F-760

IONOSPHERIC DATA IN JAPAN

FOR APRIL 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

APR. 2012

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

HD \ 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	66	67	54	66	62
3	54	54	54	64	62	63	67	67	66	C	C	C	C	C	C	C	C	70	67	65	54	67	54	54
4	54	52	53	62	53	60	67	68	67	74	88	90	92			91	90	70	67	67	64	54	53	59
5	52	34	53	42	54	51	65	66	69	70	91	92	59			72	74	92	70	66	66	67	66	55
6	66	62	52	34	32	34	46	51	56	61	60	67	70	67	67	70	68	65	66	66	64	54	52	55
7	53	58	52	53	39	58	66	66	67	N	82	70	69	69	71	70	68	71	68	66	64	64	60	63
8	52	55	52	54	44	56	62	66	67	N	68	59	69	87	84	69	74	71	62	64	54	54	54	54
9	51	54	53	53	51	58	59	65	68	73	68	80	69	70	90	72	70	67	61	63	64	63	54	54
10	62	54	53	52	48	49	54	65	67	80	N	90	70	N	44	90	73	67	65	65	66	64	63	64
11	54	54	54	52	60	59	61	66	67	90	59	68	69	54	90	68	81	82	67	66	64	67	55	52
12	53	52	51	53	54	61	58	65	67	68	69	58	69	67	45	56	70	81	69	66	64	64	54	52
13	60	53	52	52	54	53	62	68	82	43	73	72	67	59	79		72	72	70	66	66	65	64	62
14	64	62	52	52	62	67	67	67	64	70	70	N	47	68	70	74	70	72	66	66	65	63	54	58
15	52	55	54	54	58	63	66	68	69	59	79	70	66	68	60		90	57	66	66	63	67	66	54
16	65	53	64	64	56	58	59	70	68	72	68	56	67	56	59	66	70	70	70	59	67	66	54	55
17	53	59	53	52	52	58	67	67	70	44	80	59	94	69	90	87	82	67	68	66	66	66	54	63
18	54	52		54	52	52	61	68	73	70	69	67	69	67	57	91	74	89	70	67	64	54	61	58
19	44	55	54	51	54	64	67	66	96		69	N	55		59	70	83	87	90	66	67	52	52	52
20	37	37	53	52	52	64	67	85	69			68	72	68	N	68	86	91	59	67	66	67	64	63
21	53	52	52	50	34		50	56				62	61	62	64	64	65	70	64	63	63	52	62	51
22	54	56	53	51	48	52	64	66	66	66	76	68	68	67	68	70	70	70	70	65	66	66	63	63
23	53	54	53	53	58	61	67	68	64	69	67	69	70	70	70	75	69	67	70	66	66	65	54	64
24	63	53	53	53	20	53	53	42		A	61	66	66	66	60	68	65	70	65	55	54	54	54	53
25	54	55	53	55	52	51	64	64	59	66	67	73	70	59	43	92	68	66	73	64	66	66	65	54
26	53	54	54	58	44	51	56	52		A	A				65	68	70	61	62	66	54	58	54	52
27	52	A	A	51	34	69	64	66	66	66	67	57	67	68	A		75	73	72	65	64	67	61	52
28	54	60	53	54	60	64	65	62	62	A	A	67	67	69	69	70	70	70	65	66	67	64	67	65
29	A	62	52	60	58	63	65	66	68	65	68	66	N		73	70	81	69	74	66	65	64	64	65
30	61	64	65	63	64	67	67	67	70	67		62	59	70	70	70	70	75	70	66	59	66	66	54
31																								
	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	27	26	28	28	27	28	28	25	19	21	24	25	21	23	24	27	28	28	29	29	29	29	29
MED	54	54	53	53	52	58	64	66	67	68	69	68	69	68	68	70	70	70	68	66	64	64	60	55
U Q	60	58	54	54	58	63	67	67	69	72	77	71	70	69	73	74	81	74	70	66	66	66	64	63
L Q	52	53	52	52	46	52	59	65	66	65	67	62	66	64	59	68	70	67	65	65	63	54	54	53

HOURLY VALUES OF fEs AT Wakkanai

APR. 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G	G	26	G
3	G	G	G	G	G	G	G	G	G	C	C	C	C	C	C	C	C	G	26	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	G	50	G			G	G	G	G	G	G	G	G	G
5	G	G	G	G	G	G	G	G	G	G	G	G	G			G	G	G	G	G	28	43	36	23
6	G	G	G	G	26	G	35	G	44	G	G	G	50	60	57	G	G	34	29	38	29	G	G	G
7	G	G	G	G	G	G	31	38	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
8	29	G	G	24	G	G	32	G	G	G	G	G	G	G	G	G	36	G	33	G	G	G	G	G
9	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
10	G	G	G	G	G	G	40	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
11	G	G	G	G	G	G	33	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
12	G	G	G	G	G	G	32	G	G	G	G	G	G	G	G	G	G	32	30	G	G	G	G	G
13	G	G	G	G	G	G	33	G	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G
14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
15	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G
16	G	G	G	G	G	G	35	G	G	G	G	G	G	G	G	G	G	32	G	G	G	G	G	G
17	G	G	G	G	G	G	45	G	G	G	G	G	G	G	G	G	G	33	28	25	G	G	G	G
18	G	G		G	G	G	G	G	G	G	G	G	49	G	48	G	40	G	30	G	28	30	26	32
19	23	G	G	G	G	G	G	G	G		G	G	44		G	56	49	39	35	34	G	G	G	G
20	G	G	G	G	G	G	G	G	39			G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	30	28	24	G	G	G
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	33	G	G	G	G	G
23	G	G	G	G	G	G	G	G	43	50	43	G	G	G	G	40	G	34	G	29	26	G	G	G
24	G	24	G	G	G	G	32	G	G	51	G	G	G	G	G	G	G	32	G	G	G	39	28	32
25	G	G	G	26	G	32	32	G	G	G	G	G	49	46	G	G	G	G	28	27	G	G	G	G
26	G	G	G	G	G	G	G	G	G	63	56	G	G	G	G	G	50	45	50	49	44	38	28	G
27	26	44	33	32	G	G	G	G	G	47	54	53	G	58	70		59	56	52	50	44	56	38	39
28	26	G	31	41	G	G	33	G	G	60	71	49	43	48	53	51	G	44	45	53	44	38	29	44
29	39	G	G	G	G	G	G	G	G	50	G	G	G		G	G	G	G	32	50	G	G	G	34
30	31	G	G	G	G	G	G	G	G	G		G	G	G	G	G	38	G	G	G	G	G	G	G
31																								
	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	28	28	27	28	28	27	28	28	28	25	25	27	27	23	25	24	27	28	28	29	29	29	29	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	14	G	G	G	G	G
U Q	G	G	G	G	G	G	32	G	G	24	G	G	G	G	G	G	G	33	31	28	25	G	13	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

APR. 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	14	15	14	15	14
3	14	14	14	15	15	15	15	14	14	C	C	C	C	C	C	C	C	15	14	15	15	15	15	14
4	15	15	15	14	15	14	14	14	14	14	15	15	15			14	14	14	18	14	14	14	14	15
5	15	14	15	14	14	14	14	14	14	14	15	15	16			14	14	14	16	14	14	14	14	14
6	15	15	15	15	15	15	15	14	14	17	18	20	18	18	16	16	15	14	14	14	14	14	14	14
7	14	15	15	15	15	15	14	14	14	16	15	17	20	21	18	15	14	14	16	14	15	15	15	14
8	14	15	15	14	14	15	14	14	15	15	16	20	20	20	15	15	14	14	14	15	15	14	15	15
9	15	14	15	15	14	15	14	14	14	14	15	16	20	17	15	14	14	14	17	14	15	15	14	15
10	15	15	14	14	15	16	14	14	15	15	15	15	20	18	22	15	14	15	17	15	14	14	14	14
11	15	14	15	15	15	16	14	14	14	14	15	17	21	21	14	14	14	14	17	15	14	14	14	15
12	14	14	15	14	15	16	14	14	14	14	16	18	17	18	15	15	14	14	14	15	15	14	14	15
13	14	15	15	14	15	15	15	14	14	14	15	16	17	15	17		14	14	17	14	14	15	14	15
14	15	15	15	14	14	15	15	14	14	14	17	17	18	14	18	15	14	14	17	14	15	14	15	14
15	15	15	14	14	15	15	14	14	14	16	14	22	20	20	18		14	14	17	14	14	14	15	14
16	15	14	14	15	15	16	14	14	15	15	17	15	18	18	20	16	14	14	17	15	14	15	15	14
17	15	15	14	16	16	17	14	14	15	20	17	18	17	20	17	14	14	14	15	15	15	15	15	15
18	14	15		14	14	16	14	15	15	17	21	22	20	20	16	16	15	15	14	14	15	14	16	14
19	14	14	14	14	14	17	14	14	14		18	16	21		16	18	14	14	14	14	15	14	15	15
20	15	15	15	14	14	17	15	14	14			22	18	18	18	15	14	14	17	14	14	14	15	14
21	15	14	14	14	15		14	14	15	20	24	18	26	45	15	14	14	14	14	15	15	14	14	14
22	15	15	14	14	14	17	14	14	17	20	17	17	32	27	21	15	15	14	14	15	15	14	15	15
23	14	14	14	14	16	17	14	14	17	22	18	22	20	26	22	18	15	14	14	14	14	15	15	15
24	16	15	15	15	15	16	14	14	14	18	21	18	22	23	18	14	14	14	14	14	14	14	14	14
25	14	14	14	14	15	14	14	14	14	16	15	26	18	18	18	15	14	14	14	14	14	14	14	14
26	14	14	14	15	15	20	14	14	16	20	21	22	17	15	14	16	14	14	14	15	15	15	14	15
27	16	14	14	14	15	14	14	15	15	15	17	21	20	16	16		14	14	15	15	14	14	15	14
28	16	15	14	14	14	14	15	16	15	33	18	21	18	20	17	18	15	15	15	14	15	14	15	14
29	14	15	14	15	14	20	15	16	15	17	20	17	18		16	17	14	14	16	15	14	15	14	14
30	15	15	15	15	15	17	15	14	15	18		18	18	18	15	15	14	15	18	15	15	14	14	15
31																								
	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	28	28	27	28	28	27	28	28	28	25	25	27	27	23	25	24	27	28	28	29	29	29	29	29
MED	15	15	14	14	15	16	14	14	14	16	17	18	18	18	17	15	14	14	15	14	15	14	15	14
U Q	15	15	15	15	15	17	15	14	15	19	18	21	20	21	18	16	14	14	17	15	15	15	15	15
L Q	14	14	14	14	14	15	14	14	14	14	15	16	18	18	15	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

APR. 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	46	53	52	53	43	43	63	76	87	84	87	100	107	100	96	97	105	104	102	80	54	55	54	53
2	53	45	52	54	47	53	77	81	82	94	99	120	120	117	108	100	97	101	97	87	64	53	54	44
3	49	53	52	54	44	44	64	77	80	81	104	110	114	110	102	101	88	90	91	88	74	54	53	52
4	52	N	54	62	39	32	66	74	75	86	102	122	131	124	117	116	106	106	98	81	55	52	52	53
5	52	52		53	38	39	54	80	86	86	92	110	116	117	116	115	106	102	102	106	78	73	77	67
6	67	66	52	58	54	64	64	76	88	105	117	111	104	96	87	86	84	88	86	83	42	53	55	52
7	A	58	A	45	A	44	71	88	101	84	78	80	91	100	106	96	82	87	97	98	67	54	54	62
8	53	67	67	43		N	67	80	88	92	93	96	102	106	100	101	92	86	76	52	54	53	46	53
9	53	53	52	51	39	39	63	77	84	87	83	94	98	96	92	98	97	88	82	74	66	54	54	54
10	52	48	54	52	30	34	54	64	76	82	97	101	112	116	113	112	102	91	83	80	67	67	54	54
11	62	52	54	62	52	48	62	62	88	97	91	101	111	120	121	116	110	100	94	83	67	54	54	54
12	52	53	53	61	53	53	64	69	77	78	86	96	102	100	106	100	96	97	99	104	73	47	52	54
13	52	44	52	47		45	64	88	105	77	80	101	107	100	102	106	101	92	98	91	86	55	54	54
14	54	65	54	54	62	67	87	81	74	78	94	98	96	101	94	96	98	97	100	87	46		51	52
15	52	45	45	N	45	51	74	64	73	85	87	92	104	107	116	114	111	96	84	74	54	60	52	53
16	52	52	67	67	36	43	64	78	81	90	95	94	100	107	105	101	106	106	100	86	75	54	54	54
17	52	54	52	52	51	59	76	73	81	78	88	97	104	114	117	109	102	101	100	88	87	78	53	44
18		37		44	37	44	84	78	98	75	72	94	115	117	121	120	114	117	124	114	79	53	53	
19	51	52	52	54	51	59	71	84	85	87	86	97	101	98	98	105	111	121	121	110	64	A	51	53
20	54	53	52	45	53	53	80	86	87	86	86	97	108	N	113	107	105	103	110	108	78		A	67
21	53	54	54	54	47	44		64		61	65	75	77	85	84	87	86	84	88	84	76	55	54	54
22	53	53	53	52	46	52	64	74	88	93	91	90	95	106	102	104	101	110	110	88	78	54	63	67
23	67	67	54	52	53	64	92	81	77	78	80	83	95	107	108	102	100	95	107	101	77	67	55	54
24	52	53	53	55	52	53	77	73	74	80	80	96	107	100	104	96	91	84	72	63	54	64	53	55
25	52	54	52	55	52	63	75	88	96	90	92	96	101	98	97	95	91	88	88	90	88	62	54	54
26	67	54	54	55	53	59	63	58	64	67	72	76	74	87	92	112	102	87	76	72	62	55	54	55
27	54	63	53	53	53	51	80	84	88	91	100	100	114	121	111	108	107	102	102	91	75	55	67	75
28	75	73	55	67	64	66	77	84	79	76	80	98	112	115	115	107	101	91	83	80	48	74	67	64
29	A	67	54	63	62	72	80	80	80	76	A	83	91	108	116	102	101	102	101	85	72	54	66	57
30	A	55	54	64	55	59	76	86	93	86	90	91	95	102	95	104	101	93	90	107	88	72	54	64
31																								
	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	29	27	29	27	29	29	30	29	30	29	30	30	29	30	30	30	30	30	30	30	27	29	29
MED	52	53	53	54	51	52	71	78	84	84	88	96	104	106	106	103	101	96	98	87	70	55	54	54
U Q	54	60	54	59	53	59	77	84	88	90	94	101	112	115	115	109	106	102	102	98	78	64	54	59
L Q	52	52	52	52	43	44	64	73	77	78	80	92	96	100	97	98	96	88	86	80	55	54	53	53

HOURLY VALUES OF fEs AT Kokubunji

APR. 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	G	G	G	G	G	G	G	G	G	G	G	48	93	45	36	26	27	G
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	27	G	G	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	35	38	26	G	G	G
4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32	27	G	G	G	G
5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	46	34	43	30	27	29	25	G
6	28	G	G	34	29	27	G	G	G	G	G	G	G	G	G	G	G	G	45	50	G	37	46	29
7	29	29	71	50	37	G	G	54	54	G	53	G	G	G	G	G	G	G	G	30	29	G	36	G
8	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	28	26	G	G	G
9	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	29	29	25	G	G	G
10	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	28	24	G
11	G	G	G	G	G	G	G	G	G	50	G	G	G	G	G	G	G	G	34	38	G	G	G	G
12	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	43	G	34	29	25	G	G	G	G
13	G	G	G	G		G	30	G	G	G	G	G	G	G	G	G	G	G	G	50	34	26	G	G
14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31	G	39		G	G
15	G	G	G	G	G	G	G	G	G	G	G	45	72	G	G	G	G	G	G	G	G	G	G	G
16	G	G	G	G	G	G	G	G	45	G	G	G	G	G	G	G	G	G	29	G	G	G	G	G
17	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	24	29	27	G	G
18		G	G	G	G	G	G	G	G	G	G	G	G	G	45	G	55	34	G	G	G	G	G	
19	34	G	G	29	G	G	G	G	G	53	53	G	58	G	48	50	54	75	43	33	52	60	40	G
20	26	24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	39	G	G	G	69		51	G
21	G	G	G	G	G	G		G		G	62	G	G	G	48	44	G	G	27	32	26	41	40	G
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	G	G	G	G	27
23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	59	34	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	50	G	G	G	G	G	G	G	G	53	33	31	29	G
27	39	33	29	G	G	G	G	G	53	G	71	50	G	50	57	58	62	53	52	80	48	39	28	56
28	28	G	G	G	G	G	G	G	55	48	74	67	61	64	77	80	G	G	45	42	G	32	G	29
29	86	29	G	G	34	G	G	G	54	71	81	54	60	G	G	49	50	56	G	29	34	G	G	G
30	33	33	G	G	23	G	G	G	G	61	G	G	G	50	G	G	61	61	84	53	40	G	G	G
31																								
	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	30	30	30	28	30	29	30	29	30	30	30	30	30	30	30	30	30	30	30	30	28	30	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	29	29	26	G	G	G
U Q	27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	43	38	34	28	27	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Kokubunji

APR. 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	17	13	17	14	14	24	14	34	42	44	43	46	45	48	37	13	13	14	14	14	20	13	15
2	14	15	17	20	13	15	22	13	18	42	44	45	42	47	44	39	36	13	14	14	17	17	14	14
3	21	28	14	14	15	20	24	34	36	42	42	44	40	45	45	42	20	26	15	13	14	14	14	14
4	13	22	14	18	13	14	26	17	36	40	49	45	45	49	43	42	37	15	13	14	14	20	17	15
5	15	14	17	15	13	14	22	17	22	40	49	50	45	46	43	42	18	13	13	14	14	13	14	14
6	14	14	22	13	15	13	18	15	44	45	39	44	43	43	43	38	39	18	13	14	14	13	13	15
7	14	14	14	14	15	18	14	14	33	40	35	45	47	44	44	17	17	13	18	13	13	20	17	14
8	14	14	14	14		18	15	15	39	40	44	43	48	50	42	21	34	31	18	13	15	15	18	18
9	14	14	13	13	13	14	15	14	17	43	47	45	44	44	42	41	14	14	14	14	14	14	18	21
10	14	14	17	14	14	14	17	14	21	38	44	44	53	48	44	42	35	18	21	14	14	13	15	14
11	14	18	14	14	20	14	17	15	39	39	43	54	50	49	21	42	33	35	13	14	14	14	17	14
12	14	14	13	14	13	14	18	13	39	22	45	44	47	51	44	30	40	13	13	14	13	14	17	15
13	15	15	14	20		29	14	18	20	42	45	47	45	54	41	38	40	30	18	13	13	13	14	15
14	17	13	14	13	14	14	30	15	21	43	43	45	39	48	55	37	14	18	15	15	15		18	13
15	14	14	14	14	13	14	24	14	18	44	41	52	39	45	44	43	34	33	13	14	18	14	14	14
16	15	15	15	13	17	14	13	13	17	34	50	44	47	45	45	44	21	18	18	21	14	15	14	14
17	14	18	17	14	13	14	25	14	40	43	44	53	42	47	45	44	39	13	13	20	13	15	14	17
18		15	14	15	13	15	25	17	39	40	48	52	54	52	33	39	29	20	20	14	14	14	13	
19	14	14	13	14	13	18	14	17	38	38	39	53	39	54	40	40	22	15	13	13	13	13	13	14
20	18	15	14	13	13	15	21	13	21	43	44	43	49	47	45	39	18	15	18	14	17		13	15
21	15	14	13	14	15	14		39		45	35	50	55	53	40	30	39	37	13	13	13	14	14	14
22	14	13	15	15	14	17	22	35	42	49	49	46	55	53	54	43	40	15	13	13	14	14	14	14
23	14	15	39	14	43	15	20	37	40	43	46	56	53	52	53	43	20	38	23	14	14	14	15	21
24	14	14	20	14	22	17	18	39	50	53	44	52	54	46	50	42	40	14	23	14	14	15	33	18
25	13	14	13	17	14	18	13	38	42	53	56	43	40	51	44	21	20	13	14	13	14	14	14	13
26	24	14	15	21	14	15	14	18	40	47	39	43	55	47	52	42	15	36	14	14	14	14	14	14
27	14	13	14	18	14	18	14	37	34	52	39	39	57	39	36	38	33	30	15	14	17	14	14	14
28	14	17	15	13	18	18	18	36	34	39	40	40	38	38	35	34	43	34	15	17	23	15	37	14
29	14	14	15	13	13	15	25	40	33	36	38	43	35	47	46	39	34	13	21	14	13	15	18	15
30	18	13	14	30	14	17	29	15	42	34	47	34	48	38	44	42	31	18	13	14	15	14	14	15
31																								
	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	30	30	30	28	30	29	30	29	30	30	30	30	30	30	30	30	30	30	30	30	28	30	29
MED	14	14	14	14	14	15	18	16	36	42	44	45	46	47	44	40	33	18	14	14	14	14	14	14
U Q	15	15	15	17	15	18	24	35	40	44	47	50	53	51	45	42	39	30	18	14	15	15	17	15
L Q	14	14	14	14	13	14	14	14	21	39	40	43	42	45	42	37	20	13	13	13	14	14	14	14

HOURLY VALUES OF foF2 AT Yamagawa

APR. 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	52	42	51	54	51	37	45	67	77	80	75	76	76	69	88	98	100	79	A	88	54	53	54	64
2	53	54	52	52	53	44	53	69	74	77	77	69	89	88	100	68	95	92	49	53	67	52	44	52
3	51	52	51	67	44	40	47	63	64	75	77	77	69	79	69	N	93	94	92	66	73	52	53	53
4	53	52	53	54	N	B	40	64	78	77	N	78	69	78	69	69	N	82	79	58	49	53	54	54
5	53	52	51	64	51	36	44	67	76	76	77	78	N	69		69	89	88	49	77	49	65	53	66
6	67	49	52	55	52	53	54	74	81	79	N	N	69	69	94	69	N	84	82	N	50	50	48	45
7	44	52	N	47	53	51	50	87	48	69	68	72		69	69	N	88	86	78	39	54	54	51	53
8	48	52	32	48	34	34	48	68	78	77	77	77	69	69	69	69	94	87	75	N	54	42	53	53
9	53	47	52	54	41	34	48	73	80	72	75	94	78	69	88	62	97	81	92	78	59	54	52	53
10	43	52	51	55	29	29	46	69	65	77	78	78	69	69	N	69	60	88	86	75	A	52	53	52
11	54	42	45	53	48	46	52	68	72	74	72	79	69	52	62	128	99	92	79	76	46	54	52	54
12	53	52	53	64	54	47	53	68	65	68	73	60	94	93	69	92	N	90	49	N	73	48	47	48
13	47	52	53	53	40	37	47	86	72	70	74	76	87	92	73	N	N	59	78	56	52	53	72	53
14	52	53	52	53	61	53	67	69	69	74	86	69	N	65		89	58	N	115	74	52	46		52
15	52	52	54	54	43	34	50	63	74	75	76	84		79	90	A	75	94	88	54	67	53	54	53
16	52	49	52	67	45	59	51	66	78	84	65	84	93	110		89	72	79	40	80	N	55	52	54
17	53	67	52	49	52	52	67	73	67	77	80	69	69	79	69	69	N	95	78	72	53	48	52	53
18	47	53	53	53	38	36	54	83	82	75	70	77	69	69	62	69	97	N	38	N	54	52	54	53
19	52	50	54	58	54	42	52	72	83	72	75	60	69	B	82	83	69	69	79	N	49	36	54	47
20	A	67	44	53	53	52	63	87	81	77	76	69	N	69	89	N	N	91	50	39	67	67	54	67
21	53	52	52	66	52	51	64	86	69	74	76	73	69	69	69	69	78	80	87	77	54	53	A	54
22	39	54	A	A	55	49	60	65	61	88	N	71	69	69	69	79	90	N	N	47	74	67	54	67
23	N	52	52	57	54	54	73	66	74	84	72	67	61	69	69	96	89	90	85	38	54	67	54	54
24	54	52	53	55	54	44	54	60	89	74	71	86	N	N	86	79	100	87	79	67	63	54	A	53
25	53	52	52	55	46	50	52	88	72	66	74	72	A	68	N	N	62	86	90	54	68	54	54	54
26	52	54	53	52	52	51	65	70	78	73	89	74	79	69	83	64	97	77	96	78	67	A	53	72
27	54	54	52	54	60	52	54	67	81	76	79	84	69	69	69	69	59	110	92	54	67	67	54	54
28	67	66	64	65	60	51	65	70	80	72	72	A	69	A	54	79	70	N	109	N	N	64	63	63
29	52	52	53	A	67	61	77	86	70	71	70	78	79	89	69	98	89	111	89	A	N	52	74	N
30	46	49	50	67	48	57	74	84	78	76	69	74	59	69	70	90	N	87	92	46	67	66	52	A
31																								
	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	28	30	28	28	29	29	30	30	30	30	27	28	23	27	25	24	23	26	28	23	26	29	27	28
MED	52	52	52	54	52	49	53	69	75	75	75	76	69	69	69	74	89	87	80	66	54	53	53	53
U Q	53	53	53	61	54	52	64	83	80	77	77	78	79	79	87	89	97	92	91	77	67	59	54	54
L Q	49	52	51	53	44	37	48	67	69	72	72	70	69	69	69	69	70	81	76	53	52	52	52	53

HOURLY VALUES OF fEs AT Yamagawa

APR. 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	32	41	48	49	G	G	G	G	50	40	35	61	32	40	G	G	G
2	G	33	37	36	34	G	24	G	G	50	G	G	G	G	47	G	G	G	37	26	32	49	28	G
3	G	G	G	G	G	G	G	G	G	G	49	G	61	G	G	G	G	G	34	50	29	31	G	G
4	G	G	G	G	G	B	G	G	42	G	G	G	G	G	G	G	G	G	31	G	G	G	G	G
5	G	G	G	G	G	G	G	35	G	45	52	G	G	G	G	43	46	G	37	58	36	60	38	G
6	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	50	47	G	G	40	24	G	G	G
7	G	G	G	26	G	G	G	G	G	44	48	46	G	G	47	43	G	G	G	28	27	28	35	34
8	G	G	G	48	G	G	G	G	G	G	49	G	G	G	G	G	G	G	G	G	27	59	30	G
9	G	G	G	G	11	G	26	36	40	46	G	G	G	47	45	G	G	G	33	G	34	26	24	G
10	G	G	G	G	G	G	G	34	G	G	G	44	G	G	G	G	G	G	G	33	67	G	G	G
11	G	G	G	G	G	G	G	35	G	G	67	44	G	52	44	43	41	G	G	G	G	25	30	G
12	G	G	26	G	G	G	G	G	G	46	47	51	50	G	G	G	G	G	G	26	G	G	G	G
13	G	G	G	G	G	G	26	38	G	52	G	G	G	G	G	G	G	G	G	26	G	G	G	G
14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	39	38	40	37	38	G	G	G
15	G	G	G	G	G	G	G	33	G	G	G	G	G	G	64	75	46	G	G	G	29	40	G	G
16	G	G	G	G	G	G	G	39	43	G	G	G	G	G	G	G	40	G	52	32	G	G	26	G
17	G	G	G	G	G	G	G	38	50	G	45	G	G	G	G	G	G	G	44	28	G	G	G	G
18	G	G	G	G	G	G	28	G	G	G	G	G	G	G	G	G	G	46	36	31	G	G	G	G
19	G	G	G	G	G	G	G	G	G	G	G	G	G	B	G	G	45	58	64	G	33	38	49	G
20	28	25	30	26	26	G	29	38	G	46	G	G	G	G	G	G	58	41	59	28	44	34	G	26
21	G	G	G	G	G	G	G	G	G	G	G	G	G	45	G	G	46	46	40	31	31	31	44	34
22	34	58	49	33	33	27	G	34	G	G	G	G	G	G	44	52	47	43	G	41	G	G	G	G
23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	37	44	45	G	G	G	G	G	G	G	G	G	29	G	G	26	G
25	G	G	G	G	G	G	G	33	41	46	G	52	72	G	G	50	57	56	76	50	40	27	G	30
26	G	G	G	G	G	G	G	38	G	G	G	G	G	G	G	G	G	G	34	38	39	57	34	54
27	40	G	26	28	G	G	G	40	46	50	72	G	G	G	G	G	54	51	42	30	32	38	27	G
28	G	G	28	G	G	G	G	40	57	60	62	102	65	71	57	G	G	47	36	24	36	27	39	45
29	G	28	36	49	43	51	29	36	38	G	G	G	G	G	50	G	76	G	50	72	45	46	42	38
30	34	G	G	24	G	G	G	36	G	G	56	G	48	G	46	44	G	58	61	54	G	33	34	34
31																								
	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	30	30	30	29	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30
MED	G	G	G	G	G	G	G	34	G	G	G	G	G	G	G	G	G	G	35	30	29	26	12	G
U Q	G	G	G	24	G	G	G	37	41	46	49	G	G	G	44	43	46	43	44	38	36	38	34	26
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	G	G	G	G

HOURLY VALUES OF fmin AT Yamagawa

APR. 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	15	15	15	15	15	17	15	20	16	17	21	20	55	22	32	20	18	16	15	15	14	16	18	17
2	15	14	14	14	15	15	15	23	16	16	18	49	50	28	33	40	18	14	14	15	14	14	15	15
3	15	26	15	18	15	15	15	15	17	17	20	35	21	48	21	36	18	20	15	14	15	14	17	15
4	16	15	14	14	15	B	16	15	14	18	26	39	27	28	47	45	21	18	16	16	15	15	15	15
5	15	15	15	15	14	15	16	14	16	18	21	49	30	26	46	22	20	16	17	15	14	15	15	17
6	15	16	15	20	15	16	17	14	16	39	45	21	30	30	27	32	26	15	15	15	15	15	16	17
7	18	16	14	16	18	15	15	14	20	20	29	29	27	26	23	21	17	15	22	16	16	14	15	14
8	17	15	15	15	15	15	17	18	15	20	26	46	48	48	46	20	18	17	16	14	14	14	14	15
9	15	15	15	15	15	15	17	14	16	20	45	32	32	28	26	28	20	14	14	18	16	15	15	15
10	14	15	15	22	15	15	17	14	17	17	20	28	28	27	50	21	15	18	16	14	15	21	18	16
11	16	15	15	15	15	15	18	14	18	20	34	26	30	27	26	34	18	16	21	16	17	15	14	15
12	17	15	15	16	15	14	18	14	16	18	33	33	30	46	29	20	21	16	14	15	21	15	15	20
13	16	15	18	16	15	15	17	15	14	18	36	33	66	48	57	43	27	15	24	14	15	17	15	17
14	15	29	15	16	16	16	18	14	16	18	21	26	44	55	91	17	21	15	15	15	15	15	66	15
15	15	15	14	15	15	15	18	14	20	17	22	66	101	52	38	36	20	14	24	18	15	15	15	17
16	15	38	21	15	14	18	18	14	15	20	36	51	63	21	21	21	20	15	20	15	14	15	16	23
17	15	15	17	15	14	15	18	14	15	21	21	50	28	26	58	44	36	20	16	15	15	14	15	15
18	15	15	15	15	15	16	14	14	16	21	26	52	49	52	46	48	22	17	15	14	15	15	16	15
19	16	21	15	15	15	14	18	16	17	26	27	52	56	B	50	52	18	16	17	18	16	15	15	17
20	16	15	14	15	14	15	15	15	20	21	23	29	53	58	33	36	21	17	16	14	14	15	15	15
21	17	15	16	20	15	16	20	15	17	41	22	26	32	55	27	45	18	16	14	14	14	15	15	15
22	15	15	14	14	15	16	21	16	21	24	27	57	54	54	36	34	28	18	16	14	23	15	14	15
23	15	15	15	15	15	14	18	15	20	23	26	58	56	56	24	21	26	22	14	16	16	15	15	15
24	15	16	17	15	14	15	14	15	17	30	24	30	28	45	41	26	22	17	15	14	15	17	16	18
25	14	15	15	17	15	14	20	14	14	17	21	23	27	29	26	20	18	17	14	14	15	15	21	15
26	17	15	15	14	16	17	16	14	16	21	44	51	63	54	53	22	17	16	14	14	16	14	16	15
27	15	15	15	17	14	15	22	16	21	26	34	33	24	32	54	48	20	20	15	15	15	14	15	15
28	15	15	14	15	16	16	21	16	20	24	38	35	38	35	38	45	21	20	14	16	15	15	14	15
29	20	15	15	15	15	14	14	17	20	23	45	57	52	58	34	27	17	16	14	14	15	17	15	16
30	14	23	17	15	17	14	21	15	18	26	29	30	29	27	26	24	21	20	14	15	15	14	15	15
31																								
	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	30	30	30	29	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	17	15	16	20	26	34	35	35	35	30	20	16	15	15	15	15	15	15
U Q	16	16	15	16	15	16	18	16	20	24	34	51	54	53	47	43	21	18	16	16	16	15	16	17
L Q	15	15	15	15	15	15	15	14	16	18	21	29	28	27	26	21	18	15	14	14	15	14	15	15

HOURLY VALUES OF foF2 AT Okinawa

APR. 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	52	52	51	53	47	32	37	64	80	86	81	95	109	127	124	122	121	121	116	110	87	74	67	54
2	66	67	66	51	50	42	46	67	84	78	102	126	135	130	128	127	127	130	138	120	87	73	54	54
3	52	67	59	79	46	34	37	62	73	86	102	121	121	131	131	125	122	126	124	111	87	72	72	67
4	66	77	81	62	N	B	31	67	85	94	108	128	142	146	150	143	143	136	133	124	88	86	88	100
5	104	88	86	84	57	38	42	61	77	85	94	108	131	148	144	145	147	141	130	110	107	88	81	88
6	86	87	99	87	80	62	51	77	101	107	109	126	136	144	134	134	126	124	132	126	86	54	54	54
7	67	81	87	88	72	67	71	88	88	81	81	93	109	131	131	124	121	126	126	108	87	N	87	87
8	87	109	131	86	46	40	45	66	84	87	97	108	121	132	132	125	121	118	111	110	87	54	52	54
9	63	53	66	59	42	30	42	67	85	82	92	90	107	118	131	141	145	139	151	129	108	83	54	72
10	67	66	67	66	31	28	37	61	76	85	91	104	121	132	143	144	146	140	134	126	87	67	52	63
11	52	52	63	39	46	45	45	67	75	82	86	97	122	141	142	152	159	152	139	134	120	86	87	86
12	88	85	85	85	74	64	62	66	75	72	81	88	101	110	120	132	131	143	131	126	87	66	62	54
13	54	67	76	73	44	36	40	70	71	67	82	88	114	114	108	108	121	127	131	143	104	78	82	86
14	83	53	66	66	63	63	52	63	78	88	96	107	117	128	134	131	131	136	118	87	61	61	62	54
15	67	74	84	67	42	34	46	66	78	85	86	105	120	128	130	116	116	125	130	110	84	72	66	74
16	76	87	86	76	38	28	42	66	90	94	95	107	125	144	152	145	147	146	141	131	130	113	110	107
17	107	112	108	106	78	54	62	67	73	66	97	110	122	131	144	146	146	135	131	124	118	87	74	67
18	54	53	75	61	40	30	46	90	80	72	76	110	136	144	143	144	152	145	152	144	126	86	73	72
19	54	61	67	72	60	34	46	71	81	92	101	110	118	126	128	132	143	137	132	125	108	88	86	85
20	87	86	85	84	71	58	66	82	87	81	94	118	131	144	142	171	148	143	145	132	131	131	132	124
21	122	108	88	86	67	66	78	104	88	86	90	106	122	127	121	112	102	94	89	110	108	67	54	55
22	67	62	62	61	51	48	54	84	92	94	72	95	121	143	145	144	144	149	161	146	124	109	107	87
23	89	101	88	72	64	74	82	76	80	87	96	116	131	148	157	158	157	151	149	144	131	121	109	110
24	108	88	88	87	74	47	52	85	107	74	71	105	132	123	133	130	138	127	116	107	87	86	54	54
25	52	54	67	52			58	87	75	76	93	105	127	138	117	116	116	106	105	A	88	A	86	78
26	81	72	67	62	52	48	67	85	82	87	87	107	120	129	121	130	128	134	N	131	87	87	88	84
27	78	80	74	67	63	52	63	72	87	90	83	98	128	131	134	143	145	148	152	131	108	104	83	86
28	66	81	83	87	67	51	67	84	81	87	90	104	123	140	140	143	148	147	157	146	123	106	107	110
29	107	83	87	88	87	86	102	73	74	76	86	98	122	132	142	144	147	145	N	136	129	138	131	130
30	131	131	121	122	88	87	88	88	87	90	92	100	110	117	108	117	122	121	134	121	N	49	87	87
31																								
	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	30	30	28	28	30	30	30	30	30	30	30	30	30	30	30	30	28	29	29	28	30	30
MED	72	78	82	72	58	48	52	70	81	86	92	106	122	131	134	133	140	136	132	126	104	86	82	81
U Q	88	87	87	86	71	62	66	84	87	88	96	110	131	143	143	144	147	145	143	133	121	96	88	87
L Q	63	62	67	62	46	34	42	66	76	78	83	98	118	127	128	125	122	126	125	110	87	69	62	55

HOURLY VALUES OF fEs AT Okinawa

APR. 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	26	28	G	G	G	G	G	34	G	G	47	53	54	51	45	52	58	36	G	G	G	G	24	G
2	G	G	G	G	G	G	G	G	G	G	G	G	49	62	52	G	G	46	48	60	G	26	G	36
3	32	34	25	35	30	28	28	G	G	G	G	G	G	G	G	G	G	G	G	45	40	51	46	39
4	G	28	G	21	G	B	G	33	40	G	G	G	G	G	G	49	G	G	33	38	36	34	26	G
5	G	G	G	G	40	G	G	G	G	G	G	G	50	G	G	G	G	G	34	28	34	42	28	30
6	G	24	G	G	G	G	G	G	G	G	G	G	45	53	44	G	G	41	44	28	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G	G	44	G	G	G	47	47	G	36	35	33	24	G	G
8	27	26	23	49	G	G	G	G	G	45	48	G	G	G	G	G	42	G	G	G	G	35	23	46
9	G	G	G	G	30	25	G	37	44	48	51	56	58	61	63	55	44	G	34	49	50	27	G	G
10	G	G	G	G	G	G	G	G	G	G	G	G	50	50	G	47	G	G	G	40	40	G	G	G
11	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	11	G	32	G
12	48	G	G	29	G	G	G	35	G	44	58	58	66	50	G	46	G	43	G	36	G	38	36	30
13	28	28	G	G	G	26	24	34	41	49	G	48	G	53	G	G	48	49	41	38	28	G	50	G
14	G	G	G	G	G	G	30	G	G	G	G	50	G	G	G	G	G	42	37	43	32	26	G	G
15	G	G	G	G	24	G	26	34	44	G	48	G	52	69	64	48	G	G	36	39	34	58	29	39
16	G	G	G	11	G	G	G	34	G	47	G	G	G	68	56	50	55	46	74	78	35	39	35	G
17	G	G	G	G	G	G	G	32	50	60	47	G	48	60	52	47	G	G	41	46	27	G	26	G
18	G	G	G	G	G	G	G	34	G	G	G	G	G	G	G	G	G	G	40	91	G	25	G	G
19	G	G	G	G	G	G	G	35	42	56	G	G	G	G	53	G	51	60	49	44	28	42	27	30
20	G	G	G	G	G	G	24	33	G	49	G	G	50	G	54	50	46	48	55	58	38	28	26	G
21	G	G	G	G	G	G	G	G	G	G	46	47	G	52	47	G	46	G	36	34	26	33	G	G
22	G	G	G	G	G	G	G	G	G	47	46	G	G	G	G	G	49	60	53	48	35	G	25	G
23	G	G	G	G	G	G	G	G	G	G	G	G	G	52	G	53	G	G	G	27	G	G	G	G
24	G	G	G	G	G	G	21	G	G	G	G	G	G	G	G	G	G	G	39	44	56	G	G	G
25	G	G	G	G	G	G	G	36	42	44	48	75	54	58	61	55	62	54	59	149	73	90	60	G
26	G	G	G	G	G	G	26	G	G	G	G	G	G	G	64	80	57	G	45	31	25	G	26	G
27	G	G	G	G	G	G	G	G	G	G	52	77	56	51	G	G	G	G	52	32	72	70	31	36
28	35	G	G	27	G	G	G	34	43	G	G	G	G	G	G	G	50	59	59	90	60	33	25	G
29	28	G	G	G	G	G	G	G	G	G	G	G	G	G	51	G	G	G	43	G	G	G	G	G
30	G	31	G	28	32	59	44	67	68	73	50	51	G	50	G	G	G	74	36	60	52	50	G	34
31																								
	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	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	G	38	40	32	26	25	G
U Q	G	G	G	G	G	G	21	34	41	47	47	48	50	53	52	49	48	46	48	49	40	39	29	30
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	33	31	G	G	G	G

HOURLY VALUES OF fmin AT Okinawa

APR. 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	14	15	14	15	14	16	15	18	17	18	27	39	36	37	24	20	21	17	14	20	15	17	17	20
2	16	15	15	15	15	15	15	18	18	21	44	49	48	38	35	46	40	14	14	14	15	15	32	15
3	15	16	20	16	14	14	14	22	17	20	40	52	48	48	46	42	39	34	14	14	14	14	14	14
4	18	15	18	15	16	B	15	15	15	22	43	48	49	47	45	33	39	17	14	14	15	16	16	16
5	15	15	15	15	14	14	14	24	18	21	41	48	42	50	44	43	20	17	14	14	14	14	16	15
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7	15	15	14	15	15	14	14	15	14	36	41	50	49	49	45	26	20	15	14	14	15	15	17	14
8	15	15	14	14	15	15	14	18	18	20	50	43	46	49	45	40	23	17	18	16	23	14	15	14
9	15	15	15	15	14	15	14	15	18	20	38	38	40	35	38	32	40	17	14	14	14	15	17	15
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11	17	18	14	16	15	15	14	27	15	20	45	49	49	50	49	42	43	38	26	15	16	21	16	21
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19	15	15	14	15	14	15	17	14	18	22	42	45	52	53	24	24	21	20	18	14	14	15	15	14
20	15	15	15	15	15	15	16	14	18	22	47	50	36	52	40	39	46	28	14	14	14	14	16	22
21	16	15	15	14	15	15	20	17	16	18	30	38	50	33	39	46	30	21	21	16	14	14	16	15
22	17	15	14	14	15	15	17	26	18	26	30	50	54	52	50	50	34	18	15	14	15	15	15	15
23	18	14	14	14	15	14	20	14	20	38	44	53	54	38	52	32	40	18	16	14	14	15	14	15
24	15	15	18	15	15	21	18	14	20	38	42	40	50	49	53	42	20	21	14	14	16	17	21	18
25	15	22	15	16	66	16	16	14	17	22	32	38	38	42	42	39	22	18	14	14	14	14	14	15
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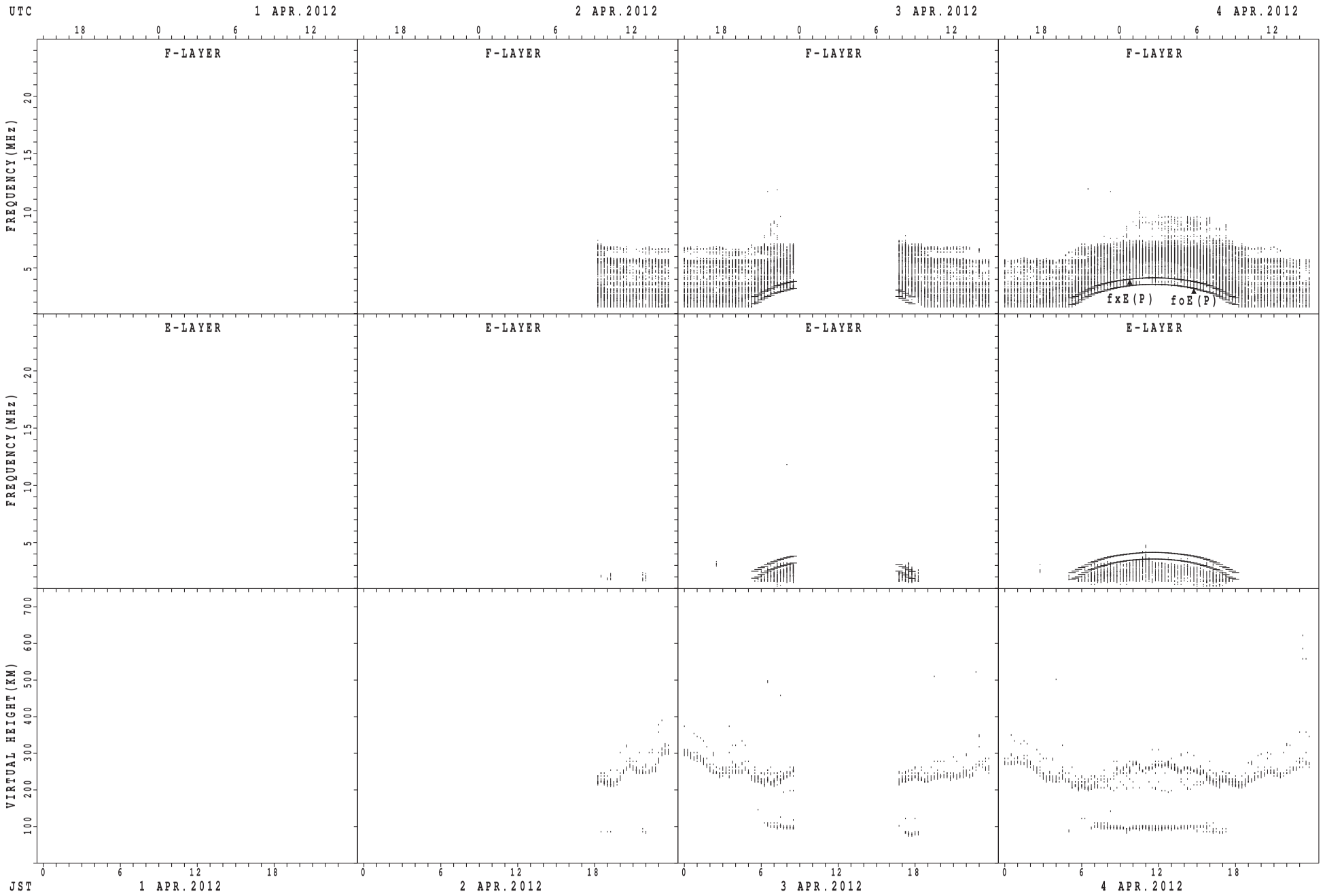
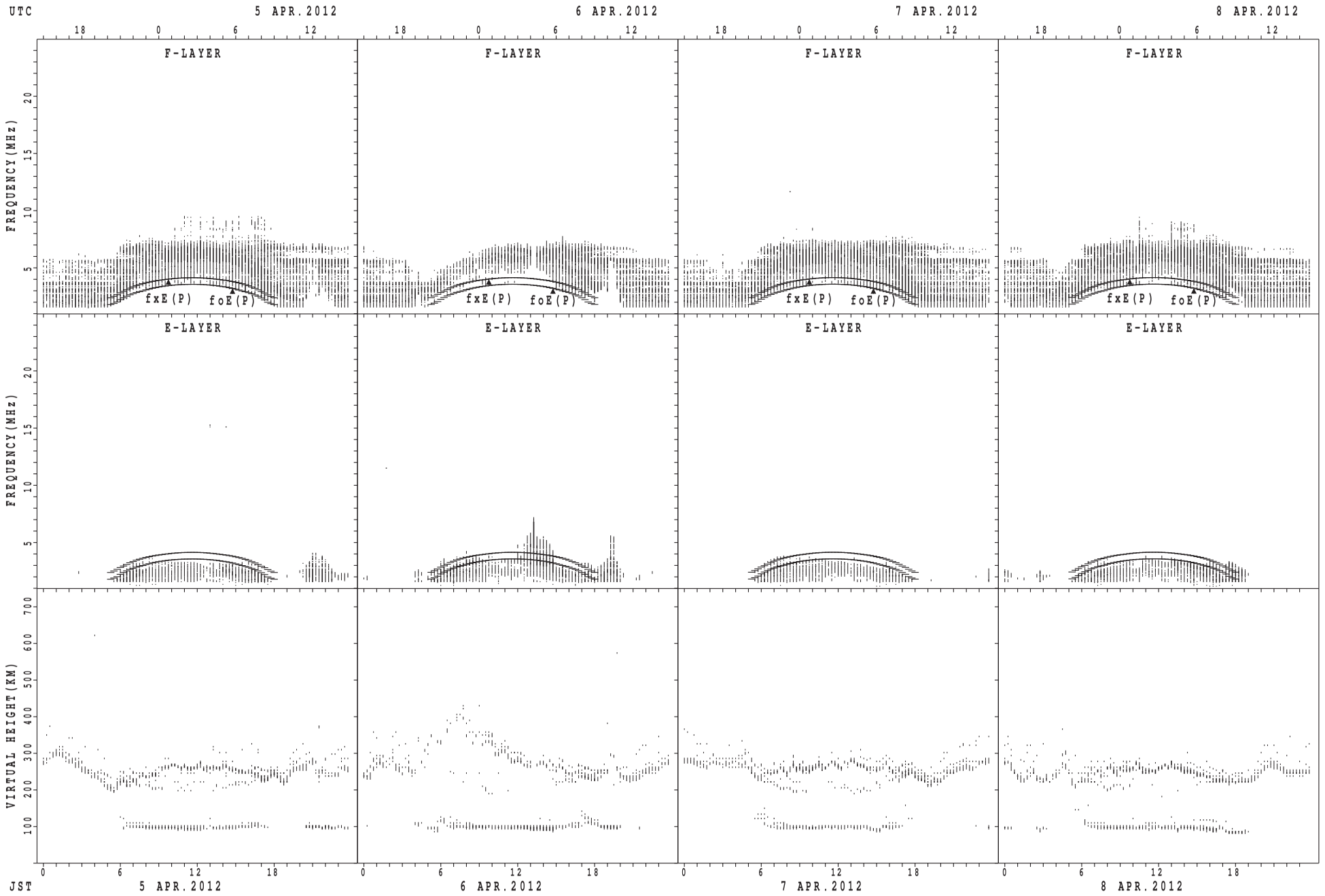
27	15	15	15	14	15	15	18	17	17	24	36	38	39	38	53	48	23	21	15	14	15	15	15	17
28	17	20	20	14	14	14	18	18	29	23	44	52	53	50	49	45	24	24	15	14	15	16	34	20
29	15	17	17	18	17	15	21	14	15	27	44	52	52	49	49	41	24	17	14	16	17	15	17	18
30	18	14	14	14	15	16	14	15	17	35	38	50	60	42	48	48	39	28	18	18	15	14	17	16
31																								
	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	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	16	15	17	22	41	48	48	42	44	42	25	18	14	14	15	15	16	15
U Q	17	17	17	15	15	16	18	18	18	27	44	50	52	49	48	45	40	21	17	15	15	16	17	17
L Q	15	15	14	14	14	15	14	14	16	20	34	39	40	38	38	32	21	17	14	14	14	14	15	15

SUMMARY PLOTS AT Wakkanai



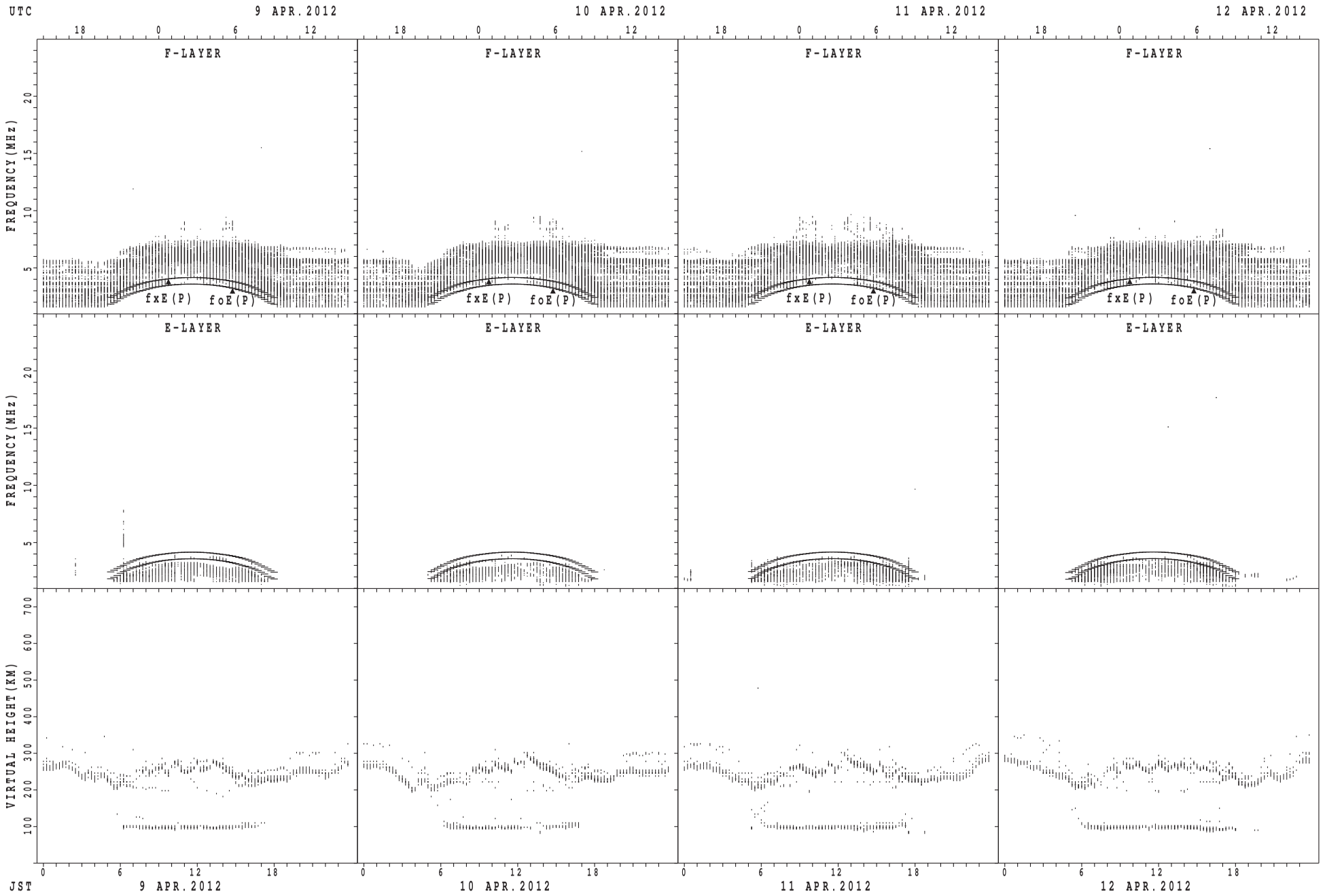
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



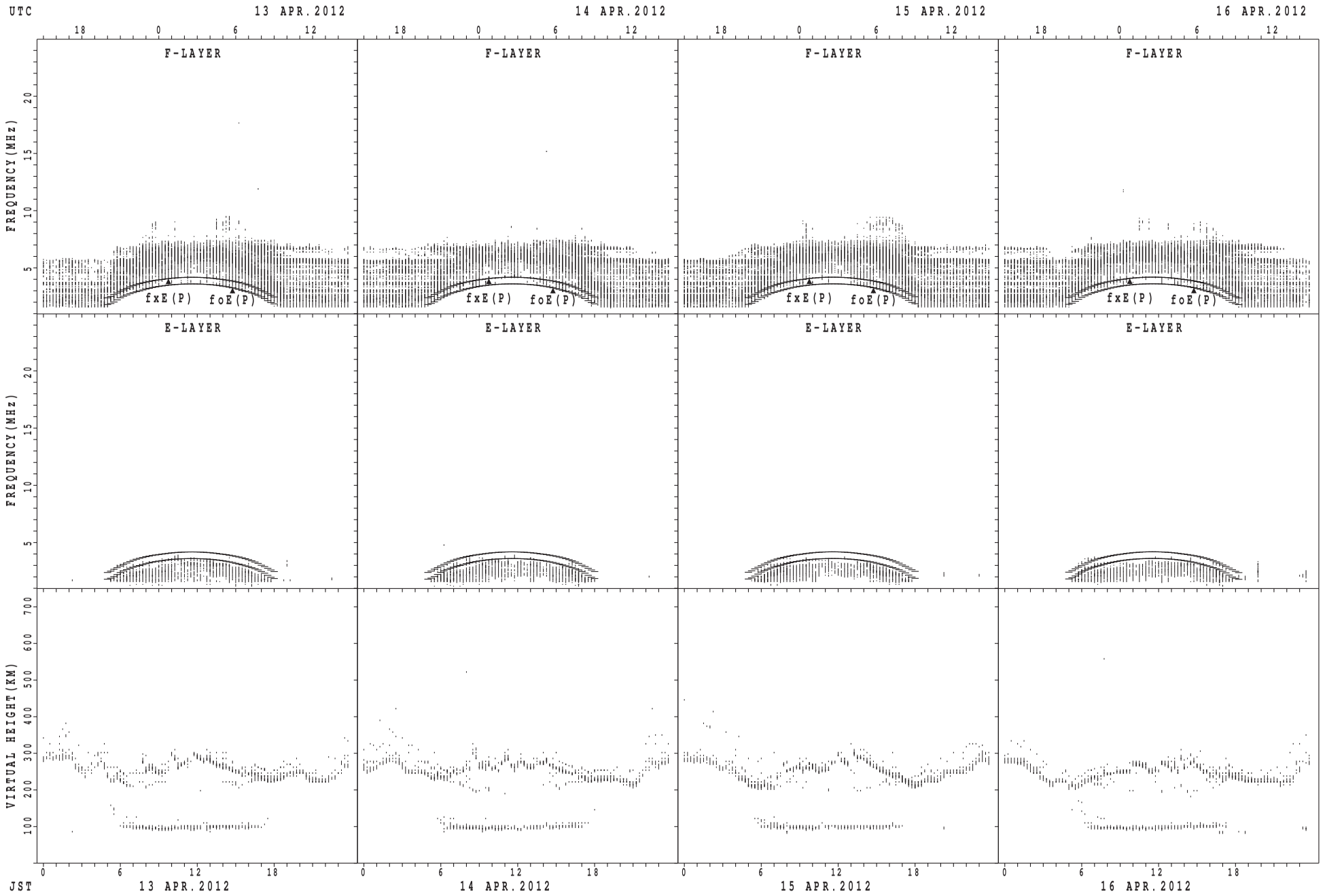
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



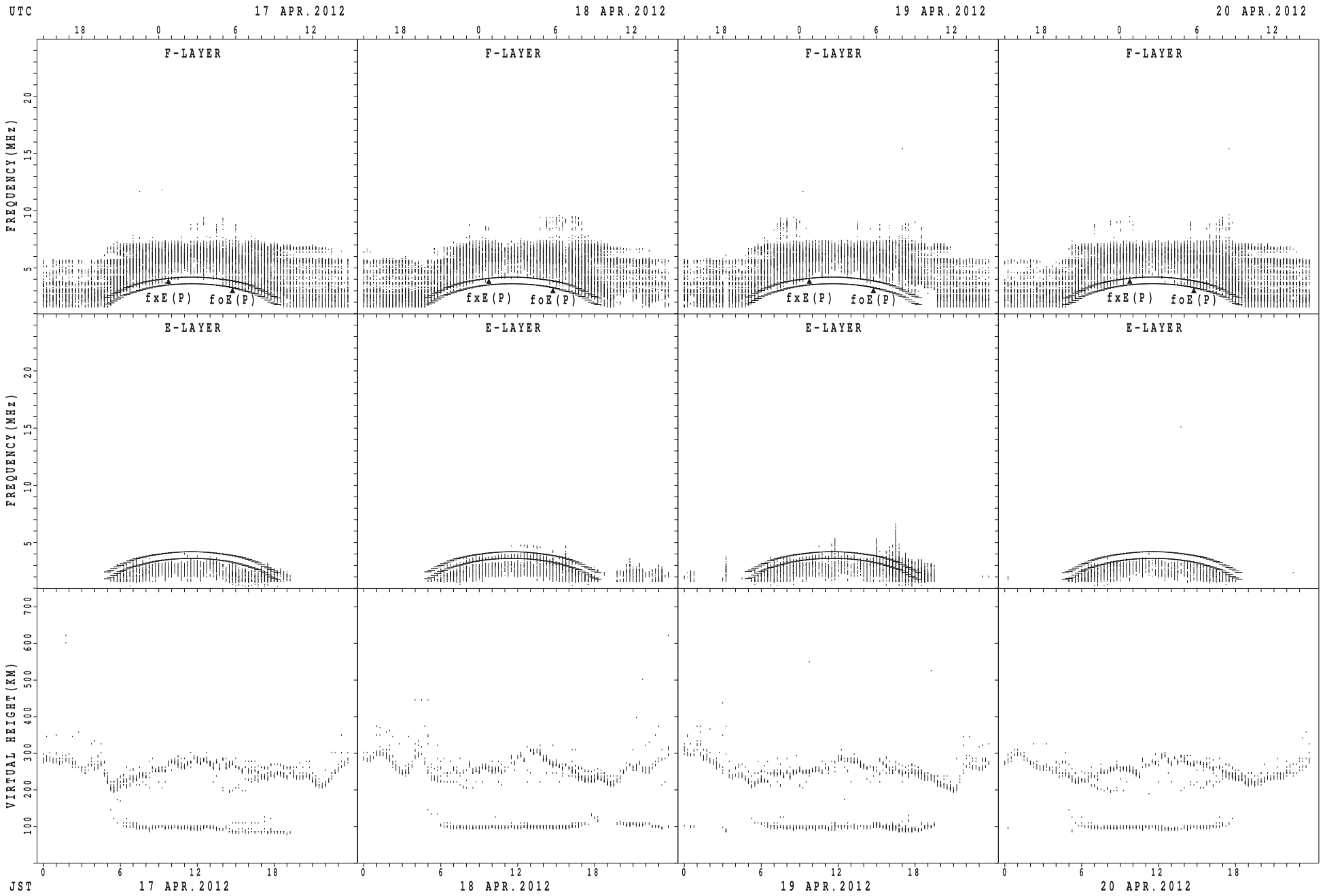
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



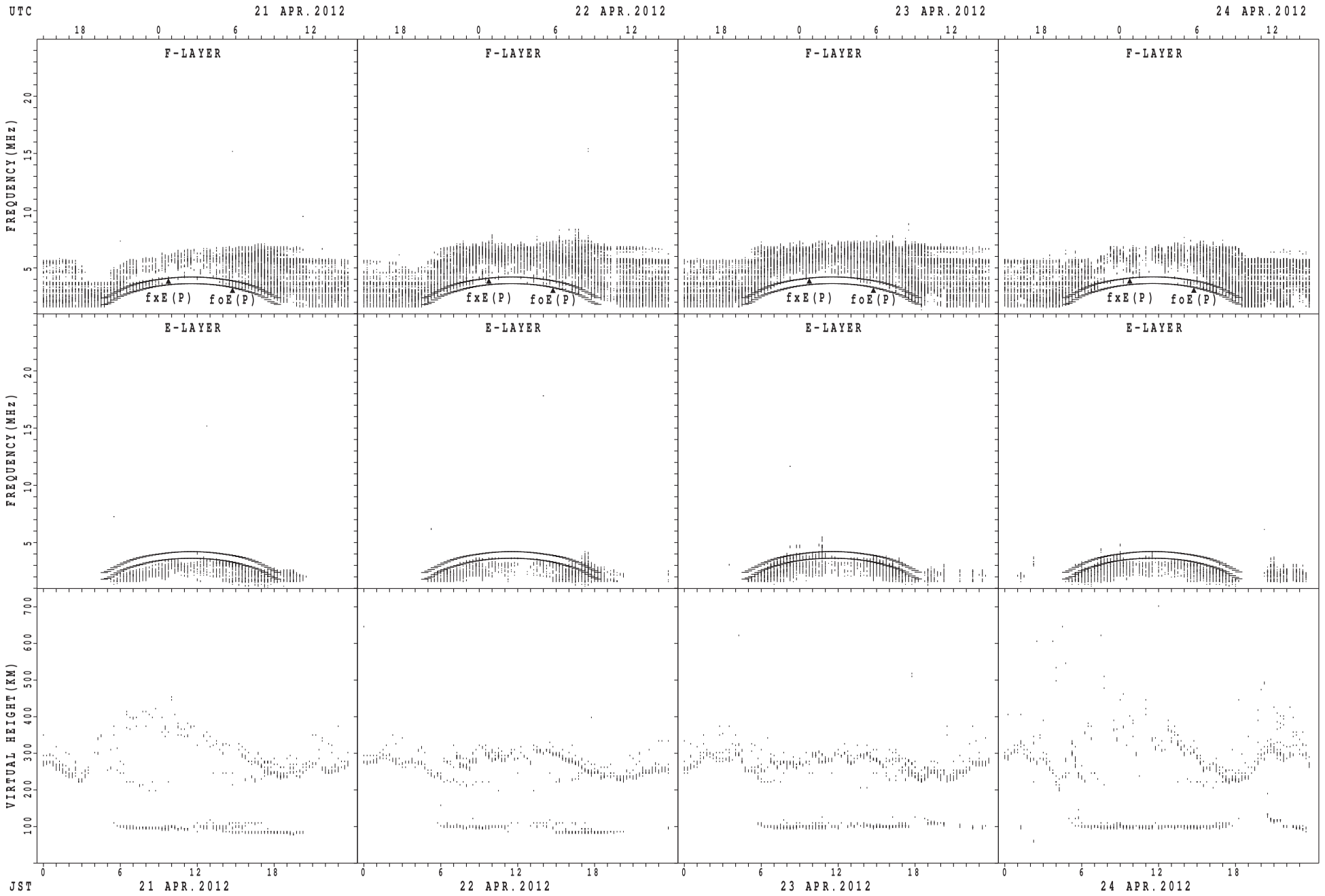
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



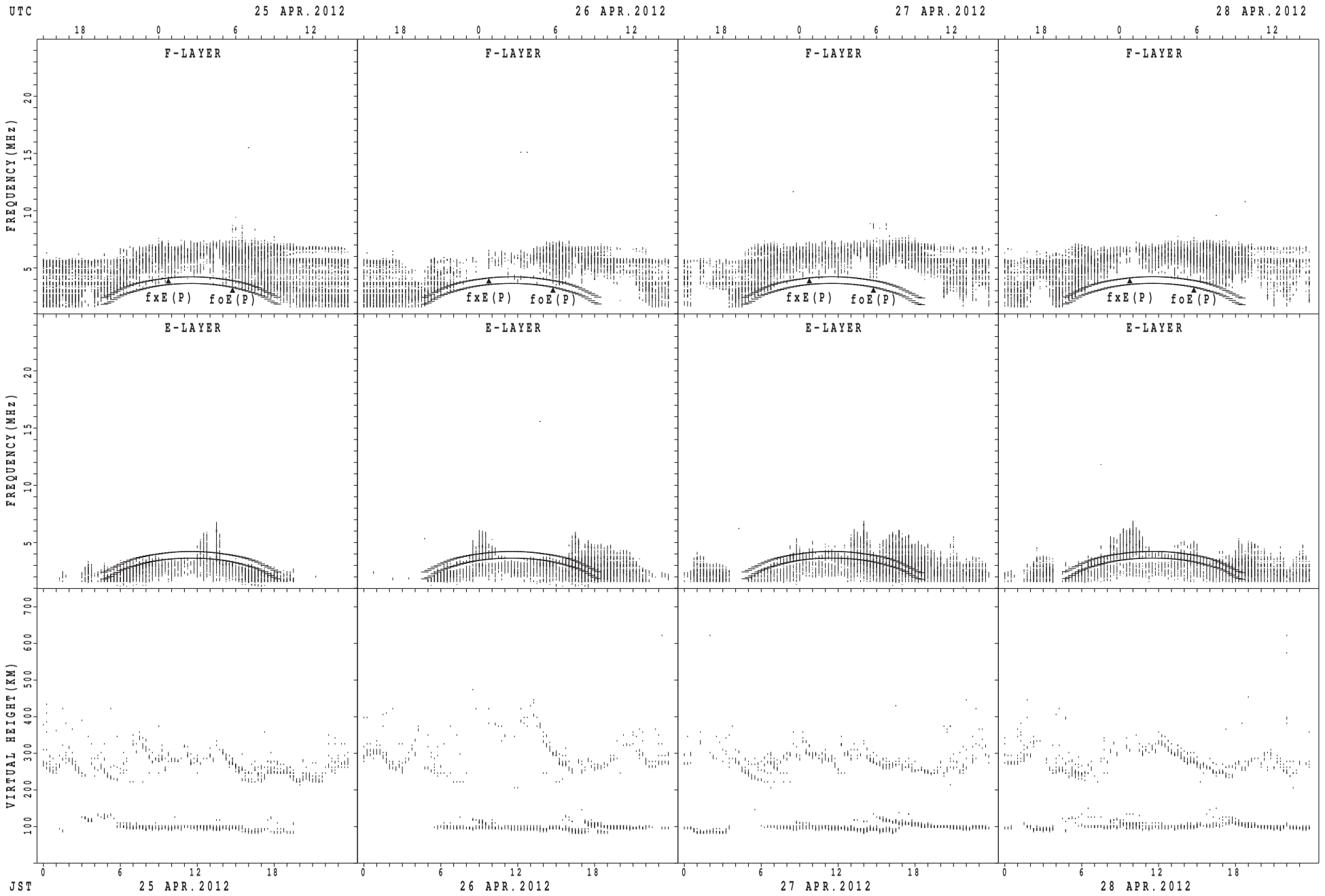
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



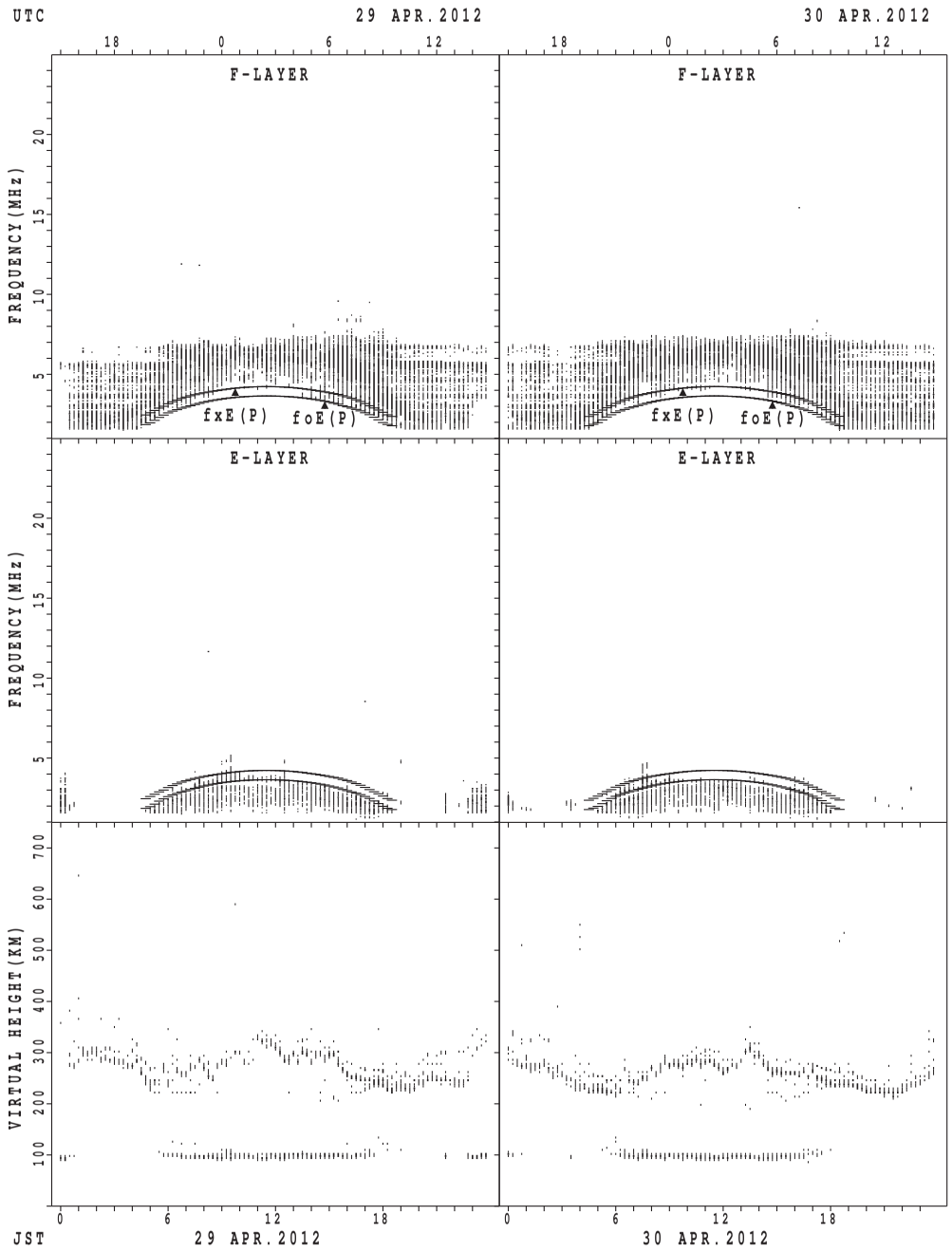
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



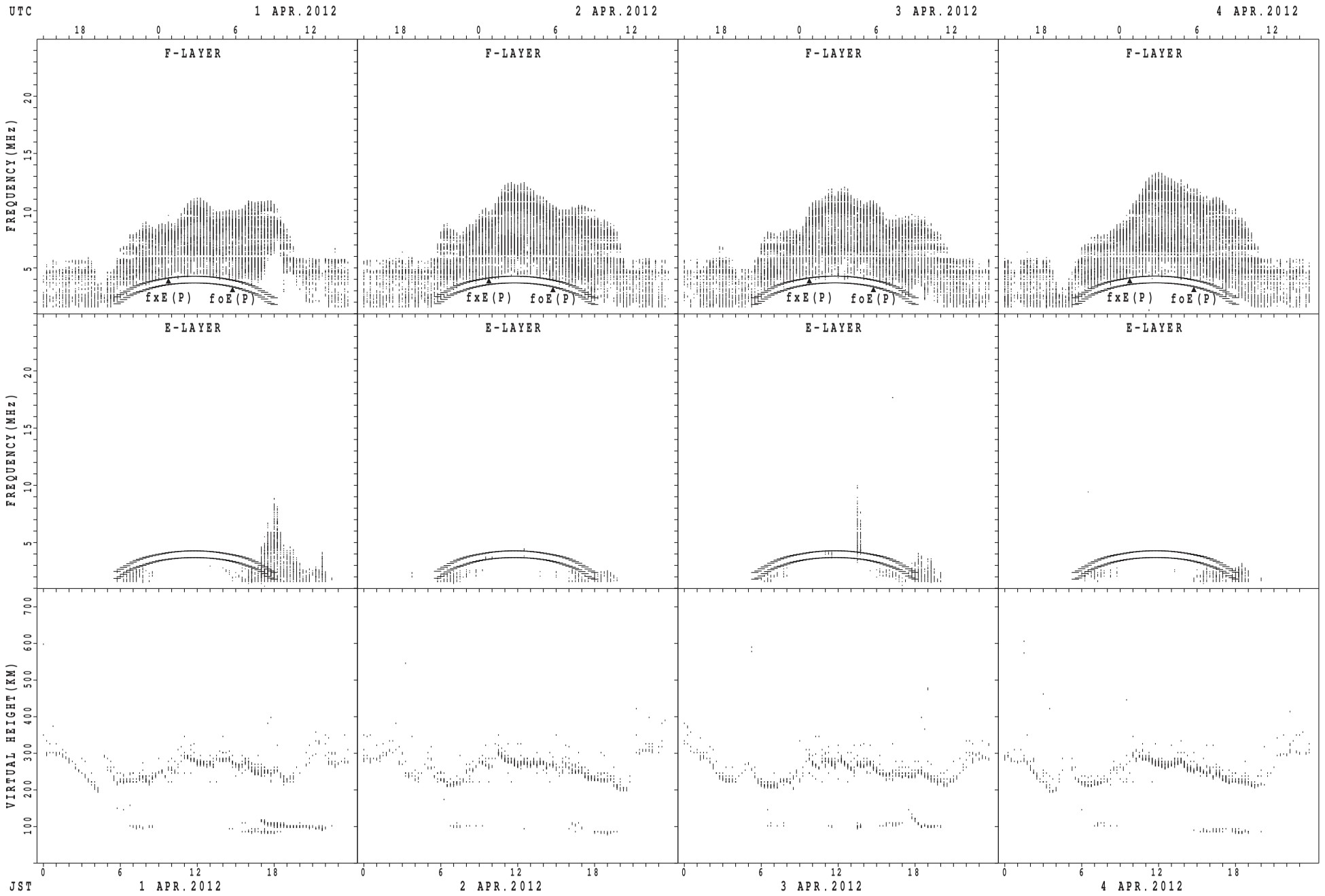
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



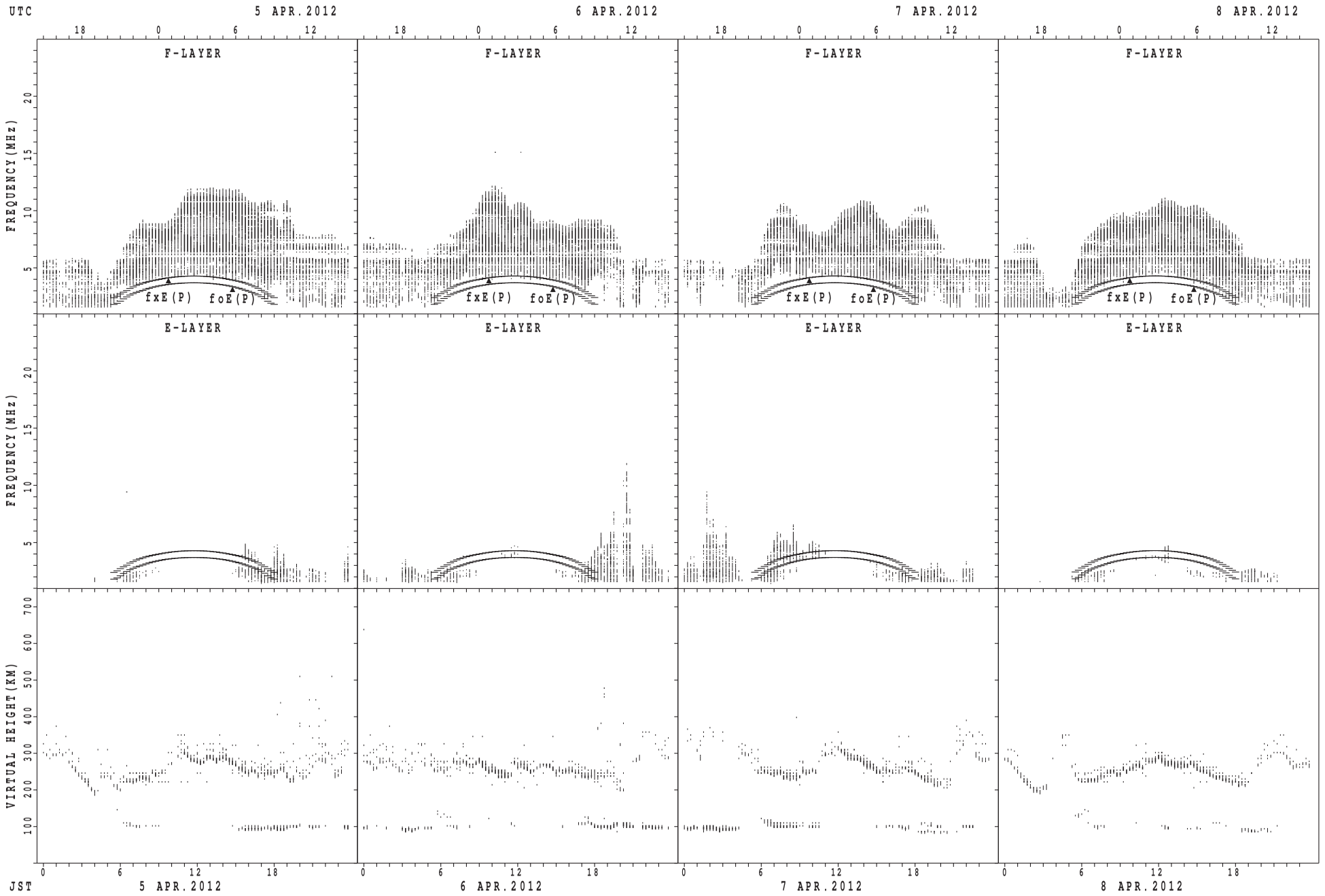
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



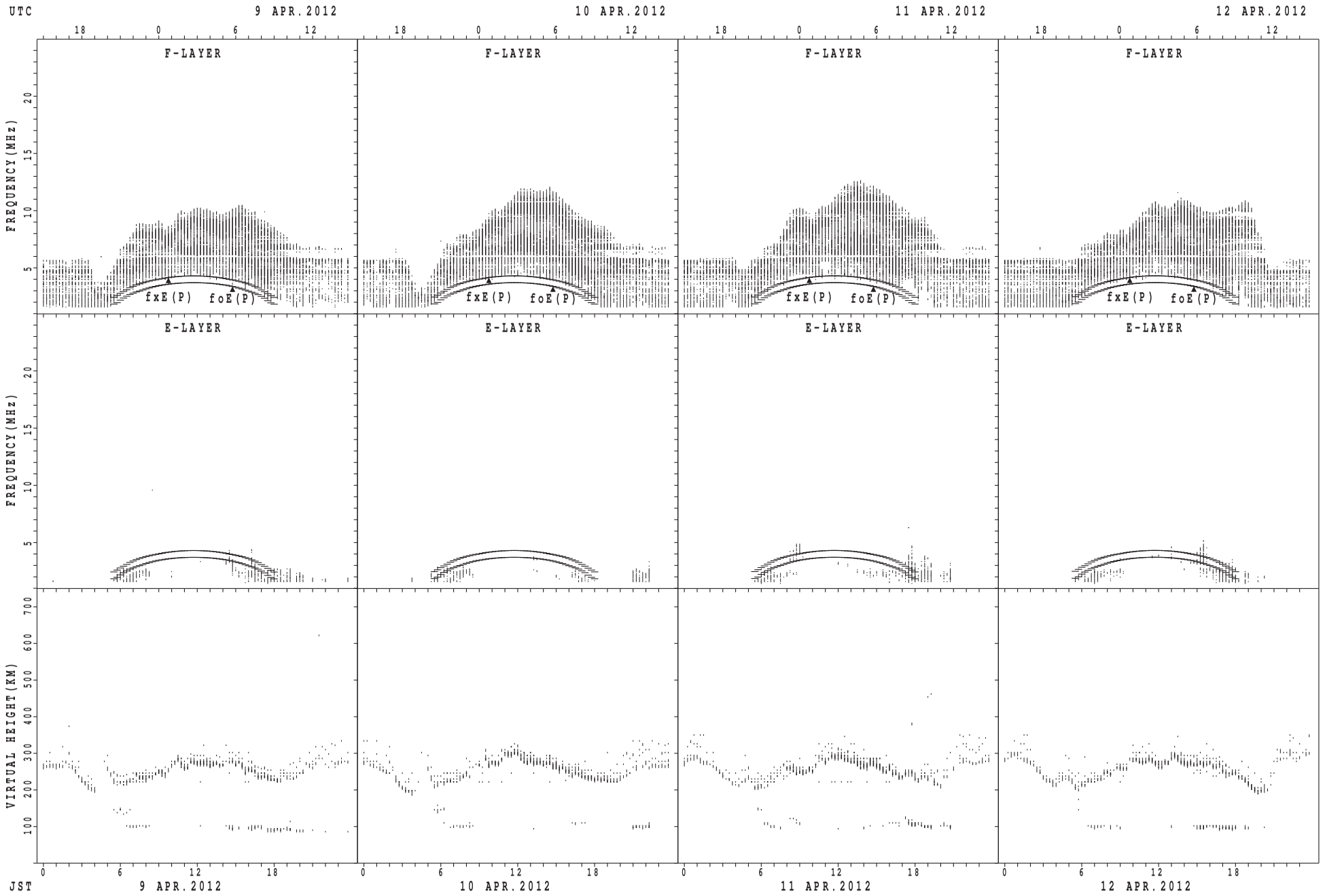
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



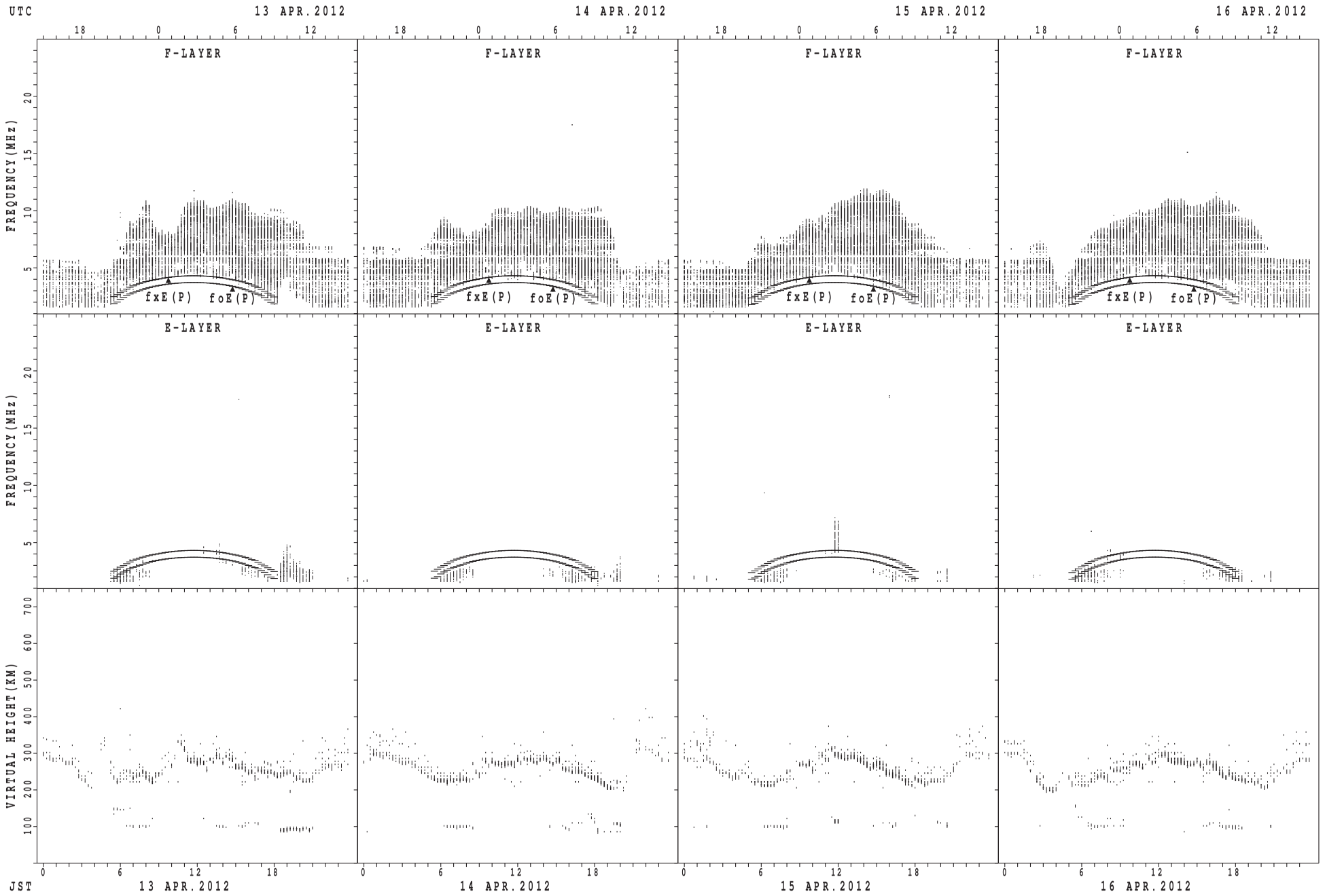
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



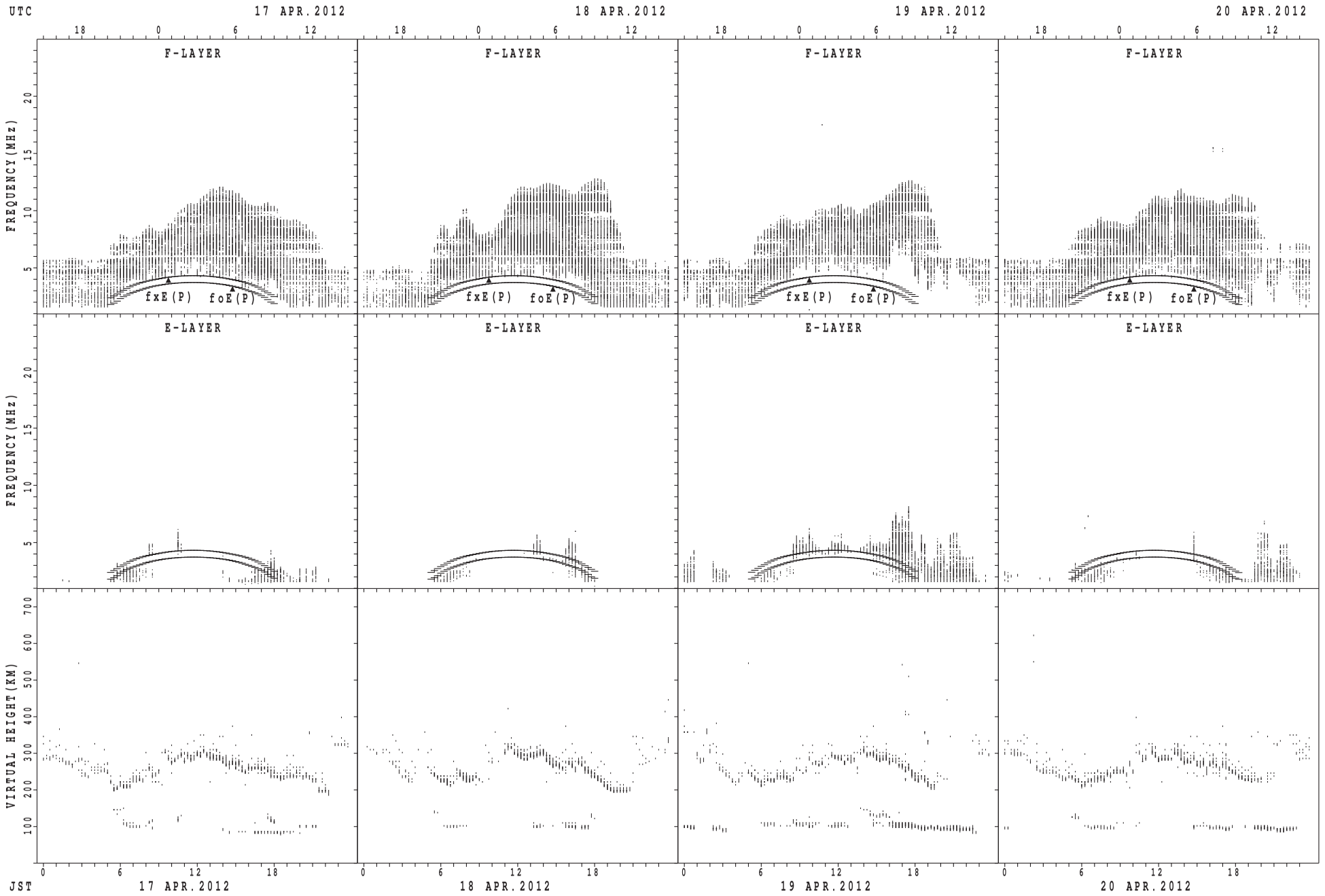
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



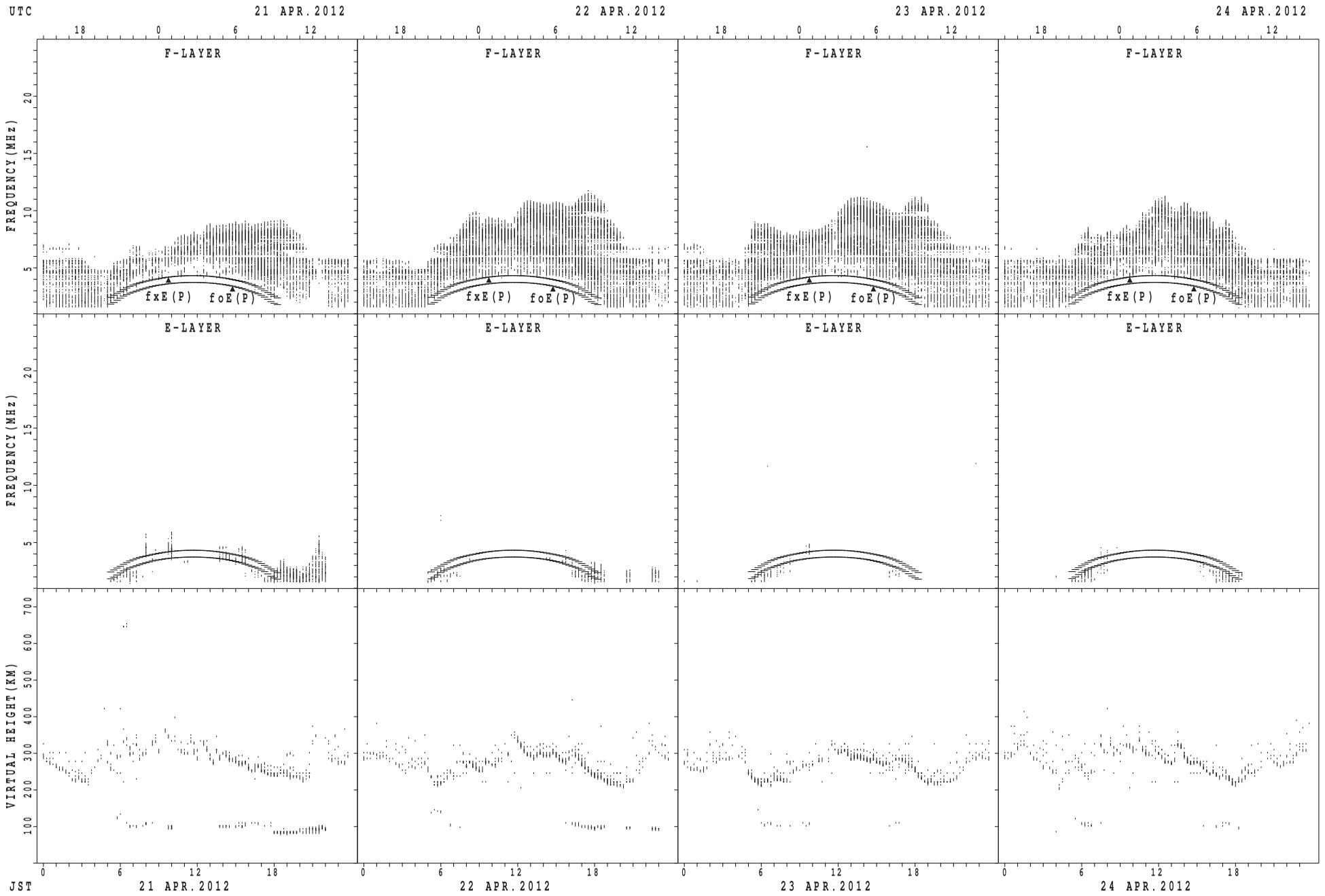
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



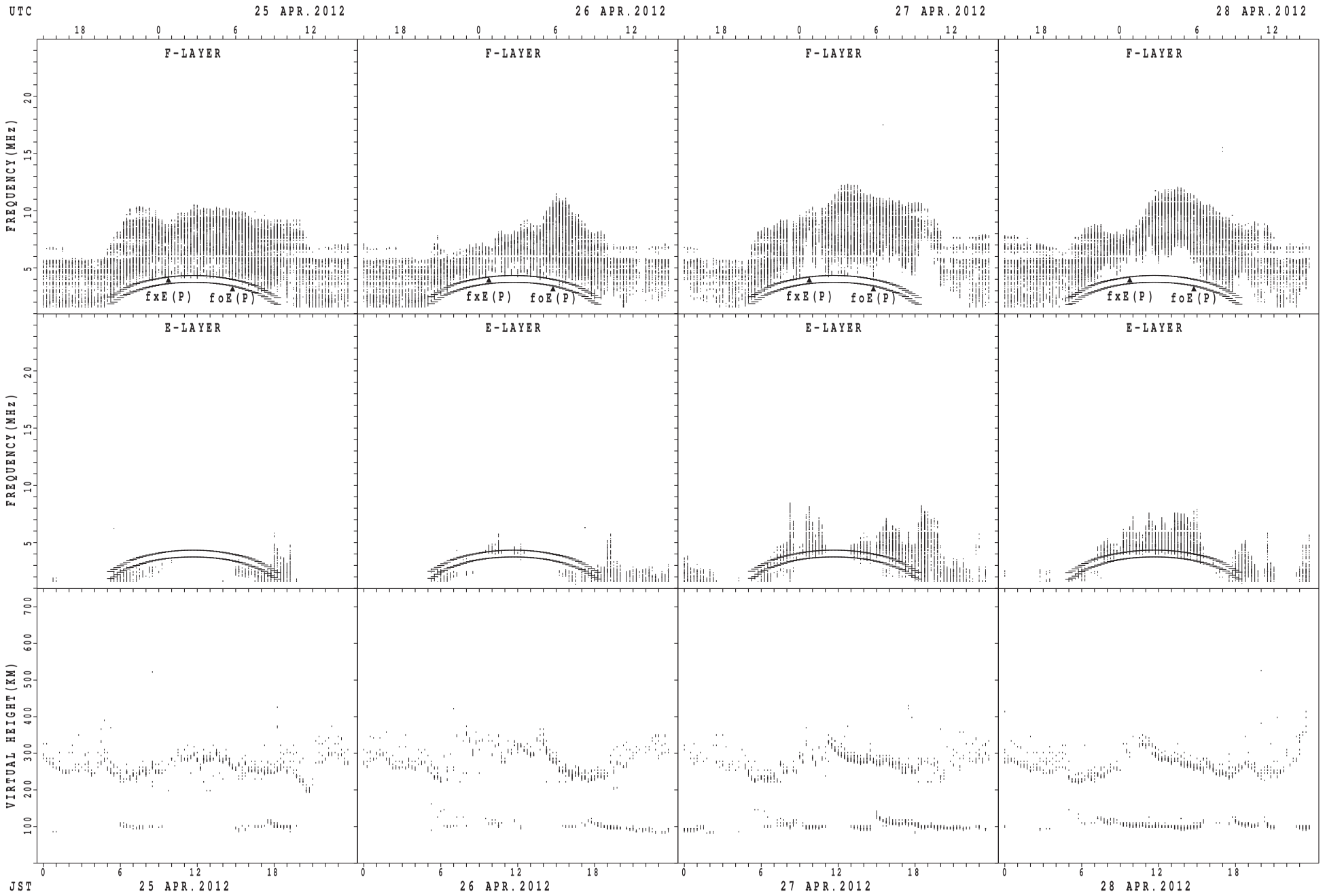
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



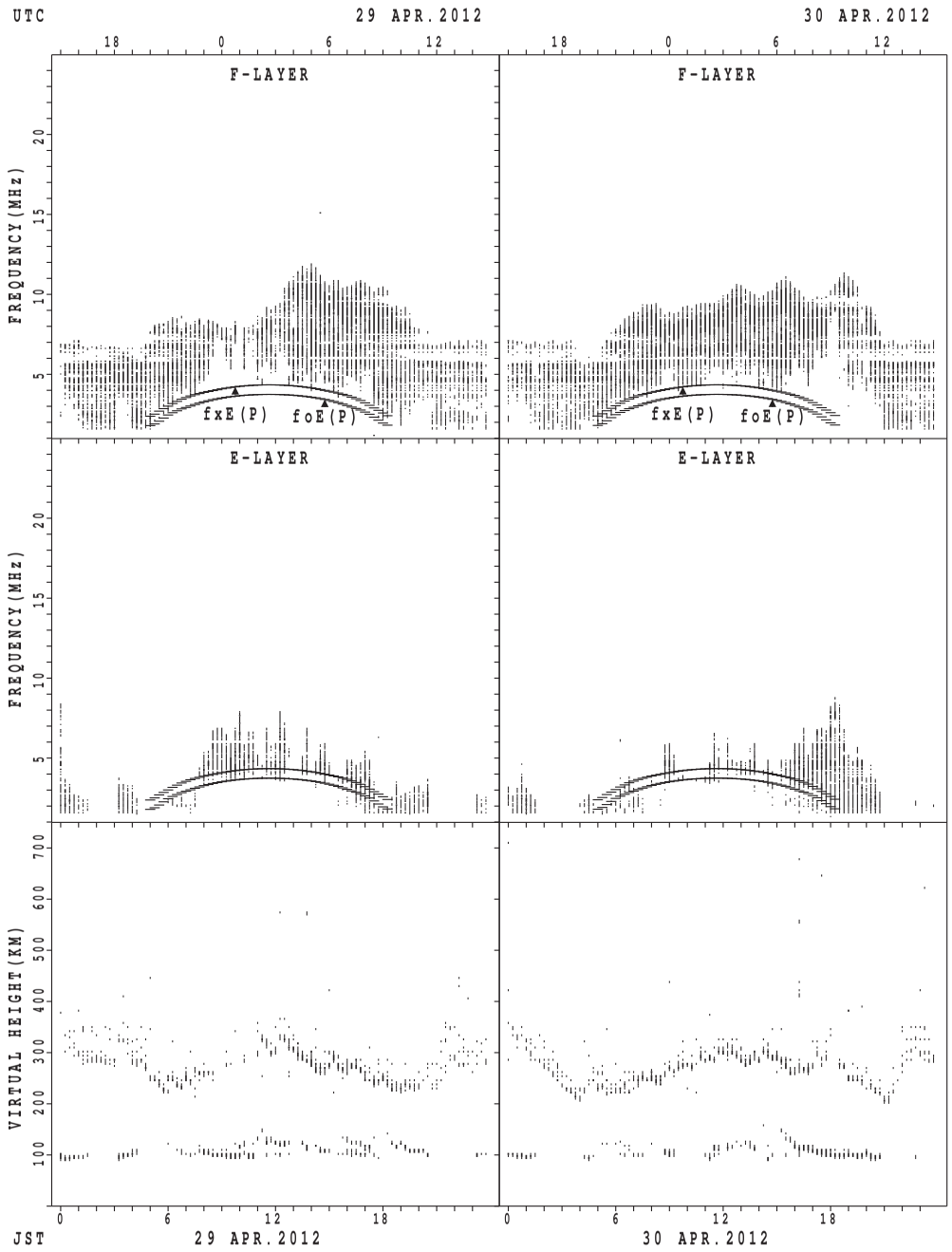
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



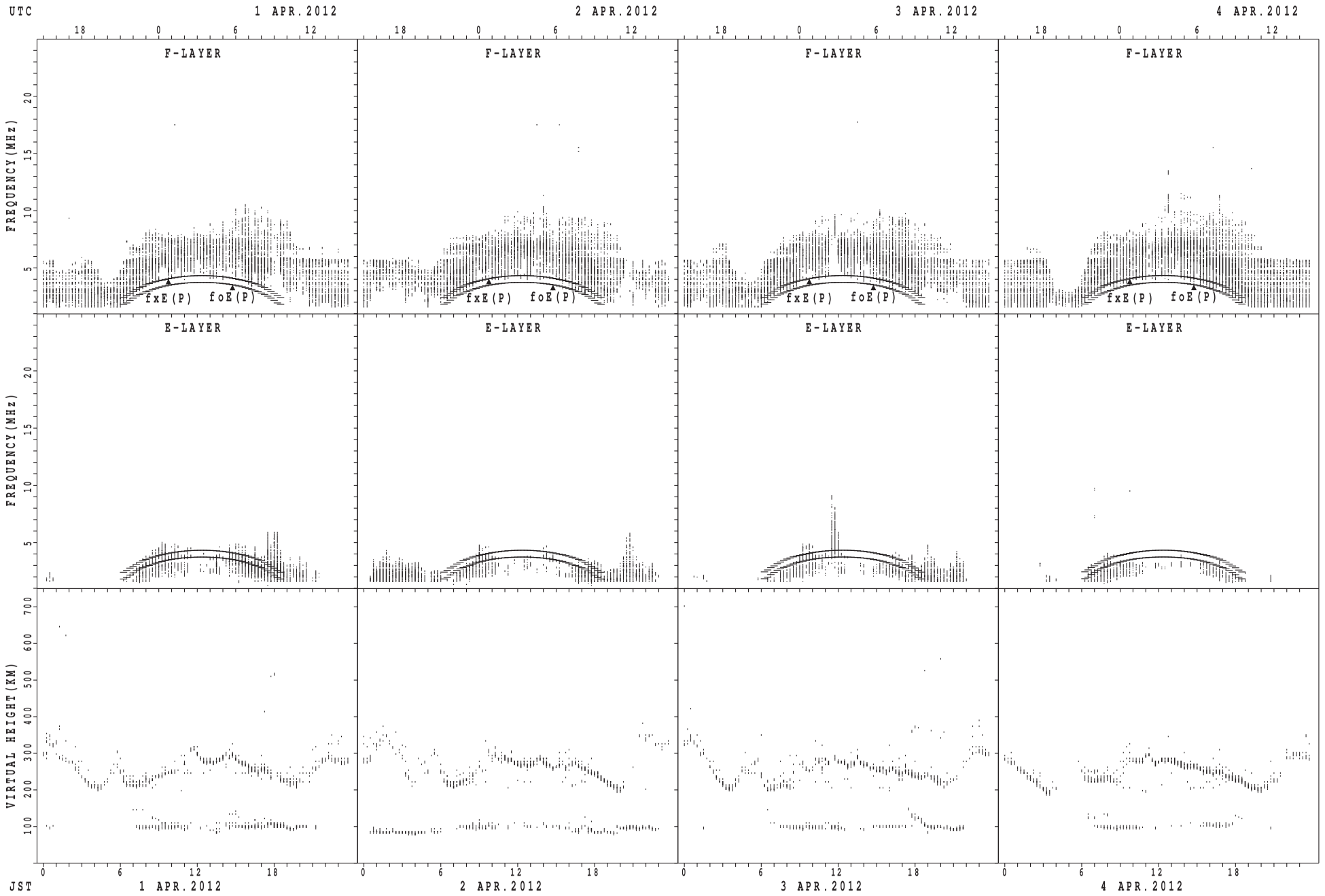
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



