F-764

IONOSPHERIC DATA IN JAPAN

FOR AUGUST 2012

VOL. 64 NO. 8

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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

AUG. 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	53	60	55	53	62	64	A	66	A	A	70	A	A	A	67	64	64	70	68	A	A	74	A	66
2	65	58	54	55	53	62	70	66	65	A	64	70	A	63	A	65	A	62	A	A	A	A	65	54
3	62	52	60	61	57	61	66	64	66	65	A	A	A	64	67	67	67	67	66	65	67		63	62
4	54	63	52	53	53	60	60	65	67	66	68	66	59	64	68	67	66	68	65	67	65	65	66	63
5	66	54	52	64	63	66	64	74	59	66	63	65	67	66	74	A	70	68	65	66	65	67	65	61
6	58	61	51	39	53	62	58	66	64	61	66	67	64	68	67	67	66	66	71	A	49	66	66	64
7	54	53	53	53	58	59	63	66	66	64	59	67	62	66	67	64	68	66	66	66	63	64	66	52
8	34	60	52	60	60	62	61	61	61	A		A	66	63	68	66	65	67	67	64	66	64	63	66
9	A	54	54	61	36	55	A	66	64	61	62	68	A	66	69	67	66	69	66	67	34	64	A	54
10	64	52	54	53	53	52	58	64	61	A	A	61	A		58	62	62	66	67	67	66	A	A	52
11	A	53	51	54	32	A	62	67	66	A	A	A	57		66	59	66	67	64	66	54	66	66	66
12	58	53	44	46	A	52	63	63	58	66	52	A		62	62	67	67	67	67	63	65	66	54	54
13	53	43	47	47	49	58	68	64	A	61	A		A	A	A		62	61	65	67	63	64	62	60
14	58	54	52	54	56	56	58	69	66	64	67	58		62	A	65	65	66	64	64	67	62	A	61
15	51		51	54	47	50	61	66	59	59	A	65	67	66	67	67	65	66	67	67	65	66	62	51
16	53	53	32	34	50	48	46	57	62	60		A	64	67	58	64	58	64	62	66	54	66	66	54
17	53	43	42		47	52	61	64	A	A	A		61		62	67	58	61	63	64	54	62	62	A
18	55	A	A	54	54	51	56	62	64	A		61	62	66		A	A	64	61	66	51	54	64	61
19	64	60	62	54	48	49	58	64	69	67	64	61	63	64	66	64	67	67	62	66	67	66	64	63
20	66	63	64	42	46	32		54	65	62	65	64	62	66	61	61	61	66	63	64	54	54	A	54
21	42	40	48	48	43	53	52	A	57	A	A	A	62	A	65	62	62	62	64	62	64	54	A	A
22	A	48	47	47	44	43	A	67	63	61	60	A	59	A	64	63		58	61	64	64	66	64	54
23	48	47	47	26	28	A	70	60	63	59	62	66	64	62	64	64	64	67	67	66	64	64	52	52
24	48	34	42	47	32	34	A	A	A	A	A				A	A	A	56	A	55	52	50	A	A
25	34	A	A	54	A	44	58	61	58	66	A	A	64	65	63	64	A	65	66	67	63	A	54	32
26	A	A	A	A	A	A	58	58	56	A	61	69		64	66	67	A	66	A	A	61	64	62	54
27	53	53	50	47	47	34	57	65	66	64	62	62	62	66	66	64	68	67	66	66	63	N	66	A
28	A	A	A	58	50	50	56	59	63	63	63	66	66	65	67	65	99	66	A	67	64	63	54	A
29	A	A	52	52	48	54	62	64	64	59	A	68	65	62	A	66	69	67	65	65	66	66	67	63
30	50	52	48	50	48	58	64	67	60	69	68	64	N	66	70	70	62	65	67	67	66	66	33	30
31	51	50	47	45	46	48	64	84	59	70	66	67	66	68	66	66	67	67	66	67	66	67	66	52
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	25	27	29	28	28	26	29	27	21	18	19	20	23	25	27	25	31	27	27	29	26	24	26
MED	53	53	51	53	48	52	61	64	63	64	64	66	64	65	66	65	66	66	66	66	64	64	64	54
U Q	60	59	54	54	53	59	64	66	66	66	66	67	65	66	67	67	67	67	67	67	66	66	66	63
L Q	50	49	47	47	46	48	58	61	59	61	62	62	62	63	63	64	62	64	64	64	54	63	62	52

HOURLY VALUES OF fEs AT Wakkanai

AUG. 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	26	28	G	35	61	57	74	94	65	116	53	74	G	49	G	G	49	71	72	58	77	56
2	40	32	36	27	G	34	55	40	64	65	62	68	77	55	62	G	65	60	103	71	70	71	41	24
3	28	G	G	26	24	33	50	G	52	61	73	66	70	58	50	G	G	50	50	54	53		28	32
4	32	34	39	27	G	30	43	55	G	G	58	G	G	G	G	G	39	56	54	29	30	G	G	26
5	G	G	G	G	G	G	38	G	G	G	G	G	G	G	G	92	G	34	38	36	28	36	25	40
6	26	G	28	28	28	28	40	51	51	53	44	G	G	G	57	G	G	57	62	68	35	60	40	32
7	36	G	G	G	G	G	34	G	46	G	G	G	G	G	G	G	G	42	33	39	32	G	G	G
8	28	34	32	27	24	G	39	G	62	63	G	65	G	G	G	46	G	40	46	51	58	26	G	58
9	39	29	28	G	27	35	65	38	40	G	48	G	74	68	G	G	G	43	34	39	50	40	60	33
10	24	G	32	30	G	G	G	G	48	69	49	58	55	G	54	60	52	35	39	53	60	52	54	37
11	37	36	33	36	26	44	53	69	52	71	59	70	G	G	G	50	44	41	32	32	39	38	59	39
12	23	30	G	G	29	29	35	50	G	G	51	57	G	G	G	50	G	49	45	40	34	32	50	33
13	25	26	24	G	29	37	G	G	49	62	50	G	50	68	68	G	G	G	36	35	46	68	35	40
14	24	39	G	34	31	35	52	41	G	G	53	60	G	51	71	G	G	39	41	56	71	44	40	24
15	28		G	G	G	G	38	46	62	52	72	48	G	G	G	G	G	G	34	40	32	35	24	G
16	G	G	G	G	G	G	G	40	49	46	G	47	57	62	G	G	G	46	50	38	50	33	28	G
17	28	28	33		G	34	46	60	67	72	55	G	G	G	G	G	40	39	39	41	24	37	48	59
18	43	72	68	34	11	48	40	52	59	64		54	52	G	G	54	58	35	50	60	60	32	28	28
19	40	G	G	G	G	26	33	50	64	58	51	49	50	G	G	G	G	36	34	34	G	G	32	25
20	34	G	G	26	G	G		G	45	50	52	52	52	G	G	G	G	39	51	70	27	32	71	38
21	33	G	G	G	24	G	36	60	52	64	59	61	50	44	G	G	G	G	27	43	33	G	69	40
22	40	38	32	36	34	32	40	46	47	G	52	65	G	58	48	57	G	40	35	29	27	35	G	G
23	G	G	G	G	G	70	33	38	G	G	G	G	G	G	G	G	G	G	G	G	28	23	G	G
24	G	23	G	G	G	27	39	41	49	51	56	G	G	G	51	73	71	62	60	59	G	59	38	39
25	34	41	39	52	58	34	37	102	72	G	74	79	52	G	56	49	76	40	39	28	39	52	50	40
26	49	68	70	68	70	69	35	56	57	75	51	G	G	G	45	58	62	62	72	77	49	57	38	68
27	G	G	G	30	26	G	36	G	46	G	54	50	G	50	G	40	52	55	40	58	35	29	50	60
28	72	69	40	43	40	28	G	40	G	56	59	G	62	51	58	44	86	79	71	60	40	39	34	60
29	56	60	36	28	23	28	34	40	62	52	69	64	60	59	68	52	38	40	50	40	54	46	36	25
30	31	29	G	28	33	40	40	61	G	G	56	43	G	G	G	G	G	G	48	39	51	28	G	G
31	29	G	G	G	G	G	G	G	43	G	G	44	G	54	53	G	G	34	30	G	G	G	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	30	31	30	31	31	30	31	31	31	30	31	30	31	31	31	31	31	31	31	31	30	31	31
MED	29	27	24	27	23	29	38	41	49	52	52	49	G	G	G	G	G	40	41	40	39	36	36	33
U Q	39	36	33	30	29	35	43	55	62	64	59	64	53	55	54	50	52	50	50	59	53	52	50	40
L Q	24	G	G	G	G	G	34	G	40	G	48	G	G	G	G	G	G	34	34	35	28	28	24	24

HOURLY VALUES OF fmin AT Wakkanai

AUG. 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	23	14	15	14	14	14	14	14	15	20	20	22	21	26	17	16	18	14	14	14	14	14	14	14
2	15	15	14	14	14	14	14	14	15	24	17	20	27	22	30	17	14	14	14	14	14	14	14	14
3	14	15	14	14	14	14	14	14	14	17	18	22	29	29	20	18	14	14	14	14	15		14	14
4	14	14	14	15	14	14	14	14	15	16	17	18	18	18	23	21	14	15	14	14	15	16	15	15
5	14	14	14	14	15	14	14	15	18	18	23	27	23	20	20	16	14	16	14	14	15	14	15	14
6	15	14	14	14	14	14	14	14	15	16	18	15	21	22	18	21	14	14	14	14	14	14	14	14
7	14	15	15	15	14	14	14	14	14	15	17	21	21	20	18	21	15	14	14	14	14	15	14	14
8	15	15	14	14	16	20	14	14	15	16	18	16	28	20	16	15	15	14	14	14	14	14	16	14
9	14	14	14	14	17	14	15	14	15	16	18	20	42	40	27	17	15	14	14	14	14	14	14	14
10	14	14	14	14	21	21	14	14	14	15	20	27	23	20	18	14	14	14	14	14	14	14	14	14
11	14	14	14	14	14	14	14	14	14	14	18	33	23	20	15	16	14	14	14	15	14	14	14	14
12	15	15	14	16	16	14	14	14	15	14	17	20	32	17	17	15	14	14	14	14	14	14	15	14
13	14	15	14	14	15	14	14	14	15	20	17	18	26	21	17	15	15	14	14	14	14	14	14	14
14	14	14	15	14	14	14	14	14	14	14	17	17	22	18	17	14	14	14	14	14	14	14	14	14
15	14		14	14	14	17	14	14	17	14	18	17	22	27	18	15	14	14	14	15	14	15	14	15
16	15	16	15	15	14	18	14	14	15	15	17	21	16	14	16	15	14	14	14	14	14	15	14	15
17	14	15	14		15	14	14	14	16	15	15	20	54	16	20	17	14	14	14	14	14	14	14	14
18	14	15	15	14	14	14	14	15	15	15		24	20	28	20	15	14	14	14	14	14	14	14	14
19	14	15	14	14	15	17	14	15	21	18	16	20	20	17	23	15	15	14	14	14	15	15	14	14
20	14	15	15	14	15	16		14	14	14	14	15	18	16	14	14	14	14	14	14	15	15	14	14
21	14	15	15	14	15	16	14	14	14	16	20	21	17	16	14	14	14	14	15	15	14	15	14	14
22	14	14	14	14	14	14	14	15	15	15	17	17	15	15	18	16	15	14	14	14	17	15	14	15
23	14	15	15	15	20	14	14	14	14	14	16	17	16	15	14	14	14	14	18	14	15	14	15	16
24	14	15	14	15	14	14	14	14	14	15	15	18	26	14	16	14	14	14	14	14	15	14	14	14
25	14	14	15	14	14	14	14	14	14	17	16	20	20	18	16	15	15	14	14	14	15	15	14	14
26	14	14	14	14	14	14	14	14	17	15	15	17		16	17	16	15	14	14	14	14	14	14	15
27	15	15	16	14	15	15	14	14	15	16	18	18	16	14	18	16	15	14	14	14	14	14	14	14
28	14	14	14	14	14	14	14	14	15	16	21	20	17	18	20	20	14	14	14	14	14	14	14	14
29	14	14	14	14	14	14	14	14	21	16	18	18	17	27	20	15	15	14	14	14	15	14	14	15
30	15	14	14	14	15	14	14	14	14	17	20	21	15	16	15	14	14	14	14	14	14	15	15	15
31	14	15	14	15	15	17	14	14	17	17	20	18	20	17	15	14	14	14	14	15	15	14	15	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	30	31	30	31	31	30	31	31	31	30	31	30	31	31	31	31	31	31	31	31	30	31	31
MED	14	15	14	14	14	14	14	14	15	16	18	20	21	18	18	15	14	14	14	14	14	14	14	14
U Q	15	15	15	14	15	16	14	14	15	17	18	21	26	22	20	17	15	14	14	14	15	15	14	15
L Q	14	14	14	14	14	14	14	14	14	15	17	17	17	16	16	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

AUG. 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	73	A	67	54	51	56	67	62	82	75	76		77	77	87	67	84	81	80	77	77	54	67	A
2	A	A	67	52	51	58	72	A	76	78	76	90	90	82	79	77	80	A	72	A	A	71	A	A
3	A	44	46	58	45		67	86	87	75	A		76	90	97	94	88	81	78	80	78	A	A	A
4	67	66	67	54	51	53	73	78	77	85	75	86	97	85	80	82	A	A	A	A	86	78	74	54
5	53	53				53	78	82	74	69	74		80	80	90	94	92	96	90	A	A	A	64	53
6	73	64	66	54	55	52	73	82	81	74	73	88	92	75		91	91	87	77	82	75	54	76	53
7	67	53	64	54	61	63	69	78	81	80	A	77	77	77	87	78	72	78	76	78	74	76	73	72
8	67	67	53	52		63	73	77	64	68	68		74	87	88	82	82	78	77	80	76	54	51	55
9		54	52	52	53	58	62	77	72	71		67	69	72	83	90	A	75	90	76	67	A	74	74
10	53	A	52	52	44		69	86	96	A	A			75	78	80	74	A	77	91	73		67	54
11	53	54	54	53	53	52	62	81	A	72	A	A	A	A		73	74	75	76	77	76	54	55	73
12	54	52	52	A	53	53	66	74	77	70	A	A		82	75	71	75	81	85	87	74	64	47	53
13	51	A	A	A	A	53	A	66	A			48	38	67	71	75	77	76	74	81	A	54	A	A
14	A	52	46	46	45	53		74	85	A	A	A		76	80	80	78	67	64	76	72	A	54	54
15	52	47	58	51	45	45	59	81	79	74	A	74		81	81	73	73	80	88	84	A	59	54	47
16	52	A	A	A	44	53	64	A	66	63	66	A	58	80	76	A	69	67	74	A	A	64	A	52
17	53	A	45	48	42	52	68	84	63	A			74	73	68	68	69	64	67	81	70	54	47	A
18		49	51	A	44	51	58	A	A	A		A	65		75	72	A	A	67	72	76	54	67	54
19	54	52	52		52	46	64	76	98	A	A	71		73	86	87	76	71	72	72	74	54	78	A
20	75	80	80	52	55	51	A	69	78	98	78	67			67	68	73	68	77	80	74	54	A	A
21	A	46		53	43		52	82	73	71				76	73	69	73	74	71	43	53	55	A	A
22	32	51	48					63	74	76	A	70	A		69	66	64	62	68	48	76	54	54	A
23	44	44	50		36	A	56	72	77	82	77	68		55	64	68	67	74	77	81	73	53	53	N
24		44	45	A	41	42	56	56	A	A	A	A		A	A	A	68	58	59	A	54	49	A	A
25	48	44	A	36	A	A	59	64	67		68	A	73	73	75	72	73	88	88	80	54	A	54	52
26		52	53	A	46	46	60	69	A	A	71	A	80	A	74	81	83	77	A	A	A	54	54	A
27	53	54	53	44	46	38	56	69	76	A	A	68		73		80	88	90	80	78	64	54	66	A
28	52	A	A	45	43	52	75	78	78	74	76	80	A	78	A	78	81	81	80	84	87	54	54	52
29	45	52	A	A	53	44	66	67	67	74	80		67	78		85	80	77	79	77	84	78	67	53
30	51	47	53	53	53	48	74	88	77	68	73	77	85	77	88	83	80	91	102	105	73	72	44	58
31	51	49	52	51	42	46	78	88	88	81	82	81	87	76	74	78	80	85	94	90	88	71	47	
	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	24	24	20	26	25	27	28	26	21	15	15	18	25	25	29	28	27	29	25	25	25	24	17
MED	53	52	52	52	46	52	66	77	77	74	75	74	76	77	78	78	76	77	77	80	74	54	54	54
U Q	67	54	61	53	53	53	73	82	81	79	77	81	85	80	86	82	81	81	82	83	76	67	67	56
L Q	51	47	50	49	44	46	59	69	73	70	71	68	69	73	73	71	73	71	72	76	71	54	53	52

HOURLY VALUES OF fEs AT Kokubunji

AUG. 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	35	35	26	G	28	G	G	G	49	57	60		G	G	G	G	G	G	50	49	32	G	57	73
2	59	59	40	34	39	43	59	51	54	G	64	78	66	48	50	64	80	80	59	92	92	50	73	89
3	57	37	39	G	G		41	53	64	75	50		G	G	G	G	G	G	38	27	35	30	71	78
4	113	79	40	28	26	G	G	49	G	G	G	G	G	60	G	58	91	116	106	142	34	G	31	G
5	33	G				G	G	48	G	50	G		G	80	59	G	50	51	72	84	84	59	45	94
6	30	30	30	29	G	G	G	G	G	46	45	G	G	G		G	G	69	55	35	40	G	29	G
7	G	G	33	31	28	24	34	46	52	49	114	59	G	46	47	G	47	51	50	60	79	53	27	G
8	G	G	G	G		G	35	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G
9		G	G	G	G	G	42	G	G	G		G	85	64	61	50	112	76	46	59	35	54	60	28
10	G	33	24	27	30	G	G	G	64	108	61			G	G	54	58	86	55	46	35		G	G
11	G	G	G	G	26	27	G	53	110	72	61	69	55	103		G	G	G	37	28	28	G	36	50
12	46	40	40	29	29	G	G	G	G	70	78	64	G	G	G	G	G	G	G	23	29	34	G	G
13	31	50	69	55	29	23	82	70	91	G		69	G	G	50	66	62	60	41	58	60	50	56	87
14	49	40	46	29	G	G		53	62	185	102	106	G	G	G	G	G	47	49	27	60	71	50	39
15	33	G	G	25	G	32	34	G	49	50	117	62	G	66	54	G	G	42	40	26	28	34	34	26
16	46	58	31	41	35	29	36	62	G	G	G	60	59	47	53	84	53	52	59	71	89	G	51	26
17	G	71	G	G	G	26	42	44	49	42			G	G	G	G	43	34	41	50	G	G	29	26
18		G	G	43	35	35	35	83	92	64		68	45		G	43	61	54	41	45	G	50	34	39
19	36	40	G		G	G	G	G	G	72	53	49	G	G	51	44	G	G	G	26	G	G	27	60
20	39	34	33	G	34	77	69	51	47	46	G	G			G	G	46	59	31	30	24	28	26	53
21	40	25		G	G		G	G	43	G			G	53	G	G	G	59	59	G	45	27	37	37
22	G	G	G	G	G			G	50	57	59	G	57		G	50	G	G	29	G	G	35	43	40
23	30	G	G		26	30	G	G	G	G	G	G		G	G	45	G	G	29	46	G	G	G	G
24		G	G	30	G	G	40	G	50	71	64	69		64	73	78	70	61	51	79	49	43	59	36
25	29	27	32	25	30	29	G	37	48		48	79	45	G	53	41	58	52	62	28	28	35	44	45
26		28	37	53	G	G	41	43	73	87	61	65	72	128	53	61	60	61	152	81	50	34	30	58
27	49	40	29	G	24	32	33	G	G	114	72	G		G	G	G	G	50	39	45	35	30	59	50
28	55	57	41	40	36	41	33	G	G	G	G	58	99	62	70	G	G	G	G	G	G	G	G	G
29	G	G	45	28	25	28	G	G	G	G	G	G	G	G		G	G	34	43	29	G	29	49	31
30	38	32	G	G	G	G	G	G	G	44	G	G	G	G	G	50	50	58	45	49	55	33	G	33
31	G	G	G	G	G	G	G	G	43	G	60	45	G	45	45	G	45	41	72	50	27	31	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	27	31	29	28	29	28	29	31	31	30	26	24	26	28	28	31	31	31	31	31	31	30	31	30
MED	33	30	29	26	25	12	33	G	47	48	56	58	G	G	G	G	43	51	45	45	34	30	34	36
U Q	46	40	39	30	29	29	40	51	54	71	64	68	55	61	53	50	58	60	59	59	50	43	51	53
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	27	G	G	26	G

HOURLY VALUES OF fmin AT Kokubunji

AUG. 2012

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	21	13	35	17	40	40	33	36		59	57	61	55	42	39	15	14	13	43	17	15
2	14	14	15	13	13	14	18	37	36	54	39	39	38	53	38	34	34	14	14	15	15	13	14	13
3	14	13	14	13	18		17	18	35	36	36		56	56	59	56	45	14	13	14	15	15	13	14
4	14	14	13	14	13	21	14	20	38	55	52	57	55	37	55	20	14	18	14	15	14	15	15	18
5	14	14				18	15	24	43	35	56		59	44	40	55	33	21	21	17	18	15	15	14
6	13	13	14	17	15	34	18	40	44	38	37	58	63	53		50	42	14	15	17	14	36	13	14
7	21	17	14	14	14	18	14	31	33	37	36	40	51	39	30	45	33	15	15	14	14	20	17	36
8	18	18	38	17		43	20	40	47	49	54		57	56	52	44	43	38	14	17	38	14	18	21
9		13	17	20	15	40	17	18	42	49		59	49	40	38	53	34	15	15	14	14	13	14	14
10	21	14	14	15	14	20	15	38	37	37	36			54	55	34	31	18	14	13	14		17	15
11	43	17	35	18	15	17	15	20	18	26	30	37	38	39		45	17	13	14	15	14	26	14	14
12	17	14	14	14	17	26	13	18	42	36	40	39	56	53	53	44	42	14	31	14	15	14	37	21
13	14	20	15	14	17	15	14	18	36	45		40	40	62	36	33	30	28	14	14	17	14	14	14
14	14	14	15	14	15	17		31	34	31	37	34	62	55	54	49	43	21	14	14	13	18	14	14
15	14	14	21	17	18	14	14	15	30	36	41	36	66	31	31	15	40	13	14	13	15	17	13	14
16	14	15	14	13	17	14	15	14	43	44	51	34	33	40	39	23	21	13	17	15	15	14	15	18
17	17	13	15	17	15	40	15	28	28	29			54	53	47	47	42	17	21	14	37	30	14	13
18		18	17	14	14	14	14	15	20	35		40	46		34	31	31	18	13	13	14	14	15	13
19	15	14	14		22	21	17	31	50	31	33	33	54	47	29	28	14	18	15	15	15	15	15	15
20	14	14	13	15	14	14	13	15	18	36	35	55			53	43	20	14	14	13	17	14	14	14
21	14	15		14	14		15	38	30	43			61	38	59	44	40	13	15	17	15	17	14	14
22	17	18	34	17	18			38	34	33	34	53	30		49	31	21	44	15	17	40	18	14	14
23	17	18	17		17	13	17	39	42	51	55	18		50	53	30	39	18	14	14	18	40	22	15
24		21	18	15	14	14	17	40	33	34	38	39		42	40	34	31	15	17	14	14	14	14	13
25	15	14	14	14	14	13	14	40	36		38	37	47	54	36	34	31	25	13	14	14	13	14	14
26		14	14	13	14	20	13	28	33	38	39	34	40	37	39	36	30	17	21	18	18	14	14	14
27	14	15	14	14	17	13	15	39	41	42	38	56		55	53	44	28	21	15	21	13	13	17	15
28	14	13	13	14	14	14	13	36	44	43	54	33	34	35	33	47	42	18	18	20	17	14	17	40
29	36	22	14	14	14	14	25	39	40	46	52	64	48	60		46	37	21	14	13	15	14	14	14
30	14	14	15	20	13	14	13	40	17	17	46	56	62	54	52	34	31	13	14	20	14	14	14	14
31	14	14	14	15	21	21	29	34	42	44	33	39	55	30	30	44	39	25	14	14	15	14	14	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	31	29	28	29	28	29	31	31	30	26	24	26	28	28	31	31	31	31	31	31	30	31	30
MED	14	14	14	14	15	17	15	31	36	37	38	39	54	52	44	44	33	18	14	14	15	14	14	14
U Q	17	17	17	17	17	21	17	39	42	44	51	55	59	54	53	47	42	21	15	17	17	18	17	15
L Q	14	14	14	14	14	14	14	18	33	34	36	35	40	39	36	33	30	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Yamagawa

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

HOURLY VALUES OF fEs AT Yamagawa

AUG. 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	58	43	41	56	59	44	46	33	46	48	51	G	G	49	69	64	66	56	78	59	70	54	32	36
2	41	G	24	36	59	52	G	38	73	45	78	46	85	G	55	78	60	87	81	53	59	G	58	60
3	48	55	40	26	24	G	34	55	92	60	73	52	G	47	55	G	G	G	G	G	G	G	G	44
4	56	58	30	31	40	41	30	G	G	51	G	52	G	G	G	G	65	79	173	92	82	56	73	70
5	33	G	G	G	G	G	G	37	50	52	54	65	62	78	59	56	G	46	52	45	36	36	29	G
6	69	72	33	37	G	G	34	44	48	51	54	56	47	G	G	43	69	55	138	33	50	33	24	39
7	47	27	G	G	G	G	G	36	50	56	72	G	47	68	53	61	72	80	72	58	59	69	58	70
8	G	G	G	32	G	23	G	G	G	48	46	G	45	B	G	G	G	G	G	26	G	G	G	G
9	32	G	G	G	G	G	G	33	G	G	44	56	66	48	86	48	51	58	37	29	57	40	50	49
10	G	48	34	32	G	26	27	35	G	G	G	48	G	G	G	51	78	80	39	50	67	44	33	30
11	30	G	G	G	G	G	G	36	G	58	49	54	G	G	G	G	49	54	65	41	G	G	32	29
12	25	32	30	30	30	36	35	61	51	50	55	59	71	78	76	65	52	54	G	41	G	39	32	32
13	G	29	51	G	G	G	G	40	58	118	95	70	62	54	60	G	42	60	51	50	50	59	33	G
14	30	25	G	G	G	G	G	49	54	63	77	G	G	G	G	G	G	G	36	30	36	30	57	54
15	50	47	44	30	G	G	G	36	40	62	79	79	66	61	52	43	50	66	62	46	58	24	G	44
16	47	29	34	28	G	G	40	43	45	68	71	47	G	G	G	49	54	38	G	34	54	50	73	31
17	G	44	G	30	G	G	28	40	48	50	65	G	G	G	G	78	54	58	49	52	37	50	49	34
18	36	30	B	G	G	G	G	36	47	72	B	76	59	62	66	57	64	70	78	78	60	57	73	57
19	44	30	32	G	G	G	G	G	62	G	76	56	54	75	G	G	G	45	51	56	33	40	G	G
20	30	30	30	29	39	G	G	36	44	G	50	52	47	G	G	69	58	69	84	152	79	35	36	G
21	30	34	36	39	45	35	30	39	44	51	44	58	G	G	G	53	60	51	54	34	30	40	36	39
22	34	G	28	G	G	G	G	34	46	52	57	50	G	B	G	44	58	48	38	40	50	46	30	59
23	34	46	27	G	29	G	G	40	G	49	53	64	G	80	54	70	83	65	69	53	40	67	49	G
24	G	34	24	40	36	36	G	35	46	47	60	61	B	B	56	55	54	46	38	35	49	70	36	58
25	28	G	27	G	G	33	29	G	50	55	64	G	G	G	53	56	52	59	48	58	68	47	30	60
26	28	33	34	G	24	31	G	36	73	51	49	64	64	79	71	61	48	53	88	73	39	25	58	40
27	51	27	40	73	29	26	G	44	41	G	68	71	67	G	46	G	G	G	33	36	60	60	60	49
28	36	33	36	32	46	34	31	G	G	57	45	44	61	63	57	61	69	44	G	40	34	46	40	39
29	29	G	G	G	34	G	G	G	G	G	G	G	G	G	G	G	G	38	30	30	43	48	33	32
30	28	G	30	31	26	26	25	G	G	G	G	G	B	G	46	46	G	50	92	94	68	34	26	40
31	G	34	25	G	G	G	G	40	44	50	47	G	B	G	G	G	40	50	131	124	60	72	50	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	30	31	31	31	31	31	31	31	30	31	28	28	31	31	31	31	31	31	31	31	31	31
MED	32	30	30	28	G	G	G	36	46	51	54	52	46	G	46	49	52	54	51	46	50	44	36	39
U Q	47	43	34	32	34	33	30	40	50	57	71	61	62	62	57	61	64	65	78	58	60	56	57	54
L Q	28	G	G	G	G	G	G	33	G	45	46	G	G	G	G	G	G	45	36	34	36	33	30	29

HOURLY VALUES OF fmin AT Yamagawa

AUG. 2012

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	15	14	16	15	16	15	16	22	30	54	59	40	39	27	27	18	14	15	15	15	14	15
2	15	14	16	15	18	15	15	21	18	26	36	81	46	62	39	28	26	18	15	14	14	20	14	14
3	14	15	14	16	16	15	15	15	16	20	32	35	56	27	29	27	18	14	14	18	14	15	17	14
4	14	14	15	14	14	14	16	14	17	18	20	35	27	56	52	18	15	14	16	15	15	15	14	14
5	14	16	15	17	15	14	21	14	20	30	30	32	32	28	42	28	26	20	17	14	15	15	16	39
6	16	17	15	15	15	14	16	15	15	22	26	28	27	66	65	66	28	24	14	14	14	15	15	14
7	14	15	16	16	15	22	21	15	15	22	18	54	38	35	36	33	17	15	14	14	15	15	14	15
8	15	16	21	14	15	15	23	14	15	18	22	18	22	B	55	20	16	18	14	15	15	16	17	17
9	15	17	16	15	14	15	24	17	18	43	44	40	43	40	38	37	22	18	15	14	17	15	14	15
10	15	14	15	15	16	16	14	14	35	18	24	40	30	59	49	26	21	17	14	15	15	15	14	15
11	15	17	15	16	15	17	20	15	20	20	23	33	101	71	53	27	21	16	14	15	15	15	14	14
12	16	15	14	14	15	14	14	14	16	22	27	36	36	36	34	26	18	18	14	15	15	14	14	15
13	14	15	15	15	18	17	20	14	14	21	23	28	34	30	28	27	18	17	14	15	15	16	15	30
14	15	16	15	17	23	18	20	15	18	27	24	22	53	28	55	17	18	18	15	14	15	15	14	15
15	16	15	15	15	17	16	17	16	17	27	22	27	20	20	20	17	17	14	14	14	15	15	15	14
16	14	14	14	14	16	20	15	15	17	18	20	28	28	60	22	18	14	14	14	14	15	15	15	14
17	15	14	16	15	14	14	15	18	15	28	33	56	52	21	59	18	16	17	14	14	14	15	16	15
18	15	15	B	17	17	14	18	18	15	18	B	37	38	39	34	32	29	17	15	16	16	15	15	14
19	14	15	14	15	16	15	29	15	35	18	29	33	28	27	23	20	16	14	15	14	15	15	16	15
20	15	15	15	15	15	16	21	14	15	15	17	30	38	33	50	23	20	15	16	15	16	15	14	15
21	14	15	14	14	16	15	15	15	15	18	66	33	30	23	20	17	15	17	15	15	14	16	20	15
22	14	17	16	16	17	18	15	14	16	18	23	23	22	B	27	22	18	15	14	14	15	16	15	16
23	16	15	14	16	14	15	14	14	15	23	30	36	71	35	21	21	20	14	15	14	14	15	14	14
24	18	15	16	16	14	14	18	14	21	18	33	35	B	B	28	22	15	14	17	14	15	15	16	15
25	14	15	15	15	16	15	14	14	14	23	24	27	56	58	23	22	16	15	14	16	15	15	16	14
26	15	16	14	15	15	15	18	14	15	18	20	30	21	34	35	35	23	18	15	15	14	15	15	15
27	15	15	14	15	15	15	17	14	17	20	36	36	35	54	38	18	18	17	15	14	15	15	15	15
28	16	15	15	15	14	16	14	15	34	23	24	29	34	36	33	29	21	21	16	17	15	15	16	18
29	14	15	16	15	14	66	18	14	15	20	48	60	62	52	54	39	20	17	14	15	17	15	15	15
30	15	14	15	16	15	15	17	18	17	20	24	27	B	24	21	37	21	15	18	14	15	15	15	15
31	81	14	17	17	21	15	22	14	21	21	36	28	B	60	24	22	17	14	15	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	31	31	31	30	31	28	28	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	17	15	16	20	25	33	36	36	35	26	18	17	15	14	15	15	15	15
U Q	15	16	16	16	16	16	20	15	18	23	33	37	52	57	50	29	21	18	15	15	15	15	16	15
L Q	14	14	14	15	15	15	15	14	15	18	23	28	28	28	24	20	16	14	14	14	14	15	14	14

HOURLY VALUES OF foF2 AT Okinawa

AUG. 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	82	82	78	62	A	A	49	77	85	A	66	68	81	90	108	112	117	121	132	130	81	A	72	68
2	66	52	66	67	59	47	50	66	76	84	70	86	107	121	124	122	118	110	92	84	A	54	76	77
3	52	53	72	72	66	52	54	84	84	A	A	78	94	107	118	122	108	111	111	100	86	77	80	74
4	67	53	81	66	55	50	52	80	80	64	65	88	105	110	120	118	111	106	102	107	88	72	67	78
5	81	76	67	60	61	67	78	66	67	80	90	94	102	108	121	120	131	131	131	118	112	107	112	106
6	110	107	N	88	72	60	64	73	87	70	A	81	90	106	102	98	110	116	102	84	A	77	76	76
7	76	54	75	73	66	54	61	78	90	90	91	80	91	88	A	A	105	100	94	87	82	76	82	C
8	C	C	C	C	C	C	C	C	C	C	75	76	83	86	103	108	104	110	110	87	78	76	73	71
9	77	85	84	63	58	54	56	78	72	69	67	72	75	85	98	105	98	100	107	108	87	74	72	53
10	72	82	73	59		52	63	77	67	64	71	87	A	85	87	98	98	118	109	109	107	104	88	87
11	88	105	88	79	67	63	66	92	87	82	80	A	A	73	82	64	90	96	102	87	85	85	78	54
12	72	66	52	52	54	53	51	81	77	66	71	76	88	76	56	82	A	111	111	89	78	76	67	54
13	53	58	52	52	55	48	52	70	76	A	A	A	73	90	100	98	106	107	110	88	67	66	54	51
14	49	53	52	43	47	47	52	64	75	72	81	90	111	122	120	116	107	98	88	102	88	74	A	A
15	53	81	78	80	76	58	54	65	70	76	A	90	105	106	101	96	98	106	111	87	52	48	53	51
16	52	52	52	48	44	47	54	66	68	A	72	A	97	98	92	103	111	110	96	87	77	53	54	54
17	52	52	47	52	58	44	44	67	71	65	62	82	97	84	88	82	84	87	97	88	A	61	53	51
18	51	48	48	47	45	29	38	52	52	60	B	A	A	91	106	111	109	A	A	126	110	80	A	52
19	53	63	66	61	52	43	45	73	67	55		65	116	126	126	126	127	131	132	119	105	106	108	85
20	63	109	108	80	46	44	44	72	109	85	72	74	78	76	80	86	82	90	106	96	54	A	53	52
21	52	51	53	52	43	A	44	A	62	A	A	71	87	100	98	102	97	88	88	A	67	60	A	A
22	52	54	49	46	46	44	49	76	81	84	A	A	82	85	100	110	128	131	133	N	119	108	66	
23	63	A	64	47	39	38	39	75	88	80	61		63	72	78	81	90	97	104	100	A	A	52	51
24	A	51	48	52	49	48	60	72	69	53	65	66	75	C	C	C	C	C	90	81	52	51	47	52
25	52	51	45	41	42	40	50	67	67	72	72	71	85	88	87	95	95	96	103	100	80	54	52	52
26	52	A	52	57	36	36	53	71	49	74	79	A	77	87	87	100	102	102	110	102	81	52	40	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	97	101	102	96	88	101	110	106	77	64	72
28	67	74	72	60	54	54	60	73	77	78	80	80	81	90	94	107	115	116	132	131	110	87	73	72
29	80	79	77	55	40	34	40	67	72	76	80	76	87	102	111	104	100	105	110	132	111	81	54	53
30	65	66	61	66	52	37	48	67	72	66	73	82	105	116	109	118	125	121	124	130	128	78	67	54
31	67	66	71	67	54	47	50	73	100	92	74	87	101	108	107	127	131	129	149	N	84	93	66	87
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	29	27	27	29	28	29	24	22	23	27	30	29	29	29	29	30	28	27	28	28	26
MED	64	63	66	60	54	47	52	72	75	73	72	80	88	90	101	104	106	107	108	100	85	76	67	54
U Q	74	81	76	67	59	54	58	77	84	81	80	87	102	107	110	117	116	117	111	114	107	83	76	76
L Q	52	52	52	52	45	43	46	67	67	65	67	72	81	85	87	97	97	97	101	87	78	60	53	52

HOURLY VALUES OF fEs AT Okinawa

AUG. 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	45	26	36	54	56	55	41	35	43	78	66	G	G	G	79	78	83	70	70	40	60	69	48	59
2	G	G	G	G	G	30	49	39	42	54	66	66	67	48	90	G	G	G	48	46	94	G	34	32
3	59	40	G	G	G	52	34	38	46	133	144	68	66	62	G	G	G	39	46	54	G	G	G	G
4	70	56	57	32	33	27	35	36	58	49	48	63	56	G	77	69	140	53	44	60	40	36	46	51
5	58	58	G	33	28	29	G	41	71	68	56	55	G	58	60	61	86	52	61	G	26	G	G	G
6	28	50	43	56	G	35	G	G	47	60	69	58	78	G	50	60	57	60	68	83	112	58	46	31
7	27	33	G	G	G	G	G	38	65	67	56	83	124	84	93	146	76	66	54	34	27	34	50	C
8	C	C	C	C	C	C	C	C	C	C	G	47	G	G	G	G	52	G	41	46	43	44	30	26
9	26	G	G	G	G	G	G	36	G	G	53	58	66	72	61	71	66	72	49	58	77	34	41	33
10	46	46	36	G	G	G	39	G	G	48	G	G	110	73	67	58	56	89	102	104	77	34	33	27
11	G	G	G	G	G	G	26	36	59	45	71	56	71	56	53	50	51	41	70	61	43	G	26	34
12	38	G	27	32	36	24	28	58	59	48	52	55	87	74	62	70	180	165	44	49	G	28	50	54
13	53	34	27	G	G	G	G	37	52	100	88	59	57	G	50	G	G	54	51	53	50	32	32	G
14	G	G	G	G	G	G	G	43	51	94	66	G	G	G	G	48	G	38	46	35	51	59	58	42
15	40	33	G	G	G	G	G	33	40	53	77	65	53	76	61	53	48	62	48	50	36	28	G	G
16	26	44	G	59	39	28	G	35	38	94	50	90	82	G	52	G	G	50	48	60	40	29	28	58
17	46	G	G	41	49	G	G	G	40	53	51	50	G	G	G	G	50	39	G	54	72	39	38	43
18	35	37	G	G	G	G	G	G	40	46	B	91	115	84	55	86	78	134	114	116	67	49	94	49
19	34	39	28	G	G	G	G	34	G	54	G	59	82	52	58	60	51	45	36	26	G	G	54	50
20	G	32	G	11	G	G	46	39	42	48	52	58	G	G	G	46	49	54	46	46	40	58	G	32
21	34	28	G	G	27	34	30	92	94	90	76	G	54	G	54	52	54	67	65	84	59	51	69	70
22	57	43	34	31	26	G	G	G	52	68	87	52	61	75	59	65	82	69	72	60	G	G	G	G
23	40	58	40	G	40	G	G	38	39	44	50	G	G	56	57	50	47	55	40	48	79	46	29	38
24	73	36	G	25	G	G	G	35	49	57	48	G	G	C	C	C	C	C	32	24	22	35	30	34
25	54	33	27	26	36	26	30	53	60	49	48	52	G	G	G	G	G	G	35	G	G	G	34	G
26	41	36	29	28	26	G	25	38	54	64	68	70	61	73	G	57	83	68	67	58	34	33	51	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	56	91	78	74	44	46	43	27	28	47	45
28	37	34	26	28	35	28	34	41	37	59	46	G	G	G	G	49	50	68	44	G	35	G	G	G
29	G	G	G	G	G	G	G	G	G	G	G	G	G	48	56	52	65	49	53	43	50	40	24	G
30	25	G	G	G	G	G	G	52	G	48	G	G	53	G	57	57	55	56	56	29	26	48	G	G
31	G	G	G	G	G	G	G	G	40	G	51	53	50	G	53	52	44	38	37	39	60	59	50	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	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	31	31	31	31	31	29
MED	37	33	G	G	G	G	G	36	43	54	52	55	55	48	56	52	53	54	48	48	40	34	34	33
U Q	49	41	28	31	34	28	32	40	56	68	68	63	71	72	61	65	76	68	65	60	60	48	50	49
L Q	25	G	G	G	G	G	G	17	38	48	48	G	G	G	G	46	47	41	44	35	26	G	24	G

HOURLY VALUES OF fmin AT Okinawa

AUG. 2012

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

DAY \ HOUR	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	14	15	16	14	15	15	14	18	23	28	91	55	54	40	39	34	21	16	14	14	14	14	15
2	18	20	18	17	21	15	14	15	21	24	39	38	39	56	42	54	45	22	16	15	15	17	14	14
3	14	15	15	20	18	15	14	14	18	20	30	30	33	32	30	52	20	17	14	15	15	15	18	20
4	15	14	14	14	14	14	14	14	14	18	71	27	43	58	42	40	23	14	14	14	14	14	16	14
5	14	15	14	14	14	14	17	15	21	28	30	36	53	42	42	30	29	22	15	17	15	14	20	21
6	16	18	17	14	17	14	16	18	17	33	41	39	41	60	39	39	36	20	18	14	14	15	14	15
7	16	20	15	17	14	16	17	17	16	22	39	40	40	38	38	41	36	21	16	14	14	14	14	C
8	C	C	C	C	C	C	C	C	C	C	22	54	23	62	54	28	23	24	15	15	15	15	15	15
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21	14	14	15	18	14	14	14	14	17	21	29	44	32	52	39	34	22	17	15	17	15	15	14	14
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27	C	C	C	C	C	C	C	C	C	C	C	C	C	44	39	33	21	18	14	14	14	15	15	15
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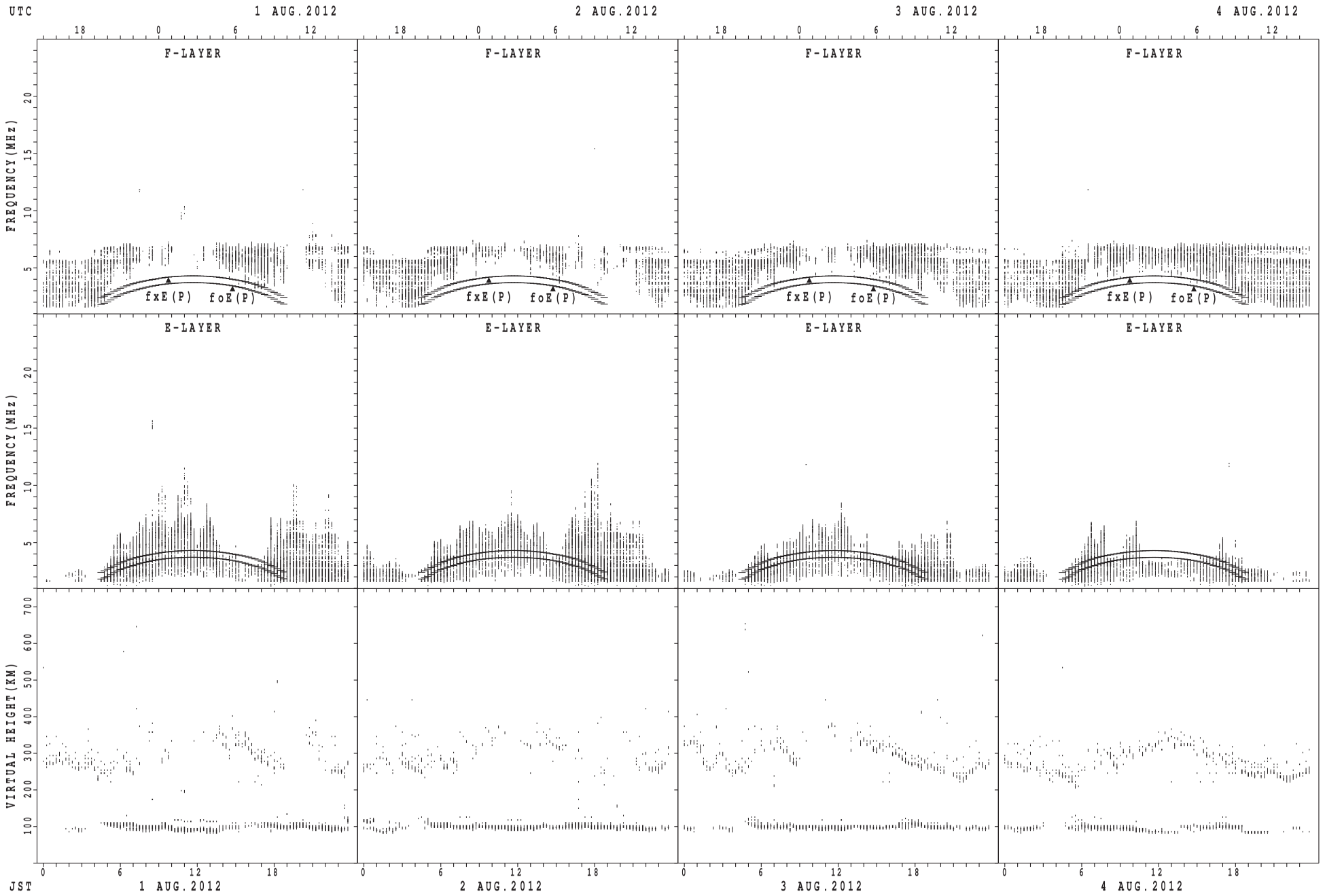
CNT	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	31	31	31	31	31	29
MED	15	15	15	15	14	15	15	14	17	22	33	38	38	42	39	34	22	18	15	15	15	15	15	15
U Q	16	16	16	17	17	17	17	15	20	30	41	44	43	54	46	39	30	20	16	15	15	15	16	20
L Q	14	14	15	14	14	14	14	14	15	20	26	32	29	38	38	29	21	17	14	14	14	14	14	14

