F-761

IONOSPHERIC DATA IN JAPAN

FOR MAY 2012

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≪Real Time Ionograms on the Web ・・・・・・・・・・・・http://wdc.nict.go.jp/index_eng.html≫

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the National Institute of Information and Communications Technology , Japan.

Stations	Geographic(WGS84)		Geomagnetic (IGRF-10(2005))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
✳Wakkanai/Sarobetsu	45˚10'N	141˚45'E	36.4˚N	208.9˚	Vertical Sounding (I)
Kokubunji	35˚43'N	139˚29'E	26.8˚N	208.2˚	Vertical Sounding (I)
Yamagawa	31˚12'N	130˚37'E	21.7˚N	200.5˚	Vertical Sounding (I)
Okinawa	26˚41'N	128˚09'E	17.0˚N	198.6˚	Vertical Sounding (I)
Hiraiso	36˚22'N	140˚37'E	27.6˚N	209.1˚	Solar Radio Emission (S)

✳We moved the observation facilities at Wakkanai to Sarobetsu on February 2009. The new observatory is located at approximately 26km south from the old observatory. The observation at Sarobetsu commenced on March 6, 2009.

A. IONOSPHERE

Ionospheric observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes. The ionosonde produces ionograms, which are recorded digitally on a computer storage medium. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five characteristics of the ionospheric are listed below. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (*foF2, fEs*, *fmin*) and monthly medians of two factors (*h'Es* ,*h'F*), daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

foF2	Ordinary wave critical frequency for the ***F2*** layer
fEs	Highest frequency of the ***Es*** layer whether it may be ordinary or extraordinary
fmin	Lowest frequency which shows vertical iono-spheric reflections
h'Es ***h'F***	Minimum virtual height on the ordinary wave for the ***Es*** and ***F*** layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

A Impossible measurement because of the presence of a lower thin layer, for example *Es* (for *foF2*).

C Impossible measurement because of any failure in observation.

G Impossible automatic scaling because of very small ionization density of the layer (for *fEs*).

N Impossible automatic scaling because of complex echoes.

Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

c. Definitions of CNT, MED, UQ ,and LQ

Median count (**CNT**) is the number of numerical values from which the median has been computed. In addition to numerical values, the count may include a descriptive letter G.

Median (**MED**) is defined as the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

If CNT is less than 10, there are blank spaces left.

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of *foF2 , fEs* and *fmin* were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

Daily Summary Plots which are made from quarter-hourly digital ionograms are published to present general ionosphere conditions. The upper and middle parts of a Summary Plot show the diurnal variation of the frequency range of the echoes reflected from the *F* and *E* regions, respectively. The two solid arcing lines indicate the predicted values of *fxE* and *foE* calculated by the method described in the CCIR report 340. The lower part shows the diurnal variation of the virtual height where the echo traces become horizontal.

A2. Manual Scaling

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily *f*-plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Hand-book of Ionogram Interpretation and Reduction (Second Edition) 1972 " and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

fxI	Top frequency of spread ***F*** trace
foF2 ***foF1*** ***foE*** ***foEs***	Ordinary wave critical frequency for the ***F2***, ***F1***, ***E,*** and ***Es*** (including particle type ***E)*** layers, respectively
fbEs	Blanketing frequency of the ***Es*** layer, e.g. the lowest ordinary wave frequency visible through ***Es***
fmin	Lowest frequency that shows vertical ionospheric reflections
M(3000)F2 ***M(3000)F1***	Maximum usable frequency factor for a path of 3000 km for transmission by the ***F2*** and ***F1*** layers, respectively
h'F2 ***h'F*** ***h'E*** ***h'Es***	Minimum virtual height on the ordinary wave for the ***F2,*** whole ***F, E*** and ***Es*** layers, respectively
Types of ***Es***	See below b. (iii)

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replaced a numerical value on the monthly tabulation sheets, if necessary.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

K Presence of particle *E* layer.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets, if necessary.

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

When more than one type of *Es* trace are present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple trace is indicated after the type letter.

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.

l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.

r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.

a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.

s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.

d A weak diffuse trace at heights below 95 km as-sociated with high absorption and large *fmin.*

n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.

k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

c. Definitions of the CNT, MED, UQ and LQ

Median count (**CND**) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (**MED**) is the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

B. SOLAR RADIO EMISSION

Solar radio observations at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of three parabolic antennas, one with 10-meter diameter for 200 MHz Measurement, one with 6-meter diameter for 500 MHz measurements and one with 2-meter diameter for 2800 MHz measurements, each being equipped with a pair of crossed doublet antennas as a primary radiator, and three appropriate receivers. Each pair of the crossed doublet antennas is used as a polarimeter. Observations are continuously carried out almost from sunrise to sunset.

B1. Outstanding Occurrences at Hiraiso

The table is a list of outstanding occurrences of solar radio emission bursts observed at 200, 500 and 2800 MHz during a month.

Listed in the table are the date, frequencies, the type of event, the start time and the time of maximum, both in U.T. expressed in hours, minutes and tenths of a minute, the duration in minutes, the peak and mean flux densities in 10^{-22} Wm^{-2} Hz^{-1} unit, and the polarization.

The type of event is expressed by a combination of a numerical code and a letter symbol in accordance with the "Descriptive Text of Solar Geophysical Data, NOAA" as defined by H. Tanaka in the "Instruction Manual for Monthly Report of Solar Radio Emission, WDC-C2" in January 1975:

SGD Code	Letter Symbol	Morphological Classification
1	S	Simple 1
2	S/F	Simple 1F
3	S	Simple 2
4	S/F	Simple 2F
5	S	Simple
6	S	Minor
7	C	Minor+
8	S	Spike
20	GRF	Simple 3
21	GRF	Simple 3A
22	GRF	Simple 3F
23	GRF	Simple 3AF
24	R	Rise
25	R	Rise A
26	FAL	Fall
27	RF	Rise and Fall
28	PRE	Precursor
29	PBI	Post Burst Increase
30	PBI	Post Burst Increase A
31	ABS	Post Burst Decrease
32	ABS	Absorption
40	F	Fluctuations
41	F	Group of Bursts
42	SER	Series of Bursts
43	NS	Onset of Noise Storm
44	NS	Noise Storm in progress
SGD Code	Letter Symbol	Morphological Classification
45	C	Complex
46	C	Complex F
47	GB	Great Burst
48	C	Major
49	GB	Major+

The polarization is expressed by the polarization degree and sense as follows:

R or L	right or left-handed polarization,
W, M or S	weak, moderate or strong polarization,
0	almost zero or unable to detect polarization due to small increase of flux,
00	polarization degree of less than 1

One of the following symbols may be attached after numerical values, if necessary.

D	greater than, or later than,
E	less than or earlier than,
U	approximate, or uncertain.

B2. Summary Plots of F10.7 at Hiraiso

The 10.7 cm solar radio flux at Hiraiso is plotted over a one month period. The 10.7 cm flux ($F_{10.7}$) is determined by adjusting the 10.7 cm radio flux measured at Hiraiso to the Pentincton 10.7 cm radio flux. The figure on the right-hand side shows the $F_{10.7}$ index estimated at Hiraiso.

The following symbols are used in the $F_{10.7}$ index:

*	Measurement made not at 3h U.T..
B	Measurement affected by bursts.

HOURLY VALUES OF foF2 AT Wakkanai

MAY 2012

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	54	64	64	62	64	66	67	68	69	76	69	68	67	69	61	70	39	70	70	67	66	65	64	54
2	60	63	64	60	58	63	66	64	72	66	68	66	68	70	69	67	70	73	67	69	62	66	52	54
3	60	59	56	50	57	62	72	67	87	74	59	69	70	70	68	67	74	N	80	66	65	63	66	54
4	54	54	58	50	58	51	58	67	A	67	65	66	64	67	67	69	67	67	67	62	65	66	62	53
5	61	51	53	52	53	54	53	58	63	61	64	61	65	69	64	72	70	65	65	67	63	66	63	61
6	61	52	50	35	53	62	64	65	69	67	67	60	67	64	55	66	56	80	65	65	67	61	63	54
7	53	54	54	53	57	51	57	49	58			62			64	64	A	63	66	67	67	65	52	37
8	53	44	40	53	53	60	67	64	67	65	66	69	67	68	66	70	68	71	67	67	65	63	64	54
9	52	52	53	58	55	58	69	62	66	70	69	67	59	68	N	71	70	68		67	65	64	64	65
10	67	64	54	60	48	54	60	55	66	64	56		57	70	66	72	66	70	70	67	66	A	64	67
11	64	63	63	52	54	54	62	62	64	A	65	65	66	68	66	66	66	65	65	66	65	65	65	64
12	54	52	54	61	63	64	67	68	66	68	67	64	69	56	69	69	69	74	70	66	64	65	67	67
13	66	63	54	52	65	58	64	61	67	70	59	68	68	60	58	59	67	74	67	A	64	67	66	63
14	59	63	64	66	62	57	44		59	A	A		65	62	67	68	70	67	67	65	A	67	61	53
15	54	54	53	52	57	64	65	67	68	66	66	68	70	69	69	74	70	70	66	66	67	67	66	66
16	63	64	62	63	63	66	66	67	70	59	68	67	67	68	70	52	69	67	70	67	65	65	66	66
17	44	52	53	62	64	70	67	50	N	70	65		61	65	71	59		75	67	66	66	64	66	63
18	61	64	64	64	65	67	74	59	66	68	58	67	70	67	70	66	71	70	70	67	67	66	65	65
19	66	66	67	67	67	67	68	64	66	67		67	56	65	65	A	70	70	70	67	64	64	61	63
20	A	54	62	54	63	65	70	65	69	59	A	67	66	65	66	68	70	68	71	70	45	62	55	53
21	54	66	66	C	64	67	58	63	A	A	A	A	A	C	67	67	65	70	66	66	65	65	65	54
22	54	42	62	53	63	70	68	66	66	C	C	C	C	C	C	C	C	69	71	67	65	A	65	67
23	67	67	66	66	62	64	56	A	A	C	C	C	C	C	C	C	66	66	68	65	54	54	63	62
24	60	N	62	61	63	62	70	64	63	C	C	C	67	57	70	67	70	70	70	67	66	67	67	66
25	66	64	66	64	64	70	67	67	62	64	66	A	66	66	66	64	66	67	68	67	59	66	64	66
26	66	66	64	64	65	67	A	A	A	64	A	A	A	66	60	67	68	70	70	66	66	67	64	65
27	65	66	54	62	65	66	63	68	70	44	68	69	68	68	57	A	68	A	A	A	65	67	53	66
28	62	65	53	62	65	65	66	67	67	A	66		64	67	A	66	A	63	66	67	64	63	67	65
29	67	62	52	54	62	67	66	65	70	69	67	66	67	66	62	A	70	A	A	A	74	66	67	67
30	67	61	60	52	64	67	76	72	54	69	68	63	69	66	66	68	69	A	68	67	67	65	67	66
31	66	66	64	64	62	66	67	61	A	A			A	A	62	64	62	63	A	64	34	65	A	65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	31	31	30	28	25	22	21	20	25	26	27	26	27	27	27	28	30	29	30	31
MED	61	63	60	60	63	64	66	64	66	67	66	67	67	67	66	67	69	70	68	67	65	65	64	64
U Q	66	64	64	63	64	67	68	67	69	69	68	68	68	68	69	69	70	70	70	67	66	66	66	66
L Q	54	54	53	52	57	58	62	61	63	64	64	64	64	65	62	66	66	67	66	66	64	64	63	54

HOURLY VALUES OF fEs AT Wakkanai

MAY 2012

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	24	G	33	G	44	G	G	G	G	G	G	G	G	39	33	26	G	G	G	G
2	G	G	34	26	G	29	40	45	G	50	58	G	G	G	G	52	49	52	58	30	46	24	23	G
3	G	G	G	G	G	G	34	G	G	G	G	G	G	G	G	48	49	50	49	40	38	G	G	G
4	G	G	G	G	G	G	G	45	66	42	G	48	52	64	G	G	G	52	G	G	G	G	G	G
5	G	25	G	G	28	G	G	G	40	44	57	59	G	G	G	G	G	G	34	27	G	G	G	G
6	G	G	G	G	G	G	G	G	G	G	G	G	58	G	G	46	40	51	44	27	G	G	G	G
7	G	G	G	G	G	30	38	43	52	G	G	G		G	G	G	51	G	32	G	G	G	G	G
8	G	G	26	G	G	G	38	45	G	G	G	G	G	43	G	G	G	G	36	40	G	29	G	G
9	G	G	G	G	G	29	G	44	51	G	G	G	G	G	50	G	G	G		G	G	24	G	G
10	G	G	G	G	G	30	38	56	53	60	G	G	G	G	G	71	68	40	44	66	81	69	G	24
11	34	G	G	G	G	G	40	49	53	46	58	G	G	G	64	46	39	36	28	35	G	G	G	G
12	G	G	G	G	G	G	G	G	G	G	G	51	62	G	51	44	G	47	38	31	G	G	44	28
13	28	38	40	35	37	G	36	57	48	44	53	56	62	G	G	48	59	40	43	70	42	45	29	32
14	G	G	G	G	G	G	G	G	G	55	62	G	G	G	G	G	G	G	45	30	71	24	28	G
15	32	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	38	35	G	G	G	G
16	G	G	G	G	G	G	G	G	G	G	51	G	G	50	G	G	G	52	40	29	31	29	26	28
17	G	24	G	26	G	32	G	G	G	43	G		G	G	G	G		G	34	G	32	32	24	G
18	30	G	G	G	G	35	40	50	51	G	52	G	G	G	G	G	61	52	38	38	37	39	29	G
19	G	G	G	G	G	38	43	46	40	G	G	G	G	G	58	72	61	68	53	48	30	37	27	42
20	39	26	G	28	G	40	44	69	54	46	67	71	G	G	G	G	48	49	44	55	60	37	30	G
21	G	G	G	C	G	35	52	45	57	90	74	64	134	C	G	G	64	45	52	53	39	69	36	27
22	28	27	G	G	G	G	G	G	52	C	C	C	C	C	C	C	C	34	45	50	29	57	24	G
23	G	40	G	G	36	41	45	62	71	C	C	C	C	C	C	C	G	G	43	38	27	G	G	G
24	G	27	G	G	G	35	G	54	57	C	C	C	50	G	G	G	G	53	52	58	46	29	49	G
25	24	G	35	G	G	G	43	50	53	58	51	60	60	G	52	64	G	45	62	46	60	40	49	58
26	24	G	25	26	G	40	56	66	66	65	88	75	61	43	G	G	G	40	38	36	45	52	29	43
27	35	25	G	60	29	G	G	52	48	G	G	G	54	56	G	74	49	73	68	73	33	G	46	53
28	G	27	26	39	G	G	G	52	63	70	62		60	G	118	52	74	45	42	59	50	79	33	26
29	31	G	25	38	34	34	48	62	62	64	57	51	G	G	G	86	84	112	139	94	69	56	25	25
30	33	G	G	G	G	G	40	G	G	42	G	G	G	G	G	63	80	76	54	36	34	28	G	26
31	G	G	G	G	G	36	38	51	74	43	G	G	73	74	G	59	51	54	71	43	53	58	72	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	28	28	26	28	28	29	29	29	31	30	31	31	31	31	31
MED	G	G	G	G	G	G	36	45	51	42	G	G	G	G	G	G	40	45	44	38	33	29	24	G
U Q	28	25	G	26	G	35	40	52	57	52	57	51	59	G	G	55	60	52	52	53	46	45	30	28
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	38	29	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 2012

LAT. 45°10.0′N LON. 141°45.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	14	14	20	14	14	14	15	16	21	17	16	17	15	14	14	15	14	14	14	15	14
2	14	15	14	14	15	14	14	14	15	16	16	20	18	18	18	15	14	14	15	15	14	14	14	15
3	15	14	14	14	15	14	14	14	15	15	17	28	18	18	16	14	14	14	15	14	14	15	15	15
4	15	14	15	14	15	14	14	14	20	16	17	15	17	18	17	16	14	14	14	15	14	15	15	15
5	14	14	15	14	14	14	15	15	15	18	18	21	21	21	20	18	14	14	14	15	15	17	15	15
6	15	15	15	15	14	20	18	14	15	17	17	15	26	24	16	18	14	14	14	15	14	27	15	15
7	14	14	14	14	15	14	14	14	15	18	20	22		23	20	15	16	14	16	15	14	14	15	15
8	15	15	15	14	15	14	15	14	14	16	16	20	18	17	16	15	14	14	14	14	15	14	14	14
9	15	15	14	14	14	15	18	15	16	18	21	20	17	22	17	17	14	14		15	14	15	15	14
10	14	14	17	15	14	15	14	14	15	18	22	23	26	24	51	17	14	14	15	14	14	14	14	15
11	14	14	15	14	14	14	14	14	15	16	16	18	18	18	17	16	15	14	14	14	14	14	15	15
12	14	14	14	14	14	22	14	15	15	20	22	20	23	20	18	16	14	15	14	14	14	15	15	14
13	15	14	14	14	15	15	15	14	15	18	17	20	21	18	17	18	15	14	14	15	14	14	14	14
14	17	14	14	14	15	15	14	18	14	18	18	16	17	17	16	15	14	14	14	14	14	14	15	14
15	14	15	15	14	15	15	14	14	17	18	20	20	17	17	16	15	15	14	14	14	15	15	14	14
16	14	15	15	14	16	22	14	15	15	18	18	20	21	18	17	17	14	15	16	14	14	14	15	16
17	15	14	14	15	15	15	14	16	18	22	51		54	57	20	17		14	14	14	14	14	14	14
18	14	14	14	14	15	14	14	14	16	17	21	20	21	18	16	18	14	14	14	14	14	15	15	14
19	15	18	15	14	15	14	14	14	14	20	18	20	22	20	17	17	15	14	14	14	14	14	14	14
20	14	16	14	15	18	14	14	14	17	17	16	20	22	27	15	15	14	14	14	14	14	14	14	15
21	15	14	14	C	15	14	14	15	14	21	22	33	32	C	20	14	16	14	14	14	14	14	14	15
22	14	14	15	17	14	14	14	14	18	C	C	C	C	C	C	C	C	14	14	14	15	14	14	14
23	15	14	14	14	14	14	14	14	15	C	C	C	C	C	C	C	15	14	14	14	15	15	16	15
24	15	14	14	15	17	14	14	15	15	C	C	C	21	18	28	16	14	14	14	14	14	14	14	14
25	14	14	14	14	15	14	14	15	21	20	22	27	20	16	16	15	14	14	14	14	14	14	14	14
26	14	14	14	14	15	14	14	14	18	22	21	21	18	22	52	18	15	14	14	14	14	14	14	14
27	15	15	14	14	14	14	14	15	14	17	21	17	17	28	23	21	17	14	14	14	15	14	14	14
28	14	14	14	14	16	14	14	14	14	18	27		22	23	18	15	15	14	14	14	14	14	15	14
29	14	14	15	14	14	14	14	15	14	15	20	16	17	18	23	15	14	14	14	14	14	14	15	14
30	15	15	14	14	15	14	14	14	20	15	53	18	15	21	14	14	15	14	14	14	14	14	14	15
31	15	15	14	18	15	14	14	14	15	18	21	60	20	22	16	18	15	14	14	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	28	28	26	28	28	29	29	29	31	30	31	31	31	31	31
MED	15	14	14	14	15	14	14	14	15	18	20	20	20	19	17	16	14	14	14	14	14	14	14	14
U Q	15	15	15	14	15	15	14	15	17	18	21	21	22	22	20	17	15	14	14	14	14	15	15	15
L Q	14	14	14	14	14	14	14	14	14	16	17	18	17	18	16	15	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

MAY 2012

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	63	65	73	67	62	64	84	101	86	75	78	86	91	93	97	95	101	110	120	111	81	56	67	54
2	A	52	54	59	52	54	84	100	91	81	74	80	83	86	96	107	107	105	115	106	64	52	A	53
3	52	49	53	53	54	53	78	100	96	A	85	87	86	105	107	101	111	106	95	86	74	A	A	74
4	67	67	51	52	56	46	77	74	N	91	96	102	105	104	108	116	96	72	72	A	A	55	52	52
5	52	52	52		46	54	73	83	78	69	74	83	86	91	97	102	100	97	96	83	74	57	66	44
6	52	67	64	52	44	47	67	76	87	75	75	76	77	81	102	108	106	110	107	88	73	67	54	54
7	54	49	67	53	52	58	77	76	69	77	81	75	80	86	80	87	76	75	90	107	N	53	52	52
8		54		44		59	80	84	67	A	72	74	78	85	91	94	94	80	83	90	72	A	A	74
9	75	73	64	67	56	67	67	67	80	82	91	98	102	98	91	98	88	92	97	88	80	77	73	
10	67	66	54	77	54	38	62	74	76	A	A	78	81	92	96	96	97	88	90	86	74	66	A	67
11	75	74	67	54	47	54	61	63	66	A	62	76	77	91	92	91	80	72	72	81	80	76	66	73
12	67	53	53	54	59	67	83	86	81	86	84	85	101	106	106	107	101	86	88	83	74	79	76	74
13	52	63	67	54	60	56	71	80	88	A	90	A	94	96	107	110	107	86	A	77	85	80	A	80
14	78	74	73	64	62	59	72	66	68	72	68	75	82	91	91	A	83	81	A	A	A	A	54	53
15	66	62	53	56	53	61	74	84	66	69	72	76	97	100	92	84	86	A	A	96	88	84	76	73
16	66	52	67	59	63	67	72	A	80	72	74	81	85	98	102	108	108	A	A	82	A	84	81	75
17	80	76	73	66	67	72	88	97	90	95	79	A	92	98	103	114	106	95	84	77	83	82	A	A
18	A	67	72	67	67	75	87	73	A	72	74	80	85	93	102	98	100	100	84	80	A	74	72	74
19	73	55	66	72	67	72	85	84	84	78		83	96	91	84	87	95	97	98	90	55	A	64	54
20	54	63	66	54	54	64	78	90	A	A	80	A		85	84	87	A	102	104	102	53	54	A	A
21	52	54	54	C		55	62	80	74	67	A	77	81	91	C	A	95	98	105	112	106	A	77	80	A
22	A	75	66	54	55	61	74	73	A	72	56		86	92	94	91	95	98	102	102	88	90	80	53
23	75	76	81	87	79	74	62	66	71	75	73	86	81	76	102	96	108	107	A	90	79	A	A	73
24	67	67	67	63	62	64	77	73	73	A	A	68	75	86	90	91	A	85	86	88	78	80	76	74
25	A	75	74	62	67	76	86	78	74	A	58	A	A	120	82	91	94	87	78	78	53	74	76	75
26	74	81	78	74	74	64	A	A	A	A	A	83	80	75	81	86	88	91	86	89	77	54	67	55
27	67	65	54	58	53	61	71	73	73	A	78	A	A	A	88	88	88	90	87	79	A	54	53	A
28	74	73	64	54	54	64	76	87	74	73	78	72	72	81	90	94	93	90	86	85	78	A	69	76
29	73	74	67	63	61	64	77	99	88	A	68	74	80	A	92	96	98	81	85	78	A	76	76	76
30	74	67	67	56	57	67	74	72	80	A	75	A	80	82	83	94	97	87	81	81	83	A	75	75
31	75	N	67	53	64	72	81	70	N	74	76	74	72	A	A	86	88	85	86	81	55	64	A	71
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	30	30	29	30	31	30	29	25	18	27	24	28	27	29	30	29	29	26	29	23	24	22	26
MED	67	66	66	58	56	64	77	76	78	75	75	80	84	91	92	95	97	90	88	86	77	74	70	73
U Q	74	74	67	66	63	67	81	86	86	81	80	84	91	98	102	102	103	101	98	93	81	79	76	74
L Q	54	54	54	54	54	56	72	73	70	72	72	75	80	85	89	91	88	85	84	81	72	55	64	54

HOURLY VALUES OF fEs AT Kokubunji

MAY 2012

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	33	G	62	G	G	G	G	G	G	53	50	50	40	31	26	G	G	G
2	23	G	G	G	G	G	G	G	45	48	52	G	G	G	G	G	G	37	G	29	31	G	34	40
3	26	34	G	43	G	53	60	52	113	86	G	50	G	46	G	56	61	50	61	51	33	60	51	G
4	G	G	G	G	G	34	G	55	73	77	61	73	64	58	51	71	53	95	64	60	80	40	31	G
5	G	G	G	G	G	29	G	G	G	53	51	49	G	G	49	G	G	G	G	G	29	26	G	G
6	G	G	G	G	G	G	G	G	G	43	G	G	G	G	G	61	70	59	52	G	51	G	G	23
7	23	G	G	G	G	29	G	45	50	G	G	G	G	53	G	G	G	52	51	42	29	29	G	G
8	G	G	G	G		G	G	52	59	65	59	62	67	50	G	G	G	50	70	58	70	78	78	27
9	27	G	G	G	29	40	G	50	61	60	60	68	68	52	50	50	G	G	34	39	59	G	G	G
10	G	G	G	G	G	G	32	46	67	71	94	60	60	52	G	G	38	53	78	53	50	59	87	44
11	59	G	G	G	G	G	G	38	59	51	50	62	G	51	50	G	G	45	50	29	29	49	51	32
12	G	G	G	G	G	G	G	46	50	52	47	49	46	68	60	52	G	G	G	50	30	46	30	31
13	29	G	G	G	G	G	G	51	86	79	65	86	68	G	55	67	76	82	168	43	33	71	56	50
14	59	G	G	25	26	G	52	50	40	54	60	57	60	48	G	81	48	70	124	117	72	50	30	79
15	G	G	G	30	G	G	37	51	63	59	71	73	54	G	48	G	G	132	105	92	60	G	G	G
16	G	G	G	G	G	G	56	88	52	59	G	47	47	G	G	53	56	146	117	73	124	59	60	34
17	31	30	35	28	G	G	G	G	48	59	60	110	87	93	110	G	51	48	40	48	50	28	94	116
18	55	34	G	49	29	G	G	58	73	51	68	G	68	G	G	G	52	G	35	31	60	50	58	G
19	29	G	G	32	40	31	100	72	80	50		65	82	59	54	51	G	G	G	40	40	60	60	59
20	28	29	G	G	G	G	45	53	89	89	55	75		51	59	G	96	107	38	62	83	51	69	78
21	50	25	G	C	G	G	36	45	G	86	G	G	50	C	137	59	61	136	82	50	73	51	58	93
22	84	35	27	27	G	G	G	G	90	43	47		G	72	68	83	55	60	31	G	52	46	27	28
23	51	73	35	86	79	G	59	58	G	49	G	G	56	67	G	47	61	136	91	47	46	60	93	G
24	G	G	G	G	G	G	G	53	62	83	113	49	G	G	G	G	86	58	70	70	45	71	82	58
25	59	23	G	26	G	G	40	52	62	76	60	79	80	110	60	G	49	47	40	59	27	54	40	59
26	81	51	52	35	G	30	70	102	97	109	84	70	G	50	G	G	G	G	35	29	G	49	36	59
27	70	46	28	49	40	28	G	53	62	86	75	85	84	95	68	G	G	48	42	28	72	50	70	81
28	49	23	45	49	29	32	G	47	50	G	68	G	G	G	G	G	G	G	47	33	G	78	41	49
29	51	58	31	29	28	G	G	52	62	80	57	61	126	138	64	58	107	77	62	43	49	50	50	59
30	29	G	G	G	G	G	39	47	79	97	68	82	98	G	60	68	76	72	52	63	60	92	67	33
31	53	30	40	38	23	29	33	47	62	53	G	50	G	80	107	53	62	56	45	40	34	35	34	51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	31	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	29	G	G	G	G	G	G	50	62	59	58	58	52	50	49	47	50	52	50	43	49	50	50	34
U Q	53	30	27	32	26	29	40	53	73	80	68	73	68	67	60	58	61	77	70	59	60	60	67	59
L Q	G	G	G	G	G	G	G	45	50	50	G	G	G	G	G	G	G	37	35	31	30	29	30	G

HOURLY VALUES OF fmin AT Kokubunji

MAY 2012

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	13	18	13	14	30	39	47	48	54	53	44	35	15	13	14	13	14	15	14	17
2	15	17	13	15	14	18	13	14	20	35	36	50	54	48	50	43	39	13	13	13	13	17	13	13
3	14	14	14	13	15	13	14	31	33	36	48	35	50	58	46	36	34	15	14	13	14	17	13	13
4	17	14	14	14	15	13	18	31	34	36	36	38	36	34	36	33	31	14	14	14	14	13	14	42
5	41	18	15	18	15	14	23	37	42	38	40	38	48	50	46	45	33	38	13	14	14	15	15	14
6	17	14	14	14	15	33	15	29	45	44	54	53	54	55	46	40	20	30	13	17	14	33	14	14
7	15	20	14	15	18	13	14	29	33	45	52	54	56	38	49	45	42	23	15	18	14	14	14	18
8	14	14	18	17		20	28	30	31	37	36	39	37	38	52	43	42	14	13	13	13	13	14	14
9	13	13	14	15	15	13	13	18	36	37	38	37	39	38	38	39	38	17	17	14	15	17	14	44
10	15	17	15	13	43	20	18	20	35	35	38	39	39	42	58	44	30	26	14	13	14	14	13	13
11	14	13	14	14	14	18	15	40	38	43	39	38	56	36	36	44	18	17	13	14	14	18	13	14
12	14	15	14	14	14	22	34	37	34	38	38	37	38	36	37	34	41	39	13	15	13	14	15	14
13	14	14	13	40	17	22	14	22	36	38	37	38	39	54	34	31	31	22	13	14	14	14	14	13
14	15	14	13	13	13	13	14	18	33	38	38	39	38	42	51	31	37	29	15	13	15	18	14	14
15	14	15	18	13	15	20	14	34	35	36	38	38	36	54	36	51	39	30	17	20	14	14	28	15
16	14	20	18	14	14	21	14	20	37	36	57	38	39	60	60	38	33	21	31	15	13	13	14	13
17	14	14	15	14	13	21	15	40	41	37	38	75	57	44	36	46	36	13	17	14	14	14	14	13
18	13	13	13	17	14	21	17	20	35	37	39	55	39	55	40	45	35	15	14	13	14	13	13	17
19	13	14	21	13	13	14	14	20	34	34		37	39	40	39	38	44	38	15	13	13	14	15	13
20	14	14	14	14	13	22	15	31	33	40	39	37		35	36	48	31	26	15	14	14	14	14	15
21	14	14	14	C	15	22	26	29	42	38	53	57	37	C	38	39	39	30	22	18	15	13	14	13
22	14	13	13	14	15	13	14	20	36	35	40		56	40	36	34	30	17	14	18	14	14	15	15
23	14	13	13	13	13	17	14	20	41	34	50	53	39	39	55	40	31	14	14	13	14	20	13	17
24	15	14	13	14	13	22	34	22	33	38	39	39	52	53	52	34	28	14	18	13	14	15	14	15
25	14	14	14	13	13	25	14	20	34	37	39	39	38	43	36	52	33	17	13	13	14	14	13	15
26	13	14	13	14	13	13	17	21	34	39	39	37	37	53	59	45	20	31	13	13	14	14	14	13
27	13	13	15	14	13	13	17	20	33	34	38	39	35	38	39	45	46	26	13	13	13	14	13	14
28	14	14	14	15	13	13	14	18	33	46	35	54	54	65	53	50	39	20	14	13	14	15	17	13
29	14	14	13	14	13	18	33	20	35	40	38	38	44	39	37	38	42	17	15	15	13	14	13	14
30	14	14	14	37	13	20	17	31	31	39	36	39	36	53	39	38	34	31	13	14	14	14	13	13
31	13	14	13	15	13	15	15	31	35	38	52	40	55	39	38	36	37	21	17	13	13	13	13	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	31	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	18	15	22	34	38	39	39	39	42	39	40	34	21	14	14	14	14	14	14
U Q	15	14	15	15	15	21	18	31	36	39	47	50	54	53	51	45	39	30	15	15	14	15	14	15
L Q	14	14	13	14	13	13	14	20	33	36	38	38	38	38	36	36	31	15	13	13	13	14	13	13

HOURLY VALUES OF foF2 AT Yamagawa

MAY 2012

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	69	67	52	67	64	54	71	86	70	74	72	89	69	71	70	60	93	69	82	A	A	54	54	53
2	52	54	67	54	52	58	64	89	N	72	76	69	A	69	A	A	79	A	A	A	49	77	49	A
3	A	65	72	66	52	53	67	90	A	A	A	A	68	69	A	69	A	A	A	A	A	A	A	A
4	A	A	A	53	52	52	66	77	85	88	76	84	A	A	A	66	N	87	87	78	71	A	54	54
5	52	44	51	52	52	50	67	69	68	72	67	74	59	59	69	69	69	A	A	A	54	53	53	53
6	67	67	59	54	52	52	40	67	72	72	69	72	73	69	97	69	90	A	N	74	44	53	54	54
7	63	54	64	60	43	50	67	73	74	79	73	69	69	79	69	69	52	90	95	72	54	53	53	52
8	52	54	52	53	54	54	67	74	70	A	A	A	A	A	A	A	109	A	91	65	54	A	54	A
9	A	52	66	67	49	52	58	64	74	76	A	62	A	A	A	69	88	79	90	78	53	49	52	54
10	64	49	A	64	54	44	69	66	68	67	A	A	A	A	A	A	N	79	90	71	A	A	A	52
11	A	A	66	A	A	54	64	60	64	61	A	72	77	66	79	A	92	78	85	A	59	52	52	53
12	52	A	A	A	A	A	67	A	A	65	A	68	69	69	A	A	98	88	92	72	54	50	54	54
13	A	69	A	54	56	54	70	67	71	72	A	80	A	A	79	64	N	55	76	55	54	53	54	52
14	52	66	63	A	54	64	67	78	82	67	A	74	59	A	89	88	87	A	88	64	54	53	54	54
15	52	A	67	62	57	54	77	N	A	A	A	A	A	69	A	A	A	A	90	76	54	A	A	66
16	52	52	49	54	54	54	67	N	68	A	A	A	84	A	89	57	96	A	111	A	A	67	A	66
17	53	53	52	54	66	67	80	78	80	72	76	B	B	B	60	76	69	94	88	82	43	A	44	67
18	65	54	67	64	64	65	N	76	66	A	A	59	A	A	72	79	A	91	90	86	77	A	A	52
19	66	53	67	55	66	67	72	85	74	72	71	69	59	79	69	77	90	94	99	A	A	A	A	67
20	54	52	53	54	54	54	70	N	82	71	A	A	69	55	A	A	79	A	A	A	A	A	A	A
21	52	A	A	52	50	52	A	68	50	62	70	68	N	59	A	69	76	N	94	A	A	39	54	66
22	A	A	66	54	57	63	70	66	67	63	A	70	A	A	A	A	93	79	89	A	67	A	A	53
23	54	52	54	67	63	52	72	76	73	A	A	A	74	70	78	69	64	89	65	79	A	55	52	N
24	67	52	54	66	66	66	72	67	67	A	A	A	70	A	78	A	59	92	88	78	72	47	54	48
25	52	A	53	A	53	72	84	66	66	A	67		73	N	69	76	79	90	A	A	A	66	67	52
26	A	52	52	51	63	58	78	76	76	A	A	A	A	81	80	58	71	87	86	77	54	54	54	54
27	52	52	54	52	51	52	63	72	70	79	A	A	A	A	59	69	54	69	84	74	55	54	A	53
28	66	54	61	54	56	58	67	74	66	64	A	59	72	82	86	56	96	89	96	89	54	55	52	54
29	52	67	64	54	51	54	68	78	84	A	A	66		76	53	94	59	92	86	67	64	64	54	54
30	63	67	52	54	57	67	71	82	74	71	A	81	A	70	92	62	94	95	87	58	54	54	A	A
31	52	52	66	53	57	60	66	67	66	72	A	60	A	71	78	89	88	83	87	77	54	54	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	26	27	29	30	29	27	27	21	10	19	15	18	20	22	25	21	25	20	22	21	20	24
MED	52	54	60	54	54	54	67	74	70	72	72	69	69	70	78	69	87	88	88	75	54	54	54	54
U Q	64	65	66	64	60	63	71	78	74	73	76	74	73	76	83	76	93	91	91	78	59	55	54	54
L Q	52	52	52	53	52	52	66	67	67	66	69	66	68	69	69	64	69	79	86	69	54	52	52	52

HOURLY VALUES OF fEs AT Yamagawa

MAY 2012

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	34	G	44	52	58	58	G	44	54	55	58	78	113	72	48	32	G
2	G	G	G	G	G	G	G	40	46	56	68	53	85	48	54	68	83	144	85	93	60	59	32	60
3	72	56	51	38	35	G	32	56	122	152	132	66	49	64	67	65	88	104	147	94	94	108	73	60
4	72	60	50	53	44	38	32	48	55	58	73	51	78	78	74	48	50	42	38	31	61	65	43	46
5	37	G	G	G	G	G	31	47	52	58	60	47	G	G	G	49	49	64	60	90	32	29	G	34
6	G	33	G	G	G	G	34	G	42	G	G	G	G	G	G	G	62	119	70	32	G	30	39	G
7	G	G	G	G	G	G	35	41	G	50	53	G	G	G	G	G	49	52	52	51	G	G	30	38
8	38	36	33	41	G	G	36	G	64	62	90	77	114	124	114	116	115	103	72	67	38	45	49	72
9	58	G	57	G	26	25	34	50	60	64	52	60	72	70	74	65	61	51	40	57	40	40	33	G
10	27	29	29	26	29	35	31	G	47	50	70	82	121	118	118	89	G	55	G	30	116	72	57	40
11	79	58	58	59	62	53	G	58	56	58	62	47	48	G	56	61	60	G	40	78	47	30	27	30
12	G	59	59	59	59	67	56	90	77	61	68	63	74	52	85	82	52	46	60	G	31	51	40	49
13	59	38	45	46	G	G	33	52	52	55	73	70	80	53	G	50	54	G	53	36	51	36	51	43
14	46	47	54	61	50	40	46	62	71	59	53	72	G	68	66	46	49	114	69	56	31	47	32	35
15	44	59	57	50	34	G	33	47	96	81	96	176	92	67	51	90	90	95	54	61	47	84	73	G
16	26	27	G	27	29	28	29	39	56	67	72	84	77	55	49	48	77	149	105	94	70	72	73	55
17	32	32	G	28	34	28	G	53	51	48	44	B	B	B	G	G	61	71	45	44	48	34	40	35
18	40	57	45	41	48	28	45	42	40	85	75	47	61	66	44	55	77	46	49	58	66	60	57	G
19	30	G	G	G	25	G	30	37	43	50	45	G	G	51	50	42	40	54	83	72	69	60	70	60
20	48	34	36	38	26	G	36	49	55	63	78	78	60	55	100	78	64	95	117	118	81	73	72	58
21	58	59	70	58	26	33	73	44	44	60	55	58	60	G	83	62	53	51	51	61	54	58	33	57
22	60	59	50	G	30	G	29	G	G	59	60	64	48	59	77	100	69	70	71	73	36	59	83	46
23	G	G	31	30	28	G	36	50	54	56	98	72	65	G	72	57	G	43	77	43	81	33	24	32
24	48	45	28	G	G	G	G	35	51	83	70	69	70	115	74	76	G	G	36	49	58	57	51	57
25	57	72	30	73	54	39	122	58	G	84	G	G	G	G	G	G	40	81	82	86	60	59	49	48
26	69	54	39	46	G	G	51	68	64	82	102	86	77	50	65	G	61	G	34	34	30	G	49	58
27	40	58	44	46	40	G	42	43	56	62	76	82	74	71	49	G	G	G	G	33	40	32	59	42
28	38	49	G	40	G	35	G	35	52	68	74	57	G	G	G	G	G	G	38	31	34	36	27	34
29	49	48	44	51	39	29	52	40	74	68	67	52	G	G	G	G	G	G	35	G	G	G	40	32
30	53	49	G	G	G	G	G	42	48	56	74	64	62	G	G	52	G	G	36	31	29	60	72	72
31	G	30	38	36	G	G	36	40	52	63	71	57	70	G	64	58	49	G	44	37	40	36	59	59
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	40	45	36	38	26	G	33	43	52	60	70	62	62	52	54	54	53	52	53	56	47	48	49	43
U Q	58	58	50	50	39	33	42	52	60	68	75	72	77	67	74	68	64	95	77	78	66	60	59	58
L Q	26	27	G	G	G	G	29	37	44	56	53	51	G	G	G	G	40	G	38	33	32	33	32	32

HOURLY VALUES OF fmin AT Yamagawa

MAY 2012

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	16	14	14	14	15	14	16	15	23	26	21	26	32	27	21	18	14	16	14	14	14	14	21
2	15	17	14	15	15	18	17	14	17	18	29	34	36	40	38	22	18	16	16	15	15	14	17	14
3	15	15	14	15	14	17	15	15	15	20	22	32	30	29	28	28	22	16	14	16	16	15	15	15
4	14	14	15	14	14	14	15	14	17	23	36	36	35	28	26	28	23	18	16	14	15	14	14	14
5	16	14	15	16	17	14	15	15	15	34	35	51	52	38	57	29	26	18	15	15	16	15	16	14
6	15	14	20	24	15	15	16	18	33	33	58	52	58	60	30	20	17	16	15	16	18	15	14	17
7	15	16	14	14	17	16	14	16	18	32	33	47	60	34	55	54	22	17	14	14	15	18	15	14
8	14	15	15	14	15	14	14	14	20	20	32	34	36	35	33	23	22	17	14	15	15	15	15	14
9	15	14	14	14	14	15	18	14	18	23	26	27	38	38	36	27	20	15	15	14	14	15	15	15
10	17	15	16	14	15	16	16	17	20	27	27	32	29	33	35	33	44	20	26	14	16	14	15	15
11	14	14	14	14	14	14	16	15	21	26	33	58	40	54	33	27	22	18	14	14	14	16	15	15
12	17	14	14	15	15	14	14	15	17	36	36	35	35	33	33	27	22	15	14	17	15	15	14	14
13	14	14	14	14	16	15	16	15	17	34	28	42	32	34	26	21	20	16	16	15	16	14	15	14
14	14	15	14	14	15	14	17	16	17	21	24	34	36	34	33	20	34	21	15	14	14	15	15	15
15	14	15	15	15	14	16	18	16	20	27	34	36	36	32	34	36	21	15	14	15	15	14	15	16
16	15	15	17	14	17	14	14	16	20	22	29	35	34	35	39	26	26	16	16	15	14	14	15	15
17	14	15	14	14	15	18	14	15	24	32	35	B	B	B	54	49	34	18	14	15	15	15	15	15
18	14	15	14	14	15	14	16	17	21	24	36	29	38	34	35	33	20	18	14	14	16	15	15	16
19	14	14	15	15	16	15	14	14	21	33	28	53	59	43	32	24	33	21	14	15	16	17	15	15
20	14	14	14	14	16	16	15	16	20	23	24	34	35	34	34	30	24	17	16	14	15	15	14	14
21	15	14	14	15	15	16	14	15	18	26	27	34	36	59	40	34	21	17	14	18	17	15	15	15
22	14	14	14	16	15	18	14	14	16	20	20	39	38	38	38	34	23	18	15	15	16	15	15	15
23	15	14	15	16	14	15	17	14	18	21	28	35	38	54	34	34	21	20	14	14	15	14	15	15
24	15	14	16	17	21	15	16	14	20	22	35	35	35	35	29	27	23	17	14	15	15	15	14	14
25	14	14	15	14	14	14	14	14	21	24	57	56	58	57	60	56	20	18	17	14	18	15	15	14
26	15	14	14	15	14	18	16	15	17	23	33	35	36	23	32	26	18	20	14	14	15	16	14	14
27	16	15	14	14	14	16	17	15	20	20	24	34	35	32	30	29	23	15	16	14	15	15	14	14
28	14	14	14	14	14	14	14	14	18	23	27	34	32	58	56	52	18	16	14	14	14	14	14	15
29	15	14	15	14	16	17	18	15	16	26	34	35	101	55	55	26	51	17	14	17	22	16	14	14
30	14	14	14	15	14	15	14	16	20	21	22	34	38	34	28	24	22	15	14	14	14	15	15	15
31	14	14	15	14	15	16	14	16	17	26	36	38	39	59	38	27	22	17	14	14	14	15	14	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	15	15	15	15	18	23	29	35	36	35	34	27	22	17	14	14	15	15	15	15
U Q	15	15	15	15	16	16	16	16	20	27	35	39	39	54	39	34	24	18	16	15	16	15	15	15
L Q	14	14	14	14	14	14	14	14	17	21	26	34	35	33	30	24	20	16	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

MAY 2012

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	88	110	108	107	80	77	85	88	74	74	90	101	110	108	107	118	117	122	130	A	87	77	74	76
2	77	76	81	77	52	58	67	99	112	78	83	90	107	118	119	127	130	131	124	123	A	88	110	86
3	110	89	81	74	67	65	76	87	89	95	84	93	110	124	130	134	136	129	A	90	87	100	87	78
4	A	76	73	53	47	A	56	78	86	96	96	103	121	131	138	143	143	140	131	131	109	83	A	72
5	76	76	73	76	61	51	58	73	72	76	81	92	113	131	131	143	147	144	131	116	88	107	108	109
6	89	118	88	85	58	53	61	84	78	75	78	86	107	120	120	120	120	131	118	110	79	72	66	73
7	74	74	72	68	52	54	66	84	92	84	82	90	107	130	134	132	137	130	A	148	87	A	83	80
8	80	78	80	72	61	52	66	81	67	71	80	87	105	118	121	118	124	121	111	102	87	A	72	A
9	A	72	74	76	60	54	58	A	84	78	A	91	102	110	109	118	111	106	110	109	88	76	72	67
10	71	74	81	87	53	42	66	72	67	72	78	93	A	117	122	130	132	138	131	111	87	87	76	85
11	80	75	76	76	A	52	71	84	49	A	77	76	102	120	119	143	142	131	130	120	88	75	80	78
12	53	86	89	77	65	67	72	72	67	77	80	96	109	131	130	127	126	112	89	90	103	77	76	59
13	76	52	74	72	66	62	67	73	75	74	86	97	105	117	134	138	128	121	110	107	87	78	72	54
14	53	77	72	62	62	51	64	86	92	A	77	94	110	110	110	117	108	108	110	110	87	54	72	78
15	72	78	72	61	47	52	80	71	64	75	81	87	102	106	102	91	102	117	118	107	87	75	A	72
16	65	72	81	67	61	54	76	80	67	71	A	N	108	126	134	143	134	108	108	A	100	88	87	86
17	87	108	105	104	86	79	84	83	94	87	86	B	107	122	125	127	131	123	117	127	109	81	87	85
18	80	76	72	68	58	60	67	78	74	71	80	91	100	110	121	120	118	116	110	88	78	77	77	80
19	84	75	75	76	72	77	80	81	72	71	76	89	110	117	121	124	126	127	110	88	66	63	76	80
20	83	84	87	71	65	62	74	87	A	A	A	A	A	A	107	120	121	118	110	98	72	77	78	79
21	85	80	77	66	52	52	72	67	57	73	81	88	104	117	118	130	140	142	143	131	121	88	79	80
22	77	87	81	62	62	54	66	75	70	75	75	82	97	100	106	105	121	127	132	117	87	86	87	90
23	87	87	87	87	66	54	74	84	A	A	72	93	98	88	91	107	110	123	116	108	104	88	88	A
24	88	48	85	78	82	66	75	80	78	72	A	A	A	107	108	110	116	116	110	108	A	84	86	87
25	86	87	86	77	72	67	78	72	66	74	68	81	90	102	120	122	125	120	118	107	87	78	82	49
26	86	86	74	72	66	67	77	84	83	88	A	A	A	77	104	108	A	N	108	106	A	82	79	76
27	78	74	53	64	A	50	60	73	76	81	A	A	A	94	108	122	125	111	105	88	72	54	66	54
28	52	66	71	64	63	65	75	84	77	68	70	76	80	88	101	109	121	130	108	88	88	83	80	83
29	81	77	86	67	61	54	66	74	80	A	A	77	81	91	101	107	110	110	88	88	81	76	74	73
30	72	80	52	67	63	63	75	88	68	71	A	A	77	86	96	108	117	108	104	89	87	75	78	A
31	66	78	64	60	52	52	67	72	71	84	82	A	76	87	95	103	107	111	108	88	76	76	73	78
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	31	31	29	30	31	30	29	26	23	23	26	30	31	31	30	30	29	29	28	29	29	28
MED	80	77	77	72	62	54	71	80	74	75	80	90	105	114	119	120	124	122	110	107	87	78	78	78
U Q	86	86	86	77	66	65	76	84	83	81	83	93	109	120	125	130	132	130	127	116	88	86	86	84
L Q	72	74	72	66	55	52	66	73	67	72	77	86	98	100	106	109	117	112	108	89	84	75	73	72

HOURLY VALUES OF fEs AT Okinawa

MAY 2012

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	23	G	G	38	46	46	53	G	65	68	67	83	69	62	153	89	50	49	28
2	29	G	G	G	G	G	G	38	50	G	48	53	G	60	74	65	78	69	36	87	83	73	79	52
3	65	46	G	G	G	G	G	35	45	59	66	G	124	63	53	58	69	113	129	103	59	103	58	59
4	72	80	58	51	43	40	G	46	53	58	49	74	92	60	61	49	69	44	45	41	93	54	82	58
5	34	36	G	G	44	28	35	72	53	56	54	60	56	53	45	54	76	126	92	45	50	39	35	36
6	30	28	G	G	26	G	G	36	53	68	54	54	58	53	56	56	78	78	114	85	70	G	G	43
7	G	G	G	G	G	G	33	36	52	56	48	75	85	54	47	61	57	91	132	56	46	77	50	34
8	G	24	G	G	G	G	G	40	51	66	51	48	49	82	116	64	76	58	84	57	40	107	69	85
9	114	92	69	71	48	28	44	72	73	67	79	53	54	70	68	57	68	51	62	58	50	60	54	38
10	26	G	31	G	G	38	27	39	G	49	52	67	125	94	65	G	G	G	G	G	42	35	70	59
11	59	33	29	51	59	36	27	69	56	108	72	54	G	G	62	53	45	G	122	91	69	46	49	34
12	G	59	44	27	G	G	28	72	60	70	62	73	67	66	52	78	64	47	87	45	70	39	32	59
13	G	24	24	24	G	G	G	40	50	G	G	59	G	G	54	46	52	40	38	40	34	24	26	G
14	49	47	49	43	43	33	G	54	73	83	56	70	51	75	58	62	60	64	73	51	25	43	39	26
15	G	G	G	G	G	G	G	34	44	47	G	G	48	57	70	71	82	62	60	36	46	52	78	54
16	92	53	40	40	43	31	G	39	45	56	80	66	60	63	61	54	74	69	88	140	43	39	79	53
17	34	71	59	62	39	G	32	42	43	G	G	B	G	G	65	G	51	50	58	40	69	36	G	32
18	26	38	36	59	G	G	32	44	52	60	71	75	115	66	88	G	G	G	G	G	G	58	60	71
19	59	G	G	G	G	G	26	41	48	48	50	47	54	65	57	59	74	48	37	54	30	50	45	59
20	58	48	54	43	31	46	50	58	92	124	150	104	108	130	65	G	G	48	53	38	42	43	67	70
21	27	58	35	39	64	50	59	67	56	67	48	72	59	58	71	G	G	42	41	32	G	43	48	36
22	59	49	70	60	46	54	28	37	46	G	53	64	80	60	77	64	71	63	107	103	83	44	26	58
23	57	40	40	30	28	29	44	50	87	95	67	58	88	70	81	90	50	64	38	G	G	G	67	77
24	36	28	38	G	G	G	34	G	G	57	110	105	130	59	69	72	47	G	45	69	114	35	69	57
25	58	70	88	59	54	50	29	38	G	47	G	G	G	G	G	56	61	G	35	G	G	40	40	G
26	40	24	G	28	51	37	44	57	69	69	102	140	133	77	94	53	150	107	36	50	90	G	26	37
27	71	78	67	39	64	51	G	51	56	58	92	128	108	72	51	G	58	40	34	36	G	26	26	59
28	73	28	27	40	49	39	G	38	47	50	59	55	G	G	G	G	G	43	46	39	G	30	49	44
29	36	49	48	49	40	G	G	38	56	92	108	58	56	G	50	G	45	44	38	28	23	G	G	46
30	46	53	46	59	41	32	36	50	39	48	83	84	53	46	G	44	49	41	33	28	58	51	56	73
31	58	36	38	28	24	G	36	46	56	57	72	118	G	G	51	51	52	43	41	G	29	G	53	50
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	40	38	36	30	31	28	27	41	52	57	56	62	56	60	61	54	60	48	46	45	46	43	49	52
U Q	59	53	49	51	46	38	35	54	56	68	79	75	92	70	70	64	74	69	87	69	70	52	67	59
L Q	26	24	G	G	G	G	G	38	45	48	48	53	G	46	51	G	47	41	37	32	25	30	32	36

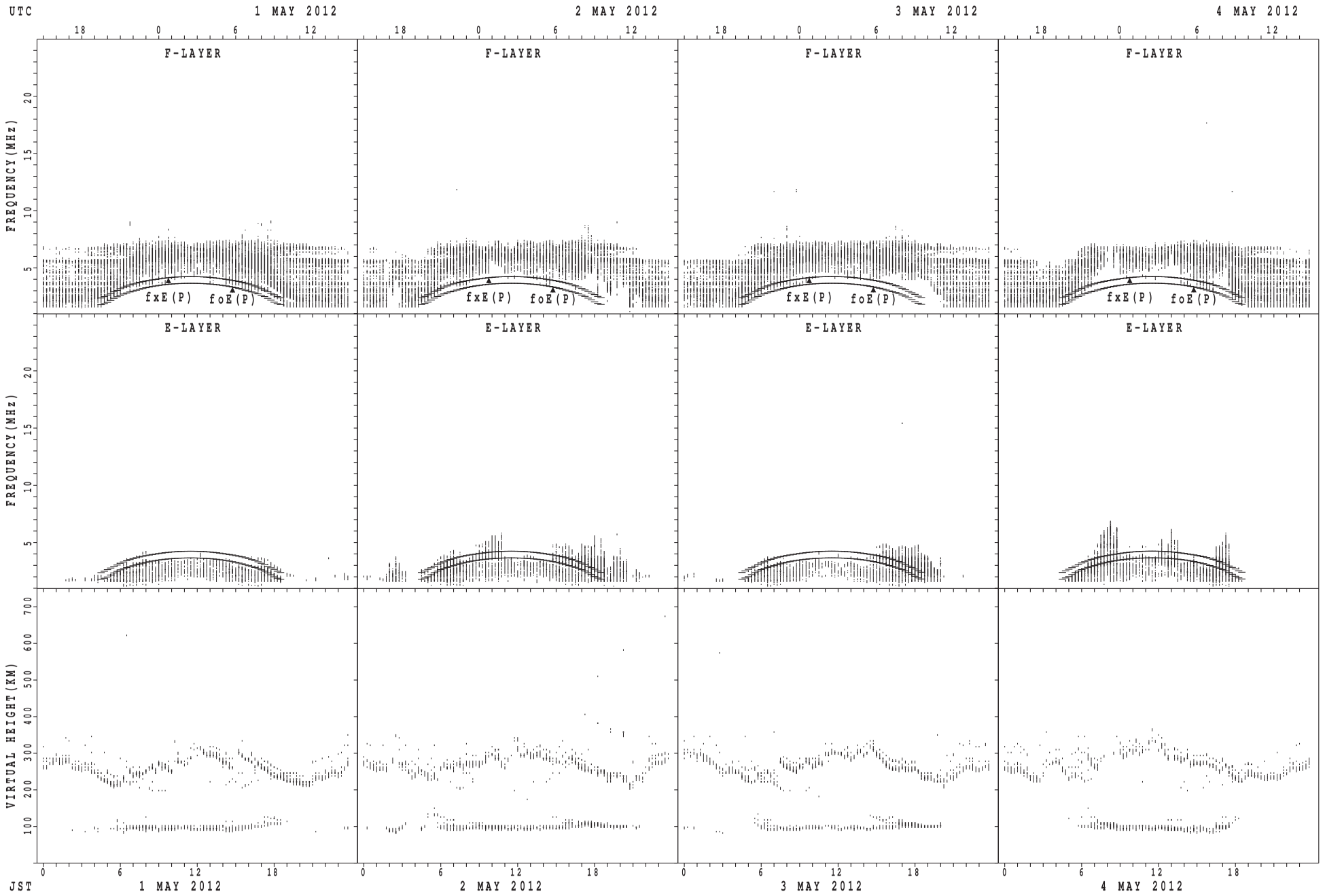
HOURLY VALUES OF fmin AT Okinawa

MAY 2012

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

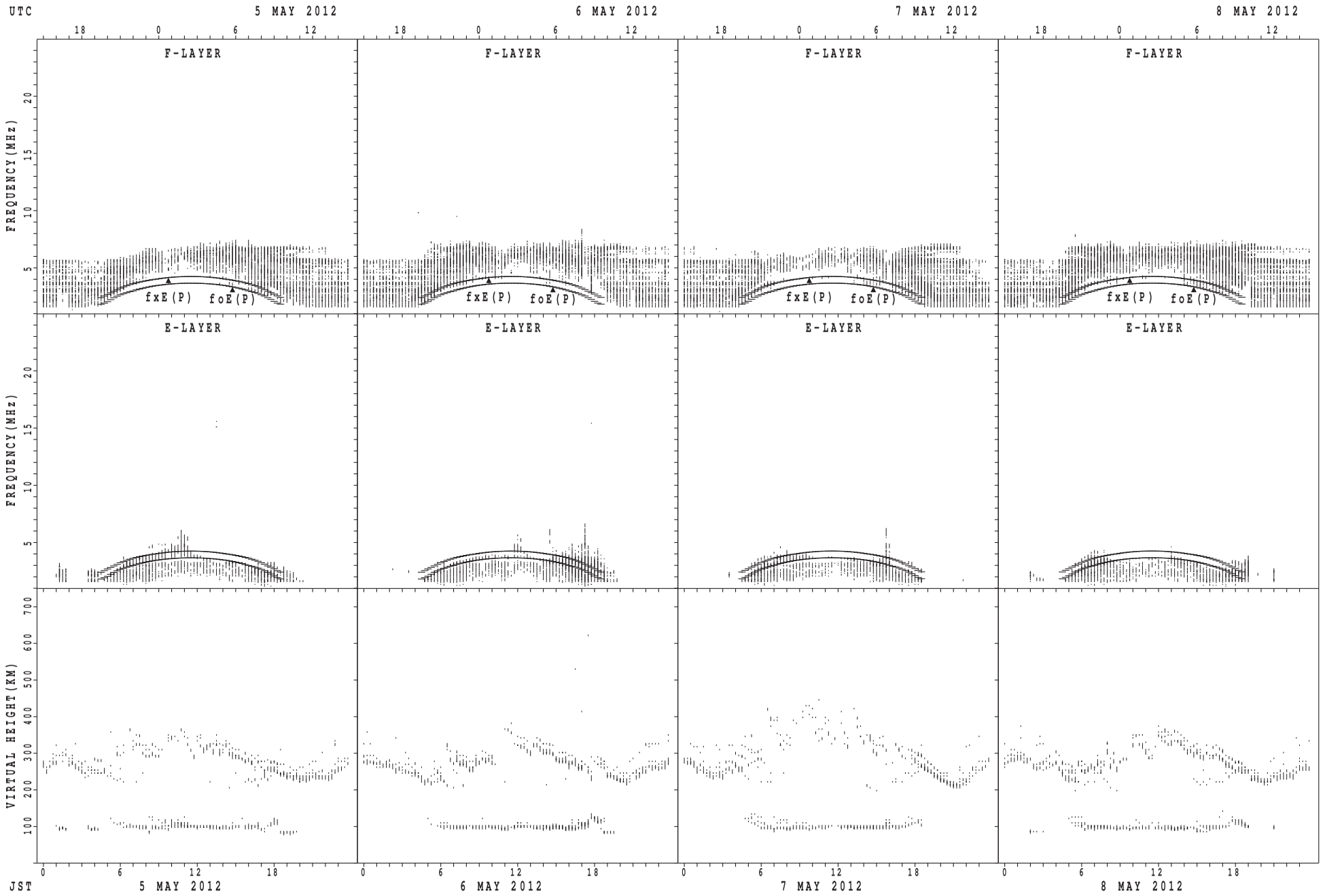
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	21	15	23	18	14	14	18	14	21	20	47	34	49	36	40	38	33	16	15	15	14	15	14	14
2	15	22	16	18	28	21	17	14	20	22	33	50	50	42	38	38	21	18	14	14	14	14	14	14
3	14	14	15	17	14	17	14	14	18	20	30	50	30	28	40	38	20	18	14	15	15	15	14	15
4	14	15	14	17	14	15	20	17	17	18	29	33	34	33	36	33	27	20	17	14	14	14	14	14
5	14	14	15	18	14	15	14	14	20	27	38	39	39	39	50	34	18	21	15	14	14	14	14	14
6	15	16	16	14	14	18	21	15	39	27	36	39	36	42	38	39	39	22	15	14	14	16	15	14
7	21	15	15	17	21	18	14	15	20	35	47	40	39	29	30	39	38	20	14	14	15	14	14	14
8	16	15	15	17	16	15	18	15	21	27	30	50	42	43	42	38	33	18	16	15	14	14	14	14
9	14	14	14	14	15	14	14	14	20	23	28	39	40	39	39	39	32	18	15	15	14	15	15	14
10	16	20	14	22	17	14	15	17	21	29	34	38	40	39	40	54	44	30	29	18	17	14	15	14
11	14	14	15	14	14	14	14	18	18	24	36	34	60	54	36	29	40	21	15	14	14	14	14	14
12	14	14	15	14	18	16	14	14	20	38	39	41	39	36	33	30	23	22	16	14	14	14	14	14
13	14	14	14	15	15	15	21	14	17	21	49	38	57	53	49	26	22	18	14	14	14	14	15	14
14	14	14	14	14	14	14	16	17	21	23	32	35	36	34	36	43	22	20	14	15	16	16	14	14
15	20	14	15	15	15	14	20	15	20	28	45	54	52	43	40	38	35	21	15	14	14	15	14	14
16	14	14	15	15	15	14	14	15	21	26	35	39	40	43	42	39	21	18	17	14	15	15	14	14
17	14	14	15	14	14	14	15	18	21	26	50	B	66	56	44	48	35	20	17	14	16	14	21	15
18	15	14	14	15	39	17	15	18	20	23	39	38	38	38	38	48	43	20	15	20	16	15	14	15
19	15	18	16	17	16	14	14	14	21	33	32	54	55	42	40	39	18	16	14	14	14	14	14	15
20	15	14	15	14	14	15	14	20	21	32	33	36	35	38	34	53	45	23	14	14	16	15	15	14
21	15	14	15	22	14	15	17	15	20	28	30	33	39	38	29	40	47	21	16	14	18	14	15	17
22	14	16	15	14	14	15	17	15	21	28	30	41	42	42	39	39	22	18	14	16	14	14	14	15
23	14	14	15	14	16	14	15	14	18	24	28	32	42	39	38	39	21	27	14	18	15	17	14	14
24	14	15	14	18	15	18	16	16	21	21	38	38	39	40	39	38	23	20	17	15	15	15	14	14
25	15	15	15	14	14	14	14	15	17	30	47	59	54	56	54	38	36	20	17	14	15	14	14	18
26	14	15	15	14	14	14	18	17	21	26	35	35	36	38	33	27	21	17	14	16	15	15	15	14
27	14	15	16	15	14	15	21	15	18	23	27	36	36	32	30	53	20	18	14	14	16	15	15	15
28	14	14	15	14	14	15	15	14	20	28	30	38	53	55	55	52	21	17	14	14	16	14	14	15
29	14	14	14	14	14	15	16	16	20	20	30	33	36	54	54	46	23	16	14	14	14	15	15	15
30	15	14	14	14	17	14	14	15	20	28	23	33	38	34	53	29	22	18	14	14	15	14	14	14
31	14	15	14	14	14	15	14	15	21	27	38	40	58	54	48	40	35	21	14	14	14	15	17	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	15	15	14	15	15	15	20	26	34	38	40	39	39	39	23	20	15	14	15	14	14	14
U Q	15	15	15	17	16	15	18	17	21	28	39	41	52	43	44	43	36	21	16	15	16	15	15	15
L Q	14	14	14	14	14	14	14	14	20	23	30	35	36	36	36	38	21	18	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai



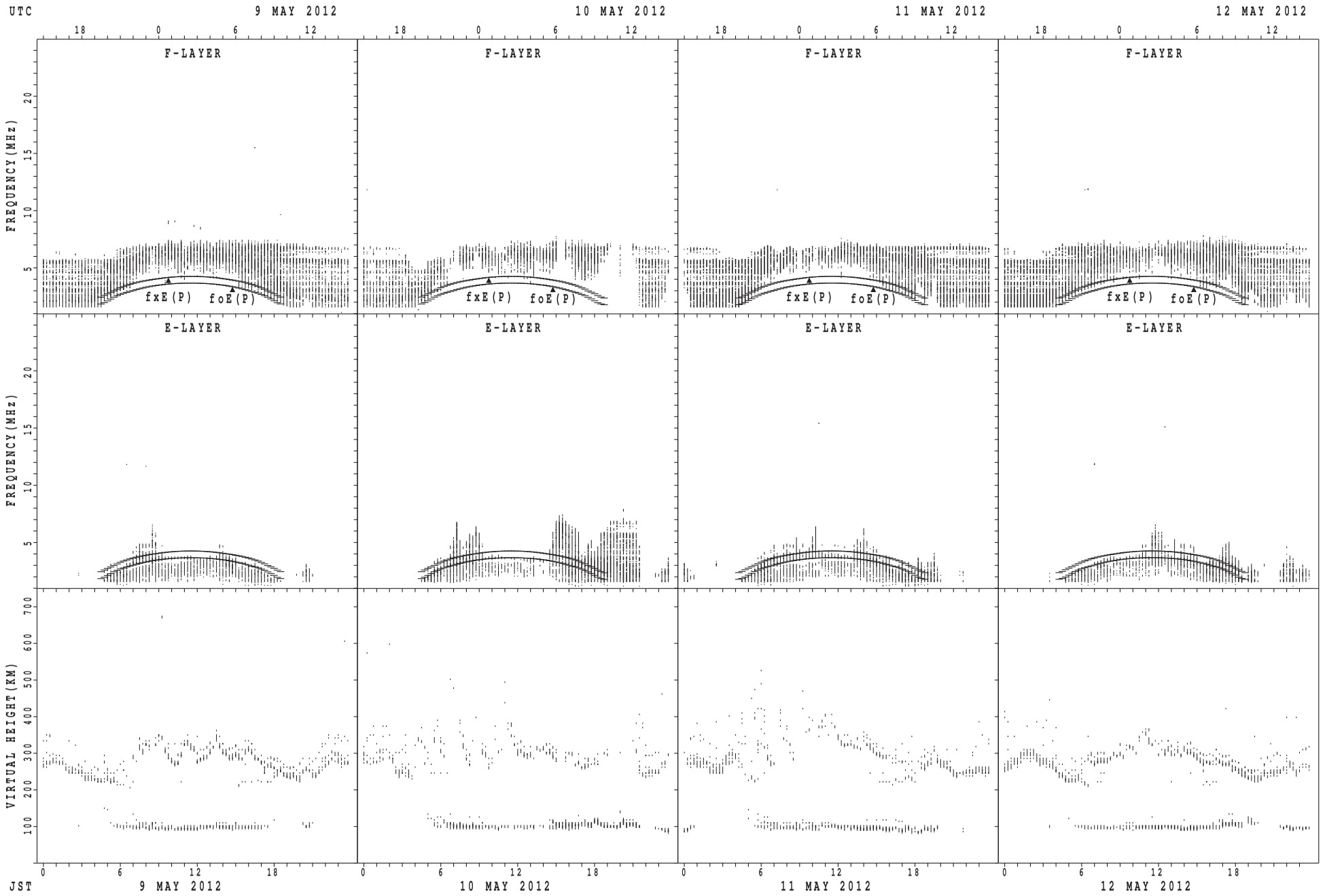
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



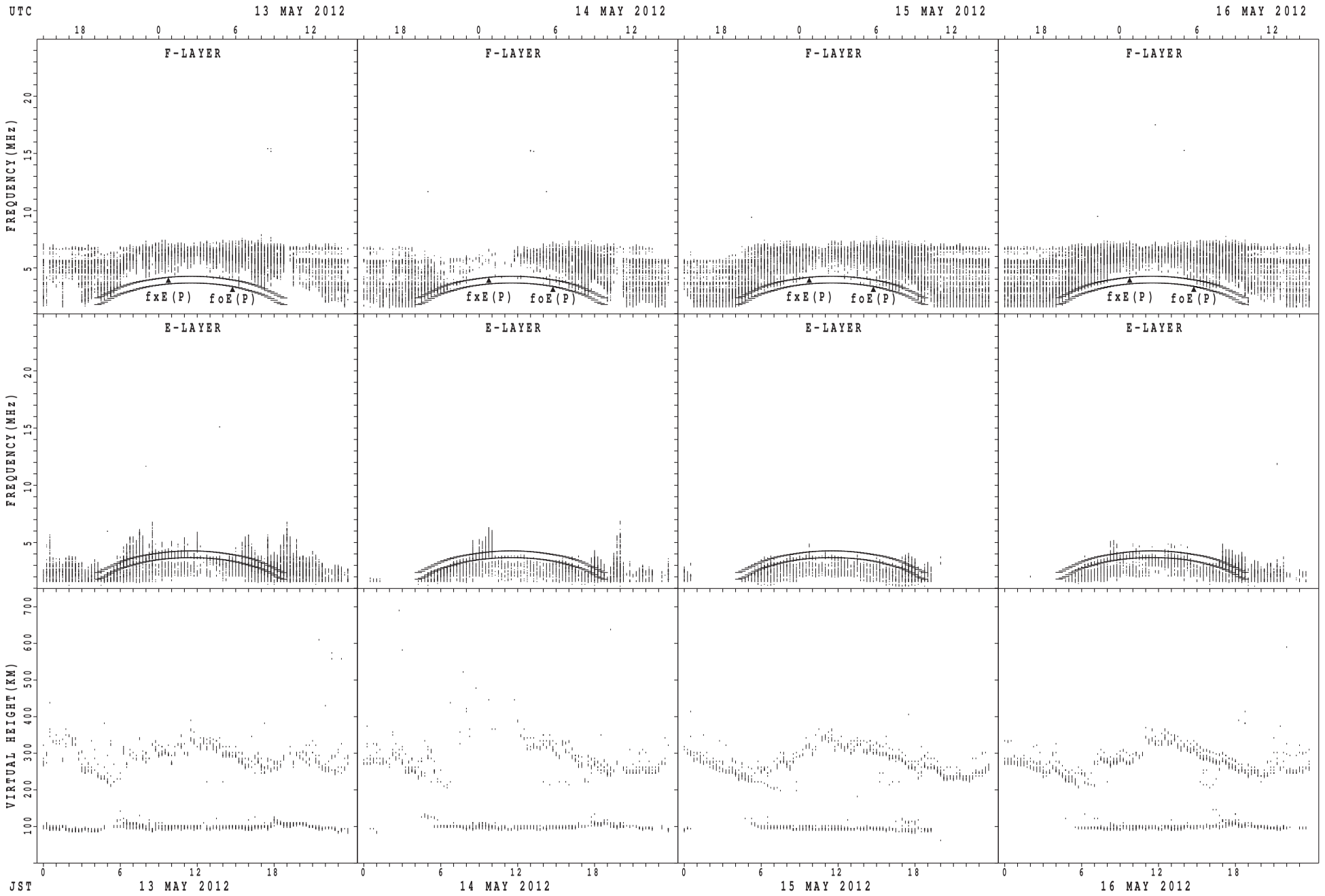
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



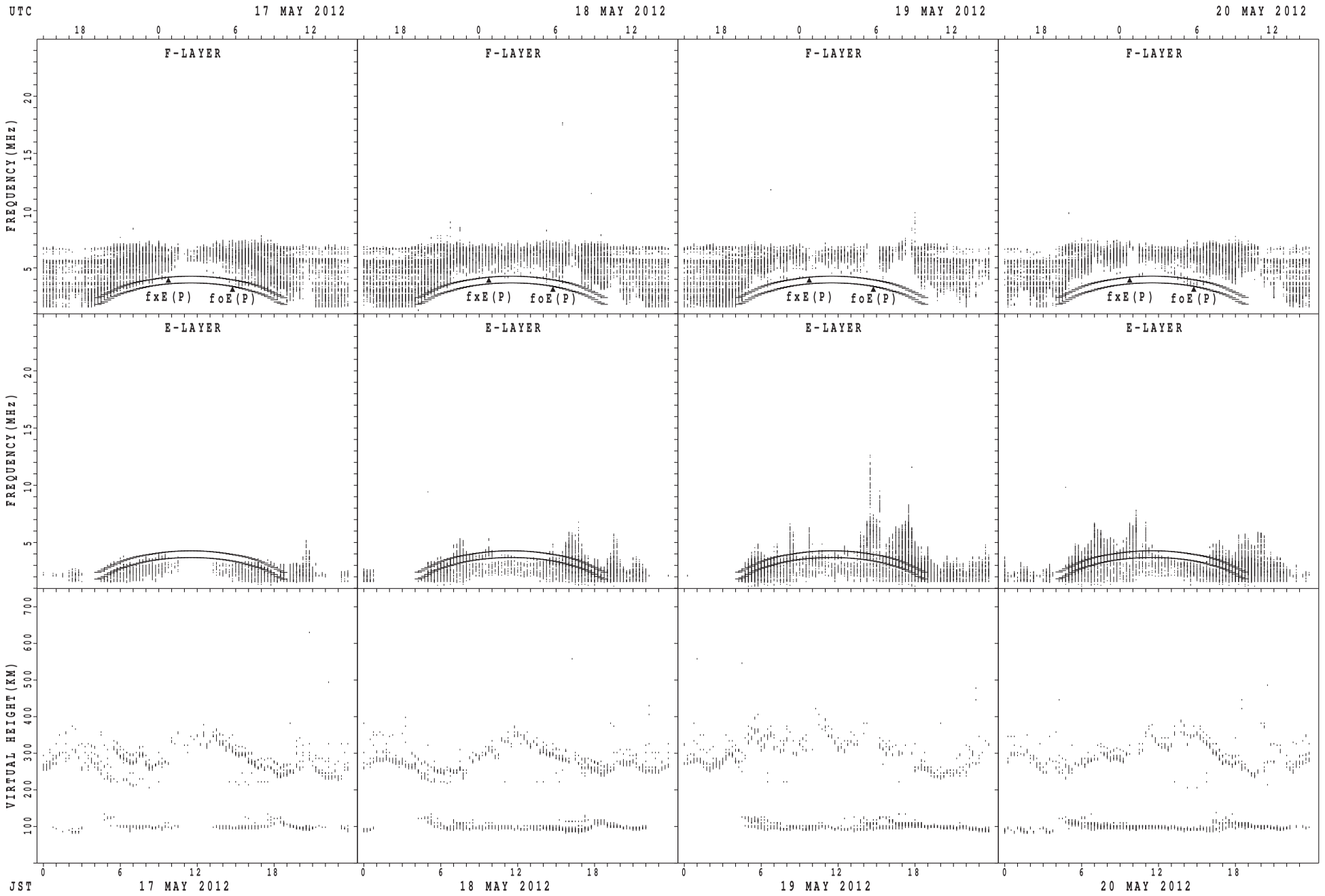
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

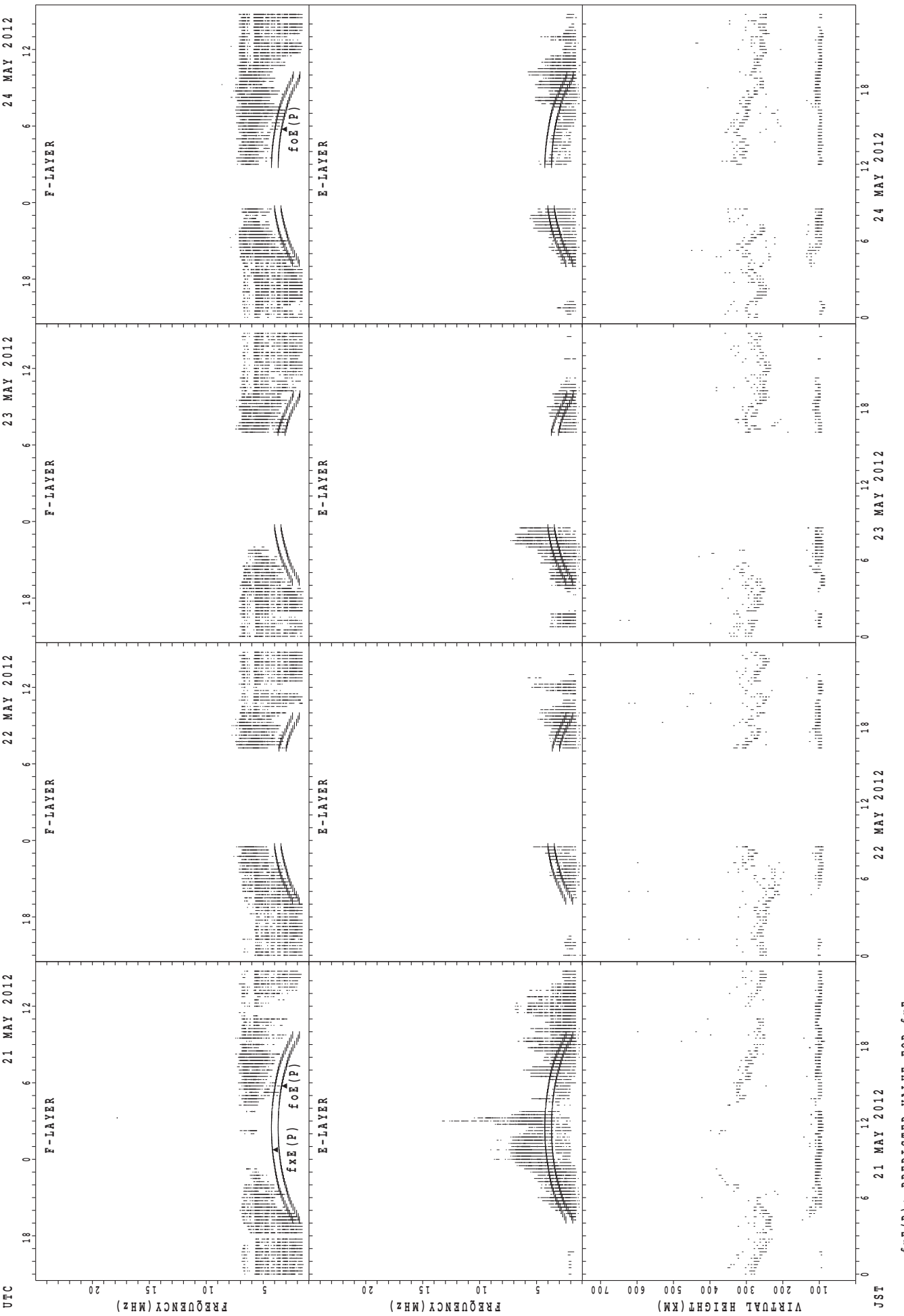


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

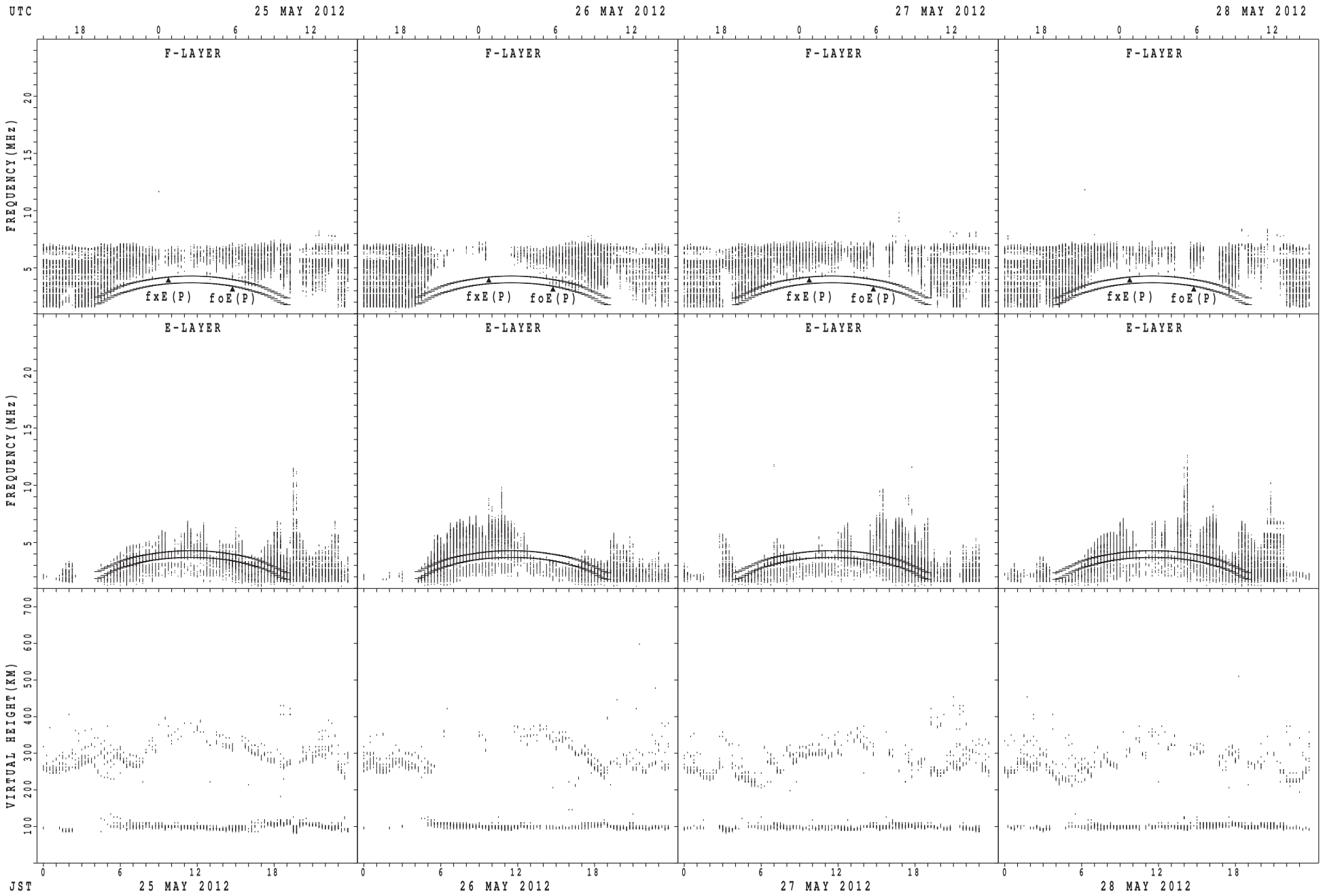
SUMMARY PLOTS AT Wakkanai



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

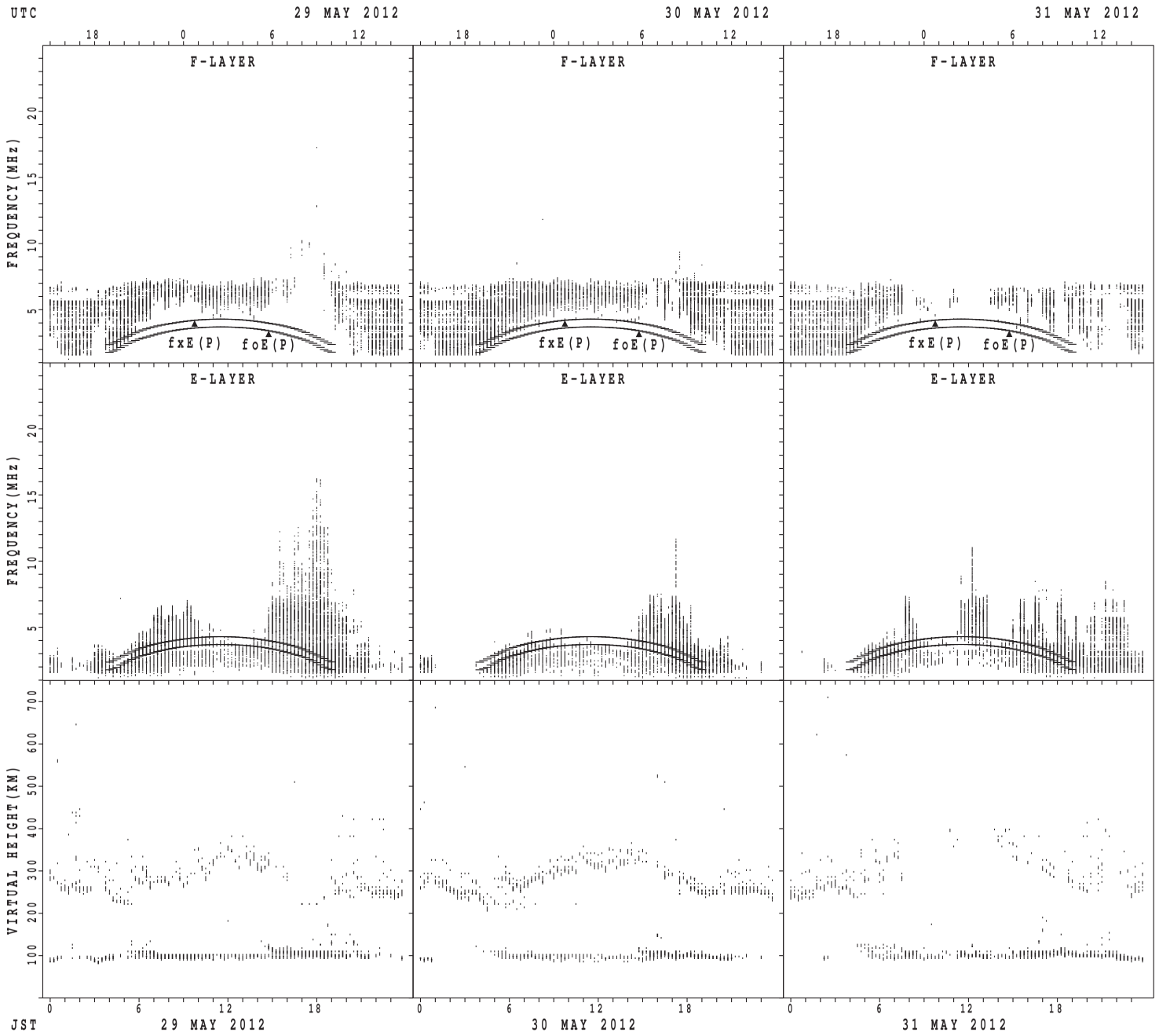

SUMMARY PLOTS AT Wakkanai
UTC
JST
21 MAY 2012
22 MAY 2012
23 MAY 2012
24 MAY 2012
F-LAYER
E-LAYER
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



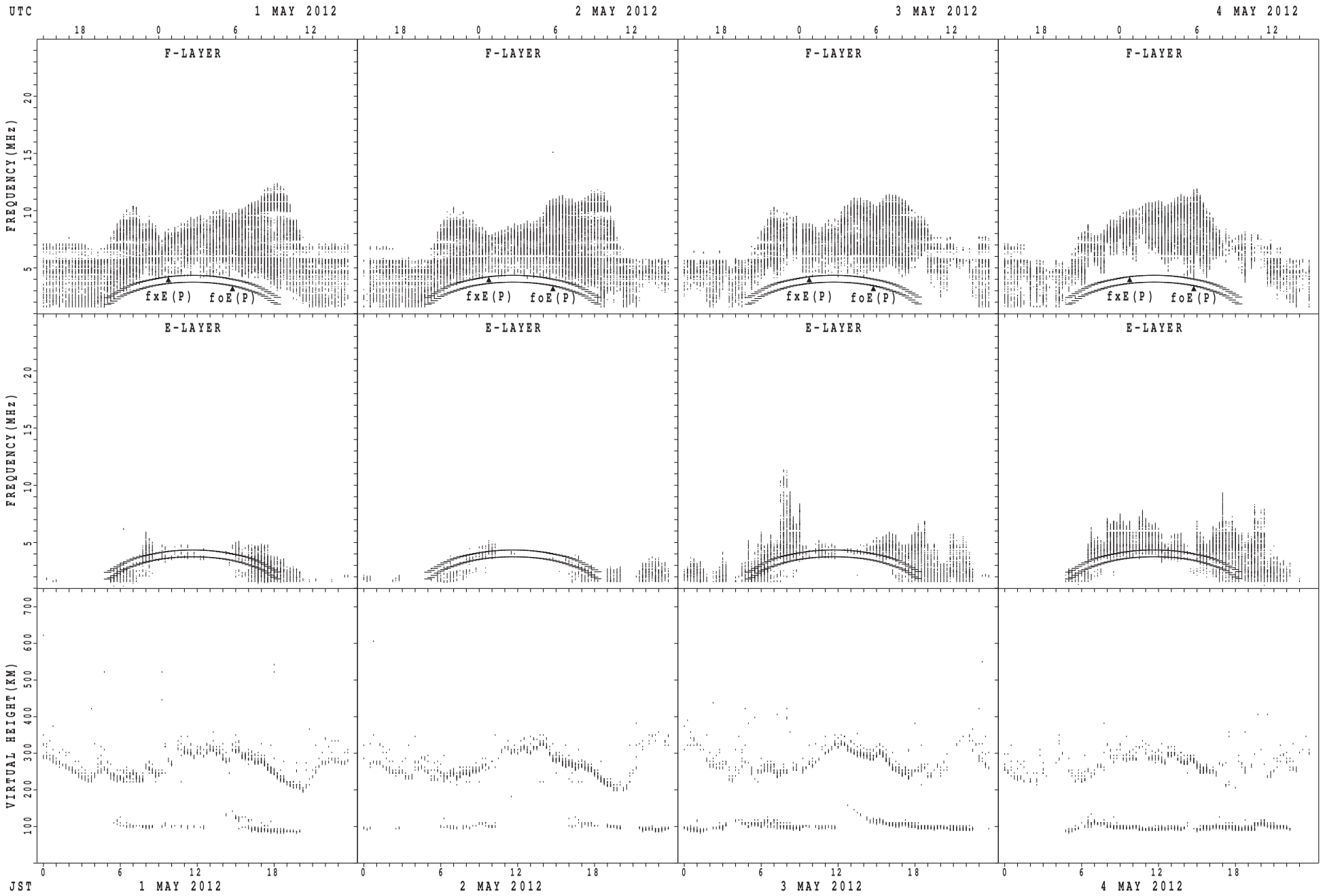
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

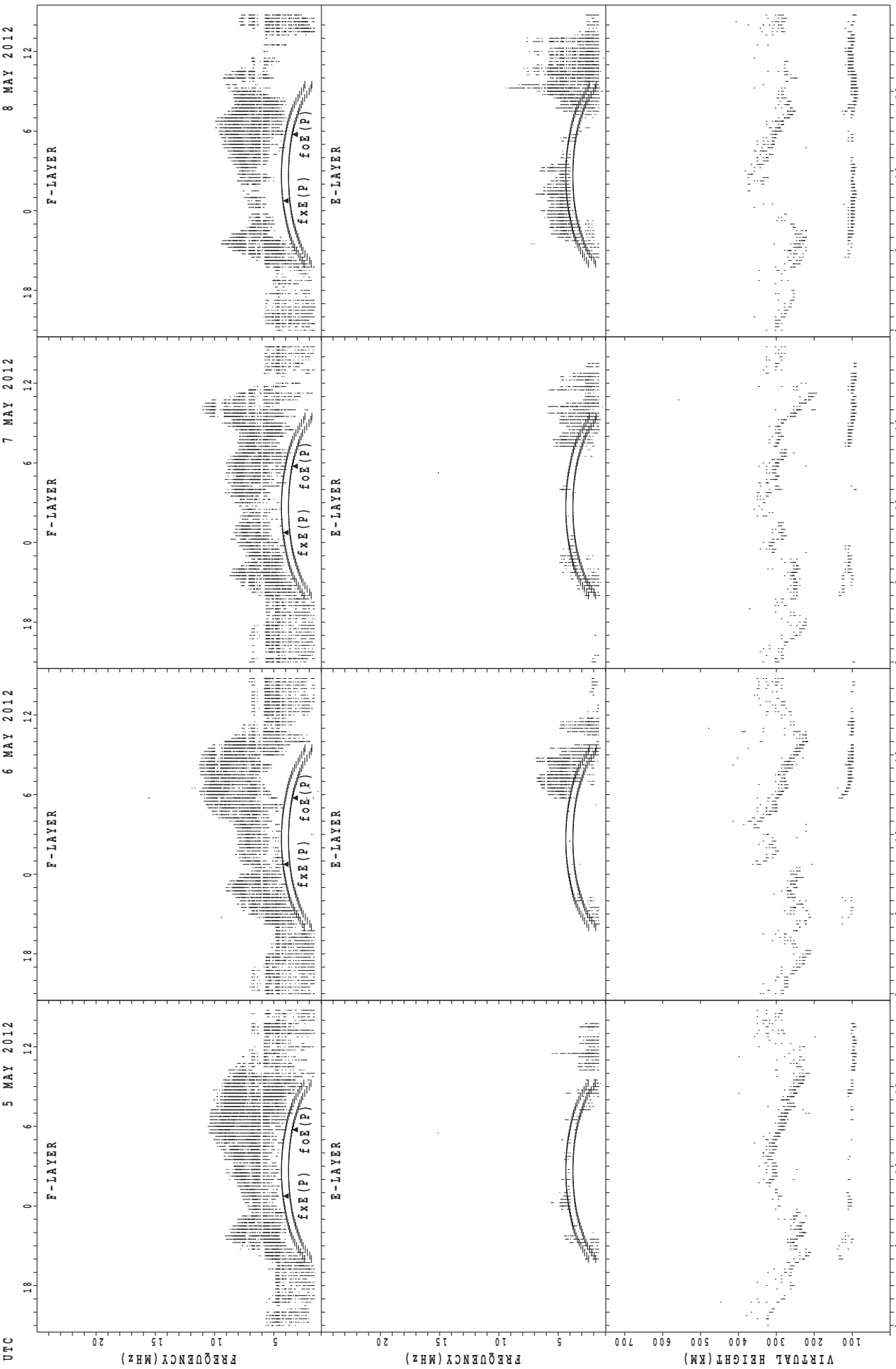


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

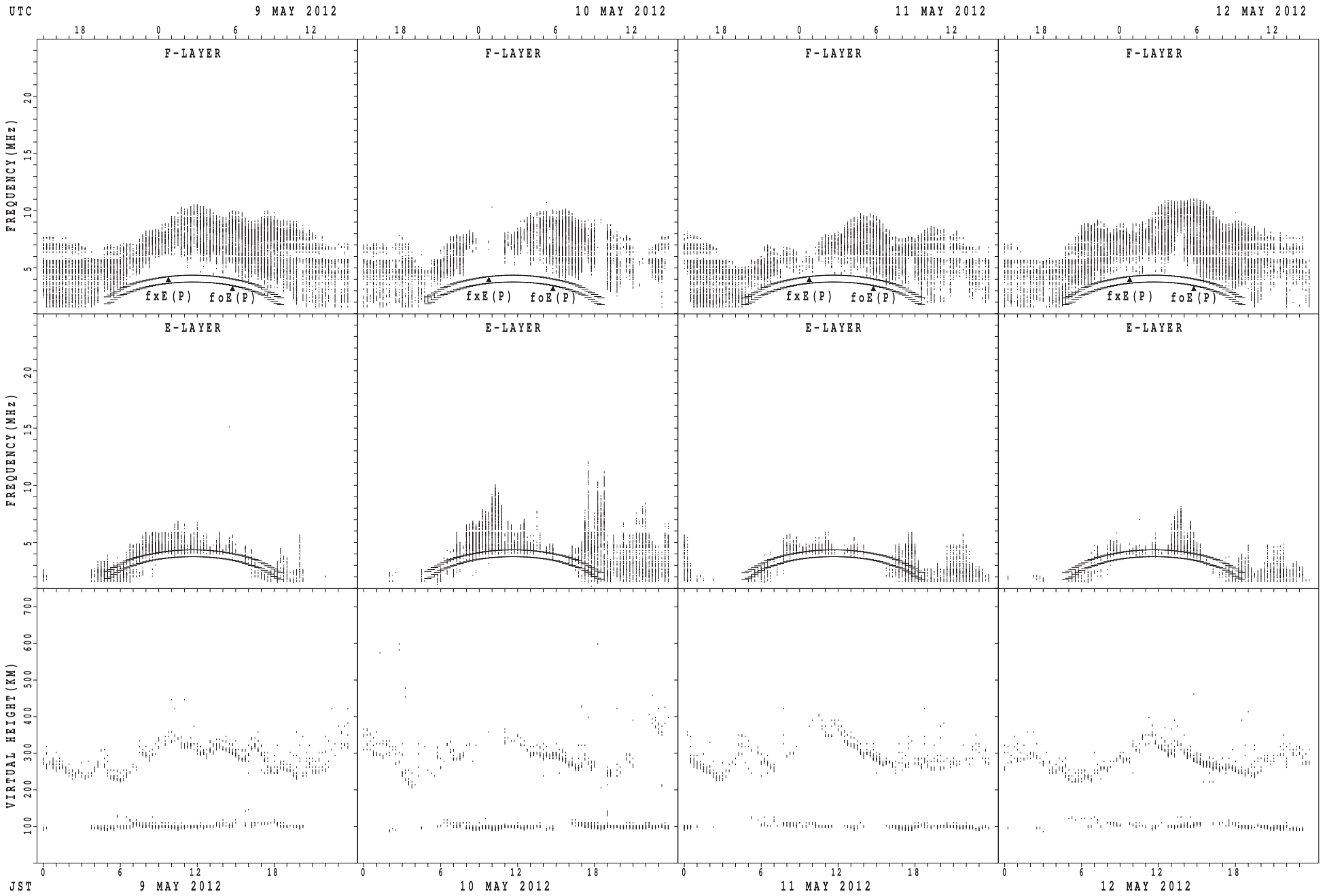
SUMMARY PLOTS AT Kokubunji



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

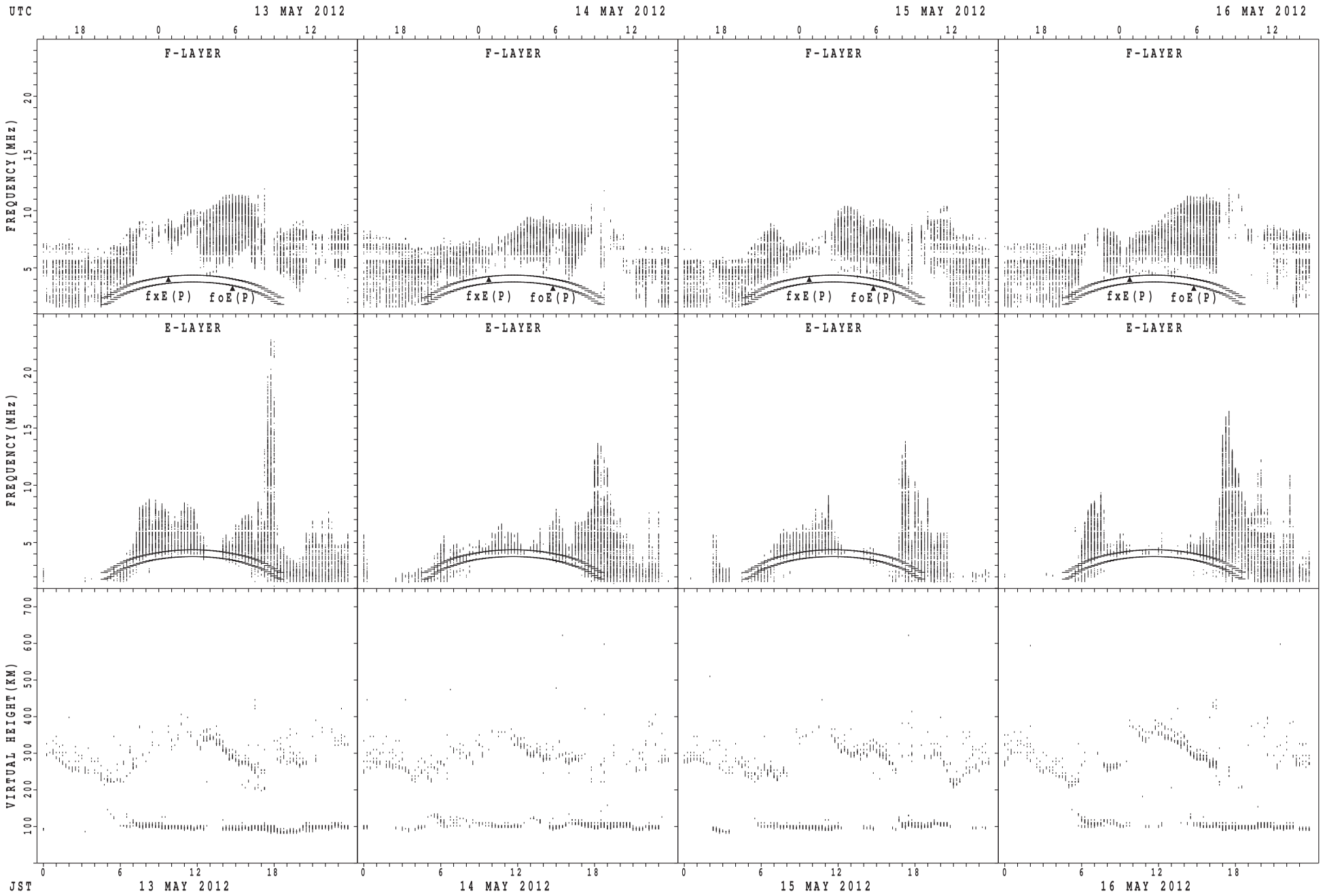

SUMMARY PLOTS AT Kokubunji
UTC
JST
5 MAY 2012
6 MAY 2012
7 MAY 2012
8 MAY 2012
F-LAYER
E-LAYER
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



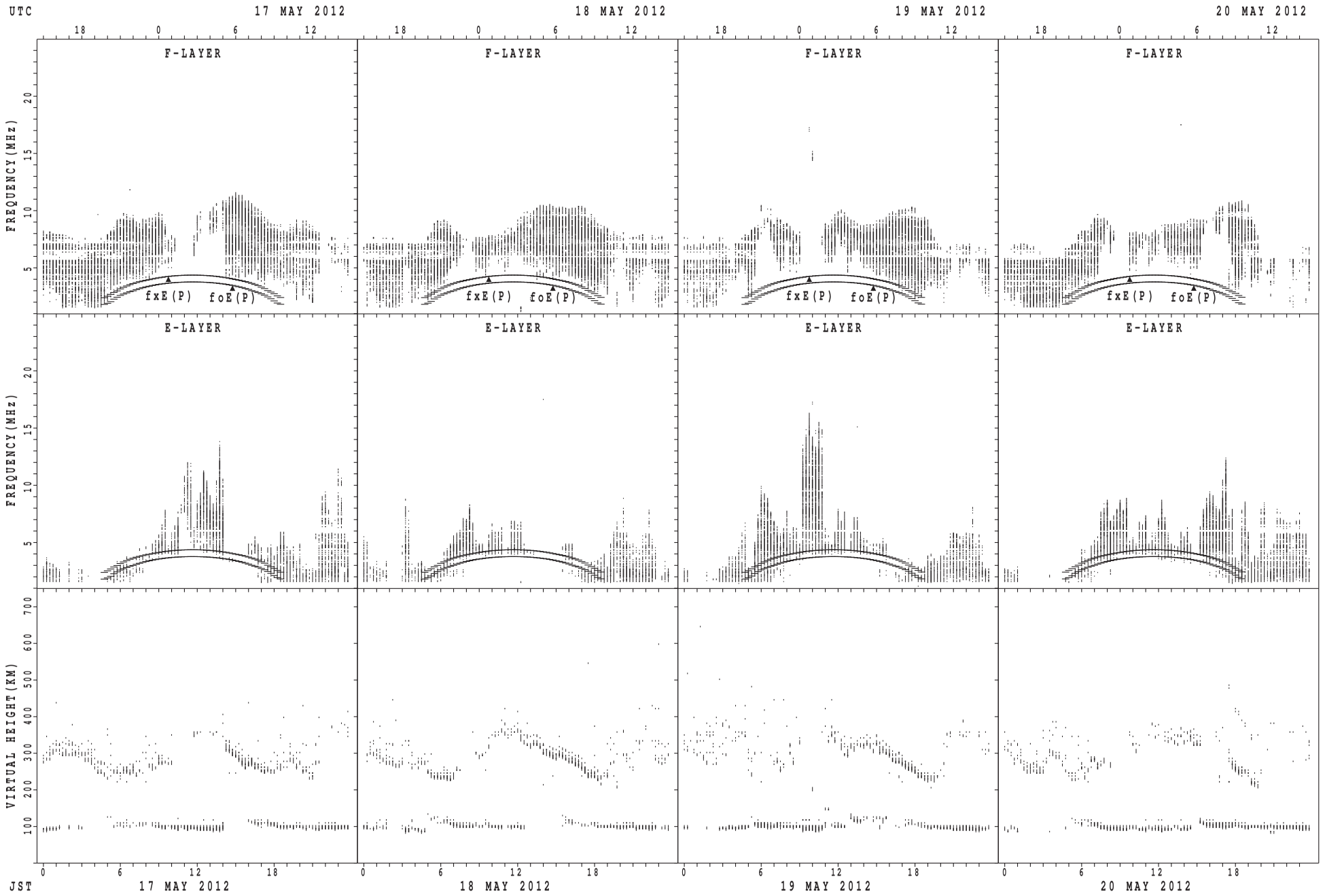
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



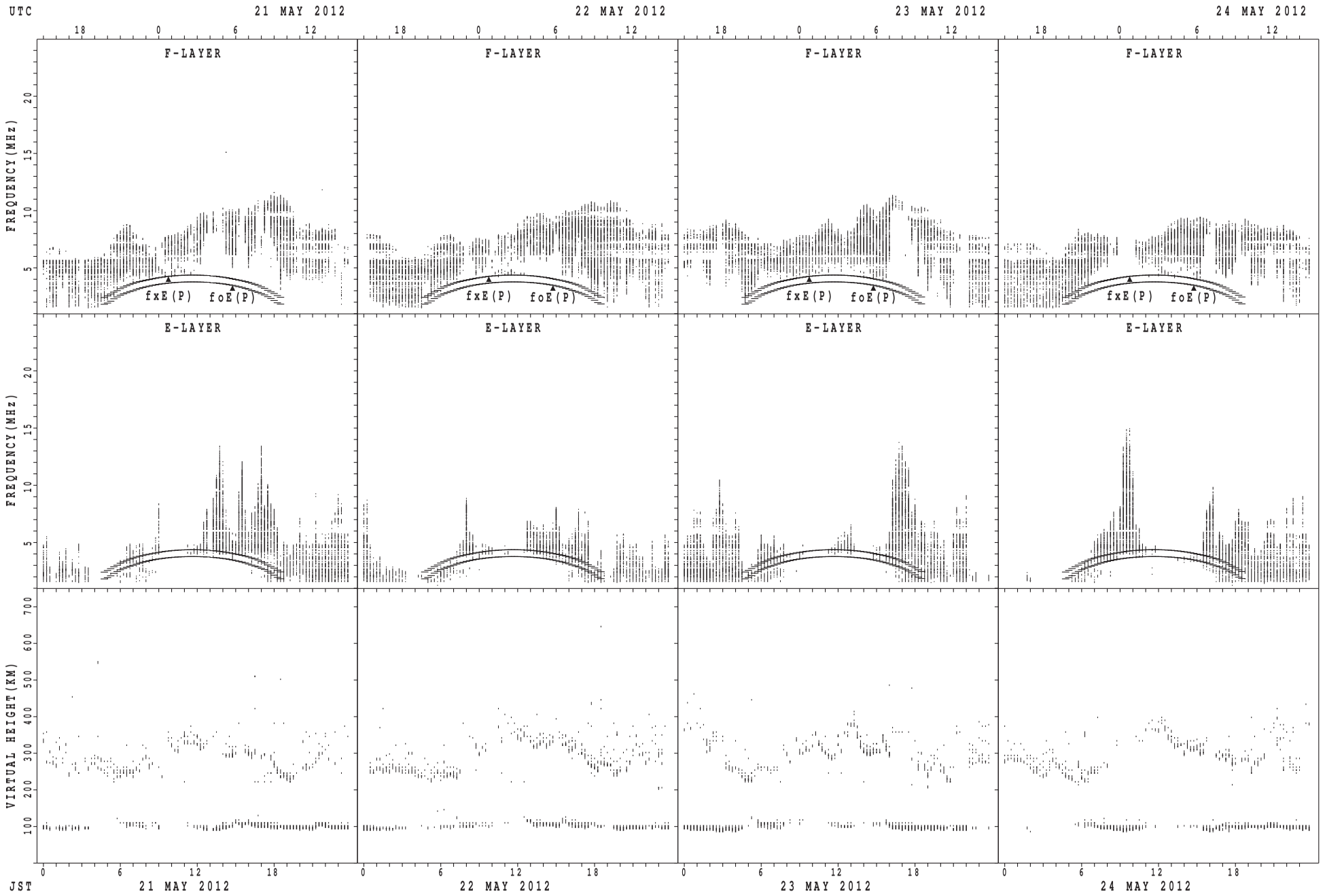
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



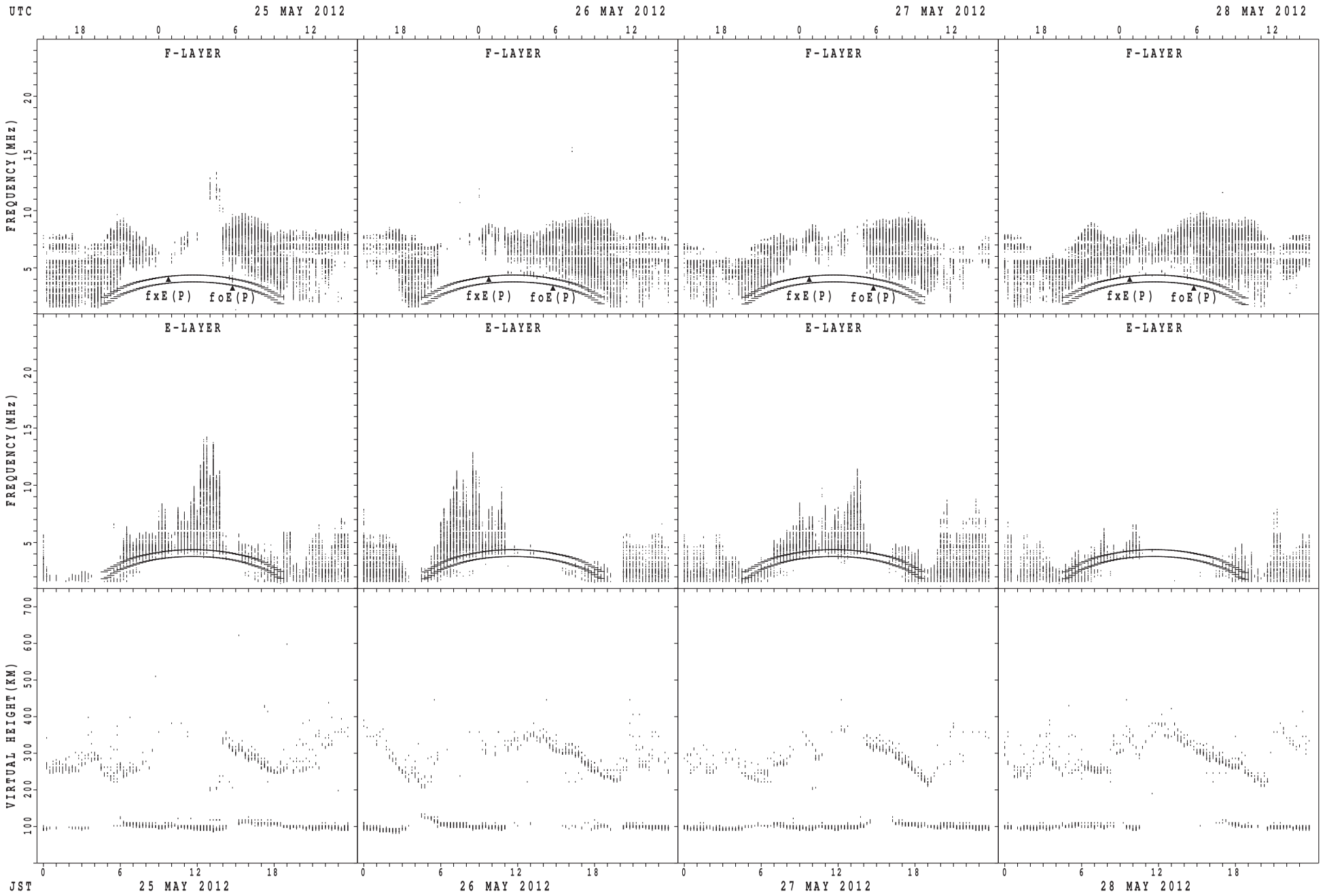
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