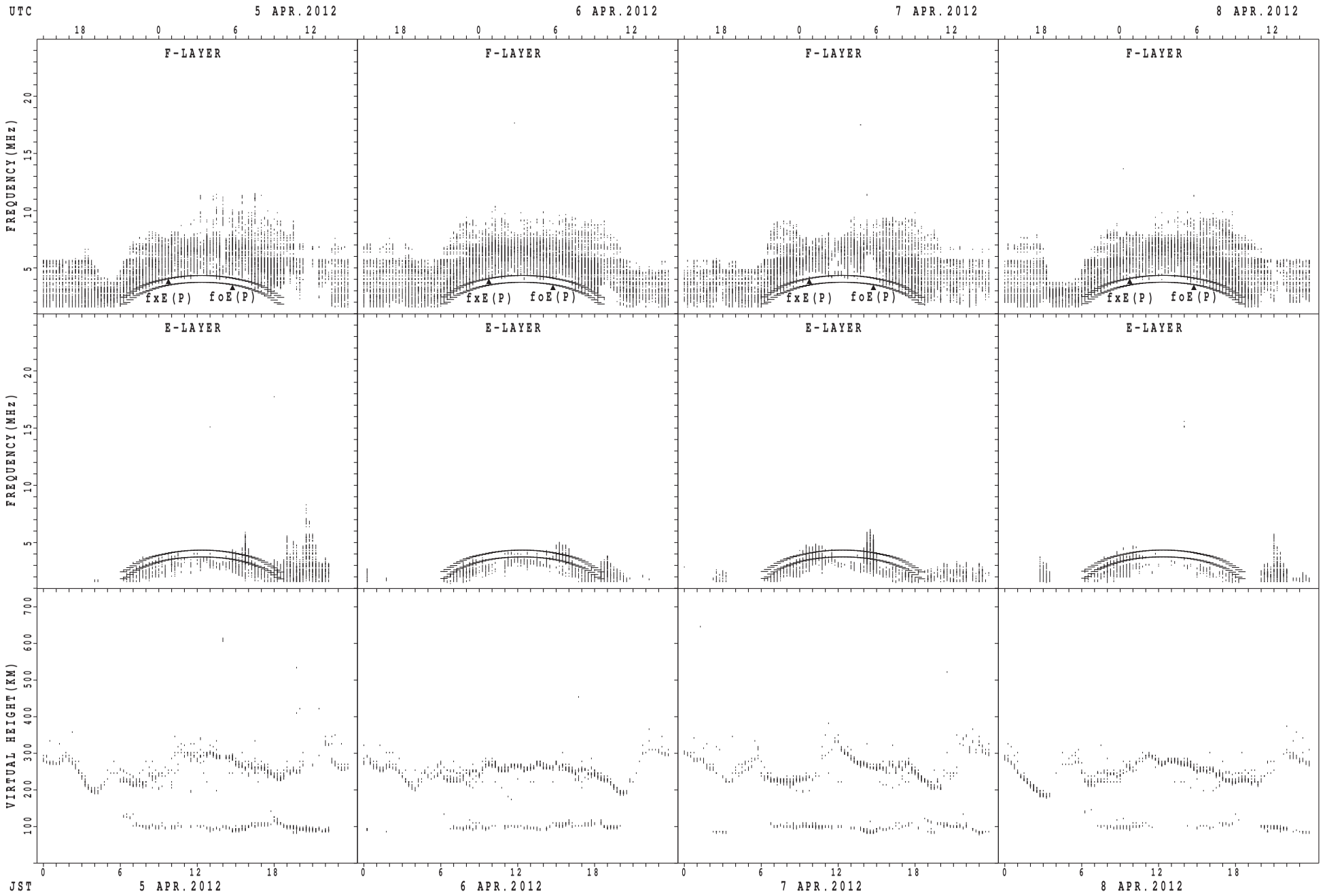
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



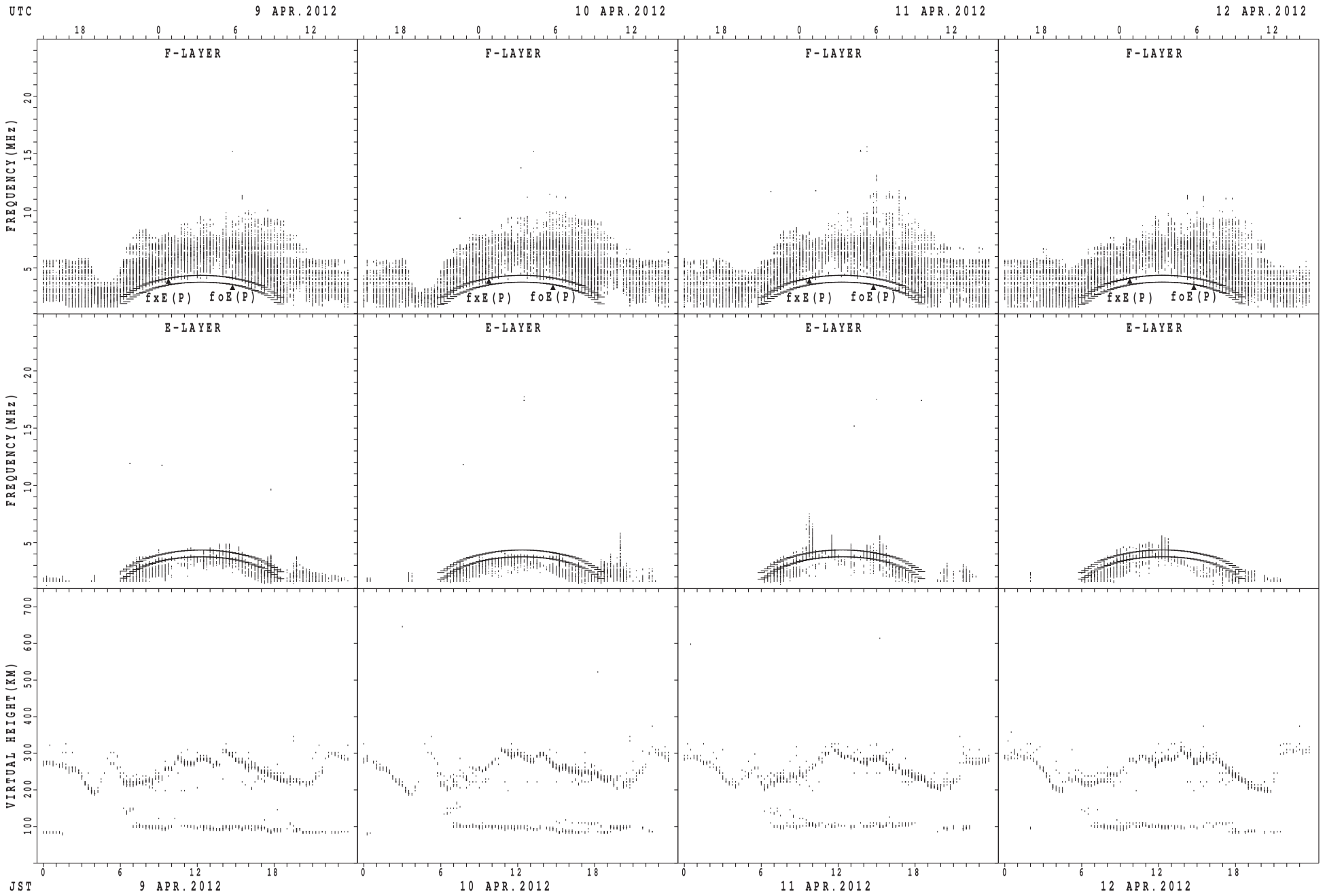
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



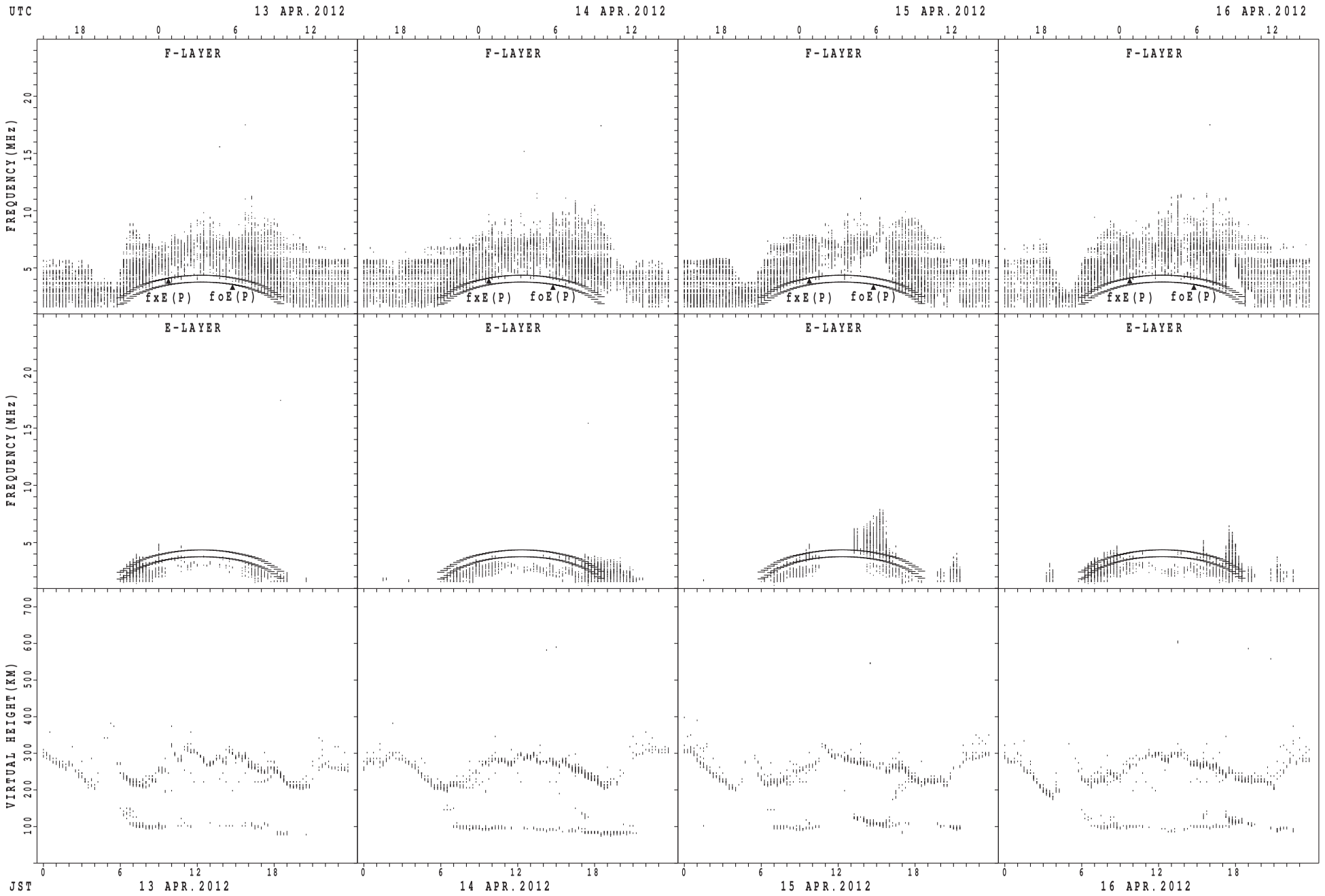
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



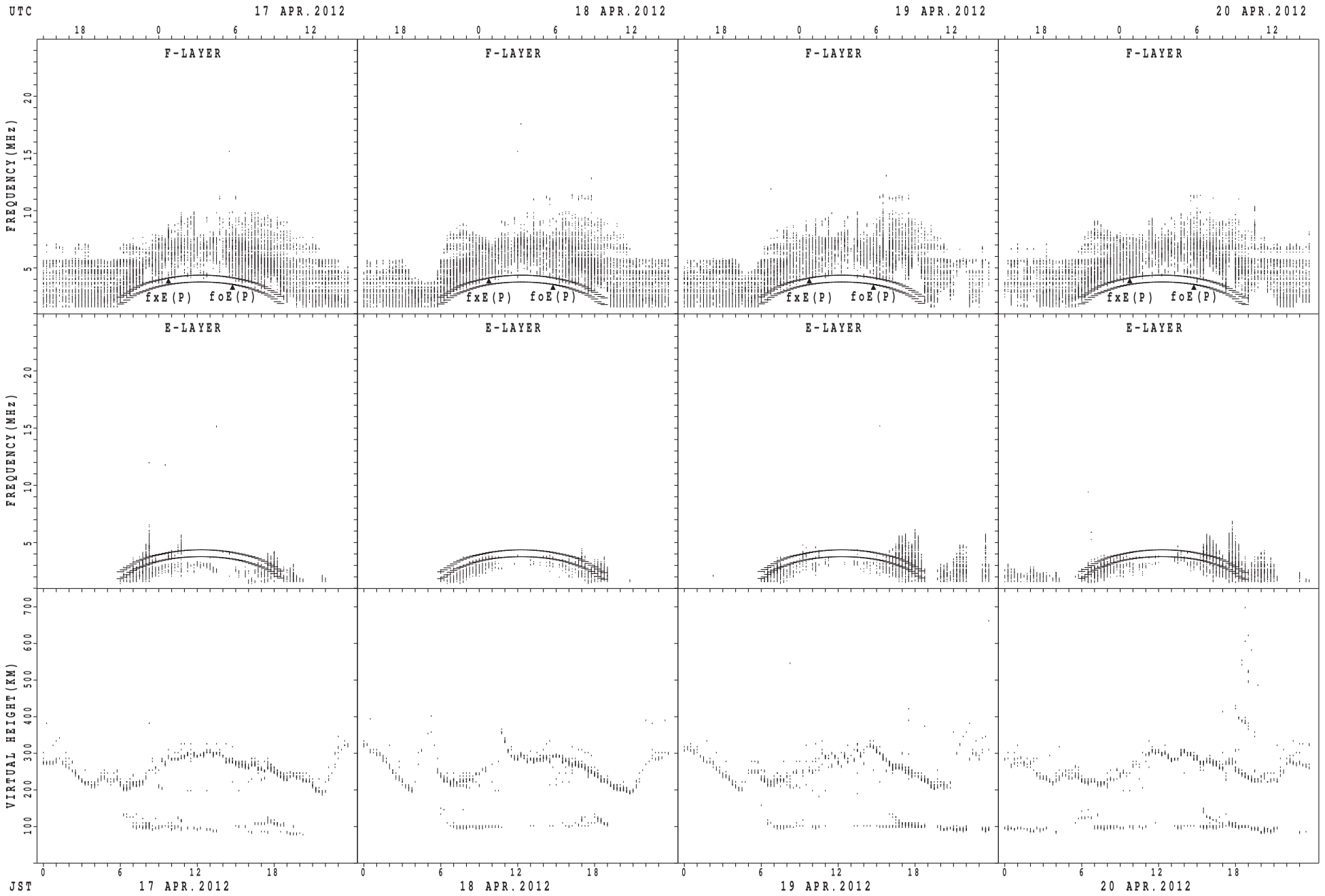
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



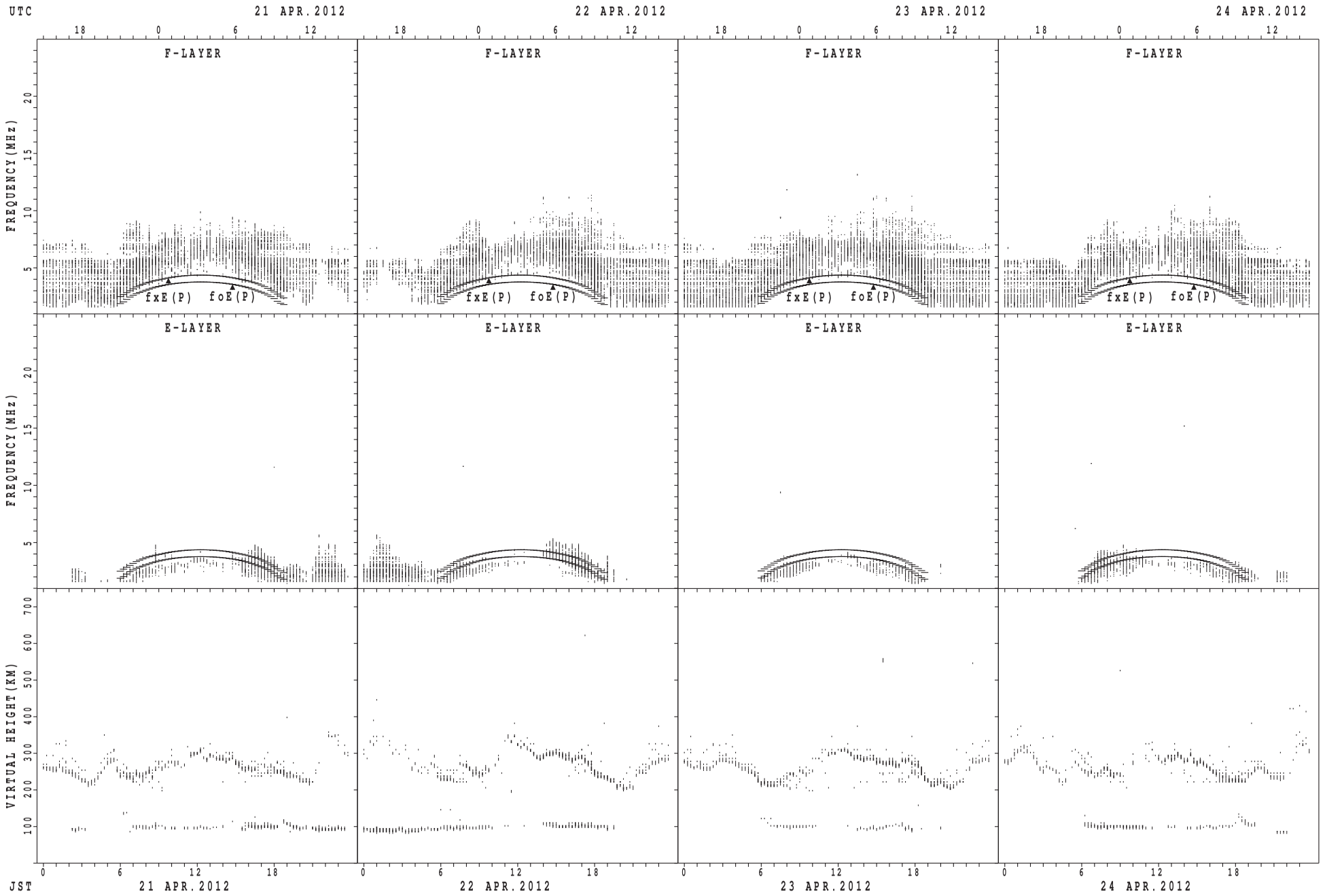
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



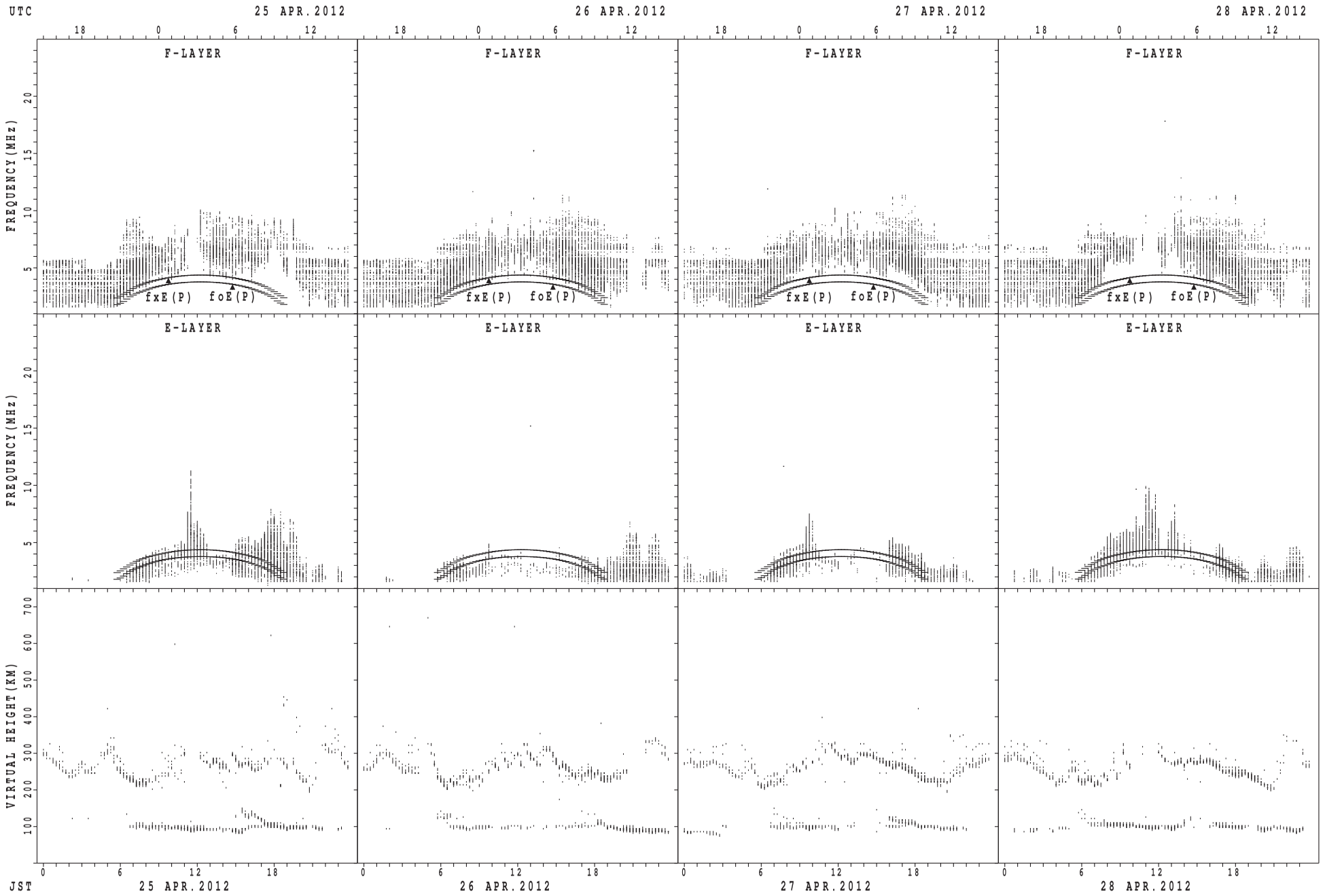
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



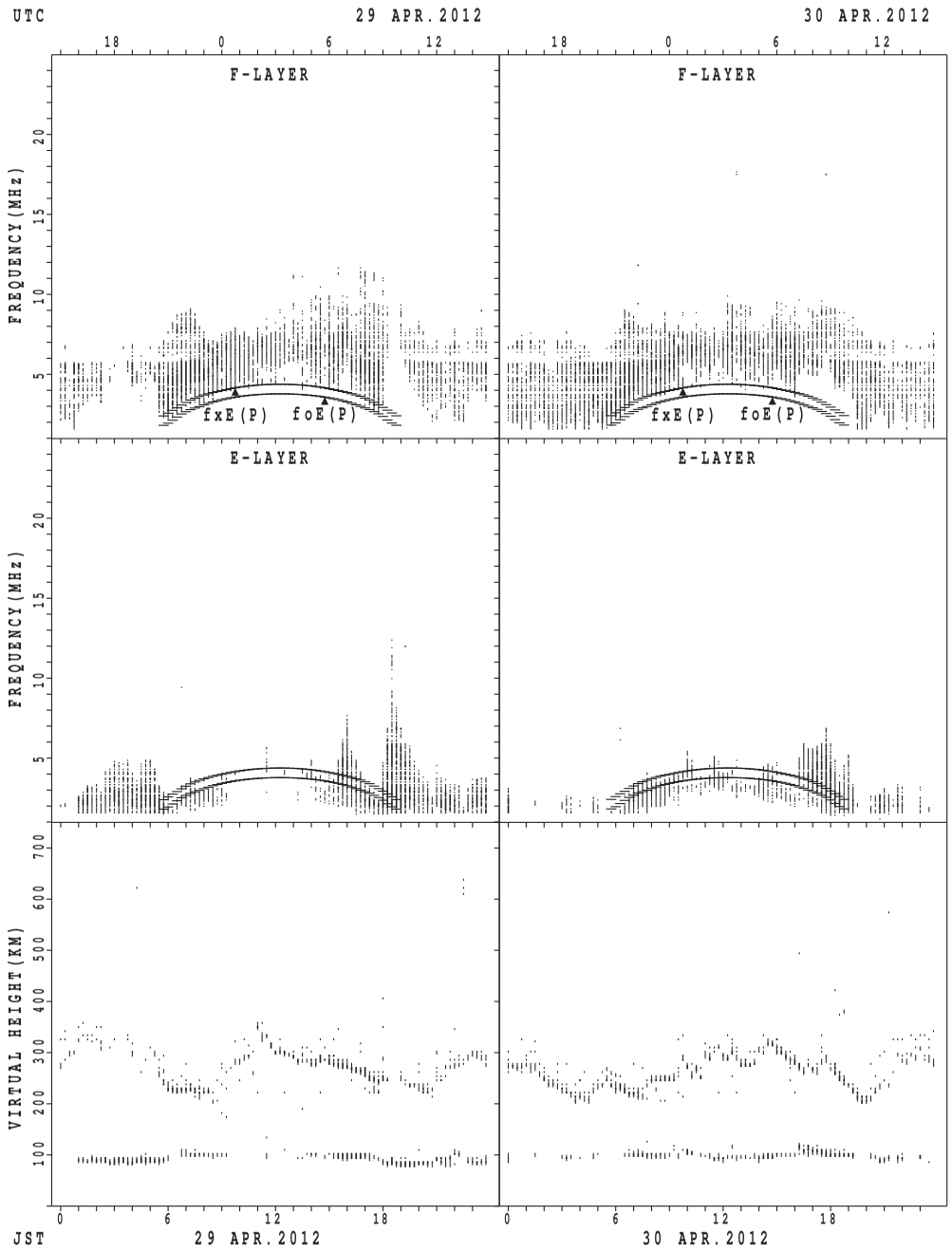
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



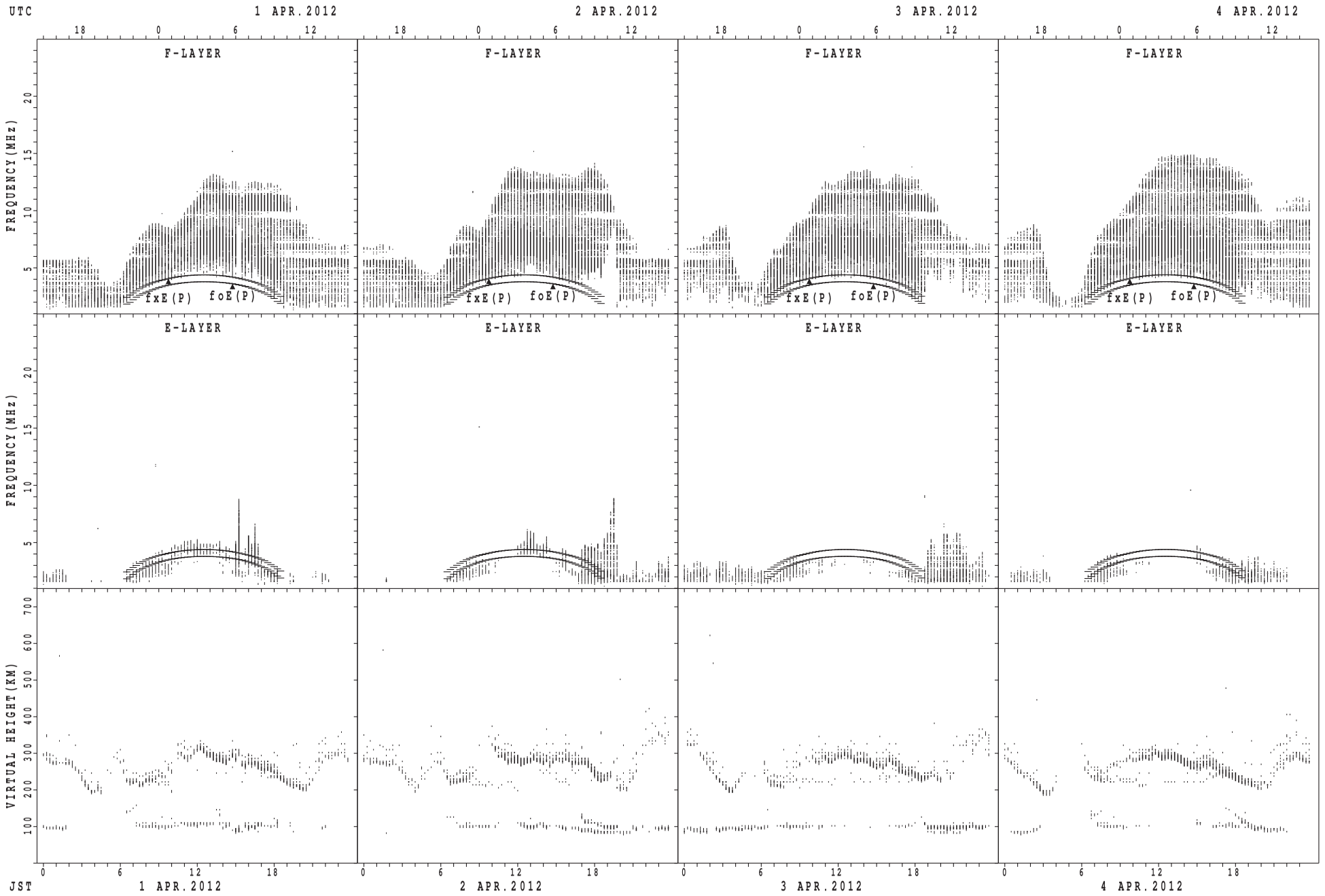
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



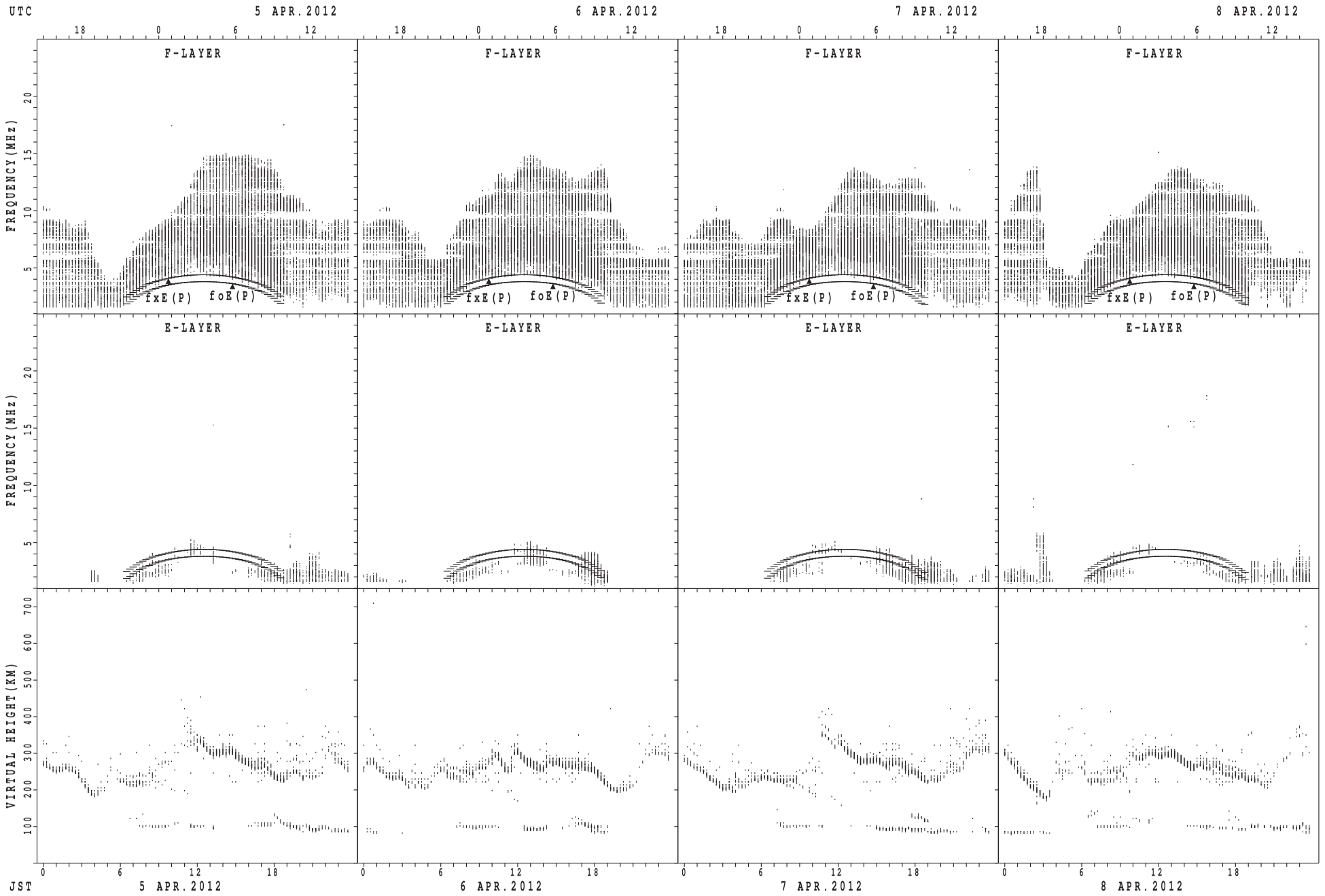
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



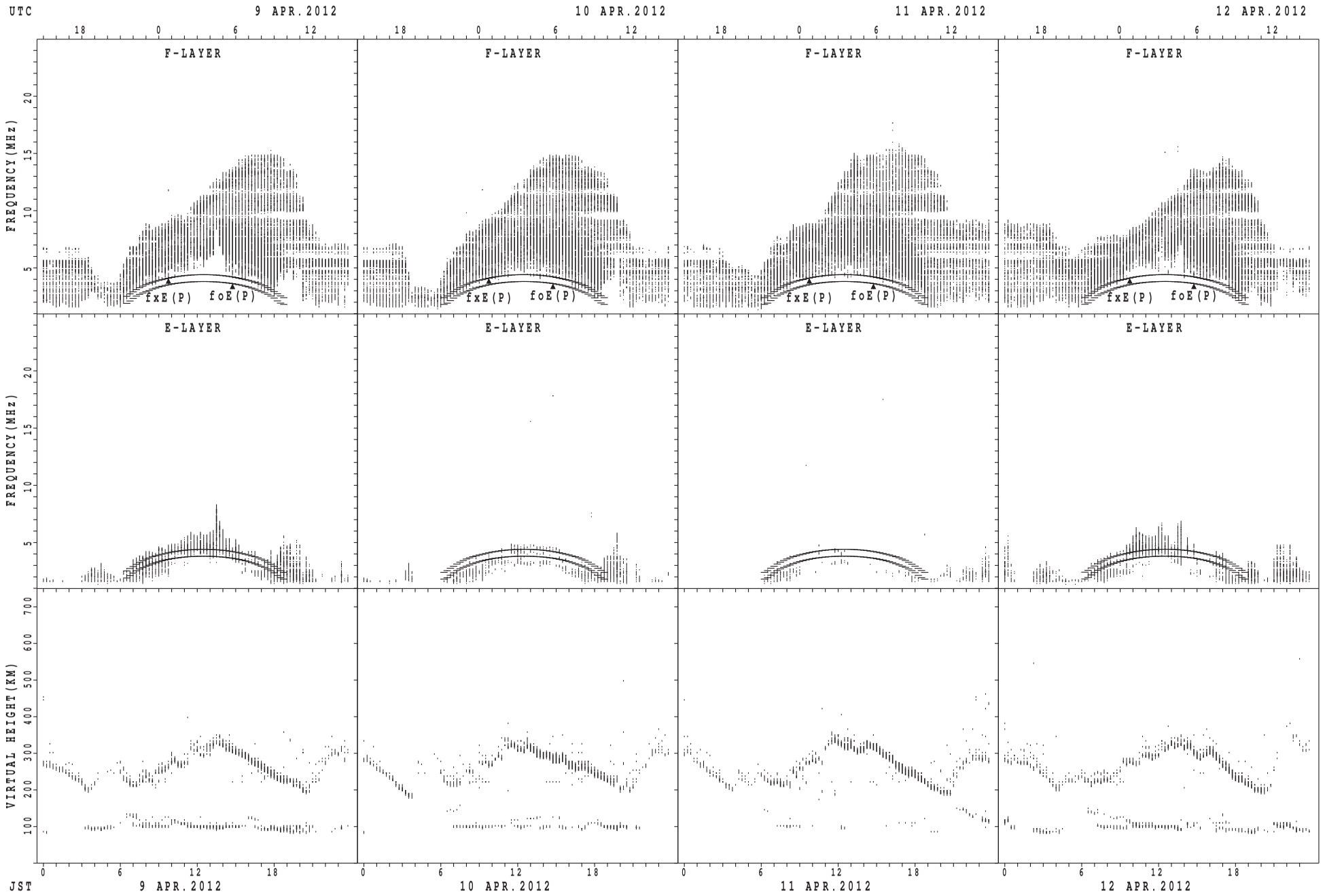
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



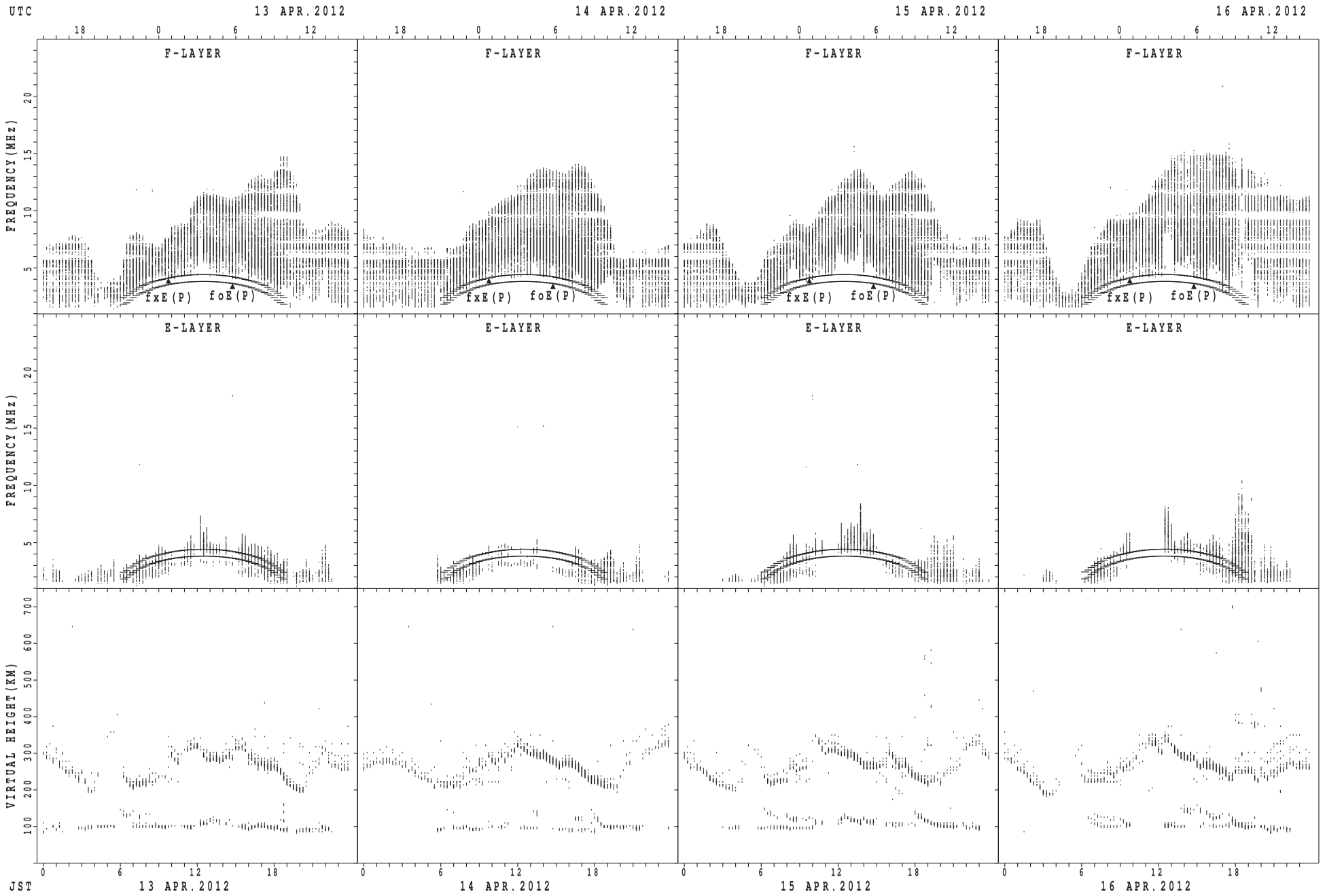
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



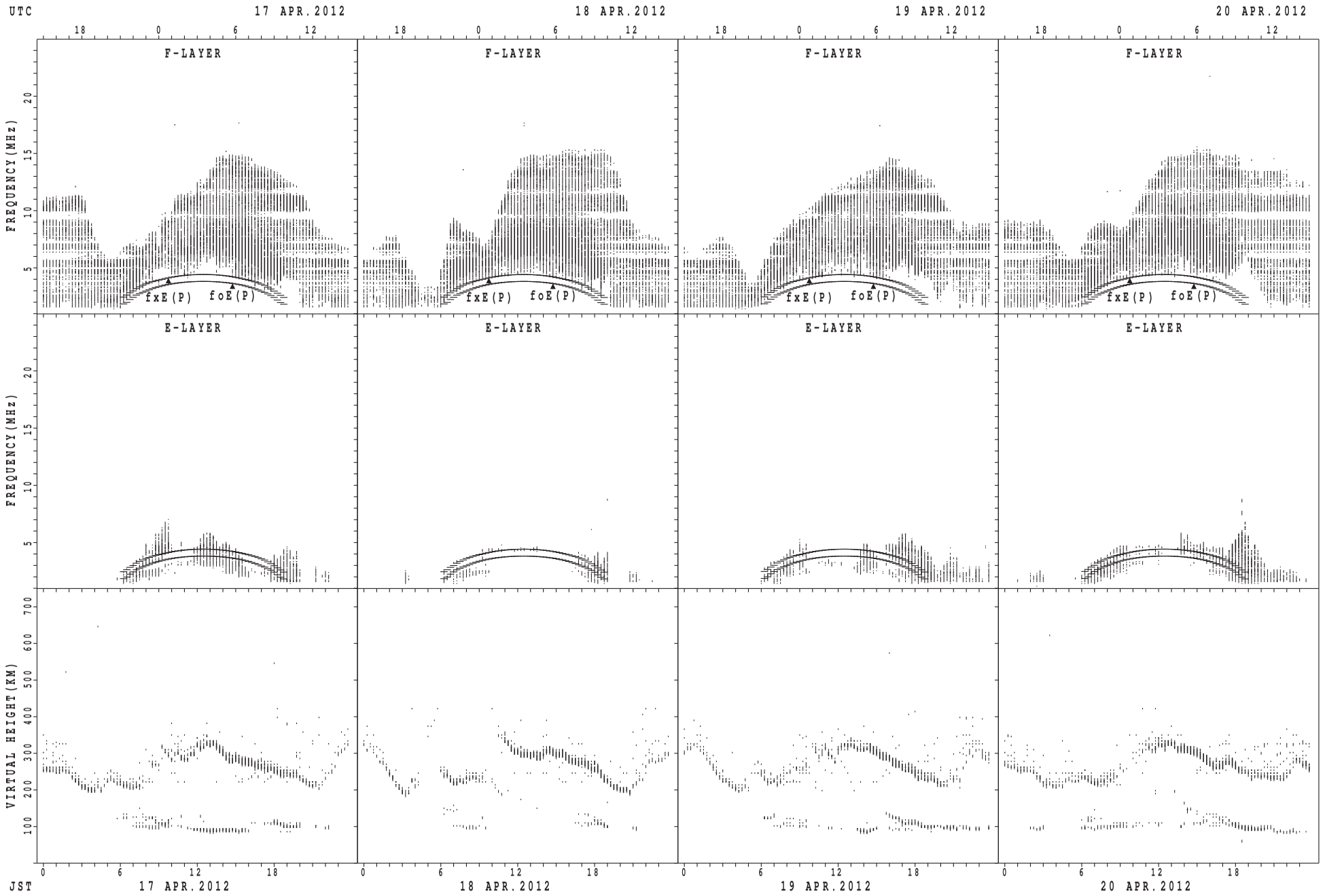
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



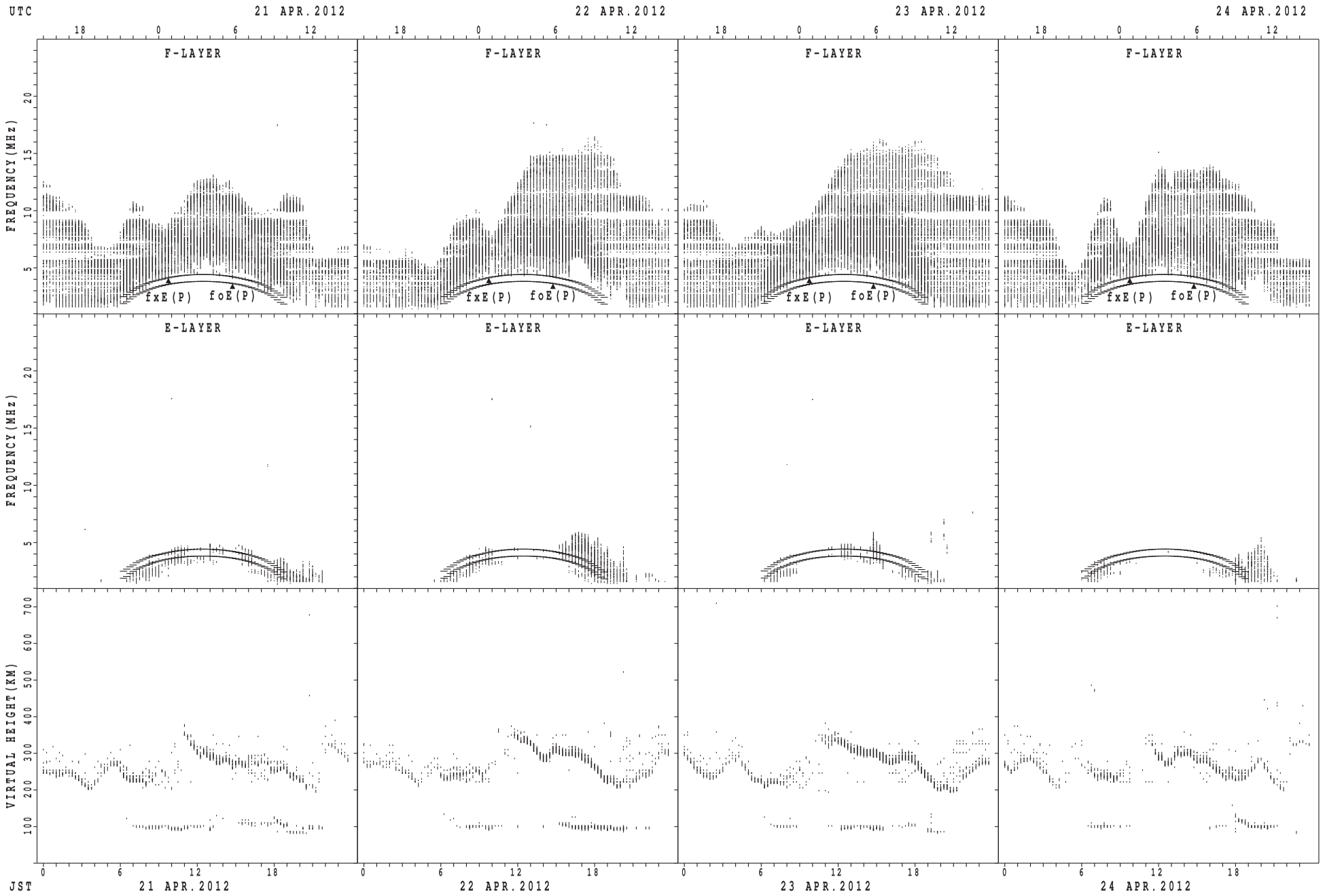
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



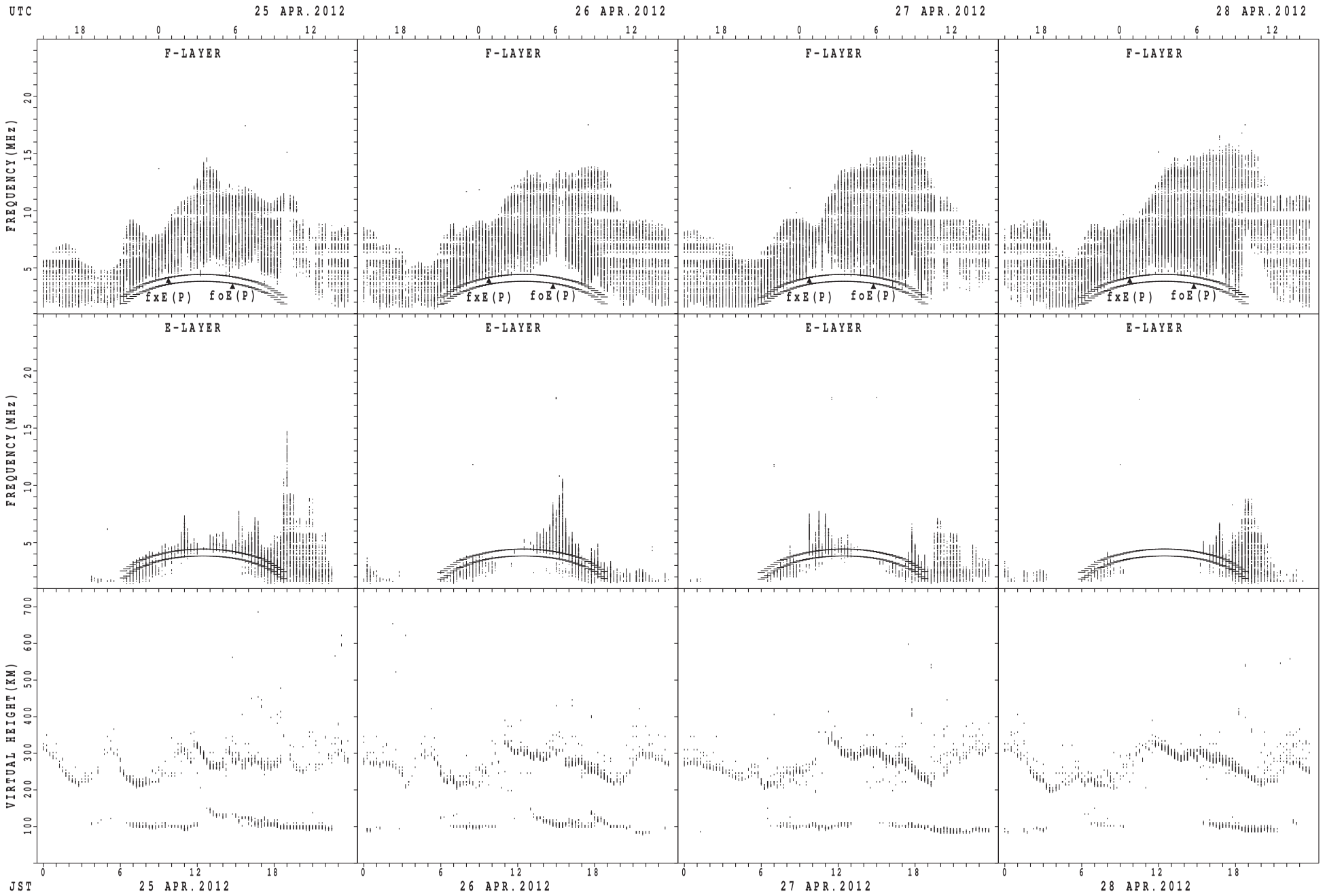
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



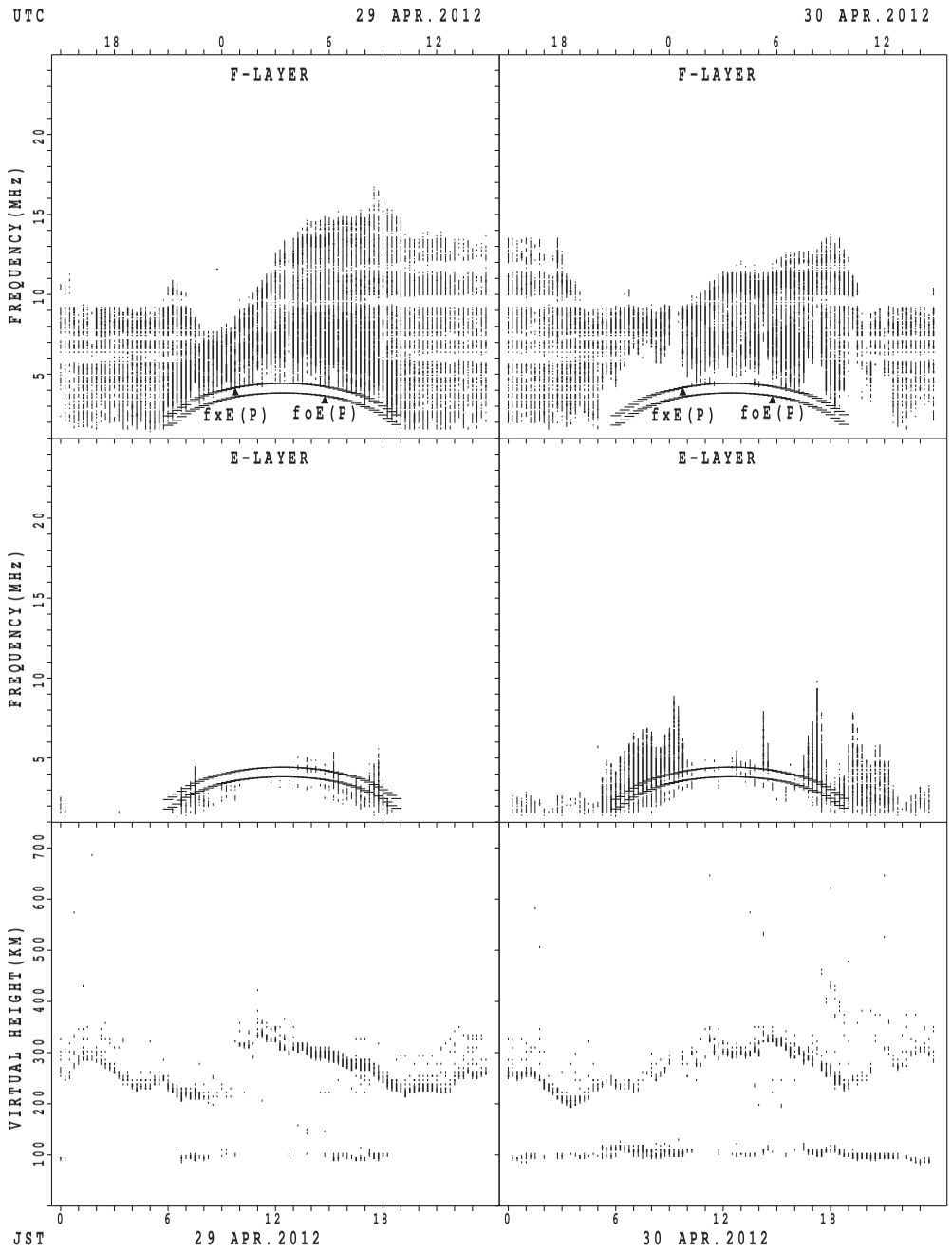
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

APR.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						1	14	19	13							10	26	28	23	21	11	10	2	
MED						258	255	262	254							256	262	261	260	264	272	284	271	
U Q						129	276	280	263							262	266	267	264	272	284	296	288	
L Q						129	242	246	239							244	254	251	254	253	260	264	254	

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	6	2	2	4	1	1	12	1	3	6	4	3	5	4	4	3	6	11	14	10	8	6	7	6
MED	97	97	95	93	113	137	134	113	103	111	106	103	105	98	98	105	108	95	100	101	102	103	101	99
U Q	103	107	101	113	56	68	149	56	107	111	109	107	106	101	101	105	123	111	109	105	114	111	111	103
L Q	97	87	89	89	56	68	122	56	101	107	104	101	102	97	92	103	99	89	87	87	98	97	95	97

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		1	1	2		1	17	26	26							16	30	30	30	26	13	1	2	1
MED		324	238	257		278	238	246	250							262	261	254	250	246	252	248	333	306
U Q		162	119	274		139	257	256	262							270	270	270	256	254	267	124	338	153
L Q		162	119	240		139	232	240	234							257	252	244	238	234	238	124	328	153

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	8	5	2	3	4	1	1	1	5	5	7	4	4	3	5	6	7	8	19	21	16	11	10	4
MED	99	97	95	95	101	97	143	105	111	109	103	120	108	105	105	109	113	111	103	101	97	99	100	100
U Q	103	98	103	97	105	48	71	52	117	112	113	135	113	121	126	129	119	113	107	103	105	103	103	104
L Q	98	96	87	93	96	48	71	52	104	103	103	104	103	103	95	103	97	99	97	91	94	97	95	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	3	3	5	5	1		8	24	28	16							30	30	29	29	22	5	4	4
MED	304	314	280	238	256		248	238	245	252							264	259	244	238	238	274	321	309
U Q	318	330	301	272	128		264	249	249	278							270	264	255	248	252	323	339	333
L Q	294	300	253	217	128		241	229	230	240							256	246	238	231	230	246	319	304

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	4	4	7	8	4	2	6	18	10	12	11	6	5	4	9	9	14	11	19	23	19	17	15	8
MED	92	94	89	94	88	95	135	125	111	107	107	101	99	100	105	105	113	111	103	99	95	95	95	91
U Q	95	97	91	101	89	99	139	143	113	107	111	105	103	143	112	111	127	119	115	107	103	100	97	95
L Q	90	89	89	89	85	91	93	113	107	105	103	97	94	96	94	91	105	103	97	89	91	94	91	88

MONTHLY MEDIANS OF h′F AND h′Es

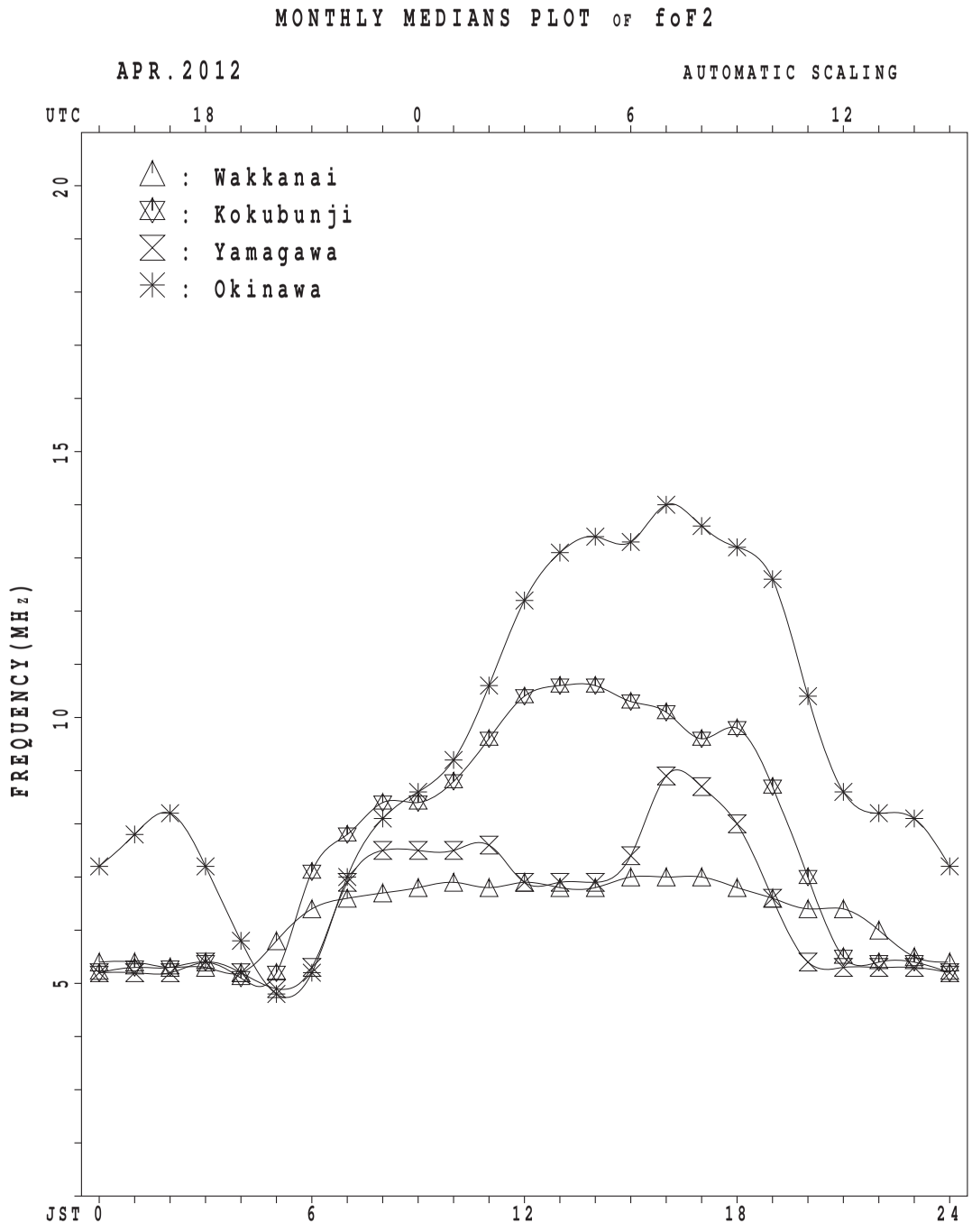
APR.2012 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	14	17	20	17	3	3	4	22	29	27							30	30	30	29	28	16	16	15
MED	308	290	270	242	262	280	239	233	244	262							274	263	246	230	238	293	316	310
U Q	328	321	298	257	282	290	259	244	255	272							284	272	254	238	254	320	332	344
L Q	278	274	255	222	222	274	234	222	237	252							270	256	236	222	216	250	293	290

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	7	7	2	6	5	4	7	14	9	11	11	10	12	15	13	13	13	13	23	26	21	19	18	9
MED	89	91	92	96	97	102	111	136	113	107	109	103	105	105	115	113	113	111	113	103	99	97	97	95
U Q	101	93	99	99	142	105	145	141	120	119	123	111	111	113	137	129	128	124	121	105	102	101	99	97
L Q	89	89	85	95	96	98	97	125	112	105	107	97	104	99	98	97	102	105	101	95	94	93	93	92


MONTHLY MEDIANS PLOT OF foF2
APR.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

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	X 84	X 76	X 77	X 74	69
3	X 70	X 71	X 75	X 71	X 67					C	C	C	C	C	C	C	C			X 84	X 80	X 76	X 73	X 70
4	X 67	X 65	X 66	X 68	X 62															X 77	X 73	X 71	X 68	X 66
5	X 65	X 62	X 62	X 62	X 61															X 84	X 84	X 84	X 81	X 72
6	X 73		X 64	X 59	X 48															X 77	X 74	X 69	X 66	X 63
7	X 62	X 62	X 59	X 58	X 57															X 84	X 79	X 76	X 73	X 71
8	X 70	74	X 67	X 63	X 51															X 73	X 69	X 69	X 69	X 67
9	X 65	X 64	X 62	X 60	X 57															X 75	X 75	X 74	X 71	X 69
10	X 68	X 68	X 66	X 66	X 54															X 82	X 79	X 77	X 75	X 74
11	X 72	X 71	X 69	X 67	X 67															X 82	X 81	X 76	X 71	X 67
12	X 68	X 67	X 65	X 63	X 61															X 88	X 76	X 77	X 73	X 64
13	X 65	X 65	X 66	X 66	X 60															X 84	X 83	X 83	X 73	X 69
14	X 71	X 71	68	68	X 67															X 85	X 83	X 72	X 65	X 65
15	X 64	X 63	X 59	X 59	X 65															X 79	X 78	X 76	73	X 73
16	X 72	X 72	X 72	X 70	X 60															X 88	X 82	X 78	X 64	X 64
17	X 63	X 62	X 61	X 61	X 59															X 92	X 87	X 85	X 77	X 68
18	66	X 65	66	66	58															X 89	X 76	X 71	X 69	X 66
19	64	X 63	X 63	X 63	X 61															X 99	X 92	X 68	X 63	X 64
20	X 60	X 58	X 59	X 58	X 56															X 95	X 83	X 80	X 73	X 67
21	X 67	X 67	X 66	X 54	X 46															X 75	X 72	X 69	X 70	X 64
22	X 61	X 59	X 58	X 56	X 55															X 77	X 82	X 82	X 74	X 69
23	X 67	X 63	X 62	X 62	X 62															X 85	X 83	X 79	X 74	X 74
24	X 68	X 66	X 67	X 66	X 65															64	64	66	66	67
25	68	66	61	63	X 57															X 93	X 80	X 80	X 71	X 71
26	67	X 64	X 65	X 59	X 51															X 73	X 71	X 71	X 70	X 69
27	X 68	X 64	X 64	X 60	X 60															X 85	X 77	X 76	X 72	69
28	X 70	X 67	67	66	X 66															X 82	X 82	X 81	X 82	X 75
29	X 70	X 68	X 67	X 65	X 65															X 84	X 84	X 80	X 77	X 71
30	X 72	X 74	X 71	X 71	X 71															X 95	X 89	X 85	X 77	X 74
31																								
	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	28	27	28	28	28															29	29	29	29	29
MED	X 68	X 65	X 66	X 63	X 60															X 84	X 80	X 76	X 73	X 69
U Q	X 70	X 68	X 67	X 66	X 65															X 88	X 83	X 80	X 74	X 71
L Q	X 65	X 63	X 62	X 60	X 56															X 77	X 76	X 71	X 69	X 66

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	R 77	69	70	67	60
3	63	64	68	64	60	62	72	76	R 76	C	C	C	C	C	C	C	C	77	78	R 78	73	J R 69	66	63
4	60	58	59	62	55	58	67	68	74	J Y 85	U Y 96	U R 98	U R 100	Y	98	U R 96	95	82	78	70	67	65	61	59
5	58	55	55	55	R 54	57	64	74	R 83	R 84	U R 90	U R 99	U R 98	R 99	R 99	U R 95	R 90	92	U R 88	R 77	R 77	J R 77	75	65
6	66		59	53	40	37	46	49	54	59	66	68	70	68	70	71	70	71	70	70	68	62	59	56
7	55	55	52	51	50	52	64	71	R 75	92	82	R 78	R 77	J R 79	J R 81	77	U R 78	78	R 81	R 78	73	69	66	64
8	63	67	60	56	44	48	62	72	74	J R 83	J R 82	R 89	Y	R 89	90	U Y 80	76	73	69	66	62	62	62	60
9	58	57	55	53	50	52	59	62	73	77	R 78	R 90	88	U R 83	93	U R 84	74	67	66	69	68	67	64	62
10	61	61	59	59	48	50	54	63	71	87	R 86	R 89	R 82	92	J R 94	91	76	76	78	76	73	70	69	67
11	65	64	62	60	60	62	66	75	75	92	U R 97	R 79	U R 78	92	96	U R 86	84	83	78	77	74	69	64	61
12	61	60	58	56	54	60	62	63	69	75	J R 84	U R 96	U R 89	U R 81	J R 85	R 84	78	80	J R 87	81	70	68	66	58
13	58	58	58	58	52	52	63	66	U R 84	R 88	92	80	J R 94	J R 95	98	99	R 82	76	76	76	76	76	66	62
14	64	64	F 60	F 59	60	68	74	74	70	75	78	R 80	R 80	U R 77	R 81	U R 84	78	80	80	R 78	75	65	58	58
15	57	56	52	53	58	67	67	67	76	U R 82	92	R 78	U R 78	U R 78	R 90	97	J R 97	86	71	72	69	69	66	66
16	66	64	65	63	52	56	63	74	U R 75	79	U Y 79	U R 92	U R 82	82	R 79	R 85	83	77	R 79	R 83	76	72	60	58
17	56	55	V 54	R 54	52	63	67	R 77	R 76	J R 84	87	R 87	92	J R 92	J R 91	R 85	81	75	79	J R 85	R 80	R 78	70	61
18	60	59	F 57	F 56	49	51	58	67	76	U R 82	J R 86	74	U Y 76	U Y 76	R 96	99	95	90	85	83	69	65	62	59
19	F 57	56	56	56	54	61	72	J R 85	93	J R 90	U R 92	J R 87	U Y 87	J R 90	R 90	U R 82	U R 84	84	92	U R 91	U R 85	62	57	57
20	54	52	53	52	50	62	72	R 82	U Y 79	87	93	92	R 80	U R 85	J R 93	J Y 85	R 87	92	J R 92	88	R 76	74	66	60
21	60	60	59	46	38	40	48	52	R 54	U R 54	58	61	R 62	64	64	64	67	69	69	68	66	62	63	57
22	55	52	51	49	48	51	63	69	70	V 72	R 75	75	73	74	75	R 76	80	86	R 82	R 78	76	75	67	62
23	60	56	55	55	55	58	68	70	71	70	74	76	U R 77	75	76	U R 78	79	R 78	86	78	76	72	67	66
24	61	60	60	59	58	54	V 53	U R 56	58	F 67	R 68	67	72	72	73	74	70	74	65	54	F 54	F 55	F 55	F 55
25	F 57	54	F 54	52	50	55	62	63	68	74	74	U R 75	76	U Y 76	U R 78	92	75	74	79	86	73	73	66	64
26	57	57	58	R 53	R 44	49	49	50	R 51	R 54	57	59	59	62	70	74	74	68	68	67	64	64	64	62
27	61	57	57	R 53	53	62	69	72	68	68	74	76	74	74	R 76	R 85	R 80	79	79	78	71	69	66	F 61
28	64	60	F 58	F 56	59	63	69	61	64	65	67	71	72	R 76	U R 81	U R 79	77	74	71	75	75	75	75	68
29	63	61	60	58	58	61	64	68	R 75	71	70	70	R 75	76	76	J R 71	R 86	J R 78	81	77	77	73	70	64
30	65	67	64	64	64	72	73	R 74	77	R 77	U R 78	U R 85	Y	78	U Y 79	J R 85	78	R 79	80	88	U R 82	78	70	R 67
31																								
	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	28	27	28	28	28	28	28	28	28	27	27	27	25	26	27	27	27	28	28	29	29	29	29	29
MED	60	58	58	56	52	58	64	68	74	77	79	R 79	R 78	78	R 81	R 84	79	78	79	77	73	69	66	61
U Q	63	61	60	59	58	62	68	74	76	85	U 90	U R 89	U R 88	R 89	R 93	91	R 84	82	R 82	82	R 76	74	67	64
L Q	57	56	55	53	50	52	60	63	68	70	74	74	74	75	76	77	76	74	71	71	68	65	62	58

APR. 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3								L	L	C	C	C	C	C	C	C	C							
4										L	L	L	L	U L 512	L	L	L	L						
5								L	L	L	U L 480	U L 492	U L 500	L	L	L	L							
6							324	388	420	472	468	476	L	A	A	L	L							
7								L	U L 432	L 452	U L 468	L 468	L 464	L 468	U L 464	L	L							
8									L	U L 492	L	L 492	L	U L 508	L	L	L	L						
9									L	U L 464	L	L 468	L 488	L	L 484	L								
10							272	304	L	U L 484	L 484	L 484	U L 484	L 496	L 488	U L 436		L						
11								L	L	U L 452	L 456	U L 452	L	L 480	U L 480	U L 468		L						
12									L	U L 444	U L 492	L 492	L 492	U L 492	L 460	U L 456	L							
13									U L 444	L	U L 520	U L 488	U L 500	L 500	L	L	L		188					
14								L	L	460	456	464	L 484	L 484	L 468	U L 464	L	L						
15								L	L	L 492	U L 492	L 492	U L 504	L	L 488	U L 488	U L 452	L						
16								L	L	L	U L 492	L 492	L	U L 492	L 484	U L 484	L							
17								L	L	L 460	L 488	U L 480	L 504	U L 500	U L 500	U L 456	L							
18								L	L	U L 464	L	L 492	U L 500	L 532	U L 512	U L 492	L							
19								L	L	U L 488	U L 488	L	L	U L 540	L 512	A	L	L	U L 288					
20								L	L	L 476	U L 484	L	L	L	L 508	L	L	L						
21							L	404	424	440	480	500	488	U L 476	U L 476	L	U L 432	L						
22								L	L	L	484	L 500	U L 500	L	L	U L 500	L	L						
23							L	L	L 468	U L 492	U L 504	L 500	L	L	L	U L 488	L	L						
24						L	460	448	420	A	496	500	U L 580	532	U L 512	L 480	U L 408	L						
25							L	L 456	464	U L 472	U L 484	U L 568	U L 544	L 544	U L 536	U L 508	L							
26						L		L	U L 456	A	R	U L 488	L	U L 508	U L 496	L 488	A							
27								L 468	L 476	L	U L 500	L 512	L	L	A	L	A	A						
28							L		U L 460	A	A	A	U L 524	L 520	L	L	L							
29								L	L 452	L 488	L	L 504	L 512	L 508	U L 488	L 488	L	L						
30							L	L	L	U L 492	500	L 500	U R 492	L	U L 500	U L 492	L	L						
31																								
	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	6	11	18	20	23	17	18	18	15	3		2					
MED							324	426	L 452	U L 472	U L 486	L 492	U L 500	L 504	U L 488	U L 488	U L 432		238					
U Q							460	L 456	L 464	U L 488	U L 494	L 500	U L 508	L 520	U L 508	U L 492	U L 452							
L Q							272	388	424	L 460	480	L 480	L 488	L 492	U L 480	U L 464	U L 408							

APR. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3						B	192	256	292	C	C	C	C	C	C	C	C	228	176					
4						B	212	260	288	320	324	U A 324	A	324	324	292	276	220	B					
5						B	228	260	300	316	328	328	324	336	328	304	280	228	B					
6						A	204	264	296	328	R 348	U A 324	U A 324	A	A	316	296	260	A					
7						B	228	264	300	320	320	336	U A 332	U A 324	320	308	276	240	B					
8						B	200	260	300	316	328	U A 336	A	324	316	308	284	224	A					
9						B	216	264	292	304	332	R 344	R 344	336	332	316	284	204	B					
10						J R 176	216	256	296	316	332	328	332	340	340	308	276	216	J R 200					
11						J R 180	200	268	296	320	340	R 348	U A 352	360	340	324	284	260	B					
12						B	216	276	320	328	336	344	348	A	A	316	284	224	B					
13						B	208	260	R 300	320	348	348	U A 352	A	312	296	272	224	B					
14						B	224	272	R 296	340	A 308	340	344	356	336	308	272	224	180					
15						J R 176	232	272	316	328	336	U R 352	R	R 332	324	312	280	240	B					
16						164	224	276	308	328	R 340	344	356	344	344	R 312	A	244	176					
17						172	220	284	316	340	348	360	R 364	A 360	344	312	296	252	176					
18						176	224	276	312	332	348	356	360	356	336	A	A	248	A					
19						164	260	284	320	340	A 348	352	U A 364	A 360	352	A 340	A	A	A					
20						180	244	296	320	332	A 360	A	A	356	344	328	288	240	U R 176					
21						B	216	R 284	316	340	A 356	352	360	376	364	324	292	240	216					
22						168	232	300	320	340	352	356	U A 356	R 360	356	340	300	A	A					
23						188	256	300	328	344	U A 364	U A 364	U A 364	A	A	A	A	280	200					
24						184	252	288	328	A	R 348	U A 352	U R 356	356	344	332	304	268	188					
25						176	248	288	332	348	R 360	U R 380	A	A	344	324	288	264	A					
26						176	252	A 272	312	340	360	368	360	A	A	340	A 276	A	A					
27						A	260	296	324	A 344	A	A	A	A	A	336	312	260	A					
28						A	264	300	320	U A 340	R 352	356	A	360	U A 340	A	304	268	204					
29						188	260	288	320	U A 332	A	U A 348	A	R 352	R	324	288	244	200					
30						176	252	288	316	332	352	A	372	372	348	324	304	260	196					
31																								
	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						15	28	28	28	26	25	24	19	20	21	24	23	25	12					
MED						176	226	276	314	332	348	348	356	356	340	316	284	240	192					
U Q						180	252	288	320	340	352	356	360	360	344	326	296	260	200					
L Q						172	216	264	298	320	332	338	344	336	326	308	276	224	176					

APR. 2012 foE (0.01MHz)

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	22	E B 14	E B 14	J A 17	E B 14
3	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	G	33	C	C	C	C	C	C	C	C	24	J A 19	J A 18	E B 12	E B 12	E B 12	E B 12
4	E B 12	E B 12	E B 12	E B 14	E B 14	J A 23	G	28	G	G 28	36	43	35	G 29	G 22	G 18	G 18	G 17	J A 18	E B 11	J A 16	E B 15	E B 15	E B 15
5	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 19	29	31	33	35	35	35	G 20	G 26	G	G	G 22	E B 15	J A 16	J A 14	J A 35	J A 28	J A 17
6	20		J A 21	E B 15	J A 19	21	26	31	36	39	39	38	42	59	J A 51	G 26	G 29	G 19	19	36	J A 19	20	E B 14	E B 14
7	E B 14	E B 14	J A 11	E B 15	E B 15	E B 15	G 18	29	34	35	37	37	36	34	G	G 25	28	G 21	J A 19	E B 16	17	E B 16	E B 16	E B 16
8	J A 20	J A 14	21	24	19	18	25	30	32	34	35	36	36	37	G 30	G 25	G 27	G 19	J A 26	J A 19	E B 11	E B 11	E B 11	E B 11
9	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	G	G 23	31	32	G 32	38	38	G	37	G	G	24	E B 15	J A 15	E B 15	E B 15	E B 15	E B 15
10	E B 12	E B 10	E B 10	22	E B 10	G	24	28	33	34	36	36	38	G 24	G 21	G	G	G	G	E B 16	E B 14	E B 14	E B 14	E B 14
11	21	E B 14	E B 15	E B 15	E B 15	G	24	30	31	35	39	G	38	39	G 23	G 28	G 26	G 24	J A 25	J A 15	E B 14	E B 14	E B 14	E B 14
12	E B 13	E B 12	E B 12	E B 15	E B 15	E B 15	24	G	G 28	34	37	37	37	36	34	33	32	25	J A 25	J A 18	J A 18	21	21	20
13	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	24	30	G 28	34	38	38	37	37	G 31	G 26	G	G	E B 16	18	E B 15	E B 13	20	E B 12
14	E B 12	E B 14	E B 13	20	E B 15	E B 15	G	G 24	32	G	38	G 34	38	38	36	G	G	G 22	G	E B 13	E B 12	E B 11	E B 11	E B 11
15	E B 11	E B 15	E B 13	E B 12	E B 12	G	G	G	34	35	39	G	28	G 31	G 30	G 26	G	G	E B 18	E B 14	E B 14	E B 14	E B 14	J A 16
16	E B 13	E B 12	E B 12	E B 14	E B 14	G	27	31	33	G 29	G 29	G 29	G	G 29	G	36	30	G 24	G	E B 12	E B 12	E B 12	E B 12	J A 15
17	E B 13	E B 13	E B 13	21	E B 13	G	26	G	G	35	37	G 32	40	40	G 28	G 24	32	J A 25	J A 21	J A 18	E B 13	E B 13	E B 13	E B 14
18	E B 13	E B 13	E B 13	E B 16	E B 11	G	24	30	34	38	38	40	40	40	40	36	J A 33	G	22	22	J A 18	J A 21	J A 17	J A 21
19	J A 16	J A 16	E B 15	21	19	G	G	32	36	38	39	39	43	40	38	J A 47	J A 44	J A 31	29	J A 26	E B 14	E B 14	E B 14	E B 14
20	J A 14	E B 13	E B 12	E B 12	E B 12	G	27	G	34	36	41	38	38	G 28	G 24	G	G	26	18	E B 12	E B 16	E B 12	E B 12	E B 12
21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 16	25	G	33	35	40	G 28	42	43	40	G 21	32	27	G 20	J A 21	22	E B 14	E B 14	E B 14
22	E B 14	E B 14	E B 14	E B 14	E B 14	20	26	32	36	39	40	40	39	G	39	G 25	J G 28	J A 37	J A 27	27	27	J A 14	E B 12	E B 12
23	E B 12	E B 12	E B 12	E B 12	E B 12	G	G	34	41	41	41	42	38	38	38	38	33	G 26	G 20	J A 21	J A 17	22	22	J A 17
24	E B 15	J A 16	E B 15	E B 15	E B 15	G	27	33	37	50	G	40	G 29	G 33	G	G	35	G	G	E B 14	E B 14	J A 33	J A 23	J A 23
25	J A 12	E B 12	E B 12	J A 20	J A 19	22	29	G 27	36	39	G	G 34	41	40	G 34	G	J G 25	27	29	J A 19	E B 13	E B 13	E B 13	E B 13
26	E B 13	E B 12	J A 11	E B 12	E B 14	G	G 20	32	35	J A 56	49	40	38	38	38	37	42	J A 37	J A 43	J A 42	J A 38	J A 31	26	J A 13
27	J A 17	43	32	J A 25	J A E B 12	20	G	34	38	45	J A 45	J A J A 45	J A 43	J A 55	J A 62	39	J A 49	J A 49	52	52	J A 38	55	38	38
28	J A 18	J A 14	J A 23	J A 40	J A 25	24	32	35	38	J A 53	J A 63	48	45	42	J A 46	J A 43	36	35	44	50	46	J A 32	J A 25	J A 35
29	J A 32	E B 13	E B 13	E B 13	E B 13	G	G 22	33	36	42	42	40	40	40	G 33	G	G 25	26	23	J A 18	E B 14	E B 14	E B 14	J A 25
30	J A 25	J A 13	E B 12	E B 12	E B 12	20	29	31	36	39	38	37	G 33	G	G 28	G	33	29	G 19	E B 12	E B 12	E B 12	J A 13	20
31																								
	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	28	27	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	28	28	29	29	29	29	29
MED	E B 14	E B 14	E B 13	E B 15	E B 14	G	24	30	34	35	38	38	38	37	G	G	G	G	G	18	E B 14	E B 14	E B 14	E B 14
U Q	J A 16	J A 14	15	20	15	19	26	32	36	39	40	40	40	40	38	36	33	27	26	22	J A 18	J A 21	20	J A 18
L Q	E B 13	E B 12	E B 12	E B 14	E B 12	E B 16	G	G	32	34	G 36	G	36	G 33	G 28	G 26	G 28	G 24	19	E B 14	E B 14	E B 13	E B 13	E B 13

APR. 2012 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E B 13	E B 14	E B 14	E B 14	E B 14
3	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 19	G	31	C	C	C	C	C	C	C	C	24	G 15	E B 12	E B 12	E B 12	E B 12	E B 12
4	E B 12	E B 12	E B 12	E B 14	E B 14	E B 14	G	G 26	G	G 24	34	36	34	G 24	G 20	G 17	G 17	G 17	12	E B 11	E B 16	E B 15	E B 15	E B 15
5	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 17	28	30	33	34	34	33	G 19	G 19	G	G	G 18	E B 15	E B 15	E B 14	34	25	E B 14
6	E B 13		E B 16	E B 15	16	17	25	27	G 30	36	36	38	40	50	47	G 23	G 28	G 18	18	24	17	E B 14	E B 14	E B 14
7	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	G 15	28	31	33	35	35	35	33	G	G 24	28	G 20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
8	17	E B 13	E B 13	E B 13	E B 14	E B 14	21	27	G 29	32	G 33	G 32	35	36	G 24	G 24	G 20	G 18	18	E B 11	E B 11	E B 11	E B 11	E B 11
9	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	G	G 17	G 29	31	G 26	36	36	G	36	G	G	22	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
10	E B 12	E B 10	E B 10	E B 10	E B 10		22	26	G 29	32	35	35	36	G 23	G 19	G	G	G	G	E B 16	E B 14	E B 14	E B 14	E B 14
11	E B 14	E B 14	E B 15	E B 15	E B 15	G	23	28	30	35	39	G	38	38	G 18	G 23	G 21	G 18	16	E B 14	E B 14	E B 14	E B 14	E B 14
12	E B 13	E B 12	E B 12	E B 15	E B 15	E B 15	22	G	G 22	G 30	35	35	G 35	35	33	32	G 28	G 20	18	E B 16	E B 14	E B 15	E B 15	E B 15
13	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	22	G 26	G 26	34	G 34	G 34	36	35	G 28	G 25	G	G	E B 16	E B 15	E B 15	E B 13	E B 12	E B 12
14	E B 12	E B 14	E B 13	E B 14	E B 15	E B 15	G	G 14	31	G	34	G 30	36	37	G 33	G	G	G 20	G	E B 13	E B 12	E B 11	E B 11	E B 11
15	E B 11	E B 15	E B 13	E B 12	E B 12	G	G	G	32	34	36	G	25	G 30	G 30	G 25	G	G	E B 18	E B 14	E B 14	E B 14	E B 14	E B 12
16	E B 13	E B 12	E B 12	E B 14	E B 14	G	24	G 27	G 29	G 27	G 27	G 27	G	G 27	G	34	29	G 22	G	E B 12	E B 12	E B 12	E B 12	E B 12
17	E B 13	E B 13	E B 13	E B 13	E B 13	G	24	G	G	35	G 35	G 30	38	38	G 25	G 19	30	G 18	G 17	12	E B 13	E B 13	E B 13	E B 14
18	E B 13	E B 13	E B 13	E B 16	E B 11	G	24	G 27	G 31	38	37	38	38	38	37	34	30	G	E B 19	15	17	18	16	18
19	E B 13	E B 13	E B 15	E B 15	E B 15	G	G	G 28	33	36	39	39	40	39	37	41	31	27	21	21	E B 14	E B 14	E B 14	E B 14
20	E B 12	E B 13	E B 12	E B 12	E B 12	G	27	G	G 30	G 30	38	U Y 38	38	G 28	G 24	G	G	24	G 15	E B 12	E B 16	E B 12	E B 12	E B 12
21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 16	24	G	G 29	G 32	40	G 24	38	40	38	G 17	30	26	G 19	18	17	E B 14	E B 14	E B 14
22	E B 14	E B 14	E B 14	E B 14	E B 14	18	25	G 29	33	38	37	37	U Y 38	G	38	G 22	G 20	29	22	20	E B 12	E B 12	E B 12	E B 12
23	E B 12	E B 12	E B 12	E B 12	E B 12	G	G	33	34	38	40	39	U Y 38	38	37	34	31	G 25	G 17	E B 14	15	E B 14	E B 14	E B 14
24	E B 15	E B 15	E B 15	E B 15	E B 15	G	26	30	G 32	50	G	40	G 28	G 28	G	G	33	G	G	E B 14	E B 14	E B 14	E B 14	E B 14
25	E B 13	E B 12	E B 12	E B 12	E B 12	18	26	G 22	34	G 34	G	G 33	38	37	G 30	G	G 19	G 18	20	17	E B 13	E B 13	E B 13	E B 13
26	E B 13	E B 12	E B 12	E B 12	E B 14	G	G 15	28	32	51	47	37	37	38	38	36	40	30	38	37	37	30	19	E B 13
27	E B 12	19	18	18	E B 12	18	G	31	34	42	42	42	42	42	55	39	43	45	42	42	36	30	24	22
28	17	E B 12	12	26	E B 15	18	28	34	37	49	61	46	43	41	42	40	34	34	34	39	26	18	E B 12	32
29	24	E B 13	E B 13	E B 13	E B 13	G	G 21	30	32	38	U Y 42	40	40	U Y 39	U G 33	G	G 21	25	21	E B 14	E B 14	E B 14	E B 14	22
30	E B 12	E B 12	E B 12	E B 12	E B 12	20	28	30	32	39	37	35	G 30	G	G 28	G	G 30	28	G 18	E B 12	E B 12	E B 12	E B 12	E B 12
31																								
	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	28	27	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	28	28	29	29	29	29	29
MED	E B 13	E B 13	E B 13	E B 14	E B 14	G	22	G 28	31	34	36	35	37	36	G	G	G	G 24	18	E B 15	E B 14	E B 14	E B 14	E B 14
U Q	E B 14	E B 14	E B 14	E B 15	E B 15	G	24	G	32	38	39	38	38	38	37	34	30	26	20	18	16	15	15	15
L Q	E B 12	E B 12	E B 12	E B 12	E B 12	E B 15	G	G 27	G 30	G 32	G 34	G 34	G	G 30	G 25	G 24	G 28	G 19	16	E B 12	E B 13	E B 12	E B 12	E B 12

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	13	14	14	14	14
3	14	14	14	14	14	14	14	14	14	C	C	C	C	C	C	C	C	12	12	12	12	12	12	12
4	12	12	12	14	14	14	15	15	13	13	13	13	13	13	12	12	12	11	12	11	16	15	15	15
5	14	14	14	14	14	14	14	14	13	12	15	15	15	15	15	13	12	12	15	15	14	14	14	14
6	13		16	15	15	15	15	15	12	12	12	15	15	20	17	15	15	15	10	13	13	14	14	14
7	14	14	14	15	15	15	15	13	12	15	15	15	20	20	18	16	16	16	16	16	16	16	16	16
8	13	13	13	13	14	14	14	14	16	15	15	15	15	15	15	15	15	14	11	11	11	11	11	11
9	14	14	14	14	15	15	15	16	16	14	12	11	6	6	6	6	15	15	15	15	15	15	15	15
10	12	10	10	10	10	14	14	14	13	12	12	12	11	16	16	15	15	15	16	16	14	14	14	14
11	14	14	15	15	15	15	14	14	15	12	12	16	10	9	8	8	8	8	16	14	14	14	14	14
12	13	12	12	15	15	15	15	16	16	11	11	11	16	15	15	15	15	16	15	16	14	15	15	15
13	15	15	15	15	15	15	15	14	16	13	13	12	11	11	11	15	15	14	16	15	15	13	12	12
14	12	14	13	14	15	15	14	13	13	15	15	14	14	17	16	16	13	13	13	13	12	11	11	11
15	11	15	13	12	12	14	10	14	14	13	8	17	19	20	16	15	15	16	18	14	14	14	14	12
16	13	12	12	14	14	14	13	13	12	14	16	16	16	13	13	13	13	16	12	12	12	12	12	12
17	13	13	13	13	13	13	13	11	12	17	17	17	17	18	18	12	11	11	10	12	13	13	13	14
18	13	13	13	16	11	12	11	11	11	16	19	18	18	16	13	13	12	12	12	15	15	15	15	15
19	13	13	15	15	15	15	14	15	15	16	14	14	14	16	15	15	15	11	12	14	14	14	14	14
20	12	13	12	12	12	12	12	12	14	14	20	20	18	18	19	11	13	12	12	12	16	12	12	12
21	14	14	14	14	14	16	15	14	14	18	20	18	16	16	14	14	14	14	14	14	14	14	14	14
22	14	14	14	14	14	14	14	13	12	18	17	17	16	18	18	17	15	12	13	15	12	12	12	12
23	12	12	12	12	12	13	12	15	14	14	19	18	18	17	19	19	17	17	15	14	14	14	14	14
24	15	15	15	15	15	13	13	13	13	13	17	17	17	21	16	15	14	14	14	14	14	14	14	14
25	13	12	12	12	12	12	12	12	12	12	12	17	18	18	17	15	14	14	14	13	13	13	13	13
26	13	12	12	12	14	14	14	14	14	19	18	23	19	19	16	11	11	11	15	13	13	13	13	13
27	12	11	11	11	12	15	15	15	15	14	14	20	20	16	15	15	13	12	13	13	13	12	12	12
28	13	12	12	16	15	15	14	14	14	15	16	15	15	14	14	14	15	15	16	12	12	12	12	12
29	13	13	13	13	13	13	12	12	12	14	17	14	14	13	12	9	9	8	8	14	14	14	14	14
30	12	12	12	12	12	12	12	15	13	16	18	19	18	18	17	16	16	16	16	12	12	12	12	12
31																								
	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	28	27	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	28	28	29	29	29	29	29
MED	13	13	13	14	14	14	14	14	14	14	15	16	16	16	15	15	14	14	14	14	14	14	14	14
U Q	14	14	14	15	15	15	15	15	14	16	17	18	18	18	17	15	15	15	16	15	14	14	14	14
L Q	12	12	12	12	12	13	12	13	12	13	12	14	14	14	13	12	12	12	12	12	12	12	12	12

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	R 334	298	295	290	284
3	271	279	294	290	295	302	330	345	R 353	C	C	C	C	C	C	C	C	341	331	R 320	315	R	310	277
4	282	283	290	306	330	314	349	345	350	Y	U Y 327	U R 330	U R 324	Y	324	U R 339	344	337	352	313	302	312	295	285
5	281	280	280	290	R 292	302	347	348	R 340	R 318	U R 319	U R 325	U R 319	R 327	R 323	U R 330	R 310	328	U R 308	R 314	R 305	J R 303	301	295
6	295		265	299	287	311	305	290	315	310	307	325	332	344	329	326	331	326	328	320	304	299	298	279
7	283	281	288	290	291	303	327	333	R 349	R 313	334	R 334	R 341	R	R	331	U R 334	322	R 320	R 333	301	295	291	280
8	288	305	295	299	317	319	333	325	338	J R 349	R	R 341	Y	R 334	331	U Y 353	343	353	323	311	303	303	308	302
9	290	291	294	308	316	324	349	333	339	330	R 326	R 339	317	U R 321	323	U R 343	334	336	329	316	302	308	296	302
10	305	304	300	308	313	340	340	338	335	329	R 334	R 336	R 364	308	R	R 337	326	328	321	328	303	294	300	307
11	305	298	305	302	319	325	351	334	336	328	U R 353	R 332	335	313	325	U R 317	326	329	326	310	305	306	298	280
12	276	283	289	297	310	318	350	356	327	332	J R 369	U R 346	U R 326	U R 340	R	R 326	334	324	J R 324	341	317	306	298	284
13	282	282	279	299	275	289	338	308	U R 332	R 348	310	311	R	R	321	318	R 335	346	332	313	314	316	309	290
14	289	287	F 288	F 295	295	307	349	346	331	338	324	R 338	R 328	U R 349	R 322	U R 342	338	330	331	R 333	335	349	290	291
15	295	284	291	297	321	342	353	334	342	U R 354	329	R 343	U R 326	U R 326	R 329	331	J R 330	354	341	336	317	297	291	280
16	290	287	284	309	327	321	336	347	U R 359	347	U Y 345	U R 341	U R 325	340	R 346	R 336	333	330	R 344	R 326	319	313	357	291
17	293	295	V 299	R 295	287	363	343	R 349	R 354	R	311	R 317	321	J R 322	J R 311	R 329	320	337	315	J R 328	R 317	R 323	336	291
18	285	277	F 287	F 297	275	299	325	337	318	U R 339	R	321	U Y 332	U Y 333	R 306	315	323	333	320	328	301	298	293	278
19	F 282	267	287	290	298	331	348	R	342	R	U R 329	R	U Y 330	R	R 318	U R 317	U R 325	327	317	U R 333	U R 332	323	286	286
20	288	291	294	299	306	323	346	R 335	U Y 345	336	333	332	R 331	U R 330	R	Y	R 323	311	J R 311	322	R 327	307	292	290
21	280	281	305	310	285	276	277	310	R 293	U R 294	274	304	R 319	302	311	309	320	311	318	306	300	283	287	286
22	282	284	288	300	284	303	311	309	339	V 304	R 322	328	325	313	313	R 326	315	314	R 322	R 331	326	300	295	285
23	290	292	279	279	277	286	324	328	337	339	324	328	U R 314	327	324	U R 334	314	R 319	318	323	326	307	284	287
24	280	273	274	274	297	289	V 293	U R 262	268	F 264	R 304	269	286	304	327	328	315	336	338	297	F 285	F 275	F 274	F 281
25	F 276	279	F 275	305	292	333	315	307	R 321	324	331	U R 325	327	U Y 337	U R 333	327	320	324	303	311	330	319	271	268
26	272	263	288	R 280	R 257	292	290	288	R 267	A 283	317	308	259	275	296	324	327	321	317	308	287	275	275	284
27	273	281	280	R 297	295	307	311	330	325	325	329	319	307	326	R 329	R 325	R 338	328	329	331	309	304	301	F 286
28	279	280	F 290	F 295	282	303	332	315	319	294	R 308	316	306	R 330	U R 323	U R 336	340	328	313	301	302	302	302	305
29	285	283	281	277	281	315	310	325	R 340	333	322	302	R 326	321	321	R	R 328	R	320	335	307	303	300	289
30	286	279	293	293	315	326	353	R 348	334	R 334	U R 335	U R 314	Y	308	U Y 337	J R 337	329	R 326	326	313	U R 333	336	302	R 285
31																								
	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	28	27	28	28	28	28	28	27	28	24	25	26	24	23	23	25	27	27	28	29	29	28	29	29
MED	284	283	288	297	295	312	334	333	336	330	326	R 326	326	326	323	R 329	328	328	322	322	307	304	296	286
U Q	290	291	294	301	314	324	348	345	342	R 338	R 334	R 336	330	334	R 329	U R 336	334	336	330	R 332	322	312	302	291
L Q	280	279	280	290	284	302	313	310	323	312	314	316	318	313	318	324	320	324	318	312	302	298	290	280

APR. 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3								L	L	C	C	C	C	C	C	C	C							
4										L	L	L	L	U L 349	L	L	L	L						
5								L	L	L	U L 372	U L 365	U L 360	L	L	L	L							
6							333	348	356	356	379	372	L	A	A	L	L							
7								L	U L 394	L 378	U L 380	L 381	L 384	L 381	U L 384	L	L							
8									L	U L 354	L	L 370	L	U L 360	L	L	L	L						
9									L	U L 394	L	L 384	L 377	L	L 359	L								
10							450	440	L	U L 359	L 376	L 382	U L 383	L 373	L 372	U L 371		L						
11								L	L	U L 393	L 392	U L 418	L	L 394	U L 364	U L 374		L						
12									L	U L 387	U L 361	L 361	L 371	U L 371	L 382	U L 377	L							
13									U L 404	L	U L 356	U L 379	U L 370	L 360	L	L	L		A					
14								L	L	393	396	400	L 383	L 383	L 381	U L 380	L	L						
15								L	L	L 358	U L 358	L 375	U L 367	L	L 368	U L 348	U L 372	L						
16								L	L	L	U L 375	L 378	L	U L 379	L 385	U L 343	L							
17								L	L	L 382	L 372	U L 402	L 379	U L 373	U L 374	U L 380	L							
18								L	L	U L 395	L	L 382	U L 376	L 353	U L 348	U L 353	L							
19								L	L	U L 380	U L 388	L	L	U L 352	L 348	A	L	L	U L 403					
20								L	L	L 400	U L 393	L	L	L	L 360	L	L	L						
21							L	377	382	382	368	353	385	U L 386	U L 375	L	U L 357	L						
22								L	L	L	372	L 361	U L 373	L	L	U L 340	L	L						
23							L	L	L 368	U L 370	U L 363	L 390	L	L	L	U L 352	L	L						
24						L	351	358	380	A	346	355	U L 328	343	U L 345	L 367	U L 373	L						
25							L	L 337	357	U L 365	U L 379	U L 351	U L 353	L 354	U L 342	U L 334	L							
26						L		L	U L 360	A	R	U L 363	L	A 350	U L 340	L 346	A							
27								L 349	L 353	L	U L 356	L 349	L	L	A	L	A	A						
28							L		U L 385	A	A	A	U L 377	L 368	L	L	L							
29								L	L 395	L 380	L	L 379	L 369	L 373	U L 368	L 353	L	L						
30							L	L	L	U L 362	386	L 386	U R 392	L	U L 377	U L 365	L	L						
31																								
	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	6	11	18	20	23	17	18	18	15	3		1					
MED							351	354	L 380	U L 380	U L 374	L 378	U L 376	L 370	U L 368	U L 353	U L 372		U L 403					
U Q							450	377	U L 394	U L 393	L 383	L 384	L 383	L 379	L 377	U L 374	U L 373							
L Q							333	348	357	U L 362	U L 362	L 361	U L 368	L 353	U L 348	U L 346	U L 357							

APR. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3								224	232	C	C	C	C	C	C	C	C							
4										254	268	268	270	270	258	258	246	234						
5								234	234	238	252	264	264	270	270	270	270							
6							328	362	358	358	332	306	286	280	280	268	258							
7								258	248	256	256	256	260	278	278	272	272							
8									248	258	258	258	258	258	258	254	248	240						
9									246	252	260	248	262	262	262	246								
10							218	218	242	254	254	256	260	280	264	246		246						
11								L 254	248	258	248	254	256	270	270	266		262						
12									266	256	260	260	268	268	268	268	268							
13									268	254	294	294	294	290	274	272	260		248					
14								248	266	266	266	280	280	270	270	270	262	250						
15								278	262	262	262	262	286	270	272	272	256	236						
16								248	248	248	260	260	260	260	260	260	250							
17								238	238	250	266	266	278	268	286	278	260							
18								270	L 270	262	262	262	284	302	294	282	266							
19								254	254	254	254	260	282	282	274	A 256	256	270	256					
20								252	254	254	254	256	260	262	278	278	274	268						
21							L 398	368	372	402	442	344	324	324	316	318	292	282						
22								292	286	L 302	280	280	292	292	294	294	294	270						
23							270	274	274	274	290	286	298	276	282	282	282	280						
24						292	392	538	Y 448	388	338	398	376	346	304	304	282	258						
25							266	322	322	292	290	312	292	292	296	276	260							
26						306		L 364	L 474	A	350	350	L 464	434	344	300	258							
27								272	284	284	292	292	268	286	302	288	264	264						
28							244		274	E 316	A E 366	A 314	320	306	286	282	280							
29								272	272	282	282	312	312	310	296	296	270	266						
30							242	242	260	268	280	280	272	278	280	274	274	274						
31																								
	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	8	22	27	26	27	27	27	27	27	27	24	15	2					
MED						299	268	264	266	259	266	268	280	278	278	272	265	264	252					
U Q							360	292	284	284	292	306	294	292	294	282	274	270						
L Q							243	248	248	254	258	260	262	270	270	266	258	246						

APR. 2012 h′F2 (KM)

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	220	240	254	254	270
3	298	298	266	258	258	258	234	220	210	C	C	C	C	C	C	C	C	226	244	234	234	242	242	262
4	282	282	280	240	228	224	224	224	224	224	220	220	212	210	210	210	210	212	212	224	234	234	242	264
5	264	288	284	272	254	214	220	220	220	218	218	202	198	H 198	198	216	216	224	238	238	250	266	254	254
6	246		268	258	258	272	260	246	246	246	214	214	E A 252	A	A	226	226	232	232	238	238	238	248	256
7	274	274	274	274	272	272	254	234	216	202	204	204	204	204	204	222	232	232	234	228	228	244	258	270
8	276	250	250	226	226	238	234	234	216	216	216	202	196	196	196	206	206	214	214	216	248	260	244	244
9	248	254	260	240	236	232	218	218	218	204	204	204	204	204	198	218	218	218	226	226	250	250	250	250
10	274	274	260	246	208	212	188	186	208	208	208	H 192	200	200	204	204	204	H 214	226	226	246	246	246	246
11	248	254	258	244	242	230	222	214	214	E A 214	A 214	212	210	208	208	208	208	218	226	226	226	226	236	260
12	282	282	280	258	254	236	222	222	218	218	218	214	210	210	210	210	218	224	234	232	232	232	232	264
13	274	274	274	268	268	252	248	238	216	216	216	216	216	216	216	216	224	224	A	234	236	236	236	236
14	264	258	270	270	250	248	248	222	222	220	220	210	210	210	210	210	230	230	230	230	230	230	250	264
15	288	288	288	272	250	224	206	206	218	214	214	214	212	208	208	208	208	224	224	226	226	246	246	276
16	276	276	272	240	240	226	226	226	226	212	208	208	208	206	206	206	212	214	246	244	250	234	234	250
17	278	278	278	260	260	228	228	228	228	208	206	200	216	208	208	208	238	238	238	238	238	234	234	252
18	278	290	290	258	280	266	244	232	220	220	232	218	218	218	E A 228	228	230	230	230	230	230	258	258	282
19	294	300	288	262	242	232	232	232	218	218	A 218	210	208	218	214	A	A 228	E A 228	222	222	222	206	252	256
20	264	294	284	274	264	248	240	228	212	212	206	206	202	202	202	214	222	228	232	228	228	228	232	250
21	268	268	230	230	272	272	256	234	226	200	224	224	210	222	222	212	226	226	240	240	240	258	258	258
22	274	274	286	278	278	260	254	240	232	208	208	210	Y 228	Y	204	204	232	242	248	248	238	238	240	254
23	254	260	290	290	290	276	234	234	234	228	228	224	224	224	222	222	228	242	242	242	242	242	244	268
24	278	288	288	288	228	234	234	234	234	A	234	234	Y	Y 248	234	234	232	232	232	232	Q 282	Q 294	294	Q 294
25	Q 270	262	270	256	256	250	250	234	214	212	212	212	212	212	212	212	H 204	214	248	248	234	234	236	242
26	292	292	280	260	286	276	260	244	234	A	E A 340	196	196	E A 282	246	234	A	242	250	258	A 294	296	294	292
27	278	A 316	294	292	292	254	248	224	224	A	E A 250	A 250	210	E A 252	A	A 252	A	A	252	252	252	252	254	296
28	276	276	278	278	266	258	244	244	E A 240	A	A	A	232	214	E A 266	E A 266	246	246	246	262	262	262	250	262
29	288	288	288	288	282	240	240	238	214	214	Y	214	224	224	216	214	224	228	232	232	234	240	240	278
30	282	282	282	272	236	236	232	H 218	218	218	202	202	202	202	202	216	216	230	232	238	236	228	228	232
31																								
	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	28	27	28	28	28	28	28	28	28	23	25	26	26	25	25	26	25	27	27	29	29	29	29	29
MED	276	278	279	261	257	244	234	230	218	214	215	211	210	209	209	214	224	228	232	232	238	242	246	260
U Q	282	288	287	274	272	259	248	234	227	218	222	216	216	220	219	222	230	232	244	241	249	256	254	270
L Q	266	268	269	251	241	231	225	221	216	208	208	204	204	204	204	208	211	218	226	226	231	234	236	250

