F-763

IONOSPHERIC DATA IN JAPAN

FOR JULY 2012

VOL. 64 NO. 7

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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.

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.

HOURLY VALUES OF foF2 AT Wakkanai

JUL. 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	64	64	52	53	62	66	66	67	59	67	A	55		A	A	66	A	62	62	64	60	64	64	35
2	58	52	52	56	57	61	65	66	A	A	67	A	A	A	A	A	66	67	66	64	65	A	64	64
3	63	52	62	62	58	67	62	56	A			A			A		A	A	62	65	A	66	A	65
4	65	63	62	56	54	63	66	59	67	64	59	66	62			A	67	A	67	67	66	A	A	66
5	54	61	61	54	58	66	70	65	70	A	66	A	A			A	A	A	A	67	64	A	64	65
6	64	64	A	A	62	64	A	A	A	A	A	A	A			62		61	A	67	66	66	62	65
7	64	54	59	59	54	60	63	A	69	69	61	A	A	64	66	A	A	65	66	62	65	64	66	53
8	65	61	57	56	60	67	68	70	59	65	61				A	61	63	63	65	67	62	54	A	65
9	65	65	A	60	58	63	69	65	68	66	66	66	66	63	67	63	66	66	66	64	64	66	66	66
10	65	52	54	48	A	A	A		A	A		A			A	A	A	A	A	A	54	A	58	54
11	54	54	34	38		A	A	55		A						62	62	A		65	67	63	A	64	A
12	62	53	54	52	52	52	52	A	A	A	A		A	A			58	66	67	65	66	66	66	52
13	60	53	54	51	48	58	67	66	55	A	A					64	62	60	62	62	67	66	65	53
14	52	52	62	54	55	62	67	66	A	A	64	62	A	A	62	63	A	A	65	A	A	66	A	A
15	65	64	61	52	58	64	A	67	66	65	67	67	A	A	70	A	60	67	67	67	59	59	34	59
16	A	28			A	39		39		A		A	A				A		52	57	62	63	53	53
17	30	34	32	30	34	A	A	59									A	A	58	A	62	62	A	52
18	49	34	37	40	38	A	54	62	61	63	61	62	59	64	58	63	64	66	67	67	65	29	65	64
19	65	54	58	52	34	48	A	A	64	A	A	A	A		A	A	A	A	A	66	66	A	64	54
20	52	51	37	46	47		61	A	A	A	A	A		A	62	62	58	A	64	A	65	54	A	A
21	63	64	54	54	46	51	64	A	92	A	A		A	A	A	A	A	A	61	65	33	54	63	A
22	61	58	58	47	48	55	68	67	49	58	A	A	A	A	A	A	A	A	66	61	65	64	A	63
23	61	58	61	53	50	57	66	67	64	59	A	A	60			57	58	62	60	58	55	61	60	53
24	54	53	36	32	44	44	48	A	A	A					A	57	61	58		59	54	63	54	52
25	54	53	53	48	52	61	A	A	58	62	A	A		A		A	A	56	A	A	A	A	A	52
26	58	55	A	37	44	52	A	A	A	A	A	A		A	A	60	A	A	55	A	64	54	52	51
27	54	52	57	52	52	65	62	61	63	62	59	59	65	60	59	65	65	66	64	65	62	63	65	54
28	54	53	53	52	54	61	65	67	66	A	A	A	A	64	61	67	66	65	65	64	62	63	65	65
29	64	59	61	52	38	50	A	A	A	A	A	A	A	A				61	62	66	66	64	63	63
30	58	52	51	54	57	64	67	58	67	64	A	63		59	60	A	66	67	65	67	65	65	63	A
31	53	53	53	37	52	48	56	61	56	57			62	64		62	A	A	67	A	65	66	54	63
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	27	29	28	26	21	20	18	13	10	8	6	7	9	15	15	17	25	24	28	24	23	26
MED	60	53	54	52	52	61	65	65	64	64	62	62	62	64	62	62	63	65	65	65	64	64	64	56
U Q	64	61	61	54	57	64	67	67	67	65	66	66	65	64	66	64	66	66	66	67	65	66	65	65
L Q	54	52	52	46	46	52	61	59	59	60	61	60	60	60	59	61	60	61	62	63	62	60	58	53

HOURLY VALUES OF fEs AT Wakkanai

JUL. 2012

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	28	G	30	34	53	57	62	57	74	51		59	72	60	67	60	53	33	71	44	60	29
2	27	G	G	33	G	34	44	63	83	63	G	64	51	87	122	137	128	41	G	39	57	69	68	26
3	33	33	33	G	G	44	46	51	76		G	69	G		45		60	64	56	58	60	44	59	35
4	31	27	32	32	36	54	60	51	55	52	54	46	G	G		50	62	74	72	54	41	54	43	34
5	33	25	27	G	G	36	60	38	50	101	62	73	52		G	52	73	106	118	51	26	60	41	40
6	37	40	72	72	56	46	74	80	126	56	72	75	89	G	G	49	G	48	72	66	41	26	30	28
7	G	25	G	G	G	G	51	59	G	45	44	68	63	G	G	81	70	45	55	60	93	59	28	39
8	32	33	G	G	G	33	34	40	62	63	G		G	G	45	60	G	51	48	39	40	58	59	32
9	32	29	37	33	34	G	38	40	61	50	G	63	G	G	G	44	55	39	G	33	31	50	54	37
10	G	33	G	G	34	58	51		51	47		52	G	G	50	56	52	48	40	48	35	39	53	46
11	38	29	G	27	G	36	41	47	G	52	G	G		G	G	G	51	70	58	48	32	55	57	67
12	38	36	35	G	32	39	52	58	68	57	108	G	52	51	G	G	71	60	44	61	G	57	43	G
13	31	36	39	G	G	G	G	54	56	71	59	G	G	G	G	G	G	54	38	38	42	40	59	46
14	48	42	48	G	G	41	G	50	57	76	62	62	76	61	G	G	71	73	65	71	73	66	72	60
15	41	46	39	34	49	86	61	64	G	49	G	64	71	74	46	71	55	39	G	G	G	G	39	32
16	40	24			28	31	G	G	G	53	G	59	44	G	G	G	54	G	36	G	G	G	G	G
17	G	25	G	26	33	35	38	G	G		G	G	G			G	51	97	54	92	30	53	40	29
18	G	G	25	31	28	44	35	G	G	49	G	G	G	G	G	G	G	57	43	58	60	26	68	60
19	51	34	33	32	40	41	73	69	60	73	64	62	58	G	104	177	75	180	180	94	57	72	37	G
20	G	34	25	G	28		44	68	69	96	101	79	G	73	G	G	39	61	42	95	60	53	83	72
21	58	58	49	27	44	39	41	122	84	106	52	G	67	80	120	114	97	90	56	60	36	36	50	39
22	33	30	29	26	36	38	39	53	50	49	102	180	97	93	103	71	72	116	71	105	59	70	67	39
23	33	33	33	G	29	38	59	57	58	51	64	102	65	G	G	G	39	G	36	G	34	39	45	39
24	G	G	G	G	G	30	43	58	59	62	G	G	G	G	72	G	G	44		32	27	40	54	53
25	34	30	24	26	G	37	44	52	52	62	126	51	G	60	G	112	55	61	72	158	113	72	60	36
26	49	41	40	34	G	35	65	97	78	68	71	76	G	56	48	51	58	61	48	92	69	27	24	33
27	28	38	27	25	G	30	34	52	40	60	50	G	G	G	G	G	G	G	36	33	G	50	56	56
28	28	40	33	G	28	G	36	46	54	124	69	67	72	61	G	56	40	38	39	61	53	41	34	40
29	33	41	34	29	G	37	93	73	53	64	52	51	66	61	G	G		35	38	60	38	43	28	24
30	36	33	30	G	24	33	39	44	46	G	54	53	G	54	43	51	42	40	36	G	54	54	34	34
31	G	G	G	33	33	G	34	G	G	G	G	G	G	G	G	50	98	80	58	72	48	36	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	31	30	31	30	31	29	30	30	29	28	29	30	30	31	30	31	31	31	31	31
MED	33	33	30	26	28	36	44	52	55	57	53	56	G	G	G	50	55	57	48	58	41	50	50	36
U Q	38	38	35	32	34	41	59	63	62	69	69	68	65	61	49	60	71	73	58	71	60	58	59	46
L Q	G	25	G	G	G	31	36	44	40	49	G	G	G	G	G	G	39	40	38	33	31	39	34	29

HOURLY VALUES OF fmin AT Wakkanai

JUL. 2012

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

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

HOURLY VALUES OF foF2 AT Kokubunji

JUL. 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	53	73	77	58	67	A	66	A	105	104	87	78	58	A	75	A	90	A	83	71	73	67	A	54
2	52	A	54	56	53	59	54	79	78	A	A	A	A		76	74	A	A	A	A	A	A	54	54
3	52	52	45	N	53	63	69	68	A	A	A	A	A	57	62	66	67	69	A	67	66	54	54	78
4	72	67	53	52	52	52	64	87	81	A	A	A	A	A	A	71	72	73	A	91	A	77	78	80
5	A	54	52	A	A	53	74	102	100	A		A				77	76	74	66	72	76	74	72	73
6	66	53	52	N	57	53	78	93	A	A	A			A		78	81	A	A	A	A	A	A	A
7	A	51	A	67	55	52	66	A	91	80	A	A		A	87	87	75	74	72	72	73	73	64	72
8	A	75	52	A	54	61	65	90	92	A	A	A	A	A	71	73	76	71	74	39	74	A	74	76
9	75	A	66	54	59	63	74	80	95	86	A	A	84	A	A	A	77	84	85	88	80	87	87	81
10	A	A	75	52	55	66	A	A	65		48		48	A		A		59	A	60	A	54	54	54
11	53	63	A	53	49	A	57	A	A	A	A	A		A	69	78	76	76	72	A	64	72	A	53
12	53	52	52	52	57	52	62	61	A	A	A	A			68	63	73	A	A	A	A	55	67	52
13	67	68	52	47	54	62	81	72	76	A	A			81	A	65	74	80	81	78	66	53	67	67
14	62	58	A	44	44	54	73	64	A	75		A				74	81	A	90	87	A	58	54	74
15	67	67	66	64	52	52	66	A	88	A	66	93	93	84	A	97	81	86	89					
16	A	51	A	A	44												A	A	A	A	A	43	52	A
17	46	56	54	52	58	54	53	A	80	77		A		78	63	72	76	A	A	74	73	54	53	A
18	52	A	A	A			60	74	74	A	A	A	64	74	88	83	74	63	66	72	A	78	A	A
19	52		51	47	44	44	A	80	81	A	A	A	66	A	67		69	78	88	92	88	71	66	73
20	64	62	62	63	A	67	72	82	84	81		A	74	A	A	75	67	63	72	80	76	74	A	54
21	54	A	53	51	51	53	A	84	97	78	92	71		A	77	69	66	A	A	A	A	A	50	28
22	52	52	52	44	44	47	53	71	82	75	A	A	A	A	A	71	73	81	80	83	82	A	74	66
23	52	51	47	52	42	58	67	78	A	A	A	78	74		73	78	88	87	76	76	52	A	52	
24	A	A	44	43	42	39	A	53	48	A	A	A	A	A			68	67	54	A	64	A	54	53
25	52	52	47	45	45	53	A	A	A	A	A	A	A	48	A	A	A	A	55	53	64	54	63	64
26	53	58	A	51	46	46	69	A	72	A		A	A	A	73	72	A	A	A	71	A	A	54	A
27	52	58	52	51	46	53	62	73	A	67	64			73	78	90	87	88	87	90	74	63	54	A
28		52	45		45	58	64	66	68	A	66	A	83	93	87	81	80	77	64	A	A	64	66	54
29	67	64	52	52	46	52			62	A	A		A		A	68	A	62	63	63		67	54	54
30	53	52	44	44	45	52	67	85	84	73	A	A	A	A		74	72	81	83	81	72	A	63	A
31	54	67	54	56	58	53	53	64	66			A	76	63	76	A	68	68	76	81	77	53	76	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	25	24	28	27	24	21	22	10	6	4	10	9	16	23	25	21	21	22	18	21	25	21
MED	53	57	52	52	52	53	66	78	81	78	66	78	74	74	74	74	75	74	76	75	73	64	63	64
U Q	65	65	54	55	55	59	70	84	91	81	87	85	83	82	77	78	80	81	84	83	76	73	69	73
L Q	52	52	49	47	45	52	61	67	72	75	64	74	64	60	68	71	70	67	66	71	66	54	54	54

HOURLY VALUES OF fEs AT Kokubunji

JUL. 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	32	G	G	G	G	53	49	89	60	45	G	49	49	80	65	75	107	97	62	29	45	48	59	46
2	29	37	30	35	24	32	G	73	80	111	126	96	70		79	62	89	92	112	84	51	60	59	39
3	54	40	28	37	G	30	42	53	136	155	122	53	68	50	G	45	G	53	76	70	36	79	34	38
4	G	34	G	G	G	G	G	50	60	86	100	107	100	120	124	G	62	81	96	104	124	60	79	83
5	83	36	42	45	33	G	48	60	62	48		62				52	84	69	106	92	G	G	50	37
6	41	G	G	G	G	G	G	76	152	155	180			50		60	G	73	73	116	114	85	71	115
7	78	27	50	40	39	G	G	96	105	51	50	59		122	G	G	G	51	50	54	G	50	60	57
8	82	G	27	78	G	G	G	45	89	133	127	148	62	80	G	G	G	G	42	49	78	70	60	58
9	58	58	50	28	G	G	G	G	G	G	62	53	68	109	96	87	G	G	G	33	G	39	60	78
10	78	103	59	49	G	67	59	73	65		G		51	73		70		50	83	28	103	34	53	46
11	28	G	29	G	23	44	55	73	60	49	58	67		65	G	G	G	G	61	77	53	41	41	59
12	38	46	47	G	36	26	33	53	84	81	110	79			65	G	G	87	150	110	60	44	46	42
13	40	23	G	G	32	G	51	52	G	62	49			G	51	50	G	G	34	51	60	G	39	G
14	47	45	51	49	36	32	G	44	87	62		61				G	52	112	82	74	85	44	34	29
15	24	G	G	G	G	G	50	78	115	130	45	72	51	68	102	49	68	G	G					
16	37	33	36	25	G												50	59	53	84	60	39	32	43
17	29	G	35	45	24	29	36	69	G	G		49		G	G	49	57	112	140	G	G	G	50	27
18	40	58	50	34		G	49	G	81	87	102	92	50	G	60	50	G	47	57	54	79	47	39	41
19	G	G	G	G	26	33	72	72	84	137	90	80	61	80	49		G	62	56	116	80	51	48	27
20	51	41	32	31	28	G	56	52	47	50		66	47	58	80	G	G	53	51	64	32	57	58	33
21	43	57	G	G	G	40	84	103	62	G	G	G	G	68	51	53	60	90	72	72	79	49	29	G
22	27	31	29	35	G	G	G	G	53	75	86	106	86	48	136	G	51	62	G	32	40	30	33	28
23	G	G	28	36	32	27	38	60	72	51	81	G	G	G	51	G	47	G	57	38	36	36	53	
24	58	46	G	G	G	G	39	G	52	51	68	82	62	53		G	50	51	53	67	G	59	73	51
25	49	33	31	40	34	G	70	80	82	46	61	67	47	60	102	79	61	96	34	49	G	29	29	28
26	G	34	35	29	29	G	36	116	72	100		50	80	80	50	61	146	87	87	38	64	60	25	68
27	G	G	31	G	G	34	G	58	93	58	G	G		54	51	52	60	107	95	61	33	40	50	30
28		29	G		G	G	G	G	G	61	G	104	61	59	49	G	G	38	49	61	79	67	50	51
29	32	34	G	G	G	G			G	59	63		53		68	72	69	38	50	34		46	G	48
30	G	G	G	G	G	G	45	G	47	51	112	86	80	65		50	58	46	50	38	49	53	50	83
31	43	33	29	29	G	29	43	G	G			53	G	G	47	79	G	56	60	79	27	28	27	48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	30	30	30	29	29	30	28	24	26	21	25	24	29	30	31	31	30	29	30	30	29
MED	39	33	29	28	G	G	39	58	64	60	66	66	61	60	51	50	50	56	57	61	51	46	50	43
U Q	51	41	36	37	29	32	50	74	84	93	106	86	69	80	79	61	61	87	83	79	79	59	59	57
L Q	27	G	G	G	G	G	G	22	47	49	47	53	48	49	48	G	G	38	50	38	29	36	34	29

HOURLY VALUES OF fmin AT Kokubunji

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

HOURLY VALUES OF foF2 AT Yamagawa

JUL. 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	67	52	67	61	51	47	45	67	N	70	72	A	A	A	71	A	A	A	80	A	54	67	66	A
2	52	67	54	63	54	50	63	66	69	A	A	69	A	A	A	A	N	89	88	68	67	52	54	52
3	A	42	50	52	53	52	62	67	75	B	A	A	A	A	70		71	71	68	A	55	A	A	67
4	A	53	53	56	48	52	61	66	52	69	A	A	74	A	A	69	72	77	69	74	64	76	54	67
5	A	67	A	54	A	51	67	83	61		B	B		B	67	70	A	A	76	67	54	54	63	63
6	52	53	43	55	53	53	70	77	67	71	A	A	A	A	A	A	69	A	72	68	67	67	53	A
7	51	52	52	A	51	52	63	72	64	70	A		B		74	74	59	72	61	69	67	66	59	54
8	52	53	49	62	52	54	55	67	74	64	A	A	A	B	A	69	71	69	72	70	A	64	54	52
9	52	A	54	55	58	52	64	94	77	A	A	A	A	A	69	76	A	91	87	77	A	63	A	67
10	52	72	52	A	53	67	52	58	A	A	A	A		B	59	78		71	38	64	66	64	52	54
11	52	A	52	51	52	50	48	A	A	A	A	A		68	68	66	69	76	86	A	53	53	54	53
12	54	44	52	54	A	52	65	N	64	A	59	A	A	A	A	A	69	80	69	86	52	A	53	B
13	52	42	51	51	50	48	63	66	67		A		59	59	72		90	79	45	A	A	66	54	52
14	52	52	52	52	52	52	60	63	74	76		B		B	A	75	76	70	77	72	54	54	49	54
15	52	52	53	54	60	52	53	67	70	A	A	74	69	70	A	58	59	76	84	47	54	54	64	54
16	53	A	52	53	52	42	42					B	B	B	B		A	A	A	57	44	A	45	47
17	A	52	52	54	53	A	44	64	74	54	60	B	67	72	69	83	86	69	73	77	74	54	54	29
18	A	52	52	53	52	53	52	67	65	59	A	A	A	72	77	69	A	A	A	66	A	67	54	53
19	51	52	51	55	42	50	52	70	78	72	62	65	A	A	A	B		88	59	66	N	54	53	53
20	44	54	67	56	55	54	63	74	79	65	58		B	64	71	A	72	68	70	88	79	A	54	54
21	52	A	A	45	45	45	48	A	A	78	69	74	89	73	74	A	A	76	A	48	52	67	51	54
22	50	52	44	52	53	54	58	65	62	A	51	B	A	A	A	77	77	87	83	76	52	53	53	54
23	52	66	43	45	42	44	56	65	62	92	A	A	A	A	A	71	74	80	77	A	54	51	B	50
24	46	A	A	A	A	45	47	56	58	57	A	A	A	A		A	A	67	A	A	A	54	54	52
25	52	A	A	A	46	45	52	64	70	A	62	A	A	A		59	66	62	62	63	55	54	52	54
26	53	53	51		47	45	53	70	73	A	A	A		A	64	70	73	79	88	76	55	52	54	54
27	A	A	51	52	52	51	51	A	61	65	70	A	A	73	76	74	75	76	93	66	54	64	A	52
28	52	54	52	55	55	52	62	64	58	66	A	A	A	83	72	76	78	78	77	A	53	67	51	A
29	53	52	52	52	51	47	53	68	66	A		A	A	A	A	A	A	A	A	A	43	54	42	54
30	53		50	48	47	48	54	72	74	63			B	74	77	75	69	64	89	55	A	54	63	52
31	54	53	54	55	58	61	62	69	61	A	49	A	72	77	A	A	A	A	82	A	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	23	27	26	28	30	31	26	26	16	10	4	6	11	16	18	19	24	26	22	23	26	26	26
MED	52	52	52	54	52	52	55	67	67	68	61	72	70	72	71	72	72	76	76	68	54	54	54	54
U Q	53	54	53	55	53	52	63	70	74	71	69	74	74	74	74	76	76	79	84	76	66	66	54	54
L Q	52	52	51	52	49	47	52	65	62	63	58	67	67	68	68	69	69	69	69	64	53	54	52	52

HOURLY VALUES OF fEs AT Yamagawa

JUL. 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	25	40	39	47	67	61	122	172	82	G	92	91	69	71	84	32	51	40	70
2	G	34	48	40	41	44	G	60	G	70	70	60	102	93	75	53	G	57	44	G	31	58	59	43
3	52	33	G	G	G	G	34	39	53	B	70	80	52	50	57	G	G	G	56	83	53	71	47	50
4	59	27	40	28	G	G	34	40	39	49	79	84	58	74	101	G	G	48	52	33	52	48	48	28
5	71	50	58	46	46	24	36	44	59	G	B	B	G	B	G	52	63	39	64	40	G	G	32	34
6	33	30	27	28	33	G	38	47	55	52	65	84	130	86	76	57	43	86	64	58	54	53	38	59
7	37	45	31	60	35	34	36	35	48	48	64	G	B	G	G	52	G	38	50	49	46	46	50	34
8	40	53	58	56	26	25	32	37	G	61	83	57	70	B	74	G	G	G	36	56	53	73	46	27
9	49	52	28	33	51	25	35	35	52	46	50	50	57	76	65	78	116	G	36	G	29	26	60	59
10	49	40	29	73	32	44	33	46	54	78	173	60	G	B	G	G	G	46	52	46	G	30	45	67
11	36	59	45	33	35	30	G	58	84	92	123	90	G	49	54	55	68	60	53	61	41	41	40	40
12	28	G	37	35	34	34	35	G	G	50	G	78	72	63	60	79	58	67	42	61	54	57	40	B
13	G	G	G	G	G	G	G	40	G	G	52	G	45	G	G	G	43	47	56	72	78	50	48	28
14	G	G	G	G	G	G	33	48	G	G	G	B	G	B	47	44	G	G	33	G	26	G	32	49
15	43	40	37	33	27	28	55	49	48	124	54	46	63	G	61	G	51	44	50	41	G	G	32	G
16	41	59	58	48	30	29	36	G	G	G	G	B	B	B	B	G	42	61	48	44	24	71	G	G
17	53	34	34	51	72	112	28	51	44	52	68	B	G	G	G	54	80	73	40	36	30	50	30	24
18	48	G	G	G	G	G	31	50	43	G	53	68	53	G	48	66	100	66	91	43	74	43	G	G
19	46	G	28	27	25	26	33	41	49	G	G	49	60	93	118	B	G	G	44	G	42	33	29	25
20	G	26	26	26	G	28	G	46	G	G	G	G	B	G	G	78	56	57	41	36	45	70	43	37
21	40	52	58	27	G	G	50	82	118	42	50	61	71	G	71	77	77	116	70	82	28	34	43	40
22	34	27	42	G	G	G	G	39	42	49	G	B	61	47	86	59	53	72	68	60	59	49	G	37
23	30	32	33	G	G	G	28	42	54	G	73	94	76	72	68	48	54	72	61	88	50	40	B	49
24	59	73	59	53	38	41	28	35	67	51	63	83	74	68	G	64	76	64	149	81	54	58	53	49
25	50	52	52	58	40	30	54	49	73	64	53	93	94	73	G	54	59	43	65	28	29	G	26	G
26	28	G	32	G	G	27	30	39	52	79	117	69	G	72	G	47	53	42	46	34	49	34	43	40
27	58	59	40	G	G	24	41	53	58	47	65	70	77	68	74	47	G	62	61	91	69	54	59	G
28	G	G	G	G	G	G	32	43	44	51	72	68	54	69	G	G	G	61	58	77	G	38	49	73
29	54	G	49	32	36	G	34	34	43	46	G	64	51	68	61	50	50	117	88	58	43	34	34	39
30	50	G	G	G	G	G	G	G	G	42	G	G	B	G	G	45	47	62	54	149	116	53	40	32
31	28	G	G	G	26	G	36	36	G	56	53	54	58	59	75	82	95	78	114	93	78	73	52	58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	26	27	26	30	30	31	31	31	31	31	31	30	30
MED	40	32	33	28	26	25	33	41	47	49	58	66	58	66	56	52	51	60	54	56	45	48	42	38
U Q	50	52	48	46	35	30	36	49	54	61	70	83	74	73	74	64	68	69	65	81	54	57	48	49
L Q	28	G	G	G	G	G	28	36	G	G	G	50	45	G	G	G	G	42	44	36	29	34	32	27

HOURLY VALUES OF fmin AT Yamagawa

JUL. 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	17	17	17	18	15	17	15	21	27	26	32	23	36	N	36	35	20	17	14	15	17	14	14
2	15	14	15	15	14	14	23	17	22	23	34	34	39	40	38	35	52	18	15	20	14	15	15	16
3	15	14	15	15	18	24	16	16	18	B	35	32	32	32	28	28	22	18	18	14	15	15	15	14
4	15	15	14	15	14	15	14	16	21	33	39	38	39	42	40	54	24	20	17	17	14	15	14	14
5	20	14	14	14	14	15	15	15	20	55	B	B	101	B	58	42	39	26	16	15	15	16	14	14
6	14	15	15	15	14	16	15	23	22	24	36	51	56	38	39	32	28	21	18	15	15	15	15	14
7	15	15	15	14	14	15	14	18	21	33	35	36	B	58	58	28	53	17	14	15	14	14	15	15
8	16	16	15	15	15	15	15	18	23	22	29	39	40	B	42	55	52	22	17	15	20	15	15	17
9	15	15	15	15	15	15	14	15	21	24	34	38	40	42	40	35	18	18	17	23	15	14	15	14
10	15	15	14	14	14	15	15	15	17	27	38	39	101	B	64	53	101	21	15	15	15	16	15	15
11	14	14	15	17	15	15	15	16	18	23	35	35	36	36	28	26	21	18	14	15	15	15	14	14
12	15	18	14	16	17	14	15	17	20	21	51	39	41	39	40	41	18	20	15	15	14	15	15	B
13	20	30	17	14	14	15	22	18	48	66	27	29	34	53	56	27	26	17	16	15	15	14	15	16
14	17	17	14	14	14	15	14	15	18	21	46	B	71	B	37	27	21	16	15	20	15	15	17	15
15	14	14	15	14	15	15	15	14	18	22	24	26	27	53	36	54	21	16	14	14	16	14	15	15
16	14	14	14	15	14	14	14	15	18	71	66	B	B	B	B	26	20	17	15	15	15	17	15	14
17	15	15	14	15	14	14	20	16	22	20	27	B	55	54	53	35	22	17	16	14	15	15	14	15
18	15	16	26	16	16	16	15	16	23	28	34	32	29	54	28	38	21	18	15	14	15	15	27	15
19	16	17	15	15	16	15	14	18	23	28	30	34	36	35	35	B	111	26	21	18	14	15	17	17
20	16	14	15	15	14	15	15	17	23	43	53	66	B	51	52	32	21	20	15	15	15	14	15	14
21	14	15	15	14	14	15	15	16	21	17	32	34	36	53	27	33	17	17	14	14	14	15	15	17
22	17	15	14	14	14	15	15	15	16	18	20	B	36	81	26	34	23	17	14	16	15	14	16	15
23	14	16	14	18	17	15	14	14	16	18	27	26	28	27	30	26	22	20	14	15	14	14	B	15
24	14	21	15	14	14	15	15	14	14	20	30	36	38	38	66	26	18	14	14	14	14	15	15	14
25	14	15	14	14	14	14	14	14	15	21	26	21	26	33	45	26	21	17	14	14	16	17	15	15
26	15	20	14	81	15	15	15	14	14	21	22	28	34	36	33	38	18	16	16	14	14	14	15	14
27	14	14	15	15	14	15	14	14	14	27	23	30	34	34	36	38	32	17	20	15	15	14	14	18
28	17	18	20	15	16	15	16	17	22	21	26	30	26	23	48	21	22	17	16	16	15	15	14	14
29	15	15	14	14	14	17	17	14	17	23	66	29	34	36	34	22	27	20	14	15	15	15	15	15
30	15	71	18	15	15	20	20	15	20	27	28	71	B	34	30	24	21	15	14	14	15	14	15	15
31	15	20	15	16	15	15	15	15	17	28	21	29	30	30	27	21	20	15	15	14	15	14	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	30	26	27	26	29	30	31	31	31	31	31	31	30	30
MED	15	15	15	15	14	15	15	15	20	24	31	34	36	38	38	32	22	18	15	15	15	15	15	15
U Q	16	17	15	15	15	15	16	17	22	28	36	38	40	53	50	38	32	20	17	15	15	15	15	15
L Q	14	14	14	14	14	15	14	15	17	21	26	29	30	34	30	26	21	17	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

JUL. 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	86	110	48	68	63	58	52	77	87	86	72	82	88	87	A	94	107	101	96	83	81	72	66	A
2	A	78	67	64	62	52	66	A	A	A	A	81	87	97	102	106	94	104	120	90	67	A	54	A
3	52	52	54	56	60	58	65	78	62	66	66	72	76	76	82	88	88	74	71	72	77	N	78	82
4	82	80	66	66	68	67	67	72	85	66	A	A	87	A	96	104	105	110	105	N	88	80	80	84
5	86	86	67	64	64	63	65	88	86	64	B	72	84	86	86	87	81	84	85	86	88	71	54	66
6	66	73	72	64	67	67	76	70	73	71	71	A	A	76	87	A	110	106	86	80	77	77	72	66
7	54	66	72	64	66	58	51	68	70	72	63	B			80	91	88	87	93	89	90	A	63	54
8	53	54	52	54	A	58	74	70	70	71	53	60	67	72		80	97	89	88	88	82	73	54	74
9	67	66	52	55	62	54	65	76	85	A	A	A	A	A	92	97	98	101	108	105	101	84	85	84
10	87	80	83	80	72	53	54	N	53	A	72	67	77	91	91	94	85	87	84	76	A	A	63	54
11	A	52	52	52	50	47	52	66	57	58	A	66	A	90	A	104	131	134	125	110	104	87	84	78
12	53	53	59	A	53	52	72	86	72	77	70	A	72	78	82	101	105	108	107	101	80	54	54	64
13	60	52	53	51	58	54	60	58	67	72	72	73	85	87	89	102	108	118	118	108	104	87	72	81
14	76	81	81	68	85	77	60	67	96	72	B	A	49	64	78	88	101	105	101	89	87	88	77	77
15	66	A	66	63	64	56	52	61	73	66		81	96	85	A	97	107	105	102	106	87	88	80	74
16	67	75	52	72	78	54	46	A	A			B	B	B	A		A	A	55	61	47	45	44	48
17	44	48	51	45	45	47	40	A	A	A	62	A	75	87	96	105	106	87	88	88	87	77	A	A
18	67	63	52	62	57	54	52	70	82	65	62	65	72	77	88	97	97	100	104	89	88	81	70	66
19	64	52	66	63	64	53	72	85	72	75	65	64	76	91	100	B		107	120	108	87	87	A	77
20	78	72	54	66	65	60	66	87	83	71	64	60	66	81	83	82	82	81	89	88	80	67	64	52
21	65	52	52	46	44	42	47	61	67	80	88	A	101	115	100	89	94	97	102	87	82	84	80	52
22	72	67	58	48	52	64	72	71	62	56	B	A	A	A	72	87	98	100	100	73	84	73	72	71
23	72	71	52	50	48	47	48	66	73		65	69	76	A	88	88	100	107	105	89	53	52	53	64
24	53	52	48	45	42	45	52	69	75	60	49	A	A	76	74	A	71	A	66	48	A	A	54	51
25	52	A	A	A	A	41	37	77	65	66	75	54	72	75	78	80	74	70	A	76	82	A	52	54
26	51	49	59		49	46	A	74	67	67	66	A	A	A	B	85	104	116	107	88	54	52	54	61
27	52	52	48	51	50	52	52	67	76	75	56	A	B	76	87	89	108	120	118	106	87	77	A	66
28	77	73	81	88	86	74	72	63	67	A	76	74	A	98	98	88	93	104	A	A	76	66	64	71
29	A	52	52	52	44	42	52	65	81	55	169	63	A	80	86	84	88	87	80	86	64	A	A	54
30	A	52	53	55	54	51	57	71	67	72	68	74	81	87	98	100	104	105	110	81	76	71	71	72
31	67	67	54	58	62	52	54	68	64	B	A	72	80	101	A	A	88	86	90	77	74	54	A	80
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	29	30	28	29	31	30	27	28	23	21	18	20	24	24	26	29	29	29	29	29	24	26	28
MED	66	66	54	60	62	54	56	70	72	71	66	70	76	86	88	90	98	101	101	88	82	75	65	66
U Q	76	74	66	65	65	58	66	77	81	72	72	74	86	90	96	100	105	107	107	95	87	84	77	77
L Q	53	52	52	51	50	47	52	66	67	65	62	64	72	76	82	87	88	87	87	78	76	66	54	54

HOURLY VALUES OF fEs AT Okinawa

JUL.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	34	29	39	G	27	G	32	33	50	G	G	G	G	G	90	54	74	44	55	61	90	50	58	81
2	59	43	59	53	49	34	41	94	72	124	110	58	56	G	55	G	G	62	50	41	39	41	40	60
3	35	50	36	38	34	38	34	50	44	G	46	48	68	59	79	79	G	47	40	35	34	25	G	G
4	G	G	G	G	G	G	G	G	39	50	68	81	62	126	G	53	G	G	G	G	G	27	30	48
5	56	59	58	39	40	38	31	58	62	53	B	G	G	G	G	56	G	45	39	G	26	28	28	48
6	39	36	30	42	50	G	35	93	63	58	57	77	51	62	58	124	91	93	72	49	73	60	51	48
7	32	28	59	53	50	30	38	60	54	48	60	B	G	G	G	G	G	G	51	41	35	60	40	40
8	40	G	49	49	51	46	26	G	50	65	49	48	G	G	G	56	G	G	36	32	G	49	34	34
9	26	41	G	44	39	G	34	72	48	82	80	69	108	94	84	G	G	G	36	30	G	29	28	G
10	32	49	45	G	G	24	26	38	G	51	G	G	G	G	G	G	50	G	66	41	78	91	50	48
11	59	45	36	40	44	26	32	51	49	85	135	61	108	68	112	93	51	G	38	54	36	34	26	27
12	26	25	G	26	30	30	G	56	45	G	81	89	60	82	76	71	87	48	42	58	G	G	27	35
13	41	G	G	G	G	G	34	41	43	48	G	49	G	G	49	71	63	49	57	144	39	53	24	G
14	G	G	G	G	G	G	G	G	G	G	B	51	G	G	53	G	G	G	G	G	25	G	G	G
15	G	26	G	27	52	37	28	52	G	46	G	G	G	90	54	57	61	G	35	33	G	G	25	26
16	40	44	46	40	37	G	48	67	57	G	G	B	B	B	50	G	46	51	G	39	G	G	G	G
17	G	36	36	G	G	59	33	68	136	114	G	73	62	G	G	G	51	46	47	44	44	58	49	70
18	27	G	58	G	27	28	G	32	40	G	G	G	55	G	G	52	64	47	35	28	28	26	G	46
19	41	G	40	34	28	30	35	50	G	G	G	51	54	61	53	B	G	46	G	82	35	35	39	30
20	G	G	G	G	G	G	26	35	G	54	46	48	51	51	78	60	49	70	46	39	72	40	34	51
21	32	34	33	49	35	34	35	91	44	58	67	116	G	78	61	67	95	45	71	63	G	50	39	28
22	36	G	23	24	G	G	44	G	G	48	B	54	52	62	54	76	58	70	88	78	110	51	49	50
23	28	34	26	G	G	G	G	35	51	G	48	54	66	103	77	81	61	90	39	61	35	36	34	26
24	G	G	G	G	G	G	49	35	69	58	50	64	67	52	56	103	79	82	55	50	88	69	55	34
25	33	59	56	58	51	29	53	67	114	52	61	60	67	77	G	51	55	52	79	59	34	60	57	28
26	G	G	G	G	28	28	38	G	G	G	53	57	76	54	B	44	G	54	78	50	24	G	26	G
27	G	G	25	26	G	G	26	37	94	54	47	53	B	G	51	66	58	49	62	G	G	30	90	80
28	48	45	33	G	43	G	G	37	60	81	62	66	76	70	G	81	67	63	104	124	60	29	41	G
29	92	59	34	28	G	27	26	34	51	48	56	55	64	60	G	49	58	66	47	G	44	60	73	49
30	84	59	59	47	G	27	G	G	G	G	G	47	G	G	G	66	67	76	50	49	60	58	60	28
31	33	G	25	G	26	G	G	33	G	B	66	58	46	59	110	127	60	76	74	29	33	G	53	53
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	28	29	29	30	30	30	31	31	31	31	31	31	31	31
MED	33	29	33	26	28	26	32	38	48	49	50	54	54	56	53	56	55	48	47	41	35	36	39	34
U Q	41	45	46	42	43	30	35	60	60	58	64	65	66	70	76	76	64	66	66	59	60	58	51	49
L Q	G	G	G	G	G	G	G	33	G	G	G	48	G	G	G	44	G	G	36	30	G	26	26	26

HOURLY VALUES OF fmin AT Okinawa

JUL. 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	15	15	15	16	15	16	15	14	21	22	45	54	49	54	40	38	34	18	16	14	14	14	14	15
2	15	15	15	16	15	15	14	14	20	26	34	36	38	54	42	53	18	18	16	14	14	14	14	15
3	14	15	15	14	14	16	14	15	20	101	48	32	35	29	30	29	27	21	20	14	14	17	16	15
4	15	18	20	15	14	15	21	16	24	30	36	39	42	42	66	39	58	20	16	20	15	17	14	15
5	14	14	14	14	14	14	15	16	21	36	B	101	58	57	59	38	55	44	17	15	14	15	15	14
6	14	15	15	15	14	17	16	18	22	32	39	42	42	40	43	38	29	22	15	15	14	14	14	14
7	15	15	14	15	14	15	14	17	23	32	32	B	101	91	58	59	53	17	14	15	16	18	15	15
8	18	17	15	14	16	14	18	17	22	42	40	39	91	101	91	55	54	20	17	15	15	17	15	15
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12	15	14	22	16	14	14	18	17	20	35	40	39	39	40	39	38	24	20	17	15	15	18	15	14
13	15	16	32	15	16	16	15	18	21	46	30	33	56	53	56	30	22	18	14	14	14	14	14	18
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15	20	16	15	15	14	14	15	14	20	24	66	52	38	40	43	38	21	20	14	14	15	16	15	14
16	14	15	14	14	14	17	15	15	17	24	27	B	B	B	81	91	27	18	17	16	21	16	15	15
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18	15	16	14	15	14	14	18	16	21	29	44	53	36	54	53	39	26	20	15	16	15	14	21	14
19	15	18	15	15	14	14	14	14	21	42	45	36	39	39	36	B	59	29	38	15	14	15	15	15
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26	17	20	32	66	14	15	14	14	15	20	39	38	35	35	B	52	48	16	14	14	15	17	14	23
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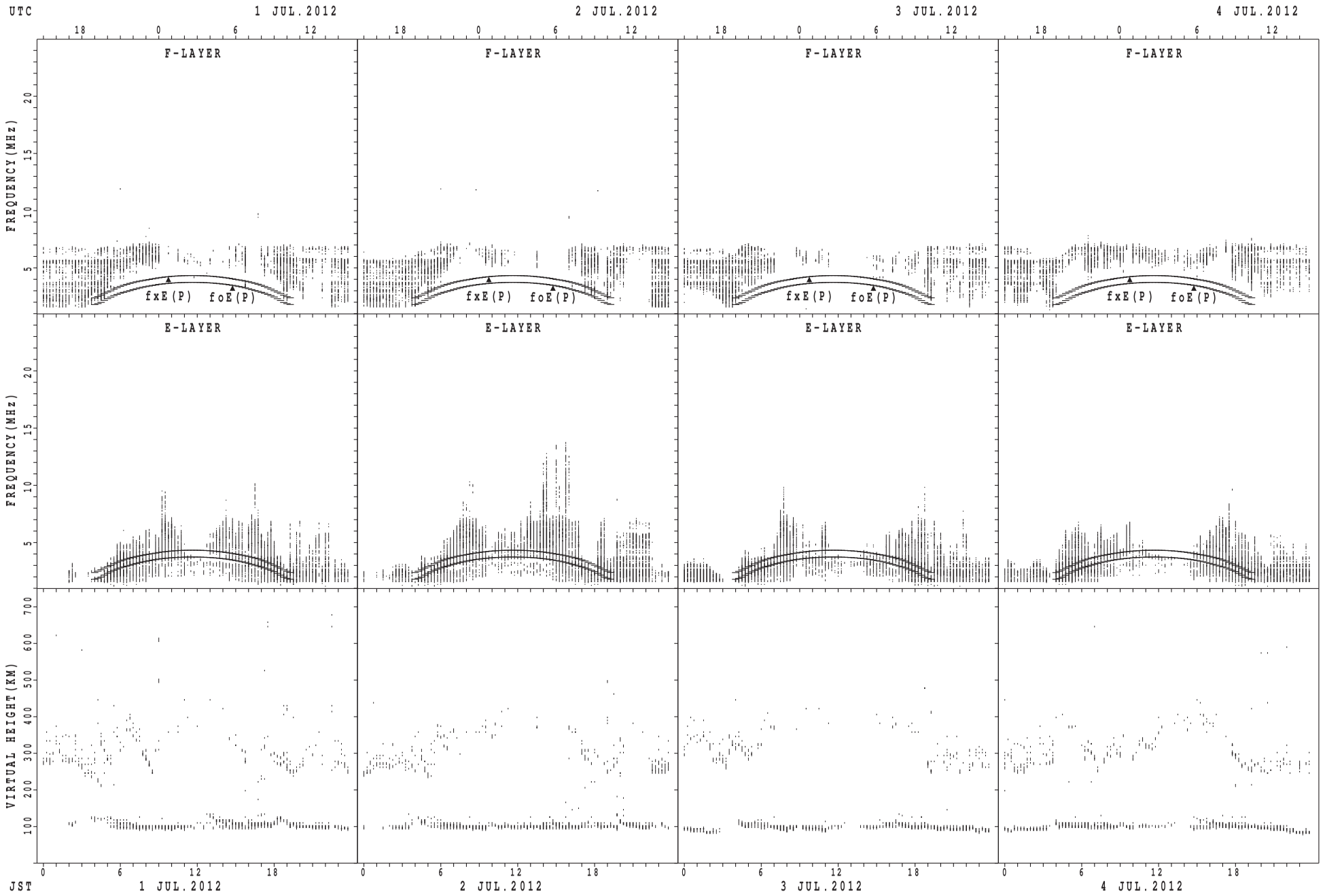
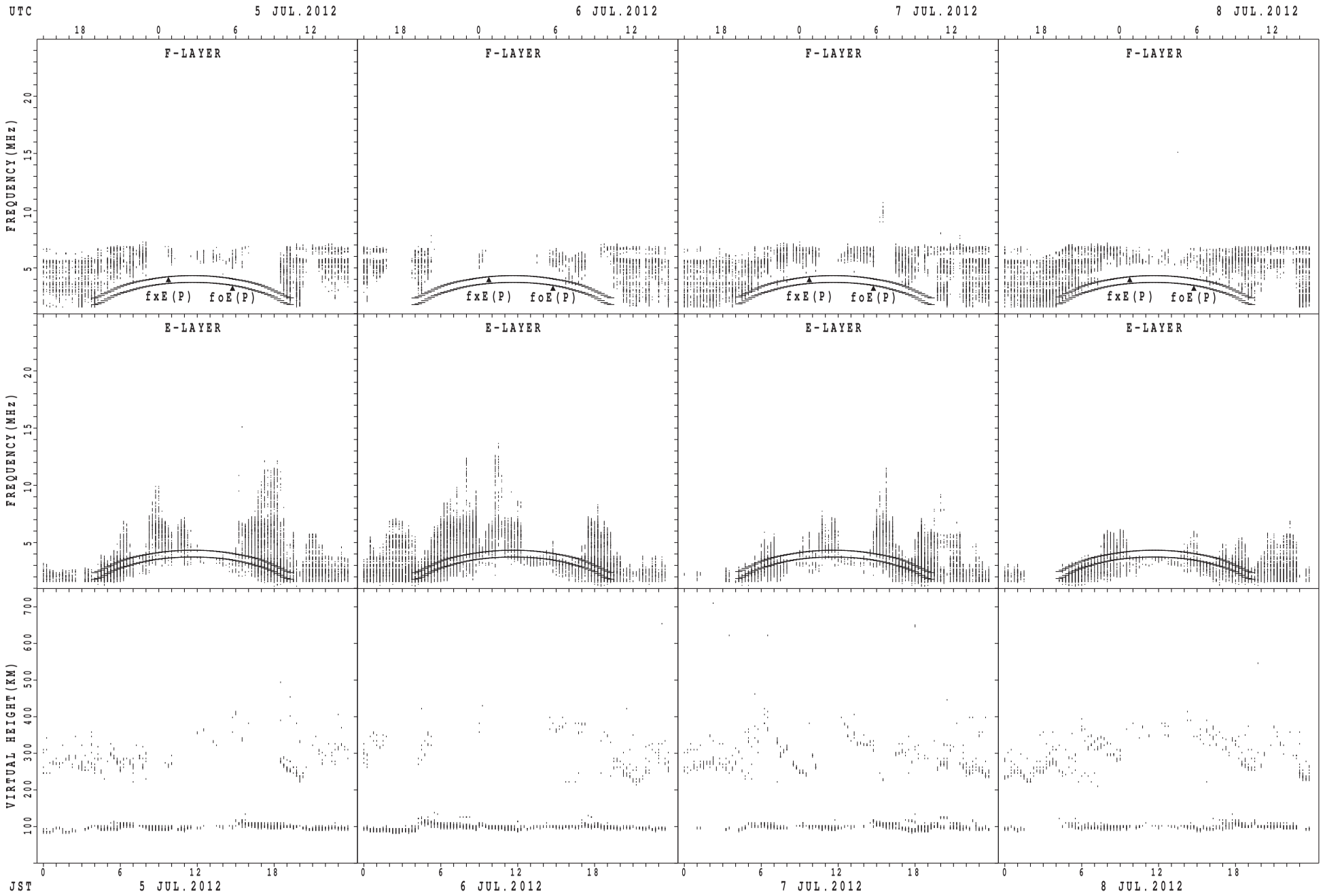
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	28	29	29	30	30	30	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	20	28	39	39	40	41	43	38	30	20	15	14	15	15	15	15
U Q	17	16	16	16	16	16	18	17	21	35	45	40	55	54	56	50	48	21	17	15	15	17	15	15
L Q	15	15	14	14	14	14	14	14	18	22	33	36	36	39	39	38	23	18	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai



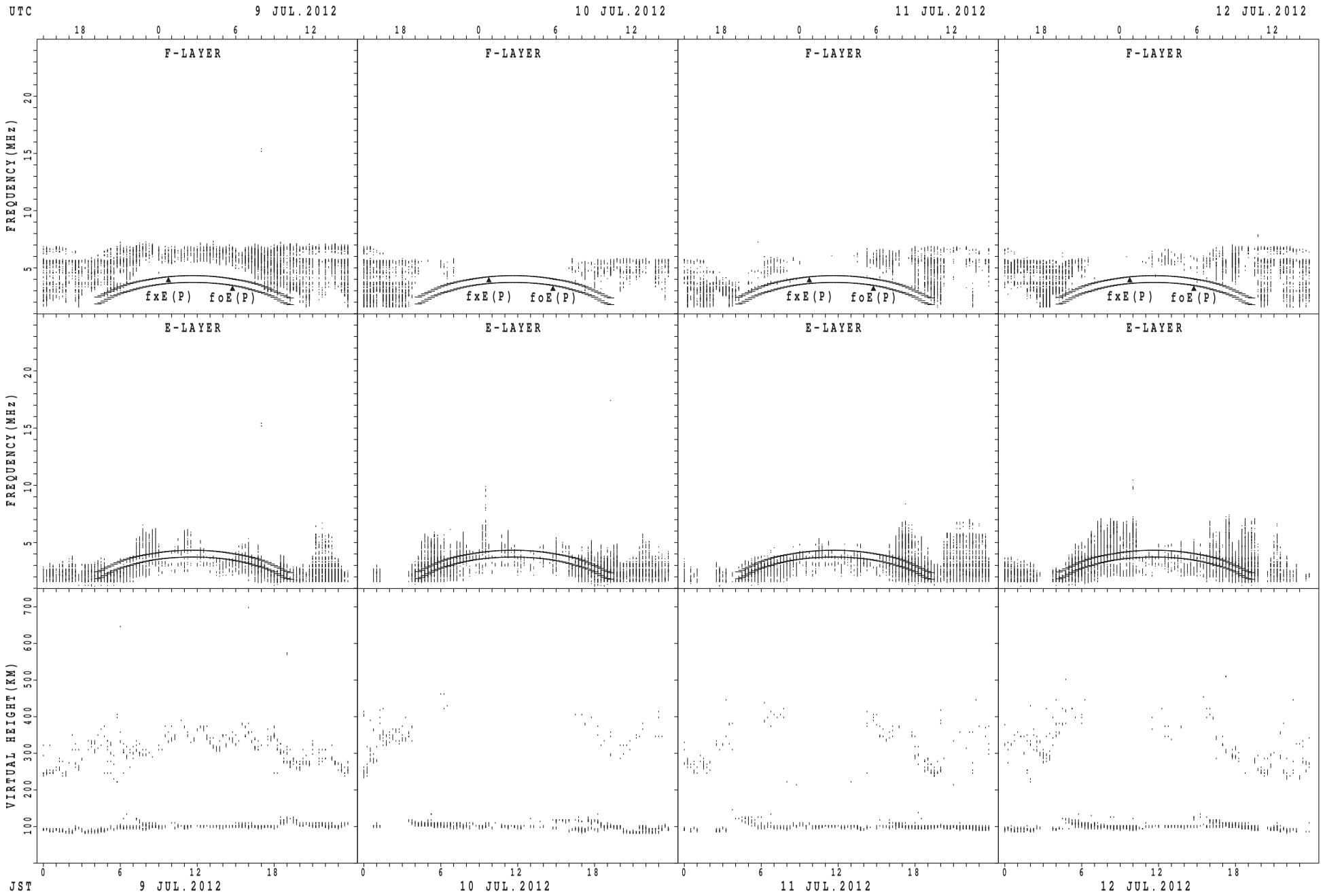
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



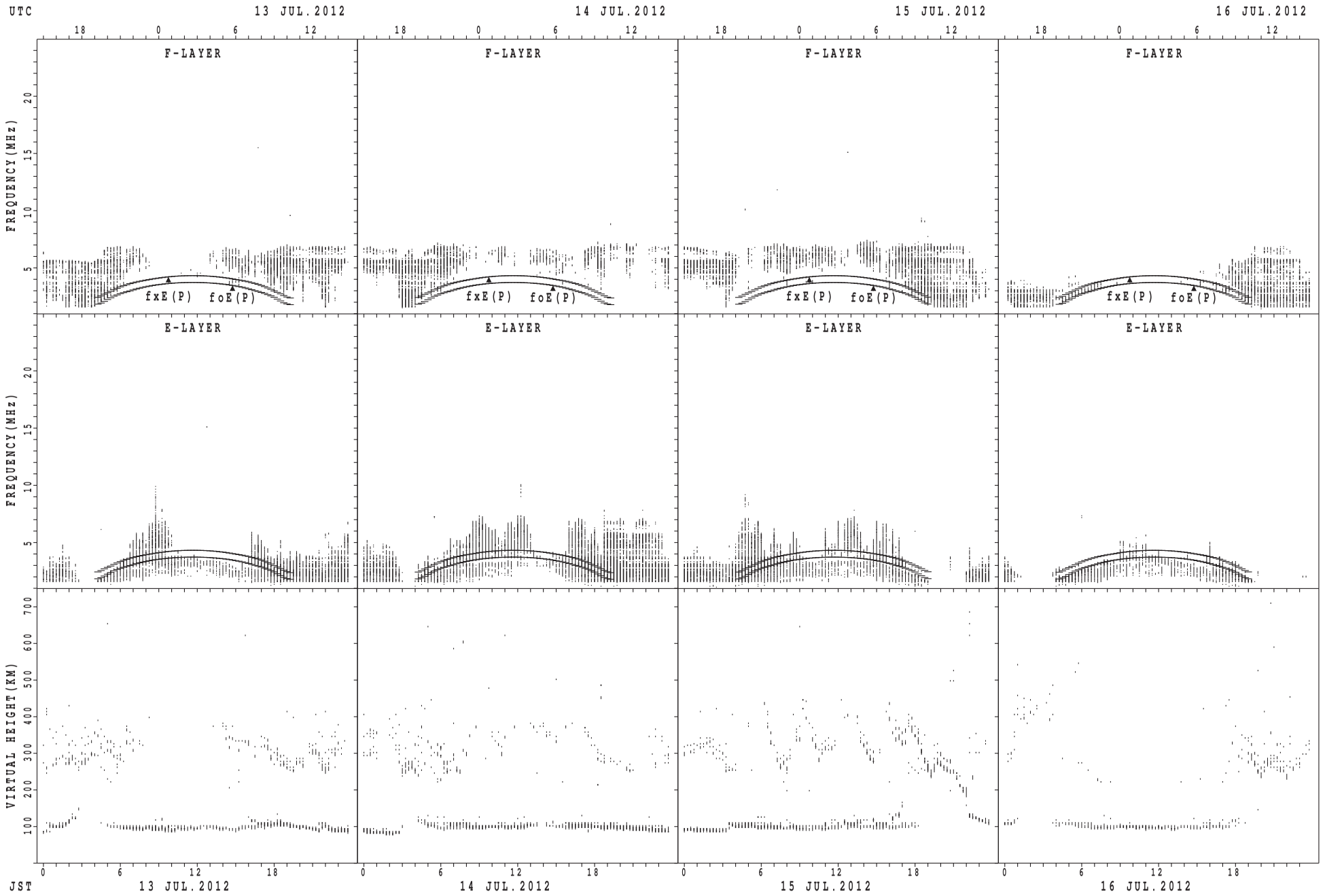
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



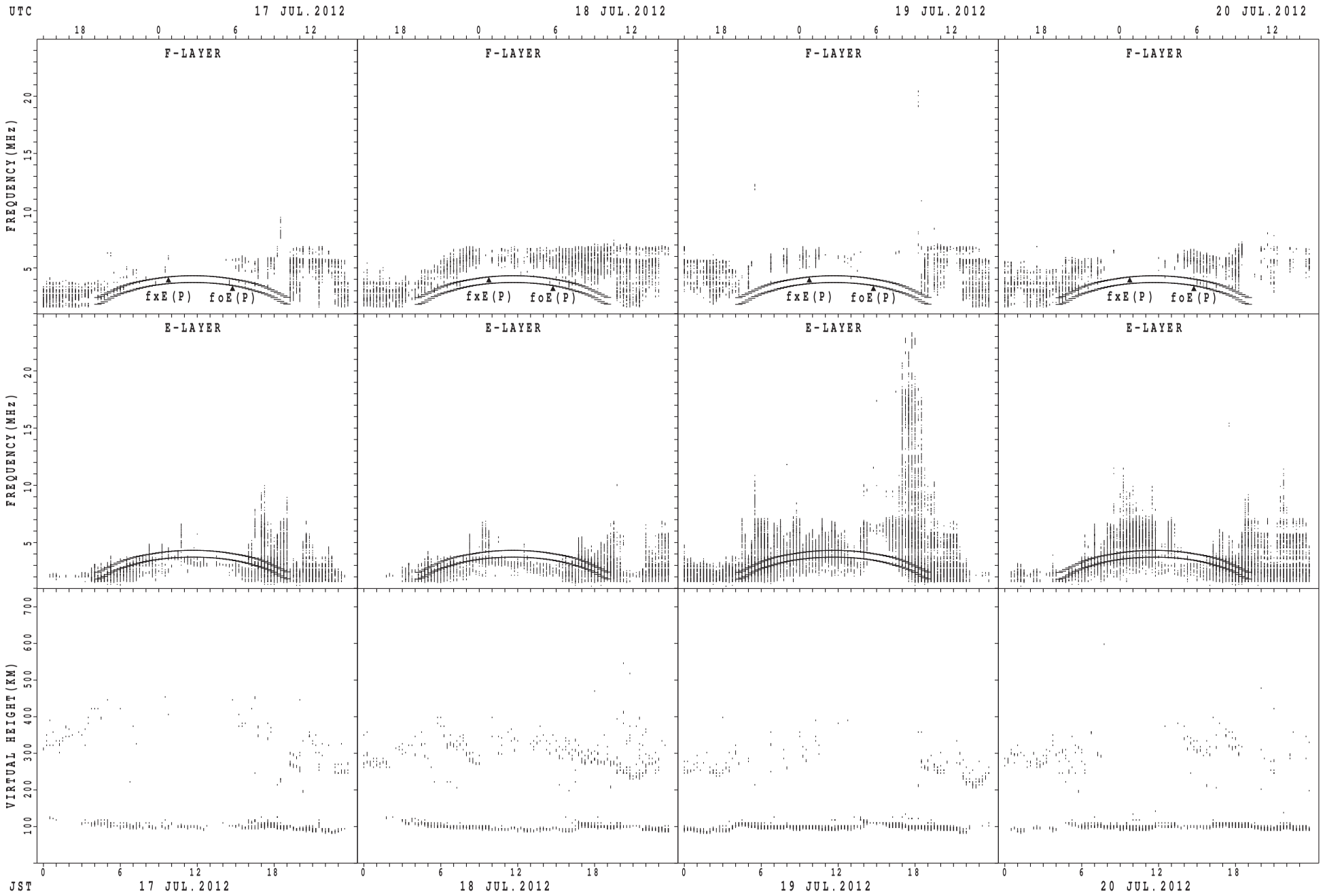
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



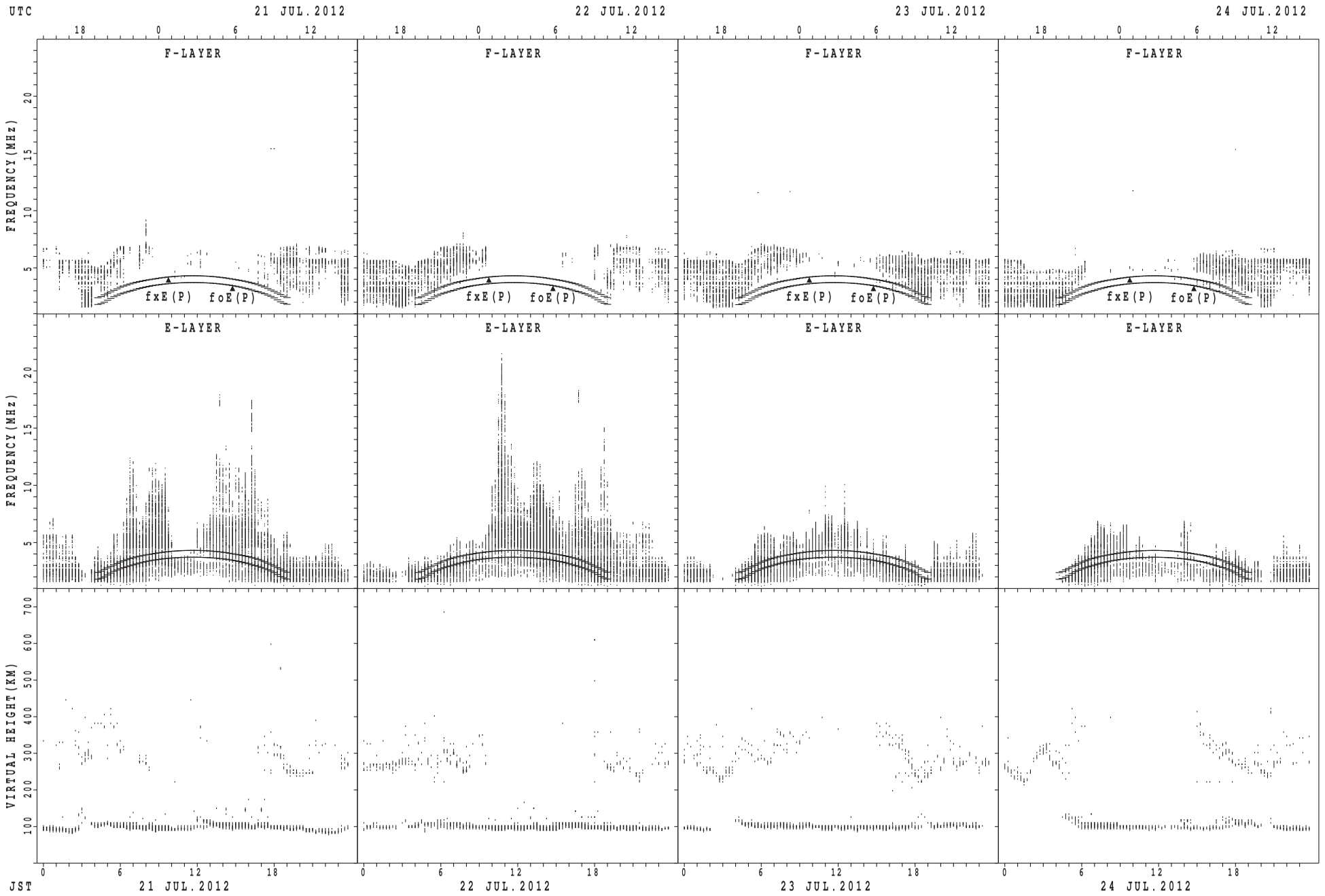
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

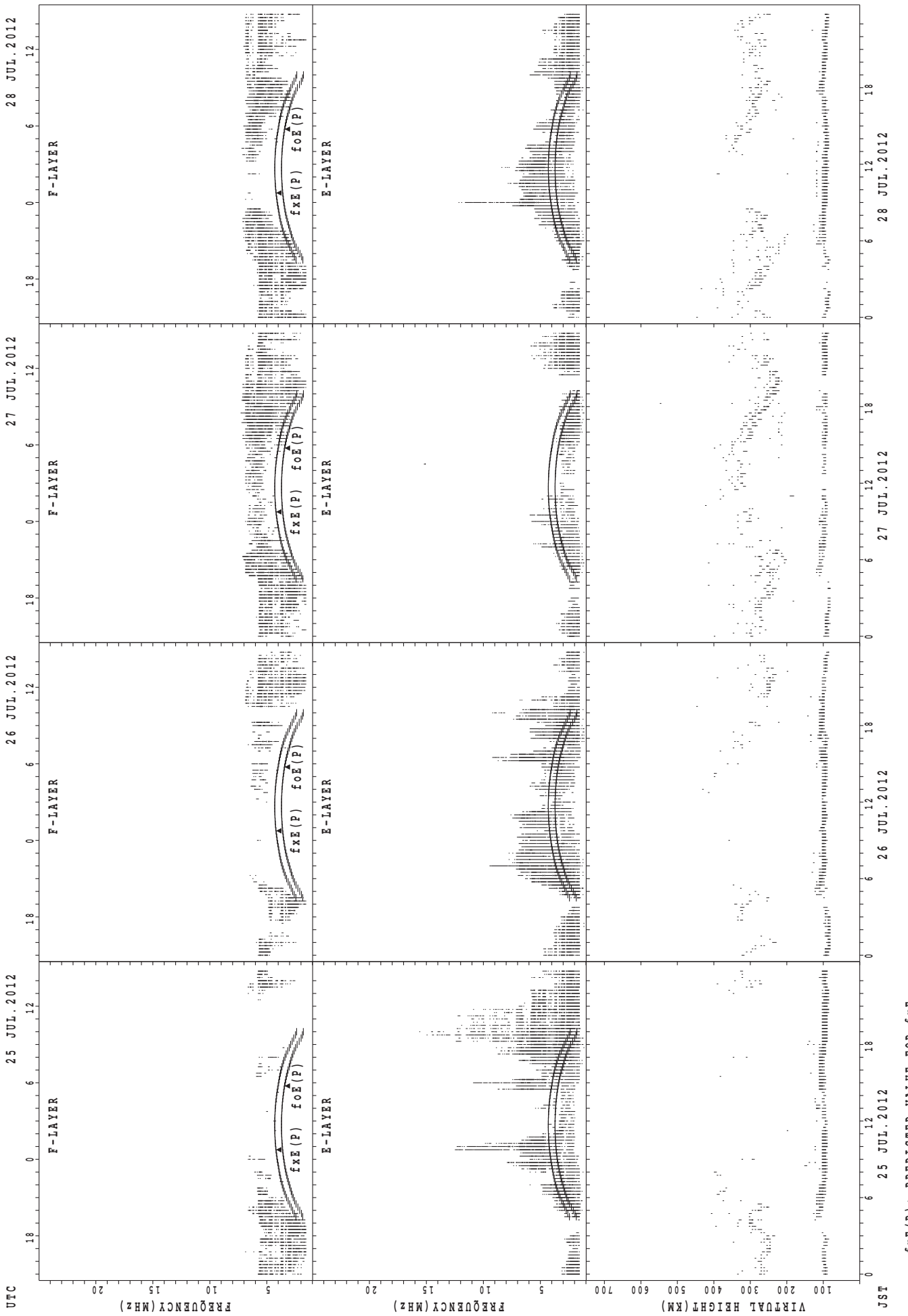


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

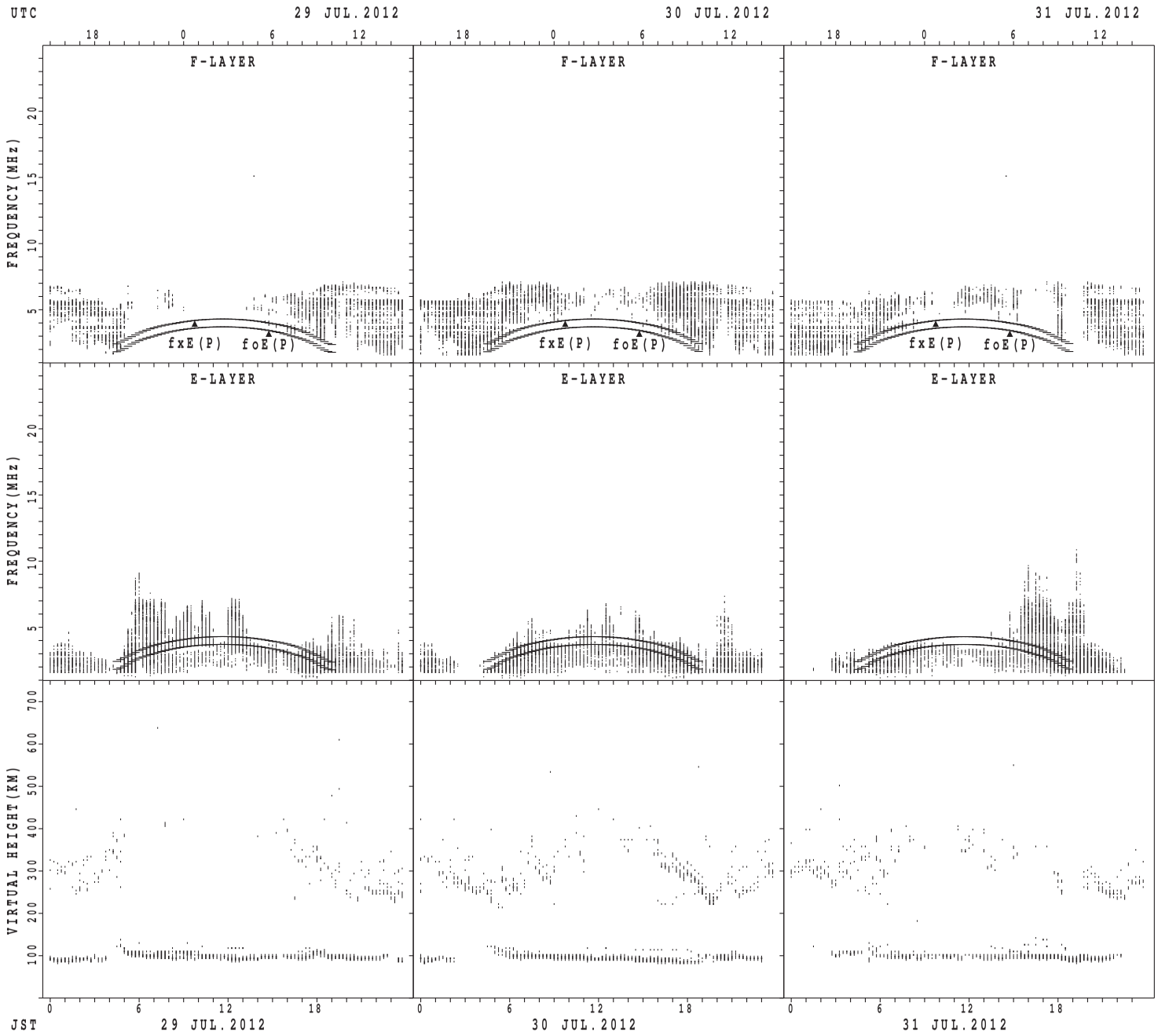
SUMMARY PLOTS AT Wakkanai



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

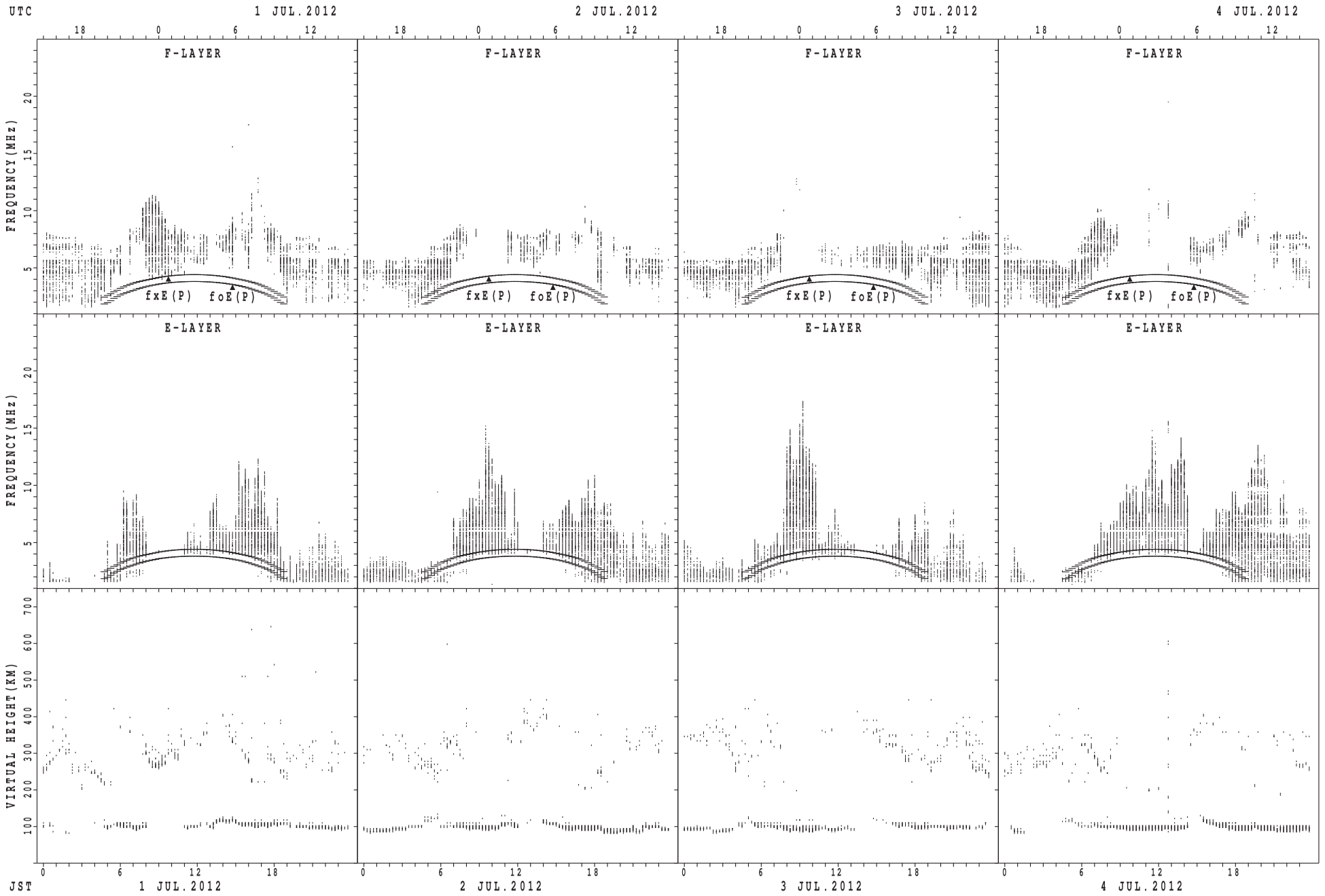

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 JUL.2012
26 JUL.2012
27 JUL.2012
28 JUL.2012
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



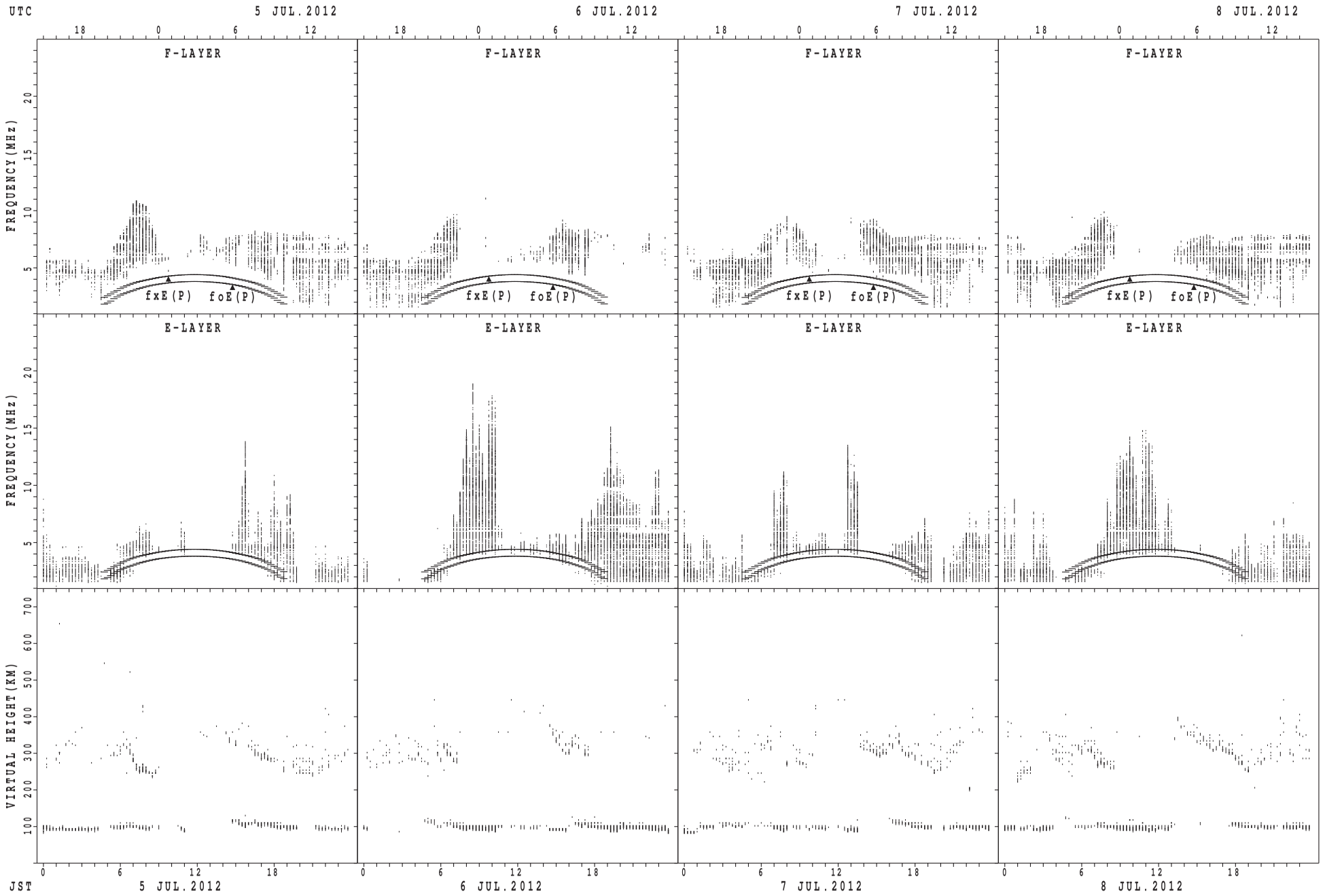
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



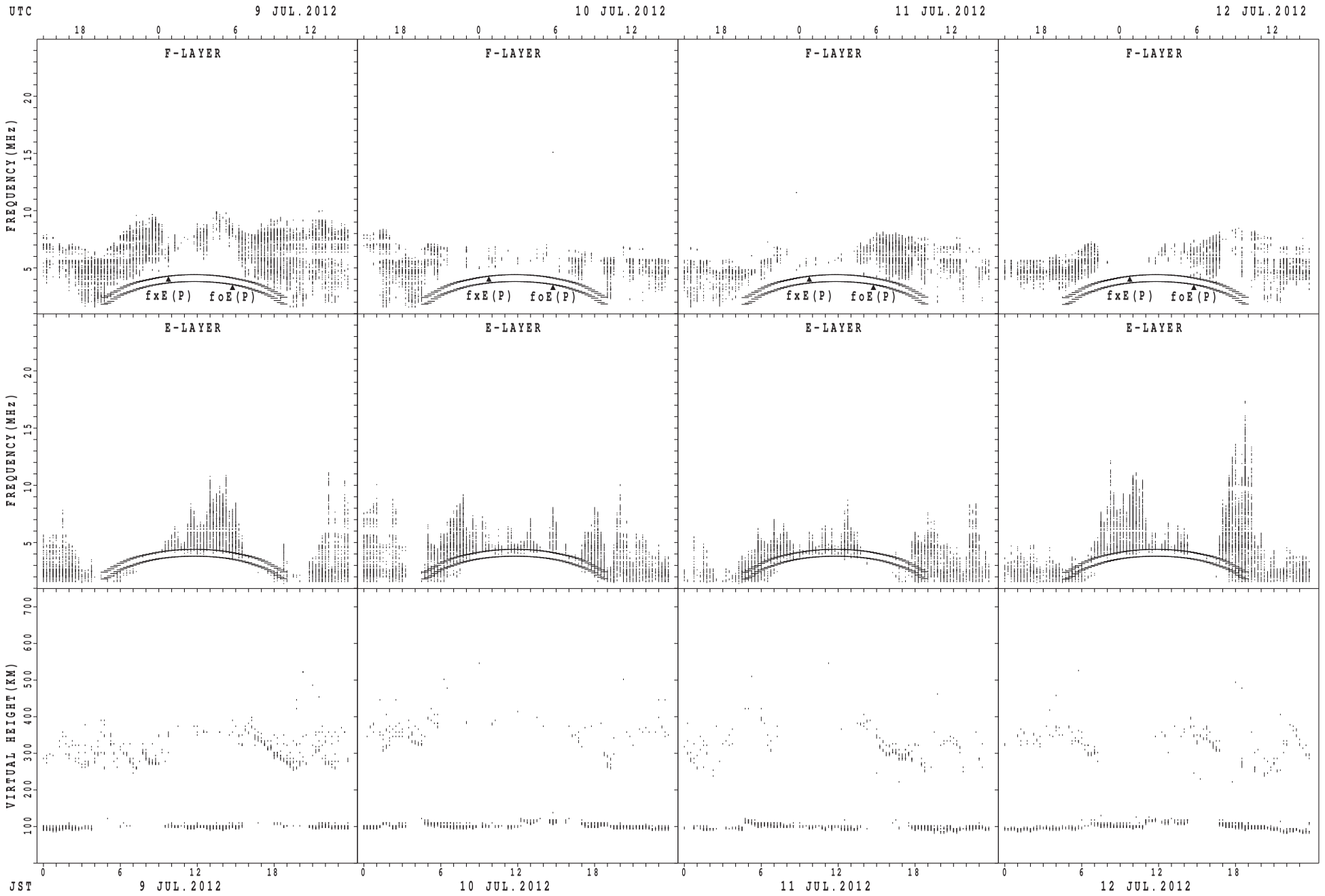
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



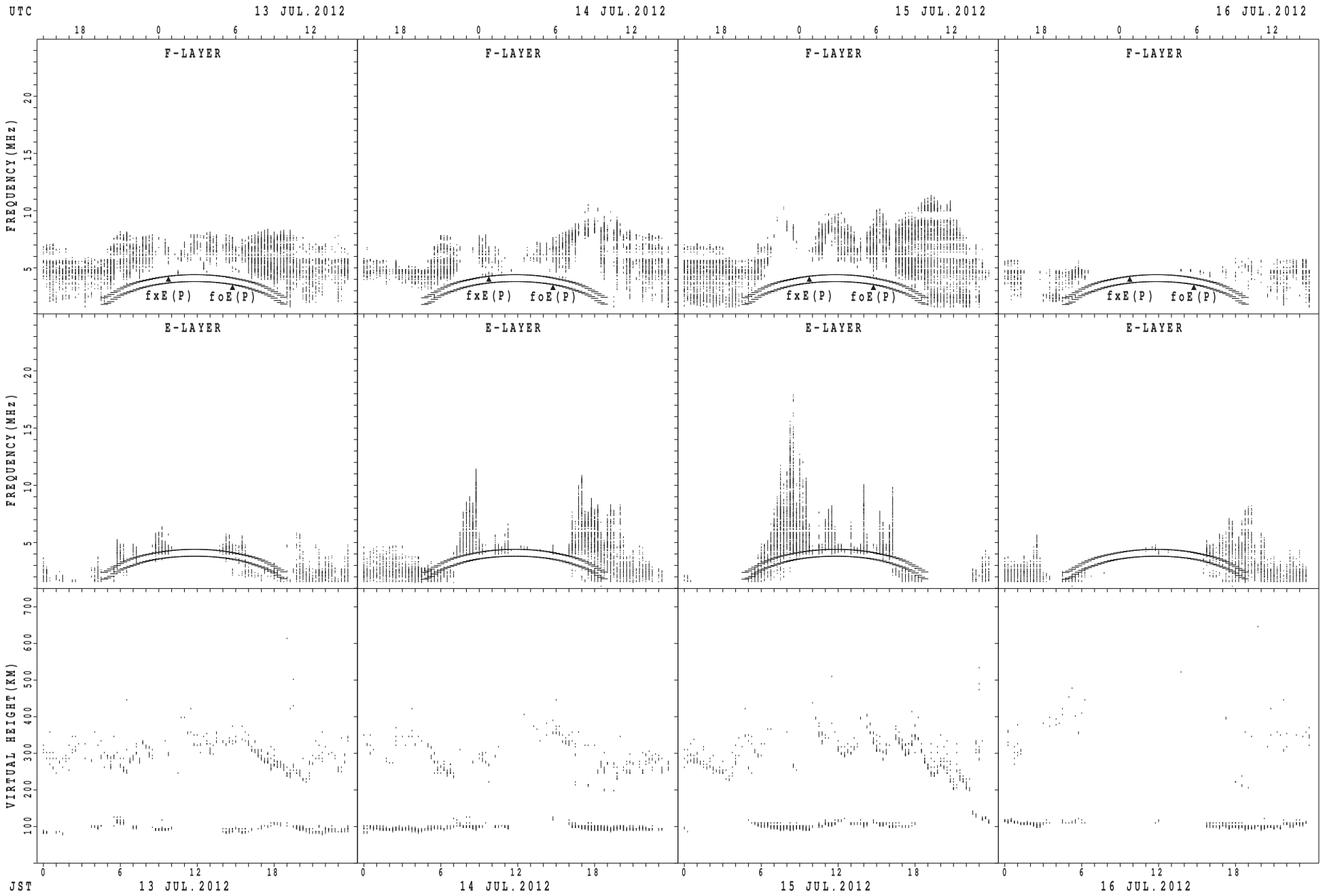
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



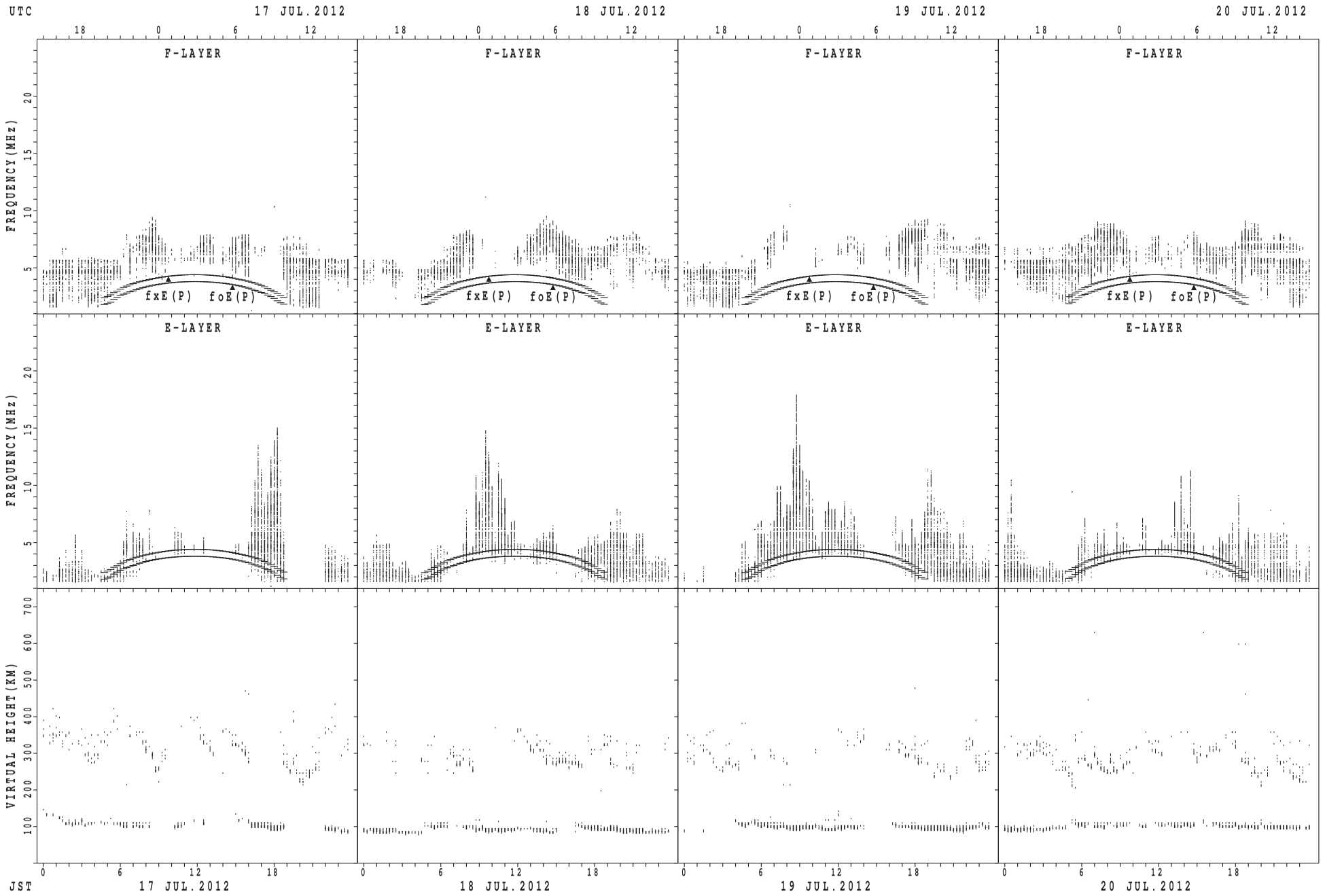
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



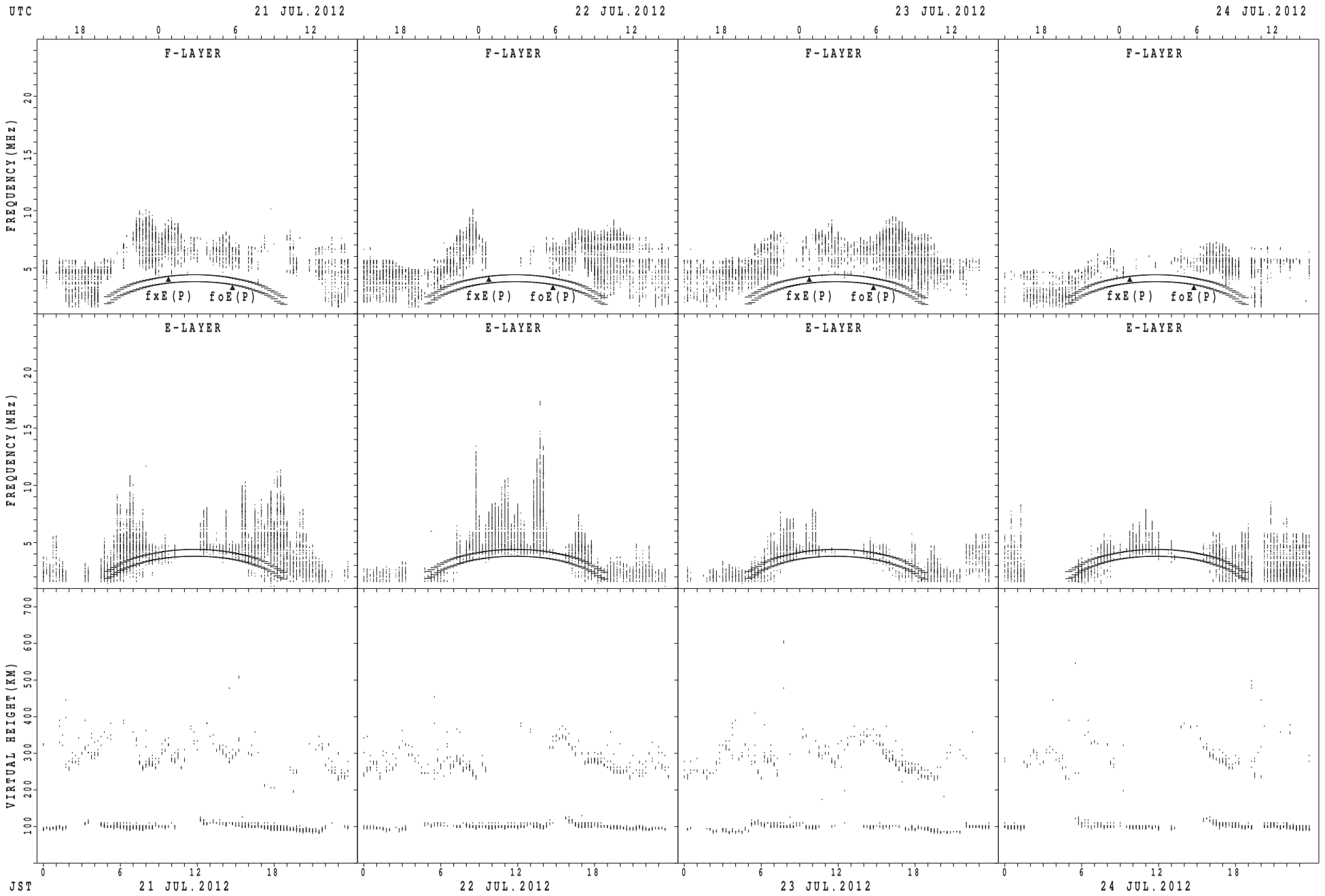
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



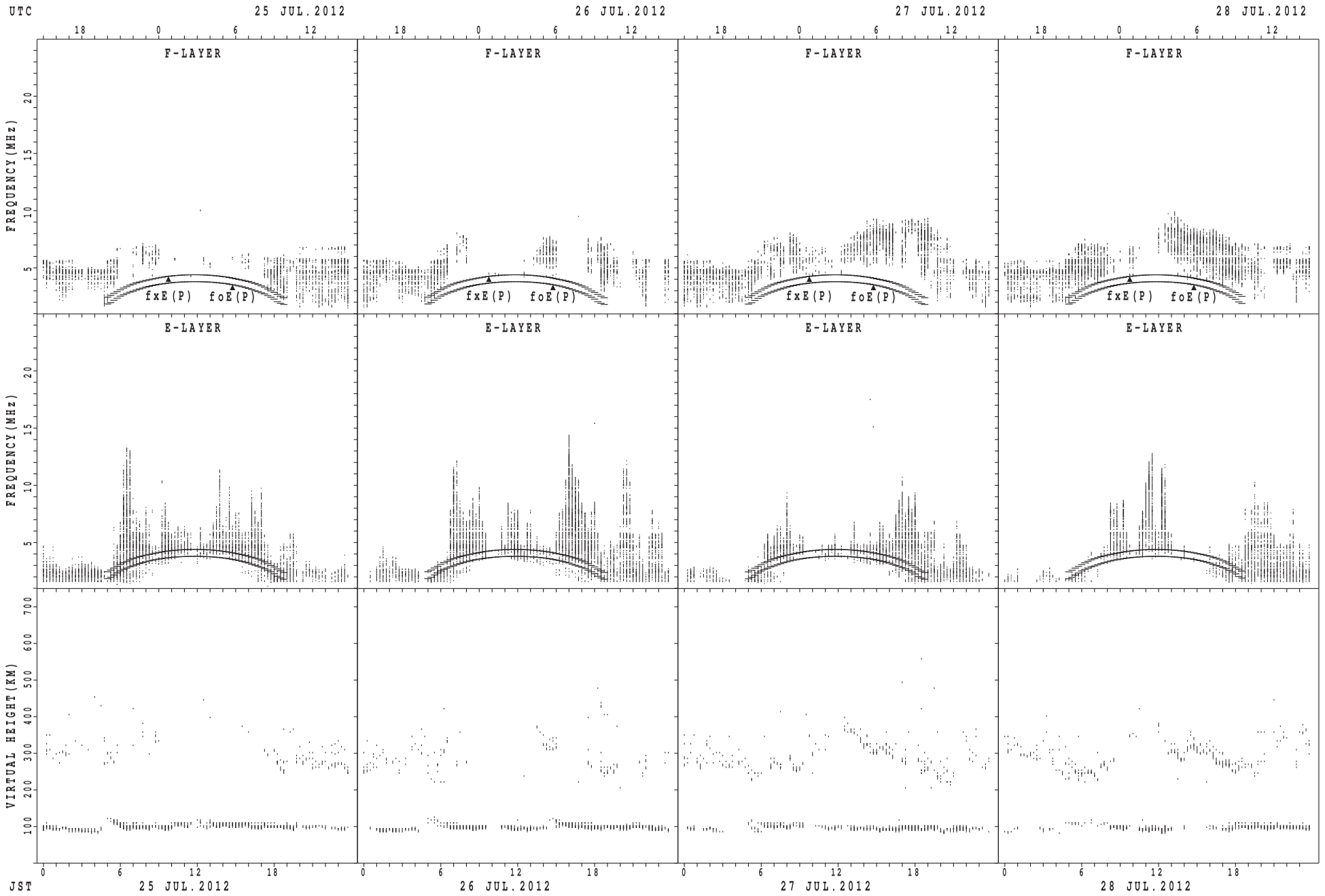
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



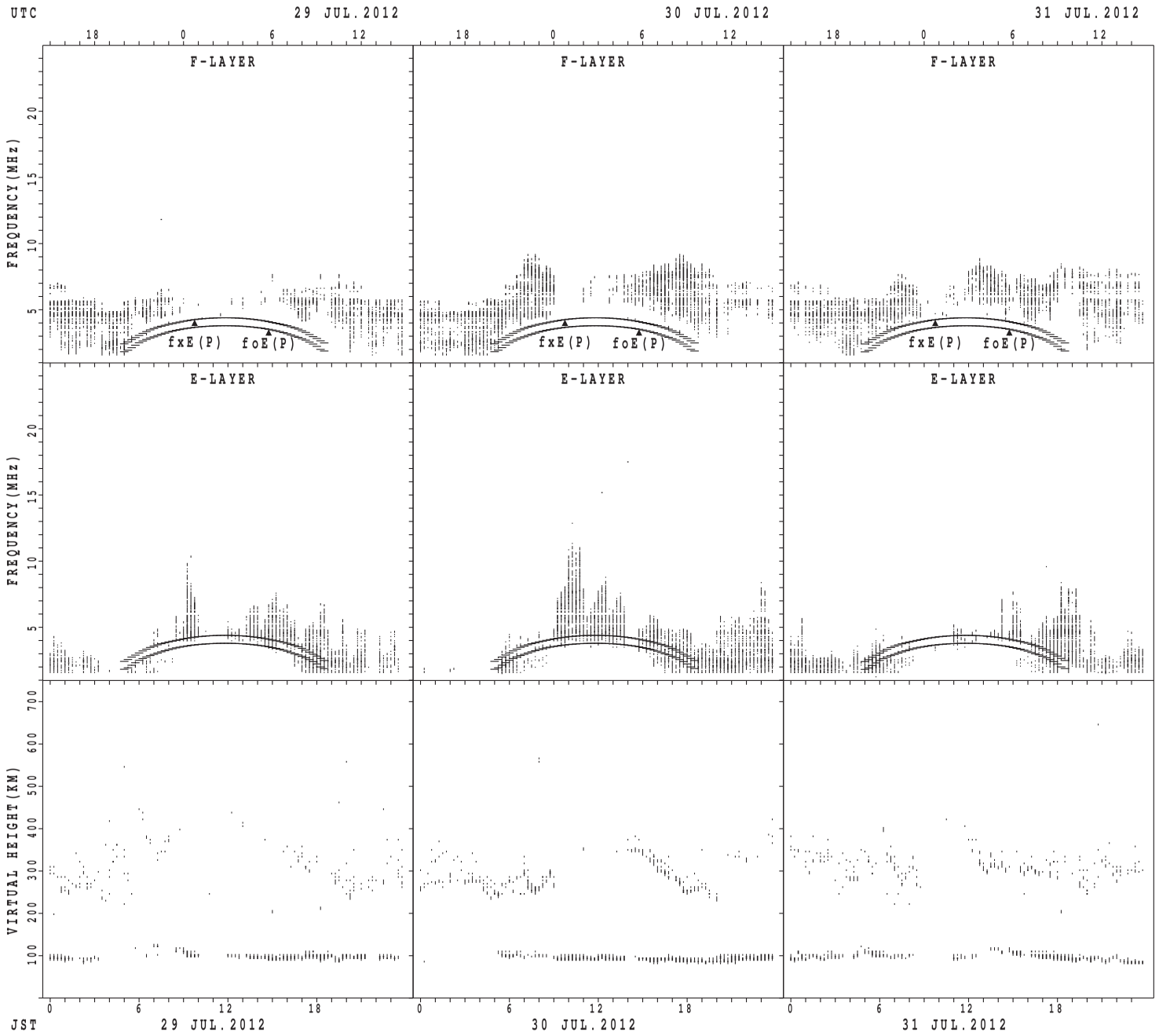
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



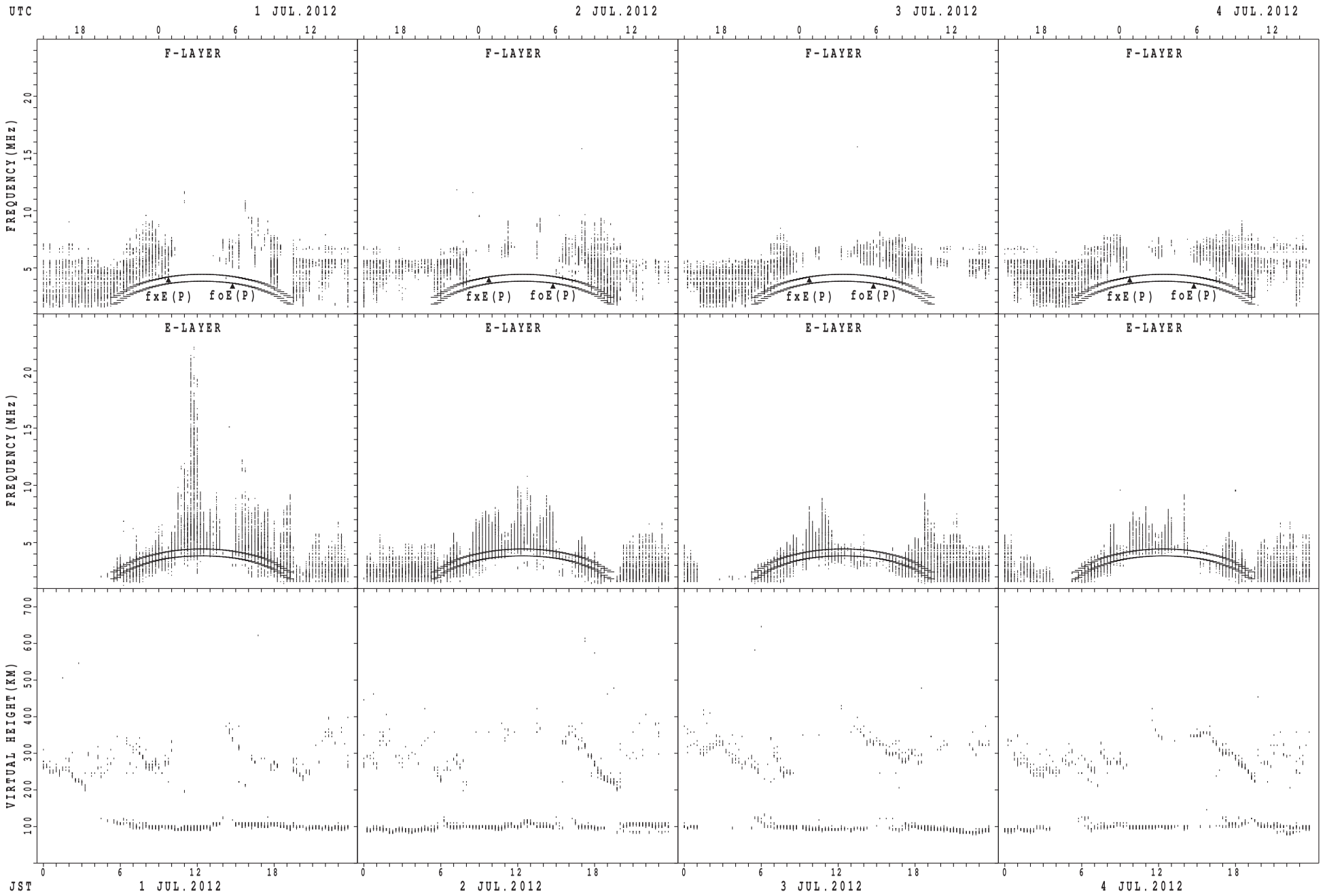
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



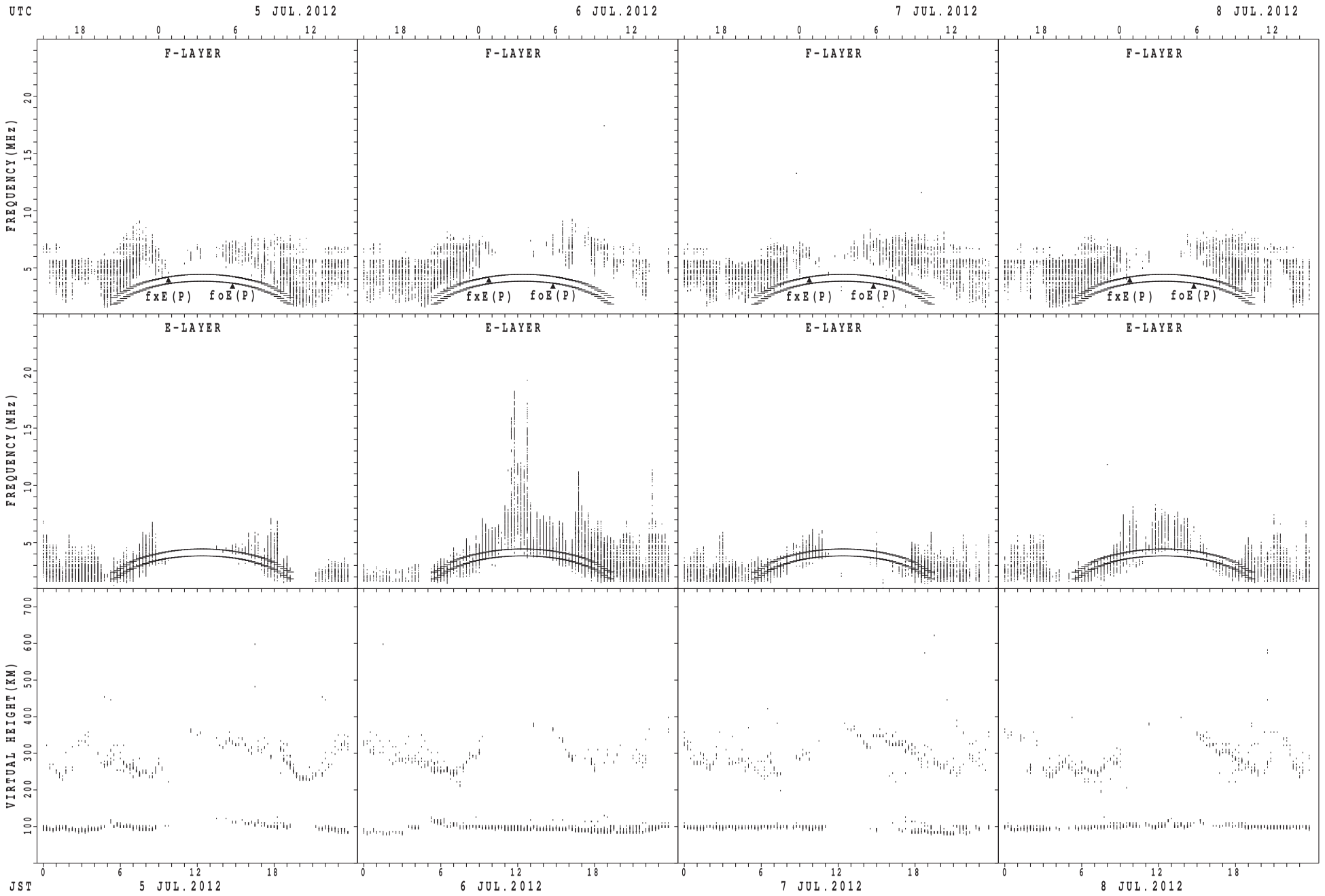
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