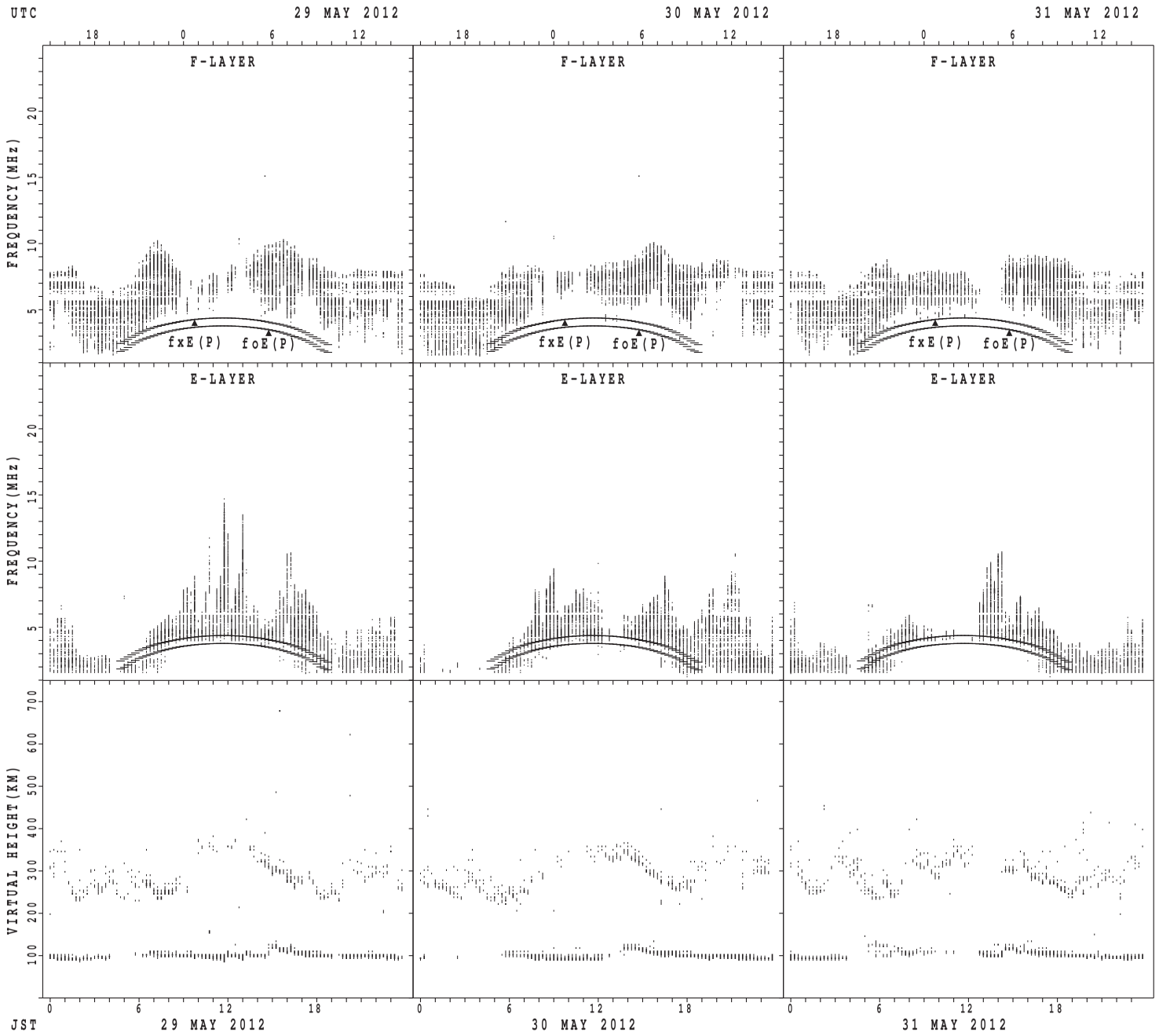
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



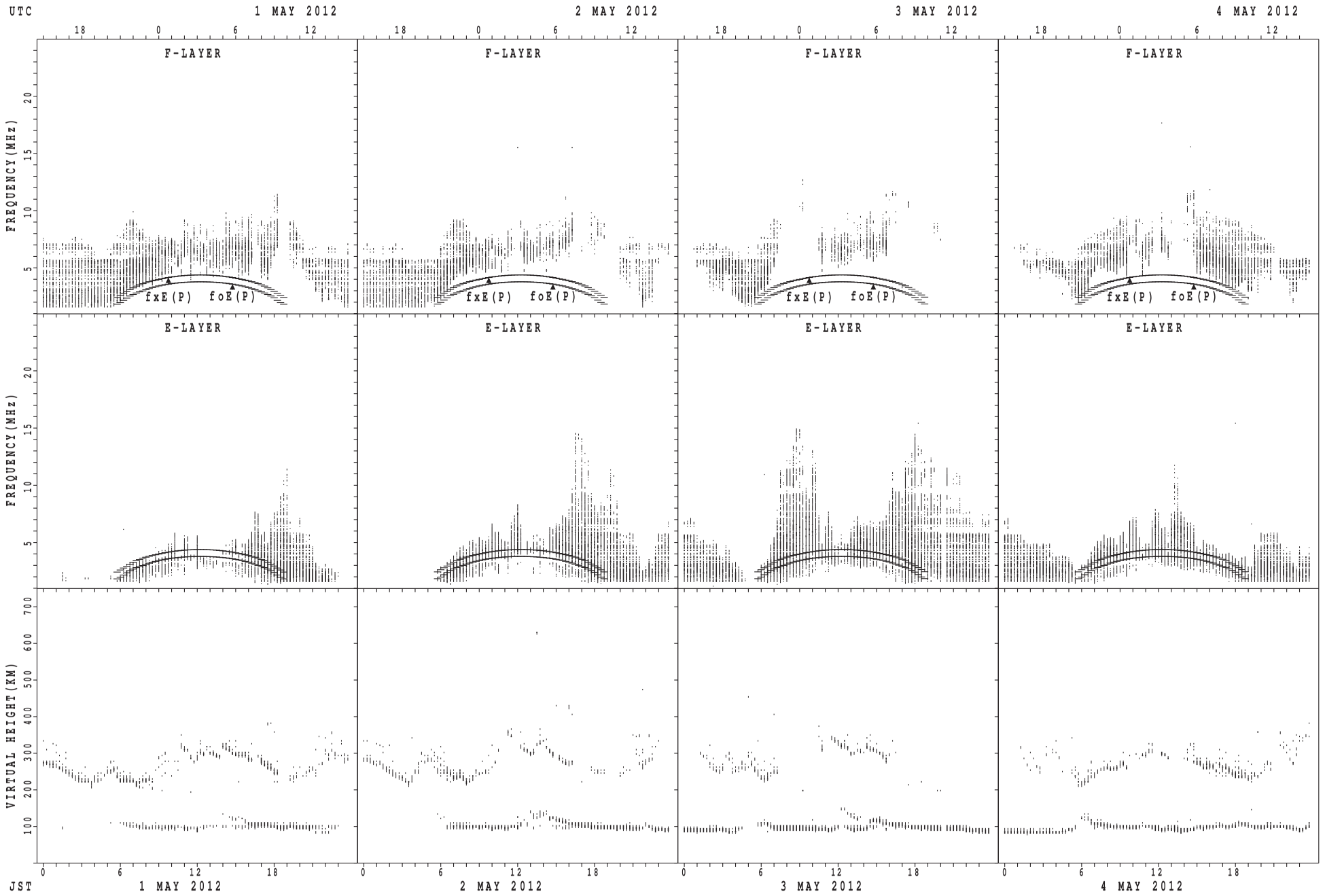
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

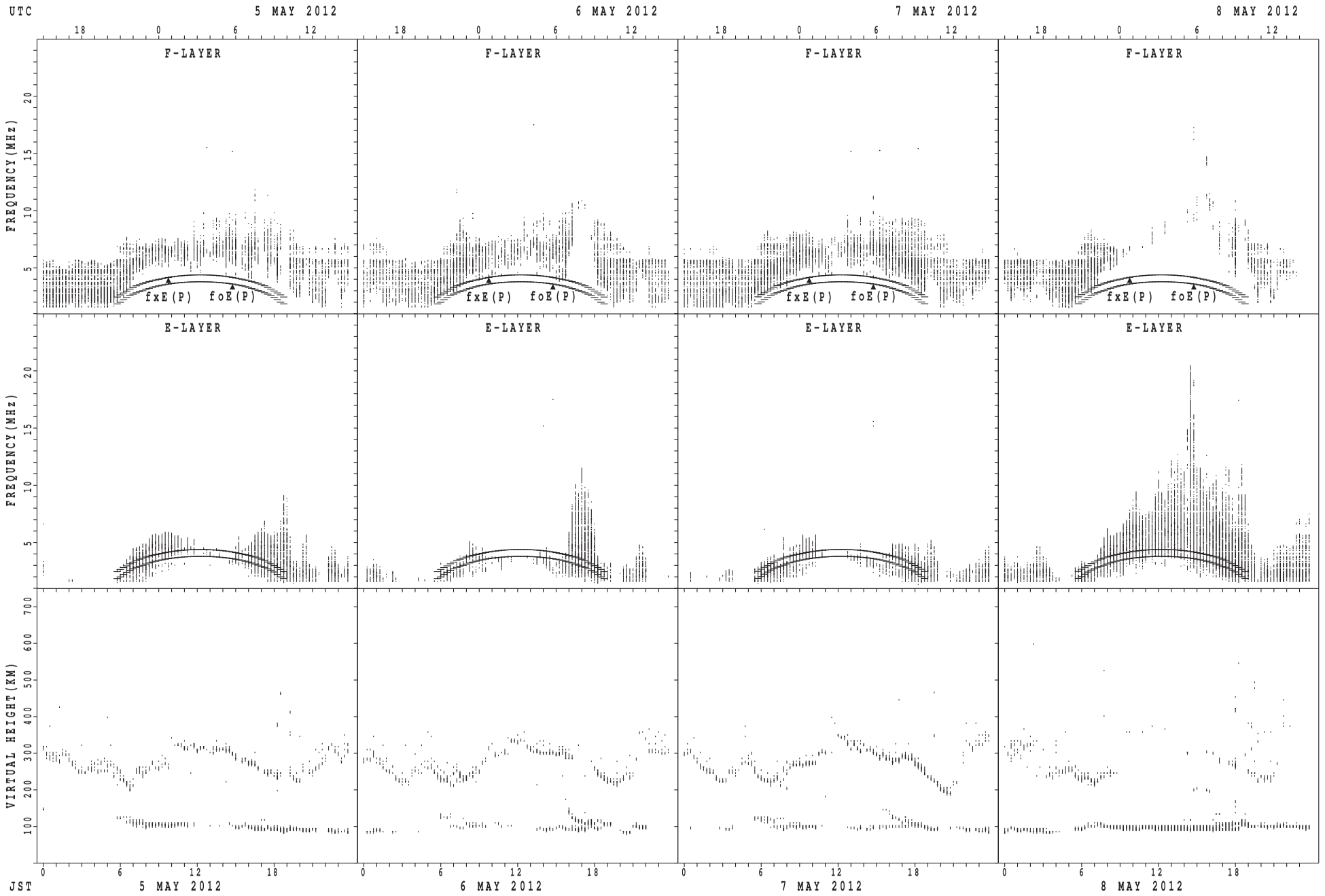


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

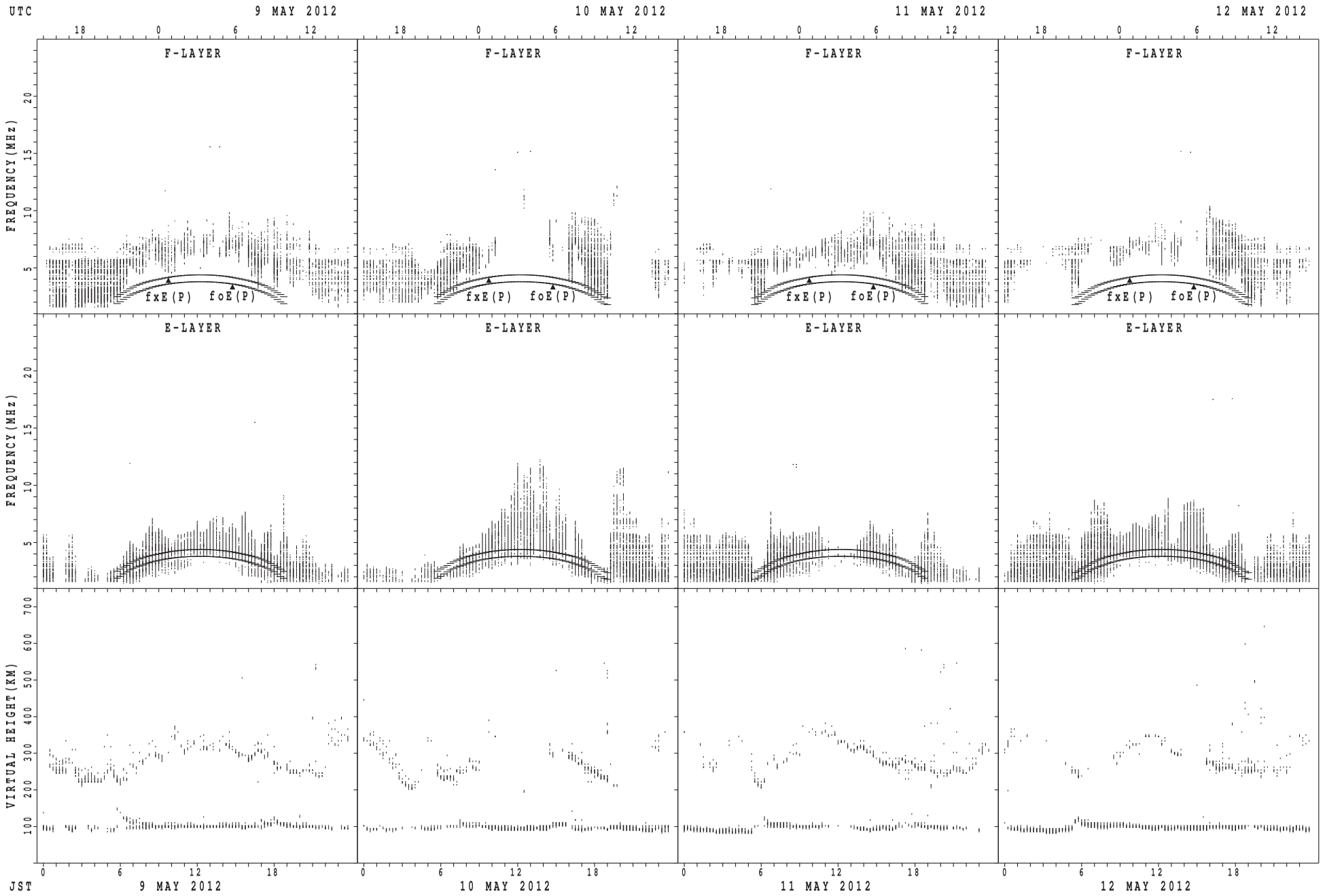
SUMMARY PLOTS AT Yamagawa



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

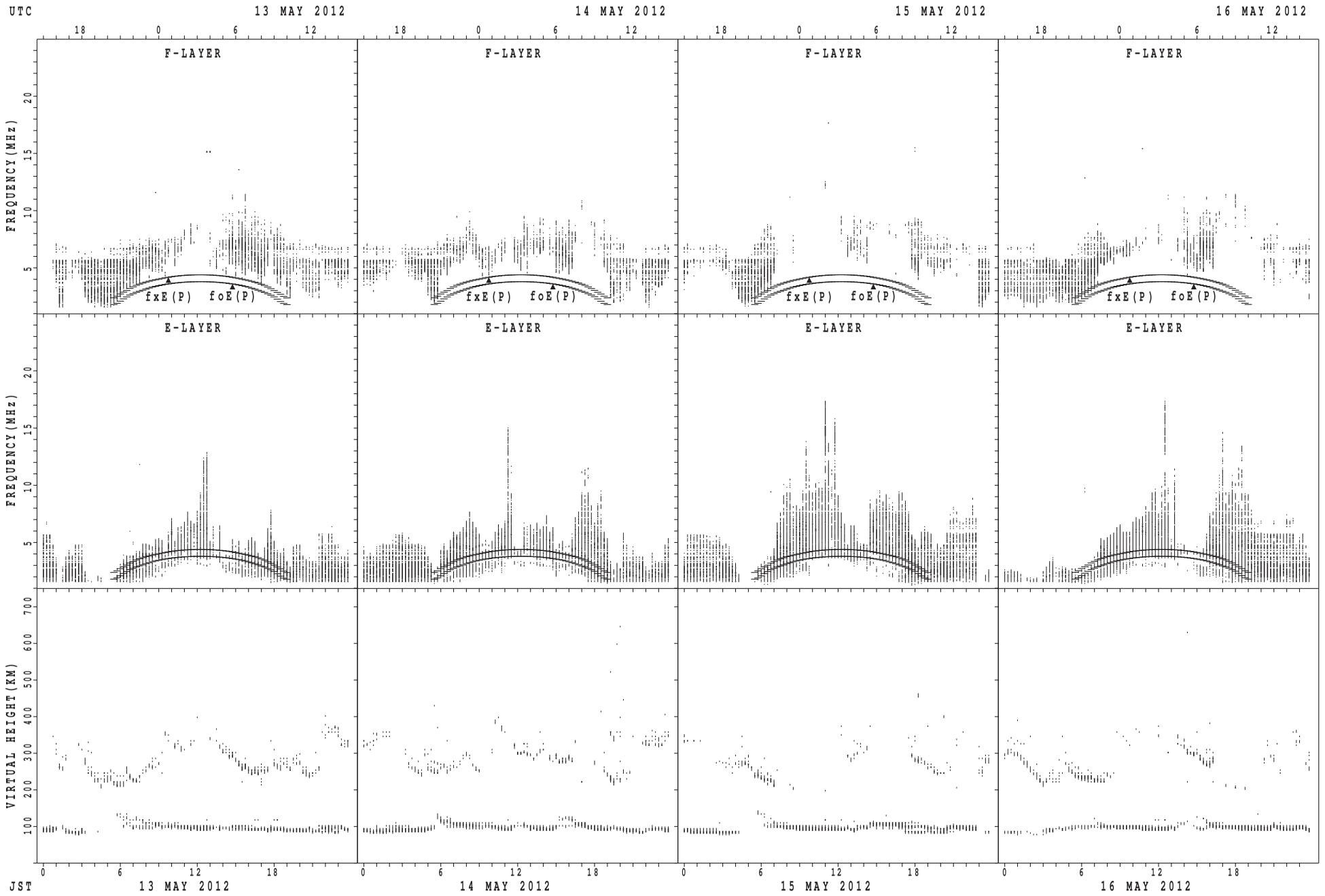

SUMMARY PLOTS AT Yamagawa
UTC
5 MAY 2012
6 MAY 2012
7 MAY 2012
8 MAY 2012
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



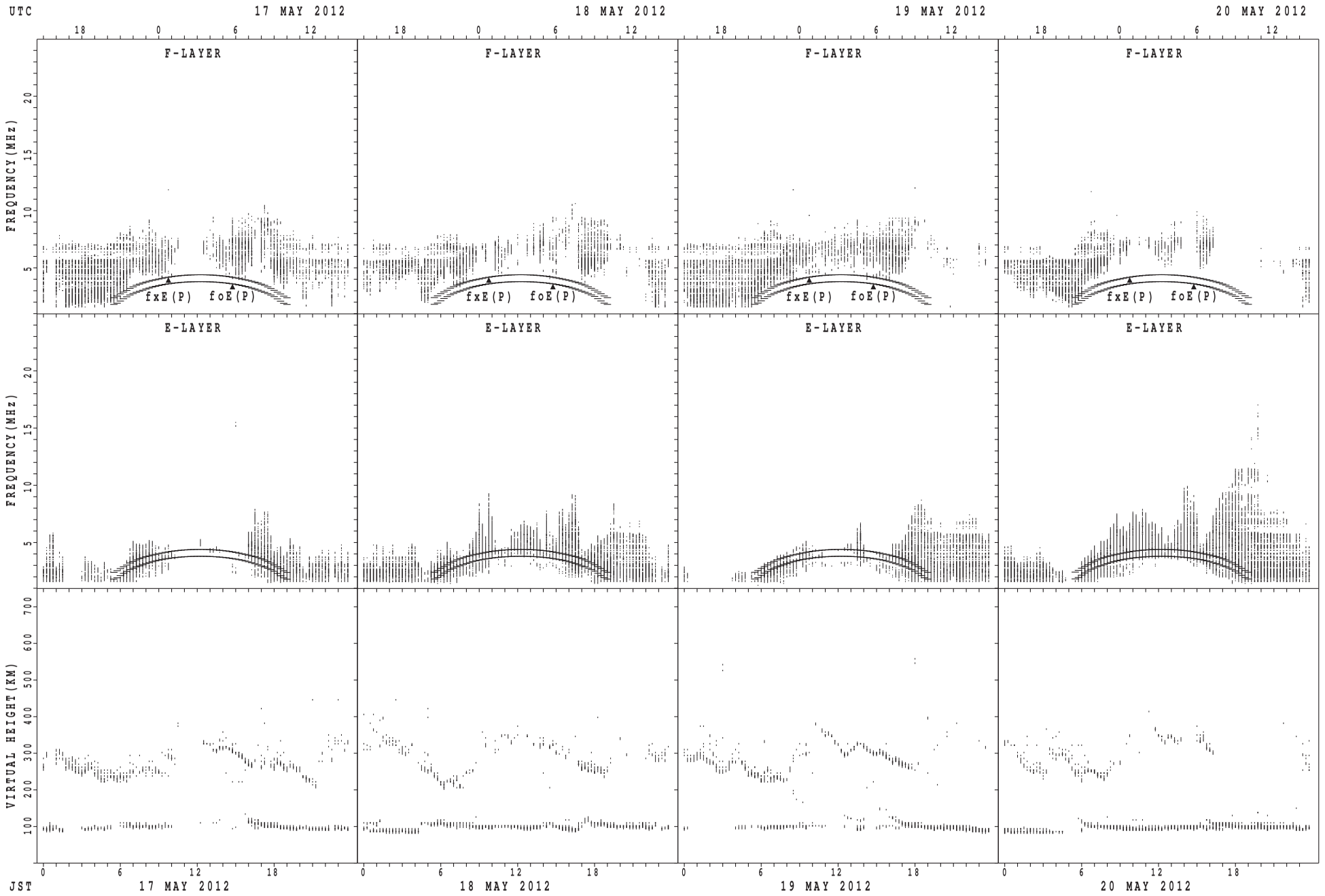
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



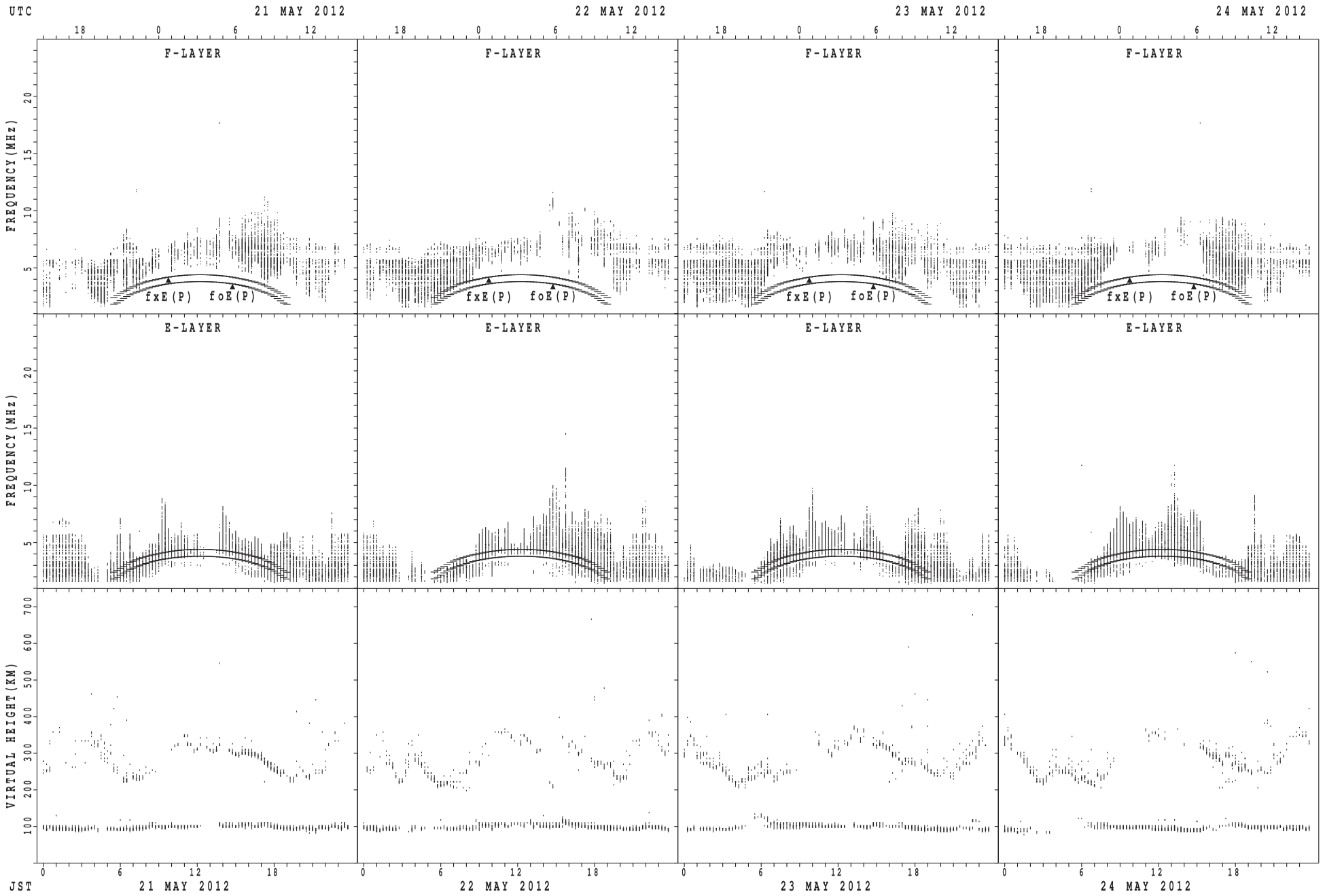
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

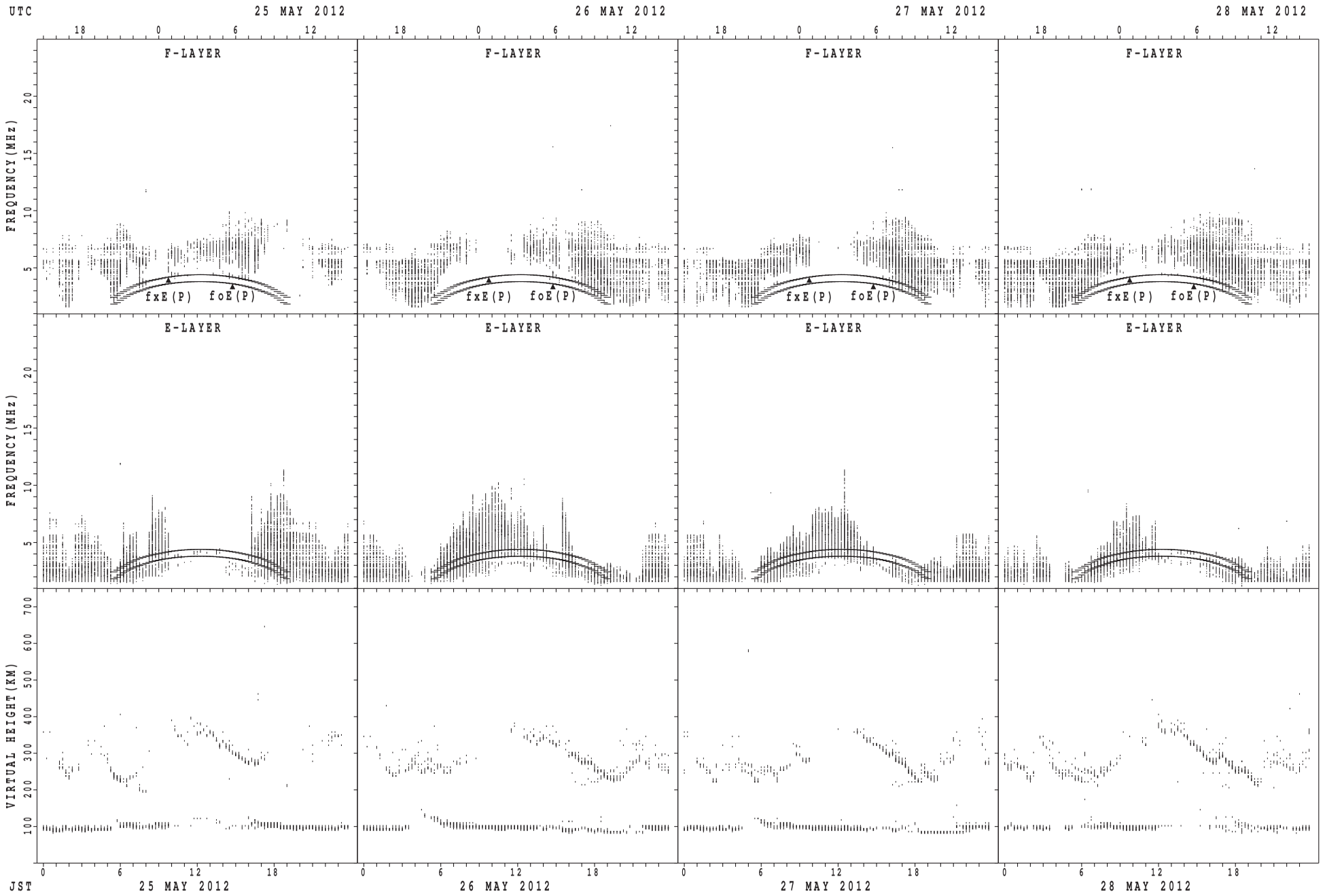


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

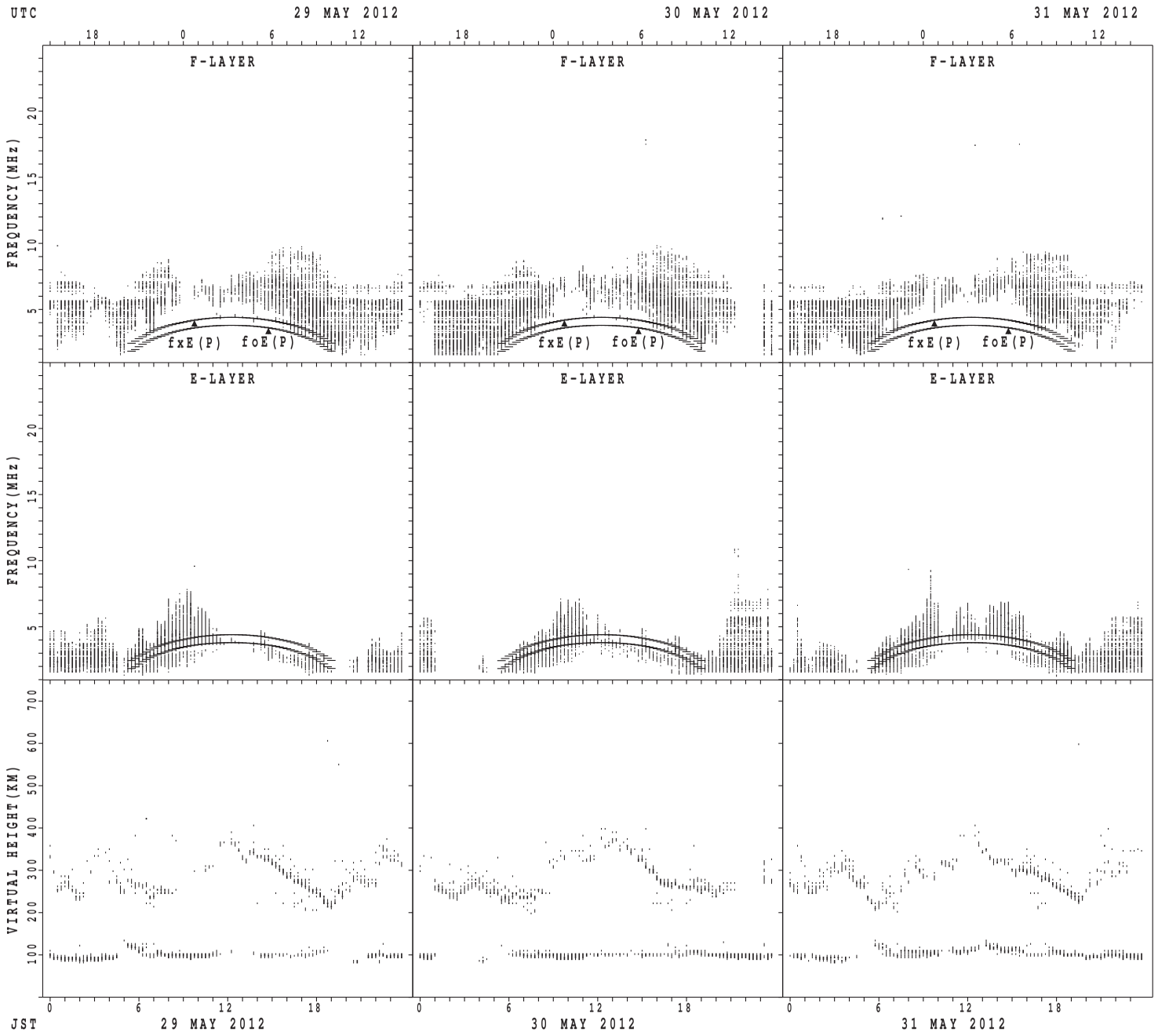
SUMMARY PLOTS AT Yamagawa



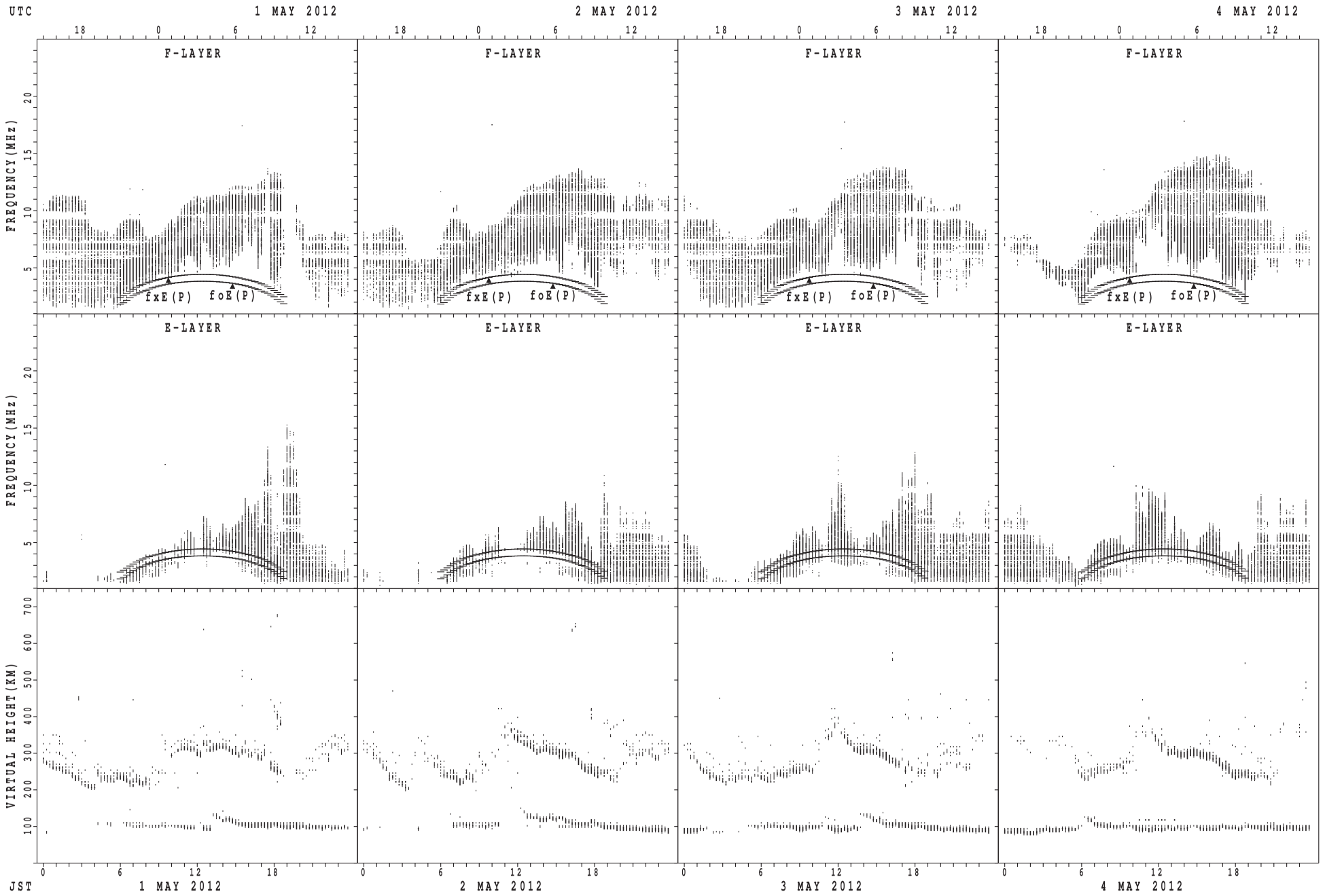
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

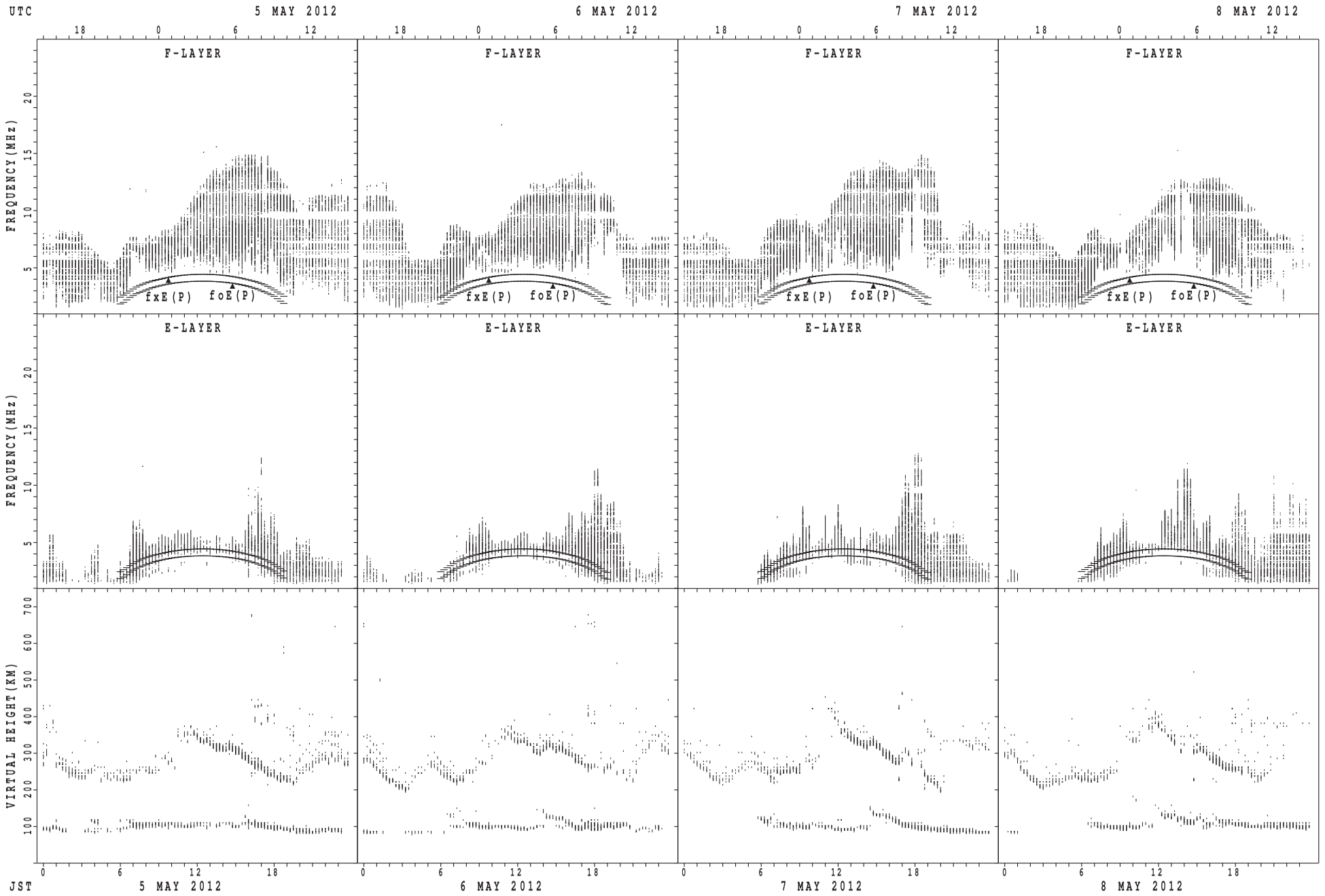

SUMMARY PLOTS AT Yamagawa
UTC
29 MAY 2012
30 MAY 2012
31 MAY 2012
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



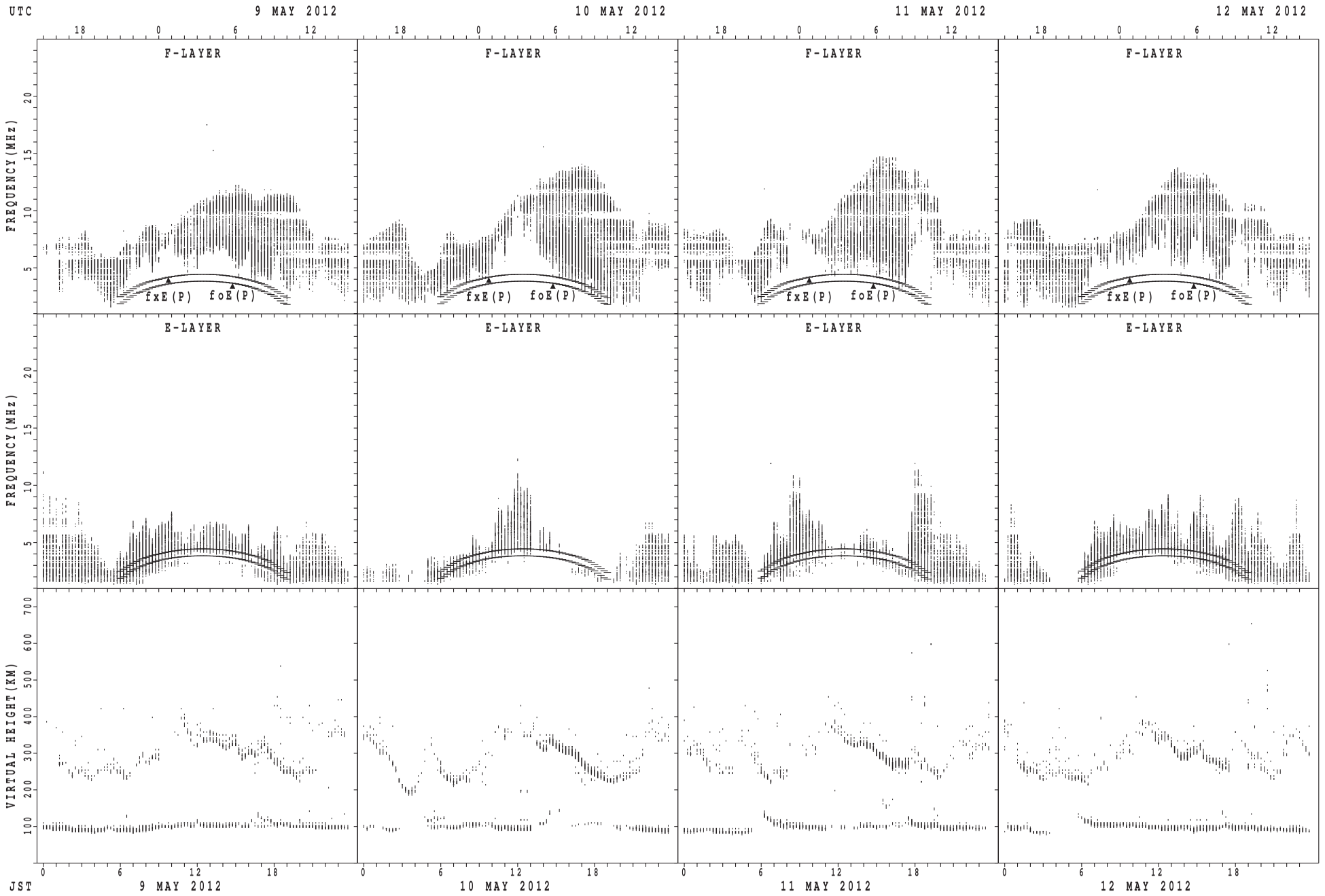
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



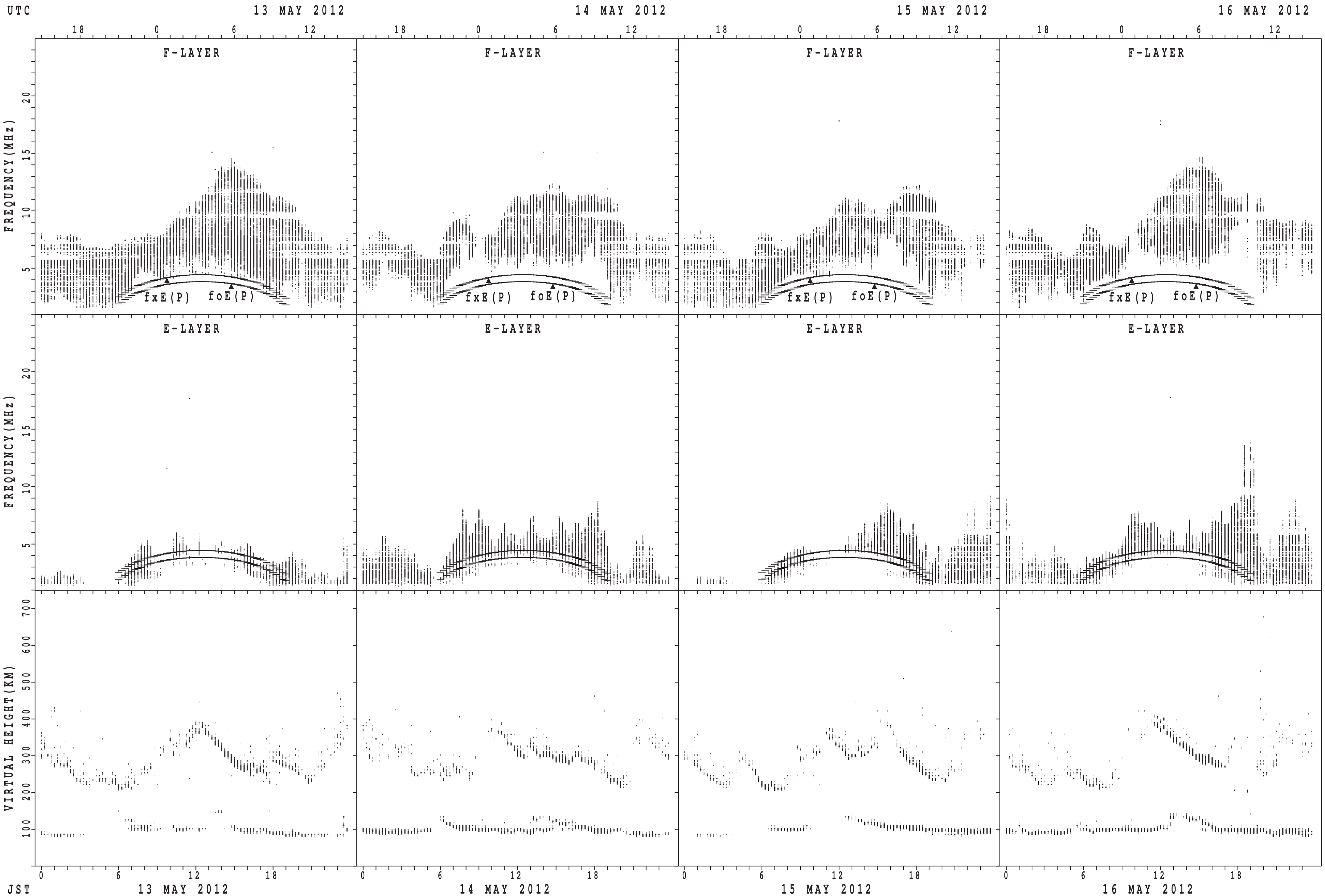
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



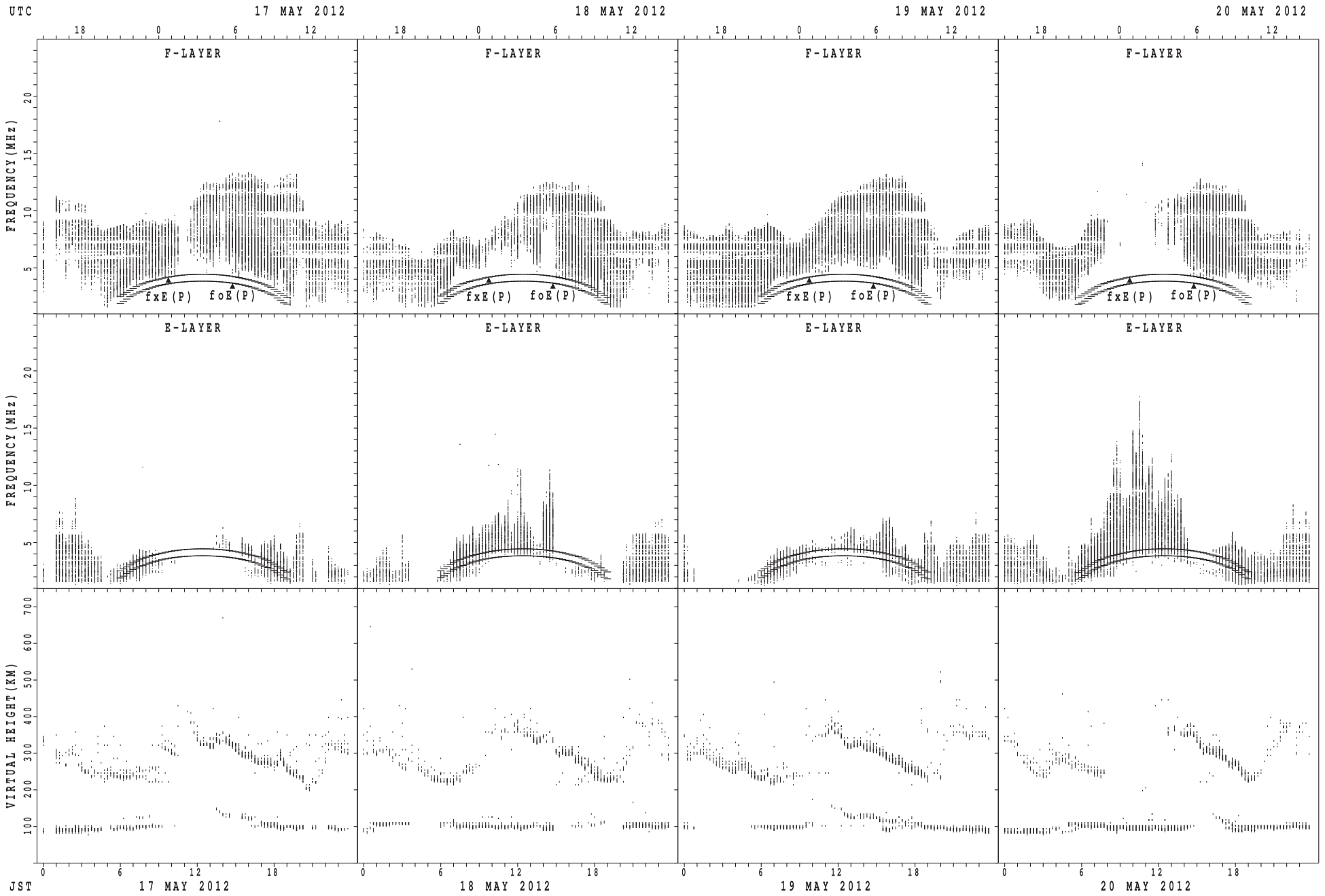
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



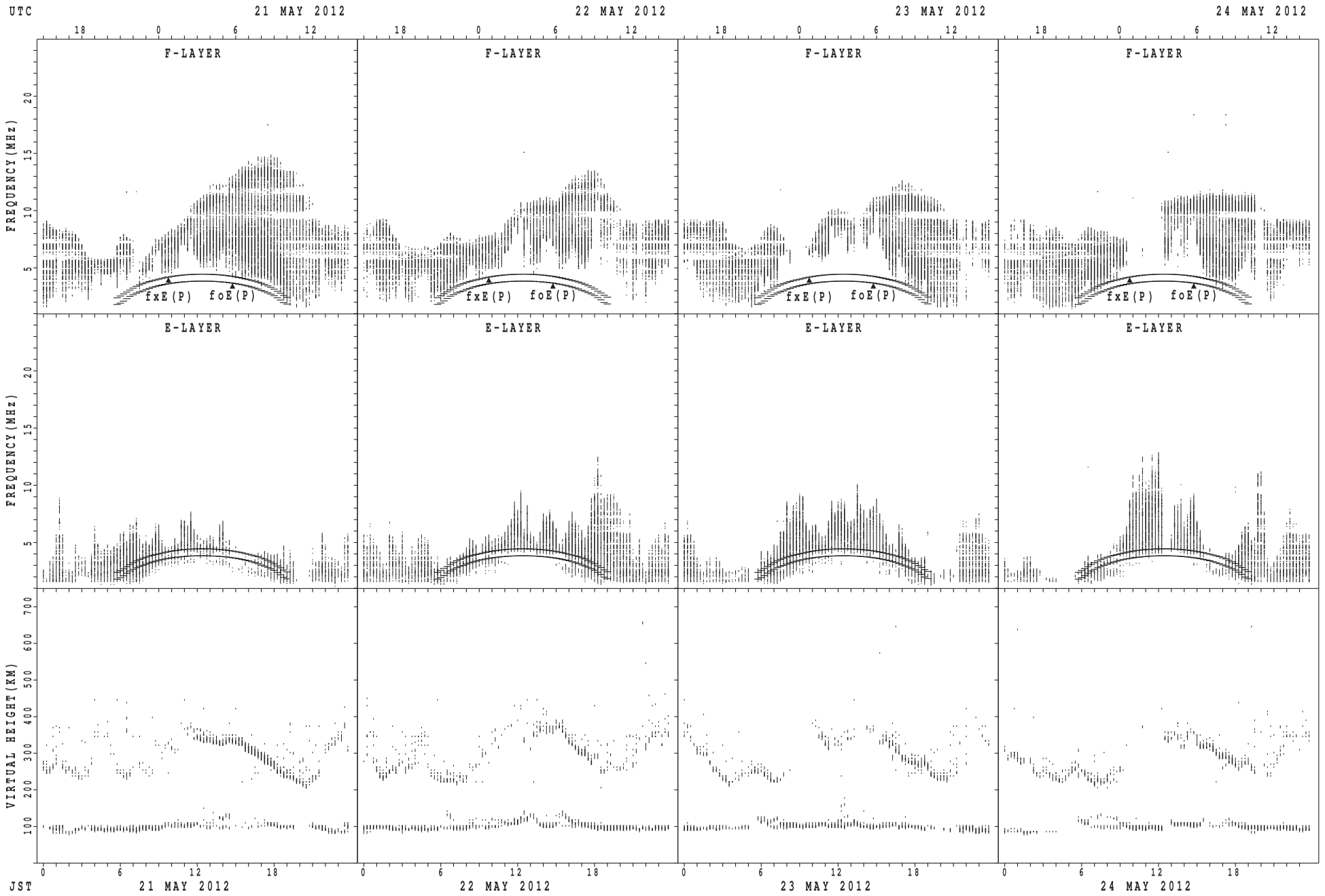
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



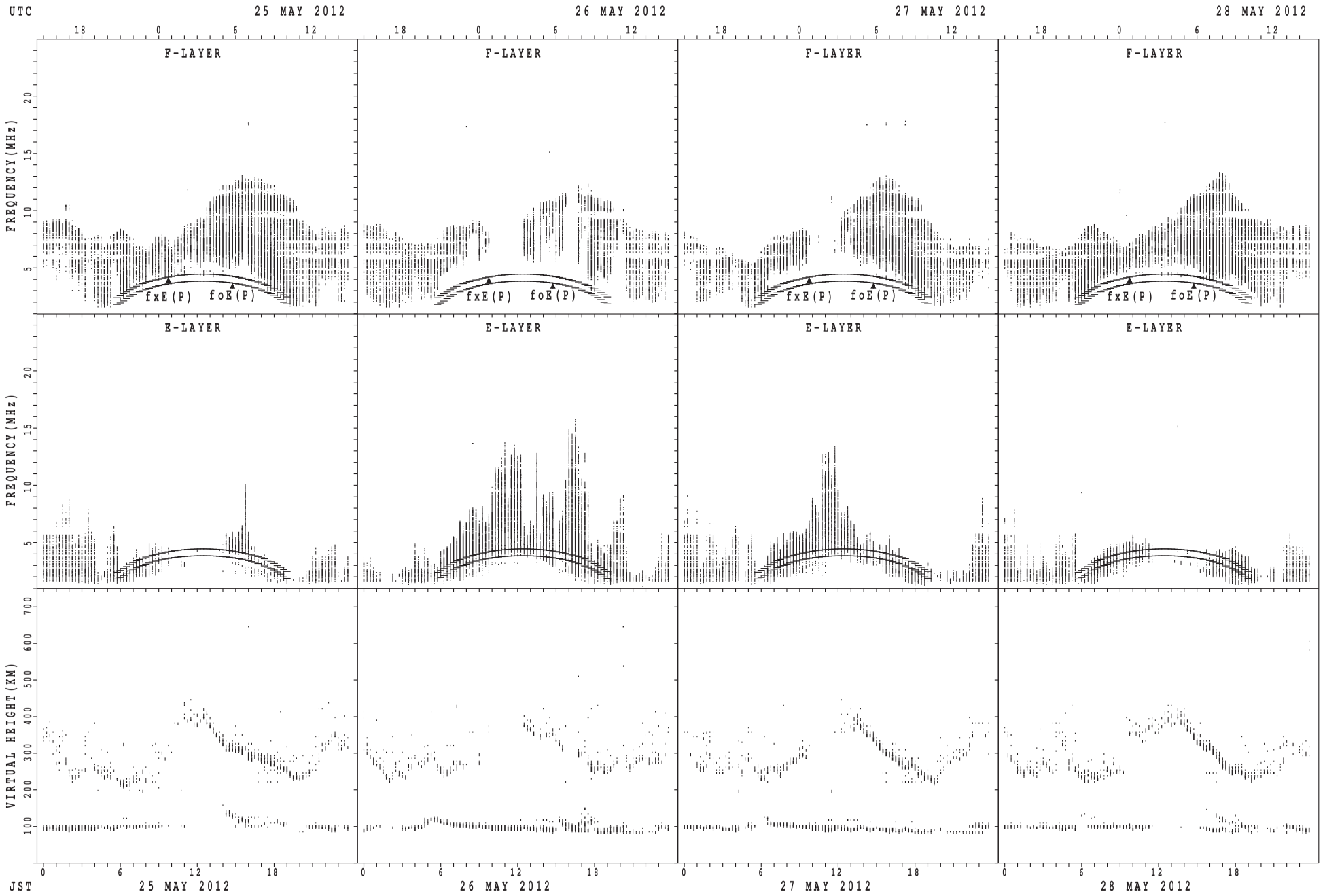
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



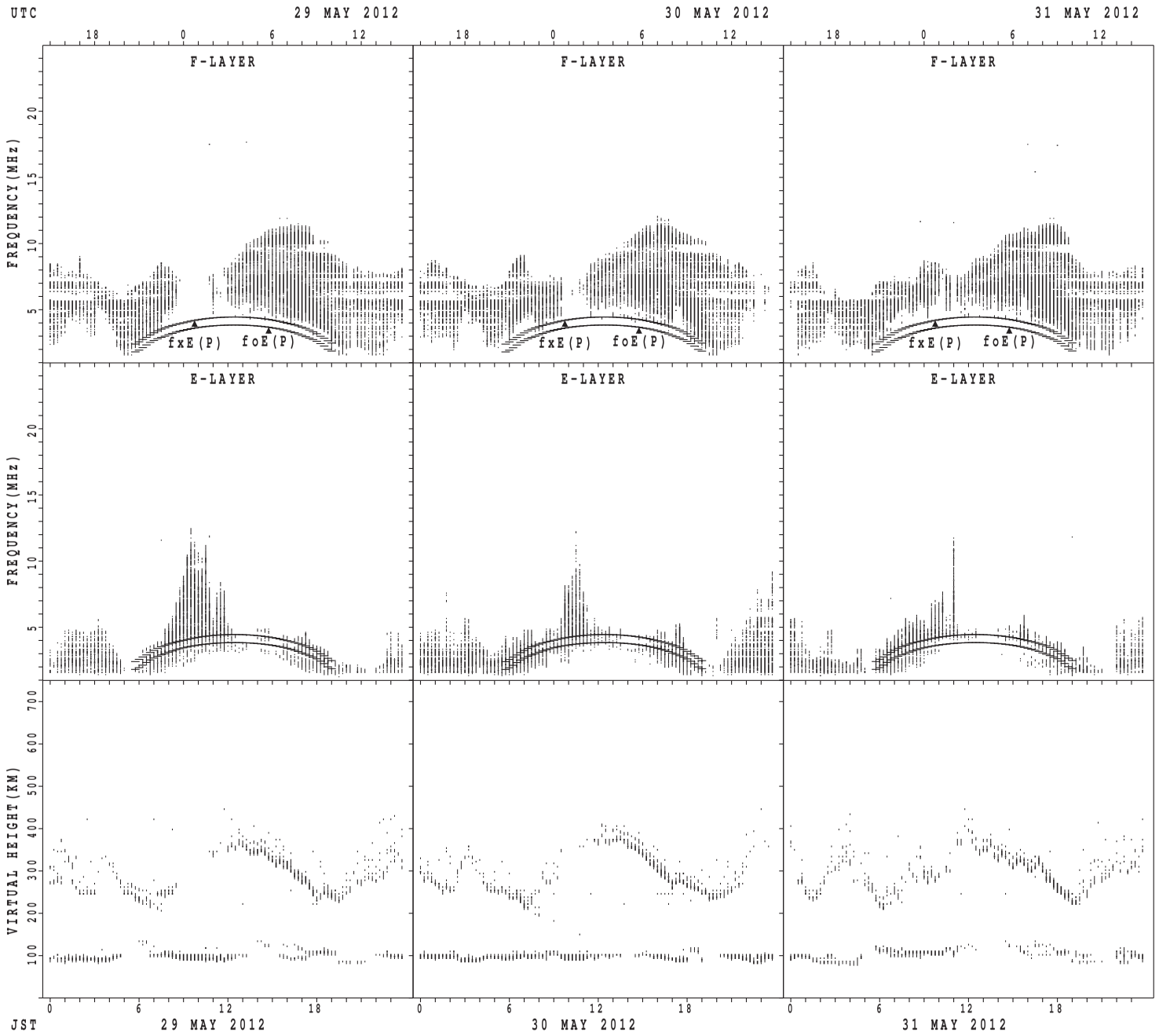
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

MONTHLY MEDIANS OF h′F AND h′Es

MAY 2012 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h′F STATION Wakkanai LAT. 45°10.0′N LON. 141°45.0′E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	1	5	1	2	8	18	23									27	27	24	23	22	6	6	6
MED	322	330	354	358	363	306	282	278									304	286	281	272	279	291	294	302
U Q	344	165	374	179	394	322	296	290									314	304	289	280	296	310	296	312
L Q	312	165	328	179	332	266	266	264									282	270	272	262	270	268	280	286

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	9	7	8	6	14	18	20	21	16	13	9	11	6	6	14	16	24	29	27	21	20	18	13
MED	95	99	95	97	94	119	113	110	107	103	103	101	101	97	99	107	111	109	107	103	105	104	99	97
U Q	97	103	97	99	95	125	119	113	111	107	105	103	105	99	117	111	115	112	112	107	111	109	103	99
L Q	91	96	91	93	91	115	111	106	104	101	100	98	101	95	95	99	105	103	105	103	100	98	97	93

h′F STATION Kokubunji LAT. 35°43.0′N LON. 139°29.0′E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	6	6	3	1	3	23	28	1								29	29	25	27	13	6	7	8
MED	322	342	319	310	312	260	264	254	262								278	270	264	262	288	302	312	342
U Q	344	356	328	342	156	300	276	268	131								296	280	276	272	296	312	330	360
L Q	316	306	298	278	156	248	252	245	131								270	250	248	238	257	294	312	339

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	13	8	14	9	10	14	25	27	28	22	22	18	19	17	16	19	24	27	28	29	26	25	22
MED	97	97	96	97	97	104	109	109	103	103	101	101	101	101	103	113	109	107	103	102	103	101	101	99
U Q	101	97	99	99	101	131	117	113	105	107	103	103	105	109	111	120	117	109	105	103	104	103	104	103
L Q	95	95	93	95	96	103	105	105	103	99	97	97	99	97	98	106	103	105	97	99	99	97	97	97

h′F STATION Yamagawa LAT. 31°12.0′N LON. 130°37.0′E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	5	6	4	4		15	28	21								28	22	26	18	15	1	1	4
MED	340	328	285	294	275		256	249	258								284	275	261	259	262	346	322	335
U Q	350	332	322	318	297		270	256	263								294	286	274	272	276	173	161	346
L Q	304	302	276	268	259		240	233	245								271	266	248	254	250	173	161	327

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	21	21	19	13	23	27	27	30	29	26	22	18	22	23	24	22	29	29	28	28	30	26
MED	97	95	95	93	95	95	113	107	105	103	99	98	99	99	101	103	107	107	103	99	98	99	97	97
U Q	102	98	95	95	97	99	123	113	109	107	103	103	103	105	103	115	114	111	107	104	102	103	103	99
L Q	92	91	89	89	89	95	97	103	103	99	97	95	95	95	95	99	99	103	100	95	95	95	95	93

MONTHLY MEDIANS OF h′F AND h′Es

MAY 2012 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

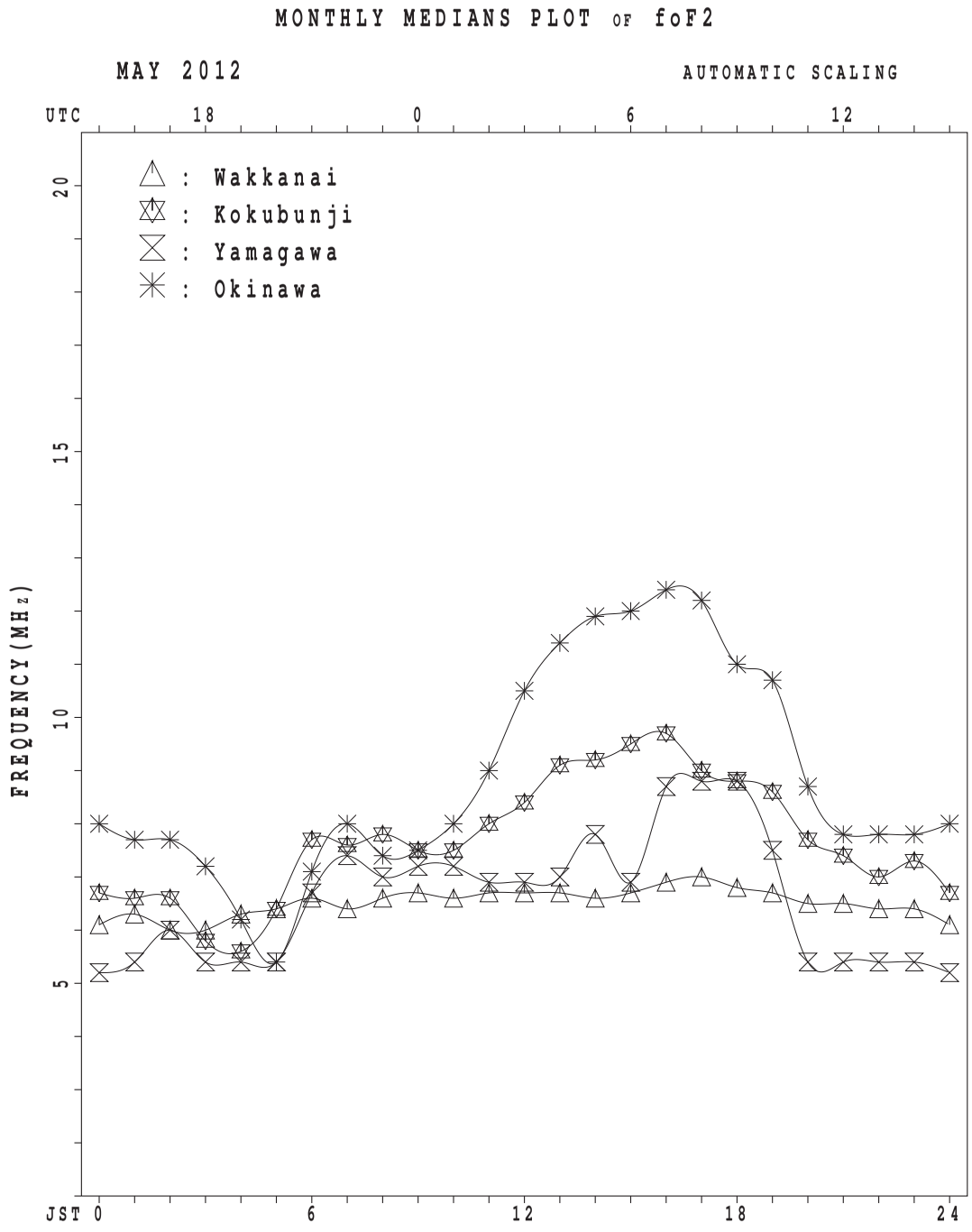
h′F

STATION Okinawa LAT. 26°41.0′N LON. 128°09.0′E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	21	21	16	3	5	16	29	25	10							30	31	29	29	23	12	15	14
MED	340	304	278	269	274	282	254	238	254	273							291	266	254	250	256	306	336	352
U Q	352	325	298	304	286	326	265	259	263	286							302	286	270	269	272	318	352	362
L Q	322	285	262	245	268	280	246	225	239	248							278	262	240	239	238	285	326	328

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	25	21	20	19	17	18	29	28	27	27	27	23	24	28	23	26	26	29	26	25	26	28	29
MED	95	97	95	95	95	99	105	107	104	103	103	99	103	102	115	113	111	108	105	99	99	97	98	97
U Q	101	103	97	97	97	109	115	113	109	105	107	105	113	123	135	123	119	119	110	103	103	101	103	99
L Q	90	92	90	91	89	95	103	101	101	101	99	97	97	95	100	103	103	105	99	95	97	91	95	93


MONTHLY MEDIANS PLOT OF foF2
MAY 2012
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
✡ : Kokubunji
⧖ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 73	X 71	X 71	X 70	X 71															X 97	X 91	O X 83	X 78	X 72
2	X 71	X 70	X 67	X 65																X 92	X 85	X 74	X 66	X 66
3	X 66	X 65	X 65	X 62																X 94	X 82	X 77	X 77	X 71
4	X 71	X 69	X 64	X 57																X 75	X 79	X 75	X 69	X 67
5	X 66	X 61	X 62	X 60																X 81	X 80	X 76	X 74	X 67
6	X 67	X 65	X 63	X 62																	X 86	X 77	X 76	X 75
7	X 71	X 71	X 71	X 63																	X 91	X 80	X 64	X 62
8	X 60	X 60	X 60	X 59																X 79	X 80	X 77	X 75	X 73
9	X 69	X 67	X 64	X 64																	O X 83	X 82	X 77	X 75
10	X 74	X 73	X 73	X 68																X 78	X 79	X 82	X 79	X 76
11	X 70	71	71	67	62	63	66	68												X 76	X 79	X 82	X 79	75
12	70	67	66	X 66	68																X 81	X 81	X 81	X 78
13	X 76	X 75	72	70																	X 83	X 82	X 82	X 78
14	X 77	X 77	X 71	X 75																	X 76	X 77	X 73	X 70
15	X 68	X 66	X 67	X 66																X 83	X 96	X 92	X 85	X 81
16	X 77	X 75	X 75	X 71																	X 84	X 83	X 83	X 83
17	X 80	X 76	X 71	X 70																X 81	X 81	X 85	X 84	X 77
18	X 73	X 72	73	X 70																	X 83	X 89	X 80	X 81
19	X 81	X 81	X 78	X 75																	X 86	X 78	X 75	X 73
20	X 71	X 70	X 69	X 64																	X 84	X 77	X 77	X 76
21	X 72	X 72	X 72	C										C							X 81	76	X 76	X 76
22	X 73	X 70	X 68	X 66						C	C	C	C	C	C	C	C				X 81	X 82	X 81	X 85
23	X 83	X 81	X 81	X 81	X 75					C	C	C	C	C	C	C				X 79	X 81	X 78	X 76	X 75
24	71	72	71	X 68		74				C	C	C									X 88	X 89	X 86	X 85
25	X 82	X 74	74	72																	X 83	X 89	88	93
26	X 83	X 77	X 76	X 75	72																X 81	X 81	X 77	X 77
27	X 77	X 73	X 68	X 67																	O X 82	X 83	84	80
28	O X 87	X 75	77	76																	O X 89	95	X 87	X 81
29	X 76	X 76	X 70	X 67																	X 81	X 83	X 81	X 81
30	X 76	X 73	X 73	X 73																	X 88	O X 85	X 83	X 80
31	X 81	X 77	X 72	X 70																	X 77	76	77	X 73
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	5	2	1	1												11	31	31	31	31
MED	X 73	X 72	X 71	X 68	71	68	66	68												X 81	X 82	X 82	X 78	X 76
U Q	X 77	X 75	X 73	X 71	74															X 92	X 86	X 83	X 83	X 81
L Q	X 70	X 69	X 67	X 64	65															X 78	X 81	X 77	X 76	X 73

MAY 2012 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	66	64	64	63	64	71	74	J R 80	U R 77	J R 83	76	74	75	U Y 77	J R 79	75	J R 85	R 86	87	J R 90	R 84	76	71	65
2	64	63	60	59	56	61	70	70	73	69	71	71	74	75	76	73	77	R 84	R 82	R 85	R 79	67	59	59
3	60	59	59	55	55	61	72	72	R 85	R 77	78	78	78	U R 78	78	J R 82	J R 87	82	88	88	72	70	66	63
4	64	62	57	50	50	54	61	70	66	68	68	66	J R 65	74	74	75	73	74	68	68	72	68	62	61
5	60	55	55	53	53	52	54	57	62	60	62	66	67	68	69	72	73	70	72	74	73	69	66	60
6	59	58	56	R 55	55	60	68	70	76	69	67	64	72	72	78	Y	U R 79	U R 80	73	76	R 79	70	69	68
7	64	64	64	56	57	56	55	R 55	57	50	59	60	60	59	63	62	R 62	64	64	71	J R 84	73	58	55
8	53	53	53	52	51	66	72	70	71	64	66	70	68	69	71	72	68	72	73	73	74	70	68	66
9	63	61	58	57	54	58	62	64	70	75	U R 88	72	U R 78	76	R 78	78	76	76	75	R 78	76	74	70	68
10	67	66	R 66	61	48	50	59	57	72	69	62	65	74	72	R 72	77	72	72	71	71	72	75	72	69
11	63	F 63	F 62	F 57	F 49	V 53	F 56	57	61	54	63	66	70	74	71	71	65	65	62	69	72	75	72	F 66
12	F 61	F 56	F 54	58	F 59	67	72	74	72	70	69	70	76	76	75	77	76	76	77	R 83	74	74	74	71
13	69	68	F 64	F 63	63	57	60	66	72	78	74	74	R 76	77	U Y 78	R 78	74	76	74	75	76	R 75	75	71
14	70	70	63	68	61	55	49	53	55	55	59	59	64	66	67	70	71	69	68	72	70	70	66	63
15	62	60	60	59	58	63	71	72	76	68	68	71	75	76	74	74	74	74	73	76	U R 89	U R 85	78	75
16	70	68	68	64	64	68	72	74	76	U Y 78	74	72	75	75	78	78	78	77	79	76	R 77	76	76	76
17	73	69	64	63	64	68	74	J R 81	J R 82	77	68	66	71	74	76	U R 76	85	80	77	74	74	R 77	77	70
18	66	65	F 64	63	64	72	R 77	J R 85	72	74	75	73	73	U R 75	U R 80	R 78	77	R 77	76	78	77	R 82	73	74
19	75	75	71	68	68	67	68	68	68	70	62	68	R 71	69	66	69	72	74	73	79	79	71	68	66
20	64	63	62	57	60	69	R 78	J Y 80	J R 84	U Y 78	75	71	R 73	69	71	71	76	76	R 80	J R 86	76	71	70	69
21	65	65	65	C	61	65	64	61	59	A	A	63	56	C	69	71	72	76	74	74	74	F 68	V 69	69
22	66	63	61	59	60	63	64	70	74	C	C	C	C	C	C	C	C	R 81	76	84	75	75	R 75	78
23	76	75	74	74	68	62	54	57	A	C	C	C	C	C	C	C	J R 79	74	75	74	74	72	69	68
24	F 67	F 64	F 60	61	59	F 62	73	V 69	61	C	C	C	72	75	73	73	73	77	78	77	U R 82	82	R 79	78
25	75	67	F 64	F 63	62	68	74	73	64	63	66	64	66	70	70	68	68	69	76	75	76	82	F 80	R 79
26	76	70	69	69	F 63	65	58	63	65	70	70	66	65	65	65	66	70	72	76	76	74	74	70	70
27	70	66	61	60	64	71	69	77	75	R 79	U R 78	79	76	71	75	A	74	71	71	74	75	V 76	76	R 68
28	80	69	F 68	F 65	F 63	68	R 72	73	J R 78	71	69	67	70	71	72	71	U A 68	68	72	81	U Y 82	F 85	F 76	74
29	69	69	63	60	61	65	72	74	77	77	73	70	69	70	U Y 76	80	R 80	71	A	74	74	76	74	74
30	69	66	66	66	63	73	82	R 80	U R 79	77	U R 77	R 72	76	72	67	69	72	72	78	81	81	78	76	74
31	74	70	65	63	62	65	67	66	A	55	E G 49	61	58	A	62	62	62	63	J R 62	65	70	F 68	F 68	66
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	29	27	27	28	29	27	29	27	30	31	30	31	31	31	31	31
MED	66	65	63	60	61	65	69	70	72	70	69	69	72	72	73	73	74	74	74	76	75	74	71	69
U Q	70	69	65	63	63	68	72	74	R 76	77	75	72	75	75	77	77	R 77	R 77	77	81	R 79	76	76	74
L Q	63	62	60	57	55	58	60	63	64	64	63	66	66	69	69	70	71	71	72	74	74	70	68	66

MAY 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	U L 500	U L 500	L 492	U L 492	508	U L 500	L	U L 472	U L 424	L					
2							L	U L 424	L	U L 476	A	U L 488	512	U R 508	L	L	L	A						
3							L		L 452	L	480	L 480	U L 500	L 500	U L 500	U L 476	U L 448							
4							L	U L 424	A	L 476	480	U L 484	484	A	L 484	U L 472	L	A						
5						L	L	L 432	448	464	A	U A 484	L	L 508	504	L 480	L	L	L					
6								U L 436	L 460	L 480	480	U L 536	L 524	U L 516	496	L 492	L 456	L						
7						U L 344	U L 384	436	U A 424	R 436	468	484	U R 492	L 492	492	L 460	A	U L 400	L					
8							U L 400	L	468	L 464	492	492	504	500	500	L 476	L	U L 452	L					
9						L 268	L	U L 448	U L 472	U L 496	496	528	512	L 508	500	460	U L 456	U L 400	U L 344					
10						L	L 412	U A 468	U A 448	U A 480	L	548	516	500	U L 508	A	A		A					
11							L	U L 440	A	U R 484	U A 464	484	492	492	U L 508	472	U L 452	L						
12							L	L 436	L 464	L 480	L 512	L 528	512	L 508	504	488	U L 468	L						
13								A	L 464	U L 500	L 500	L 500	L 508	512	508	U L 504	A	L		A				
14						L 356	456	436	460	U A 472	A	R	480	488	500	484	L	U L 400						
15							L	L	L 472	L 488	492	L 520	516	512	492	L 492	L 472	U L 440						
16						256	L	L	U L 476	L 488	L 504	L 544	L	532	L 520	L 516	464	A						
17					L		L	L 448	456	L	520	B	R 520	L	512	480	L 464	L						
18							L	L		L 484	520	U L 548	L 548	520	L 516	L 512	A	L	L					
19						L 372	L 420	R 424	480	508	L 504	Y 500	500	504	500	A	R 460	A	A					
20						L	L	A	480	488	A	U L 528	524	U L 520	516	L 512	U L 488	A						
21								L 420	A	A	A	U A 480	L	C	L 520	L	L	L						
22						L	L	U L 460	U L 480	C	C	C	C	C	C	C	C	L						
23						L	L	A	A	C	C	C	C	C	C	C	436	408	L					
24						L 380	L 428	R	A	C	C	C	496	496	L 496	496	L 480	A	A	A				
25					L	L	408	440	U L 472	U A 468	Y 476	500	L 504	500	500	L 488	L 468	L 444	A					
26						L	A	A	A	A	A	A	512	L 508	L 504	488	464	L 460	L 372					
27								L	L 500	500	500	500	500	L 524	484	A	U L 460	A	A	A				
28							U L 436		A	A	A	460	476	L 512	A	U A 444	U R 424	L	L					
29						L	L	A	A	A	L 508	504	508	U R 528	488	A	A	A	A					
30						L	L 428	L 444	476	484	484	492	496	496	496	U A 476	468	A	A					
31						L	404	U A 420	A	484	492	480	A	A	488	480	L 464	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						6	10	17	19	22	20	25	25	25	27	22	19	9	2					
MED						L 350	L 416	L 436	L 468	484	494	500	504	508	500	L 482	L 464	U L 424	L 358					
U Q						L 372	L 428	U L 446	L 476	L 488	L 504	L 528	514	L 514	L 508	L 492	U L 468	L 448						
L Q						268	U L 404	U L 424	456	476	480	484	494	500	496	476	U L 456	U L 400						

MAY 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						192	244	U A 276	A	348	A	A	U R 368	R 368	R 348	324	300	260	A					
2					B	204	252	292	320	A	A	A	R 356	352	352	324	300	248	A 176					
3					B	200	256	284	316	332	U R 336	U R 360	U R 360	352	R 348	332	292	260	A					
4					B	204	264	300	324	336	340	U A 344	A	A	A	A	308	U A 260	208					
5					B	196	256	296	336	348	364	U A 364	A	A	336	332	308	264	A					
6					B	208	248	296	328	348	R 368	376	U A 376	A	U R 360	A	A 300	272	212	B				
7					B	U A 192	240	300	320	340	352	U R 356	R	U A 352	A	332	300	260	204	B				
8					B	208	260	284	308	U R 328	U R 360	A	A	A	R 352	332	R 304	260	220					
9					B	212	260	292	320	340	344	344	U R 356	A	A	A	316	260	216	B				
10					B	196	260	292	320	340	U A 352	356	360	A 356	A	340	320	264	200					
11						216	268	304	324	336	352	A	U A 360	A	A	A	A	A	216					
12					B	200	264	300	328	356	360	A	A	A	A	A	312	280	200	B				
13					A	208	268	304	324	A	A	A	A	A	A	A	A	A	224	A				
14					B	216	276	312	340	U A 372	U A 372	A	368	368	360	348	300	264	216	B				
15					B	228	256	304	324	A	A	A	U A 376	R 356	344	332	312	260	200					
16					B	220	272	304	324	U A 340	352	A	A	A	A	336	308	276	220	B				
17					B	204	276	308	320	344	352	B	B	U R 368	336	324	316	280	216					
18					B	216	268	304	340	352	364	U A 372	A	A	A	A	A	A	216	B				
19					B	224	268	312	U A 336	U A 352	A	A	U A 364	364	364	356	300	272	U A 220	A				
20					B	212	260	300	324	344	364	A	A	A	360	332	312	276	A	A				
21					A	212	276	292	A 272	340	360	A	A	C	356	336	320	A	A	A				
22					B	212	280	304	328	C	C	C	C	C	C	C	C	264	204	A				
23						U A 232	260	304	336	C	C	C	C	C	C	C	312	268	240					
24					A	232	260	296	336	C	C	C	A	A	A	R 324	316	288	A 208	A				
25					B	236	260	312	332	356	U A 356	360	U A 352	A	A	A	316	284	224	B				
26					152	216	272	308	336	344	U A 360	A	A	364	348	336	316	268	A 208	B				
27					A	236	284	300	324	340	348	364	U A 364	A	364	U A 340	A 316	272	U A 220	B				
28					A	236	276	300	A	332	A	A	U A 348	U A 348	U A 344	336	308	268	A 212	A				
29					A	232	268	304	328	U A 336	A 352	U A 352	U A 348	356	A	348	308	272	U A 224	B				
30					160	228	276	300	312	336	A	U A 348	A	356	356	336	316	272	A	A				
31					B	224	292	328	U A 340	344	356	368	U A 372	U A 364	356	340	324	272	220	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	31	31	31	29	25	21	13	15	14	17	21	27	27	25					
MED					156	212	264	300	324	340	356	U 360	U A 360	356	352	336	312	268	216					
U Q						228	276	304	336	348	362	366	U A 368	364	360	340	316	272	220					
L Q						204	260	296	320	336	352	U A 350	U A 356	352	346	332	300	260	206					

MAY 2012 foE (0.01MHz)

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	E B 13	20	20	J A 17	G	27	33	36	G	36	36	G 29	40	38	36	G 24	31	24	J A 17	19	19	E B 14	18
2	21	18	J A 26	J A 21	E B 12	22	30	38	36	J A 43	J A 49	40	42	40	38	44	41	J A 44	J A 50	J A 21	J A 37	J A 18	J A 16	J A 16
3	22	22	19	19	E B 18	G	30	32	34	38	G 32	41	40	40	39	39	39	J A 39	46	J A 34	J A 20	E B 12	E B 12	E B 12
4	E B 14	E B 14	E B 14	E B 14	E B 13	G	G	38	J A 57	44	40	40	J A 45	J A 55	34	34	G 25	49	23	J A 15	J A 15	E B 15	E B 15	19
5	E B 15	J A 17	E B 15	E B 14	J A 19	21	29	34	39	43	48	57	40	38	G 25	G	G 20	G	J A 26	J A 19	26	E B 15	E B 15	E B 15
6	E B 14	E B 12	E B 12	E B 12	E B 12	G	28	34	37	39	G	40	J A 51	40	G 35	48	39	J A 47	J A 37	J A 20	J A 17	E B 14	E B 14	E B 14
7	E B 14	E B 14	E B 14	E B 14	E B 14	24	32	35	44	40	40	G	G	38	37	G 31	J A 43	G	24	J A 85	E B 12	E B 12	E B 12	20
8	E B 12	E B 12	J A 19	20	E B 12	G	30	36	36	36	42	40	38	44	G 31	38	G	31	28	J A 31	J A 17	J A 19	E B 14	E B 14
9	E B 14	E B 14	E B 14	E B 14	E B 14	G	28	35	43	42	40	40	40	40	51	37	34	30	G	16	22	J A 15	J A 14	E B 12
10	E B 14	E B 14	E B 16	E B 12	E B 14	22	30	J A 48	45	J A 52	42	39	39	40	43	J A 62	J A 60	35	J A 37	J A 65	J A 87	J A 63	E B 12	J A 16
11	J A 26	E B 15	E B 16	E B 16	E B 16	G	32	42	J A 46	46	J A 49	41	41	40	J A 57	38	J A 30	27	G 21	J A 26	J A 18	E B 13	19	20
12	E B 14	E B 14	E B 14	E B 13	J A 15	22	30	35	37	39	39	J A 45	J A 56	37	J A 43	38	36	39	J A 32	J A 24	E B 14	J A 13	E B 40	J A 22
13	28	J A 31	J A 30	J A 27	J A 29	24	34	J A 49	42	44	J A 45	J A 49	J A 55	42	36	40	J A 51	36	J A 34	J A 65	J A 37	J A 37	J A 20	J A 23
14	J A 17	J A 19	E B 14	E B 14	E B 16	26	G 25	36	36	J A 49	J A 54	40	40	G	G	G	34	G	J A 36	J A 24	J A 64	J A 17	J A 19	E B 13
15	J A 27	E B 13	J A 13	E B 12	E B 13	G	30	35	36	39	39	42	42	G 32	G 32	38	G 25	31	J A 30	J A 29	E B 15	E B 15	E B 15	E B 15
16	E B 15	E B 15	J A 15	E B 15	E B 15	24	30	35	38	41	45	42	39	J A 43	39	G	34	J A 45	33	30	30	J A 22	J A 18	J A 19
17	J A 17	J A 17	J A 23	J A 19	E B 13	25	30	33	38	42	40	E B 57	E B 47	G	G	G	36	34	26	22	31	J A 23	J A 16	E B 14
18	J A 24	18	20	E B 14	E B 14	26	32	43	43	42	44	41	39	39	36	37	J A 55	J A 54	28	J A 29	J A 31	J A 30	J A 23	J A 14
19	21	J A 15	E B 12	E B 12	E B 12	31	34	38	38	39	J A 45	42	42	41	J A 55	J A 66	J A 55	J A 59	J A 53	J A 46	J A 22	J A 32	J A 27	J A 41
20	J A 33	J A 20	J A 20	J A 23	E B 14	30	J A 36	J A 61	J A 47	45	J A 60	J A 65	42	39	40	G 27	38	40	J A 37	J A 50	J A 53	J A 31	J A 23	J A 16
21	J A 16	J A 15	18	C	J A 20	27	J A 44	41	J A 49	J A 81	J A 66	J A 61	J A 149	C	43	G	J A 57	J A 36	J A 43	52	J A 33	J A 85	J A 48	J A 18
22	J A 21	J A 20	E B 13	J A 15	J A 15	22	30	34	44	C	C	C	C	C	C	C	C	32	J A 37	J A 42	J A 30	J A 50	21	E B 14
23	E B 14	J A 48	J A 19	E B 14	J A 30	41	37	J A 53	J A 63	C	C	C	C	C	C	C	G	32	J A 35	J A 30	J A 21	E B 14	E B 14	E B 14
24	J A 13	J A 19	J A 14	E B 14	20	27	31	J A 47	J A 49	C	C	C	42	40	40	G	G	J A 44	J A 43	J A 50	J A 39	28	J A 40	J A 13
25	23	19	J A 27	E B 14	E B 14	G	34	42	J A 47	J A 50	44	J A 55	J A 52	41	J A 48	J A 61	34	37	J A 53	J A 39	J A 61	J A 31	J A 50	J A 49
26	J A 16	E B 12	J A 17	J A 18	G	32	J A 50	J A 57	J A 57	J A 57	J A 92	J A 68	J A 59	44	37	G	36	34	J A 31	J A 28	J A 37	J A 46	J A 24	J A 37
27	J A 29	J A 15	J A 13	J A 61	J A 25	G 19	32	J A 45	39	39	39	43	J A 53	J A 53	40	J A 67	J A 44	70	J A 60	J A 67	J A 27	J A 16	J A 40	J A 55
28	J A 18	J A 20	J A 18	J A 31	J A 21	G 21	30	J A 45	J A 55	J A 61	J A 56	41	J A 65	41	J A 111	47	73	J A 35	42	59	J A 42	J A 84	J A 31	23
29	J A 23	J A 13	J A 17	J A 30	J A 29	26	40	J A 53	J A 53	J A 57	J A 49	46	41	40	J A 43	J A 92	J A 79	J A 95	164	J A 111	J A 65	J A 56	J A 17	J A 17
30	J A 25	J A 16	E B 15	E B 15	18	G	33	34	37	44	40	37	38	G 34	41	J A 63	J A 91	J A 75	J A 46	J A 28	J A 28	J A 19	21	J A 17
31	E B 15	J A 13	J A 13	J A 16	E B 14	27	36	42	J A 67	43	39	G 35	J A 66	J A 66	40	J A 55	J A 55	J A 47	J A 63	J A 37	J A 48	J A 85	J A 66	J A 28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	28	28	28	29	28	29	29	30	31	31	31	31	31	31	31
MED	17	15	16	E B 15	E B 15	22	30	38	43	43	43	41	42	40	39	38	37	36	J A 36	J A 30	J A 30	J A 19	J A 19	J A 17
U Q	J A 23	J A 19	J A 19	J A 20	J A 19	26	34	J A 45	J A 49	J A 48	J A 49	J A 48	J A 52	42	J A 43	J A 52	J A 55	J A 47	J A 46	J A 50	J A 39	J A 37	J A 27	J A 22
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	G	30	35	37	39	40	40	40	38	G	G	G 30	31	28	J A 24	J A 19	E B 15	E B 14	E B 14

MAY 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	E B 13	E B 13	E B 12	E B 12	G	26	32	34	G	36	36	G 26	38	38	35	G 22	28	20	E B 14	E B 14	E B 14	E B 14	E B 14
2	E B 12	E B 11	22	E B 12	E B 12	G 20	28	33	32	41	46	38	40	38	38	40	40	40	42	18	34	E B 13	E B 13	E B 13
3	E B 11	E B 14	E B 14	E B 14	E B 18	G	27	G 27	32	38	G 31	40	38	38	37	37	37	37	37	26	18	E B 12	E B 12	E B 12
4	E B 14	E B 14	E B 14	E B 14	E B 13	G	G	33	53	40	38	38	41	52	32	33	G 20	41	22	E B 16	E B 16	E B 15	E B 15	E B 15
5	E B 15	E B 15	E B 15	E B 14	15	20	28	32	37	40	45	48	40	37	G 25	G	G 20	G	22	19	16	E B 15	E B 15	E B 15
6	E B 14	E B 12	E B 12	E B 12	E B 12	G	27	31	35	38	G	38	41	39	G 22	38	35	32	29	18	E B 14	E B 14	E B 14	E B 14
7	E B 14	E B 14	E B 14	E B 14	E B 14	21	28	31	42	39	39	G	G	38	36	G 28	43	G	21	E B 15	E B 12	E B 12	E B 12	E B 12
8	E B 12	E B 12	E B 12	E B 12	E B 12	G	27	33	33	G 33	40	38	38	38	G 30	36	G	28	25	25	E B 14	16	E B 14	E B 14
9	E B 14	E B 14	E B 14	E B 14	E B 14	G	28	34	40	40	39	39	39	37	37	37	34	29	G	15	E B 12	E B 12	E B 12	E B 12
10	E B 14	E B 14	E B 16	E B 12	E B 14	21	27	47	45	48	40	38	37	38	42	55	55	33	33	54	44	50	E B 12	E B 12
11	22	E B 15	E B 16	E B 16	E B 16	G	28	34	43	43	46	40	39	40	43	36	30	26	G 16	22	E B 14	E B 13	E B 12	E B 11
12	E B 14	E B 14	E B 14	E B 13	E B 13	21	29	30	34	36	39	42	42	36	38	35	35	33	28	21	E B 13	E B 13	17	18
13	17	18	20	17	25	23	31	45	38	40	42	44	44	40	34	40	46	30	28	58	34	34	20	20
14	E B 16	E B 14	E B 14	E B 14	E B 16	22	G 20	G 29	35	47	49	U Y 38	38	G	G	G	34	G	33	21	45	E B 10	16	E B 13
15	19	E B 13	E B 13	E B 12	E B 13	G	28	32	36	36	37	39	41	G 30	G 30	37	G 24	27	27	24	E B 15	E B 15	E B 15	E B 15
16	E B 15	E B 15	E B 15	E B 15	E B 15	G 22	29	32	34	40	42	42	U Y 38	42	38	G	34	44	31	17	17	17	E B 14	16
17	E B 14	E B 14	E B 13	E B 13	E B 13	22	29	32	34	39	39	E B 57	E B 47	G	G	G	35	30	22	20	20	20	E B 14	E B 14
18	18	E B 13	E B 13	E B 14	E B 14	25	28	38	40	40	42	40	38	U Y 38	34	34	48	34	27	24	22	22	E B 15	E B 15
19	E B 12	E B 12	E B 12	E B 12	E B 12	25	30	36	36	38	43	U Y 42	42	41	42	52	40	56	43	38	18	18	16	24
20	24	E B 12	E B 12	E B 12	E B 14	25	34	57	45	45	58	44	40	37	38	G 26	37	37	33	30	52	23	21	E B 14
21	E B 13	E B 13	E B 13	C	16	24	37	33	44	A A 81	A A 66	48	45	C	38	G	42	33	41	40	28	23	22	16
22	17	16	E B 13	E B 13	E B 14	22	28	32	40	C	C	C	C	C	C	C	C	30	30	27	18	32	16	E B 14
23	E B 14	E B 14	E B 14	E B 14	16	29	33	42	A A 63	C	C	C	C	C	C	C	G	30	30	21	17	E B 14	E B 14	E B 14
24	E B 14	E B 14	E B 14	E B 14	17	G 22	26	43	46	C	C	C	40	38	38	G	G	43	40	40	28	17	26	E B 12
25	E B 14	E B 14	16	E B 14	E B 14	G	31	37	43	47	U Y 43	43	43	41	40	41	34	34	46	31	41	22	27	19
26	E B 12	E B 12	E B 12	E B 12	G	28	48	51	55	54	54	58	46	42	37	G	34	32	29	21	27	20	18	23
27	18	14	E B 15	E B 15	15	G 15	30	32	34	34	39	39	39	39	39	A A 67	39	64	50	50	18	E B 13	E B 13	24
28	E B 13	E B 13	E B 13	16	18	G 17	28	42	50	56	54	40	40	40	68	44	36	33	29	39	29	45	17	17
29	18	E B 14	16	20	19	25	33	49	49	54	46	39	39	39	39	55	55	55	A A 164	56	27	17	E B 13	14
30	17	E B 12	E B 15	E B 15	G 14	G	30	31	35	42	38	U Y 37	37	G 30	38	48	36	44	44	24	22	16	16	16
31	E B 15	E B 15	E B 15	E B 15	E B 14	26	G 28	42	A A 67	41	38	G 33	54	A A 66	39	39	37	42	52	32	19	18	53	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	28	28	28	29	28	29	29	30	31	31	31	31	31	31	31
MED	E B 14	E B 14	E B 14	E B 14	E B 14	G	28	33	40	40	41	40	40	38	38	36	35	33	30	24	18	16	E B 15	E B 14
U Q	17	E B 14	15	E B 15	16	24	30	42	45	46	46	42	42	40	39	40	40	41	41	38	28	22	17	17
L Q	E B 13	E B 13	E B 13	E B 12	E B 13	22	28	32	34	38	38	38	38	37	G 33	G	G 30	29	25	19	E B 15	E B 13	E B 13	E B 13

MAY 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	13	13	12	12	13	13	11	11	13	12	14	14	14	14	14	14	14	14	14	14	14	14	14
2	12	11	13	12	12	12	12	12	15	15	15	15	17	16	16	16	14	14	13	13	13	13	13	13
3	11	14	14	14	18	14	14	13	12	9	16	15	13	12	12	13	11	10	9	8	12	12	12	12
4	14	14	14	14	13	13	13	13	13	16	16	16	16	16	16	16	16	16	16	16	16	15	15	15
5	15	15	15	14	14	12	12	12	12	15	13	16	16	16	16	16	16	12	12	15	15	15	15	15
6	14	12	12	12	12	12	12	15	15	14	14	14	21	21	19	18	14	13	14	14	14	14	14	14
7	14	14	14	14	14	14	14	14	14	14	16	18	27	18	17	16	15	15	15	15	12	12	12	12
8	12	12	12	12	12	12	12	12	14	14	14	16	16	16	16	16	16	16	16	15	14	14	14	14
9	14	14	14	14	14	14	12	14	14	18	17	17	17	18	18	18	16	16	16	13	12	12	12	12
10	14	14	16	12	14	14	14	13	13	15	15	16	16	16	19	16	15	15	15	11	12	12	12	12
11	13	15	16	16	16	12	12	12	12	12	12	12	18	20	13	13	12	12	12	11	14	13	12	11
12	14	14	14	13	13	14	14	15	15	15	17	18	19	18	18	16	16	15	13	16	13	13	14	17
13	16	16	16	11	12	12	10	10	9	13	16	23	22	19	16	15	15	14	14	13	15	15	17	16
14	16	14	14	14	16	14	14	13	12	12	14	14	10	9	10	9	13	12	12	12	12	10	12	13
15	13	13	13	12	13	13	13	13	14	14	14	18	16	16	16	11	11	11	9	15	15	15	15	15
16	15	15	15	15	15	15	15	15	15	16	16	20	20	17	16	16	16	16	16	13	14	14	14	14
17	14	14	13	13	13	13	13	12	14	16	16	57	47	26	18	17	15	11	11	14	14	14	14	14
18	13	13	13	14	14	14	14	11	13	12	16	16	16	16	16	16	14	14	13	16	15	15	15	15
19	12	12	12	12	12	12	12	12	12	16	16	16	16	16	16	16	16	16	16	14	13	12	12	12
20	12	12	12	12	14	14	14	14	14	14	14	14	14	14	14	14	14	12	12	14	14	14	14	14
21	13	13	13	C	13	13	12	12	12	18	17	21	16	C	16	16	14	11	12	14	14	14	12	11
22	12	12	13	13	14	14	14	14	14	C	C	C	C	C	C	C	C	13	12	12	12	14	14	14
23	14	14	14	14	12	12	12	12	12	C	C	C	C	C	C	C	12	12	12	12	14	14	14	14
24	14	14	14	14	14	14	13	12	12	C	C	C	19	15	15	15	15	15	15	12	12	12	12	12
25	14	14	14	14	14	14	12	12	12	13	14	17	17	17	14	14	14	14	17	14	14	14	10	12
26	12	12	12	12	12	12	12	11	11	15	15	16	14	14	14	14	14	14	14	14	13	13	12	12
27	14	14	15	15	13	12	12	12	12	12	12	12	12	15	15	14	15	14	13	13	13	13	13	13
28	13	13	13	12	11	11	11	11	11	11	11	11	12	12	12	12	10	10	13	13	9	12	12	12
29	14	14	14	14	14	14	14	14	11	13	13	13	13	15	13	15	16	12	12	12	12	12	13	12
30	13	12	15	15	13	13	13	13	14	14	14	14	14	14	14	14	14	12	12	11	11	11	11	11
31	15	15	15	15	14	12	13	12	12	16	16	16	15	16	12	11	10	10	10	11	13	13	13	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	28	28	28	29	28	29	29	30	31	31	31	31	31	31	31
MED	14	14	14	14	13	13	13	12	12	14	15	16	16	16	16	15	14	14	13	13	13	13	13	13
U Q	14	14	15	14	14	14	14	14	14	16	16	18	18	18	16	16	16	15	15	14	14	14	14	14
L Q	13	12	13	12	12	12	12	12	12	13	14	14	14	14	14	14	14	12	12	12	12	12	12	12

MAY 2012 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	287	290	290	298	309	327	336	R	U R 346	J R 346	340	315	308	U Y 332	R	313	R	R 328	325	J R 333	R 333	306	311	302
2	294	299	301	289	298	304	320	327	321	337	319	344	319	330	329	315	304	R 318	R 328	R 340	R 351	310	284	285
3	276	274	273	289	309	316	333	324	R 323	R 356	356	313	312	U R 332	306	J R 314	J R 372	323	302	302	328	296	313	296
4	290	302	310	288	289	292	323	336	322	326	317	309	R	313	319	313	329	328	326	309	311	314	301	295
5	291	293	286	292	286	302	307	321	330	336	308	308	305	299	308	317	313	331	322	316	320	297	307	292
6	285	289	298	R 306	310	313	328	322	335	334	344	291	308	324	316	Y	U R 323	U R 328	301	330	R 326	307	286	291
7	289	293	297	294	296	301	318	R 300	315	314	291	294	290	304	306	324	R 326	304	309	328	J R 381	336	305	298
8	286	286	284	289	290	316	344	328	323	336	323	328	291	294	314	311	304	309	307	340	337	309	304	299
9	284	283	291	300	309	334	324	312	314	292	U R 327	318	U R 357	312	R 322	324	300	321	309	R 333	329	327	284	274
10	280	279	R 279	299	276	297	306	266	327	312	321	271	316	326	R 329	322	320	319	305	339	323	299	302	283
11	298	F 285	F 289	F 288	F 305	V 291	F 278	334	312	241	298	286	301	302	298	311	325	312	302	279	298	287	300	F 306
12	F 291	F 294	F 284	273	F 303	313	327	318	326	320	322	294	318	319	319	323	319	321	317	R 318	312	299	298	292
13	284	279	F 291	F 281	281	309	305	315	326	318	341	322	R 317	313	U Y 331	R 332	313	309	313	312	309	R 310	312	298
14	282	283	271	286	319	329	241	296	285	281	319	296	294	324	319	322	304	313	319	308	288	288	303	283
15	285	284	288	292	298	324	321	318	339	319	320	299	299	318	315	314	314	313	298	309	U R 315	U R 310	321	299
16	294	288	296	301	303	312	331	320	333	U Y 330	312	300	292	293	293	326	323	322	320	331	R 325	298	300	299
17	294	281	285	283	285	283	312	J R 345	R	317	307	323	317	296	314	U R 337	316	317	328	316	301	299	305	295
18	287	285	F 284	291	294	300	R 335	R	316	324	321	300	298	U R 315	U R 311	R 329	334	R 319	324	324	295	R 294	319	301
19	284	284	297	288	288	280	295	313	302	297	307	293	R 318	299	289	305	309	302	316	317	318	307	292	290
20	283	285	276	297	283	317	R 304	Y	R	U Y 333	308	290	R 311	305	297	290	298	310	R 302	R	317	274	281	280
21	283	283	285	C	302	315	320	302	308	A	A	304	281	C	316	308	306	322	318	328	324	F 329	301	301
22	290	293	293	301	309	315	322	312	325	C	C	C	C	C	C	C	C	R 310	296	300	338	322	R 305	306
23	281	283	288	296	294	287	292	319	A	C	C	C	C	C	C	C	R	301	298	315	307	300	285	280
24	F 264	F 283	F 303	299	304	F 300	309	V 332	321	C	C	C	313	318	302	301	301	287	323	299	U R 293	288	R 294	300
25	278	291	F 297	F 290	283	292	312	330	305	312	311	293	289	313	309	302	302	305	305	308	320	282	F 274	R 297
26	270	303	295	290	F 300	322	A 297	322	314	305	314	A 305	297	298	286	303	294	304	319	307	306	297	298	288
27	299	299	309	295	312	333	285	329	312	R 311	U R 324	320	318	282	305	A	311	315	314	329	324	V 297	285	R 291
28	282	290	F 292	F 290	F 297	300	R 351	308	J R 340	322	292	320	303	310	A 306	309	A	313	300	301	U Y 316	F 299	F 321	296
29	293	291	306	290	286	295	278	337	323	347	294	301	288	289	U Y 313	317	R 317	328	A	325	324	302	302	304
30	292	286	301	303	308	308	317	R 322	U R 326	327	U R 319	R 304	308	296	301	300	301	303	304	313	307	302	305	304
31	296	303	289	297	284	304	312	286	A	305	G	330	A 253	A	297	302	305	299	R	307	305	F 299	F 292	288
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	28	27	27	27	28	28	27	28	27	27	31	29	30	31	31	31	31
MED	286	286	291	292	298	308	317	320	323	320	319	304	306	312	310	314	313	313	313	316	318	299	301	296
U Q	292	293	297	298	308	316	327	328	327	334	323	319	316	319	318	323	323	322	321	329	326	310	305	300
L Q	282	283	285	289	286	297	304	312	314	311	307	294	293	298	302	305	304	305	302	308	307	297	292	288

MAY 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	U L 375	U L 376	L 397	U L 398	373	U L 354	L	U L 345	U L 341	L					
2							L	U L 371	L	A 385	A	U L 376	370	U R 373	L	L	L	A						
3							L		L 402	L	398	L 399	U L 383	L 370	U L 370	U L 346	U L 369							
4							L	U L 391	A	L 357	354	U L 372	R 373	A	L 373	U L 366	L	A						
5						L	L	L 372	376	383	A	A	L	L 350	352	L 359	L	L	L					
6								U L 386	L 367	L 380	380	U L 360	L 352	U L 357	359	L 350	L 356	L						
7						U L 353	U L 376	354	A	R 403	391	383	U R 378	L 378	370	L 366	A	U L 362	L					
8							U L 365	L	385	L 389	393	393	384	387	360	L 361	L	U L 318	L					
9						L 389	L	U L 375	U L 364	U L 346	370	348	359	L 362	350	371	U L 357	U L 377	U L 353					
10						L	L 320	A	A	A	L	355	L 365	362	U L 358	A	A		A					
11							L	U L 382	A	U R 373	A	374	368	368	A 354	355	U L 361	L						
12							L	L 374	L 376	L 375	L 369	L 358	370	L 356	363	347	U L 358	L						
13								A	L 371	A	L 361	A	A 357	363	359	U L 363	A	L		A				
14						L 336	335	347	366	A	A	R	376	371	362	348	L	U L 374						
15							L	L	L 367	L 375	393	L 366	355	358	372	L 340	L 337	U L 334						
16						407	L	L	U L 373	L 364	L 367	L 364	L	352	L 354	L 338	360	A						
17					L		L	L 374	371	L	377	B	B 340	L	346	368	L 359	L						
18							L	L		L 395	368	U L 348	L 348	366	L 357	L 338	A	L	L					
19						A 322	L 347	R 398	359	376	L 380	Y	382	373	A 360	A	R 360	A	A					
20						L	L	A	A	388	A	U L 360	375	U L 354	357	L 336	U L 336	A						
21								L 366	A	A	A	A	L	C	L 340	L	L	L						
22						L	L	U L 377	U L 371	C	C	C	C	C	C	C	C	L						
23						L	L	A	A	C	C	C	C	C	C	C	H 405	397	L					
24						L 347	L 342	R	A	C	C	C	374	374	L 360	346	L 345	A	A	A				
25					L	L	384	A 370	A	A	A	A 363	L 362	365	366	A	L 358	A 359	A					
26						L	A	A	A	A	A	A	369	L 373	L 365	365	363	L 331	L 367					
27								L	L 367	367	367	407	408	L 363	H 379	A	A 336	A	A	A				
28							U L 351		A	A	A	444	428	L 346	A	A	A 313	L	L					
29						L	L	A	A	A	A 358	383	380	U R 363	364	A	A	A	A					
30						L	L 348	L 386	378	A 354	386	380	377	377	367	A	357	A	A					
31						L	354	A	A	388	382	405	A	A	379	373	L 345	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						6	10	15	15	18	18	21	25	25	27	19	19	9	2					
MED						L 350	L 350	L 374	L 371	376	376	374	373	365	360	L 355	L 357	U L 359	L 360					
U Q						389	U L 365	L 386	376	388	386	395	381	373	367	366	360	U L 376						
L Q						336	L 342	370	367	L 367	367	L 360	360	L 358	354	L 346	L 345	U L 332						

MAY 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 h′F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								240	248	262	254	262	280	296	270	278	282	280	256					
2							256	256	264	264	296	266	310	304	288	288	288	274						
3							258		258	258	258	294	294	294	294	294	276							
4							276	264	A 304	304	304	318	318	304	288	288	274	254						
5						L 304	304	308	302	302	346	336	342	340	322	314	302	276	272					
6								272	272	272	272	374	326	312	310	290	276	276						
7						290	290	Y 376	334	Y 338	392	392	Y 384	342	342	298	298	298	298					
8							256	258	298	290	316	316	354	344	336	320	312	304	264					
9						242	268	286	318	336	280	316	282	300	300	300	310	292	278					
10						286	298	434	294	336	282	438	296	296	314	A 292	290		274					
11							Q 376	276	340	Y 538	368	368	356	338	338	302	302	300						
12							266	266	278	292	314	348	312	300	306	302	290	286						
13								286	284	292	278	302	322	330	284	284	A 270	270		A				
14						296	560	392	408	416	A 346	374	374	326	326	308	308	282						
15							254	262	268	284	296	336	332	308	308	308	298	292						
16						230	246	268	268	294	288	334	326	326	326	300	290	286						
17					296		296	292	270	280	334	320	350	338	328	308	288	286						
18							250	250		288	306	320	346	324	310	296	284	272	268					
19						334	322	322	338	338	322	364	322	326	350	328	326	306	A 270					
20						260	280	A 292	292	292	A 312	348	336	332	350	352	326	276						
21								322	A 334	A	A	360	430	C	302	314	314	300						
22						308	270	282	282	C	C	C	C	C	C	C	C	284						
23						312	L 312	E A 312	A	C	C	C	C	C	C	C	306	306	290					
24						Q 290	290	260	310	C	C	C	320	314	314	314	314	300	272	A 276				
25					306	298	298	276	296	340	336	350	360	334	334	328	326	304	298					
26						272	E A 316	A 312	A 324	324	A 312	E A 356	364	358	364	308	318	316	270					
27								260	304	304	304	304	304	352	324	A	314	E A 316	292	E A 290				
28							258		274	A 300	A 314	296	326	326	E A 384	332	406	308	296					
29						278	288	270	270	270	326	326	350	388	324	306	294	A 294	A					
30						288	282	272	274	290	296	316	316	322	322	326	326	296	278					
31						278	296	340	A	360	G	340	A	A	378	356	336	324	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	16	26	29	28	27	27	28	28	27	29	28	30	29	15	2				
MED					301	289	283	276	293	294	312	332	326	326	322	307	302	292	274	283				
U Q						301	298	312	314	336	334	358	352	338	337	317	314	304	292					
L Q						275	258	263	271	284	288	316	314	304	304	295	288	278	270					