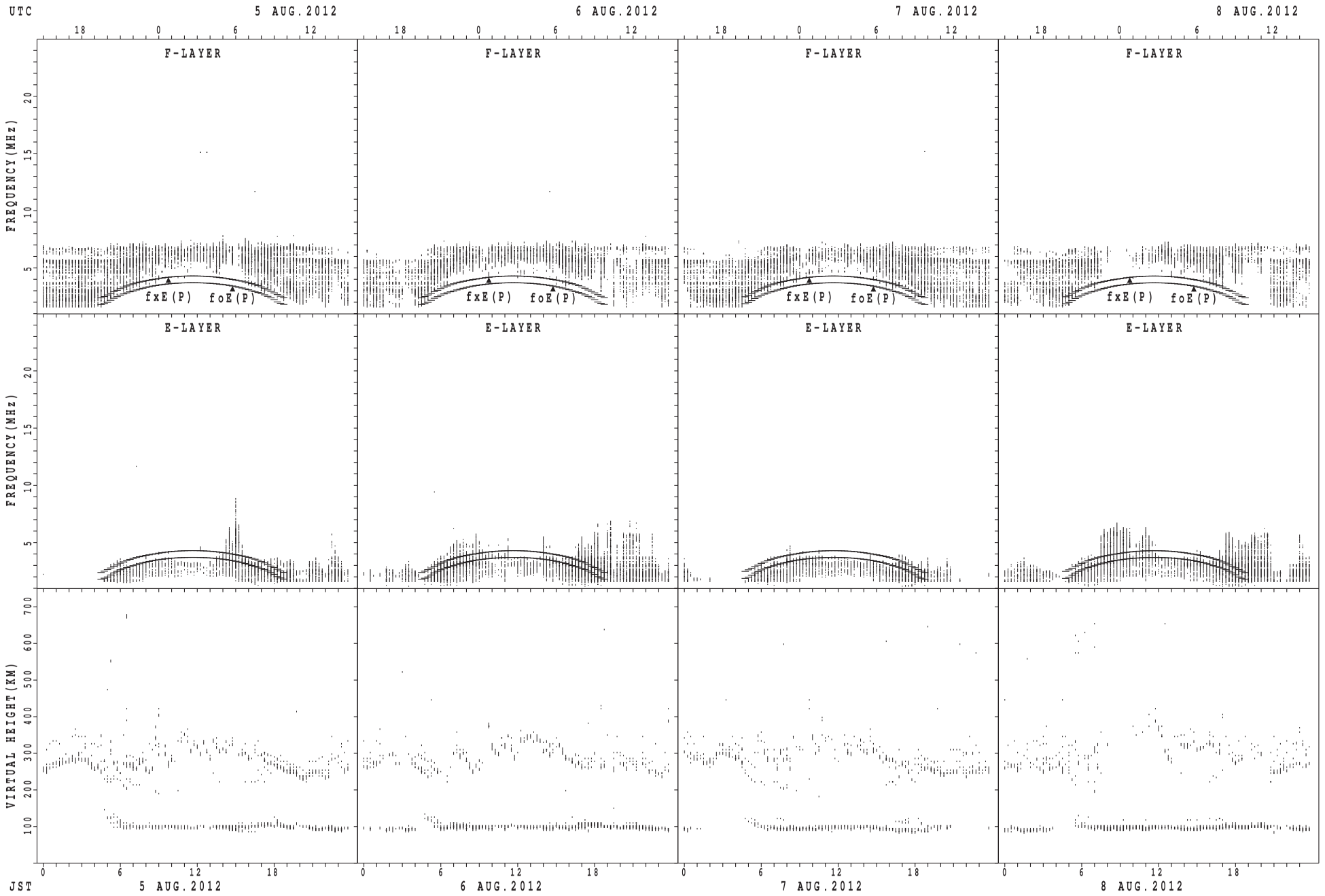
SUMMARY PLOTS AT Wakkanai



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

16

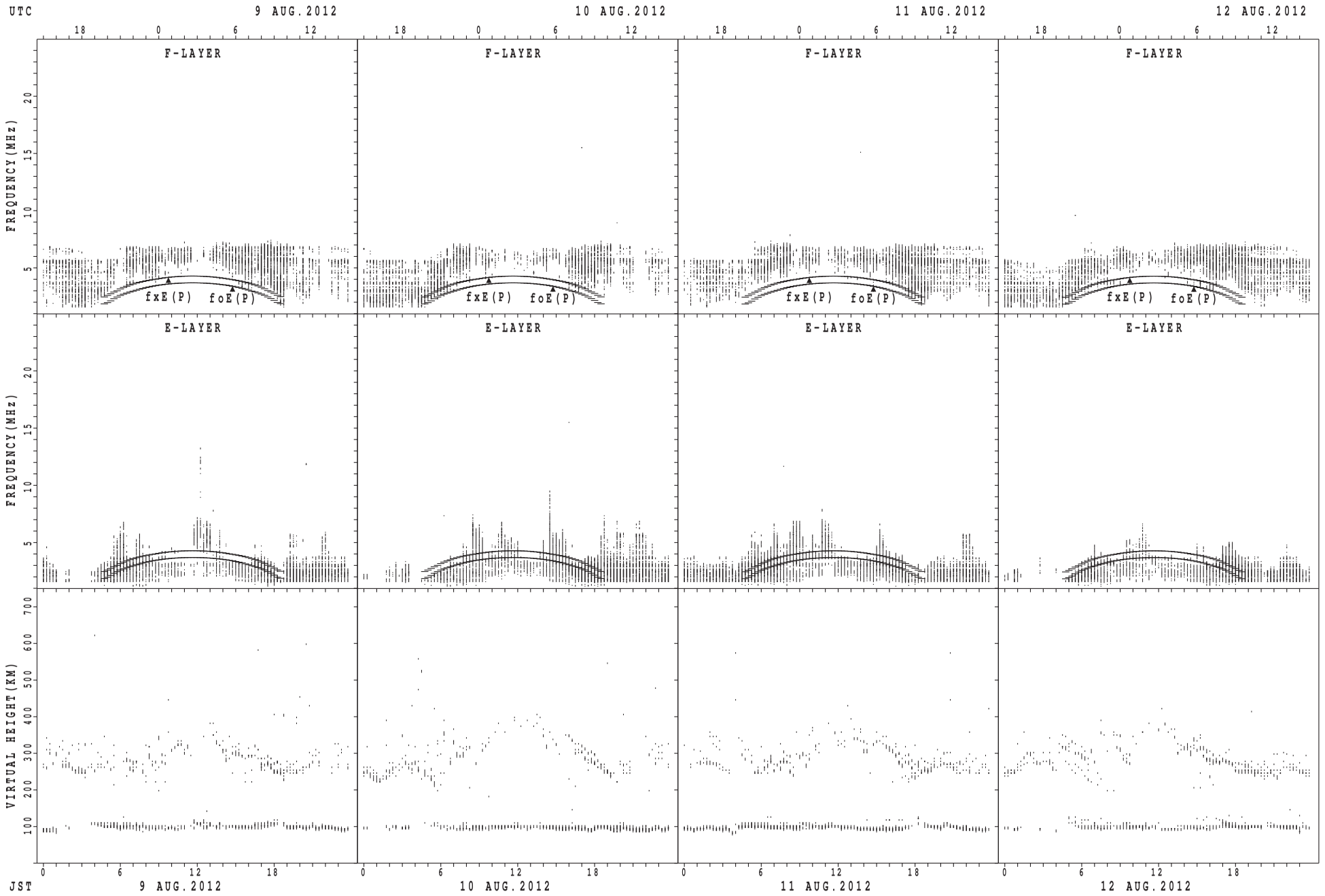
SUMMARY PLOTS AT Wakkanai



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

17

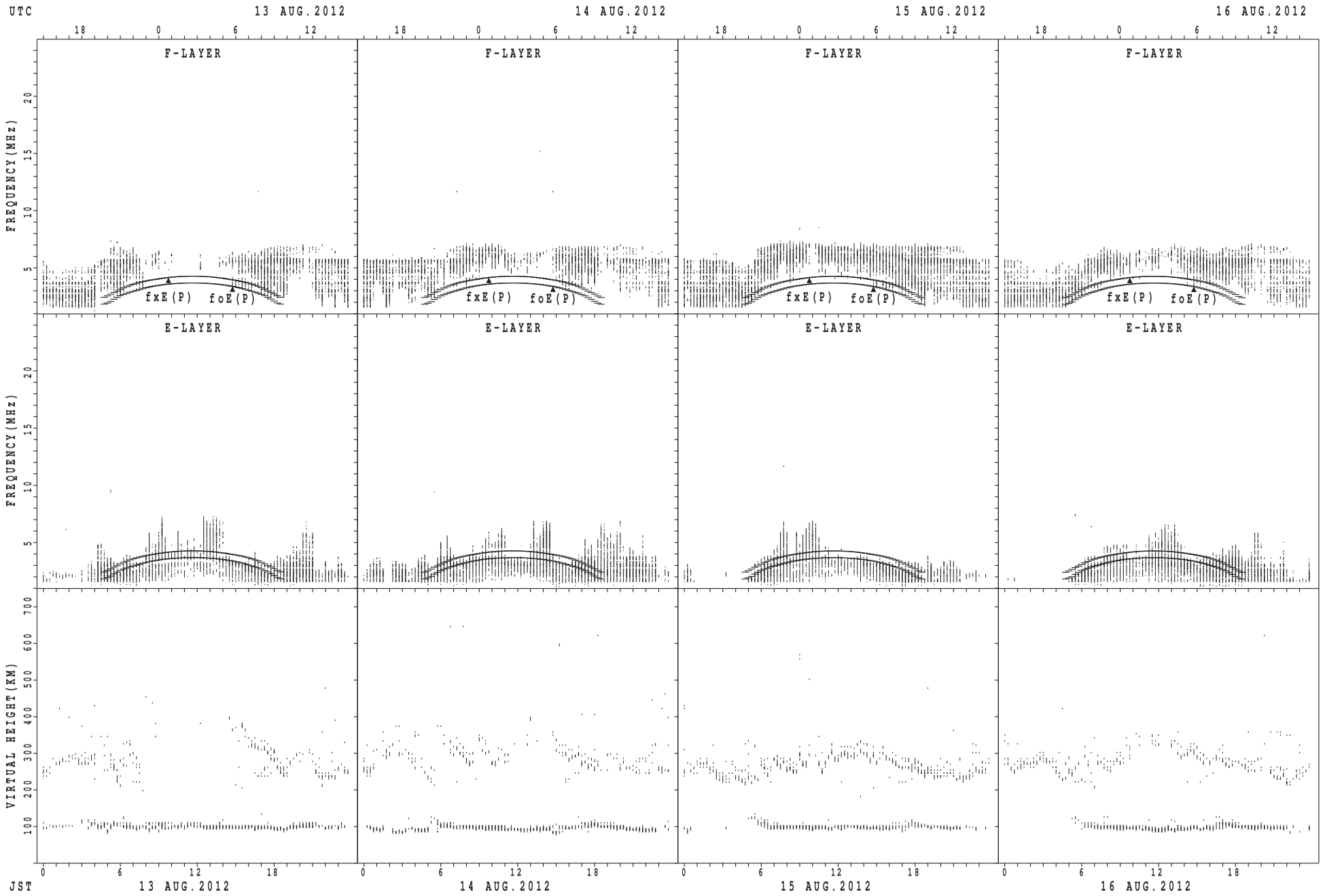
SUMMARY PLOTS AT Wakkanai



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

18

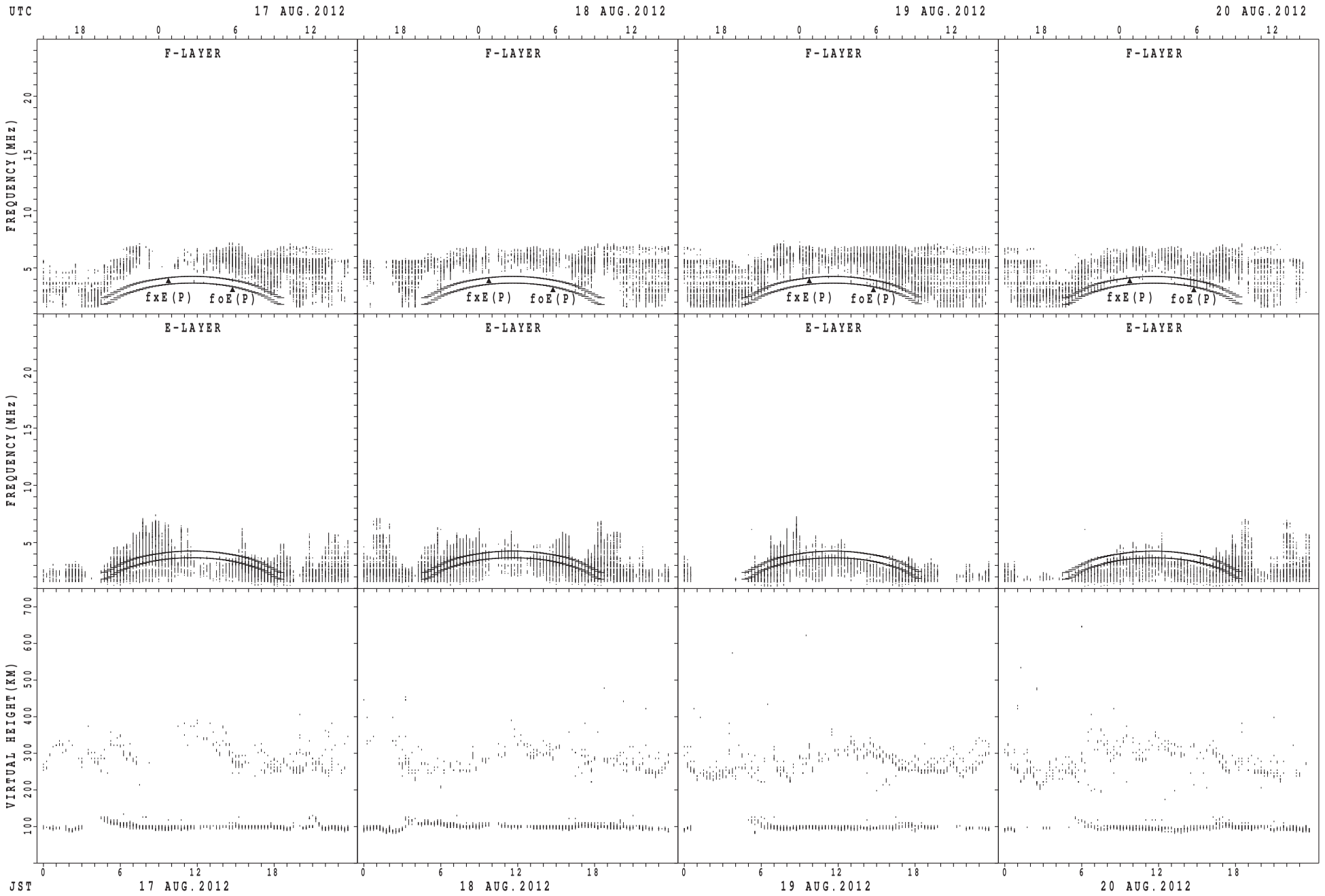
SUMMARY PLOTS AT Wakkanai



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

19

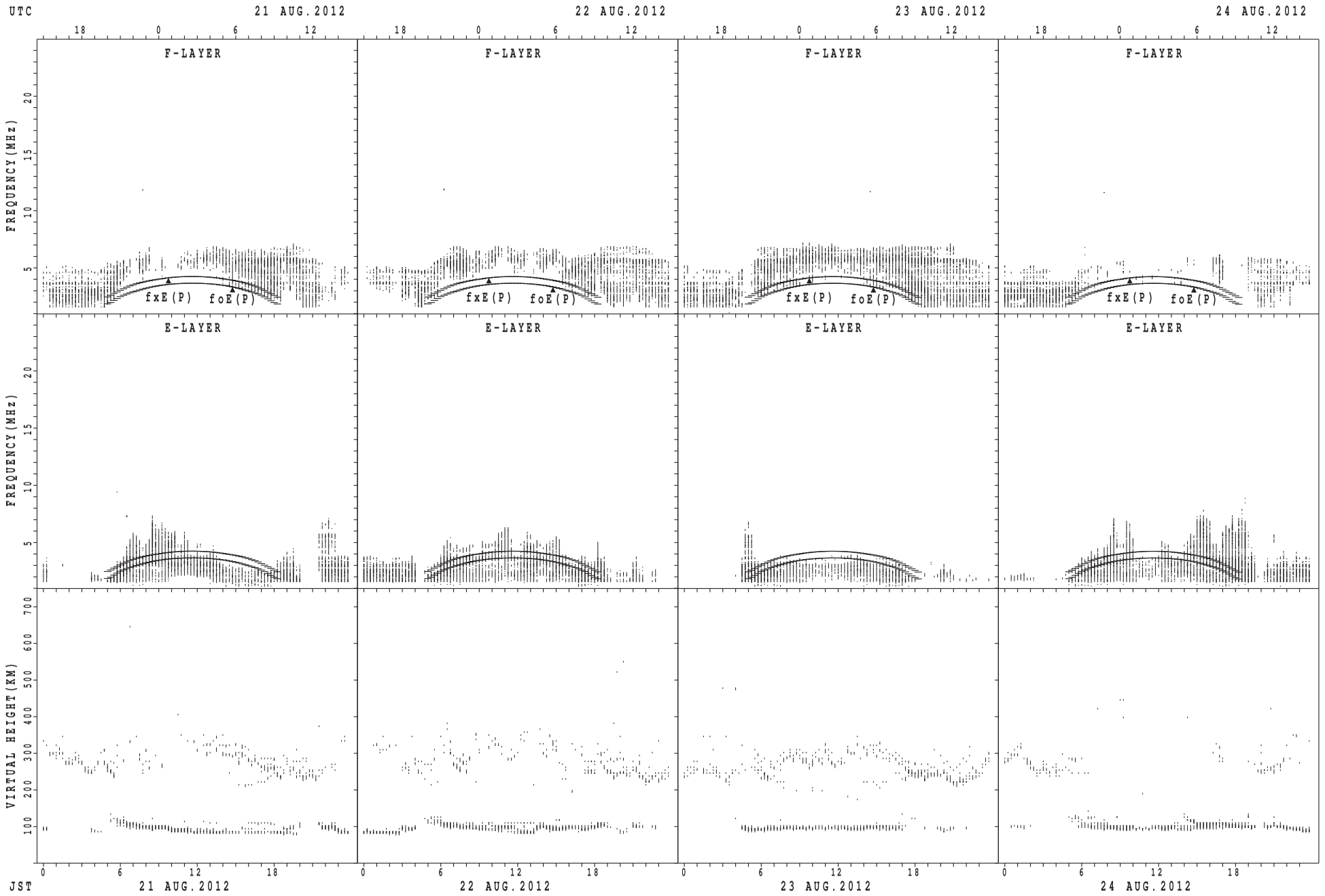
SUMMARY PLOTS AT Wakkanai



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

20

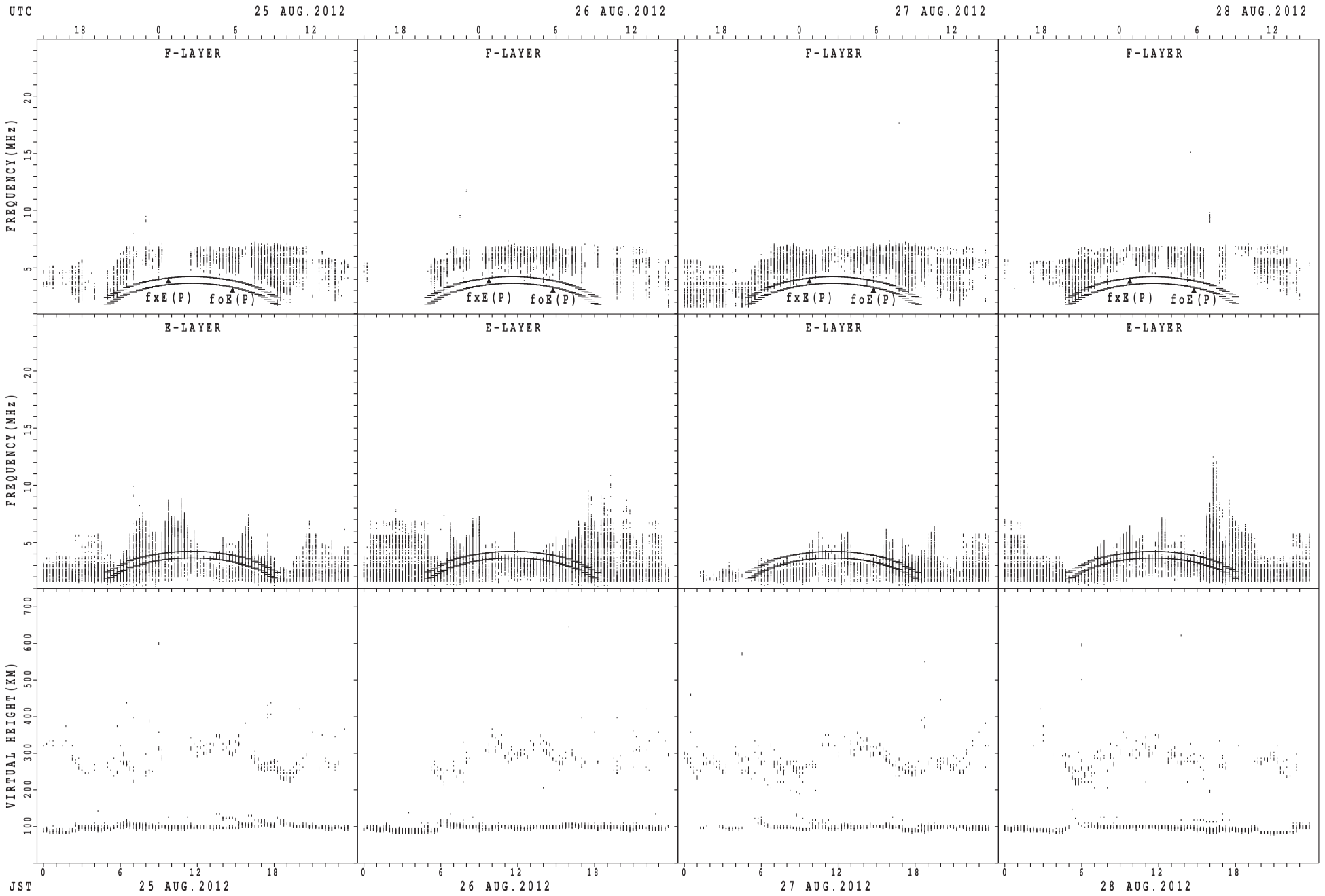
SUMMARY PLOTS AT Wakkanai



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

21

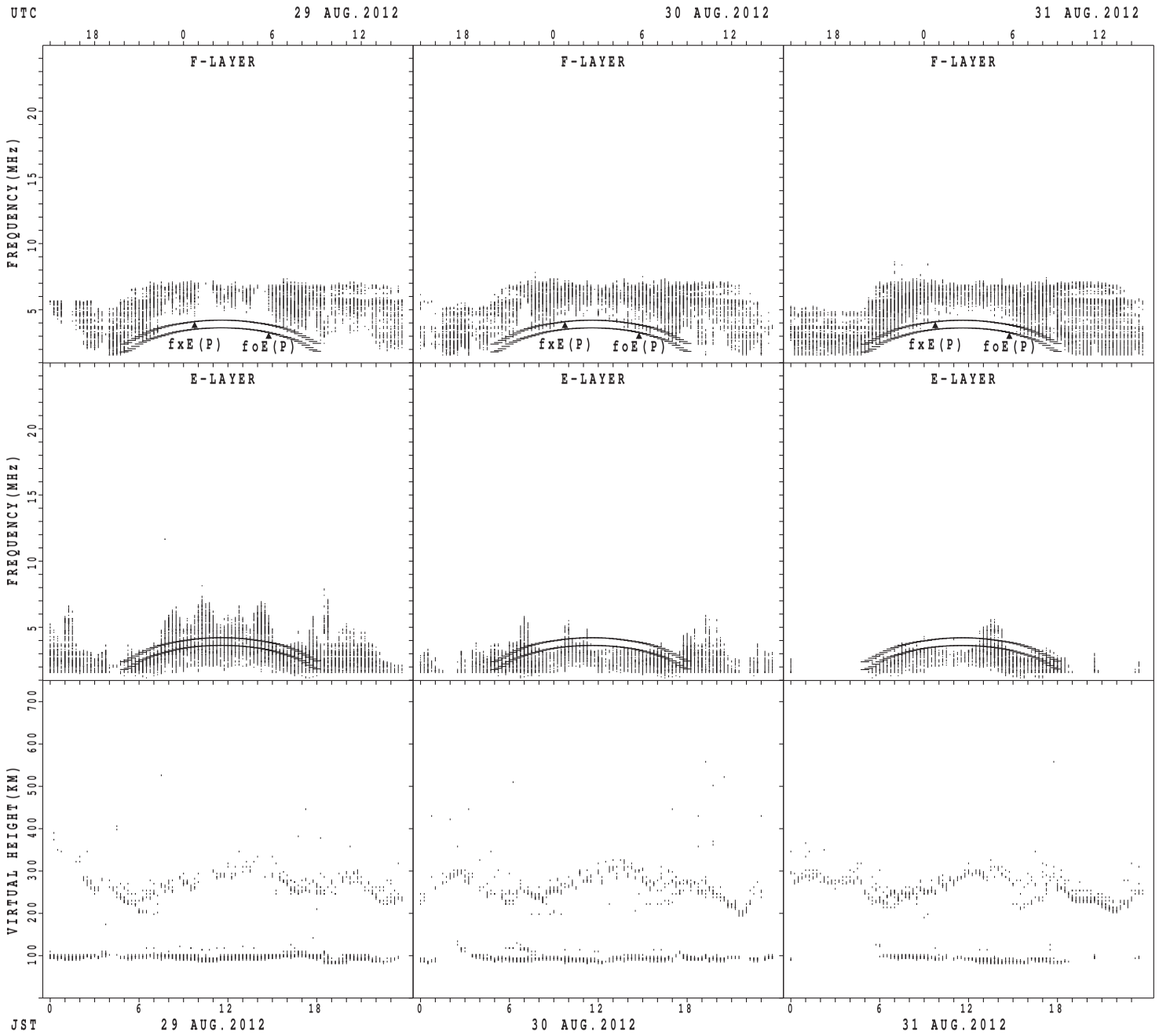
SUMMARY PLOTS AT Wakkanai



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

22

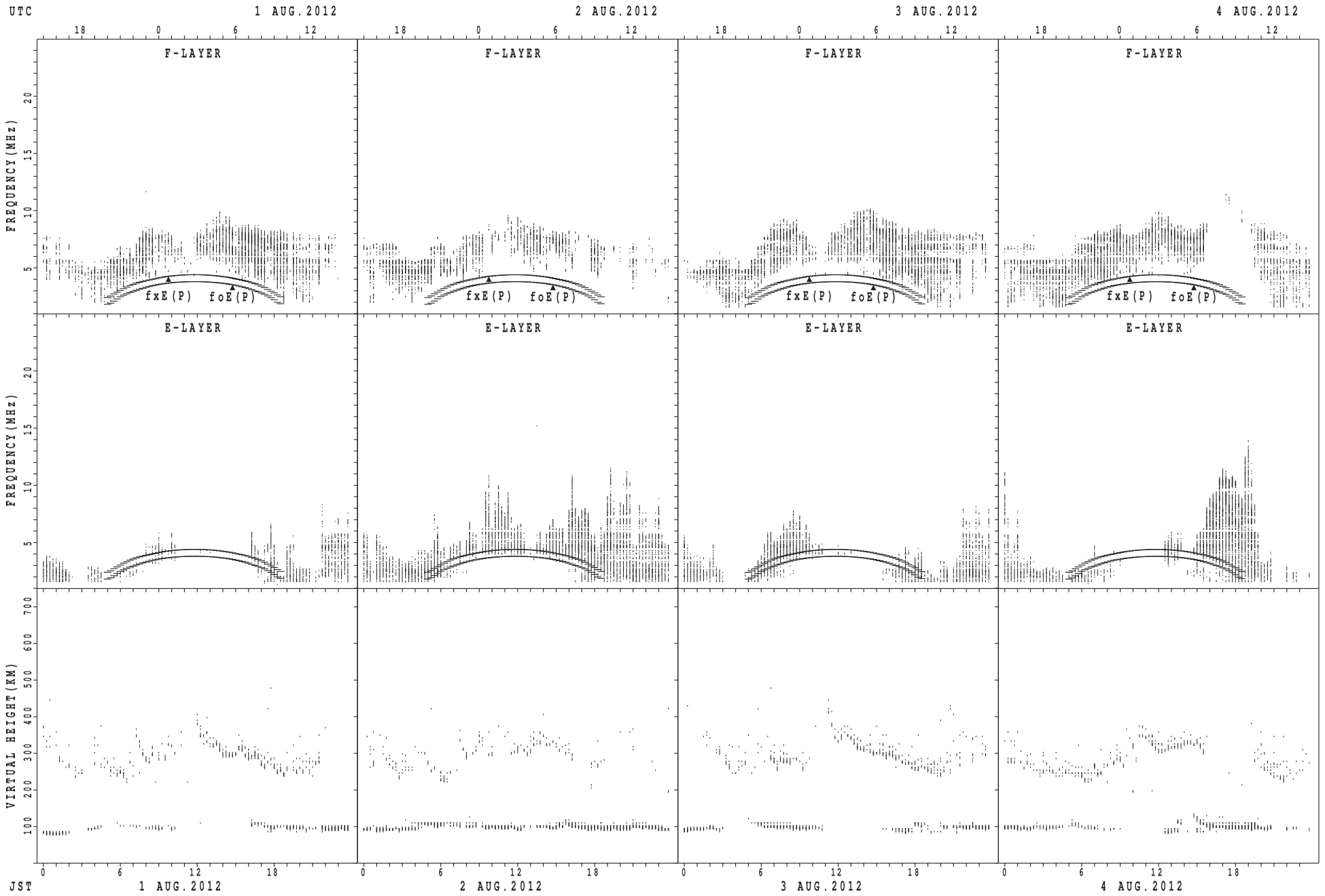
SUMMARY PLOTS AT Wakkanai



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

23

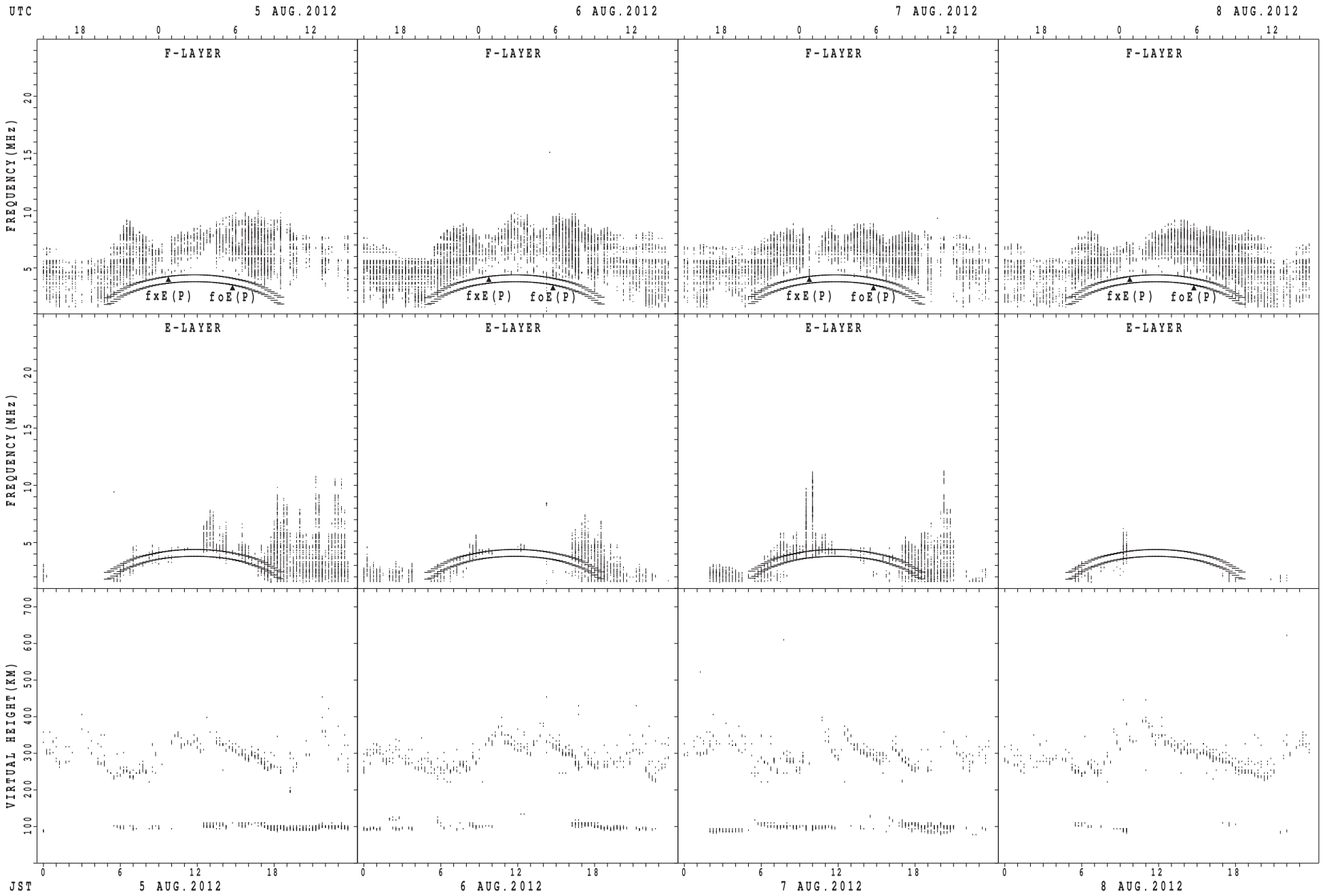
SUMMARY PLOTS AT Kokubunji



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

24

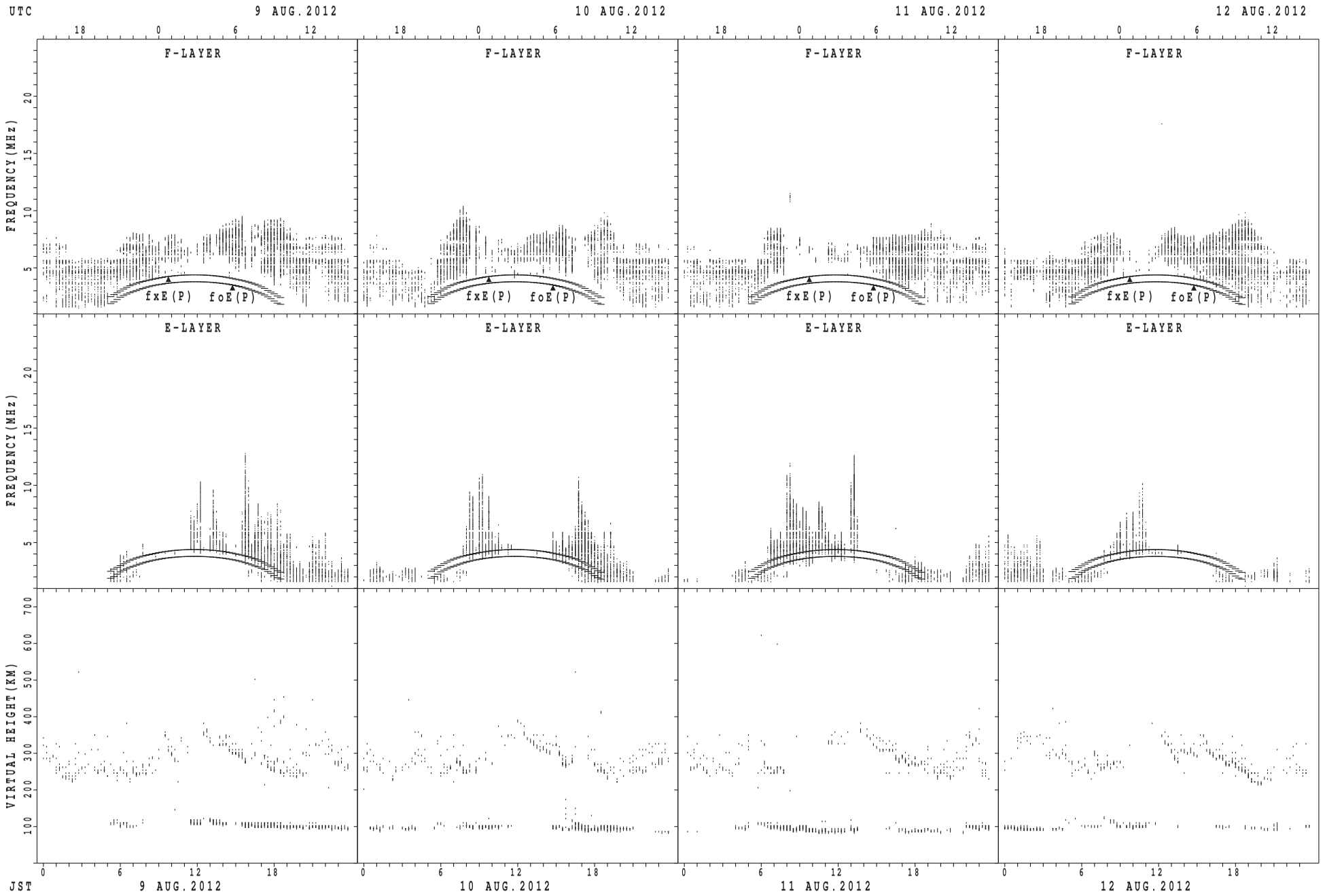
SUMMARY PLOTS AT Kokubunji



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

25

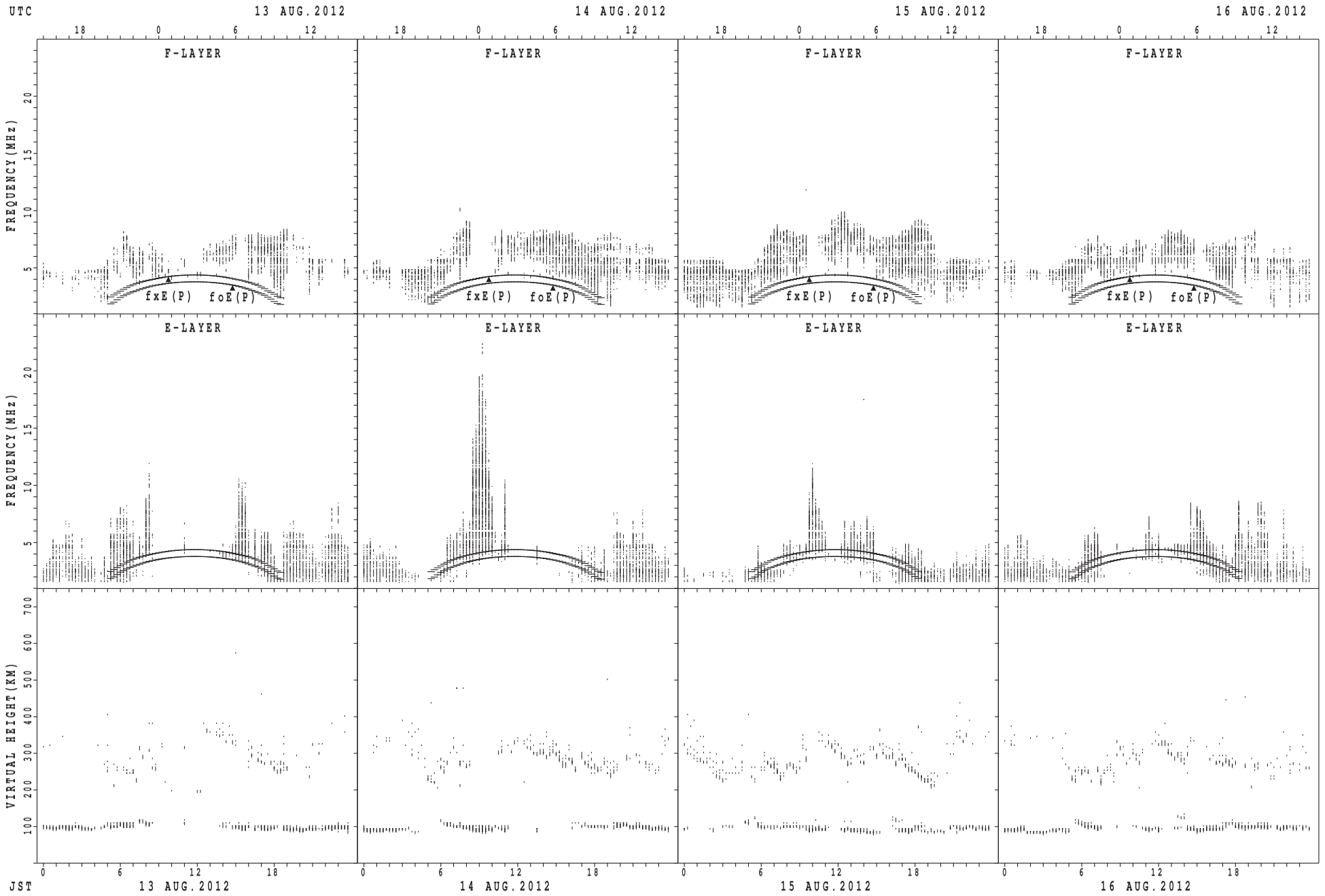
SUMMARY PLOTS AT Kokubunji



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

26

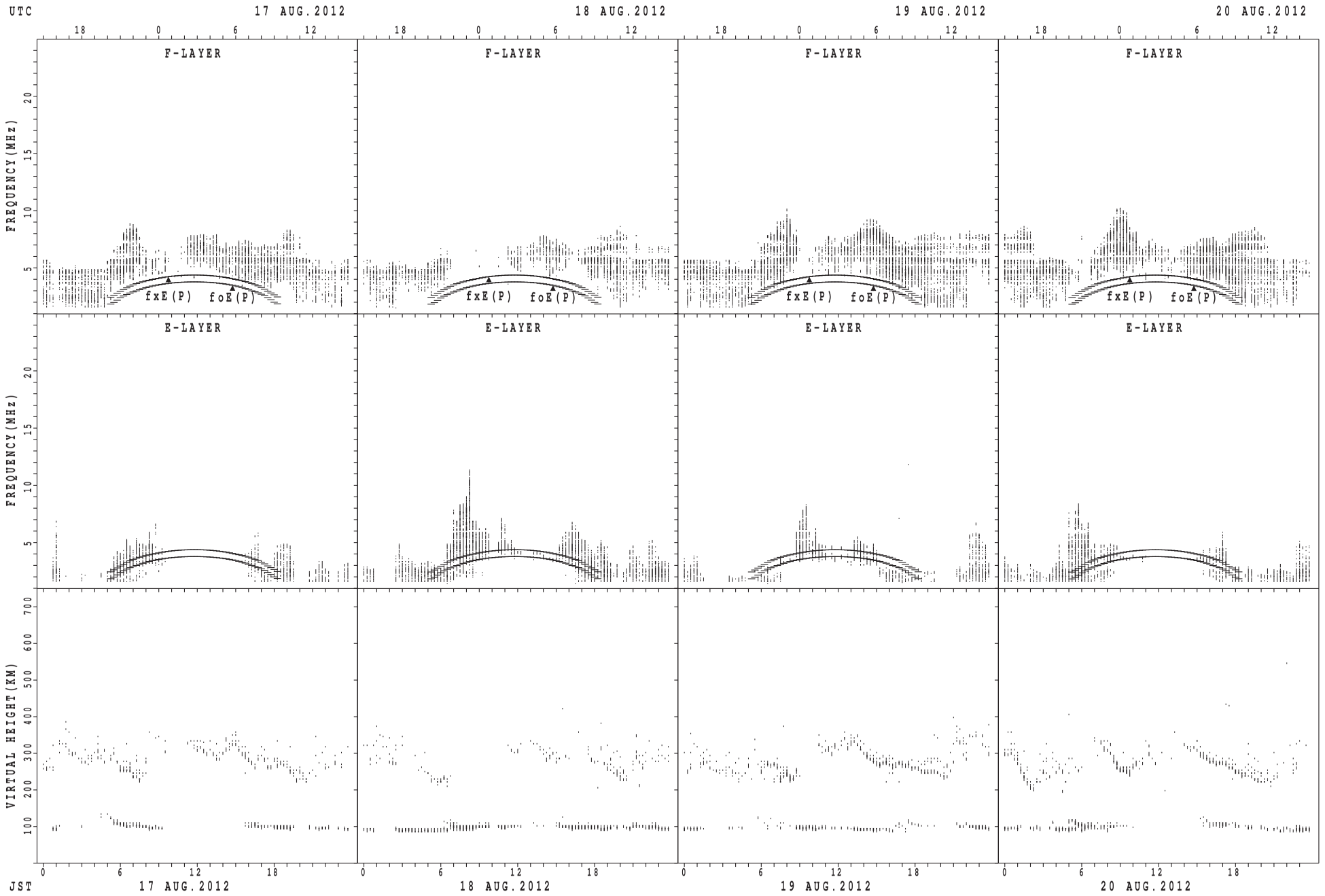
SUMMARY PLOTS AT Kokubunji



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

27

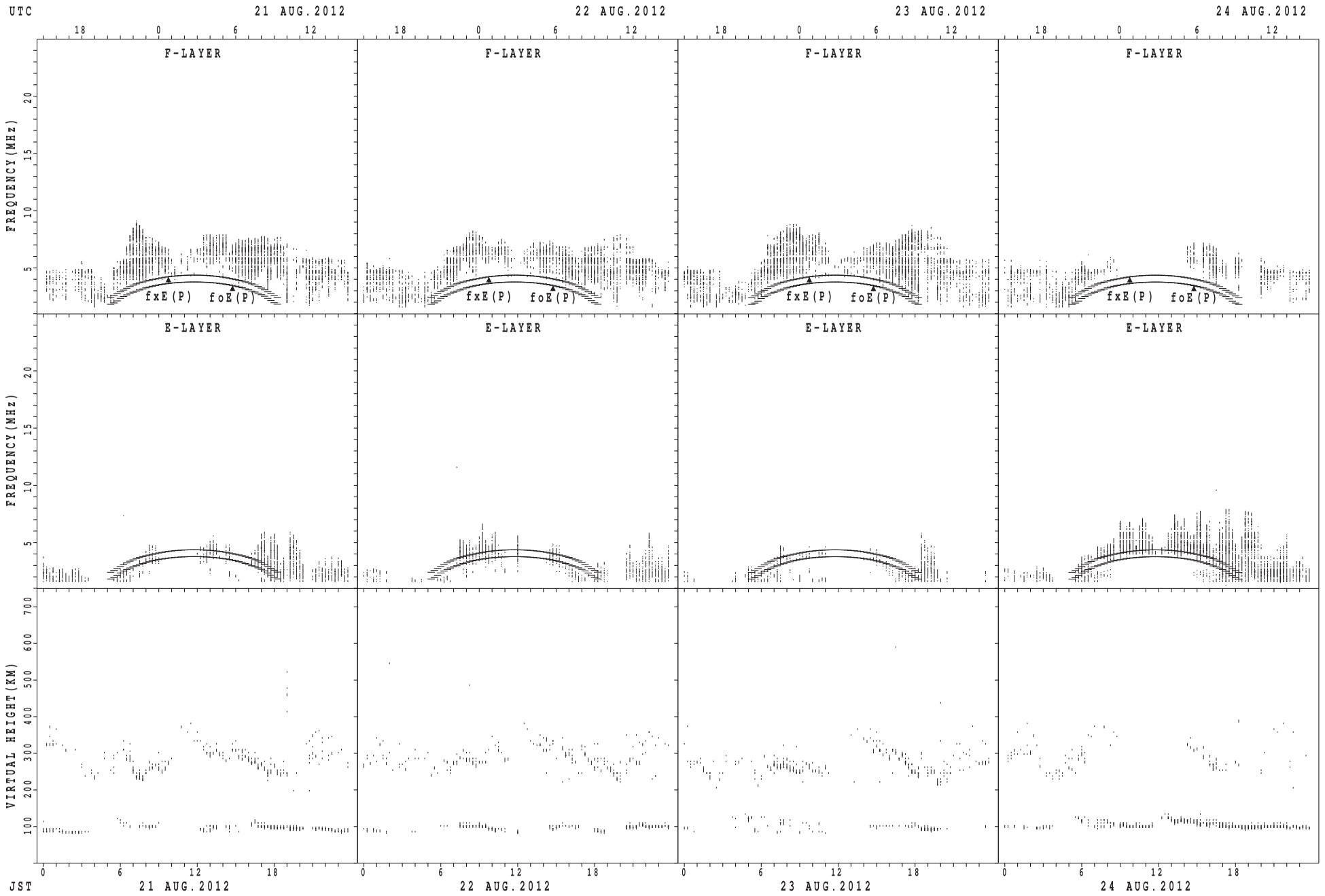
SUMMARY PLOTS AT Kokubunji



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

28

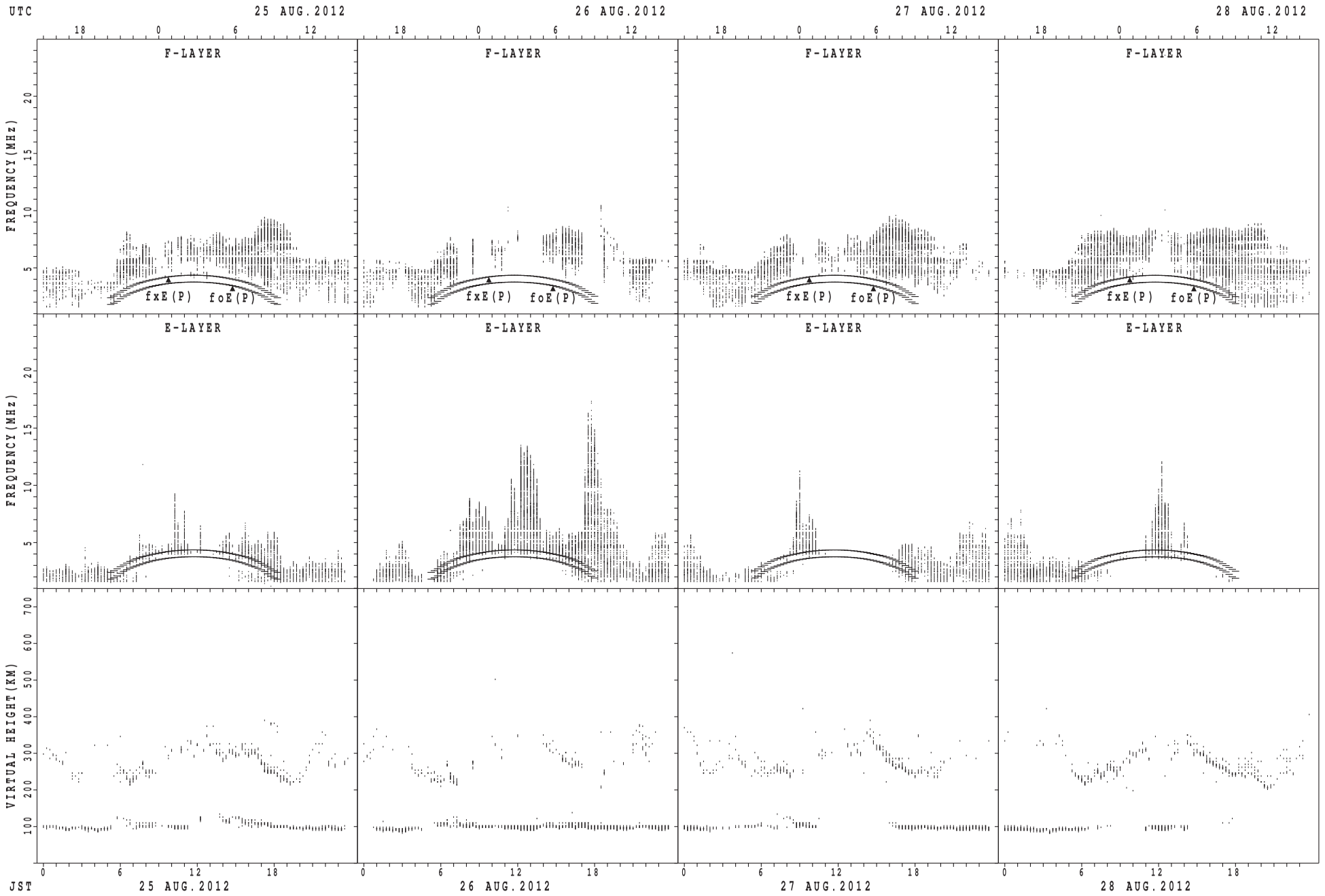
SUMMARY PLOTS AT Kokubunji



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

29

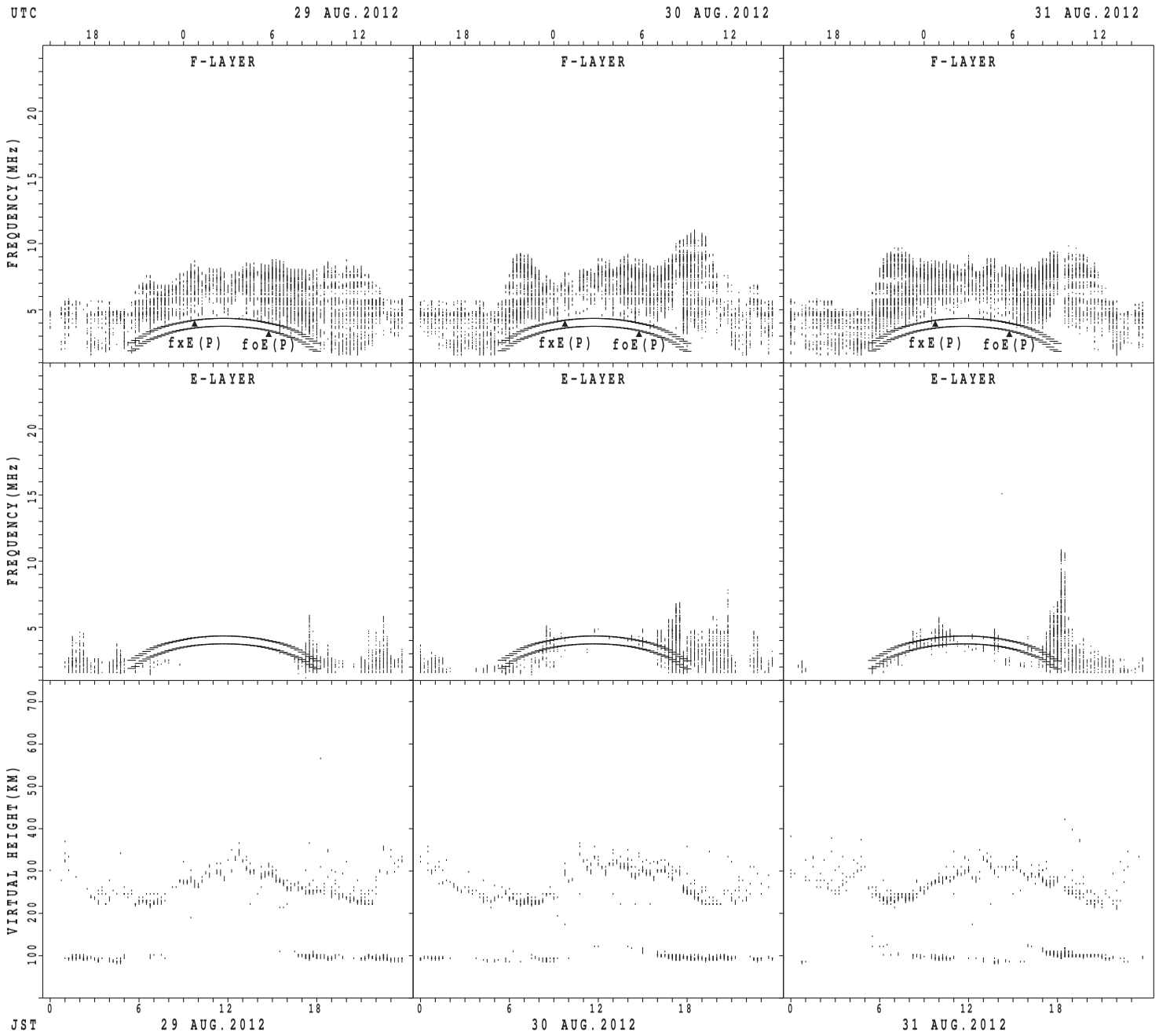
SUMMARY PLOTS AT Kokubunji



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

30

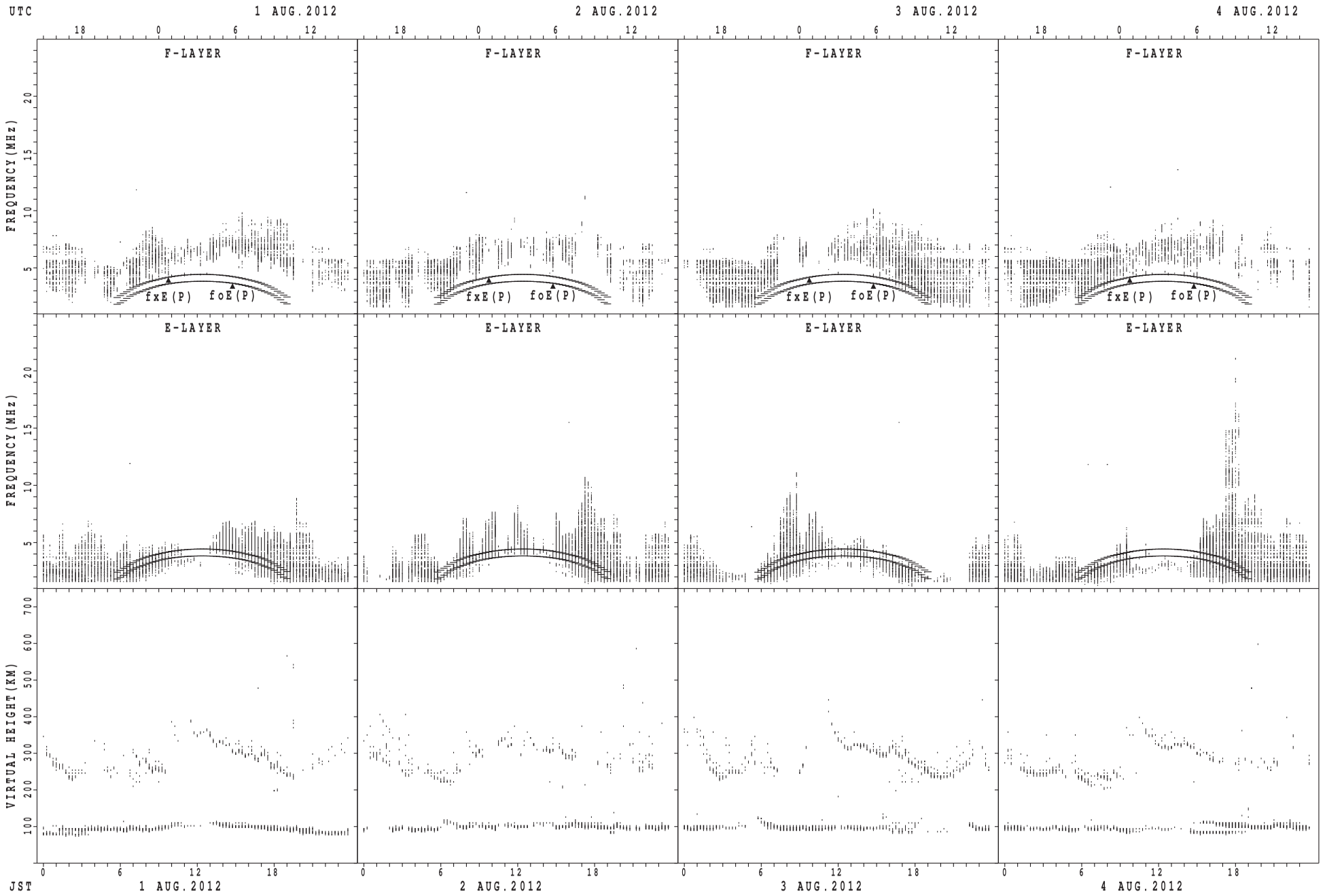
SUMMARY PLOTS AT Kokubunji



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

31

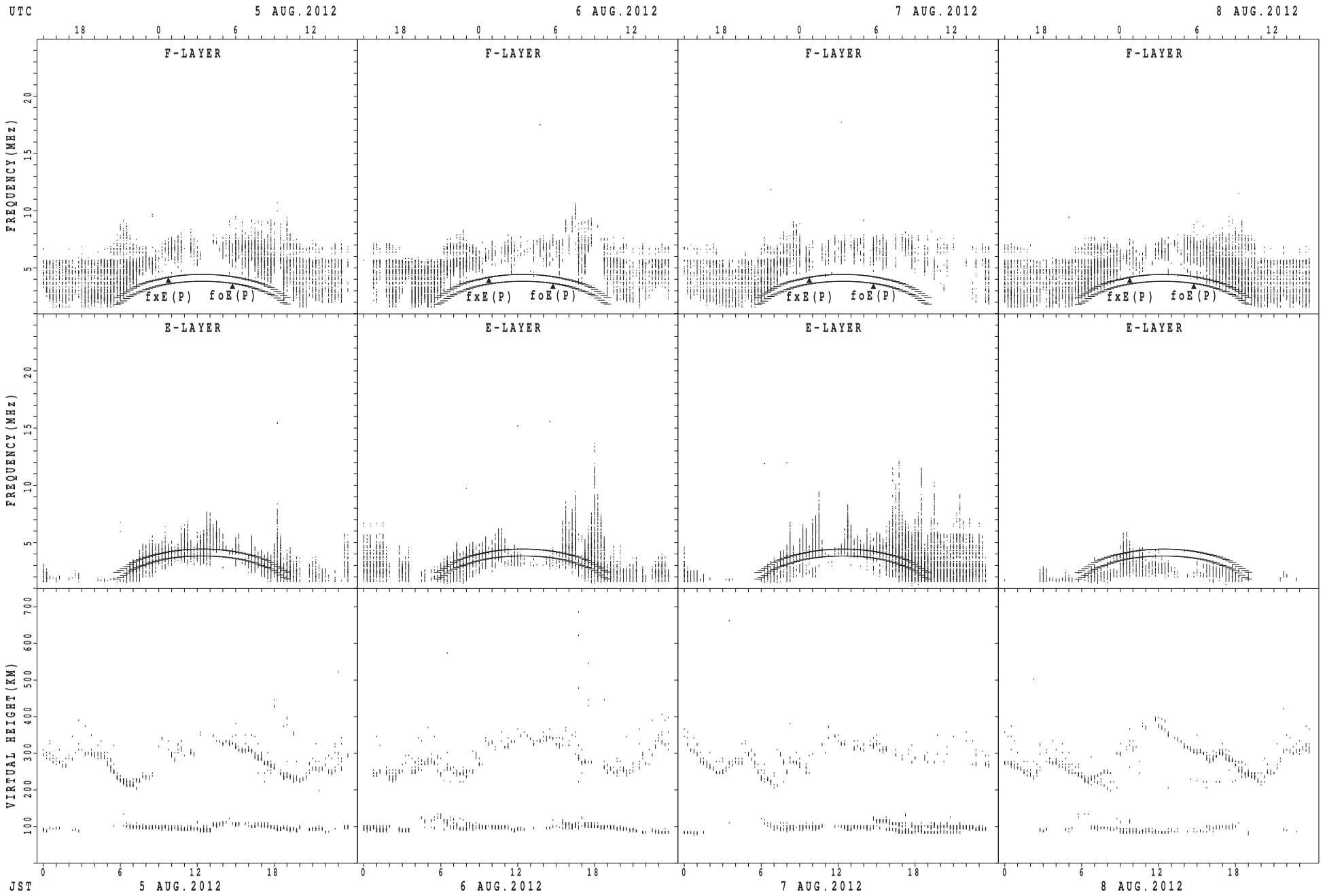
SUMMARY PLOTS AT Yamagawa



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

32

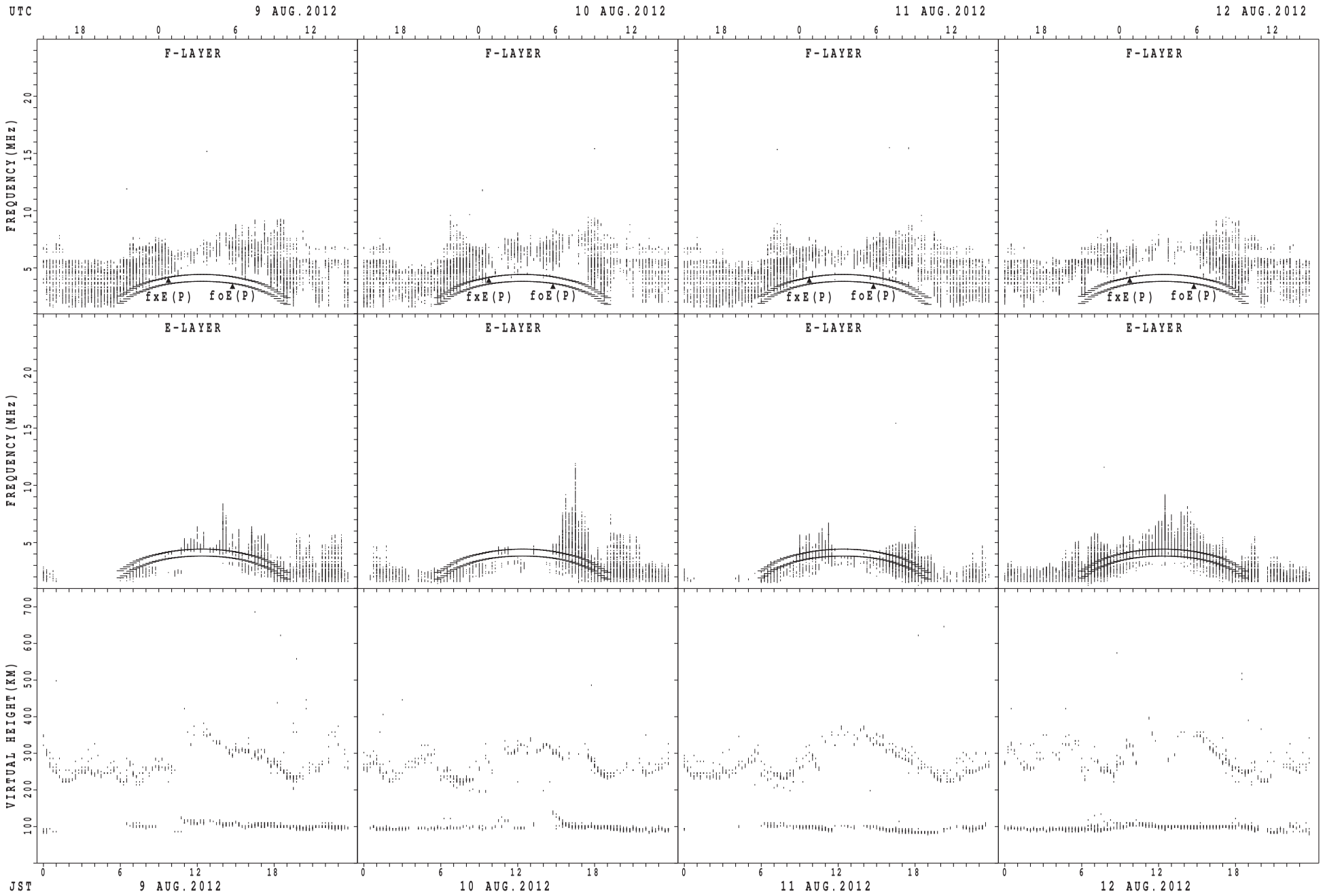
SUMMARY PLOTS AT Yamagawa



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

33

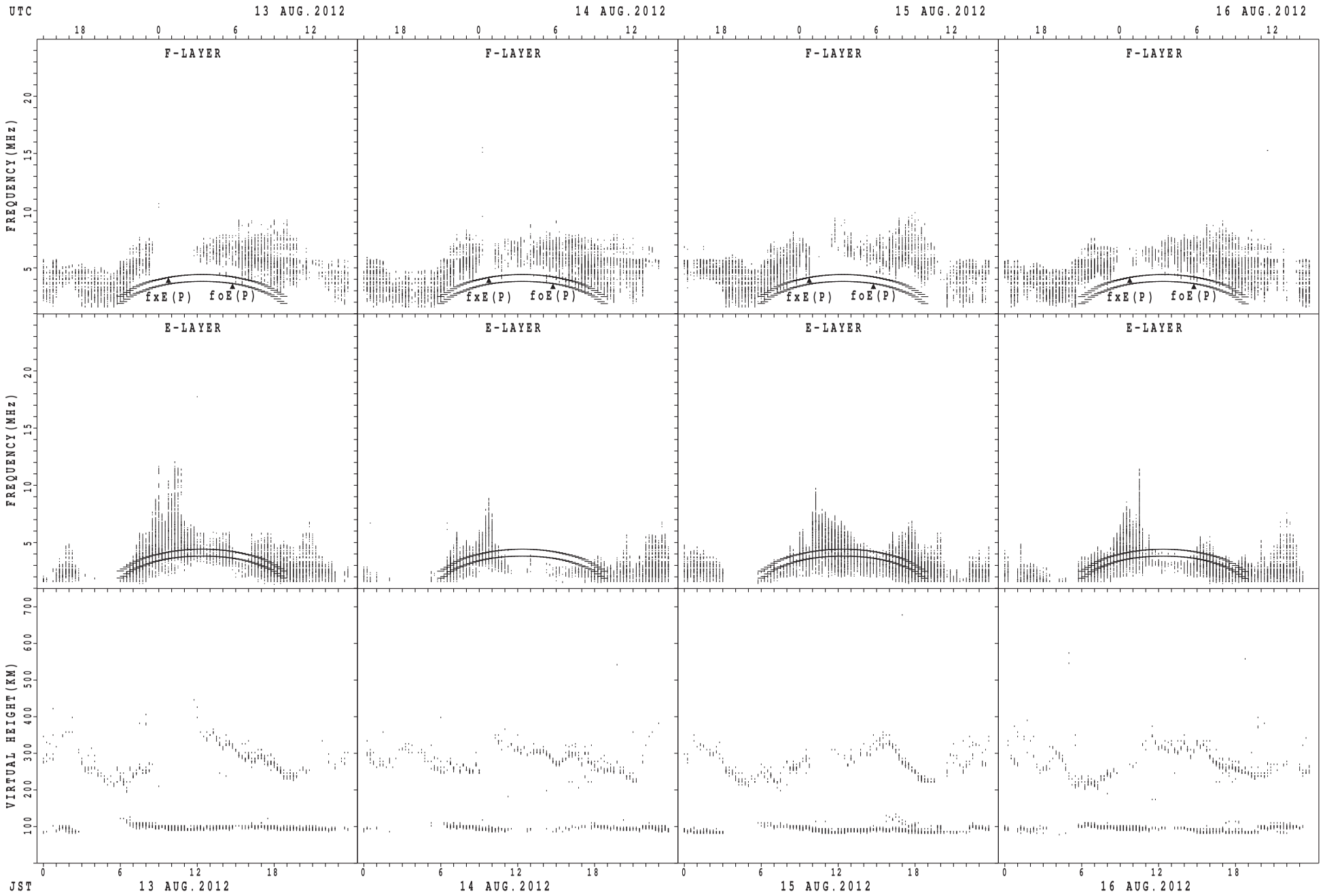
SUMMARY PLOTS AT Yamagawa



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

34

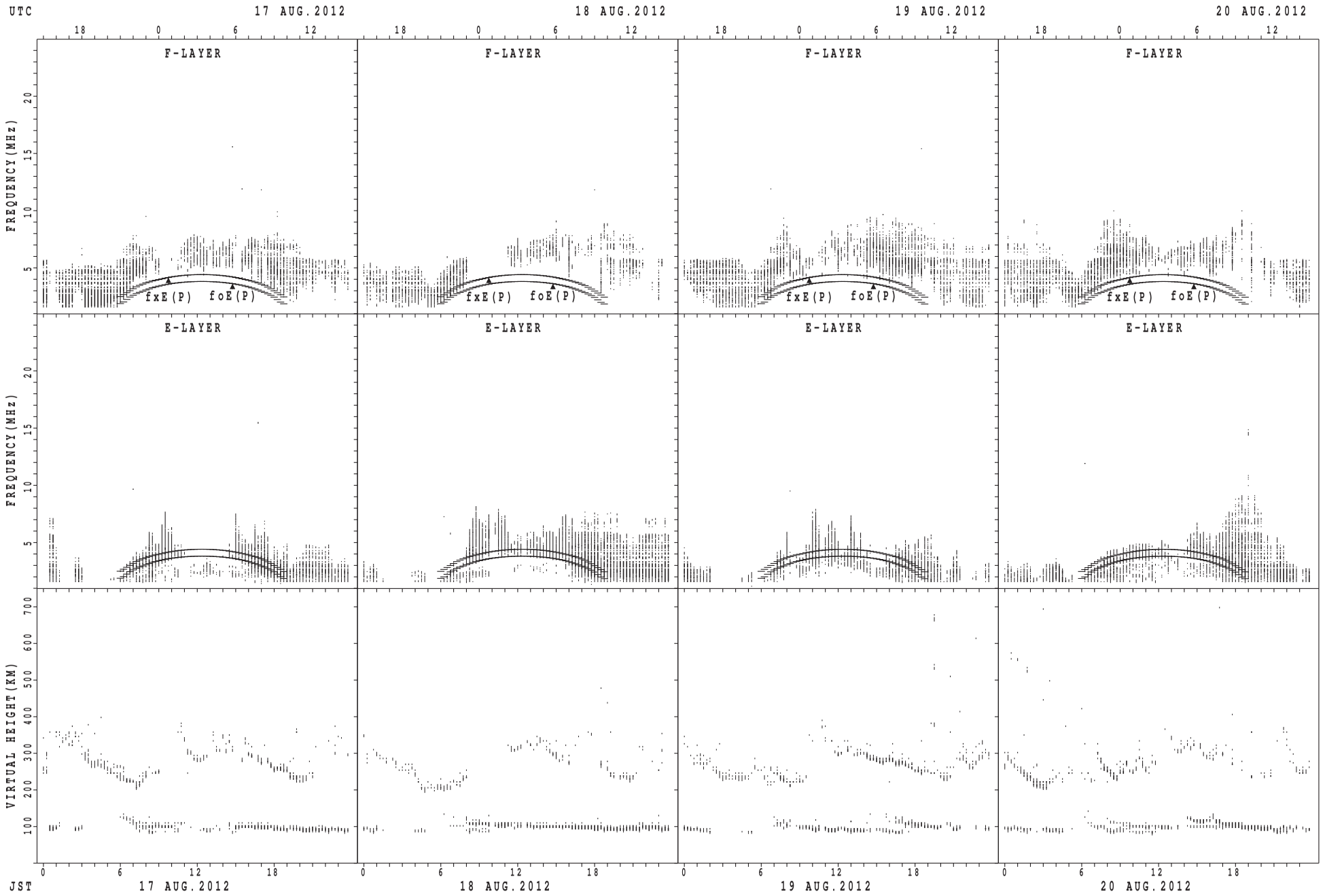
SUMMARY PLOTS AT Yamagawa



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

35

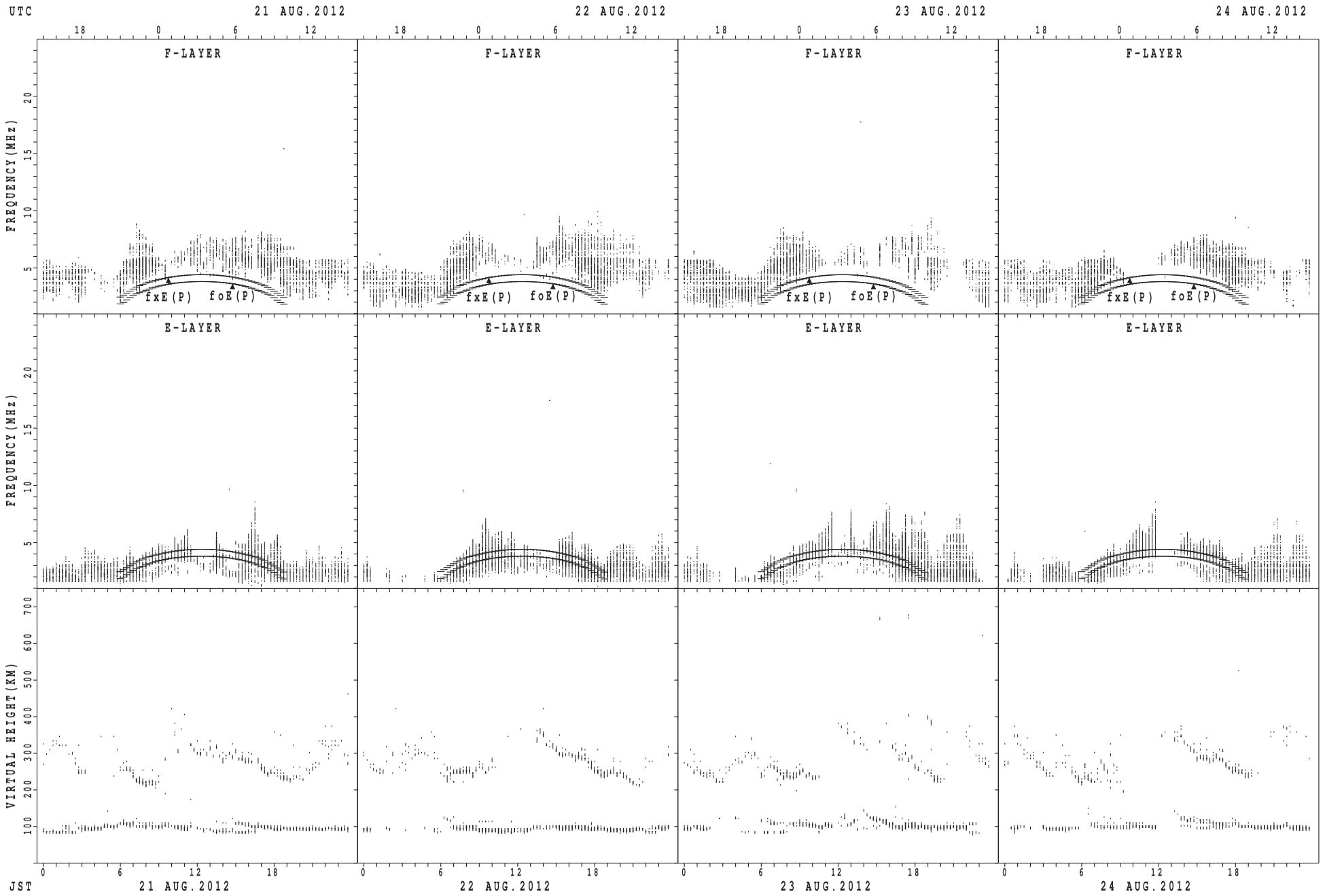
SUMMARY PLOTS AT Yamagawa



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

36

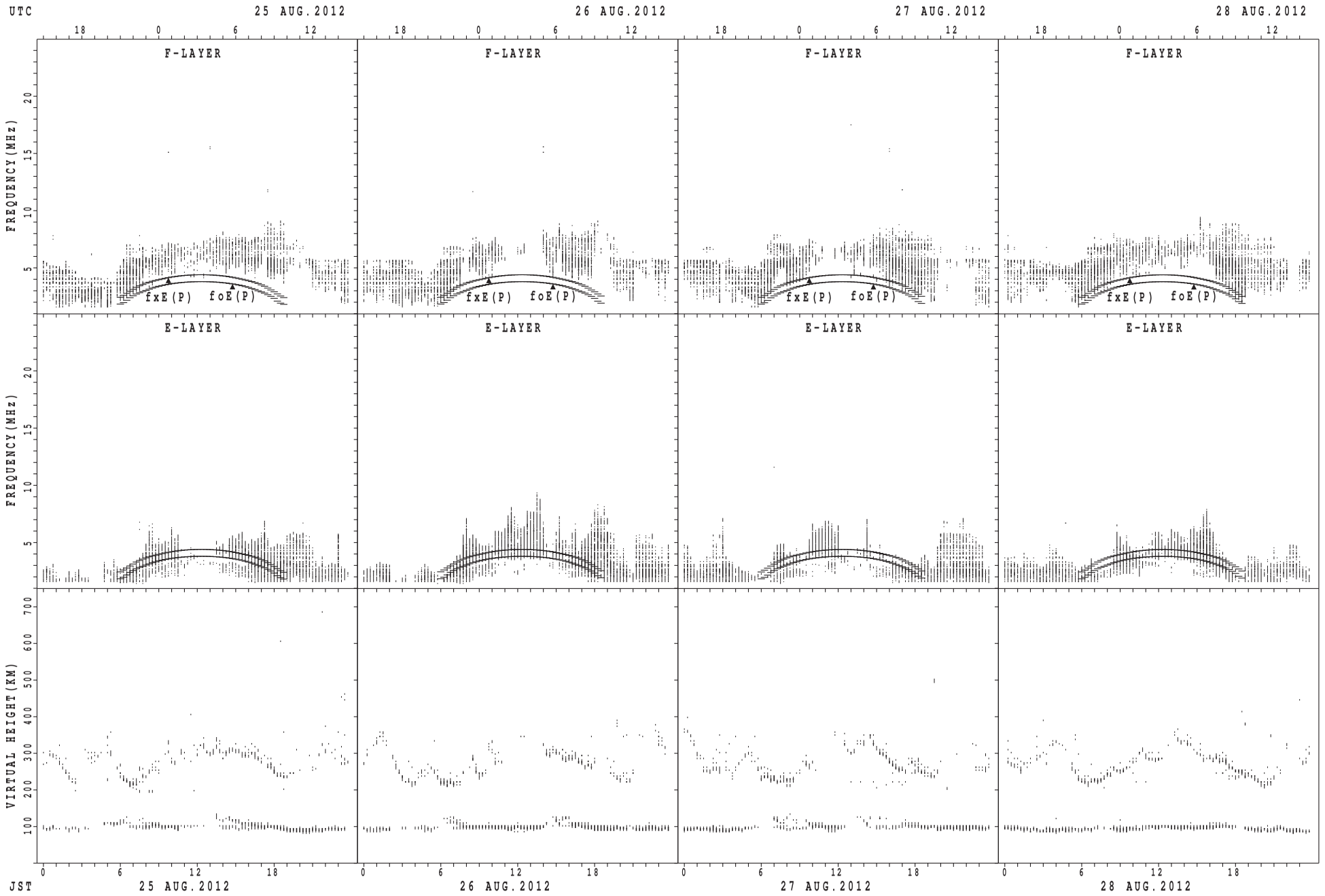
SUMMARY PLOTS AT Yamagawa



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

37

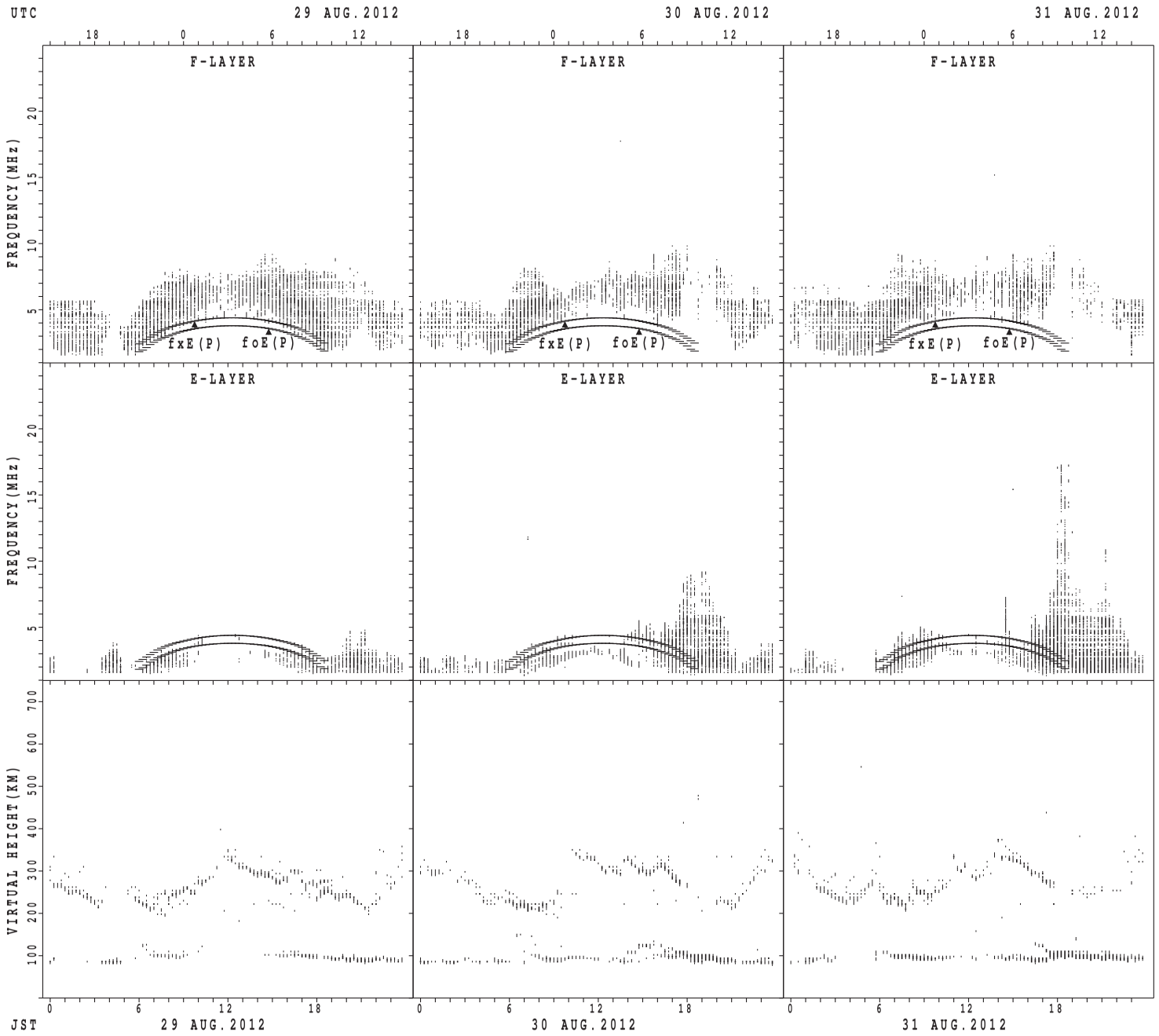
SUMMARY PLOTS AT Yamagawa



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

38

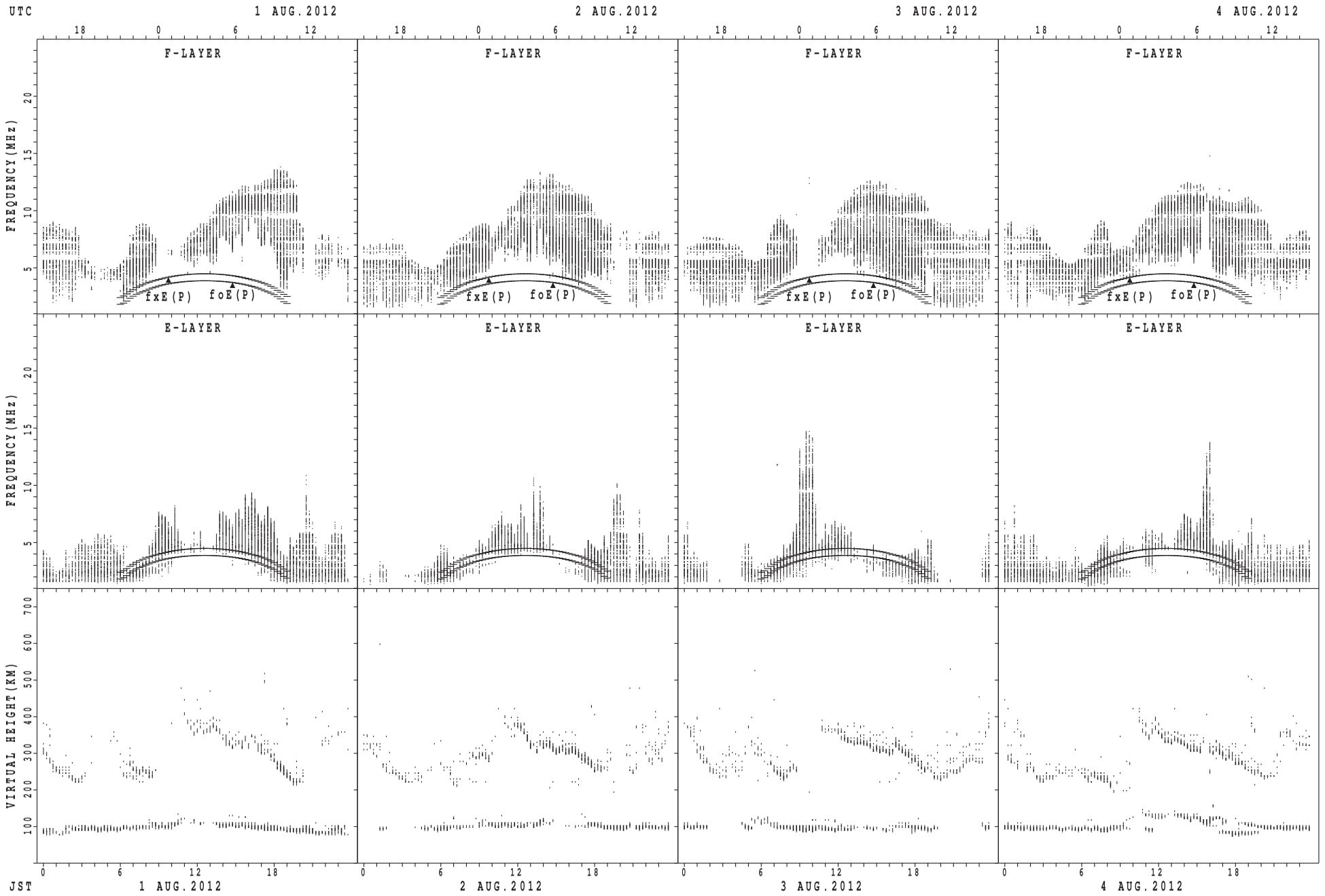
SUMMARY PLOTS AT Yamagawa



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

39

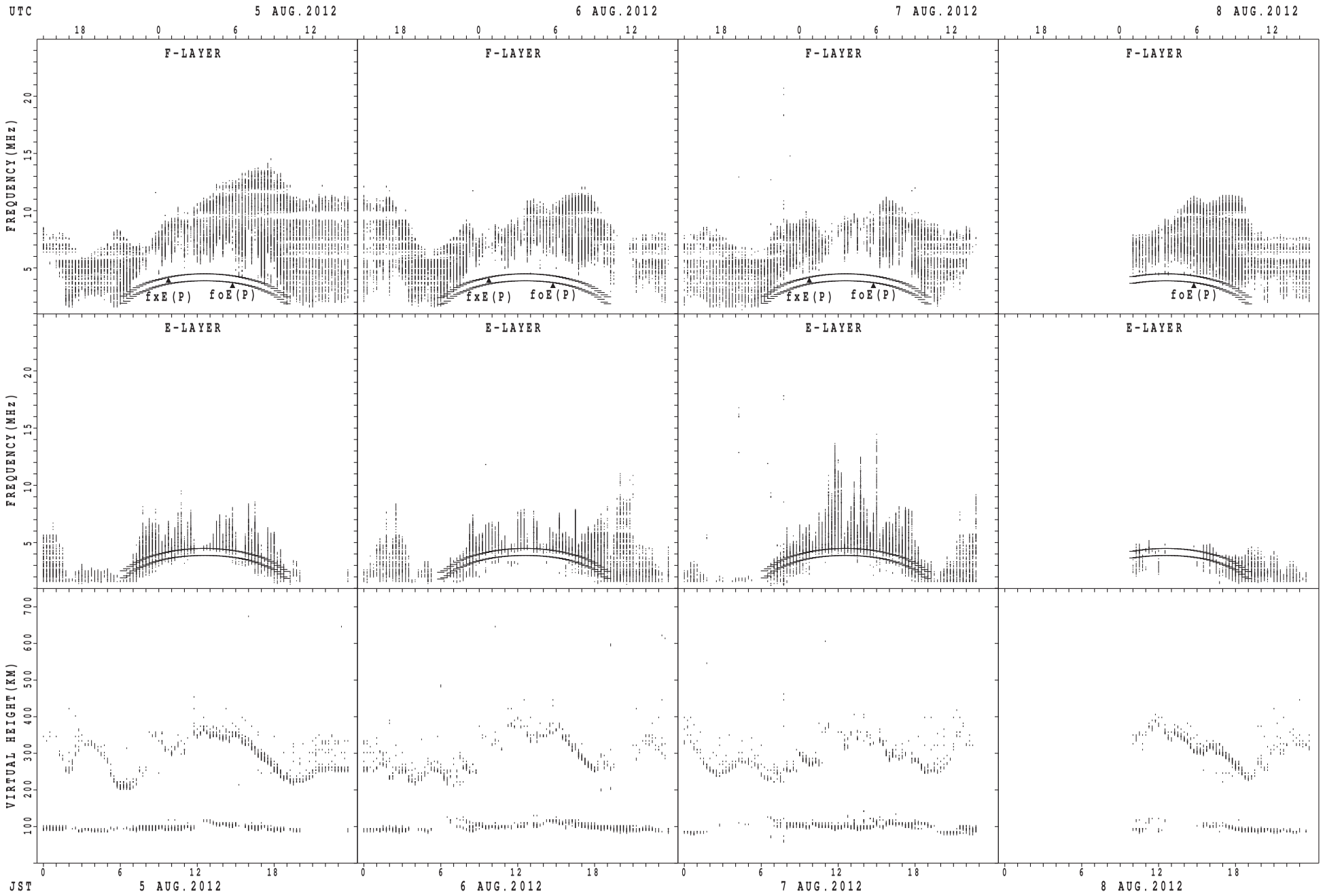
SUMMARY PLOTS AT Okinawa



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

40

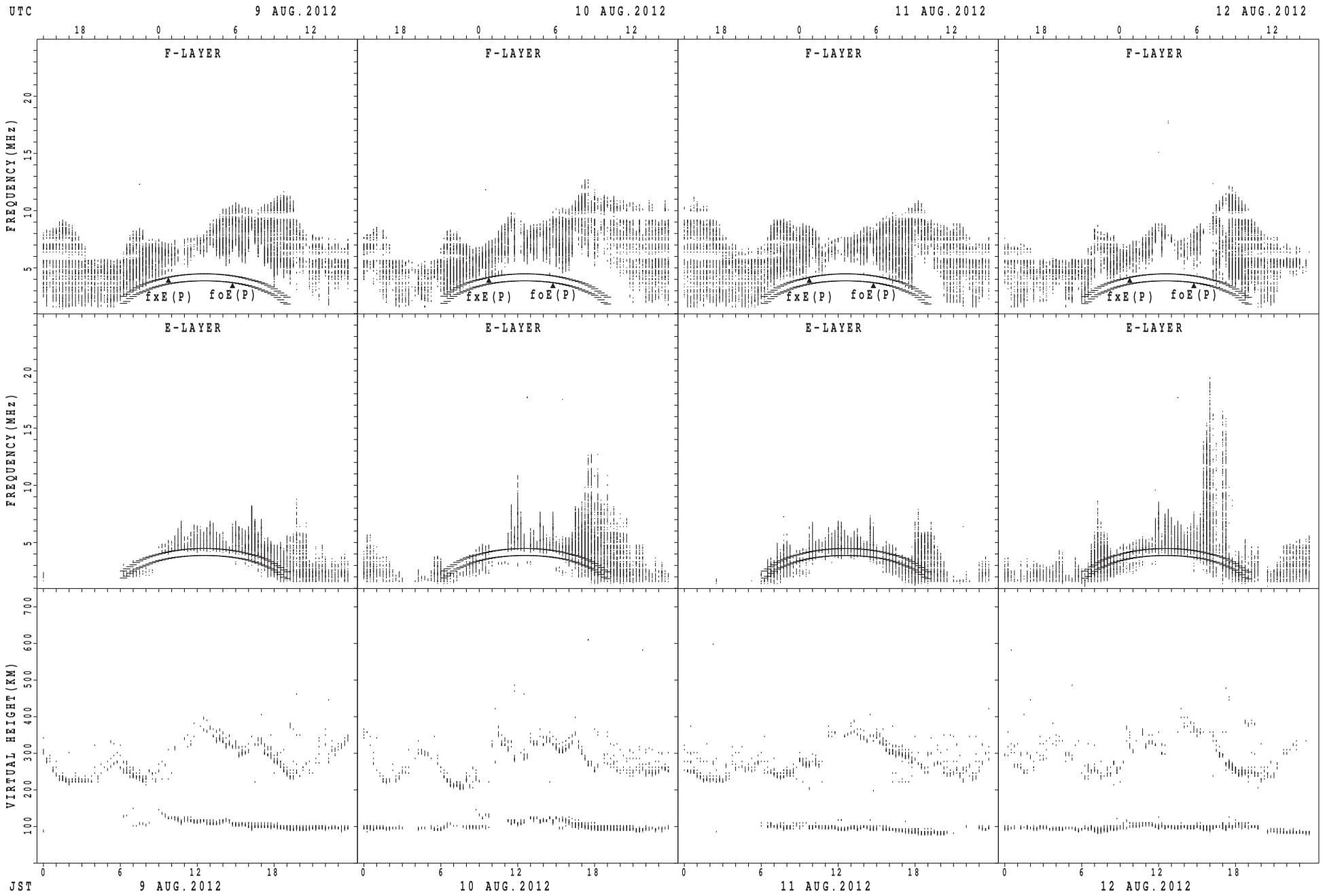
SUMMARY PLOTS AT Okinawa



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

41

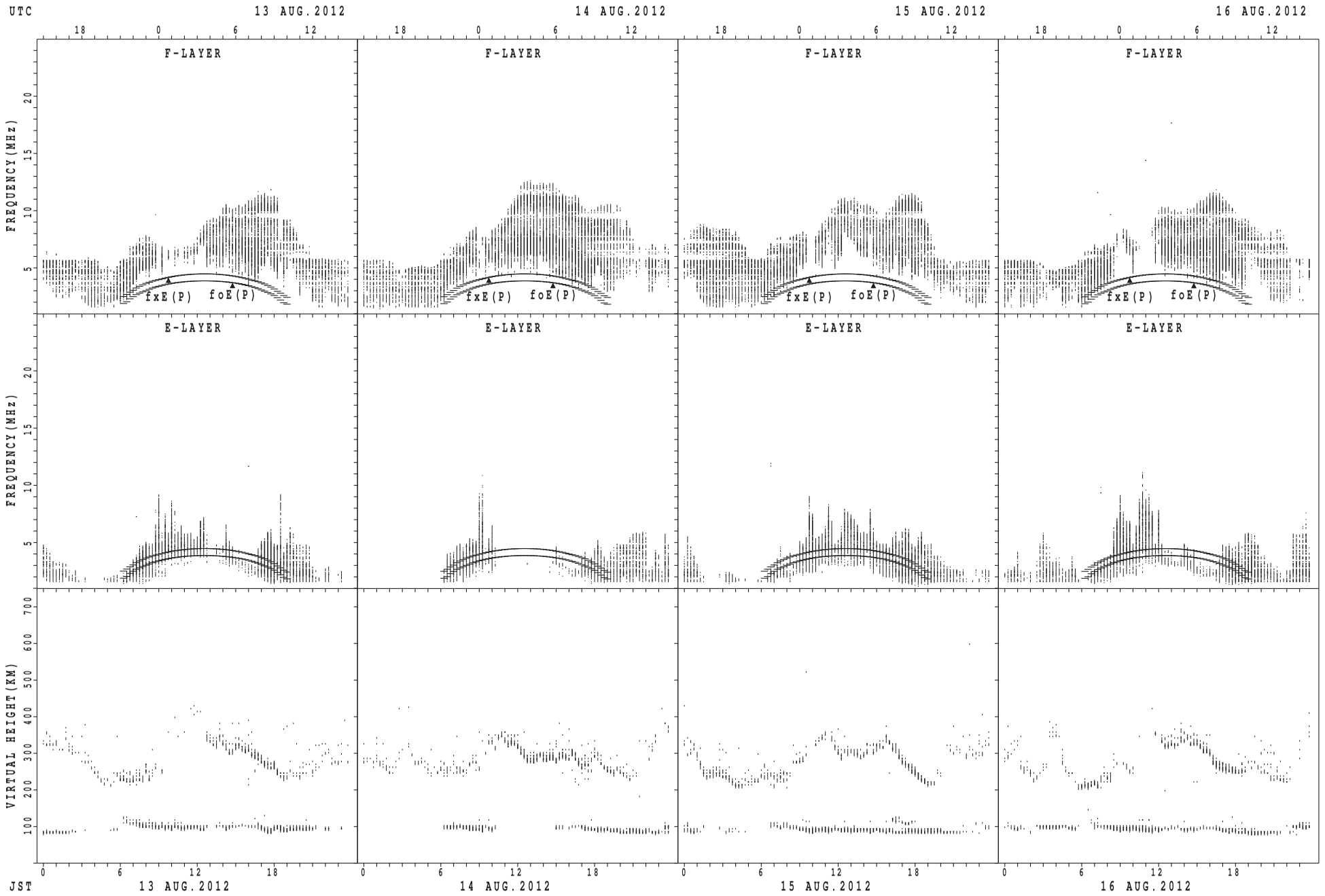
SUMMARY PLOTS AT Okinawa



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

42

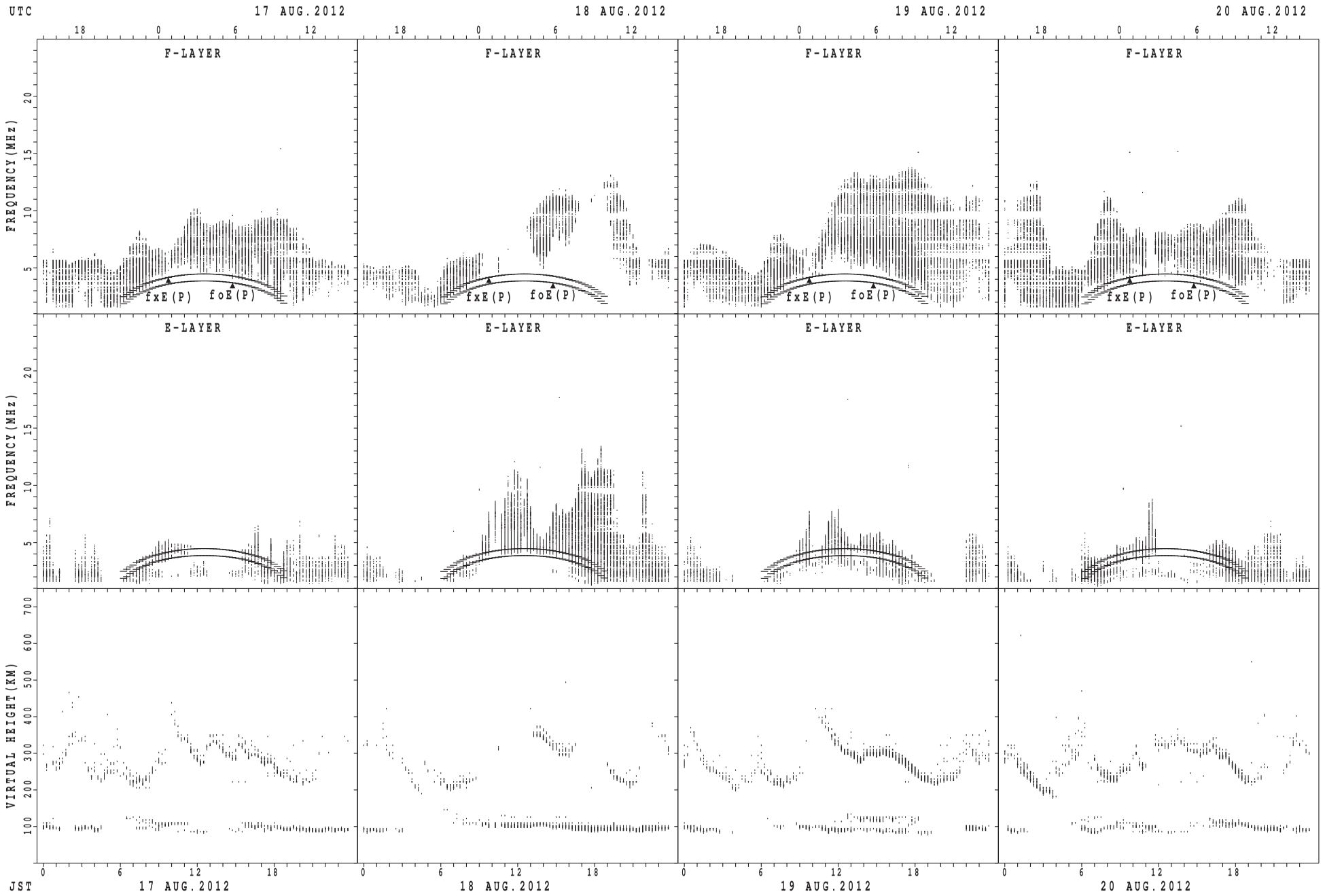
SUMMARY PLOTS AT Okinawa



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

43

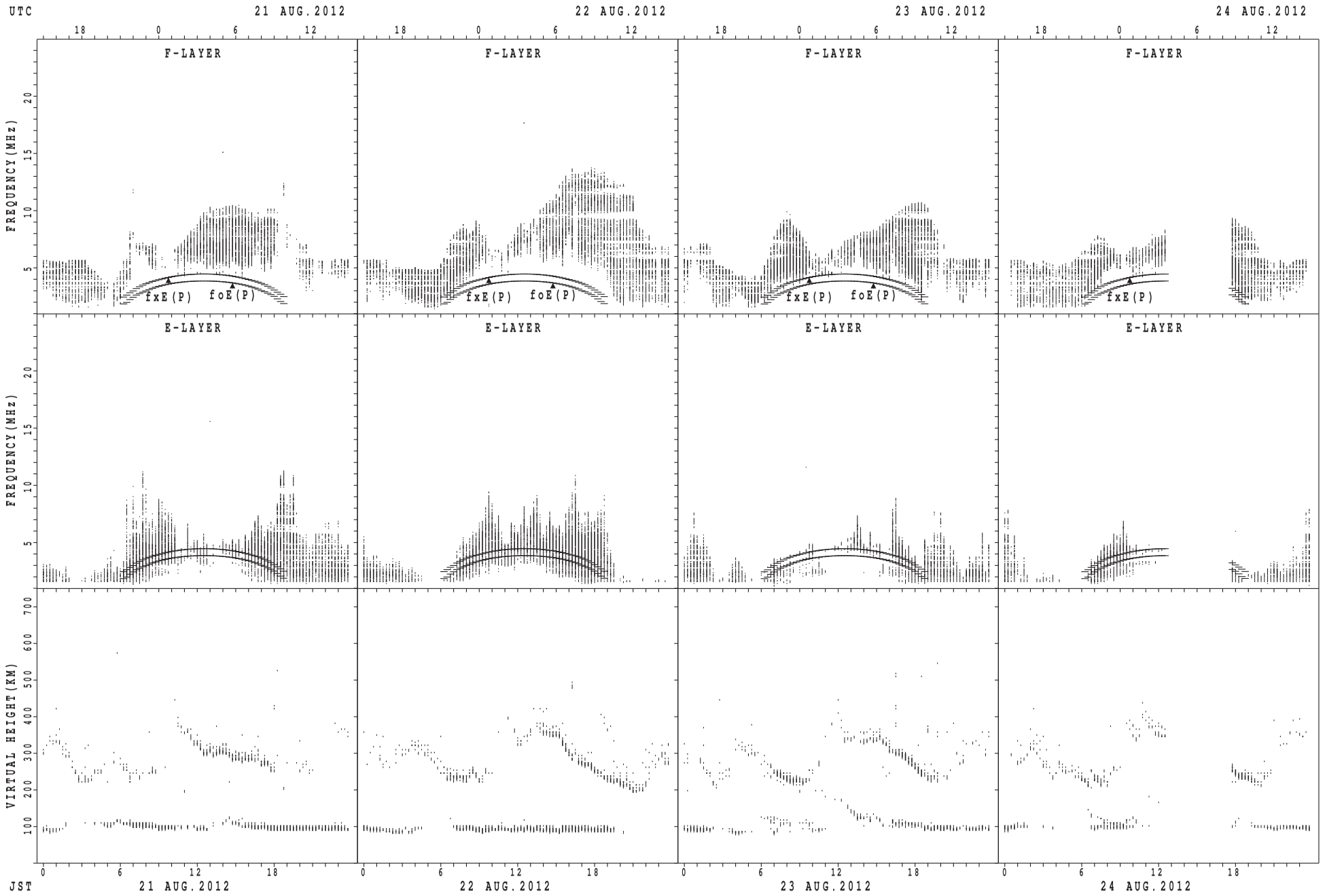
SUMMARY PLOTS AT Okinawa



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

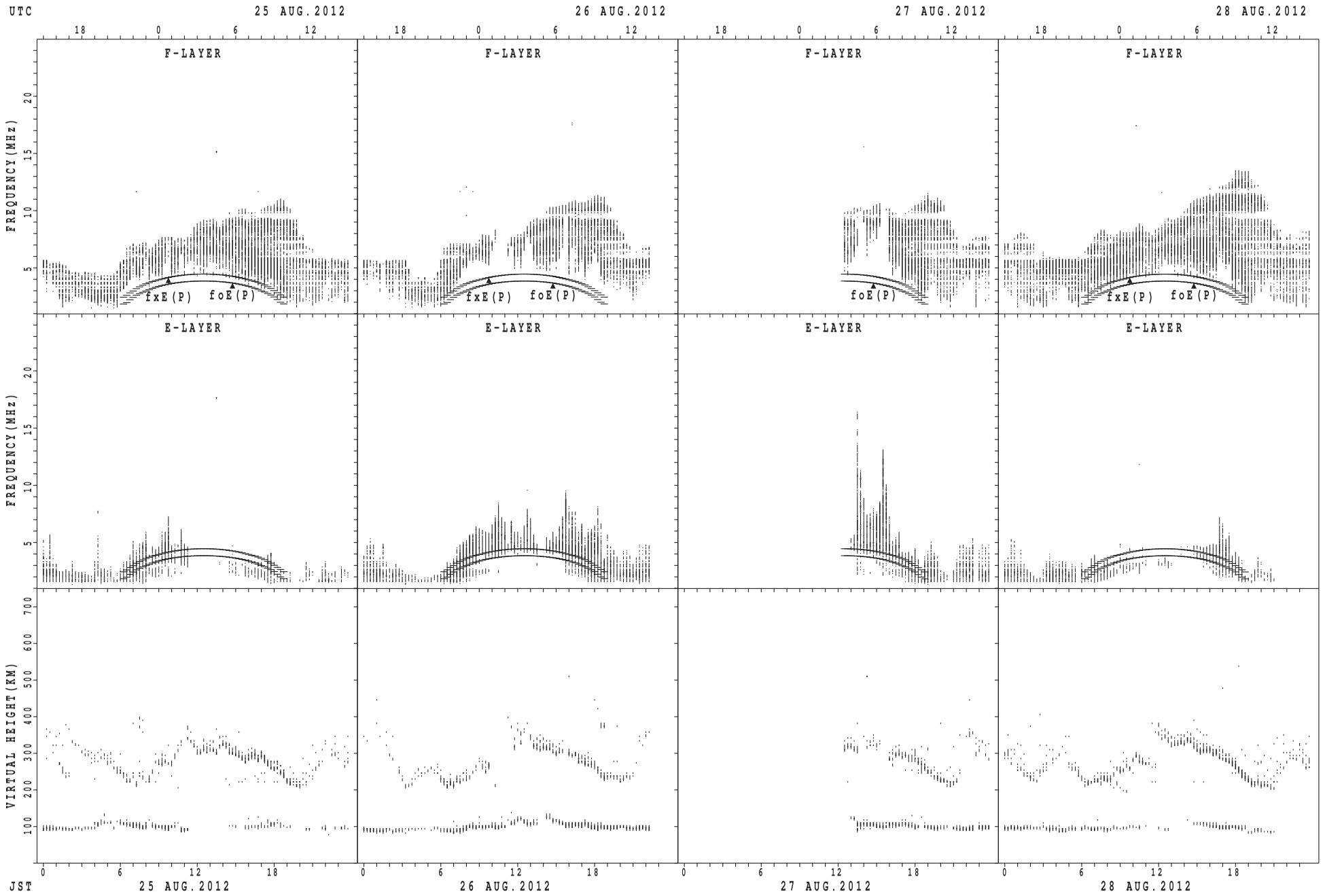
44

SUMMARY PLOTS AT Okinawa



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

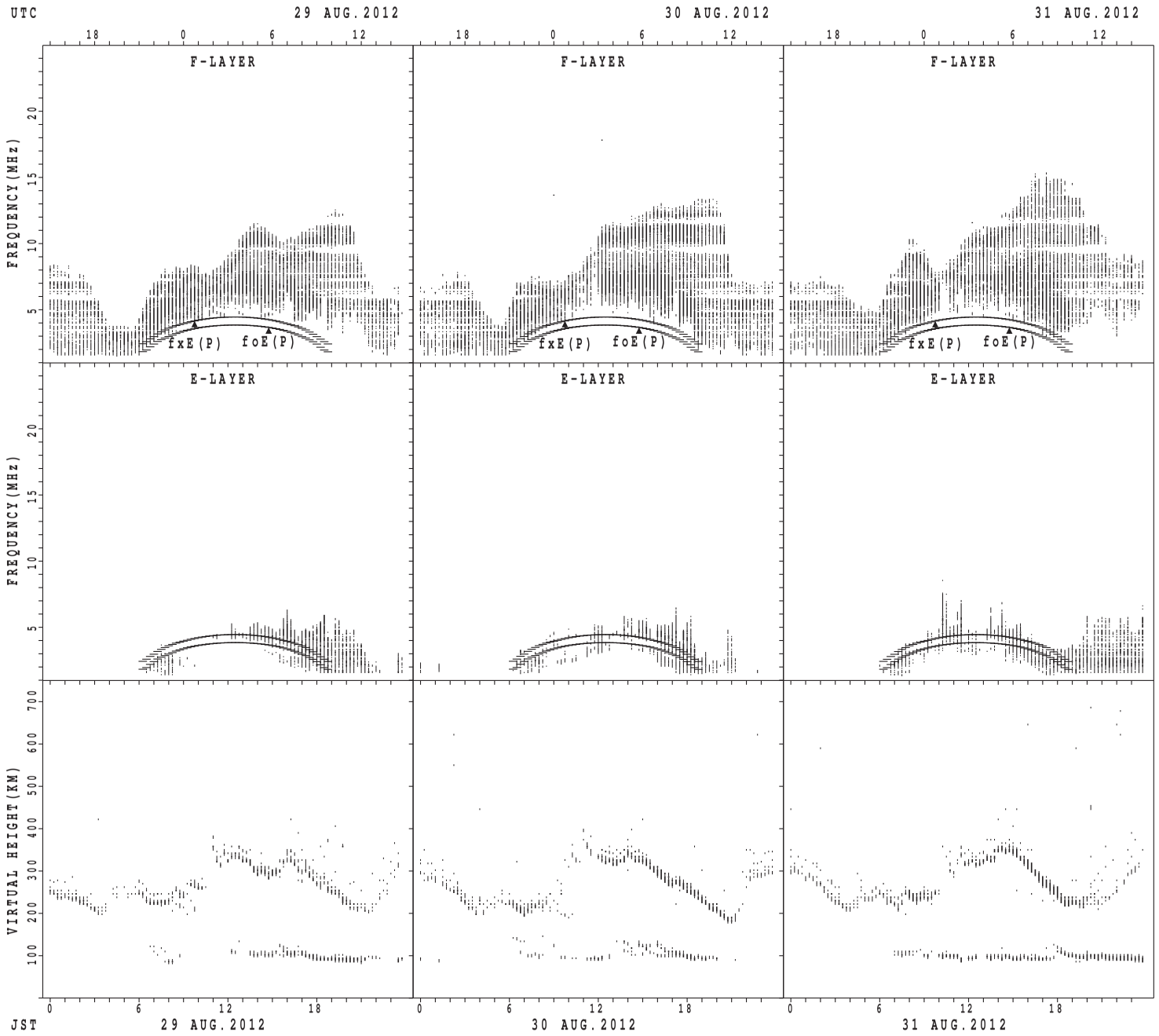
SUMMARY PLOTS AT Okinawa



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

46

SUMMARY PLOTS AT Okinawa



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

47

MONTHLY MEDIANS OF h′F AND h′Es

AUG.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	2	1					6	21	7							3	18	20	17	16	13	8	5	3
MED	296	288					276	280	254							296	303	290	288	279	294	280	290	292
U Q	320	144					292	298	304							300	320	304	296	285	307	302	298	318
L Q	272	144					256	256	238							286	294	284	283	270	269	252	276	284

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	17	16	18	16	21	25	22	24	19	24	20	14	13	13	14	12	25	30	29	28	25	24	24
MED	95	95	96	97	96	103	107	106	103	103	101	98	97	95	101	103	103	107	103	101	101	99	97	97
U Q	99	98	98	101	98	114	109	107	105	103	104	103	105	99	111	109	104	112	107	103	105	105	99	99
L Q	93	90	92	93	92	96	104	103	101	99	97	95	95	90	98	97	98	102	95	98	97	97	95	95

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	3	1				12	22	20							4	23	21	25	22	13	3	1	3
MED	306	338	230				258	262	260							304	286	286	280	274	272	282	334	330
U Q	153	354	115				268	272	280							316	302	291	287	286	285	334	167	374
L Q	153	288	115				248	238	248							297	278	274	271	256	259	260	167	316

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	19	19	17	16	16	14	15	14	18	19	17	15	9	13	13	14	16	22	27	27	23	20	24	22
MED	95	95	95	95	97	104	105	105	103	103	99	99	97	101	105	103	106	103	99	99	99	97	98	97
U Q	99	97	98	99	99	111	109	109	107	103	103	101	109	112	112	111	112	111	103	103	101	102	103	99
L Q	93	95	93	92	93	95	105	99	99	97	95	95	90	93	95	99	105	101	99	97	95	95	97	95

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	3	1			4	19	23	12							29	27	23	21	12	6	1	1
MED		300	262	244			253	240	248	249							292	286	268	264	258	249	320	306
U Q		317	298	122			256	260	256	259							307	292	282	271	264	280	160	153
L Q		283	244	122			241	230	232	244							284	274	258	253	249	244	160	153

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	22	22	17	14	13	12	24	22	24	26	22	15	13	17	21	23	27	26	30	27	27	27	25
MED	95	95	95	95	95	95	107	107	103	103	101	99	101	99	103	111	103	105	103	97	97	97	95	97
U Q	97	97	97	98	97	96	121	113	105	105	103	103	105	107	114	115	113	107	105	103	99	97	103	98
L Q	91	91	89	90	93	93	95	104	99	96	95	95	95	93	98	100	103	103	99	95	95	93	91	93

MONTHLY MEDIANS OF h′F AND h′Es

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

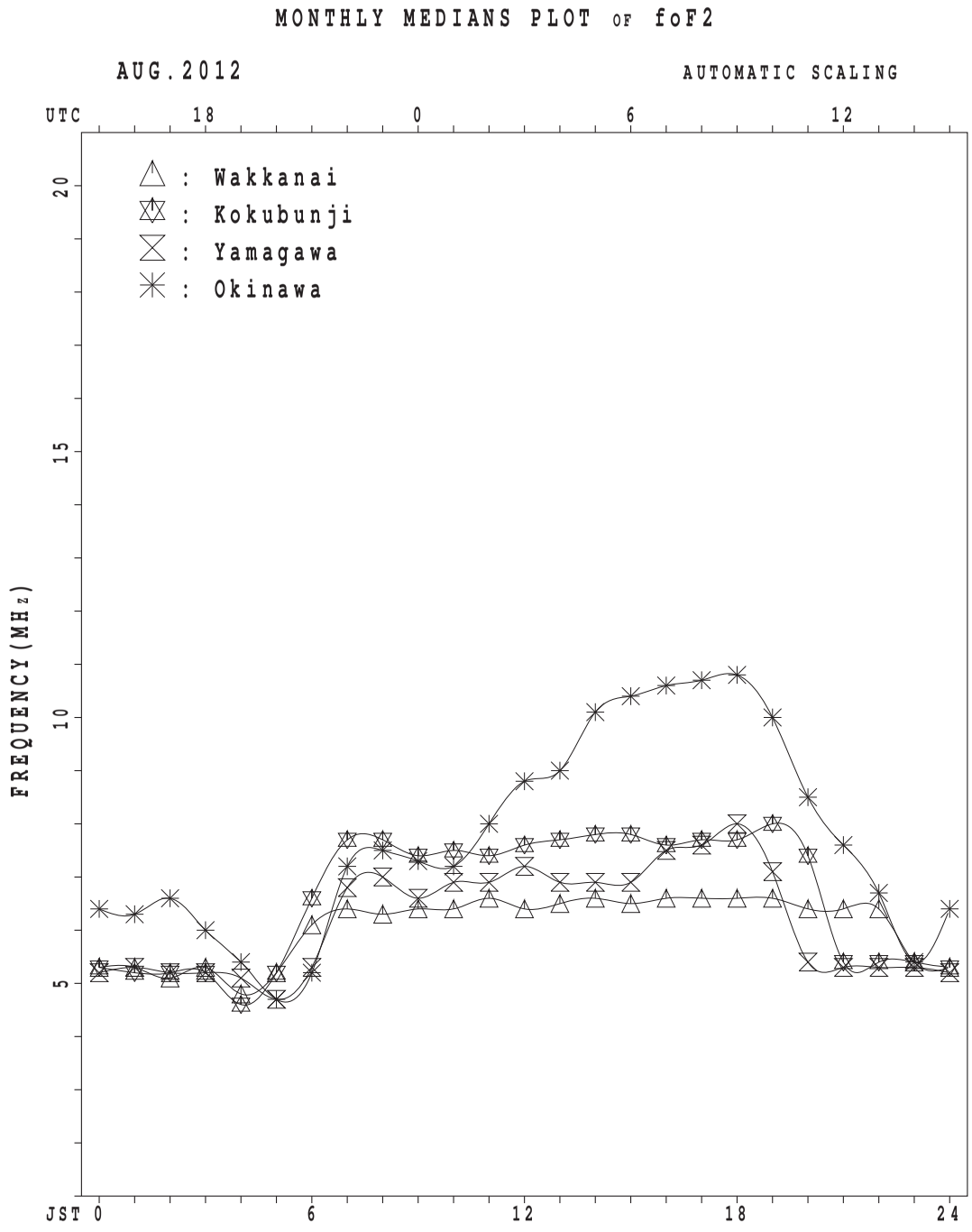
h′F

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	10	11	4	3	1	1	24	25	18							29	29	30	28	21	12	9	8
MED	304	310	270	261	302	314	214	245	246	267							302	284	258	246	252	266	334	324
U Q	343	328	306	268	362	157	107	259	256	290							315	294	274	264	273	300	350	358
L Q	277	282	250	234	258	157	107	233	230	240							288	268	246	232	231	237	287	287

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	20	12	12	12	11	12	22	24	26	24	21	19	16	22	23	24	27	30	28	26	23	24	20
MED	97	94	95	96	95	97	96	105	103	105	105	101	99	106	110	107	105	105	99	97	97	95	97	97
U Q	99	97	97	99	97	99	109	113	107	107	108	105	103	120	119	119	112	111	107	104	101	97	99	99
L Q	93	89	91	93	93	93	95	97	97	99	97	95	95	96	103	101	100	99	95	92	91	89	91	94