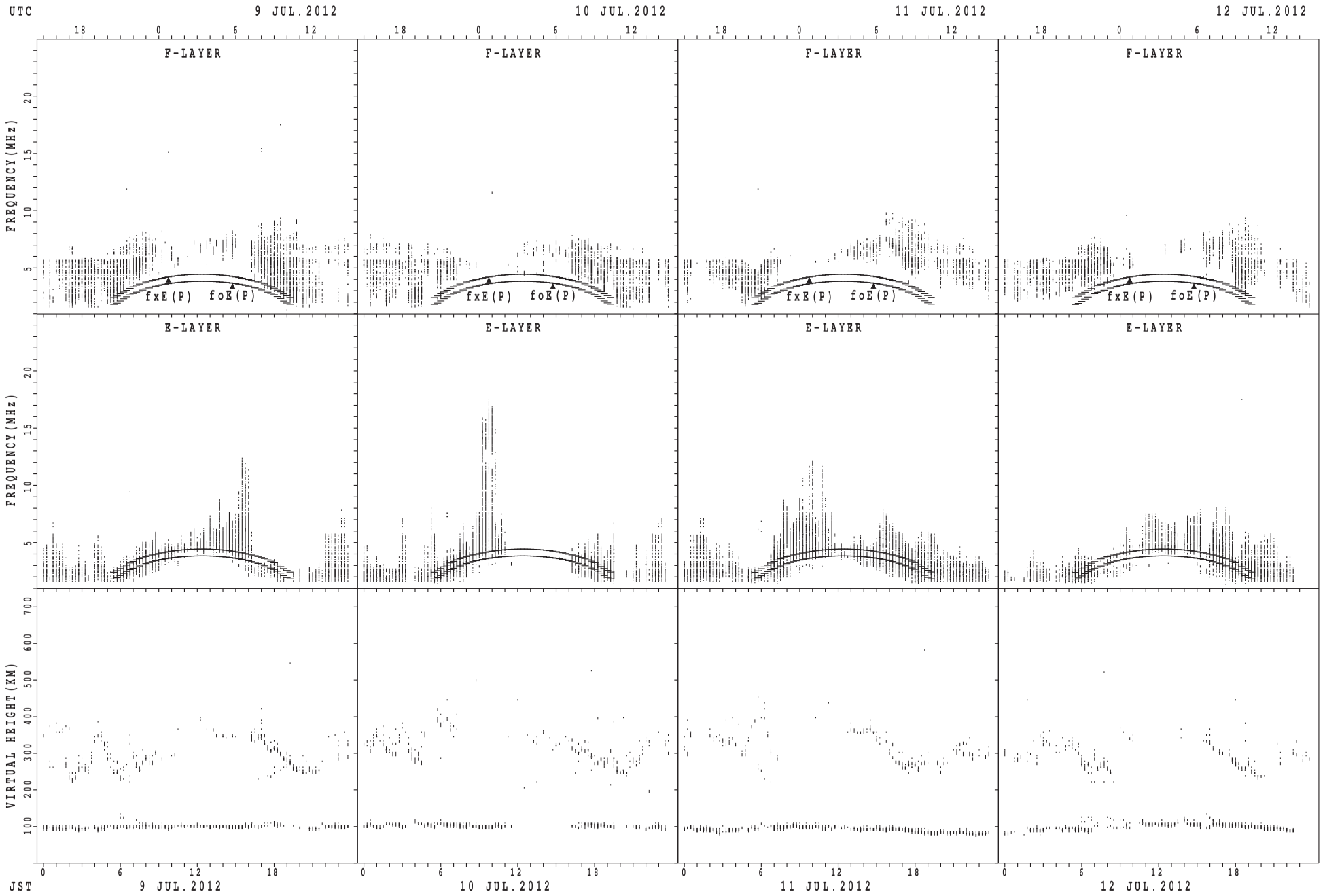


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

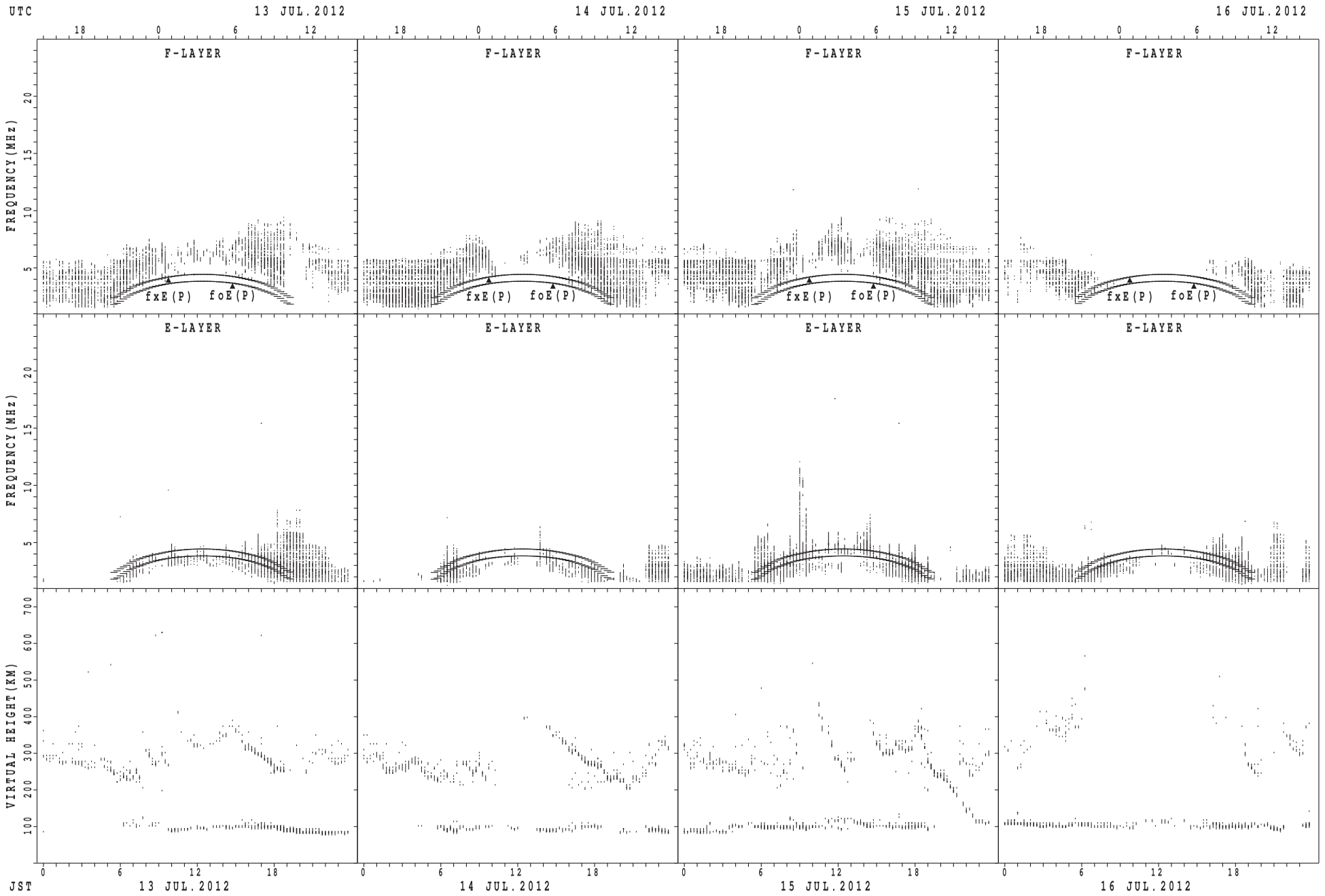


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

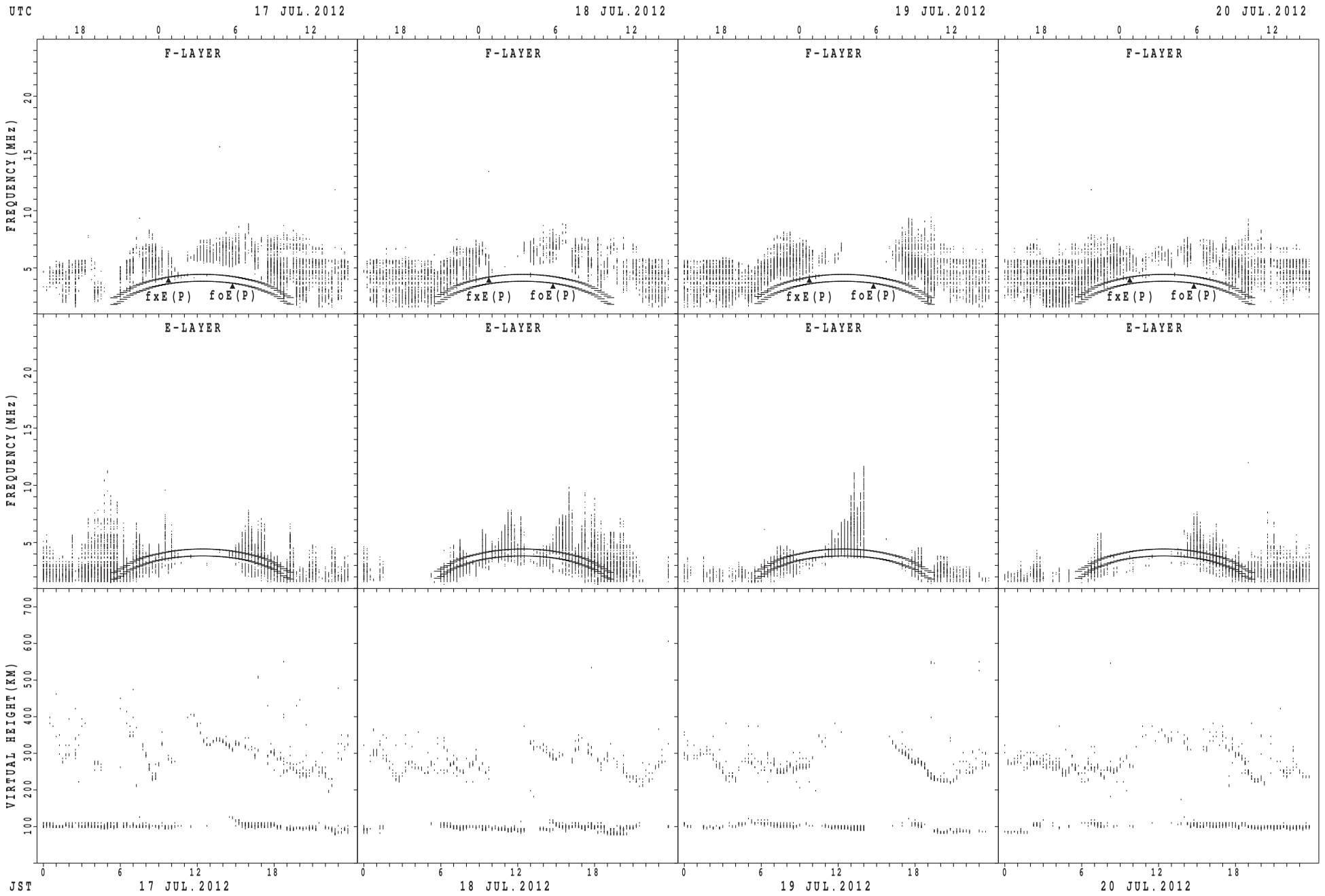


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

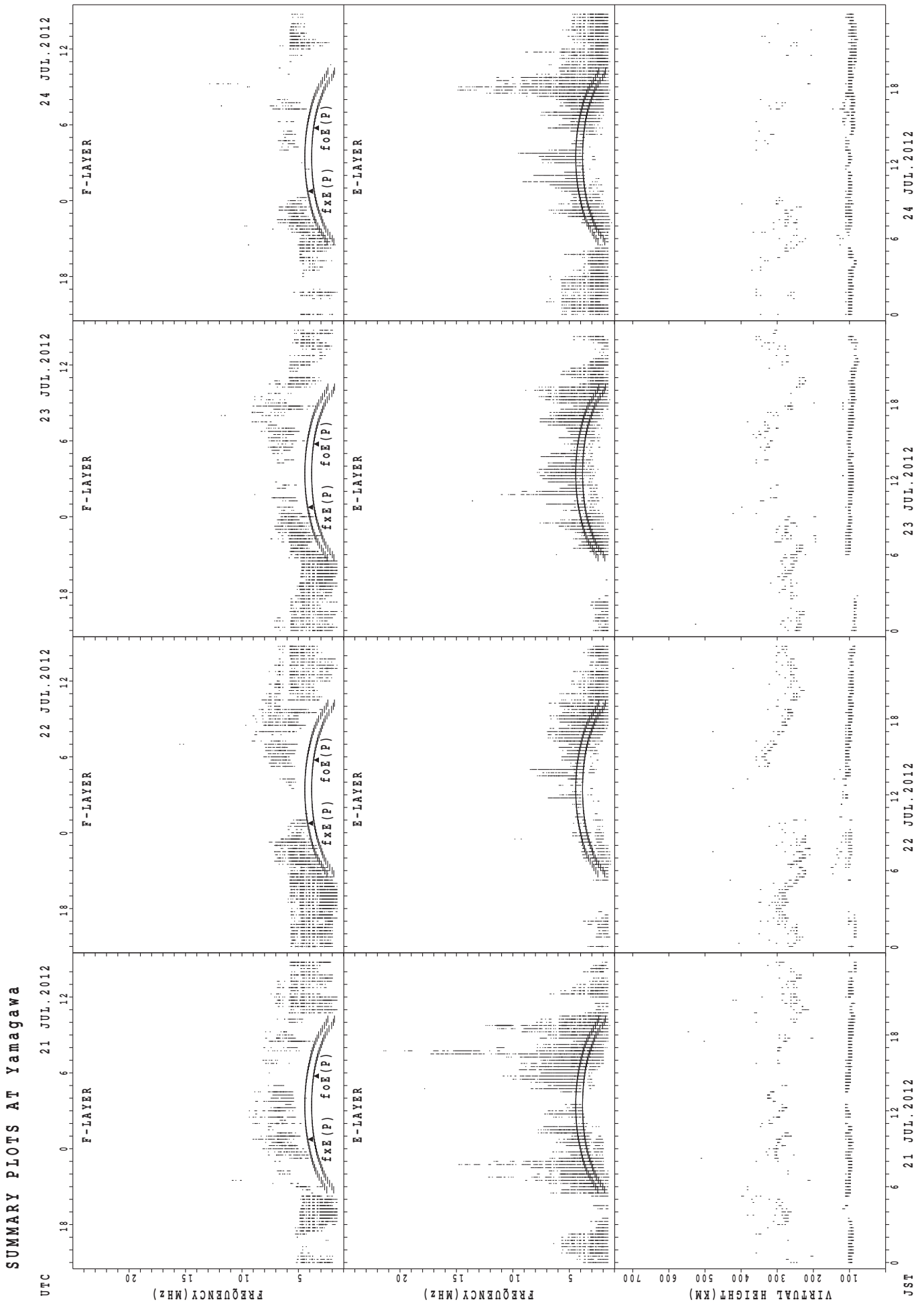
SUMMARY PLOTS AT Yamagawa



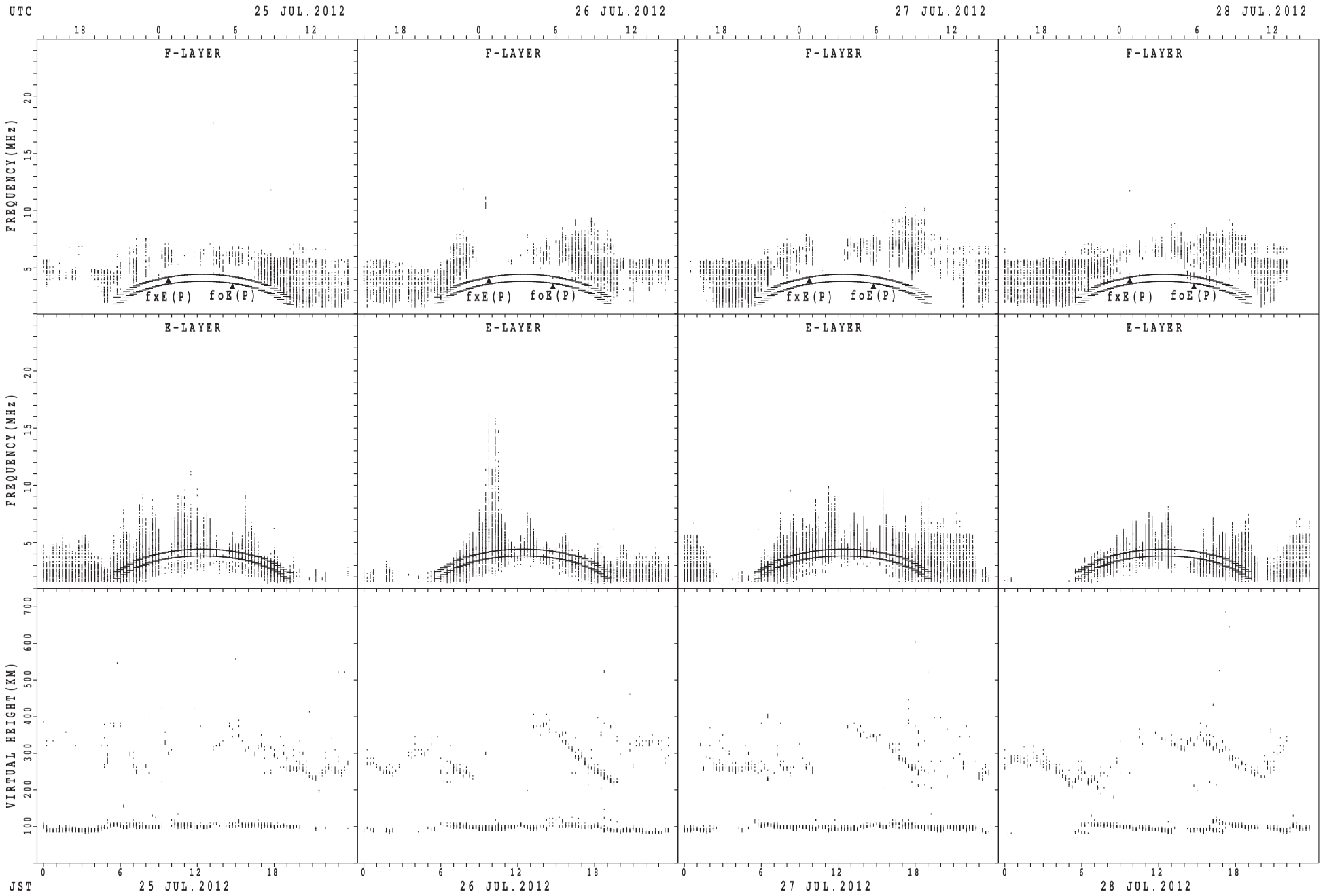
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



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

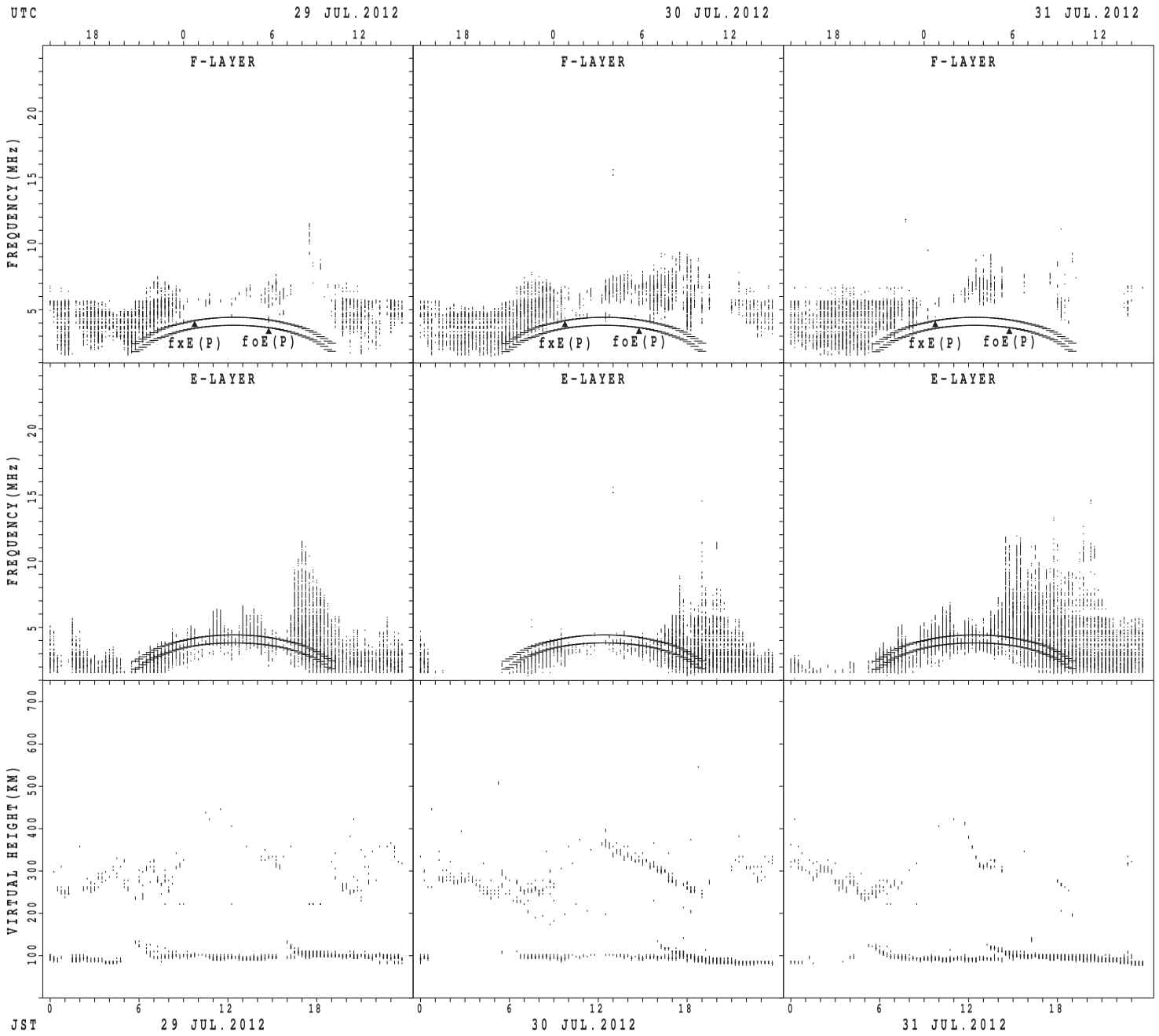

SUMMARY PLOTS AT Yamagawa
UTC
JST
21 JUL.2012
22 JUL.2012
23 JUL.2012
24 JUL.2012
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



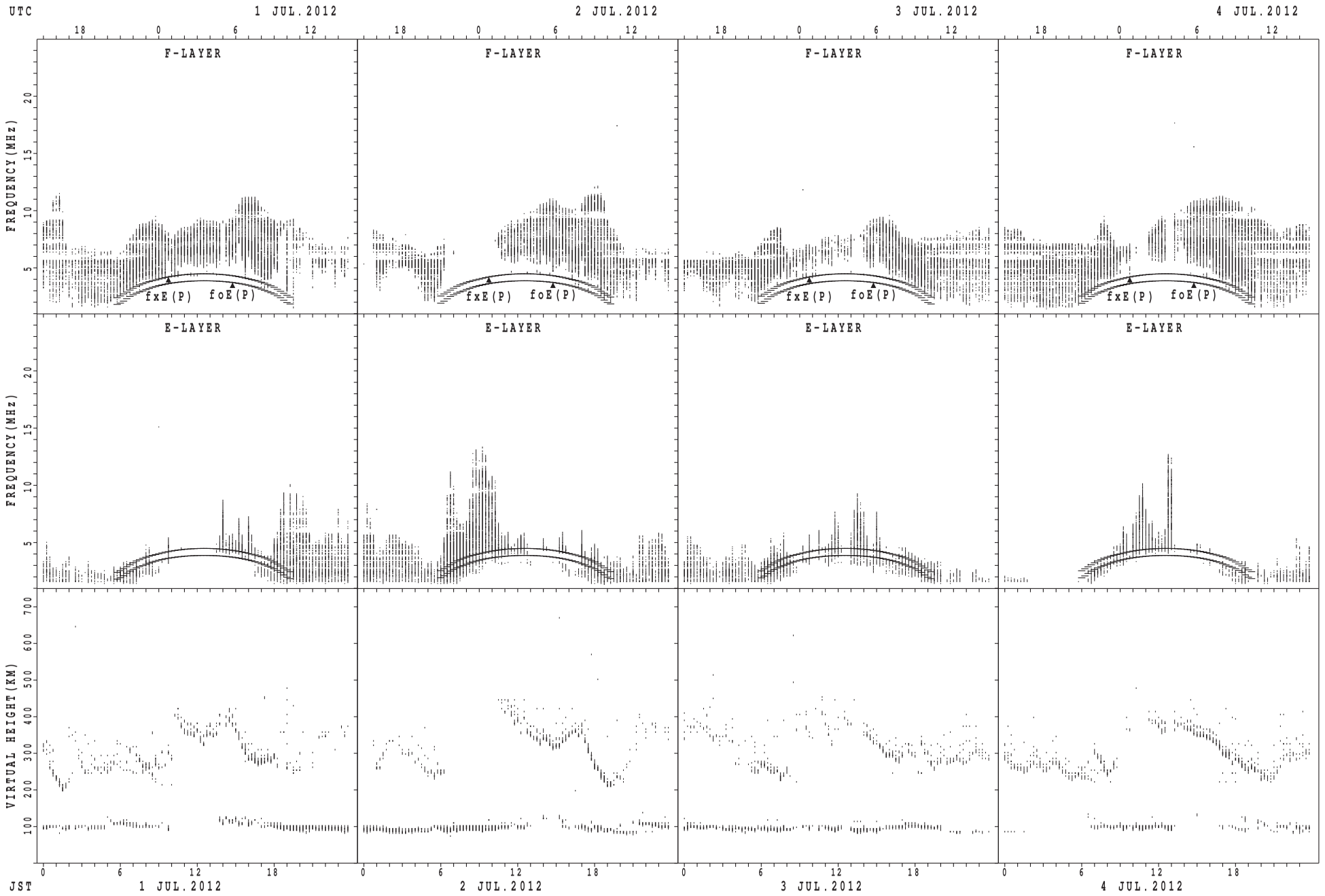
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



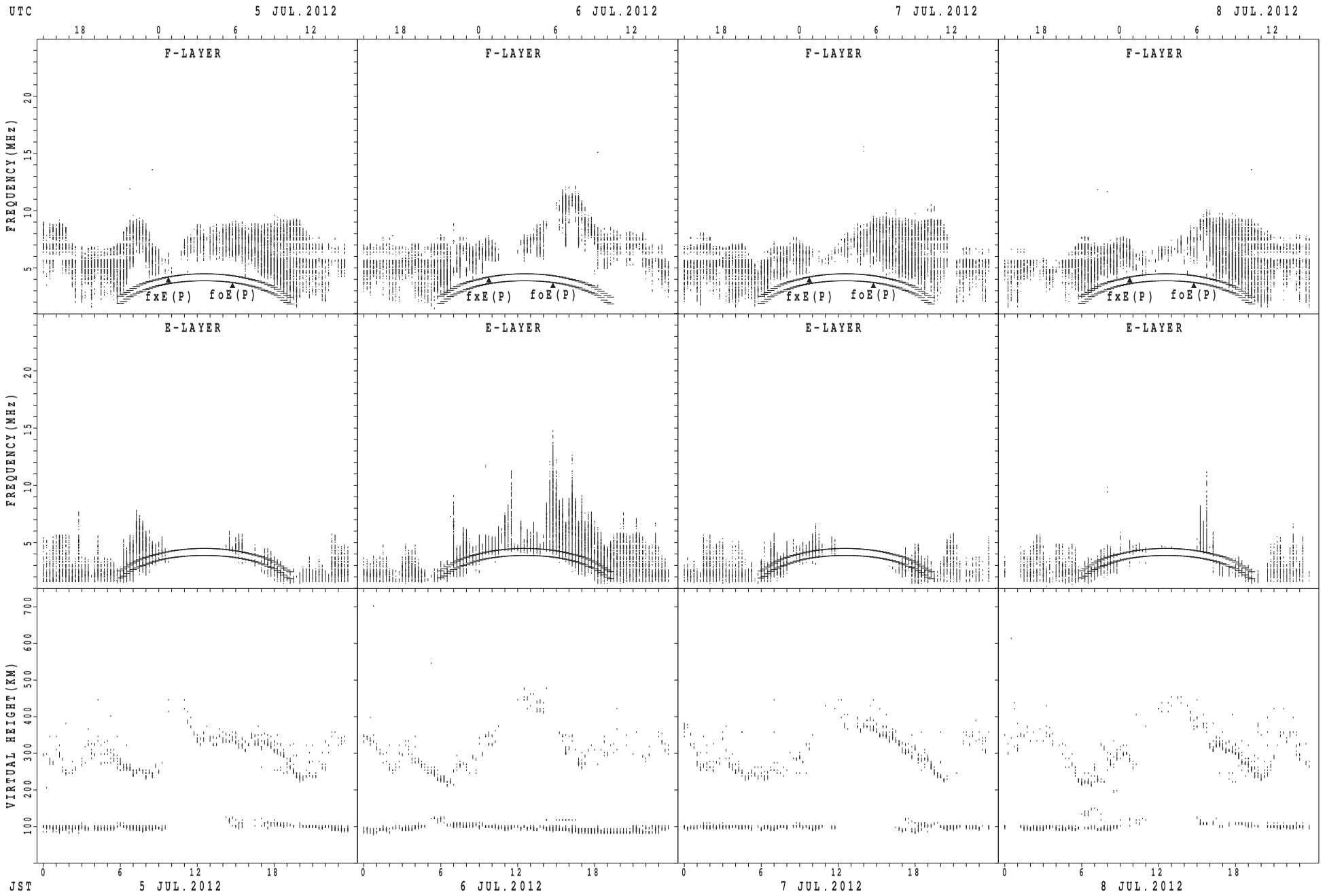
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



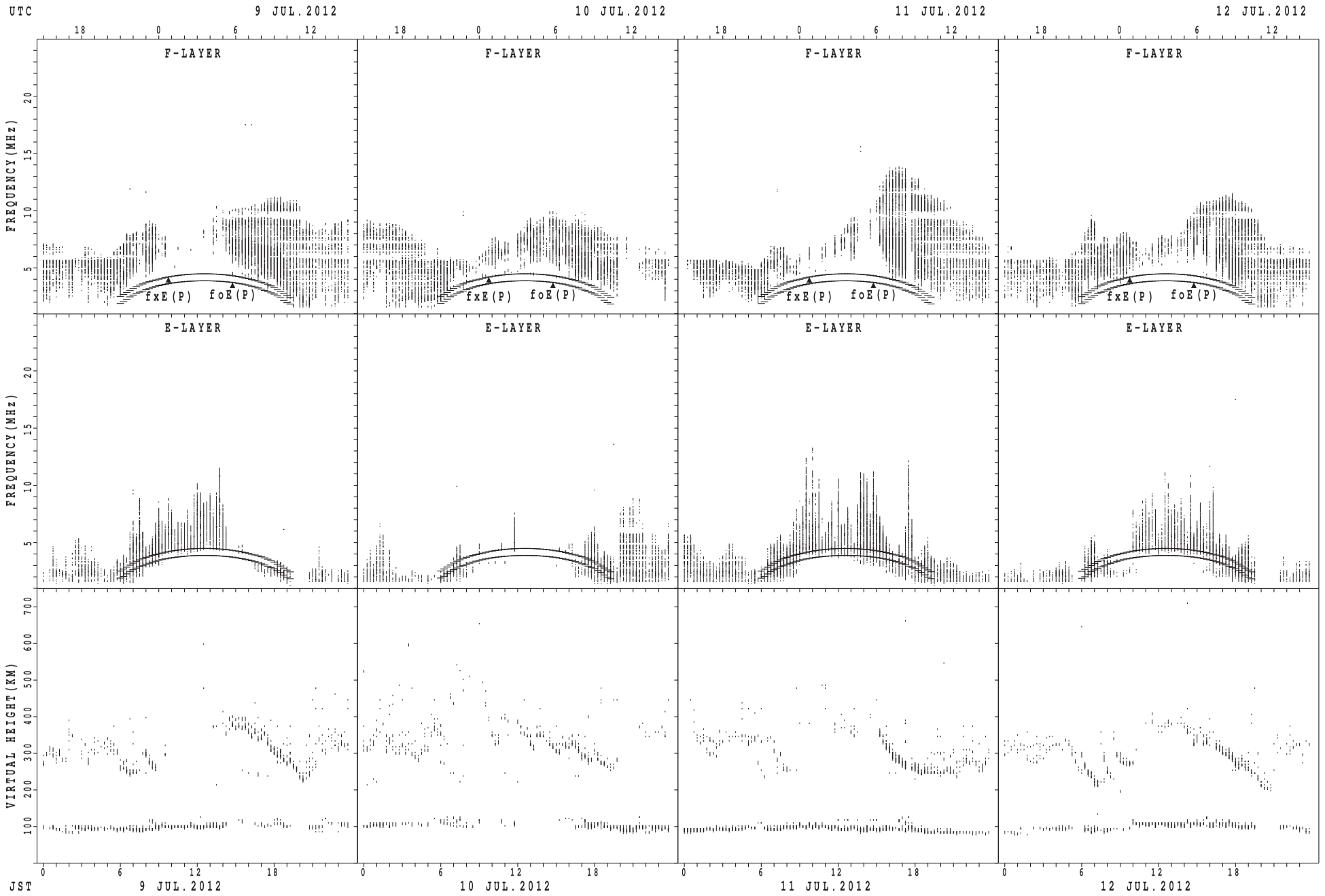
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



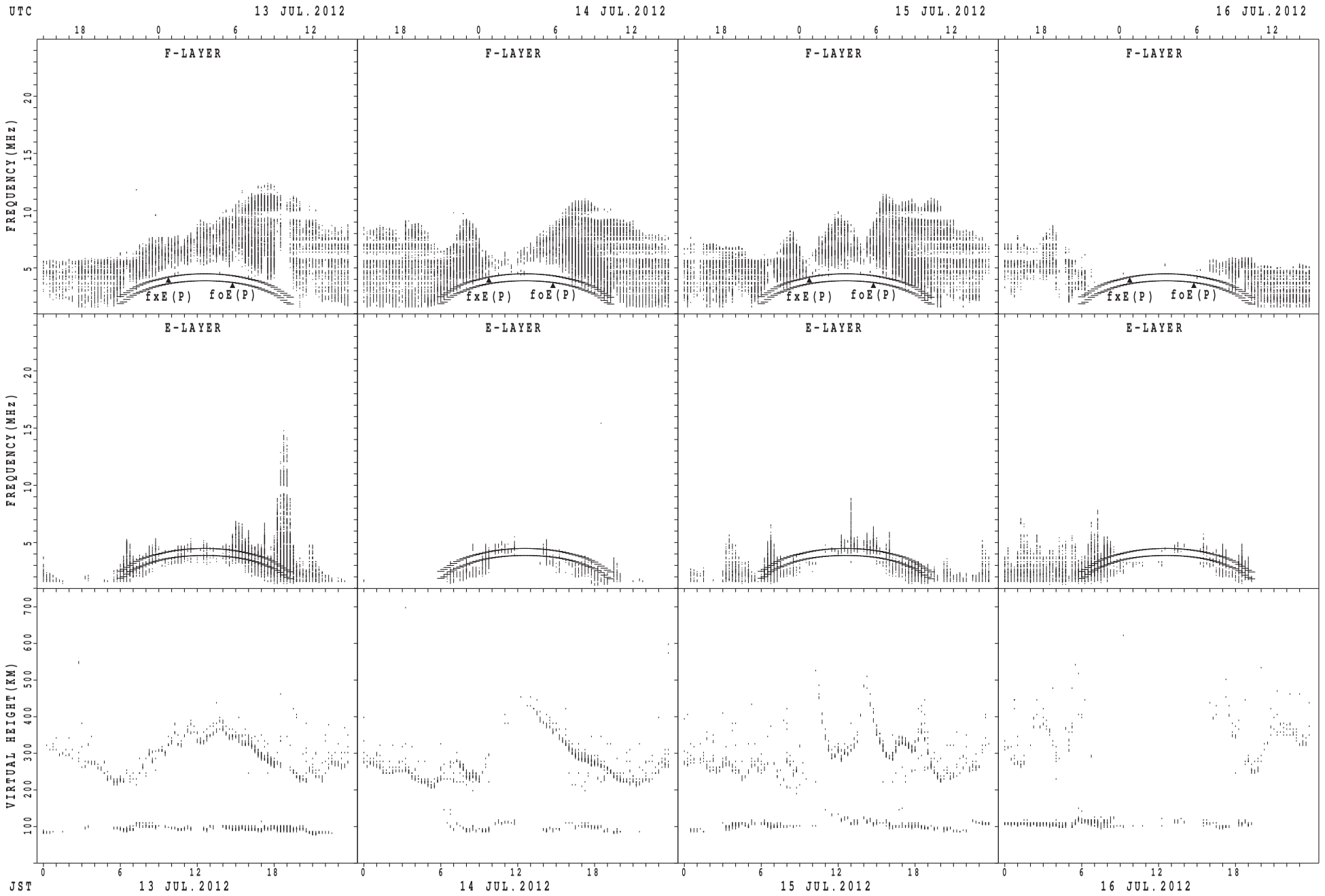
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



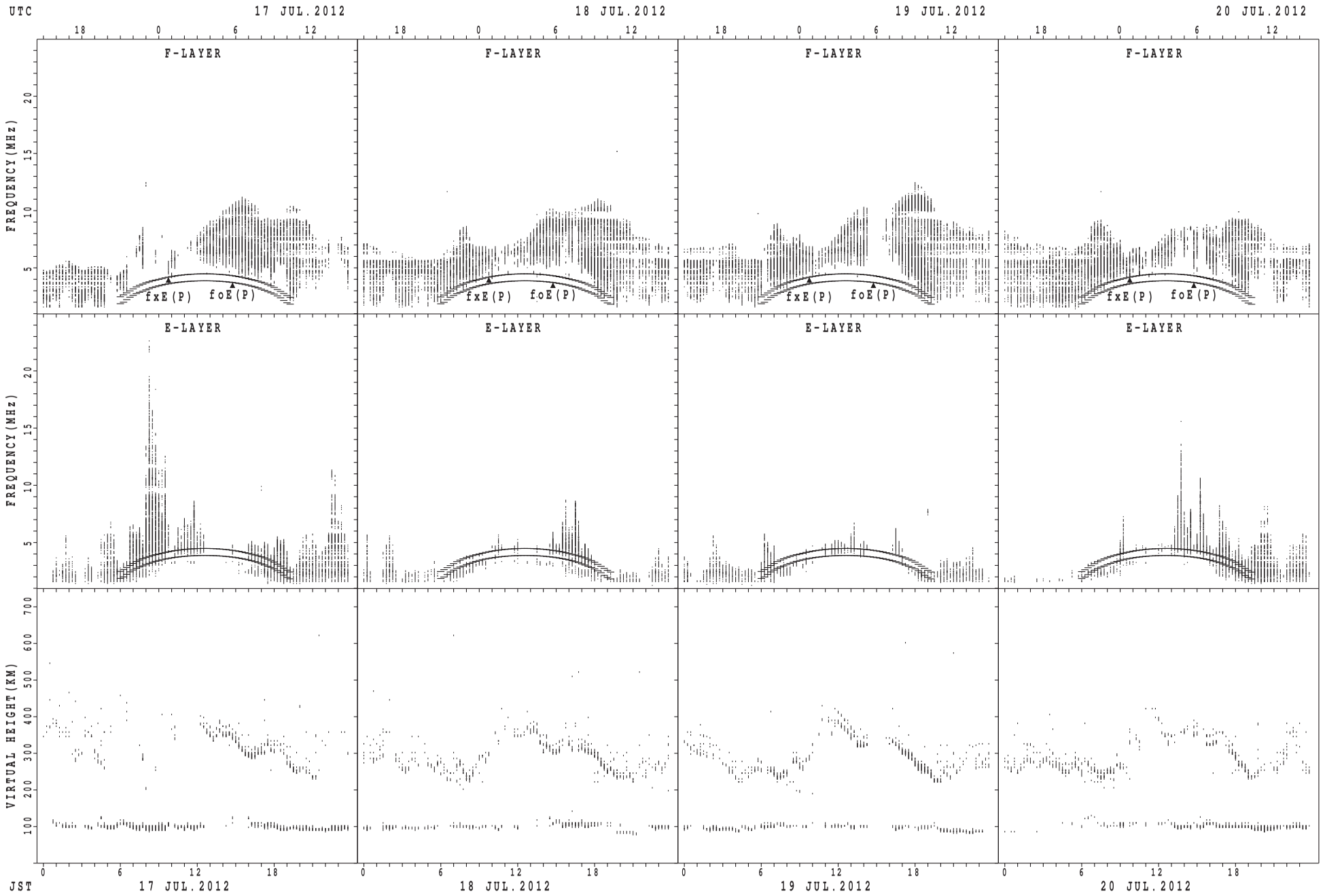
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



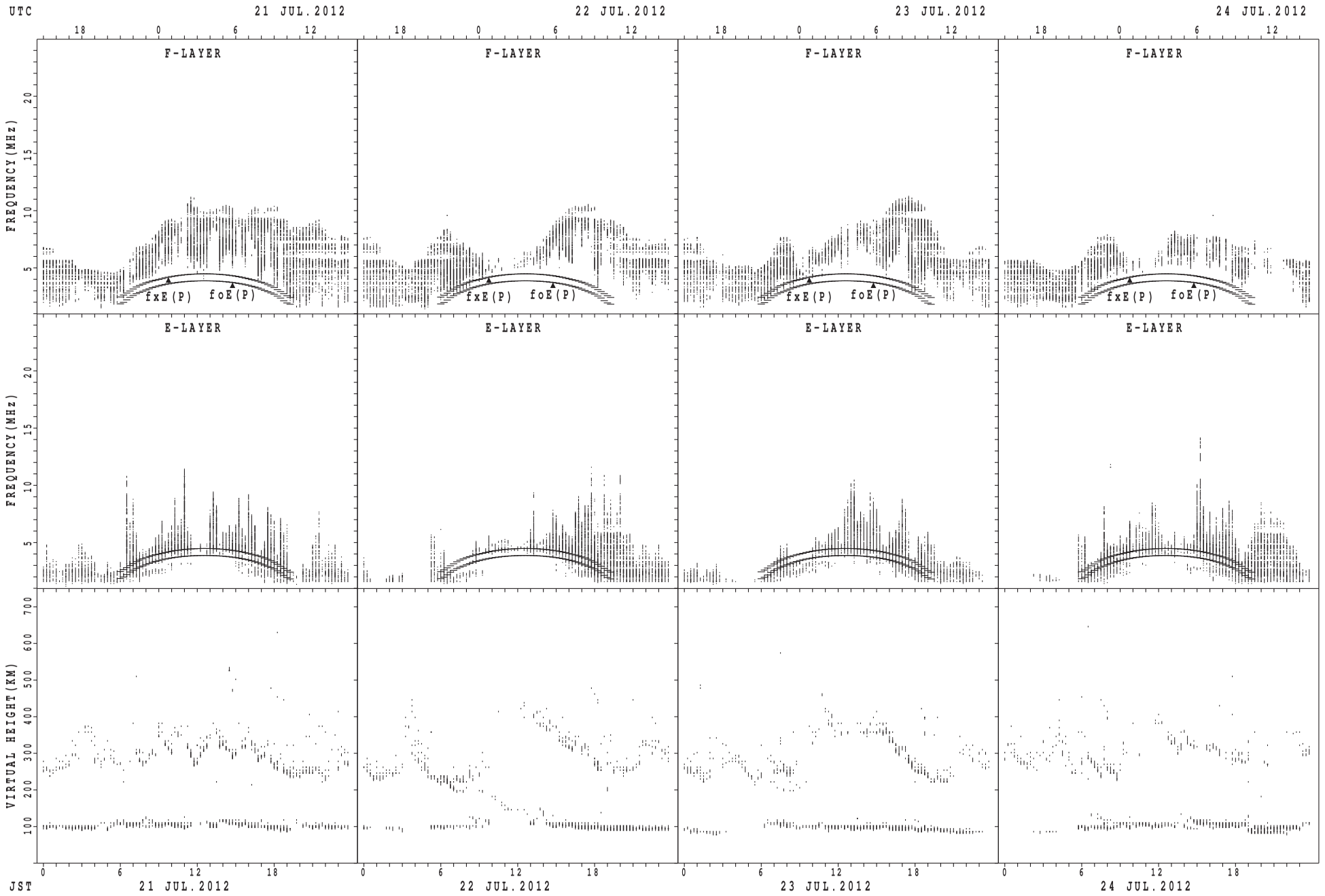
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



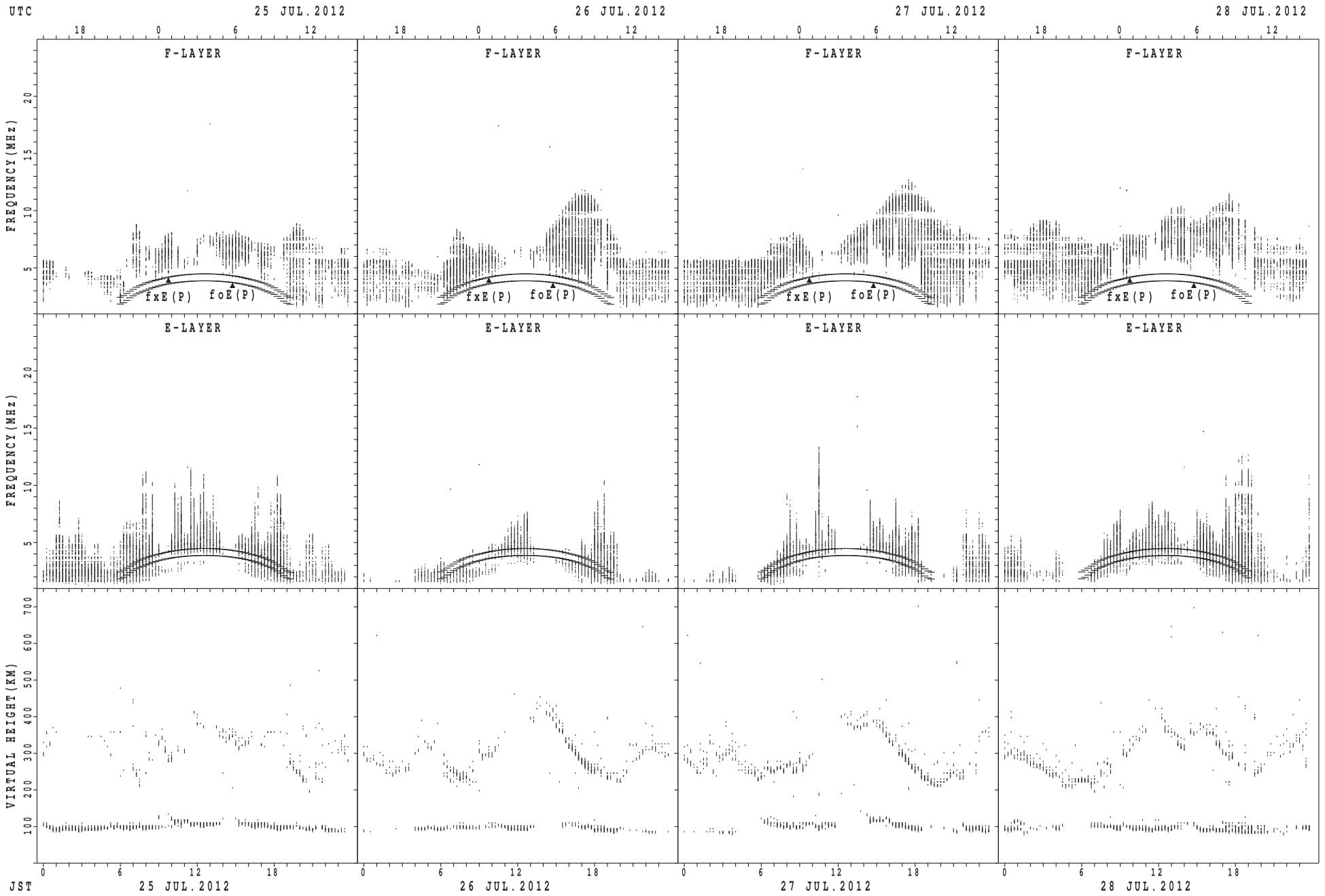
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



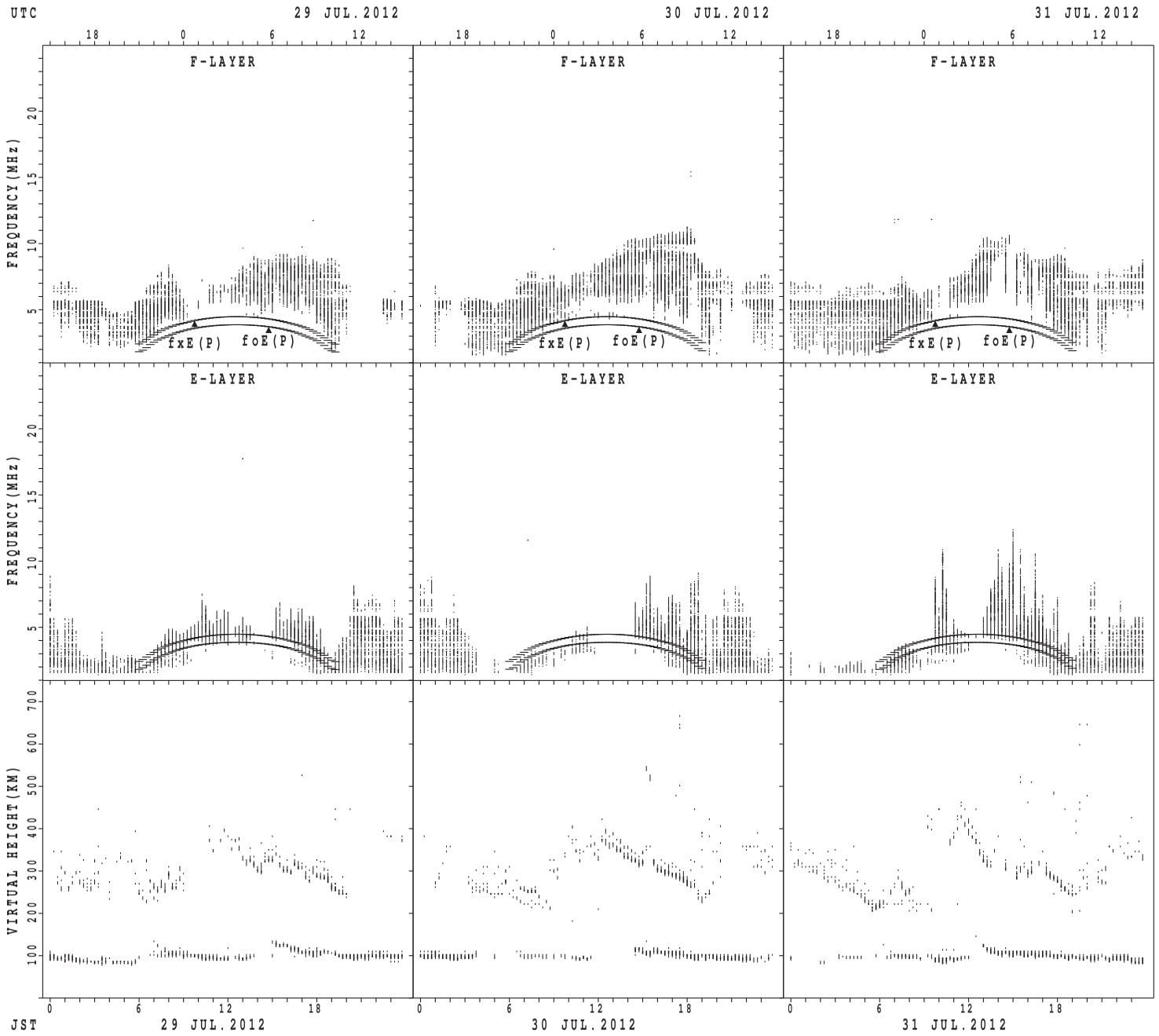
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

JUL.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	3	3		1		7	8	14									9	10	10	9	6	6	2	4
MED	290	364		316		336	306	308									350	331	308	284	277	296	297	306
U Q	296	366		158		358	335	336									360	338	320	297	288	328	314	320
L Q	288	334		158		294	279	286									324	304	302	270	256	278	280	288

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	23	26	22	16	18	25	28	26	24	27	19	21	14	13	12	18	24	28	27	27	27	29	29	27
MED	95	94	91	96	105	111	107	104	103	103	101	99	101	103	106	109	108	107	103	103	103	99	97	97
U Q	97	99	101	108	107	113	110	107	106	105	105	104	105	113	112	113	113	111	105	107	105	105	103	99
L Q	93	91	89	92	97	105	103	103	102	101	99	95	97	96	103	101	106	103	103	101	97	95	95	93

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		3	1				3	16	4								19	14	13	12	3	7	4	3
MED		352	368				296	292	271								308	307	294	282	254	330	335	306
U Q		358	184				320	295	297								326	328	305	296	308	354	339	310
L Q		344	184				286	273	260								300	288	265	270	254	284	271	302

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	21	20	17	13	13	19	22	24	25	19	23	18	20	19	18	17	25	28	29	23	27	29	27
MED	97	95	95	95	95	111	105	103	103	101	99	101	101	101	103	107	107	103	101	101	99	99	101	99
U Q	102	98	103	105	105	113	107	105	103	105	101	105	103	106	113	117	112	107	105	105	105	103	104	103
L Q	95	92	94	92	92	98	103	101	100	99	97	95	97	96	97	97	99	102	95	99	95	95	97	97

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	1	3				3	19	18								5	20	21	16	12	4	3	2
MED	322	306	288				280	288	267								318	304	270	280	275	329	348	329
U Q	327	153	344				290	296	286								328	319	288	302	283	354	358	338
L Q	319	153	288				272	264	254								310	289	263	254	265	261	264	320

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	20	23	19	17	18	25	28	22	22	22	22	21	18	18	22	21	26	31	27	27	27	27	25
MED	97	97	97	95	97	102	109	105	103	103	99	99	101	96	99	105	107	106	103	99	97	97	97	95
U Q	104	99	103	99	103	113	112	111	107	107	103	105	105	103	103	109	109	109	105	103	103	99	99	101
L Q	91	92	89	91	93	97	103	102	101	99	95	95	95	95	95	97	103	101	103	95	91	91	91	89

MONTHLY MEDIANS OF h′F AND h′Es

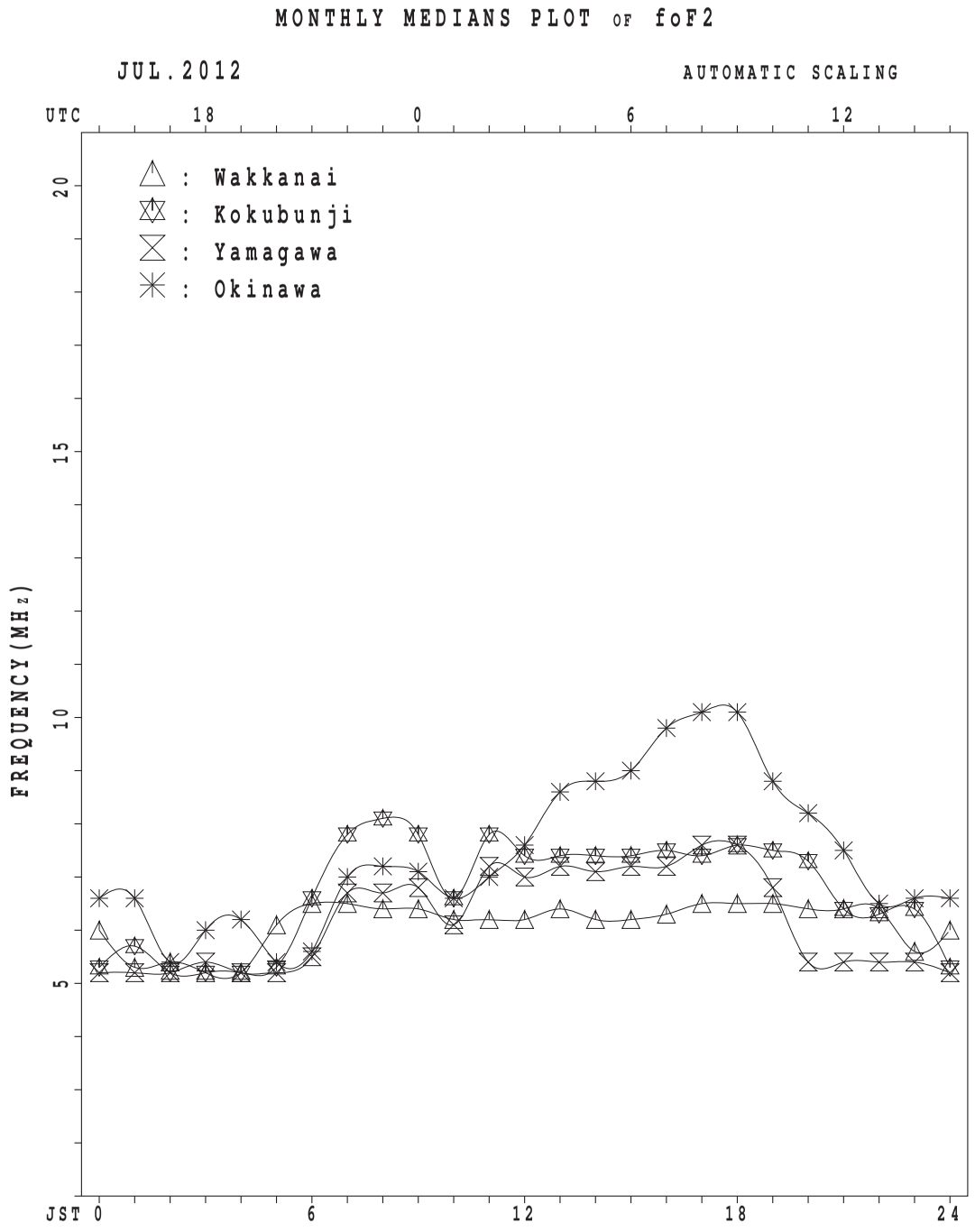
JUL.2012 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	5	9	5	3	2	2	7	14	19	19							18	28	28	25	14	11	4	10
MED	330	308	342	322	265	253	250	264	256	288							320	302	284	272	256	270	327	333
U Q	367	315	367	390	266	260	284	274	276	316							334	313	306	295	264	302	343	352
L Q	319	285	303	278	264	246	242	256	242	262							302	285	268	246	246	256	283	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	23	19	22	18	19	17	23	25	22	20	19	24	19	18	19	23	21	23	27	26	23	25	27	24
MED	97	99	97	97	97	97	105	105	103	105	105	102	101	103	103	109	107	103	103	99	97	97	99	97
U Q	103	105	99	99	99	101	113	110	107	115	113	107	105	109	119	117	112	111	107	103	99	99	101	100
L Q	95	93	91	93	95	95	95	95	99	103	97	97	97	99	99	101	100	101	99	95	91	90	95	95


MONTHLY MEDIANS PLOT OF foF2
JUL.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

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 76	X 72	X 73	X 72																	X 72	X 76	X 75	X 72
2	X 68	X 64	X 65	X 63																	77	77	78	75
3	X 71	70	70	X 67																	X 80	X 80	X 77	X 77
4	X 73	X 67	68	X 61																	X 88	X 87	X 84	X 84
5	X 69	X 67	X 65	X 65																	X 85	X 79	X 75	X 75
6	73	70	X 69	X 67																	O X 81	X 81	X 76	X 75
7	X 74	X 72	X 66	X 66																	X 83	X 81	X 86	X 81
8	X 77	X 72	X 62	X 62																	X 77	X 79	74	X 81
9	X 79	X 75	X 67	X 65	X 62																X 84	X 93	X 99	X 86
10	X 75	X 67	X 63	X 62	X 60									Y							X 62	X 65	X 65	X 63
11	X 64	X 59	X 50	X 48																	X 74	X 75	75	72
12	70	66	X 62	64	58	59															X 80	X 81	X 76	X 69
13	X 65	X 61	X 58	X 57																	X 78	X 79	74	75
14	75	72	70	65	65															O X 81	X 99	O X 83	X 77	72
15	X 71	X 69	X 67	X 65																		X 102	X 62	44
16	X 42	37	X 38	X 37										Y							X 73	X 72	X 69	X 57
17	52	X 47	X 41	X 39											Y						X 73	X 72	X 68	X 64
18	X 55	X 54	X 48	X 46																	X 81	O X 80	X 82	X 76
19	X 73	X 62	X 59	63																	X 86	X 84	X 79	X 68
20	X 57	X 57	X 54	X 52																	X 85	87	79	78
21	71	70	62	62																	X 76	X 73	X 68	X 66
22	X 66	X 61	X 60	59																	X 82	X 81	X 69	X 69
23	X 65	X 64	X 65	X 61	X 55																X 65	X 64	X 64	X 58
24	X 60	X 59	X 49	X 49								Y									X 69	X 68	67	X 64
25	X 59	X 58	X 58	X 54																	A	67	X 68	66
26	X 65	X 61	X 48	X 49																	X 72	X 72	X 67	X 64
27	X 61	61	62	X 58	X 58			63												X 80	X 81	X 77	X 70	68
28	X 61	X 59	X 59	60	60																X 75	X 78	X 76	X 73
29	X 71	67	67	63																	X 79	X 74	X 69	X 71
30	X 65	X 62	X 63	62																	X 83	X 76	X 71	X 67
31	X 65	X 62	X 59	X 57	X 57															X 75	X 78	X 79	X 74	X 71
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	8	1		1												3	29	31	31	31
MED	X 68	X 64	X 62	X 62	X 59	59		63												X 80	X 79	X 79	X 74	X 71
U Q	X 73	70	67	X 65	X 61															O X 81	X 83	X 81	X 77	X 75
L Q	X 61	X 59	X 58	X 54	X 58															X 75	X 74	X 73	X 68	X 66

JUL. 2012 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	69	65	66	65	60	63	65	74	J R 89	V 74	A	V 62	59	60	63	69	66	62	67	71	66	70	68	65
2	62	58	58	56	56	57	68	72	70	68	67	63	57	A	A	A	66	68	64	64	F 66	F 66	F 68	F 68
3	64	F 59	F 61	60	58	65	62	60	A	68	60	60	U R 51	E G 48	R 54	56	53	U A 57	60	70	75	74	70	70
4	66	60	F 59	54	53	62	72	J Y 81	73	71	U Y 78	71	63	62	R 60	60	67	A	76	77	R 81	R 80	78	77
5	62	60	58	58	57	64	72	R 74	76	A	74	A	67	R 66	U R 63	62	67	A	A	76	78	72	68	68
6	F 63	F 59	62	59	59	61	R 66	A	A	59	A	A	A	57	61	62	56	60	U A 61	72	74	74	69	68
7	67	65	59	59	57	57	62	U R 63	U R 89	Y	72	A	62	70	73	A	69	67	66	67	76	74	79	74
8	70	66	R 55	55	58	65	65	70	74	68	64	R 61	61	60	62	61	61	62	63	65	70	72	76	74
9	72	68	60	58	55	60	67	V 70	75	73	71	72	72	U R 77	75	71	70	67	74	85	U R 78	86	93	79
10	68	60	56	54	53	52	52	52	A	50	A	A	E G 50	Y	A	J R 51	53	50	50	50	55	59	58	56
11	57	52	R 43	41	34	U R 41	R 49	52	R 51	55	E G 49	E G 49	E G 50	U R 51	U R 52	61	61	62	R 65	66	68	68	F 67	F 63
12	F 62	F 57	56	F 51	F 47	51	53	U Y 50	54	59	A	53	60	61	57	R 55	60	65	68	70	74	74	69	62
13	58	54	51	50	49	61	64	66	57	E G 49	56	U R 53	U R 57	61	61	64	62	60	61	68	71	71	F 68	F 65
14	F 64	F 62	F 60	F 54	F 54	59	71	66	60	A	66	66	J R 58	61	62	62	56	A	67	R 74	92	76	70	F 64
15	64	62	60	58	56	60	61	U R 75	R 72	68	U R 74	U R 73	A	67	76	71	66	73	78	91	87	95	J R 55	F 32
16	35	F 26	31	31	33	37	R 39	E G 39	E G 39	A	A	A	E G 43	Y	E G 42	E G 43	45	48	51	57	66	65	62	50
17	R 42	40	34	32	34	38	R 42	49	U R 49	J R 54	U R 56	E G 44	U R 55	53	Y	55	53	U A 54	58	U A 61	66	65	62	57
18	48	47	41	39	37	45	51	61	67	62	V 62	61	61	64	64	63	62	66	67	74	75	U R 73	75	69
19	66	55	52	52	43	46	A	66	63	59	57	62	J R 58	57	A	A	A	A	A	74	R 79	77	72	61
20	50	50	47	45	44	52	58	58	64	61	A	A	U R 57	56	61	61	56	J R 49	62	U A 72	77	F 78	F 69	R 69
21	F 59	F 59	52	52	46	49	63	A	90	R 74	R 55	E G 46	60	A	61	57	U A 59	57	60	72	69	66	62	J R 59
22	60	54	53	49	47	54	61	75	69	57	A	A	A	A	A	58	62	67	65	73	75	74	62	62
23	58	57	58	54	48	52	66	66	63	60	58	A	U R 54	U R 50	54	56	57	59	58	52	58	59	57	51
24	53	52	42	42	44	42	47	A	R 53	A	U R 52	Y	53	R 51	A	57	59	57	57	53	62	61	F 58	57
25	52	51	51	47	49	60	50	R 51	57	62	A	A	E G 46	A	J R 53	A	54	54	56	A	A	F 56	62	F 59
26	57	54	41	42	42	50	60	A	64	57	A	A	54	56	57	58	59	59	58	A	65	65	60	57
27	54	F 53	F 52	51	51	62	66	V 58	V 61	68	63	63	68	65	64	65	68	69	70	73	74	69	63	F 59
28	54	52	50	F 52	51	58	63	72	69	A	A	62	66	69	68	68	66	65	65	66	69	72	V 70	66
29	64	F 59	F 58	F 54	45	49	A	A	59	V 58	A	U R 50	A	54	56	R 54	57	57	59	67	73	67	62	64
30	58	55	56	55	56	60	70	63	72	68	58	62	58	62	60	62	66	68	71	82	76	68	64	60
31	58	55	53	51	50	52	56	58	54	V E 60	G 51	62	R 62	67	62	62	U A 59	66	68	U A 68	72	72	67	64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	29	26	28	25	20	20	27	25	25	27	30	27	29	29	30	31	31	31
MED	60	57	55	52	50	57	62	64	64	61	61	62	58	61	61	61	60	62	64	70	74	72	68	64
U Q	64	60	59	56	56	61	66	72	72	68	69	63	62	66	64	63	66	67	68	74	76	74	70	68
L Q	54	52	50	47	44	49	52	58	57	58	56	53	E G 54	55	56	56	56	57	58	66	66	66	62	59

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					L	U L 360	A	U A 444	A	A	A	488	R 468	U R 476	A	444	R	A	A					
2							424	U A 440	A	A	R 472	A	A	A	A	A	448	L 412	L					
3					L 268	L 344	L 404	U A 408	A	B	U R 472	A	Y	U R 480	U A 432	R 456	U A 444	A	A	L				
4						A	A	456	484	484	U A 488	504	508	504	500	484	A	A	L 400					
5						L	L	U L 448	L 472	A	U A 480	A	U R 528	B	U R 508	A	A	A	A	L				
6						A	A	A	A	U A 476	A	A	A	504	R	U A 460		L 444	A	A				
7						L 400	A	U L 488	476	L 488	R 500	A	A	U Y 512	508	A	A	448	L					
8						L	L 424	440	A	A	U Y 472	504	Y 500	R 500	500	500	U L 492	U L 452	A					
9						L 404	R 412	464	A	512	504	A	R 508	R 504	U R 516	500	A	L	U L 436					
10						A	A	U R 400	A	U R 448	A	A	496	Y	A	U R 432	A	A	L					
11						348	388	R 424	436	Y 448	488	U R 488	504	476	U Y 452	460	L 460	U L 432	U L 412					
12					L	344	U A 372	436	A	A	A	480	476	A	L 484	L	468	L 432	A					
13					L	372	392	U A 448	U A 448	488	A	488	488	488	488	U L 464	452	424	L					
14						L	L 416	U L 472	A	A	A	U A 520	A	A	U R 476	U L 476	A	A	A					
15						L 396	A	A	452	R 460	472	L	A	A	484	A	432	432	L 404	U L 264				
16					L	304	336	388	388	A	A	A	U R 432	Y	420	428	408	404	L					
17						328	376	388	444	U R 444	U R 452	444	A	R 444	Y	444	428	A	A	A				
18						A	392	436	448	468	480	480	480	492	476	476	440	416	A	A				
19						L	A	A	U A 444	U A 456	A	A	464	L 476	A	B	A	A	A					
20					L	L 328	384	A	A	A	A	A	Y 464	A	464	460	U L 452	L	U L 368					
21						340	368	A	A	A	A	U R 464	A	A	A	U A 444	U A 428	A	U L 368					
22						L	L	392	456	452	A	A	A	A	A	U A 448	A	A	A	L				
23						U L 352	A	A	U A 440	U A 416	A	A	468	U R 464	452	432	432	412	L					
24						L 340	368	A	A	A	452	Y	R 452	Y 456	A	436	432	392	U L 360					
25					U L 228	L 356	U L 392	A	428	A	A	A	460	A	R 464	A	A	A	A	A				
26					L		A	A	A	U A 452	A	A	464	U A 472	460	R 456	L 456	A	A	A				
27						L	U L 408		U L 448	A	U L 524	500	R 500	R 500	L 500	492	R 444	L 432	L					
28							L	L 456	456	A	A	A	A	A	468	L 484	456	U L 448	U L 380	A				
29						L 352	A	A	A	U A 448	A	472	A	A	464	464	440	L 436	376					
30						L	L	L	464	L 484	U L 492	U R 500	U R 464	U R 460	456	452	460	L 436	U L 384					
31						L 340	L 400	432	436	R 456	508	504	488	496		468	456	A	U L 376					
	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	17	17	19	17	17	15	14	20	18	21	24	21	16	11	1				
MED					L 248	L 348	392	440	448	456	480	488	478	484	476	460	444	L 432	U L 380	U L 264				
U Q						L 366	L 410	L 456	460	484	500	504	500	500	500	476	456	L 440	U L 404					
L Q						340	374	408	438	U 448	472	480	464	U R 472	458	444	432	414	U L 368					

JUL. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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					172	224	A 288	U A 316	324	U A 352	A	A	U A 368	368	R 360	340	320	284	A 228	A				
2					156	220	256	308	328	A 340	A	A	A	A 348	U A 348	344	316	A	240	A				
3					172	U A 232	276	U A 300	A	B	A	A	A	R	A 356	352	320	296	U A 232	A				
4					A	U A 228	U A 288	316	340	A	A	A	A	A	U R 352	348	328	296	228	A				
5					A	A	A	320	A	A	A	A	A	B	A	360	U A 356	A 304	U A 248	196				
6					A	232	296	U A 352	A 368	U A 380	A	A	A	A	A	A	328	304	244	A				
7					180	208	A 276	U A 316	332	U A 364	A	A	A	A	A 372	364	348	292	U A 276	A				
8					B	228	272	316	U A 340	352	U A 356	U R 388	A	A	A	A	336	324	268	A				
9						240	A 276	324	356	U A 364	A	A	A	A	R	A	A	A 292	268	U A 176				
10						A	U A 268	312	A 332	U A 352	A	A	A	U R 376	A	364	340	A	236	A				
11					A	232	272	316	340	364	U A 364	A	A	A	A	344	328	U A 300	A	A				
12					A	228	264	320	332	U A 344	352	A	A	A	U A 352	352	336	300	240	A				
13					148	244	300	A	A	A	A	A	U R 376	R	B	328	320	296	A	A				
14					164	A	272	308	U A 340	A 356	A	U A 360	A	A	R	352	332	292	U A 232					
15					A	U A 208	U A 260	308	340	360	368	U A 376	388	384	368	352	324	292	228	156	B			
16					A	A	244	292	312	U A 332	A	A	A	U R 344	352	U R 312	312	280	228	188				
17					A	A	264	296	328	336	344	A	A	R	348	340	308	280	228	A				
18					A	216	U A 272	U A 304	A	A	A	A	A	R	R	336	320	272	U A 208	A				
19					A	A 220	A	U A 304	U A 320	A	A	A	A	A 348	348	B	B	312	A	A				
20					A	A	A	U A 300	U A 320	A	A	A	368	A	340	324	316	292	A	A				
21					A	A	U A 268	U A 280	U A 296	U A 308	A	A	368	364	340	324	300	260	A	A				
22					B	U A 208	252	300	316	332	U A 344	U A 324	A	A	A	A	312	276	U A 236	A				
23						A	252	U A 292	U A 312	U A 336	U A 348	A	A	A	A	A	A	272	232	A				
24					J R 156	220	256	A 312	336	A	U A 356	A	R 356	U R 348	348	336	300	280	232	A				
25					B	220	260	U A 312	316	U A 328	U A 340	A	376	364	348	324	316	284	A	A				
26					B	A	272	U A 308	U A 332	A	A	A	A	A	A	U A 340	304	284	U A 240	A				
27						216	272	312	324	348	U A 356	A	R 352	R	336	336	320	288	232					
28						216	260	304	U A 332	A	A	A	A	A	A	A	A 300	268	U A 232	B				
29					B	A 188	A	U A 308	328	348	U A 352	A	A	A	A	336	316	288	A	A				
30					B	U A 204	264	304	U A 324	A	A	A	A	A	A	A	A	A	U A 244	B				
31						208	260	292	A 328	U A 344	R 372	A	R 376	384	364	352	316	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					7	22	27	30	27	20	12	4	9	10	16	23	27	27	23	4				
MED					164	220	268	308	328	U A 348	U A 354	U A 368	368	364	350	340	320	292	232	182				
U Q					172	228	A 276	316	340	A 358	360	U 382	R 376	376	358	352	328	296	244	192				
L Q					156	A 208	260	300	U A 320	U A 336	U A 346	U A 342	R 362	A 348	348	336	312	280	228	166				

JUL. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	JA 12	EB 16	JA 19	JA 16	23	26	JA 45	JA 49	JA 56	JA 59	JA 68	53	39	JA 52	JA 63	JA 55	JA 60	58	JA 47	JA 24	JA 64	JA 38	JA 59	JA 22
2	JA 21	JA 24	23	JA 27	G	26	39	JA 54	JA 77	JA 58	JA 42	JA 57	55	JA 81	JA 151	JA 143	JA 121	45	27	JA 39	JA 51	JA 64	JA 63	JA 25
3	JA 27	JA 26	JA 26	JA 15	G	JA 37	38	JA 43	JA 68	EB 54	JA 47	JA 61	42	G	45	42	JA 53	JA 55	JA 54	JA 63	JA 54	JA 37	JA 63	JA 27
4	JA 22	JA 19	JA 24	JA 24	JA 27	52	60	JA 42	JA 48	JA 45	62	46	42	42	G	42	JA 56	JA 66	JA 68	57	JA 40	JA 55	39	JA 27
5	JA 28	JA 22	JA 23	20	19	JA 28	JA 58	36	JA 47	JA 94	JA 56	72	JA 57	EB 49	41	48	JA 67	JA 103	JA 110	JA 61	JA 19	JA 57	JA 36	JA 34
6	JA 29	JA 33	JA 77	JA 69	JA 51	JA 38	JA 66	JA 73	JA 119	JA 49	JA 63	76	JA 81	40	43	JA 47	37	JA 42	JA 66	JA 58	42	JA 21	21	JA 21
7	EB 13	JA 20	EB 13	JA 20	G	27	JA 43	JA 50	37	43	44	JA 62	JA 57	39	42	JA 76	JA 65	37	JA 48	JA 53	JA 113	JA 52	JA 20	JA 31
8	JA 25	JA 25	AE 14	EB 14	EB 15	26	31	39	JA 55	JA 55	40	G	40	38	JA 44	JA 52	GJ 33	JA 43	JA 43	JA 33	JA 33	JA 56	JA 73	JA 34
9	JA 25	29	JA 30	JA 26	JA 25	G 21	34	39	JA 53	JA 51	46	JA 57	44	42	G	43	JA 51	33	G	25	JA 22	JA 49	JA 49	JA 31
10	JA 15	JA 27	EB 15	JA 14	JA 27	JA 49	JA 43	38	53	44	42	54	41	45	51	JA 48	JA 49	JA 42	34	JA 40	JA 29	JA 29	JA 47	JA 49
11	JA 33	JA 22	EB 14	JA 20	20	27	34	41	39	43	40	40	40	40	38	G	JA 45	JA 65	JA 57	JA 43	JA 27	JA 59	JA 83	JA 63
12	JA 34	JA 30	35	EB 12	JA 28	32	JA 45	JA 49	JA 60	58	JA 99	41	JA 43	50	38	39	JA 63	67	JA 37	JA 54	AE 13	BJ 50	JA 37	21
13	JA 23	JA 29	JA 47	JA 15	G	G 22	36	JA 47	JA 47	70	JA 58	42	40	G 36	G 31	G 27	37	JA 47	JA 31	JA 31	JA 36	JA 38	JA 59	JA 42
14	JA 42	JA 37	JA 41	JA 19	G	40	30	40	JA 49	JA 67	JA 55	JA 55	JA 69	JA 57	G 32	39	JA 65	JA 63	JA 59	JA 64	JA 80	JA 63	JA 72	72
15	JA 36	JA 40	JA 33	JA 29	JA 52	84	61	JA 56	38	42	41	JA 56	JA 63	JA 65	45	JA 64	35	38	G 20	G	EB 12	EB 12	20	JA 26
16	JA 34	JA 16	JA 15	JA 13	JA 21	24	28	32	36	JA 46	50	JA 51	43	38	37	35	JA 45	34	31	20	EB 11	EB 11	EB 11	EB 11
17	JA 15	JA 16	JA 15	JA 17	JA 26	27	30	36	38	38	38	JA 53	JA 55	G	G	G	JA 43	JA 93	JA 49	JA 95	JA 26	JA 49	JA 39	JA 20
18	EB 14	EB 14	JA 17	JA 25	JA 21	JA 36	33	37	37	48	40	39	39	G 34	G 32	G 30	35	JA 48	JA 36	JA 52	JA 90	JA 71	JA 64	JA 62
19	JA 49	JA 26	JA 26	JA 25	JA 46	JA 33	JA 66	JA 61	JA 55	JA 64	JA 57	63	JA 54	42	JA 96	JA 168	JA 91	JA 205	JA 223	JA 156	JA 61	JA 89	JA 31	JA 15
20	EB 13	JA 29	JA 19	JA 18	JA 24	30	JA 38	JA 62	68	JA 93	102	JA 73	39	JA 65	39	G	38	JA 57	JA 33	JA 94	JA 57	JA 54	JA 90	JA 67
21	JA 52	58	JA 43	JA 17	JA 37	JA 33	JA 33	JA 116	JA 85	JA 100	JA 57	39	JA 62	JA 77	JA 114	JA 111	JA 90	JA 109	JA 49	JA 55	JA 31	JA 31	45	48
22	JA 28	JA 25	JA 25	JA 20	JA 31	JA 30	37	37	JA 43	43	JA 93	JA 173	JA 93	100	103	70	JA 65	116	68	JA 97	87	JA 67	JA 61	JA 33
23	JA 25	JA 25	JA 25	JA 15	JA 21	JA 30	JA 54	JA 50	JA 49	JA 44	JA 57	JA 112	JA 59	JA 55	41	38	37	29	29	JA 22	JA 26	JA 30	JA 37	JA 50
24	EB 14	EB 14	EB 14	EB 14	G	G	35	56	JA 51	JA 55	39	40	40	G	JA 65	37	33	36	JA 38	24	JA 17	JA 32	JA 48	JA 45
25	JA 29	JA 25	JA 16	JA 18	EB 14	27	36	JA 44	39	JA 53	JA 119	JA 52	40	JA 57	40	JA 103	JA 47	JA 58	JA 64	182	JA 127	JA 87	JA 62	JA 33
26	JA 41	JA 35	JA 32	JA 29	JA 21	JA 26	JA 59	JA 90	JA 75	JA 60	JA 64	75	40	JA 49	44	44	JA 49	JA 53	JA 41	JA 89	JA 64	JA 19	JA 17	JA 25
27	JA 27	JA 30	JA 22	JA 18	JA 18	G 21	G	JA 45	40	JA 51	JA 46	40	G	G 29	G	G	34	30	JA 28	JA 28	AE 14	BJ 42	JA 51	JA 51
28	JA 21	JA 36	JA 26	AE 14	JA 21	25	30	37	JA 45	JA 115	68	JA 58	70	60	37	JA 47	36	30	30	JA 56	54	JA 35	JA 35	JA 35
29	JA 27	40	JA 27	28	JA 15	27	JA 86	JA 65	46	JA 54	52	51	JA 59	61	38	37	36	34	37	JA 64	JA 33	44	JA 21	JA 15
30	JA 33	JA 27	JA 24	JA 16	JA 17	23	32	37	38	38	JA 47	JA 46	39	52	JA 41	JA 41	JA 37	JA 35	31	JA 21	JA 60	JA 51	28	35
31	EB 14	20	JA 13	JA 27	JA 27	G 18	30	34	37	40	G 37	38	G 34	41	40	49	JA 93	JA 67	JA 51	JA 89	JA 45	28	33	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 27	JA 26	JA 24	JA 18	JA 21	27	37	JA 44	JA 48	JA 52	JA 52	53	43	44	41	43	JA 47	JA 48	JA 41	JA 54	JA 40	JA 49	JA 45	JA 33
U Q	JA 33	JA 30	JA 30	JA 25	JA 27	JA 33	JA 54	JA 56	JA 56	JA 60	JA 63	62	JA 59	JA 57	JA 45	JA 55	JA 65	JA 66	JA 57	JA 64	JA 61	JA 57	JA 62	JA 48
L Q	EB 15	20	EB 15	15	G	G 25	32	37	39	44	42	41	40	G 38	G 37	G 37	37	36	31	28	26	JA 31	JA 31	JA 22

JUL. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 16	16	E B 15	G 16	24	38	44	48	48	A A 68	43	38	42	52	37	35	47	47	22	19	37	38	17
2	17	E B 14	E B 13	17	G	25	30	44	60	54	42	52	51	A A 81	A A 151	A A 143	35	31	26	22	29	41	42	E B 12
3	16	16	17	E B 13	G	30	37	41	A A 68	E B 54	41	52	U Y 42	G	43	40	44	52	37	23	47	28	28	25
4	18	17	17	17	25	41	57	42	43	43	49	44	U Y 42	40	G	40	50	A A 66	33	29	29	25	29	24
5	18	E B 13	17	E B 14	14	24	32	36	35	A A 94	48	A A 72	46	E B 49	40	45	56	A A 103	A A 110	G 17	16	18	27	23
6	22	25	51	50	29	37	56	A A 73	A A 119	48	A A 63	A A 76	A A 81	U Y 39	U Y 43	46	36	36	52	49	32	15	15	15
7	E B 13	E B 13	E B 13	E B 13	G	24	40	40	36	38	40	A A 62	51	U Y 38	42	A A 76	56	35	35	38	23	22	18	18
8	17	E B 14	E B 14	E B 14	E B 15	24	31	G 31	50	50	U Y 38	G	U Y 38	U Y 36	40	42	G 32	G 32	39	22	24	29	44	E B 12
9	E B 14	24	25	20	20	G 18	33	37	51	43	42	52	41	42	G	41	47	32	G	23	17	23	17	16
10	E B 16	16	E B 15	E B 15	21	43	43	34	A A 53	39	A A 42	A A 54	40	U Y 43	A A 51	39	46	41	30	30	25	26	40	16
11	18	18	E B 14	17	18	24	30	33	37	U Y 43	U Y 40	U Y 40	U Y 39	39	U Y 37	G	37	34	25	22	18	43	36	39
12	26	23	20	E B 12	17	26	37	37	48	54	A A 99	40	41	49	36	36	36	36	36	41	E B 13	40	E B 12	E B 12
13	20	19	E B 16	E B 15	G	G 18	30	45	45	45	47	U Y 40	40	U G 34	U G 31	G 23	32	32	25	27	27	21	E B 12	26
14	30	30	32	E B 12	G	34	30	38	44	A A 67	54	52	51	48	U G 31	36	42	A A 63	52	49	56	52	59	34
15	27	26	20	18	19	25	51	52	36	37	38	47	A A 63	63	42	52	G 32	36	G 19	G	E B 12	E B 12	18	18
16	28	E B 14	E B 14	E B 13	16	19	26	G 25	G 30	A A 46	A A 50	A A 51	38	U Y 37	37	35	34	31	27	G 18	E B 11	E B 11	E B 11	E B 11
17	E B 13	15	E B 13	E B 13	21	22	G 26	G 29	G 31	G 31	G 33	37	49	G	G	G	40	43	38	40	20	23	25	16
18	E B 14	E B 14	E B 14	E B 14	20	34	30	31	32	39	37	37	U Y 37	U G 34	U G 32	G 28	33	35	33	39	18	17	21	20
19	25	22	19	18	22	28	A A 66	60	44	46	52	57	41	41	A A 96	A A 168	A A 91	A A 205	A A 223	22	18	49	19	E B 14
20	E B 13	17	16	E B 13	17	22	30	46	56	53	A A 102	A A 73	U Y 39	53	39	G	36	30	23	60	50	22	22	37
21	37	39	24	E B 13	22	22	G 24	A A 116	48	53	50	39	52	A A 77	58	44	43	50	28	24	13	22	25	22
22	18	E B 12	E B 12	E B 12	E B 12	24	29	G 30	37	37	A A 93	A A 173	A A 93	A A 100	A A 103	45	48	60	40	19	17	17	31	23
23	20	18	18	E B 13	16	23	38	42	44	42	48	A A 112	41	40	40	36	32	28	G 18	16	18	20	23	18
24	E B 14	E B 14	E B 14	E B 14	G	G	31	A A 56	42	A A 55	37	U Y 38	40	G	A A 65	35	33	33	30	22	16	20	27	27
25	18	17	E B 14	E B 14	E B 14	G 22	28	38	37	50	A A 119	A A 52	40	A A 57	38	A A 103	38	39	46	A A 182	A A 127	44	44	23
26	32	22	22	20	16	20	54	A A 90	57	45	A A 64	A A 75	40	47	40	40	36	48	37	A A 89	24	16	E B 12	20
27	17	17	17	E B 15	E B 15	G 15	G	32	G 32	51	45	39	G	U G 29	G	G	G 32	30	26	26	E B 14	30	18	21
28	E B 14	20	20	E B 14	18	G 17	G 25	33	42	A A 115	A A 68	54	54	54	36	43	33	G 22	25	49	44	31	27	27
29	22	24	24	17	E B 15	26	A A 86	A A 65	U Y 45	45	A A 52	44	A A 59	49	36	35	33	30	28	37	28	22	20	E B 15
30	18	17	17	E B 11	E B 11	G 19	G 24	31	G 32	34	39	42	38	38	37	37	36	31	G 23	19	25	20	20	20
31	E B 14	E B 14	E B 13	19	18	G 17	27	G 29	G 31	U Y 39	G 36	U Y 38	G 33	40	40	40	40	50	25	62	21	22	11	11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	18	17	17	E B 14	16	24	31	38	44	46	48	51	41	40	40	40	36	36	30	26	21	22	23	20
U Q	22	22	20	17	20	26	40	A A 46	50	53	A A 63	A A 57	51	49	A A 43	45	44	50	39	41	29	31	31	24
L Q	E B 14	E B 14	E B 14	E B 13	E B 16	G 20	G 28	G 32	G 36	39	40	40	39	U G 37	G 36	G 35	33	31	25	22	17	20	18	E B 15

JUL. 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	16	16	15	15	14	14	15	15	14	14	11	15	15	15	15	15	16	15	15	14	14	14	15	15
2	14	14	13	12	12	14	14	14	16	15	19	20	18	17	17	15	12	12	12	12	12	12	12	12
3	13	13	12	13	12	12	13	12	13	54	16	16	19	28	19	18	16	15	15	14	13	13	13	13
4	14	14	11	12	13	13	13	15	15	22	21	28	22	20	20	19	17	15	12	11	12	12	12	12
5	13	13	13	14	14	14	14	14	18	32	28	26	34	49	24	20	20	16	12	12	12	12	12	12
6	14	14	14	12	12	12	12	17	15	18	24	33	32	30	28	20	18	17	14	12	13	13	13	13
7	13	13	13	13	13	13	13	13	21	24	20	26	22	28	24	20	20	18	13	11	11	11	11	11
8	16	14	14	14	15	12	12	12	15	15	19	22	30	28	24	22	18	18	17	13	12	12	12	12
9	14	14	14	14	12	12	12	12	12	16	15	18	20	22	18	20	16	14	14	14	14	14	14	14
10	16	16	15	15	15	15	15	15	15	23	22	23	18	20	16	16	19	17	16	16	14	14	15	15
11	14	14	14	14	14	14	12	12	14	14	14	19	25	23	25	20	18	17	16	14	14	14	15	14
12	12	12	13	12	14	14	14	14	14	14	14	20	16	20	19	18	18	18	13	12	13	12	12	12
13	12	13	16	15	10	12	13	14	17	18	16	18	16	16	19	13	13	13	13	14	14	12	12	12
14	14	14	14	12	11	13	13	13	12	15	15	22	20	36	28	15	13	13	14	13	12	11	11	11
15	13	13	12	12	12	12	12	12	12	12	15	15	15	15	15	15	15	15	16	12	12	12	12	14
16	14	14	14	13	12	14	12	12	16	16	15	17	18	18	17	16	15	12	11	12	11	11	11	11
17	13	12	13	13	13	14	13	13	16	17	22	22	22	27	20	16	14	14	14	13	13	12	12	14
18	14	14	14	14	14	14	14	12	13	13	24	22	18	24	21	18	17	13	13	13	13	13	14	14
19	13	13	12	12	12	14	14	14	15	16	18	21	21	22	22	55	42	18	16	14	14	14	14	14
20	13	13	13	13	13	13	12	14	14	15	16	18	19	19	18	15	15	15	14	12	14	14	16	16
21	15	15	15	13	13	12	12	12	12	12	15	16	16	19	17	16	16	16	16	16	13	12	12	12
22	12	12	12	12	12	12	12	12	10	14	18	14	19	17	16	15	15	14	13	13	12	13	13	13
23	13	13	13	13	14	14	14	14	14	14	20	20	20	20	16	16	16	16	16	16	16	12	12	12
24	14	14	14	14	14	13	12	12	12	12	15	20	16	16	15	15	12	11	10	15	15	12	12	12
25	14	14	14	14	14	14	14	14	14	14	16	14	14	12	17	17	15	15	15	14	12	16	15	15
26	15	14	16	15	16	13	12	14	14	14	17	17	17	24	16	20	14	16	12	12	12	12	12	12
27	12	12	12	15	15	15	15	15	15	15	12	12	21	17	19	18	17	13	13	14	14	14	14	16
28	14	14	14	14	14	14	14	14	14	14	14	18	17	18	17	16	17	17	14	14	15	15	15	15
29	14	14	14	15	15	13	29	14	11	11	13	15	15	16	14	14	14	14	12	12	16	15	15	15
30	12	12	11	11	11	11	11	11	11	11	11	11	11	14	13	13	13	13	13	13	15	15	15	15
31	14	14	13	12	12	12	11	11	11	15	22	17	18	21	16	15	12	11	11	12	10	10	10	10
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	13	13	13	13	14	14	15	16	18	18	20	18	16	16	15	14	13	13	12	12	13
U Q	14	14	14	14	14	14	14	14	15	17	20	22	21	24	21	20	18	17	15	14	14	14	15	15
L Q	13	13	13	12	12	12	12	12	12	14	15	16	16	17	16	15	14	13	12	12	12	12	12	12

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	277	264	278	304	293	311	295	289	R	V 303	A	V 268	299	272	268	312	299	309	311	303	283	282	280	289
2	299	283	283	294	284	309	273	294	315	296	298	309	A 261	A	A	A	289	296	298	288	F 291	F 292	F 286	F 295
3	287	F 281	F 284	292	283	301	283	289	A	320	292	302	U R 273	G	R 293	296	278	A	288	306	288	279	295	296
4	291	300	F 303	288	271	281	312	Y	314	324	U Y 336	322	300	291	R 299	278	287	A	304	321	R 305	R 306	314	310
5	282	293	293	294	296	283	338	R 331	310	A	328	A	303	R 285	U R 305	283	299	A	A	311	333	297	293	279
6	F 291	F 295	A 326	279	286	293	A 287	A	A	305	A	A	A	259	286	296	295	284	A	294	314	320	285	290
7	294	281	286	311	281	295	283	U R 278	U R 302	Y	341	A	A 266	312	305	A	315	303	304	297	277	277	286	304
8	304	301	R 314	295	292	291	287	309	323	326	291	R 298	283	304	284	306	297	294	309	301	285	276	285	320
9	303	291	302	281	290	297	289	V 317	319	310	311	296	298	U R 320	300	295	286	288	278	301	U R 306	281	276	315
10	308	265	251	256	259	262	266	271	A	269	A	A	G	Y	A	R	269	282	280	297	293	271	275	272
11	275	289	R 284	280	258	U R 266	R 271	298	R 270	291	G	G	G	U R 280	U R 283	281	295	299	R 287	309	302	300	F 297	F 279
12	F 278	F 274	277	F 291	F 269	263	289	U Y 261	292	A 318	A	289	279	311	295	R 278	287	299	306	295	316	293	312	296
13	306	285	290	294	280	298	310	314	305	G	314	U R 255	U R 287	295	295	308	308	300	292	309	296	296	F 311	F 294
14	F 305	F 300	F 288	F 305	F 315	291	312	310	337	A	319	321	R	296	297	312	292	A	300	R 331	310	342	306	F 301
15	300	298	290	297	307	290	A 260	U R 320	R 338	303	U R 305	U R 318	A	A 270	313	314	263	303	277	313	273	315	R	F 240
16	318	F 231	265	255	239	278	R 225	G	G	A	A	A	G	Y	G	G	241	269	302	282	306	283	288	307
17	R 266	271	273	282	266	274	R 300	306	U R 227	R	U R 283	G	U R 282	286	Y	278	284	A	296	A	306	295	282	298
18	292	300	288	285	291	333	294	305	318	346	V 309	306	338	313	301	324	318	327	313	297	313	U R 333	320	307
19	317	305	309	294	304	318	A	A 322	344	327	A	A 320	J R 286	293	A	A	A	A	A	316	R 304	297	308	328
20	300	303	291	289	300	344	334	285	323	341	A	A	U R 293	A 302	319	317	322	R	289	A 252	306	F 306	F 315	R 292
21	F 298	F 330	288	289	283	278	291	A	331	R 342	R 317	G	304	A	A 335	305	A	A 313	301	316	314	315	304	R
22	290	312	302	293	304	319	307	306	341	305	A	A	A	A	A	301	298	306	299	301	307	326	312	307
23	303	302	300	280	292	311	309	311	315	327	283	A	U R 282	U R 278	292	314	309	299	327	325	301	297	308	302
24	308	319	300	282	288	282	304	A	R 314	A	U R 312	Y	282	R 266	A	293	301	314	314	315	303	303	F 295	296
25	306	297	297	295	281	332	284	R 308	300	340	A	A	G	A	R	A	314	309	324	A	A	F 290	298	F 291
26	313	328	311	302	302	288	290	A	A 247	335	A	A	271	294	303	297	293	305	322	A	294	295	306	291
27	288	F 285	F 290	306	307	332	333	V 302	V 314	336	334	303	311	308	297	299	309	316	312	325	320	304	311	F 314
28	297	289	295	F 281	293	309	303	320	334	A	A	287	296	296	304	313	319	314	307	302	289	296	V 286	293
29	293	F 301	F 303	F 287	278	280	A	A	304	V 276	A	U R 258	A	251	289	R 271	298	299	290	299	318	286	299	300
30	283	290	288	285	294	308	312	327	331	307	325	335	274	276	307	286	297	298	293	315	327	287	298	275
31	278	268	274	280	283	293	326	312	296	V 300	G	274	R 304	304	297	307	A	318	310	A	293	309	314	287
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	29	25	27	24	19	20	26	25	24	26	28	24	28	27	30	31	30	30
MED	297	293	290	289	288	293	294	306	314	314	311	297	282	293	297	298	297	302	302	303	304	296	298	296
U Q	305	301	302	295	296	311	311	316	331	331	325	314	299	304	304	312	308	311	310	315	313	306	311	307
L Q	287	281	284	281	280	281	284	289	300	302	291	263	G 271	274	290	283	287	297	291	297	293	286	286	290

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					L	U L 367	A	A	A	A	A	394	R 413	A	A	413	R	A	A					
2							354	A	A	A	R 397	A	A	A	A	A	360	L 378	L					
3					L 319	A	A	A	A	B	U R 418	A	Y	R	A	R 363	A	A	A	L				
4						A	A	A	A	398	A	A	380	383	361	366	A	A	A					
5						L	L	U L 396	L 376	A	A	A	U R 350	B	U R 365	A	A	A	A	L				
6						A	A	A	A	A	A	A	A	371	R	A		A 326	A	A				
7						L 313	A	A	382	L 385	R 406	A	A	Y	343	A	A	370	L					
8						L	L 351	369	A	A	Y	397	Y	R 379	A 319	A	U L 337	U L 362	A					
9						L 327	R 374	363	A	374	391	A	R 388	R 376	U R 359	A 337	A	L	U L 315					
10						A	A	U R 361	A	U R 416	A	A	377	Y	A	U R 381	A	A	L					
11						291	350	R 373	398	A	383	U R 384	Y 338	376	Y	359	L 346	U L 350	U L 325					
12					L	337	A	360	A	A	A	393	396	A	L 370	L	341	A 348	A					
13					L	333	363	A	A	336	A	410	404	404	358	U L 372	363	379	L					
14						L	L 361	U L 390	A	A	A	A	A	A	U R 387	U L 376	A	A	A					
15						L 318	A	A	393	R 386	376	L	A	A	366	A	387	A	L 297	U L 336				
16					L	332	345	383	380	A	A	A	U R 409	Y	403	377	394	354	L					
17						343	335	400	394	U R 394	U R 407	413	A	R 413	Y	383	352	A	A	A				
18						A	377	369	356	A	396	397	358	391	394	394	406	358	A	A				
19						L	A	A	A	A	A	A	402	L 381	A	B	A	A	A					
20					L	L 395	364	A	A	A	A	A	Y	A	390	381	U L 370	L	U L 363					
21						315	358	A	A	A	A	U R 429	A	A	A	A	A	A	A					
22						L	L	412	A 353	415	A	A	A	A	A	A	A	A	A	L				
23						U L 353	A	A	A	A	A	A	414	U R 367	377	394	383	348	L					
24						L 330	357	A	A	A	442	Y	R 360	Y	A	373	376	379	A 373					
25					U L 320	L 347	U L 361	A	390	A	A	A	437	A	R 407	A	370	A	A	A				
26					L		A	A	A	A	A	A	397	A	347	R 357	L 357	A	A	A				
27						L	U L 395		U L 383	A	U L 367	402	R 403	R 376	L 366	363	R 354	L 352	L					
28							L	L 371	A	A	A	A	A	A	413	A	362	U L 358	U L 373	A				
29						L 322	A	A	A	A	A	383	A	A	378	379	372	L 354	339					
30						L	L	L	364	L 388	U L 382	A	U R 412	U R 427	411	373	355	L 357	U L 329					
31						L 330	L 353	369	385	R 396	379	382	394	388		398	347	A	U L 353					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	16	15	13	12	10	12	11	18	13	19	19	19	15	9	1				
MED					L 320	L 331	358	371	382	391	394	397	396	381	370	376	362	357	U L 339	U L 336				
U Q						L 345	364	393	392	398	R 406	410	R 409	398	394	383	376	370	U L 368					
L Q						L 320	351	366	370	385	380	384	377	376	359	363	352	350	U L 320					

JUL. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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					300	296	302	348	300	312	A	436	E Y 370	434	A 432	324	Y 320	A 298	298					
2							346	346	E A 326	326	348	348	E A 484	A	A	A	384	310	310					
3					312	298	324	378	A	316	386	A 348	E Y 448	G	414	394	434	A	346	276				
4						340	E A 316	296	296	300	288	320	348	394	362	416	A 356	A	300					
5						358	266	266	288	A	282	A	360	B 364	344	394	E A 352	A	A	280				
6						316	E A 418	A	A	364	A	A	A	462	404	372		364	A	A 312				
7						324	A 304	384	318	244	292	A	E A 448	338	332	A	A 322	322	322					
8						304	362	326	314	300	352	360	416	388	388	356	360	334	324					
9						324	328	312	310	318	330	372	372	326	346	336	360	340	344					
10						E A 426	E A 426	430	A	Y 502	A	A	G	Y	A	Y	E A 442	416	368					
11						468	440	378	458	394	G	G	G	422	400	384	352	328	314					
12					344	372	372	474	E A 422	E A 350	A	Y 432	418	340	348	390	388	338	308					
13					352	312	296	314	328	G	E A 370	484	E Y	384	368	342	338	338	310					
14						324	300	300	296	A	326	322	E A 356	358	358	336	E A 336	A	A 312					
15						344	E A 468	296	270	344	344	316	A	E A 490	318	A 298	394	342	344	268				
16					458	458	624	G	G	A	A	A	G	Y	G	G	574	440	326					
17						440	422	376	600	460	430	G	E A 452	428	Y	418	366	A	314	A				
18						294	360	338	306	274	316	352	316	326	336	308	308	284	284	284				
19						284	A	E A 306	274	328	A	A	378	378	A	A	A	A	A					
20					300	262	272	E A 384	E A 340	302	A	A	366	E A 396	350	314	306	320	320					
21						348	314	A	284	A 276	E A 344	G	A 350	A	E A 332	334	A	E A 340	302					
22						300	300	300	260	336	A	A	A	A	A	346	340	E A 374	312	278				
23						298	298	300	302	306	E A 400	A	E Y 426	438	416	362	346	334	254					
24						400	368	A	330	A	360	Y	428	440	A	382	330	316	286					
25					300	282	372	A 316	338	292	A	A	G	A	436	A	352	318	E A 310	A				
26					300		E A 386	A	A	324	A	A	456	404	382	336	336	A 336	294	A				
27						260	268		290	310	298	350	326	326	348	348	300	288	260					
28							292	280	270	A	A	A 396	370	356	352	322	292	292	292	E A 304				
29						358	A	A	364	422	A	Y 524	A	E A 544	394	444	370	344	340					
30						276	260	260	286	302	320	302	440	398	362	378	360	330	312					
31						318	312	322	376	368	G	412	364	362		342	A	A 304	292					
	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	28	29	25	27	26	19	19	26	25	24	26	27	25	28	7				
MED					306	319	314	319	305	319	337	372	U 392	386	362	352	352	331	311	279				
U Q					348	358	379	378	340	364	386	G 484	G 452	436	402	390	370	341	323	A 304				
L Q					300	297	299	300	288	302	316	348	364	357	347	336	330	313	296	276				

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	308	296	276	250	260	A	A	A	A	A	222	204	A	A	H 204	204	A	A	258	258	290	A 306	284
2	256	256	256	278	276	250	248	A	A	A	222	A	A	A	A	A	240	218	218	256	286	A 334	A 334	Q 256
3	278	310	310	296	296	A	A	A	A	B	216	A	Y	Y	A	E A 268	A	A	A	A 268	A 300	286	286	286
4	264	264	276	276	276	A	A	A	A	A 220	A	A	220	220	Y 252	252	A	A	A	252	252	252	266	266
5	256	266	266	266	260	234	242	228	228	A	A	A	A	B	E A 242	A	A	A	A	E A 250	248	248	278	286
6	290	304	E A 332	A	292	A	A	A	A	A	A	A	A	Y 262	A	A	216	E A 274	A	A	274	234	234	266
7	262	262	264	264	272	254	A	A	218	218	214	A	A	A	E A 252	A	A	242	A	E A 268	268	284	274	270
8	252	252	228	254	276	260	242	238	A	A	A	220	A	E Y 246	A	A	206	220	A	254	256	A 364	A 322	290
9	252	252	264	268	292	264	252	E A 252	A	240	228	A	228	E A 242	Y	E A 290	A	254	254	268	268	298	294	272
10	254	270	326	332	348	A	A	E A 296	A	212	A	A	244	Y	A	E Y 272	A	A	266	280	280	314	E A 342	320
11	292	280	270	282	282	E A 310	276	250	236	A	Y 252	E A 252	Y	242	Y	242	242	242	242	250	250	A 310	296	A 358
12	304	Q 304	304	298	298	A	A	278	A	A	A	214	A 256	A	254	224	252	A	A	A 288	258	A 294	238	238
13	254	268	268	268	284	228	A 248	A	A	A	A	218	204	204	214	214	214	220	236	262	262	282	270	A 286
14	294	292	322	Q 254	254	A	242	A 234	A	A	A	A	A	A	234	224	A	A	A	A 288	288	A 266	A	266
15	272	282	282	278	262	A 262	A	A	212	214	234	A	A	A	A 268	A	244	A	248	256	262	262	206	A 298
16	A 318	Q 318	350	372	368	322	294	236	236	A	A	A	A 232	Y	232	232	232	232	242	272	248	256	256	256
17	300	306	334	334	386	262	260	224	224	224	198	200	A	218	Y	230	E A 278	A	A	A	254	288	288	272
18	256	256	256	280	280	A	242	232	230	A	218	202	Y 278	Y 232	216	216	216	E A 232	A	A	246	246	246	246
19	246	254	254	252	A 292	A 266	A	A	A	A	A	A	218	218	A	B	A	A	A	252	252	E A 300	236	236
20	264	270	270	270	E A 296	234	234	A	A	A	A	A	A	A	222	222	222	E A 262	262	A	268	264	264	A 298
21	298	284	306	300	A 348	294	A 250	A	A	A	A	192	A	A	A	A	A	A	A	262	242	242	258	260
22	266	266	266	266	266	A 256	A 254	244	E A 244	226	A	A	A	A	A	A	A	A	A	246	246	246	252	252
23	282	282	278	248	266	264	A	A	A	A	A	A	242	264	262	214	214	214	226	238	242	268	272	266
24	280	248	248	294	290	248	248	A	A	A	200	Y	A	A	A	216	216	216	A	248	248	274	294	294
25	286	280	254	248	B 284	E A 254	E A 248	A	218	A	A	A	202	A	232	A	232	A	A	A	A	A 338	A 330	306
26	302	226	300	300	288	250	A	A	A	A	A	A	200	A	E A 300	242	242	A	A	A	284	256	256	256
27	272	272	272	270	264	244	228	E A 246	224	A	E A 230	200	200	200	202	212	212	212	220	232	232	246	246	246
28	270	278	290	292	274	256	218	218	A	A	A	A	A	A	206	A	208	216	216	A	A 316	298	298	298
29	278	278	278	278	288	E A 288	A	A	A	A	A	276	A	A	218	218	218	218	228	A 286	262	262	262	262
30	258	284	284	278	264	250	240	240	240	232	210	A	210	210	210	210	220	220	224	250	250	250	250	298
31	294	300	300	276	286	278	242	228	228	228	228	218	198	236	236	236	252	A	242	A	254	254	254	262
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	31	24	19	15	12	9	12	11	15	13	18	20	21	16	14	23	30	31	30	31
MED	272	278	277	277	283	256	248	235	227	224	218	216	218	225	226	220	219	219	239	256	257	267	266	270
U Q	292	292	304	294	292	265	252	250	236	230	229	222	242	244	252	242	242	242	248	A 268	268	A 298	A 294	294
L Q	256	262	264	266	266	250	242	228	221	216	212	200	202	214	216	215	214	217	224	250	248	252	252	256

JUL. 2012 h′F (KM)

IONOSPHERIC DATA STATION Wakkanai

JUL. 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					E A 180	132	120	110	110	110	A		110	110	110	110	110	110		A				
2					130	120	112	106	106	106		A		106	106	106	106		106	A				
3					118	118	112	110	A	B	A	A	A	112		112	112	112	112					
4					A	122	116	116	116			A		A	114	114	112	112	112					
5							A	110		A				B	A	110	110	110	110	134				
6					A	112	112	112	112	112		A	A		A		112	112	112					
7					112	112	112	112	112	112	110	A	A	A	A	110	110	110	110	A				
8					B	112	112	112	112	112	112	112	A			A	118	118	118					
9						120	A	120	106	106			A		106		A	A	106	112				
10						108	108	108	108	108		A		108		108	108		108	A				
11						108	108	108	108	108	108	A	A	A		108	108	108		A				
12					A	112	112	112	112	112	108				108	108	108	108	108	A				
13					134	128	120	102		A	A		106	106	A	106	106	106						
14					116		106	106	106	106	A	106	A		A	106	106	106	106					
15						106	106	106	106	106	108	108	108	108	108	108	108	108	124	130	B			
16					A		110	110	110	110				110	110	110	110	110	110	126				
17					A	122	118	118	114	114	114	A	A	114	114	114	114	114	114					
18					A	108	108	108		A	A		A		A	A	114	114	114	A				
19					A	114		110	110		A	A		A	110	B		B	110	A	A			
20					A		A	116	116			A	116	A	112	112	112	112		A				
21							112	112	112	112			112	112	110	108	108	108	A					
22					B	112	112	112	112	112	112	112					112	112	112					
23							112	112	112	112	112	A	A	A		A		114	124	A				
24					B	110	114	116	114	114	114		114	112	112	112	112	112	112					
25					B	112	118	118	106	106	106		106	106	106	106	106	106						
26					B	A	106	106	106	A	A			A		106	106	106	106	A				
27						120	120	108	108	100	100		100	A	100	100	110	110	110					
28						130	116	116	114	A			A	A				114	114	B				
29					B	114	A	114	114	110	110					110	110	110						
30					B	114	114	114	114	A	A			A		A			114	B				
31						126	116	116	112	112	112		110	110	110	110	110	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					6	24	26	31	27	21	13	4	9	12	15	23	26	26	22	4				
MED					120	114	112	112	112	110	110	110	110	110	110	110	110	110	112	128				
U Q					134	121	116	116	114	112	112	112	113	112	112	112	112	112	114	132				
L Q					116	112	110	108	108	106	108	107	106	107	106	106	108	108	108	119				

JUL. 2012 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 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	100	B	108	114	122	246	120	114	112	112	108	108	110	136	122	120	120	120	120	120	110	110	110	110
2	104	104	104	104	G	116	114	112	112	112	112	112	112	112	112	112	112	112	130	112	152	112	112	130
3	102	100	100	100	G	100	110	110	102	B	102	102	102	G	118	118	118	118	118	116	112	110	108	102
4	104	104	104	104	120	116	116	116	116	116	116	110	110	110	G	126	118	118	118	110	102	102	102	96
5	96	96	96	96	98	98	104	106	106	106	106	106	106	B	106	114	114	114	114	114	108	108	108	106
6	104	100	100	100	100	112	112	112	112	112	112	104	100	104	104	104	144	118	118	116	108	108	102	102
7	B	102	B	108	G	108	108	108	116	116	112	106	104	104	128	120	120	120	120	120	120	118	106	106
8	106	102	B	B	B	122	148	126	114	112	112	G	104	104	104	100	100	112	112	112	112	112	110	110
9	104	104	96	96	96	96	228	120	112	112	112	112	112	112	G	112	112	222	G	122	122	122	120	120
10	106	106	B	124	124	124	124	124	118	112	112	112	140	118	120	120	120	120	120	118	114	102	102	102
11	102	102	B	102	122	122	122	122	112	112	112	112	112	112	112	G	112	112	112	112	112	112	112	106
12	100	100	100	B	100	108	108	108	108	108	108	108	108	108	108	146	120	120	120	116	B	104	104	104
13	100	100	112	122	G	116	116	100	120	94	108	118	126	100	100	100	126	126	124	120	110	110	110	104
14	96	96	96	96	G	112	130	116	116	106	106	106	106	106	106	126	118	118	116	116	104	104	104	104
15	104	104	96	96	112	112	112	112	112	112	188	122	122	122	122	122	152	160	108	G	B	B	138	134
16	120	120	122	122	122	122	122	122	122	108	108	108	108	130	130	176	116	116	122	122	B	B	B	B
17	138	136	118	118	118	118	118	118	118	118	118	118	110	G	G	G	110	110	110	110	110	110	100	100
18	B	B	134	126	126	122	122	112	112	102	102	102	102	102	102	102	126	116	116	108	108	144	102	102
19	102	102	102	102	102	104	104	104	104	104	104	104	104	142	120	118	116	116	116	116	116	100	100	100
20	B	100	100	100	100	114	112	112	112	106	106	106	118	110	122	G	122	120	120	104	104	104	104	104
21	98	96	96	102	104	110	110	110	104	104	124	106	124	122	112	112	108	136	108	106	106	102	98	98
22	108	108	108	108	110	110	110	110	110	110	110	106	106	120	104	114	114	114	114	114	108	108	108	108
23	108	108	106	106	108	108	108	108	108	108	108	112	110	120	110	110	110	148	114	114	114	114	114	114
24	B	B	B	B	G	G	120	118	118	118	114	114	154	G	124	132	132	132	132	122	118	114	114	94
25	94	94	100	100	B	110	110	110	110	110	110	110	120	120	120	120	120	120	120	110	110	110	110	110
26	98	98	90	90	130	130	122	110	110	110	110	110	110	110	110	110	110	110	110	112	112	112	112	106
27	106	100	98	94	94	110	G	110	110	110	110	110	G	96	G	G	114	152	120	110	B	110	110	110
28	102	102	102	B	102	102	118	118	118	112	110	108	108	106	106	102	138	116	116	110	110	110	110	96
29	96	96	94	94	94	104	108	108	108	108	108	108	108	108	112	128	128	128	128	108	108	108	108	108
30	92	92	92	92	94	116	116	116	116	116	110	108	108	108	108	106	106	106	112	106	106	106	106	106
31	B	122	124	112	112	112	118	118	118	116	112	110	110	146	136	122	122	112	112	108	106	106	106	106
	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	28	26	27	23	30	30	31	31	30	31	30	30	27	27	27	31	31	30	30	27	29	30	30
MED	102	102	100	102	108	112	116	112	112	111	110	108	110	110	112	118	118	118	117	113	110	110	108	106
U Q	106	104	108	112	122	118	122	118	116	112	112	112	112	120	122	122	122	126	120	116	114	112	110	110
L Q	98	99	96	96	100	108	110	110	110	108	108	106	106	106	106	110	112	114	112	110	108	105	104	102