MAY 2012 h′F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 h′F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	272	272	268	258	228	226	226	214	210	210	206	188	204	204	222	222	222	232	232	232	232	232	234
2	274	272	272	272	254	238	238	238	204	A 232	A	218	208	H 194	A 232	A	A 248	A	248	246	246	226	228	260
3	298	298	298	242	242	240	240	240	224	224	208	208	208	208	198	A 262	262	262	262	240	224	228	262	262
4	262	262	238	238	276	232	232	A 232	A	232	230	224	E A 276	A	204	204	218	A	226	234	234	234	244	262
5	278	278	278	260	260	H 184	232	232	232	E A 232	A	A	208	208	208	208	232	232	232	232	232	232	232	254
6	270	270	270	264	258	244	244	220	220	206	206	206	E A 266	A 230	A 238	238	232	A	238	238	238	238	240	248
7	284	264	252	244	268	246	238	234	A	350	204	204	E Y 264	224	222	210	A	222	244	248	246	222	222	242
8	260	272	272	272	272	252	228	228	224	204	202	200	200	200	200	214	214	214	230	236	236	236	236	260
9	272	274	256	256	250	244	220	220	E A 240	240	220	218	218	218	218	218	218	218	234	234	234	234	254	270
10	278	278	284	250	256	256	248	A	A	A	A 222	222	216	H 206	E A 264	A	A	A 264	A	A 288	A 288	A 322	240	242
11	276	Q 276	270	270	276	258	246	A 248	A	250	A	234	250	234	E A 288	220	220	220	232	262	262	258	258	258
12	258	264	272	272	258	234	234	224	224	220	214	A 250	A 250	202	204	212	212	E A 262	262	260	250	250	250	250
13	256	304	304	270	270	234	234	A	A 230	A	A	A	E A 260	222	222	236	A	A 242	242	A	A 286	286	268	268
14	268	268	268	268	262	246	238	238	216	A	A	Y	214	214	214	214	214	222	264	254	A 312	258	258	258
15	290	290	278	260	254	242	224	210	210	210	200	200	A 238	202	202	214	214	226	238	256	246	242	240	240
16	268	272	272	244	250	206	212	212	212	212	A 240	192	194	228	228	228	216	A	246	246	246	246	246	246
17	266	266	268	268	268	242	242	218	218	218	204	B	E B 300	Y	240	230	224	224	240	240	256	268	250	238
18	268	276	276	276	274	242	230	E A 244	A 226	196	A 232	232	200	E A 226	224	212	A	E A 238	E A 242	242	270	274	252	252
19	274	274	274	274	274	A 240	250	A 232	228	218	A 228	Y	216	216	E A 268	A	E A 258	A	A	258	242	242	242	274
20	304	298	296	264	264	A 230	A 240	A	A	238	A	E A 254	204	204	210	210	E A 258	A	A 258	252	A 268	268	268	268
21	288	286	270	C	248	248	A 262	E A 244	A	A	A	A	E A 272	C	216	218	E A 260	A 260	A 260	260	260	260	260	260
22	264	260	260	260	260	224	222	200	A 230	C	C	C	C	C	C	C	C	234	268	268	260	280	280	262
23	292	292	292	276	276	A 298	E A 254	A	A	C	C	C	C	C	C	C	H 202	204	E A 260	260	260	260	260	268
24	Q 270	Q 270	266	266	266	254	236	254	A	C	C	C	220	208	A 220	216	222	A	A	A	266	266	266	266
25	268	264	264	268	268	258	244	E A 252	A	A	A	E A 266	258	246	A 246	A	226	A	A	252	A 276	278	296	286
26	Q 252	Q 252	252	268	268	A 234	A	A	A	A	A	A	234	220	202	202	216	224	A 244	244	250	250	250	290
27	272	264	244	244	244	238	232	232	224	216	216	208	206	206	H 196	A	A	A	A	A	232	254	264	A 280
28	266	266	Q 266	270	238	238	228	A 246	A	A	A	168	168	E A 242	A	A	A	A 236	A 244	A 258	258	A 292	254	250
29	282	274	274	274	256	242	A 250	A	A	A	A	196	190	H 190	218	A	A	A	A	A 272	272	264	260	258
30	258	272	254	250	246	236	236	228	218	A	206	206	206	182	220	A	224	A	A	242	242	246	250	250
31	244	244	254	264	260	260	242	A	A	230	198	196	A	A	232	232	A 240	A	A	256	256	268	A 310	234
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	30	24	18	19	17	21	28	25	28	21	23	19	23	28	31	31	31	31
MED	270	272	270	267	260	242	236	230	223	219	210	207	211	208	217	216	220	225	243	250	250	254	252	258
U Q	278	278	276	270	268	248	244	A 242	A 228	232	A 225	228	E A 254	225	A 232	229	A 240	A 242	260	259	A 266	268	262	268
L Q	264	264	260	256	254	234	230	222	216	210	204	200	205	203	204	211	216	222	234	240	238	236	240	248

MAY 2012 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 h′E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						132	102	102	A	102			110	110	110	112	112	112	A					
2					B	124	120	120	98				98	98	98	98	98	98	116					
3					B	118	114	110	110	110	106	A	106	106	108	108	108	108						
4					B	120	120	116	104	104	104	104	A	A	A	A	106	106	130					
5					A	130	124	122	120	106	106	106	A		106	106	106	106						
6					B	118	114	112	112	106	106	106	106	106	108			108	118	B				
7					B	112	112	112	106	106	106	106	106	106		118	118	118	118	A				
8					B	118	118	116	116	112	96	96	A	A	96	104	104	104	104					
9					B	118	112	112	108	108	108	108	108	A			108	108	108	B				
10					B	122	116	110	110	108	108	108	108	108	A	108	108	108	108					
11						112	112	112	112	112	110		110	A			A		126					
12					B	126	118	106	106	106	106		A				106	106	106	B				
13						126	112	110	110		A	A	A		A	A		A	110					
14					B	A 124	124	124	108	108	108		108	108	108	108	108	108	108	A				
15					B	122	118	114	108				A	108	108	A 114	114	116	116					
16					B	116	116	106	106	106	106			A	A	106	106	106	106	B				
17					B	114	114	112	112	102	102	B	B	102	102	102	102	102	102					
18					B	112	112	112	106	100	100	100	100	A		A	A	A	118	B				
19					B	118	118	110	110	110	A	A	110	110	110	110	110	110	110	A				
20					B	112	112	102	102	102	102	A		A	108	108	108	108	A	A				
21					A	108	108	116	116	112	112	A	A	C	110	110	110	A		A				
22					B	110	110	106	106	C	C	C	C	C	C	C	C	112	112	A				
23						112	112	112	110	C	C	C	C	C	C	C	110	112	112					
24					A	112	112	108	106	C	C	C	A			106	106	106	106					
25					B	106	106	106	106	106	106	106	106	A	A	A	106	106	106	B				
26					E B 208	110	110	104	104	104	104			104	104	104	104	104	104	B				
27					A	126	106	106	106	106	106	106	106	A	106	106	106	106	106	B				
28					A	130	110	104	A	104	104	104	104	104	104	104	104	104	104	A				
29					A	116	116	110	108	108	108	108	108	108		108	108	108	108	B				
30					A	108	108	108	108	106	A	106	A	114	114	112	112	112	A					
31					B	108	114	110	110	110	104	104	104	104	104	104	104	104	104	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	31	31	31	29	25	22	14	16	15	17	21	26	27	25					
MED					E B 208	118	112	110	108	106	106	106	106	106	108	108	107	108	108					
U Q						124	118	112	110	109	108	106	108	108	109	110	110	110	116					
L Q						112	110	106	106	104	104	104	105	104	104	104	106	106	106					

MAY 2012 h′E (KM)

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IONOSPHERIC DATA STATION Wakkanai

MAY 2012 h′Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0′N LON.141°45.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	100	100	94	G	126	112	112	G	112	112	102	198	198	170	94	120	120	120	102	102	B	102
2	102	102	102	102	B	136	132	122	122	112	108	108	186	186	192	128	120	120	120	116	116	112	110	90
3	106	106	106	92	B	G	116	116	116	198	108	184	184	184	184	140	134	130	114	114	114	B	B	B
4	B	B	B	B	B	G	G	114	114	114	114	114	108	100	100	100	100	100	144	136	126	B	B	100
5	B	104	B	B	104	142	142	142	136	124	118	118	114	114	102	G	102	G	118	90	110	B	B	B
6	B	B	B	B	B	G	154	132	132	124	G	112	112	112	104	104	118	118	118	106	96	B	B	B
7	B	B	B	B	B	120	122	122	110	110	114	G	G	114	114	106	112	G	124	124	B	B	B	102
8	B	B	98	98	B	G	104	102	110	120	190	116	116	104	104	212	G	146	136	110	110	110	B	B
9	B	B	B	B	B	G	202	126	120	120	120	112	190	104	104	112	142	148	G	122	122	122	122	B
10	B	B	B	B	B	124	124	108	108	108	108	108	112	198	124	120	118	118	118	116	148	120	B	106
11	100	B	B	B	B	G	122	122	120	118	112	112	112	112	100	100	100	100	100	100	100	B	100	100
12	B	B	B	B	100	144	144	130	124	124	124	104	104	104	104	104	126	118	118	120	120	B	110	108
13	108	108	108	102	96	142	128	118	118	116	106	106	106	106	106	106	106	106	112	112	112	112	104	96
14	96	96	B	B	B	124	118	118	118	118	108	108	108	G	G	G	128	G	116	116	116	114	100	B
15	86	B	148	B	B	G	146	128	126	110	110	110	172	96	96	206	104	118	118	104	B	B	B	B
16	B	B	104	B	B	192	152	130	114	114	114	112	102	102	102	G	150	130	128	122	106	106	106	106
17	106	94	94	94	B	120	142	154	118	118	118	B	B	G	G	G	128	128	128	106	106	106	104	B
18	96	96	96	B	B	118	118	118	118	118	110	110	110	110	106	106	118	114	114	114	112	108	108	106
19	96	96	B	B	B	124	124	124	116	106	106	106	106	130	122	116	116	116	116	116	106	106	106	102
20	102	102	102	102	B	116	122	120	114	114	110	110	110	108	200	104	128	126	122	112	112	112	110	110
21	102	102	102	C	102	120	116	120	120	118	114	108	108	C	122	G	122	120	108	108	108	108	126	98
22	112	102	B	102	108	134	134	134	112	C	C	C	C	C	C	C	C	126	122	110	110	96	98	B
23	B	100	104	B	104	112	112	112	112	C	C	C	C	C	C	C	G	136	128	112	112	B	B	B
24	102	102	118	B	122	126	126	112	112	C	C	C	110	110	110	G	G	110	110	110	106	106	106	106
25	108	102	102	B	B	G	116	116	116	116	116	108	108	108	102	102	136	128	120	120	114	114	114	108
26	104	B	96	100	G	120	120	118	118	106	106	104	104	104	120	G	136	132	118	112	106	106	106	106
27	100	100	100	100	100	100	134	124	116	116	116	116	110	110	182	106	106	116	116	116	116	112	112	112
28	104	104	104	104	122	102	130	118	118	112	112	112	112	112	132	128	122	122	120	110	110	110	110	102
29	94	94	94	94	94	148	116	116	108	108	108	108	108	152	110	110	110	110	110	110	110	110	110	100
30	100	100	B	B	112	G	116	116	116	116	116	116	110	108	128	122	118	116	110	110	110	110	106	106
31	B	102	102	102	B	112	122	122	114	114	114	112	112	110	120	120	120	120	120	118	128	132	114	104
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	19	19	13	12	21	30	31	31	27	27	26	27	26	27	22	27	28	30	31	29	22	21	21
MED	102	102	102	100	103	124	124	120	116	116	112	111	110	110	110	111	118	120	118	112	110	110	108	104
U Q	106	102	104	102	110	139	134	126	120	118	116	112	112	114	128	128	128	128	122	118	116	112	111	106
L Q	96	96	98	96	98	117	118	116	112	112	108	108	108	104	104	104	106	116	114	110	106	106	105	100

IONOSPHERIC DATA STATION Wakkanai

MAY 2012 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			F1	F1	F1		CL11	C2	CL11		C1	C1	L1	HL11	HL11	HL11	L1	C2	C1	F1	F1	F1		F1
2	F1	F1	F4	F1		C1	CL21	CL22	C1	C1	C1	C1	H1	H1	HL11	C2	C3	C3	C3	F3	F3	F1	F1	F1
3	F5	F1	F1	F1			CL11	C1	C1	HC11	L1	HL11	HL11	HL11	HL11	CL11	CL11	C4	C3	F6	F3			
4								C2	C2	C1	C1	C1	C1	C2	C2	C2	L2	C4	C1	F1	F1			F1
5		F1			L2	HL11	H1	H1	C2	C1	C1	C1	C1	C1	L1		L1		C2	F2	FF11			
6							H1	H1	H1	H1		C1	C1	C1	L1	L2	CL12	C2	C3	L1	F1			
7						C1	C2	CL21	C1	C1	C1			C1	C1	L1	C1		C1	F1				F1
8			F2	F1			C1	C1	C2	C2	H1	C1	C1	C2	C1	HL12		C1	C3	F4	F1	F1		
9							H1	H1	C1	C1	C1	C1	HL11	L1	L1	C1	C1	H1		C1	F1	F1	F1	
10						C1	C1	C2	C2	C2	C2	C1	C1	H1	CL11	C2	C2	C2	C2	F6	FF15	FQ51		F1
11	F4						C1	C2	C2	C1	C2	C1	C1	C1	C2	C2	L2	L2	L2	F3	F1		F1	F1
12					L1	H1	C1	C1	C1	C1	C1	C1	L1	L1	L2	L2	C1	C3	C3	C3	F1		F3	F3
13	F3	F5	F3	F3	L3	CL11	C2	C2	C1	C1	C1	C1	L2	CL11	C1	L2	L2	L2	L3	L4	L6	L6	F3	F2
14	F1	F2				CL21	L1	C2	C2	C1	C1	C1	C1				H1		C2	C2	F6	F1	F2	
15	F3		R1				H1	C1	C1	C1	C1	C1	HL11	L1	L1	HL11	L1	CL22	CL33	F2				
16			F1			H1	HL11	H1	C1	C1	C1	C1	C1	L2	L1		H1	C2	C3	L3	F3	F3	F1	F2
17	F1	F1	F2	F1		C1	H1	H1	C1	C1	C1						C1	C1	C1	F2	F3	F2	F1	
18	F2	F1	F1			C1	C2	C2	C1	C1	C1	C1	C1	C1	C1	C2	CL23	CL23	CL31	C5	C5	F5	F2	F1
19	F2	F1				CL21	CL21	C2	C1	C1	C1	C1	CL11	H1	C1	C2	C2	C3	C4	C4	F2	F3	F2	F5
20	F5	F2	F2	F1		CL21	CL31	C2	C2	C1	C2	C2	C1	L1	HL11	L1	CL21	C2	CL31	L3	F7	F3	F3	F1
21	F2	F1	F1		L1	C1	C2	CL21	C2	C3	C3	C1	CC31		CL11		C2	C2	L5	L4	F7	FQ41	FF13	F2
22	F1	F2		F1	L1	H1	C1	H2	C1									C3	C3	C4	F3	F3	F2	
23		F2	F1		F2	C2	C2	C2	C2									C2	C3	F3	F3			
24	F1	F2	F1		C2	C2	C2	C2	C1				C1	C1	C1			C3	C4	C3	F7	F3	F5	F1
25	F2	F1	F3				C3	C2	C2	C1	C1	C2	C1	C1	L2	CL22	HL11	C2	C3	C3	F3	F4	F4	F3
26	F2		F2	F1		C2	C2	C2	C2	C2	CQ11	C2	C1	C1	C1		H1	C2	C3	C5	F4	FF32	F3	F5
27	F3	F3	F1	F3	L2	L2	HL11	C1	C2	C1	C1	C1	C1	C1	HL11	C3	L2	C5	C4	C4	F3	F1	F2	F4
28	F1	F1	F2	F3	CL11	L2	C1	C3	C2	C2	C2	C1	C1	C1	CC12	C2	C2	C2	C3	L4	L5	L5	FF12	F2
29	F3	F1	FF11	F3	C2	H2	C2	C2	C2	C2	C2	C1	C1	HL11	C1	C3	C3	C4	C4	CQ41	FQ31	F2	F2	F2
30	F2	F1			L1		C2	C1	C2	C2	C1	C1	C1	L1	CL11	CL21	CQ21	C3	C5	C3	F4	F3	F1	F2
31		F1	F1	F1		C2	CL11	C2	C3	C1	C1	L1	C2	C2	C1	C1	C2	CH32	C4	C7	FF23	FF13	FF63	F4
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 76	X 78	X 78	X 76	X 68															X 118	X 89	X 76	X 76	X 76
2	X 72	X 72	X 72	X 69	X 61															X 112	X 77	X 66	X 66	X 65
3	X 66	X 66	X 66	X 67	X 60	X 64														X 93	X 81	X 78	X 76	X 79
4	X 78	X 75	X 67	X 61	X 58															X 82	X 77	X 71	X 71	X 65
5	X 64	X 60	X 57	X 58	X 56															X 91	X 82	X 71	X 72	X 71
6	X 72	X 72	X 70	X 61	X 57															X 100	X 81	X 74	X 74	X 75
7	X 75	X 73	X 74	X 66	X 60															X 113	X 97	X 66	X 64	X 64
8	X 63	X 62	X 60	X 57	X 56															X 97	X 79	71	73	X 80
9	X 80	X 77	X 75	X 72	X 67															X 98	X 94	X 85	X 80	X 75
10	X 78	X 79	X 77	X 81	X 61															X 93	X 84	X 73	X 71	80
11	87	83	X 73	X 63	X 56															X 88	X 88	X 87	X 78	X 79
12	X 76	X 72	X 69	X 66	X 66															X 92	X 88	X 85	X 83	X 81
13	X 75	X 75	X 74	X 72	X 67															O X 91	X 95	X 87	X 83	X 87
14	X 88	X 83	X 79	X 75	X 68															X 98	X 85	X 73	X 72	X 72
15	X 72	X 68	X 66	X 64	X 60															X 100	X 104	X 97	X 84	X 79
16	X 74	X 75	X 76	X 74	X 71															X 89	X 88	X 92	X 86	X 86
17	X 86	X 83	80	80	77															X 90	X 96	X 89	A	X 80
18	81	81	X 78	X 73	X 73															X 88	X 84	X 79	X 82	X 81
19	X 79	X 80	X 82	X 79	X 77															X 96	X 75	X 73	X 76	X 71
20	X 69	X 74	X 72	X 65	68															X 108	X 64	X 66	X 70	76
21	75	X 69	X 65	C	X 61									C						X 113	X 94	X 88	90	85
22	87	84	X 72	X 65	X 61															X 110	X 106	X 95	X 92	84
23	88	X 88	101	X 95	X 90															X 103	X 98	X 86	X 83	X 80
24	X 80	X 75	X 76	X 71	X 68															X 96	X 89	X 87	X 86	X 84
25	85	86	81	X 76	X 72															X 86	X 87	X 87	83	X 87
26		89	94	83	82															X 96	X 84	X 79	X 84	X 80
27	X 76	X 71	X 68	X 65	X 61															X 87	X 73	73	79	81
28	84	X 78	71	66	66	69														X 98	X 88	X 74	78	X 82
29	81	86	X 75	X 70	X 67															X 85	X 80	X 82	X 82	85
30	X 81	X 74	X 72	X 65	X 66															X 90	X 91	X 90	84	83
31	X 82	X 81	X 74	X 71	71															X 88	X 84	X 83	X 83	80
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	30	31	2														31	31	31	30	31
MED	X 78	X 75	X 74	X 70	X 66	66														X 96	X 87	X 79	X 80	X 80
U Q	82	83	78	X 75	X 71															X 100	X 94	X 87	X 83	83
L Q	X 74	X 72	X 69	X 65	X 60															X 89	X 81	X 73	X 73	X 75

MAY 2012 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2012 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	71	72	70	62	70	90	100	86	75	80	87	91	93	97	94	100	110	120	112	83	70	70	70
2	68	66	66	63	55	57	84	99	92	82	80	81	83	86	94	106	106	105	114	106	71	60	60	58
3	60	60	60	61	54	58	78	98	94	A	85	86	90	106	107	101	111	105	95	87	75	72	70	72
4	72	68	60	55	51	55	77	74	85	93	96	101	104	102	109	114	94	74	72	75	71	65	64	59
5	58	54	51	52	51	58	72	84	78	70	74	83	86	89	96	102	100	95	96	85	76	64	66	65
6	66	66	64	55	51	56	69	75	87	76	75	76	78	86	101	108	106	108	107	94	75	68	68	69
7	69	67	68	60	54	60	75	82	69	76	80	75	79	85	85	86	76	74	90	106	91	60	58	57
8	57	56	54	51	50	60	82	84	67	62	72	76	80	85	90	93	94	80	83	91	73	F	F	73
9	74	70	68	66	61	65	68	67	79	83	91	98	101	98	93	96	87	93	97	92	88	79	74	68
10	72	72	71	75	55	51	61	73	77	69	A	78	85	93	96	95	97	88	89	87	77	67	65	F
11	F	F	67	57	50	50	60	62	65	55	63	74	80	90	92	92	79	72	73	82	81	80	72	72
12	69	66	63	60	60	68	83	84	81	87	83	86	101	106	106	106	101	86	88	86	82	79	77	75
13	69	69	68	66	61	63	68	80	86	85	90	92	94	98	107	111	107	86	80	85	89	80	77	80
14	82	77	73	68	62	62	70	66	68	71	68	74	82	91	91	86	83	84	A	92	79	67	66	66
15	65	62	60	58	54	61	73	84	66	69	71	80	97	99	92	89	85	78	A	94	98	91	78	73
16	68	69	70	68	65	67	71	A	80	72	74	81	88	98	105	110	108	A	A	83	81	86	80	80
17	80	77	F	F	F	72	90	97	91	94	80	A	91	97	104	112	105	95	84	84	90	82	A	73
18	F	F	72	67	67	73	87	74	72	73	75	82	88	94	101	98	98	99	90	82	77	73	75	75
19	73	74	76	73	71	73	86	90	84	79	A	86	94	90	84	86	93	97	99	90	69	67	70	65
20	63	68	66	58	F	61	78	89	88	A	80	76	82	84	86	90	92	102	103	101	58	60	64	F
21	F	63	59	C	55	61	78	80	67	62	77	82	91	C	99	96	97	104	111	107	88	82	F	F
22	F	F	66	59	56	60	72	73	A	72	71	75	86	92	93	92	96	100	103	104	100	89	86	S
23	F	81	F	88	84	72	69	62	71	75	73	87	80	80	101	94	108	106	100	97	92	80	77	74
24	74	69	70	65	62	69	80	72	73	A	A	72	74	85	89	91	89	86	87	90	83	80	80	78
25	F	F	F	69	66	74	92	79	72	67	66	75	80	A	84	90	92	86	79	80	81	80	F	81
26	F	F	F	F	F	62	67	A	75	81	85	83	80	76	81	88	88	92	93	90	78	72	77	74
27	70	65	62	59	55	59	69	73	72	A	84	73	77	85	88	89	88	90	93	81	66	F	F	F
28	F	72	F	F	F	F	75	86	73	72	80	72	73	80	89	94	91	89	86	92	82	68	F	76
29	F	F	69	64	61	62	76	96	90	A	69	74	79	A	91	96	98	88	84	79	74	76	76	F
30	75	68	66	59	60	66	79	77	78	A	76	79	80	81	84	92	94	88	81	84	85	84	F	F
31	75	75	68	65	F	71	78	73	69	72	76	73	72	74	A	85	88	85	86	82	78	77	77	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	25	26	27	26	30	31	29	30	25	28	30	31	28	30	31	31	30	28	31	31	29	24	23
MED	70	68	66	63	58	62	76	80	78	73	76	80	83	90	93	94	94	90	90	90	81	76	73	73
U Q	74	72	70	68	62	69	82	88	86	82	82	86	91	98	101	102	101	100	100	94	88	80	77	75
L Q	66	66	62	58	54	59	69	73	71	70	72	75	80	85	89	90	88	86	84	83	75	67	66	66

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	A	L	L	UL548	UL548	UL548	A	L	UL468	A						
2								L	L	L	A	L	UL532	UL568	516	UL472	L	L						
3								A	A	A	UL496	UL532	UL524	A	L	A	A	A						
4									A	A		A		A	A	A	A	A	A					
5								A	L	L	UL504	UL532	A	UL516	492	UL500	L	L						
6							L		UL472	UL472	532	UL524	UL540	516	UL492	A	A	A						
7								A	UL500	480	492	UL536	UL524	UL532	L	484	L	A	A					
8							L	A	A	A	A	A	A	A	492	472	UL448	A	A					
9								A	A	A	A	A	A	A	UL528	A	L	L						
10							A	A	A	A	A	A	A	A	A	A	A	A	A					
11						L	L	L	A	A	504	A	UL520	508	500	L	L	A	A					
12									L	A	L	A	UL516	A	A	A	UL456	L						
13								A	A	A	A	A	A	UL528	A	A	A	A	A					
14							A	A	L	A	A	A	A	A	496	A	A	A	A					
15								A	A	A	UL524	A	520	UL488	A	L	L	A	A					
16								A	UL484	A	UL568	516	532	UL528	L	A	A	A	A					
17								L	L	A	A	A	A	A	A	UL516	A	A						
18								A	A	L	A	UL560	UL568	528	484	L	A	L						
19							A	A	A	L	A	A	A	A	A	504	UL480	L						
20							A	A	A	A	532	A	A	532	A	496	A	A	A					
21							A	A	A	476	UL560	544	532	C	A	A	A	A	A					
22								L	A	500	UL540	UL576	UL524	A	UL520	A	A	A	L					
23							A	A	L	508	UL532	L	UL540	UL544	508	L	A	A	A					
24							A	A	A	A	A	UL540	UL536	508	492	UL496	A	A	A					
25							L	A	A	A	A	A	A	A	A	UL484	A	A	A					
26							A	A	A	A	A	524	516	536	UL516	488	UL464	UL428	A					
27							L	A	A	A	A	UL508	A	A	A	492	L	A	A					
28							L	L	A	UL504	A	516	UL504	492	480	UL460	A	L	A					
29						L	L	A	A	A	A	A	A	A	A	A	A	A	A					
30								A	A	A	A	A	A	508	A	A	A	A	A					
31						L		A	A	508	496	A	UL500	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	7	12	13	17	16	13	12	5	1						
MED									UL484	500	UL528	UL532	UL524	528	496	490	UL464	UL428						
U Q									UL500	508	UL536	UL546	UL538	UL534	UL516	UL498	UL474							
L Q									UL472	476	500	520	UL518	508	492	478	UL452							

MAY 2012 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2012 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	256	A	A	A	A	A	A	A	A	A	A	A	A					
2						B	A	A	A	A	A	R	R	A	R	R	A	A	B					
3							A	A	A	A	A	A	R	384	A	A	A	A	B					
4						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
5						B	U A 252	A	A	A	A	A	A	A	A	A	A	R	B					
6						U R 184	A	A	R	R	R	R	R	R	A	A	A	A	B					
7						B	A	A	A	A	R	R	R	A	R	R	A	A	B					
8						B	A	A	A	A	A	A	A	A	A	A	R	A	A					
9						B	U A 256	A	A	A	A	A	A	A	A	A	A	R	A					
10						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
11						U R 184	A	A	A	A	A	A	A	A	A	R	A	A	B					
12						184	256	A	A	A	A	A	A	A	A	A	A	A	B					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	A	A	A	A	A	A	R	A	A	R	A	B					
16						B	A	A	A	A	A	A	A	A	R	A	A	A	B					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
18						U A 192	U A 268	A	A	A	A	A	A	A	A	R	A	A	A					
19						B	A	A	A	A	A	U A 436	A	U A 376	A	A	A	A	A					
20						U R 200	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						A	A	A	A	A	R	A	A	C	A	A	A	A	A					
22						R	272	A	A	A	A	A	R	A	A	A	A	A	A					
23						A	A	A	A	A	A	R	A	A	A	A	A	A	B					
24						U A 176	A	A	A	A	A	A	A	A	A	A	A	A	B					
25						B	U A 264	A	A	A	A	A	A	A	A	R	A	A	A					
26						U A 200	A	A	A	A	A	A	A	A	A	R	R	A	A					
27						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
28						B	A	A	A	A	A	A	R	R	R	R	A	A	A					
29						192	R	A	A	A	A	A	A	A	A	A	A	A	A					
30						U A 184	A	A	A	A	A	A	A	A	A	A	A	A	A					
31						208	A	A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	7					1		2										
MED						U 188	U A 256					U A 436		380										
U Q						U 200	268																	
L Q						U A 184	256																	

MAY 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	20	20	E B 15	18	20	19	G 23	35	J A 57	40	42	42	43	41	43	J A 48	43	J A 44	J A 37	J A 27	J A 21	20	20	E B 15
2	J A 18	E B 14	19	20	E B 14	19	28	35	40	J A 44	J A 50	G	G	38	G	G	37	31	24	J A 24	J A 26	22	J A 34	J A 35
3	J A 30	J A 31	J A 22	J A 38	J A 25	J A 50	J A 55	J A 54	J A 108	J A 80	44	44	G	46	44	J A 52	J A 58	J A 45	J A 58	J A 45	J A 59	J A 28	J A 55	E B 14
4	J A 18	E B 15	J A 22	20	E B 14	J A 31	33	J A 52	J A 66	J A 70	J A 60	J A 67	J A 58	J A 53	J A 49	70	J A 47	90	58	56	J A 86	J A 44	28	28
5	J A 17	J A 21	J A 18	E B 15	E B 14	22	30	40	40	J A 49	J A 46	J A 46	47	45	43	41	34	G	22	E B 14	J A 26	J A 22	J A 20	J A 18
6	E B 15	E B 15	E B 14	E B 14	E B 14	G	32	37	G	G	G	G	G	G	42	J A 55	J A 65	J A 54	J A 45	J A 22	J A 49	E B 14	E B 16	J A 20
7	23	E B 14	22	E B 15	E B 15	J A 23	33	J A 42	J A 43	44	G	G	G	J A 51	G	G	38	J A 50	J A 45	J A 40	J A 24	J A 22	J A 27	E B 15
8	E B 15	E B 15	E B 14	E B 15	E B 14	E B 15	29	J A 47	J A 53	J A 61	J A 55	J A 58	J A 62	45	41	40	G J 30	J A 44	J A 64	J A 54	J A 76	J A 75	J A 74	J A 22
9	J A 25	20	E B 15	E B 15	J A 24	J A 37	31	J A 45	J A 55	J A 54	J A 57	J A 62	J A 64	47	46	46	36	G	28	J A 36	J A 57	E B 14	J A 18	E B 15
10	E B 15	E B 15	J A 21	E B 16	E B 14	E B 16	33	J A 41	J A 61	J A 66	J A 88	J A 57	J A 59	J A 56	J A 56	J A 43	44	J A 47	J A 77	J A 59	J A 47	J A 61	J A 138	J A 44
11	J A 65	J A 17	19	E B 15	E B 14	G	32	38	J A 53	J A 48	J A 48	J A 57	44	J A 48	J A 45	G	35	J A 40	J A 47	J A 30	J A 27	J A 44	J A 46	J A 26
12	J A 17	20	20	21	E B 15	23	32	39	44	J A 48	47	49	J A 47	J A 64	J A 59	J A 47	35	34	23	J A 48	J A 26	J A 44	J A 44	J A 32
13	J A 24	E B 15	E B 15	24	22	22	31	J A 45	J A 80	J A 74	J A 64	J A 81	J A 63	44	J A 53	J A 62	J A 71	J A 77	J A 222	J A 44	J A 34	J A 66	J A 61	J A 48
14	J A 70	J A 19	J A 16	J A 20	J A 21	20	J A 49	J A 44	42	J A 50	J A 56	51	J A 56	49	J A 45	J A 75	41	J A 64	J A 118	J A 115	J A 68	J A 47	J A 36	J A 75
15	E B 15	E B 15	J A 28	J A 29	J A 19	20	33	J A 45	J A 61	J A 54	J A 74	J A 67	J A 56	G	J A 46	35	G	J A 126	J A 100	J A 85	J A 60	J A 20	J A 18	J A 19
16	J A 20	J A 16	J A 17	J A 22	E B 15	23	J A 49	J A 82	J A 48	J A 54	44	46	48	44	G	J A 50	J A 52	J A 139	J A 112	J A 68	J A 130	J A 70	J A 67	J A 29
17	J A 32	J A 30	J A 34	J A 24	J A 19	21	32	36	42	J A 53	J A 56	104	J A 82	J A 88	J A 108	43	J A 46	J A 43	J A 38	J A 45	J A 49	J A 24	J A 99	J A 120
18	J A 55	J A 33	E B 15	J A 72	J A 24	23	32	J A 53	J A 68	J A 51	J A 64	45	J A 73	46	41	G	J A 46	33	J A 31	J A 27	J A 67	J A 47	J A 70	21
19	J A 42	E B 14	21	J A 35	J A 36	J A 30	J A 95	J A 66	J A 78	J A 48	J A 169	52	J A 78	J A 55	48	44	38	34	25	40	J A 35	J A 66	J A 64	J A 61
20	J A 28	J A 26	E B 15	21	20	G	J A 41	J A 48	J A 82	J A 82	J A 51	J A 71	J A 67	J A 54	J A 55	43	J A 93	J A 102	J A 36	J A 61	J A 80	J A 50	J A 72	J A 80
21	J A 46	J A 19	J A 19	C	J A 17	23	37	J A 39	42	J A 79	G	44	J A 47	C	J A 144	58	J A J 60	J A 131	J A 76	J A 45	J A 71	J A 47	J A 61	J A 100
22	J A 99	J A 32	J A 22	J A 25	J A 20	G 18	33	37	J A 86	44	J A 47	44	G	J A 67	J A 64	J A 78	J A 50	J A 54	27	E B 15	J A 60	J A 43	23	J A 34
23	J A 60	J A 80	J A 42	J A 90	J A 97	25	J A 53	J A 52	40	43	43	G	J A 50	J A 62	41	42	J A J 61	J A 131	J A 87	J A 52	J A 44	J A 59	J A 87	21
24	20	E B 16	J A J 27	J A 26	E B 14	22	31	J A 48	J A 57	J A 77	J A 116	J A 49	44	41	43	J A 42	J A 82	J A 55	J A 65	J A 65	46	J A 83	J A 83	J A 55
25	J A 52	J A 19	20	J A 22	E B 15	22	33	J A 47	J A 58	J A 74	J A 60	J A 72	J A 78	J A 108	J A 62	G	43	J A 44	J A 39	J A 59	J A 25	J A 52	J A 43	J A 101
26	J A 82	J A 62	J A 53	J A 37	E B 15	31	J A 64	J A 96	J A 96	J A 107	J A 79	J A 74	J A 47	J A 48	42	G	G 26	36	29	J A 24	20	J A 49	J A 46	59
27	J A 87	J A 44	J A 24	J A 47	J A 37	J A 26	32	J A 48	J A 57	J A 82	J A 70	J A 80	J A 80	J A 91	J A 64	43	37	J A 42	J A 37	J A 23	J A 72	J A 47	J A 72	J A 77
28	J A 52	J A 18	J A 46	J A 48	J A 29	J A 40	32	J A 43	J A 46	40	J A 64	J A 45	G	G	G	G	39	34	J A 41	29	20	J A 78	J A 38	J A 53
29	J A 52	J A 61	J A 29	J A 23	J A 24	23	G	J A 45	J A 58	J A 74	J A 52	J A 56	J A 140	J A 133	J A 59	52	J A 101	J A 71	J A 59	J A 41	J A 43	J A 46	J A 45	J A 52
30	J A 23	20	20	22	20	23	J A 36	J A 43	J A 74	J A 91	J A 64	J A 76	J A 104	42	J A 57	J A 63	J A 70	J A 68	J A 46	J A 60	J A 56	J A 103	J A 70	J A 30
31	J A 53	J A 29	J A 36	J A 33	J A 18	24	33	J A 41	J A 57	J A 48	43	50	44	J A 74	J A 100	J A 49	J A 57	J A 51	J A 39	J A 35	J A 29	J A 29	J A 30	J A 49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31
MED	J A 28	J A 19	J A 20	J A 22	19	23	33	J A 45	J A 57	J A 54	J A 55	J A 51	J A 50	48	J A 46	43	44	J A 47	J A 45	J A 44	J A 46	J A 47	J A 46	J A 34
U Q	J A 53	J A 30	J A 27	J A 33	J A 24	J A 25	J A 37	J A 48	68	74	64	67	J A 67	62	J A 59	J A 52	J A 60	J A 71	J A 65	J A 59	J A 67	J A 61	J A 70	J A 59
L Q	18	E B 15	E B 16	E B 18	E B 14	19	31	39	43	48	44	44	G 44	44	42	G 35	37	36	31	J A 27	J A 26	24	J A 28	21

MAY 2012 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2012 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 16	E B 15	E B 15	E B 15	18	G 22	33	46	37	39	40	42	39	41	44	39	38	31	20	18	15	E B 15	E B 15
2	E B 15	E B 14	E B 14	E B 14	E B 14	18	26	34	36	41	44	G	G	34	G	G	35	30	22	17	21	E B 15	25	24
3	E B 15	20	E B 15	25	E B 15	24	37	38	52	A A 80	42	42	G	45	41	47	52	40	42	42	24	43	33	E B 14
4	E B 15	E B 15	E B 15	E B 15	E B 14	23	29	46	64	66	50	64	55	49	42	50	42	60	55	46	46	20	20	18
5	E B 16	18	E B 15	E B 15	E B 14	20	29	37	39	43	43	43	44	42	41	38	33	G	22	E B 14	21	16	16	E B 15
6	E B 15	E B 15	E B 14	E B 14	E B 14	G	29	34	G	G	G	G	G	G	40	51	60	52	40	E B 18	40	E B 14	E B 16	E B 16
7	E B 17	E B 14	E B 15	E B 15	E B 15	20	29	37	38	41	G	G	G	44	G	G	34	41	39	31	20	E B 15	E B 15	E B 15
8	E B 15	E B 15	E B 14	E B 15	E B 14	E B 15	27	44	48	54	50	55	55	44	38	38	G 27	40	50	48	34	36	35	E B 16
9	17	E B 15	E B 15	E B 15	16	28	30	37	52	50	48	48	58	46	42	44	35	G	24	31	50	E B 14	E B 15	E B 15
10	E B 15	E B 15	16	E B 16	E B 14	E B 16	30	37	57	62	A A 88	52	54	50	54	42	40	46	45	30	34	29	28	30
11	44	E B 15	E B 15	E B 15	E B 14	G	30	36	49	42	41	50	43	42	39	G	32	34	36	17	20	36	36	20
12	E B 15	E B 15	E B 15	E B 15	E B 15	20	29	37	40	44	44	47	44	52	51	44	34	32	22	38	20	25	E B 15	20
13	20	E B 15	E B 15	16	E B 14	19	28	39	67	65	56	76	58	40	47	57	68	52	43	36	28	58	40	32
14	E B 15	E B 15	E B 15	E B 15	17	20	42	42	40	47	52	48	53	46	44	56	40	61	A A 118	36	52	34	16	17
15	E B 15	E B 15	E B 15	22	E B 14	18	32	41	44	50	43	65	45	G	44	34	G	43	A A 100	57	53	E B 15	E B 15	E B 15
16	E B 16	E B 15	E B 15	E B 14	E B 15	21	45	A A 82	40	50	41	44	46	42	G	47	45	A A 139	A A 112	64	66	18	E B 15	20
17	22	16	E B 15	E B 15	E B 14	19	29	34	38	48	46	A A 104	73	75	64	39	42	36	32	34	32	18	A A 99	42
18	36	E B 14	E B 15	E B 15	22	22	30	47	64	46	56	42	46	42	40	G	43	32	23	25	40	18	20	E B 15
19	19	E B 14	E B 16	20	31	21	77	60	70	43	A A 169	50	57	50	47	42	35	30	22	32	32	45	41	32
20	17	E B 15	E B 15	E B 14	E B 15	G	38	42	78	A A 82	46	59	59	43	50	40	82	86	30	46	40	20	47	21
21	32	16	E B 16	C	E B 15	20	34	35	40	38	G	43	42	C	55	53	46	60	67	40	54	38	20	39
22	56	16	17	16	E B 15	G 17	28	34	A A 86	40	42	41	G	60	41	68	43	41	25	E B 15	40	29	19	24
23	33	39	22	38	44	24	49	46	40	42	42	G	46	45	39	38	54	72	76	29	37	30	50	E B 15
24	E B 16	E B 16	16	E B 15	E B 14	20	29	41	51	A A 77	A A 116	43	42	39	40	38	75	43	54	46	41	43	52	18
25	42	E B 14	E B 15	17	E B 15	20	32	41	54	58	49	62	62	A A 108	50	G	42	34	32	30	21	20	18	36
26	24	27	42	18	E B 15	31	44	A A 96	58	71	58	45	43	43	41	G	G 24	31	28	20	E B 15	32	20	17
27	30	E B 15	E B 15	34	29	21	30	45	56	A A 82	66	43	56	72	57	41	36	39	35	20	44	30	20	36
28	32	E B 15	16	17	18	20	30	35	41	38	54	42	G	G	G	G	36	32	36	29	E B 15	37	29	31
29	38	38	19	18	17	22	G	42	51	A A 74	48	50	49	A A 133	57	45	45	58	52	33	37	31	38	42
30	19	E B 14	E B 15	E B 15	E B 14	20	33	38	65	A A 91	59	67	51	41	51	58	64	44	41	57	48	60	31	20
31	29	18	28	21	E B 16	22	30	38	53	45	42	47	43	70	A A 100	46	52	46	37	25	25	25	18	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31
MED	17	E B 15	E B 15	E B 15	E B 15	20	30	38	51	48	46	47	46	44	42	42	42	41	37	31	34	29	20	20
U Q	32	16	16	18	16	22	34	44	58	A A 66	56	55	55	50	51	47	52	52	52	42	44	36	36	32
L Q	E B 15	E B 15	E B 15	E B 15	E B 14	18	29	36	40	42	42	42	G 42	41	40	G 34	35	32	28	20	21	E B 18	E B 16	E B 15

MAY 2012 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	15	15	15	15	14	15	13	18	17	18	21	19	20	14	14	14	15	14	15	15	15	15
2	15	14	15	14	14	15	14	13	16	20	24	21	26	18	19	17	18	13	14	14	13	15	15	14
3	15	14	15	15	15	14	13	13	12	16	18	20	20	22	18	17	17	14	14	15	14	15	15	14
4	15	15	14	15	14	14	15	16	16	21	22	26	26	22	23	18	16	15	15	14	15	16	14	15
5	16	15	15	15	14	14	13	12	20	22	25	19	20	20	18	17	15	16	14	14	14	14	14	15
6	15	15	14	14	14	14	14	14	21	18	20	23	29	22	22	28	18	14	13	14	15	14	16	16
7	17	14	15	15	15	14	14	14	15	17	22	21	21	18	16	16	16	13	14	14	15	15	15	15
8	15	15	14	15	14	15	13	16	14	22	25	24	25	22	18	17	14	15	15	14	15	15	15	16
9	15	15	15	15	15	14	15	18	18	19	22	22	28	24	22	22	14	16	13	14	13	14	15	15
10	15	15	15	16	14	16	13	16	20	30	24	23	23	25	28	20	16	16	14	14	15	16	14	14
11	15	15	15	15	14	14	13	14	18	18	17	21	20	18	20	18	18	13	14	15	14	15	15	15
12	15	15	15	15	15	14	14	13	18	21	20	17	22	20	26	20	16	13	13	14	15	15	15	14
13	15	15	15	14	14	15	15	13	19	21	26	25	26	24	20	24	18	16	15	14	14	14	15	15
14	15	15	15	15	14	14	14	17	17	20	24	25	24	22	17	26	18	19	14	15	15	14	14	15
15	15	15	15	14	14	14	13	14	16	19	23	27	24	17	16	16	14	14	14	14	14	15	15	15
16	16	15	15	14	15	15	14	15	17	18	21	19	17	20	20	18	16	13	18	15	14	15	15	15
17	15	15	15	15	14	15	12	13	16	17	20	39	30	26	26	16	16	13	13	13	13	14	14	15
18	16	14	15	15	15	15	14	15	23	22	21	24	27	26	20	19	14	12	14	14	15	14	15	15
19	15	14	16	14	14	14	14	16	13	18	28	24	29	22	22	20	17	14	13	15	15	14	14	14
20	15	15	15	14	15	14	14	15	18	21	22	26	22	24	22	22	16	16	13	15	15	15	14	16
21	14	15	16	C	15	14	13	13	15	24	26	24	21	C	23	19	18	16	13	14	15	15	15	15
22	15	14	13	14	15	14	14	14	14	16	16	18	26	21	21	22	15	12	13	15	15	15	15	15
23	15	15	14	14	14	13	14	15	17	19	21	22	24	24	22	18	18	14	14	15	15	15	15	15
24	16	16	15	15	14	14	14	14	17	19	24	23	21	19	19	18	16	14	14	14	14	12	14	15
25	14	14	15	14	15	14	14	16	18	28	24	26	27	22	21	17	18	15	14	13	14	14	14	13
26	15	16	15	15	15	14	14	16	14	20	25	23	21	18	18	19	18	14	15	15	14	15	15	16
27	15	15	15	15	14	14	14	17	16	17	22	23	23	24	22	21	21	13	14	14	15	14	15	15
28	14	15	16	15	14	14	15	15	17	18	22	20	24	23	23	25	16	12	12	12	15	15	15	14
29	16	15	14	14	13	15	16	16	16	20	22	26	25	25	24	18	18	13	13	15	14	15	15	14
30	14	14	15	15	14	14	14	16	16	18	26	22	25	22	19	20	21	17	12	14	14	15	15	14
31	15	14	14	13	16	14	16	17	15	19	20	24	22	20	25	21	18	18	14	13	14	13	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	14	14	14	15	16	19	22	23	24	22	21	19	16	14	14	14	15	15	15	15
U Q	15	15	15	15	15	15	14	16	18	21	24	25	26	24	23	21	18	16	14	15	15	15	15	15
L Q	15	14	15	14	14	14	13	14	15	18	20	21	21	20	19	17	16	13	13	14	14	14	14	14

MAY 2012 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2012 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	298	306	312	303	310	331	338	330	358	318	307	306	299	309	294	301	308	325	351	338	288	284	294
2	287	297	301	309	299	302	327	342	346	321	315	299	301	304	294	312	318	311	328	346	315	283	281	273
3	278	284	299	320	306	310	319	342	334	A	324	304	286	299	299	299	321	331	328	326	296	282	285	295
4	303	311	317	318	293	303	338	328	303	306	302	304	312	304	311	331	337	335	313	316	300	308	301	280
5	280	276	294	303	296	315	334	351	338	333	307	305	304	304	304	313	311	321	331	320	315	292	284	286
6	289	291	314	350	295	337	334	330	340	333	312	313	295	293	295	309	304	311	319	330	300	285	281	283
7	277	285	316	321	290	310	339	335	301	314	319	303	298	319	308	315	306	306	306	332	359	301	284	287
8	288	288	302	309	295	326	333	366	337	332	305	302	292	292	300	311	321	311	308	336	300	F	F	281
9	296	301	314	318	295	304	335	320	322	291	282	289	296	295	293	302	295	289	305	301	310	301	288	271
10	270	279	283	328	306	283	321	321	299	308	A	300	293	312	311	312	306	310	317	315	304	314	269	F
11	F	F	305	297	285	295	332	348	335	345	290	297	279	292	306	316	319	307	297	300	303	299	287	283
12	286	284	280	297	303	330	325	325	338	316	304	295	290	300	302	312	321	319	320	303	300	290	284	293
13	281	280	296	304	304	337	308	334	321	302	292	288	292	281	302	311	318	320	295	287	298	298	277	278
14	285	288	290	288	290	302	330	320	328	321	302	294	302	317	329	324	322	320	A	303	299	297	295	286
15	290	288	307	294	289	321	328	354	354	310	293	281	298	307	308	302	312	287	A	298	303	325	287	293
16	281	274	294	300	306	318	332	A	340	325	285	294	274	279	287	307	314	A	A	299	297	289	294	300
17	289	274	F	F	F	293	317	328	295	315	299	A	284	285	294	306	301	308	301	288	295	305	A	274
18	F	F	282	288	297	313	340	354	331	305	304	283	277	292	300	302	315	320	324	312	289	275	275	281
19	275	271	292	285	271	279	297	307	296	281	A	276	292	302	299	297	311	317	331	343	288	274	285	283
20	271	288	283	295	F	301	332	318	338	A	304	293	288	294	283	287	276	298	315	335	356	262	271	F
21	F	284	301	C	296	312	322	312	320	341	306	303	306	C	310	292	302	303	325	333	299	306	F	F
22	F	F	302	302	305	324	343	355	A	326	260	272	290	286	289	271	282	283	303	292	305	278	268	S
23	F	271	F	299	312	336	334	348	310	320	300	302	306	269	302	288	298	310	301	311	297	277	275	278
24	278	287	293	301	297	324	337	338	326	A	A	284	293	295	304	296	302	303	307	311	292	278	300	283
25	F	F	F	298	289	306	330	335	324	316	296	299	308	A	290	309	304	325	309	302	294	268	F	283
26	F	F	F	F	F	327	324	A	309	308	310	305	310	295	297	302	298	315	309	318	297	277	299	287
27	293	292	302	305	299	324	329	322	332	A	314	308	273	288	288	294	293	307	329	327	314	F	F	F
28	F	311	F	F	F	F	315	337	339	317	304	300	278	289	294	303	301	308	304	318	330	286	F	280
29	F	F	307	298	293	300	301	343	333	A	298	293	298	A	298	298	312	317	331	308	283	286	296	F
30	298	288	298	295	307	309	322	331	329	A	300	291	289	299	291	298	312	320	306	295	290	314	F	F
31	291	299	301	272	F	300	315	342	279	299	327	303	313	281	A	311	308	305	314	315	294	294	298	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	25	26	27	26	30	31	29	30	25	28	30	31	28	30	31	31	30	28	31	31	29	24	23
MED	286	288	301	301	296	310	330	335	330	316	304	299	293	295	300	303	308	310	314	315	300	289	284	283
U Q	290	294	306	312	304	324	334	346	338	329	311	303	304	303	306	312	318	320	325	330	310	301	294	287
L Q	278	280	293	295	293	302	321	324	310	307	297	291	288	288	294	297	301	306	306	301	295	278	279	280

MAY 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	A	L	L	U L 363	U L 359	U L 353	A	L	U L 362	A						
2								L	L	L	A	L	U L 362	U L 335	355	U L 365	L	L						
3								A	A	A	U L 406	U L 374	U L 382	A	L	A	A	A						
4									A	A		A		A	A	A	A	A	A					
5								A	L	L	U L 398	U L 356	A	U L 378	379	U L 349	L	L						
6							L		U L 382	U L 422	380	U L 372	U L 367	371	U L 382	A	A	A						
7								A	U L 365	378	394	U L 388	U L 369	U L 346	L	366	L	A	A					
8							L	A	A	A	A	A	A	A	378	377	U L 352	A	A					
9								A	A	A	A	A	A	A	U L 338	A	L	L						
10							A	A	A	A	A	A	A	A	A	A	A	A	A					
11						L	L	L	A	A	382	A	U L 375	369	350	L	L	A	A					
12									L	A	L	A	U L 379	A	A	A	U L 366	L						
13								A	A	A	A	A	A	U L 370	A	A	A	A	A					
14							A	A	L	A	A	A	A	A	378	A	A	A	A					
15								A	A	A	U L 375	A	378	U L 417	A	L	L	A	A					
16								A	U L 384	A	U L 361	387	362	U L 373	L	A	A	A	A					
17								L	L	A	A	A	A	A	A	U L 345	A	A						
18								A	A	L	A	U L 348	U L 344	363	405	L	A	L						
19							A	A	A	L	A	A	A	A	A	347	U L 349	L						
20							A	A	A	A	359	A	A	358	A	356	A	A	A					
21							A	A	A	414	U L 354	374	380	C	A	A	A	A	A					
22								L	A	396	U L 367	U L 348	U L 377	A	U L 364	A	A	A	L					
23							A	A	L	385	U L 360	L	U L 361	U L 339	363	L	A	A	A					
24							A	A	A	A	A	U L 363	U L 380	383	378	U L 356	A	A	A					
25							L	A	A	A	A	A	A	A	A	U L 380	A	A	A					
26							A	A	A	A	A	358	387	360	U L 362	360	U L 354	U L 359	A					
27							L	A	A	A	A	U L 377	A	A	A	344	L	A	A					
28							L	L	A	U L 384	A	396	U L 392	394	360	U L 373	A	L	A					
29						L	L	A	A	A	A	A	A	A	A	A	A	A	A					
30								A	A	A	A	A	A	391	A	A	A	A	A					
31						L		A	A	382	370	A	U L 399	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	7	12	13	17	16	13	12	5	1						
MED									U L 382	385	U L 372	U L 372	U L 377	370	364	358	U L 354	U L 359						
U Q									U L 384	414	388	382	U L 381	380	378	370	U L 364							
L Q									U L 365	382	U L 360	U L 357	U L 362	U L 356	358	348	U L 350							

MAY 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 h′F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								248	262	242	272	304	300	306	288	310	286	286						
2								250	248	256	278	312	300	304	316	282	270	264						
3								246	244	A	270	302	322	308	296	290	270	242						
4									E A 304	E A 300		288		294	276	266	250	E A 264	E A 290					
5								234	264	292	308	312	302	316	304	284	274	268						
6							270		250	254	330	302	318	342	306	288	276	262						
7								244	332	312	288	324	334	292	298	294	278	282	284					
8							272	228	248	E A 302	318	336	342	324	314	292	272	266	E A 270					
9								246	292	310	332	318	302	300	314	294	304	306						
10							268	288	E A 298	E A 342	A	326	342	296	288	282	270	264	258					
11						314	276	262	288	278	382	338	364	326	294	284	280	280	268					
12									266	288	324	318	316	298	302	278	268	264						
13								262	272	E A 308	306	E A 370	316	338	306	282	264	242	E A 284					
14							270	304	294	320	E A 326	356	326	294	284	290	280	E A 278	A					
15								242	232	E A 324	326	E A 376	322	296	302	308	280	E A 296	A					
16								A	268	260	366	338	350	338	324	286	272	A	A					
17								252	290	268	E A 268	A	E A 358	E A 348	320	296	272	252						
18								232	E A 306	290	E A 314	354	366	322	304	288	278	266						
19							E A 366	E A 262	E A 310	338	A	348	322	314	316	326	296	272						
20							262	282	E A 294	A	324	E A 344	E A 346	338	328	324	E A 412	E A 334	262					
21							244	238	284	260	322	326	324	C	292	298	298	E A 286	266					
22								238	A	296	310	350	342	330	328	E A 336	306	302	274					
23							E A 244	250	304	306	322	302	322	376	310	308	296	E A 280	E A 292					
24							238	240	E A 262	A	A	346	358	338	298	312	E A 334	292	E A 270					
25							268	250	E A 274	E A 332	378	E A 350	E A 336	A	326	298	290	262	252					
26							254	A	E A 324	E A 334	294	316	310	348	344	310	300	284	256					
27							260	262	262	A	302	316	E A 378	E A 370	320	318	314	272	248					
28							284	256	252	308	314	328	366	342	326	304	278	280	E A 260					
29						304	304	250	244	A	344	352	332	A	316	296	286	268	248					
30								256	E A 288	A	E A 330	E A 374	326	324	338	316	E A 282	260	260					
31						278		250	E A 338	308	284	330	318	E A 420	A	298	300	270	270					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	15	26	30	25	27	30	30	28	30	31	31	30	18					
MED						304	268	250	U 268	295	316	324	324	320	308	295	279	268	262					
U Q						314	276	262	E A 298	E A 316	330	350	346	340	320	310	298	284	E A 274					
L Q						278	254	242	262	273	294	316	318	302	298	286	272	264	258					

MAY 2012 h′F2 (KM)

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 h′F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 280	E B 272	E B 256	226	226	242	224	210	A	208	204	202	216	206	A	E A 256	E A 236	A	242	214	202	220	E B 264	E B 270
2	E B 276	E B 262	E B 248	E B 238	E B 242	242	228	218	210	206	A	192	198	204	212	232	222	216	240	212	196	220	E A 298	E A 324
3	E B 298	E A 310	E B 264	E A 258	228	E A 250	236	A	A	A	194	200	200	A	246	A	A	A	234	E A 230	E A 236	E A 296	E A 306	E B 284
4	E B 254	226	E B 208	238	E B 260	E A 244	222	228	A	A	284	A	284	A	A	A	A	A	A	E A 250	E A 302	228	E A 272	E A 274
5	E B 294	E A 308	E B 274	E B 258	E B 256	224	238	A	202	218	200	230	A	216	204	224	214	210	238	216	226	224	E A 272	E B 282
6	E B 284	E B 266	E B 242	212	E B 242	232	212	216	206	176	200	230	216	222	222	A	A	A	238	218	E A 258	E B 246	E B 272	E B 286
7	E B 282	E B 280	E B 246	222	E B 256	246	228	A	214	216	216	206	218	E A 254	204	212	210	A	A	238	204	210	E B 258	E B 270
8	E B 282	E B 282	E B 250	E B 246	E B 266	230	210	A	A	A	A	A	A	A	208	210	210	A	A	E A 252	E A 242	E A 338	E A 336	E B 280
9	E A 272	E B 252	E B 246	E B 230	E A 244	236	224	A	A	A	A	A	A	A	E A 256	A	236	242	234	E A 248	E A 260	E B 242	E B 246	E B 290
10	E B 308	E B 284	E A 280	E B 234	208	E B 250	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 246	E A 240	E A 262	E A 330	E A 344
11	E A 354	E B 262	E B 250	224	E B 252	250	228	204	A	A	204	A	202	218	224	210	212	A	A	E A 260	E A 254	E A 266	E A 270	E A 286
12	E B 256	E B 272	E B 276	E B 264	E B 244	230	220	216	218	A	208	A	232	A	A	A	216	230	244	E A 238	E A 248	E A 264	E B 260	E B 270
13	E A 280	E B 286	E B 256	E A 254	234	224	218	A	A	A	A	A	A	214	A	A	A	A	A	E A 268	E A 264	E A 288	E A 308	E A 322
14	240	E B 258	E B 258	E B 258	220	230	A	A	216	A	A	A	A	A	E A 238	A	A	A	A	E A 260	E A 264	E A 258	E A 260	E A 276
15	E B 272	E B 278	E B 264	E B 252	E A 258	234	232	A	A	A	218	A	E A 240	186	A	220	204	A	A	E A 296	E A 288	212	E B 234	E B 248
16	E B 268	E B 294	E B 272	E B 246	E B 236	210	E A 252	A	214	A	204	204	234	206	218	A	A	A	A	E A 300	E A 332	E A 254	E B 238	E B 266
17	E A 266	E A 290	E B 288	E B 276	E B 260	230	222	204	202	A	A	A	A	A	A	216	A	A	230	E A 260	E A 260	230	A	E A 306
18	E A 316	E B 282	E B 266	E B 264	E A 256	240	230	A	A	E A 250	A	216	E A 236	208	204	206	A	226	232	230	E A 278	E A 240	E A 280	E B 268
19	E A 286	E B 290	E B 264	E A 288	E A 322	244	A	A	A	214	A	A	A	A	A	E A 246	222	216	228	224	E A 246	E A 356	E A 318	E A 312
20	E A 282	E B 272	E B 248	E B 248	E B 284	242	A	A	A	A	E A 258	A	A	206	A	216	A	A	A	232	218	E A 332	E A 384	E A 326
21	E A 294	E A 264	234	C	E B 258	234	A	A	A	202	198	212	210	C	A	A	A	A	A	226	E A 272	E A 254	E A 280	E A 270
22	E A 330	E A 250	E A 254	E A 244	E B 242	228	216	198	A	192	202	200	220	A	226	A	A	A	216	E B 260	E A 252	E A 270	E A 272	E A 280
23	E A 340	E A 330	E A 300	E A 268	E A 254	226	A	A	220	212	202	222	E A 250	E A 260	216	222	A	A	A	E A 242	E A 250	E A 234	E A 326	E B 270
24	E B 270	E B 272	E A 252	E B 234	E B 258	234	A	A	A	A	A	212	200	190	212	216	A	A	A	E A 262	E A 274	E A 316	E A 298	E A 244
25	E A 320	E B 250	E B 248	E A 260	E B 282	232	226	A	A	A	A	A	A	A	A	212	A	A	A	E A 248	E A 248	E A 258	E A 296	E A 300
26	E A 306	E A 314	E A 280	E A 242	E B 234	212	A	A	A	A	A	E A 266	208	214	222	214	214	222	A	232	226	E A 296	E A 254	E A 264
27	E A 282	E A 246	E B 238	E A 282	E A 274	230	208	A	A	A	A	206	A	A	A	234	222	A	A	212	E A 270	E A 330	E A 308	E A 298
28	E A 292	232	230	E A 262	E A 262	230	226	210	A	202	A	196	198	192	214	214	A	218	A	E A 238	212	E A 312	E A 332	E A 298
29	E A 304	E A 288	228	E A 262	E A 272	234	222	A	A	A	A	A	A	A	A	A	A	A	A	E A 238	E A 282	E A 296	E A 282	E A 306
30	E A 256	E B 260	E B 246	E B 244	E B 258	228	230	A	A	A	A	A	A	202	A	A	A	A	A	E A 292	E A 302	E A 286	E A 280	E A 290
31	E A 292	E A 260	E A 248	E A 302	E B 288	238	224	A	A	E A 238	224	A	204	A	A	A	A	A	A	228	E A 254	E A 268	E A 246	E A 306
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	23	9	9	12	15	15	18	16	16	17	12	8	11	31	31	31	30	31
MED	E A 282	E B 272	E B 252	E 250	E B 256	232	224	210	214	207	204	206	211	206	215	215	214	220	234	E A 238	E A 254	E A 262	E A 280	E A 284
U Q	E A 304	E A 288	E B 266	E A 262	262	242	230	217	217	217	218	222	E A 234	217	225	228	222	228	240	E 260	E A 272	E A 296	E A 308	E A 306
L Q	E 272	E 260	E B 246	238	242	230	220	204	204	202	200	200	202	203	210	212	211	216	230	228	236	234	E B 260	E A 270

MAY 2012 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 h′E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
						116	122	122	112			112	114		118	118	118	114						
2						B				A	A			A					B					
						122	122	110					124	116	112	110								
3							A		A	A	A	A					A	A	B					
						B		A	A	A	A	A	A	A	A	A								
4						118																		
5						B				A	A	A		A	A	A	A		B					
						120	120	120					120					118						
6																	A	A	B					
						118	122	122	122	122	116	116	122	122	128	126								
7						B			A					A				A	B					
						116	114			114	114	124	116		116	116	122							
8						B		A	A	A	A	A	A	A	A	A								
						114											118	A	A					
9						B		A	A	A	A	A	A	A	A	A	A							
						118												112	114					
10						B		A	A	A	A	A	A	A	A	A	A	A	B					
						110																		
11									A	A	A	A	A	A	A		A	A	B					
						120	116	116								116								
12									A	A	A	A	A	A	A	A	A		B					
						118	120	112										116						
13						B		A	A	A	A	A	A	A	A	A	A	A	B					
						112																		
14						B				A	A	A	A			A		A	A					
						114	110	112						116	122		122							
15						B	A	A	A	A	A	A	A		A	A		A	B					
														114			114							
16						B		A		A	A	A	A			A	A	A	B					
						120			124					120	120									
17						B			A	A	A	A	A	A	A	A								
						114	112										112	A	B					
18									A	A	A	A	A	A					A					
						118	120	108							108	114	114	116						
19						B	A	A	A	A	A		A											
												122		128	122	124	118	114	114					
20								A	A	A	A	A	A	A	A	A	A	A	A					
						116	116																	
21								A	A	A		A	A	C	A	A	A	A	A					
						120	114				118													
22									A	A	A	A			A	A	A	A	A					
						120	114	110					112	116										
23							A	A	A					A	A		A	A	B					
						122				110	114	116			118									
24								A	A	A	A	A	A	A	A	A	A	A	B					
						118	118																	
25						B		A	A	A	A	A	A	A	A			A	A					
						114										112	120							
26							A	A	A	A	A	A	A	A	A									
						122										114	114	114	114					
27						B		A	A	A	A	A	A	A	A			A	A					
						114										114	118							
28						B	A	A	A	A	A	A							A					
													114	116	122	122	116	114						
29								A	A	A	A	A	A	A	A			A	A					
						118	116									116								
30								A	A	A	A	A	A	A				A	A					
						120	112								112	114								
31									A		A	A		A	A			A	A					
						116	124	116		116			120			114								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	25	13	5	4	4	5	8	8	12	15	13	8	3					
MED						118	116	114	120	115	115	116	118	116	119	116	118	114	114					
U Q						120	120	121	123	119	117	123	121	121	122	120	119	116	114					
L Q						118	114	110	112	112	114	114	114	116	114	114	114	114	114					

MAY 2012 h′E (KM)

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	96	96	B	120	114	168	106	122	106	104	102	102	104	104	126	122	116	116	94	94	94	94	94	B
2	96	B	102	98	B	140	128	124	120	104	104	G	G	94	G	G	120	116	102	104	104	102	96	94
3	98	96	96	96	118	106	104	116	100	96	102	98	G	150	128	112	104	104	106	102	102	100	96	B
4	94	B	106	92	B	92	122	108	106	102	104	100	96	100	104	98	98	102	100	100	110	108	102	102
5	96	92	96	B	B	128	126	118	118	108	104	104	114	104	104	104	104	G	106	B	96	98	98	98
6	B	B	B	B	B	G	134	118	G	G	G	G	G	G	122	126	108	106	108	104	102	B	B	100
7	100	B	92	B	B	138	126	116	106	110	G	G	G	100	G	G	130	106	106	96	96	100	98	B
8	B	B	B	B	B	B	116	106	100	100	98	98	102	104	104	104	102	112	114	96	102	108	104	104
9	100	102	B	B	100	96	128	108	102	102	102	100	100	100	104	110	130	G	116	104	102	B	102	B
10	B	B	94	B	B	B	120	104	102	102	100	102	104	98	102	98	100	108	104	100	102	100	102	100
11	100	100	98	B	B	G	118	116	106	106	106	104	104	102	100	G	102	100	100	106	102	102	100	98
12	98	98	98	94	B	162	140	120	106	104	102	100	102	108	104	104	106	124	116	100	100	94	100	98
13	94	B	B	92	92	146	130	106	104	106	102	100	96	100	100	100	98	96	94	90	90	100	98	106
14	104	102	100	94	94	122	124	116	116	106	106	104	102	124	118	100	122	106	104	100	104	102	96	100
15	B	B	102	92	94	118	102	104	102	102	100	98	100	G	102	98	G	104	106	104	112	106	106	104
16	98	98	94	96	B	138	122	104	118	102	102	102	100	112	G	108	104	106	104	100	104	100	100	96
17	96	96	96	98	98	126	110	116	104	102	104	104	98	100	100	104	124	104	106	104	102	100	100	100
18	102	98	B	104	92	130	120	108	104	102	104	108	106	102	100	G	118	118	106	104	104	104	102	102
19	100	B	102	98	98	106	104	102	100	104	94	144	104	120	120	124	118	118	110	100	102	102	98	98
20	98	98	B	100	94	G	118	106	104	98	98	96	96	96	98	108	106	100	104	104	102	102	100	98
21	98	100	102	C	104	126	116	106	106	104	G	106	104	C	100	118	108	104	102	102	98	98	106	100
22	100	98	94	96	104	98	152	118	102	102	100	104	G	118	106	108	104	102	104	B	100	100	100	100
23	100	100	100	96	96	120	106	108	102	118	118	G	106	102	112	108	106	104	100	102	102	96	96	100
24	98	B	98	102	B	128	118	104	104	96	96	100	102	102	102	102	96	102	104	104	100	104	104	104
25	100	100	98	98	B	120	122	106	104	104	106	100	98	98	98	G	118	108	106	96	100	100	100	100
26	98	98	96	96	B	126	104	104	104	104	102	102	104	104	112	G	102	116	112	108	96	104	110	104
27	98	100	100	96	96	104	120	108	104	100	100	100	100	100	102	124	122	106	106	104	104	104	102	98
28	98	100	100	100	102	104	106	102	106	104	100	104	G	G	G	G	124	116	106	104	106	100	100	100
29	100	96	96	96	100	136	G	106	104	104	104	102	100	100	104	120	108	104	102	104	104	104	102	100
30	98	98	98	98	98	128	116	102	102	98	96	96	98	108	120	120	104	104	102	100	100	98	98	100
31	94	96	96	96	96	142	122	116	104	112	108	108	114	106	104	118	108	104	104	102	102	100	100	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	21	24	23	18	26	30	31	30	30	28	27	25	27	27	24	30	29	31	29	31	29	30	27
MED	98	98	98	96	98	126	120	108	104	104	102	102	102	102	104	108	107	106	104	102	102	100	100	100
U Q	100	100	100	98	102	138	126	116	106	104	104	104	104	108	112	119	118	114	106	104	104	104	102	102
L Q	96	96	96	96	94	106	110	104	102	102	100	100	99	100	100	103	104	104	102	100	100	100	98	98

IONOSPHERIC DATA STATION Kokubunji

MAY 2012 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0′N LON.139°29.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2		F1	F1	H2	L2	CL12	L2	L2	L2	L2	L2	L2	CL12	CL22	CL22	CL22	L3	F3	F3	F2	F1	
2	F2		F1	F2		H1	CL12	CL22	CL22	L2	L2			L2			C2	C2	L3	F2	F5	F1	F4	F4
3	F2	F4	F2	F2	F2	F3	L2	C2	L2	L3	L2	L2		H1	CL11	CL21	L3	L2	L4	F4	F4	F4	F5	
4	F2		F1	F1		L2	C1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	L4	F3	F4	F2	F2	F2
5	F1	F1	F1			C2	CL21	CL21	CL11	L2	L2	L2	C1	L2	L2	L2	L2		L2		F3	F2	F2	F2
6							C2	C1							C1	C2	L2	L2	L3	F2	F5			F2
7	F2		F1			H2	C2	CL21	L2	L2				L2			CL11	L3	L3	F4	F3	F3	F2	
8							C2	L2	L3	L2	L2	L3	L2	L2	L2	L2	L2	CL22	CL24	F4	F3	F4	F4	F2
9	F2	F1			F3	L3	CL22	L2	L2	L2	L2	L2	L2	L2	L2	L2	CL12		C2	F3	F3		F2	
10			F2				C1	L2	L2	L3	L3	L2	L2	L2	L2	L2	L2	L2	L3	F3	F3	F3	F3	F5
11	F5	F2	F1				C2	C2	L2	L2	L2	L2	L2	L2	L2		L2	L2	L3	F2	F2	F3	F3	F3
12	F2	F1	F1	F2		H1	H1	CL32	L2	L2	L2	L2	L2	L2	L2	L2	L2	CL22	C2	F5	F3	F3	F2	F4
13	F2			F1	F1	H1	C1	L2	L3	L2	L2	L2	L2	L2	L2	L2	L2	L3	L3	F3	F3	F4	F4	F5
14	F2	F1	F2	F2	F3	C2	C2	C2	CL11	L2	L2	L2	L2	C1	CL11	L2	C2	L2	L3	F2	F3	F3	F2	F2
15			F1	F4	F1	C1	L1	L2	L2	L2	L2	L2	L2		L2	L2		L2	L3	F4	F6	F3	F1	F2
16	F1	F2	F1	F1		H1	CL21	L3	CL21	L2	L2	L2	L2	C1		L2	L2	L4	L3	F4	F4	F3	F3	F2
17	F3	F2	F2	F2	F1	C2	C2	C2	L2	L2	L2	L2	L2	L2	L2	L2	CL21	L2	L2	F4	F3	F4	F4	F3
18	F3	F2		F2	F4	HL21	C2	C2	L2	L2	L2	L2	L2	L2	L2		CL22	CL22	L2	F5	F4	F3	F3	F2
19	F2		F2	F4	F4	L2	L3	L3	L2	L2	L3	HL12	L2	C1	C2	C1	C2	C2	C3	F4	F5	F4	F4	F3
20	F2	F2		F1	F1		C1	L2	L4	L2	L2	L2	L2	L2	L2	L2	L3	L3	L2	F3	F3	FF32	F4	F3
21	F4	F2	F3		F1	C1	C2	L2	L2	L2		L2	L2		L2	CL32	L2	L3	L4	F4	F4	F3	F3	F3
22	F3	F4	F3	F3	F1	L2	HL11	CL11	L3	L2	L2	L2		C2	L2	L2	L2	L2	L2		F4	F4	F3	F5
23	F3	F4	F3	F3	F4	CL12	L3	L2	L2	C2	C2		L2	L2	C1	L2	L2	L3	L3	F4	F3	F5	F5	F2
24	F2		F2	F1		C2	C2	L2	L3	L2	L2	L2	L2	L2	L2	L2	L3	LL32	L4	F5	F4	F3	F4	F2
25	F3	F2	F2	F2		C1	C2	L3	L2	L2	L2	L2	L2	L3	L3		CL11	L2	L3	F3	F3	F2	F5	F5
26	F3	F3	F4	F2		C2	L3	L3	L3	L3	L2	L2	L2	L2	L2		L2	CL31	CL21	F3	F1	F4	F3	F3
27	F3	F3	F3	F4	F4	L2	C2	L2	L2	L2	L3	L2	L2	L2	L2	C2	C2	L2	L2	F3	F3	F5	F3	F4
28	F4	F2	F4	F3	F2	L3	L2	L2	L2	L2	L2	L2					CL11	C1	L2	F3	F3	F3	F5	F4
29	F5	F4	F4	F3	F2	H2		L2	L2	L3	L2	L2	L2	L2	L2	C2	L2	L3	L3	F3	F4	F3	F6	F6
30	F5	F2	F2	F1	F1	C1	C2	L2	L2	L2	L2	L2	L2	L2	C2	C3	L2	L3	L4	F4	F5	F5	F3	F3
31	F3	F2	F4	F3	F2	H2	C2	C1	L2	C2	L2	L2	C1	L2	L2	C2	L2	L2	L3	F4	F4	F5	F4	F6
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 87	X 92	X 90	X 88	X 75	X 73														X 122	X 93	X 76	X 76	X 77
2	X 77	X 76	X 77	X 75	X 64	X 63														A	X 92	X 87	O X 86	O X 85
3	O X 82	X 81	X 79	X 72	X 70	O X 70															A	A	A	O X 81
4	O X 76	X 79	X 82	70	X 67	X 61														X 102	X 88	X 74	70	70
5	66	61	61	X 59	X 56	X 55														O X 102	X 81	O X 74	X 84	X 81
6	X 82	X 82	X 78	X 70	X 61	X 59														X 103	X 82	X 72	X 73	X 74
7	X 74	X 74	X 72	X 68	X 62																O X 109	X 66	X 66	X 66
8	X 69	X 69	X 66	63	X 58	X 58														X 97	X 88	X 72	76	A
9	68	80	83	81	77	64															X 95	O X 81	X 72	X 74
10	X 75	X 77	X 79	X 80	X 64	X 51	X 70													X 97	A	X 77	X 75	72
11	X 68	75	77	X 68	68	X 66															X 88	X 79	X 77	X 70
12	X 72	76	75	76	77	76															X 94	X 82	X 80	78
13	X 74	X 76	X 68	73	73																X 92	X 83	76	78
14	X 80	78	78	79	79	73															X 86	X 71	73	76
15	79	80	82	77	X 66																X 98	O X 83	X 83	X 78
16	X 78	X 78	X 79	X 72	X 63	68															O X 101	X 99	X 86	X 96
17	91	X 88	X 94	85	82	81															O X 103	X 89	X 79	X 80
18	X 79	X 74	77	X 74	X 71															X 95	X 86	X 80	X 78	X 82
19	X 86	X 83	X 84	X 84	X 80																X 78	X 76	79	X 81
20	X 75	74	X 76	69	X 65																X 78	O X 73	X 71	X 77
21	X 75	X 68	X 72	X 63	65	66															X 102	X 83	X 75	76
22	X 84	X 74	79	76	67																X 101	X 88	X 84	X 86
23	X 88	X 87	X 84	X 88	X 75																X 98	X 84	X 84	X 82
24	X 84	X 92	X 92	X 76	X 74																X 95	X 90	X 78	91
25	X 104	X 99	X 92	A	X 77	X 80															O X 75	X 83	X 83	X 81
26	X 85	X 85	X 81	X 70	X 70																X 85	X 78	X 82	X 82
27	X 74	75	X 74	62	X 60																X 76	X 74	X 74	74
28	X 80	79	73	69	70	68															X 85	X 85	X 89	X 84
29	90	X 84	X 79	70	63	64															X 80	X 78	X 77	X 76
30	78	X 82	76	76	X 72																X 90	76	A	76
31	X 78	75	75	71	71	69															X 83	X 81	X 76	X 81
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	19	1													7	29	30	29	30
MED	X 78	X 78	X 78	72	X 70	X 66	X 70													X 102	X 88	X 80	X 77	X 78
U Q	X 84	X 83	X 82	77	75	73														X 103	X 96	X 83	X 83	X 82
L Q	X 74	X 75	X 75	69	X 64	X 61														X 97	X 82	X 74	X 74	76

MAY 2012 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	81	86	84	82	69	67	80	94	76	76	79	R 89	U R 89	95	R	R 100	U R 101	J R 116	U R 120	116	87	70	70	71
2	71	70	71	69	58	57	70	U R 99	J R 91	78	78	U R 79	A	97	R 98	J R 111	J R 113	A	U R 91	A	86	81	U R 80	R 79
3	76	75	73	65	64	64	71	90	A	A	A	80	J R 87	J R 90	103	R 112	R 118	A	A	85	A	A	A	75
4	70	72	J R 76	F 61	61	55	65	78	J R 88	97	92	U R 93	U Y 100	U R 115	U R 119	U R 118	J R 113	U Y 104	99	96	R 82	68	F 62	F 62
5	F 54	F 49	F 50	53	50	48	66	66	69	72	73	84	U R 88	Y	Y	J R 116	R 117	J R 114	111	96	70	68	73	75
6	76	76	72	64	55	53	R 64	75	78	73	R 76	78	R 86	U R 96	105	U Y 103	111	112	U R 106	97	76	66	68	68
7	68	68	R 66	62	56	56	73	75	79	R 84	R 82	R 78	R 90	J R 98	U Y 99	J R 113	U R 105	98	J Y 104	U Y 124	U Y 103	60	60	60
8	64	62	59	53	53	R 53	66	76	71	63	70	R 79	A	A	A	A	A	R 103	106	92	R 83	R 66	F 64	A
9	F 64	F 67	J R 76	J R 68	F 62	R 56	60	67	78	80	U R 81	U R 89	97	R 97	95	U Y 101	102	94	U R 97	96	J Y 89	U R 75	67	68
10	69	71	73	74	58	45	64	71	70	68	74	82	A	A	A	R 104	R 108	U R 107	R 102	91	A	71	69	F 66
11	62	68	68	62	58	60	58	65	62	60	68	76	90	J R 94	U Y 103	Y	R 98	R 92	R 91	A	U R 82	73	70	64
12	66	J R 67	F 66	F 65	65	F 65	74	A	A	R 74	81	J R 85	U R 100	U R 106	J R 111	R	R 107	97	86	86	U R 88	76	74	R 68
13	68	70	F 64	F 62	61	62	Z 66	R 74	74	72	85	94	R 92	U R 102	J R 112	U R 132	R 120	97	88	88	R 86	77	F 69	F 69
14	74	F 69	F 64	F 65	F 66	F 64	71	77	84	74	70	R 83	92	96	R 99	99	90	A	94	U R 94	80	65	64	F 66
15	F 69	69	73	F 66	60	60	77	77	A	A	A	A	A	102	92	92	90	A	95	96	R 92	U R 77	77	72
16	72	72	73	66	57	F 56	72	82	70	70	77	88	U R 93	U Y 104	117	U Y 111	R 101	A	A	92	95	93	81	91
17	J R 80	F 80	J R 88	F 80	F 71	F 71	80	84	88	R 80	U R 89	B	U R 98	U R 105	U R 108	U R 106	116	104	96	R 96	U R 97	83	73	74
18	73	U R 68	69	V 68	65	66	80	78	72	A	R 78	U R 77	R 86	U R 92	U R 98	U R 102	U R 103	104	R 98	89	80	74	72	76
19	80	77	78	78	74	74	82	89	80	80	U R 80	89	U R 103	R 100	R 101	R 102	U R 105	J R 109	R 108	90	72	70	70	75
20	69	F 69	70	F 58	59	59	72	J R 94	R 84	77	78	77	U R 86	92	A	100	U R 101	R 104	A	A	72	67	65	71
21	69	F 58	F 64	57	F 52	F 52	71	73	56	67	76	J R 83	U R 91	U Y 94	U R 101	J Y 105	J R 106	R 119	U R 119	J R 115	96	U R 77	69	R 68
22	77	68	F 68	64	F 59	62	67	67	68	72	70	77	U R 86	R 94	J R 87	A	U R 102	Y	114	R 111	95	83	80	R 80
23	82	81	78	82	69	62	72	82	75	67	A	R 87	R 85	80	92	95	104	U R 108	110	R 100	92	78	78	76
24	78	R 86	86	70	68	66	73	73	72	A	72	77	U R 82	A	98	U R 95	R 100	96	96	U R 97	U R 89	84	72	F 77
25	J R 98	J R 93	86	A	71	74	89	72	67	A	70	78	82	R 91	J R 100	J R 113	U R 110	98	J R 92	A	U S 69	R 77	77	75
26	79	79	74	64	64	J R 74	82	78	82	R 81	A	A	77	86	R 88	R 93	R 98	97	94	92	79	72	R 77	R 76
27	68	F 65	68	F 55	54	54	62	75	69	82	78	A	82	82	U R 88	96	97	100	88	80	70	67	68	F 64
28	F 74	R 70	F 64	F 59	F 63	60	66	81	72	69	73	73	76	86	U R 92	105	111	R 111	99	98	R 79	U R 79	83	R 78
29	F 79	78	73	F 60	F 56	F 56	69	82	83	70	70	72	74	85	R 90	102	U R 102	R 100	93	74	74	72	71	70
30	F 68	76	F 66	F 66	66	68	74	82	74	74	R 73	R 80	78	R 81	91	100	110	96	86	83	R 84	J R 68	A	F 68
31	72	F 68	F 66	F 62	F 62	F 62	65	68	71	U R 79	80	78	U Y 76	R 80	R 89	U R 97	96	96	96	94	77	75	70	75
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	31	30	28	26	27	27	27	27	26	27	30	25	28	27	29	30	29	30
MED	72	70	71	64	61	60	71	77	74	74	77	80	R 87	R 94	R 98	R 102	R 104	103	96	94	83	74	70	72
U Q	78	77	76	68	66	66	74	82	81	80	R 80	R 87	U R 92	U R 100	R 103	J R 111	R 111	R 108	106	R 97	90	77	77	76
L Q	68	68	F 66	F 61	57	56	66	73	70	70	72	77	82	86	R 92	99	101	97	92	89	76	68	68	68

MAY 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	L 548	A	L 528	U L 580	508	472	L						
2								L	L	A	A	U R 540	A	U R 532	532	A	A	A						
3								A	A	A	A	A	544	U A 540	A	A	A	A	A	A				
4									A	L	A	A	A	A	A	U L 512	L	L						
5							L 288			A	L	U L 552	L 540	540	528	504	500							
6								L	L	L 468	U L 556	L 528	L 528	516	512	508	U L 500	A						
7									L	L 504	L 500	L 500	L 556	528	528	L 516	500	A	L 388					
8								L	A	A	A	A	A	A	A	A	A	A	L					
9								A	A	A	L	A	A	A	A	A	U A 468	L	L					
10								L	L	L	A	A	A	A	A	A	L 504	472	L					
11								A	A	A	A	R 504	528	516	520	A	L 472	L	L	A				
12								A	A	A	A	A	A	A	A	A	L 496	L						
13									A	A	A	A	A	512	508	504	L 476	U L 476	A					
14								A	A	A	L	A	512	A	A	508	U L 496	A						
15								A	A	A	A	A	A	U A 508	A	A	A	A	A					
16								L	A	A	A	A	A	U R 500	500	L 520	A	A	A					
17								A	L	L	L 496	B	B	Y 540	532	L 532	A	A	L					
18								L	L	A	A	L	L 544	A	R 544	528	A	L						
19								L	L	L	L	540	540	U L 544	544	520	504	A						
20								L	A	A	A	A	528	528	A	A	A	A	A	A				
21							A	A	L	A	L	L 548	U L 544	544	A	A	U L 516	U L 468						
22									L	A	A	A	L 520	L	A	A	L	A						
23							L			A	A	A	A	R 508	U L 512	U L 524	U L 520	L	A					
24										A	A	U A 536	A	A	A	A	480	U L 472	L					
25							L		L	A	552	524	520	524	544	504	496	A	A	A				
26							A	A	A	A	A	A	A	532	532	496	L 496	L 480	U L 416					
27								L	A	A	A	A	A	A	488	488	488	L 452	L					
28								L	L	L 484	A	508	504	508	492	492	476	L 456	U L 396					
29							A	L	A	A	A	496	L 524	492	492	504	L 472	U L 468	U L 420					
30								L	L 456	L 504	A	500	L	532	504	488	476	L 468	L					
31									A	A	A	L 508	A	504	A	A	496	U L 480	U L 424					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1		1	4	4	14	14	21	18	18	21	10	5					
MED							L 288		L 456	L 494	L 526	526	528	528	524	508	496	L 470	U L 416					
U Q										L 504	554	L 540	L 544	536	532	L 520	L 500	U L 476	U L 422					
L Q										L 476	L 498	504	520	508	504	504	476	L 468	L 392					

MAY 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							200	280	316	A	A	A	A	R 396	388	360	336	296	U A 212					
2							184	U A 256	U A 300	A	A	A	A	R 392	380	372	324	288	A					
3							A	A	A	A	A	A	A 404	A	A	364	324	284	A	B				
4							U A 188	264	316	U A 328	A	A	A	A	A	A	A	A	A					
5							A	284	324	A 352	A	A	A	A	A	A	A	A	A					
6							208	256	U R 304	324	A	A	A 384	B	A	U R 368	340	A 312	A 224					
7						B	208	268	308	340	A	B	B	A	R	U R 364	340	300	236	B				
8							A	256	A	A	A	A	A	A	A	A	A	A	A					
9							200	256	A 296	U A 332	A	A	A	A	U A 364	U A 356	A 316	296	220	A				
10								268	U A 316	A	A	A	A	A	A	A	332	A	220					
11							216	272	328	352	A	A	A	A	A	A	A	308	240	B				
12						A	A	U A 272	U A 332	A	A	A	A	A	A	A	A	A	A	B				
13						B	220	260	320	A	A	A	A	A	A	A	A	A	A	A				
14							212	272	332	344	A	A	U A 380	A	A	A 376	352	308	A	A				
15						B	216	U A 276	A	A	A	A	A	A	A	376	336	296	A	A				
16							220	268	324	U A 352	A	A	A	A	A	A 348	U A 340	U A 316	A	A				
17						A	216	A	A	A	A	B	B	A	U R 364	R 352	R 340	304	A	B				
18						A	224	276	U A 328	A	A	A	A	A	A	A	A	304	248					
19						B	228	A	A	A	A	388	412	U R 408	A	U R 364	348	296	U A 244	B				
20						B	236	A	U A 316	A	A	A	A	A	A	A	328	304	240	A				
21							A	A	A	U A 356	U A 360	A	A	U R 396	A	A 348	344	U A 312	A	A				
22						B	220	272	A 312	A 356	U A 360	U A 384	U A 380	U R 384	U A 376	U A 356	340	316	A	A				
23						B	216	260	328	U A 332	U A 360	U A 376	A	A	A	360	336	304	A	A				
24						B	212	268	324	A	A	A	A	A	A	A	316	300	236	A				
25							A	284	U R 320	356	R 376	R	388	U R 380	R 372	U R 348	332	304	244	A				
26						B	212	292	A 328	A	A	A	A	A	A	R 352	A	292	A	A				
27						B	U A 244	268	U A 328	A	A	A	A	A	A	A	324	296	244	A				
28						A	228	288	A	A	A	A	A	R	R 364	356	324	292	244	A				
29						A	224	272	316	U A 340	U A 344	A	B	R 380	A	A	340	288	244	A				
30						B	224	U A 276	U A 320	U A 340	A	A	A	A	A	A	332	300	248	A				
31						B	224	276	320	352	U A 360	376	A 380	B	376	368	352	308	252	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							24	26	24	15	6	4	7	7	8	18	23	25	16					
MED							216	272	320	A 344	U A 360	380	A 384	U R 392	374	360	336	300	242					
U Q							224	276	A 328	A 352	360	386	404	U R 396	378	368	340	308	244					
L Q							210	264	316	U A 332	U A 360	376	A 380	R 380	U R 364	R 352	324	296	230					

MAY 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 15	J A 20	J A 13	18	J A 11	J A 14	22	G	G	36	J A 45	J A 50	56	43	44	49	J A 50	J A 50	J A 76	J A 118	J A 76	J A 45	34	J A 18
2	19	E B 15	E B 15	E B 15	E B 15	E B 15	22	32	40	J A 50	J A 61	J A 47	J A 79	48	48	J A 62	J A 80	J A 141	J A 90	95	J A 69	J A 69	J A 34	J A 55
3	J A 67	J A 58	J A 48	J A 34	J A 28	20	J A 26	54	J A 116	J A 146	J A 125	J A 58	50	J A 60	J A 66	J A 62	J A 83	105	J A 140	115	J A 107	J A 106	J A 88	71
4	J A 84	J A 54	J A 50	J A 50	J A 41	J A 33	27	J A 40	53	J A 51	J A 70	51	77	J A 72	J A 72	J A 44	J A 43	J A 37	J A 33	J A 24	J A 60	J A 64	J A 49	J A 40
5	J A 61	E B 12	18	E B 12	E B 14	E B 14	24	39	J A 46	J A 50	J A 53	50	44	47	40	J A 42	J A 42	63	J A 65	J A 83	J A 31	J A 23	E B 15	J A 29
6	J A 18	J A 29	23	E B 14	18	J A 27	28	29	42	41	40	39	44	E B 36	39	G	65	J A 116	J A 64	J A 27	J A 19	J A 27	J A 37	E B 14
7	E B 14	20	22	22	20	E B 15	27	33	34	46	J A 46	E B 40	E B 52	42	G 33	41	41	J A 45	J A 44	J A 49	20	J A 17	J A 24	J A 30
8	J A 35	J A 32	J A 32	J A 38	J A 20	E B 14	J A 30	34	J A 57	J A 56	J A 109	78	J A 108	J A 119	J A 108	120	116	J A 105	J A 73	J A 67	J A 34	J A 37	J A 49	J A 73
9	J A 54	J A 18	J A 51	E B 12	J A 19	24	26	J A 44	J A 53	J A 56	J A 45	J A 53	J A 65	J A 63	J A 66	J A 60	J A 56	J A 45	32	J A 51	J A 51	46	J A 27	23
10	J A 22	J A 24	J A 23	J A 20	J A 20	J A 27	24	30	38	J A 43	68	J A 75	J A 117	J A 112	J A 132	J A 83	40	J A 47	G	J A 24	J A 140	J A 78	J A 53	J A 58
11	J A 124	J A 57	J A 56	J A 56	J A 58	J A 49	G	J A 50	J A 50	J A 50	J A 56	J A 49	42	41	58	J A 59	J A 54	36	36	J A 71	46	J A 25	J A 21	J A 21
12	J A 43	J A 66	J A 53	J A 56	J A 56	J A 61	J A 50	J A 82	J A 71	J A 55	J A 60	64	J A 68	54	J A 79	J A 76	51	J A 40	J A 52	J A 36	31	J A 50	J A 37	J A 44
13	J A 61	J A 42	J A 42	J A 42	22	E B 12	26	J A 48	J A 47	J A 48	J A 66	J A 64	J A 76	51	40	J A 46	J A 47	J A 31	J A 46	J A 30	48	J A 34	J A 70	J A 44
14	J A 44	51	J A 48	J A 60	J A 44	J A 37	J A 39	J A 55	J A 65	J A 52	J A 47	J A 66	45	J A 63	J A 62	44	44	J A 108	J A 65	J A 49	J A 32	J A 42	J A 27	27
15	J A 40	J A 60	J A 53	J A 44	35	E B 14	27	J A 40	J A 98	80	J A 110	J A 174	91	J A 60	J A 51	J A 83	J A 83	J A 89	J A 48	J A 54	J A 42	J A 110	J A 67	J A 30
16	J A 20	J A 20	20	J A 20	J A 28	27	22	31	J A 50	J A 60	J A 66	J A 78	J A 73	J A 54	J A 52	49	J A 70	147	108	92	J A 79	J A 67	J A 82	J A 50
17	J A 26	J A 33	E B 14	35	J A 29	J A 36	G 22	J A 46	J A 45	J A 42	J A 42	B	E B 67	45	43	G	J A 56	J A 71	J A 39	45	J A 41	J A 26	J A 34	J A 37
18	J A 33	J A 50	J A 42	47	J A 41	J A 22	J A 38	38	39	J A 79	J A 69	50	J A 54	J A 58	J A 46	J A 52	J A 70	40	J A 41	56	J A 67	J A 65	J A 62	E B 12
19	J A 23	E B 15	E B 13	E B 13	J A 20	J A 18	23	J A 33	J A 36	47	44	G	45	50	50	42	39	J A 47	J A 79	J A 64	68	J A 63	J A 72	J A 65
20	J A 43	J A 30	39	J A 34	J A 20	J A 16	44	J A 43	J A 48	J A 56	J A 71	J A 73	J A 53	J A 54	J A 92	J A 73	J A 59	J A 90	J A 111	117	J A 127	J A 100	J A 73	J A 55
21	J A 63	J A 61	J A 64	J A 52	J A 25	J A 27	J A 68	J A 36	37	J A 53	J A 50	J A 52	J A 55	G	J A 78	J A 56	J A 46	J A 45	J A 45	60	J A 49	J A 52	J A 28	J A 51
22	J A 60	J A 59	J A 54	E B 14	J A 29	E B 14	26	31	36	J A 53	J A 53	J A 58	48	J A 54	J A 69	J A 95	J A 69	70	J A 66	J A 67	36	J A 70	J A 89	J A 52
23	22	J A 25	J A 24	29	J A 23	E B 15	29	J A 45	J A 46	J A 48	J A 92	J A 64	J A 59	46	J A 69	J A 52	G 30	J A 36	J A 73	J A 44	J A 80	J A 27	J A 32	J A 33
24	J A 45	J A 42	J A 26	J A 16	J A 18	E B 12	G 21	31	J A 43	J A 76	J A 64	J A 62	J A 67	J A 113	J A 71	J A 70	G	32	30	J A 43	J A 53	J A 58	J A 54	J A 53
25	J A 50	J A 78	J A 25	J A 78	J A 50	46	J A 32	J A 49	41	J A 76	40	G	45	44	44	G	40	J A 75	J A 75	98	J A 74	55	J A 49	J A 47
26	J A 68	J A 49	J A 33	J A 40	J A 15	16	J A 44	J A 60	J A 58	J A 75	94	J A 82	J A 72	J A 57	64	G 34	J A 57	G	J A 27	J A 27	J A 25	20	J A 45	J A 60
27	J A 43	J A 54	J A 45	J A 45	J A 44	J A 14	J A 35	38	J A 49	J A 58	J A 70	J A 80	J A 70	J A 68	48	42	G 28	G 22	27	J A 27	J A 36	J A 28	J A 65	J A 40
28	J A 35	J A 42	J A 22	J A 34	E B 12	37	G 20	31	J A 48	J A 64	J A 68	J A 50	48	G 36	47	40	38	31	31	J A 24	J A 25	J A 36	J A 20	J A 28
29	J A 42	J A 44	J A 43	J A 46	J A 43	J A 24	J A 46	32	J A 70	J A 61	J A 61	48	E B 40	G	42	39	G 29	G 21	27	17	J A 23	J A 24	J A 34	J A 24
30	J A 53	J A 44	E B 14	E B 14	J A 15	E B 13	24	36	J A 41	J A 52	J A 66	J A 59	J A 59	44	41	J A 46	38	33	30	J A 24	J A 23	J A 73	J A 96	J A 79
31	21	J A 24	J A 32	J A 32	23	E B 14	28	32	J A 46	J A 56	J A 68	J A 51	J A 62	46	J A 58	J A 56	J A 44	34	J A 38	J A 32	38	38	J A 54	J A 61
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 43	J A 42	J A 32	J A 34	J A 23	18	27	38	J A 46	J A 53	J A 64	J A 56	J A 58	51	J A 52	J A 49	J A 47	J A 45	J A 46	J A 49	J A 46	J A 46	J A 49	J A 44
U Q	J A 60	J A 54	J A 48	J A 46	J A 41	J A 27	J A 35	J A 46	J A 53	J A 61	J A 70	J A 66	J A 72	J A 60	J A 69	J A 62	J A 65	J A 89	J A 73	71	J A 69	J A 67	J A 67	J A 55
L Q	22	24	22	E B 16	18	E B 14	23	32	40	48	J A 47	50	48	44	44	42	40	34	32	J A 27	J A 31	J A 27	J A 32	J A 28

MAY 2012 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

MAY 2012 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	20	G	G	35	35	45	50	42	41	46	42	42	52	45	55	23	18	18
2	E B 13	E B 15	E B 15	E B 15	E B 15	E B 15	21	26	31	45	45	45	A A 79	45	45	51	68	A A 141	56	A A 95	28	28	18	42
3	57	37	23	22	22	E B 12	23	52	A A 116	A A 146	A A 125	49	44	54	54	57	77	A A 105	A A 140	74	A A 107	A A 106	A A 88	53
4	52	46	41	41	35	25	24	38	44	49	52	50	72	61	61	40	40	33	27	22	22	53	30	30
5	E B 12	E B 12	E B 12	E B 12	E B 14	E B 14	21	36	36	48	48	48	43	46	U Y 40	35	35	58	48	68	24	19	E B 15	18
6	E B 14	18	E B 14	E B 14	E B 14	E B 15	23	28	38	38	37	37	42	E B 36	39	G	42	102	33	22	16	16	30	E B 14
7	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	23	31	33	45	45	E B 40	E B 52	U Y 40	U G 32	41	40	44	28	28	E B 14	E B 14	19	18
8	26	22	21	20	16	E B 14	17	26	52	52	54	74	A A 108	A A 119	A A 108	A A 120	A A 116	59	31	44	27	22	22	A A 73
9	26	E B 13	24	E B 12	E B 13	E B 12	22	38	48	50	41	50	54	56	61	56	47	38	26	44	24	18	22	E B 12
10	E B 12	18	19	19	E B 12	23	22	28	34	41	62	73	A A 117	A A 112	A A 132	56	36	36	G	20	A A 140	48	37	16
11	18	34	29	41	43	39	G	43	44	47	50	45	42	41	47	48	42	36	32	A A 71	27	16	16	18
12	E B 14	38	43	48	44	38	35	A A 82	A A 71	52	57	57	62	54	76	74	41	35	43	E B 14	18	32	20	19
13	19	E B 13	E B 13	25	E B 12	E B 12	22	32	42	43	60	60	72	48	39	40	42	27	42	23	38	23	21	19
14	19	22	31	35	35	24	26	53	58	50	45	60	42	54	57	41	43	A A 108	58	38	17	35	21	21
15	22	31	40	38	23	E B 14	24	39	A A 98	A A 80	A A 110	A A 174	A A 91	51	49	73	57	A A 89	43	50	39	72	60	E B 10
16	19	16	E B 14	18	17	17	G 17	31	45	57	60	67	70	45	47	40	52	A A 147	A A 108	66	38	18	60	35
17	17	17	E B 14	17	17	18	G 18	40	36	36	40	B	E B 67	U Y 45	42	G	52	44	33	33	35	20	28	22
18	18	18	20	22	29	19	29	30	37	A A 79	63	U Y 47	49	56	40	43	53	37	37	52	57	40	22	E B 12
19	19	E B 15	E B 13	E B 13	18	E B 13	G 13	27	32	43	43	G	45	45	45	41	38	43	44	55	59	44	50	42
20	32	24	22	22	E B 14	E B 14	G	38	45	50	64	67	51	51	A A 92	53	55	84	A A 111	A A 117	E B 14	30	E B 14	25
21	E B 13	20	20	23	20	20	62	33	32	47	44	45	43	G	76	52	45	38	40	44	44	32	20	22
22	40	20	23	E B 14	18	E B 14	G 22	30	33	48	48	53	46	48	66	A A 95	42	66	57	60	25	25	41	20
23	E B 13	E B 13	16	20	19	E B 15	25	39	40	44	A A 92	58	56	43	46	46	G 29	G 30	50	31	26	22	E B 14	E B 14
24	16	24	E B 12	E B 12	16	E B 12	G 16	27	42	A A 76	63	54	56	A A 113	56	67	G	32	28	38	36	28	31	37
25	38	34	17	A A 78	40	26	26	40	40	A A 76	40	G	42	42	42	G	39	69	74	A A 98	59	26	26	22
26	23	37	27	16	E B 14	E B 14	42	56	54	72	A A 94	A A 82	58	42	44	G 28	42	G	26	26	18	E B 14	E B 14	16
27	19	E B 14	31	E B 13	19	E B 13	32	32	42	49	62	A A 80	64	60	43	40	G 26	G 20	G 24	23	30	20	19	19
28	17	17	17	24	E B 12	21	G 17	G 19	37	37	59	47	44	U G 36	43	40	36	30	27	23	23	24	17	17
29	20	27	27	28	28	16	44	31	66	59	54	43	E B 40	G	U Y 42	34	G 26	G 20	25	17	17	E B 12	18	19
30	32	E B 14	E B 14	E B 14	E B 14	E B 13	23	32	33	37	51	46	46	42	40	42	36	33	26	20	21	19	A A 96	39
31	E B 11	E B 11	16	18	18	E B 14	G 22	29	42	50	64	43	50	42	53	52	40	33	33	27	27	20	E B 16	38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	19	18	19	19	17	E B 15	22	32	42	49	54	50	50	45	46	43	42	38	37	38	27	23	21	19
U Q	26	27	27	25	23	20	26	39	48	A A 57	63	60	67	54	61	56	52	A A 69	52	60	39	32	31	35
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 21	28	34	43	45	45	44	42	42	40	36	33	27	23	21	19	E B 18	E B 17

MAY 2012 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

MAY 2012 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	15	15	14	14	14	14	20	20	20	23	24	24	20	18	17	16	16	14	14	14	14
2	13	15	15	15	15	15	15	15	14	15	20	19	18	24	27	18	16	16	16	14	14	14	14	14
3	11	11	13	12	12	12	12	12	12	15	17	17	26	26	22	14	15	15	9	16	15	11	12	12
4	15	15	15	15	15	14	14	14	18	20	18	21	29	29	20	21	21	18	16	15	15	15	15	15
5	12	12	12	12	14	14	13	13	13	17	30	30	32	28	33	20	19	19	14	15	15	15	15	15
6	14	14	14	14	14	15	15	17	24	19	19	29	31	36	25	20	17	16	16	16	14	14	14	14
7	14	14	14	14	15	15	15	15	15	15	21	40	52	29	24	21	20	16	15	14	14	14	14	14
8	14	14	14	14	14	14	14	14	16	16	16	26	28	32	23	20	20	17	17	14	14	14	14	14
9	13	13	13	12	13	12	12	12	18	17	17	20	24	30	22	22	22	14	11	11	13	12	12	12
10	12	12	12	12	12	12	12	14	18	18	21	26	26	26	32	28	20	19	16	12	12	12	12	12
11	11	11	11	8	15	15	15	14	16	15	22	22	16	21	23	22	18	17	15	12	14	13	13	13
12	14	14	14	14	14	14	14	14	14	25	28	24	21	20	20	20	20	15	15	14	14	14	13	13
13	13	13	13	12	12	12	12	12	13	16	20	22	20	24	24	21	18	15	16	14	14	14	14	15
14	15	14	14	14	14	14	14	14	18	17	20	23	22	26	26	20	20	20	13	13	12	12	12	12
15	14	14	13	13	14	14	14	13	17	17	18	32	24	24	23	20	20	16	16	16	13	12	12	10
16	14	14	14	16	15	15	15	16	16	19	22	26	28	34	24	19	19	17	14	14	14	14	13	11
17	14	14	14	13	13	13	13	13	14	22	34	B	67	33	29	22	23	17	17	15	14	14	14	14
18	14	14	14	14	14	14	14	13	18	21	26	26	36	31	24	24	16	13	12	12	12	12	12	12
19	12	15	13	13	13	13	13	13	14	23	21	21	24	22	20	20	20	13	13	12	12	12	12	12
20	14	14	14	14	14	14	14	13	16	15	17	20	34	27	28	22	22	18	12	14	14	14	14	14
21	13	12	12	12	13	12	14	14	14	20	24	20	30	30	28	20	18	15	15	15	14	14	14	14
22	14	14	14	14	14	14	13	12	12	18	17	21	21	33	28	16	16	16	16	15	13	13	13	13
23	13	13	13	13	13	15	13	14	14	14	22	24	28	28	27	19	17	16	16	13	14	14	14	14
24	12	12	12	12	12	12	13	12	18	16	15	21	21	33	30	22	22	12	12	14	13	12	12	12
25	13	12	12	12	12	12	12	12	12	19	19	24	30	29	25	23	19	15	15	14	14	14	14	14
26	12	12	12	14	14	14	14	14	14	14	16	17	25	21	24	21	14	16	16	12	14	14	14	14
27	14	14	14	13	13	13	13	16	15	15	18	21	25	23	23	23	21	16	15	14	14	14	14	14
28	12	12	12	12	12	11	11	11	14	16	22	22	29	28	28	24	20	15	13	12	12	12	12	11
29	13	12	12	12	12	12	14	14	14	21	19	24	40	30	30	20	20	16	16	12	12	12	12	12
30	14	14	14	14	14	13	12	12	21	20	20	23	26	25	23	22	22	16	15	14	14	14	13	13
31	11	11	12	14	14	14	14	14	14	15	26	26	25	38	24	24	13	13	13	13	14	15	16	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	14	13	13	14	14	14	14	14	17	20	23	26	28	24	21	20	16	15	14	14	14	14	14
U Q	14	14	14	14	14	14	14	14	18	20	22	26	30	31	28	22	20	17	16	15	14	14	14	14
L Q	12	12	12	12	13	12	13	12	14	15	18	21	23	24	23	20	17	15	13	12	13	12	12	12

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	302	300	314	317	324	289	338	360	371	325	307	R 304	U R 321	313	R	R 313	U R 336	J R 325	U R 341	339	326	308	278	293
2	293	295	311	322	301	294	318	U R 367	R	324	303	U R 313	A	307	R 314	R	R	A	U R 338	A	311	283	U R 298	R 300
3	293	299	307	301	307	307	342	330	A	A	A	302	R	R	291	R 308	R 333	A	A	305	A	A	A	311
4	317	308	R	F 323	314	301	322	329	R	320	322	U R 316	U Y 338	U R 321	U R 332	U R 333	R	U Y 316	328	324	R 333	319	F 314	F 306
5	F 284	F 294	F 296	305	299	310	336	334	347	339	298	303	U R 318	Y	Y	R	R 334	R	327	338	335	324	301	295
6	291	291	301	309	301	299	R 328	334	374	320	R 320	301	R 283	U R 320	306	U Y 312	310	316	U R 333	328	318	299	279	279
7	281	290	R 307	315	297	297	333	348	329	R 341	R 334	R 318	R 275	R	U Y 320	R	U R 319	307	Y	U Y 338	U Y 376	314	283	282
8	292	300	278	311	311	R 311	333	363	364	318	329	A 313	A	A	A	A	A	R 309	314	340	R 321	306	F 290	A
9	F 287	F 321	J R 338	J R 338	F 347	R 297	322	338	317	312	U R 294	U R 311	306	R 311	308	U Y 320	313	298	U R 326	329	R	U R 333	276	264
10	267	269	289	313	351	281	331	330	328	326	303	A 301	A	A	A	R 287	R 313	U R 328	R 347	333	A	307	296	F 293
11	268	290	301	326	320	306	348	333	342	335	299	284	283	A	U Y 312	Y	R 333	R 320	R 311	A	U R 335	306	296	291
12	281	R	F 293	F 307	310	F 309	349	A	A	R 316	307	R	U R 296	U R 321	R	R	R 326	307	307	299	U R 315	328	287	R 272
13	283	292	F 301	F 293	297	296	Z 321	R 371	337	312	294	303	R 289	U R 299	R	U R 314	R 337	333	303	299	R 311	289	F 275	F 279
14	286	F 278	F 290	F 303	F 339	F 304	317	331	315	342	264	R 284	329	324	R 316	316	319	A	325	U R 364	331	285	268	F 291
15	F 286	286	281	F 321	290	289	327	377	A	A	A	A	A	309	296	297	285	A	318	330	R 318	A 308	286	295
16	274	282	310	331	324	F 321	340	354	355	302	294	271	U R 291	U Y 296	293	U Y 330	R 330	A	A	285	297	286	289	282
17	R	F 303	R	F 305	F 310	F 310	324	318	303	R 323	U R 324	B	U R 308	U R 326	U R 315	U R 333	314	311	299	R 321	U R 339	369	274	272
18	282	U R 286	283	V 295	301	296	359	356	337	A	R 315	U R 310	R 309	U R 299	U R 306	U R 319	U R 334	319	R 330	327	288	288	287	294
19	282	284	292	297	290	307	328	326	302	292	U R 273	284	U R 305	R 308	R 309	R 310	U R 328	J R 329	R 330	342	290	275	279	294
20	279	F 273	301	F 337	301	289	314	R	R 327	303	309	280	U R 298	298	A	291	U R 310	R 319	A	A	322	284	263	289
21	310	F 307	F 293	302	F 277	F 301	360	339	269	305	302	R	U R 299	U Y 334	U R 319	Y	R	R 321	U R 329	R	325	U R 309	301	R 298
22	298	298	F 296	307	F 285	313	350	348	342	331	305	294	U R 304	R 313	R	A	U R 304	Y	325	R 320	334	287	250	R 288
23	287	286	298	305	347	319	330	339	338	291	A	R 302	R 314	301	286	302	304	U R 303	320	R 324	330	287	285	282
24	276	R 295	309	317	305	311	330	330	333	A	296	282	U R 307	A	295	U R 320	R 307	299	315	U R 339	U R 319	297	315	F 294
25	R	R	317	A	301	297	351	357	318	A	279	288	287	R 286	R	R	U R 318	315	J R 315	A	U S 331	R 292	286	277
26	288	289	329	308	291	J R 330	315	326	318	R 323	A	A	292	294	R 286	R 304	R 330	328	329	317	311	297	R 302	R 299
27	288	F 301	329	F 296	302	302	326	343	333	318	324	A	288	300	U R 303	301	320	322	326	335	292	285	276	F 268
28	F 295	R 297	F 318	F 300	F 294	307	324	347	336	319	293	312	285	276	U R 299	310	302	R 296	345	330	R 302	U R 302	293	R 298
29	F 282	310	333	F 313	F 316	F 314	322	324	348	319	283	309	278	296	R 295	292	U R 318	R 326	335	326	299	293	293	288
30	F 303	296	F 313	F 300	299	301	322	344	345	311	R 292	R 298	280	R 281	284	293	316	324	309	301	R 322	J R 250	A	F 300
31	289	F 297	F 303	F 299	F 301	F 299	311	315	306	U R 331	305	312	U Y 286	R 296	R 296	U R 308	308	306	335	321	291	286	309	295
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	31	31	31	29	26	26	27	25	26	24	22	22	27	24	27	26	28	30	29	30
MED	287	295	301	308	301	302	328	339	334	320	303	302	R 297	304	R 304	310	R 318	318	326	328	320	297	287	292
U Q	293	300	314	317	316	310	340	355	345	326	R 315	R 312	U R 308	U R 316	U R 314	U R 319	R 330	R 324	R 333	338	331	308	297	295
L Q	282	286	293	F 301	297	297	322	330	318	312	294	286	286	296	295	301	310	307	315	320	306	286	277	282