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

50

IONOSPHERIC DATA STATION Wakkanai

AUG. 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 65	X 66	X 65	X 61	X 66															O X 76	88	95	X 81	X 80
2	X 79	X 65	X 63	X 63																X 73	X 75	X 78	X 78	X 73
3	X 68	X 65	X 65	X 66	X 64	X 64														X 83	X 83	X 79	X 75	X 72
4	X 70	X 68	X 62	X 61	X 58															X 81	X 85	X 88	X 83	X 78
5	X 75	X 72	X 69	X 69	X 69															X 83	X 84	X 82	X 80	X 71
6	X 67	X 66	X 63	X 61	X 61															X 78	X 77	X 82	X 85	X 77
7	X 70	X 70	X 66	X 64	X 64															X 79	X 80	X 83	X 79	X 77
8	X 73	X 72	X 69	X 65	X 65														X 77	X 78	X 79	X 79	X 76	X 74
9	X 70	X 70	X 70	X 67	X 61	X 60						76								X 83	X 76	X 78	O X 75	X 71
10	X 68	X 68	X 61	X 59	X 58															X 89	X 83	X 76	X 73	X 73
11	X 69	X 65	X 63	X 61	C															X 79	X 79	O X 82	X 81	X 72
12	X 64	X 60	X 57	X 55	X 54															X 79	O X 81	X 78	X 72	X 67
13	X 59	X 51	X 51	X 52	X 54															X 75	X 78	X 78	X 75	X 65
14	X 64	X 62	X 59	X 59	X 61															X 77	X 79	X 77	X 71	X 67
15	X 63	X 61	X 62	X 62	X 55															X 83	X 82	X 79	X 71	X 66
16	X 63	X 61	X 57	X 53	X 56															X 81	X 81	X 81	X 74	X 63
17	X 58	X 52	X 52	X 51	X 50															X 72	X 75	74	68	X 65
18	X 59	X 56	62	X 58	X 59	65														X 80	X 80	X 79	X 79	X 72
19	X 73	X 67	X 66	X 60	X 54															X 82	X 81	X 81	X 82	X 77
20	X 75	X 77	X 73	X 57	X 52															X 77	X 78	X 75	X 61	X 62
21	X 55	X 53	X 53	X 54	X 48															X 76	X 74	X 71	X 59	X 54
22	X 52	X 52	57	X 52	X 50	X 49														X 76	X 76	X 74	X 69	X 61
23	X 58	X 52	X 52	X 49	X 45	A														X 80	X 78	X 77	X 66	X 57
24	X 54	X 51	X 53	X 52	X 48															X 63	X 65	X 62	X 57	X 57
25	X 53	X 52	X 52	X 59	X 43	X 50														X 83	X 78	X 68	X 67	X 58
26	59	X 56	X 54	A	O X 40	X 49														X 75	X 72	X 71	X 67	X 62
27	X 63	X 62	X 57	X 53	X 52	X 48														X 77	X 77	X 74	X 71	X 68
28	X 66	X 59	X 56	X 57	X 55															X 79	X 73	X 76	X 71	X 61
29	62	63	61	X 56	X 53	X 61														O X 81	X 82	76	X 80	X 76
30	X 65	X 57	60	57	X 54	X 56														X 92	X 92	X 84	X 66	X 58
31	X 55	X 55	X 54	X 52	X 52															X 92	X 94	X 85	X 74	X 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	30	29	9						1							1	31	31	31	31	31
MED	X 64	X 62	X 61	X 58	X 54	X 56						76							X 77	X 79	X 79	X 78	X 74	X 67
U Q	X 70	X 67	X 65	X 61	X 61	X 62														X 83	X 82	X 82	X 79	X 73
L Q	X 59	X 55	X 54	X 53	X 51	X 49														X 76	X 76	X 75	X 68	X 62

IONOSPHERIC DATA STATION Wakkanai

AUG. 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	59	59	58	54	59	F 62	67	72	64	R 72	72	A	J R 61	70	70	67	68	71	70	U R 69	F 78	F 83	74	74
2	73	58	57	56	51	60	72	72	71	71	69	72	A	69	67	67	66	69	A	66	67	71	70	66
3	61	58	58	59	57	57	R 62	64	70	65	61	64	64	69	74	73	74	75	74	76	76	72	68	65
4	64	62	56	54	51	58	58	69	74	73	U R 75	J R 65	70	69	69	69	70	70	70	75	78	U R 81	76	71
5	68	65	62	62	62	66	70	R 74	U Y 77	70	70	72	U R 76	73	76	73	70	70	72	78	R 78	75	73	64
6	61	59	56	54	54	60	62	67	U R 74	V 68	U R 74	R 72	72	73	Y	74	75	70	69	70	70	74	R 78	70
7	63	63	59	57	57	58	60	70	V 71	65	67	70	67	68	68	69	69	67	66	72	74	76	72	70
8	66	65	63	58	58	60	61	69	65	58	62	65	72	70	69	66	66	64	70	71	72	72	69	67
9	64	64	63	60	54	53	64	70	62	67	68	J R 65	U R 63	68	75	72	73	74	73	76	69	71	68	64
10	61	59	54	52	51	51	V 51	68	67	64	59	62	58	59	65	63	62	66	72	82	77	69	66	66
11	62	58	56	54	C	57	V 64	74	72	66	66	J R 63	63	62	66	64	65	66	66	72	72	75	75	65
12	57	53	50	49	47	52	60	61	R 58	68	V 59	58	61	R 64	68	68	68	67	71	72	74	71	65	60
13	52	44	44	45	47	55	62	62	52	61	58	U R 63	56	55	58	60	60	60	64	69	71	70	67	58
14	56	55	52	52	54	53	54	64	72	V 64	R 73	63	56	61	61	66	66	66	68	70	73	70	64	60
15	56	54	55	55	49	48	65	U R 73	J Y 83	R 87	76	72	74	72	68	66	66	66	68	76	75	72	64	59
16	56	54	50	46	49	49	49	56	61	60	56	60	65	67	63	63	58	63	62	73	74	74	66	56
17	51	45	45	45	45	49	58	69	U R 66	60	54	V 63	V 60	60	63	68	57	59	61	V 65	69	F 67	F 59	59
18	52	J R 49	50	51	52	F 54	53	59	63	58	62	60	62	67	62	60	57	61	66	73	73	72	72	65
19	65	61	59	53	47	46	53	68	U R 76	V 71	69	62	62	64	66	65	66	66	66	74	74	75	75	70
20	68	70	66	50	45	U R 44	54	R 52	62	60	63	63	63	64	60	59	59	66	63	70	71	69	R 54	55
21	48	46	46	47	41	50	51	57	R 63	56	U R 54	60	60	60	63	61	61	61	63	69	67	64	53	47
22	45	45	45	45	43	42	52	64	61	59	62	66	62	62	63	61	51	58	59	69	69	68	62	54
23	51	45	45	42	38	A	63	63	62	64	67	66	63	62	62	62	62	67	66	73	72	70	58	50
24	47	44	46	45	41	38	42	U R 46	48	50	U R 50	U R 50	50	51	J R 48	U A 52	56	56	59	56	59	55	50	50
25	46	R 46	46	52	36	42	56	72	73	71	A	A	66	64	64	62	A	71	70	76	71	62	60	52
26	50	R 49	R 47	A	33	42	54	64	61	A	66	73	70	64	66	69	63	65	67	U A 68	65	65	60	55
27	56	55	50	46	45	42	56	67	64	64	61	61	63	68	68	70	74	74	76	70	70	67	64	61
28	59	R 52	49	50	48	55	R 62	V 58	68	Z 61	65	69	V 71	71	67	67	A	66	67	72	66	69	65	55
29	F 50	F 56	51	49	46	54	58	70	70	74	72	72	71	68	70	69	72	70	72	74	75	70	74	69
30	58	50	46	46	47	49	64	U R 68	U R 74	76	72	72	U R 72	72	71	75	68	71	75	85	R 85	R 77	59	51
31	48	48	48	45	45	46	69	J R 83	U Y 76	78	72	73	71	75	73	70	68	71	74	R 86	87	R 78	67	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	30	30	30	31	31	31	30	30	29	30	31	30	31	29	31	30	31	31	31	31	31
MED	57	55	51	52	48	52	60	68	67	65	66	65	63	67	66	67	66	66	68	72	72	71	66	60
U Q	63	59	58	54	54	57	64	70	U 73	71	72	72	71	70	69	69	70	70	72	76	75	75	72	66
L Q	51	48	46	46	45	46	54	62	62	60	61	62	61	62	63	62	60	64	66	69	69	69	60	55

AUG. 2012 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 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							A	A	A	A	A	A	A	A	492	492	468	L 428						
2						L	A 428		A	A	A	A	A	492	A	492	A	A	A					
3							U A 396	L 472	L 472	A	A	A	A	A	A	L 492	480	L 452	A					
4									U L 520	484	U A 488	U L 504	R 520	520	512	L 496	L	A	L					
5						L	L	U L 440	U L 476	492	508	L	524	U L 520	U L 516	A	L 476	L	L					
6								L	L 480	L	L 512	L 520	L	512	L 504	U L 508	L	L						
7						L	U L 452	444	468	488	500	L 532	L	524	492	L 492	U L 472	L						
8						L		444	A	A	492	A	U R 492	L 492	492	L 468	L 464							
9							A	U L 452		H 528	512	U R 508	A	A	500	L 500	L 472	U L 436	L					
10							L	U L 444	480	484	500	A	A	500	U R 500	U A 448	L 460	U L 448	U L 360					
11								A	U L 476	476	U R 500	A	500	R 500	472	R 468	456	L						
12						L	U L 396	L 432	U L 444	452	L	U L 468	L 504	496	U R 496	476	L	L	A					
13							L	L	R 440	A	U R 488	U R 492	476	A	476	460	L 456	U L 428	L					
14							A	416	436	452	464	480	480	508	A	476	U L 448	U L 408	A					
15							L	L	U A 420	U L 464	A	U L 512	L 496	480	464	U L 460	L	U L 372	L					
16								U L 420	424	L 448	L	476	U A 448	476	L 460	L 456	L	L						
17						L	U A 348	A	A	A	A	R	444	464	R 460	432	L	L 404						
18							U L 316	A	A	A	B	L	484	472	L 464	A	A	L	A					
19								U A 396	A	R	U A 448	R 464	L 468	L 480	484	L 464	L 448	L						
20						L	L 372	388	432	L 448	U A 456	464	U A 460	464	L 460	U L 452	U L 448	U L 388						
21						L	L	A	U A 436	A	A	A	R 460	R 456	452	L 456	L 444	L	L					
22							L	408	L 432	448	L 472	A	468	A	472	460		U L 408	L					
23							L	L	L	460	476	476	476	L 476	L 476	U L 476	L	L						
24							L	388	412	440	440	448	452	448	R 440	A	A	A	A					
25							L	396	A	464	A	A	472	L 468	A	U L 436	A	A						
26								A	U A 460	A	500	500	500	U L 500	488	A	A	A	A					
27							L	L 424	L	L	U L 476	U L 480	U L 488	L 480	U L 492	U L 492	L							
28							L	L	L	L	U L 484	500	L	L	L	L	A							
29								L	A	A	L	A	U A 488	A	A	A	L	L						
30									L 444	U L 488	L	U L 508	L 512	L 508	L	U L 492	L	L						
31								L	U L 468	460	L	504	L 512	L 508	L	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							6	16	19	17	18	18	23	24	23	24	13	10	1					
MED							U L 384	426	444	464	488	496	484	492	484	L 472	L 460	U L 418	U L 360					
U Q							U L 396	L 444	U L 476	486	500	U L 508	500	508	496	L 492	L 472	U L 436						
L Q							U 348	402	432	450	472	476	468	474	464	L 458	L 448	U L 404						

AUG. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 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						A	U A 280	A	A	U A 328	A	A	A	A	U A 336	336	332	296	U A 232					
2					B	A	U A 268	312	U A 348	U A 360	A	A	A	A	A	348	U A 340	284	A					
3							U A 260	308	A 332	U A 364	A	A	A	A	A	348	328	292	220					
4						196	U A 260	U A 296	U A 312	A	A	R	R 352	U R 376	376	356	316	U A 288	A					
5						188	U A 256	316	344	372	R	R 396	R 396	R	A	A	340	296	A 220					
6						224	264	308	340	A 356	U A 360	A	A	U R 352	A	348	324	288	A					
7						204	268	296	A 312	A	A	A	A	U R 364	356	340	312	280	224					
8						200	248	292	A	A	A	A	A	A	A	A	328	A 288						
9							A	284	328	348	R 360	U R 364	372	372	A	A	312	U A 284	U A 232					
10						184	232	300	320	U A 344	A	A	U A 372	372	U A 368	U A 328	A 296	260	A					
11						A	A	A	324	U A 332	A 344	A	U A 352	R 356	A	A	A	A	224					
12						196	U A 232	288	316	344	U A 356	U A 356	A	U A 368	348	336	320	264	U A 192					
13						A	240	276	316	340	344	U A 348	360	A	A	336	312	268	A					
14						A	U A 244	U A 276	312	A	A	A	A	A	A	344	300	A 256	U A 188					
15						184	236	284	U A 316	U A 328	U A 332	A	A	A	A	320	A	264	A					
16						180	232	U A 276	U A 312	U A 320	A	A	A	A	A	320	296	256	A					
17						A	244	276	U A 292	A	U A 308	A	R	336	352	336	320	252	A					
18						A	244	268	U A 304	320	B	A	A	A	A	A	A	260	U A 176					
19						188	244	264	U A 308	A	A	A	A	A	A	320	300	256	A					
20						A	228	260	300	308	A	A	A	A	U A 308	312	296	248	A					
21						172	U A 228	A 268	304	U A 308	A	A	A	A	328	308	284	256	A					
22							240	276	304	324	336	U A 336	348	A	A	A	A	A	236					
23							252	264	296	324	336	344	U R 352	332	R 324	A	284	240	172					
24						A	212	264	296	U A 320	A 332	R 360	A	U R 348	348	332	292	224	A					
25							212	260	288	320	332	A	A	U A 344	344	320	U A 288	240	A					
26							224	280	300	332	U A 332	A	A	A	A	A	A	232	A					
27							U A 224	272	296	328	336	R 348	352	A	352	340	A	A	A					
28						A	228	276	316	320	A 332	A	A	A	A	A	A	A	A					
29							220	U A 260	A	A	A	A	A	A	A	A	A	A 236	A					
30							A	A	324	332	A	A	R 380	372	364	340	312	236	A					
31						B	236	292	A	352	U R 364	R 376	R 356	A	A	328	288	A 232	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						11	28	28	27	24	15	9	11	12	13	21	23	27	11					
MED						188	240	276	312	330	A 336	R 356	356	360	348	336	312	260	A 220					
U Q						200	U A 254	294	324	A 346	U 356	R 370	R 372	372	360	342	324	284	U A 232					
L Q						184	228	268	300	320	A 332	346	352	346	332	320	296	240	U A 188					

AUG. 2012 foE (0.01MHz)

IONOSPHERIC DATA STATION Wakkanai

AUG. 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	24	JA 16	24	JA 23	EB 14	JA 29	JA 56	JA 51	JA 67	JA 102	JA 59	JA 112	JA 48	JA 67	40	41	G	33	JA 44	70	JA 89	JA 53	JA 94	JA 53
2	JA 34	JA 25	JA 27	28	JA 15	30	JA 46	40	JA 57	JA 57	JA 55	JA 64	JA 69	JA 49	JA 56	41	JA 61	JA 54	JA 109	JA 67	JA 64	JA 65	JA 36	23
3	JA 19	JA 16	JA 15	25	JA 17	24	JA 41	35	45	JA 53	70	JA 60	68	58	52	G 32	35	JA 43	JA 43	JA 46	JA 51	JA 30	JA 19	JA 23
4	JA 25	JA 31	37	26	EB 14	JA 22	JA 37	JA 47	38	38	JA 50	G 32	G 32	40	G	38	38	JA 49	JA 31	JA 24	JA 23	JA 21	EB 12	27
5	JA 17	EB 12	EB 12	EB 12	EB 12	22	30	G	38	42	G 38	44	G 29	G 35	JA 42	JA 88	34	34	30	JA 29	JA 20	JA 28	JA 19	JA 39
6	JA 18	JA 16	JA 21	28	JA 21	G 21	32	JA 43	45	JA 45	44	42	40	G	JA 50	38	37	JA 49	JA 53	JA 60	38	69	JA 44	JA 25
7	JA 29	JA 14	21	EB 12	EB 12	G	G 20	35	38	39	40	40	40	G	G	G	G 26	35	27	JA 37	JA 23	24	EB 15	EB 15
8	25	JA 27	JA 25	26	24	G	34	33	JA 55	JA 56	40	JA 57	39	39	39	39	37	40	JA 41	JA 45	JA 51	JA 25	30	JA 63
9	JA 34	JA 27	JA 22	EB 14	JA 21	JA 25	JA 60	36	39	39	42	42	JA 65	JA 59	40	37	34	52	JA 27	JA 31	JA 51	JA 36	59	JA 27
10	23	EB 14	JA 25	JA 28	JA 17	G 18	26	34	JA 41	JA 65	JA 43	57	JA 50	G	JA 47	JA 53	JA 45	30	JA 32	JA 47	JA 57	56	JA 50	JA 31
11	JA 31	38	JA 26	JA 29	C	JA 38	53	JA 58	JA 45	JA 66	JA 51	68	40	G 34	37	JA 44	JA 37	JA 35	G 22	JA 24	JA 31	JA 31	JA 56	JA 31
12	JA 17	JA 22	EB 11	JA 20	JA 27	21	27	JA 41	38	39	JA 43	JA 57	40	41	39	44	G	JA 40	45	JA 37	JA 28	JA 25	51	JA 26
13	JA 23	JA 19	JA 21	JA 29	JA 25	36	G	34	40	JA 54	43	41	44	JA 63	JA 65	G 33	G 31	G 26	JA 29	JA 27	JA 39	JA 61	JA 28	38
14	JA 27	37	JA 15	JA 27	JA 23	JA 33	JA 44	36	G 30	40	JA 44	JA 51	39	JA 46	JA 62	G 26	32	41	JA 34	55	JA 64	JA 35	JA 33	23
15	JA 24	26	19	JA 16	18	G	28	37	JA 53	JA 47	JA 64	40	40	40	37	35	30	27	27	JA 32	JA 24	32	JA 17	JA 16
16	EB 13	22	JA 21	EB 12	EB 13	G	27	32	39	39	39	JA 46	JA 53	JA 59	JA 43	36	36	JA 40	47	JA 30	JA 51	JA 27	JA 26	20
17	30	JA 21	JA 28	JA 26	EB 14	27	37	JA 53	67	JA 65	55	40	40	G	40	37	37	31	JA 32	40	JA 15	JA 44	JA 42	JA 61
18	JA 53	99	JA 62	JA 27	JA 21	JA 41	34	JA 44	JA 51	JA 56	EB 52	JA 46	JA 45	42	40	JA 47	JA 49	G	49	JA 53	JA 62	JA 24	JA 21	JA 20
19	JA 32	20	EB 14	EB 14	20	G 18	G 18	JA 43	JA 57	JA 52	JA 46	44	JA 42	36	34	G 30	31	31	JA 27	JA 27	JA 15	JA 15	JA 28	JA 17
20	JA 28	22	JA 15	24	JA 13	16	26	31	37	JA 42	52	JA 45	JA 49	34	36	35	34	32	49	JA 66	29	JA 30	JA 85	JA 32
21	JA 27	EB 15	20	EB 16	JA 19	G	27	60	JA 45	JA 55	JA 55	JA 55	JA 42	43	36	34	G 19	30	26	JA 36	JA 26	EB 14	JA 63	JA 34
22	JA 32	JA 31	JA 28	JA 28	JA 28	JA 25	32	41	40	40	42	63	39	48	40	JA 49	JA 31	38	37	JA 23	JA 20	28	26	23
23	EB 14	JA 15	EB 15	EB 15	JA 16	JA 61	26	33	35	35	G	37	G	37	37	34	30	26	GE	BJ 14	JA 19	JA 15	20	20
24	JA 13	JA 15	22	18	JA 12	18	32	33	40	JA 49	JA 49	42	41	40	43	JA 68	JA 65	JA 55	62	JA 58	EB 14	JA 85	JA 31	39
25	JA 27	JA 41	JA 39	JA 45	JA 50	JA 27	33	JA 60	70	39	JA 68	JA 73	53	38	48	41	JA 71	37	38	JA 21	JA 33	JA 50	50	JA 33
26	JA 49	JA 85	JA 85	JA 66	72	JA 61	29	JA 49	JA 48	JA 67	44	38	38	37	38	JA 50	JA 55	JA 51	70	JA 103	JA 85	JA 53	JA 53	JA 63
27	27	JA 17	JA 16	JA 23	JA 21	EB 14	27	32	39	39	JA 46	44	40	JA 43	38	38	JA 46	JA 49	JA 38	JA 52	JA 27	JA 23	JA 43	JA 52
28	JA 67	JA 67	JA 31	JA 40	44	JA 23	26	32	35	JA 47	JA 50	39	JA 54	JA 43	JA 53	36	84	JA 79	JA 62	JA 61	JA 42	JA 36	JA 29	JA 63
29	JA 53	JA 53	JA 30	JA 23	JA 25	20	26	32	JA 55	50	JA 61	JA 57	JA 55	JA 54	JA 61	51	34	JA 31	46	JA 38	JA 51	JA 43	JA 32	27
30	JA 23	JA 23	EB 14	JA 21	JA 25	JA 32	JA 33	JA 55	38	G 29	JA 50	44	G 29	G 29	38	G 31	36	27	JA 41	JA 32	JA 49	JA 23	EB 14	23
31	JA 23	EB 11	JA 14	18	18	EB 14	G 18	G 29	36	43	G	G 30	G 33	JA 48	JA 48	G 32	G 27	29	JA 27	JA 20	EB 12	JA 16	EB 14	JA 17
	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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 27	JA 22	JA 21	JA 24	JA 20	22	30	36	40	JA 47	46	44	40	40	40	38	35	35	JA 38	JA 37	JA 33	JA 30	JA 31	JA 27
U Q	JA 32	JA 31	JA 28	JA 28	JA 25	JA 30	JA 37	JA 47	JA 53	JA 56	JA 55	JA 57	JA 50	JA 48	JA 48	JA 44	JA 45	JA 49	47	JA 55	JA 51	JA 50	JA 50	JA 39
L Q	JA 23	16	EB 15	EB 16	EB 14	21	26	33	38	39	42	40	G 39	G	37	G 34	G	30	27	JA 27	JA 23	JA 24	20	23

AUG. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 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	18	E B 14	E B 14	17	E B 14	23	41	42	43	61	54	A A 112	47	55	39	39	G	31	31	62	59	39	21	17
2	18	18	18	E B 11	E B 15	18	43	37	48	54	53	53	A A 69	44	44	38	48	48	A A 109	42	44	46	24	E B 14
3	E B 12	E B 12	E B 12	E B 12	E B 12	21	40	34	42	49	49	53	57	54	51	G 32	G 32	32	42	40	20	20	16	16
4	16	16	22	E B 14	E B 14	G 13	32	44	37	37	49	U G 31	G 29	G 36	G	37	37	44	21	18	18	17	E B 12	E B 12
5	E B 12	E B 12	E B 12	E B 12	E B 12	G 18	26	G	37	40	U G 37	U Y 44	G 29	U G 32	40	55	G 25	31	25	23	18	20	E B 14	23
6	E B 12	E B 14	16	21	19	G 18	29	32	G 34	41	40	40	39	G	40	G 28	33	33	36	36	29	E B 14	25	22
7	23	E B 12	E B 12	E B 12	E B 12	G	G 14	G 30	35	38	37	38	U Y 38	G	G	G	G 22	28	25	19	16	E B 15	E B 15	E B 15
8	E B 15	16	18	18	E B 15	G	G 21	G 29	49	51	38	54	39	38	38	35	34	33	31	30	27	17	16	16
9	17	17	17	E B 14	17	21	59	34	34	G 34	42	42	46	49	37	35	32	30	24	26	17	24	52	21
10	E B 14	E B 14	E B 14	E B 14	E B 14	G 16	26	32	36	38	38	52	46	G	45	45	G 24	27	24	27	40	27	34	24
11	24	18	17	19	C	35	28	45	42	39	46	60	38	G 32	32	32	32	32	G 15	19	27	27	22	22
12	E B 12	17	E B 11	11	E B 11	G 14	26	38	35	36	38	37	37	38	38	39	G	35	35	19	17	E B 15	23	E B 12
13	E B 12	17	E B 12	E B E B 12	E B 12	21	G	29	38	44	42	41	40	44	40	G 26	G 26	G 22	22	22	34	21	21	24
14	E B 14	E B 14	E B 14	16	17	16	40	32	G 26	39	39	43	38	38	44	G 23	G 30	30	30	40	29	25	24	E B 13
15	E B 14	E B 15	E B 15	E B E B 15	E B 15	G	24	30	42	42	52	39	39	37	34	33	29	G 20	20	27	22	22	E B 12	E B 12
16	E B 13	E B 12	E B 12	E B E B 12	E B 13	G	24	G 26	33	33	36	37	45	40	36	34	32	33	39	20	19	19	18	E B 15
17	18	17	17	E B 14	E B 14	20	35	47	53	54	49	U Y 40	39	G	39	34	G 26	26	25	33	E B 14	12	20	20
18	21	43	43	E B 13	E B 13	28	27	40	45	47	E B 52	42	42	39	38	43	45	G	45	45	E B 12	18	18	E B 12
19	28	16	E B 14	E B E B 14	E B 14	G 13	G 14	40	52	45	45	41	40	36	32	G 27	G 28	28	18	18	E B 15	E B 15	15	E B 15
20	20	E B 14	E B 14	19	E B 14	14	24	G 24	32	36	46	40	46	34	34	34	G 29	29	40	20	17	E B 13	22	21
21	E B 14	E B 15	E B 16	E B E B 16	E B 16	G	G 23	46	44	45	48	48	40	41	36	33	G 19	28	20	34	20	E B 14	17	23
22	26	22	20	20	17	19	28	33	38	38	42	55	39	47	36	38	28	24	G 19	18	18	19	E B 14	E B 14
23	E B 14	E B 15	E B 15	E B E B 15	E B 15	A A 61	G 20	30	G 30	34	G	G 34	G	34	G 30	30	30	26	G	E B 14	18	E B 14	E B 14	E B 14
24	E B 15	E B 15	E B 15	E B E B 15	E B 15	15	27	28	35	35	37	38	38	37	36	47	41	41	51	16	E B 14	16	20	20
25	22	33	20	18	18	20	23	30	50	36	A A 68	A A 73	41	37	44	40	A A 71	33	23	17	22	37	36	21
26	28	29	30	A A 66	25	36	24	47	46	A A 67	39	38	37	34	36	46	49	38	54	46	22	22	18	E B 15
27	E B 14	E B 14	E B 14	16	16	E B 14	G 22	30	33	37	39	39	39	42	36	36	37	33	23	38	26	21	21	38
28	34	30	24	24	22	18	G 22	G 26	G 27	42	42	U Y 38	44	40	40	36	A A 84	32	48	45	22	19	22	E B 12
29	39	24	24	17	E B 14	13	G 22	27	51	44	44	45	49	49	52	45	32	28	28	27	38	32	24	20
30	21	20	E B 14	18	18	25	27	49	36	G 25	40	40	G 24	G 23	38	G 27	33	26	27	24	30	20	E B 14	E B 14
31	E B 12	E B 11	11	11	11	E B 14	G 14	G 22	34	40	G	G 27	G 28	44	41	G 19	G 18	28	21	18	E B 12	E B 11	E B 14	E B 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	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	E B 15	E B 15	E B 14	G	26	32	37	40	42	41	39	38	38	35	G	30	25	26	20	19	20	16
U Q	22	18	18	18	17	21	29	40	45	45	49	52	45	44	40	39	37	33	39	38	29	24	23	21
L Q	E B 14	E B 14	E B 14	E B E B 12	E B 13	15	G 22	G 29	34	36	38	38	G 38	G	36	G 32	G 28	27	21	19	E B 17	E B 15	E B 15	E B 14

AUG. 2012 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 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	14	14	14	14	14	12	12	13	12	18	18	18	18	19	18	17	17	17	17	14	14	11	11	11
2	11	11	11	11	15	15	15	13	12	22	16	16	15	18	17	14	14	14	12	13	14	14	14	14
3	12	12	12	12	12	12	12	13	13	14	16	22	15	17	18	18	16	15	17	15	15	15	15	15
4	14	14	14	14	14	11	11	11	10	10	10	14	17	17	17	17	12	14	13	12	12	12	12	12
5	12	12	12	12	12	12	12	12	12	14	14	14	14	14	17	17	16	15	13	12	14	14	14	14
6	12	14	14	14	14	14	14	14	13	13	13	15	18	18	18	17	13	12	12	14	14	14	14	14
7	13	12	12	12	12	12	12	12	14	14	14	14	14	14	14	15	15	16	15	12	15	15	15	15
8	15	15	15	15	15	15	15	15	15	13	13	15	15	15	15	15	15	15	13	13	13	16	15	15
9	14	14	14	14	12	12	12	12	11	16	17	16	16	15	15	15	18	16	16	15	15	15	14	14
10	14	14	14	14	14	14	13	12	12	14	16	16	18	17	17	16	15	14	14	14	14	14	13	11
11	11	11	14	14	C	13	13	12	11	11	18	16	16	17	15	16	16	15	15	12	12	12	12	12
12	12	11	11	11	11	11	11	11	11	13	16	16	16	16	16	16	16	15	14	16	15	15	12	12
13	12	12	12	12	12	12	15	15	15	17	16	16	18	16	12	14	14	13	12	14	14	14	14	14
14	14	14	14	14	14	14	14	14	14	11	11	11	14	16	15	15	15	15	14	13	13	13	13	13
15	14	15	15	15	15	15	15	15	14	14	14	14	20	20	18	17	17	18	15	14	14	14	12	12
16	13	12	12	12	13	12	12	13	14	14	13	15	16	15	17	16	16	12	12	11	15	15	15	15
17	13	13	13	14	14	12	11	11	11	12	13	12	15	15	15	13	13	14	14	14	14	12	11	11
18	13	13	13	13	13	13	13	13	14	15	52	15	15	15	15	14	14	14	13	12	12	12	12	12
19	14	14	14	14	14	11	11	11	20	16	16	16	17	16	18	14	14	14	14	15	15	15	15	15
20	14	14	14	14	14	12	12	11	11	11	11	15	15	15	15	16	12	12	14	14	14	13	14	12
21	14	15	16	16	16	14	14	14	14	14	12	18	18	15	13	12	11	11	11	13	14	14	14	14
22	14	14	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	13	14	14	14	14	14
23	14	15	15	15	15	16	12	12	12	12	12	12	12	12	12	12	12	12	12	14	14	14	14	14
24	15	15	15	15	15	12	12	12	12	12	12	14	14	14	14	14	14	11	12	14	14	14	14	14
25	14	14	14	14	14	14	10	10	10	13	14	14	14	14	16	16	16	16	14	12	12	12	12	12
26	12	12	12	12	12	12	12	14	14	12	11	11	11	14	14	14	13	12	12	15	15	15	15	15
27	14	14	14	14	14	14	14	14	14	14	14	14	15	15	16	16	18	13	13	13	11	13	13	12
28	13	12	12	12	12	12	13	15	15	15	18	20	13	12	12	13	12	13	13	14	12	12	12	12
29	15	15	15	14	14	11	11	11	12	11	14	14	14	14	17	15	15	10	10	10	12	11	11	11
30	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	14	14
31	12	11	11	11	11	14	14	14	14	14	16	16	16	16	16	16	15	14	14	14	12	11	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	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	12	12	13	13	14	14	15	15	15	15	15	15	14	13	14	14	14	14	14
U Q	14	14	14	14	14	14	14	14	14	14	16	16	17	17	17	16	16	15	14	14	14	15	14	14
L Q	12	12	12	12	12	12	12	12	12	12	13	14	14	14	14	14	13	12	12	12	12	12	12	12

AUG. 2012 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 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	285	285	293	286	308	F 321	320	362	296	R 342	310	A	R	318	312	303	301	315	314	U R 389	F 296	F 279	312	312
2	313	287	296	288	313	300	322	322	305	307	316	304	A	314	304	307	308	310	A	309	292	301	298	299
3	269	265	288	287	296	300	R 290	305	322	328	323	290	303	319	300	304	300	312	311	332	318	315	300	297
4	280	291	303	297	296	335	315	335	312	319	U R 328	R	309	306	301	310	307	310	312	326	315	U R 307	304	299
5	290	291	281	283	293	275	321	R 336	U Y 350	326	330	305	U R 322	319	303	315	314	317	309	311	R 327	311	301	298
6	291	288	287	283	281	315	319	305	U R 330	V 342	U R 325	R 327	310	308	Y	307	312	322	304	300	300	302	R 294	290
7	281	279	287	276	276	285	290	329	V 334	320	306	317	290	325	319	316	315	325	308	309	311	293	297	288
8	291	297	296	290	291	283	311	321	338	A 290	303	287	293	330	317	308	300	293	298	308	304	304	285	283
9	306	280	288	302	287	298	A 311	347	319	311	324	J R 318	U R 315	289	318	312	309	319	320	327	319	313	326	297
10	301	313	300	298	301	315	V 336	309	314	319	304	307	311	287	298	309	302	305	310	320	308	295	301	286
11	295	292	291	302	C	307	V 302	342	329	334	320	R	321	284	317	294	302	322	315	302	313	321	308	308
12	304	285	287	290	298	285	321	330	R 305	318	V 297	303	301	R 295	311	311	315	312	309	326	317	314	299	303
13	313	285	286	281	296	310	336	317	283	315	299	U R 245	282	249	295	300	298	292	306	299	305	300	317	306
14	311	299	277	288	292	309	292	309	315	V 302	R 349	349	323	289	308	307	310	322	314	303	303	314	321	292
15	300	297	287	309	320	306	319	U R 325	Y	R 328	319	339	315	321	315	325	327	322	313	318	320	324	303	300
16	288	289	291	297	316	315	313	309	350	336	318	315	310	320	318	320	324	315	312	301	300	306	334	299
17	293	290	293	300	288	294	301	316	U R 341	A 364	A 262	V 305	V 321	305	293	335	332	321	309	V 315	299	F 302	F 309	309
18	289	J R 270	270	306	305	F 357	335	343	347	338	336	333	321	327	313	317	300	316	316	303	302	295	297	318
19	290	300	308	310	291	295	328	318	U R 366	V 345	353	336	334	306	326	327	322	329	311	312	311	299	299	286
20	284	319	304	314	304	U R 307	333	R 327	323	327	320	335	323	329	332	318	309	333	313	293	301	309	R 342	318
21	288	280	296	300	310	337	323	302	R 314	339	U R 308	333	330	311	323	336	335	337	326	304	314	312	314	302
22	299	297	299	310	298	301	302	342	361	330	318	324	339	316	322	332	322	307	305	308	308	313	320	315
23	303	301	299	320	309	A	344	336	333	325	342	324	341	326	321	319	320	320	323	294	299	335	314	289
24	286	279	302	308	316	306	296	U R 290	292	290	U R 252	U R 260	260	269	R	A	321	332	345	320	299	304	287	292
25	290	R 287	296	325	318	296	303	357	362	322	A	A	334	319	314	323	A	297	317	319	327	295	301	278
26	280	R 275	R 286	A	282	A 312	348	354	347	A	295	331	326	304	317	321	296	320	320	A	305	296	308	269
27	274	305	290	304	292	315	319	336	325	361	362	312	334	322	309	299	321	321	325	314	296	296	307	286
28	304	R 290	288	293	300	313	R 353	V 306	304	Z 335	329	312	V 302	314	322	321	A	327	319	306	318	304	304	267
29	F 296	F 280	281	308	303	336	354	339	338	346	342	333	324	325	315	322	333	307	313	317	306	319	324	316
30	322	299	295	293	294	328	340	U R 359	U R 375	338	322	337	U R 335	318	318	329	300	317	300	303	R 340	R 334	312	299
31	288	285	281	297	291	304	336	R	U Y 366	353	344	342	334	319	313	327	313	301	314	R 330	325	R 348	320	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	30	31	30	30	30	30	27	29	31	29	30	29	31	30	30	31	31	31	31
MED	291	289	291	298	297	307	320	328	330	328	320	318	321	316	315	316	312	317	313	310	308	306	307	298
U Q	303	297	296	308	308	315	336	342	347	339	330	333	332	321	318	323	322	322	317	320	318	314	317	306
L Q	286	280	287	288	291	298	303	309	314	319	306	305	306	304	306	307	302	310	309	303	300	299	299	288

IONOSPHERIC DATA STATION Wakkanai

AUG. 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							A	A	A	A	A	A	A	A	377	378	384	L 358						
2						L	A	385	A	A	A	A	A	378	A	342	A	A	A					
3							A	L 358	A	A	A	A	A	A	A	L 343	352	L 337	A					
4									U L 354	392	A	Y 378	R 366	368	375	L 370	L	A	L					
5						L	L	U L 381	U L 371	400	388	L	389	U L 393	U L 359	A	L 352	L	L					
6								L	L 394	L	385	L 390	L	397	A 339	U L 351	L	L						
7						L	U L 346	352	390	382	386	L 365	L	373	391	L 379	U L 355	L						
8						L		377	A	A	395	A	U R 396	L 379	380	L 380	L 351							
9							A	U L 359		H 360	405	U R 401	A	A	367	L 360	L 352	U L 361	L					
10							L	U L 352	361	382	375	A	A	376	U R 401	A	L 343	U L 325	U L 338					
11								A	U L 378	392	A	A	374	R 374	397	R 368	359	L						
12						L	U L 360	A 357	U L 388	382	L	U L 406	L 363	368	U R 368	383	L	L	A					
13							L	L	R 406	A	U R 380	U R 378	390	A	361	375	L 344	U L 335	L					
14							A	369	377	A	397	A	383	363	A	345	U L 355	U L 357	A					
15							L	L	A	U L 386	A	U L 350	L 360	384	399	U L 360	L	U L 383	L					
16								U L 393	390	L 406	L	387	A	A 361	L 375	L 358	L	L						
17						L	A	A	A	A	A	R	399	383	R 386	368	L	L 344						
18							U L 436	A	A	A	B	L	A 369	A 363	L 370	A	A	L	A					
19								A	A	R	A	R 395	L 385	L 376	357	366	L 356	L						
20						L	L 356	377	355	L 396	A	384	A	384	L 365	U L 358	U L 328	U L 337						
21						L	L	A	A	A	A	A	R 400	A	395	L 362	L 346	L	L						
22							L	A	A	387	A	A	414	A	A 341	A 348		U L 340	L					
23							L	L	L	399	386	386	397	L 397	L 370	U L 360	L	L						
24							L	393	368	386	405	398	408	400	R 309	A	A	A	A					
25							L	R 408	A	387	A	A	381	L 384	A	A	A	A						
26								A	A	A	359	359	359	U L 361	369	A	A	A	A					
27							L	L 367	L	L	U L 389	U L 386	U L 378	A	U L 359	U L 359	L							
28							L	L	L	L	A	400	L	L	L	L	A							
29								L	A	A	L	A	A	A	A	A	L	L						
30									L 407	U L 400	L	U L 381	L 378	L 381	L	U L 360	L	L						
31								L	U L 363	418	L	398	L 393	L 376	L	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							4	14	14	16	12	17	20	22	23	22	13	10	1					
MED							U L 358	373	378	390	387	386	384	377	370	L 360	L 352	U L 342	U L 338					
U Q							U L 398	385	390	400	396	398	396	384	386	370	356	U L 358						
L Q							L 351	358	363	384	382	378	372	368	359	358	L 345	U L 337						

AUG. 2012 M(3000)F1 (0.01)

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AUG. 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							A 268	246	A 328	A 322	322	A	A 310	340	334	334	334	298						
2						298	298	294	310	310	310	326	A	326	326	326	324	304	A					
3							330	320	314	298	298	398	A 388	318	340	322	322	298	284					
4									290	290	290	310	314	344	344	302	302	302	292					
5						264	264	264	254	292	292	322	322	302	314	314	306	306	286					
6								300	294	274	324	322	322	340	304	330	300	280						
7						L 312	336	288	288	306	328	330	362	308	308	308	296	294						
8						294		304	302	E A 400	382	E A 382	374	282	314	314	322							
9							A	270		358	334	318	310	376	320	320	304	276	274					
10							242	342	308	308	354	E A 354	354	420	346	314	350	324	288					
11								266	276	282	330	A	330	382	326	332	328	298						
12						304	298	294	304	304	L 326	326	366	366	324	324	294	294	272					
13							272	272	418	326	408	576	418	482	372	352	334	334	290					
14							E A 334	304	286	336	272	272	282	390	318	318	300	284	270					
15							264	286	258	286	298	272	290	292	294	284	284	274	274					
16								296	266	270	296	340	340	300	300	300	292	292						
17						306	320	298	A 286	E A 286	A	E A 358	352	352	340	280	280	304						
18							214	242	252	A 298	B 298	304	320	296	298	298	E A 350	310	300					
19								290	246	280	264	292	292	318	298	300	300	272						
20						284	284	308	306	306	306	300	314	310	304	304	314	282						
21						258	272	A 308	298	298	A	310	310	310	310	310	294	286	278					
22							308	280	264	304	308	A 308	296	E A 332	314	304		304	274					
23							274	274	286	286	286	310	288	302	310	310	298	288						
24							L 360	408	408	430	544	Y 498	498	488	402	A	324	296	E A 296					
25							280	242	244	302	A	A	304	304	304	304	A	276						
26								264	276	A	348	296	296	308	308	296	E A 326	276	A					
27							272	272	272	244	266	310	306	306	312	312	294							
28							266	286	274	298	298	320	320	296	296	296	A							
29								260	260	264	276	282	304	304	304	304	282	278						
30									236	248	268	270	288	300	300	292	284	284						
31								266	248	248	268	274	292	292	300	284								
	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	20	29	30	30	28	28	30	31	31	30	27	27	13					
MED						296	275	286	286	298	302	312	314	310	312	309	301	294	281					
U Q						305	314	302	304	308	329	335	352	352	326	320	324	304	291					
L Q						274	267	266	260	282	288	298	296	302	304	300	294	280	274					

AUG. 2012 h′F2 (KM)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 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	294	294	294	288	270	242	A	A	A	A	A	A	A	A	240	228	228	228	258	A 250	E A 354	320	246	246
2	246	246	258	264	264	238	A	238	A	A	A	A	A	A 238	A	238	A	A	A	264	A 316	E A 316	278	272
3	298	306	264	282	266	266	A	226	A	A	A	A	A	A	A	226	226	E A 242	A	A 254	246	246	246	262
4	282	282	282	268	256	242	242	A 260	216	216	A	Y	216	216	216	224	224	A	234	236	236	246	240	240
5	246	262	272	274	274	234	234	214	H 208	206	198	A	198	190	190	A	218	H 218	232	252	246	246	246	266
6	276	276	276	284	284	258	234	E A 256	230	E A 236	216	198	218	198	A	H 200	200	A 252	272	272	272	270	270	262
7	280	280	282	296	296	252	244	230	222	220	198	198	Y 238	198	198	202	208	230	230	256	256	256	256	256
8	256	256	256	256	256	254	254	216	A	A	216	A	216	176	200	200	218	254	270	270	270	268	262	268
9	290	290	288	264	260	260	A	A 230	230	H 204	200	200	A	A	212	212	212	E A 234	248	248	248	266	E A 300	282
10	260	246	246	254	254	254	208	222	A 246	224	224	A	A	224	224	A	234	214	224	238	260	260	274	278
11	278	278	278	278	C	280	220	A	A 236	208	A	A	208	208	208	222	222	A 228	232	252	268	268	264	260
12	254	254	270	270	270	270	252	A	216	216	216	216	216	216	216	220	230	E A 248	A	248	248	246	246	246
13	246	254	266	266	268	266	216	H 192	216	A	216	216	216	A	232	232	232	232	A 258	258	268	268	260	260
14	278	278	290	290	278	248	A	238	210	A	202	A	202	H 202	A	202	228	242	A	A 286	272	244	244	254
15	270	270	270	254	252	250	224	A 224	A	224	A	224	224	204	202	214	214	214	236	246	246	246	240	254
16	264	264	264	274	272	270	246	236	A 230	216	216	216	A	E A 246	226	226	226	A	A 270	270	264	250	246	246
17	260	292	292	280	280	A 260	A	A	A	A	A	A	234	208	208	220	220	220	258	258	258	258	258	260
18	282	A	E A 366	264	258	256	216	A	A	A	B	A	E A 254	A	A 252	A	A	H 216	A	A 278	268	268	268	262
19	288	254	254	254	254	254	238	A	A	268	A	216	222	224	218	212	212	224	252	252	252	270	262	262
20	284	270	270	230	246	246	220	220	220	A 220	A	A 220	A	186	186	202	202	A 218	A 266	260	260	240	244	244
21	292	292	292	288	256	256	238	A	A	A	A	A	238	A	220	220	220	226	238	256	256	254	254	272
22	316	314	314	258	260	260	A 256	A	A	222	A	A	194	A	A	A	200	206	228	248	248	248	238	238
23	240	254	254	224	224	A	230	230	218	208	208	208	208	190	186	H 186	198	228	234	238	238	234	234	234
24	278	288	286	266	260	260	E A 264	230	E A 278	234	230	230	230	208	A	A	A	A	A	232	246	246	288	288
25	324	A 326	296	258	A 258	258	234	E A 234	A	206	A	A	220	220	A	A	A	A	248	238	254	E A 324	282	282
26	354	354	A 330	A	A 360	A	234	A	A	A	234	212	216	210	210	A	A	A	A	A	240	246	246	284
27	278	252	270	264	272	258	258	234	A 234	H 198	E A 244	208	222	A	222	222	A	254	254	254	256	258	260	E A 322
28	A 282	314	314	312	298	276	236	218	218	A	A	218	A	E A 244	A 222	222	A	256	A 274	274	256	256	256	256
29	A	286	286	270	268	258	210	210	A	A	E A 260	A	A	A	A	A	240	236	240	244	272	272	256	254
30	240	262	272	280	274	256	234	234	212	212	212	212	212	212	212	212	220	220	256	256	256	222	222	228
31	274	276	276	276	276	272	248	230	230	208	208	200	200	E A 250	244	236	236	236	252	252	236	236	220	228
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	30	29	25	22	18	19	17	16	22	22	23	23	24	25	24	30	31	31	31	31
MED	278	277	276	269	267	258	234	229	220	216	214	214	216	208	216	220	220	227	250	253	256	253	255	260
U Q	288	292	292	280	274	263	247	234	A 230	224	227	217	224	A 224	224	226	228	242	A 258	260	268	268	264	272
L Q	260	256	266	258	256	251	222	220	216	208	205	204	208	198	202	202	212	219	234	248	246	246	244	246

AUG. 2012 h′F (KM)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 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						A 110			A 110			A	A		110	110	110	110	110					
2					B		110	110	110	110		A	A	A		110	110	110	A					
3							114	114	110	110			110			110	110	110	110					
4						112	112	112	112	112		A	112	114	114	114	112	112						
5						124	114	114	114	114	A	114	114	114			114	114	118					
6						136	122	122	108	108	108			108	A	108	122	122						
7						122	122	122	114	A	A	A		106	106	106	110	110	110					
8						112	112	108				A	A	A	A		108	108						
9							A 112	112	108	108	108	108	108	108	108	A	108	108	108					
10						132	106	106	106	106			106	106	106	106		114						
11						A	A	A	108	108	108	108	108	108		A	A	A	126					
12						130	120	118	110	104	104	104	A	104	104	104	104	104	104					
13						A 104	104	104	104	104	104	104	104	A	A	104	114	124	A					
14						A 114	114	114						A	A	110	110	110	116					
15						116	116	114	114	114	108		A			120	A	120						
16						120	120	116	110	106		A	A	A	A	106	112	112	A					
17							108	108	108		108	A	108	108	108	108	122	122	A					
18						A	124	114	114	114	B					A		114	114					
19							112	112	112	A					A	114	114	114						
20							112	112	106	104					104	106	106	116						
21						124	124	116	114	104		A	A		104	104	106	106						
22							106	106	106	106	106	106	106	A	A	A			126					
23							132	114	114	114	112	104	104	104	104		108	108	110					
24						A	116	116	114	110	108	108	A	118	118	118	118	118						
25							108	108	108	108	108			108	108	108	108	108						
26							118	112	112	112	112		A				A	112						
27							108	108	108	108	108	108	108	108	108	108		A	A					
28							108	108	108	108	108			A	A		A		A					
29							116	116	A		A	A	A	A	A	A		116	A					
30								A	116	112	A		112	112	112	112	112	112	A					
31						B	126	126		120	102	102	102	A	A	102	110	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	28	28	27	25	15	10	13	14	14	21	22	26	11					
MED						123	114	113	110	108	108	107	108	108	108	108	110	112	110					
U Q						130	120	116	114	112	108	108	111	112	110	111	114	116	118					
L Q						116	109	108	108	106	106	104	105	106	104	106	108	110	110					

AUG. 2012 h′E (KM)

IONOSPHERIC DATA STATION Wakkanai

AUG. 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	110	98	98	98	B	112	112	112	112	112	112	104	104	104	112	112	G	112	112	112	112	112	112	112
2	116	100	118	118	128	120	120	120	110	110	110	110	110	110	110	120	120	120	118	116	114	114	102	102
3	102	102	102	102	102	112	112	112	112	112	108	108	108	108	108	102	132	132	122	112	122	108	102	102
4	112	112	106	106	B	106	122	114	114	114	108	96	96	122	G	146	122	114	114	92	92	92	B	92
5	96	B	B	B	B	132	122	G	184	196	96	204	98	98	98	106	106	122	122	114	114	110	110	108
6	98	98	98	98	98	120	120	120	120	114	114	114	114	G	108	108	124	124	118	114	112	112	126	100
7	100	100	100	B	B	G	100	116	112	106	106	106	106	G	G	G	106	108	108	108	108	108	B	B
8	108	104	100	100	100	G	118	118	100	100	100	100	100	100	100	100	124	124	114	112	112	98	100	100
9	98	98	98	B	106	106	106	106	106	108	176	142	114	114	114	114	126	126	126	116	116	116	116	104
10	104	B	104	104	104	110	160	168	110	108	108	108	108	G	108	108	106	144	114	114	114	110	110	110
11	110	112	112	106	C	98	98	98	98	104	104	104	104	102	102	102	102	102	122	122	118	114	114	110
12	104	102	B	118	100	112	112	112	112	196	118	116	116	116	142	124	G	124	112	112	112	112	112	102
13	112	112	122	122	122	118	G	118	118	118	118	114	114	114	114	114	114	104	104	104	104	104	104	104
14	124	94	94	94	94	94	106	120	96	96	96	118	98	98	98	90	178	128	122	114	112	112	96	96
15	96	96	96	108	108	G	124	116	106	106	106	106	106	106	106	202	108	108	108	108	108	108	108	108
16	B	108	108	B	B	G	120	120	110	108	104	104	102	102	102	128	128	128	120	116	116	114	114	92
17	106	106	106	106	B	116	116	116	110	110	110	108	184	G	178	142	112	122	112	102	102	128	98	98
18	98	98	98	98	104	114	114	114	114	114	B	114	114	114	110	110	108	G	108	108	108	108	108	108
19	108	108	B	B	106	114	114	110	110	110	110	110	106	106	98	98	124	124	108	108	108	108	108	108
20	94	96	96	96	102	102	118	118	112	110	104	100	100	100	110	136	136	130	104	104	104	104	104	104
21	102	B	102	B	98	G	104	104	104	104	104	96	96	96	130	130	90	228	112	110	110	B	110	104
22	96	96	96	96	96	112	112	110	110	110	110	110	110	96	100	100	100	106	106	108	96	104	100	100
23	B	136	B	B	134	98	98	126	126	126	G	126	G	124	102	102	162	156	G	B	104	104	104	108
24	108	108	108	108	132	132	124	124	122	120	112	178	106	144	128	122	122	122	122	124	B	124	108	108
25	102	102	96	96	96	96	112	112	112	112	112	112	112	112	126	126	126	126	126	120	120	122	110	110
26	108	108	108	102	102	102	124	124	120	120	120	120	110	110	110	108	108	108	108	108	122	122	120	118
27	114	108	108	108	108	B	118	118	118	188	114	114	114	114	130	130	104	102	102	102	102	102	102	102
28	102	102	102	102	104	104	130	122	122	108	108	108	108	108	108	108	100	138	100	100	98	98	98	98
29	98	98	98	98	112	112	114	114	112	110	106	106	106	106	102	102	102	102	102	102	102	102	102	102
30	102	102	B	114	114	102	102	114	200	100	100	100	100	100	198	106	116	144	110	106	106	106	B	106
31	102	B	102	102	100	B	100	126	112	194	G	104	102	102	102	102	102	126	94	94	B	104	B	104
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	26	24	24	24	30	30	31	31	28	31	30	27	29	30	29	30	30	30	29	30	27	30
MED	102	102	102	102	104	112	114	116	112	110	108	108	106	106	108	109	114	124	112	109	110	108	108	104
U Q	109	108	108	108	110	115	120	120	118	118	112	114	112	114	120	126	125	128	120	114	114	114	112	108
L Q	98	98	98	98	100	102	106	112	110	108	104	104	102	100	102	102	105	108	108	104	104	104	102	100

AUG. 2012 h′Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F1	F1	F1	F3		C3	CL21	CL22	CL22	CL21	CL21	L3	L1	L2	CL11	CL11		CL11	CL31	FQ41	FQ71	F6	FQ31	F2
2	FF32	F3	FF31	F1	C1	C2	C2	C2	C2	C1	C1	C2	C2	L2	L2	CL11	C2	C3	C4	F3	F3	F5	F4	F1
3	F2	F1	FF11	F2	F1	CL21	CL31	C1	C1	C2	C2	C2	C2	C2	C1	L1	CL11	C3	C3	C4	FF14	F3	F3	F3
4	F2	F2	F2	F1		LC11	CL11	C2	CL11	C1	C1	L1	L1	CL11		H1	C2	C2	C2	F2	FF22	F1		F1
5	F1					C1	C2		H1	H1	L1	HL11	L1	L1	L1	CL12	L1	CL11	CL22	F5	F1	F3	F1	F3
6	F1	F1	F3	F2	F2	L1	CL12	CL21	C1	C1	C1	C1	C1		C1	L1	CL11	CL32	C6	F5	F4	F3	FF14	F3
7	F4	F2	F2				L1	CL21	CL21	L2	L1	C1	C1				L1	CL21	CL21	FF22	F2	F1		
8	F2	F2	F3	F2	F1		C2	C2	C2	C2	C2	C2	C1	C1	C2	L2	CL12	CL12	CL32	F6	F6	FF12	FF11	F2
9	F2	FQ21	F2		F1	F2	F2	C2	C1	C1	HL11	H1	C1	C1	C1	C1	C1	C2	C2	F3	FF12	F2	F3	F3
10	F2		F1	F2	FF11	L1	H1	H1	C1	C2	C1	L1	C1		C1	C2	LH21	HL12	CLQ22	F5	FQ31	F4	F5	F3
11	F4	F3	F2	F3		L3	L3	C2	C2	C2	C2	C2	C1	L1	L2	L2	L3	L3	L2	F2	F3	F3	F3	F4
12	F1	F2		FF11	F1	L2	C2	C2	C1	H1	C1	C1	C1	C1	C1	C1		C3	C3	F3	F2	F2	F3	FQ11
13	FF11	F2	FF11	FF11	F2	CL31		C1	C1	CL21	C1	C1	C1	C1	CL11	L1	L1	L2	L3	F3	F4	FQ31	F2	F3
14	FF11	F3	F1	F3	F5	L3	C3	CL11	L1	L1	L1	CL11	CL11	L1	L2	L2	HL11	CL22	C2	F3	F3	F4	F4	F1
15	F2	FF11	F1	FF11	F1		C2	C2	C2	C1	C2	C2	C2	L1	L2	HL11	CL11	L2	L3	F4	F3	F3	F1	F2
16		F1	F1				CL11	C2	C2	C2	C1	L2	L2	L2	L1	CL12	CL22	C3	C4	F4	F2	F3	F2	F1
17	F2	F2	FQ21	F2		C2	C2	C2	C2	C2	C2	C1	H1		H1	HL11	L1	CL22	L3	F6	F1	FF12	F3	F4
18	F5	F6	F4	F3	FF11	C3	C2	C2	C2	C3		C1	C1	C1	L2	L2	L3		C4	F3	FF12	F2	F2	F3
19	F4	F1			F1	L2	L2	C3	C2	C2	C1	C1	C2	C2	L2	L2	CL12	CL12	CL32	F2	F1	F1	F5	F2
20	F4	F2	F1	F2	F1	L1	C2	C2	C2	C2	C1	C2	L2	CL11	C1	HL11	CL11	CL21	C5	FQ31	F2	FF13	F4	F3
21	F2		F1		F2		C2	C2	C2	C2	CQ21	L3	L2	L2	HL11	HL11	L1	HL11	CL22	FF32	FF41		FF21	F3
22	F3	F3	F3	F2	F2	F2	C3	C2	C2	C1	CL11	CL21	CL11	C2	C2	C2	C2	CL22	L3	F2	F2	FQ21	F1	F1
23		F1			F1	FQ21	L2	CL12	CL12	C1		C1		C1	L1	L1	HL12	HL12			F2	F2	F1	F1
24	F1	F2	F1	F1	F1	C2	C2	C2	C2	C2	C1	HL11	C1	CL11	CL11	C2	C3	C3	C5	FFQ23		FFQ11	F4	F4
25	F3	F5	FQ21	F2	F3	F3	C2	C2	C2	CL11	C3	C3	C1	C1	C1	C2	C2	C2	C5	F2	F6	F3	F5	F4
26	F5	F3	FQ41	FQ41	FQ31	CL23	CL22	C3	C2	C3	C1	C1	C2	C1	L2	L3	CL22	C5	C5	F3	FF14	F3	F3	F2
27	F2	F1	FF11	F3	F2		C2	C2	C2	HC11	C1	C1	C1	C1	C1	C1	CL22	L3	LC32	F6	F3	F6	F3	F4
28	FQ51	FQ41	F3	FQ41	FQ31	C1	H1	C1	C1	C2	C1	C1	C2	L2	CL12	L2	L4	HL23	L2	F4	FF21	F2	F3	FQ21
29	F5	F4	F4	F3	F2	F2	CL21	CL12	CLH21	C2	C2	C2	C2	LC11	L2	L1	L2	C3	C5	F3	FF32	F3	F3	F2
30	F2	F2		F2	F2	F3	C3	CL22	HCL11	L1	L2	L1	L1	L1	HL11	L1	CL22	HL12	L3	F4	F4	F3		F1
31	F2		F1	F1	F1		L1	L2	L2	HL12		L1	L1	L2	L2	L2	L1	CL12	L2	F1		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																								

AUG. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 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 79	X 79	X 74	X 63	X 58															X 85	X 85	X 84	83	79
2	82	81	76	68	X 57															A	X 76	78	79	X 66
3	66	62	71	66	X 62	60														X 87	X 87	X 82	X 84	X 86
4	X 76	X 73	X 73	X 67	X 61															X 92	X 96	X 91	X 85	X 74
5	X 72	X 71	X 67	X 65	X 64															X 95	X 84	X 79	80	84
6	81	76	76	70	66															X 89	X 84	X 84	X 89	X 81
7	X 76	X 72	X 72	X 71	X 71															X 86	X 84	X 85	X 84	X 77
8	X 75	X 74	X 69	X 65	X 63															X 87	X 84	X 76	X 72	X 72
9	X 78	X 80	X 71	X 64	X 63															X 93	X 84	X 81	X 81	X 81
10	X 74	X 73	X 70	X 58	X 56															X 101	X 80	X 77	X 77	X 76
11	X 74	X 74	X 68	X 65	X 60															X 90	X 88	X 78	X 73	82
12	X 72	X 69	68	X 65	X 63															X 101	X 82	X 72	X 70	X 66
13	X 59	X 54	X 53	X 54	X 55															X 89	X 77	X 68	69	X 60
14	X 60	X 60	X 55	56	X 54															X 84	X 77	X 76	X 74	69
15	66	68	68	X 65	X 53															X 93	X 67	X 67	67	67
16	66	67	63	58	59	X 60														X 82	A	75	X 72	X 65
17	X 63	A	X 56	X 56	X 54															X 88	X 80	X 66	X 63	X 63
18	X 61	X 57	X 59	X 58	X 56															X 84	X 89	X 80	X 75	X 72
19	X 68	X 66	X 66	X 62	X 61															X 85	X 85	X 79	X 88	87
20	87	X 87	X 85	67	X 62															X 87	X 81	X 68	X 65	X 61
21	X 58	X 56	X 56	X 58	X 51															X 76	X 67	X 66	X 65	X 64
22	X 60	X 56	X 55	X 52	X 50															X 84	X 84	X 72	X 66	X 55
23	59	X 57	X 57	X 45	X 43															X 89	X 80	X 68	X 65	X 64
24	X 62	X 59	X 58	X 62	X 53															A	X 61	X 57	X 60	X 56
25	X 55	X 54	X 53	X 47	X 44															X 90	X 70	X 67	X 68	X 66
26	X 63	X 58	X 60	X 60	X 54															X 85	X 73	70	70	68
27	68	71	X 62	X 57	X 54															X 86	X 76	X 73	X 77	X 63
28	X 59	X 56	X 56	X 54	54															X 92	X 95	X 75	X 73	X 67
29	X 64	X 65	X 66	X 66	X 59															X 92	X 92	X 89	X 74	X 65
30	70	X 66	X 65	X 61	X 60															X 111	X 87	X 80	X 71	X 68
31	X 63	X 63	X 61	X 57	X 54															X 104	X 99	X 78	X 62	X 57
	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	31	31	2														29	30	31	31	31
MED	X 66	X 66	X 66	X 62	X 57	60														X 89	X 84	X 76	X 73	X 67
U Q	X 75	X 73	X 71	65	X 62															X 92	X 87	X 80	X 80	77
L Q	X 61	X 58	X 57	X 57	X 54															X 85	X 77	X 68	X 67	X 64

AUG. 2012 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 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	73	72	68	57	52	59	67	65	83	82	77	64	79	88	94	84	84	81	80	79	79	78	F	F
2	F	F	F	F	51	57	72	63	76	81	86	92	93	87	81	79	80	A	71	A	70	F	F	60
3	F	F	F	F	56	F	66	87	88	85	67	69	83	91	97	94	88	83	78	81	81	76	78	79
4	70	67	67	60	55	55	72	80	78	86	81	87	96	88	81	81	A	A	A	86	90	85	79	67
5	66	65	61	59	58	62	78	86	75	70	74	78	84	83	91	94	92	95	91	89	78	73	F	F
6	F	F	F	F	F	58	72	82	83	75	78	89	93	89	86	93	90	86	81	83	77	78	83	75
7	70	66	66	65	65	65	71	79	82	79	A	79	80	83	87	83	72	78	77	80	78	79	78	71
8	69	68	63	59	57	63	75	79	66	69	70	73	80	87	88	84	82	79	77	81	78	70	66	66
9	72	74	65	58	57	57	68	77	73	70	78	70	70	79	84	90	A	85	90	87	78	75	75	75
10	68	66	64	52	50	48	66	86	96	85	69	72	69	74	78	80	76	A	85	95	74	71	71	70
11	68	68	62	59	54	52	65	81	79	74	65	68	66	68	67	72	73	75	75	84	82	72	68	F
12	66	63	F	59	57	54	63	72	78	72	72	61	72	81	76	71	75	82	86	95	76	66	64	60
13	53	48	46	47	49	52	A	66	A	58	60	61	60	69	70	77	76	77	74	83	72	62	F	54
14	53	54	49	F	48	54	60	74	86	A	77	81	78	80	80	80	78	70	71	78	71	69	67	F
15	F	F	F	58	47	46	58	81	79	74	A	84	92	87	82	72	73	79	89	87	61	61	F	F
16	F	F	F	F	F	54	62	65	67	64	69	66	70	81	77	72	69	67	74	76	A	F	66	58
17	57	A	50	50	48	51	71	86	63	62	55	V 67	74	73	70	66	71	66	69	81	74	60	57	57
18	55	51	53	52	50	50	58	A	A	60	A	63	67	68	75	72	66	62	67	78	83	74	68	66
19	62	59	59	56	55	51	64	80	98	A	62	72	71	73	86	87	75	70	72	78	79	73	81	F
20	F	81	79	F	56	50	A	61	76	97	79	67	65	59	68	68	72	70	76	81	75	62	59	55
21	52	50	50	52	45	43	55	81	74	71	58	62	69	76	76	70	73	73	71	70	61	60	59	58
22	54	50	49	46	44	42	52	68	73	75	66	72	71	67	70	66	64	62	67	78	78	66	60	49
23	F	50	51	38	37	38	55	72	81	82	78	68	59	63	64	68	69	77	81	83	74	62	59	58
24	56	53	52	56	47	44	54	50	55	A	A	A	49	A	A	66	70	57	58	A	55	50	54	50
25	49	48	49	40	38	37	62	66	73	R 58	70	74	73	72	74	72	72	89	92	84	64	60	62	60
26	57	52	53	54	48	46	59	69	66	A	71	68	81	A	76	81	83	78	A	79	67	F	F	F
27	F	F	56	51	48	44	54	65	75	A	A	70	64	73	68	80	90	90	81	80	70	67	71	57
28	53	50	50	47	F	51	75	80	80	76	76	79	A	79	74	79	80	81	80	86	88	69	67	61
29	58	59	60	60	53	48	66	70	67	75	79	77	75	81	82	84	80	78	80	86	86	84	68	58
30	F	60	59	55	54	49	75	90	77	69	73	79	85	84	88	84	80	91	103	105	81	74	65	62
31	57	57	55	51	48	46	78	96	88	83	84	82	87	82	81	78	80	85	93	98	93	72	56	51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	25	25	28	30	29	30	29	26	26	30	30	29	30	31	29	28	29	29	30	28	25	24
MED	58	59	56	55	50	51	66	78	77	74	72	72	74	80	79	79	76	78	78	83	78	70	67	60
U Q	68	66	64	59	56	55	72	81	82	82	78	79	83	86	86	84	81	84	86	86	81	74	73	66
L Q	54	50	50	50	48	46	58	66	73	69	67	67	69	72	74	72	72	70	72	79	71	62	60	57

AUG. 2012 foF2 (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	A	UL 476	A	UL 504	L	UL 544	UL 540	UL 492	484	A	UL 436	A					
2							A	A	A	UL 560	A	A	A	508	UL 528	A	A	A	A					
3							A	A	A	A	UL 572	UL 548	UL 516	UL 516	512	500	UL 476	L	A					
4								L	L	UL 508	UL 528	532	528	A	UL 524	A	A	A	A					
5								A	L	UL 528	532	UL 520	UL 524	A	UL 532	A	UL 476	L	A					
6							L	L	L	A	UL 536	UL 544	520	UL 464	UL 544	UL 524	L	A	A					
7							L	L	496	A	A	A	L	516	A	UL 488	L	A	A					
8							L	440	L	496	UL 528	UL 524	UL 500	UL 520	524	476	452	L						
9							A	L	A	L	UL 512	UL 532	A	A	A	496	A	A	A					
10						A			A	A	A	UL 544	UL 544	UL 504	504	A	A	A	A					
11						L	L	A	A	A	A	A	UL 508	A	UL 504	488	UL 468	L	A					
12							L	UL 480	UL 452	A	A	UL 528	UL 512	492	500	468	L	L	L					
13							A	A	A	UL 464	UL 520	A	UL 532	UL 496	A	A	L	A	A					
14							A	A	A	A	A	A	496	488	500	UL 452	L	A	A					
15							L	L	L	L	A	UL 508	488	A	A	L	A	L						
16							A	A	L	488	484	A	A	A	A	A	A	A						
17							A	A	456	456	UL 464	UL 480	UL 500	UL 480	464	452	L	L	A					
18								A	A	A	A	A	A	A	L	468	A	A	A					
19							A	L	UL 448	A	A	492	500	500	A	UL 460	436	L						
20							A	A	A	452	472	UL 540	480	480	480	468	A	A	A					
21							L	420	UL 452	456	476	UL 508	UL 508	A	UL 480	468	UL 436	A	A					
22							L	L	A	A	A	484	A	476	468	456	452	L	A					
23								L	UL 456	464	472	488	A	508	488	UL 476	L	L						
24							A	A	A	A	A	A	UL 476	A	A	A	A	A	A					
25								A	A	488	488	A	484	484	A	UL 472	A	A	A					
26								A	A	A	A	A	A	A	A	A	A	A	A					
27								L	UL 448	A	A	UL 512	UL 544	500	528	476	L	A	A					
28						A		L	L	UL 480	UL 524	A	A	UL 504	A	UL 492	L	L						
29									L	UL 500	UL 500	L	UL 516	524	496	UL 500	L	L						
30								A	L	L	A	L	A	544	512	L	UL 480	A	A					
31								L	L	L	A	L	UL 536	UL 556	UL 500	L	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	8	13	16	16	21	21	20	20	8	1						
MED								440	UL 454	488	UL 508	UL 522	UL 512	504	502	476	UL 460	UL 436						
U Q								UL 480	UL 466	UL 504	UL 528	UL 536	UL 530	UL 518	UL 524	UL 490	UL 476							
L Q								420	UL 450	460	480	500	498	486	490	468	444							

AUG. 2012 foF1 (0.01MHz)

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	R	A	A	R	R	A	R	B					
2						B	A	A	A	R	A	A	A	A	A	A	A	A	A					
3						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
4						B	R	A	A	A	R	R	R	A	A	A	A	A	A					
5						B	A	A	A	A	A	R	A	A	A	A	A	A	A					
6						B	A	A	A	A	A	R	376	R	A	A	A	A	A					
7						B	A	A	A	A	A	A	R	A	A	R	A	A	A					
8						B	A	R	A	A	A	A	R	R	R	R	R	R	B					
9						B	A	A	A	A	R	R	A	A	A	A	A	A	A					
10						B	R	R	A	A	A	A	A	R	A	A	A	A	A					
11						B	A	A	A	A	A	A	A	A	R	R	R	R	A					
12						B	R	A	A	A	A	A	A	A	A	R	A	R	R					
13						A	A	A	A	R	R	A	R	A	A	A	A	A	A					
14						B	A	A	A	A	A	A	R	A	A	R	A	A	B					
15						B	A	R	A	A	A	A	A	A	A	A	A	A	A					
16							A	A	A	A	A	A	A	388	A	A	A	A	B					
17						A	A	A	A	A	R	R	R	R	R	R	A	A	A					
18						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
20						B	A	A	A	A	A	A	R	R	R	324	A	A	B					
21						B	A	A	A	A	R	R	A	A	R	A	A	A	B					
22						B	R	A	A	A	A	A	A	A	A	A	A	R	B					
23						B	R	A	A	A	A	A	A	A	A	A	A	R	B					
24						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
25						B	A	A	A	A	A	A	A	R	A	A	A	A	B					
26						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
27						B	A	R	A	A	A	R	R	R	A	R	A	A	A					
28						B	A	R	R	A	A	A	A	A	A	R	R	R	B					
29						B	220	R	A	R	R	R	R	R	R	R	A	A	A					
30						B	232	A	A	A	A	R	A	A	A	A	A	A	A					
31						B	A	A	A	A	A	A	R	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							2						1	1		1								
MED							226						376	388		324								
U Q																								
L Q																								

AUG. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 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 44	J A 40	28	J A 22	J A 24	E B 16	28	38	J A 48	J A 58	J A 55	G	45	48	G	G	40	G	J A 51	J A 45	J A 31	J A 25	J A 58	J A 68
2	J A 75	J A 62	J A 45	J A 32	J A 37	J A 40	J A 59	J A 46	J A 51	G	J A 62	J A 72	67	J A 45	J A 48	J A 65	J A 74	J A 76	J A 55	J A 89	J A 88	J A 55	J A 80	J A 101
3	J A 52	J A 37	J A 40	J A 24	E B 14	23	J A 39	J A 49	J A 60	J A 74	J A 46	44	45	45	40	42	39	J A 34	J A 37	J A 23	J A 31	34	J A 82	J A 78
4	J A 125	J A 78	J A 50	J A 28	J A 21	J A 24	J A 29	J A 44	36	39	G	G	G	J A 57	44	J A 54	J A 85	J A 109	J A 100	J A 135	J A 30	E B 15	J A 28	E B 15
5	J A 29	21	20	E B 16	E B 15	E B 16	35	J A 43	40	J A 49	46	G	42	J A 74	J A 59	42	J A 44	J A 48	J A 67	J A 79	J A 101	J A 54	J A 44	J A 106
6	J A 24	J A 28	J A 29	J A 28	21	J A 20	30	37	J A 41	45	45	G	48	G	41	41	40	J A 64	J A 49	J A 34	J A 45	J A 23	J A 27	J A 20
7	20	E B 15	J A 33	J A 30	J A 28	J A 20	30	J A 42	J A 46	J A 51	J A 107	J A 55	G	49	J A 49	G 28	40	J A 48	J A 45	J A 58	J A 86	J A 74	J A 24	J A 30
8	E B 15	E B 15	E B 14	21	E B 14	E B 15	29	G	40	41	39	40	G	G	G	G	G	36	21	E B 14	E B 15	J A 21	J A 26	J A 25
9	E B 13	E B 15	E B 16	E B 16	E B 15	E B 16	J A 40	38	40	42	G	G	J A 87	J A 59	J A 55	J A 45	J A 142	J A 72	J A 53	J A 63	J A 37	J A 59	J A 65	J A 26
10	J A 40	J A 32	26	J A 24	J A 25	22	G	G	J A 64	J A 102	J A 56	45	44	G	42	J A 51	58	J A 88	J A 51	J A 49	J A 38	J A 24	20	J A 22
11	J A 23	20	E B 14	18	J A 20	J A 24	28	J A 49	J A 106	J A 69	64	J A 68	J A 52	J A 102	G	G	G 24	G 22	J A 35	J A 27	J A 24	J A 20	J A 42	J A 50
12	J A 59	J A 38	J A 49	J A 29	J A 24	19	30	38	40	J A 65	J A 72	J A 81	44	40	42	G	37	G 24	G	J A 18	J A 23	J A 31	J A 20	J A 20
13	J A 33	J A 48	J A 76	J A 55	J A 30	J A 25	J A 77	J A 69	J A 85	G	G	J A 78	G	42	46	J A 61	J A 61	J A 57	J A 36	J A 62	J A 56	J A 51	J A 55	J A 100
14	J A 50	J A 36	J A 44	J A 28	J A 24	E B 15	31	J A 48	J A 61	J A 225	J A 110	J A 108	G	40	41	G	40	J A 44	J A 46	J A 31	J A 63	J A 80	J A 73	J A 41
15	J A 32	E B 15	J A 24	J A 22	E B 15	J A 30	J A 31	G 28	J A 44	J A 46	J A 116	J A 57	J A 74	J A 60	J A 52	32	40	35	J A 35	26	J A 28	J A 40	J A 37	J A 36
16	J A 46	J A 65	J A 36	J A 41	J A 32	35	J A 34	J A 60	38	39	J A 43	J A 58	J A 54	47	51	J A 78	J A 50	J A 49	J A 56	J A 65	J A 88	J A 27	J A 65	J A 30
17	J A 19	J A 74	20	J A 21	E B 15	J A 24	J A 38	J A 40	J A 45	42	G	G	G	G	G	G	J A 44	J A 30	J A 43	E B 60	J A 14	J A 21	J A 24	J A 23
18	J A 33	J A 22	E B 14	J A 46	J A 37	J A 31	J A 32	J A 77	J A 86	J A 58	J A 51	J A 62	44	45	46	42	J A 64	J A 49	J A 36	J A 53	J A 22	J A 44	J A 34	J A 39
19	J A 37	J A 40	21	20	20	19	28	34	40	J A 68	J A 48	J A 43	44	40	J A 46	J A 42	34	30	23	J A 20	E B 15	20	J A 29	J A 75
20	J A 36	J A 38	J A 26	J A 19	J A 33	J A 74	J A 70	J A 46	J A 42	J A 42	42	41	G	G	G	39	40	J A 56	24	J A 24	J A 18	J A 24	J A 22	J A 47
21	J A 44	J A 22	J A 24	J A 20	21	E B 14	29	32	J A 38	J A 39	G	G	38	J A 51	G	39	37	J A 54	J A 54	31	J A 41	J A 45	J A 38	J A 32
22	J A 23	J A 24	E B 14	E B 14	20	E B 14	G	34	J A 45	59	J A 60	43	J A 52	40	40	J A 48	35	G 26	J A 28	J A 30	J A 24	J A 37	J A 47	J A 40
23	J A 43	19	19	E B 14	J A 20	J A 25	G	34	39	42	41	43	42	42	42	J A 41	32	G 22	J A 30	J A 50	J A 22	E B 15	E B 15	J A 17
24	J A 23	22	23	J A 30	E B 16	E B 14	J A 35	36	J A 45	J A 65	J A 59	J A 64	43	J A 60	J A 69	J A 74	J A 65	J A 70	J A 45	J A 74	J A 51	J A 44	J A 59	J A 34
25	J A 23	J A 29	J A 29	J A 62	J A 27	J A 30	30	J A 40	J A 46	40	J A 55	J A 74	45	G	46	42	J A 56	J A 46	J A 66	J A 24	J A 24	J A 32	J A 45	J A 43
26	E B 15	J A 27	J A 40	J A 50	J A 18	J A 22	J A 40	36	J A 68	J A 83	J A 56	J A 61	J A 76	J A 124	J A 50	J A 57	J A 56	J A 58	J A 151	J A 84	J A 67	J A 29	J A 31	J A 64
27	J A 57	J A 36	J A 27	J A 19	J A 22	J A 31	J A 39	G	41	J A 118	J A 68	G	G	G	43	G 26	36	J A 45	J A 42	J A 44	J A 32	J A 24	J A 54	J A 52
28	J A 54	J A 64	J A 45	J A 34	J A 33	J A 38	J A 32	G 27	G 29	42	42	J A 52	J A 94	J A 62	J A 65	G	G	G	E B 14	E B 15	E B 14	E B 14	E B 15	E B 14
29	J A 26	J A 28	J A 42	J A 24	J A 21	J A 32	28	G	38	G	G	G	G	G	G	G	35	J A 33	J A 40	J A 28	J A 23	J A 25	J A 44	J A 32
30	J A 35	J A 31	22	E B 15	20	J A 17	27	38	35	J A 44	45	G 35	57	42	46	44	J A 45	J A 52	J A 40	J A 46	J A 53	32	19	J A 33
31	J A 19	20	E B 15	E B 15	E B 15	E B 15	28	36	38	J A 44	J A 55	46	G 39	41	J A 42	39	40	J A 40	J A 68	J A 45	J A 24	J A 27	J A 24	24
	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 33	J A 29	J A 26	J A 24	J A 21	J A 22	30	38	J A 42	J A 45	J A 48	44	44	42	43	41	40	J A 46	J A 43	J A 45	J A 31	J A 29	J A 37	J A 34
U Q	J A 46	J A 40	J A 40	J A 30	J A 27	J A 30	J A 38	J A 46	J A 51	J A 65	J A 60	J A 62	J A 52	J A 57	J A 49	J A 48	J A 56	J A 57	J A 54	J A 62	J A 53	J A 44	J A 55	J A 52
L Q	23	21	E B 20	E B 19	E B 16	E B 16	28	G 34	39	41	G 41	G	G	G	G 40	G	36	G 30	35	J A 26	23	23	24	J A 24

AUG. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 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	30	32	24	19	17	E B 16	25	34	37	45	43	G	42	44	G	G	35	G	36	38	18	21	38	56
2	45	34	31	22	20	36	37	39	44	G	51	63	61	43	43	60	57	A A 76	46	A A 89	48	22	40	38
3	36	27	E B 15	17	E B 14	23	34	41	47	58	43	41	43	43	37	38	35	30	29	18	18	29	50	44
4	31	26	27	E B 16	E B 15	18	20	36	35	37	G	G	G	50	41	50	A A 85	A A 109	A A 100	68	26	E B 15	19	E B 15
5	19	E B 14	E B 15	E B 16	E B 15	E B 16	30	38	37	39	43	G	39	55	43	34	38	31	39	66	44	38	30	34
6	19	20	20	18	15	18	28	34	39	44	43	G	46	G	38	38	38	46	30	30	24	E B 14	17	E B 15
7	E B 16	E B 15	20	20	18	E B 15	27	38	41	41	A A 107	52	G	45	44	G 24	38	40	39	29	36	23	18	E B 15
8	E B 15	E B 15	E B 14	E B 15	E B 14	E B 15	26	G	38	39	39	40	G	G	G	G	G	32	20	E B 14	E B 15	E B 15	18	E B 15
9	E B 13	E B 15	E B 16	E B 16	E B 15	E B 16	34	34	40	41	G	G	55	54	54	40	A A 142	43	35	48	29	39	22	18
10	20	24	21	18	16	18	G	G	40	52	44	43	41	G	42	46	52	A A 88	32	34	20	E B 15	E B 15	17
11	E B 15	E B 15	E B 14	E B 15	16	17	24	44	63	49	59	58	45	57	G	G	G 24	G 21	29	20	19	E B 14	17	16
12	23	29	24	E B 14	17	18	26	32	36	59	57	44	41	38	39	G	32	G 23	G	E B 15	E B 15	24	E B 16	E B 15
13	23	34	24	23	20	18	A A 77	39	A A 85	G	G	46	G	38	43	50	36	42	30	43	30	36	23	39
14	36	30	23	19	18	E B 15	27	46	46	A A 225	53	63	G	37	36	G	36	38	24	25	38	46	22	24
15	21	E B 15	20	E B 15	E B 15	20	23	G 24	37	37	A A 116	42	41	52	46	27	36	33	32	23	23	21	22	20
16	18	35	31	32	26	28	30	52	35	38	40	48	48	46	48	62	43	36	46	59	A A 88	E B 15	29	E B 15
17	E B 15	A A 74	E B 16	E B 15	E B 15	17	33	38	38	39	G	G	G	G	G	G	31	25	33	28	E B 14	17	20	20
18	25	E B 15	E B 14	36	29	23	28	A A 77	A A 86	51	A A 51	56	44	42	45	38	54	46	35	30	E B 15	20	29	29
19	31	30	E B 15	E B 15	E B 14	E B 15	25	31	37	A A 68	44	41	40	38	45	37	31	28	22	18	E B 15	E B 15	E B 14	41
20	18	17	E B 14	16	20	23	A A 70	42	39	37	39	39	G	G	G	38	37	45	22	21	E B 15	E B 14	18	27
21	26	19	16	E B 15	16	E B 14	25	30	35	37	G	G	34	48	G	36	36	45	50	29	25	18	20	25
22	18	17	E B 14	E B 14	E B 15	E B 14	G	32	41	56	49	42	52	36	38	38	31	G 24	23	20	19	28	30	27
23	19	E B 15	E B 16	E B 14	18	22	G	32	37	40	40	42	38	40	38	39	32	G 22	23	20	18	E B 15	E B 15	E B 15
24	20	20	E B 16	22	E B 16	E B 14	29	34	43	A A 65	A A 59	A A 64	41	A A 60	A A 69	54	39	43	42	A A 74	18	30	38	30
25	E B 16	E B 15	21	E B 15	21	17	25	34	40	37	43	63	43	G	44	40	42	41	55	18	18	28	28	33
26	E B 15	E B 15	25	40	E B 14	E B 15	32	34	59	A A 83	51	58	68	A A 124	44	47	50	50	A A 151	44	44	21	18	36
27	30	32	21	16	16	24	25	G	38	A A 118	A A 68	G	G	G	40	G 24	34	38	31	32	28	22	42	35
28	20	30	30	23	26	32	28	G 25	G 28	39	41	46	A A 94	42	55	G	G	G	E B 14	E B 15	E B 14	E B 14	E B 15	E B 14
29	E B 15	16	34	21	18	17	24	G	35	G	G	G	G	G	G	G	32	28	22	17	E B 15	19	31	20
30	23	21	E B 16	E B 15	E B 15	E B 15	25	31	32	38	43	G 34	53	41	43	41	39	43	31	31	29	21	E B 14	16
31	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	24	33	37	39	52	44	G 37	41	40	36	37	35	53	34	20	19	E B 14	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	20	20	20	16	16	17	26	34	38	40	43	42	41	41	41	38	36	38	32	29	20	21	20	20
U Q	26	30	24	21	18	22	30	39	43	A A 56	52	52	46	48	44	41	42	45	42	43	29	28	30	34
L Q	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	24	G 31	37	37	G 39	G	G	G	G 36	G	32	G 28	23	20	E B 15	E B 15	E B 17	E B 15

IONOSPHERIC DATA STATION Kokubunji

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

IONOSPHERIC DATA STATION Kokubunji

AUG. 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	281	293	313	315	293	311	341	327	319	324	321	299	279	296	312	307	312	324	312	304	284	301	F	F
2	F	F	F	F	295	331	355	297	321	294	302	291	301	301	296	310	311	A	314	A	286	F	F	286
3	F	F	F	F	291	F	296	316	318	336	284	264	297	291	298	301	305	306	303	300	299	288	294	296
4	286	281	305	308	303	327	345	339	322	321	290	285	303	302	298	300	A	A	A	302	305	301	305	296
5	276	287	272	270	286	309	316	340	339	318	310	304	309	297	291	299	299	316	311	315	285	291	F	F
6	F	F	F	F	F	290	316	323	332	312	297	295	293	300	285	291	302	304	309	304	294	273	292	294
7	277	273	279	283	279	277	301	325	329	316	A	305	317	303	318	325	304	313	309	308	275	282	295	291
8	287	296	297	279	286	292	337	343	325	319	306	284	285	293	300	321	320	316	309	304	304	287	278	277
9	278	311	313	302	307	302	323	337	334	334	327	325	294	301	297	308	A	288	310	307	286	274	276	288
10	294	298	327	304	289	277	319	298	330	317	332	303	280	305	310	299	329	A	309	333	290	295	296	294
11	298	296	302	298	280	290	291	328	303	332	306	319	319	310	300	304	303	312	308	309	311	301	276	F
12	288	279	F	288	292	291	323	316	334	353	321	282	297	320	311	316	312	311	309	325	318	281	294	316
13	304	286	279	276	303	319	A	349	A	350	311	331	278	302	298	306	302	313	312	321	303	294	F	304
14	294	300	297	F	298	337	334	311	329	A	309	311	302	312	320	317	314	312	309	307	296	299	302	F
15	F	F	F	337	317	323	321	331	328	284	A	286	309	316	323	325	311	318	333	342	324	279	F	F
16	F	F	F	F	F	321	363	334	342	321	327	323	312	318	323	323	322	319	327	308	A	F	293	288
17	296	A	273	294	286	295	326	358	339	316	302	V 304	316	305	316	316	326	310	308	317	330	305	299	293
18	297	290	289	308	318	350	363	A	A	330	A	328	319	308	328	332	334	309	307	304	328	293	301	298
19	297	295	294	312	322	302	313	306	356	A	336	315	316	297	312	323	337	323	320	310	301	273	284	F
20	F	301	353	F	329	331	A	316	308	343	334	310	332	342	317	320	330	317	321	307	334	315	300	303
21	296	273	282	309	309	294	315	344	334	350	361	295	304	332	324	319	326	337	334	323	301	285	290	301
22	294	291	304	296	298	303	318	325	327	345	316	330	280	312	315	316	315	311	319	315	332	292	290	300
23	F	292	330	314	311	316	310	334	337	356	351	352	317	303	310	312	322	314	334	317	332	299	286	288
24	283	279	288	321	312	318	319	300	316	A	A	A	287	A	A	317	339	335	325	A	294	276	292	280
25	283	297	314	314	301	301	325	359	349	R 321	318	329	312	320	334	326	318	320	335	329	311	292	284	296
26	282	286	285	293	325	327	370	382	325	A	321	308	312	A	320	310	332	322	A	324	326	F	F	F
27	F	F	316	291	288	314	350	333	366	A	A	328	305	322	305	304	314	319	314	311	303	287	305	304
28	289	293	297	300	F	309	363	341	341	345	317	319	A	322	306	313	326	328	315	309	332	287	295	309
29	299	287	310	336	328	319	349	372	341	333	339	321	311	308	327	319	323	320	300	301	314	322	306	279
30	F	305	295	302	319	314	346	351	378	332	328	312	307	305	311	311	305	306	316	339	330	306	306	301
31	285	293	292	305	296	289	344	350	348	344	333	314	320	303	318	296	306	312	316	325	336	340	304	282
	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	25	25	28	30	29	30	29	26	26	30	30	29	30	31	29	28	29	29	30	28	25	24
MED	288	292	297	302	300	310	325	334	332	331	320	310	306	305	312	313	315	315	312	310	304	292	294	295
U Q	296	296	313	313	314	321	348	344	341	344	332	323	316	317	320	320	326	320	320	324	328	301	302	301
L Q	283	286	286	292	290	294	316	316	324	318	306	295	294	301	300	304	306	311	309	306	294	284	288	288