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3						B 112	112	112		C	C	C	C	C	C	C	C	112	E A 118					
4						B 122	110	108	120	100	100		A	112	108	102	102	114	B					
5						B 114	114	114	114	114	104	104	104	104	110	110	110	132	B					
6							102	102	102	102	102	102	102			112	112	120						
7						B 120	116	114	114	108	108	108	108	108	108	108	108	128	B					
8						B 110	110	110	110	110	110	110	110	110	110	110	110	116	A					
9						B 116	118	120	102	104	104	104	104	104	112	112	112	112	B					
10						B 120	108	110	110	100	106	106	110	110	110	110	110	110	B					
11						B 110	110	104	104	104	104	104	104	104	104	110	110	132	B					
12						B 114	114	120	104	104	104	104				110	110	126	B					
13						B 120	120		120	114	110	110	A	114	114	114	114	114	B					
14						B 114	118	110	108	A	124	110	108	108	108	108	108	126	148					
15						B 108	108	108	108	108	108	108	108	112	112	112	112	112	B					
16						166	124	114	116	116	106	106	106	108	108	108	A	128	136					
17						B 120	106	106	106	106	112	114	A	110	108	108	116	E A 132						
18						136	124	118	106	106	106	106	106	106	106	A	106	A						
19						172	114	114	112	112	112	104	104	104	104	104	A	A						
20						134	120	110	110	110	A		A	110	110	108	108	108	A					
21						B 108	108	108	108		108	106	106	106	106	106	106	106	A 130					
22						122	122	114	110	110	108	108	108	108	108	108	108	A						
23						124	116	116	112	112	112	110	110	A		A	A	E A 148	148					
24						114	114	114	114		114	114	112	116	114	114	114	114	114					
25						130	124	120	112	108	96	102		A	114	112	112	112						
26						118	124	A	116	110	110	110	110	A	A	110	A	A	A					
27							118	116	110	110	A				A	110	110	110	A					
28							124	112	112	112	112	112	112	112	112		112	112	112					
29						122	122	122	104	104		104		A	A	104	116	116	116					
30						116	116	108	108	108	108	A	108	108	108	108	108	108	144					
31																								
	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	28	27	27	26	22	24	22	18	21	24	22	25	10					
MED						124	117	114	110	110	108	107	108	108	110	110	110	114	128					
U Q						136	122	116	114	112	112	110	110	110	112	111	112	126	144					
L Q						118	114	110	108	106	104	104	104	106	108	108	108	111	116					

APR. 2012 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	92	B	B	92	B
3	B	B	B	B	B	B	156	G	200	C	C	C	C	C	C	C	C	150	94	118	B	B	B	B
4	B	B	B	B	B	90	G	166	G	102	108	108	108	102	98	98	98	98	98	B	98	B	B	B
5	B	B	B	B	B	B	120	160	160	134	124	124	112	100	100	G	G	100	B	124	124	112	104	104
6	100		100	B	112	96	118	118	118	118	196	196	106	104	104	104	172	122	118	98	98	98	B	B
7	B	B	98	B	B	B	110	118	118	118	118	118	118	118	G	98	112	112	124	B	104	B	B	B
8	102	102	102	102	102	92	144	144	144	128	128	124	114	132	110	110	106	106	98	98	B	B	B	B
9	B	B	B	B	B	B	G	98	134	128	112	192	192	G	186	G	G	174	B	98	B	B	B	B
10	B	B	B	94	B	G	174	174	174	136	136	136	166	100	100	G	G	G	G	B	B	B	B	B
11	100	B	B	B	B	G	134	138	138	134	194	G	122	180	102	102	102	102	102	98	B	B	B	B
12	B	B	B	B	B	B	134	G	108	124	110	110	110	110	110	122	122	112	100	100	100	100	100	100
13	B	B	B	B	B	B	150	150	102	136	122	122	122	118	116	108	G	G	B	98	B	B	98	B
14	B	B	B	98	B	B	G	98	136	G	104	104	182	182	166	G	G	118	G	B	B	B	B	B
15	B	B	B	B	B	G	G	G	140	134	198	G	96	94	94	94	G	G	B	B	B	B	B	104
16	B	B	B	B	B	G	150	150	130	106	106	106	G	106	G	178	108	108	G	B	B	B	B	108
17	B	B	B	98	B	G	184	G	G	162	120	102	184	184	104	98	196	96	94	94	B	B	B	B
18	B	B	B	B	B	G	158	158	142	126	124	116	116	116	114	114	106	G	126	126	116	116	112	110
19	110	114	B	98	98	G	G	164	122	122	106	106	106	106	126	112	110	100	114	114	B	B	B	B
20	100	B	B	B	B	G	154	G	124	124	178	100	100	100	100	G	G	152	134	B	B	B	B	B
21	B	B	B	B	B	B	164	G	146	136	172	98	182	208	206	86	194	166	88	88	88	B	B	B
22	B	B	B	B	B	166	166	152	144	126	122	122	122	G	200	94	94	98	98	98	98	96	B	B
23	B	B	B	B	B	G	G	122	122	122	118	118	118	118	118	116	104	104	124	122	120	110	110	110
24	B	100	B	B	B	G	128	128	116	116	G	116	100	100	G	G	208	G	G	B	B	126	120	114
25	98	B	B	132	132	134	140	104	116	116	G	104	104	104	104	G	98	98	116	100	B	B	B	B
26	B	B	140	B	B	G	118	142	142	120	120	120	120	114	98	146	126	94	106	106	106	106	106	106
27	100	100	100	100	B	130	G	130	130	120	110	110	110	110	98	132	126	126	118	118	110	110	110	110
28	106	106	106	100	112	118	140	140	140	114	114	114	114	114	114	114	148	132	120	114	114	112	112	114
29	110	B	B	B	B	G	110	144	122	122	118	118	118	E 204	G 106	G	106	154	132	124	B	B	B	102
30	102	102	B	B	B	182	140	140	122	114	114	110	100	G	100	G	112	116	116	B	B	B	106	108
31																								
	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	6	6	8	5	8	21	22	26	26	25	25	26	24	24	18	20	23	20	20	12	10	11	12
MED	101	102	101	99	112	124	140	141	132	123	120	116	115	111	105	109	111	112	115	100	105	110	106	108
U Q	106	106	106	101	122	150	157	152	142	134	132	122	122	125	117	116	137	132	122	118	115	112	112	110
L Q	100	100	100	98	100	94	124	122	122	118	111	106	106	103	100	98	105	100	98	98	98	100	100	104

APR. 2012 h'Es (KM)

IONOSPHERIC DATA STATION Wakkanai

APR. 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																								
2																				F1			F1	
3							H1		H1									HL11	L3	F1				
4						L1		H1		L1	C1	C1	C1	L1	L1	L1	L1	L1	L1		F1			
5							L1	HL11	HL11	HL11	CL11	CL11	CL11	L1	L1			L1		FF11	F1	F5	F4	F2
6	F1		F1		F2	HL11	C2	C1	C2	C1	H1	HC11	C1	C2	C2	L2	H1	L1	L3	F6	F3	F3		
7			F1				L1	C1	C2	C1	C1	C1	C1	C1		L3	CL12	L1	L1		F1			
8	F3	F1	F1	F2	F1	L1	H1	H1	H1	C1	C1	C1	C1	HL11	L1	L1	L3	L3	L3	F1				
9								L1	CL11	CL11	L1	H1	H1		H1			H1		F1				
10				F1			H1	H1	HL11	H1	H1	H1	HL11	L1	L1									
11	F1						H1	H1	H1	H1	H1		C1	H1	L1	L1	L1	L1	L1	F1				
12							HL11		L1	C1	C1	C1	C1	C1	C1	CL12	CL12	L2	L2	F1	F1	F1	F1	F2
13							HL11	HL11	L1	HL11	CL11	CL11	C1	C1	L1	L1				F1			F1	
14				F1				L1	CL11		CL21	L1	H1	H1	H1			L2						
15									HL11	CL11	CL11		LL11	L1	L1	L1								F1
16							H2	H1	CL11	L1	L1	L1		L1		H1	C2	L3						F1
17				F1			H1			H1	H1	L1	HL11	HL11	L1	L1	HL11	LH21	LH21	F2				
18							H1	H1	H1	C1	C1	C1	C1	C1	C1	C2	C2		C2	F1	F3	F3	F2	F3
19	F1	F1		F2	F1			H1	C1	C1	C1	C1	C1	C1	C1	C2	C2	L3	CL13	FF61				
20	F1						HL21		C1	C1	HC11	L1	L1	L1	L1			HL11	L1					
21							H1		H1	H1	HL11	L1	HL11	HL11	HL11	L2	HL11	HL12	L2	F3	F2			
22						H1	H1	H1	H1	HL11	CL11	C1	C1		HL11	L1	L2	CL22	LL22	F2	F1	F1		
23								C2	C1	C1	C1	C1	C1	C1	C1	C2	L2	L2	L2	F2	F1	F1	FF11	F1
24		F1					C1	H1	C1	C1		C1	L1	L1			H1					F2	F2	F2
25	F1			FF21	F1	C2	CL11	L2	CL11	CL11		L1	L2	L1	L2		L2	L2	CL21	F2				
26			F1				L1	HL21	HL21	C2	C2	C1	H1	C2	L2	H1	CL22	LC32	L4	F3	F4	F4	F3	F1
27	F2	F4	F3	F3		L1		C1	C1	C1	C2	C2	C2	C2	L2	CL12	CL32	C3	C3	F5	F3	F3	F3	F4
28	F2	F1	F3	F3	F1	C1	HL12	C1	C2	C2	C2	C2	C1	C1	C2	C2	H1	C2	C3	F4	F4	F3	F2	F5
29	F4						L1	HL11	C1	C1	C1	C1	C1	HL11	L1		L2	HL12	C1	F1				F4
30	F2	F1				H1	H1	H1	C1	C2	C1	C1	L1		L1		C1	C1	L1				F1	F1
31																								
	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																								

APR. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

APR. 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 60	X 59	X 59	X 61	X 55	X 49														X 88	X 66	X 66	X 68	X 68
2	X 68	X 66	X 65	X 66	X 62	X 61														X 96	X 77	X 61	X 65	X 65
3	X 64	X 65	X 64	X 72	X 58	X 54														X 98	X 81	X 67	X 65	X 67
4	X 66	X 66	X 66	X 69	X 49	X 44														X 89	X 69	X 64	X 64	X 64
5	X 64	X 63	X 62	X 65	X 49	X 46														X 111	X 85	X 81	X 85	X 80
6	X 77	X 76	X 76	X 73	X 67	X 69														X 91	X 72	X 61	X 62	X 62
7	X 62	X 62	X 59	X 56	X 54	X 54														X 105	X 76	X 63	X 67	X 68
8	X 66	X 73	X 74	X 49	X 37	X 38														X 64	X 64	X 64	X 64	X 65
9	X 63	X 62	X 61	X 61	X 46	X 46														X 81	X 74	X 72	X 72	X 70
10	X 68	X 66	X 68	X 66	X 42	X 41														X 87	X 76	X 73	X 72	X 71
11	X 70	X 67	X 66	X 68	X 60	X 56														X 91	X 74	X 70	X 71	X 71
12	X 69	X 69	X 69	X 69	X 60	X 60														X 109	X 79	X 57	X 60	X 62
13	X 63	X 61	X 60	X 59	X 50	53														X 101	X 93	X 76	X 73	X 72
14	X 69	X 71	X 70	X 67	X 67	X 72														X 94	X 60	X 54	X 57	X 58
15	X 61	X 60	60	X 58	X 54	X 56														X 82	X 74	X 68	X 68	X 68
16	X 69	X 69	X 72	X 74	X 47	X 49														X 98	X 82	X 66	X 65	X 65
17	X 66	X 64	X 64	X 63	X 58	X 65														X 98	X 94	X 85	X 62	X 55
18	X 55	X 56	X 56	X 57	X 48	X 51														X 121	X 85	X 60	X 61	X 59
19	X 58	X 61	X 61	X 61	X 58	X 61														X 115	X 76	X 65	X 64	X 65
20	X 67	X 65	X 65	X 66	X 65															X 114	X 92	X 72	X 74	X 76
21	X 73	X 73	X 73	X 68	X 56	X 52														X 91	X 83	X 65	X 70	X 68
22	X 67	X 65	X 62	X 60	X 58	X 62														X 104	X 86	X 71	X 70	X 74
23	X 76	X 76	X 68	X 65	X 66	X 77														X 108	X 90	X 78	X 72	X 73
24	X 72	X 67	X 68	X 68	X 64	X 60														X 68	X 66	X 70	X 67	X 67
25	X 70	X 72	X 68	X 66	X 63	X 68														X 100	X 96	X 70	X 74	X 74
26	X 74	X 69	X 69	X 70	X 62	X 64														X 79	X 74	X 73	X 73	X 72
27	X 72	X 69	X 65	X 65	X 62	X 68														X 104	X 88	X 79	X 79	X 80
28	X 81	X 79	X 75	X 73	X 69															X 94	X 93	X 81	X 76	X 77
29	X 78	X 73	X 71	X 69	X 67	X 76														X 97	X 82	X 75	X 77	X 77
30	X 79	X 74	X 74	X 74	X 64															X 115	X 103	X 80	X 75	X 76
31																								
	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	30	30	30	27														30	30	30	30	30
MED	X 68	X 66	X 66	X 66	X 58	X 56														X 98	X 80	X 70	X 69	X 68
U Q	X 72	X 72	X 70	X 69	X 64	X 65														X 105	X 88	X 75	X 73	X 74
L Q	X 64	X 63	X 62	X 61	X 50	X 49														X 89	X 74	X 64	X 64	X 65

IONOSPHERIC DATA STATION Kokubunji

APR. 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	54	53	53	55	49	43	63	75	86	84	87	99	107	99	96	97	104	103	102	82	59	60	62	62
2	62	60	59	59	55	54	78	80	82	94	96	120	120	116	108	100	96	101	96	89	71	55	59	58
3	58	59	58	66	52	48	70	76	80	81	103	110	112	110	104	102	88	90	92	92	75	61	59	60
4	60	60	60	62	43	38	65	74	75	86	102	122	130	123	123	114	107	105	97	83	63	58	58	58
5	58	57	56	59	43	40	57	78	86	86	91	111	116	116	115	114	106	102	100	105	78	75	79	74
6	71	70	70	67	61	63	68	76	88	103	117	110	102	96	86	86	83	88	92	85	66	55	56	56
7	56	56	55	50	48	48	68	94	100	84	79	80	92	98	105	96	83	87	96	99	70	57	60	62
8	60	67	68	43	31	32	66	79	88	92	94	94	102	104	99	100	92	85	76	58	58	58	58	59
9	57	56	55	55	40	40	63	76	84	88	82	94	98	96	93	97	97	88	82	75	68	66	66	64
10	62	60	62	59	35	35	55	69	76	80	96	102	112	114	112	112	100	91	84	81	70	66	66	64
11	64	61	60	61	54	50	60	68	88	98	92	100	110	120	120	114	109	98	94	85	68	64	65	65
12	64	63	62	62	54	54	63	70	76	79	85	96	101	99	106	99	96	96	98	103	73	51	54	55
13	57	55	54	53	44	F	64	86	106	82	80	100	107	98	102	105	100	92	98	95	87	69	66	66
14	63	65	64	61	60	66	89	82	74	80	94	98	94	100	94	95	98	97	99	88	54	48	51	52
15	55	54	F	52	48	50	74	68	72	84	88	92	102	107	116	113	112	97	85	76	68	62	61	62
16	63	63	66	68	41	42	62	78	81	88	94	94	98	106	104	100	104	106	99	92	76	60	58	59
17	60	58	58	57	52	59	74	72	80	79	87	99	104	114	115	111	102	100	100	92	88	79	56	49
18	49	50	50	51	42	45	83	77	97	76	78	96	115	116	120	120	114	117	125	114	79	54	55	53
19	52	55	55	55	52	55	75	83	91	86	94	97	100	99	98	104	111	121	120	109	70	59	58	59
20	61	59	58	60	59	63	80	87	87	86	86	97	108	107	112	106	104	103	112	108	86	66	68	69
21	67	67	67	62	50	46	56	62	60	64	66	74	78	85	82	86	84	85	87	84	76	59	64	64
22	61	59	56	54	52	56	69	74	88	92	91	89	95	105	102	104	100	109	110	97	80	65	64	68
23	70	70	62	59	59	71	84	82	77	78	81	84	94	107	107	103	97	95	108	102	84	72	67	67
24	66	61	61	62	58	54	76	72	73	82	82	93	106	100	103	96	90	83	72	62	60	64	61	60
25	64	65	62	60	57	62	80	97	94	92	92	94	100	98	96	95	92	88	89	94	90	64	67	68
26	68	63	63	64	56	58	63	58	64	66	70	76	80	87	91	111	101	88	76	73	68	67	66	66
27	66	63	59	59	56	62	80	84	89	92	99	100	115	119	111	107	106	101	102	98	83	73	73	74
28	75	73	69	66	63	64	76	84	78	78	81	96	111	114	114	106	100	92	84	87	86	75	70	70
29	72	67	65	63	61	70	79	81	78	75	A	82	91	108	115	104	101	104	101	91	76	69	71	71
30	73	68	68	68	58	60	75	86	93	86	90	91	95	102	94	103	100	94	99	109	97	74	69	70
31																								
	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	29	30	30	29	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	62	60	60	60	52	54	70	78	83	84	90	96	102	106	104	104	100	96	98	92	74	64	63	63
U Q	66	65	64	62	58	62	78	83	88	88	94	100	111	114	114	111	104	103	101	99	83	69	67	68
L Q	58	57	56	55	44	44	63	72	76	79	82	92	95	99	96	97	96	88	87	83	68	58	58	59

IONOSPHERIC DATA STATION Kokubunji

APR. 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	U L 516	L	L	U L 520	L	L	L	A	A					
2										L	L	U L 516	L	L	U L 524	L	L							
3										L	L	U L 512	L	L	U L 504	L	L							
4										L	U L 560	U L 532	U L 524	L	L	L	L							
5									L	L	U L 520	U L 556	L	U L 552	U L 516	L	A							
6								L	U L 476	492	U L 484	L	L	U L 472	L	L	L							
7								A	A	A	A	U L 500	U L 572	U L 504	L	L	L							
8									L	L	U L 488	L	U L 532	L	L	U L 452	L							
9									L	L	L	U L 492	U L 524	U L 496	L	L	L							
10									L	L	U L 512	L	U L 528	L	U L 480	L	L							
11									L	A	U L 496	U L 516	U L 528	U L 508	U L 456	U L 464	L							
12									L	L	U L 540	U L 516	U L 496	400	U L 496	L	L	L						
13									L	L	U L 492	U L 540	U L 508	L	U L 484	L	L	L						
14									L	L	U L 480	U L 496	U L 516	500	464	L	L							
15									L	L	A	A	A	U L 540	L	L								
16									A	L	L	L	L	U L 524	L	L	L	A						
17									L	L	U L 508	500	L	U L 524	L	L	L							
18									L	L	L	L	U L 560	L	U L 524	L	A	L						
19									L	A	A	L	A	L	U L 556	A	A	A						
20									L	L	L	L	U L 520	U L 508	L	L	L	L						
21								L	452	U L 480	A	516	U L 500	U L 508	L	L	A	L						
22									L	L	L	U L 492	U L 564	L	L	U L 508	L	L						
23										L	U L 500	L	U L 544	L	L	L	L	L						
24									L	A	U L 520	U L 544	L	L	504	L	L							
25								L	L	A	L	L	L	U L 548	L		L							
26								L	488	L	A	L	U L 548	U L 520	524	L	L	A						
27								A	A	L	A	L	536	U L 520	A	A	A	A						
28									A	A	A	A	A	A	A	A	A							
29								L	A	A	A	L	A	500	500	A	A	A						
30								L	U L 480	A	L	U L 512	U L 528	U L 520	U L 516	A	A	A	A					
31																								
	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	2	13	15	17	18	14	3								
MED									478	486	U L 508	U L 516	U L 528	U L 514	U L 504	U L 464								
U Q									484		U L 520	U L 532	U L 546	U L 524	U L 524	U L 508								
L Q									464		U L 490	U L 500	U L 518	500	U L 484	U L 452								

APR. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

APR. 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							180	272	A	R	R	R	R	R	R	R	R	UA 240	B					
2							192	268	R	R	A	R	R	R	R	R	R	UR 228	B					
3							B	R	R	R	R	A	A	A	A	R	R	R	B					
4							212	A	R	R	R	R	R	R	R	R	A	A	B					
5							180	R	R	R	R	R	R	R	R	R	A	A	B					
6							U A 196	A	A	A	A	A	A	R	R	R	R	A	B					
7							U R 220	A	A	A	A	R	R	R	R	A	A	R	B					
8							176	264	R	A	A	A	A	R	R	R	R	R	B					
9							176	A	R	A	A	R	R	R	R	R	A	A	B					
10							192	272	R	R	A	R	R	R	R	R	A	R	B					
11							196	R	A	A	R	R	A	R	R	R	R	UA 244	B					
12							200	R	A	A	R	A	A	A	R	A	A	A	B					
13							196	276	A	A	A	A	A	A	A	A	A	A	B					
14							212	R	A	R	R	R	R	R	A	A	R	236	B					
15							216	R	A	A	A	A	A	R	R	R	R	UR 224	B					
16							232	284	A	A	A	A	A	A	A	A	R	A	B					
17							216	A	A	A	R	A	R	R	R	R	R	A	B					
18							212	R	A	R	A	A	R	A	A	A	A	A	B					
19							U R 232	R	R	A	A	A	A	A	A	A	A	A	B					
20						B	236	A	A	A	A	A	A	A	R	A	A	A	UR 180					
21							A	A	A	A	A	R	A	A	A	A	A	R	B					
22							232	296	A	A	A	R	R	A	R	A	A	R	B					
23							244	A	A	A	A	R	R	R	R	R	R	R	UR 184					
24							R	A	A	A	A	R	R	R	R	R	R	R	B					
25							244	A	A	A	A	R	R	A	A	R	A	R	A	B					
26							A	R	A	A	A	A	A	A	A	A	R	UA 244	B					
27							236	A	A	A	A	A	A	A	A	A	A	A	A	A					
28						B	256	A	A	A	A	A	A	A	A	A	A	A	B					
29							U R 248	R	A	A	A	A	A	R	A	A	A	A	180					
30						B	U R 264	A	A	A	R	A	A	A	A	356	A	A	B					
31																								

	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	7								1		6	3					
MED							214	272								356		U 238	UR 180					
U Q							236	284										UA 244	UR 184					
L Q							196	268										UR 228	180					

APR. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

APR. 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	E B 15	E B 15	E B 14	E B 14	E B 15	E B 15	23	33	36	G 32	G	G	G	G 34	G	G 24	G 24	J A 43	J A 90	J A 40	J A 38	J A 25	J A 24	E B 14
2	E B 15	E B 15	E B 15	E B 15	21	E B 16	24	34	G 28	G 28	40	G	G	G	G 27	G 25	G 23	G 22	J A 22	J A 22	E B 15	E B 14	E B 15	E B 15
3	E B 16	E B 14	E B 14	E B 15	E B 14	E B 14	22	G 22	G 28	G 26	G	41	41	37	40	G	G 24	G 21	J A 31	J A 35	J A 20	E B 15	E B 15	E B 15
4	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	26	34	G 29	G 30	G	G	G	G	G	G 23	34	J A 31	J A 28	J A 23	20	E B 14	E B 14	E B 15
5	E B 16	E B 15	E B 15	E B 15	E B 14	E B 14	22	G 24	G 30	G 32	G	G	G	G	G	G 29	J A 40	J A 32	J A 45	J A 28	J A 24	J A 28	J A 22	E B 15
6	J A 23	22	E B 15	J A 30	J A 24	J A 23	26	33	J A 38	41	42	42	42	G	G	G 27	G	30	J A 41	J A 56	J A 99	J A 48	J A 43	J A 25
7	J A 24	J A 28	J A 76	J A 62	J A 35	J A 22	G	J A 48	J A 50	40	J A 47	G	G	G	G	35	28	G 24	J A 18	J A 29	J A 24	20	J A 31	E B 15
8	E B 14	E B 15	E B 15	E B 14	E B 15	E B 15	25	34	36	38	42	42	43	G 35	G	G 27	G	G	E B 15	J A 23	J A 19	22	E B 15	20
9	E B 15	18	E B 14	E B 15	E B 15	E B 15	28	35	G 28	42	39	G	G	G	G 30	G 32	35	26	J A 23	J A 24	J A 20	20	20	E B 17
10	20	E B 14	E B 15	E B 14	E B 14	E B 14	26	34	G 28	G 30	42	G	G	G	G 30	G 24	36	G	20	E B 15	20	J A 22	J A 21	E B 15
11	E B 16	E B 15	E B 15	E B 14	E B 15	E B 14	25	G 22	40	J A 46	G	G	43	G 33	G 27	G 30	G 26	33	36	J A 36	22	J A 29	J A 20	E B 15
12	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	27	G 25	36	40	G 30	40	41	J A 44	G 34	38	33	J A 28	32	J A 19	E B 15	E B 16	E B 15	E B 14
13	E B 14	E B 16	E B 16	E B 14	E B 15	E B 15	26	33	36	41	40	45	42	40	J A 43	34	32	25	20	J A 46	J A 31	J A 22	E B 14	E B 14
14	20	E B 15	E B 15	E B 15	E B 15	20	25	G 25	38	G	G	G	G	G	39	39	G 21	30	26	J A 20	J A 36	E B 14	E B 15	J A 20
15	E B 15	20	E B 15	E B 15	E B 15	E B 16	26	G 24	39	38	42	46	J A 69	G	G	G	G 23	G 21	21	E B 15	J A 21	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	E B 13	29	35	39	42	40	42	42	42	44	40	G 28	28	J A 30	J A 21	J A 17	20	E B 15	E B 15
17	E B 15	E B 15	19	E B 15	E B 14	E B 15	27	38	41	41	G	42	G	G	G 28	G	G	26	J A 36	J A 20	J A 23	J A 24	E B 14	E B 14
18	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	24	G 24	35	G	42	42	G	44	J A 41	40	J A 49	J A 39	21	E B 15	E B 14	E B 15	E B 15	E B 15
19	J A 37	J A 24	J A 30	J A 23	E B 15	E B 15	G	G 25	G J A 26	49	55	45	51	44	49	48	J A 50	J A 70	J A 38	33	J A 52	J A 59	J A 37	20
20	J A 22	J A 18	E B 15	18	E B 15	18	29	34	40	41	43	43	43	41	G	42	J A 37	J A 35	G	J A 21	J A 78	J A 32	J A 46	J A 25
21	J A 21	E B 14	E B 14	E B 15	E B 16	E B 14	26	38	J A 53	40	J A 57	G	42	40	43	J A 42	35	G 22	J A 22	J A 32	J A 22	J A 40	E B 39	E B 16
22	E B 15	E B 15	E B 15	E B 15	E B 14	19	29	36	38	42	42	G	G	41	G	40	38	G 24	J A 28	J A 19	E B 15	E B 14	E B 15	J A 23
23	J A 22	18	21	E B 15	E B 15	E B 14	28	37	J A 40	42	42	G	G	G	G	G	G 26	G	G	E B 14	E B 14	E B 14	E B 14	E B 15
24	J A 19	E B 14	E B 14	E B 15	21	E B 14	G 22	35	40	49	G	G	G	G	G	G	G 27	G	J A 22	22	E B 15	E B 15	E B 15	E B 13
25	20	22	E B 15	19	E B 15	E B 16	30	37	37	38	G 34	G	40	43	G	37	G 30	30	J A 56	J A 36	J A 18	E B 14	E B 15	E B 14
26	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	29	G 26	40	42	J A 46	42	44	42	43	41	G 26	34	25	J A 50	J A 29	J A 29	J A 22	J A 26
27	J A 43	J A 28	J A 22	J A 17	20	E B 16	30	36	J A 50	42	J A 66	J A 50	42	J A 52	J A 57	51	J A 57	J A 47	J A 46	J A 74	J A 50	J A 40	J A 22	J A 81
28	J A 25	E B 15	J A 19	J A 22	E B 15	20	31	38	48	48	J A 68	J A 60	J A 56	J A 59	J A 71	J A 76	42	G 23	J A 42	J A 38	J A 36	J A 31	E B 16	J A 28
29	J A 81	J A 25	J A 20	E B 15	J A 30	E B 14	G	G	J A 52	J A 66	J A 77	J A 51	J A 59	G	47	49	43	J A 52	22	J A 30	36	E B 15	E B 14	22
30	J A 32	J A 31	22	J A 17	J A 19	E B 15	G 20	34	38	J A 56	G	J A 42	44	J A 46	J A 44	40	J A 55	J A 57	J A 79	J A 48	J A 42	E B 15	21	J A 18
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	26	34	38	41	41	40	41	G	G	34	G	28	J A 27	J A 26	J A 22	20	E B 15	E B 15
U Q	J A 22	J A 20	J A 19	J A 17	16	16	28	36	J A 40	42	J A 43	42	43	42	43	40	J A 38	J A 34	J A 38	J A 36	J A 36	J A 29	J A 22	J A 20
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	G 23	G 25	G 35	G	G	G	G	G	G	G 30	G 26	G	21	20	E B 18	E B 15	E B 15	E B 15

APR. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

APR. 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 15	E B 15	E B 14	E B 14	E B 15	E B 15	22	31	34	G 30	G	G	G	G 31	G	G 22	G 23	32	59	36	19	19	E B 14	E B 14
2	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	21	30	G 22	G 26	39	G	G	G	G 25	G 23	G 22	G 20	17	19	E B 15	E B 14	E B 15	E B 15
3	E B 16	E B 14	E B 14	E B 15	E B 14	E B 14	21	G 22	G 26	G 25	G	38	39	35	38	G	G 23	G 20	27	27	E B 15	E B 15	E B 15	E B 15
4	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	25	31	G 25	G 29	G	G	G	G	G	G 22	30	29	24	18	E B 16	E B 14	E B 14	E B 15
5	E B 16	E B 15	E B 15	E B 15	E B 14	E B 14	22	G 18	G 28	G 30	G	G	G	G	G	G 26	37	26	32	18	18	20	14	E B 15
6	18	E B 15	E B 15	16	23	16	25	30	34	37	39	40	39	G	G	G 27	G	28	34	23	E B 15	21	29	16
7	17	21	34	24	24	E B 15	G	44	46	39	44	G	G	G	G	33	27	G 23	16	19	19	E B 15	20	E B 15
8	E B 14	E B 15	E B 15	E B 14	E B 15	E B 15	23	30	34	35	36	40	40	G 34	G	G 27	G	G	E B 15	18	17	E B 16	E B 15	E B 15
9	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	26	30	G 27	38	37	G	G	G	G 29	G 30	33	26	20	20	16	E B 16	E B 16	E B 17
10	E B 14	E B 14	E B 15	E B 14	E B 14	E B 14	25	31	G 28	G 28	38	G	G	G	G 28	G 22	32	G	18	E B 15	E B 15	18	17	E B 15
11	E B 16	E B 15	E B 15	E B 14	E B 15	E B 14	23	G 21	38	42	G	G	40	G 32	G 26	G 29	G 24	30	30	32	16	E B 15	E B 15	E B 15
12	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	24	G 24	34	38	G 28	39	39	38	G 32	35	30	24	28	16	E B 15	E B 16	E B 15	E B 14
13	E B 14	E B 16	E B 16	E B 14	E B 15	E B 15	24	30	34	38	39	42	40	38	37	32	31	24	18	36	20	E B 15	E B 14	E B 14
14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	24	G 24	33	G	G	G	G	G	37	36	G 19	29	23	16	32	E B 14	E B 15	E B 15
15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	24	G 21	37	37	40	44	45	G	G	G	G 21	G 20	19	E B 15	16	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	E B 13	26	31	36	38	38	38	38	36	40	37	G 26	25	24	E B 15	E B 16	E B 15	E B 15	E B 15
17	E B 15	E B 15	E B 14	E B 15	E B 14	E B 15	25	32	36	37	G 40		G	G	G 26	G	G	23	30	17	21	18	E B 14	E B 14
18	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14	23	G 24	32	G	40	40	G	41	37	37	46	31	20	E B 15	E B 14	E B 15	E B 15	E B 15
19	E B 15	E B 16	E B 15	18	E B 15	E B 15	G	G 24	G 24	45	53	42	50	43	46	46	45	67	34	30	35	34	28	E B 15
20	18	E B 15	E B 15	E B 15	E B 15	E B 17	27	31	38	37	40	40	40	39	G	40	33	28	G	E B 15	31	18	37	16
21	E B 16	E B 14	E B 14	E B 15	E B 16	E B 14	24	33	40	37	52	G	38	38	41	37	32	G 22	19	21	16	33	32	E B 16
22	E B 15	E B 15	E B 15	E B 15	E B 14	19	28	32	36	39	42	G	G	39	G	38	34	G 23	24	E B 14	E B 15	E B 14	E B 15	E B 15
23	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	27	34	35	40	40	G	G	G	G	G	G 24	G	G	E B 14	E B 14	E B 14	E B 14	E B 15
24	E B 14	E B 14	E B 14	E B 15	E B 15	E B 14	G 21	32	38	47	G	G	G	G	G	G	G 26	G	20	E B 15	E B 15	E B 15	E B 15	E B 13
25	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	27	32	36	35	G 34	G	40	40	G	32	G 28	28	34	18	E B 15	E B 14	E B 15	E B 14
26	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	26	G 23	38	40	42	41	42	41	40	37	G 26	29	22	21	23	24	19	19
27	28	20	19	E B 15	E B 15	E B 16	28	34	41	40	51	42	40	41	45	48	54	45	39	69	32	27	18	E B 15
28	E B 15	E B 15	E B 15	E B 16	E B 15	19	30	34	45	45	63	56	53	57	67	46	38	G 23	32	30	E B 15	19	E B 16	E B 15
29	19	17	E B 16	E B 15	16	E B 14	G	G	45	62	A A 77	51	50	G	40	44	38	45	21	18	26	E B 15	E B 14	E B 15
30	16	22	E B 15	E B 15	E B 15	E B 15	G 19	32	37	54	G	40	40	40	41	40	51	46	76	45	34	E B 15	E B 15	E B 15
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	24	30	36	38	38	38	38	G	G 32		G	26	24	18	16	E B 15	E B 15	E B 15
U Q	16	15	E B 15	E B 15	E B 15	16	26	32	38	40	42	40	40	39	40	37	34	29	32	27	21	19	17	E B 15
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	G 22	G 24	G 32	G	G	G	G	G	G	G 29	G 26	G	19	E B 15	E B 15	E B 15	E B 15	E B 15

APR. 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

APR. 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	15	15	14	14	15	15	13	14	14	18	18	25	22	18	18	14	13	14	13	15	15	14	14	14
2	15	15	15	15	15	16	12	14	12	14	18	23	21	26	15	13	14	15	15	15	15	14	15	15
3	16	14	14	15	14	14	14	13	14	14	17	22	18	17	16	16	14	13	16	14	15	15	15	15
4	15	15	15	14	14	14	16	15	15	16	20	20	18	20	18	14	12	11	14	14	16	14	14	15
5	16	15	15	15	14	14	15	14	17	17	20	19	19	19	18	16	12	13	14	14	14	15	14	15
6	14	15	15	14	14	15	15	15	16	18	18	18	18	20	19	16	15	13	14	15	15	15	15	15
7	14	15	15	14	14	15	15	14	16	19	19	22	22	19	18	16	15	13	14	15	14	15	15	15
8	14	15	15	14	15	15	12	14	15	18	19	19	19	19	21	18	16	15	15	14	14	16	15	15
9	15	15	14	15	15	15	14	14	14	13	16	22	21	19	18	20	15	14	15	14	15	16	16	17
10	14	14	15	14	14	14	13	14	15	13	14	20	23	16	18	13	13	12	14	15	15	14	14	15
11	16	15	15	14	15	14	13	14	15	22	19	24	18	16	18	14	14	12	14	16	16	15	14	15
12	15	16	15	15	15	15	15	13	12	12	18	20	21	17	18	16	14	14	14	14	15	16	15	14
13	14	16	16	14	15	15	14	14	14	15	15	20	17	22	17	14	12	11	14	14	15	14	14	14
14	15	15	15	15	15	15	14	12	13	19	18	18	18	18	19	17	13	14	15	14	15	14	15	15
15	15	15	15	15	15	16	15	14	13	13	17	22	18	18	16	14	13	14	14	15	14	15	15	15
16	15	15	15	15	15	13	14	13	15	14	18	25	16	16	13	16	13	13	14	15	16	15	15	15
17	15	15	14	15	14	15	13	13	13	14	21	20	22	24	16	12	13	12	14	14	14	15	14	14
18	15	15	15	15	14	14	13	14	13	18	15	24	17	17	19	19	15	17	15	15	14	15	15	15
19	15	15	15	16	15	15	15	14	12	20	21	18	24	24	20	16	13	14	14	14	14	15	14	15
20	16	15	15	15	15	15	14	14	16	17	20	14	20	18	20	17	14	15	15	15	12	15	15	14
21	16	14	14	15	16	14	14	12	16	15	18	14	18	19	19	17	16	13	14	14	14	15	15	16
22	15	15	15	15	14	13	14	13	14	20	22	22	22	21	22	18	17	14	13	14	15	14	15	15
23	15	15	15	15	15	14	14	18	18	17	22	23	25	21	17	18	17	17	14	14	14	14	14	15
24	14	14	14	15	15	14	14	13	18	15	16	20	21	19	19	17	16	14	14	15	15	15	15	13
25	15	15	15	15	15	16	15	14	13	17	18	22	21	19	15	17	16	14	15	15	15	14	15	14
26	15	15	14	15	15	15	14	15	17	14	19	20	17	18	17	15	14	16	15	16	15	15	15	15
27	15	15	16	15	15	16	16	14	17	20	21	26	21	19	20	21	15	15	16	14	15	15	15	15
28	15	15	15	16	15	15	14	12	18	23	27	25	29	25	22	21	14	16	14	15	15	14	16	15
29	16	15	16	15	13	14	16	15	20	22	23	21	20	26	21	19	13	12	14	14	14	15	14	15
30	16	15	15	15	14	15	14	14	15	15	18	17	20	17	21	16	13	13	14	15	14	15	15	15
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	14	14	15	17	18	20	20	19	18	16	14	14	14	14	15	15	15	15
U Q	15	15	15	15	15	15	15	14	16	19	20	23	22	21	20	18	15	15	15	15	15	15	15	15
L Q	15	15	15	14	14	14	14	13	13	14	18	19	18	18	17	14	13	13	14	14	14	14	14	15

IONOSPHERIC DATA STATION Kokubunji

APR. 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	286	288	293	321	356	302	356	362	362	335	326	303	313	316	309	312	322	327	339	344	303	287	292	298
2	286	286	275	296	309	295	334	357	337	305	292	305	307	307	310	308	315	332	332	328	351	275	274	270
3	264	284	294	340	331	296	358	365	347	308	321	313	314	321	315	333	330	328	325	333	332	303	281	283
4	275	298	311	346	329	294	356	356	336	322	295	306	322	312	320	318	321	335	338	344	328	286	279	279
5	283	277	297	326	310	310	341	349	351	326	300	292	307	303	300	308	306	312	317	333	292	273	286	292
6	286	296	294	296	290	292	317	302	325	316	331	333	322	315	328	327	332	338	337	339	346	276	282	284
7	287	279	284	280	284	291	324	344	352	333	332	309	296	307	321	330	320	312	325	340	334	269	280	293
8	286	312	365	346	297	291	357	345	334	335	318	313	309	323	322	328	339	346	352	312	288	281	290	294
9	301	303	300	334	344	313	348	343	355	340	320	333	319	316	308	309	322	330	335	321	307	294	298	295
10	304	308	322	359	329	321	352	347	350	325	316	296	307	313	308	323	327	336	323	324	310	294	290	298
11	283	295	304	329	334	315	368	339	328	328	307	307	301	305	321	318	324	317	329	333	311	289	288	292
12	284	280	301	320	321	318	348	360	353	336	321	315	320	300	311	310	309	314	323	340	351	280	278	286
13	281	288	287	311	275	F	318	334	347	322	293	298	308	305	296	312	315	313	325	322	329	293	287	291
14	292	274	280	285	301	323	352	351	350	323	315	322	321	312	302	315	322	324	333	350	339	278	274	282
15	287	302	F	309	307	322	370	345	342	326	323	300	311	304	319	318	327	342	332	311	310	296	278	293
16	284	289	308	356	361	326	362	340	336	330	322	307	297	317	318	312	318	327	334	325	340	295	302	288
17	291	290	297	320	300	320	369	352	333	318	316	298	301	307	313	309	311	313	317	314	321	326	336	268
18	285	291	293	314	289	293	350	326	359	336	316	282	301	303	303	308	301	304	331	355	343	272	286	290
19	258	284	261	313	315	311	351	338	340	328	306	306	306	308	303	307	311	322	333	354	330	287	280	277
20	285	283	298	305	302	319	359	350	342	330	299	294	309	295	311	307	304	296	321	321	332	276	285	284
21	283	297	322	326	285	286	280	315	328	318	312	323	326	320	311	323	334	327	325	320	325	284	279	280
22	278	283	283	298	293	308	347	323	322	338	318	298	284	302	301	300	296	310	326	330	317	278	283	279
23	291	300	284	278	279	318	357	345	336	325	321	300	299	307	311	307	304	294	312	319	311	301	276	289
24	279	265	284	290	294	287	325	295	287	298	295	292	298	310	315	315	324	320	332	312	282	290	288	271
25	275	294	299	302	286	291	311	330	336	323	297	302	316	312	307	313	323	320	299	304	322	273	269	285
26	293	278	295	290	291	277	344	311	298	317	315	323	310	307	299	323	337	332	326	311	288	289	272	279
27	286	297	281	296	288	311	338	324	318	307	308	282	298	306	307	311	313	314	307	318	323	277	283	282
28	286	291	305	302	304	319	325	340	317	321	294	297	312	316	317	320	319	315	317	305	322	307	285	272
29	286	285	283	279	278	306	328	345	328	312	A	297	287	299	319	299	306	324	320	324	308	290	287	300
30	267	278	290	326	325	318	338	332	345	335	322	313	297	313	303	310	316	296	298	329	321	292	276	282
31																								
	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	29	30	30	29	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	286	288	294	312	302	310	348	344	336	325	316	304	308	308	311	312	320	321	326	324	322	287	283	284
U Q	287	297	302	326	325	318	357	350	350	333	321	313	314	315	318	320	324	330	333	339	332	294	288	292
L Q	281	283	284	296	289	292	328	330	328	318	300	297	299	305	303	308	311	313	320	318	310	277	278	279

IONOSPHERIC DATA STATION Kokubunji

APR. 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	U L 378	L	L	U L 371	L	L	L	A	A					
2										L	L	U L 366	L	L	U L 350	L	L							
3										L	L	U L 387	L	L	U L 369	L	L							
4										L	U L 346	U L 360	U L 363	L	L	L	L							
5									L	L	U L 369	U L 344	L	U L 340	U L 350	L	A							
6								L	U L 364	382	U L 405	L	L	U L 398	L	L	L							
7								A	A	A	A	U L 400	U L 327	U L 372	L	L	L							
8									L	L	U L 382	L	U L 355	L	L	U L 378	L							
9									L	L	L	U L 398	U L 372	U L 381	L	L	L							
10									L	L	U L 374	L	U L 357	L	U L 382	L	L							
11									L	A	U L 384	U L 380	U L 352	U L 377	U L 423	U L 375	L							
12									L	L	U L 351	U L 380	U L 384	464	U L 358	L	L	L						
13									L	L	U L 390	U L 337	U L 362	L	U L 371	L	L	L						
14									L	L	U L 404	U L 383	U L 376	379	406	L	L							
15									L	L	A	A	A	U L 341	L	L								
16									A	L	L	L	L	U L 360	L	L	L	A						
17									L	L	U L 387	391	L	U L 366	L	L	L							
18									L	L	L	L	U L 345	L	U L 351	L	A	L						
19									L	A	A	L	A	L	U L 347	A	A	A						
20									L	L	L	L	U L 391	U L 380	L	L	L	L						
21								L	378	U L 385	A	380	U L 403	U L 376	L	L	A	L						
22									L	L	L	U L 403	U L 352	L	L	U L 345	L							
23										L	U L 398	L	U L 368	L	L	L	L	L						
24									L	A	U L 360	U L 356	L	L	368	L	L							
25								L	L	A	L	L	L	U L 368	L		L							
26								L	366		L	A	L	U L 357	U L 363	355	L	L	A					
27								A	A	L	A	L	385	U L 378	A	A	A	A	A					
28									A	A	A	A	A	A	A	A	A							
29								L	A	A	A	L	A	384	379	A	A	A	A					
30								L	U L 364	A	L	U L 390	U L 362	U L 364	U L 359	A	A	A	A					
31																								
	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	2	13	15	17	18	14	3								
MED									365	384	U L 382	U L 380	U L 362	U L 374	U L 364	U L 375								
U Q									372		U L 394	U L 391	U L 380	U L 380	379	U L 378								
L Q									U L 364		U L 364	U L 360	U L 354	U L 364	U L 351	U L 345								

APR. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

APR. 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	304	278	268	282	274	268	244	234					
2										284	266	288	276	274	276	270	270							
3										260	276	284	282	266	268	258	252							
4										266	292	286	272	274	270	258	252							
5									240	248	274	302	286	292	290	274	252							
6								278	274	278	256	238	272	252	272	262	260							
7								248	236	236	254	300	312	292	280	252	262							
8									252	246	262	276	286	274	266	264	252							
9									234	246	272	262	270	270	270	278	262							
10									256	274	278	294	298	278	270	268	258							
11									262	246	250	278	288	282	262	262	262							
12									248	262	286	280	268	288	278	274	280	268						
13									240	254	274	316	280	282	276	268	250	256						
14									238	260	278	268	280	280	284	276	268							
15									254	266	258	280	294	294	278	272								
16									242	256	274	274	288	280	276	282	284	238						
17									252	258	286	288	296	294	284	266	260							
18									232	250	288	304	300	286	300	274	274	274						
19									238	254	270	284	288	286	310	284	278	264						
20									248	254	262	288	282	286	286	276	272	280						
21								306	302	308	326	304	284	290	296	284	260	262						
22									268	264	276	270	342	294	300	294	288	278						
23										272	276	284	304	288	286	282	278	292						
24									306	E A 274	308	304	304	282	296	278	258							
25								250	258	256	280	294	288	284	286		262							
26								260	356	314	290	278	308	296	330	286	250	234						
27								238	254	290	292	292	304	288	276	272	268	246						
28									242	256	E A 304	318	286	274	266	264	268							
29								254	258	E A 300	A	342	294	308	284	274	270	252						
30								260	254	268	282	286	302	288	288	294	260	254	E A 320					
31																								
	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								8	25	30	29	30	30	30	30	29	29	14	2					
MED								257	252	258	276	287	288	285	281	274	262	259	277					
U Q								269	260	274	287	302	300	290	288	280	271	274						
L Q								249	240	254	264	278	280	274	272	265	258	246						

IONOSPHERIC DATA STATION Kokubunji

APR. 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 292	E B 280	E B 244	210	E B 254	220	220	224	194	194	182	190	204	208	224	216	A	A	222	220	E A 286	E B 282	E B 260
2	E B 272	E B 276	E B 298	E B 260	224	E B 246	226	214	220	204	204	192	198	206	210	212	210	230	228	220	198	E B 248	E B 298	E B 298
3	E B 324	E B 286	E B 268	228	214	E B 248	210	212	220	202	232	190	198	210	206	228	214	228	232	232	214	214	E B 252	E B 276
4	E B 276	E B 264	E B 256	212	198	E B 276	222	214	214	200	202	210	198	198	194	200	202	228	222	218	212	E B 244	E B 284	E B 292
5	E B 288	E B 282	E B 272	232	192	230	202	220	204	196	202	204	212	208	204	210	A	234	238	242	E A 234	E A 256	E B 276	E B 232
6	E A 278	E B 256	E B 266	E A 248	E A 268	E A 266	E A 250	218	216	210	208	190	208	188	198	202	214	232	234	228	202	E A 274	E A 316	E A 286
7	E A 286	E A 294	E A 314	E A 288	E A 284	E B 288	240	A	A	A	A	180	208	198	216	202	210	234	240	222	208	214	E A 308	E B 276
8	E B 276	E B 250	206	E B 204	E B 284	E B 306	220	222	214	200	196	208	202	206	204	202	206	226	216	216	E A 262	E B 280	E B 280	E B 254
9	E B 256	E B 256	E B 262	220	200	E B 248	216	222	214	202	196	188	H 182	188	192	208	218	230	224	224	234	E B 256	E B 268	E B 260
10	E B 264	E B 258	240	204	196	E B 252	210	222	214	208	204	206	220	228	200	202	210	234	228	222	218	E A 252	E A 262	E B 260
11	E B 264	E B 280	E B 266	E B 232	212	216	206	214	220	A	196	186	214	204	200	206	214	228	226	230	210	E B 250	E B 270	E B 270
12	E B 270	E B 288	E B 270	226	208	228	210	218	204	200	192	194	198	192	196	216	220	216	242	210	E B 196	E B 236	E B 278	E B 282
13	E B 290	E B 272	E B 266	220	218	E B 280	224	222	204	202	202	222	216	204	202	214	194	212	240	E A 244	224	228	E B 256	E B 256
14	E B 258	E B 292	E B 286	E B 276	E B 264	232	226	224	202	198	188	202	188	204	190	210	222	232	226	208	214	E B 256	E B 302	E B 284
15	E B 278	E B 262	E B 272	E B 242	E B 228	E B 234	214	212	208	200	A	A	A	200	202	198	222	220	H 200	212	218	E B 240	E B 276	E B 280
16	E B 292	E B 290	E B 246	202	194	230	212	218	A	206	204	202	196	184	202	202	204	A	232	214	208	216	E B 248	E B 274
17	E B 278	E B 280	E B 262	E B 234	E B 248	242	208	210	202	202	198	198	220	210	206	212	208	236	236	232	234	218	E B 194	E B 316
18	E B 308	E B 298	E B 284	E B 232	E B 226	E B 256	226	212	194	194	202	186	194	204	204	222	A	222	236	206	194	206	E B 262	E B 282
19	E B 332	E B 284	E B 292	E A 242	214	240	216	220	198	A	A	210	A	220	230	A	A	A	228	210	212	E A 302	E A 306	E B 296
20	E A 296	E B 290	E B 274	E B 242	E B 242	234	214	212	212	200	198	188	184	200	216	226	206	224	242	226	220	226	E A 316	E A 278
21	E B 274	E B 256	E B 234	228	E B 250	E B 272	232	226	228	188	A	208	192	196	200	202	A	206	240	232	226	E A 300	E A 328	E B 274
22	E B 280	E B 284	E B 278	E B 252	E B 256	E A 252	212	224	216	210	216	176	224	204	228	222	226	230	236	216	208	218	E B 268	E B 284
23	E B 268	E B 252	E B 260	E B 278	E B 282	248	216	214	220	196	194	200	202	222	210	204	218	230	246	214	212	E B 218	E B 254	E B 280
24	E B 282	E B 300	E B 288	E B 260	224	240	246	228	212	A	214	194	216	194	204	194	200	230	220	236	E B 248	E B 276	E B 260	E B 294
25	E B 288	E B 260	E B 246	E B 246	E B 242	250	224	212	202	A	192	192	204	200	220	220	202	224	242	E A 250	222	202	E B 278	E B 286
26	E B 260	E B 282	E B 270	E B 254	E B 258	246	224	198	212	212	A	220	208	200	224	210	206	A	228	226	E A 264	E A 278	E A 284	E A 288
27	E A 288	E A 276	E A 280	E B 258	E B 252	238	230	A	A	196	A	224	192	210	A	A	A	A	240	E A 264	226	E A 262	E A 256	E B 272
28	E B 276	E B 268	E B 260	E B 244	E B 244	230	222	228	A	A	A	A	A	A	A	A	A	232	236	E A 260	226	226	E B 252	E B 278
29	E A 290	E A 282	E B 282	E B 274	E B 286	E A 242	226	210	A	A	A	E A 278	A	216	196	A	A	A	244	226	224	E B 226	E B 278	E B 266
30	E A 320	E A 294	E B 270	230	212	H 220	218	206	206	A	192	192	206	206	200	A	A	A	A	E A 248	228	204	E B 252	E B 284
31																								
	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	30	30	30	30	30	28	25	22	22	28	26	29	28	25	22	23	28	30	30	30	30	30
MED	E B 279	E B 281	E B 270	E B 242	E 227	238	220	218	212	200	200	195	202	204	204	210	210	230	235	222	216	E 242	E B 276	E B 279
U Q	E B 290	E B 290	E B 280	E B 254	E B 256	E B 254	226	222	218	204	204	208	212	209	210	218	218	232	240	E A 232	226	E A 262	E A 284	E B 286
L Q	E B 272	E B 262	E B 260	228	212	234	212	212	204	196	194	189	194	198	200	202	206	224	227	216	210	218	E B 256	E B 270

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IONOSPHERIC DATA STATION Kokubunji

APR. 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							126	120	120	122	118	120	120	120	120	114	114	114	B					
2							114	118	118	120	120	122	126	124	116	110	116	116	B					
3							B	120	118	120	126	A	A	A	A	116	116	122	B					
4							124	124	122	122	122	122	122	122	120	114	A	A	B					
5							114	120	120	118	118	124	126	120	120	120	A	A	B					
6							120	114	A	112	118	120	A	116	116	118	118	120	B					
7							118	A	A	A	A	116	118	120	120	A	A	122	B					
8							114	116	124	120	A	A	A	120	120	118	118	114	B					
9							134	114	116	116	116	122	124	124	120	120	116	A	B					
10							114	116	116	116	116	118	116	116	116	112	116	118	B					
11							118	116	114	118	118	116	A	112	116	122	124	128	B					
12							120	116	122	114	114	118	118	A	124	A	A	A	B					
13							120	120	120	120	118	120	120	122	A	A	A	A	B					
14							114	116	A	114	112	118	120	126	A	A	116	120	B					
15							116	118	116	A	A	116	122	118	118	116	122	122	B					
16							120	120	118	116	A	120	118	114	114	114	118	A	B					
17							118	112	110	120	118	118	118	122	116	116	116	A	B					
18							114	114	A	116	122	116	120	A	A	A	A	A	B					
19							122	120	120	A	A	A	A	A	120	122	126	A	B					
20						B	110	120	112	112	A	A	A	A	118	A	A	A	122					
21							120	118	A	A	A	118	A	A	A	A	A	120	B					
22							116	118	118	118	118	124	124	A	124	118	A	122	B					
23							120	116	120	118	A	120	126	122	128	128	120	120	124					
24							126	A	120	A	122	120	126	124	124	124	114	120	B					
25							118	A	A	A	118	120	A	112	112	A	118	118	B					
26							114	124	124	128	122	A	122	A	A	116	116	118	B					
27							116	114	A	A	A	A	A	A	A	128	116	A	A					
28						B	120	116	122	A	A	A	A	A	A	A	A	122	B					
29							122	116	A	A	A	116	116	118	122	A	126	A	124					
30						B	124	116	116	A	118	A	A	120	114	120	120	118	B					
31																								
	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	27	22	20	19	22	19	20	22	20	20	18	3					
MED							118	116	119	118	118	120	120	120	120	118	117	120	124					
U Q							121	120	120	120	122	120	124	122	120	121	120	122	124					
L Q							114	116	116	116	118	118	118	117	116	115	116	118	122					

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APR. 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	B	B	B	B	B	B	146	156	126	108	G	G	G	102	G	98	92	120	110	106	106	102	100	B
2	B	B	B	B	104	B	156	152	106	104	112	G	G	G	96	98	98	96	94	90	B	B	B	B
3	B	B	B	B	B	B	146	104	104	106	G	104	102	106	104	G	106	108	122	104	104	B	B	B
4	B	B	B	B	B	B	140	128	104	102	G	G	G	G	G	92	92	92	92	94	90	B	B	B
5	B	B	B	B	B	B	152	102	102	104	G	G	G	G	G	102	98	98	98	98	104	104	104	B
6	102	102	B	102	96	96	122	124	104	116	118	112	102	G	G	100	G	128	104	104	114	104	104	102
7	100	100	98	98	100	102	G	104	104	106	104	G	G	G	G	104	102	102	96	106	104	92	104	B
8	B	B	B	B	B	B	134	138	124	124	104	106	102	100	G	100	G	G	B	88	88	94	B	96
9	B	94	B	B	B	B	144	128	104	120	118	G	G	G	106	100	116	102	92	92	92	92	88	B
10	90	B	B	B	B	B	140	142	106	100	118	G	G	G	94	92	120	G	132	B	94	94	104	B
11	B	B	B	B	B	B	146	104	124	118	G	G	102	94	96	108	108	128	104	104	104	106	108	B
12	B	B	B	B	B	B	144	102	116	120	108	116	112	108	108	104	102	102	100	104	B	B	B	B
13	B	B	B	B	B	B	148	144	122	122	122	120	124	124	106	106	102	108	140	96	96	96	B	B
14	86	B	B	B	B	94	162	102	104	G	G	G	G	G	104	106	94	152	120	90	106	B	B	106
15	B	108	B	B	B	B	162	102	122	102	106	126	118	G	G	G	106	108	134	B	110	B	B	B
16	B	B	B	B	B	B	142	130	116	120	116	118	112	112	112	122	108	106	98	94	104	110	B	B
17	B	B	88	B	B	B	146	118	124	118	G	124	G	G	94	G	G	90	124	88	106	104	B	B
18	B	B	B	B	B	B	144	106	106	G	114	114	G	104	102	108	104	102	126	B	B	B	B	B
19	104	104	116	92	B	B	G	104	102	104	106	108	104	110	148	130	130	108	106	102	98	94	94	94
20	98	100	B	96	B	132	136	130	120	114	106	108	104	106	G	108	104	102	G	106	100	100	96	96
21	92	B	B	B	B	B	128	122	106	106	102	G	98	98	102	104	106	106	94	82	90	90	94	B
22	B	B	B	B	B	130	140	132	118	114	116	G	G	98	G	114	104	106	104	106	B	B	B	98
23	92	90	90	B	B	B	140	132	126	118	108	G	G	G	G	G	100	G	G	B	B	B	B	B
24	100	B	B	B	94	B	106	108	112	104	G	G	G	G	G	G	102	G	100	96	B	B	B	B
25	96	96	B	132	B	B	156	104	100	100	104	G	104	124	G	98	102	132	104	104	102	B	B	B
26	B	B	B	B	B	B	132	104	128	120	114	104	118	100	106	118	108	128	112	104	100	100	94	92
27	98	96	88	86	88	B	140	122	108	110	102	100	106	104	100	122	120	108	104	100	100	100	100	102
28	98	B	98	98	B	144	134	122	120	106	104	104	102	100	100	102	110	110	120	112	138	104	B	104
29	98	98	116	B	106	B	G	G	106	104	114	126	126	G	120	106	128	114	156	126	112	B	B	104
30	102	102	102	102	102	B	102	120	118	104	G	102	102	120	126	170	128	118	106	104	104	B	94	98
31																								
	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	14	11	8	8	7	6	27	29	30	28	21	16	17	17	18	25	27	26	27	26	24	17	13	11
MED	98	100	98	98	100	116	142	122	110	107	108	110	104	104	104	104	104	108	104	103	104	100	100	98
U Q	100	102	109	102	104	132	146	131	122	118	116	119	115	111	108	111	110	118	122	104	106	104	104	104
L Q	92	96	89	94	94	96	134	104	104	104	104	104	102	100	100	100	102	102	98	94	97	94	94	96

IONOSPHERIC DATA STATION Kokubunji

APR. 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							H 2	HL 21	CL 11	L 2				L 2		L 2	L 2	CL 33	CL 33	F 4	F 3	F 3	F 2	
2					F 1		H 1	HL 11	L 2	L 1	CL 21				L 2	L 2	L 2	L 1	L 1	F 3				
3							H 2	L 1	L 2	L 2		L 2	L 2	L 2	L 2		L 2	L 1	C 3	F 4	F 3			
4							H 1	CL 11	L 2	L 2						L 1	L 2	L 2	L 2	F 3	F 1			
5							H 1	L 1	L 2	L 2						L 2	L 3	L 2	L 3	F 3	F 3	F 3	F 1	
6	F 2	F 1		F 3	F 4	F 3	C 2	C 2	L 2	CL 11	CL 21	CL 11	L 2			L 2		C 1	L 3	F 3	F 2	F 2	F 4	F 2
7	F 3	F 4	F 3	F 3	F 2	F 1		L 3	L 2	L 2	L 2					L 2	L 2	L 2	L 2	FF 13	F 2	F 1	F 2	
8							H 2	H 2	CL 22	CL 22	L 2	L 2	L 2	L 2		L 1				F 3	F 2	F 2		F 1
9		F 1					H 2	CL 12	L 2	CL 22	CL 11				L 2	L 2	CL 11	L 3	L 3	F 3	F 2	F 1	F 2	
10	F 1						H 2	HL 21	L 2	L 2	CL 12				L 2	L 2	CL 11		H 1		F 1	F 3	F 3	
11							H 2	L 2	CL 22	C 2			L 2	L 2	L 1	L 2	L 2	CL 22	L 3	F 3	F 1	F 2	F 2	
12							H 2	L 2	CL 22	CL 22	L 2	CL 11	CL 11	L 2	L 2	L 2	L 2	L 3	L 2	F 3				
13							H 2	HL 11	CL 22	CL 12	CL 22	CL 22	CL 22	CL 22	L 2	L 2	L 2	L 2	H 2	F 3	F 4	F 3		
14	F 1					F 1	H 2	L 1	L 2						L 2	L 2	L 2	HL 11	C 3	F 2	F 3			F 1
15		F 1					H 2	L 2	CL 11	L 2	L 2	C 1	C 2				L 2	L 2	H 2		F 3			
16							H 2	HL 21	CL 31	CL 21	CL 21	CL 21	CL 21	CL 21	CL 22	CL 22	L 2	L 2	L 2	F 1	F 2	F 3		
17			F 1				H 2	C 1	C 2	C 2		C 2			L 2			L 2	CL 22	F 2	FF 32	F 3		
18							H 2	L 2	L 2		C 2	C 2		L 2	L 2	L 2	L 3	L 2	C 1					
19	F 3	F 2	F 1	F 2				L 2	L 2	L 2	L 2	L 2	L 2	L 2	H 1	CL 22	CL 22	L 3	L 3	F 3	F 5	F 3	F 3	F 2
20	F 4	F 2		F 1		C 1	H 2	CL 21	CL 21	CL 21	L 2	L 2	L 2	L 2		L 1	L 2	L 2		F 3	F 3	F 3	F 3	F 2
21	F 2						C 2	C 2	L 2	L 2	L 2		L 2	L 2	L 2	L 2	L 2	L 2	L 2	F 3	F 2	F 4	F 5	
22						F 2	H 2	H 2	C 2	C 2	C 2			L 2		CL 11	L 2	L 2	L 3	F 3				F 2
23	F 1	F 1	F 1				H 1	C 2	C 2	C 2	L 2						L 2							
24	F 1				F 2		L 2	L 2	C 1	L 2							L 2		L 2	F 1				
25	F 1	F 2		F 1			HL 21	L 2	L 2	L 2	L 2		L 2	CL 11		L 2	L 2	CL 11	L 3	F 3	F 2			
26							C 2	L 2	CL 21	CL 22	CL 22	L 2	C 1	L 2	L 2	C 2	L 2	CL 11	C 3	F 3	F 5	F 2	F 3	F 2
27	F 3	F 2	F 4	F 1	F 1		H 2	C 2	L 2	L 2	L 2	L 2	L 2	L 2	L 2	C 2	C 3	L 2	L 3	F 6	F 5	F 4	F 2	F 2
28	F 2		F 1	F 1		H 2	H 2	C 2	CL 31	L 2	L 2	L 2	L 2	L 2	L 2	L 2	L 2	L 2	C 2	F 5	F 2	F 3		F 2
29	F 2	F 2	F 2		F 3				L 2	L 2	CL 22	CL 22	CL 22		CL 11	L 2	CL 11	CL 21	H 1	F 3	F 5			F 2
30	F 3	F 4	F 1	F 1	F 1		L 1	CL 22	CL 12	L 2		L 2	L 2	C 1	C 2	HL 22	CL 22	CL 42	L 4	F 7	F 5		F 2	F 1
31																								
	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																								

APR. 2012 TYPES OF Es

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IONOSPHERIC DATA STATION Yamagawa

APR. 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 60	X 59	X 59	X 61	X 57	X 45														X 104	X 81	X 71	X 72	X 72
2	X 70	X 68	X 66	X 67	X 61	X 55														X 116	X 81	X 58	X 60	X 63
3	X 59	X 65	X 69	X 82	X 51	X 46														X 102	X 90	X 72	X 66	X 66
4	X 68	X 69	X 72	X 70	X 33	X 33														O X 105	X 77	X 66	X 68	X 68
5	X 71	X 66	X 62	X 71	X 58	X 43															X 92	X 82	X 80	X 84
6	X 76	X 84	X 81	X 73	X 64	X 62														O X 109	X 76	X 57	X 58	X 58
7	X 60	X 60	O X 66	X 62	X 59	X 58														X 113	X 80	X 73	X 72	X 74
8	X 75	X 84	105	X 70	X 40	X 41														X 86	X 73	X 62	X 64	X 66
9	X 66	X 66	X 64	X 66	X 48	X 42														X 106	X 88	X 67	X 62	X 62
10	X 60	X 61	X 64	X 62	X 36	X 35														X 102	O X 90	X 68	X 66	X 66
11	X 66	X 66	X 65	X 63	X 52	X 51														O X 110	X 90	X 71	X 70	X 70
12	X 70	X 68	X 68	X 71	X 64	X 56														O X 108	X 86	X 56	X 56	X 56
13	X 59	X 61	X 60	X 60	X 45	X 45														120	X 95	X 74	X 74	X 76
14	X 71	X 70	X 66	X 65	X 67	X 68														X 92	X 62	X 58	X 58	X 58
15	X 58	63	68	X 65	X 46	X 40															X 84	X 66	X 68	X 69
16	X 72	X 72	X 77	X 82	X 50	X 37														O X 106	X 98	X 79	X 76	X 72
17	X 75	X 74	X 77	X 80	X 65	X 61														X 109	O X 102	X 92	X 66	X 60
18	X 59	X 59	X 61	X 61	X 45	X 42														X 139	X 102	X 65	X 64	X 65
19	X 61	X 63	X 65	X 66	X 62	X 48														X 118	X 100	X 70	X 70	X 70
20	X 75	X 75	O X 75	X 75	X 68	X 63														X 122	X 97	X 88	X 88	X 88
21	X 90	X 87	X 84	X 82	X 68	X 63														X 98	X 95	X 76	X 64	X 70
22	X 70	X 70	X 68	X 66	X 62	X 58														X 123	X 98	X 80	X 80	X 83
23	X 85	X 84	O X 75	X 70	X 70	X 71														O X 129	X 114	X 86	X 80	X 78
24	X 75	X 71	X 68	X 67	X 64	X 51														X 80	X 80	X 75	X 64	X 64
25	X 66	X 68	X 68	X 64	X 56	X 56														X 101	X 101	X 73	X 74	X 75
26	X 78	X 68	X 69	X 69	X 64															O X 104	X 90	X 79	X 78	X 83
27	X 80	X 80	X 72	X 71	X 68	X 64														X 118	X 98	X 85	X 85	X 84
28	X 82	X 78	X 76	X 77	X 69	X 64														X 122	X 114	X 77	X 77	X 77
29	X 74	X 70	X 70	X 70	X 73	X 72														X 124	X 106	X 90	X 91	X 91
30	X 89	O X 82	X 92	X 92	X 78	X 67														X 124	X 93	X 84	O X 83	X 84
31																								
	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	30	30	30	29														28	30	30	30	30
MED	X 70	X 68	X 68	X 70	X 62	X 55														X 109	X 91	X 73	X 70	X 70
U Q	X 75	X 75	X 75	X 73	X 67	X 63														X 121	X 98	X 80	X 78	X 78
L Q	X 61	X 65	X 65	X 65	X 50	X 42														X 103	X 81	X 66	X 64	X 65

APR. 2012 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

APR. 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	54	53	53	55	51	39	44	69	80	82	81	86	U R 100	U Y 103	U R 101	108	U R 107	108	107	98	75	65	66	66
2	64	62	60	61	55	49	57	74	75	80	R 88	J R 111	J R 122	U Y 112	118	J R 111	R 105	110	116	110	76	52	54	57
3	53	U R 59	63	76	45	40	45	61	70	80	97	U Y 103	J R 115	Y	U Y 106	U Y 103	101	100	U R 99	96	84	66	60	60
4	62	63	66	64	28	27	40	70	82	83	R 98	J R 106	J Y 122	U R 133	U R 132	Y	117	R 114	J R 112	U R 99	71	60	62	62
5	R 65	60	56	R 65	52	37	46	69	76	82	R 85	R 105	Y	Y	J Y 135	J R 126	U Y 116	R 116	114	R 98	86	76	R 74	80
6	74	R 78	75	67	58	56	62	81	R 95	U R 100	R 113	U R 112	U R 117	U Y 112	J R 114	U Y 104	100	94	98	103	70	51	53	55
7	54	54	R 60	56	53	52	54	R 87	U Y 101	83	75	78	U Y 94	U Y 107	J R 108	U R 104	R 102	96	115	U R 107	74	67	66	68
8	R 70	78	99	R 65	34	35	48	66	84	83	84	U R 94	U R 113	Y	U R 112	J R 109	104	98	83	80	68	J R 56	58	60
9	60	60	58	60	42	36	49	73	81	74	82	94	99	U R 102	U R 101	U R 106	116	R 114	R 104	100	83	61	56	56
10	55	55	58	56	30	29	46	64	72	84	83	U Y 99	J Y 110	Y	U Y 122	J R 131	U Y 118	104	U R 101	96	U R 84	63	60	60
11	60	60	59	56	48	45	52	68	76	82	81	R 88	113	R 131	139	R 131	U R 124	U R 121	112	104	84	65	R 65	64
12	64	63	62	65	58	50	54	68	71	68	80	89	97	99	R 101	R 105	U R 103	116	116	R 102	80	50	50	51
13	53	55	55	55	39	39	48	R 87	78	72	76	86	R 101	R 100	R 92	U R 93	U R 108	U R 100	U R 108	R 114	89	68	68	69
14	65	64	J R 60	59	61	63	69	69	72	79	U R 88	U R 98	U R 99	R 109	Y	U Y 103	J R 111	U R 116	111	84	55	52	52	53
15	53	F 53	58	58	40	34	48	69	73	80	82	R 87	U Y 97	115	114	Y	98	U R 99	102	86	80	60	62	63
16	66	66	71	R 76	44	31	51	70	R 84	84	R 86	92	U R 104	R 112	U R 112	R 116	R 120	119	108	R 100	92	73	70	67
17	69	J R 68	71	74	59	55	66	72	68	79	88	U Y 94	Y	J Y 114	J Y 116	J Y 119	U Y 115	114	R 112	103	R 96	86	60	54
18	53	53	55	55	39	36	61	81	85	76	75	R 102	U R 116	U R 118	U R 115	U R 126	U R 123	U R 123	J R 132	133	96	59	58	58
19	55	57	59	60	56	42	58	R 75	82	U R 86	92	102	R 104	U R 95	U R 95	U R 115	R 135	J R 128	116	U R 111	J R 94	64	64	R 64
20	69	69	U R 69	69	62	57	70	87	82	81	86	R 98	U Y 112	U Y 122	U Y 121	J Y 123	U Y 122	R 110	R 118	116	91	R 81	81	82
21	R 84	81	78	76	62	57	68	R 89	J R 80	78	82	90	R 98	R 100	100	U R 100	U R 94	82	88	92	R 88	70	R 59	64
22	64	64	62	60	56	52	64	72	92	92	J R 72	78	R 95	R 117	118	R 116	118	U R 114	118	R 117	92	74	74	77
23	79	78	69	64	64	65	80	R 78	77	86	R 81	U R 94	U R 110	U Y 128	Y	U Y 130	U Y 124	115	U R 121	U R 123	J R 108	80	74	72
24	69	65	62	61	58	45	59	J R 78	U Y 100	82	78	U R 86	Y	U R 115	114	U Y 104	R 111	97	92	74	74	69	58	58
25	60	62	62	58	50	50	68	U R 97	74	72	U Y 80	U Y 88	Y	R 102	96	94	102	92	94	R 95	R 95	68	68	69
26	72	65	63	63	57	55	76	75	J R 91	U R 84	R 99	U R 97	U R 99	U R 112	U R 96	J R 118	119	U R 100	U R 97	R 98	84	73	R 73	77
27	74	73	R 66	65	62	57	62	75	80	R 82	86	R 88	J R 112	U Y 115	Y	U Y 121	R 131	U R 128	U R 120	112	92	79	R 78	78
28	76	72	70	71	63	58	72	79	78	U R 78	85	A	U R 119	U R 120	118	U R 116	J R 128	118	114	116	J Y 108	71	71	71
29	R 68	64	64	U R 64	67	66	79	88	75	75	76	U R 83	J R 100	R 118	J R 116	U R 126	Y	R 120	120	118	97	79	85	85
30	84	U R 76	86	86	72	61	R 76	86	86	83	R 98	R 89	R 95	R 105	94	101	112	U R 99	J R 111	R 116	87	78	77	78
31																								
	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	30	30	30	30	30	30	30	30	30	29	26	26	27	28	29	30	30	30	30	30	30	30
MED	64	64	62	64	56	50	58	74	80	82	84	R 94	R 104	U R 112	114	R 113	115	112	112	102	85	68	64	64
U Q	70	69	69	67	61	57	68	81	84	83	R 88	R 100	U R 113	U R 118	118	R 122	R 121	R 116	116	114	92	74	73	72
L Q	55	59	59	58	44	37	48	69	75	78	80	88	99	R 103	R U 101	104	104	99	101	96	76	60	58	58

APR. 2012 foF2 (0.1MHz)

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APR. 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 496	U R 532	U L 540	U L 516	U L 512	L	L						
2									L	L	U L 500	U L 540	L 520	U L 516	L 512	U L 496	L	L	L					
3								260		L	L	L	A	L	U L 536	L								
4										L	U L 532	U L 536	U L 536	L	L	U L 524	L	L						
5										L	L	U L 504	L	U L 552	U Y 548	U L 528	L	L						
6									L	L	U L 496	U L 508	L	L	U L 500	L	L	U L 412	184					
7									L	U L 440		L	L 552	L 528	U L 520	U L 488	L	L						
8									L	L	L	U L 492	L 504	U L 500	L 504	U L 472	L	U L 400						
9										L	L 480	L 480	U L 500	L 504	L	U L 516	L	L						
10									L	L	U L 484	L 504	U R 500	L 500	L 524	L 496	U L 496	L						
11									L	L 460	A 464	L 500	L 512	L 508	L 504	U L 508	U L 472	L						
12									L	L	L 484	L 484	L 488	L	L 512	U L 504	L 500	L	L					
13									L	A	L 528	U L 548	A 532	U L 520	L	U L 504	U L 468	L	L					
14											U L 496	L 500	L 528	L 528	U L 528	U L 528	L 512	L	L					
15									L	L	U L 476	L 540	L 540	L 540	A	A		408	L					
16									L		L	L 532	L 556	L 556	L 564	L 504	U L 484	L						
17										L	U L 504	U L 516	U L 536	L 536	U L 552	L 516	U L 496	L						
18								L	L	L	L	L 556	L 548	L 548	L	U L 548	U L 488	L						
19									L	L	L	L 560	L 544	B	L	U L 564	U L 540	A						
20										U L 492	L	L	L 552	L 548	U L 548	U L 540	A	L	L					
21								L	L	U L 500		L	U L 552	L 516	L 512	U L 508	L		L					
22								L	U L 472	U L 468		L	L 548	L 548	U L 548	U L 548	U L 508	U L 468	L					
23									L	L	L	L	U L 580	L 556	U L 540	U L 540	L	L						
24									L	L	U L 484	L	U L 540	L 540	L	L	L	L						
25								L	L		U L 508	L 564	A	L	L 528	U L 528	A							
26									L	L	L	U L 560	U L 556	L 528	L	L	U L 492		L					
27									L	L	L	L 520	U L 548	L 544	L	L	L	L						
28									A	L	L	A	A	A	U L 552	L	L	L						
29								L	L	L	L	L 580	L	L 544	U L 544	L 520	A	L	L					
30									L	U L 456	A	U L 520	L 516	R 512	U L 508	U L 504	U L 500	A						
31																								
	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	6	13	22	24	23	21	23	12	4	1					
MED								260	U L 472	U L 464	U L 496	L 520	L 538	L 536	U L 528	U L 516	U L 496	U L 410	184					
U Q										U L 492	U L 506	L 548	U L 550	L 548	U L 548	U L 528	U L 504	U L 440						
L Q										U L 456	L 482	L 500	L 518	L 516	L 512	U L 504	U L 486	404						

APR. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

APR. 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							J R 148	220	284	316	A	A	B	U A 352	U A 344	344	A 320	A 272	U A 208					
2							B	240	300	328	U A 344	U R 360	R	U A 372	U A 364	A	U A 280	268	A					
3							B	228	292	320	U A 344	356	U A 360	U R 356	336	320	312	272	U A 220					
4							152	224	300	316	R	R	R 372	R 372	R	A	A	U R 264	A					
5							B	228	292	308	340	U R 368	A	A	R	A	A	U R 268	200	A				
6							B	244	292	U A 332	356	A	A	A	K 380	A	312	284	A 204					
7							B	248	296	328	A	A	R	R	A	A	312	272	204					
8							160	236	292	312	340	U A 344	356	R 352	U R 348	336	312	256	176					
9							A	216	280	316	U R 336	A	A	A	A	A	U A 304	272	A					
10							172	232	308	344	R 380	A 380	A	364	U R 344	R 332	320	280	R 220					
11							B	240	288	316	344	A 380	A	A	A	A	U A 312	292	216					
12							188	252	276	U A 308	A	A	A	A	A	344	316	288	208					
13							A	228	272	A	A	A	344	R 368	A	R	A	280	A					
14							168	236	A 272	320	R 356	R	R	R	A 368	364	332	280	A					
15							168	244	284	316	R 336	B	360	B	356	U A 344	332	276	216	B				
16							184	260	288	U R 324	A	U R 368	R 376	R 368	U R 368	352	324	288	212					
17							180	236	292	U R 316	A	U R 360	R	R	R	368	312	304	224					
18							204	228	296	336	R 360	R 372	372	376	372	352	A 328	288	224					
19							180	244	296	R 336	356	R 376	R	B	R	368	332	292	228					
20							176	256	A 280	R 332	U R 340	U R 360	A	A	A 376	R	A 344	316	A					
21							192	R 244	300	320	U R 336	R	A	R	R	U A 348	A	A	A					
22							196	A 248	308	R	R	R	R	B	R 352	A	U A 320	U A 280	A					
23							196	264	312	R 336	U R 360	A	R 376	U R 364	R	R	336	296	232					
24							176	A	A	A	A	A	R	384	372	R	320	280	220					
25							196	280	U A 312	A	A	A	A	A	A	352	340	296	U A 236					
26						B	A	276	316	340	A	A	A	U R 376	R	U R 372	324	288	224					
27							216	280	304	U A 336	A	A	R	A	U R 368	R	344	300	220					
28							184	276	316	344	A	U A 352	A	A	U R 372	R 348	348	A	A					
29							A	A	A	R 336	U R 372	R	U R 384	A	A	376	A	A	A					
30							B	A	U A 328	U A 336	A	R 384	A	380	A	A	320	292	U A 228					
31																								
	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	27	28	26	16	13	9	13	15	16	25	27	20					
MED							180	244	294	326	R 344	U R 368	372	R 368	368	350	320	280	220					
U Q							196	256	306	336	R 358	378	R 376	376	372	366	332	292	224					
L Q							168	228	286	316	R U 340	358	358	360	U 348	344	312	272	208					

IONOSPHERIC DATA STATION Yamagawa

APR. 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	E B 15	E B 15	E B 15	E B 15	E B 15	G	25	34	40	40	39	E B 39	39	39	45	36	33	J A 56	J A 26	J A 33	J A 27	E B 14	E B 14
2	E B 13	J A 27	J A 34	J A 30	J A 30	J A 23	J A 19	G	G 25	42	39	G	G 29	41	40	39	34	29	J A 31	J A 20	J A 26	J A 42	29	22
3	E B 12	J A 19	18	E B 12	E B 12	18	E B 12	24	31	38	41	41	J A 56	G 28	G 28	36	40	33	J A 33	J A 44	J A 22	J A 23	20	E B 13
4	E B 14	E B 14	E B 16	E B 16	J A 14	E B 13	G	28	35	35	G 34	31	G 31	G	G 33	35	33	G	24	J A 16	E B 13	J A 16	E B 13	E B 13
5	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	32	38	38	G	38	44	G 35	J A 38	J A 39	G	30	J A 50	35	J A 62	J A 32	E B 12
6	18	22	18	E B 14	18	17	E B 16	G 22	32	36	G	37	39	37	G 32	J A 43	40	G	25	J A 34	22	21	E B 12	J A 14
7	E B 16	E B 15	20	J A 21	E B 15	E B 15	E B 15	G	G 36	40	40	41	G 34	46	J A 37	G 26	30	21	J A 20	J A 23	J A 23	32	32	
8	J A 21	E B 14	E B 14	E B 15	E B 15	E B 15	G	27	33	38	41	38	40	40	38	37	G 27	29	22	E B 15	J A 20	J A 61	J A 24	22
9	20	21	18	E B 12	E B 12	E B 14	17	26	32	37	38	40	40	J A 40	J A 40	40	34	28	J A 26	J A 21	J A 26	J A 21	25	23
10	E B 14	19	E B 16	E B 16	E B 16	E B 16	G	28	G	G 30	G	43	41	41	39	39	35	G 19	G 21	J A 27	J A 71	18	J A 22	E B 12
11	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	27	34	37	J A 61	42	41	J A 46	46	J A 43	37	G	G 22	E B 14	J A 20	J A 19	J A 23	J A 24
12	22	22	22	E B 11	E B 11	E B 11	G	26	31	38	42	J A 44	J A 43	43	39	G 30	G	G 18	G 20	J A 20	20	20	E B 15	E B 15
13	E B 17	E B 16	E B 15	E B 15	E B 15	E B 15	20	30	30	J A 46	39	39	41	G	39	G	36	G 21	24	25	E B 14	E B 14	E B 13	E B 13
14	E B 12	E B 12	18	E B 11	18	E B 10	G	28	30	35	39	G 32	G 31	G 30	42	38	37	37	J A 38	J A 32	J A 32	J A 22	21	E B 12
15	E B 12	E B 12	E B 12	E B 13	E B 13	E B 14	G	28	35	39	39	E B 38	40	E B 38	J A 58	J A 70	J A 42	40	G	E B 14	J A 21	J A 34	E B 15	E B 15
16	E B 13	E B 13	E B 15	E B 15	E B 15	E B 15	21	32	35	38	40	41	41	G 30	40	40	40	34	J A 44	J A 26	E B 12	E B 12	J A 20	E B 14
17	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	G	31	J A 44	35	J A 44	44	G 34	G 33	G 26	38	36	32	J A 38	J A 26	22	E B 12	E B 12	E B 12
18	E B 12	E B 13	E B 12	E B 12	E B 12	E B 12	G	26	33	37	39	39	41	42	45	38	38	39	32	J A 23	E B 12	E B 12	J A 13	18
19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	32	32	37	43	G	G	E B 54	G	42	40	J A 50	J A 53	J A 17	J A 25	J A 30	J A 46	22
20	26	J A 20	J A 23	J A 20	J A 20	J A 14	22	31	35	39	39	39	40	40	43	G 33	J A 51	35	J A 54	J A 35	J A 44	27	18	J A 18
21	20	E B 14	J A 22	J A 21	E B 14	J A 12	G	29	32	36	G 31	G 32	38	G 34	G 34	41	J A 40	J A 40	J A 36	J A 26	J A 25	J A 25	J A 40	J A 28
22	J A 28	J A 53	J A 44	J A 29	J A 26	29	J A 23	29	34	G 31	G 33	G 33	G 34	E B 45	43	45	J A 41	43	J A 27	J A 36	21	20	E B 14	E B 14
23	E B 14	E B 14	E B 14	E B 15	E B 15	J A 14	G	29	34	G	G	37	G 36	41	G 31	G 33	G	G	G 20	E B 14	J A 26	E B 15	E B 15	E B 15
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	22	J A 31	J A 38	40	40	37	G 34	G 34	40	33	G 31	E B 16	28	J A 22	18	18	23	E B 12
25	E B 13	E B 13	E B 13	E B 13	E B 13	J A 12	G	G	35	J A 38	42	J A 49	J A 69	43	42	J A 44	J A 50	J A 49	J A 75	J A 56	J A 40	26	22	J A 24
26	20	E B 12	20	19	18	E B 14	22	30	G	G	40	40	41	G	G	G	G	33	27	J A 31	J A 38	J A 52	J A 32	J A 48
27	J A 38	19	J A 23	J A 23	E B 12	E B 12	G 19	33	39	J A 43	J A 67	41	J A 35	47	46	44	47	J A 43	J A 34	J A 23	J A 23	J A 33	J A 22	E B 12
28	E B 14	J A 16	J A 23	J A 17	J A 20	24	22	32	J A 50	J A 55	J A 57	J A 94	J A 59	68	60	G	G	J A 42	J A 34	J A 18	J A 32	J A 20	J A 38	J A 39
29	22	J A 21	J A 27	J A 44	J A 40	J A 43	22	29	30	G 30	G	G	42	42	48	40	J A 73	J A 32	J A 47	J A 73	J A 39	J A 40	J A 39	J A 33
30	J A 33	20	20	21	J A 20	J A 19	21	J A 30	37	37	J A 50	G 37	48	43	J A 41	41	38	55	60	54	E B 14	J A 24	J A 28	J A 32
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 14	E B 14	17	E B 15	E B 15	E B 14	G	28	33	37	40	39	40	40	40	38	37	32	30	J A 26	J A 23	J A 22	22	15
U Q	20	20	J A 22	J A 20	J A 18	16	21	30	35	39	J A 42	41	41	43	43	42	J A 40	J A 40	J A 38	J A 34	J A 32	J A 30	J A 29	J A 24
L Q	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	G	26	31	G 35	G 38	G	G 36	G	G	G 35	G 33	G	G 24	20	E B 20	E B 18	E B 15	E B 13

APR. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

APR. 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 15	G	24	31	38	38	38	E B 39	38	38	40	36	31	31	19	19	E B 14	E B 14	E B 14
2	E B 13	E B 13	20	20	20	E B 12	E B 13	G	G 22	38	38	G	U G 29	40	39	36	32	G 24	21	19	22	17	24	E B 15
3	E B 12	E B 13	E B 12	E B 12	E B 12	E B 12	E B 12	G 23	30	35	41	37	49	G 28	G 26	34	40	31	27	40	16	16	16	E B 13
4	E B 14	E B 14	E B 16	E B 16	E B 13	E B 13	G	24	34	32	U G 33	30	G 30	G	U G 33	34	30	G	E B 22	E B 14	E B 13	E B 13	E B 13	E B 13
5	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	G 29	33	36	G	35	37	U G 35	35	35	G	26	48	24	47	27	E B 12
6	11	E B 14	E B 14	E B 14	E B 13	E B 12	E B 16	G 17	30	34	G	34	36	U Y 35	G 30	35	35	G	G 15	26	17	E B 12	E B 12	E B 13
7	E B 16	E B 15	E B 15	18	E B 15	E B 15	E B 15	G	G	G 32	35	36	40	U G 34	38	37	G 26	G 27	G 18	20	20	17	27	27
8	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	G	24	31	33	40	U Y 38	U Y 39	39	36	36	G 22	27	20	E B 15	18	18	17	17
9	E B 12	E B 12	E B 12	E B 12	E B 12	E B 14	16	26	29	34	36	36	37	38	37	37	33	G 23	23	21	20	18	17	12
10	E B 14	E B 14	E B 16	E B 16	E B 16	E B 16	G	24	G	G 24	G	42	40	40	37	37	G 25	G 18	G 18	26	32	14	14	E B 12
11	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	25	30	35	35	42	40	40	40	40	35	G	G 19	E B 14	E B 14	E B 14	14	E B 14
12	11	11	14	E B 11	E B 11	E B 11	G	G 25	30	36	36	40	41	41	37	G 26	G	G 18	G 17	17	E B 15	E B 15	E B 15	E B 15
13	E B 17	E B 16	E B 15	E B 15	E B 15	E B 15	16	29	29	42	36	36	36	G	37	G	35	G 20	22	18	E B 14	E B 14	E B 13	E B 13
14	E B 12	E B 12	E B 12	E B 11	E B 11	E B 10	G	G 23	28	G 32	38	U G 32	U G 31	U G 30	G 36	G 36	36	34	26	26	25	E B 12	E B 12	E B 12
15	E B 12	E B 12	E B 12	E B 13	E B 13	E B 14	G	26	31	33	35	E B 38	37	E B 38	55	62	38	35	G	E B 14	17	29	E B 15	E B 15
16	E B 13	E B 13	E B 15	E B 15	E B 15	E B 15	G 18	29	31	34	36	41	U Y 40	G 28	38	37	37	30	34	23	E B 12	E B 12	16	E B 14
17	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	G	30	42	34	36	39	U G 34	U G 33	G 24	38	35	32	34	20	E B 12	E B 12	E B 12	E B 12
18	E B 12	E B 13	E B 12	E B 12	E B 12	E B 12	G	24	31	35	38	39	40	40	42	38	36	36	28	19	E B 12	E B 12	E B 12	E B 12
19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	28	30	G 32	G 35	G	G	E B 54	G	40	37	47	46	E B 14	17	17	19	E B 15
20	19	18	19	18	18	E B 15	21	30	31	37	37	U Y 38	40	40	41	U G 33	49	34	28	17	31	23	E B 14	E B 14
21	E B 14	E B 14	14	15	E B 14	E B 14	G	26	G 30	G 32	G 30	U G 32	U Y 37	U G 34	U G 34	41	36	36	30	E B 14	20	20	26	17
22	E B 15	22	22	22	21	19	G 18	27	G 30	U G 31	U G 32	U G 32	U G 33	E B 45	42	43	36	33	22	19	16	E B 14	E B 14	E B 14
23	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	G	28	32	G	G	U Y 36	G 35	39	U G 30	U G 31	G	G	G 19	E B 14	E B 15	E B 15	E B 15	E B 15
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 18	20	26	26	37	37	G 33	G 33	40	31	G 27	E B 16	25	19	E B 12	E B 12	15	E B 12
25	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	G	G 31	31	33	37	58	41	38	G 28	46	46	55	40	30	16	E B 12	E B 12
26	E B 12	E B 12	E B 14	E B 14	E B 14	E B 14	20	28	G	G	34	35	U Y 38	G	G	G	G	32	26	26	25	28	19	35
27	19	E B 12	E B 12	E B 12	E B 12	E B 12	G 16	32	34	37	39	39	U G 35	40	44	44	42	42	32	22	20	20	17	E B 12
28	E B 14	E B 14	17	E B 14	E B 14	E B 14	19	30	47	50	50	A A 94	58	63	43	G	G	28	25	17	17	E B 13	18	32
29	E B 14	17	17	34	31	32	22	22	30	G 30	G	G	40	40	42	40	50	29	27	43	24	21	20	26
30	22	E B 13	E B 13	E B 14	E B 13	E B 15	19	24	35	35	46	G 33	41	41	41	40	35	46	45	27	E B 14	22	22	22
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G	34	36	36	38	38	38	36	35	30	26	19	17	16	15	E B 14
U Q	E B 14	E B 14	15	15	15	E B 15	G	28	31	35	38	39	40	40	41	40	37	34	30	26	22	20	19	15
L Q	E B 12	E B 13	E B 13	E B 13	E B 13	E B 13	E B 16	24	30	G 32	G	G	U G 35	G	G 36	35	G	G	G 20	E B 17	E B 14	E B 13	E B 14	E B 12

APR. 2012 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Yamagawa

APR. 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	15	14	14	13	12	15	19	39	21	20	19	18	16	15	13	13	14	14	14
2	13	13	13	13	13	12	13	12	18	17	17	19	20	18	17	17	17	17	14	14	15	15	15	15
3	12	13	12	12	12	12	12	12	12	13	16	16	16	17	20	18	15	15	15	13	13	13	13	13
4	14	14	16	16	13	13	13	13	13	16	20	17	21	21	31	23	17	16	16	14	13	13	13	13
5	14	14	14	14	14	14	14	14	15	15	15	25	21	21	30	23	13	13	8	13	12	12	12	12
6	11	14	14	14	13	12	16	15	15	18	14	19	21	20	20	19	14	15	15	12	12	12	12	13
7	16	15	15	15	15	15	15	15	19	19	18	18	19	24	21	20	18	17	17	13	16	15	15	15
8	14	14	14	15	15	15	13	15	13	15	18	17	18	24	20	16	16	16	16	15	15	15	15	15
9	12	12	12	12	12	14	12	12	12	16	16	25	21	20	20	26	20	14	17	12	11	11	11	11
10	14	14	16	16	16	16	16	15	15	15	19	20	20	24	24	20	16	15	15	12	12	12	12	12
11	14	14	14	14	15	15	15	15	15	18	18	18	23	19	19	20	16	15	15	14	14	14	14	14
12	11	11	11	11	11	11	11	11	11	15	20	20	24	24	23	20	16	14	14	15	15	15	15	15
13	17	16	15	15	15	15	15	16	15	15	22	22	22	22	32	22	19	15	13	14	14	14	13	13
14	12	12	12	11	11	10	12	11	14	16	16	24	24	24	19	18	19	18	15	12	13	12	12	12
15	12	12	12	13	13	14	13	13	11	15	19	38	24	38	20	17	14	14	14	14	16	15	15	15
16	13	13	15	15	15	15	14	14	16	18	18	20	22	17	17	15	14	10	9	13	12	12	14	14
17	13	14	14	14	14	14	14	14	14	19	17	30	22	24	20	18	14	13	13	14	12	12	12	12
18	12	13	12	12	12	12	12	15	14	20	20	20	27	26	26	22	21	13	12	11	12	12	12	12
19	14	14	14	14	14	14	14	13	13	20	20	26	29	54	25	22	18	16	15	14	12	12	15	15
20	14	14	15	15	15	15	12	15	15	17	20	20	32	30	25	22	22	16	16	15	14	14	14	14
21	14	14	14	14	14	14	14	14	14	14	16	20	28	28	18	19	14	14	14	14	13	13	13	13
22	15	15	15	15	14	14	14	14	15	18	18	19	25	45	23	35	19	16	14	14	14	14	14	14
23	14	14	14	15	15	15	15	12	16	19	21	29	29	27	23	21	18	18	16	14	15	15	15	15
24	14	14	14	14	14	14	14	14	14	18	20	24	24	25	25	25	17	16	15	12	12	12	12	12
25	13	13	13	13	13	13	13	14	14	14	20	20	20	24	24	20	18	14	16	11	13	12	12	12
26	12	12	14	14	14	14	13	13	13	14	17	17	22	19	19	18	17	14	14	12	12	13	13	13
27	12	12	12	12	12	12	12	17	20	18	19	18	20	21	20	14	15	16	16	13	13	12	12	12
28	14	14	14	14	14	14	14	14	17	20	24	26	37	27	24	23	16	14	14	13	13	13	13	12
29	14	14	14	14	15	15	13	16	17	17	24	23	22	22	20	20	16	16	15	15	13	13	13	13
30	13	13	13	14	13	15	15	15	15	19	27	27	26	26	26	19	18	18	14	15	14	14	14	14
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	14	14	14	14	14	14	14	14	14	17	18	20	22	24	20	20	17	15	15	14	13	13	13	13
U Q	14	14	15	15	15	15	14	15	15	18	20	25	26	26	25	22	18	16	16	14	14	14	14	14
L Q	12	13	13	13	13	13	13	13	13	15	17	19	21	21	20	18	15	14	14	12	12	12	12	12

IONOSPHERIC DATA STATION Yamagawa

APR. 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	278	273	285	322	346	318	309	370	351	345	338	316	U R 321	U Y 335	U R 324	312	U R 325	322	324	334	320	284	283	281
2	286	281	284	292	293	295	311	361	355	313	R 314	R	R	U Y 331	317	R	R 319	312	329	348	364	282	273	278
3	265	U R 280	302	358	336	323	322	352	345	316	301	U Y 334	R	Y	U Y 346	U Y 348	321	323	U R 343	343	343	314	276	276
4	293	306	340	351	398	292	314	345	344	330	R 316	R	R	U R 325	U R 322	Y	317	R 325	J R 326	U R 358	343	310	280	283
5	R 285	302	295	R 329	365	315	309	356	337	334	R 305	R 297	Y	Y	Y	Y	U Y 323	R 311	335	R 322	303	317	R 289	298
6	288	R 300	294	328	332	311	306	324	R 336	U R 346	R 327	U R 349	U R 334	U Y 343	R	Y	331	320	341	354	343	299	285	274
7	288	287	R 301	321	299	307	300	R 353	U Y 369	366	316	305	U Y 302	U Y 331	R	U R 329	R 309	323	331	U R 346	326	313	280	284
8	R 283	315	342	R 384	304	300	321	336	340	346	325	U R 317	U R 321	Y	U R 325	R	324	331	331	332	315	R	291	304
9	307	309	304	321	367	295	335	358	365	349	330	R 330	312	U R 329	U R 311	U R 316	314	R 320	R 348	336	338	325	284	282
10	297	307	319	347	363	309	339	344	334	331	328	U Y 314	Y	V	U Y 314	R	U Y 325	319	U R 337	341	U R 358	325	289	290
11	290	291	295	320	315	321	353	345	350	357	326	R 309	312	R 318	317	R 315	U R 334	U R 335	330	349	343	318	R 287	289
12	285	276	280	326	333	316	333	342	353	347	330	322	313	308	R 321	R 323	U R 331	312	332	R 356	346	285	283	274
13	278	297	297	312	339	263	319	R 367	356	332	302	315	R 312	R 329	R 323	U R 324	U R 310	U R 344	U R 317	R 347	340	285	287	299
14	280	283	R	287	303	330	364	352	339	315	U R 325	U R 331	U R 329	R 306	Y	U Y 335	R	U R 341	347	346	341	273	274	279
15	277	F 280	318	333	344	299	333	353	351	333	327	R	U Y 326	324	326	Y	330	U R 352	342	347	375	315	301	295
16	283	307	325	R 366	361	295	324	350	R 336	339	R 325	310	U R 328	R 313	U R 328	R 331	R 326	336	349	R 342	323	322	288	295
17	295	J R 294	309	339	327	317	338	359	372	323	317	U Y 336	Y	Y	Y	Y	U Y 317	311	R 326	318	R 340	342	298	277
18	279	286	305	336	304	275	330	361	350	345	297	R 308	U R 323	U R 342	U R 328	U R 316	U R 336	U R 337	J R 342	340	361	312	283	287
19	279	294	284	308	328	309	327	R 358	344	U R 325	311	321	R 324	U R 321	U R 322	U R 312	R 320	R	343	U R 349	R	287	281	R 293
20	295	296	U R 314	319	315	316	336	356	350	344	315	R 313	U Y 321	U Y 325	U Y 326	Y	U Y 325	R 307	R 325	333	327	R 314	298	301
21	305	299	305	313	308	298	316	R 325	R	323	303	296	R 317	R 320	314	U R 327	U R 330	313	313	337	R 331	336	R 277	282
22	289	282	291	293	298	279	328	328	342	343	R	302	R 307	R 312	318	R 314	308	U R 309	340	R 340	343	291	291	284
23	291	288	303	279	285	308	347	R 360	346	327	R 313	U R 314	U R 296	U Y 309	Y	U Y 320	U Y 331	307	U R 314	U R 339	R	311	289	285
24	288	280	282	284	302	287	309	R	U Y 355	323	291	U R 311	Y	U R 321	326	U Y 332	R 329	328	348	319	289	308	278	269
25	284	296	320	288	309	277	322	U R 377	357	337	U Y 344	U Y 327	Y	R 346	339	344	326	302	309	R 312	R 314	299	261	286
26	289	275	282	299	311	268	346	338	R	U R 361	R 312	U R 332	U R 333	U R 326	U R 314	R	340	U R 331	U R 352	R 351	311	295	R 288	282
27	305	309	R 309	295	309	293	361	332	333	R 354	307	R 297	R	U Y 325	Y	U Y 330	R 320	U R 309	U R 339	341	327	300	R 297	291
28	287	291	300	301	328	304	339	346	368	U R 310	286	A	U R 319	U R 352	329	U R 336	R	335	327	322	Y	298	276	306
29	R 293	279	282	U R 296	286	287	336	345	348	326	320	U R 295	R	R 308	R	U R 313	Y	R 337	335	331	338	329	282	295
30	301	U R 320	318	318	345	300	R 328	350	345	348	R 342	R 307	R 318	R 327	310	288	311	U R 329	R	R 344	344	301	294	292
31																								
	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	29	30	30	30	30	29	28	30	29	26	20	25	22	20	27	29	29	30	27	29	30	30
MED	288	292	302	320	321	300	328	352	349	336	316	R 314	U R 320	U R 325	322	U R 324	325	323	335	341	340	310	284	286
U Q	293	302	316	333	344	315	338	358	355	346	327	U R 327	U R 325	U Y 331	U 326	U 332	U R 330	U R 335	342	R 347	343	318	289	295
L Q	283	281	288	296	304	292	316	343	341	325	306	R 307	312	R 316	317	R 314	317	312	R 326	333	323	293	280	281

APR. 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

APR. 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 391	U R 381	U L 376	U L 387	U L 363	L	L						
2									L	L	U L 371	U L 344	L 363	U L 385	L 379	U L 387	L	L	L					
3								489		L	L	L	A	L	U L 350	L								
4										L	U L 359	U L 356	U L 360	L	L	U L 355	L	L						
5										L	L	U L 376	L	U L 344	U Y 344	U L 326	L	L						
6									L	L	U L 370	U L 368	L	L	U L 389	L	L	U L 367	815					
7									L	U L 404		L	L 338	L 349	U L 356	U L 378	L	L						
8									L	L	L	U L 389	L 380	U L 374	L 369	U L 394	L	U L 363						
9										L	L 390	L 398	U L 383	L 380	L	U L 341	L	L						
10									L	L	U L 372	L 368	U R 370	L 370	L 354	L 373	U L 350	L						
11									L	L 385	A 402	L 382	A 362	L 365	L 368	U L 352	U L 367	L						
12									L	L	L 407	L 407	L 403	L	L 363	U L 369	L 353	L	L					
13									L	A	L 359	H 347	A 357	U L 366	L	U L 362	U L 368	L	L					
14											U L 372	L 369	350	L 350	U L 350	U L 350	L 340	L	L					
15									L	L	U L 382	L 347	L 347	L 347	A	A		392	L					
16									L			L 369	L 354	L 354	L 344	L 369	U L 366	L						
17										L	U L 369	U L 388	U L 373	L 384	U L 361	L 352	U L 342	L						
18								L	L	L	L	L 357	L 361	L 361	L	U L 341	U L 365	L						
19									L	L	L	L 358	L 368	B	L	U L 327	U L 337	A						
20										U L 391	L	L	L 356	L 358	U L 358	U L 352	A	L	L					
21								L	L	U L 358	L	L	U L 368	L 394	L 388	A 363	L		L					
22								L	U L 390	U L 394	L	L	L 364	L 364	U L 361	U L 342	U L 336	U L 342	L					
23									L	L	L	L	U L 351	L 367	U L 371	U L 359	L	L						
24									L	L	U L 400	L	U L 359	L 359	L	L	L	L						
25								L	L		U L 386	L 372	A	L	L 371	U L 361	A							
26									L	L	L	U L 342	U L 361	380		L	U L 365		L					
27									L	L	L	L 387	U L 367	L 370	L	L	L	L						
28									A	L	L	A	A	A	U L 356	L	L	L						
29								L	L	L	L	L 344	L	367	U L 353	L 356	A	L	L					
30									L	U L 406		A	U L 374	L 376	R 379	U L 382	U L 358	U L 355	A					
31																								
	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	6	13	22	24	23	21	23	12	4	1					
MED								489	U L 390	U L 392	U L 372	L 369	L 362	L 367	U L 361	U L 356	U L 356	U L 365	815					
U Q										U L 404	L 395	L 387	U L 372	379	U L 375	U L 369	U L 366	380						
L Q										L 385	U L 370	L 356	L 356	L 358	U L 354	U L 350	U L 341	U L 352						

APR. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

APR. 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									244	244	246	274	300	276	282	284	274	272						
2									238	262	266	278	276	274	274	274	274	274	260					
3								210		276L	280L	290	286	286	274	258								
4										268	274	282	282	282	274	274	258	256						
5										260	272	292	298	306	Y	276	276	274						
6									250	250	274	254	268	264	264	266	264	262	258					
7									232	232		UL 300	334	294	284	266	266	266						
8									244	244	258	282	282	282	276	264	264	242						
9										246	250	274	278	278	298	290	280	260						
10									250	252	268	298	298	296	296	276	266	256						
11									236	236	252	294	302	302	280	284	260	252						
12									258	258	276	286	286	286	292	284	284	280	248					
13									240	254	320	320L	314	278	278	286	284	274	274					
14											272	276	280	286	286	286	286	250	244					
15									242	248	252	318	294	290	286	280		270	232					
16									250		264	290	296	296	294	280	274	250						
17										260	270	280	292	296	296	276	266	266						
18								230	230	238	260	336	284	284	288	298	284	274						
19									236	262	262	288	280	288	304	304	282	274						
20										244	258	282	308	290	302	288	288	276	276					
21								250	250	258	260	260	290	290	290	284	266		266					
22								260	264	242	276L	312	322	314	300	302	294	294	250					
23									238	252	252	298	310	302	294	290	288	288						
24									252	252	272	298	296	292	292	284	264	248						
25								242	228		246	294	294	268	268	276	276							
26									258	242	262	284	296	292	308	288	260		260					
27									264	264	274	300	300	288	292	292	288	284						
28									238	348	316L	A	316	274	274	274	278	254						
29								244	228	274	282	350	300	300	290	290	284	280	260					
30									260	260	270	284	286	286	300	300	292	282						
31																								
	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	23	27	29	29	30	30	29	30	28	26	11					
MED								243	244	252	268	290	295	288	290	284	276	271	260					
U Q								250	252	262	274	299	300	296	296	290	284	276	266					
L Q								230	236	244	258	281	284	282	277	276	266	256	248					

APR. 2012 h'F2 (KM)