MAY 2012 M(3000)F2 (0.01)

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IONOSPHERIC DATA STATION Yamagawa

MAY 2012 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	L 355	A	L 368	U L 335	A	A	L						
2								L	L	A	A	U R 356	A	U R 362	353	A	A	A						
3								A	A	A	A	A	333	A	A	A	A	A	A	A				
4									A	L	A	A	A	A	A	U L 354	L	L						
5							L 383			A	L	A 346	A 352	A 340	348	H 365	355							
6								L	L	L 397	U L 351	L 370	L 355	365	368	371	A	A						
7									L	A	A 382	L 401	B	A 331	L 340	L 349	350	A	L 349					
8								L	A	A	A	A	A	A	A	A	A	A	L					
9								A	A	A	L	A	A	A	A	A	A	L	L					
10								L	L	L	A	A	A	A	A	A	L 341	365	L					
11								A	A	A	A	R 378	380	389	A	A	A 385	L	L	A				
12								A	A	A	A	A	A	A	A	A	L 355	L						
13									A	A	A	A	A	A	371	374	A	U L 369	A					
14								A	A	A	L	A	365	A	A	367	A 371	A						
15								A	A	A	A	A	A	A	A	A	A	A	A					
16								L	A	A	A	A	A	U R 396	A	L 366	A	A	A					
17								A	L	L	L 408	B	B	Y	350	L 341	A	A	L					
18								L	L	A	A	L	A	A	R 361	352	A	L						
19								L	L	L	L	363	363	A 350	A 350	386	358	A						
20								L	A	A	A	A	A	A	A	A	A	A	A	A				
21							A	A	L	A	L	L 357	U L 360	345	A	A	A 348	A 362						
22									L	A	A	A	L 371	L	A	A	L	A						
23							L			A	A	A	A	R 381	A	A	U L 350	L	A					
24										A	A	A	A	A	A	A	345	U L 352	L					
25							L		L	A	358	377	380	377	341	369	360	A	A	A				
26							A	A	A	A	A	A	A	367	355	366	A	L 338	U L 346					
27								L	A	A	A	A	A	A	391	373	354	L 363	L					
28								L	L	L 402	A	A	394	391	A 341	341	353	L 349	U L 345					
29							A	L	A	A	A	392	L 385	410	393	368	L 354	U L 357	U L 358					
30								L	L 383	L 383	A	A	L	362	383	379	367	L 351	L					
31									A	A	A	H 332	A	376	A	A	355	U L 349	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1		1	3	4	11	11	16	15	16	16	10	4					
MED							L 383		L 383	L 397	370	363	365	368	353	366	354	L 354	U L 348					
U Q										L 402	395	378	380	385	371	372	359	L 363	L 354					
L Q										L 383	354	355	355	A 356	341	L 353	350	L 349	U L 346					

MAY 2012 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 h′F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								226	226	250	258	304	290	302	316	310	294	280						
2								232	232	246	A 258	350	A	312	330	306	284	A						
3								264	A	A	A	298	316	314	314	310	A 296	A	A					
4									258	272	286	294	302	294	294	284	276	276						
5							244			A 254	328	328	314	302	312	304	284							
6								266	244	252	322	320	324	318	314	312	296	A						
7									260	262	274	300	350	318	322	298	298	296	282					
8								218	242	E A 278	A 312	A	A	A	A	A	A	282	280					
9								260	282	282	L 298	304	312	312	332	312	300	312	296					
10								242	250	272	E A 352	E A 382	A	A	A	314	306	286	262					
11								282	288	300	342	362	344	318	318	298	284	284	284	A				
12								A	A	A 300	306	334	340	316	304	304	280	284						
13									254	274	A 320	310	A 388	346	300	292	258	262	A 266					
14								264	292	258	300	358	306	306	322	296	296	A						
15								228	A	A	A	A	A	302	302	E A 338	334	A	290					
16								236	236	E A 322	336	370	A 354	340	324	308	270	A	A						
17								258	258	258	278	B	B 338	318	318	312	282	272	272					
18								226	248	A	E A 320	348	336	336	336	316	302	278						
19								252	248	L 308	L 400	358	336	318	318	310	294	278						
20								264	258	266	A	E A 406	360	352	A	344	314	E A 322	A	A				
21							E A 278	236	L 468	A 248	310	348	318	312	A 322	306	306	296						
22									256	274	A 276	350	342	342	A 342	A	328	312						
23							266			E A 284	A	334	318	340	340	330	326	296	278					
24										A	E A 344	360	360	A	332	A 332	300	284	284					
25							230		270	A	384	338	358	358	340	310	288	288	A 294	A				
26							270	A 270	272	E A 308	A	A	368	346	346	332	298	282	268					
27								258	258	298	A 298	A	A 376	348	346	338	302	282	248					
28								258	258	282	E A 332	332	370	370	358	326	298	298	266					
29							262	246	246	A 296	A 316	318	396	340	340	316	282	276	256					
30								252	252	304	316	316	316	372	366	344	284	272	272					
31									264	280	E A 320	310	352	352	328	314	304	278	266					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	21	25	26	26	26	27	28	28	29	30	24	17					
MED							258	252	258	272	308	332	340	318	323	311	296	282	272					
U Q							270	264	267	298	332	358	360	346	340	328	302	296	284					
L Q							244	234	247	258	298	310	316	312	315	305	284	278	266					

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 h′F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	274	274	252	238	238	238	234	234	218	204	204	E A 244	A	224	244	A	A	A	244	244	244	244	274	278
2	274	274	266	236	242	274	256	240	A 226	A	A	230	A	232	232	A	A	A	236	A	242	286	286	330
3	E A 350	316	260	260	260	260	256	A	A	A	A	A	206	A	A	A	A	A	A	A	A	A	A	A 360
4	E A 318	A 318	252	A 260	282	264	240	A 240	A	A	A	A	A	A	A	240	E A 240	234	234	234	234	E A 290	A 296	310
5	280	280	280	260	260	260	E A 222	222	230	A	E A 266	E A 266	E A 264	A	236	H 196	216	248	248	A 278	214	236	290	290
6	266	266	266	212	232	252	248	224	A	210	210	196	224	216	216	216	A	A	254	238	238	238	A 328	312
7	306	292	252	238	238	268	246	228	216	A	A 232	180	B	A	Y 248	A 236	A 252	A	A 240	240	206	206	298	302
8	288	288	298	276	266	264	236	234	A	A	A	A	A	A	A	A	A	A	234	240	240	240	340	A
9	332	Q 260	270	Q 218	Q 218	238	228	A	A	A	A 228	A	A	A	A	A	A	E A 276	242	258	248	248	268	324
10	320	318	292	232	218	A 320	234	234	A 232	E A 254	A	A	A	A	A	A	236	A 236	236	236	A	E A 312	A 312	312
11	334	A 314	268	A 282	E A 340	322	210	A	A	A	A	226	206	206	A	A	E A 250	246	252	A	252	252	252	292
12	304	A 350	350	A 316	A 298	A 276	232	A	A	A	A	A	A	A	A	A	E A 236	A 252	252	252	252	252	252	320
13	A 320	300	A 316	A 292	216	226	226	226	A	A	A	A	A	A	194	210	A	214	A	266	A 266	252	290	324
14	324	324	A 324	A 322	A 246	252	252	A	A	A	224	A	A 226	A	A	226	A	A	272	244	234	A 280	300	300
15	334	A 318	A 294	276	270	270	242	A	A	A	A	A	A	A	A	A	A	A	A	A 260	256	A	E A 342	246
16	282	282	260	234	232	252	248	230	A	A	A	A	A	A 230	A	242	A	A	A	A	294	284	A	A 316
17	272	278	270	Q 250	250	236	236	A	220	226	200	B	B	A	H 242	242	A	A	A 258	258	258	216	274	296
18	296	306	306	304	A 290	254	226	222	A 214	A	A	Y	A	A	222	A 250	A	E A 252	252	A 252	A	A 318	294	294
19	286	286	286	256	268	248	240	212	212	A 254	A 236	H 194	214	E A 254	A 254	H 178	228	A	244	244	A	A 342	E A 380	A 322
20	A 316	312	256	246	264	274	246	A 246	A	A	A	A	A	A	A	A	A	A	A	A	236	A 320	340	304
21	260	A 338	274	272	298	286	A	A	232	A	E A 248	A 240	224	Y 260	A	A	A	E A 278	256	256	256	256	256	284
22	A 298	282	282	236	Q 288	252	220	H 220	208	A	A	A	208	A	A	A	E A 300	A	A 276	276	236	274	A 370	A 308
23	304	304	288	272	230	230	252	236	236	A	A	A	A	E A 246	A	A	230	A 238	A	254	242	242	260	292
24	290	290	258	230	256	256	242	218	238	A	A	A	A	A	A	A	220	218	226	244	244	276	284	B 334
25	Q 308	286	246	A	A 302	292	236	230	204	A	204	204	204	204	250	232	A 232	A	A	A	A 304	272	286	322
26	290	B 300	252	252	258	258	A	A	A	A	A	A	A	220	A 230	224	A	224	224	228	228	252	270	264
27	260	268	264	258	258	258	258	A 230	A	A	A	A	A	A	A 230	230	220	220	220	232	250	260	274	308
28	264	264	248	A 300	256	252	242	214	A 214	202	A	A	202	200	A	200	216	216	A 226	234	234	270	270	272
29	322	262	248	284	284	266	A	212	A	A	A	A 228	182	182	192	192	214	228	222	222	246	254	260	302
30	290	278	252	Q 252	252	252	234	232	212	200	A	A	A	238	214	222	222	220	220	256	246	244	A	A 314
31	276	268	268	284	284	268	228	224	A	A	A	A	A	218	A	A	230	228	A	236	248	264	266	A 314
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	31	28	22	15	7	10	10	11	14	14	16	16	17	23	25	27	29	28	30
MED	293	288	268	259	258	258	238	229	218	207	216	U 214	207	220	231	225	225	229	242	244	244	254	282	308
U Q	320	A 314	288	A 282	284	270	247	234	232	A 254	E A 236	E A 240	A 224	238	244	238	E A 238	E A 250	252	257	252	A 282	A 306	320
L Q	276	274	252	238	238	252	230	222	212	202	204	196	204	206	216	205	220	220	226	236	236	244	269	292

MAY 2012 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 h′E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							104	104	104	A	A	A	A	104	104	104	104	114	114					
2							116	116	112		A	A	A	112	112	112	112	112						
3									A	A		A	A		A	114	114	114	A	B				
4							130	122	120	108	A	A						A						
5							A	106	106	106	A		A			A	A							
6							118	118	112	112		A	A	B		108	110	A						
7						B	116	116	116	100		B	B	A	A	110	110	110	112	B				
8							A	104	A			A	A		A	A	A	A	A					
9							122	122	A	112	A		A	A	112	112	112	112	112	A				
10								108	108	A	A	A	A	A	A		108	A	108					
11							114	114	114	112		A	A	A	A	A	A	112	112	B				
12						A	A	108	108	A		A	A	A				A		B				
13						B	120	120	120	A		A		A	A	A			A	A				
14							120	120	104	104	A	A	104	A	A	A	104	104	A					
15						B	108	108		A	A	A	A	A	A	108	108	108	A	A				
16							124	124	106	106	A		A	A			106	106	A	A				
17							126		108		A	B	B		108	108	108	108		B				
18						A	118	114	112	112	A		A		106			106	A 128					
19						B	120	A	A	A		106	A	106		110	110	110	110	B				
20						B	118	A	108	A		A			A	A	108	108	108	A				
21							A	A	A	108	108	A	A	108	A	A	108	108	108	A				
22						B	136	122	A	110	110	110	110	110	110	106	106	106	A	A				
23						B	114	114	112	112	112	112			A	112	112	112	A	A				
24						B	138	102	102			A	A	A		A	102	102	102	A				
25								106	106	106	106	106	106	106	106	106	106	106	106	A				
26						B	104	104	104		A	A			A	104	A	104	A	A				
27						B	114	114	114		A						114	112	112	A				
28							B 140	A 132	A	A	A	A		A	104	104	104	104	108					
29						A	112	112	106	106	106		B	108			118	118	116					
30						B	122	112	112	104	A	A	A		A	A	104	104	108	A				
31						B	108	108	108	108	108	108		A	108	108	108	108	108	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							24	26	23	16	6	5	3	7	9	15	23	24	16					
MED							118	114	108	108	108	108	106	108	108	108	108	108	109					
U Q							123	120	112	112	110	111	110	110	111	112	112	112	112					
L Q							114	108	106	106	106	106	104	106	105	106	106	106	108					

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	104	100	100	112	112	182	G	G	106	106	100	100	184	142	122	122	122	114	98	98	98	98	98
2	90	B	B	B	B	B	126	126	120	110	110	106	106	128	134	132	124	124	118	106	106	106	106	106
3	106	96	96	96	96	96	118	118	114	104	104	100	168	134	92	114	114	114	114	114	114	114	114	106
4	100	100	100	100	92	92	120	120	118	116	112	112	102	102	102	102	102	102	102	102	102	102	102	102
5	148	B	92	B	B	B	130	124	124	116	114	114	170	170	108	108	108	108	108	102	102	102	B	102
6	96	96	96	B	96	96	120	138	116	116	116	112	166	B	94	G	140	128	128	128	92	104	104	B
7	B	94	96	96	96	B	116	116	116	100	100	B	B	100	100	174	144	120	120	108	108	108	102	102
8	110	106	106	106	96	B	96	108	108	108	108	108	108	106	106	106	106	118	118	118	118	108	108	108
9	110	108	108	B	106	100	130	124	120	112	112	112	112	108	108	108	108	114	114	110	126	126	102	102
10	106	102	102	102	102	102	102	120	120	116	108	104	102	102	100	106	134	102	G	102	100	100	100	102
11	106	102	102	100	100	100	G	100	104	104	104	104	104	104	104	104	104	216	122	118	108	108	108	100
12	110	102	102	102	96	96	108	108	108	108	108	108	108	108	108	108	116	112	112	112	108	108	108	108
13	108	108	108	98	98	B	134	100	108	108	108	108	108	108	108	108	108	104	104	104	100	100	110	110
14	110	110	110	106	106	106	114	114	114	114	114	108	108	108	106	132	130	104	104	102	102	102	102	102
15	92	92	92	92	90	B	134	126	110	106	104	104	104	100	100	114	114	112	112	112	112	112	112	130
16	86	86	86	86	86	92	104	112	110	104	104	104	104	104	104	132	116	104	104	98	98	98	98	96
17	102	102	B	102	102	106	106	106	106	106	106	B	B	124	152	G	118	118	118	106	106	106	106	106
18	112	112	90	90	90	118	118	120	120	104	104	102	102	102	112	112	108	118	118	114	114	114	114	B
19	100	B	B	B	100	100	100	100	100	166	174	G	162	128	128	154	140	122	120	100	100	100	100	96
20	104	102	102	102	102	102	94	102	102	102	102	102	102	102	102	102	114	114	114	114	114	114	114	112
21	110	108	100	100	100	100	100	100	100	116	110	108	108	G	108	108	116	116	116	102	102	102	102	102
22	104	104	104	B	104	B	156	144	130	110	110	110	110	112	112	104	110	110	110	110	106	106	106	106
23	92	116	106	100	100	B	122	122	118	118	114	114	114	114	110	110	104	104	104	104	104	100	100	100
24	106	100	100	100	100	B	116	116	114	102	102	102	102	102	102	102	G	134	128	108	108	108	108	108
25	102	96	96	96	96	96	108	108	192	112	186	G	136	122	122	G	130	112	112	108	108	108	108	108
26	104	104	96	96	96	136	130	120	114	110	106	106	106	106	106	106	100	G	94	94	94	94	94	94
27	98	98	98	98	98	104	116	116	116	114	102	102	102	102	102	102	102	102	130	90	90	104	104	104
28	102	102	104	104	B	104	104	104	112	112	108	108	108	108	158	158	122	134	128	114	112	112	104	102
29	108	96	96	96	96	136	128	128	104	104	104	104	B	G	104	104	104	104	116	116	98	106	106	106
30	104	104	B	B	102	B	138	116	116	102	100	100	100	102	102	102	142	134	126	112	110	100	100	100
31	106	104	102	100	100	B	126	126	110	110	110	110	110	128	122	122	122	122	122	118	110	102	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	27	24	28	20	30	30	30	31	31	27	28	28	31	28	30	30	30	31	31	31	30	29
MED	104	102	100	100	99	101	118	116	114	110	108	106	108	108	106	108	115	114	115	108	106	106	104	102
U Q	109	105	104	102	102	106	130	124	118	114	112	110	111	123	112	122	124	122	120	114	110	108	108	107
L Q	100	97	96	96	96	96	106	108	108	104	104	102	102	102	102	104	108	104	110	102	100	100	102	101

MAY 2012 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2012 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0′N LON.130°37.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F1	F1	F1	F1	F1	H1			C1	C1	C2	L2	H1	H1	C1	C2	C3	C6	FQ41	F4	F3	FF22	F2
2	F1						C1	CL11	CL11	C2	C2	L2	L3	H1	H1	C3	C5	C3	C4	F5	FQ31	F3	F3	F6
3	F6	F6	F3	F3	F3	F1	C2	C4	C3	C2	C2	C1	HL11	HL11	LC21	C2	C3	C3	C8	L5	F8	F5	F5	F5
4	F5	F5	F4	F3	F2	F5	C2	CL21	CL21	C2	C2	C2	L1	L2	L3	L2	L2	L1	L4	F3	F3	F7	F7	F3
5	FF11		F1				C2	C2	C1	C2	C1	C1	HC11	HC11	L1	L1	L2	L3	L5	F4	F3	F3		F3
6	F2	F2	F1		F1	F1	C2	H1	C1	C1	C1	C1	HL11		L1		HL11	CL52	CL32	F3	F1	F1	F5	
7		F1	F1	F1	FF11		C3	C2	C1	C2	C1			L1	L1	HL11	H1	C2	C3	L4	F1	F1	F4	F3
8	F3	F3	F2	F2	F2		L2	C1	C3	C3	C2	C2	C3	C2	C3	L4	L4	CL32	CLQ22	F4	F3	F2	F3	F5
9	F3	F1	F2		F1	F2	CL21	C2	CL31	C2	CL11	C2	C2	C1	C1	C1	C2	C2	C2	F4	FF13	F3	F3	F1
10	F1	F2	F2	F1	F1	F4	F1	C1	C1	C2	C2	C2	L2	L3	L3	CL21	HL11	L3		F2	F3	FQ41	FQ41	FQ21
11	F3	F4	F5	F5	FQ41	FQ41		F3	C2	C2	C2	C1	C1	L1	L2	L2	L2	H1	C2	C4	F3	F3	F2	F2
12	FF11	FQ41	F5	F6	F3	L4	C3	C4	C4	C1	C1	C2	C2	C1	C1	C2	CL21	CL21	L5	L1	F2	FQ41	F3	FQ21
13	F6	F2	F3	FQ21	F1		C2	LC11	C2	C2	C2	C2	L3	L1	CL11	CL11	L2	L2	L3	L3	F5	F3	FF22	FF21
14	F2	F3	FF32	F3	F4	F4	C2	C2	C3	C1	C1	L4	C1	L1	L2	CL11	C1	C4	L6	L4	F2	F6	F2	F3
15	F5	F5	F5	F3	F3		C1	C2	C4	C3	C3	L3	L2	L2	LC11	C3	C3	CL21	CL53	CL42	FF43	FF43	F4	F1
16	F4	F3	F2	F2	F2	F1	L1	CL11	C2	C1	C2	L2	L2	L1	C1	CL11	C4	C3	C4	L4	F3	FQ31	F7	FQ41
17	F3	FF21		F2	F2	CL11	L1	C3	C1	C1	L1			C1	HC11		C2	C2	C4	C4	F8	F3	F5	F3
18	FF23	FF22	F5	F4	F5	C3	C3	C2	C1	C2	C2	L2	L1	C2	C1	C2	L3	C2	CL31	F3	F8	FQ51	FQ51	
19	F5				F2	L1	L2	L2	L1	HL11	HL11		HL11	C1	CL11	HL11	HL11	C2	C5	F3	F5	F7	F6	F5
20	F3	FQ21	F2	F3	F1	L1	LC11	C2	C2	C2	L2	C1	C1	C2	L2	L2	CL21	CL31	C3	L5	FQ21	F3	F3	FQ31
21	F3	F3	F3	F3	F2	F2	L4	L3	LC11	C2	C2	CH11	C1		C1	CL21	C1	C2	C6	L6	F5	F3	F3	F6
22	F6	F3	F4		FF21		HL11	HL11	HL11	C1	C1	C1	C1	C1	C2	C2	C2	C2	C6	L8	F3	F3	F4	F6
23	F2	F1	F3	F3	F2		C2	C2	C2	C2	C3	C2	C1	C1	L2	C1	L1	C2	C3	C3	F3	FF31	F1	F3
24	F2	F2	F1	F1	F1		L1	C1	C2	C2	C2	C2	C2	L3	L2	L2		H1	C1	L6	F3	F4	F5	F5
25	F8	F5	F2	F8	F5	F5	L2	C3	H1	C2	H1		C1	C1	C1		H1	C2	C6	L8	F8	F6	F3	F5
26	F4	F5	F5	F3	F1	H1	C3	C3	C3	C2	C2	C2	C1	C1	L2	L1	L3		L3	L2	L5	F1	F4	F3
27	F3	FQ31	F6	F3	F4	L1	CL21	C1	C2	C2	C2	C2	C2	LQ21	L1	L1	L1	L1	C1	L3	F5	FF22	FF22	F3
28	F2	F2	F1	F5		L5	L1	L1	CL21	CL11	C2	C2	C1	L1	H1	H1	H1	H1	CL31	CL21	F3	F6	FF22	F3
29	F5	F4	F3	F3	F4	C3	C4	C1	C3	C2	C2	C1			C1	L1	L1	L1	C2	C1	F1	FF11	F2	F3
30	F8	F2			F1		CL11	CL11	C2	C1	C2	C2	C1	C1	C1	C2	C1	C1	CL11	C2	F5	F3	FQ41	FQ31
31	F2	F2	F3	F2	F1		C2	C1	C1	C2	C1	C1	CL21	H1	C1	C2	C1	C1	C2	C3	F5	FF42	F3	F5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 114	X 123	X 124	X 117	X 86	X 84														A	X 99	X 83	X 83	X 84
2	X 84	X 84	X 88	X 83	X 62	X 61														X 129	X 113	X 133	X 132	X 122
3	X 120	X 112	X 98	X 87	X 82	X 76														X 113	X 100	X 110	X 103	X 84
4	83	84	81	X 63	X 54	X 52														X 144	X 132	X 94	X 84	92
5	88	91	89	87	68	58															X 114	X 118	X 128	X 132
6	X 128	X 134	X 130	X 95	X 63	X 59															X 97	X 80	X 78	X 79
7	X 80	X 81	X 80	X 74	X 66	X 61															X 95	X 80	X 92	X 93
8	X 90	X 94	X 98	X 80	68	62	72														X 97	X 85	84	89
9	83	82	83	83	68	65															X 104	X 82	X 79	X 77
10	X 78	X 82	X 91	X 93	X 58	X 50															X 107	X 99	X 101	100
11	102	98	87	82	66	63															X 100	X 82	X 86	X 85
12	X 76	102	102	88	X 75	X 73															X 108	X 84	X 83	X 81
13	87	85	93	80	73	70															X 103	X 85	X 79	X 75
14	78	X 84	83	71	70	X 63	72	92													X 100	X 82	X 84	X 86
15	X 83	X 85	X 82	X 69	X 62	X 66															X 98	X 85	X 78	88
16	90	82	90	77	68	66															X 109	X 98	X 98	99
17	X 107	X 122	X 112	X 110	X 94	X 87															X 132	X 94	X 100	X 98
18	X 89	X 82	X 78	X 73	X 66	X 66															X 86	X 85	X 85	91
19	93	84	85	90	88	88	87	88													X 78	X 78	X 84	X 87
20	101	97	X 98	80	77	71															X 86	X 84	86	91
21	97	89	87	76	67	64	79														X 141	X 116	X 90	X 90
22	96	110	95	74	72	70															X 106	X 100	X 97	X 98
23	100	X 98	X 100	X 91	X 72	X 68															X 111	X 100	X 100	X 96
24	X 98	X 99	X 96	X 88	X 88	X 75															X 113	X 99	X 102	X 100
25	X 98	105	110	88	80	80	86														X 103	X 89	X 89	X 85
26	X 93	X 92	X 80	X 79	X 75																X 96	X 89	X 87	X 85
27	85	X 79	76	71	66	59															X 80	X 78	X 77	78
28	82	87	79	74	72	71	81														X 98	X 92	X 88	X 90
29	X 87	87	100	X 76	X 66	66															X 88	X 84	X 82	X 79
30	86	90	X 76	77	70	70															X 100	X 89	X 84	87
31	84	90	72	71	68	66															X 84	X 84	82	X 86
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	6	2												3	31	31	31	31
MED	89	90	89	80	68	66	80	90												X 129	X 100	X 85	X 86	X 88
U Q	X 98	X 99	X 98	X 88	X 75	X 71	86													X 144	X 109	X 99	X 98	X 96
L Q	83	84	81	74	X 66	X 62	72													X 113	X 96	X 83	X 83	X 84

MAY 2012 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	108	117	118	111	80	78	85	94	74	76	90	101	109	110	113	118	118	122	130	A	93	77	77	78
2	78	78	82	77	56	55	70	98	86	80	84	93	108	118	120	128	129	132	126	123	107	R 127	126	116
3	114	106	92	81	76	70	77	87	95	96	85	96	112	U R 128	130	134	138	135	113	107	94	104	97	78
4	F 75	78	74	57	48	46	58	78	88	96	96	103	U R 124	135	141	146	R 148	145	137	138	126	88	78	F 80
5	F 79	F 79	F 80	F 76	F 61	F 49	57	74	72	76	81	97	114	131	136	146	151	R 148	134	124	108	112	122	126
6	U R 122	R 128	R 124	89	57	53	62	83	80	75	79	91	108	121	120	122	128	131	118	113	91	74	72	73
7	74	75	74	68	60	55	67	84	89	85	84	93	115	131	136	138	140	131	139	151	89	74	86	87
8	79	88	92	74	F 59	F 50	66	81	72	70	81	93	106	120	124	121	126	121	114	103	91	79	F 76	F 77
9	F 73	F 70	F 72	F 76	F 60	F 57	59	66	84	80	85	95	104	110	115	120	114	107	115	116	98	76	73	71
10	72	76	85	87	52	44	60	73	68	70	80	95	107	118	124	132	136	140	131	118	101	93	95	F 89
11	F 85	F 85	F 78	F 76	F 59	F 51	70	82	71	U A 78	79	86	104	119	129	144	149	139	137	130	94	76	80	79
12	R 70	F 95	F 94	F 78	V 69	67	72	72	70	78	84	100	116	132	131	129	128	113	96	105	102	78	77	75
13	F 76	F 75	F 83	F 70	F 64	F 61	68	72	74	74	88	98	106	118	137	141	130	121	112	108	97	79	73	69
14	F 68	78	F 72	F 63	F 61	57	F 64	F 85	92	A	82	96	110	111	114	118	109	110	113	111	94	76	78	80
15	77	79	76	63	56	60	79	70	65	75	81	88	104	106	104	94	102	118	118	113	92	79	72	F 79
16	F 77	F 74	F 81	F 70	F 61	F 60	75	80	68	70	83	96	111	127	143	145	137	114	109	115	103	92	92	F 93
17	101	116	106	104	88	81	83	84	90	86	91	93	114	123	127	130	131	124	118	130	126	88	94	92
18	83	76	72	67	60	60	70	79	73	72	82	93	107	116	121	122	120	116	113	97	80	79	79	F 81
19	F 84	F 76	F 74	F 82	F 78	F 78	80	82	72	76	85	97	111	118	121	125	126	127	112	97	72	72	78	81
20	F 84	F 86	92	F 72	F 64	F 62	73	92	88	75	A	92	104	109	113	124	121	118	117	99	80	78	F 73	F 78
21	F 85	F 80	F 78	F 67	F 60	F 52	F 69	61	56	72	81	93	106	118	122	130	142	145	146	R 143	135	110	84	84
22	F 84	F 96	F 82	F 64	F 63	F 63	68	75	71	76	76	87	101	105	109	109	121	128	133	117	100	94	91	92
23	90	92	94	85	66	62	73	83	69	A	74	94	98	95	96	110	114	125	117	111	105	94	94	R 90
24	92	R 93	90	82	82	69	V 75	80	78	72	73	85	A	108	110	116	117	117	112	114	107	93	96	94
25	92	F 94	F 98	F 78	F 73	F 67	F 77	70	66	75	72	84	92	104	119	123	125	124	119	114	97	83	83	79
26	87	86	74	73	69	69	76	84	82	87	82	A	A	98	104	110	A	117	109	105	90	83	81	79
27	F 77	73	F 69	F 63	F 57	F 48	59	73	75	81	A	A	94	101	112	124	127	115	106	94	74	72	71	F 68
28	F 69	F 78	F 71	F 63	F 63	F 64	F 74	83	76	68	71	79	85	93	103	115	121	129	109	98	92	86	82	84
29	81	F 77	90	70	60	F 58	66	73	80	A	78	78	82	94	102	109	112	111	97	94	82	78	76	73
30	F 79	F 83	70	F 68	F 62	F 61	74	88	69	71	74	80	86	92	100	109	117	110	104	100	94	83	78	F 73
31	F 76	F 78	F 65	F 61	F 58	F 56	67	70	70	84	82	74	78	88	96	104	107	114	113	93	78	78	F 73	80
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	28	29	29	29	31	31	31	30	31	31	30	31	31	31	31
MED	79	79	81	F 73	F 61	F 60	70	80	74	76	82	93	106	116	120	123	126	122	115	112	94	79	79	80
U Q	87	93	92	81	69	67	75	84	84	80	84	96	111	121	129	132	136	131	130	118	103	93	92	89
L Q	F 76	76	F 74	F 67	59	F 53	66	73	70	72	78	86	100	104	109	115	117	115	112	100	90	77	76	77

MAY 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	U L 528	U L 548	524	540	A	A	A	A	L					
2								L	L	U L 536	L	U L 584	552	A	A	A	A	A	L					
3									L	L	L	U L 556	A	516	U L 552	A	A	A	A					
4										A	L	A	A	A	A	U L 548	A	L						
5								A			L 504	U L 576	532	L 544	U L 532	U L 488	A	A						
6								L		L	U L 508	U L 544	L 520	520	A	504	A	L						
7								L		A	L 496	A	A	544	524	U A 516	488	A	A					
8								L	A	L	L 512	L	520	A	A	U A 504	A	A	A					
9									A	A	A	U L 548	L 504	A	A	512	A	L 488	A					
10										L	U L 528	L	A	A	A	548	U L 512	U L 476	L					
11								A	A	A	A	U L 588	U L 564	L 568	568	524	L	A	A					
12								A		A	A	A	A	524	L 524	A	500	L						
13									U L 504	U L 504	U L 552	L	536	L 548	516	L 504	L	L	L					
14									A	A	544	A	512	A	508	A	A	A	A					
15										U L 508	L 532	U L 588	536	A	A	A	A	A	A					
16									L	L	A	A	536	L 564	544	516	A	A	A					
17								A			L 536	B	R 512	536	L	L 528	U L 512	L	L					
18								L			A	A	U L 592	A	A	U L 512	U L 540	464	L	208				
19								L	L 404		L	U L 560	548	A	540	516	A	U L 468	L					
20									A	L	A	A	A	A	L 540	516	504	452	A					
21								A		A	U L 544	A	544	U L 556	A	524	U L 508	U L 472	L					
22								L	L	U L 568	U L 552	L	A	A	A	A	A	A	A					
23								L	A	A	L	L 536	A	A	A	A	U L 508	L 480	L	L				
24								L	452	U L 480	A	A	A	L 552	L 536	A	L	L	L					
25								388	L	U L 504	U L 492	568	516	524	516	516	A	L 480	L					
26								A	A	A	A	A	A	A	A	508	A	A	L					
27									L	L	A	A	A	A	508	504	U A 476	L 452	L 392					
28								L	L 464	L 492	L	U L 512	524	528	500	492	U L 488	440	L					
29									L	A	A	L 540	516	500	508	496	496	452	L					
30							L	L	L	L	A	U L 528	508	L 532	492	492	L 484	U L 452	L					
31								L	U L 548	476	U R 516	A	520	520	508	504	480	468	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	5	8	14	14	20	17	17	22	13	13	1	1				
MED								388	L 464	U L 504	U L 528	U L 552	524	536	524	512	U L 500	L 468	L 392	208				
U Q									U L 526	U L 522	U L 544	U L 576	540	L 550	540	516	U L 510	L 478						
L Q									428	L 486	L 508	L 540	516	522	508	504	486	452						

MAY 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							168	264	328	A	A	A	A	A	A	U A 372	332	U A 288	A					
2							A	240	A	A	A	404	U R 404	U R 400	R 380	R 364	324	284	U A 224					
3							A	A	A	A	A	U R 388	A	A	U A 388	R 360	324	272	U A 200					
4							A	A	U A 292	U A 316	A	A	A	A	A	A	A	A	A					
5							A	U A 272	A 320	A	360	A 380	U R 380	R 368	A	A	A	A	A	A				
6							204	U A 260	A	U A 336	A	A	A	A	U A 396	A	A	A	A	A				
7							A	268	A 300	320	R 352	A	A	A	R 412	R 376	R 348	U A 296	A	A				
8							180	A 244	A	A	A	A	R 416	R 400	A	R 360	336	A 304	U A 248	A				
9							A	A	A	A	A	A	A	A	A	U R 356	320	296	228	A				
10							A	A	U A 308	A	A	A	A	A	A	U R 384	356	304	R 252	B				
11							188	A 284	U A 312	U A 348	A	A	B	A	A	A	360	312	U A 244	A				
12							A	U A 264	316	344	R 376	A	A	A	A	A	A	A 320	A	A				
13							160	A 256	A	336	A	A	A	436	R 380	A 352	A	A	A	A				
14							A 172	256	U A 308	A	A	A	A	A	A	R 372	336	304	A	A				
15							U A 176	A	A	A	B	U R 388	U R 408	404	U R 380	R 364	336	304	U A 240	A				
16							180	A	A	A	A	A	A	R 432	U R 400	R 376	340	304	A	A				
17							A	A	A	A	A	B	B	B	U R 408	R 400	340	304	U A 244	A				
18							A	U A 260	A	A	A	A	A	A	A	380	R 348	300	252	164				
19							188	A	A	A	A	A	428	R 412	R 380	R 360	A	296	228	A				
20							A	U A 268	308	A	U A 352	A	A	A	A	R 364	U R 336	300	A	A				
21							A	A	A	A	A	A	A	A	A	U R 360	344	A 316	A	A				
22							208	272	A 328	A	U R 376	A	A	U R 400	A	U A 356	352	300	U A 232	A				
23							A	268	300	A	A	A	A	A	A	A	332	A	A	A				
24							188	284	308	A	A	A	A	A	U R 376	364	344	308	248	A				
25						A	A	U A 276	A	A	U R 360	U R 384	U R 392	U R 408	388	360	340	304	252	A				
26						A	A	280	344	A 352	A	A	A	A	A	A	A	U A 304	240	A				
27						B	A	280	U A 320	A	A	U A 356	A	A	A	A	A	A	A	A				
28						A	208	260	A	A	A	A	U R 388	A	U R 372	U R 368	336	296	A 236	A				
29						B	188	256	A	A	A	A	A	A	U R 400	U R 368	332	292	A 236	A				
30						A	A	A	328	348	A	A	A	A	A	A	A	A 300	A 256	A				
31						A	A	272	U A 320	U A 344	U A 368	U R 380	U R 396	U R 376	U R 376	U R 368	336	308	A 252	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							13	21	16	9	7	7	8	10	14	22	22	25	18	1				
MED							188	268	A 314	A 344	U R 360	U R 384	U R 400	R 402	U R 384	R 364	336	304	A 242	164				
U Q							196	274	324	A 348	R 376	388	R 412	R 412	U R 400	R 372	344	A 304	252					
L Q							174	258	308	328	352	A 380	U R 390	R 400	U R 380	360	332	296	U A 232					

MAY 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 22	J A 17	20	E B 14	J A 16	J A 17	G	G	34	39	J A 42	J A 47	J A 45	J A 60	J A 62	J A 61	J A 77	J A 70	J A 104	J A 156	J A 106	J A 52	J A 50	J A 24
2	J A 34	E B 18	J A 18	E B 14	J A 20	18	20	32	J A 45	41	43	46	46	J A 55	J A 68	J A 59	J A 77	J A 64	31	J A 96	J A 78	J A 77	J A 79	J A 54
3	J A 60	J A 46	J A 19	J A 18	19	J A 21	J A 21	J A 31	J A 38	J A 52	J A 62	J A 51	J A 122	J A 60	49	J A 52	J A 62	J A 106	J A 124	J A 98	J A 54	J A 98	J A 55	J A 61
4	J A 80	J A 96	J A 66	J A 48	J A 41	J A 37	J A 22	J A 40	J A 48	J A 52	J A 44	J A 68	J A 89	J A 54	J A 55	J A 43	J A 63	J A 37	J A 40	J A 35	J A 100	J A 56	J A 84	J A 56
5	J A 30	J A 38	J A 21	J A 23	J A 42	J A 24	J A 29	J A 66	J A 46	J A 51	J A 47	J A 54	J A 50	J A 47	J A 45	J A 50	J A 70	J A 122	J A 84	J A 40	J A 48	J A 34	J A 30	J A 30
6	J A 30	J A 28	J A 16	18	J A 24	J A 20	G 18	29	J A 46	J A 70	J A 48	J A 47	J A 52	J A 54	J A 51	50	J A 72	J A 73	J A 111	J A 85	J A 66	J A 19	J A 22	J A 48
7	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14	J A 28	J A 39	J A 46	J A 52	J A 47	J A 70	J A 79	J A 48	48	J A 55	J A 51	J A 87	J A 127	J A 54	J A 52	J A 82	J A 56	J A 29
8	J A 25	J A 19	J A E B 14	E B 14	E B 14	E B 13	G	32	J A 45	J A 61	J A 45	42	48	J A 75	J A 110	J A 59	J A 69	J A 53	J A 88	J A 66	J A 52	J A 134	J A 98	J A 88
9	J A 133	J A 117	J A 74	J A 86	J A 46	J A 25	J A 36	J A 67	J A 70	J A 61	J A 76	J A 52	J A 53	J A 63	J A 62	J A 50	J A 61	J A 45	J A 57	J A 28	J A 47	J A 65	J A 62	J A 38
10	J A 26	J A 21	J A 28	J A 21	J A 18	J A 31	J A 36	J A 33	36	J A 42	J A 53	J A 70	J A 118	J A 92	J A 59	43	40	G	G	E B 16	J A 78	J A 38	J A 75	J A 58
11	J A 63	J A 31	J A 45	J A 49	J A 56	J A 45	21	J A 63	J A 54	J A 103	J A 66	J A 48	E B 42	42	J A 65	J A 47	46	38	J A 120	J A 85	J A 65	J A 51	J A 52	J A 31
12	J A 22	J A 64	J A 45	J A 28	J A 20	J A E B 13	23	J A 66	J A 57	J A 65	J A 58	J A 71	J A 60	J A 65	J A 46	J A 68	J A 62	41	J A 84	J A 41	J A 67	J A 44	J A 49	J A 63
13	J A 22	J A 22	J A 21	J A 18	J A 22	J A E B 14	21	33	J A 43	40	42	J A 53	45	46	J A 48	J A 41	J A 46	J A 34	J A 32	J A 38	J A 32	J A 17	J A 21	J A 20
14	J A 53	J A 49	J A 53	J A 45	J A 44	J A 27	22	J A 47	J A 66	J A 77	J A 52	J A 64	J A 45	J A 69	J A 54	J A 57	J A 53	J A 60	J A 69	J A 46	J A 22	J A 51	J A 43	J A 21
15	19	J A 19	22	J A 16	J A E B 14	E B 14	20	29	J A 38	J A 42	J A 41	G	47	J A 52	J A 63	J A 64	J A 77	J A 58	J A 56	J A 35	J A 42	J A 51	J A 75	J A 52
16	J A 100	J A 56	J A 38	J A 43	J A 44	J A 31	23	J A 33	J A 38	J A 50	J A 76	J A 61	J A 53	J A 56	J A 54	J A 48	J A 72	J A 63	J A 82	J A 135	J A 40	J A 32	J A 88	J A 58
17	J A 49	J A 72	J A 120	J A 61	J A 38	J A 20	J A 26	J A 36	J A 38	37	40	E B 72	E B 43	E B 44	J A 58	G	J A 46	J A 43	J A 52	J A 36	J A 70	J A 32	J A 19	J A 30
18	J A 21	J A 32	J A 35	J A 58	J A E B 14	J A 17	J A 26	J A 38	J A 44	J A 59	J A 69	J A 71	J A 114	J A 60	J A 82	G	G	G	28	G	E B 14	J A 55	J A 85	J A 84
19	J A 84	E B 14	18	E B 13	E B 13	20	G 19	J A 37	J A 42	44	46	47	47	J A 58	J A 51	J A 54	J A 68	J A 41	31	J A 54	J A 26	J A 55	J A 41	J A 72
20	J A 54	J A 45	J A 49	J A 44	J A 29	J A 46	J A 44	J A 53	J A 86	J A 120	J A 143	J A 98	J A 105	J A 125	J A 65	G	39	40	J A 48	J A 32	J A 36	J A 43	J A 64	J A 95
21	J A 46	J A 65	J A 32	J A 43	J A 61	J A 48	J A 54	J A 61	J A 54	J A 61	J A 43	J A 65	J A 52	J A 51	J A 66	42	G 30	35	J A 35	J A 26	J A 23	J A 49	J A 56	J A 44
22	J A 61	J A 50	J A 81	J A 64	55	J A 53	G 20	30	40	40	47	J A 58	J A 76	J A 58	J A 70	J A 57	J A 67	J A 58	J A 105	J A 104	J A 81	J A 47	J A 21	J A 61
23	J A 66	J A 39	J A 44	J A 29	J A 25	J A 22	J A 38	J A 45	J A 80	J A 95	J A 60	J A 52	J A 82	J A 65	J A 79	J A 84	J A 43	J A 60	J A 32	24	J A 19	J A 29	J A 74	J A 84
24	J A 41	J A 24	J A 38	J A 22	20	J A 19	J A 27	G	36	J A 51	J A 104	J A 99	J A 124	J A 52	J A 65	J A 70	42	35	J A 39	J A 64	J A 150	J A 30	J A 85	J A 54
25	J A 55	J A 65	J A 91	J A 62	J A 61	J A 56	J A 23	J A 32	J A 35	J A 44	G	G	44	G	44	J A 50	J A 56	34	28	J A 19	22	J A 38	J A 38	J A 32
26	J A 49	J A 22	J A 19	J A 28	J A 52	J A 34	J A 38	J A 50	J A 66	J A 64	J A 97	J A 133	J A 128	J A 72	J A 88	J A 48	J A 144	J A 102	29	J A 53	J A 84	J A 19	J A 20	J A 35
27	J A 87	J A 96	J A 65	J A 36	J A 63	J A 53	22	J A 45	J A 53	J A 55	J A 86	J A 130	J A 102	J A 66	J A 46	45	J A 51	J A 34	J A 28	J A 36	J A 20	J A 22	J A 21	J A 66
28	J A 72	J A 46	J A 28	J A 47	J A 49	J A 36	G	30	J A 40	J A 46	J A 52	J A 48	43	42	G 34	G 32	38	36	J A 41	J A 33	J A 18	J A 24	J A 49	J A 47
29	J A 32	J A 52	J A 43	J A 48	J A 44	J A 22	22	33	J A 49	J A 86	J A 108	J A 54	J A 50	46	44	41	38	38	31	21	J A 18	22	20	J A 51
30	J A 46	J A 55	J A 51	J A 62	J A 43	J A 27	J A 32	J A 44	G	J A 43	J A 77	J A 80	J A 53	J A 43	41	40	J A 47	J A 40	29	J A 23	J A 17	J A 54	J A 56	J A 68
31	J A 73	J A 52	J A 36	J A 31	J A 21	J A 23	J A 30	J A 40	J A 50	J A 50	J A 68	J A 114	45	G	45	46	J A 46	36	34	J A 22	J A 23	20	J A 51	J A 49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 49	J A 45	J A 36	J A 31	J A 29	J A 23	J A 23	J A 37	J A 45	J A 52	J A 52	J A 56	J A 52	J A 55	J A 55	J A 50	J A 53	J A 41	J A 41	J A 38	J A 47	J A 44	J A 52	J A 52
U Q	J A 66	J A 56	J A 51	J A 48	J A 46	J A 36	J A 30	J A 47	J A 54	J A 64	J A 76	J A 71	J A 89	J A 65	J A 65	J A 57	J A 69	J A 63	J A 84	J A 66	J A 70	J A 55	J A 75	J A 63
L Q	J A 26	J A 22	20	E B 18	E B 19	E B 18	G 20	32	38	43	44	48	45	46	46	42	43	36	31	26	J A 22	J A 29	J A 30	J A 32

MAY 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	19	E B 14	E B 14	E B 14	E B 13	E B 14	G	G	G 30	38	41	46	44	50	56	56	73	52	24	A A 156	42	20	22	19
2	20	E B 18	E B 14	E B 14	E B 14	E B 14	18	26	39	38	41	45	46	53	64	56	62	62	29	35	39	41	47	26
3	52	28	E B 14	15	E B 14	18	19	28	33	46	44	41	60	46	46	51	54	101	106	42	27	40	27	30
4	46	38	46	32	32	27	19	38	43	50	42	64	70	54	53	40	54	34	34	34	56	20	22	38
5	18	E B 14	E B 14	17	30	20	23	57	44	45	45	50	48	46	43	44	57	44	49	34	34	24	25	22
6	21	23	E B 14	E B 13	18	E B 14	G 15	29	43	48	45	46	50	48	48	48	55	44	61	76	28	17	18	20
7	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14	22	29	44	49	42	59	70	46	45	52	46	80	104	47	23	34	30	24
8	E B 14	E B 14	E B 14	E B 14	E B 14	E B 13	G	32	42	47	40	42	48	67	92	50	66	45	48	40	30	40	19	23
9	21	31	32	28	28	E B 13	24	43	62	55	64	43	44	57	61	50	56	39	54	21	21	E B 14	20	20
10	17	E B 14	22	20	E B 14	28	22	30	34	39	44	52	93	60	56	43	40	G	G	E B 16	34	24	34	32
11	39	20	19	36	39	21	G 16	61	44	69	64	45	E B 42	41	47	43	42	36	71	82	21	25	24	19
12	E B 14	21	20	20	E B 14	E B 13	21	59	43	52	55	60	58	46	43	66	38	39	56	32	44	23	24	30
13	21	E B 14	E B 14	E B 14	E B 14	E B 14	19	32	38	37	38	50	44	46	44	40	44	33	28	24	22	E B 12	17	E B 13
14	E B 14	19	21	28	18	20	20	44	63	A A 77	43	61	44	65	46	52	49	54	54	34	E B 14	31	26	E B 13
15	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	20	28	32	39	40	G	46	50	61	56	68	51	49	26	27	21	42	38
16	32	E B 13	29	24	22	E B 13	20	30	36	43	67	59	52	55	52	45	62	61	70	104	22	24	54	31
17	24	39	38	29	28	E B 14	24	32	36	37	39	E B 72	E B 43	E B 44	51	G	42	42	29	21	45	20	E B 14	24
18	17	20	21	E B 14	E B 14	E B 14	17	30	42	44	54	56	45	54	72	G	G	G	27	G	E B 14	29	29	32
19	22	E B 14	E B 14	E B 13	E B 13	E B 14	G 16	31	38	43	46	46	46	56	47	46	57	39	31	43	21	21	29	30
20	31	37	40	26	20	18	40	44	68	44	A A 143	86	70	57	44	G	38	40	45	31	33	20	21	21
21	E B 14	20	23	26	30	30	37	48	32	54	42	64	50	50	62	42	G 28	34	34	20	E B 14	E B 13	27	26
22	22	21	20	32	21	30	G 16	29	38	39	46	54	75	54	68	56	57	52	97	46	40	21	E B 13	31
23	28	20	22	E B 14	18	20	37	34	55	A A 95	56	46	77	64	72	83	41	34	30	19	E B 13	E B 14	E B 14	44
24	21	E B 14	24	E B 14	E B 14	E B 14	G 16	G	34	42	65	64	A A 124	45	48	57	42	31	35	58	65	22	23	16
25	30	24	29	29	19	16	22	31	33	38	G	G	44	G	43	48	53	33	27	18	E B 14	E B 14	20	E B 14
26	17	E B 14	E B 14	17	23	25	31	48	56	57	74	A A 133	A A 128	56	60	43	A A 144	73	28	32	82	E B 14	E B 14	20
27	22	E B 14	E B 14	24	36	E B 14	21	40	44	48	A A 86	A A 130	52	63	42	40	48	32	26	24	17	18	E B 14	E B 14
28	30	E B 14	E B 14	19	E B 14	20	G	29	36	39	44	40	43	41	G 33	G 32	38	35	37	31	E B 14	21	20	28
29	19	20	33	28	26	E B 14	22	32	42	A A 86	55	44	45	44	44	40	38	37	30	20	E B 14	E B 14	E B 13	20
30	22	20	20	30	32	20	24	31	G	G 31	66	45	43	41	41	38	36	34	28	20	E B 14	16	31	42
31	25	E B 14	21	23	17	18	27	36	44	43	45	56	43	G	44	46	44	35	34	20	20	E B 14	16	22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	21	19	20	20	18	E B 14	20	32	42	44	45	50	48	50	48	46	48	39	34	32	23	21	22	24
U Q	28	21	24	28	28	20	24	43	44	52	64	61	70	56	61	52	57	52	54	43	39	24	29	31
L Q	E B 17	E B 14	E B 14	E B 14	E B 14	E B 14	G	29	34	39	42	45	44	45	44	40	40	34	28	20	E B 14	E B 14	E B 17	20

MAY 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	13	14	14	14	20	20	24	31	29	34	32	30	23	16	14	14	14	14	13	13
2	14	18	14	14	14	14	14	12	16	20	20	23	26	31	24	21	21	17	14	14	13	13	14	14
3	13	14	14	14	14	14	14	14	15	16	21	20	23	24	25	24	21	16	13	14	14	14	14	14
4	14	14	14	14	14	14	14	16	16	19	23	26	30	31	32	24	22	17	14	14	14	13	13	13
5	14	14	14	14	14	14	14	14	20	22	24	27	27	29	39	25	18	18	15	13	14	13	14	14
6	14	14	14	13	13	14	14	16	33	20	22	31	32	40	30	32	29	20	14	14	14	14	14	14
7	14	14	14	14	15	14	14	14	16	20	22	39	38	30	29	23	22	17	14	14	14	13	14	14
8	14	14	14	14	14	13	14	14	20	21	24	26	24	25	25	22	20	16	14	14	13	14	13	14
9	14	13	13	13	14	13	13	13	15	22	24	31	33	26	31	24	22	17	15	14	13	14	13	14
10	14	14	14	14	14	14	14	16	21	21	22	33	26	32	40	30	24	21	17	16	14	14	13	14
11	14	14	13	13	14	14	14	14	14	20	22	26	42	22	26	24	23	20	13	12	13	13	13	14
12	14	13	13	14	14	13	14	13	16	22	30	30	38	32	29	21	22	20	14	13	13	14	13	13
13	13	14	14	14	14	14	14	14	16	16	22	33	29	24	23	22	21	16	12	12	14	12	14	13
14	14	14	13	13	14	13	14	14	20	20	22	23	30	32	24	22	22	20	13	14	14	14	13	13
15	14	14	14	14	14	14	15	14	16	24	24	24	36	24	25	26	22	20	14	14	14	14	14	14
16	13	13	13	14	14	13	14	15	20	23	24	26	32	26	24	22	20	19	14	14	14	13	14	14
17	14	14	14	14	14	14	14	14	20	24	24	72	43	44	33	26	20	13	14	14	14	13	14	13
18	14	14	14	14	14	14	14	16	16	22	27	32	25	25	36	22	18	17	15	14	14	14	14	14
19	14	14	14	13	13	14	12	13	20	28	23	27	24	24	24	24	19	16	13	13	14	13	13	14
20	14	13	14	14	14	13	14	16	21	23	22	31	24	24	26	25	23	19	14	12	14	14	13	14
21	14	14	14	17	13	14	14	14	17	25	22	24	41	28	27	24	21	16	14	14	14	13	14	14
22	13	14	14	13	14	14	14	14	21	21	25	24	30	24	24	19	20	17	14	17	14	14	13	14
23	14	14	14	14	14	14	14	13	15	21	21	25	30	24	28	24	21	21	13	18	13	14	14	14
24	14	14	14	14	14	14	14	16	20	20	24	33	28	30	23	24	22	16	17	14	14	14	14	14
25	14	14	14	14	14	14	14	14	17	21	22	24	26	24	23	21	24	18	13	14	14	14	14	14
26	14	14	14	14	14	14	14	16	20	21	20	23	24	30	25	24	20	16	13	13	14	14	14	14
27	14	14	14	14	14	14	14	14	17	21	22	23	34	30	31	29	20	19	12	14	14	14	14	14
28	14	14	14	13	14	14	15	13	18	21	24	30	31	27	24	23	21	18	12	12	14	14	14	14
29	14	14	14	14	14	14	14	14	15	20	24	23	23	29	24	23	24	16	14	14	14	14	13	13
30	14	14	14	14	14	14	14	14	18	23	22	22	25	24	32	21	22	17	14	13	14	13	13	14
31	14	14	13	14	14	15	15	14	18	21	23	24	31	32	24	25	20	19	14	12	13	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	18	21	23	26	30	28	26	24	21	17	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	15	20	22	24	31	33	31	31	25	22	19	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	16	20	22	24	25	24	24	22	20	16	13	13	14	13	13	14

IONOSPHERIC DATA STATION Okinawa

MAY 2012 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	288	298	315	322	304	323	341	354	353	315	297	292	300	297	293	300	302	307	324	A	334	281	278	275
2	282	294	326	353	283	298	323	356	353	313	292	269	286	303	299	306	312	324	319	327	277	R 282	281	293
3	282	286	323	319	303	318	332	324	332	331	291	272	275	U R 296	299	305	317	324	321	305	298	289	301	283
4	F 273	289	319	303	289	281	325	332	319	309	291	279	U R 297	300	304	303	R 300	310	317	325	317	308	284	F 275
5	F 291	F 296	F 332	F 330	F 317	F 336	337	365	339	317	303	270	284	294	298	299	312	R 325	323	327	287	287	293	289
6	U R 294	R 309	R 318	339	304	296	318	359	336	316	296	271	283	294	289	294	303	311	323	324	319	280	273	272
7	280	301	313	311	301	294	317	336	334	341	304	253	270	286	297	295	311	309	317	350	363	277	272	273
8	281	277	320	319	F 329	F 323	342	359	330	311	284	264	274	292	301	297	310	318	321	317	326	285	F 284	F 285
9	F 285	F 291	F 339	F 333	F 324	F 300	331	340	333	305	255	262	275	281	291	291	296	280	304	314	325	318	272	259
10	261	270	284	340	341	274	328	360	344	307	282	279	287	288	296	293	295	313	319	313	297	290	269	F 278
11	F 290	F 280	F 292	F 329	F 299	F 281	317	352	351	U A 299	311	256	267	284	287	304	315	314	313	334	334	277	278	270
12	R 284	F 305	F 324	F 325	V 289	309	342	334	326	309	277	267	285	293	309	296	310	304	283	304	316	301	271	287
13	F 283	F 308	F 307	F 319	F 310	F 315	339	340	328	290	277	272	269	278	295	313	307	306	285	294	304	289	282	262
14	F 281	300	F 300	F 289	F 328	296	F 305	F 318	334	A	266	273	296	292	299	310	311	304	314	319	322	271	267	274
15	290	299	322	327	285	294	366	384	319	324	302	273	280	296	289	278	272	299	312	323	316	294	280	F 278
16	F 296	F 311	F 331	F 336	F 288	F 312	352	360	334	296	271	259	268	282	294	303	312	297	285	A 284	299	285	279	F 283
17	280	302	294	307	306	306	322	298	300	284	302	251	278	289	285	294	298	301	292	312	345	292	263	268
18	277	282	293	298	293	316	341	375	344	310	283	262	270	275	289	301	302	313	312	307	284	267	268	F 282
19	F 287	F 280	F 288	F 296	F 306	F 311	324	315	333	269	255	263	276	290	293	303	316	323	320	328	284	266	260	272
20	F 277	F 294	325	F 320	F 292	F 289	310	339	334	293	A	252	266	273	278	287	292	303	317	319	285	269	F 261	F 279
21	F 312	F 309	F 308	F 325	F 280	F 308	F 344	349	337	313	304	268	279	289	289	291	293	307	318	R 319	322	288	274	262
22	F 284	F 335	F 331	F 301	F 310	F 327	332	357	337	308	288	259	270	267	272	270	286	299	315	312	300	274	271	267
23	284	281	298	314	302	300	329	353	369	A	275	297	303	288	263	283	282	302	302	299	295	274	274	R 269
24	284	R 287	299	301	323	303	V 317	338	353	333	277	265	A	283	287	288	289	299	300	305	319	281	282	287
25	278	F 315	F 342	F 313	F 306	F 339	F 348	347	323	306	291	254	258	273	292	301	309	308	307	316	305	283	274	280
26	281	302	310	319	292	282	310	316	324	313	277	A	A	269	280	284	A	304	306	303	309	282	280	289
27	F 288	310	F 286	F 324	F 302	F 295	336	342	332	311	A	A	270	267	277	291	298	313	312	325	298	279	275	F 272
28	F 296	F 323	F 325	F 304	F 313	F 305	F 337	351	349	355	282	272	265	261	269	288	295	325	318	304	294	296	278	287
29	284	F 284	323	316	287	F 309	333	332	346	A	313	288	277	273	279	290	294	307	296	309	294	281	281	275
30	F 287	F 309	316	F 294	F 299	F 313	329	371	335	318	291	274	254	262	271	283	301	310	309	302	306	299	284	F 286
31	F 290	F 329	F 302	F 305	F 287	F 294	341	343	306	325	327	281	268	277	279	292	300	303	321	323	281	279	F 285	281
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	28	29	29	29	31	31	31	30	31	31	30	31	31	31	31
MED	284	299	316	F 319	F 302	F 305	332	347	334	311	291	269	275	286	289	294	302	307	314	315	305	282	278	278
U Q	F 290	F 309	F 325	327	F 310	F 315	341	359	344	318	302	274	284	293	297	303	311	313	319	324	322	290	282	285
L Q	281	286	299	F 304	289	294	322	334	328	306	277	260	268	273	279	288	295	303	304	305	294	277	271	272

MAY 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	U L 366	U L 357	367	A 346	A	A	A	A	L					
2								L	L	U L 366	L	U L 336	352	A	A	A	A	A	L					
3									L	L	L	U L 357	A	A 365	U L 328	A	A	A	A					
4										A	L	A	A	A	A	U L 343	A	L						
5								A			L 380	U L 335	357	L 352	U L 358	U L 377	A	A						
6								L		L	U L 390	U L 360	A	A 353	A	A	A	L						
7								L		A	L 397	A	A	353	351	A	A	A	A					
8								L	A	L	L 407	L	362	A	A	A	A	A	A					
9									A	A	A	U L 360	L 395	A	A	A	A	L 334	A					
10										L	U L 363	L	A	A	A	323	U L 336	U L 337	L					
11								A	A	A	A	U L 334	U L 365	L 345	333	341	L	A	A					
12								A		A	A	A	A	367	L 356	A	347	L						
13									U L 369	U L 377	U L 350	L	389	L 339	366	L 359	L	L	L					
14									A	A	362	A	381	A	379	A	A	A	A					
15										U L 370	L 355	U L 346	368	A	A	A	A	A	A					
16									L	L	A	A	A	A	A	350	A	A	A					
17								A			L 357	B	R 409	366	L	L 339	U L 352	L	L					
18								L			A	A	U L 348	A	A	U L 376	U L 335	365	L	404				
19								L	L 432		L	U L 349	356	A	348	359	A	U L 349	L					
20									A	L	A	A	A	A	L 345	363	349	A 356	A					
21								A		A	U L 361	A	A 349	A 333	A	360	U L 347	U L 358	L					
22								L	L	U L 356	U L 349	L	A	A	A	A	A	A	A					
23								L	A	A	L	L 362	A	A	A	A	U L 356	L 347	L	L				
24								L	399	U L 390	A	A	A	L 362	A	A	L	L	L					
25								417	L	U L 373	U L 401	350	405	378	381	A	A	L 353	L					
26								A	A	A	A	A	A	A	A	361	A	A	L					
27									L	L	A	A	A	A	398	365	A	L 365	L 375					
28								L	L 383	L 386	L	U L 391	377	378	403	363	U L 343	363	L					
29									L	A	A	L 365	402	399	388	384	340	354	L					
30							L	L	L	L	A	U L 374	389	L 371	394	365	L 356	U L 360	L					
31								L	U L 345	403	U R 358	A	390	390	377	A 357	A 355	347	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	5	8	14	14	18	16	15	17	11	13	1	1				
MED								417	L U 383	U L 375	U L 362	U L 357	372	364	366	360	U L 347	L 354	L 375	404				
U Q									416	L 388	L 390	L 362	390	374	388	365	L 355	362						
L Q									U L 357	U L 368	L 357	U L 346	357	L 349	348	346	U L 340	L 347						

MAY 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 h′F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								216	226	254	300	316	294	310	320	304	296	288	258					
2								240	238	298	308	358	338	318	316	302	296	266	246					
3									248	254	252	L 340	354	326	306	304	282	278	E A 342					
4										268	300	344	318	304	300	300	290	266						
5								238			284	358	344	326	312	308	284	262						
6								226		L 294	294	344	332	326	310	308	300	272						
7								240		252	262	A 380	378	338	324	320	288	286	296					
8								234	234	L 306	334	L 346	376	342	A 326	308	286	264	256					
9									274	286	E A 374	378	322	338	320	328	304	322	274					
10										282	300	342	E A 368	334	310	324	304	272	246					
11								246	240	A	A 300	384	360	328	328	302	272	268	282					
12								E A 276		288	A 294	358	332	324	290	306	278	266						
13									274	300	346	340	364	362	322	278	270	268	294					
14									256	A	370	348	306	326	304	290	284	294	270					
15										294	316	364	328	300	308	322	356	310	280					
16									286	L 310	E A 370	376	372	348	320	292	286	268	A 312					
17								226			302	E B 422	340	318	338	312	298	278	278					
18								222			312	330	366	352	330	306	302	274	242	226				
19								222	238		342	354	358	318	318	306	282	272	252					
20									276	L 330	A	A	384	354	348	336	304	286	272					
21								A 246		284	320	A 352	344	338	328	330	308	290	264					
22								230	238	318	330	366	A 376	316	360	360	332	302	288					
23								222	A 228	A	L 384	326	324	340	A 386	A 346	322	286	276	264				
24								224	230	258	E A 408	A 388	A	344	318	330	324	294	272					
25								230	226	294	278	396	376	370	326	308	290	282	278					
26								252	262	278	E A 404	A	A	366	340	338	A	298	250					
27									262	294	A	A	340	370	360	328	296	264	260					
28								238	254	252	354	338	360	376	378	328	314	266	256					
29									250	A	318	340	350	362	346	322	312	278	236					
30							252	220	258	300	E A 374	348	368	368	360	338	306	266	270					
31								258	312	290	290	E A 312	396	350	328	312	306	302	256					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	20	21	23	29	28	29	31	31	31	30	31	27	2				
MED							252	231	250	290	308	349	352	338	324	312	297	278	270	245				
U Q								243	268	300	E A 362	371	370	354	340	328	306	290	280					
L Q								223	236	268	297	340	332	324	312	304	286	266	256					

MAY 2012 h′F2 (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 2012 h′F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	278	256	242	218	204	222	236	214	210	210	198	A 234	242	E A 294	A	A	A	A	230	A	214	A 218	A 282	300
2	300	284	234	212	226	266	240	222	E A 224	194	218	234	240	A	A	A	A	A	224	228	254	272	282	278
3	306	272	234	220	220	230	236	214	216	A	E A 230	192	A	E A 248	E A 274	A	A	A	A	250	252	284	256	292
4	A 320	A 306	A 278	260	A 298	A 298	238	236	240	A	212	A	A	A	A	216	A	230	238	240	234	204	266	A 310
5	264	262	242	234	A 250	236	230	A	238	250	A 230	E A 284	E A 278	238	A 220	A 242	A	A	238	228	240	252	280	278
6	278	260	222	206	232	250	244	220	232	A 252	A 222	A 222	A	E A 282	A	A	A	A	256	262	222	224	302	318
7	304	266	234	212	240	252	250	218	254	A	202	A	A	A 240	E A 252	A	A	A	A	232	198	A 302	304	310
8	292	272	228	206	220	224	230	214	A	E A 248	184	H 162	E A 264	A	A	A	A	A	A	244	230	A 278	302	322
9	296	276	242	234	222	244	238	248	A	A	A	A 204	A 208	A	A	A	A	E A 258	A	250	222	226	318	342
10	342	314	280	210	196	E A 324	252	216	224	220	236	A	A	A	A	272	262	220	228	226	238	246	318	322
11	310	286	256	246	A 274	A 274	248	A	A	A	A	A 232	186	212	E A 258	A 260	A	A	A	260	226	A 274	296	300
12	308	276	250	228	230	230	230	A	250	A	A	A	A	A 244	A 230	A	206	A	E A 290	264	256	228	A 286	A 318
13	290	266	268	230	226	230	214	212	A 212	208	202	A 292	206	264	236	222	A	220	218	276	250	226	258	312
14	344	264	266	290	234	258	242	258	A	A	208	A	214	A	E A 240	A	A	A	A	248	220	A 270	318	308
15	284	270	240	214	242	270	218	210	210	194	196	192	A 230	A	A	A	A	A	A	244	236	238	A 326	Q 340
16	290	264	248	226	A 244	236	238	216	200	218	A	A	A	A	A	A 266	A	A	A	A	246	A 268	A 322	294
17	306	272	288	254	232	236	238	A	218	212	200	B	198	232	A	240	E A 252	A 262	244	258	232	214	262	302
18	292	292	286	258	256	234	220	216	224	A 226	A	A	198	A	A	212	206	212	228	214	234	A 304	324	314
19	296	290	280	Q 258	Q 240	Q 244	230	206	204	236	256	236	A 240	A	E A 262	E A 258	A	E A 250	238	224	230	316	342	324
20	310	292	258	242	274	282	254	244	A	A 224	A	A	A	A	E A 242	214	228	E A 254	A	232	250	286	324	298
21	258	272	248	230	A 300	A 288	240	A	198	A	202	A	E A 288	E A 290	A	222	216	222	260	242	222	218	290	324
22	270	258	244	264	266	256	226	220	198	H 200	A 246	A	A	A	A	A	A	A	A	252	258	266	304	328
23	324	288	272	224	222	242	248	228	A	A	A	E A 240	A	A	A	A	226	204	240	256	232	226	268	334
24	300	278	258	230	230	238	228	212	202	A 220	A	A	A	224	A	A	E A 254	H 208	256	272	268	256	290	280
25	308	272	240	238	250	234	220	A 216	194	206	190	196	190	200	202	A	A	216	228	256	232	246	292	308
26	294	266	222	232	264	280	242	A	A	A	A	A	A	A	A	A 238	A	A	232	248	A	260	274	274
27	292	260	272	244	A 272	278	230	250	A	E A 282	A	A	A	A	200	210	A	212	218	236	250	274	282	336
28	308	246	238	264	242	256	236	220	212	210	A 232	172	208	196	184	222	226	224	A	238	236	242	296	294
29	266	274	244	246	296	250	232	214	A	A	A	A 222	202	214	208	196	234	224	218	242	246	264	270	314
30	284	264	248	304	A 280	250	234	208	198	H 184	A	A 218	214	210	204	200	222	218	222	250	238	248	288	A 346
31	306	248	236	290	296	274	218	226	232	214	E A 244	A	196	186	222	E A 262	E A 280	210	250	226	242	276	290	296
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	25	22	20	19	16	18	16	15	17	12	17	20	29	30	31	31	31
MED	296	272	248	234	242	250	236	216	213	214	207	A 216	208	U 223	U 215	222	223	218	233	244	236	256	290	310
U Q	308	284	268	258	A 272	274	242	227	232	A 231	A 232	A 235	E A 240	E A 256	E A 252	A 259	E A 253	E A 240	247	256	250	274	318	324
L Q	284	264	238	220	226	236	230	214	202	207	200	194	198	211	204	213	219	212	226	232	230	226	280	296

MAY 2012 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2012 h′E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							144	110	110	A	A	A	A	A	A	110	110	110	A					
2							A	110	A	A	A	112	108	110	110	110	110	110	110					
3							A	A	A	A	A	108	A	A	A	108	108	108	108					
4							A	A	108	108	A	A	A	A	A	A	A	A	A					
5							A	108	108	A	110	108	108	A	A	A	A	A	A	A				
6							136	122	A	110	A	A	A	A	A	A	A	A	A	A				
7							A	110	110	106	108	A	A	A	A	110	110	110	A	A				
8							124	112	A	A	A	A	108	110	A	110	108	108	112	A				
9							A	A	A	A	A	A	A	A	A	112	110	110	112	A				
10							A	A	112	A	A	A	A	A	A	112	112	112	112	B				
11							138	112	110	110	A	A	B	A	A	A	110	110	110	A				
12							A	110	110	110	110	A	A	A	A	A	A	A	A	A				
13							122	118	A	116	A	A	A	110	106	110	A	A	A	A				
14							124	108	110	A	A	A	A	A	A	110	110	108	A	A				
15							134	A	A	A	A	108	110	110	110	110	110	110	110	A				
16							132	A	A	A	A	A	A	110	110	110	114	114	A	A				
17							A	A	A	A	A	B	B	B	108	110	110	110	110	A				
18							A	110	A	A	A	A	A	A	A	110	110	110	110	142				
19							140	A	A	A	A	A	108	108	108	108	A	108	108	A				
20							A	110	110	A	108	A	A	A	A	106	108	110	A	A				
21							A	A	A	A	A	A	A	A	A	108	108	112	A	A				
22							130	A	A	A	A	A	A	112	A	112	112	110	108	A				
23							A	110	110	A	A	A	A	A	A	A	110	A	A	A				
24							144	110	110	A	A	A	A	A	108	108	108	108	108	A				
25						A	A	110	A	A	108	108	108	108	108	108	108	110	110	A				
26						A	A	110	110	110	A	A	A	A	A	A	A	A	114	A				
27						B	A	110	108	A	A	108	A	A	A	A	A	A	A	A				
28						A	134	110	A	A	A	A	A	A	116	114	112	112	112	A				
29						B	130	112	A	A	A	A	A	A	110	110	110	110	110	A				
30						A	A	A	110	110	A	A	A	A	A	A	A	A	A	A				
31						A	A	110	110	108	108	108	108	108	106	108	108	108	108	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							13	20	15	9	6	7	7	9	11	22	22	22	17	1				
MED							134	110	110	110	108	108	108	110	108	110	110	110	110	142				
U Q							139	111	110	110	110	108	108	110	110	110	110	110	112					
L Q							127	110	110	108	108	108	108	108	108	108	108	108	108					

MAY 2012 h′E (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 2012 h′Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	94	94	94	B	118	110	G	G	120	110	106	104	108	102	122	114	110	112	112	110	110	106	106	102
2	100	B	100	B	100	110	142	110	108	108	106	156	154	128	122	124	122	114	114	108	104	104	102	100
3	100	100	94	88	88	102	108	104	104	100	102	120	110	100	128	118	114	110	108	106	102	110	98	96
4	96	110	92	98	98	98	108	116	112	106	108	100	100	100	100	102	102	108	102	108	106	120	104	104
5	102	100	98	96	120	94	120	114	112	110	110	110	110	108	112	142	120	112	104	100	98	94	96	94
6	94	92	92	92	92	94	90	126	112	110	106	102	100	104	138	124	116	122	112	112	112	98	98	104
7	B	B	B	B	B	B	124	100	108	108	108	106	102	100	178	134	130	116	108	102	100	102	96	92
8	94	94	B	B	B	B	G	110	106	104	104	108	152	130	120	124	114	116	112	112	126	108	112	110
9	108	108	104	104	98	102	98	98	112	110	110	116	118	110	110	110	110	126	116	112	120	110	116	102
10	102	120	98	96	102	126	126	104	120	108	108	106	102	104	112	166	196	G	G	B	128	118	98	98
11	96	96	102	96	94	96	142	118	114	110	106	104	B	102	110	106	160	166	112	110	106	102	106	100
12	108	104	100	92	94	B	128	114	114	110	110	110	106	104	102	100	102	134	104	104	102	102	112	98
13	96	92	92	92	132	B	142	120	110	122	108	104	108	160	142	110	102	102	98	96	98	92	94	92
14	106	102	104	100	104	104	126	118	110	108	108	102	102	102	102	124	122	116	108	104	106	98	96	96
15	96	94	94	92	B	B	164	136	104	104	112	G	148	134	122	116	114	114	110	106	106	104	104	104
16	104	114	96	98	100	100	130	118	102	106	106	106	108	134	134	126	116	108	108	104	104	94	106	102
17	96	104	120	102	100	102	102	104	126	136	110	B	B	B	136	G	122	114	110	104	104	102	100	98
18	92	114	114	114	B	114	112	114	106	106	108	106	106	106	104	G	G	G	124	G	B	112	114	110
19	110	B	92	B	B	106	106	104	104	182	168	172	156	130	128	126	116	120	114	106	104	102	102	104
20	98	102	96	100	100	112	112	110	108	108	104	104	104	102	104	G	136	118	114	108	104	104	106	108
21	116	108	100	98	100	100	100	102	102	102	106	112	112	114	128	128	104	122	108	102	104	106	110	108
22	106	104	104	104	100	100	100	142	124	128	112	118	118	128	110	114	122	116	106	106	106	104	100	102
23	104	102	102	102	102	102	118	122	112	110	110	110	122	132	104	108	110	110	106	106	98	122	106	98
24	98	96	94	94	92	92	118	G	126	114	106	102	102	114	110	110	142	132	108	108	106	102	106	100
25	102	102	102	102	102	102	104	116	114	110	G	G	124	G	154	134	122	136	120	110	92	104	106	106
26	102	106	106	104	104	118	118	112	110	110	106	104	102	102	100	100	110	136	114	94	108	94	94	102
27	104	106	104	100	100	106	126	112	112	110	104	104	102	100	100	100	96	98	132	94	94	92	92	110
28	106	114	104	106	106	104	G	124	102	104	104	102	162	106	104	102	136	120	108	108	102	94	108	100
29	96	100	98	98	98	112	134	122	108	106	102	102	100	102	130	130	122	114	110	110	92	92	108	106
30	106	106	106	100	100	102	104	108	G	112	100	102	102	104	106	106	104	100	120	98	96	106	104	108
31	104	104	98	96	88	102	116	116	112	114	114	116	124	G	130	114	114	124	112	110	108	90	112	110
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	26	26	26	28	29	30	31	30	28	29	28	31	28	30	29	30	29	30	31	31	31
MED	102	103	100	98	100	102	118	114	111	110	107	106	108	105	112	115	116	116	110	106	104	102	104	102
U Q	106	107	104	102	102	110	127	119	114	110	110	111	123	128	130	126	122	123	114	110	106	106	108	106
L Q	96	98	94	96	98	100	105	106	106	106	106	103	102	102	104	107	110	111	108	103	100	94	98	98

MAY 2012 h′Es (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 2012 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F4	F1	F1		F1	F1			C1	C1	C1	C1	CH11	L2	C2	C2	C3	C3	C3	F7	F3	F4	F3	F4
2	F2		F1		F1	F1	H1	C1	C1	C1	C1	H1	H1	C1	C2	C3	C6	C5	C2	F4	F4	FQ51	FQ41	F5
3	FF33	FF22	FQ11	F2	F1	F1	C2	C1	C1	C2	C2	CL11	CL12	L1	CL11	C2	C4	C6	C7	F5	F4	FF16	F5	F5
4	F5	FF13	F3	F2	F6	F3	LC11	C1	C2	C1	C1	C2	C3	C2	C2	C1	C3	L2	L3	F2	F4	FF13	FQ41	FQ81
5	F2	F3	F2	F1	FF22	F2	CL22	C4	CL21	C2	C1	C2	C1	CL11	C1	HC11	CL31	C3	L5	L4	F5	FQ41	F5	F3
6	F4	F3	F1	F1	F2	F1	L1	CL11	C1	C3	C2	C2	L1	L1	H1	CL21	CL31	CL32	CL53	C8	FQ31	F1	F2	F2
7							F3	H1	C1	C1	C1	L2	L2	L1	HL11	H1	H2	C6	C9	L8	F5	F4	F4	F4
8	F2	F2						C1	C2	C3	L1	L1	H1	H3	C4	C2	C3	C2	C3	C6	FF23	FQ31	FQ31	FQ31
9	FQ41	FQ41	FQ41	FQ31	F5	FQ21	L3	L3	CL53	C3	C3	CL11	C1	C2	C2	C1	C3	C2	C4	C2	FF23	F4	FF23	F3
10	F1	FF11	F2	F1	F1	F6	CL11	C2	C1	C1	C2	L2	L5	L3	C1	H1	H1				FF25	FF11	F5	F6
11	FQ51	FQ41	F2	F6	F5	FQ21	H1	C3	C2	C3	C2	C2		L1	C1	L1	H1	H1	C2	C8	FQ31	FQ41	F3	F2
12	FF11	FQ11	FQ31	F2	F1		C1	C5	C3	C2	C2	C2	C1	L2	L1	L2	L2	HL11	L5	LC41	F9	F9	FF27	F5
13	F2	F3	F2	F2	F1		H1	CL21	C2	CL11	C1	L2	L1	H1	H1	C1	CL31	CL11	LC21	L4	F5	F3	F7	F2
14	FQ21	FQ21	FQ31	FQ41	FQ21	F3	C1	C3	C4	C3	C1	C2	C1	L2	LC21	C2	C2	C4	C5	L6	F1	F6	F5	F3
15	F2	F2	F2	F1			H1	HC12	L1	L1	C1		H1	HL11	C1	C2	C4	C4	C4	C3	F8	FFQ42	FF52	F9
16	F5	F2	F3	F2	F3	FQ21	HL11	CL12	L1	CL11	C3	C2	C1	H1	H1	C1	CL21	CL31	CL62	L6	F5	F7	FF32	F3
17	F2	FF23	FF12	FF31	F4	F1	LC21	L2	CL11	HC11	C1				H1		C1	C1	C2	C2	F3	F3	F1	F3
18	F2	F4	F3	F3		F1	C1	C2	C2	C1	C3	C2	L1	L1	L3				C1			FFQ51	FQ31	FQ41
19	FF31		F1			F1	C1	C2	C2	HL11	HCH11	H1	HC11	C2	C1	C1	CL32	CL11	C1	C5	F4	F5	F9	FFQ22
20	FQ31	FF14	FF34	FF34	F3	FF31	C4	C5	C3	C2	C4	CQ41	L3	L3	L2		H1	CL11	CL22	CL22	F5	F4	FQ41	FQ21
21	FFQ11	FF31	FF11	F1	F4	F8	L3	L7	LQ11	C2	C1	CL21	C2	CL11	CL21	C1	L1	C1	C2	L2	F3	F2	FF13	FF12
22	FF32	FF21	F3	FF22	FQ21	F3	L1	HC12	CL12	CL11	CL11	CL21	CL21	C1	C2	CH22	C3	C3	C6	C6	F5	F5	F2	F3
23	F5	F5	F2	F2	F2	F1	C2	C3	C3	CL51	CL31	CL21	CL13	CL12	LC21	C3	C1	C1	C2	C2	F1	FF11	FF22	F5
24	F3	F2	F3	F2	FF11	FF11	C1		C1	C1	C3	L3	L5	C1	C1	C2	H1	H1	C2	C4	F6	F5	FF41	FF32
25	F4	FQ41	F4	F4	F5	L3	L2	CL21	C1	C1			C1		H1	HC11	C2	H1	C1	CL21	F2	F3	F2	F2
26	F3	F2	F1	F2	F3	C6	C2	C5	C4	C3	C3	C4	L4	L2	L3	L1	CL41	HCL13	CL11	L3	FF93	F2	F2	F4
27	F3	F2	FQ31	F5	F5	L2	CL11	C2	C2	C2	C4	C5	LQ21	L2	L1	L1	L3	L2	HL12	L4	F3	F3	F3	FF41
28	FQ31	FF12	F2	F2	F2	L5		CL11	C2	L1	L2	L1	HL11	L1	L1	L1	HL11	CL11	CL31	CL21	F2	F3	FF41	F4
29	F3	F2	F4	FF72	F5	C1	H1	C1	C2	C6	C5	L2	L1	L1	H1	HL11	CL11	CL11	C2	C1	F2	F1	F1	F3
30	F3	F3	F3	FQ21	F6	L3	L3	C2		C1	L3	L2	L1	L1	L1	L1	L1	LC21	CL12	LC31	F1	F3	F6	FF43
31	FQ41	F2	FQ21	F2	F2	L1	C3	C2	C2	C2	C2	C2	C1		H1	C1	C2	C1	C3	CL11	FF61	FF11	FF22	FF32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

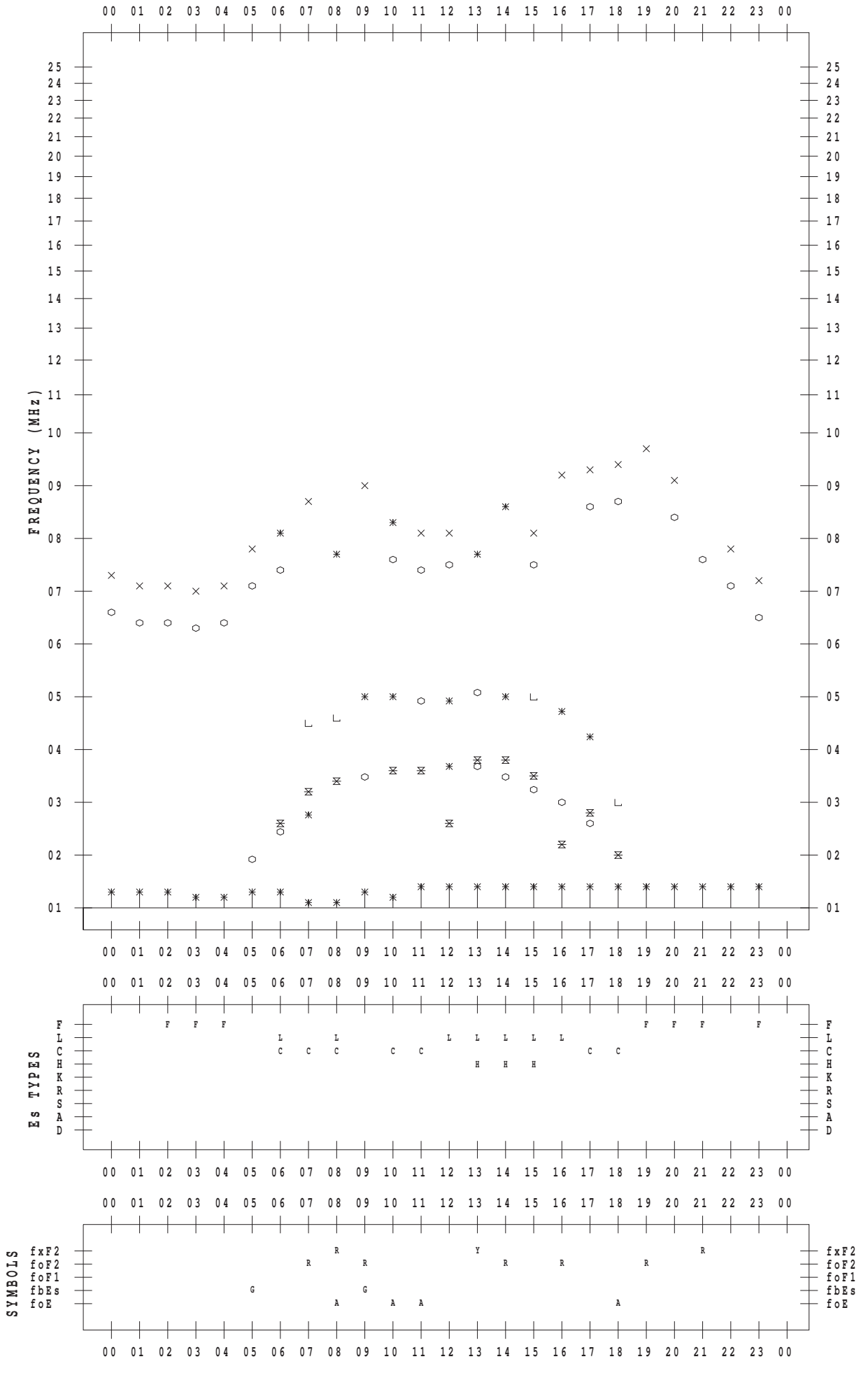
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 1

135 °E MEAN TIME



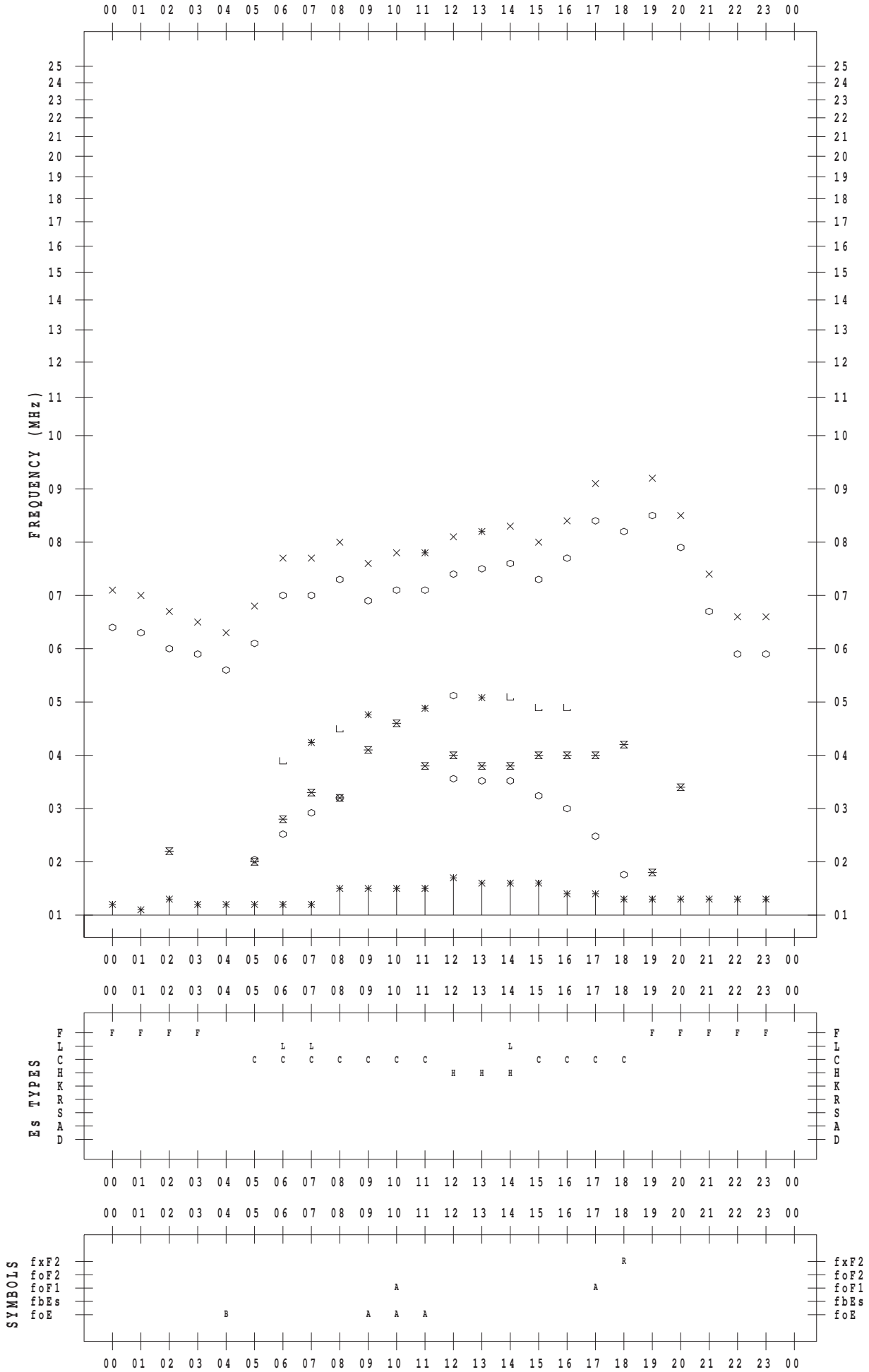
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 2

135 °E MEAN TIME



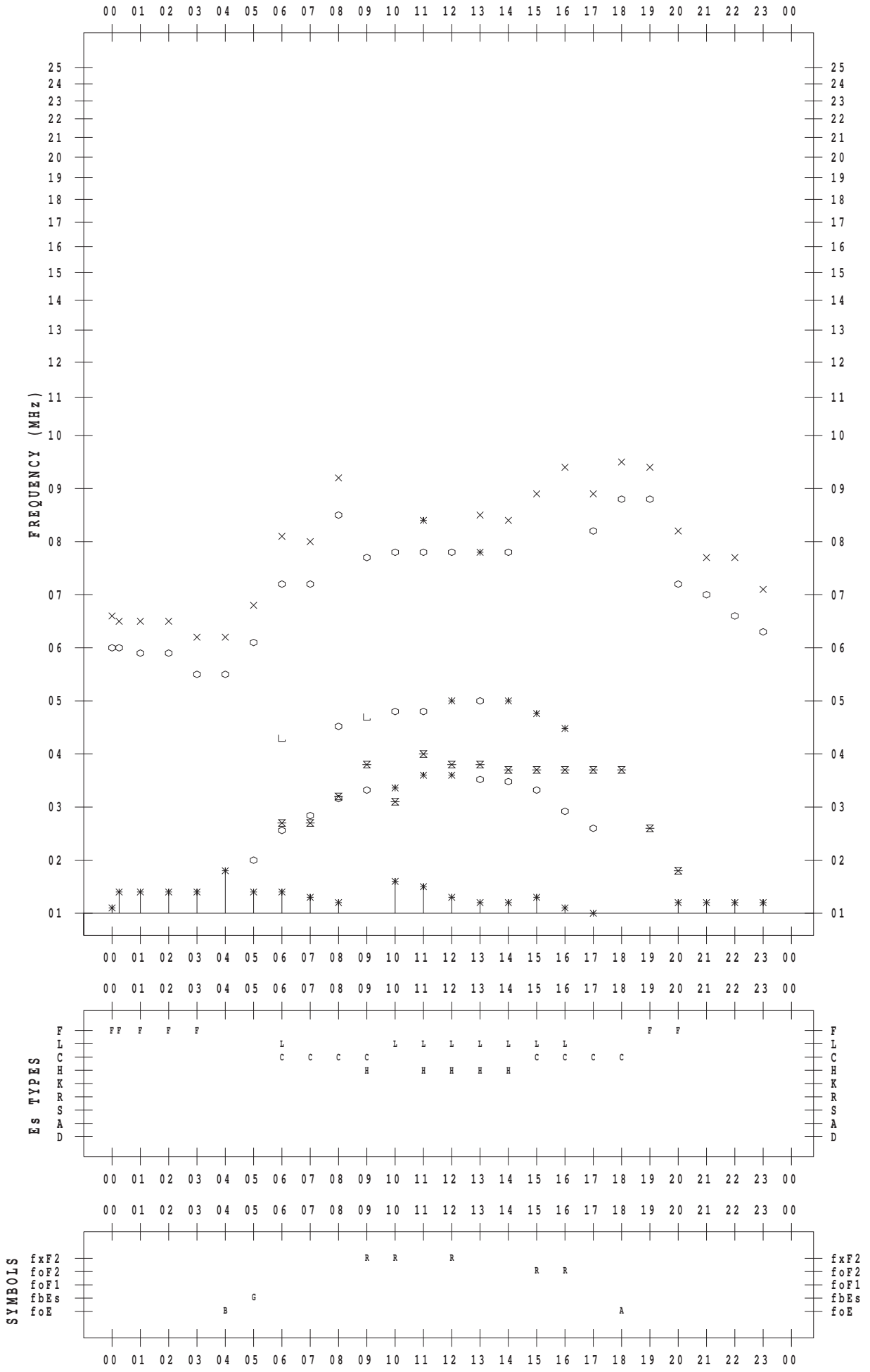
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 3

135 °E MEAN TIME



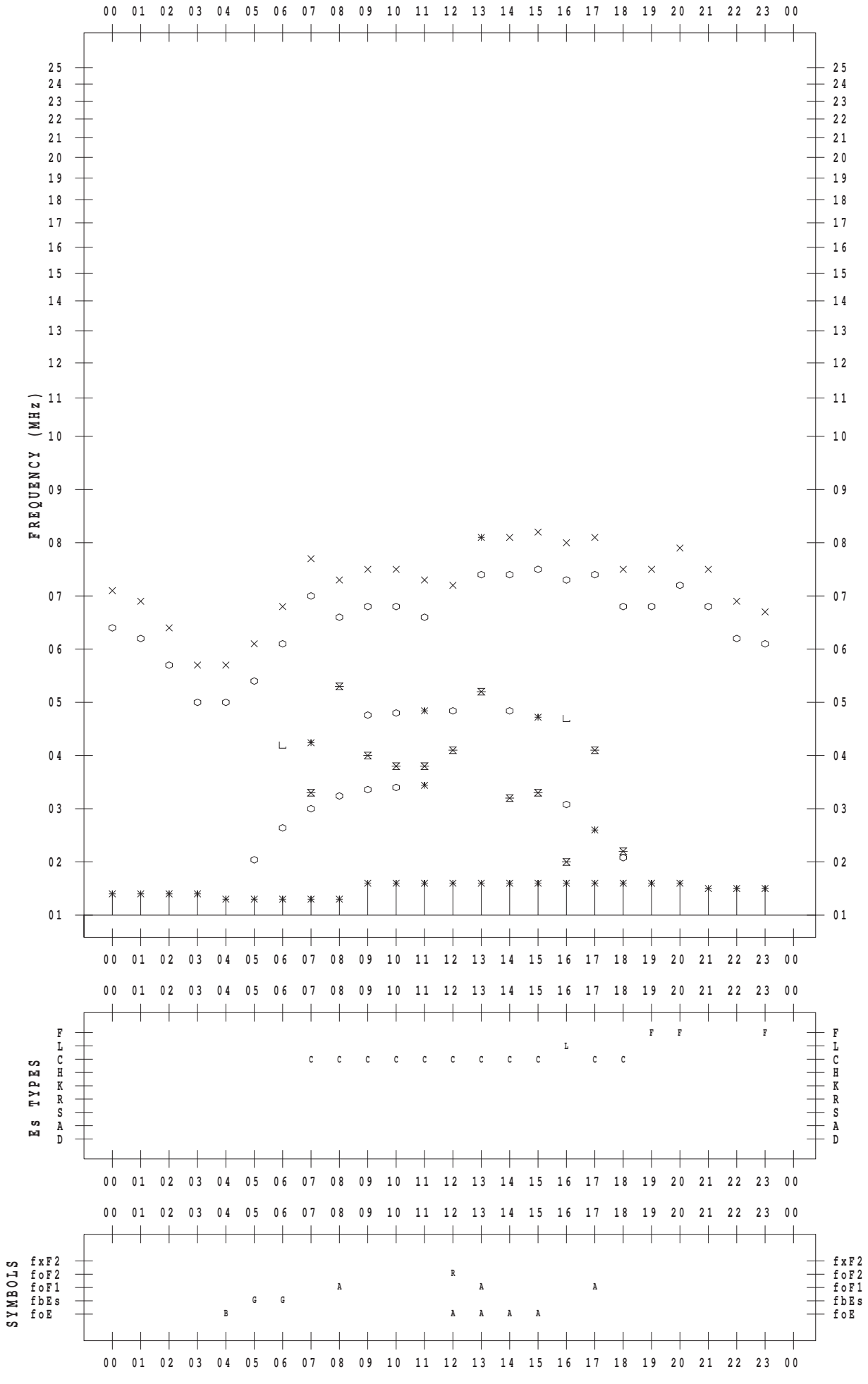
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 4

135 °E MEAN TIME



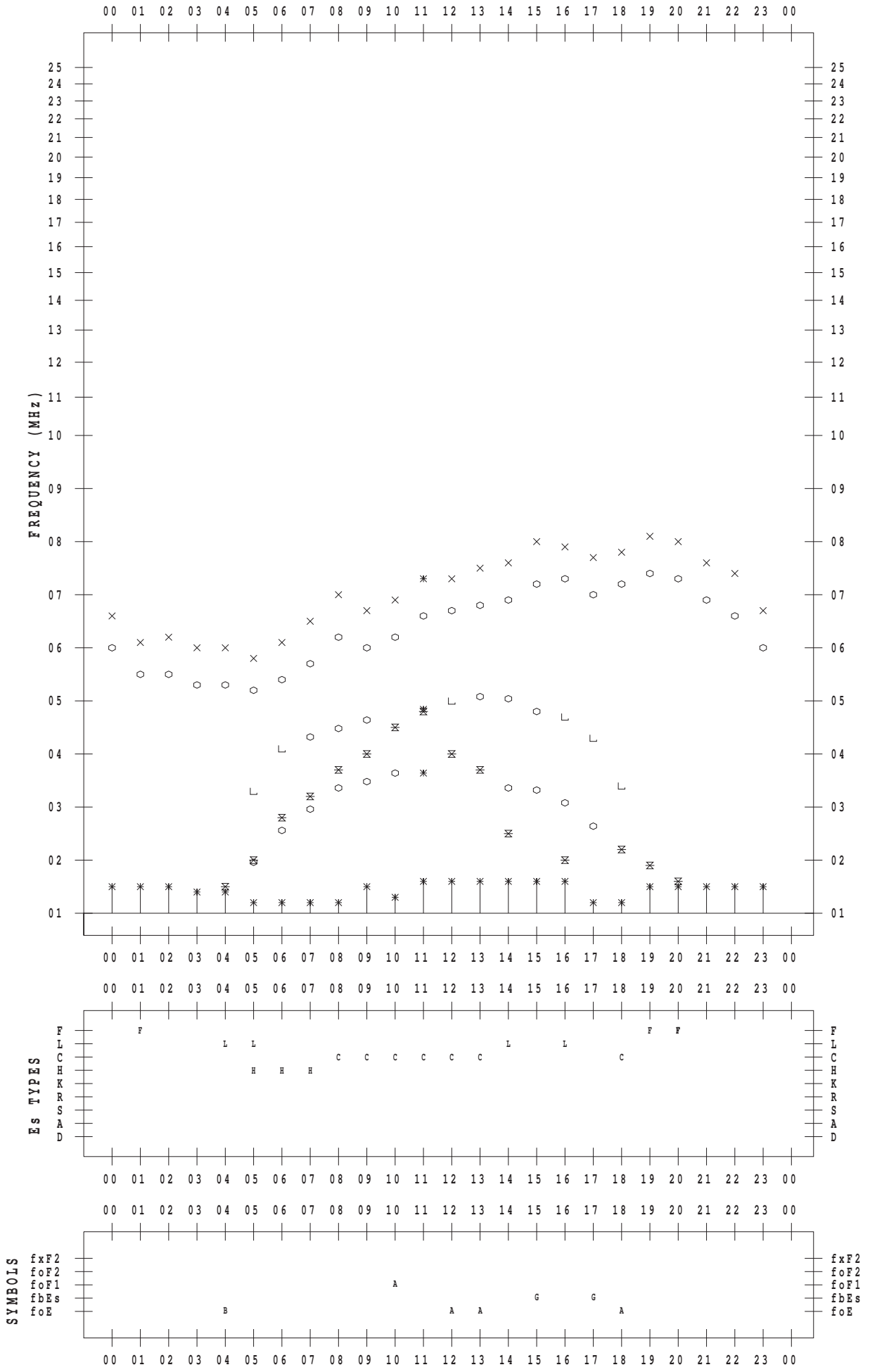
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 5

135 °E MEAN TIME



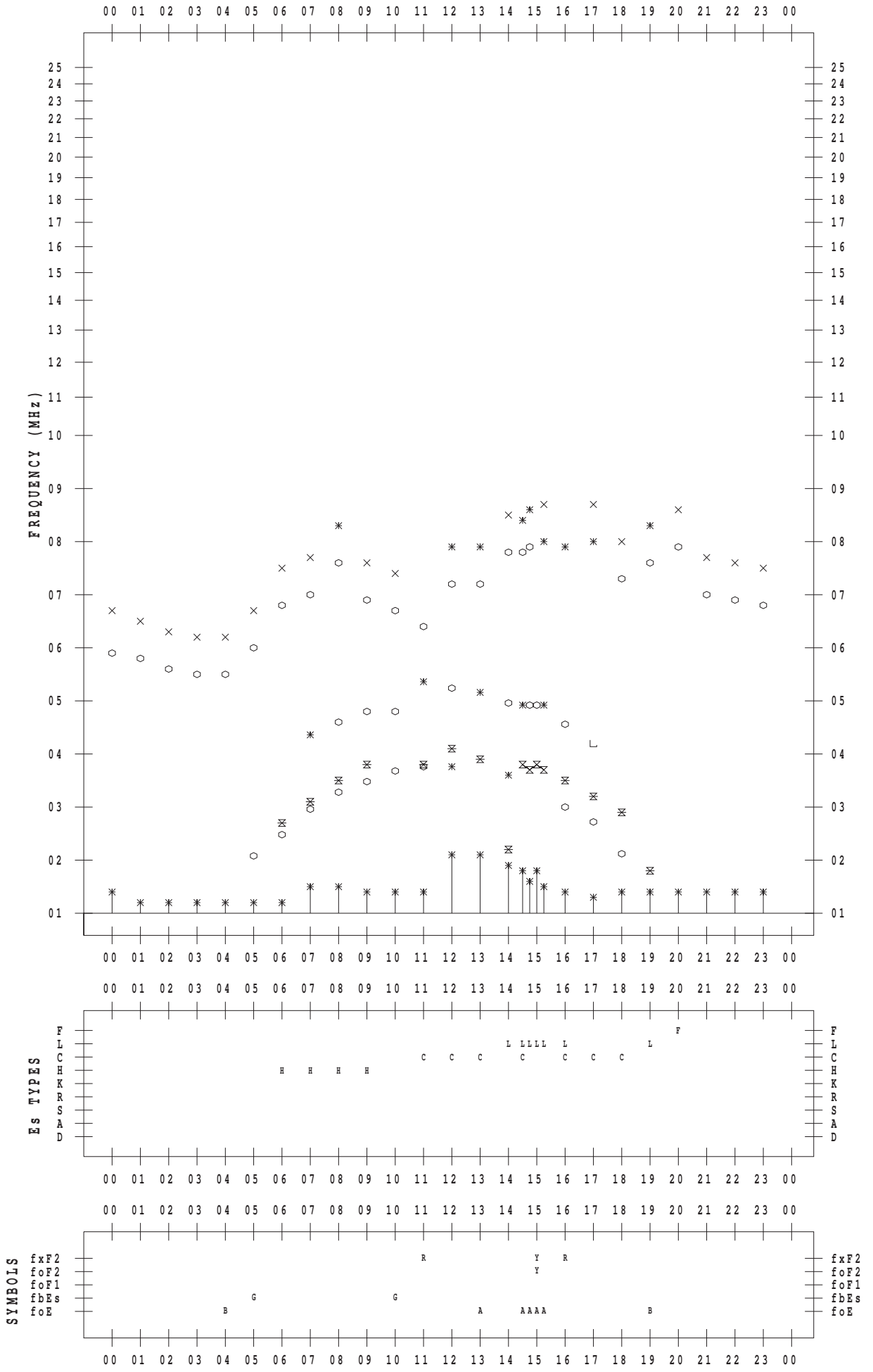
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 6

135 °E MEAN TIME



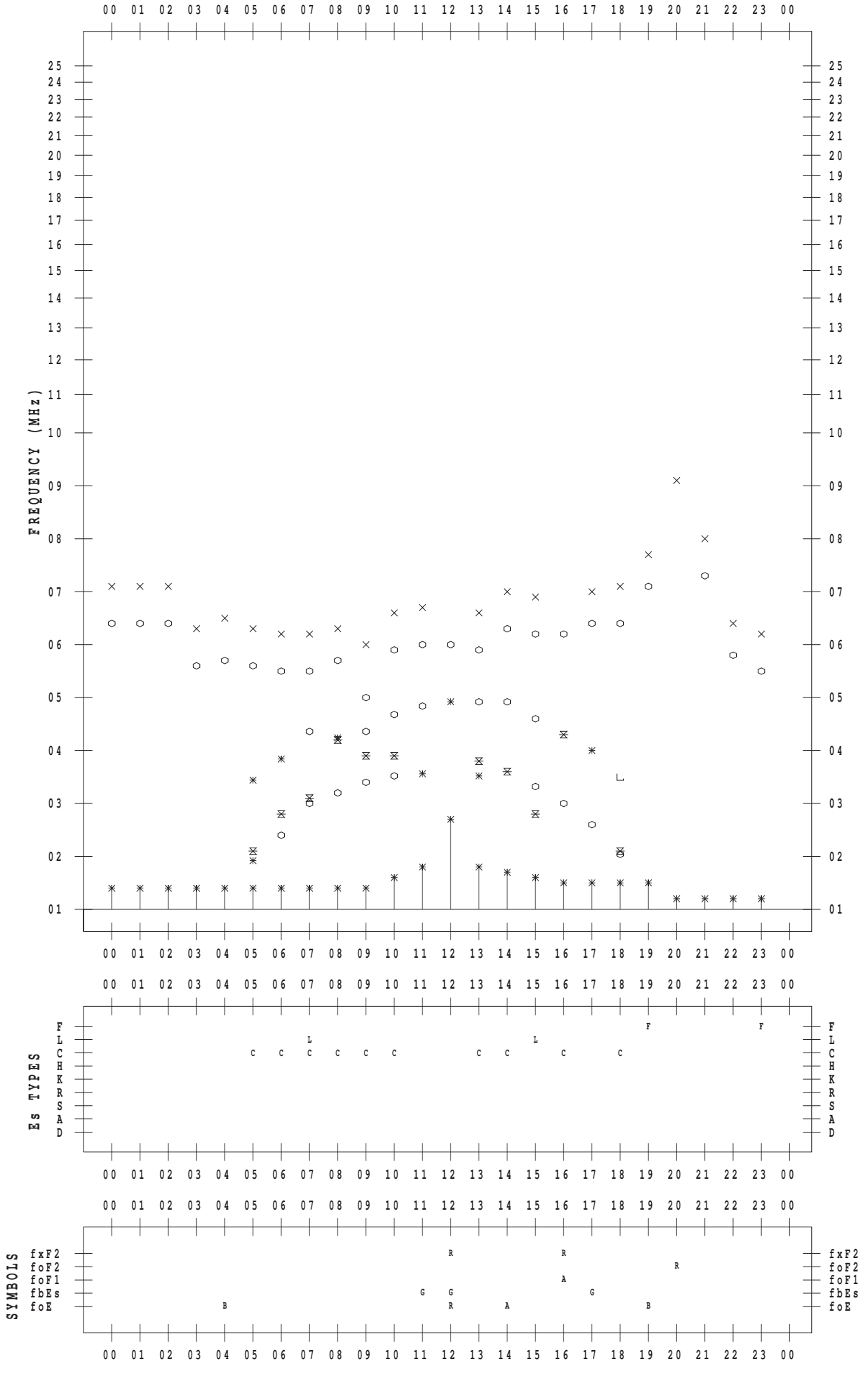
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 7

135 °E MEAN TIME



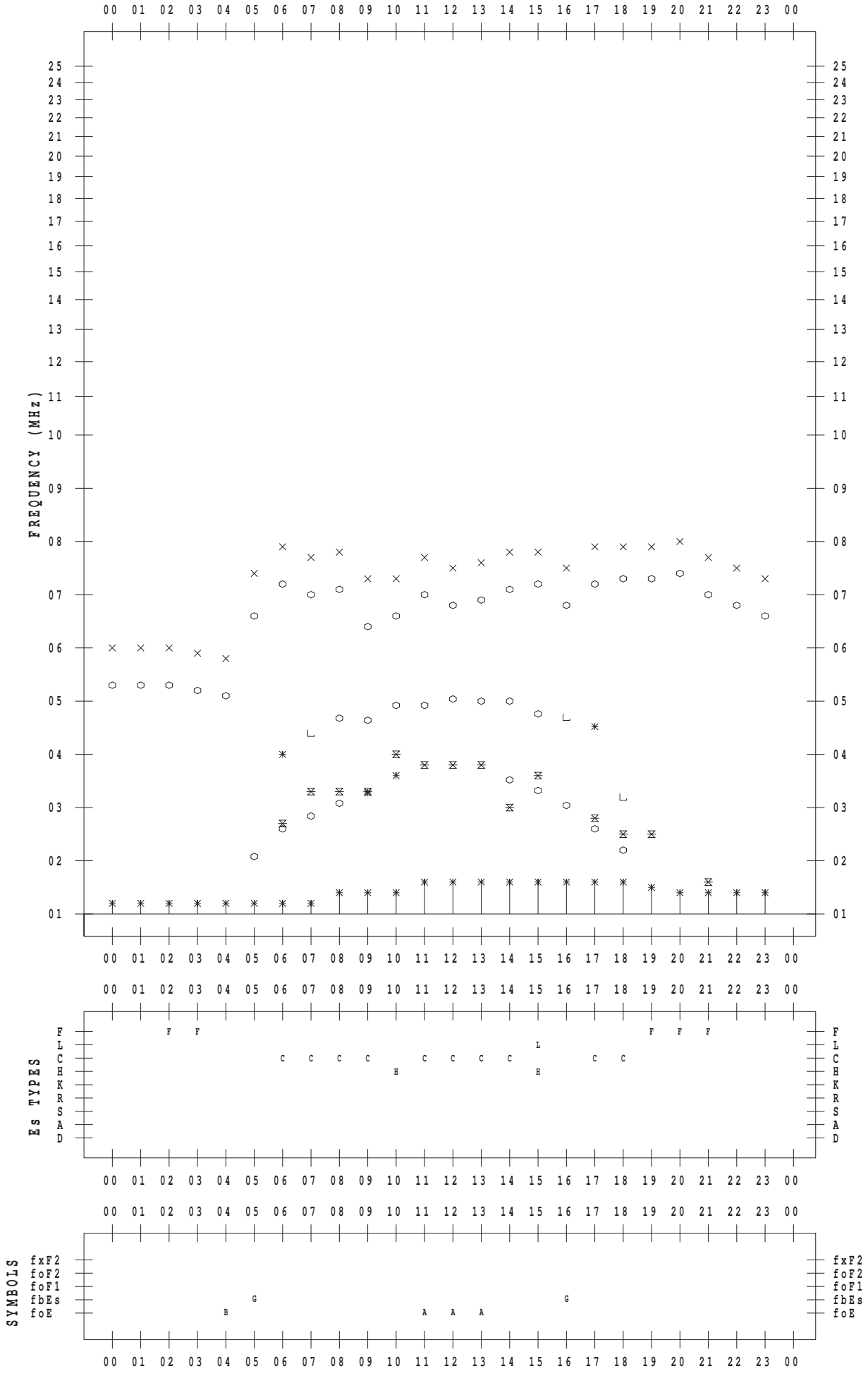
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 8