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	A	U L 399	A	U L 395	L	U L 381	U L 379	U L 393	375	A	U L 358	A					
2							A	A	A	U L 349	A	A	A	392	U L 369	A	A	A	A					
3							A	A	A	A	U L 361	U L 374	U L 387	U L 383	353	362	U L 360	L	A					
4								L	L	U L 383	U L 393	391	379	A	U L 367	A	A	A	A					
5								A	L	U L 380	406	U L 408	U L 384	A	U L 358	A	U L 361	L	A					
6							L	L	L	A	U L 374	U L 378	360	U L 379	U L 367	U L 354	L	A	A					
7							L	L	380	A	A	A	L	376	A	U L 366	L	A	A					
8							L	371	L	375	U L 373	U L 401	U L 420	U L 341	357	389	388	L						
9							A	L	A	L	U L 393	U L 390	A	A	A	362	A	A	A					
10						A			A	A	A	U L 366	U L 361	U L 377	351	A	A	A	A					
11						L	L	A	A	A	A	A	U L 365	A	U L 362	352	U L 364	L	A					
12							L	U L 355	U L 398	A	A	U L 366	U L 383	399	362	383	L	L	L					
13							A	A	A	U L 382	U L 383	A	U L 381	U L 347	A	A	L	A	A					
14							A	A	A	A	A	A	401	400	343	U L 345	L	A	A					
15							L	L	L	L	A	U L 374	382	A	A	L	A	L						
16							A	A	L	404	401	A	A	A	A	A	A	A						
17							A	A	385	411	U L 409	U L 370	U L 417	U L 388	375	381	L	L	A					
18								A	A	A	A	A	A	A	L	364	A	A	A					
19							A	L	U L 426	A	A	397	376	374	A	U L 379	373	L						
20							A	A	A	397	412	U L 355	401	395	382	359	A	A	A					
21							L	360	U L 388	416	413	U L 341	U L 392	A	U L 373	371	U L 365	A	A					
22							L	L	A	A	A	404	A	403	378	370	365	L	A					
23								L	U L 379	399	408	408	A	361	368	U L 349	L	L						
24							A	A	A	A	A	A	U L 377	A	A	A	A	A	A						
25								A	A	415	373	A	402	389	A	U L 385	A	A	A					
26								A	A	A	A	A	A	A	A	A	A	A	A					
27								L	U L 389	A	A	U L 383	U L 356	388	351	355	L	A	A					
28						A		L	L	U L 386	U L 376	A	A	U L 395	A	U L 353	L	L						
29									L	U L 384	U L 396	L	U L 384	361	362	U L 355	L	L						
30								A	L	L	A	L	A	350	366	L	U L 370	A	A					
31								L	L	L	A	L	U L 390	U L 359	U L 384	L	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	8	13	16	16	21	21	20	20	8	1						
MED								360	U L 388	386	U L 394	U L 380	U L 383	379	366	363	U L 365	U L 358						
U Q								371	U L 398	408	407	399	396	394	374	377	372							
L Q								U L 355	382	U L 381	U L 375	U L 368	U L 376	361	358	U L 354	U L 362							

AUG. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 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							258	238	280	284	302	316	376	320	296	296	290	272	264					
2							232	236	290	334	296	326	302	300	338	E A 314	298	A	E A 264					
3							300	280	278	268	372	420	328	340	316	298	298	284	266					
4								270	270	290	316	346	306	314	330	324	A	A	A					
5								242	258	302	332	318	318	332	322	304	286	276	264					
6							278	266	260	270	330	330	306	302	350	316	304	260	272					
7							302	280	286	256	A	330	288	322	302	286	294	284	254					
8							246	246	294	312	336	388	346	324	314	292	296	280						
9							264	268	254	290	290	306	E A 348	334	318	304	A	E A 264	254					
10						E A 262			248	286	268	322	386	332	316	324	266	A	272					
11						320	330	248	E A 288	280	E A 324	E A 338	326	E A 330	350	314	308	294	266					
12							266	300	272	E A 270	E A 300	342	360	306	306	292	302	288	274					
13							A	244	A	274	350	316	362	342	348	316	314	278	260					
14							276	314	266	A	300	E A 304	330	312	298	296	286	296	264					
15							274	266	262	274	A	308	318	270	274	288	292	282						
16							246	E A 258	260	312	298	288	316	292	272	E A 324	280	268						
17							256	240	282	324	370	356	314	312	298	324	282	296	272					
18								A	A	E A 282	A	E A 336	300	326	292	282	E A 280	E A 296	264					
19							260	270	246	A	264	306	310	328	298	274	274	274						
20							A	336	312	254	262	326	282	288	320	316	284	270	252					
21							310	254	254	260	264	342	332	292	290	312	286	264	E A 262					
22							256	268	282	266	316	282	E A 332	340	306	288	302	322	260					
23								270	266	252	258	266	E A 288	352	342	318	288	296						
24							296	368	348	A	A	A	360	A	A	E A 312	274	E A 258	E A 270					
25								230	250	314	310	E A 304	322	316	278	296	296	272	242					
26								226	E A 312	A	304	E A 324	E A 334	A	296	304	266	264	A					
27								272	248	A	A	292	350	296	338	320	284	260	240					
28						E A 276		254	258	258	294	310	A	282	E A 306	306	278	274						
29									260	278	266	290	292	322	294	294	262	270						
30								230	226	244	272	318	318	316	308	302	308	284	248					
31								246	236	256	280	288	300	330	296	316	282	280	270					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	17	28	29	26	26	30	30	29	30	31	29	28	22					
MED						E A 276	266	262	263	275	300	316	318	318	306	303	286	276	264					
U Q						320	298	271	284	290	324	336	346	331	322	316	298	286	270					
L Q						E A 262	256	243	254	260	272	304	306	301	296	294	280	269	254					

AUG. 2012 h'F2 (KM)

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 294	E A 290	E A 238	E A 240	E A 268	238	212	A	192	A	E A 234	188	200	206	206	216	A	210	A	E A 246	E A 244	E A 238	E A 334	E A 320
2	E A 340	E A 284	E A 268	E A 234	E A 270	E A 262	A	A	A	210	A	A	A	200	226	A	A	A	A	A	E A 314	E A 298	E A 328	E A 308
3	E A 378	E A 362	E B 290	E A 278	230	E A 266	A	A	A	A	202	198	206	210	204	216	216	214	A	248	E A 238	E A 288	E A 308	E A 292
4	E A 302	E A 288	E A 256	E B 240	E B 238	238	230	216	202	186	194	214	194	A	198	A	A	A	A	E A 318	E A 244	230	226	E B 238
5	E A 288	E B 278	E B 268	E B 308	E B 280	E B 248	232	A	194	210	190	182	202	A	228	A	222	216	A	E A 276	E A 280	E A 262	E A 326	E A 272
6	244	E A 290	E A 278	E A 280	E A 254	242	236	216	204	A	208	212	E A 258	218	226	204	218	A	A	E A 262	E A 256	E B 262	E A 264	E B 232
7	E B 282	E B 286	E A 302	E A 288	E A 312	E B 254	216	228	208	A	A	A	194	222	A	208	216	A	A	E A 250	E A 296	E A 282	E A 262	E B 258
8	E B 272	E B 258	242	E B 264	E B 268	E B 268	226	210	208	208	194	180	198	224	220	216	214	224	E A 246	246	232	E B 242	E A 296	E B 308
9	E B 284	E B 250	228	E B 250	E B 254	238	A	216	A	192	188	198	A	A	A	224	A	A	A	E A 250	E A 242	E A 306	E A 286	E A 268
10	E A 258	E A 254	240	E A 244	E A 270	A	234	214	A	A	A	212	202	200	244	A	A	A	A	224	214	E B 240	E B 246	E A 266
11	E B 260	E B 252	E B 238	E B 252	E A 250	E A 264	212	A	A	A	A	A	E A 260	A	210	220	216	216	A	E A 250	234	230	E A 282	E A 250
12	E A 246	E A 296	E A 290	E B 276	E A 282	E A 258	220	208	202	A	A	208	208	188	214	206	210	216	224	232	212	E A 242	E B 242	E B 244
13	E A 268	E A 326	E A 334	E A 338	E A 270	E A 250	A	A	A	210	192	A	204	206	A	A	E A 236	A	A	E A 252	E A 258	E A 284	E A 278	E A 322
14	E A 304	E A 292	E A 302	E A 326	E A 268	226	A	A	A	A	A	A	202	202	214	216	214	A	A	E A 256	E A 278	E A 298	E A 260	242
15	E A 314	E B 282	E A 264	216	232	E A 252	214	208	206	204	A	204	204	A	A	212	A	E A 240	248	220	216	E A 298	E A 322	E A 308
16	E A 290	E A 316	E A 306	E A 320	E A 302	E A 246	A	A	194	178	198	A	A	A	A	A	A	A	E A 260	E A 306	A	220	E A 276	E B 254
17	E B 252	A	E B 296	E B 274	E B 270	E A 260	A	A	212	198	190	216	176	210	210	206	210	204	A	E A 258	220	222	E A 256	E A 266
18	E A 278	E B 268	E B 262	E A 294	E A 256	236	214	A	A	A	A	A	A	A	230	224	A	A	A	E A 260	230	E A 256	E A 262	E A 264
19	E A 274	E A 296	E B 262	E B 238	E B 230	E B 256	A	216	198	A	A	202	206	204	A	198	208	214	E A 238	E A 246	232	E B 266	E B 282	E A 316
20	E A 280	E A 268	202	E A 248	E A 248	228	A	A	A	226	218	210	208	190	202	222	A	A	A	234	216	216	E A 258	E A 268
21	E A 300	E A 318	E A 290	E A 248	E B 230	E B 268	236	224	206	190	206	224	180	A	222	216	224	A	A	232	E A 236	E A 280	E A 272	E A 280
22	E A 262	E A 266	E B 254	E B 252	E B 270	E A 266	196	222	A	A	A	214	A	188	212	218	200	222	A	E A 246	216	E A 266	E A 268	E A 266
23	E A 254	E B 258	234	214	E A 248	E A 274	228	228	222	210	206	198	A	234	204	E A 236	208	228	E A 246	234	214	222	E B 252	E B 254
24	E A 276	E A 288	E B 292	E A 254	E B 234	E B 256	A	A	A	A	A	A	226	A	A	A	A	A	A	A	E A 240	E A 328	E A 322	E A 310
25	E B 290	E B 278	E A 246	218	E A 298	E A 266	224	A	A	190	210	A	214	202	A	216	A	A	A	214	216	E A 278	E A 292	E A 296
26	E B 268	E B 290	E A 294	E A 326	E B 240	240	214	A	A	A	A	A	A	A	A	A	A	A	A	242	E A 268	E A 282	E A 284	E A 346
27	E A 350	E A 290	240	E A 256	E A 280	E A 258	232	214	206	A	A	180	200	202	232	224	204	A	A	242	E A 248	E A 274	E A 278	E A 290
28	E A 270	E A 314	E A 294	E A 294	E A 306	A	230	200	208	196	200	A	A	204	A	212	200	214	238	234	212	208	E B 232	234
29	E B 270	E A 268	E A 294	234	228	E A 246	212	218	192	198	184	210	192	224	198	218	200	214	E A 246	236	234	220	E A 244	E A 300
30	E A 294	E A 272	E A 262	E B 242	E B 242	228	234	A	188	190	A	212	A	212	214	230	212	A	A	226	202	230	224	E A 240
31	E B 280	E B 272	E B 262	E B 244	E B 260	E B 278	226	212	198	198	A	190	196	202	200	204	A	A	A	E A 236	218	210	210	E A 284
	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	31	31	29	21	16	18	17	16	20	22	21	21	23	18	13	8	29	30	31	31	31
MED	E A 280	E A 285	E 264	E 252	E A 260	E A 254	226	216	203	198	198	206	202	204	214	216	212	215	E A 246	E A 246	U 220	E A 262	E A 272	E A 268
U Q	E A 294	E A 292	E A 294	E A 288	E A 270	E A 265	232	220	208	210	207	212	208	215	226	222	216	223	E A 247	E A 254	E A 248	E A 282	E A 292	E A 308
L Q	E A 268	E 268	242	240	240	239	214	211	194	190	191	194	196	201	204	208	208	214	238	234	216	230	E 252	E 254

AUG. 2012 h′F (KM)

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	118	116	116	114	120	122	116	B					
2						B	A	A	A	114	A	A	A	A	A	A	A	A	A					
3						B	114	A	A	A	A	A	A	A	A	A	A	A	A					
4						B	120	A	A	A	126	128	110	A	114	A	A	A	A					
5						B	A	A	A	A	A	114	A	A	A	A	A	A	A					
6						B	118	118	118	A	A	122	126	128	A	A	112	A	A					
7						B	A	A	A	A	A	A	112	A	A	116	116	A	A					
8						B	A	114	A	A	A	A	114	124	126	128	128	118	B					
9						B	A	A	118	118	122	122	A	120	A	A	A	A	A					
10						B	116	116	A	A	A	A	A	110	A	A	A	A	A					
11						B	116	A	A	A	A	A	A	A	116	112	114	116	A					
12						B	118	118	124	A	A	A	A	A	A	114	A	116	116					
13						A	A	A	A	118	120	A	120	A	A	A	A	A	A					
14						B	116	A	A	A	A	A	120	A	A	102	116	A	B					
15						B	A	120	A	A	A	A	A	A	A	A	116	A	A					
16							116	A	A	A	A	A	A	108	118	A	A	A	B					
17						128	118	A	A	A	110	126	126	122	120	120	A	A	A					
18						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	116	114	114	A	A	A	A	A	A	A	A	122	B					
20						B	A	A	A	A	A	A	122	128	126	112	114	A	B					
21						B	118	110	A	A	120	116	A	A	128	A	112	A	B					
22						B	118	126	A	A	A	A	A	A	A	A	A	114	B					
23						B	120	120	114	116	116	116	A	114	114	A	A	118	B					
24						B	122	112	114	A	A	A	A	118	118	118	A	A	B					
25						B	120	110	A	A	A	A	116	118	116	116	A	A	B					
26						B	A	116	A	A	A	A	A	A	A	A	A	A	A					
27						B	A	114	112	A	A	114	118	120	130	126	A	A	A					
28						B	A	116	112	A	A	A	A	A	A	126	126	118	B					
29						B	116	118	A	112	116	120	128	120	124	124	A	A	A					
30						B	112	A	A	A	A	114	116	120	124	116	A	A	A					
31						B	116	112	A	A	A	A	110	A	A	A	114	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						1	18	16	8	5	7	11	14	14	14	14	11	8	1					
MED						128	117	116	114	116	120	118	117	120	119	117	116	117	116					
U Q							118	118	118	118	122	122	122	122	126	124	122	118						
L Q							116	113	113	113	116	114	114	116	116	114	114	116						

AUG. 2012 h′E (KM)

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AUG. 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	86	84	86	92	94	B	102	102	98	98	102	G	114	114	G	G	118	G	100	102	100	92	94	98
2	94	98	94	96	112	106	104	104	106	G	102	102	94	96	104	102	104	106	98	100	100	102	100	98
3	96	96	100	92	B	124	110	102	104	104	100	104	104	100	98	104	98	94	104	102	94	100	100	98
4	98	98	96	98	100	102	104	100	102	98	G	G	G	90	126	126	102	100	98	98	100	B	98	B
5	92	94	98	B	B	B	100	98	102	100	98	G	98	104	102	106	110	108	100	92	96	94	104	100
6	94	94	126	130	96	122	120	112	116	98	106	G	142	G	102	102	120	106	106	102	96	96	96	94
7	94	B	94	94	88	94	106	106	104	102	98	100	G	100	98	104	118	108	104	104	106	100	94	94
8	B	B	B	92	B	B	106	G	104	96	96	98	G	G	G	G	G	120	104	B	B	98	94	106
9	B	B	B	B	B	B	108	110	124	120	G	G	110	122	106	106	106	106	106	104	104	106	106	102
10	98	98	96	96	96	98	G	G	104	104	102	104	104	G	110	98	94	106	96	98	94	96	98	90
11	90	88	B	88	102	102	116	100	96	96	96	92	92	100	G	G	94	96	88	88	88	94	100	100
12	98	98	98	96	96	112	122	112	122	104	102	102	106	108	102	G	102	100	G	100	94	96	96	96
13	102	100	100	100	94	104	106	106	108	G	G	108	G	98	106	104	102	100	96	96	96	98	96	100
14	94	96	94	94	86	B	122	106	102	96	92	96	G	98	102	G	116	108	104	106	106	104	100	98
15	92	B	94	100	B	118	104	102	104	104	96	100	100	96	96	90	128	116	106	96	94	96	100	102
16	96	94	90	86	88	90	114	100	102	104	104	94	94	154	128	98	98	110	110	104	104	110	96	100
17	102	94	104	104	B	136	112	104	102	102	G	G	G	G	G	G	104	104	100	100	B	98	96	96
18	96	96	B	94	92	90	92	104	98	104	100	98	102	100	104	104	106	98	98	98	104	102	100	100
19	98	98	94	94	96	100	118	120	112	102	102	100	102	100	96	96	96	108	110	106	B	106	108	102
20	98	100	98	96	96	114	106	104	100	104	100	104	G	G	G	120	114	108	102	104	98	94	94	96
21	88	90	90	86	92	B	118	116	104	102	G	G	98	98	G	100	126	100	104	100	96	100	100	88
22	90	94	B	B	88	B	G	122	106	102	96	102	90	96	104	100	100	104	94	92	90	98	104	106
23	100	90	94	B	94	128	G	130	114	114	114	112	98	116	112	104	104	106	112	98	96	B	B	106
24	102	102	100	100	B	B	122	114	114	106	106	106	108	122	118	118	106	106	106	100	100	110	104	98
25	104	104	96	98	98	94	112	114	104	102	108	100	124	G	122	122	110	106	106	104	102	98	100	96
26	B	98	98	92	94	110	104	122	108	108	104	104	104	98	104	104	104	106	102	102	102	102	102	102
27	100	100	92	96	96	106	106	G	122	104	106	G	G	G	126	100	104	102	102	100	100	100	100	98
28	98	98	98	94	92	92	96	102	102	108	104	98	100	100	102	G	G	G	B	B	B	B	B	B
29	106	102	100	94	92	94	158	G	102	G	G	G	G	G	G	G	104	106	102	98	98	96	98	94
30	94	100	94	B	98	90	146	102	98	98	98	102	126	126	120	114	106	104	102	96	96	96	94	94
31	94	92	B	B	B	B	118	118	104	106	98	94	96	100	92	102	120	108	104	102	104	104	98	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	28	27	25	25	23	22	28	27	31	28	25	22	22	23	24	23	29	29	29	29	27	28	29	29
MED	96	98	96	94	94	103	109	106	104	103	102	101	102	100	104	104	104	106	102	100	98	98	100	98
U Q	99	100	99	98	96	114	118	114	108	104	104	104	108	114	115	106	115	108	106	103	102	102	100	101
L Q	94	94	94	92	92	94	104	102	102	99	98	98	98	98	102	100	102	101	99	98	96	96	96	95

IONOSPHERIC DATA STATION Kokubunji

AUG. 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	F3	F2	F2	F3		L2	L2	L2	L2	L2		C1	C1			C2		L3	F3	F2	F2	F2	F3
2	F3	F3	F3	F3	FF23	L3	L2	L2	L2		L2	L2	L2	L2	L2	L2	L2	L3	L4	F4	F4	F2	F3	F4
3	F4	F3	F2	F2		C2	C2	L3	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	F2	F2	F4	F4	F3
4	F3	F3	F4	F2	F2	L1	L2	L2	L2	L2				L2	CL22	CL22	L3	L3	L4	F4	F6		F3	
5	F2	F2	F1				L2	L3	L2	L2	L2		L2	L2	L2	L2	L2	L2	L3	F3	F3	F3	F4	F3
6	F4	F2	FF42	FF24	F2	CL11	C2	C2	CL11	L2	L2		H1		L2	L2	CL11	L3	L3	F3	F3	F2	F3	F2
7	F1		F2	F3	F2	L2	L2	L2	L2	L2	L3	L2		L2	L2	L2	C1	L2	L2	F2	FF23	FF22	F2	F2
8				F1			L2		L2	L2	L2	L3						C2	L2			F1	F2	F1
9							L2	L2	C2	C2			L2	C2	L2	L2	L3	L3	L3	F5	F3	F5	F3	F2
10	F2	F4	F3	F3	F3	L2			L2	L2	L2	L2	L2		L2	L2	L2	LL32	L2	F3	F3	F2	F1	F3
11	F2	F1		F1	F2	L1	C2	L3	L2	L3	L2	L2	L2	L2			L2	L2	L3	F2	F2	F2	F2	F3
12	F3	F4	F4	F2	F4	C2	C2	CL11	CL11	L2	L2	L2	L2	L2	L2		L2	L2		F2	F2	F4	F1	F2
13	F3	F3	F3	F2	F2	L2	L3	L2	L3			L2		L2	L2	L2	L2	L2	L2	F4	F3	F3	F2	F3
14	F3	F4	F2	F2	F2		C1	L2	L2	L3	L2	L2		L2	L2		C1	L2	L2	F2	F3	F3	F3	F3
15	F3		F2	F1		C2	L2	L2	L2	L2	L3	L2	L2	L2	L3	L2	CL11	CL22	LL22	FF32	F2	F2	F2	F2
16	F3	F3	F3	F3	F2	L2	C2	L3	L2	L2	L2	L2	L2	HL11	CL21	L2	L2	LL22	C3	F4	F4	F2	F3	F2
17	F2	F3	F1	F1		C1	C2	L2	L2	L2							L2	L2	L2	F2		F2	L3	F2
18	F4	F2		F3	F3	L3	L2	L3	L3	L2	L2	L2	L2	L2	L2	L2	L2	L3	L3	F3	F2	F3	F3	F3
19	F4	F4	F1	F1	F2	L1	C2	C2	C2	L2	L2	L2	L2	L2	L2	L2	L2	C2	C2	F3		F1	F2	F4
20	F3	F2	F1	F2	F4	CL22	L2	L2	L2	L2	L2	L2				C1	C1	L3	L2	F4	F2	F2	F3	F3
21	F3	F4	F2	F2	F1		C2	C2	L2	L2			L2	L2		L2	C2	L3	L3	F2	F4	F3	F2	F3
22	F3	F2			F2			CL11	L2	L2	L2	L2	L3	L2	L2	L2	L2	L2	L1	F1	F1	F3	F2	F2
23	F2	F2	F1		F2	C5		C2	C2	C2	C2	C2	L2	C1	C1	L2	L3	L2	C2	F3	F2			F2
24	F3	F2	F2	F2			C2	C2	CL22	L3	L3	L3	L2	C2	C2	CL22	L2	L3	L5	F6	F3	F3	F3	F5
25	F2	F2	F4	F2	F4	L2	C2	C2	L2	L2	L2	L2	C1		C1	C2	L2	L2	L3	F2	F3	F4	F3	F4
26		F2	F3	F4	F2	L2	L2	C2	L3	L3	L2	L2	L3	L3	L2	L2	L2	L3	L3	F5	F4	F4	F3	F3
27	F6	F5	F3	F2	F2	L3	L2		C2	L3	L2				C1	L2	L2	L2	L3	F4	F4	F3	F3	F3
28	F3	F3	F3	F4	F3	L3	L3	L2	L2	L2	L2	L2	L2	L2	L3									
29	F1	F2	F3	F2	F3	L2	H1		L2								L2	L2	L3	F3	F1	F2	F3	F4
30	F2	F3	F2		F2	L2	HL12	L2	L2	L2	L2	L2	C1	C1	CL11	CL11	L2	L2	L3	F3	F3	F3	F1	F3
31	F2	F2					C1	C2	L2	L2	L2	L2	L2	L2	L2	L2	C1	L2	L4	F2	F2	F2	F2	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																								

IONOSPHERIC DATA STATION Yamagawa

AUG. 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 82	X 82	X 78	X 70	X 58	X 56															X 94	X 85	X 80	X 71
2	X 64	X 64	X 68	X 68	X 72	X 69															X 76	X 78	X 80	76
3	74	74	70	X 65	66	X 58															X 86	X 78	X 77	74
4	X 80	X 76	X 75	X 64	X 61	X 58															X 92	X 82	O X 80	X 74
5	X 76	X 74	X 72	X 66	X 66	X 71															X 92	X 90	X 85	X 84
6	X 84	X 109	X 83	X 72	66	X 64															X 86	X 82	X 77	X 80
7	X 82	X 85	X 81	X 73	X 70	X 69															X 81	X 87	83	X 81
8	X 81	X 80	X 80	X 68	X 72	X 66															X 80	X 77	X 76	X 75
9	X 80	X 88	X 76	X 68	X 64	X 60															X 92	X 78	X 78	X 83
10	X 80	X 80	X 77	X 61	X 60	X 58															X 93	X 89	X 92	X 89
11	X 92	X 87	X 77	X 71	X 60	X 59															X 95	X 82	X 81	X 76
12	X 72	X 75	X 69	X 63	X 65	X 66															X 82	X 73	X 73	X 67
13	X 64	X 60	X 56	X 56	X 55	X 50															X 79	X 67	X 64	X 61
14	X 60	X 60	X 56	X 50	X 50	X 51															X 92	X 83	X 75	72
15	X 74	X 68	X 68	X 64	X 65	X 52															X 65	X 64	X 63	X 61
16	X 59	X 59	X 60	X 56	X 54	X 60														X 84	X 77	X 71	X 68	65
17	68	65	60	59	53	X 55														X 89	X 80	X 68	X 60	X 59
18	X 57	X 56	O X 54	X 52	X 55	X 40														X 98	X 92	X 82	X 77	X 72
19	X 68	X 70	66	X 64	X 62	X 50														X 96	X 91	X 90	X 87	65
20	O X 85	X 100	X 108	X 96	X 68	X 49														A	O X 79	X 63	67	X 65
21	X 60	X 57	X 56	X 57	X 49	X 43														X 78	X 70	X 63	X 63	X 62
22	X 61	X 58	X 55	X 51	X 48	X 47														X 95	X 98	X 93	X 66	X 67
23	X 64	X 68	X 64	X 53	X 46	X 44														X 96	X 88	O X 65	X 66	X 64
24	X 64	X 61	X 58	X 60	X 52	X 52														X 70	X 64	X 57	X 59	61
25	X 57	X 56	X 56	X 45	X 44	X 42														X 94	X 78	X 70	X 64	X 65
26	X 62	X 60	X 60	X 67	X 54	X 48														X 97	X 83	X 68	X 69	X 72
27	X 68	X 70	X 71	X 65	X 59	X 56														X 92	X 85	X 77	X 74	X 74
28	X 74	X 73	X 62	X 58	X 56	X 56														X 101	X 99	X 78	X 75	X 74
29	X 72	X 66	X 65	X 59	X 49	X 46														X 100	X 99	X 102	X 64	X 61
30	X 60	X 60	X 60	X 58	X 59	X 48														93	X 104	X 79	X 69	X 68
31	X 66	X 76	X 72	X 73	X 64	X 56														X 113	X 93	X 92	X 70	X 61
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31														15	31	31	31	31
MED	X 68	X 70	X 68	X 64	X 59	X 56														X 95	X 86	X 78	X 74	X 71
U Q	X 80	X 80	X 76	X 68	X 65	X 60														X 98	X 93	X 85	X 80	X 75
L Q	X 62	X 60	X 60	X 57	X 53	X 48														X 89	X 79	X 68	X 66	X 64

AUG. 2012 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 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	76	76	72	64	52	50	50	65	R 84	80	68	69	78	90	U R 94	R 96	95	R 100	R 100	R 104	88	79	74	65
2	58	59	62	62	66	F 60	56	67	71	82	A	U R 90	A	U R 94	U R 98	96	87	87	86	74	70	72	74	F 70
3	F 66	F 66	F 64	59	58	52	56	82	A	80	62	68	U R 90	J R 90	U R 93	R 96	93	92	88	88	80	72	71	F 67
4	74	70	69	58	55	52	65	75	81	69	66	84	R 93	R 92	93	U R 100	U R 98	86	U R 84	U R 83	U R 86	76	74	69
5	70	68	66	60	60	65	86	71	67	70	R 86	U R 86	U R 82	A	U R 93	U R 100	R 100	U R 110	R 100	U R 95	86	R 84	U R 79	78
6	F 77	U R 103	77	66	58	58	58	R 77	77	76	78	U R 84	U R 84	U R 93	R 90	U R 90	U R 90	R 96	A	86	80	76	71	74
7	76	79	75	67	64	63	68	69	R 83	86	78	U R 76	R 78	U R 84	J R 88	85	87	84	78	80	75	81	F 76	F 74
8	75	74	74	62	66	60	73	74	72	68	72	74	75	U R 81	U R 92	93	92	U R 92	93	91	74	71	70	69
9	74	R 82	70	62	58	54	58	74	72	74	67	R 67	72	R 82	R 92	90	R 92	93	94	93	86	72	72	77
10	74	74	71	55	54	52	60	89	76	66	58	81	R 80	R 81	U R 82	U R 90	86	86	R 105	94	87	83	86	83
11	86	81	71	65	54	53	57	84	80	72	73	65	67	68	71	76	82	83	86	94	89	76	75	70
12	66	69	63	57	59	60	61	72	82	R 70	72	64	R 80	U R 78	70	74	R 83	R 90	94	90	76	67	67	61
13	58	54	50	50	49	44	52	68	72	A	A	R 56	72	78	U R 84	R 92	94	90	92	88	73	61	58	55
14	54	54	50	44	44	45	56	72	82	74	68	75	U R 81	U R 84	U R 86	U R 89	78	74	74	76	86	77	69	F 65
15	68	62	62	58	59	46	51	69	74	80	U R 74	R 80	93	93	R 80	76	81	94	U R 105	88	59	58	57	55
16	53	53	54	50	F 46	F 52	66	73	66	69	68	69	78	78	81	78	U R 86	88	82	78	71	65	62	56
17	F 60	F 56	F 53	F 51	F 47	49	58	76	68	58	62	77	R 86	73	74	74	73	72	79	83	74	62	54	53
18	51	50	48	46	49	34	42	53	60	A	B	70	73	79	83	93	R 78	70	R 78	92	U R 86	76	71	66
19	F 61	F 62	F 59	58	56	44	51	70	86	63	62	R 72	R 84	91	R U 96	R U 105	96	R 91	91	90	R 85	R 84	81	R
20	U R 79	94	102	90	62	43	42	62	R 97	91	82	79	64	68	70	71	75	U R 75	91	A	R 73	57	F 60	59
21	54	51	50	51	43	37	46	80	73	56	58	65	78	82	U R 80	80	78	81	77	72	64	57	57	56
22	55	52	49	45	42	41	49	68	78	74	69	R 64	65	R	U R 78	94	92	86	88	89	92	87	60	61
23	58	62	58	47	40	38	45	69	79	76	71	58	61	68	U R 70	68	72	80	U R 80	U R 90	82	U R 59	R 60	58
24	V 58	55	52	54	46	46	53	V 50	55	54	R 56	56	R 62	68	75	R 79	73	70	69	64	58	51	F 52	F 52
25	51	50	50	39	38	36	52	65	62	62	70	R 70	73	79	78	76	78	84	93	88	72	64	58	59
26	56	V 54	R 54	61	48	42	58	68	A	73	V 71	66	71	A	82	86	86	86	87	91	77	62	V 63	66
27	62	64	65	59	53	50	51	78	70	67	70	68	R 72	78	R 74	R 86	93	81	81	86	79	71	68	68
28	68	67	56	F 51	50	50	58	73	73	78	72	R 81	78	75	82	93	94	94	95	95	R 93	U R 72	69	68
29	66	60	59	53	43	40	50	64	75	80	75	74	J R 80	R	92	96	81	83	86	94	U R 93	R 96	58	54
30	54	54	54	52	53	42	56	81	77	64	68	76	95	R 93	98	R 101	94	110	113	R	98	73	63	62
31	60	70	66	67	58	50	V 60	90	J R 80	R 92	80	U R 83	U R 94	R 91	93	R 98	R 100	U R 110	A	U R 107	U R 87	86	F 62	55
	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	29	29	28	31	30	27	31	31	31	31	29	29	31	31	31	30
MED	62	62	62	58	53	50	56	72	75	73	70	72	78	81	R 83	90	87	86	88	89	80	72	68	65
U Q	74	74	70	62	58	53	60	77	80	80	74	R 80	R 84	R 91	R 93	R 96	94	93	94	94	87	79	74	69
L Q	56	54	53	51	46	42	51	68	70	66	66	66	72	78	78	78	78	81	80	83	73	62	60	56

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L 476	L 484	U R 540	L	L 540	532	A	A	A	A	A					
2								L	A	U L 516	A	U L 536	A	568	524	A	A	A	A					
3							L	L	A	L	A	R 560	R 520	L 528	L 528	508	L 508	L	L					
4							L	L	L	L	L	548	532	U R 536	L 544	512	A	A							
5									L	U L 548	516	A	L	A	A	512	U L 516	U L 480	A					
6								L	L	L	L	524	R 552	524	L 532	U R 520	U L 520	L	A					
7								L	L	R 480	U L 548	L 536	540	L	U L 540	L 532	A	A						
8								L	L	U L 500	500	U R 520	L 536	R 536	532	R 508	L 476	U L 476	U L 400					
9								L	L	L 488	U L 532	U R 576	A	544	A	U L 540	L 488	A	L					
10							L	L	L	468	L 484	540	540	L 560	U L 528	A	A	A	U L 396					
11							L	L	U L 456	A	U L 536	U L 544	R 528	508	520	508	L 488	L 444	A					
12									L	L	U R 508	548	A	A	U L 516	R 504	468	U L 440	L					
13							L 216	L	L	A	A	A	U R 524	A	508	492	U L 484	L 432	U L 380					
14							L	L	A	A	A	U R 492	R 500	516	504	456	L 476	U L 420	L					
15								L	L	A	A	A	A	508	488	468	460	A	L					
16								L	U L 428	A	U L 488	L 484	496	R 500	L 500	L 500	460	L 428	U L 364					
17							L	L	L	L	A	R 484	U R 488	R 484	U L 496	A	U R 460	L 412	L					
18								U L 348	A	A	B	A	A	A	A	A	L 460	U L 428	L					
19								L	A	U L 448	A	U R 476	492	A	496	L 488	L 468	L						
20							U L 372	L	L 440	U L 460	L 476	484	R	U R 480	U L 500	A	U L 464	A	A					
21								L	L	L	492	R 508	484	U R 496	488	488	A	A	A					
22								L	U L 444	464	A	452	U R 492	U R 480	U R 496	484	L 468	U L 428	L					
23								L	U L 440	460	472	A	U R 488	U R 500	492	A	A	A	L					
24									L	L 496	A	A	U R 492	U R 484	A	R 468	A	L	L					
25								L	L	L	L 488	U R 488	508	500	A	A	464	A	A					
26								L	A	U L 464	L	A	U L 524	A	A	A	U L 480	L						
27								L	L	L	A	A	A	524	516	500	L 468	L	L					
28								L	L	L	L	520	A	A	L 524	A	L	U L 460	L					
29									L	U L 484	480	L	528	U L 516	L 520	L 512	U L 492	U L 448	L					
30									L	468	L	U L 552	548	L 552	544	L	U L 516	U L 444	A					
31								L	L	L	U L 512	L 584	U R 548	U L 516	564	544	504	L 452	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	1	6	15	15	21	22	23	24	20	22	14	4					
MED							L U 294 348		U L 442	L 480	L 500	524	524	516	518	506	L 476	U L 442	U L 388					
U Q									L 456	U L 496	U L 532	548	540	536	L 530	512	U L 492	U L 452	U L 398					
L Q									L 440	464	484	486	U R 492	U R 500	498	488	464	L 428	U L 372					

AUG. 2012 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 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							A 276		U A 260	U A 292	A 376	U R 384	U R 396	404	A 404	368	352	A 300	U A 216	A				
2							200	A 272	U A 300	U A 348	U A 372	U A 400	U A 404	U A 384	A 384	U A 360	A 340	312	U A 256	B				
3							A 176	U A 260	U A 304	U A 332	U A 360	U A 368	U A 368	U A 372	A	R 388	364	308	248	180				
4							176	280	U A 292	A	U A 316	U A 368	R 388	U R 392	388	A	A	312	A 244	B				
5							200	U A 248	U A 300	A 308	U A 336	U A 340	U A 340	A	U A 428	384	A 360	316	U A 228	A				
6							192	276	324	A 356	A	U A 384	A	A	U R 404	376	368	316	A 252	A				
7							U A 176	A 268	312	U A 360	364	U A 388	U A 392	U A 392	U A 392	U A 368	A 356	A	A 252	A				
8							B	A 280	A 320	A	A	A	U R 388	A	U R 380	364	328	300	244	A				
9							180	268	316	352	388	U R 404	A 404	R 408	396	380	356	300	A 240	B				
10							A	U A 244	U A 296	R 372	R 380	R 392	U R 396	U R 396	U R 388	376	344	A 308	U A 224	A				
11							U A 180	U A 244	A 300	332	A 356	U A 324	A	U A 356	U A 328	U A 312	A	A	A	A				
12							A	264	300	340	368	A 372	A 376	U A 368	U A 380	U A 364	A 324	U A 288	220	A				
13							172	256	A 316	U A 340	U A 348	A	A	A	A	R 364	332	U A 292	U A 196	A				
14							A	252	A 300	U A 304	U A 324	A	U R 352	A	U R 344	R 340	316	U A 284	A	B				
15							A	U A 236	A 292	U A 348	A	A	A	A	A	U A 324	A	A 292	U A 284	A				
16							A	U A 248	U A 292	U A 324	U A 332	A	A	U A 336	A	A	A	280	228					
17							U A 176	A 244	A 288	A 324	U A 344	U A 364	368	U R 360	R 368	U A 340	U A 316	U A 232	B					
18							B	252	A 296	332	B	A 368	A	A	A 360	344	A 320	U A 272	U A 180					
19							176	236	U A 300	A 336	U A 340	A	A	A	A	U R 364	324	A 292	224					
20							B	232	U A 292	320	328	U A 344	U R 348	U A 340	360	368	328	U A 300	A 224					
21							B	240	U A 288	U A 324	U A 352	A	A	A	A	U R 356	320	284	U A 184					
22							228	U A 244	U A 308	A	A	A	A	A	U R 364	U A 324	A	A	A					
23							A	256	A 304	332	352	A	364	A U 372	392	356	U R 340	U A 264	B					
24							172	A 248	288	328	A 352	U A 364	U R 364	U R 376	380	364	324	276	A 220					
25							B	248	A 292	A U 336	U A 352	U R 356	U A 372	R	368	364	316	A 280	B					
26							172	252	A 312	328	U A 352	U A 364	A	U A 380	U A 356	A 368	328	U A 292	U A 188					
27							176	A 260	300	328	360	A 364	U A 408	A	A 392	360	A U 336	U A 292	B					
28							A	244	300	A	A	A	U A 364	A 364	A 344	U A 324	U A 296	U A 264	208					
29							172	260	304	340	368	R 376	R	R 376	R	R 360	A 324	A 264	B					
30							180	268	304	U R 348	A	A	A	A	A	376	348	288	212					
31							B	U A 220	A	A	A	A	A	A	U A 360	A	344	A U 312	U A 224					
	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	31	30	26	23	19	18	17	23	28	26	28	23	1				
MED							176	252	A 300	A U 332	U A 352	U A 368	U A 374	U A 376	380	364	330	A 292	A 224	180				
U Q							186	268	A U 304	A 348	368	U R 384	U A 396	U R 392	A 392	368	348	304	A 244					
L Q							174	244	A U 292	A U 324	U A 340	U A 364	U A 364	U A 362	A U 360	A 350	324	A 280	U A 212					

AUG. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 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 65	J A 41	J A 47	J A 63	J A 58	J A 43	J A 40	J A 29	J A 42	41	J A 48	41	42	48	J A 63	J A 58	J A 61	J A 50	J A 76	J A 53	J A 69	J A 51	J A 33	J A 36
2	J A 38	21	J A 34	J A 36	J A 52	J A 52	22	32	J A 66	J A 44	J A 74	45	J A 82	42	J A 48	J A 71	J A 58	J A 83	J A 74	J A 47	J A 66	J A 21	J A 52	J A 64
3	J A 46	J A 52	J A 42	J A 28	J A 17	J A 20	26	J A 51	J A 86	J A 53	J A 70	J A 48	40	46	J A 48	44	38	36	26	24	J A 16	22	J A 36	J A 46
4	J A 52	J A 64	J A 26	J A 27	J A 40	J A 36	22	33	38	J A 47	35	44	48	42	40	40	J A 60	J A 87	J A 213	J A 87	J A 86	J A 52	J A 74	J A 66
5	J A 32	20	22	E B 16	J A 17	J A 16	G	J A 32	J A 43	J A 45	J A 48	J A 61	J A 56	J A 73	52	J A 50	39	38	J A 46	J A 44	J A 42	J A 41	J A 24	20
6	J A 82	J A 72	J A 42	J A 38	20	20	26	36	42	44	47	J A 49	50	34	42	45	J A 64	36	J A 134	J A 28	J A 45	J A 36	J A 22	J A 33
7	J A 45	J A 26	J A 16	18	19	J A 20	20	32	J A 43	J A 49	J A 67	42	47	J A 62	J A 48	J A 56	J A 65	J A 81	J A 66	J A 54	J A 72	J A 95	J A 106	J A 84
8	21	E B 16	E B 16	J A 26	20	J A 22	E B 21	31	34	42	J A 41	43	40	38	44	38	34	G	G	J A 21	E B 16	20	J A 18	19
9	J A 28	J A 22	19	E B 16	E B 16	E B 16	22	29	33	38	43	55	J A 60	47	87	47	J A 45	J A 51	38	J A 28	J A 52	J A 40	J A 51	J A 64
10	19	J A 49	J A 31	J A 26	J A 19	J A 20	21	27	31	39	40	47	G 38	G 32	G	52	J A 71	J A 83	J A 42	J A 51	J A 66	J A 41	J A 30	J A 28
11	J A 26	21	19	19	22	J A 20	22	30	35	J A 52	42	J A 50	38	38	34	36	J A 42	J A 52	J A 62	J A 38	J A 16	20	J A 33	J A 29
12	J A 34	J A 26	J A 24	J A 24	J A 27	J A 37	J A 29	J A 54	J A 44	44	J A 48	J A 52	J A 64	J A 72	J A 69	J A 60	J A 45	J A 50	28	J A 37	J A 29	J A 38	J A 28	J A 29
13	J A 24	J A 26	J A 50	J A 18	22	22	19	33	J A 60	J A 117	J A 104	J A 68	J A 63	J A 51	J A 59	G	42	J A 61	J A 44	J A 52	J A 45	J A 61	J A 26	J A 20
14	J A 26	J A 20	22	E B 16	18	J A 26	21	J A 44	J A 48	J A 59	J A 71	46	G	47	G	G 22	G 28	29	30	J A 24	J A 38	J A 26	J A 55	J A 52
15	J A 48	J A 44	J A 38	J A 26	E B 16	18	20	30	33	J A 56	J A 73	J A 109	J A 63	J A 56	J A 47	38	J A 48	J A 62	J A 56	J A 40	J A 54	J A 20	J A 17	J A 40
16	J A 42	J A 22	J A 31	J A 26	J A 21	18	J A 34	J A 38	J A 42	J A 65	J A 84	J A 45	42	38	34	J A 42	J A 50	34	26	J A 30	J A 47	J A 52	J A 82	J A 42
17	17	J A 50	E B 16	J A 27	E B 16	19	20	32	J A 42	J A 44	J A 58	42	38	38	40	J A 72	J A 51	J A 54	J A 42	J A 50	J A 36	J A 51	J A 51	J A 34
18	J A 30	J A 28	J A 20	E B 16	J A 20	21	J A 25	28	41	J A 66	B	J A 69	J A 52	J A 55	J A 60	J A 50	J A 59	J A 62	J A 74	J A 75	J A 64	J A 52	J A 72	J A 62
19	J A 44	J A 27	J A 25	19	21	J A 17	22	30	J A 60	38	J A 72	J A 49	J A 47	J A 68	42	G 29	37	J A 40	J A 44	J A 50	J A 30	J A 34	J A 18	J A 22
20	J A 26	J A 26	J A 24	J A 25	J A 34	21	21	28	37	39	J A 44	J A 45	51	40	42	J A 62	J A 52	J A 64	J A 84	J A 146	J A 86	J A 37	J A 35	21
21	J A 26	J A 32	J A 32	J A 42	J A 46	40	J A 28	33	J A 37	J A 46	40	J A 51	J A 40	G 32	J A 43	44	J A 53	J A 44	J A 48	J A 29	J A 31	J A 39	J A 40	J A 36
22	J A 34	22	J A 25	J A 22	21	J A 18	28	28	J A 40	J A 47	57	J A 43	46	40	40	J A 37	J A 53	J A 46	J A 33	J A 38	J A 44	J A 45	J A 30	J A 60
23	J A 30	J A 46	J A 22	J A 19	J A 23	22	22	J A 34	34	42	46	J A 58	49	J A 74	48	J A 64	J A 79	J A 62	J A 64	J A 48	J A 42	J A 66	J A 43	J A 29
24	E B 16	J A 32	J A 23	J A 36	J A 36	J A 33	23	27	J A 40	40	J A 55	J A 54	G	40	50	48	J A 48	J A 41	31	J A 28	J A 47	J A 110	J A 39	J A 52
25	J A 22	J A 24	J A 21	J A 17	21	J A 28	22	30	J A 44	J A 49	J A 60	G	39	G	J A 48	49	J A 45	59	J A 42	J A 53	J A 66	J A 43	J A 31	J A 53
26	J A 25	J A 33	J A 34	J A 17	J A 20	J A 30	G	J A 31	J A 68	J A 44	43	J A 58	J A 64	J A 75	J A 71	60	J A 51	J A 47	J A 84	74	J A 46	J A 26	J A 53	J A 38
27	J A 52	J A 24	J A 39	J A 66	J A 25	J A 20	18	J A 38	34	40	J A 62	J A 68	J A 60	33	46	G	36	35	J A 26	J A 33	J A 59	J A 62	62	J A 48
28	J A 40	J A 41	J A 31	J A 26	J A 45	J A 29	J A 26	26	G	J A 52	42	44	J A 57	J A 57	J A 50	J A 56	J A 64	J A 40	23	J A 34	J A 35	J A 45	J A 36	J A 35
29	J A 23	E B 16	20	18	J A 30	J A 26	J A 20	G 20	33	36	40	42	G 29	G	G	G	34	31	23	J A 24	J A 43	J A 44	J A 31	J A 26
30	J A 23	22	J A 26	J A 25	J A 26	J A 20	J A 19	30	33	38	41	45	35	43	46	46	38	J A 45	J A 88	J A 107	J A 72	J A 40	J A 20	J A 34
31	J A 24	J A 30	J A 24	J A 22	21	18	J A 22	J A 33	J A 38	J A 44	46	35	34	34	40	34	40	J A 46	J A 217	J A 154	J A 78	J A 128	J A 61	J A 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	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 30	J A 26	J A 25	J A 25	J A 21	J A 21	22	31	J A 40	J A 44	J A 48	J A 47	47	42	46	46	J A 48	J A 47	J A 44	J A 44	J A 46	J A 41	J A 36	J A 36
U Q	J A 44	J A 41	J A 34	J A 27	J A 30	J A 29	J A 26	J A 33	J A 44	J A 52	J A 67	J A 55	J A 57	J A 56	J A 50	J A 56	J A 59	J A 62	J A 74	J A 53	J A 66	J A 52	J A 53	J A 52
L Q	24	22	21	18	19	19	20	29	34	40	42	43	38	38	40	G 37	39	38	30	J A 29	J A 36	J A 34	J A 28	J A 29

AUG. 2012 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 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	30	23	20	35	32	19	33	28	33	40	42	U Y 41	U Y 42	47	61	54	56	47	53	43	44	23	24	24
2	28	E B 16	E B 16	E B 16	35	21	G 20	31	60	42	A A 74	45	A A 82	42	48	68	52	80	74	44	20	E B 16	33	43
3	38	28	20	E B 16	E B 16	E B 16	25	31	A A 86	46	56	46	U Y 40	46	46	42	37	31	26	19	E B 16	E B 16	E B 16	33
4	23	30	E B 16	16	E B 16	30	22	28	34	43	U Y 35	43	43	U Y 42	U Y 40	39	56	62	46	50	23	35	46	46
5	18	E B 16	E B 16	E B 16	E B 16	E B 16	G	28	38	43	43	53	51	A A 73	U Y 52	48	39	38	45	24	E B 15	23	18	16
6	20	18	E B 16	21	E B 16	E B 16	23	33	39	44	47	47	45	U Y 34	42	42	49	33	A A 134	25	21	E B 16	E B 16	28
7	27	20	E B 16	E B 16	E B 16	E B 16	20	30	36	42	50	42	46	58	47	48	58	66	45	47	27	40	16	25
8	E B 16	E B 16	E B 16	20	E B 16	E B 16	E B 21	30	34	41	41	43	U Y 40	U Y 38	44	U Y 38	U Y 34	G	G	19	E B 16	E B 16	E B 16	E B 16
9	16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	32	38	42	52	60	47	87	46	44	45	36	20	28	28	25	39
10	E B 16	20	E B 16	19	E B 16	19	21	U Y 27	U Y 31	39	40	46	G 38	G 32	G	U Y 52	66	60	30	22	34	20	19	16
11	16	E B 16	E B 16	E B 16	E B 16	E B 16	20	29	33	48	42	49	U Y 38	U Y 38	U Y 34	36	38	33	49	31	E B 16	E B 16	17	17
12	E B 16	22	22	20	21	24	23	52	40	44	U Y 48	50	63	58	48	48	41	31	25	36	E B 16	24	17	E B 16
13	18	18	25	E B 16	18	E B 16	18	28	33	A A 117	A A 104	50	48	49	41	G	39	32	27	21	32	35	21	E B 16
14	21	E B 16	E B 16	E B 16	E B 16	E B 16	20	32	45	50	57	41	G	44	G	G 22	G 28	29	27	21	25	16	34	35
15	31	35	32	20	E B 16	E B 16	18	29	33	50	66	58	54	43	44	38	36	44	34	31	35	19	E B 16	22
16	23	16	20	19	E B 16	E B 16	28	32	32	58	42	39	38	38	U Y 34	36	36	31	26	26	29	25	20	E B 16
17	E B 16	21	E B 16	E B 16	E B 16	E B 16	20	31	39	42	56	41	U Y 38	38	39	48	48	34	28	20	21	25	24	22
18	25	E B 16	16	E B 16	17	E B 16	18	28	38	A A 66	B	68	52	53	60	49	41	34	30	51	31	33	21	E B 16
19	30	19	19	E B 16	E B 16	E B 16	20	30	44	38	49	48	42	68	39	G 29	36	36	42	47	22	33	E B 16	E B 16
20	16	E B 16	20	E B 16	20	E B 16	18	28	36	38	43	44	U Y 51	40	42	61	43	49	72	A A 146	41	21	23	E B 16
21	17	20	23	23	36	24	19	31	33	43	39	48	40	G 32	40	44	50	42	46	26	20	20	23	28
22	24	E B 16	20	E B 16	E B 16	E B 16	G 21	26	38	40	55	40	44	U Y 40	U Y 40	37	36	30	25	27	36	35	24	34
23	20	18	E B 16	E B 16	21	E B 16	16	32	34	40	45	53	44	51	46	62	67	49	32	44	25	55	25	E B 16
24	E B 16	20	E B 16	E B 16	16	22	19	27	37	38	50	52	G	U Y 40	U Y 50	48	47	39	29	26	36	31	E B 16	36
25	19	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	38	37	40	G	U Y 39	G	48	49	43	53	40	44	45	33	20	40
26	17	19	18	E B 16	E B 16	17	G	28	A A 68	44	41	56	48	A A 75	52	55	38	44	57	74	21	16	21	22
27	33	16	21	30	20	17	18	35	34	38	59	56	59	U Y 33	44	G	35	30	26	27	57	45	19	E B 16
28	E B 16	16	19	19	22	20	21	25	G	43	40	40	54	53	50	53	44	30	23	25	28	37	24	28
29	20	E B 16	E B 16	E B 16	25	E B 16	G 17	G 20	32	36	40	41	G 29	G	G	G	34	30	22	19	20	36	19	18
30	E B 16	E B 16	23	22	19	18	G 18	29	33	38	41	U Y 45	U Y 35	42	U Y 46	U Y 46	38	37	74	87	36	20	19	22
31	22	30	E B 16	16	16	E B 16	18	26	34	42	41	U Y 35	U Y 34	U Y 34	40	U Y 34	38	38	A A 217	16	33	25	24	E B 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	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	20	18	E B 16	E B 16	E B 16	E B 16	20	29	34	42	43	46	43	42	44	46	41	37	34	27	27	25	20	22
U Q	25	20	20	20	20	19	21	31	39	44	55	52	51	51	48	49	49	47	49	44	35	35	24	33
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	33	38	41	41	38	38	40	G 36	36	31	26	21	E B 20	E B 19	E B 17	E B 16

IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Yamagawa

AUG. 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	295	317	334	335	298	316	325	315	R 335	349	291	277	292	294	U R 312	R 319	R 321	R 305	R 325	R 332	327	284	301	290
2	283	278	296	314	325	F 339	330	317	306	313	A	U R 290	A	R	U R 309	296	324	307	318	320	290	294	293	F 292
3	F 292	F 262	F 313	316	307	287	298	328	A	364	347	269	U R 301	J R	U R 301	R 327	297	293	311	314	320	304	289	F 284
4	299	291	291	306	313	309	346	337	368	338	304	283	R 310	R 310	305	U R 314	U R 316	317	U R 321	U R 317	U R 332	304	288	307
5	289	297	289	274	289	301	355	357	353	316	R 329	U R 322	U R 303	A	U R 311	U R 307	R 320	U R 308	R 327	U R 340	311	R 296	U R 310	R 317
6	F 283	R	340	315	307	296	329	R 351	339	316	299	U R 303	U R 284	U R 302	R 286	U R 307	U R 307	R 331	A	303	295	285	298	272
7	272	291	311	311	287	284	326	324	R 342	342	320	316	R 311	U R 320	R 305	302	307	327	315	316	292	297	F 296	F 319
8	301	312	309	301	297	313	339	350	349	328	316	289	289	R	308	315	321	U R 302	317	318	298	285	272	275
9	282	R 324	312	307	309	293	303	350	350	359	343	R 287	288	R 298	R 305	311	R 310	296	322	333	325	294	288	294
10	295	307	340	305	288	297	319	352	371	341	384	320	R 316	R 318	U R 312	U R 323	324	298	R 323	330	316	307	301	296
11	300	310	309	305	300	299	307	341	361	351	344	312	302	313	296	305	307	314	318	315	330	304	309	300
12	292	284	307	292	290	296	306	321	345	R 341	336	R	R 312	U R 336	305	301	R 307	R 307	332	330	327	296	291	303
13	296	286	281	307	310	336	356	367	356	A	A	R 337	284	291	U R 308	R 316	313	313	324	331	320	310	291	289
14	293	303	298	273	289	299	324	341	346	353	295	305	U R 316	314	U R 318	R	314	313	314	314	322	339	291	F 285
15	311	286	292	308	340	334	328	367	339	340	U R 308	R 309	313	315	R 316	330	294	327	U R 343	348	304	290	296	293
16	296	294	293	308	F 294	F 332	347	388	365	339	348	311	312	310	297	295	U R 324	331	334	321	334	298	306	315
17	F 318	F 283	F 279	F 284	F 299	320	334	368	363	361	292	299	R 330	304	311	316	323	307	325	323	331	325	285	290
18	297	295	297	307	332	377	380	369	366	A	B	298	313	309	303	320	R 324	309	R 304	342	U R 347	338	302	296
19	F 296	F 303	F 309	320	327	318	321	345	380	386	310	R 309	R 315	314	R 317	U R 317	316	R 318	329	338	R 319	R 304	306	R
20	R	309	348	362	325	323	280	313	R 353	351	347	352	312	312	310	311	323	U R 321	320	A	R 360	307	F 286	322
21	294	277	301	337	317	292	330	364	393	407	289	282	322	313	U R 326	324	327	342	349	336	322	307	285	299
22	302	309	334	289	289	297	328	342	353	348	353	R 318	290	R	U R 304	303	301	306	324	326	331	358	301	308
23	307	324	301	350	309	303	334	335	360	358	377	366	301	310	U R 322	299	310	321	U R 344	U R 332	358	U R 287	R 295	291
24	V 302	279	291	310	310	315	335	V 326	388	343	R 273	279	R 296	300	306	R 335	336	326	336	338	324	296	F 282	F 299
25	309	301	334	295	304	303	350	369	367	339	341	R 340	333	330	339	323	318	321	336	335	331	306	294	296
26	293	V 277	R 294	338	327	307	363	378	A	375	V 320	343	325	A	317	310	315	319	324	330	342	300	V 279	287
27	278	297	317	311	304	294	321	374	368	332	350	322	R 320	322	R 305	R 310	326	324	307	321	327	315	281	309
28	291	304	302	F 298	312	301	337	356	362	350	330	R 327	328	300	297	U Y 302	313	315	332	349	R 362	U R 340	284	304
29	300	310	322	354	314	311	344	350	353	340	338	318	J R	R	333	321	312	325	302	322	U R 346	R 363	307	300
30	291	291	308	306	330	331	342	377	387	351	301	306	300	R 323	298	R 306	305	313	345	R	336	326	297	309
31	303	291	312	317	321	309	V 320	357	J R	R 369	341	U R 307	U R 321	R 306	282	R 295	R 314	R	A	U R 331	U R 338	326	F 312	295
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	31	31	31	31	28	29	28	30	29	24	31	30	31	30	29	29	31	31	31	30
MED	296	296	308	308	309	307	330	350	358	348	330	309	312	311	R 308	311	315	314	324	330	327	304	294	296
U Q	301	309	317	317	321	320	344	367	368	358	346	322	318	R 316	R 316	320	323	324	333	336	R 336	325	301	307
L Q	291	286	294	301	297	297	321	335	348	339	302	290	298	303	303	303	307	307	318	319	319	296	286	290

AUG. 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L 363	L 390	U R 373	L	Y	371	A	A	A	A	A					
2								L	A	U L 370	A	U L 367	A	350	A	A	A	A	A					
3							L	L	A	L	A	R 356	R 416	L 361	L 348	375	L 356	L	L					
4							L	L	L	L	L	367	377	U R 381	L 361	372	A	A							
5									L	U L 354	388	A	L	A	A	346	U L 337	U L 356	A					
6								L	L	L	L	376	R 365	391	L 371	U R 371	A	L	A					
7								L	L	R 398	U L 359	L 383	371	L	A	L 343	A	A						
8								L	L	U L 388	408	U R 393	L 389	R 372	354	R 365	L 374	U L 345	U L 365					
9								L	L	L 374	U L 378	U R 364	A	352	A	U L 354	L 348	A	L					
10							L	L	L	421	L 410	366	366	L 355	U L 380	A	A	A	U L 353					
11								L	U L 389	A	U L 363	U L 353	R 387	402	385	359	L 352	L 355	A					
12									L	L	A	347	A	A	A 336	A 330	367	U L 371	L					
13							L 428	L	L	A	A	A	U R 354	A	401	402	U L 350	L 366	U L 377					
14							L	L	A	A	A	U R 401	R 389	363	381	409	L 371	U L 365	L					
15								L	L	A	A	A	A	390	396	396	385	A	L					
16								L	U L 398	A	U L 384	L 410	418	R 387	L 339	L 356	359	L 366	U L 374					
17							L	L	L	L	A	R 404	U R 390	R 414	U L 359	A	A	L 362	L					
18								U L 420	A	A	B	A	A	A	A	A	L 367	U L 349	L					
19								L	A	U L 401	A	A	391	A	365	L 370	L 358	L						
20							U L 304	L	L 378	U L 384	L 389	408	R	U R 402	U L 353	A	U L 355	A	A					
21								L	L	L	R 419	344	436	U R 390	388	374	A	A	A					
22								L	U L 374	379	A	468	U R 403	R	U R 393	368	L 351	U L 361						
23								L	U L 385	392	A 402	A	U R 435	A	A	A	A	A	L					
24									L	L 361	A	A	U R 345	U R 380	A	A	A	L	L					
25								L	L	L	L 385	U R 437	382	375	A	A	358	A	A					
26								L	A	A	L	A	U L 350	A	A	A	U L 356	L						
27								L	L	L	A	A	A	360	361	354	L 359	L	L					
28								L	L	L	L	387	A	A	A	A	L	U L 361	L					
29									L	U L 389	427	L	384	U L 410	L 357	L 368	U L 354	U L 361	L					
30									L	420	L	U L 357	366	L 347	336	L	U L 358	U L 352	A					
31							L	L	L	L	U L 402	L 374	U R 392	A	352	342	348	L 352	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	1	6	14	14	20	21	20	20	19	20	14	4					
MED							L 366	U L 420	U L 382	L 388	L 388	375	387	378	361	368	L 357	U L 361	U L 370					
U Q									U L 389	398	408	402	R 398	390	383	374	L 363	L 365	U L 376					
L Q									L 374	L 374	U L 378	360	366	360	352	354	L 352	U L 352	U L 359					

AUG. 2012 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 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								306	278	254	378	390	350	350	330	300	298	294	262					
2								296	A 322	304	A	340	A	342	306	318	288	356	314					
3							314	262	A	246	E A 288	454	336	314	320	302	304	292	266					
4							236	238	230	246	326	358	320	316	326	300	284	280						
5									234	316	292	294	314	A	326	318	308	284	262					
6								248	238	H 272	332	316	362	340	336	324	324	272	A					
7								240	248	264	302	302	328	306	308	324	312	282						
8								240	250	298	310	366	372	346	316	300	278	298	268					
9								248	258	256	266	416	370	350	E A 376	310	304	290	278					
10							258	232	228	258	240	314	308	336	318	302	286	312	264					
11							282	242	234	260	288	336	328	342	364	328	308	288	268					
12									252	274	296	484	328	284	324	334	314	274	264					
13							230	236	240	A	A	A 296	388	350	312	308	288	288	268					
14							266	260	256	246	E A 338	336	310	300	306	268	292	270	268					
15								224	278	266	E A 342	332	294	288	300	310	326	272	242					
16								216	242	282	264	312	314	316	328	328	290	260	256					
17							242	222	238	236	E A 392	338	280	328	344	316	298	276	254					
18								224	236	A	B	E A 402	312	322	332	288	274	294	296					
19								246	214	222	320	336	296	304	304	282	280	274						
20							416	294	250	246	246	254	E Y 324	340	318	A 328	288	298	298					
21								236	212	220	418	404	302	314	278	302	278	258	242					
22								248	250	260	266	298	Y	E Y 418	346	308	294	284	250					
23								260	236	242	232	A 264	380	336	322	A 372	E A 360	286	262					
24									226	296	446	448	386	360	330	282	278	282	252					
25								216	222	254	274	286	292	298	284	306	294	278	248					
26								214	A	236	308	A 272	306	A	306	300	286	274						
27								228	228	256	266	310	326	302	328	314	276	258	268					
28								228	244	254	268	288	284	302	334	300	288	282	252					
29									240	256	276	288	328	310	290	284	282	278	262					
30									210	220	350	330	320	302	328	300	312	284	264					
31							260	240	242	246	252	334	306	288	354	326	306	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							9	26	29	29	28	31	29	29	31	31	31	31	25					
MED							260	240	240	256	288	331	320	316	323	308	291	282	264					
U Q							298	248	250	269	335	366	343	342	332	324	308	290	268					
L Q							239	228	229	246	266	296	306	302	306	300	284	274	253					

AUG. 2012 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	294	252	232	236	294	240	248	210	192	208	A 198	186	Y	E A 238	A	A	A	A	A	242	240	254	250	282
2	316	282	258	242	266	228	222	218	A	A 206	A	E A 220	A	196	E A 276	A	A	A	A	264	262	270	280	338
3	338	340	256	218	238	272	242	232	A	E A 266	A	E A 218	184	E A 252	E A 254	220	214	218	220	248	230	236	260	338
4	264	286	242	240	236	252	228	208	206	A 206	184	A 202	204	A 206	204	212	A	A	272	286	254	264	342	326
5	276	264	272	290	284	264	224	214	218	A 218	196	A	E A 278	A	A	E A 298	H 220	218	A	236	218	256	254	254
6	292	236	228	250	238	264	240	234	218	A 218	E A 268	E A 242	A 214	196	212	218	A	H 218	A	244	252	248	258	324
7	324	286	252	244	270	280	230	208	224	224	E A 268	196	A 222	A	A	E A 286	A	A	286	276	262	288	280	274
8	264	256	234	280	270	244	236	220	204	206	186	212	180	A 194	E A 232	224	210	214	222	242	214	238	296	294
9	292	240	220	246	232	242	224	H 214	H 196	204	H 190	E A 264	A	E A 250	A	E A 250	E A 280	A	A 242	230	222	254	292	302
10	250	266	216	240	256	280	228	210	198	192	206	E A 236	212	H 220	194	A	A	A	E A 232	230	232	250	240	256
11	260	234	228	240	238	264	238	206	H 190	A	208	E A 266	194	186	176	H 178	A 220	222	A	250	224	216	248	246
12	266	282	256	272	282	284	246	270	244	E A 246	A	A 288	A	A	A	A	A 244	214	210	244	218	246	258	240
13	270	294	320	268	254	210	200	238	218	A	A	A	284	A	H 174	186	A 250	214	228	228	238	250	280	250
14	284	258	260	294	278	266	246	232	A	A	A	194	190	A 228	192	200	218	196	232	250	242	214	290	314
15	270	290	280	258	222	208	238	212	210	A	A	A	A	202	A 226	208	204	A	A	222	252	266	250	294
16	292	260	284	250	284	224	214	216	190	A	E A 216	174	162	180	220	208	228	H 208	228	242	232	236	264	252
17	238	336	316	286	256	246	230	220	234	E A 234	A	186	A 192	H 166	212	A	A	A 238	246	248	216	230	272	284
18	284	276	262	242	240	196	204	186	A	A	B	A	A	A	A	A	E A 260	A 226	E A 240	258	224	224	260	238
19	300	266	262	226	228	226	234	220	A	214	A	A	206	A	216	H 194	H 212	236	252	244	232	248	272	282
20	260	258	228	200	218	236	242	226	218	208	A 234	204	R	202	H 238	A	A	A	A	A	228	236	296	236
21	258	312	280	242	E A 314	300	240	232	214	A	176	E A 312	162	H 192	198	A 246	A	A	A	226	228	250	302	290
22	270	248	240	254	284	274	238	220	A 226	A 226	A	174	222	R	196	204	A 218	208	228	238	240	212	236	282
23	268	252	236	220	270	276	236	232	216	A 214	E A 240	A	H 190	A	A	A	A	A	E A 266	250	218	E A 416	308	274
24	258	306	274	246	248	264	216	214	E A 234	A 204	A	A	E Y 314	E A 238	A	A	A	A 270	A 236	230	248	308	308	322
25	262	278	230	260	274	282	236	208	218	196	194	164	208	216	A	A	E A 282	A	A	234	244	252	286	314
26	266	324	288	226	200	244	216	216	A	A	H 184	A	A	A	A	A	A 224	A	262	266	218	234	306	298
27	342	280	242	270	252	286	226	A	210	198	A	A	A	222	A 244	206	208	214	242	238	272	276	268	236
28	268	252	254	260	266	272	220	H 182	200	A 240	170	H 178	A	A	A	A	E A 282	218	228	236	210	226	282	264
29	264	254	244	218	258	254	226	210	H 190	202	182	H 182	212	174	186	218	202	H 206	H 230	244	242	216	216	254
30	272	282	278	278	232	222	226	216	206	190	H 182	E A 236	206	216	A	E A 286	220	H 254	A	258	220	206	252	276
31	292	296	248	234	228	242	242	H 158	202	218	198	186	178	A	190	220	236	E A 256	A	226	232	238	220	260
	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	30	25	23	19	22	21	20	19	19	20	19	20	30	31	31	31	31
MED	270	276	254	246	255	254	230	216	210	207	190	U 190	200	200	204	212	218	218	232	243	232	247	272	282
U Q	292	290	274	268	274	274	240	226	218	A 224	E A 216	E A 236	218	E A 225	E A 232	E A 246	E A 247	A 236	249	250	244	256	292	302
L Q	264	254	234	236	236	236	224	210	199	204	184	186	187	193	192	204	213	214	228	234	220	230	252	254

AUG. 2012 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 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							A	106	96	96	100	98	102	102	100	98	100	98	98	A				
2							116	106	98	100	100	104	100	98	100	98	96	94	104	B				
3							114	100	96	96	98	102	102	98	98	106	102	102	102	114				
4							120	118	96	92	92	98	96	94	94	A	A	102	104	B				
5							108	100	98	102	94	100	100		100	100	100	102	102	A				
6							134	96	108	108	98	96	A	A	96	116	A	100	100	A				
7							122	102	102	96	92	94	96	96	90	98	110	A	108	A				
8							B	114	128	A	A	A	A	A	96	106	92	100	100	A				
9							132	118	118	96	94	104	96	108	102	106	100	100	102	B				
10							A	108	96	96	96	100	104	106	98	92	98	100	100	A				
11							116	98	100	96	96	96	100	100	102	96	A	A	A	A				
12							A	116	114	104	100	102	94	96	100	98	98	98	108	A				
13							118	102	96	98	98	A	A	A	A	98	96	96	100	A				
14							A	102	98	98	98	A	96	A	94	94	100	114	A	B				
15							A	100	98	98	A	A	A	A	A	90	A	108	108	A				
16							A	108	98	96	96	A	A	96	A	A	A	112	112					
17							122	116	108	102	98	102	100	100	102	98	100	100	B					
18							B	104	104	104	B	98	A	A	106	106	104	102	A					
19							B	98	106	96	96	96	96	A	A	108	108	106	104					
20							B	118	110	98	98	98	98	102	104	102	100	98	102					
21							B	102	96	96	98	100	96	100	A	A	104	100	100					
22							84	106	104	A	A	A	A	A	110	96	A	A	A					
23							A	106	106	104	102	102	110	100	106	96	104	100	B					
24							132	122	A	96	96	98	98	104	100	98	94	94	104					
25							B	98	96	98	98	98	100	100	96	96	94	98	B					
26							128	110	96	96	94	102	102	A	100	102	104	106	102					
27							114	120	120	114	96	96	96	A	98	96	96	102	B					
28							A	114	98	A	A	A	98	96	96	94	96	102	106					
29							136	110	94	94	96	98	108	98	96	104	100	100	B					
30							136	104	106	108	A	A	A	A	A	92	106	98	112					
31							B	100	A	A	A	A	A	A	102	A	112	A	108					
	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							16	31	29	27	24	22	22	18	25	28	25	27	22	1				
MED							121	106	98	98	97	98	99	100	100	98	100	100	103	114				
U Q							132	114	107	102	98	102	102	102	102	105	104	102	108					
L Q							115	100	96	96	96	98	96	96	96	96	96	98	100					

AUG. 2012 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 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	98	98	94	94	94	94	92	94	94	106	104	120	122	112	102	102	102	98	96	94	90	94	80	80
2	90	98	94	98	90	94	98	110	98	106	100	106	100	108	106	98	102	104	100	98	100	98	98	96
3	98	96	96	98	98	126	112	102	94	94	94	96	100	158	92	124	144	88	176	86	86	92	110	96
4	96	96	94	92	96	92	132	134	102	92	94	102	108	126	130	88	112	106	102	100	98	104	102	98
5	92	92	90	B	92	96	G	100	100	98	96	92	108	90	108	106	112	102	96	94	94	92	84	92
6	96	92	94	90	98	98	122	112	104	104	98	102	94	96	130	124	110	114	100	100	96	90	86	88
7	86	82	82	82	112	98	120	106	104	104	102	104	104	94	100	112	110	104	102	102	104	98	98	96
8	82	B	B	88	94	90	B	140	138	112	88	88	134	90	112	118	116	G	G	82	B	90	90	90
9	88	86	88	B	B	B	142	150	158	170	128	114	110	114	104	114	112	104	104	100	96	96	100	98
10	98	94	94	94	96	92	126	112	110	168	130	116	96	98	G	124	104	100	98	98	94	94	94	92
11	92	96	112	110	104	110	114	106	108	100	102	92	106	100	102	98	90	88	86	84	86	88	96	96
12	108	96	90	92	92	92	92	106	110	106	106	104	100	100	100	100	100	100	112	106	110	86	104	104
13	86	104	98	90	90	94	118	108	106	100	94	94	96	96	98	G	108	102	98	94	94	96	94	96
14	90	90	88	B	88	100	128	100	98	96	92	90	G	90	G	90	96	126	104	98	94	94	104	92
15	90	86	88	84	B	96	102	100	106	96	92	88	88	90	90	154	122	110	106	86	98	84	84	96
16	94	92	90	92	86	102	102	102	100	96	94	94	94	100	98	88	86	120	116	88	98	100	100	98
17	86	98	B	98	B	130	126	110	104	102	100	108	124	90	108	98	100	98	94	92	92	92	92	92
18	92	92	92	B	88	88	84	138	114	108	B	104	104	104	104	102	102	98	96	94	92	94	98	96
19	96	92	88	96	94	86	88	122	104	104	94	94	94	90	90	92	130	118	104	104	104	96	96	102
20	94	94	92	92	90	90	92	120	110	110	100	98	100	96	148	116	116	110	104	98	96	92	90	92
21	90	86	98	98	96	104	106	110	102	102	104	94	96	92	106	108	102	100	96	96	94	96	94	94
22	90	90	92	90	96	88	90	112	100	90	90	88	90	92	168	98	94	94	94	90	92	90	88	96
23	96	98	94	118	120	86	116	110	114	108	102	106	110	108	134	116	106	96	96	98	98	100	98	122
24	B	98	96	98	96	92	104	126	112	112	102	102	G	158	118	110	110	108	108	102	98	98	104	94
25	94	104	90	92	114	112	112	108	104	104	100	G	106	G	114	112	110	102	100	92	90	90	92	92
26	92	90	92	92	92	92	G	118	102	102	102	98	102	98	100	116	118	102	98	96	96	96	96	96
27	94	94	92	92	92	94	96	120	122	112	102	100	98	100	114	G	122	114	102	100	96	96	96	96
28	98	96	90	90	88	90	90	126	G	90	106	106	98	100	98	98	98	102	100	96	90	90	90	90
29	88	B	88	88	88	92	94	100	112	130	116	114	98	G	G	G	108	98	98	94	92	90	92	90
30	88	88	88	90	106	90	88	144	132	124	120	166	94	120	110	124	138	114	102	98	92	90	88	94
31	84	88	92	92	92	92	104	98	98	96	96	96	98	98	108	96	156	122	104	112	98	108	96	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	29	29	27	28	30	28	31	30	31	30	30	29	29	28	28	31	30	30	31	30	31	31	31
MED	92	94	92	92	94	93	104	110	104	104	100	101	100	98	106	107	110	102	100	96	95	94	96	96
U Q	96	97	94	98	97	98	119	122	112	110	104	106	107	108	114	116	116	110	104	100	98	96	98	96
L Q	88	90	89	90	90	90	92	102	100	96	94	94	96	92	100	98	102	98	96	92	92	90	90	92

AUG. 2012 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 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	FF 25	FF 24	FF 23	FF 33	FF 31	F 2	L 3	LH 11	C 2	CC 11	C 1	C 1	C 1	C 1	C 2	C 2	C 2	C 2	C 4	L 5	FF 44	FF 23	F 3	F 3
2	F 4	FF 11	F 2	FQ 21	F 5	FQ 21	LQ 21	CL 11	C 2	C 1	C 2	C 1	C 2	C 1	C 1	C 2	C 2	C 5	C 4	C 7	FFQ 32	F 2	F 4	FQ 41
3	FQ 61	FF 51	F 4	F 2	F 2	FF 11	C 2	C 2	C 3	C 3	C 2	C 1	C 1	HC 11	C 1	HL 11	HL 11	L 1	H 1	L 2	F 1	F 1	FF 11	FF 61
4	F 3	FQ 41	F 4	F 3	FQ 21	F 9	H 2	HL 12	C 1	C 2	C 1	CL 11	C 1	H 1	H 1	L 2	CL 23	CL 42	CL 22	CL 61	F 4	F 7	F 6	F 8
5	F 3	F 1	F 2		F 1	F 1		C 2	C 2	C 2	C 1	C 2	CC 11	L 1	C 1	C 2	C 1	C 2	C 4	L 3	F 3	F 3	F 2	F 1
6	FF 21	F 3	F 3	F 4	FF 11	F 1	CL 21	C 3	CL 21	CL 11	CC 11	C 2	L 1	L 1	H 1	CL 11	CL 21	C 1	C 4	L 4	F 4	F 3	F 5	F 4
7	F 4	F 2	F 2	F 1	F 1	F 1	C 2	CL 22	CL 12	C 1	C 2	C 1	C 1	C 2	C 2	CL 11	CL 21	CL 44	CL 42	LL 42	FF 32	FF 22	FF 32	F 2
8	F 1			F 3	F 2	F 2		HC 22	HL 11	CL 12	LC 11	L 1	HL 11	L 1	C 1	CL 11	C 1			L 2		F 1	F 2	F 1
9	FQ 21	F 1	F 1				H 1	HL 11	HL 11	HC 11	C 1	C 1	C 1	C 1	C 2	C 1	C 2	C 3	C 3	C 3	F 3	F 5	FQ 31	F 5
10	F 1	F 4	F 2	F 2	F 1	F 1	CL 12	CL 11	C 1	H 1	H 1	C 1	L 1	L 1		C 1	C 2	C 2	C 3	L 2	FQ 41	F 2	F 3	F 3
11	F 2	F 1	FF 12	F 1	F 2	FF 11	CL 11	C 1	C 1	C 3	C 1	C 1	C 1	C 1	C 1	C 1	L 2	L 3	L 6	L 4	F 1	F 1	F 2	F 2
12	FF 23	F 6	F 5	F 5	F 5	F 4	L 4	CL 35	CL 21	CL 11	C 1	C 2	C 2	C 2	C 2	C 2	C 2	C 1	CL 22	LL 23	FF 31	F 3	FF 12	FF 22
13	FQ 21	FF 21	FF 22	F 2	F 1	F 2	C 1	C 2	C 2	C 3	C 2	L 1	L 1	L 1	L 1		C 1	C 1	C 3	LQ 31	FQ 51	F 6	F 5	F 1
14	F 3	F 1	F 2		F 1	FF 11	CL 11	C 4	C 3	C 2	C 2	L 1		L 1		L 1	L 1	CL 11	CL 21	C 4	F 4	F 3	FF 43	F 3
15	F 4	F 4	F 6	F 3		F 1	C 2	C 3	C 1	C 2	L 4	L 2	L 2	L 1	L 1	HC 11	HL 12	CL 32	CL 22	L 3	FF 33	F 2	F 2	F 3
16	F 3	F 3	F 3	FF 31	F 2	F 1	L 5	CL 41	C 1	C 3	C 2	L 1	L 1	C 1	L 1	L 2	L 2	CL 12	CL 13	F 5	F 3	FF 21	FF 32	F 7
17	F 1	FF 61		FQ 11		F 1	C 1	CL 21	CL 41	CL 21	CL 21	CL 11	CL 11	L 1	CL 11	CL 11	CL 21	C 2	C 3	FQ 11	FQ 31	F 3	F 3	F 4
18	F 4	F 2	F 1		F 3	F 1	LH 12	H 1	CL 11	CL 31		C 2	CL 11	CL 11	CL 11	CL 21	CL 11	C 2	C 2	F 5	FQ 41	F 4	F 4	FQ 31
19	FQ 31	F 3	F 2	F 1	FF 11	F 2	L 1	C 2	C 2	C 1	C 2	C 3	C 2	L 3	L 2	L 1	HL 12	CL 22	C 6	FF 61	F 3	F 4	F 1	F 1
20	F 2	F 3	F 2	F 1	FQ 31	F 1	LH 11	CL 22	CL 22	CL 11	CL 21	CL 11	CL 21	CL 11	HCL 11	C 2	C 2	C 2	C 6	F 3	FQ 61	F 4	FQ 21	F 1
21	F 2	F 4	FF 53	FF 51	F 5	FF 61	C 3	C 2	C 2	C 2	C 1	C 2	C 1	L 1	CL 12	CL 11	CL 22	C 6	C 3	F 3	F 4	F 3	FQ 21	FQ 41
22	F 3	F 1	FF 11	F 2	FF 11	F 1	C 1	CL 12	CL 21	L 2	L 2	L 1	LL 11	L 1	HL 11	C 1	L 2	LQ 21	LQ 21	FQ 31	FF 32	F 2	F 3	F 3
23	F 2	F 2	F 2	FF 11	FF 31	F 2	CL 11	CL 22	CL 11	CL 11	C 1	C 1	CL 11	CC 21	HCL 11	CC 31	CL 21	CQ 21	C 2	F 5	F 3	F 9	F 6	FF 12
24		F 2	F 1	F 2	F 3	F 4	L 1	CL 21	CL 21	C 2	C 2	C 1		H 1	C 2	C 1	C 1	C 3	C 3	F 8	F 5	FQ 41	F 2	FQ 51
25	F 3	FF 12	F 4	F 2	F 1	F 4	CL 41	C 2	C 2	C 2	C 2		C 1		C 1	C 1	C 2	C 4	C 5	F 7	F 4	F 3	F 2	F 4
26	F 4	F 5	FQ 31	C 2	F 2	FQ 21		CL 21	C 5	C 2	C 1	CL 11	CL 11	CL 31	C 2	C 2	C 1	C 2	C 4	F 8	F 5	F 3	F 2	F 6
27	F 6	F 3	F 5	F 5	F 4	F 2	L 1	CL 21	CL 21	CL 11	C 2	C 2	C 1	L 1	C 1		C 1	C 1	C 3	L 6	F 7	F 6	F 3	FQ 31
28	F 2	F 3	F 5	F 4	FF 41	F 5	L 2	CL 11		L 3	CL 11	CL 11	C 1	C 2	C 2	C 2	C 2	C 1	C 2	F 3	F 3	F 2	F 3	F 2
29	F 3		F 1	F 1	F 7	F 3	L 1	L 1	C 1	H 1	C 1	C 1	L 1				CL 11	C 2	C 2	F 3	F 3	F 5	F 3	F 3
30	F 2	F 2	F 4	F 2	FF 13	F 3	L 2	HL 11	HL 11	CL 12	CL 11	HL 11	L 1	CL 11	CL 11	C 1	HL 11	C 2	CL 61	FF 53	F 5	F 3	F 2	FF 22
31	F 1	FF 32	F 1	F 2	F 1	F 1	C 2	C 2	L 2	L 2	L 2	L 1	L 1	L 1	CL 11	L 1	HL 11	CL 12	CL 41	FF 31	FQ 41	FFQ 23	F 3	F 2
	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																								