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F1		F2	F1	L1	HCL11	CLL21	C2	C2	C2	C2	C1	C1	C1	C2	C1	C2	C2	C2	C2	F3	F3	F4	F2
2	F2	F1	F2	F2		C1	C2	C2	C2	C2	C1	C1	C1	C4	CQ21	C2	C3	CH11	C2	L3	FFQ14	FQ41	F4	C1
3	F2	FQ21	FQ21	F1		C2	C2	C2	C3		L1	LQ21	L1		CL11	CL11	C2	C3	C3	C3	F3	F4	F3	F3
4	F3	F3	F2	F2	L3	C3	C2	C2	C2	C1	C1	C1	C1	C1		C1	C2	C2	C3	C2	F3	F3	F4	F4
5	F2	FQ11	FQ11	F1	L1	LC11	LC21	CC11	L1	CL12	L1	LQ21	L1		L1	C1	C2	C3	C3	L3	F2	F3	F4	F5
6	F4	F6	F5	FQ31	LQ21	C2	C2	C3	C2	C2	L2	L1	L2	L1	L1	L1	HL11	C2	C2	C8	F3	F1	F2	F2
7		F1		F1		C1	C2	C2	C1	C1	C1	L1	L1	L1	CL11	C2	C2	CL22	CL22	CL32	FF13	F3	F2	F2
8	F2	F2				CH11	HC11	C1	C2	C1	C1		C1	C1	C1	C1	L1	L1	C3	L3	F3	F4	FQ31	F1
9	F3	F3	F4	F3	F3	L1	HL11	HL11	C2	C1	C1	C1	L1	L1		L1	C2	HL11		C2	F3	F3	FQ21	FQ21
10	F1	F2		F1	F4	C2	C3	C2	C2	C1	C1	C1	CL11	C1	CL11	CL11	CL22	CL22	CL31	CL31	F3	F4	FF32	FF22
11	F3	F2		F2	C1	C2	C2	C2	C2	C1	C1	C1	C1	C1	L2		C1	C2	CL12	L2	F2	F4	FQ51	F5
12	F3	F3	FQ21		L2	C3	C2	C2	C2	C1	C2	C1	C1	L1	C1	H1	C2	C2	C5	C5		F5	F2	F1
13	F2	F3	F1	F1		L1	C1	C1	CC11	LQ11	CL11	CL11	HL11	L1	L1	L2	HL11	C2	CL21	C3	F2	FQ41	F1	F5
14	F5	F5	F3	F1		C2	H1	C2	C1	C2	C2	C2	C2	C1	L1	CL11	C1	C3	C3	FQ21	FQ31	FQ41	FQ41	FQ41
15	F3	F3	F3	F3	L3	C3	C2	C2	C1	C1	HL11	C1	CL11	C2	C1	C3	H1	H2	L2				F3	F7
16	F5	F2	F1	F1	C3	C2	C2	C2	C1	C1	C2	C1	C1	CL11	CL11	H1	C1	C2	CL21	L1				
17	F1	F2	F1	F2	L3	C2	C1	C1	C1	C1	C1	CL11	C1				C2	C2	C4	C4	F3	FQ31	FQ31	F2
18			F1	F2	C2	C3	C1	C2	C1	C1	C1	C1	C1	L1	L1	L1	HL12	C3	C3	C3	F2	FF12	F4	F3
19	F4	F2	F2	F3	L4	C3	C3	C3	C2	C2	C2	L2	L2	HL11	C2	L1	L1	C2	C3	LQ31	FQ31	FQ31	F4	F1
20		F3	F1	F1	L1	CL11	CL11	C2	C2	CQ11	CLQ21	LQ21	C1	L2	C1		C1	C2	C3	LQ81	F5	FF14	FQ21	F3
21	F5	F5	FQ31	FF11	C4	C3	C2	CQ21	CQ21	CQ21	CLQ11	CLQ11	C1	C2	C2	C2	C2	HCQ22	C3	LQ21	FQ11	F4	F3	F2
22	FF12	F1	F1	F1	L2	C2	C2	C2	C2	C1	C2	CQ21	CQ21	CLQ11	LQ21	CLQ12	CQ21	CQ21	CQ51	CQ31	FQ41	F5	FC41	FQ21
23	F4	F3	F3	F1	F2	C3	C2	C2	C1	C1	C1	CL12	C1	C1	L1	L1	L1	HL12	L3	L2	F3	F5	F3	F6
24							CL22	C2	C2	C1	C1	C1	HC11		C3	H1	HL11	C2	C2	C2	F2	F4	F5	F4
25	F3	F2	F1	F1		C2	CL31	C2	C1	C1	CQ21	LC11	HL11	C1	C1	C2	C2	C3	C3	LQ61	FQ71	FQ31	FQ41	FQ51
26	F3	F8	F4	F3	CL11	CL22	C2	C3	C3	C2	C2	L2	L1	L2	L2	CL11	CL21	CL21	C3	L3	F3	F2	F2	F3
27	F3	F2	F3	F2	F1	L1		C2	C1	C1	C1	C1		L1			CL11	HL11	CL22	F2		F3	F3	F2
28	F2	F3	F3		F1	L1	C1	C2	C1	C3	C2	L2	LQ21	L2	L2	CL21	HL12	L3	C3	C7	F4	F4	F2	F8
29	F3	F5	F3	F2	L1	C2	C2	C4	F2	C2	C1	C1	L2	L2	L1	CL12	CL11	CL11	C3	C6	F4	F3	F2	F1
30	F2	F2	F2	F1	L1	C1	C1	C1	C1	C1	C1	L1	L1	L1	L2	L2	L3	L3	CL23	L2	L4	F3	F2	F2
31		FF11	F1	F3	F3	L1	CL11	C2	C2	C1	L1	L1	L1	H1	CL11	C1	C2	CQ31	LQ21	F4	F3	F3	F1	F1
	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																								

JUL. 2012 TYPES OF Es

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IONOSPHERIC DATA STATION Kokubunji

JUL. 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 86	X 81	X 84	X 77	X 76																X 79	X 77	X 77	X 72
2	X 69	X 65	X 65	X 60	X 62																X 70	X 71	70	72
3	70	68	X 60	66	67																X 78	79	84	88
4	X 79	X 73	X 64	X 60	X 58																X 90	X 86	89	X 86
5	X 75	X 69	X 64	X 66	X 58																X 89	X 88	X 80	X 78
6	X 73	X 64	X 64	X 65	X 63																A	A	83	A
7	80	80	76	75	68																X 80	X 79	X 76	81
8	82	84	67	66	69																X 82	X 79	X 80	82
9	X 81	X 76	78	72	67																X 102	X 97	X 102	95
10	X 96	X 91	87	76	69																X 72	X 70	X 70	68
11	X 67	X 70	X 61	X 58	X 56																X 76	X 78	X 76	X 75
12	X 68	X 66	X 64	66	65																X 82	X 78	X 72	80
13	X 76	X 73	66	70	X 62																X 86	X 75	X 77	X 77
14	72	X 68	X 65	X 55	X 53																X 92	X 87	X 82	X 81
15	X 74	X 73	X 73	X 71	X 61																X 110	X 106	X 82	X 74
16	X 71	70	51	X 49	54	53															X 63	X 57	X 64	X 61
17	60	70	X 70	X 65	X 65																X 79	X 68	X 66	X 66
18	67	X 64	X 63	X 56	X 54																X 86	X 86	X 75	X 64
19	X 60	X 58	X 58	X 57	X 54																X 99	X 80	75	79
20	77	X 73	70	X 70	X 72																X 85	81	X 75	X 75
21	X 63	X 62	X 62	X 57	64																X 81	X 65	X 75	X 80
22	X 69	X 67	X 58	X 54	X 55																X 90	X 84	X 81	X 77
23	X 75	X 68	X 63	65	X 63	69															X 65	X 66	X 64	X 64
24	X 53	54	52	X 48	X 47																X 70	X 67	72	71
25	68	X 58	62	X 58	X 55																X 71	X 70	X 72	X 70
26	X 67	X 65	X 65	X 57	X 53																A	72	72	70
27	X 63	X 61	X 60	X 56	X 51																X 87	X 69	X 65	X 65
28	X 61	65	67	65	60																X 78	78	77	X 70
29	X 73	X 71	71	X 64	X 55																X 78	X 74	X 68	X 64
30	X 65	X 62	X 59	X 58	64																X 78	X 76	X 76	X 69
31	74	X 73	X 72	X 70	X 62																X 84	X 80	X 83	X 82
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	2															29	30	31	30
MED	X 71	X 68	X 64	X 65	X 62	61															X 81	X 78	X 76	X 74
U Q	X 76	X 73	70	70	65																X 88	X 81	X 81	80
L Q	X 67	X 64	X 61	X 57	X 55																X 77	X 70	X 72	X 69

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	80	75	78	71	70	62	66	86	104	105	85	79	78	78	79	94	92	A	84	70	73	71	71	66
2	63	58	58	54	56	62	66	80	82	A	A	87	84	76	77	78	A	83	A	78	64	65	F	F
3	F	F	54	F	F	60	64	70	A	A	A	70	66	64	66	66	68	69	A	69	72	F	F	F
4	73	67	58	54	52	53	70	92	88	89	A	A	A	A	A	72	72	80	A	94	84	79	F	79
5	69	63	57	60	52	56	73	100	97	68	63	A	76	75	73	76	76	79	75	80	83	82	74	72
6	67	58	58	58	57	60	76	92	A	A	A	68	62	68	71	86	83	79	78	77	A	A	F	A
7	F	F	F	F	F	56	71	A	92	86	66	61	64	A	89	88	75	73	73	77	74	73	70	F
8	F	F	F	F	F	60	70	90	92	A	A	A	68	A	70	73	75	71	73	74	76	73	74	F
9	75	70	F	F	F	62	74	84	93	84	74	74	90	90	96	87	80	84	89	94	96	91	96	F
10	89	85	F	F	F	69	67	65	62	60	66	64	64	61	66	A	62	60	A	62	66	64	63	F
11	60	64	55	52	50	47	57	65	63	56	A	A	66	69	70	78	76	74	71	73	70	72	70	69
12	62	60	58	F	F	54	61	68	58	A	A	70	67	69	67	70	73	78	83	81	76	72	66	F
13	70	67	F	F	56	61	81	72	73	71	68	69	78	80	82	70	74	79	79	82	80	69	70	71
14	F	62	59	49	46	53	72	67	70	74	66	63	R	67	70	73	82	A	92	96	86	81	76	75
15	68	67	66	65	55	56	68	78	91	A	77	93	94	85	A	97	83	94	94	111	104	100	76	68
16	65	F	F	43	F	F	49	A	R	R	R	R 57	50	R	54	54	50	49	44	54	57	51	57	55
17	F	F	64	59	59	54	59	70	82	81	63	65	70	78	68	72	74	66	A	73	73	62	60	60
18	F	58	57	50	48	49	60	73	79	66	A	A	67	79	88	84	74	64	65	72	80	80	69	58
19	54	52	51	51	47	47	A	76	88	A	A	A	68	74	72	68	74	80	89	92	93	74	F	F
20	F	67	F	63	66	68	71	82	85	80	69	66	73	68	71	78	68	64	71	89	79	F	68	68
21	57	55	56	51	F	54	A	84	95	82	93	80	68	71	77	70	65	69	72	80	75	58	69	74
22	63	61	52	47	48	50	58	70	88	82	A	A	A	69	A	71	72	81	80	84	84	78	74	71
23	69	62	56	F	57	F	67	81	67	65	78	81	80	69	73	78	87	88	73	76	59	60	58	58
24	47	F	F	42	40	40	48	55	64	R	A	A	A	60	58	61	68	68	61	60	64	61	F	F
25	F	52	F	52	48	53	62	64	68	64	63	A	R	59	60	60	59	A	57	56	65	64	66	63
26	61	59	58	50	46	48	60	A	70	62	R	58	A	64	74	70	A	A	A	70	A	F	F	F
27	57	55	54	50	45	52	62	72	71	71	68	65	65	74	82	90	89	88	88	87	81	63	58	59
28	54	F	F	F	F	56	68	69	68	62	66	A	82	93	86	82	79	77	70	72	71	F	F	64
29	67	65	F	57	49	54	54	59	63	57	A	R	62	62	63	A	64	61	64	71	72	68	62	58
30	59	56	53	52	F	59	66	85	86	75	A	70	71	72	72	74	80	83	84	83	72	70	70	62
31	F	67	66	64	56	53	54	69	69	61	65	65	75	86	75	70	70	69	77	83	78	74	77	75
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	20	22	21	29	29	28	28	22	16	20	25	27	28	29	29	27	25	31	29	26	23	20
MED	64	62	58	52	52	54	66	72	80	71	67	68	68	71	72	73	74	77	75	77	75	72	70	67
U Q	69	67	58	59	56	60	70	84	90	82	76	76	78	78	78	83	80	81	84	84	82	78	74	72
L Q	59	58	54	50	48	52	60	68	68	62	66	64	66	67	68	70	68	68	70	71	70	64	63	60

IONOSPHERIC DATA STATION Kokubunji

JUL. 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							A	A	L	492	U L 512	U L 532	A	A	A	A	A	A	A					
2						L		A	A	A	A	A	A	A	A	A	A	A	A	A				
3							U L 456	A	A	A	A	A	A	508	492	484	A	A	A					
4							424	A	A	A	A	A	A	A	A	504	A	A	A	A				
5							L	A	A	A	U L 556	A	U L 552	U L 520	496	A	A	A	A	A				
6							A	A	A	A	A	U L 536	A	A	A	A	468	A	A	A				
7							L	A	A	A	U L 516	A	U L 524	A	U L 516	484	L	A	A	A				
8							U L 436	464	A	A	A	A	A	A	U L 476	488	468	U L 444	U L 388					
9						L	L	448	A	492	A	A	A	A	A	A	492	U L 456	L	A				
10						A	A	A	A	U L 468	504	U L 532	A	A	A	A	U L 492	A	A	A				
11						A	A	A	A	492	A	A	U L 524	A	U L 496	492	464	A	A	A				
12						L	L	A	A	A	A	A	A	A	A	468	460	A	A	A				
13						L	A	A	484	A	A	U L 520	U L 524	U L 492	A	476	A	U L 420	A					
14						L	A	A	A	A	492	492	U L 532	A	U L 448	U L 488	A	A	A	A				
15						L	A	A	A	A	488	A	A	A	A	484	A	U L 444	L					
16						U L 276	U L 400	A	A	R	R	A	U L 500	R	U L 488	A	A	U L 420	A	A				
17						L	A	A	A	480	U L 520	A	A	492	484	A	A	A	A	A				
18							A	452	A	A	A	A	496	500	A	472	452	A	A	A				
19						A	A	A	A	A	A	A	A	A	496	U L 424	A	A	A	A				
20							A	A	A	A	L	A	A	A	A	472	U L 452	A	U L 376	A				
21						A	A	A	448	460	U L 488	U L 488	U L 480	A	460	A	428	A	A	A				
22							L	L	A	A	A	A	A	A	A	456	A	A	A	A				
23						A	A	A	A	A	A	U L 496	488	488	A	456	432	L	A					
24							384	412	A	U L 480	A	A	A	U L 516	U L 460	468	A	A		A				
25						L	A	428	460	U L 456	A	A	U L 484	A	A	A	A	A	L					
26						L	L	A	A	A	492	A	A	A	U L 460	A	A	A	A	A				
27								A	A	A	504	524	U L 504	516	A	484	A	A	A					
28								L	L	A	524	A	A	A	A	476	468	L	A					
29						188	U L 400	A	U L 452	A	A	U L 448	A	504	A	A	A	U L 440	A	A				
30							L	448	U L 476	A	A	A	A	A	A 508	480	A	A	A	A				
31						L	U L 396	436	464	516	U L 540	U L 520	U L 524	492	492	A	U L 480	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	7	7	6	9	12	10	12	10	14	18	12	6	2					
MED						232	U L 400	448	462	480	508	U L 520	U L 514	502	490	478	466	U L 442	U L 382					
U Q							U L 436	452	476	492	U L 522	U L 532	U L 524	U L 516	496	484	474	U L 444						
L Q							396	428	452	U L 464	492	U L 492	492	492	U L 460	468	452	U L 420						

JUL. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
2						U A 180	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
3						A	A	A	A	A	A	A	A	A	R	A	A	A	A	B				
4						A	A	A	A	A	A	A	A	A	A	R	A	A	A	B				
5						U R 240	A	A	A	A	A	A	A	R	R	A	A	A	A	B				
6						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
7						B	R	A	A	A	A	A	A	A	R	R	A	A	A	B				
8						A	A	A	A	A	A	A	A	A	R	R	R	R	A	B				
9						U R 208	R	R	A	A	A	A	A	A	A	A	A	A	R	A				
10						A	A	A	A	A	A	R	A	A	A	A	A	A	A	B				
11						A	A	A	A	A	A	A	A	A	A	A	R	A	A	B				
12						B	U A 252	A	A	A	A	A	A	A	A	R	R	A	A	B				
13						R	A	A	A	A	A	A	R	R	A	A	A	R	A	B				
14						A	A	A	A	A	R	A	A	R	R	A	A	A	A	B				
15						B	A	A	A	A	A	A	A	A	A	A	A	A	R	B				
16						A	A	A	A	R	A	A	A	A	R	A	A	A	A	B				
17						A	A	A	A	R	R	A	A	A	R 324	A	A	A	A	B				
18						A	A	A	A	A	A	A	A	A	A	A	R	A	A	B				
19						A	A	A	A	A	A	A	A	A	A	R	A	A	A	B				
20						A	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
21						B	A	A	A	A	A	R	A	A	A	A	A	A	A	B				
22						B	A	R	A	A	A	A	A	A	A	A	A	A	A	B				
23						B	A	A	A	A	A	A	R	A	A	A	A	R	A	B				
24						U R 184	A	A	A	A	A	A	A	A	R	A	A	A	A	B				
25						B	A	A	A	A	A	A	A	A	A	A	A	A	U R 232	B				
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
27						A	A	A	A	A	R	A	A	A	A	A	A	A	A	B				
28						B	A	A	A	A	A	A	A	A	A	A	A	A	A	B				
29						B	R	A	A	A	A	R	A	A	A	A	A	A	A	B				
30						B	A	R	A	A	A	A	A	A	A	A	A	A	A	B				
31						B	A	A	A	R	A	A	A	A	A	A	A	A	A	B				
	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	1								1				1					
MED						U R 196	U A 252								R 324				U R 232					
U Q						U R 224																		
L Q						U 182																		

JUL. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	J A 29	20	22	J A 20	J A 22	J A 50	J A 48	J A 83	J A 64	J A 44	42	J A 46	J A 54	J A 74	J A 62	76	J A 102	J A 102	J A 67	J A 24	J A 41	J A 46	J A 73	J A 49
2	J A 26	J A 39	J A 30	J A 30	J A 28	26	36	J A 68	J A 80	J A 108	J A 128	J A 90	J A 65	47	J A 73	J A 60	J A 82	J A 86	J A 115	J A 84	J A 75	J A 66	J A 61	J A 35
3	J A 50	J A 37	J A 28	J A 36	J A 24	24	J A 38	J A 49	J A 130	J A 148	J A 119	J A 56	J A 62	J A 49	G	45	J A 41	J A 47	J A 70	J A 65	J A 47	J A 105	J A 34	J A 44
4	20	J A 37	J A 23	J A 24	E B 15	24	34	J A 45	J A 54	J A 81	J A 102	J A 102	J A 95	J A 114	J A 117	G	J A 57	J A 76	J A 90	J A 102	J A 145	J A 66	J A 86	J A 87
5	J A 102	J A 40	J A 40	J A 45	J A 33	G	J A 45	J A 57	J A 62	48	43	J A 67	45	G	G	52	J A 111	J A 67	J A 105	J A 94	E B 14	E B 15	J A 54	J A 36
6	J A 46	E B 14	E B 14	E B 14	E B 14	25	J A 40	J A 71	J A 147	J A 162	J A 192	G	52	53	54	J A 56	42	J A 68	J A 71	J A 117	J A 127	J A 96	J A 75	J A 125
7	J A 84	J A 31	J A 50	J A 42	J A 34	23	G	J A 92	J A 101	J A 53	J A 55	J A 58	46	J A 144	G	G	43	J A 47	J A 46	J A 55	E B 16	J A 48	J A 66	J A 54
8	J A 102	J A 24	J A 30	J A 89	J A 21	24	35	39	J A 87	J A 128	J A 124	J A 170	J A 64	J A 96	G	G	G	G	J A 38	J A 47	J A 74	J A 65	J A 74	J A 70
9	J A 70	J A 58	J A 52	J A 28	J A 22	G	G 22	G	48	42	J A 61	58	J A 74	J A 106	J A 90	J A 82	42	43	G	34	32	J A 40	J A 72	77
10	J A 101	J A 102	J A 66	J A 90	20	J A 63	J A 56	J A 72	J A 62	45	J A 47	G	51	J A 68	48	J A 65	41	J A 44	J A 76	J A 27	J A 102	J A 43	J A 72	J A 44
11	J A 45	J A 30	J A 26	J A 25	J A 28	J A 40	J A 50	J A 67	J A 58	J A 46	J A 56	J A 66	J A 50	J A 62	44	39	G	J A 44	J A 56	J A 82	J A 56	J A 44	J A 45	J A 72
12	J A 35	J A 44	J A 44	J A 24	J A 37	J A 31	J A 36	J A 48	J A 93	J A 80	J A 105	J A 76	50	52	J A 59	G	G	J A 83	J A 147	J A 121	J A 63	J A 39	J A 45	J A 39
13	J A 37	J A 24	24	E B 16	J A 29	G	J A 46	J A 47	43	J A 61	52	40	G	G	J A 49	J A 44	J A 46	G 22	J A 36	J A 50	J A 74	J A 31	J A 43	24
14	J A 42	J A 51	J A 47	J A 46	J A 36	J A 33	36	38	J A 82	J A 61	G	J A 62	43	47	G	44	J A 48	J A 106	J A 76	J A 72	J A 86	46	J A 38	J A 32
15	J A 22	20	E B 15	E B 15	E B 14	22	J A 47	J A 79	J A 116	J A 130	50	J A 67	53	J A 64	J A 96	J A 45	J A 62	40	G	E B 16	E B 15	E B 15	E B 15	J A 20
16	J A 38	J A 28	J A 33	J A 22	22	21	29	46	40	G	43	48	44	43	G	40	J A 44	J A 57	J A 49	J A 84	J A 57	J A 38	J A 33	J A 48
17	J A 22	22	J A 32	J A 46	J A 21	23	J A 39	J A 73	J A 46	G	G	49	47	43	45	45	J A 53	J A 117	J A 143	J A 31	E B 15	E B 16	J A 45	30
18	J A 37	J A 54	J A 52	J A 35	J A 21	J A 27	J A 46	J A 38	J A 94	J A 82	J A 98	J A 86	J A 49	J A 43	J A 56	J A 51	G	J A 42	J A 51	J A 61	J A 79	J A 57	44	J A 40
19	J A 30	25	J A 23	E B 14	J A 24	J A 38	J A 66	J A 67	J A 80	J A 134	J A 95	J A 74	J A 59	J A 91	J A 45	G	J A 56	J A 58	J A 50	J A 127	J A 121	J A 52	J A 53	J A 24
20	J A 63	J A 61	J A 32	J A 26	J A 31	J A 24	J A 50	J A 47	J A 47	J A 58	J A 34	J A 61	48	52	J A 88	42	40	J A 46	J A 47	J A 62	J A 47	J A 57	J A 69	J A 43
21	J A 43	J A 52	21	J A 24	20	J A 38	J A 81	J A 115	J A 61	J A 44	41	G	44	J A 82	J A 50	J A 52	J A 80	J A 93	J A 102	68	74	49	31	E B 14
22	J A 22	J A 30	J A 25	J A 37	23	J A 31	28	G 26	J A 50	J A 70	J A 95	J A 114	J A 79	50	J A 131	42	J A 46	65	J A 32	J A 28	J A 39	J A 25	J A 28	J A 22
23	19	23	J A 23	J A 38	J A 31	28	31	J A 61	J A 68	52	J A 83	42	G	44	J A 49	J A 45	J A 45	G 24	J A 53	J A 38	J A 36	J A 42	J A 60	J A 54
24	J A 72	J A 52	E B 15	E B 14	E B 14	G	32	36	J A 56	J A 44	J A 62	J A 76	J A 56	J A 51	G	40	J A 47	J A 47	J A 48	J A 64	J A 27	J A 83	J A 72	J A 53
25	J A 49	J A 33	J A 29	J A 42	J A 32	20	J A 65	J A 104	J A 79	J A 46	J A 60	J A 63	48	J A 54	J A 62	J A 80	J A 56	J A 96	J A 36	54	24	J A 48	J A 23	J A 23
26	J A 19	J A 35	J A 37	J A 30	J A 28	21	32	J A 112	J A 69	J A 102	42	J A 52	J A 77	J A 78	J A 46	J A 59	J A 140	J A 82	J A 83	J A 36	J A 61	J A 68	J A 23	J A 70
27	J A 22	E B 15	J A 28	J A 28	J A 22	J A 30	J A 39	J A 52	J A 98	J A 55	G	46	44	J A 48	53	J A 61	J A 54	J A 108	J A 95	J A 57	J A 27	J A 41	J A 47	J A 26
28	J A 21	J A 25	E B 15	J A 26	J A 24	21	32	38	J A 44	J A 56	44	J A 98	64	J A 62	49	40	J A 42	J A 35	J A 44	J A 60	J A 101	J A 78	J A 49	J A 54
29	J A 44	J A 29	J A 28	J A 24	20	E B 14	G	42	40	J A 56	J A 64	G	J A 55	44	J A 65	J A 69	J A 64	J A 38	J A 44	39	J A 42	J A 44	J A 21	J A 50
30	21	J A 27	21	22	E B 15	E B 16	J A 43	G 25	J A 43	J A 49	J A 109	J A 86	J A 74	J A 59	42	J A 47	J A 53	J A 44	J A 43	J A 40	J A 52	J A 56	J A 61	J A 100
31	J A 44	J A 38	J A 25	J A 24	22	J A 25	J A 37	36	40	G	44	J A 49	42	44	47	J A 72	39	J A 54	J A 59	J A 105	J A 22	23	J A 26	J A 48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 38	J A 31	J A 28	J A 26	J A 22	24	J A 38	J A 49	J A 62	J A 56	J A 56	J A 61	51	J A 52	J A 49	45	J A 46	J A 54	J A 53	J A 60	J A 52	J A 46	J A 47	J A 44
U Q	J A 50	J A 44	J A 37	J A 38	J A 29	J A 31	J A 47	J A 72	J A 87	J A 82	J A 98	J A 76	J A 64	J A 74	J A 62	J A 60	J A 57	J A 83	J A 83	J A 84	J A 75	J A 65	J A 69	J A 54
L Q	J A 22	24	23	E B 22	E B 20	21	32	38	47	45	43	46	45	44	G 42	G 40	41	43	J A 44	38	27	J A 39	J A 33	J A 30

JUL. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	21	E B 15	E B 15	17	E B 15	43	37	73	41	38	41	42	46	68	56	71	48	A A 102	42	19	23	17	51	21
2	16	29	21	23	15	24	31	54	60	A A 108	A A 128	79	58	46	54	56	A A 82	70	A A 115	69	46	33	29	18
3	35	26	16	29	E B 15	21	35	42	A A 130	A A 148	A A 119	45	55	44	G	43	38	41	A A 70	25	23	21	16	E B 16
4	E B 15	23	18	E B 15	E B 15	22	30	42	50	71	A A 102	A A 102	A A 95	A A 114	A A 117	G	53	55	A A 90	77	70	39	55	31
5	38	30	28	31	25	G	31	41	53	46	39	A A 67	42	G	G	46	43	41	49	52	E B 14	E B 15	16	27
6	30	E B 14	E B 14	E B 14	E B 14	22	35	55	A A 147	A A 162	A A 192	G	46	50	49	50	40	60	63	60	A A 127	A A 96	42	A A 125
7	61	22	30	18	17	20	G	A A 92	51	45	45	50	44	A A 144	G	G	42	41	42	43	E B 16	40	44	42
8	43	E B 14	E B 15	34	E B 15	22	31	37	63	A A 128	A A 124	A A 170	54	A A 96	G	G	G	G	30	22	22	17	32	36
9	33	33	28	18	E B 15	G	G 21	G	45	42	54	54	57	59	85	62	40	39	G	29	25	24	16	23
10	30	37	18	19	E B 14	41	50	56	46	42	41	G	50	53	45	A A 65	38	37	A A 76	22	38	22	20	25
11	16	E B 15	20	18	23	34	38	58	54	40	A A 56	A A 66	44	58	41	38	G	40	44	36	23	36	34	28
12	32	37	32	20	31	22	30	43	53	A A 80	A A 105	52	48	48	48	G	G	73	70	71	42	32	18	31
13	30	17	18	E B 16	22	G	46	40	36	52	46	37	G	G	48	38	44	G 20	28	18	22	E B 15	30	20
14	30	32	22	29	24	22	31	35	61	46	G	42	40	45	G	41	43	A A 106	70	62	54	41	23	21
15	E B 15	E B 15	E B 15	E B 15	E B 14	20	39	65	73	A A 130	43	64	52	47	A A 96	38	55	31	G	E B 16	E B 15	E B 15	E B 15	E B 15
16	21	21	22	E B 15	E B 15	20	26	A A 46	39	G	40	42	40	42	G	40	40	32	34	36	25	20	21	23
17	19	E B 15	21	E B 15	16	20	32	44	45	G	G	47	43	38	42	43	39	43	A A 143	22	E B 15	E B 16	20	27
18	25	40	39	26	18	21	32	36	45	45	A A 98	A A 86	41	38	48	42	G	37	43	35	58	27	41	35
19	22	18	E B 15	E B 14	16	32	A A 66	58	62	A A 134	A A 95	A A 74	52	58	40	G	42	48	48	62	40	39	28	E B 15
20	23	24	19	19	17	19	38	40	43	45	25	53	44	46	51	38	36	43	26	58	20	39	38	E B 14
21	35	35	E B 15	20	E B 14	32	A A 81	40	39	40	39	G	40	50	40	44	35	38	61	64	53	27	19	E B 14
22	18	18	18	20	E B 15	22	26	G 26	46	62	A A 95	A A 114	A A 79	47	A A 131	38	40	61	28	23	26	20	20	18
23	18	16	20	16	19	22	30	42	60	45	46	39	G	42	45	38	34	G 23	41	24	30	36	20	34
24	E B 15	20	E B 15	E B 14	E B 14	G	28	32	44	41	A A 62	A A 76	A A 56	46	G	38	40	40	37	50	E B 15	28	38	35
25	30	25	20	29	26	18	53	37	40	37	50	A A 63	44	49	49	46	42	A A 96	G 20	19	19	E B 15	18	16
26	E B 15	E B 15	31	E B 15	17	20	28	A A 112	52	56	40	44	A A 77	58	39	44	A A 140	A A 82	A A 83	31	A A 61	34	16	46
27	16	E B 15	E B 15	18	16	19	30	41	51	47	G	41	43	44	48	40	48	41	59	47	18	20	34	23
28	20	18	E B 15	20	17	18	30	33	38	50	41	A A 98	56	54	46	38	36	31	31	35	22	33	30	E B 15
29	23	19	19	18	E B 15	E B 14	G	40	38	50	A A 64	G	47	42	56	A A 69	44	34	38	34	21	21	E B 16	26
30	E B 15	E B 15	E B 15	E B 16	E B 15	E B 16	32	G 24	38	46	A A 109	54	62	55	40	39	43	38	33	36	27	34	32	32
31	34	19	E B 15	19	E B 15	20	30	30	37	G	41	42	41	40	42	45	38	40	49	48	19	E B 15	18	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	23	19	18	18	15	20	31	41	46	46	46	52	46	47	45	40	40	41	43	36	23	27	23	25
U Q	32	29	22	20	18	22	38	55	60	A A 71	A A 98	A A 74	56	58	51	46	44	60	A A 70	58	42	36	34	32
L Q	E B 16	E B 15	E B 15	E B 15	E B 15	18	30	36	40	41	40	42	42	42	G 39	G 38	36	37	31	23	E B 19	E B 17	18	E B 18

JUL. 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

JUL. 2012 fmin (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	300	272	285	313	307	308	266	271	291	324	311	309	298	270	281	298	309	A	327	300	286	280	290	273
2	288	293	282	288	293	320	283	303	280	A	A	279	292	279	266	270	A	283	A	302	312	284	F	F
3	F	F	263	F	F	285	298	290	A	A	A	292	299	275	295	297	306	311	A	294	278	F	F	F
4	287	299	297	295	283	272	291	311	314	317	A	A	A	A	A	292	280	287	A	316	288	280	F	312
5	310	299	293	281	308	299	288	322	342	344	264	A	307	310	311	306	307	307	301	290	290	303	292	299
6	291	279	284	282	299	281	294	310	A	A	A	294	268	282	278	288	295	303	303	313	A	A	F	A
7	F	F	F	F	F	298	289	A	316	323	325	307	270	A	298	313	293	312	312	303	285	280	283	F
8	F	F	F	F	F	297	293	300	324	A	A	A	288	A	295	301	301	299	301	303	290	281	275	F
9	298	303	F	F	F	276	285	323	313	306	291	259	270	266	290	287	276	280	283	289	295	271	288	F
10	275	264	F	F	F	260	263	258	280	265	297	272	271	279	291	A	298	301	A	298	290	269	272	F
11	279	284	307	275	279	257	276	312	328	264	A	A	282	277	286	294	309	315	300	317	288	280	294	292
12	282	296	281	F	F	275	296	328	300	A	A	281	295	303	311	304	302	301	303	307	298	306	277	F
13	288	286	F	F	290	316	312	318	316	305	302	294	313	321	300	304	303	312	314	310	310	283	288	313
14	F	303	321	294	294	299	321	368	309	329	300	316	R	294	287	292	292	A	306	316	306	306	290	295
15	291	287	294	303	288	290	283	271	313	A	242	279	301	310	A	297	294	282	263	295	287	297	303	278
16	268	F	F	259	F	F	283	A	R	R	R	R 231	226	R	251	283	283	266	299	281	306	252	273	274
17	F	F	278	269	292	286	277	297	306	331	297	297	287	310	302	301	328	297	A	298	315	281	270	257
18	F	281	299	296	306	297	291	321	300	319	A	A	291	315	328	331	339	324	311	287	309	323	312	296
19	293	283	289	301	300	302	A	326	337	A	A	A	308	315	295	308	310	298	295	311	327	302	F	F
20	F	283	F	283	302	322	296	318	333	313	298	314	320	297	298	331	307	308	288	320	318	F	313	321
21	285	291	303	290	F	290	A	286	307	303	317	292	318	301	318	325	324	313	312	306	327	300	309	320
22	298	307	297	298	286	347	337	333	322	328	A	A	A	294	A	296	302	315	307	303	318	295	308	293
23	310	308	312	F	298	F	301	321	340	303	306	315	317	295	291	288	323	317	325	328	316	298	296	286
24	307	F	F	294	305	322	294	312	310	R	A	A	A	297	301	286	326	331	312	304	292	286	F	F
25	F	306	F	294	294	303	315	303	319	318	334	A	R	288	318	321	315	A	313	298	290	301	301	298
26	294	300	320	305	297	312	310	A	335	326	R	269	A	280	311	307	A	A	A	325	A	F	F	F
27	286	291	299	308	308	339	329	343	322	339	339	331	297	287	305	301	302	310	312	321	321	322	287	298
28	290	F	F	F	F	325	346	349	338	306	298	A	294	301	303	306	308	316	307	309	288	F	F	271
29	291	297	F	298	265	286	263	302	287	276	A	R	268	290	302	A	308	302	287	292	294	292	296	271
30	299	291	288	291	F	318	319	313	324	324	A	299	310	295	300	300	311	315	323	305	294	281	290	288
31	F	279	264	304	287	295	292	317	307	293	280	295	292	319	310	316	314	302	316	302	290	278	288	297
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	20	22	21	29	29	28	28	22	16	20	25	27	28	29	29	27	25	31	29	26	23	20
MED	291	291	294	294	294	298	293	312	315	318	299	294	294	295	299	301	307	307	307	303	294	285	290	294
U Q	298	300	301	301	304	317	311	322	326	326	314	308	308	310	308	308	312	315	312	313	314	301	301	298
L Q	286	283	283	283	288	286	283	301	306	303	294	279	276	280	290	292	296	298	300	298	289	280	283	276

IONOSPHERIC DATA STATION Kokubunji

JUL. 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							A	A	L	370	UL 364	UL 368	A	A	A	A	A	A	A					
2						L		A	A	A	A	A	A	A	A	A	A	A	A	A				
3							UL 326	A	A	A	A	A	A	386	357	368	A	A	A					
4							348	A	A	A	A	A	A	A	A	357	A	A	A	A				
5							L	A	A	A	UL 364	A	UL 365	UL 349	374	A	A	A	A	A				
6							A	A	A	A	A	UL 377	A	A	A	A	369	A	A	A				
7							L	A	A	A	UL 374	A	UL 405	A	UL 329	363	L	A	A	A				
8							UL 353	346	A	A	A	A	A	A	UL 353	362	358	UL 341	UL 351					
9						L	L	376	A	392	A	A	A	A	A	A	331	UL 344	L	A				
10						A	A	A	A	UL 429	317	UL 368	A	A	A	A	UL 328	A	A	A				
11						A	A	A	A	393	A	A	UL 363	A	UL 365	357	381	A	A	A				
12						L	L	A	A	A	A	A	A	A	A	380	345	A	A	A				
13						L	A	A	369	A	A	UL 344	UL 400	UL 409	A	389	A	U L 360	A					
14						L	A	A	A	A	410	417	UL 396	A	UL 383	UL 374	A	A	A	A				
15						L	A	A	A	A	371	A	A	A	A	346	A	UL 323	L					
16						UL 307	UL 328	A	A	R	R	A	UL 341	R	UL 272	A	A	UL 336	A	A				
17						L	A	A	A	395	UL 380	A	A	388	371	A	A	A	A	A				
18							A	364	A	A	A	A	392	359	A	375	374	A	A	A				
19						A	A	A	A	A	A	A	A	A	378	UL 328	A	A	A	A				
20							A	A	A	A	L	A	A	A	A	376	UL 358	A	UL 323	A				
21						A	A	A	398	414	UL 348	UL 396	UL 370	A	361	A	373	A	A	A				
22							L	L	A	A	A	A	A	A	A	372	A	A	A	A				
23						A	A	A	A	A	A	UL 414	419	418	A	351	363	L	A					
24							325	356	A	U L 393	A	A	A	U L 360	U L 351	369	A	A		A				
25						L	A	387	389	U L 408	A	A	UL 406	A	A	A	A	A	L					
26						L	L	A	A	A	404	A	A	A	U L 422	A	A	A	A	A				
27								A	A	A	403	390	UL 439	351	A	367	A	A	A					
28								L	L	A	385	A	A	A	A	384	358	L	A					
29						424	UL 309	A	UL 389	A	A	UL 399	A	365	A	A	A	UL 354	A	A				
30							L	377	UL 393	A	A	A	A	A	A	374	A	A	A	A				
31						L	UL 344	363	401	383	UL 354	UL 385	UL 361	379	387	A	UL 361	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	7	7	6	9	12	10	12	10	14	18	12	6	2					
MED						366	UL 328	364	391	393	372	UL 388	UL 394	372	368	368	360	UL 342	UL 337					
U Q							348	377	398	UL 411	394	UL 399	UL 406	388	378	375	371	UL 354						
L Q							325	356	389	388	UL 359	UL 368	UL 364	359	UL 353	357	352	UL 336						

JUL. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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							366	E A 388	306	268	302	324	324	E A 392	362	E A 318	278	A	262					
2						280		294	E A 338	A	A	E A 416	E A 308	370	E A 376	362	A	E A 358	A	E A 352				
3							330	312	A	A	A	356	E A 368	406	358	362	328	304	A					
4							322	288	240	E A 288	A	A	A	A	A	350	E A 356	E A 314	A	E A 304				
5							320	282	252	256	444	A	328	326	334	318	318	290	E A 278	E A 278				
6							282	282	A	A	A	348	E A 438	394	392	336	300	316	E A 322	E A 300				
7							324	A	270	274	294	E A 358	436	A	314	296	328	306	284	264				
8							300	292	E A 268	A	A	A	E A 340	A	362	338	320	310	292					
9						350	314	270	290	278	332	E A 390	348	E A 418	E A 370	E A 324	354	332	300	278				
10						E A 358	E A 396	E A 432	386	456	382	410	414	E A 418	374	A	356	322	A	264				
11						E A 414	392	E A 334	E A 306	462	A	A	406	E A 398	382	344	298	290	E A 284	256				
12						366	334	296	E A 374	A	A	388	E A 326	E A 306	336	330	332	E A 376	E A 334	E A 328				
13						300	264	284	316	296	308	362	324	304	324	332	330	294	266					
14						324	256	242	E A 338	286	306	328	R 388	366	362	354	326	A	E A 306	E A 264				
15						336	288	E A 366	E A 302	A	428	312	310	298	A	312	E A 300	318	342					
16						424	358	A	R	R	R	E A 490	E A 470	R	E A 470	392	410	446	E A 338	E A 316				
17						326	348	318	304	264	310	354	368	310	362	322	284	326	A	262				
18							240	298	292	302	A	A	360	312	290	266	266	264	282	E A 286				
19						E A 296	A	E A 284	E A 266	A	A	A	334	E A 304	340	332	292	298	286	E A 274				
20							274	296	246	256	278	336	296	338	336	284	308	302	322	E A 262				
21						E A 316	A	304	268	278	286	276	312	336	304	292	302	298	E A 320	E A 314				
22							276	268	256	E A 242	A	A	A	354	A	326	322	E A 294	280	258				
23						298	234	270	E A 302	348	314	296	292	338	328	326	284	268	250					
24							354	332	322	390	A	A	A	368	356	374	292	276		E A 334				
25						306	E A 328	326	304	314	E A 306	A	370	E A 392	328	316	318	A	312					
26						304	290	A	280	E A 328	356	426	A	E A 402	328	318	A	A	A	E A 238				
27								266	302	256	292	310	376	358	314	306	294	280	274					
28								242	264	E A 308	354	A	352	306	284	304	312	284	252					
29						268	428	344	356	E A 410	A	R 376	E A 412	404	E A 376	A	328	332	E A 304	E A 288				
30							278	292	256	268	A	348	E A 344	362	350	342	298	290	246	262				
31						336	336	308	292	370	430	370	376	306	308	318	302	E A 292	282	E A 274				
	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						17	26	28	28	23	17	21	27	27	28	29	29	27	24	22				
MED						315	314	290	U 282	283	310	346	343	U 335	338	326	310	298	280	E A 276				
U Q						354	348	322	311	348	369	389	388	E A 394	366	343	328	322	E A 316	E A 304				
L Q						299	278	282	267	268	298	326	324	310	326	314	296	290	276	262				

IONOSPHERIC DATA STATION Kokubunji

JUL. 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 A 248	E B 280	E B 290	204	E B 238	218	A	A	E A 248	212	218	210	A	A	A	A	A	A	A	228	E A 276	E A 274	E A 312	E A 270
2	E A 272	E A 288	E A 280	E A 288	E A 264	238	214	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 272	E A 296	E A 320	E A 276
3	E A 344	E A 326	E A 296	E A 322	E B 246	E A 234	E A 256	A	A	A	A	A	A	230	208	230	A	A	A	E A 258	E A 278	E A 322	E A 310	E B 248
4	228	E A 252	E A 268	E B 262	E B 282	228	224	A	A	A	A	A	A	A	A	218	A	A	A	A	E A 322	E A 296	E A 318	E A 254
5	E A 258	E A 276	E A 302	E A 308	E A 274	R 264	218	A	A	A	212	A	218	212	222	A	A	A	A	A	E B 242	E B 232	222	E A 274
6	E A 278	E B 252	E B 258	E B 260	E B 278	E A 238	A	A	A	A	A	204	A	A	A	A	E A 234	A	A	A	A	A	E A 306	A
7	E A 344	E A 294	E A 320	E A 268	E A 254	240	226	A	A	A	E A 228	A	196	A	212	210	E A 258	A	A	A	E B 254	E A 298	E A 326	E A 352
8	E A 346	212	E B 250	E A 324	E B 284	E A 248	226	228	A	A	A	A	A	A	208	204	222	222	216	E A 242	E A 256	256	E A 310	E A 304
9	E A 280	E A 272	E A 280	E A 268	E B 270	252	224	210	A	204	A	A	A	A	A	A	236	E A 244	220	A	E A 264	E A 282	E A 270	E A 266
10	E A 274	E A 338	E A 320	E A 320	E B 322	A	A	A	A	198	E A 256	238	A	A	A	A	E A 242	A	A	A	E A 320	E A 306	E A 308	E A 368
11	E A 286	E B 254	E A 240	E A 288	E A 308	A	A	A	A	206	A	A	226	A	226	232	224	A	A	A	E A 268	E A 308	E A 284	E A 278
12	E A 310	E A 308	E A 312	E A 272	E A 330	E A 258	252	A	A	A	A	A	A	A	A	224	226	A	A	A	E A 268	E A 260	E A 290	E A 314
13	E A 290	E A 248	E A 250	E B 282	E A 278	250	A	A	220	A	A	208	202	184	A	216	A	212	A	234	234	E B 256	E A 272	E A 252
14	E A 312	E A 292	E A 264	E A 318	E A 306	E A 252	A	A	A	A	194	198	198	A	212	224	A	A	A	A	E A 266	E A 254	E A 252	E A 256
15	E B 256	E B 270	E B 258	E B 238	E B 272	E A 250	A	A	A	A	220	A	A	A	A	232	A	216	242	E B 258	E B 262	202	208	E B 282
16	E A 270	E A 266	E A 380	E B 368	E B 376	E A 314	E A 256	A	A	R	R	A	E A 242	R	A	A	A	E A 252	A	A	E A 266	E A 364	E A 314	E A 296
17	E A 344	E B 330	E A 298	E B 308	E A 274	E A 284	A	A	A	218	204	A	A	224	226	A	A	A	A	A	218	E B 242	E A 272	E A 350
18	E A 288	E A 340	E A 318	E A 292	E A 264	E A 244	A	236	A	A	A	A	212	216	A	226	224	A	A	A	E A 290	E A 248	E A 266	E A 284
19	E A 280	E A 276	E B 290	E B 244	E A 260	A	A	A	A	A	A	A	A	A	216	232	A	A	A	A	236	224	E A 304	E B 244
20	E A 264	E A 280	E A 276	E A 284	E A 250	238	A	A	A	A	206	A	A	A	A	204	210	A	216	A	214	E A 304	E A 254	226
21	E A 306	E A 336	E B 254	E A 284	E B 278	A	A	A	216	210	216	210	220	A	226	A	220	A	A	A	E A 260	E A 282	E A 268	222
22	230	E A 248	E A 250	E A 298	E B 278	230	218	208	A	A	A	A	A	A	A	232	A	A	A	A	240	E A 236	E A 248	E A 266
23	232	E A 246	230	E A 280	E A 274	A	A	A	A	A	A	178	194	190	A	220	216	212	A	228	E A 246	E A 292	E A 270	E A 294
24	E B 266	E A 272	E B 256	E B 262	E B 284	230	E A 242	222	A	214	A	A	A	E A 248	214	124	A	A	E A 266	A	E B 228	E A 284	E A 314	E A 306
25	E A 278	E A 266	E A 278	E A 290	E A 304	E A 272	A	E A 234	220	204	A	A	212	A	A	A	A	A	218	E A 254	E A 284	E B 252	E A 270	E A 260
26	E B 244	E B 254	E A 268	E B 240	E A 290	240	216	A	A	A	188	A	A	A	198	A	A	A	A	A	A	E A 302	E A 254	E A 334
27	E A 266	E A 276	E B 272	E B 258	E A 252	236	226	A	A	A	198	200	216	226	A	238	A	A	A	E A 256	220	214	E A 306	E A 268
28	E A 292	E A 308	E A 282	E B 284	E A 246	230	226	206	210	A	194	A	A	A	A	216	216	216	A	260	E A 254	E A 324	E A 292	E B 292
29	E A 286	E A 254	E A 258	E A 262	E A 220	208	232	A	220	A	A	212	A	218	A	A	A	230	A	A	E A 248	E A 248	E B 250	E A 296
30	E B 258	E B 264	E B 262	E B 262	E B 266	242	228	222	206	A	A	A	A	A	204	212	A	A	A	A	222	E A 286	E A 296	E A 294
31	E A 346	E A 296	E B 306	E A 258	E B 276	E A 254	240	220	210	204	214	220	230	212	212	A	236	A	A	A	E A 248	E B 282	E A 270	E A 276
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	26	17	9	8	9	13	10	12	10	13	18	13	8	6	9	29	30	31	30
MED	E A 278	E A 276	E A 276	E A 282	E A 274	236	225	221	216	206	208	209	213	216	212	222	222	216	218	E 254	E A 256	E A 282	E A 284	E A 277
U Q	E A 306	E A 296	E A 298	E A 298	E A 284	E A 252	E A 241	231	220	213	219	212	223	226	224	232	236	E A 237	242	E 258	E A 270	E A 298	E A 310	E A 296
L Q	E 258	E A 254	E 258	E 262	E A 260	234	221	209	210	204	196	200	200	212	208	212	218	214	216	231	238	E 248	E A 266	E 260

JUL. 2012 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 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						A	A	A	A	A	A	A	A	A	A	116	A	A	A	B				
2						118	118	A	A	A	A	A	A	108	A	A	A	A	A	B				
3						118	A	A	A	A	A	A	A	A	122	122	122	A	A	B				
4						118	118	A	A	A	A	A	A	A	A	126	118	A	A	B				
5						118	A	A	A	A	A	A	98	116	114	124	A	A	A	B				
6						120	112	A	A	A	A	108	A	A	A	A	A	A	A	A				
7						B	116	A	A	A	A	A	A	A	116	120	118	A	A	B				
8						120	116	116	A	A	A	A	A	A	120	124	120	114	A	B				
9						120	120	120	116	116	A	A	A	A	A	A	A	118	116	A				
10						118	A	A	A	A	A	120	A	118	118	A	118	114	A	B				
11						116	A	A	A	A	A	A	A	A	A	A	110	A	A	B				
12						B	110	A	A	A	A	A	124	122	A	120	118	A	A	B				
13						128	A	A	A	A	A	A	124	126	A	A	A	116	A	B				
14						A	A	116	A	A	116	A	A	124	116	120	120	A	A	B				
15						B	A	A	A	A	A	A	A	A	A	A	A	A	112	B				
16						A	114	114	114	128	128	128	124	126	120	120	A	A	A	B				
17						A	A	A	A	114	116	A	A	122	130	128	120	A	A	B				
18						A	A	A	A	A	A	A	A	A	A	A	108	A	A	B				
19						A	A	A	A	A	A	A	A	A	A	116	A	A	A	B				
20						A	A	A	A	A	A	A	A	A	A	A	116	A	A	B				
21						B	A	A	A	A	A	126	124	A	A	A	A	A	A	B				
22						B	A	124	A	A	A	A	A	A	A	A	120	A	A	B				
23						B	A	A	A	A	A	114	116	A	A	A	A	118	A	B				
24						118	114	116	A	A	A	A	A	A	126	114	114	A	A	B				
25						B	A	A	A	A	A	A	120	120	A	A	A	A	122	B				
26						B	120	A	A	A	114	A	A	A	A	114	A	A	A	B				
27						112	112	A	A	A	112	A	A	A	A	A	A	A	A	B				
28						B	124	112	A	A	A	A	A	A	A	A	A	A	114	B				
29						B	120	112	118	A	A	124	A	114	A	A	A	A	A	B				
30						B	A	116	A	A	A	A	A	A	A	A	A	114	A	B				
31						B	A	A	A	118	A	A	A	A	124	A	112	A	A	B				
	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						12	13	9	3	4	5	6	7	10	10	13	14	6	4					
MED						118	116	116	116	117	116	122	124	121	120	120	118	115	115					
U Q						120	120	118	118	123	122	126	124	124	124	124	120	118	119					
L Q						118	113	113	114	115	113	114	116	116	116	116	114	114	113					

JUL. 2012 h′E (KM)

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	102	94	88	98	110	98	106	102	102	106	106	106	102	102	110	118	106	106	108	106	106	100	100	98
2	98	94	94	94	100	120	120	104	104	104	100	106	104	116	112	106	106	96	98	88	88	94	102	104
3	94	94	94	94	100	112	106	106	102	100	96	100	98	98	G	120	118	106	104	102	104	102	104	102
4	94	94	94	98	B	120	118	104	104	106	100	100	100	102	102	G	120	106	100	100	100	96	96	98
5	98	96	94	92	94	G	102	102	102	102	100	94	90	G	G	118	106	108	106	102	B	B	96	96
6	96	B	B	B	B	122	124	104	102	98	100	G	102	102	104	96	96	106	104	102	100	100	100	98
7	88	88	98	106	106	110	G	100	98	102	98	98	100	94	G	G	114	106	104	100	B	100	100	100
8	98	100	102	94	100	118	112	114	104	102	94	100	100	104	G	G	G	G	108	102	102	98	100	102
9	100	94	102	98	100	G	98	G	116	120	102	106	104	100	100	102	106	120	G	104	104	104	108	102
10	98	98	108	104	118	114	104	104	104	110	110	G	104	120	120	120	120	116	104	108	100	102	102	96
11	98	98	98	98	98	114	104	106	106	106	102	98	98	98	98	102	G	104	102	98	94	96	96	100
12	94	92	92	94	94	100	114	110	106	108	100	114	120	116	110	G	G	106	104	102	100	94	92	92
13	90	92	92	B	98	G	110	104	104	96	98	106	G	G	92	92	94	98	104	108	100	94	98	92
14	94	98	98	92	96	96	98	118	104	104	G	102	108	150	G	118	116	102	102	100	100	96	100	98
15	96	94	B	B	B	108	104	102	102	104	106	106	110	102	106	106	104	104	G	B	B	B	B	132
16	116	114	108	112	118	118	120	116	114	G	124	114	114	114	G	120	104	106	104	102	102	100	108	110
17	140	146	116	116	110	108	108	108	108	G	G	106	118	124	140	126	118	106	100	102	B	B	96	98
18	92	90	90	90	88	104	102	108	104	98	96	94	96	96	96	96	G	106	102	100	98	88	88	88
19	94	94	98	B	114	106	106	106	102	100	102	100	96	102	104	G	102	106	98	96	98	94	92	98
20	100	94	94	90	96	100	104	106	106	106	106	104	108	106	104	104	120	106	102	100	104	104	100	100
21	94	96	102	112	122	110	106	98	102	106	106	G	120	108	108	108	102	104	100	94	92	92	96	B
22	100	100	92	92	102	106	106	104	110	104	104	104	104	106	104	108	116	104	104	102	102	100	96	96
23	96	94	92	90	88	94	106	106	104	104	104	114	G	104	102	102	102	102	100	94	90	88	104	102
24	104	100	B	B	B	G	118	114	104	106	104	102	100	100	G	126	116	108	108	102	102	102	100	100
25	96	102	98	98	90	116	104	104	102	104	102	110	116	118	108	108	108	104	104	102	102	102	98	98
26	98	92	92	92	92	118	122	100	100	100	114	104	100	96	98	120	106	104	104	100	98	102	100	94
27	98	B	94	92	92	112	118	106	104	104	G	104	98	98	98	98	100	98	100	100	94	92	98	94
28	94	96	B	94	90	108	122	114	106	102	102	98	100	96	100	100	102	96	112	100	104	102	100	100
29	100	96	96	92	98	B	G	122	122	114	104	G	102	106	100	98	100	96	102	104	98	98	104	98
30	98	100	96	96	B	B	100	104	106	102	96	94	98	96	96	98	92	114	92	94	88	94	96	102
31	102	98	96	100	104	118	102	106	102	G	102	102	98	106	120	106	110	104	102	98	96	96	96	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	27	26	26	25	29	30	31	28	28	27	29	29	24	26	27	30	29	30	27	28	30	30
MED	98	96	96	94	99	110	106	106	104	104	102	104	102	102	104	106	106	106	104	101	100	98	100	98
U Q	100	99	98	98	106	118	118	108	106	106	105	106	108	111	109	118	116	106	104	102	102	102	100	102
L Q	94	94	92	92	94	105	104	104	102	102	100	100	98	98	99	100	102	104	100	100	96	94	96	96

JUL. 2012 h'Es (KM)

IONOSPHERIC DATA STATION Kokubunji

JUL. 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	F3	F2	F2	F3	F1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	C2	L2	L3	L4	L3	F6	F4	F4	F3
2	F3	F3	F3	F5	F2	C2	C2	L2	L3	L2	L2	L2	L2	CL11	C2	L2	L3	L3	L3	L4	F3	F4	F4	F3
3	F4	F3	F2	F3	F2	C2	L2	L2	L2	L2	L2	L2	L2	L2		C2	C2	L2	L3	L2	F4	F3	F2	F2
4	F1	F2	F2	F1		C3	C1	L2	L2	L2	L3	L3	L3	L3	L3		C2	L3	L4	L4	F4	F4	F4	F3
5	F3	F3	F3	F4	F3		L2	L2	L2	L2	L2	L2	L2			C2	L2	L2	L3	L3			F4	F3
6	F3					C1	C2	L2	L3	L2	L3		L2	L2	L2	L2	L2	L2	L3	L4	F4	F4	F3	F4
7	F3	F2	F3	F3	F3	L2		L2	L2	L2	L2	L2	L2	L2			C1	L2	L3	L3		F3	F4	F4
8	F4	F3	F2	F3	F2	C2	CL22	CL22	L3	L2	L2	L2	L2	L2					L2	L3	F3	F2	F3	F3
9	F3	F2	F3	F3	F1		L1		C1	C1	L2	L2	L2	L2	L2	L2	L2	C2		L2	F2	F4	F3	F3
10	F3	F3	F4	F3	F2	C4	L2	L2	L2	L2	L2		L2	C2	C2	C2	C1	C2	L3	L4	F3	F3	F3	F3
11	F1	F2	F2	F2	F2	C3	L2	L3	L2	L2	L2	L2	L2	L2	L2	L2		L2	L3	L3	F3	F2	F2	F3
12	F3	F3	F3	F2	F2	L2	CL12	L2	L2	L3	L2	C2	C2	C2	L2			L3	L3	L3	F4	F4	F2	F3
13	F3	F2	F1		F3		L2	L2	L2	L2	L2	L2			L2	L2	L2	L1	L2	L3	F3	F2	F3	F2
14	F2	F2	F3	F2	F4	L2	L2	CL22	L2	L2		L2	L2	H1		C1	C1	L2	L3	L3	F3	F3	F3	F3
15	F2	F1				L1	L3	L3	L3	L2	L2	L2	L2	L1	L2	L2	L2	L1						F2
16	F6	F6	F5	F2	F2	C2	C2	C2	C2		C2	C2	C2	C2		C1	L2	L2	L3	L3	F3	F2	F5	F4
17	F2	F1	F4	F2	F2	L2	L2	L2	L2			L2	C2	C2	H2	C2	C2	L2	L3	L3			F4	F3
18	F2	F5	F2	F2	F2	L2	L2	L2	L2	L3	L3	L3	L2	L2	L2	L2		L2	L3	L3	F3	F2	F2	F2
19	F2	F2	F2		F3	L2	L2	L3	L3	L3	L2	L2	L2	L2	L2		L2	L2	L3	L4	F3	F2	F2	F2
20	F3	F3	F2	F3	F2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	C2	L2	L2	L5	F2	F5	F3	F2
21	F5	F4	F2	F2	F1	L3	L2	L2	L2	L2	L2		C1	L2	L2	L2	L2	L2	L3	L3	F3	F3	F2	
22	F3	F2	F2	F3	F1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	L2	C1	L2	L2	L2	F4	F3	F3	F2
23	F2	F2	F3	F2	F3	L2	L2	L2	L3	L2	L2	C1		L2	L2	L2	L2	L2	L2	L3	F4	F2	F2	F3
24	F3	F3					C2	C2	L2	L2	L2	L2	L2	L2		C1	C2	L2	L3	L3	F2	F3	F4	F4
25	F5	F3	F2	F2	F2	C1	L3	L2	L2	L2	L2	L2	CL22	CL22	L2	L2	L2	L2	L2	L2	F1	F2	F2	F2
26	F1	F2	F3	F2	F2	C1	C2	L3	L2	L2	C2	L2	L2	L2	L2	CL11	L3	L3	L3	L4	F5	F3	F2	F5
27	F2		F2	F2	F2	C1	CL21	L2	L2	L2		L2	L2	L2	L2	L2	L3	L3	L3	L3	F3	F3	F3	F3
28	F2	F2		F2	F2	C2	CL11	C2	L2	L2	L2	L3	L2	L2	L2	L2	L2	L2	CL22	L2	F2	F2	F5	F3
29	F3	F3	F3	F2	F1			C2	C2	C2	L2		L2	L1	L3	L3	L2	L2	L2	L3	F3	F4	F2	F2
30	F2	F1	F1	F1			L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	CL12	L3	L3	F3	F3	F2	F3
31	F3	F2	F2	F2	F1	C2	L2	L1	L1		L2	L2	L1	L2	C1	L2	C1	L3	L3	L4	F2	F3	F2	F2
	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																								

IONOSPHERIC DATA STATION Yamagawa

JUL. 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 95	X 92	X 86	X 74	X 65																X 87	X 79	X 76	X 77
2	X 80	X 75	X 69	X 71	X 66																X 80	X 65	X 65	X 64
3	65	65	62	62	X 61	61															X 78	X 72	X 72	X 78
4	X 76	X 80	X 75	X 69	X 62																X 92	X 89	X 88	X 86
5	X 86	X 83	X 70	X 64	X 68																X 92	X 76	X 76	X 75
6	X 75	X 74	X 72	X 68	X 68																X 78	X 78	X 76	76
7	X 79	X 79	X 72	X 64	X 57																X 85	X 76	X 75	X 72
8	X 70	76	X 84	X 78	X 69																X 84	X 79	X 76	X 76
9	X 71	70	X 81	X 75	X 67																X 99	X 90	X 91	X 90
10	X 92	X 96	X 99	X 92	X 74																X 74	X 72	X 66	X 68
11	X 67	X 68	X 70	X 68	X 63																X 81	X 78	X 72	X 77
12	X 69	X 68	X 66	X 66	X 64																X 94	X 73	X 71	X 68
13	X 63	X 64	X 63	X 62	X 59																X 84	X 78	X 77	X 74
14	X 69	X 66	X 62	X 60	X 60																X 95	X 83	X 78	X 78
15	X 79	77	X 75	X 72	X 68																X 114	X 81	X 83	X 74
16	X 70	X 85	X 74	75	71	60	48														X 51	A	X 54	X 57
17	X 54	X 56	62	62	X 60																X 89	X 83	X 78	X 70
18	X 68	X 68	X 72	X 66	X 64																X 89	X 85	X 67	X 65
19	X 64	X 60	X 62	X 64	X 58																X 92	X 79	X 78	X 74
20	X 74	X 75	X 81	X 74	X 75																X 88	76	76	75
21	X 58	X 58	X 57	X 53	X 52																X 79	X 79	X 76	X 65
22	X 69	X 60	64	63	66																X 92	X 81	X 77	X 76
23	X 78	X 72	X 63	X 55	X 46																X 68	X 64	X 56	X 58
24	54	A	51	51	X 52	53															X 66	X 69	X 64	X 63
25	X 60	X 56	X 58	A	X 54																X 78	X 77	X 73	X 70
26	X 66	X 65	X 63	X 57	X 55	X 53															X 68	X 65	X 66	X 70
27	X 69	X 66	X 61	X 64	X 59	X 58															X 91	X 79	X 78	X 76
28	X 73	X 69	X 68	X 67	X 69	X 64															X 79	X 78	X 76	X 72
29	X 72	X 70	67	66	64	X 56															X 78	X 69	X 68	X 66
30	X 64	X 61	X 57	X 56	X 56	X 55															A	X 75	X 79	X 78
31	X 75	X 74	X 72	71	X 74	X 66															X 70	X 78	75	76
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	30	31	9	1														30	30	31	31
MED	X 70	X 70	X 68	X 66	X 64	X 58	48														X 84	X 78	X 76	X 74
U Q	X 76	X 76	X 74	X 71	X 68	X 62															X 92	X 79	X 78	X 76
L Q	X 65	X 65	X 62	X 62	X 58	X 54															X 78	X 73	X 68	X 68

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	R 89	U R 86	R 80	68	59	52	57	79	93	94	79	A	A	A	U R 80	88	J R 95	94	86	A	81	73	70	71
2	74	69	63	65	60	55	62	70	69	74	R 78	86	A	A	A	R 95	U R 90	88	J R 105	87	74	59	59	58
3	58	57	54	54	55	R 54	61	77	78	67	70	A	67	R 73	78	R 78	79	76	68	A	72	66	66	72
4	70	F 73	69	63	56	51	61	72	82	82	A	A	R 81	U R 84	A	R 84	92	94	R 92	92	86	83	82	80
5	80	77	64	58	62	57	67	89	92	67	E G 53	R 68	R 74	U R 78	U R 78	78	U R 78	R 74	77	80	86	70	V 70	69
6	69	68	66	62	62	62	74	81	76	78	R 72	A	A	80	U R 80	R	U R 104	98	U R 83	76	72	72	70	68
7	F 72	F 72	66	58	51	50	62	73	70	R 73	U R 63	E G 50	68	U R 72	U R 87	84	R 81	R 83	R 79	78	79	70	69	66
8	64	68	78	72	63	56	70	77	73	74	A	67	U R 68	U R 74	78	U R 84	U R 86	83	81	78	78	73	70	70
9	65	F 62	F 73	69	F 60	F 62	65	78	88	U R 87	74	72	U R 78	90	U R 84	87	A	93	94	91	93	R 84	85	84
10	86	90	93	86	68	69	63	59	58	A	A	J R 66	67	J R 74	U R 78	77	75	72	69	67	68	66	60	62
11	V 61	62	F 63	F 60	57	50	50	66	A	A	59	A	R 68	76	78	R 90	R 94	R 96	94	83	75	72	66	71
12	63	62	60	60	58	56	70	74	66	60	65	68	68	A	R 79	84	U R 91	96	94	92	88	67	65	62
13	57	58	57	56	53	52	62	68	69	70	66	68	R 74	76	74	78	91	94	91	84	R 78	72	71	68
14	63	60	56	54	54	54	59	62	76	74	61	59	U R 62	R 65	U R 70	R 78	89	R 94	R 93	86	89	77	72	72
15	F 71	F 69	69	F 64	F 61	57	58	65	V 77	A	69	U R 81	U R 96	78	70	88	96	93	R 87	U R 111	U R 108	75	77	68
16	64	79	68	F 68	F 65	53	F 41	44	E G 39	E G 40	R	E G 44	E G 45	E G 45	E G 45	50	54	52	48	57	45	A	48	51
17	48	50	55	54	54	50	48	62	80	60	60	J R 58	74	R 78	R 88	87	R 90	81	78	86	83	77	72	64
18	62	62	66	60	58	55	52	70	71	U R 76	R	62	U R 64	76	R 86	87	A	73	72	76	83	79	61	59
19	58	54	56	V 58	52	49	58	76	81	77	62	64	68	A	A	B	U R 82	R 93	96	U R 99	86	73	72	68
20	68	69	75	68	69	65	69	78	80	71	64	62	67	68	72	72	72	73	77	91	82	F 69	69	F 68
21	52	52	51	47	46	44	49	71	74	87	U R 87	95	U R 95	U R 90	J R 91	80	77	79	U R 80	78	73	73	70	59
22	63	54	56	F 57	F 60	54	57	71	67	58	R 54	U R 52	A	64	A	R 82	90	92	91	81	86	75	71	70
23	72	66	57	V 49	40	42	55	60	68	64	U R 67	A	J R 72	R 72	R 78	78	83	89	86	A	62	58	50	52
24	47	A	F 43	F 44	F 45	46	47	61	62	58	R 62	A	J R 53	65	68	62	A	66	A	A	60	63	V 58	57
25	54	50	52	A	48	48	50	70	72	58	70	62	R 62	74	64	66	65	62	60	64	72	71	67	64
26	60	59	57	51	49	47	52	72	80	A	A	59	A	67	70	77	88	95	94	82	62	59	60	64
27	63	60	55	58	53	52	58	58	80	70	70	A	A	74	81	R 86	95	98	100	R 94	85	73	72	70
28	67	63	62	61	63	58	62	68	64	66	72	70	79	87	U R 81	U R 78	83	84	88	81	73	72	70	R 66
29	66	64	60	58	57	50	55	75	72	U R 58	62	R 61	A	68	R	R 74	U R 64	A	A	69	72	63	62	60
30	58	55	51	50	50	49	53	73	77	69	R 66	U R 65	U R 72	R 78	R 84	R 88	92	94	U R 90	R 84	A	69	73	72
31	69	68	66	64	68	60	62	68	61	55	62	64	78	90	88	A	A	A	82	A	64	72	68	68
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	30	31	31	31	31	30	27	25	23	24	27	26	28	27	29	29	26	30	30	31	31
MED	64	62	62	59	57	53	58	71	74	70	66	64	R 68	74	R 78	81	88	89	86	82	78	72	70	68
U Q	70	69	68	64	62	57	62	76	80	76	71	68	R 76	78	R 84	87	92	94	94	91	86	73	72	70
L Q	58	58	56	54	52	50	52	65	68	60	62	59	R 67	68	72	78	78	75	78	78	72	67	62	62

JUL. 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	U L 472	484	A	A	A	A	R 512	A	U R 428	A	L	A				
2							L	A	L	A	A	A	A	A	A	480	480	A	U L 428	204				
3							L 424		448	R	A	A	A	U R 488	U R 488	R	460	L 448	A	A				
4							L	L	L 456	L 492	A	A	U A 516	A	A	U R 484	488	L 452	L 428	L				
5							L	U L 424	U L 468	L	R 528	U R 508	B	B	504	R 500	A	U L 472	L					
6							L	L	A	L	A	A	A	A	A	A	R 460	A	L	A				
7							L	L	L	U L 500	A	U R 496	R	B	U R 508	U R 496	500	L 468	L					
8							L	L	L	R 528	A	A	A	U R 552	A	R 500	480	U L 464	U L 400					
9								L 452	L 484	R 516	U L 512	U R 536	A	A	U R 552	A	A	L 476	U L 448	L				
10							324	384	448	A	A	A	R 528	U R 536	516	R	504	456	L					
11							L	A	A	A	U R 492	A	U R 504	U R 500	A	U R 488	A	U L 456	U L 416					
12							L	U L 452	L 444	L 508	496	A	A	A	R 508	496	464	A	U L 408					
13							L	L	L	U L 488	U L 520	U R 520	R	R 496	U R 504	R 508	484	U L 444	L 400					
14							L	L	L 460	476	U L 492	R 492	480	U R 488	R	R 500	468	440	L 416					
15							L	L	416	A	A	U R 516	A	496	A	484	472	L 456	L 424	L				
16							L	364	392	U R 396	U R 428	U R 436	R 448	R 452	R 448	444	A	A	A					
17							336	L 420	444	L	L 488	U R 500	U R 496	500	484	U L 492	A	L	U L 416					
18							L	U L 416	L	468	U R 480	U L 476	R	R 488	500	A	A	A	A					
19							L	L 416	U L 444	L 476	U L 484	468	R 480	A	A	B	B	428	A	L				
20							L	U L 408	L 452	U L 468	476	480	U R 480	488	464	A	L 480	U L 452	L 384	L				
21							L	A	A	456	L 472	484	U A 488	R 480	A	A	A	L 432	A					
22								L	436	U L 440	U L 460	R 456	A	U R 480	A	A	A	A	A	A				
23							L	U L 428	L 452	444	476	A	A	A	A	456	464	U L 436	L	A				
24							U L 356	372	A	456	A	A	472	U R 504	Y 480	A	A	A	A	A				
25							U L 388	L 404	L 448	R 488	R 492	A	A	A	L 488	U R 456	U L 460	456	U L 392	L				
26							L	U L 424	L 452	A	A	A	A	A	U R 492	U R 484	472	L 448	U L 388					
27									U L 456	488	A	A	A	A	A	500	476	A	A					
28								L	L	U R 520	U R 488	A	R 500	U R 504	L 508	U R 492	484	A	A	A				
29								L 420	L 444	480	500	A	A	A	A	480	R 496	A	A					
30							L	L	U L 460	L 496	U R 528	U R 504	U R 512	U R 512	U R 524	500	488	A	U L 408					
31								U L 420	U L 488	A	R 500	U R 524	A	U R 516	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	16	21	21	19	15	12	17	17	19	20	17	14	1				
MED							346	L 420	L 452	484	U 492	U R 496	R 492	U R 496	R 504	R 492	478	L 452	U L 412	204				
U Q							U L 372	U L 424	U L 460	498	U R 500	U R 516	U R 508	U R 508	U R 510	R 500	486	U L 460	L 424					
L Q							330	406	444	462	476	476	480	R 488	486	480	464	L 442	L 400					

JUL. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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						B	A 196	UA 268	A 312	UA 328	UA 344	UA 368	UA 368	376	R 380	372	UR 348	304	A 252	UA 156				
2						A	224	UA 280	320	UA 364	A 360	UA 360	UA 400	A	UA 396	A 364	UA 360	304	UA 220	A				
3						B	208	A 272	A 308	B	UA 356	A	A	A	A	376	352	316	UA 268	A				
4						B	212	280	320	UA 348	UA 388	A	UR 396	A	A	R	UR 364	324	260	172				
5						B	B	UA 272	UA 324	A	A	R	B	B	B	392	B	328	UA 268	B				
6						B	UA 204	A 304	A 340	A 360	UA 376	A	A	UA 368	A	A	UA 308	UA 232	UA 196	A				
7						A	UA 180	UA 272	A 324	UA 368	UA 376	UA 384	B	B	A	A	R 324	A	A	A				
8						A	232	UA 260	328	360	UA 384	A 396	B	B	UA 408	400	R 364	328	A 292	B				
9						A	216	288	336	368	A	A	UA 420	A	UA 408	UA 372	UA 356	324	UA 304	192				
10						B	UA 200	UA 280	A 320	A 356	372	UR 380	UR 392	A	B	UR 404	UA 380	312	256	168				
11						A	212	A	316	UA 364	UA 368	UA 380	UR 344	UA 344	A	A	A	A	A	A				
12						A	UA 224	A 276	324	A 364	A 372	UA 396	A 404	UA 392	400	376	360	324	264	A				
13						B	224	280	UR 292	R 336	A	A	A	A	A	A	348	316	264	A				
14						B	208	A	316	UR 336	A	A	A	B	A	A	R 344	R 320	UA 236	A				
15						A	UA 200	UA 268	UA 292	A 348	360	R 388	R 392	R 396	A 388	A 368	352	312	A 268	A				
16						B	UA 204	UA 264	UA 312	UA 332	A 360	UA 392	UA 388	UR 400	UA 388	364	A 340	A 292	232	B				
17						A	216	A 264	308	332	UA 364	R	R	R	UR 388	A 372	R 336	304	A 268	A				
18						B	200	UA 252	UA 296	UA 316	A	UA 348	A	A	A	392	340	304	UA 236	A				
19						B	UA 200	A 268	316	UA 332	UA 344	UA 372	A	A 372	UA 368	B	B	UA 316	268	184				
20						B	UA 176	UA 256	UA 300	UA 312	UA 364	UA 368	UA 376	R 376	UA 376	UA 360	UA 336	UA 296	A 244	B				
21						A	UA 188	A 252	UA 304	324	UA 344	UA 372	A 380	376	A 372	UA 364	A 332	292	UA 224	B				
22						B	212	240	300	328	UR 340	A 332	A 380	R 340	A 368	A 352	A 332	UA 300	UA 244	A				
23						B	B	UA 260	UA 312	UA 348	UA 360	UA 372	UA 376	UA 372	UA 364	UA 360	UA 324	UA 280	A	A				
24						A	200	UA 264	UA 316	A 336	UA 360	UA 364	UA 380	UA 380	UA 368	A	UA 368	UA 344	UA 248	B				
25						A	UA 176	UA 268	A 300	A 320	UA 380	UA 384	UA 380	A 372	372	364	320	UA 292	UA 248	B				
26							A	A 260	A 316	324	UA 328	A	A	UA 388	UA 388	380	A 352	304	UA 256	A				
27							UA 200	A 264	UA 300	UA 316	UA 348	UA 340	UA 384	A	A 376	UA 388	UA 348	304	240	B				
28							A	UA 260	UA 316	UA 352	UA 348	UA 364	A	A	A	UA 376	352	316	UA 272	A				
29							216	284	UA 324	UA 356	UA 364	UA 372	UA 368	UA 368	A	UA 352	364	312	252	B				
30							A 192	R 268	A	UA 328	A	A	A	UA 388	A	A	A	312	UA 248	A				
31							180	UA 248	292	A	UA 340	A	A	UA 324	A 400	372	344	304	UA 244	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							27	29	30	28	25	20	17	17	18	22	27	29	28	5				
MED							204	UA 268	A 316	UA 336	UA 360	UA 372	UA 380	UA 376	UA 384	372	348	312	UA 252	172				
U Q							216	278	A 320	A 358	UA 372	UA 384	UA 394	UA 388	UA 396	380	U 360	318	A 268	188				
L Q							UA 196	UA 260	UA 300	A 328	UA 346	UA 364	UA 376	UA 368	UA 372	A 364	A 336	UA 302	UA 242	162				

JUL. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	J A 20	E B 16	J A 16	20	J A 16	J A 18	J A 37	J A 39	J A 42	J A 64	J A 55	J A 123	J A 200	J A 75	44	J A 89	J A 85	J A 64	J A 74	J A 78	J A 26	J A 58	J A 42	J A 75
2	J A 26	J A 84	J A 46	J A 42	J A 39	J A 43	24	J A 53	34	J A 67	70	J A 56	J A 96	J A 87	J A 71	46	41	J A 50	J A 37	18	J A 27	J A 62	J A 62	J A 42
3	J A 52	J A 27	J A 18	J A 16	J A 16	E B 16	27	34	J A 47	42	J A 64	J A 96	54	J A 49	J A 53	42	40	35	J A 50	J A 82	J A 46	J A 72	J A 43	J A 47
4	J A 52	J A 26	J A 40	J A 25	19	E B 16	27	34	38	J A 44	J A 74	J A 78	J A 52	J A 69	J A 108	G	G	44	J A 46	26	J A 47	J A 50	J A 45	J A 22
5	J A 74	J A 63	J A 53	J A 50	J A 45	J A 18	J A 31	J A 39	J A 53	35	39	40	E B 58	E B 56	46	55	J A 59	40	J A 61	J A 35	J A 25	18	J A 28	J A 32
6	J A 32	J A 32	J A 27	J A 23	J A 29	20	J A 32	J A 42	J A 49	52	J A 59	J A 78	J A 140	J A 88	75	J A 55	G 37	85	J A 72	J A 52	J A 48	J A 72	J A 52	J A 65
7	J A 37	J A 46	J A 28	J A 69	J A 30	J A 29	J A 32	32	J A 42	J A 44	64	48	42	E B 57	36	J A 48	G	38	J A 46	J A 43	J A 41	J A 43	J A 46	J A 32
8	J A 51	J A 52	J A 108	J A 52	J A 24	J A 19	J A 27	J A 30	38	J A 55	J A 84	56	J A 68	J A 100	J A 68	51	G	35	J A 32	J A 50	54	J A 72	J A 43	J A 27
9	J A 52	J A 52	J A 29	J A 29	J A 51	J A 24	29	35	J A 46	J A 44	50	50	56	J A 70	J A 60	J A 73	J A 110	G	32	G	28	J A 23	J A 64	65
10	J A 51	J A 37	J A 23	J A 74	J A 31	J A 50	28	J A 41	J A 49	J A 74	J A 167	66	G	G	38	46	41	40	J A 46	J A 40	20	J A 26	J A 40	J A 66
11	J A 37	J A 62	J A 44	J A 40	J A 40	J A 25	24	J A 52	J A 77	J A 85	J A 138	J A 105	42	J A 47	J A 54	J A 51	J A 63	J A 54	J A 50	J A 54	J A 37	J A 38	J A 37	J A 37
12	J A 25	J A 37	J A 40	J A 30	J A 29	J A 30	J A 36	33	36	44	J A 62	J A 116	J A 71	J A 64	J A 54	J A 79	J A 53	J A 63	J A 39	J A 64	J A 60	J A 62	42	19
13	J A 19	J A 23	J A E 16	B E 16	B E 16	B E 16	G	32	34	38	J A 46	44	44	35	41	39	42	J A 41	J A 61	J A 74	J A 81	J A 51	J A 43	J A 26
14	J A 24	J A 18	J A E 16	B E 16	B E 16	B E 16	B J 28	A J 44	A 33	41	34	33	40	E B 41	48	44	G 27	G 21	26	23	J A 22	J A 25	J A 50	J A 45
15	J A 38	J A 39	J A 32	J A 29	J A 36	J A 28	J A 49	J A 42	40	J A 118	54	46	J A 57	47	J A 56	40	J A 46	40	J A 43	J A 41	20	E B 16	J A 27	J A 22
16	J A 36	J A 52	J A 52	J A 45	J A 26	J A 23	J A 30	30	35	35	40	45	44	43	48	40	41	J A 59	J A 41	J A 38	J A 19	J A 70	J A 32	J A 22
17	J A 62	J A 37	J A 30	J A 49	J A 168	J A 142	J A 32	J A 52	J A 38	J A 48	J A 65	G	G	G	43	48	J A 76	J A 71	J A 34	J A 31	J A 24	J A 53	J A 30	J A 27
18	J A 48	J A 21	18	19	22	E B 16	23	J A 43	35	34	J A 48	J A 68	52	38	J A 43	J A 60	J A 97	J A 59	J A 85	J A 50	J A 76	J A 40	21	20
19	J A 43	E B 16	J A 27	J A 21	J A 22	J A 23	J A 27	J A 35	J A 42	36	38	42	J A 54	J A 86	J A 114	B	E B 55	35	44	G	J A 40	J A 28	J A 30	J A 20
20	J A 19	J A 31	J A 33	J A 28	J A 26	J A 22	J A 22	J A 43	32	32	38	40	41	44	J A 57	J A 76	J A 52	J A 52	J A 37	J A 29	J A 42	J A 82	J A 40	J A 46
21	J A 46	J A 61	J A 62	J A 26	J A 26	J A 20	J A 44	J A 79	J A 110	J A 43	J A 43	J A 64	J A 71	39	J A 65	J A 70	J A 72	J A 115	J A 64	J A 101	J A 32	39	46	38
22	J A 30	J A 21	J A 44	19	E B 16	E B 16	23	33	34	42	G	34	J A 55	47	J A 80	J A 52	53	J A 67	J A 62	59	J A 62	46	30	41
23	J A 26	J A 28	J A 27	18	J A 18	E B 16	J A 24	J A 37	J A 49	40	J A 67	J A 88	75	J A 73	J A 62	41	J A 48	J A 70	J A 60	J A 87	J A 46	J A 38	J A 25	J A 70
24	J A 62	J A 86	J A 66	J A 54	J A 33	J A 39	22	34	J A 65	J A 48	J A 57	J A 77	J A 70	J A 67	40	J A 58	J A 69	J A 62	J A 166	J A 76	J A 51	J A 71	J A 53	J A 44
25	J A 52	J A 50	J A 51	J A 53	J A 34	J A 27	J A 49	J A 51	J A 66	J A 61	J A 55	J A 108	J A 88	J A 66	41	48	J A 56	J A 38	J A 47	J A 28	J A 24	J A 17	J A 20	E B 16
26	J A 24	J A 19	J A 26	22	E B 16	J A 21	23	J A 34	J A 46	J A 74	J A 109	J A 66	J A 35	J A 66	47	46	J A 46	36	J A 40	J A 33	J A 51	J A 39	J A 40	J A 41
27	J A 62	J A 66	J A 37	22	21	J A 24	J A 37	J A 48	J A 52	J A 51	J A 59	J A 89	J A 74	J A 62	J A 67	52	40	J A 54	J A 56	J A 87	J A 65	J A 52	J A 65	J A 22
28	J A 22	18	E B 16	J A 25	22	J A 23	J A 31	J A 37	38	J A 45	J A 65	J A 61	J A 48	J A 68	30	39	40	J A 57	J A 51	J A 70	J A 32	J A 37	J A 46	J A 72
29	J A 60	21	J A 52	J A 26	J A 30	J A 20	28	32	38	39	40	J A 58	J A 48	J A 61	60	J A 44	44	J A 112	J A 88	J A 52	J A 43	J A 32	J A 30	J A 46
30	J A 52	J A 32	J A 18	J A E 16	B E 16	B E 16	B G 18	G 26	38	36	40	39	40	43	45	J A 43	40	J A 58	J A 52	J A 144	J A 116	J A 52	J A 42	J A 31
31	J A 30	J A 26	J A 16	J A 20	J A 19	E B 16	J A 31	30	35	J A 50	J A 46	J A 49	59	J A 52	J A 68	J A 77	J A 88	J A 71	J A 114	J A 110	J A 144	J A 84	J A 62	J A 65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	J A 38	J A 32	J A 30	J A 26	J A 26	J A 21	J A 28	J A 37	J A 40	J A 44	J A 55	J A 58	54	J A 57	J A 54	48	46	J A 54	J A 50	J A 50	J A 42	J A 46	J A 42	J A 38
U Q	J A 52	J A 52	J A 46	J A 45	J A 33	J A 27	J A 32	J A 43	J A 49	J A 55	J A 65	J A 78	J A 71	J A 69	J A 67	J A 58	J A 63	J A 64	J A 62	J A 76	J A 54	J A 62	J A 46	J A 47
L Q	J A 26	21	18	20	E B 18	E B 16	24	33	35	39	40	44	42	43	43	43	G 40	38	J A 40	31	J A 26	J A 32	J A 30	J A 22

JUL. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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 16	E B 16	E B 16	E B 16	E B 16	E B 16	29	30	35	40	52	A A 123	A A 200	A A 75	U Y 44	61	38	61	31	A A 78	24	39	26	18
2	E B 16	16	31	20	24	31	24	50	34	61	66	53	A A 96	A A 87	A A 71	44	39	44	35	18	21	19	29	21
3	38	E B 16	E B 16	E B 16	E B 16	E B 16	24	32	41	U Y 42	60	A A 96	54	46	43	U Y 42	39	35	50	A	40	60	32	34
4	37	E B 16	25	E B 16	E B 16	E B 16	26	32	37	41	A A 74	A A 78	52	68	A A 108	G	G	41	37	25	44	30	32	20
5	53	21	32	24	30	E B 16	24	34	46	U Y 35	U Y 39	U Y 40	E B 58	E B 56	46	50	54	35	33	33	E B 16	E B 16	17	20
6	23	30	21	19	20	E B 16	29	39	47	47	56	A A 78	A A 140	71	72	54	G 37	83	38	44	43	28	E B 16	48
7	20	30	17	26	22	22	28	30	37	42	59	45	U Y 42	E B 57	U Y 36	42	G	36	36	28	36	29	31	20
8	17	39	20	31	E B 16	E B 16	24	30	37	44	A A 84	56	61	46	57	44	G	U Y 35	G 28	46	52	48	25	E B 16
9	20	36	E B 16	18	E B 16	E B 16	28	34	44	43	49	50	U Y 56	68	56	59	A A 110	G	G 28	G	24	20	20	16
10	18	16	20	39	E B 16	18	24	30	40	A A 74	A A 167	61	G	G	U Y 38	U Y 46	41	36	31	38	E B 16	20	E B 16	20
11	20	24	35	28	21	18	22	42	A A 77	A A 85	44	A A 105	42	47	50	45	59	43	34	39	27	31	36	33
12	20	18	28	25	25	20	29	32	36	41	40	55	60	A A 64	52	47	39	58	28	25	23	39	38	E B 16
13	17	19	E B 16	E B 16	E B 16	E B 16	G	32	U Y 34	U Y 38	41	43	U Y 44	U Y 35	U Y 41	38	41	41	30	46	25	31	16	19
14	17	16	E B 16	E B 16	E B 16	E B 16	22	28	33	40	U Y 34	U Y 33	U Y 40	E B 41	U Y 48	41	G 27	G 21	26	20	18	E B 16	E B 16	24
15	20	E B 16	20	20	E B 16	E B 16	28	40	37	A A 118	52	45	53	43	53	40	40	36	31	24	E B 16	E B 16	26	21
16	36	40	29	32	19	16	24	28	33	U Y 35	40	42	43	41	42	40	U Y 41	45	41	30	E B 16	A A 70	E B 16	E B 16
17	E B 16	E B 16	24	40	22	19	22	36	33	40	40	G	G	G	43	45	56	39	30	30	21	25	20	20
18	20	E B 16	E B 16	E B 16	E B 16	E B 16	23	28	35	U Y 34	46	46	48	U Y 38	43	58	A A 97	58	68	31	43	29	21	E B 16
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	34	42	36	U Y 38	42	48	A A 86	A A 114	B	E B 55	U Y 35	40	G	35	23	19	E B 16
20	17	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	32	U Y 32	38	40	41	42	G 37	58	37	33	30	23	30	E B 16	E B 16	18
21	E B 16	37	32	17	E B 16	E B 16	26	52	49	37	39	43	49	39	63	61	51	38	53	46	E B 16	E B 16	24	30
22	18	18	E B 16	E B 16	E B 16	E B 16	22	31	34	39	G	U Y 34	A A 55	40	A A 80	52	48	52	48	56	25	19	E B 16	22
23	20	18	25	E B 16	E B 16	E B 16	20	28	35	36	46	A A 88	74	66	56	40	46	42	37	A A 87	21	24	22	20
24	E B 16	A A 86	16	25	22	24	21	31	45	39	55	A A 77	44	44	U Y 40	49	A A 69	54	A A 166	A A 76	39	28	37	36
25	23	38	38	A A 53	24	17	29	28	44	41	43	51	55	64	41	44	36	32	30	18	E B 16	E B 16	E B 16	E B 16
26	19	E B 16	20	21	E B 16	16	22	33	37	A A 74	A A 109	54	A A 35	59	47	45	42	33	33	20	25	E B 16	20	30
27	41	46	18	E B 16	E B 16	E B 16	25	37	40	38	52	A A 89	A A 74	61	61	48	38	53	45	52	35	36	23	E B 16
28	17	E B 16	E B 16	E B 16	E B 16	E B 16	31	33	35	41	50	58	46	46	U Y 30	39	37	47	50	70	E B 16	21	25	53
29	32	E B 16	24	17	21	17	28	29	36	38	40	55	A A 48	60	58	44	42	A A 112	A A 88	46	33	E B 16	19	21
30	20	16	E B 16	E B 16	E B 16	E B 16	G 18	G 26	32	36	40	U Y 39	U Y 40	43	40	39	39	48	32	26	A A 116	36	26	22
31	20	E B 16	E B 16	E B 16	E B 16	E B 16	28	30	34	48	46	46	55	52	68	A A 77	A A 88	A A 71	46	A A 110	50	46	36	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	30	31	31	31	31
MED	20	16	20	17	E B 16	E B 16	24	32	37	40	46	51	48	46	48	45	40	41	35	32	25	25	22	20
U Q	23	30	25	25	21	17	28	34	42	44	56	A A 77	58	64	61	52	54	53	46	46	39	36	29	30
L Q	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	34	37	40	42	42	41	U Y 41	41	G 37	35	30	24	E B 18	E B 16	E B 16	E B 16

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	16	16	16	16	16	14	16	16	20	23	22	27	22	26	24	22	21	17	16	14	16	16	16	16
2	16	16	16	16	16	16	16	16	20	22	29	24	24	41	24	22	20	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	17	39	30	26	30	30	29	23	22	18	16	14	15	16	16	16
4	16	16	16	16	16	16	15	16	21	21	29	39	32	41	40	22	22	20	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	19	31	35	29	58	56	41	29	40	24	17	16	16	16	16	16
6	16	16	16	16	16	16	16	19	20	20	29	40	42	37	40	30	25	20	16	16	16	16	16	16
7	16	16	16	16	16	14	16	17	20	24	30	28	41	57	25	26	24	19	15	15	16	16	16	16
8	16	16	16	16	16	16	16	17	19	21	20	25	39	42	31	37	24	18	16	16	16	16	16	16
9	16	16	16	16	16	16	15	16	20	21	29	32	32	42	28	26	19	17	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	15	21	30	29	32	32	37	27	24	16	15	16	16	16	16	16
11	16	16	16	16	16	16	16	16	19	21	25	26	26	24	28	25	21	17	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	19	21	26	27	28	24	24	26	18	20	16	16	15	16	16	16
13	16	16	16	16	16	16	16	16	22	24	28	29	31	29	32	23	20	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	18	20	27	30	27	41	38	25	20	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	16	19	21	23	24	20	23	20	20	16	16	14	16	16	16	16
16	16	16	16	16	16	16	16	16	16	21	21	29	32	28	33	20	20	17	17	16	16	16	16	16
17	16	16	16	16	16	16	16	16	18	20	22	30	29	32	27	21	20	16	16	14	16	16	16	16
18	16	16	16	16	16	16	16	16	21	22	33	26	30	33	26	25	20	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	20	22	29	28	37	32	31	B	55	25	16	16	14	16	16	16
20	16	16	16	16	16	16	15	16	21	20	24	28	20	32	29	20	22	20	16	15	16	16	16	16
21	16	16	16	16	16	16	16	16	16	16	20	27	33	29	25	21	18	16	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	15	17	17	22	22	26	22	25	19	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	16	24	21	24	19	24	20	18	17	16	16	16	16	16	16
24	16	E C 23	16	14	16	16	16	16	16	17	18	22	24	25	27	21	19	16	16	16	16	16	16	16
25	16	16	16	16	16	16	15	16	16	16	21	20	20	22	22	24	20	13	16	14	16	16	16	16
26	16	16	16	16	16	16	16	16	16	18	17	21	29	24	32	28	18	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	18	20	23	21	30	27	26	19	16	17	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	19	20	28	20	24	30	22	16	16	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	17	20	24	22	22	24	21	19	23	16	16	16	16	16	16	16
30	16	16	16	16	16	16	15	16	16	16	29	31	37	26	26	24	20	16	13	14	16	16	16	16
31	16	16	16	16	16	16	16	16	16	30	19	30	30	29	26	23	16	16	16	15	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	18	21	24	27	29	29	27	24	20	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	20	22	29	29	32	37	32	26	22	18	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	18	20	23	24	24	24	21	19	16	16	15	16	16	16	16

JUL. 2012 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	R 309	U R 312	R 319	315	282	294	271	288	335	327	311	A	A	A	R 280	306	R	316	305	A	325	287	275	293
2	291	299	297	309	300	301	345	325	283	281	R 297	297	A	A	A	R 305	U R 268	309	R	339	334	298	284	286
3	289	269	276	262	295	R 305	307	325	342	286	271	A	287	294	295	R 313	320	331	310	A	304	309	290	297
4	303	F 301	321	296	308	307	318	320	333	328	A	A	R 290	U R 293	A	R 297	280	R 301	R 321	330	308	281	307	300
5	297	314	309	284	305	303	305	334	351	329	G	R 294	R 304	U R 295	R 313	313	U R 325	R 324	287	302	318	324	295	287
6	274	287	294	297	295	309	331	339	310	304	320	A	A	267	U R 276	R	U R 322	314	U R 329	302	286	300	280	266
7	F 286	F 301	304	295	299	309	327	334	300	R 334	U R 334	G	282	R 302	R 301	289	R 309	R 298	R 314	297	325	311	269	290
8	264	270	324	326	299	302	328	332	308	346	A	286	279	U R 279	U R 268	U R 288	U R 301	294	314	313	315	287	283	291
9	276	F 281	F 332	313	F 290	F 297	278	315	317	U R 331	297	238	U R 270	261	U R 303	293	A	275	297	309	321	R 314	273	293
10	291	263	274	265	F 302	261	265	292	247	A	A		273		U R 302	310	298	309	318	308	304	287	281	275
11	V 286	299	F 281	F 286	288	F 271	269	331	A	A	283	A	R 285	289	298	R 293	R 328	R 341	320	315	312	292	309	298
12	285	288	294	287	293	F 279	324	331	351	298	318	308	316	A	R 302	284	U R 298	309	335	305	313	294	285	283
13	293	303	293	293	293	314	335	343	304	314	317	301	R 318	310	290	289	296	307	337	347	R 331	299	296	294
14	290	289	309	295	295	319	320	322	337	346	335	295	U R 258	R 280	U R 291	R 302	299	R 325	R 325	325	328	316	315	278
15	F 298	F 309	308	F 300	F 311	315	318	317	V 278	A	233	281	R	333	256	308	312	289	R 287	U R 297	O X 331	374	295	289
16	291	312	269	F 257	F 270	272	F 271	242	G	G	R	G	G	G	G	249	267	276	259	320	293	A	261	280
17	266	287	282	284	292	292	272	295	321	345	358	R	286	R 313	R 304	287	R 301	308	298	293	303	307	319	284
18	292	286	312	311	295	311	303	332	316	U R 356	R	310	U R 292	308	R 307	332	A	304	309	304	309	343	316	293
19	288	293	287	V 321	320	297	329	331	342	338	325	330	297	A	A	B	U R 300	R 303	330	U R 338	344	328	312	310
20	308	292	308	305	307	312	323	326	348	333	365	290	293	303	310	305	298	292	297	322	344	F 283	332	F 327
21	300	295	307	300	303	293	281	339	302	304	U R 346	300	U R 326	U R 304	J R	311	327	318	U R 335	344	318	305	312	316
22	309	314	292	F 286	F 293	310	347	371	354	327	R 371	U R 328	A	282	A	R 293	300	318	315	314	336	300	320	304
23	317	332	303	V 302	291	319	345	325	336	344	A	A	R	R 298	R 299	305	312	320	338	A	330	315	307	278
24	293	A	F 279	F 289	F 279	314	343	342	340	352	R 358	A	J R	309	311	292	A	313	A	A	330	321	307	296
25	291	299	286	A	301	294	297	332	346	344	312	335	R	319	278	313	320	319	317	300	313	326	297	306
26	296	308	313	301	292	289	328	339	357	A	A	296	A	290	282	295	304	314	337	345	307	292	287	284
27	280	304	300	302	309	303	316	316	355	323	369	A	A	293	293	R 300	303	324	340	R	334	303	300	325
28	295	290	297	299	315	345	337	370	339	311	329	305	285	294	U R 314	U R 294	297	299	312	320	305	278	278	R 298
29	309	316	286	296	303	306	305	322	351	U R 321	279	R 267	A	298	310	R 316	U R 341	A	A	295	320	294	284	281
30	298	299	296	295	307	318	321	338	358	348	R 317	U R 295	U R 294	R 306	R 302	299	309	326	R	R 331	A	304	288	301
31	273	277	275	294	304	320	330	335	320	344	286	278	287	310	313	A	A	A	320	A	289	275	291	289
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	30	31	31	31	31	30	27	24	21	20	26	26	28	26	29	27	25	30	30	31	31
MED	291	299	297	296	299	305	320	331	336	329	318	295	287	296	300	300	302	309	317	314	318	302	295	293
U Q	298	308	309	302	305	314	330	338	348	344	340	306	R 296	308	307	309	R 320	320	330	330	330	315	309	300
L Q	286	287	286	287	292	294	297	320	308	311	292	280	280	289	282	292	298	300	305	302	307	292	283	284

JUL. 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 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	U L 372	377	A	A	A	A	R 356	A	U R 388	A	L	A				
2							L	A	L	A	A	A	A	A	A	398	348	A	U L 353	514				
3							L	359	380	R	A	A	A	U R 385	U R 391	R	383	L 358	A	A				
4							L	L	L 365	L 367	A	A	A	A	A	U R 428	350	A	L 344	L				
5							L	U L 378	A	L	R 380	U R 426	B	B	376	A	A	U L 353	L					
6							L	L	A	L	A	A	A	A	A	A	R 386	A	L	A				
7							L	L	L	U L 362	A	U R 408	R	B	U R 351	U R 369	359	L 353	L					
8							L	L	L	R 369	A	A	A	U R 355	A	R 372	365	U L 342	U L 361					
9								L 347	L 356	R 355	A	U R 342	A	A	A	A	A	L 340	U L 353	L				
10							331	371	367	A	A	A	R 364	U R 286	H 379	R	347	358	L					
11							L	A	A	A	U R 405	A	U R 404	U R 375	A	U R 379	A	U L 351	U L 372					
12							L	U L 348	L 376	L 365	402	A	A	A	A	A	373	A	U L 351					
13							L	L	L	U L 377	U L 389	U R 404	R	R 417	U R 408	R 373	354	A	L 359					
14							L	L	L 364	423	U L 388	R 431	441	U R 411	R	R 356	369	374	L 360					
15							L	L	413	A	A	U R 342	A	400	A	381	378	L 343	L 321	L				
16							L	342	374	U R 412	U R 382	U R 373	R 390	R 390	R 402	388	A	A	A					
17							330	L 343	368	L	L 387	U R 398	U R 405	375	391	U L 350	A	L	U L 349					
18							L	U L 368	L	399	U R 392	A	R	R 423	356	A	A	A	A					
19							L	L 382	A	L 389	U L 391	411	A	A	A	B	B	Y	A	L				
20							L	U L 387	L 388	U L 399	419	432	U R 433	378	418	A	L 342	U L 341	L 353	L				
21							L	A	A	388	L 419	371	A	R 393	A	A	A	L 343	A					
22								L	404	U L 431	U L 439	R 449	A	A	A	A	A	A	A	A				
23							L	U L 382	L 377	421	A	A	A	A	A	401	A	A	L	A				
24							U L 342	359	A	394	A	A	444	U R 382	Y	A	A	A	A	A				
25							U L 320	L 362	L 390	R 361	R 394	A	A	A	L 392	U R 420	U L 378	351	U L 352	L				
26							L	U L 367	L 384	A	A	A	A	A	A	U R 347	336	L 360	U L 365					
27									U L 373	398	A	A	A	A	A	A	378	A	A					
28								L	L	U R 369	A	A	R 388	U R 385	L 386	U R 401	372	A	A	A				
29								L 350	L 370	382	384	A	A	A	A	382	R 354	A	A					
30							L	L	U L 381	L 388	U R 381	U R 400	U R 407	U R 406	U R 375	361	371	A	U L 358					
31								U L 371	U L 352	A	R 371	U R 399	A	A	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	16	19	21	16	14	9	15	13	16	19	13	14	1				
MED							330	L 364	L 374	388	390	U R 402	R 405	U R 385	386	R 380	369	L 351	U L 353	514				
U Q							336	U L 374	L 384	399	404	R 426	437	R 406	397	U R 400	378	358	U L 360					
L Q							325	L 349	L 367	368	R 383	U R 373	R 389	U R 375	R 366	U R 365	350	L 342	L 351					

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JUL. 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								308	262	260	306	A	A	A	370	328	R	282	274	A				
2							226	284	H 246	400	A 370	336	A	A	A	310	354	314	268	220				
3							304	294	248	384	E A 396	A	384	360	348	320	296	278	288	A				
4							288	256	266	274	A	A	346	356	A	344	350	298	288	248				
5							284	260	246	272	G	370	348	358	318	318	308	304	286					
6							250	242	274	302	294	A	A	E A 428	E A 428	366	292	310	256	278				
7							262	260	288	282	E A 294	G	404	362	328	342	326	320	298					
8							260	250	268	276	A	402	A 416	G 396	396	352	318	304	284					
9								288	286	284	292	522	412	A 386	346	336	A	342	314	282				
10							378	342	492	A	A	A	448	340	344	320	334	308	292					
11							400	280	A	A	418	A	396	362	358	336	302	260	268					
12							272	286	258	366	334	344	342	A	324	344	328	300	268					
13							226	236	290	270	330	352	320	324	348	360	314	290	252					
14							252	236	270	268	278	338	R	400	380	334	310	286	268					
15							278	282	H 226	A	540	360	284	282	450	326	298	310	346	278				
16							400	550	G	G	E A 676	G	G	G	G	544	456	422	462					
17							410	326	292	266	276	R	374	320	332	324	310	310	298					
18							330	268	266	258	R	350	412	326	308	284	A	322	A 370					
19							270	270	256	264	290	316	362	A	A	B	340	302	272	242				
20							244	260	258	264	266	350	358	338	328	338	336	332	294	244				
21							378	260	286	302	264	316	284	320	278	306	296	292	280					
22								226	236	248	252	314	A	400	A	336	304	286	268	280				
23							248	292	276	266	A	A	E A 344	E A 380	346	314	300	292	252	A				
24							272	278	272	286	298	A	388	352	332	380	A	322	A	A				
25							366	266	258	286	310	314	394	320	334	336	316	318	290	264				
26							284	260	244	A	A	394	A	388	378	356	316	290	246					
27									256	298	248	A	A	358	342	338	316	282	260					
28								230	272	322	300	334	352	324	310	340	326	308	266	A 304				
29								298	256	328	438	440	A	372	346	334	318	A	A					
30							276	254	244	264	334	366	360	336	336	320	300	274	260					
31								266	306	A 282	402	424	382	308	318	A	A	A	278	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							24	30	30	27	25	21	23	27	27	29	26	29	29	10				
MED							277	267	266	282	302	352	374	355	343	336	316	304	278	271				
U Q							348	288	286	302	399	413	404	386	370	344	328	316	293	280				
L Q							256	256	256	266	284	335	346	324	328	320	302	288	267	244				

JUL. 2012 h′F2 (KM)

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JUL. 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	258	248	246	214	H 220	252	E A 264	234	214	E A 208		A		A		R	A	E A 224		A 238		A	240	286	340	272
2	260	258	314	256	258	284	228	A	212		A		A		A		A	E A 218	A 250		A 274	134	208	244	310	296
3	354	290	300	310	260	262	240	226	E A 244		R		A		A		E A 250	E A 212		R	A 222	A 230		A	A	292	318	316	304
4	324	262	246	234	236	266	242	208	A 216	A 220			A		A		A		A	172	E A 236		A		250	270	278	288	232
5	308	238	278	300	290	266	234	212		A	E A 252		206	188		B		B	E A 248		A		A	224	E A 238	270	228	230	248	286
6	310	292	276	266	278	266	240	A 242		A	E A 286		A		A		A		A		236		A		A	302	272	268	384
7	308	268	254	286	268	264	234	224	192	238		A	A 208		R		B	E A 274	230		230	230	286	250	260	248	296	266
8	332	338	242	250	244	262	242	218	202	244		A		A		E A 230		A	E A 238		H 216	E A 252	222	262	278	314	292	224
9	264	348	232	260	280	284	228	A 222	E A 276	A 240		A	E A 300		A		A		A		A	234	236	262	248	246	252	284
10	296	320	302	354	Q 274	322	282	238	E A 250		A		A		A 216		A	H 206		R	250	224	252	276	244	270	274	312
11	288	290	332	306	302	314	248	A		A		A		212		166	E A 262		A	E A 244		A	A 234	264	242	284	294	280
12	282	274	286	268	300	300	252	222	224	A 214	A 192		A		A		A		A		E A 226		A	226	268	208	284	316	278
13	288	274	264	264	256	256	210	228	212	230	188	196		R		198	198		H 186		252		A	242	246	234	256	252	260
14	278	280	242	254	270	234	200	212	202	184	226	174	182	176		R		230			212	220	H 202	232	222	212	232	294
15	286	Q 266	262	250	252	246	254	262	210		A	A	288		A		A 202		A		242		224	236	256	266	238	194	266	248
16	312	266	288	362	340	342	284	248	232	E A 218	E A 246	E A 278	E A 256		A 224		E A 236		238		A	A	A	268	248	A	326	292	
17	350	306	290	352	264	298	254	A 270	216	216	202	196	190	208		A 222	E A 286		A	284	220	252	236	248	240	280		
18	290	290	250	228	256	242	H 234	214	200	194	E A 256	A	E A 282		190	E A 246		A	A	A	A	276	272	222	216	258		
19	282	278	290	240	216	270	238	214	A	H 188	216	208		A		A		B	B	Y	A	248	222	222	246	256		
20	266	270	262	254	254	248	222	222	200	194	H 162	H 174	168		224		H 176		A	A 224	A 212	232	A 244	220	258	222	230		
21	234	A 326	288	278	260	286	A 246	A	A	210	178	250		A		H 198		A	A		E A 278	A	250	212	240	252	250		
22	256	244	Q 262	Q 280	Q 276	246	220	238	200	190	H 154	176		A		216		A	A	A	A	A	A	234	242	246	266		
23	242	232	240	242	Q 244	252	224	194	220	192		A	A		A		A		206		A	A	A	A	214	254	272	294	
24	286	A	302	316	308	258	220	E A 242	A	208		A	A		186	220	A		A	A	A	A	A	A	292	240	312	286	
25	286	A 314	336	A	280	272	264	206	E A 252	A 244	A 208		A	A		A		220	E A 220		200	208	222	250	258	228	244	244	
26	268	256	244	264	286	298	244	228	208		A	A	A		A		A		E A 300		E A 298	214	A 246	228	244	262	302	310	
27	330	320	260	254	246	248	240	212	A 240	192		A	A		A		A		A		210		A	240	236	258	282	226	
28	254	272	260	258	248	210	230	208	180	200		A	A	E A 244		238	172		198		224		A	A	230	252	310	340	
29	286	240	294	248	260	256	272	234	220	222	192		A		A		A		E A 244		254		A	A	298	258	224	264	288
30	262	262	262	270	256	230	246	220	194	H 182	184	A 200	H 186		184		184		220		H 210		A	230	238	A	288	290	262	
31	310	292	290	264	266	230	252	214	204		A E A 258	A 206		A		A		A		A		A		A	A	E A 368	E A 376	A 314	296
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	30	31	31	31	28	25	24	16	14	10	15	12	16	19	13	17	23	30	30	31	31
MED	286	274	264	264	260	262	240	222	208	208	197	200	182	207	U 198	U 216	224	227	235	250	240	252	274	280
U Q	310	292	290	286	280	284	252	236	E A 228	A 234	E A 221	250	E A 244	E A 230	E A 241	E A 243	250	244	249	268	260	278	310	294
L Q	264	262	250	250	252	248	228	213	201	193	186	188	182	198	191	212	216	217	224	244	228	240	248	256

JUL. 2012 h′F (KM)

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JUL. 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	110	110	104	102	96	100	96	98	98	96	98	98	106	B				
2						A	120	100	108	98	106	98	98	A	98	100	100	94	94	A				
3						B	106	98	98	B	100	A	A	A	A	98	100	100	102	A				
4						B	112	104	106	102	104	A	102	A	A	100	102	100	100	B				
5						B	B	96	98	A	A	98	B	B	B	108	B	106	102	B				
6						B	104	104	100	100	102	A	A	A	A	A	100	96	92	A				
7						A	B	100	98	98	100	100	B	B	A	A	98	A	A	A				
8						A	126	100	100	96	98	98	B	B	104	A	104	102	102	B				
9						A	116	112	96	96	A	A	102	A	102	100	96	98	104	104				
10						B	108	100	98	98	100	100	102	104	B	100	102	98	98	B				
11						A	112	A	98	98	98	98	88	96	A	A	A	A	A	H				
12						A	114	104	94	94	102	98	100	98	98	100	106	102	102	A				
13						B	108	108	102	100	A	A	A	A	A	A	98	98	112	A				
14						B	112	A	104	106	A	A	A	B	A	A	104	102	102	A				
15						A	104	98	98	96	98	98	98	94	100	98	100	98	98	A				
16						B	106	98	100	98	98	108	104	104	106	98	98	98	98	B				
17						A	120	100	100	98	100	106	104	104	100	100	100	98	104	A				
18						B	104	100	102	100	A	102	A	A	A	96	102	98	100	A				
19						B	108	102	102	102	104	104	A	A	104	B	B	104	114	92				
20						B	110	102	102	102	100	100	90	108	106	98	100	102	108	B				
21						A	108	98	98	94	96	104	A 114	104	104	102	100	98	98	B				
22						B	138	92	104	94	96	96	100	106	102	104	102	100	100	A				
23						B	B	98	96	96	98	94	98	96	96	100	100	100	A	A				
24						A	106	98	94	94	94	96	96	96	98	A	98	104	104	B				
25						A	104	100	94	94	98	94	96	98	100	100	100	98	98	B				
26							A	96	100	98	96	A	A	100	102	104	100	98	98	A				
27							106	98	96	96	98	94	92	A	102	102	100	98	104	B				
28							A	104	100	100	98	100	94	A	A	102	102	104	104	A				
29							114	98	96	96	96	100	96	98	98	96	A	106	96	B				
30							116	112	A	96	A	A	A	102	A	A	A	108	102	A				
31							116	106	96	A	96	A	A	A	A	94	94	96	102	B				
	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	30	28	25	22	19	16	18	22	26	29	28	2				
MED							110	100	99	98	98	99	98	99	101	100	100	98	102	98				
U Q							116	104	102	100	100	100	102	104	104	102	102	102	104					
L Q							106	98	96	96	96	98	96	97	98	98	98	98	98					