IONOSPHERIC DATA STATION Yamagawa

APR. 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	294	294	288	252	208	214	250	218	218	A 218	218	194	208	192	196	H 204	214	226	240	230	224	230	276	276
2	276	290	314	272	210	236	248	220	220	220	216	204	222	226	212	210	212	228	244	238	206	234	332	326
3	328	316	266	214	214	250	250	194	206	208	A 218	H 206	A	206	204	212	250	240	240	240	226	228	246	300
4	288	266	242	220	220	270	262	230	230	230	230	210	210	194	200	200	200	H 208	222	218	212	224	286	286
5	280	276	280	236	200	220	228	226	224	216	H 194	194	H 190	202	Y 252	206	218	224	232	252	252	254	310	268
6	282	266	266	232	220	230	254	222	222	202	196	196	194	200	200	226	234	220	224	224	200	216	282	282
7	290	290	278	246	246	256	252	242	228	184	198	186	212	220	A 242	234	234	H 226	240	234	228	228	314	314
8	294	252	208	198	248	260	260	232	234	226	A 214	214	226	226	220	220	220	220	220	220	220	254	276	276
9	264	264	262	244	202	254	248	222	222	A 222	222	200	200	200	200	200	200	216	236	230	230	230	264	274
10	276	276	246	214	214	272	234	224	220	220	210	210	210	210	210	210	210	228	238	238	238	238	254	292
11	270	278	274	244	212	240	226	226	226	226	216	A 230	E A 260	230	A 230	A 222	222	222	234	218	212	212	276	276
12	280	280	280	262	206	224	224	224	224	A 224	214	214	214	H 178	190	212	212	228	232	224	220	220	292	292
13	292	292	276	250	220	332	260	230	224	A	218	H 214	214	214	216	210	222	222	238	232	218	218	264	264
14	276	276	276	276	276	232	220	220	220	220	220	214	212	212	212	212	224	236	236	226	226	258	276	304
15	304	Q 286	248	236	214	262	246	228	228	224	220	216	216	216	A	A	222	222	222	222	222	260	278	278
16	288	288	248	202	202	284	238	236	236	236	222	222	220	220	220	226	226	230	232	232	232	222	262	268
17	272	272	272	228	226	226	226	224	224	222	214	206	198	H 196	H 186	202	220	230	238	238	238	216	198	284
18	308	308	264	228	216	330	248	H 176	210	210	210	184	184	H 184	E A 252	226	226	240	240	236	212	210	260	276
19	298	298	284	246	216	248	238	232	226	220	208	200	200	B	228	228	244	A	244	224	224	224	274	280
20	278	278	278	238	238	238	238	234	226	210	206	206	204	204	230	218	A	228	240	240	236	236	258	258
21	258	258	258	234	226	268	254	230	222	206	196	196	194	192	206	270	232	236	240	240	238	238	A 344	316
22	290	308	308	280	278	274	240	232	232	218	212	212	212	226	A 230	E A 246	236	A 240	240	238	218	218	236	274
23	268	268	268	278	278	268	224	224	224	214	206	206	196	196	224	196	208	222	224	224	224	224	226	276
24	284	304	304	254	254	244	250	242	224	224	224	224	206	206	208	208	216	222	222	230	250	250	250	312
25	298	278	248	256	256	300	260	238	228	228	214	214	A	232	232	A 232	A	244	E A 274	270	244	228	298	298
26	264	274	278	260	260	294	230	230	230	218	218	206	206	206	206	H 194	204	226	234	234	234	280	280	316
27	286	286	274	272	246	246	222	222	222	A 222	222	202	Y 236	222	E A 268	E A 268	E A 268	A 268	250	240	234	234	254	260
28	272	282	282	262	228	234	230	230	A	A 230	A	A	A	A	A 230	H 196	196	234	234	244	226	220	286	A 308
29	268	314	314	A 312	302	302	240	228	218	H 194	H 186	222	E A 240	226	E A 256	226	A	238	E A 240	240	236	236	266	274
30	274	274	266	244	224	224	224	224	222	218	A	218	218	218	218	222	222	A	E A 264	248	214	234	282	282
31																								
	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	30	30	30	30	30	30	29	29	28	29	27	28	29	29	27	28	30	30	30	30	30	30
MED	281	279	274	245	222	252	240	227	224	220	214	206	209	208	215	212	221	228	238	234	226	229	276	281
U Q	292	292	280	262	248	272	250	232	228	224	219	214	218	221	A 230	226	232	236	240	240	236	238	286	300
L Q	272	274	262	232	214	234	228	222	221	212	207	200	200	198	205	205	212	222	232	224	218	220	258	274

APR. 2012 h′F (KM)

IONOSPHERIC DATA STATION Yamagawa

APR. 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							B	A				A	B				A	A						
							134	106	106					106	106	112			112					
2							B												A					
							112	116	110	108	106	110	104	104			114	114						
3							B																	
							114	114	108	108	108	108	108	108	108	108	108	110	114					
4											A				A				A					
							130	130	112	112		112	112	112			112	112						
5							B							A	A	A	A			A				
							114	114	114	114	112							108	128					
6							B						A			A								
							128	112	112	112					112		112	112						
7							B						A	A										
							122	114	114								114	114	130					
8														A										
							136	134	116	116	104	104	104		110	110	110	110	110					
9							A						A	A	A				A					
							112	112	112	112							112	112						
10												A			A	A								
							134	122	116	116	110			110			118	120	120					
11							B					A		A										
							112	112	112	112						112	112	112						
12													A											
							138	128	122	116						116	116	116	116					
13																			A					
								116	110				110	110		110		112						
14												A	A	A					A					
							144	100		106	106					106	106	106	106					
15												B								B				
							130	126	116	114	110		108		108	108	108	108	108					
16												A												
							124	124	114	114	114		114	104	104	104	104	120	120					
17										A	A	A	A	A										
							132	108	102						106	106	106	110	110					
18																	A							
							142	114	108	106	106	106	106	106	106	106		114	114					
19														B										
							148	122	112	112	110	110	110		110	110	110	110	110					
20																A	A		A					
							104	110		110	108	108						108						
21												A	A	A	A			A	A					
							130	114	114	112	110					110								
22								A		A	A	A	A	B						A				
							136		110						110		110	110						
23														A	A	A								
							128	110	110	108	108		116				112	112	128					
24									A	A		A			A									
							120						110	110		110	114	114	114					
25										A														
							120	112	112							112	112	112	112					
26						B	A				A	A												
							110	100	100					100	100	100	100	100	100					
27													A											
							150	120	120	112					106		106	106	106					
28											A		A											
							116	116	116	110		110			110	110	110							
29									A					A	A									
										112	106	106	106			106								
30								B	A			A		A		A	A							
									106	106		118		118			112	112	112					
31																								
	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	26	26	25	17	11	12	11	14	18	23	26	18					
MED							131	115	112	112	110	108	110	108	107	110	112	112	113					
U Q							138	124	116	114	112	112	111	110	110	110	112	114	120					
L Q							124	112	110	108	107	106	107	104	106	106	108	110	110					

APR. 2012 h′E (KM)

IONOSPHERIC DATA STATION Yamagawa

APR. 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	B	B	B	B	B	G	148	148	114	114	114	B	114	114	132	138	138	118	108	108	108	B	B
2	B	96	96	96	94	94	94	G	102	110	110	G	106	176	116	112	126	102	94	94	98	98	98	98
3	B	108	100	B	B	100	B	144	144	116	116	116	110	100	92	106	204	152	138	108	108	102	102	B
4	B	B	B	B	100	B	G	122	122	124	106	106	106	G	110	110	110	G	132	122	B	104	B	B
5	B	B	B	B	B	B	B	134	134	122	122	G	116	100	102	102	102	G	124	112	110	102	102	B
6	104	104	90	B	90	90	B	90	126	126	G	112	112	90	92	110	110	G	146	108	100	100	B	100
7	B	B	102	92	B	B	B	G	G	114	112	112	160	100	100	100	100	212	114	122	122	116	116	94
8	98	B	B	B	B	B	G	160	132	124	112	112	112	132	128	128	102	202	128	B	110	110	108	104
9	96	90	90	B	B	B	138	146	138	122	118	114	110	98	98	104	104	104	98	98	98	98	98	98
10	B	94	B	B	B	B	G	150	G	104	G	178	120	120	120	120	98	98	110	110	104	104	104	B
11	B	B	B	B	B	B	B	146	124	124	116	174	116	106	106	106	120	G	120	B	102	102	102	102
12	100	100	100	B	B	B	G	160	150	122	120	108	108	162	106	106	G	100	100	92	92	92	B	B
13	B	B	B	B	B	B	130	132	132	114	114	114	126	G	126	G	126	110	92	92	B	B	B	B
14	B	B	100	B	96	B	G	150	150	142	172	102	102	102	168	182	182	146	86	86	120	112	94	B
15	B	B	B	B	B	B	G	182	136	120	120	B	120	B	120	120	120	198	G	B	104	104	B	B
16	B	B	B	B	B	B	144	142	128	128	120	174	172	92	154	154	166	158	120	120	B	B	98	B
17	B	B	B	B	B	B	G	132	116	124	114	130	98	98	98	170	188	172	120	86	86	B	B	B
18	B	B	B	B	B	B	G	158	144	130	120	120	120	120	200	122	154	132	132	108	B	B	104	104
19	B	B	B	B	B	B	G	114	142	130	122	G	G	B	G	178	140	122	120	120	108	102	102	102
20	98	98	98	98	96	122	128	128	128	120	120	120	118	118	174	108	126	126	102	116	88	88	88	88
21	86	B	102	102	B	94	G	134	160	118	100	100	100	100	100	180	106	106	106	106	106	104	102	102
22	102	102	102	102	102	102	102	148	142	102	102	102	102	B	106	106	106	106	106	106	106	96	B	B
23	B	B	B	B	B	134	G	134	128	G	G	102	102	106	102	102	G	G	102	B	102	B	B	B
24	B	B	B	B	B	B	130	112	112	112	104	102	102	100	162	102	102	B	140	118	118	104	100	B
25	B	B	B	B	B	148	G	G	130	108	106	100	100	100	100	100	128	128	120	104	104	104	104	104
26	96	B	96	96	138	B	138	138	G	G	116	106	106	G	G	G	G	142	142	102	102	102	102	102
27	104	100	98	100	B	B	128	132	130	122	110	104	102	102	170	156	130	130	124	104	102	102	102	B
28	B	96	96	96	96	96	140	130	118	116	116	104	104	104	112	G	G	104	104	104	104	104	104	102
29	102	102	98	98	94	94	94	106	106	106	G	G	116	116	104	130	110	110	110	104	86	86	102	102
30	102	102	102	102	102	102	136	118	118	118	114	108	100	128	98	174	162	130	122	112	B	112	112	104
31																								
	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	12	15	10	10	11	12	27	27	28	26	25	28	24	28	27	26	24	29	26	25	25	21	15
MED	100	100	98	98	96	100	130	134	130	120	115	112	109	103	108	112	123	129	120	107	104	102	102	102
U Q	102	102	102	102	102	122	138	148	142	124	120	118	117	119	127	154	140	149	126	112	108	104	104	104
L Q	96	96	96	96	94	94	115	128	122	114	110	103	102	100	100	106	106	106	103	102	99	99	99	98

IONOSPHERIC DATA STATION Yamagawa

APR. 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								HL 21	H 1	C 1	C 1	C 1		CL 11	CL 11	HL 11	HL 11	CL 11	CL 41	F 2	F 2	F 1		
2		F 2	F 3	F 3	F 4	F 1	L 1		L 1	CL 21	C 1		L 1	HC 11	C 1	C 1	CL 11	L 1	LC 31	F 3	F 5	F 3	F 5	F 1
3		F 1	F 1			F 1		H 1	H 1	C 1	C 2	C 1	CL 11	L 1	L 1	C 1	H 1	H 1	C 2	FF 51	F 1	F 4	F 1	
4					F 1			HL 21	CL 11	CL 11	L 1	L 1	L 1		L 1	L 1	C 1		CL 21	F 1		F 1		
5								C 2	C 1	C 1	C 1		C 1	L 2	L 1	L 1	CL 21		CL 21	F 5	F 5	F 5	F 5	
6	F 1	F 1	F 1		F 1	F 1		L 1	HL 11	CL 11		C 1	C 1	L 1	L 1	C 1	C 1		CL 11	FL 31	F 1	F 1		F 1
7			F 2	F 2						C 1	C 1	C 1	HL 11	L 1	L 2	L 1	L 1	H 1	L 1	FF 22	F 2	F 1	F 4	F 3
8	F 1							HL 11	HL 11	HL 11	C 1	C 1	C 1	CL 11	CL 11	CL 11	L 1	H 1	C 1		F 3	F 3	F 2	F 2
9	F 1	F 2	F 1				C 1	H 2	H 1	C 1	C 1	C 1	C 1	L 1	L 1	L 1	CL 11	L 2	L 2	FF 21	FF 21	F 2	F 2	F 1
10		F 1						H 1		L 1		HL 11	CL 11	CL 11	CL 11	CL 11	L 1	L 1	L 1	FF 12	F 3	F 1	F 2	
11								C 1	C 1	C 1	CH 11	HH 11	L 1	L 1	L 1	L 1	C 1		L 1		FF 11	F 1	F 3	F 1
12	F 1	F 1	F 1					HL 11	C 1	C 2	C 2	C 2	C 1	HL 11	L 1	L 1		L 1	L 2	F 2	F 1	F 2		
13							C 1	CL 21	C 1	C 1	C 1	C 1	H 1		C 1		C 1	L 1	L 1	F 1				
14			F 1		F 1			H 1	HL 11	HL 11	HL 11	L 1	L 1	L 1	HL 12	HL 12	HL 12	HL 11	L 3	F 3	FF 13	FF 11	F 1	
15								HL 11	H 1	C 1	CL 11		C 1		C 1	C 3	C 1	HL 21			F 1	F 5		
16							C 1	CL 11	C 1	C 1	C 1	HL 11	HL 11	L 1	H 1	H 1	HC 11	HL 21	C 6	F 2			F 2	
17								C 1	C 2	CL 11	C 1	HL 11	L 1	L 1	L 1	HL 11	HL 11	HL 11	C 4	F 2	F 2			
18								H 1	H 1	C 1	C 1	C 1	C 1	C 1	HC 11	C 1	HL 11	CL 21	C 3	F 3			F 1	F 1
19								C 1	C 1	C 1	C 1					H 1	H 1	C 2	C 6	F 1	F 3	F 5	F 3	F 1
20	F 3	F 2	F 3	F 2	F 3	F 1	C 1	C 2	CL 11	C 1	C 1	C 1	C 1	C 1	HL 11	L 1	CL 21	CL 21	L 3	FF 13	F 4	F 2	F 1	F 2
21	F 1		F 2	F 1		F 1		H 1	H 1	C 1	L 1	L 1	L 1	L 1	L 1	HC 11	C 1	C 2	L 3	FF 21	FF 21	F 2	F 3	F 2
22	F 2	F 3	F 3	F 2	F 2	F 2	L 1	HL 12	HL 12	L 1	L 1	L 1	L 1		C 1	C 1	C 1	C 2	L 2	F 3	F 1	F 1		
23						F 1		C 1	C 1			C 1	L 1	CL 11	L 1	L 1			L 1		F 1			
24							H 1	C 1	C 1	C 1	L 1	L 1	L 1	L 1	HL 11	L 1	L 1		H 1	F 2	F 1	F 1	F 1	
25						F 2			C 1	C 1	C 1	C 1	C 2	L 1	L 2	LC 21	C 2	C 2	C 4	F 8	FQ 41	F 3	F 1	F 2
26	F 1		F 1	F 1	F 1		C 1	C 1			C 1	C 1	C 1					C 1	C 1	F 2	F 5	F 3	F 2	F 4
27	F 2	F 2	F 2	FF 11			C 1	HL 21	C 1	C 1	C 1	C 1	L 1	L 1	H 1	HL 11	CL 21	C 2	C 4	F 3	F 2	F 3	F 2	
28		F 2	F 2	F 1	F 1	F 1	H 1	C 2	C 1	C 2	C 2	C 4	L 2	L 2	C 1			C 2	LQ 21	F 1	F 3	F 1	F 3	F 4
29	F 1	F 2	F 3	F 3	F 3	F 6	C 2	C 1	C 1	L 1			CL 11	C 1	C 1	H 1	C 2	L 1	L 3	FQ 51	FF 31	F 1	FF 11	F 4
30	FF 22	F 1	F 1	F 2	F 1	F 1	C 1	C 1	C 1	C 1	C 1	L 1	L 1	HL 11	LL 11	HL 11	H 1	C 2	C 7	F 7		F 3	F 2	F 2
31																								
	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																								

APR. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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 67	X 66	X 63	X 63	X 53	X 39														X 117	X 102	X 79	X 75	X 71
2	X 71	X 72	X 72	X 64	X 57	X 48														X 127	X 96	X 80	X 67	X 68
3	X 66	X 76	X 79	X 93	X 52	X 43														X 120	X 106	X 84	X 78	X 75
4	X 76	X 83	X 90	X 68	X 30	X 28														X 131	X 112	X 106	X 121	X 128
5	X 114	X 107	X 98	X 91	X 64	X 44														X 125	X 118	X 105	X 96	X 103
6	X 97	X 100	X 108	X 95	X 86	X 68	X 64													X 132	X 94	X 74	X 71	X 70
7	X 76	X 90	X 100	107	88	X 75														X 118	X 99	X 113	X 114	X 105
8	X 115	124	X 148	X 93	55	48	54		89											X 117	X 96	X 69	X 64	X 66
9	X 70	X 68	X 71	X 68	X 48	X 42														X 157	X 135	X 95	X 79	X 80
10	X 76	X 71	X 73	X 72	X 39	X 35														X 134	X 106	X 76	X 68	X 69
11	X 71	X 70	X 70	X 68	X 52	X 50														X 153	X 134	X 104	X 100	X 103
12	X 97	X 91	X 93	X 92	X 81	X 70														X 135	X 98	X 75	X 69	X 70
13	X 70	X 77	X 82	X 79	X 51	X 44														X 152	X 110	X 86	X 93	X 92
14	X 88	X 79	X 80	X 72	X 70	X 69														X 102	X 67	X 69	X 69	X 70
15	X 75	X 80	X 94	X 74	X 48	X 39														X 120	X 92	X 79	X 78	X 80
16	X 82	X 94	X 96	X 84	X 45	X 34														X 153	X 142	X 136	X 129	X 124
17	X 122	X 122	X 126	X 120	X 83	X 63														X 132	X 126	X 98	X 82	X 76
18	X 68	X 71	X 82	X 67		X 38														X 173	X 134	X 98	X 86	X 82
19	X 72	X 67	X 75	X 79	X 66	X 41														X 133	X 120	X 103	X 99	X 93
20	X 98	X 98	X 95	X 91	X 77	X 65														X 152	X 153	X 157	X 144	X 142
21	X 138	X 124	X 111	X 98	X 74	X 71														X 120	X 114	X 76	X 66	X 70
22	X 74	X 69	X 68	X 67	X 63	X 54														X 169	X 140	X 128	X 119	X 109
23	X 110	X 113	X 112	X 84	X 75	X 81														X 192	X 160	X 137	X 128	X 123
24	X 125	X 113	X 102	X 103	X 84	X 53														X 115	X 100	X 94	X 64	X 66
25	X 66	X 71	X 74	X 58	X 52	X 51														A	X 104	X 89	X 93	X 89
26	X 88	X 80	X 73	X 68	X 58	X 56															X 108	X 103	X 98	X 92
27	X 87	X 85	X 81	X 75	X 69	X 62															X 124	X 115	X 103	X 98
28	X 91	X 90	X 100	X 102	X 73	X 63														X 176	X 151	X 143	X 136	X 133
29	X 128	X 99	X 109	X 109	X 105	X 102															X 168	O X 164	O X 161	X 152
30	X 155	X 143	X 144	X 134	X 106	X 96	X 100													X 130	X 94	X 98	X 102	X 106
31																								
	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	30	30	29	30	3		1											26	30	30	30	30
MED	X 84	X 84	X 92	X 82	X 64	X 52	X 64		89											X 132	X 111	X 98	X 93	X 90
U Q	X 110	X 100	X 102	X 95	X 79	X 68	X 100													X 153	X 134	X 113	X 114	X 106
L Q	X 71	X 71	X 74	X 68	X 52	X 42	54													X 120	X 99	X 79	X 71	X 70

IONOSPHERIC DATA STATION Okinawa

APR. 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	61	60	57	57	47	33	36	64	80	86	81	96	111	127	124	122	121	121	121	111	96	73	69	65
2	65	66	66	58	51	42	45	69	83	79	102	127	138	130	130	128	128	130	138	121	90	74	61	62
3	60	70	73	87	46	37	38	63	74	87	104	122	122	132	132	126	123	127	124	114	100	78	72	69
4	70	77	84	62	24	22	31	68	84	94	110	129	143	154	159	146	144	138	132	125	106	100	115	122
5	108	101	92	85	58	38	42	62	78	85	96	111	137	R 154	154	156	152	141	136	119	112	99	90	97
6	91	94	R 102	89	80	62	58	77	101	107	116	127	136	146	135	134	126	124	135	126	88	68	65	64
7	70	84	94	98	F 80	69	72	92	94	81	82	96	117	134	132	124	120	126	126	112	93	R 107	R 108	99
8	109	F 112	142	87	F 46	F 39	44	66	F 82	93	97	108	123	133	138	126	121	120	114	111	90	63	58	60
9	64	62	65	62	42	36	41	68	85	82	90	92	107	118	131	142	U R 152	U R 154	R 162	R 151	R 129	89	73	74
10	70	65	67	66	33	29	37	61	77	84	92	104	121	136	145	151	R 153	R 142	137	128	100	70	62	63
11	65	64	64	62	46	44	44	68	74	82	88	97	122	144	R 152	U R 172	U R 174	U R 170	U R 162	147	128	98	94	97
12	91	85	87	86	75	64	62	71	74	72	82	90	100	111	122	134	135	R 144	136	129	92	69	63	64
13	64	71	76	73	45	38	41	75	70	66	82	89	111	117	110	109	120	128	131	146	104	80	87	86
14	82	73	74	66	64	63	60	63	78	88	100	108	118	129	135	133	132	138	118	96	61	63	63	64
15	69	74	F 86	68	42	33	45	66	76	85	88	104	119	129	130	115	116	126	130	114	86	73	72	74
16	76	88	90	78	39	28	40	70	91	94	95	108	128	148	U R 152	U Y 150	J R 158	U R 154	R 143	R 147	136	130	123	118
17	116	116	120	114	77	57	62	69	72	J R 78	104	114	122	134	151	153	146	136	132	126	120	92	76	70
18	62	65	76	61	41	32	47	90	79	72	80	115	140	149	U R 147	U R 154	R 157	155	U R 166	R 167	128	92	80	76
19	66	61	69	73	60	35	48	72	82	94	100	116	118	126	129	138	143	138	133	127	114	97	93	87
20	92	92	89	85	71	59	66	83	88	81	96	118	137	R 152	R 156	R 168	R 163	147	R 151	U R 146	R 147	151	138	136
21	132	118	R 105	92	68	65	79	104	94	86	90	106	123	128	122	114	102	94	98	114	108	70	60	65
22	68	63	62	61	57	48	60	83	92	94	78	100	124	148	R 154	R 159	R 157	R 165	U R 175	163	134	122	113	103
23	104	107	106	78	69	75	84	76	80	88	97	116	139	154	U R 168	U R 172	U R 172	U R 169	U R 173	J R 186	154	131	122	117
24	119	107	96	97	78	47	52	86	108	74	72	105	134	132	34	136	140	128	120	109	94	88	58	60
25	60	65	68	52	46	45	58	90	74	77	93	110	127	140	R 118	118	116	106	105	A	98	83	87	83
26	82	74	67	62	52	50	70	85	80	89	89	108	120	131	122	130	130	135	141	134	102	97	92	86
27	81	79	75	69	63	56	62	72	92	92	84	103	128	139	139	145	148	150	155	136	118	R 109	R 97	92
28	85	83	94	96	67	57	69	84	81	88	93	105	124	141	142	150	162	R 170	U R 170	U R 170	R 145	137	U R 130	127
29	R 122	R 93	Z 103	R 103	99	96	J R 105	97	74	76	88	102	122	135	145	151	156	R 156	R 168	R 163	R 162	R 158	R 155	J R 146
30	149	137	138	128	100	90	94	96	87	94	94	100	115	118	113	118	122	123	135	124	88	92	96	100
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30
MED	78	78	85	76	58	46	55	72	80	86	92	107	122	134	135	137	142	138	136	127	105	92	87	84
U Q	104	94	96	89	71	62	66	85	88	92	97	115	134	146	R 151	R 151	R 156	R 154	U R 155	R 147	128	107	108	100
L Q	65	65	68	62	46	36	42	68	76	79	84	100	118	129	124	126	122	126	126	114	93	73	65	65

APR. 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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	U L 488	U L 520	U L 556	U L 540	L 512	L 484	L	L	L					
2											L	L 524	L 504	A	U L 512	U L 572	U L 492	U L 492						
3										L	L	L	U L 524	U L 548	U L 540	L	L	L						
4										L	L	U L 528	U L 548	U L 540	U L 500	L	U L 516	L						
5										L	L	L	U L 520	U L 544	U L 608	U L 532	L	L						
6									L	L	U L 512	L 500	U L 576	U L 524	U L 504	U L 532	U L 520	L						
7								L	L	L	U L 472	U L 548	L	L 516	L 484	U L 496	L	L						
8										L	U L 520	L	L 496	L 536	U L 504	L	L 464	L						
9									L	L	U L 532	U L 508	U L 540	L	L	L	U L 532	L						
10									L	L	U L 500	U L 552	L 504	U L 536	U L 508	U L 508	L 476	L	L					
11										L 472	L 484	L 532	528	U L 548	U L 508	U L 560	L	L 424	L					
12									L	L	A	A	L	L 552	L 484	U L 492	520	L						
13									L		U L 492	L	U L 540	U L 512	L	L	L	L	L					
14										L	U L 504	U L 508	U L 564	U L 516	L 540	L 496	U L 504	L						
15										L	L	U L 524	U L 516	A	504	U L 492	L	L						
16									L	L	L	U L 596	516	A	L	484	U L 488	L						
17										U L 404	U L 500	U L 528	U L 580	A	L	L 560	U L 484	L						
18										L	L	L 544	U L 544	U L 536	L	U L 580	U L 496	L	L					
19											L	L	U L 588	U L 588	U L 556	L 548	U L 500	A						
20									L	L	L	U L 572	U L 608	U L 608	U L 568	L 560	U L 500	L						
21								L	L	L	U L 528	U L 604	L 500	520	504	L 484	L	L	L					
22								L	L	U L 476		U L 540	U L 604	556	L 532	L 548	U L 564	A	L					
23										L	L	L	U L 592	L 560	L 564	U L 560	U L 480	L	L					
24										L		L	U L 552	U L 512	U L 592	U L 496	U L 532	L						
25									L		L	L	U L 580	L	U L 520	L	L	L						
26									L	L	L	U L 628	L 564	U L 552	A	A	A	L						
27									L	U L 496	L	A	L 568	U L 612	U L 560	U L 556	U L 520	L						
28									L	L	L	U L 548	U L 572	U L 544	U L 564	U L 508	L 524	U L 516	L					
29										L	U L 556	U L 568	U L 532	U L 540	U L 532	U L 520	U L 520	L	L					
30								A	A	A		L	R 516	L 536	L 504	U L 540	L 492	A	L					
31																								
	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	12	19	28	24	24	23	20	3						
MED										U L 474	U L 502	U L 540	U L 546	U L 540	U L 516	U L 532	U L 502	U L 492						
U Q										U L 486	U L 524	U L 568	U L 574	U L 552	U L 558	U L 560	U L 520	U L 516						
L Q										L 438	U L 490	U L 524	L 518	U L 530	L 504	L 496	L 490	L 424						

APR. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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							B	216	280	328	352	U A 356	A	A	A	A	A	280	244					
2							B	200	280	324	U R 368	U R 356	U A 364	A	A 352	A	336	A 292	A					
3							B	200	A	320	R	U R 376	U R 372	U R 368	A	R	U R 304	276	U R 192					
4							B	220	280	316	R	U R 380	A	B	U R 352	348	332	296	A					
5							B	208	280	320	U A 352	B	A	A	B	348	320	280	196					
6								A 224	296	A 316	364	U R 360	U R 384	A	A	U R 348	U R 304	A	A					
7							B	228	268	336	U R 380	R	U R 404	A	R	A	A	A	A					
8							B	A 232	280	320	A 356	U R 360	U R 376	R	A	A	U A 304	272	A 200					
9							B	208	292	320	A	A	A	A	A	A	320	284	260					
10							B	252	R 280	320	A	A 368	A	A	A	R 352	U R 344	292	208					
11							B	236	292	R 348	U A 344	R 384	U R 400	U R 364	B	U R 360	348	284	228					
12							B	U A 240	296	U A 316	U A 348	352	A	A	R 384	A	U A 344	U A 300	220					
13							B	U A 212	284	A	A	A	U R 376	U R 376	U A 368	U A 328	A	A	A					
14							A	228	280	324	U A 344	A	U A 360	A	R	R	U R 304	280	U A 212					
15							A	244	296	324	U R 344	U R 360	A	A	U R 368	A	U A 336	316	236					
16							B	252	296	320	U R 368	B	U R 388	A	A	364	332	292	A					
17							B	256	296	328	R 352	R	A	A	A	A	336	292	A 232					
18					J K 128		168	232	292	336	352	B	R 420	B	U R 404	U R 360	R 356	288	U A 224					
19							A	232	A 312	A 344	368	R	B	B	A	388	340	U A 292	228					
20							A	248	308	A	R 352	U R 364	A	U A 352	U R 352	U A 368	344	A 300	A 220					
21							B	256	296	324	A	A	A	A	A	U R 360	332	300	228					
22							A	260	304	A	A	A	A	A	A	U R 380	A 328	A	A					
23							B	U A 232	296	A 336	U R 364	B	A	A	A	A	340	304	232					
24							A	A	U R 340	A	R	R	B	B	B	A	U R 344	304	240					
25							B	240	A	A	A	A	A	R 416	U A 392	A 364	336	U A 308	A					
26							A	244	300	A	A	R	U R 384	U R 400	U R 380	356	332	U A 300	232	A				
27							172	256	308	328	U A 352	A	A	A	R	R 380	356	288	A	A				
28							184	260	312	348	R 372	A	U R 380	B	U R 372	U R 368	332	A	A					
29							B	252	312	352	384	R 384	B	U R 400	R 380	A	A	284	A	B				
30								240	296	332	A	R 392	B	A	A	R	U R 360	296	A 224					
31																								
	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		3	29	28	24	19	13	12	7	11	16	26	25	19					
MED					J K 128		172	236	296	324	U 352	U R 364	U R 382	U R 376	U R 372	360	336	292	228					
U Q							184	252	302	336	U R 368	R 382	U R 394	R 400	U R 384	U R 368	U R 344	A 300	232					
L Q							168	222	280	320	U A 352	U 358	U 374	U 364	U R 352	350	U 328	284	212					

APR. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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	JA 24	JA 23	EB 14	EB 14	EB 13	EB 14	EB 14	26	32	37	41	JA 46	JA 48	JA 45	41	JA 52	JA 52	31	G 20	18	JA 23	JA 21	JA 19	19
2	EB 14	EB 14	EB 14	EB 14	EB 13	EB 14	EB 14	25	33	36	G	G	44	JA 56	JA 45	41	36	38	JA 42	JA 54	JA 20	JA 27	JA 18	JA 30
3	JA 29	JA 32	JA 19	JA 32	JA 24	JA 26	JA 22	24	JA 30	33	G 34	G	G	G	43	G 26	G	G	23	JA 39	JA 36	JA 57	JA 45	JA 36
4	JA 16	JA 30	JA 24	JA 16	EB 14	EB 14	BJ A 13	26	34	35	G 34	G	40	EB 42	G	42	G	33	26	JA 33	JA 32	JA 40	JA 22	19
5	EB 14	EB 14	EB 13	EB 14	EB 13	EB 14	EB 13	24	31	36	40	EB 42	JA 44	JA 88	EB 41	G	G	G	27	JA 22	JA 31	JA 45	JA 38	JA 26
6	JA 21	JA 21	JA 21	20	18	EB 14	EB 14	25	G 25	34	G 31	G 32	GJ 33	JA 46	44	G 28	G	34	JA 38	JA 30	19	EB 14	18	EB 14
7	EB 14	18	EB 13	EB 14	EB 14	EB 14	EB 14	G	36	G	G 32	G 33	44	44	GJ 33	JA 42	JA 44	30	30	JA 29	JA 32	JA 19	18	JA 20
8	JA 21	JA 22	JA 17	JA 20	19	EB 14	EB 14	26	33	39	42	42	42	G 35	37	JA 36	37	G 24	26	JA 17	JA 24	JA 31	16	JA 46
9	JA 25	EB 14	18	JA 19	JA 24	JA 26	19	30	38	41	45	JA 52	JA 54	JA 54	JA 57	JA 48	38	G 26	GJ 26	JA 43	JA 46	JA 22	18	JA 19
10	JA 17	18	19	EB 14	EB 14	EB 14	EB 14	G 20	32	35	JA 37	43	46	44	42	40	G 26	34	24	JA 34	JA 44	JA 20	JA 21	JA 21
11	19	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	26	G 26	G 30	38	42	G	G	EB 41	G	G	G	G	20	JA 14	21	JA 30	JA 22
12	JA 46	JA 18	EB 13	JA 28	JA 22	JA 20	JA 17	28	33	37	JA 52	JA 52	JA 60	JA 44	42	JA 39	38	38	GJ 20	JA 32	JA 21	JA 33	JA 32	JA 25
13	JA 27	JA 23	EB 14	BJ A 22	JA 21	JA 22	17	26	35	JA 44	JA 40	JA 44	42	51	43	39	JA 44	JA 44	JA 34	JA 33	JA 26	JA 27	EB 48	EB 14
14	EB 14	18	EB 14	20	EB 14	EB 14	BJ A 28	29	31	36	41	JA 44	40	44	G 34	G 34	G 28	36	30	J 36	JA 25	JA 33	EB 14	EB 14
15	EB 14	EB 14	EB 14	BJ A 16	JA 19	18	JA 20	26	37	36	JA 43	42	JA 49	JA 62	JA 60	JA 42	38	34	28	JA 35	JA 30	JA 54	JA 31	JA 38
16	JA 21	18	EB 14	EB 14	EB 14	EB 14	EB 14	28	34	JA 42	44	EB 41	G	JA 65	JA 50	44	JA 49	JA 40	JA 74	JA 82	JA 37	JA 45	EB 30	EB 14
17	EB 13	EB 13	EB 14	EB 14	EB 14	EB 13	EB 14	G 19	JA 44	JA 61	JA 45	G 34	48	59	52	JA 41	G 26	G	JA 36	JA 44	JA 26	JA 21	JA 20	EB 14
18	EB 14	EB 14	EB 13	EB 13	BJ K 13	EB 14	G	28	32	37	40	45	46	46	44	G	39	35	33	JA 37	EB 14	BJ A 23	19	18
19	EB 14	EB 14	EB 14	EB 14	EB 13	EB 14	18	28	35	JA 62	40	G 35	EB 44	EB 44	JA 46	41	44	JA 54	JA 44	JA 38	JA 22	JA 40	JA 23	JA 24
20	EB 14	18	JA 21	JA 20	19	JA 15	JA 21	28	35	JA 42	JA 41	43	JA 44	JA 41	48	45	39	JA 41	JA 48	JA 52	JA 33	JA 24	JA 28	JA 18
21	19	EB 14	JA 18	EB 14	EB 14	EB 14	EB 17	G	G 26	37	JA 39	JA 41	42	JA 45	46	42	39	G	GJ 30	JA 28	JA 23	JA 31	18	18
22	18	EB 14	EB 14	18	EB 14	EB 14	19	G	34	42	JA 42	36	40	36	44	40	JA 43	JA 58	JA 48	JA 44	JA 31	JA 18	JA 22	18
23	EB 14	EB 13	EB 13	EB 14	19	EB 14	EB 14	27	32	36	G	47	42	JA 46	37	JA 46	G	G	G	JA 22	20	EB 14	EB 14	EB 14
24	EB 14	JA 17	EB 14	EB 14	EB 14	EB 14	23	29	G 30	38	G 35	G 34	44	44	43	38	G	G	32	43	JA 52	JA 22	JA 18	18
25	EB 13	EB 14	EB 14	18	20	18	EB 17	30	36	38	42	JA 69	JA 51	52	JA 56	JA 52	JA 56	JA 53	JA 54	JA 148	JA 71	JA 104	JA 68	EB 13
26	20	JA 28	21	EB 13	EB 13	EB 14	BJ A 20	27	34	35	40	G	43	46	JA 58	JA 76	JA 51	36	JA 42	JA 24	JA 20	20	JA 20	20
27	JA 16	20	JA 17	AE 14	BE 14	BE 14	G	G	35	36	JA 46	JA 71	JA 52	JA 52	G 36	G	G	G	GJ 46	JA 24	JA 73	JA 72	JA 31	JA 38
28	JA 31	JA 24	JA 22	JA 24	AE 14	BE 14	G	29	36	40	43	33	43	EB 46	G	G	43	JA 56	JA 83	JA 84	JA 62	JA 28	JA 30	JA 30
29	JA 25	JA 21	20	EB 14	EB 17	EB 14	EB 17	G 22	G 26	G	41	43	44	45	44	35	34	G 27	GJ 42	AE 14	BE 14	BE 14	BE 14	EB 14
30	JA 20	JA 29	JA 21	JA 22	JA 26	JA 21	JA 38	62	62	68	44	45	EB 45	JA 43	36	G	45	JA 69	29	JA 58	JA 52	JA 56	JA 22	JA 31
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	18	18	EB 14	EB 14	EB 14	EB 14	15	26	34	37	40	42	44	45	43	40	38	34	31	JA 34	JA 28	JA 27	JA 22	JA 19
U Q	JA 21	JA 22	JA 19	JA 20	JA 19	JA 15	JA 19	28	35	JA 41	JA 43	JA 45	JA 46	JA 52	JA 46	JA 42	JA 44	JA 40	JA 42	JA 44	JA 37	JA 40	JA 30	JA 26
L Q	EB 14	EB 14	EB 14	EB 14	EB 14	EB 14	14	G 24	G 31	35	G 37		42	44	G 37	G	G	G	G 26	JA 24	21	21	18	EB 14

APR. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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	E B 13	E B 13	E B 14	E B 14	E B 13	E B 14	E B 14	25	31	36	40	44	45	41	41	40	46	30	G 17	E B 14	E B 14	E B 14	18	E B 14
2	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	24	30	36	G	G	42	53	43	41	G 26	36	40	45	17	20	E B 14	27
3	23	26	17	26	21	18	E B 13	23	29	G 30	U G 34	G	G	G	42	U G 26	G	G	22	36	33	39	19	22
4	E B 14	17	23	E B 14	E B 14	E B 14	E B 14	24	32	35	U G 34	G	40	E B 42	G	41	G	33	25	E B 13	19	19	20	E B 14
5	E B 14	E B 14	E B 13	E B 14	E B 13	E B 14	E B 13	23	31	35	40	E B 42	42	41	E B 41	G	G	G	26	20	E B 14	19	E B 14	18
6	E B 14	17	E B 14	E B 14	E B 14	E B 14	E B 14	25	G 18	34	G 30	G 32	G 32	44	43	G 27	G	32	33	E B 13	E B 13	E B 14	E B 14	E B 14
7	E B 14	E B 14	E B 13	E B 14	E B 14	E B 14	E B 14	G	30	G	G U 27	G 32	44	43	U G 33	42	39	30	29	27	28	E B 13	E B 14	E B 14
8	18	20	E B 14	E B 13	E B 13	E B 14	E B 14	26	32	39	39	40	41	U G 35	36	35	35	G 20	25	17	16	28	E B 14	22
9	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	29	35	40	41	42	50	52	54	45	38	G 23	G 20	26	26	E B 14	E B 14	E B 14
10	E B 12	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	G 18	31	35	37	42	42	43	41	39	G 26	32	23	30	E B 13	E B 14	18	E B 14
11	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	G 26	G 29	38	42	G	G	E B 41	G	G	G	G	E B 14	E B 14	20	25	E B 14
12	19	E B 13	E B 13	21	19	E B 14	E B 14	27	32	36	48	49	42	40	41	39	37	37	G 19	22	E B 14	30	21	20
13	20	16	E B 14	19	E B 13	18	E B 12	25	34	38	38	41	41	43	43	38	40	39	32	29	16	E B 14	25	E B 14
14	E B 14	16	E B 14	E B 14	E B 14	E B 14	21	27	31	36	40	43	40	44	U G 34	U G 34	G 22	34	29	36	19	E B 14	E B 14	E B 14
15	E B 14	E B 14	E B 14	E B 13	E B 13	16	17	25	37	34	39	41	44	58	44	40	38	34	26	19	24	18	20	20
16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	28	32	36	42	E B 41	G	58	48	41	40	30	42	51	E B 13	19	23	E B 14
17	E B 13	E B 13	E B 14	E B 14	E B 14	E B 13	E B 14	G 16	36	36	44	U G 34	44	56	48	40	G 25	G	33	39	18	19	17	E B 14
18	E B 14	E B 14	E B 13	E B 13	K E B 13	14	G	28	32	37	40	41	45	45	44	G	38	31	27	35	E B 14	18	E B 14	E B 14
19	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	18	28	35	37	40	U G 35	E B 44	E B 44	43	40	40	51	39	35	19	E B 13	E B 13	22
20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	16	28	34	41	41	42	42	40	48	43	38	38	47	46	29	18	16	E B 14
21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	17	G	G 21	37	39	41	41	43	44	40	38	G	29	24	19	20	E B 14	E B 14
22	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	16	G	32	40	42	U Y 36	40	U Y 36	44	40	41	49	30	28	23	E B 14	E B 13	E B 14
23	E B 14	E B 13	E B 13	E B 14	E B 14	E B 14	E B 14	27	32	36	G	47	42	43	U Y 37	45	G	G	G	E B 13	E B 13	E B 14	E B 14	E B 14
24	E B 14	E B 13	E B 14	E B 14	E B 14	E B 14	17	28	G 30	38	U G 35	U G 34	44	44	43	37	G	G	28	37	41	19	E B 14	E B 14
25	E B 13	E B 14	E B 14	E B 13	E B 13	E B 13	E B 17	28	32	36	42	53	43	49	47	45	48	34	34	A A 148	33	29	21	E B 13
26	E B 14	E B 14	E B 14	E B 13	E B 13	E B 14	18	27	32	35	39	G	42	45	55	60	47	33	36	20	15	E B 14	16	E B 14
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	32	36	42	68	43	42	U G 36	G	G	G	41	20	52	39	20	27
28	25	E B 14	E B 14	16	E B 14	E B 14	G	28	36	40	43	U Y 33	42	E B 46	G	G	42	38	27	82	41	24	20	E B 14
29	20	E B 14	E B 14	E B 14	E B 17	E B 14	E B 17	G 20	G 21	G	41	43	44	44	44	35	34	G 22	24	E B 14	E B 14	E B 14	E B 14	E B 14
30	E B 14	21	16	E B 13	21	E B 14	34	59	58	66	42	44	E B 45	43	U Y 36	G	41	56	29	36	31	25	E B 14	21
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	32	36	40	41	42	43	43	40	38	32	28	28	18	18	15	E B 14
U Q	14	14	E B 14	14	E B 14	E B 14	17	28	34	38	42	43	44	45	44	41	40	36	33	36	28	20	20	20
L Q	E B 14	E B 14	E B 14	E B 13	E B 13	E B 14	E B 14	G 23	G 30	35	G 37	G	41	41	U G 37	G	G	G	G 24	E B 19	E B 14	E B 14	E B 14	E B 14

APR. 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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	13	13	14	14	13	14	14	14	14	16	21	25	28	32	21	17	14	12	14	14	14	14	14	14
2	14	14	14	14	13	14	14	14	15	19	22	27	25	38	20	20	21	13	13	13	14	14	14	14
3	14	14	14	14	13	14	13	14	16	17	20	33	23	24	24	20	21	16	14	14	13	13	14	14
4	14	14	14	14	14	14	14	14	13	20	21	30	29	42	30	26	22	15	14	13	14	13	14	14
5	14	14	13	14	13	14	13	15	16	18	22	42	31	33	41	22	16	17	15	13	14	14	14	13
6	14	14	14	14	14	14	14	14	14	20	24	24	31	26	28	24	16	13	12	13	13	14	14	14
7	14	14	13	14	14	14	14	14	14	20	22	24	26	35	30	21	19	16	13	13	13	13	14	14
8	14	14	14	13	13	14	14	14	18	19	22	24	26	26	22	20	19	17	14	14	13	14	14	14
9	14	14	14	14	14	14	14	14	16	21	20	23	33	24	36	28	20	15	14	13	13	14	14	14
10	12	13	14	14	14	14	14	14	13	21	21	21	24	24	24	23	22	16	15	14	13	14	14	14
11	14	14	14	14	14	14	14	14	16	19	21	30	32	24	41	22	19	20	14	14	14	14	14	14
12	14	13	13	13	14	14	14	17	15	20	22	21	24	24	31	21	17	14	13	13	14	13	13	13
13	14	14	14	14	13	14	12	14	14	18	20	22	27	27	24	22	18	17	14	12	12	14	14	14
14	14	14	14	14	14	14	14	14	17	22	21	24	26	27	28	24	17	14	12	13	13	14	14	14
15	14	14	14	13	13	14	14	14	16	18	20	26	40	40	27	22	18	19	13	14	13	14	14	14
16	14	14	14	14	14	14	14	13	14	21	25	41	29	32	24	22	23	15	14	13	13	13	13	14
17	13	13	14	14	14	13	14	14	16	17	21	30	27	25	24	20	18	20	14	14	13	14	14	14
18	14	14	13	13	14	14	14	14	15	20	24	39	31	42	30	28	24	20	12	14	14	14	14	14
19	14	14	14	14	13	14	14	13	17	20	25	28	44	44	21	24	22	15	14	13	14	13	13	13
20	14	14	14	13	14	14	13	13	20	22	22	24	24	31	26	23	20	16	14	12	13	14	14	14
21	14	14	14	14	14	14	17	15	14	18	27	24	28	23	40	32	24	14	13	14	14	14	14	14
22	14	14	14	13	14	14	14	14	17	20	24	27	26	24	33	32	22	16	16	13	14	14	13	14
23	14	13	13	14	14	14	14	15	18	21	24	42	30	33	32	31	24	17	15	13	13	14	14	14
24	14	13	14	14	14	14	14	14	19	21	33	27	42	42	40	22	20	16	12	13	13	14	14	14
25	13	14	14	13	13	13	17	15	15	21	22	24	39	31	32	23	20	15	14	13	13	12	13	13
26	14	14	14	13	13	14	14	14	14	18	21	25	24	28	24	20	16	14	13	14	14	14	14	14
27	14	14	14	14	14	14	14	17	16	21	26	32	25	25	31	24	20	16	14	14	14	14	14	14
28	14	14	14	13	14	14	14	14	20	22	25	24	24	46	24	24	21	20	14	13	13	14	14	14
29	14	14	14	14	17	14	17	14	14	21	23	25	40	32	23	21	22	16	13	14	14	14	14	14
30	14	14	13	13	13	14	13	15	14	21	32	31	45	32	31	29	24	20	14	14	14	13	14	14
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	14	14	14	14	14	14	14	14	16	20	22	26	28	31	28	22	20	16	14	13	13	14	14	14
U Q	14	14	14	14	14	14	14	14	17	21	24	30	32	35	32	24	22	17	14	14	14	14	14	14
L Q	14	14	14	13	13	14	14	14	14	18	21	24	25	25	24	21	18	15	13	13	13	13	14	14

IONOSPHERIC DATA STATION Okinawa

APR. 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	281	304	300	325	348	320	305	348	349	350	315	291	291	308	312	304	307	319	324	325	326	284	277	287
2	288	295	296	294	307	308	295	347	347	302	280	309	318	306	299	298	304	309	338	339	312	285	264	268
3	287	291	313	362	358	314	298	357	326	312	296	310	304	307	314	311	310	323	331	328	307	302	275	273
4	295	321	333	391	364	268	299	336	330	302	296	308	309	306	311	310	310	320	336	337	294	278	272	269
5	286	294	282	327	345	308	334	348	331	318	280	272	281	R 299	303	311	310	307	326	302	309	287	275	294
6	289	305	R 313	317	305	319	303	323	327	318	305	319	306	317	312	312	315	313	332	362	298	280	262	278
7	290	293	320	335	F 328	313	331	350	364	330	298	271	284	304	307	308	310	319	325	330	294	R 278	R 262	263
8	275	F 318	356	387	F 315	F 305	307	334	F 329	337	304	299	307	307	317	305	306	318	320	338	346	297	280	283
9	296	314	333	354	348	313	328	360	356	342	323	308	295	292	296	301	U R 304	U R 325	R 330	R 338	R 347	292	267	267
10	274	308	319	370	298	297	333	339	337	321	309	294	297	299	304	310	R 315	R 311	324	336	331	322	287	284
11	282	296	320	348	315	326	329	356	341	332	315	285	291	298	R 293	U R 288	U R 310	U R 329	U R 329	345	337	282	281	281
12	285	292	305	317	321	319	323	343	361	343	329	304	294	298	296	305	302	R 311	325	334	341	290	265	276
13	285	297	305	328	320	281	297	375	372	313	315	292	298	313	295	288	299	314	309	341	353	270	280	295
14	294	291	290	293	312	331	339	358	330	318	312	295	293	300	311	319	316	338	337	326	278	274	276	265
15	291	315	F 318	350	354	282	314	348	334	335	286	293	307	309	326	311	300	312	328	339	325	280	288	267
16	293	314	342	365	337	287	326	349	335	333	297	284	290	298	U R 315	U Y 346	J R 317	U R 323	R 312	R 321	316	293	297	294
17	298	310	308	347	336	312	344	357	324	J R 279	291	296	294	292	309	307	310	313	321	323	317	319	284	276
18	276	294	331	368	348	265	318	360	361	338	254	289	302	306	U R 296	U R 303	R 312	312	U R 312	R 344	334	289	266	276
19	272	274	299	335	359	343	325	351	334	308	289	294	294	294	297	303	318	324	330	314	320	285	260	274
20	290	298	292	331	326	318	336	350	348	321	282	287	289	R 295	R 304	R 303	R 312	303	R 316	U R 326	R 296	302	290	293
21	302	300	R 292	317	313	295	307	351	342	316	281	277	303	304	306	312	315	309	312	326	343	341	266	278
22	296	297	299	303	325	299	328	340	331	348	303	264	283	290	R 308	R 296	R 303	R 307	R	332	306	293	288	267
23	274	290	297	273	288	316	354	355	339	319	279	284	289	304	U R 305	R	U R 310	U R 300	R	R	330	294	292	286
24	292	292	276	303	287	281	298	328	342	336	296	265	304	297	4 118	302	314	315	317	308	298	334	258	262
25	276	299	335	325	308	274	320	367	366	327	301	300	298	328	R 311	302	303	310	290	A	316	295	275	269
26	298	296	294	320	290	274	323	372	341	320	293	288	302	305	303	298	309	310	315	331	292	268	278	281
27	290	290	307	301	312	297	346	331	339	337	304	269	298	301	298	298	307	309	326	322	293	R 280	R 281	287
28	283	281	315	334	330	307	327	357	342	316	297	280	293	305	306	297	306	R 311	U R 331	U R 357	R 314	293	U R 281	291
29	R 301	R 290	Z 279	R 297	300	289	J R 313	356	349	308	296	276	291	298	306	306	314	R 318	R 330	R 323	R 316	R 321	R 294	J R 311
30	301	302	320	341	325	319	342	353	325	321	296	283	297	299	290	294	301	299	329	333	293	294	276	275
31																								
	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	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	28	28	30	30	30	30
MED	290	296	308	330	323	308	324	350	340	321	296	290	296	302	306	304	310	312	326	332	316	291	276	277
U Q	295	305	320	350	345	318	333	357	349	336	305	299	303	306	311	310	314	319	330	338	331	297	284	287
L Q	282	292	296	317	308	287	307	343	331	316	289	280	291	298	297	298	304	309	316	324	298	280	266	269

IONOSPHERIC DATA STATION Okinawa

APR. 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	U L 406	U L 396	U L 353	U L 353	L 375	L 389	L	L	L					
2											L	L 368	L 400	A	U L 378	U L 353	U L 364	U L 345						
3										L	L	L	U L 368	U L 357	U L 363	L	L	L						
4										L	L	U L 372	U L 358	U L 357	U L 379	L	U L 363	L						
5										L	L	L	U L 394	U L 353	U L 348	U L 352	L	L						
6									L	L	U L 372	L 392	U L 366	U L 366	U L 375	U L 362	U L 368	L						
7								L	L	L	U L 423	U L 348	L	L 366	U L 391	U L 380	L	L						
8										L	U L 366	L	L 383	L 354	U L 357	L	L 378	L						
9									L	L	U L 365	U L 379	A 348	L	L	L	U L 347	L						
10									L	L	U L 375	U L 356	L 396	U L 353	U L 373	U L 360	A 354	L	L					
11										L 392	L 402	L 369	398	U L 351	U L 382	U L 328	L	L 374	L					
12									L	L	A	A	L	L 369	396	U L 358	333	L						
13									L		U L 379	L	U L 355	U L 384	L	L	L	L	L					
14										L	U L 370	U L 381	U L 345	U L 357	L 345	L 366	U L 362	L						
15										L	L	U L 359	U L 375	A	370	U L 376	L	L						
16									L	L	L	U L 330	395	A	L	384	U L 367	L						
17										U L 427	U L 376	U L 372	U L 357	A	L	L 350	U L 361	L						
18										L	L	L 375	U L 355	U L 356	L	U L 347	U L 353	L	L					
19											L 275	L	U L 347	U L 338	U L 355	L 336	U L 347	A						
20									L	L	L	U L 358	U L 336	U L 334	U L 338	L 340	U L 362	L						
21								L	L	L	U L 383	U L 348	L 419	L 397	401	L 389	L	L	L					
22								L	L	U L 387		U L 378	U L 343	356	L 358	L 337	U L 343	A	L					
23										L	L	L	U L 337	L 358	L 348	U L 338	U L 367	L	L					
24										L		L	U L 356	U L 379	U L 319	U L 370	U L 349	L						
25									L		L	L	U L 352	L	A 371	L	L	L						
26									L	L	L	U L 347	L 358	U L 353	A	A	A	L						
27									L	U L 385	L	A	L 359	U L 329	U L 356	U L 349	U L 355	L						
28									L	L	L	U L 371	U L 359	U L 374	U L 348	U L 371	L	U L 356	L					
29										L	U L 351	U L 345	U L 371	U L 351	U L 360	U L 353	U L 334	L	L					
30								A	A	A		L	R 380	L 364	L 401	U L 335	L 364	A	L					
31																								
	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	13	19	28	24	24	23	20	3						
MED										U L 390	U L 375	U L 369	U L 358	U L 356	U L 366	U L 353	U L 358	U L 356						
U Q										L 410	U L 392	U L 378	L 382	U L 366	L 378	L 371	U L 364	L 374						
L Q										U L 386	U L 366	U L 348	U L 352	U L 353	U L 352	L 340	U L 347	U L 345						

APR. 2012 M(3000)F1 (0.01)

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IONOSPHERIC DATA STATION Okinawa

APR. 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										246	254	292	314	294	280	288	282	262	254					
2											328L	288	278	280	278	292	284	280						
3										274	300	292	294	294	286	268	288	256						
4										276	286	294	296	294	276	270	276	256						
5										272	278	368L	314	306	306	296	274	266						
6									260	264	286	258	306	268	258	278	268	268						
7								232	226	246	256	352	334	298	282	284	278	268						
8										256	296	302	290	298	270	272	260	250						
9									244	256	282	278	310	334	324	308	286	264						
10									258	280	274	326	310	314	292	280	262	266	248					
11										260	286	318	330	322	312	314	290	254	240					
12									234	258	274	292	296	328	314	292	304	270						
13									216		300	312	320	286	284	316	294	274	270					
14										276	284	282	328	302	294	268	274	248						
15										258	320	306	306	296	264	264	302	268						
16									260	268	282L	320	308	324	294	270	266	252						
17										238	286	284	322	324	300	286	272	266						
18										236	372L	334	302	290	298	296	284	276	260					
19											310L	322	310	324	312	298	286	264						
20									244	266	298	316	328	326	306	300	272	270						
21								238	222	248L	300	354	302	288	284	274	280	290	260					
22								250	254	246		308	344	328	288	308	302	290	264					
23										262	264L	334	334	308	298	296	274	296	280					
24										250		334	288	278	302	280	270	242						
25									222		298L	294	320	262	264	282	292	268						
26									228	274	318L	334	304	290	284	304	268	278						
27									250	252	280	EA350	324	302	302	304	284	284						
28									250	296	292	322	322	302	288	298	288	278	256					
29										246	322	340	328	310	298	288	280	278	248					
30								226	A244	A276		304	304	304	300	322	294	284	264					
31																								
	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	15	26	27	30	30	30	30	30	30	30	11					
MED								235	244	259	286	312	310	302	293	290	281	268	260					
U Q								244	254	274	300L	334	324	322	302	300	288	278	264					
L Q								229	226	248	280	292	302	290	282	278	272	262	248					

APR. 2012 h′F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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	286	266	274	230	192	220	272	220	222	216	196	204	E A 238	226	H 204	208	E A 256	208	240	222	206	212	286	292
2	276	274	266	244	186	246	270	220	222	210	208	216	202	A	A 234	220	214	230	246	228	202	234	310	340
3	330	302	254	216	204	246	264	216	198	204	200	220	210	210	214	222	216	210	242	236	226	A 244	284	320
4	284	250	228	194	218	350	280	232	230	222	208	202	210	B 210	188	234	208	234	234	220	204	234	280	Q 286
5	266	250	254	222	184	208	226	218	208	200	200	198	178	200	210	206	H 194	226	240	234	242	226	268	274
6	250	262	236	230	206	206	252	236	216	218	186	194	170	E A 224	E A 224	212	210	224	254	216	198	210	280	296
7	276	256	230	204	Q 192	216	236	224	212	202	184	H 172	246	234	222	218	A 248	232	248	222	226	252	278	306
8	Q 292	254	210	182	Q 240	240	266	222	220	A 222	H 192	H 184	214	220	190	H 178	202	218	242	228	216	234	278	320
9	266	256	238	216	202	246	250	216	A 224	220	210	204	E A 292	A 294	A	E A 266	218	224	242	222	208	208	262	288
10	270	254	234	204	H 232	248	248	216	206	206	202	196	190	218	214	204	222	222	238	222	200	210	264	292
11	294	274	242	218	212	214	244	220	218	204	190	222	176	206	196	204	230	212	238	216	194	218	278	286
12	284	272	264	240	204	224	238	220	224	216	A	A	H 176	H 172	206	218	238	250	234	218	198	A 250	A 314	314
13	290	280	244	224	208	A 326	264	210	216	216	198	214	212	200	252	230	A 254	E A 248	256	222	198	236	A 280	256
14	256	274	274	260	240	224	212	210	216	212	208	208	202	A 242	232	224	206	248	224	212	222	284	284	310
15	290	256	232	212	186	286	260	220	224	208	206	212	236	A	E A 248	208	216	238	240	216	212	232	302	308
16	284	254	226	196	184	288	240	220	218	212	214	200	196	A	A	210	A 234	H 204	242	254	230	236	262	262
17	256	250	244	210	198	216	218	210	210	194	A 236	218	H 200	A	A	236	206	H 210	254	242	230	212	228	292
18	310	286	242	198	200	336	252	222	218	214	224	184	226	240	236	214	240	222	248	222	206	202	240	276
19	298	314	270	226	204	202	244	220	220	214	200	H 184	188	218	210	224	A 232	A	246	232	212	214	270	302
20	268	252	250	214	206	224	234	222	214	212	196	198	200	192	A 268	A 234	216	252	266	242	234	234	238	274
21	Q 244	238	242	216	216	254	256	228	210	202	196	H 172	188	204	210	214	A 230	H 210	238	250	228	204	292	304
22	274	266	262	246	218	234	240	236	222	E A 218	208	H 192	H 180	198	A 230	216	A 246	A	256	226	212	220	240	286
23	294	252	232	250	280	244	224	224	210	204	202	240	188	204	210	A 246	206	226	252	234	206	196	242	268
24	264	258	282	250	210	216	266	240	234	218	224	224	232	222	236	222	218	236	232	244	278	224	204	324
25	304	272	230	214	226	298	252	222	214	210	218	A	212	A	E A 246	A	E A 256	232	A 250	A	250	258	272	294
26	272	274	272	238	234	288	244	224	214	204	202	206	186	242	A	A	A	240	254	224	214	264	284	282
27	266	266	260	248	228	230	220	220	H 206	202	208	A	194	186	202	212	214	222	254	224	264	272	284	294
28	300	288	250	222	202	212	224	222	210	H 200	216	208	182	214	200	H 192	A 232	A 244	238	238	210	220	268	268
29	252	276	282	260	236	230	234	222	216	200	204	210	214	236	234	206	220	226	232	226	230	228	240	252
30	258	258	240	206	204	232	232	A	A	A	224	230	E B 230	210	202	192	248	A	220	238	224	286	272	296
31																								
	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	30	30	30	30	30	29	29	29	29	27	30	25	26	28	29	27	30	29	30	30	30	30
MED	276	264	244	220	206	233	244	220	216	210	204	204	198	212	212	214	219	226	242	226	213	230	275	292
U Q	292	274	264	240	226	254	260	224	222	216	212	216	214	230	A 234	224	A 239	238	252	237	230	244	284	306
L Q	266	254	234	210	200	216	234	219	210	203	197	H 194	188	202	204	207	212	218	238	222	206	212	262	276

APR. 2012 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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							B 110	110	110	110	110		A 108	A	A	A	A	A	120					
2							B 114	108	108	108	108		108	A	108	A	114	A	A					
3							B 116	A	108	A	110		110	108	A	A	108	110	110					
4							B 110	110	112	A	110		A	B	110	114	112	110	A					
5							B 110	108	108	108	B		A	A	B	108	108	110	110					
6							110	112	A	112	114		116	A	A	112	110	112	A					
7							B 114	114	110	110	A		A	A	A	A	A	A	A					
8							B 136	114	110	110	110		110	A	A	A	A	114	114					
9							B 112	110	110	A	A		A	A	A	A	112	116	116					
10							B 140	114	110	A	110		A	A	A	112	116	114	114					
11							B 120	122	118	110	112		108	108	B	108	108	110	110					
12							B 112	112	112	110	108		A	A	108	A	110	110	122					
13							B 110	110	A	A	A		A	110	110	110	A	A	A					
14							A 114	108	108	A	A		108	A	A	A	112	112	A					
15							A 132	118	112	110	110		A	A	112	A	112	A	A					
16							B 112	112	110	110	B		110	A	A	A	110	110	A					
17							B 114	110	110	A	A		A	A	A	A	114	114	114					
18					B		154	112	108	108	108	B	A	B	110	112	112	110	112					
19							A 110	110	110	110	A		B	B	A	110	110	110	112					
20							A 120	110	A	110	110		A	108	108	108	110	112	112					
21							B 114	110	110	A	A		A	A	A	114	112	112	112					
22							A 110	114	A	A	A		A	A	A	118	A	A	A					
23							B 112	110	110	110	B		A	A	A	A	110	110	110					
24							A	A 116	A	A	A		B	B	B	A	112	112	112					
25							B 108		A	A	A		A	110	114	110	110	110	A					
26							A 110	112		A	A	108	108	108	108	108	110	110	110	A				
27							162	110	110	108	108	A	A	A	A	110	110	110	A	A				
28							136	118	116	110	110	A	110	B	108	108	108	A	A					
29							B	108	108	108	108	108	B	108	108	A	A	112	A	B				
30								108	108	108	A	112	B	A	A	112	112	108	112					
31																								
	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	29	28	23	17	14	9	7	11	16	24	23	17					
MED							154	112	110	110	110	110	110	108	108	110	110	110	112					
U Q							162	115	114	110	110	110	110	110	110	112	112	112	114					
L Q							136	110	110	108	108	108	108	108	108	108	110	110	110					

APR. 2012 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

APR. 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	106	102	B	B	B	B	B	152	146	124	116	108	106	112	112	106	106	136	106	96	110	104	104	116
2	B	B	B	B	B	B	B	132	134	122	G	G	110	106	104	106	104	124	116	108	106	98	104	102
3	96	98	98	98	100	102	102	148	106	106	104	G	G	G	110	98	G	G	120	108	104	104	106	102
4	104	94	94	100	B	B	142	128	118	118	108	G	106	B	G	110	G	168	134	112	100	98	92	94
5	B	B	B	B	B	B	B	130	128	120	116	B	106	122	B	G	G	G	120	112	102	100	110	94
6	98	92	96	90	90	B	B	144	104	144	104	102	104	100	100	100	G	110	108	116	94	B	96	B
7	B	100	B	B	B	B	B	G	122	G	104	104	160	106	106	100	100	96	128	120	110	92	96	110
8	92	92	90	114	90	B	B	140	130	118	120	120	120	108	104	106	104	100	126	98	108	104	106	106
9	120	B	90	106	102	124	132	126	120	114	112	112	102	104	104	104	120	102	102	100	106	106	94	96
10	90	92	92	B	B	B	B	104	142	132	106	110	106	118	124	122	104	140	126	102	112	104	98	92
11	102	B	B	B	B	B	B	150	104	104	114	162	G	G	B	G	G	G	G	94	92	96	148	128
12	118	102	B	94	92	90	92	138	124	126	112	108	106	104	158	112	156	136	96	92	96	112	108	98
13	112	96	B	100	108	102	144	136	124	106	106	104	122	116	116	120	112	108	104	96	96	104	102	B
14	B	90	B	90	B	B	100	140	138	138	118	110	118	166	104	104	96	124	126	110	104	110	B	B
15	B	B	B	102	104	110	102	138	126	130	122	122	118	122	122	122	178	186	142	122	112	108	106	102
16	96	102	B	B	B	B	B	136	116	116	114	B	G	112	146	152	128	130	114	108	106	98	98	B
17	B	B	B	B	B	B	B	108	124	116	120	102	96	98	98	94	98	G	116	108	108	106	104	B
18	B	B	B	B	B	B	G	144	146	128	122	120	168	172	190	G	168	132	118	108	B	98	94	94
19	B	B	B	B	B	B	124	128	118	116	120	104	B	B	94	160	132	118	112	108	108	106	104	102
20	B	104	100	100	100	120	116	138	120	112	112	110	108	108	154	138	136	120	112	106	102	100	94	94
21	94	B	102	B	B	B	B	G	100	120	100	96	100	100	120	116	110	G	126	110	106	102	104	92
22	90	B	B	100	B	B	148	G	128	108	102	102	100	104	102	166	108	106	106	104	98	100	102	96
23	B	B	B	B	122	B	B	120	120	116	G	190	106	102	102	102	G	G	G	96	90	B	B	B
24	B	92	B	B	B	B	126	164	104	104	104	104	190	178	166	110	G	G	130	108	104	104	104	94
25	B	B	B	120	120	126	B	110	108	112	106	104	108	142	128	130	126	122	114	108	106	106	104	B
26	104	134	100	B	B	B	122	130	124	106	112	G	124	142	118	116	114	122	126	114	106	96	94	92
27	104	92	92	B	B	B	G	G	150	130	108	106	108	110	110	G	G	G	110	106	98	96	90	98
28	96	114	96	98	B	B	G	136	120	126	126	102	126	B	G	G	110	108	124	100	96	98	100	118
29	100	96	92	B	B	B	B	98	100	G	172	160	156	166	144	104	100	98	106	B	B	B	B	B
30	104	100	100	104	102	140	124	118	118	114	110	150	B	106	106	G	194	112	112	110	104	106	102	94
31																								
	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	18	13	14	11	8	13	26	30	28	28	24	25	25	26	24	22	22	28	29	28	27	27	22
MED	101	97	96	100	102	115	124	136	121	117	112	108	108	110	111	110	111	121	116	108	104	104	102	97
U Q	104	102	100	104	108	125	137	140	128	126	119	120	123	132	128	122	132	132	126	110	107	106	104	102
L Q	96	92	92	98	92	102	102	126	116	112	106	104	106	104	104	104	104	108	109	100	98	98	96	94

IONOSPHERIC DATA STATION Okinawa

APR. 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	F2	F4						H1	H1	CL11	CL11	C1	C2	C1	C1	CL11	CL31	HCL11	L1	F1	FF11	F1	F1	F1
2								H1	H1	C1			C1	C1	C1	C1	L1	CL11	CL32	FF62	FF12	F2	FF11	F6
3	F3	F3	F1	F7	F3	F3	L4	HL11	L1	L1	L1				CL11	L1			C1	F4	FF82	FF64	FF31	F5
4	F1	F2	F2	F1			H1	C1	C1	CL11	LL11		C1			C1		H1	HL11	F3	F2	F2	F3	F1
5								H1	C1	C1	C1		C1	CL11					C2	F3	F3	F3	FF12	F2
6	FF11	F2	F1	F2	F1			H1	L1	HL11	L1	L1	L1	L2	L1	L1		C1	CL22	FF51	F1		F1	
7		F1							C1		L1	L1	HL11	L1	L1	L1	L1	L2	CL11	FF24	FF16	F2	F1	FF12
8	F4	F2	F2	FF11	F1			HC11	H1	C1	C1	C1	C1	L1	L1	L1	CL11	L1	CL11	F1	FF11	F5	F1	F4
9	FF11		F1	FF11	F3	FF12	CH11	C2	C2	C1	C1	C1	C1	C3	L1	C1	CL11	L1	L1	F5	FF44	F1	F1	F1
10	F2	F2	F1					C1	HL11	H1	C1	C1	C1	CL11	CL11	CL11	L1	HL11	C1	F7	F3	F3	F1	F1
11	F1							HL11	L1	L1	C1	H1								F1	F1	F2	F3	FF11
12	F2	F1		F7	F2	F1	L1	H1	C1	CL11	CL11	C2	C2	L1	HCL11	CL11	HCL11	HCL11	L1	F3	F1	FF52	F4	F4
13	FF22	F2		F1	FF12	F2	H1	H1	C1	C1	C1	L1	CL11	CL11	C1	C1	CL11	CL31	CL32	FF22	F2	FF11	FF42	
14		F1		F1			L4	HL11	H1	HL11	CL11	C1	C1	HL11	L1	L1	L1	CL11	CL21	F8	F3	FF12		
15				F1	F1	F1	L1	HL13	CL12	HL11	C1	C1	C1	C2	C1	C1	H1	HL11	HL21	F4	F3	F3	F2	F2
16	F1	F1						H1	C1	C1	C1			CL21	HC11	HL11	C1	H2	C4	F6	F3	F3	F3	
17								L1	C2	CL11	CL11	C1	L1	L2	L1	L2	L1		C2	FF61	F3	F2	F1	
18					K1			H1	HL11	CL11	CL11	C1	HL11	H1	H1		H1	H1	C1	F5		F2	F1	F1
19							C2	C2	C1	C1	C1	L1			L1	HL11	HL11	CL21	CL31	F6	F3	F3	F4	F4
20		F1	F2	F3	F1	F1	CL11	HL11	C1	C1	C1	C1	C1	C1	HC11	HC11	HL11	C1	C4	F9	F3	F2	F3	F1
21	F1		F1						L1	CL11	L1	L1	L1	L1	C1	C1	C1		CL11	FF21	FF22	F5	F1	F1
22	F1			F1			HC11		CL11	CL11	L1	L1	L1	L1	L1	HC11	CL11	C3	L2	F4	F4	F1	F2	F1
23					F1			C1	C1	C1		H1	L1	L1	L1	L1				F2	F2			
24		F1					C1	HC11	L1	L1	L1	L1	H1	H1	H1	C1			CL22	F2	F6	F1	F1	F1
25				F1	F1	F1		C1	C1	C1	C1	C2	C1	H1	C1	C1	C2	C1	C3	F8	F3	F3	F5	
26	F1	FF11	F1				C1	C1	C1	L1	C1		C1	H1	C2	C3	C2	C2	C2	C3	F1	F2	F2	F1
27	FF11	F1	F1						H1	H1	C1	C2	C1	C1	L1				CL31	L2	F6	F3	F2	F2
28	F2	FF11	F1	F2				H1	C1	C1	C1	L1	C1				C1	C2	CL12	F8	F6	F1	F1	F1
29	F2	F1	F1					L1	L1		H1	H1	H1	H1	HL11	L1	L1	L1	C1					
30	F1	F2	F1	F3	F3	FF12	CL51	C5	CL31	CL21	CL11	H1		L1	L1		H1	C2	C1	C8	F5	FQ41	F1	F4
31																								
	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																								

APR. 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

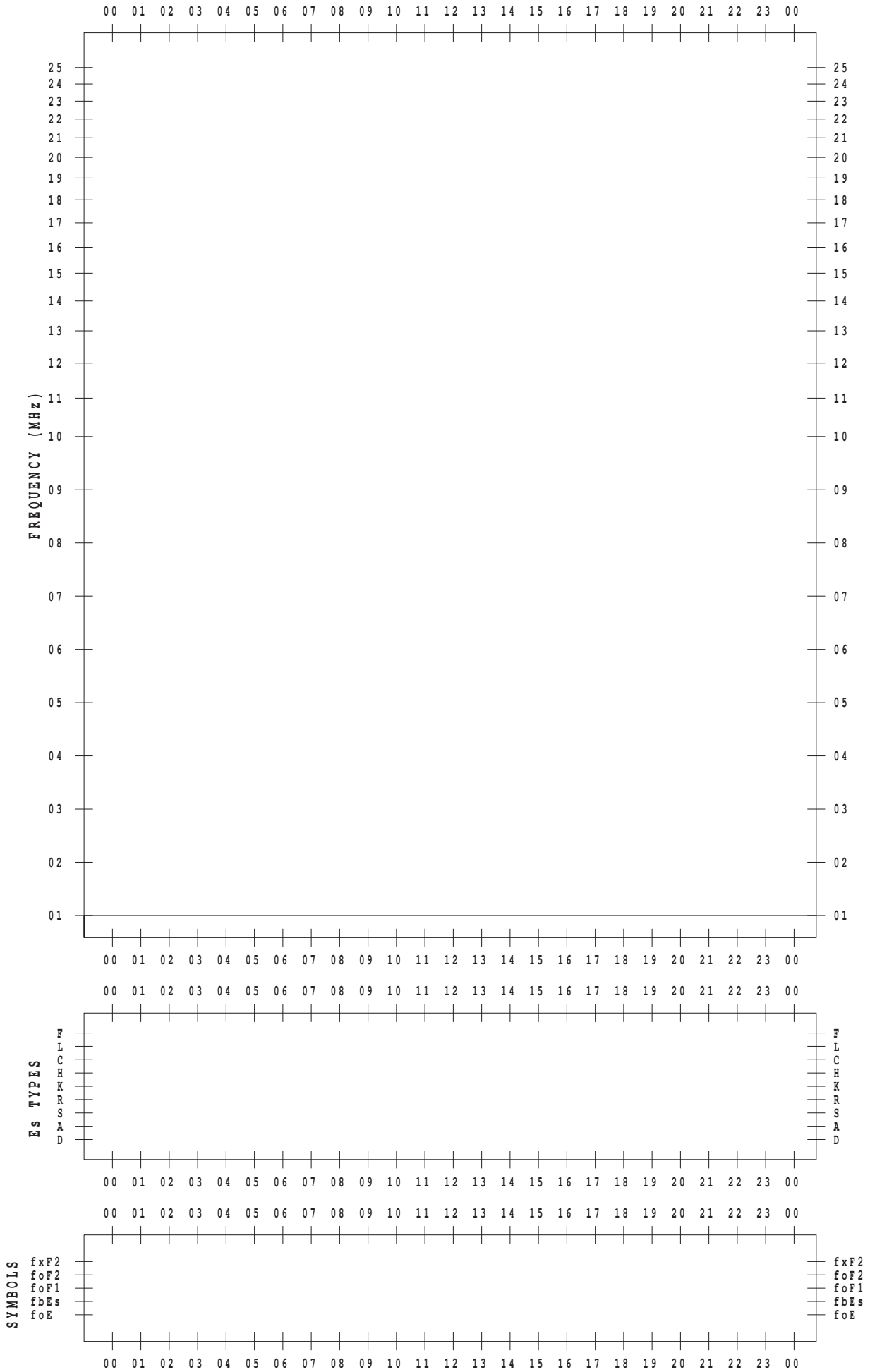
f-PLOT DATA

SCALER :

STATION : Wakkanai

DATE : 2012/ 4/ 1

135 °E MEAN TIME



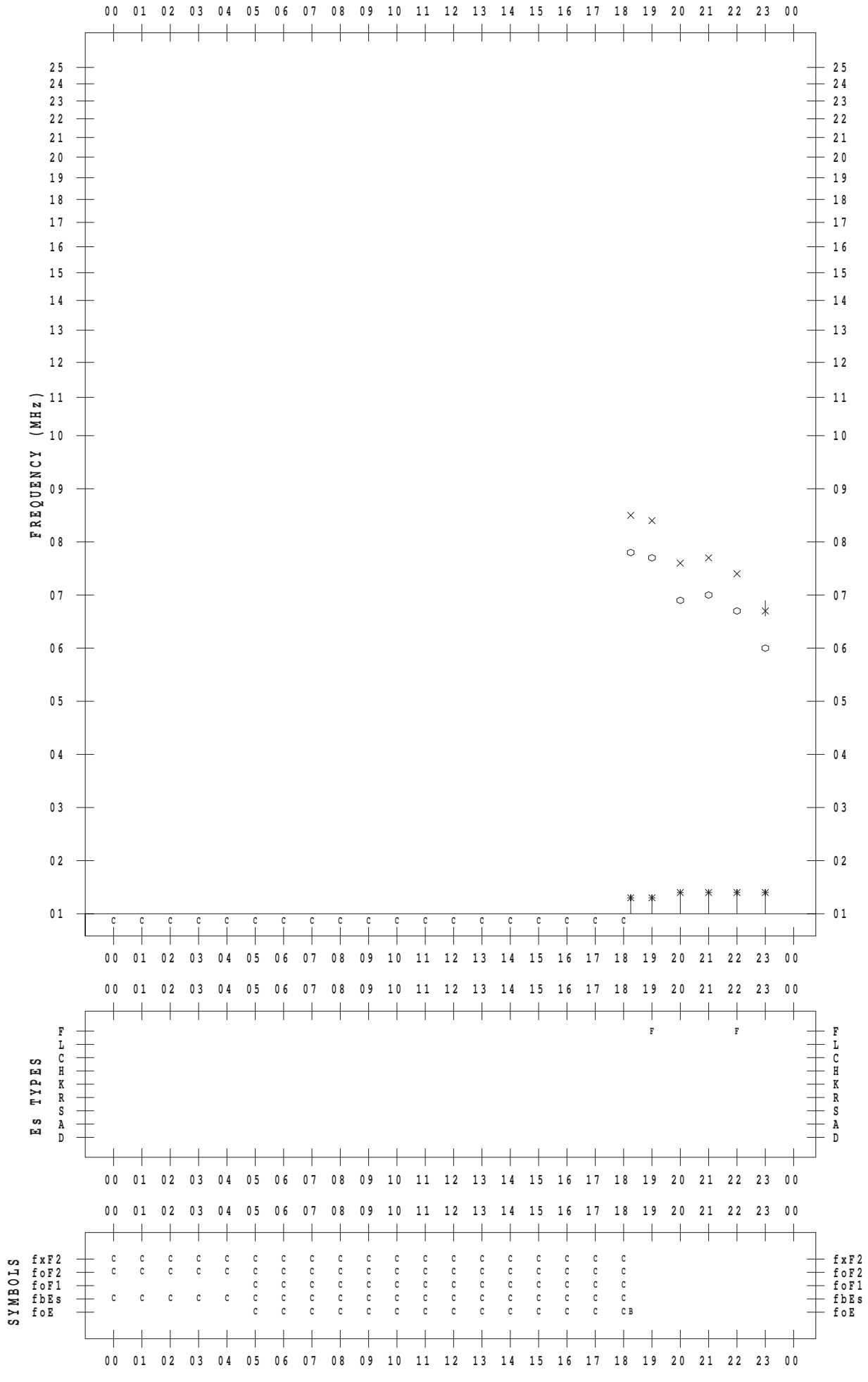
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 2

135 °E MEAN TIME



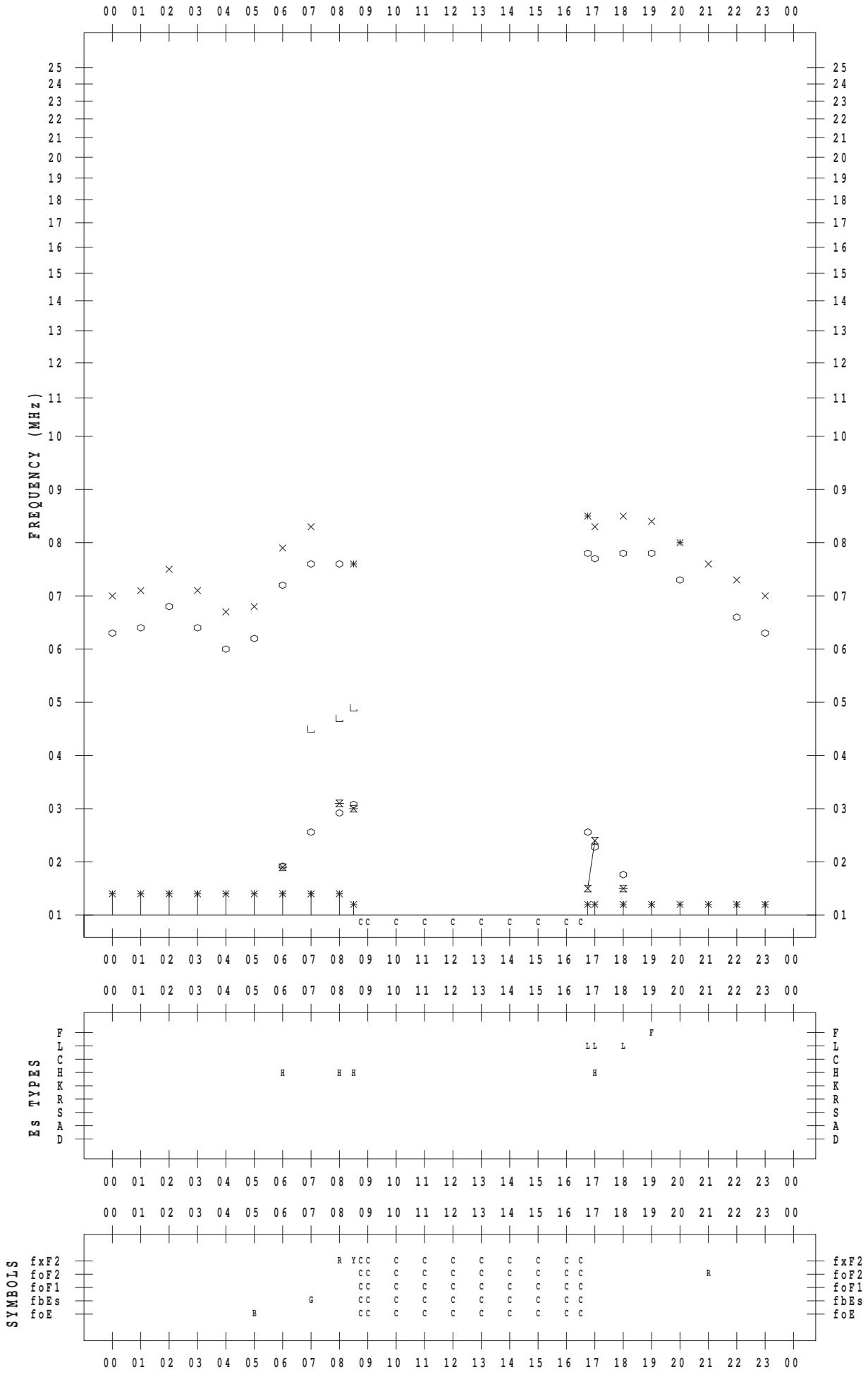
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 3

135 °E MEAN TIME



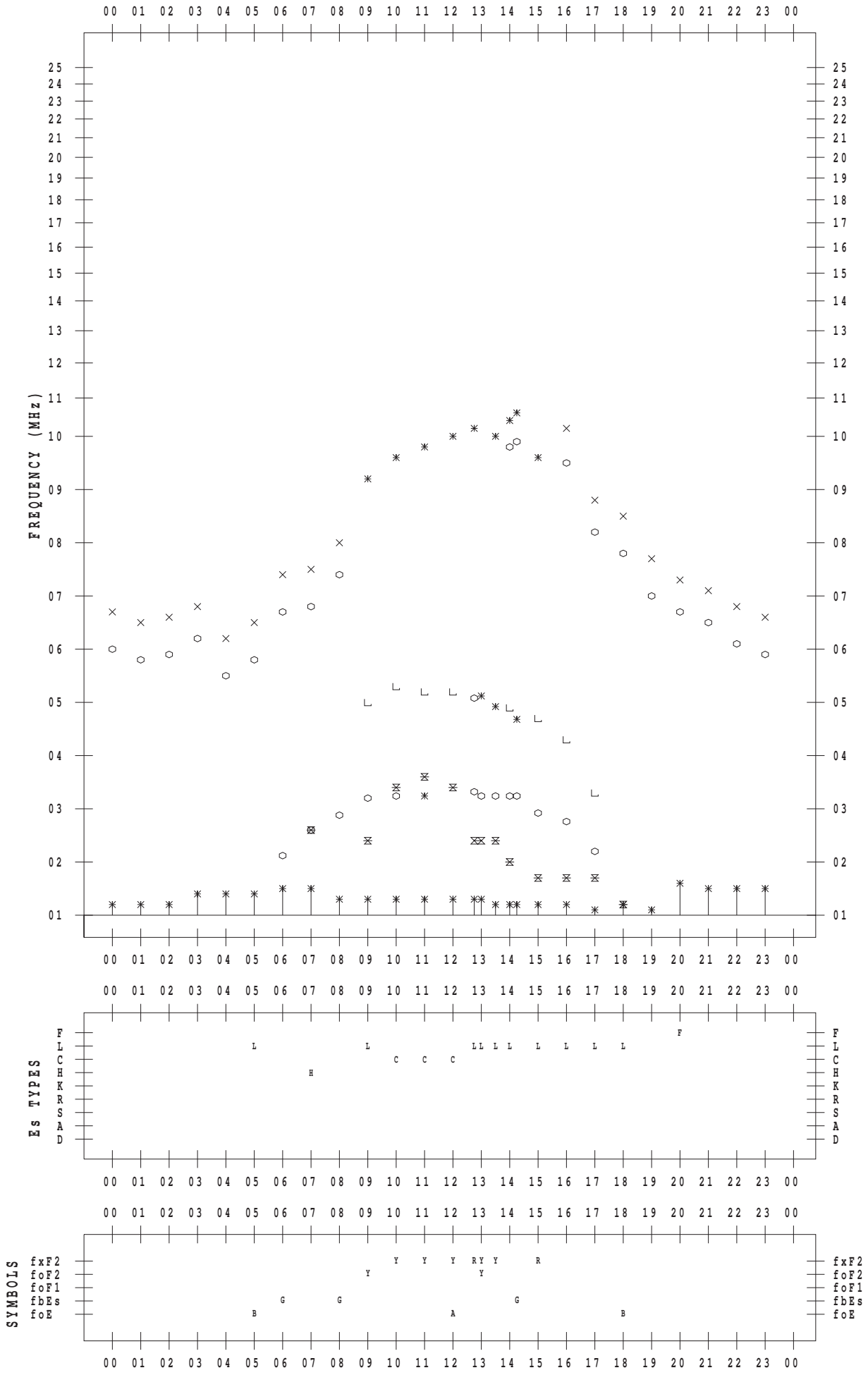
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 4

135 °E MEAN TIME



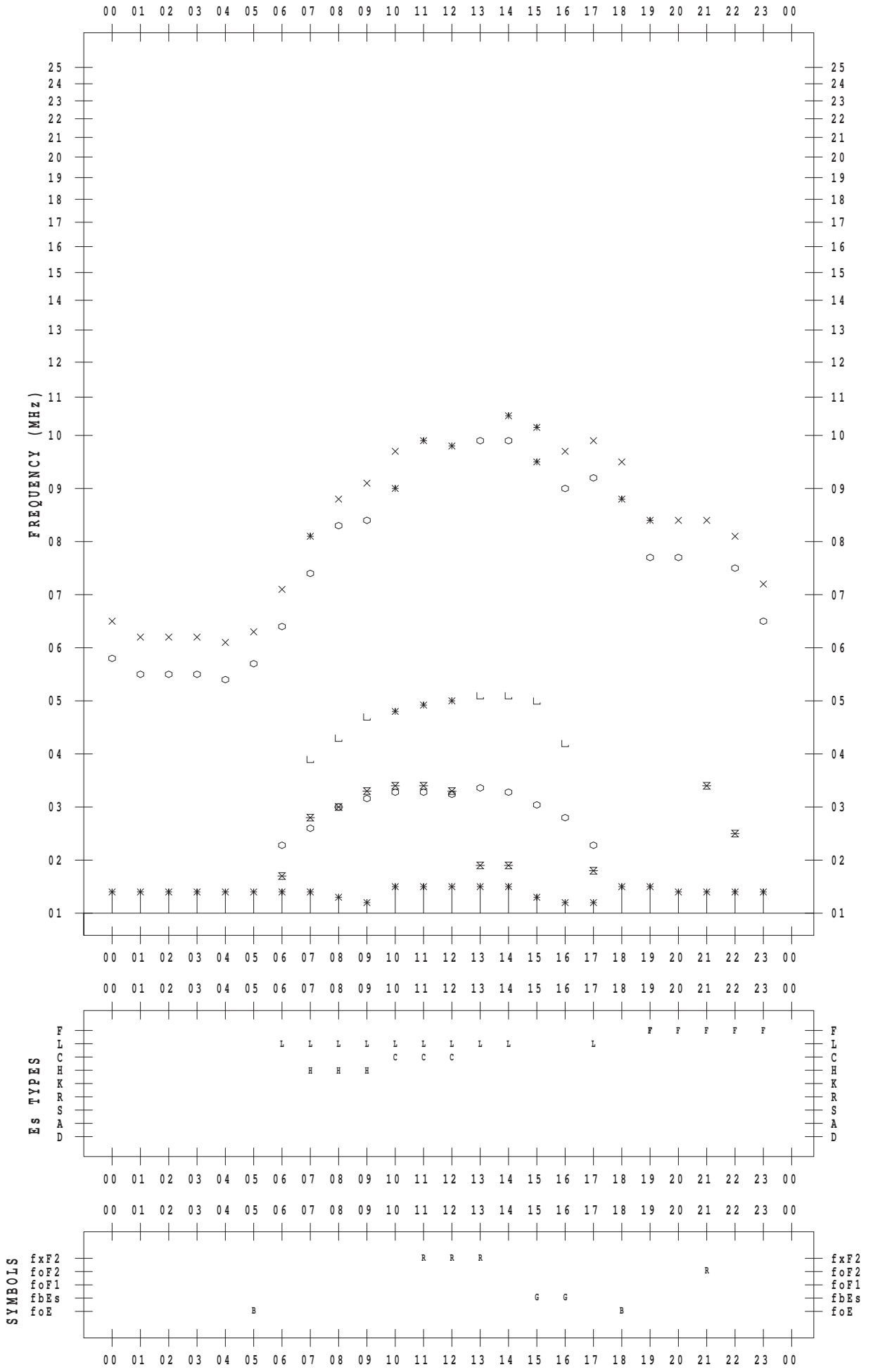
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 5

135 °E MEAN TIME



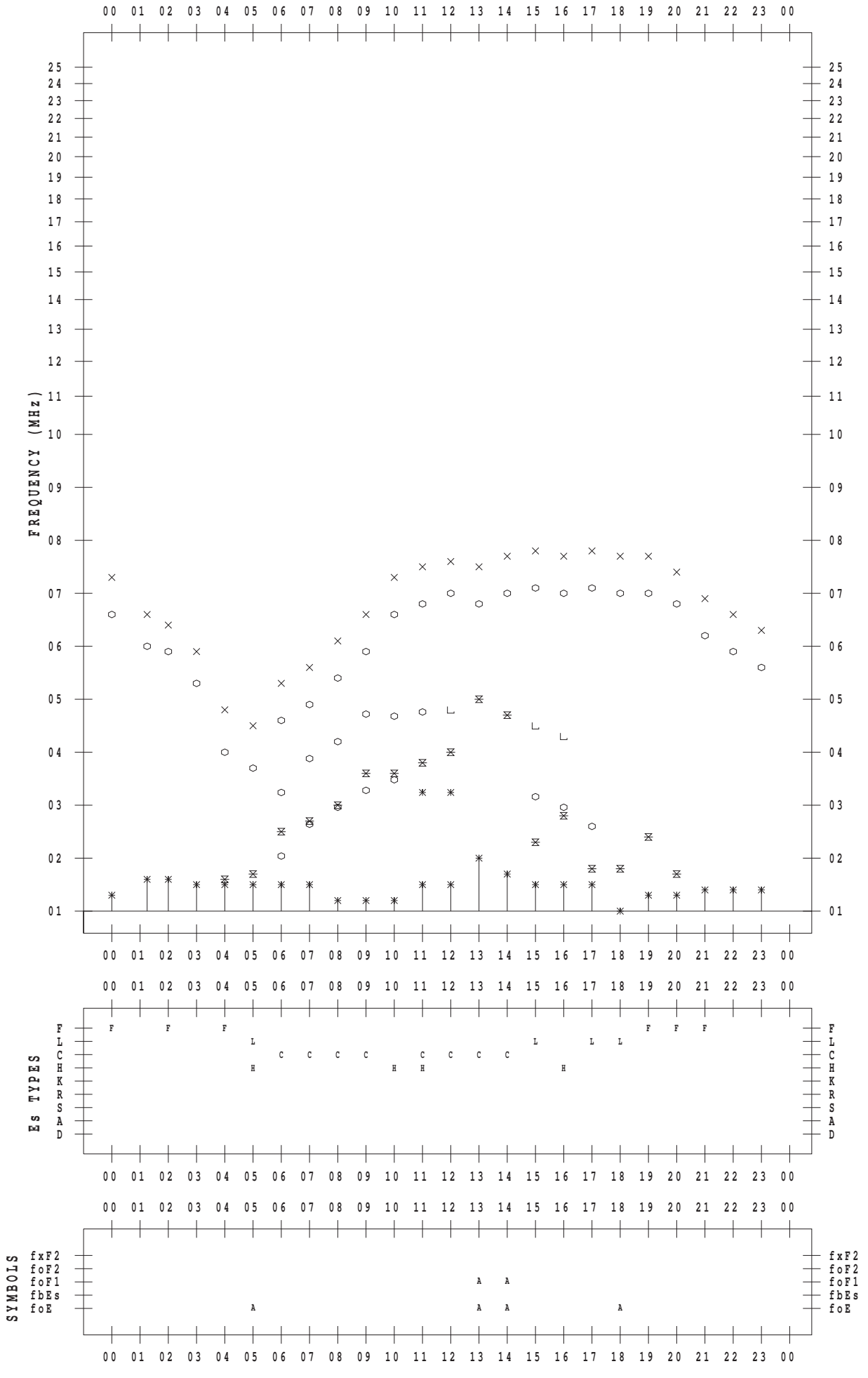
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 6

135 °E MEAN TIME



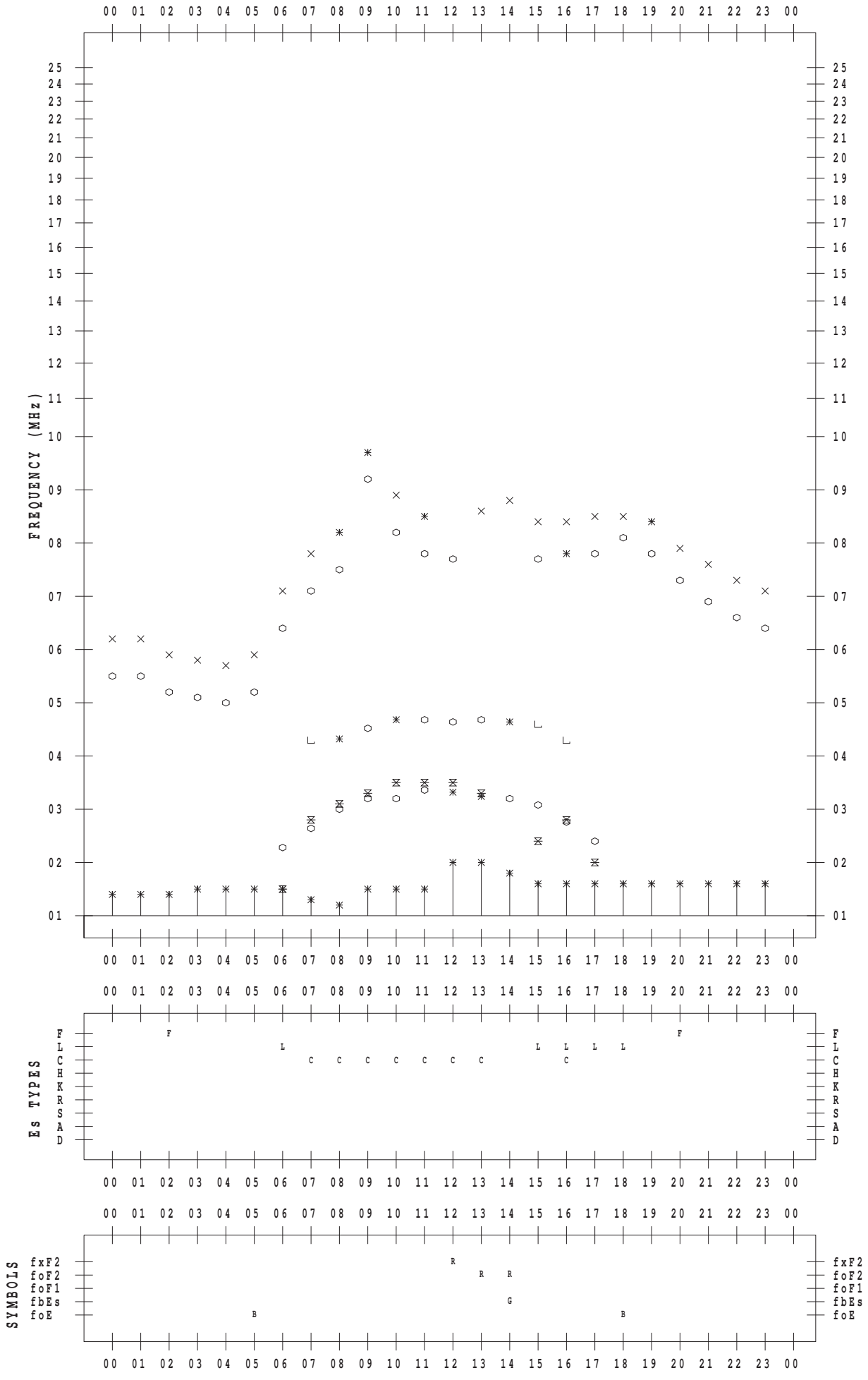
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 7

135 °E MEAN TIME



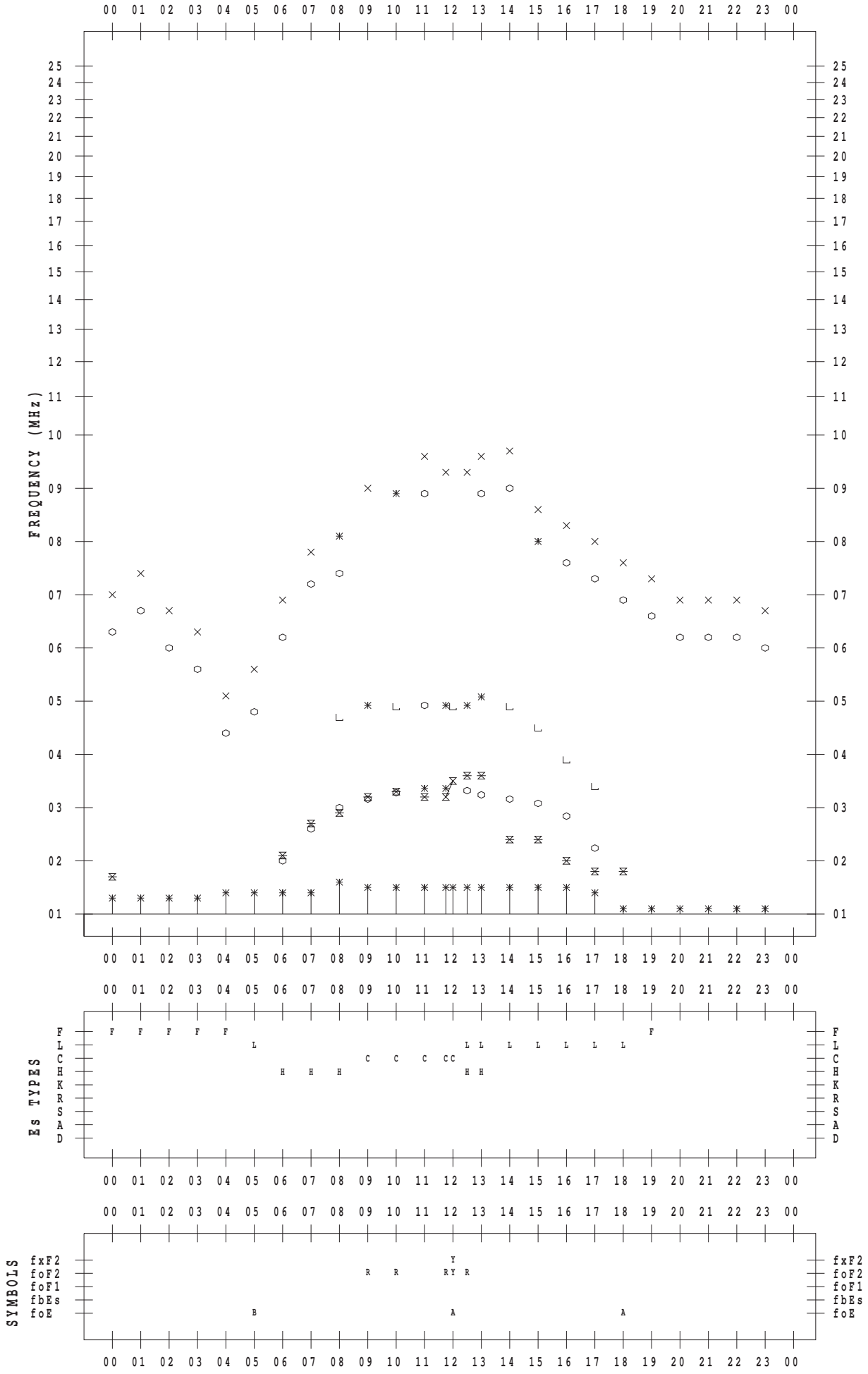
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 8

135 °E MEAN TIME



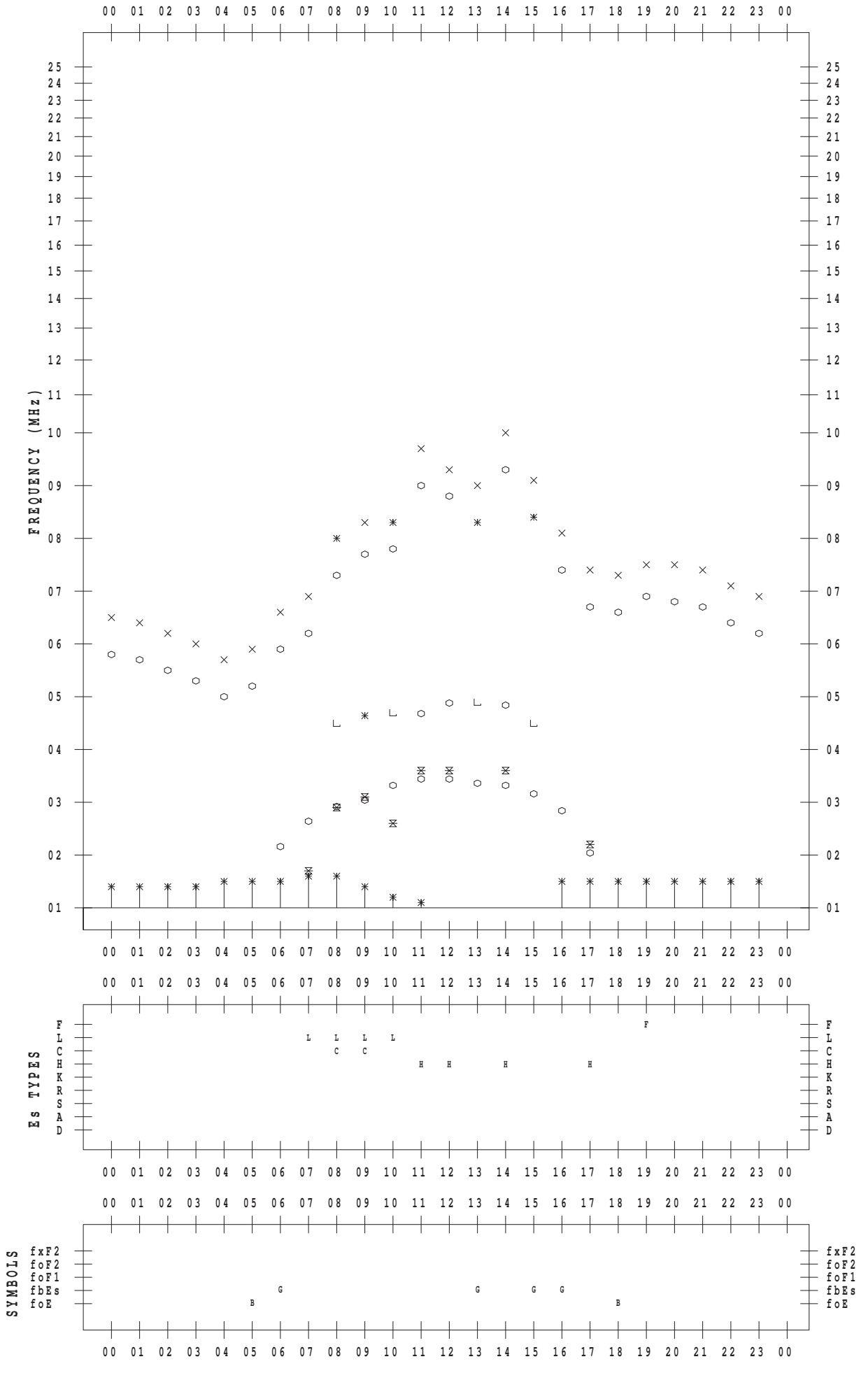
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/ 9