AUG. 2012 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 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	93	95	X 89	X 69	X 54	56															X 103	X 76	X 81	X 79
2	X 74	X 75	X 75	X 74	X 60	X 54															X 86	X 79	88	X 86
3	81	80	82	78	77	X 60															X 96	X 90	X 88	X 86
4	X 92	89	91	81	66	X 56															X 107	X 79	80	88
5	X 88	86	82	X 68	68	X 74															X 124	X 125	X 132	X 126
6	X 128	X 119	X 124	112	89	70	70														A	X 82	X 84	X 82
7	X 82	X 88	X 88	X 79	X 72	X 69															X 89	X 85	X 90	C
8	C	C	C	C	C	C	C	C	C	C											X 86	X 83	X 80	X 82
9	X 84	X 94	X 91	X 75	X 65	X 61															X 94	X 81	O X 85	X 80
10	82	X 88	X 74	X 64	X 58	X 60															X 117	X 113	X 114	X 113
11	X 112	X 118	X 110	X 86	X 76	X 71															X 92	X 93	X 87	X 79
12	X 78	X 76	X 71	X 66	X 61	X 61															X 87	X 82	X 76	X 72
13	X 69	X 64	X 63	X 64	X 61	X 53															X 81	X 69	X 64	X 63
14	X 62	X 59	X 59	X 50	X 53	X 53															X 108	X 82	X 72	X 72
15	86	91	91	88	87	X 66															X 64	X 59	X 60	X 60
16	X 61	X 59	X 65	X 55	51	X 54															X 84	X 85	X 77	66
17	69	68	58	66	X 65	54	54														X 84	X 68	X 61	X 56
18	X 56	X 53	X 54	X 52	X 51	X 34															X 124	X 87	X 66	72
19	71	73	78	68	X 58	X 48															X 118	X 120	X 122	X 126
20	124	X 123	X 136	101	57	54	55	79												X 102	X 75	X 65	X 60	X 63
21	X 62	X 58	X 60	X 59	X 49	X 42														X 87	X 76	X 67	X 60	X 62
22	X 66	X 61	X 58	X 51	54	50														X 140	X 137	X 119	X 89	X 74
23	72	81	73	57	50	47	48													X 106	X 80	X 62	X 62	X 62
24	X 63	X 63	X 56	X 59	X 55	X 54								C	C	C	C	C		X 86	X 66	X 58	X 57	61
25	66	57	54	49	X 47	46														X 108	X 89	X 70	X 65	X 66
26	X 63	X 58	X 58	X 64	X 44	X 43														X 109	X 90	X 69	X 70	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C							X 120	X 114	X 90	X 73	X 79
28	X 77	X 82	X 78	66	X 62	X 60														X 140	X 124	X 99	X 96	X 91
29	X 94	X 88	X 83	X 68	X 45	X 42														X 128	X 130	X 88	X 73	X 69
30	X 71	X 72	X 75	82	X 60	X 44														X 140	X 143	X 84	X 74	X 75
31	X 74	X 77	X 80	X 75	X 62	X 54														X 155	X 139	X 116	X 100	X 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	29	29	29	29	29	29	4	1												12	30	31	31	29
MED	X 74	X 77	X 75	X 68	X 60	X 54	54	79												X 114	X 93	X 82	X 77	X 75
U Q	X 87	X 88	X 88	78	66	X 60	62													X 140	X 118	X 90	X 88	X 86
L Q	X 66	X 62	X 60	X 59	X 52	X 48	51													X 104	X 84	X 69	X 65	X 64

AUG. 2012 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 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	F 86	88	83	63	48	F 46	49	76	85	68	68	72	83	93	111	114	118	122	134	137	97	R 70	75	73
2	68	69	69	68	54	48	50	68	76	84	81	93	109	129	134	126	120	114	96	86	80	73	F 80	F 78
3	F 68	F 70	F 74	F 71	F 69	54	54	82	82	A	A	78	99	114	122	124	116	113	113	103	90	84	82	80
4	86	F 80	F 80	F 68	F 59	49	58	80	80	63	72	92	106	111	R 121	120	113	107	103	110	101	73	72	79
5	82	F 77	F 74	62	F 60	68	79	65	67	79	94	98	104	114	123	126	134	138	R 139	126	118	119	126	120
6	122	113	118	F 103	F 79	F 61	F 62	72	88	73	86	85	95	108	103	105	113	118	104	90	A	76	78	76
7	76	82	82	73	66	63	64	78	90	92	91	79	90	94	94	A	106	101	95	87	83	79	84	C
8	C	C	C	C	C	C	C	C	C	C	76	77	84	92	103	109	104	110	110	94	80	77	74	76
9	78	88	85	69	59	55	58	79	71	71	68	73	75	86	98	105	99	100	107	115	88	75	79	74
10	F 73	82	68	58	52	54	62	78	71	65	72	87	90	84	88	98	99	118	115	112	111	107	108	107
11	106	112	104	80	70	65	66	90	90	83	82	70	72	74	82	87	94	94	103	94	86	87	81	R 73
12	72	70	65	60	55	55	56	80	76	67	70	77	88	79	73	83	R 96	110	113	98	81	76	70	66
13	63	58	57	58	55	47	52	66	75	R 68	62	64	75	91	100	99	106	114	111	93	75	63	58	57
14	56	53	53	44	47	47	53	65	75	79	80	94	114	123	124	118	111	104	98	103	102	76	66	66
15	F 78	F 84	F 82	80	80	60	54	70	69	77	76	90	106	106	102	97	98	112	112	88	58	53	54	54
16	55	53	59	49	F 44	48	56	67	69	80	72	74	98	98	96	103	114	110	96	89	78	79	71	F 60
17	F 60	F 60	F 52	F 57	59	F 46	F 46	69	72	64	64	83	98	84	90	82	85	93	97	89	78	62	55	50
18	50	47	48	46	45	28	38	52	58	58	B	76	A	94	106	115	112	A	A	128	118	81	60	F 61
19	F 60	F 65	F 66	60	V 52	42	45	74	70	64	64	88	117	R 128	129	128	128	133	136	127	112	114	116	120
20	F 112	117	F 128	F 90	F 48	F 46	F 46	70	109	86	75	74	78	77	84	87	82	90	106	96	69	59	54	57
21	56	52	54	53	43	36	45	77	68	66	62	71	88	100	99	102	95	94	100	81	70	61	54	56
22	F 59	55	52	46	F 46	F 43	49	75	80	84	66	62	82	88	R 100	112	131	134	137	134	131	113	83	68
23	F 64	F 64	62	47	39	36	37	74	88	82	60	R 60	64	72	79	80	92	97	103	100	74	56	56	56
24	57	57	50	53	49	48	60	R 71	69	58	65	66	75	C	C	C	C	C	89	80	60	52	51	54
25	F 56	F 50	F 44	40	41	39	50	68	67	71	V 74	V 73	86	90	89	95	96	96	102	102	83	64	59	60
26	57	52	52	58	38	37	53	72	70	71	70	67	77	87	93	100	104	104	110	103	84	63	64	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	99	103	102	98	92	102	114	108	84	67	73
28	71	76	72	F 60	56	54	59	73	78	79	80	80	82	92	96	107	112	118	132	134	118	93	90	85
29	88	82	77	62	39	36	40	66	73	76	80	78	88	104	112	104	100	106	110	122	124	82	67	63
30	65	66	69	F 72	54	38	50	69	72	67	73	85	107	116	116	118	128	124	126	134	137	78	68	69
31	68	V 71	74	69	56	48	50	73	100	89	76	R 86	104	111	118	127	R 146	U 160	R U 166	R 149	R 133	110	94	94
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	28	30	29	30	30	29	30	29	30	31	30	31	31	29
MED	68	70	69	60	54	48	53	72	75	72	72	78	88	94	101	105	106	110	108	103	87	76	71	69
U Q	80	82	81	70	59	54	58	78	84	81	80	86	104	111	116	118	116	118	115	126	112	84	82	78
L Q	58	56	54	53	46	40	48	68	70	66	67	72	80	87	93	98	98	98	102	90	78	63	59	58

IONOSPHERIC DATA STATION Okinawa

AUG. 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	A	A	512	528	536	A	A	A	A	A					
2									L	UL 516	A	A	L	UA 512	560	492	L 504	L 472	A					
3								L	L	A	A	UA 524	544	UR 512	532	L 532	L 496	476	L					
4								L	L	L	UL 568	UA 544	540	536	A	A	A	L	L					
5										UL 508	L 536	UL 532	540	544	L	UL 572	A	484	A	L				
6									UL 492	UL 600	A	L	A	512	540	548	UA 492	A	A					
7								L	L	UL 524	520	L 592	A	A	A	A	UA 492	A	A					
8							C	C	C	C	UL 544	UL 572	528	516	524	UL 520	UL 516	480	L					
9								L	L	L	L	UL 552	A	A	536	A	A	A	L					
10								L	L		UL 540	524	A	UL 540	A	504	UL 520	A	A					
11							L	L	L	UL 496	A	500	A	528	500	516	UL 488	UL 468	A					
12								A	L	UL 492	UL 484	488	A	A	520	500	UL 536	UL 460	L					
13								L	UL 428	A	A	L 508	UA 536	500	492	516	496	L	A					
14										A	UL 496	500	508	504	484	448	464	428	L					
15								L	L	A	A	A	500	A	A	472	460	A	A					
16								L	L	A	UL 496	A	A	500	496	500	448	432	L					
17								L	L	L	UL 520	472	480	484	484	468	468	420	L					
18									UL 384	L	B	L	A	A	492	A	A	A	A					
19								L	L	L	L 560	UL 536	A	512	500	UA 484	L 484	L 444	UL 368					
20								L	L	464	UL 480	A	508	UL 516	512	488	UL 472	A	L					
21									L	A	UL 512	512	516	480	504	L	L	A						
22								L	L	UA 484	A		UL 504	UA 536	496	516	460	A						
23								L	L	464	UL 468	L	520	UA 496	UA 496	500	464	L	L					
24								L	A	A	492	500	484	C	C	C	C	C	L					
25									L	UL 488	500	UL 504	512	520	520	L 492	UL 476	UL 464	L					
26									A	A	A	A	L	A	524	UA 496	496	L	A					
27							C	C	C	C	C	C	C	532	A	A	A	UL 460	L					
28									L	468	UL 520	508	568	524	UL 520	L 508	UL 508	A	L					
29									L	L	UL 512	L 584	528	532	UL 504	500	A	L	A					
30									L	UL 444	L	UL 588	UL 540	UL 548	UL 588	UL 548	488	A						
31									L	L		UL 544	L 568	UL 584	580	520	L 516	L 464	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									3	12	17	21	19	24	23	23	22	13	1					
MED									UL 428	UL 490	UL 512	524	528	518	512	500	490	L 464	UL 368					
U Q									UL 492	UL 512	UL 538	UL 548	540	U 536	532	L 520	UL 504	474						
L Q									UL 384	466	UL 494	502	508	508	496	492	468	438						

AUG. 2012 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 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							A	268	304	A	A	U R 384	R 380	U R 404	U R 384	U R 380	352	A	A	A				
2							A	264	308	340	U R 376	U R 376	A	A	A	R	R 364	308	256	A				
3							A	252	A	A	A	A	A	A	A	A	R 352	A	A	A				
4							A	A	A	A	376	U R 412	U R 404	U R 412	U R 412	U R 396	360	312	A	A				
5							A	A	A	A	A	A	U A 412	A	A	384	A	A	A	B				
6							168	252	308	352	A	A	A	A	A	A	356	A	A	A				
7							B	264	312	A	A	U A 376	A	A	A	A	352	300	260	A				
8							C	C	C	C	A	A	U A 396	R	R 380	360	336	292	A	A				
9							B	236	324	364	R	B	B	B	392	R 376	348	A 340	A	A				
10							A	244	A 320	356	A 372	R	R	R	B	U R 372	348	316	228	A				
11							A	A	A	U A 320	A	A	A	U R 296	A	A	A	A	A	A				
12							A	A	A	U A 336	U A 352	A	U R 380	372	A	A	A	A	U A 240	A				
13							176	236	A	U A 324	A	A	A	A	A	A	348	U A 284	A	A				
14							B	A	A	A	A	U R 364	U R 380	R	U R 360	A	A	A	A	A				
15							180	236	A 268	A	A	A	A	A	A	A	A	A	A	A				
16							A	224	A	A	A	A	A	A	A	A	304	A	A	A				
17							B	A	U A 284	U A 320	U A 348	A	U R 384	R	R 372	344	U A 312	268	A	A				
18							140	240	280	324	B	368	A	A	R 364	344	324	A	A	A				
19							B	220	320	A	A	A	A	A	380	360	336	296	224	A				
20					J K 160		A	A	288	320	U A 332	A	R	R	372	360	332	300	268					
21							A	A	A	A	A	A	A	A 368	U R 368	352	U A 336	A	A					
22							B	244	A	A	A	A	A	A	A	A	A	A	A					
23							B	U A 236	288	328	U R 344	R	B	396	R 380	R 368	328	284	A					
24							B	244	288	A 320	R 348	R	R 420	C	C	C	C	C	220					
25							A	A	U A 264	A 312	A	A	R 376	396	376	348	324	284	208					
26							B	A	A	320	340	B	U R 380	U R 388	B	U R 372	332	A	A					
27							C	C	C	C	C	C	C	U R 388	A	356	324	288	A					
28							A	A	A	336	360	R 372	U A 404	R	U R 360	352	A	A	A					
29							B	240	304	336	340	384	412	420	U R 364	348	348	300	A					
30							B	236	312	348	U R 388	U R 424	A	U R 392	A	U A 388	348	296	A					
31							B	252	A	R 368	A	A	A	R	A	A	A	308	224					
	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		4	18	16	18	12	9	12	11	14	18	22	16	9					
MED					J K 160		172	242	304	332	350	U R 376	U R 390	U R 392	R 374	360	342	298	228					
U Q							178	252	312	348	374	U R 398	408	U R 404	R 380	U R 376	352	308	258					
L Q							154	236	A 286	A 320	342	R 370	R 380	372	U R 364	352	328	286	222					

AUG. 2012 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 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 41	J A 22	J A 37	J A 52	J A 52	J A 52	J A 37	28	38	J A 72	J A 64	45	J A 48	46	J A 72	J A 72	J A 77	J A 64	J A 65	J A 43	J A 64	J A 71	J A 54	J A 65
2	J A 19	J A 19	J A 20	E B 14	J A 20	J A 31	J A 50	34	35	J A 48	J A 60	J A 64	J A 61	J A 57	J A 88	G	G	38	J A 42	J A 40	J A 97	18	J A 38	J A 32
3	J A 78	J A 42	J A 17	J A 19	E B 14	J A 47	J A 28	32	J A 42	J A 128	J A 137	J A 62	J A 62	J A 60	43	J A 42	G 28	35	J A 40	J A 49	18	J A 17	18	J A 38
4	J A 75	J A 65	J A 62	J A 28	J A 35	J A 22	J A 31	J A 30	J A 52	J A 42	42	J A 58	51	46	J A 71	J A 64	J A 141	J A 46	J A 38	J A 54	J A 37	J A 49	J A 46	J A 48
5	J A 73	J A 70	21	J A 26	J A 21	J A 22	J A 19	J A 41	J A 66	J A 60	J A 52	J A 57	45	50	J A 54	J A 55	J A 80	J A 52	J A 55	E B 18	J A 24	E B 14	J A 21	J A 20
6	J A 38	J A 50	J A 53	J A 62	19	J A 31	G	29	40	J A 53	J A 64	J A 51	J A 72	J A 45	J A 49	J A 53	J A 50	J A 57	J A 62	J A 83	J A 122	J A 119	J A 52	J A 29
7	J A 23	J A 30	20	J A 16	J A 15	J A 17	E B 16	J A 32	J A 59	J A 60	J A 56	J A 80	J A 132	J A 82	J A 88	J A 142	J A 71	J A 60	J A 47	J A 28	J A 22	J A 33	J A 54	C
8	C	C	C	C	C	C	C	C	C	C	42	46	44	G 33	G	41	J A 45	J A 34	J A 34	J A 40	J A 41	J A 38	J A 24	J A 21
9	J A 22	J A 18	J A 31	E B 14	E B 14	E B 14	19	29	G	41	47	J A 52	J A 60	J A 66	J A 54	J A 64	J A 60	J A 66	J A 50	J A 53	J A 74	J A 35	J A 38	J A 32
10	J A 42	J A 46	J A 39	J A 23	J A 21	J A 21	J A 32	26	34	42	42	G 35	J A 106	J A 70	J A 62	J A 55	J A 50	J A 88	J A 98	J A 152	J A 76	J A 31	J A 30	J A 21
11	E B 14	J A 18	J A 18	18	E B 14	20	J A 21	J A 31	J A 52	J A 42	J A 69	J A 55	J A 65	J A 50	J A 47	J A 44	J A 46	J A 34	J A 67	J A 61	J A 39	J A 18	J A 27	J A 30
12	J A 36	J A 21	J A 24	J A 31	J A 33	J A 19	J A 27	J A 53	J A 53	J A 42	J A 46	J A 50	J A 81	J A 68	J A 58	J A 69	J A 202	J A 159	J A 42	J A 45	J A 20	J A 23	J A 47	J A 50
13	J A 51	J A 28	J A 22	J A 20	18	J A 21	J A 32	29	J A 48	J A 96	J A 83	J A 53	56	J A 41	J A 48	45	G	J A 50	J A 45	J A 46	J A 51	J A 34	J A 28	J A 17
14	E B 14	E B 14	E B 14	E B 14	E B 14	J A 21	E B 14	J A 40	J A 46	J A 96	J A 60	G	G	G 34	G	J A 43	J A 34	J A 32	J A 40	J A 29	J A 48	J A 55	J A 54	J A 40
15	J A 50	J A 31	J A 17	J A 21	J A 18	E B 14	19	26	34	J A 47	J A 71	J A 59	J A 53	J A 70	J A 54	J A 47	J A 42	J A 56	J A 43	J A 48	J A 37	J A 24	J A 19	J A 17
16	J A 23	J A 40	J A 23	J A 57	J A 38	J A 23	J A 22	28	J A 32	J A 89	J A 46	J A 85	J A 76	J A 44	J A 46	37	G 28	J A 44	J A 44	J A 63	J A 42	J A 24	J A 28	J A 87
17	J A 52	J A 17	18	J A 46	J A 52	E B 14	16	25	34	J A 46	J A 45	J A 43	G 38	G	G	G 33	J A 48	32	J A 29	J A 48	J A 73	J A 39	J A 34	J A 48
18	J A 34	J A 32	J A 24	J A 22	J A 19	19	18	26	34	40	B 85	J A 117	J A 76	J A 48	J A 80	J A 73	J A 131	J A 108	J A 126	J A 76	J A 50	J A 101	J A 46	
19	J A 46	J A 44	J A 26	J A 20	J A 16	18	E B 14	26	G	J A 53	J A 40	J A 52	J A 78	46	J A 52	J A 54	J A 44	38	30	J A 22	18	E B 14	J A 57	J A 47
20	E B 14	J A 27	19	E B 14	J K 16	18	J A 47	J A 35	J A 37	J A 42	J A 46	J A 54	G 29	G 33	41	39	42	J A 47	J A 43	J A 40	J A 45	J A 58	J A 23	J A 38
21	J A 34	J A 27	J A 19	20	J A 24	J A 31	J A 29	J A 87	J A 88	88	72	45	J A 47	45	J A 48	J A 46	J A 47	J A 61	J A 74	J A 84	J A 64	J A 55	J A 70	J A 74
22	J A 55	J A 40	J A 38	J A 34	J A 21	E B 13	18	G 21	J A 51	J A 63	J A 84	J A 51	J A 61	J A 71	J A 59	J A 60	J A 92	J A 65	J A 68	J A 62	J A 19	18	19	19
23	J A 36	J A 56	J A 37	J A 17	J A 38	J A 18	J A 19	J A 31	J A 34	J A 38	J A 44	G 29	48	50	J A 51	44	J A 41	J A 49	J A 34	J A 44	J A 83	J A 47	J A 28	J A 46
24	J A 74	J A 46	18	J A 23	J A 22	E B 14	J A 18	30	J A 42	J A 52	J A 44	G 34	46	C	C	C	C	C	26	J A 18	J A 18	J A 32	J A 30	J A 32
25	J A 62	J A 28	J A 25	J A 21	J A 33	J A 28	J A 25	J A 46	J A 58	J A 46	J A 44	J A 46	G	43	42	39	39	34	J A 30	J A 21	J A 17	J A 25	J A 38	J A 20
26	J A 44	J A 36	J A 24	J A 34	J A 24	21	J A 20	J A 31	J A 48	J A 58	J A 62	J A 63	J A 54	J A 66	J A 45	J A 50	J A 83	J A 63	J A 64	J A 56	J A 37	J A 31	J A 54	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	J A 50	J A 86	J A 72	J A 68	J A 38	J A 40	J A 42	J A 22	J A 22	J A 43	J A 49
28	J A 38	J A 38	J A 22	J A 32	J A 32	J A 24	J A 29	J A 34	36	J A 54	40	39	44	G 34	J A 42	J A 42	J A 44	J A 62	J A 39	J A 19	J A 42	J A 21	18	E B 14
29	E B 14	E B 14	18	18	E B 14	E B 14	E B 14	27	32	G 26	G	46	46	47	J A 50	J A 47	J A 59	J A 43	J A 47	J A 45	J A 45	J A 38	J A 21	J A 20
30	J A 22	J A 19	J A 18	E B 14	E B 14	E B 13	E B 14	28	34	42	G 34	46	J A 47	47	J A 52	J A 50	J A 49	J A 50	J A 51	J A 23	J A 20	20	E B 14	E B 14
31	19	E B 14	E B 14	E B 14	E B 14	E B 14	19	G	J A 34	G 32	J A 44	J A 49	J A 44	G 34	J A 46	J A 46	J A 38	J A 33	30	J A 34	J A 56	J A 61	J A 53	J A 52
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	31	31	31	31	31	29
MED	J A 38	J A 30	J A 22	J A 21	J A 20	J A 20	J A 19	30	J A 38	J A 48	J A 46	J A 51	J A 52	47	J A 50	J A 47	J A 48	J A 50	J A 43	J A 45	J A 42	J A 32	J A 34	J A 32
U Q	J A 52	J A 43	J A 28	J A 32	J A 32	J A 24	J A 29	J A 34	J A 52	J A 62	J A 64	J A 58	J A 65	J A 66	J A 58	J A 60	J A 71	J A 62	J A 62	J A 56	J A 64	J A 49	J A 53	J A 48
L Q	22	J A 19	18	E B 16	E B 14	E B 14	E B 17	26	34	42	43	45	45	G 43	45	42	41	38	J A 38	J A 29	J A 22	21	23	J A 20

AUG. 2012 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 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	30	18	19	30	16	21	26	G 19	33	56	56	43	43	45	70	71	76	56	63	31	53	38	32	20
2	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	21	32	34	44	55	56	55	51	47	G	G	36	41	38	59	E B 14	20	20
3	34	22	E B 14	E B 14	E B 14	28	20	29	36	A A 128	A A 137	52	50	46	42	42	G 23	33	35	43	E B 14	E B 14	E B 14	E B 14
4	43	E B 14	19	18	20	E B 14	24	26	38	38	40	54	48	46	68	56	66	43	37	52	31	E B 14	20	31
5	38	44	E B 14	16	19	E B 13	16	30	43	44	46	44	44	50	51	44	69	36	42	E B 18	E B 14	E B 14	16	E B 14
6	20	21	20	30	E B 14	20	G	28	40	50	63	49	64	44	45	48	49	50	51	48	A A 122	27	30	20
7	16	24	E B 14	E B 14	E B 14	E B 14	E B 16	28	44	44	43	46	54	58	64	A A 142	49	58	44	25	17	20	22	C
8	C	C	C	C	C	C	C	C	C	C	41	44	44	U G 33	G	41	42	33	31	36	23	30	23	18
9	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	19	28	G	40	46	46	56	61	50	60	55	G 30	33	42	39	18	22	E B 14
10	23	23	19	18	18	E B 14	28	26	34	41	41	U G 35	82	47	55	44	48	56	51	44	28	E B 14	E B 14	21
11	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	16	28	37	37	51	44	60	49	44	42	38	32	42	49	31	16	E B 14	16
12	21	E B 14	E B 14	E B 14	E B 13	E B 14	20	33	36	40	43	47	71	56	43	41	43	31	28	21	E B 14	E B 14	30	41
13	38	22	21	18	E B 14	E B 14	G 14	26	36	60	55	46	54	40	41	43	G	42	41	42	20	19	21	E B 14
14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	30	41	48	45	G	G	U G 34	G	40	34	30	34	28	34	43	18	30
15	25	20	E B 14	E B 14	E B 14	E B 14	G 14	25	31	44	61	54	44	66	51	41	38	44	37	30	E B 14	20	E B 14	E B 14
16	E B 14	17	E B 14	20	21	19	E B 14	24	31	65	39	64	60	40	43	37	G 24	32	28	46	30	21	19	17
17	20	E B 14	E B 14	E B 14	23	E B 14	16	24	32	44	43	43	G 32	G	G	G 26	36	29	24	25	30	23	27	21
18	24	21	20	16	17	E B 14	17	26	32	39	B	57	A A 117	76	46	76	70	A A 131	A A 108	91	40	31	32	20
19	E B 14	21	19	E B 14	E B 14	E B 14	E B 14	26	G	43	38	49	60	46	48	48	41	36	30	21	E B 14	E B 14	22	19
20	E B 14	18	E B 13	E B 14	K 16	E B 14	19	28	32	39	43	49	U G 29	U G 33	41	39	42	43	G 23	23	30	34	E B 14	E B 14
21	21	17	E B 14	E B 14	E B 13	28	14	32	36	46	44	42	44	42	46	45	44	44	60	66	17	18	32	20
22	29	22	20	E B 14	E B 14	E B 13	E B 14	G 19	32	48	52	42	50	54	43	46	43	44	45	37	E B 14	E B 14	E B 14	E B 14
23	18	38	23	E B 14	19	E B 14	E B 14	30	32	36	42	U G 29	47	50	50	44	35	44	32	32	40	20	16	22
24	38	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	28	41	48	40	U G 34	46	C	C	C	C	C	25	14	E B 14	20	15	27
25	27	18	E B 14	E B 14	E B 14	E B 14	22	33	32	39	39	44	G	42	41	39	35	31	26	21	E B 14	E B 14	18	E B 14
26	23	18	17	20	E B 14	E B 14	E B 14	26	42	56	62	62	51	66	E B 44	50	37	44	60	32	20	22	22	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	47	75	71	54	35	35	22	19	17	24	E B 14
28	21	E B 14	E B 14	E B 14	19	19	20	30	32	36	40	39	43	G 34	41	41	42	53	29	16	22	21	E B 14	E B 14
29	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	32	G 22	G	45	46	46	48	45	53	40	42	36	38	25	E B 14	E B 14
30	E B 14	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	27	33	38	G 30	44	46	46	47	49	42	48	41	22	E B 14	E B 14	E B 14	E B 14
31	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	33	G 31	43	44	44	U G 34	45	43	36	G 22	27	29	22	19	24	27
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	31	31	31	31	31	29
MED	21	18	E B 14	E B 14	E B 14	E B 14	16	28	33	44	43	44	48	46	46	44	42	41	37	32	22	19	20	18
U Q	28	22	19	17	18	14	20	30	38	48	54	49	56	51	50	49	49	44	44	43	34	23	24	21
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	32	38	40	43	44	G 40	42	41	36	32	29	22	E B 14	E B 14	E B 14	E B 14

AUG. 2012 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

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

IONOSPHERIC DATA STATION Okinawa

AUG. 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	F 284	319	318	340	288	F 297	314	332	348	332	295	272	271	264	285	291	294	296	312	337	367	R 296	286	276
2	269	289	306	329	321	287	307	333	322	314	295	258	270	295	287	297	283	297	316	296	283	303	F 274	298
3	F 268	F 296	F 306	F 297	F 306	280	290	331	328	A	A	279	270	285	289	291	289	288	300	307	299	298	278	286
4	280	F 305	F 322	F 334	F 305	307	331	351	372	316	258	268	275	283	R 289	297	292	296	297	325	326	299	265	278
5	292	F 293	F 305	269	F 282	307	372	351	320	299	309	282	271	283	278	276	292	306	R 323	317	296	298	295	300
6	300	307	332	F 306	F 318	F 302	F 329	330	348	295	309	265	268	282	274	267	288	306	320	305	A	282	267	278
7	270	287	308	308	296	293	281	318	328	324	327	289	289	287	285	A	306	296	304	299	296	274	283	C
8	C	C	C	C	C	C	C	C	C	C	286	281	274	278	282	297	287	302	313	322	285	280	272	271
9	279	324	327	330	296	288	299	345	363	344	304	302	287	284	291	295	295	287	292	322	320	276	274	281
10	F 278	324	324	305	290	286	326	355	353	307	303	301	315	297	293	299	283	300	321	304	294	300	289	302
11	288	300	311	298	298	307	297	332	343	325	323	289	301	290	294	286	299	299	312	313	302	299	312	R 292
12	289	301	306	285	283	286	293	333	347	335	301	300	309	315	287	291	R 293	304	335	323	310	293	299	292
13	288	283	278	292	307	323	347	359	352	R 342	A 293	287	267	283	288	292	301	302	324	326	315	296	278	286
14	294	287	310	275	294	319	329	322	315	332	296	289	295	311	308	308	289	300	291	305	320	339	286	282
15	F 282	F 295	F 322	326	F 338	336	329	346	340	324	302	277	303	293	299	291	280	321	339	357	291	292	291	296
16	286	298	320	313	F 279	334	380	383	368	351	325	263	283	290	280	286	306	327	324	318	309	311	317	F 293
17	F 304	F 306	F 263	F 286	328	F 307	F 307	349	375	336	275	279	320	291	304	302	313	316	325	331	335	332	303	282
18	297	294	295	311	351	343	368	380	377	339	B	270	A	278	283	309	307	A	A	332	347	342	288	F 291
19	F 317	F 308	F 316	331	V 346	339	308	350	364	335	293	270	299	R 314	299	306	302	313	331	338	307	311	277	291
20	F 309	313	F 348	F 394	F 313	F 304	F 285	327	360	347	316	311	311	303	301	309	296	308	334	354	326	315	286	277
21	293	275	292	312	331	309	316	385	375	348	313	290	294	311	298	303	309	316	332	328	315	299	283	277
22	F 298	305	313	292	F 292	F 290	316	352	376	374	364	312	297	275	R 274	283	313	313	331	332	334	344	284	273
23	F 274	F 310	323	310	303	301	317	357	369	374	357	R 309	279	302	298	288	301	308	323	344	341	292	276	277
24	277	292	268	301	300	314	355	R 368	391	353	307	285	292	C	C	C	C	C	336	334	313	288	277	277
25	F 304	F 290	F 306	303	303	304	338	359	367	342	V 332	V 286	300	302	300	305	306	305	306	328	328	287	280	297
26	292	263	283	342	351	323	339	370	371	328	328	304	289	297	299	303	302	302	315	332	332	289	280	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	295	290	305	305	293	289	319	335	332	264	282
28	293	309	331	F 303	290	290	333	350	364	350	320	322	286	294	282	297	298	304	318	336	331	291	253	267
29	295	300	337	358	319	313	327	354	352	344	339	291	290	292	307	300	281	284	299	317	349	352	300	278
30	289	293	303	F 350	339	343	348	393	363	338	295	268	280	293	280	297	307	310	321	331	353	324	276	279
31	281	V 284	298	329	331	324	316	356	361	356	304	R 297	284	282	270	278	R 300	U 319	R U 343	R 337	R 332	306	294	273
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	28	30	29	30	30	29	30	29	30	31	30	31	31	29
MED	289	298	310	310	305	307	326	351	361	337	306	286	289	292	289	297	298	304	320	326	320	299	283	282
U Q	F 296	308	322	330	330	323	338	359	370	348	324	300	300	297	299	303	306	312	331	334	334	315	291	292
L Q	280	290	300	298	293	292	307	332	345	324	295	272	274	283	282	290	289	296	306	317	302	291	276	277

AUG. 2012 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 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	A	A	408	394	372	A	A	A	A	A					
2									L	U L 354	A	A	L	A	A 350	401	L 360	L 349	A					
3								L	L	A	A	A	A	U R 403	381	L 353	L 367	344	L					
4								L	L	L	U L 366	A	364	373	A	A	A	L	L					
5										U L 364	L 352	U L 390	385	A 341	L	U L 328	A	358	A	L				
6									U L 361	U L 348	A	L	A	395	374	326	A	A	A					
7								L	L	U L 360	368	L 343	A	A	A	A	A	A	A					
8							C	C	C	C	U L 363	U L 350	387	395	367	U L 354	U L 349	340	L					
9								L	L	L	L	U L 356	A	A	A 338	A	A	A	L					
10								L	L		U L 363	382	A	U L 365	A	367	A 342	A	A					
11							L	L	L	U L 377	A	402	A	330	386	362	U L 343	U L 342	A					
12								A	L	U L 380	U L 396	A 395	A	A	373	360	U L 307	U L 350	L					
13								L	U L 393	A	A	A 377	A	381	385	365	355	L	A					
14										A	A 375	411	389	383	407	439	362	371	L					
15								L	L	A	A	A	365	A	A	376	370	A	A					
16								L	L	A	U L 381	A	A	407	376	359	370	369	L					
17								L	L	L	U L 361	397	422	402	392	385	366	353	L					
18									U L 418	L	B	L	A	A	A	A	A	A	A					
19								L	L	L	L 356	A	A	A 342	A	A	L 343	L 349	U L 360					
20								L	L	383	U L 391	A	392	U L 365	366	371	A 349	A	L					
21									L	A	U L 365	396	371	410	360	L	L	A						
22								L	L	A	A		A	A	389	A 325	A	A						
23								L	L	398	U L 420	L	A 334	A	A	A 335	371	L	L					
24								L	A	A	386	416	A	C	C	C	C	C	L					
25									L	U L 371	373	U L 383	387	369	359	L 360	U L 353	U L 347	L					
26									A	A	A	A	L	A	B 357	A	353	L	A					
27							C	C	C	C	C	C	C	362	A	A	A	U L 353	L					
28									L	410	U L 372	385	359	391	U L 370	L 359	U L 341	A	L					
29									L	L	U L 386	L 339	375	377	A	361	A	L	A					
30									L	U L 420	L	U L 342	U L 348	U L 342	U L 328	U L 326	354	A						
31									L	L		U L 405	L 366	U L 361	329	358	L 332	L 354	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									3	11	17	18	15	21	19	21	19	13	1					
MED									U L 393	U L 377	U L 372	388	375	373	370	360	353	L 350	U L 360					
U Q									U L 418	398	U L 386	402	389	395	385	369	366	356						
L Q									U L 361	U L 360	U L 363	U L 356	364	362	357	344	L 343	346						

AUG. 2012 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Okinawa

AUG. 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								262	244	A 278	364	406	360	366	336	320	314	306	284					
2									278	290	A 300	378	384	318	320	306	304	282	256					
3								260	242	A	A	358	358	332	330	310	300	310	284					
4								244	228	324	420	354	358	330	328	310	310	300	276					
5										304	296	304	344	346	342	350	326	290	262	236				
6									264	356	326	322	380	336	350	366	324	286	252					
7								268	260	302	270	362	324	336	334	A	284	290	286					
8							C	C	C	C	330	358	380	340	336	304	320	300	264					
9								242	236	256	L 300	342	358	358	332	320	308	314	290					
10								216	230		324	320	E A 340	332	324	316	324	302	256					
11							304	252	246	284	282	282	354	360	338	344	302	298	278					
12								240	246	264	310	316	320	302	374	340	326	294	250					
13								230	256	E A 272	E A 364	336	416	334	326	314	310	278	268					
14										256	320	330	320	282	286	280	286	262	300					
15								242	248	278	310	340	302	300	296	312	332	276	246					
16								220	238	270	264	E A 426	346	324	336	328	302	260	246					
17								230	234	284	406	340	286	320	308	284	290	278	264					
18									224	L 278	B	A	A	A 372	344	304	292	A	A					
19								218	224	260	384	374	324	298	288	296	296	278	248					
20								288	236	242	286	272	312	328	324	308	310	294	256					
21									220	266	304	354	326	310	306	286	288	270						
22								238	228	218	242		324	352	354	354	290	278						
23								246	232	224	252	268	410	336	332	334	306	290	262					
24								232	216	244	350	392	352	C	C	C	C	C	244					
25									224	274	270	312	302	314	326	296	288	296	262					
26									234	E A 276	A 304	E A 364	364	334	314	300	302	278	268					
27							C	C	C	C	C	C	C	320	318	312	286	294	292					
28									232	252	284	268	356	320	326	310	308	292	268					
29									234	242	262	358	324	324	294	296	328	300	274					
30									226	228	314	376	338	322	340	322	290	270						
31									244	242		294	320	326	350	346	316	274	244					
	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	17	27	27	27	28	29	30	30	29	30	29	27	1				
MED							304	242	234	267	304	340	344	329	329	312	305	290	264	236				
U Q								256	246	284	330	363	359	336	338	331	316	299	278					
L Q								230	228	244	282	314	322	320	318	302	290	278	252					

AUG. 2012 h′F2 (KM)

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AUG. 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	288	252	236	206	252	276	258	232	208	A	A	186	182	220	A	A	A	A	A	242	212	310	314	302
2	308	286	248	234	222	240	254	218	210	E A 254	A	A	A	A	A 246	210	214	226	A	254	E A 330	244	294	Q 282
3	358	288	256	232	252	304	252	238	222	A	A	A	E A 330	202	196	216	204	222	256	262	228	248	270	272
4	316	258	258	214	232	230	248	216	214	192	170	A	A 256	228	A	A	A	A 272	264	254	240	232	308	298
5	302	300	246	312	302	268	208	210	234	E A 238	E A 252	194	202	E A 294	A	240	A	226	A	226	220	234	256	252
6	254	258	232	246	214	244	244	214	A 228	A 246	A	A 264	A	212	214	E A 294	A	A	A	266	A	284	310	300
7	322	300	250	242	262	262	242	224	E A 252	A 242	A 226	220	A	A	A	A	A	A	A	252	256	282	306	C
8	C	C	C	C	C	C	C	C	C	C	210	210	192	194	208	222	234	222	236	232	252	288	314	318
9	294	240	214	220	224	250	260	236	214	220	236	E A 236	A	A	E A 312	A	A	A	A 246	244	232	236	278	284
10	318	246	210	248	264	280	252	208	208	218	212	202	A	E A 244	A	238	A	A	A	262	242	234	240	250
11	246	240	226	216	258	248	252	232	218	208	A	210	A	E A 332	222	224	A 236	206	A	248	264	244	232	248
12	284	260	250	272	284	276	246	A	A 210	218	A 218	E A 250	A	A	206	A 222	E A 292	206	232	246	222	234	268	A 314
13	320	318	302	270	244	218	230	222	208	A	A	E A 246	A	202	210	222	214	A	A	230	228	242	286	268
14	272	262	242	286	266	242	256	226	A 244	A	E A 246	186	202	198	194	196	220	208	254	254	250	224	256	312
15	Q 302	Q 274	234	236	212	210	238	212	206	A	A	A	236	A	A	A 232	240	A	A	216	220	284	282	278
16	274	272	238	248	A 310	232	210	218	204	A	204	A	A	174	A 228	H 198	192	230	236	262	246	232	218	278
17	278	252	Q 308	284	242	Q 236	240	210	210	A	A 224	222	192	196	190	202	204	210	238	242	232	226	278	292
18	304	292	284	268	208	226	218	210	194	214	B	A	A	A	A	A	A	A	A	264	218	212	326	Q 306
19	Q 268	290	254	226	202	214	246	220	206	A 216	H 180	A	A	E A 286	A	A	E A 272	256	A 236	228	222	228	290	272
20	Q 272	264	Q 226	Q 194	Q 240	Q 258	A 262	236	220	234	E A 230	A	198	E Y 246	212	216	E A 278	A	260	222	228	258	248	298
21	282	314	280	208	220	E A 306	254	222	A 210	A	A 240	186	A 234	204	E A 270	A	A	A	256	A 272	222	222	A 334	318
22	284	272	246	260	288	292	246	218	208	A	A	210	A	A	A 216	E A 304	A	A	254	226	218	196	206	272
23	272	A 280	232	220	276	284	258	232	216	198	A 198	176	E A 304	A	A	E A 284	216	A	A 258	230	226	A 240	278	296
24	A 354	268	304	262	242	238	230	230	A	A	194	186	A	C	C	C	C	C	224	234	204	278	298	A 310
25	288	282	226	280	266	Q 266	244	224	214	202	206	228	200	226	214	210	200	214	224	226	210	224	286	274
26	280	298	280	220	216	238	230	212	A	A	A	A	E A 286	A	E B 242	A	224	266	A	230	220	A 238	304	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	A 250	A	A	A	226	270	248	222	214	A 286	278
28	276	252	232	256	274	262	230	222	212	H 186	182	172	208	196	198	226	E A 256	A	244	226	212	206	272	280
29	248	236	228	208	204	230	248	222	214	196	202	218	224	226	A E 260	A	A	256	A	254	224	208	214	260
30	282	274	254	Q 224	206	214	226	198	206	186	188	214	248	A 254	A E 252	A E 318	A 260	A	256	234	210	184	246	282
31	292	276	260	226	206	232	246	222	212	200	216	176	194	194	A 234	226	224	226	240	226	222	208	246	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	29	29	29	29	29	29	29	28	27	18	20	21	17	21	19	21	18	16	19	31	30	31	31	29
MED	284	272	246	236	242	243	246	222	211	210	207	202	204	U 209	212	220	219	226	246	242	222	234	278	282
U Q	306	289	259	265	266	272	253	228	218	A 234	A 228	A 225	E A 252	E A 248	E A 242	E A 250	E A 256	243	256	254	240	248	304	301
L Q	273	255	232	220	215	231	230	213	208	198	196	186	196	197	206	213	214	212	236	228	220	222	248	272

AUG. 2012 h′F (KM)

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IONOSPHERIC DATA STATION Okinawa

AUG. 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							A	112	112	A	A	110	110	110	110	110	110	A	A	A				
2							A	116	112	112	A	108	A	A	A	108	106	106	112	A				
3							A	112	A	A	A	A	A	A	A	A	110	A	A	A				
4							A	A	A	A	110	A	G	G	108	108	108	108	A	A				
5							A	A	A	A	A	A	A	A	A	112	A	A	A	B				
6							162	112	112	112	A	A	A	A	A	A	112	A	A	A				
7							B	112	108	A	A	108	A	A	A	A	108	108	110	A				
8							C	C	C	C	A	A	A	A	108	106	106	106	A	A				
9							B	A	112	110	110	B	B	B	110	110	110	110	A	A				
10							A	110	A	A	A	A	A	A	B	114	112	110	110	A				
11							A	A	A	110	A	A	A	110	A	A	A	A	A	A				
12							A	A	A	110	110	A	110	110	A	A	A	A	110	A				
13							116	112	A	108	A	A	A	A	A	A	110	108	A	A				
14							B	A	A	A	A	106	106	A	110	A	A	A	A	A				
15							112	110	110	A	A	A	A	A	A	A	A	A	A	A				
16							A	108	A	A	A	A	A	A	A	A	108	A	A	A				
17							B	A	110	108	108	A	110	110	108	110	110	110	A	A				
18							B	114	112	112	B	112	A	A	112	112	110	A	A	A				
19							B	110	108	A	A	A	A	A	112	112	112	110	110	A				
20					B		A	A	110	110	108	A	A	A	106	106	110	112	112					
21							A	A	A	A	A	A	A	108	108	108	112	A	A					
22							B	122	A	A	A	A	A	A	A	A	A	A	A					
23							B	118	114	112	110	A	B	110	112	112	110	110	A					
24							B	120	114	A	110	A	110	C	C	C	C	C	110					
25							A	A	106	108	A	A	110	110	110	110	110	110	110					
26							B	A	A	108	112	B	110	112	B	112	112	A	A					
27							C	C	C	C	C	C	C	110	A	110	110	110	A					
28							A	A	A	A	A	110	A	A	108	110	A	A	A					
29							B	110	110	110	108	108	108	110	110	108	108	108	A					
30							B	110	110	110	112	A	A	110	A	A	A	114	A					
31							B	114	A	118	A	A	A	A	A	A	A	114	114					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	17	15	15	10	7	8	11	14	18	21	16	9					
MED							116	112	110	110	110	108	110	110	110	110	110	110	110					
U Q							162	115	112	112	110	110	110	110	110	112	111	110	112					
L Q							112	110	110	108	108	108	109	110	108	108	108	108	110					

AUG. 2012 h′E (KM)

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IONOSPHERIC DATA STATION Okinawa

AUG. 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	96	88	106	102	102	102	100	104	106	108	112	122	118	118	112	108	108	104	104	98	98	104	104	104
2	92	96	104	B	100	100	102	122	116	112	112	112	106	122	122	G	G	136	112	108	106	110	110	102
3	106	106	106	100	B	112	114	114	104	100	100	100	116	102	102	98	96	110	104	100	98	94	94	130
4	106	106	102	102	102	98	98	100	100	104	126	132	126	142	130	128	124	118	118	114	104	104	102	102
5	102	102	98	98	96	96	94	96	104	102	102	106	130	114	112	112	100	100	98	B	94	B	100	100
6	100	100	100	100	92	96	G	126	112	108	106	106	106	116	114	120	112	112	108	104	104	112	102	96
7	92	94	114	112	112	110	B	118	110	112	114	108	108	104	122	116	116	116	116	112	90	90	104	C
8	C	C	C	C	C	C	C	C	C	C	136	114	120	94	G	116	108	108	100	96	96	96	96	96
9	96	92	106	B	B	B	160	150	G	142	124	120	118	116	116	112	108	108	108	102	100	100	100	100
10	100	110	98	104	100	100	100	158	170	130	134	100	114	124	124	124	114	112	106	104	100	100	102	96
11	B	96	102	102	B	110	106	106	102	106	102	102	100	100	100	100	100	96	96	92	88	88	104	104
12	100	104	102	102	102	98	98	98	100	114	108	108	106	106	106	106	100	106	106	112	112	96	92	94
13	92	92	92	92	98	106	100	116	104	104	104	106	104	108	106	106	G	110	106	98	104	104	98	102
14	B	B	B	B	B	94	B	106	102	102	98	G	G	102	G	102	100	100	98	98	96	98	96	92
15	112	100	102	112	94	B	94	144	108	100	98	96	100	100	98	98	96	116	114	98	94	90	92	92
16	104	102	92	104	104	102	98	112	106	102	102	100	98	102	96	100	100	98	112	94	92	92	106	114
17	108	102	90	102	98	B	170	120	112	108	110	110	94	G	G	94	110	108	108	100	100	96	96	96
18	96	96	96	94	94	96	144	136	120	118	B	108	108	108	108	108	106	106	104	102	102	98	104	104
19	106	98	98	96	102	102	B	146	G	106	106	100	98	136	122	122	124	122	118	88	94	B	102	100
20	B	96	98	B	B	118	100	96	122	116	108	106	94	94	138	134	120	120	114	108	102	102	102	102
21	98	98	94	114	112	112	116	114	110	106	104	108	102	106	112	110	108	108	106	104	104	104	100	106
22	102	98	98	94	98	B	98	104	102	98	104	116	114	100	108	96	118	104	100	100	92	92	88	88
23	100	100	98	96	90	94	120	116	118	118	108	98	176	140	128	124	130	118	112	102	104	102	102	102
24	106	106	108	104	120	B	140	130	116	112	122	104	162	C	C	C	C	C	114	112	106	102	102	104
25	104	100	100	98	116	116	116	108	108	108	104	98	G	152	142	132	120	118	114	104	94	100	102	106
26	98	96	96	96	96	100	96	94	112	108	108	108	120	112	150	120	112	112	106	106	106	102	102	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	124	114	112	112	112	104	106	102	102	102	104
28	102	104	104	112	102	102	102	98	100	92	104	116	154	100	114	108	108	106	106	92	92	92	92	B
29	B	B	94	96	B	B	B	182	190	98	G	170	156	130	108	128	114	110	104	100	100	96	102	116
30	98	100	100	B	B	B	B	136	136	126	100	178	100	114	130	122	128	116	104	102	98	98	B	B
31	88	B	B	B	B	B	112	G	108	104	104	104	100	100	104	100	100	100	114	108	104	106	112	104
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	27	23	21	21	23	28	27	29	28	29	28	29	27	29	28	30	31	30	31	29	30	27
MED	100	100	100	102	100	102	102	115	108	108	106	108	108	108	114	112	109	110	106	102	100	100	102	102
U Q	105	102	104	104	103	110	116	133	116	113	112	115	120	123	124	122	117	116	114	106	104	103	102	104
L Q	96	96	96	96	96	97	98	104	104	102	103	101	100	101	106	101	100	106	104	98	94	95	96	96

AUG. 2012 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 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	F3	F4	FF21	F4	F4	F5	LQ31	L1	C1	CL31	CL21	C1	C1	C1	C3	C2	C2	C4	L8	CL45	F6	FF24	FF13	FF33
2	F1	F1	F1		F1	F2	LQ21	CL11	CL11	CL11	CL11	C2	C2	C1	CL11			H1	C4	C3	F8	F1	F5	F4
3	F3	F3	F1	F1		FF23	C1	C1	C2	L6	L4	L2	CL11	L1	L1	L1	L1	C1	L2	L4	F1	F1	F1	F1
4	F4	F2	F4	F3	F3	F3	L5	LC11	L2	C1	CL11	HL11	CL11	HL11	H2	C2	C3	CL11	CL12	CL22	FF51	F5	F2	F8
5	FQ61	F5	F2	F6	F2	F4	L1	L2	L3	L2	L1	L1	HL11	C1	C1	C1	L3	L2	L3		F2		F1	F1
6	F1	F2	F3	F3	F1	F3		C1	CL11	CL11	L2	L2	L2	CL11	CL11	C1	C1	C3	C4	L7	FF84	FF25	F4	F2
7	F2	F4	FF11	F1	F1	F2		C1	C3	C2	C1	C2	C2	L2	CL22	CL31	C2	C4	C3	C3	F2	F4	F2	
8											HL11	CL11	CL11	L1		C1	CL11	C1	L5	L5	F3	F5	F6	F4
9	F2	F1	F1				H1	HL11		H1	C1	C1	C1	C2	C1	C2	C4	C3	C3	L5	FQ41	F3	F3	F3
10	F2	F2	F3	F1	F1	F1	L5	H1	HC11	H1	H1	L1	CL11	CL31	C2	CL11	C2	C4	C6	LQ31	FQ41	F3	F3	F2
11		F1	F1	F1		F1	C1	C2	L3	C1	L2	L1	L2	L1	L1	L1	L2	L2	L3	L6	F4	F2	F2	F2
12	F2	F2	F4	F3	F3	F2	L3	LQ41	L2	CL11	C1	C1	C3	C2	C1	L1	L4	LQ21	C1	CL31	F1	F3	F3	F3
13	F4	F3	F2	F1	F1	F2	L1	C1	C2	C2	C4	C2	C1	C1	C1	L1		CL21	CL21	L4	F3	F4	F3	F1
14						F1		C2	L2	L3	L2			L1		L1	L1	L1	L3	L4	F5	F6	F4	F4
15	FF22	FQ21	F1	FF11	F1		L1	HC11	C1	L1	L3	L3	L1	L3	L3	L2	L2	CL32	CL14	CL33	F3	F2	F2	F2
16	F1	F4	F2	FF21	F4	F4	LC11	C1	C1	L5	L1	L3	L2	L1	L1	L1	L1	L2	CL12	L4	F5	F3	FF12	FF31
17	F4	F1	F1	F3	F3		H1	C1	C1	C1	CL11	CL11	L1			L1	CL11	C1	C1	L4	F3	F3	F3	F2
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19	F2	F2	F4	F1	F1	F1		H1		C2	C1	L2	L3	CL12	CL11	CL21	CL21	CL22	CL11	L1	F1		F2	F2
20		F2	F1		K1	F1	LC12	LC21	C1	C1	C1	CL21	L1	L1	HL11	HL11	C1	C2	C2	F5	F8	F6	F1	F2
21	F2	F2	F1	F1	F1	F1	C1	C3	C2	C3	C2	C1	L1	C1	C1	C2	C2	C3	C8	F7	F3	F5	F6	F3
22	F4	F4	F3	F2	F2		L1	L1	LC21	L3	L2	CL11	CL12	CL12	CL12	LQ31	CL12	LQ21	L4	F6	F1	F1	F1	F1
23	F3	FQ41	F3	F2	F2	F1	C1	CL22	CL11	CL11	CL11	L1	H1	H1	C1	C1	C2	C2	C2	F5	F5	F3	F2	F4
24	FF62	FQ11	F1	F2	F1		H1	HL22	CL21	CL31	CL11	C1	H1						C1	F1	F1	F6	F4	F5
25	FQ41	F5	F3	F2	FF32	FF11	CL31	C2	CQ11	C1	C1	L2		H1	H1	H1	C1	C1	C1	F1	F1	F1	FF22	F1
26	F3	F5	F4	F3	F2	F2	L2	LC32	CL31	CL41	C3	C2	C1	C2	H1	C2	C2	C4	C3	F3	F3	F3	FQ41	
27														CL11	CL21	C3	C3	C1	C2	FQ31	F4	F3	F4	F3
28	F4	FQ31	F3	FQ21	FQ21	F2	L2	L3	L1	LC11	CL11	CL11	HL11	L1	C1	C1	C1	L3	L2	F1	F2	F1	F1	
29			F1	F1				H1	HL11	L1		H1	H1	H1	C2	CL11	C2	C2	L3	FF71	F5	F6	F2	F1
30	F2	F1	F1					H1	H1	C1	L1	H1	L1	C1	HC11	CL11	CL11	C1	C4	F1	F1	F1		
31	F1						C1		C1	L1	L1	L1	L1	L1	L1	L2	L2	L2	C2	F8	F7	F3	FF14	F5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG. 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

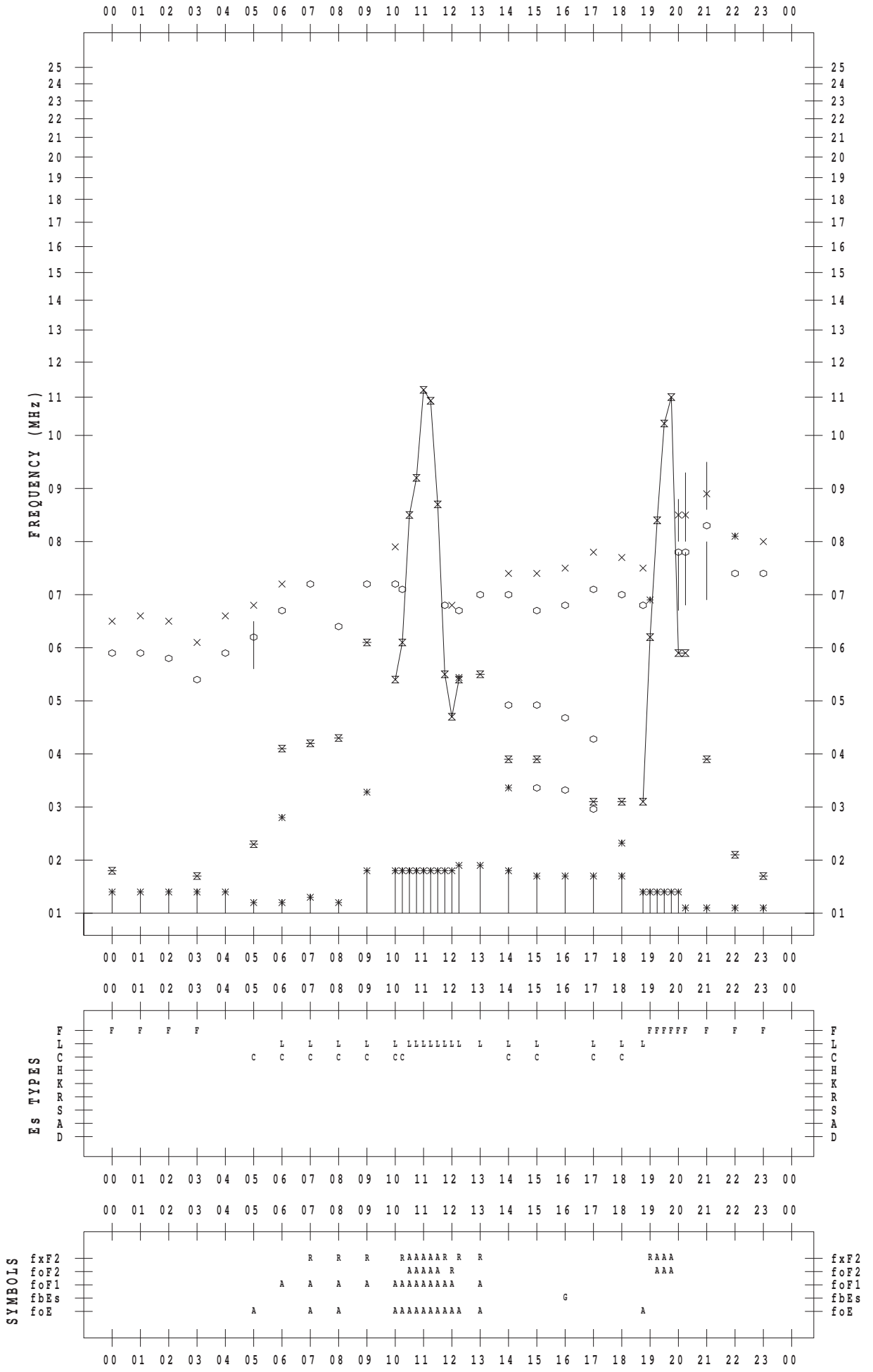
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 1

135 °E MEAN TIME



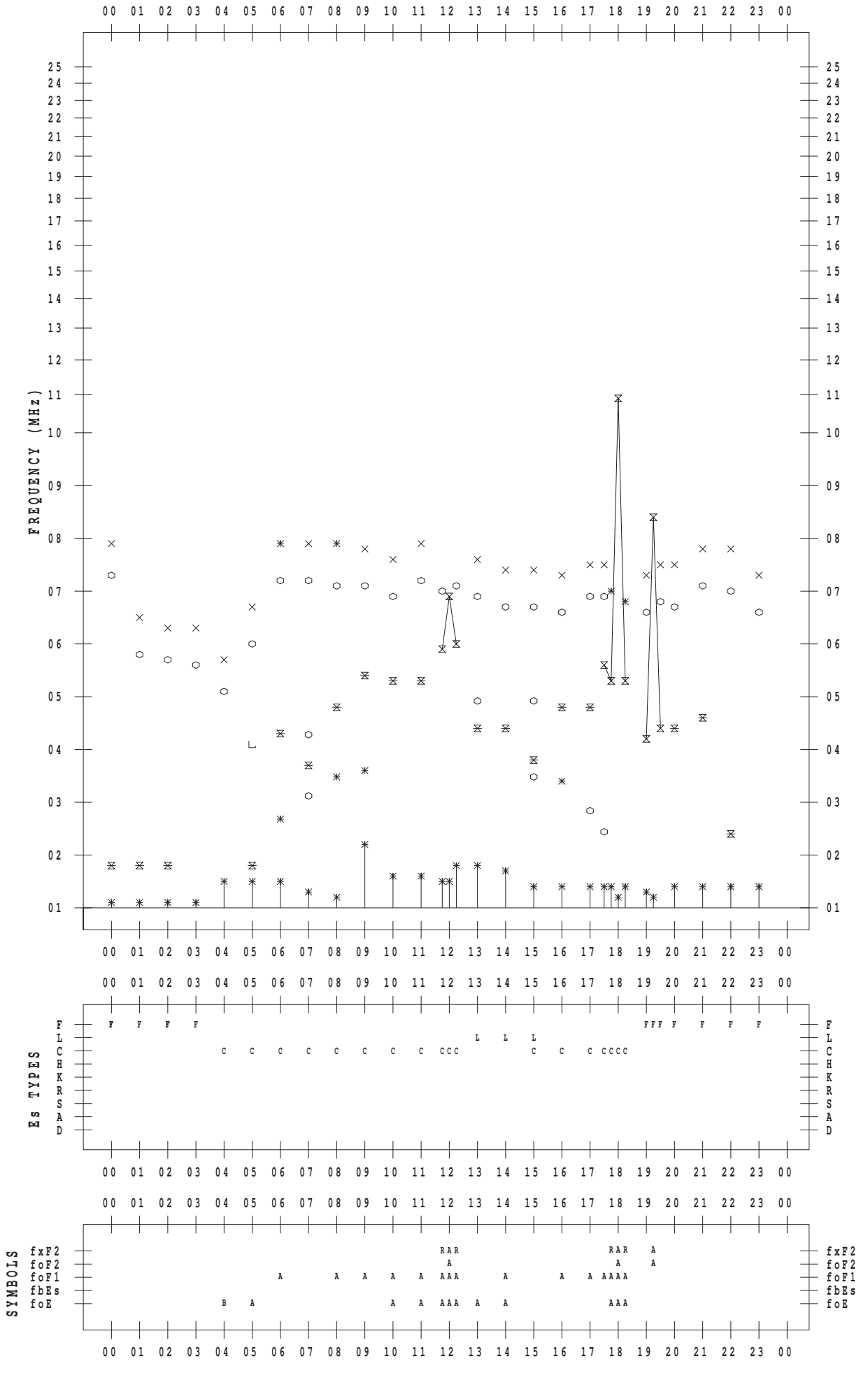
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 2

135 °E MEAN TIME



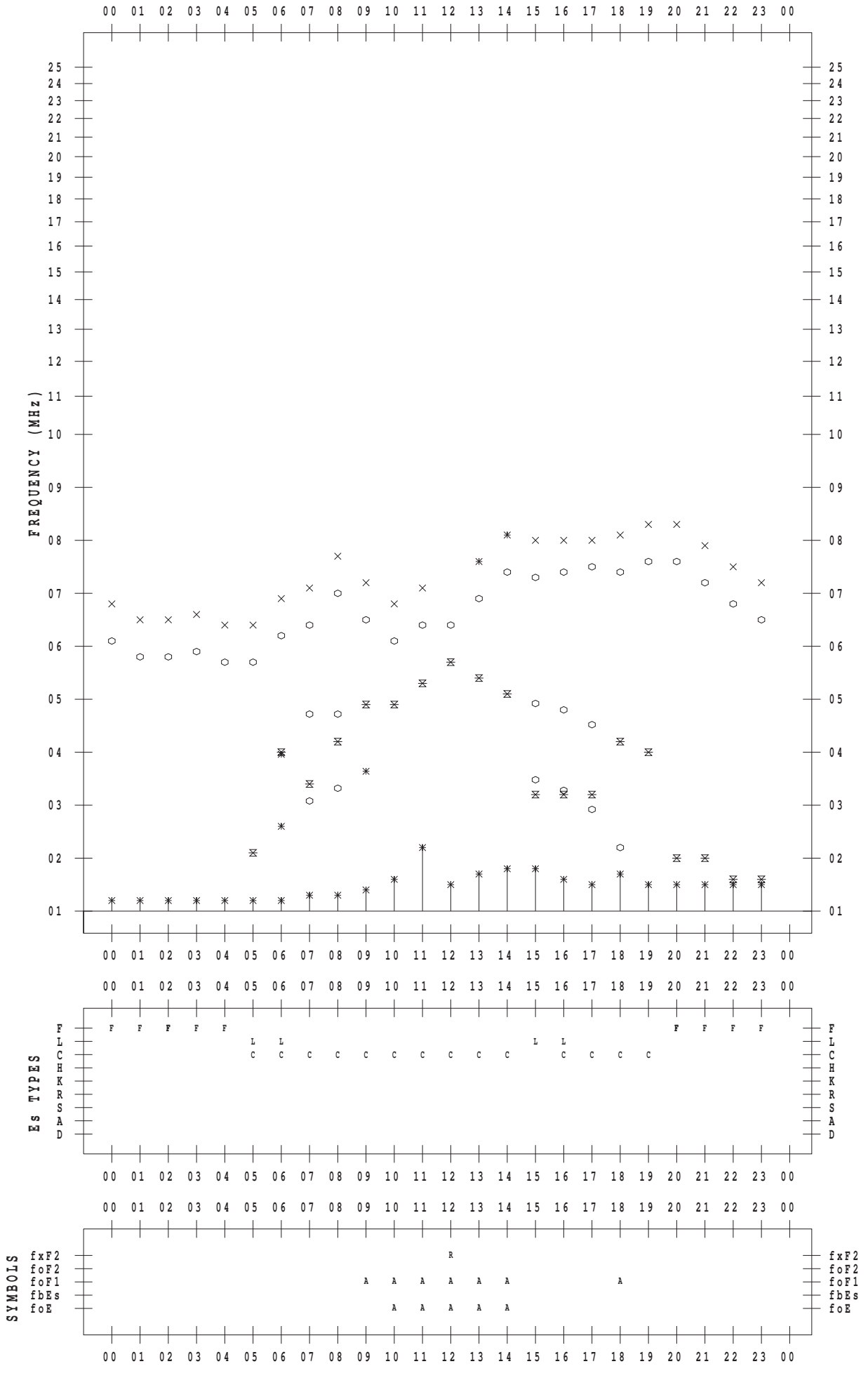
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 3

135 °E MEAN TIME



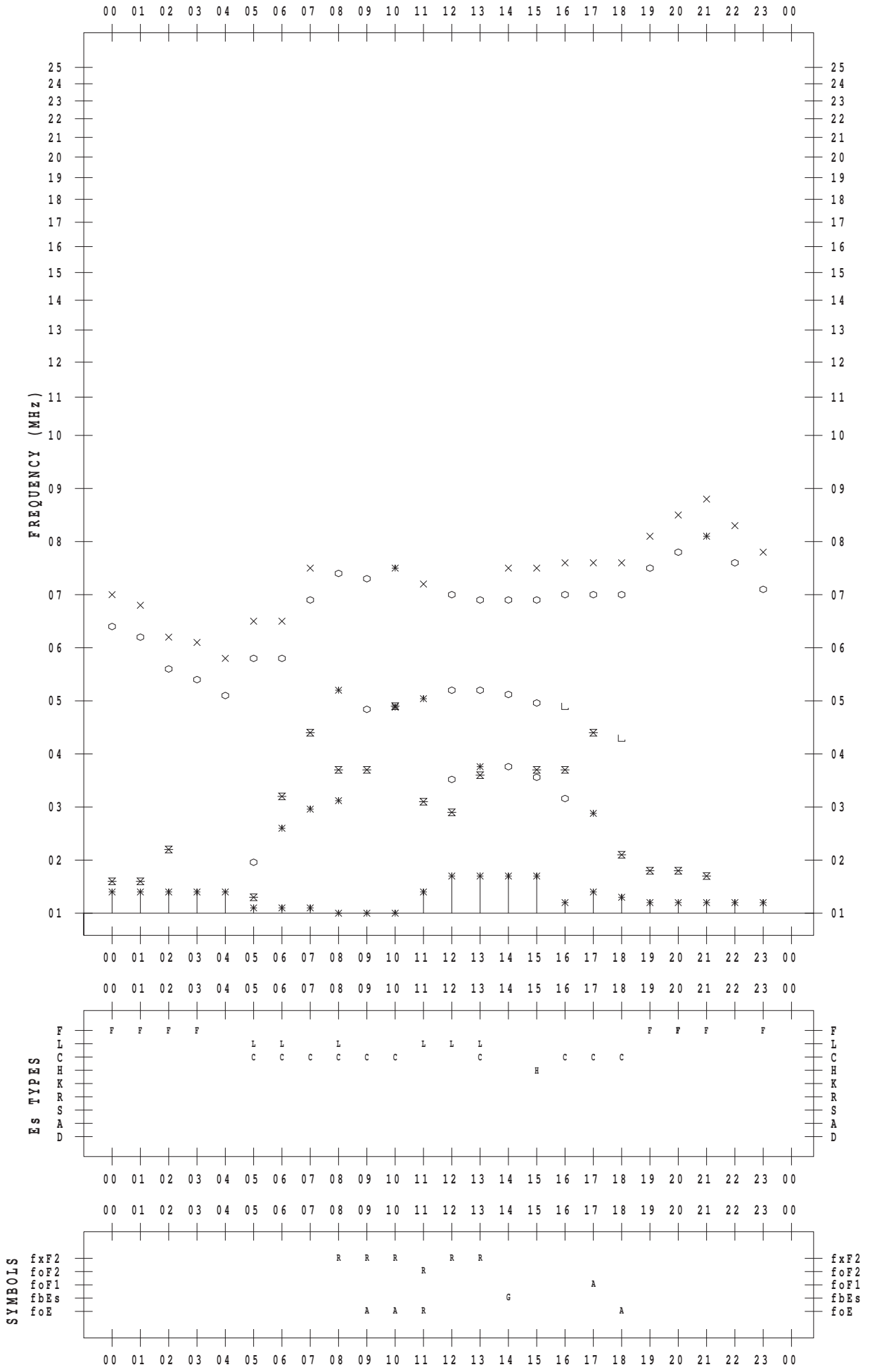
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 4

135 °E MEAN TIME



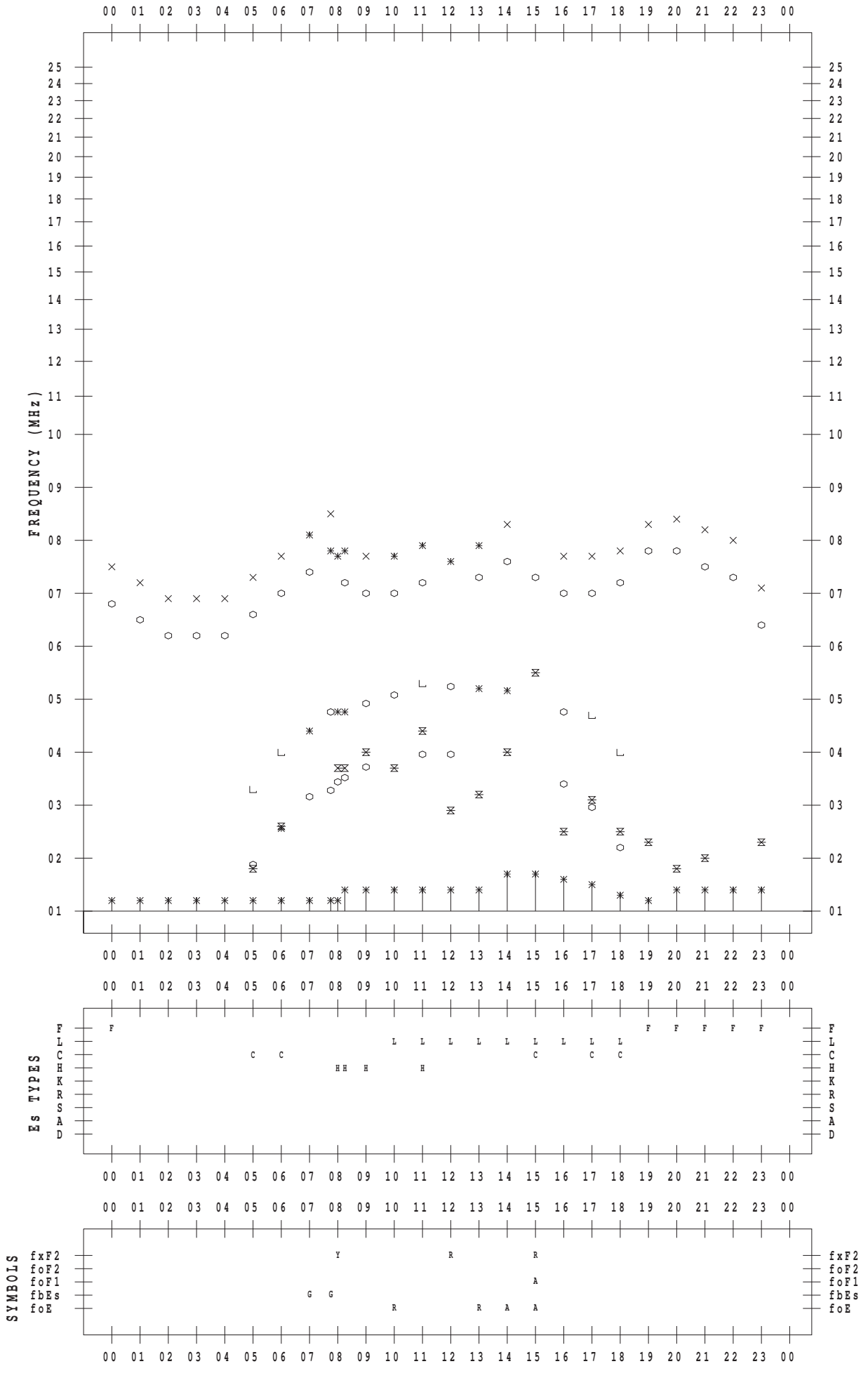
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 5

135 °E MEAN TIME



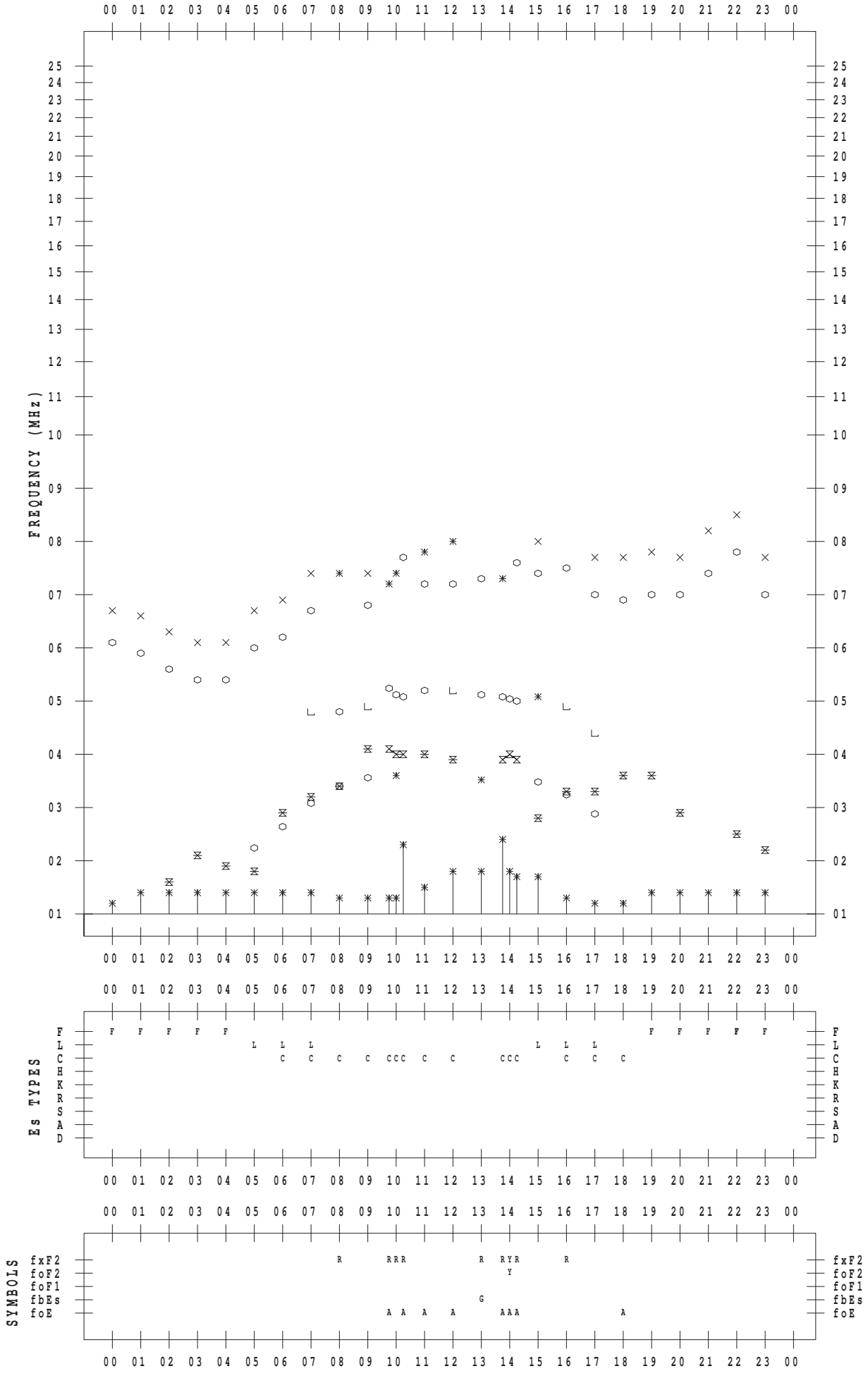
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 6

135 °E MEAN TIME



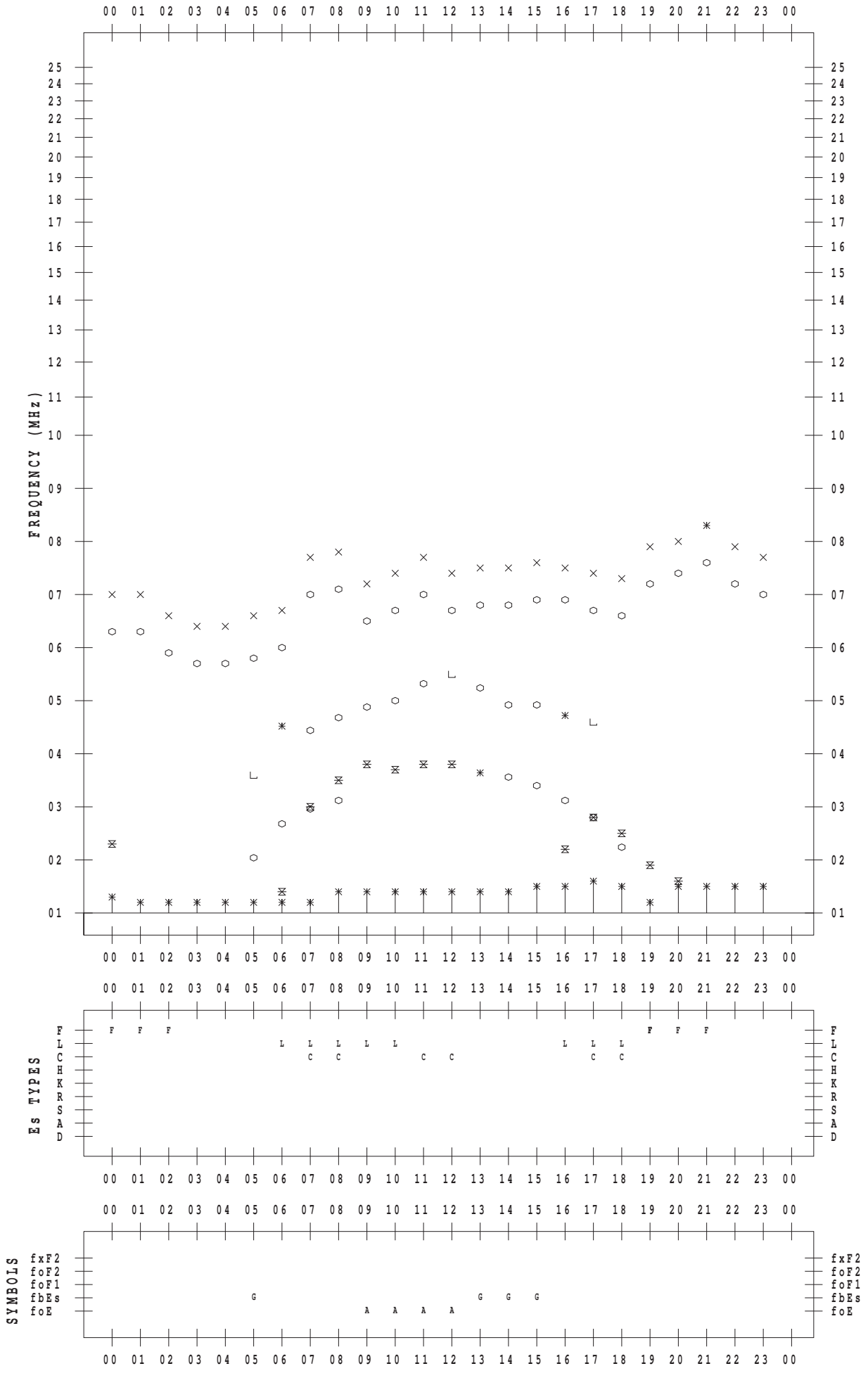
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 7

135 °E MEAN TIME



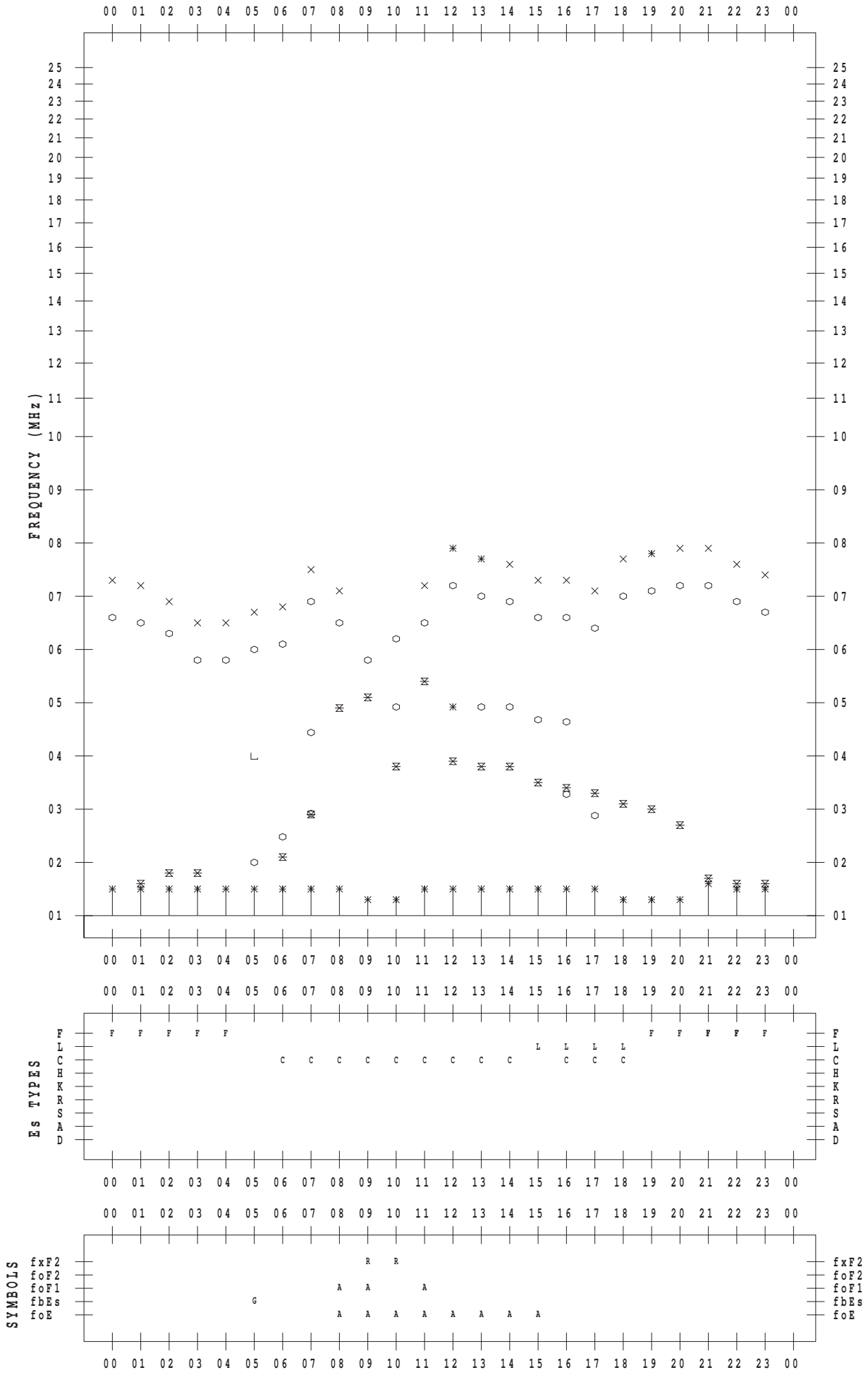
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 8

135 °E MEAN TIME



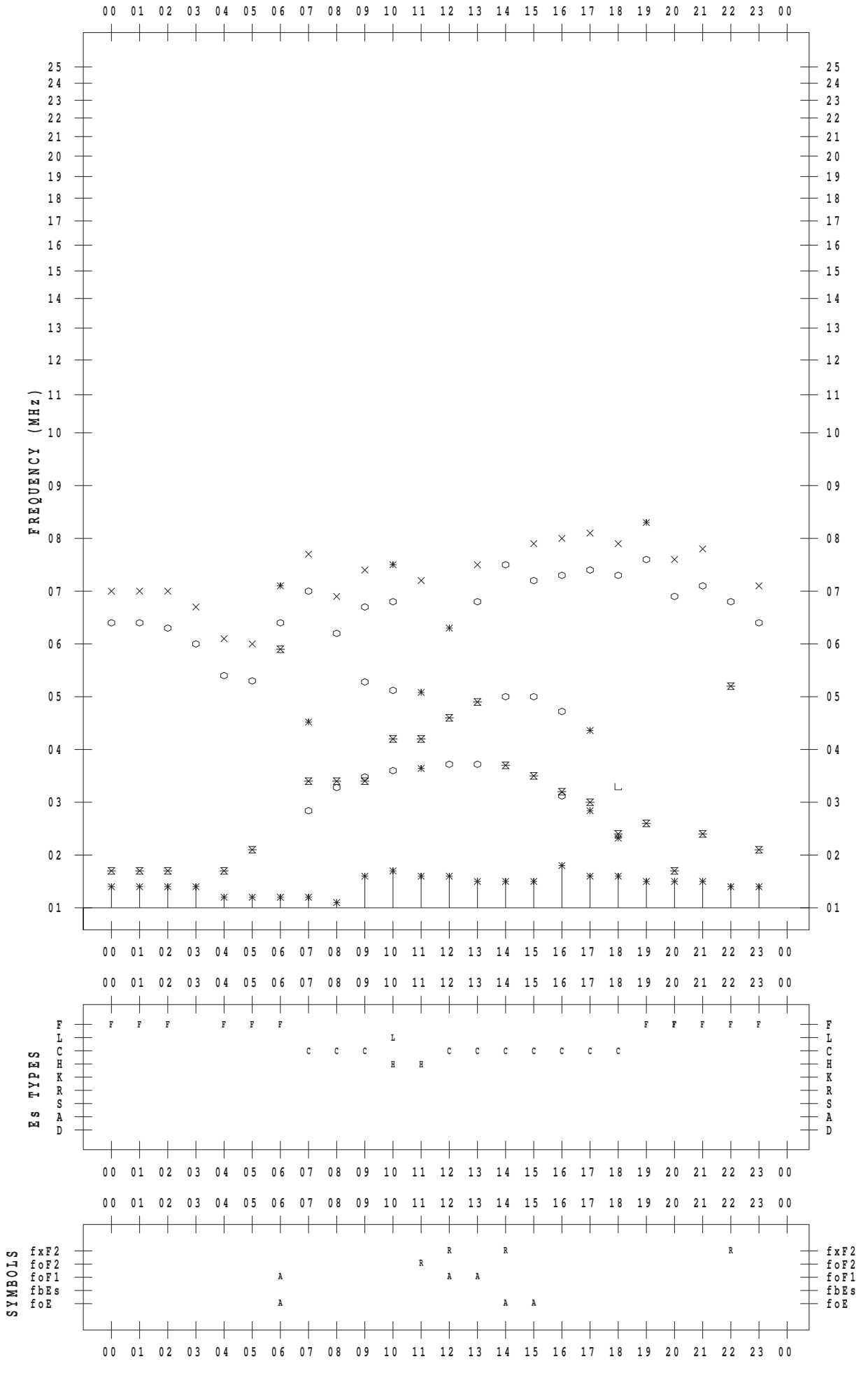
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/ 9