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JUL. 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	100	B	98	104	98	116	108	110	106	96	96	94	94	96	124	106	106	104	104	98	98	98	98	96
2	96	104	86	90	90	92	134	100	110	98	98	100	100	108	102	124	122	100	96	96	108	108	108	104
3	102	100	100	100	96	B	112	108	98	102	94	92	94	90	92	122	114	110	100	96	94	90	86	86
4	90	94	88	94	96	B	122	110	106	104	98	98	102	100	98	G	G	122	108	110	104	104	104	96
5	96	94	94	90	94	110	100	96	92	100	102	100	B	B	126	114	108	114	102	98	112	112	96	88
6	92	86	82	82	96	88	108	106	100	100	98	96	96	94	94	94	94	92	92	86	98	100	106	98
7	100	98	100	98	96	98	98	100	98	100	94	98	106	B	100	90	G	90	88	104	100	100	96	94
8	100	94	96	94	94	94	96	98	118	108	102	108	104	144	98	118	G	124	116	100	100	98	98	96
9	96	96	96	92	96	98	122	120	104	108	100	104	102	98	100	100	100	G	128	G	96	94	100	100
10	100	98	108	98	112	110	106	108	104	100	98	104	G	G	106	120	126	110	104	102	104	98	94	98
11	94	92	90	98	90	92	106	106	102	100	100	96	98	96	94	94	94	94	88	84	86	86	94	82
12	82	98	92	92	92	92	92	120	122	112	112	106	106	104	116	106	124	104	108	102	98	96	92	92
13	86	86	B	B	B	B	G	110	122	106	90	94	98	96	100	100	110	106	102	92	88	86	82	84
14	86	82	B	B	B	B	100	88	128	108	100	96	96	B	92	90	92	94	102	92	84	102	102	92
15	88	88	108	104	104	106	100	98	132	100	102	122	116	120	106	112	106	130	104	96	96	B	146	114
16	110	138	108	104	104	104	104	112	112	116	122	114	116	114	118	122	112	104	100	100	104	96	112	128
17	102	102	104	102	102	100	120	102	104	100	98	G	G	G	118	116	104	106	104	96	96	96	96	100
18	94	106	104	94	102	B	104	96	98	100	94	92	90	100	96	106	100	98	98	102	96	98	84	82
19	104	B	100	98	100	118	106	104	102	106	102	102	100	96	96	B	B	108	108	G	84	88	90	90
20	88	98	110	118	114	100	110	110	110	108	110	112	114	108	118	102	104	104	102	100	96	96	98	98
21	98	98	98	98	146	120	104	102	100	106	104	106	106	130	106	102	100	100	98	96	94	100	98	98
22	96	86	100	92	B	B	152	114	116	108	G	108	108	146	102	104	106	98	98	96	94	96	100	92
23	88	86	86	86	84	B	104	102	102	102	98	96	94	94	96	102	96	94	90	90	90	84	84	96
24	102	100	96	94	86	98	114	110	108	106	100	98	102	104	108	92	106	112	100	96	98	94	94	94
25	102	92	92	90	92	110	102	108	102	100	116	108	100	102	118	112	106	106	100	102	96	96	92	B
26	90	92	88	94	B	92	106	104	104	96	94	96	102	96	102	116	110	112	102	94	88	94	88	88
27	92	92	90	88	90	90	100	102	100	100	96	98	94	94	98	108	108	116	100	100	100	98	96	126
28	86	86	B	122	84	86	104	104	106	102	96	94	92	88	106	142	126	106	102	98	100	96	88	96
29	96	96	92	90	84	86	124	120	108	106	106	96	96	92	94	96	130	108	104	102	100	102	100	100
30	96	94	102	B	B	B	102	100	98	98	98	98	106	106	100	94	128	112	104	90	88	86	84	88
31	100	100	94	100	98	B	108	106	106	92	92	92	92	92	110	104	102	100	96	94	92	90	90	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	28	28	26	22	30	31	31	31	30	30	28	26	31	29	27	30	31	29	31	30	31	30
MED	96	94	96	94	96	98	106	106	104	102	98	98	100	99	102	106	106	106	102	96	96	96	96	96
U Q	100	99	101	100	102	110	112	110	110	106	102	106	106	108	110	116	114	112	104	101	100	100	100	100
L Q	90	90	91	91	90	92	102	100	100	100	96	96	95	94	96	98	100	100	98	94	92	94	90	90

JUL. 2012 h'Es (KM)

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F1		F1	F1	F1	C1	C2	CL11	CL11	C2	C2	C2	C2	C2	C1	C2	C1	C3	C1	C9	F3	F5	F4	F3
2	F4	FF13	F3	F3	FQ41	L5	HL11	C3	CL11	C3	C2	C1	C2	C3	C2	CC11	C1	C3	C3	L1	FF31	FF22	FF32	FF31
3	FF61	FF21	F1	F1	F2		C3	C1	C2	L1	C1	L1	L1	L1	L2	C1	CL11	CL11	C3	L4	F5	F4	F5	F3
4	F4	F2	F3	F1	F1		CL21	CL21	CL11	C1	C2	C2	C1	C1	L1			C1	C2	C2	FF61	FF51	FF24	FF22
5	F5	F3	F3	FQ21	FQ31	C2	C2	C2	C2	C1	L1	C1			C1	C1	C1	C1	C2	C3	F1	F1	F3	F2
6	FF23	F2	F2	F5	F3	L1	C2	C1	C1	C1	C1	L1	L2	C2	L2	C1	C1	C4	C4	L5	FF74	FF24	FF22	F6
7	F5	FQ41	F2	FQ31	FQ41	L3	C3	C1	C1	C1	C1	C1	L1		L1	L1		L2	L2	LL22	FF33	FF24	FF22	F3
8	F3	F5	F3	F3	F2	L1	L2	C2	C1	C2	C1	C1	C1	HC11	C2	C1		C1	C1	C5	F4	F5	F4	F3
9	F3	F5	F2	F5	F2	L2	CL21	CL21	C2	C1	CL11	CL11	C1	C1	C1	C2	C2		C1		F1	F4	F3	F3
10	FQ21	F2	F4	F3	F2	C3	C2	C2	C2	C2	C5	C1			C1	C1	C1	C2	C2	C2	F1	F2	F2	F4
11	F3	F4	F6	FF11	F2	L3	L1	CL21	CL41	C3	C1	C1	C1	C1	C1	L1	L2	L2	L3	L5	F5	F2	FF13	F4
12	F3	FF11	FF32	F2	F2	L3	LC22	CL21	H1	C1	CL11	C1	C1	C1	C2	C1	CL11	C2	C2	CQ31	FQ31	F4	F4	F2
13	F1	F1						CL11	C1	C1	L1	L1	L1	L1	L1	L1	C1	C1	LC32	L6	F4	F4	F3	F2
14	F1	F1					L1	L3	CL11	CL11	L1	L1	L1		L1	L1	L1	L1	C1	LH11	F2	FF12	F1	F6
15	F3	FQ21	FF12	FF22	FF11	L2	C3	C2	HC11	C2	C1	C1	C1	C1	C1	C1	C1	C1	C2	L4	F1		F4	F3
16	F8	FF38	F5	F8	FQ41	C2	C2	C2	C1	C1	C1	C1	C1	C1	C1	C1	C1	C2	C3	C2	F2	F7	FQ11	F2
17	FQ31	F2	F6	FF61	FF32	LQ51	LL21	C2	C1	C1	C1				C1	C1	C3	C2	C2	L3	F4	F4	F4	FF13
18	FF31	FF11	F1	F1	F1		C3	C2	C1	C1	C1	C2	C1	L1	L1	C1	CL31	C3	CL31	LL22	FF33	FF31	F1	F1
19	F1		F2	F1	F2	C1	C3	C3	C2	C1	C1	C1	C2	C3	C3			C1	CL21		F6	F4	F4	F2
20	F2	FF12	FF21	FQF11	FF21	L2	C2	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	CL31	C3	F3	F3	FQ21	FQ31
21	F3	F5	F5	F4	FF11	L1	C3	C3	C3	C1	C1	CH11	C1	H1	C1	C2	C2	C2	C5	C6	F3	FQ21	F2	FF22
22	F2	F3	FF22	F1			HL11	C1	CL11	C1		C1	C1	HC11	C2	C1	C2	C4	C4	L6	F4	F3	F2	F3
23	F3	F2	F6	F1	FF22		C2	C2	C1	C1	C2	C2	C2	C3	C2	C1	C3	C2	LL41	L4	F3	F3	F2	FF22
24	FF21	F5	F2	F3	F4	F5	C2	C2	C2	C2	C1	C3	C1	C1	C1	LL21	CL22	CL32	CL61	C7	FF43	FF54	FF44	FF52
25	FFQ32	F6	FQ31	FQ61	F4	LL21	C3	C2	C2	C2	C1	C2	C1	C2	C1	C2	C1	C1	C2	C2	F1	F1	F2	
26	F3	F2	F3	F1		F2	C2	C2	CL21	C2	C2	L1	L1	C3	C1	C1	C2	C2	C3	LL21	FQ41	F3	FQ61	FQ41
27	FQ31	F4	F3	F1	F1	FF11	C3	C3	C2	C2	CL21	C2	C2	L2	C2	C1	C1	C4	CL42	C4	FF44	F3	F3	FF11
28	F2	F1		F1	F1	F1	CL32	C2	C1	C2	C2	C2	C2	L1	L1	HL11	HL11	CL22	C3	LL42	F2	F2	F3	FQ41
29	FQ31	F1	F3	F3	F3	F1	C1	CL12	C1	C1	C1	C2	C1	C2	C2	C1	HL11	CL21	C4	CL71	FF31	FQ11	F2	FF22
30	FF22	FF11	FF12				L1	L1	L2	C1	L1	L1	C1	C1	L1	L1	HL11	CL31	CL32	L4	F5	F4	F6	F4
31	FF24	FF12	FF22	FF11	F2		C5	CL21	C1	C2	C3	L2	C2	C2	CL11	C3	C4	C3	C4	C6	FQ41	FQ31	FQ41	FF24
	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																								

JUL. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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 97	X 117	X 77	X 78	X 71																X 90	X 77	X 76	X 70
2	77	88	78	X 75	69	66															X 77	X 67	X 69	X 70
3	68	65	66	X 65	X 67		75	86													X 84	X 85	X 85	X 90
4	X 89	X 86	79	77	X 76																X 101	X 90	X 88	X 91
5	X 92	X 96	X 79	72	72	71															X 98	X 80	X 74	X 76
6	X 75	X 80	X 80	X 74	X 74																X 84	X 85	X 80	X 76
7	74	X 82	80	X 71	76																X 102	X 71	X 71	X 72
8	X 68	X 68	72	72	66	67	79														X 90	X 81	X 78	X 80
9	78	78	X 68	73	68		72														X 111	X 94	X 92	X 97
10	X 97	X 91	X 92	X 88	X 81	66															X 80	A	X 72	X 68
11	X 66	65	X 65	X 64	59	58															X 116	X 104	X 95	X 90
12	X 75	X 68	X 66	X 62	X 61																X 91	X 71	X 70	X 71
13	X 66	X 63	X 64	X 63	X 64																X 111	X 112	X 96	X 94
14	X 90	92	X 88	X 97	X 94																X 104	X 96	X 86	X 83
15	X 79	X 74	78	71	72	64															X 108	X 96	X 88	X 80
16	X 78	X 80	X 75	X 79	X 86	78	55														X 55	X 52	54	56
17	X 52	56	58	55	55	56															X 102	X 89	X 77	X 78
18	X 77	X 68	X 65	X 68	X 63																X 96	X 88	X 78	X 76
19	X 69	X 71	X 72	X 70	X 71																X 100	X 96	X 91	X 88
20	X 86	X 80	X 76	X 71	X 70	67															X 87	X 76	76	78
21	76	66	60	54	54	49															X 89	X 94	X 86	X 76
22	X 80	X 75	X 63	X 55	64	70															X 91	X 79	X 77	X 78
23	X 78	X 78	X 62	X 56	X 54	X 54															X 77	X 64	X 65	X 71
24	X 66	X 64	65	56	54	54	59														A	X 67	X 65	X 58
25	61	57	51	X 49	X 46	X 46															X 91	X 80	X 71	X 68
26	X 68	X 69	X 66	X 60	X 54	X 51															X 73	X 69	X 66	X 67
27	X 68	X 66	66	65	65	64															X 96	X 88	X 84	80
28	93	85	93	X 101	X 97	82															X 83	X 79	X 75	78
29	A	79	67	65	55	54															X 76	X 70	A	X 66
30	X 66	71	66	66	X 60	X 57															X 84	X 76	X 78	X 80
31	X 76	X 75	X 72	X 67	X 69	X 71															X 81	X 82	X 86	X 86
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	20	5	1													30	30	30	31
MED	X 76	X 75	X 68	X 68	X 67	64	72	86													X 90	X 80	X 78	X 78
U Q	X 80	X 82	78	X 74	X 72	68	77														X 101	X 90	X 86	X 83
L Q	X 68	66	65	X 62	59	54	57														X 83	X 71	X 71	X 70

IONOSPHERIC DATA STATION Okinawa

JUL. 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	V 91	112	71	72	65	61	60	78	92	86	76	84	91	90	89	98	110	100	93	93	84	71	70	R 64
2	F 69	F 78	F 70	69	F 61	F 54	66	64	65	A	A	84	92	100	104	106	98	104	118	96	71	61	63	64
3	F 57	F 54	F 58	59	61	F 58	F 67	F 79	62	66	66	76	76	78	84	91	89	75	71	74	78	79	79	84
4	83	80	F 70	F 69	70	68	67	72	86	68	70	R 79	91	A	99	107	108	110	104	98	95	84	82	85
5	86	V 90	73	F 65	F 62	F 64	F 68	90	85	63	62	73	86	87	87	88	84	85	88	92	92	74	68	70
6	69	R 74	74	68	68	66	76	68	73	71	72	A	72	81	90	106	118	106	86	80	78	79	74	70
7	F 66	76	73	65	F 66	57	56	67	68	73	65	64	70	81	88	94	96	93	92	100	96	65	65	66
8	62	62	F 63	F 62	F 57	F 60	F 70	68	69	73	64	62	69	73	78	86	97	94	92	92	84	75	72	V 74
9	F 68	F 68	62	F 63	F 62	60	64	75	83	V 81	68	63	A	91	98	99	101	103	110	105	105	88	86	91
10	91	85	86	82	75	F 54	59	57	55	58	72	70	78	91	92	94	84	88	84	76	74	A	66	62
11	60	57	59	58	F 51	F 51	51	64	58	59	A	68	A	90	93	110	134	136	130	115	110	98	89	84
12	69	62	60	56	55	57	70	86	74	78	68	67	72	78	88	101	105	111	108	101	85	65	64	65
13	60	57	58	57	58	V 59	59	58	67	73	72	75	85	89	96	J R 105	109	119	118	109	105	106	90	88
14	84	84	82	91	88	79	60	R 67	95	74	58	62	62	70	80	90	100	105	101	98	98	90	80	77
15	73	R 68	F 69	F 61	F 64	F 54	58	61	73	67	63	85	96	85	70	96	111	104	104	108	102	90	82	74
16	72	74	69	73	80	F 68	36	R 42	A	E G 41	U R 46	E G 44	R 51	R	R 50	50	55	52	56	61	V 49	46	F 46	F 48
17	46	F 48	F 49	F 48	F 48	F 47	R 41	R 62	84	66	62	A	76	89	96	105	105	93	92	100	96	83	71	72
18	V 71	62	59	62	57	56	58	67	83	65	H 64	66	71	79	93	96	97	99	104	101	90	82	72	70
19	63	65	66	64	65	55	58	84	71	75	65	65	78	92	R 100	B	98	108	121	111	94	90	85	82
20	80	74	70	65	64	F 59	65	86	76	71	J R 62	J R 60	70	R 81	82	83	84	85	94	94	81	70	F 70	F 68
21	F 67	F 58	54	F 46	F 44	F 42	46	61	68	80	90	A	101	97	R 101	94	95	96	102	87	83	88	80	J R 70
22	R 74	69	57	49	F 53	F 61	72	67	64	57	R 52	E G 50	55	62	74	88	98	100	100	91	85	73	71	72
23	72	72	56	50	48	48	47	63	73	55	66	70	79	84	89	90	99	109	104	97	71	58	59	65
24	60	Z 58	F 53	F 47	F 44	F 46	F 50	69	75	V 60	58	E G 50	64	76	74	72	71	A	66	66	A	U R 61	59	52
25	F 52	F 51	F 43	43	40	40	42	76	62	65	76	61	72	77	79	80	73	68	68	76	85	74	65	R 62
26	R 62	63	60	54	48	45	J R 44	74	69	66	65	59	65	69	75	90	104	116	107	92	67	63	60	61
27	62	60	58	F 55	F 53	52	57	67	73	75	J R 60	R 62	68	78	87	95	110	119	118	108	90	82	78	F 72
28	F 82	F 72	F 82	95	91	F 73	V 70	62	73	74	77	78	J R 86	R 100	98	91	96	104	A	93	77	73	69	F 72
29	A	F 67	F 56	F 53	F 47	F 45	53	69	82	55	58	69	R 71	80	86	84	89	88	83	84	70	R 64	A	60
30	60	F 64	F 56	F 58	54	51	54	72	67	73	69	77	82	90	98	100	103	104	109	82	78	70	72	74
31	70	69	65	61	63	65	60	64	65	61	66	73	80	101	99	A	89	85	88	77	75	76	80	80
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	30	30	29	28	29	29	31	29	31	30	30	31	30	30	30	31
MED	69	68	62	61	61	57	59	67	73	68	65	68	76	84	89	94	98	102	100	93	84	74	72	70
U Q	74	74	70	68	65	61	67	75	82	74	71	76	86	90	98	100	105	108	108	101	95	84	80	77
L Q	62	60	F 57	54	F 51	51	51	63	67	61	62	62	70	78	80	88	89	88	88	82	77	65	65	64

JUL. 2012 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	488	488	524	L 512	504	A	U A 476	A	L 444	A					
2							L	L	A	A	A	A	492	492	U A 496	480	R 456	A	A					
3							L	L	428		U L 508	488	504	500	492	A	468	U L 464	L	L				
4								U L 436	U L 456	L	A	A	U A 536	A	508	492	484	456	L					
5							L	A	A	L	548	512	R 504	U B 524	R 504	U A 492	U L 516	L 468	U L 428	L				
6									U L 468	U L 516	U L 532	A	U A 544	U A 548	U A 512	A	A	A	A	A				
7									L	L 504	A	L 552	512	512	R 512	492	492	460	L	L				
8								L	L	A	500	L	508	U R 528	504	U L 480	476	472	U L 432	L				
9								A	484	A	A	A	A	A	A	504	508	464	U L 472					
10							F 316	400	436	476	488	504	508	500	540	508	508	L 464	A					
11								412	L	U L 492	A	516	A	492	A	A	L 480	456	L					
12							L	L	444	H 496	496	U R 508	500	R 504	U A 536	A	484	L 464	L 412					
13									L	U L 524	520	464	484	504	488	A	484	452	A					
14									460	472	L 504	500	508	508	U A 528	488	468	452	L 412	L				
15								A	492	U L 520	504	476	500	A	U L 520	484	484	L 476	L 412	L				
16								U L 356	A	U R 408	R 420	U R 444	452	R 456	460	452	432	A	U L 380					
17							L	A	A	A	U L 528	A	U A 508	492	504	468	L 484	448	L					
18								L	436	484	L	508	504	516	464	500	480	468	L 420					
19							L	L	U L 436	428	U L 496	L 500	512	U A 500	480	B	E B	444	396	L				
20								L	L	460	L	492	500	496	464	484	444	432	396	L				
21								L	U L 432	L 504	464	A	480	A	A	A	A	U L 432	L 384					
22								L	L	444	H 488	496	U A 476	A	U A 488	A	A	A	A					
23								L	420	L	468	484	A	A	A	A	U A 472	A	380					
24								396	440	U L 452	492	504	484	480	A	A	U A 476	A	A					
25								A	L 552	L 480	A	L 488	492	484	496	468	472	444	U L 400	L				
26								U L 396	L	L 480	488	L	496	R 508	488	480	460	440	A					
27								L	U L 452	U L 476	L	492	500	492	U L 508	A	A	464	A	L				
28								L	U L 452	A	A	A	A	U A 540	500	A	480	A	A					
29								L	L	L	A	500	A	U A 524	480	L 480	L	A	U L 432	L				
30								L	L	U L 532	U L 552	U L 544	516	516	500	A	R 480	A						
31								L	L 440	L	A	U L 528	508	U A 532	A	A	A	U A 452	A 408	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	6	17	20	19	22	26	25	24	17	23	22	15					
MED							F 316	398	444	L 482	496	500	504	504	500	484	480	456	L 412					
U Q								412	464	U L 504	U L 520	512	508	U A 520	U 510	492	484	L 464	U L 428					
L Q								396	436	466	488	488	492	492	488	478	468	444	396					

JUL. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	A	280	A	A	UR372	UR384	UR380	UR384	R376	A	340	304	248	A				
2						A	A	A	A	A	A	A	A	UR400	UR380	UR376	R	UA304	248	A				
3						A	A	A	A	A	A	A	A	A	A	A	364	A	A252	A				
4						B	172	268	A	A	A	A	A	A	B	388	R372	324	260	192				
5						A	A	A	A	A	A	R	B	B	B	UA408	B	316	A268	A				
6						B	A	A276	A	A	A	A	A	A	B	A	A	A	A	A				
7						A	A	A	A	A	A	A	452	R	UR380	UR388	UR364	324	A	A				
8						A	UA216	256	A	A	UA372	UR400	B	B	B	UR392	A	324	272	A				
9						B	A	A	A	UA360	B	A	A	A	A	R	352	336	288	A				
10						B	A	256	312	352	UR388	R376	B	B	B	UR372	UR364	312	UA268	A				
11						B	A	A	A	A	A	A	A	A	A	A	A	312	A	A				
12						A	184	A	320	328	UR368	UR384	UR380	UR384	UR376	UR368	UA336	A	A	A				
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						B	164	244	A	R336	R	UR388	R408	B	A	R392	348	312	A252	A				
15						A	168	A244	300	352	UR352	UR384	396	R388	UR396	A380	A348	316	264	A				
16						B	A	A	296	336	UR360	376	R376	R384	B	364	336	288	240	A				
17						A	A	UA248	A	A	R356	A	A	B	UR368	R368	344	296	UA244	A				
18						B	A	268	A	A	A	A	A	UR388	UR376	380	340	304	A	A				
19						A	A	A	316	R328	R380	360	B	364	A	B	B	A	280	A				
20							A	236	296	A	A	R360	A	A	A	A	336	A	A	A				
21							A	UA228	292	320	A	A	UR372	R372	364	364	328	296	A	A				
22							A	240	296	324	UR316	UR400	B	UR380	UR392	344	336	A	A	A				
23							188	UA244	A	A336	UA348	A	A	A	A	A	A	A	A	A				
24							A	240	A300	UA332	A	A	A	A	A	UR368	336	304	244	A				
25							A	A	A	332	360	UR384	A	A	384	R372	R328	A	A	A				
26							A	UA228	296	344	UR348	R344	A	A	A	A	A	A	A	A				
27							A	248	UA312	A	A	A	UR396	B	B	B	360	A	A	B				
28							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
29							A	260	304	332	A	A	A	A	B	376	UR368	312	260	A				
30							A	248	300	R340	R368	424	B	B	R392	372	356	320	UA236	A				
31							164	236	A288	B	A	A	A	UR396	R372	UA368	A	UA300	A240	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	19	14	15	13	13	8	10	12	19	20	19	17	1				
MED							172	248	300	336	UR360	UR384	388	R384	UR378	372	346	312	252	192				
U Q							188	260	312	344	UR372	UR394	402	UR388	R388	UR388	R362	320	268					
L Q							164	240	296	328	UR350	368	UR378	R380	R374	368	336	304	A244					

JUL. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 33	J A 28	J A 43	J A 24	J A 23	J A 14	J A 28	G	J A 44	38	G	G	G	43	J A 83	J A 53	J A 68	37	J A 49	J A 76	J A 98	J A 50	J A 56	J A 80
2	J A 84	J A 49	J A 56	J A 54	J A 48	J A 28	J A 44	J A 92	J A 65	J A 120	J A 104	57	J A 49	G	50	J A 44	G	J A 56	J A 44	J A 43	J A 38	J A 40	J A 37	J A 59
3	J A 36	J A 48	J A 37	J A 38	J A 48	J A 37	J A 28	J A 45	J A 40	47	45	46	J A 73	J A 62	J A 78	J A 73	41	J A 41	J A 33	J A 30	J A 30	J A 20	J A 17	J A 18
4	J A 17	20	E B 14	E B 13	18	E B 13	20	30	J A J 34	A J 44	A J 62	A J 74	A J 55	A J 121	E B 47	51	46	37	G 25	26	J A J 22	A J 22	A J 26	A J 51
5	J A 52	J A 59	J A 66	J A 44	J A 46	J A 35	J A 26	J A 52	J A 60	J A 49	J A 42	G 37	E B 44	E B 52	46	J A 54	E B J 43	A 42	33	J A 22	J A J 19	A J 24	A J 21	A J 48
6	J A 38	J A 34	J A 28	J A 38	J A 52	22	J A 30	J A 87	J A 56	J A 52	J A 54	J A 73	54	J A 60	J A 52	J A 119	J A J 84	A J 88	A J 69	A J 46	J A J 76	A J 61	A J 54	A J 52
7	J A 29	J A 32	J A 54	J A 49	J A 49	J A 29	J A 34	J A 58	J A 50	J A 42	J A 53	J A 45	48	G	G	G	G 31	J A 34	J A 49	J A 34	J A J 30	A J 65	A J 48	A J 46
8	J A 44	E B 14	J A 54	J A 49	J A 49	J A 49	26	32	J A J 44	A 59	46	47	E B 45	48	E B 46	49	J A 52	G	32	J A 26	19	J A J 46	A J 44	A J 42
9	J A 28	J A 47	J A 22	J A 51	J A 42	J A 21	28	68	J A 44	77	76	63	J A J 104	A J 94	79	G	G	G	G	J A 24	E B 14	J A 44	A J 22	A J 22
10	J A 26	J A 47	J A 42	J A 18	J A 24	J A 18	22	34	35	44	G	G	E B 44	E B 44	E B 43	G	J A J 44	A J 39	A J 61	A J 40	J A J 74	A J 86	A J 60	A J 52
11	J A 62	J A 44	J A 32	J A 42	J A 41	J A 28	28	48	J A 44	98	J A 132	57	J A J 102	A J 67	J A 106	J A 86	J A J 47	A J 39	A J 48	A J 50	J A J 32	A J 30	A J 22	A J 29
12	J A 22	J A 28	J A 21	J A 21	J A 30	J A 28	20	J A 51	J A 41	36	J A 80	J A 84	J A J 57	A J 88	A J 70	A J 64	J A J 88	A J 43	A J 40	A J 51	18	18	J A J 30	A J 33
13	J A 42	J A 22	J A 17	E B 14	J A 16	19	J A 29	J A 35	J A 36	J A 42	43	J A 42	J A 42	J A J 45	A J 45	A J 64	J A J 58	A J 45	A J 55	A J 182	J A J 48	A J 50	A J 22	22
14	19	18	E B 14	J A 29	E B 14	E B 14	20	29	37	J A 36	43	J A 46	G	E B 44	52	J A 36	G	35	27	J A 19	J A J 24	A 19	E B 13	18
15	J A 16	J A 35	E B 14	J A 38	J A 52	J A 32	J A 22	J A 45	G	40	G	44	45	J A 85	47	J A 51	J A 54	38	G	J A 27	J A J 19	A J 20	A J 19	A J 22
16	J A 34	J A 46	J A 41	J A 37	J A 54	J A 16	J A 49	J A 61	J A 51	40	G	45	44	45	51	43	40	J A 45	28	J A 33	E B 14	E B 14	18	18
17	18	J A 32	J A 33	J A 18	J A 21	J A 56	J A 27	J A 62	J A 130	J A 118	G	J A 67	J A 56	E B 42	G	G	J A J 44	A J 40	A J 41	A J 38	J A J 44	A J 54	A J 50	A J 84
18	J A 22	J A 19	J A 58	J A 19	J A 22	J A 28	19	G 25	J A 34	J A 38	J A 43	41	J A 54	G	G	49	J A J 59	A J 42	A J 30	A 22	J A J 22	A 22	19	J A 43
19	J A 45	J A 21	J A 35	J A 36	J A 24	J A 27	J A 29	J A 44	G	G 33	G	J A 45	J A 48	J A 57	J A 47	B	E B 50	J A 40	G 26	J A 25	J A J 30	A J 30	A J 37	A J 27
20	20	J A 17	19	J A 18	J A J 16	A J 22	A J 21	A 28	32	J A 54	J A 47	A J 44	A J 58	A J 55	A J 72	A J 53	A J J 43	A J 67	A J 44	A J 35	A J 68	A J 40	A J 35	A J 52
21	J A 36	J A 30	J A 32	J A 47	J A 30	J A 29	J A 28	J A 86	38	J A 53	J A J 72	A J 116	45	J A 73	J A 54	J A 62	J A J 88	A J 39	A J 66	A J 66	J A J 18	A J 52	A J 55	A J 62
22	J A 37	E B 14	J A 20	J A 22	J A 19	E B 14	J A 40	26	32	J A 41	34	48	48	J A 58	49	J A 69	J A J 53	A J 66	A J 57	A J 72	J A J 111	A J 54	A J 44	A J 54
23	J A 25	J A 32	J A 22	J A 21	19	J A 20	G 18	28	J A 45	36	42	J A 52	J A J 62	A J 104	A J 72	A J 74	J A J 54	A J 83	A J 34	A J 56	J A J 34	A J 39	A J 32	A J 25
24	E B 14	E B 14	J A 19	J A J 20	A J 20	A E B 14	J A 45	29	J A 71	J A J 51	A J 49	A J 60	A J 63	A J 46	A J 51	A J 96	A J J 72	A J 75	A J 50	A J 54	J A J 84	A J 65	A J 55	A J 28
25	J A 28	J A J 63	A J 54	A J 59	A J 51	A J 37	A J 47	A J 66	A J 106	A J 45	A J 58	A J 54	A J 64	A J 72	A J 44	A J 44	A J J 58	A J 52	A J 80	A J 62	J A J 32	A J 62	A J 56	A J 30
26	J A 20	J A 20	19	E B 14	J A 24	J A 25	J A 32	28	33	G 29	J A 52	J A 56	J A 82	J A 50	J A 40	38	42	J A 49	J A 71	J A 55	J A J 18	A J 17	A J 21	A J 18
27	J A 16	19	J A 32	J A J 32	A J 24	E B 14	20	30	J A J 97	A J 49	45	J A 54	47	46	46	64	J A J 52	A J 42	A J 58	E B 18	J A J 22	A J 28	A J 95	A J 76
28	J A J 47	A J 48	A J 31	A J 27	A J 45	18	18	J A 30	J A J 53	A J 79	A J 56	A J 64	A J 70	A J 68	50	J A 80	J A J 66	A J 60	A J 97	A J 124	J A J 62	A J 36	A J 46	20
29	J A J 89	A J 58	A J 28	A J 22	A J 29	A J 25	A J 23	30	J A J 44	A J 42	55	54	J A J 57	A J 53	E B J 44	A J 50	J A J 52	A J 60	A J 42	A J 22	J A J 42	A J 60	A J 76	A J 50
30	J A J 96	A J 65	A J 54	A J 42	E B 14	J A 22	J A 17	28	G 26	G	G	45	E B 43	E B 42	44	J A 60	J A J 60	A J 69	A J 43	A J 54	J A J 56	A J 56	A J 84	A J 22
31	J A 28	18	J A 21	J A 18	A J 20	18	G	30	37	E B 38	J A 62	J A 53	46	54	J A 104	J A 122	J A J 54	A J 72	A J 72	A J 22	J A J 28	A J 55	A J 56	A J 49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	J A J 29	A J 32	A J 32	A J 29	A J 24	A J 22	A J 27	A J 34	A J 44	A J 44	A J 46	A J 52	A J 49	A J 53	49	J A 53	J A J 52	A J 42	A J 44	A J 38	J A J 30	A J 40	A J 37	A J 42
U Q	J A J 44	A J 47	A J 43	A J 42	A J 48	A J 29	A J 30	A J 58	A J 53	A J 53	A J 58	A J 60	A J 62	A J 68	A J 70	A J 69	A J 59	A J 60	A J 58	A J 55	J A J 56	A J 55	A J 55	A J 52
L Q	20	19	20	J A 19	20	E B 18	20	29	34	38	G 34	45	45	44	44	44	43	39	32	J A 25	19	J A J 22	A J 22	22

JUL. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	23	19	22	E B 14	E B 14	E B 14	23	G	35	37	G	G	G	43	80	48	59	33	45	27	18	20	35	38
2	31	22	40	38	29	20	28	31	57	A A 120	A A 104	54	47	G	50	41	G	54	41	22	17	20	22	43
3	17	33	20	22	21	23	23	31	38	46	42	45	44	44	44	54	41	40	32	25	17	15	E B 14	E B 14
4	E B 14	E B 14	E B 14	E B 13	E B 13	E B 13	20	29	34	40	61	74	54	A A 121	E B 47	47	45	36	G 22	22	E B 14	E B 14	18	25
5	26	37	21	E B 14	19	21	24	46	48	44	40	G 36	E B 44	E B 52	45	49	E B 43	37	31	21	17	19	18	32
6	23	22	22	30	20	E B 14	24	41	41	50	48	A A 73	54	55	51	79	81	66	54	38	44	41	32	23
7	22	E B 14	25	21	E B 14	18	28	32	38	41	51	44	47	G	G	G	G 30	G 26	32	29	21	34	29	36
8	E B 14	E B 14	29	36	31	19	23	31	40	49	43	45	E B 45	48	E B 46	42	42	G	30	23	E B 14	28	24	18
9	16	19	20	24	19	E B 14	24	41	41	64	60	60	A A 104	72	63	G	G	G	G	21	E B 14	22	E B 14	E B 14
10	20	37	14	E B 14	E B 13	E B 14	20	30	34	44	G	G	E B 44	E B 44	E B 43	G	41	36	49	34	42	A A 86	30	29
11	41	30	22	31	18	E B 14	24	31	35	38	A A 132	43	A A 102	44	74	74	38	34	29	32	23	24	17	17
12	21	21	20	17	19	21	19	32	35	35	40	47	44	46	54	56	43	36	30	32	E B 14	E B 14	E B 14	E B 14
13	22	20	E B 14	E B 14	E B 14	E B 14	24	30	35	40	41	42	42	40	44	58	40	38	41	42	E B 14	36	17	E B 14
14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	19	28	32	G 26	42	44	G	E B 44	52	G 32	G	33	27	19	E B 12	E B 14	E B 13	E B 14
15	E B 14	17	E B 14	E B 14	19	20	E B 14	41	G	38	G	43	44	52	47	44	39	33	G	21	E B 14	18	E B 14	18
16	32	30	28	30	28	E B 14	24	29	A A 51	36	G	40	42	42	44	39	38	45	28	32	E B 14	E B 14	E B 14	E B 14
17	E B 14	E B 14	E B 14	E B 13	E B 14	28	25	51	74	51	G	A A 67	51	E B 42	G	G	40	38	36	33	32	32	41	40
18	E B 14	E B 14	21	E B 14	20	E B 14	18	G 21	32	35	39	41	41	G	G	46	39	37	27	22	18	E B 14	E B 14	21
19	23	E B 14	21	26	17	20	23	33	G	G 29	G	43	46	50	45	B	E B 50	39	G 24	20	20	24	29	20
20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	28	32	37	40	40	42	44	43	46	41	34	28	20	39	25	19	21
21	E B 14	18	21	19	20	20	21	36	35	48	40	A A 116	40	56	51	54	78	35	32	25	E B 14	24	18	E B 14
22	16	E B 14	E B 14	E B 13	E B 14	E B 14	21	26	32	36	U Y 34	47	48	56	49	60	50	62	40	56	39	23	28	29
23	E B 14	24	E B 13	18	E B 14	18	G 15	27	31	G 26	40	41	56	73	61	51	47	81	27	44	21	20	28	22
24	E B 14	E B 14	19	E B 14	E B 14	E B 14	20	28	40	41	41	44	45	43	51	60	48	A A 75	42	42	A A 84	39	41	22
25	17	26	20	21	27	18	20	50	43	43	49	44	44	44	43	42	40	33	32	21	19	43	29	18
26	16	E B 14	E B 14	E B 14	20	E B 14	27	26	31	G 26	40	42	42	43	40	38	38	32	55	31	17	E B 14	17	14
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	20	28	36	42	41	44	42	46	44	63	51	36	56	E B 18	E B 14	19	44	22
28	33	E B 14	21	21	30	E B 14	18	28	38	60	53	55	69	54	46	51	46	57	A A 97	75	30	21	E B 14	19
29	A A 89	23	24	18	20	19	20	27	43	40	51	50	53	52	E B 44	44	52	46	28	19	31	54	A A 76	34
30	46	19	39	E B 13	E B 14	17	17	27	G 24	G	G	45	E B 43	E B 42	44	54	42	60	42	25	42	38	37	E B 14
31	20	E B 14	17	E B 14	18	E B 14	G	27	32	E B 38	52	45	43	53	89	A A 122	52	45	31	20	20	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	17	18	20	E B 14	18	E B 14	21	30	35	40	41	44	44	44	46	48	42	37	32	25	18	22	21	21
U Q	23	23	22	22	20	20	24	33	41	46	51	50	51	53	51	56	50	46	42	33	31	34	30	29
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	19	27	32	G 36	G	42	42	43	44	G 41	39	33	28	21	E B 14	E B 15	E B 14	E B 14

JUL. 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	14	14	14	14	15	22	23	33	33	32	25	37	24	20	14	14	13	14	14	14
2	14	14	14	14	14	14	14	14	20	21	31	31	24	22	26	26	16	18	14	12	13	14	14	14
3	14	14	14	14	14	14	14	14	18	39	24	24	31	30	27	23	21	21	15	14	14	13	14	14
4	14	14	14	13	13	13	14	16	21	26	32	39	40	33	47	30	24	16	13	13	14	14	14	14
5	14	14	14	14	14	14	14	15	20	32	30	35	44	52	43	33	43	23	16	14	12	13	14	13
6	14	14	14	14	14	14	14	16	20	23	30	41	42	39	43	32	24	21	16	14	13	14	14	14
7	14	14	13	14	14	14	14	15	21	24	24	30	36	35	32	32	24	17	14	14	14	14	14	14
8	14	14	14	14	14	14	16	15	21	32	31	31	45	45	46	33	37	20	16	14	14	14	14	14
9	14	14	14	14	14	14	15	14	24	22	41	37	42	43	41	32	24	22	16	14	14	14	14	14
10	13	13	14	14	13	14	14	15	16	22	30	30	44	44	43	24	30	21	14	14	14	14	14	14
11	14	14	14	14	14	14	14	15	18	23	24	28	33	34	29	26	24	20	13	14	13	14	14	14
12	14	14	14	14	13	14	14	14	18	20	24	30	32	32	26	24	22	20	15	14	14	14	14	14
13	13	13	14	14	14	14	14	17	20	23	30	32	32	24	28	25	21	18	14	14	14	13	14	14
14	14	14	14	14	14	14	16	14	17	19	21	24	29	44	33	24	24	17	13	12	12	14	13	14
15	14	14	14	14	14	13	14	14	18	21	23	26	24	26	24	24	17	15	13	14	14	14	14	14
16	13	14	13	13	14	14	14	15	15	24	24	28	29	32	40	25	23	18	16	14	14	14	14	14
17	14	14	14	13	14	13	14	16	18	22	24	30	28	42	27	24	21	17	16	14	14	13	13	14
18	14	14	14	14	13	14	14	14	21	22	25	24	32	31	24	31	22	17	14	14	14	14	14	14
19	14	14	14	14	14	14	14	14	21	23	26	28	40	31	32	B	50	27	20	14	14	14	14	14
20	14	14	14	14	14	14	14	16	18	20	23	26	24	30	24	23	24	20	16	14	14	14	14	14
21	14	13	14	13	14	14	14	15	21	21	24	24	29	30	25	23	20	19	14	14	14	14	14	14
22	14	14	14	13	14	14	14	15	15	16	18	21	41	31	22	24	22	20	15	14	14	14	14	14
23	14	14	13	14	14	14	14	15	17	21	21	22	29	24	27	21	29	21	15	14	14	14	14	14
24	14	14	14	14	14	14	14	15	14	21	24	24	35	30	26	24	20	20	14	14	14	14	13	14
25	13	13	14	14	14	14	14	14	14	20	22	25	30	24	24	22	20	14	14	14	14	14	14	14
26	14	14	14	14	14	14	14	14	14	21	21	24	25	32	24	23	22	14	14	14	14	14	14	14
27	14	14	14	14	14	14	14	14	16	16	24	18	22	44	42	41	24	19	14	18	14	14	14	14
28	14	14	14	14	14	14	14	15	17	22	22	24	31	28	40	26	20	16	14	14	14	14	14	14
29	14	14	14	13	14	14	14	15	20	20	24	24	25	34	44	24	30	15	14	14	14	14	14	14
30	14	14	14	13	14	14	14	16	20	21	22	29	43	42	30	25	24	20	13	14	14	14	14	14
31	14	14	14	14	14	14	14	16	16	38	22	23	32	25	24	23	21	19	14	14	14	14	14	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	15	18	22	24	28	32	32	28	25	24	19	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	15	20	23	30	31	40	42	41	32	24	20	16	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	16	21	22	24	29	30	25	24	21	17	14	14	14	14	14	14

IONOSPHERIC DATA STATION Okinawa

JUL. 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	V 285	344	259	297	286	310	273	282	307	317	291	275	274	273	260	275	306	312	307	307	320	297	281	R 272
2	F 292	F 322	F 294	312	F 310	F 307	346	305	286	A	A	252	265	274	279	286	271	274	316	342	318	271	271	263
3	F 276	F 283	F 271	268	294	F 298	F 323	F 337	344	284	290	277	281	272	280	300	308	305	302	291	281	287	279	283
4	288	305	F 300	F 294	295	317	314	304	341	284	267	R 252	270	A	268	273	278	296	290	289	305	299	272	275
5	292	V 286	313	F 287	F 288	F 287	F 319	346	359	348	224	266	297	289	298	295	284	287	281	286	321	302	289	287
6	291	R 290	302	290	301	314	354	328	333	309	310	A	257	250	252	271	307	326	307	289	286	288	287	273
7	F 261	297	314	290	F 309	333	329	325	303	332	308	269	266	270	271	275	278	285	288	298	338	265	270	270
8	284	272	F 297	F 291	F 306	F 309	F 365	352	323	312	362	289	272	261	263	263	292	292	290	306	306	288	265	V 281
9	F 301	F 310	315	F 292	F 300	281	313	324	320	V 321	289	A 228	A	261	268	262	269	267	293	279	305	271	260	270
10	271	268	274	272	276	F 280	276	246	261	230	301	284	280	302	289	309	302	317	308	299	296	A	265	262
11	273	263	306	280	F 277	F 272	301	318	364	297	A	271	A	277	273	271	298	315	314	297	297	289	281	285
12	277	284	292	290	287	278	317	384	363	335	332	298	293	281	272	283	292	301	312	306	330	268	271	279
13	285	286	288	299	302	V 324	358	334	325	316	302	H 273	290	274	269	J R 272	290	307	320	302	322	303	274	290
14	292	290	307	288	316	337	307	R 310	366	376	326	293	255	263	268	275	298	311	311	304	312	318	301	286
15	299	R 299	F 305	F 297	F 313	F 313	315	310	312	314	222	273	305	307	237	279	311	283	278	275	292	300	285	293
16	286	303	263	262	277	F 260	268	R 218	A	G	R	G	R 242	R	R 243	250	287	253	284	317	V 265	253	F 259	F 270
17	258	F 260	F 296	F 269	F 287	F 292	R 263	R 302	357	317	297	A	273	279	280	284	302	295	275	287	308	328	285	285
18	V 293	292	281	301	289	295	313	324	374	334	H 304	300	299	277	295	298	291	291	299	312	314	331	318	308
19	295	290	289	296	325	310	325	353	353	352	321	272	272	287	R 284	B	283	301	324	322	303	303	302	299
20	299	303	291	290	305	F 330	307	349	345	353	J R 308	J R 273	280	R 284	291	283	288	277	308	327	316	300	F 294	F 278
21	F 313	F 311	298	F 287	F 304	F 297	322	305	308	282	290	A	309	293	R 292	310	299	304	314	312	300	293	328	R
22	R 318	319	313	305	F 295	F 329	352	362	347	379	R 272	G	263	285	275	279	293	305	315	317	316	306	288	285
23	306	331	308	309	297	332	339	326	354	321	311	267	278	279	283	275	287	308	318	339	338	303	296	305
24	279	Z 290	F 312	F 299	F 284	F 289	F 314	340	363	V 353	304	G	290	307	302	316	315	A	315	313	A	U R 322	304	282
25	F 294	F 292	F 295	291	303	289	294	345	259	309	330	332	291	291	287	300	301	304	296	286	323	309	310	R 294
26	R 295	303	320	307	305	295	J R 294	353	363	326	340	300	288	281	258	265	292	319	327	330	306	284	282	284
27	288	306	296	F 285	F 301	306	346	353	336	333	J R 324	R 278	275	271	263	270	287	306	321	330	293	310	288	F 290
28	F 286	F 292	F 303	310	324	F 343	V 361	350	329	311	306	281	R	R 276	289	270	273	299	A	308	301	280	281	F 269
29	A	F 323	F 329	F 316	F 329	F 283	317	337	336	352	270	307	R 293	302	318	297	309	302	304	315	307	R 300	A	268
30	275	F 307	F 298	F 306	299	310	311	332	351	321	279	283	296	278	290	288	299	305	311	317	277	277	281	275
31	272	269	291	294	306	336	341	330	341	279	269	272	272	297	294	A	319	305	312	310	285	284	274	276
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	30	30	28	28	28	29	31	29	31	30	30	31	30	30	30	30
MED	288	292	298	292	301	307	317	330	341	319	303	273	279	279	279	279	292	303	308	307	306	298	282	282
U Q	295	F 307	308	301	F 306	324	341	349	357	335	316	286	292	290	290	296	302	307	315	317	318	303	294	287
L Q	277	286	291	287	288	F 289	307	310	320	309	284	266	271	272	268	271	287	291	293	291	296	284	272	272

JUL. 2012 M(3000)F2 (0.01)

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	381	401	384	L 388	384	A	A	A	L 366	A					
2							L	L	A	A	A	A	A	397	A	392	R 369	A	A					
3							L	L	399		U L 366	386	394	409	367	A	366	A 366	L	L				
4								U L 356	U L 368	L	A	A	A	A	B 350	A	A	346	L					
5							L	A	A	L	349	390	R 403	B	R 383	A	U L 347	L 347	U L 346	L				
6									U L 379	A	A 346	A	A	A	A	A	A	A	A	A				
7									L	L 363	A	L 374	383	382	R 362	362	348	357	L	L				
8								L	L	A	392	L	422	A 338	376	U L 392	378	343	U L 345	L				
9								A	362		A	A	A	A	A	380	344	349	U L 328					
10							F 329	350	361	356	367	378	395	401	362	H 388	345	L 342	A					
11								347	L	U L 382	A	403	A	401	A	A	L 355	355	L					
12							L	L	370	H 377	383	U R 413	409	R 401	A	A	346	L 333	L 355					
13									L	U L 358	362	442	427	H 417	408	A	355	354	A					
14									368	394	L 379	417	404	395	A	369	376	369	L 367	L				
15								A	358	U L 353	364	400	381	A	U L 357	345	358	L 333	L 347	L				
16								U L 345	A	U R 386	R 406	U R 383	383	R 388	A 361	387	375	A	U L 340					
17							L	A	A	A	U L 363	A	A 377	400	382	391	L 350	353	L					
18								L	387	374	L	371	383	375	433	A	362	344	L 343					
19							L	L	U L 385	443	U L 403	L 430	A	A	A 376	B	E B	A	347	L				
20								L	L	387	L	389	393	375	398	A	A 376	364	351	L				
21								L	U L 375	A	399	A	395	A	A	A	A	U L 360	L 363					
22								L	L	408	H 411	372	A	A	A	A	A	A	A					
23								L	388	L	412	413	A	A	A	A	A	A	369					
24								355	A 365	U L 404	399	380	A 370	388	A	A	A	A	A					
25								A	L 341	A 358	A	L 375	420	381	377	404	363	353	U L 336	L				
26								U L 381	L	L 388	383	L	423	R 409	412	377	H 383	366	A					
27								L	U L 384	U L 393	L	413	415	392	U L 355	A	A	360	A	L				
28								L	U L 387	A	A	A	A	A	383	A	A	A	A					
29								L	L	L	A	A	A	A	423	L 398	A	A	U L 361	L				
30								L	L	U L 354	U L 366	U L 348	400	404	396	A	R 360	A						
31								L	L 385	L	A	U L 374	404	A	A	A	A	A	A 366	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	6	17	18	19	21	21	19	19	12	19	20	15					
MED							F 329	352	375	382	383	386	395	395	377	388	360	354	L 347					
U Q								U L 356	386	393	401	413	412	401	398	392	375	362	363					
L Q								347	364	U L 358	364	L 374	383	382	362	373	348	345	U L 343					

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JUL. 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								318	264	260	286	362	362	356	EA 460	362	288	276	294					
2							248	L 316	E A 378	A	A	412	388	352	342	320	350	358	266					
3							274	250	254		342	380	368	382	354	322	294	298	302	300				
4								306	244	L 370	E A 406	E A 500	374	A	368	350	342	300	294					
5							278	244	238	258	L 624	424	332	338	336	334	324	316	308	274				
6									266	326	326	A	442	432	416	A 374	298	260	278	278				
7									L 304	290	L 310	430	418	380	374	362	334	306	320	286				
8								270	286	282	264	372	422	432	408	374	322	316	304	270				
9								250	294	E A 284	E A 382	E A 622	A	A 396	374	372	358	342	300					
10							Q 354	438	460	582	346	394	386	324	344	304	318	286	298					
11								308	252	354	A	428	A	358	A 386	370	306	270	260					
12							298	218	250	280	270	358	358	364	368	330	318	302	270					
13									290	314	330	H 300	334	352	364	340	330	288	268					
14									242	224	310	382	478	430	386	364	312	286	274	262				
15								266	280	318	610	344	310	312	482	354	288	330	308	306				
16								696	A	G	G 820	G	570	G	562	540	412	502	348					
17							L 428	346	276	A 272	374	A	370	346	352	332	292	306	308					
18								292	234	288	292	366	348	358	308	306	324	316	294					
19							280	246	242	264	306	376	384	344	322	B	328	304	276	252				
20								254	250	260	L 312	424	394	346	334	354	320	334	288	240				
21								L 320	278	346	304	A	274	320	326	298	A 340	294	266					
22								210	226	238	470	G	490	A 406	376	354	318	300	274					
23								260	244	290	332	416	358	E A 384	336	352	336	306	256					
24								266	258	246	380	G	386	330	336	A 312	308	A	280					
25								262	516	328	282	302	368	328	344	328	328	324	316	300				
26								252	238	308	290	360	384	394	414	378	318	278	252					
27								256	268	278	298	426	414	378	378	378	332	298	254	232				
28								240	276	E A 314	324	362	E A 440	348	314	358	358	302	A					
29								266	292	276	466	348	366	330	304	328	304	304	296	264				
30								260	246	302	386	346	330	362	336	326	304	294						
31								266	250	L 408	436	382	392	328	EA 370	A	292	310	280	248				
	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	27	30	29	29	28	29	30	31	29	31	30	29	13				
MED							280	266	258	289	327	380	379	356	358	352	320	303	288	270				
U Q							354	308	286	327	396	427	416	384	386	367	334	316	303	293				
L Q							274	250	244	268	301	361	358	338	336	327	304	294	269	250				

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JUL. 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	304	232	218	264	260	248	252	238	242	210	202	188	192	208	A	A	A	208	A	268	230	244	A 326	A 326
2	320	258	312	284	260	238	A	212	A	A	A	A	A	206	A	198	E Y 260	A	A	218	218	278	320	A 350
3	A 326	336	336	326	270	264	252	230	A 214	A 258	224	A 244	A 212	198	A 246	A	A 236	E A 234	A 234	262	272	272	274	288
4	278	252	264	250	266	234	232	222	214	206	A	A	A	A	E B 282	A	A	A 244	220	248	232	234	290	286
5	268	268	222	260	288	270	246	A	A	E A 242	206	204	202	B	A 236	A	E B 236	A 234	232	248	230	228	256	310
6	316	302	256	284	272	246	230	238	E A 232	A	E A 282	A	A	A	A	A	A	A	A	A	302	288	266	316
7	314	270	250	286	248	232	240	224	A 224	A 220	A	192	A 242	Y 222	240	230	224	222	236	280	234	A 256	A 330	A 326
8	292	306	A 304	Q 324	300	254	218	210	H 206	A	A 200	H 192	204	E A 298	E B 246	214	230	232	216	256	236	282	312	282
9	264	272	282	274	276	294	260	A	A 234	A	A	A	A	A	A	214	216	226	232	268	236	256	296	306
10	298	A 340	308	308	280	Q 306	Q 280	234	230	E A 284	232	220	214	208	E B 218	H 198	A 246	226	A	264	296	A	A 328	A 346
11	E A 370	326	274	A 304	316	Q 304	250	230	212	192	A	196	A	212	A	A	234	216	218	250	242	242	268	256
12	288	300	278	274	302	302	244	A	A 212	194	204	212	210	210	A	A	E A 272	240	234	258	218	226	296	290
13	294	286	284	262	264	230	228	222	226	A 228	A 224	184	190	H 178	204	A	232	E A 250	A	254	228	250	242	266
14	270	262	242	240	228	216	230	226	212	200	210	184	188	196	A	232	224	214	214	242	228	218	224	246
15	262	270	250	Q 262	236	236	236	A	200	H 190	230	216	A 232	A	E A 260	E A 278	234	236	228	260	224	236	266	258
16	302	270	308	358	282	Q 304	E A 310	A 252	A	A 236	212	A 236	A 242	242	E A 290	222	240	A	248	284	260	352	Q 342	Q 322
17	336	358	296	Q 284	Q 278	A 322	E A 294	A	A	A	A 204	A	A	204	206	220	250	A 246	A 274	276	258	228	300	320
18	274	282	304	254	272	266	242	216	208	192	212	222	214	206	200	A	216	A 230	214	252	234	222	238	258
19	300	290	278	262	228	240	248	234	208	188	H 176	H 170	E A 302	A	E A 256	B	B	A	224	242	222	242	268	258
20	256	246	276	272	264	240	240	226	206	202	208	206	190	A 248	228	A	E A 250	222	222	238	244	250	286	302
21	246	254	268	308	276	290	240	A 256	226	A	A 204	A	200	A	A	A	A	214	242	248	234	248	226	258
22	254	228	240	252	278	232	216	202	206	192	H 184	280	A	A	A	A	A	A	A	270	252	250	300	300
23	260	250	220	262	270	240	238	222	208	186	198	196	A	A	A	A	A	A	222	238	212	238	296	268
24	274	274	252	268	Q 312	Q 260	250	222	A	A 214	192	226	E A 264	216	A	A	A	A	A	A 282	A	A 272	A 300	300
25	292	312	308	296	A 304	288	244	A	238	E A 260	A	E A 244	196	E A 242	222	216	A 230	210	A 252	266	240	264	246	290
26	280	264	238	244	274	284	A 274	214	206	190	192	216	196	184	186	218	H 200	194	A	236	216	274	302	304
27	274	246	242	272	266	244	238	224	200	226	204	196	180	234	264	A	A	208	A	214	210	232	284	276
28	286	274	266	256	242	210	228	200	A 208	A	A	A	A	A	A 234	A	A	A	A	A 298	A 248	276	298	326
29	A	270	260	252	226	302	248	236	E A 274	A 256	A	A	A	A	206	228	A	A	234	256	242	E A 328	A	E A 356
30	E A 372	260	E A 314	272	252	236	246	228	222	206	192	256	210	202	210	A	268	A	270	230	A 302	A 298	316	296
31	308	302	276	268	258	226	218	214	208	212	A	A 220	200	A	A	A	A	A	A 230	236	262	258	294	318
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	30	25	26	24	22	23	21	19	19	12	19	20	21	30	30	30	30	31
MED	286	270	271	272	270	248	242	224	211	204	204	209	202	207	U 220	218	232	224	232	255	235	250	295	298
U Q	308	302	304	286	280	290	250	234	226	A 232	212	226	A 223	A 234	E A 256	229	E 250	A 235	239	268	252	274	302	A 320
L Q	270	258	250	260	258	236	232	215	208	192	198	192	194	202	206	214	224	214	221	242	228	236	266	268

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JUL. 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	A	112	A	A	112	110	110	110	108	A	108	108	108	A				
2						A	A	A	A	A	A	A	A	108	108	108	108	108	108	A				
3						A	A	A	A	A	A	A	A	A	A	A	108	A	108	A				
4						B	112	114	A	A	A	A	A	A	B	A	110	110	104	126				
5						A	A	A	A	A	A	A	B	B	B	A	B	A	112	A				
6						B	A	110	A	A	A	A	A	A	B	A	A	A	A	A				
7						A	A	A	A	A	A	A	A	110	110	110	110	110	A	A				
8						A	134	112	A	A	110	110	B	B	B	110	A	110	110	A				
9						B	A	A	A	110	B	A	A	A	A	110	110	110	110	A				
10						B	A	112	108	106	106	106	B	B	B	106	110	110	110	A				
11						B	A	A	A	A	A	A	A	A	A	A	A	110	A	A				
12						A	108	A	108	108	108	108	108	108	108	108	108	A	A	A				
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
14						B	B	108	A	108	108	108	108	B	A	112	110	110	106	A				
15						A	A	108	108	108	108	108	108	108	108	108	108	108	110	A				
16						B	A	A	112	112	110	110	110	110	B	110	110	108	108	A				
17						A	A	108	A	A	108	A	A	B	108	110	110	110	110	A				
18						B	A	110	A	A	A	A	A	110	108	110	110	110	A	A				
19						A	A	A	110	108	110	110	B	110	A	B	B	A	130	A				
20							A	122	110	A	A	110	A	A	A	A	110	A	A	A				
21							A	108	110	110	A	A	110	110	110	110	110	110	A	A				
22							A	110	110	110	108	110	B	110	110	110	110	A	A	A				
23							110	112	A	112	110	A	A	A	A	A	A	A	A	A				
24							A	A	A	A	A	A	A	A	A	110	112	108	108	A				
25							A	A	A	112	112	110	A	A	110	110	110	A	A	A				
26							A	110	110	110	110	110	A	A	A	A	A	A	A	A				
27							A	110	110	A	A	A	110	B	B	B	110	A	A	B				
28							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
29							A	110	110	110	A	A	A	A	B	110	114	112	112	A				
30							A	110	110	108	108	A	B	B	108	108	110	110	110	A				
31							106	110	110	B	A	A	A	110	108	108	A	108	108	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	18	13	14	14	12	7	11	12	18	21	18	17	1				
MED							110	110	110	110	109	110	110	110	108	110	110	110	110	126				
U Q							123	112	110	110	110	110	110	110	110	110	110	110	110					
L Q							107	110	109	108	108	108	108	108	108	108	109	108	108					

JUL. 2012 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 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	102	108	102	102	102	126	108	G	110	110	G	G	G	138	116	116	114	118	114	104	108	102	102	102
2	104	100	96	96	98	96	104	104	104	104	104	104	106	G	120	130	G	108	108	100	108	118	114	112
3	126	102	104	102	102	100	100	100	100	104	104	196	118	102	100	98	122	114	108	102	106	94	98	96
4	92	92	B	B	118	B	128	134	102	106	104	104	104	104	B	130	132	138	114	126	100	94	106	104
5	106	104	108	112	106	102	108	104	102	102	102	104	B	B	134	106	B	116	110	110	110	108	104	102
6	96	100	104	100	102	114	116	110	110	104	104	102	104	104	102	100	100	98	98	94	94	104	104	106
7	106	104	106	106	106	104	104	102	106	106	102	106	180	G	G	G	104	96	94	108	108	106	106	102
8	108	B	104	102	102	102	130	140	98	120	112	116	B	158	B	122	122	G	118	108	112	110	106	106
9	104	104	94	112	100	104	102	100	100	110	108	106	106	106	110	G	G	G	G	106	B	114	128	112
10	110	110	110	110	116	110	112	116	154	114	G	G	B	B	B	G	122	120	110	108	102	102	104	104
11	100	96	100	98	98	106	112	98	102	108	106	106	104	104	96	100	100	118	100	100	94	92	92	92
12	92	100	100	100	100	100	148	98	98	134	116	112	112	112	108	116	108	114	110	104	98	98	106	100
13	92	90	98	B	102	92	98	98	106	104	102	100	102	102	104	100	100	96	106	100	112	92	90	90
14	86	86	B	94	B	B	144	154	94	100	G 114	112	G	B	98	98	G	110	188	94	94	92	B	128
15	98	128	B	114	114	110	110	106	G	132	G	138	132	114	122	118	108	154	G	102	102	102	94	120
16	120	116	116	114	128	132	120	118	118	124	G	114	122	124	114	122	116	108	130	108	B	B	114	100
17	102	110	110	110	112	108	110	108	104	104	G	102	104	B	G	G	118	112	106	104	104	100	100	104
18	100	100	102	102	102	102	128	108	104	100	104	104	102	G	G	112	112	112	108	108	108	88	108	106
19	102	102	100	100	96	100	106	106	G	106	G	104	104	106	106	B	B	102	100	104	96	96	94	94
20	94	90	94	94	112	112	130	122	130	110	110	110	110	110	108	108	108	106	106	106	104	104	104	110
21	106	106	106	106	104	102	110	110	118	110	112	108	114	112	120	118	108	118	104	98	98	106	106	132
22	104	B	102	98	102	B	102	146	132	122	114	146	144	116	132	108	108	106	106	100	104	102	102	102
23	98	94	92	92	92	92	102	114	106	102	104	108	106	104	104	104	104	100	100	100	98	96	94	92
24	B	B	92	92	96	B	108	132	114	112	112	110	110	110	108	118	118	112	112	112	106	106	106	104
25	112	102	102	116	106	108	106	106	102	126	122	120	114	114	118	118	110	114	106	104	102	100	100	98
26	92	94	90	B	100	104	100	106	114	106	110	108	104	104	104	108	116	104	98	100	98	98	94	94
27	94	94	104	108	92	B	116	116	112	108	108	110	118	176	148	118	116	110	102	B	102	96	106	102
28	102	116	98	106	102	94	90	108	108	104	104	98	102	108	112	102	98	116	106	106	102	102	102	90
29	108	108	96	92	94	90	100	130	110	106	102	100	100	100	B	134	122	114	114	112	104	110	108	108
30	108	108	104	104	B	102	102	166	100	G	G	176	B	B	142	114	114	112	108	114	102	100	118	100
31	98	94	92	98	102	106	G	120	110	B	100	96	102	118	114	110	110	110	106	106	102	106	104	96
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	28	28	29	26	30	30	29	29	24	29	25	23	24	26	26	29	29	30	29	30	30	31
MED	102	102	102	102	102	103	108	109	106	106	105	108	106	110	111	113	111	112	106	104	102	102	104	102
U Q	106	108	104	109	106	108	116	122	113	113	112	113	116	116	120	118	118	116	111	108	107	106	106	106
L Q	96	94	96	98	99	100	102	104	102	104	104	104	104	104	104	104	108	106	103	100	98	96	100	96

JUL. 2012 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

JUL. 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	F 6	F 2	F 2	F 1	F 2	C 1	C 2		C 1	C 1				H 1	L 3	C 1	C 3	C 2	C 5	L 4	FFQ 41	F 4	FQ 41	F 4
2	FF 32	F 4	F 4	FQ 61	F 4	L 3	L 4	LQ 21	LQ 41	L 3	L 3	L 1	L 1		C 1	H 1		C 2	CL 11	L 2	FF 33	FF 24	FF 22	F 6
3	FF 13	FQ 81	F 3	F 4	FF 22	L 2	L 3	LQ 21	L 2	L 1	L 1	HL 11	CL 11	L 1	L 2	L 2	CL 11	CL 11	C 1	L 3	FF 31	F 1	F 1	F 1
4	F 1	F 1			F 1		C 1	HC 11	L 1	L 1	L 2	L 2	L 1	L 2		HL 11	H 1	HL 11	CL 11	CL 11	FF 11	F 2	F 3	FF 32
5	FF 32	FF 42	FF 22	F 2	F 3	L 3	C 2	L 2	L 3	L 1	L 1	L 1			H 1	LC 11		CL 11	CL 11	C 1	F 1	F 3	F 2	F 5
6	FQ 21	FF 23	FF 31	F 4	FQ 21	C 1	C 3	C 2	C 2	C 2	C 1	L 1	L 1	L 2	L 1	LQ 31	L 2	L 3	L 5	L 4	F 5	FF 44	FF 33	FF 32
7	F 2	F 3	F 5	F 3	F 2	L 2	L 3	L 3	C 2	C 1	C 2	C 1	HL 11				L 1	L 2	LC 11	CL 31	F 2	F 3	F 2	F 2
8	F 2		F 3	F 4	F 2	L 3	H 1	HL 11	L 1	C 1	CL 11	C 1		H 1		C 1	C 1		C 2	C 2	F 1	F 3	F 4	F 2
9	F 2	F 2	F 2	FF 12	F 2	L 2	L 3	L 3	L 2	CL 21	C 3	L 2	L 2	L 2	C 2					C 1		FF 13	FF 22	FF 11
10	F 6	F 7	F 3	F 1	F 1	C 2	C 2	C 1	HC 11	CC 11							C 1	CL 11	C 2	C 1	F 3	FF 32	FF 21	FF 31
11	F 4	F 3	F 4	FQ 41	F 2	L 1	C 1	L 3	L 1	C 1	C 2	C 1	L 2	L 1	L 3	L 3	L 1	CL 11	L 2	CL 12	F 4	F 4	F 1	F 2
12	F 1	FF 12	F 1	F 2	F 2	L 3	HL 11	LC 11	LH 21	H 1	C 1	C 2	C 2	C 2	C 1	C 4	C 2	C 1	C 2	CQ 31	F 1	F 1	F 2	F 2
13	F 3	F 1	F 1		F 1	L 1	L 3	L 1	C 1	C 1	L 1	L 1	L 1	L 1	L 1	L 2	LQ 21	LC 21	C 5	LQ 41	FFQ 12	F 6	F 3	F 1
14	F 1	F 1		F 1			H 1	HL 21	L 2	L 1	C 1	C 1			L 1	L 1		C 1	HC 11	LC 21	F 1	F 1		FF 11
15	F 1	FF 12		FF 11	FFQ 21	C 5	CH 11	C 2		H 1		H 1	H 1	C 1	C 1	C 1	C 1	H 1		L 3	FF 11	FF 22	F 1	F 3
16	F 7	F 4	F 8	F 8	FF 18	CL 11	C 2	C 2	CL 21	C 1		C 1	C 1	C 1	C 1	C 1	C 1	C 2	C 1	C 2			F 1	F 1
17	F 1	F 3	F 2	F 1	F 1	C 7	C 2	C 2	C 6	C 2		L 1	L 1				C 1	C 1	C 2	L 3	F 7	F 5	F 9	F 5
18	F 2	F 1	F 3	F 1	F 2	L 1	CL 11	L 1	L 1	L 1	L 1	L 1	L 1			C 1	C 1	C 1	C 2	C 1	FF 12	F 3	FF 11	F 3
19	F 3	F 1	F 4	F 4	F 3	L 3	C 1	C 2		L 1		C 1	C 1	C 2	C 1			L 1	L 1	L 1	F 3	F 4	F 4	F 4
20	F 2	F 1	F 1	F 1	FF 11	F 1	HL 11	CL 11	H 1	C 1	C 1	C 1	C 1	C 1	C 2	C 2	C 1	C 1	CQ 21	CQ 21	FQ 31	FQ 41	F 2	F 3
21	FQ 21	F 3	F 4	F 7	F 4	F 4	C 2	C 2	C 1	C 3	C 1	C 3	C 1	C 2	C 2	C 3	C 2	C 1	C 2	L 3	F 1	F 3	F 3	FF 12
22	F 3		F 4	F 2	F 1		L 1	HL 11	HL 11	C 1	C 1	H 1	H 1	C 1	H 1	C 3	C 3	C 4	CQ 31	CQ 51	FQ 41	FQ 41	F 6	F 4
23	F 3	F 3	F 3	F 1	F 1	F 1	L 1	C 1	C 1	L 1	C 1	CL 11	C 2	L 3	L 3	L 2	L 2	L 6	L 2	L 4	F 3	F 3	F 2	F 2
24			F 1	F 1	F 2		C 5	HL 12	CL 21	C 2	C 2	C 1	C 2	C 1	CL 11	CL 21	C 2	C 2	C 4	CL 53	FF 64	FF 43	FF 75	F 5
25	FF 21	FQ 51	FQ 31	FF 13	FF 14	FF 24	CQ 31	C 3	C 3	C 1	C 2	C 1	C 1	C 1	C 1	C 1	C 1	C 1	C 3	L 2	F 2	F 4	F 4	F 4
26	FF 11	F 1	F 1		F 1	F 2	L 4	C 1	CH 11	L 1	C 1	C 1	L 1	L 1	L 1	C 1	C 1	C 2	L 4	L 5	F 1	F 1	F 3	F 3
27	F 1	F 1	FF 12	FF 12	F 2		C 2	C 1	C 2	C 2	C 1	C 1	C 1	H 1	H 1	C 1	C 2	C 2	L 6		F 1	F 2	F 4	F 3
28	F 5	FF 12	F 1	FF 11	F 4	F 1	L 1	C 1	C 2	C 3	L 2	L 2	L 3	CL 11	C 1	CL 11	LQ 21	CL 22	CL 41	CL 52	FF 22	FF 11	FF 11	F 1
29	F 3	FF 23	F 4	F 2	F 2	F 4	C 1	H 1	C 1	C 1	L 1	L 2	L 1	L 2		H 1	C 1	CL 21	C 1	C 1	F 9	FF 72	F 4	FF 52
30	FF 41	F 4	F 8	F 4		F 2	L 1	H 1	L 1			HL 11			H 1	C 1	C 1	CL 41	C 2	CL 25	F 5	F 6	FF 16	F 2
31	F 2	F 1	F 2	F 1	F 2	F 1		C 1	C 1		L 3	L 3	L 1	C 1	C 3	C 2	C 2	C 2	C 3	C 4	F 7	F 7	F 4	F 4
	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																								

JUL. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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

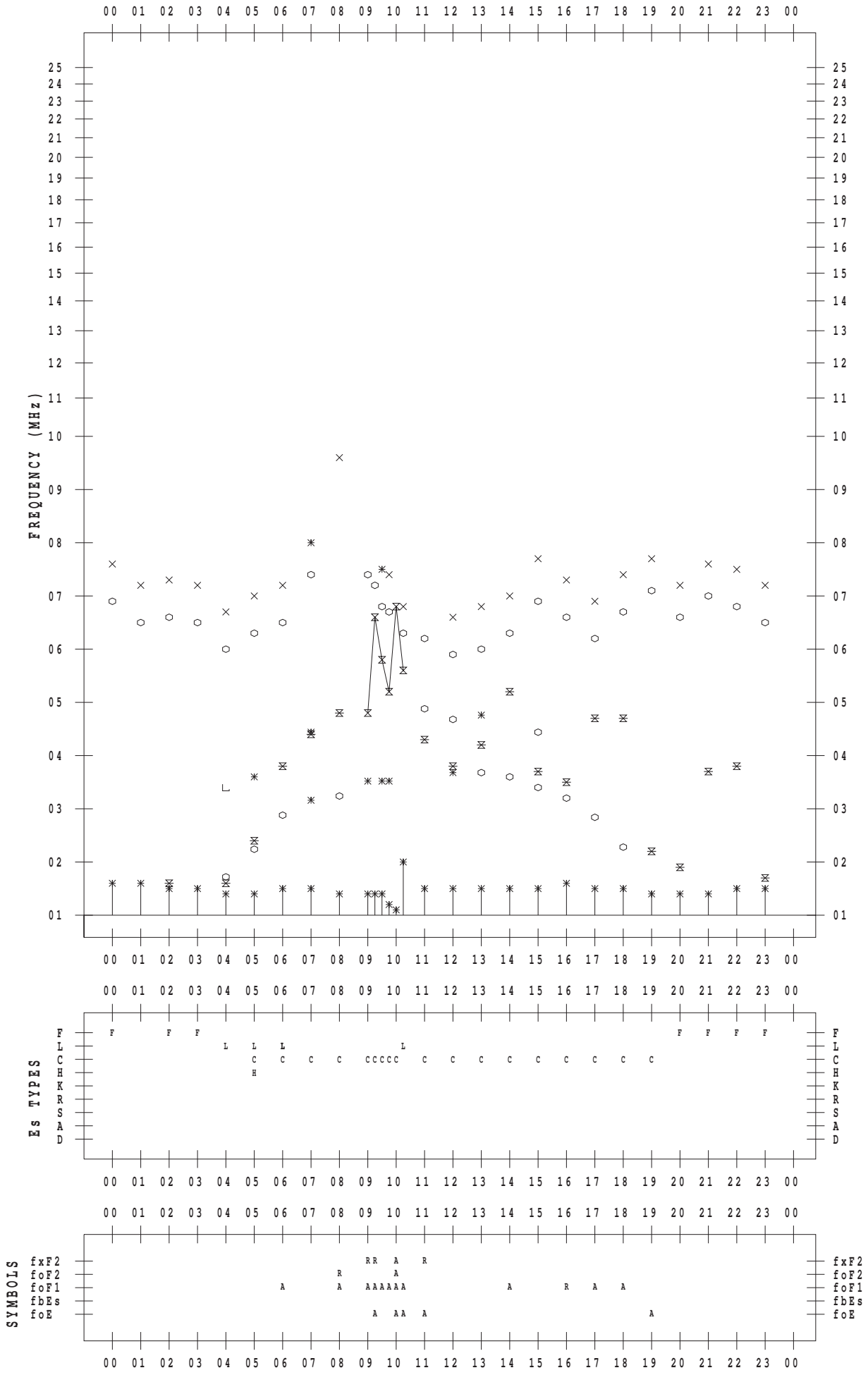
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 1

135 °E MEAN TIME



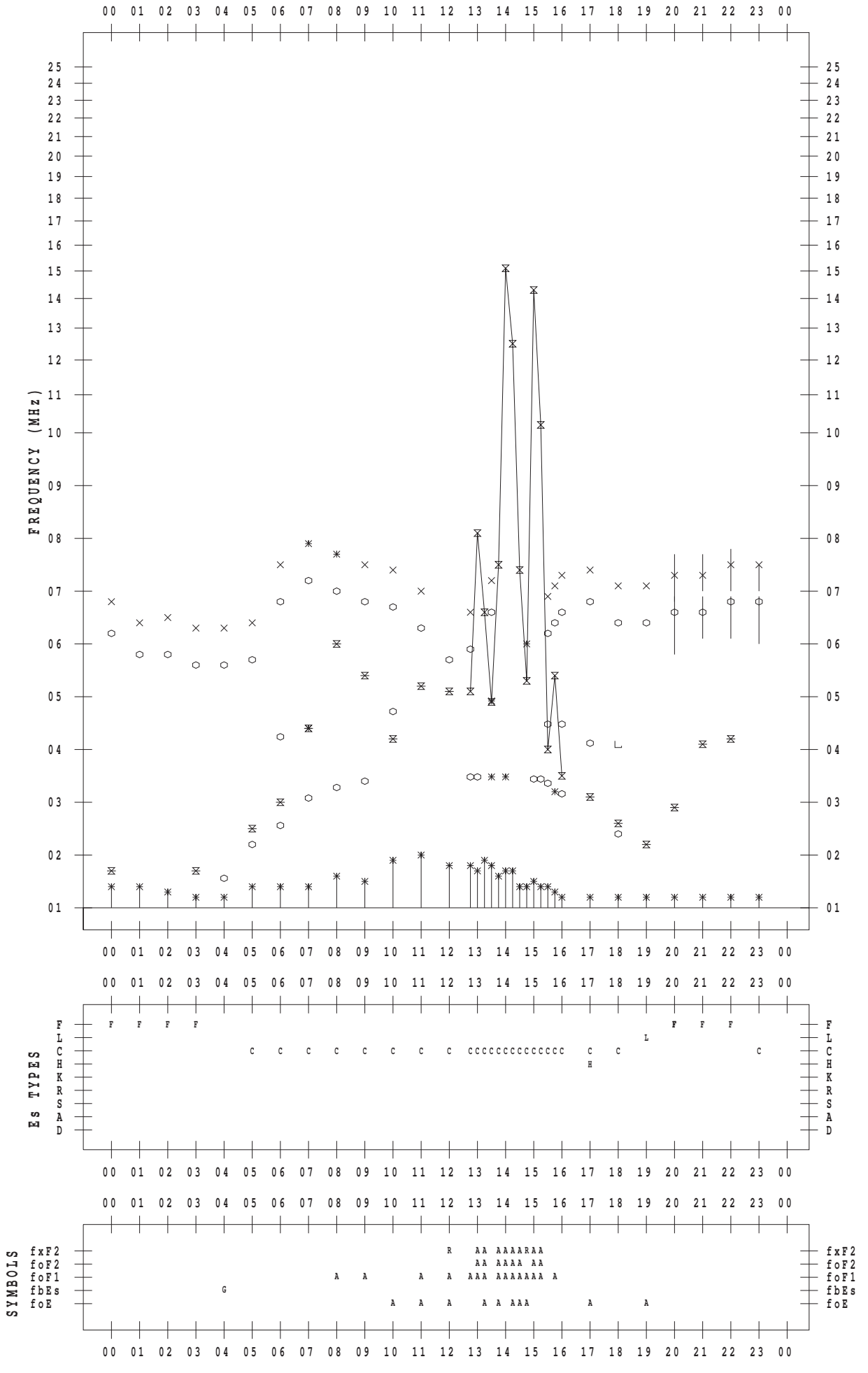
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 2

135 °E MEAN TIME



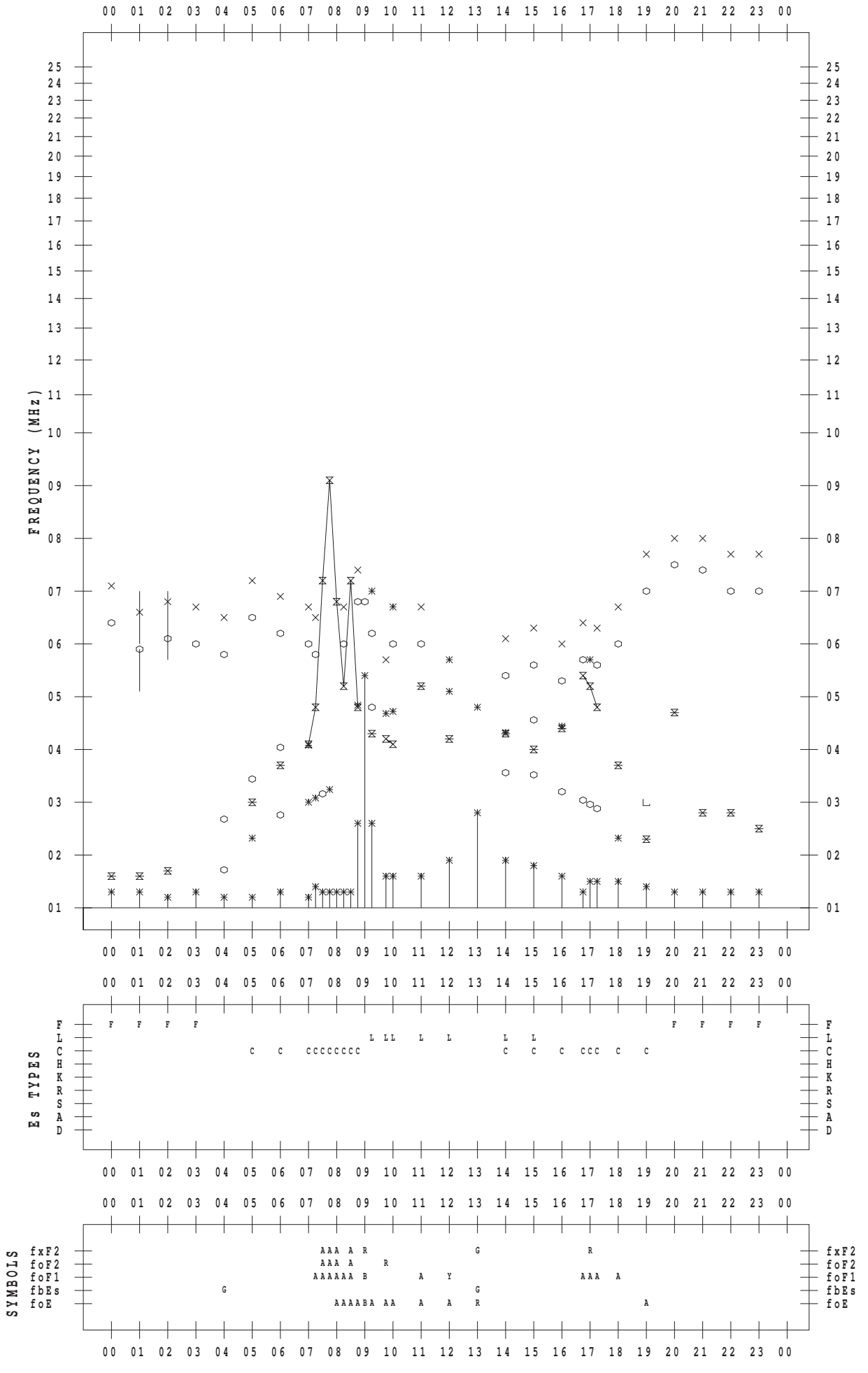
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 3

135 °E MEAN TIME



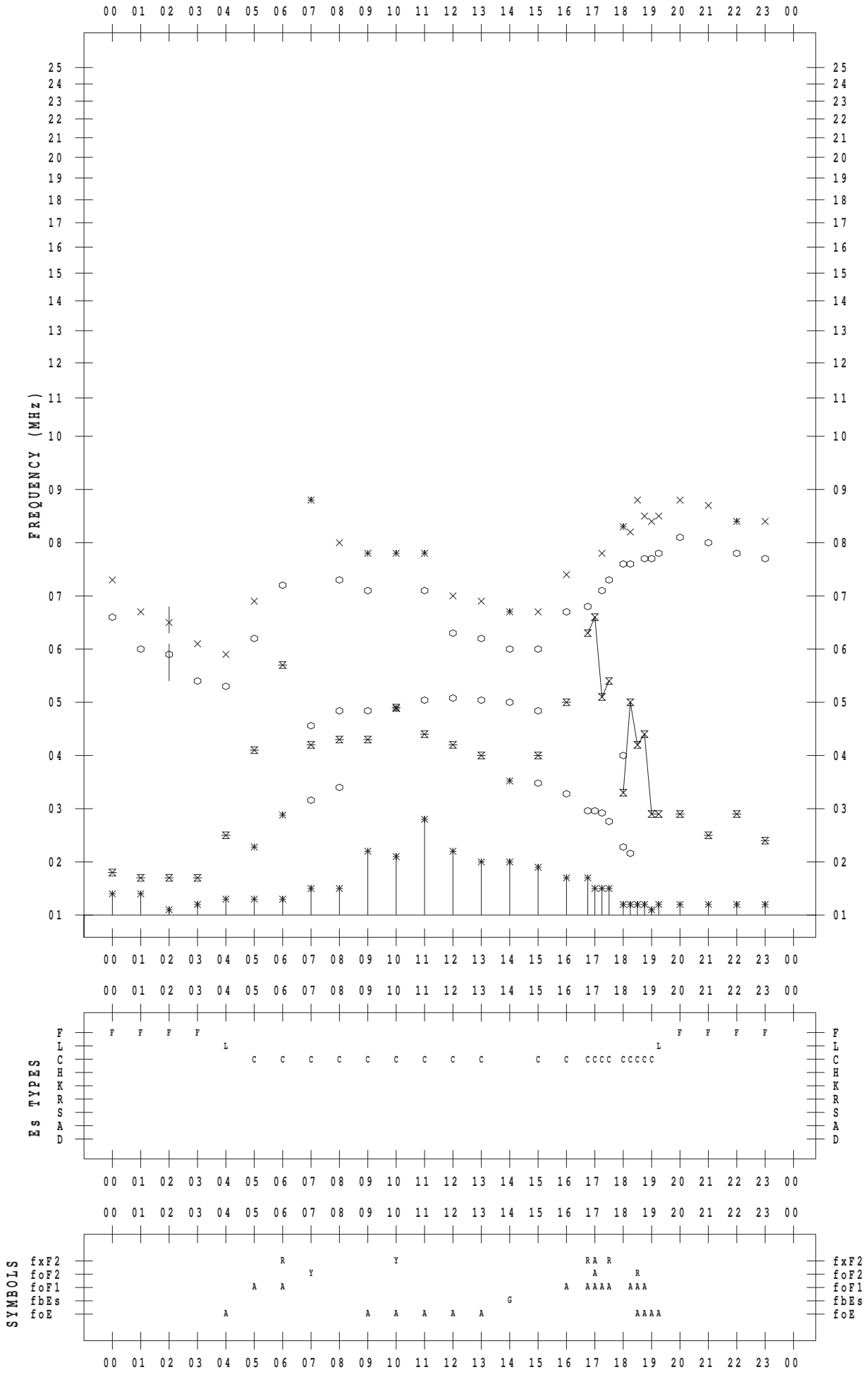
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 4

135 °E MEAN TIME



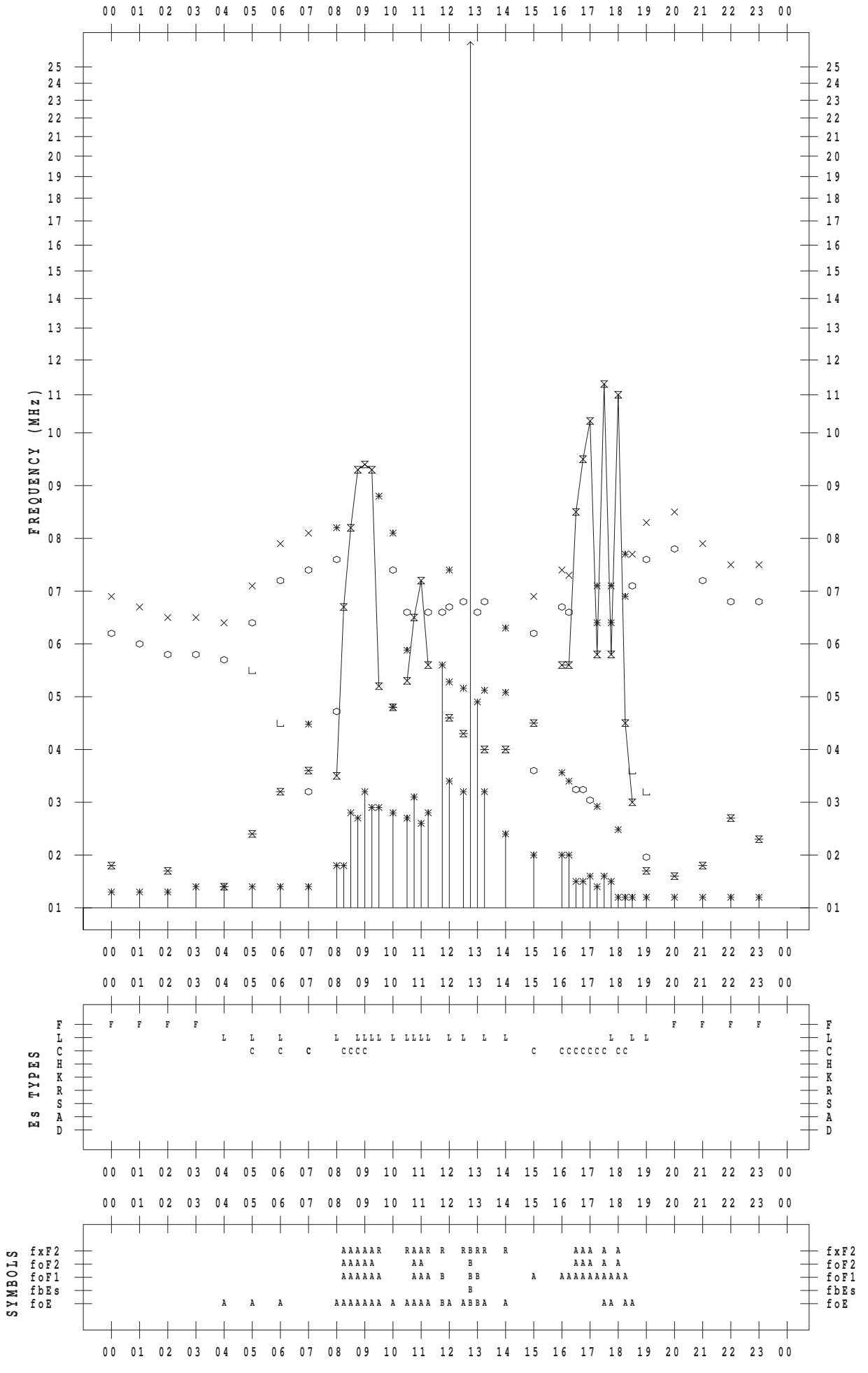
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 5

135 °E MEAN TIME



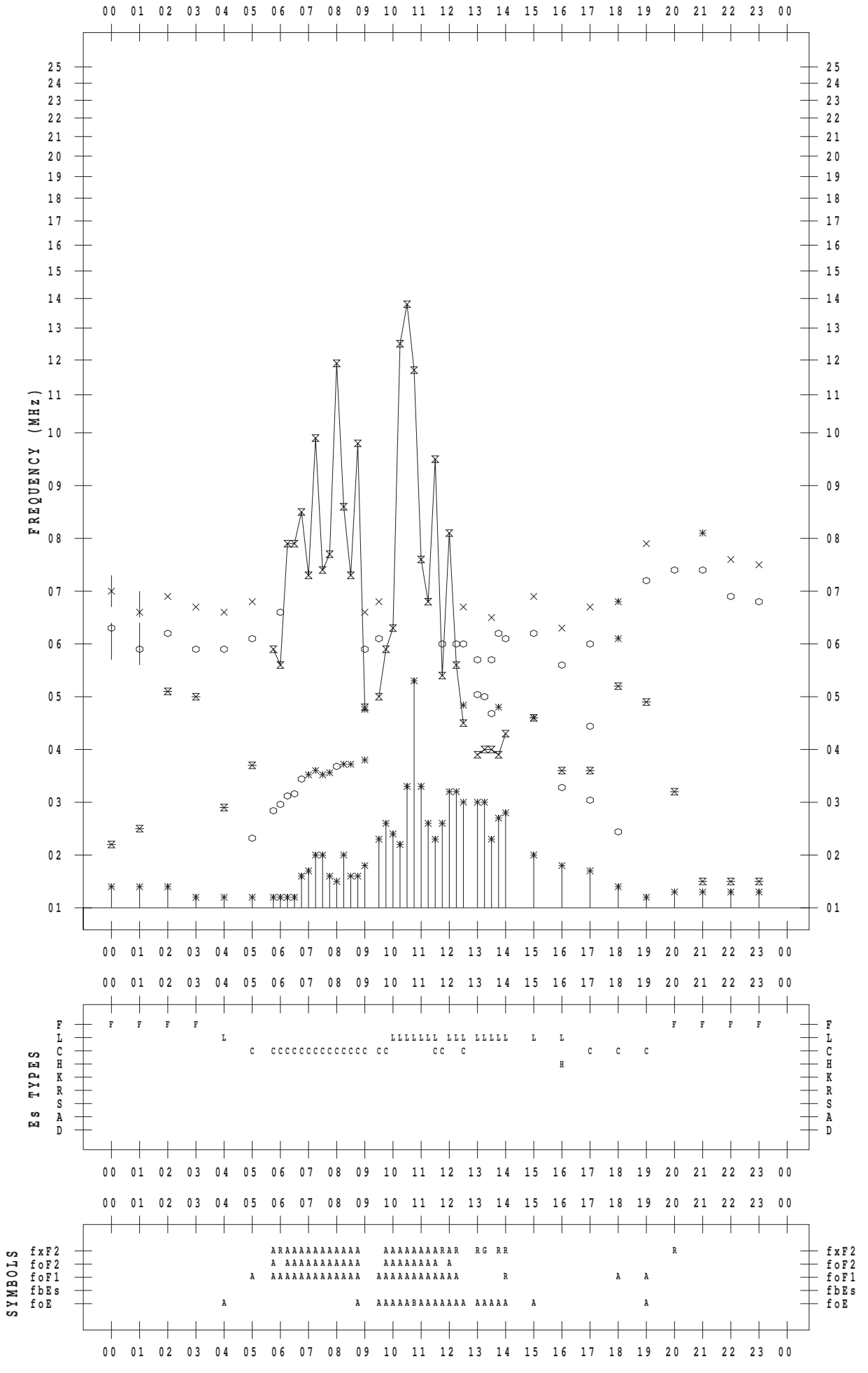
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 6

135 °E MEAN TIME



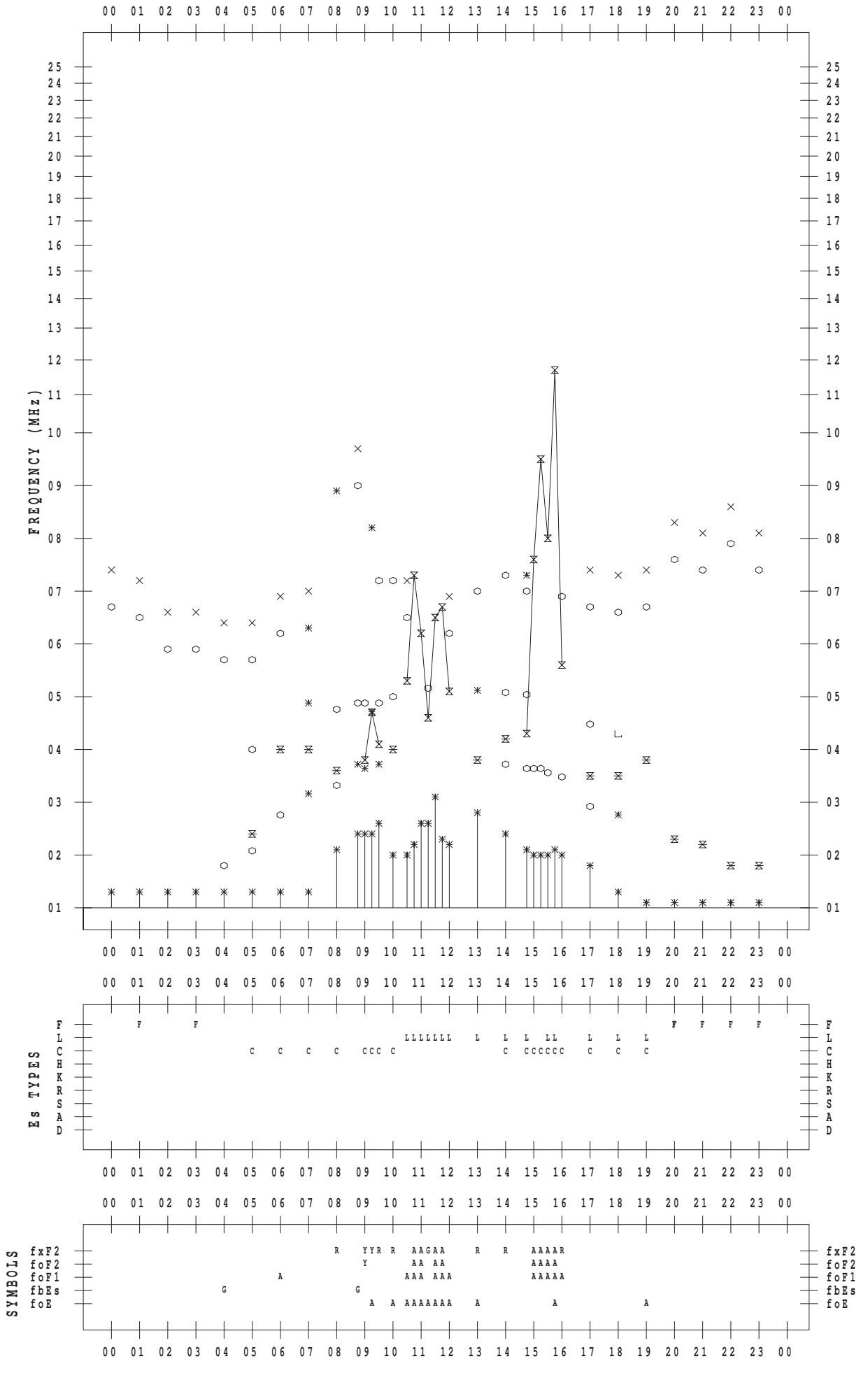
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 7

135 °E MEAN TIME



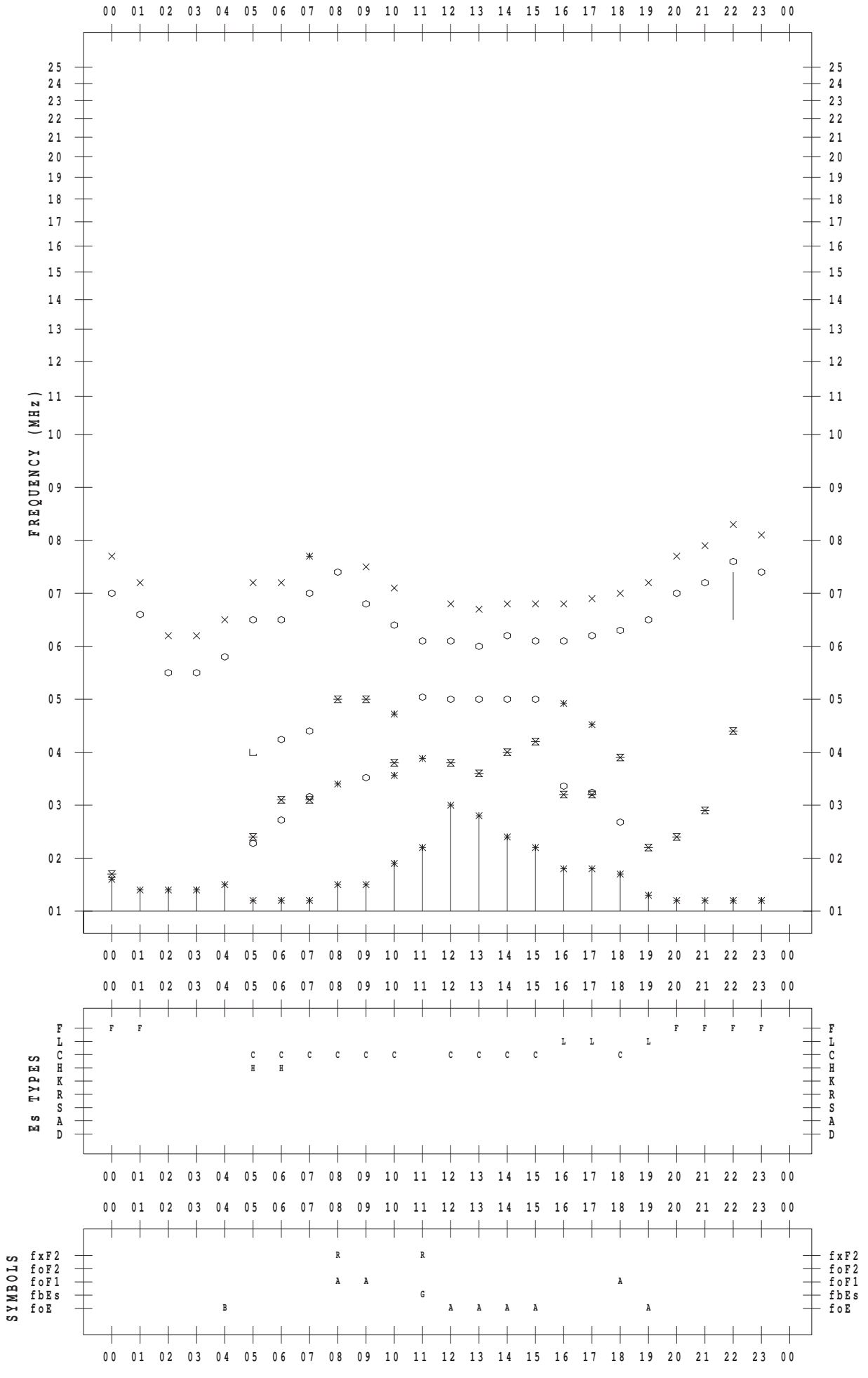
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 8

135 °E MEAN TIME



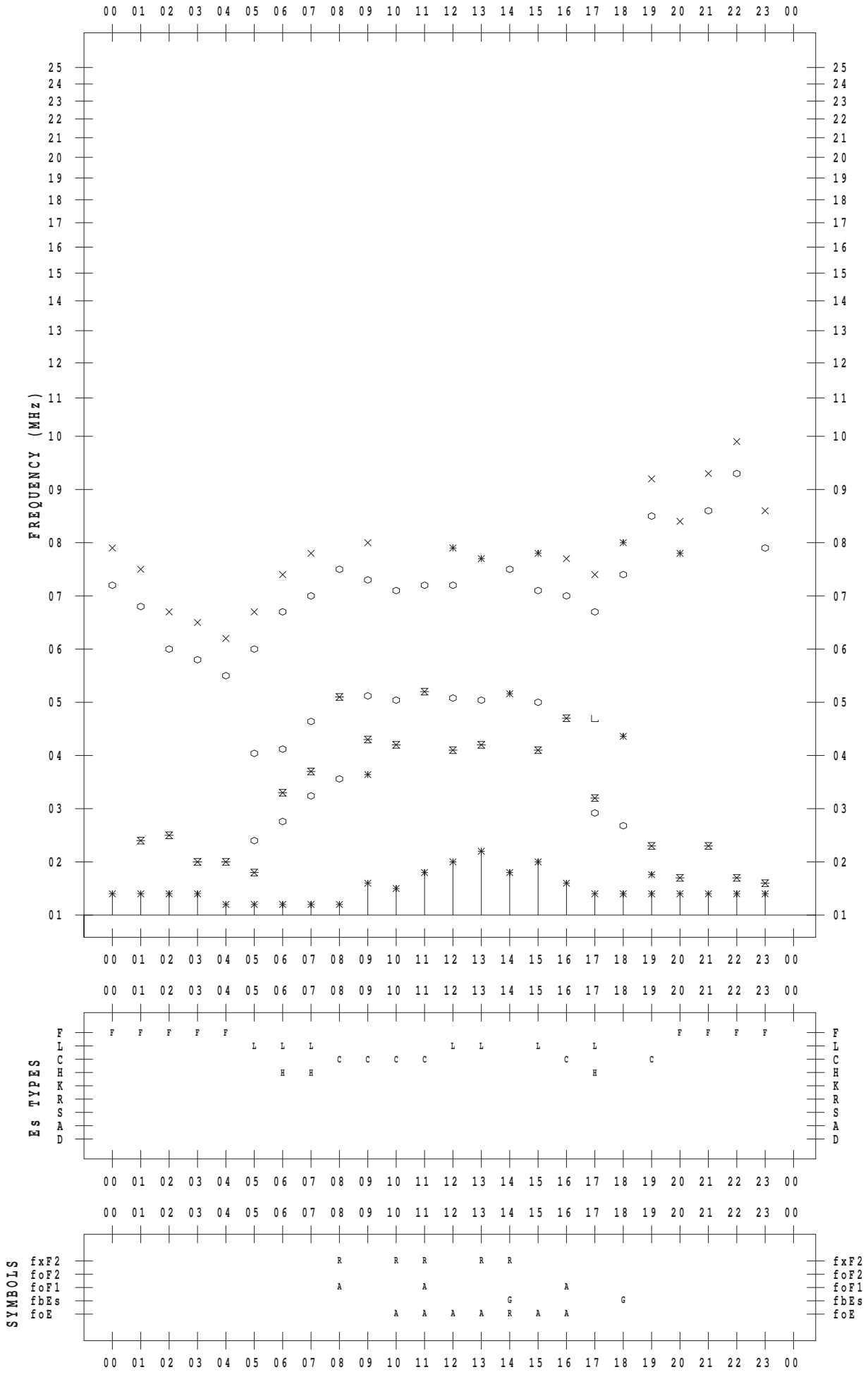
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/ 9

135 °E MEAN TIME



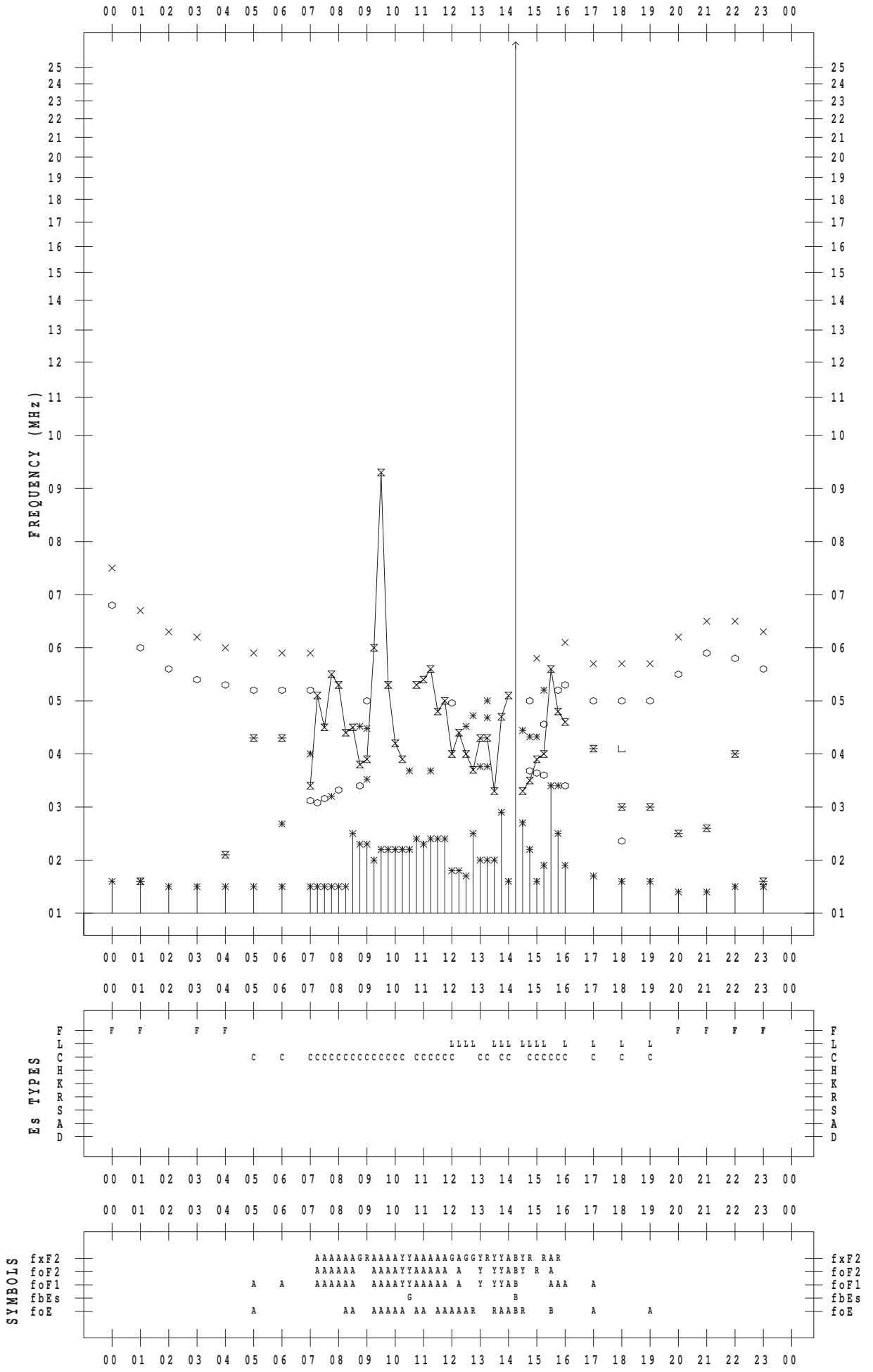
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/10