135 °E MEAN TIME



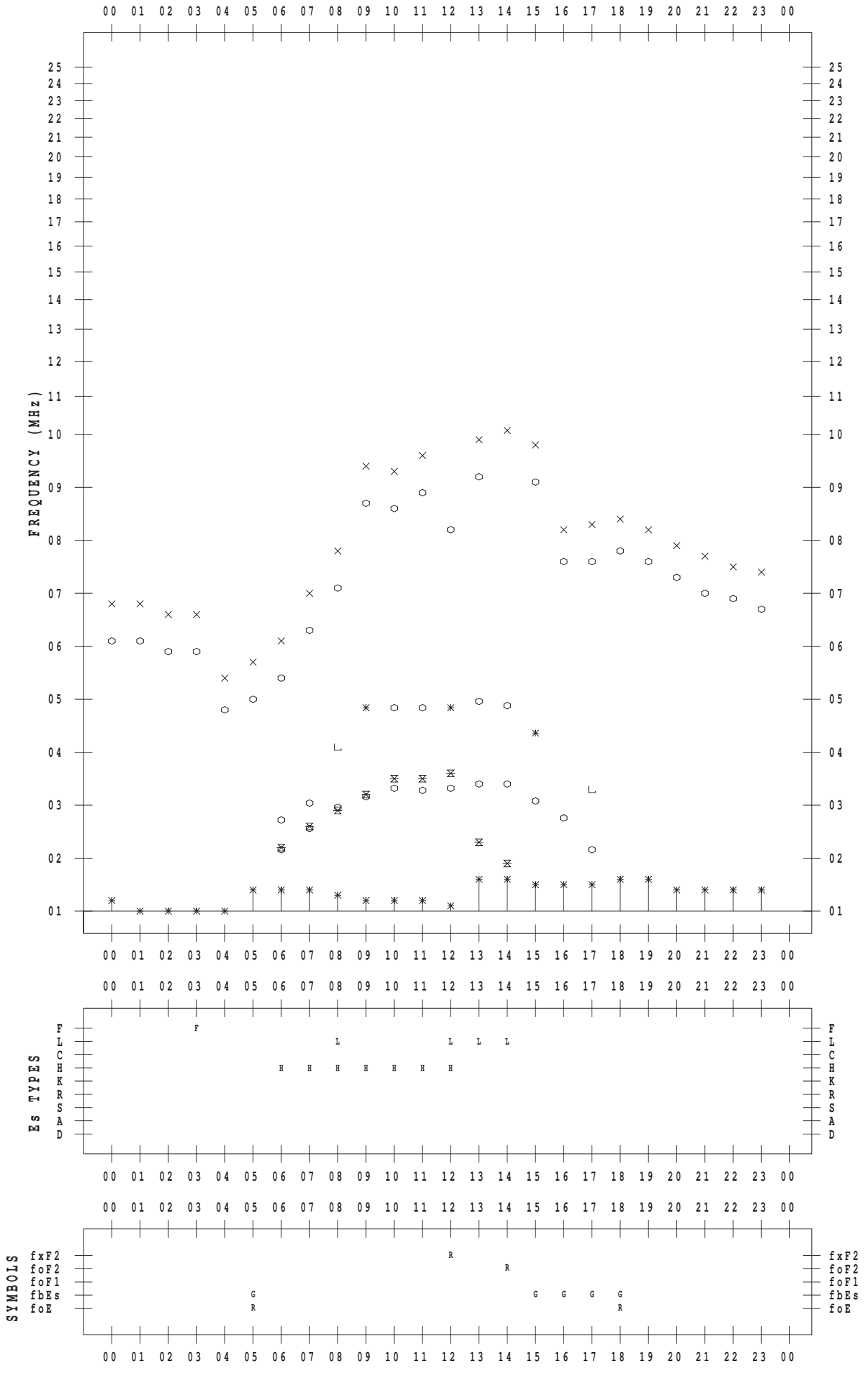
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/10

135 °E MEAN TIME



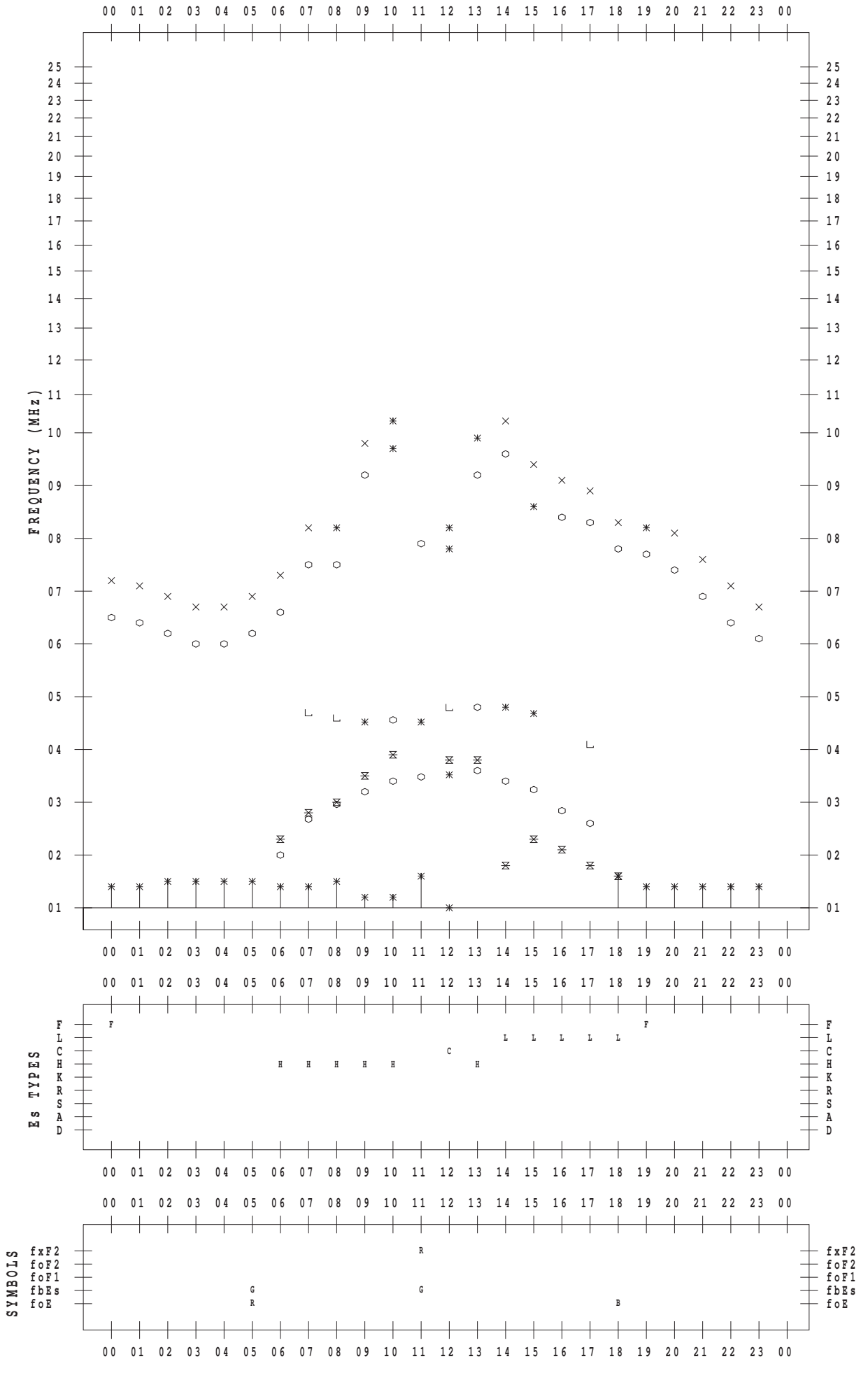
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/11

135 °E MEAN TIME



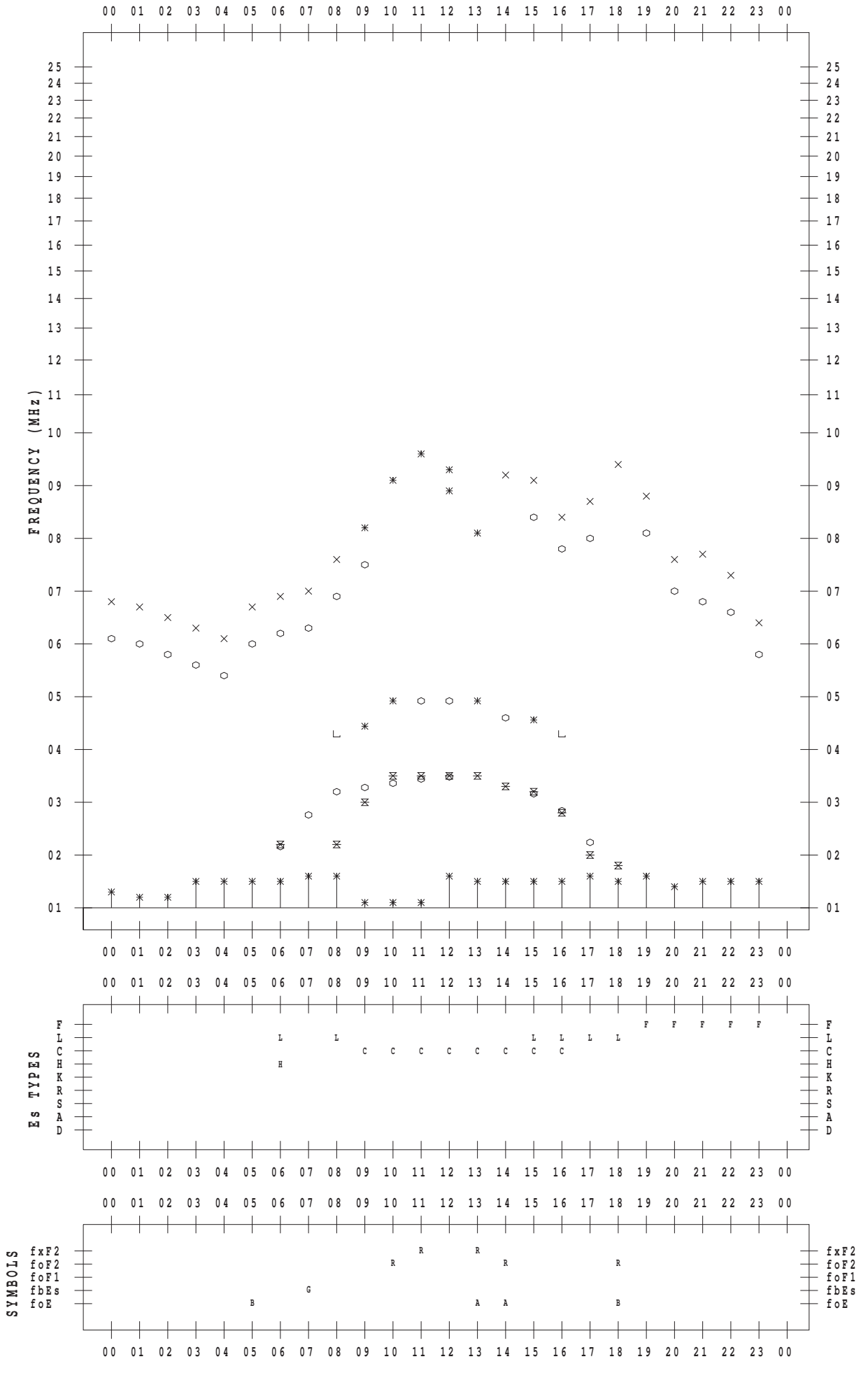
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/12

135 °E MEAN TIME



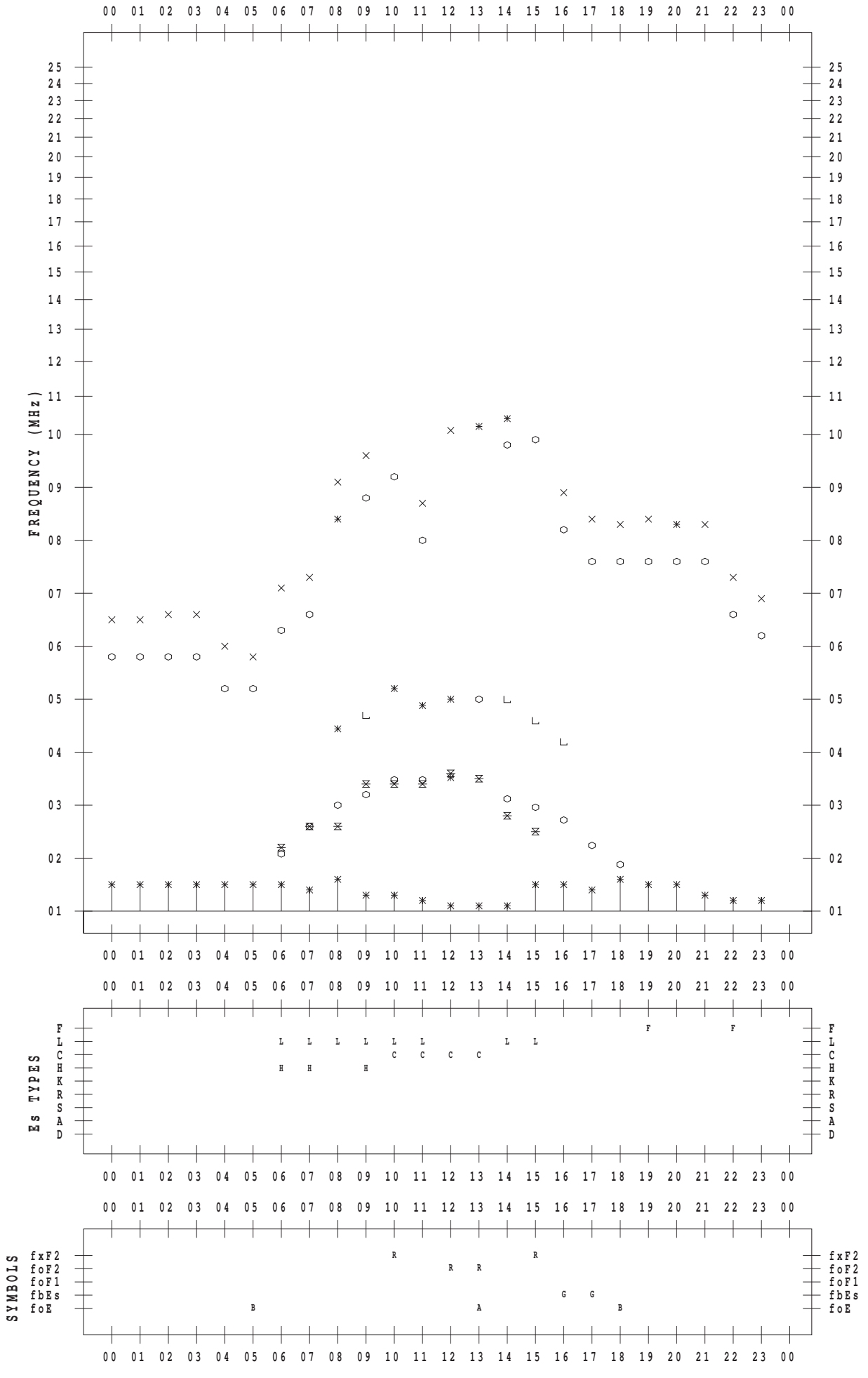
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/13

135 °E MEAN TIME



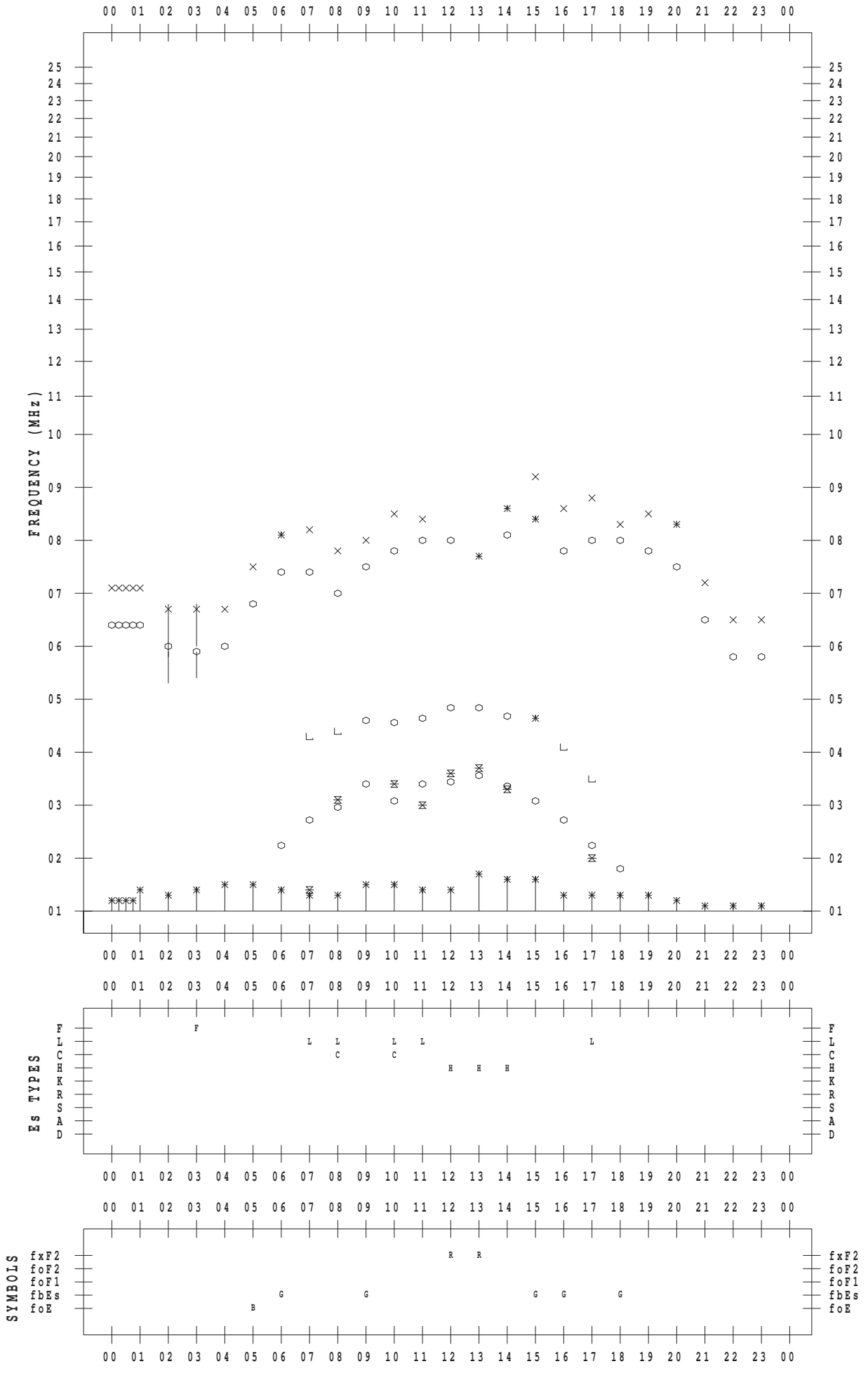
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/14

135 °E MEAN TIME



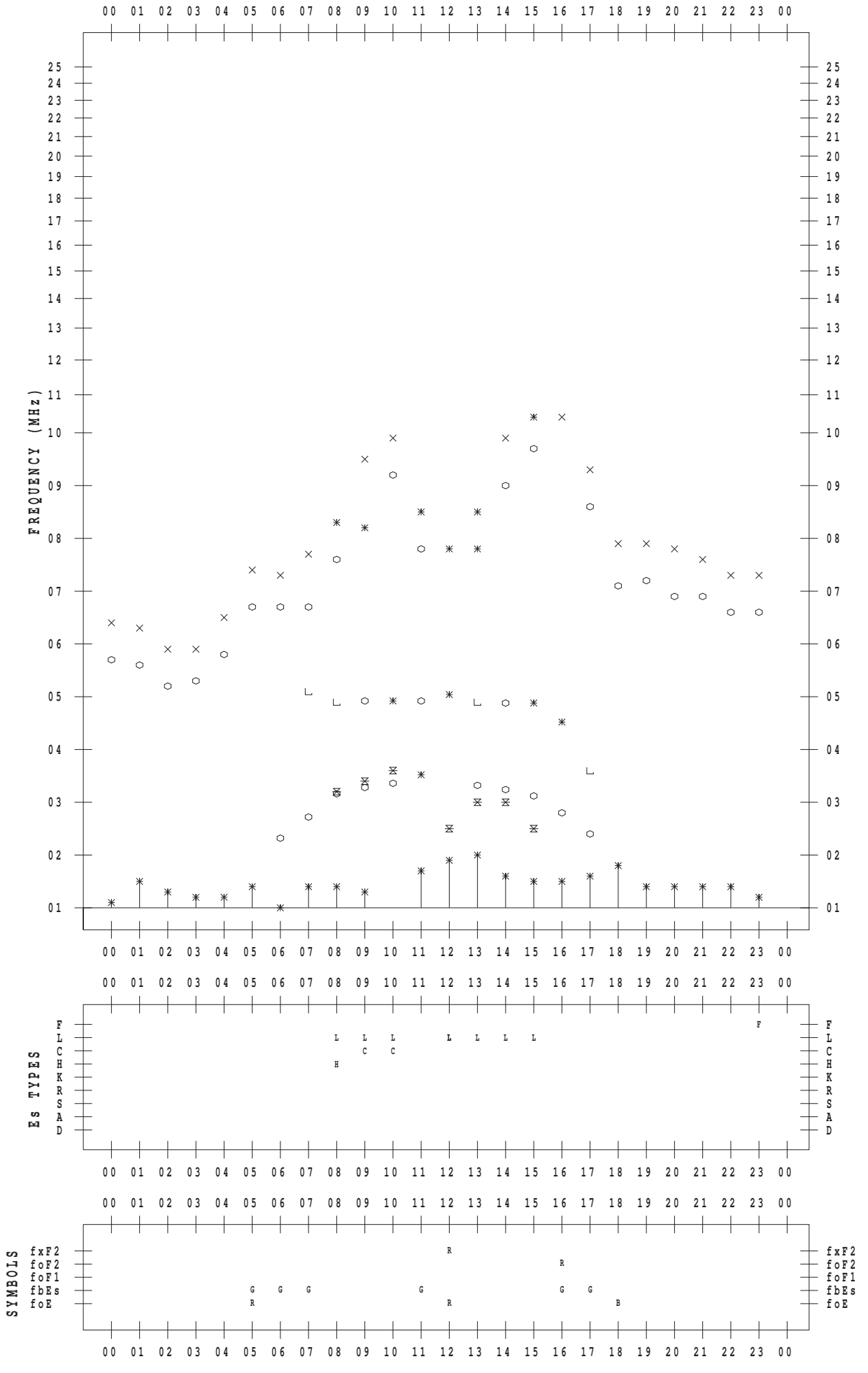
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/15

135 °E MEAN TIME



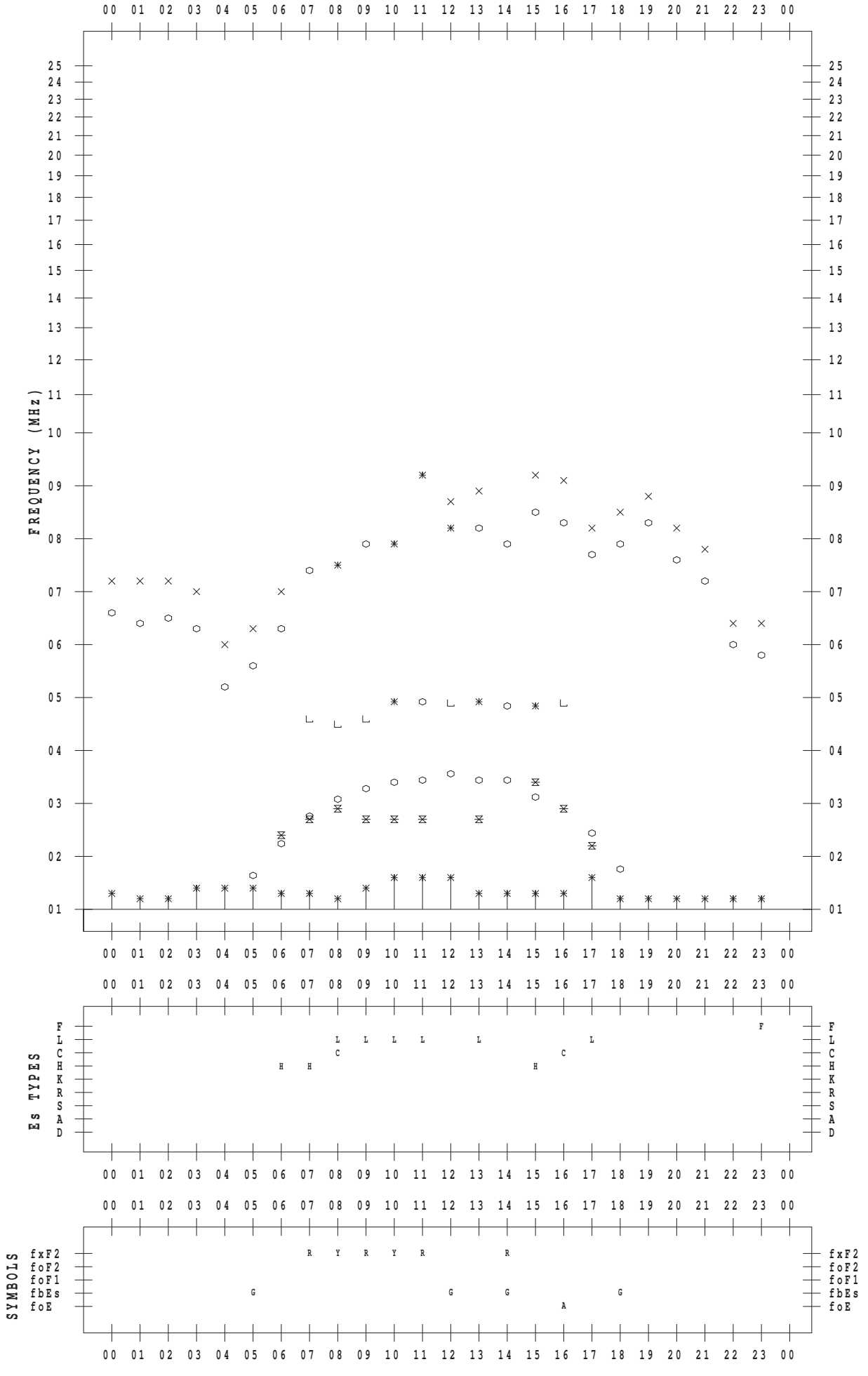
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/16

135 °E MEAN TIME



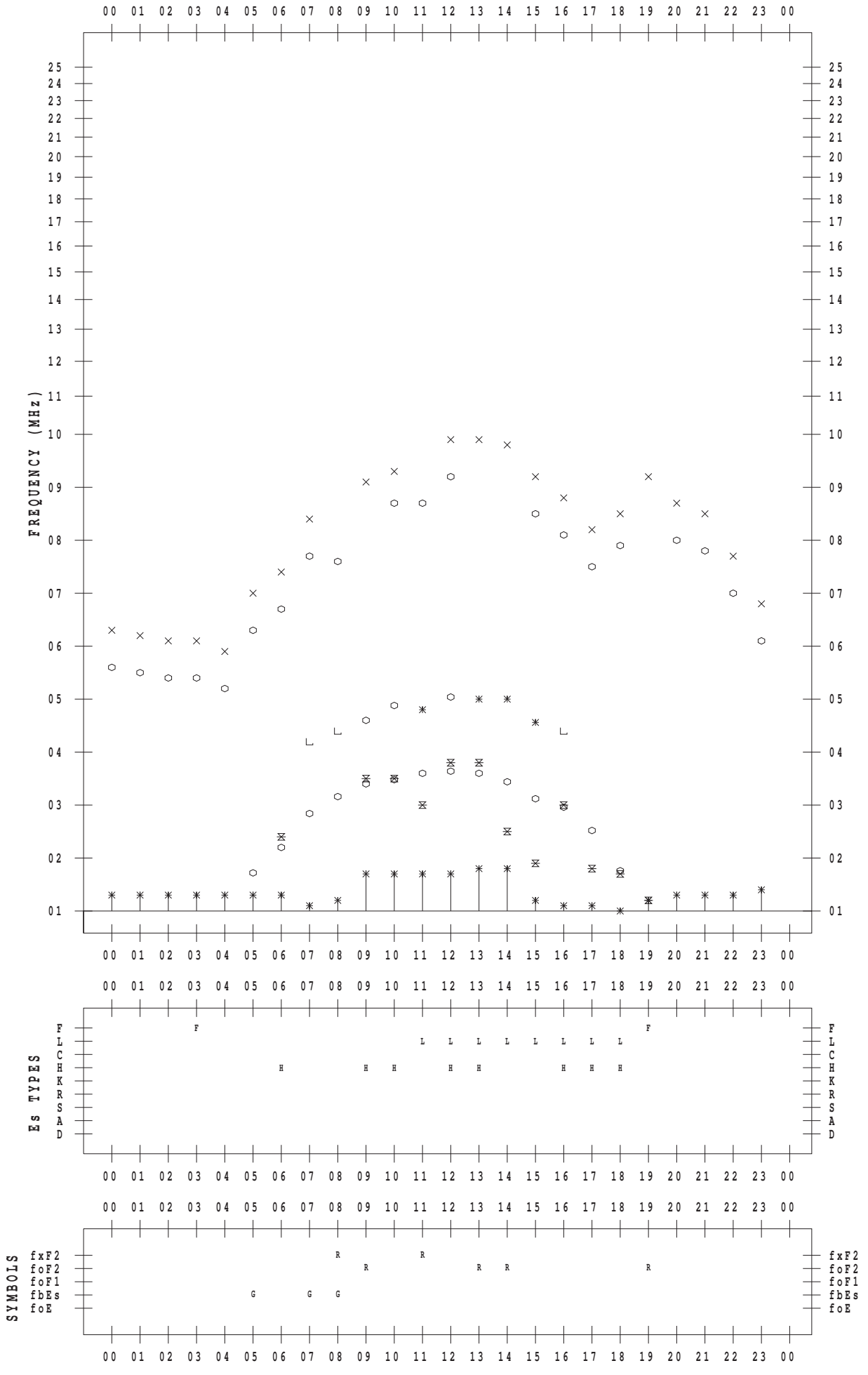
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/17

135 °E MEAN TIME



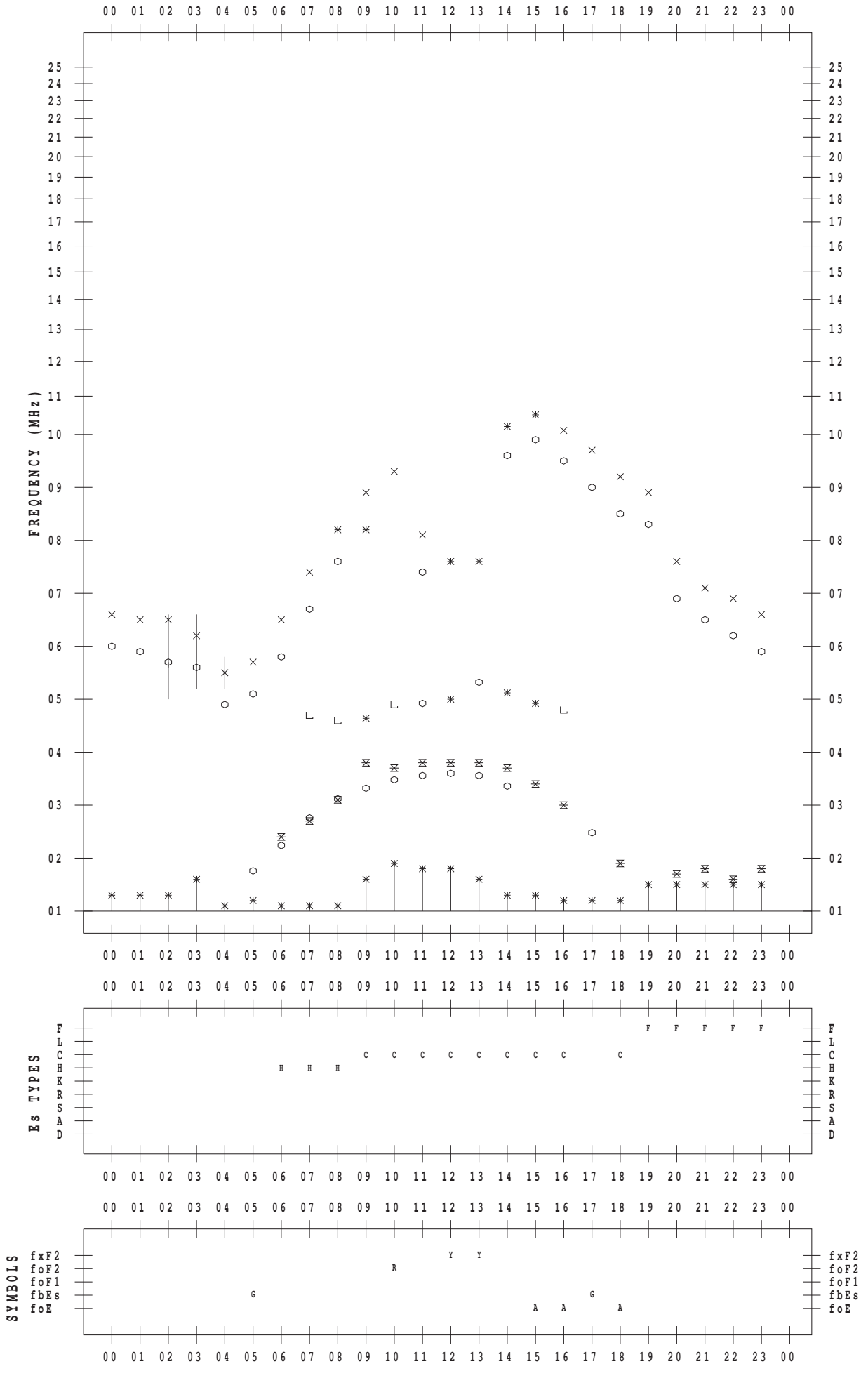
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/18

135 °E MEAN TIME



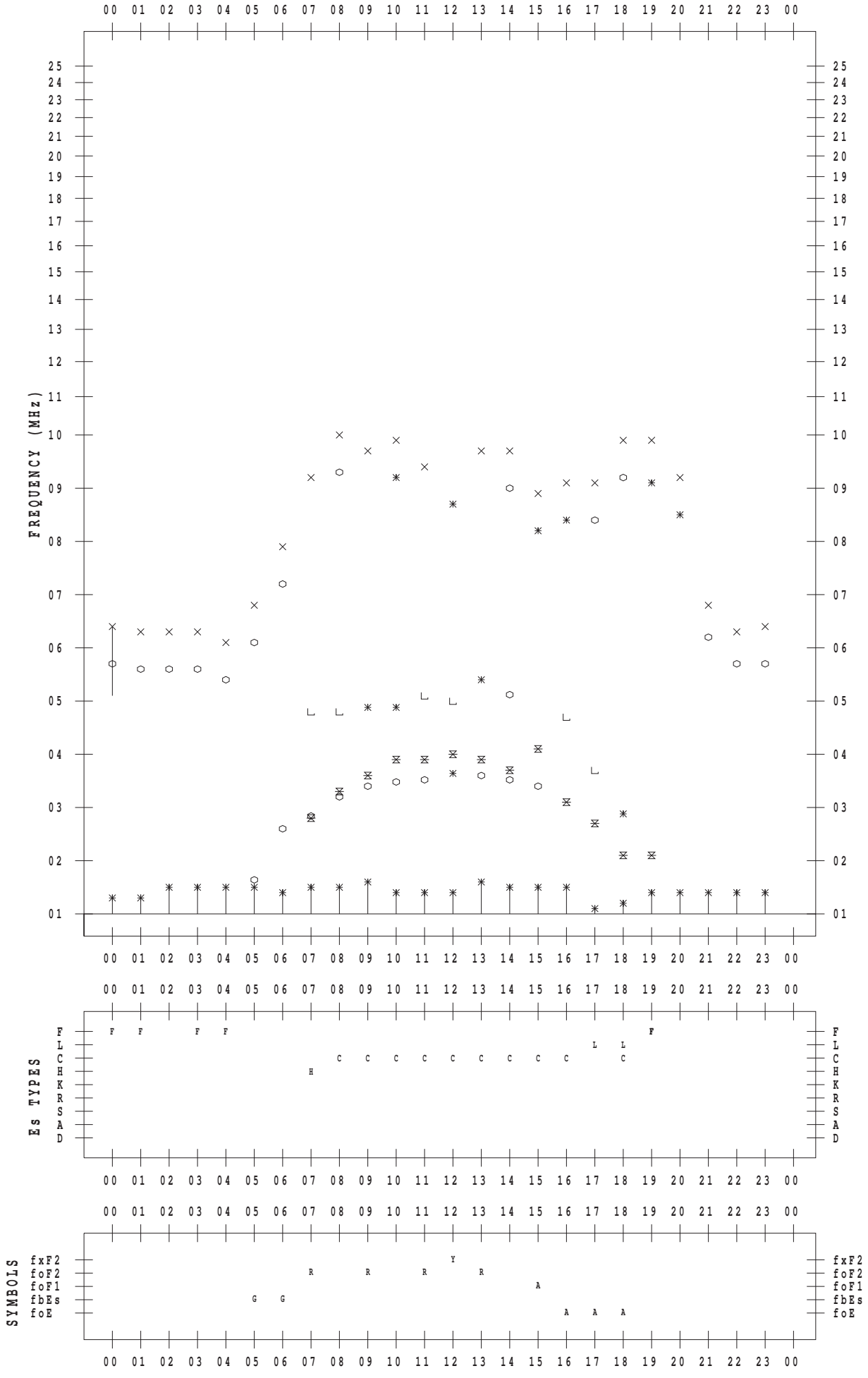
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/19

135 °E MEAN TIME



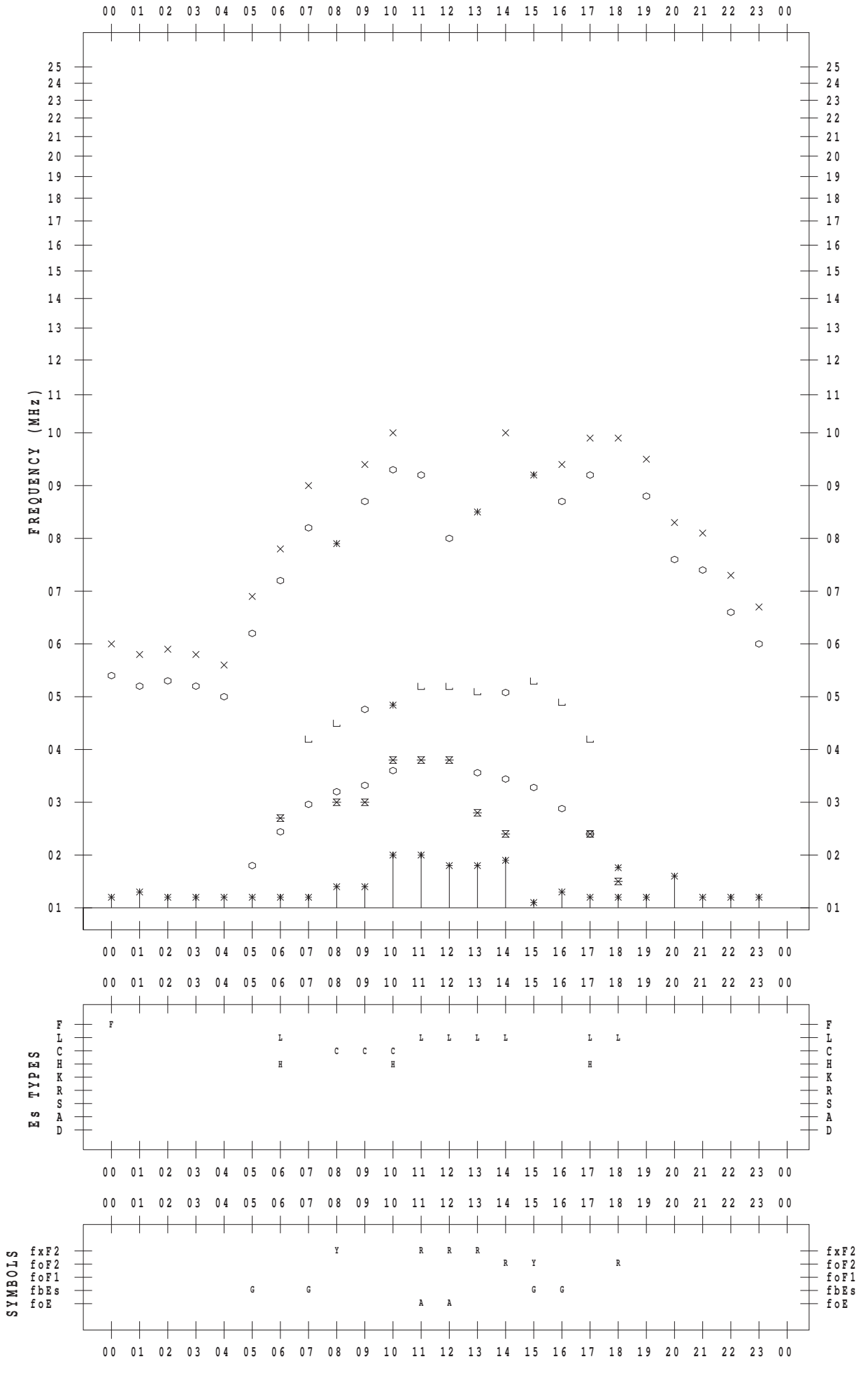
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/20

135 °E MEAN TIME



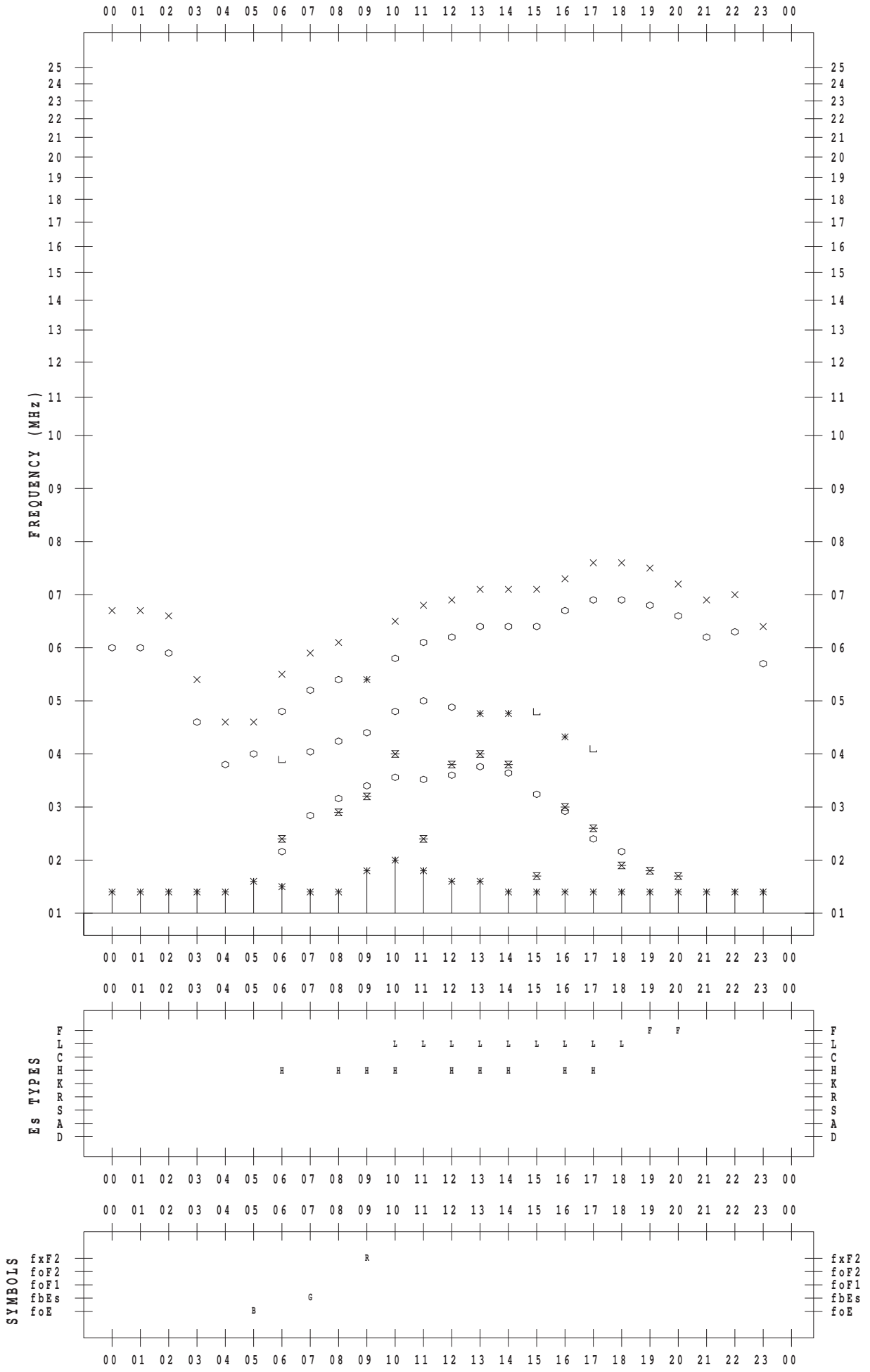
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/21

135 °E MEAN TIME



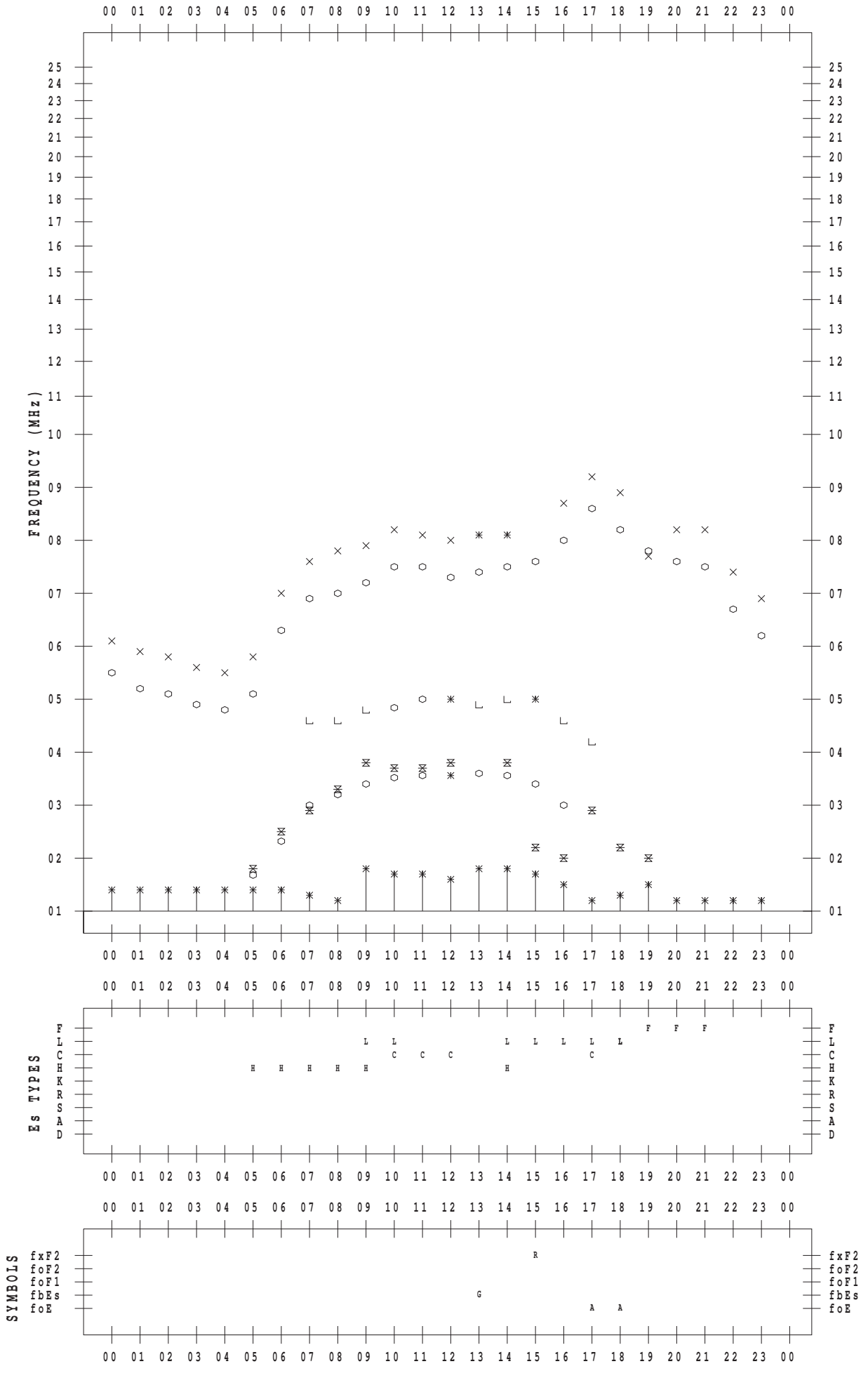
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/22

135 °E MEAN TIME



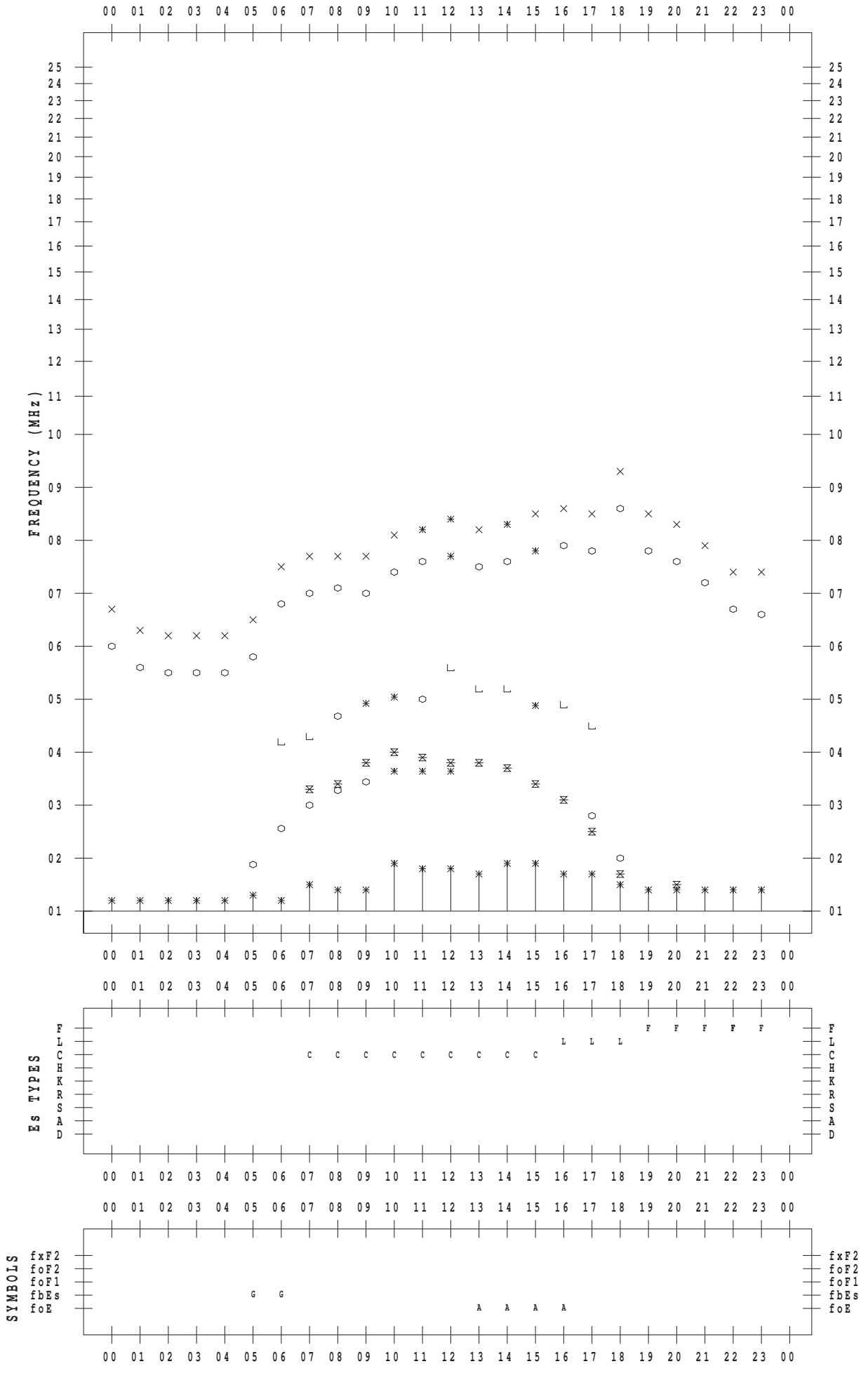
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/23

135 °E MEAN TIME



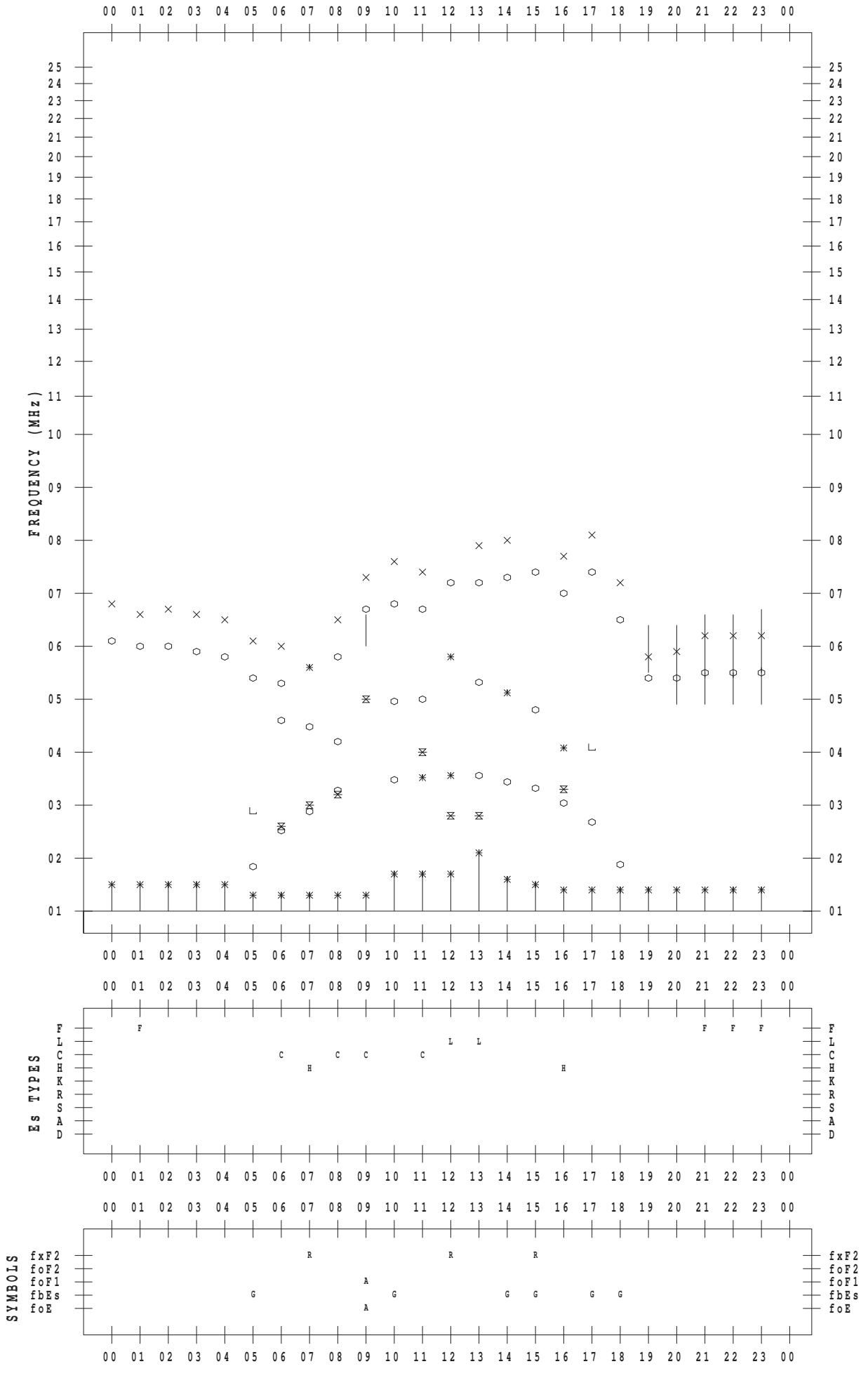
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/24

135 °E MEAN TIME



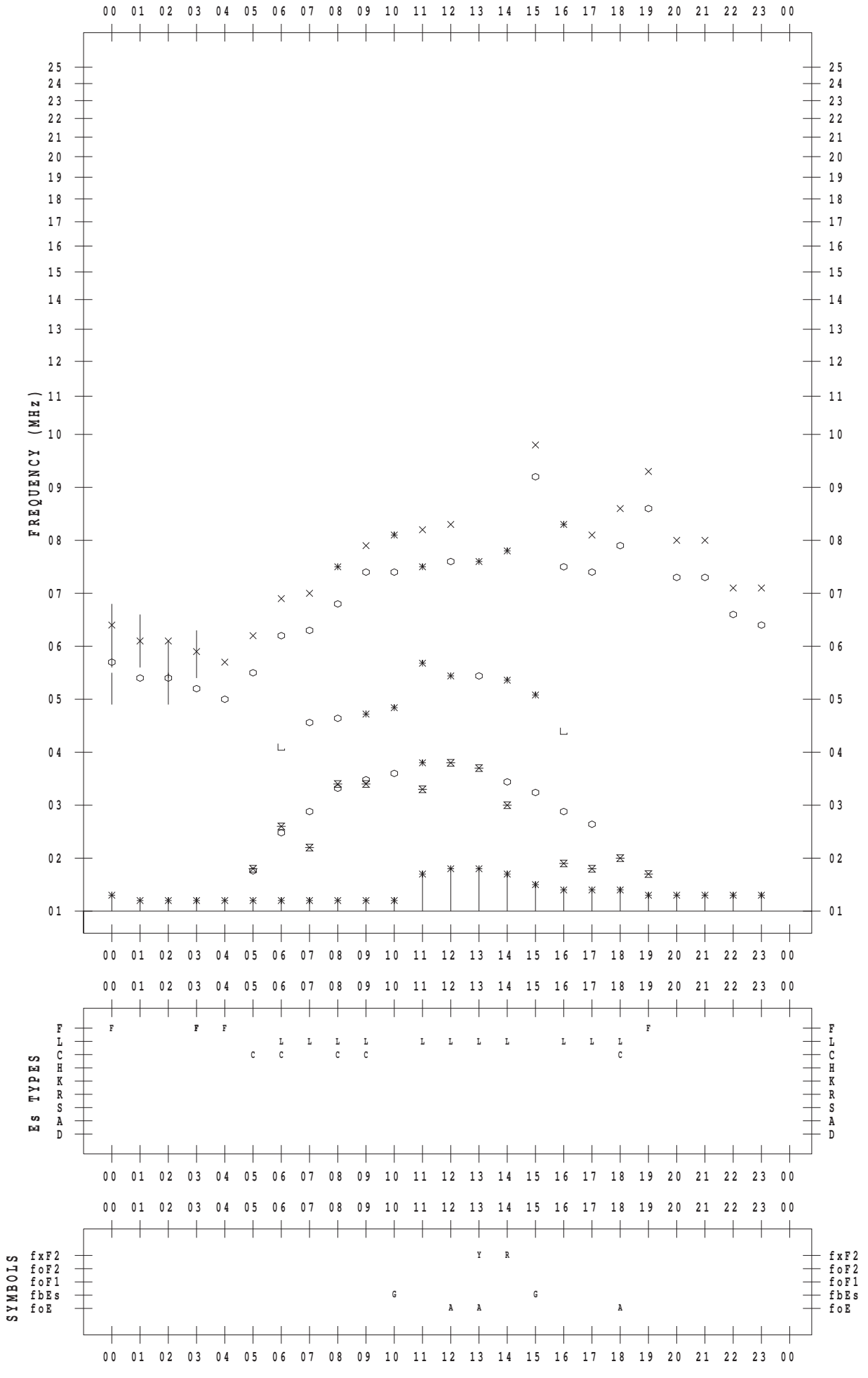
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/25

135 °E MEAN TIME



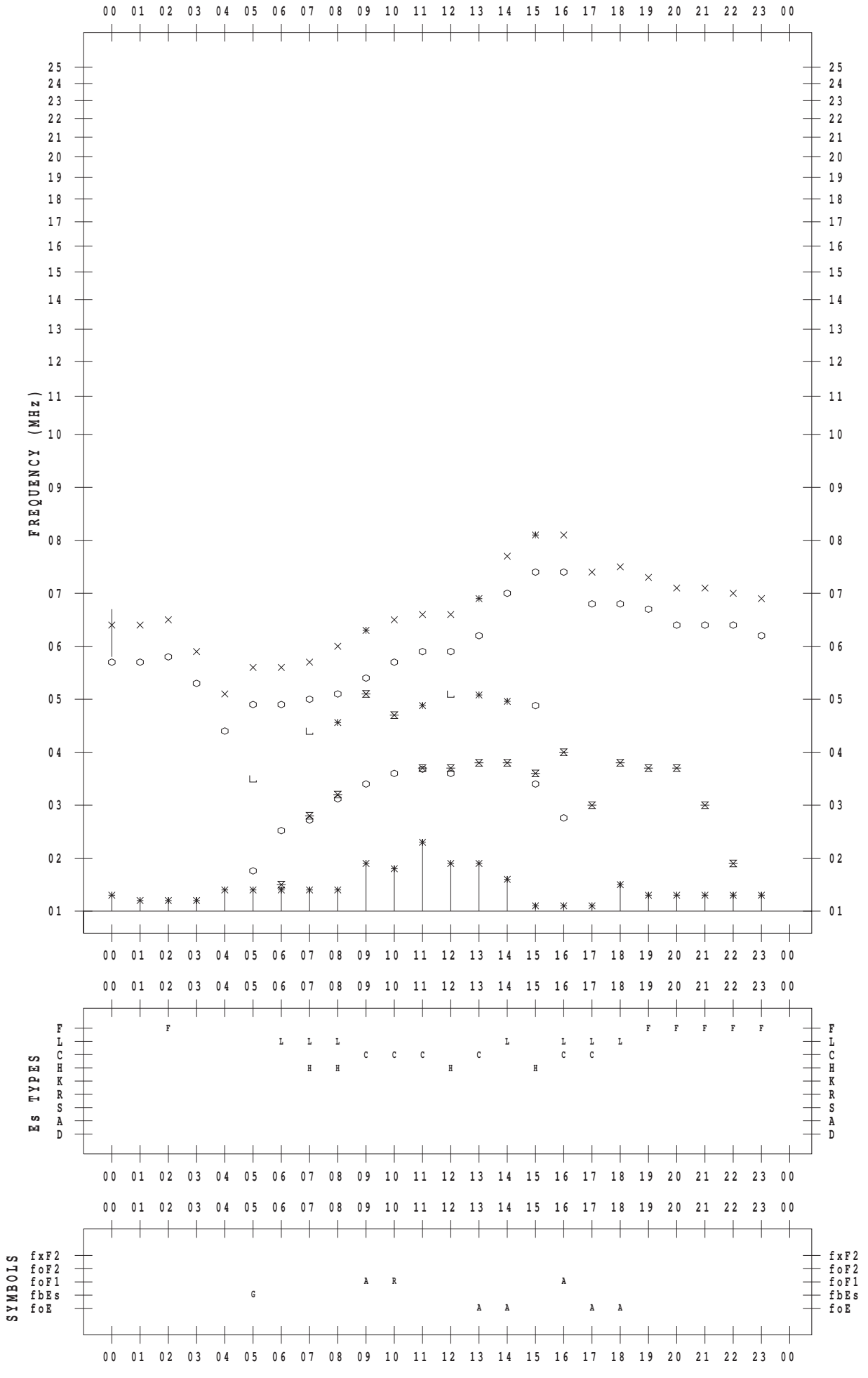
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/26

135 °E MEAN TIME



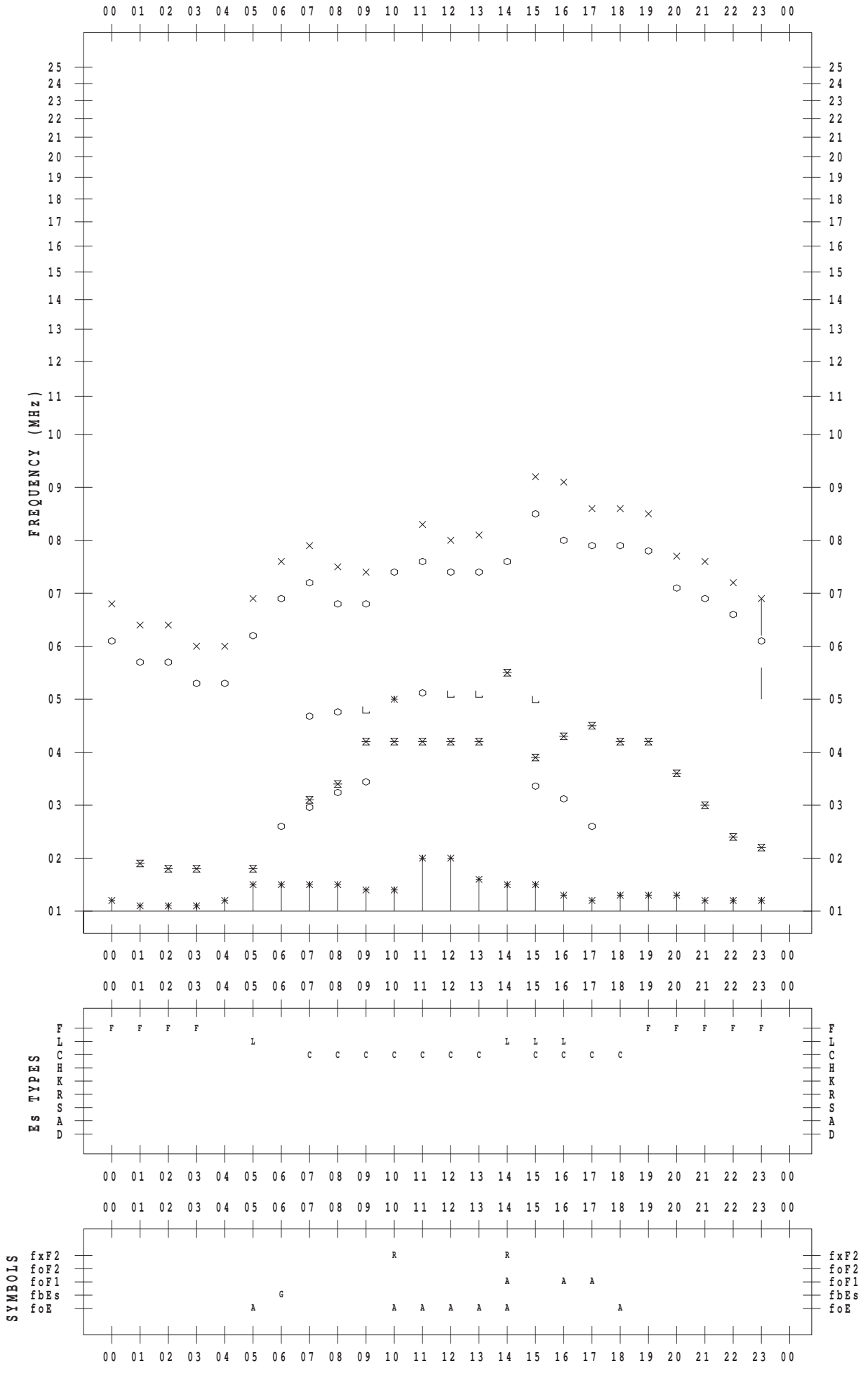
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/27

135 °E MEAN TIME



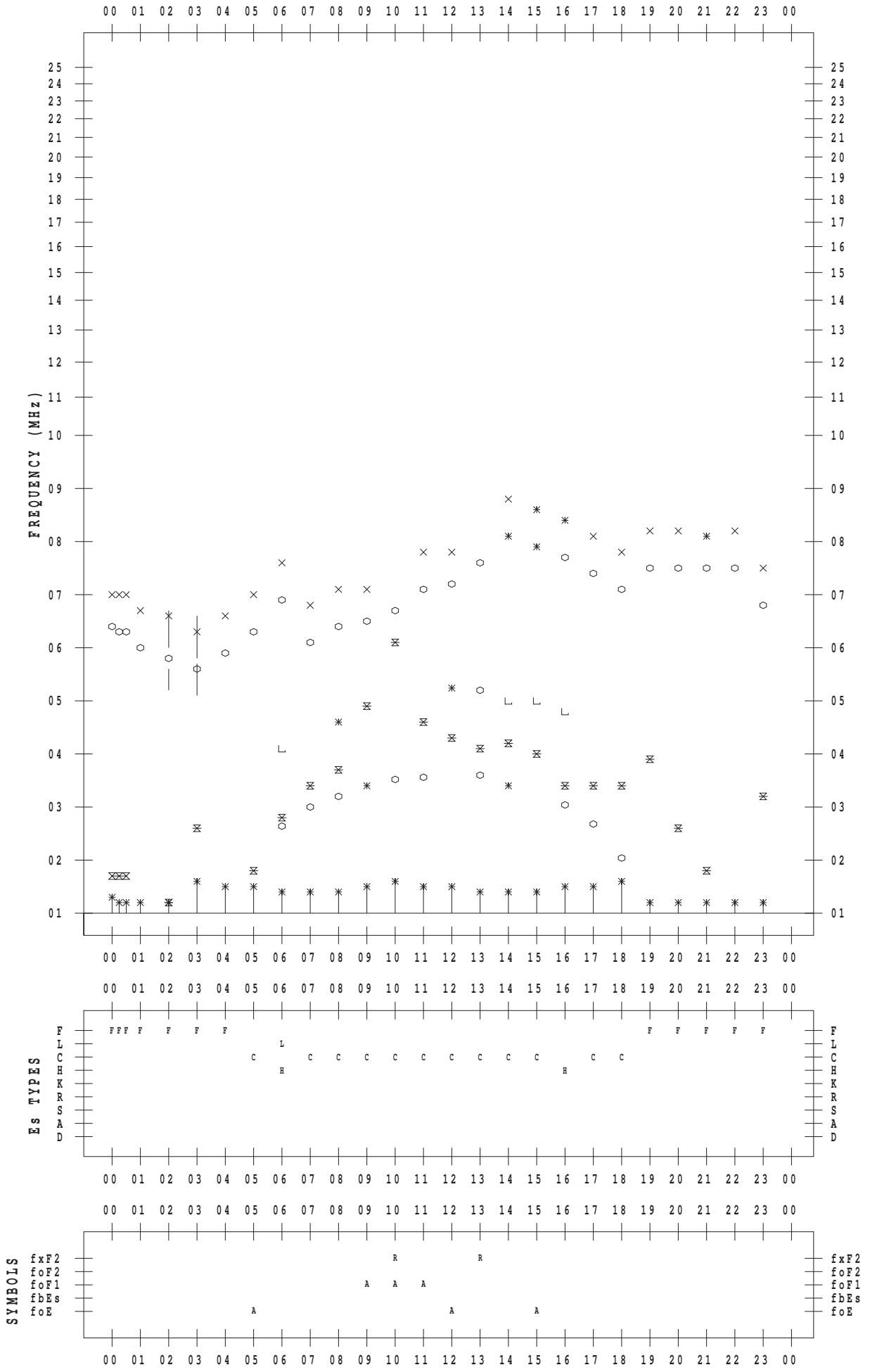
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/28

135 °E MEAN TIME



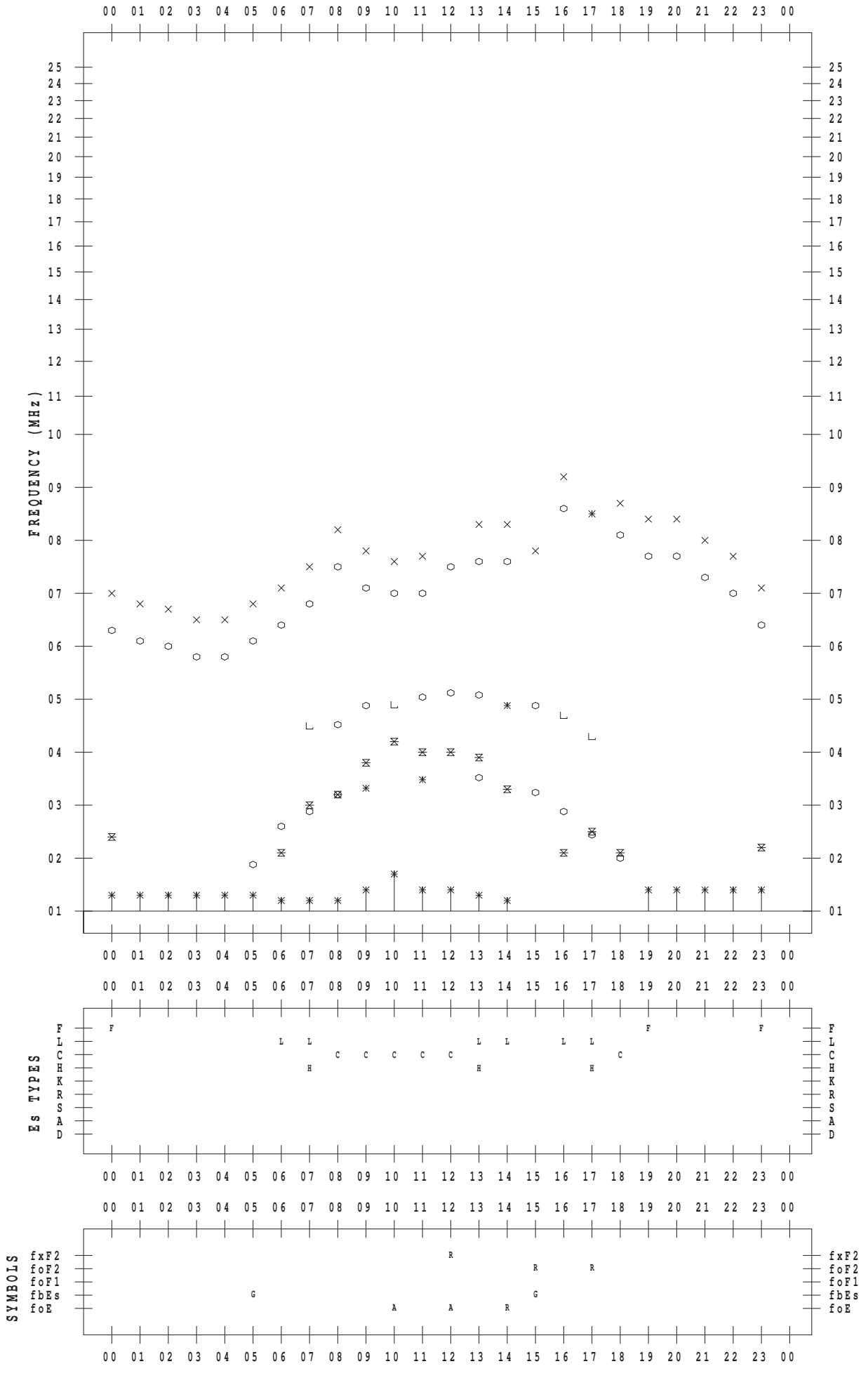
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/29

135 °E MEAN TIME



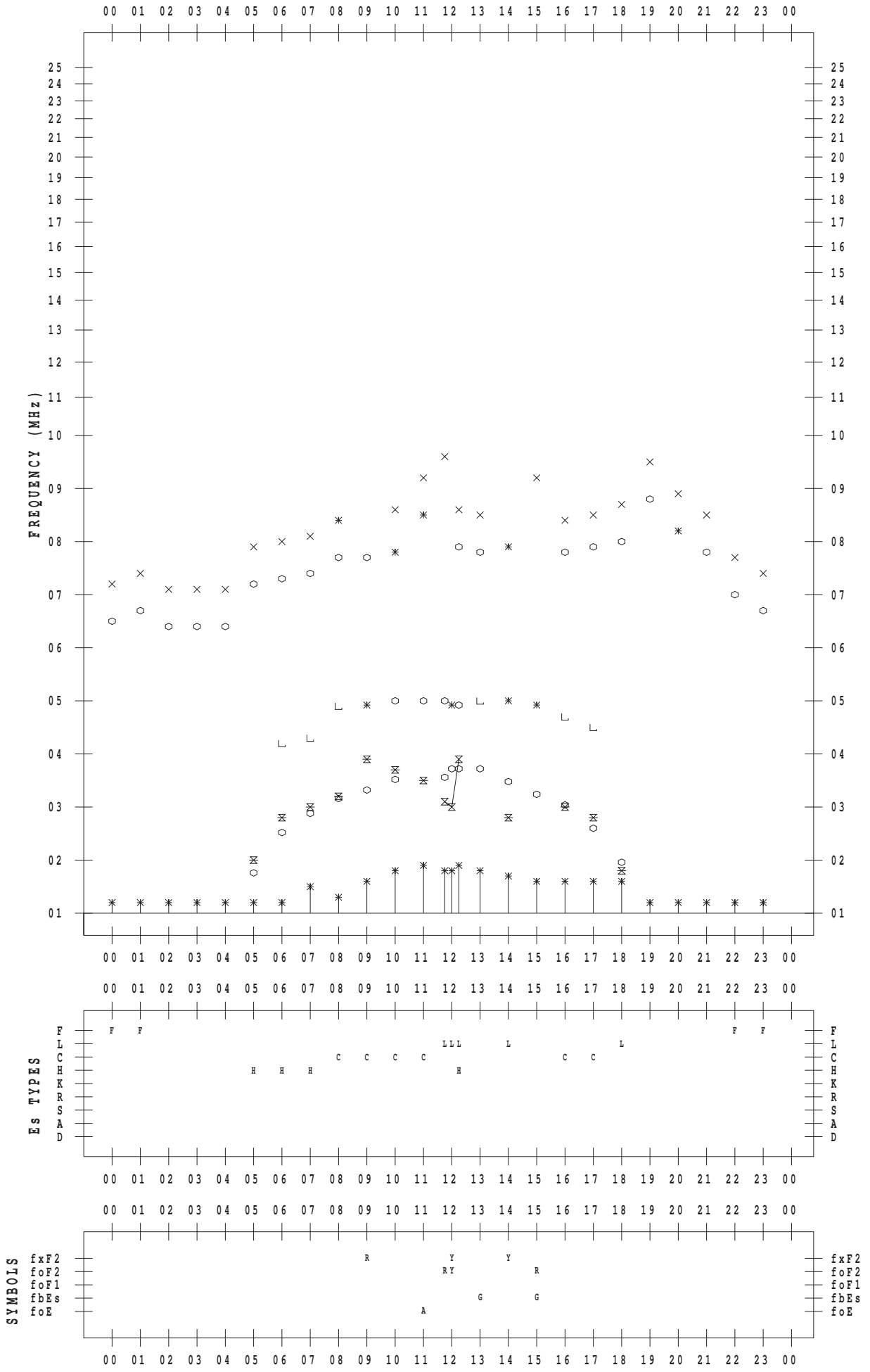
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 4/30

135 °E MEAN TIME



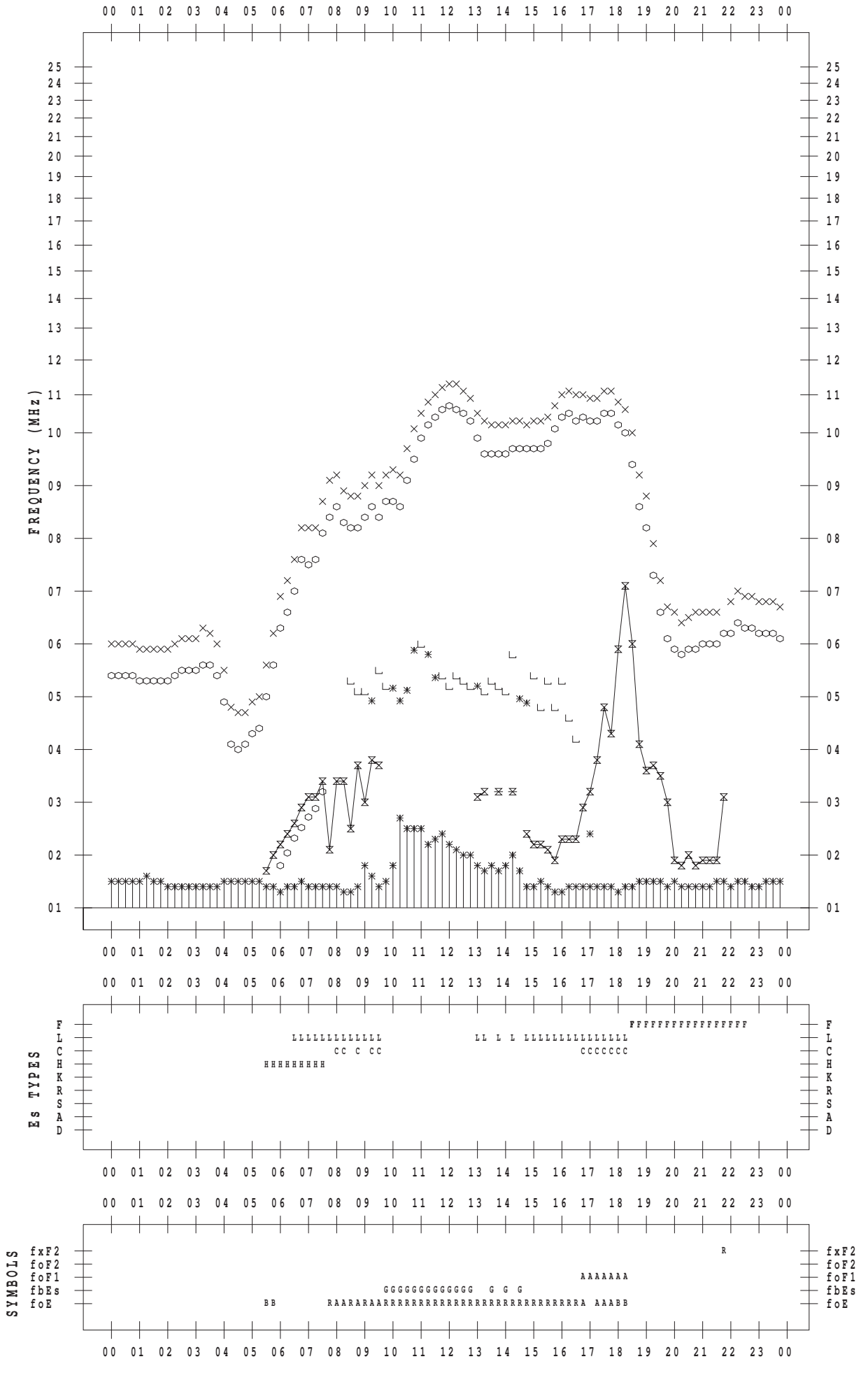
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 1

135 °E MEAN TIME



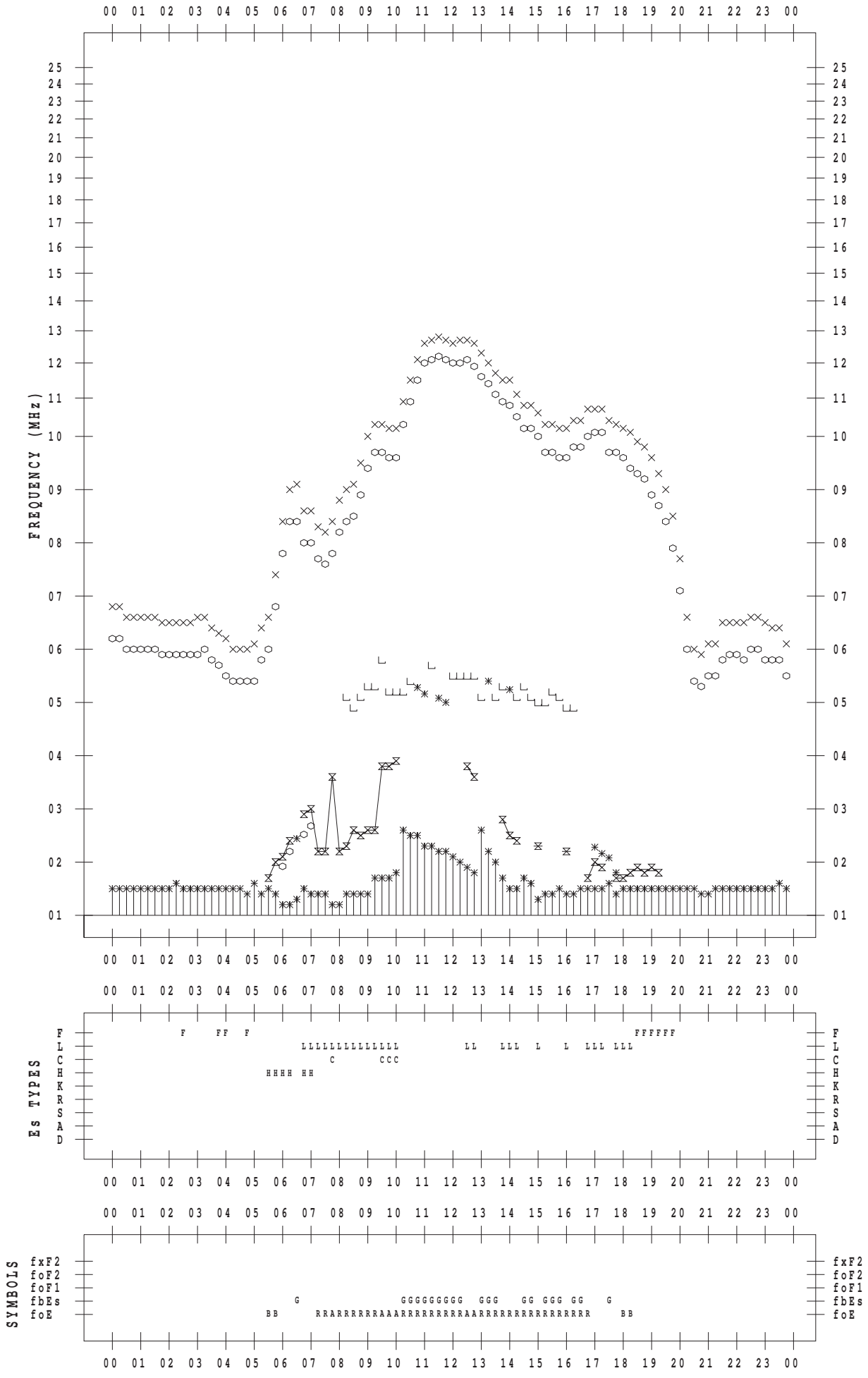
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 2

135 °E MEAN TIME



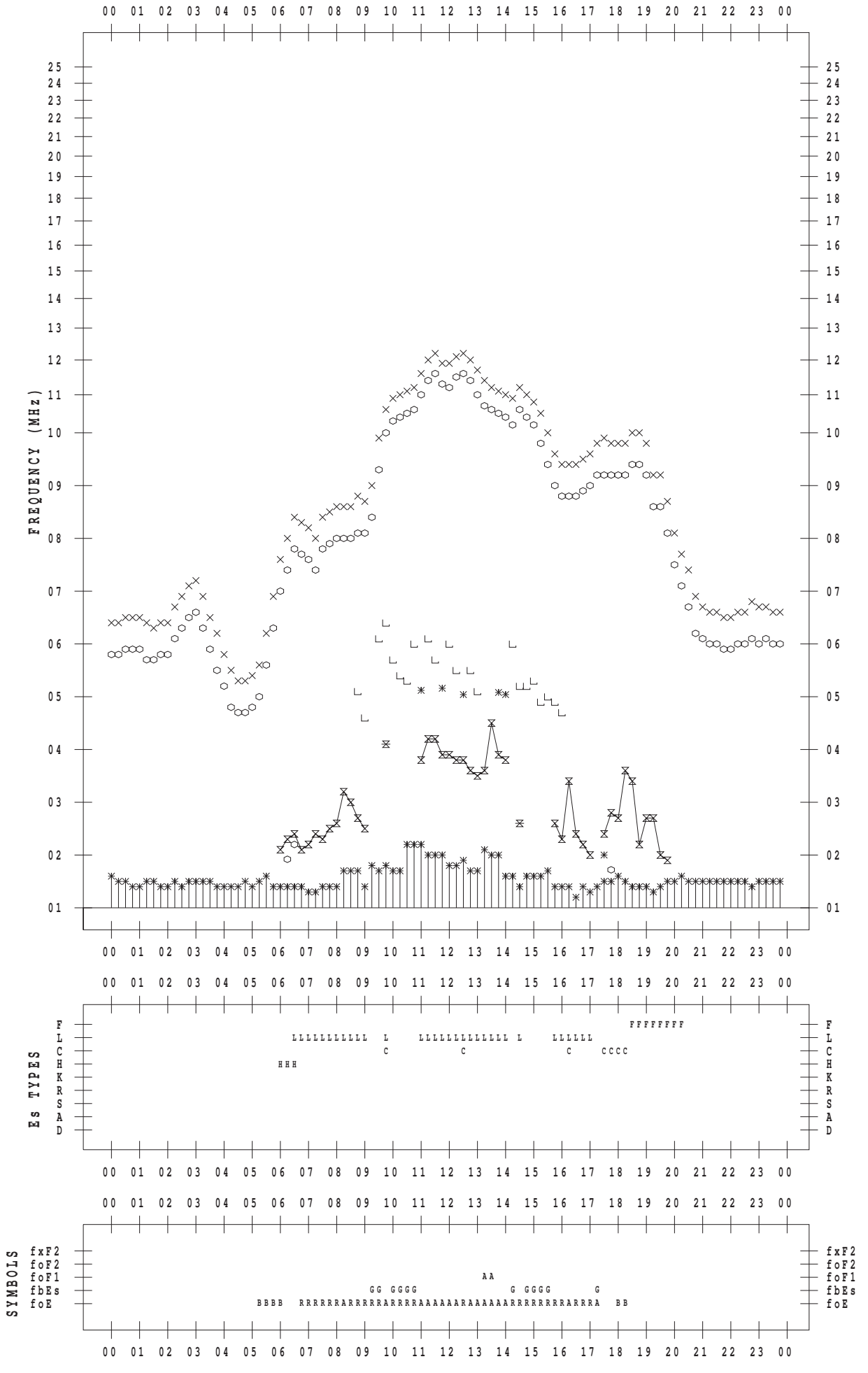
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 3

135 °E MEAN TIME



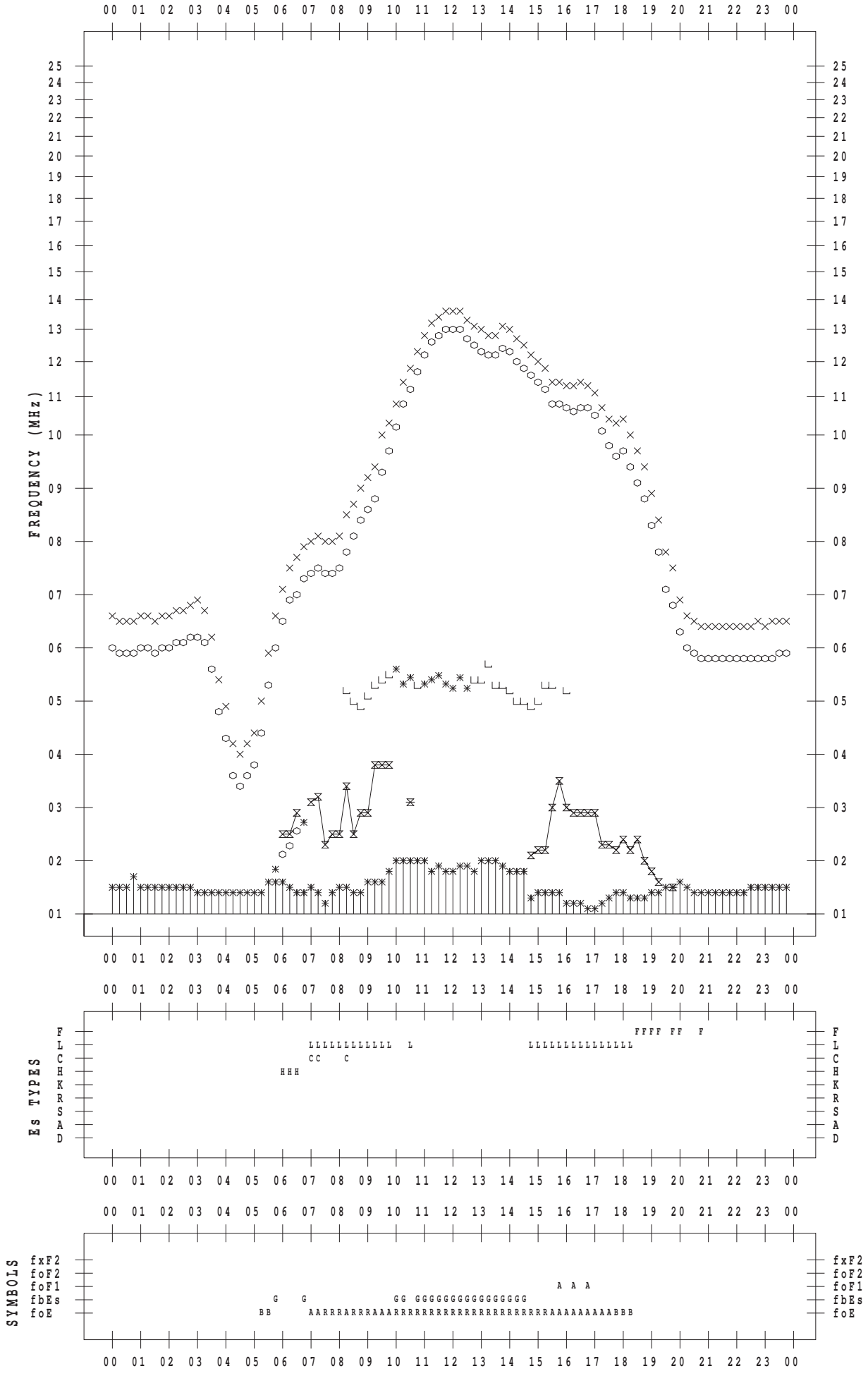
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 4

135 °E MEAN TIME



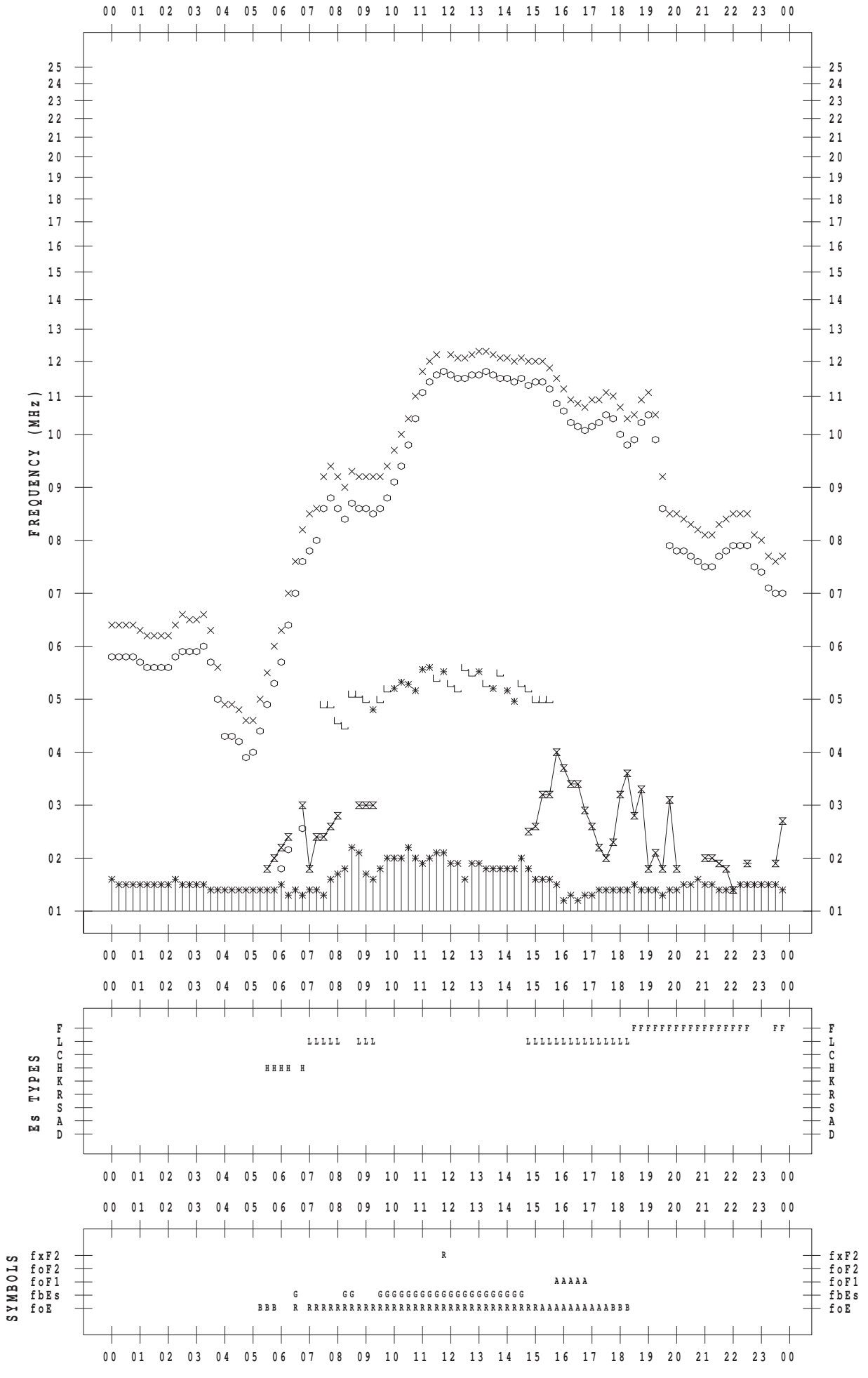
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 5

135 °E MEAN TIME



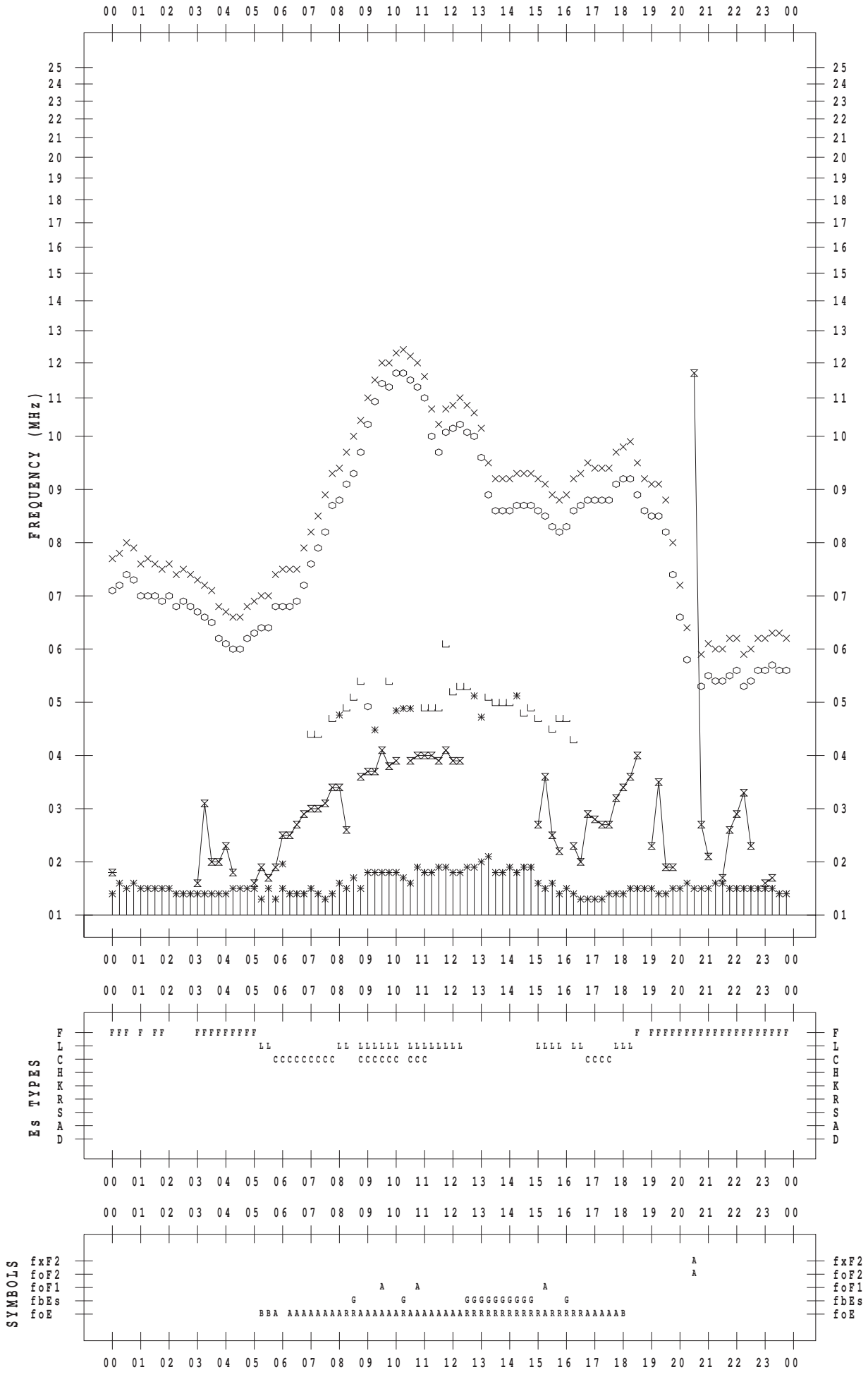
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 6

135 °E MEAN TIME



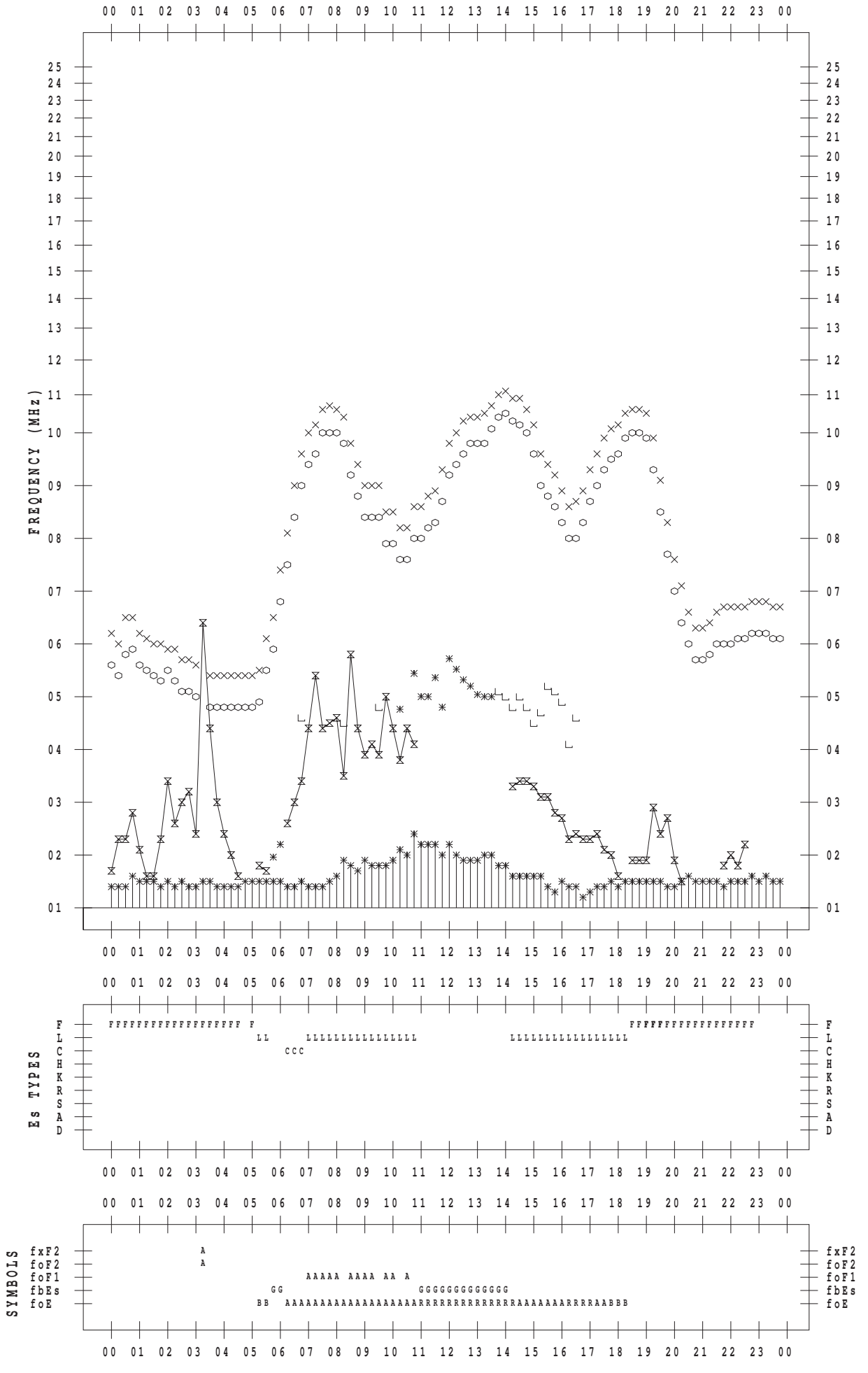
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 7