135 °E MEAN TIME



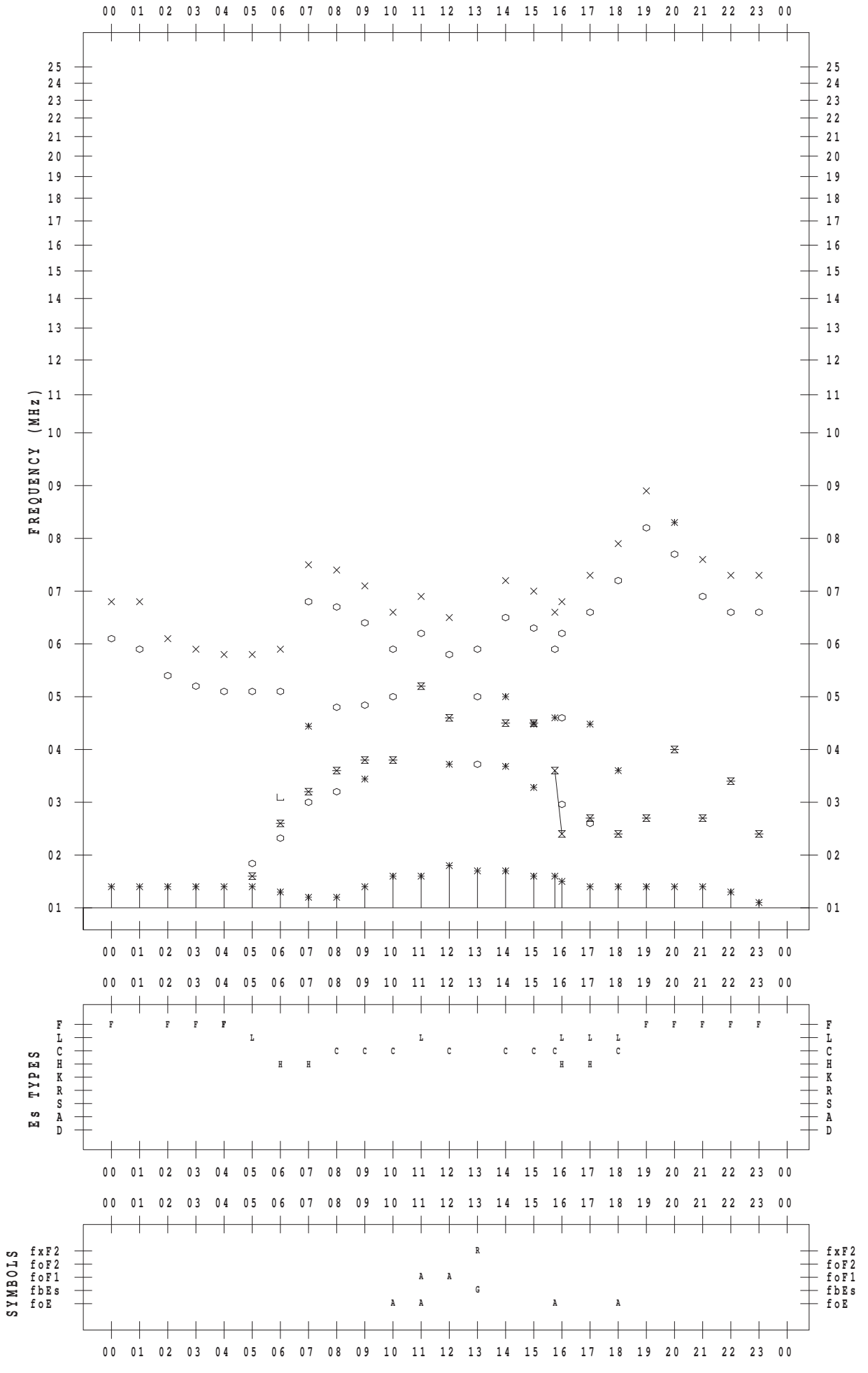
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/10

135 °E MEAN TIME



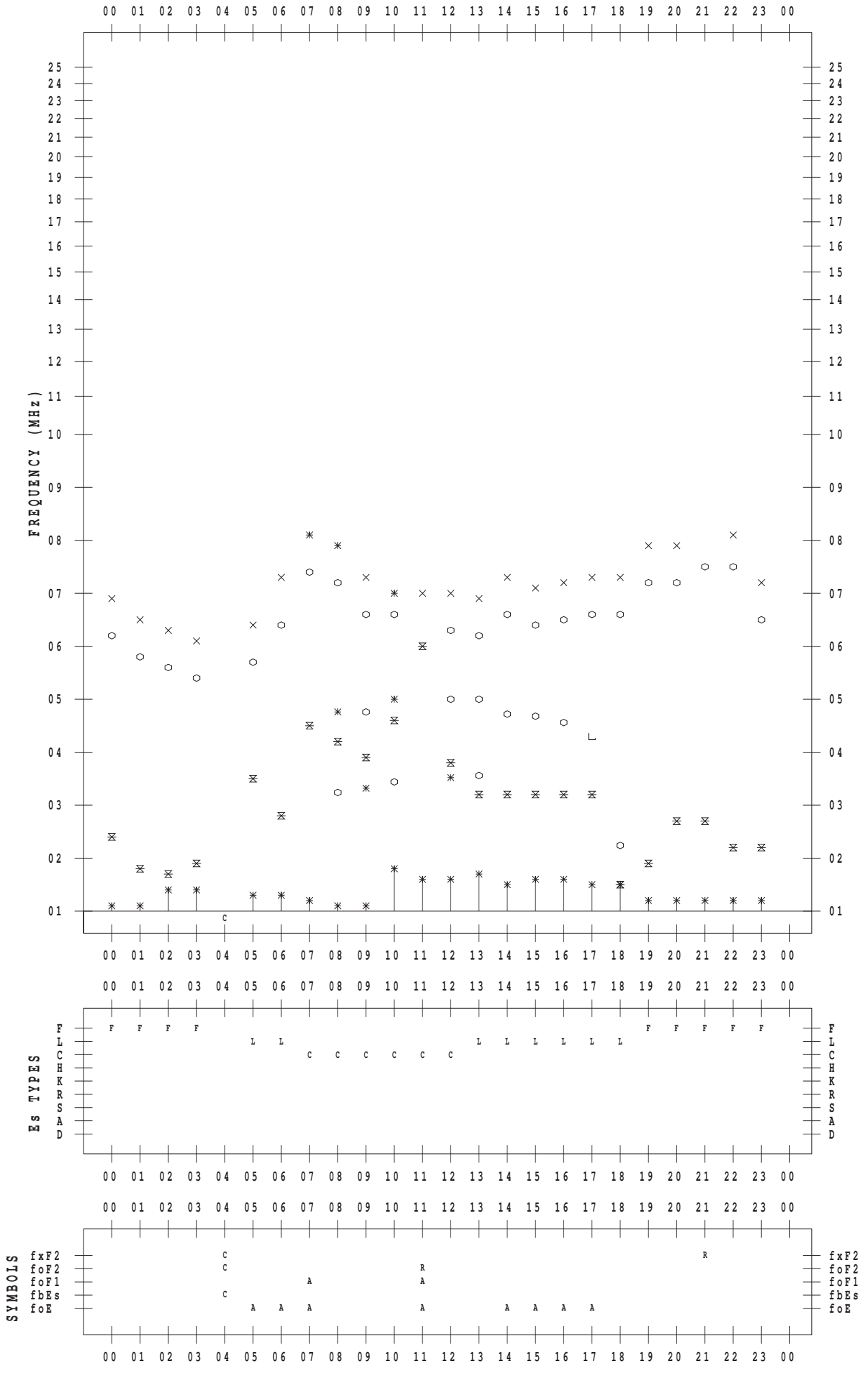
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/11

135 °E MEAN TIME



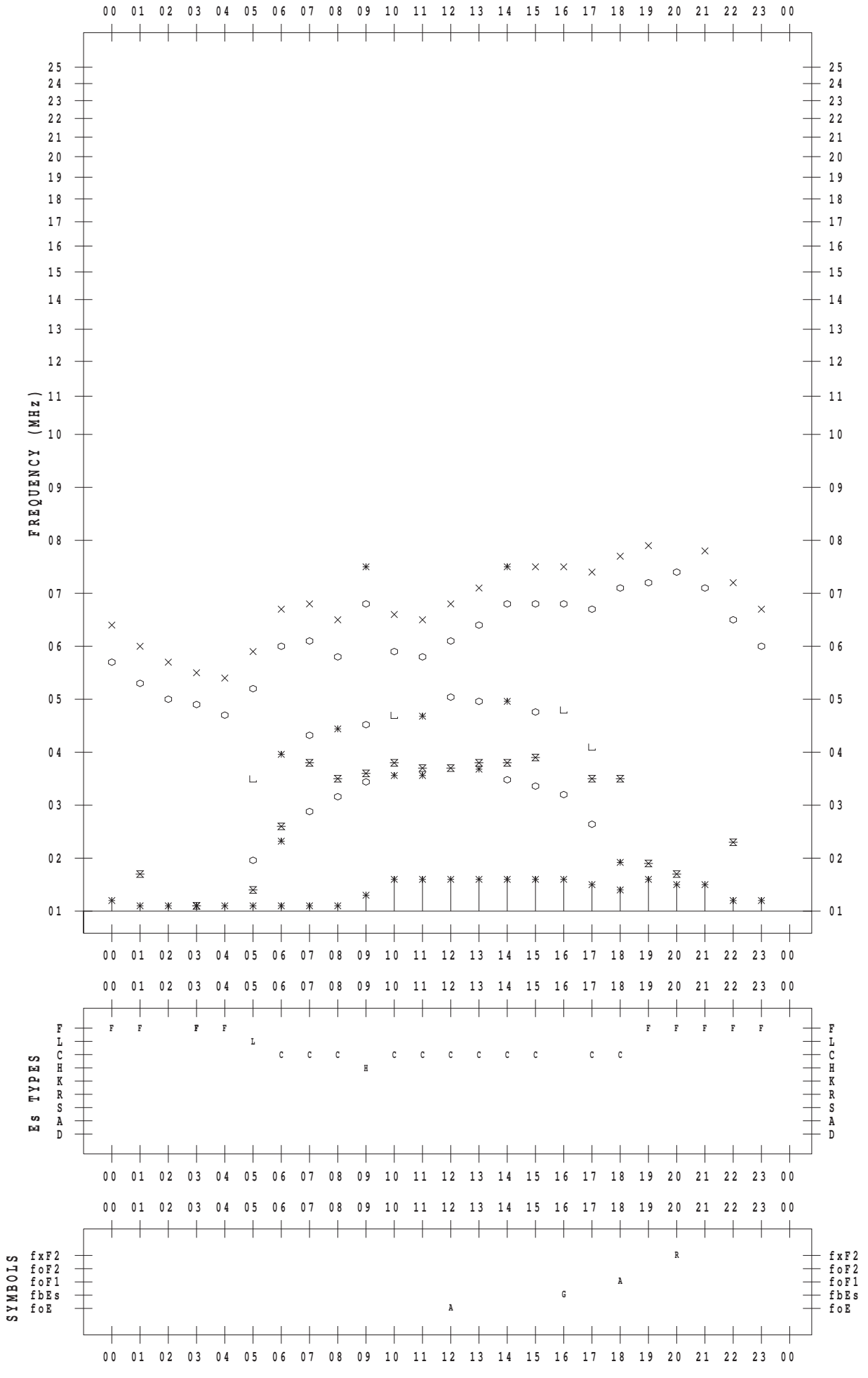
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/12

135 °E MEAN TIME



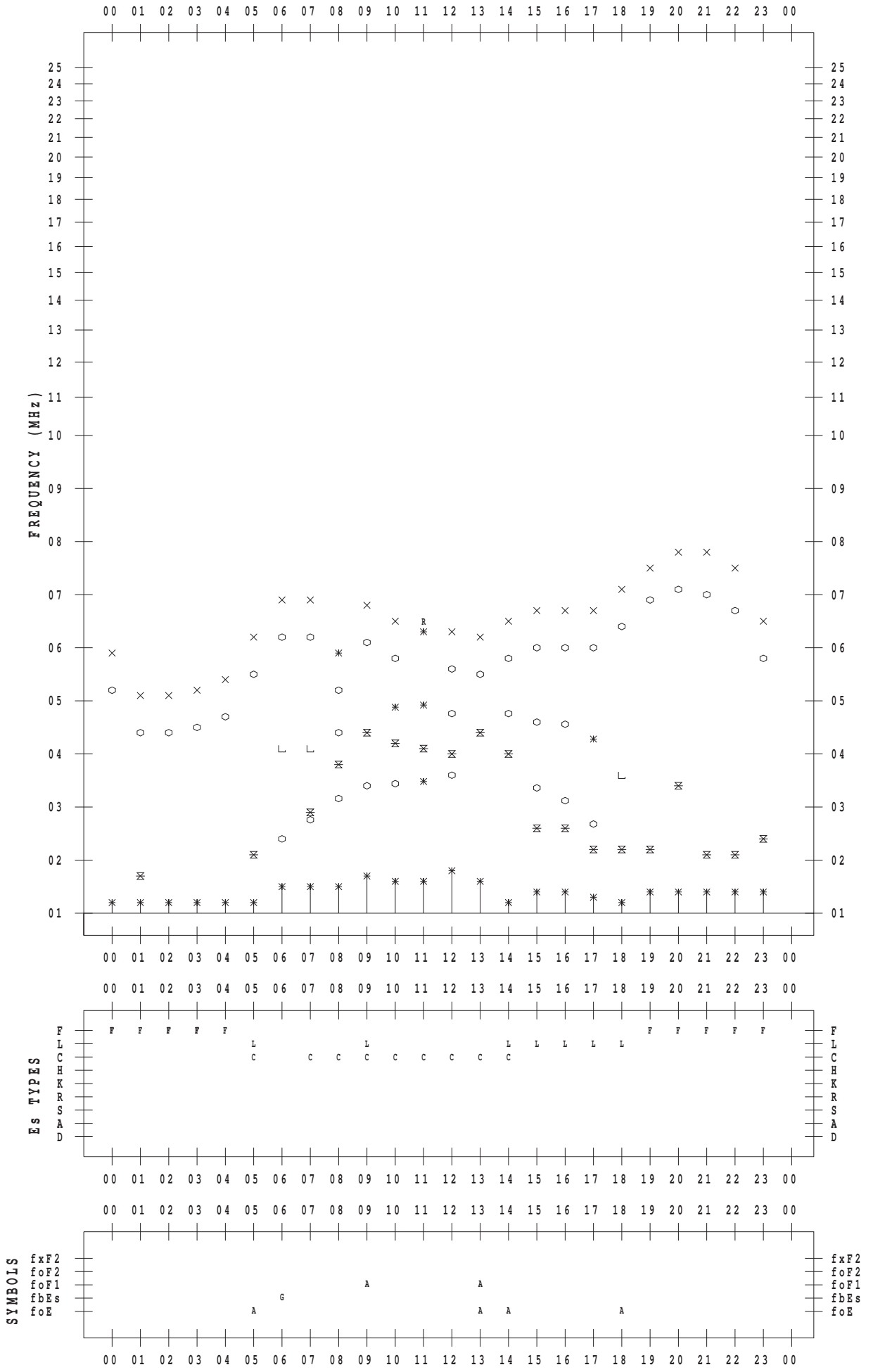
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/13

135 °E MEAN TIME



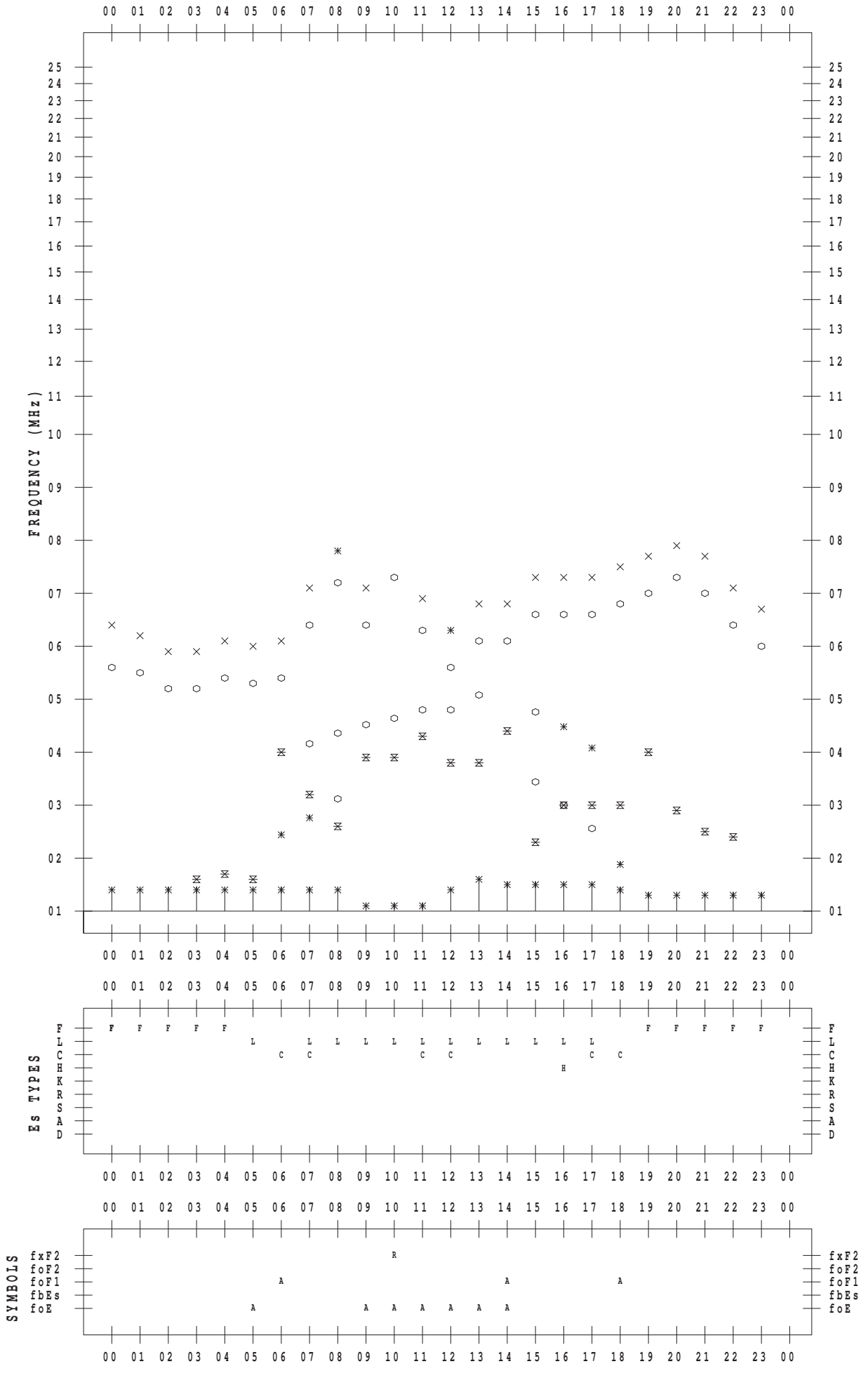
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/14

135 °E MEAN TIME



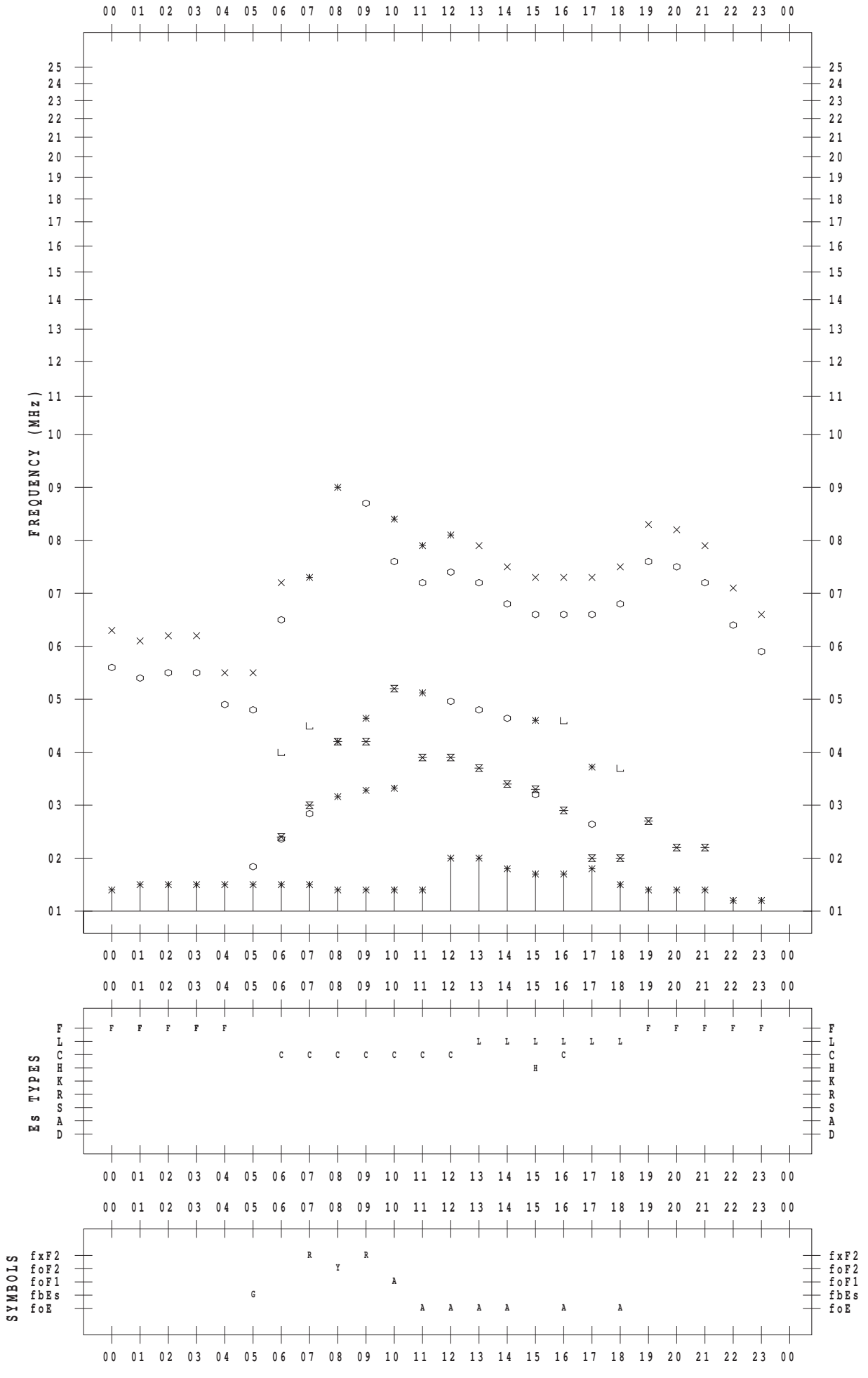
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/15

135 °E MEAN TIME



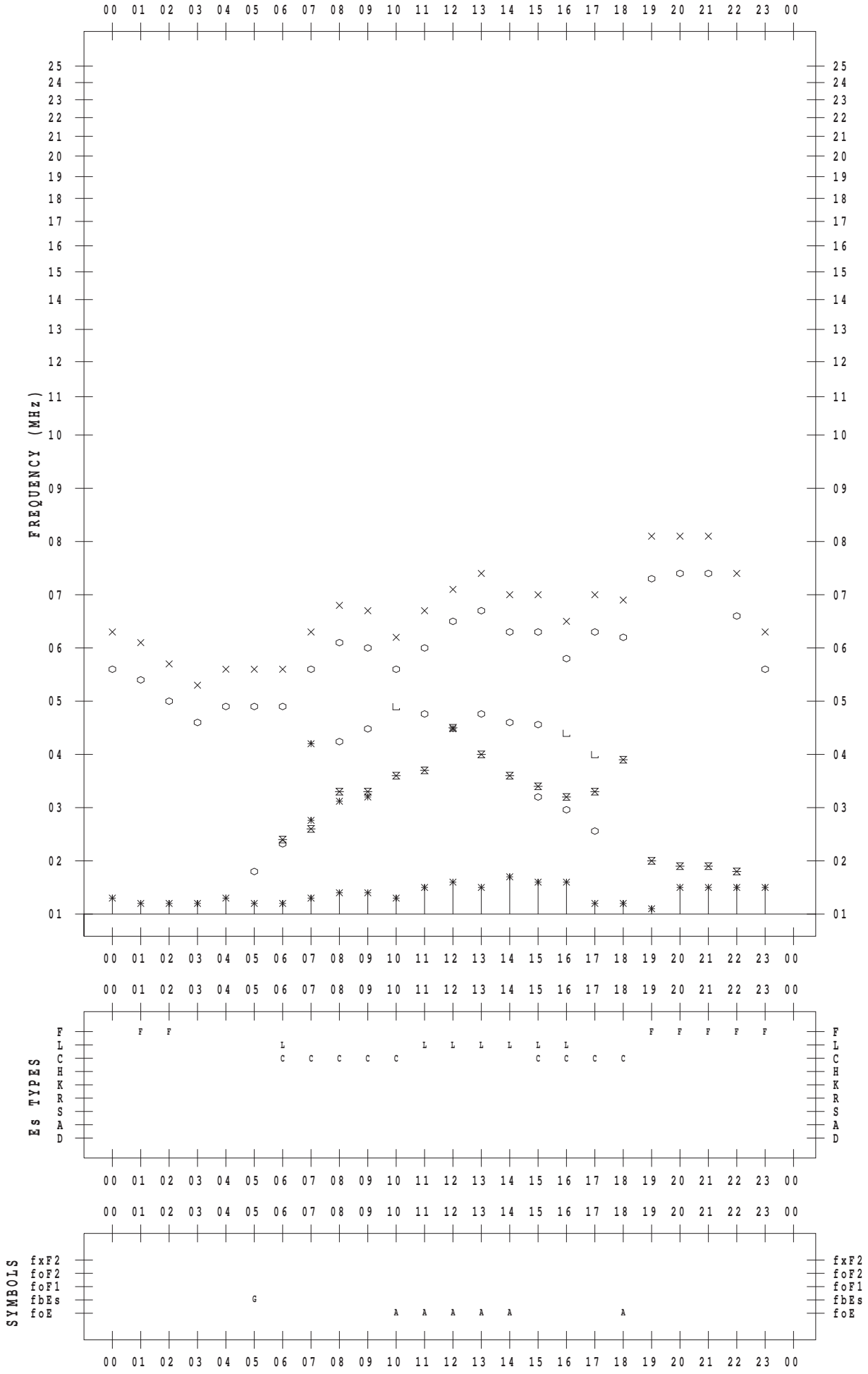
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/16

135 °E MEAN TIME



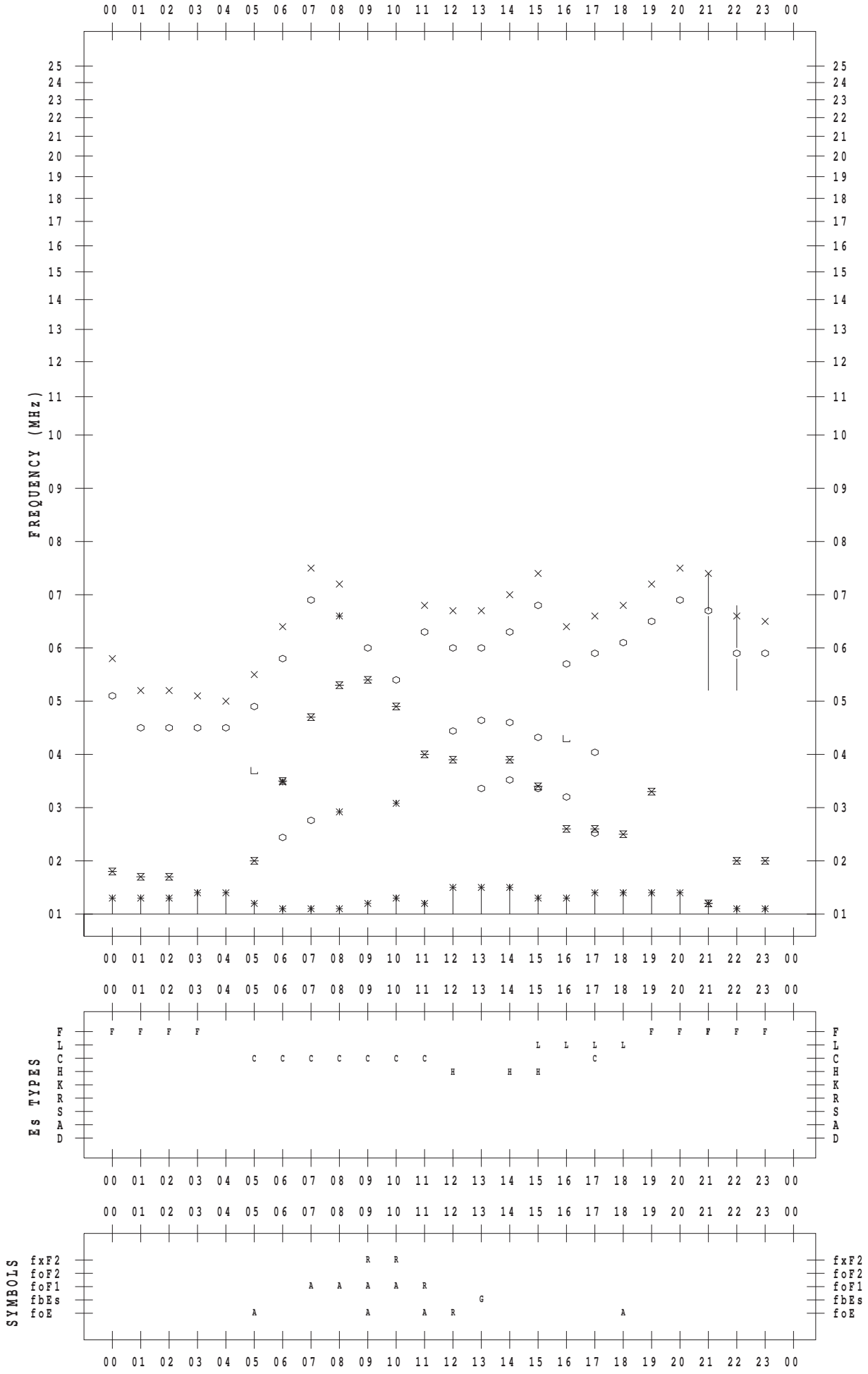
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/17

135 °E MEAN TIME



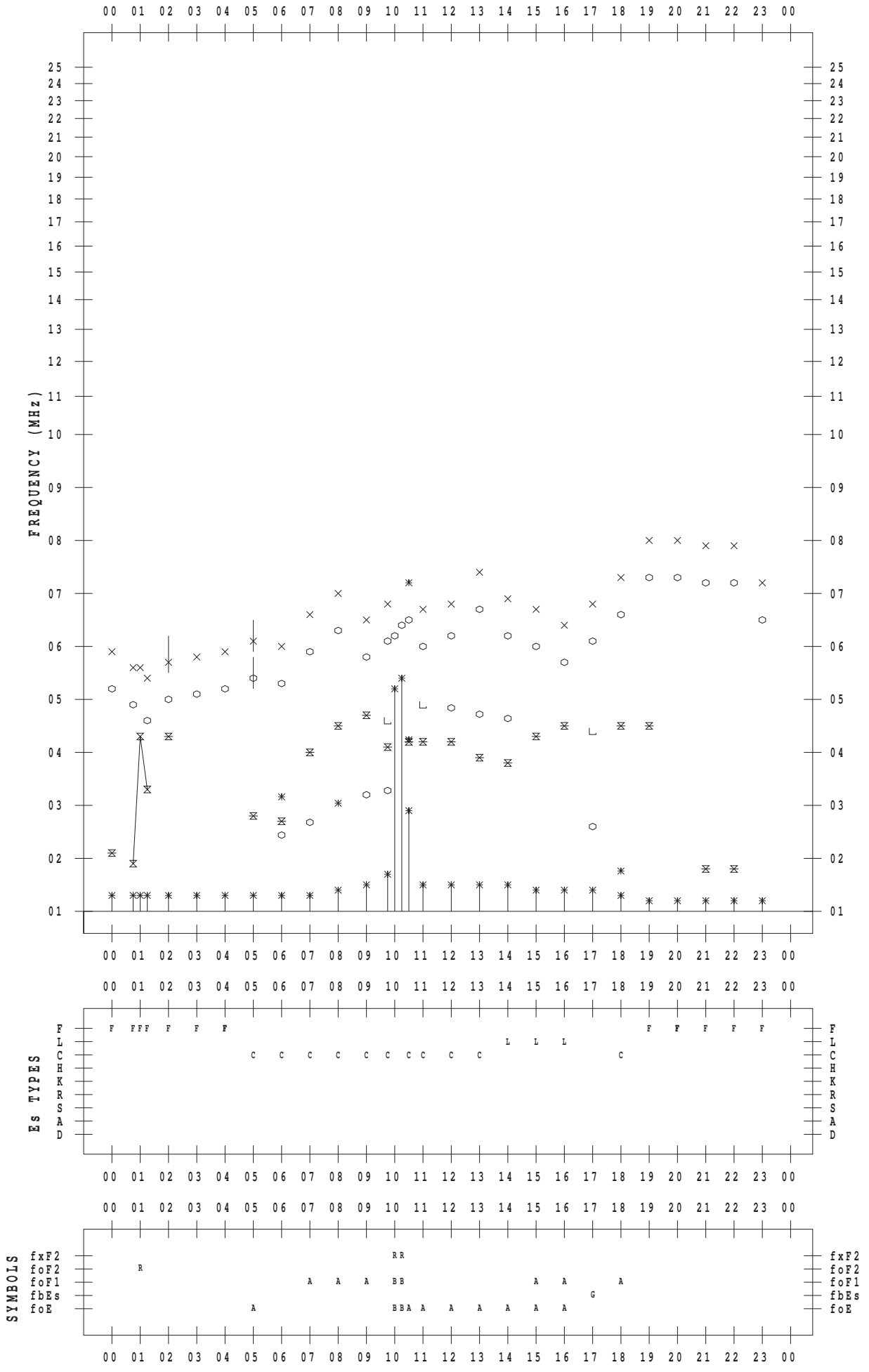
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/18

135 °E MEAN TIME



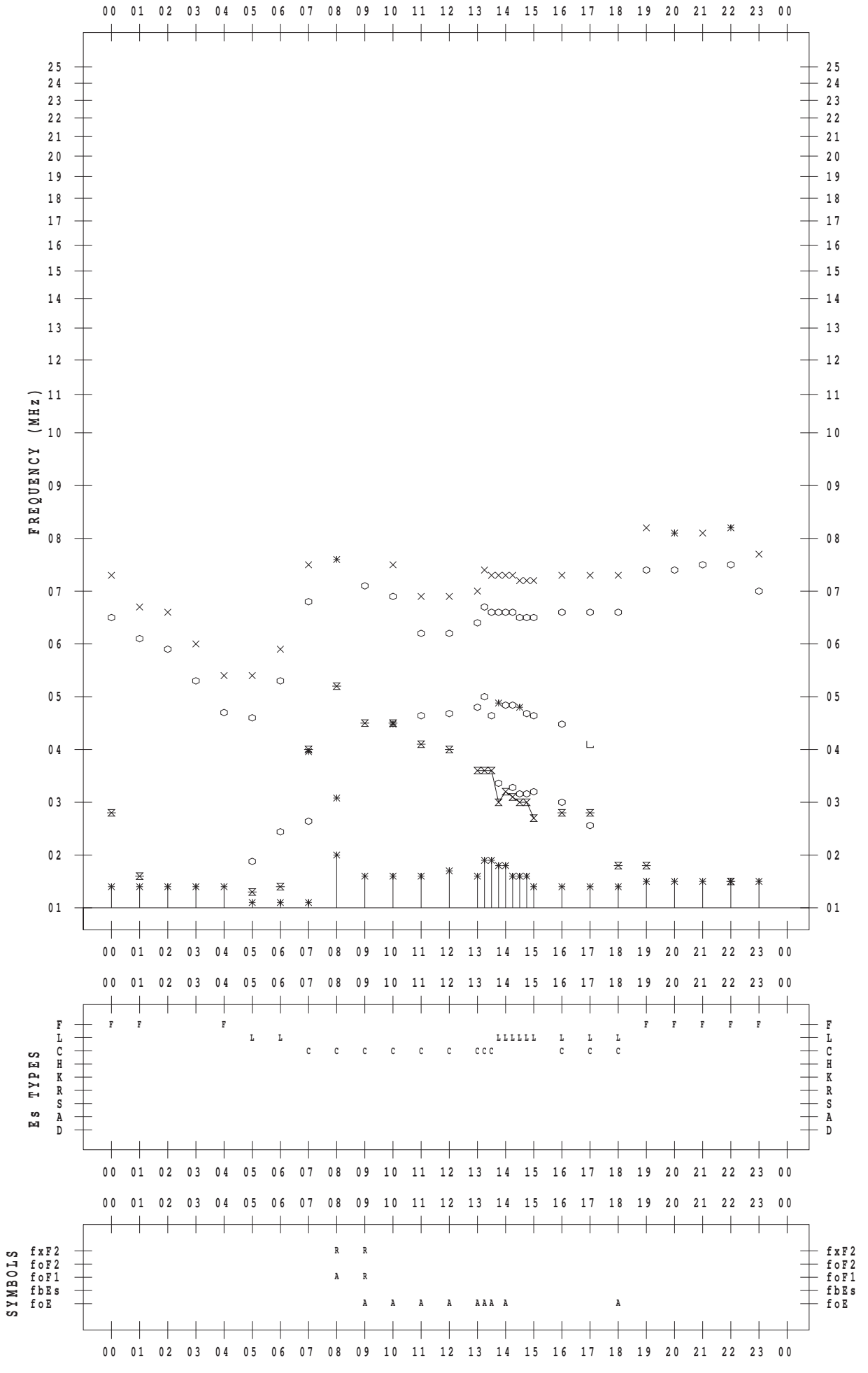
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/19

135 °E MEAN TIME



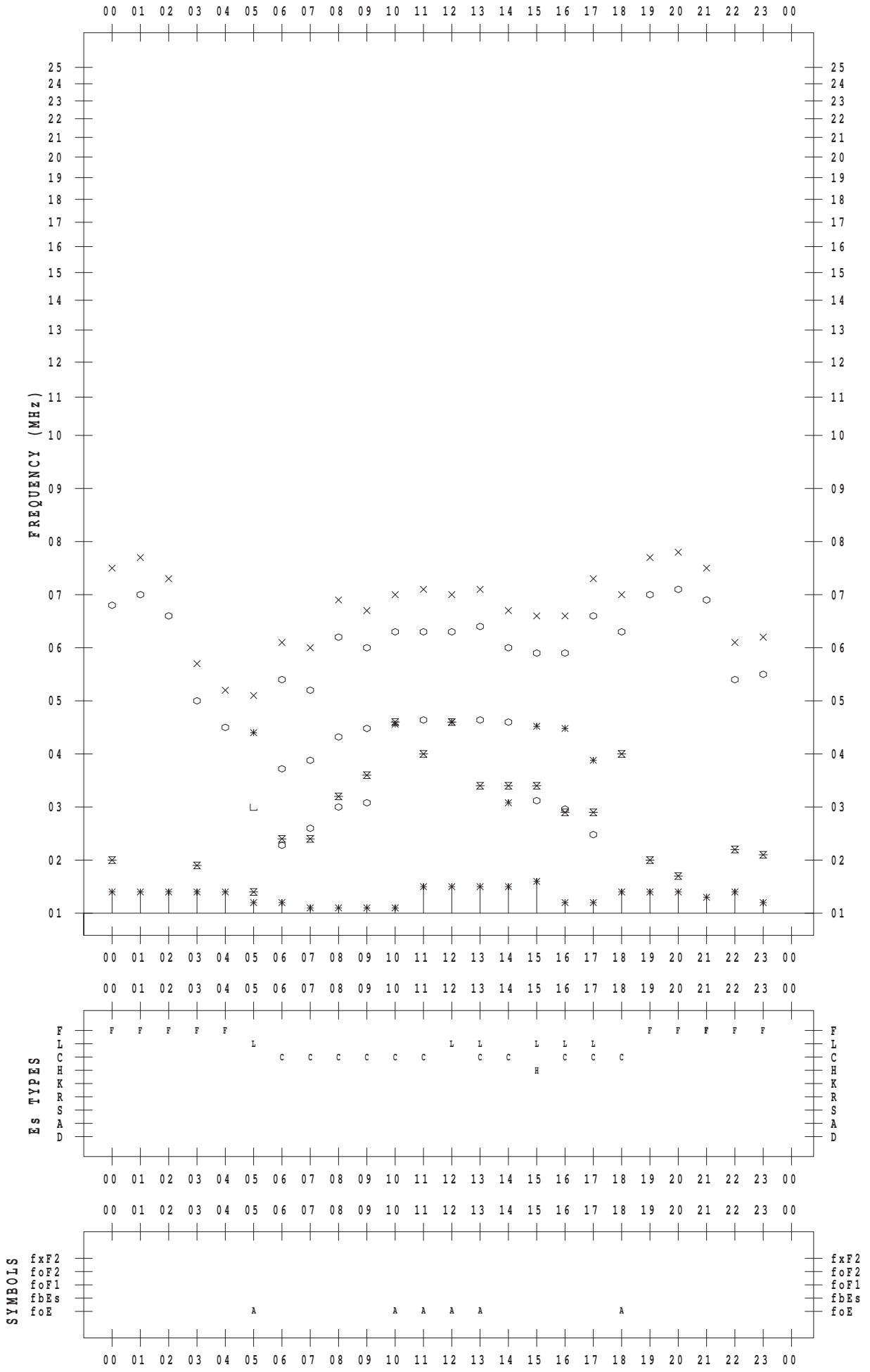
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/20

135 °E MEAN TIME



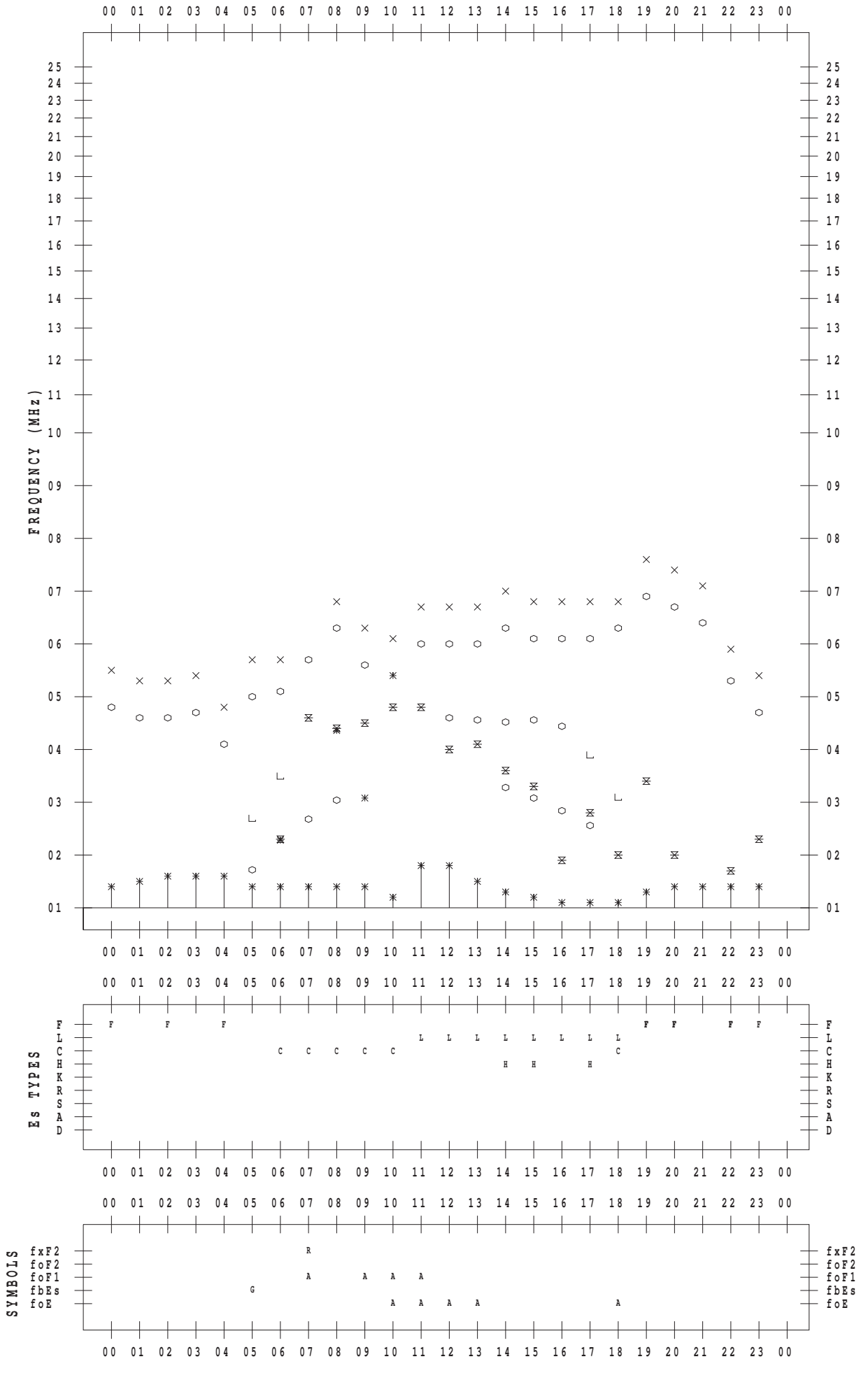
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/21

135 °E MEAN TIME



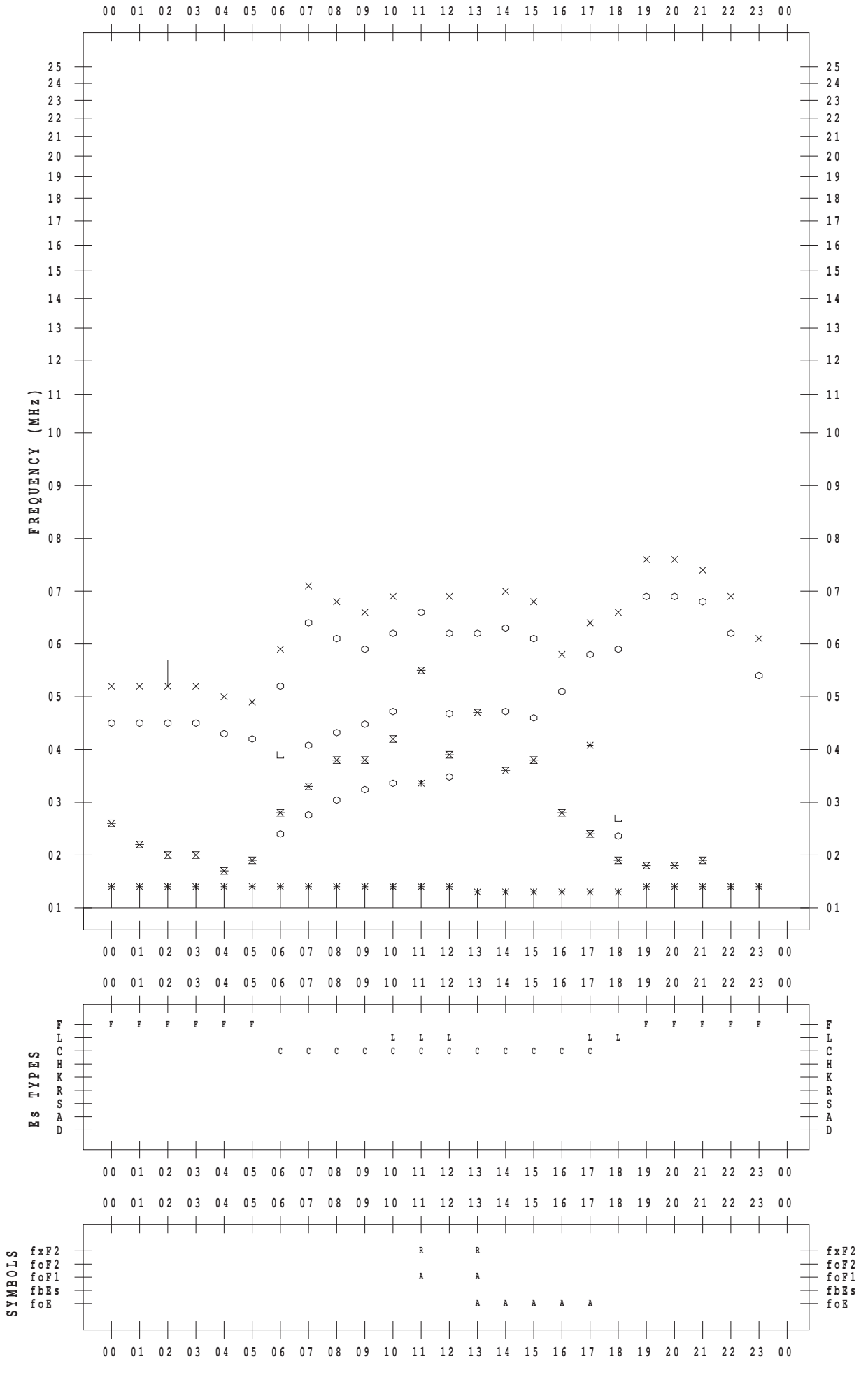
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/22

135 °E MEAN TIME



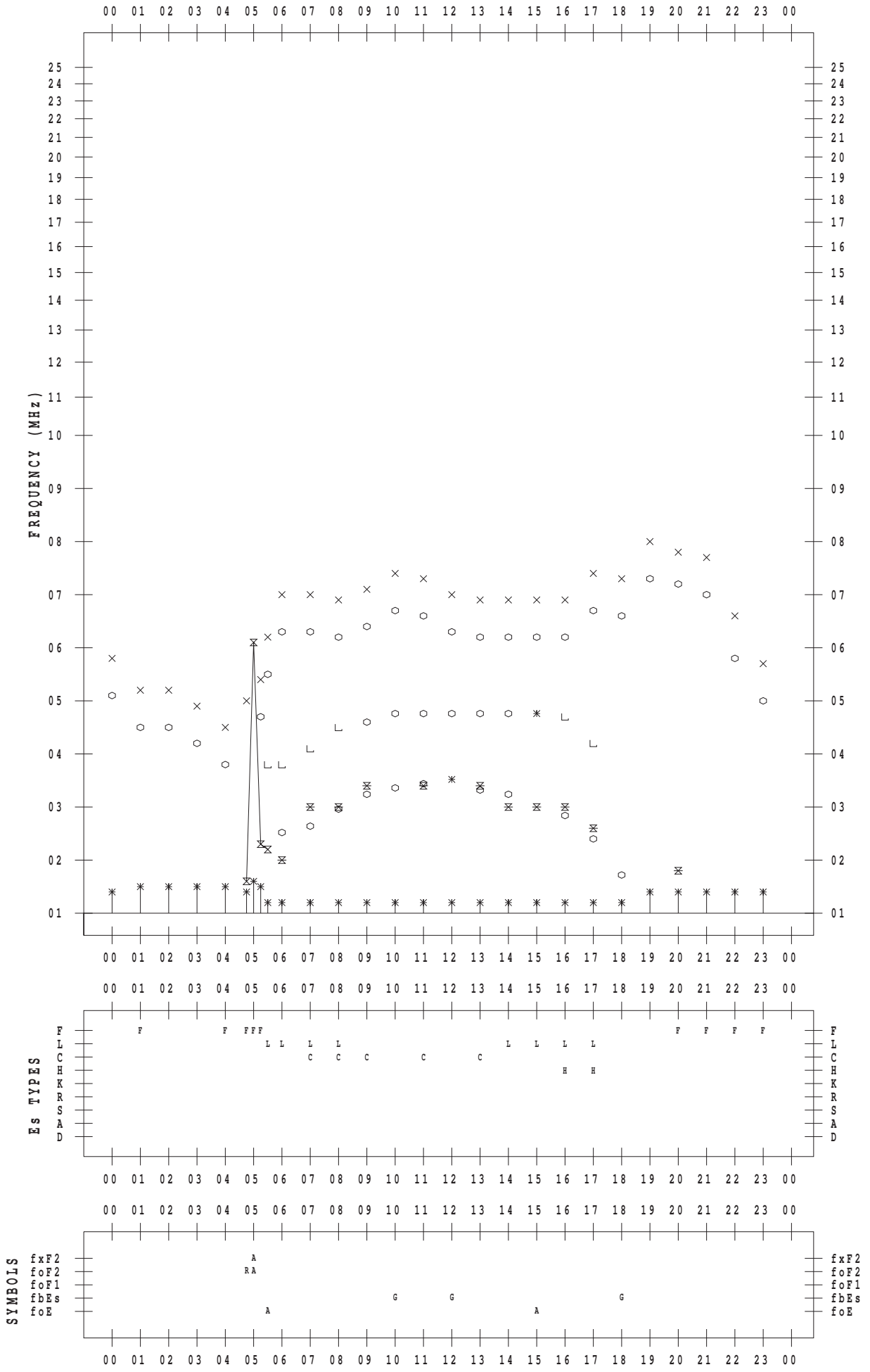
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/23

135 °E MEAN TIME



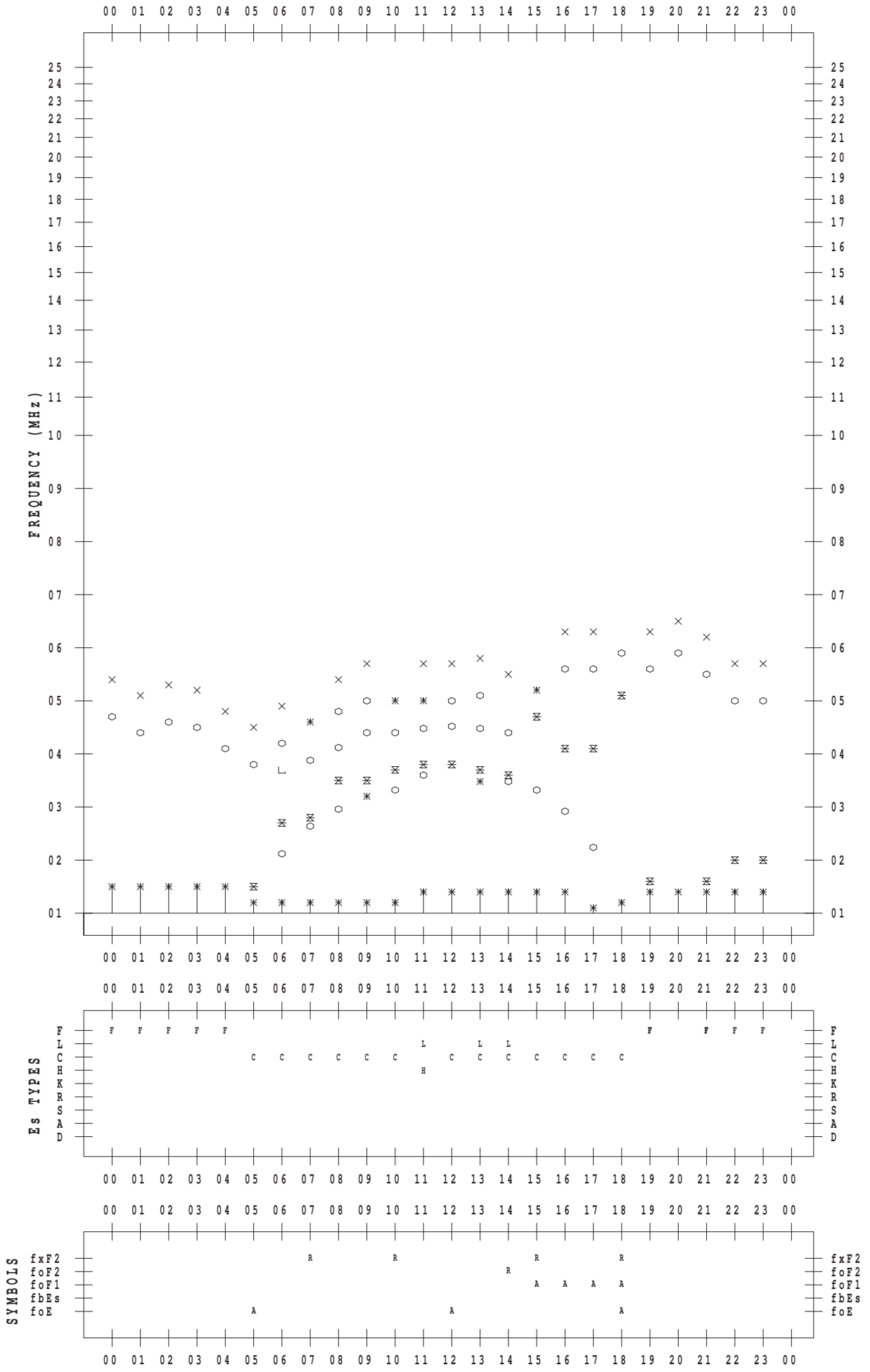
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/24

135 °E MEAN TIME



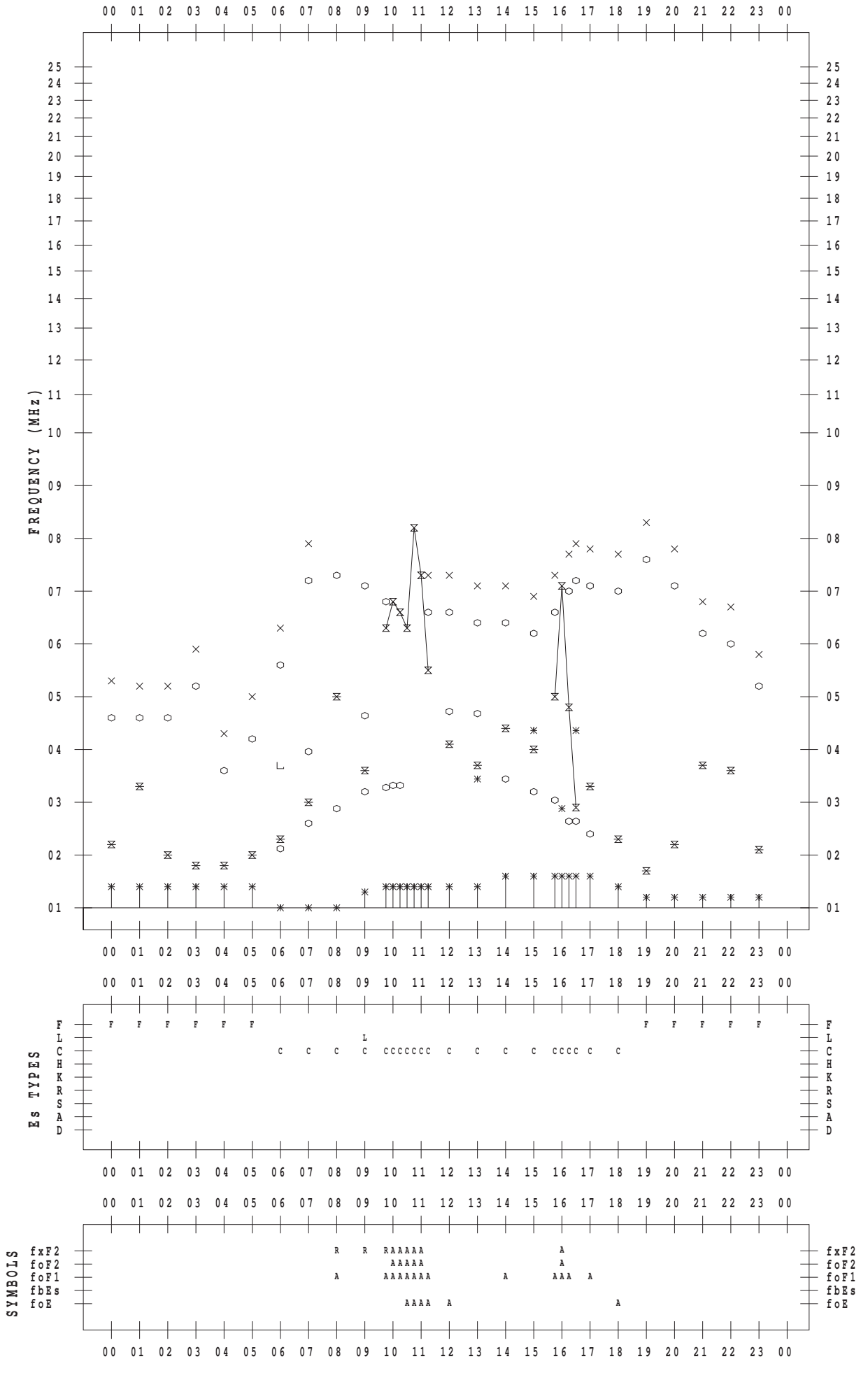
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/25

135 °E MEAN TIME



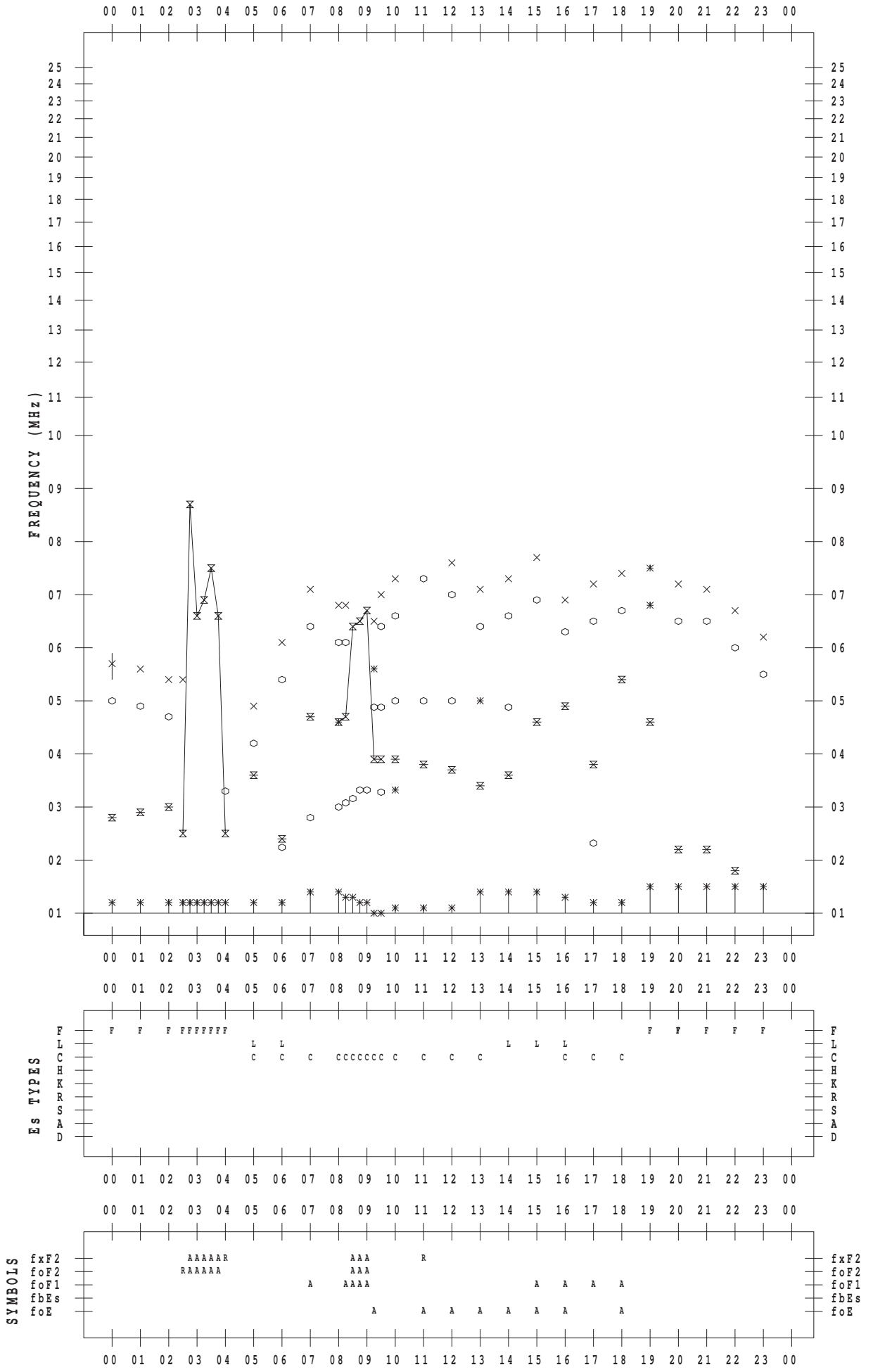
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/26

135 °E MEAN TIME



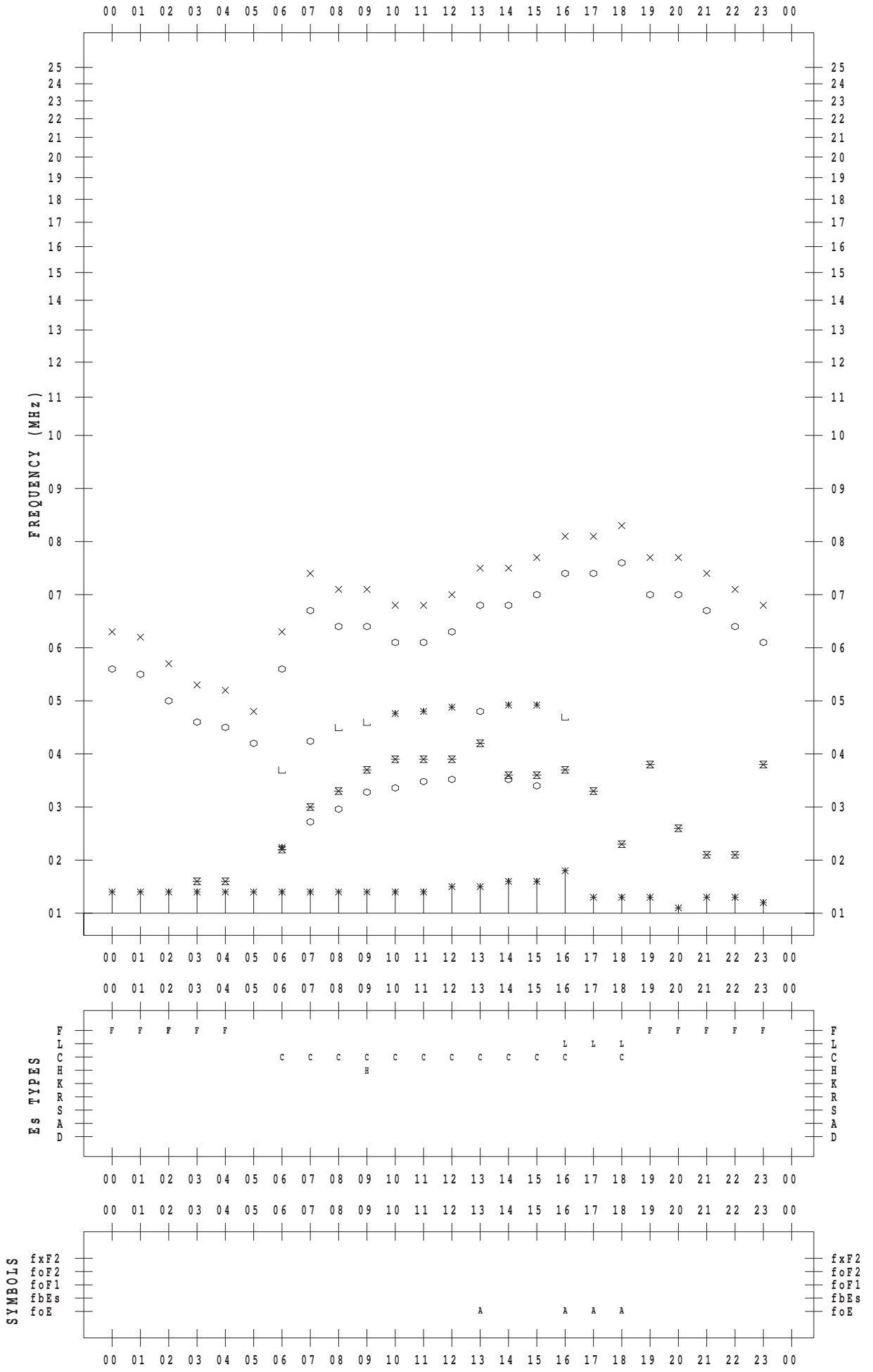
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/27

135 °E MEAN TIME



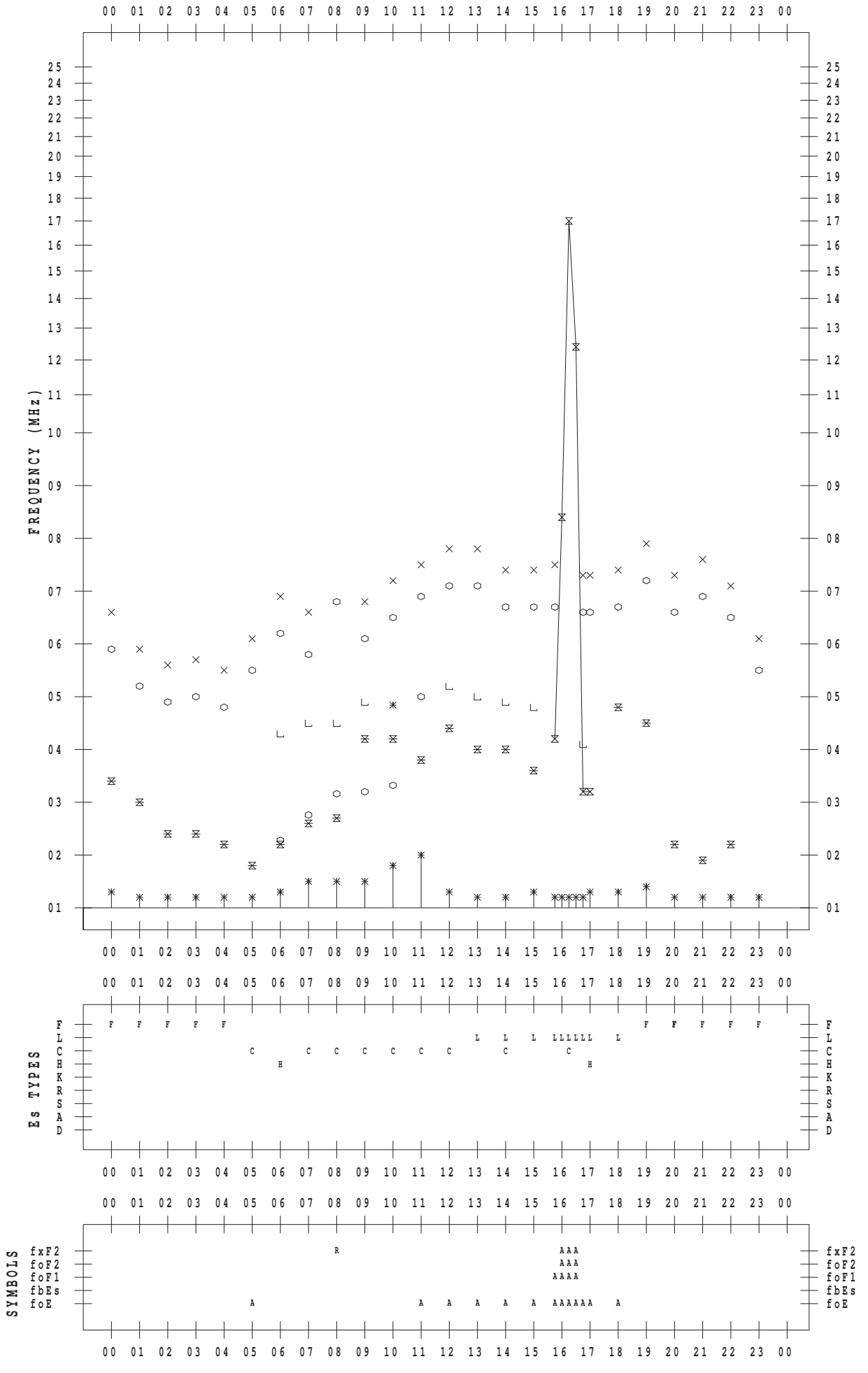
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/28

135 °E MEAN TIME



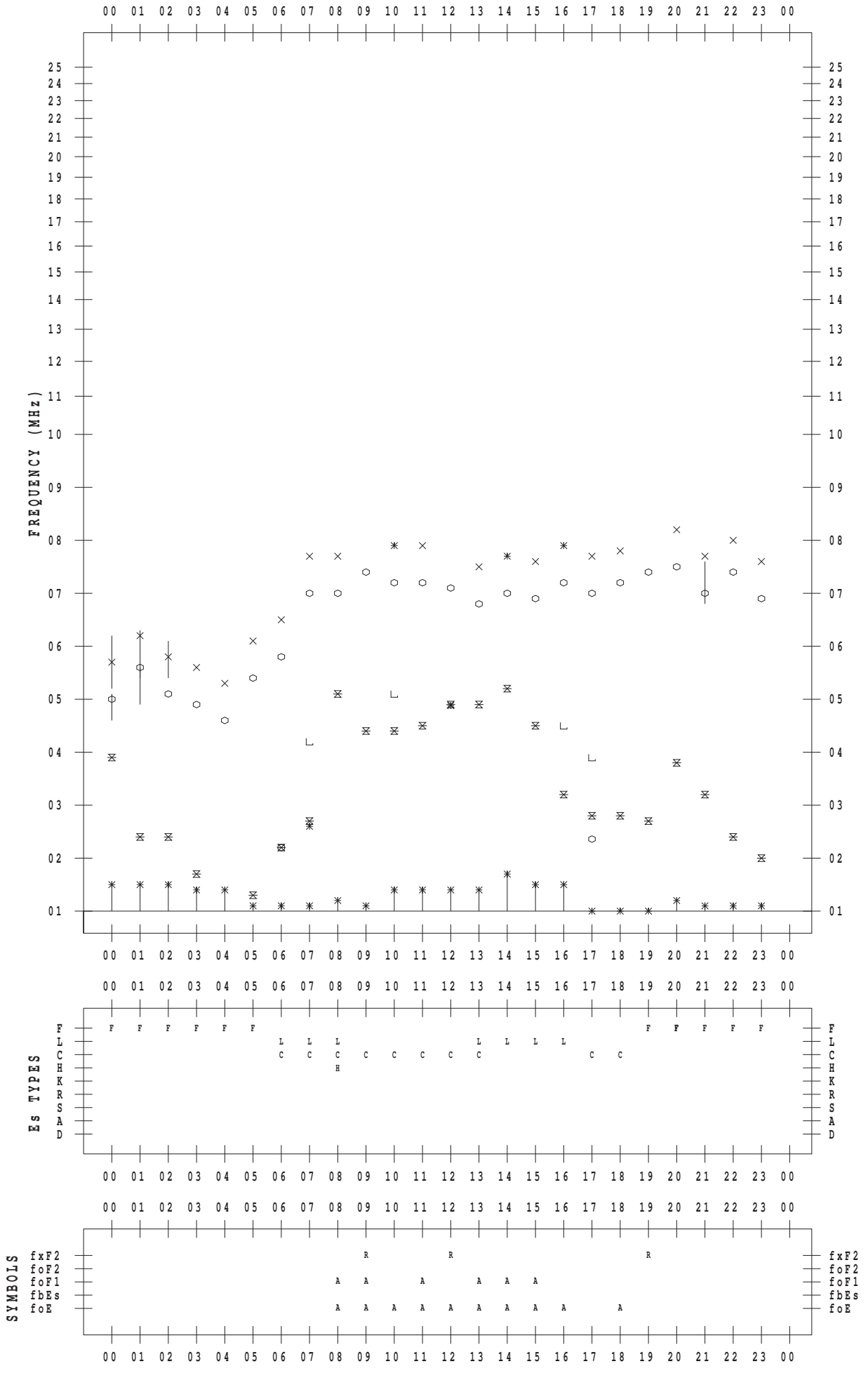
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/29

135 °E MEAN TIME



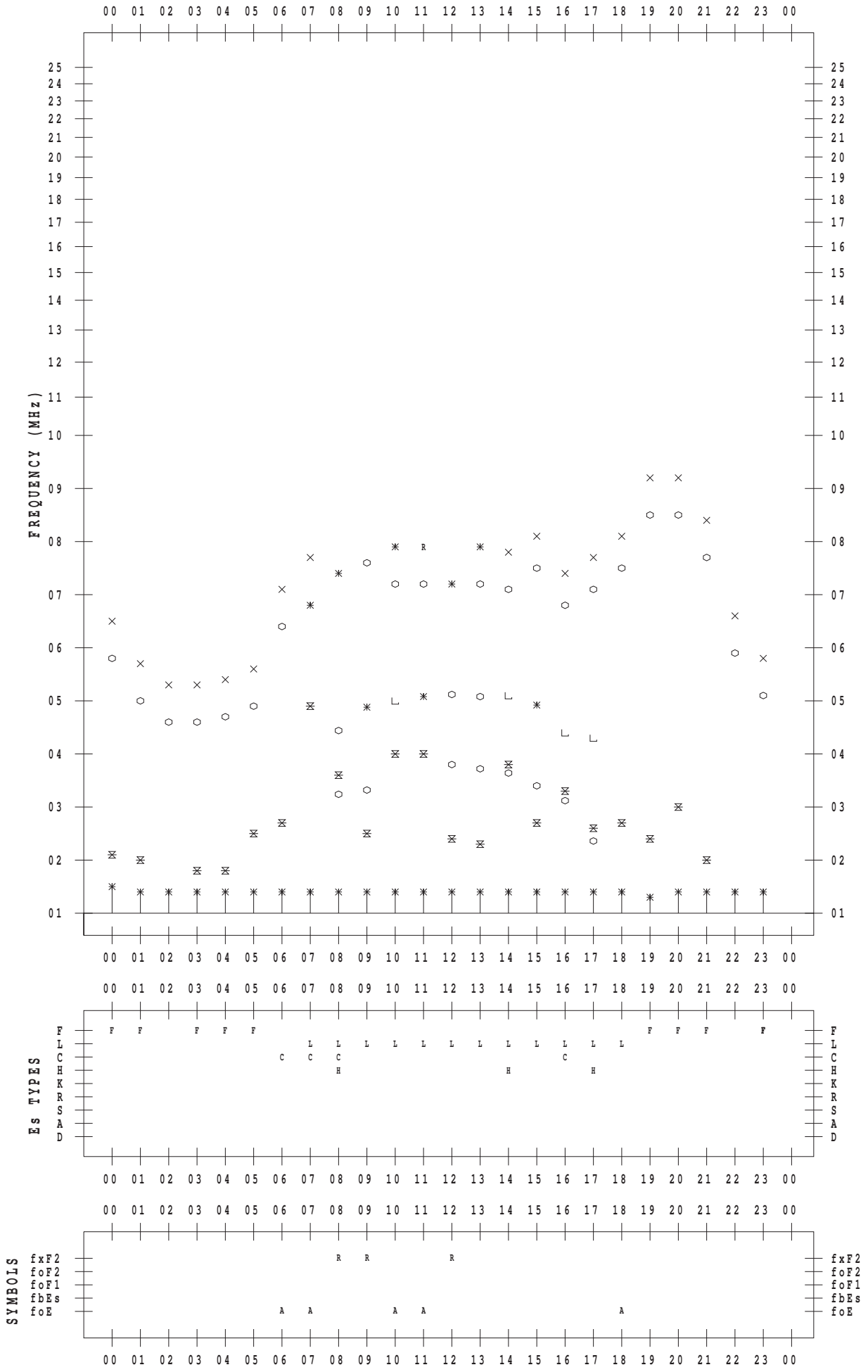
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/30

135 °E MEAN TIME



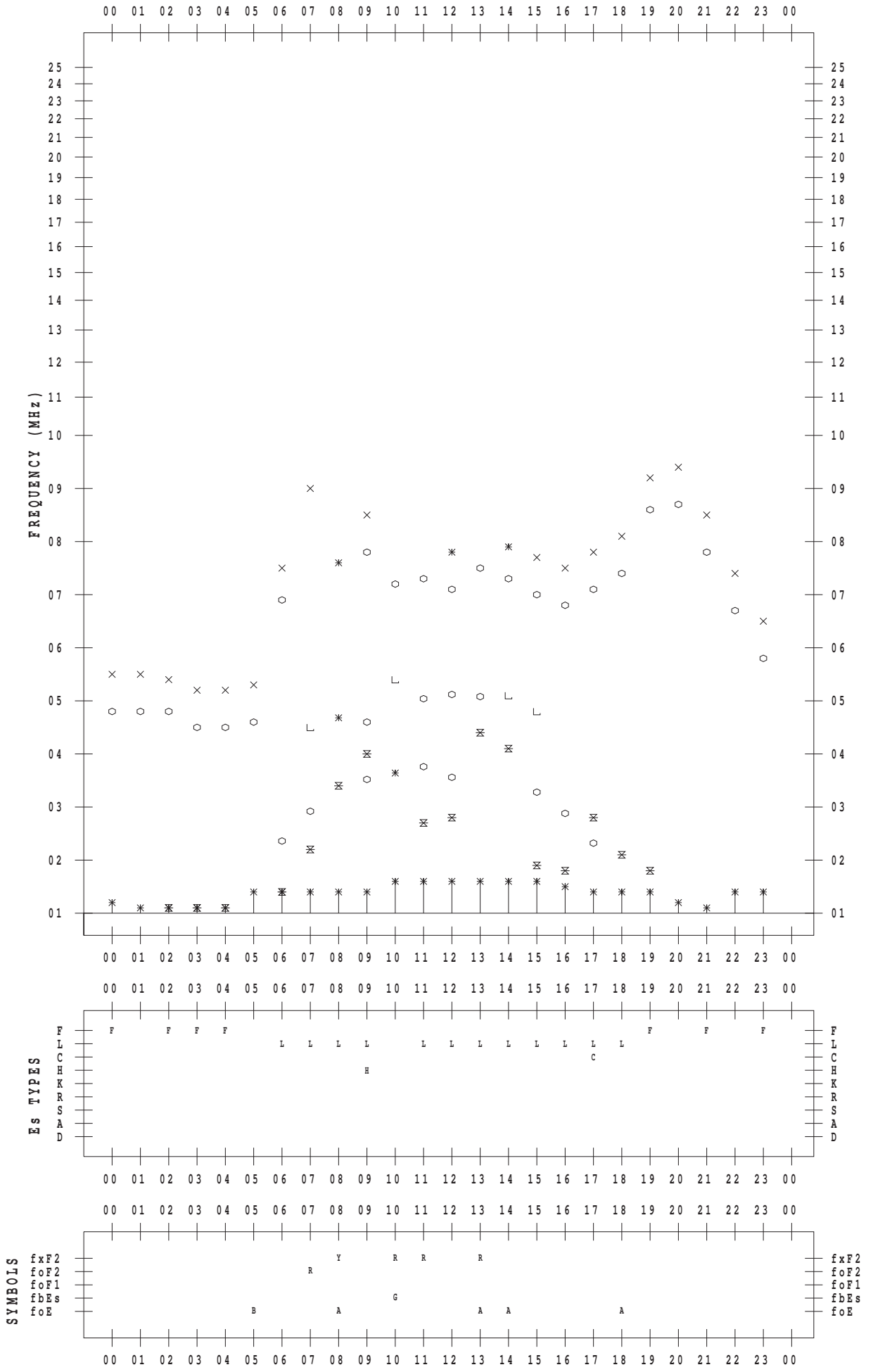
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2012/ 8/31

135 °E MEAN TIME



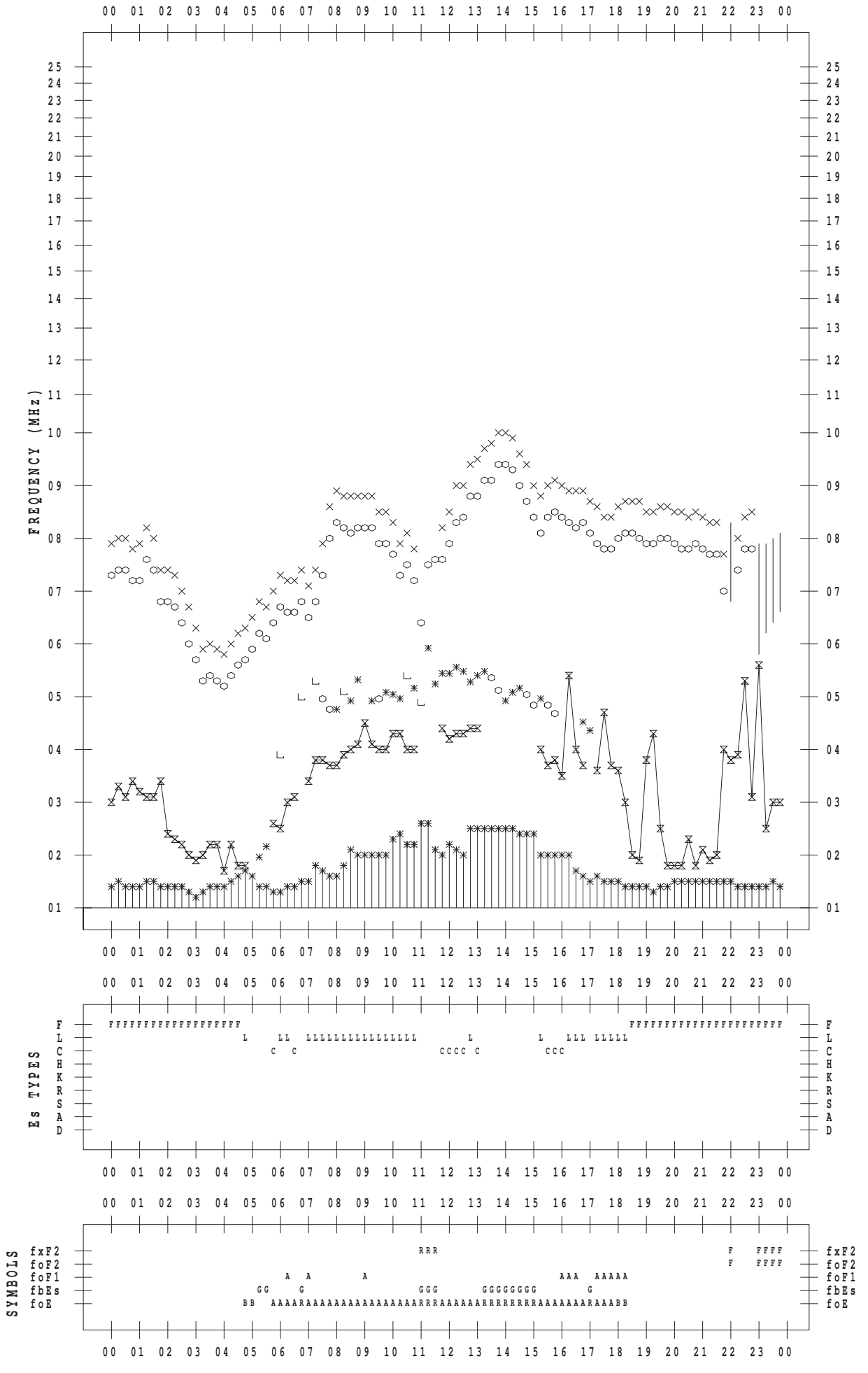
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 1