135 °E MEAN TIME



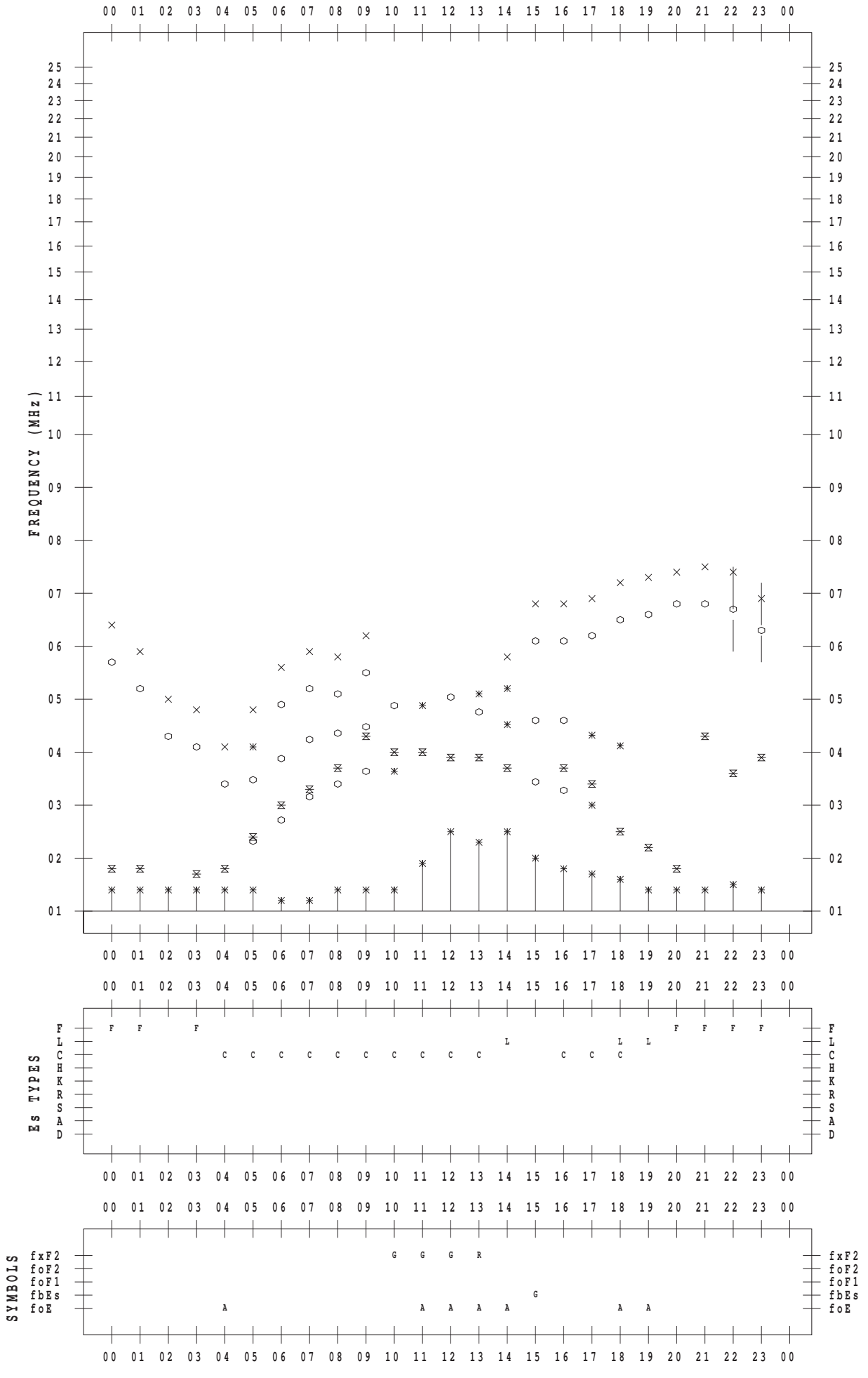
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/11

135 °E MEAN TIME



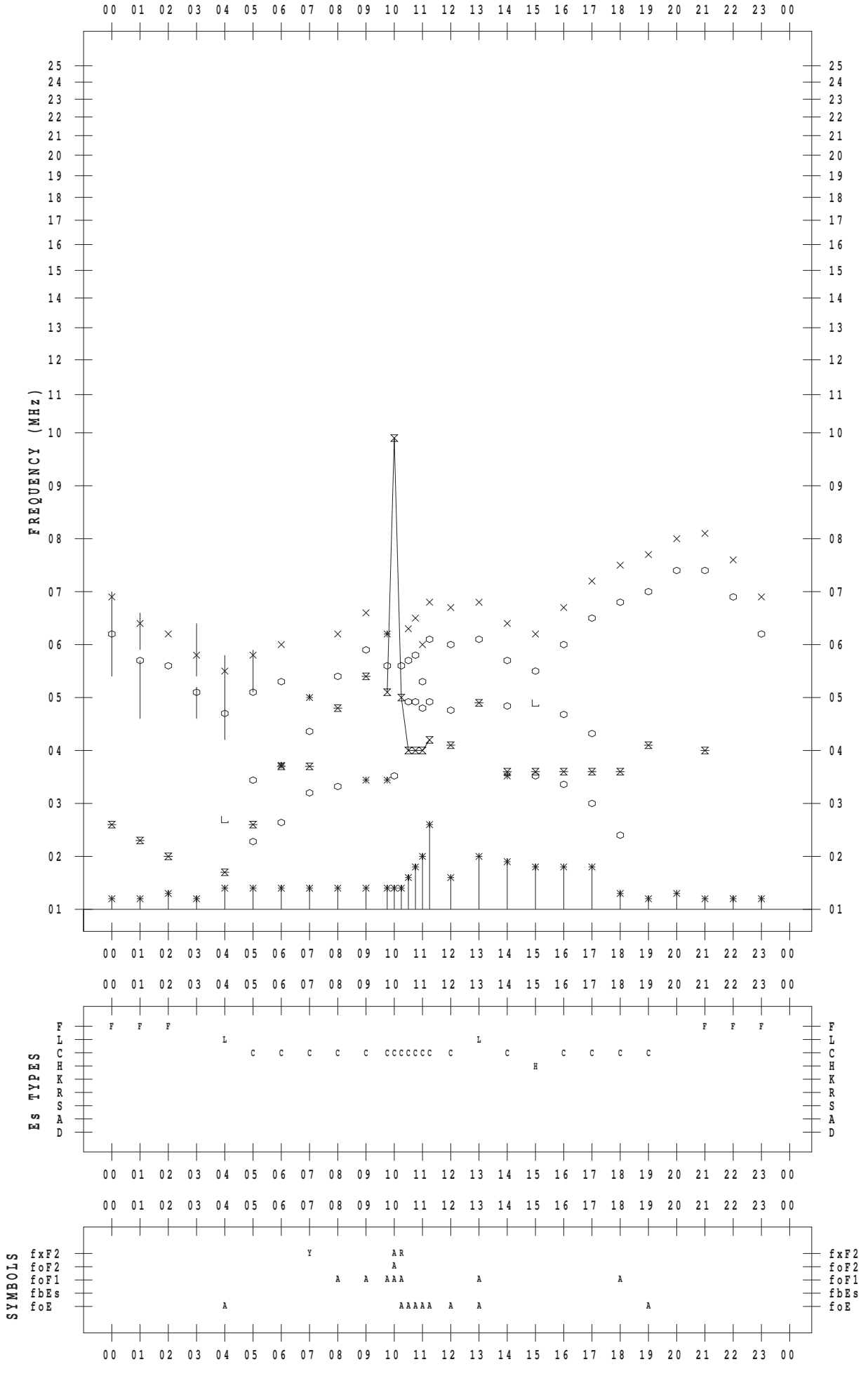
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/12

135 °E MEAN TIME



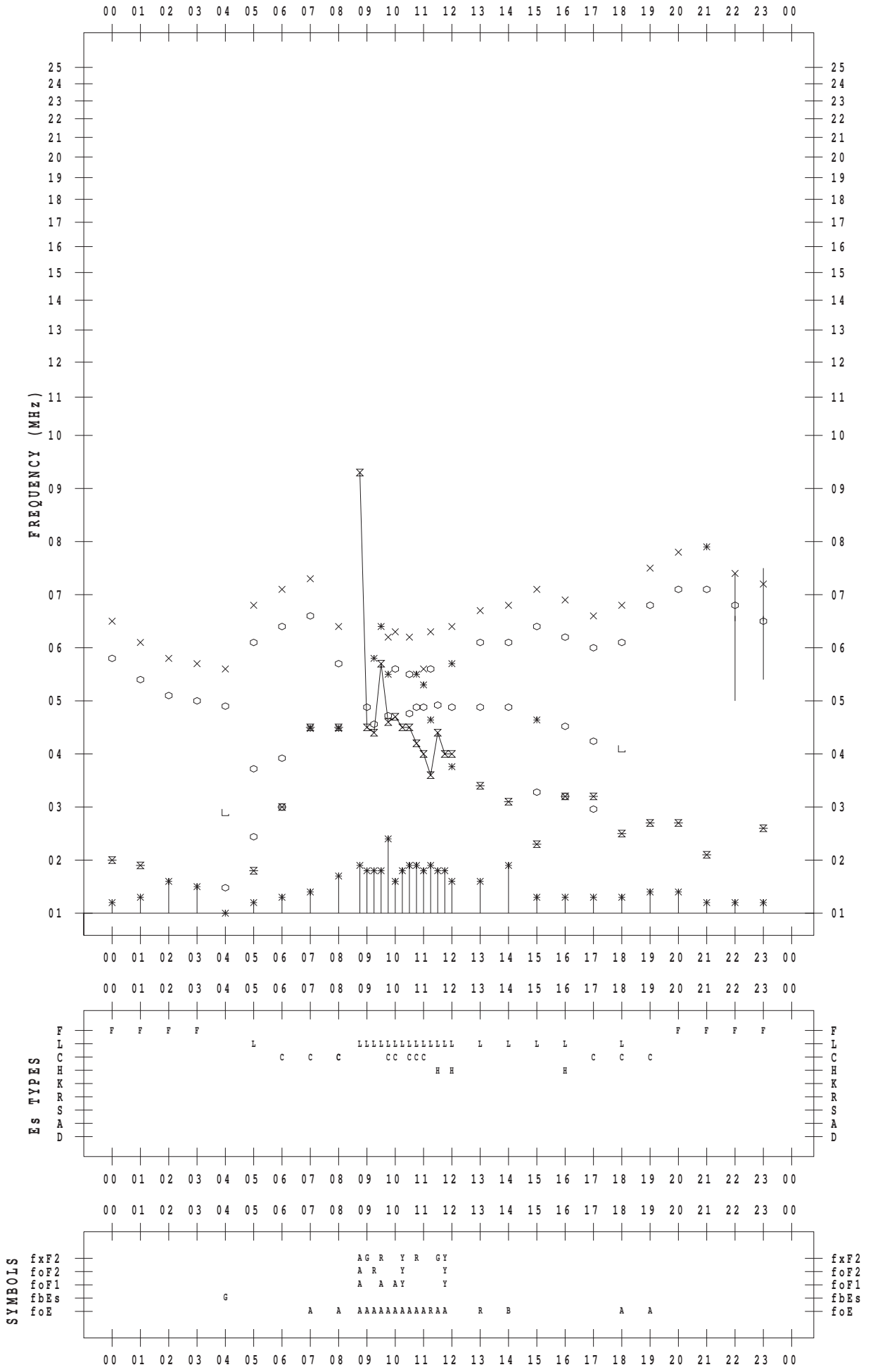
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/13

135 °E MEAN TIME



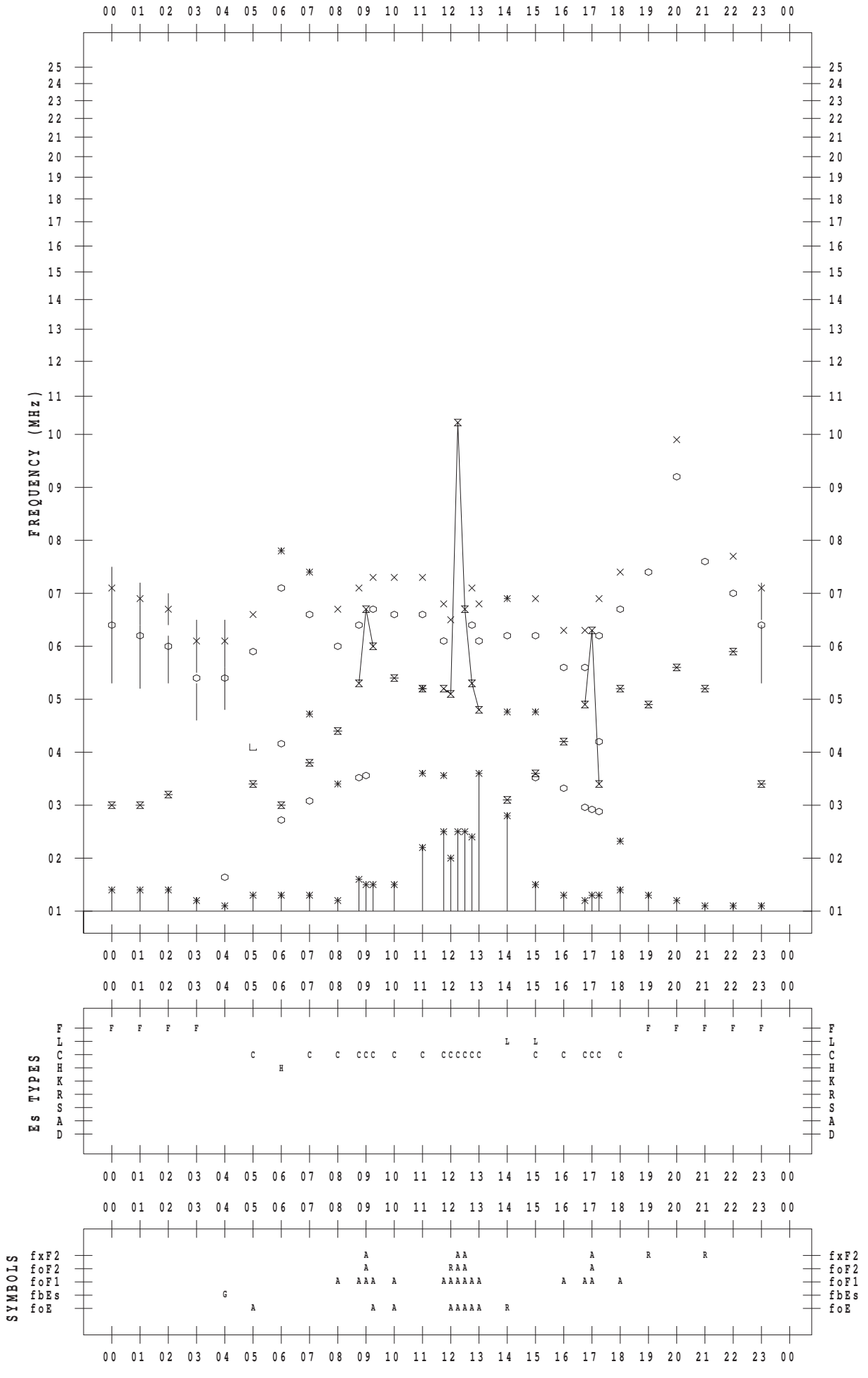
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/14

135 °E MEAN TIME



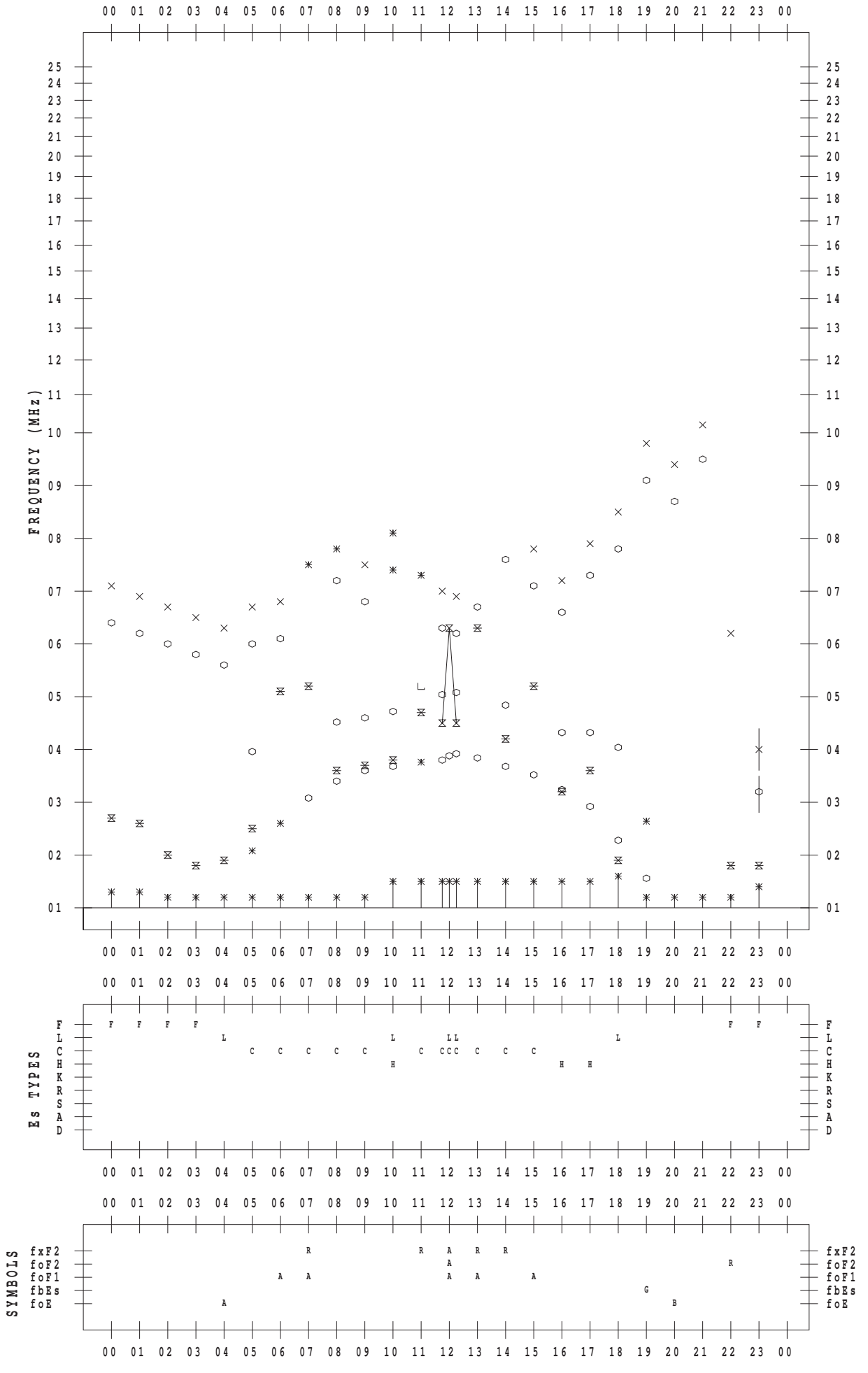
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/15

135 °E MEAN TIME



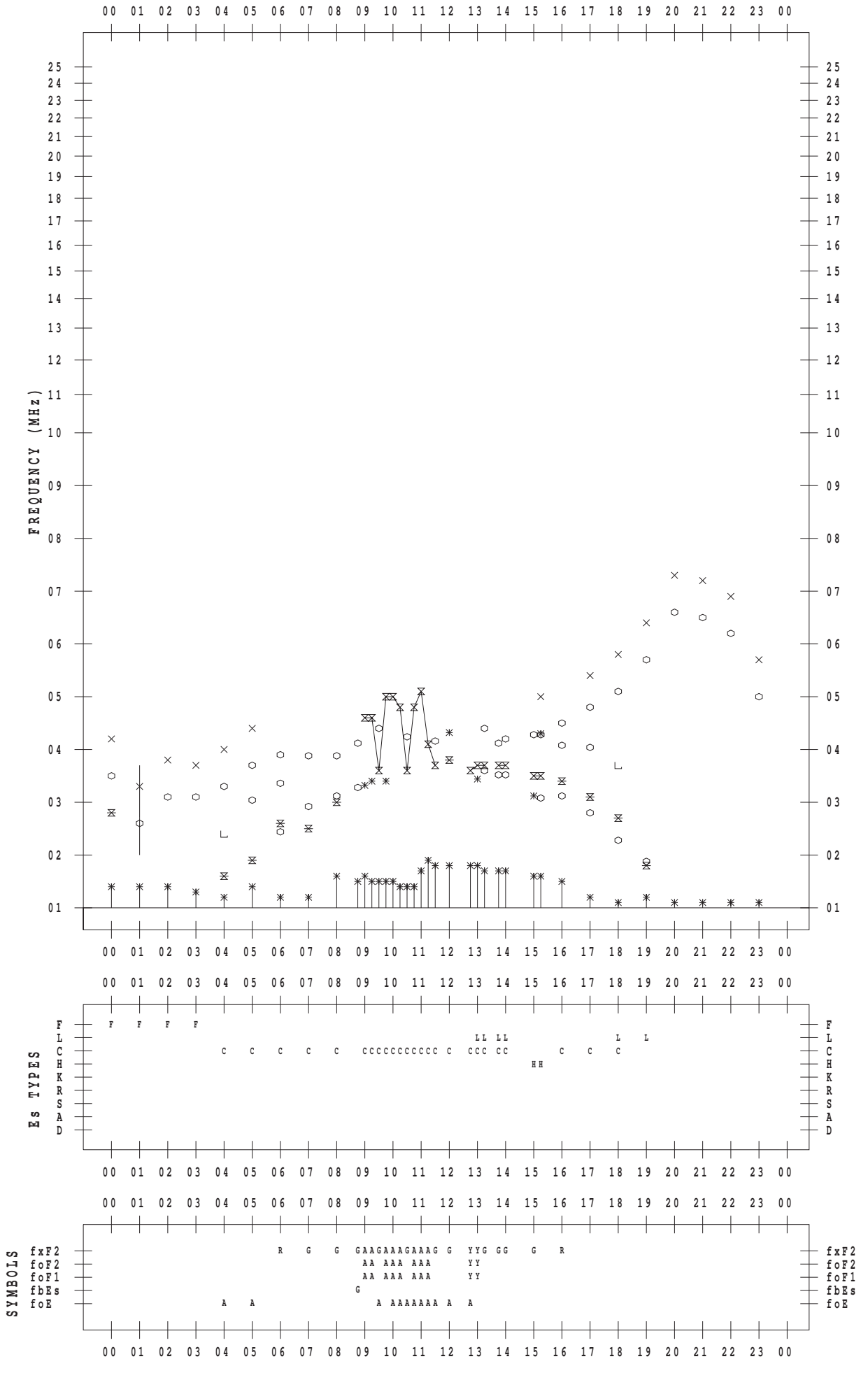
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/16

135 °E MEAN TIME



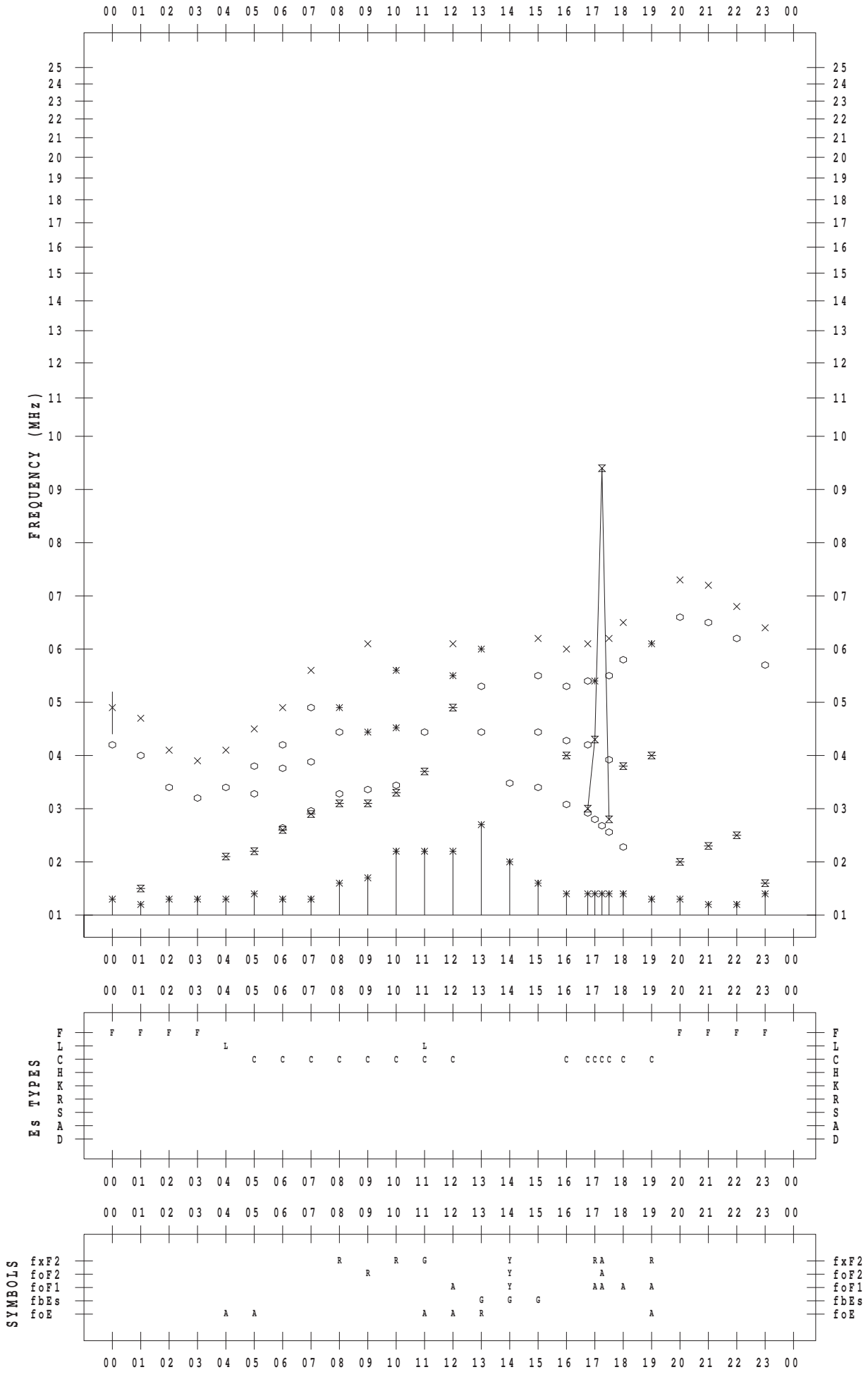
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/17

135 °E MEAN TIME



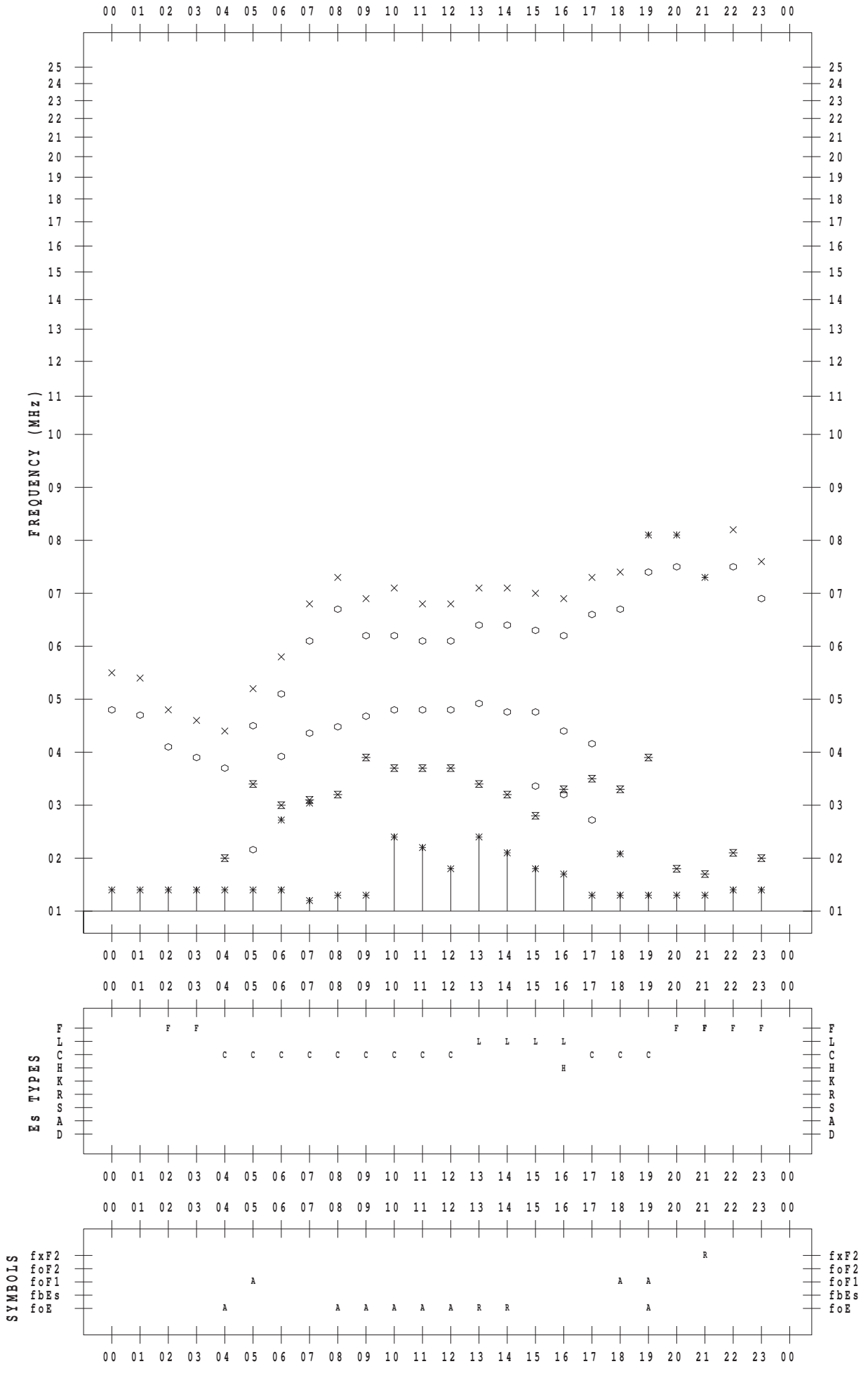
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/18

135 °E MEAN TIME



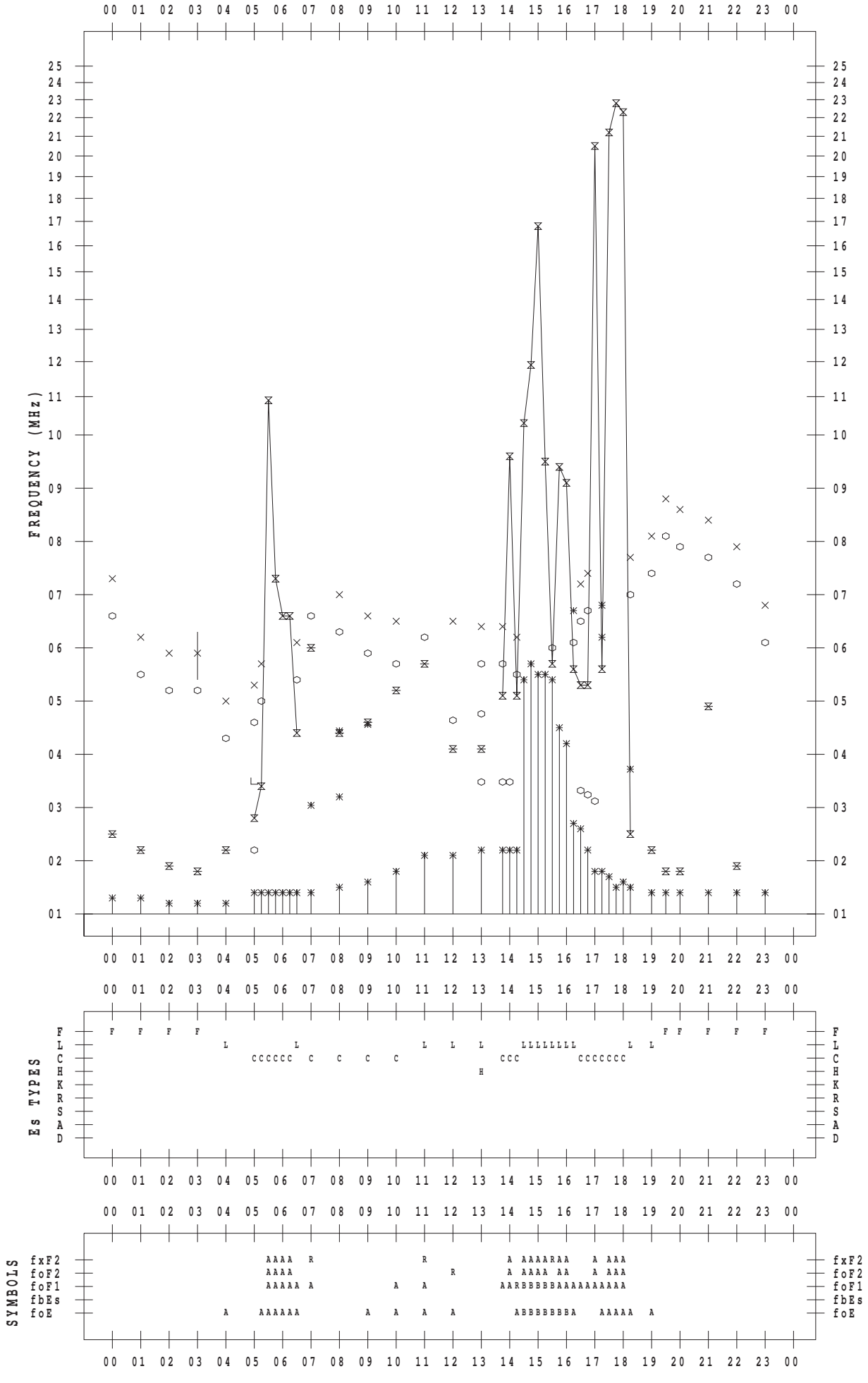
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/19

135 °E MEAN TIME



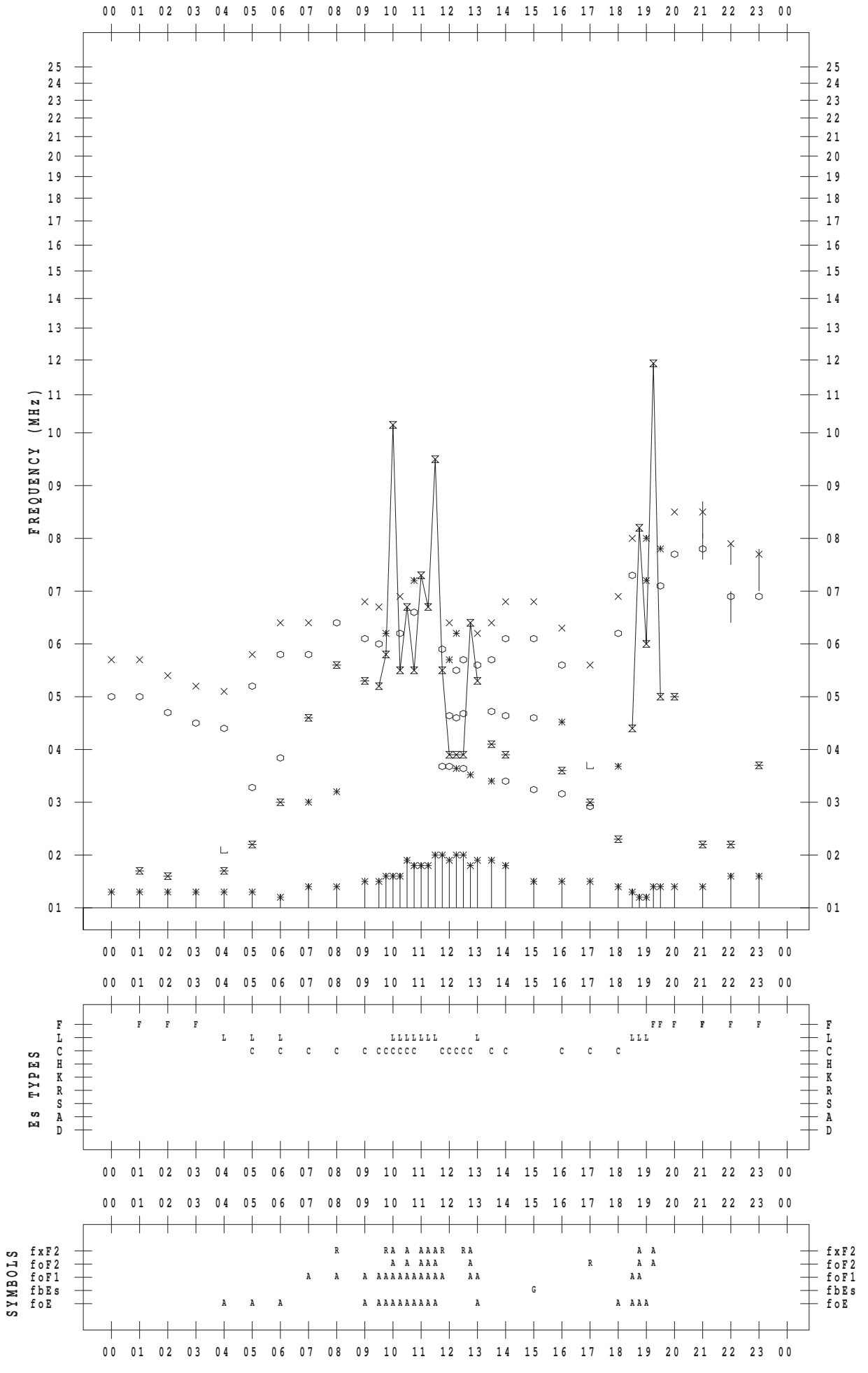
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/20

135 °E MEAN TIME



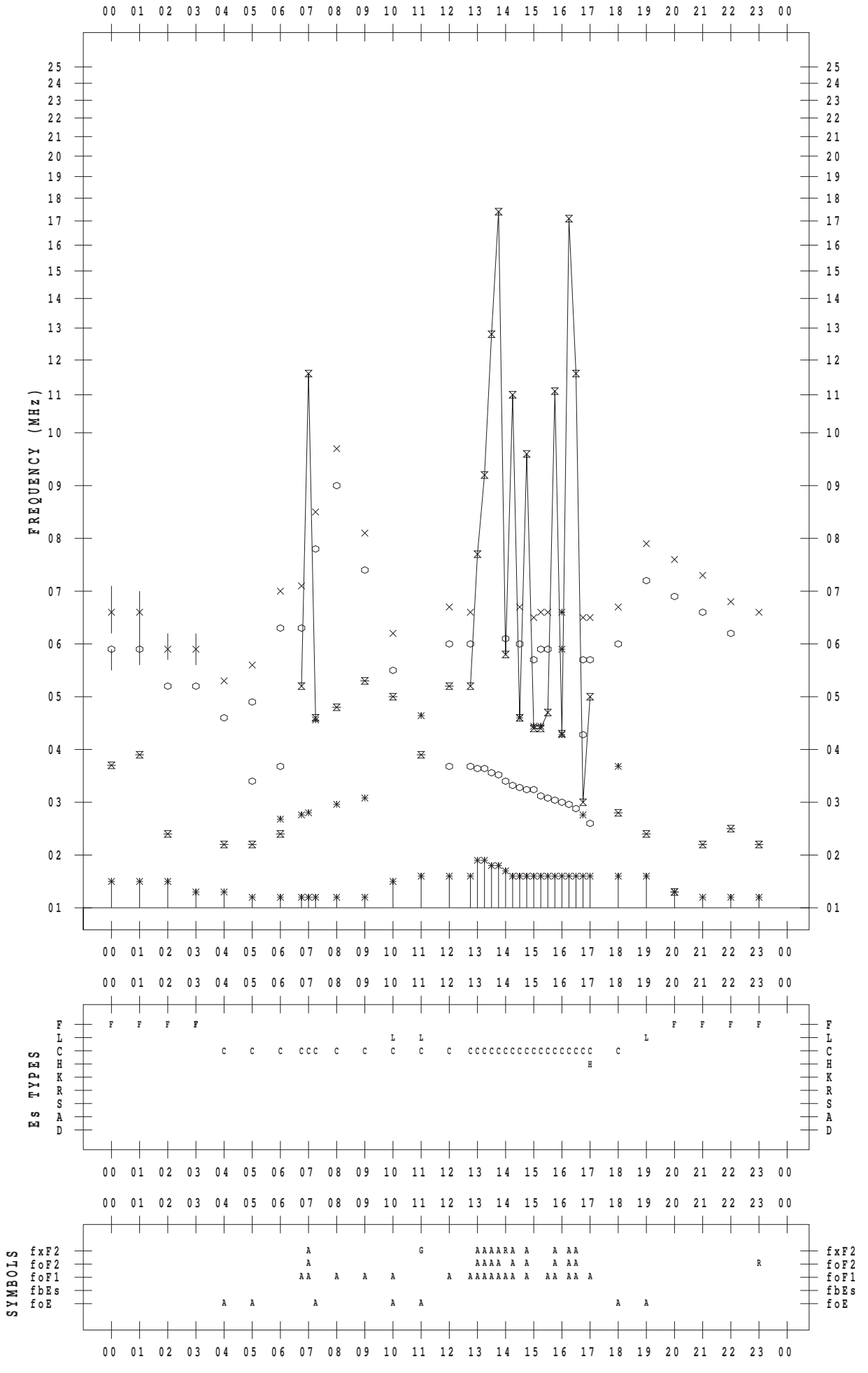
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/21

135 °E MEAN TIME



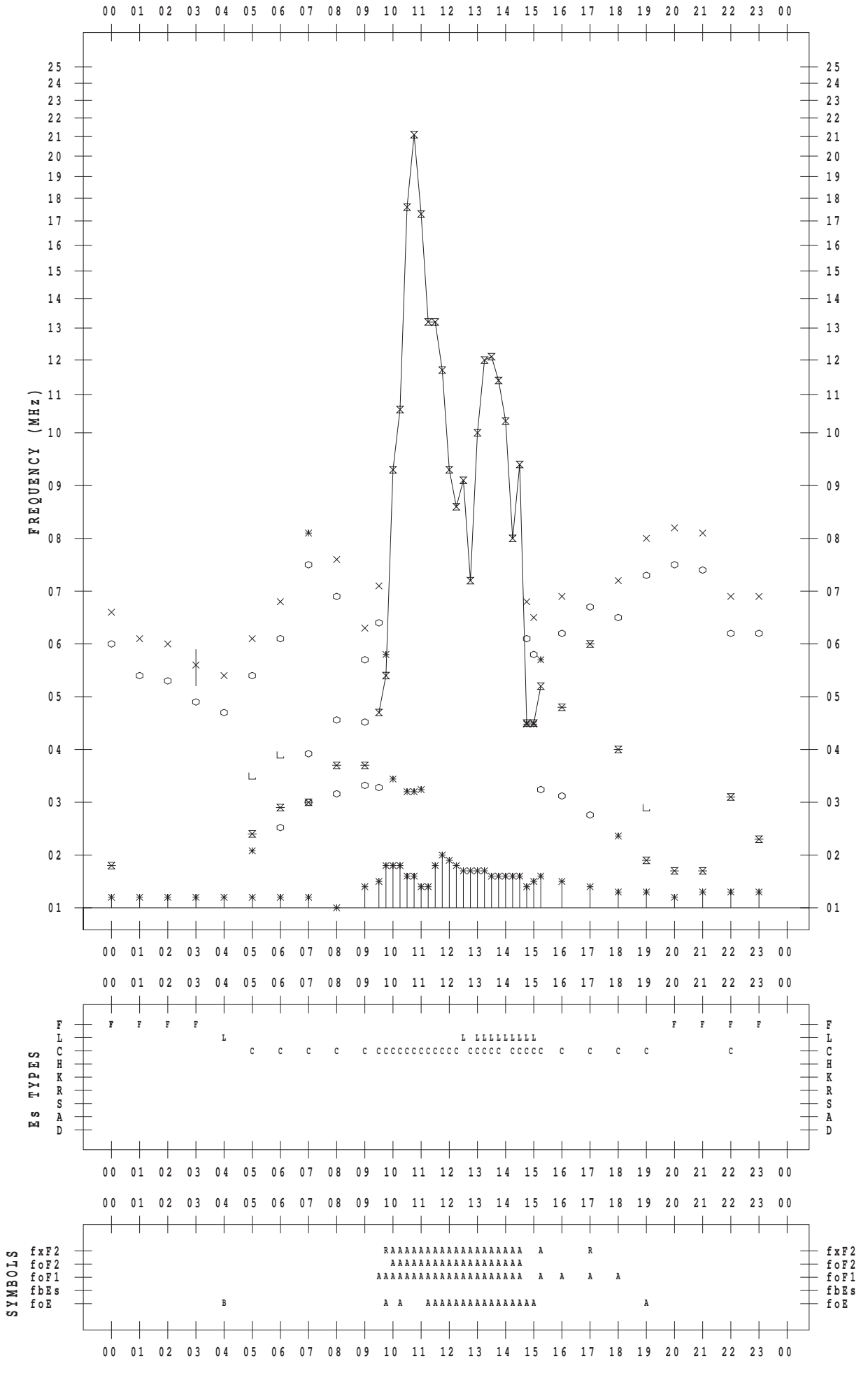
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/22

135 °E MEAN TIME



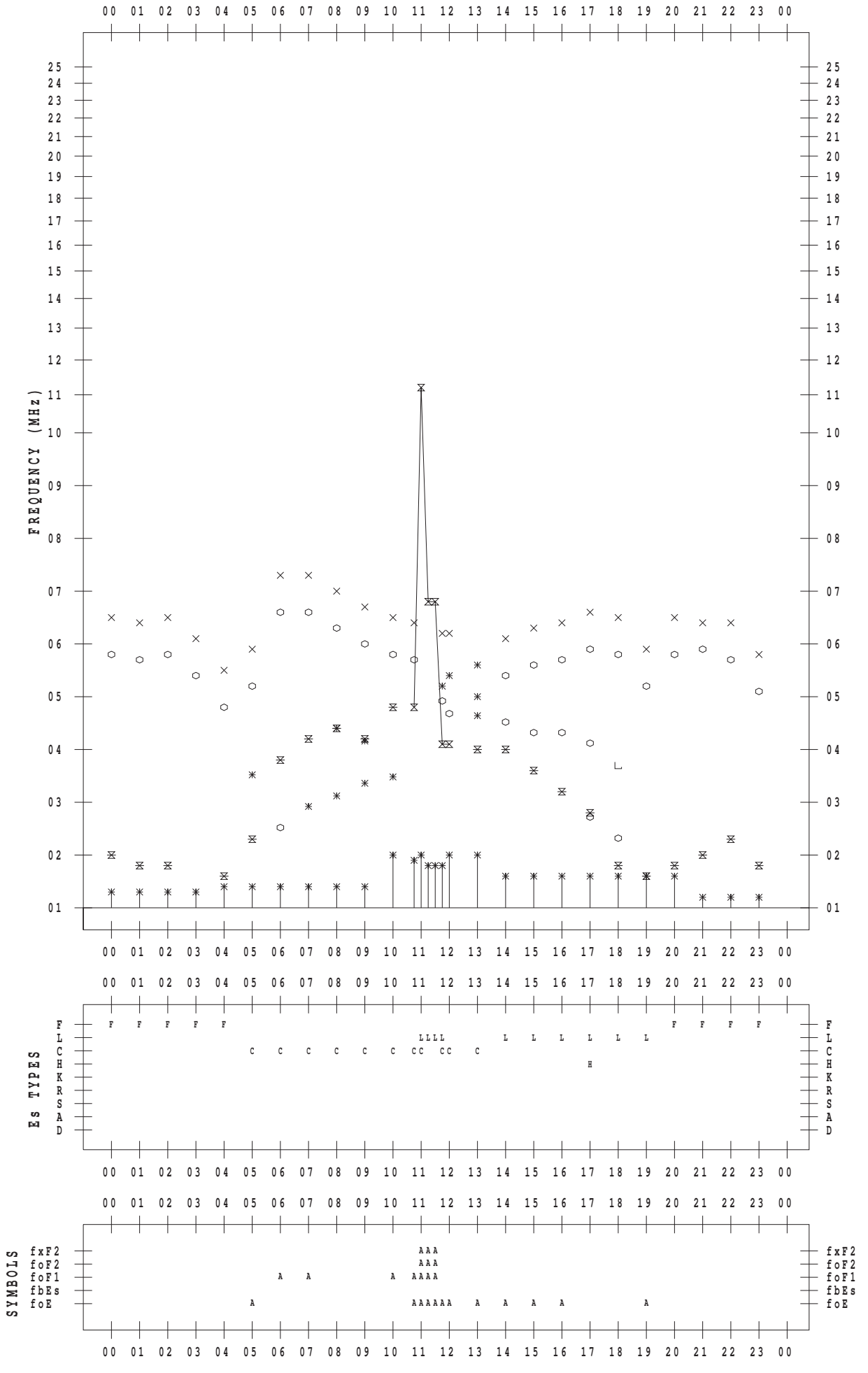
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/23

135 °E MEAN TIME



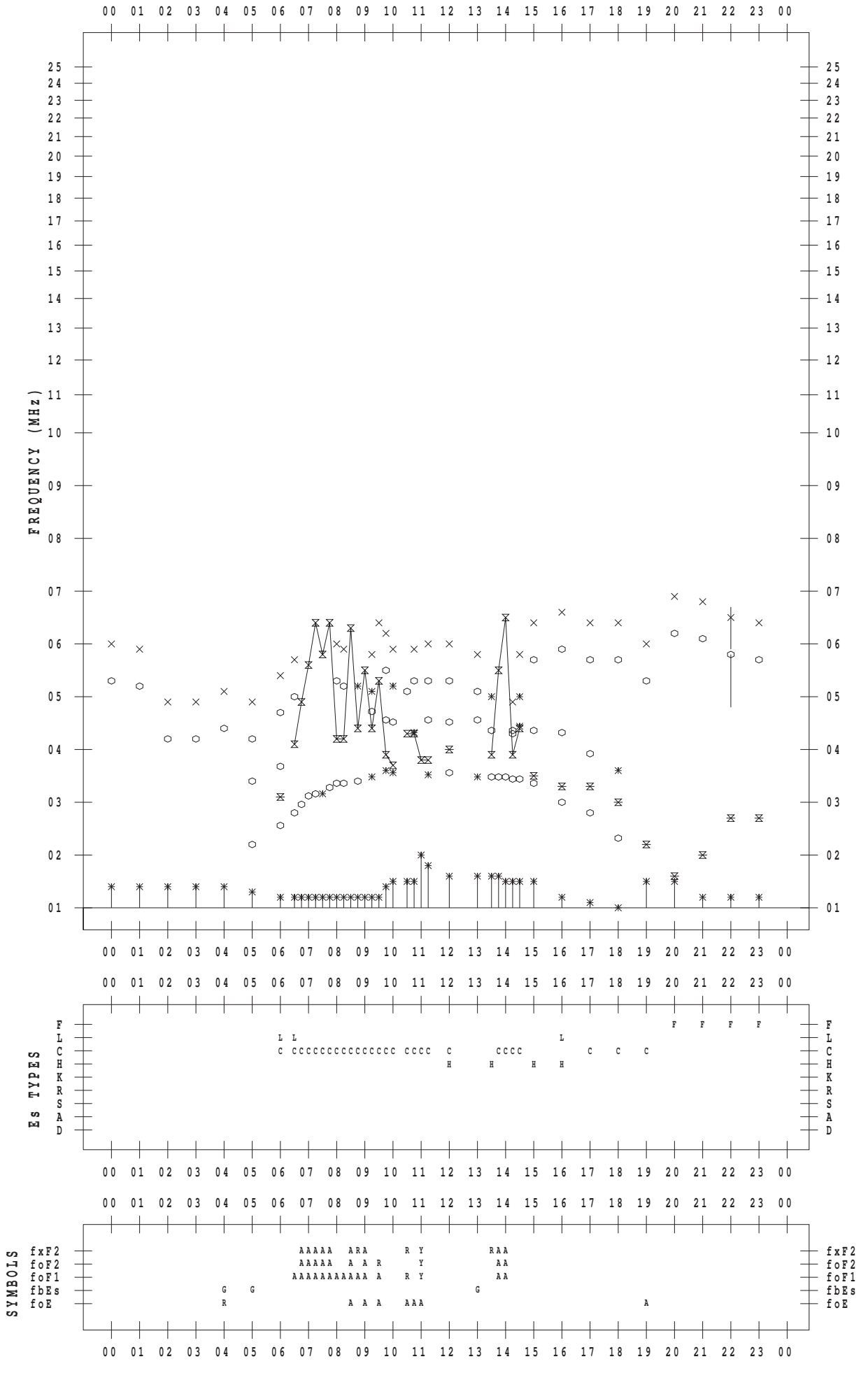
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/24

135 °E MEAN TIME



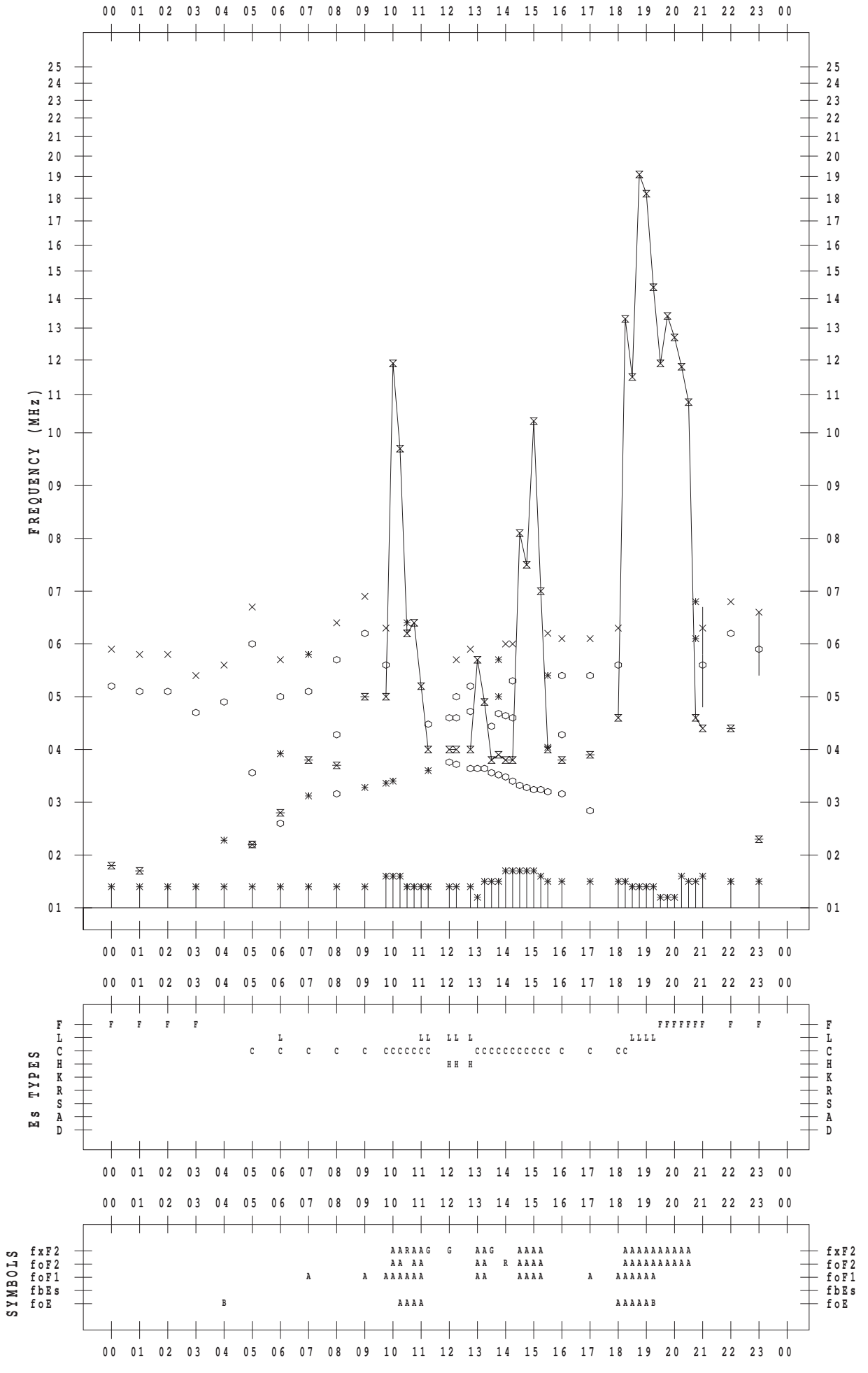
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/25

135 °E MEAN TIME



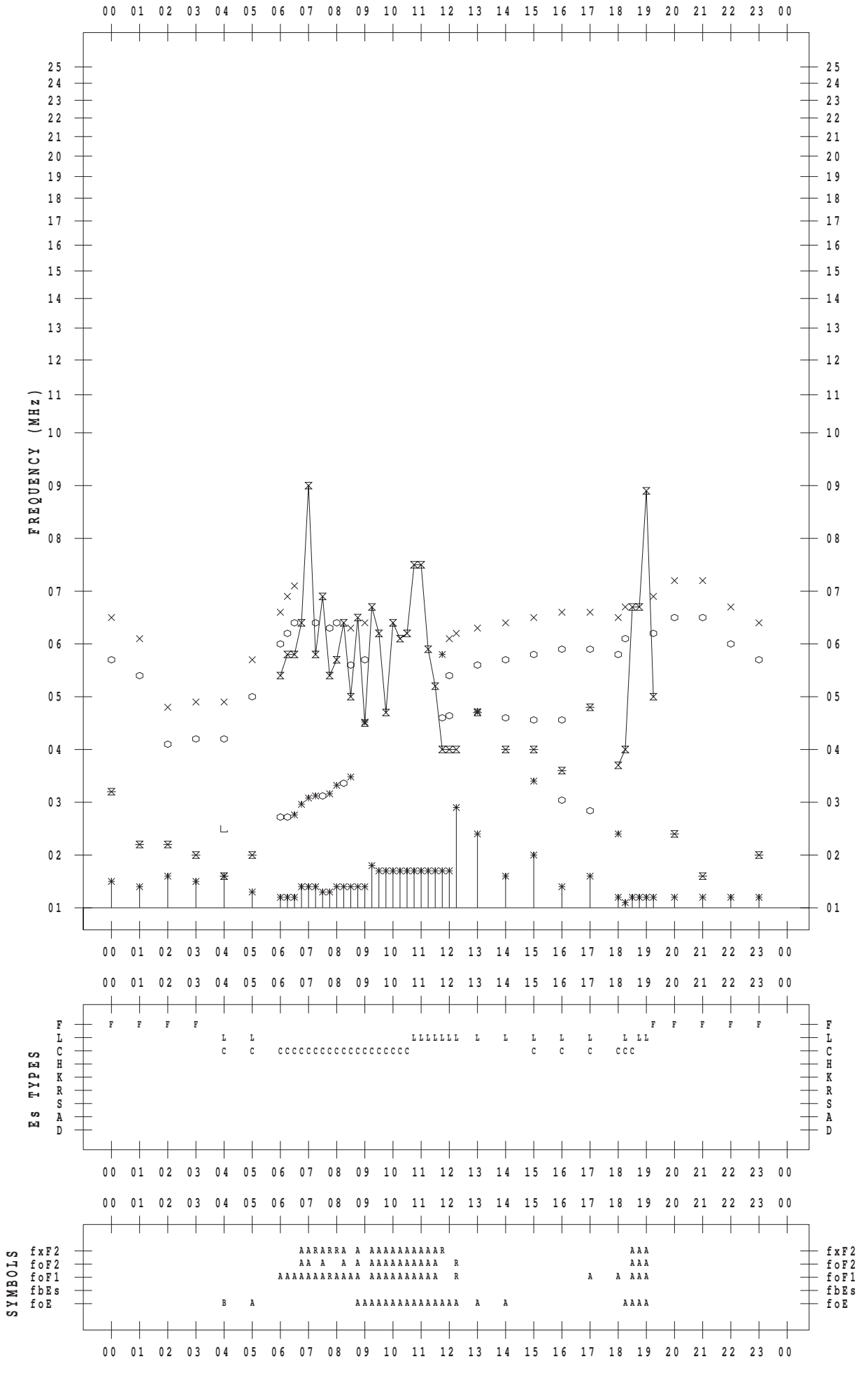
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/26

135 °E MEAN TIME



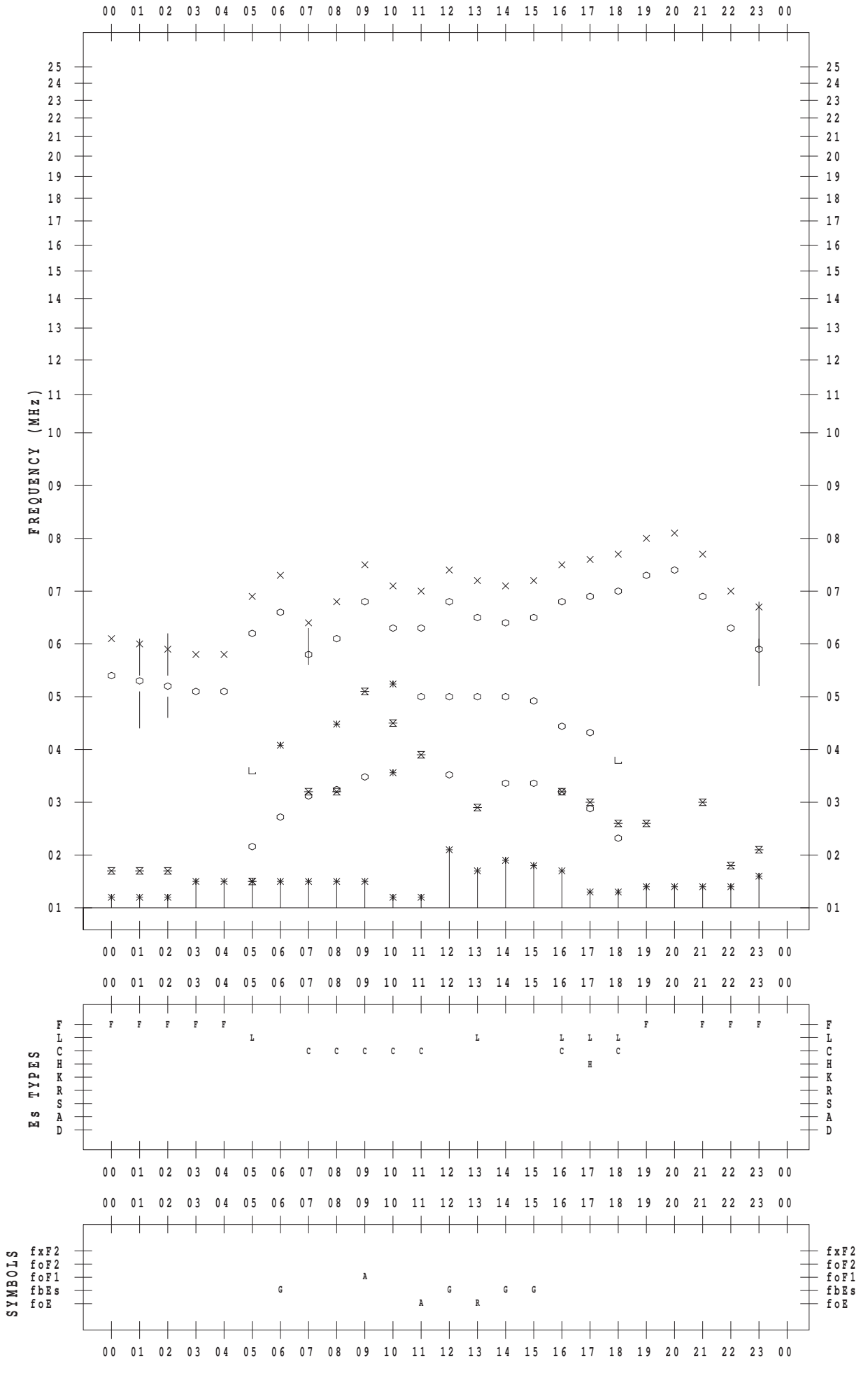
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/27

135 °E MEAN TIME



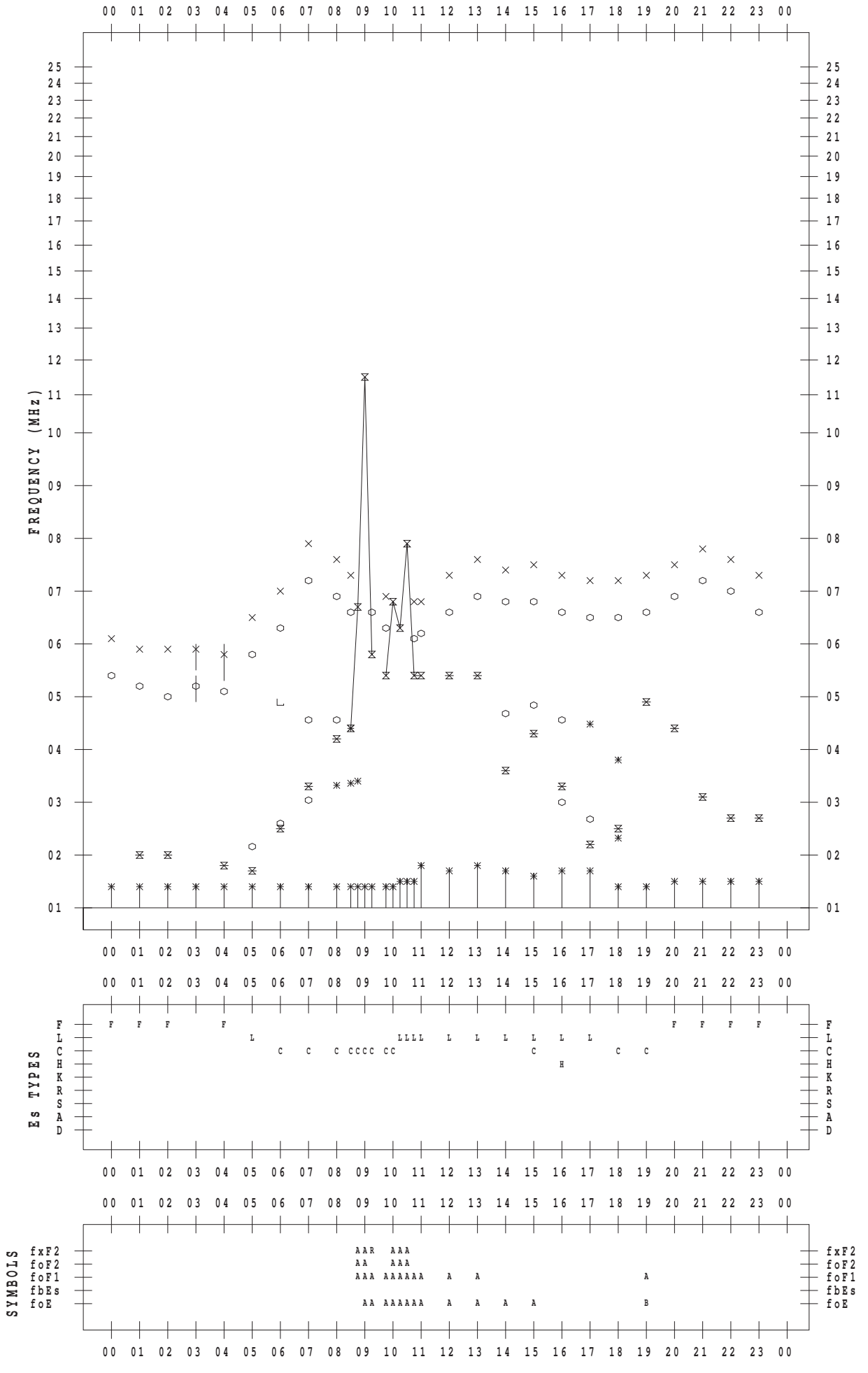
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/28

135 °E MEAN TIME



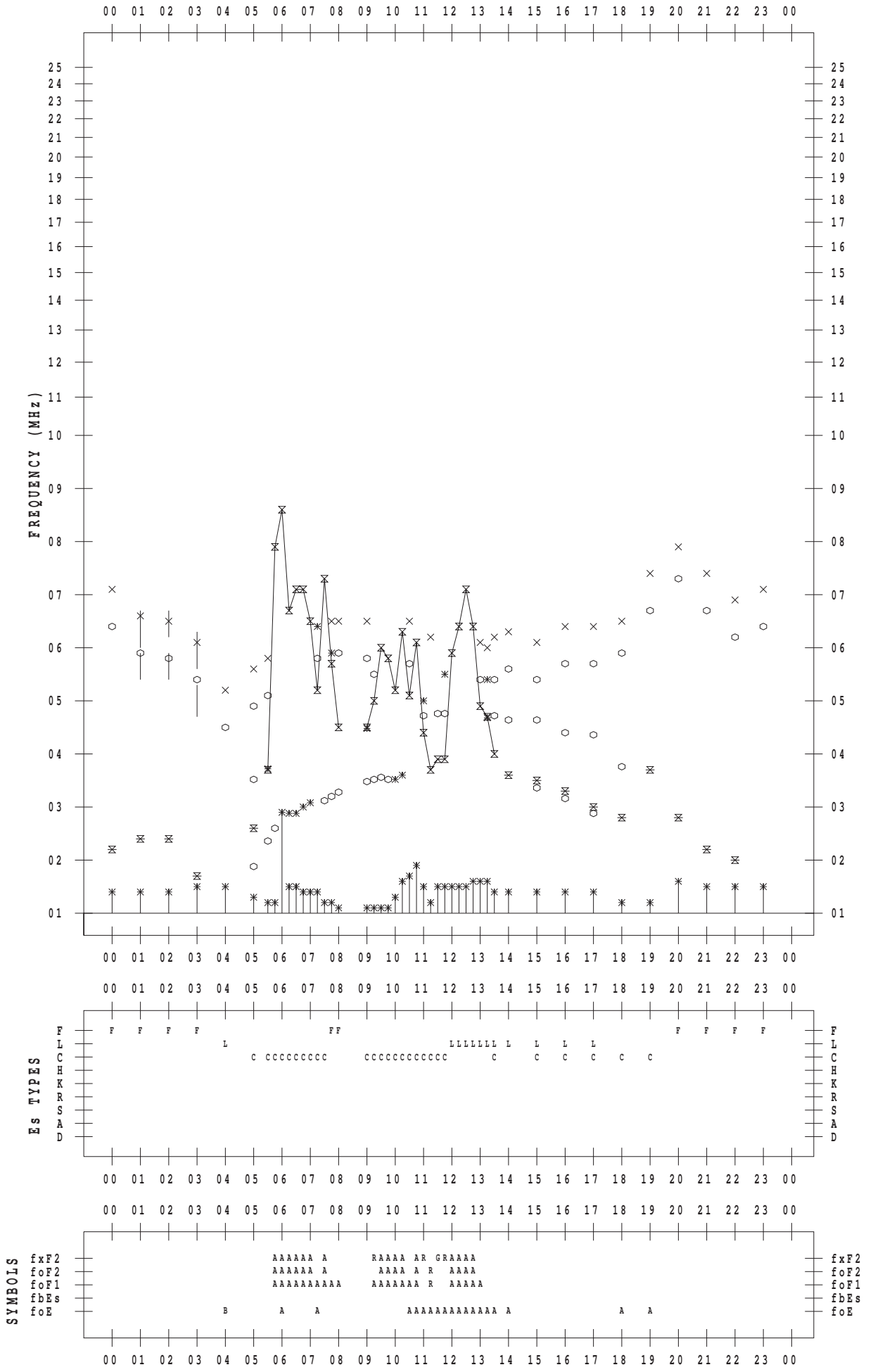
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/29

135 °E MEAN TIME



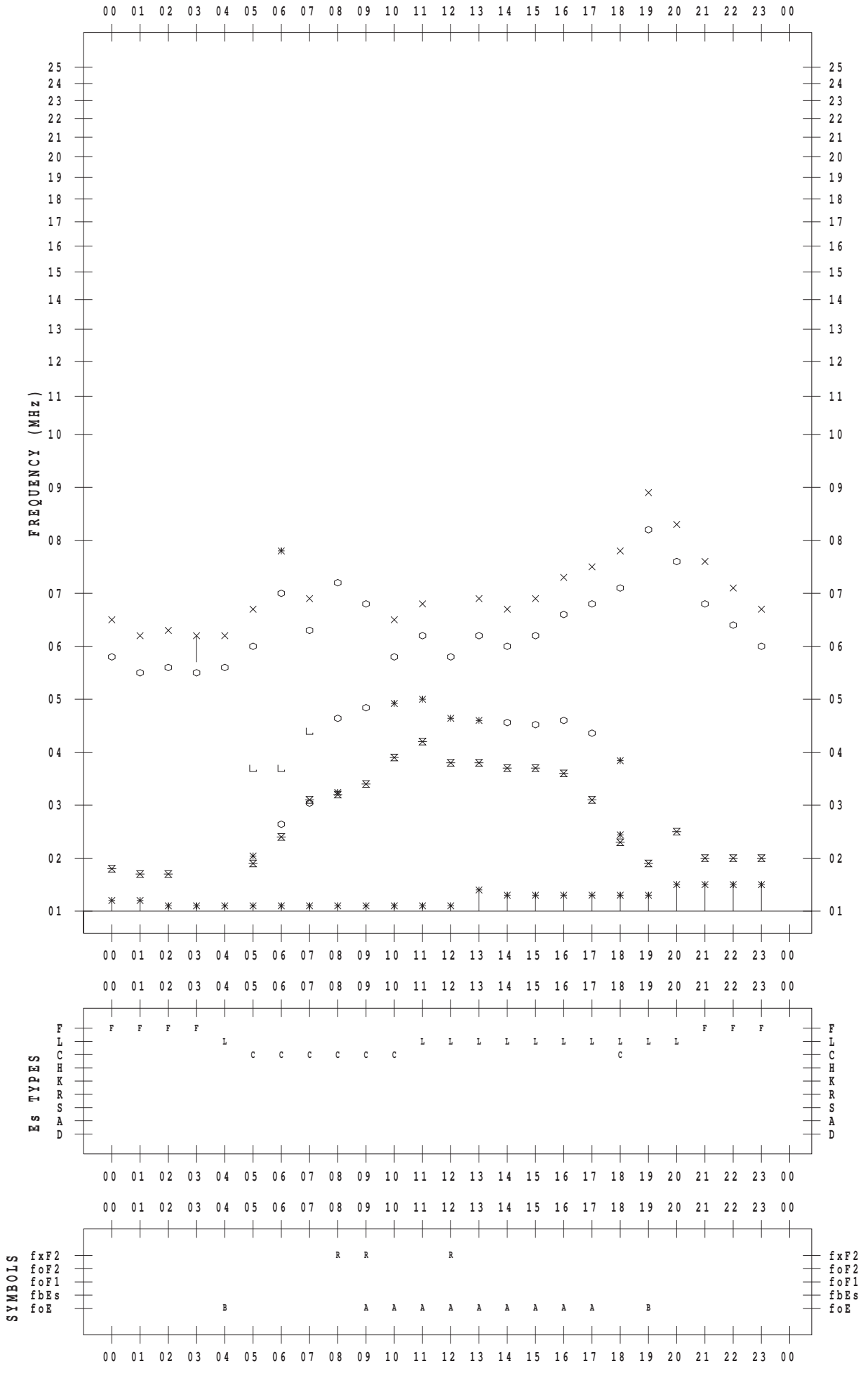
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/30

135 °E MEAN TIME



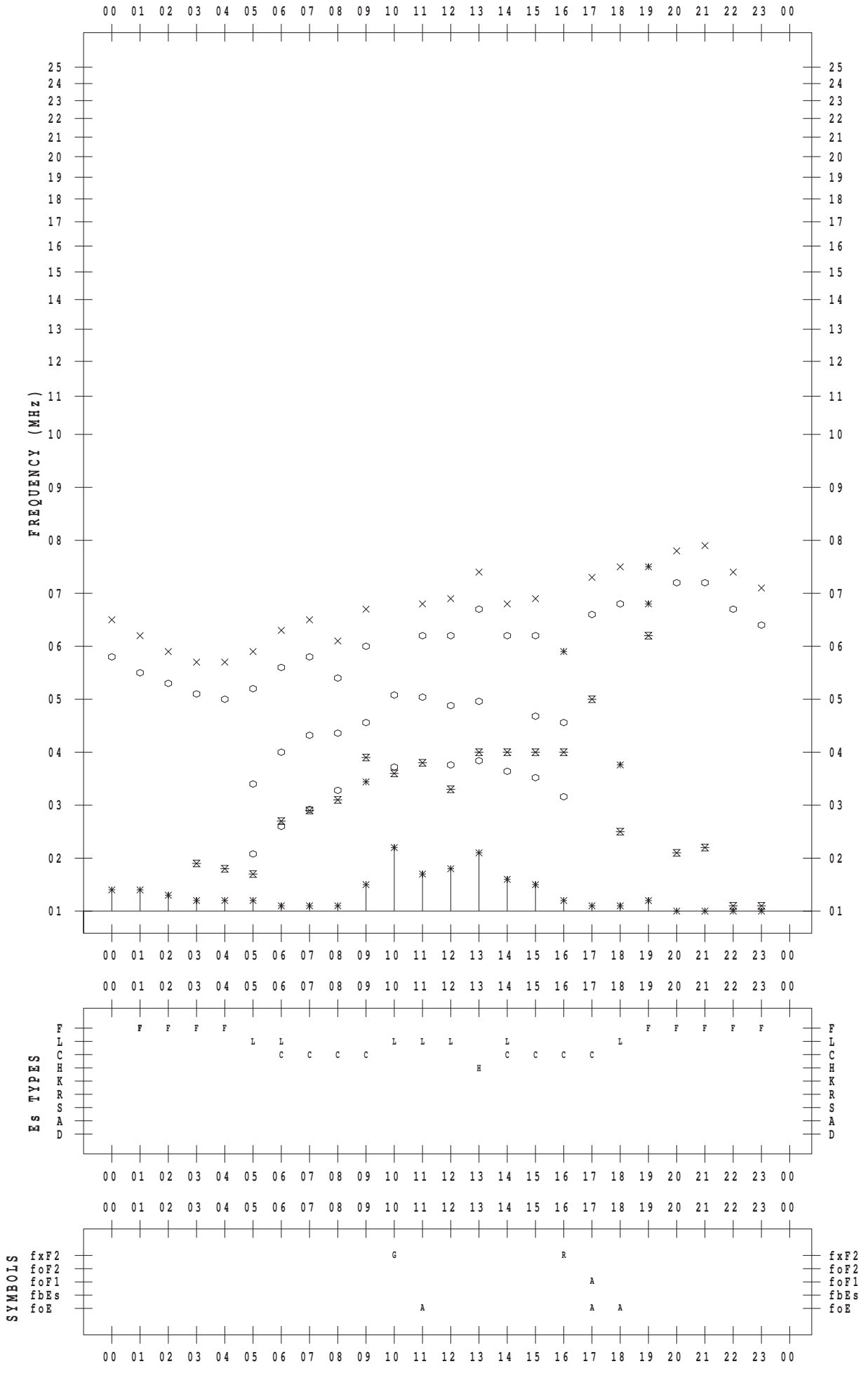
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 7/31

135 °E MEAN TIME

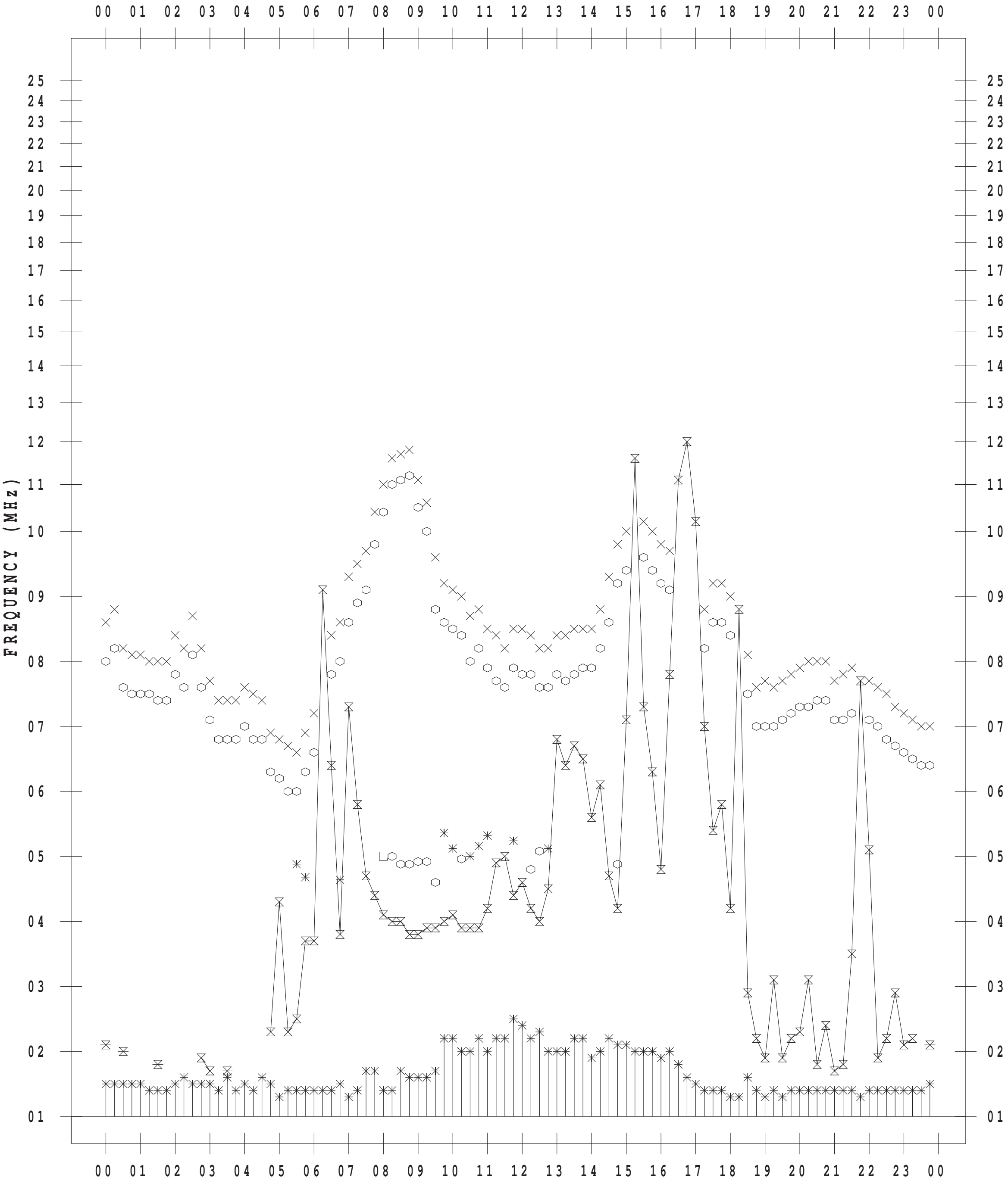


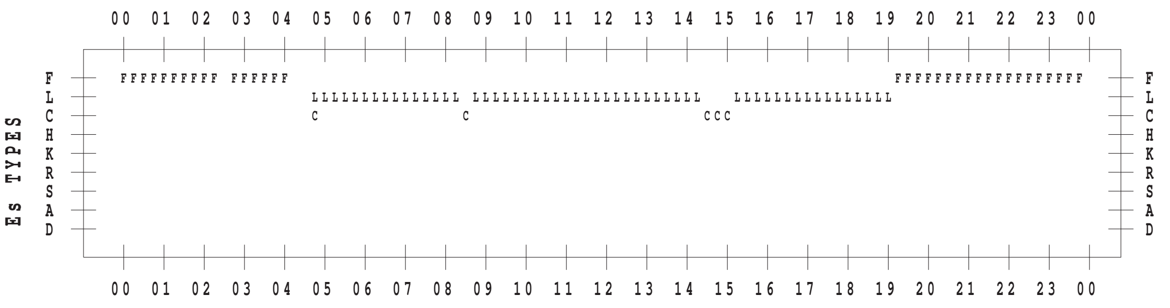
f-PLOT DATA

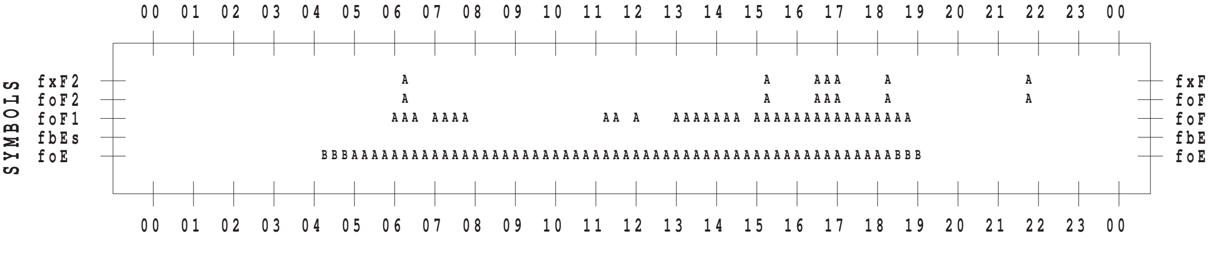
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2012/ 7/ 1

135 °E MEAN TIME





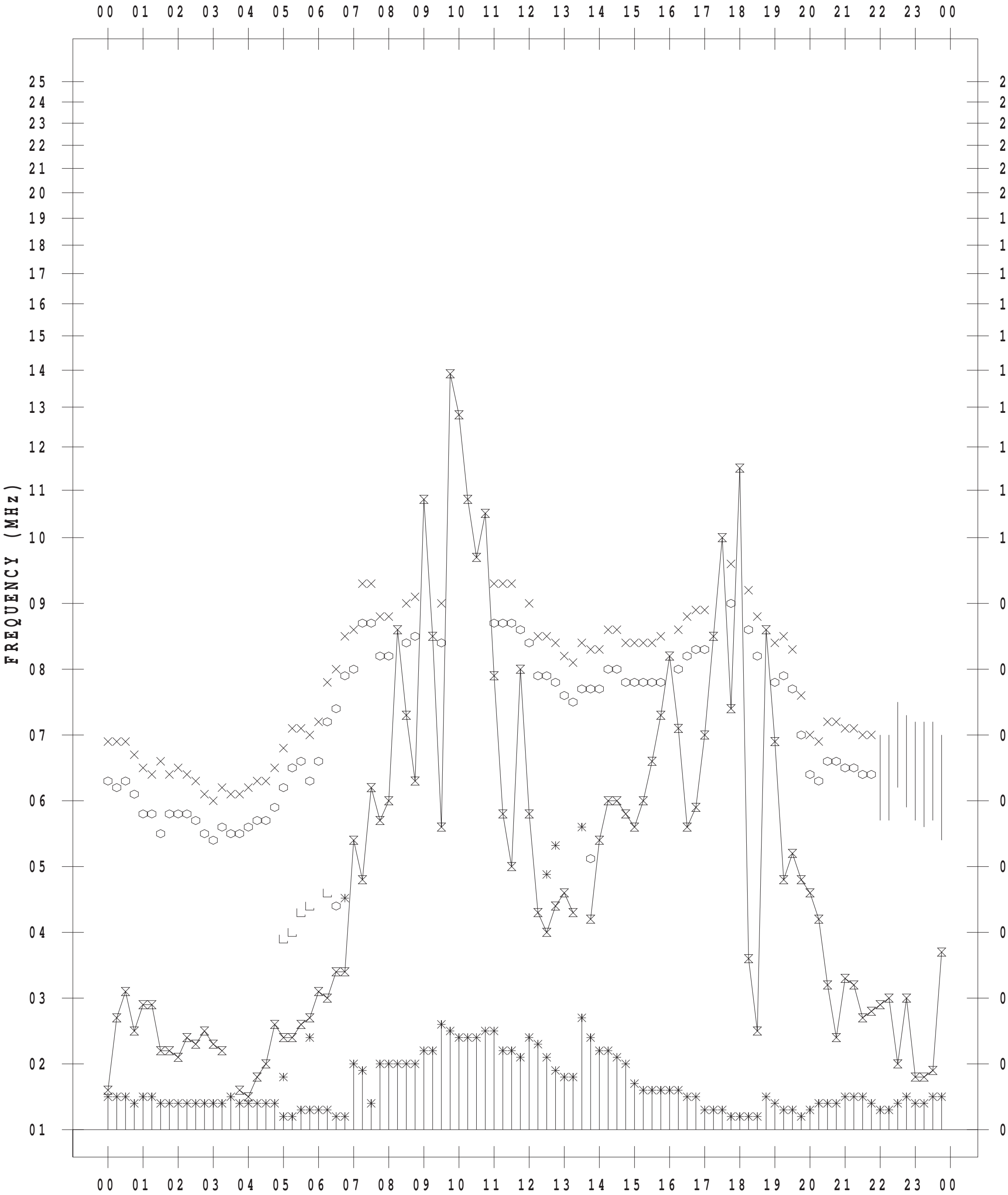


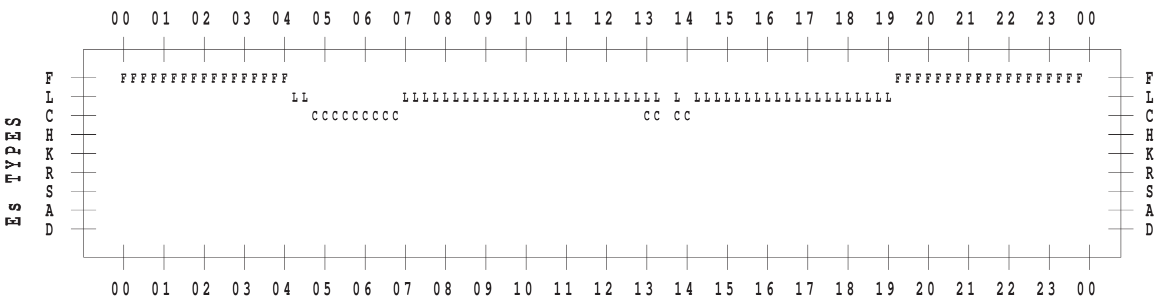
f-PLOT DATA

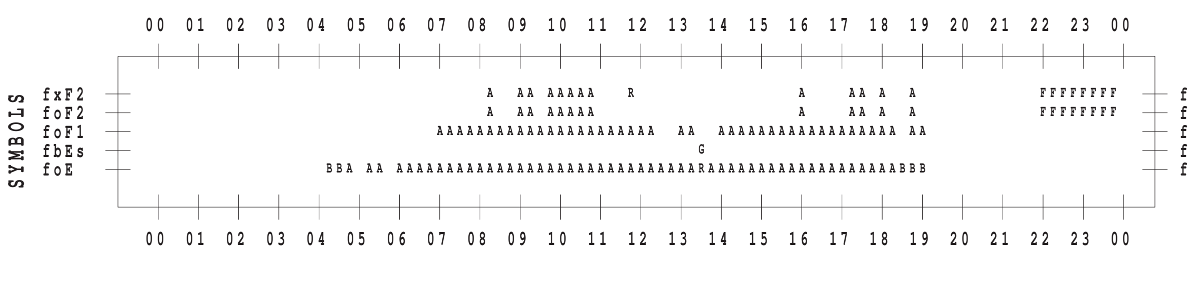
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2012/ 7/ 2

135 °E MEAN TIME







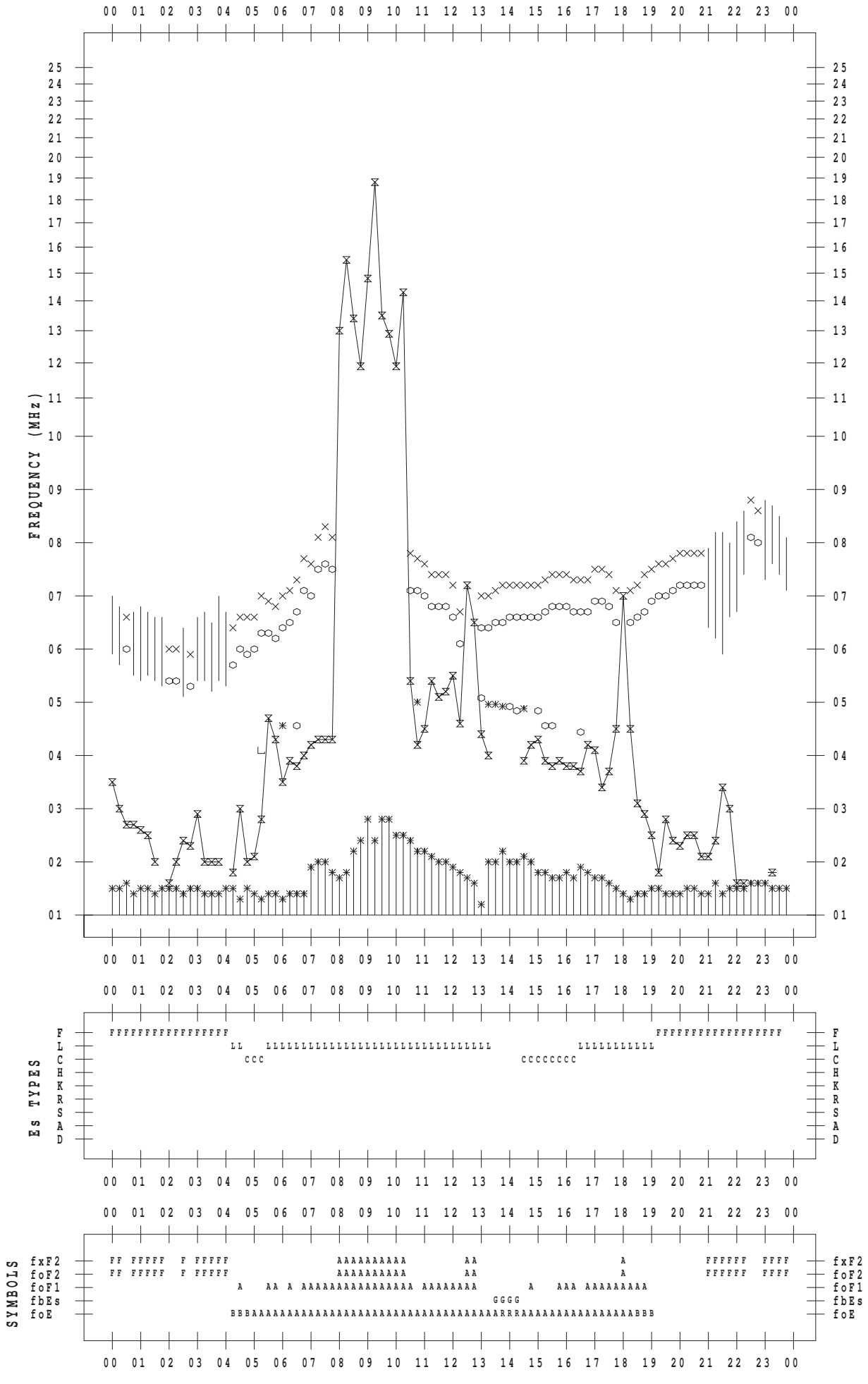
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/ 3

135 °E MEAN TIME



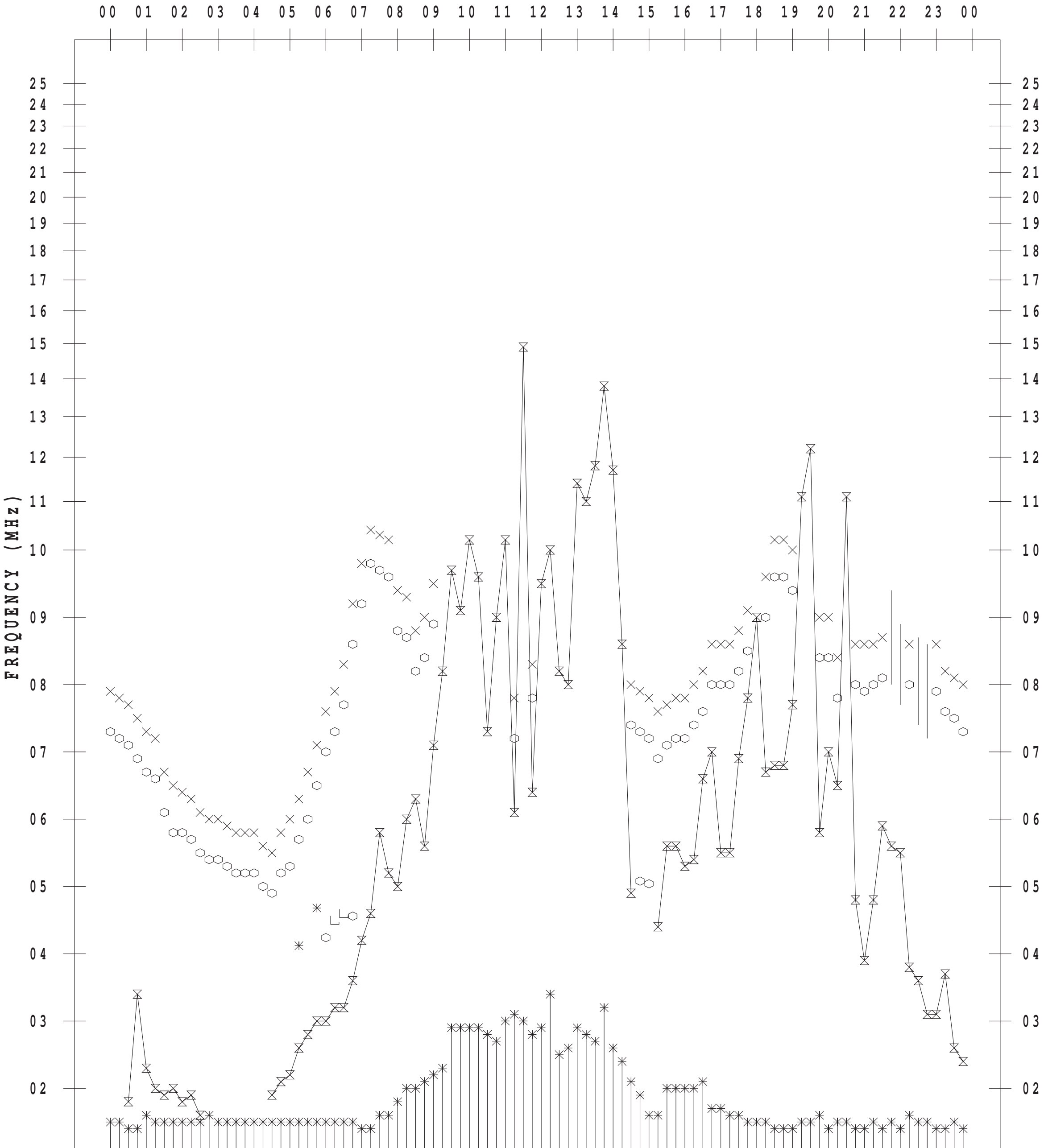
f-PLOT DATA

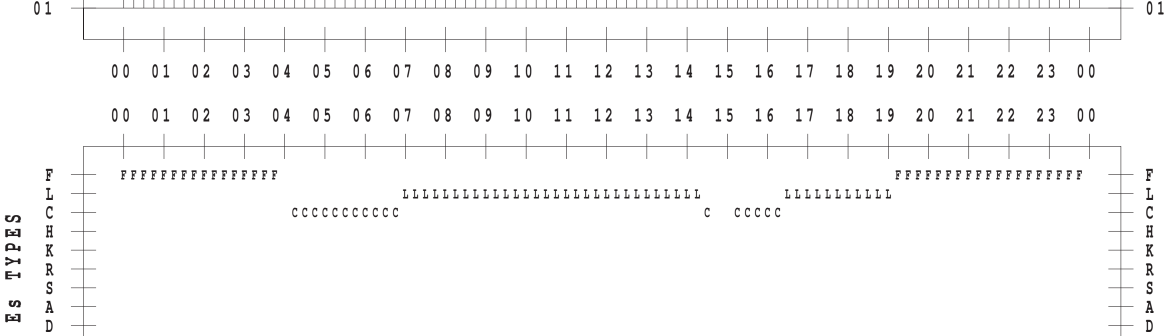
SCALER : I.NISHIMUTA

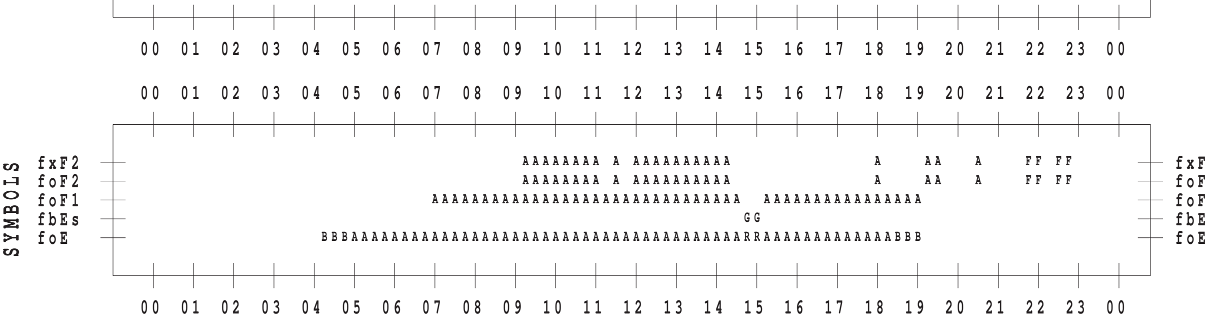
STATION : Kokubunji

DATE : 2012/ 7/ 4

135 °E MEAN TIME







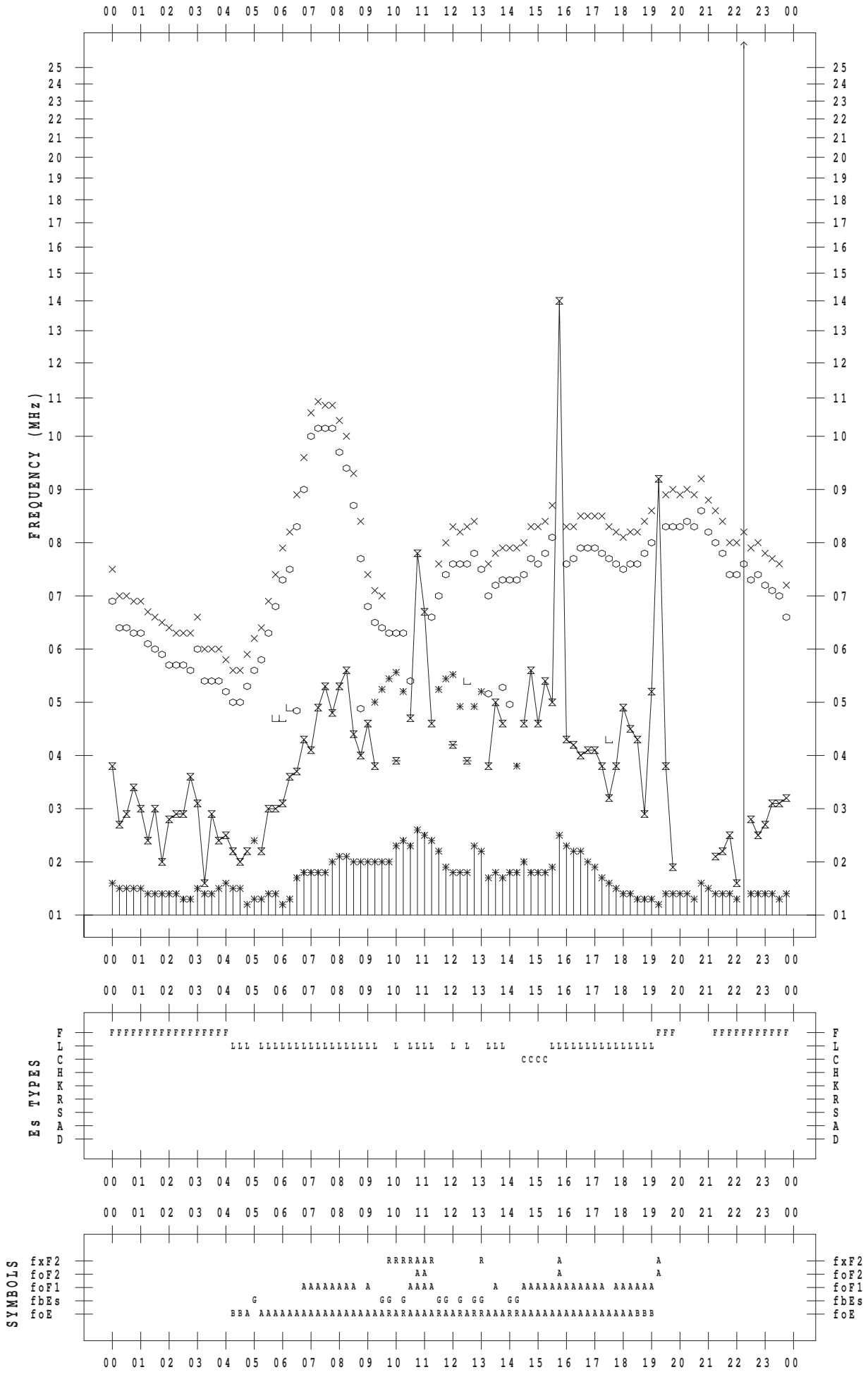
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/ 5

135 °E MEAN TIME



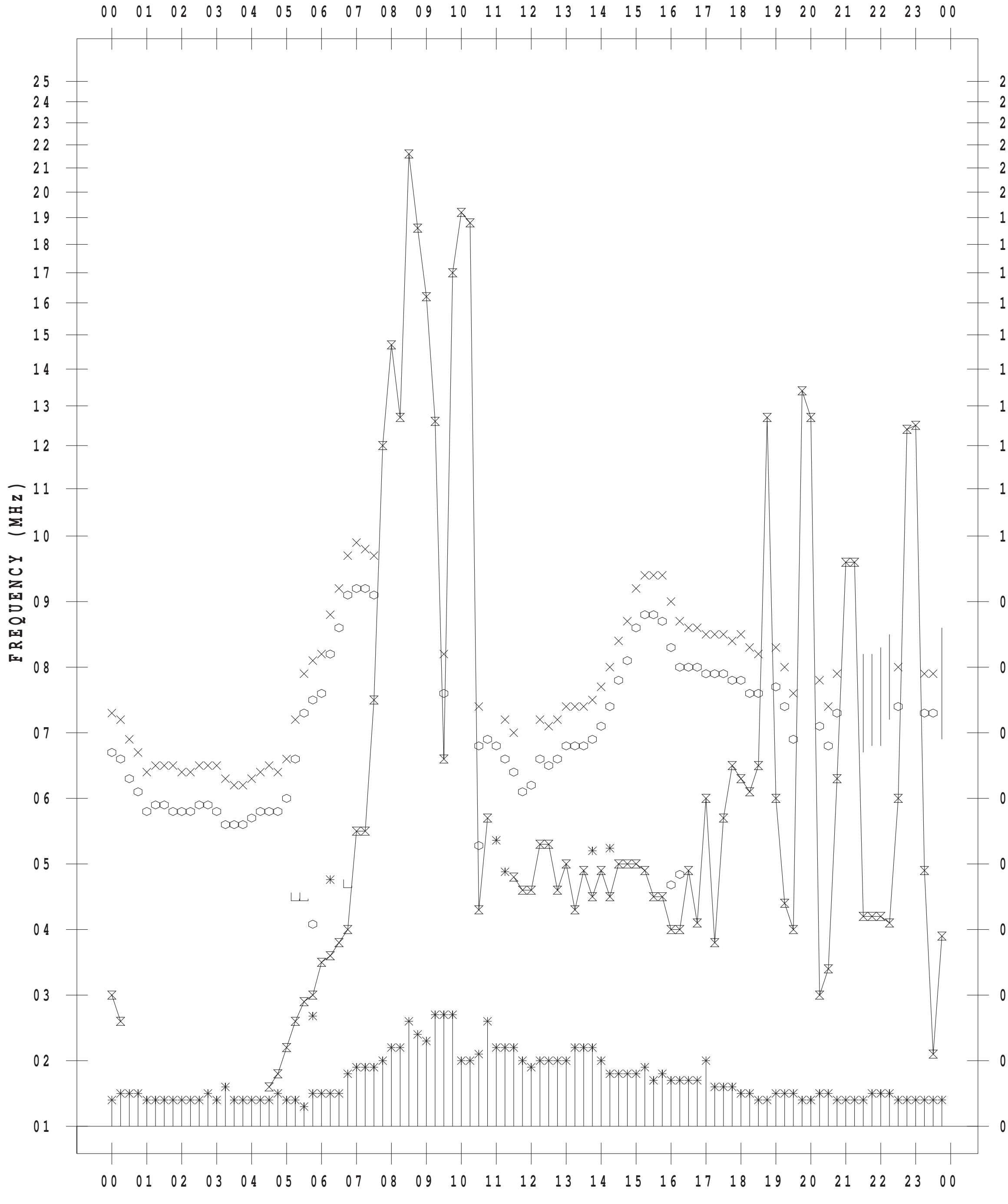
f-PLOT DATA

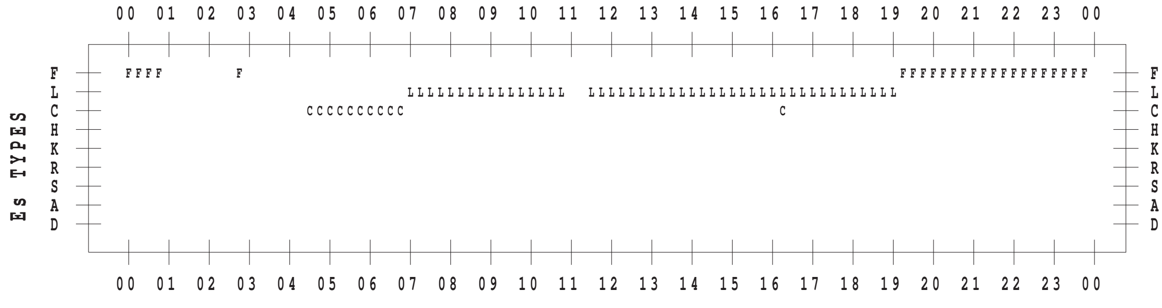
SCALER : I.NISHIMUTA

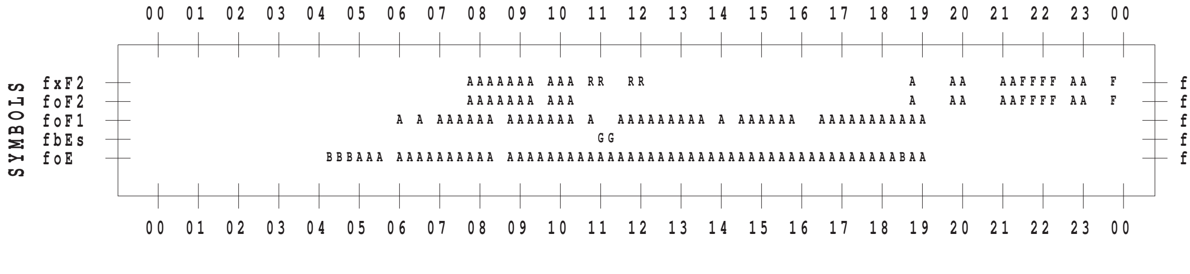
STATION : Kokubunji

DATE : 2012/ 7/ 6

135 °E MEAN TIME







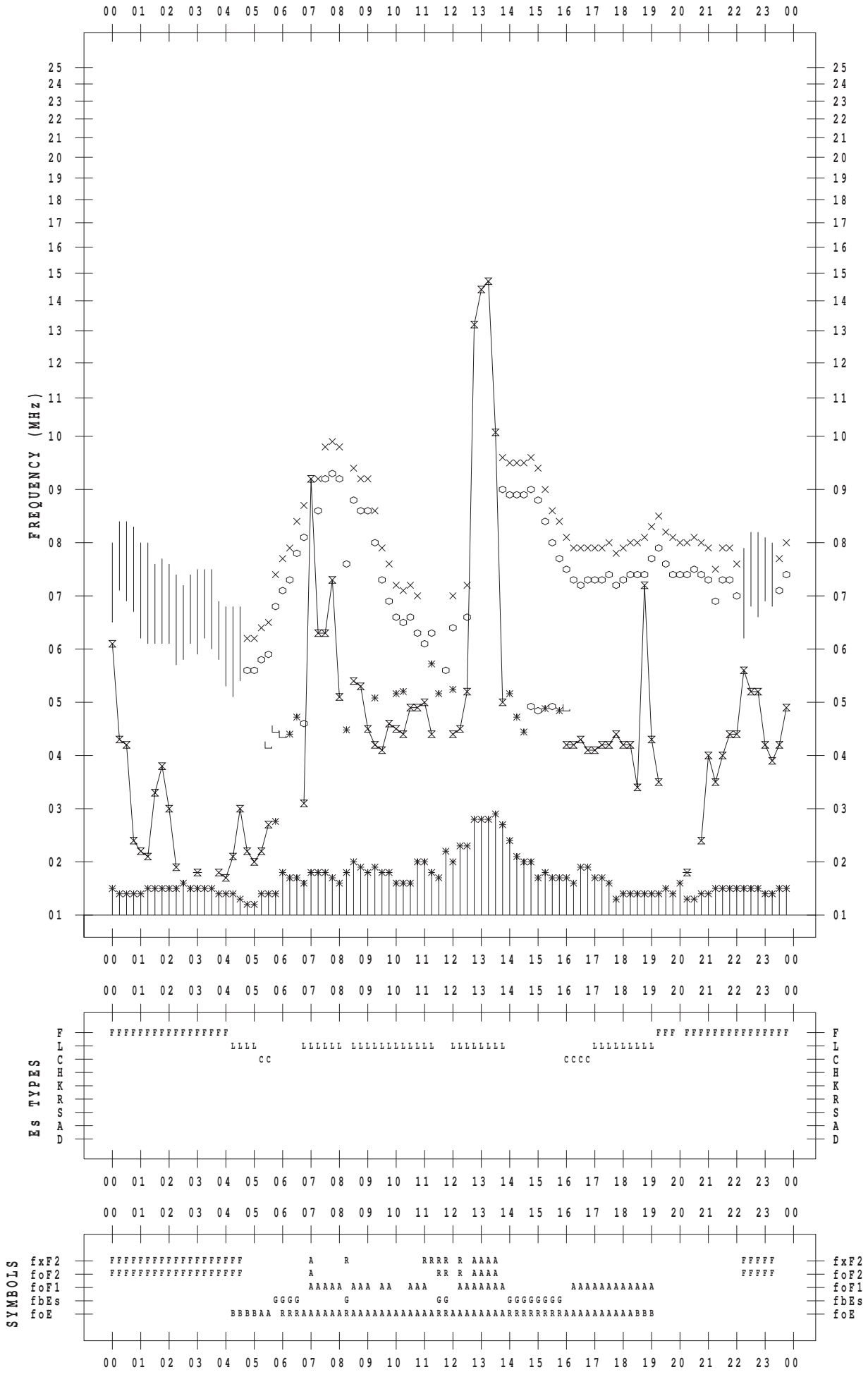
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/ 7