135 °E MEAN TIME



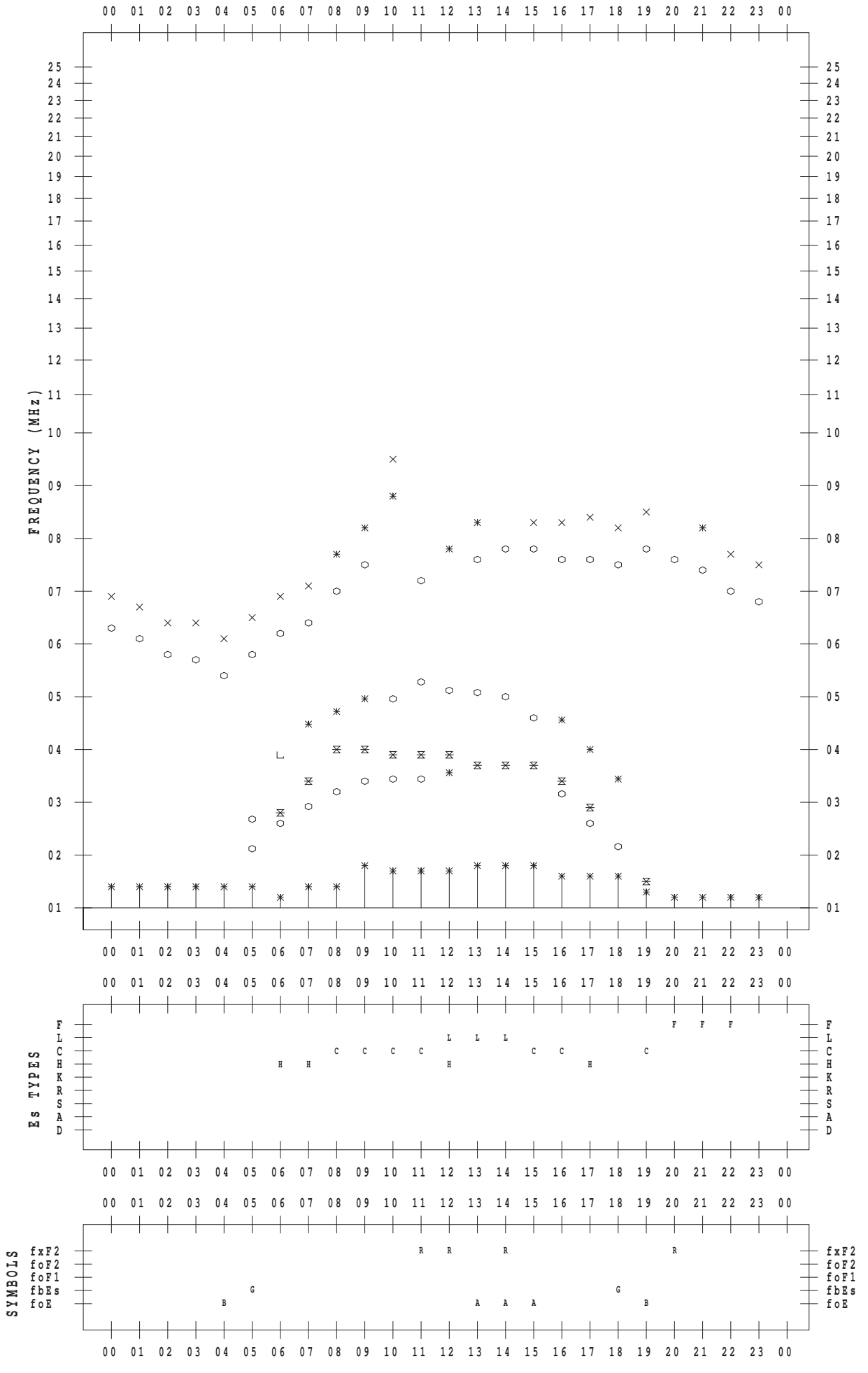
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/ 9

135 °E MEAN TIME



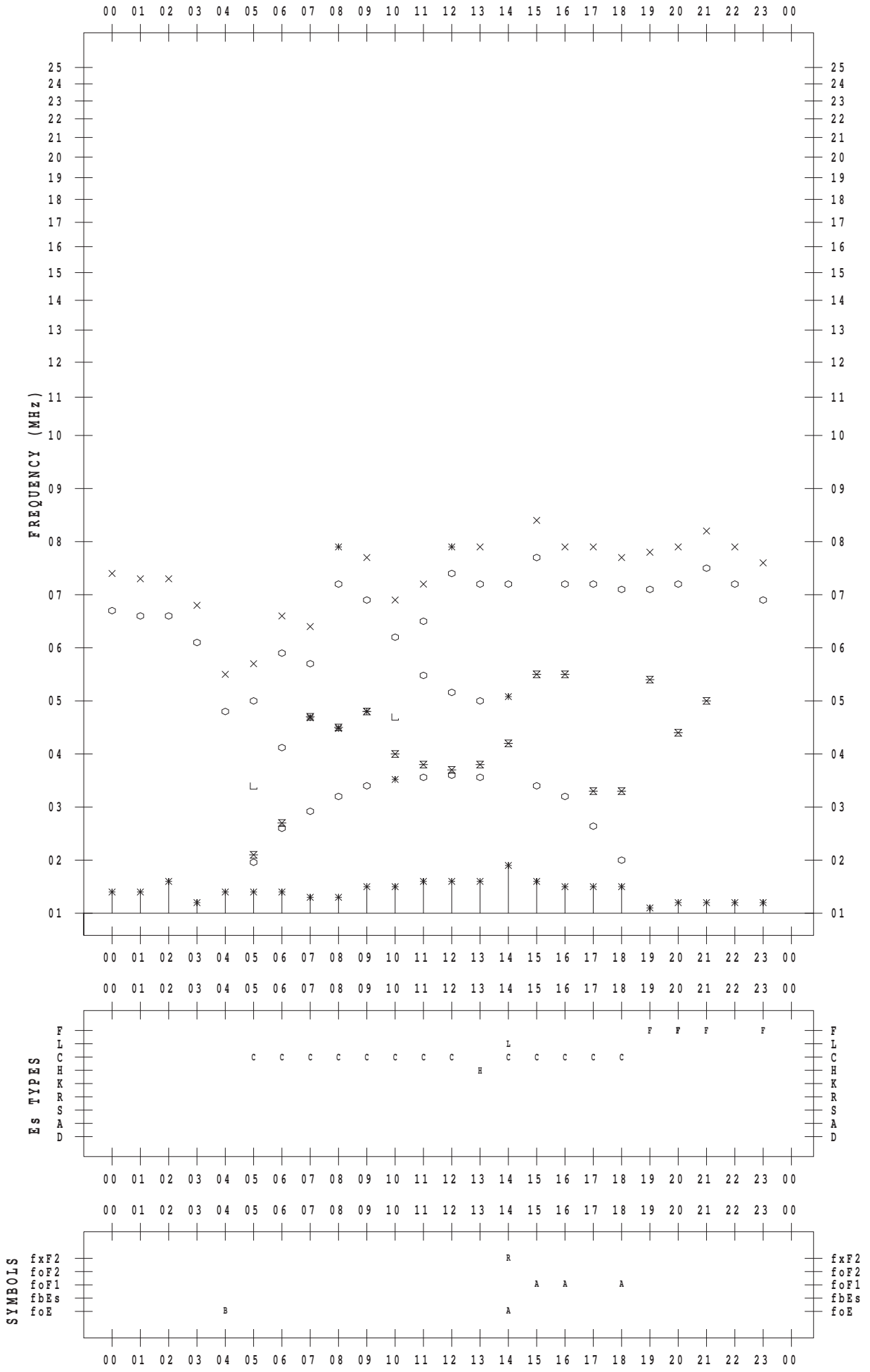
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/10

135 °E MEAN TIME



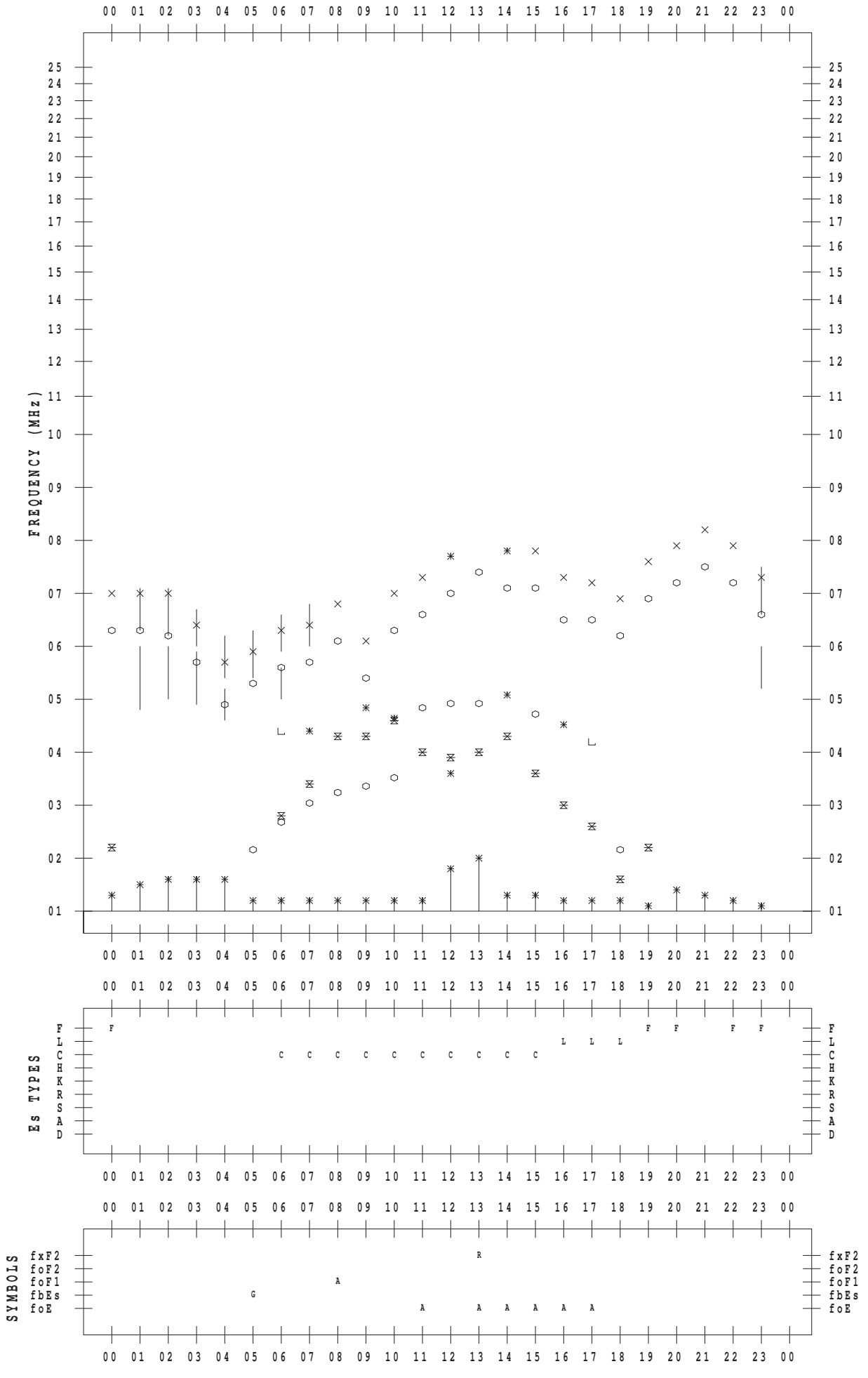
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/11

135 °E MEAN TIME



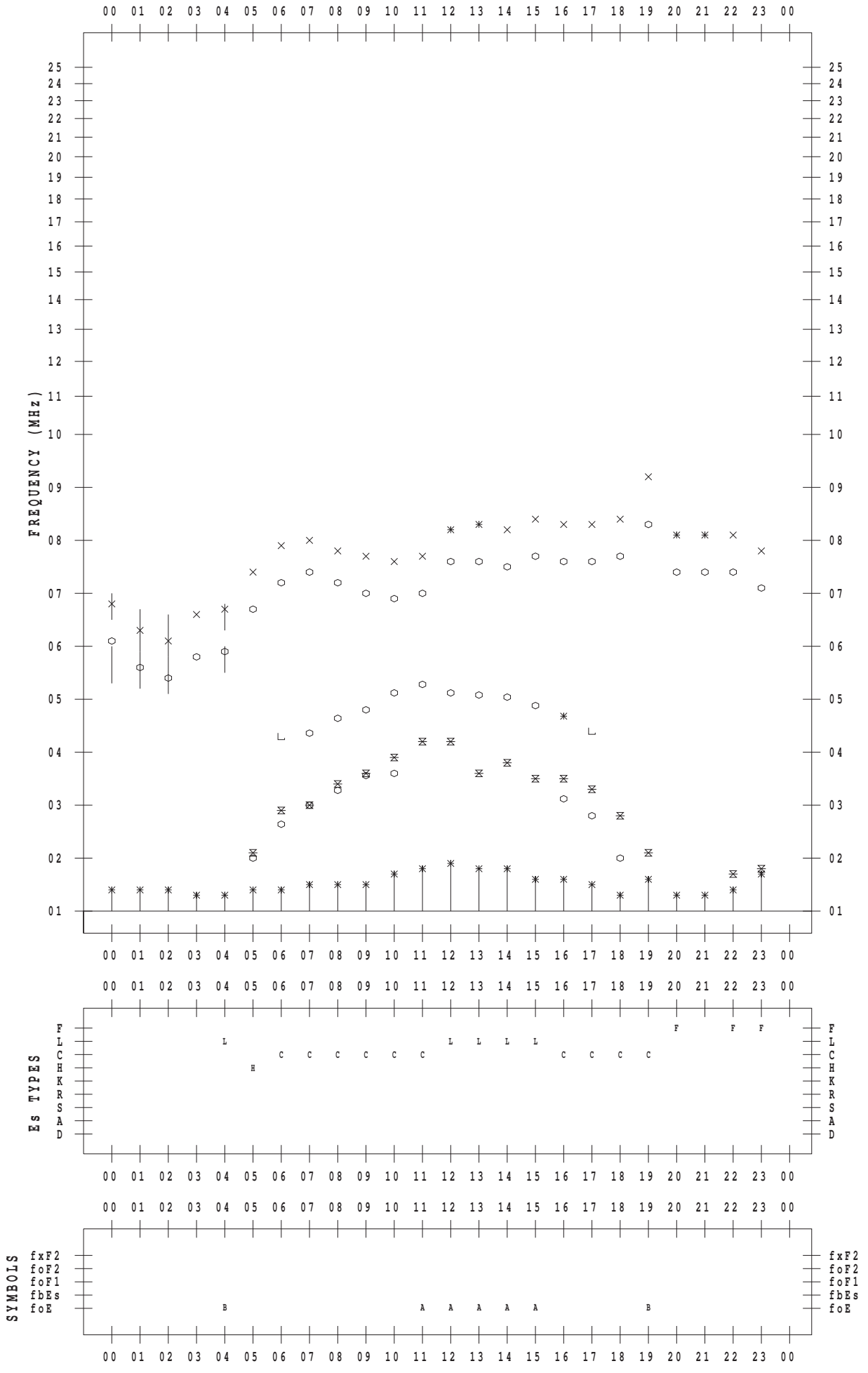
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/12

135 °E MEAN TIME



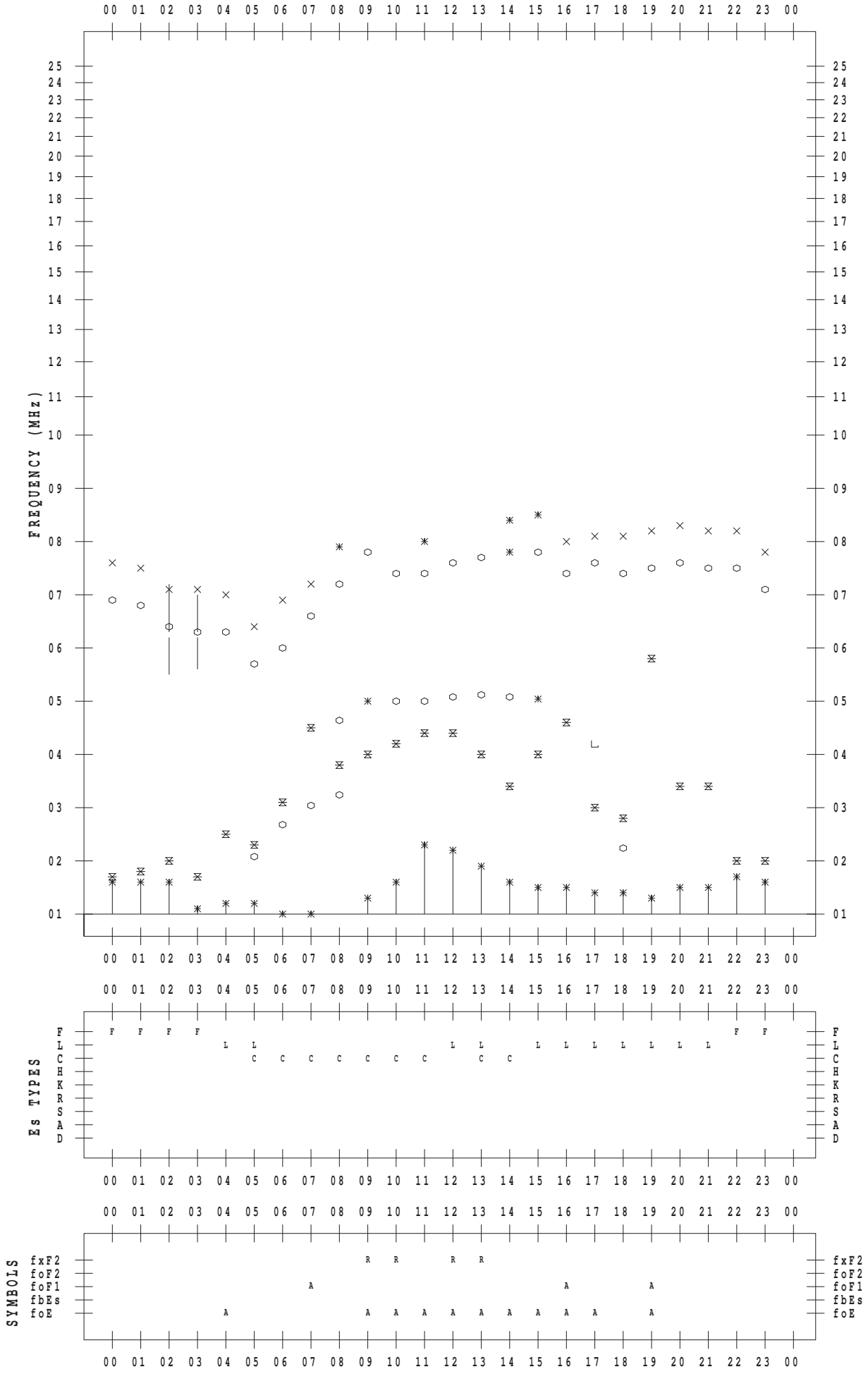
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/13

135 °E MEAN TIME



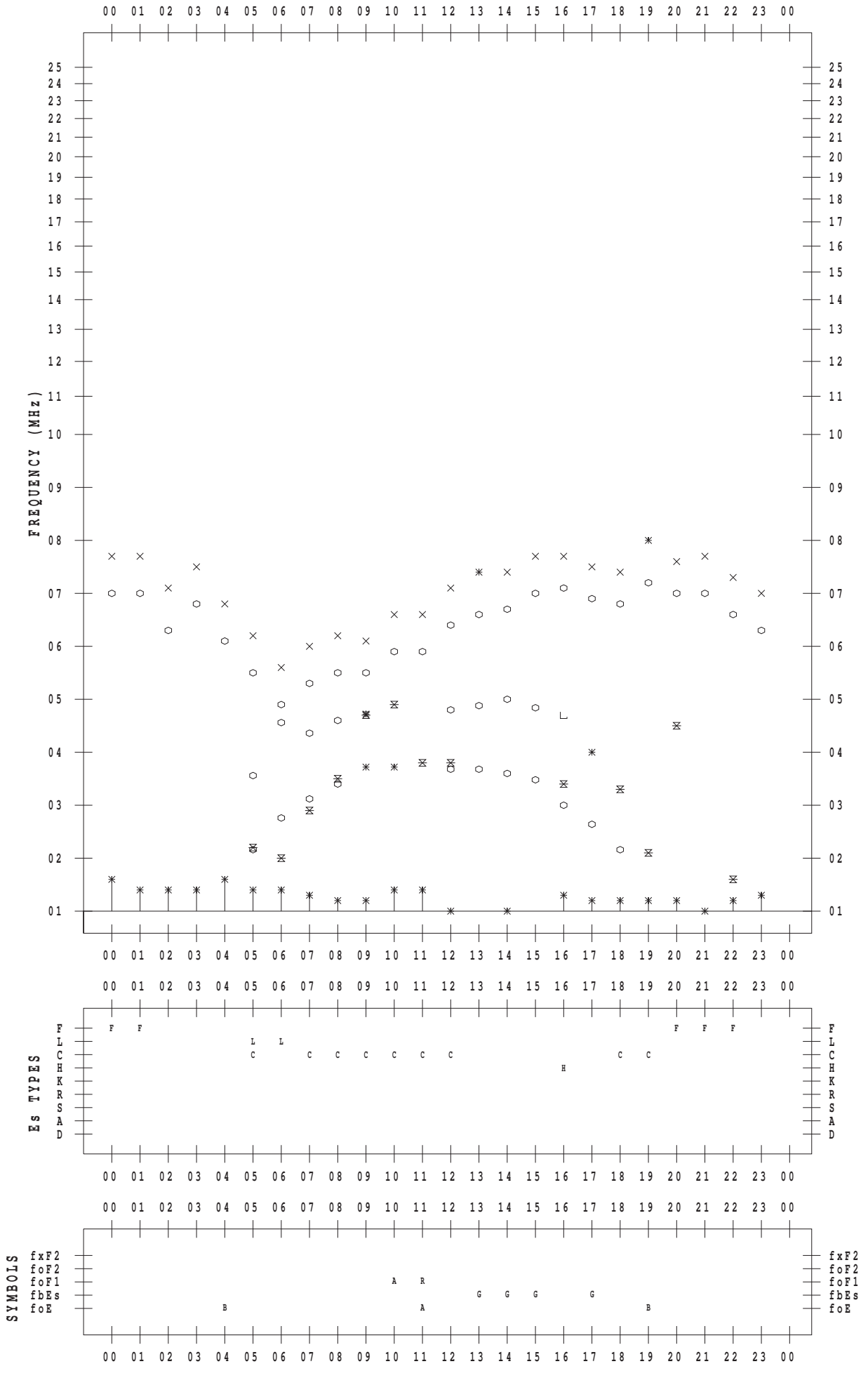
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/14

135 °E MEAN TIME



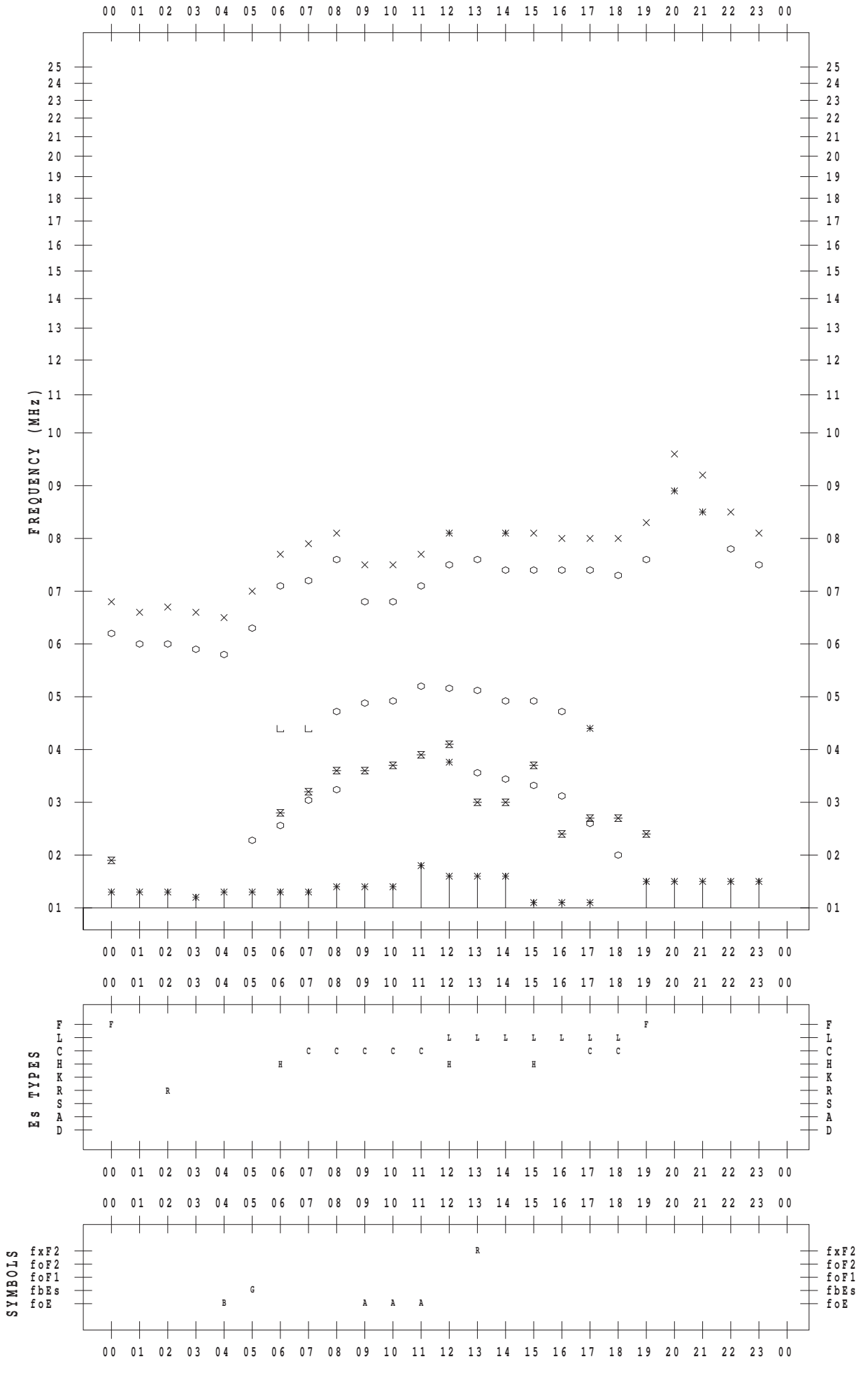
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/15

135 °E MEAN TIME



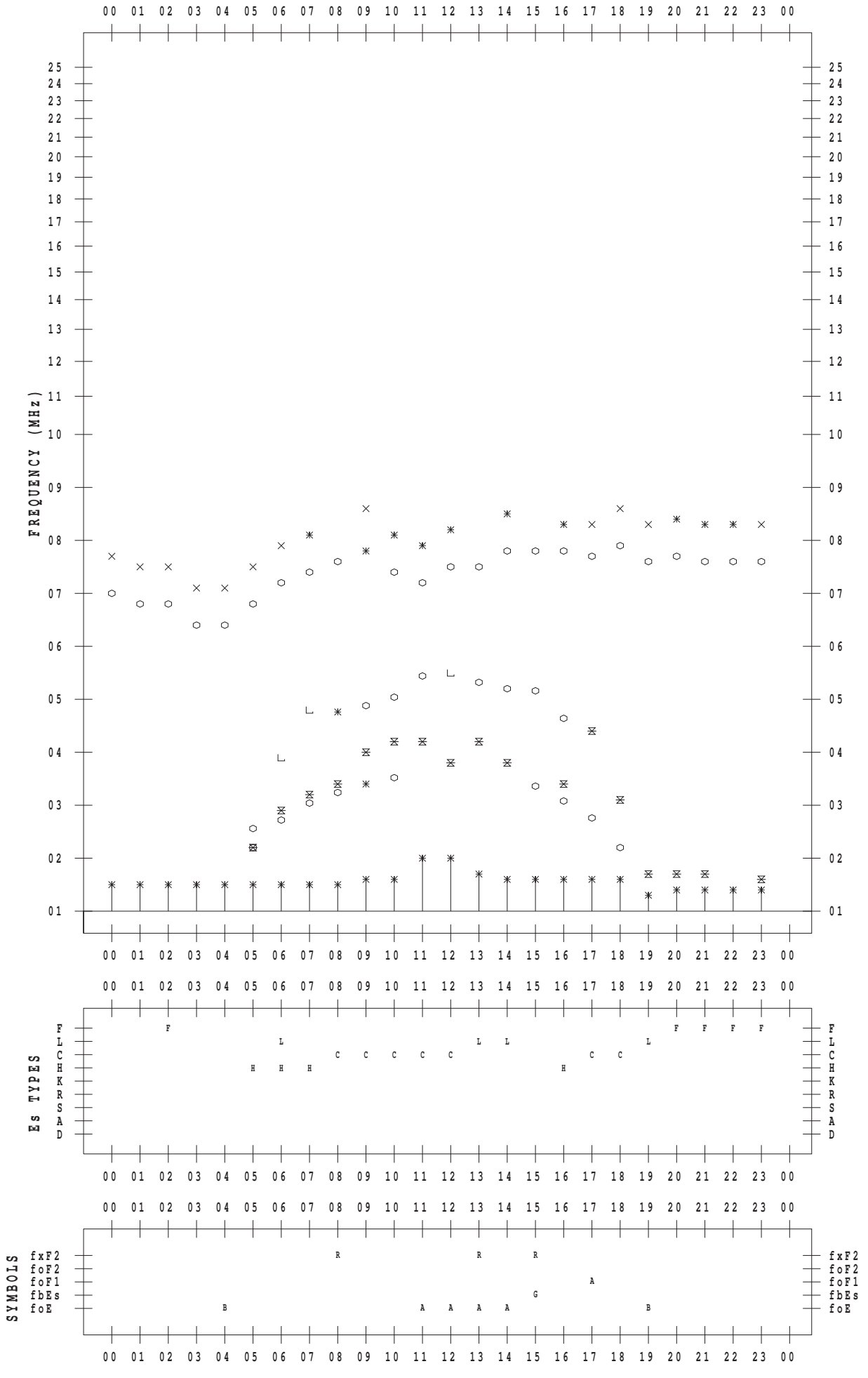
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/16

135 °E MEAN TIME



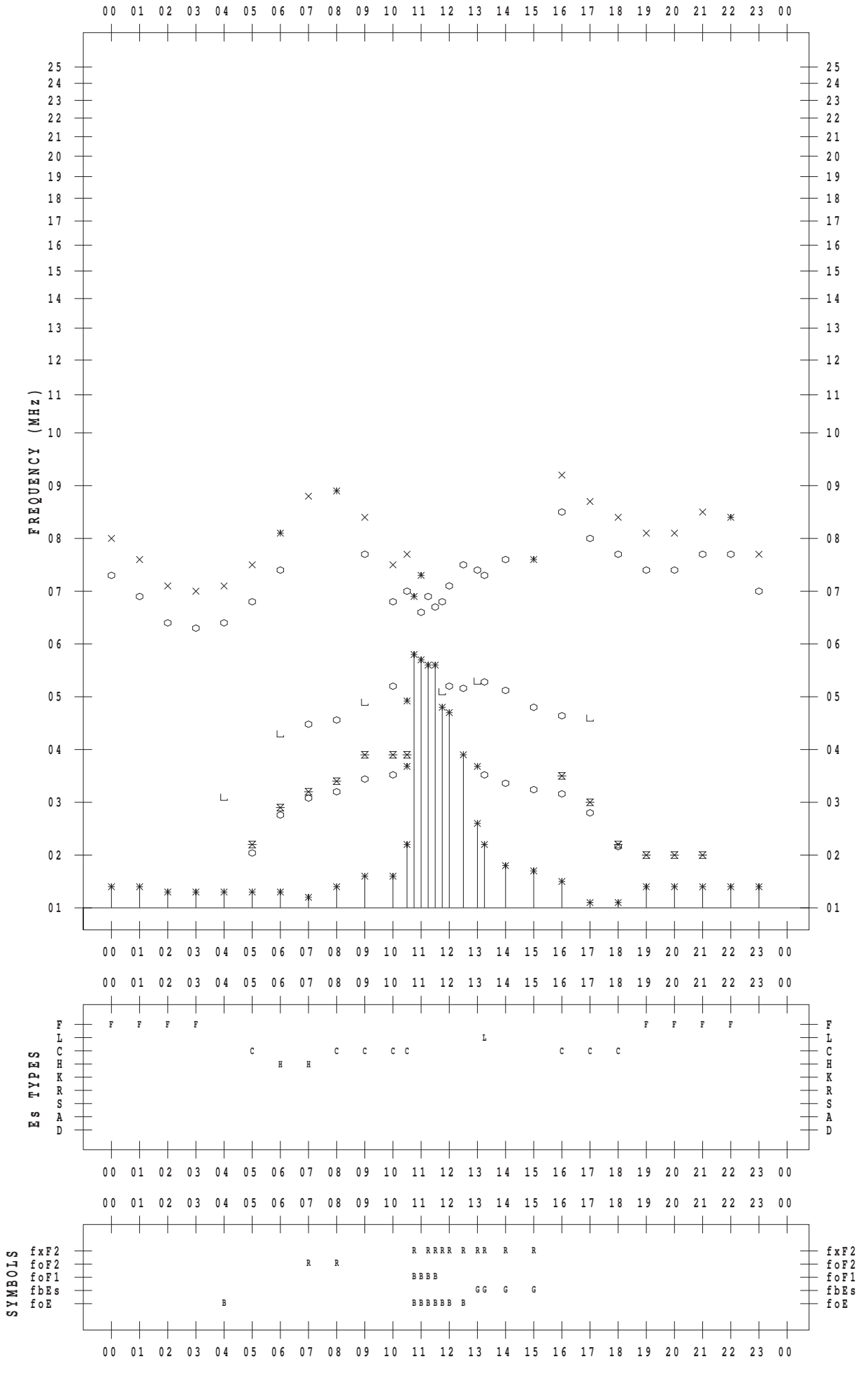
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/17

135 °E MEAN TIME



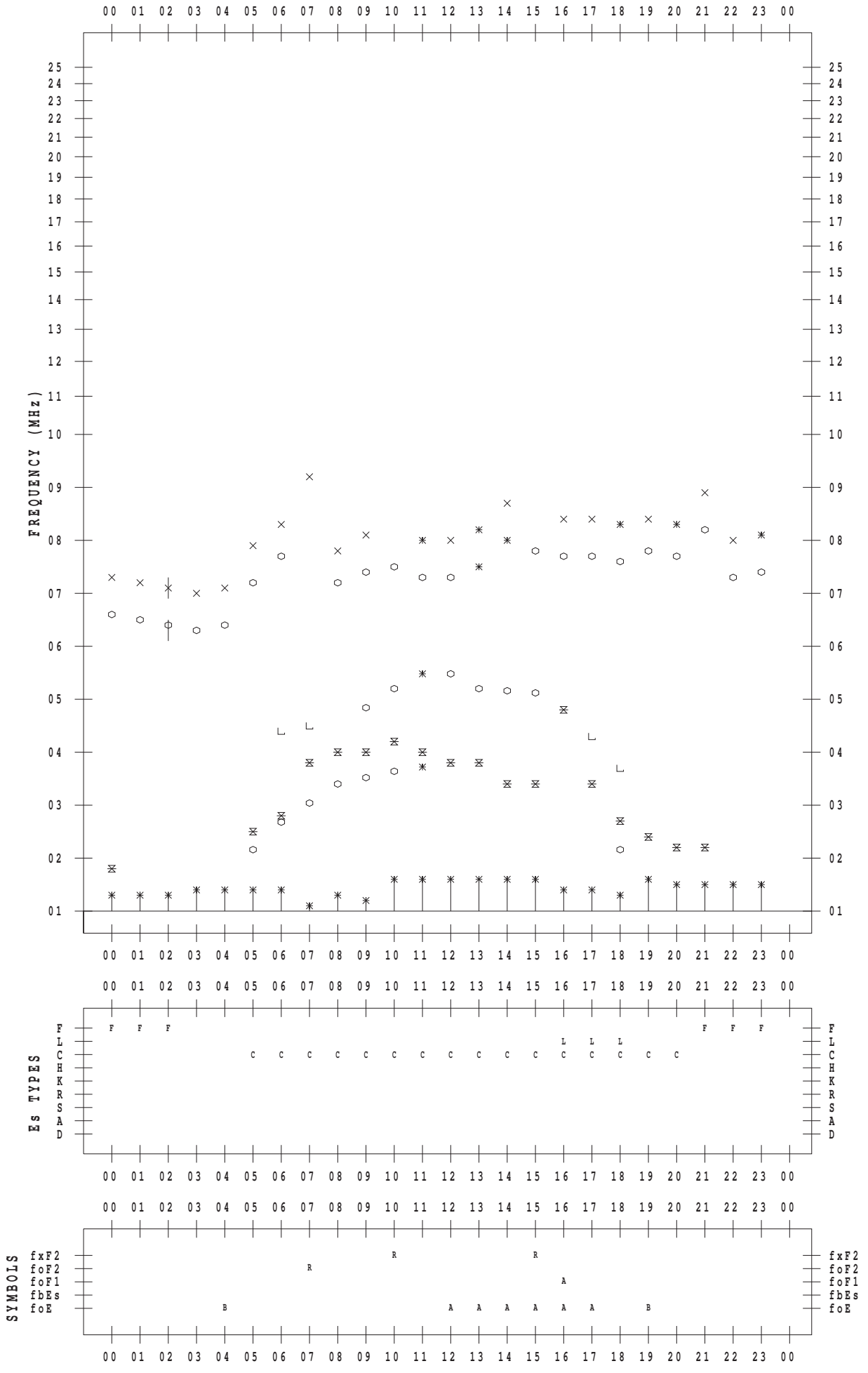
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/18

135 °E MEAN TIME



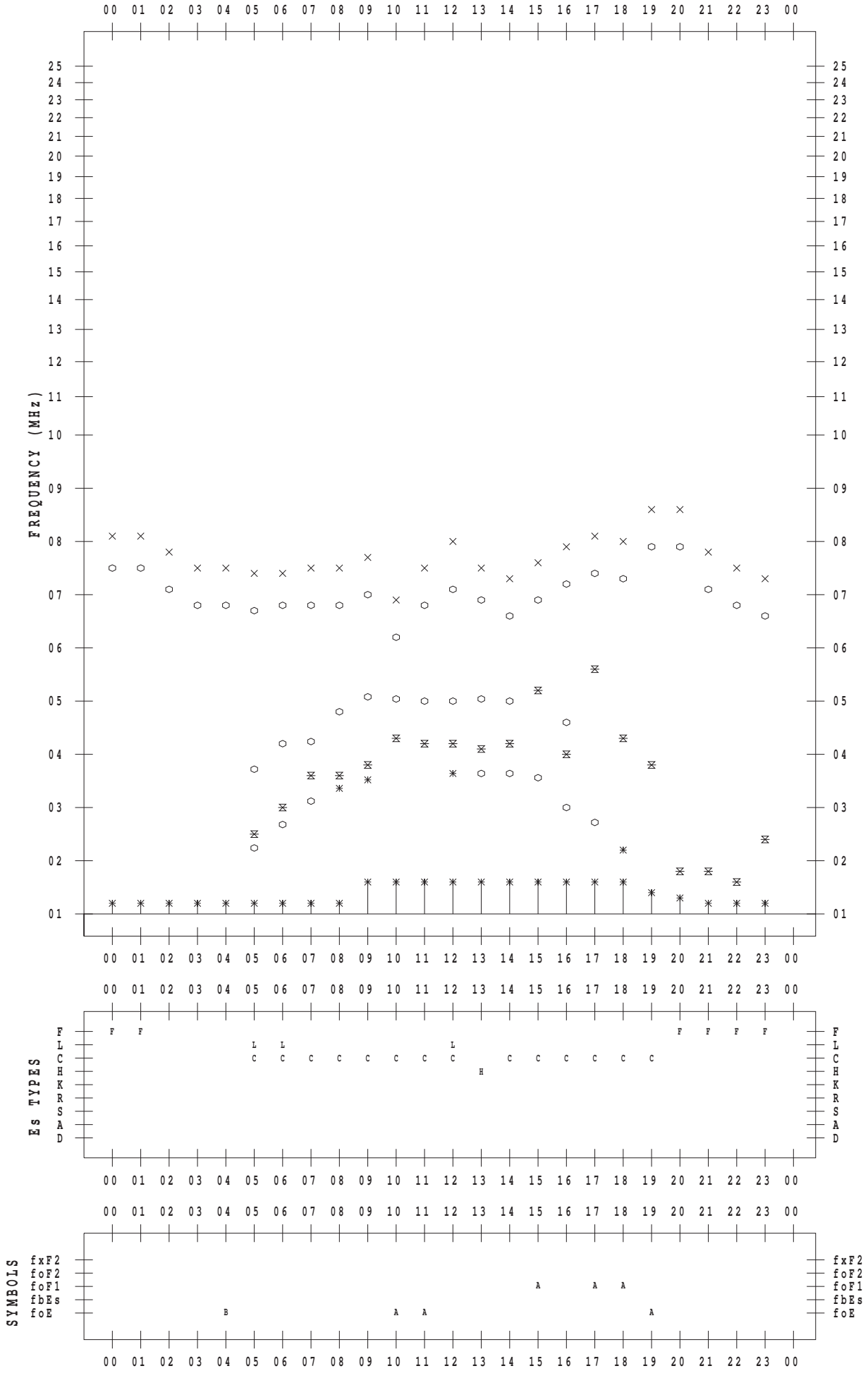
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/19

135 °E MEAN TIME



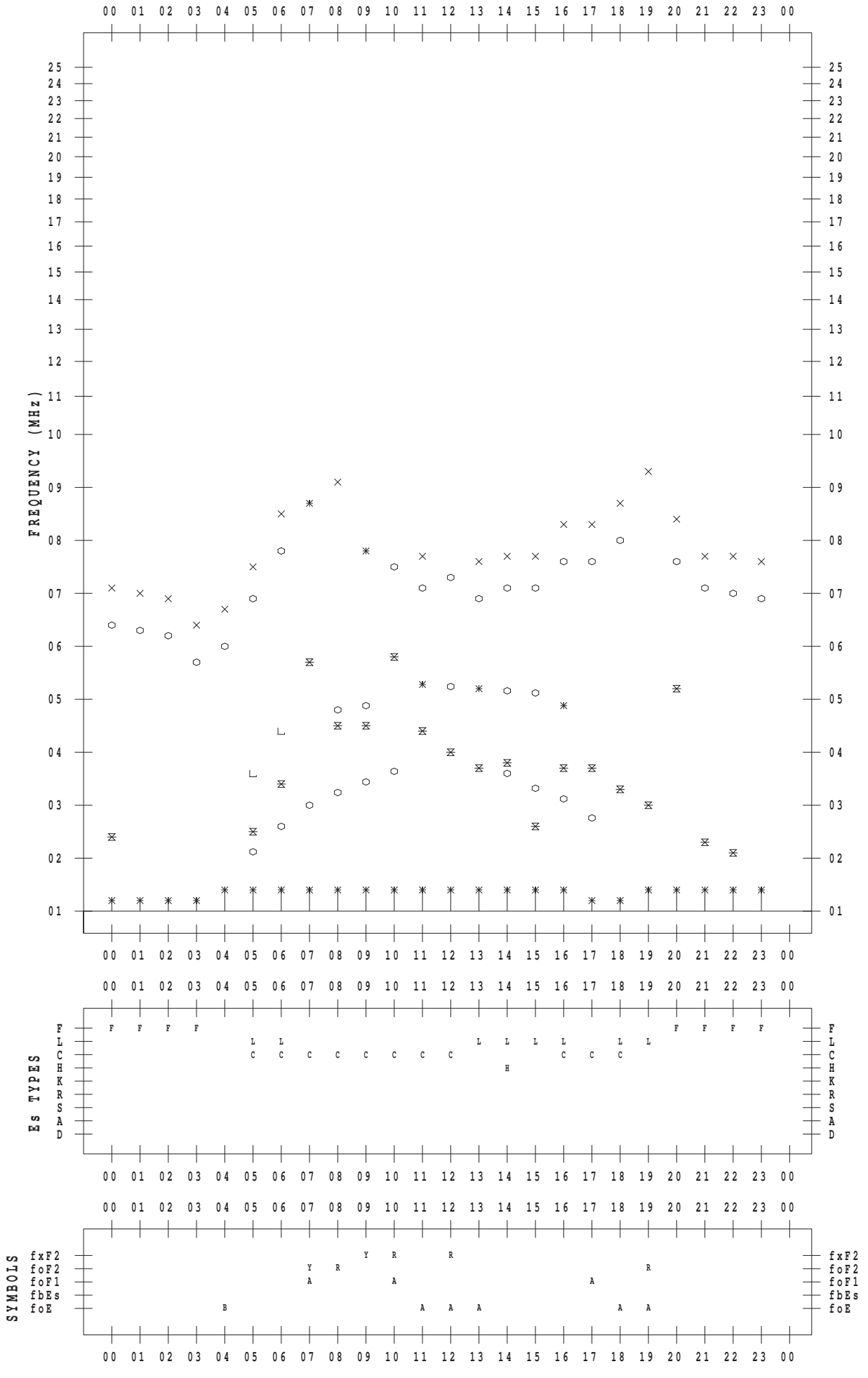
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/20

135 °E MEAN TIME



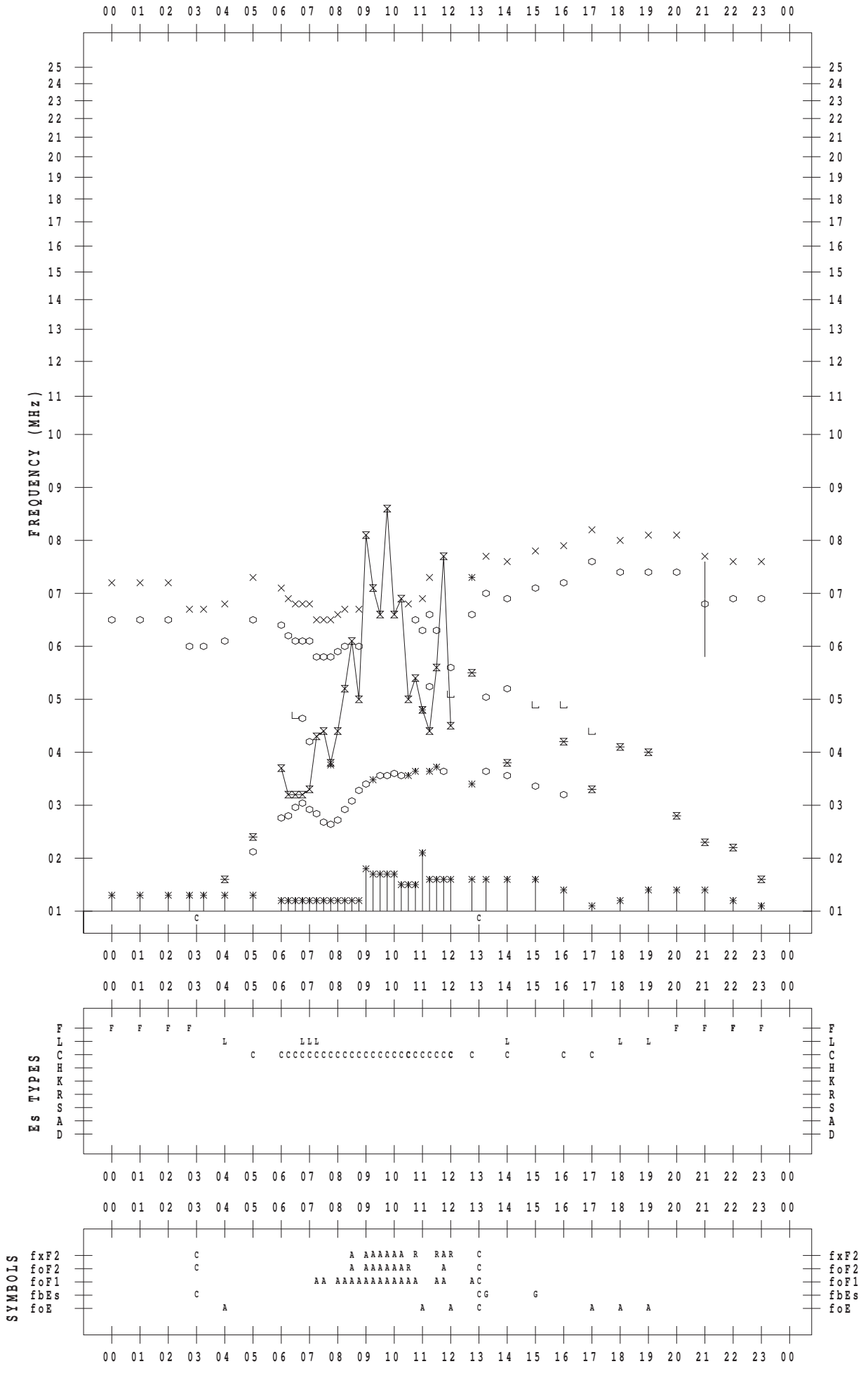
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/21

135 °E MEAN TIME



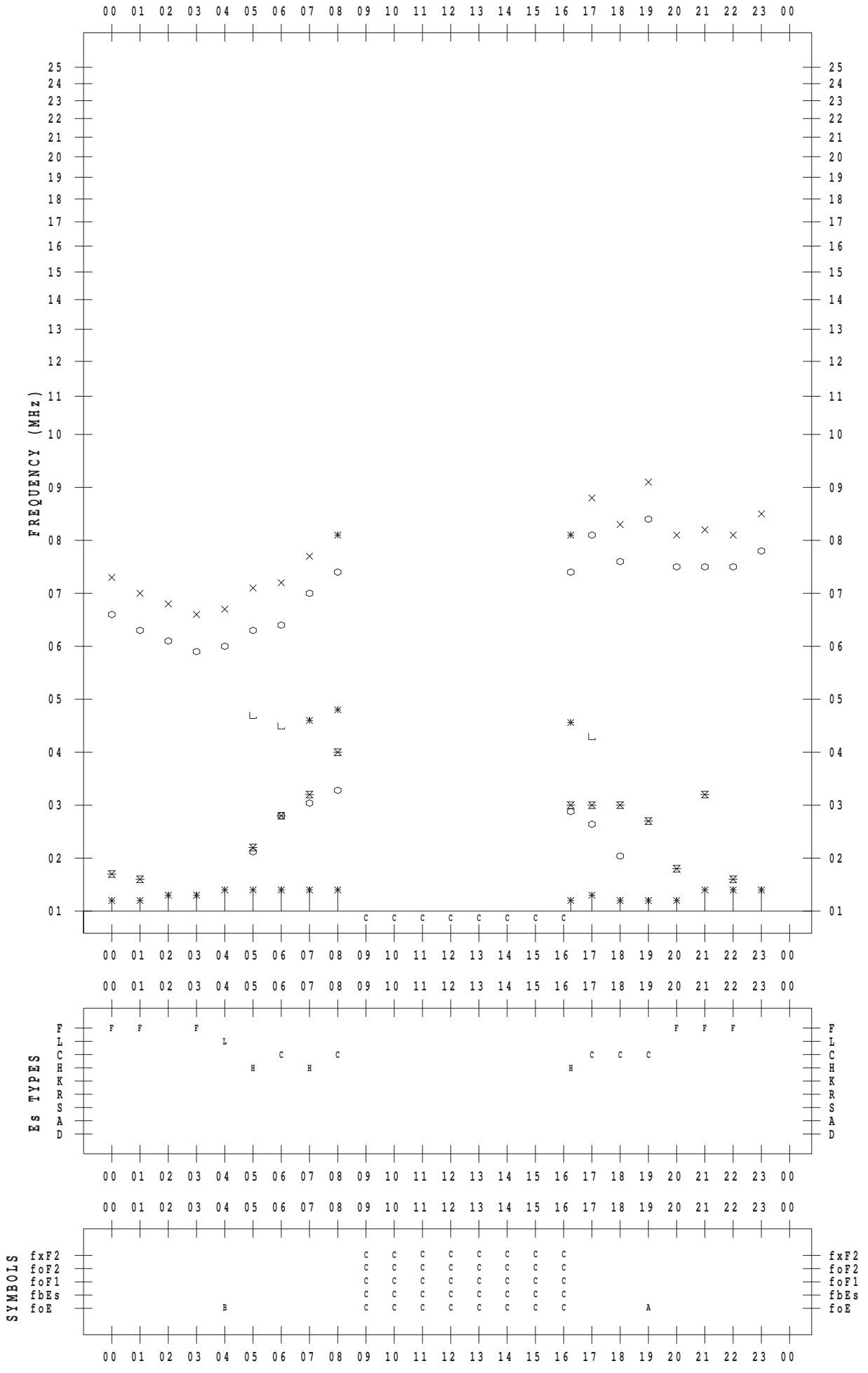
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/22

135 °E MEAN TIME



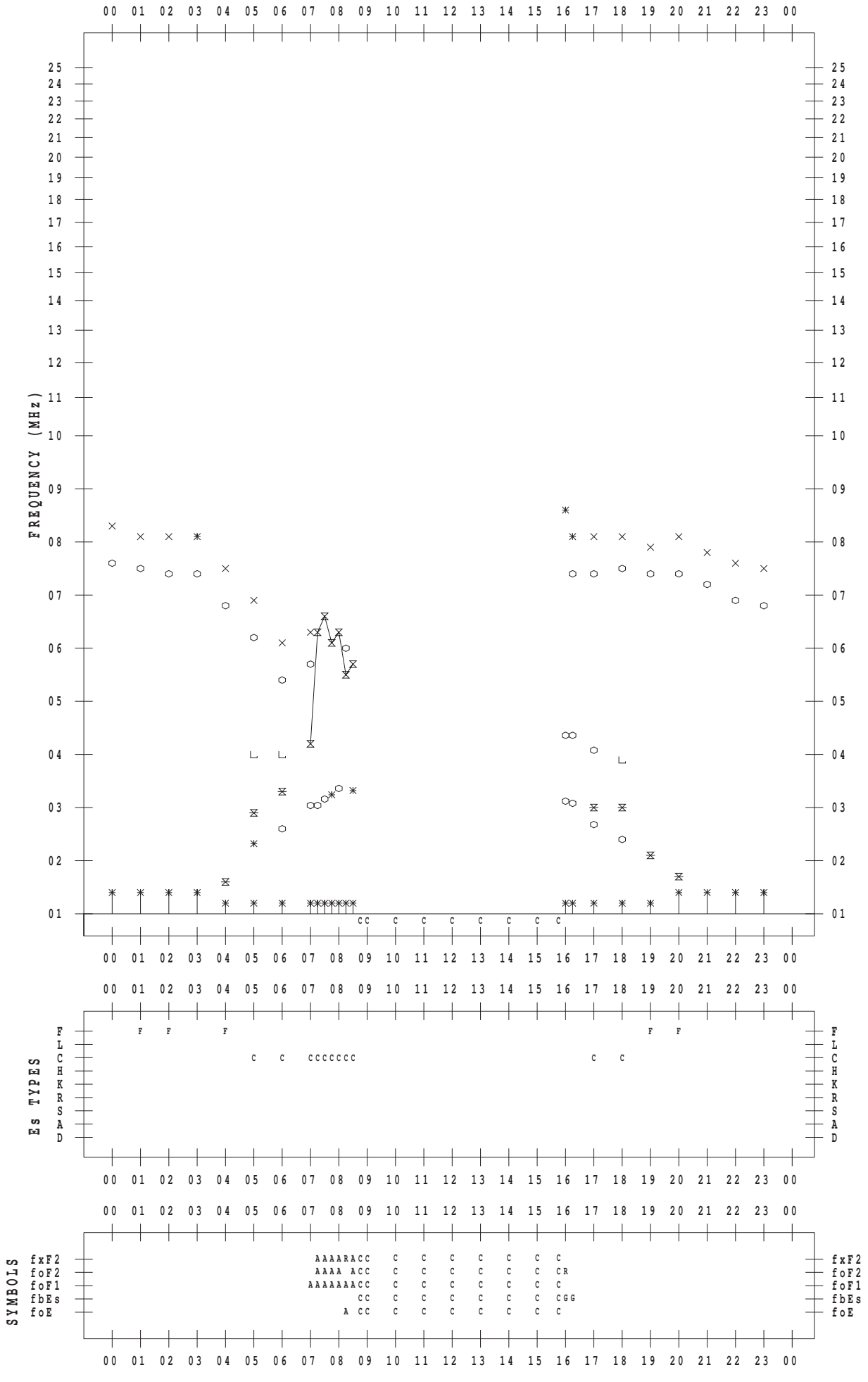
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/23

135 °E MEAN TIME



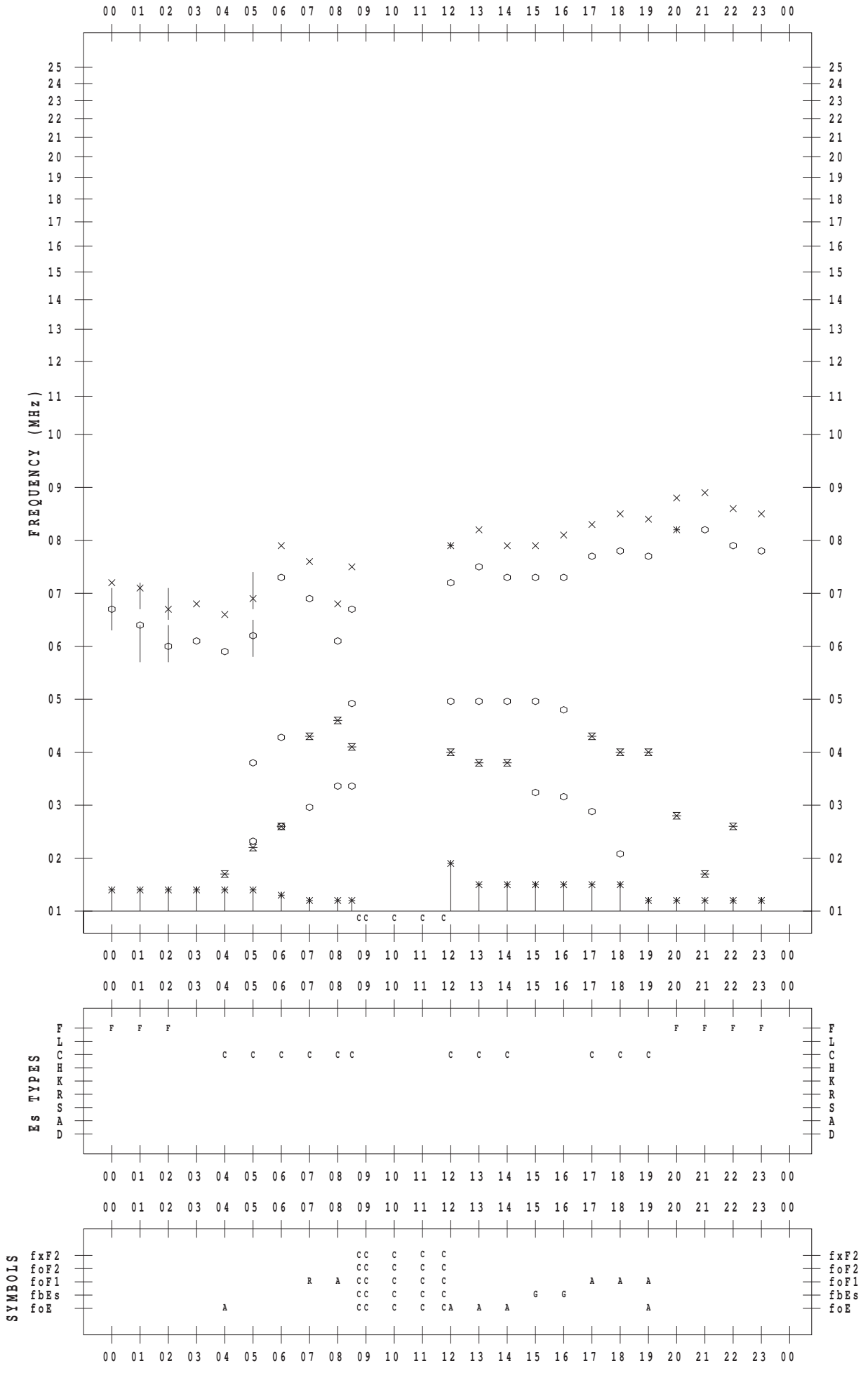
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/24

135 °E MEAN TIME



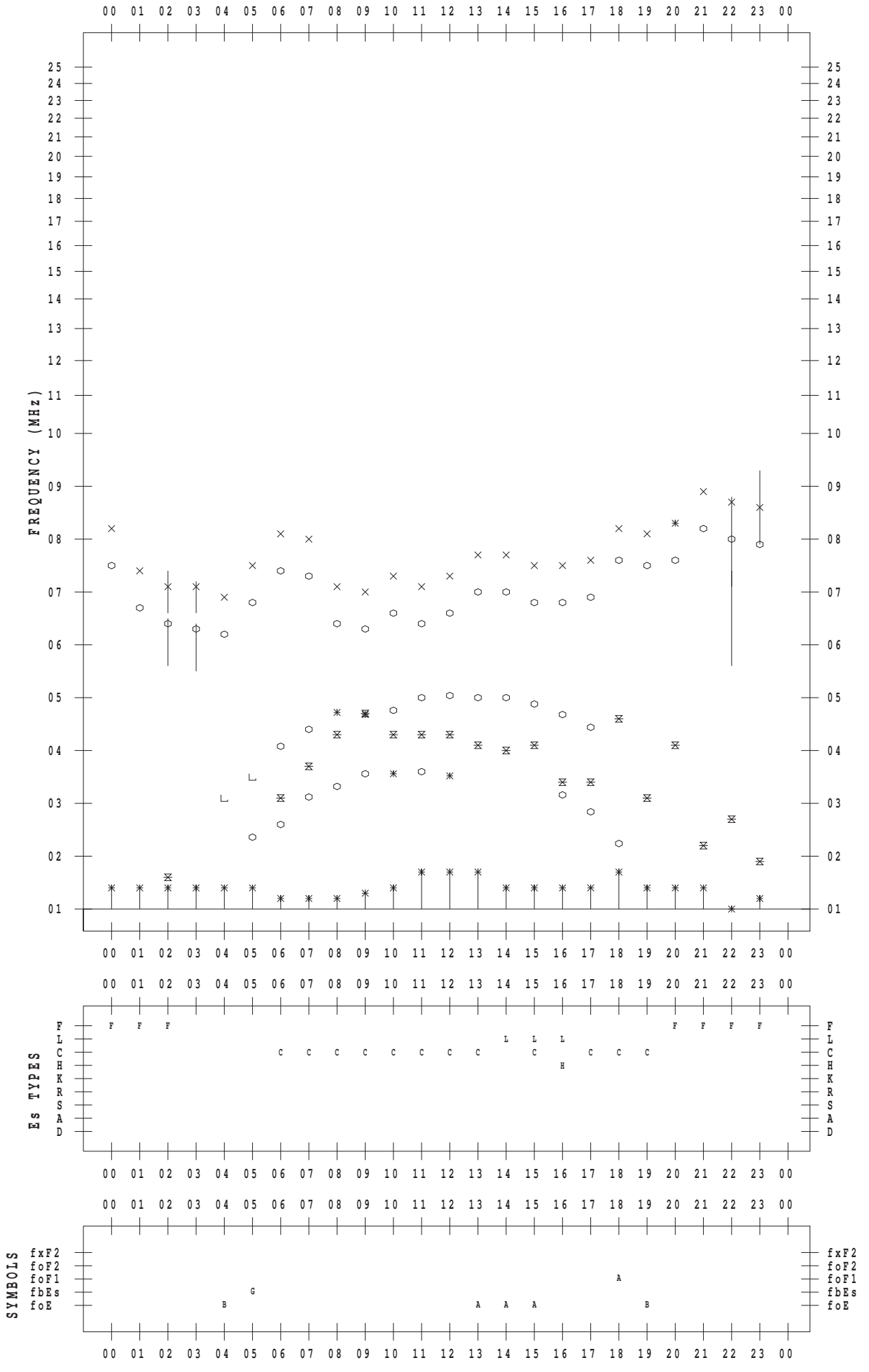
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/25

135 °E MEAN TIME



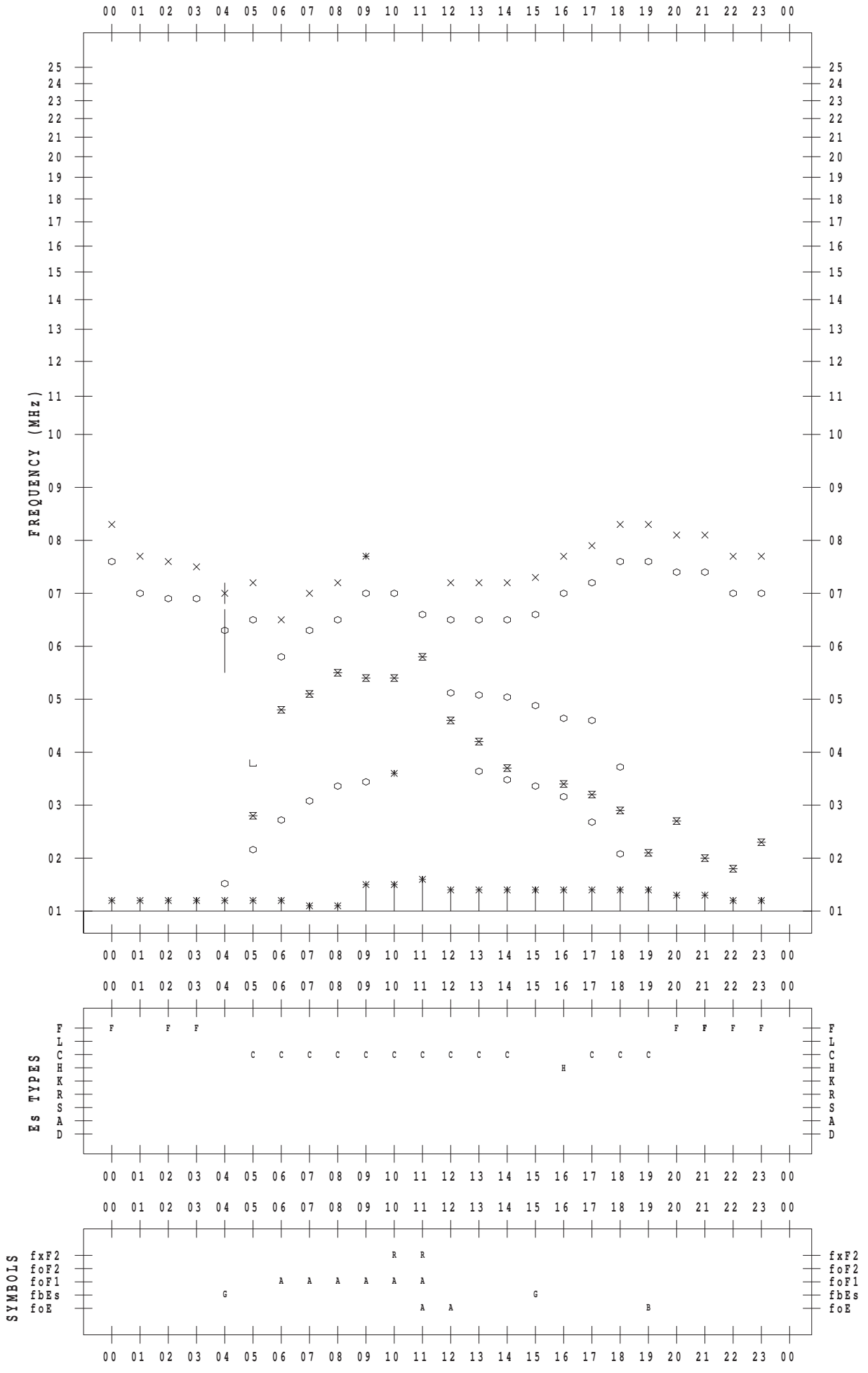
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/26

135 °E MEAN TIME



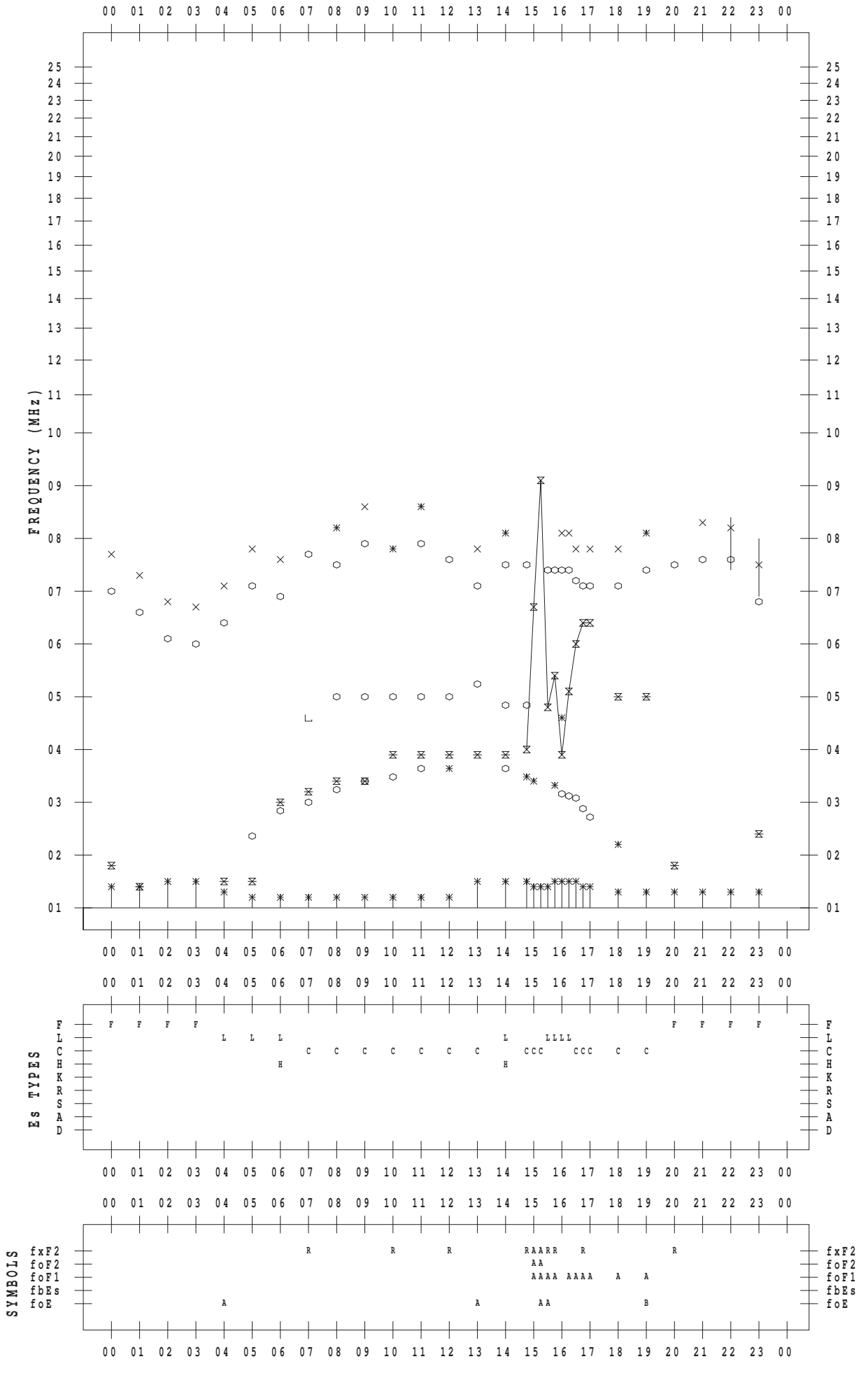
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/27

135 °E MEAN TIME



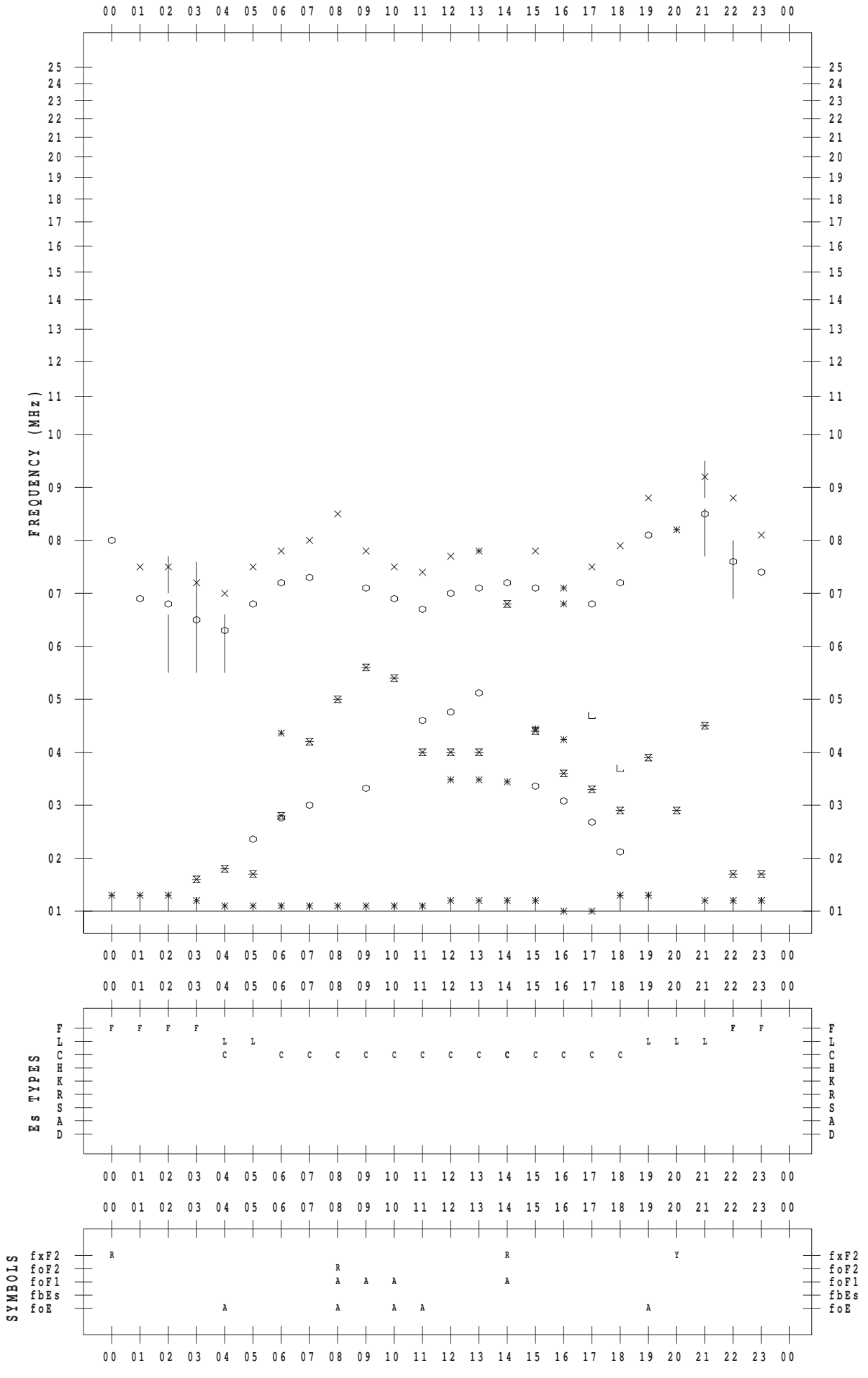
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/28

135 °E MEAN TIME



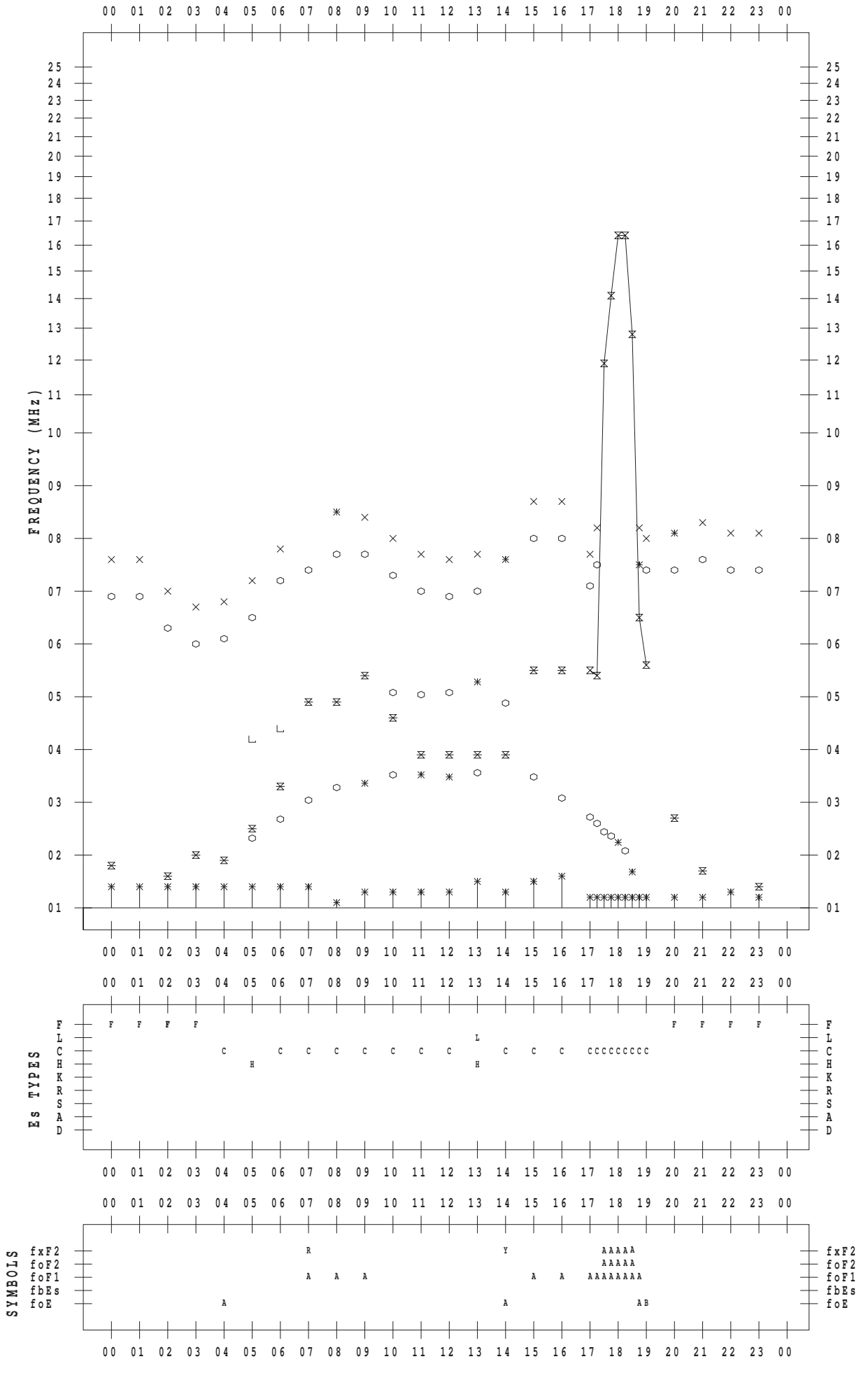
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/29

135 °E MEAN TIME



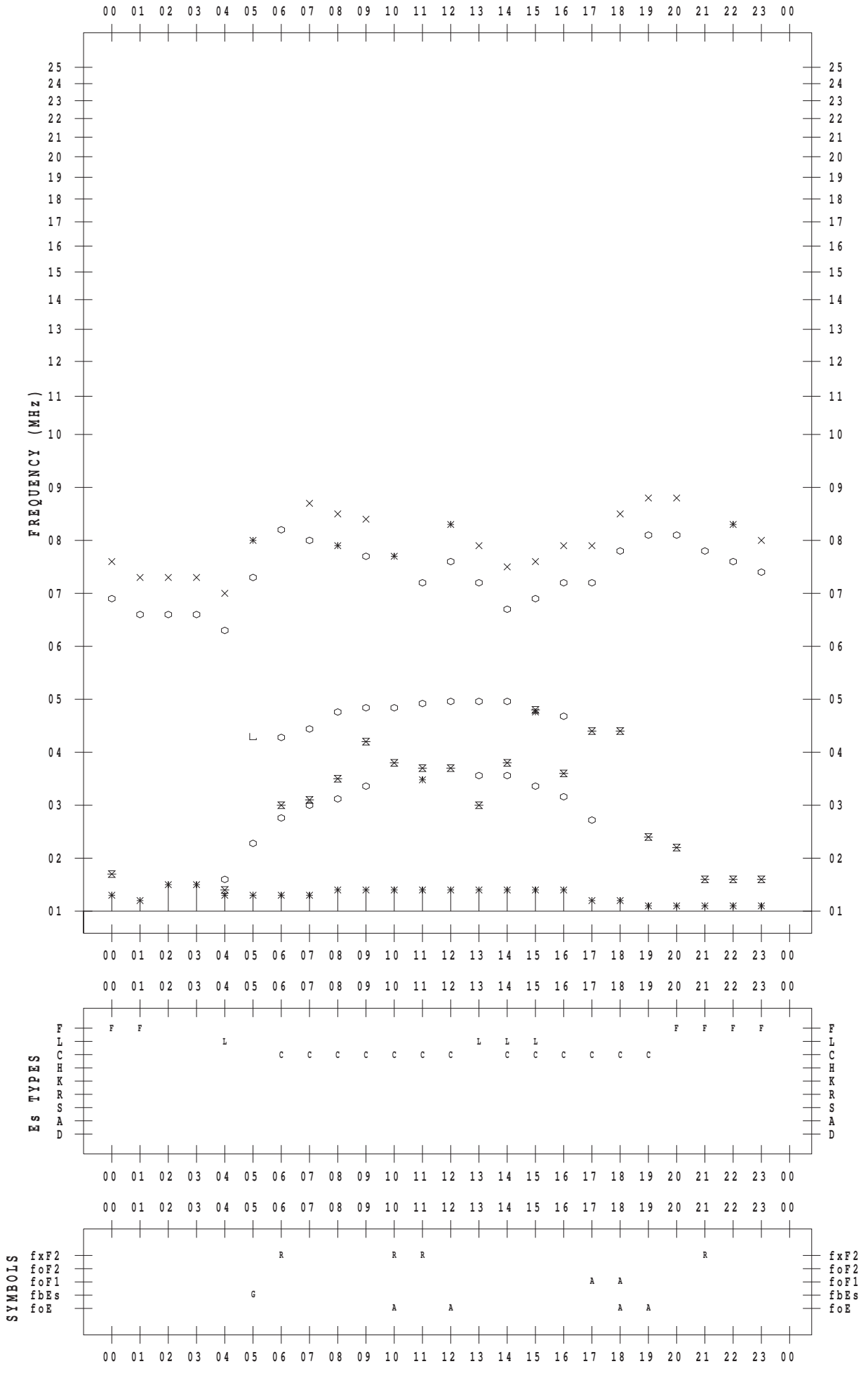
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/30

135 °E MEAN TIME



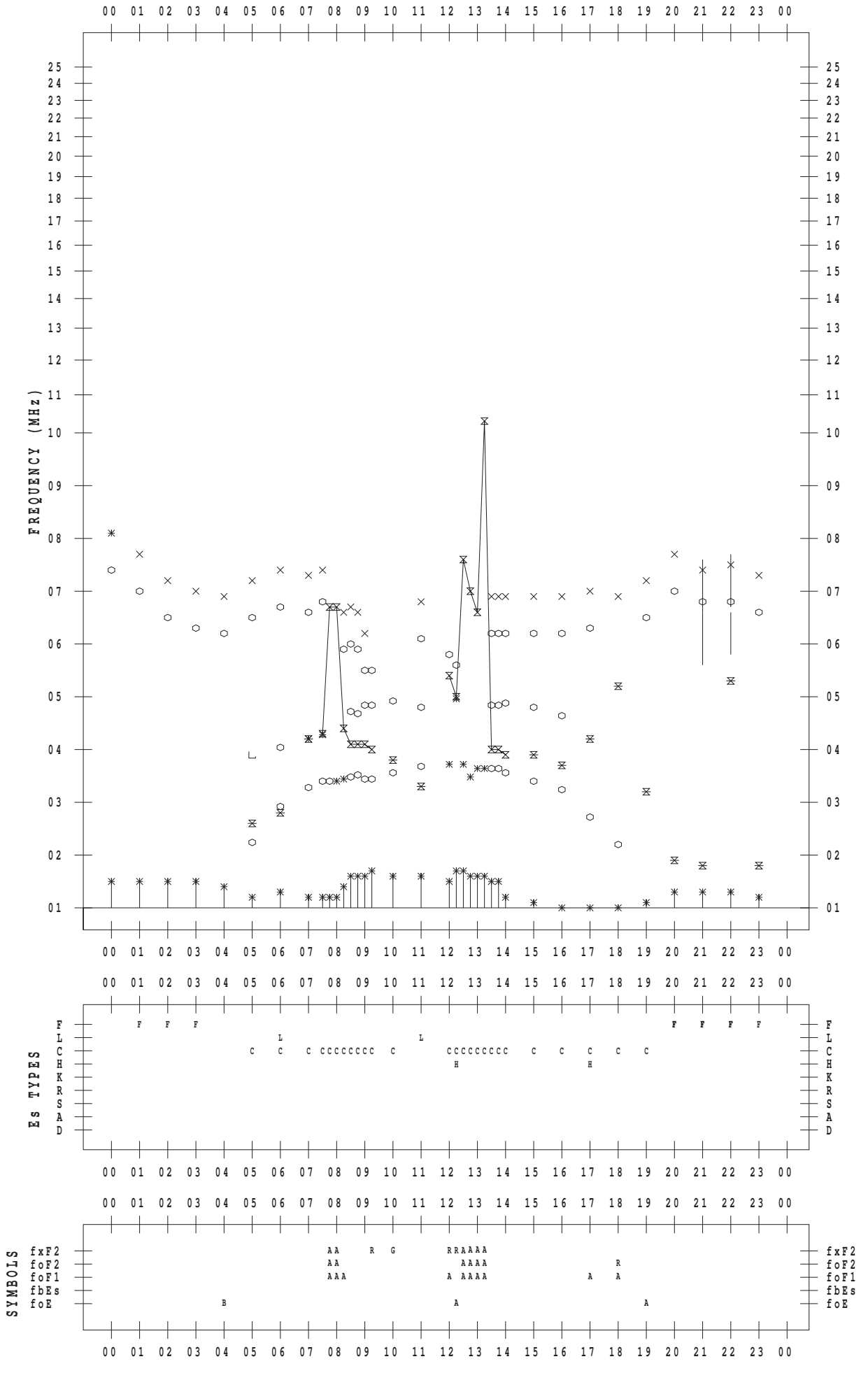
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 5/31

135 °E MEAN TIME



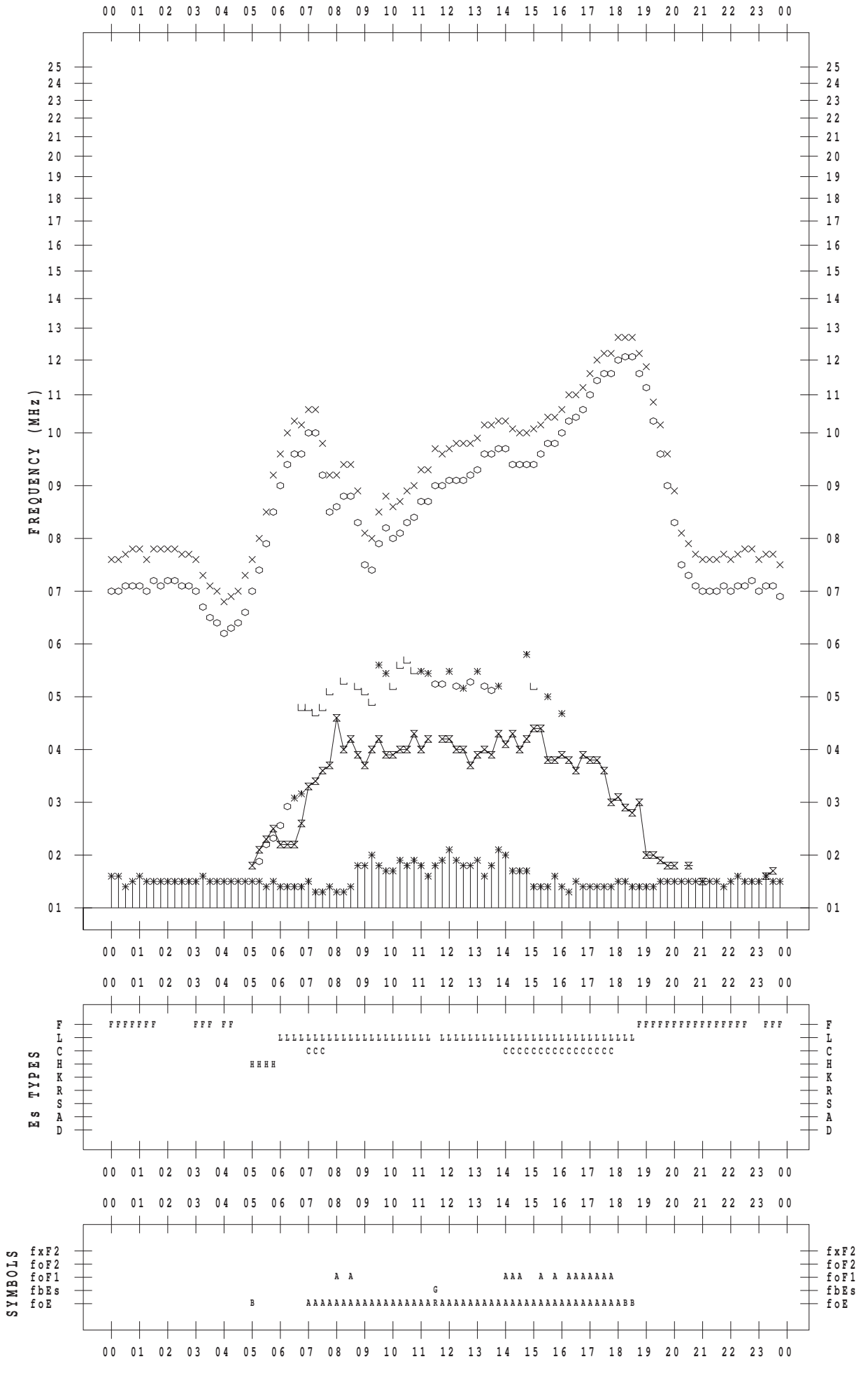
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 1

135 °E MEAN TIME



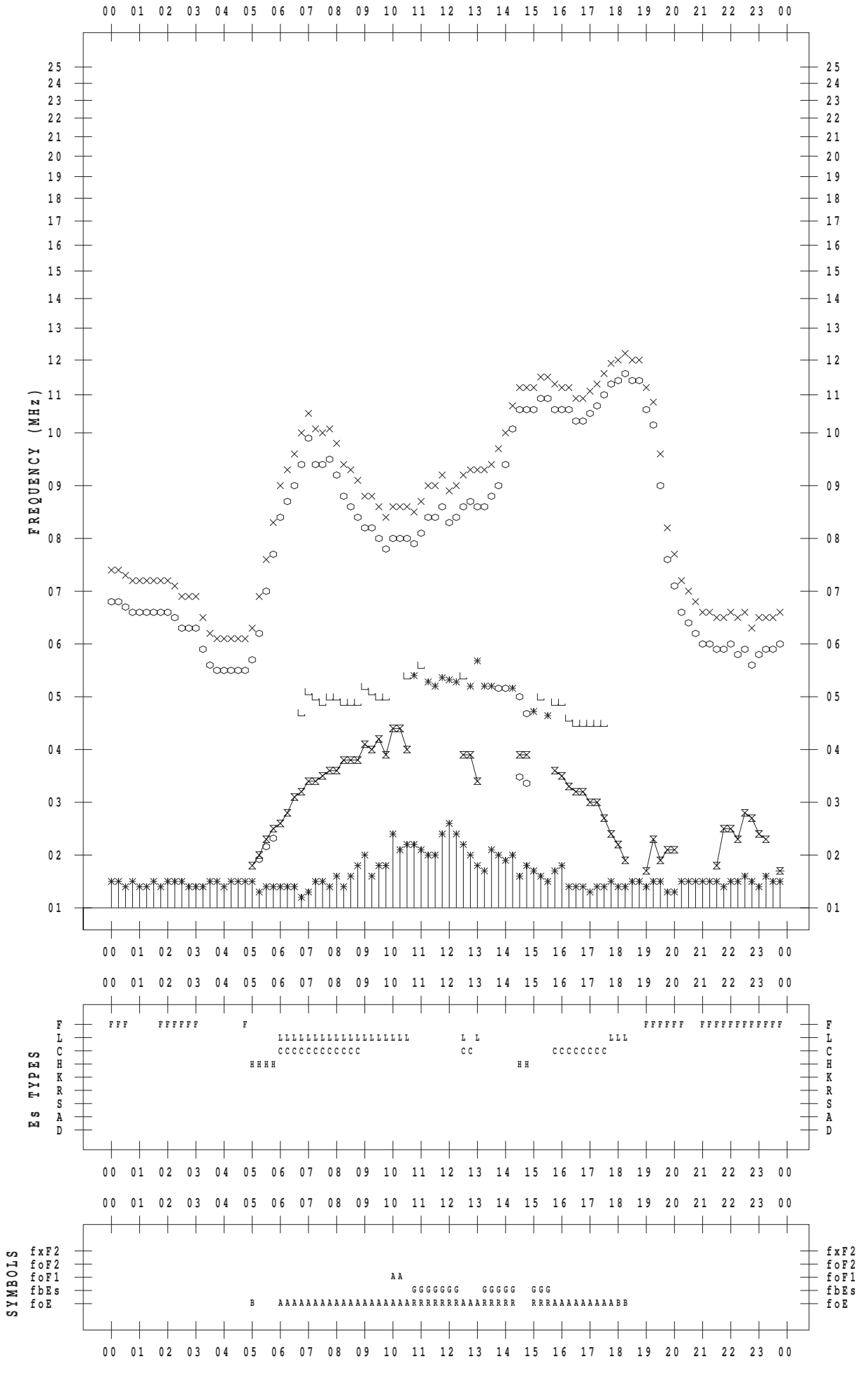
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 2

135 °E MEAN TIME



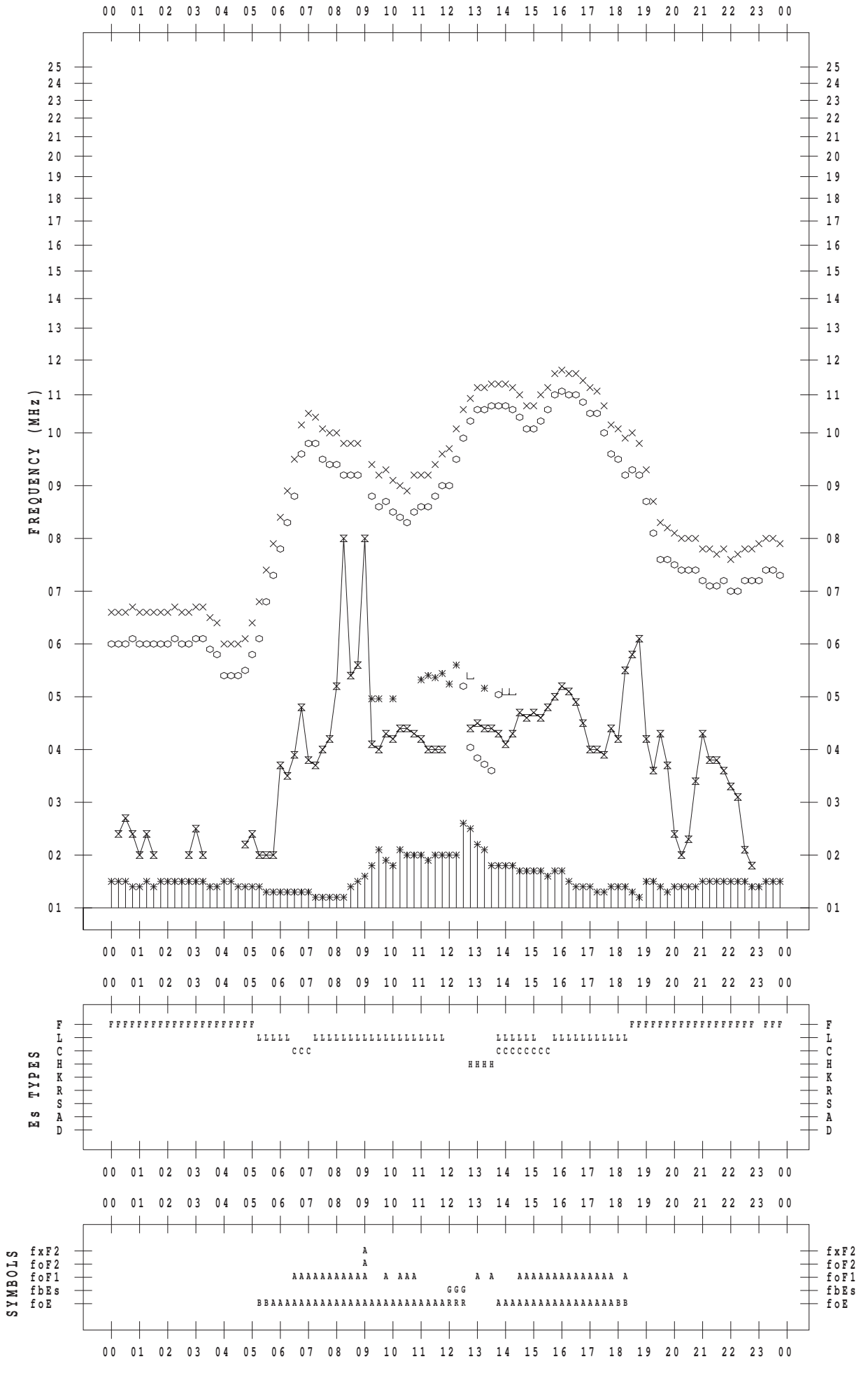
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 3

135 °E MEAN TIME

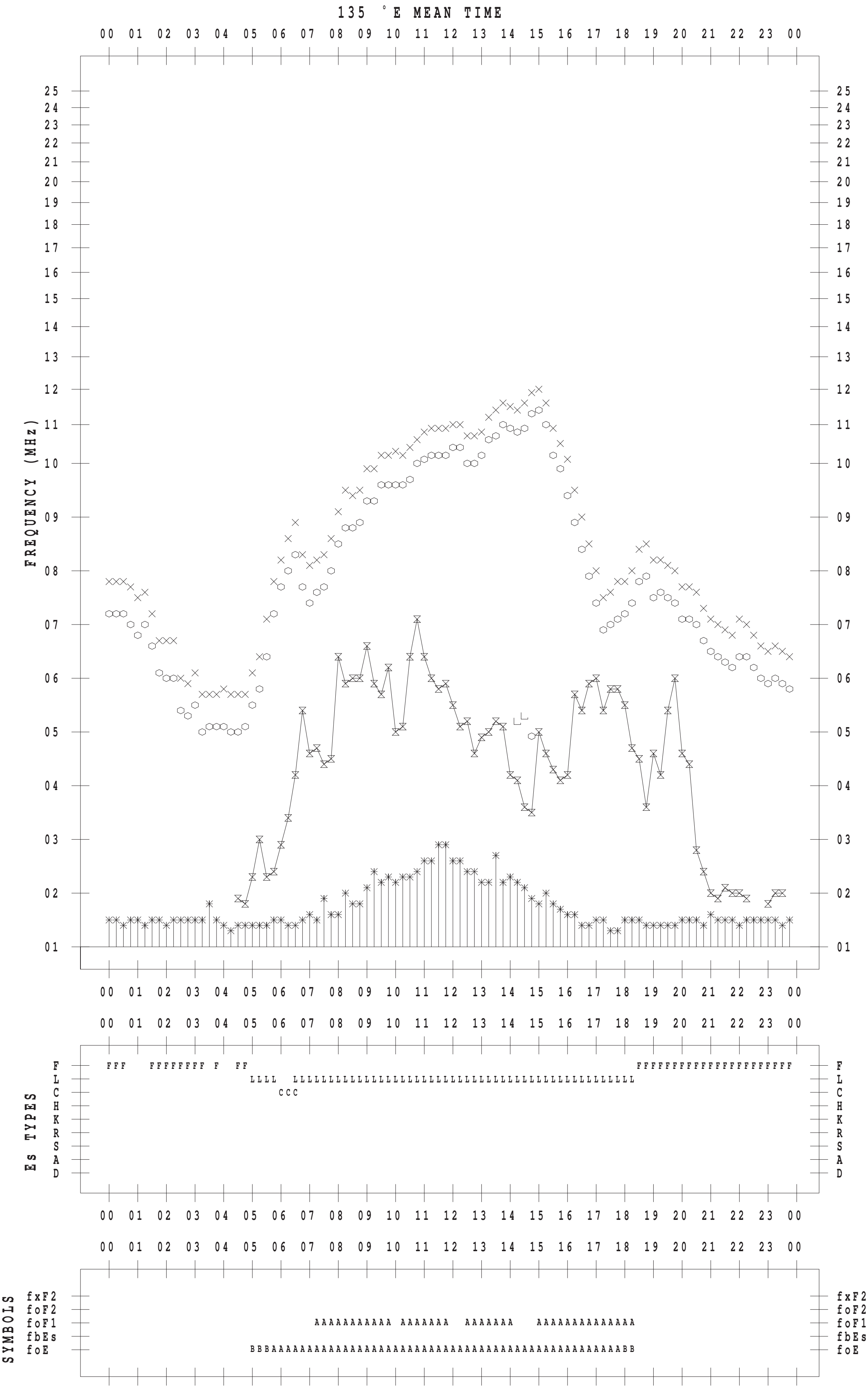


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 4



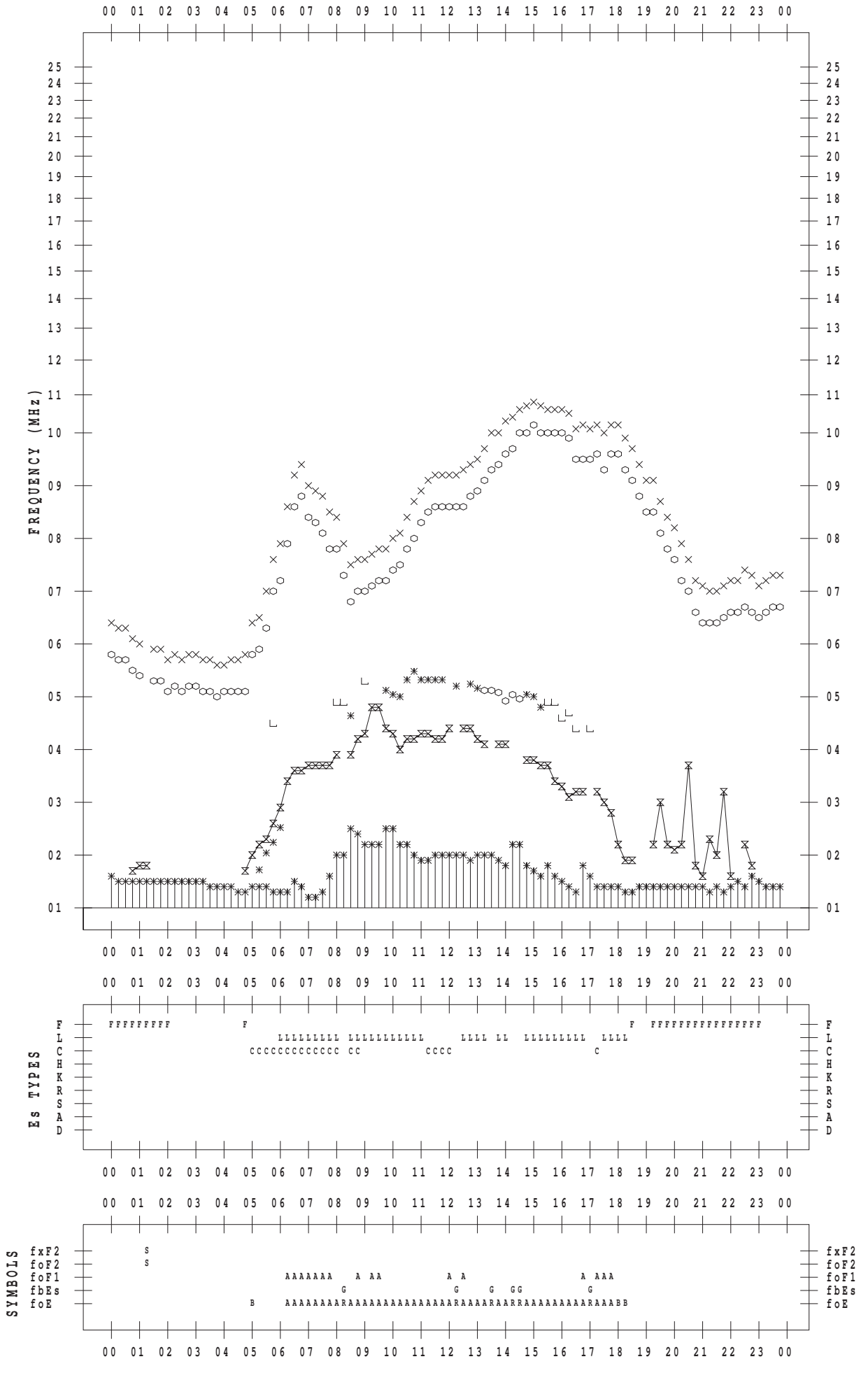
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 5

135 °E MEAN TIME



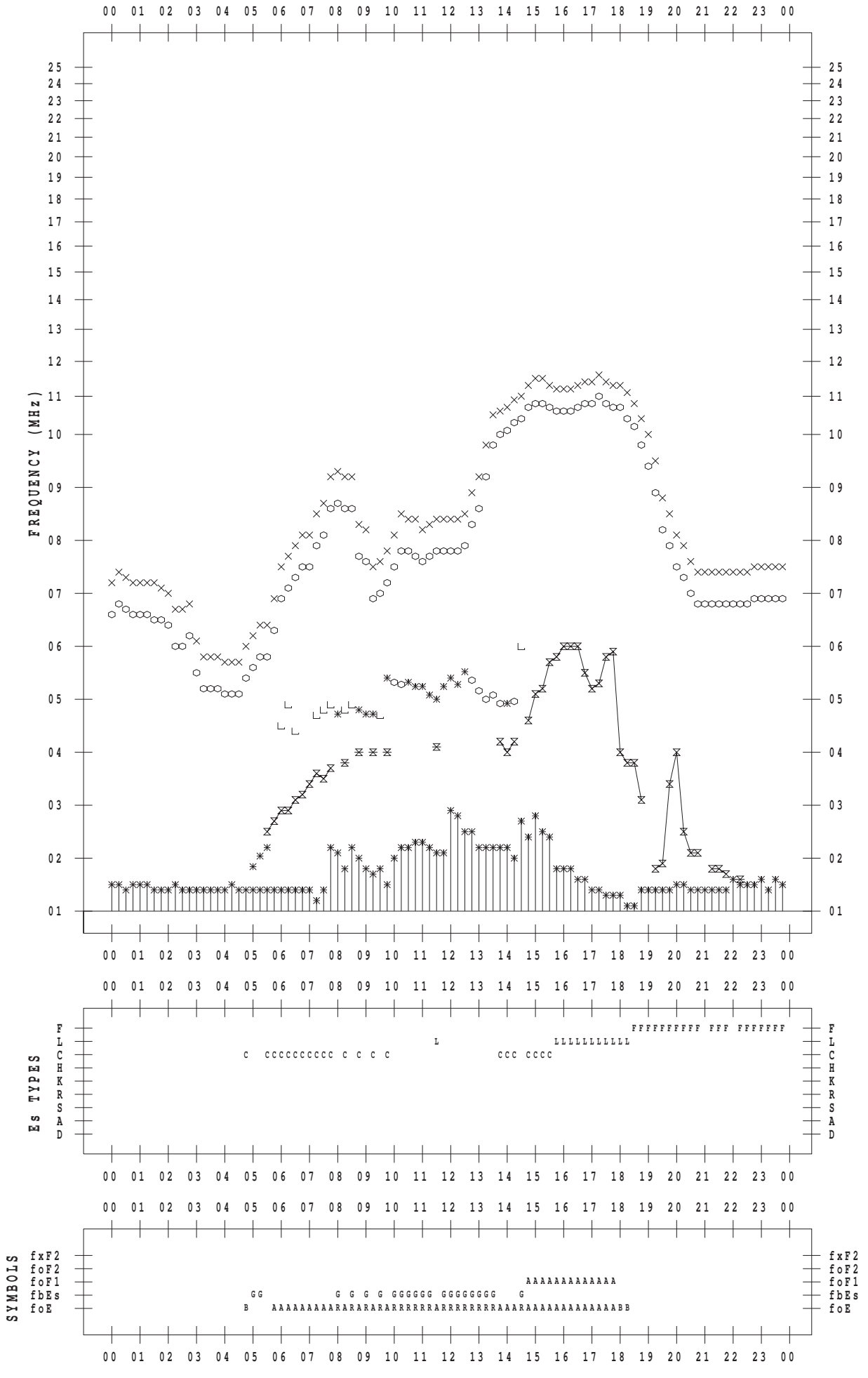
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 6

135 °E MEAN TIME



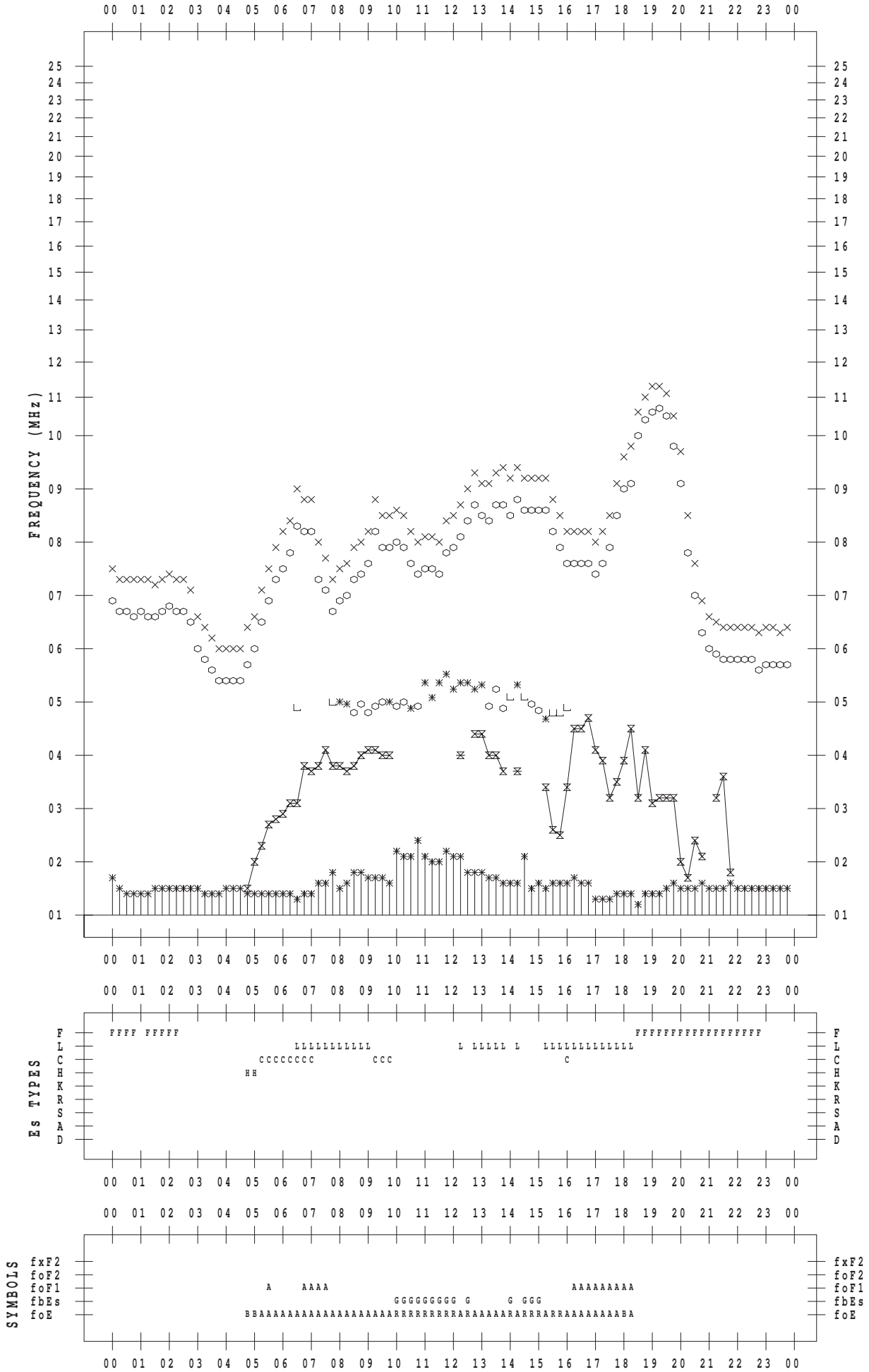
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 7