135 °E MEAN TIME



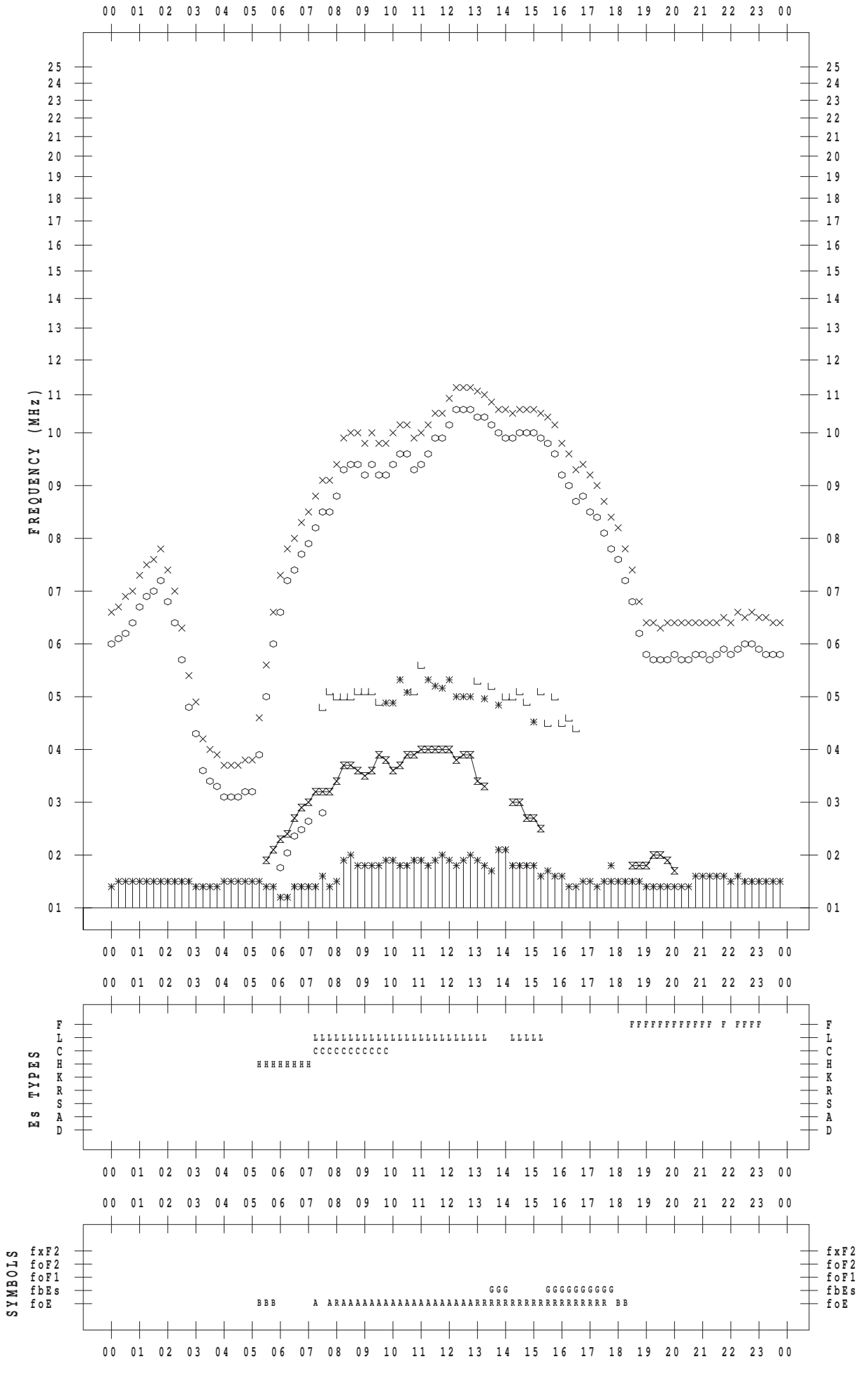
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 8

135 °E MEAN TIME



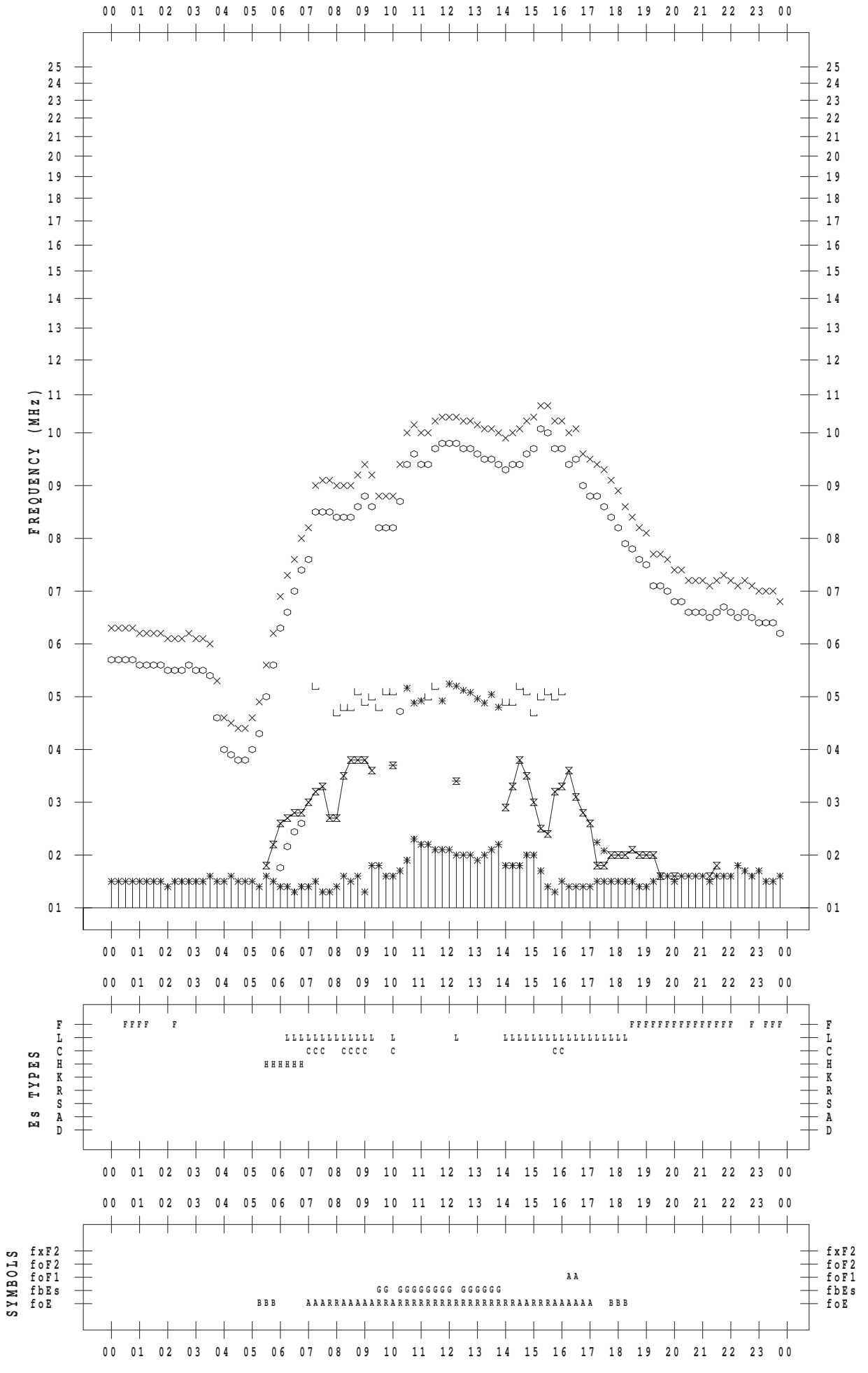
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/ 9

135 °E MEAN TIME



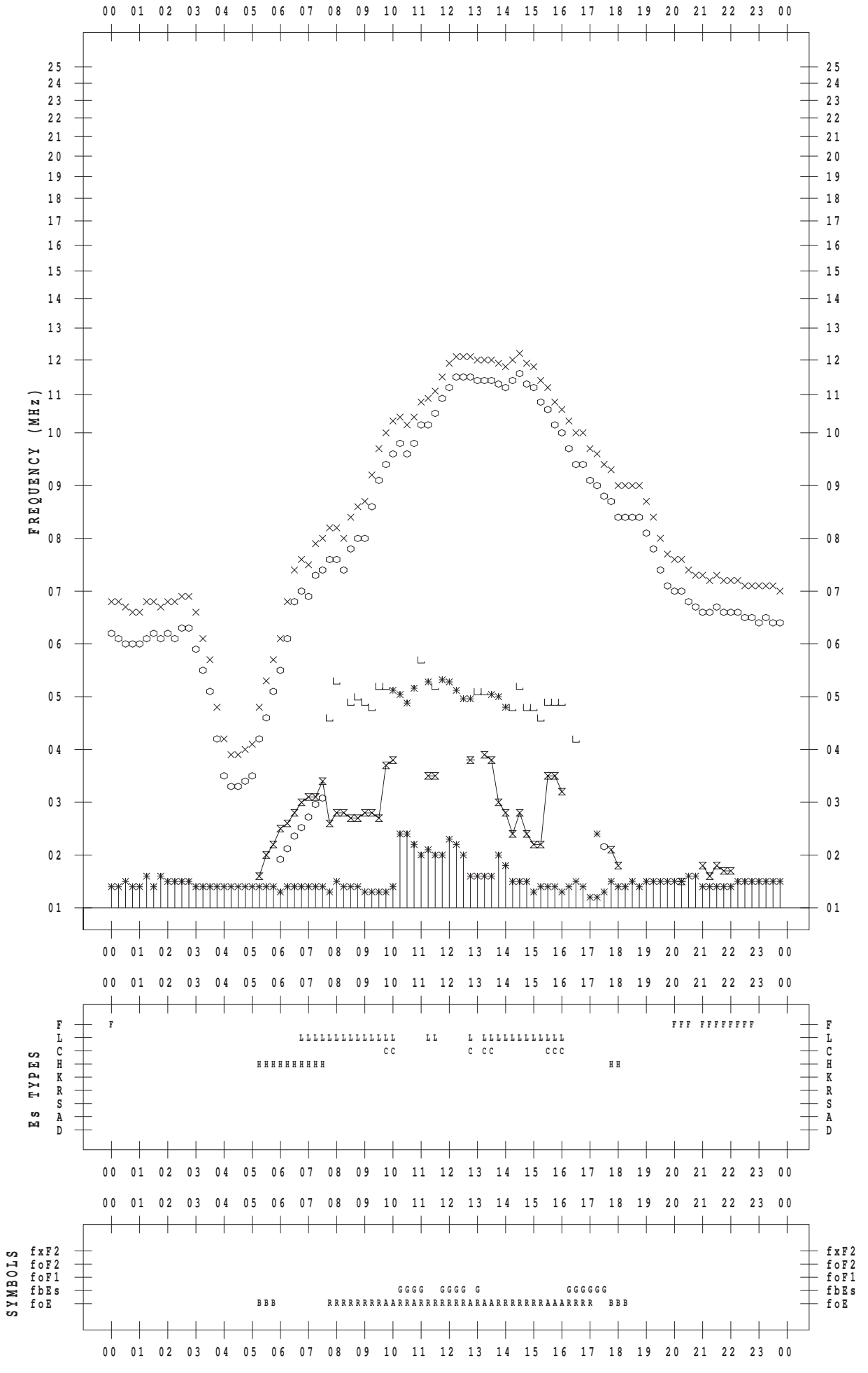
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/10

135 °E MEAN TIME



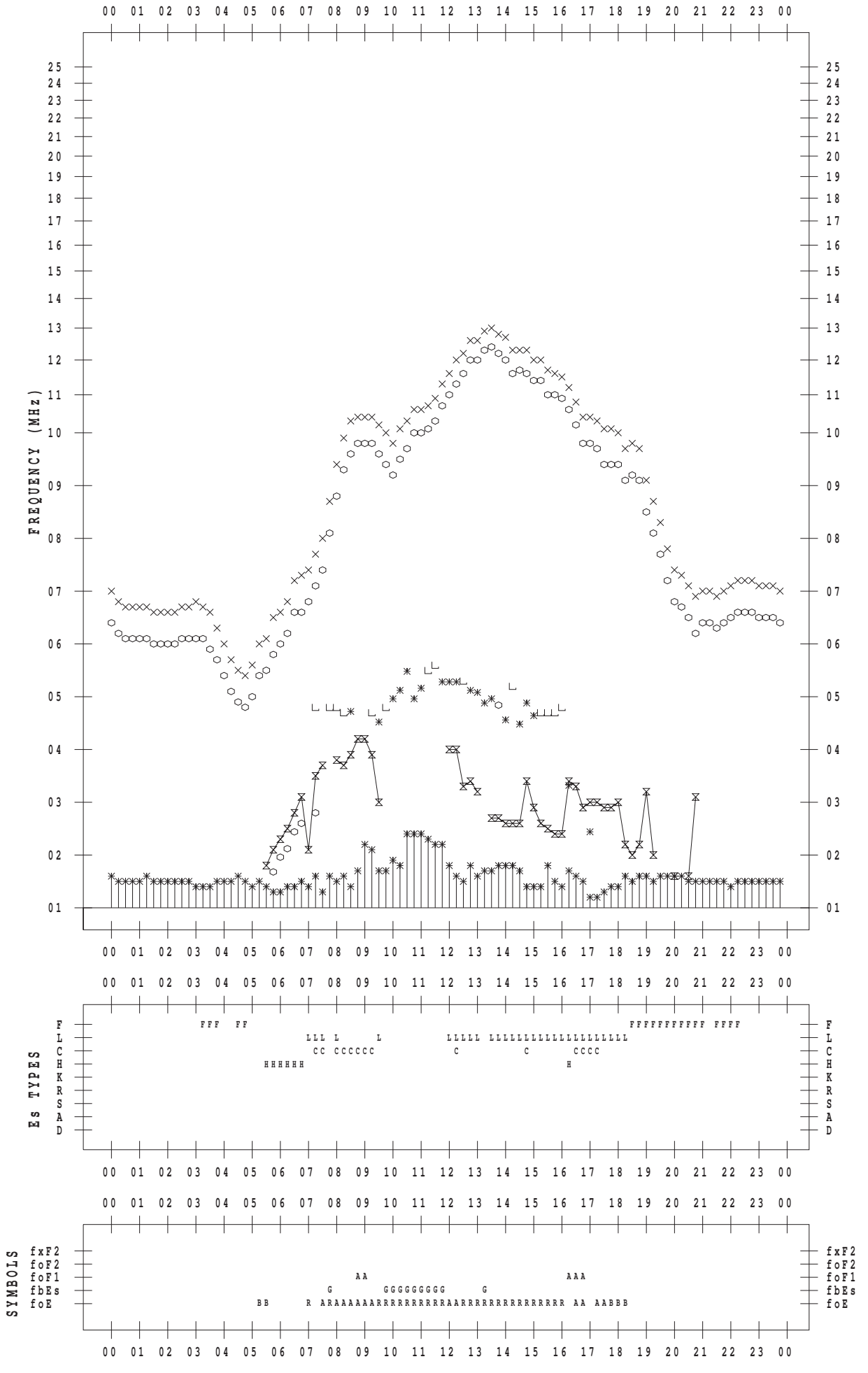
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/11

135 °E MEAN TIME



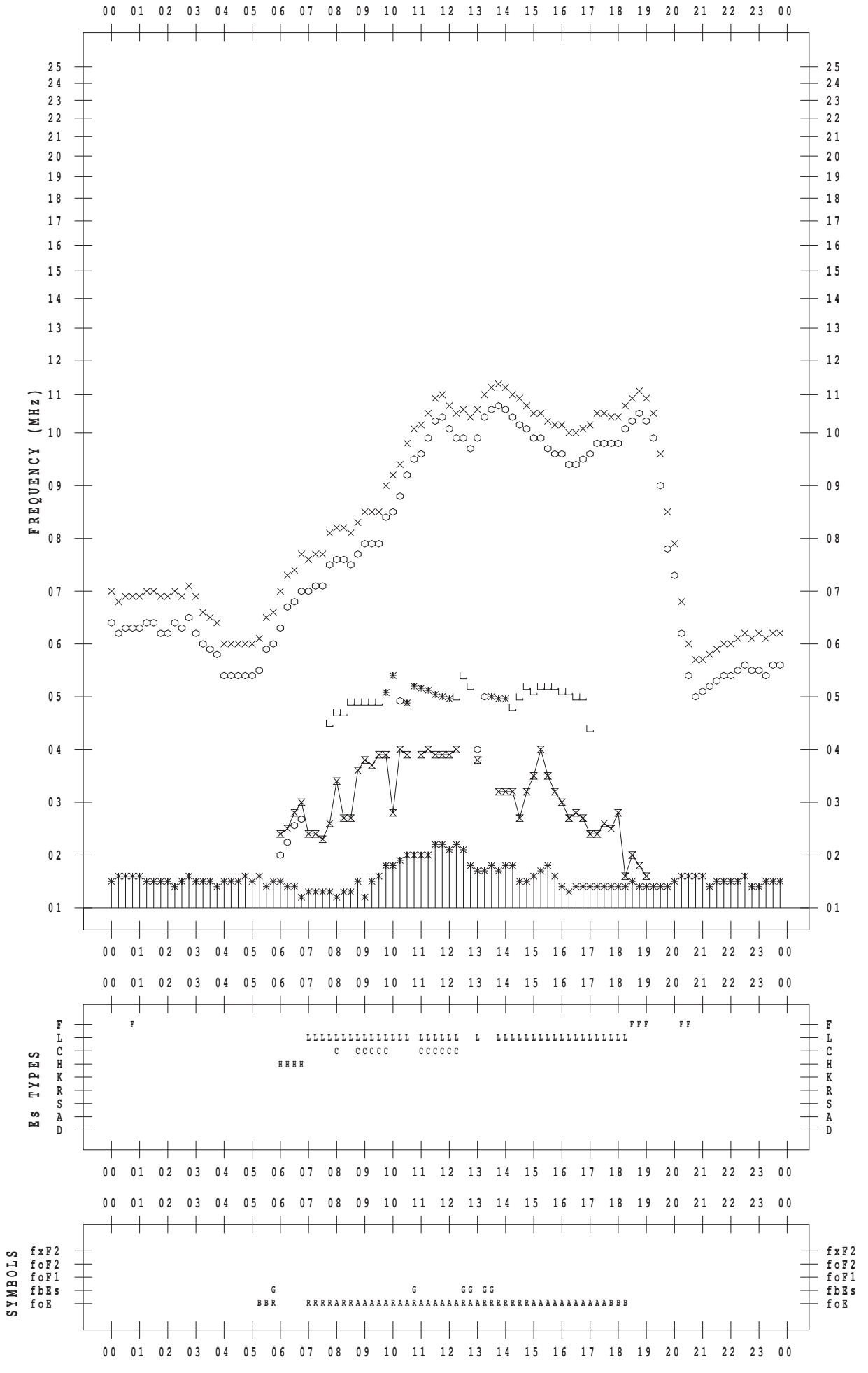
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/12

135 °E MEAN TIME



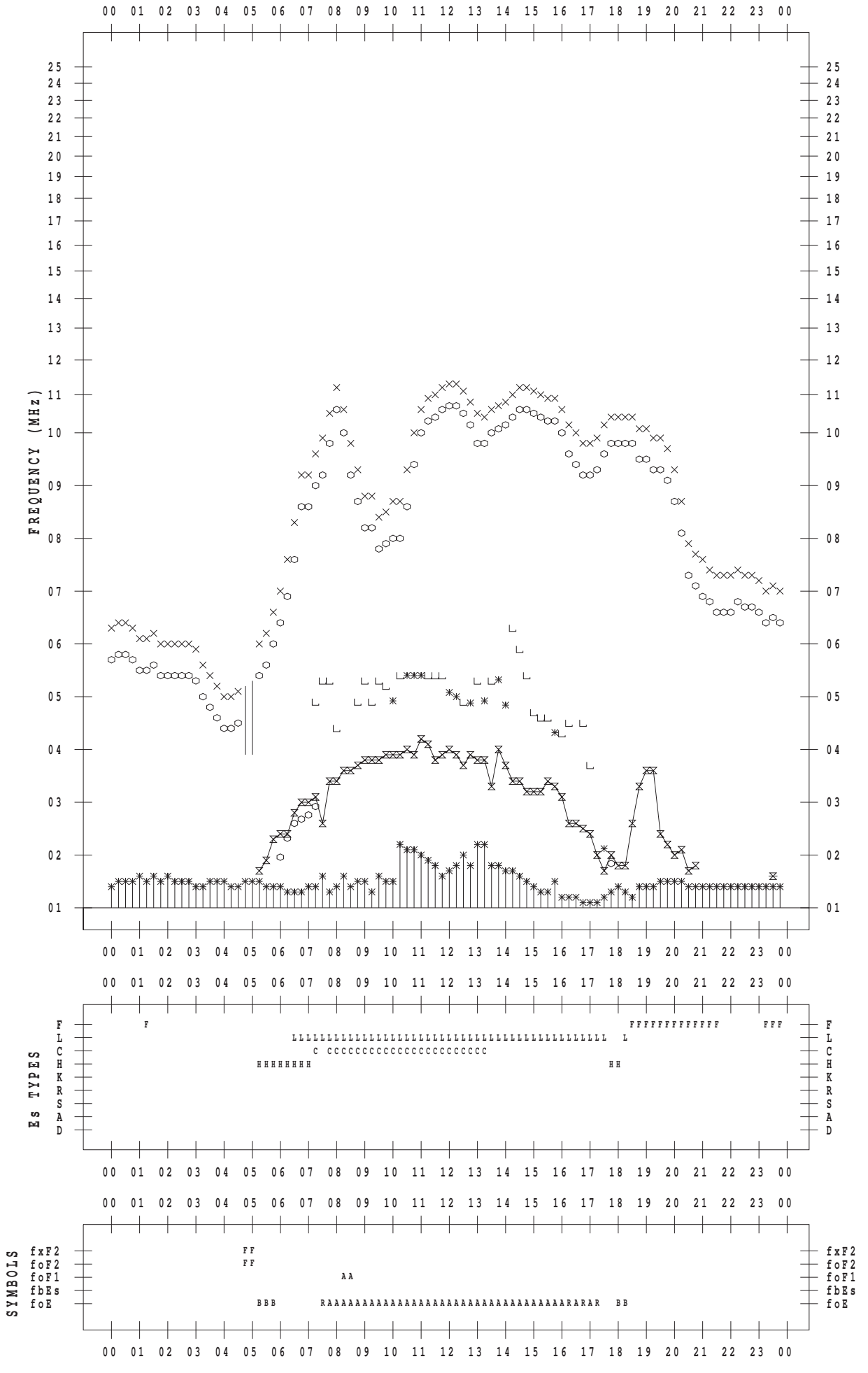
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/13

135 °E MEAN TIME



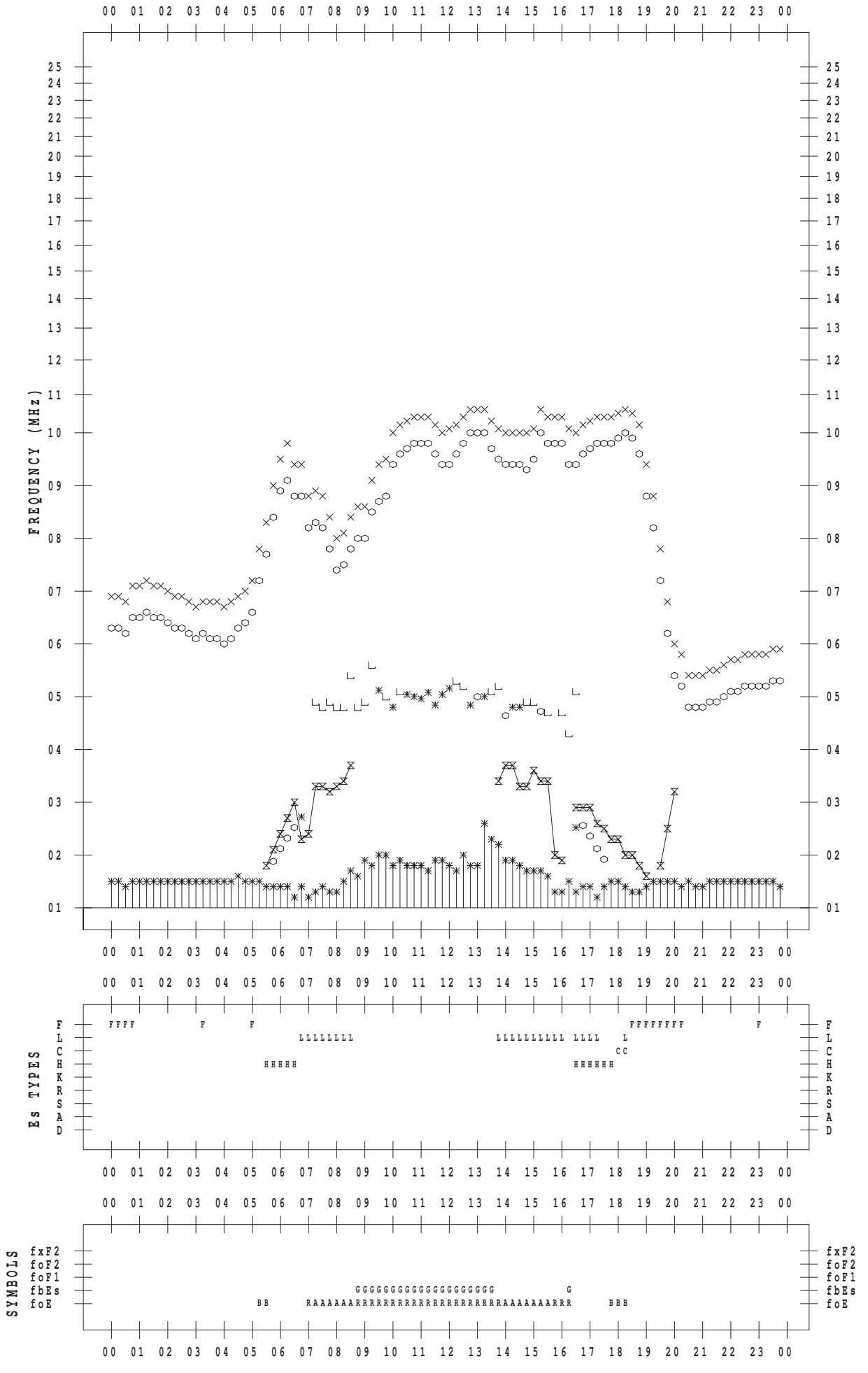
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/14

135 °E MEAN TIME



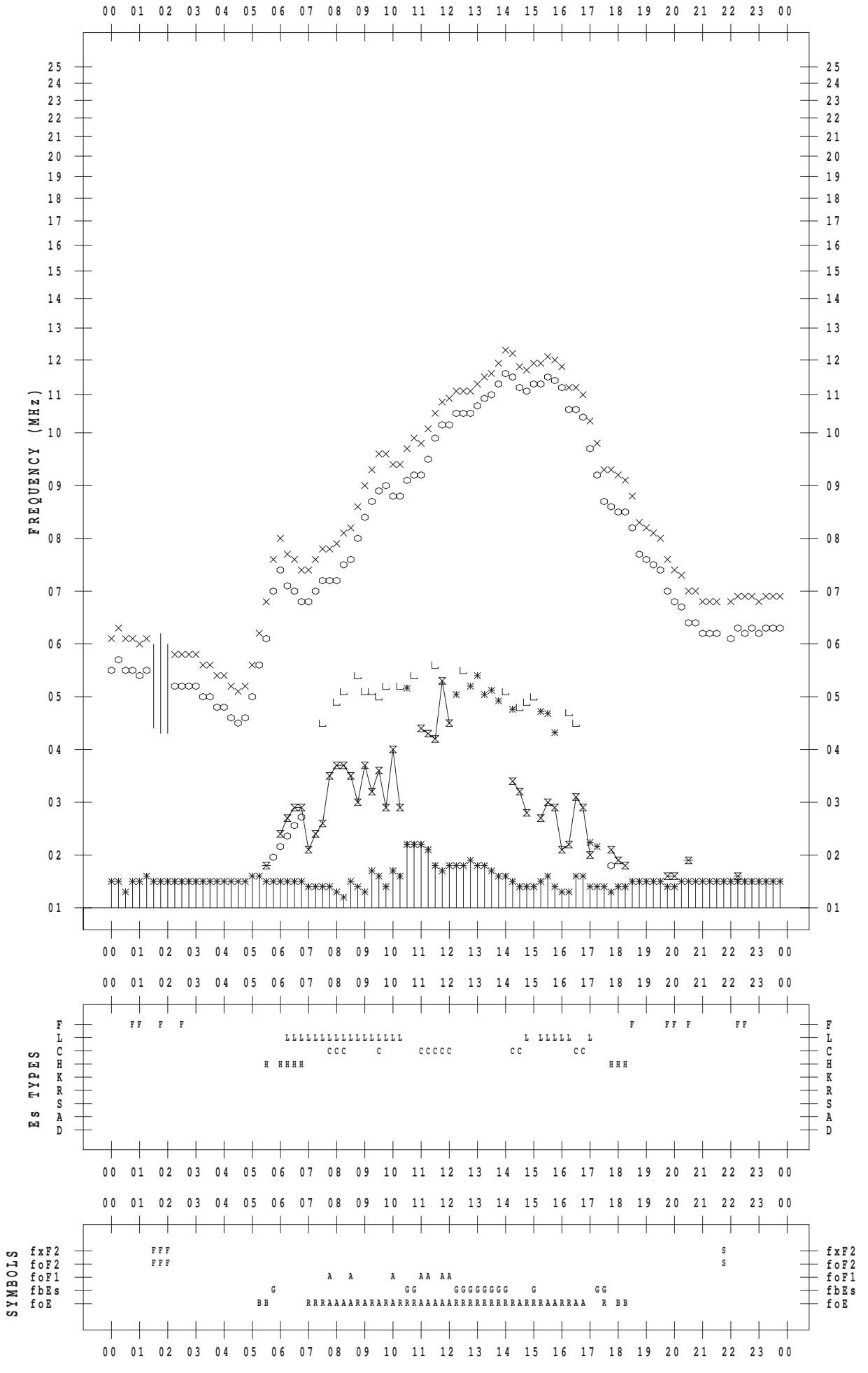
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/15

135 °E MEAN TIME



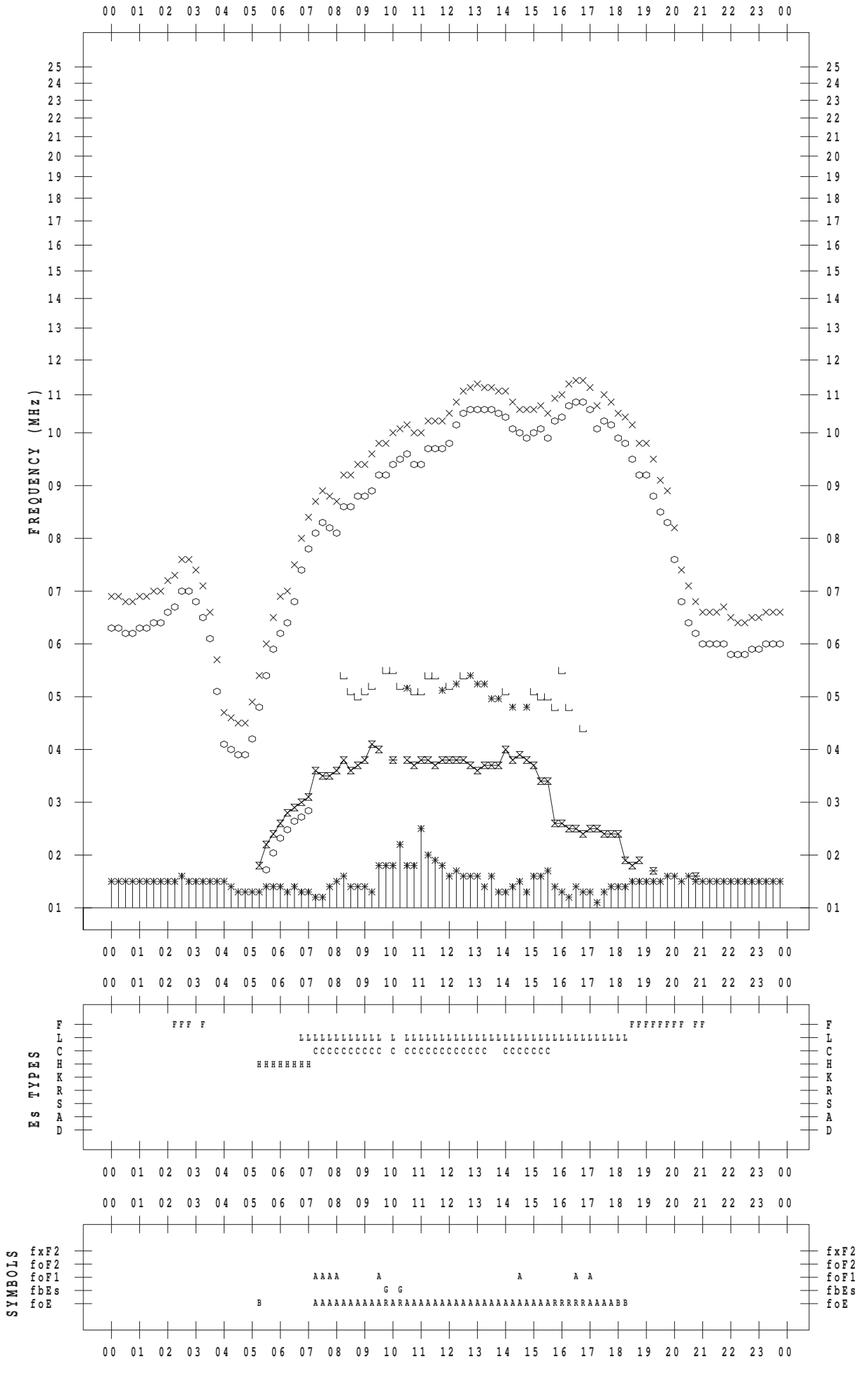
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/16

135 °E MEAN TIME



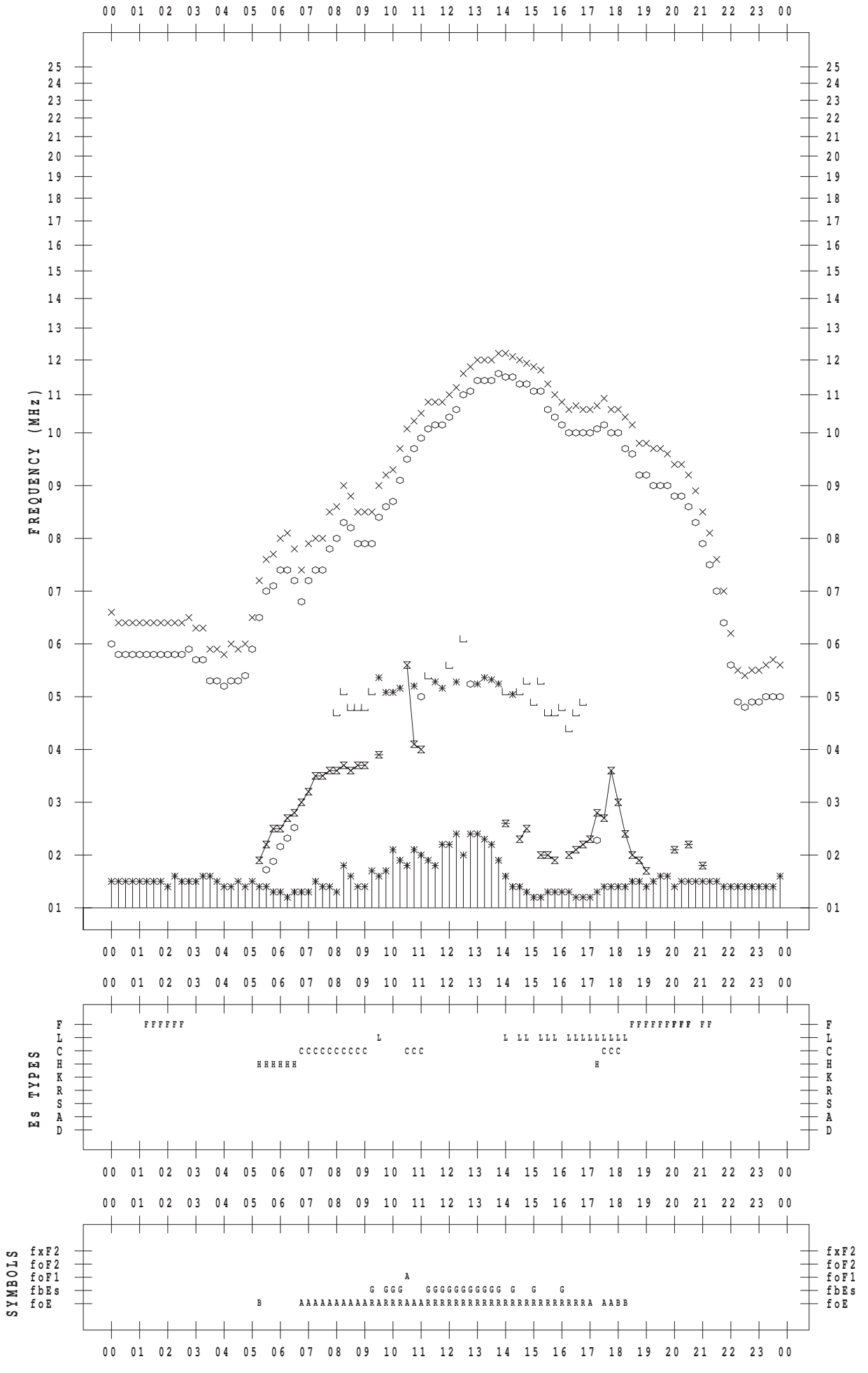
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/17

135 °E MEAN TIME



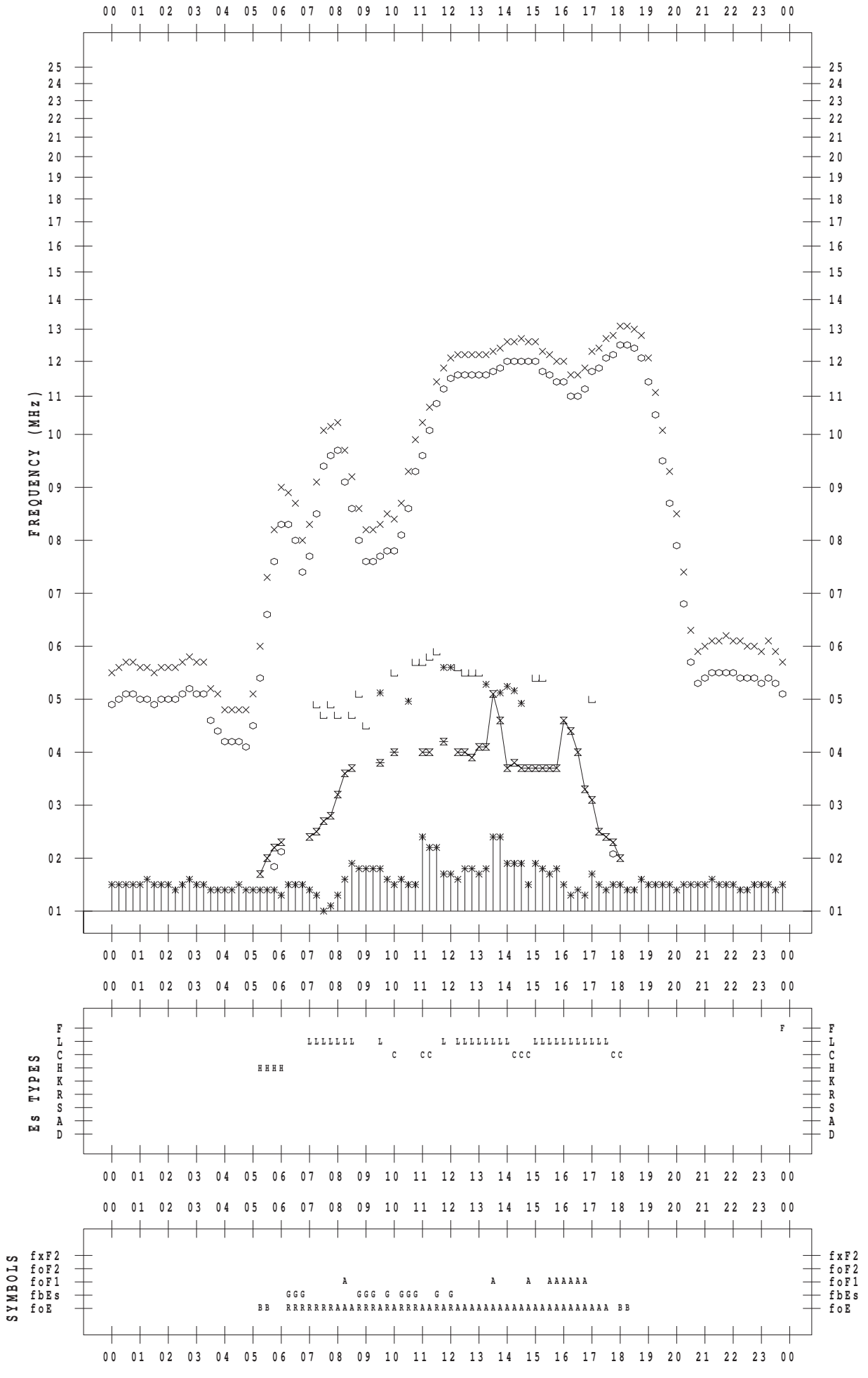
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/18

135 °E MEAN TIME



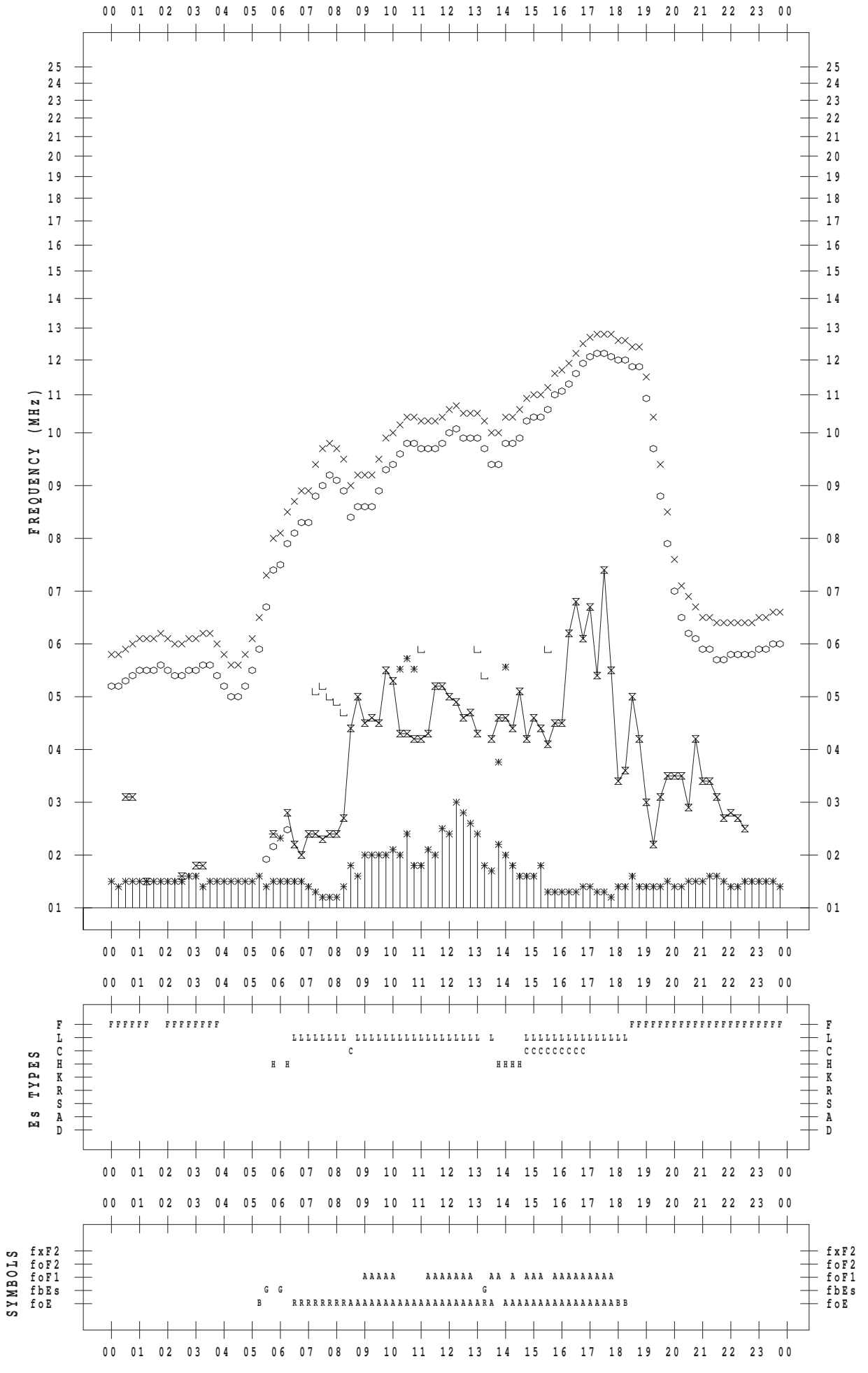
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/19

135 °E MEAN TIME



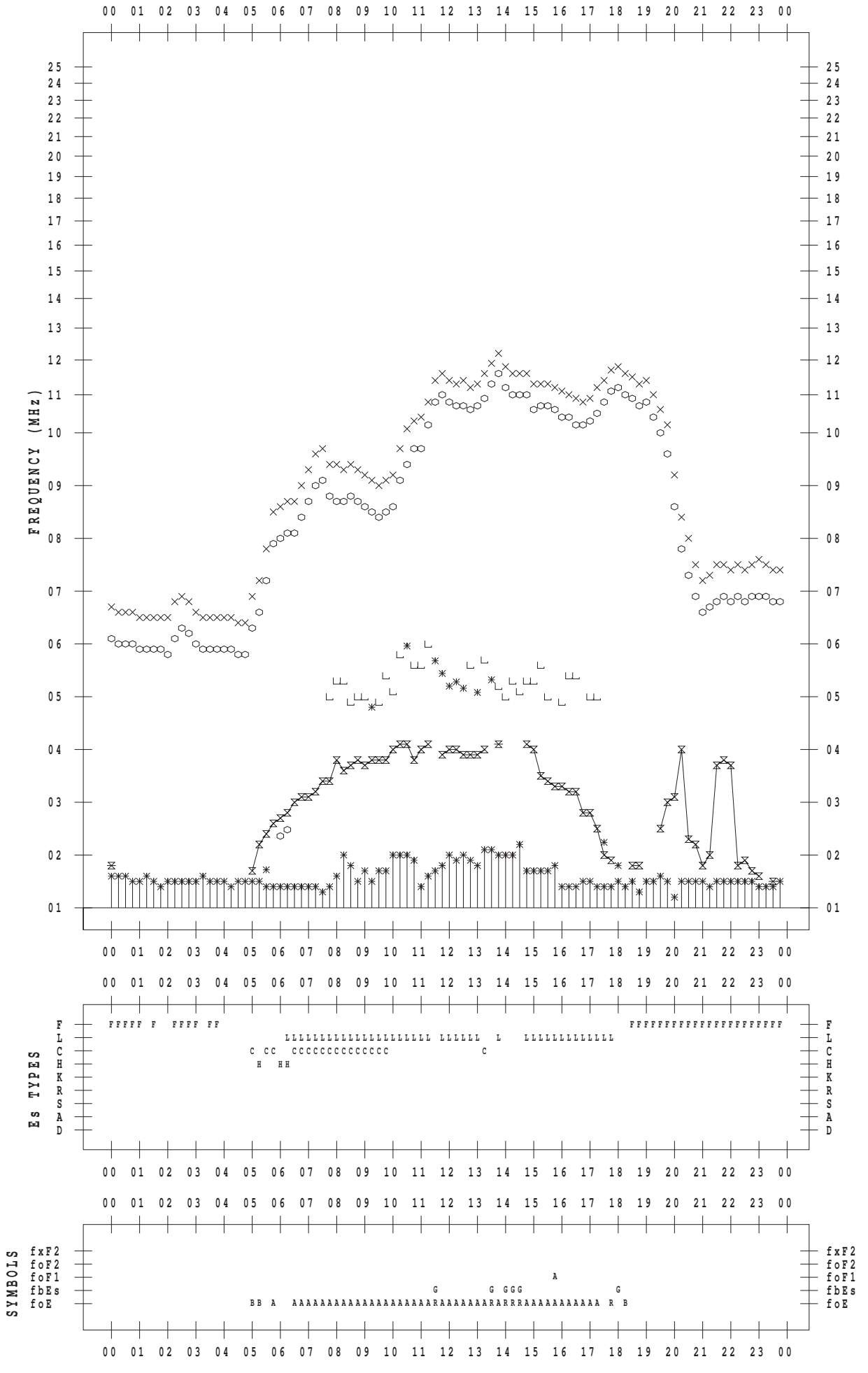
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/20

135 °E MEAN TIME



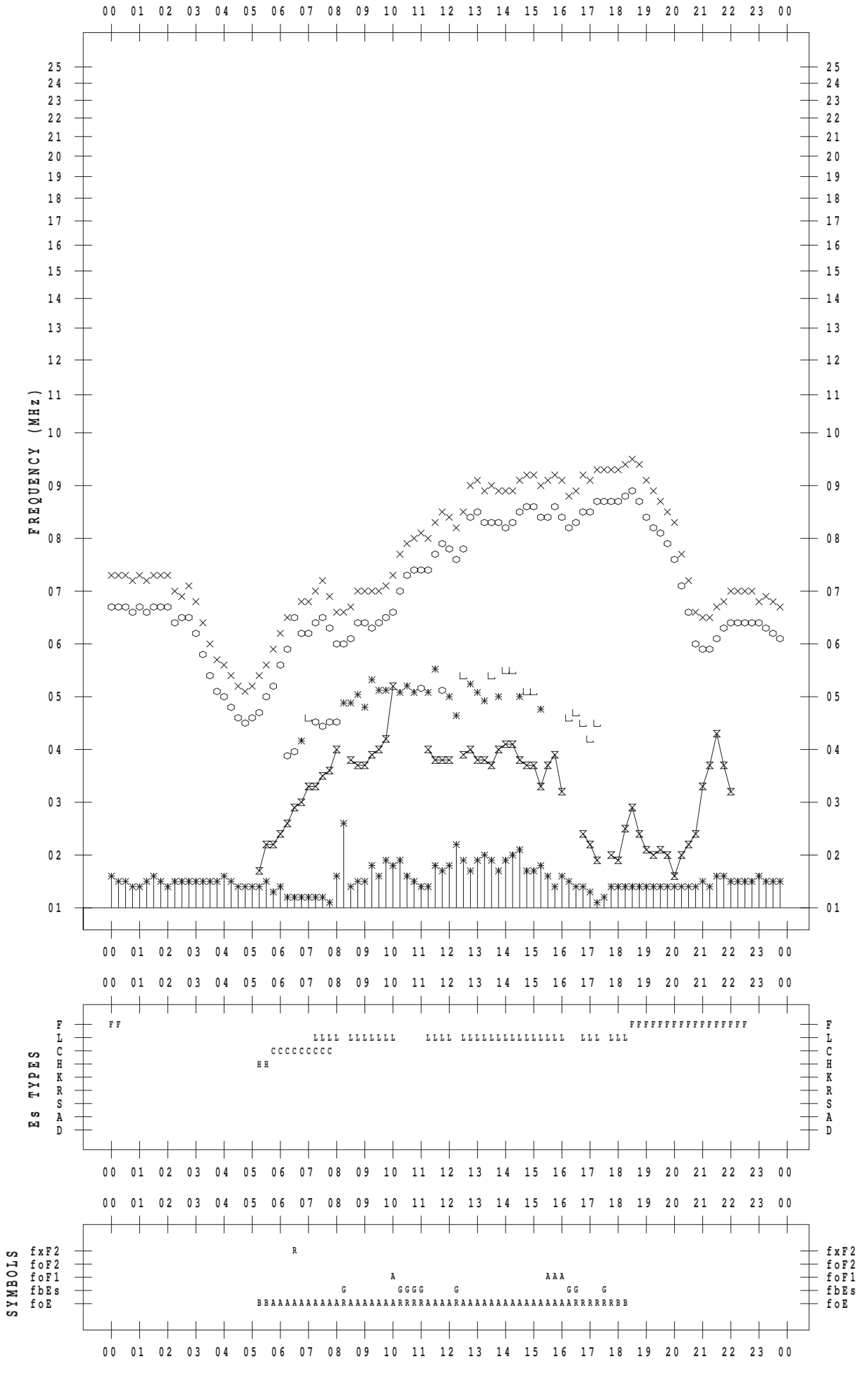
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/21

135 °E MEAN TIME



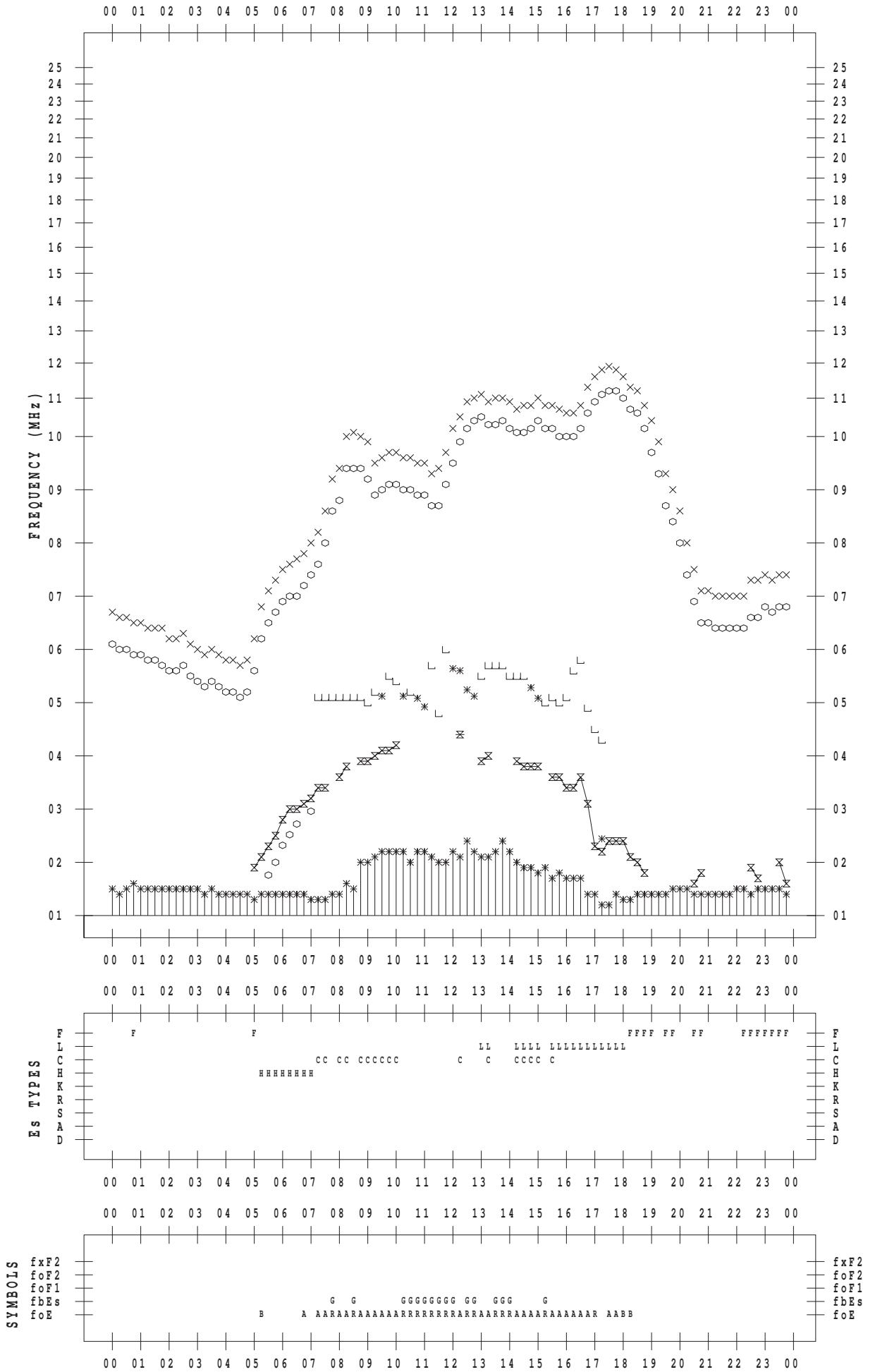
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/22

135 °E MEAN TIME



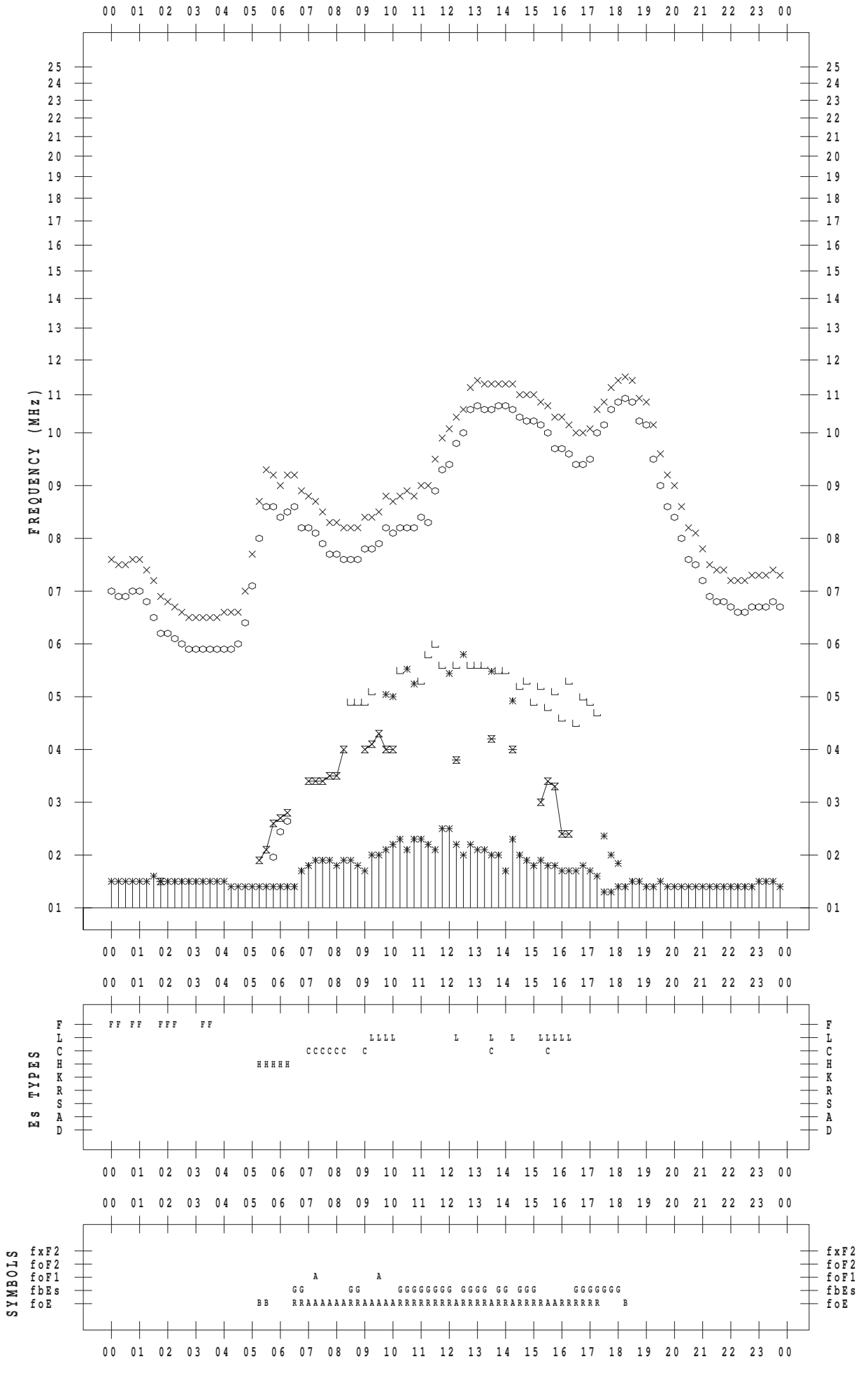
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/23

135 °E MEAN TIME



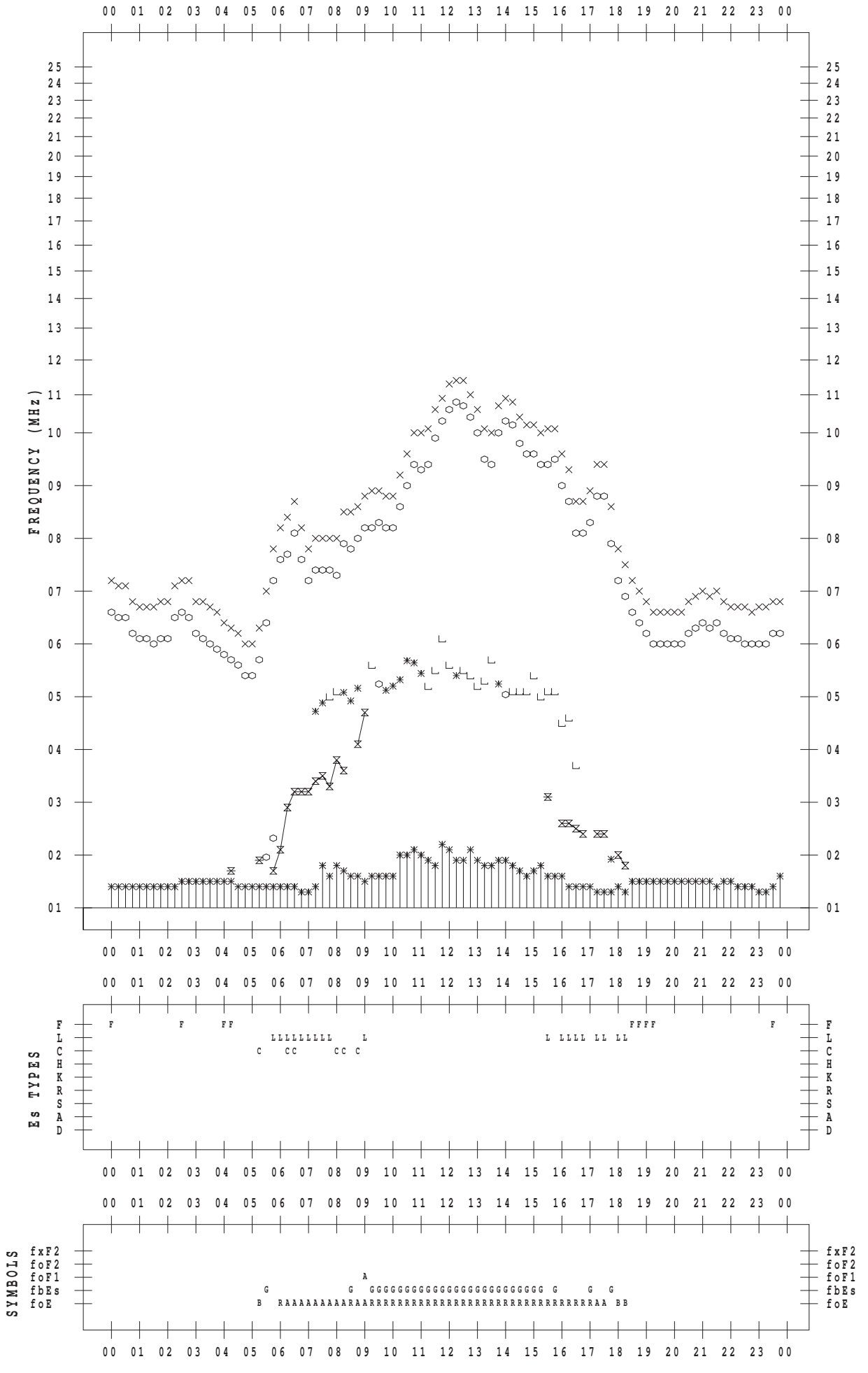
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/24

135 °E MEAN TIME



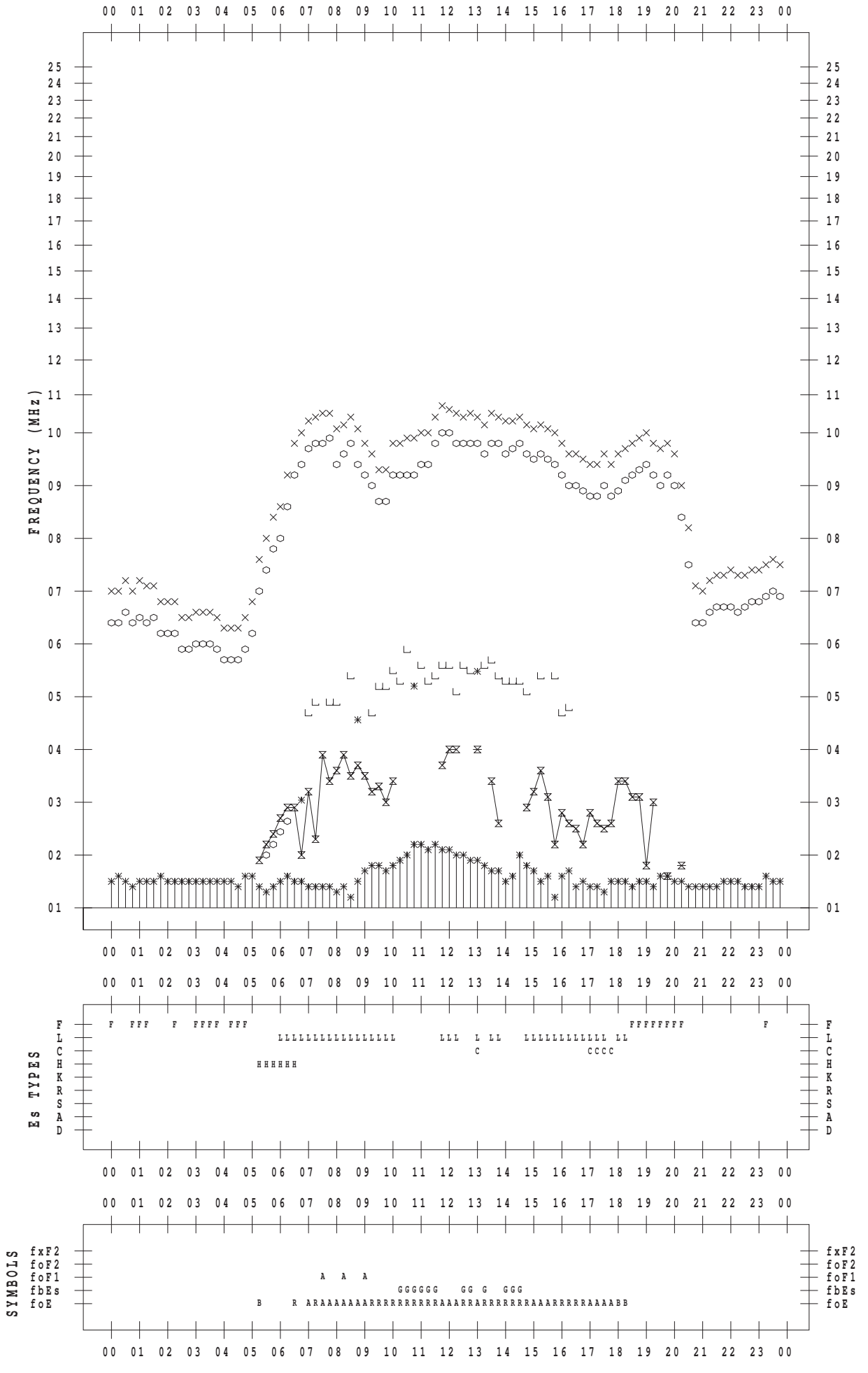
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/25

135 °E MEAN TIME



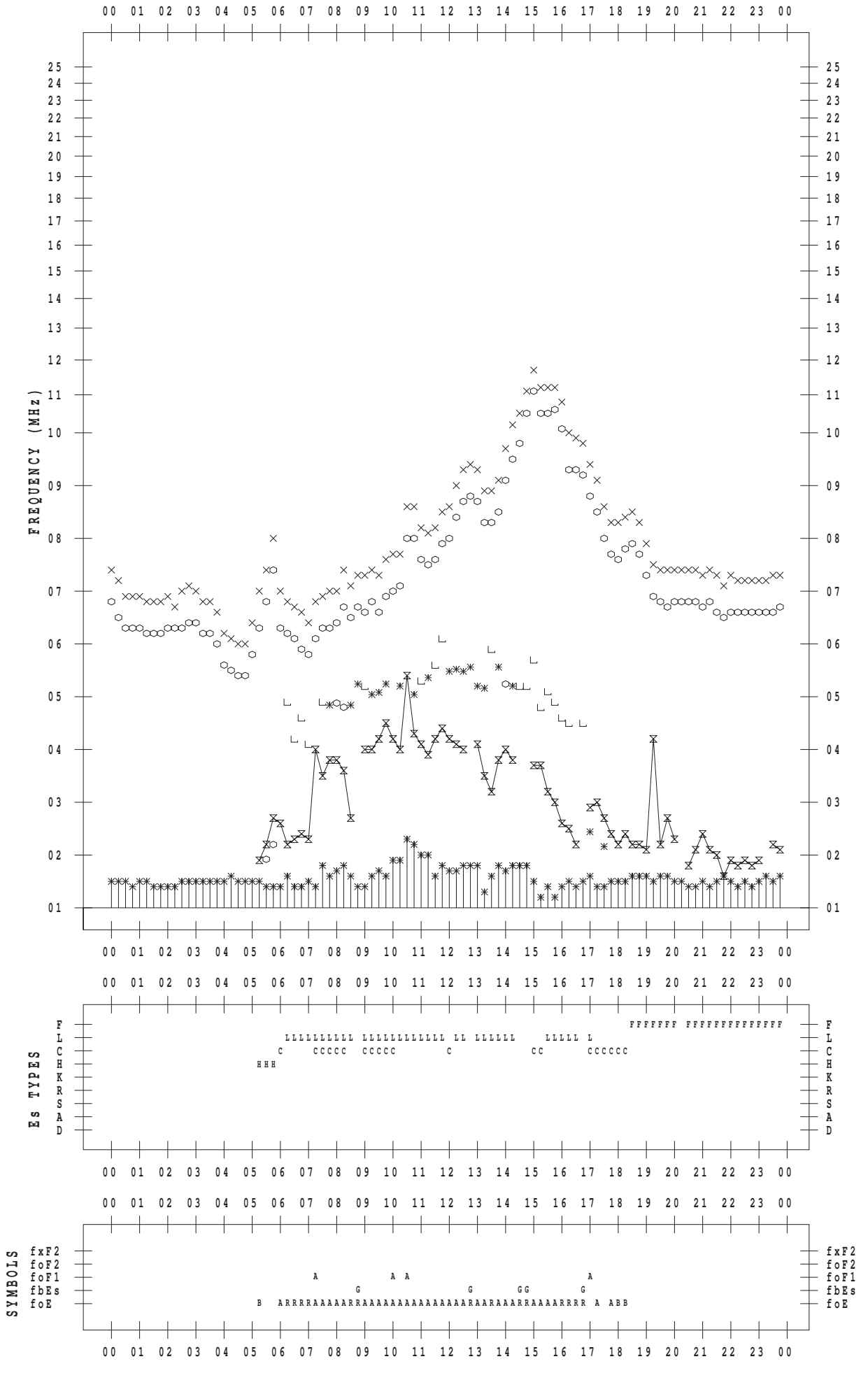
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/26

135 °E MEAN TIME



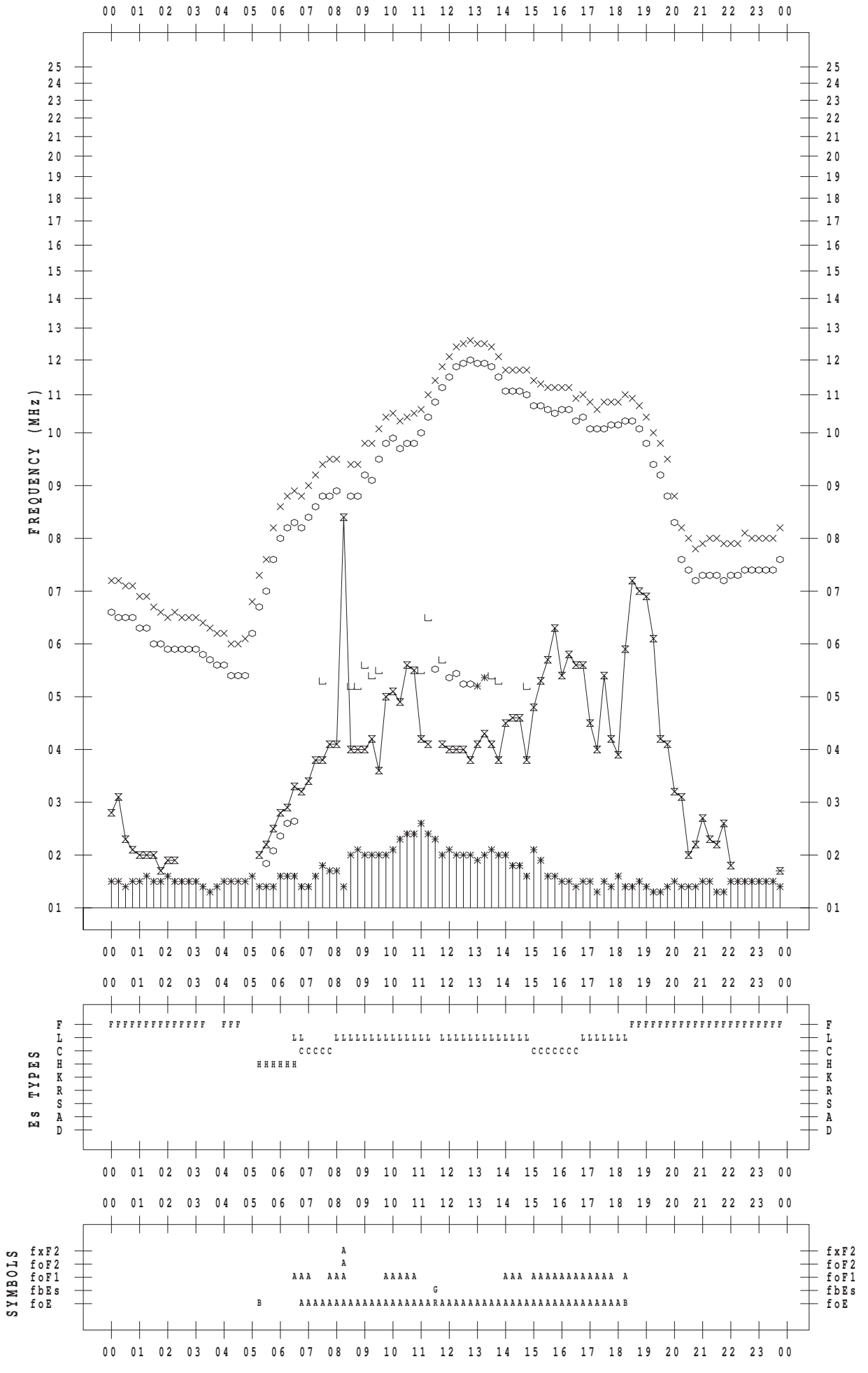
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/27

135 °E MEAN TIME

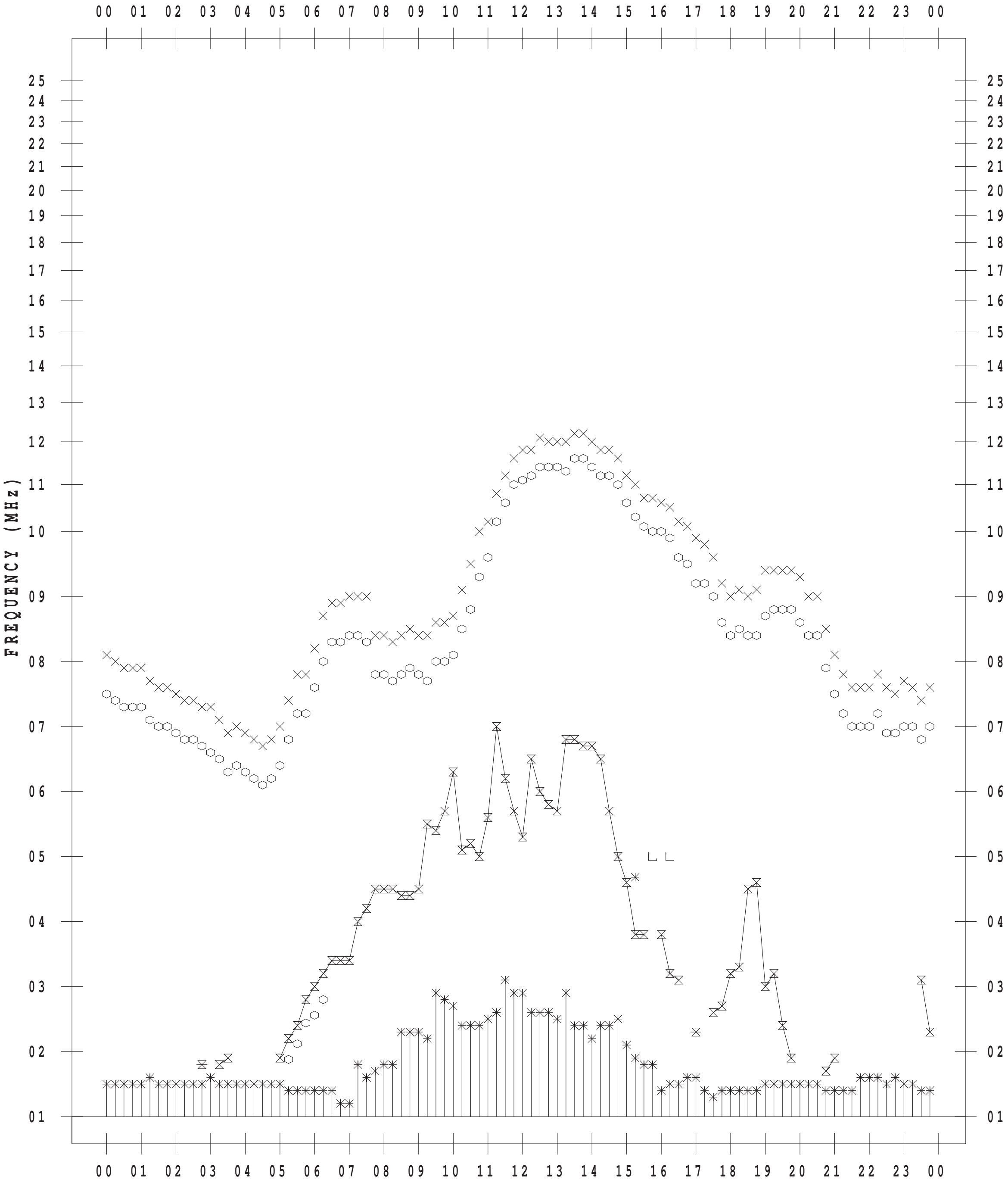


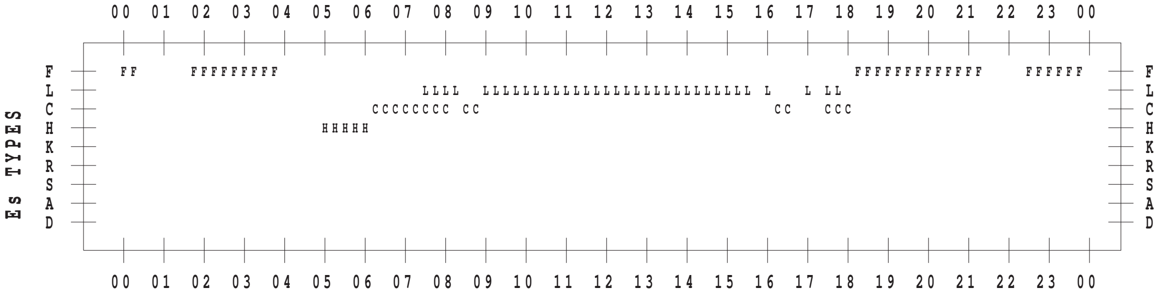
f-PLOT DATA

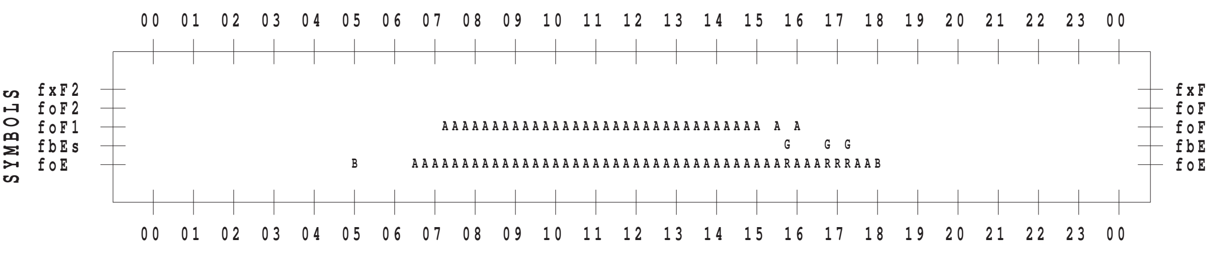
SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2012/ 4/28

135 °E MEAN TIME







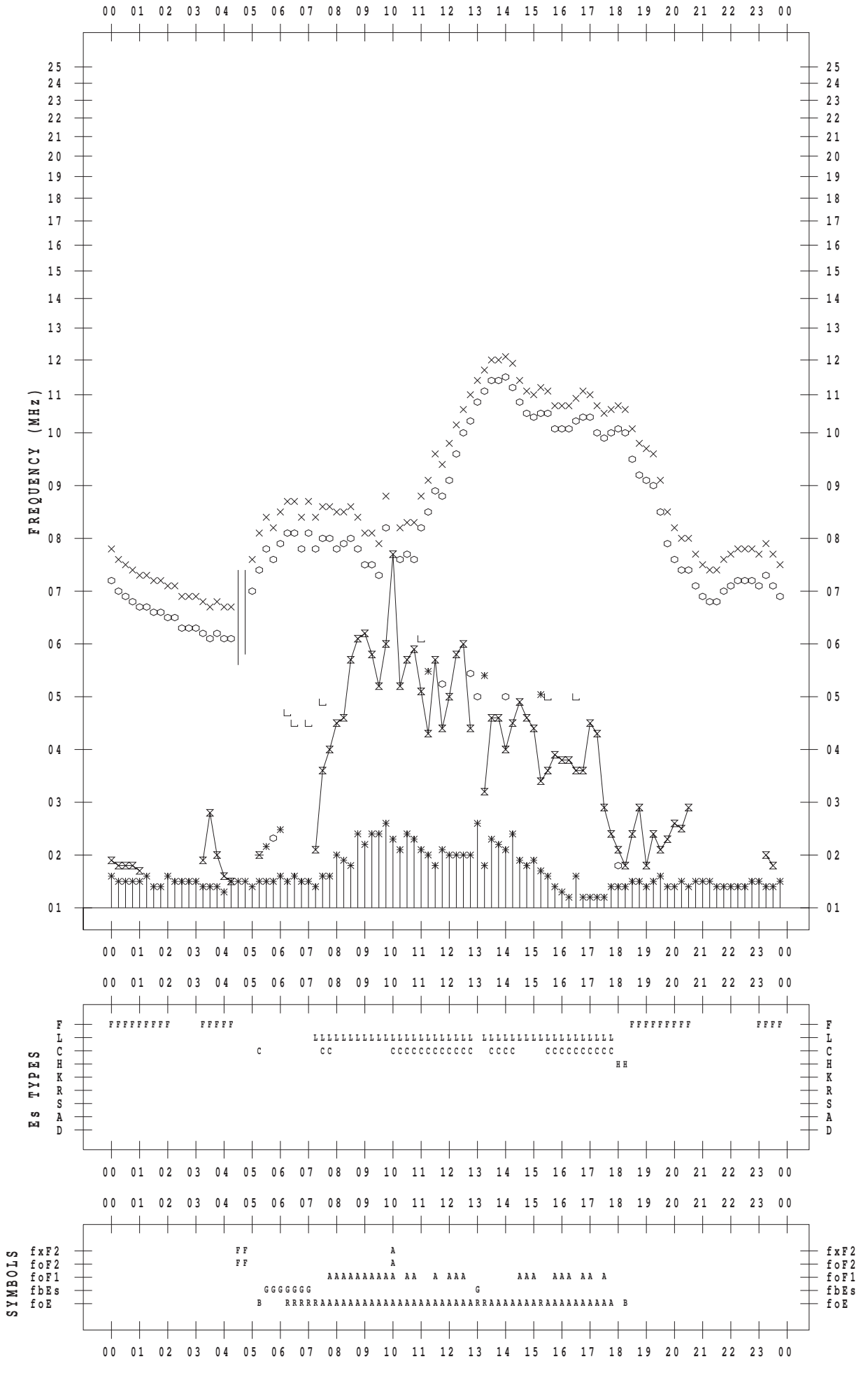
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/29

135 °E MEAN TIME



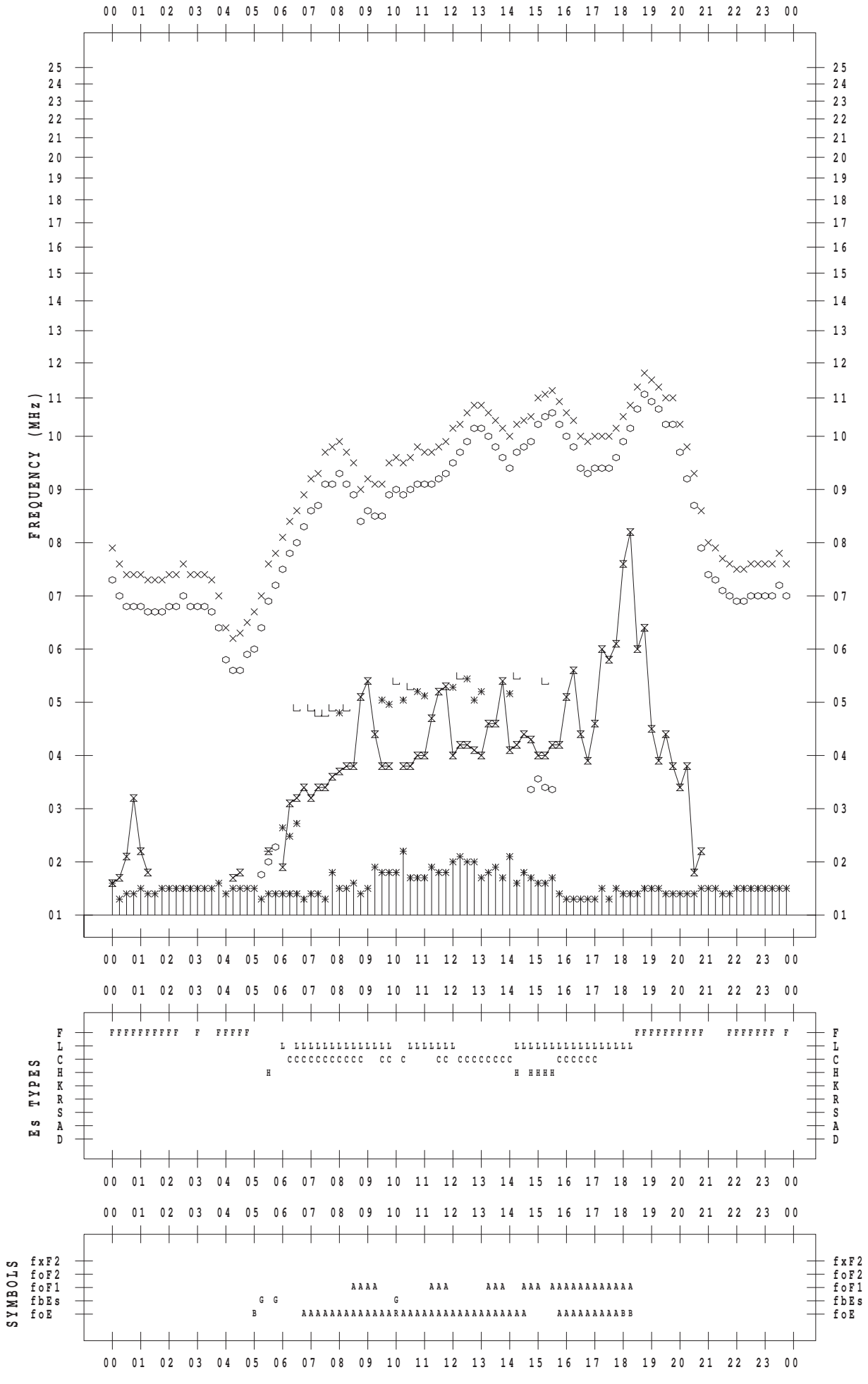
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 4/30

135 °E MEAN TIME



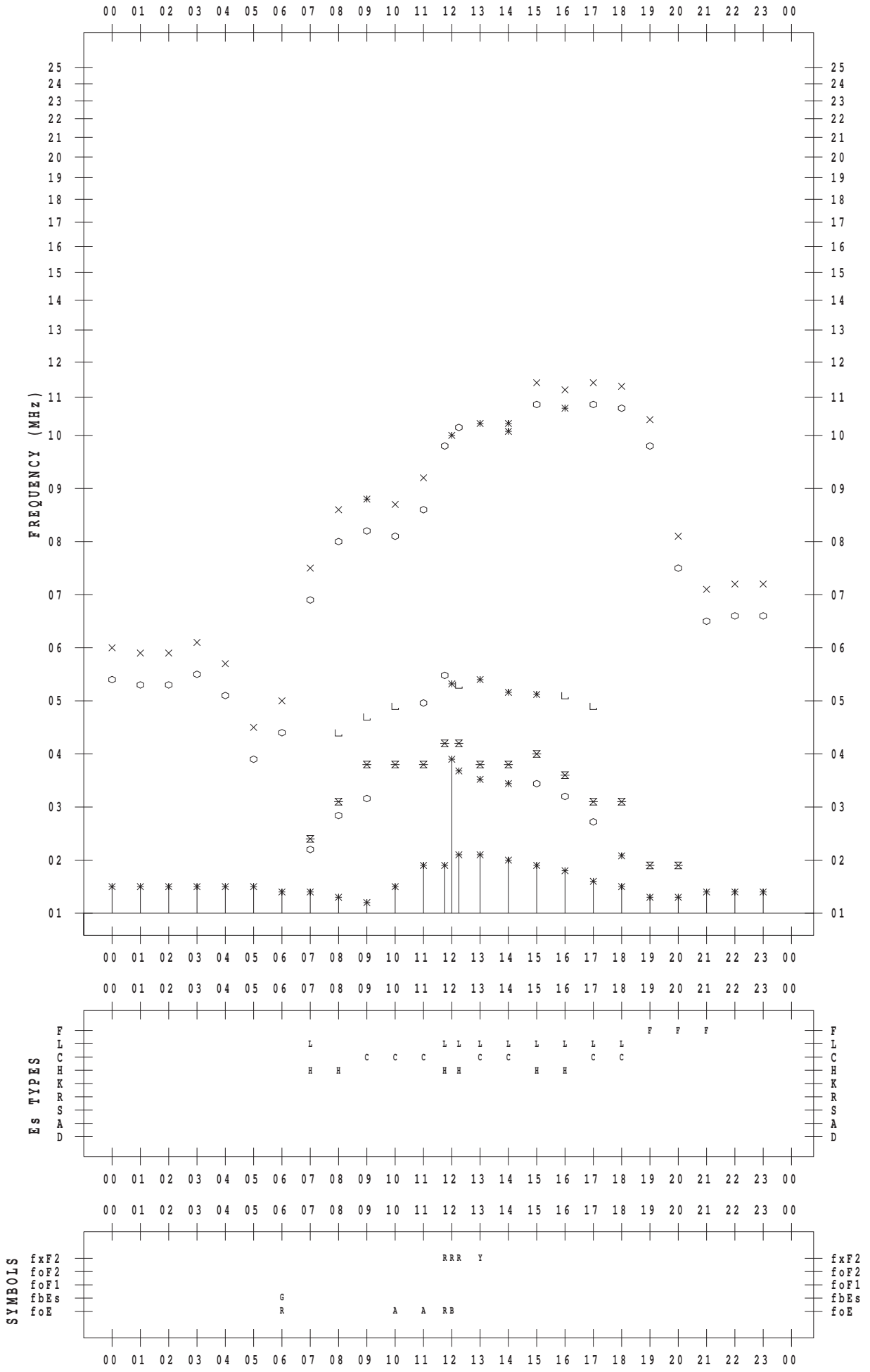
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 1

135 °E MEAN TIME



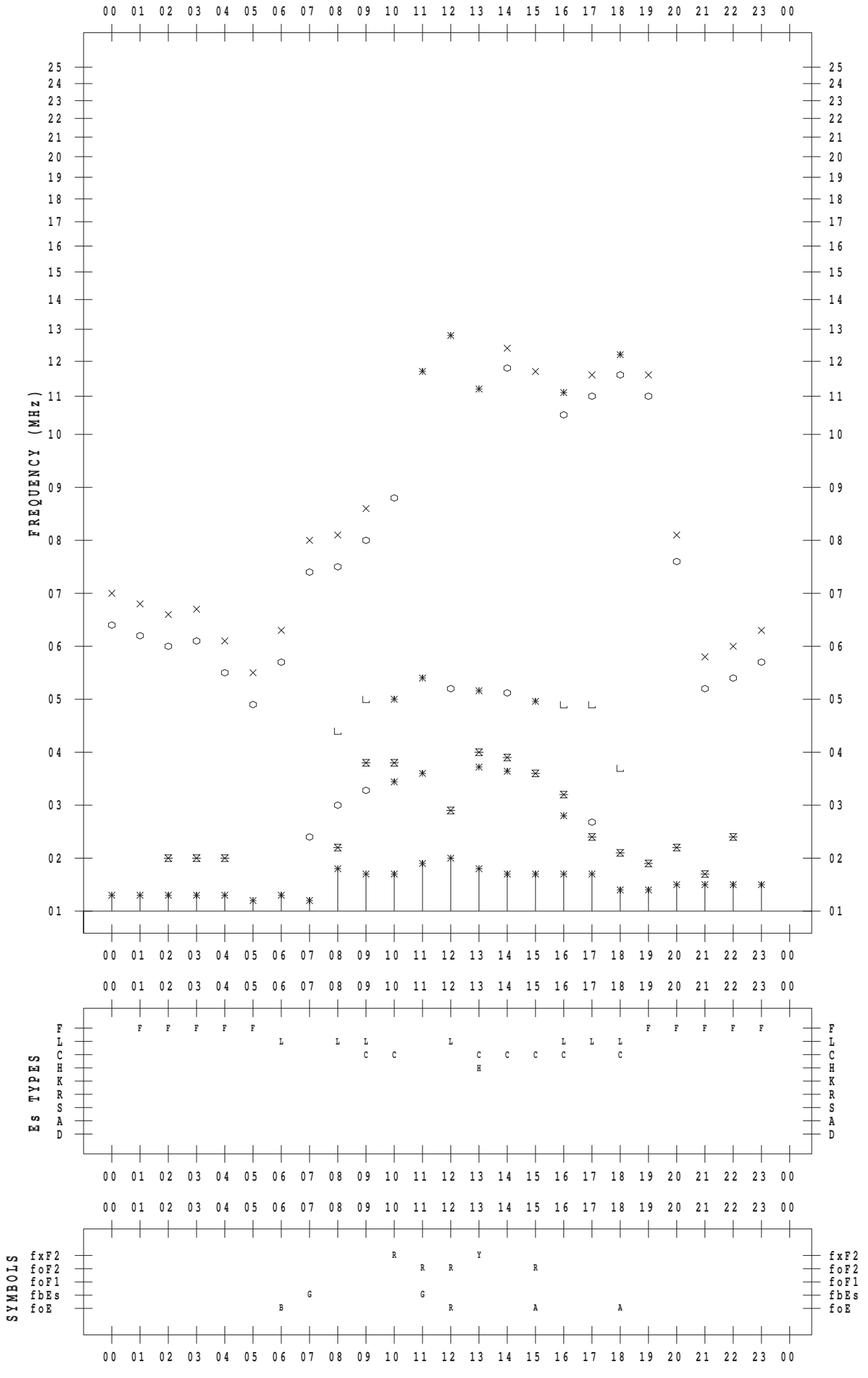
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 2

135 °E MEAN TIME



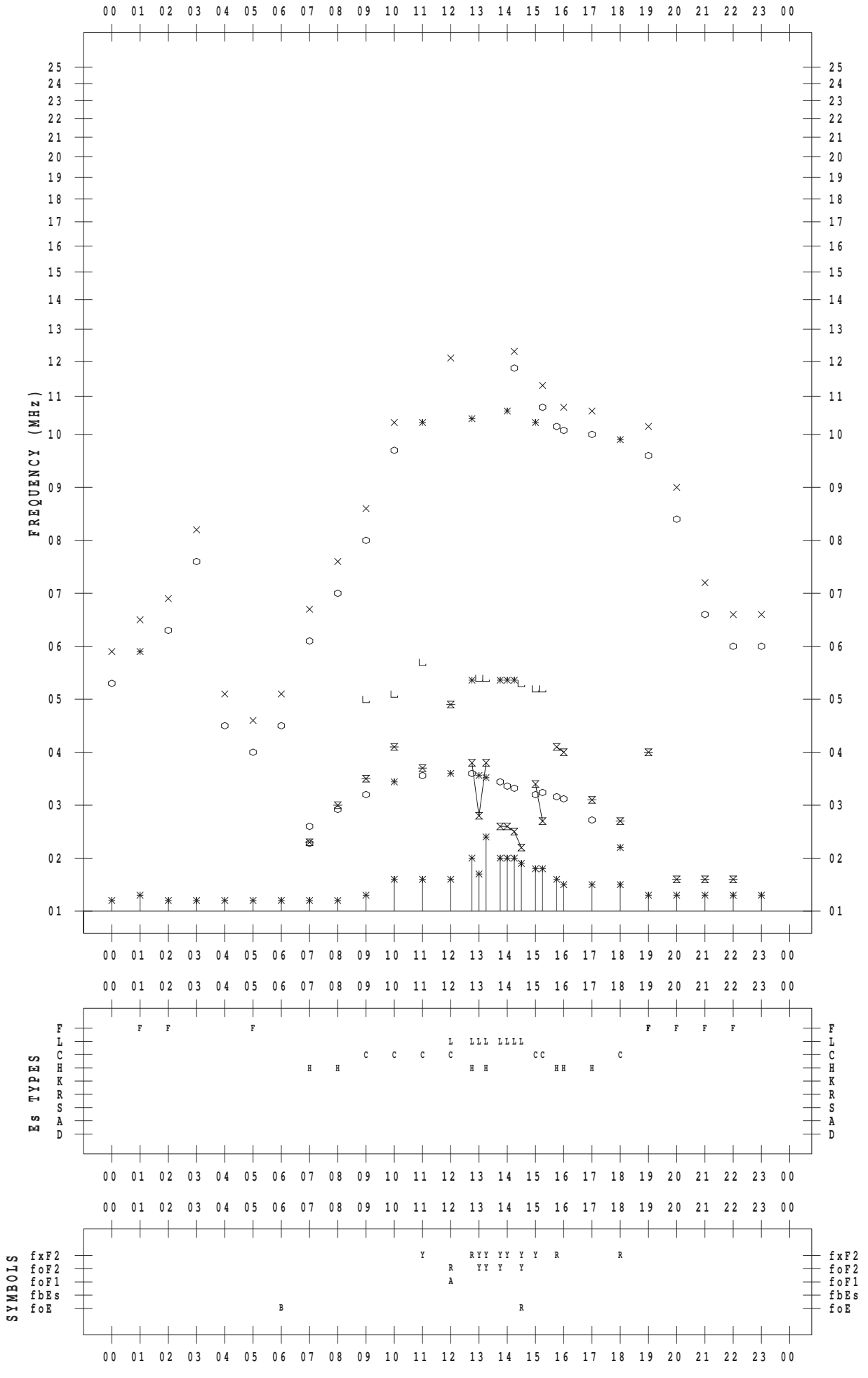
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 3

135 °E MEAN TIME



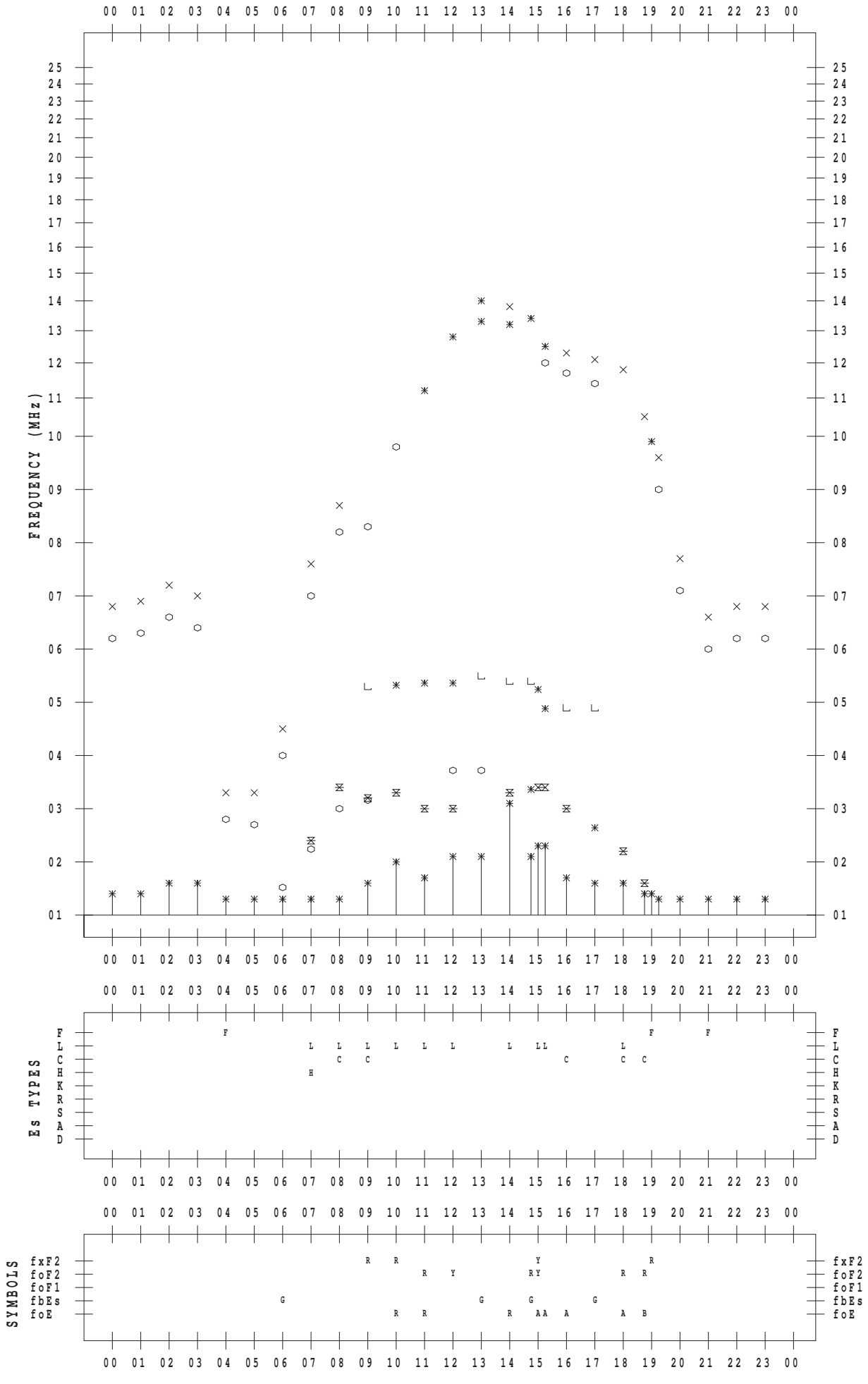
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 4

135 °E MEAN TIME



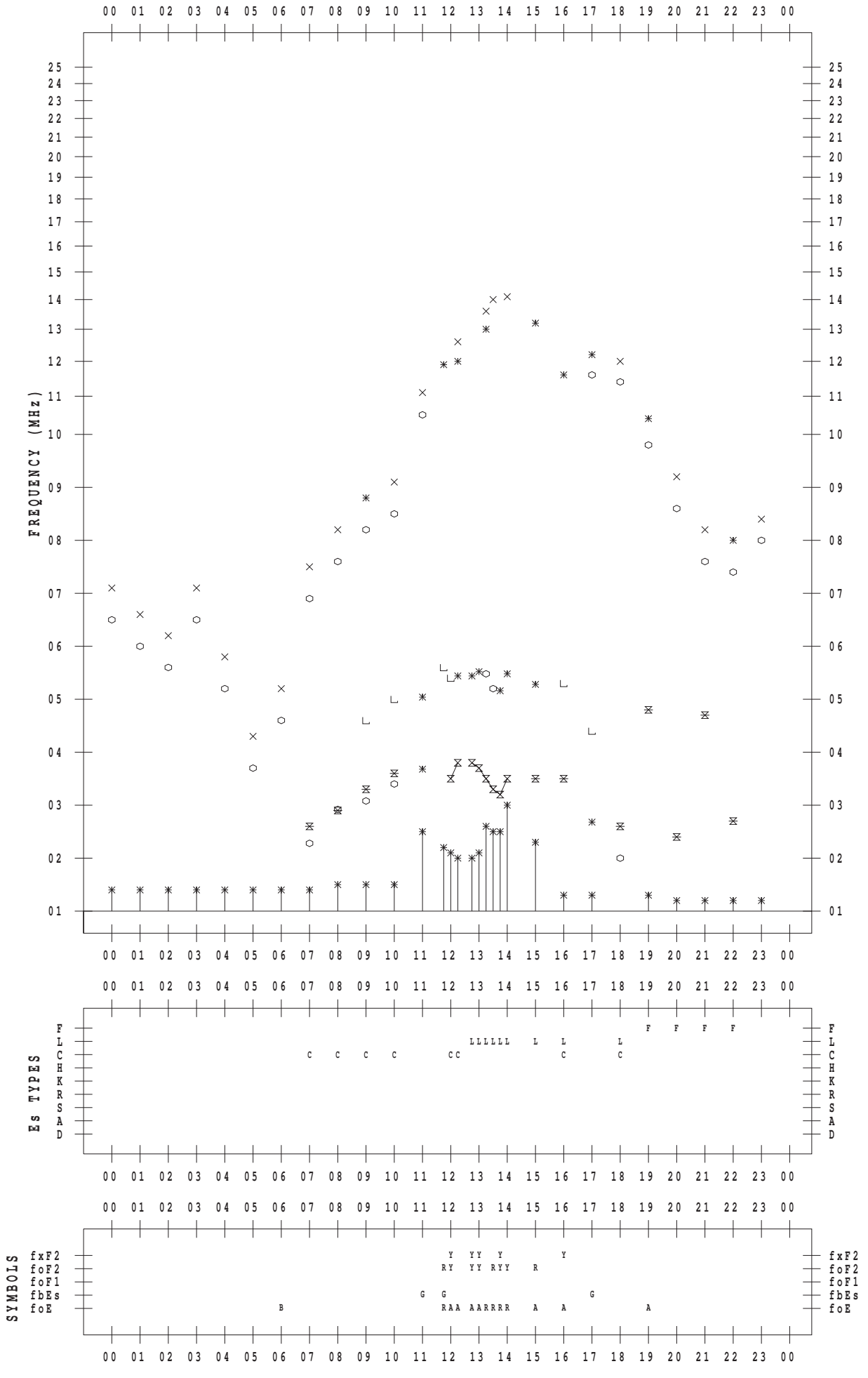
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 5