135 °E MEAN TIME



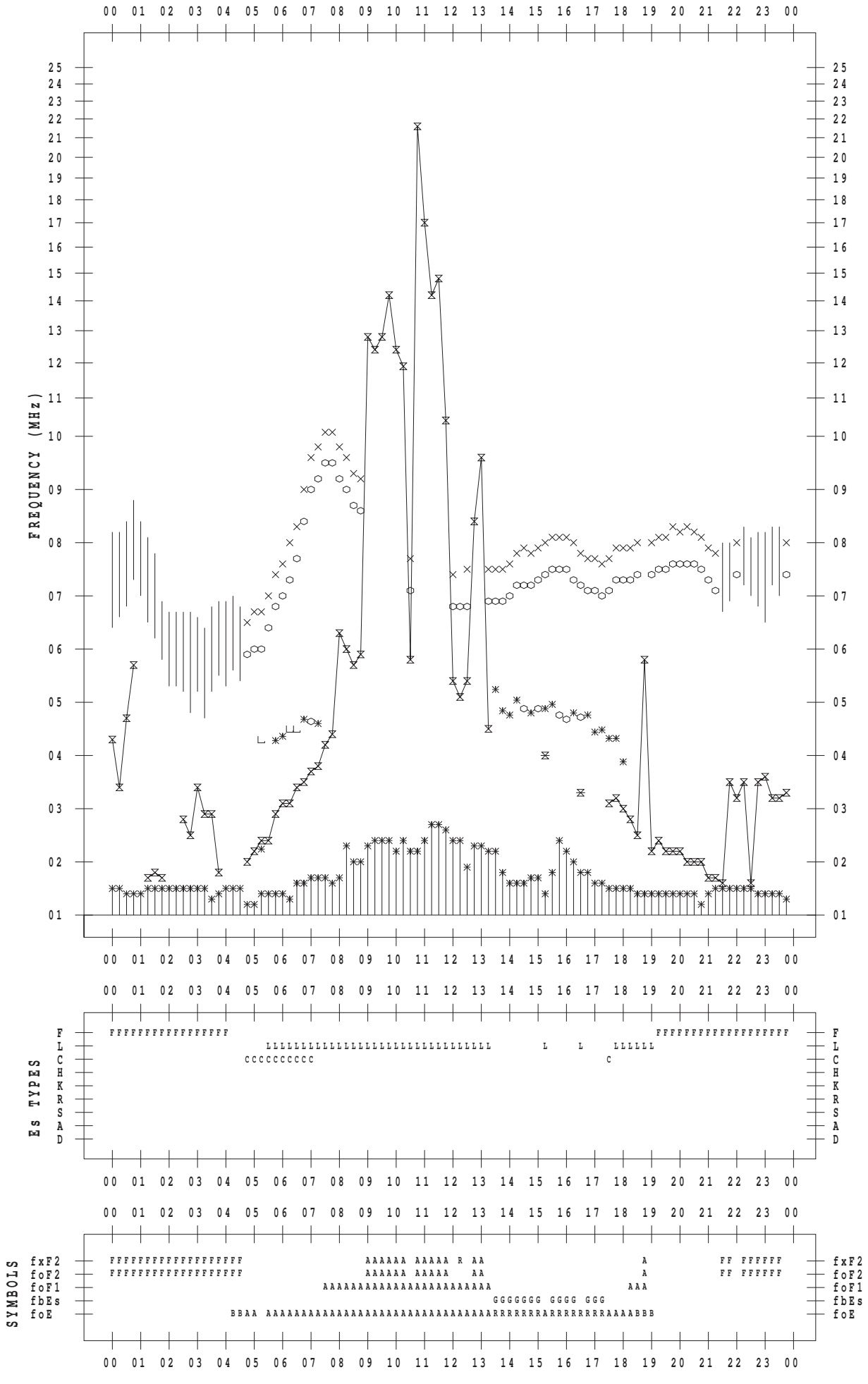
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/ 8

135 °E MEAN TIME



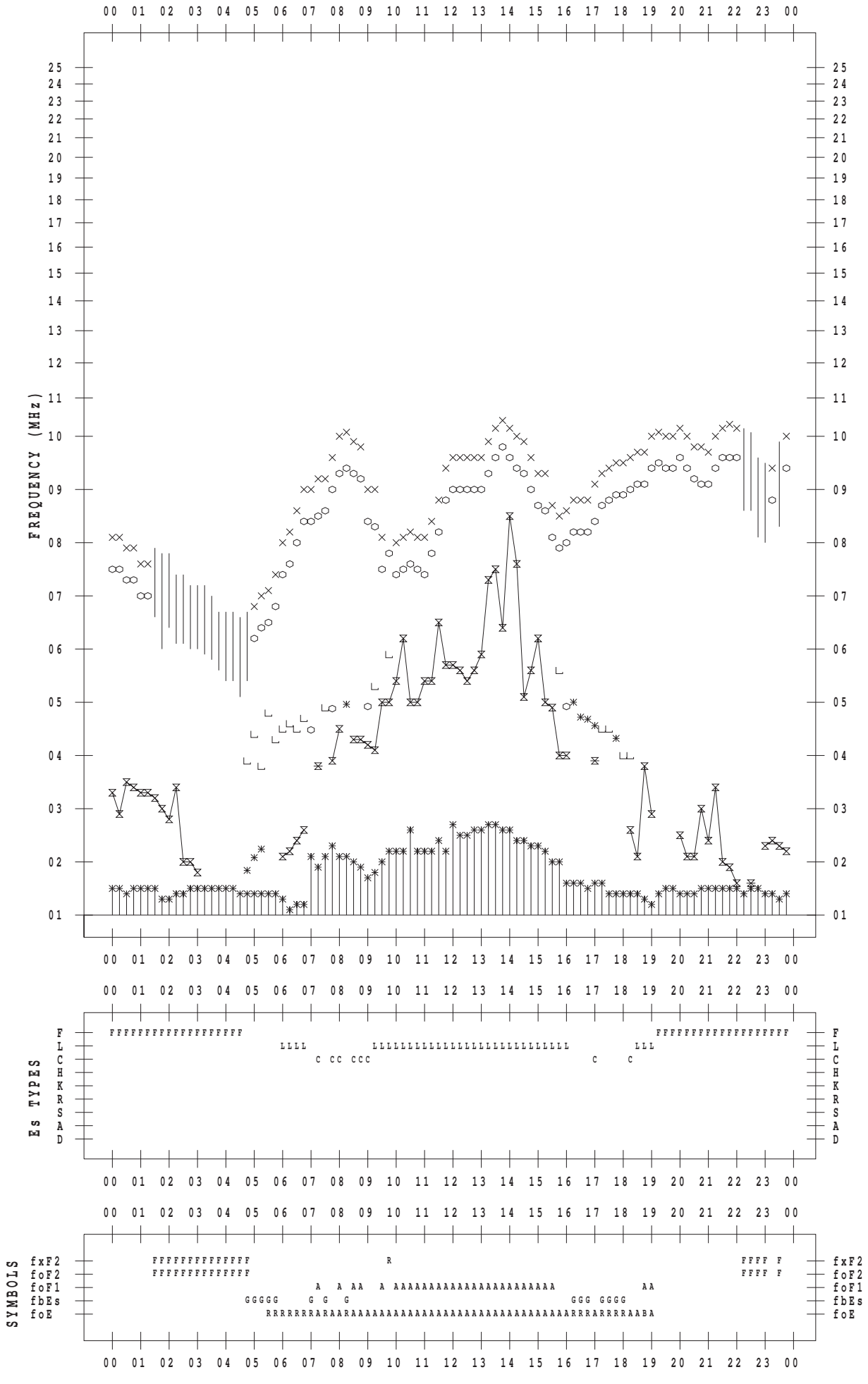
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/ 9

135 °E MEAN TIME



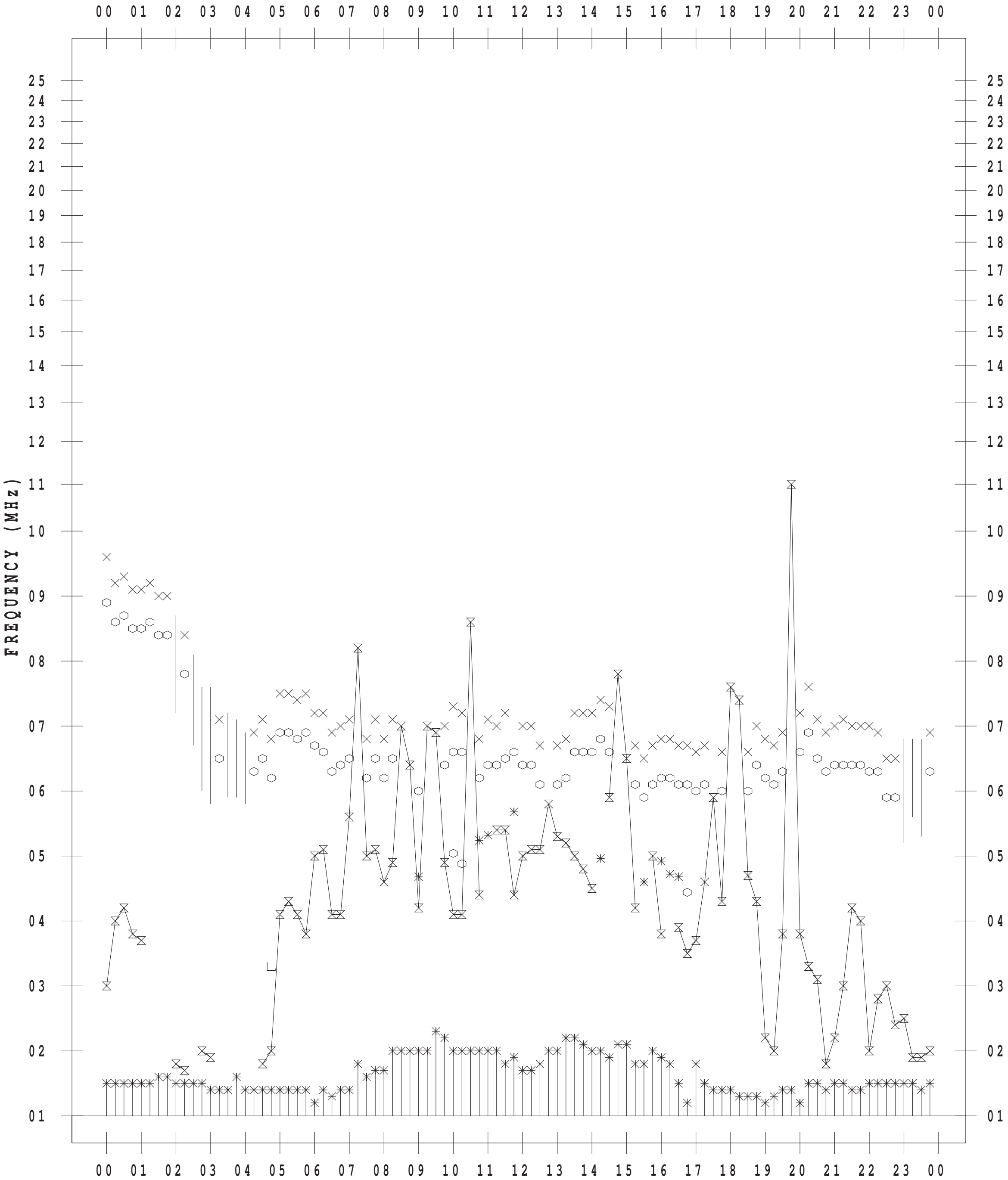
f-PLOT DATA

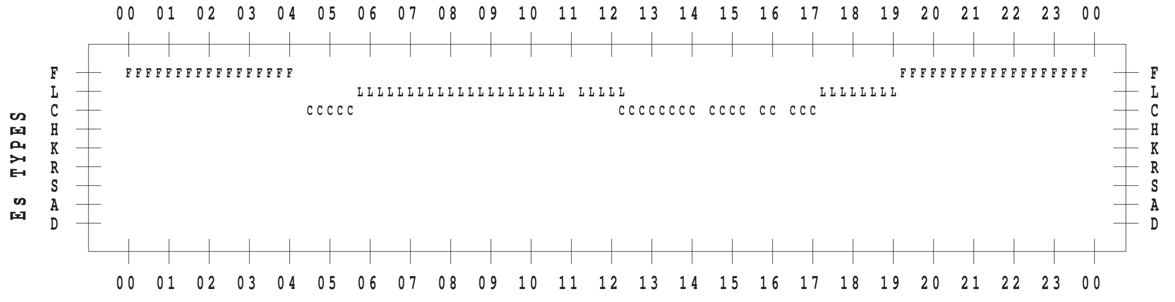
SCALER : I.NISHIMUTA

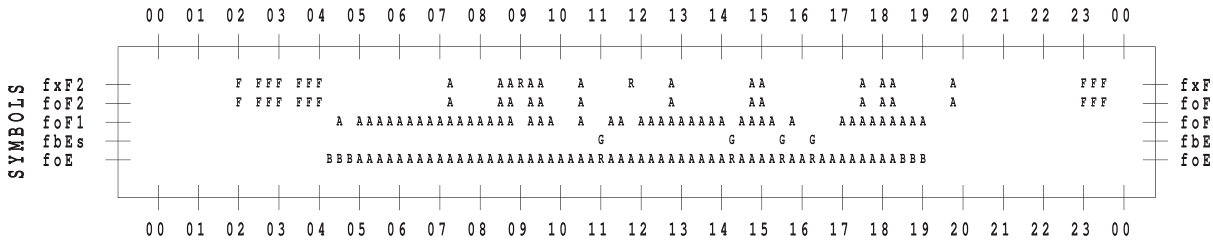
STATION : Kokubunji

DATE : 2012/ 7/10

135 °E MEAN TIME







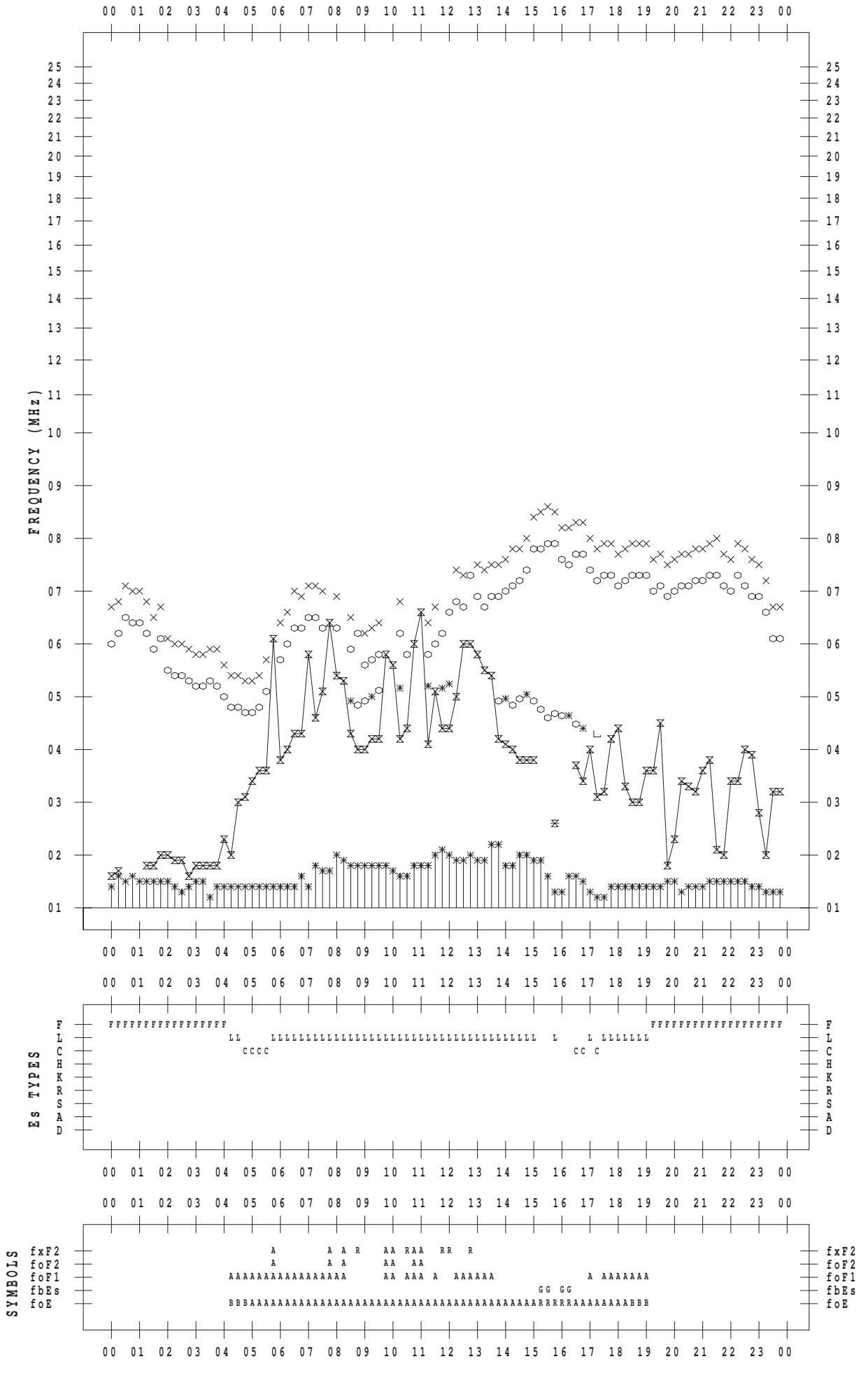
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/11

135 °E MEAN TIME



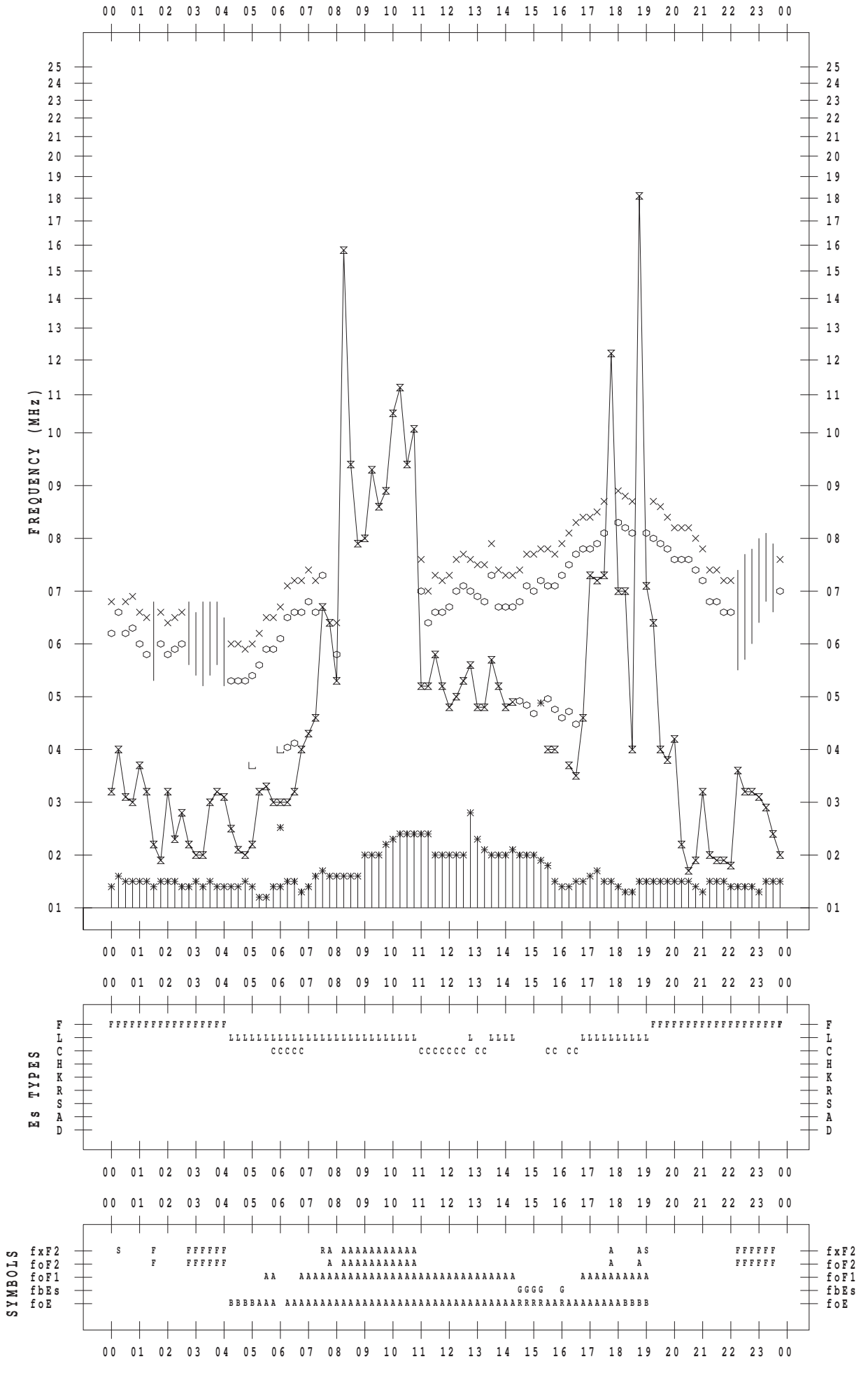
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/12

135 °E MEAN TIME

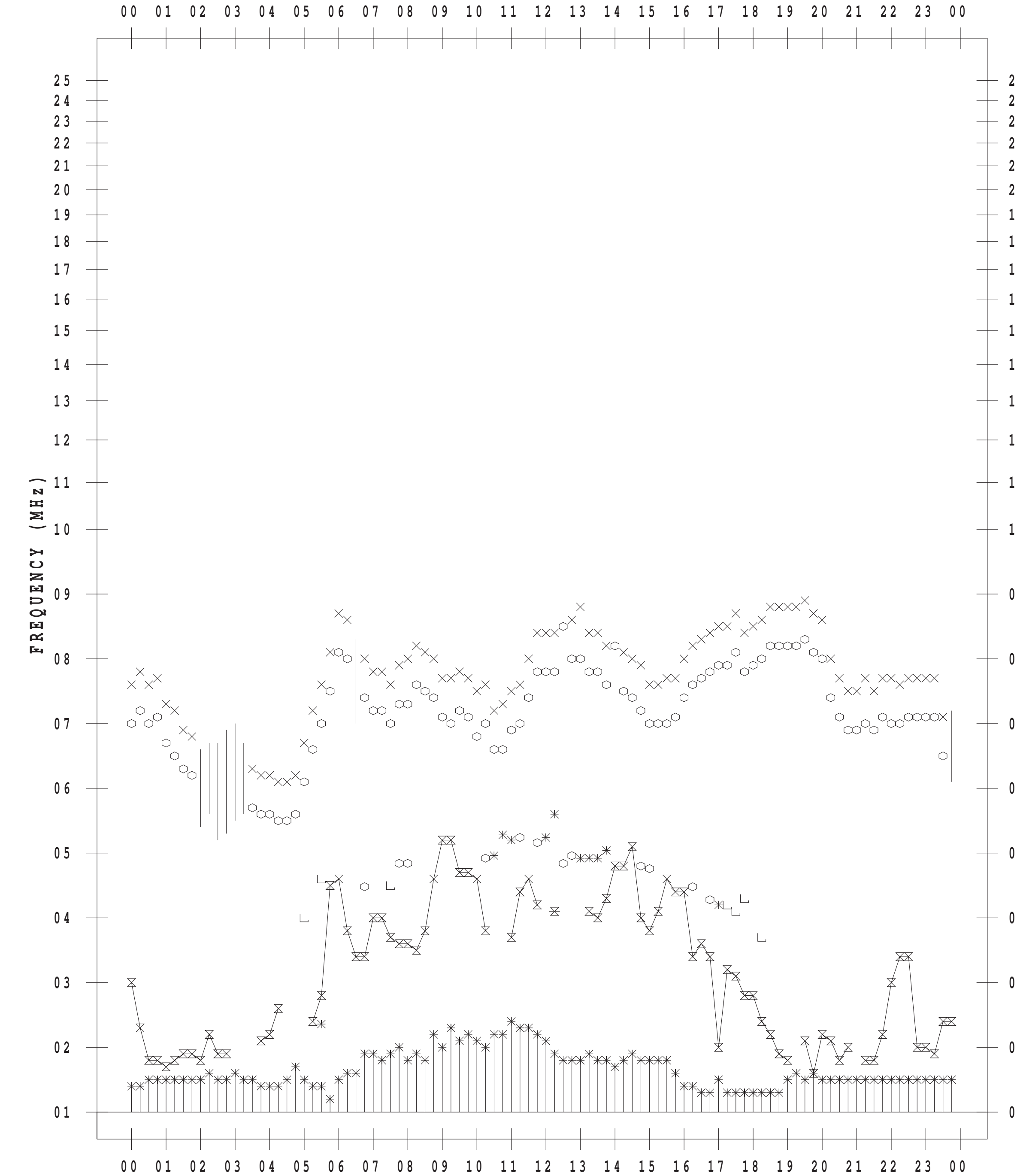


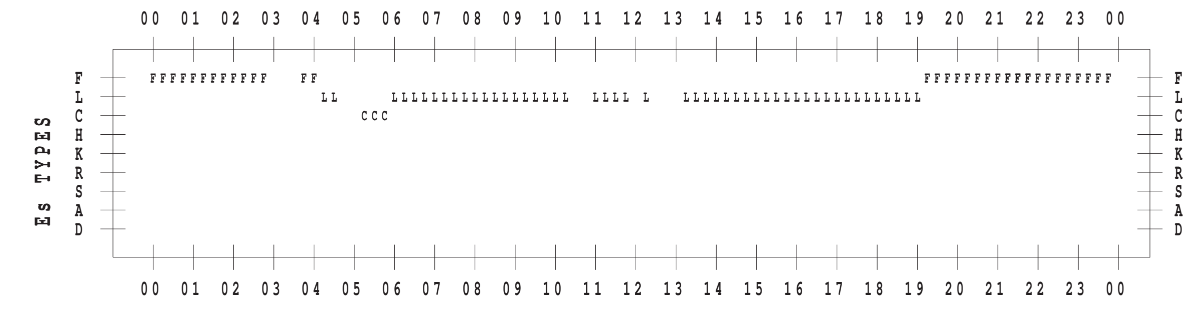
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2012/ 7/13

135 °E MEAN TIME





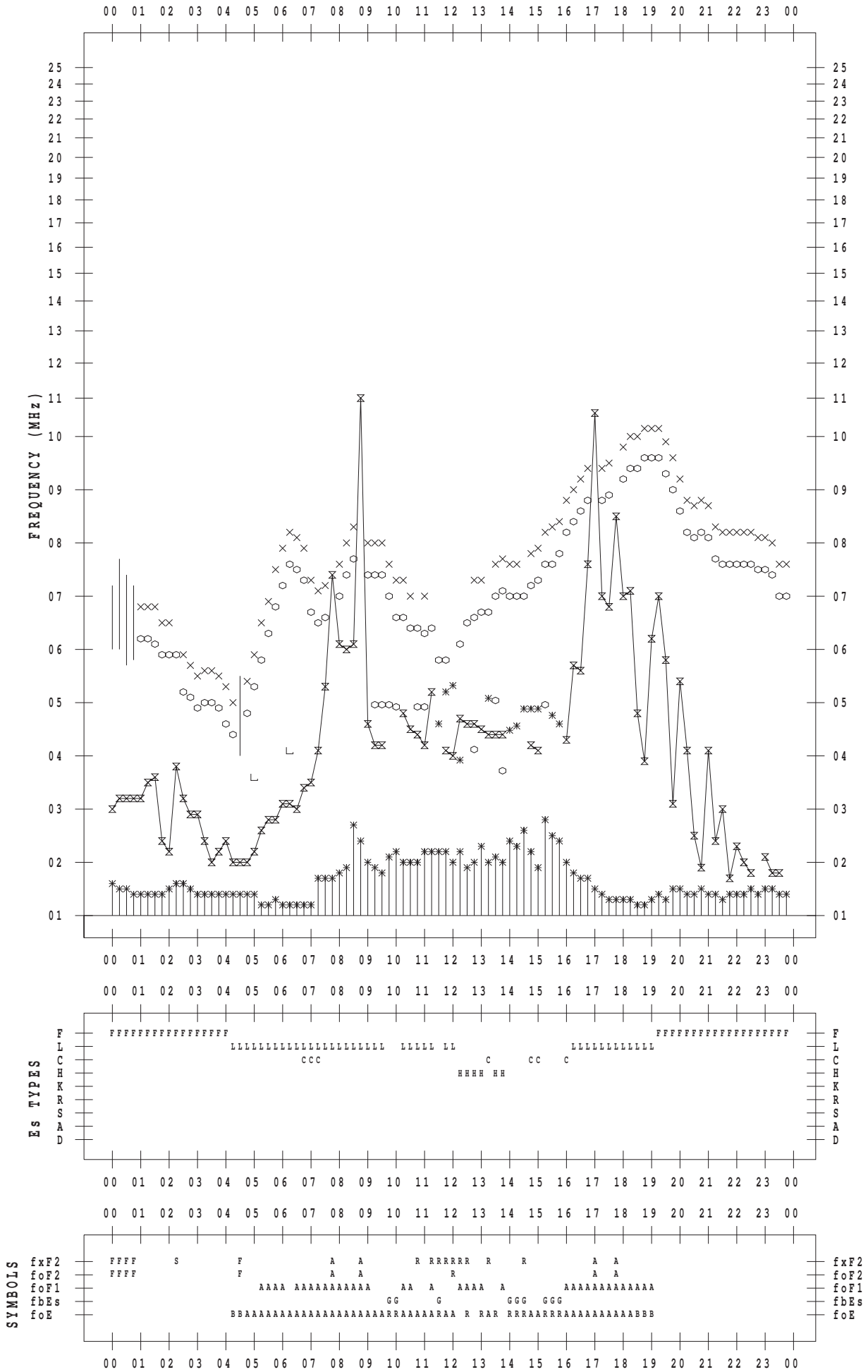
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/14

135 °E MEAN TIME



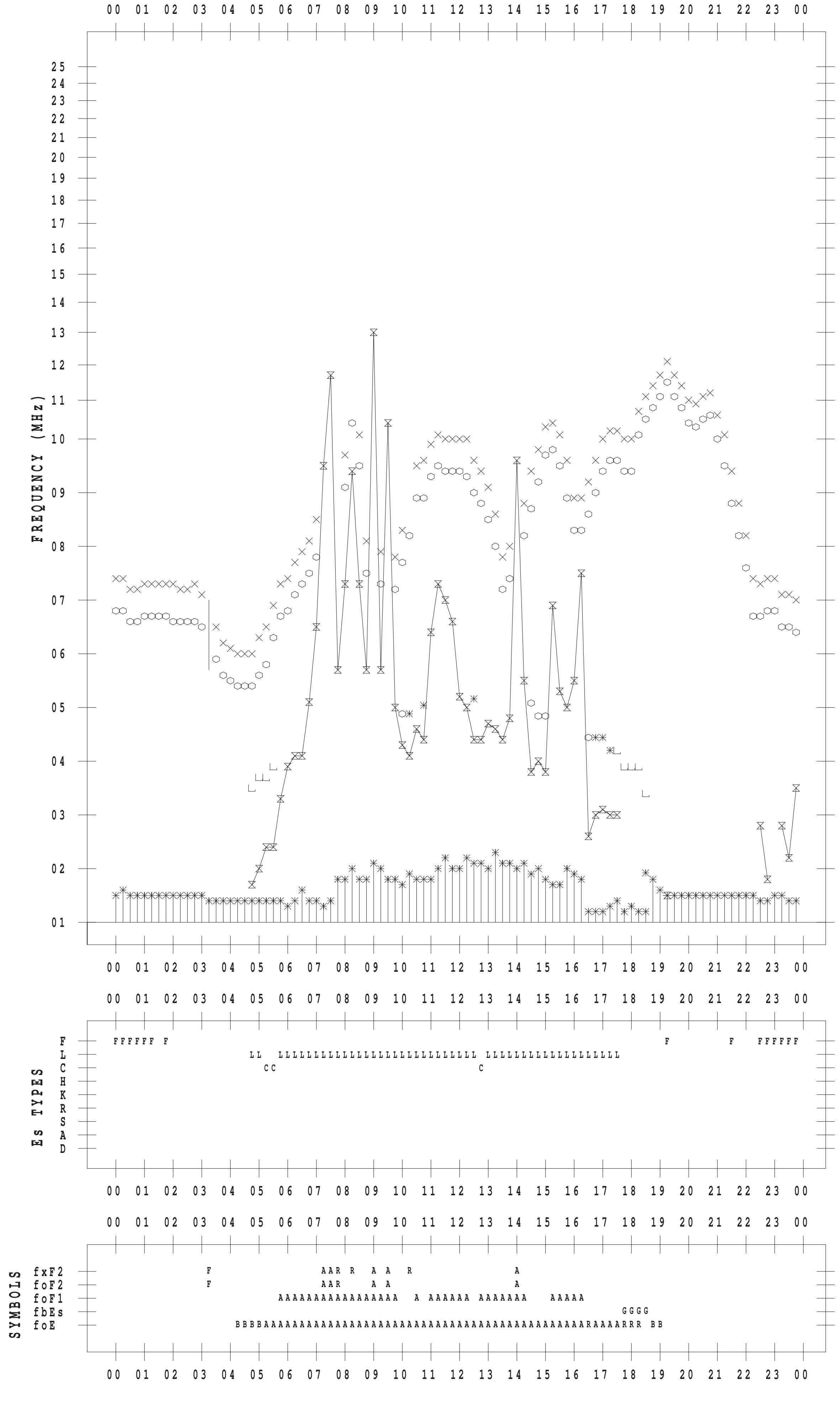
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/15

135 °E MEAN TIME



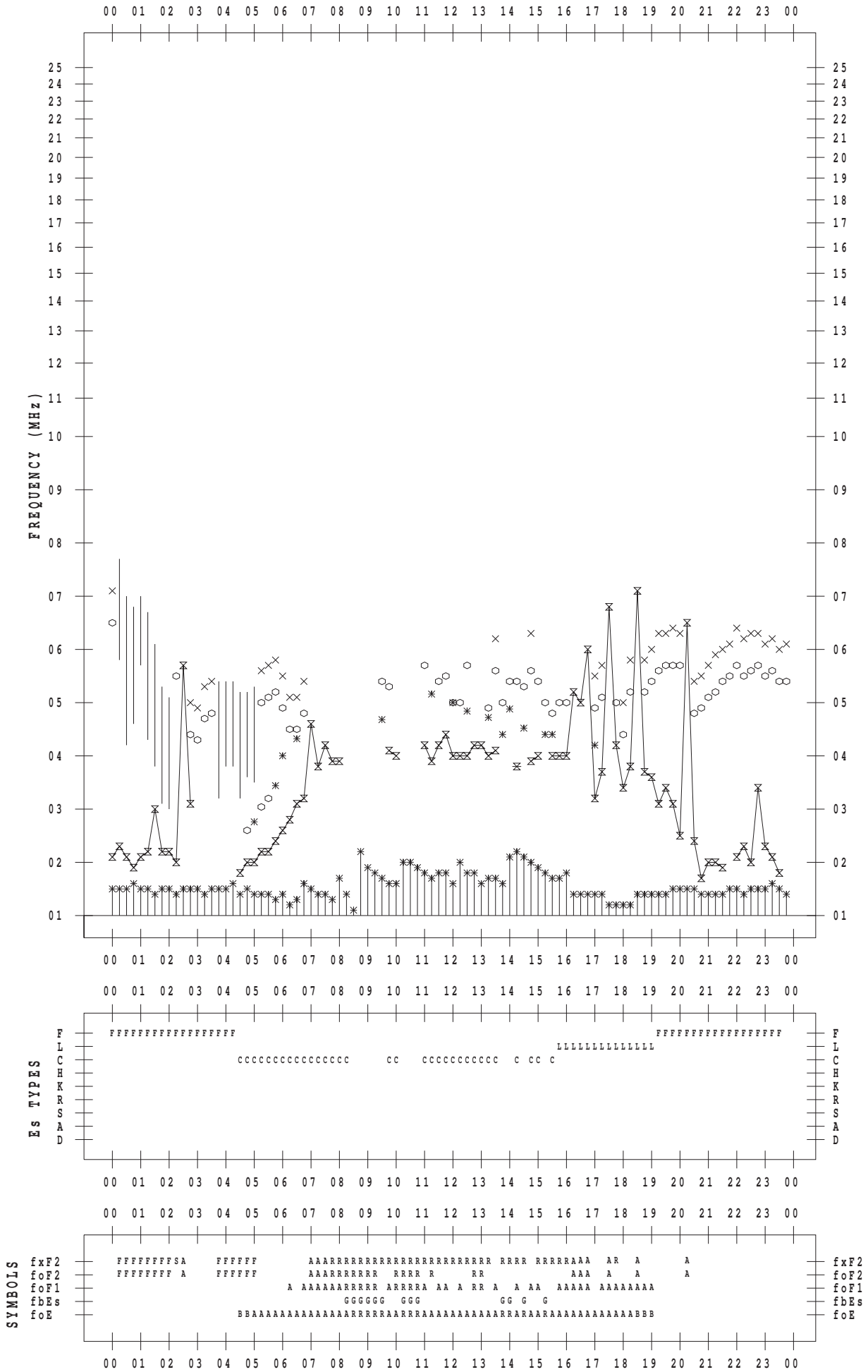
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/16

135 °E MEAN TIME



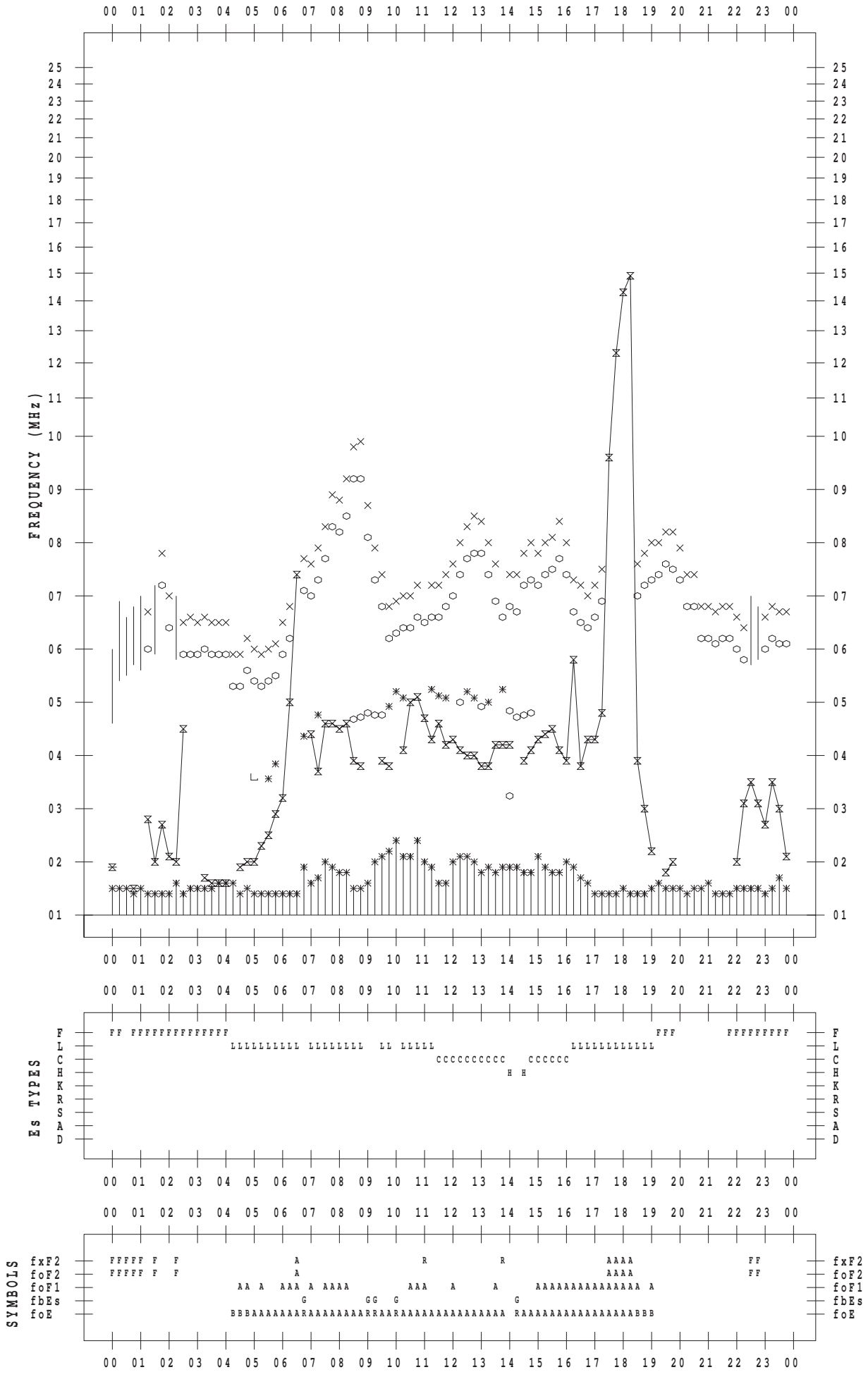
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/17

135 °E MEAN TIME



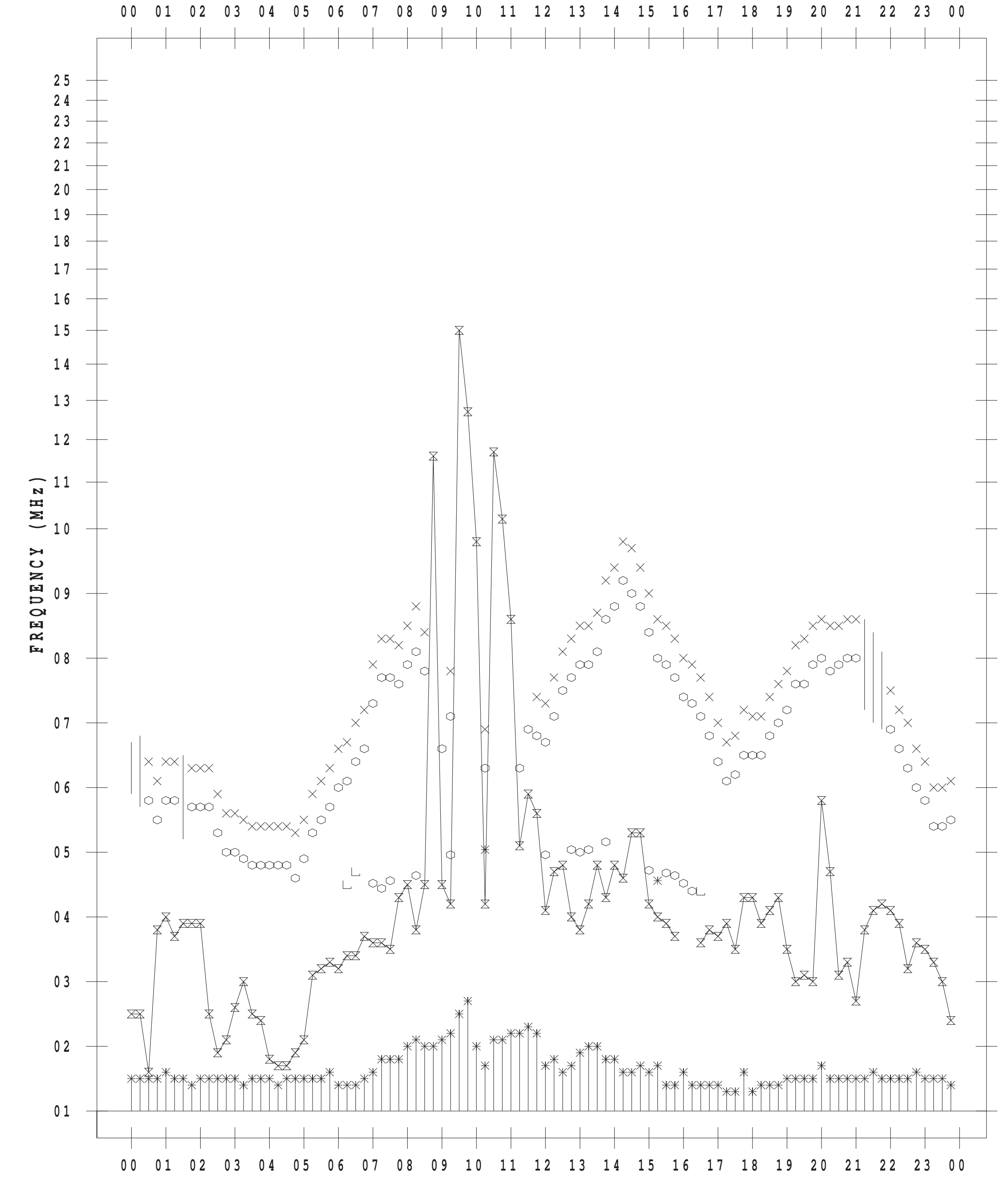
f-PLOT DATA

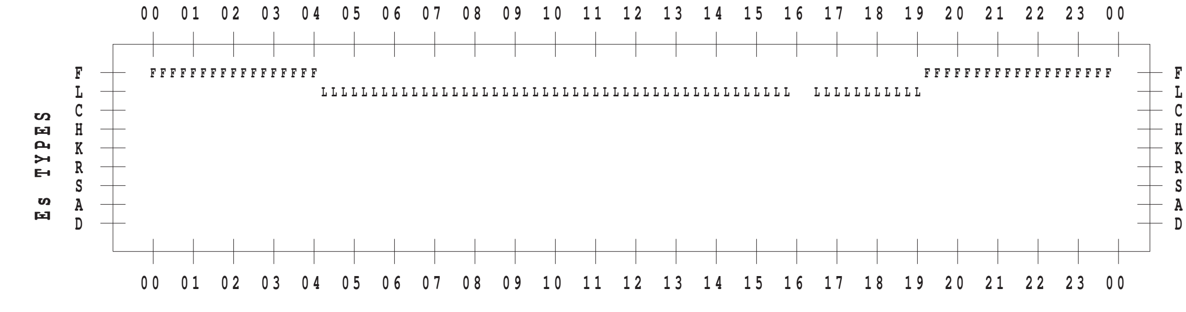
SCALER : I.NISHIMUTA

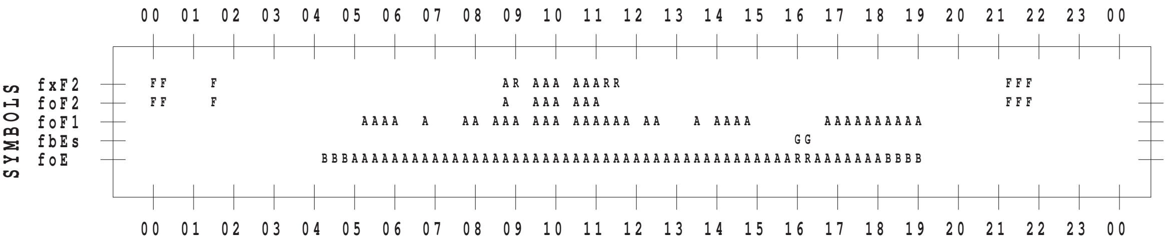
STATION : Kokubunji

DATE : 2012/ 7/18

135 °E MEAN TIME







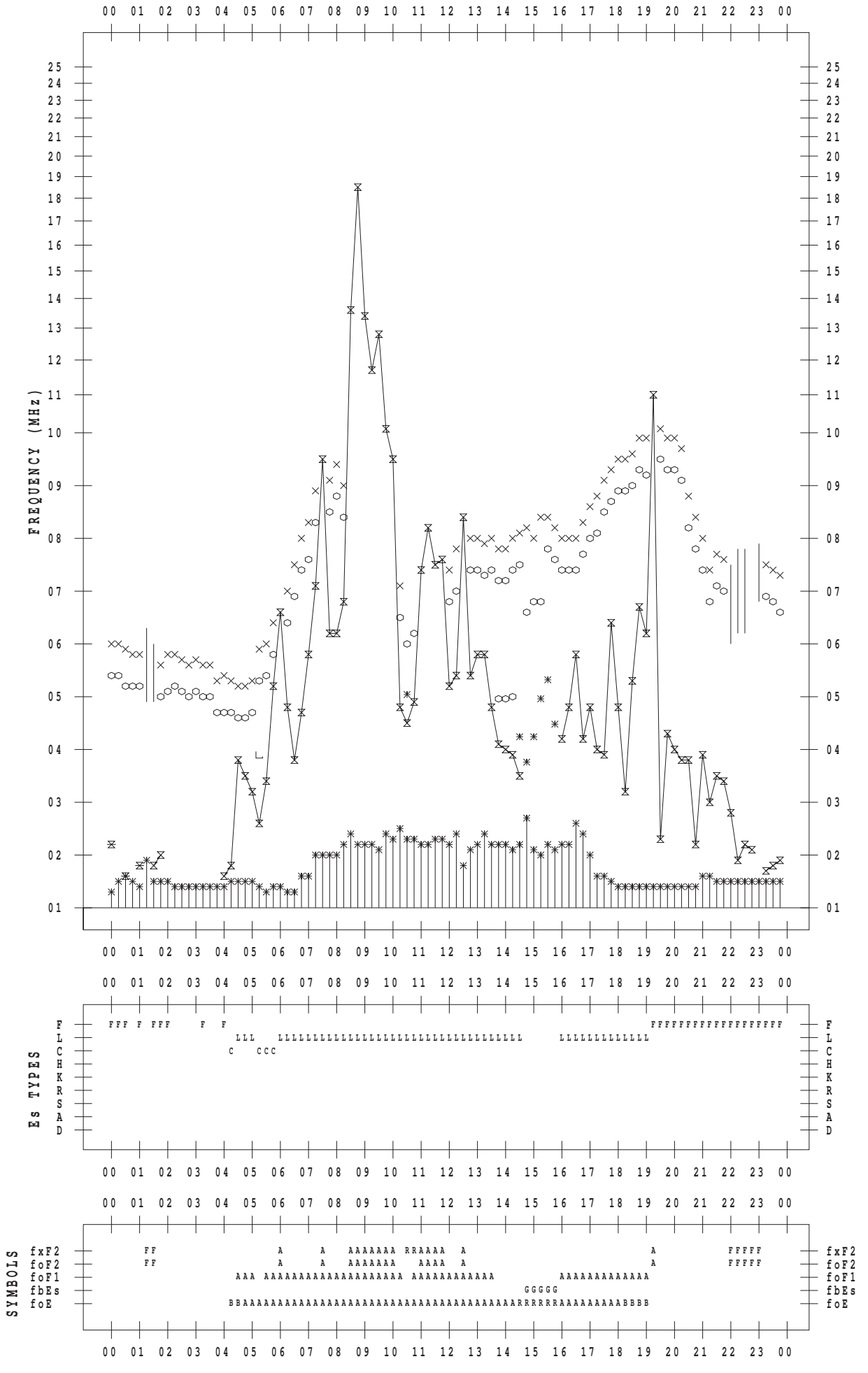
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/19

135 °E MEAN TIME



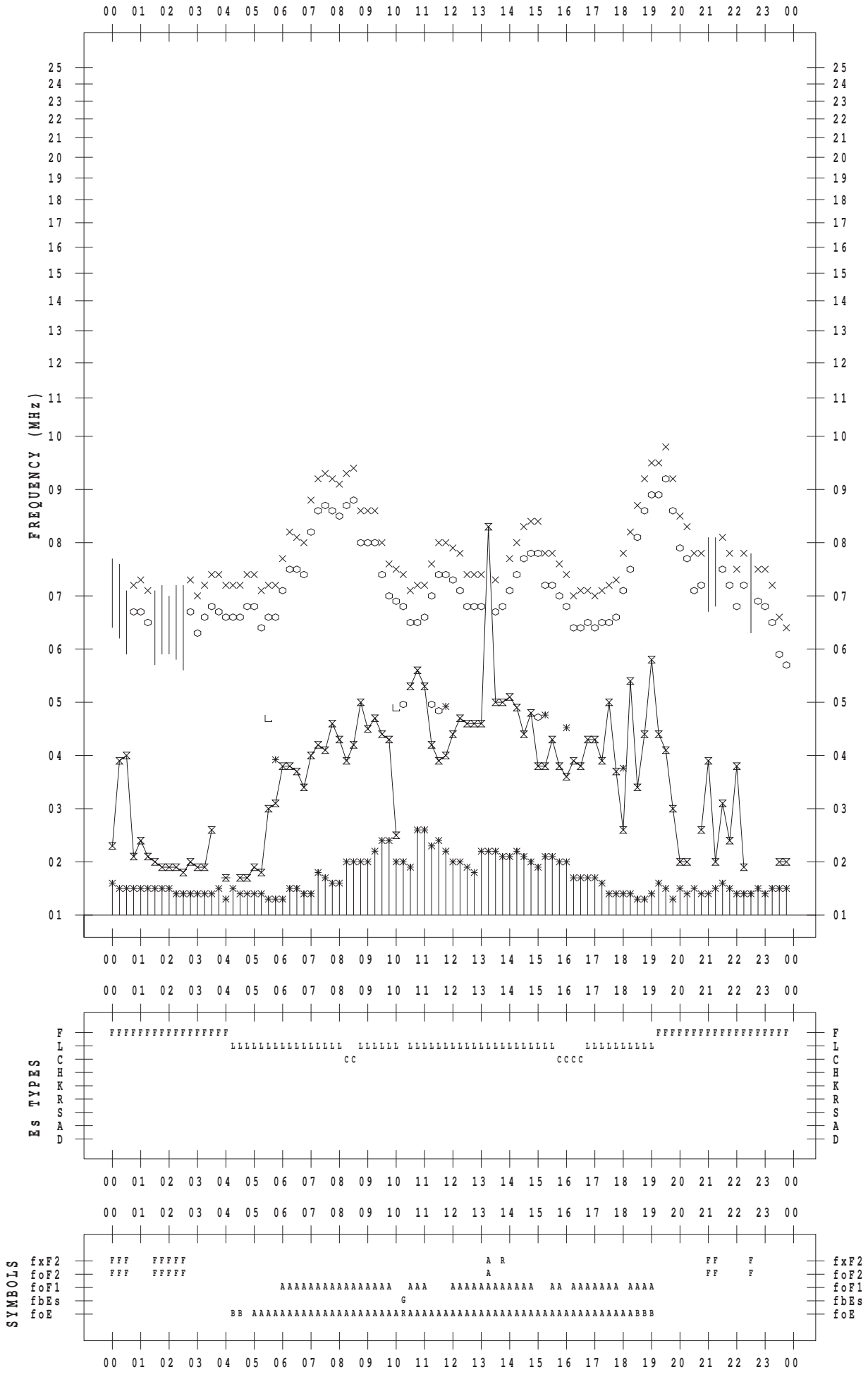
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/20

135 °E MEAN TIME

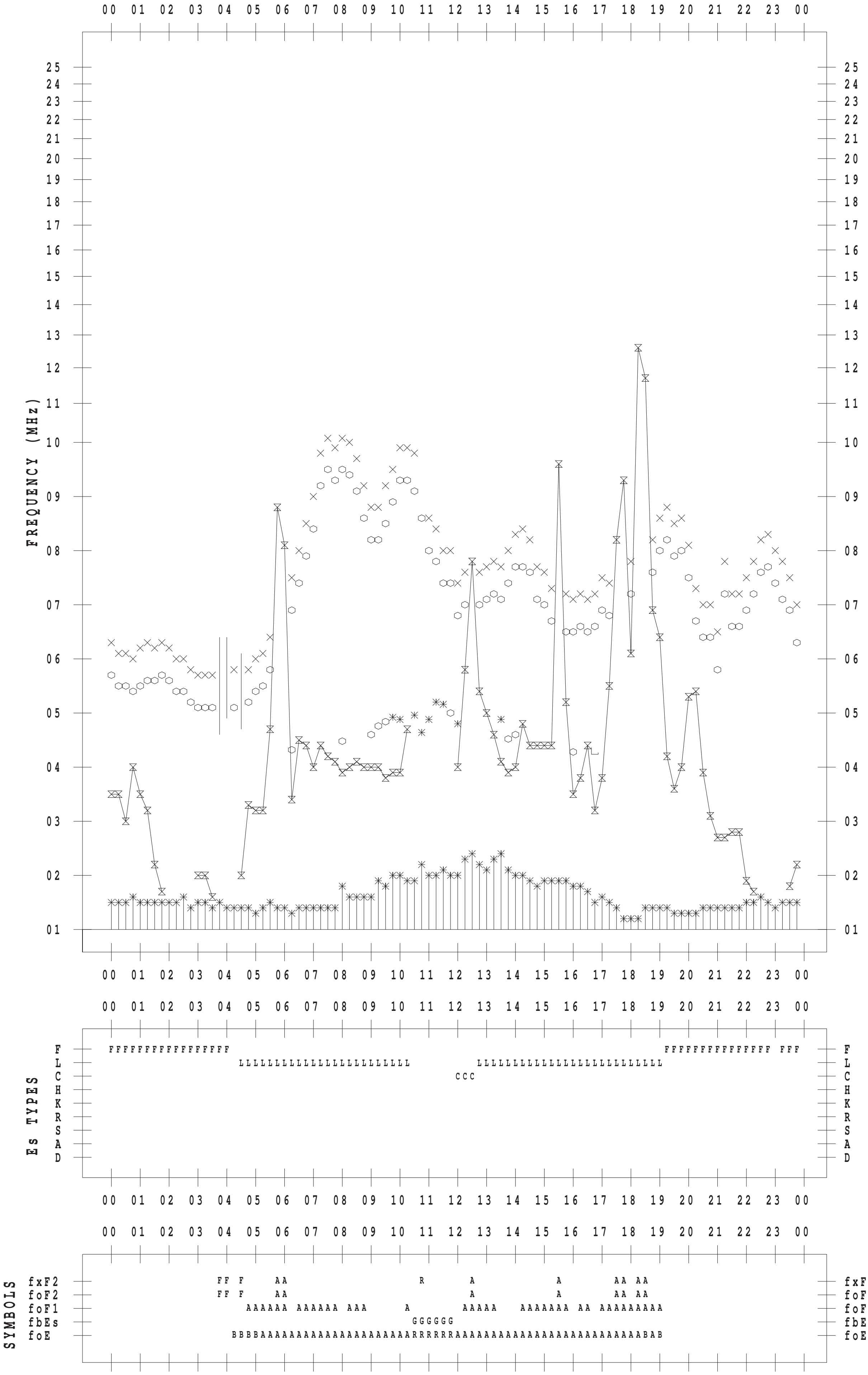


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji　　DATE : 2012/ 7/21

135 °E MEAN TIME



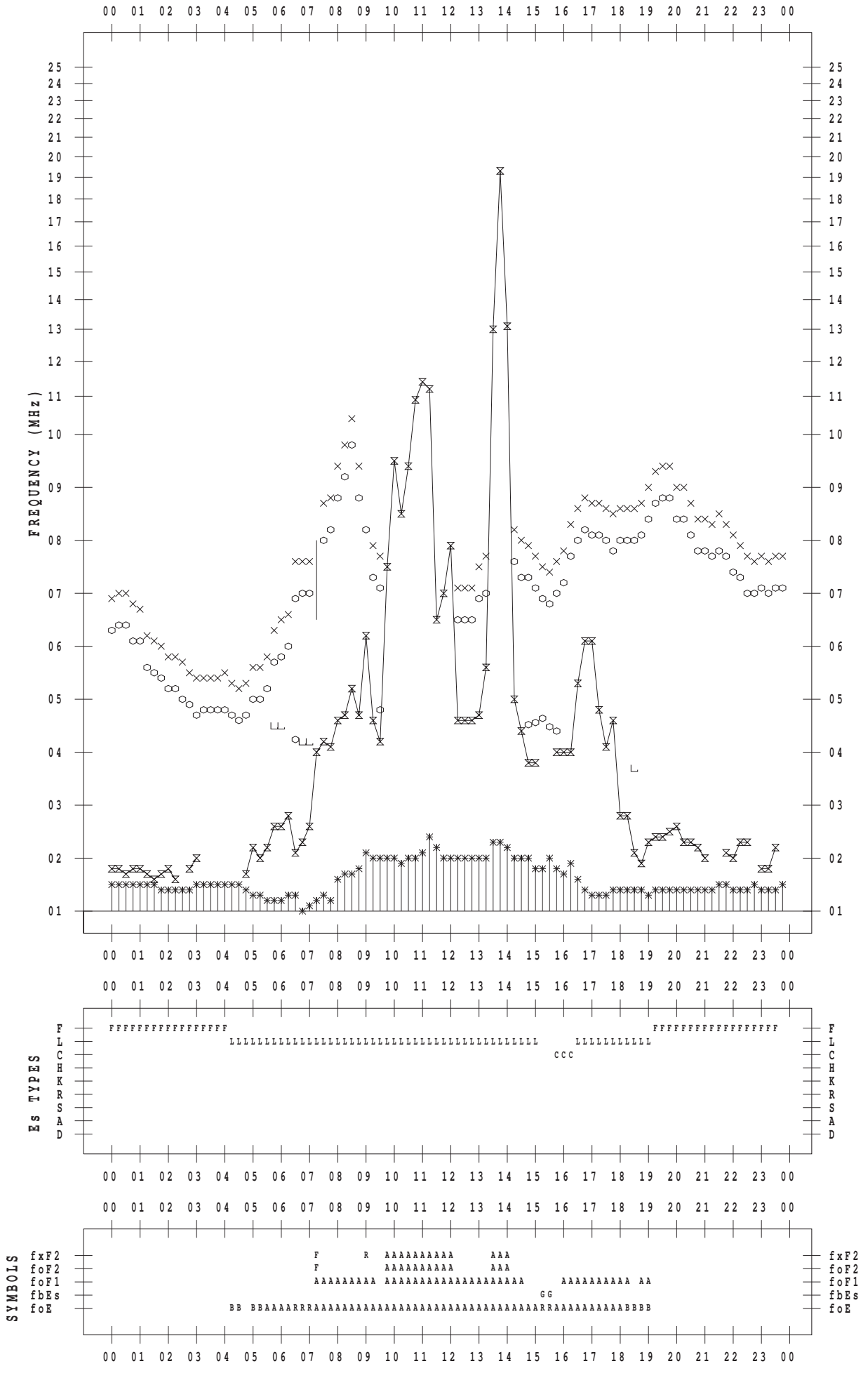
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/22

135 °E MEAN TIME



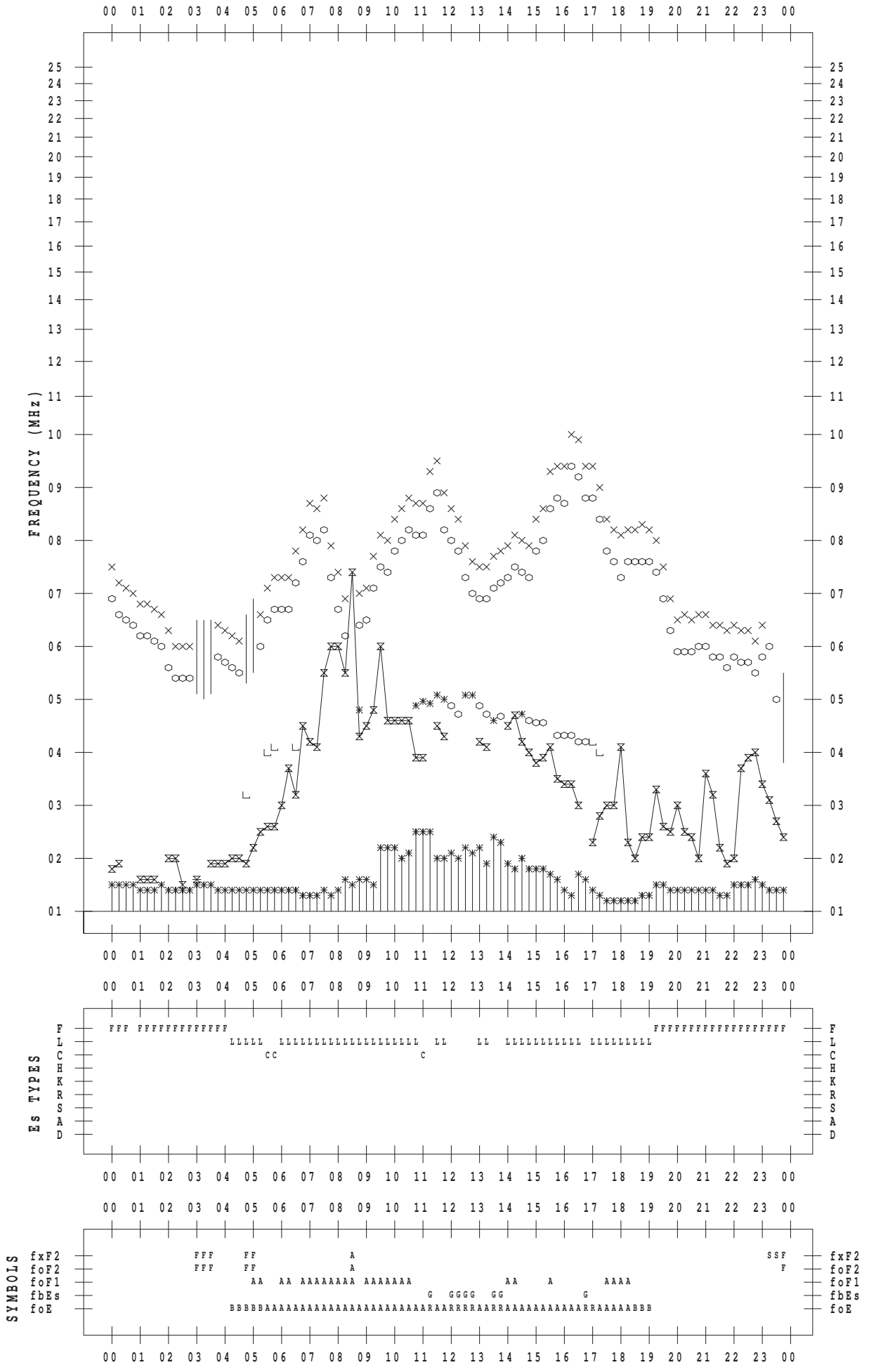
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/23

135 °E MEAN TIME



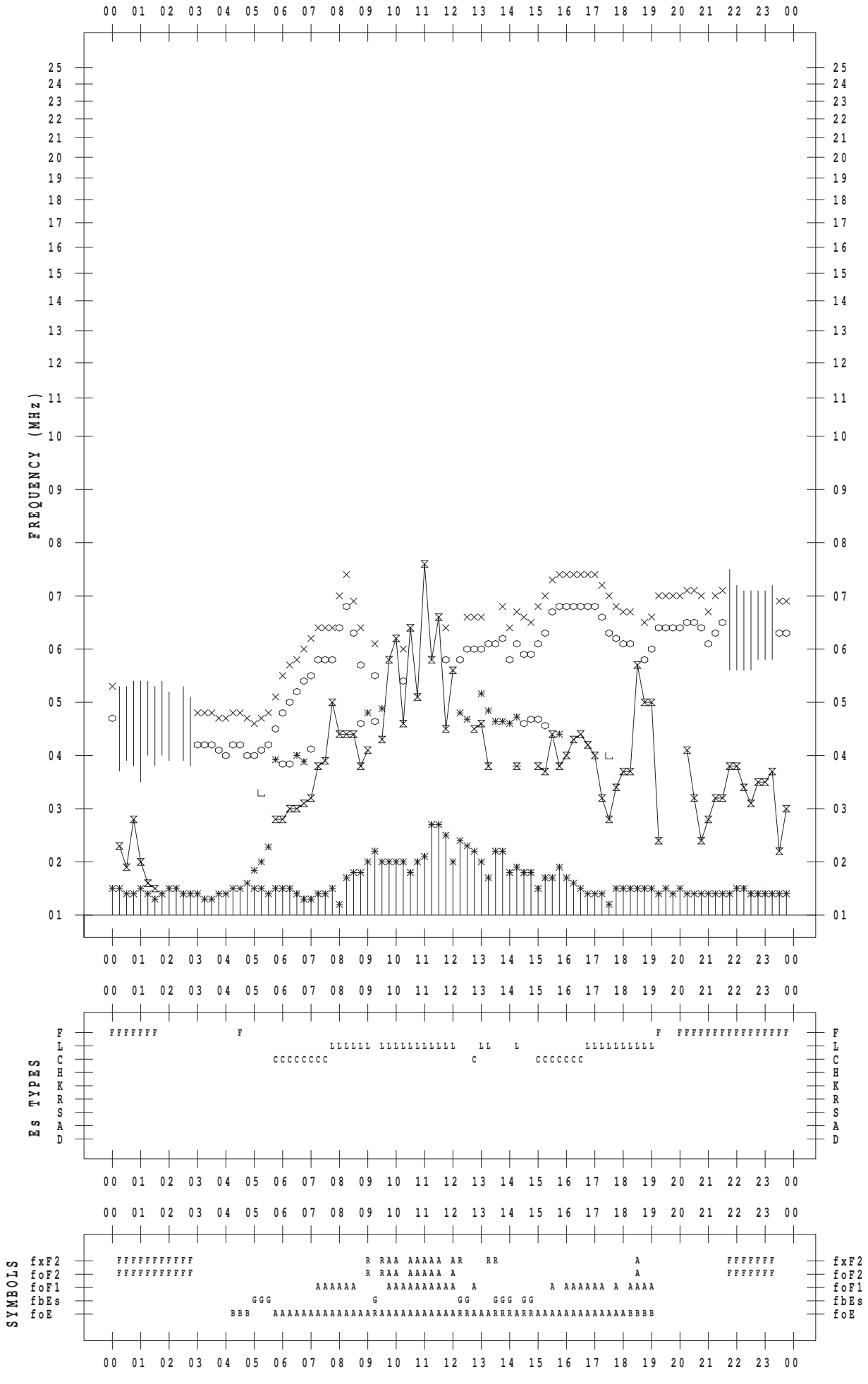
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/24

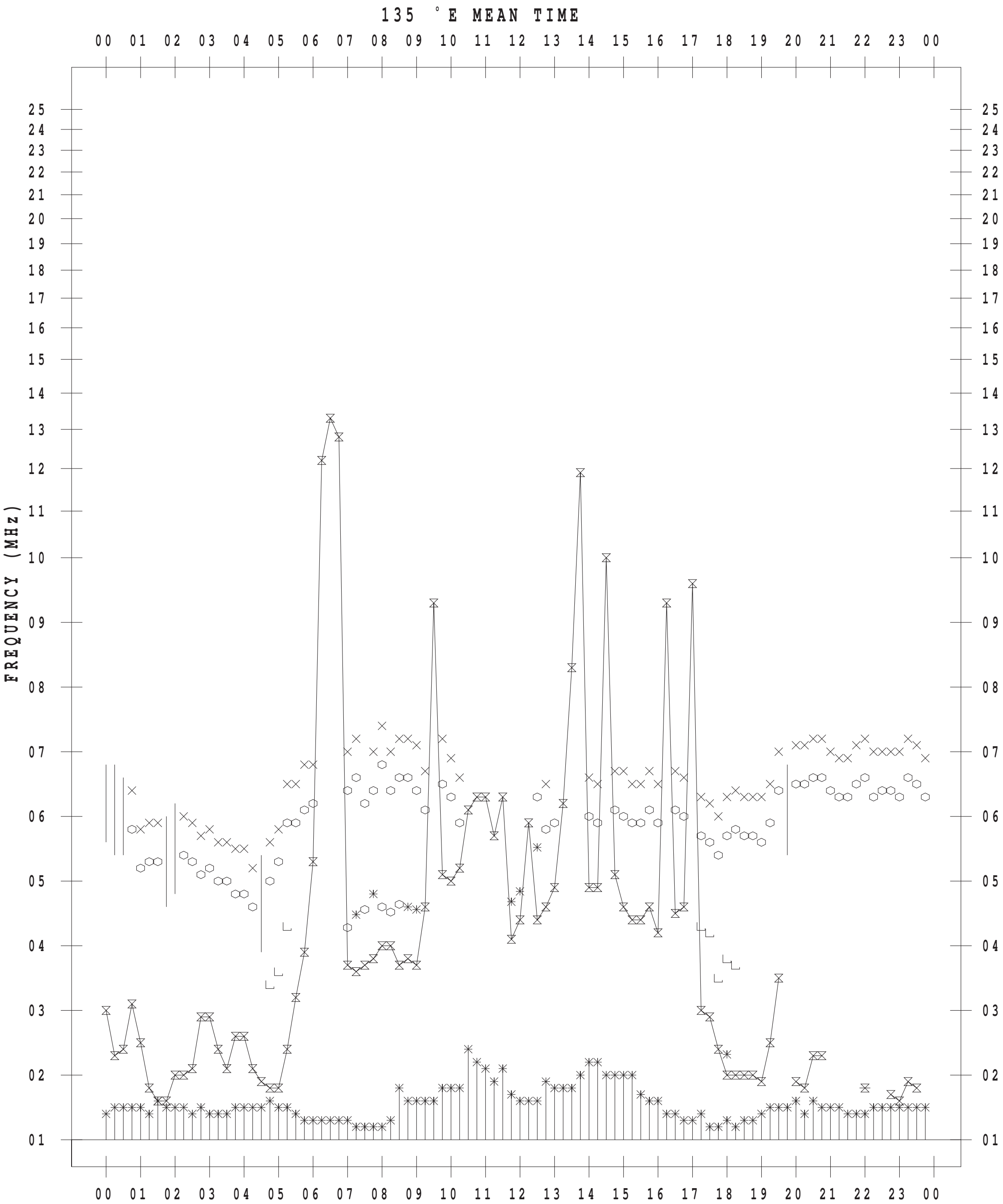
135 °E MEAN TIME

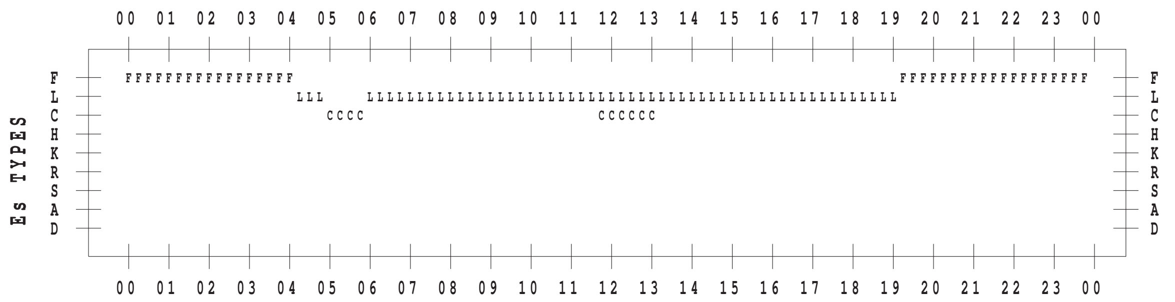


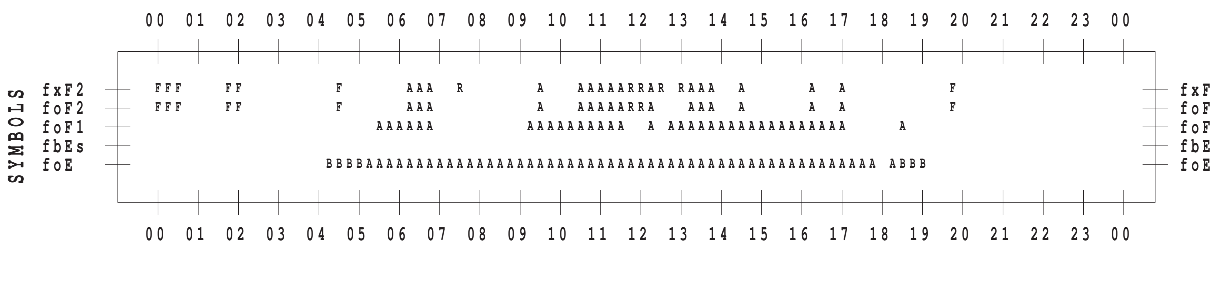
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2012/ 7/25







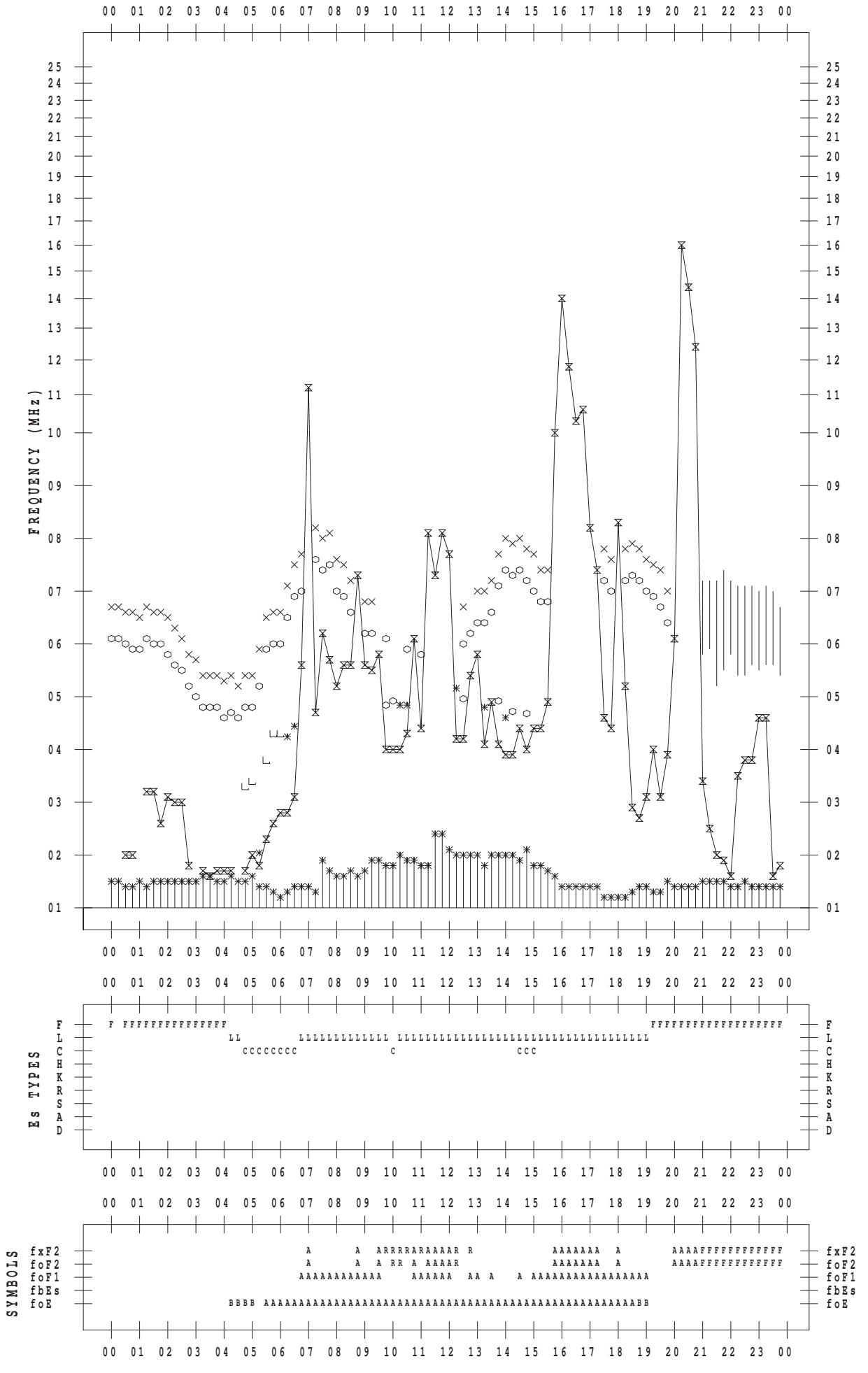
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/26

135 °E MEAN TIME



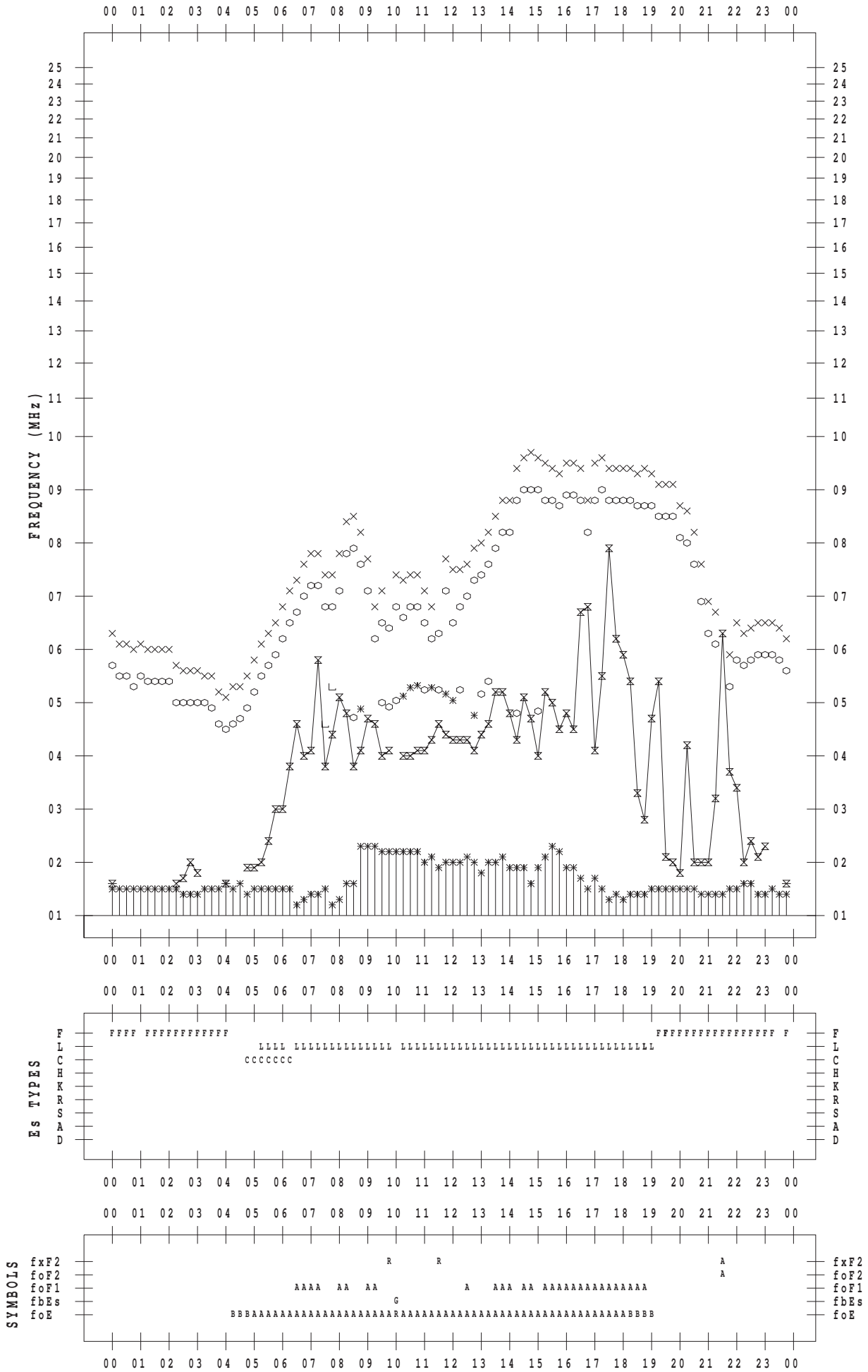
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/27

135 °E MEAN TIME

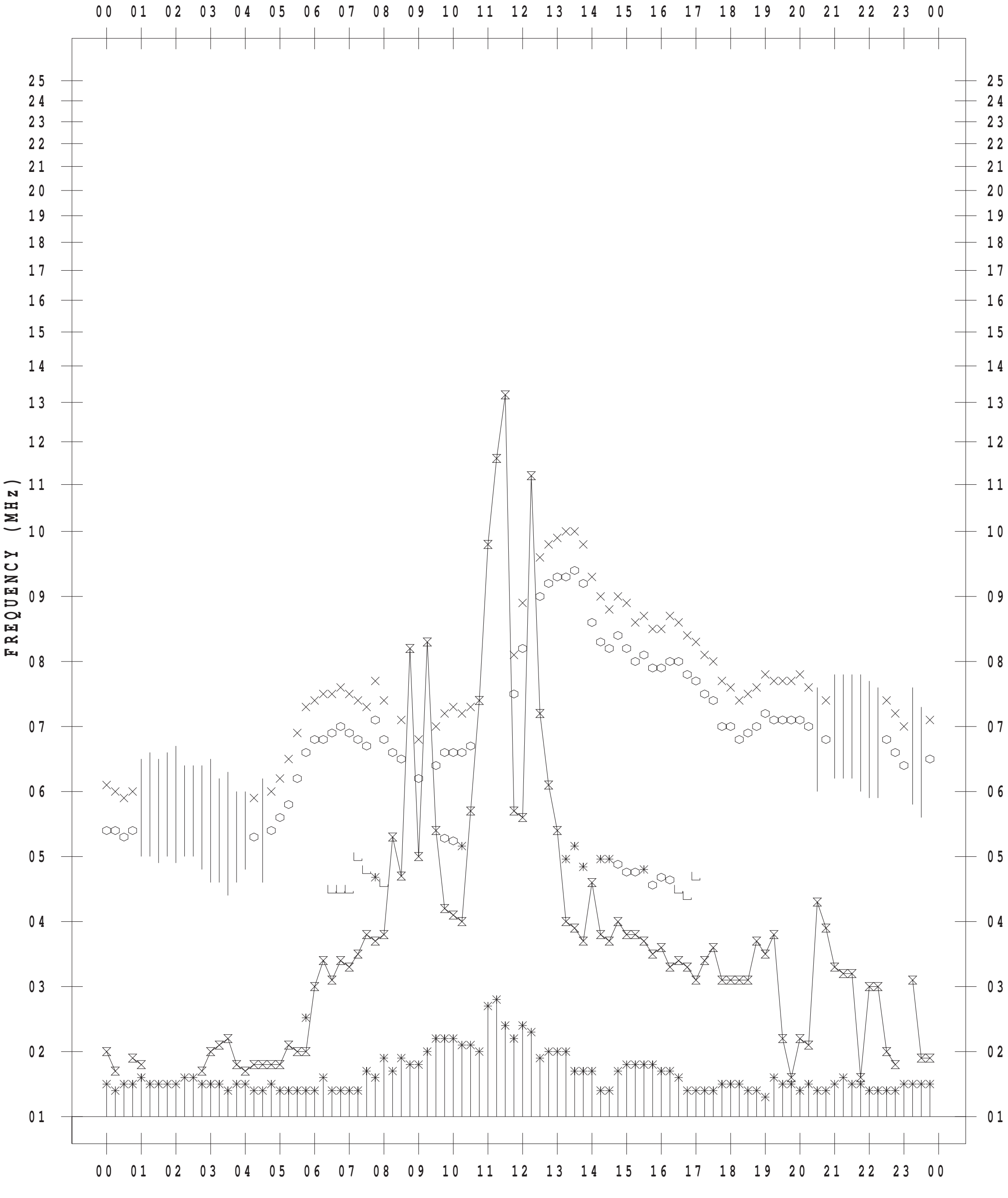


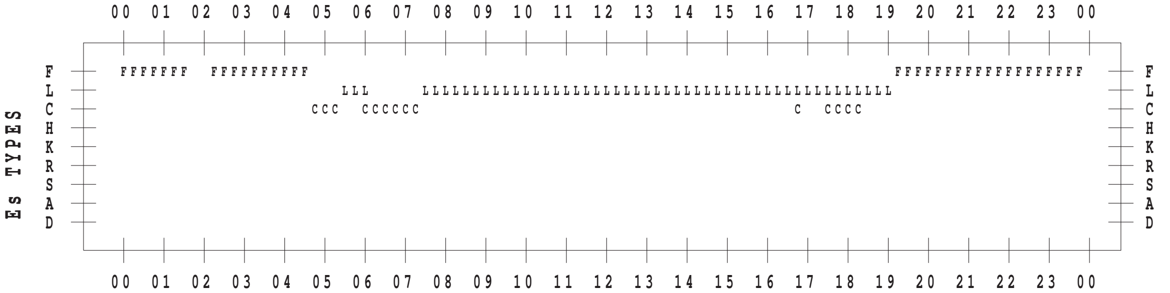
f-PLOT DATA

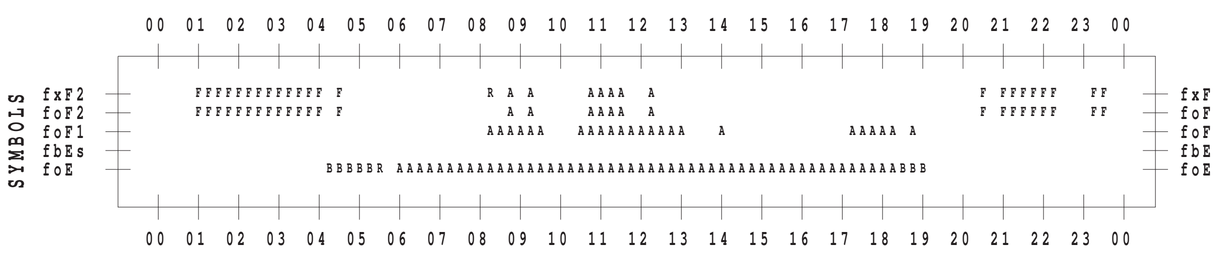
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2012/ 7/28

135 °E MEAN TIME







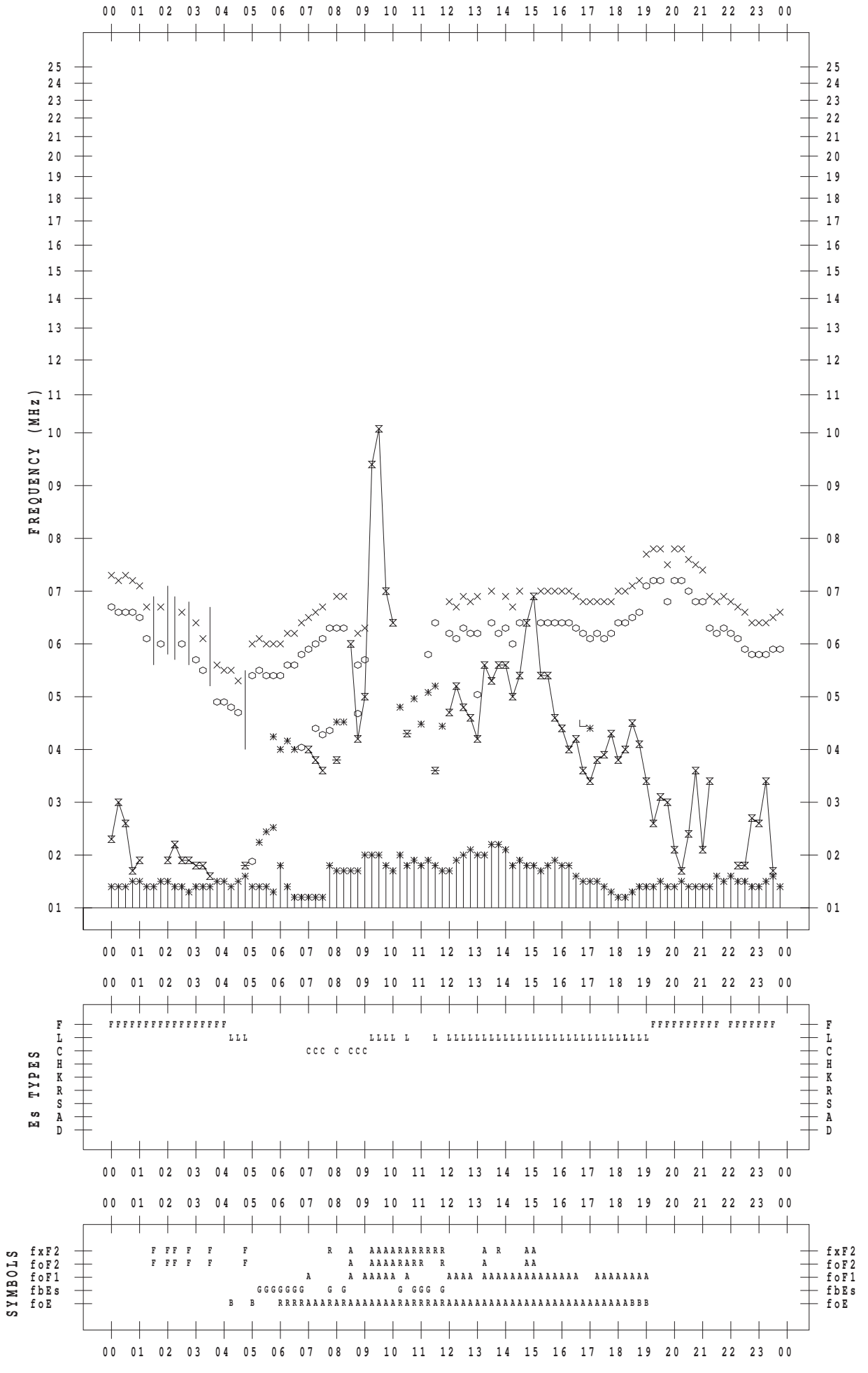
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/29

135 °E MEAN TIME



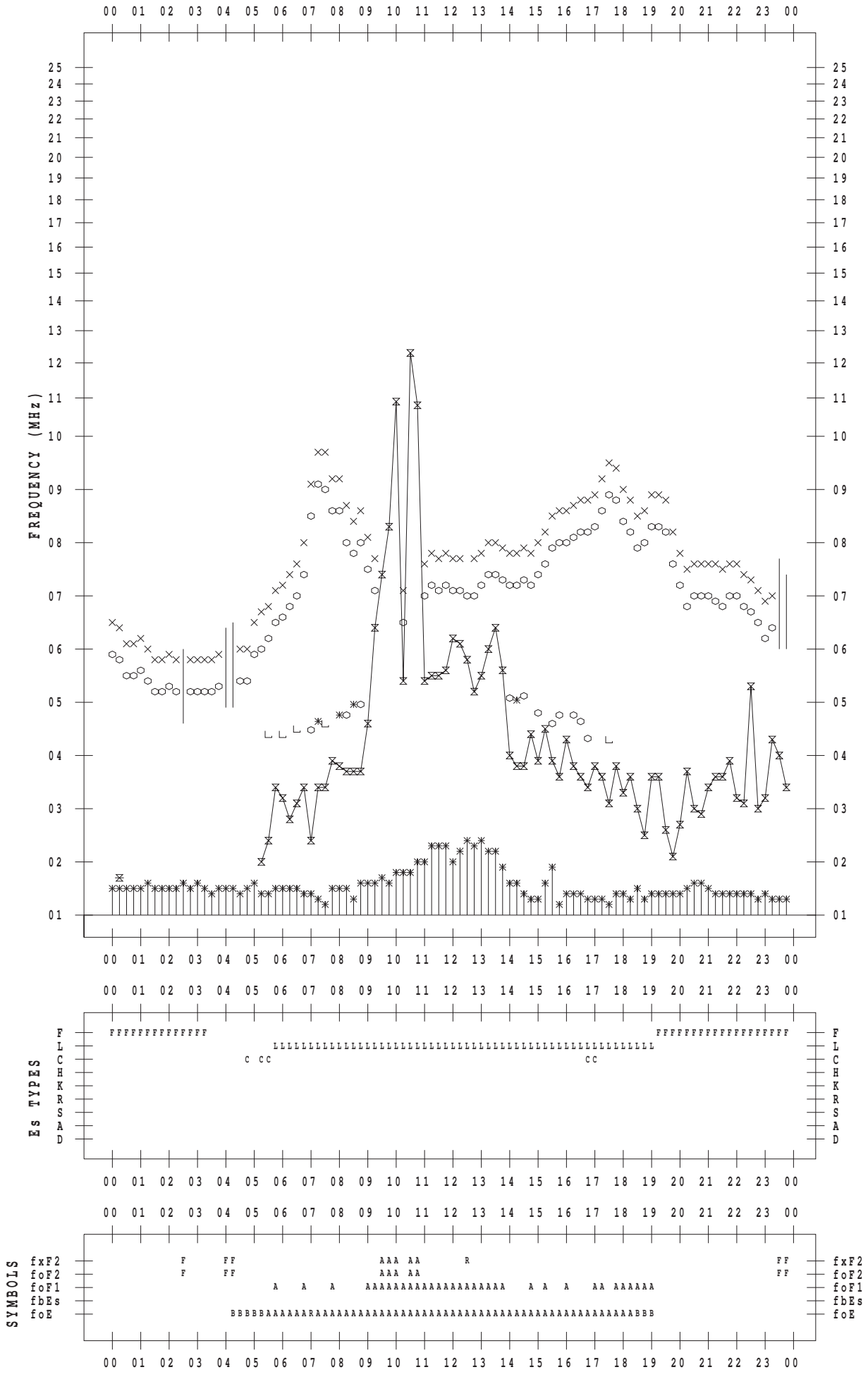
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/30

135 °E MEAN TIME



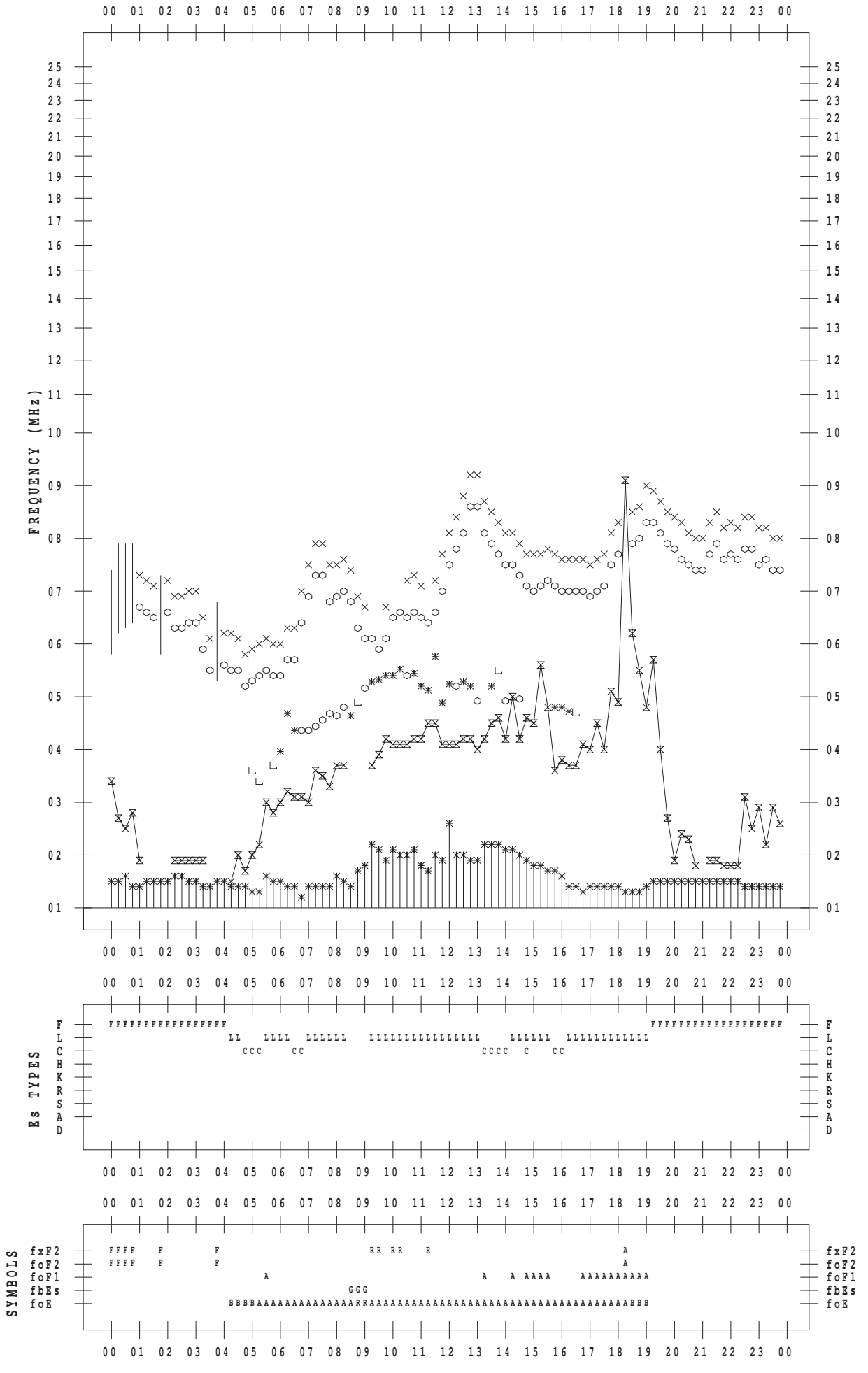
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 7/31

135 °E MEAN TIME



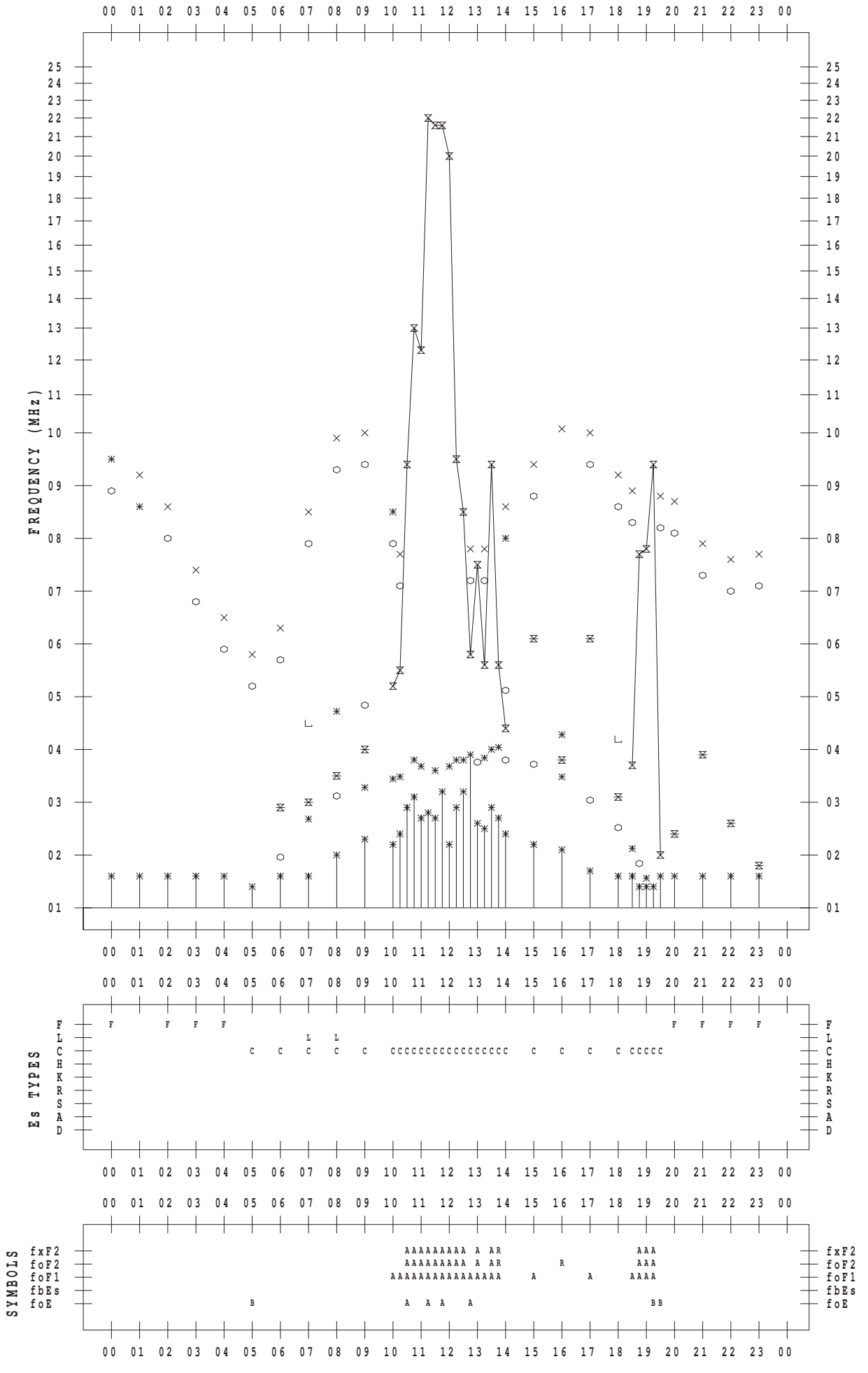
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 1

135 °E MEAN TIME



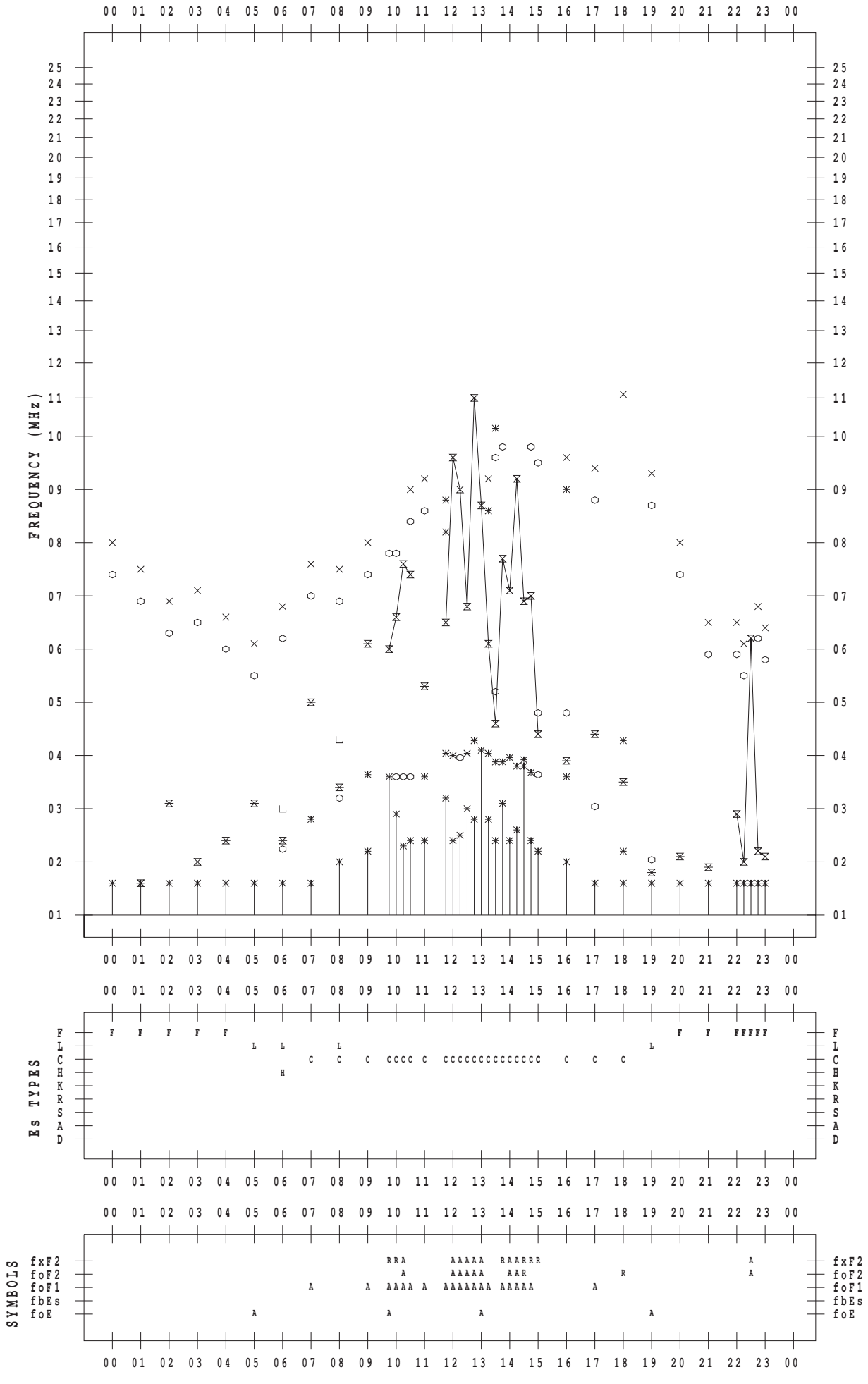
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 2