135 °E MEAN TIME



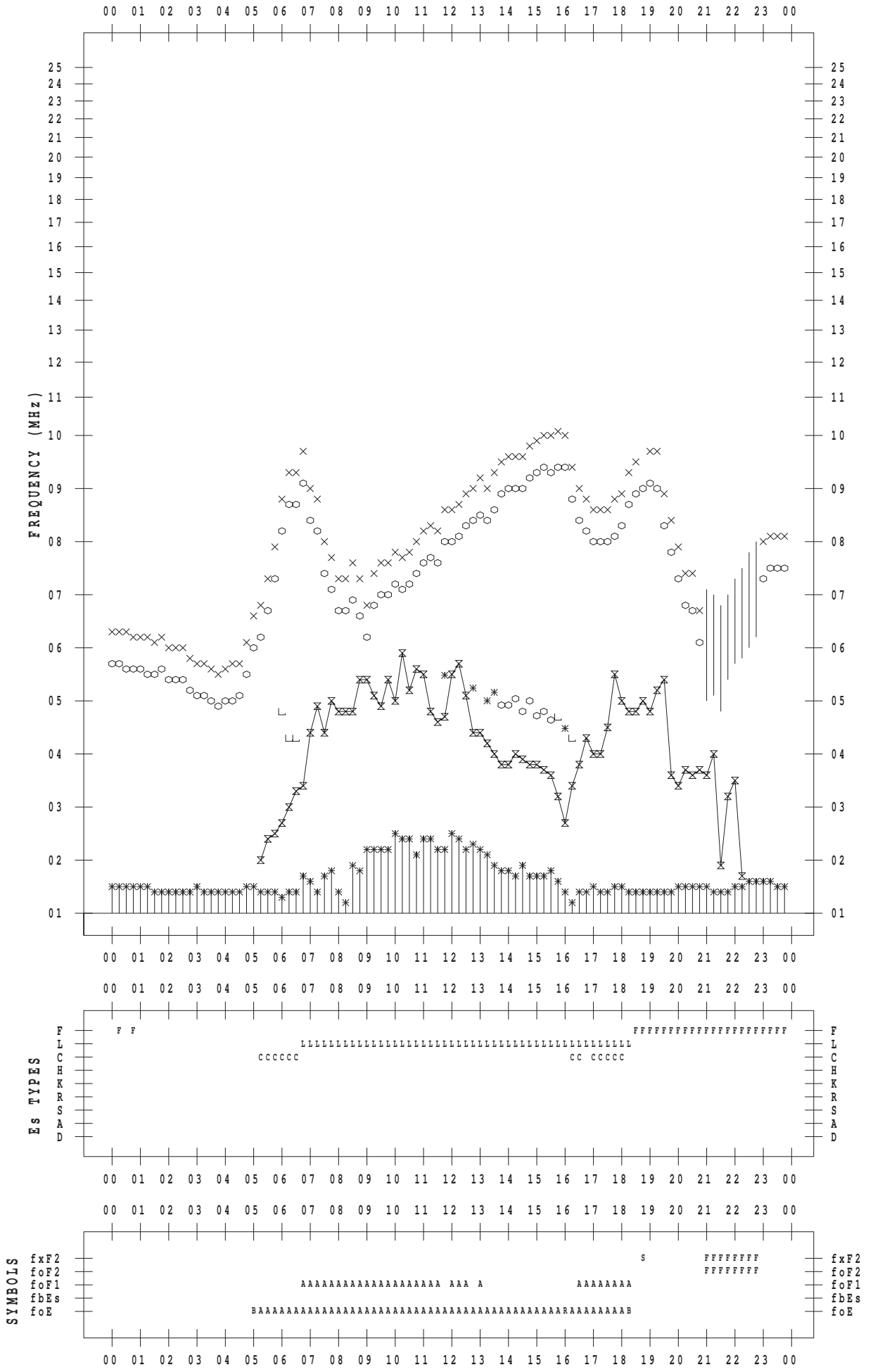
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/ 8

135 °E MEAN TIME



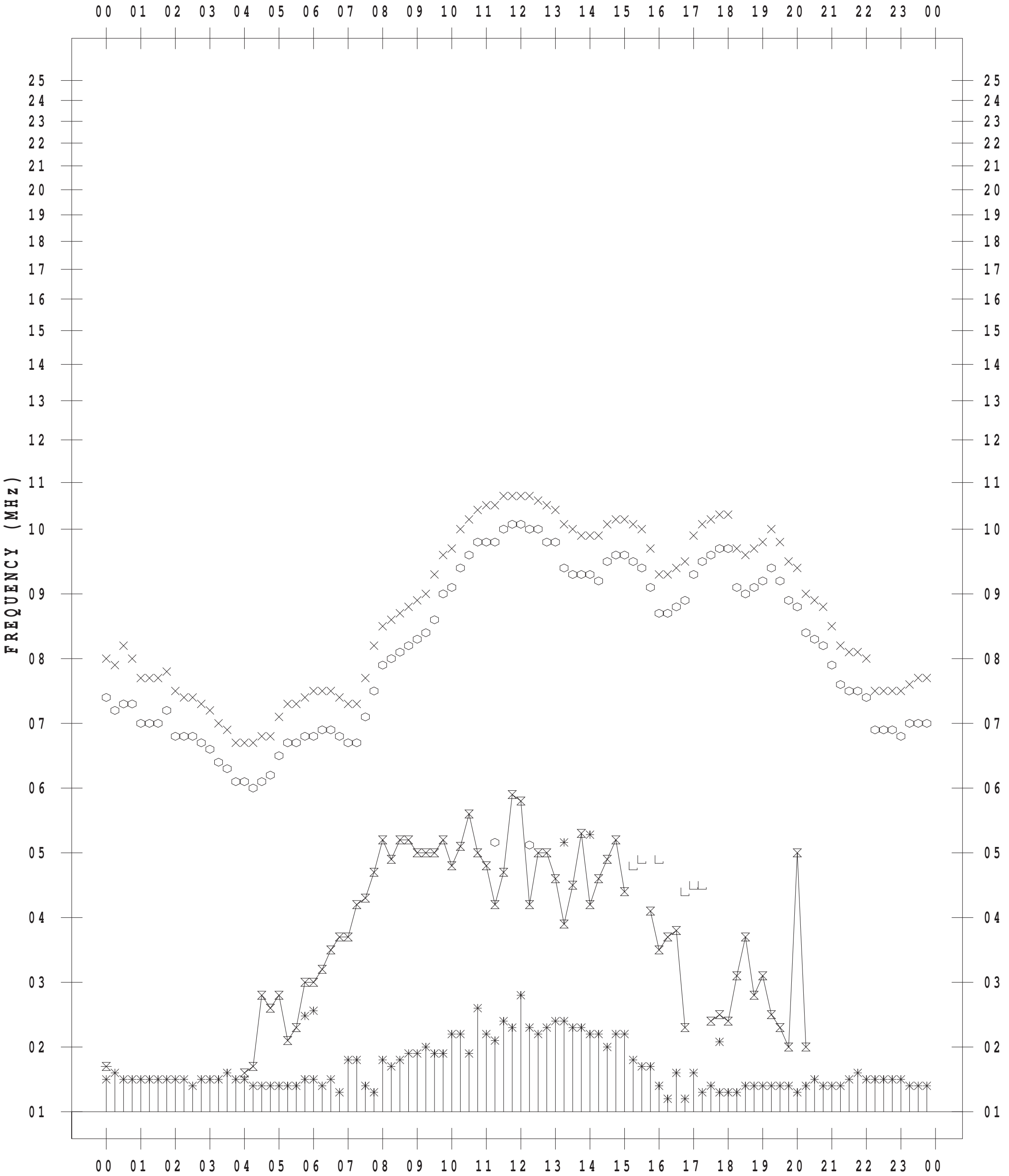
f-PLOT DATA

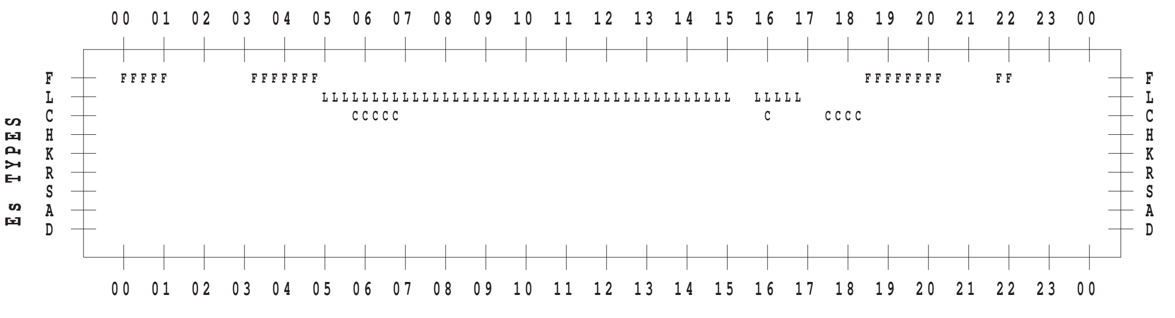
SCALER : I.NISHIMUTA

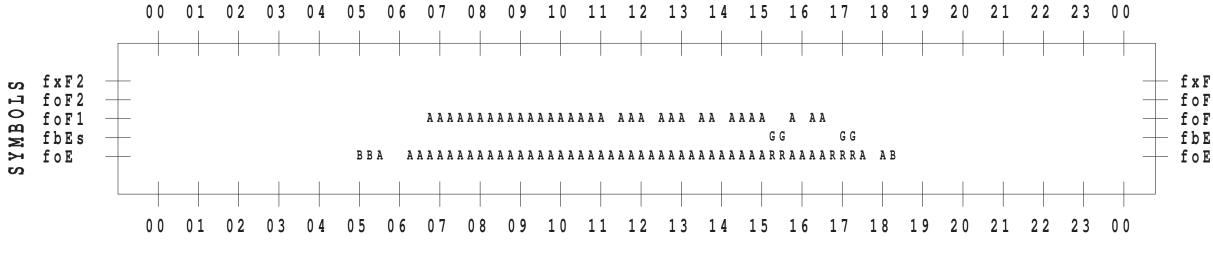
STATION : Kokubunji

DATE : 2012/ 5/ 9

135 °E MEAN TIME







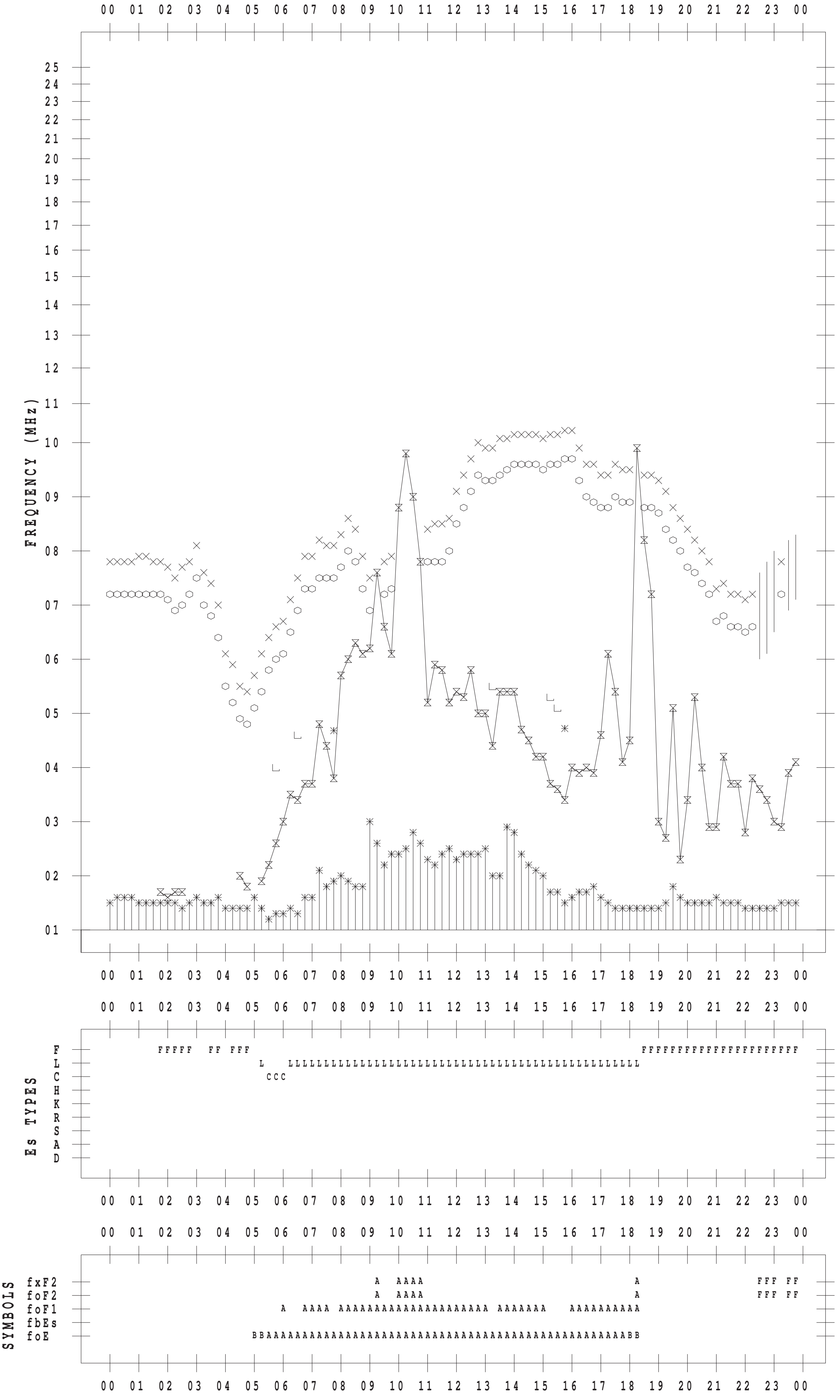
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/10

135 °E MEAN TIME



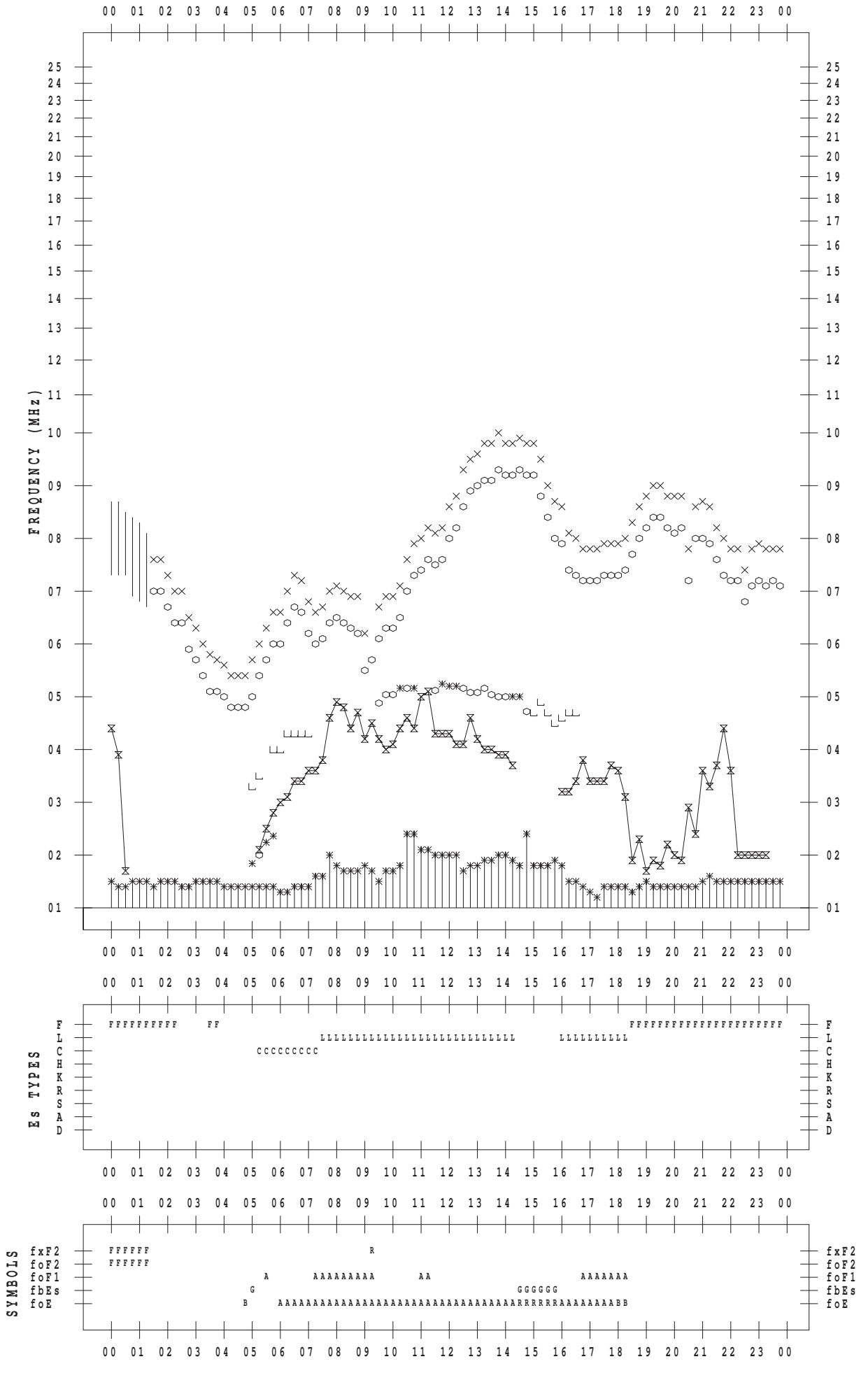
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/11

135 °E MEAN TIME



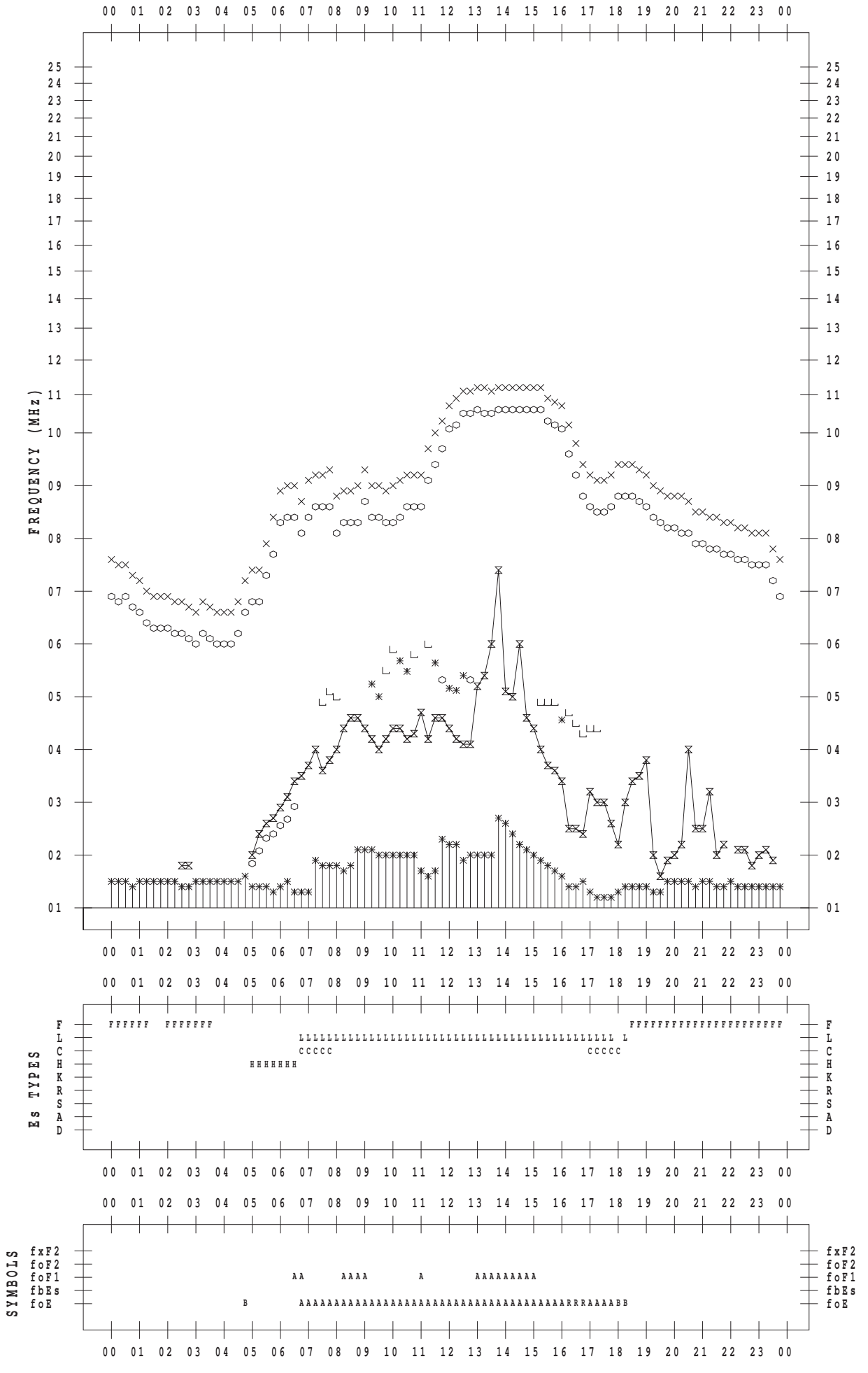
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/12

135 °E MEAN TIME



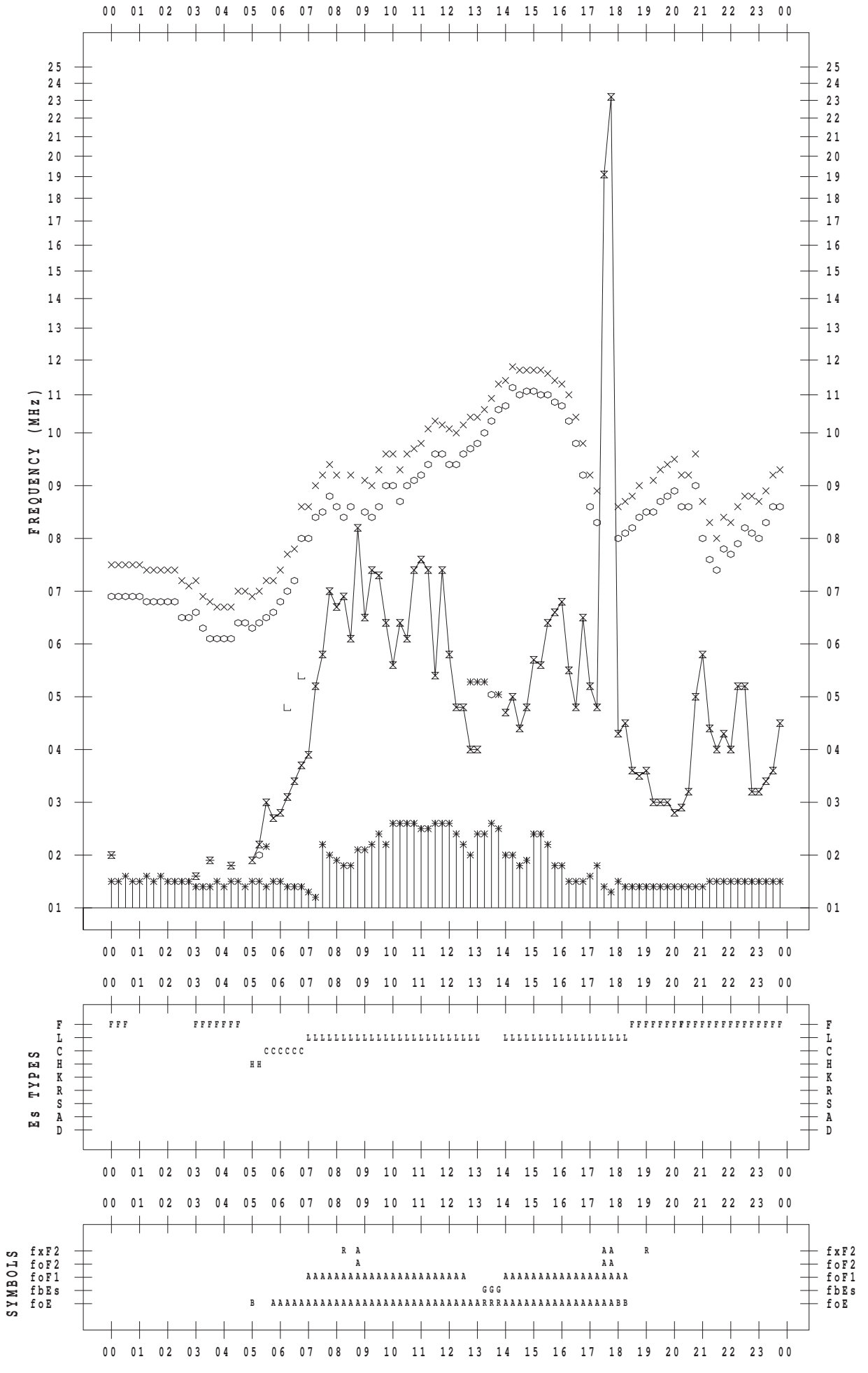
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/13

135 °E MEAN TIME



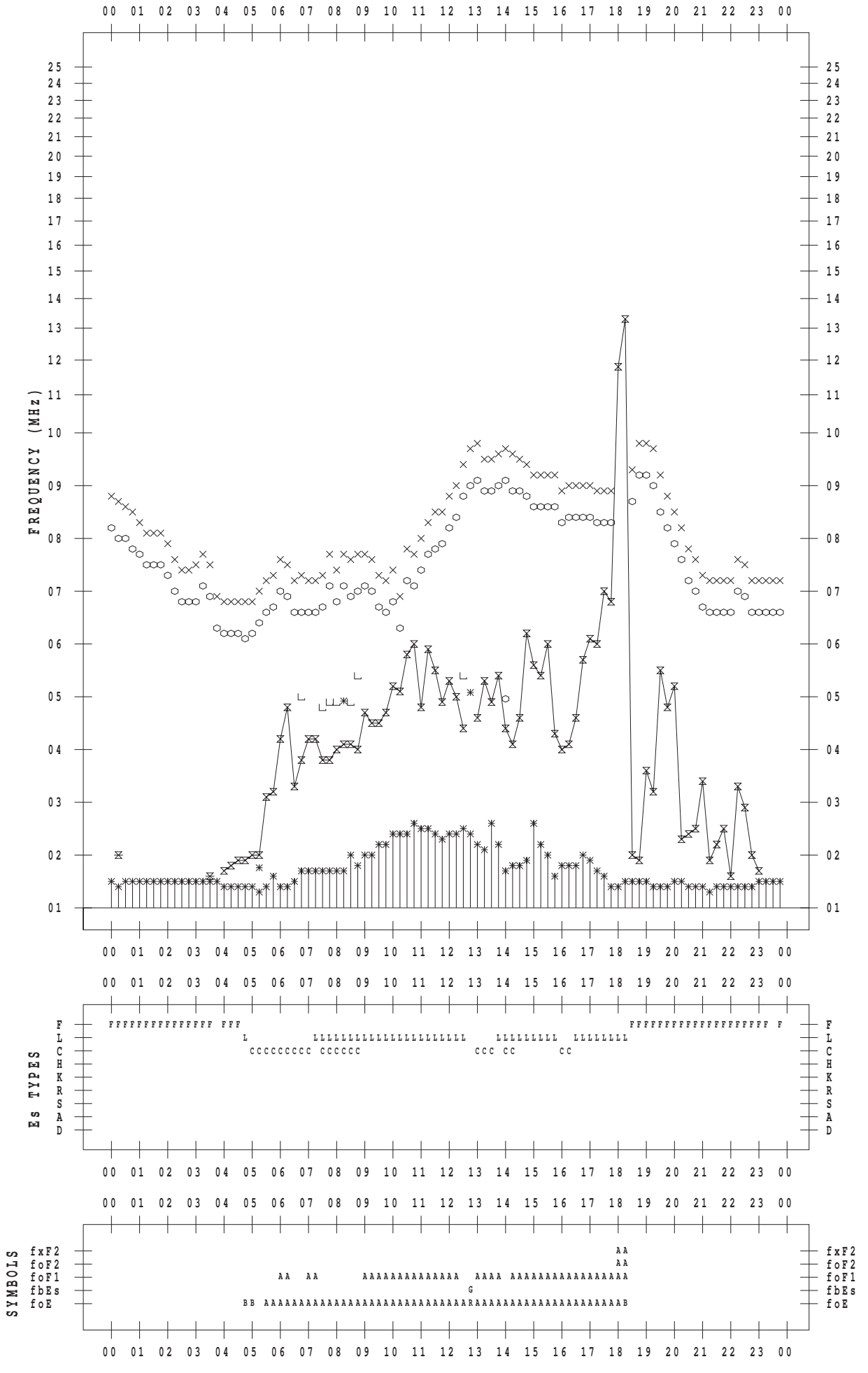
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/14

135 °E MEAN TIME



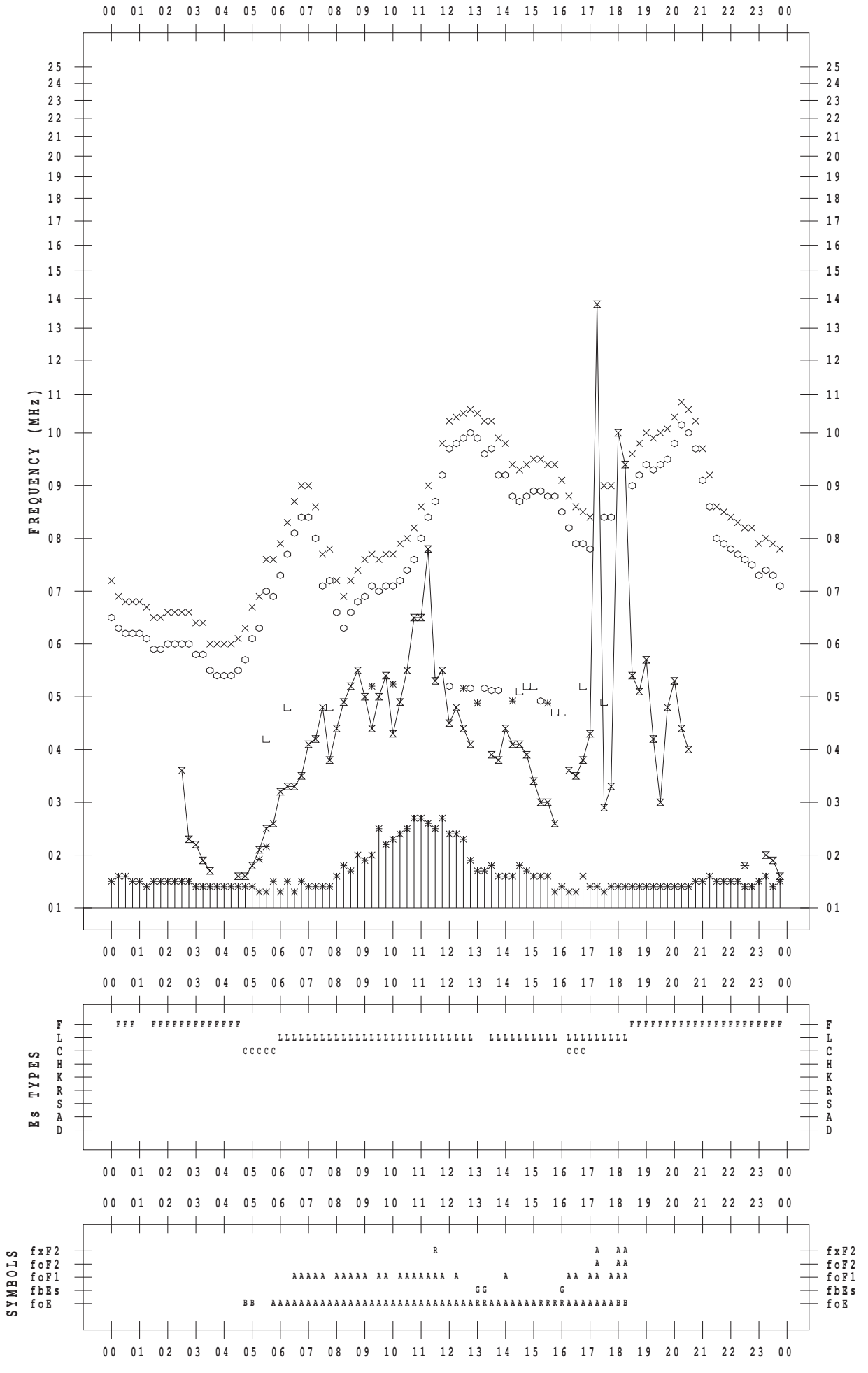
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/15

135 °E MEAN TIME



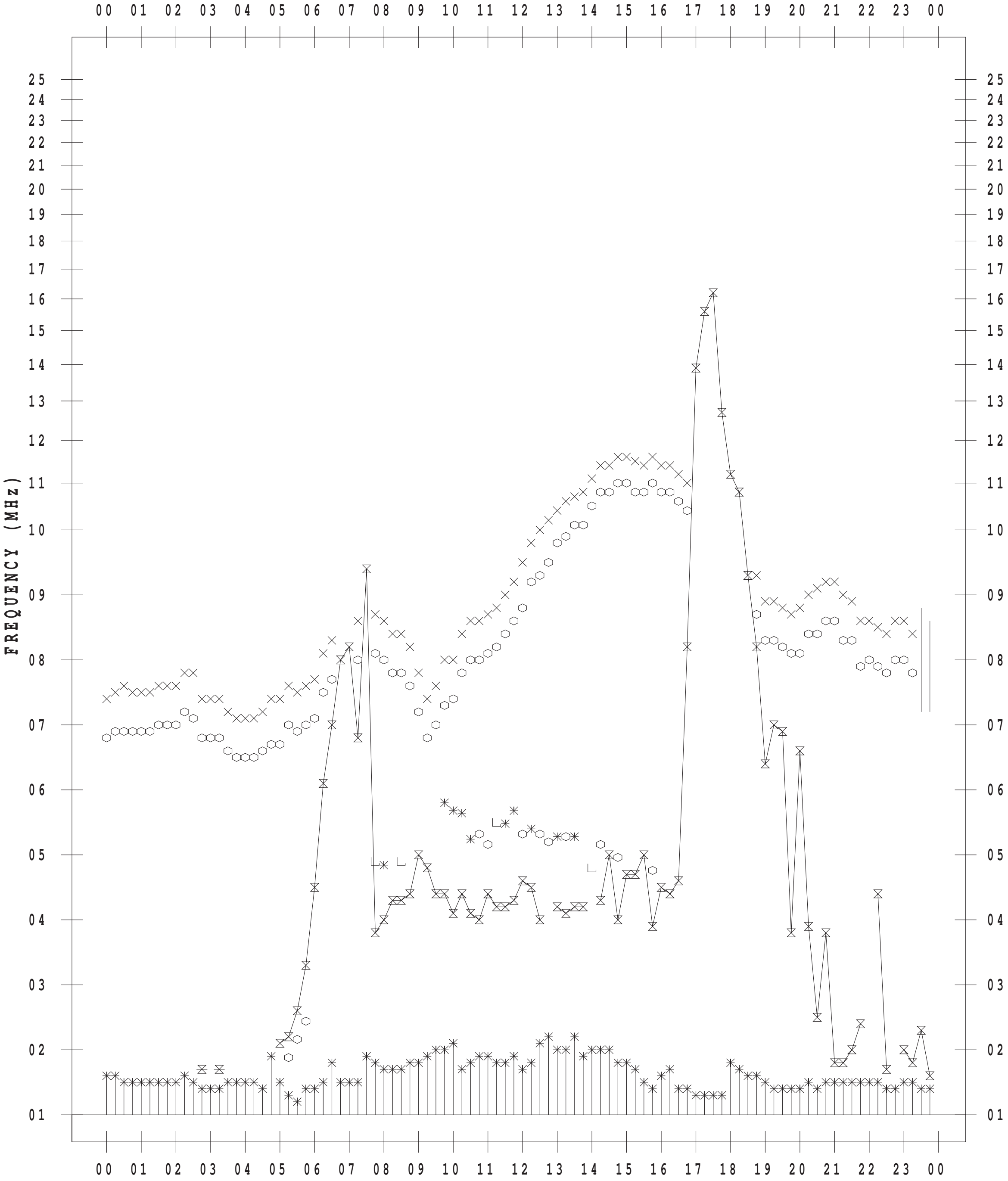
f-PLOT DATA

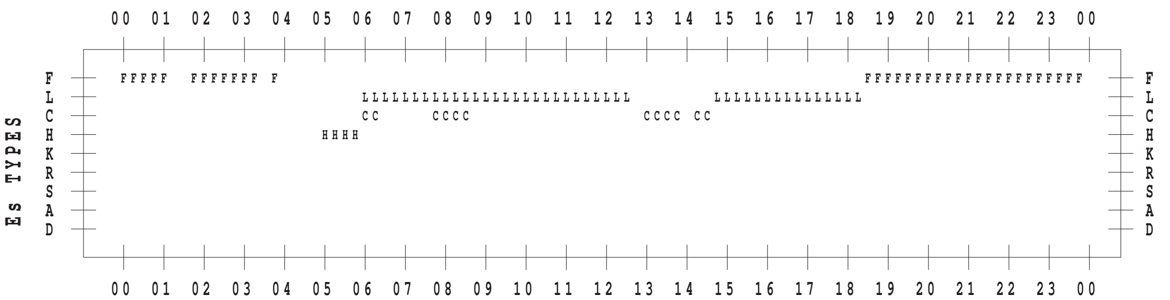
SCALER : I.NISHIMUTA

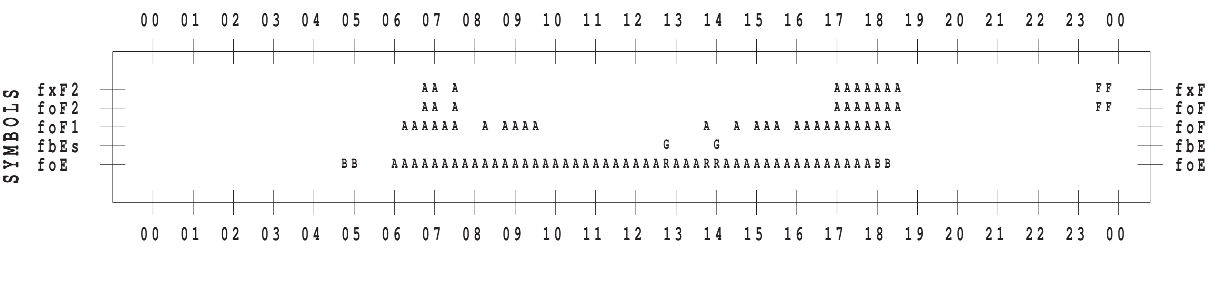
STATION : Kokubunji

DATE : 2012/ 5/16

135 °E MEAN TIME





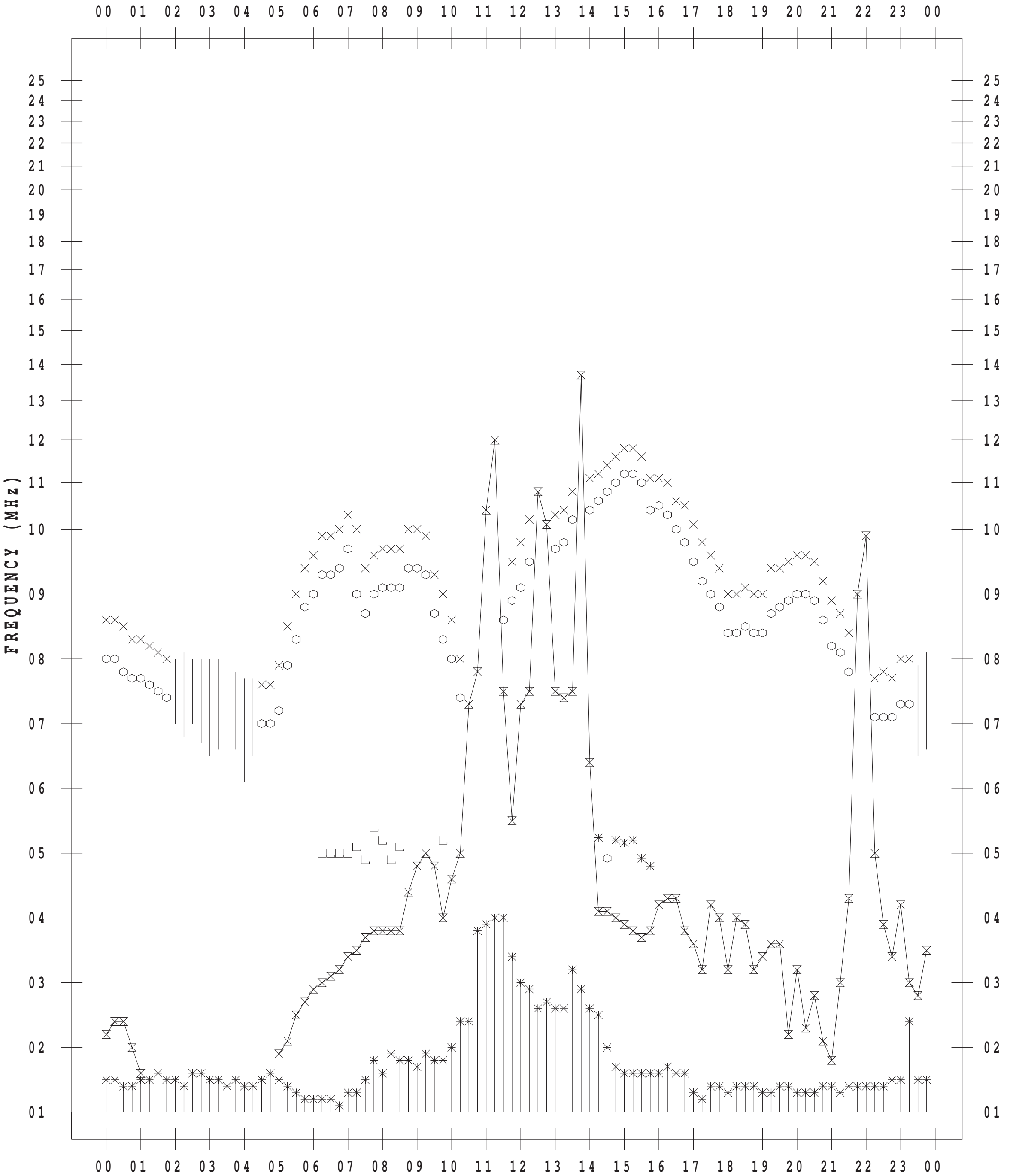


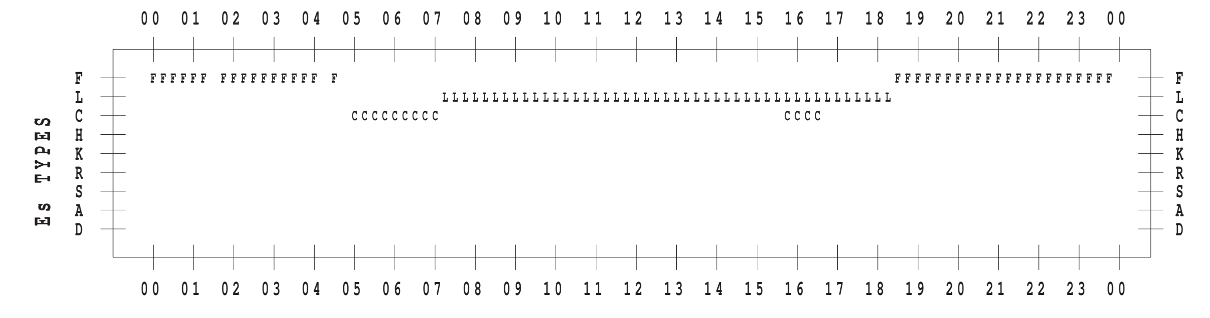
f-PLOT DATA

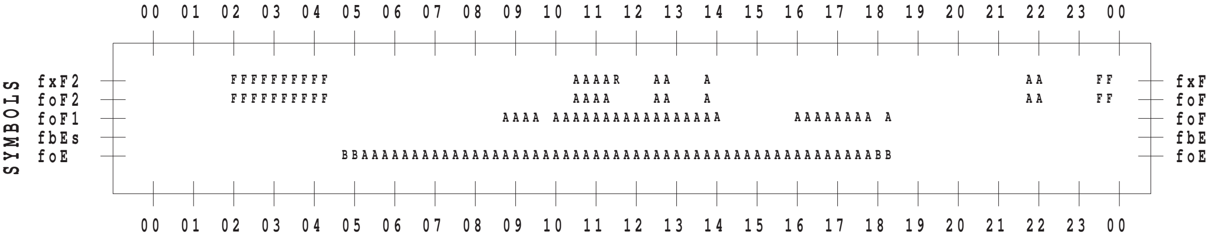
SCALER : I.NISHIMUTA

STATION : Kokubunji　　DATE : 2012/ 5/17

135 °E MEAN TIME







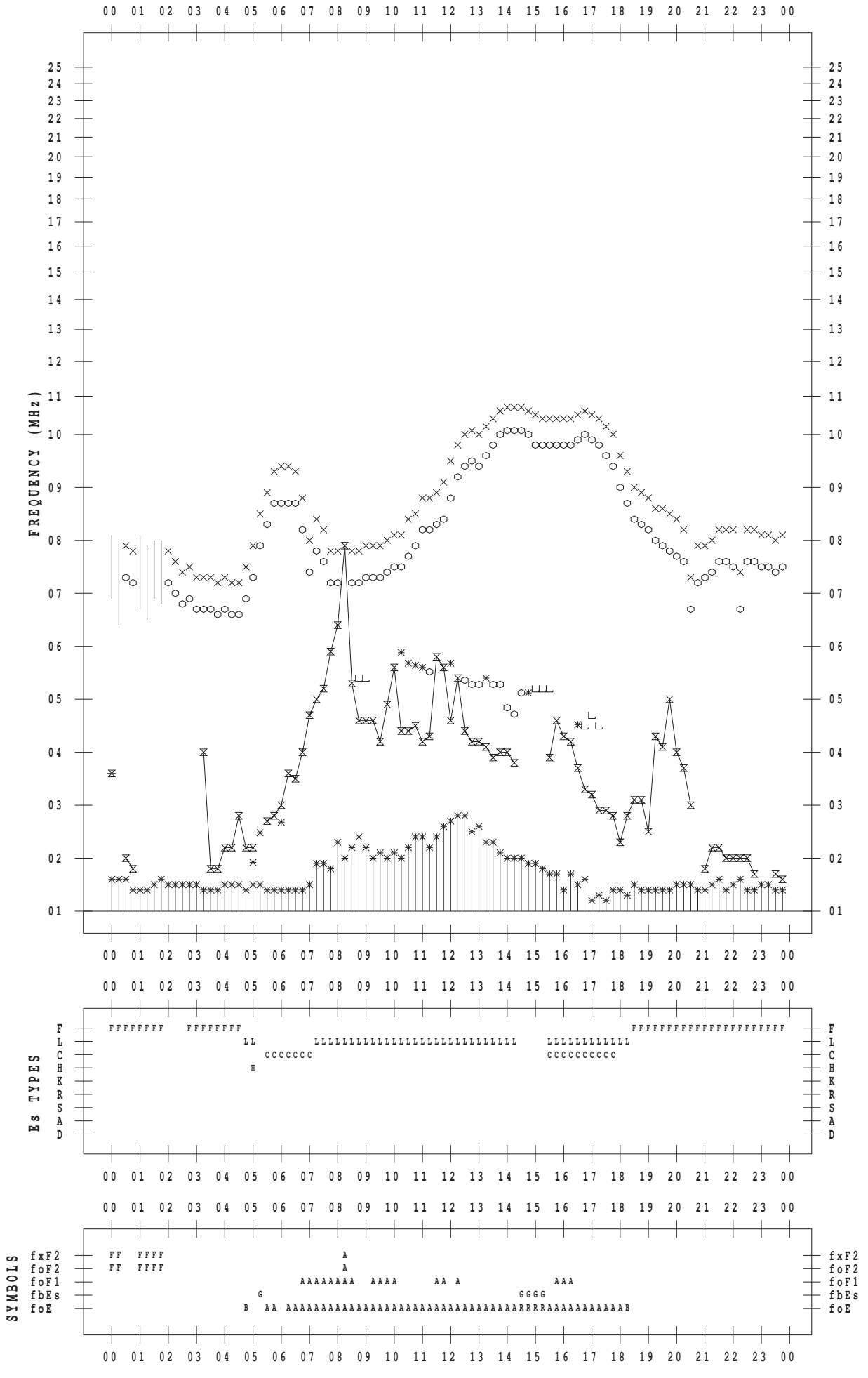
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/18

135 °E MEAN TIME



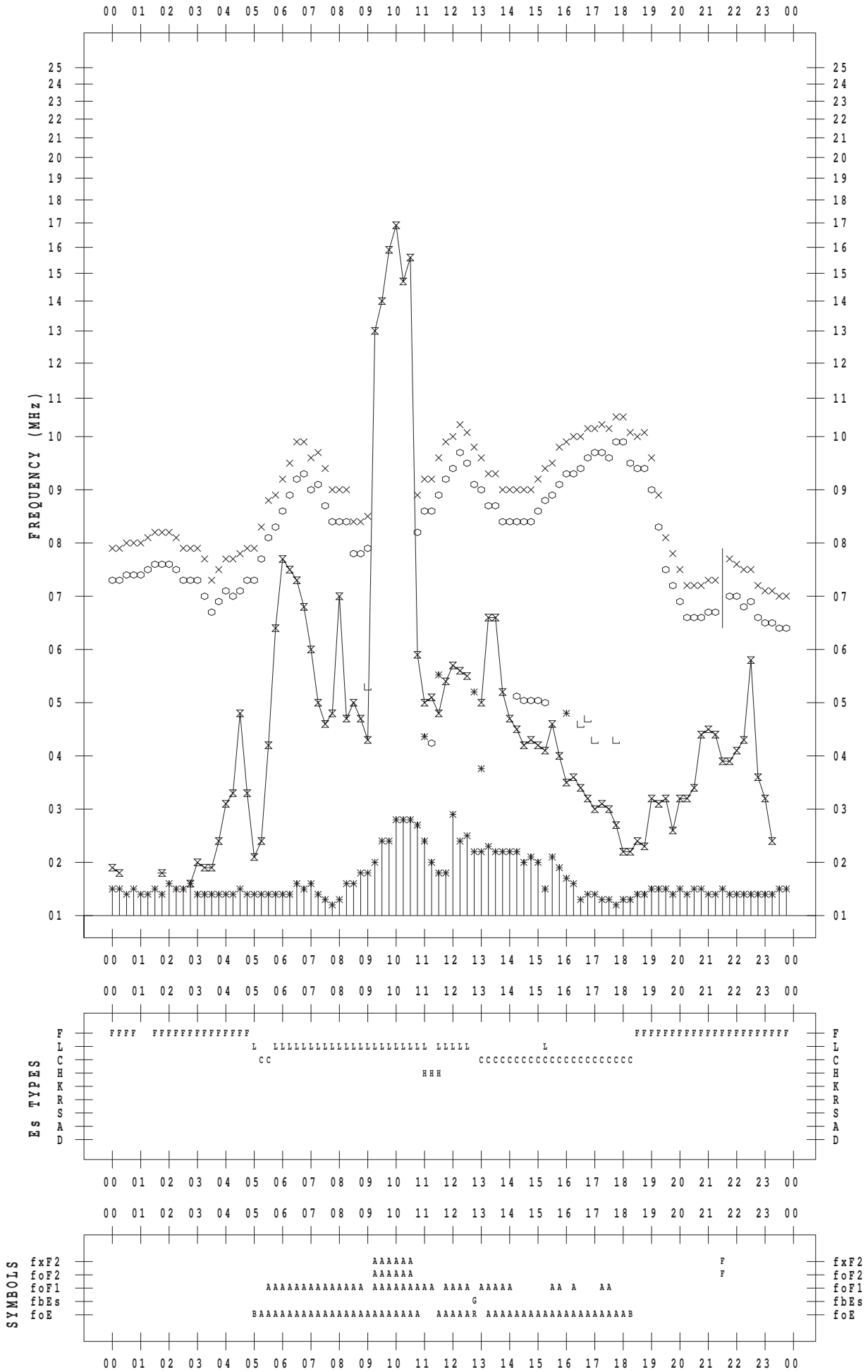
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/19

135 °E MEAN TIME



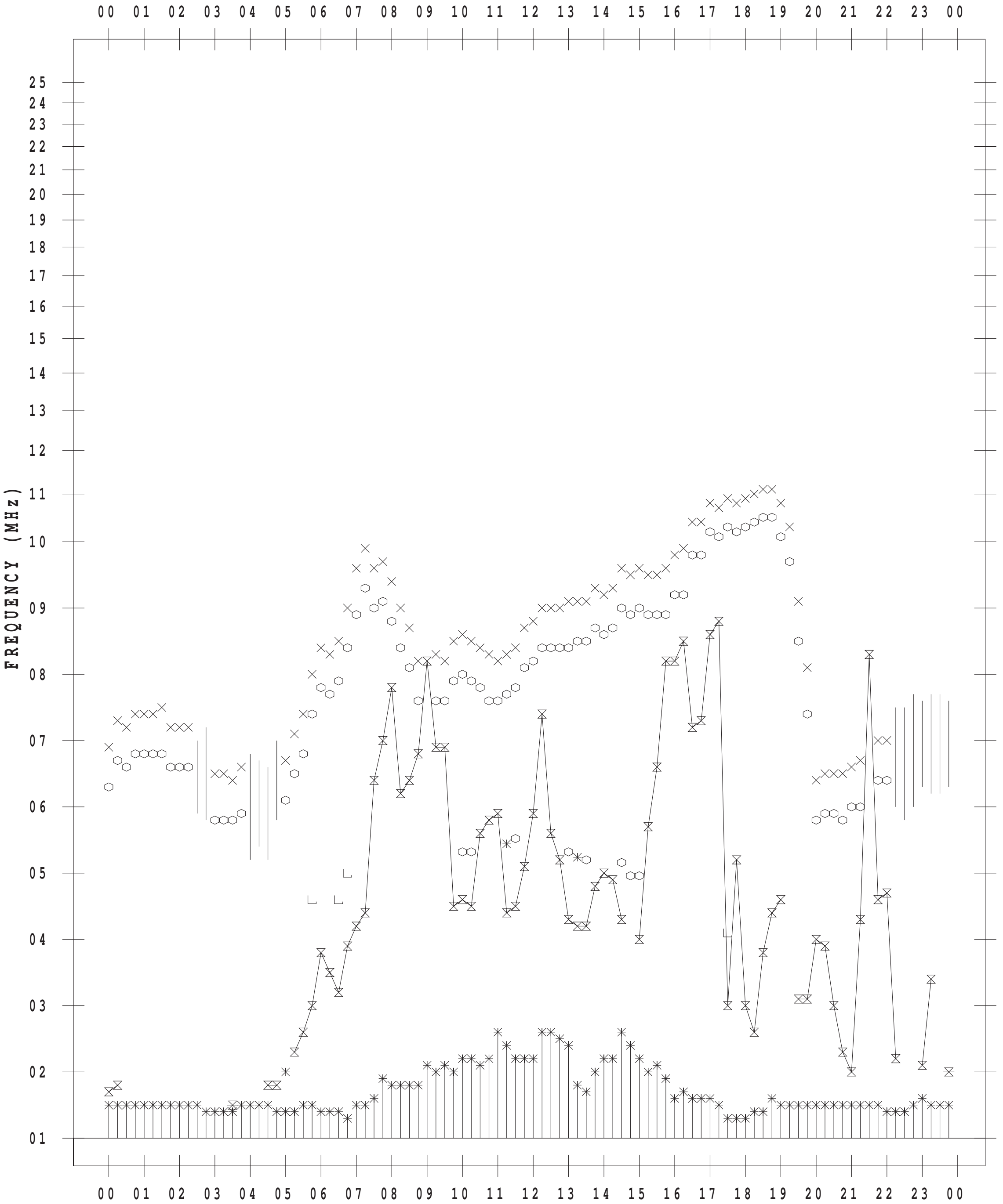
f-PLOT DATA

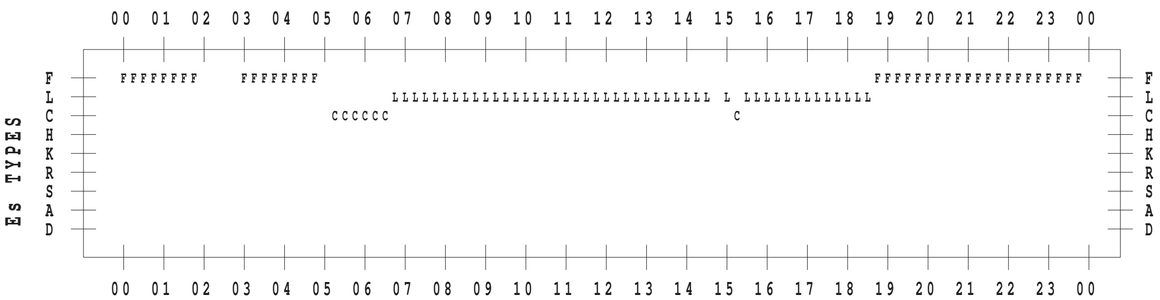
SCALER : I.NISHIMUTA

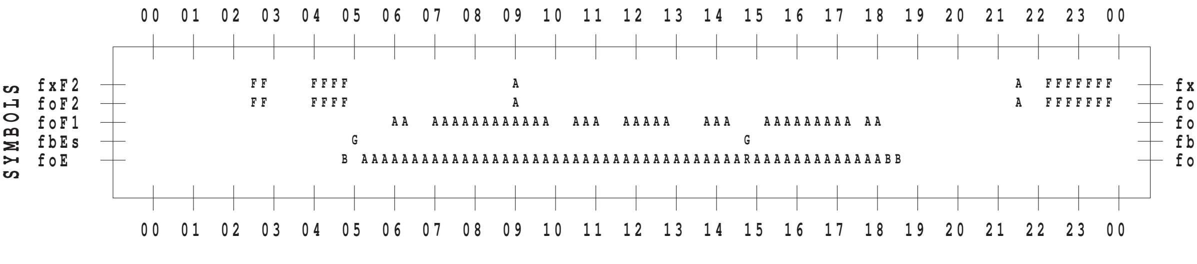
STATION : Kokubunji

DATE : 2012/ 5/20

135 °E MEAN TIME







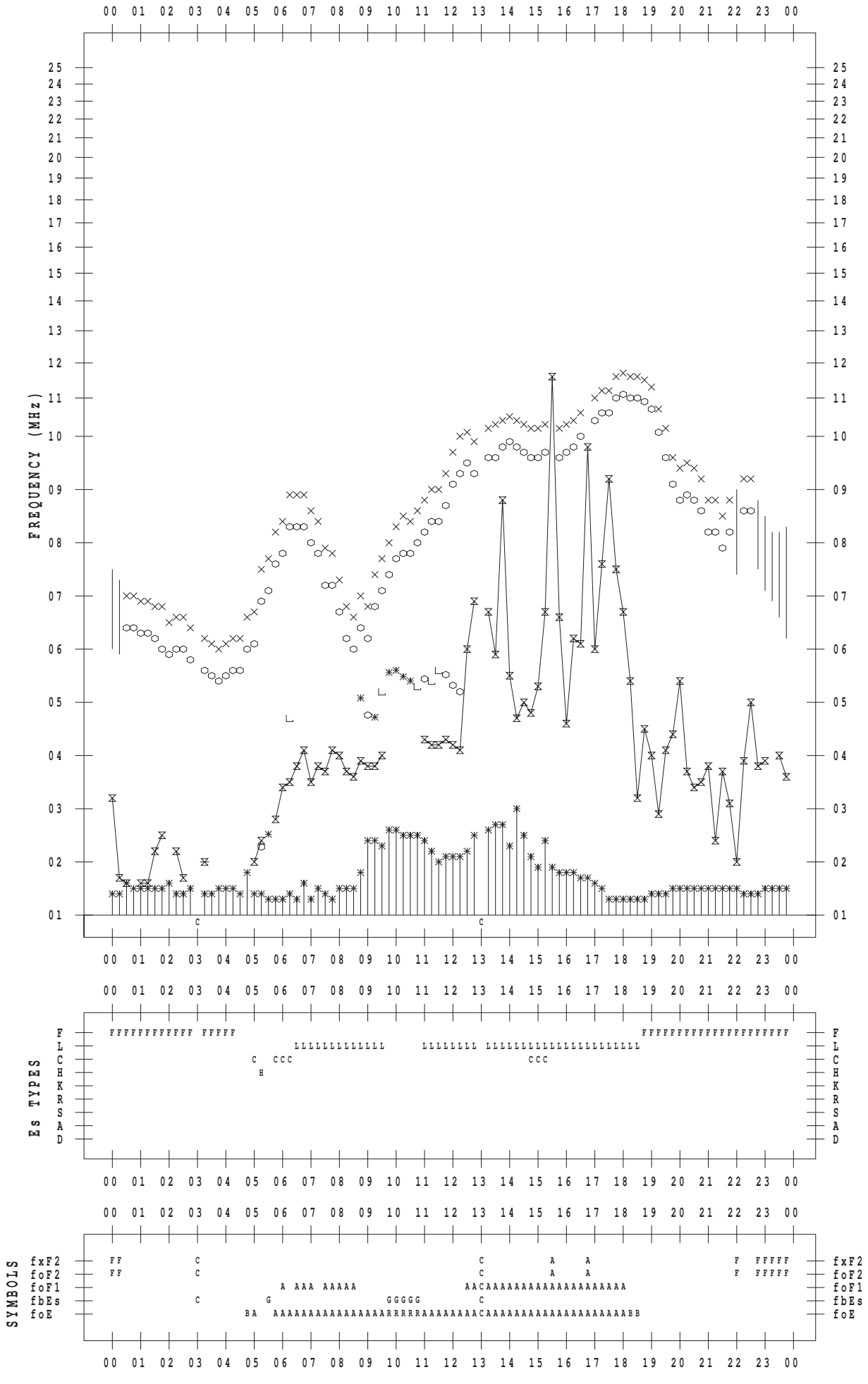
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/21

135 °E MEAN TIME



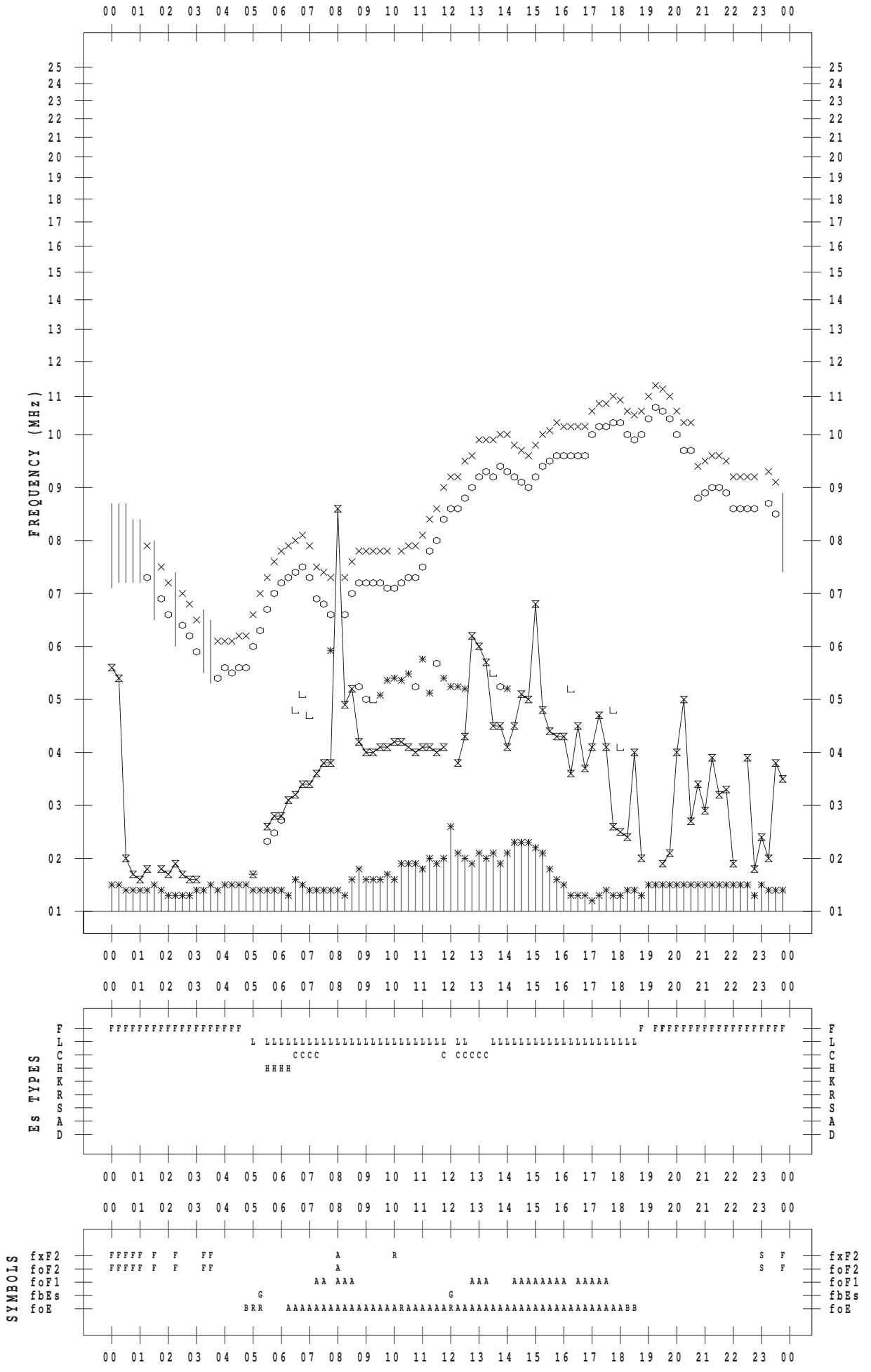
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/22

135 °E MEAN TIME



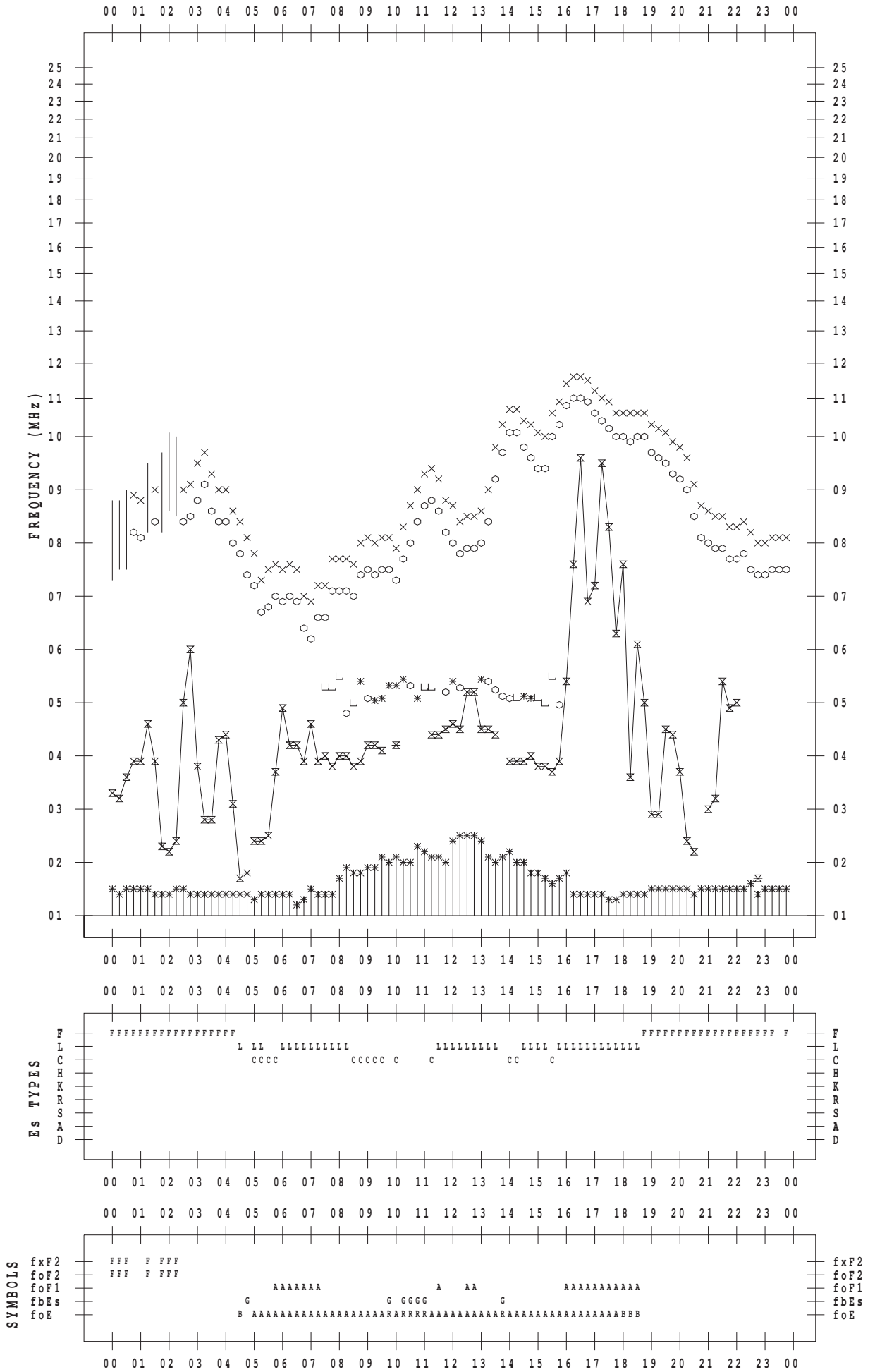
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/23

135 °E MEAN TIME



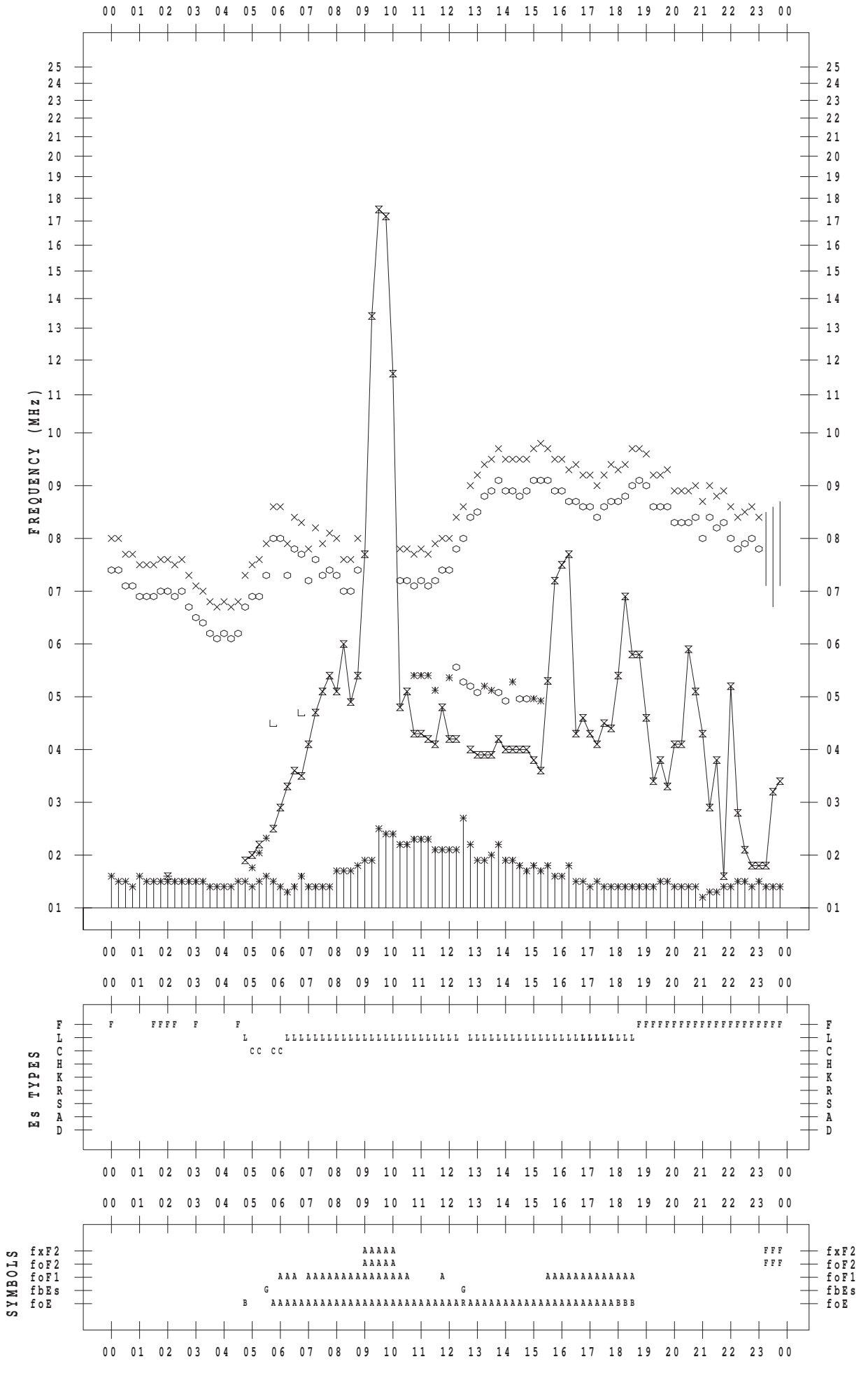
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/24

135 °E MEAN TIME



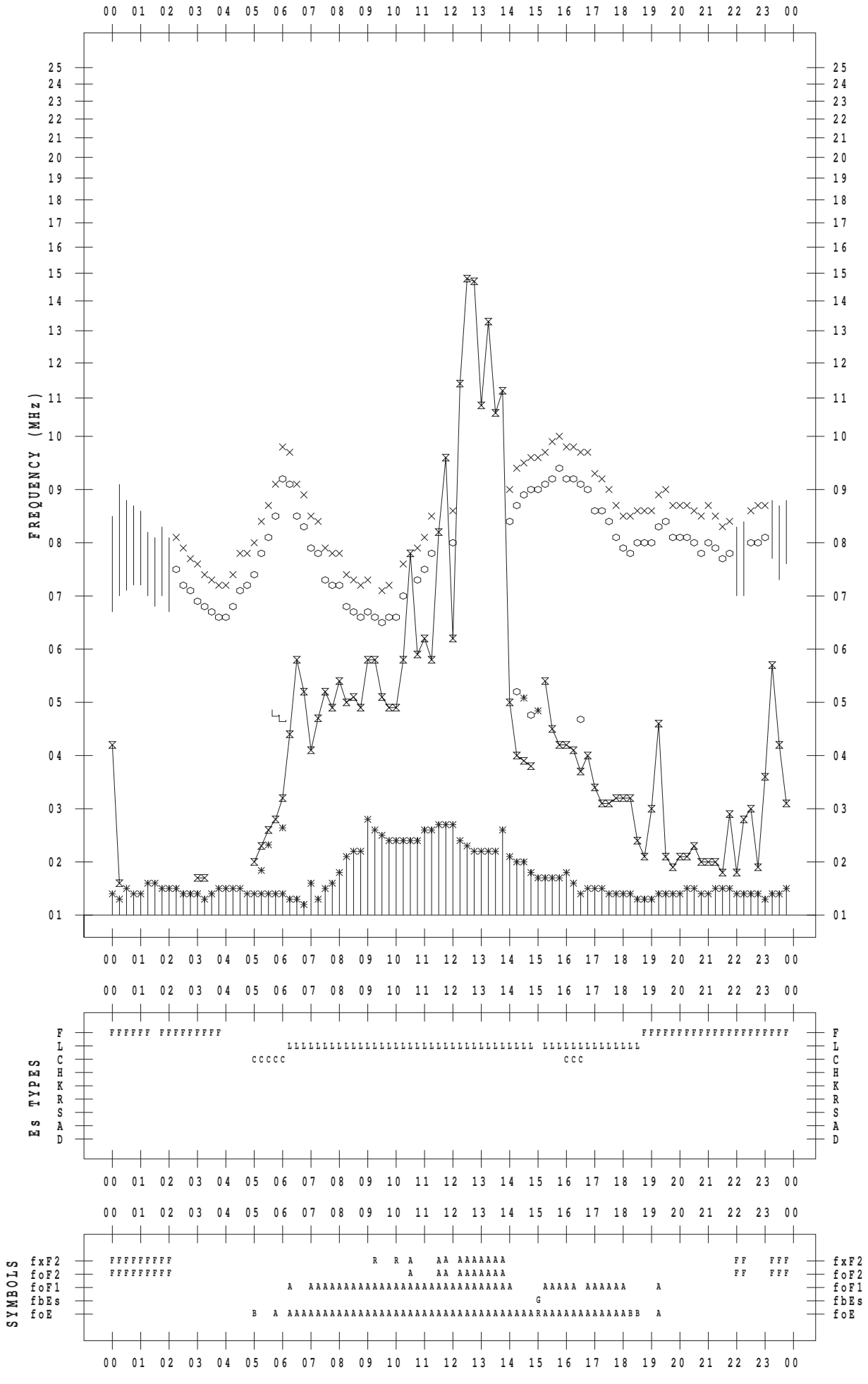
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/25

135 °E MEAN TIME



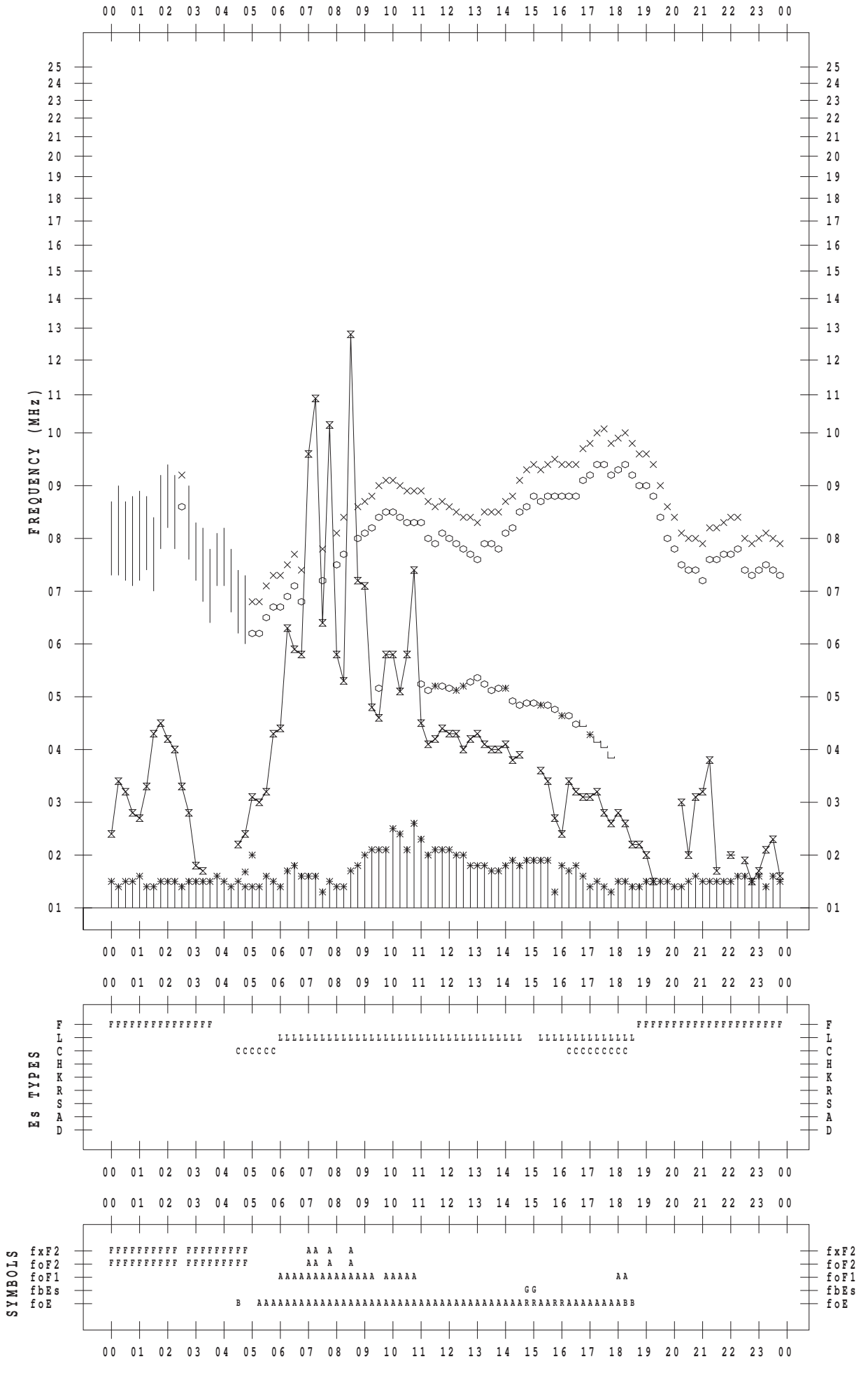
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/26

135 °E MEAN TIME



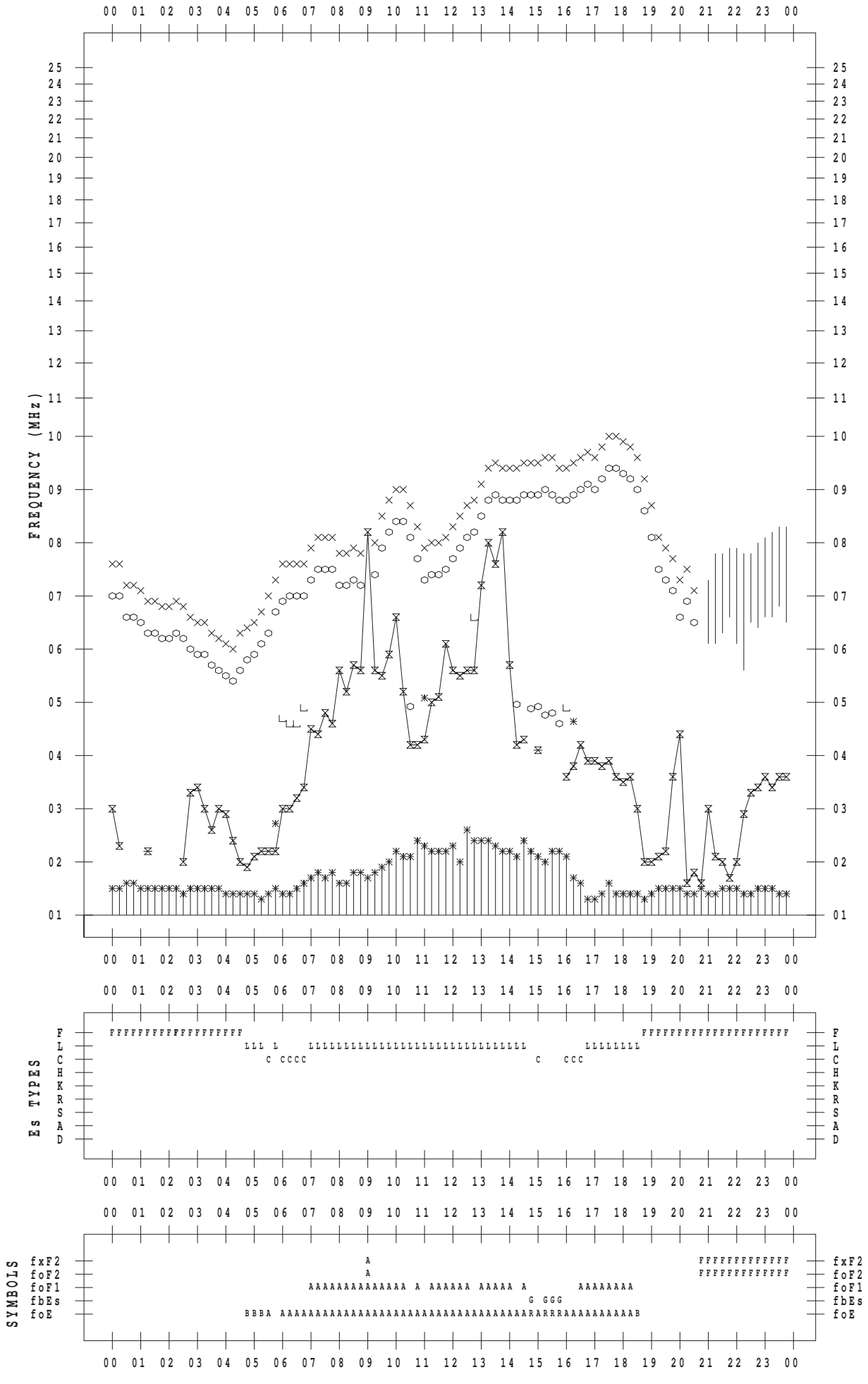
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/27

135 °E MEAN TIME



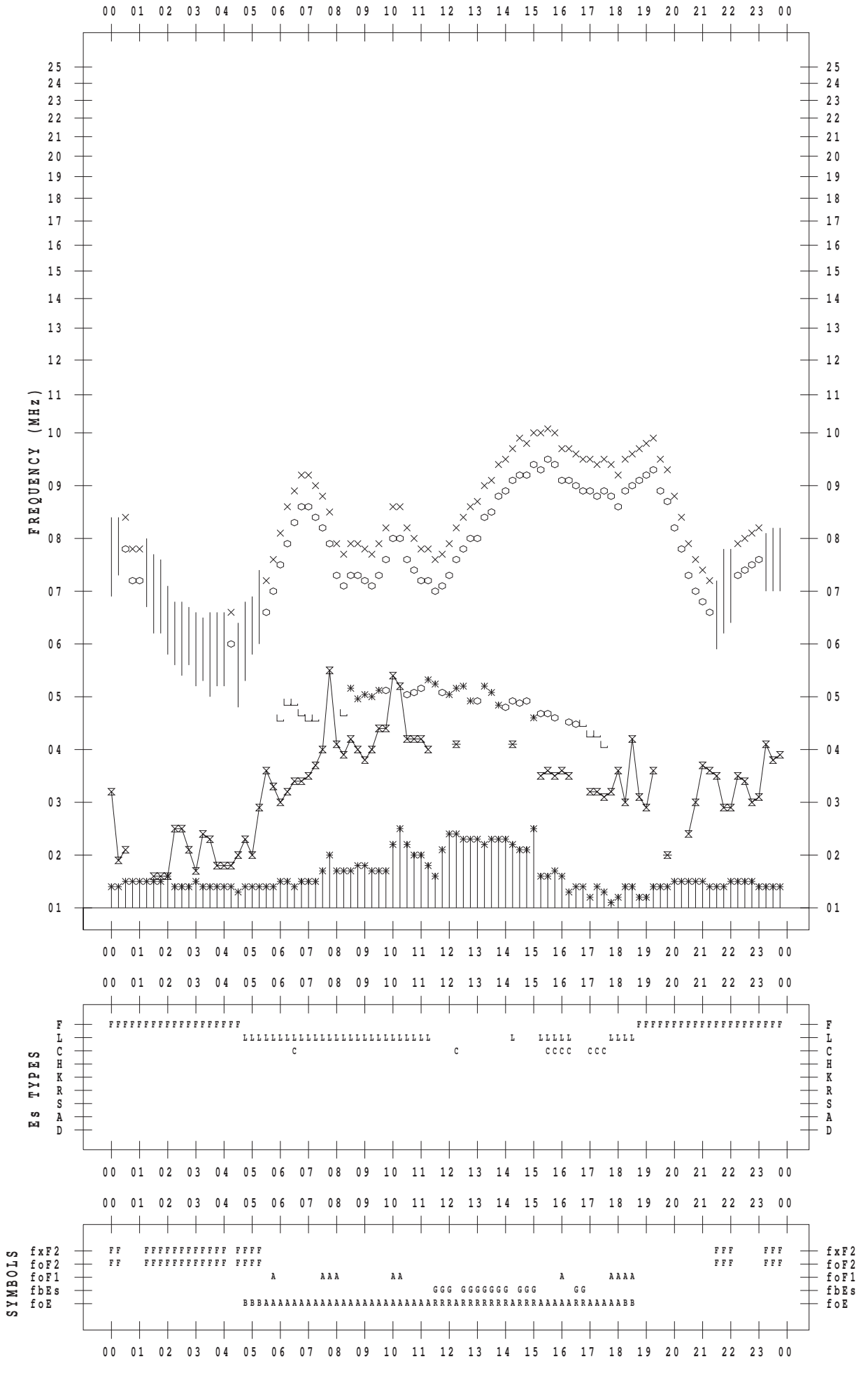
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/28

135 °E MEAN TIME



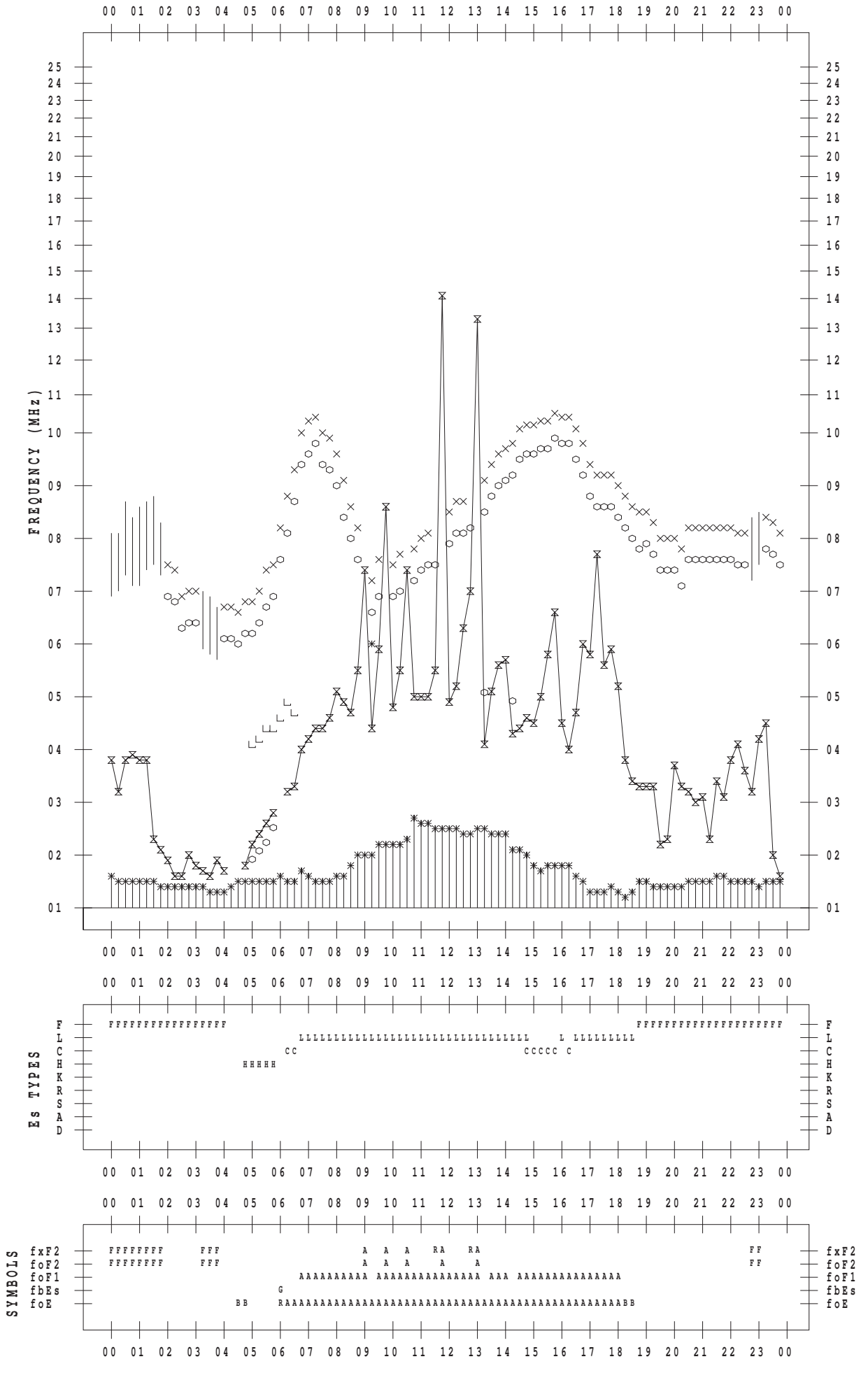
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/29

135 °E MEAN TIME



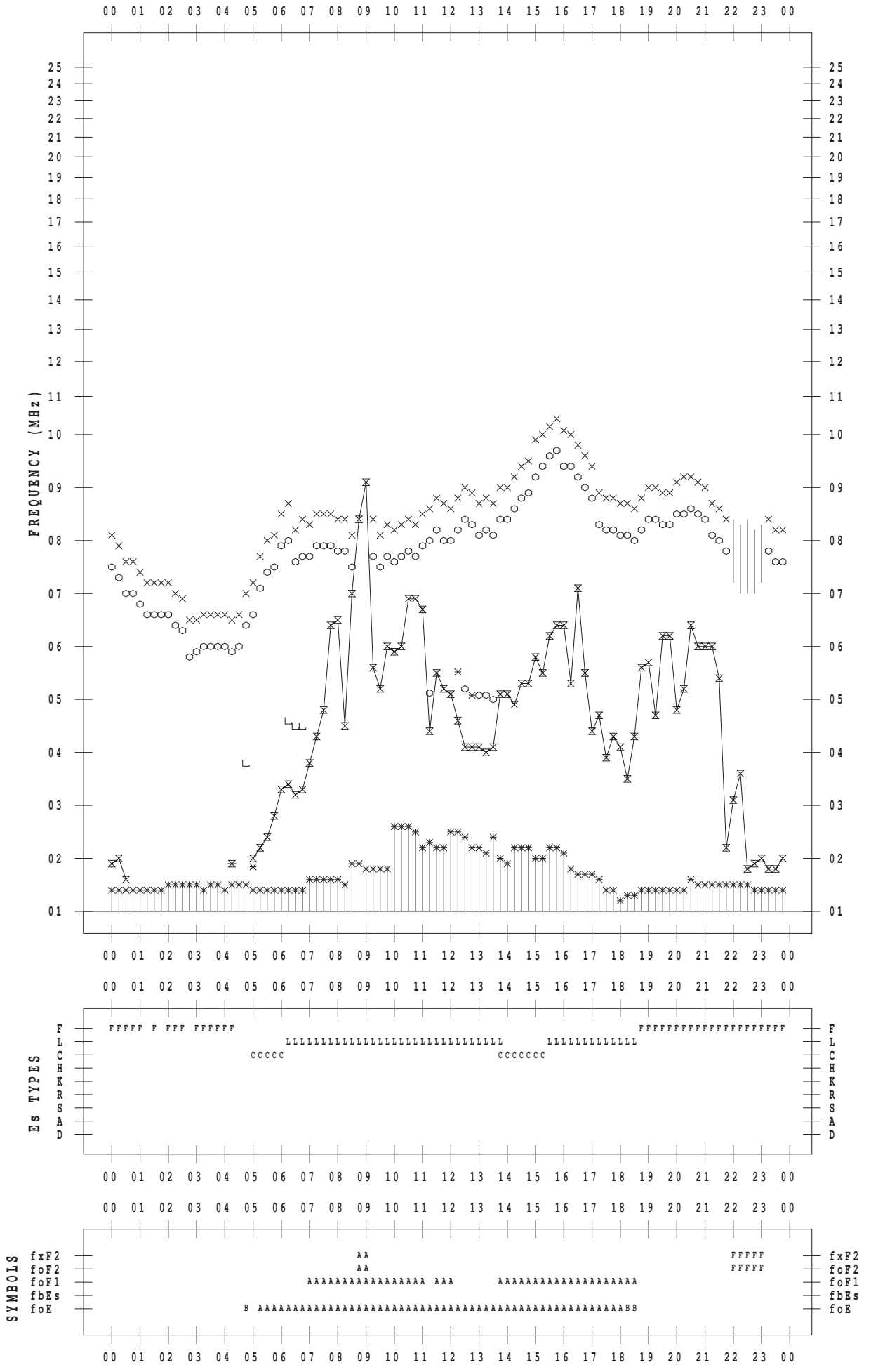
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/30

135 °E MEAN TIME



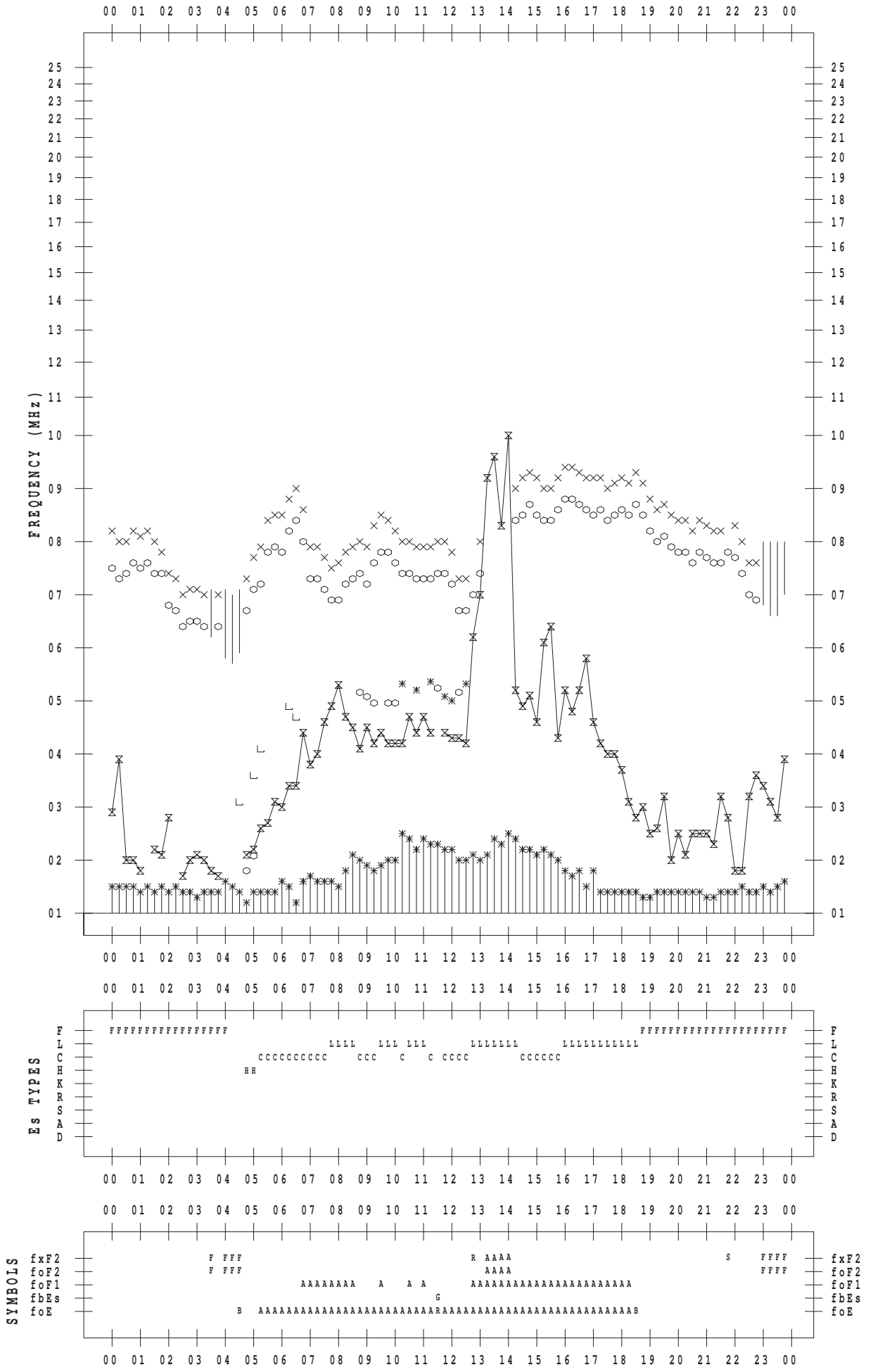
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 5/31

135 °E MEAN TIME



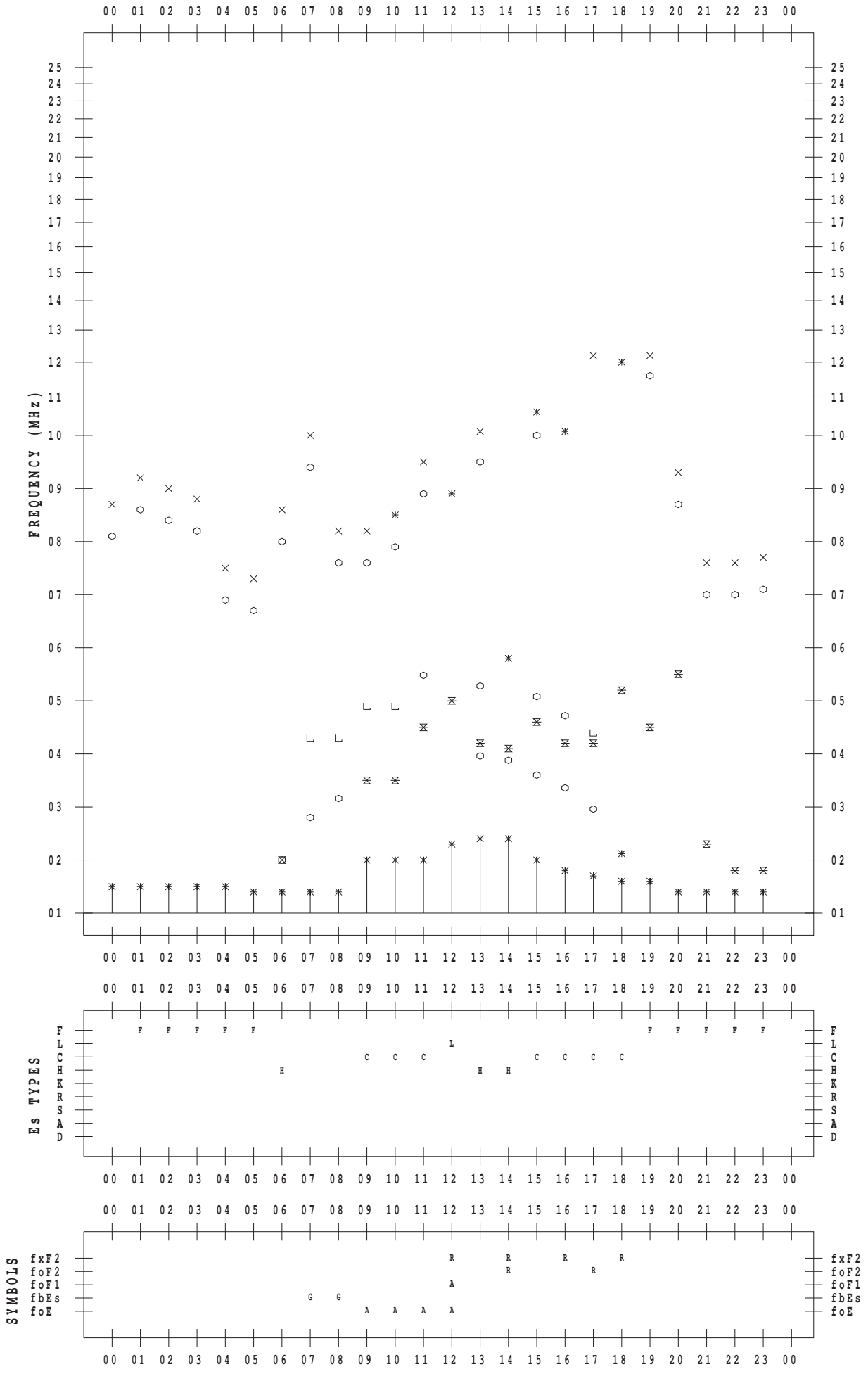
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 1

135 °E MEAN TIME



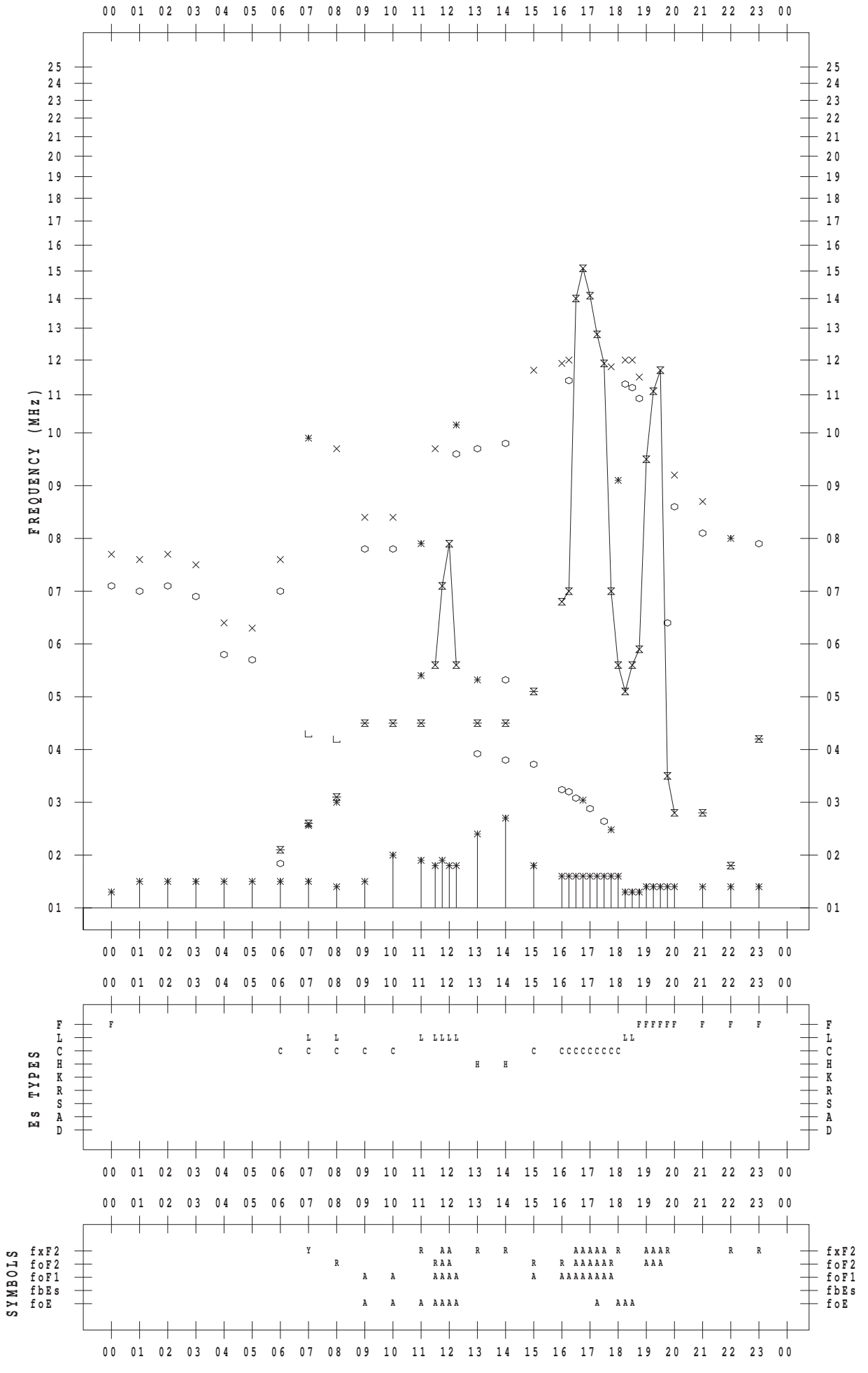
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 2

135 °E MEAN TIME



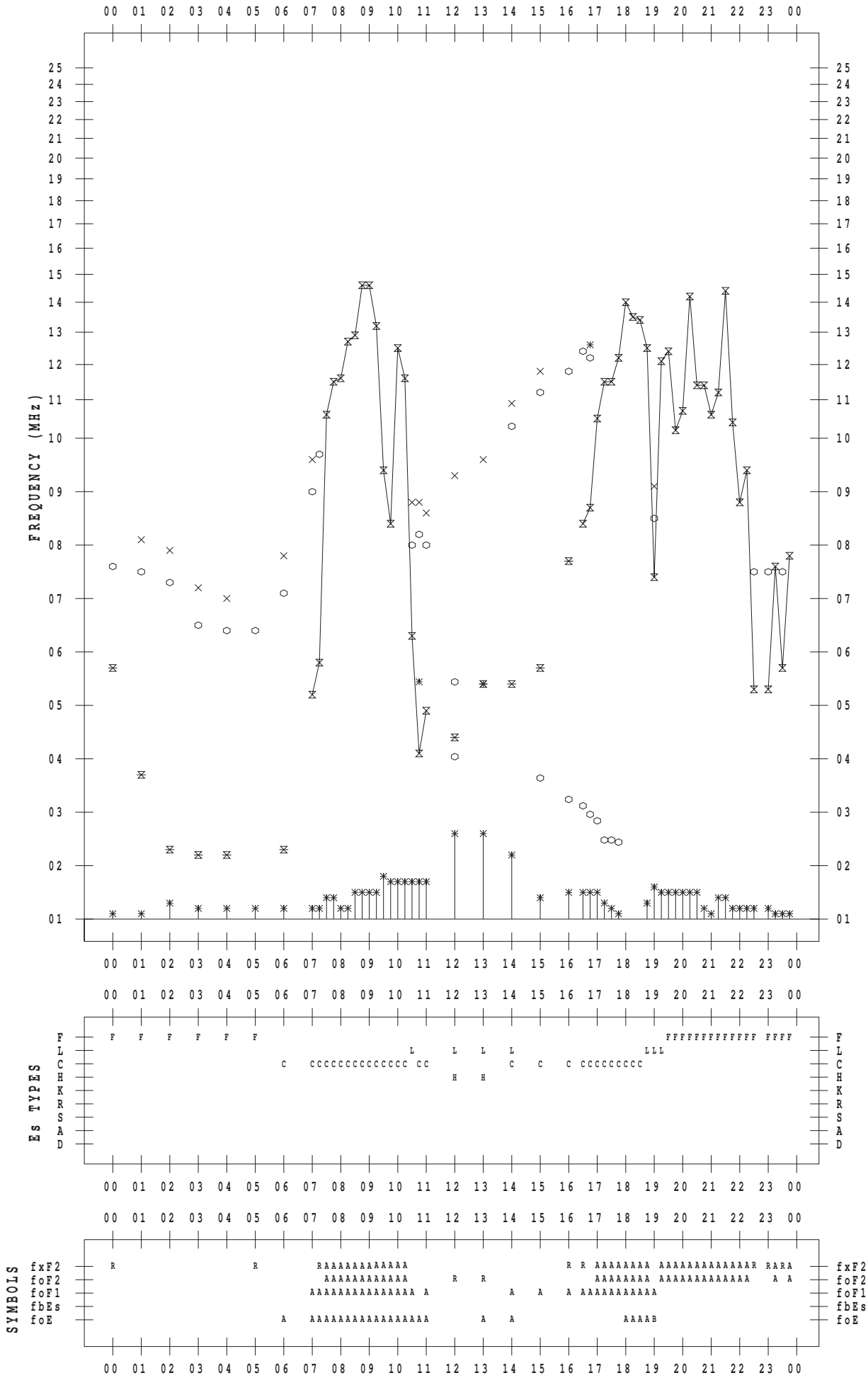
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 3

135 °E MEAN TIME



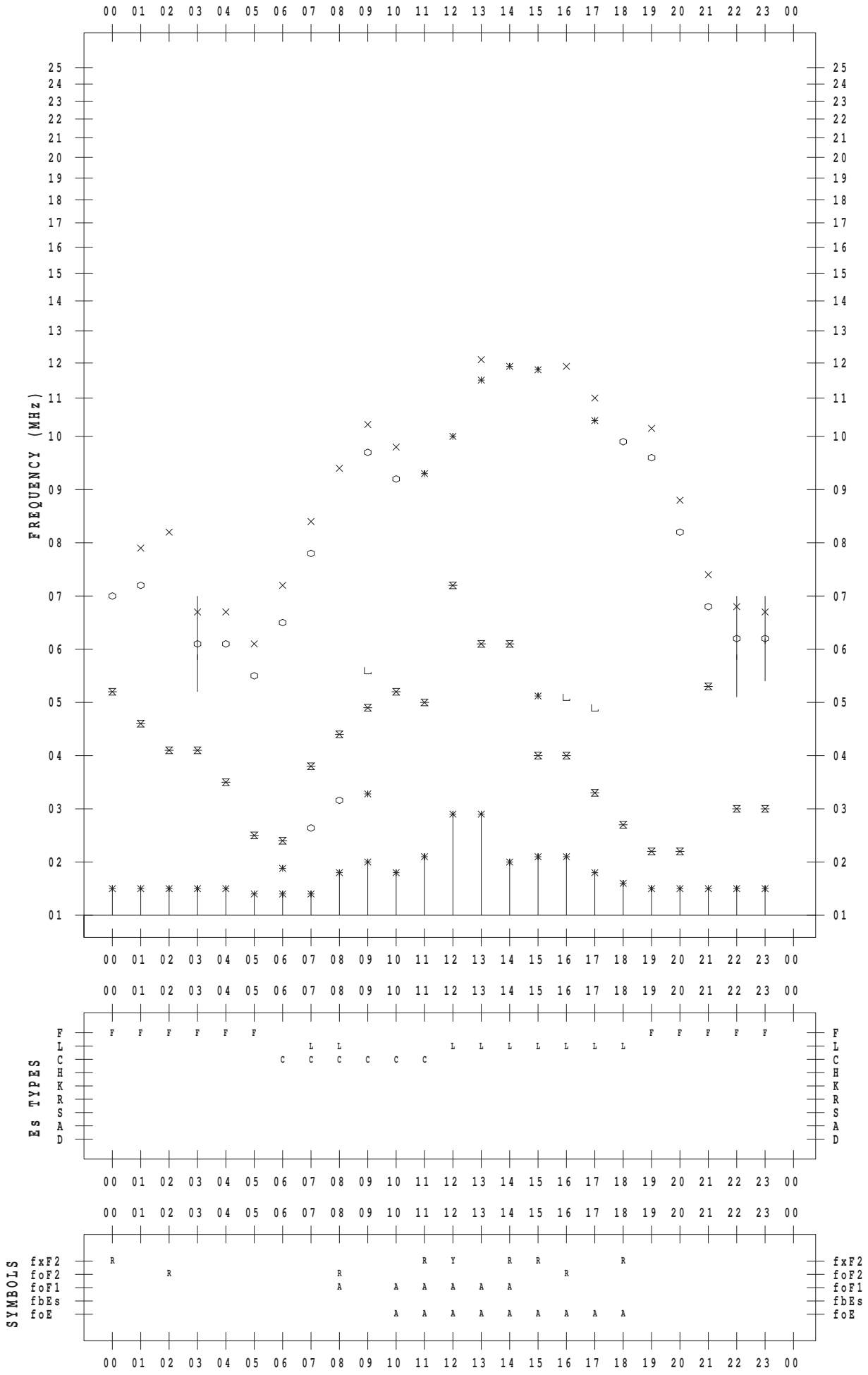
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 4