135 °E MEAN TIME



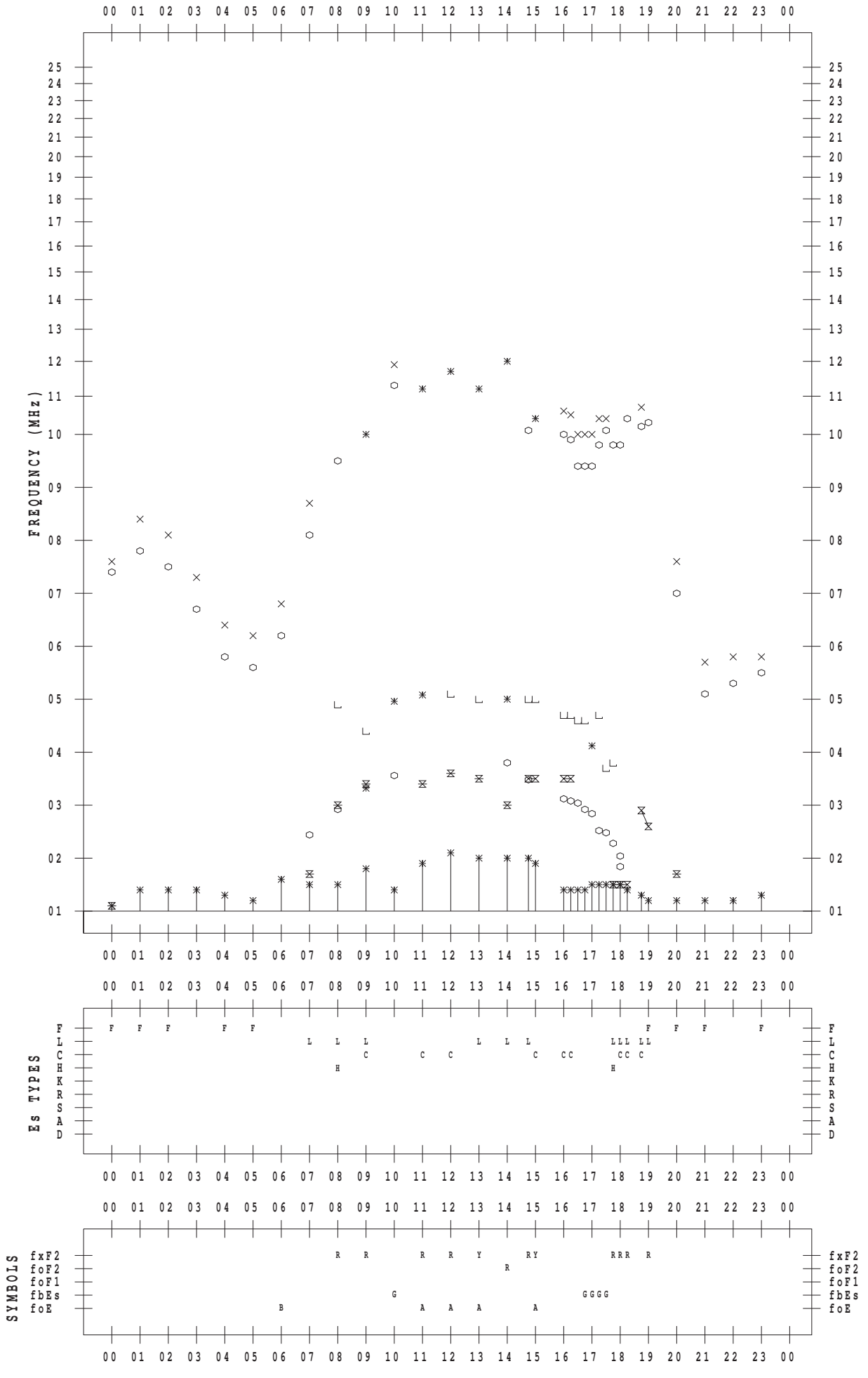
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 6

135 °E MEAN TIME



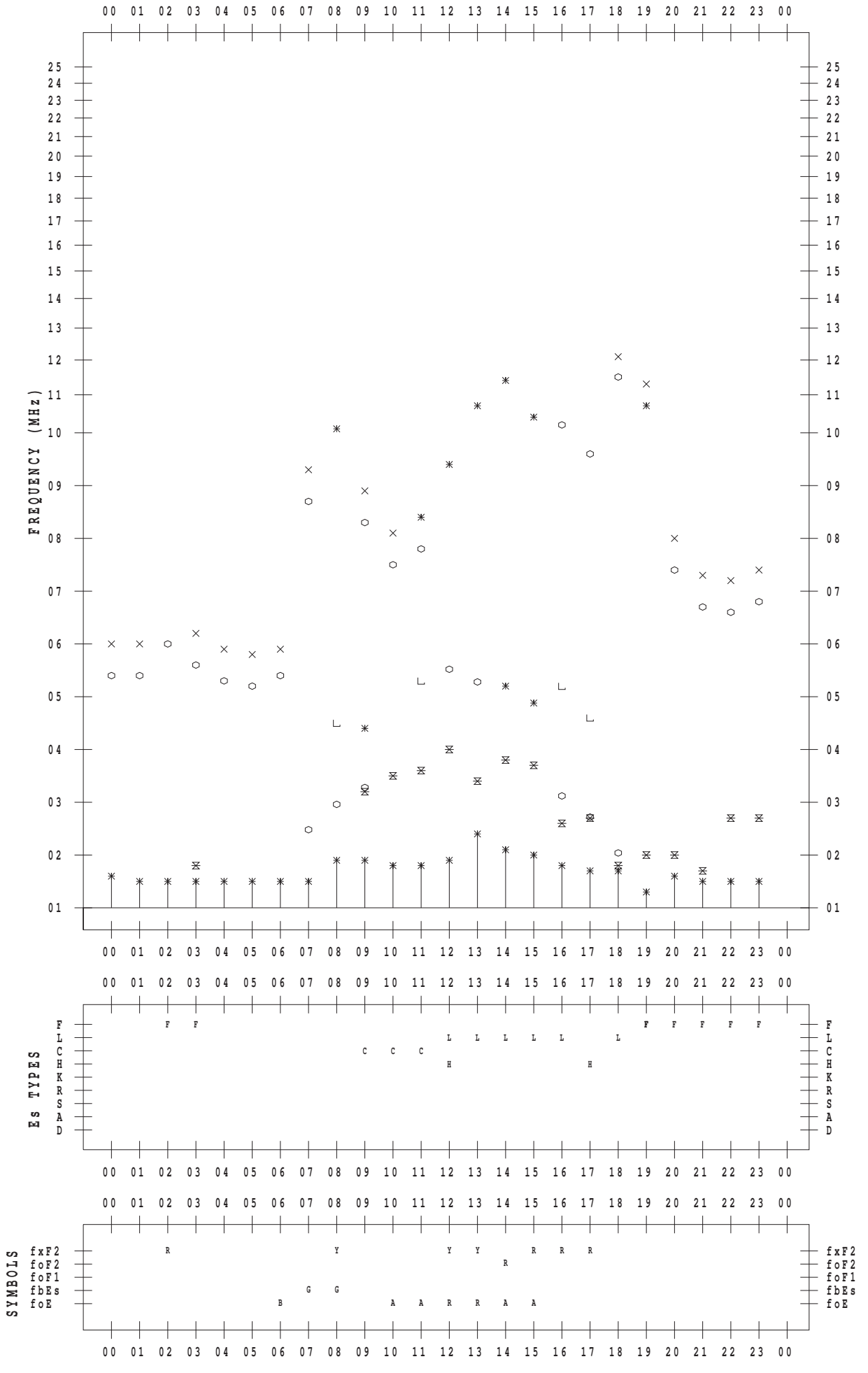
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 7

135 °E MEAN TIME



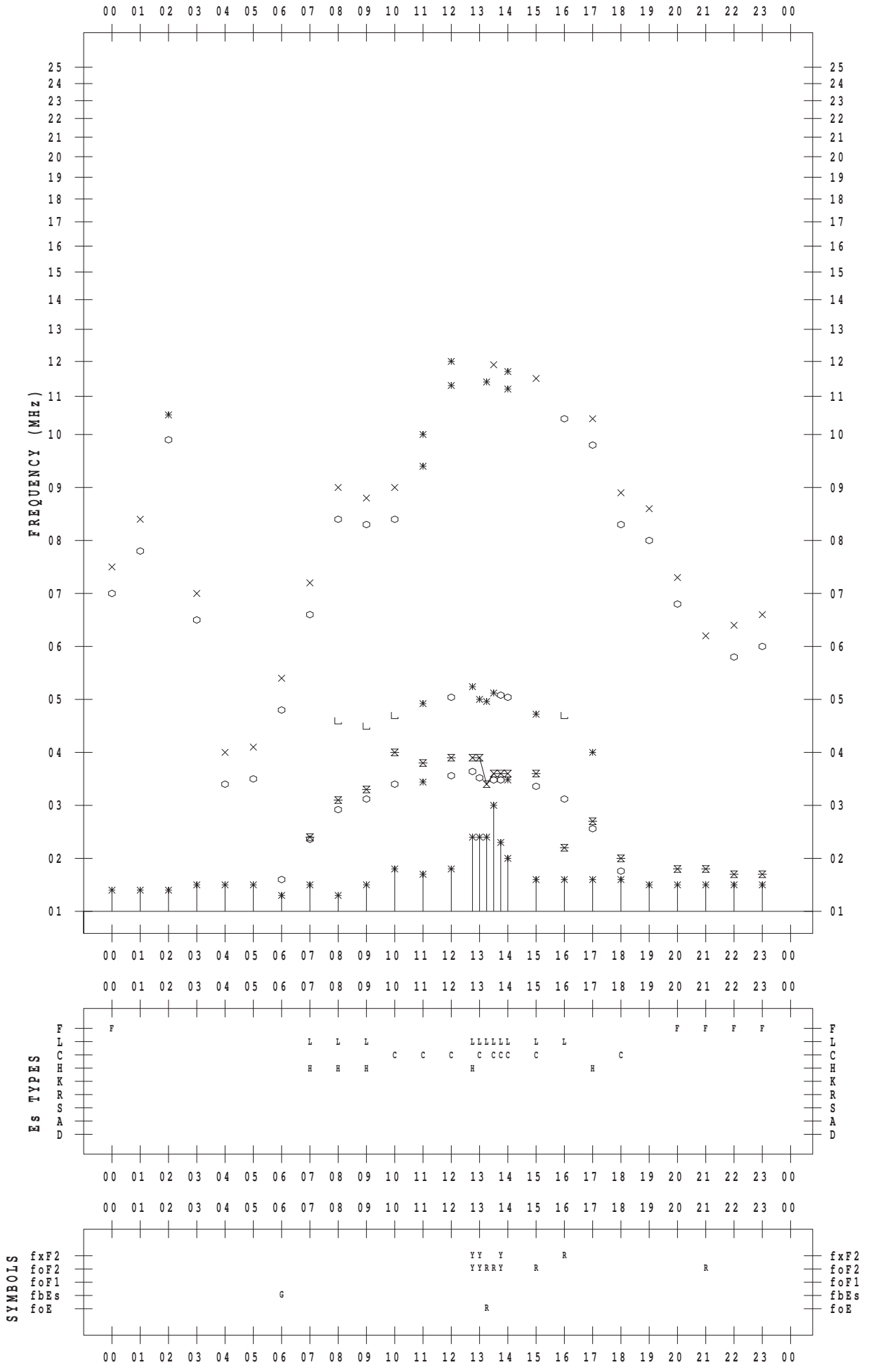
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 8

135 °E MEAN TIME



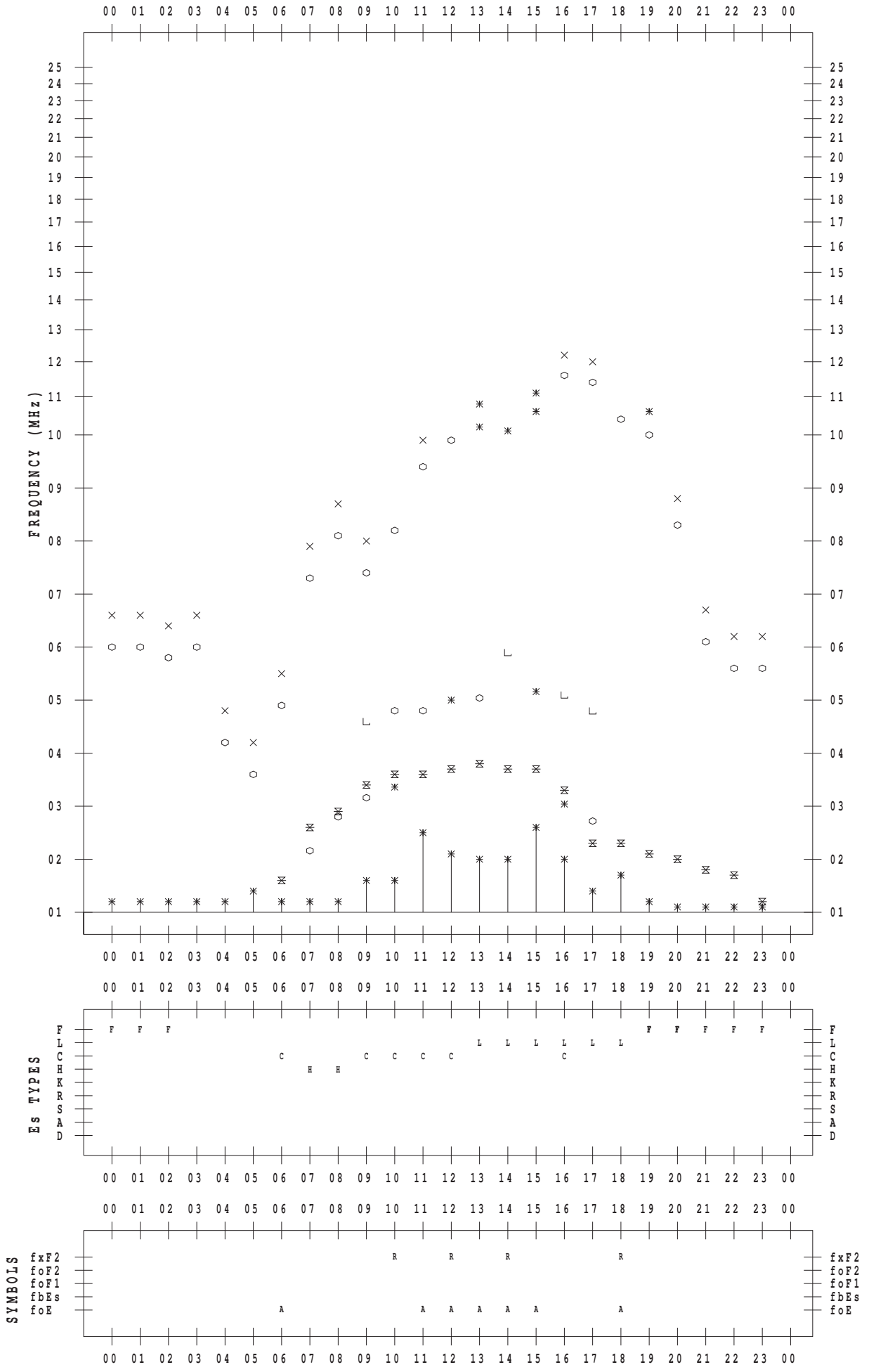
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/ 9

135 °E MEAN TIME



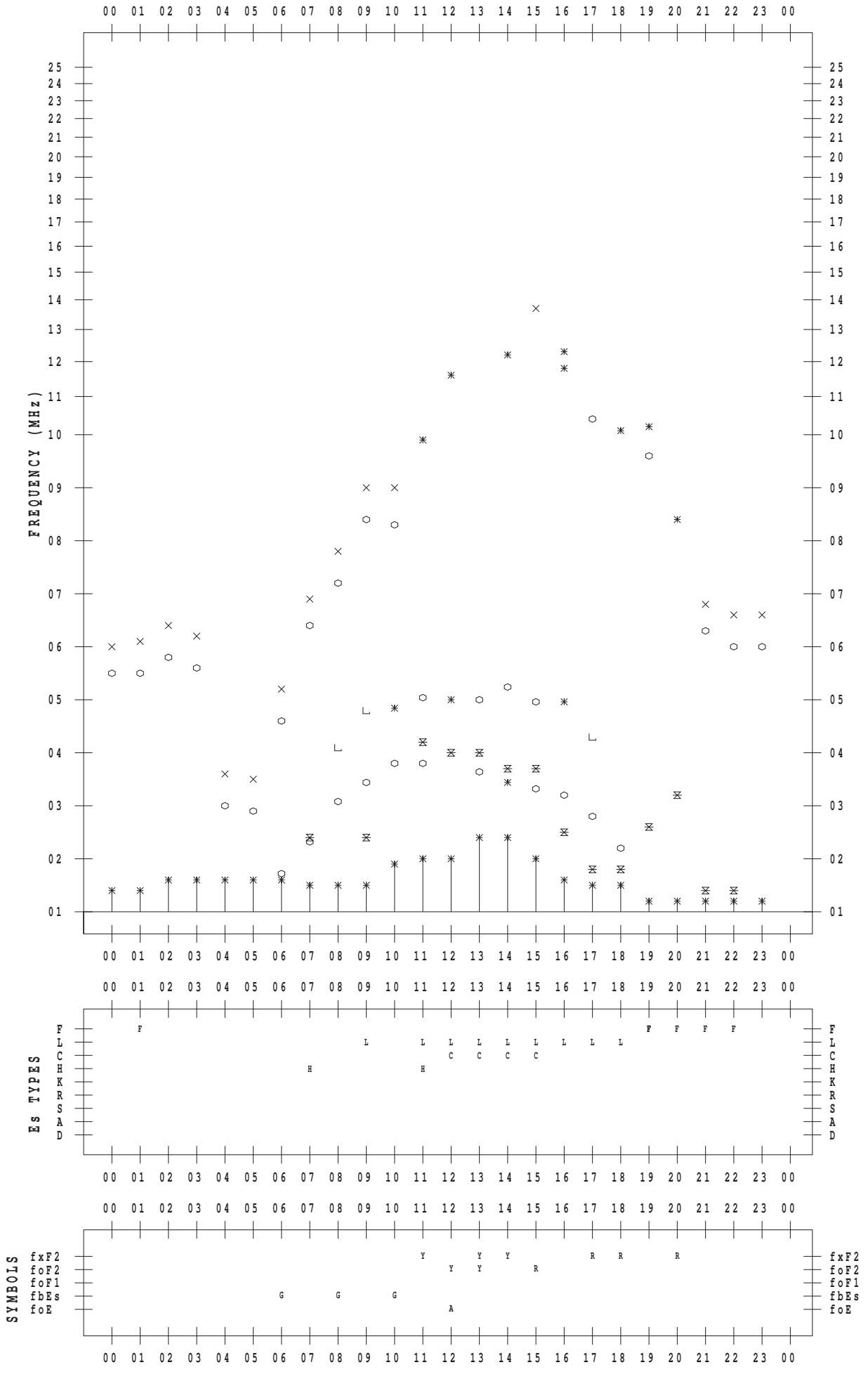
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/10

135 °E MEAN TIME



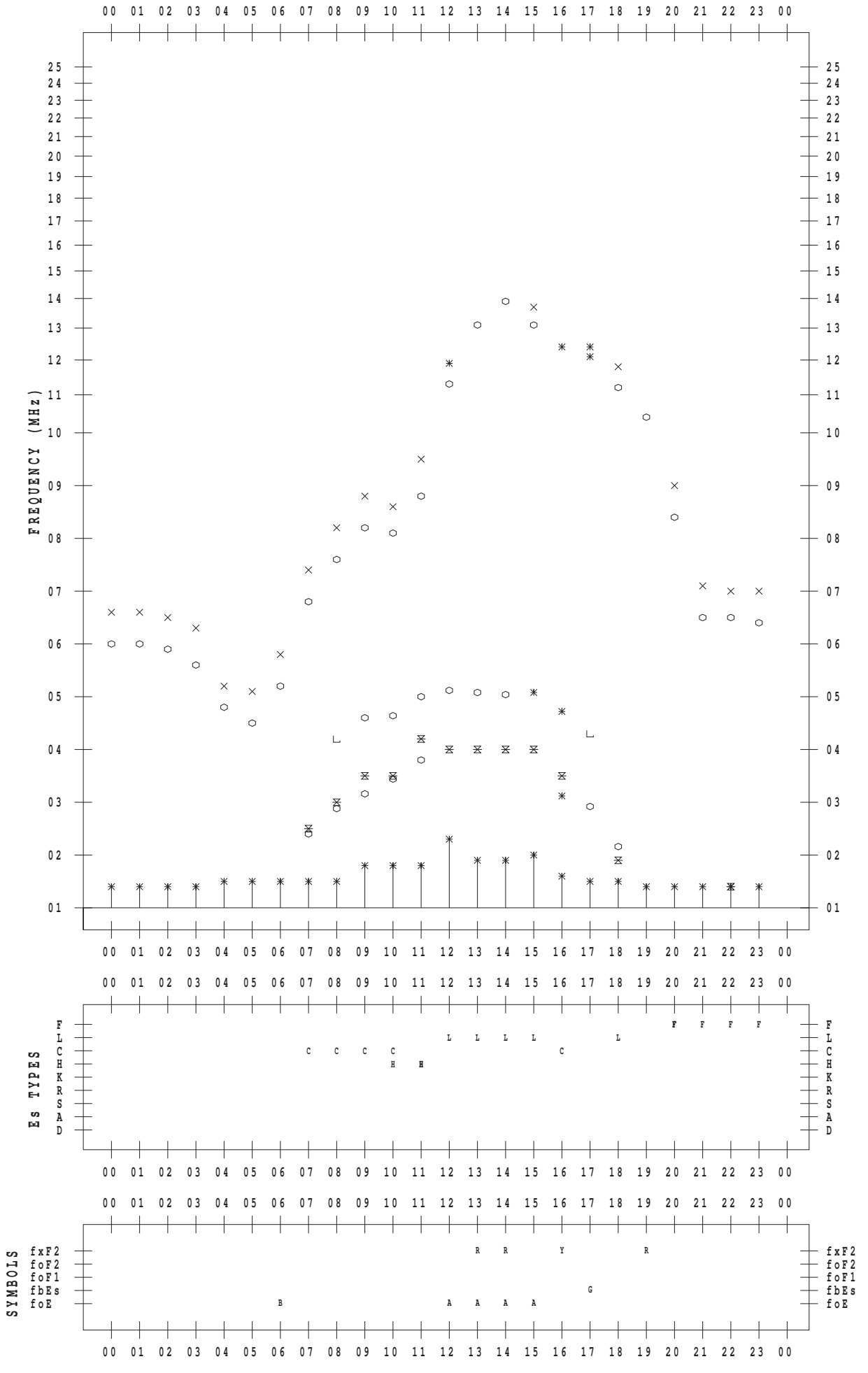
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/11

135 °E MEAN TIME



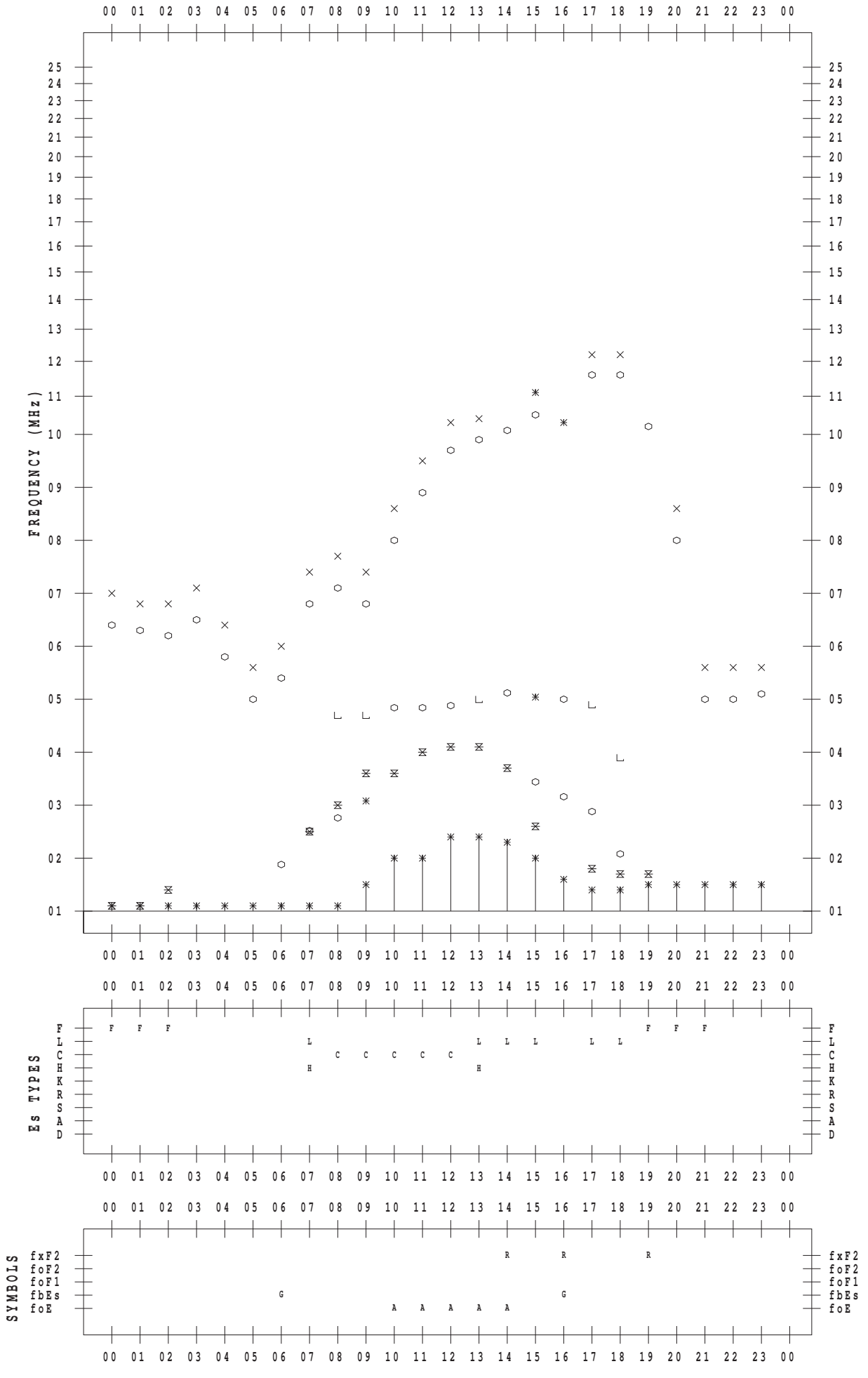
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/12

135 °E MEAN TIME



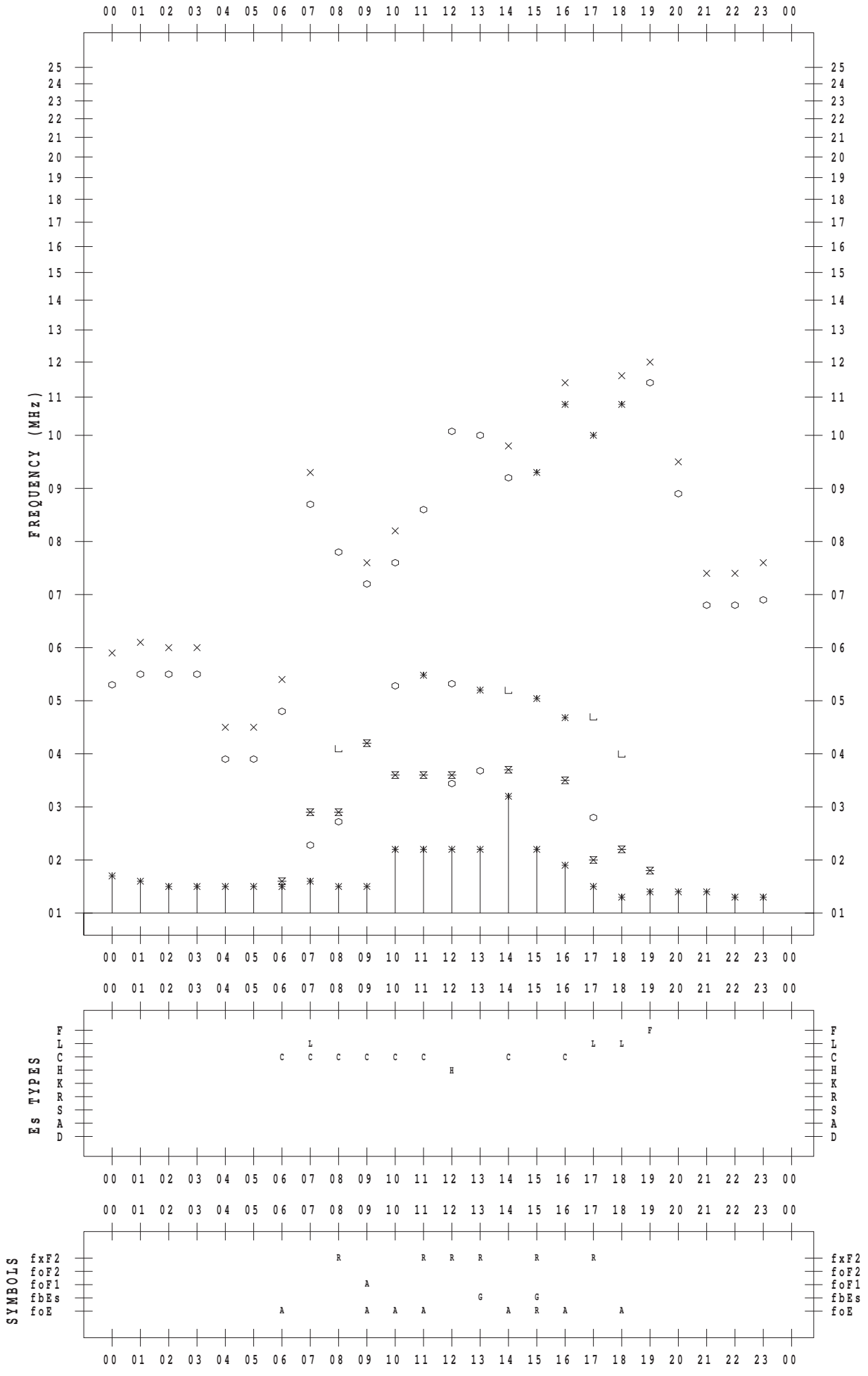
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/13

135 °E MEAN TIME



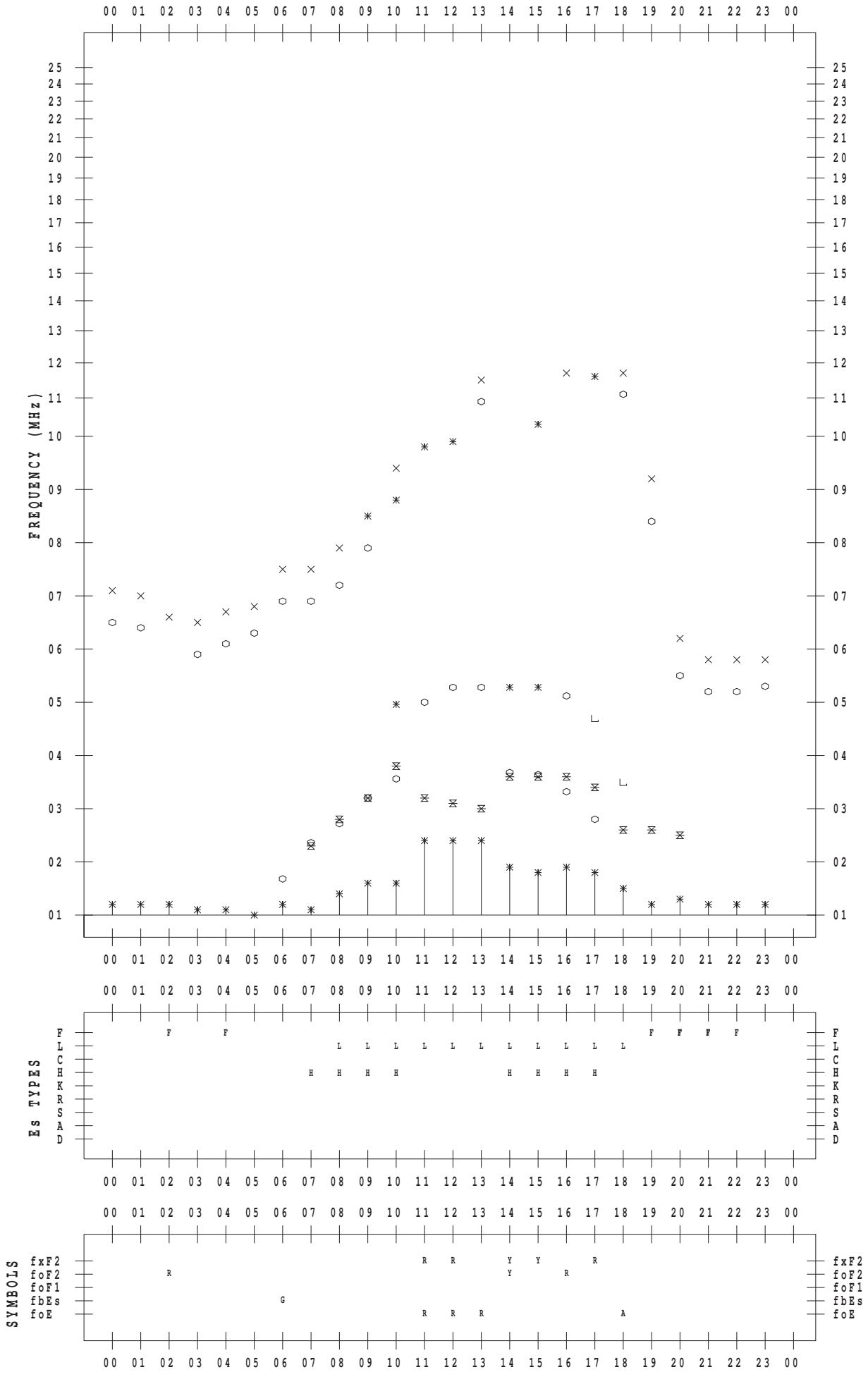
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/14

135 °E MEAN TIME



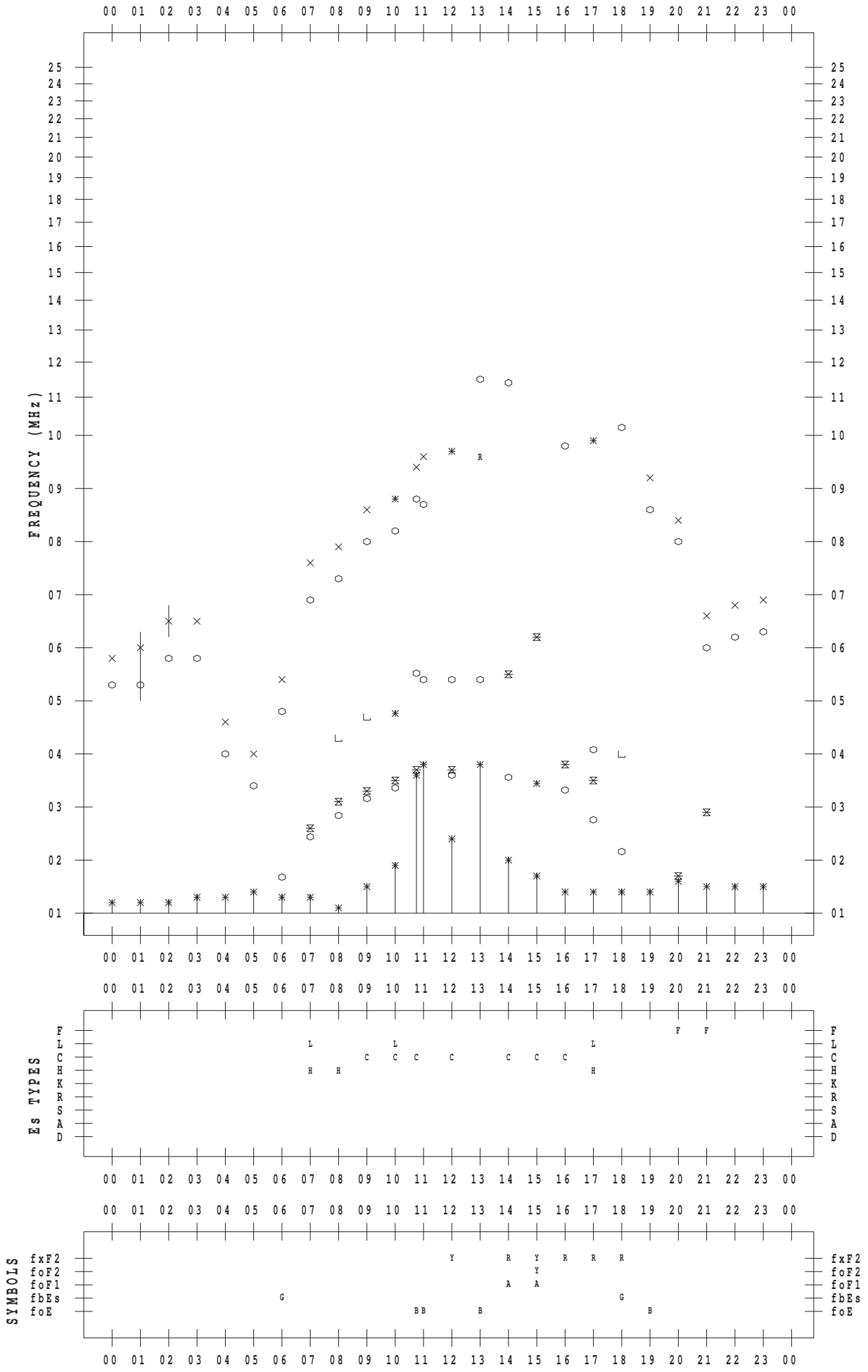
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/15

135 °E MEAN TIME



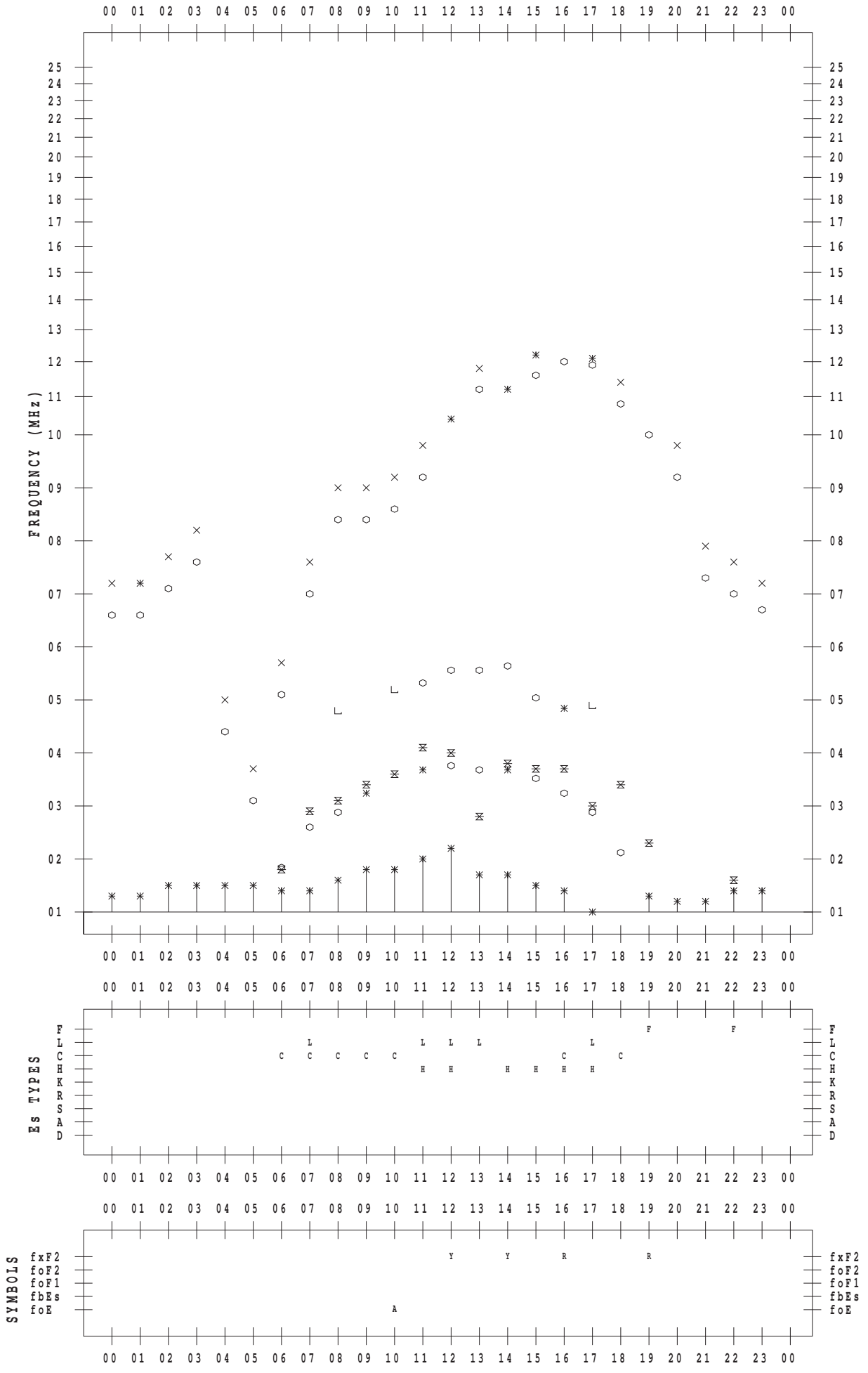
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/16

135 °E MEAN TIME



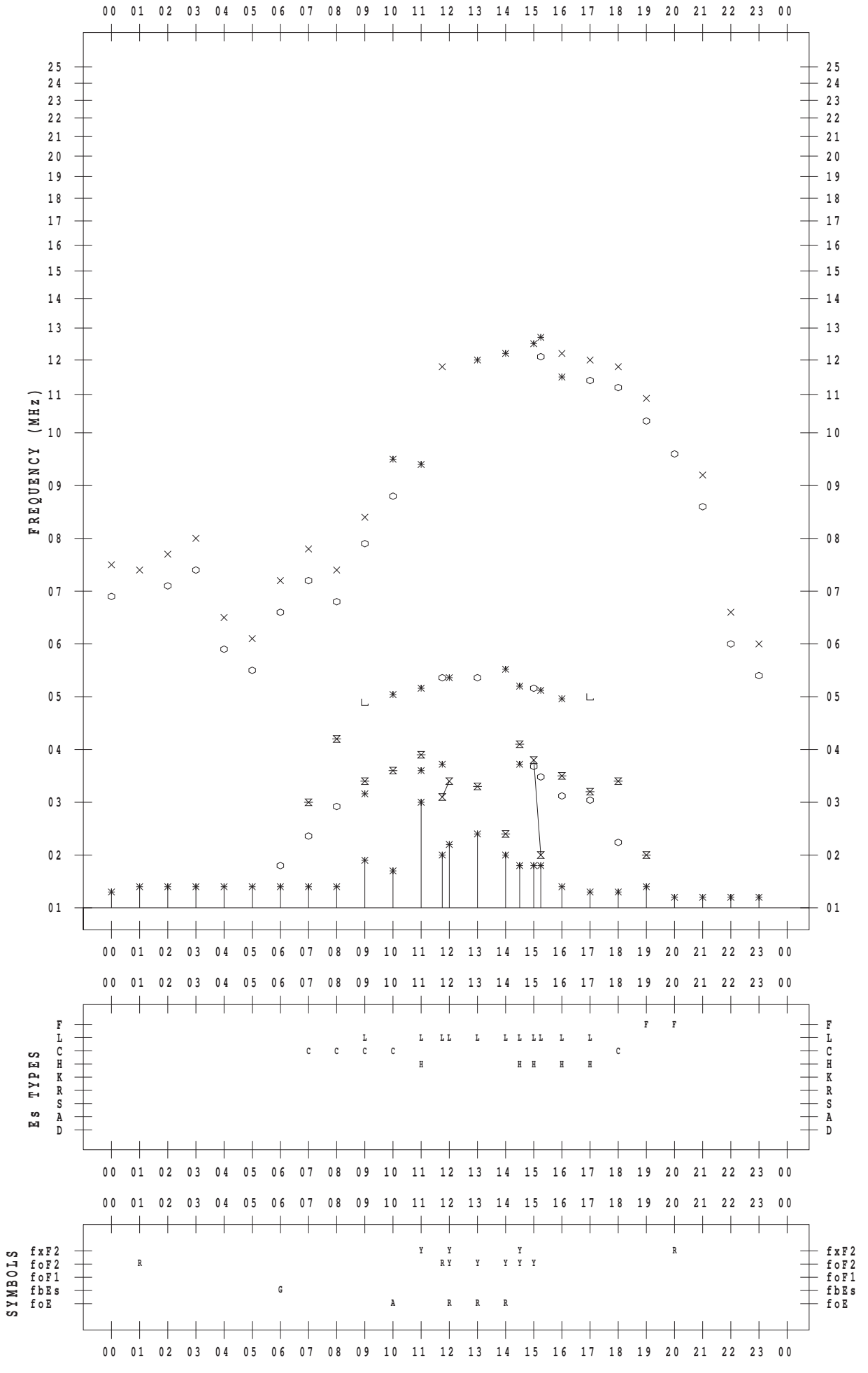
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/17

135 °E MEAN TIME



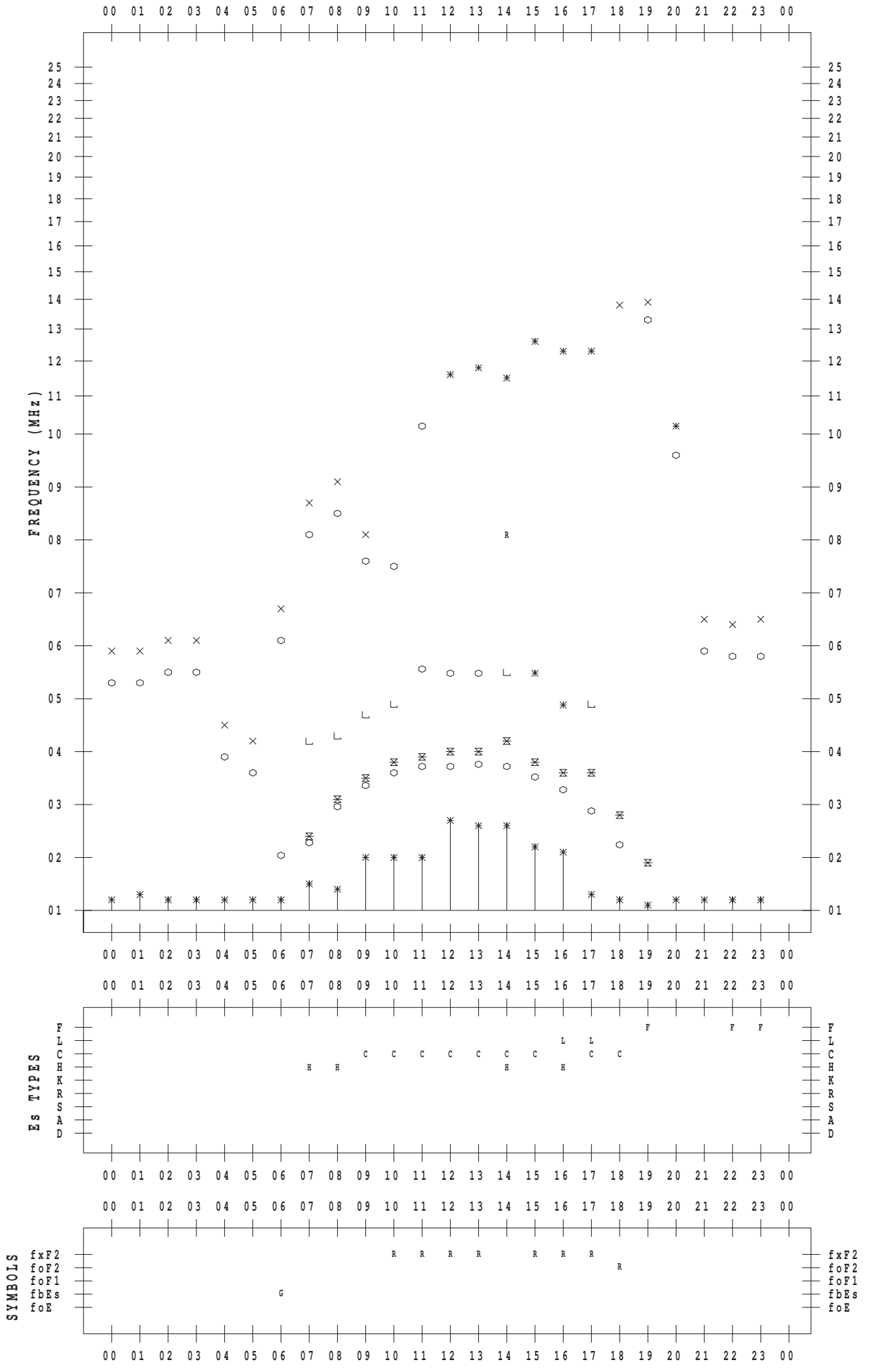
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/18

135 °E MEAN TIME



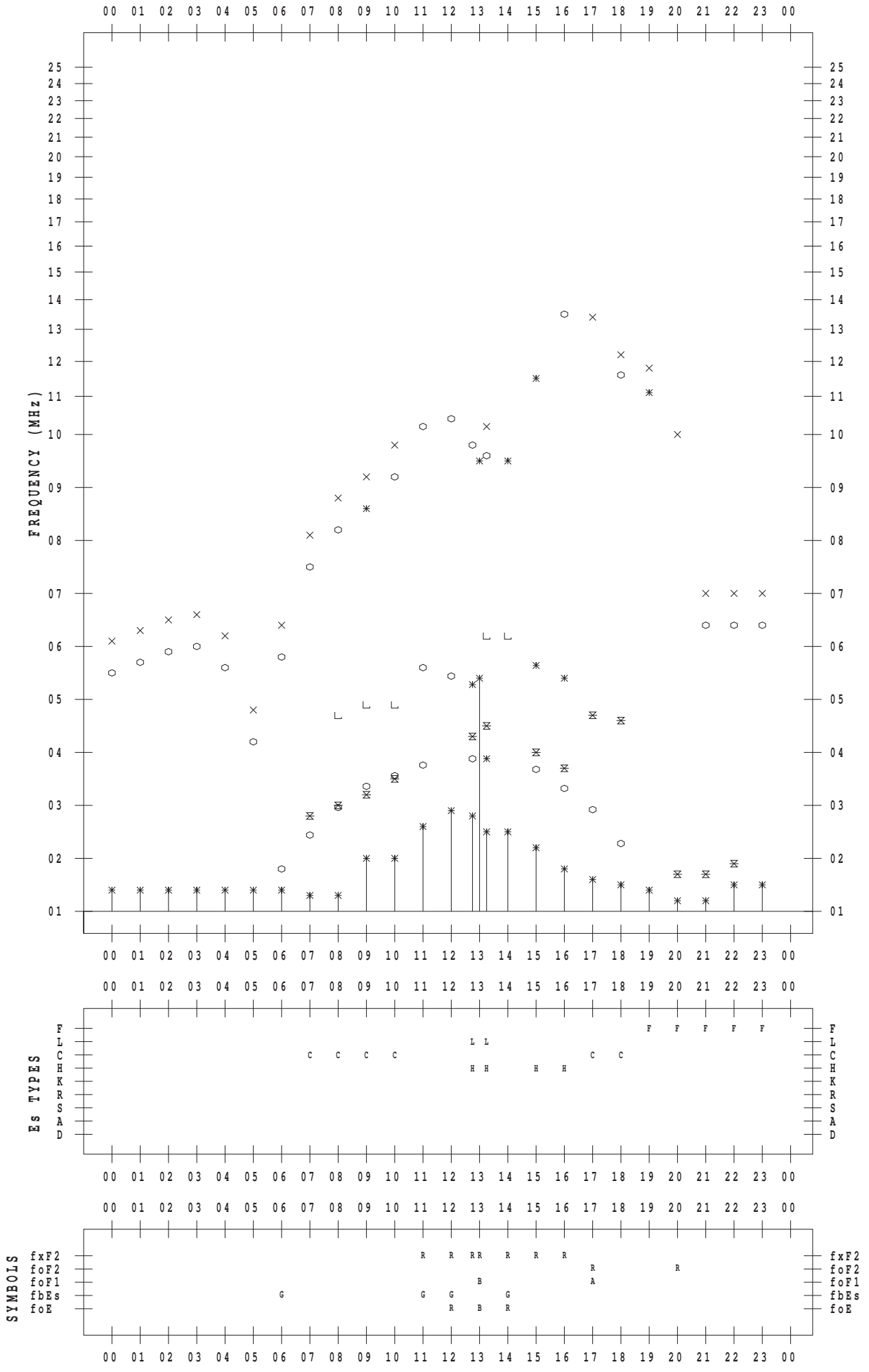
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/19

135 °E MEAN TIME



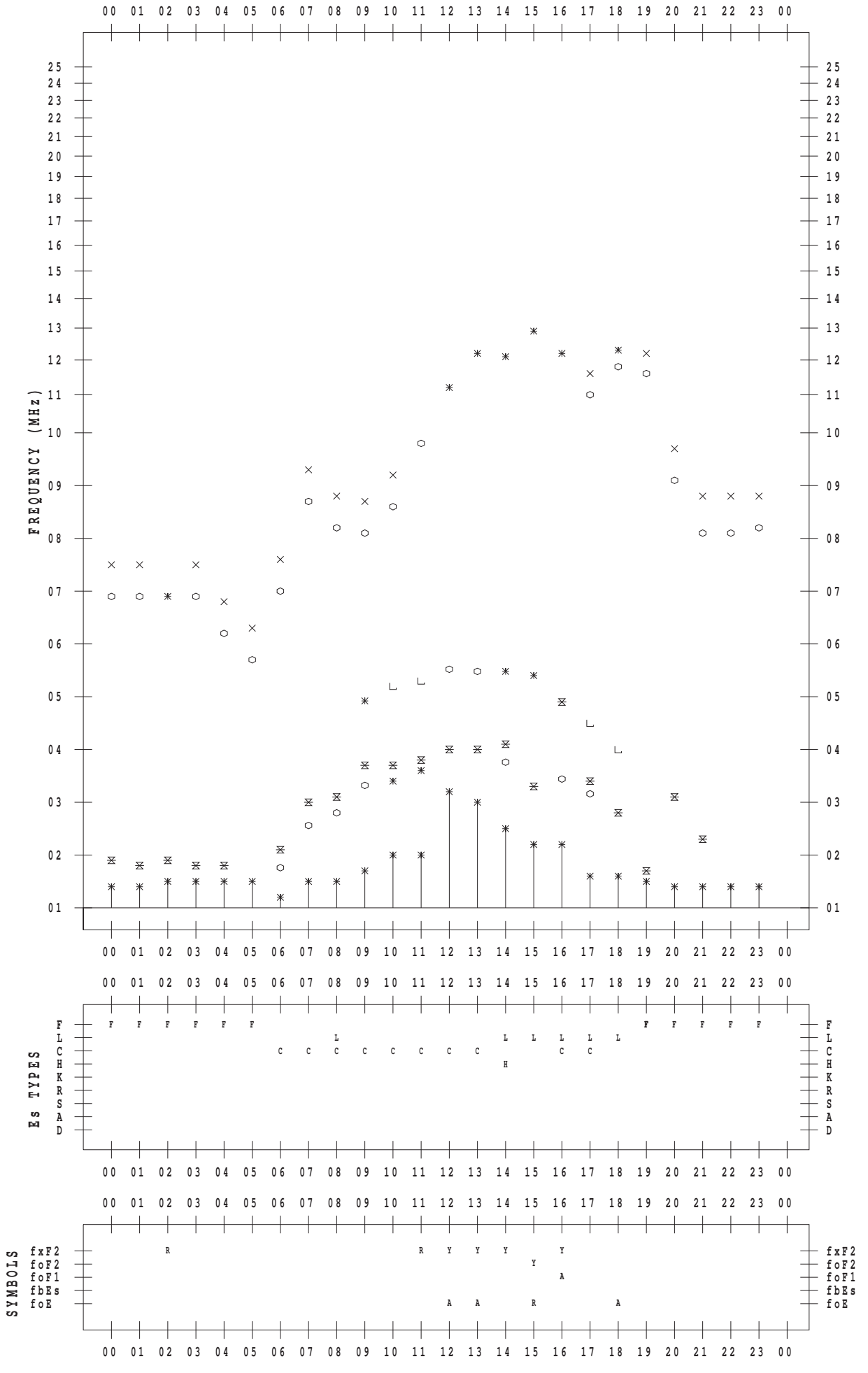
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/20

135 °E MEAN TIME



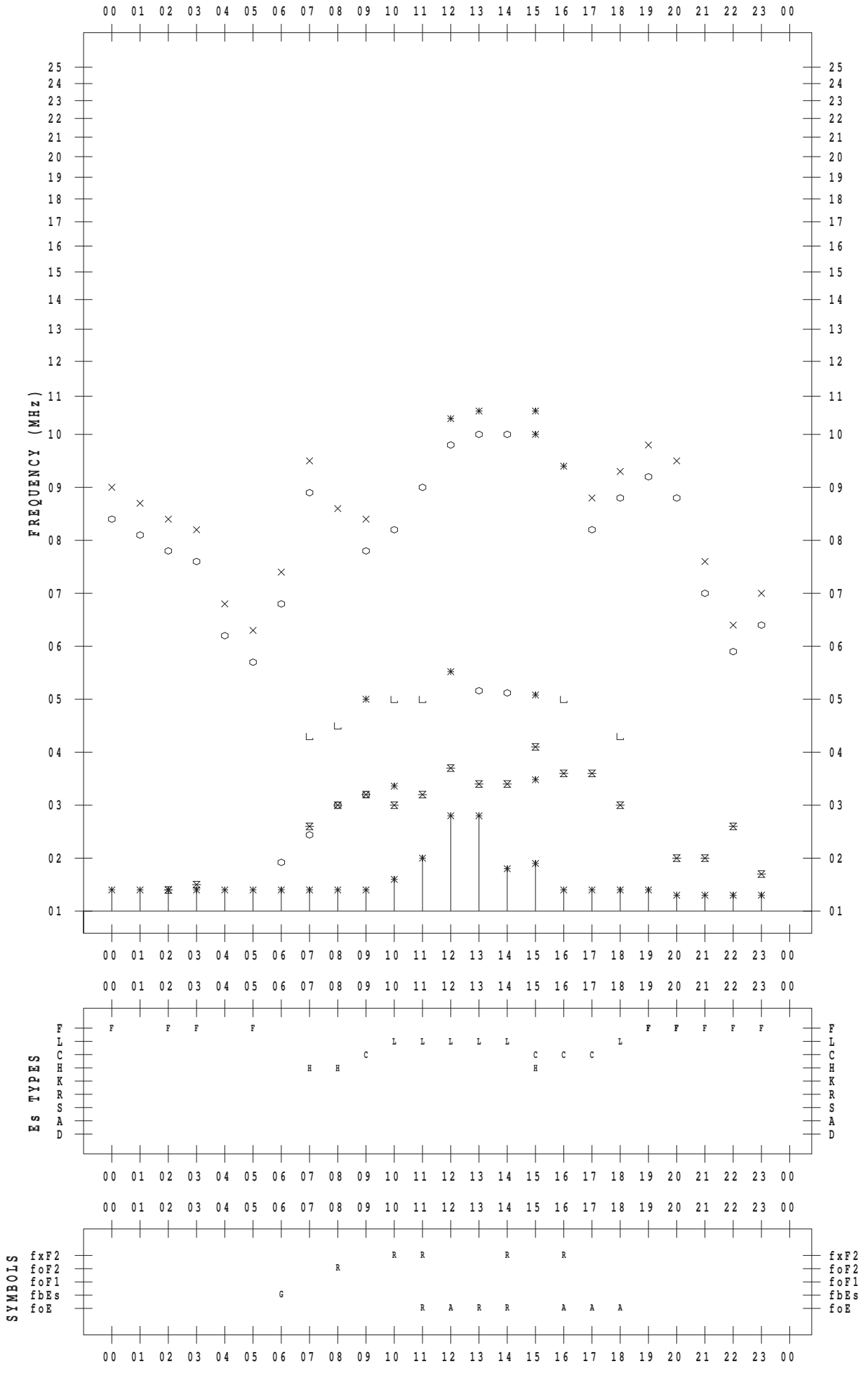
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/21

135 °E MEAN TIME



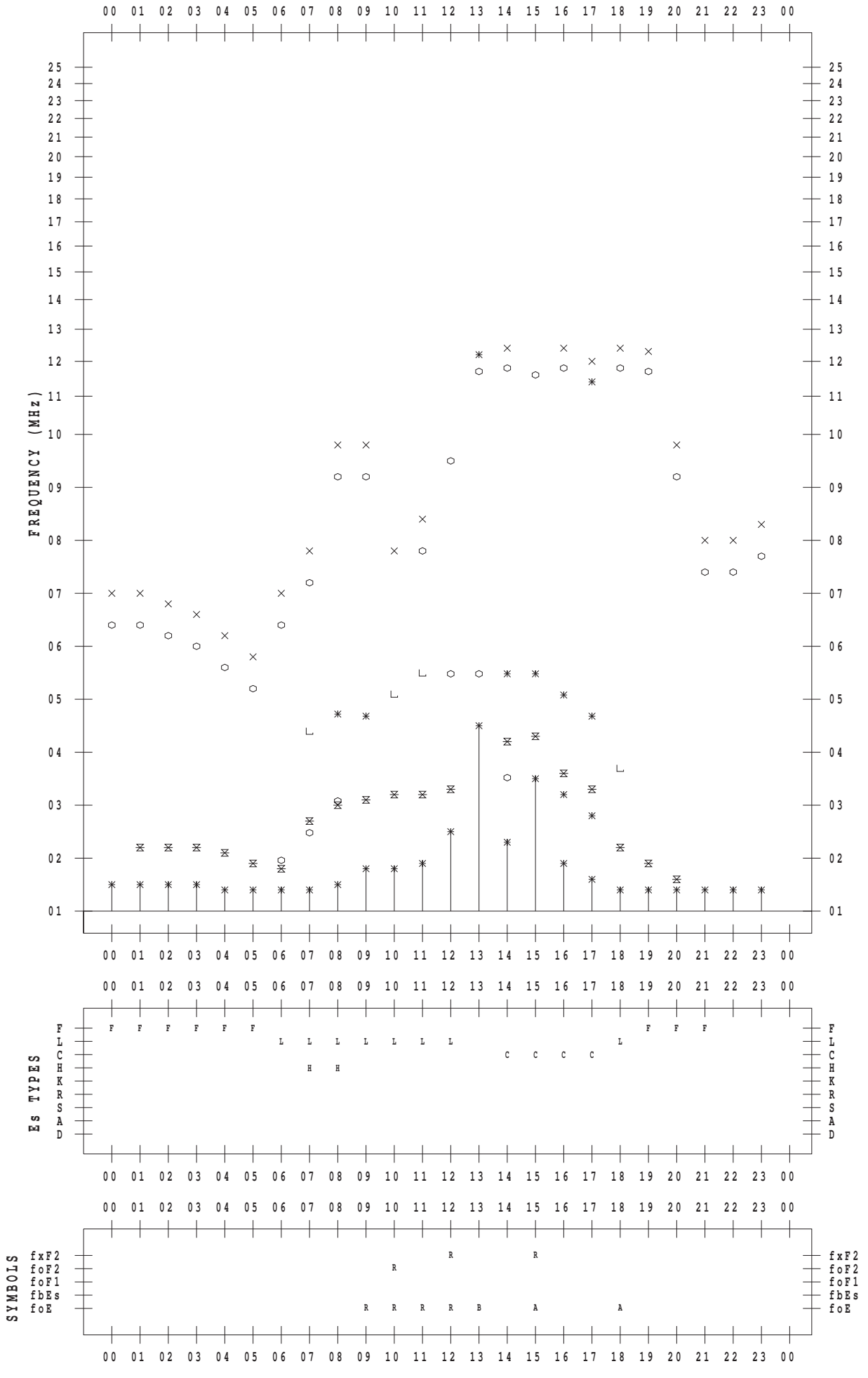
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/22

135 °E MEAN TIME



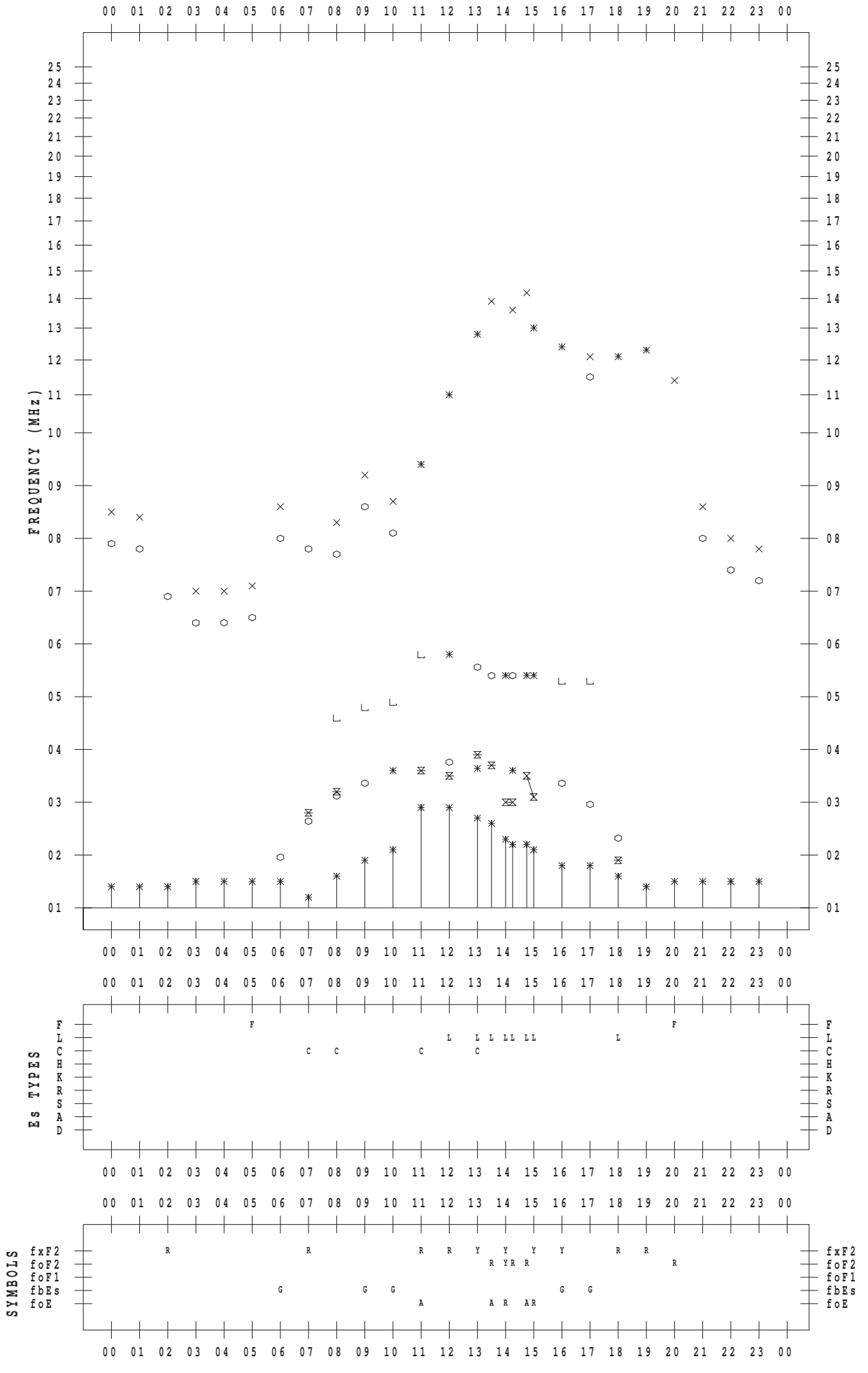
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/23

135 °E MEAN TIME



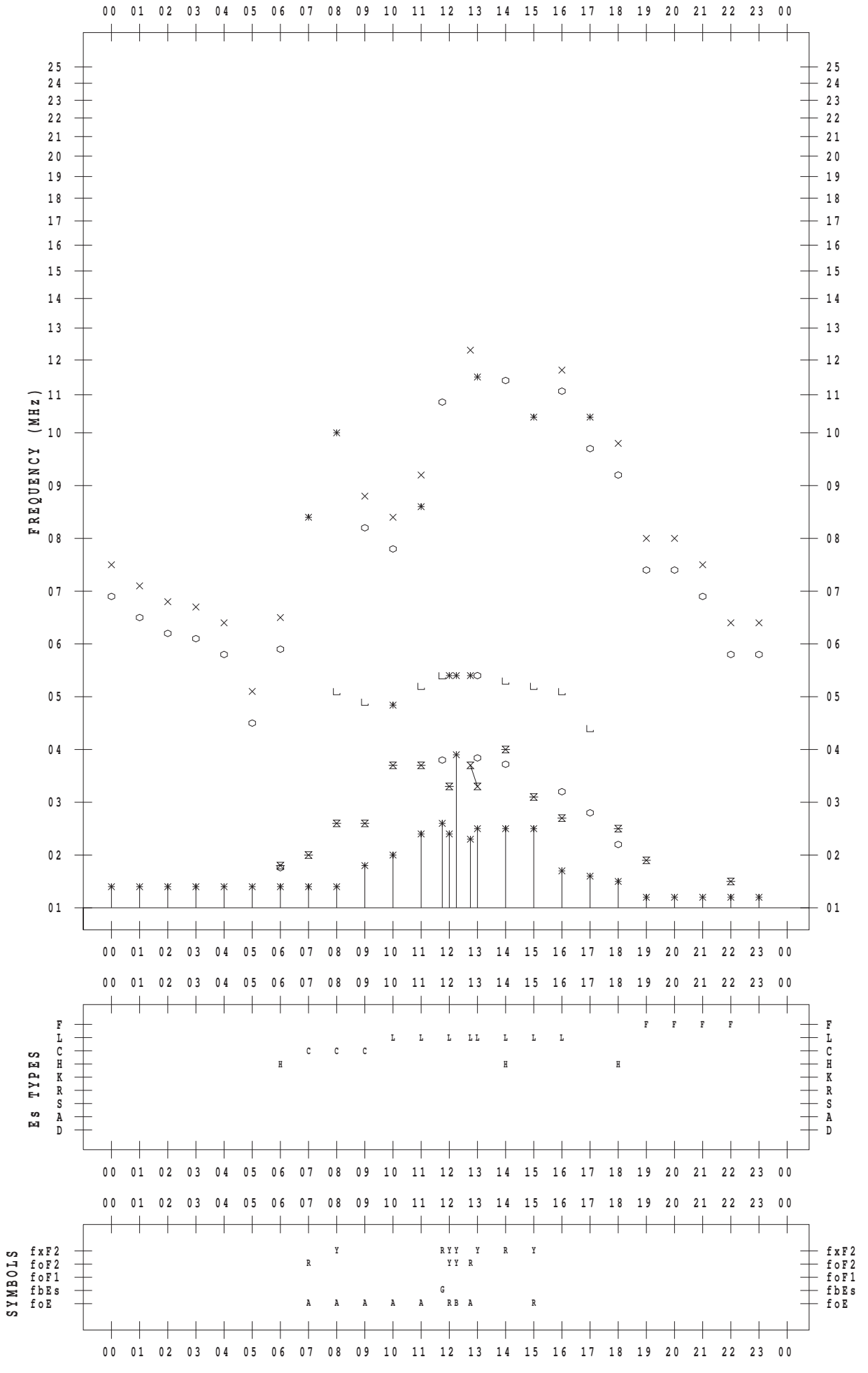
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/24

135 °E MEAN TIME



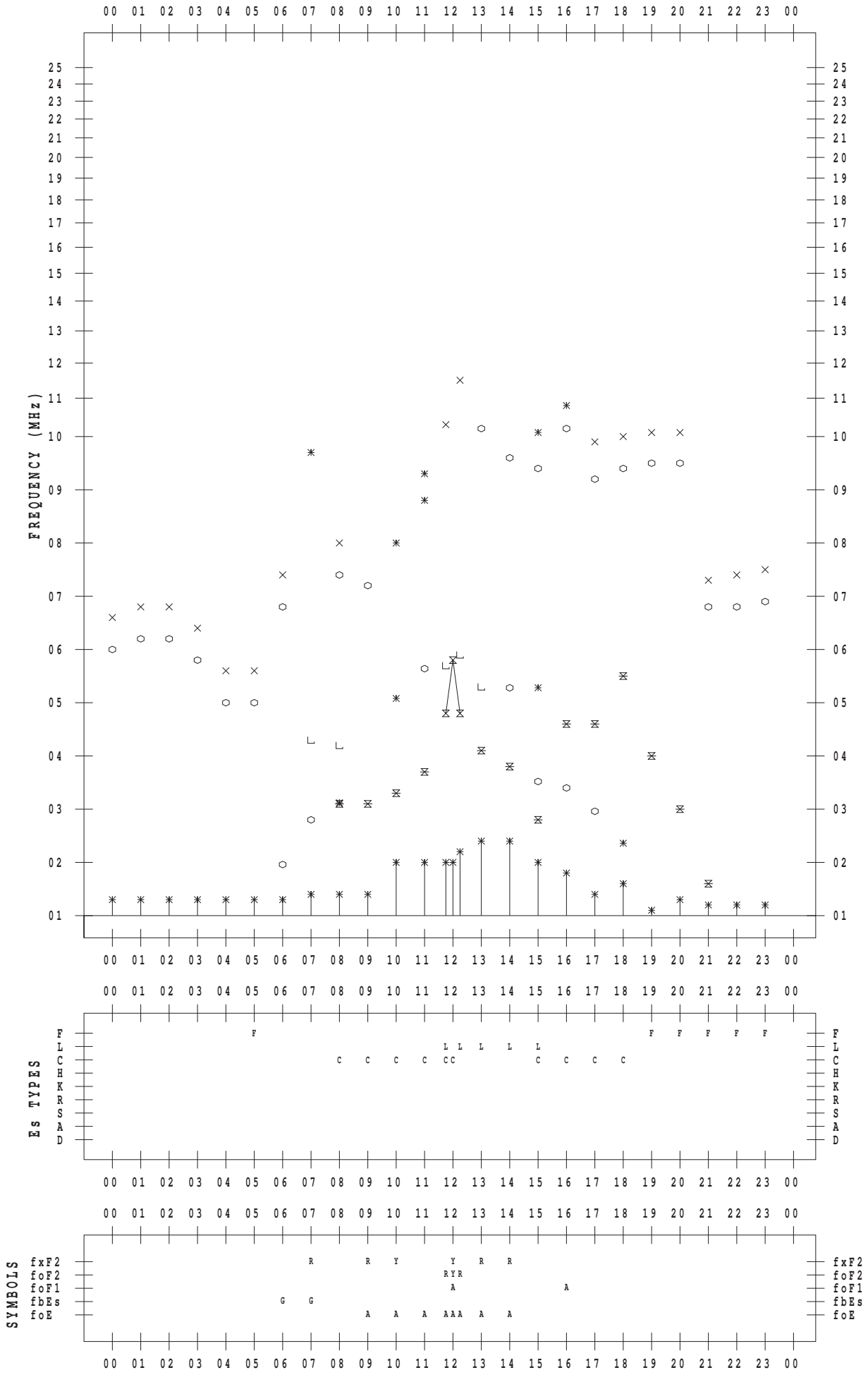
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/25

135 °E MEAN TIME



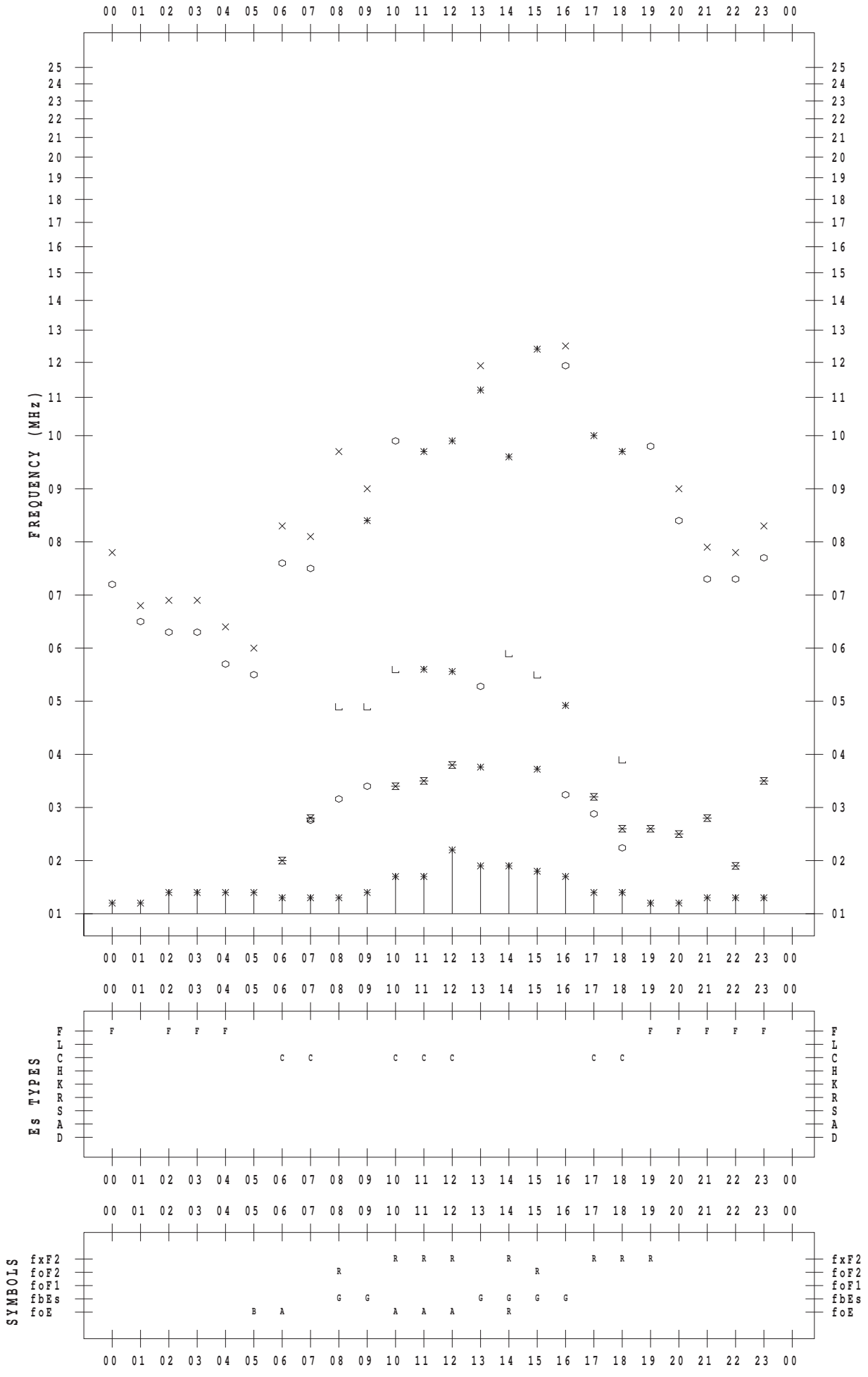
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/26

135 °E MEAN TIME



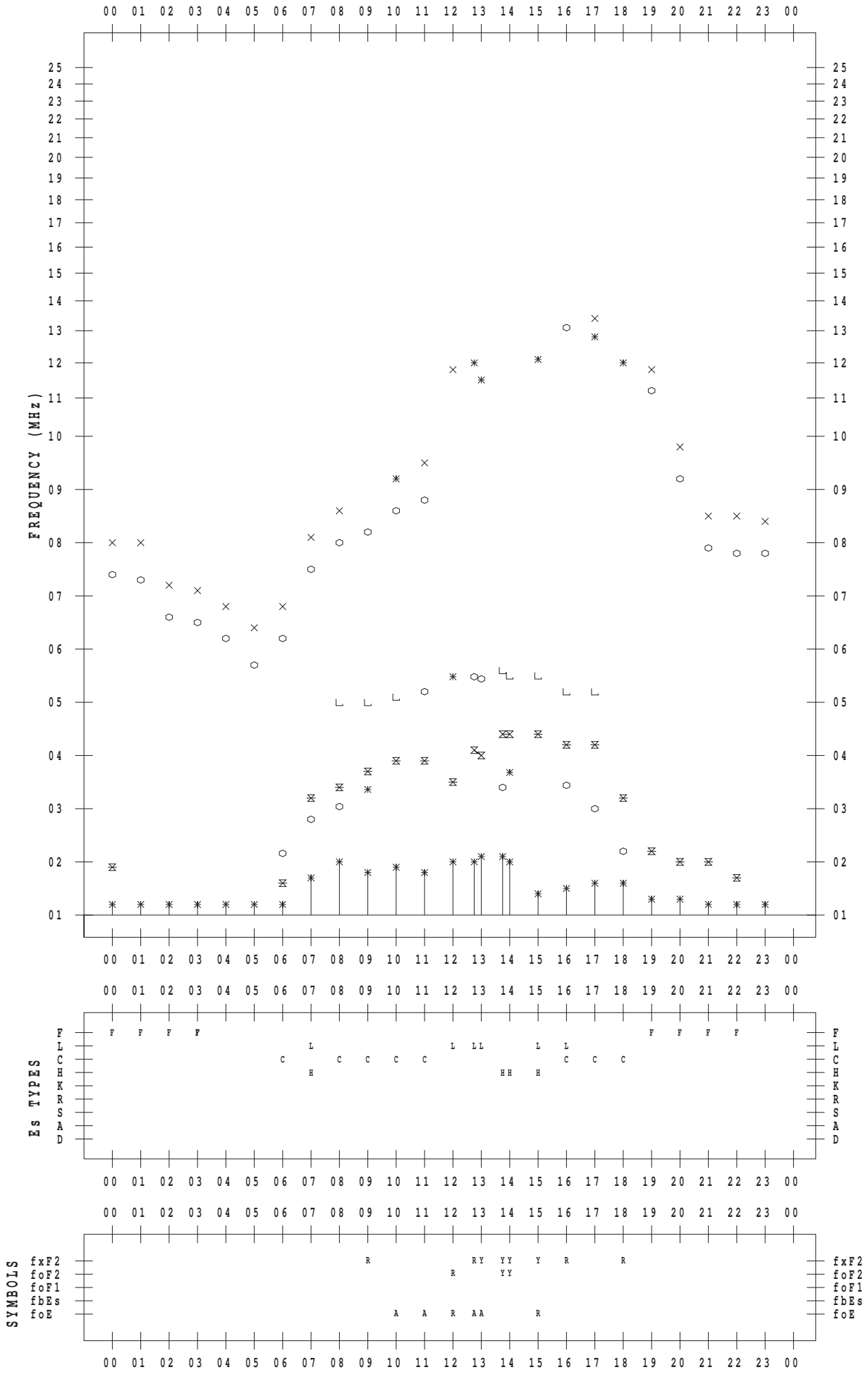
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/27

135 °E MEAN TIME



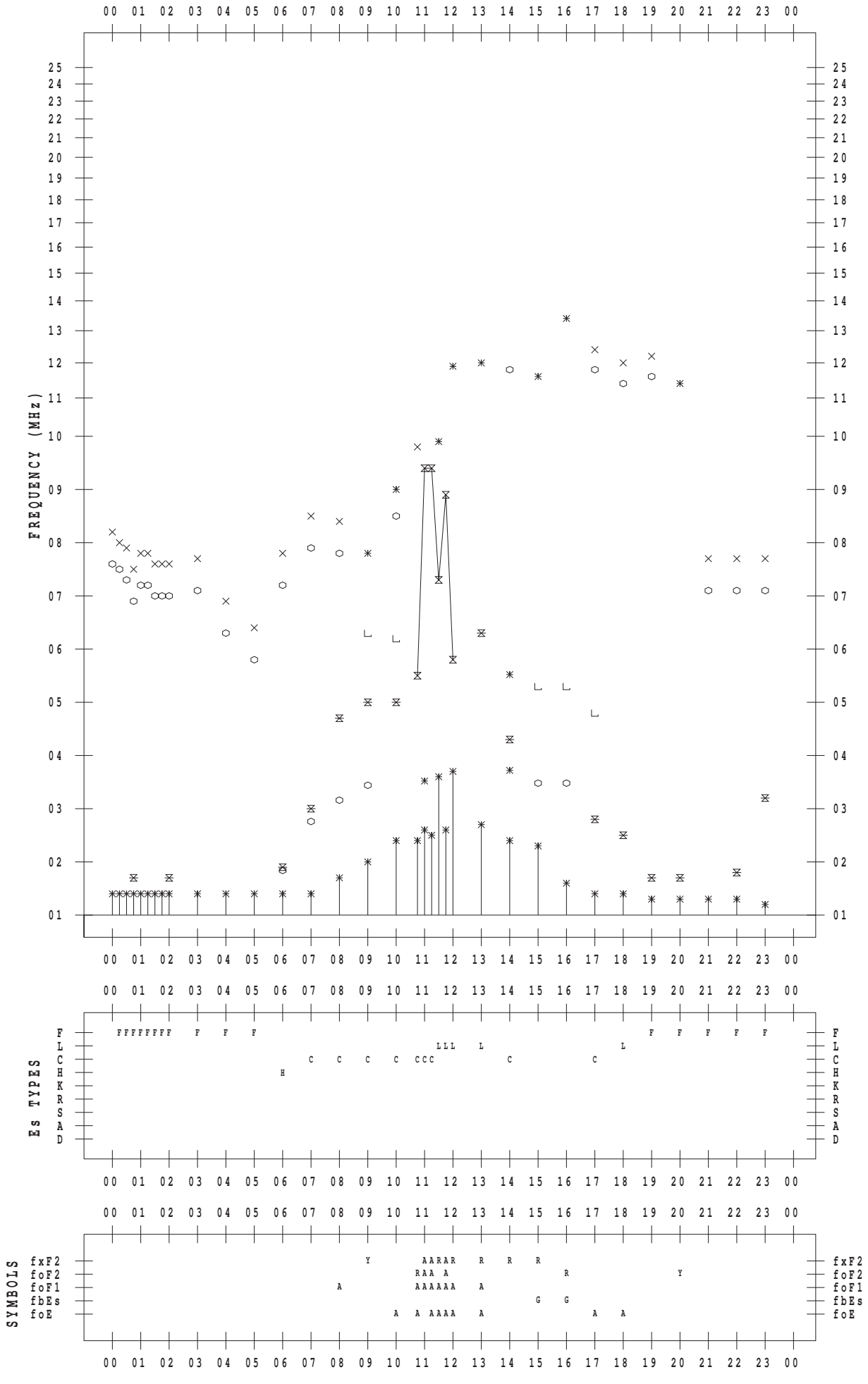
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/28

135 °E MEAN TIME



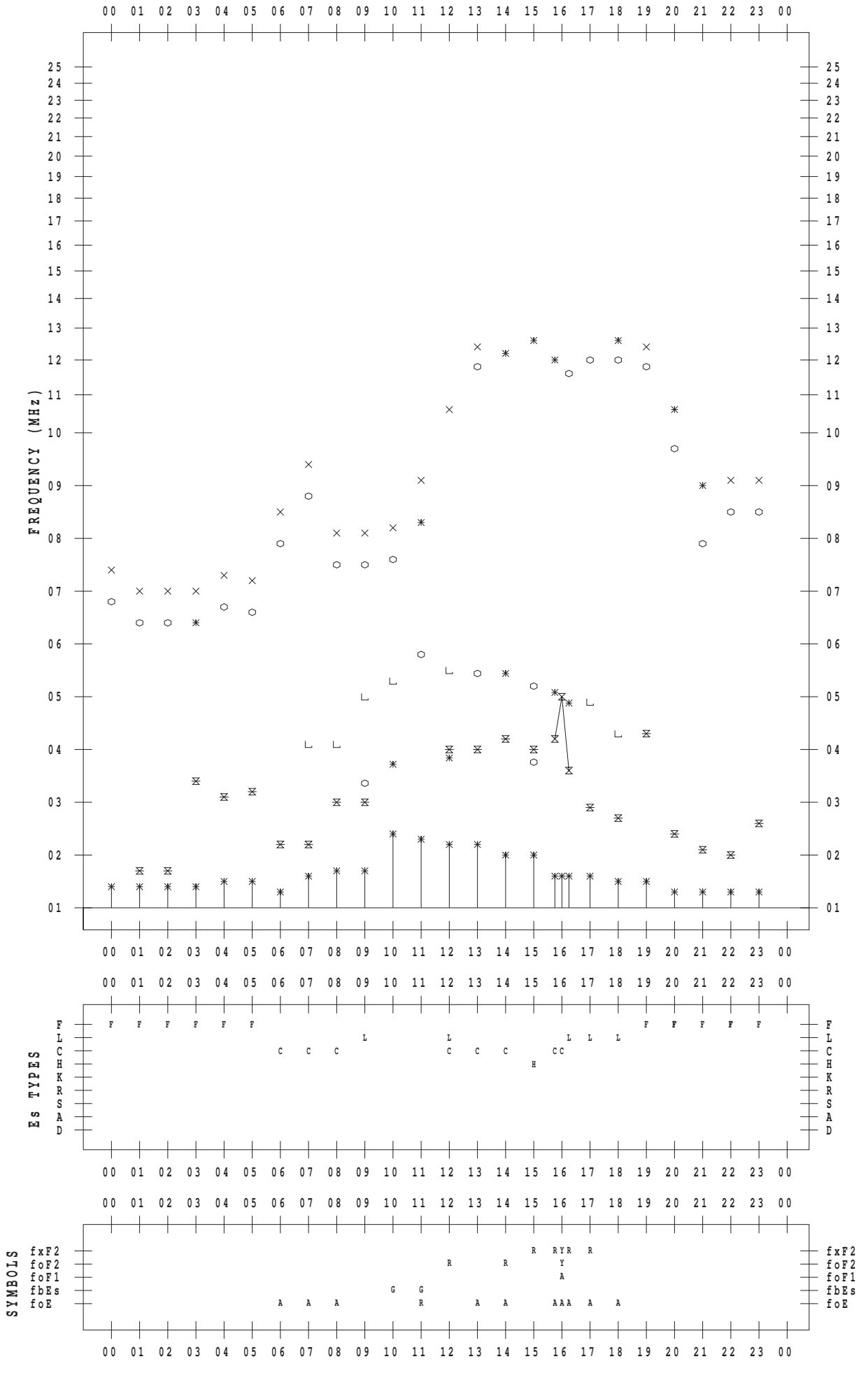
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/29

135 °E MEAN TIME



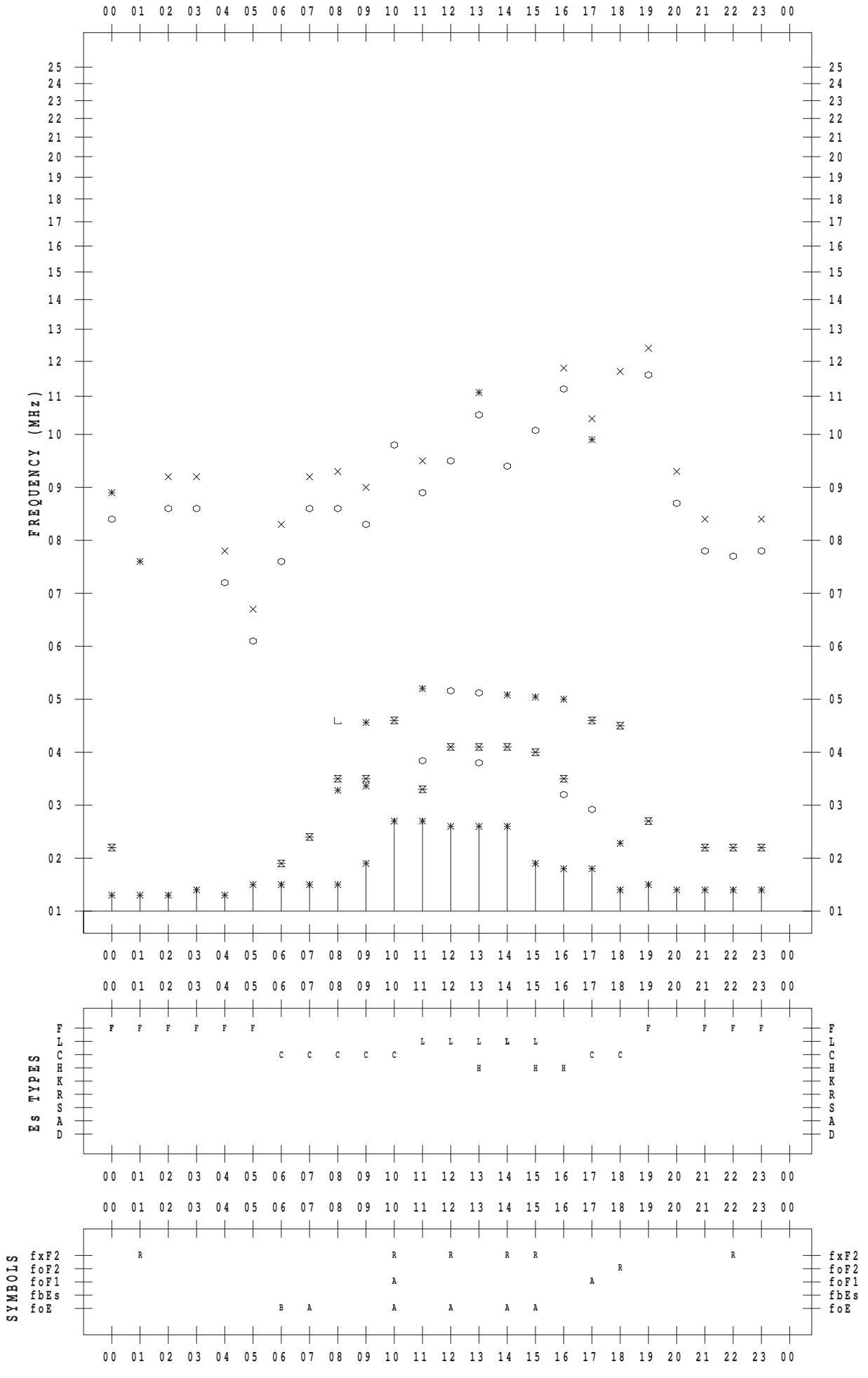
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 4/30

135 °E MEAN TIME



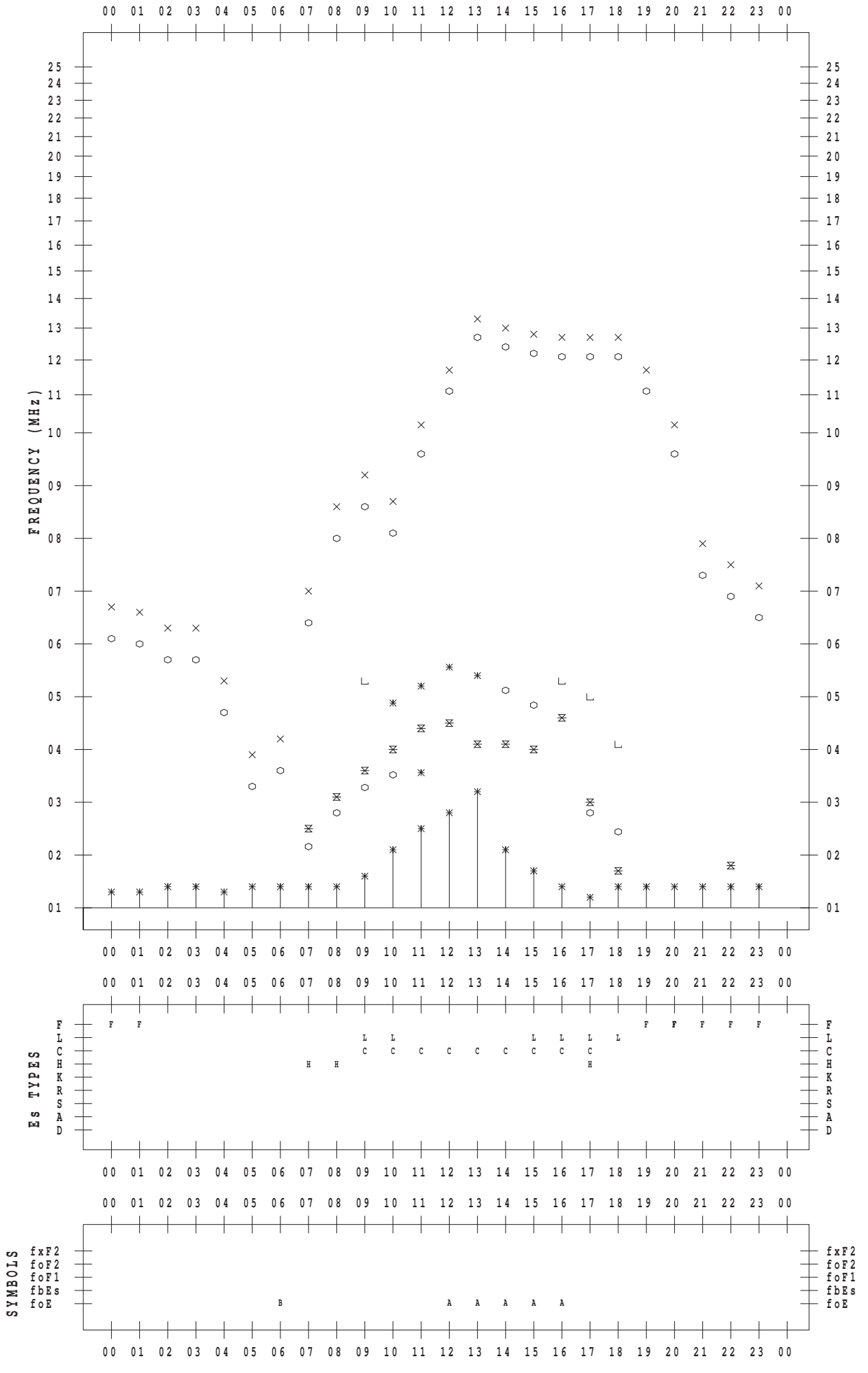
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 1

135 °E MEAN TIME



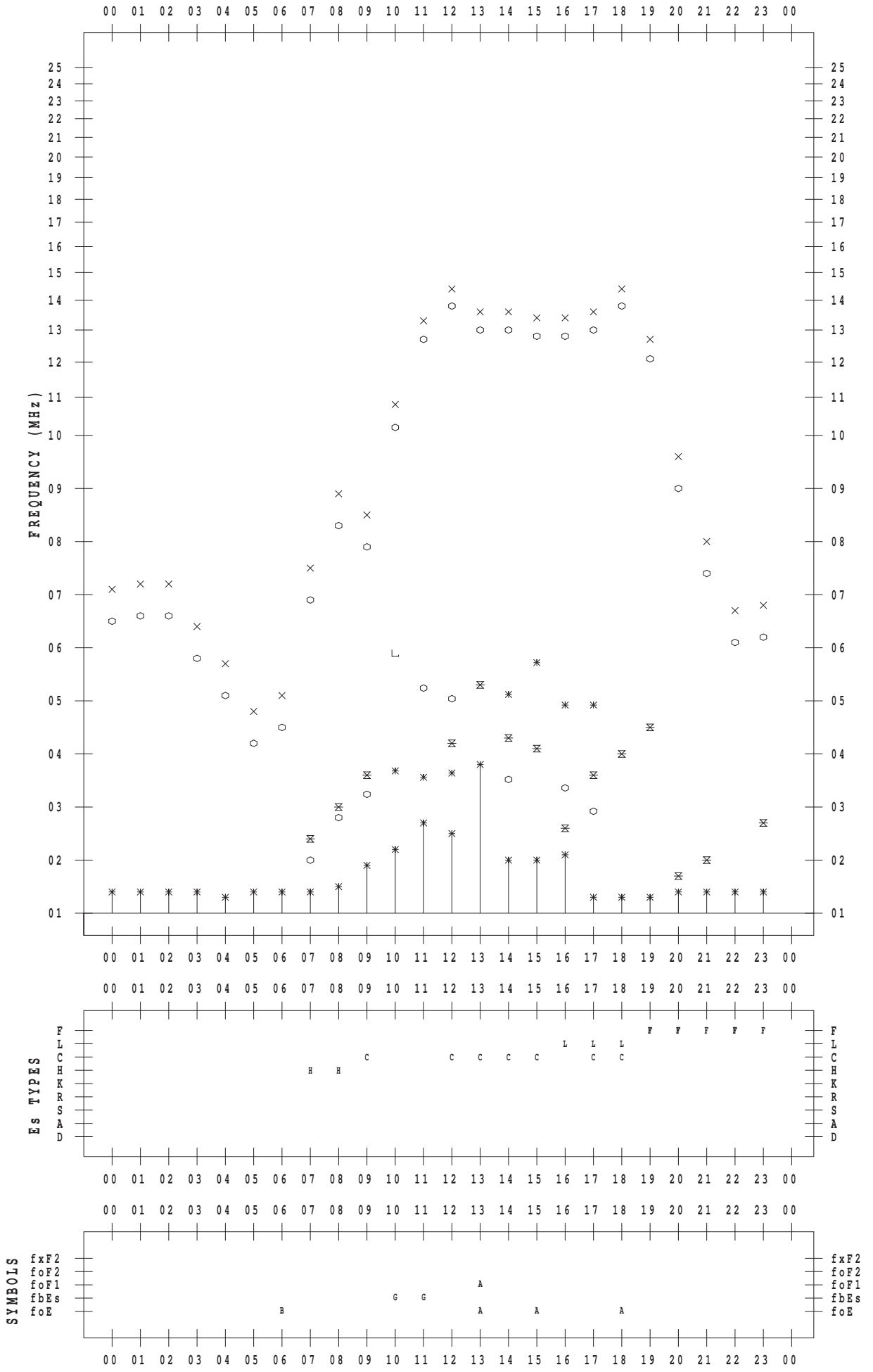
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 2

135 °E MEAN TIME



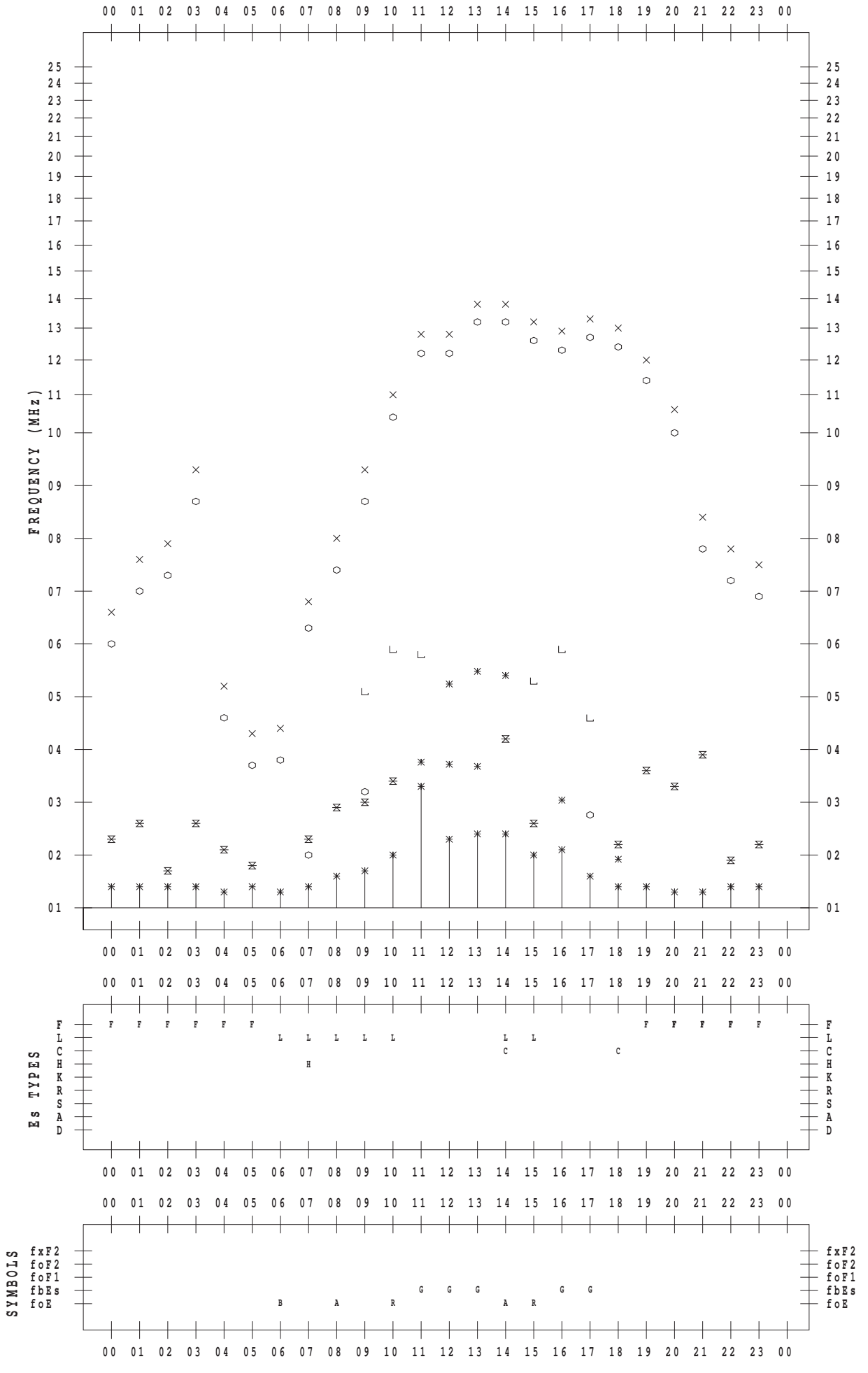
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 3