135 °E MEAN TIME



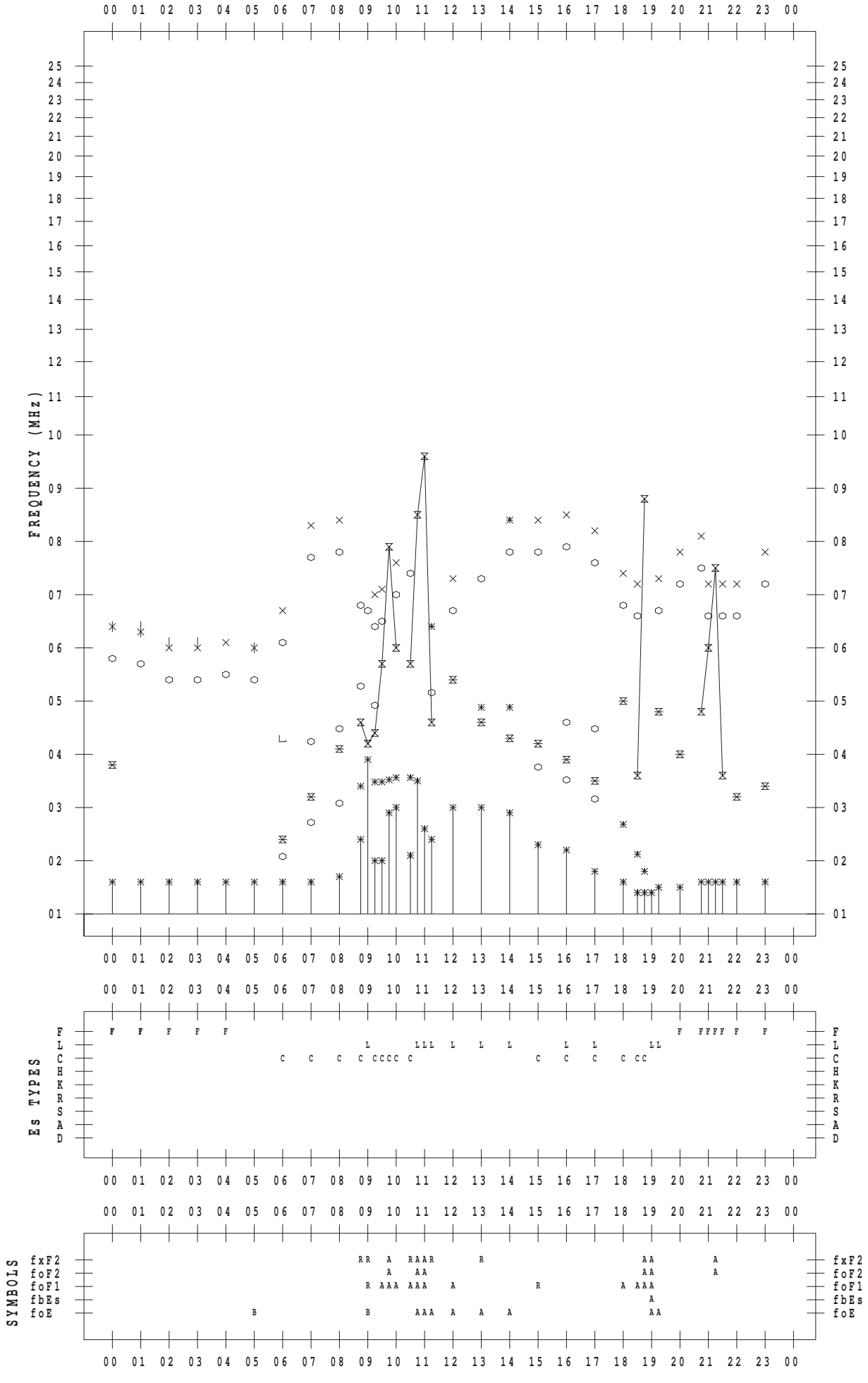
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 3

135 °E MEAN TIME



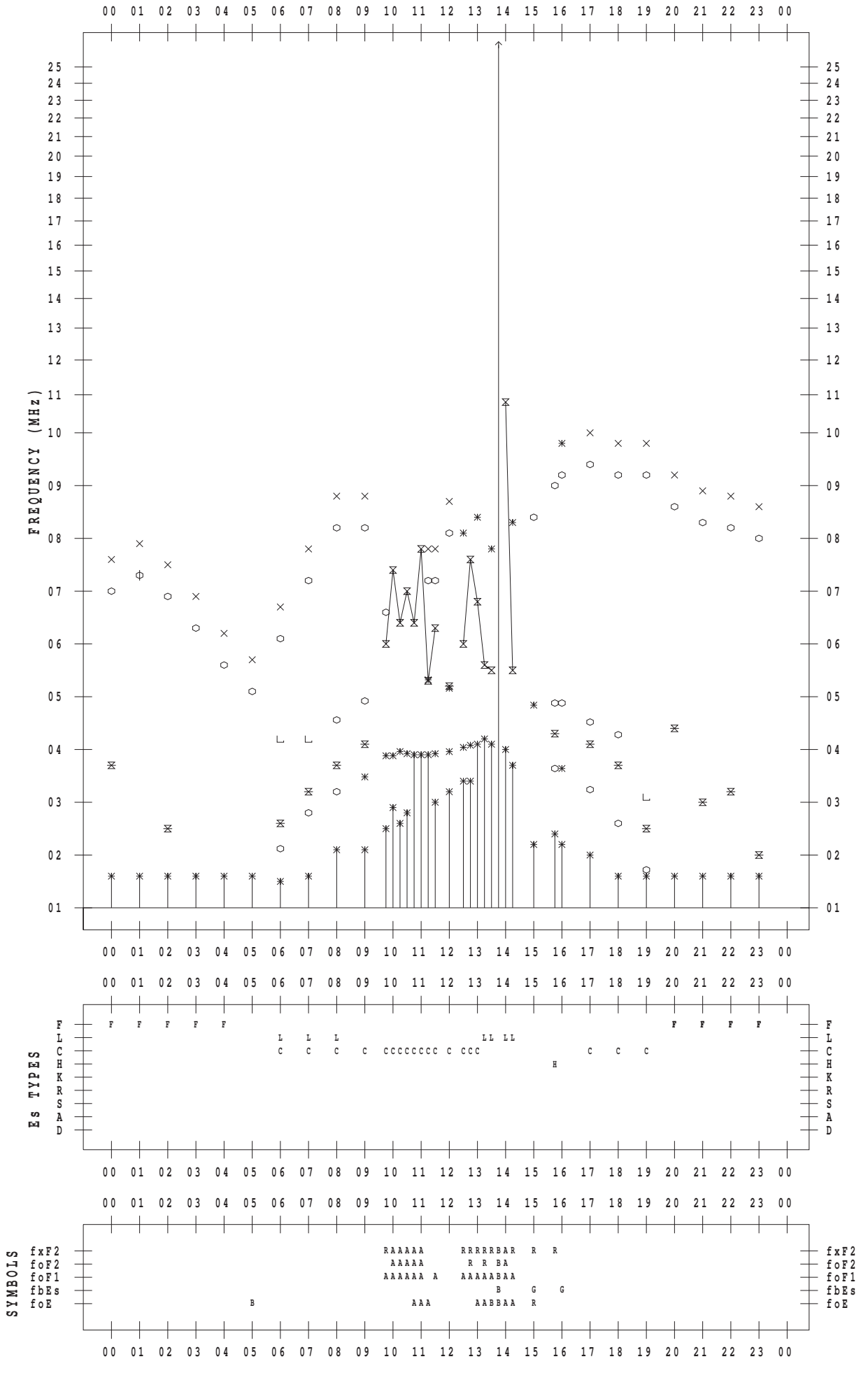
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 4

135 °E MEAN TIME



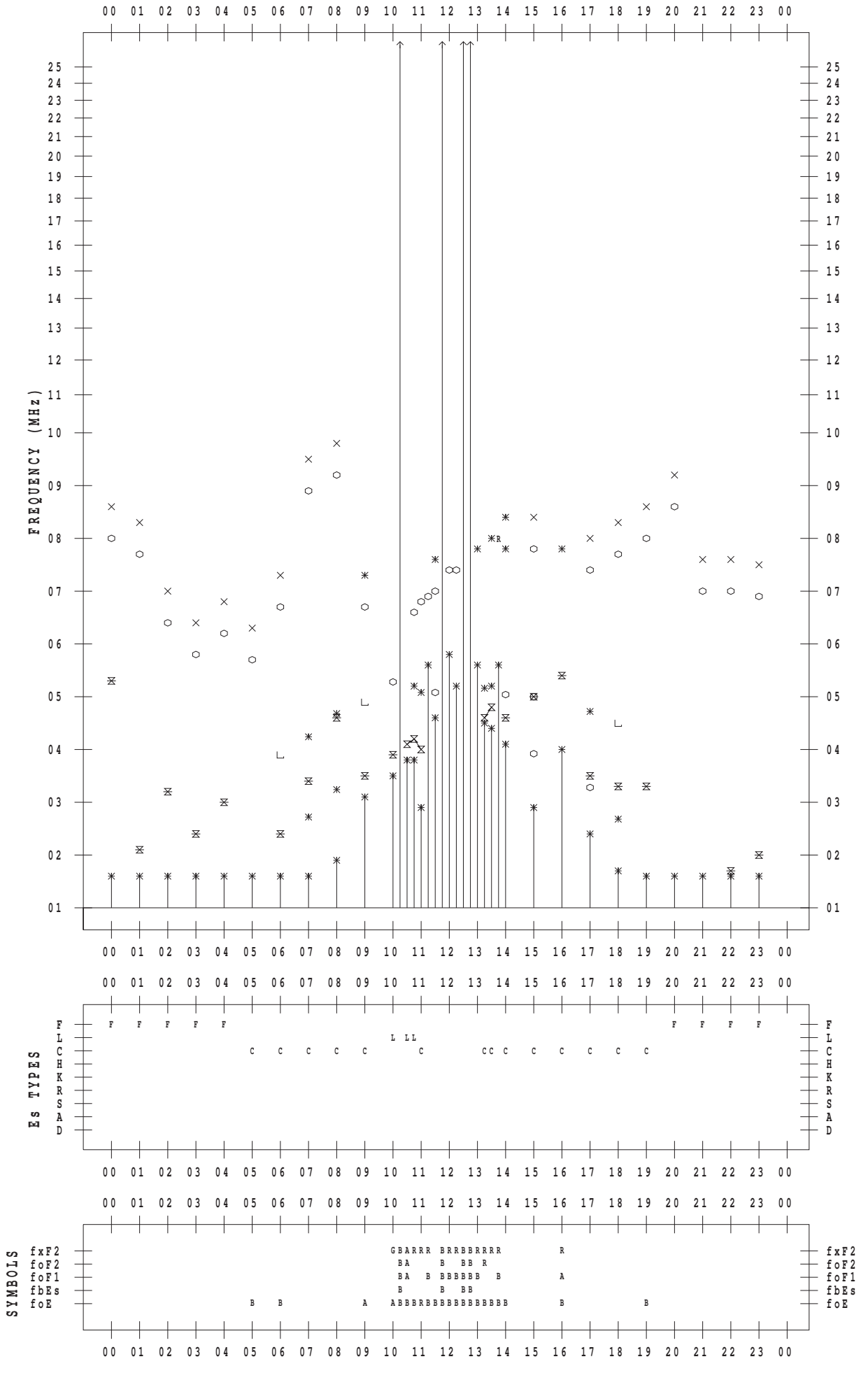
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 5

135 °E MEAN TIME



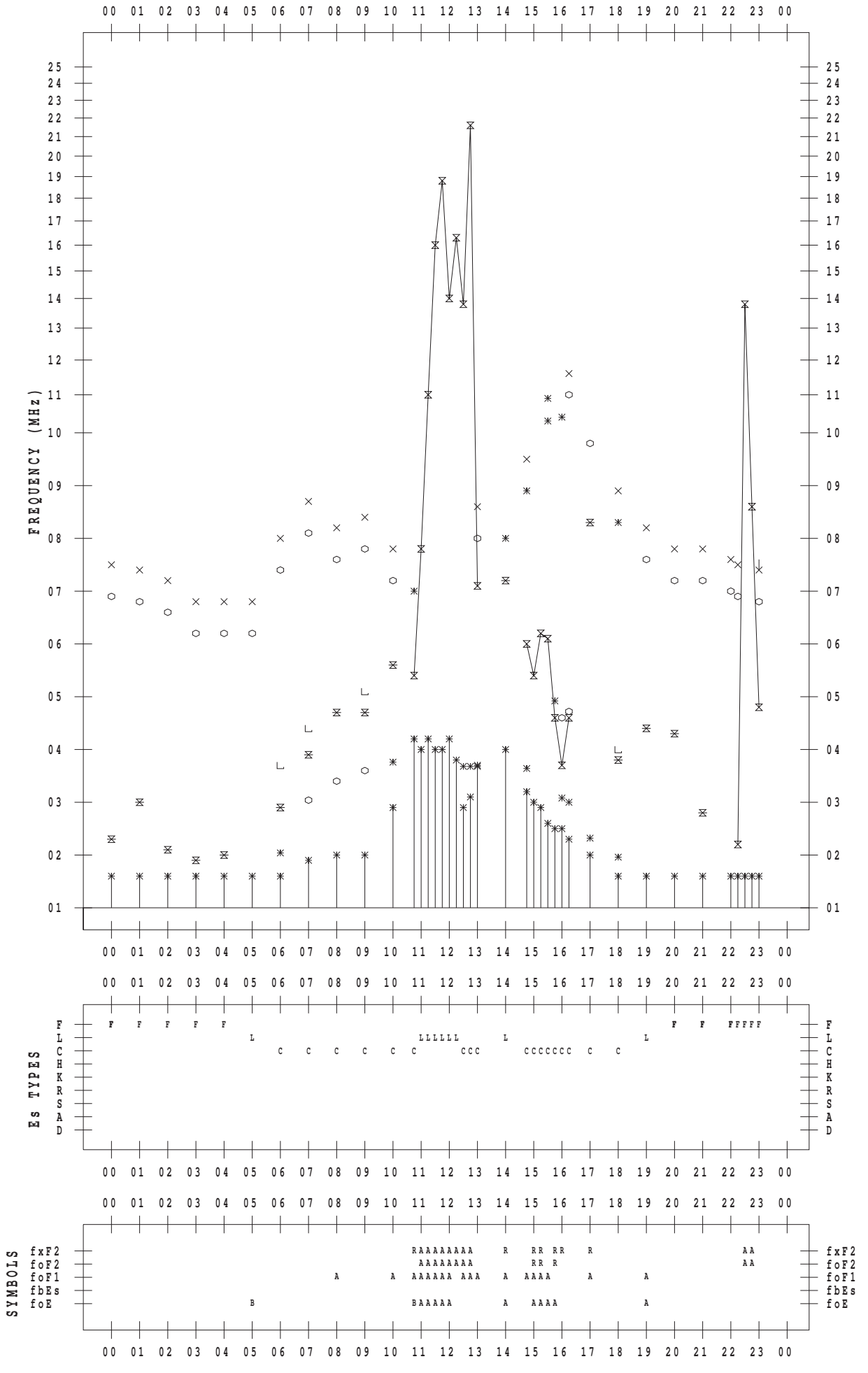
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 6

135 °E MEAN TIME



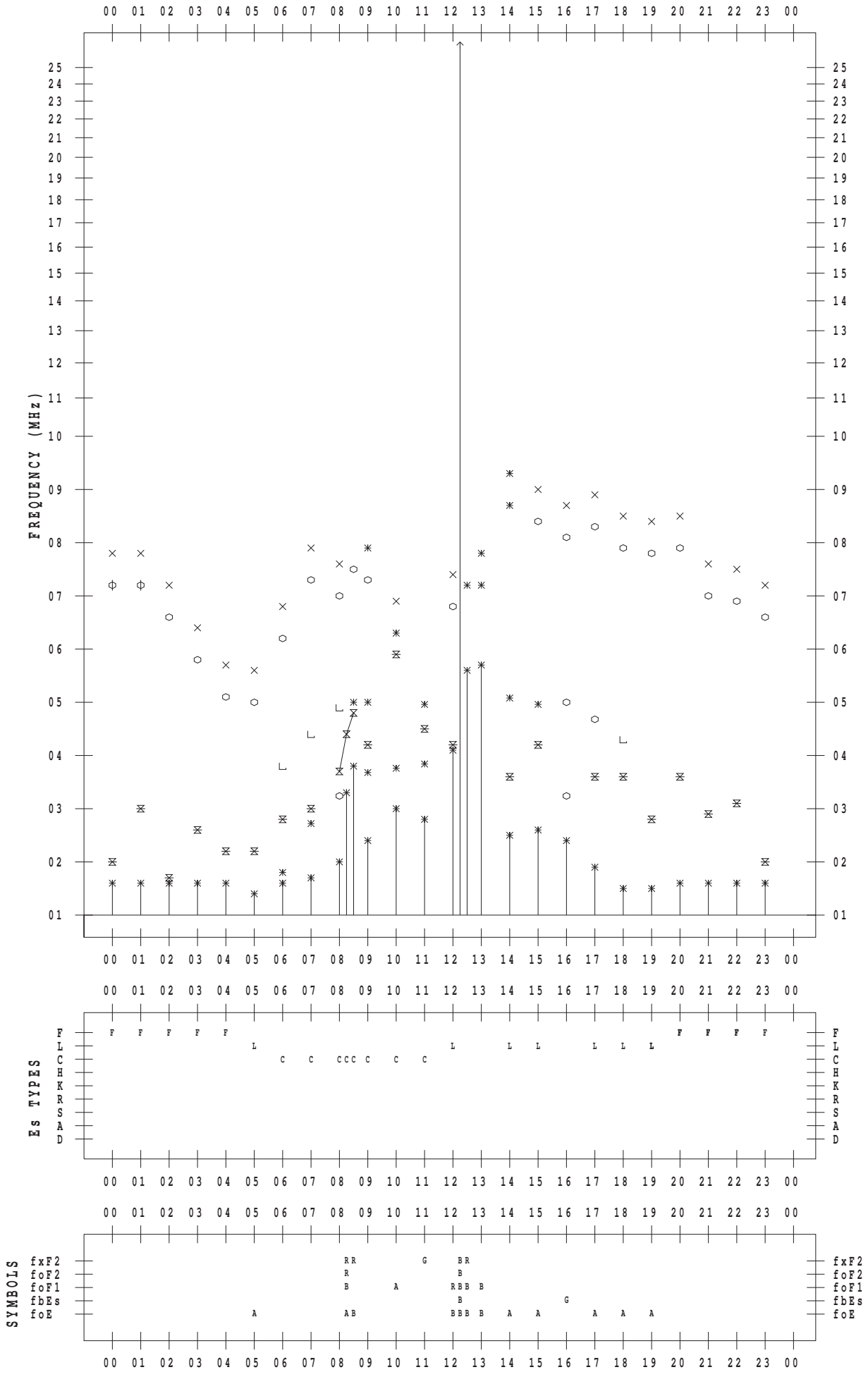
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 7

135 °E MEAN TIME



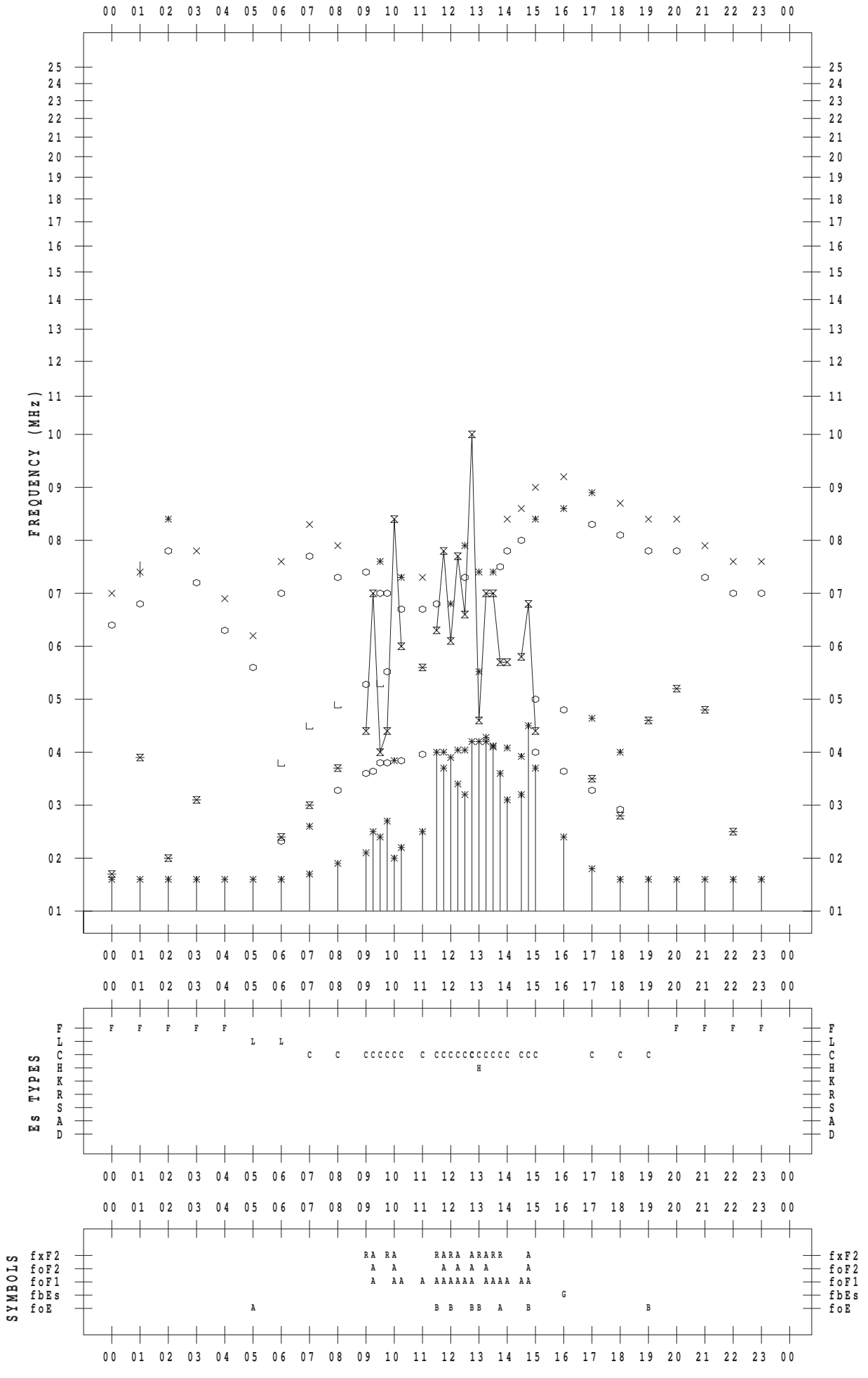
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 8

135 °E MEAN TIME



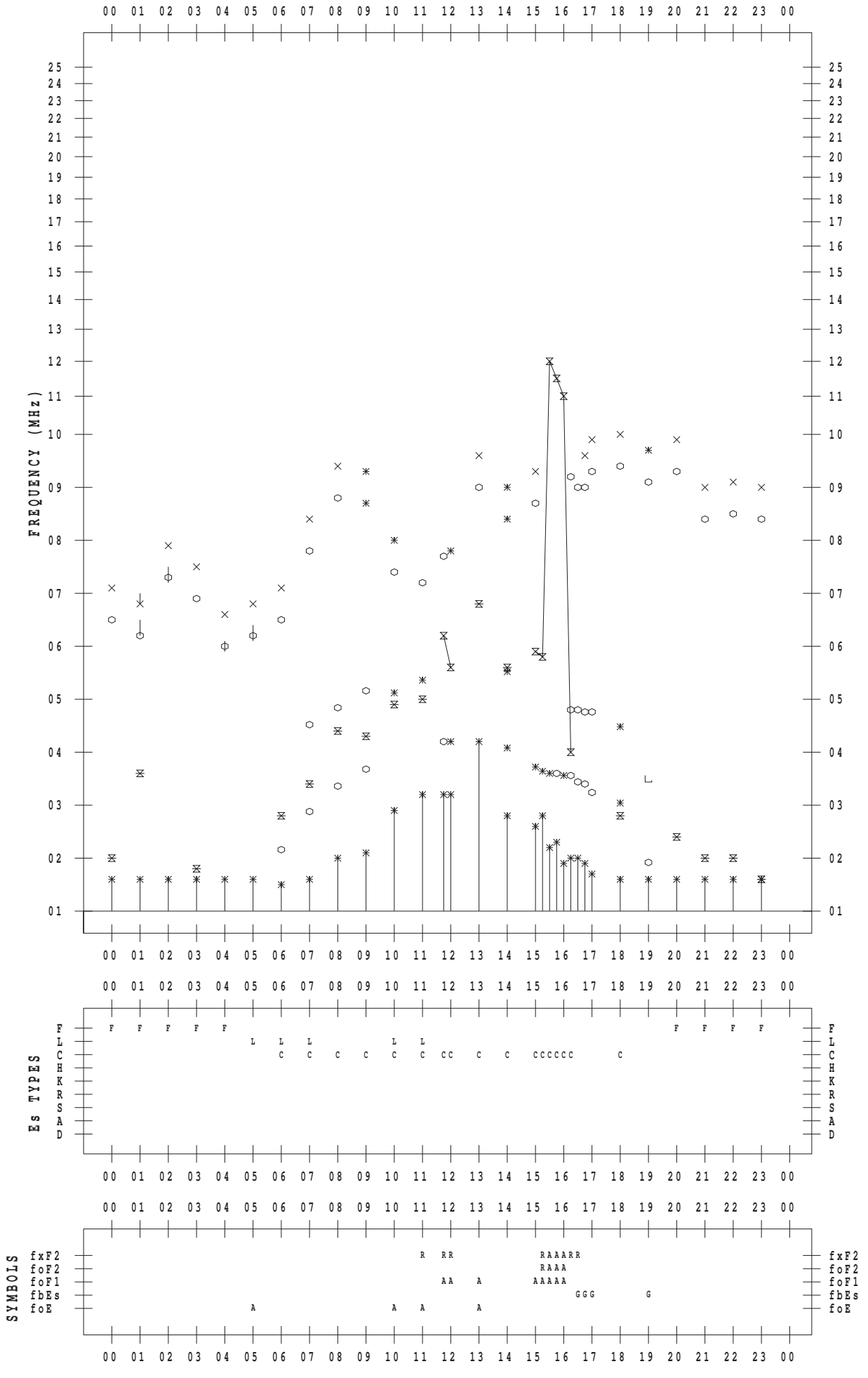
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/ 9

135 °E MEAN TIME



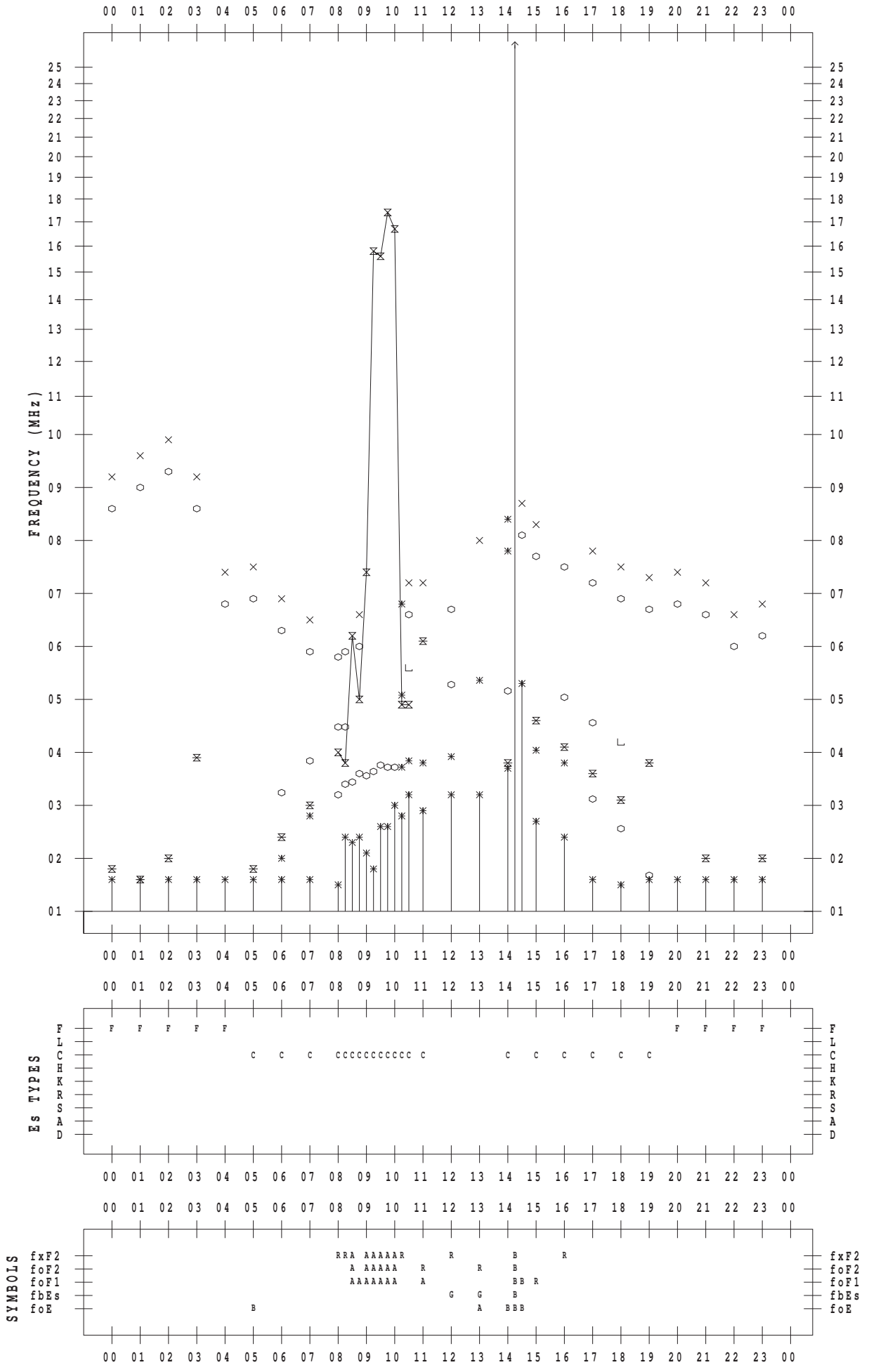
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/10

135 °E MEAN TIME



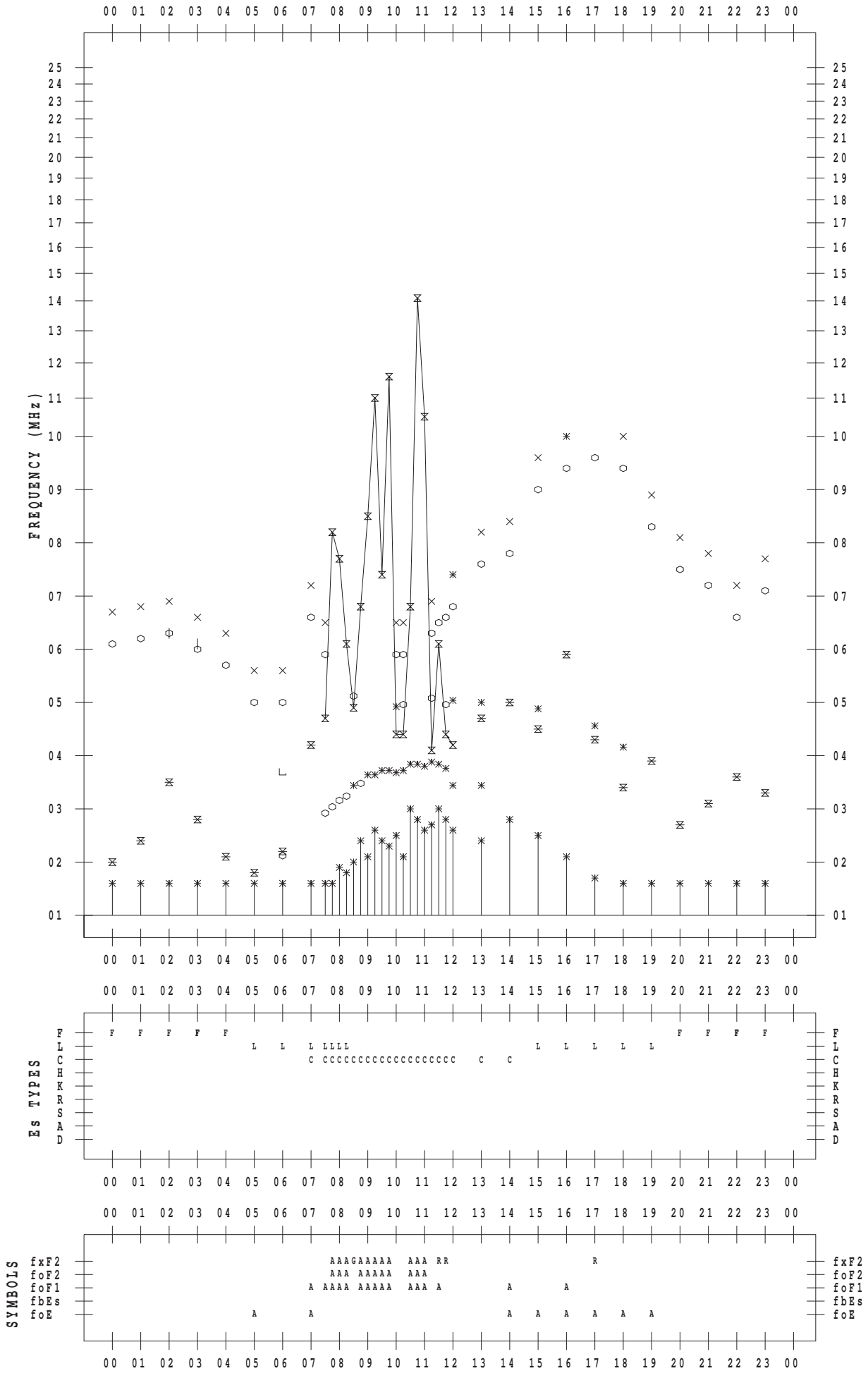
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/11

135 °E MEAN TIME



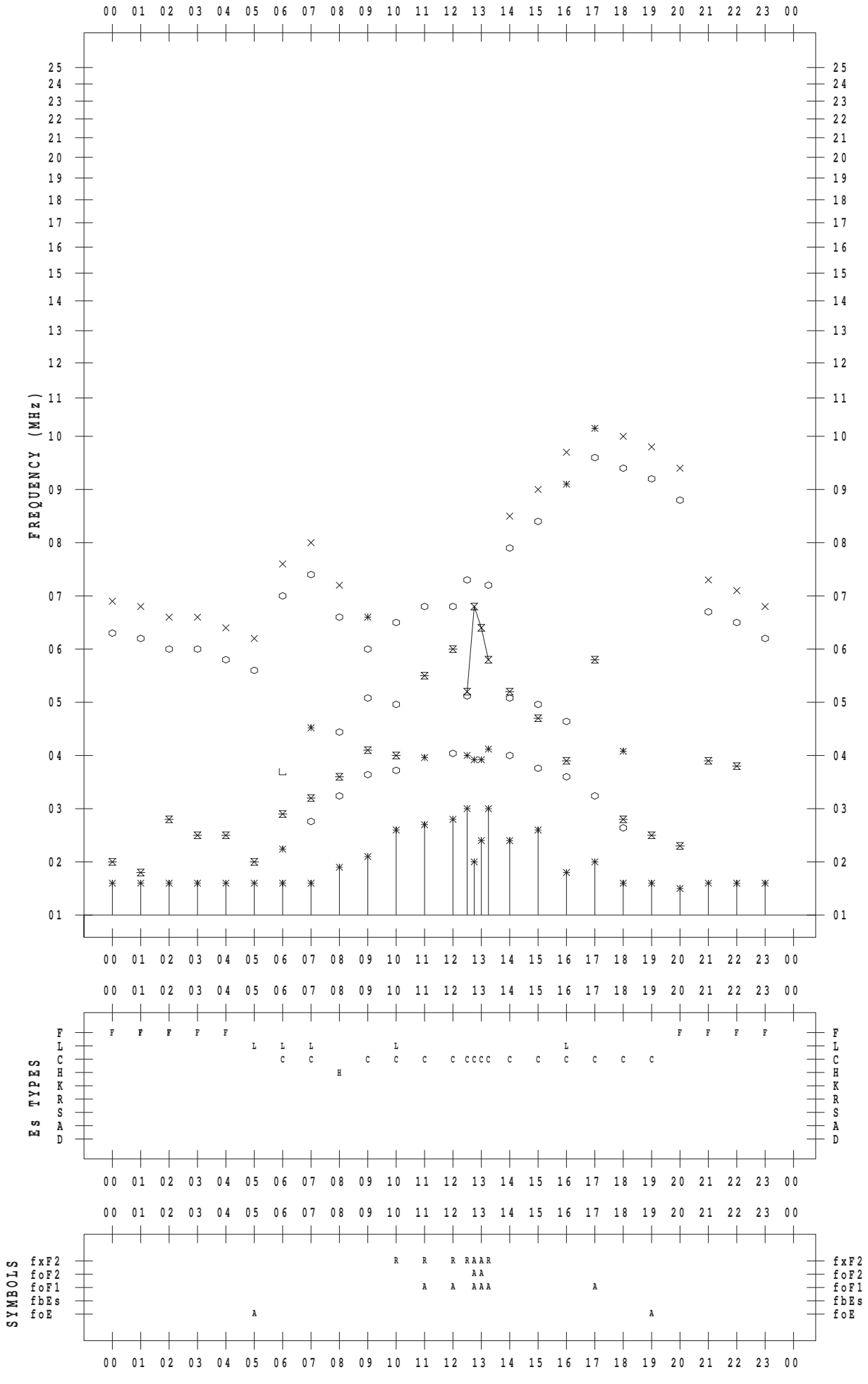
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/12

135 °E MEAN TIME



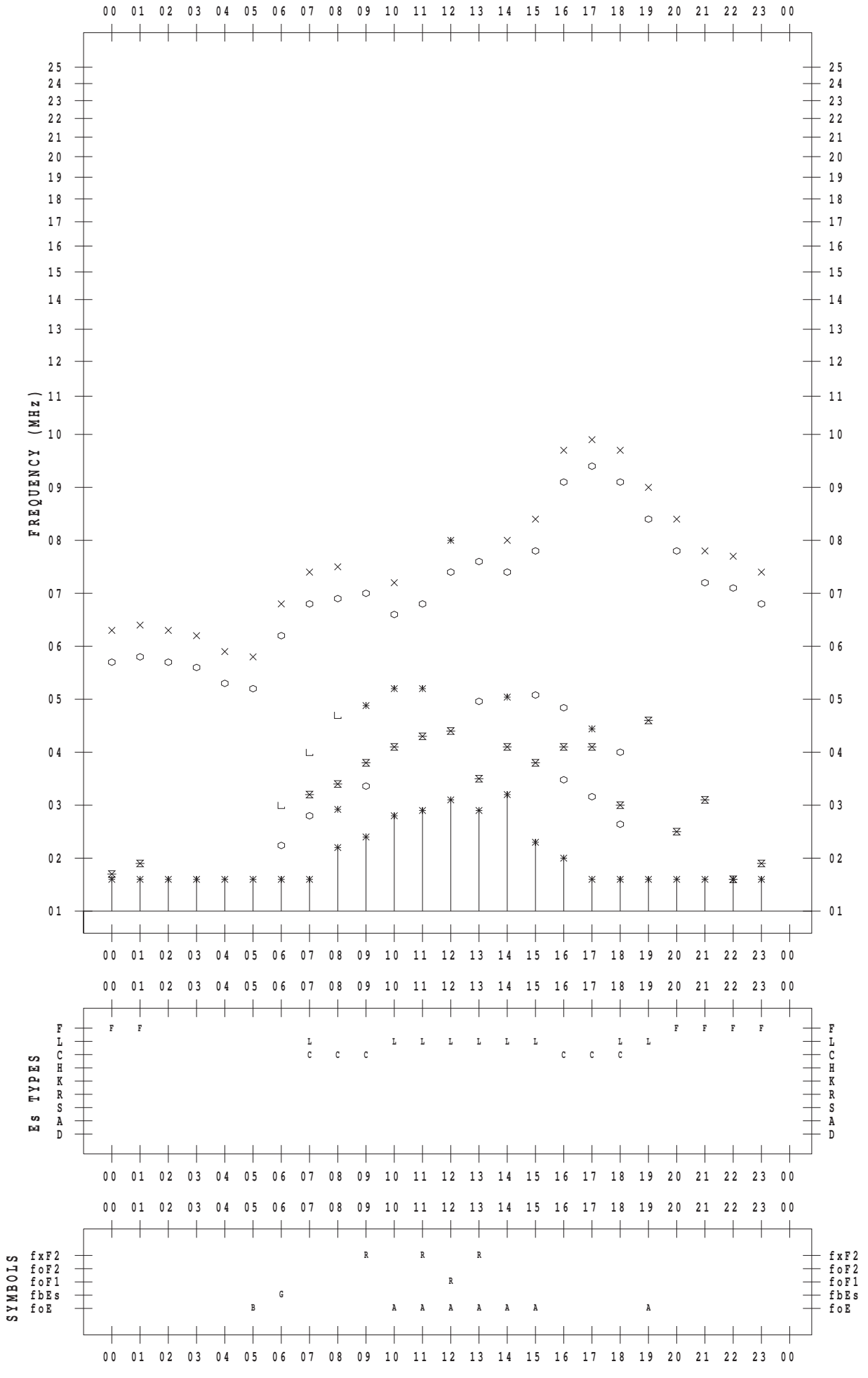
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/13

135 °E MEAN TIME



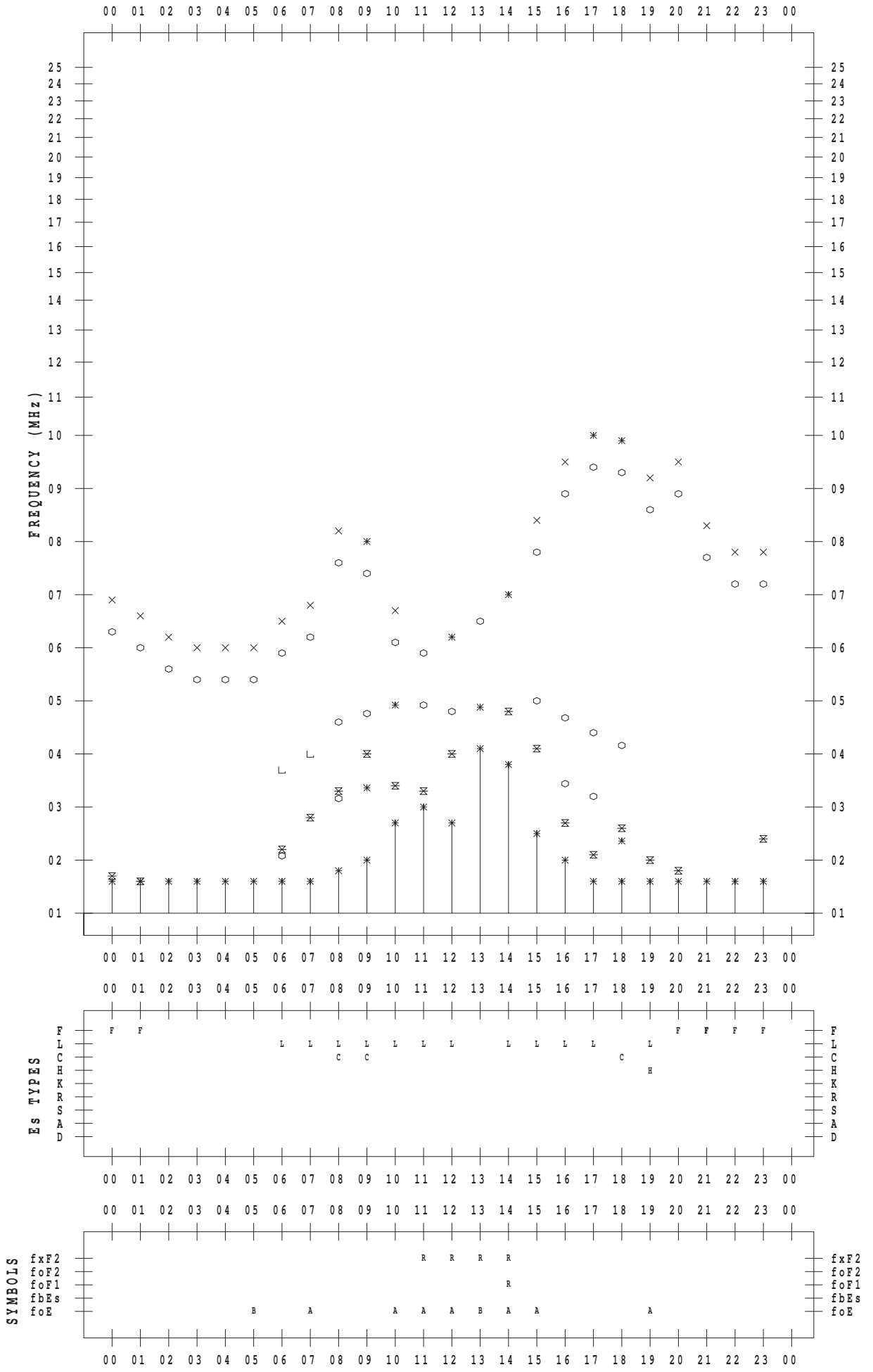
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/14

135 °E MEAN TIME



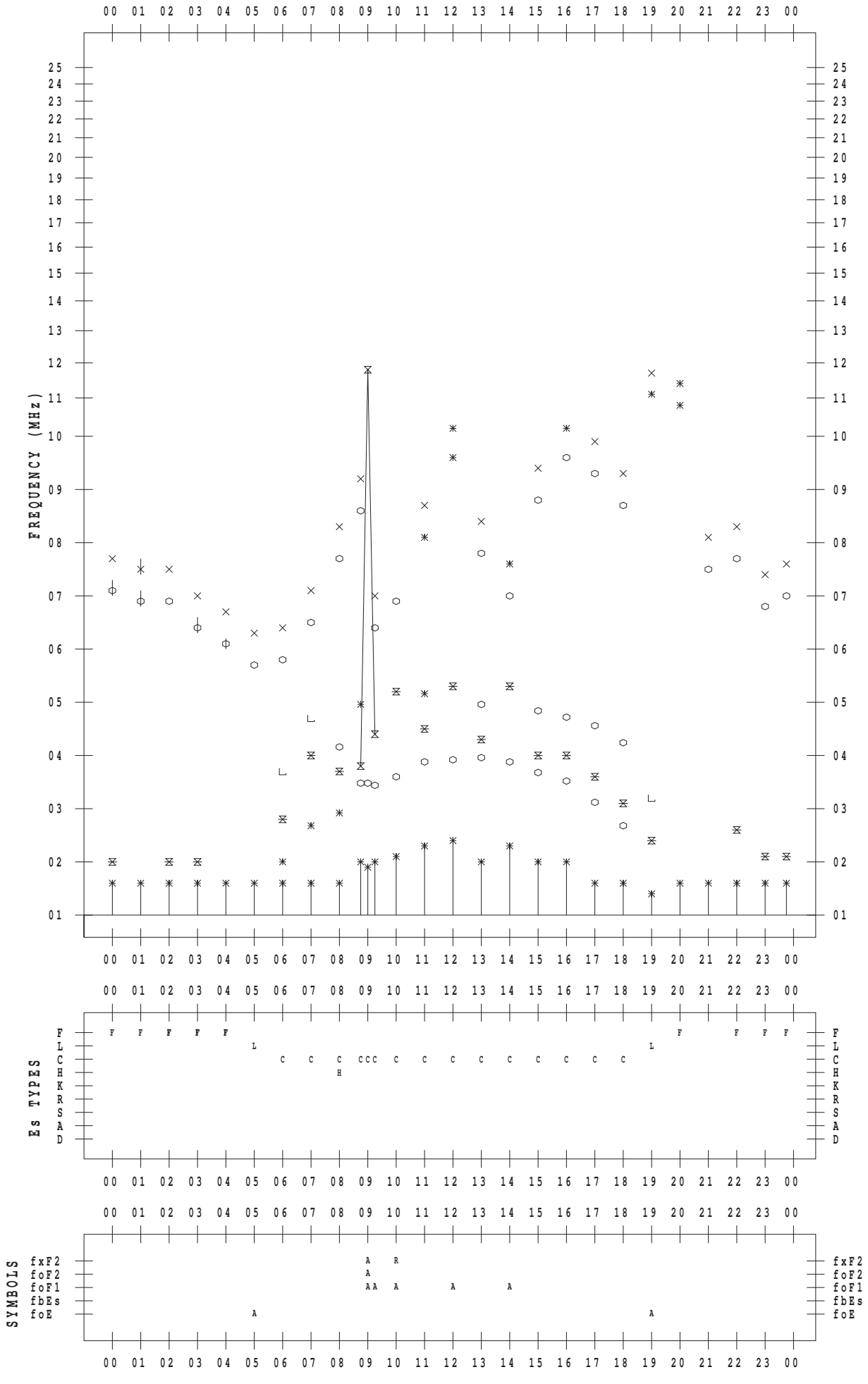
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/15

135 °E MEAN TIME



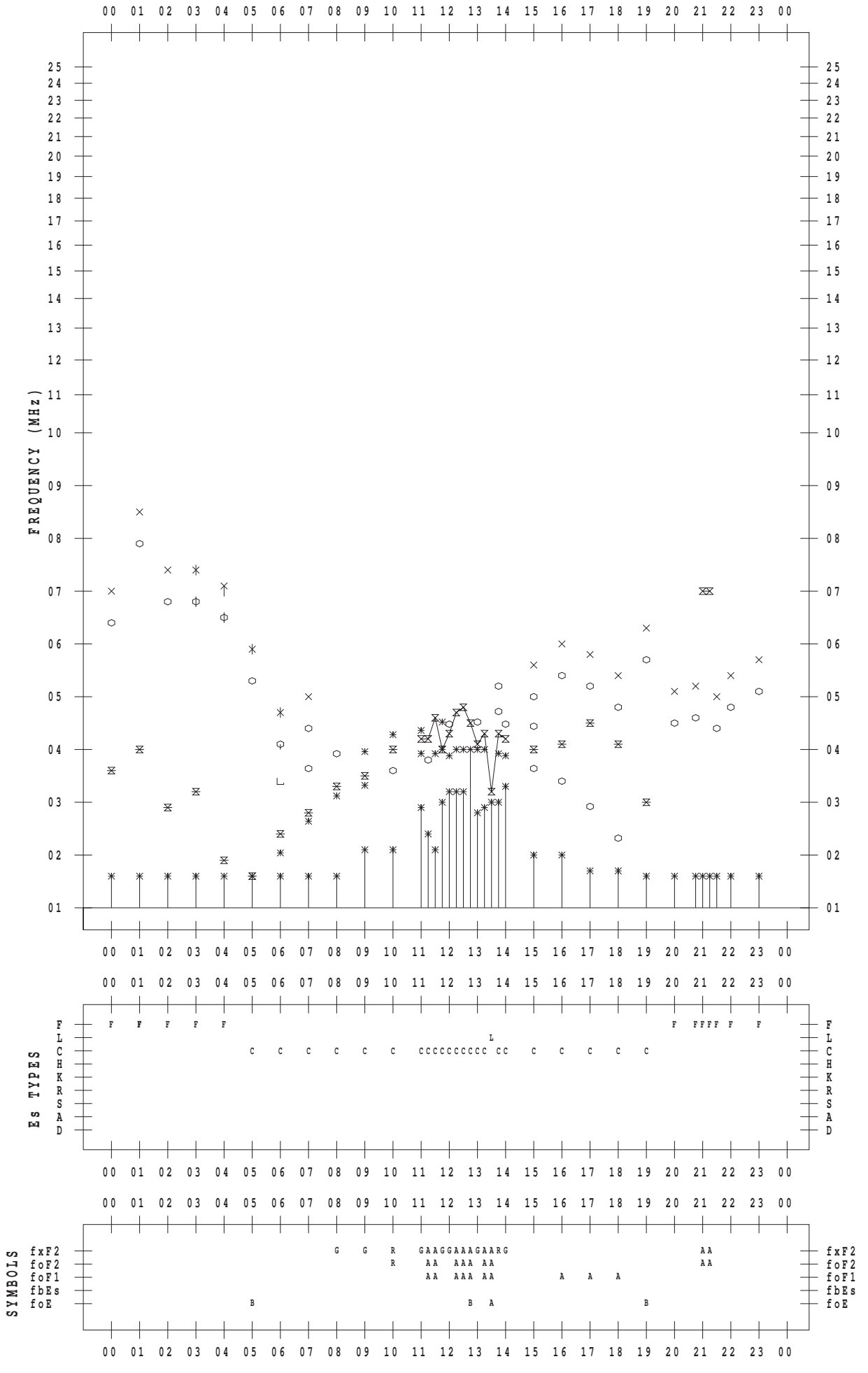
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/16

135 °E MEAN TIME



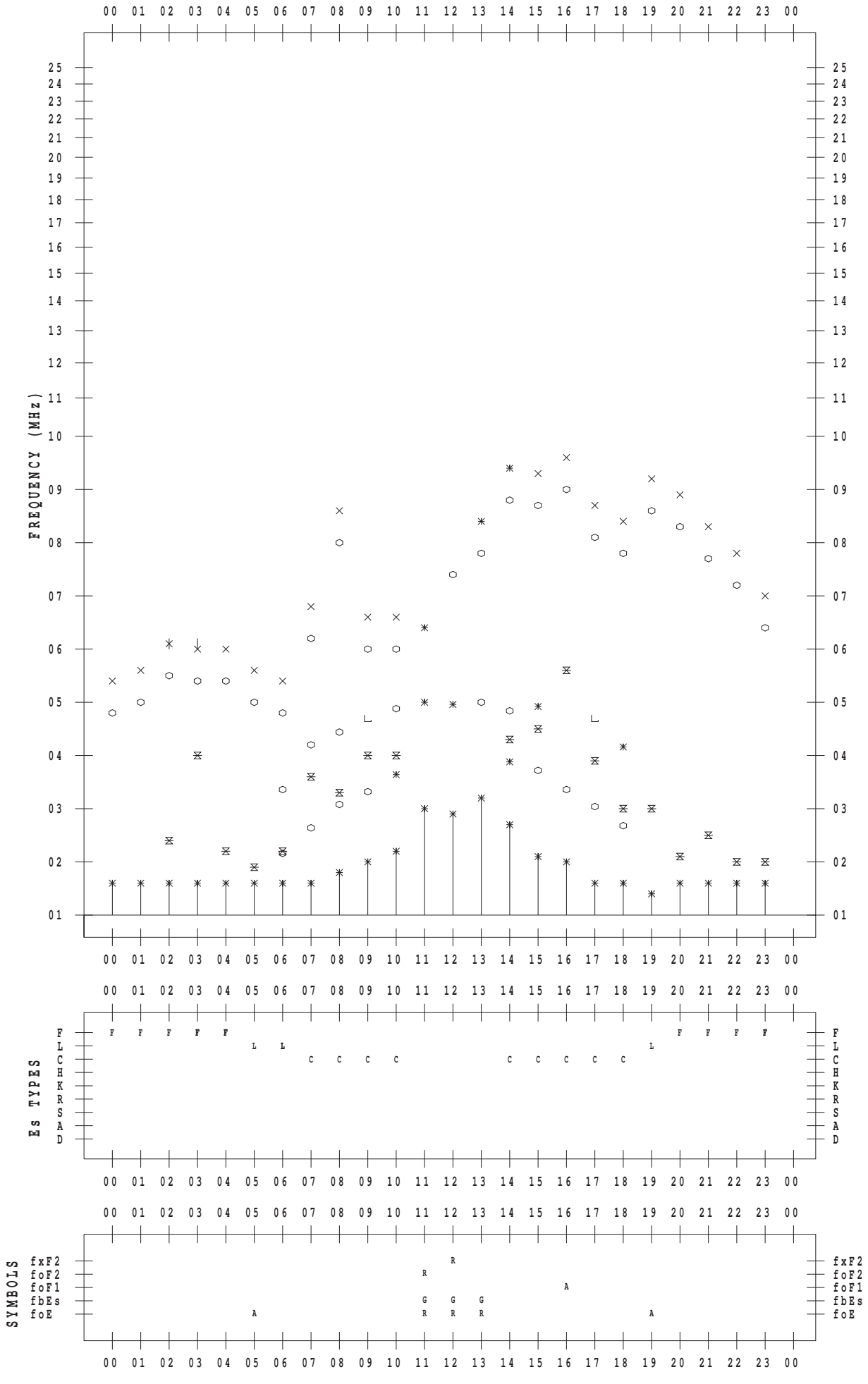
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/17

135 °E MEAN TIME



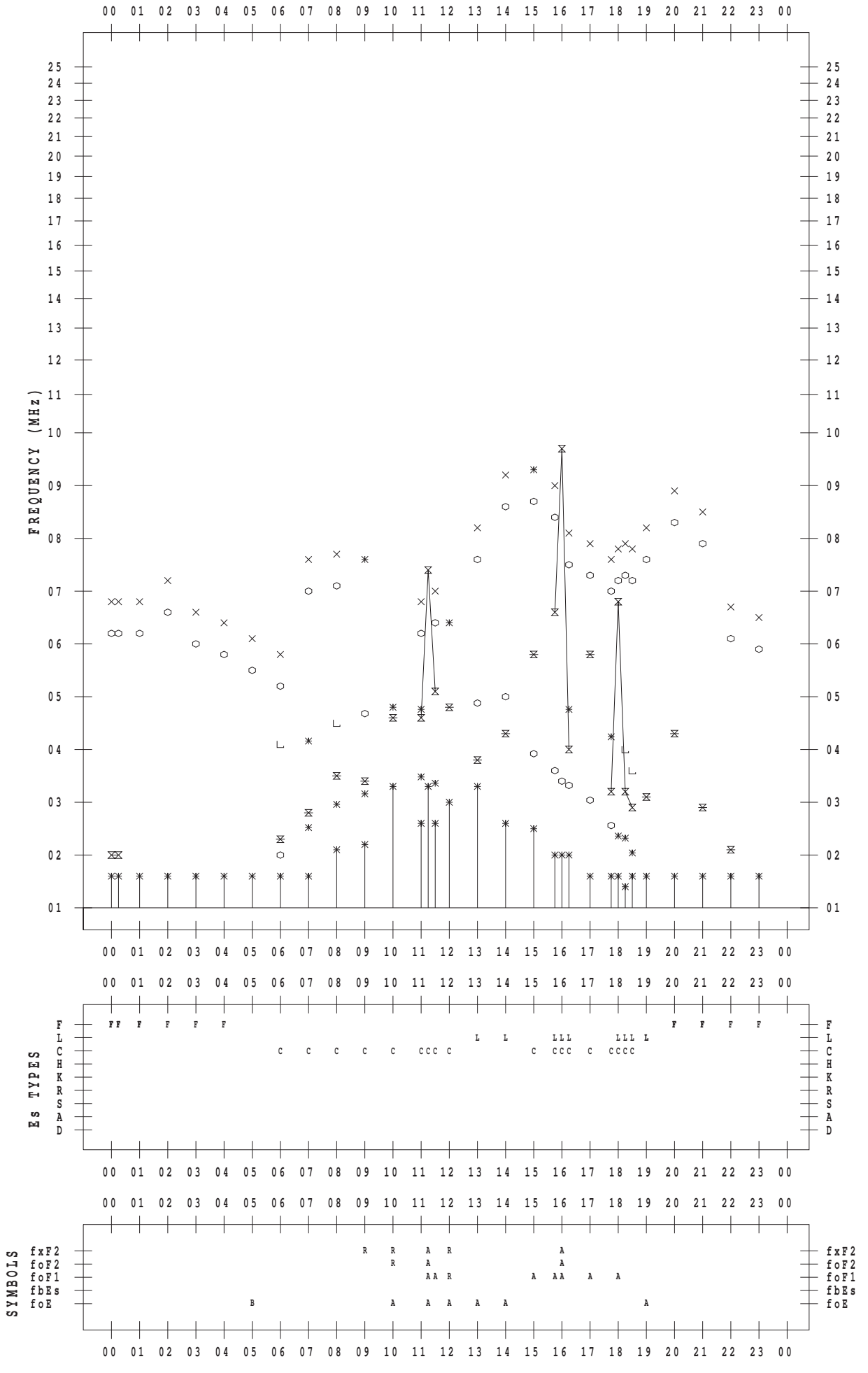
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/18

135 °E MEAN TIME



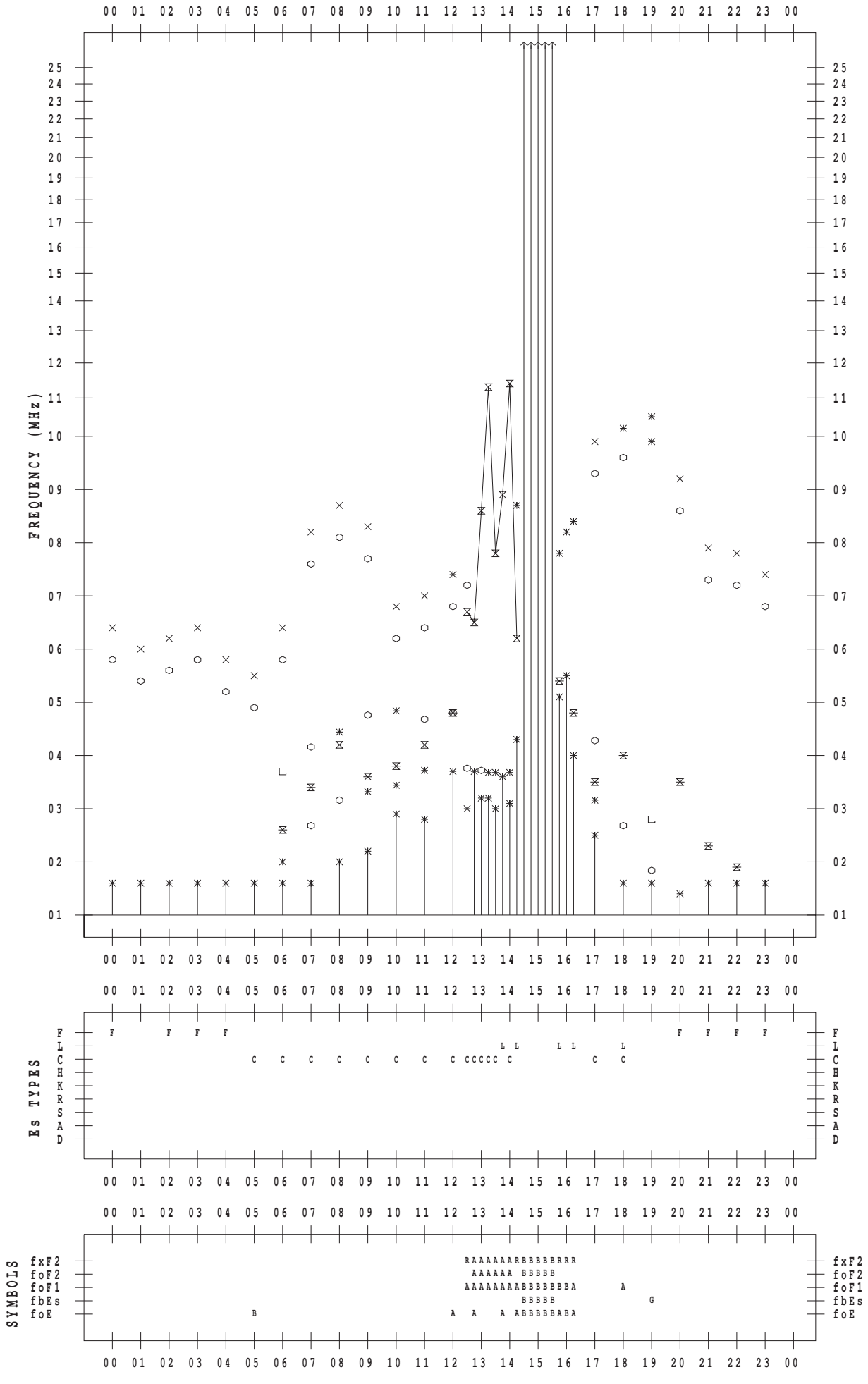
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/19

135 °E MEAN TIME



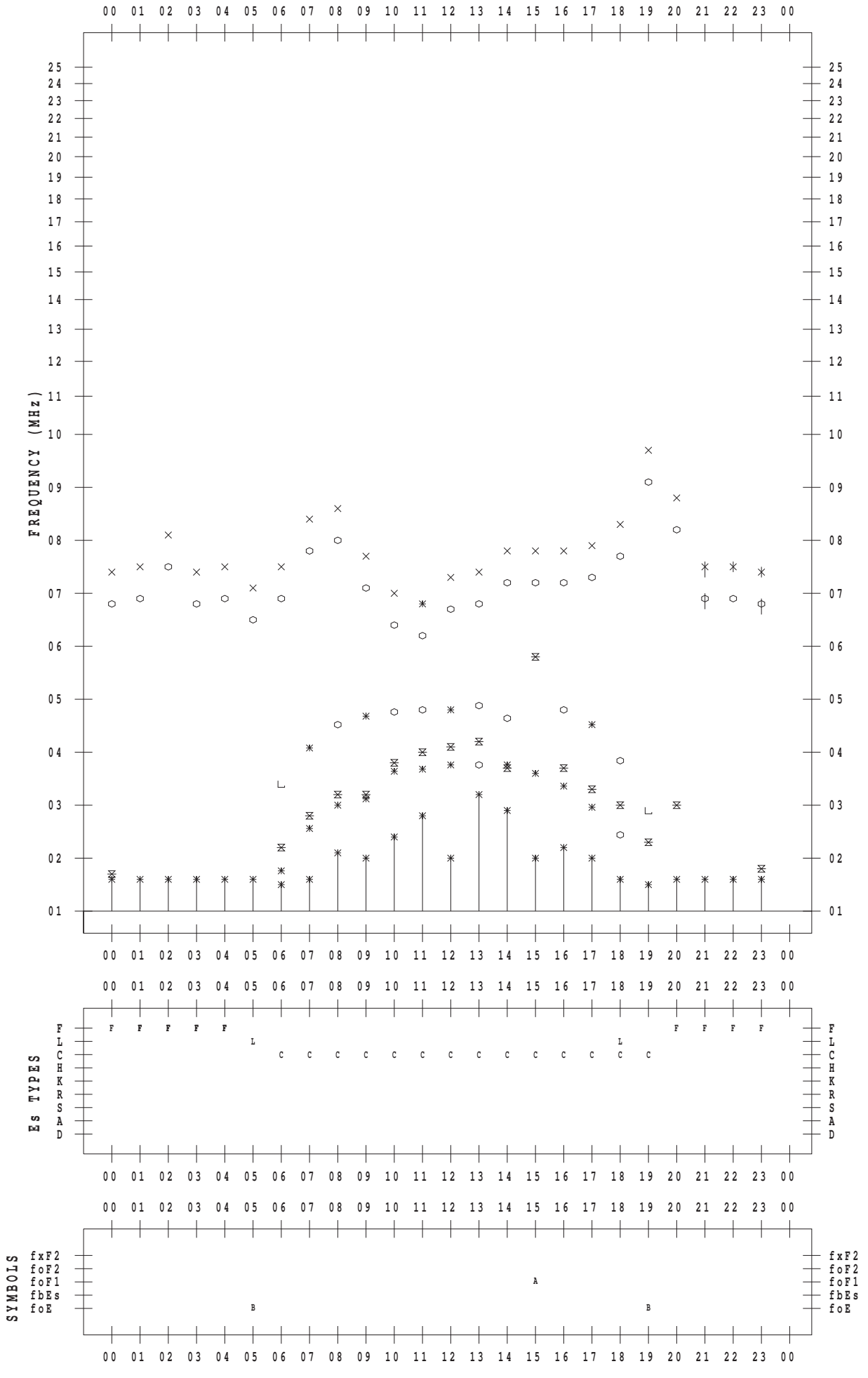
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/20

135 °E MEAN TIME



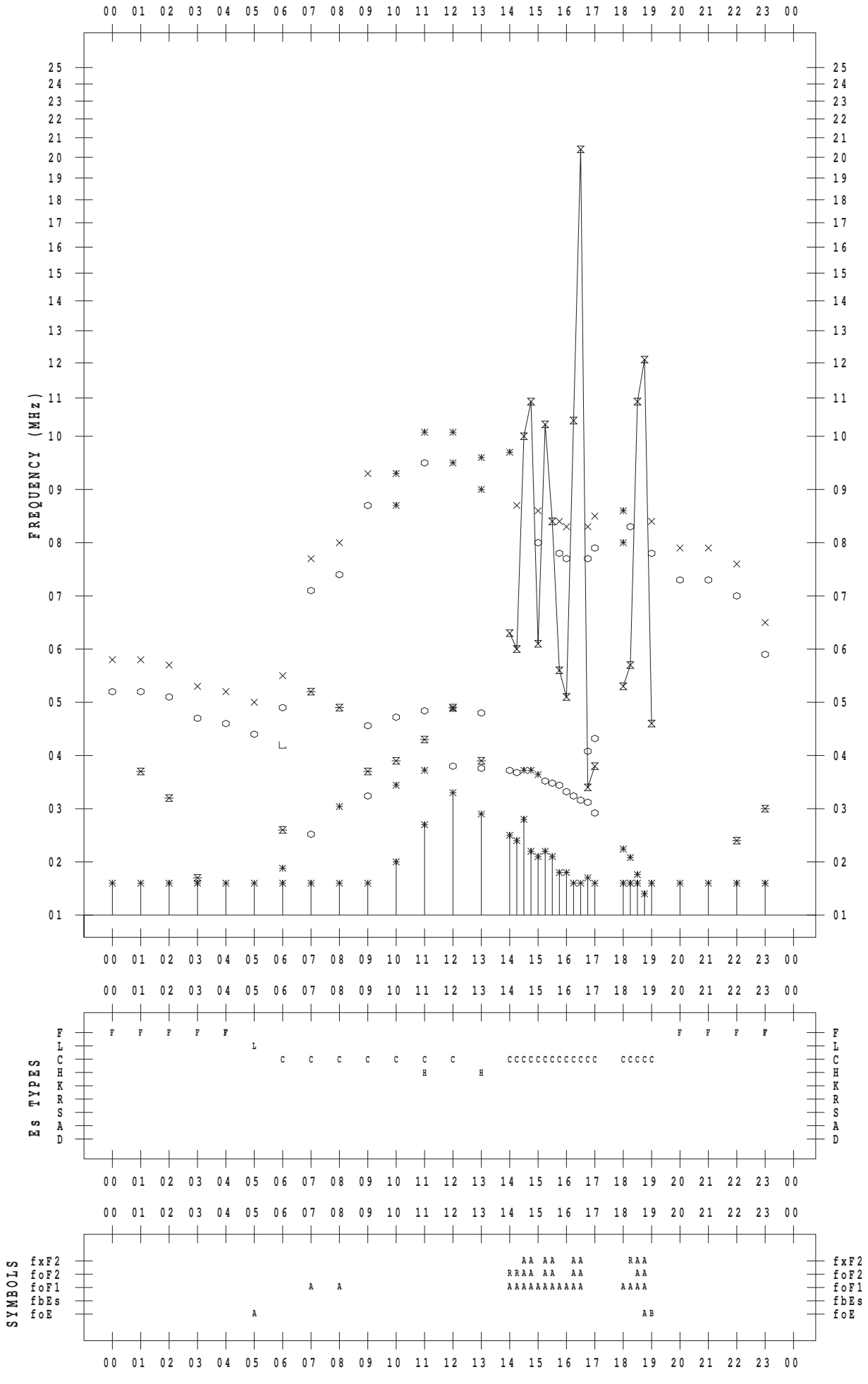
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/21

135 °E MEAN TIME



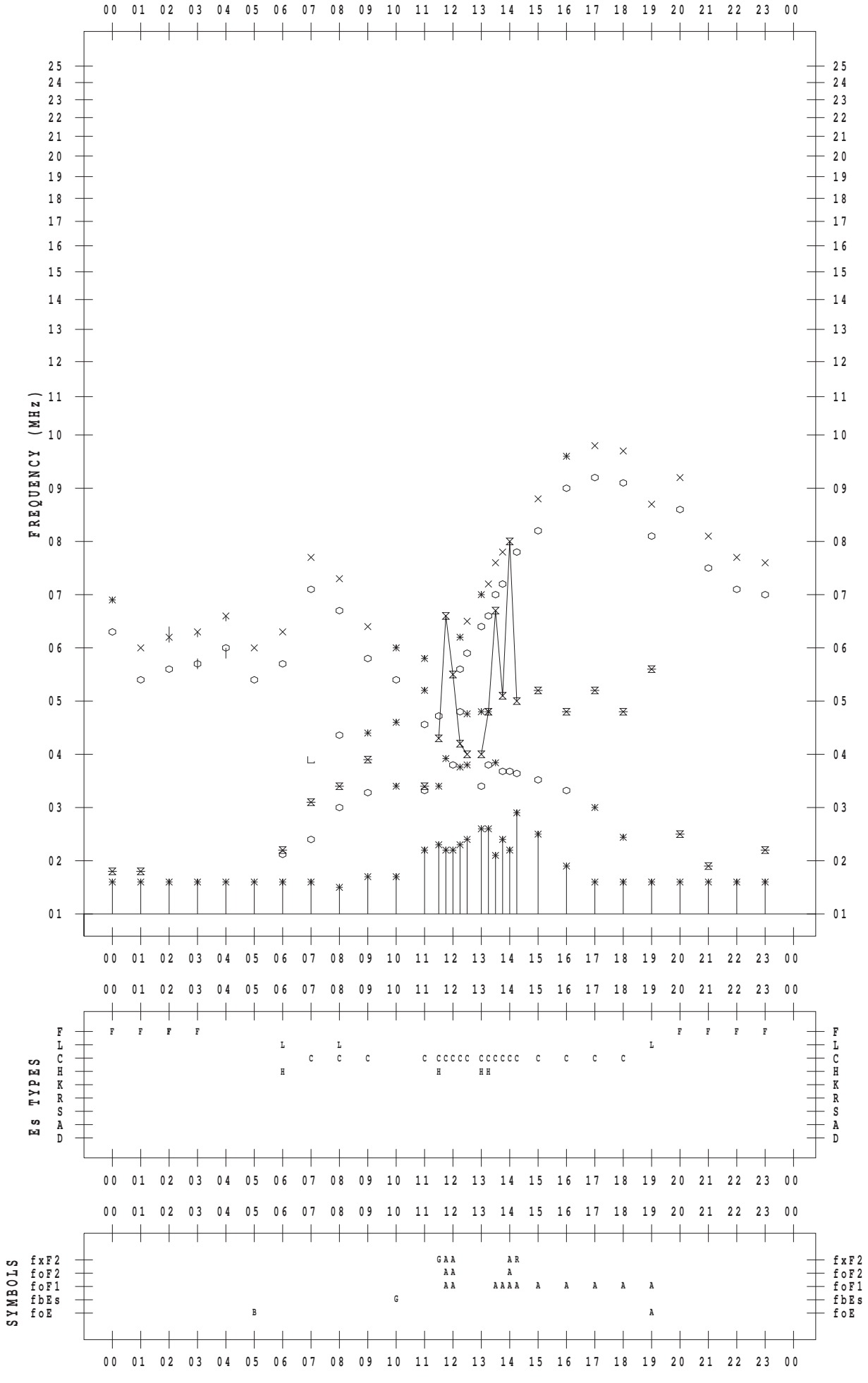
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/22

135 °E MEAN TIME



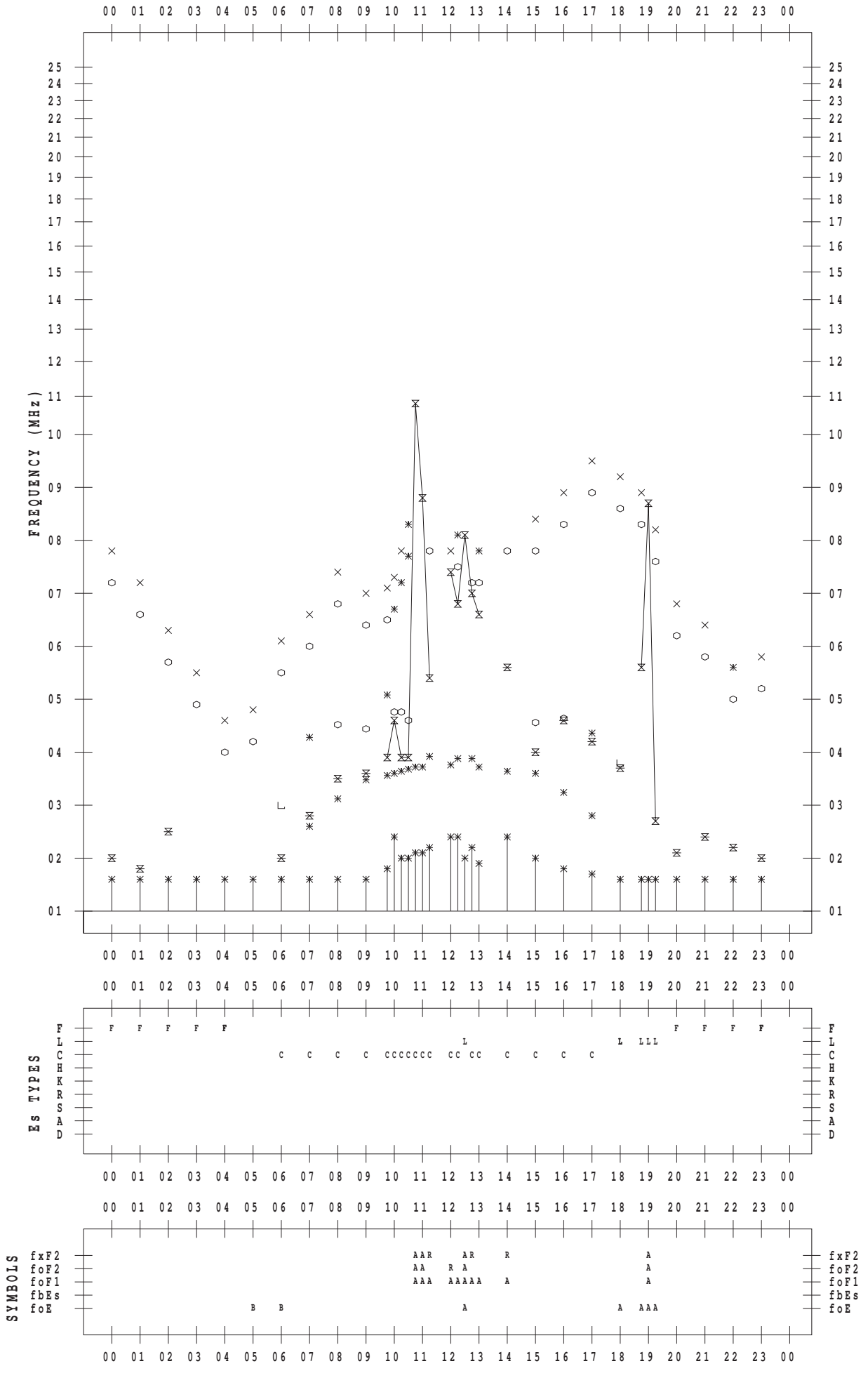
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/23

135 °E MEAN TIME



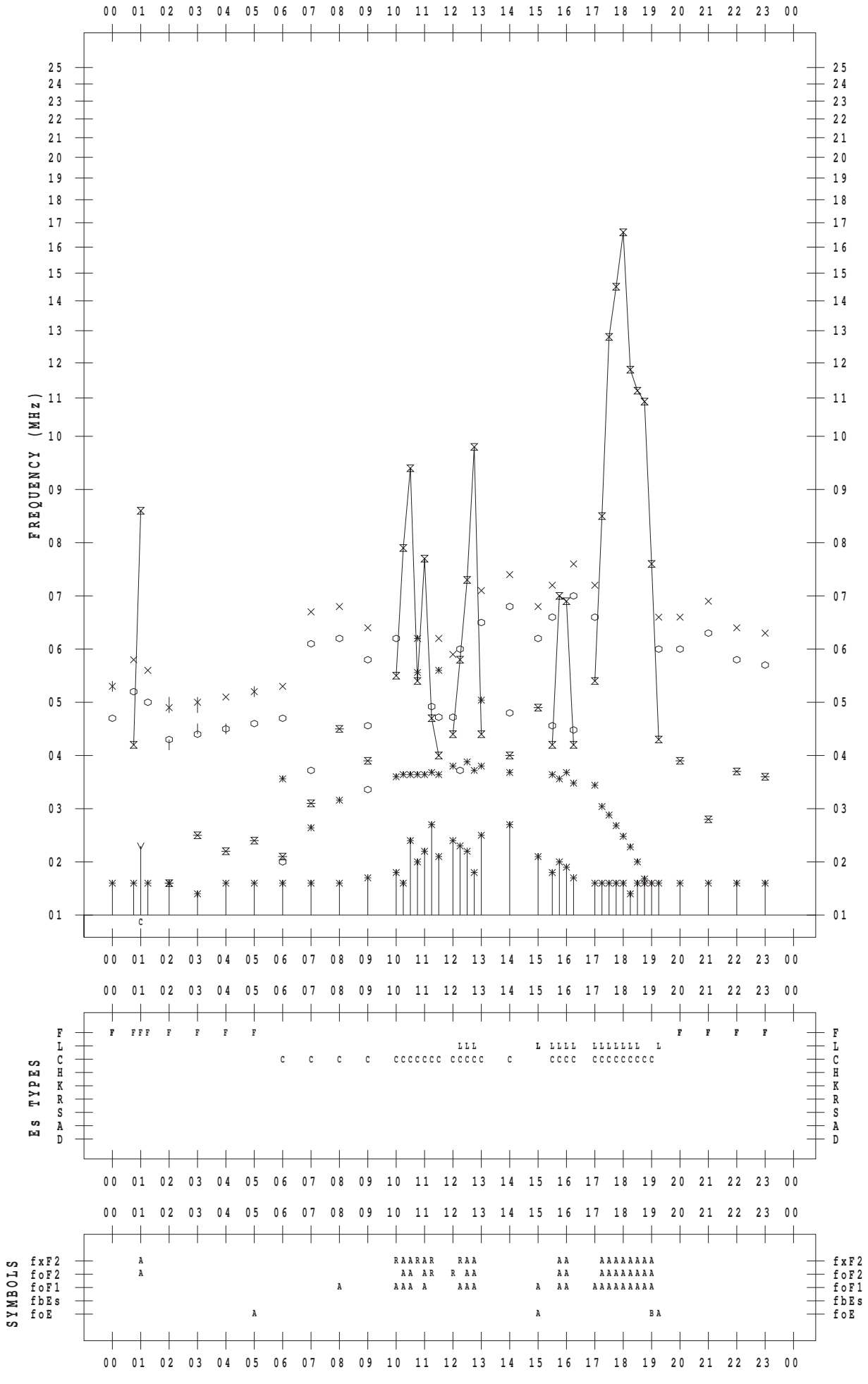
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/24

135 °E MEAN TIME



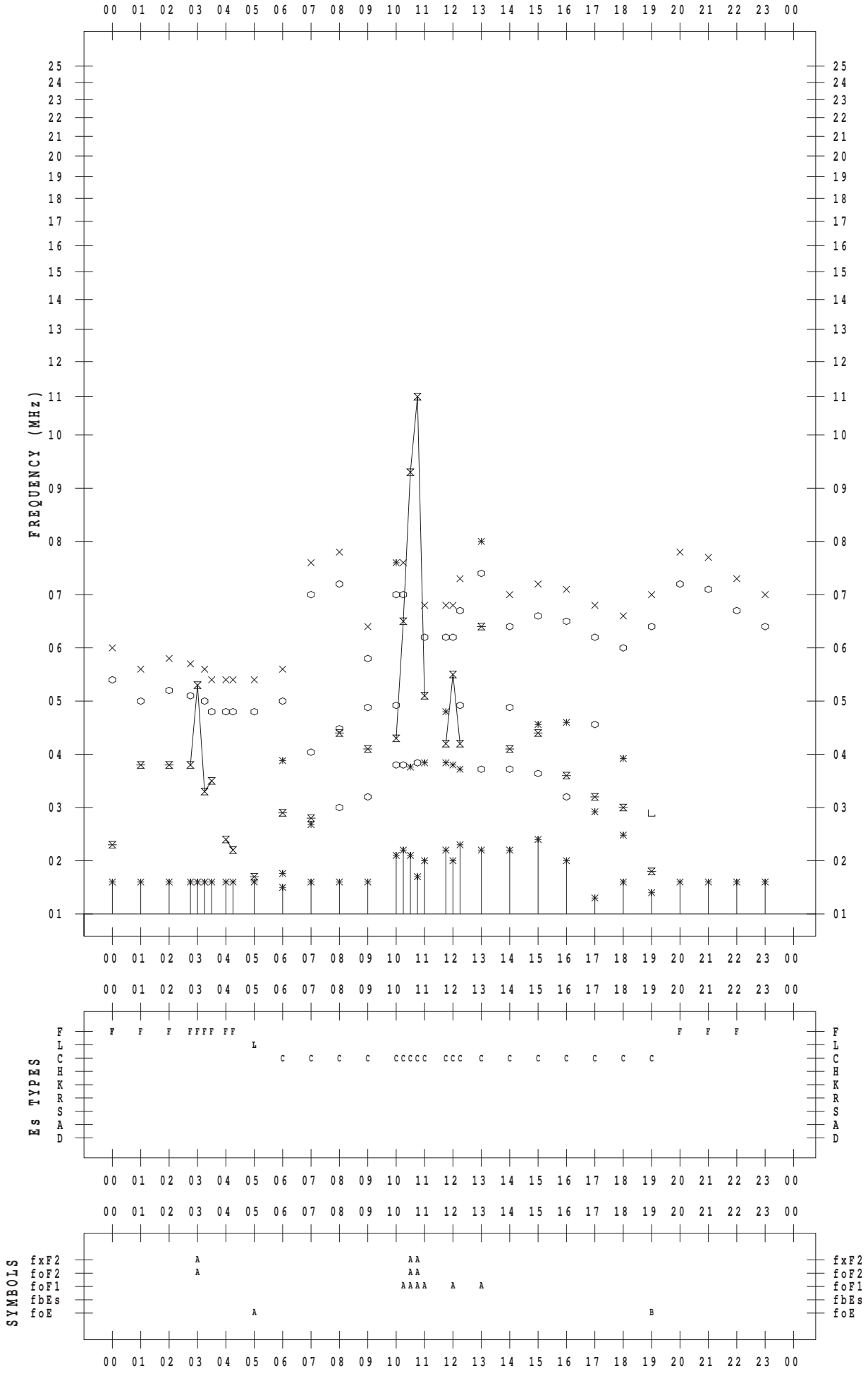
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/25

135 °E MEAN TIME



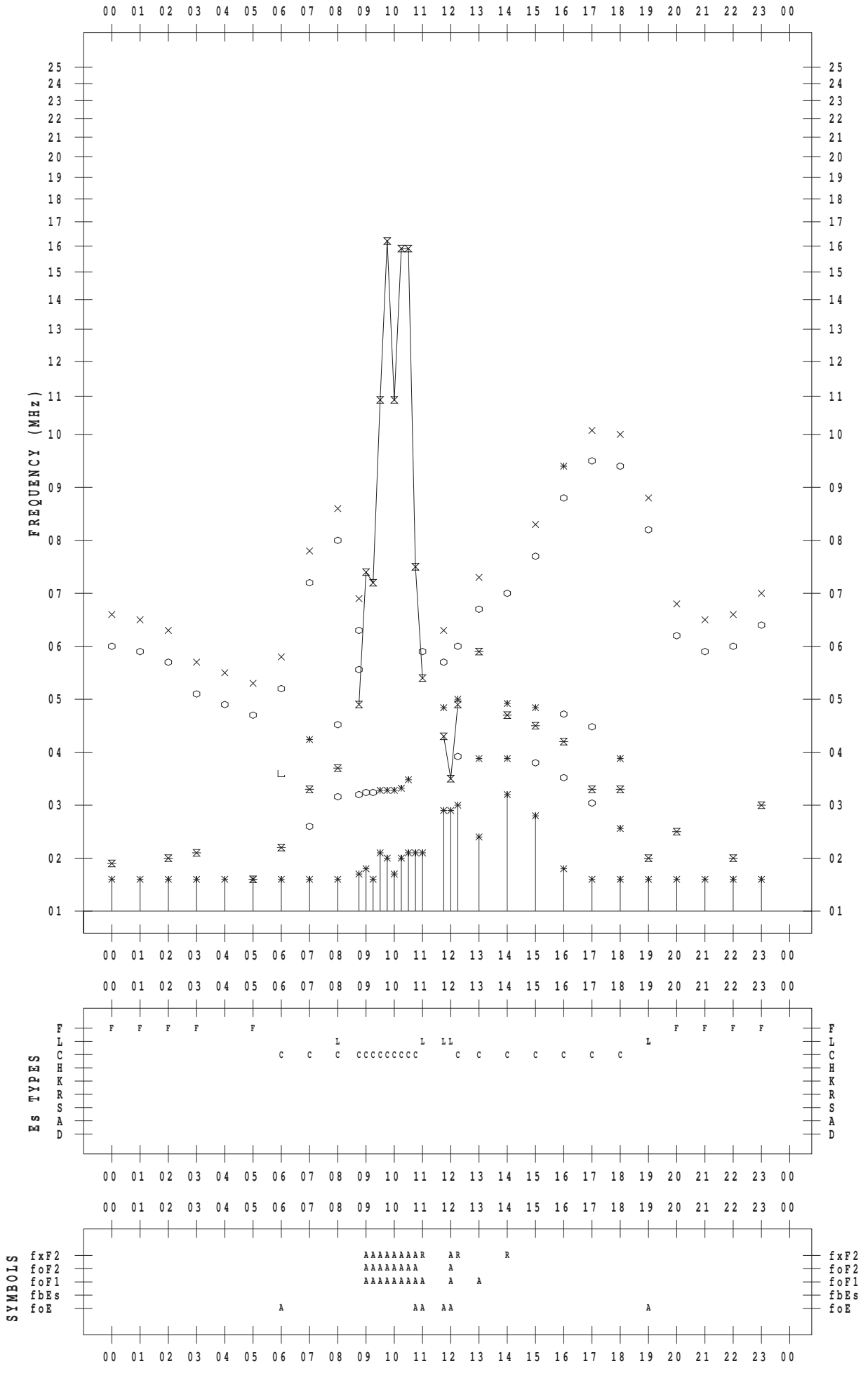
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/26

135 °E MEAN TIME



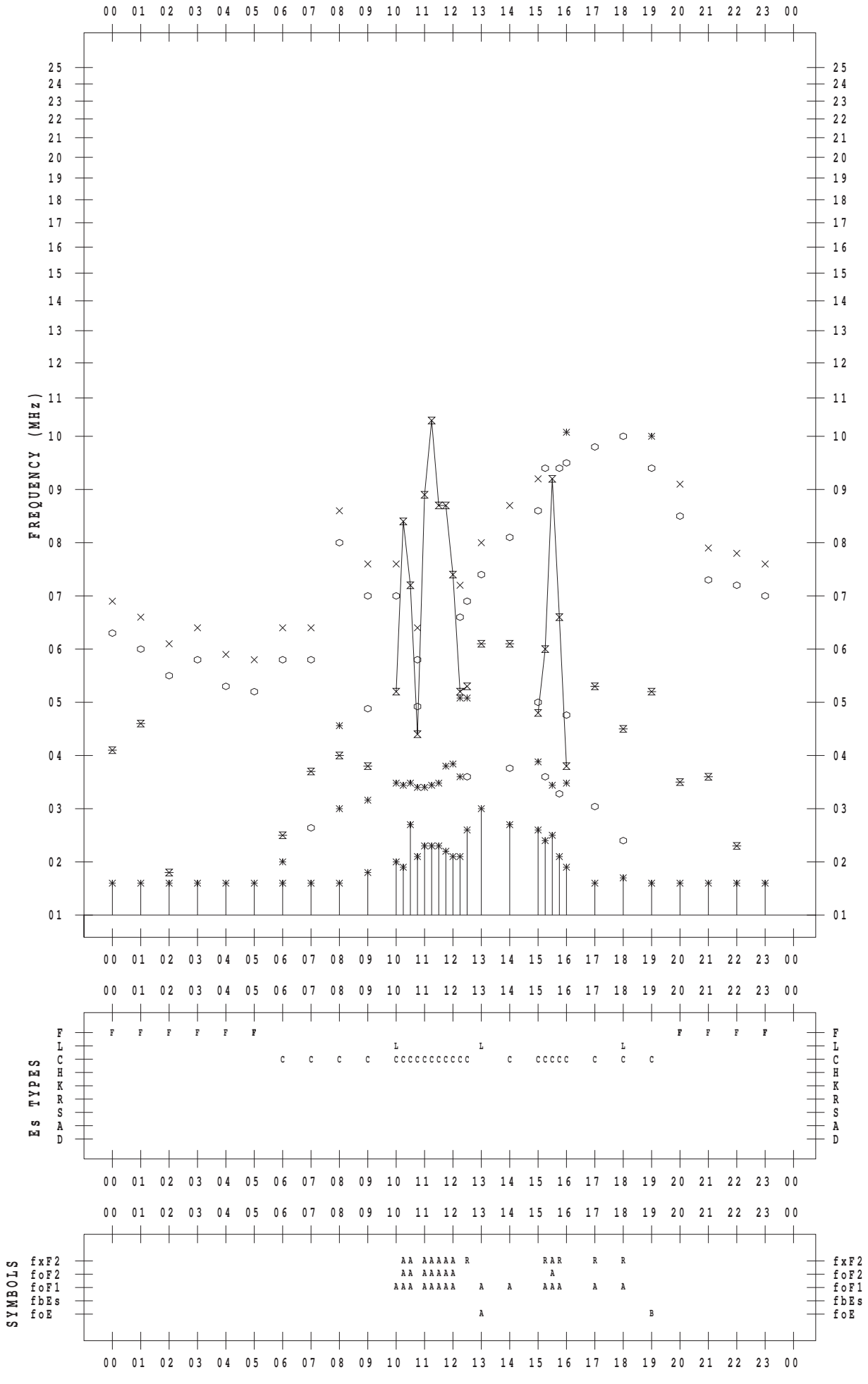
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/27

135 °E MEAN TIME



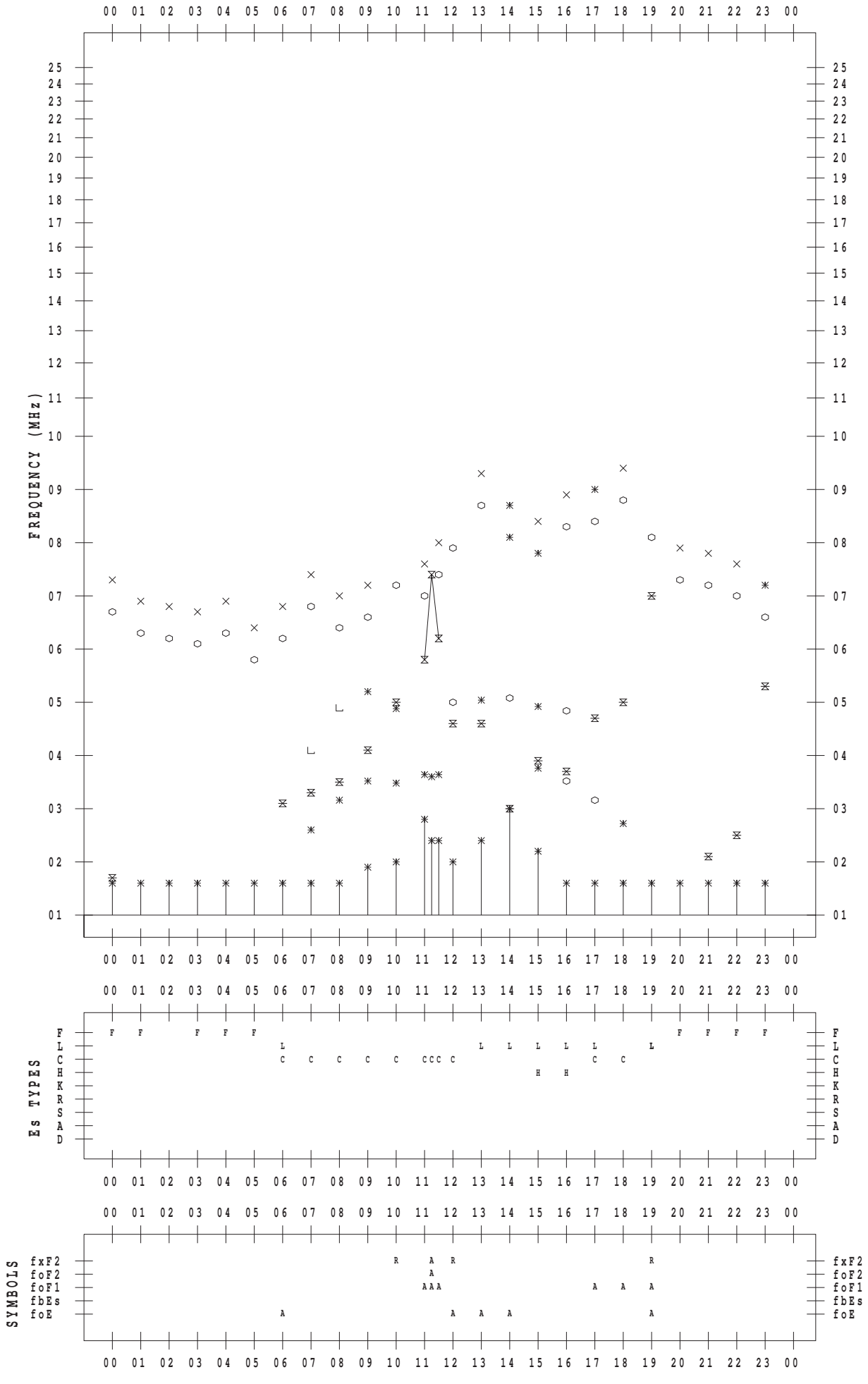
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/28

135 °E MEAN TIME



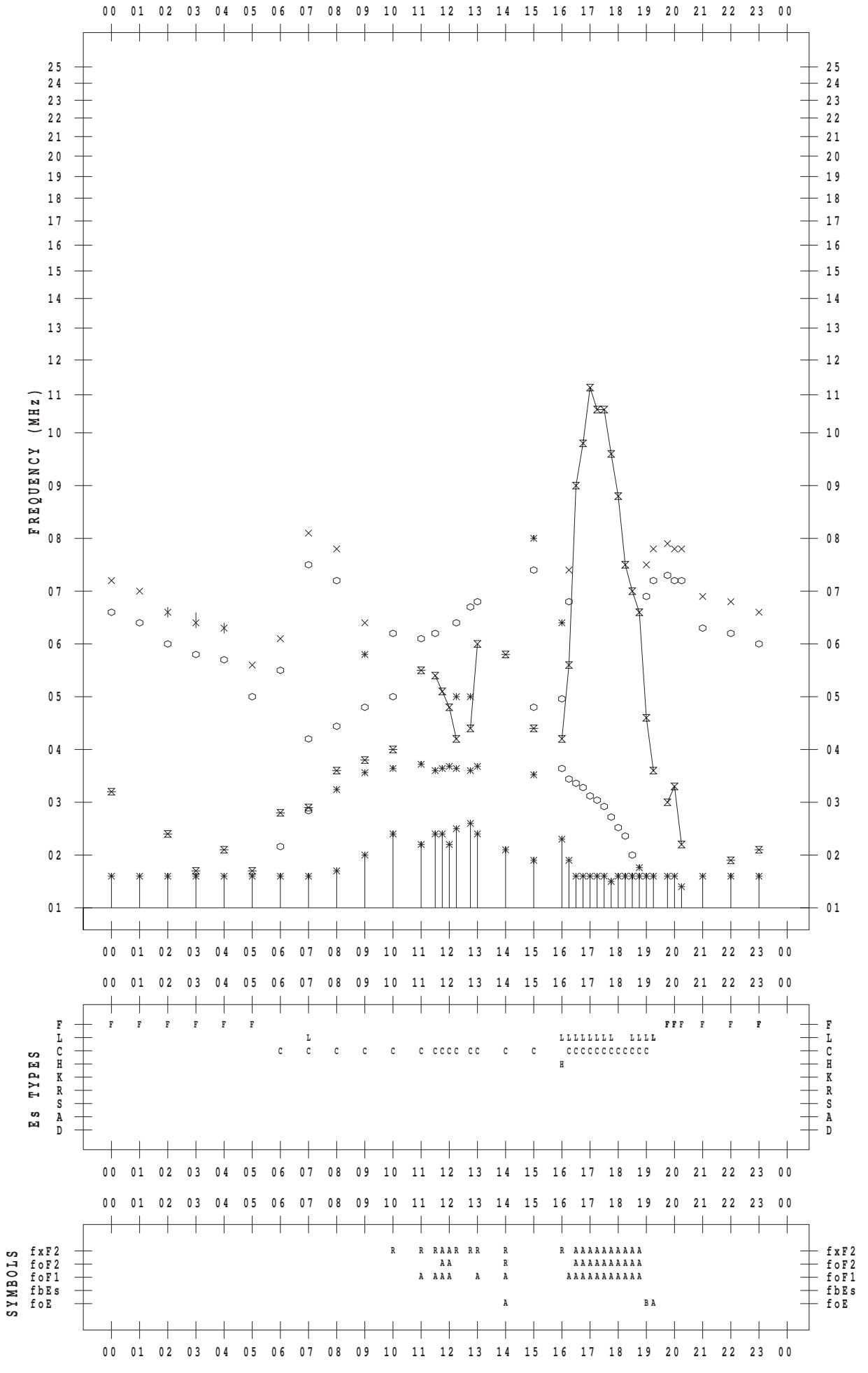
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/29

135 °E MEAN TIME



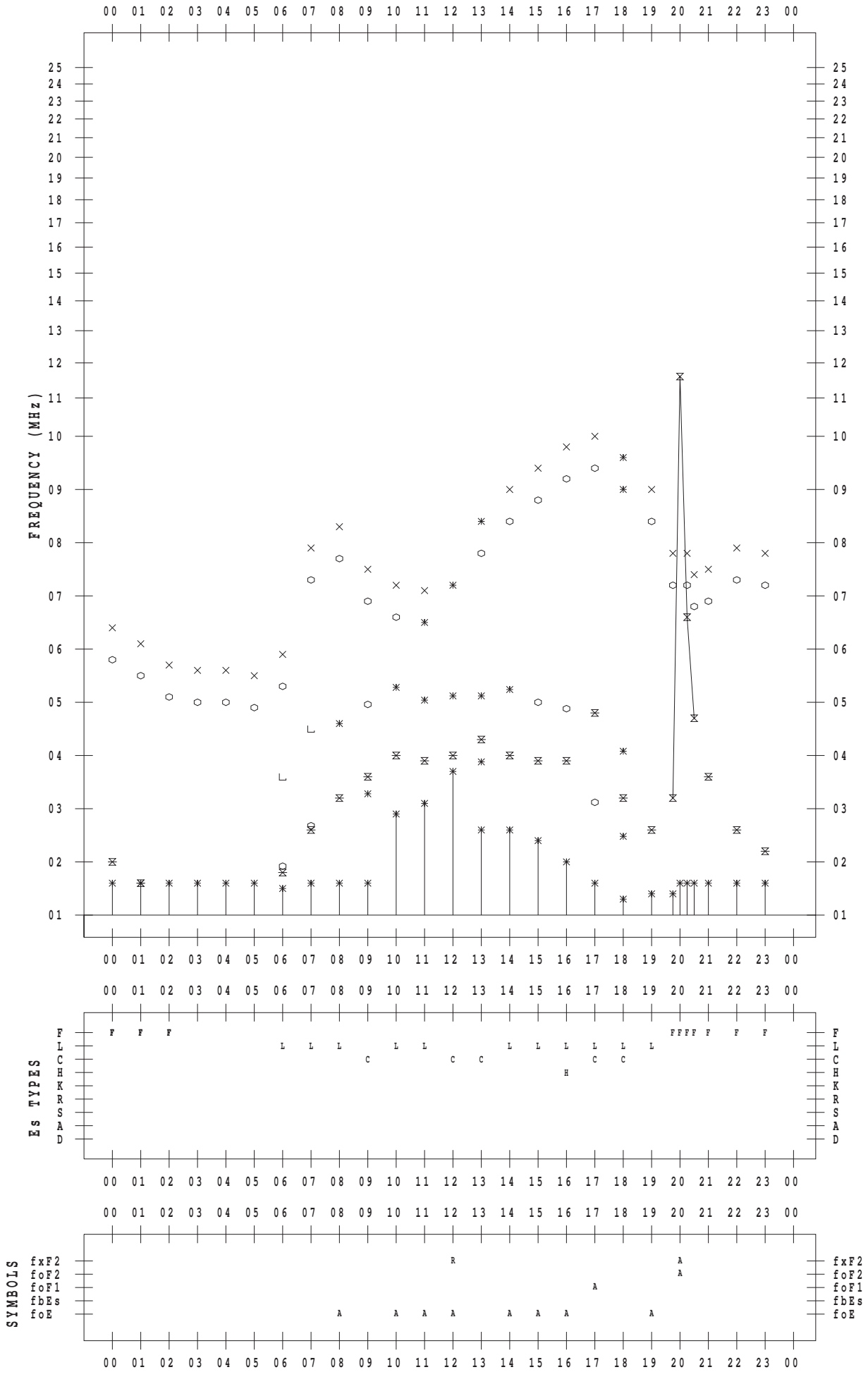
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/30

135 °E MEAN TIME



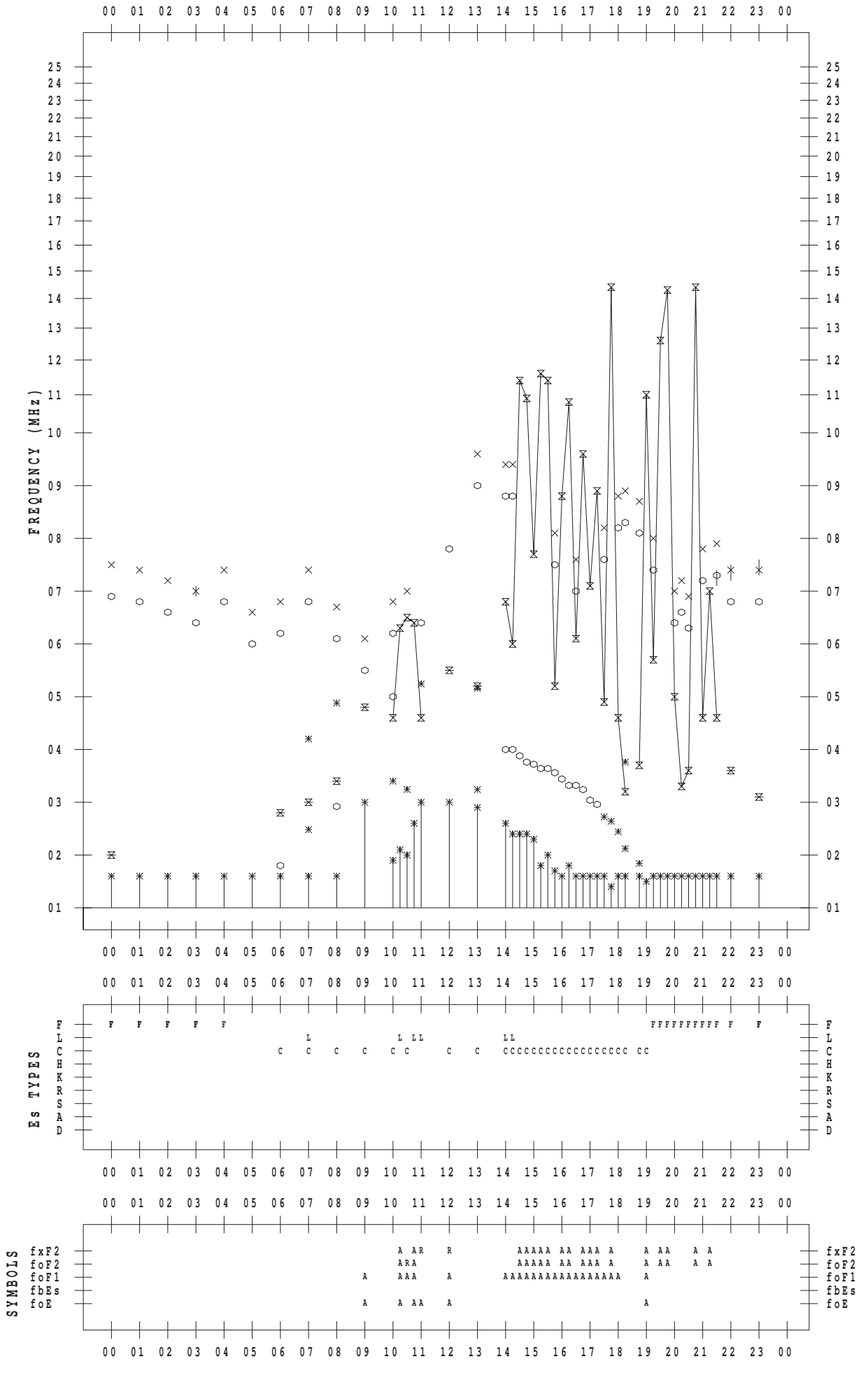
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 7/31

135 °E MEAN TIME



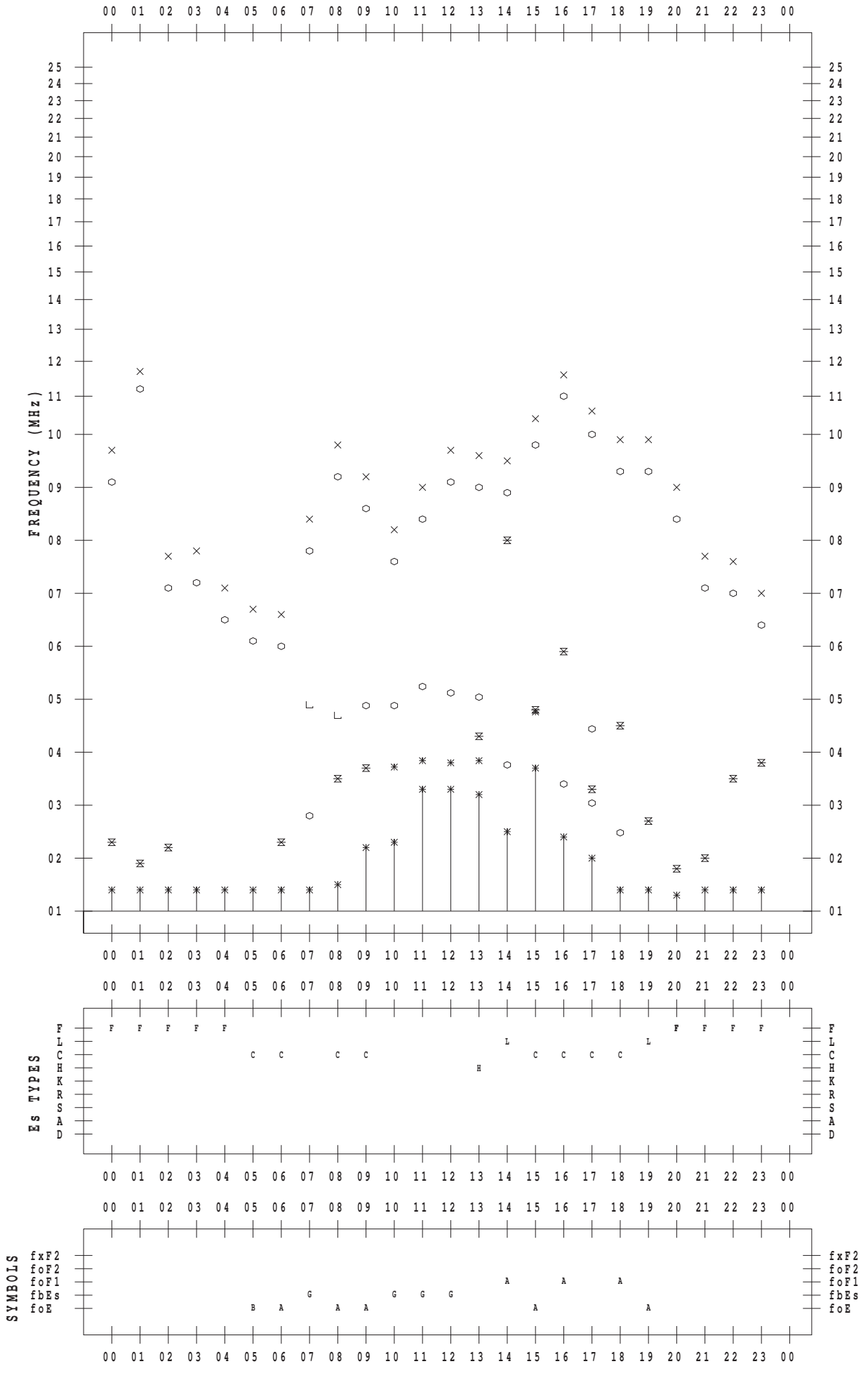
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 1