135 °E MEAN TIME



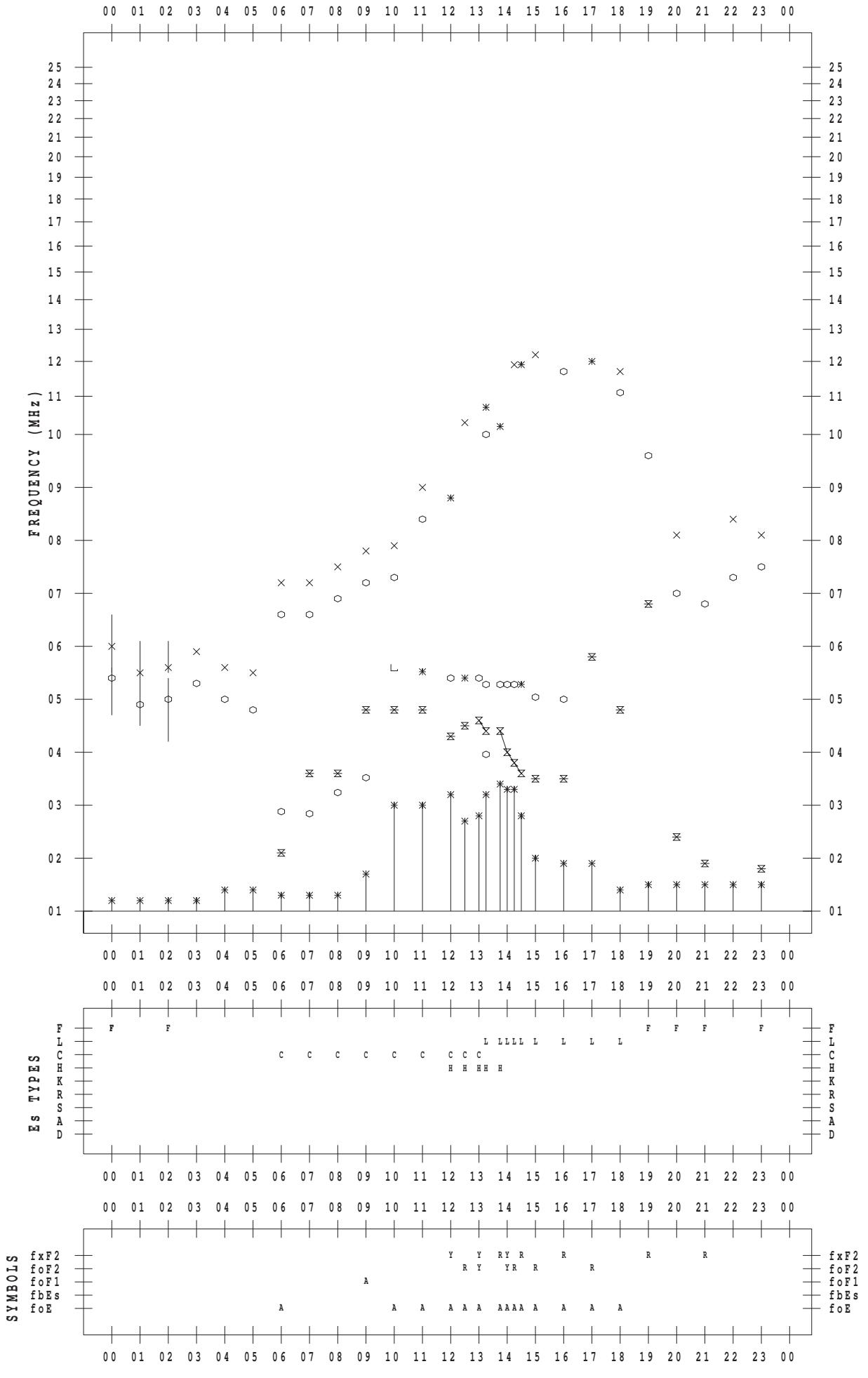
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 5

135 °E MEAN TIME



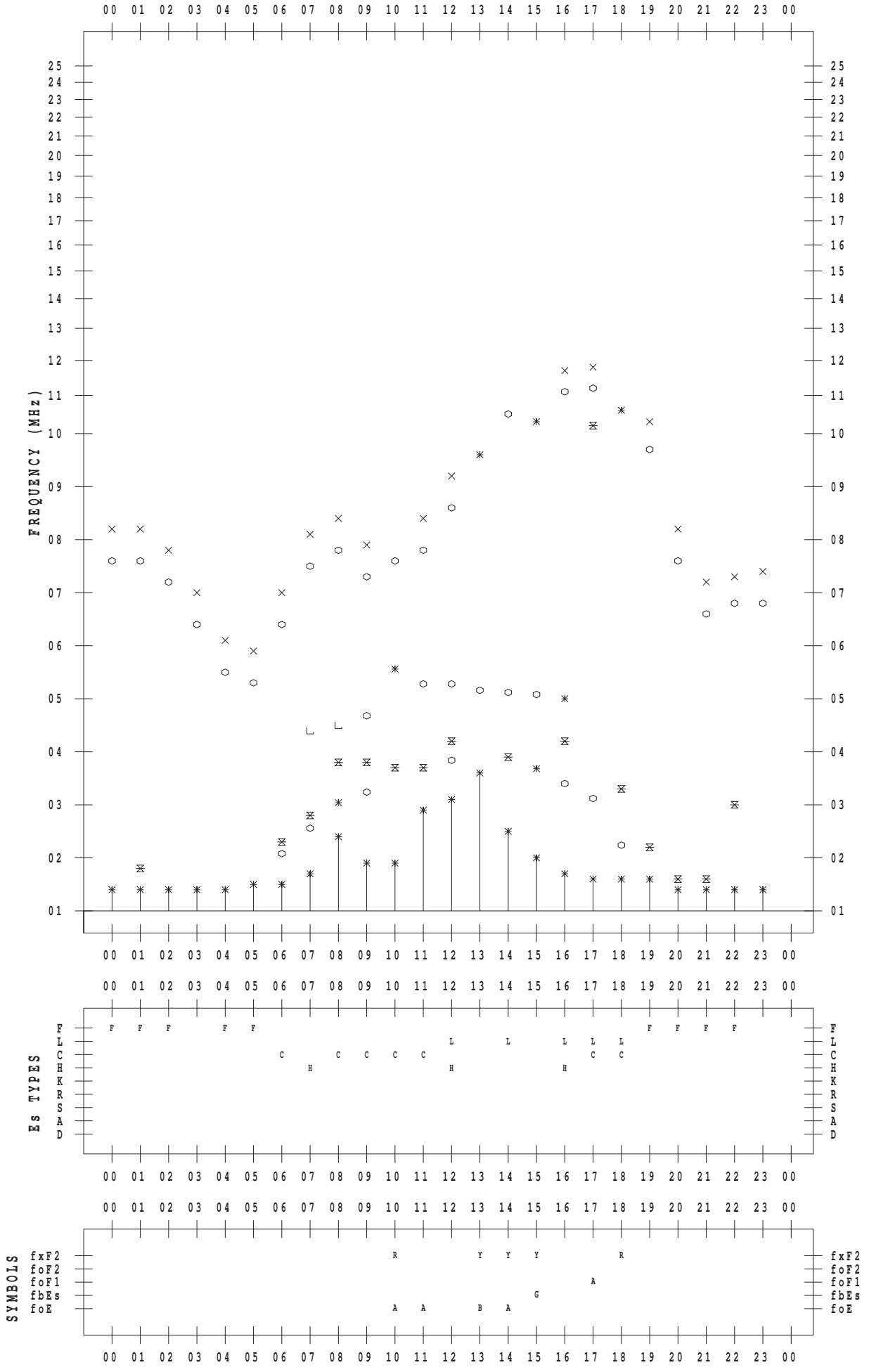
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 6

135 °E MEAN TIME



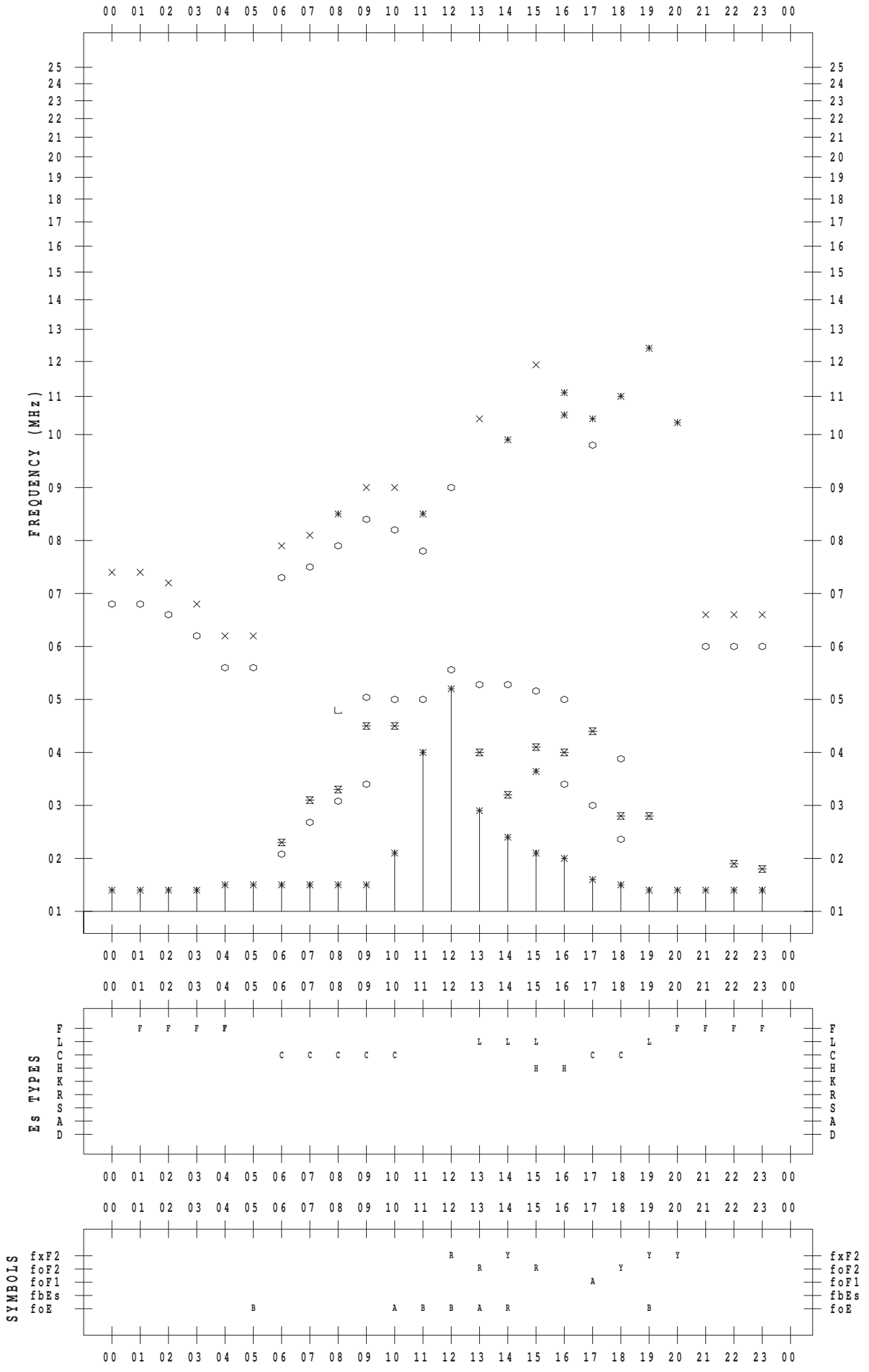
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 7

135 °E MEAN TIME



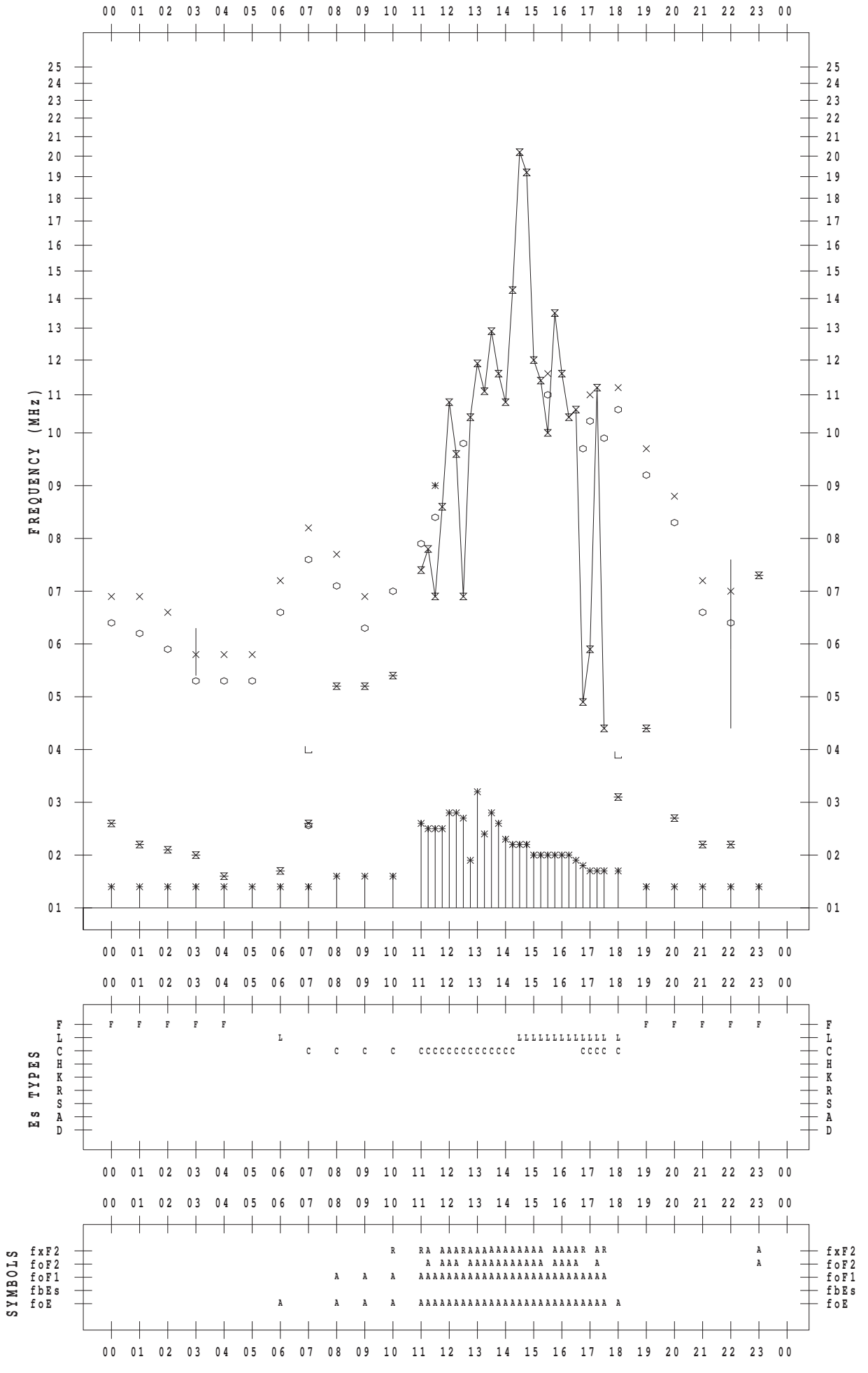
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 8

135 °E MEAN TIME



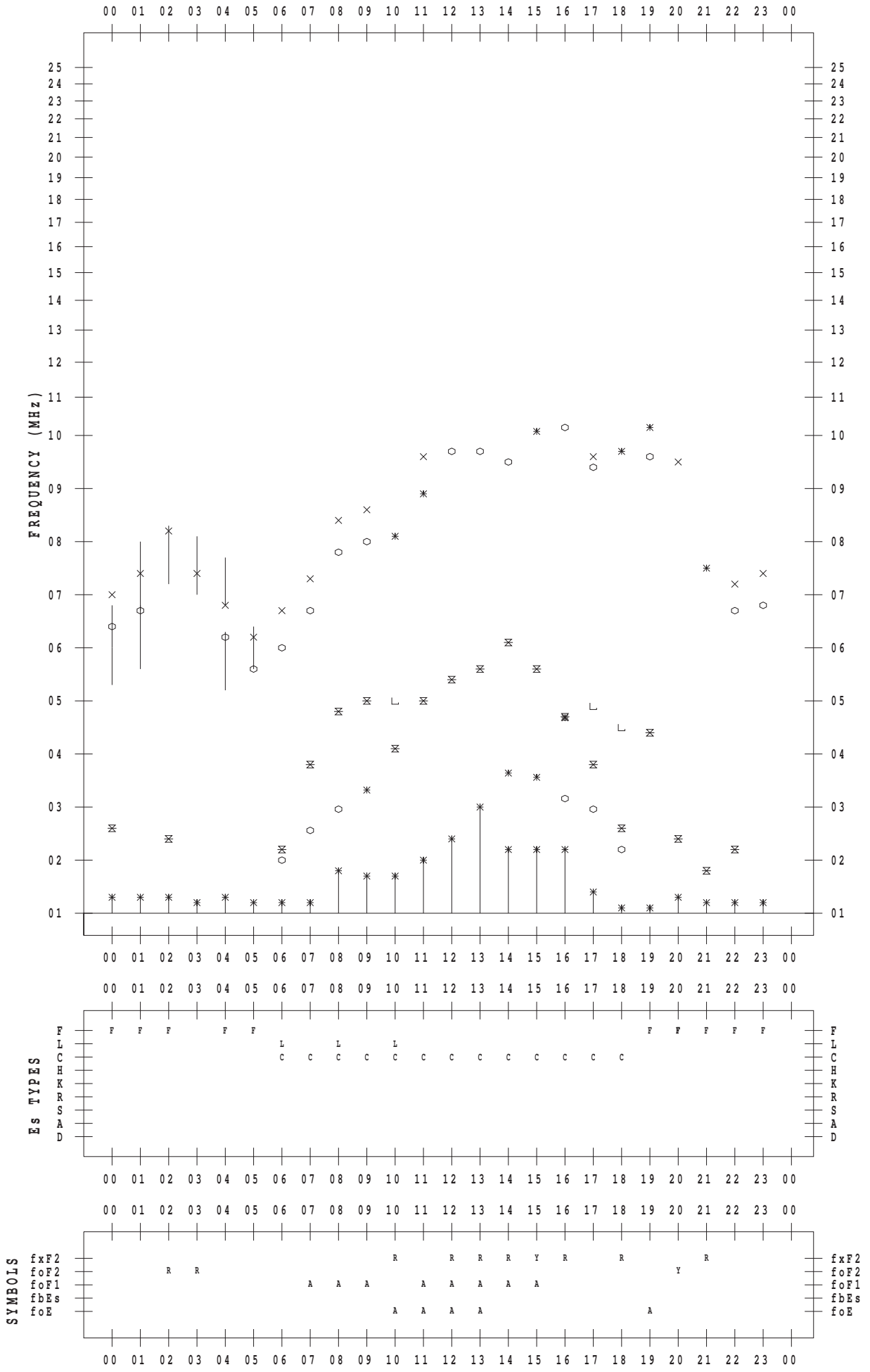
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/ 9

135 °E MEAN TIME



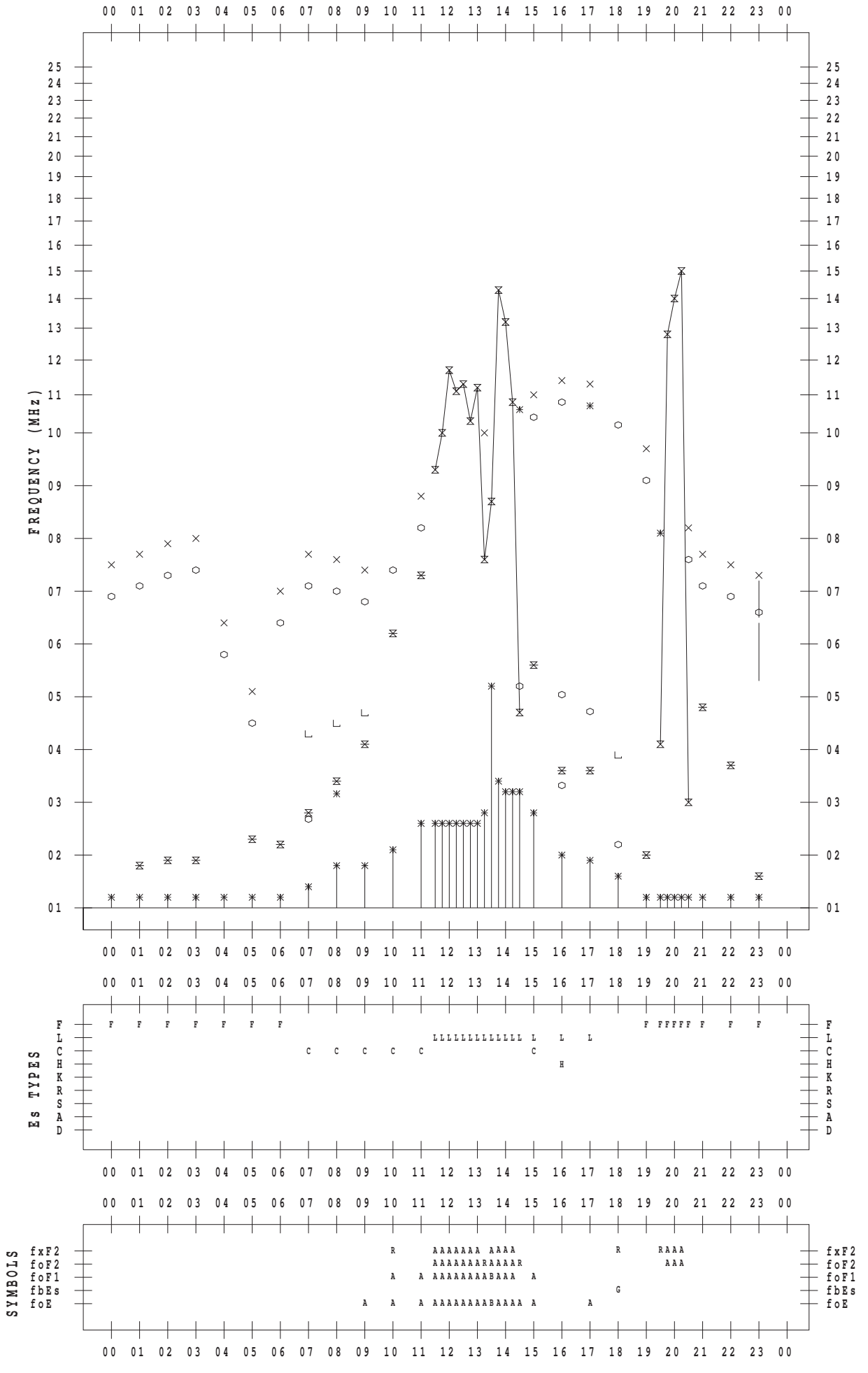
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/10

135 °E MEAN TIME



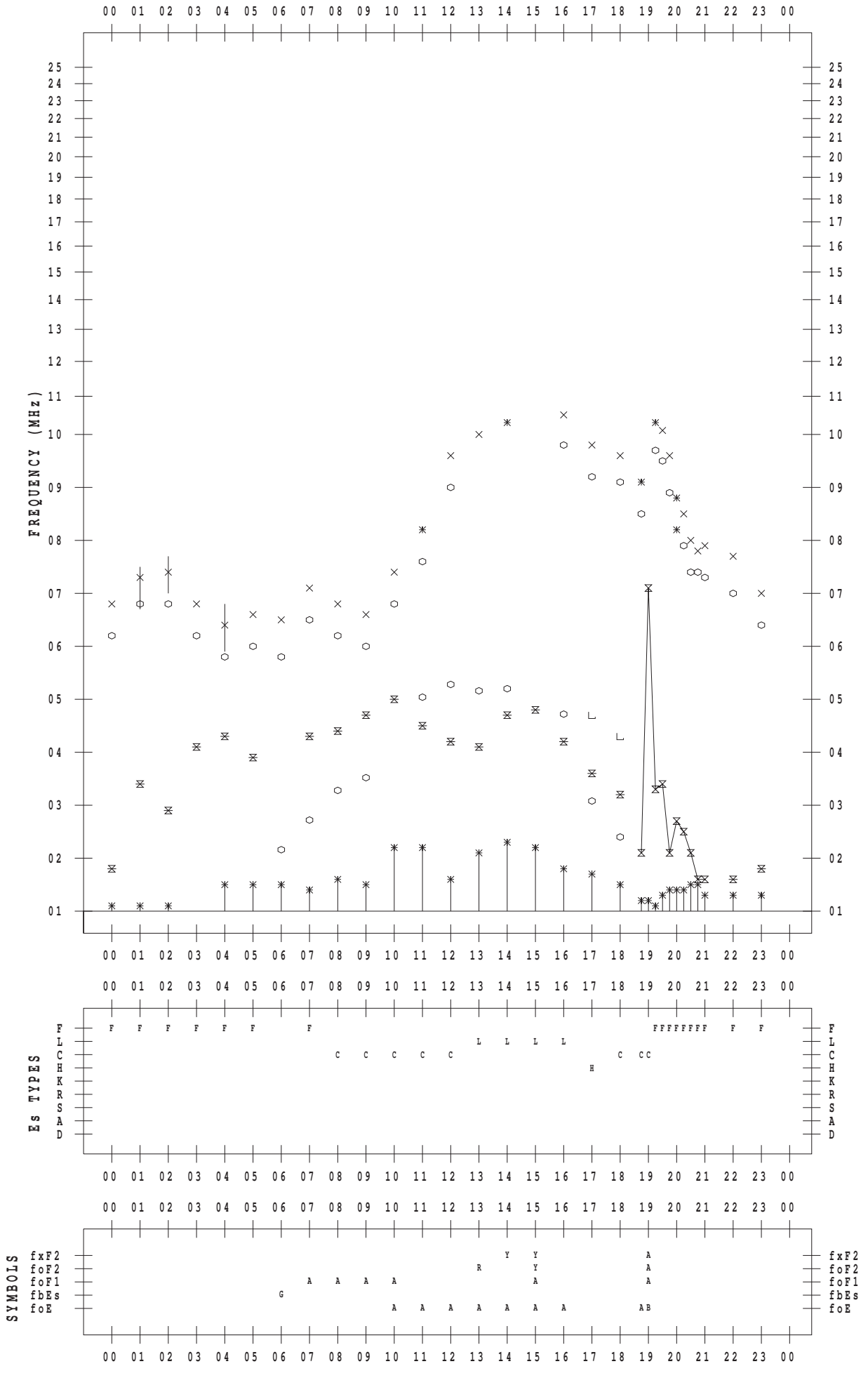
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/11

135 °E MEAN TIME



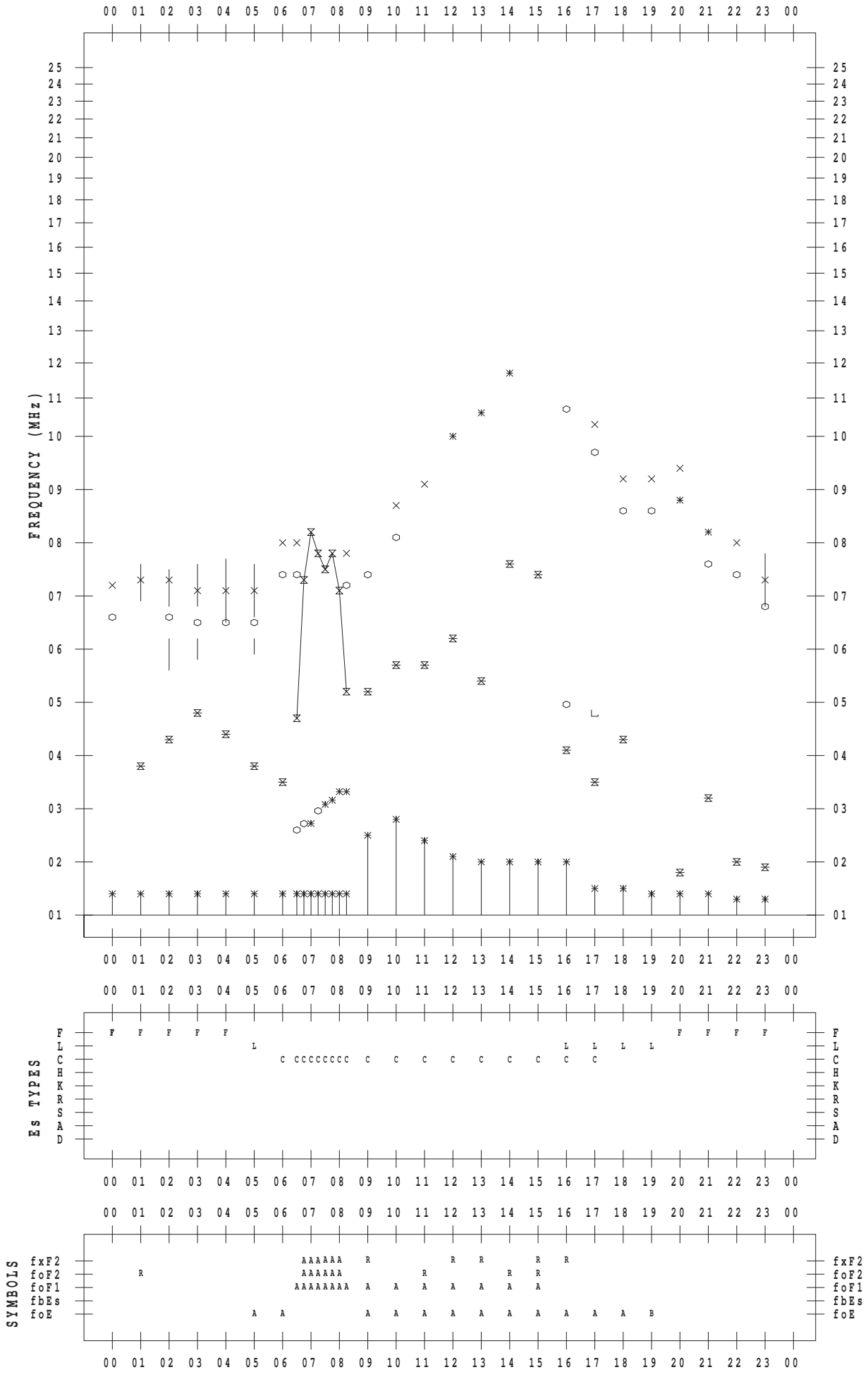
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/12

135 °E MEAN TIME



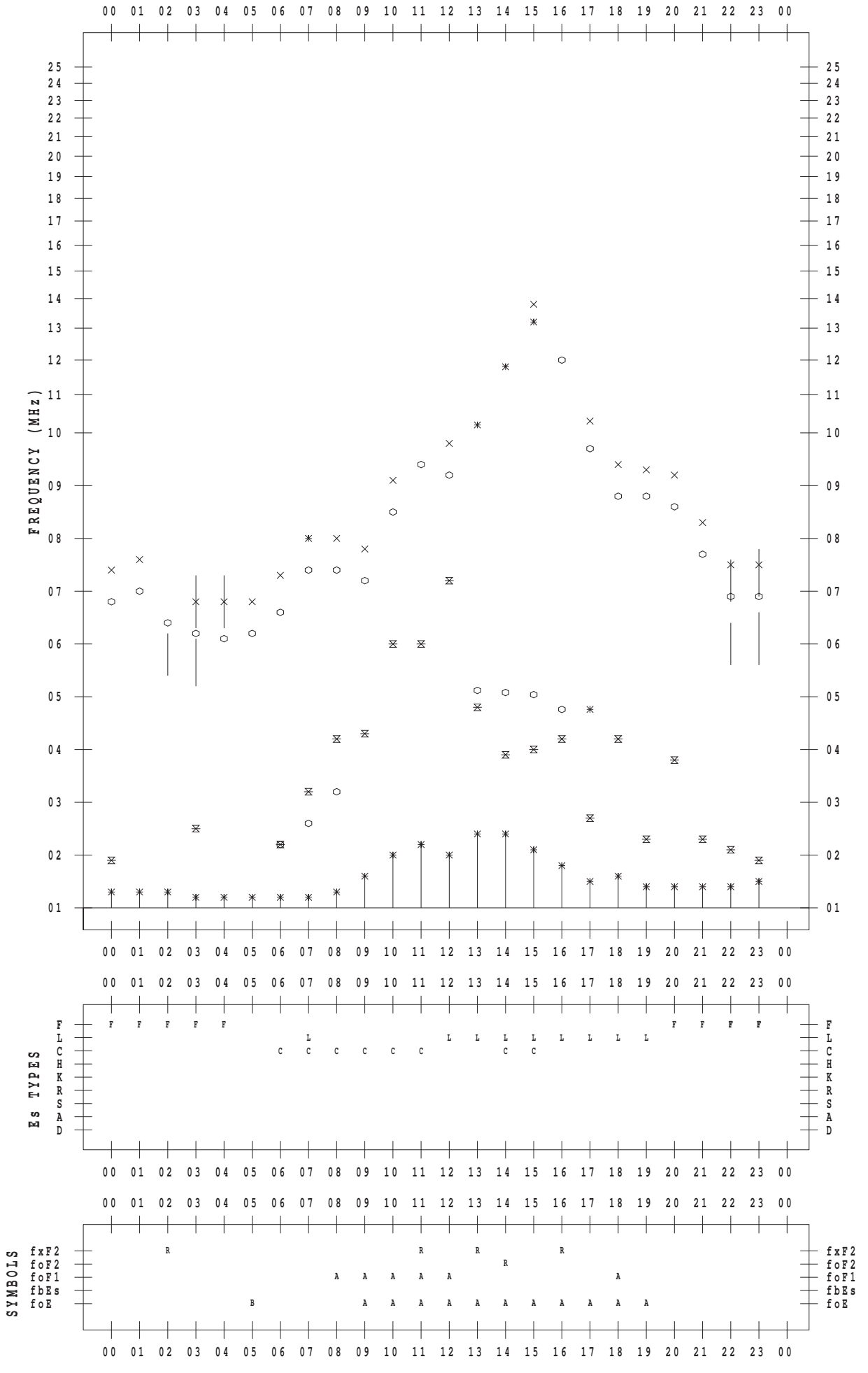
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/13

135 °E MEAN TIME



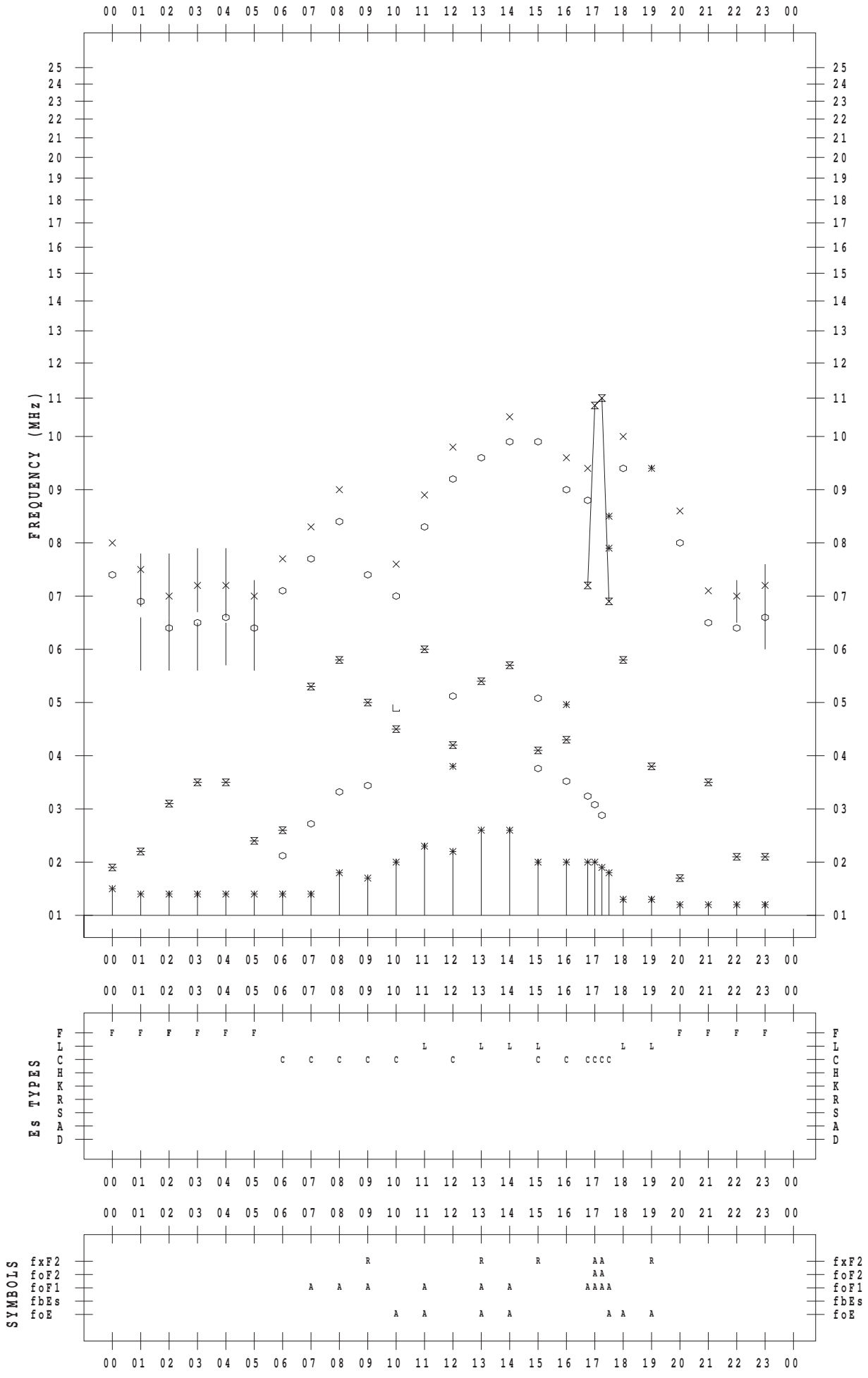
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/14

135 °E MEAN TIME



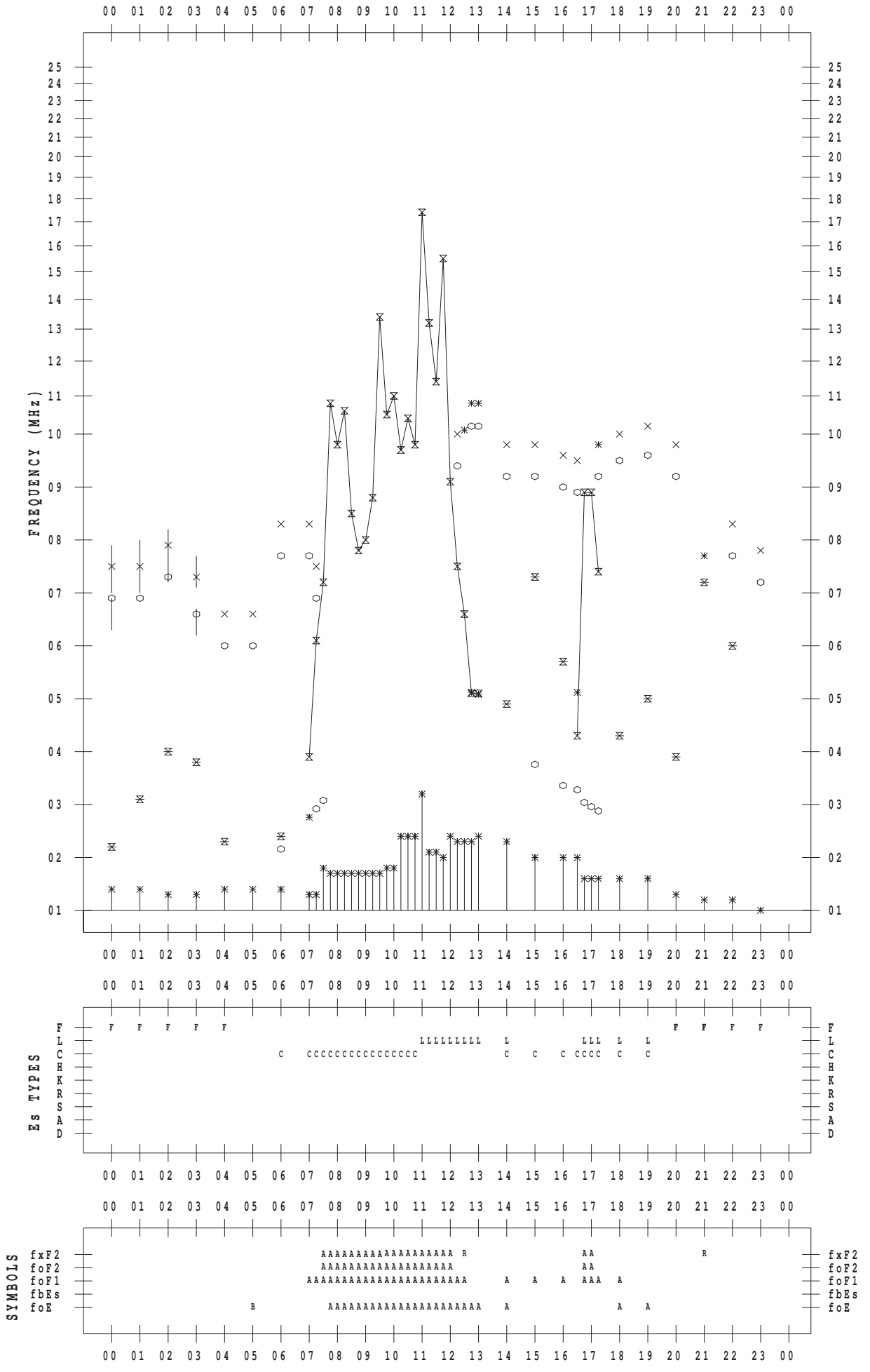
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/15

135 °E MEAN TIME



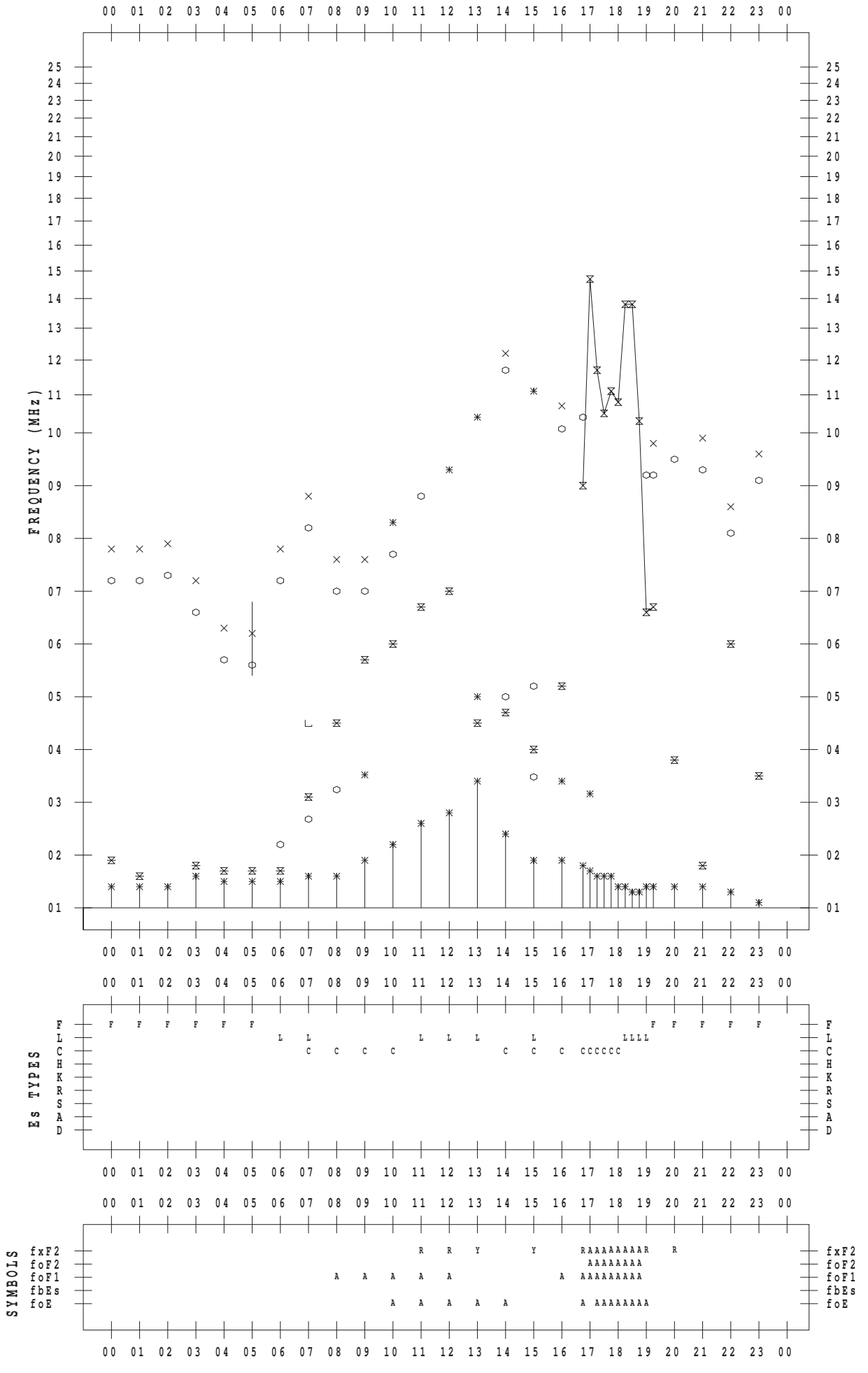
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/16

135 °E MEAN TIME



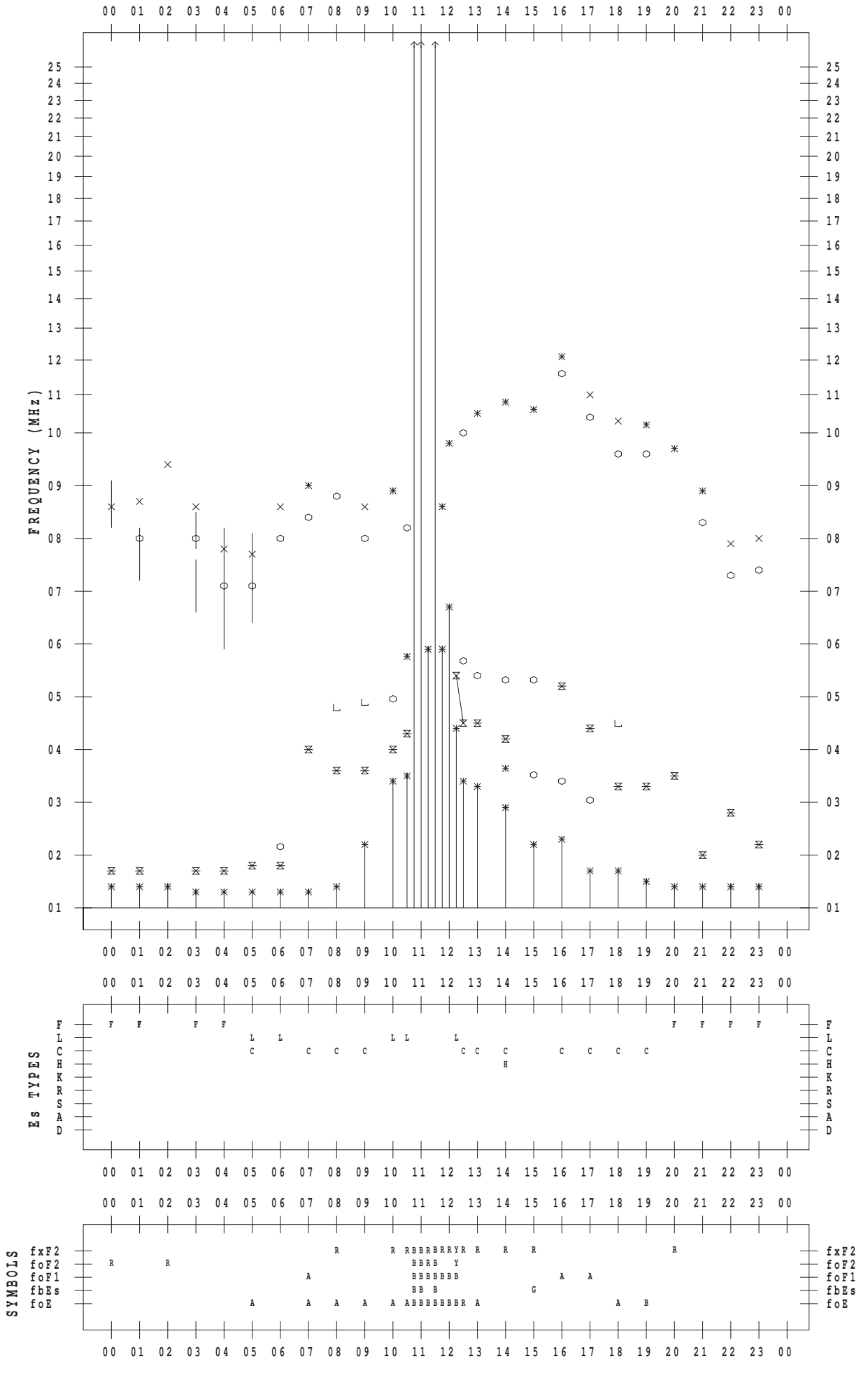
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/17

135 °E MEAN TIME



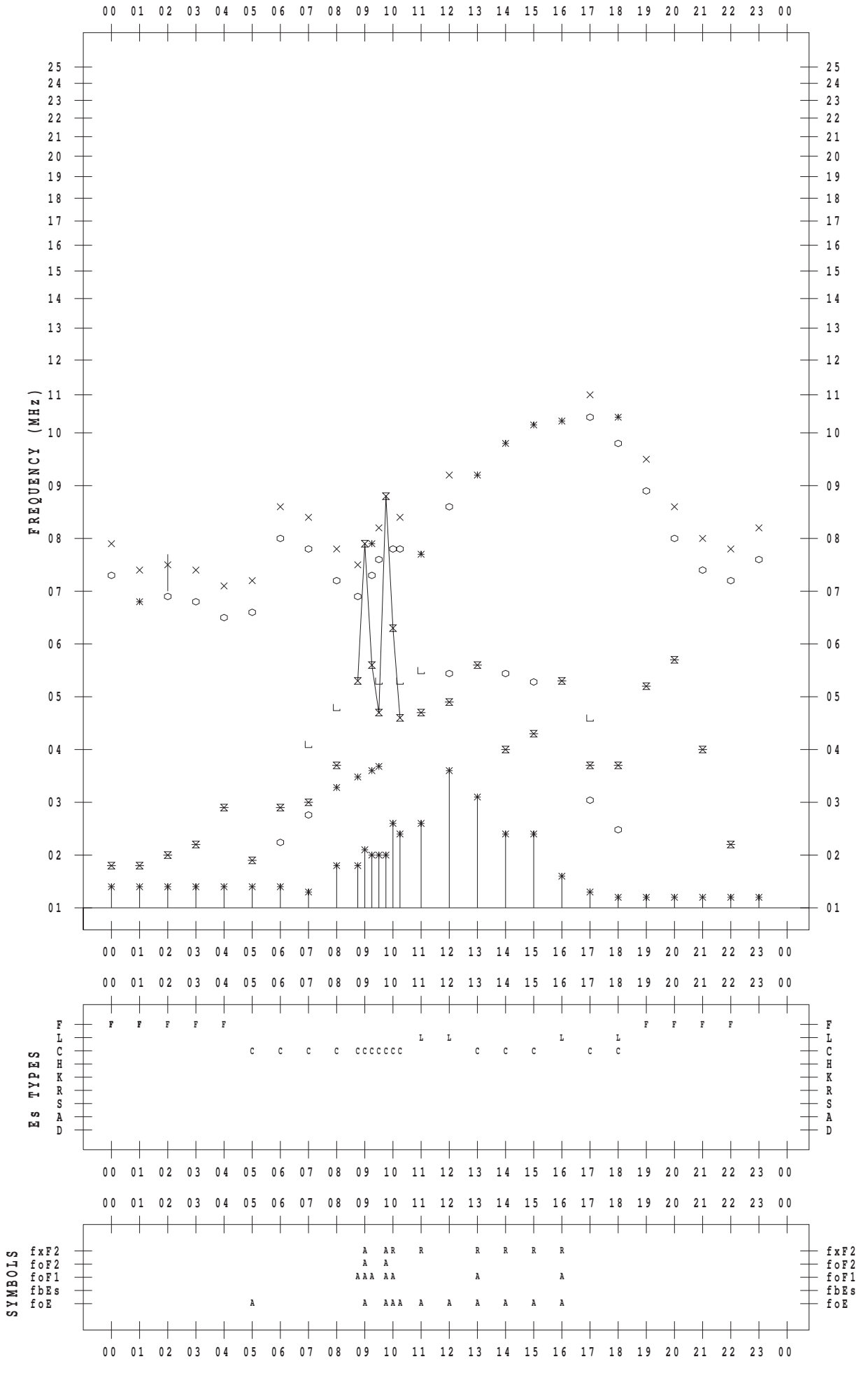
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/18

135 °E MEAN TIME



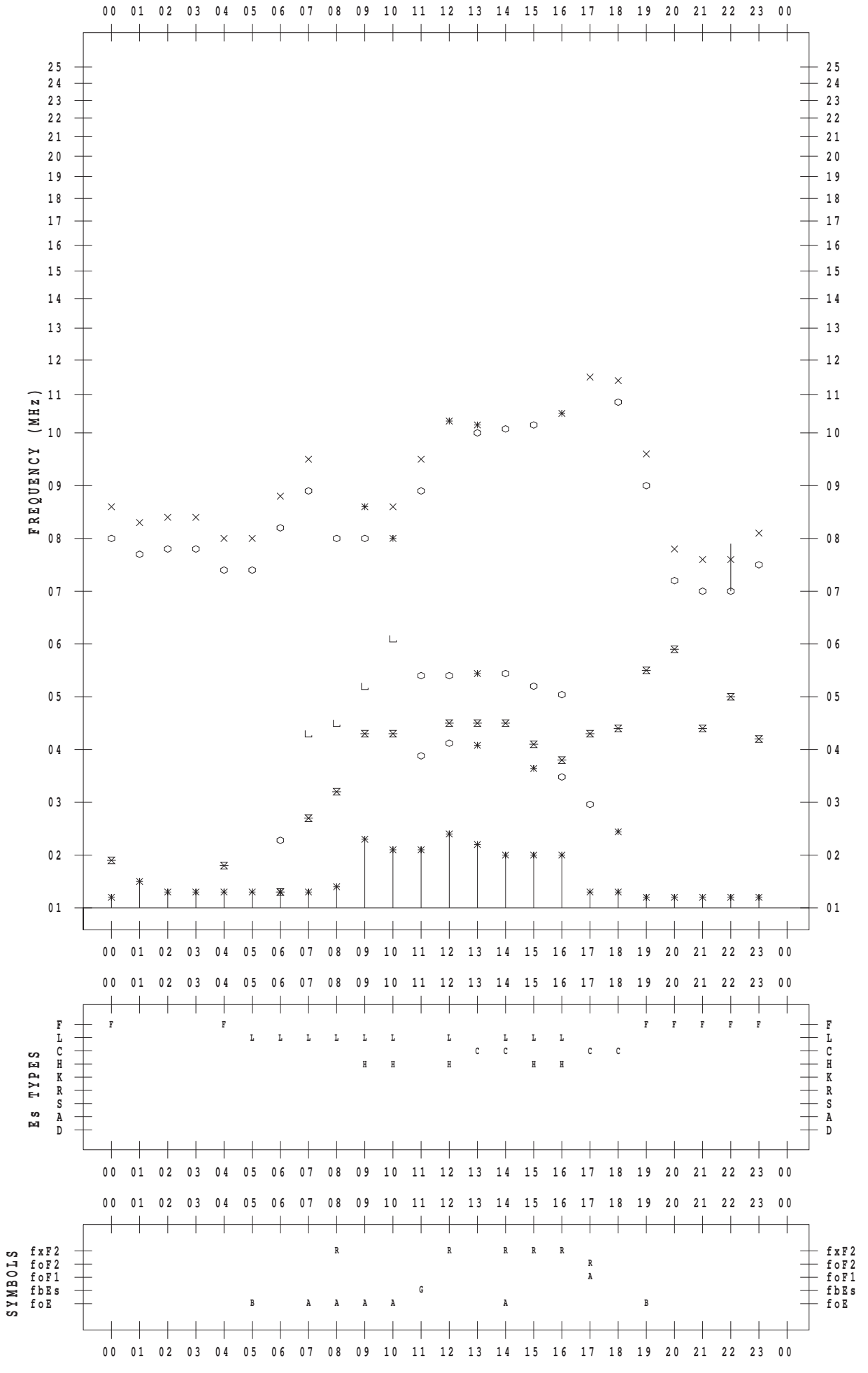
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/19

135 °E MEAN TIME



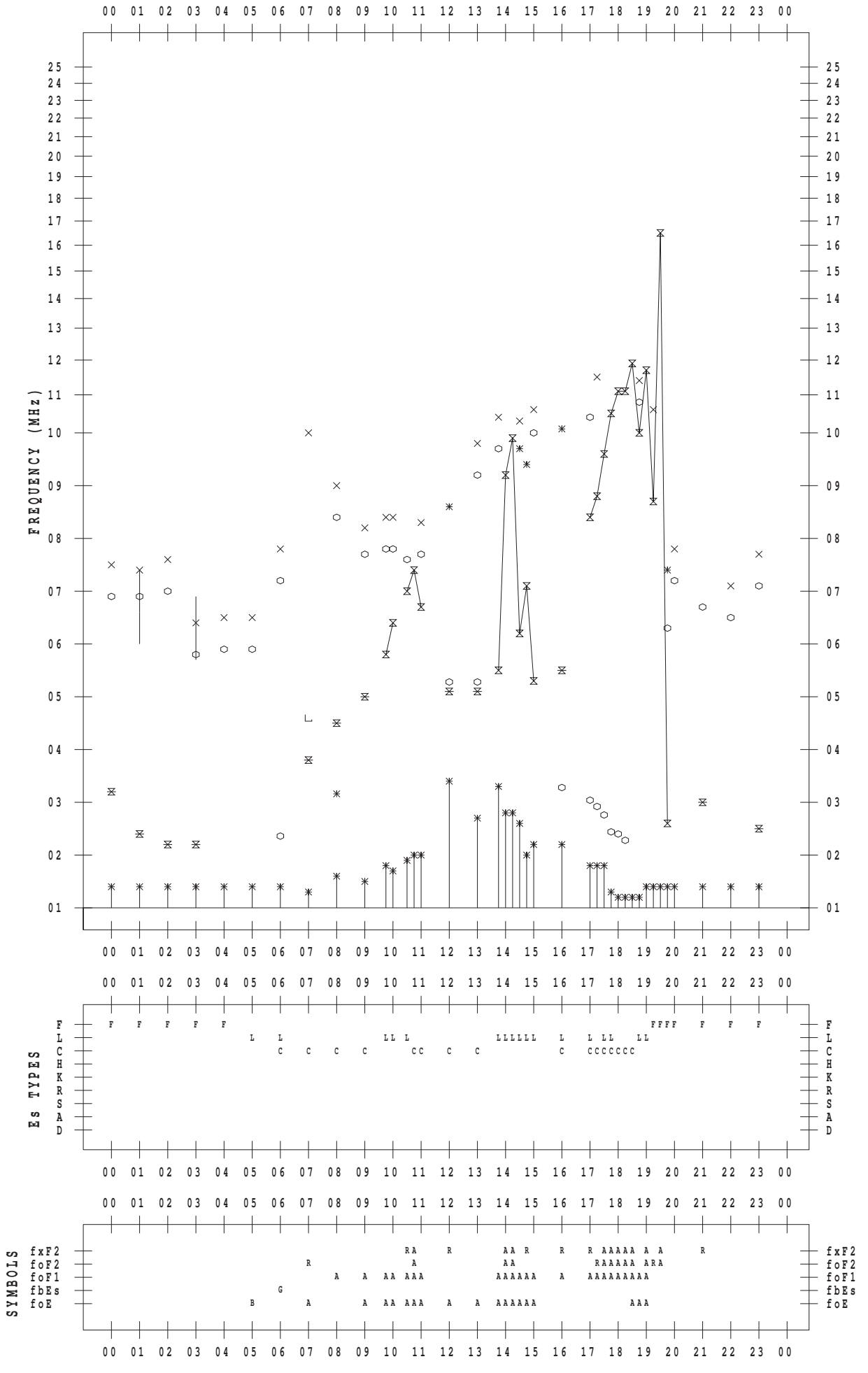
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/20

135 °E MEAN TIME



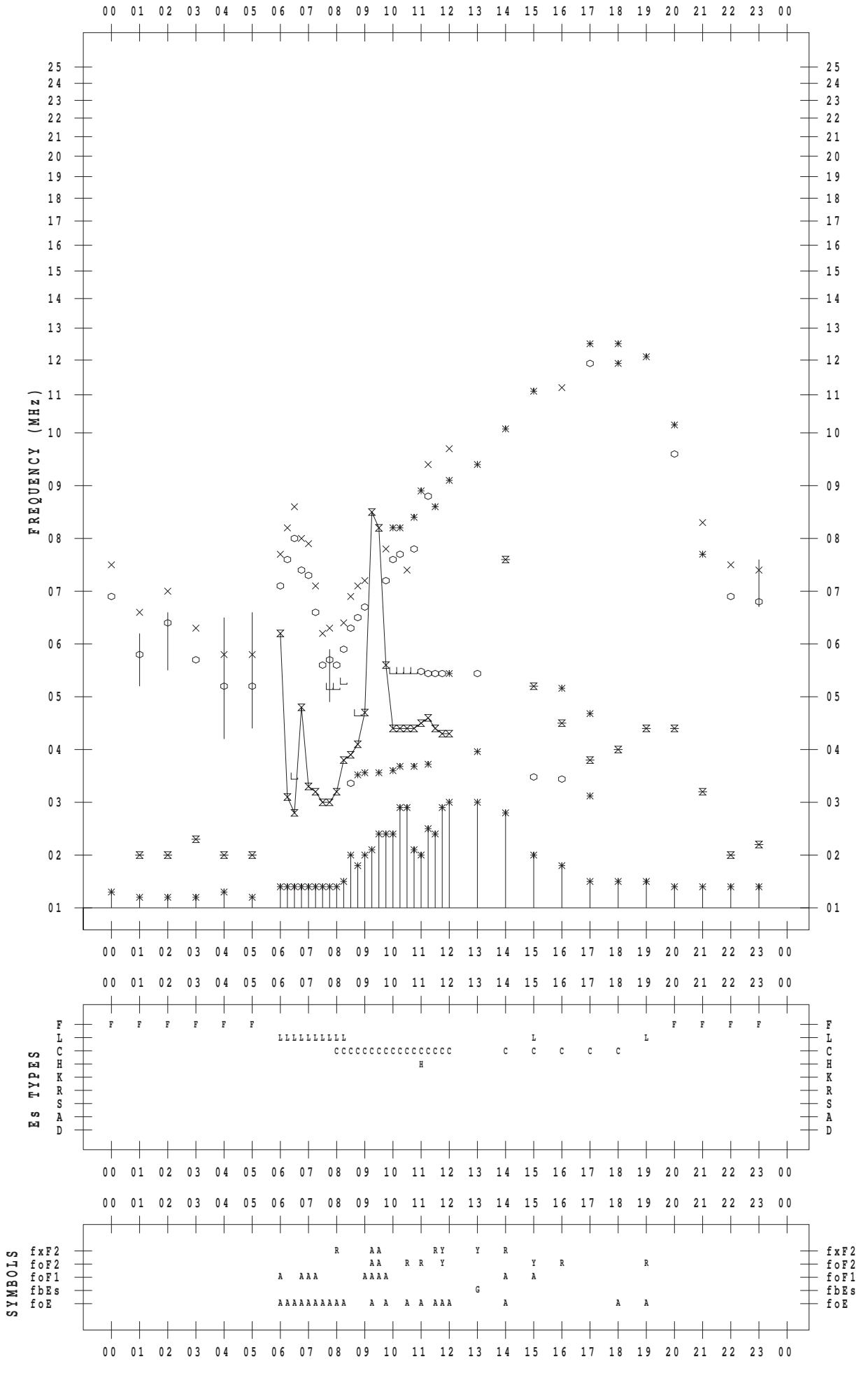
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/21

135 °E MEAN TIME



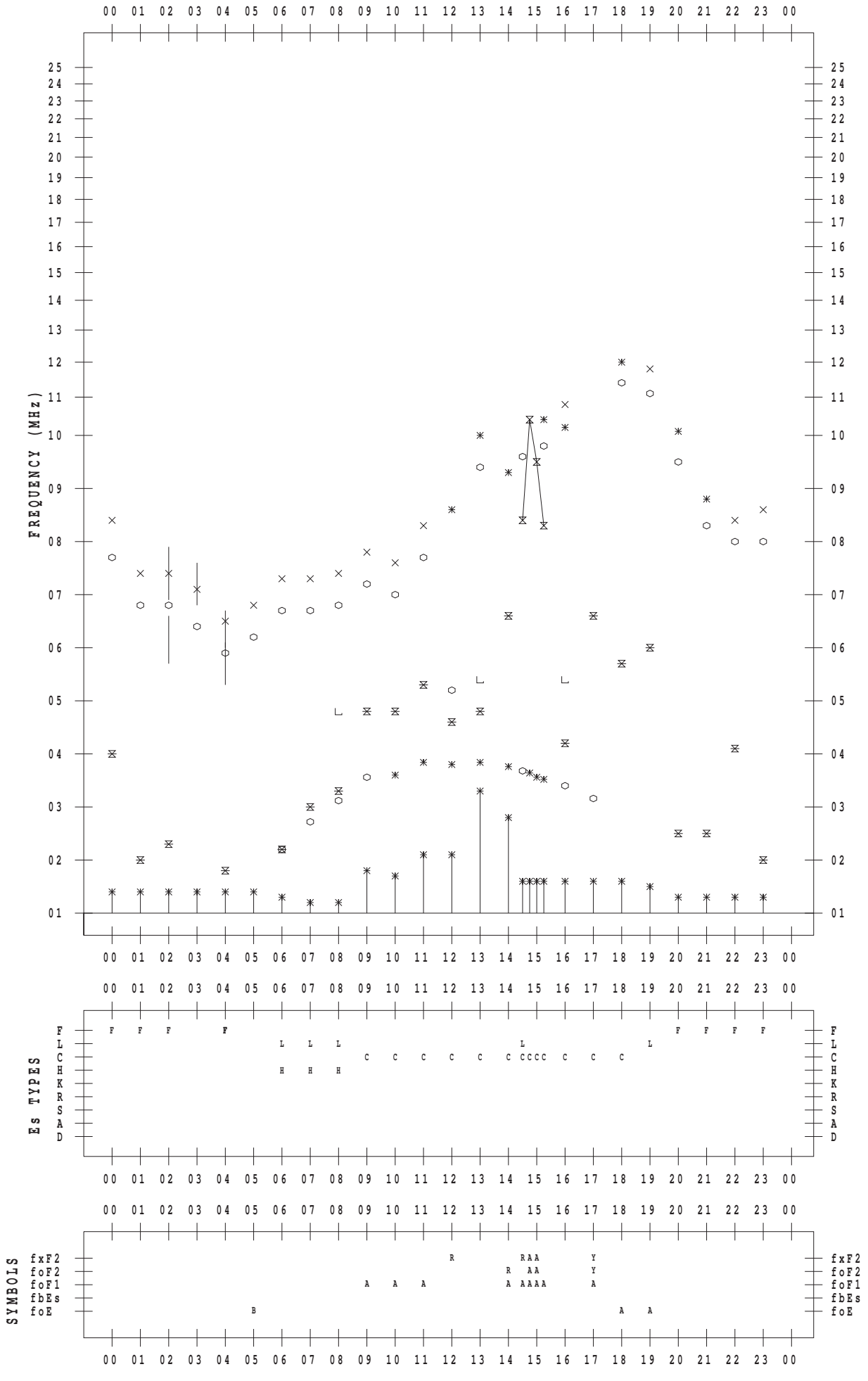
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/22

135 °E MEAN TIME



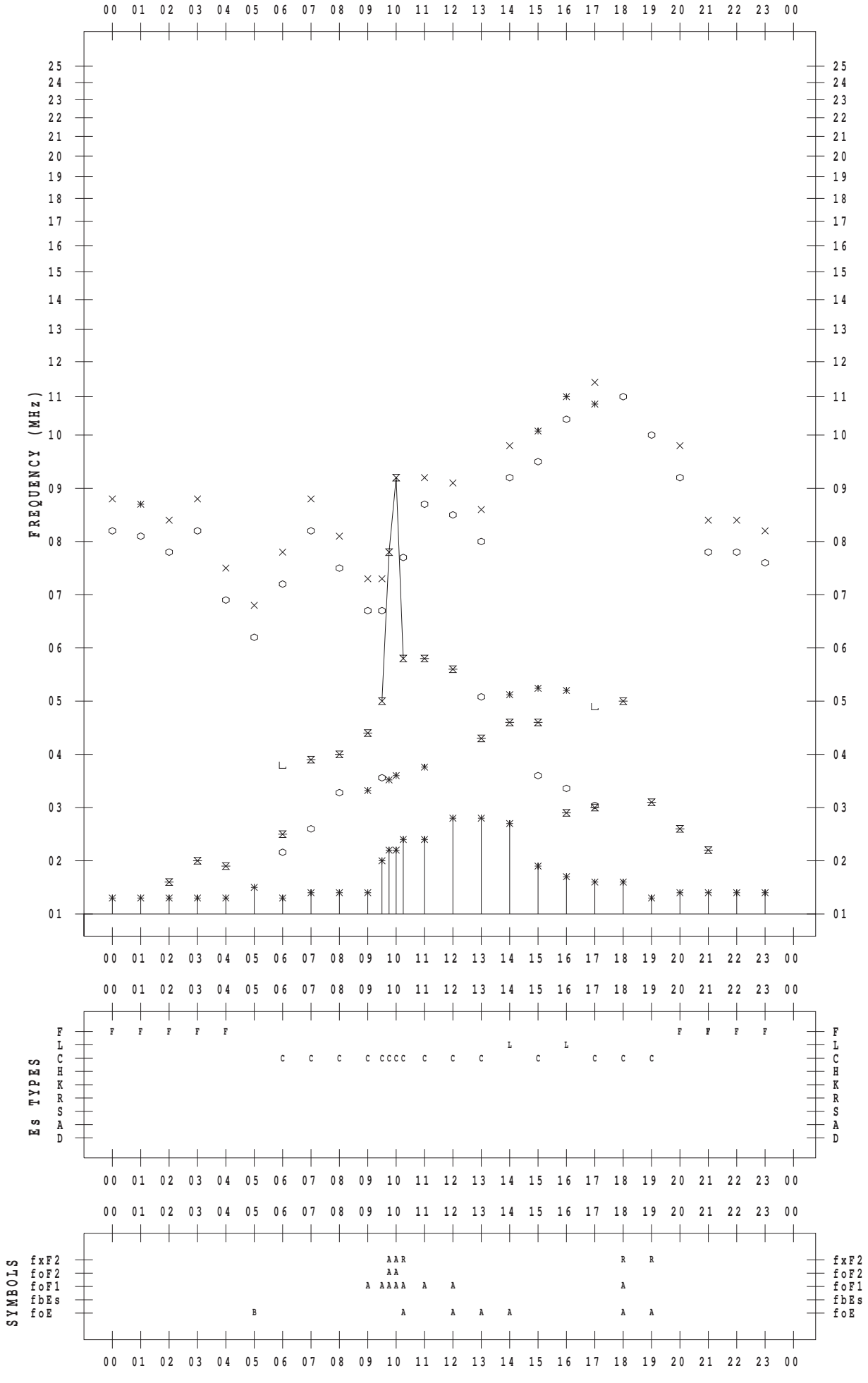
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/23

135 °E MEAN TIME



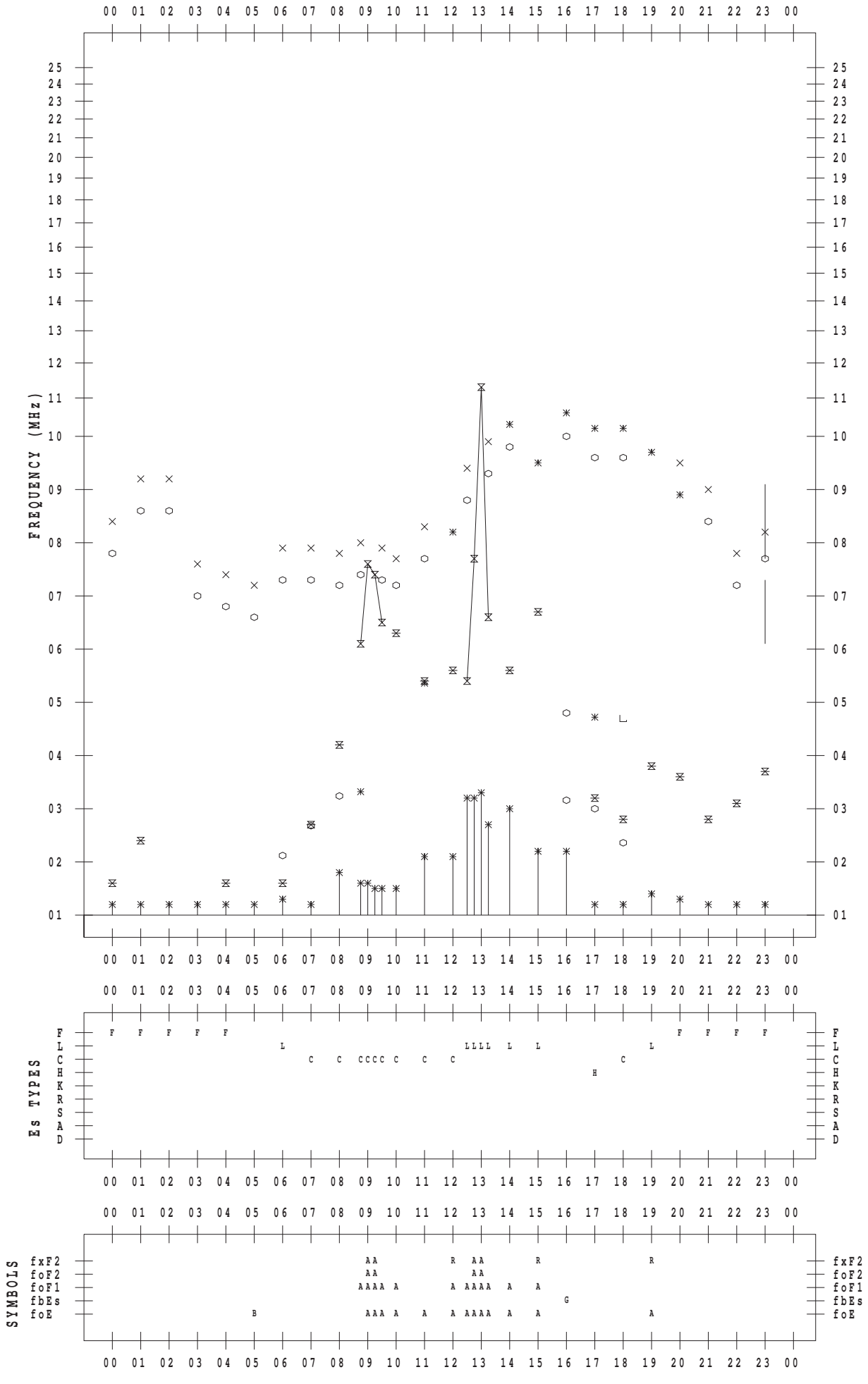
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/24

135 °E MEAN TIME



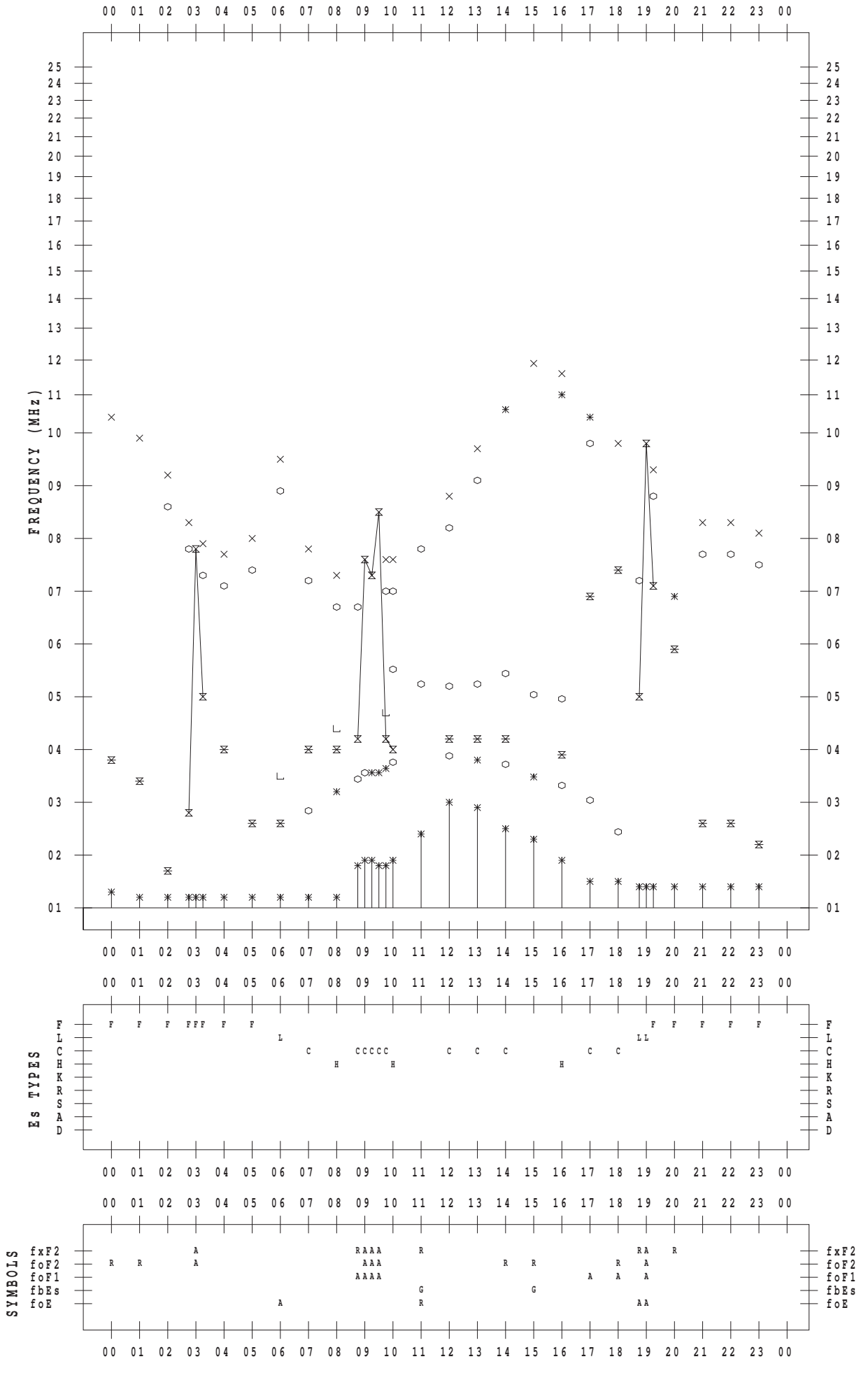
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/25

135 °E MEAN TIME



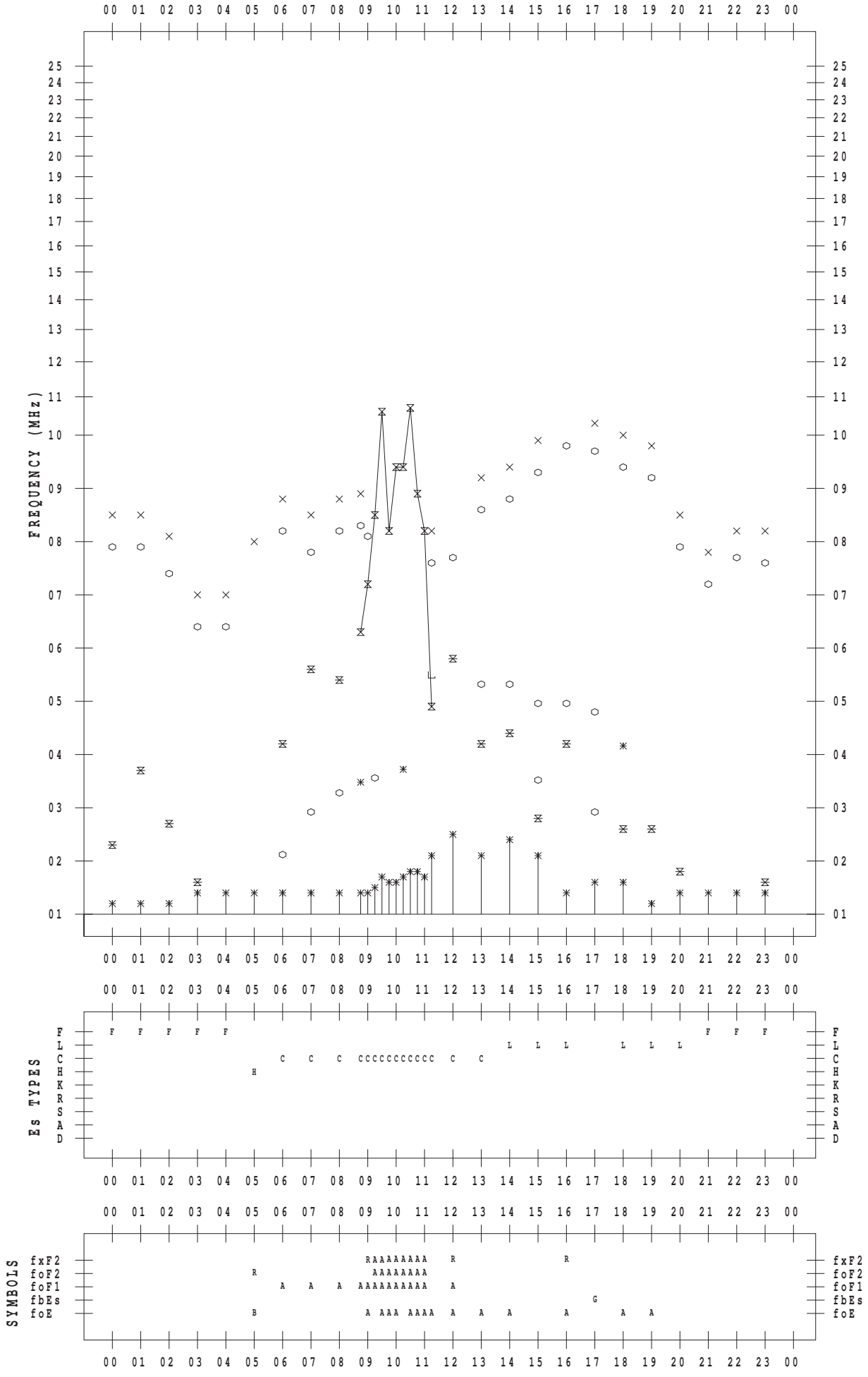
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/26

135 °E MEAN TIME



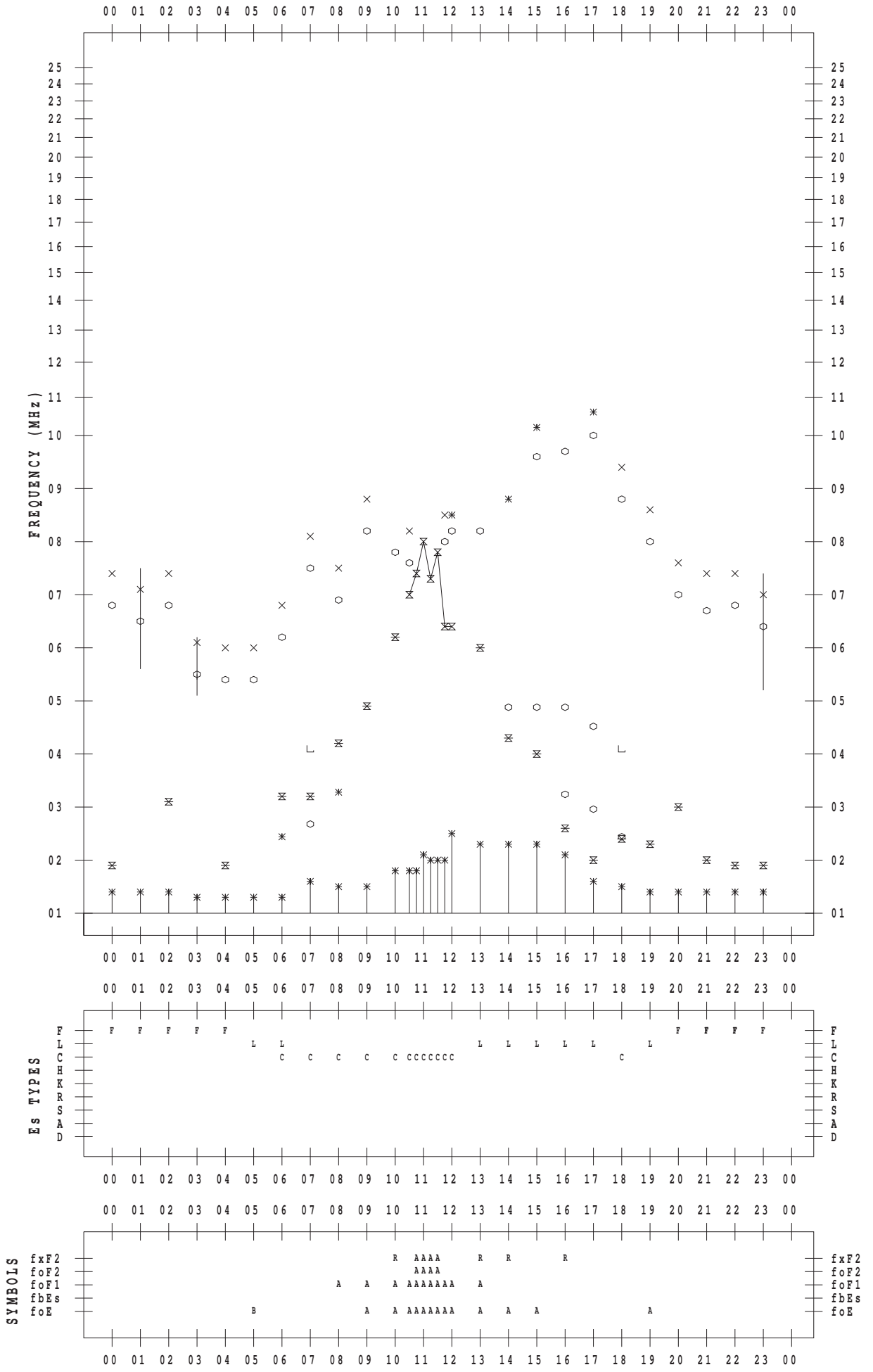
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/27

135 °E MEAN TIME



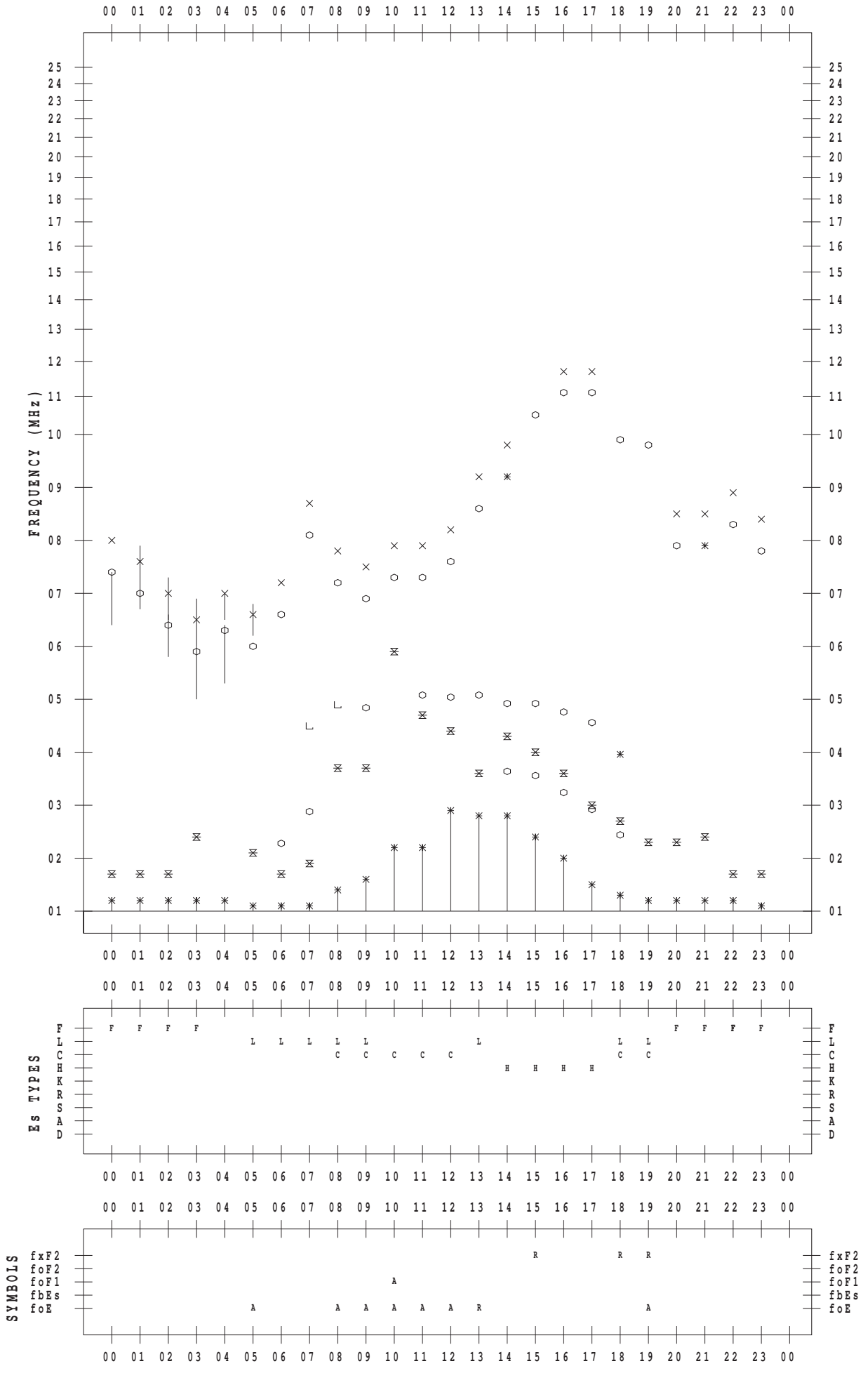
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/28

135 °E MEAN TIME



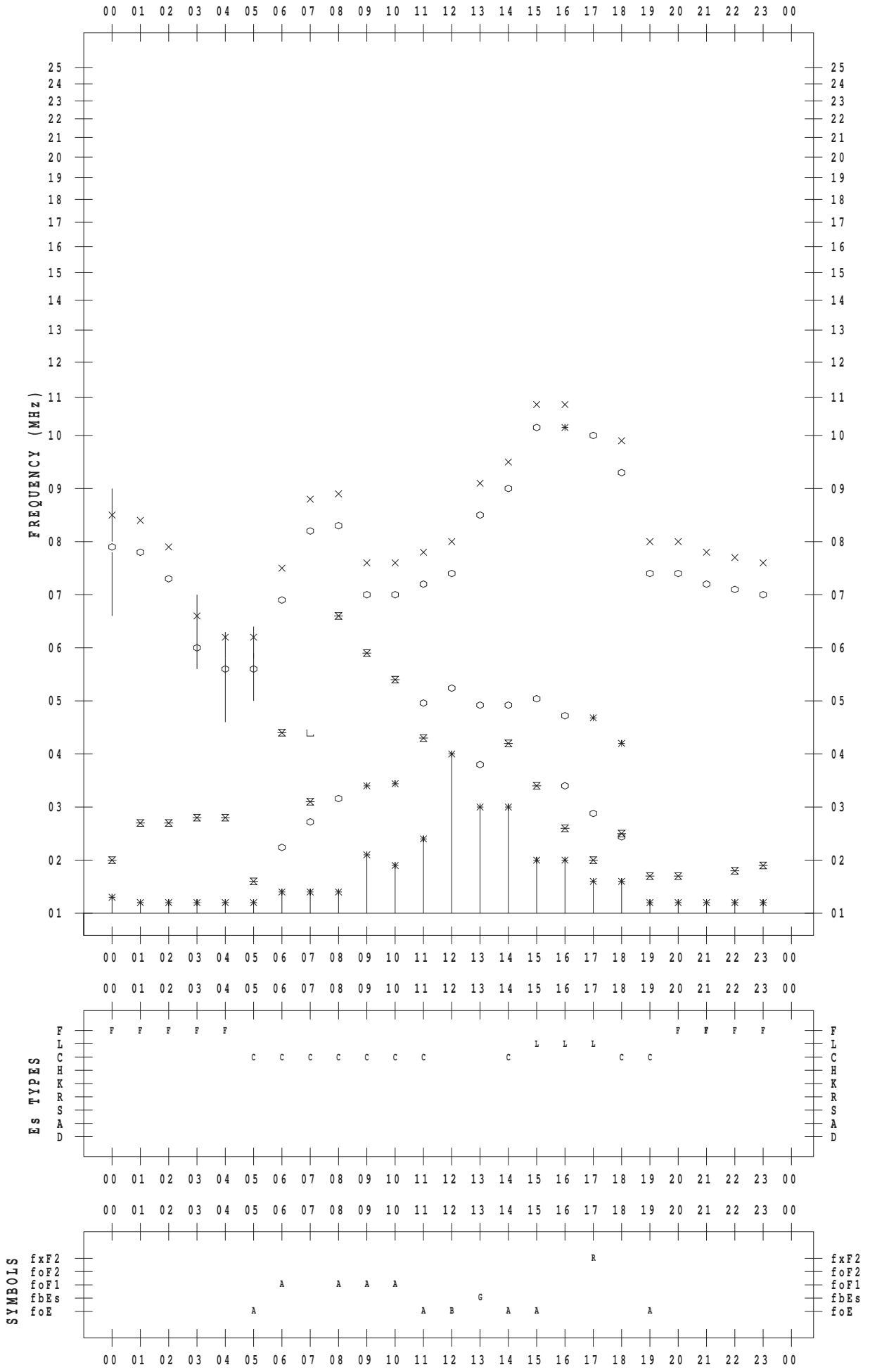
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/29

135 °E MEAN TIME



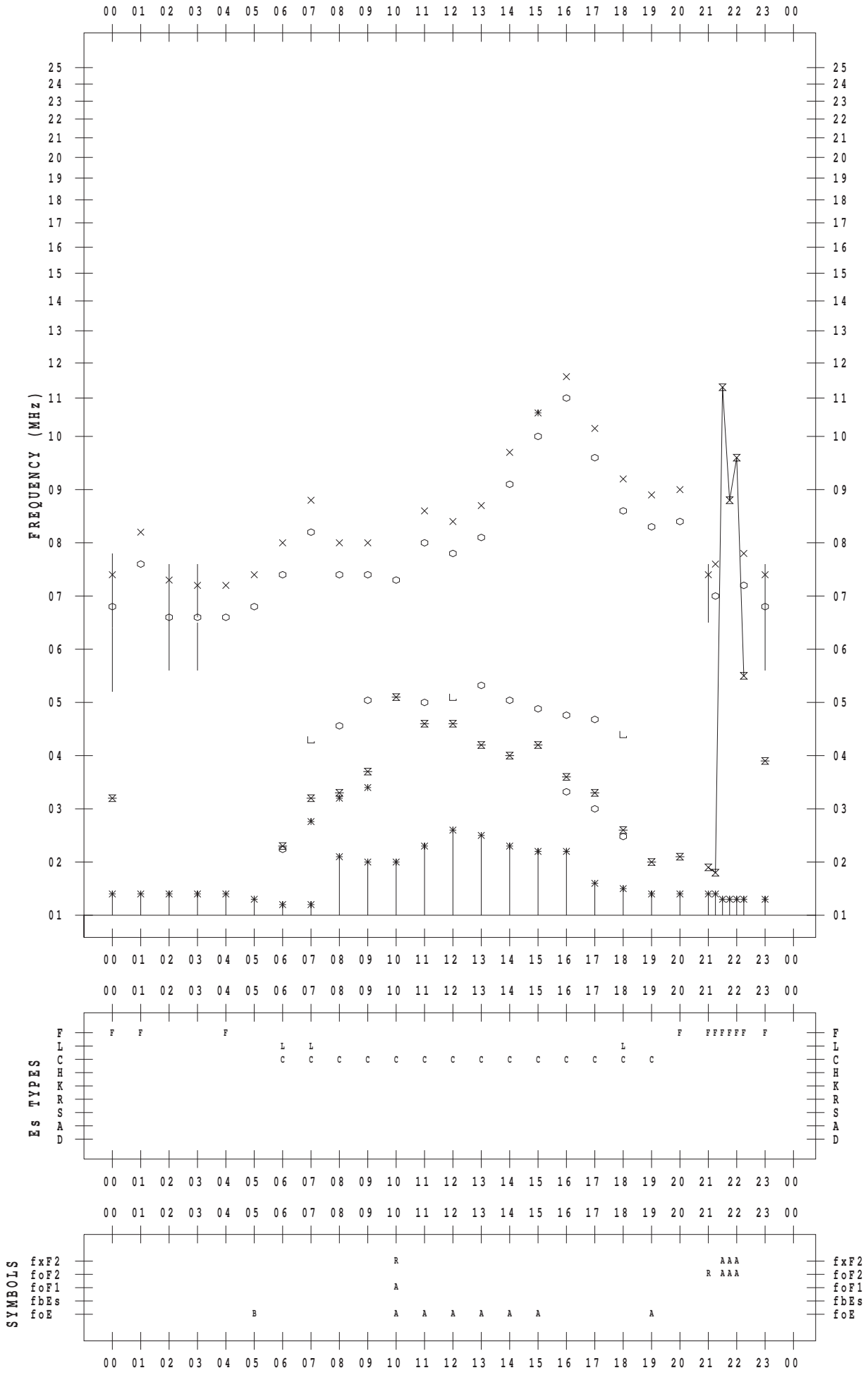
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/30

135 °E MEAN TIME



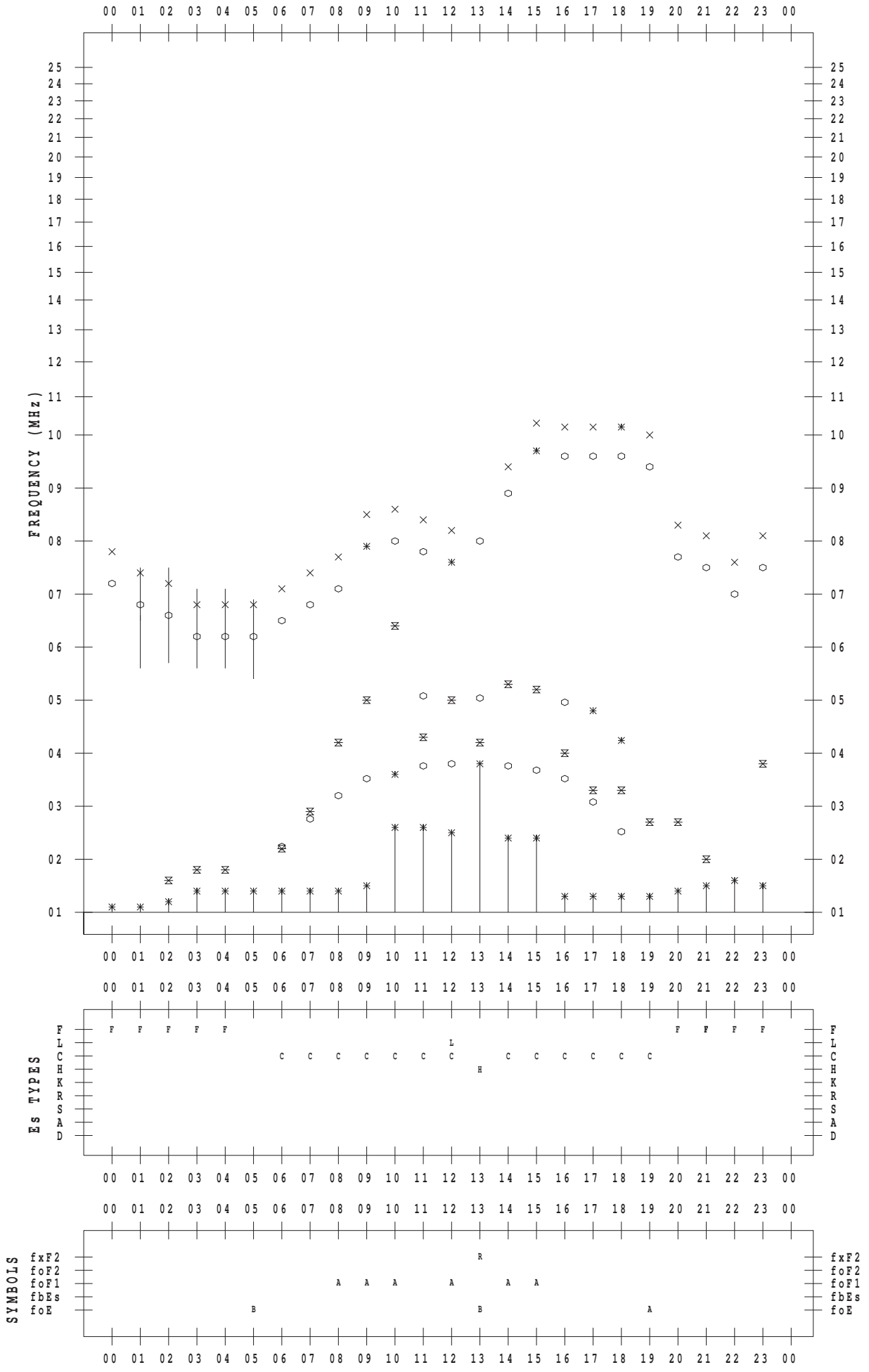
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 5/31

135 °E MEAN TIME



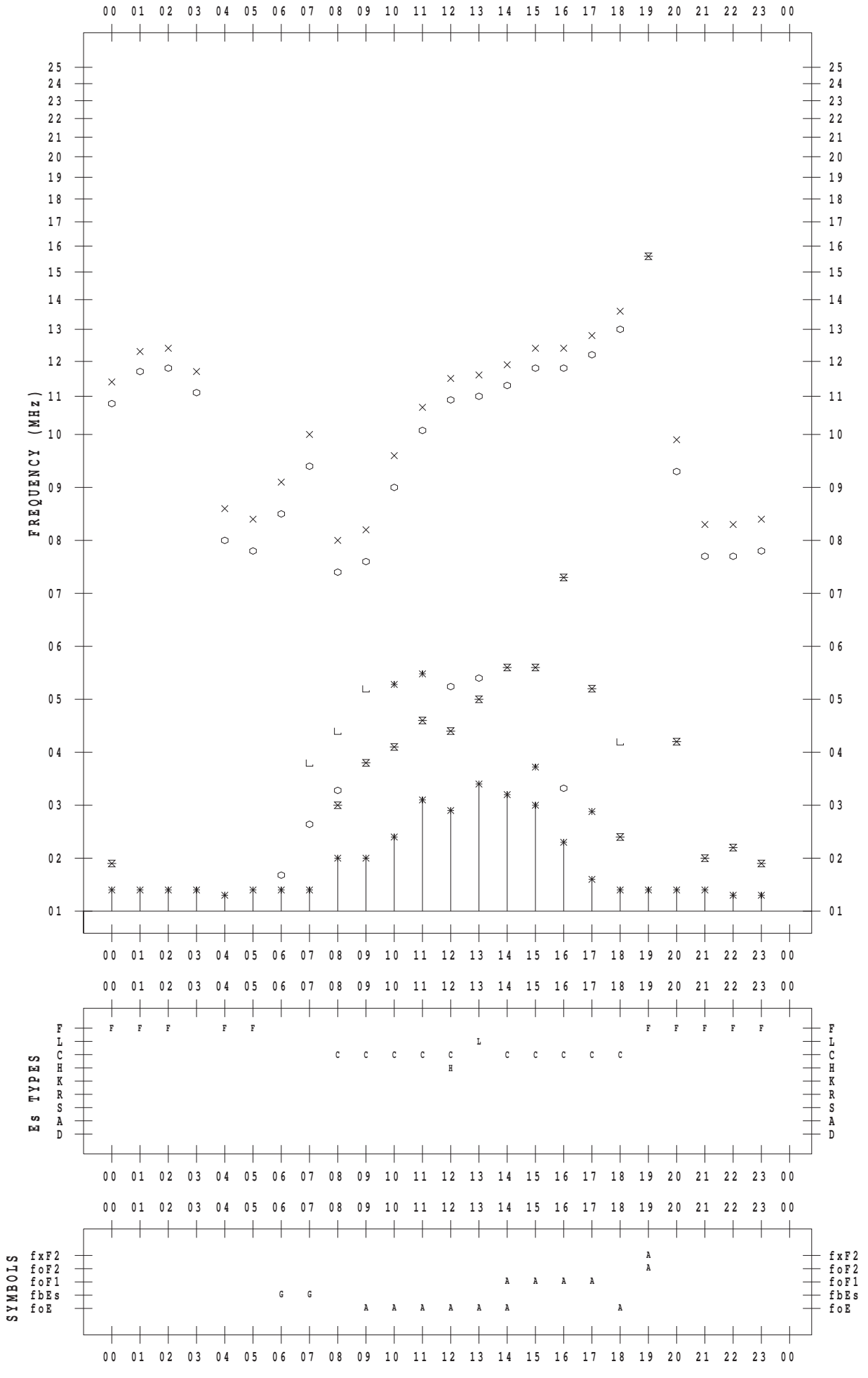
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 1

135 °E MEAN TIME



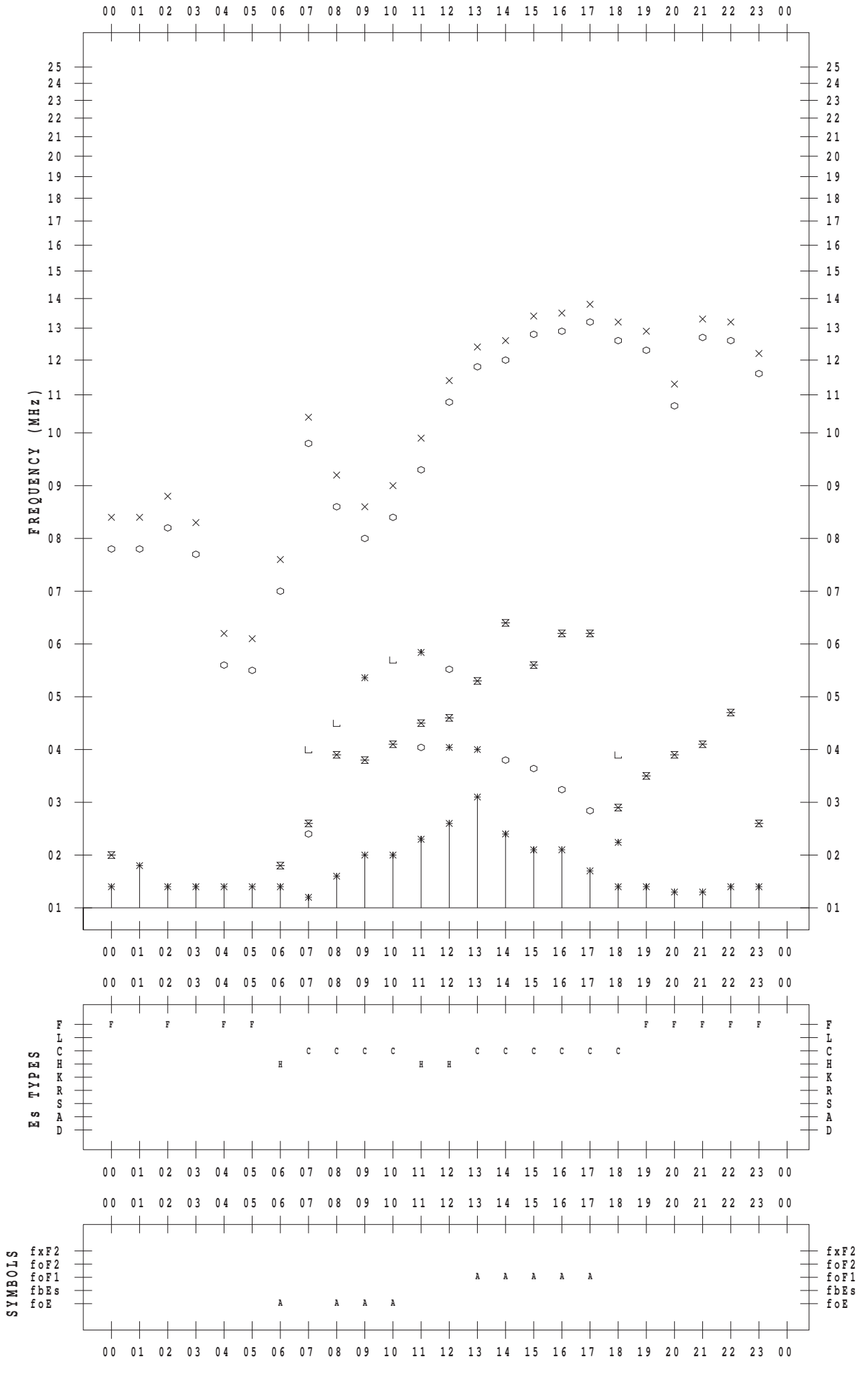
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 2