135 °E MEAN TIME



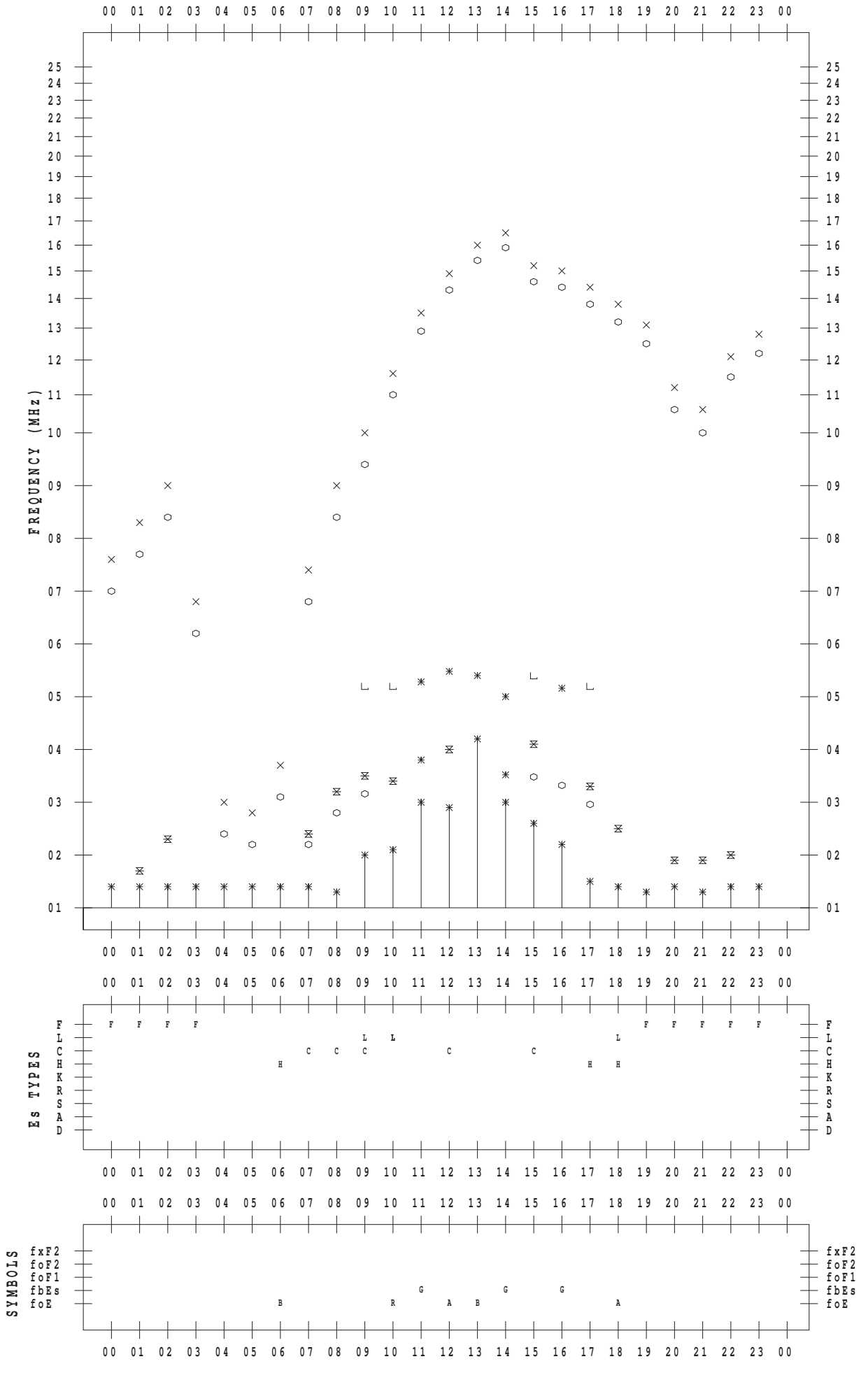
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 4

135 °E MEAN TIME



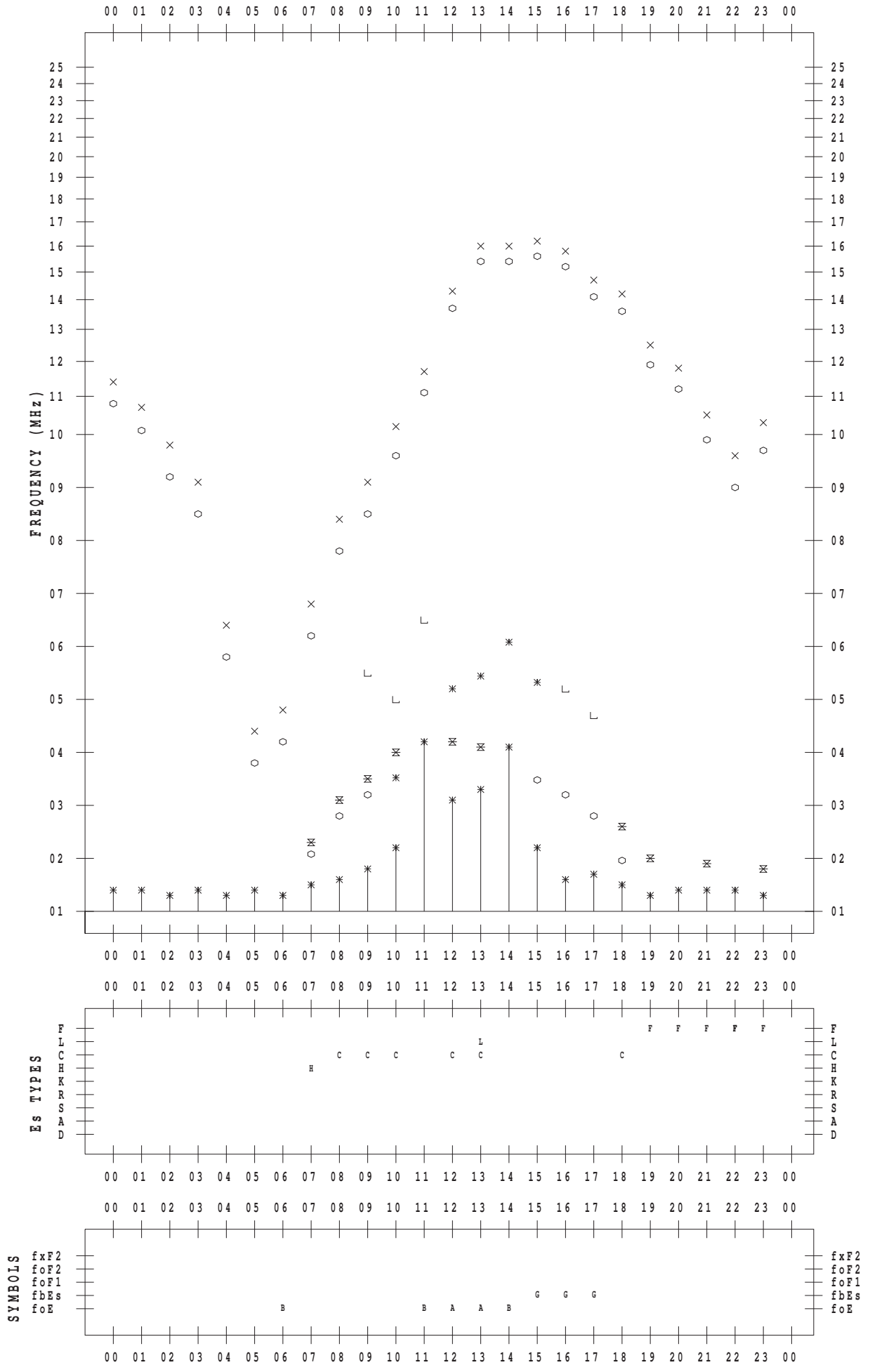
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 5

135 °E MEAN TIME



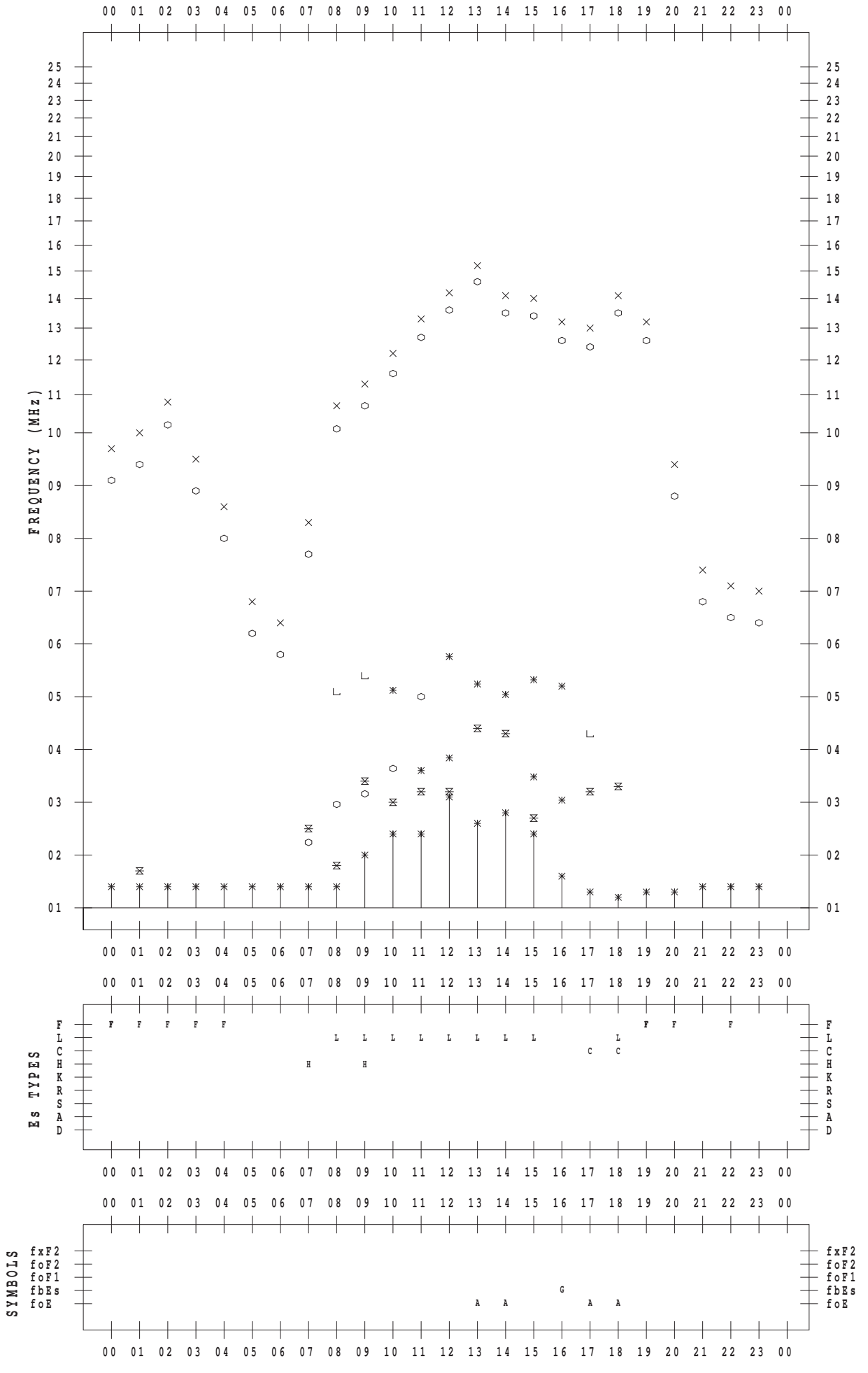
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 6

135 °E MEAN TIME



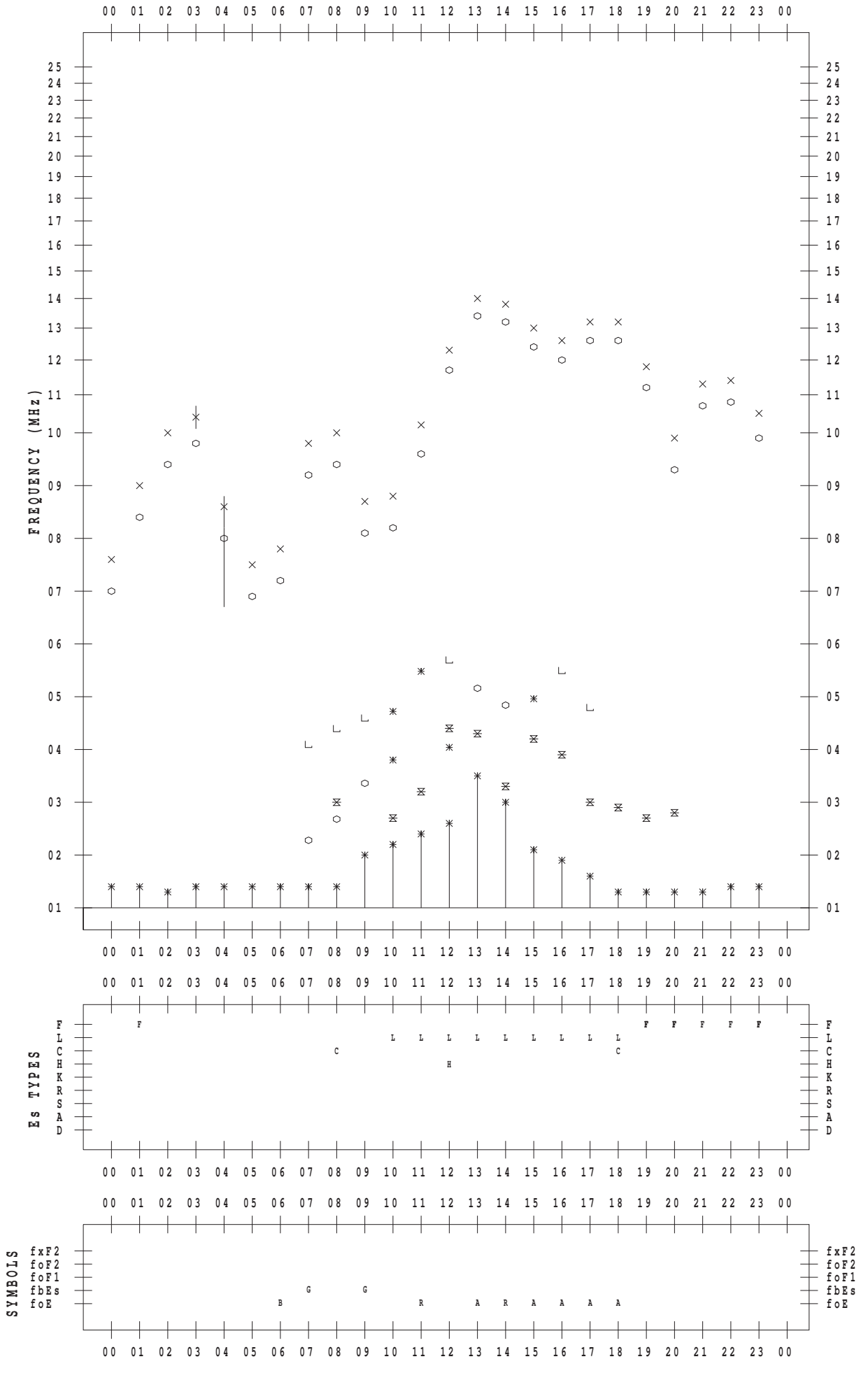
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 7

135 °E MEAN TIME



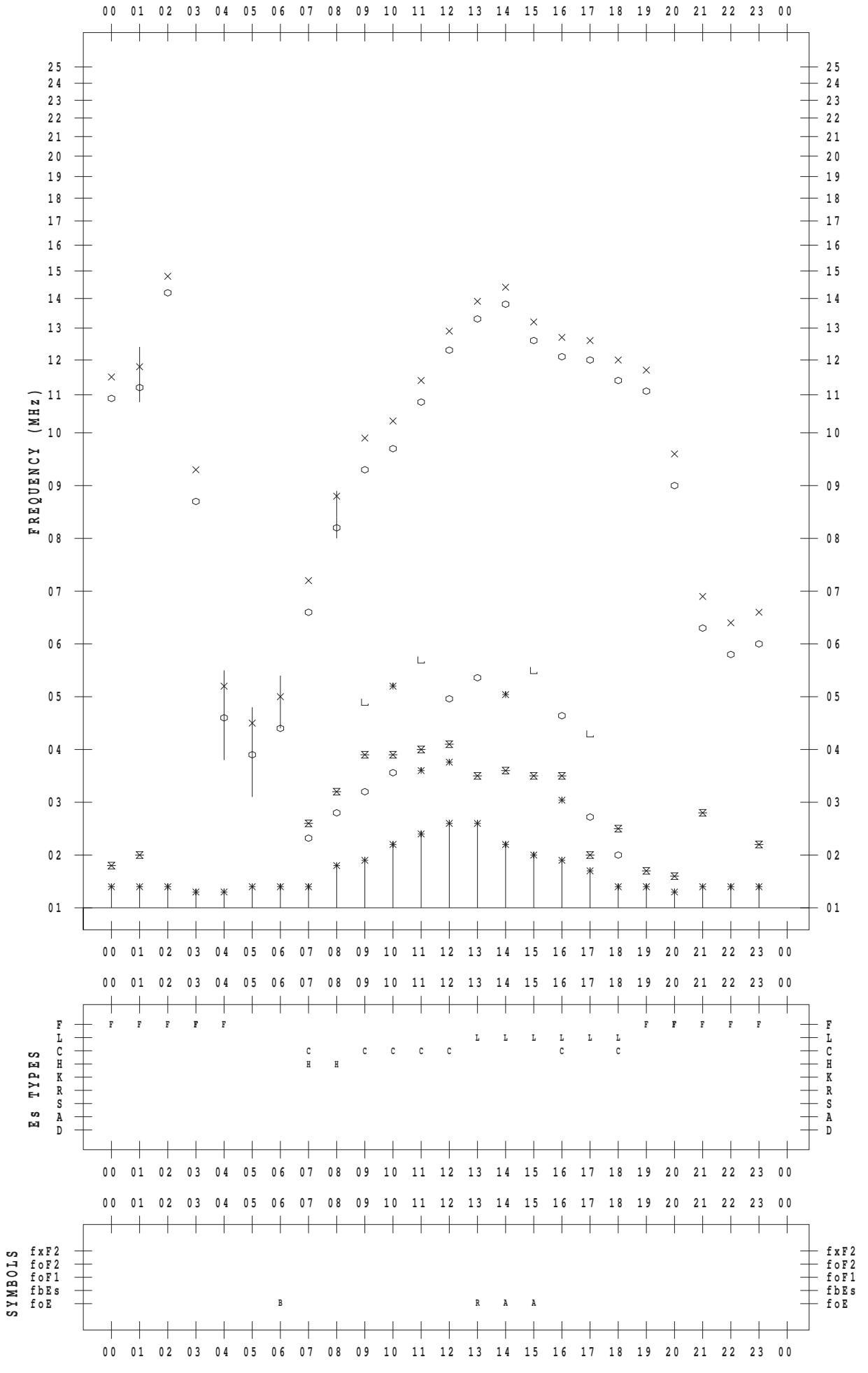
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 8

135 °E MEAN TIME



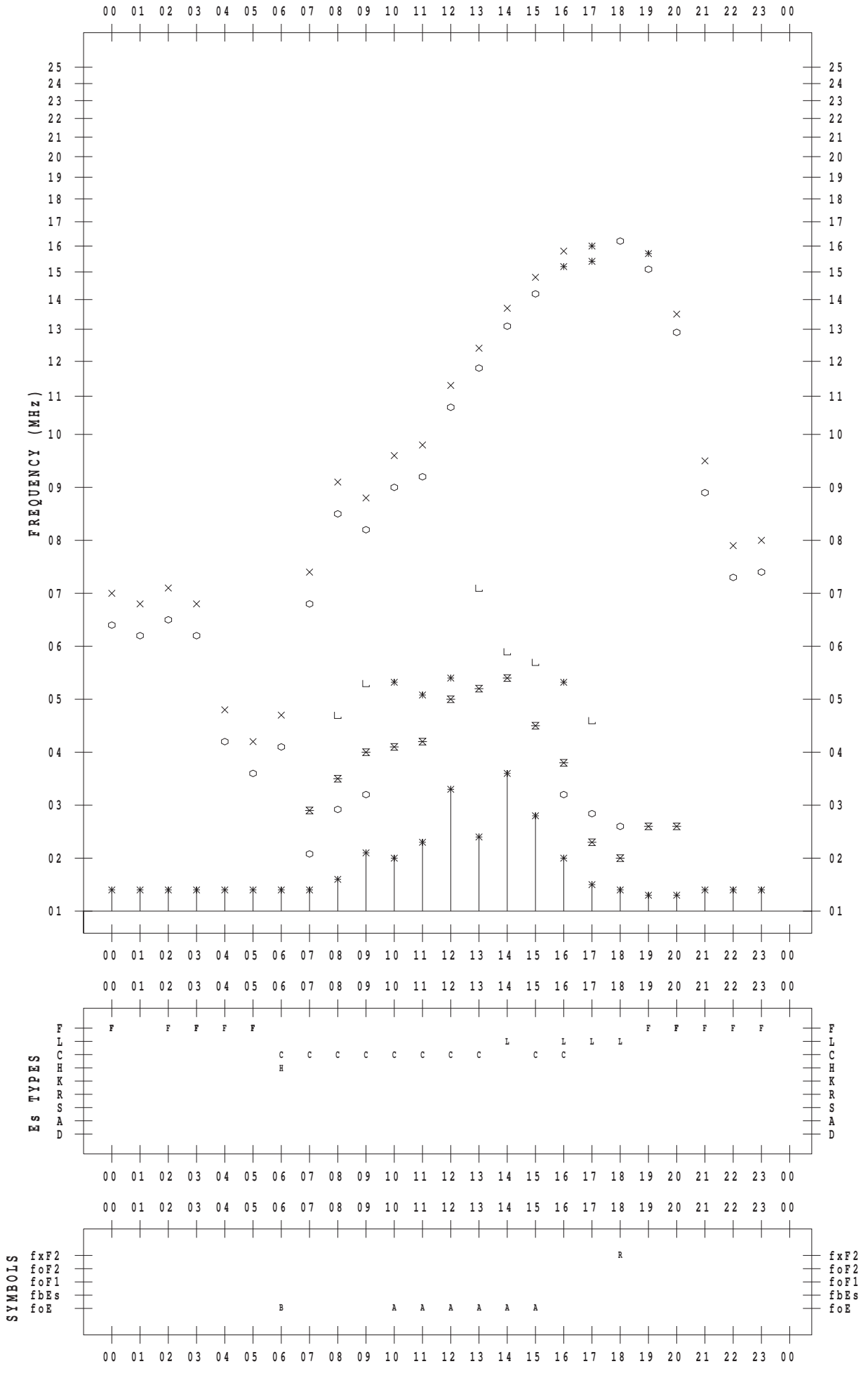
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/ 9

135 °E MEAN TIME



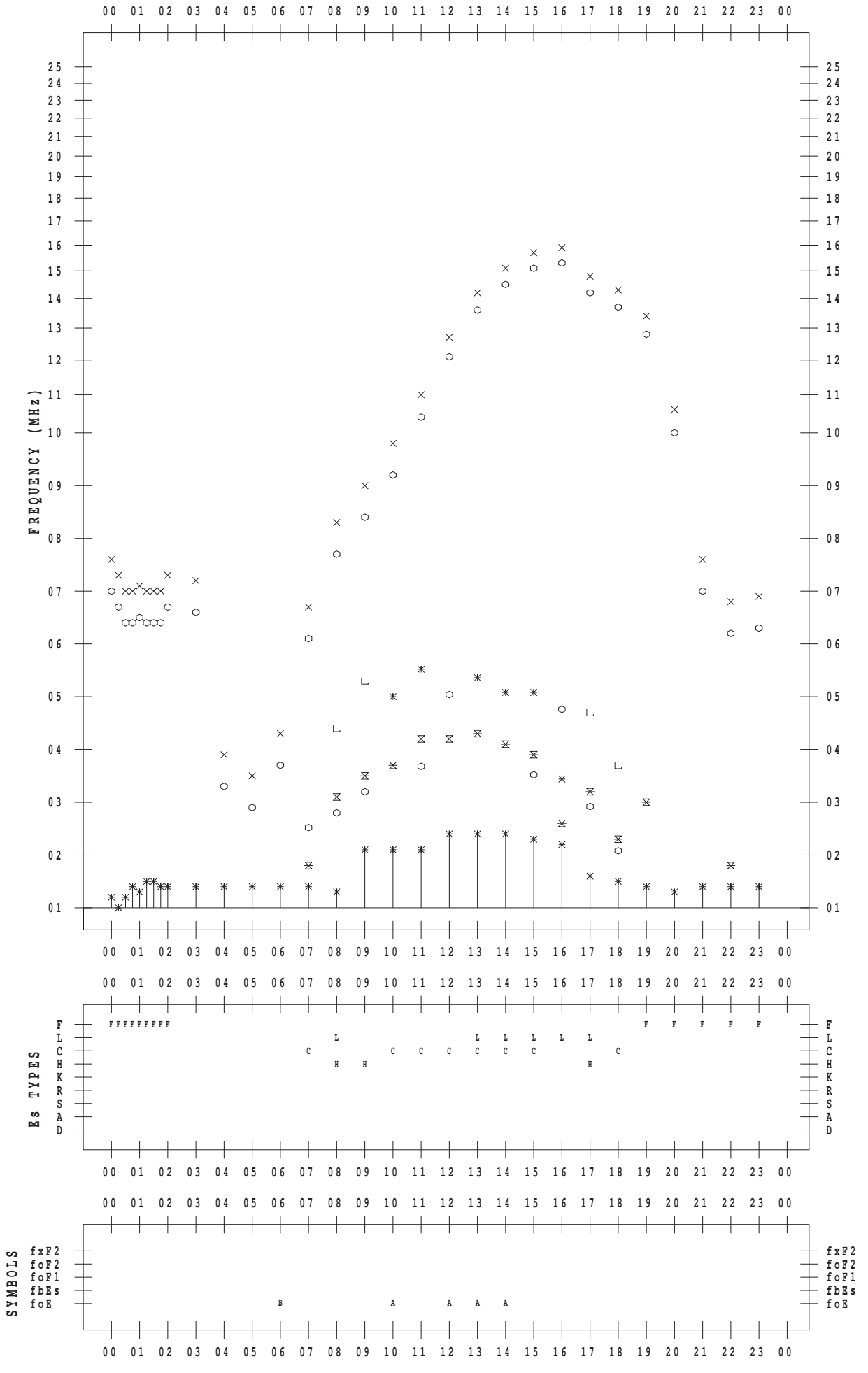
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/10

135 °E MEAN TIME



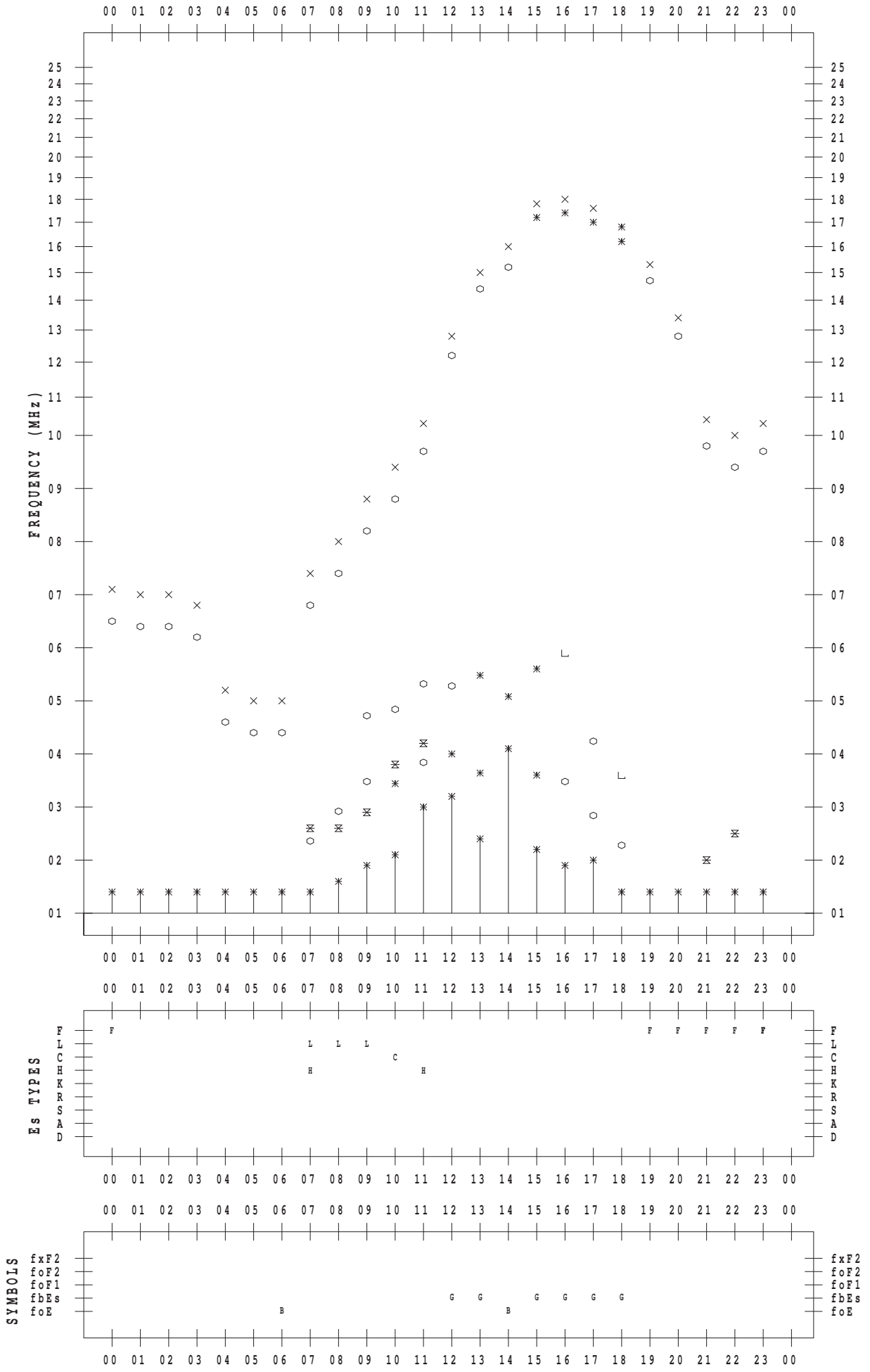
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/11

135 °E MEAN TIME



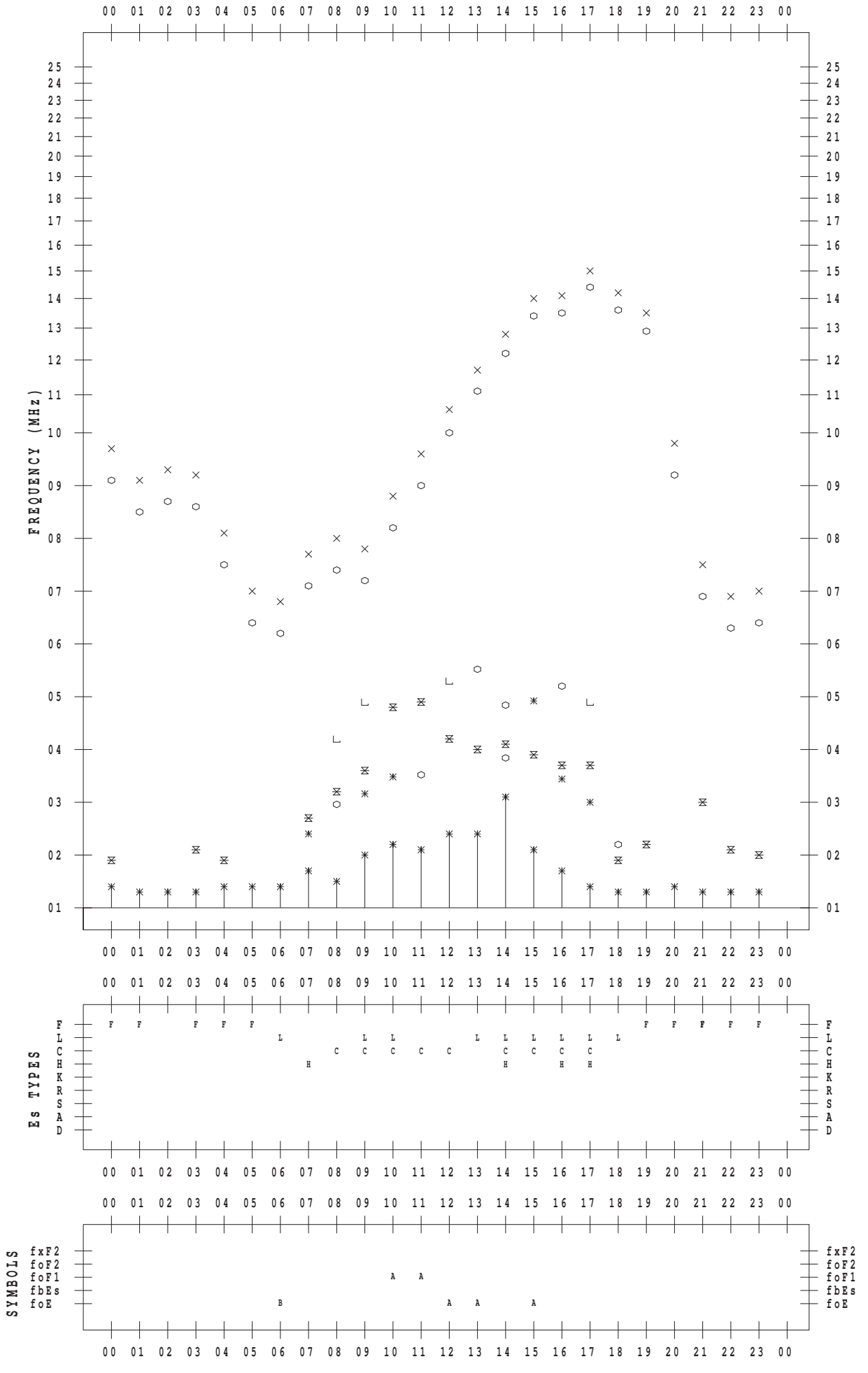
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/12

135 °E MEAN TIME



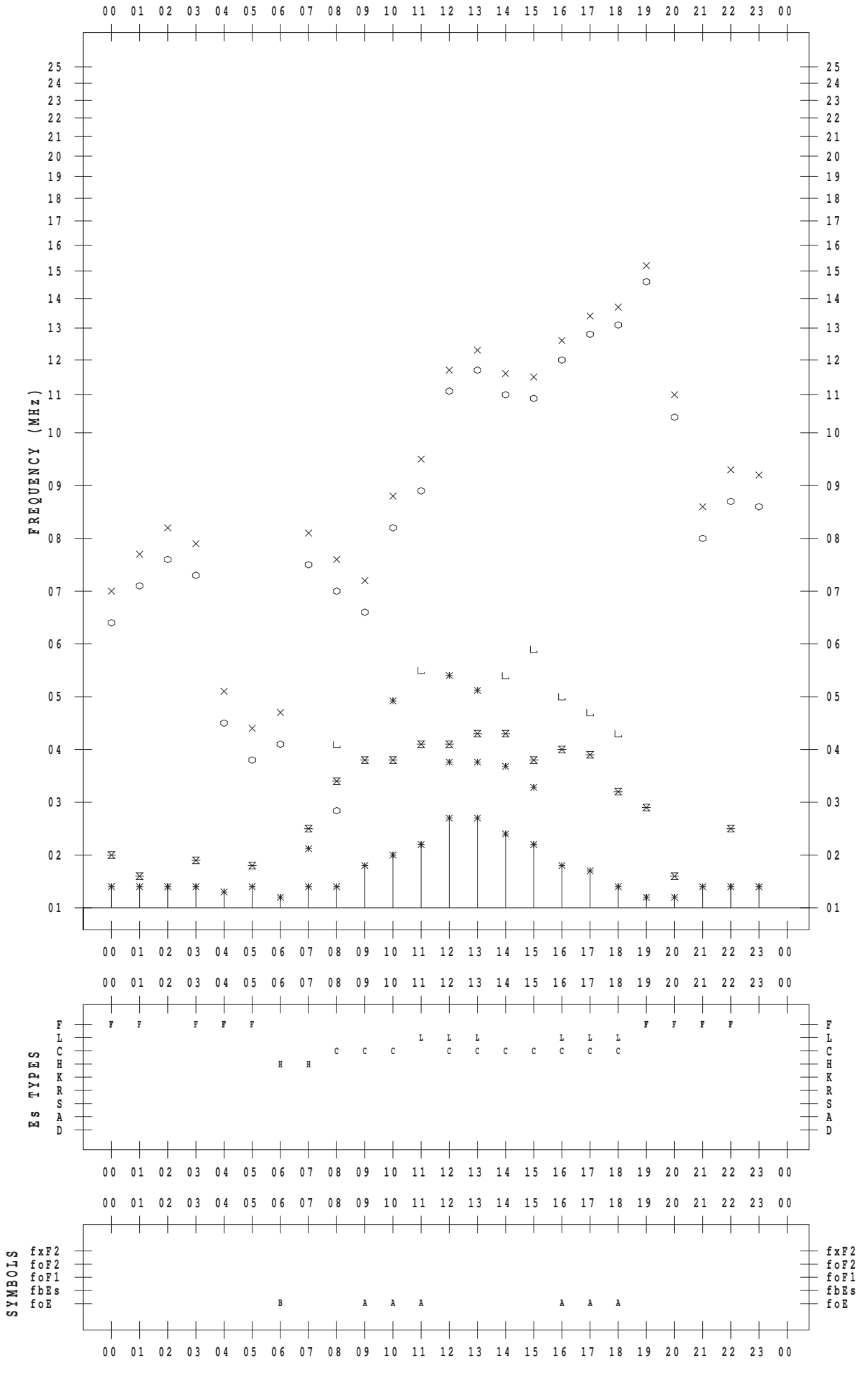
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/13

135 °E MEAN TIME



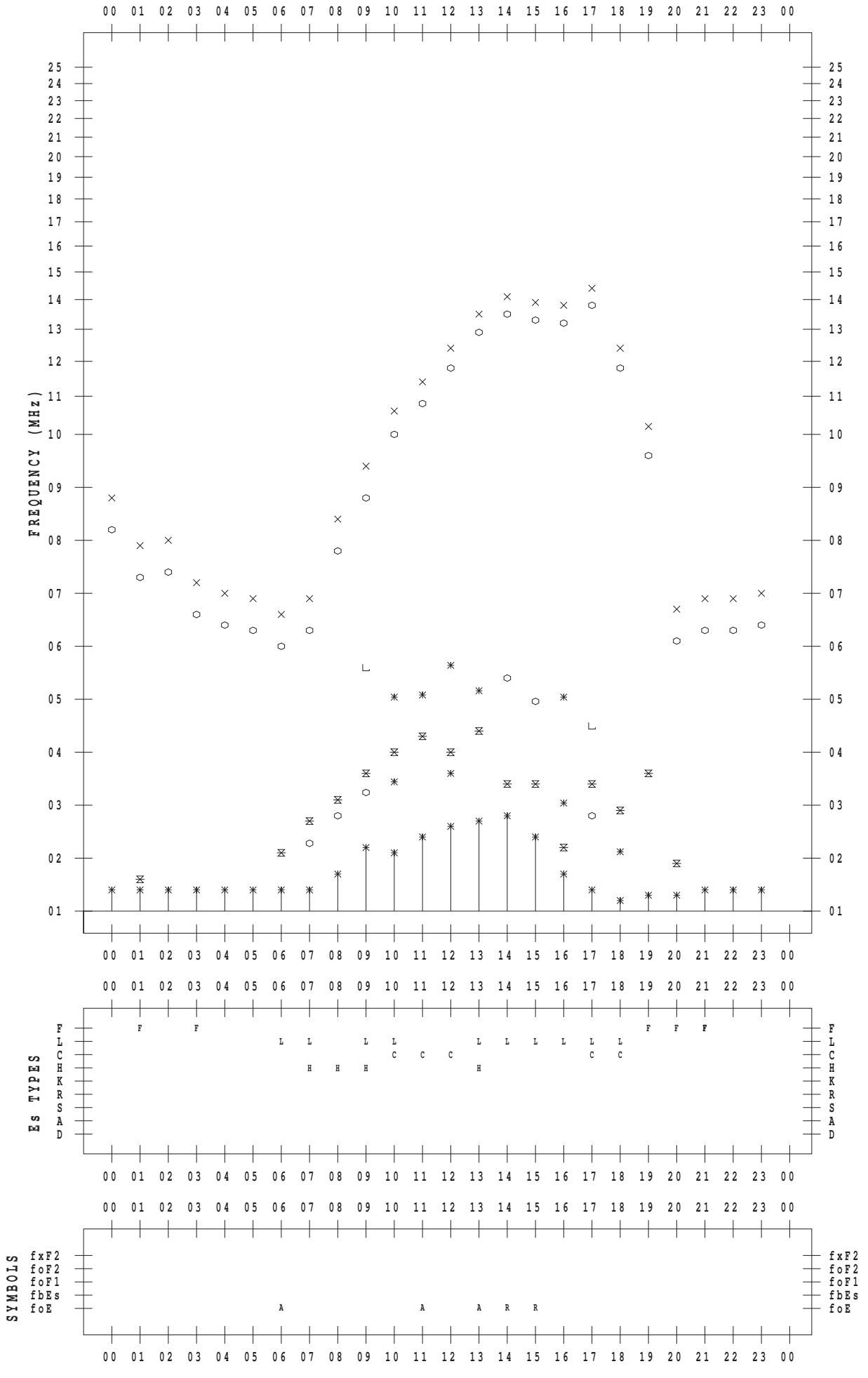
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/14

135 °E MEAN TIME



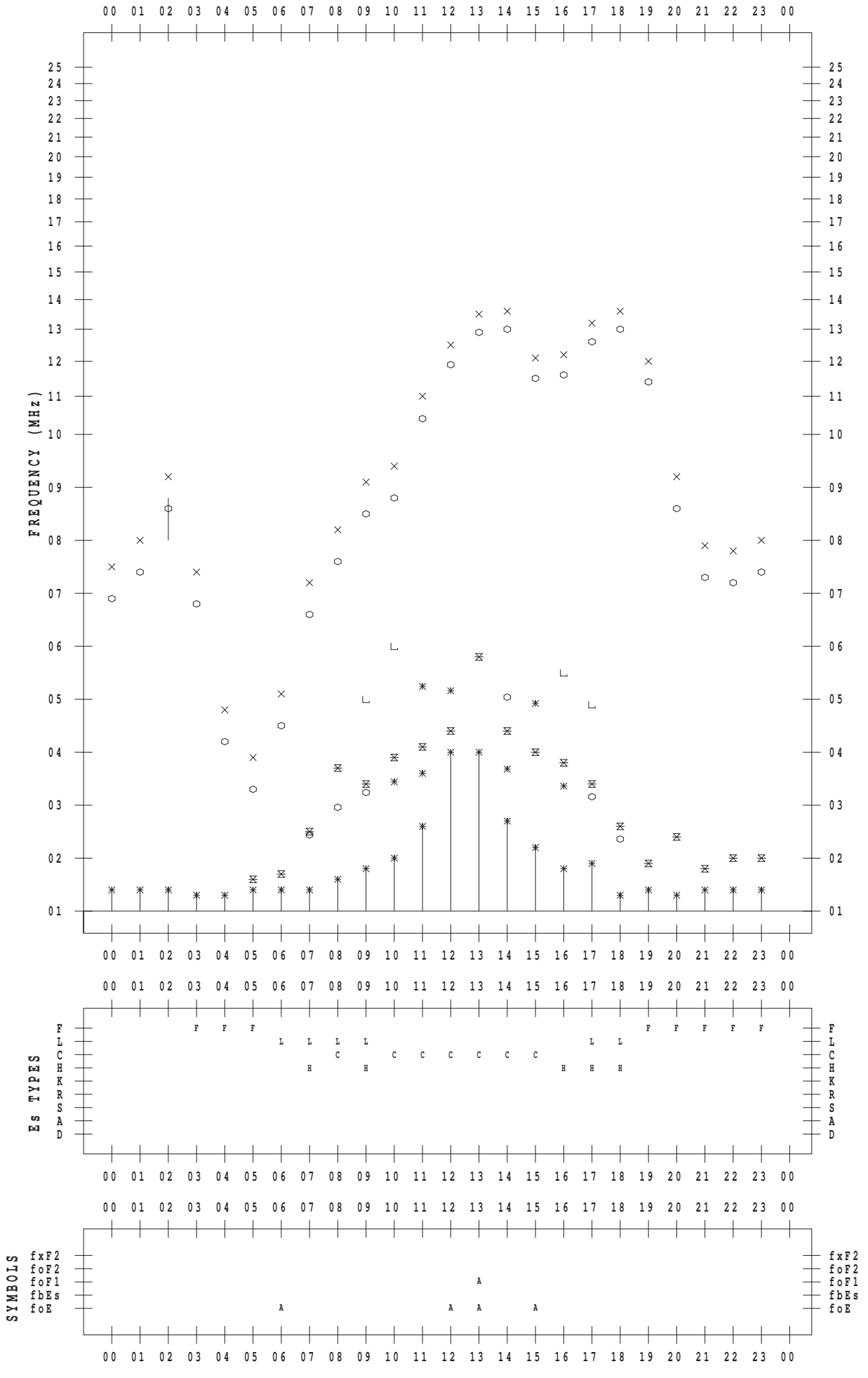
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/15

135 °E MEAN TIME



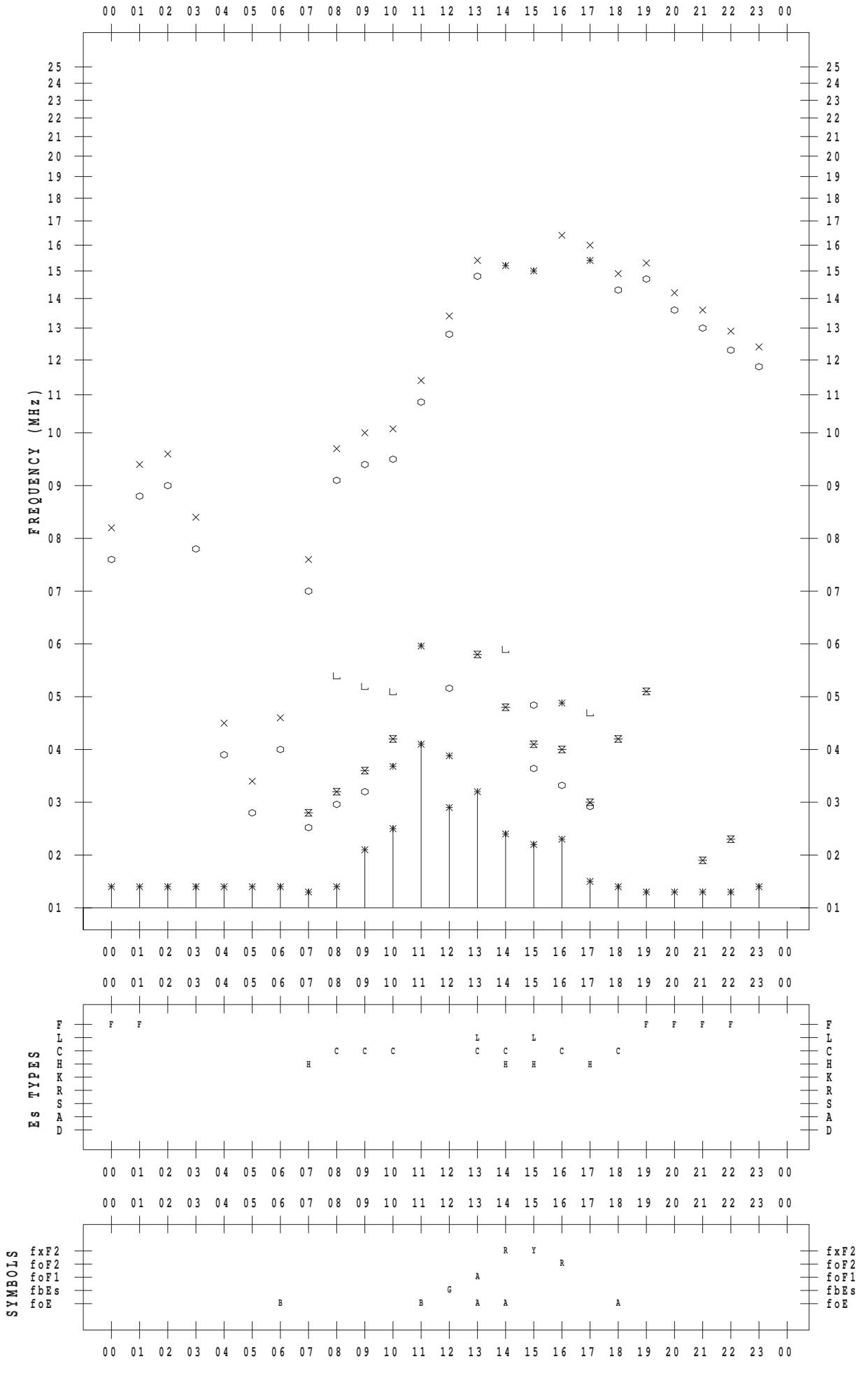
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/16

135 °E MEAN TIME



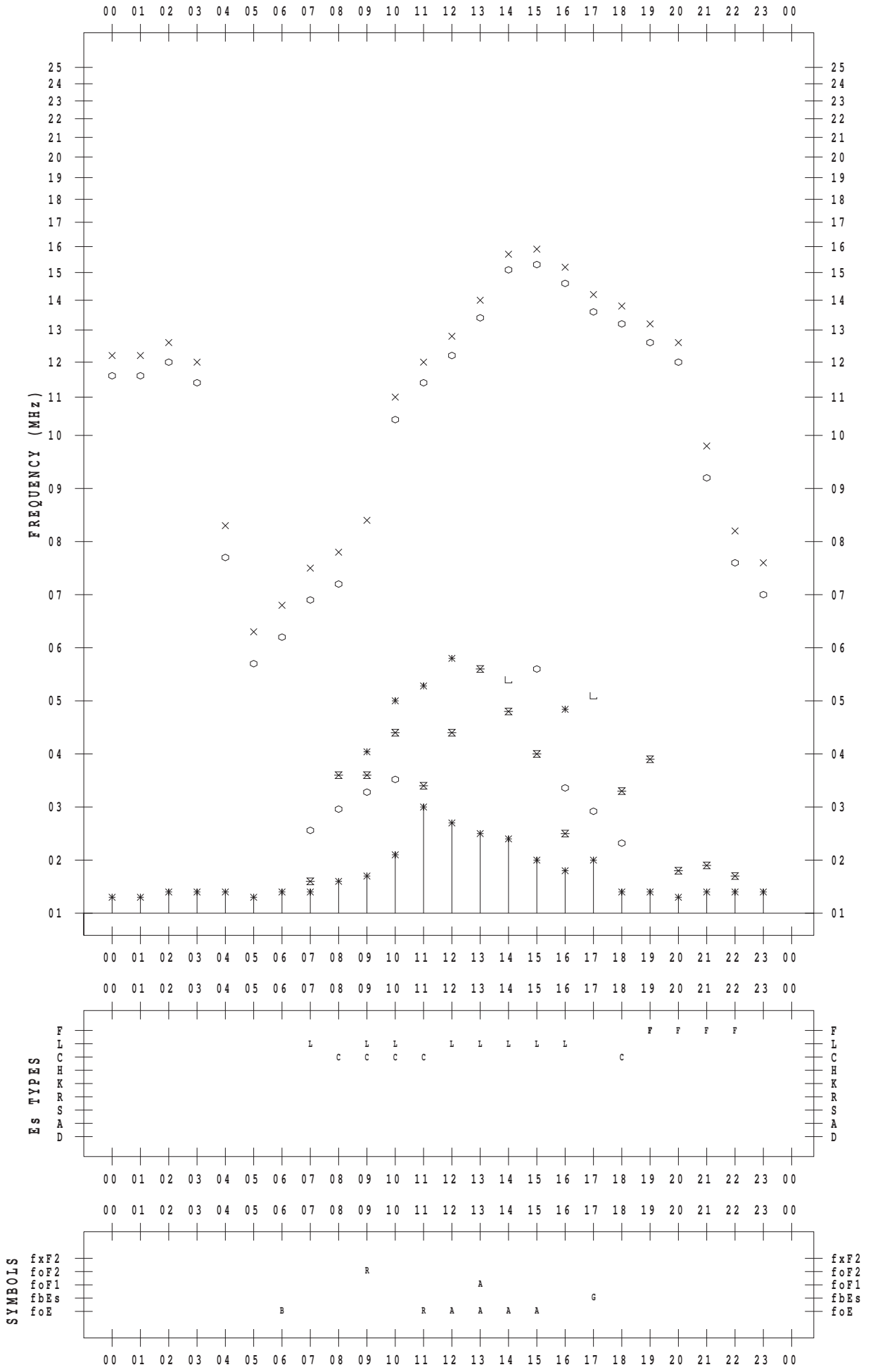
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/17

135 °E MEAN TIME



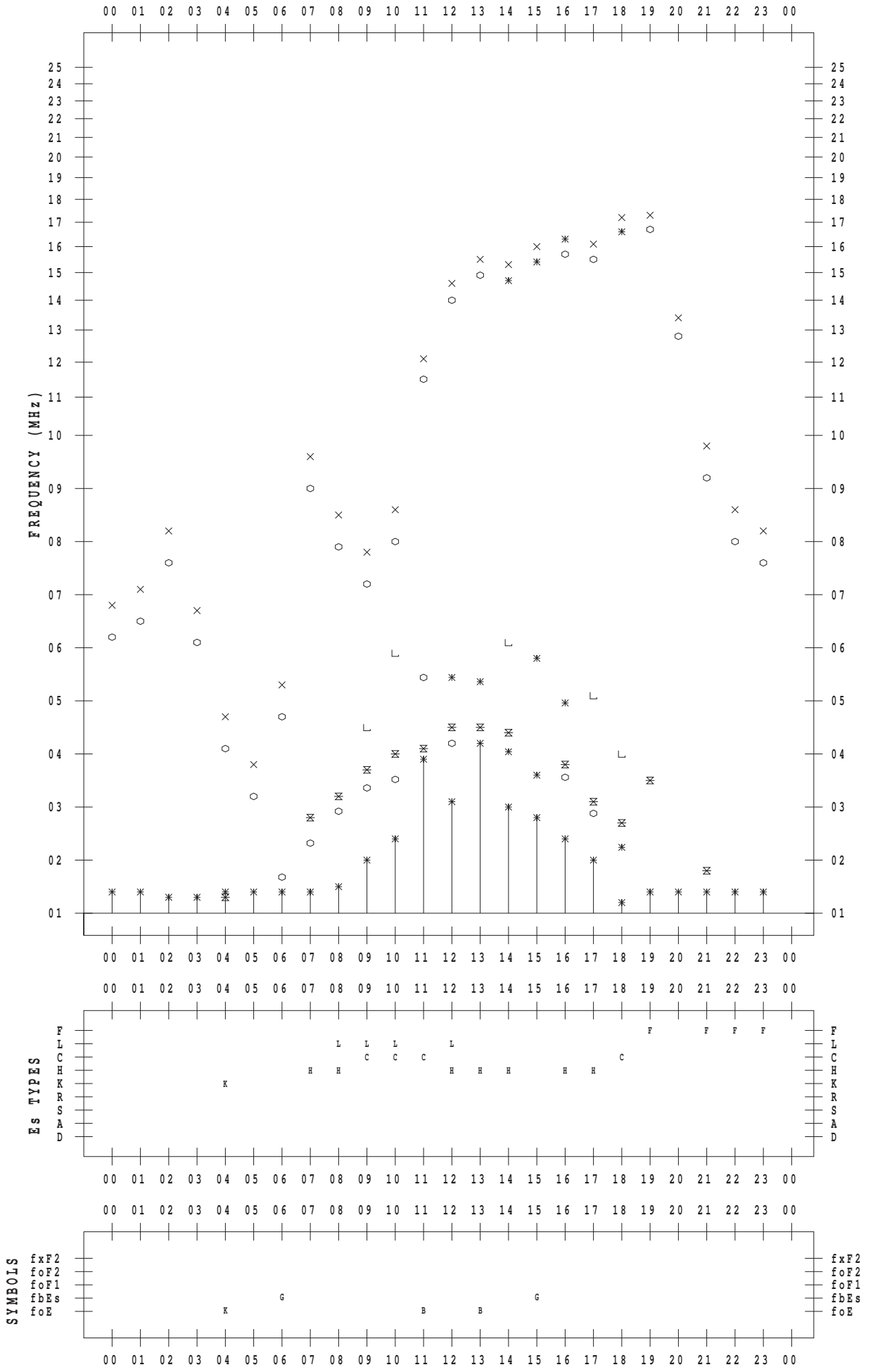
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/18

135 °E MEAN TIME



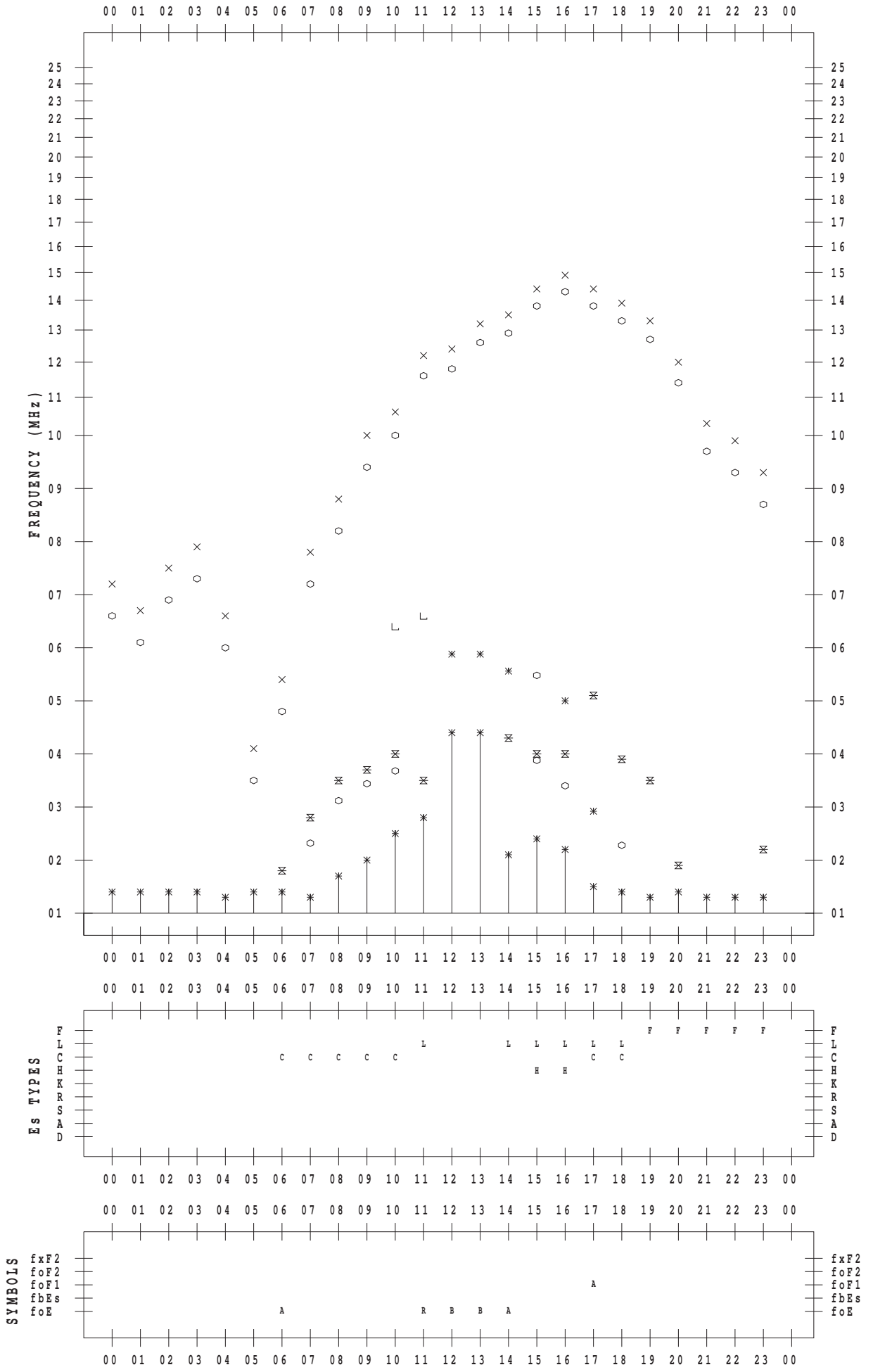
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/19

135 °E MEAN TIME



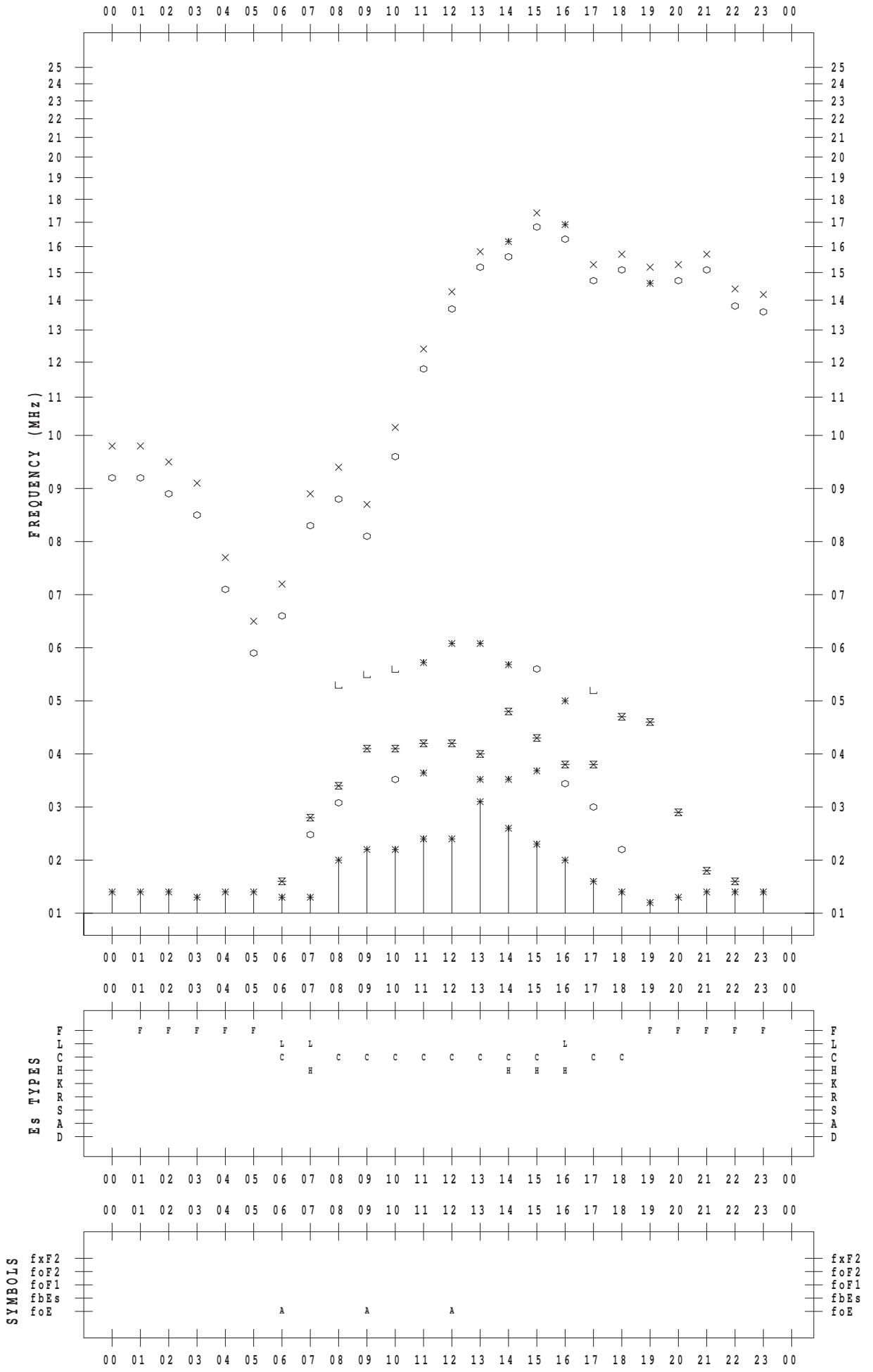
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/20

135 °E MEAN TIME



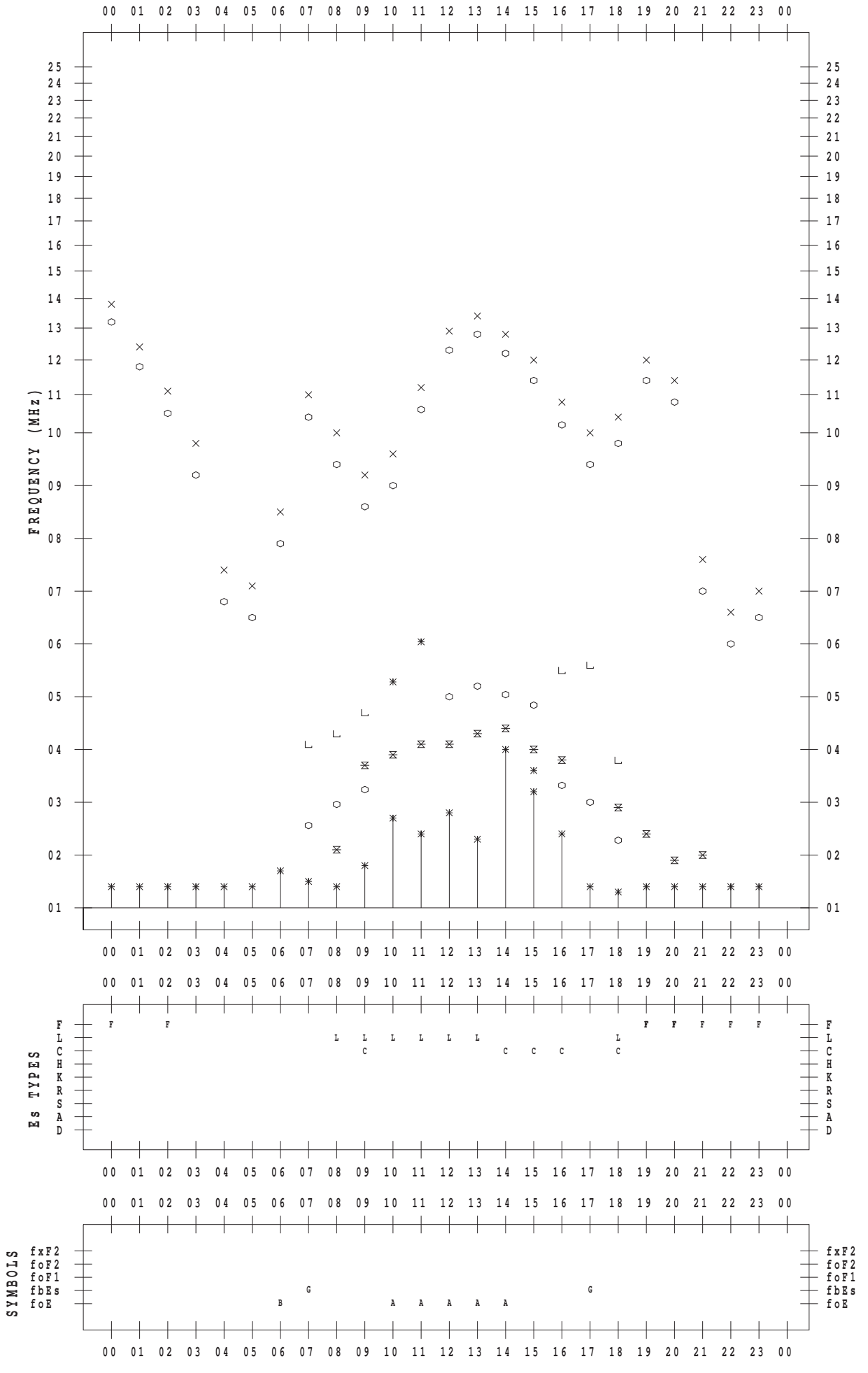
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/21

135 °E MEAN TIME



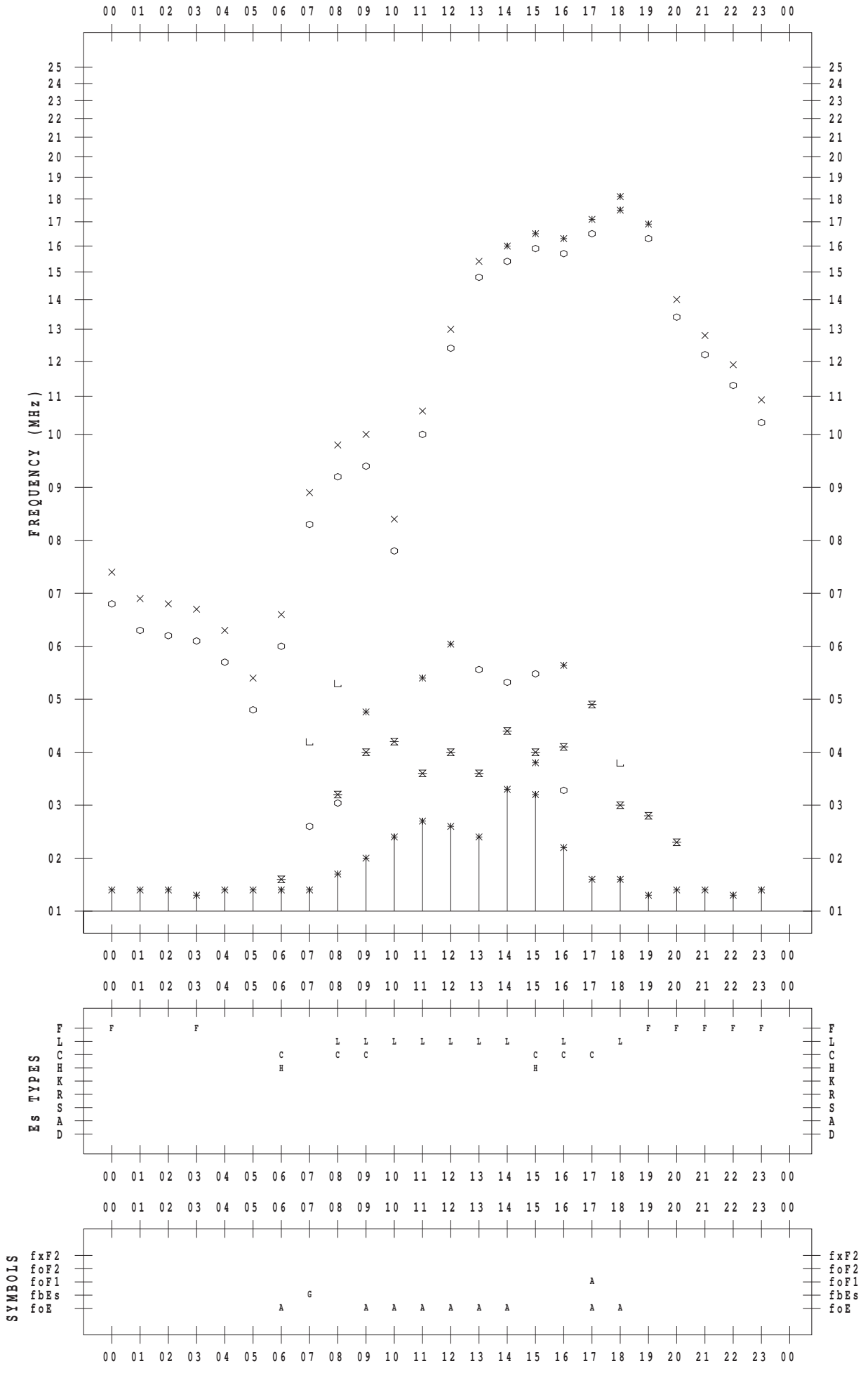
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/22

135 °E MEAN TIME



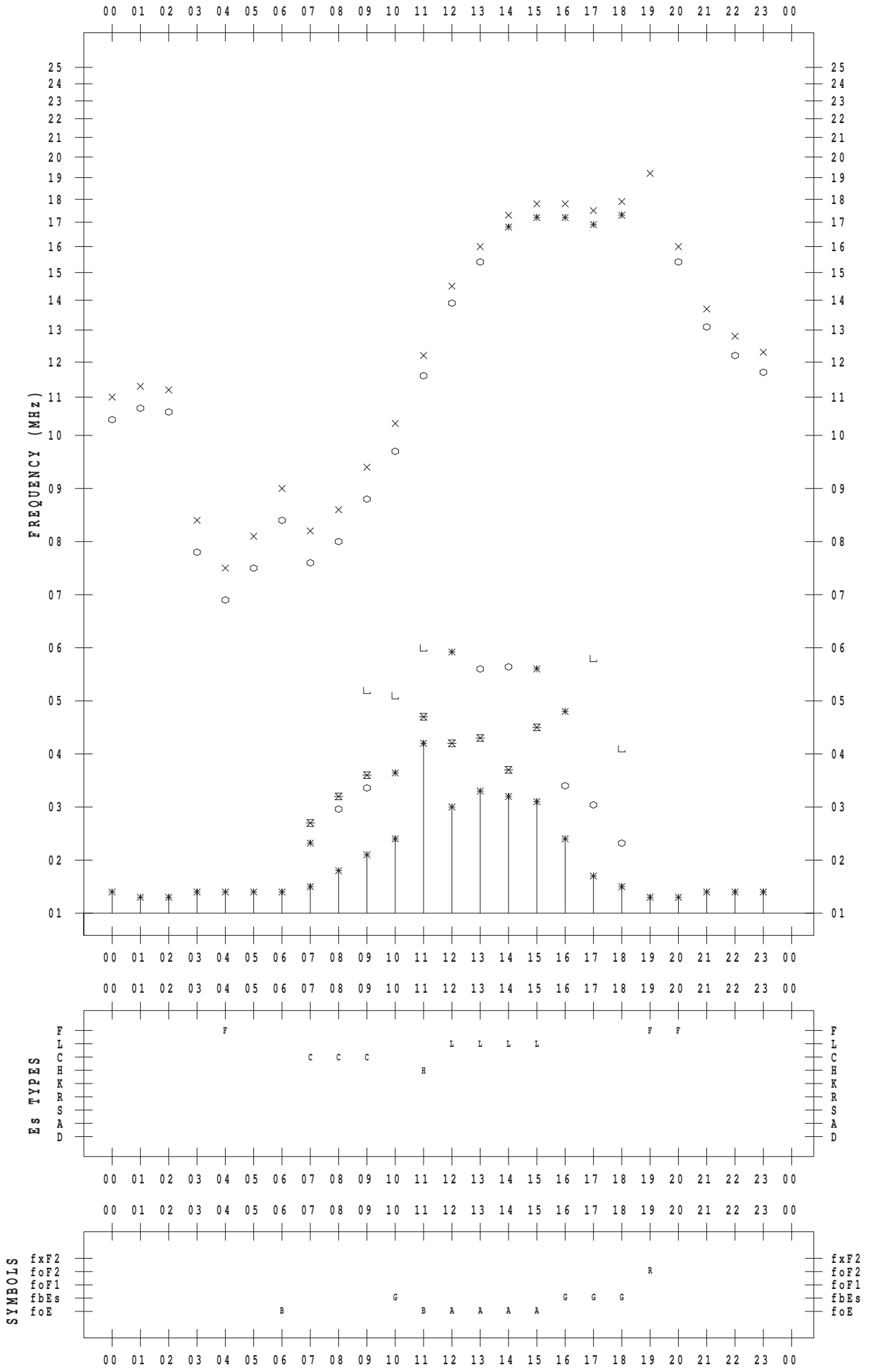
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/23

135 °E MEAN TIME



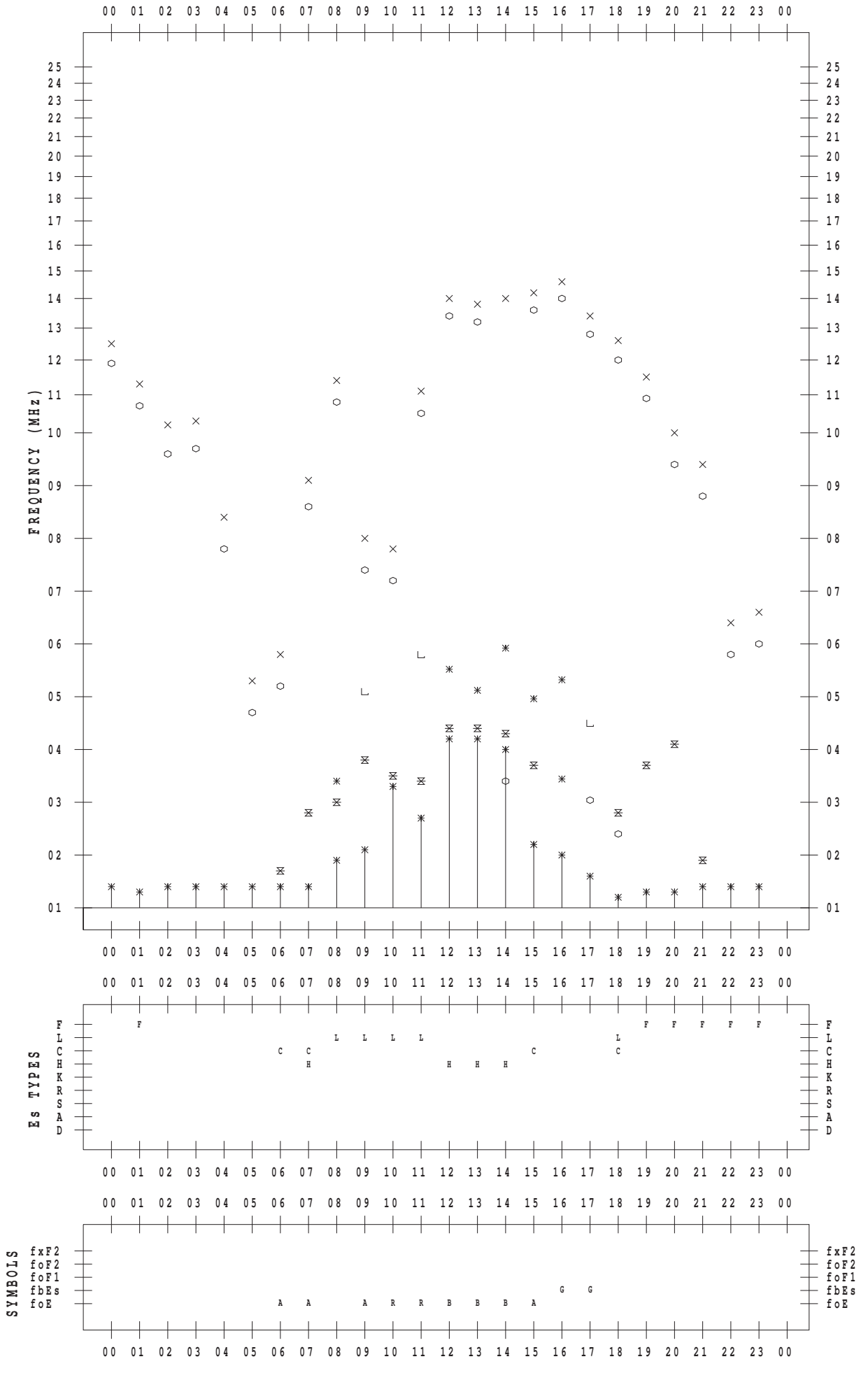
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/24

135 °E MEAN TIME



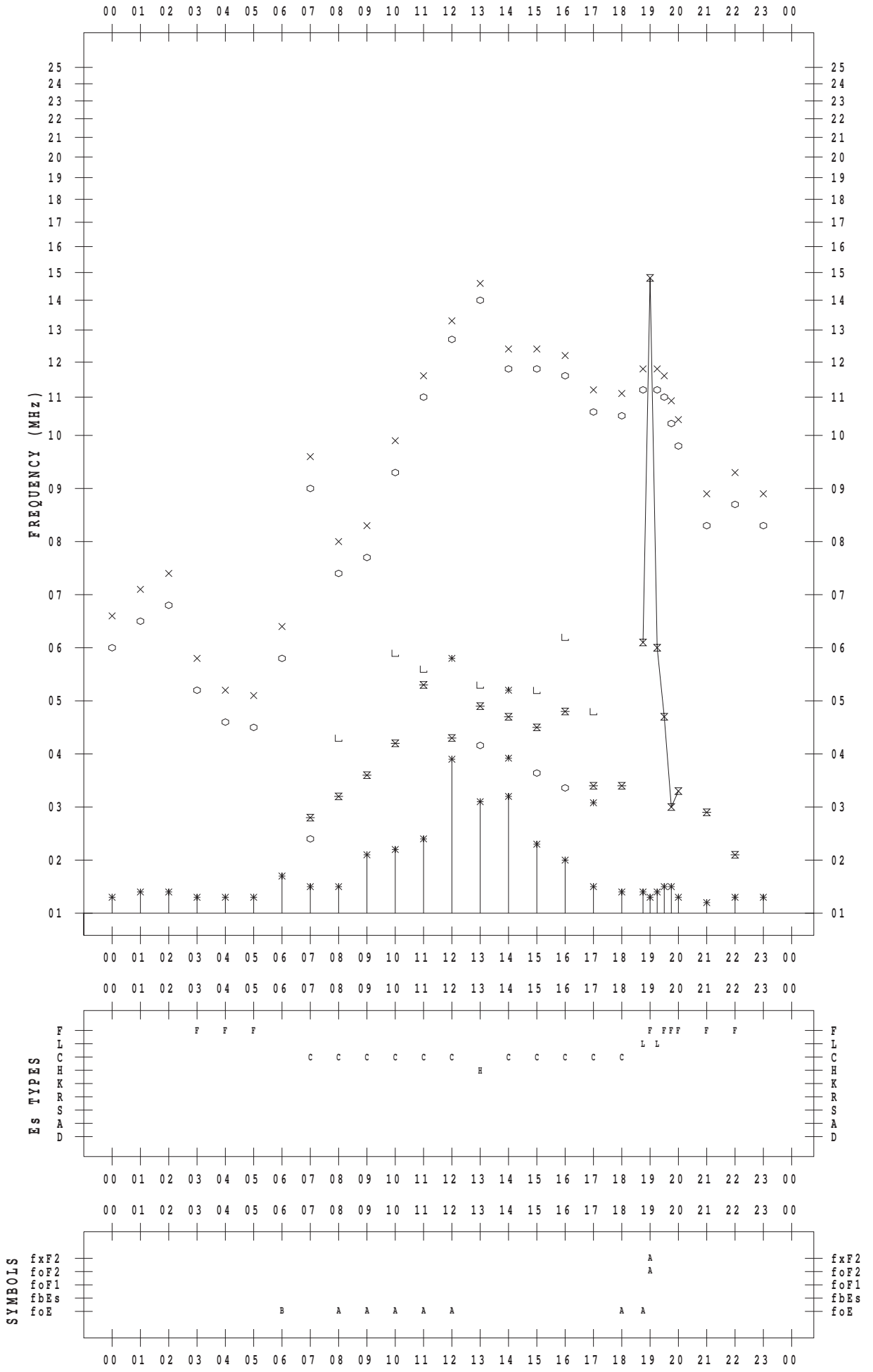
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/25

135 °E MEAN TIME



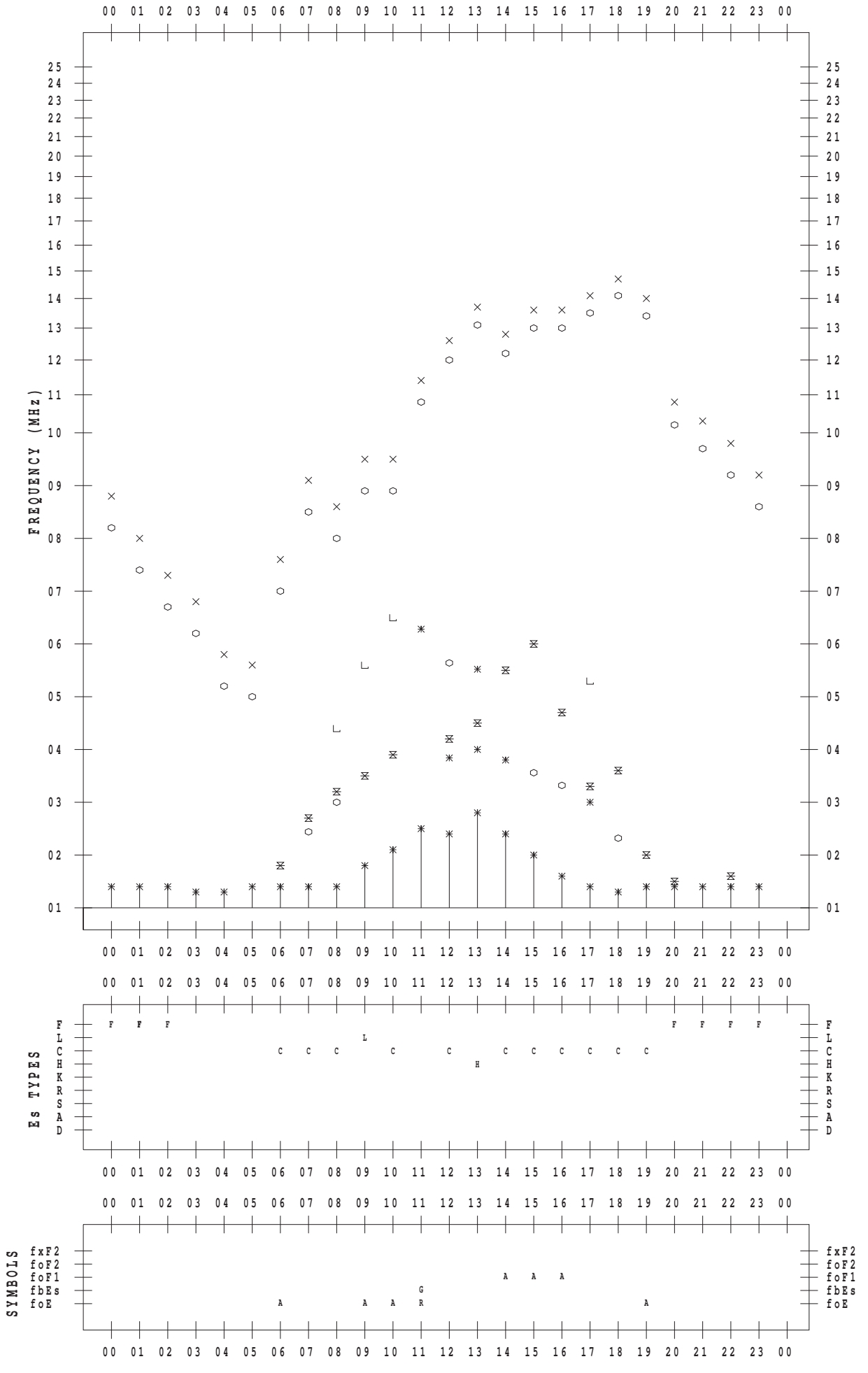
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/26

135 °E MEAN TIME



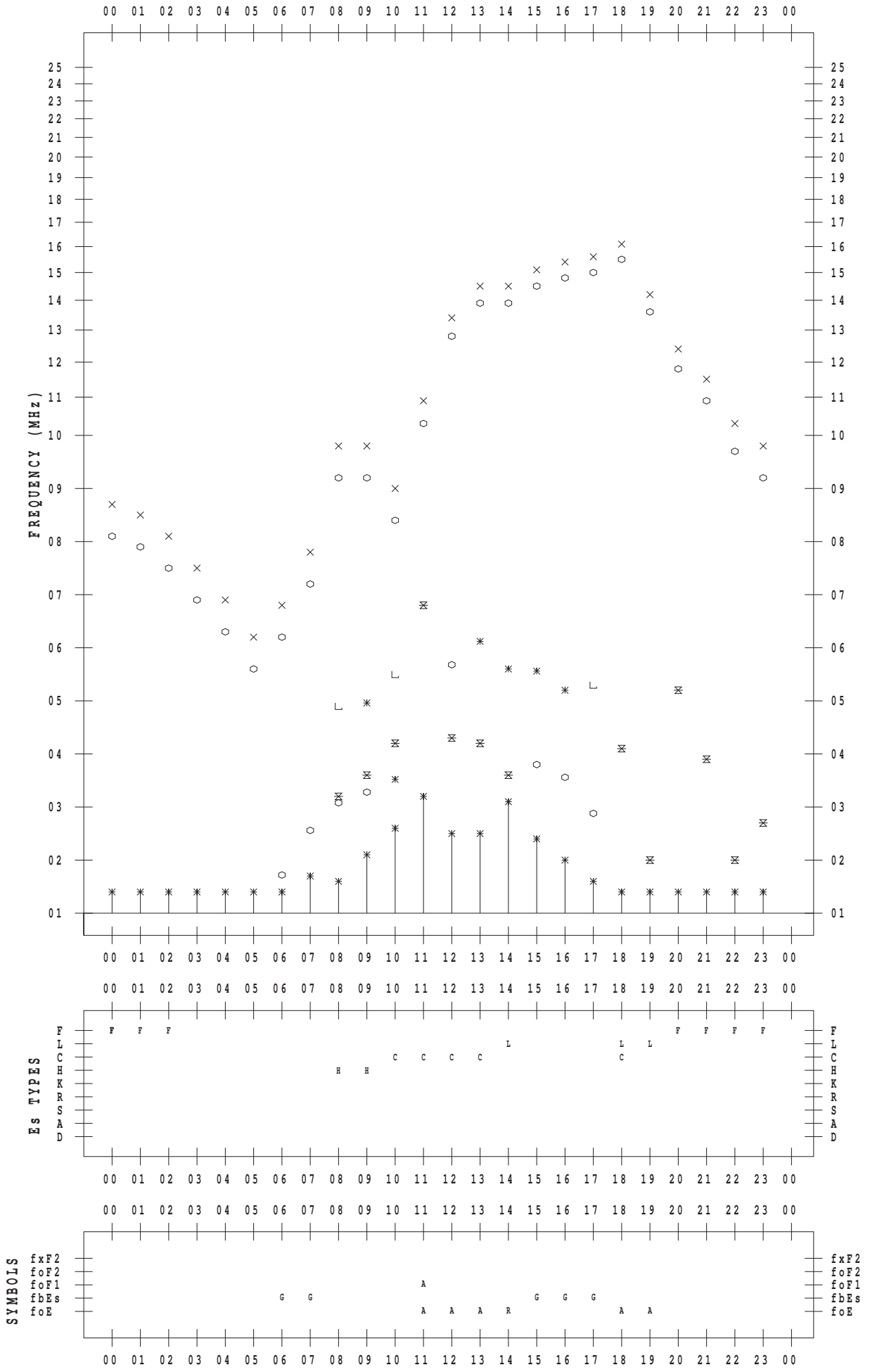
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/27

135 °E MEAN TIME



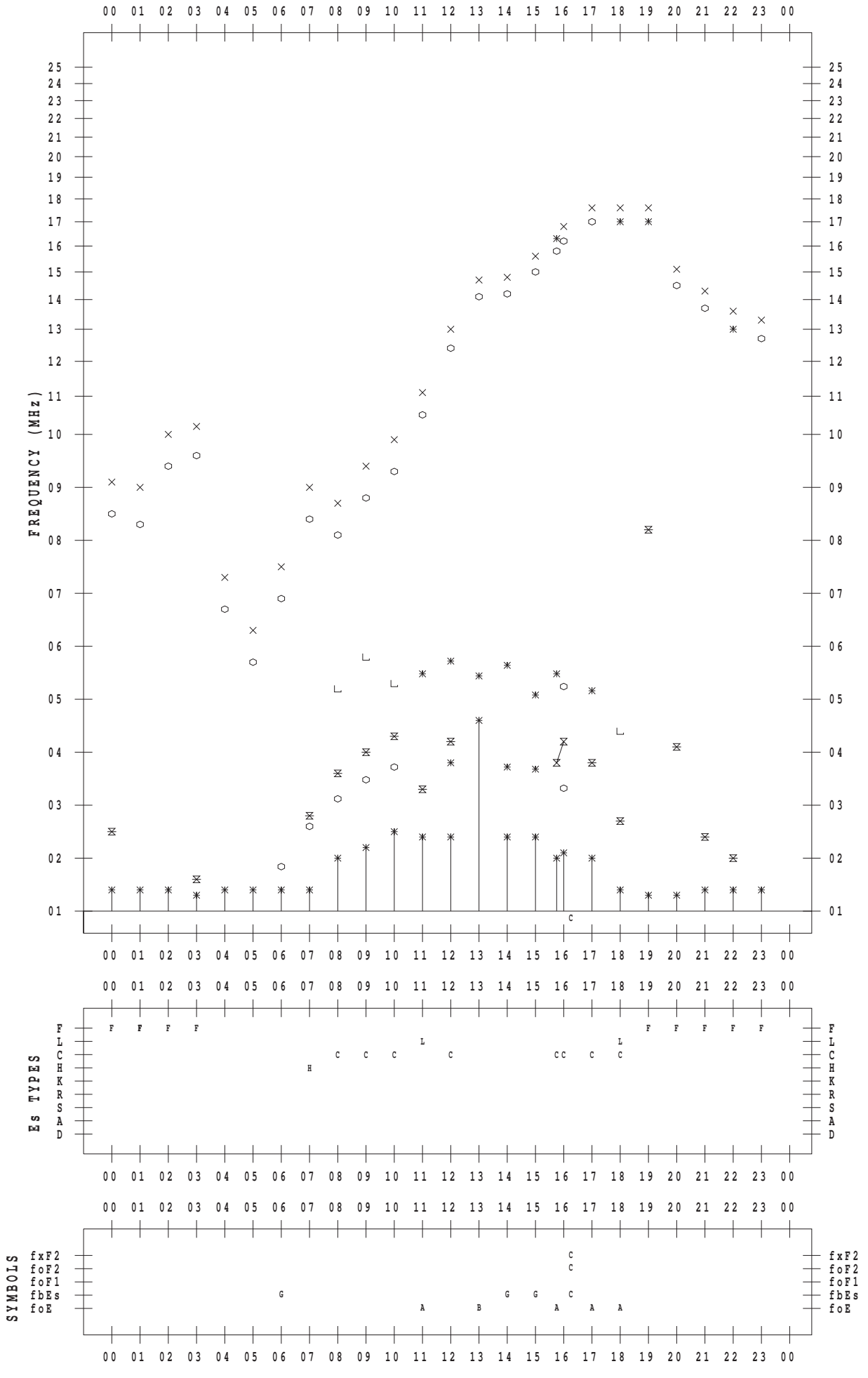
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/28

135 °E MEAN TIME



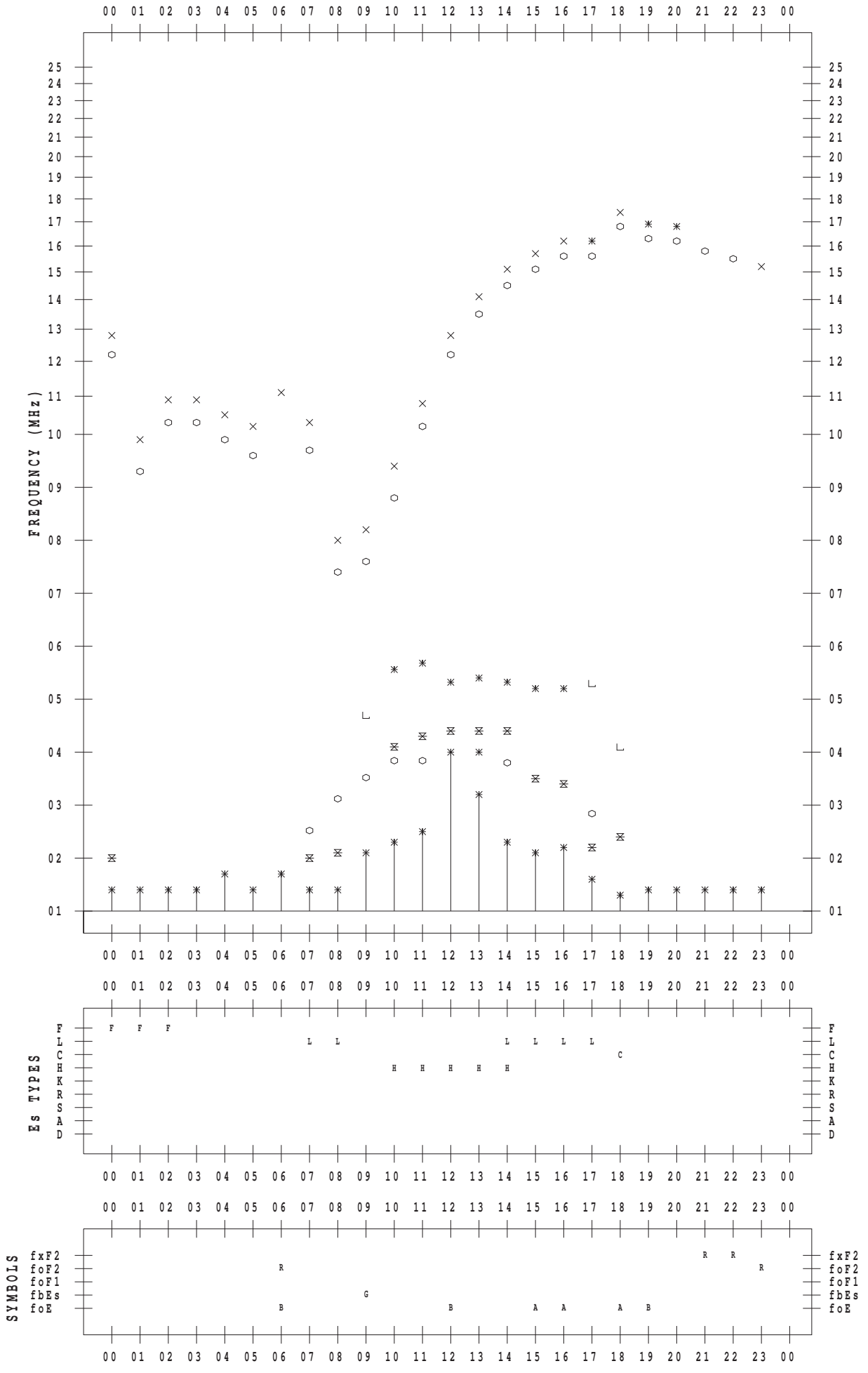
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/29

135 °E MEAN TIME



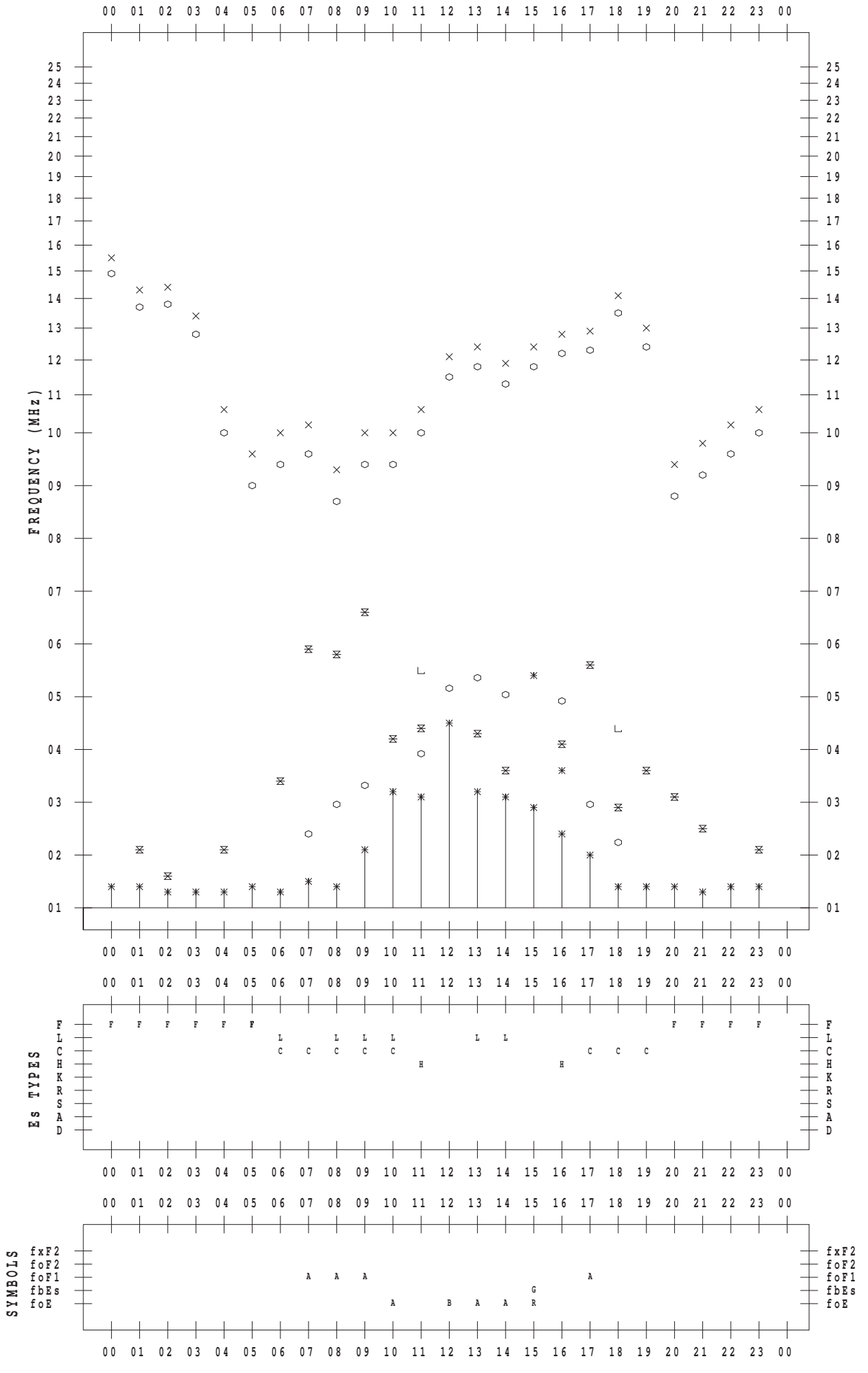
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 4/30

135 °E MEAN TIME



B. Solar Radio Emission

B1.Outstanding Occurrences at Hiraiso

Hiraiso April 2012

Single-frequency observations

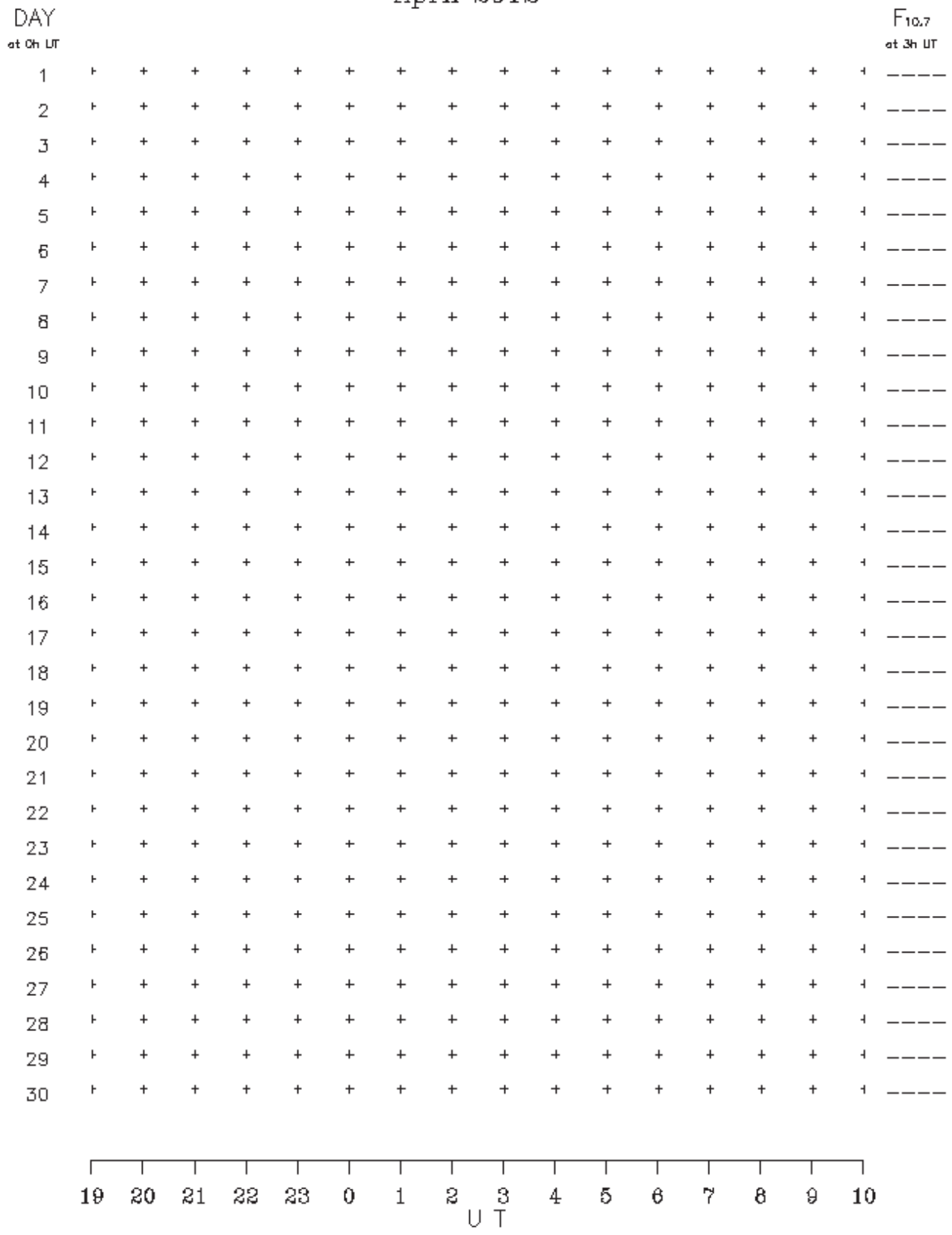
Normal observing period: 2000 - 0915 U.T. (sunrise to sunset)

APR.	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

B.Solar Radio Emission

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

April 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/2012/04/