135 °E MEAN TIME



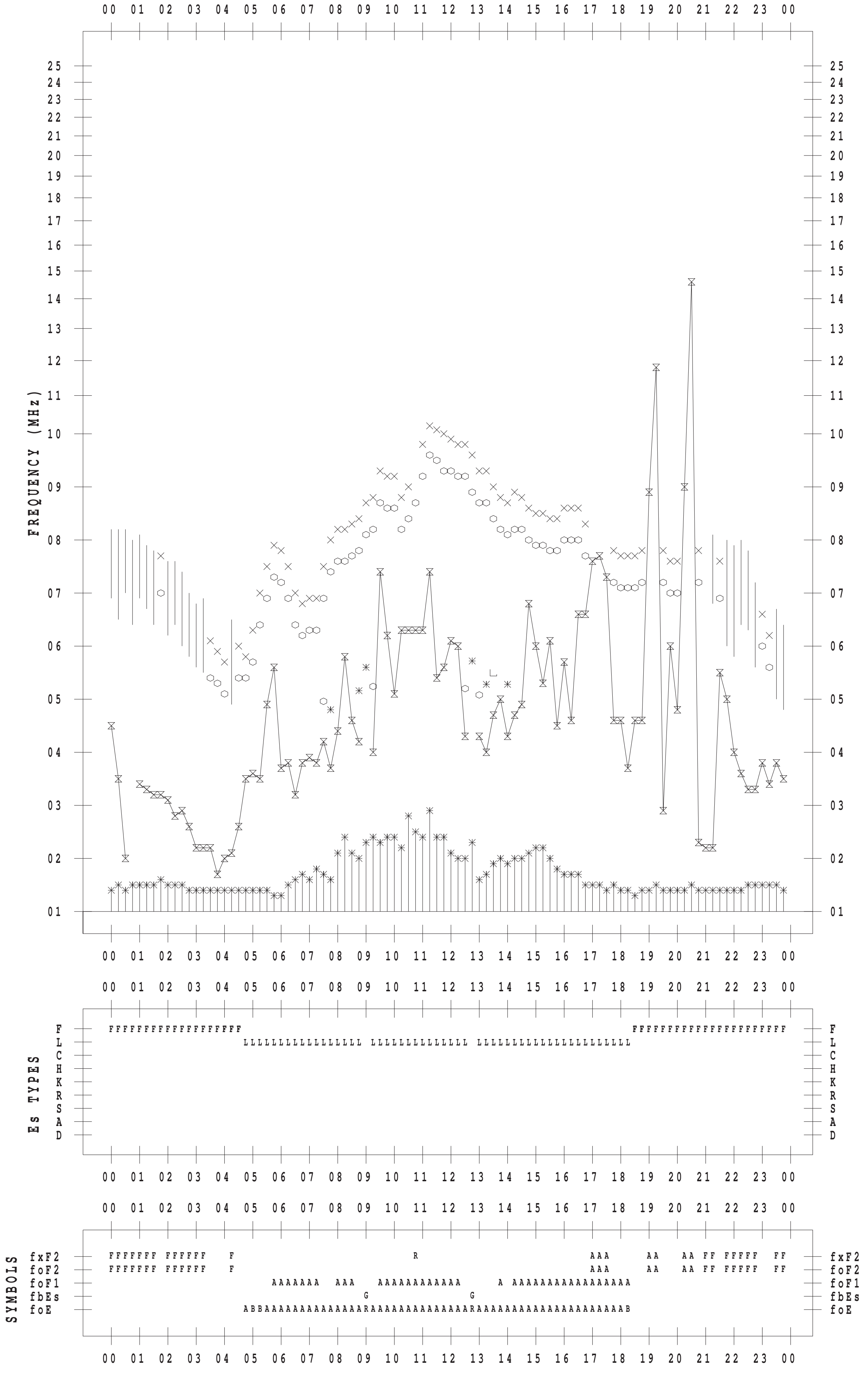
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 2

135 °E MEAN TIME



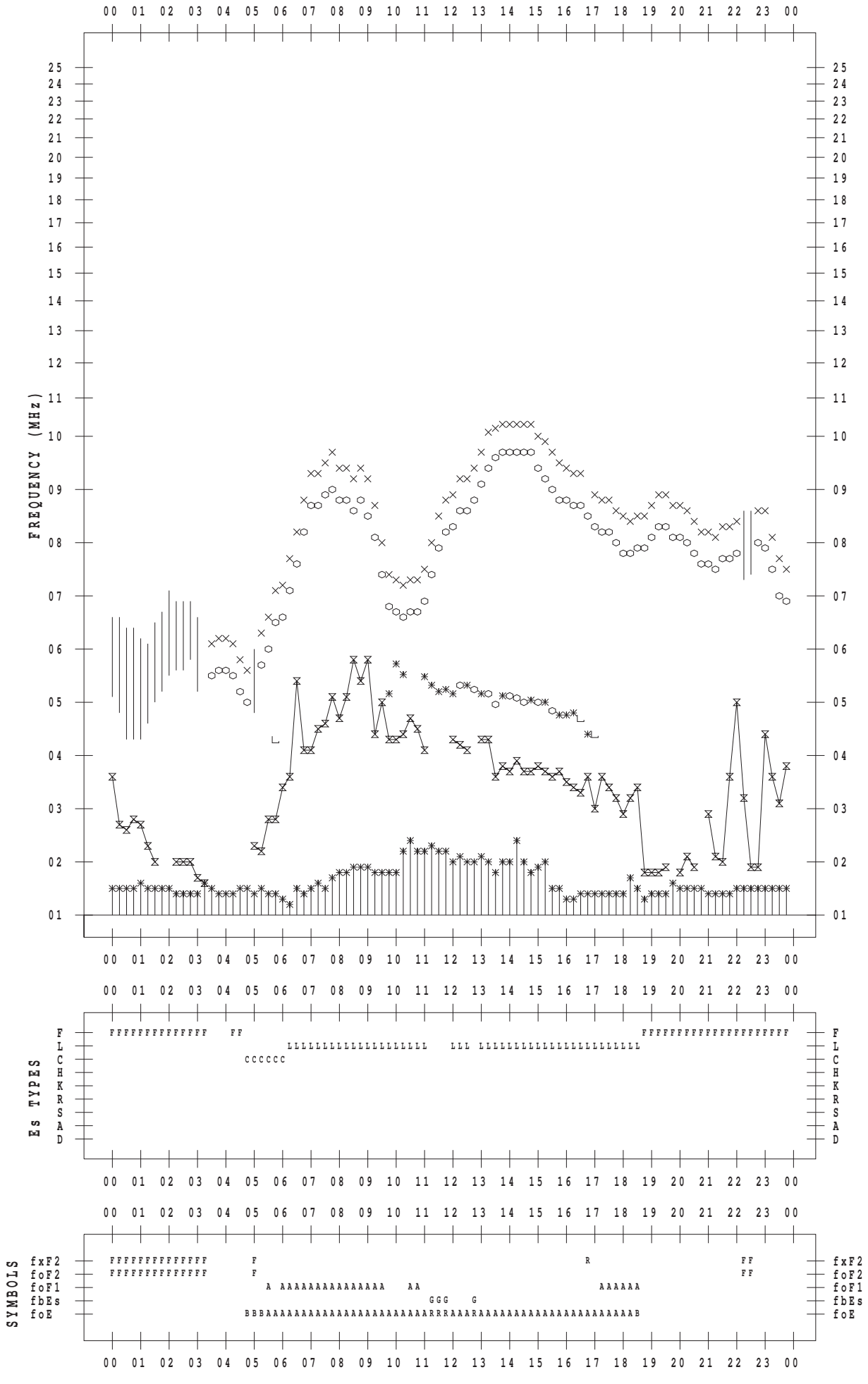
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 3

135 °E MEAN TIME



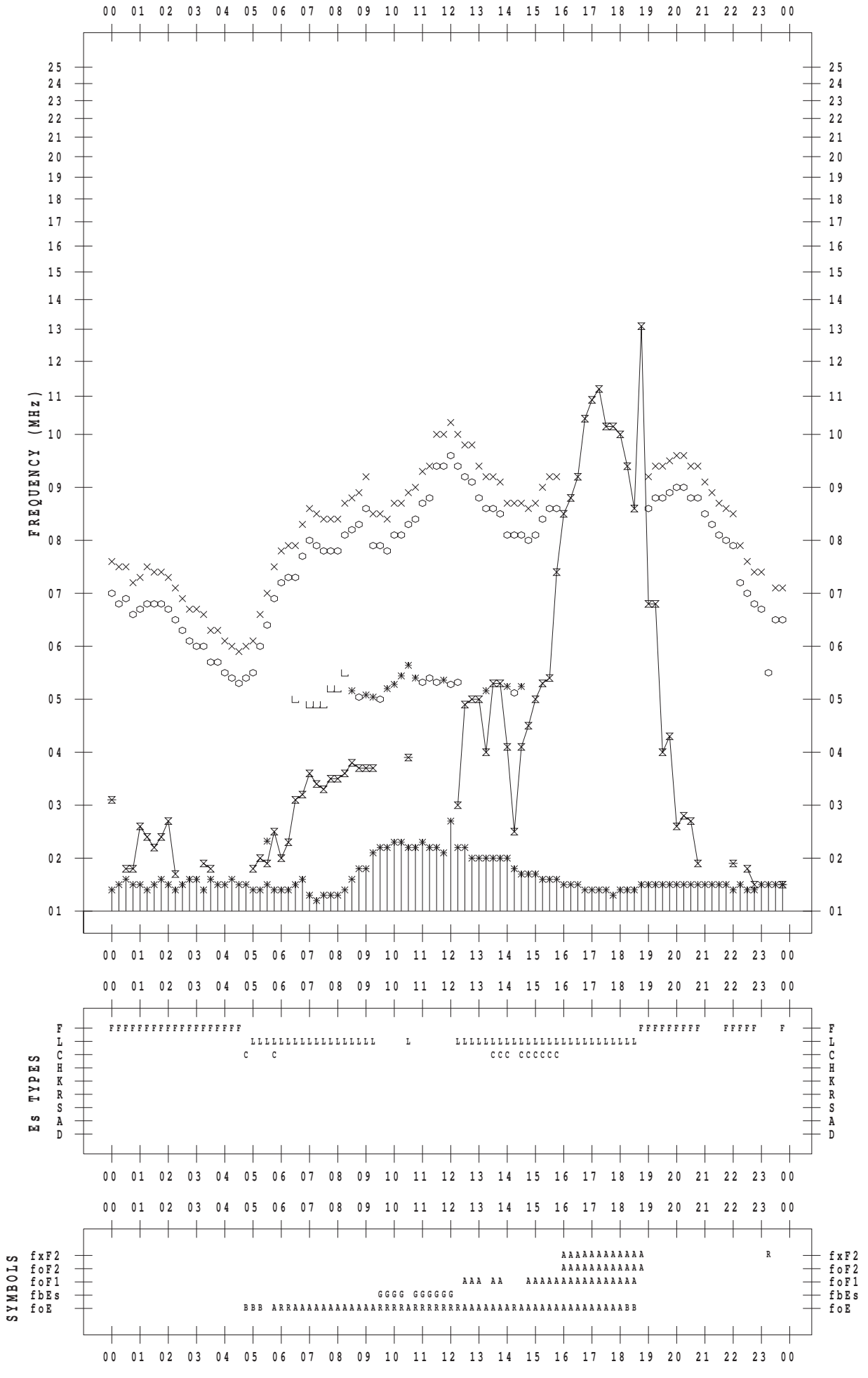
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 4

135 °E MEAN TIME



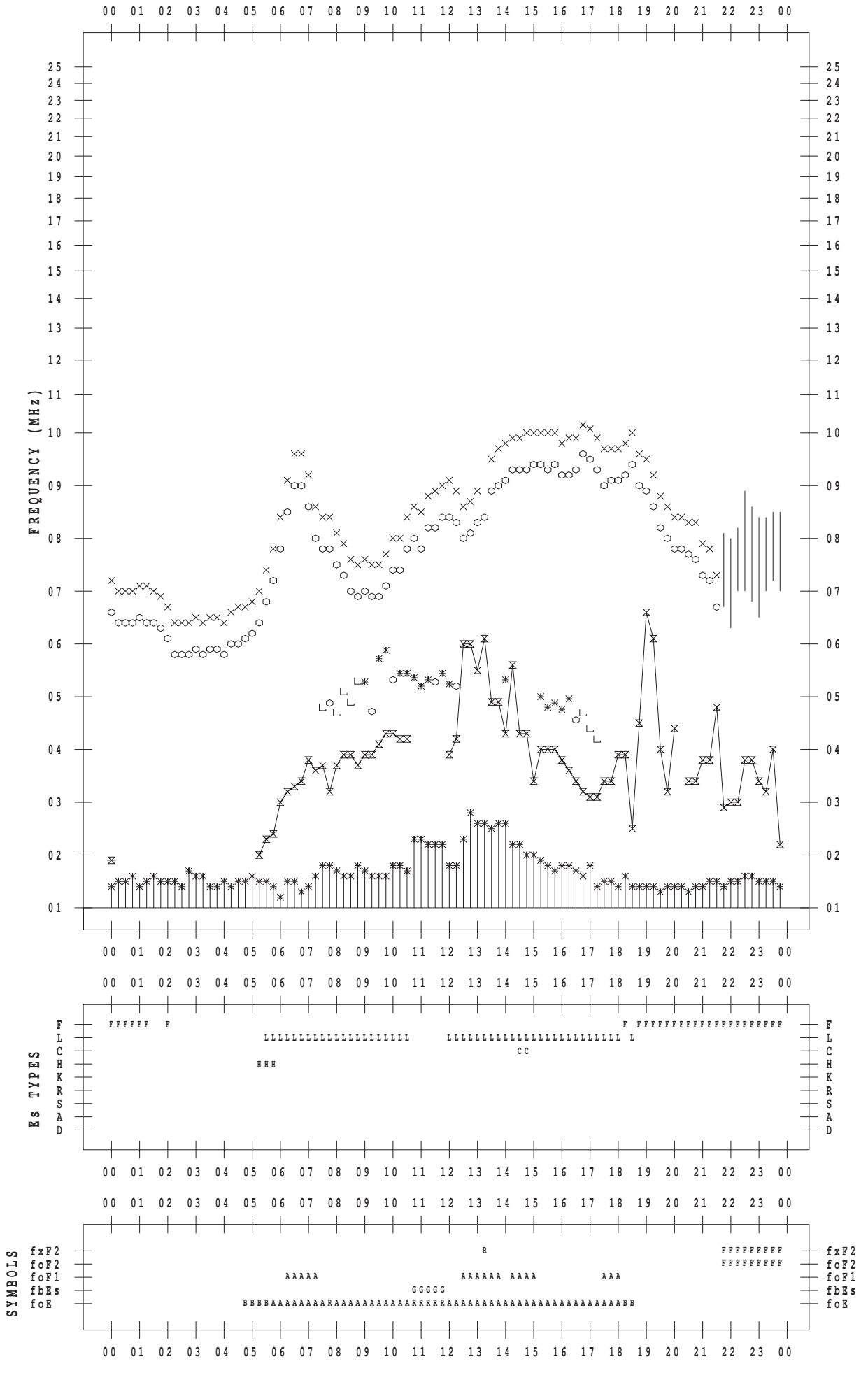
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 5

135 °E MEAN TIME



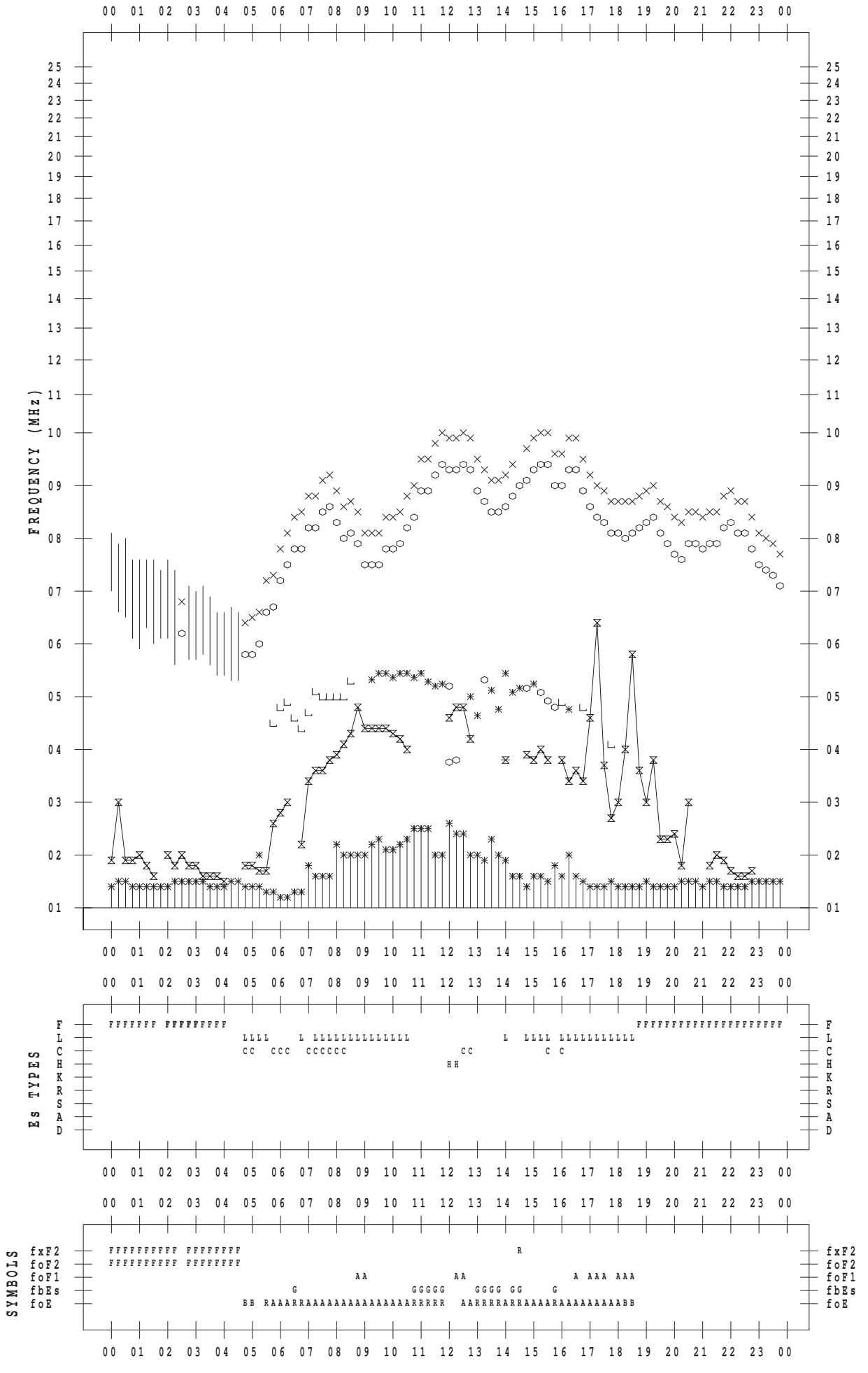
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 6

135 °E MEAN TIME



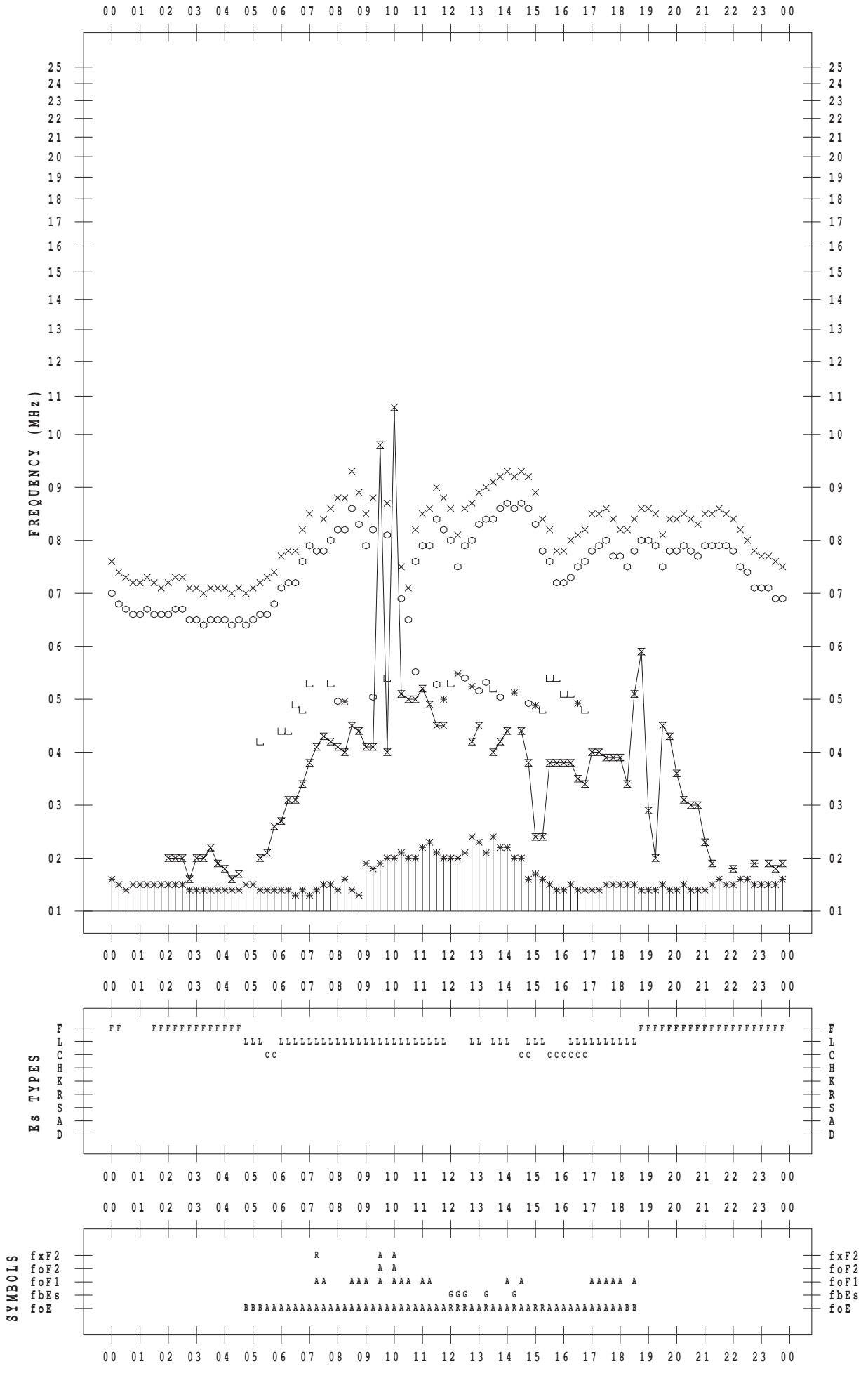
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 7

135 °E MEAN TIME



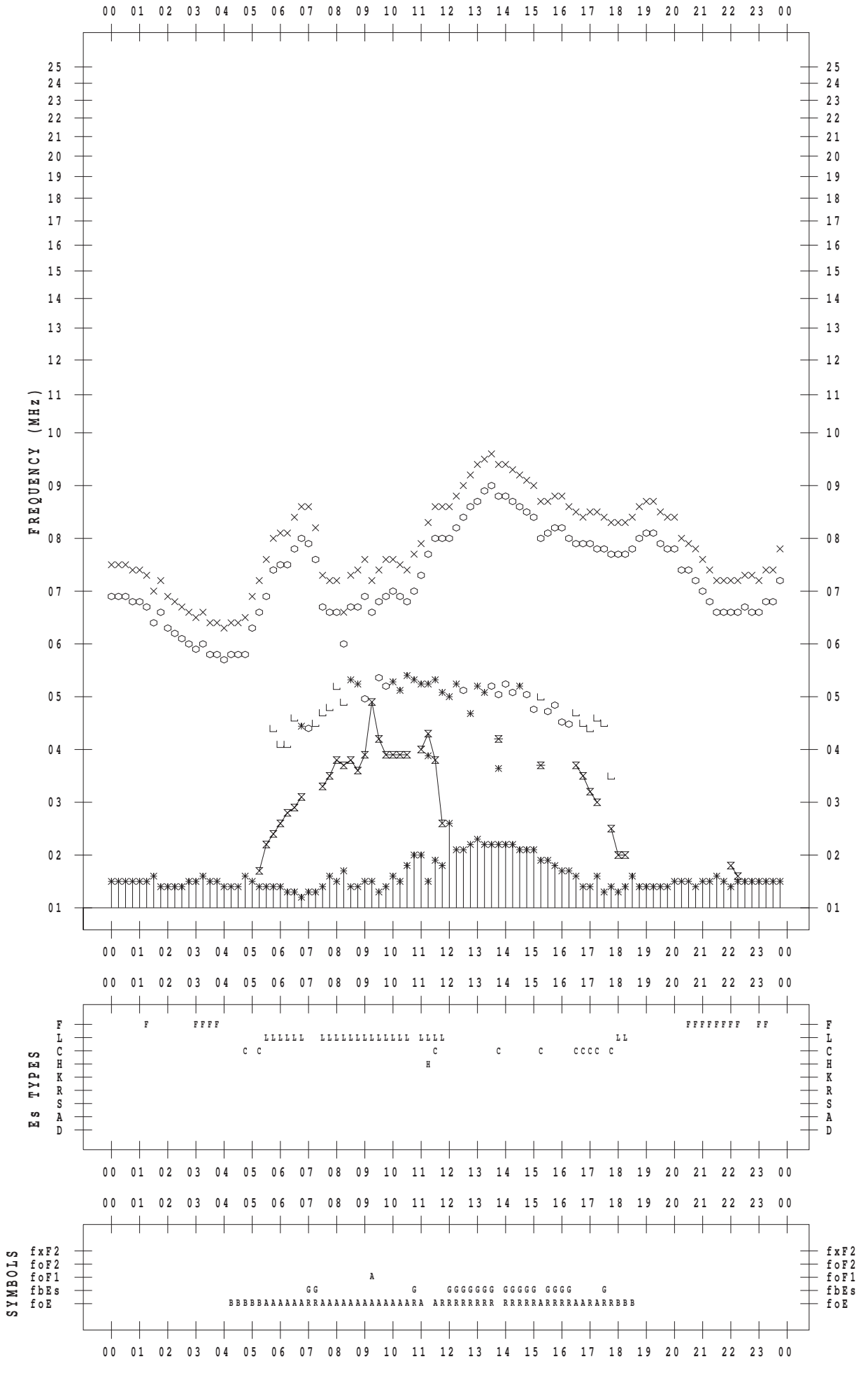
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 8

135 °E MEAN TIME



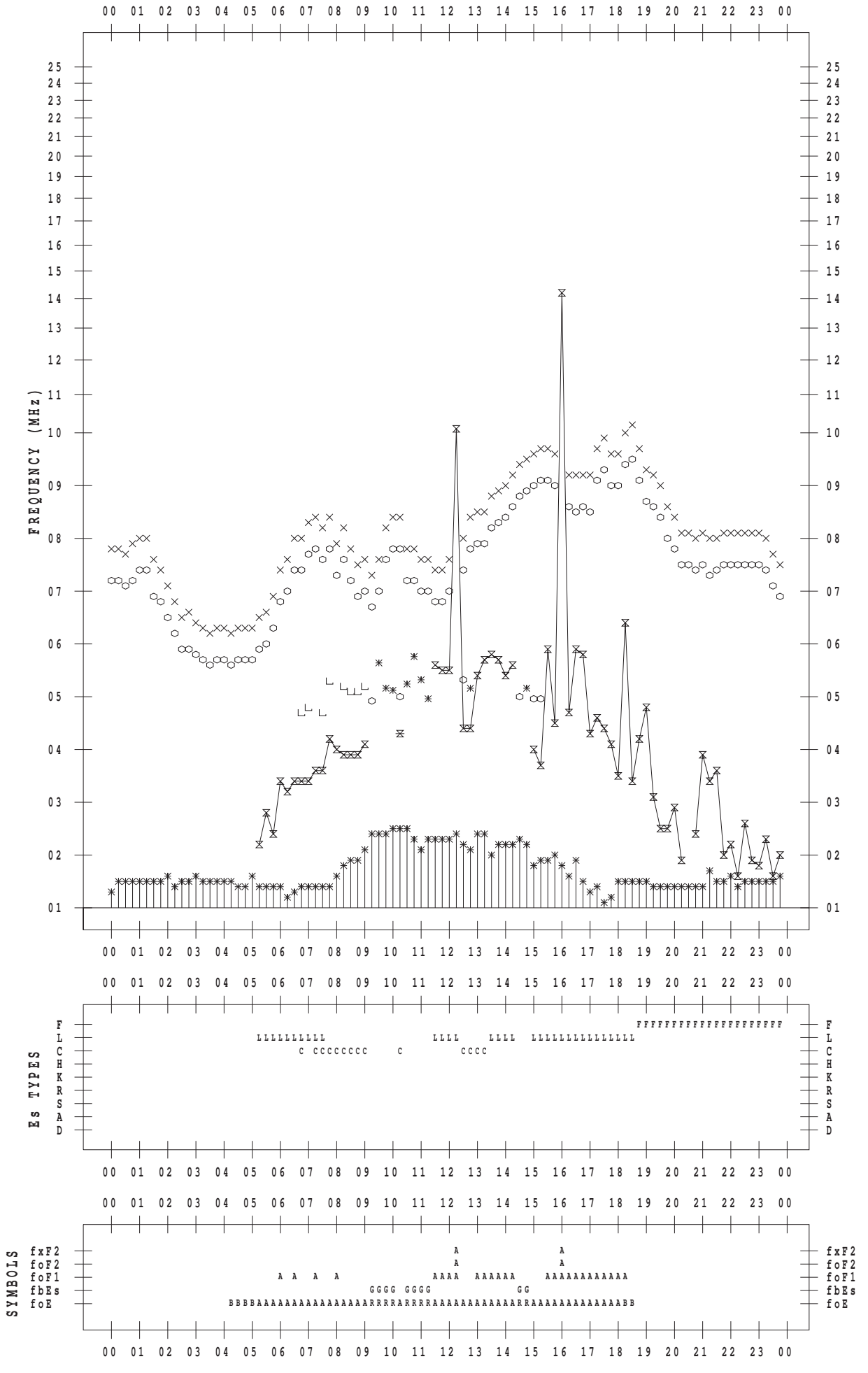
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/ 9

135 °E MEAN TIME



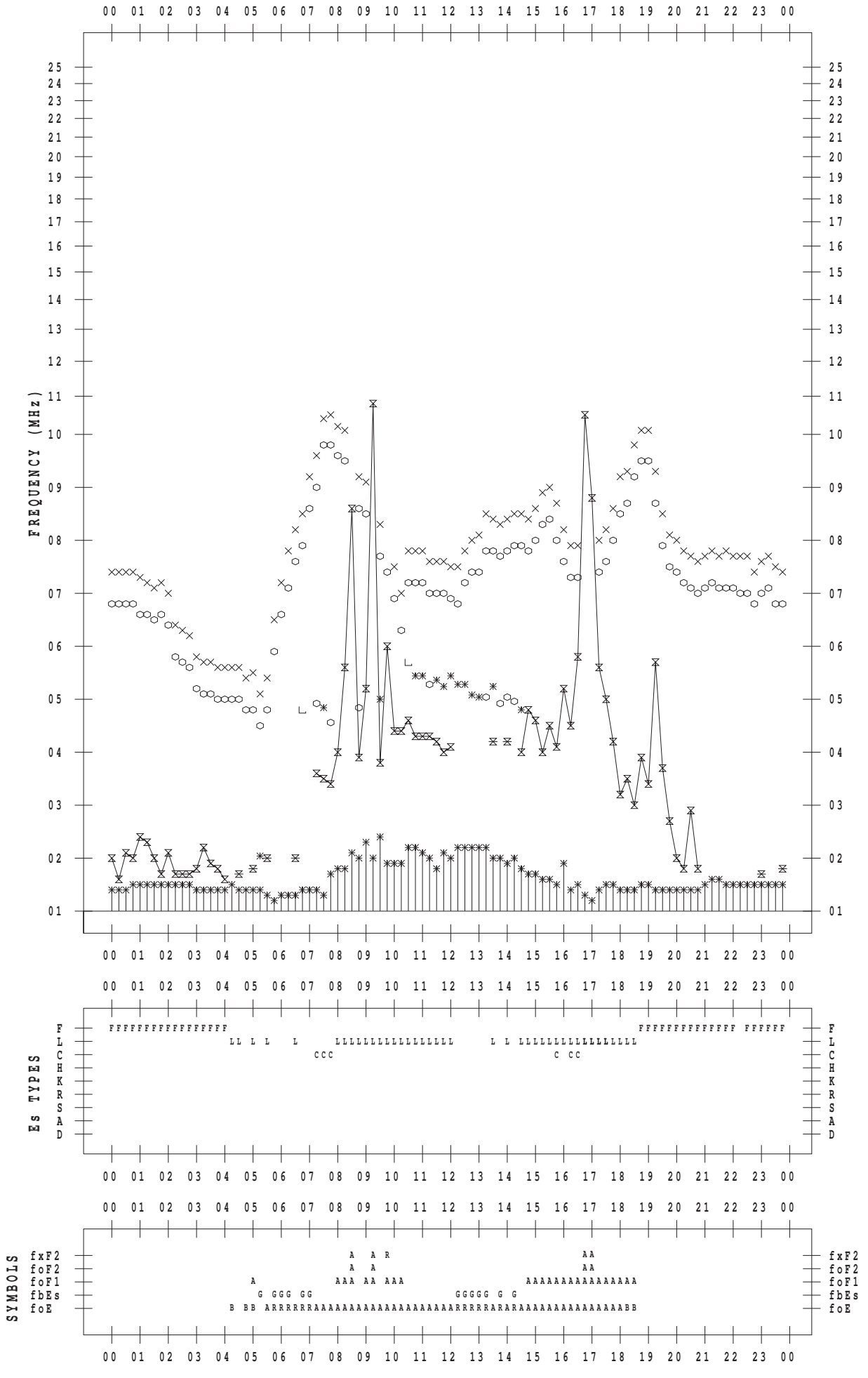
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/10

135 °E MEAN TIME



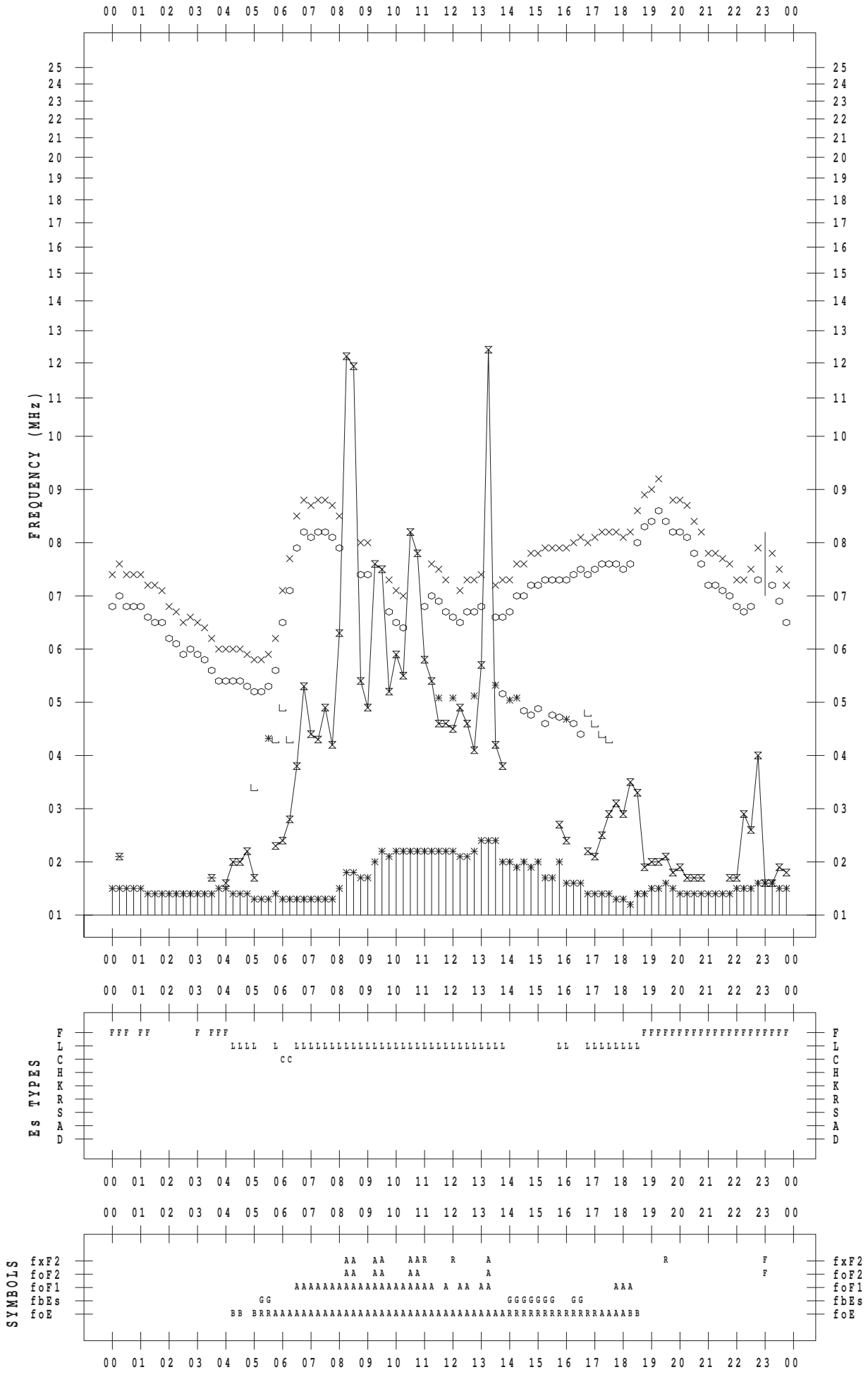
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/11

135 °E MEAN TIME



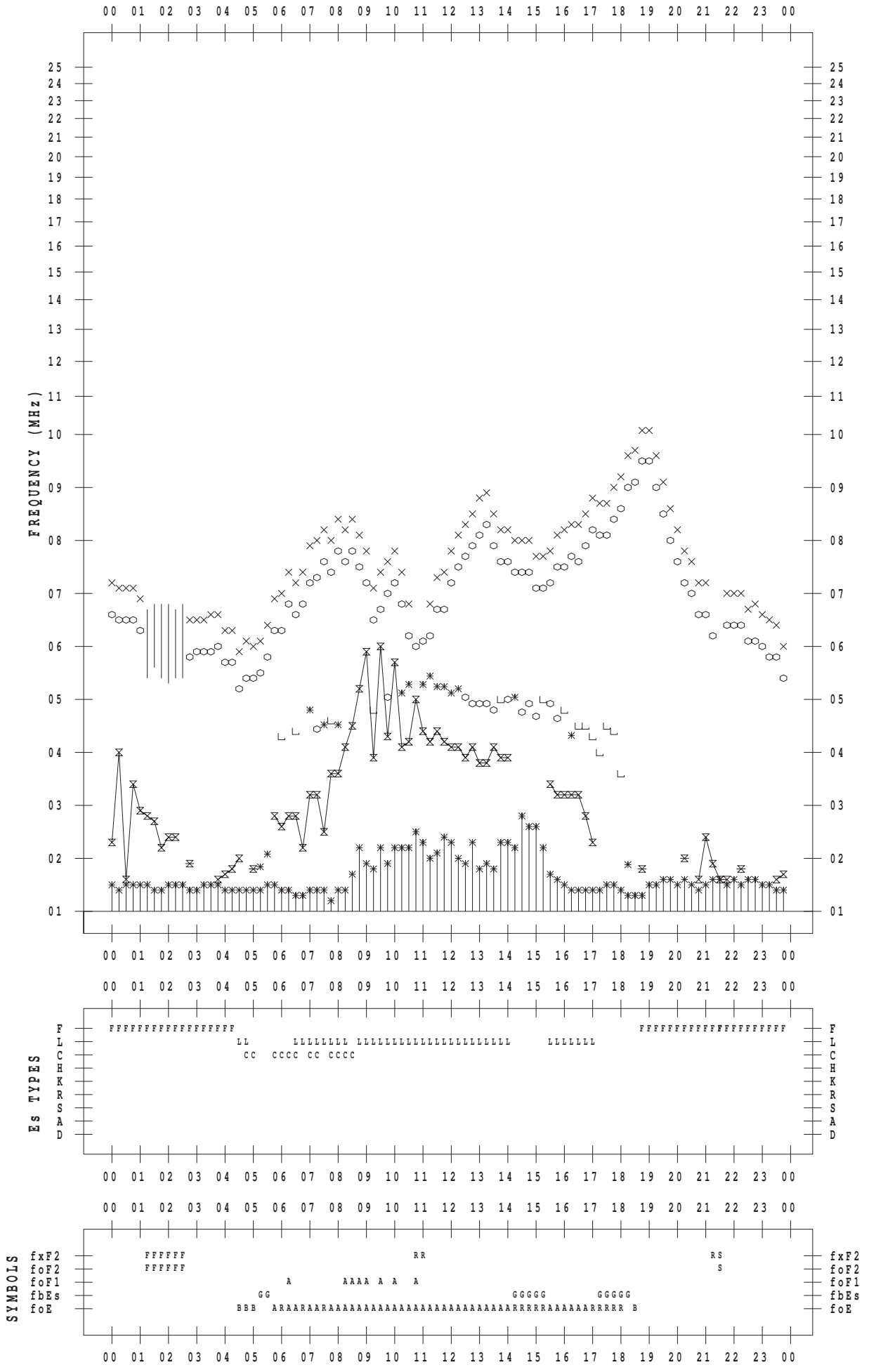
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/12

135 °E MEAN TIME



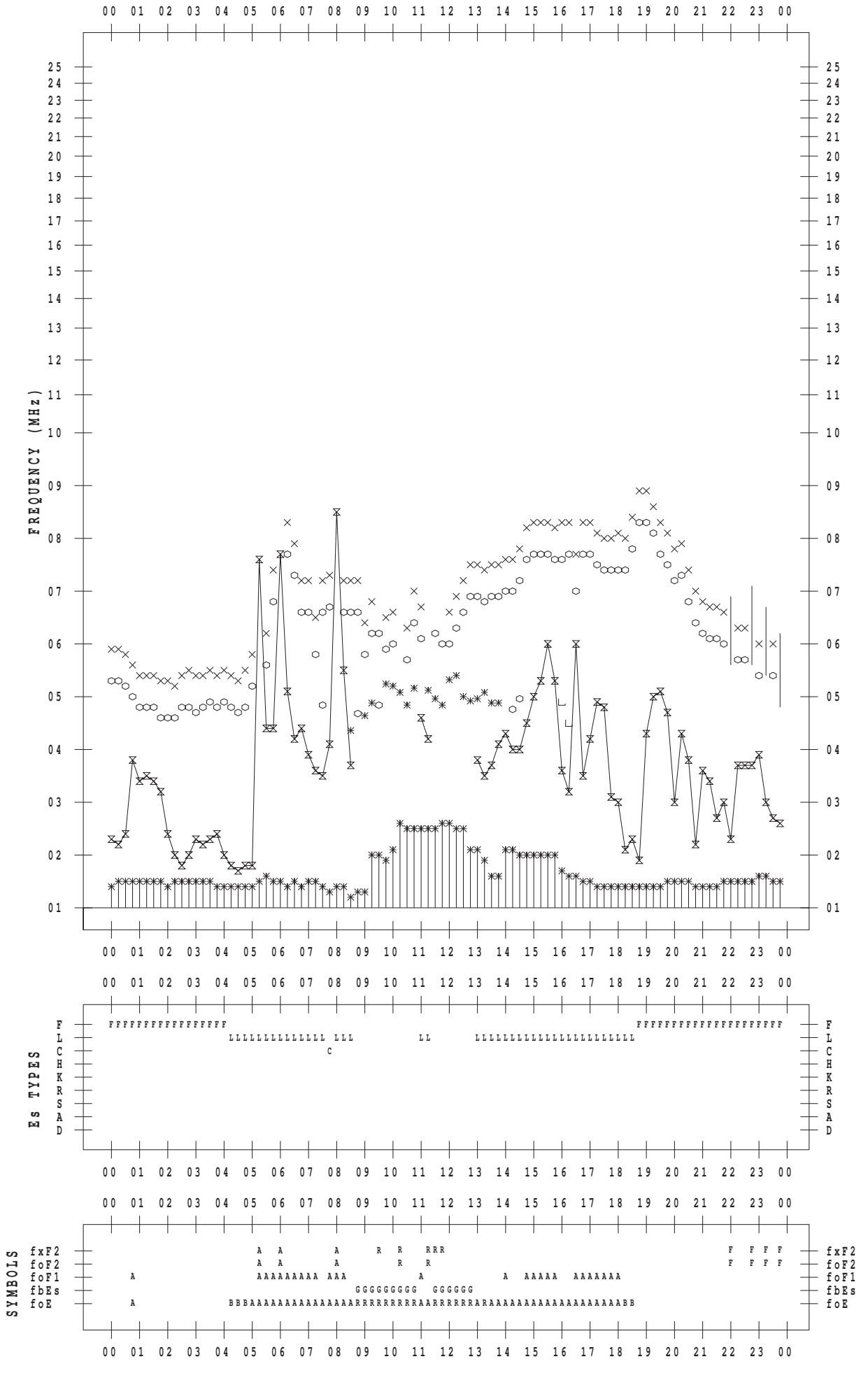
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/13

135 °E MEAN TIME



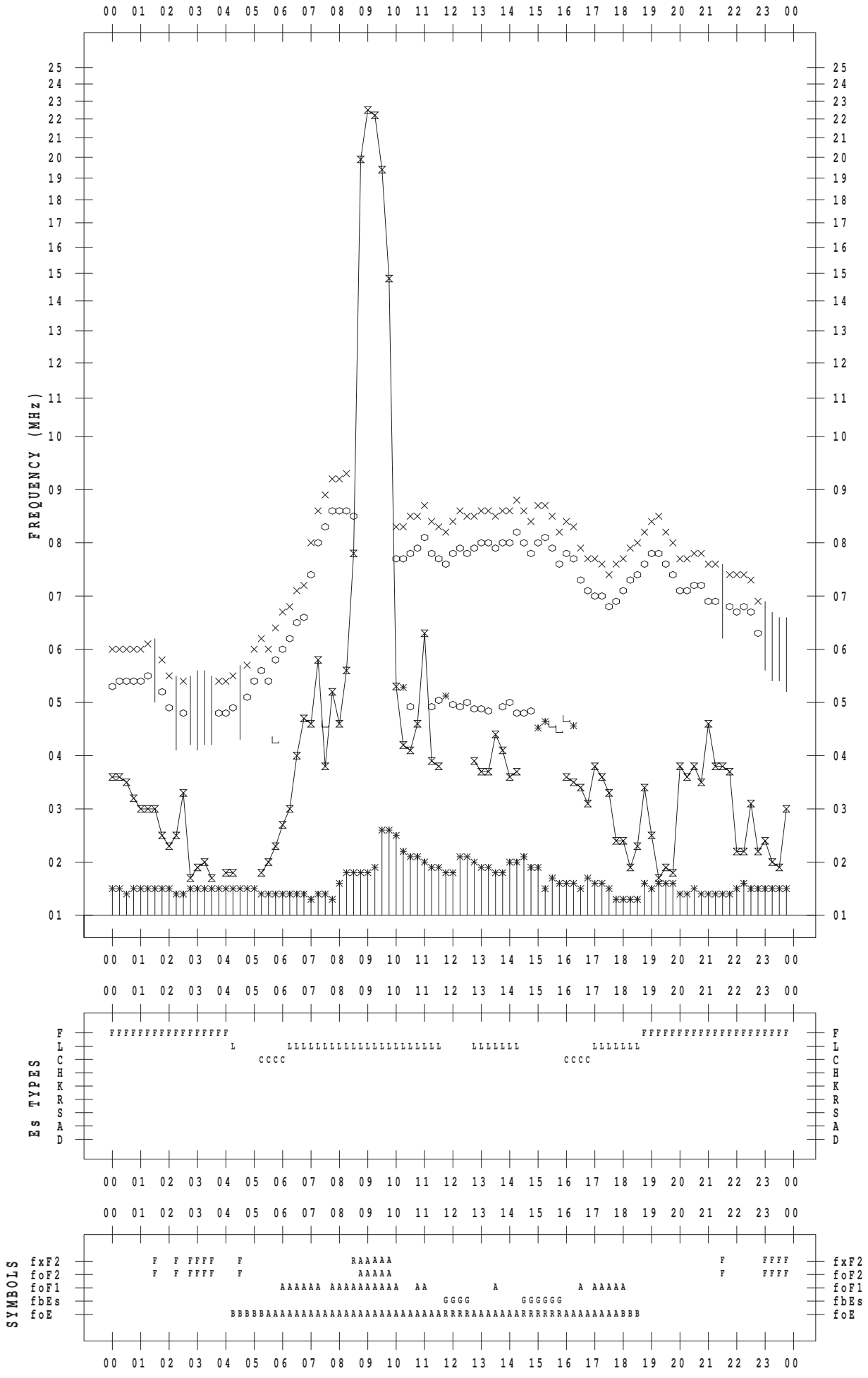
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/14

135 °E MEAN TIME



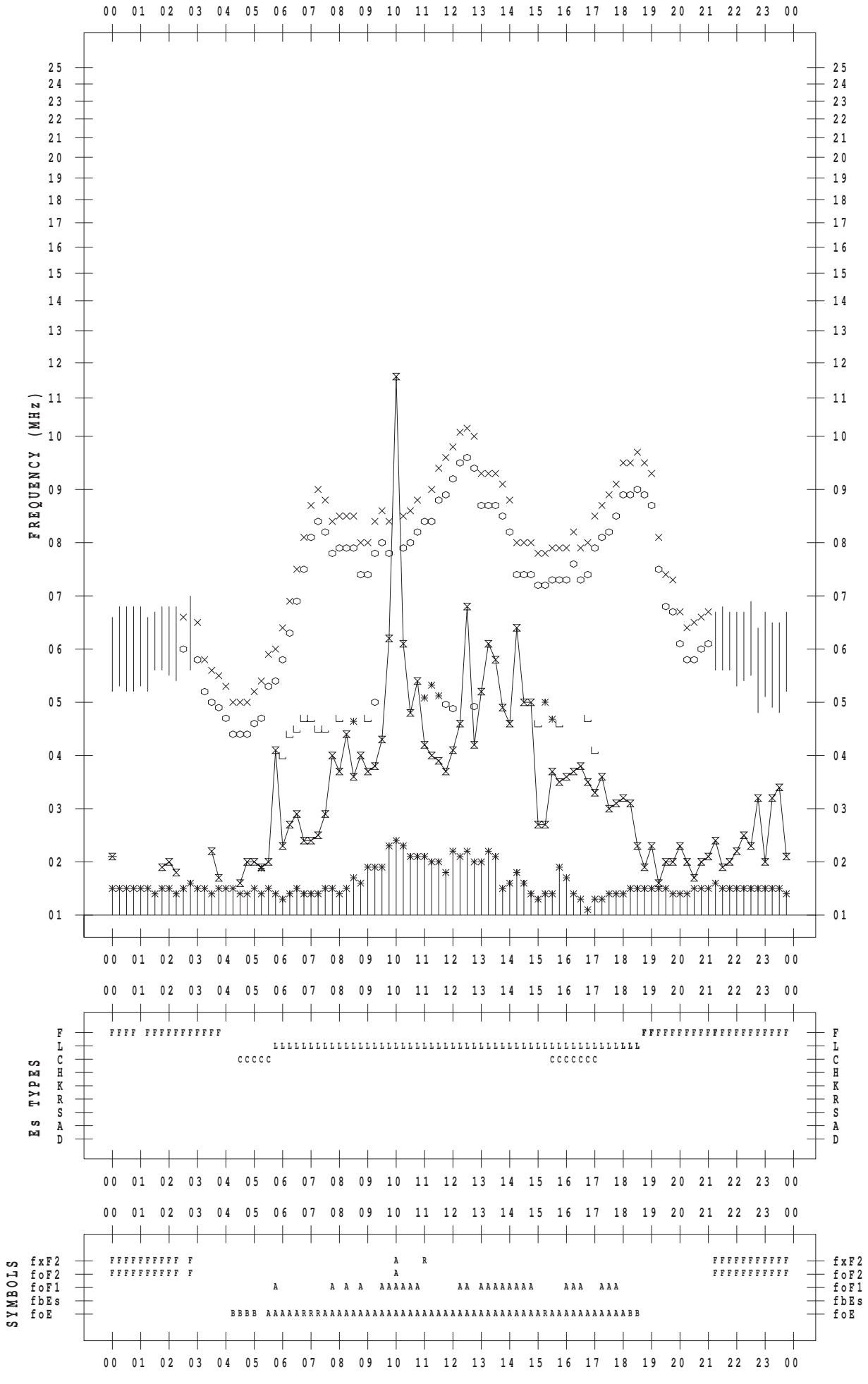
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/15

135 °E MEAN TIME



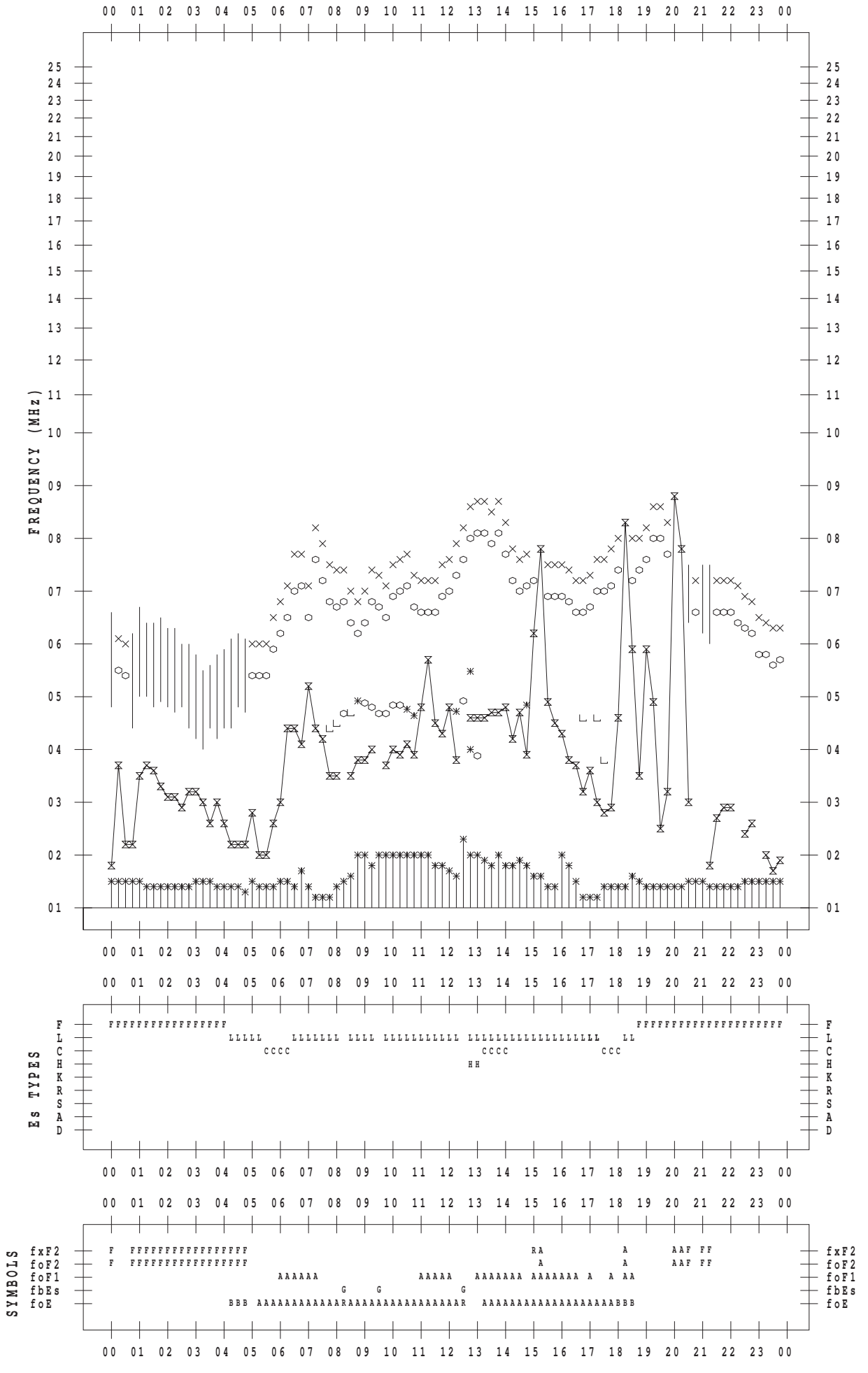
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/16

135 °E MEAN TIME



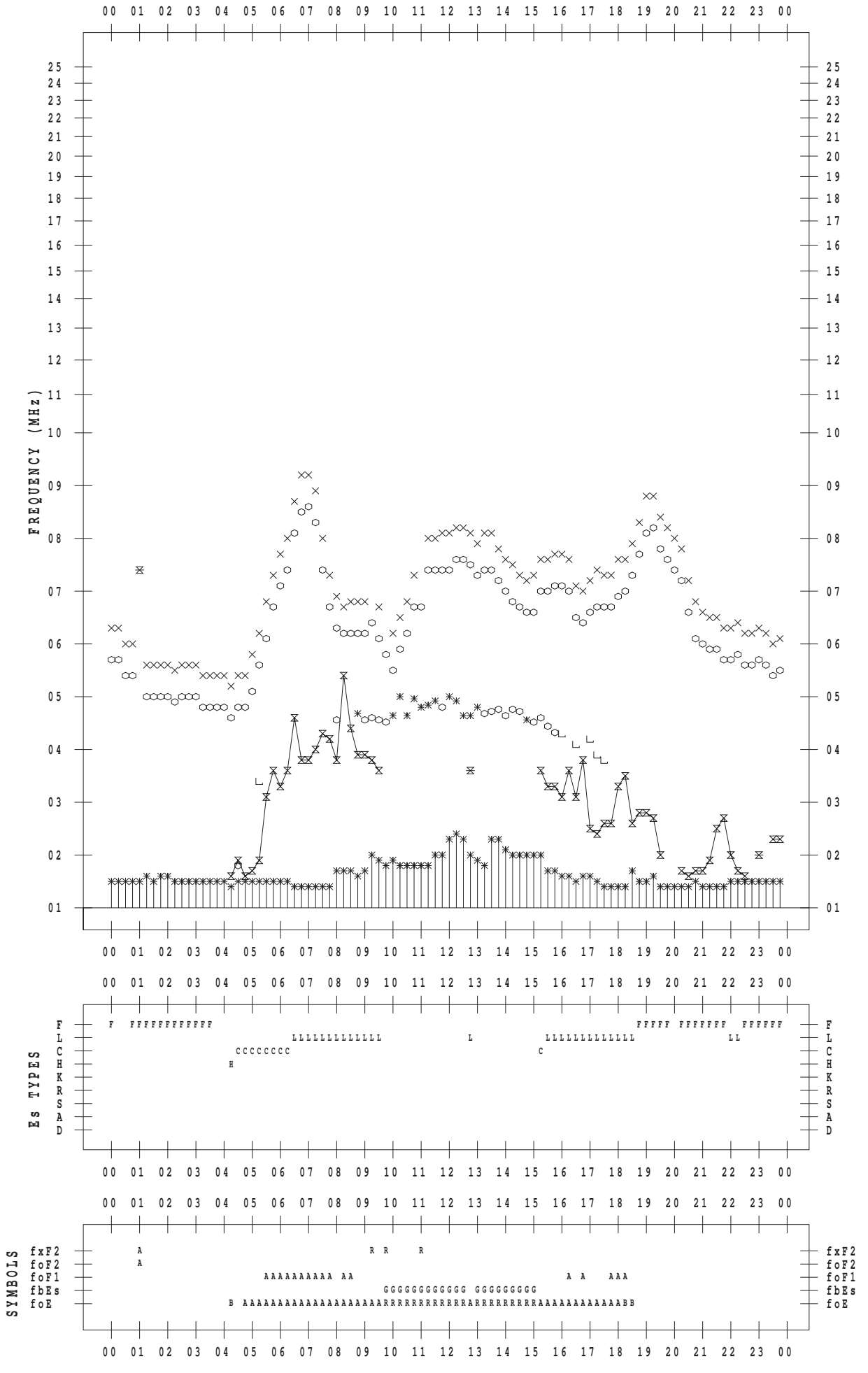
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/17

135 °E MEAN TIME



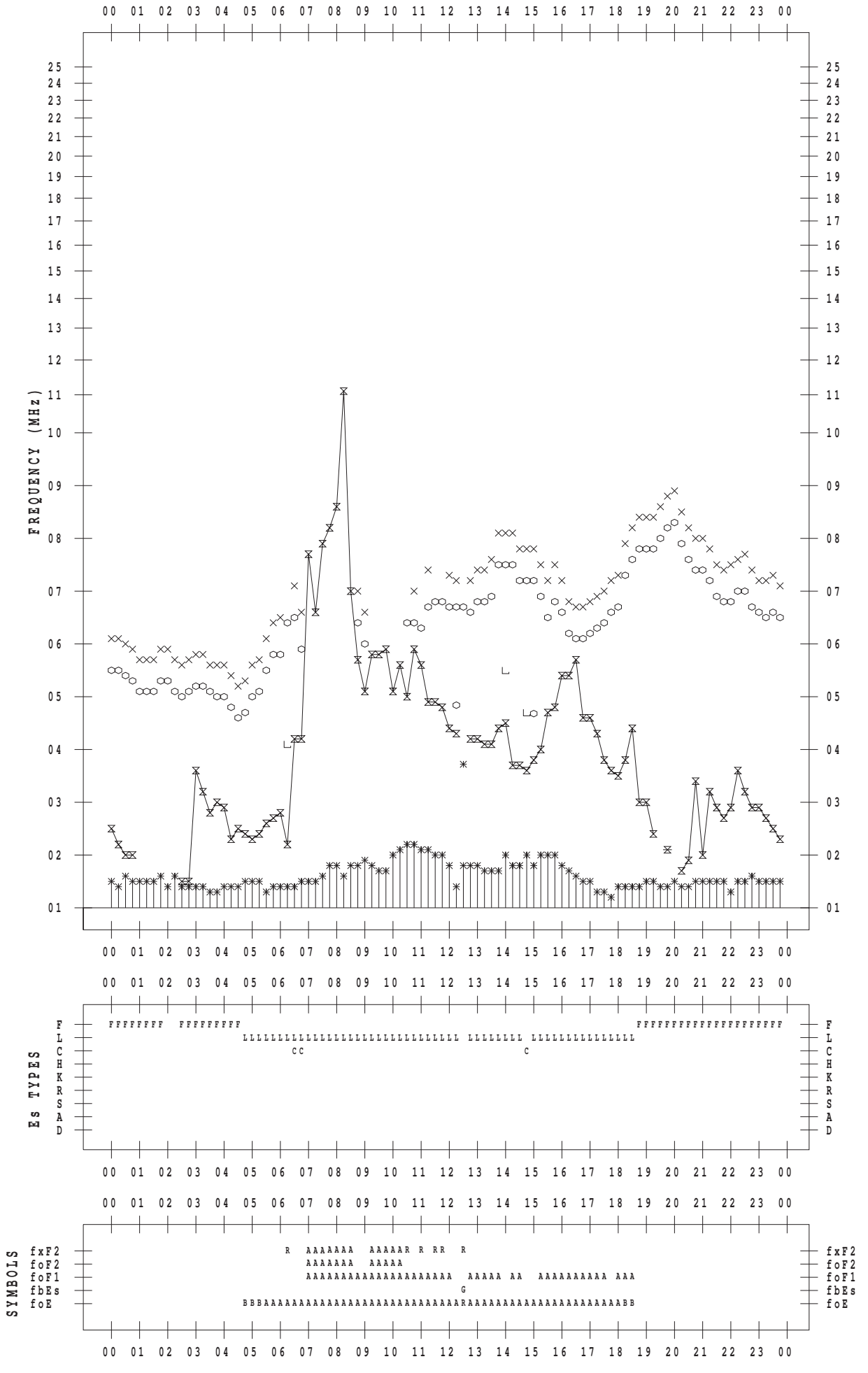
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/18

135 °E MEAN TIME



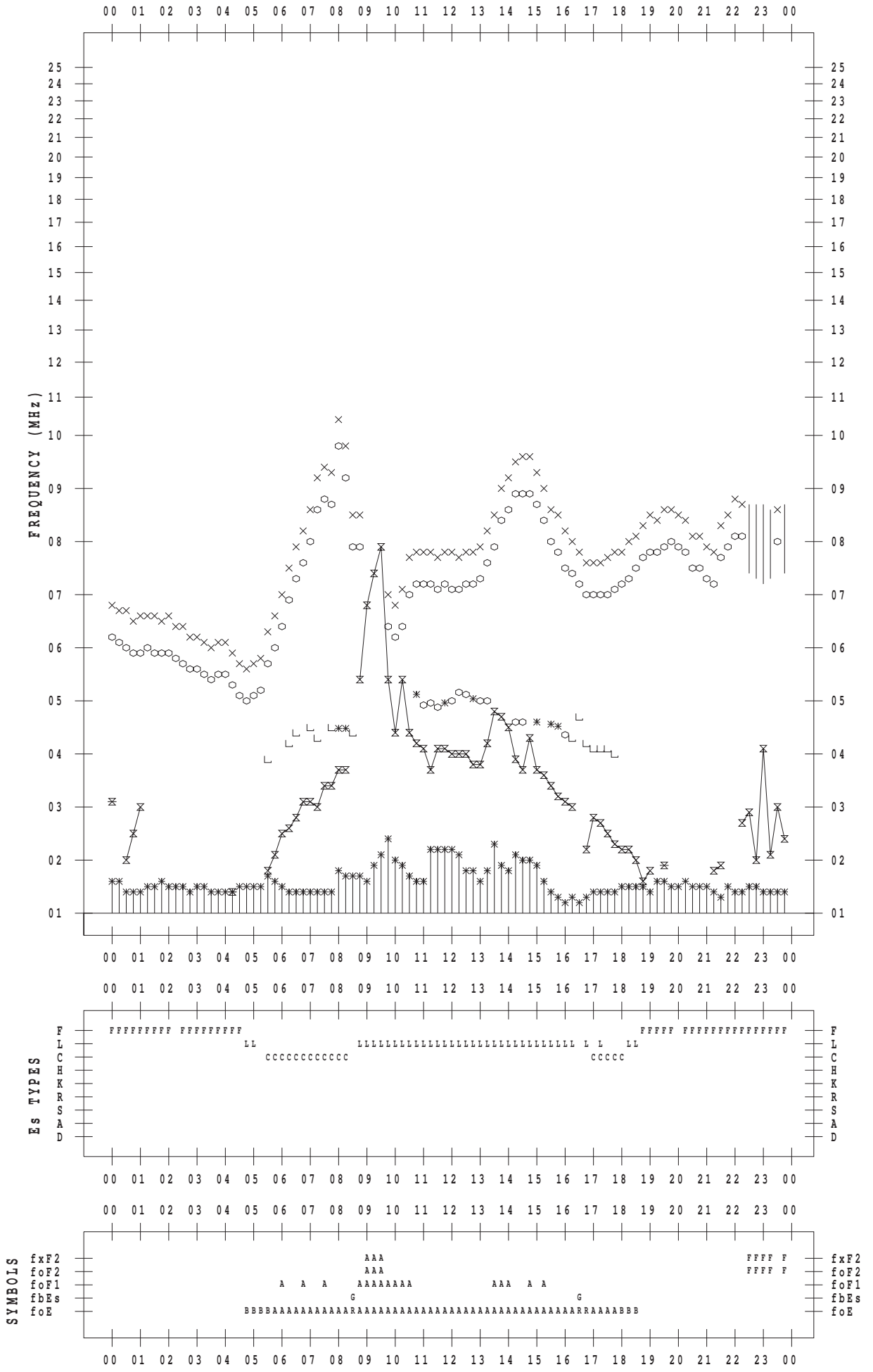
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/19

135 °E MEAN TIME



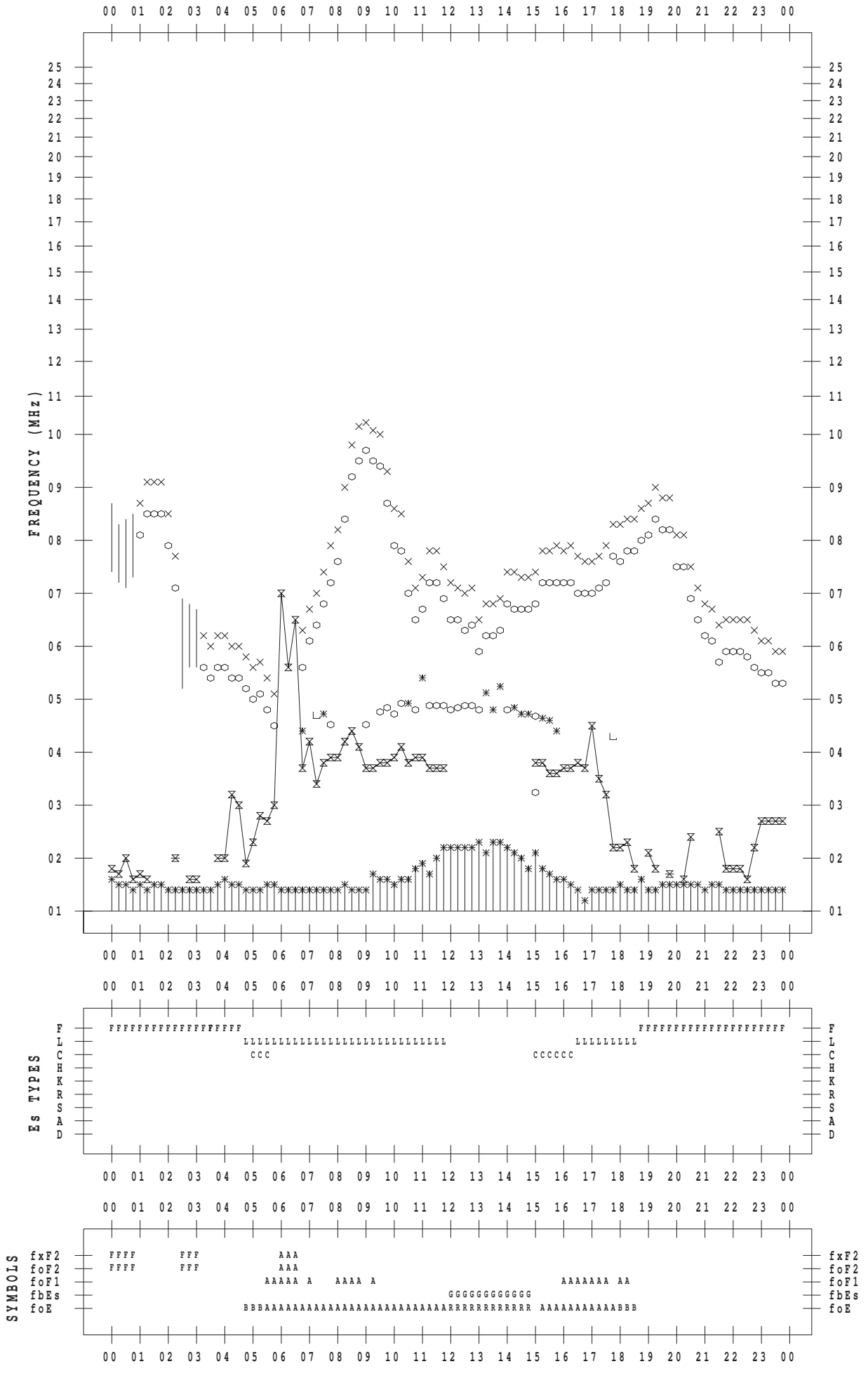
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/20

135 °E MEAN TIME



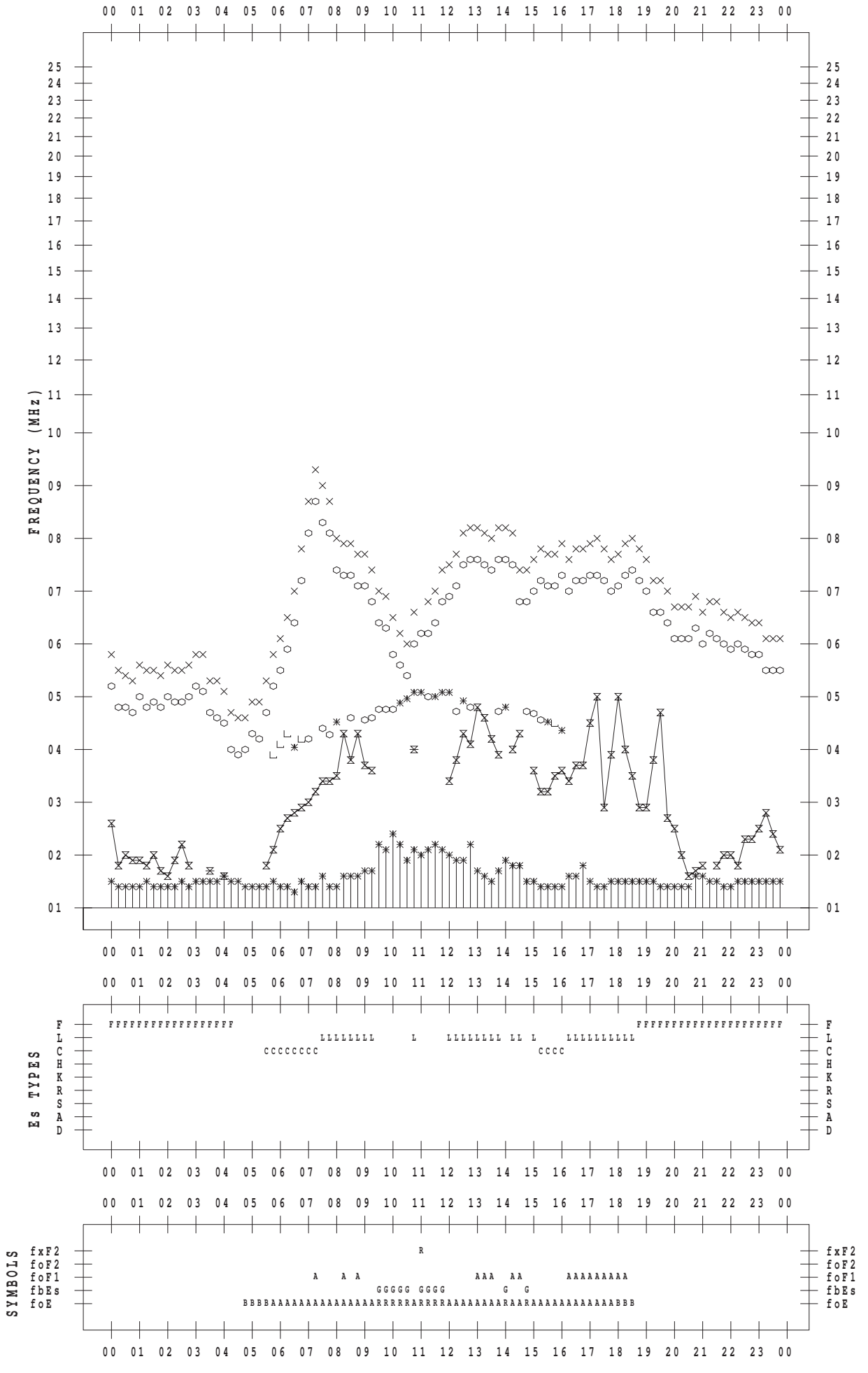
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/21

135 °E MEAN TIME



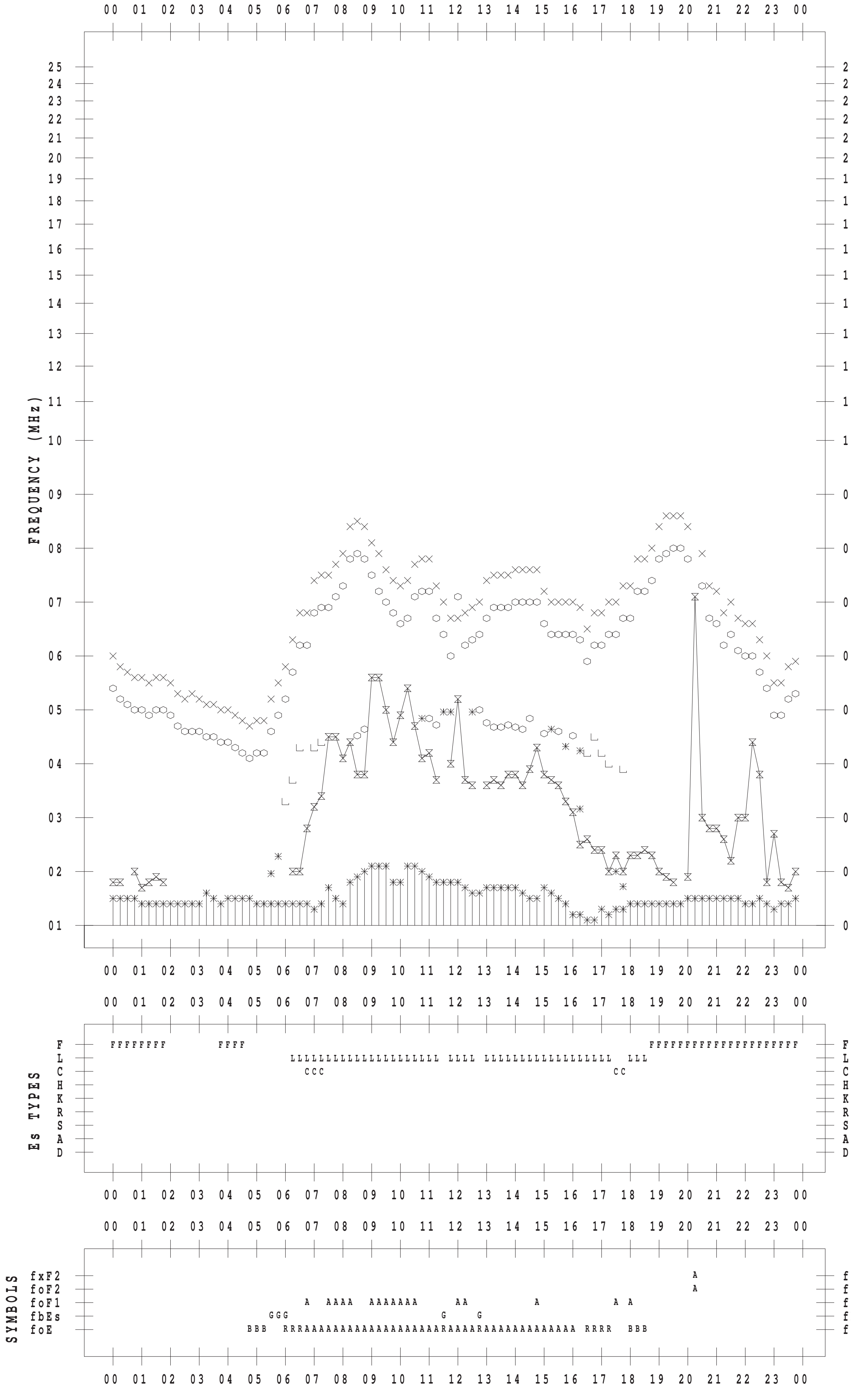
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/22

135 °E MEAN TIME



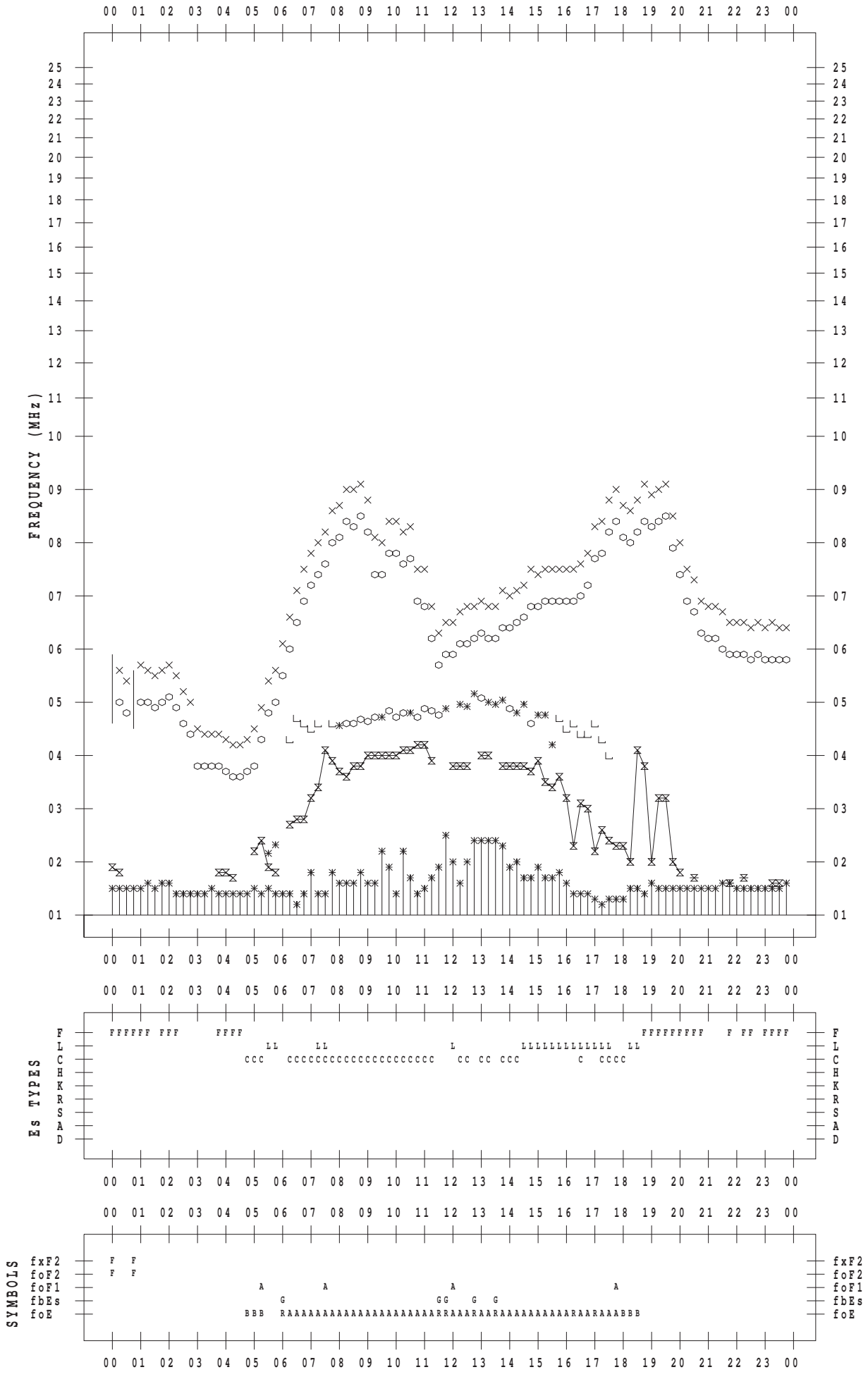
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/23