135 °E MEAN TIME



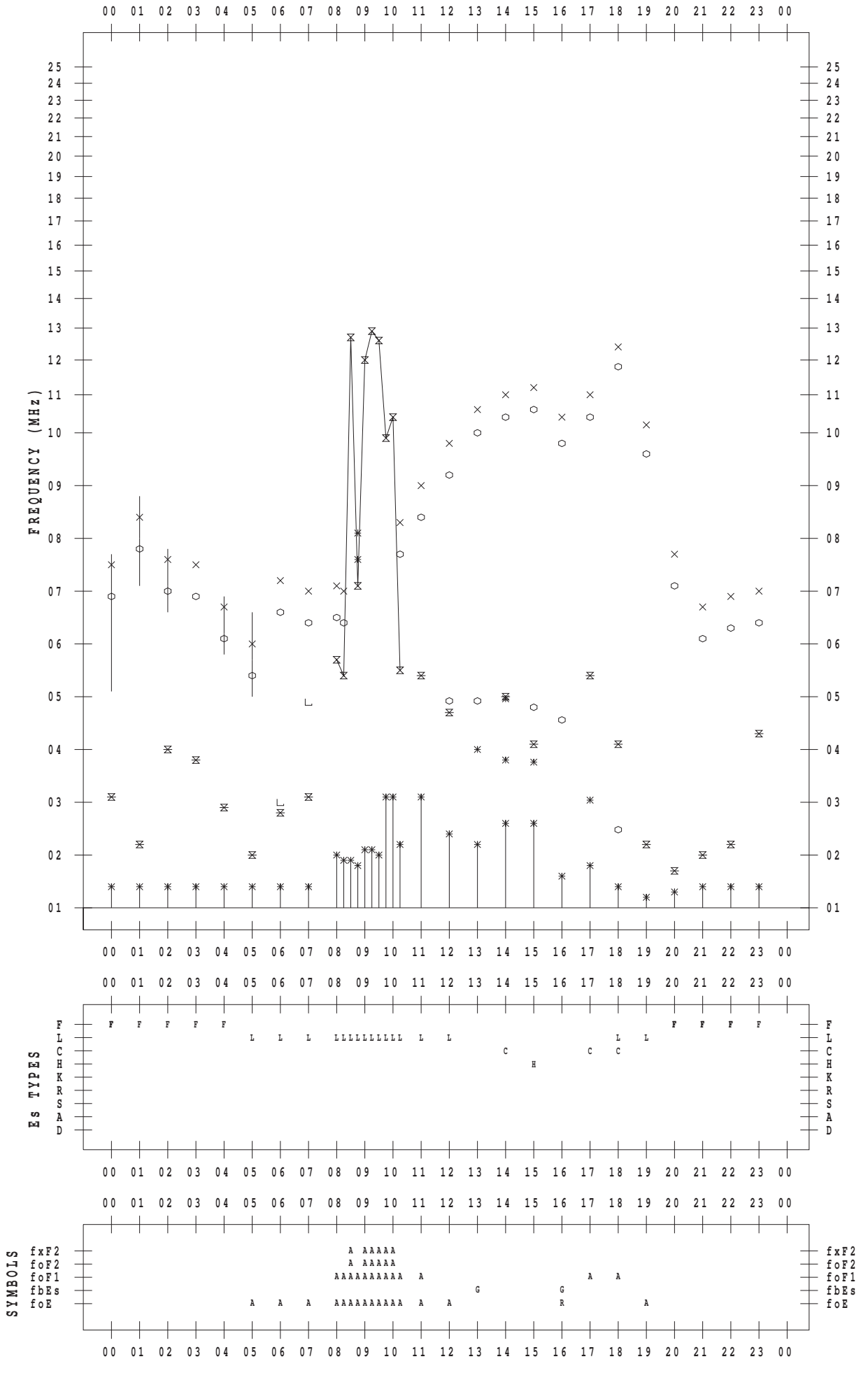
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 2

135 °E MEAN TIME



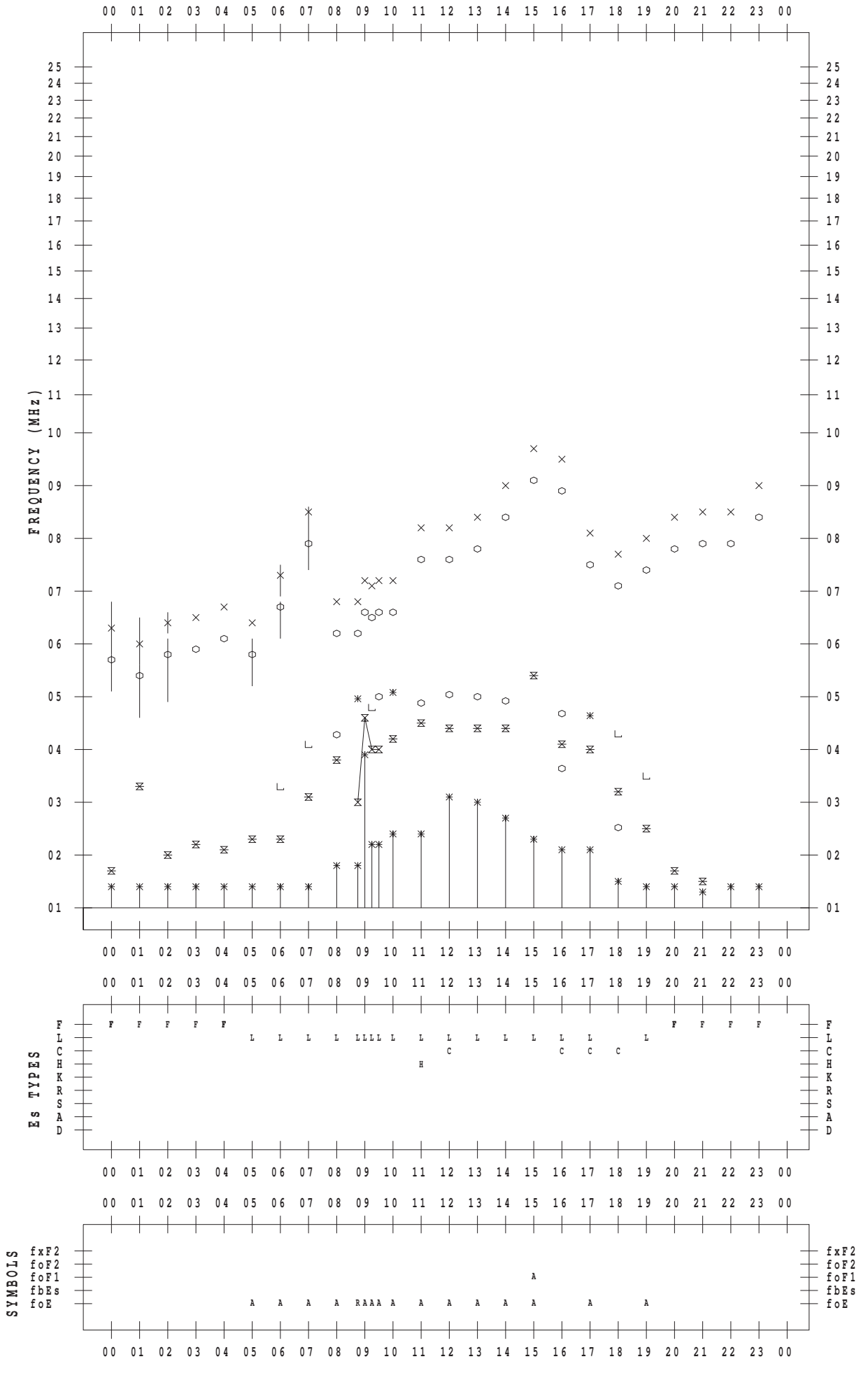
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 3

135 °E MEAN TIME



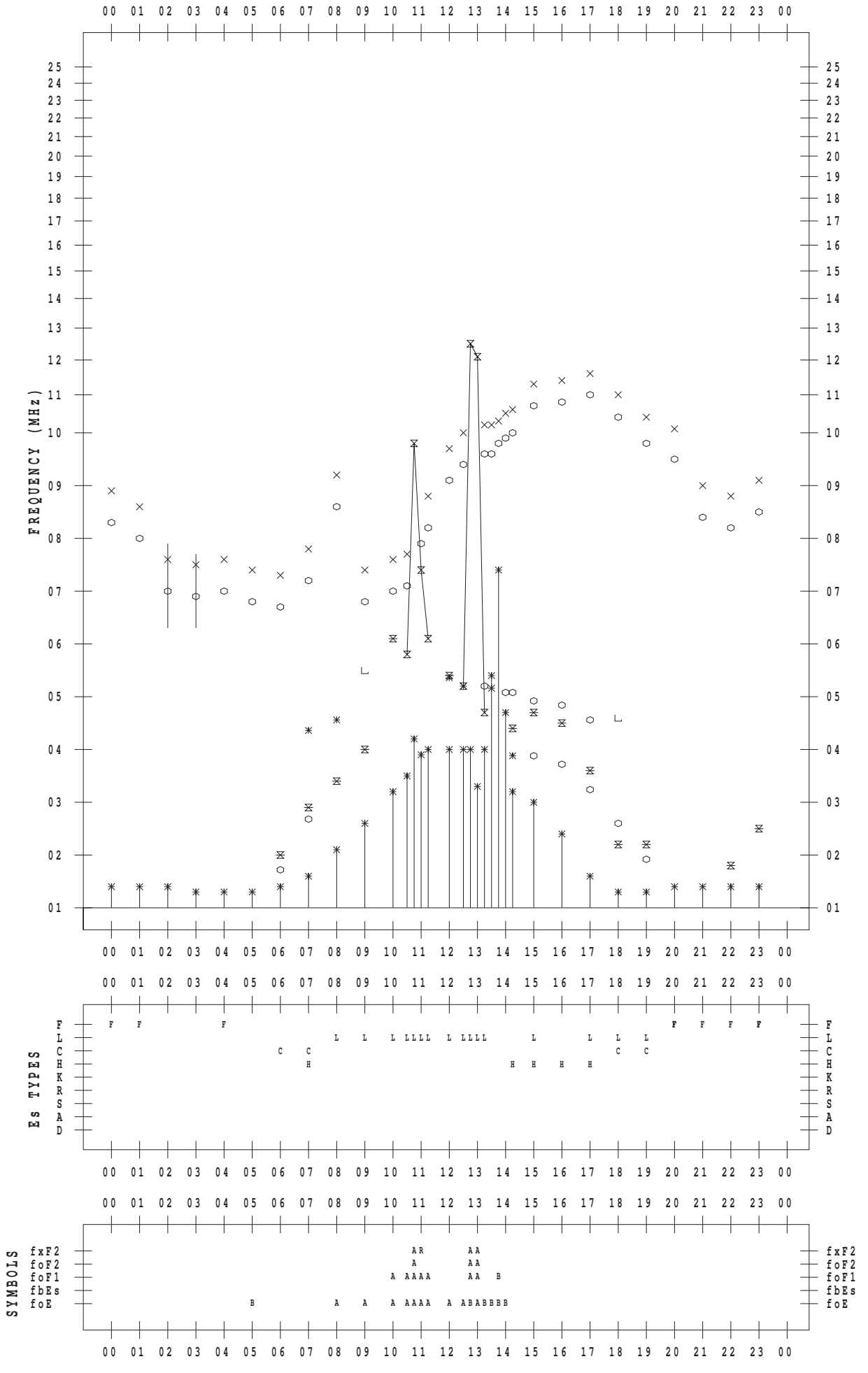
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 4

135 °E MEAN TIME



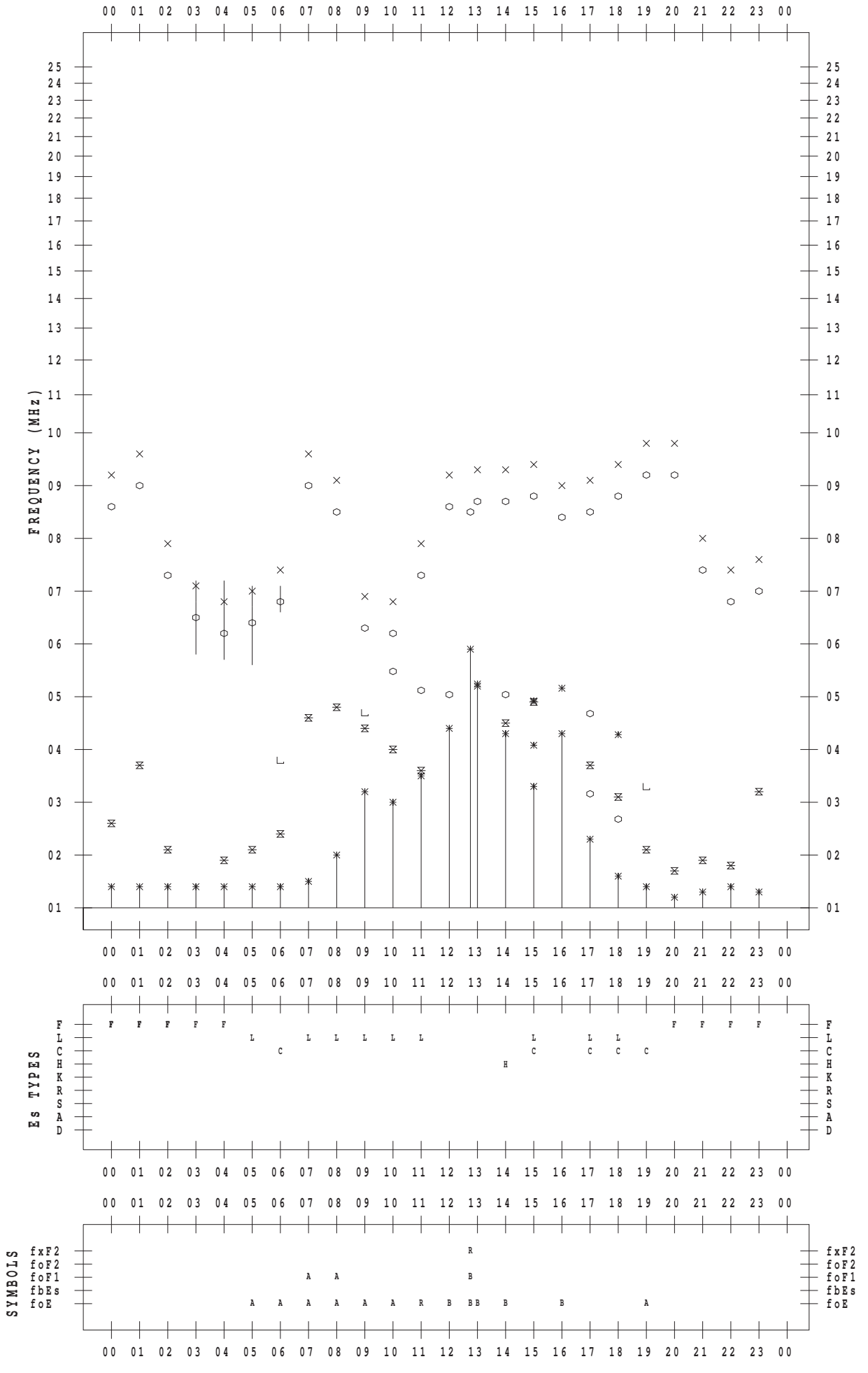
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 5

135 °E MEAN TIME



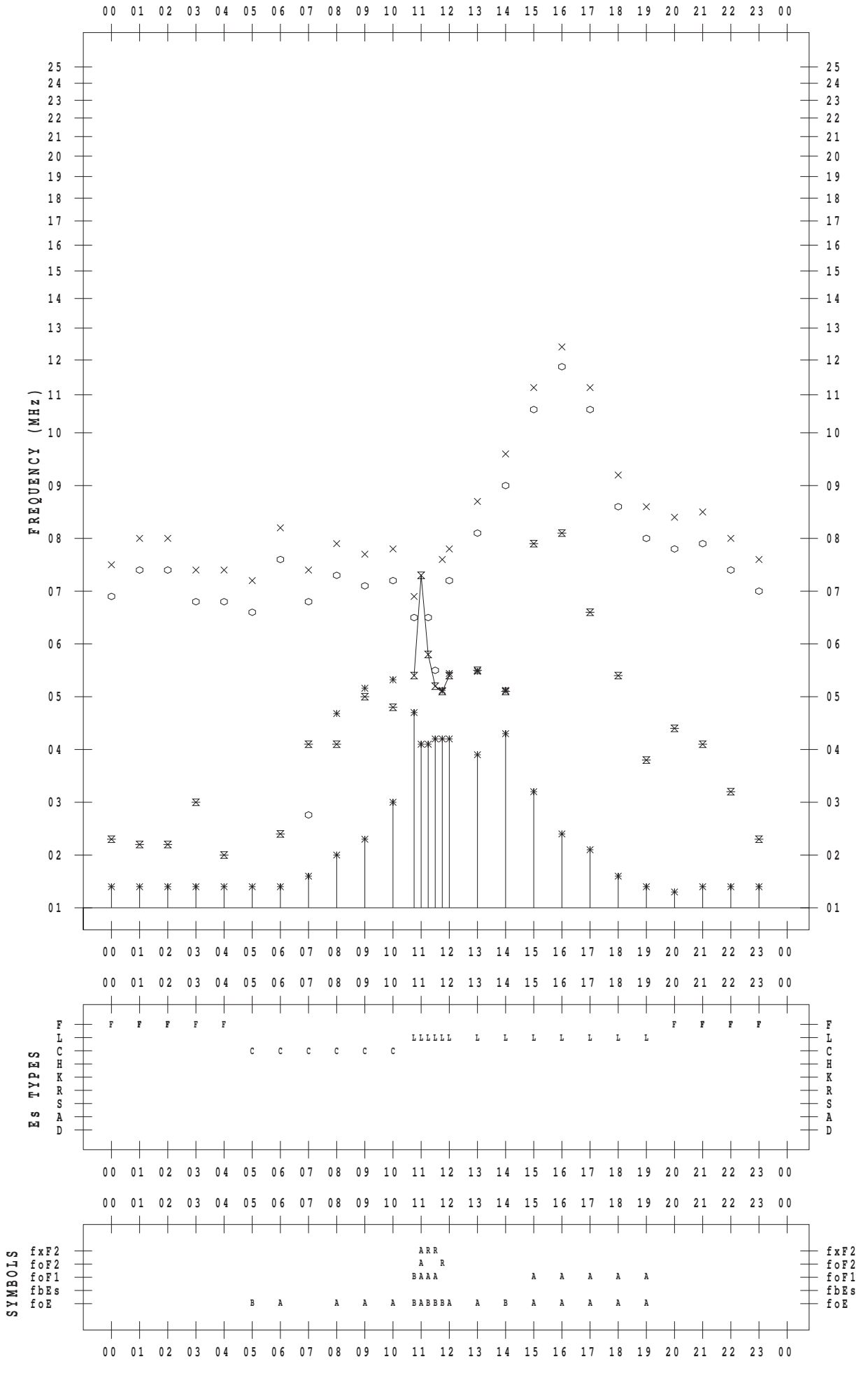
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 6

135 °E MEAN TIME



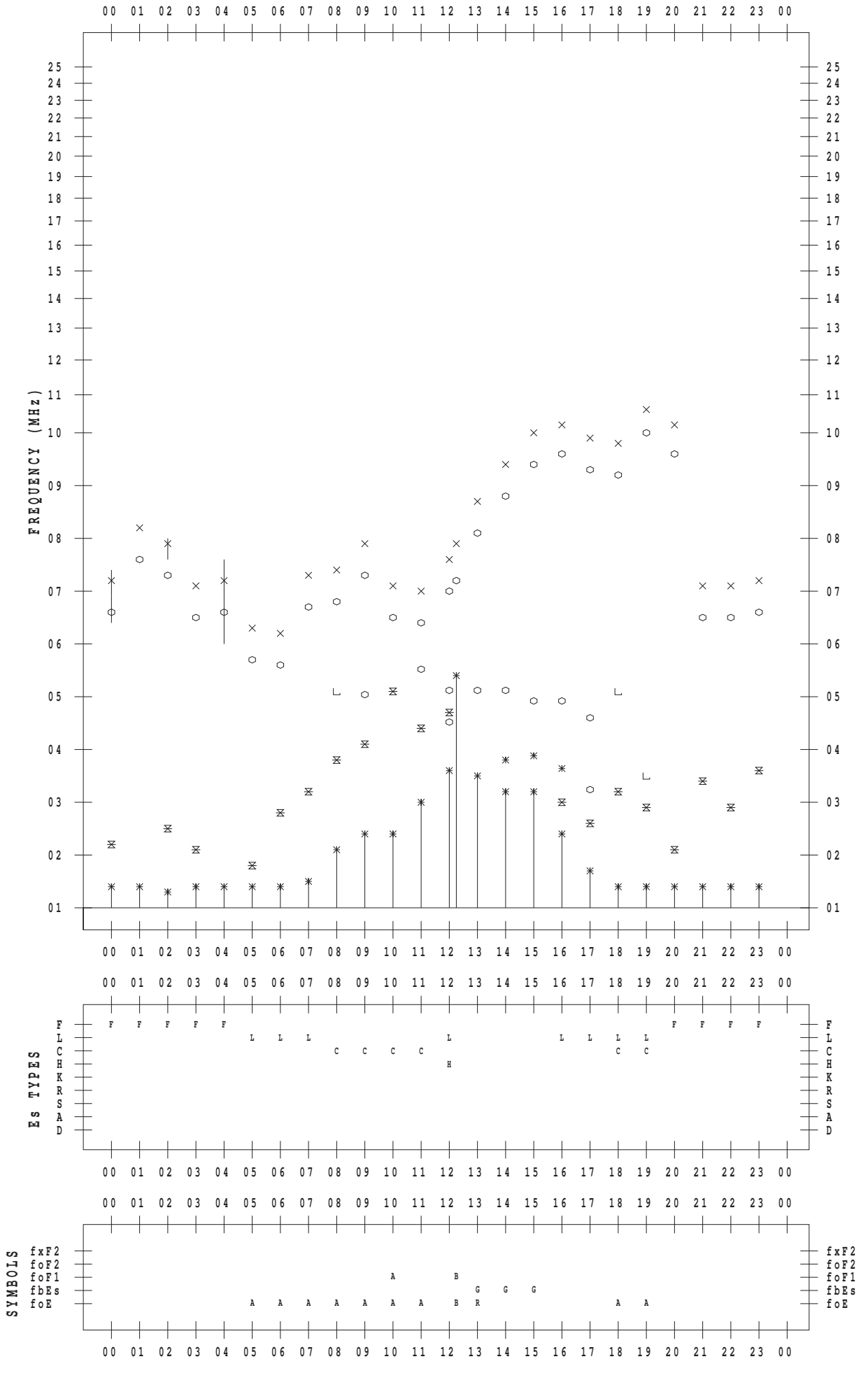
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 7

135 °E MEAN TIME



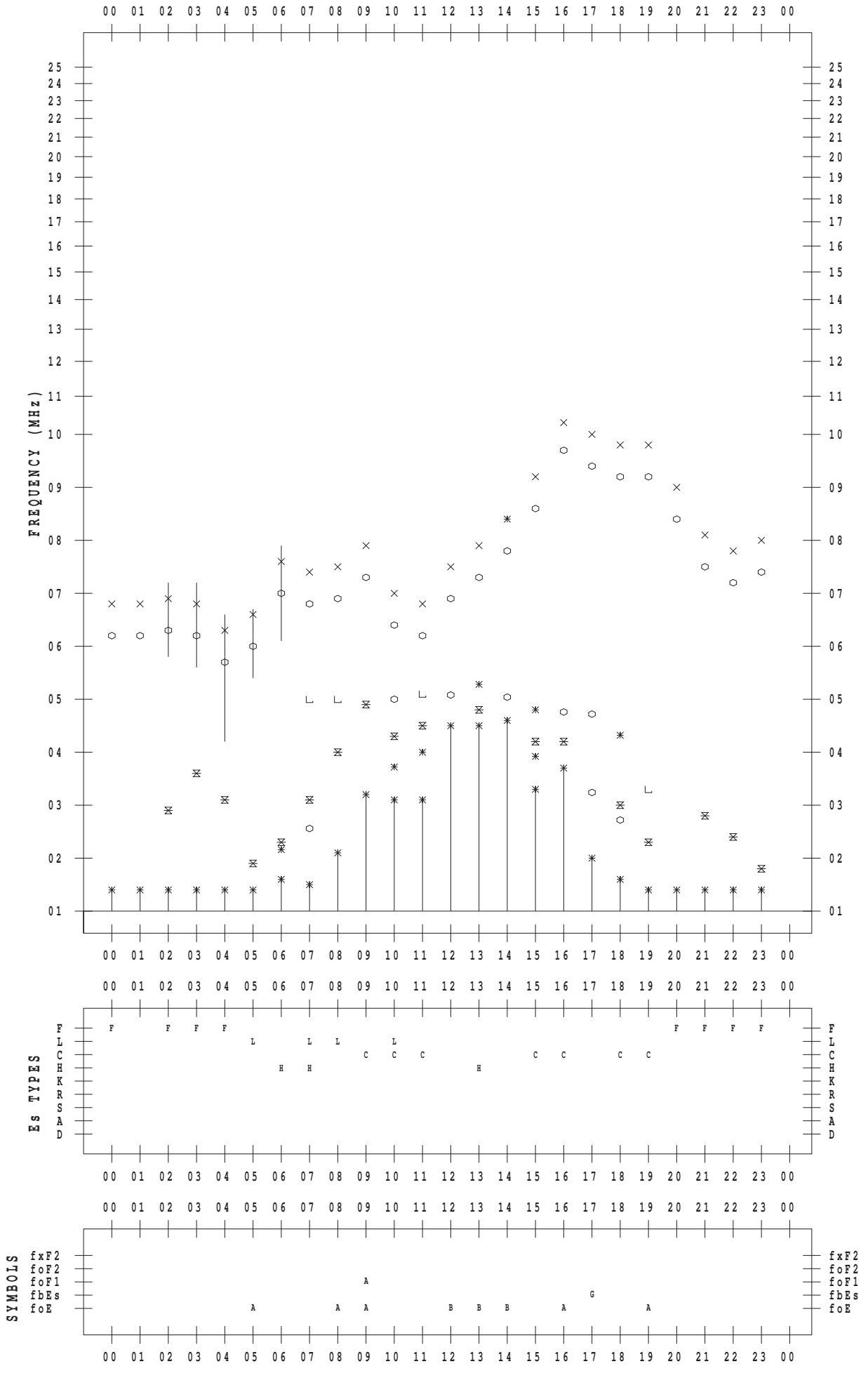
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 8

135 °E MEAN TIME



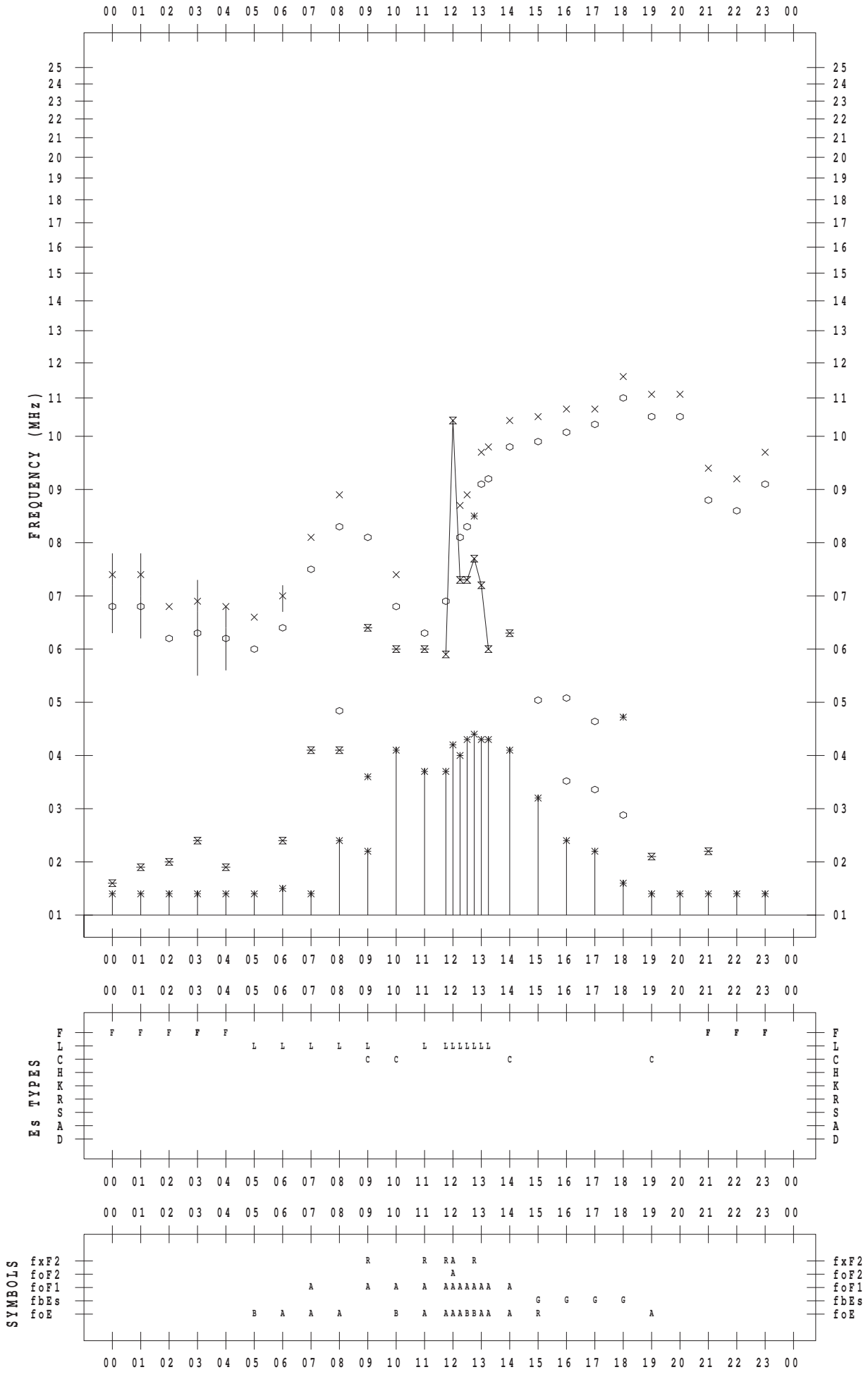
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/ 9

135 °E MEAN TIME



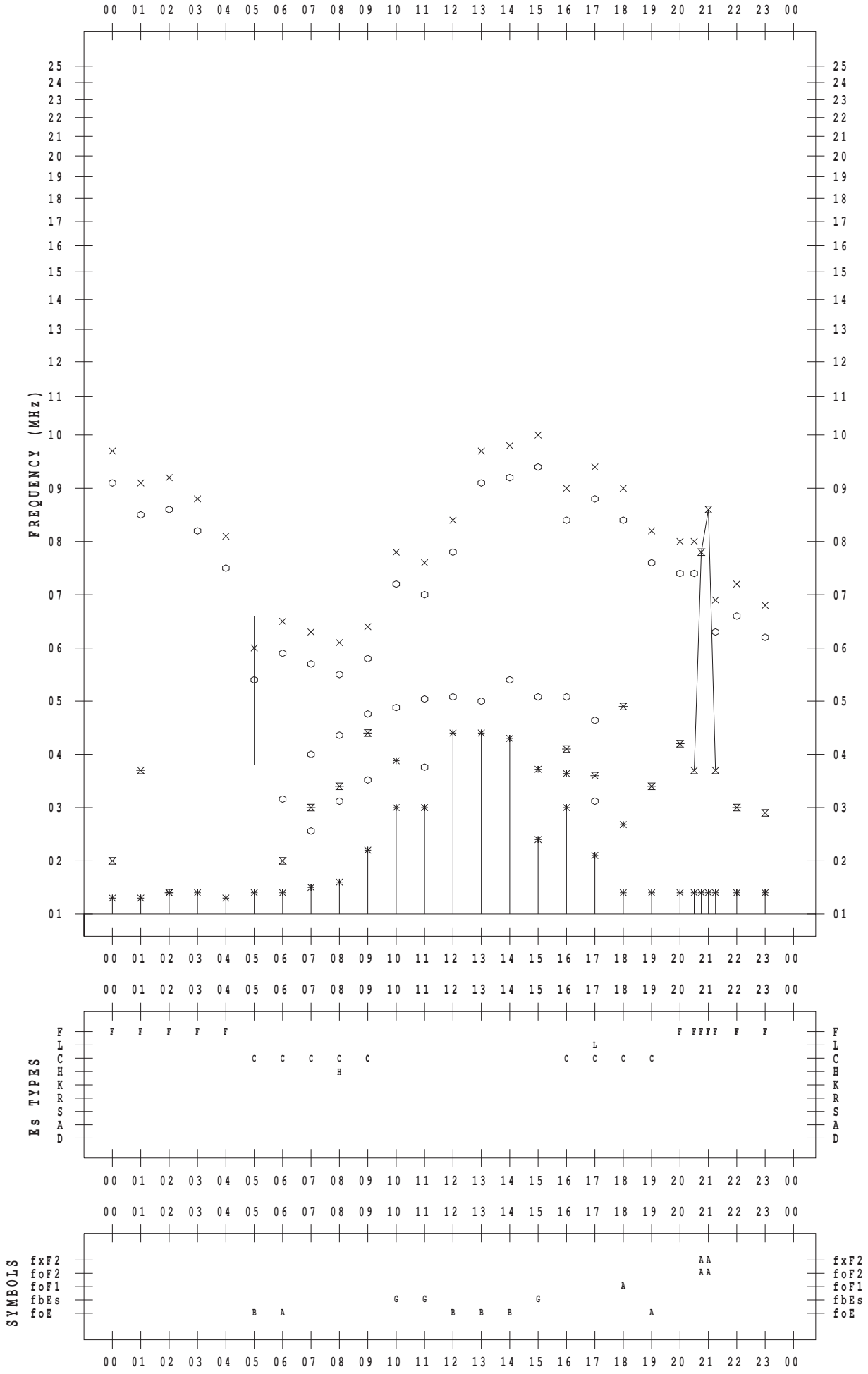
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/10

135 °E MEAN TIME



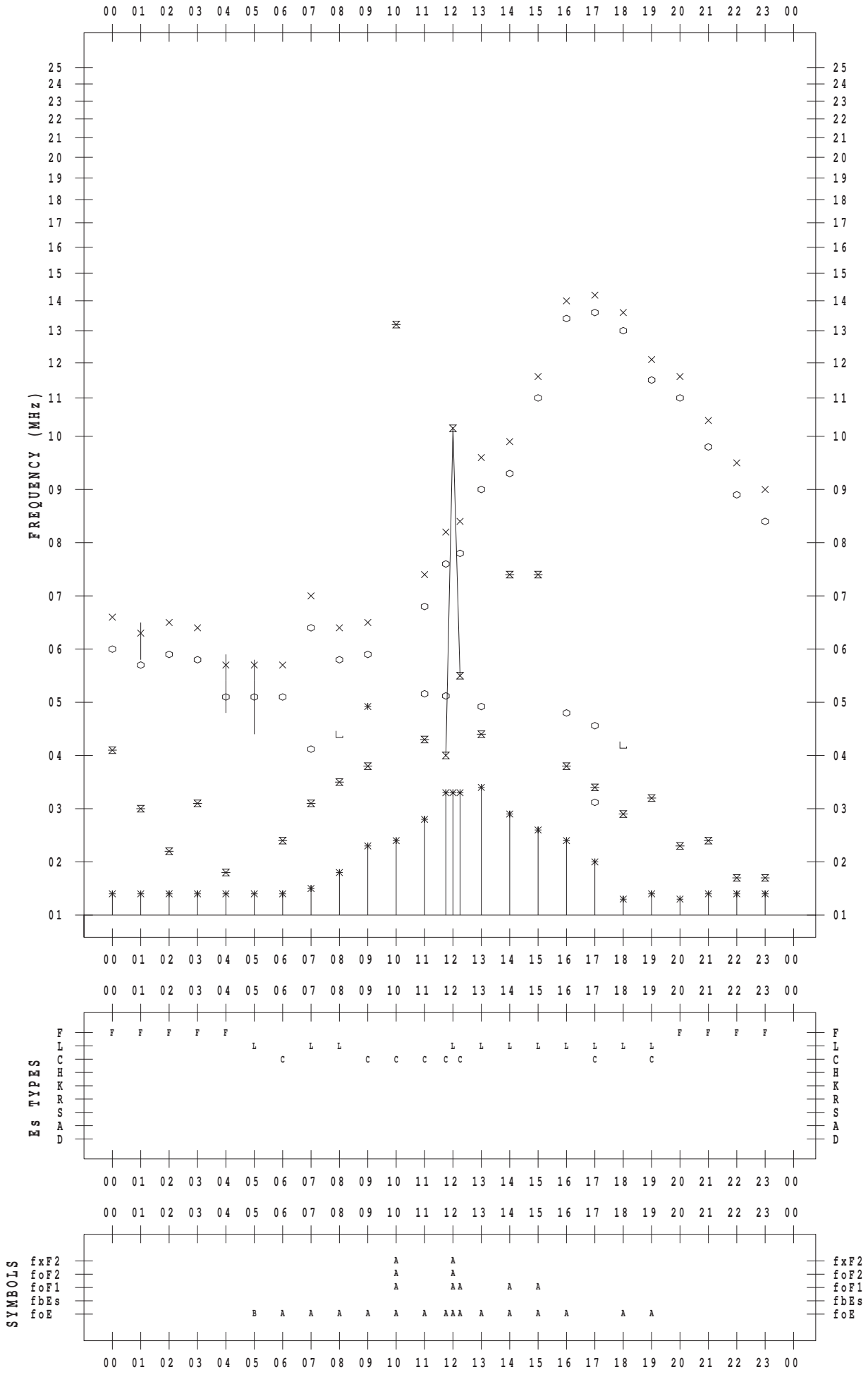
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/11

135 °E MEAN TIME



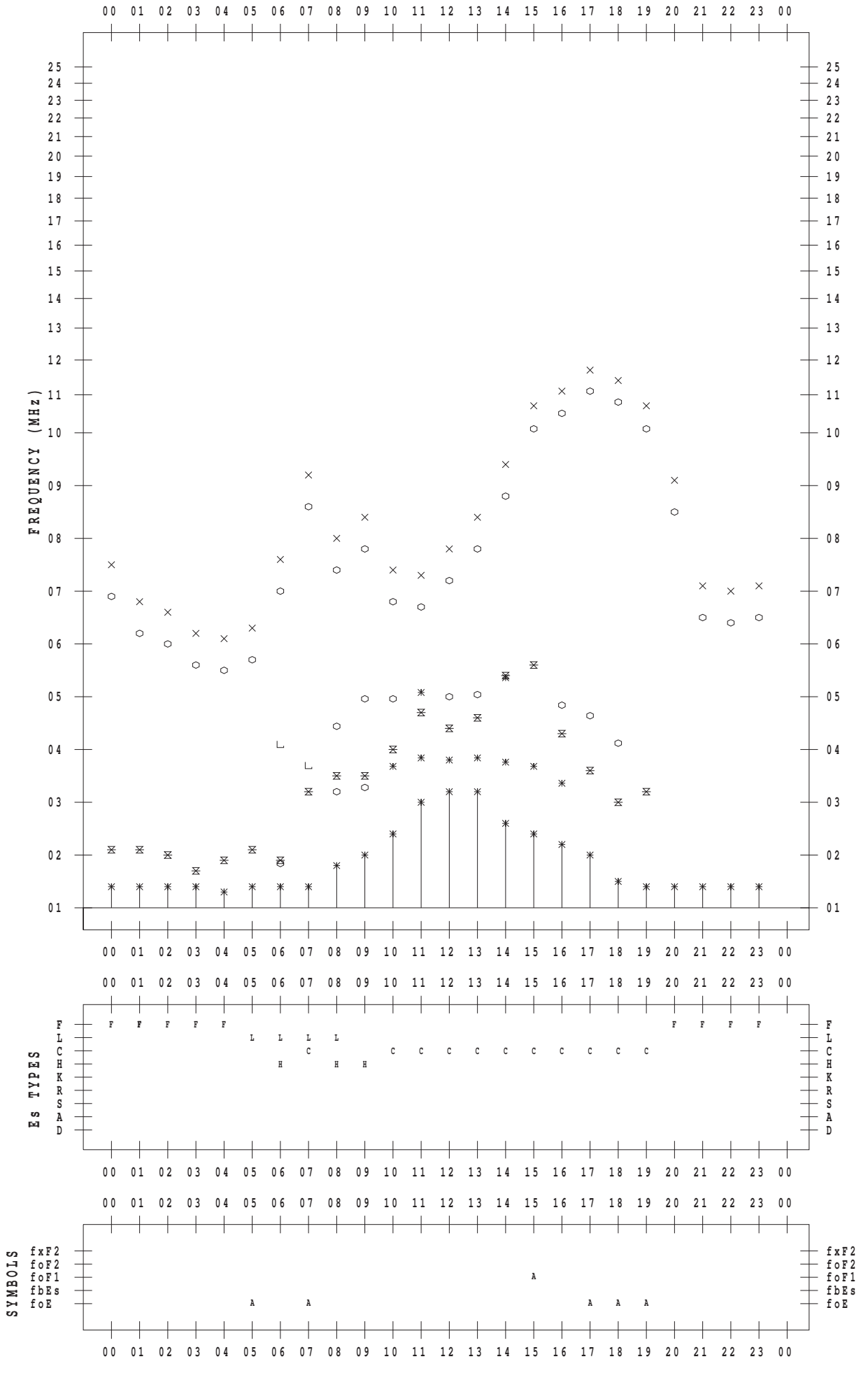
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/12

135 °E MEAN TIME



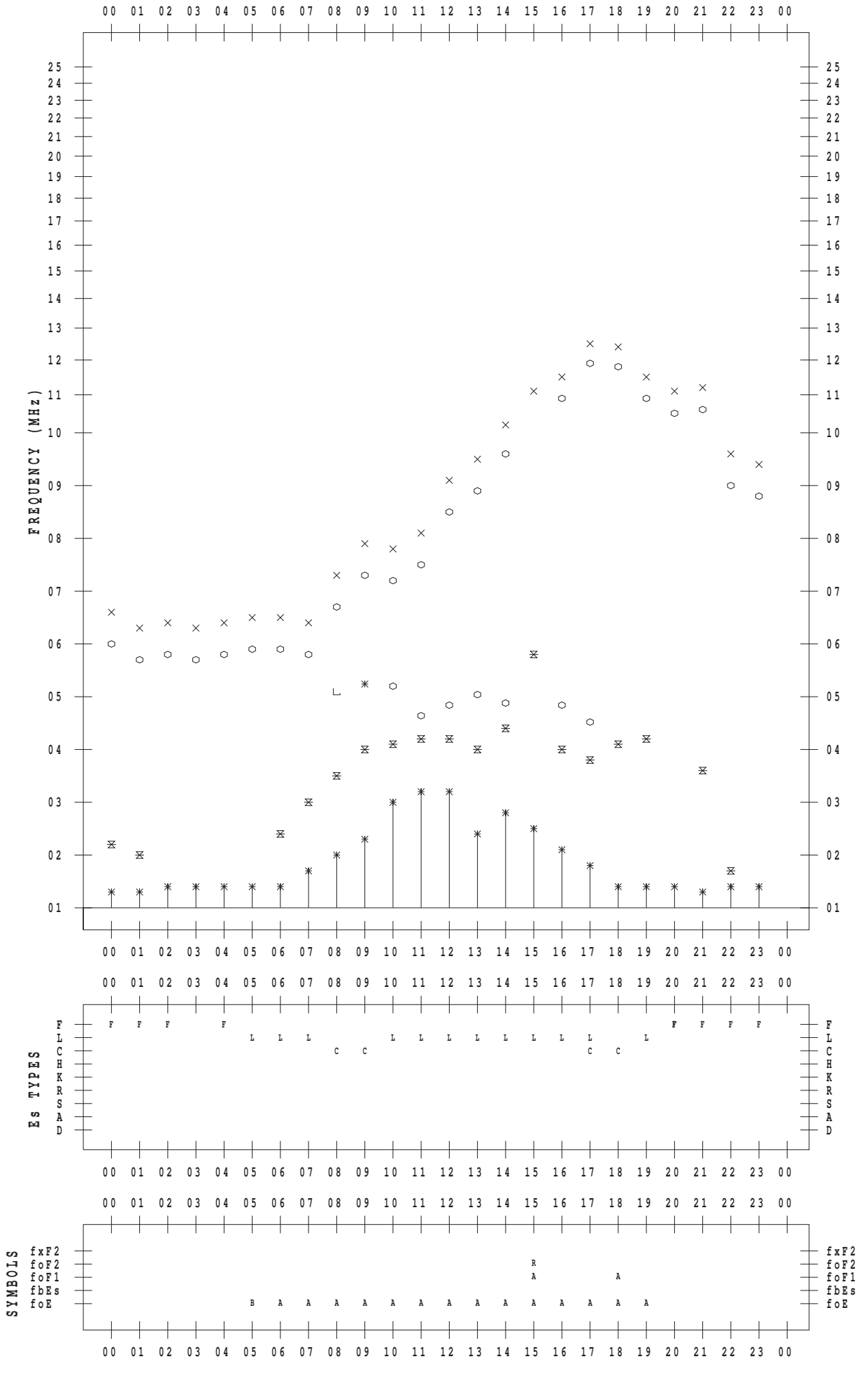
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/13

135 °E MEAN TIME



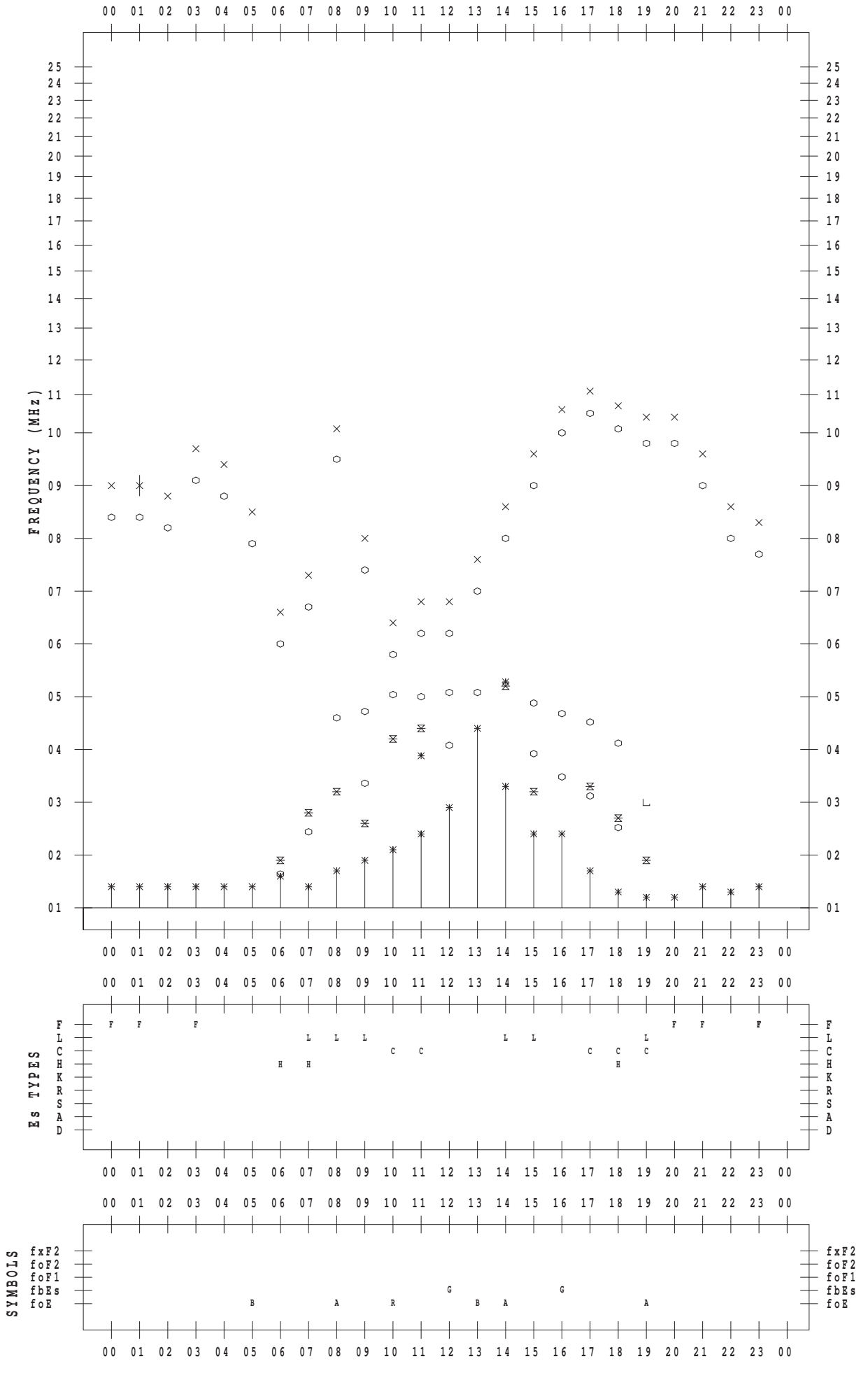
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/14

135 °E MEAN TIME



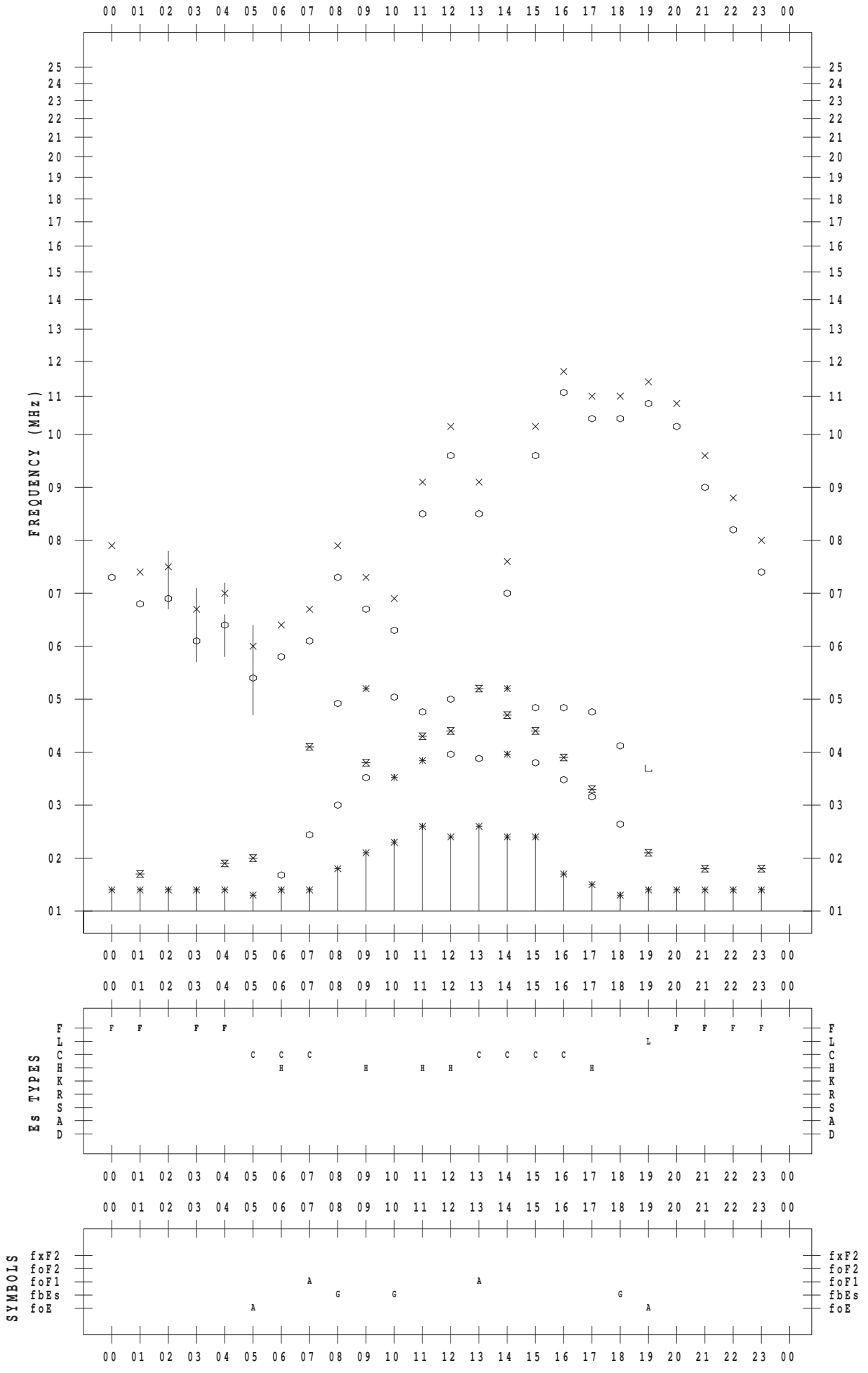
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/15

135 °E MEAN TIME



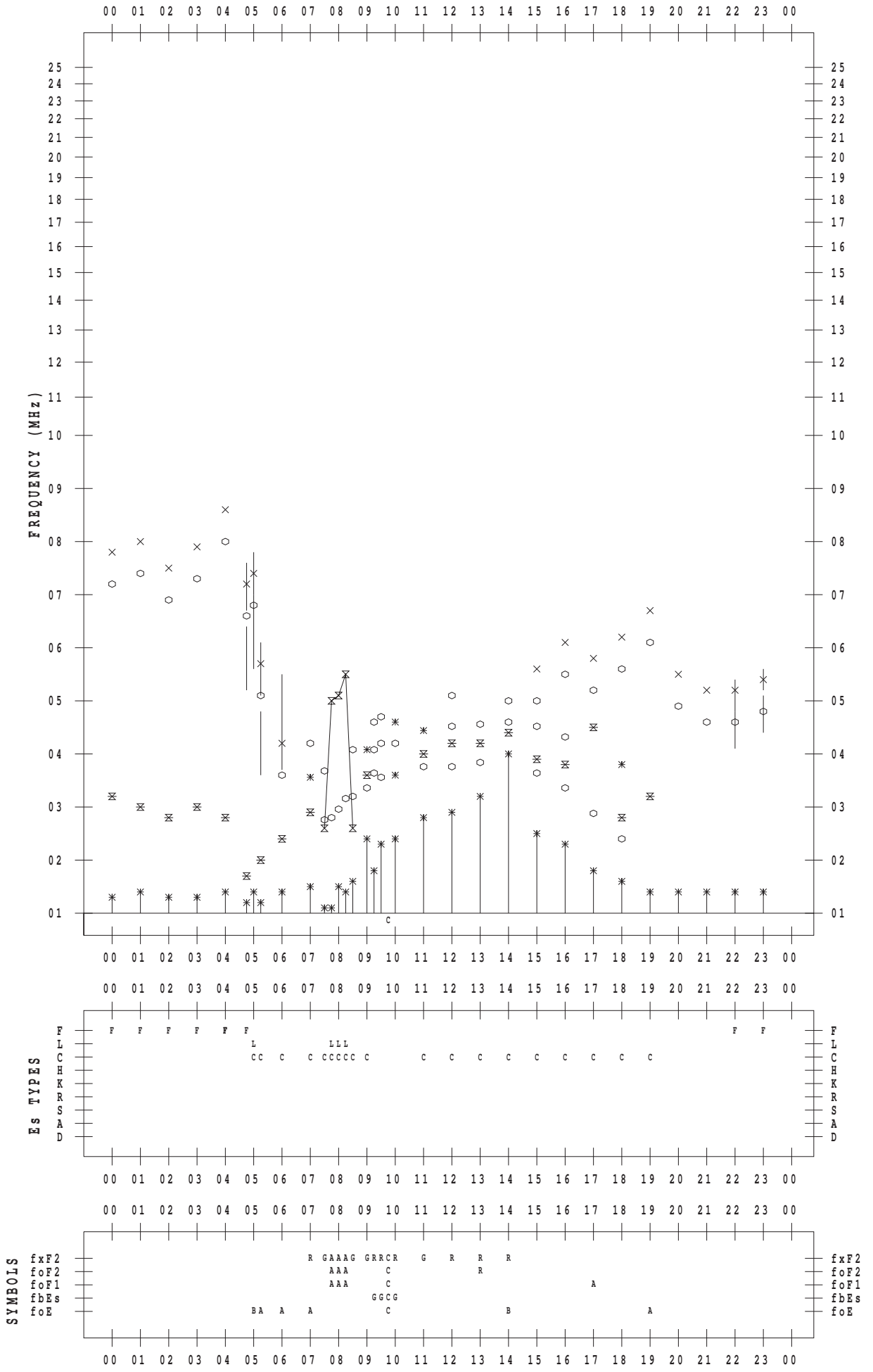
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/16

135 °E MEAN TIME



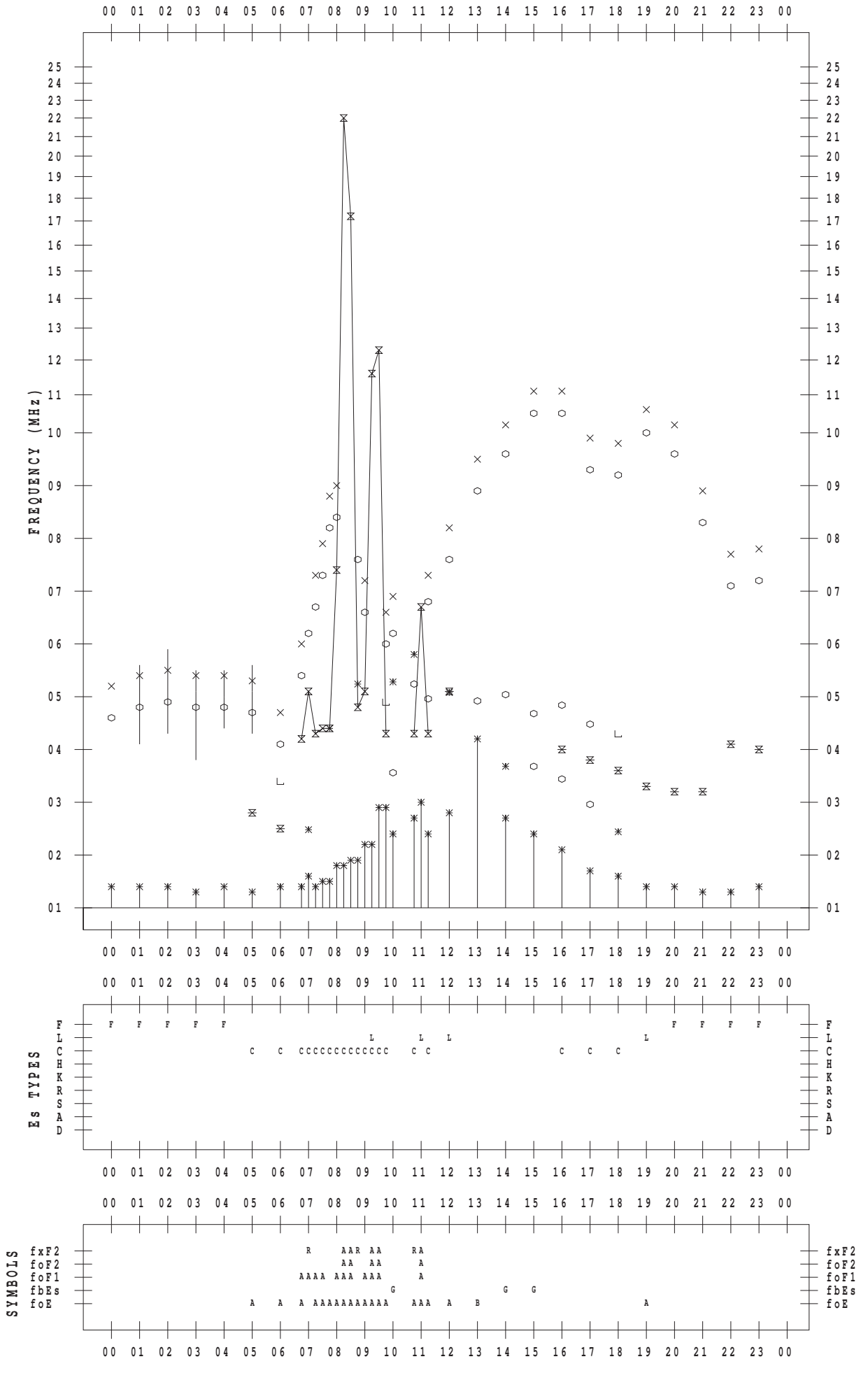
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/17

135 °E MEAN TIME



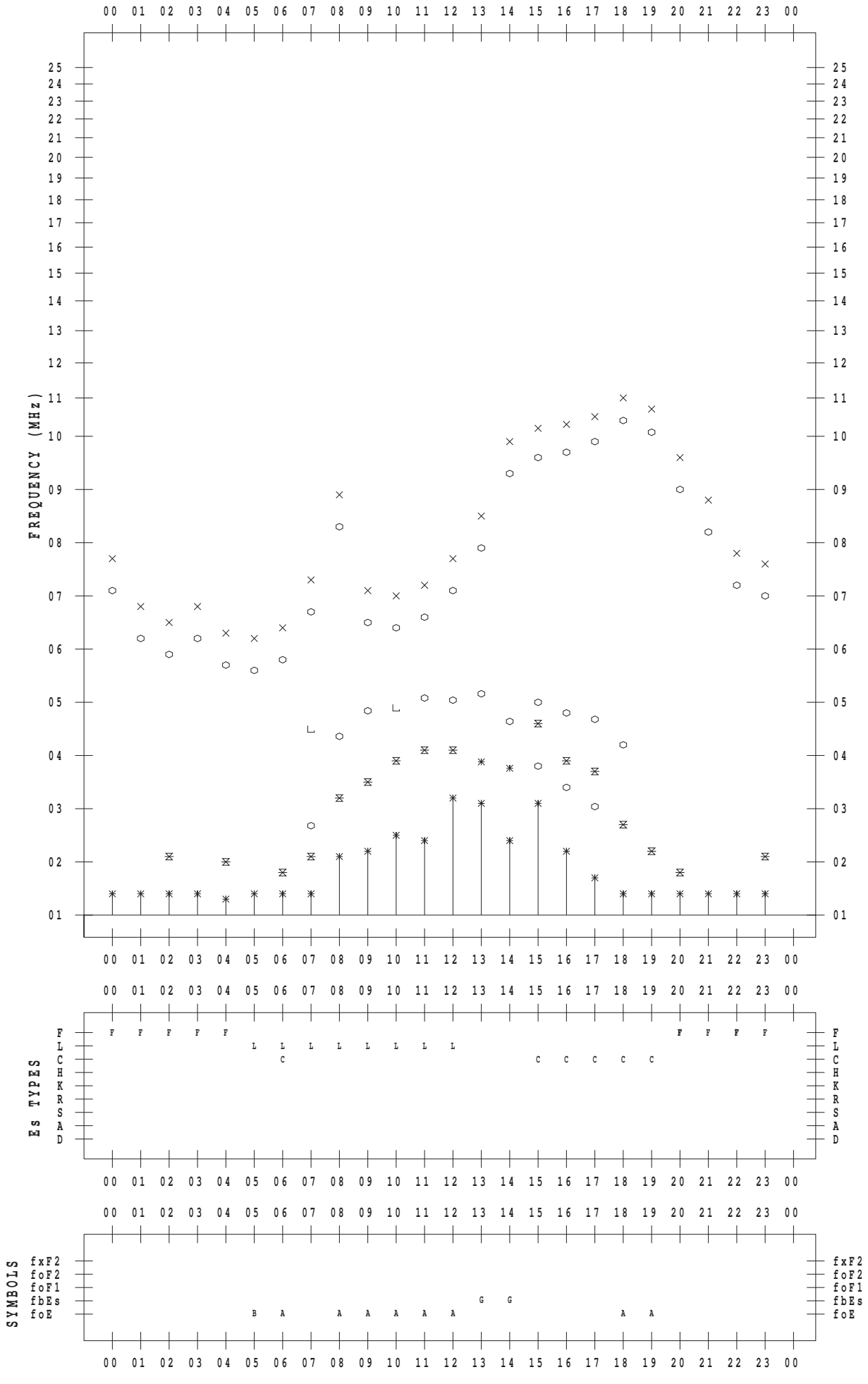
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/18

135 °E MEAN TIME



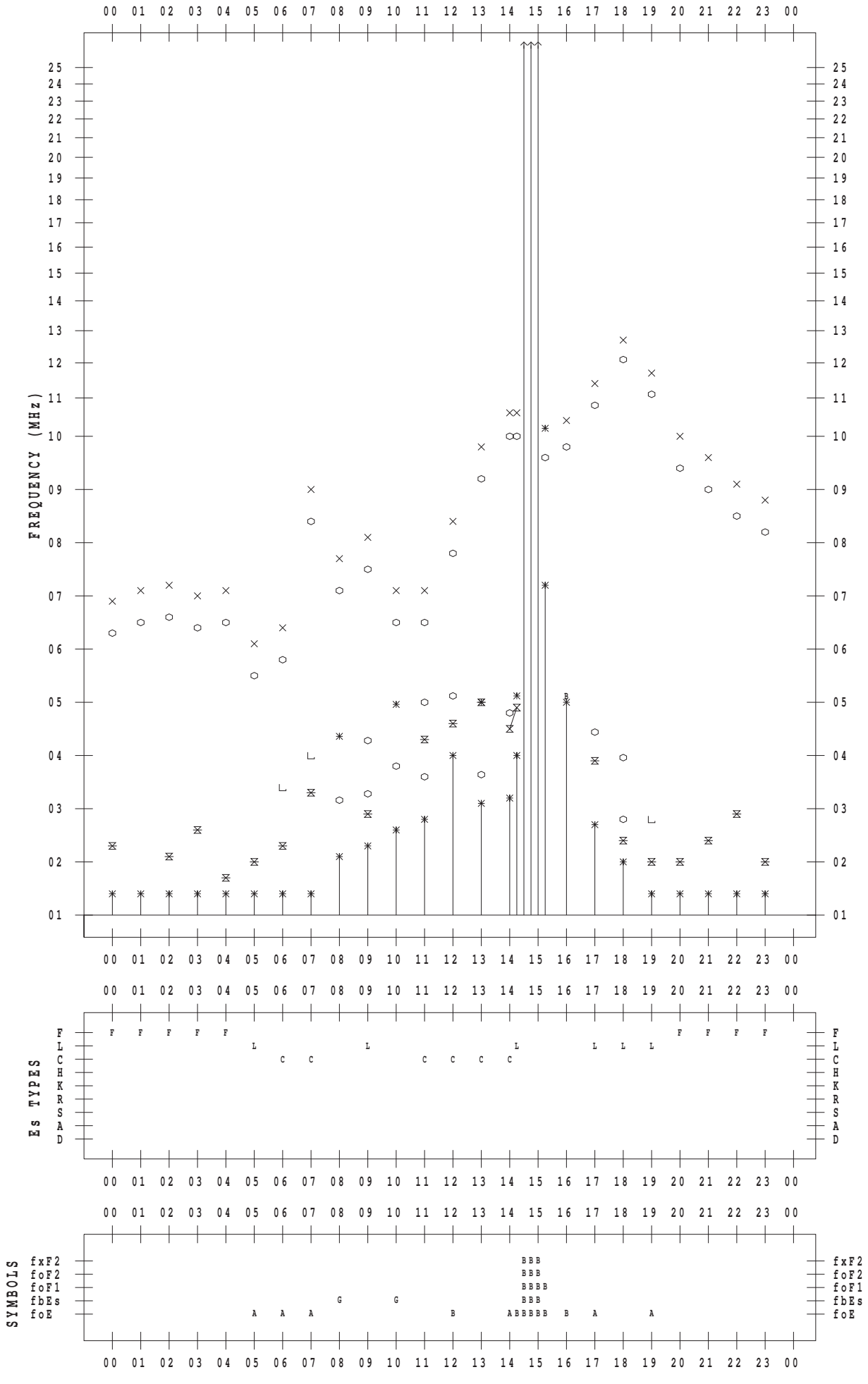
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/19

135 °E MEAN TIME



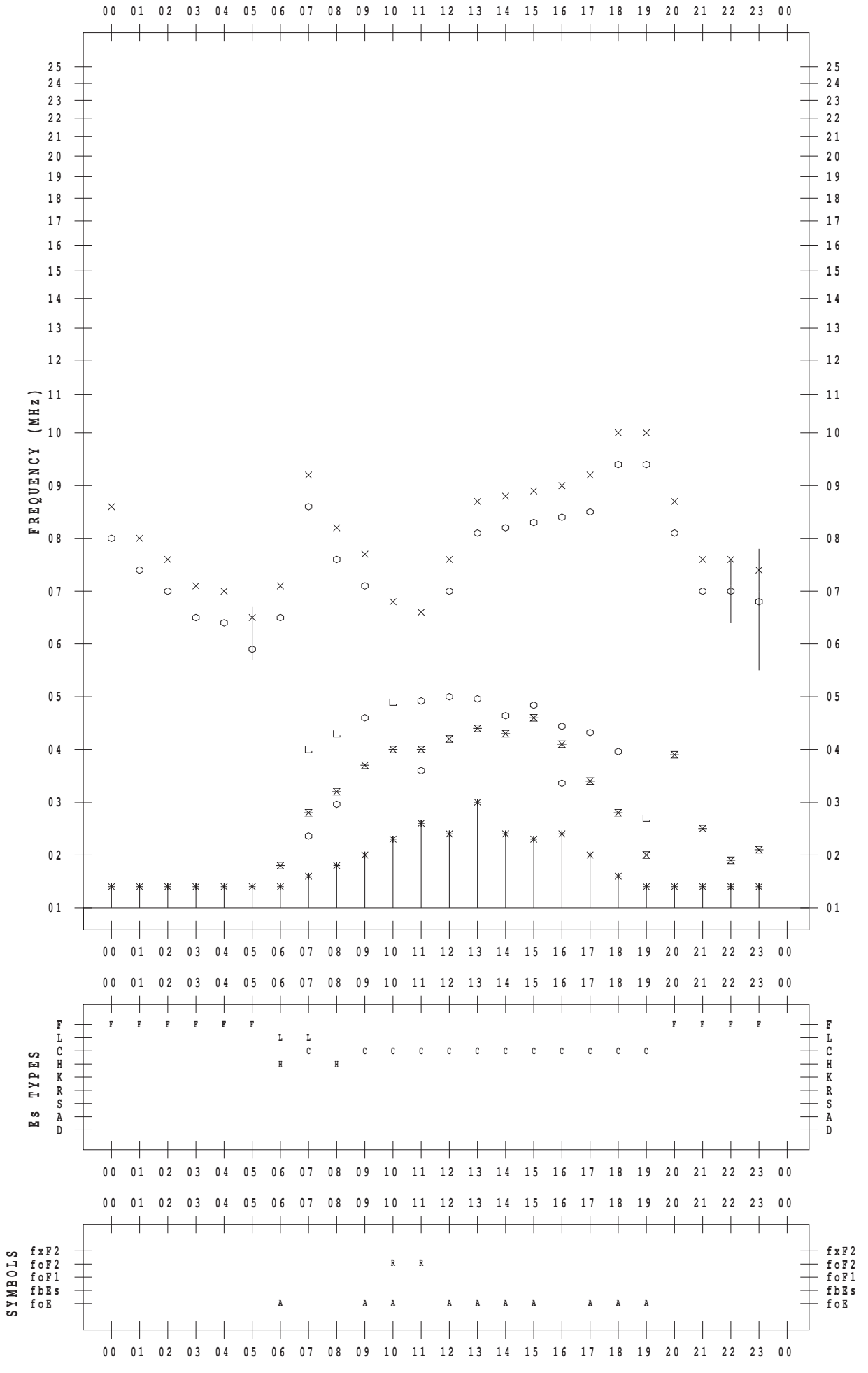
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/20

135 °E MEAN TIME



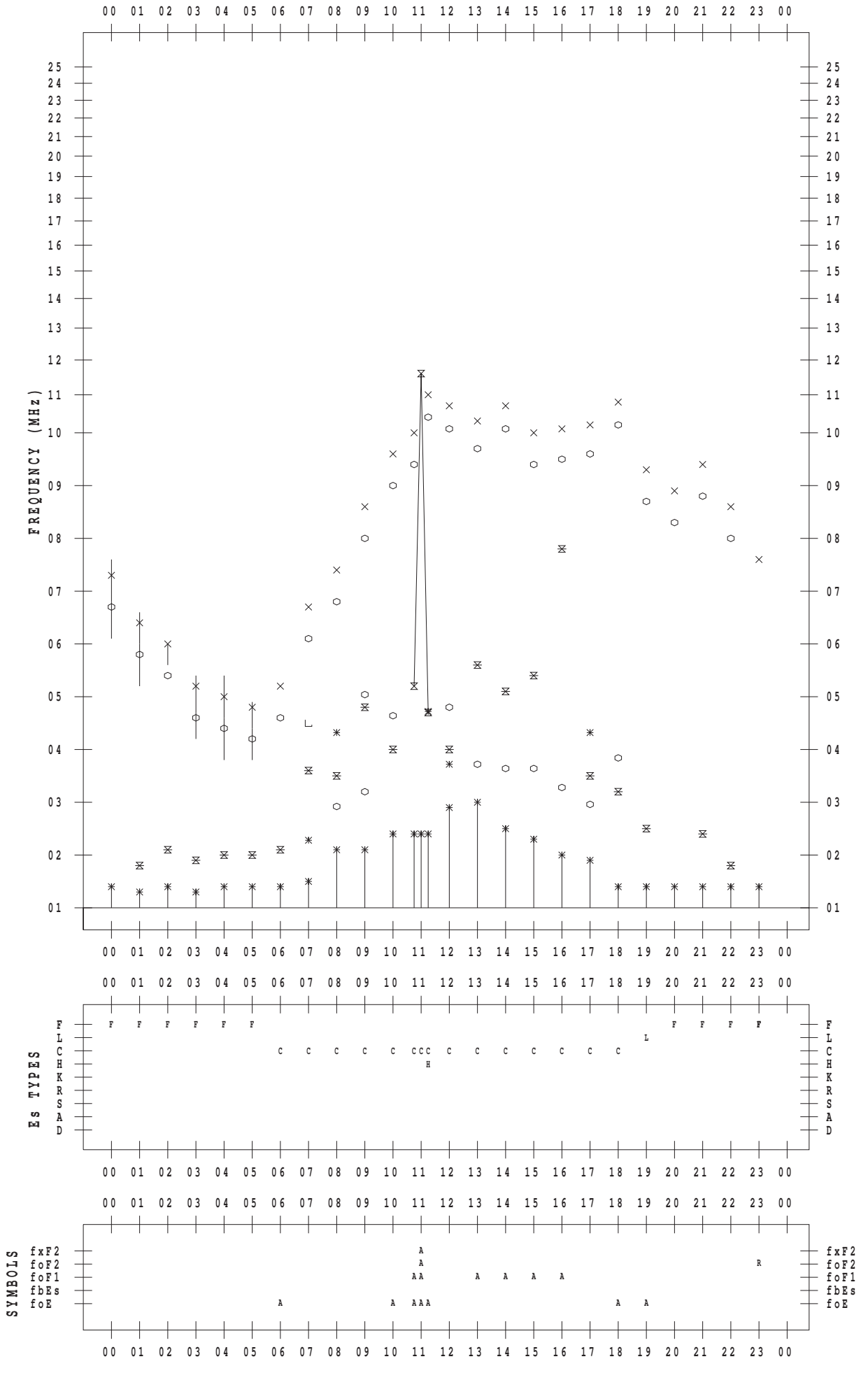
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/21

135 °E MEAN TIME



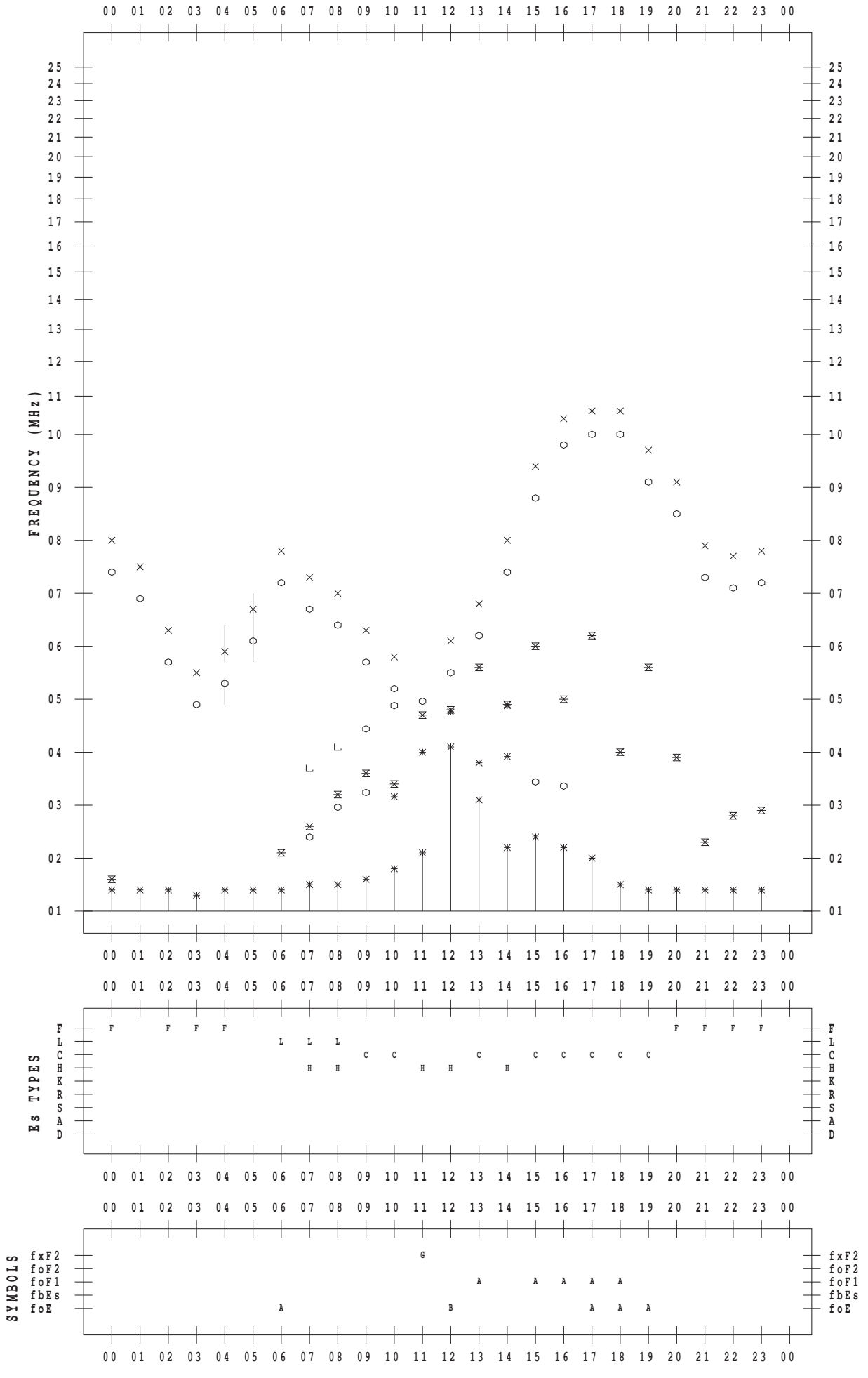
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/22

135 °E MEAN TIME



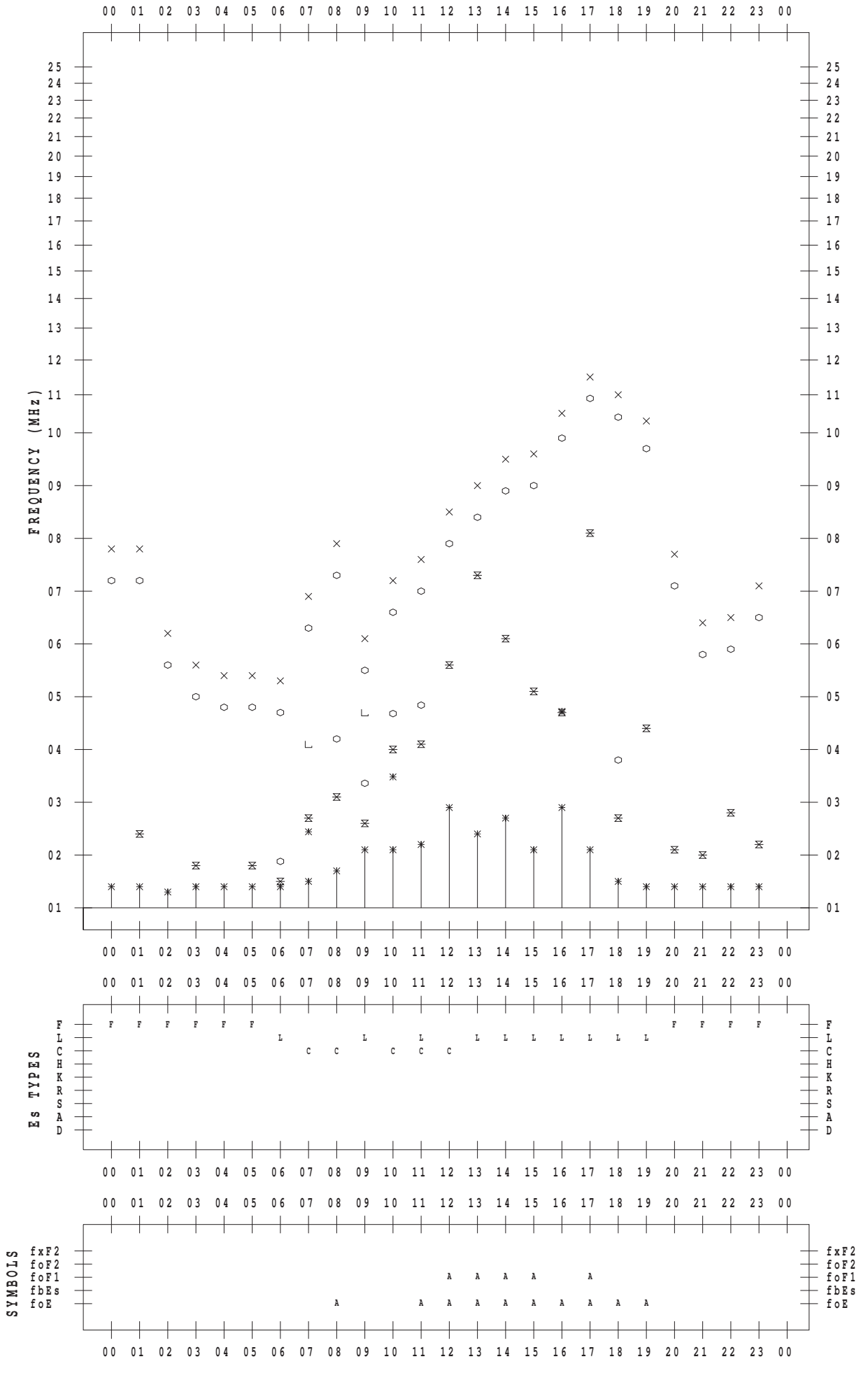
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/23

135 °E MEAN TIME



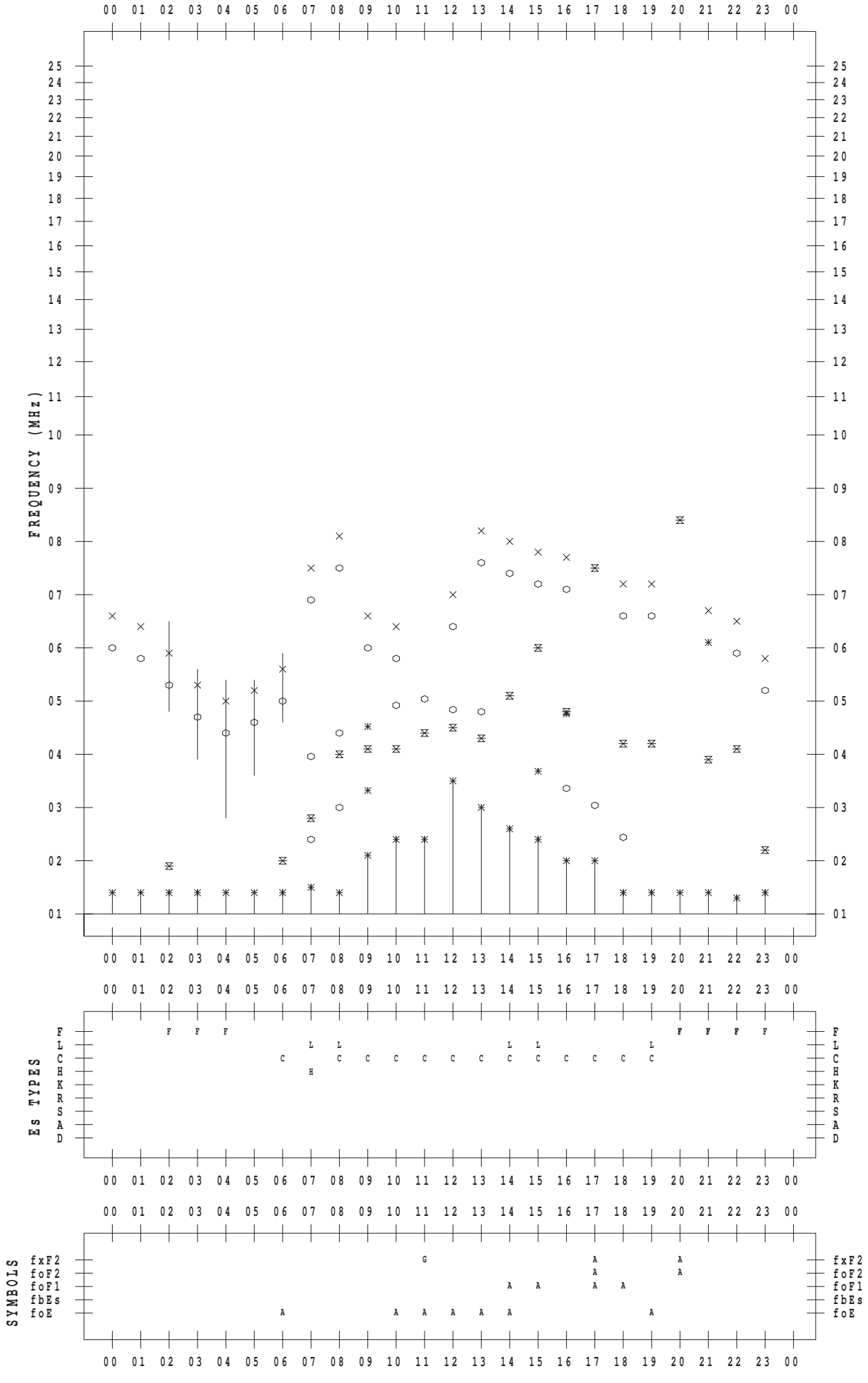
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/24

135 °E MEAN TIME



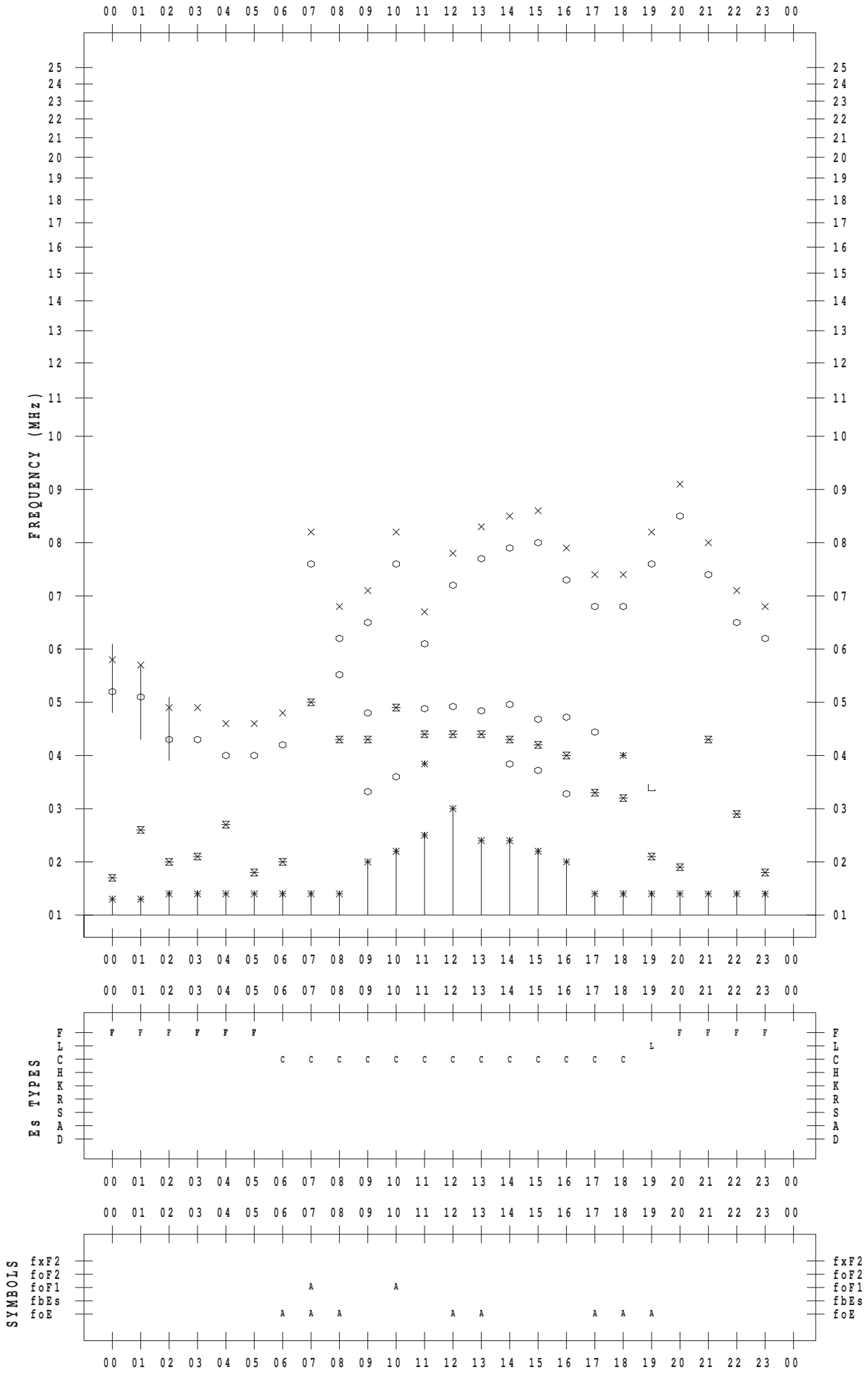
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/25

135 °E MEAN TIME



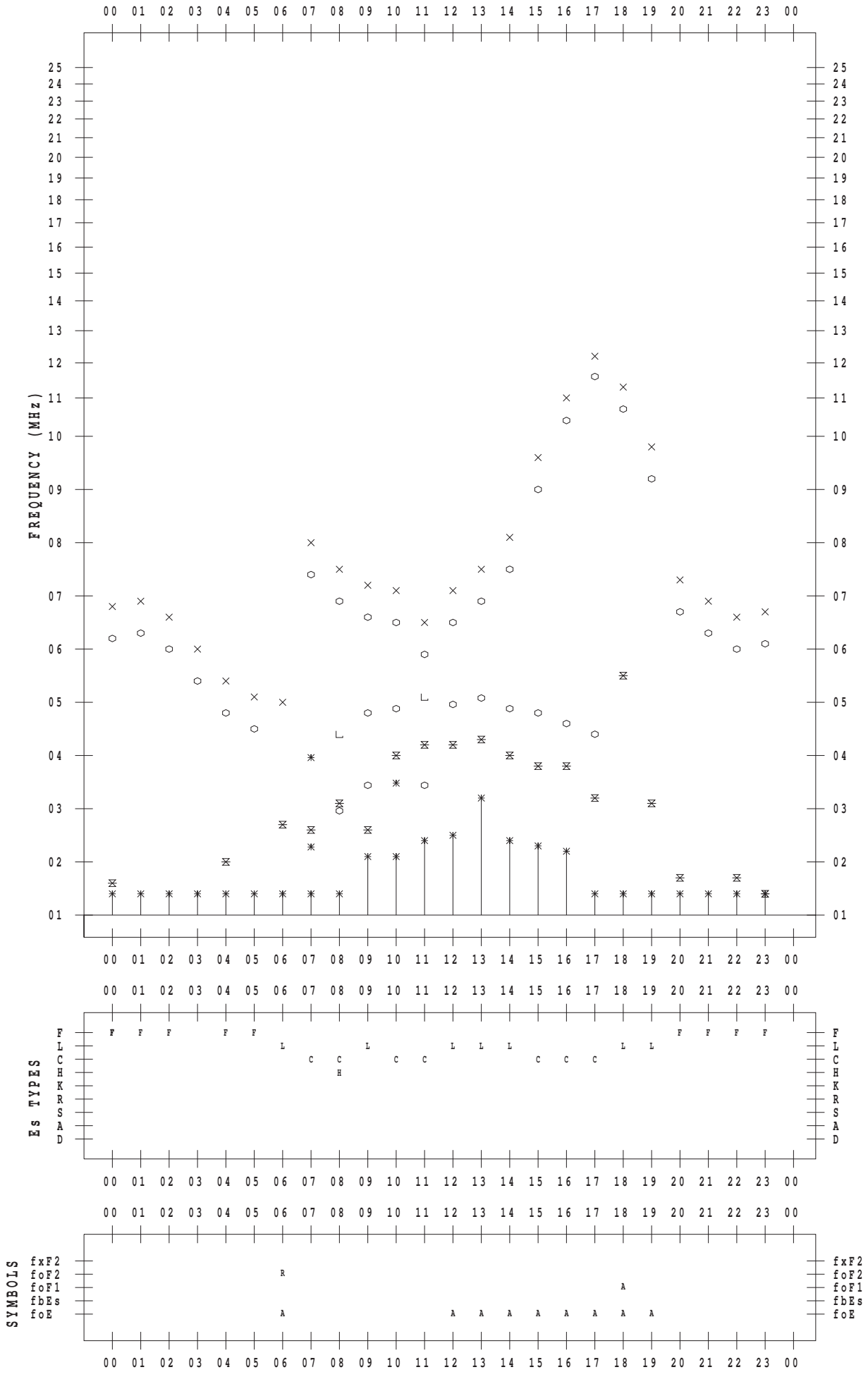
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/26

135 °E MEAN TIME



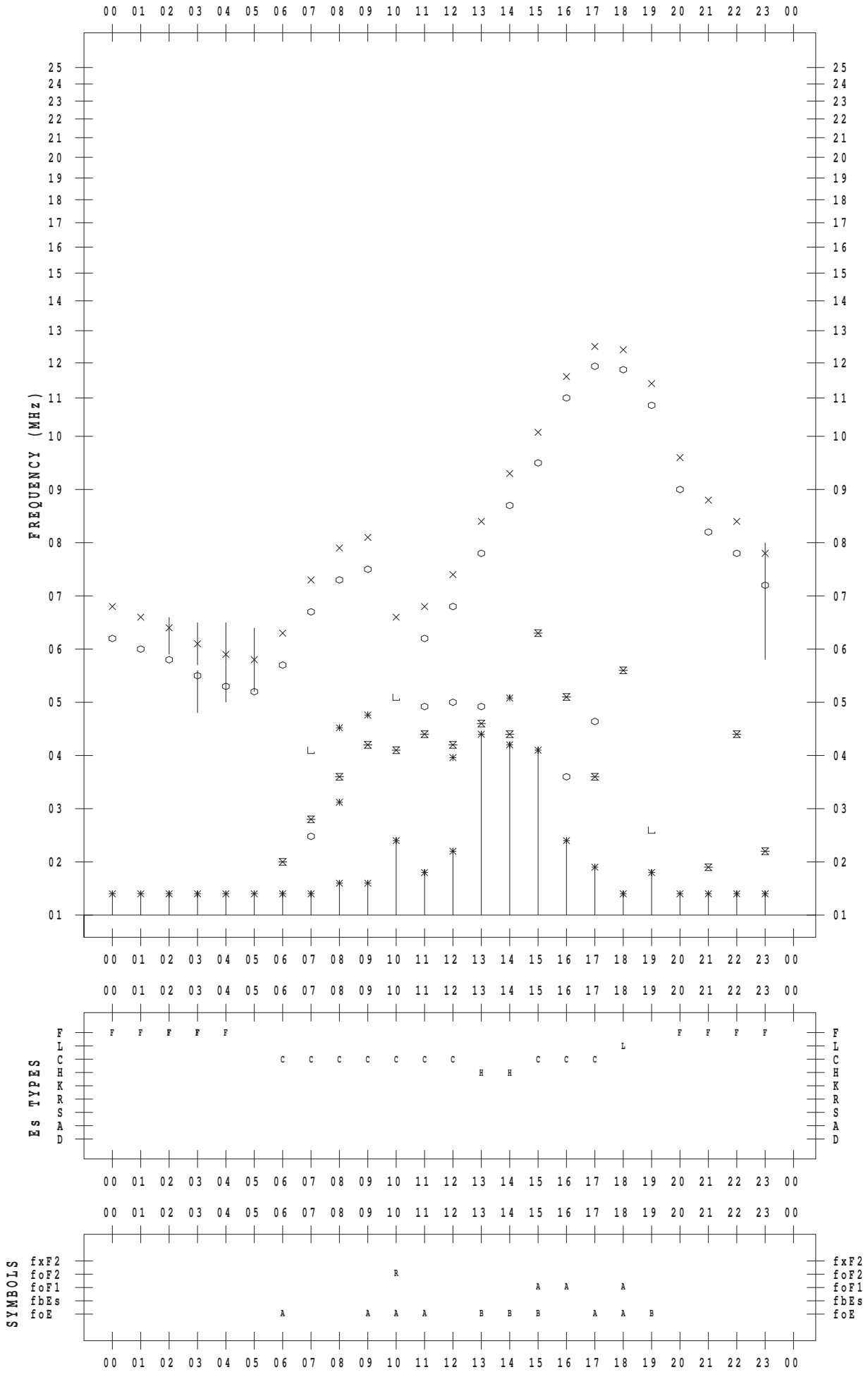
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/27

135 °E MEAN TIME



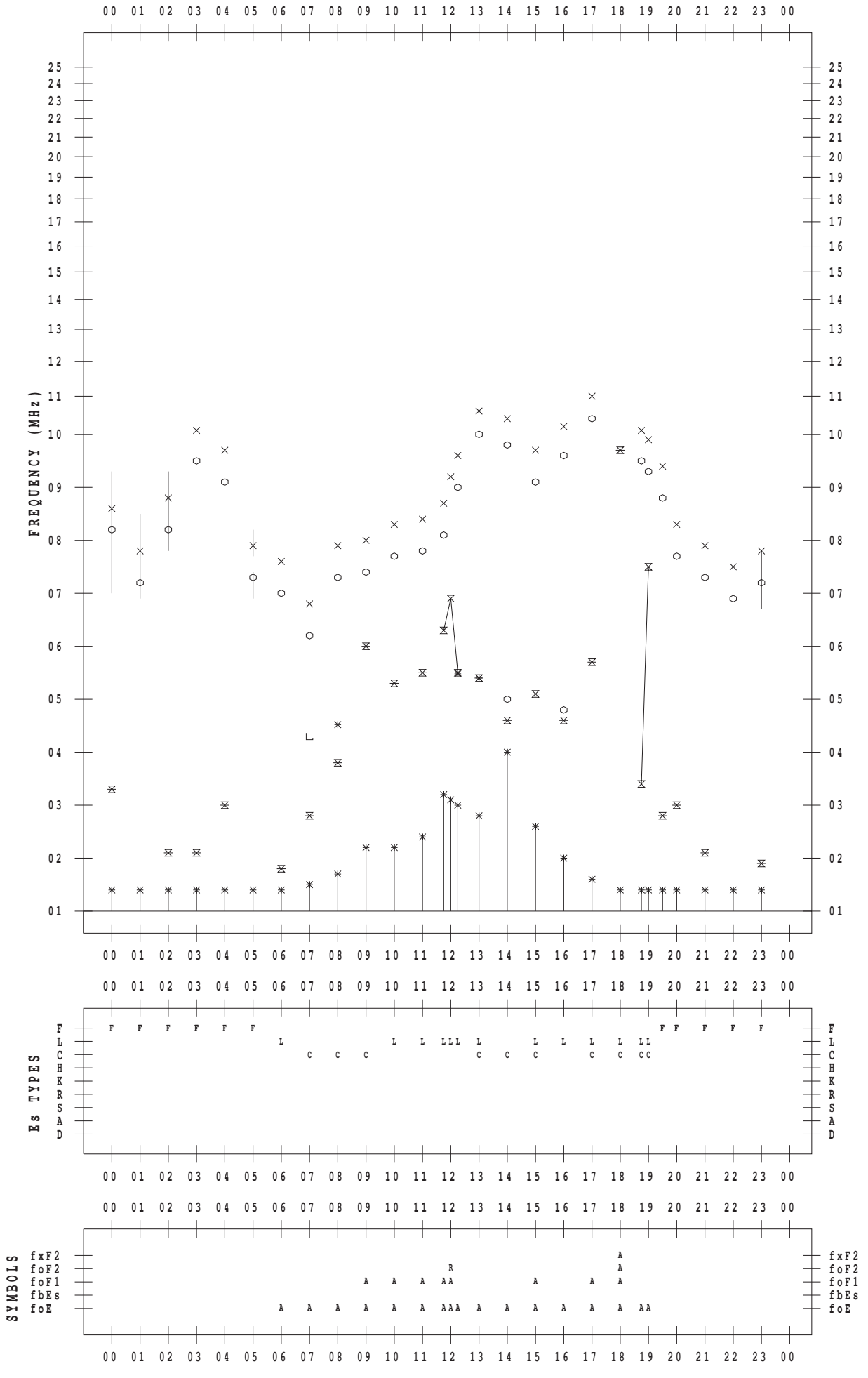
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/28

135 °E MEAN TIME



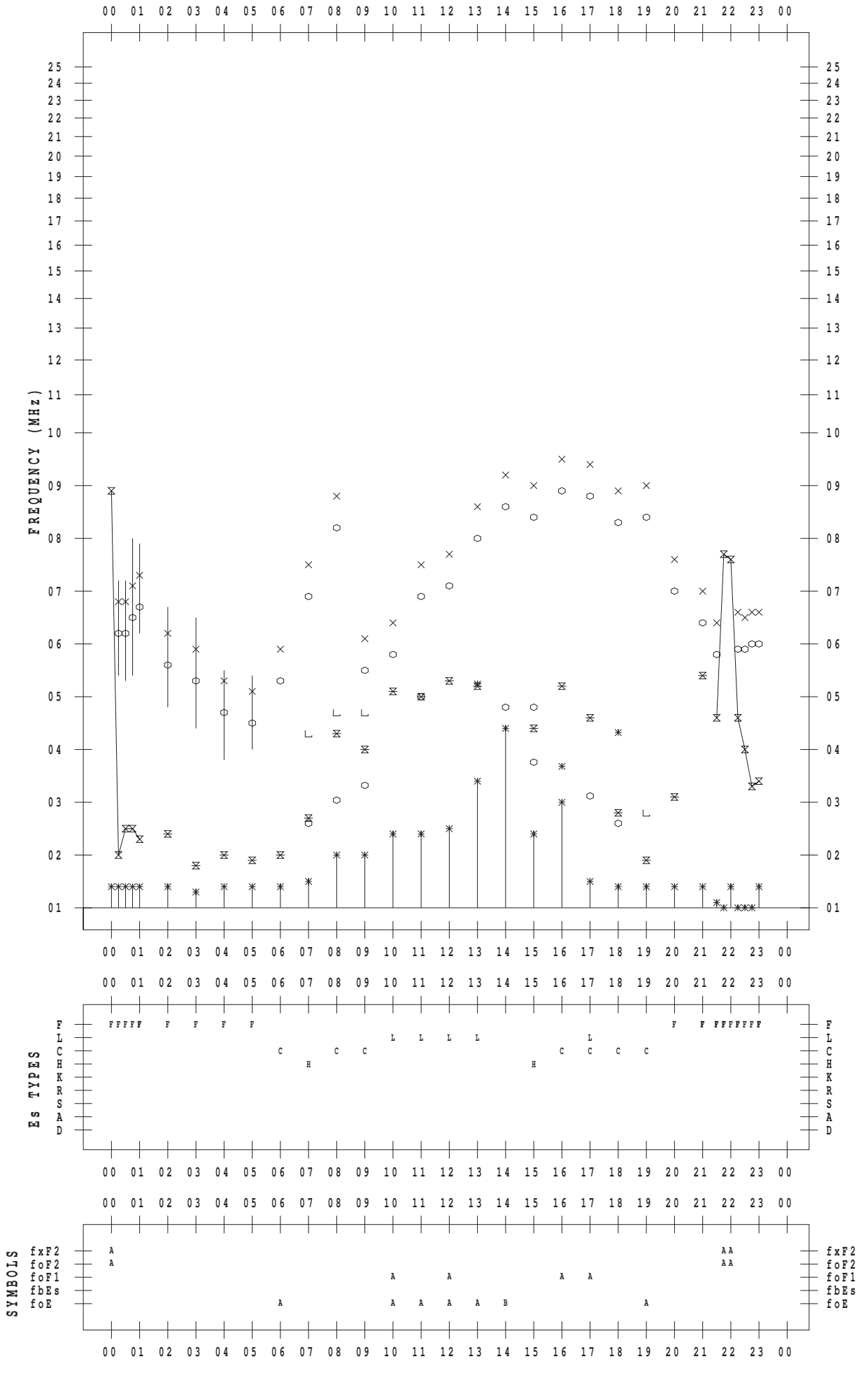
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/29

135 °E MEAN TIME



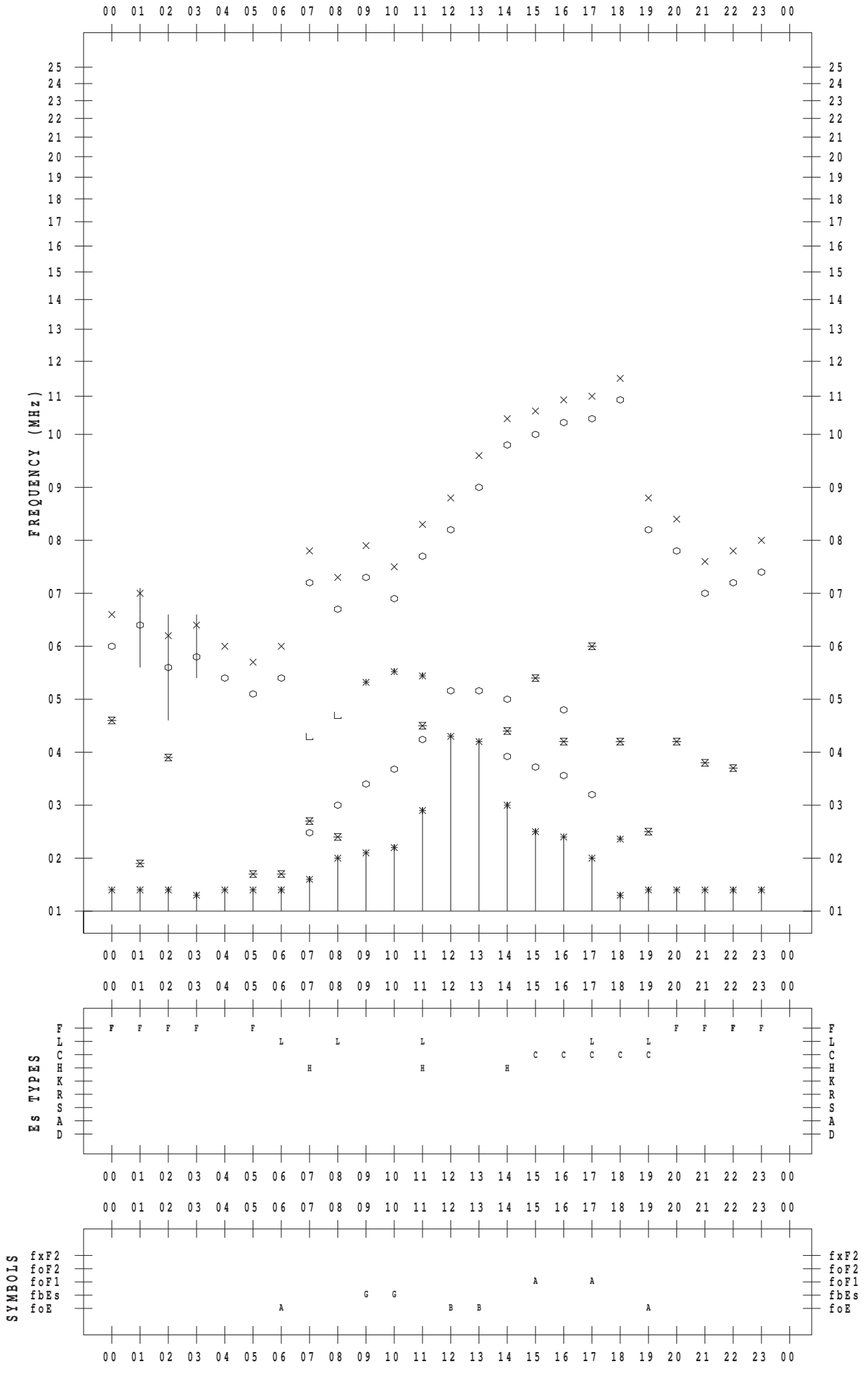
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 7/31

135 °E MEAN TIME