135 °E MEAN TIME



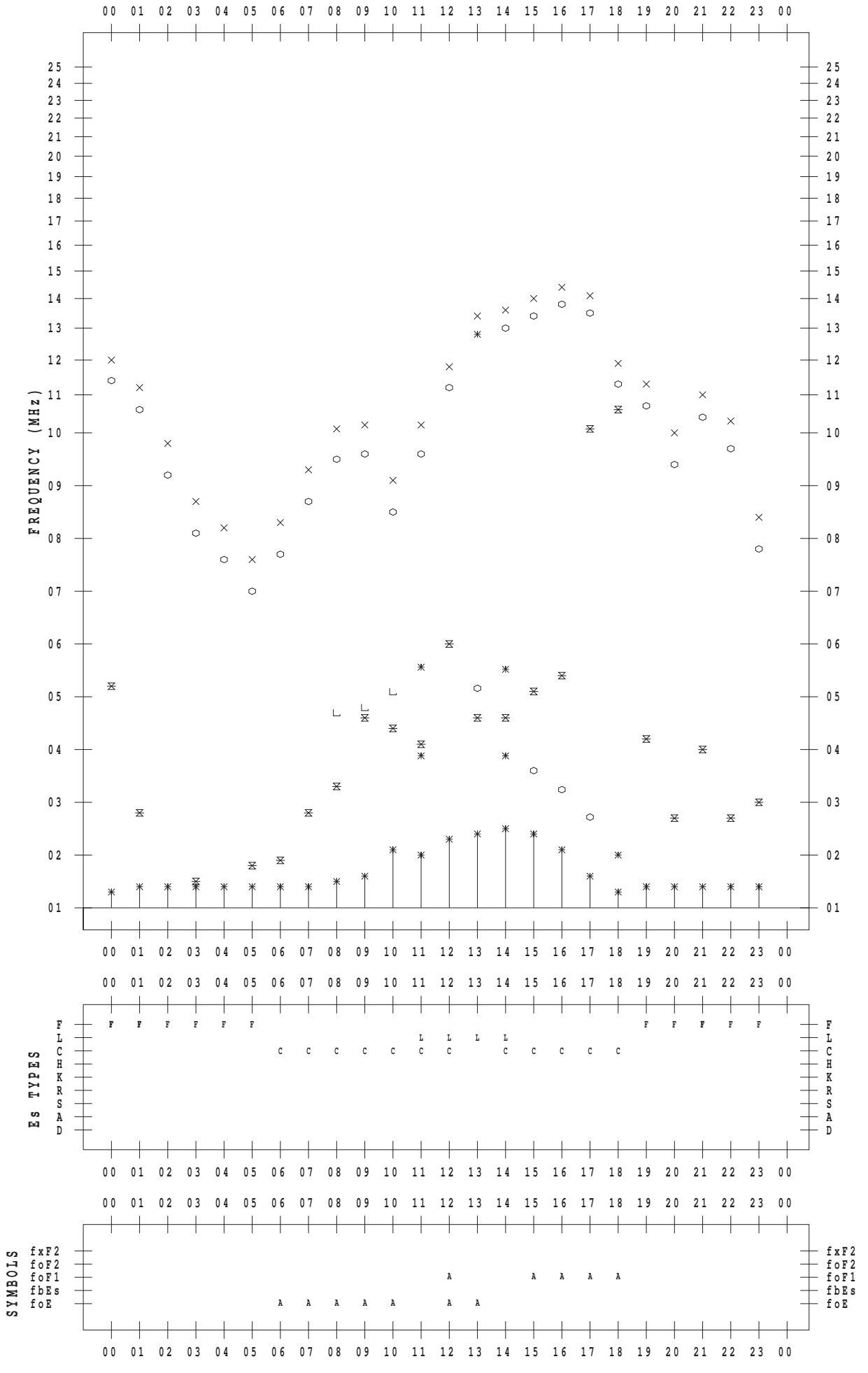
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 3

135 °E MEAN TIME



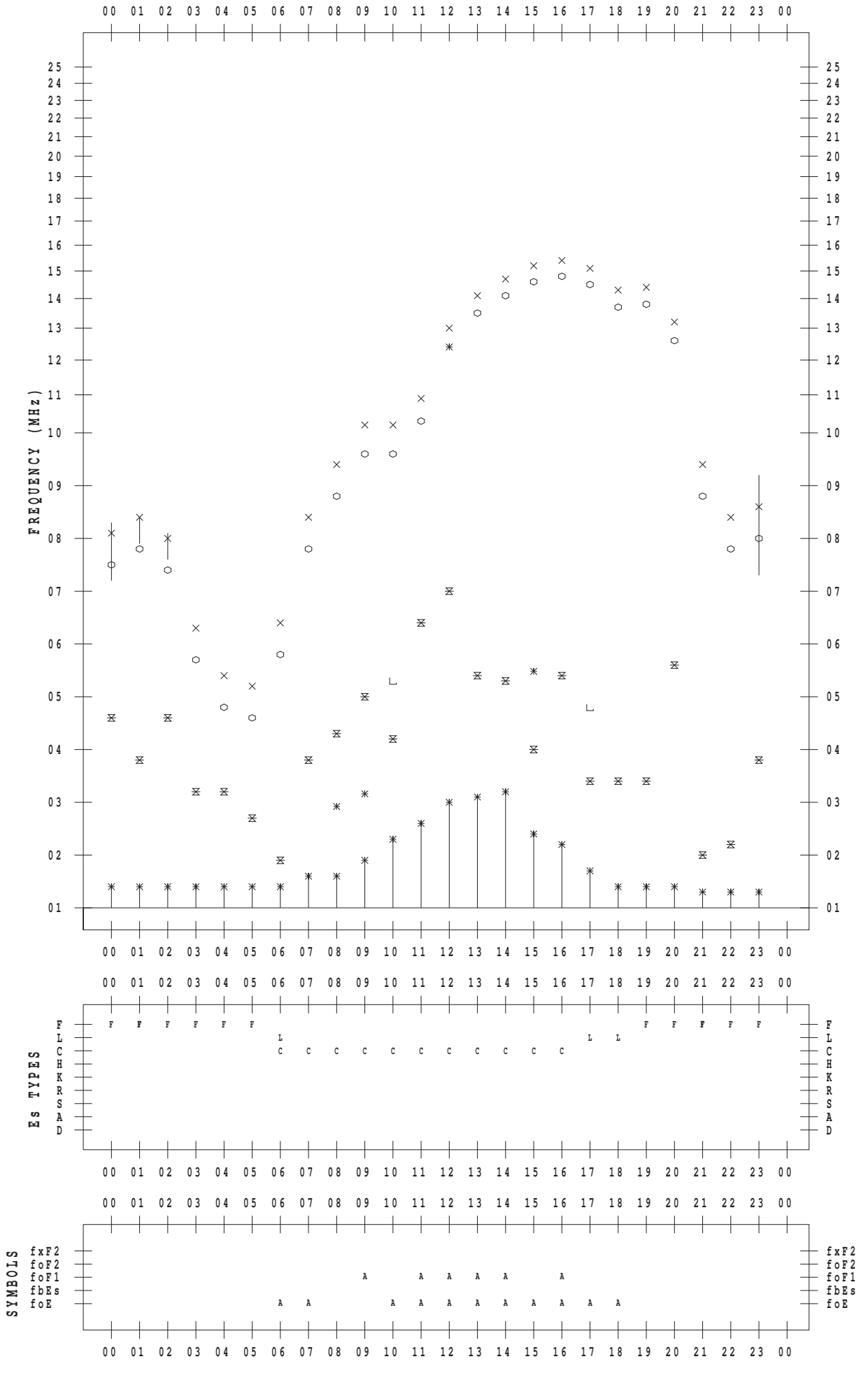
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 4

135 °E MEAN TIME



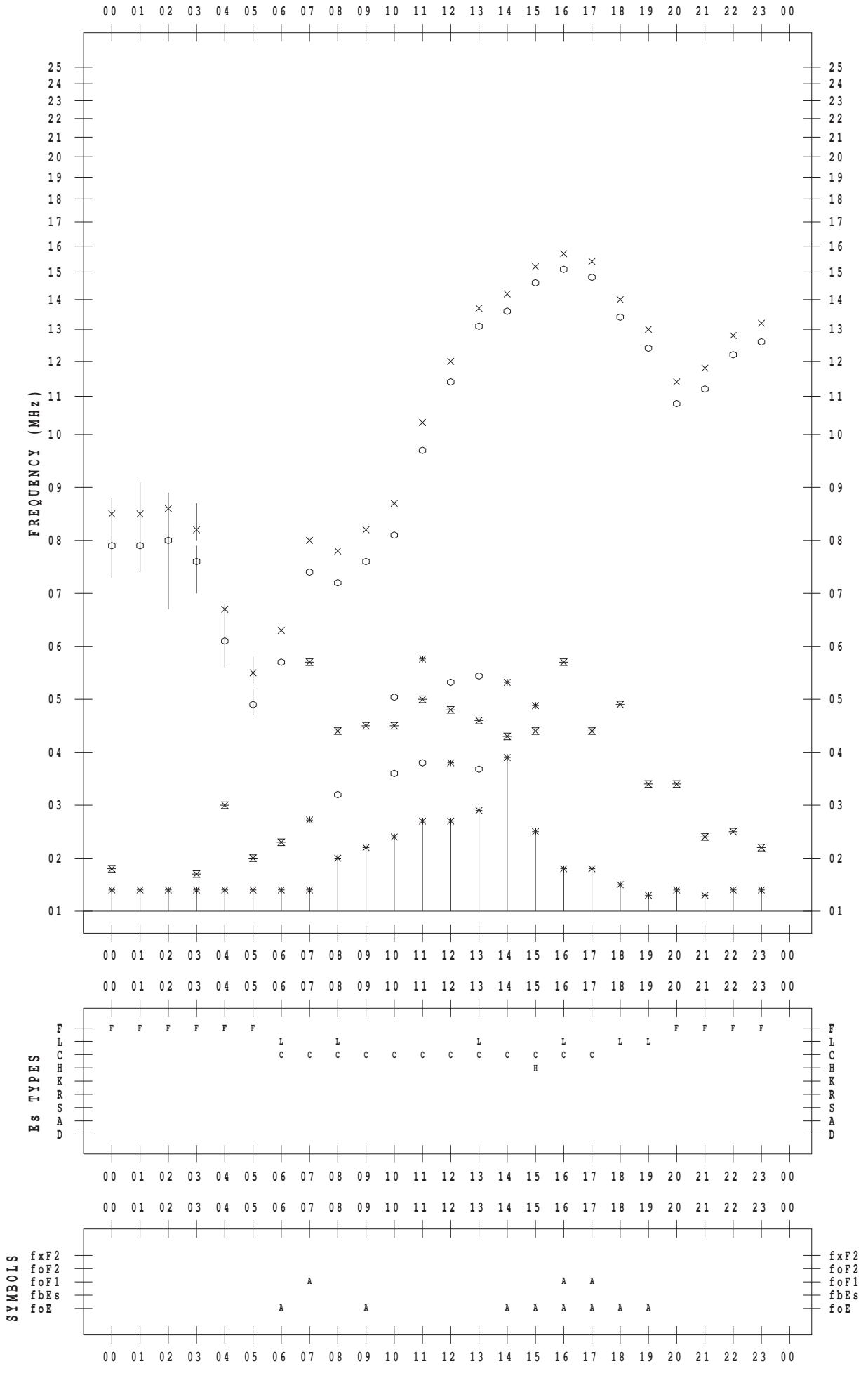
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 5

135 °E MEAN TIME



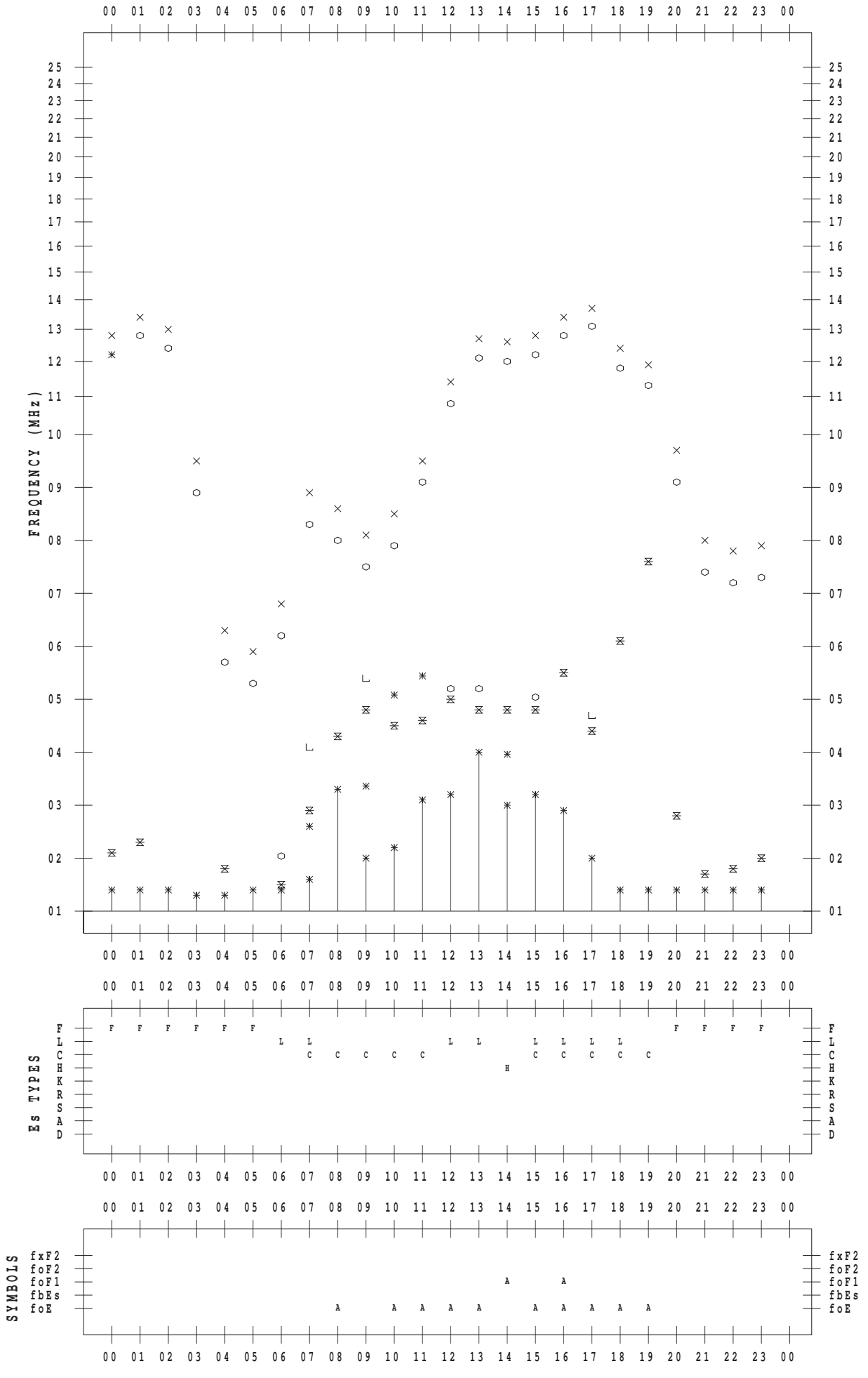
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 6

135 °E MEAN TIME



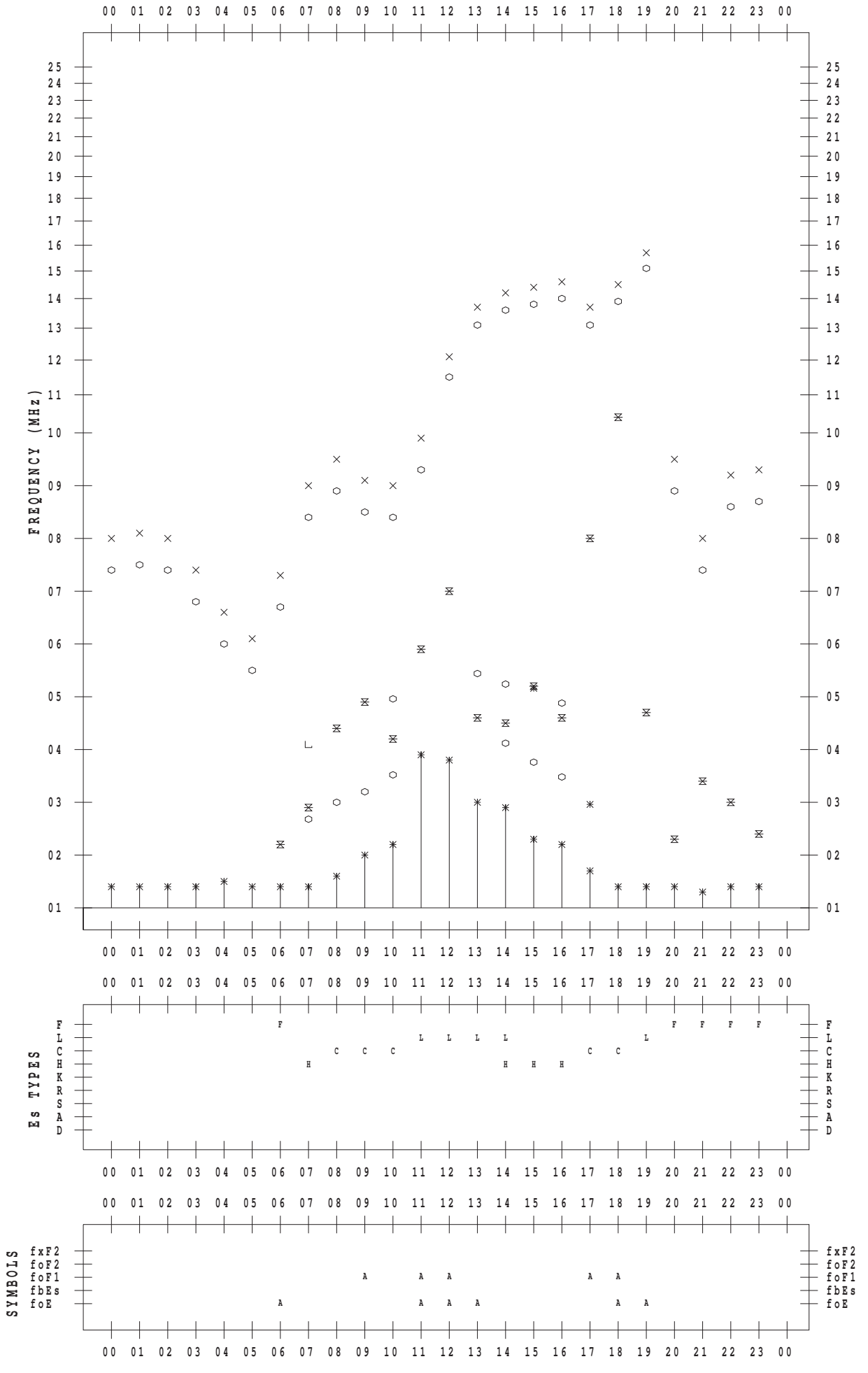
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 7

135 °E MEAN TIME



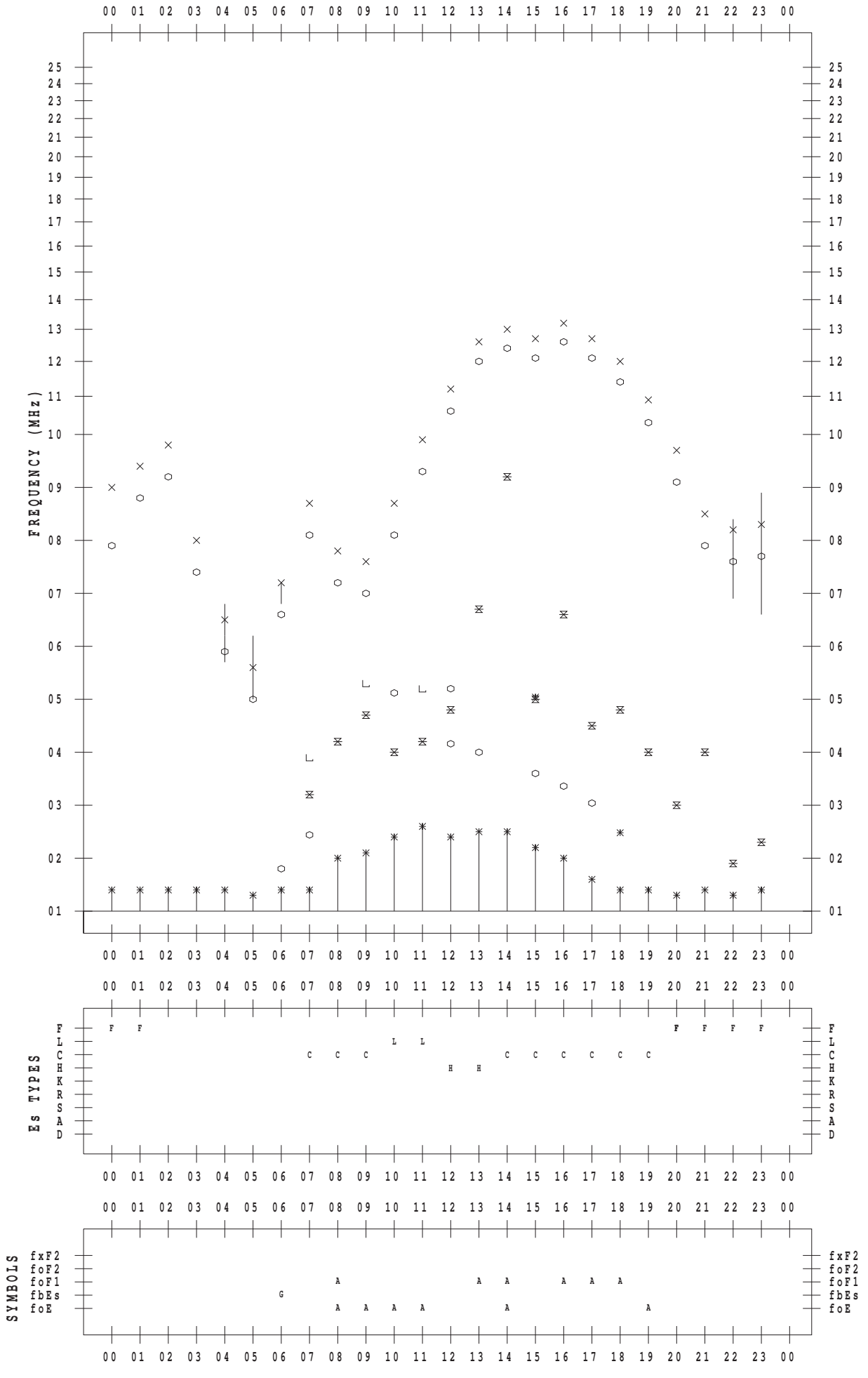
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 8

135 °E MEAN TIME



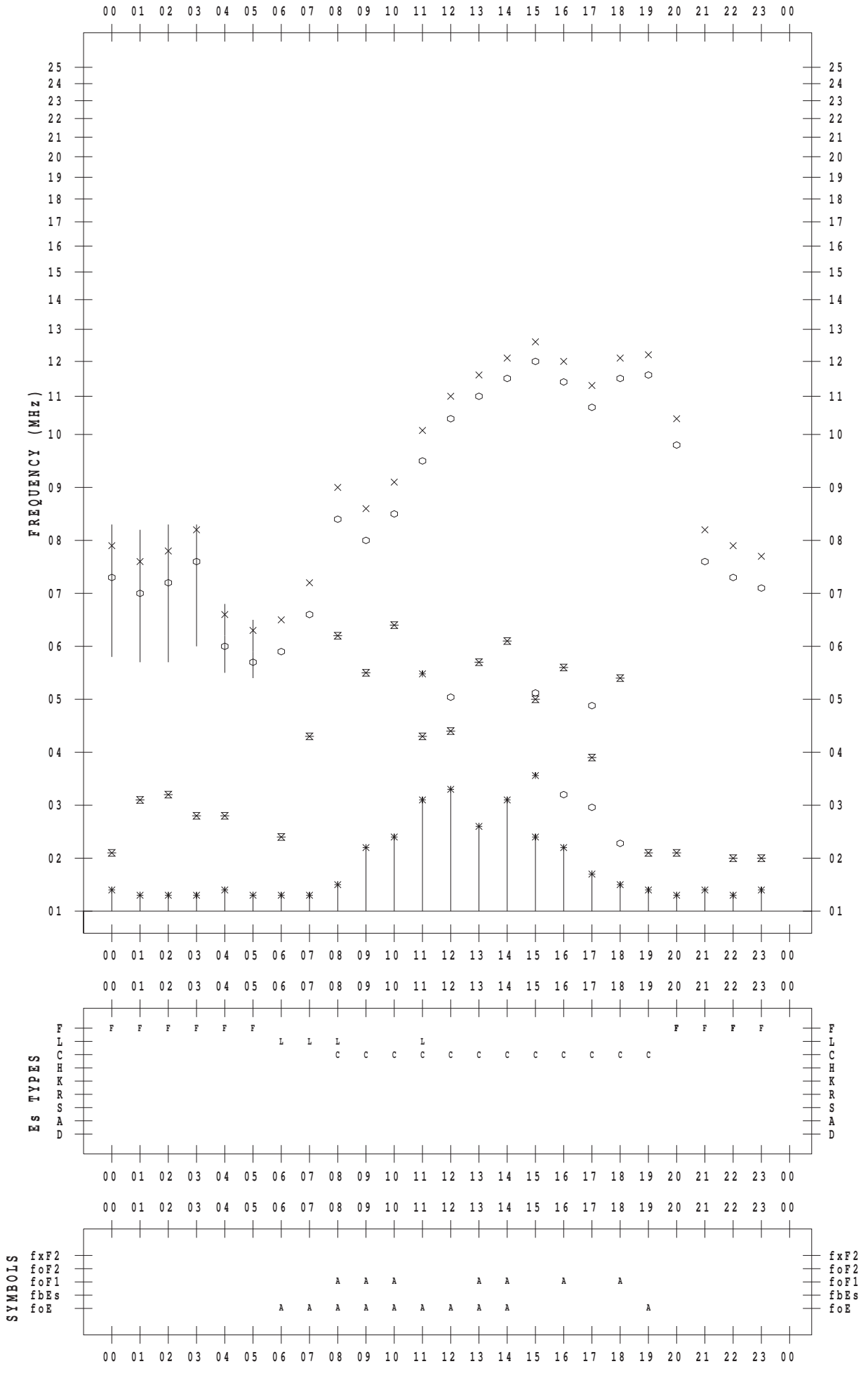
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/ 9

135 °E MEAN TIME



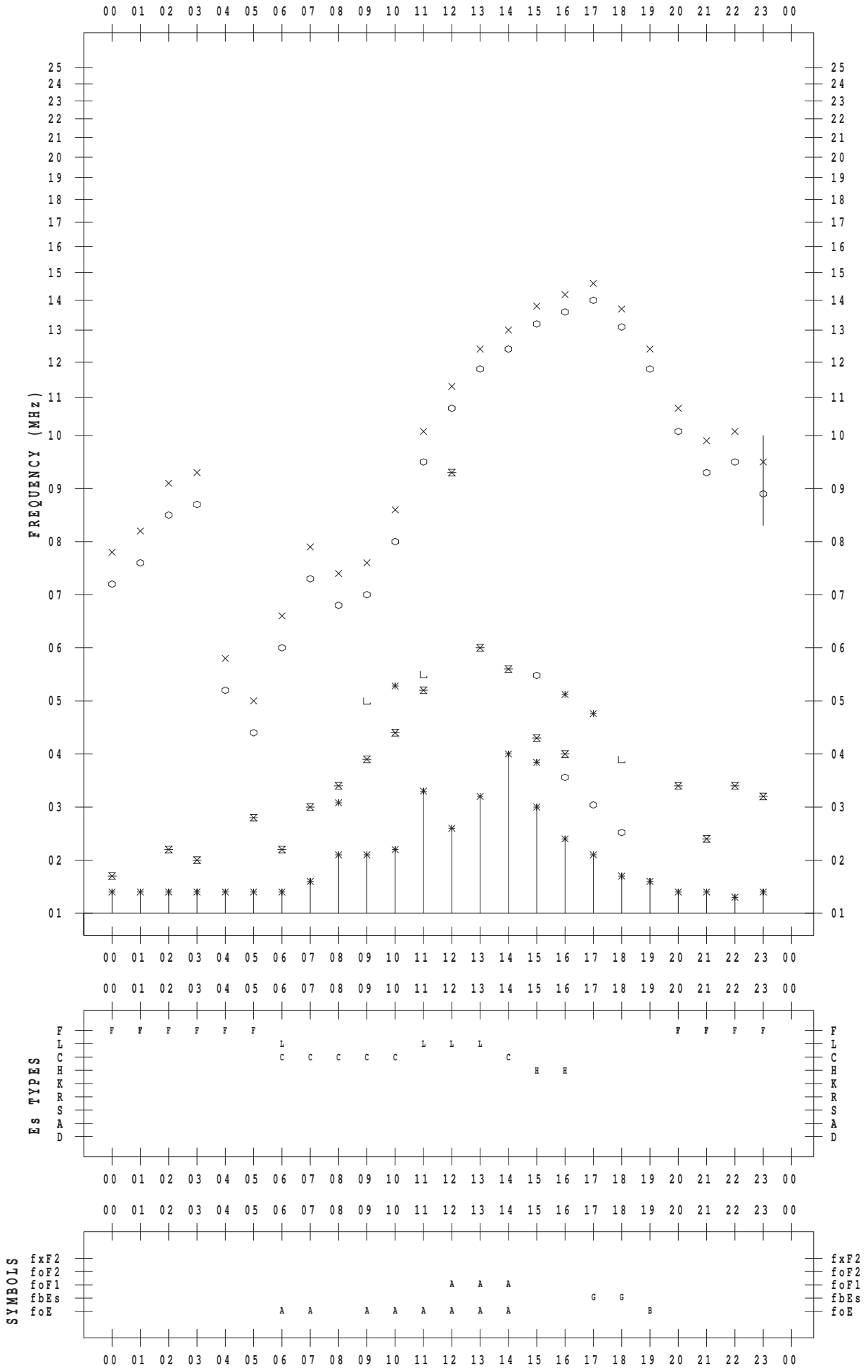
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/10

135 °E MEAN TIME



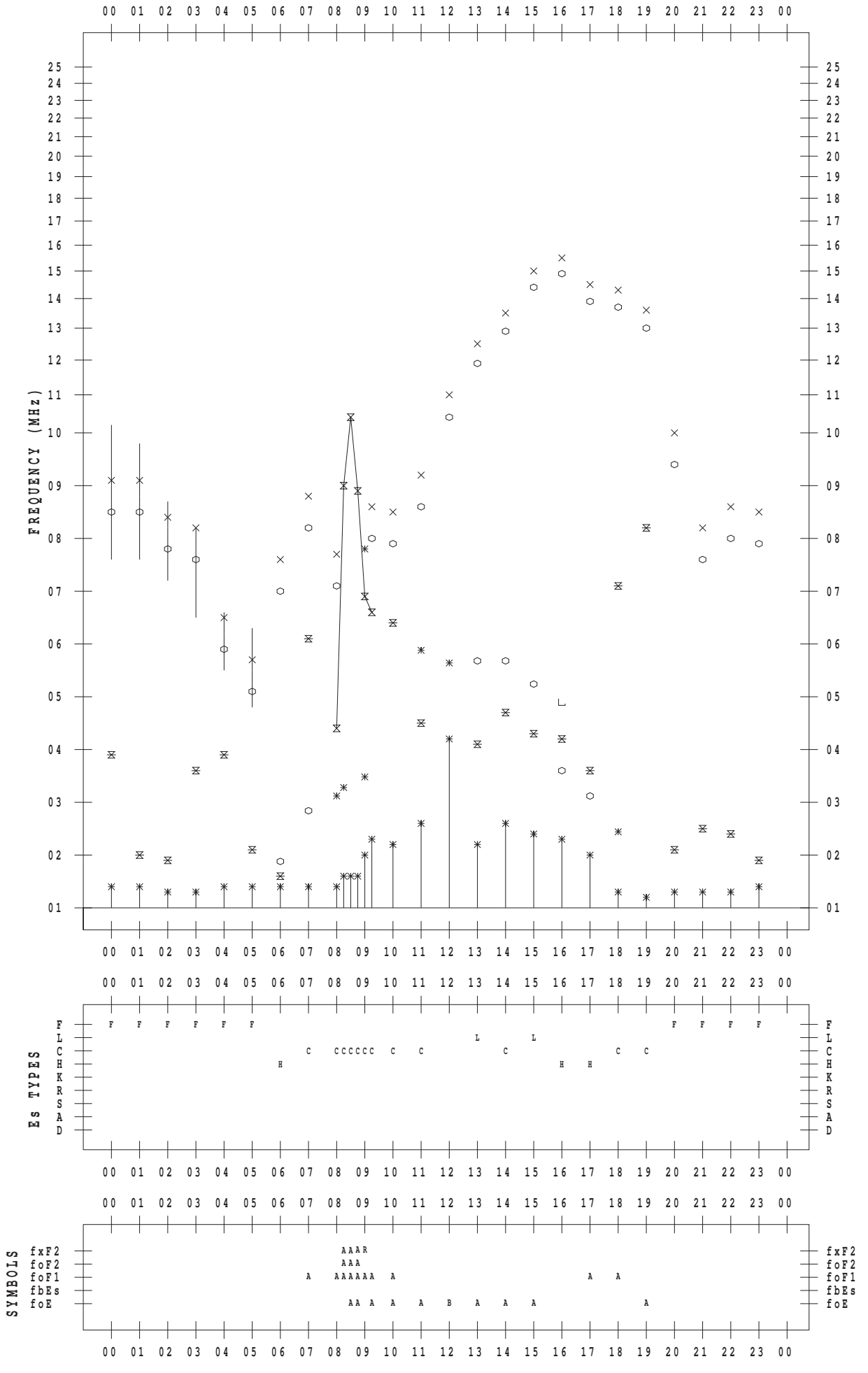
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/11

135 °E MEAN TIME



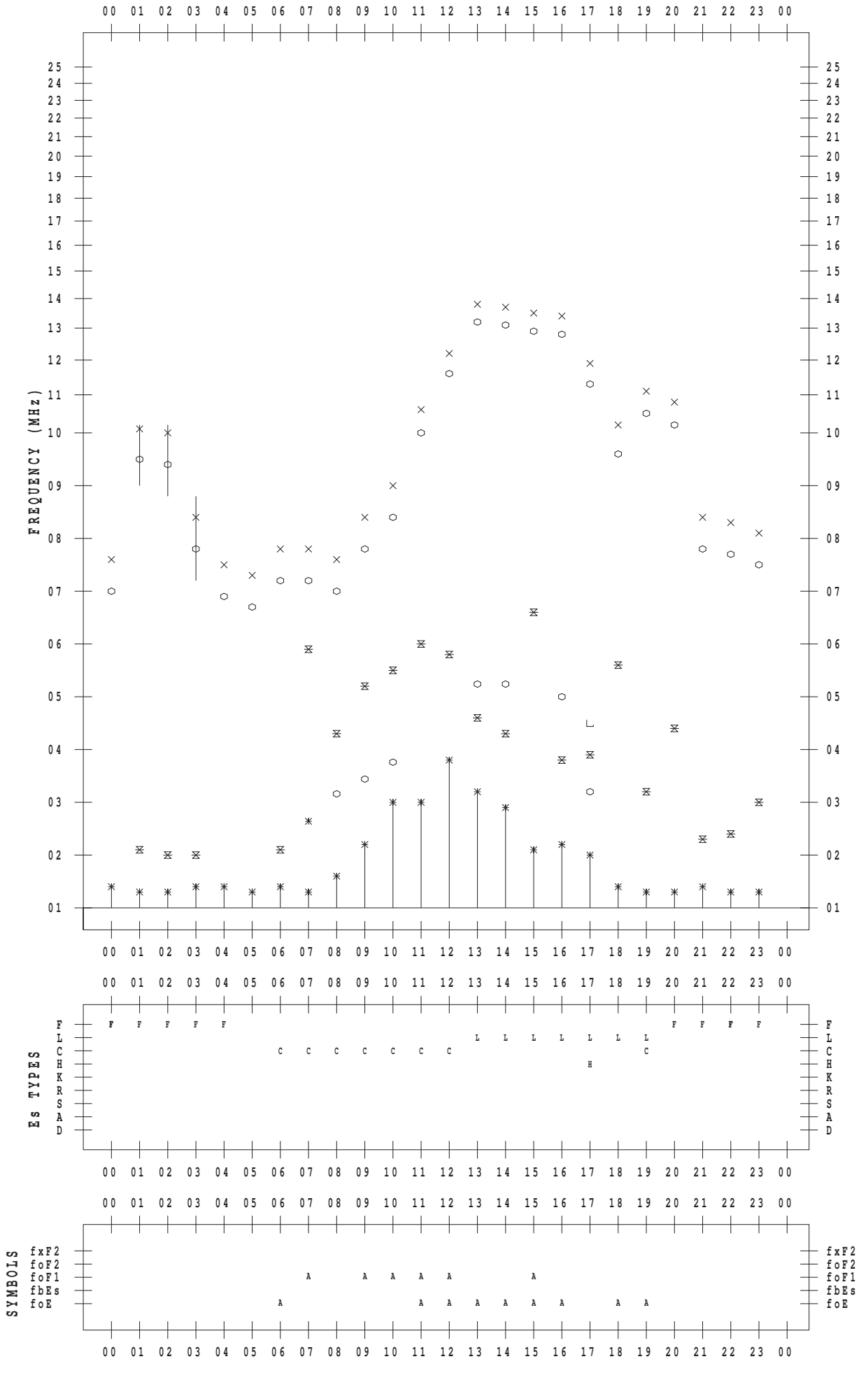
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/12

135 °E MEAN TIME



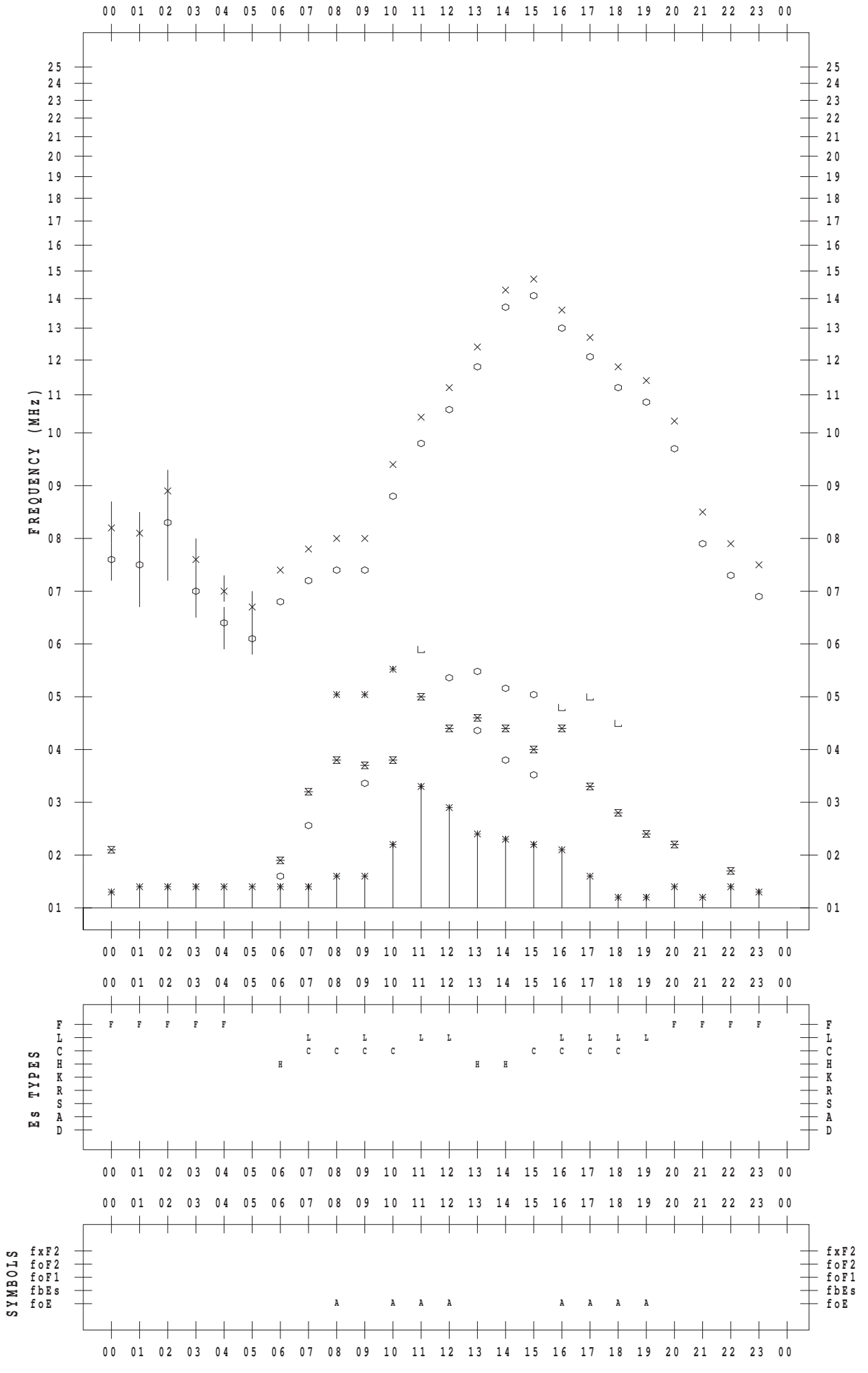
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/13

135 °E MEAN TIME



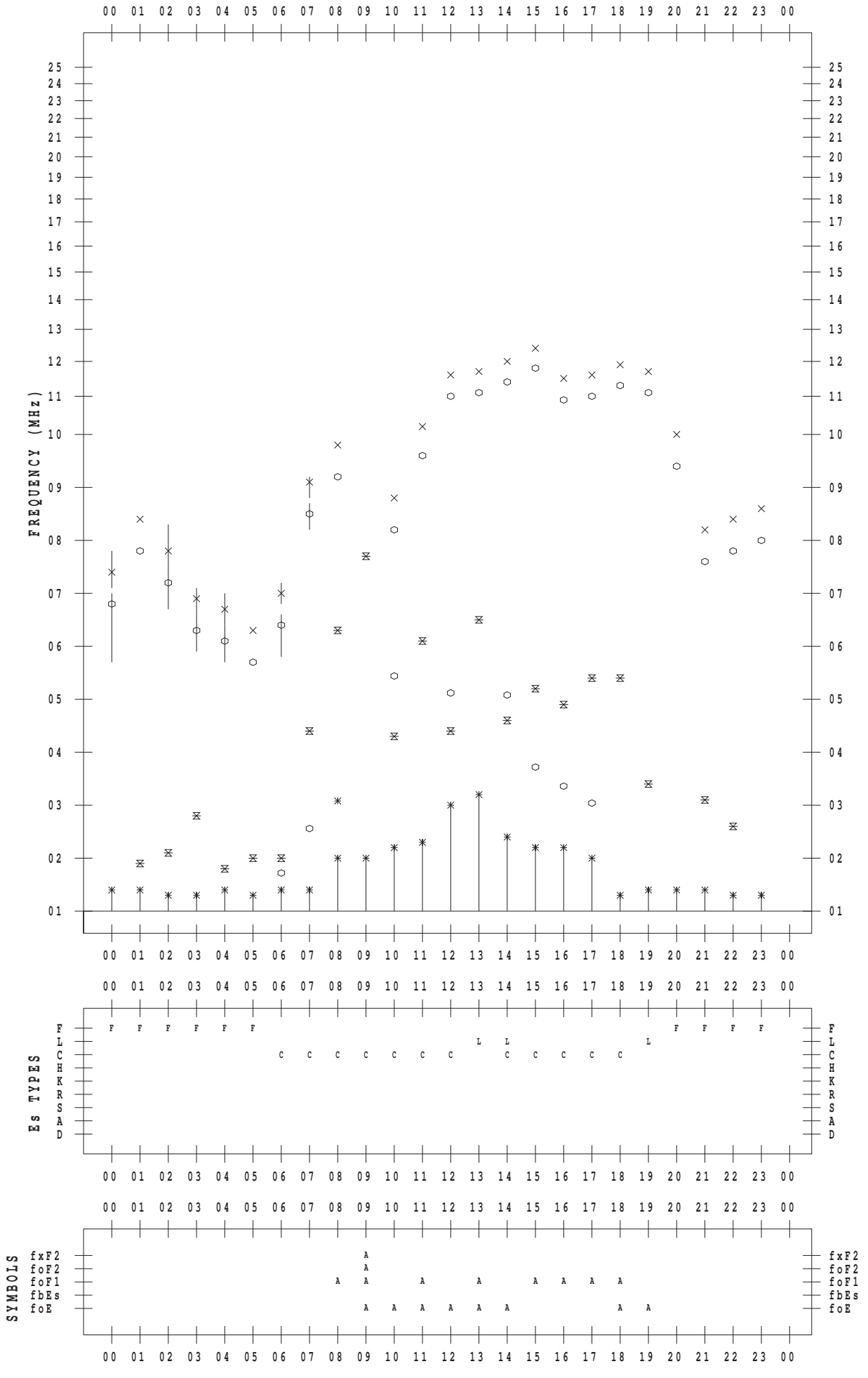
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/14

135 °E MEAN TIME



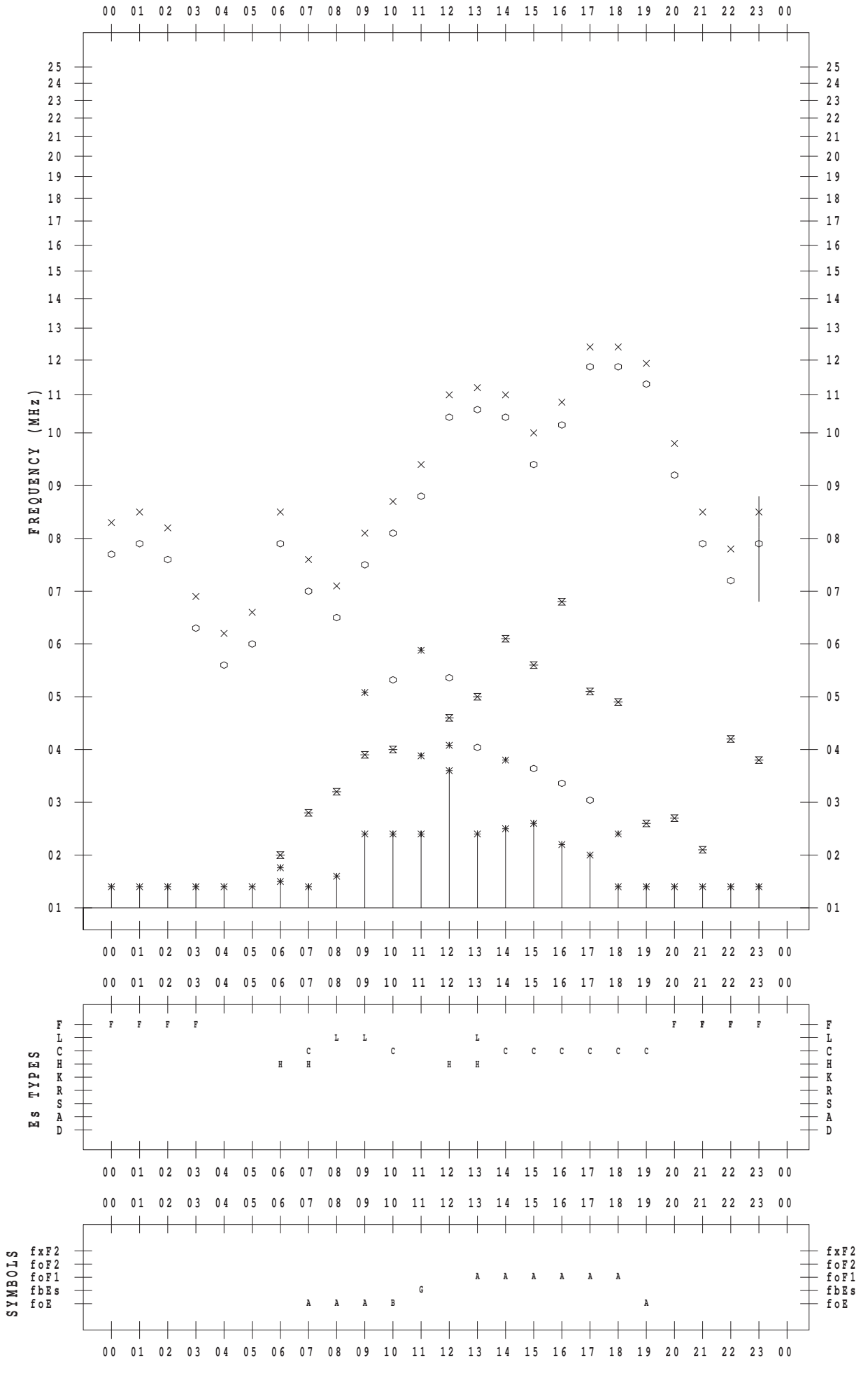
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/15

135 °E MEAN TIME



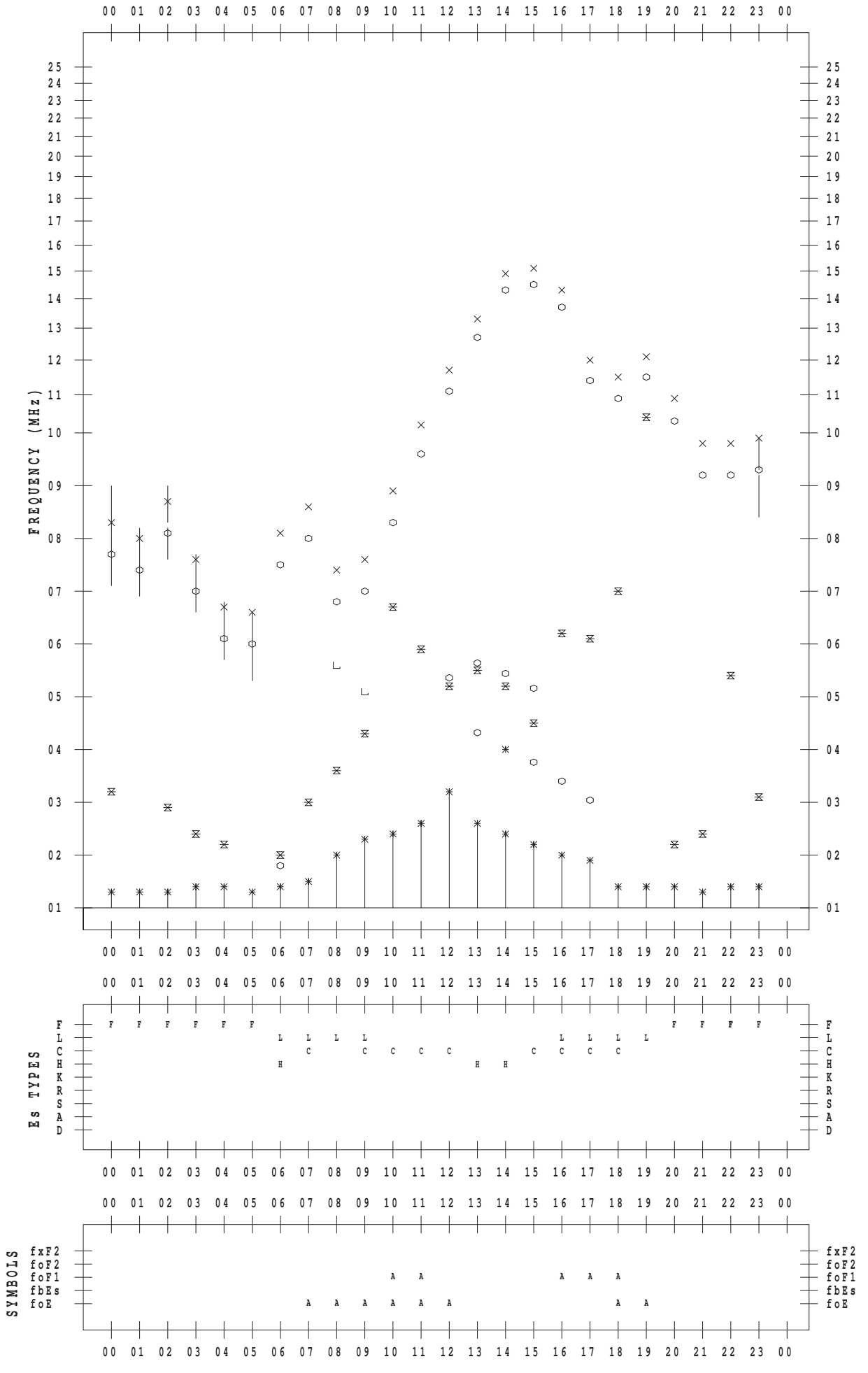
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/16

135 °E MEAN TIME



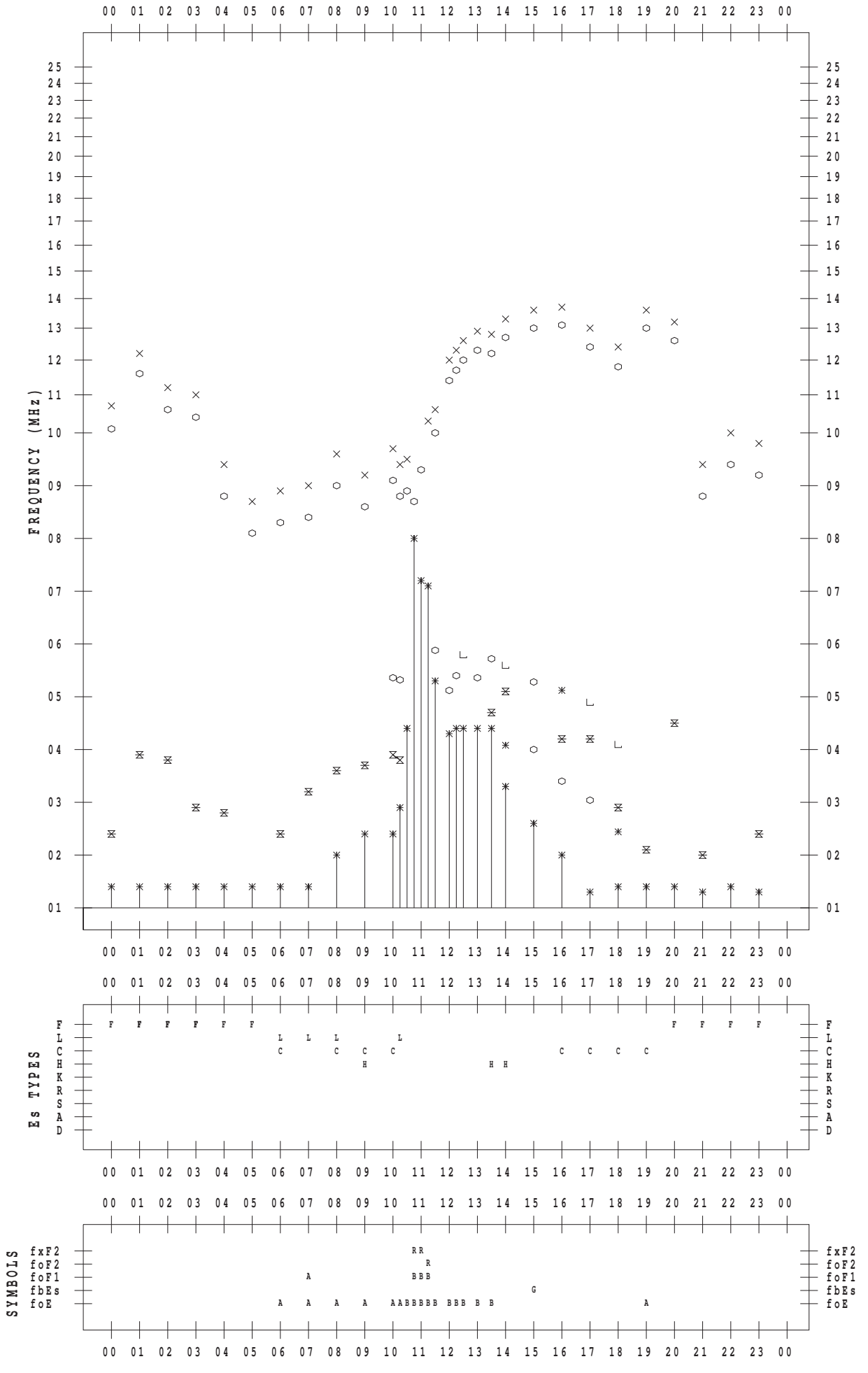
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/17

135 °E MEAN TIME



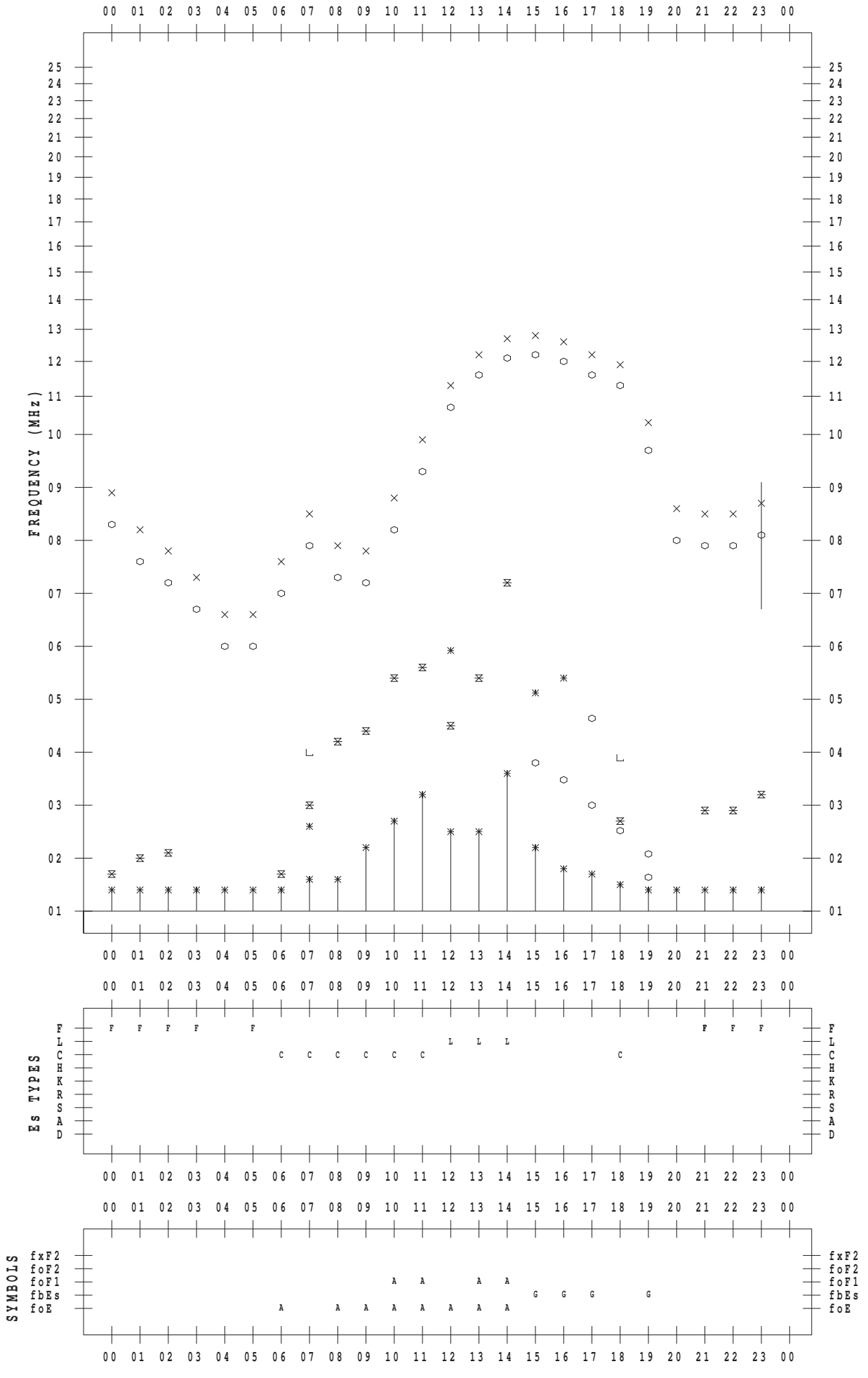
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/18

135 °E MEAN TIME



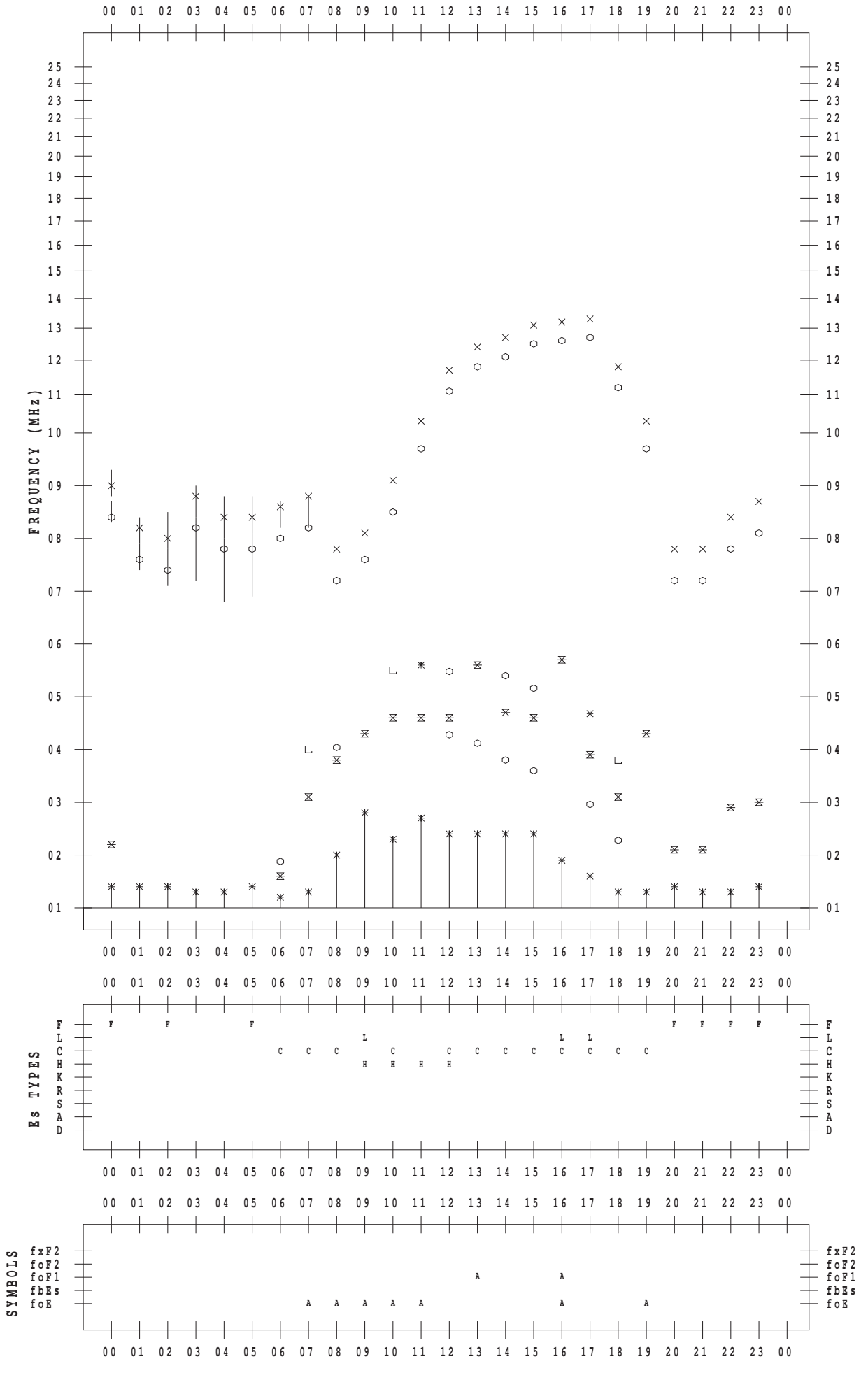
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/19

135 °E MEAN TIME



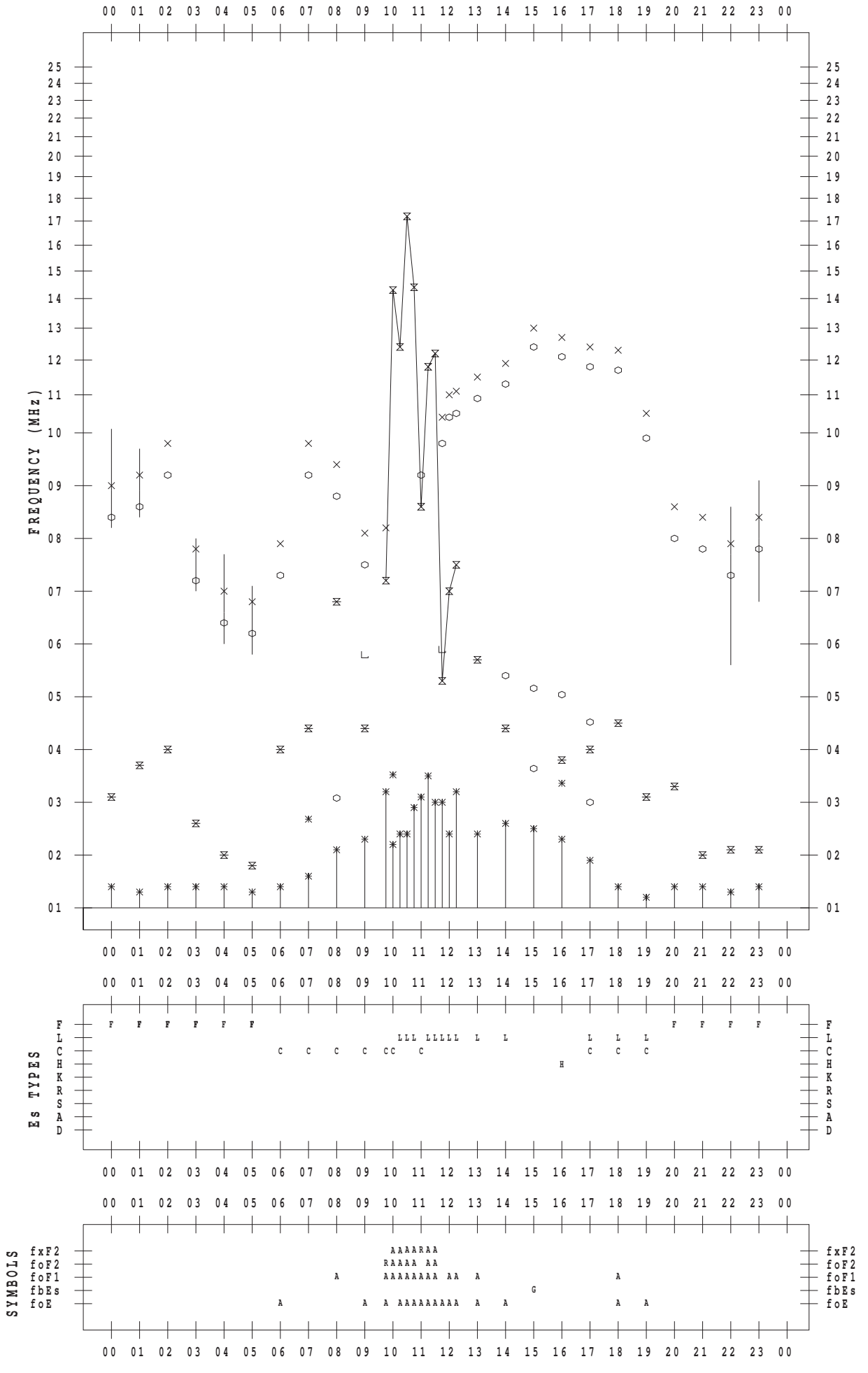
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/20

135 °E MEAN TIME



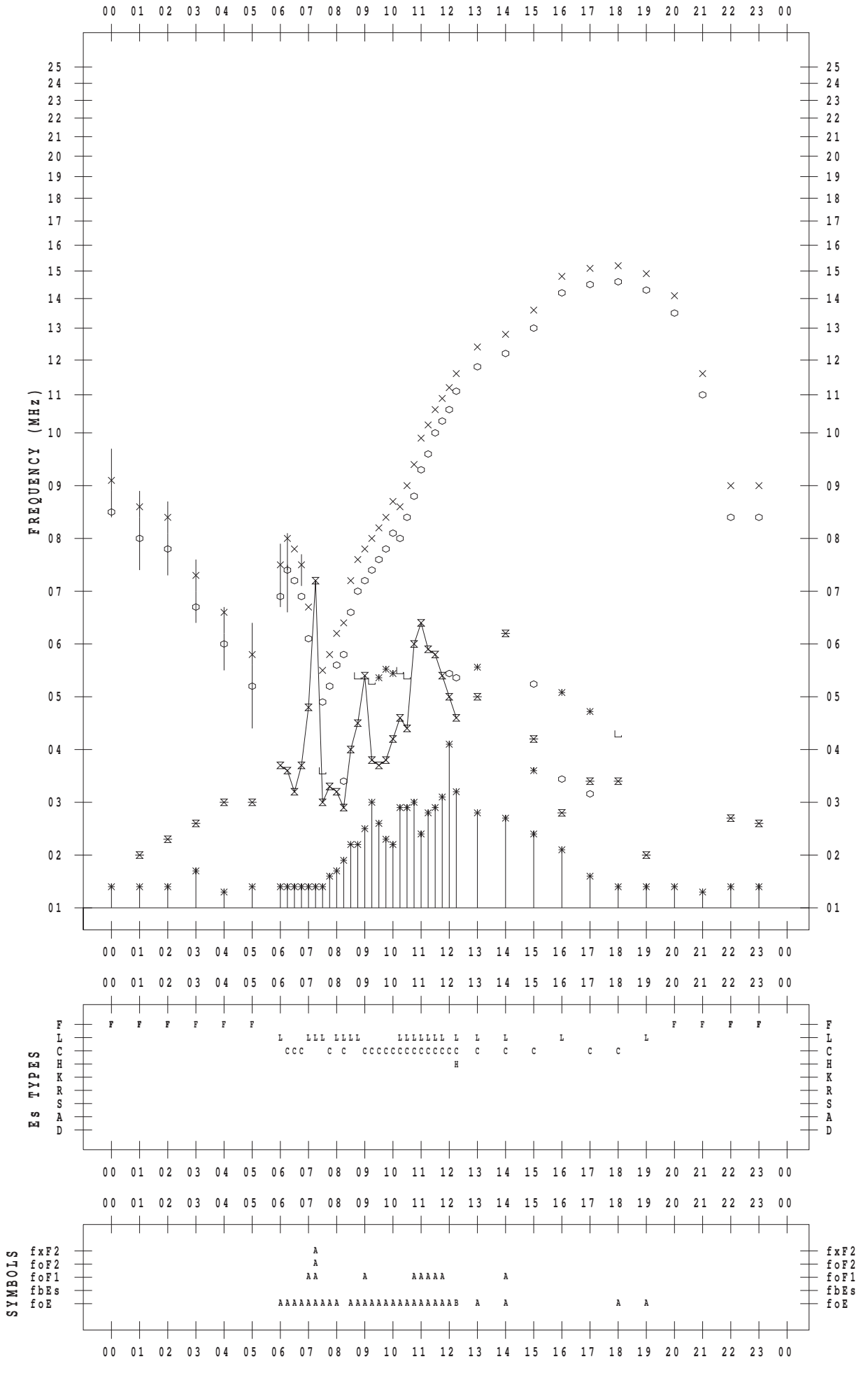
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/21

135 °E MEAN TIME



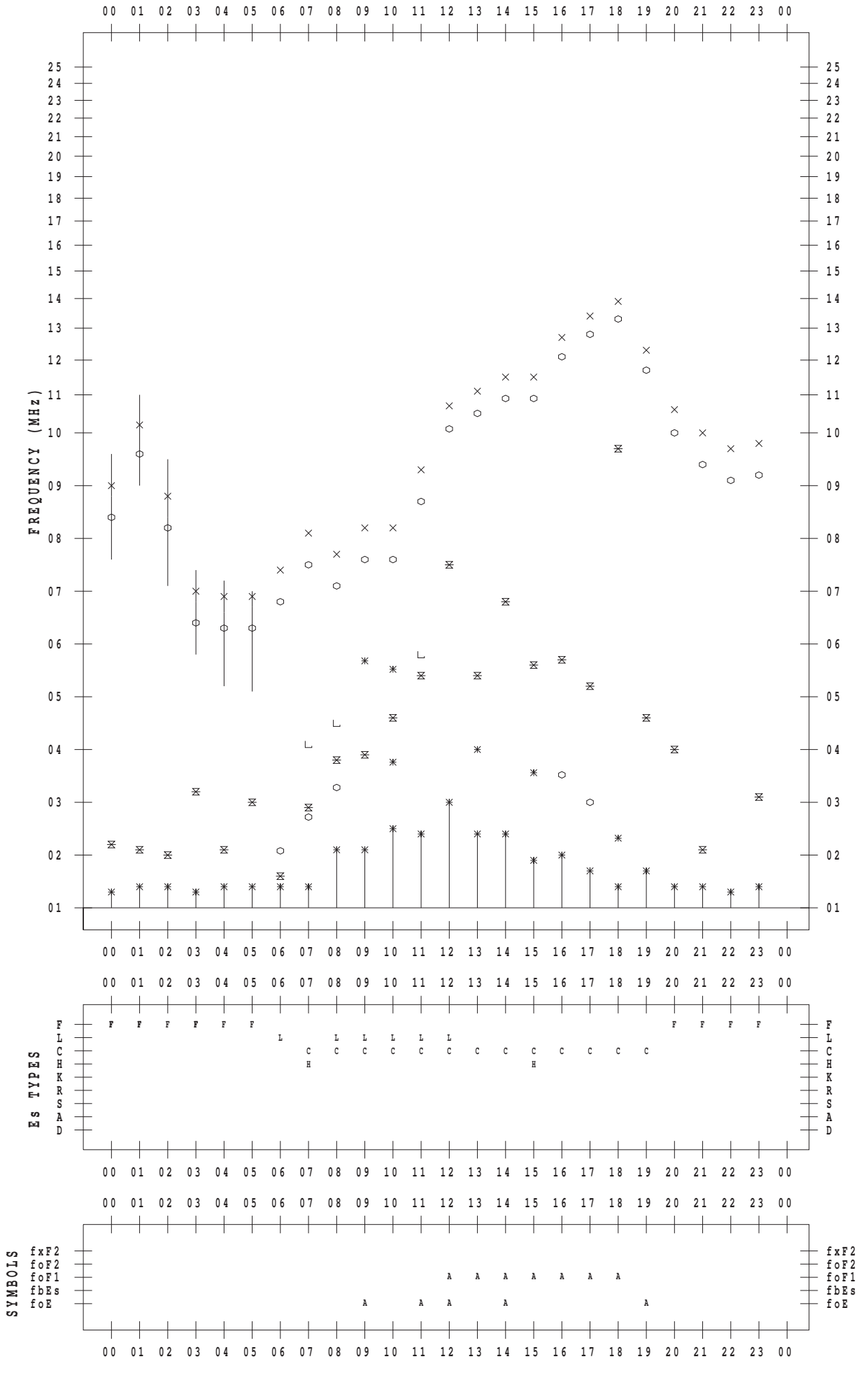
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/22

135 °E MEAN TIME



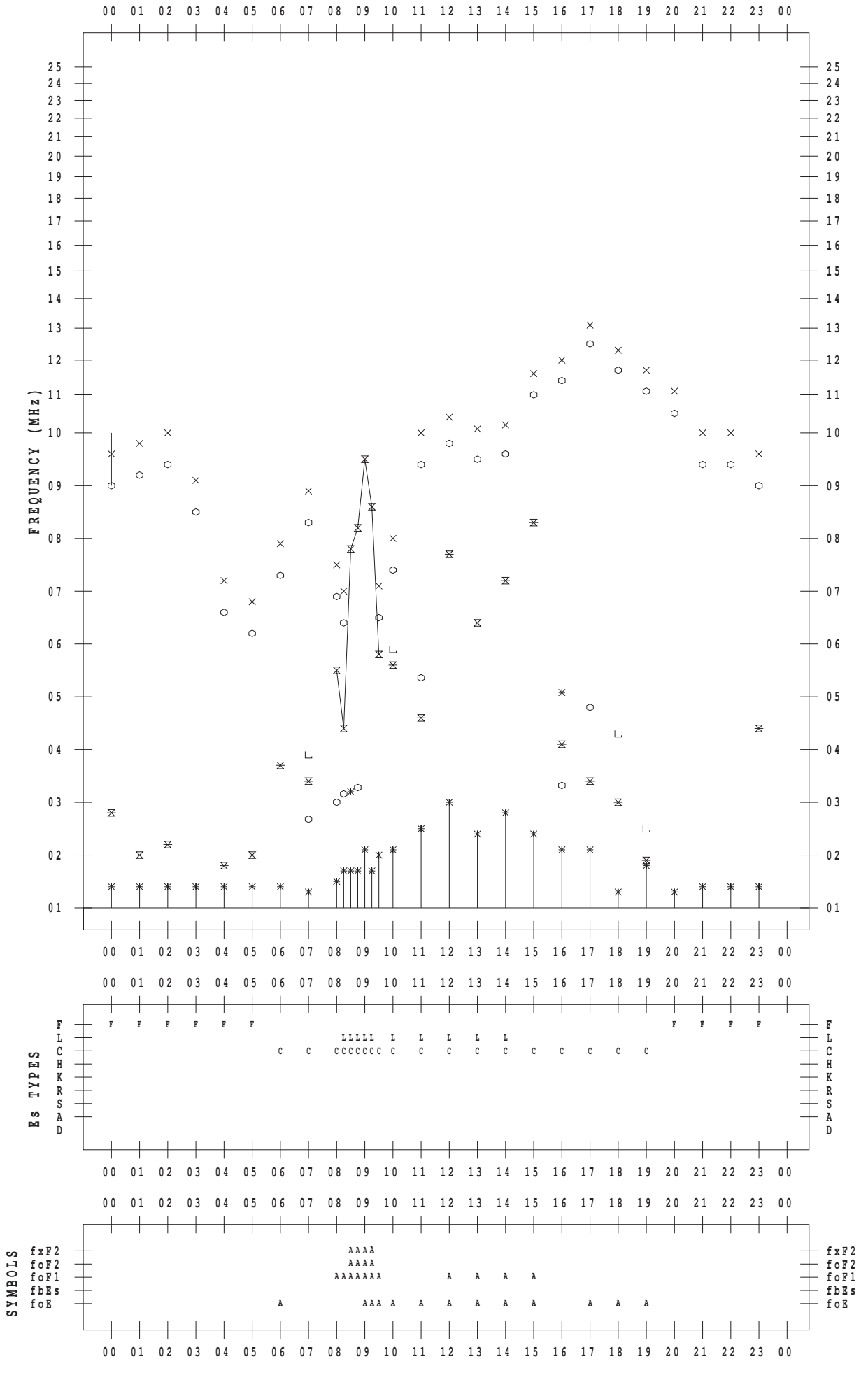
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/23

135 °E MEAN TIME



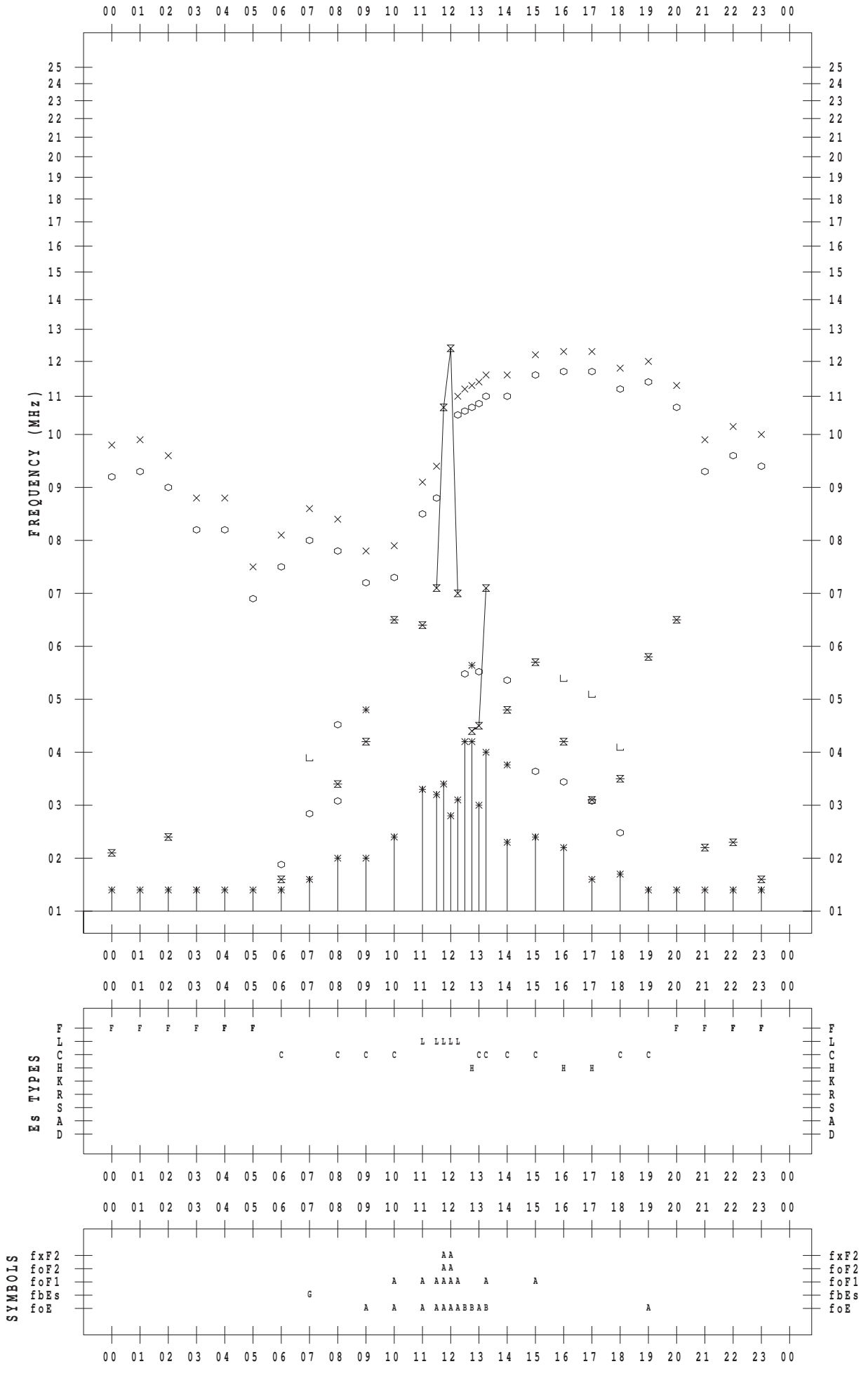
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/24

135 °E MEAN TIME



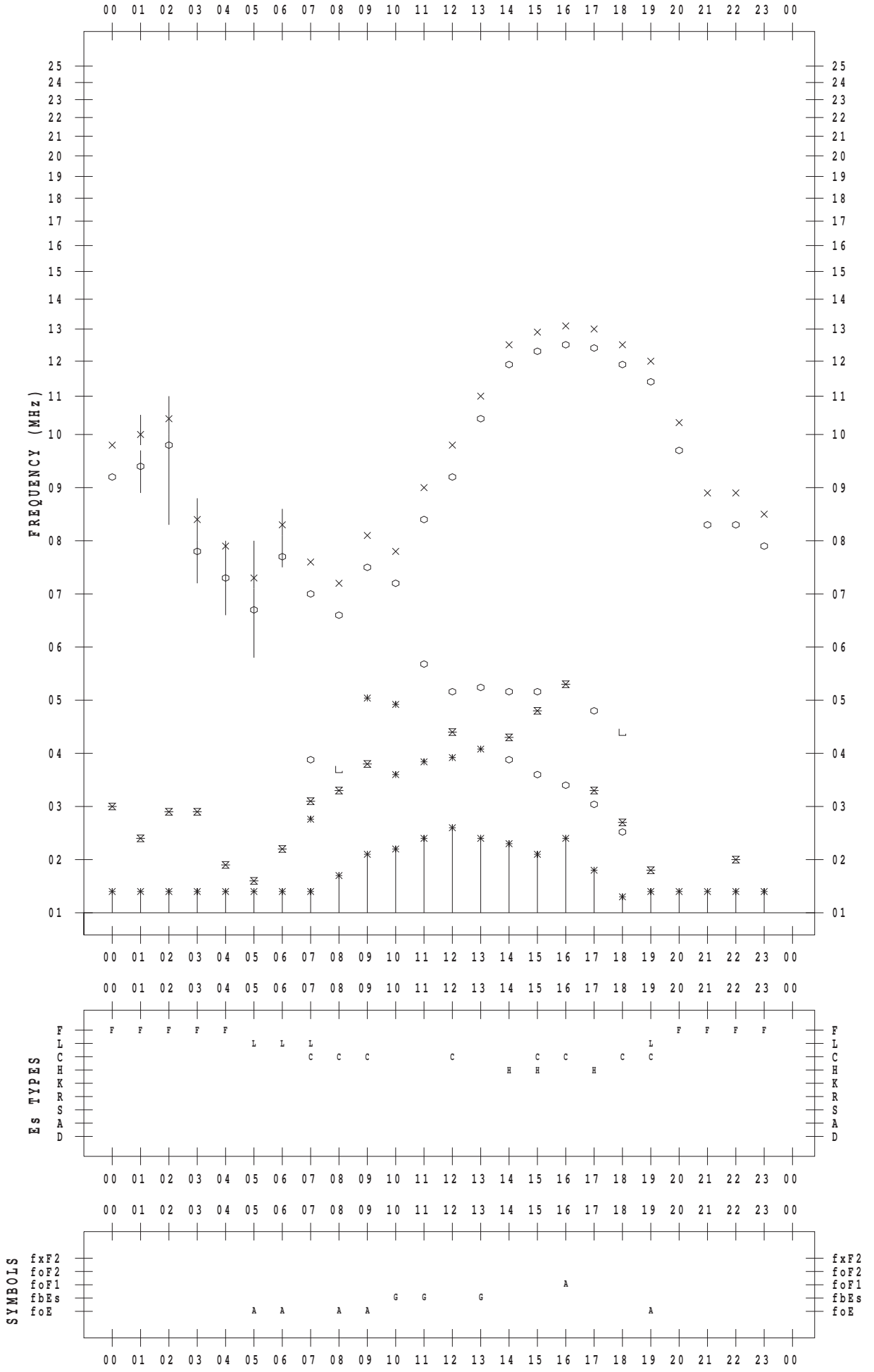
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/25

135 °E MEAN TIME



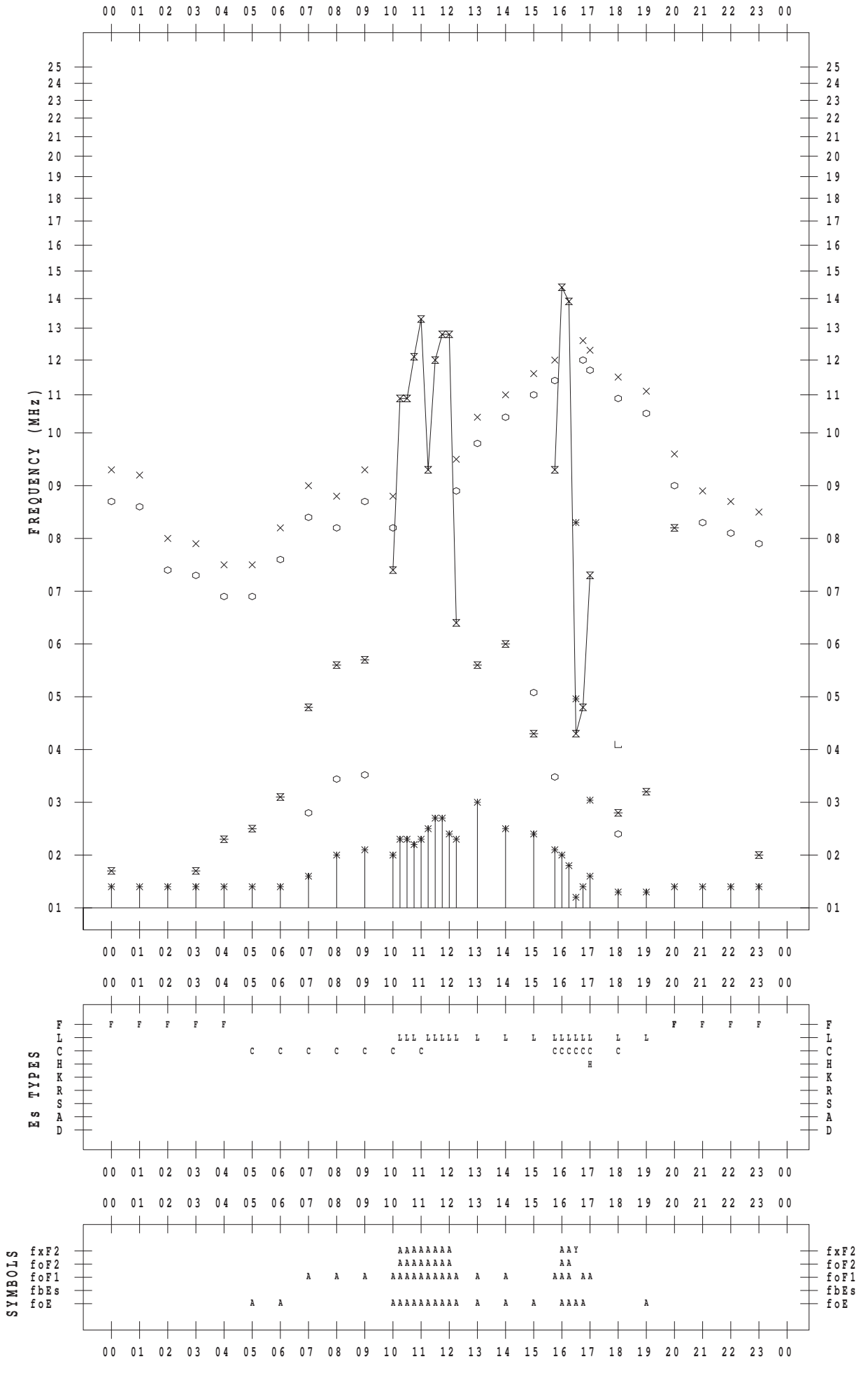
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/26

135 °E MEAN TIME



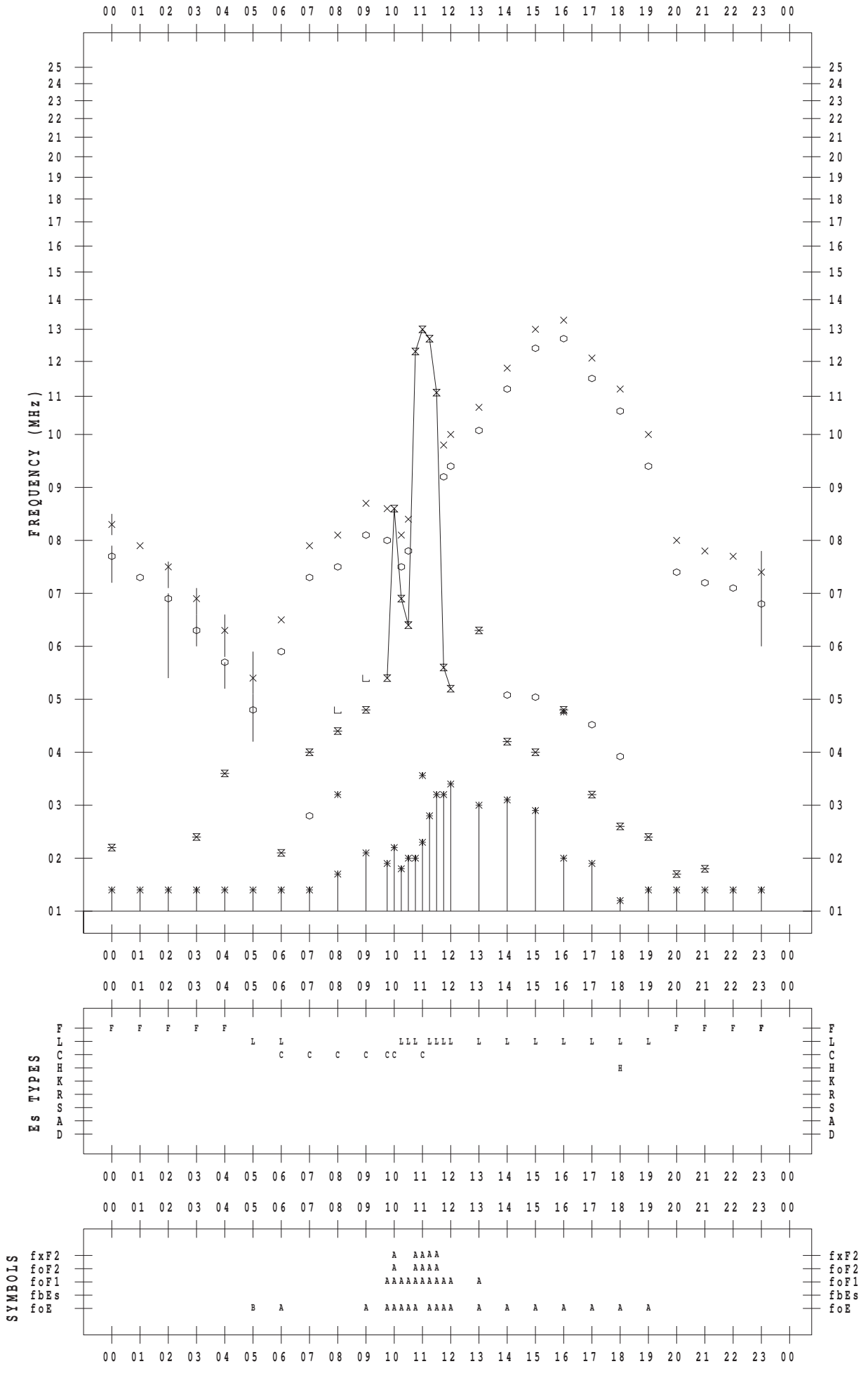
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/27

135 °E MEAN TIME



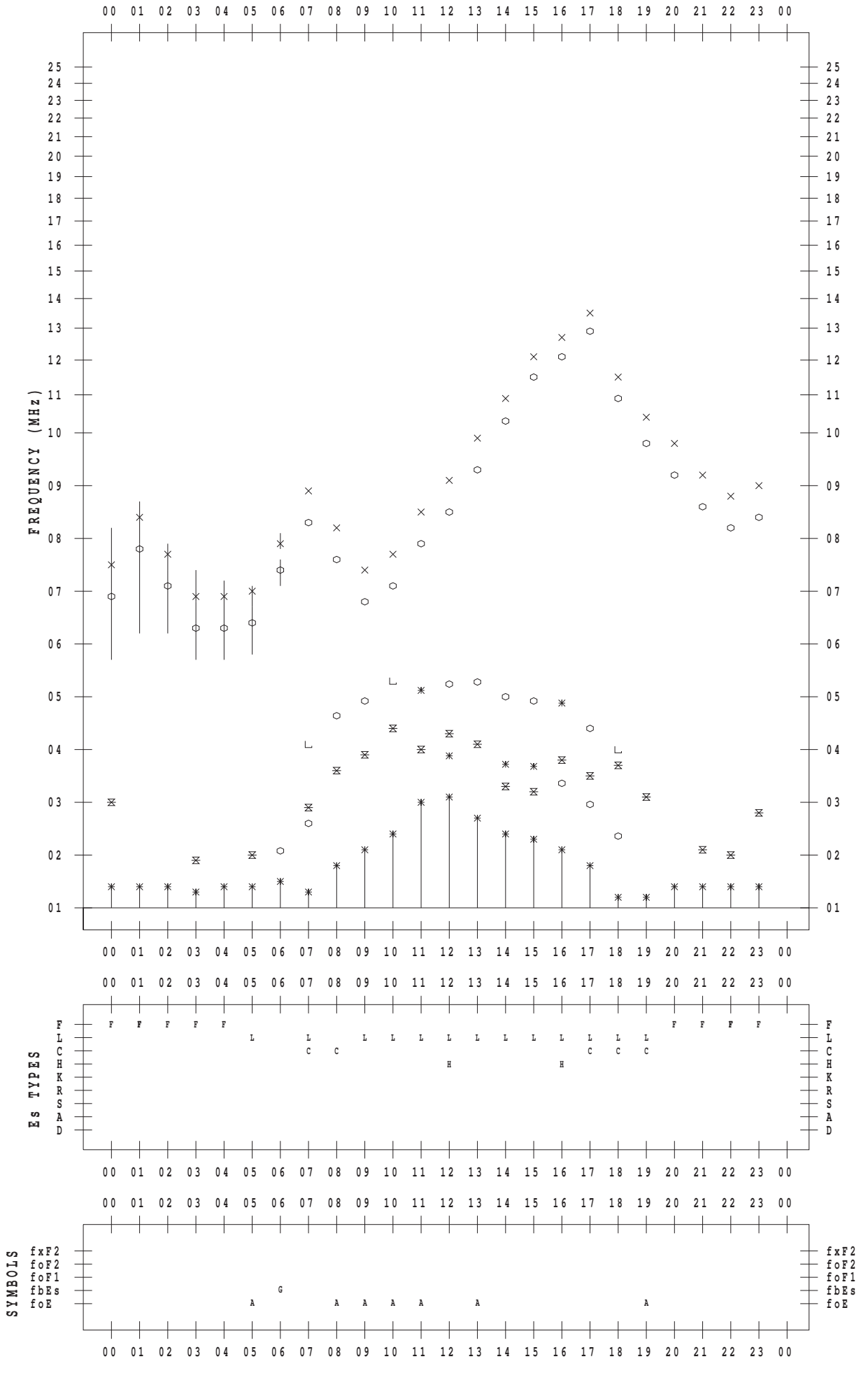
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/28

135 °E MEAN TIME



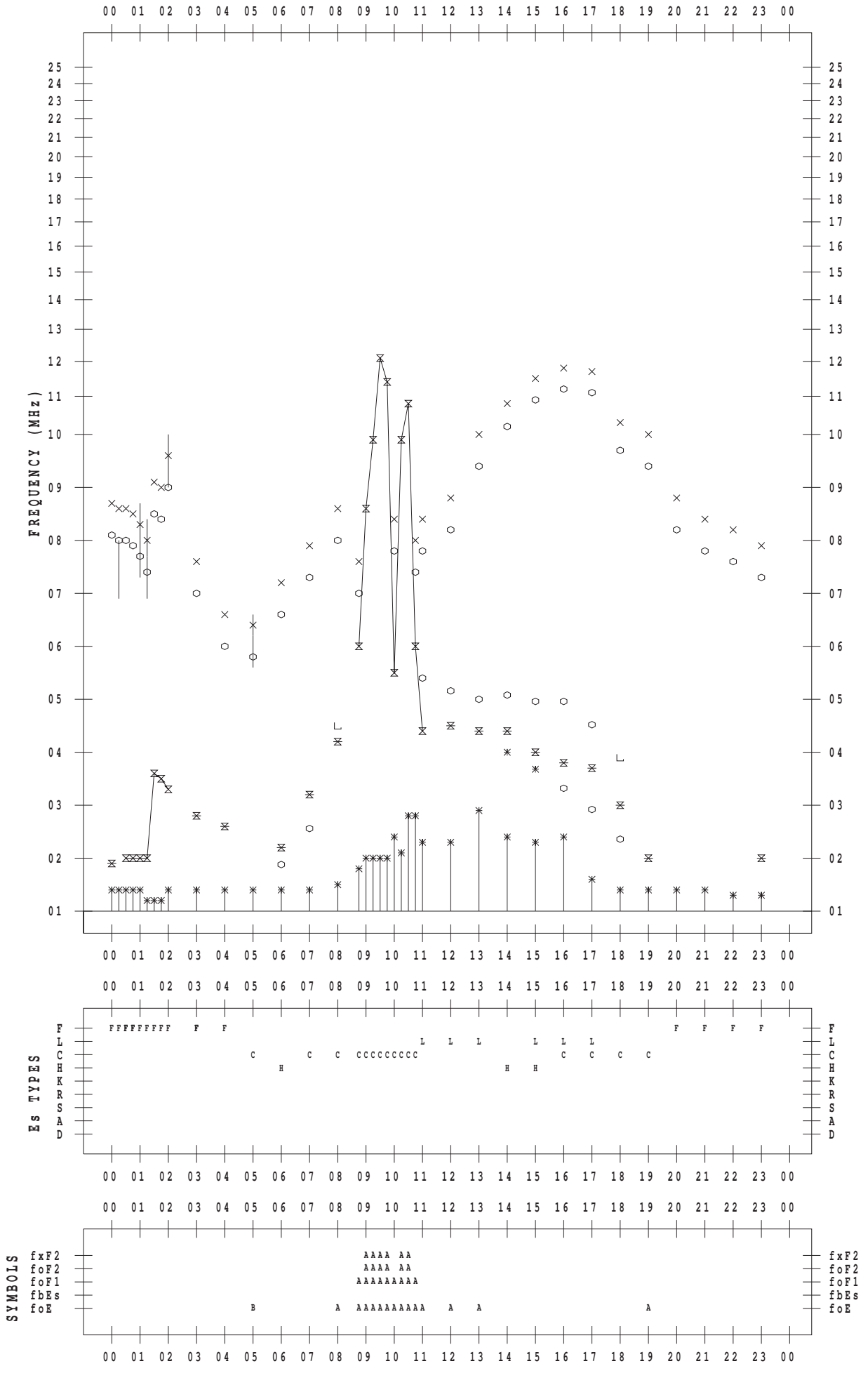
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/29

135 °E MEAN TIME



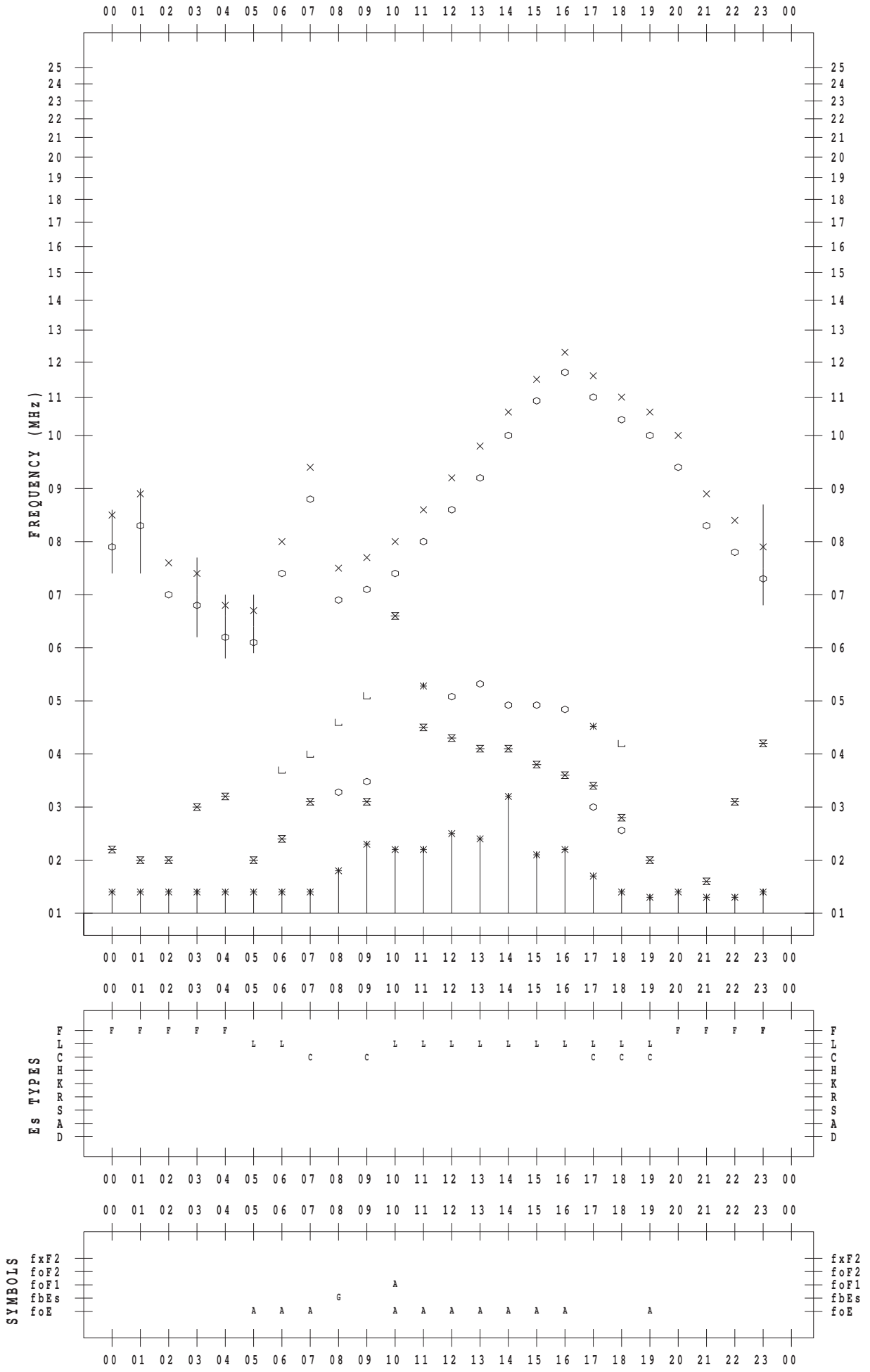
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/30

135 °E MEAN TIME



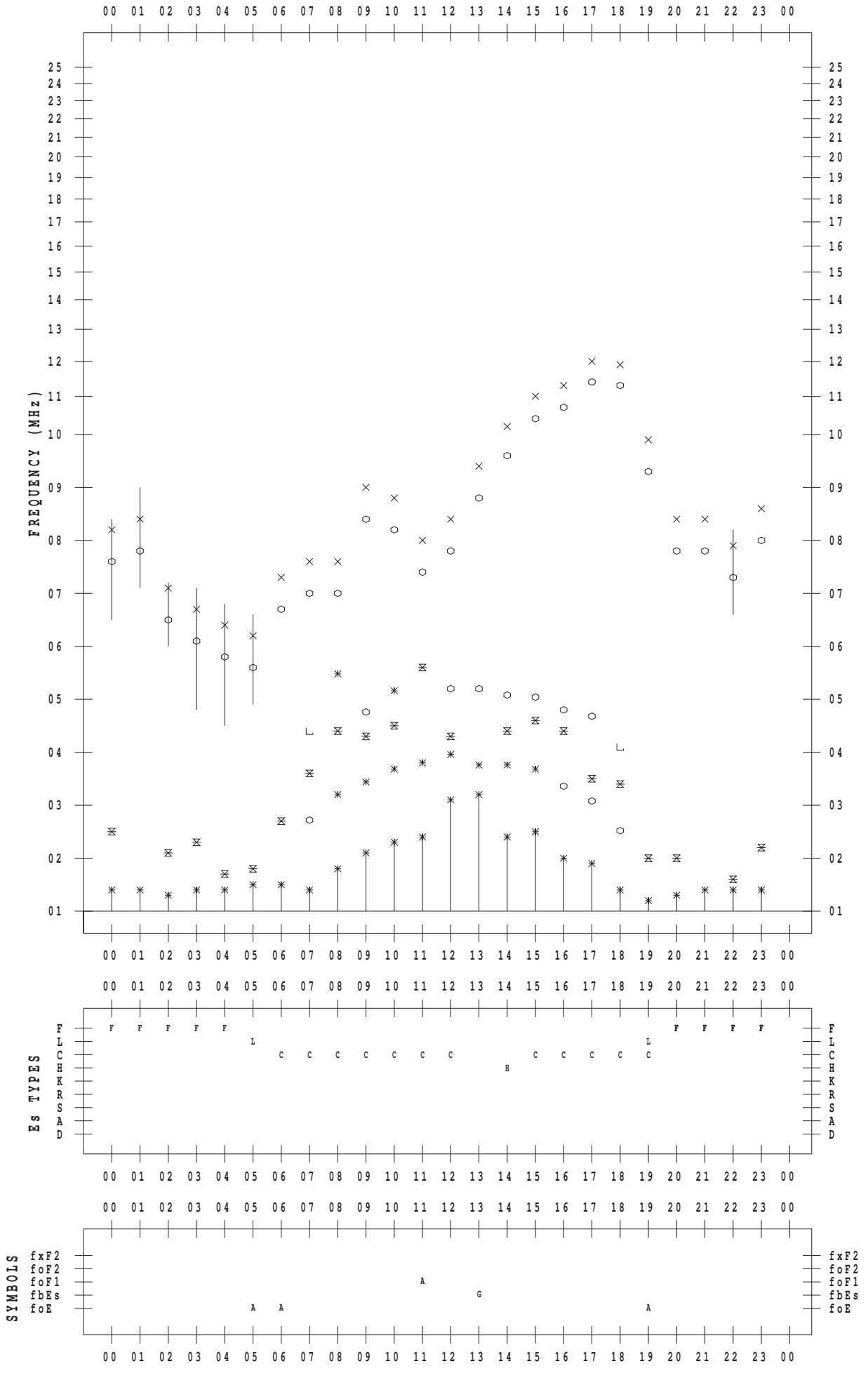
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 5/31

135 °E MEAN TIME



B. Solar Radio Emission

B1.Outstanding Occurrences at Hiraiso

Hiraiso May 2012

Single-frequency observations

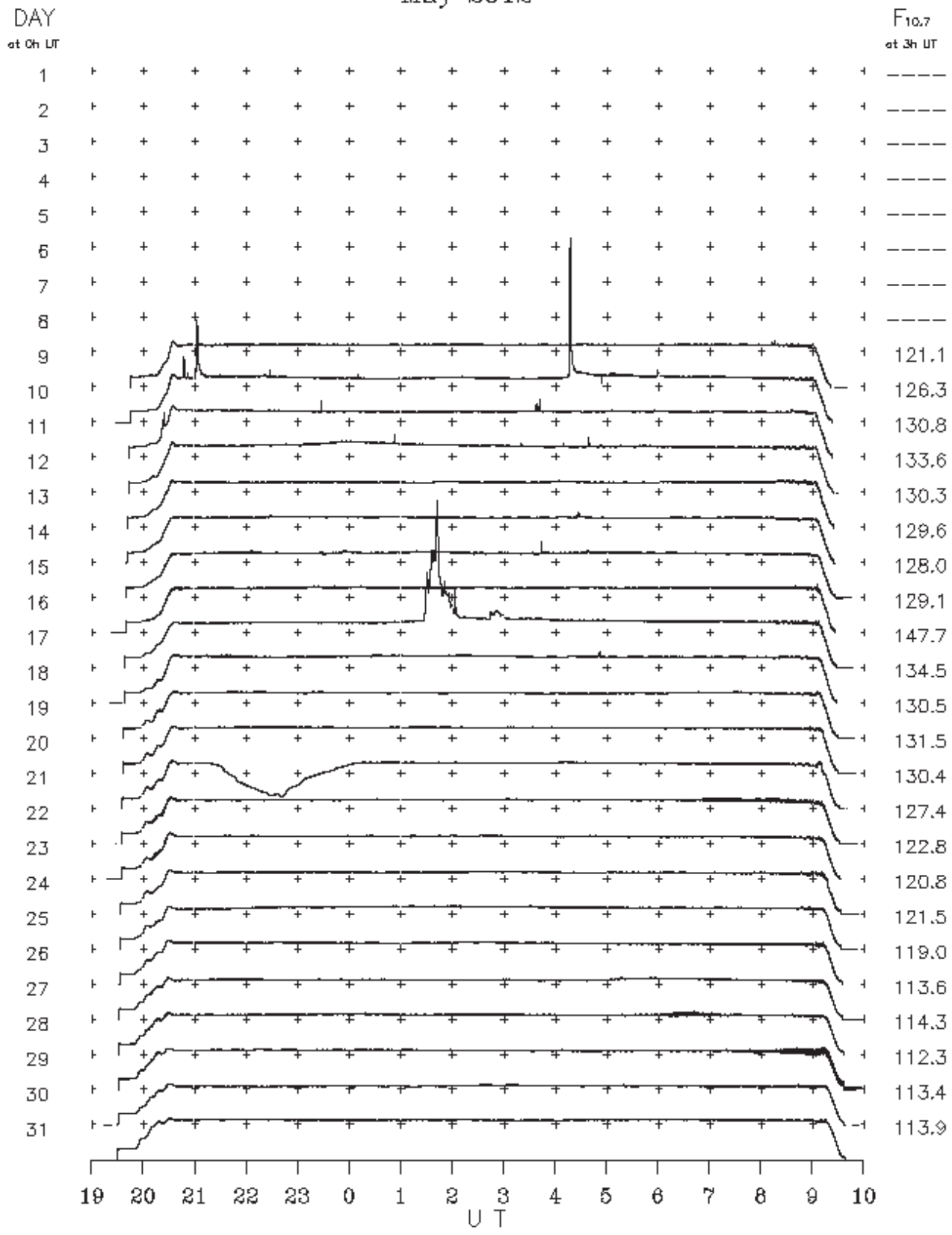
Normal observing period: 1925 - 0945 U.T. (sunrise to sunset)

MAY	FREQ.	TYPE	START TIME	TIME OF MAXIMUM	DUR.	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1})		POLARIZATION
2012	(MHz)		(U.T.)	(U.T.)	(MIN.)	PEAK	MEAN	REMARKS
9	2800	8 S	2047.0	2049.0	3.0	55	-	
9	2800	7 C	2102.0	2104.0	12.0	155	-	
9	2800	7 C	2153.0	2153.0	1.0	15	-	
10	2800	7 S	0414.0	0417.0	23.0	370	-	
10	2800	1 S	0558.0	0559.0	2.0	10	-	
10	2800	1 S	2328.0	2328.0	1.0	25	-	
11	2800	7 C	0336.0	0341.0	6.0	25	-	
12	2800	1 S	0052.0	0053.0	2.0	25	-	
12	2800	1 S	0438.0	0438.0	2.0	20	-	
12	2800	1 S	0320.0	0320.0	1.0	5	-	
14	2800	1 S	0425.0	0425.0	3.0	10	-	
15	2800	4 S/F	0343.0	0344.0	1.0	35	-	
17	2800	7 C	0127.0	0142.0	137.0	315	-	
18	2800	1 S	0450.0	0451.0	1.0	10	-	

B.Solar Radio Emission

B2. Summary Plots of $F_{10.7}$ at Hiraiso

May 2012



Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°
A link to the daily plot data directory : http://sunbase.nict.go.jp/solar/denpa/hirasDB/2012/05/