135 °E MEAN TIME

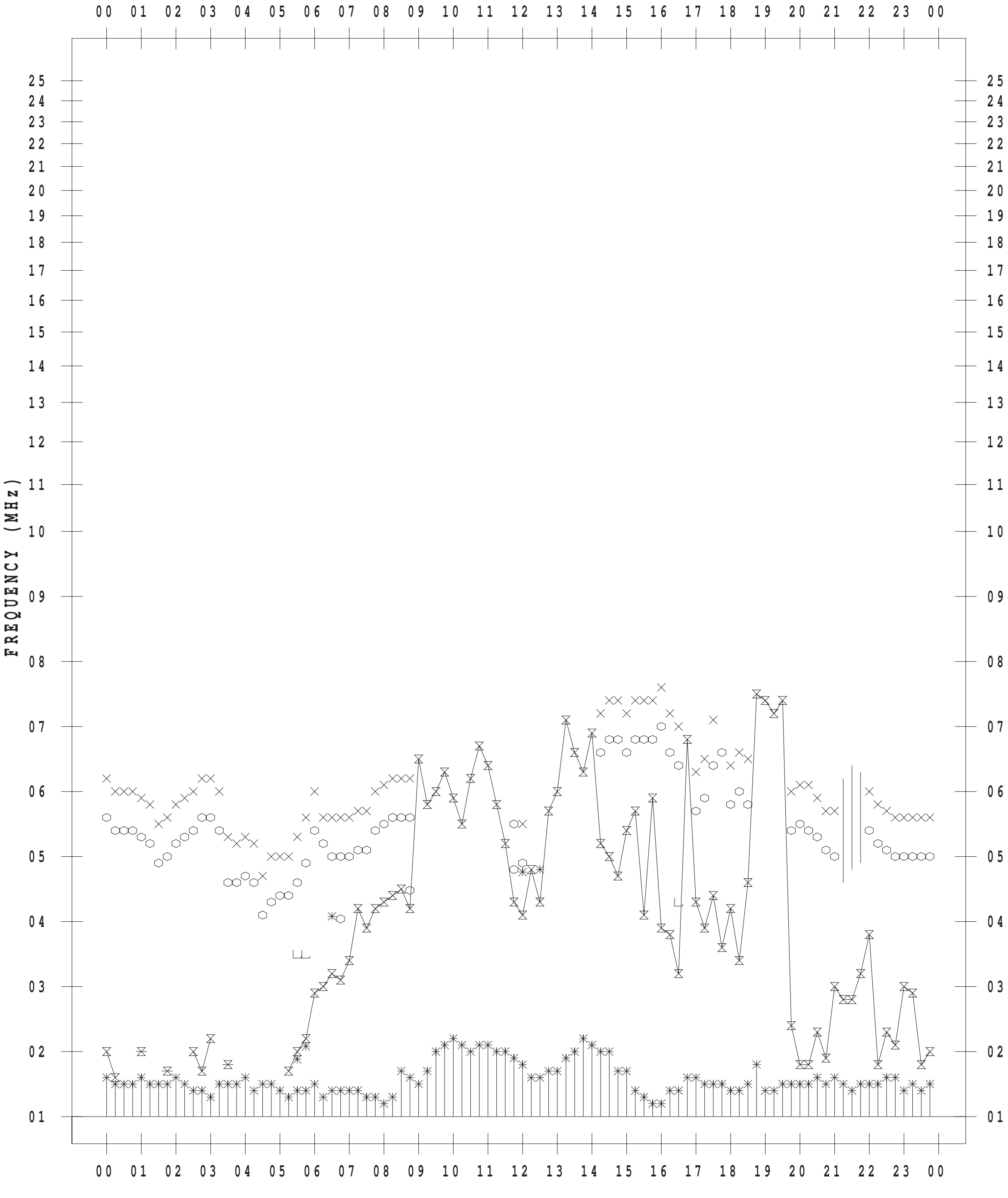


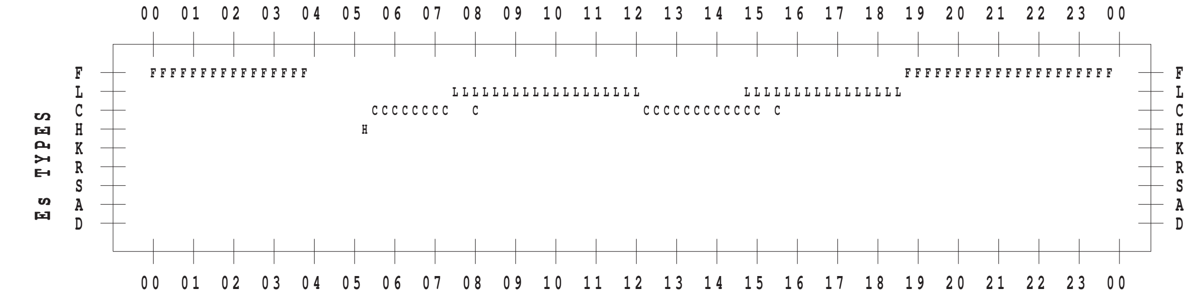
f-PLOT DATA

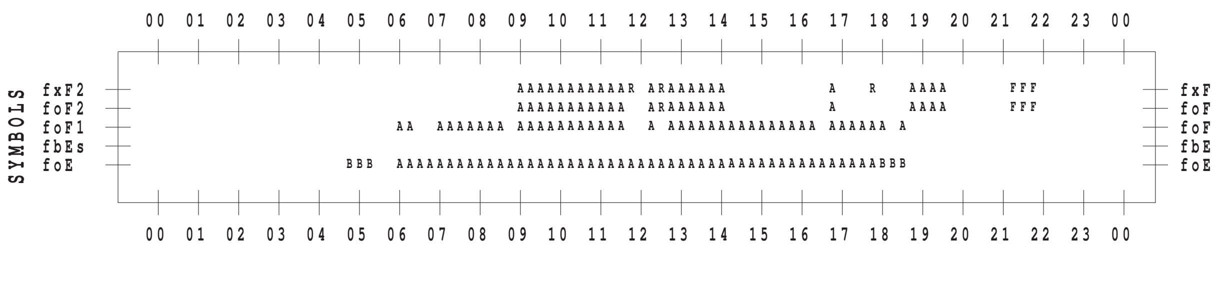
SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2012/ 8/24

135 °E MEAN TIME







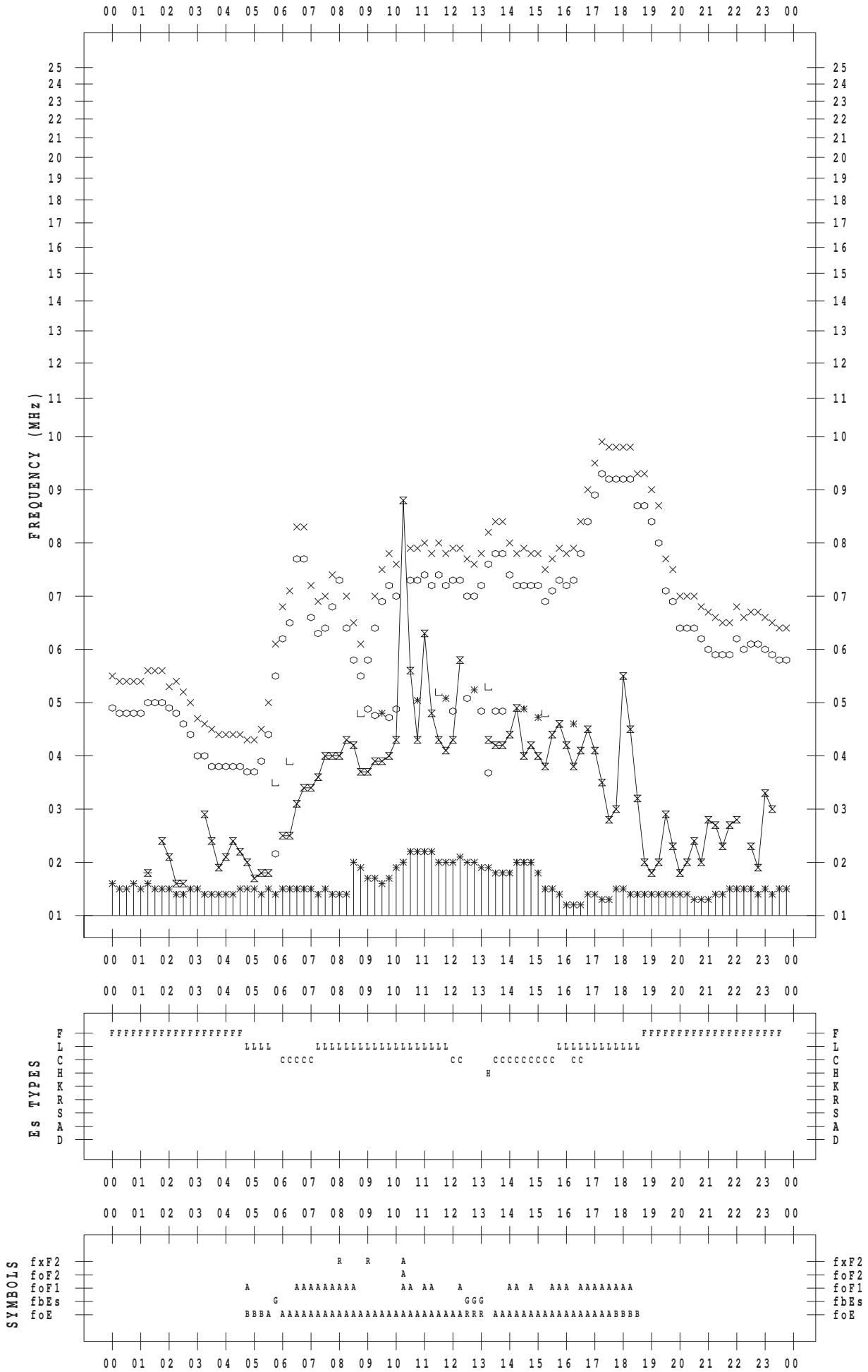
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/25

135 °E MEAN TIME



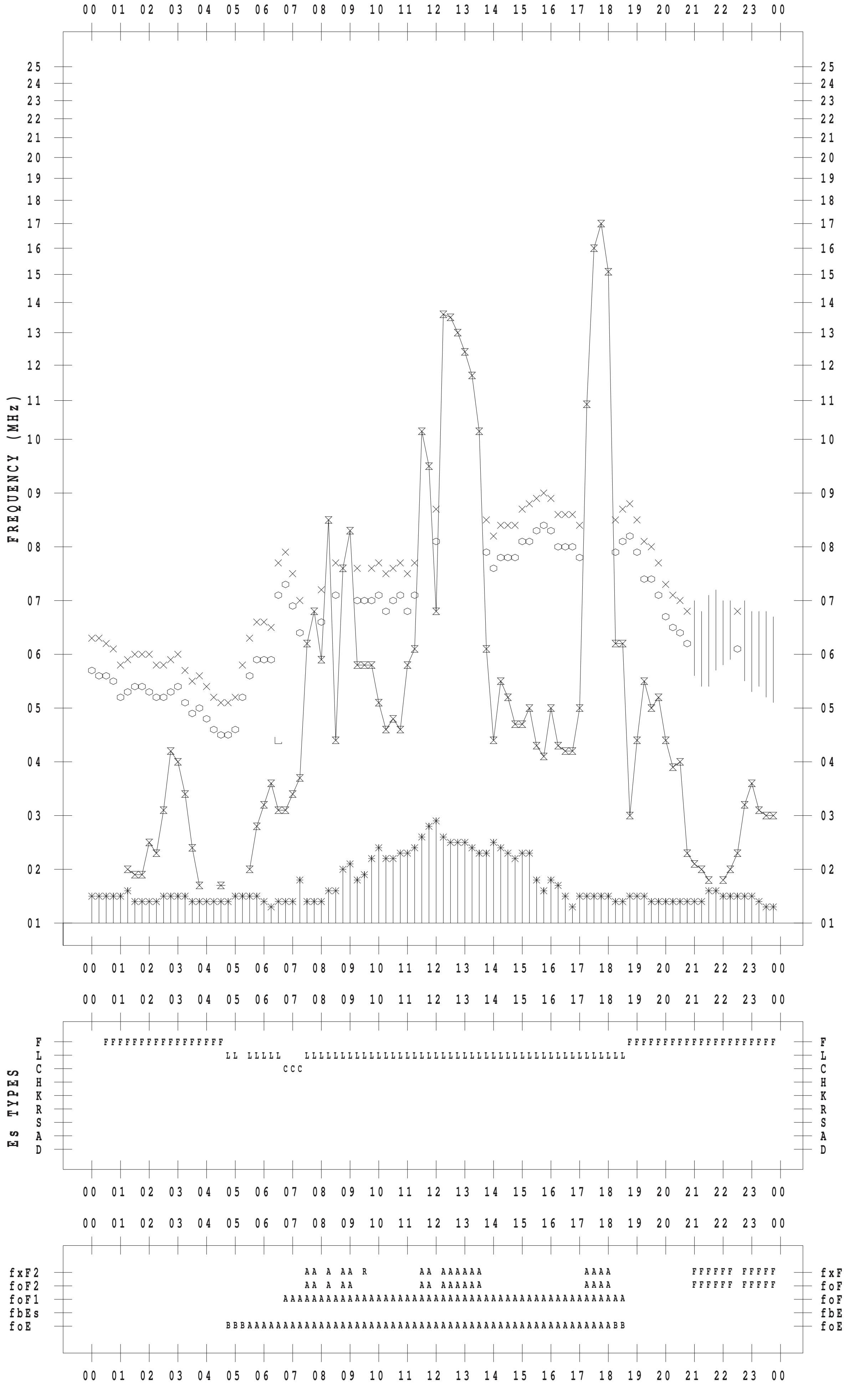
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/26

135 °E MEAN TIME



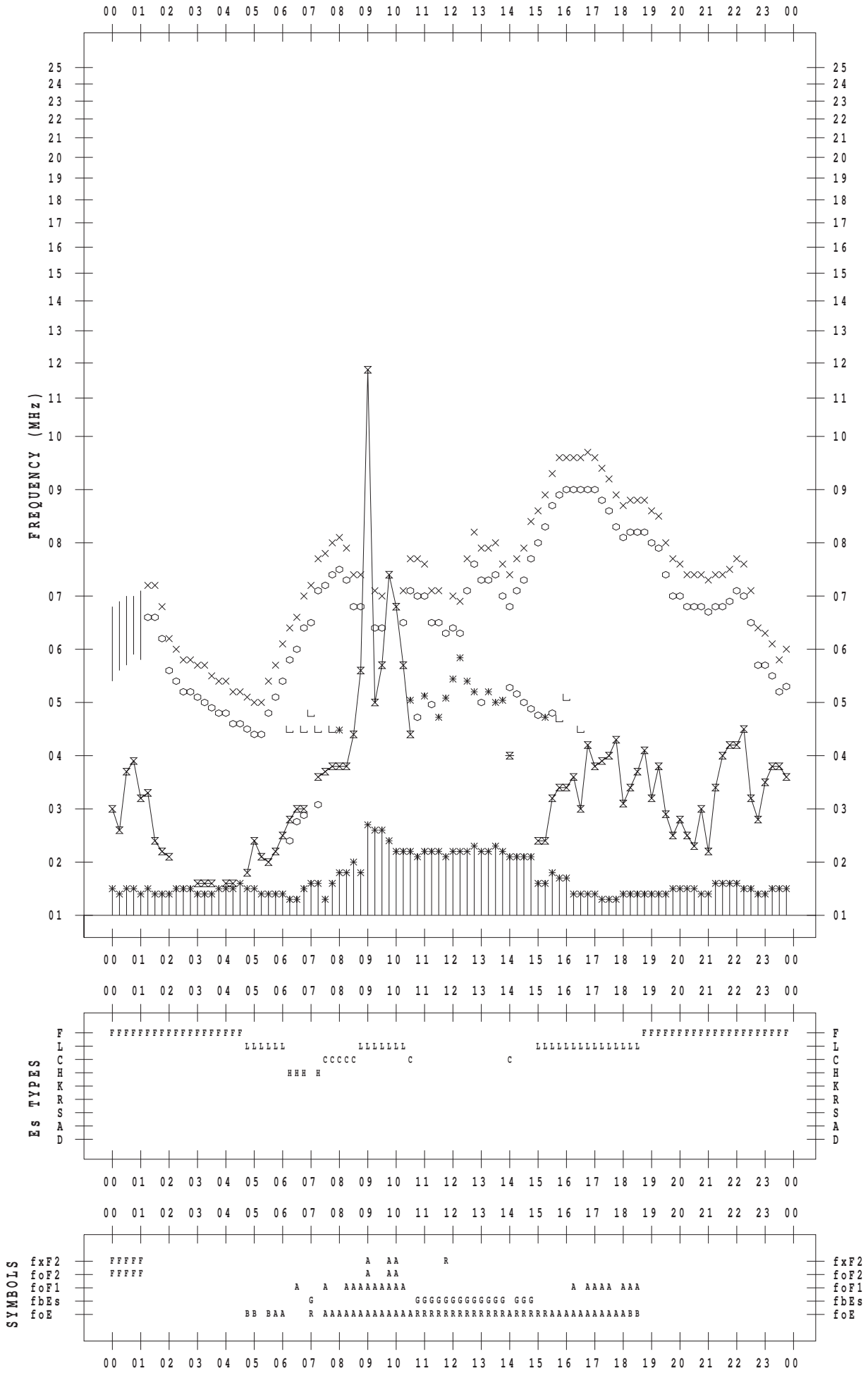
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/27

135 °E MEAN TIME



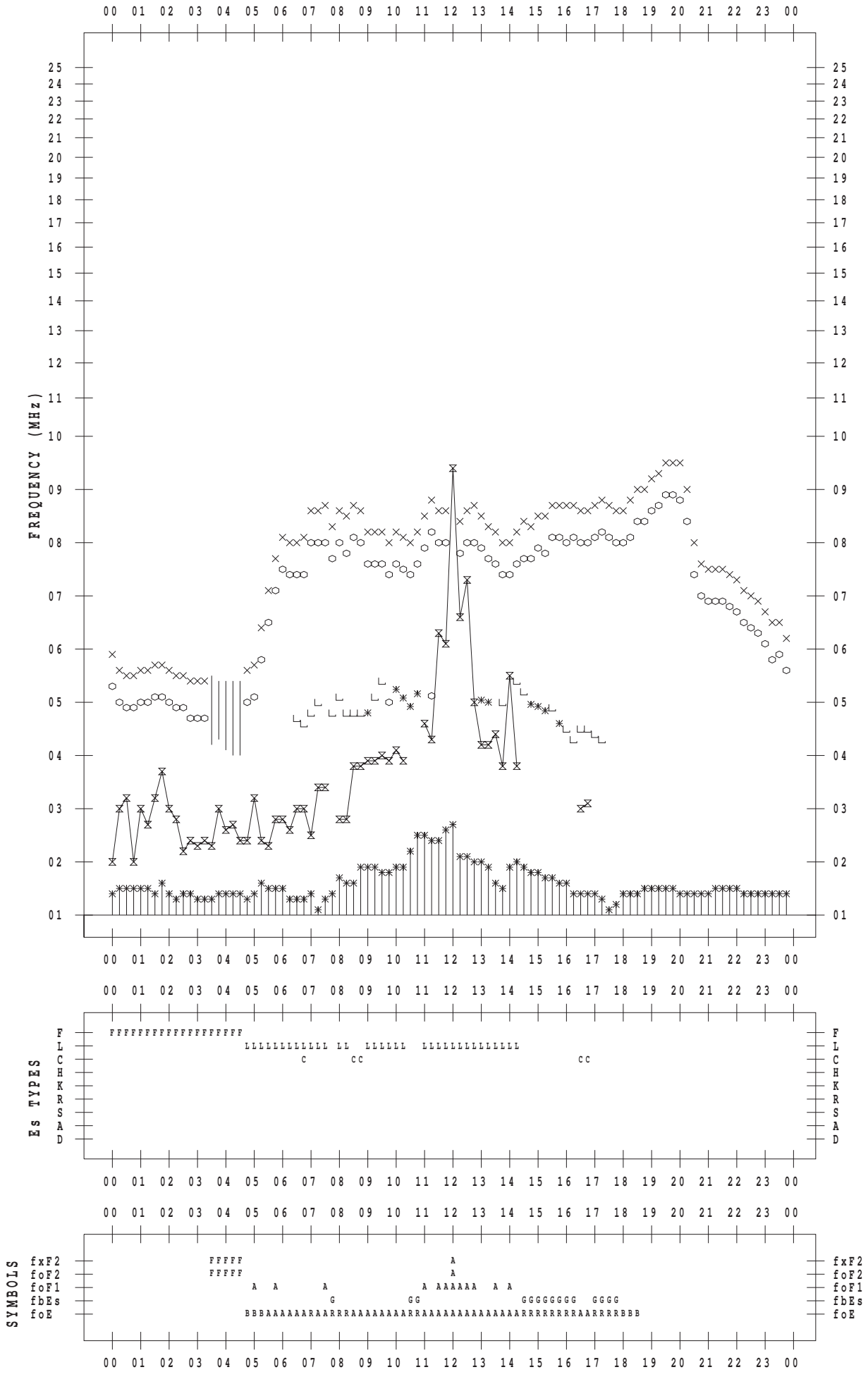
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/28

135 °E MEAN TIME

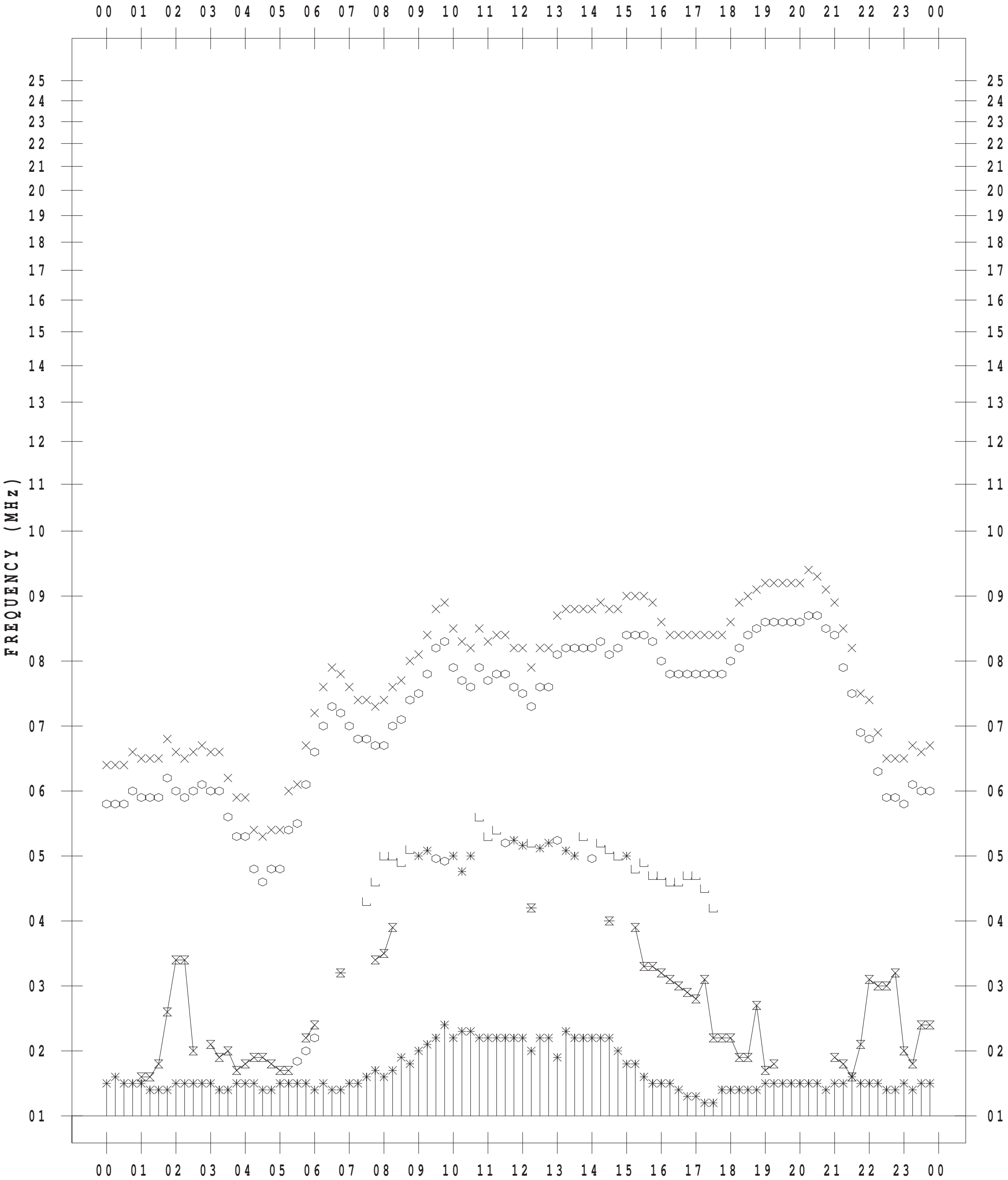


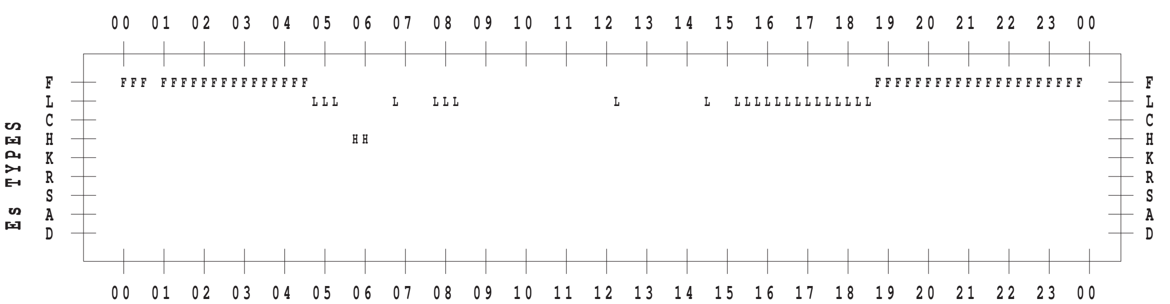
f-PLOT DATA

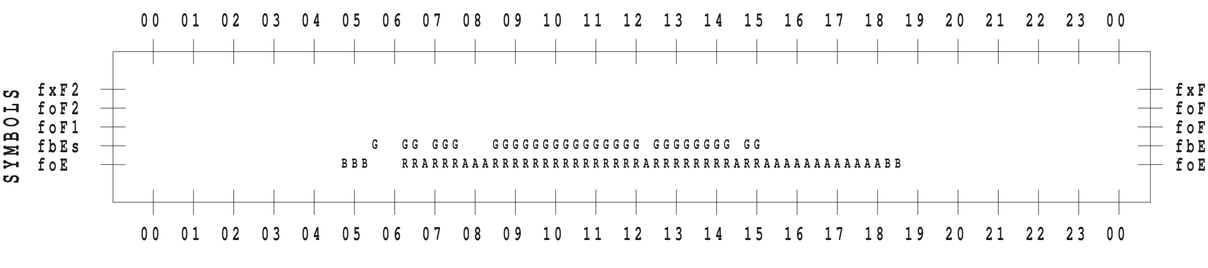
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2012/ 8/29

135 °E MEAN TIME







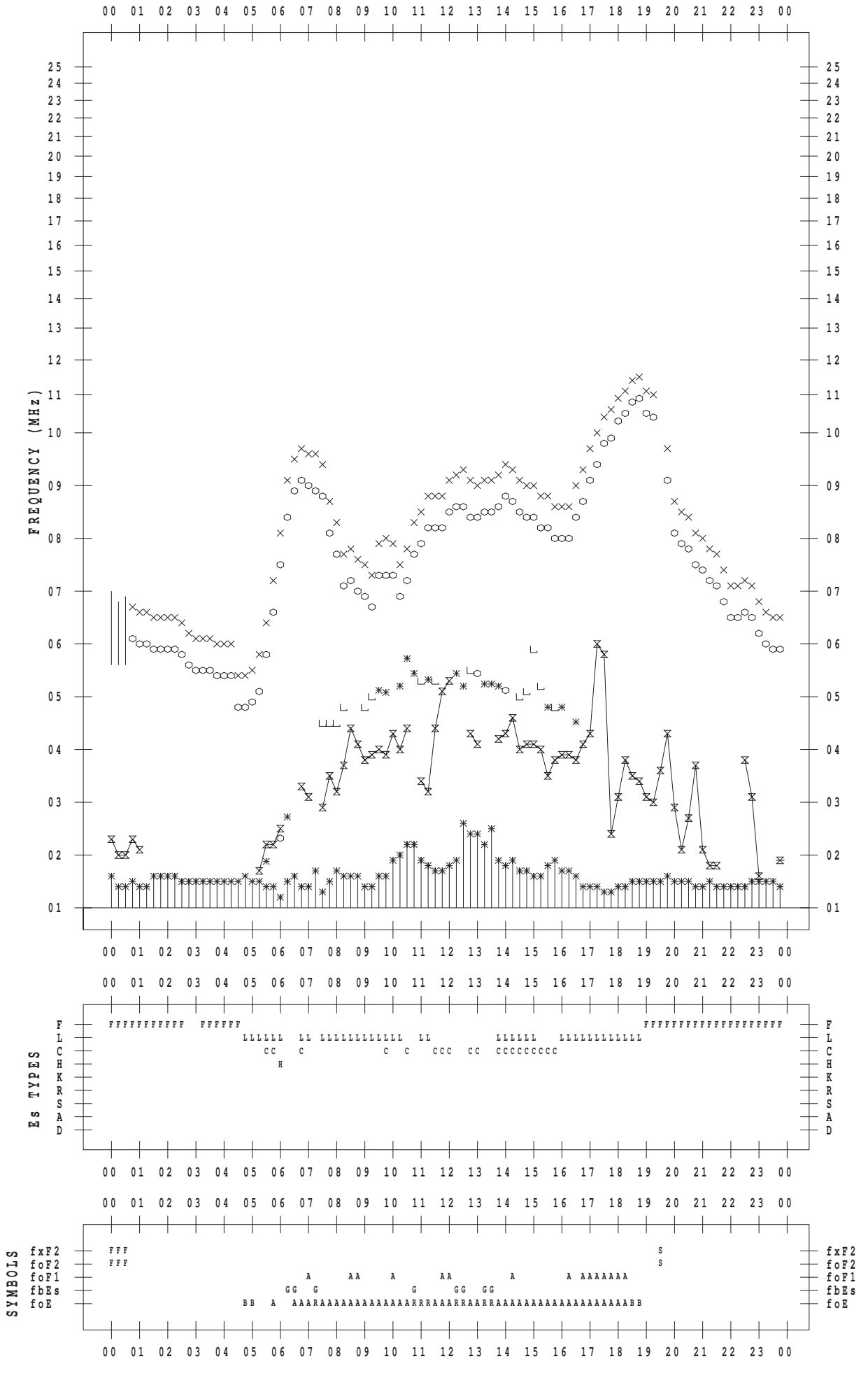
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/30

135 °E MEAN TIME



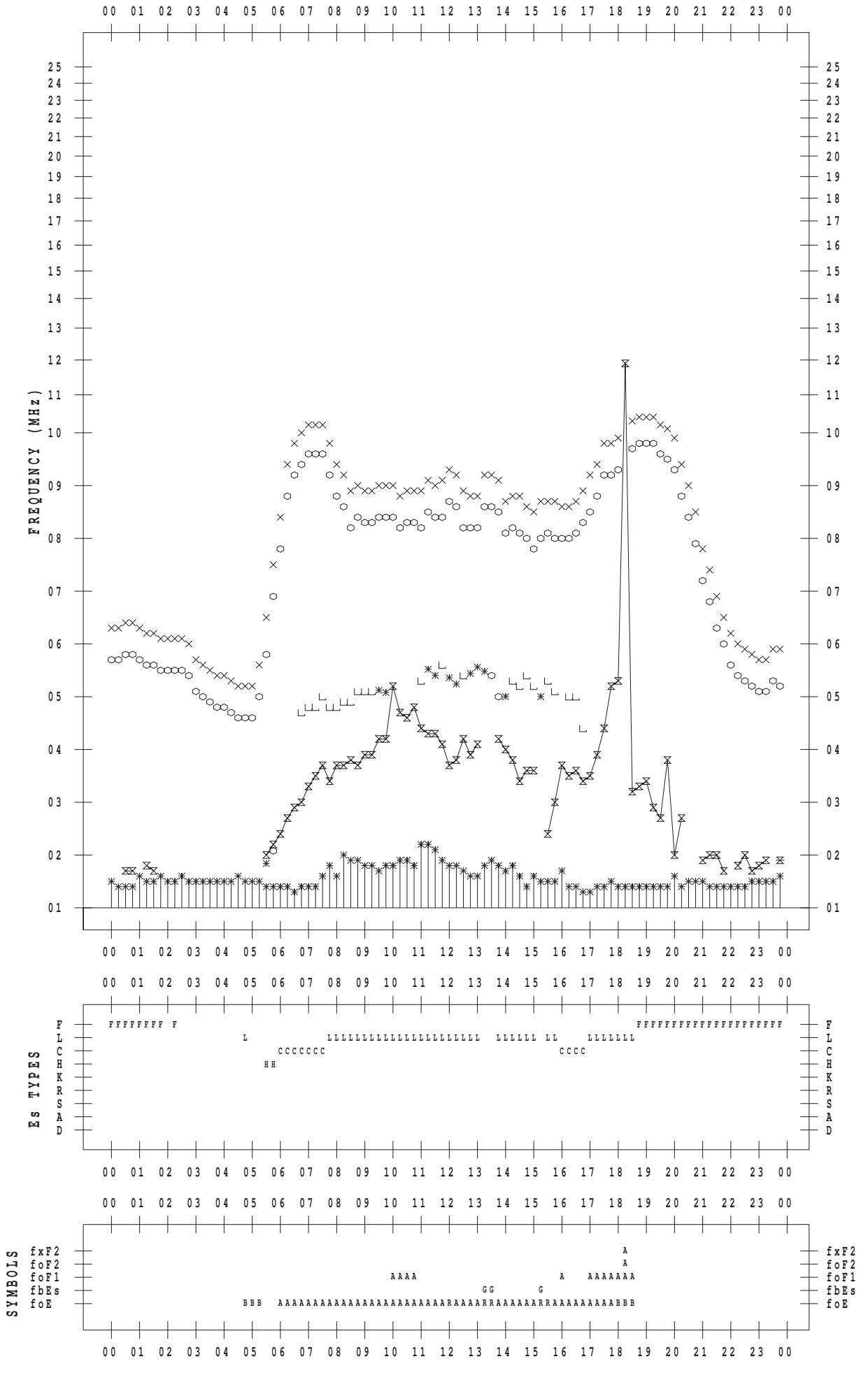
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2012/ 8/31

135 °E MEAN TIME



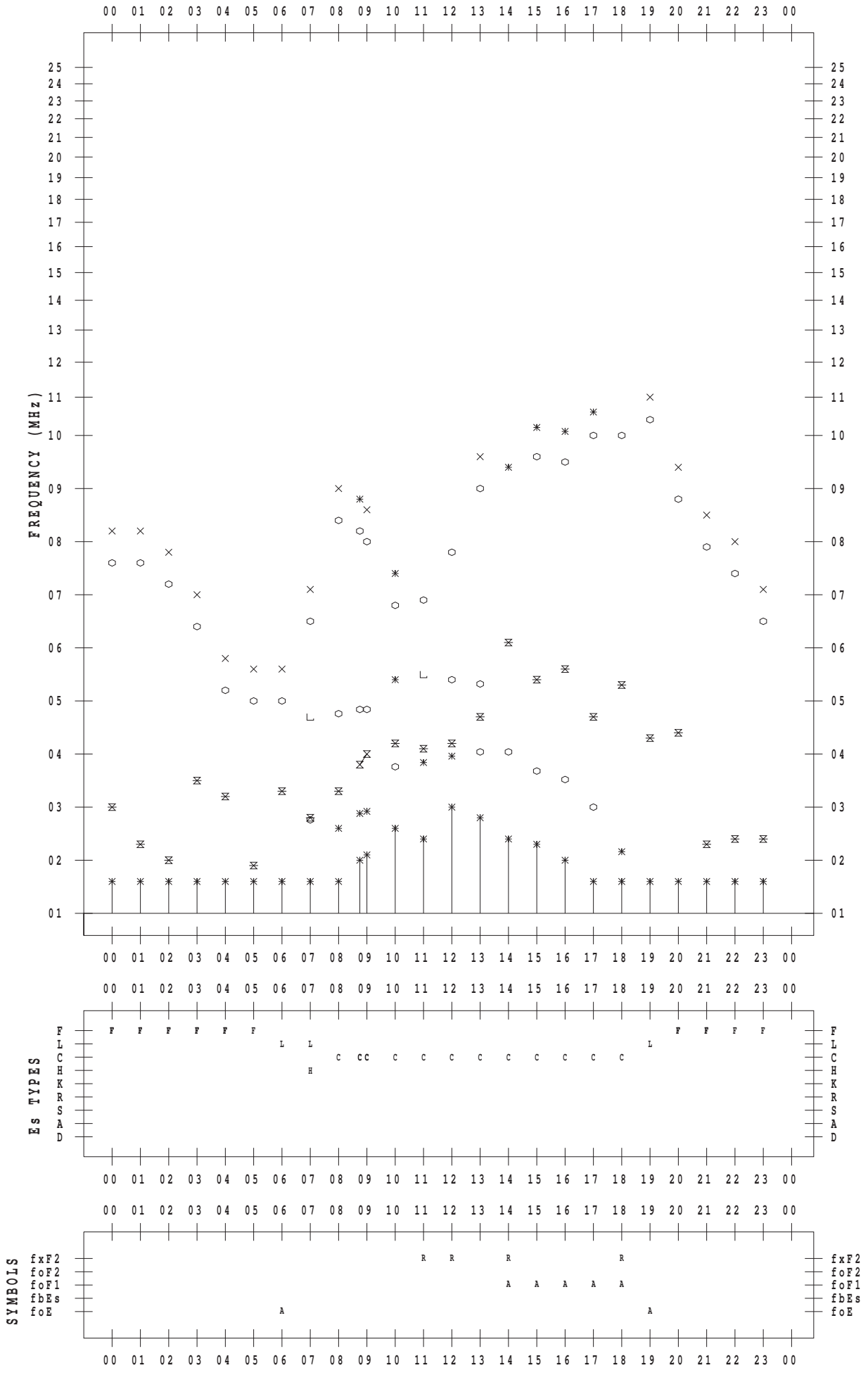
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 1

135 °E MEAN TIME



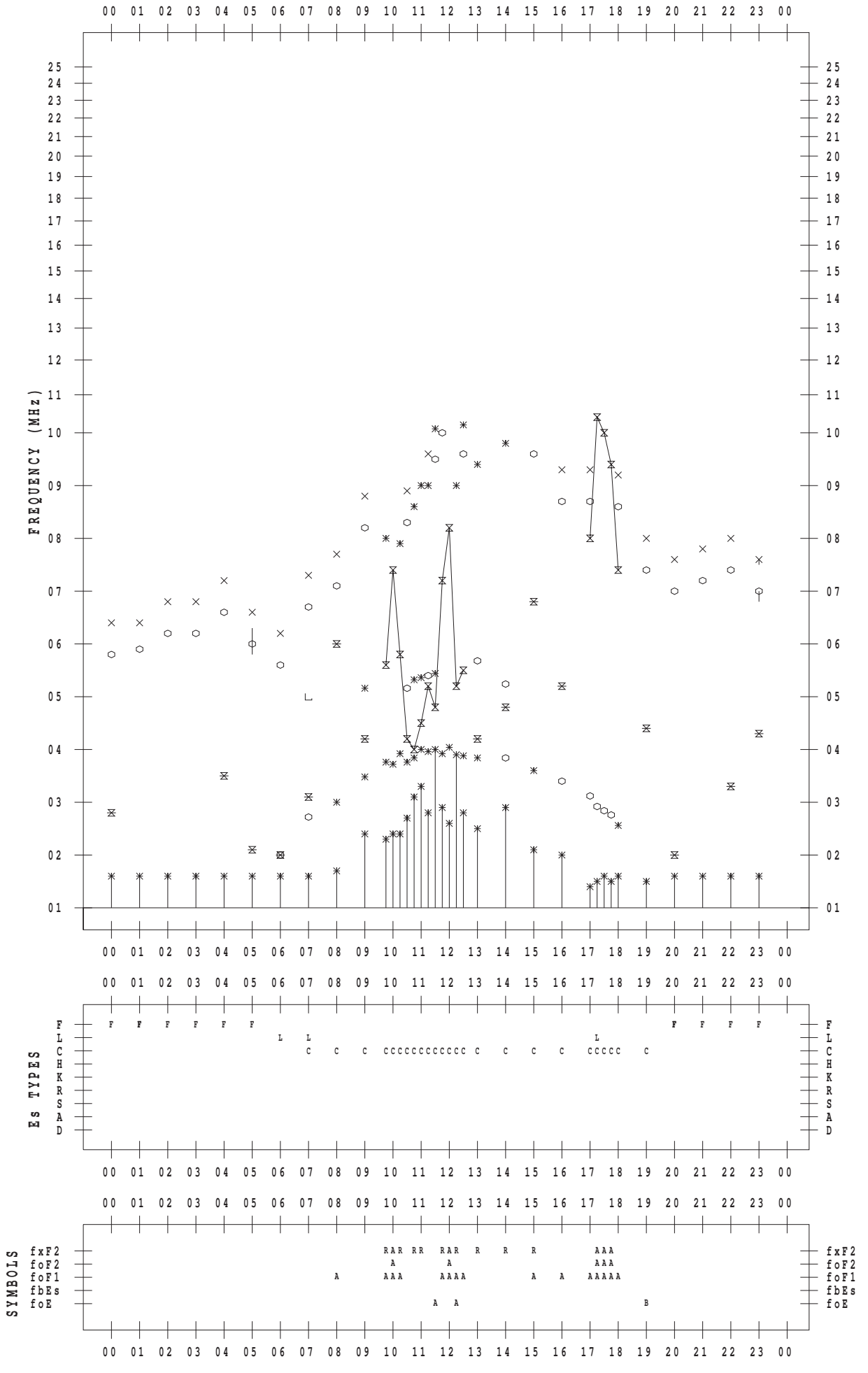
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 2

135 °E MEAN TIME



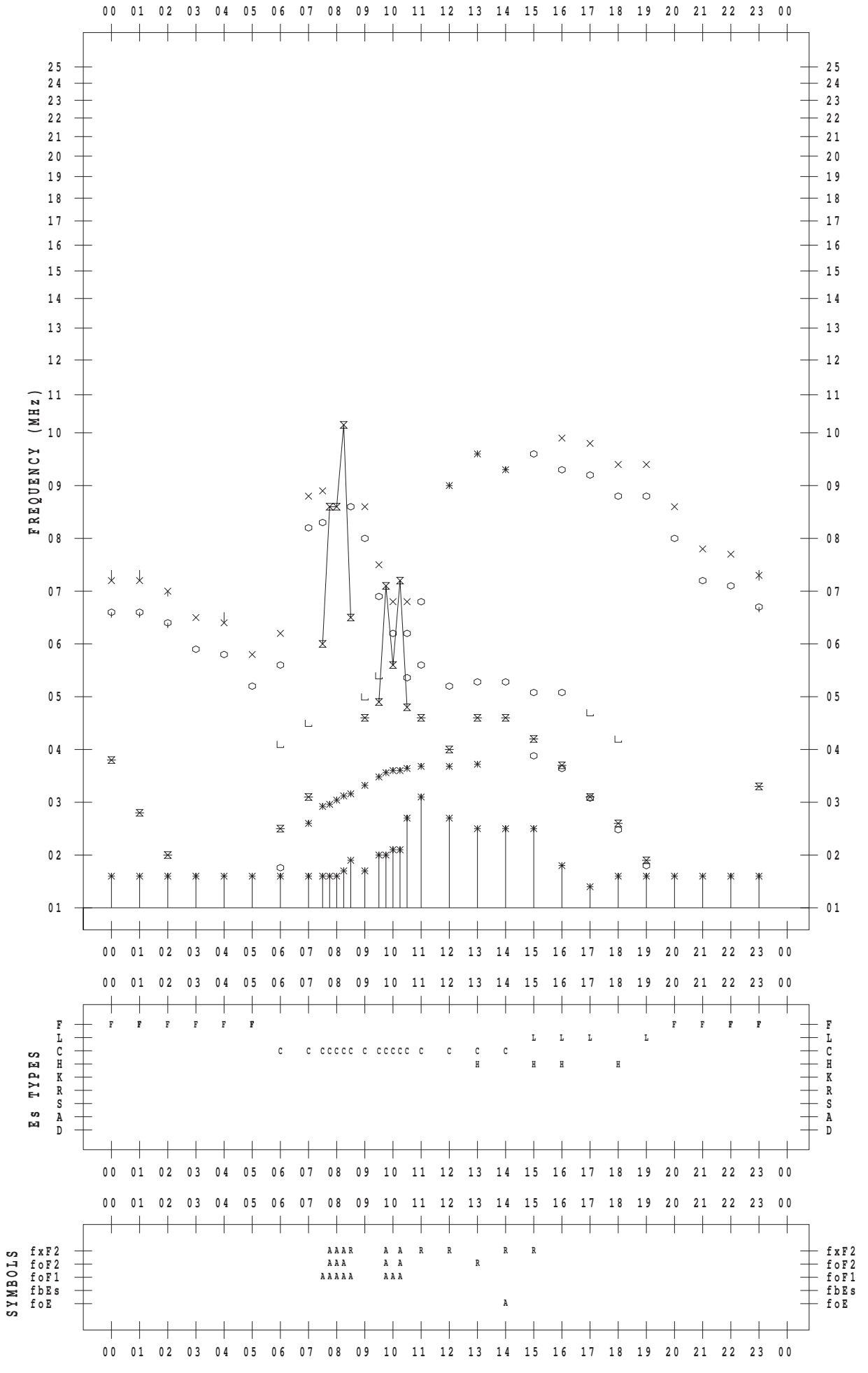
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 3

135 °E MEAN TIME



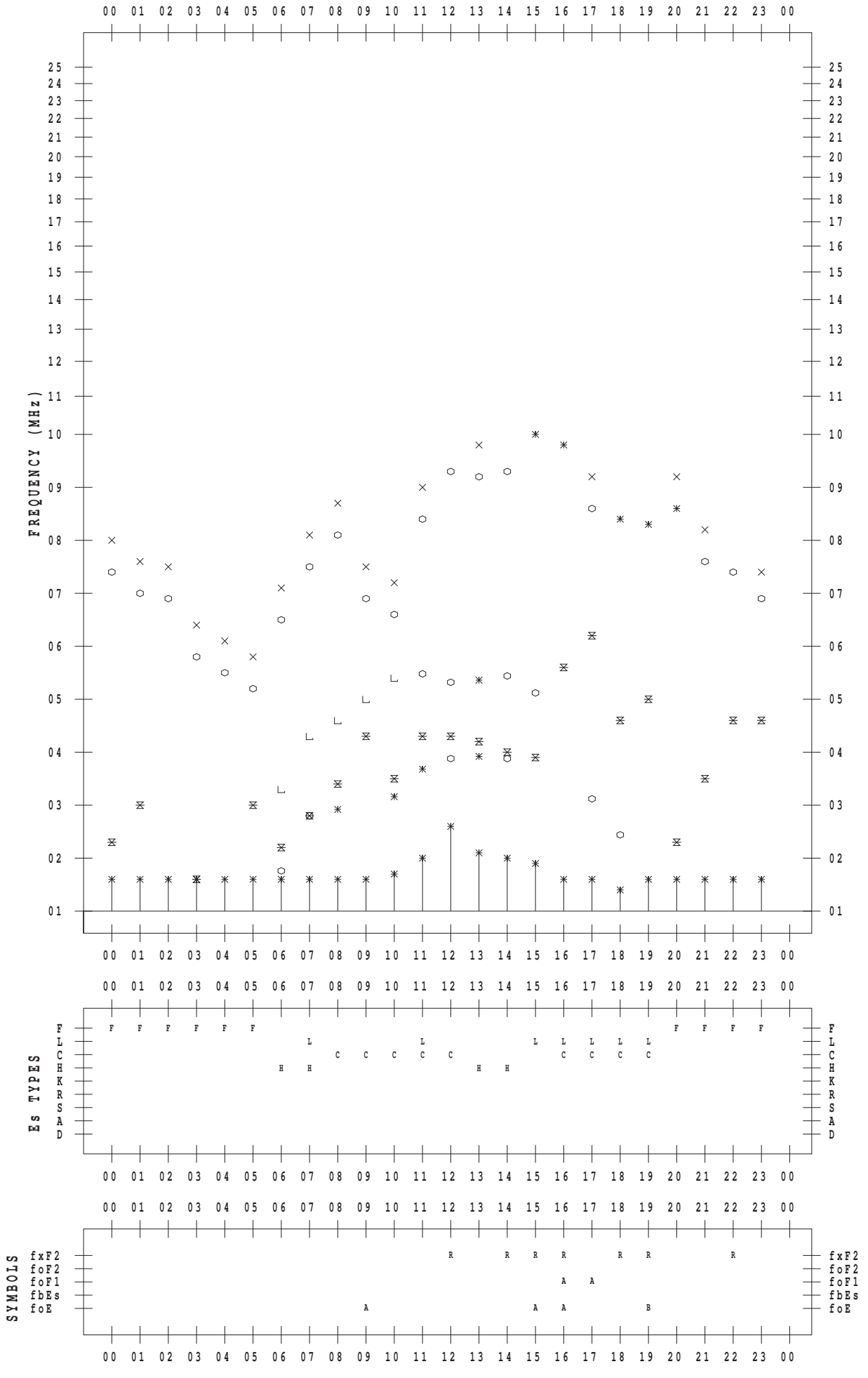
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 4

135 °E MEAN TIME



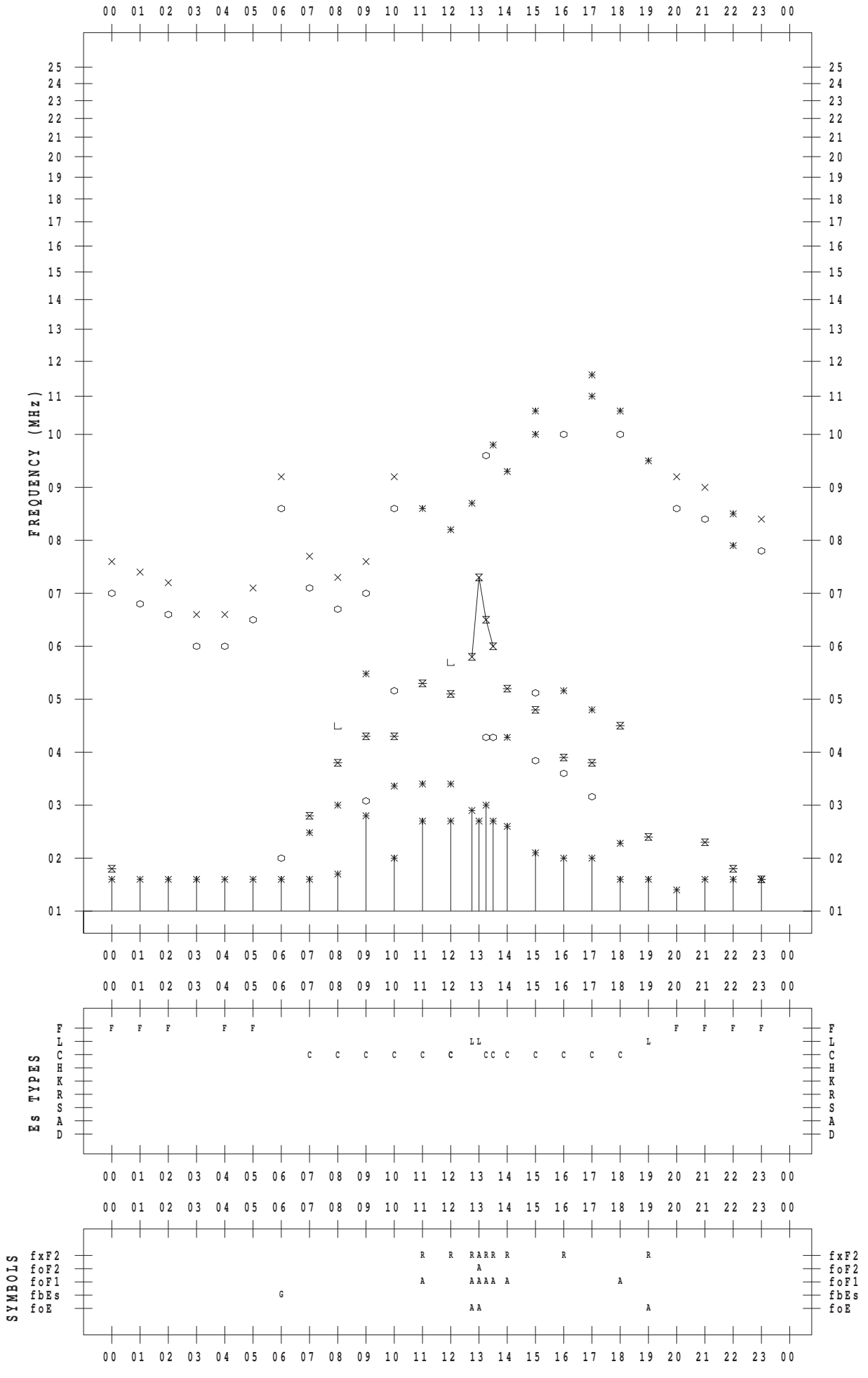
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 5

135 °E MEAN TIME



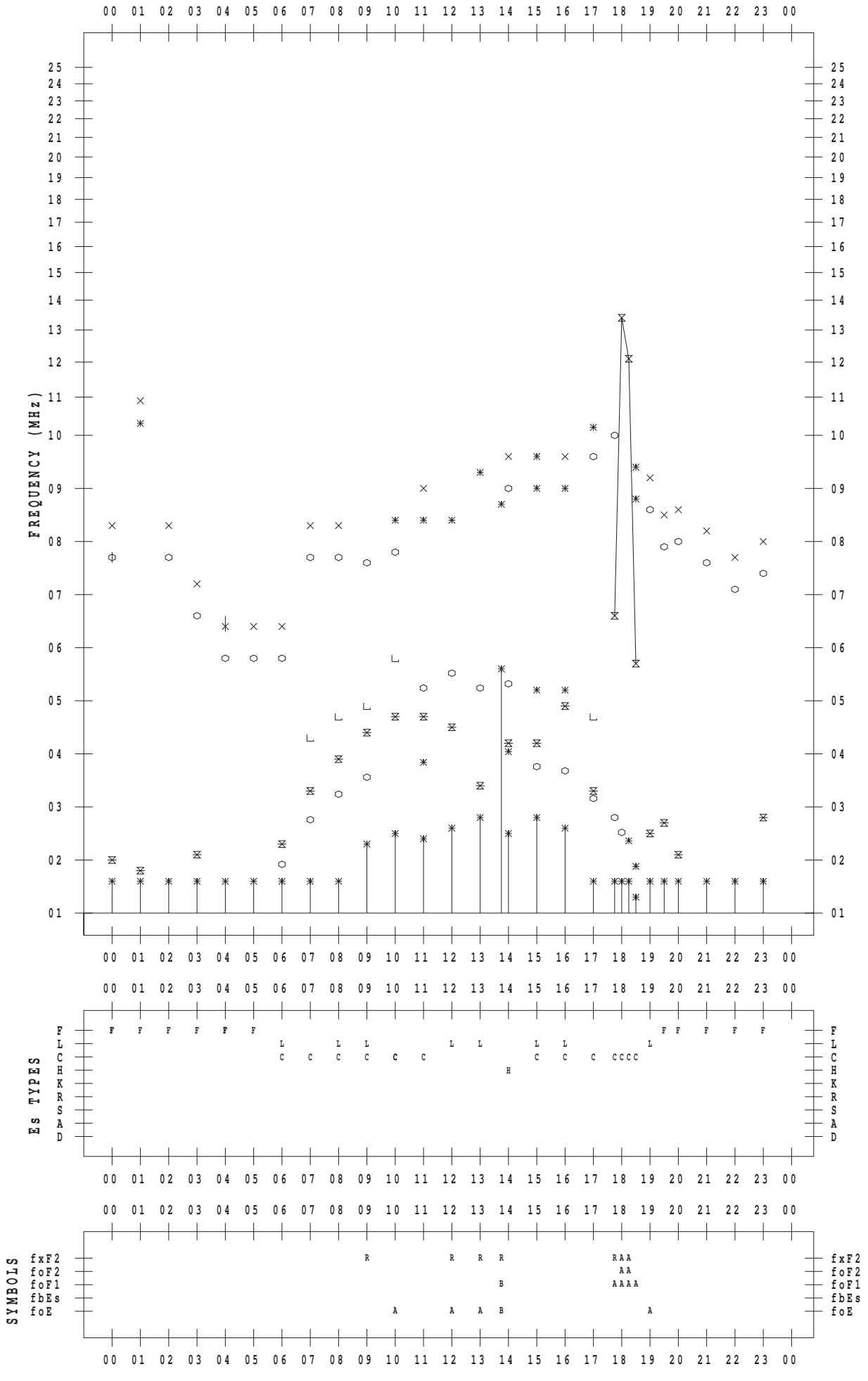
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 6

135 °E MEAN TIME



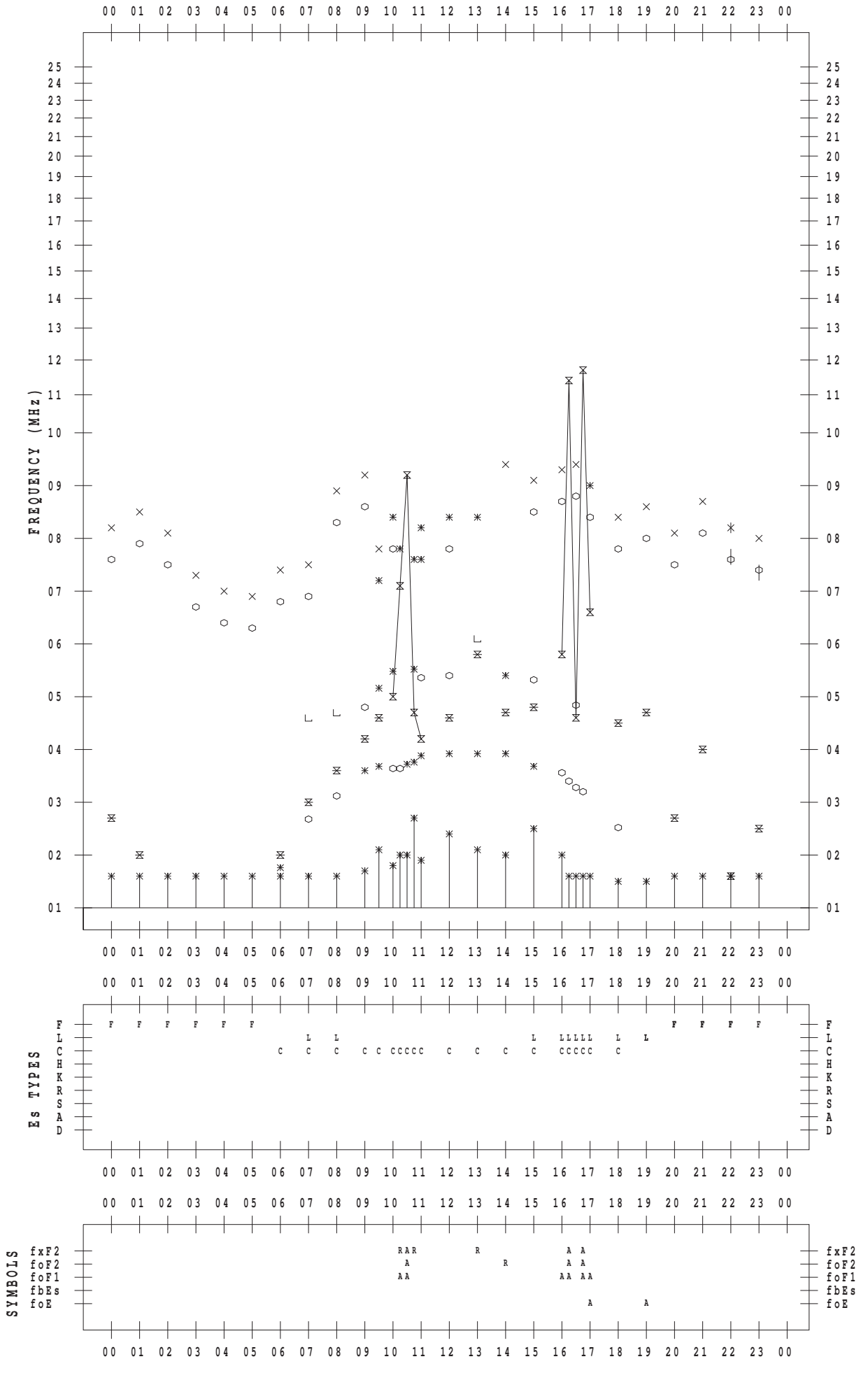
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 7

135 °E MEAN TIME



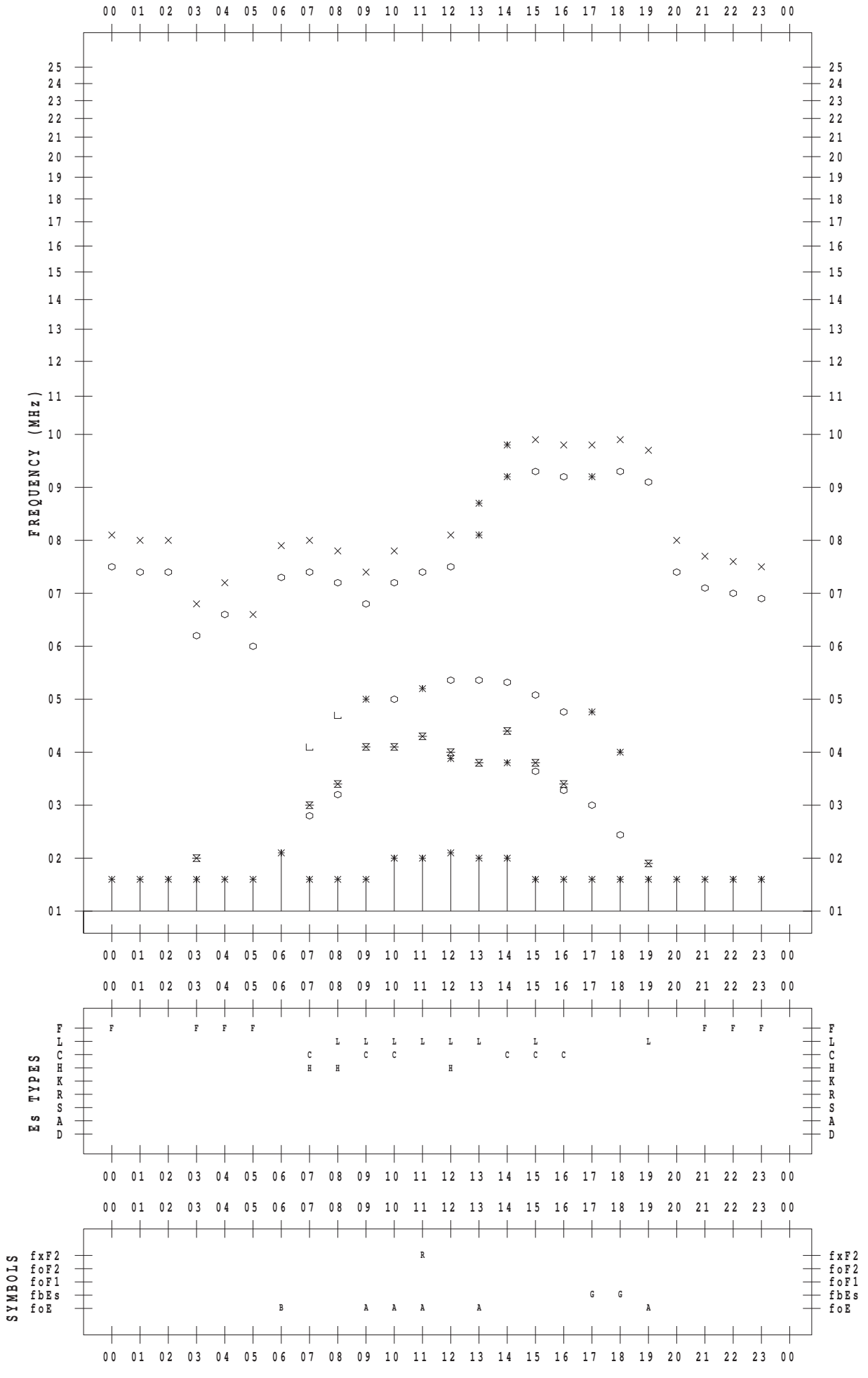
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 8

135 °E MEAN TIME



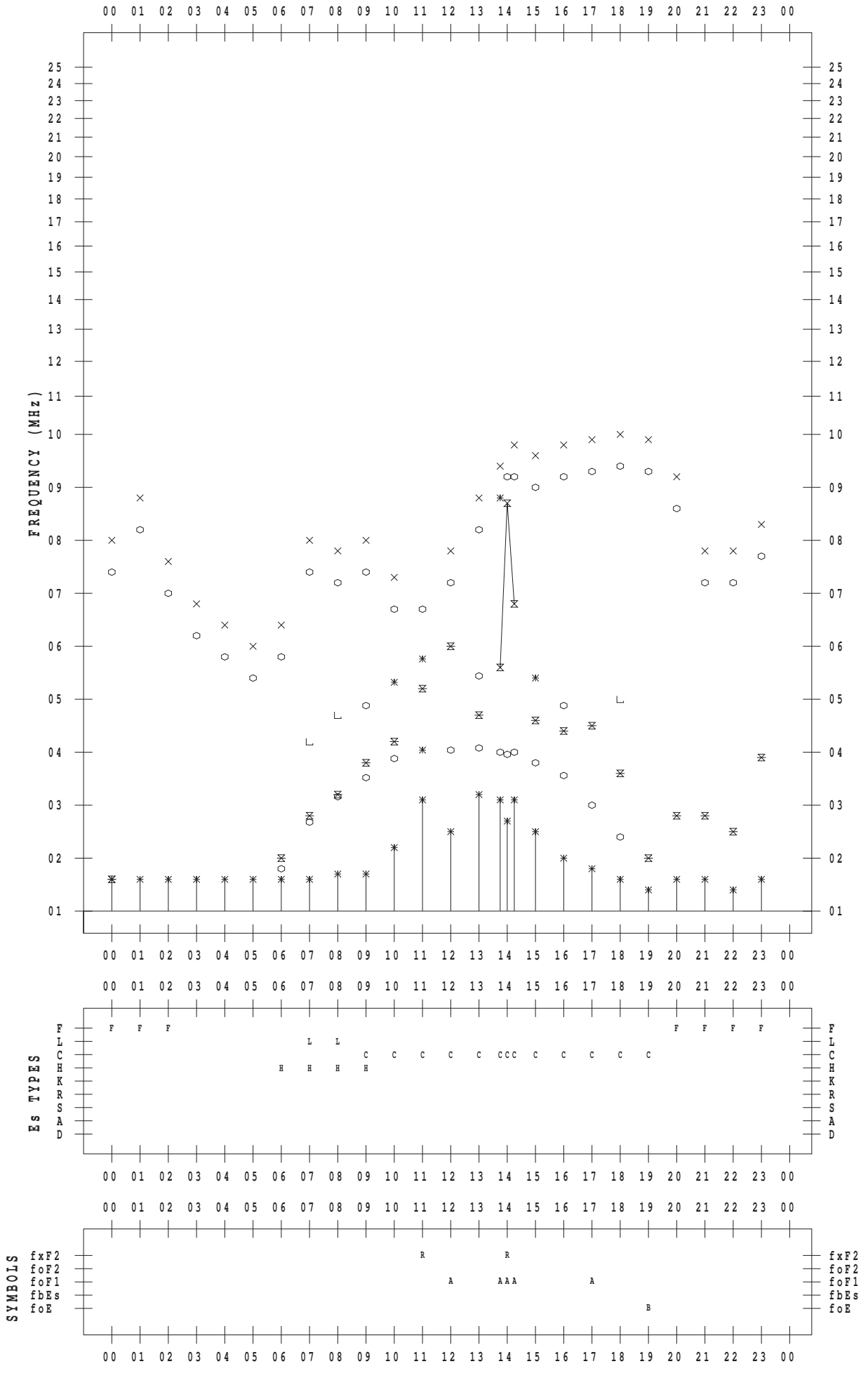
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/ 9

135 °E MEAN TIME



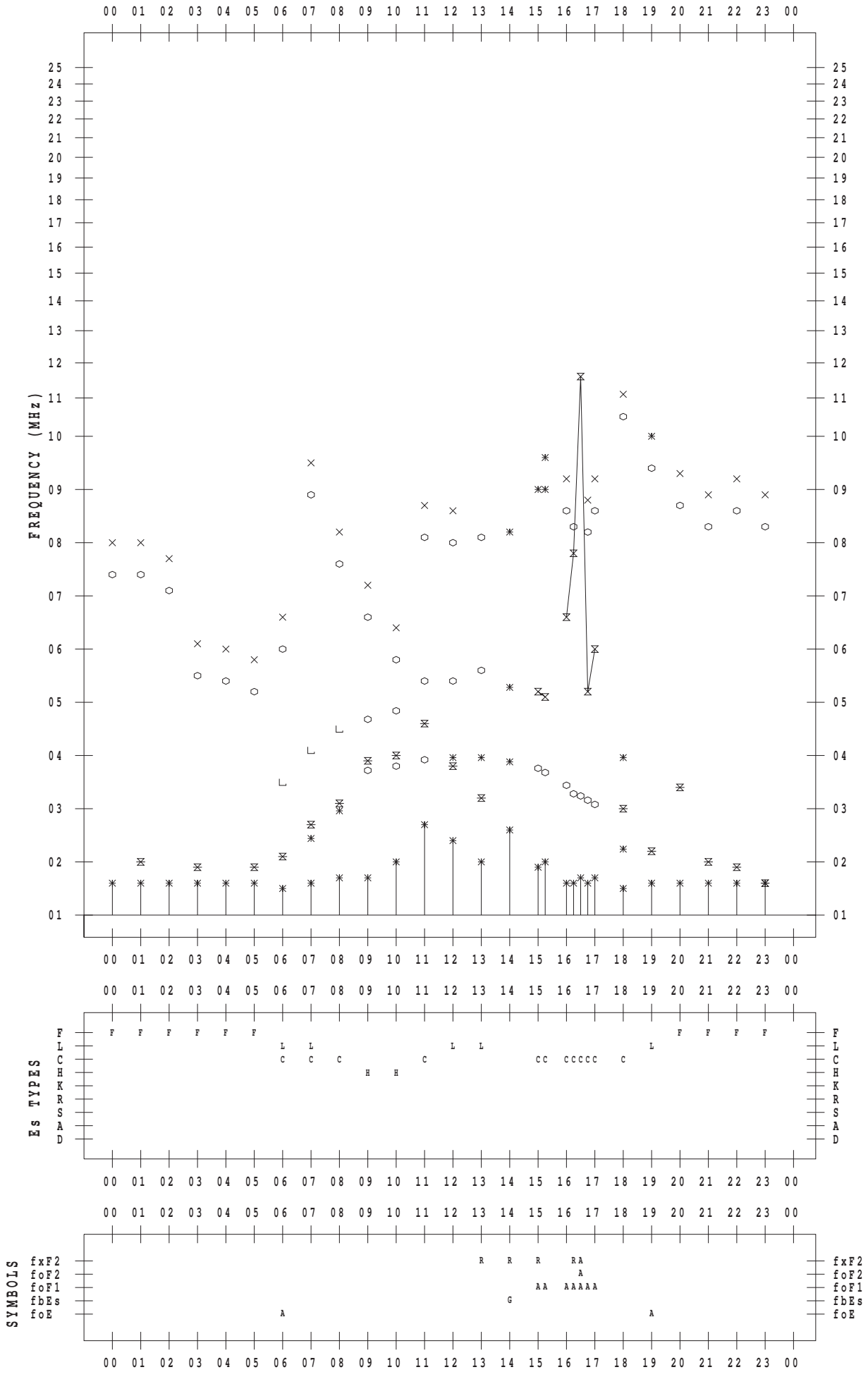
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/10

135 °E MEAN TIME



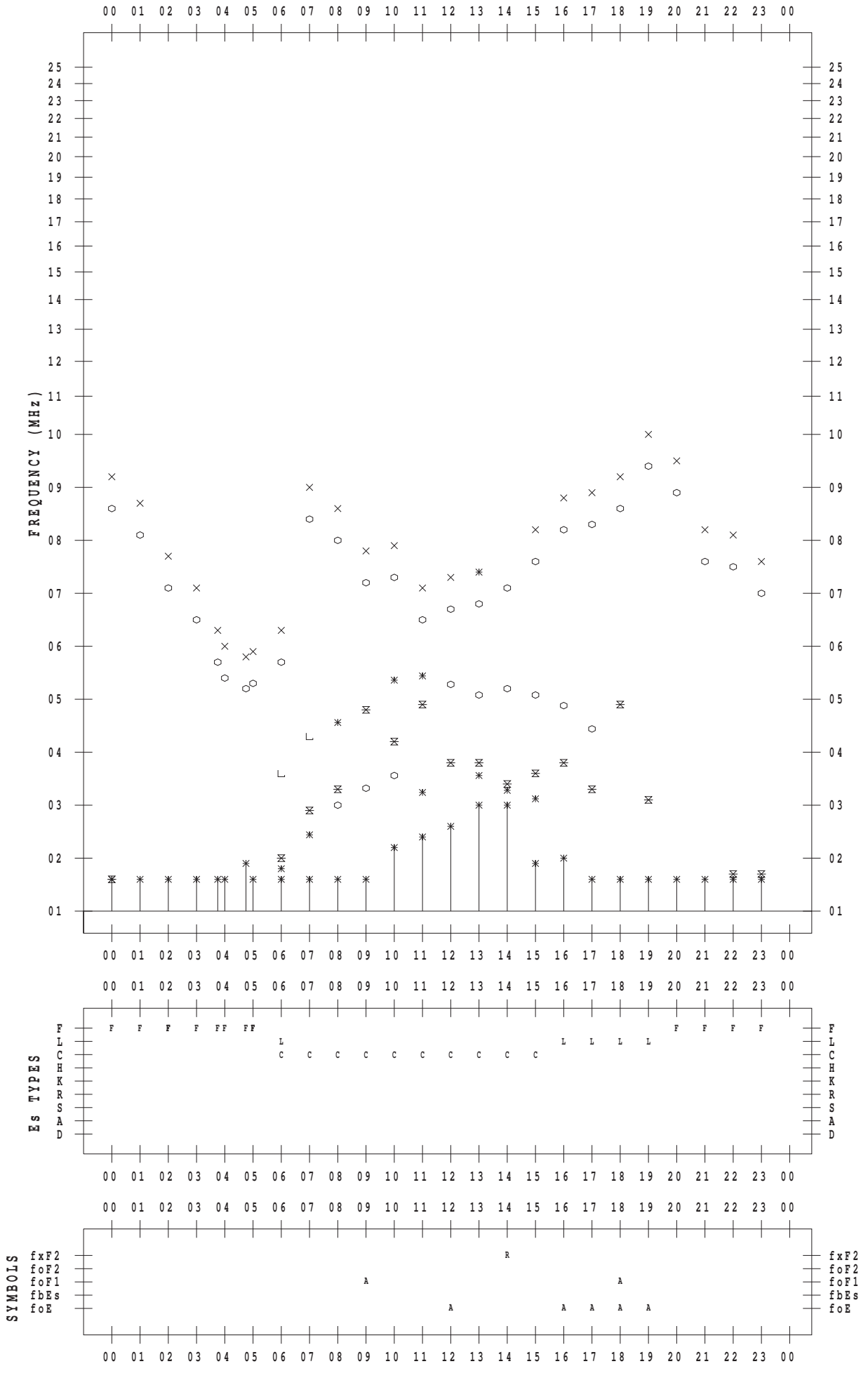
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/11

135 °E MEAN TIME



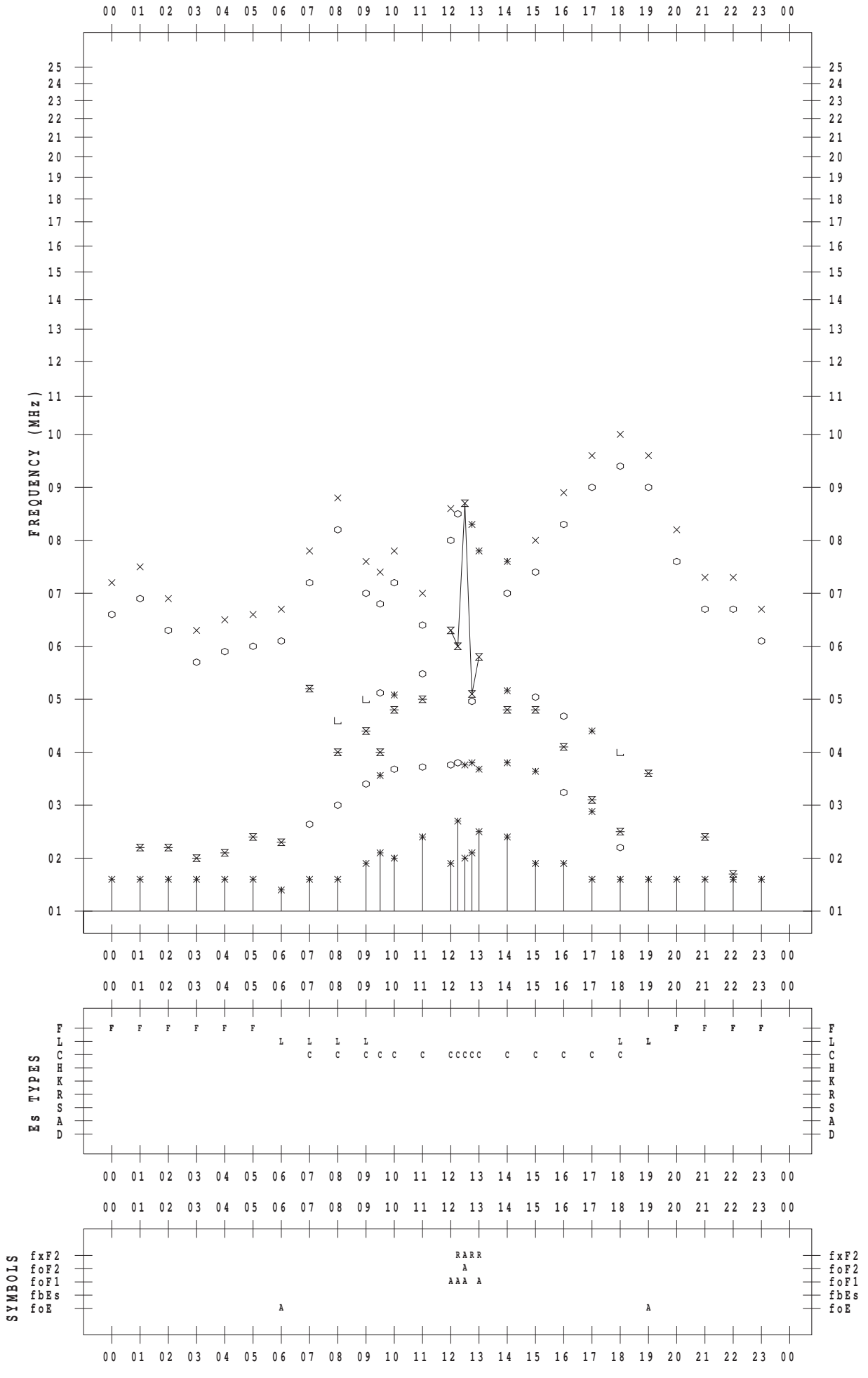
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/12

135 °E MEAN TIME



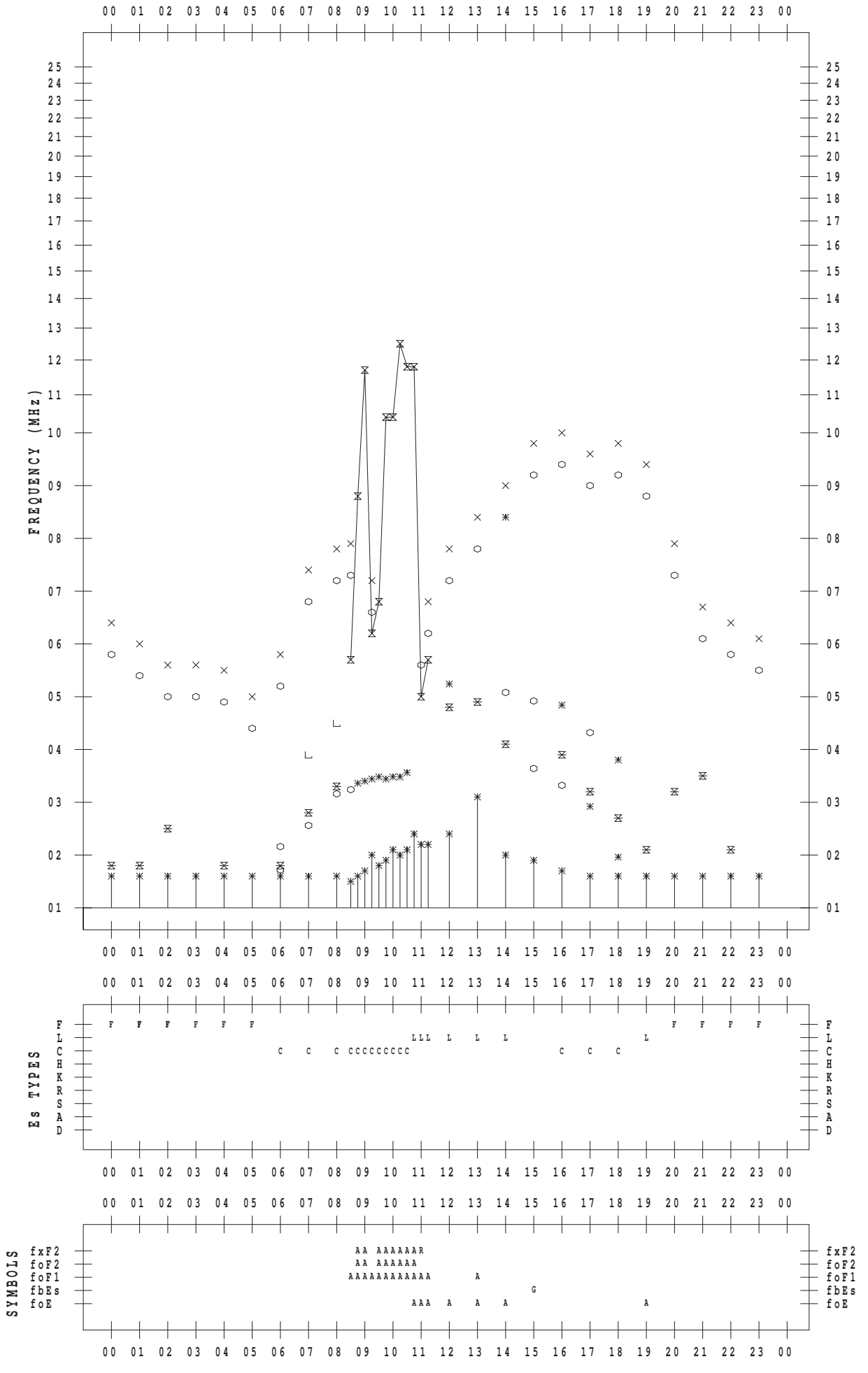
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/13

135 °E MEAN TIME



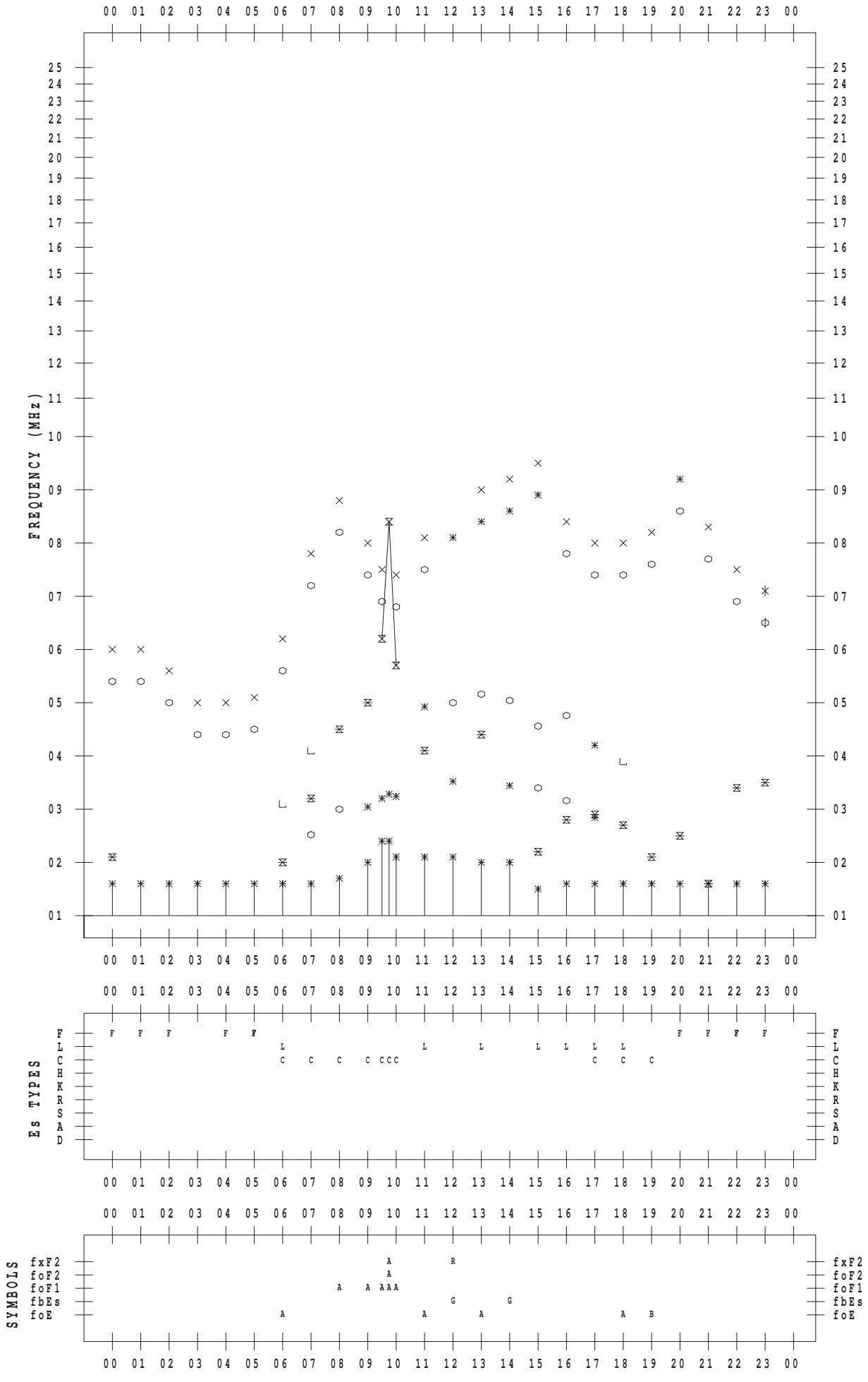
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/14

135 °E MEAN TIME



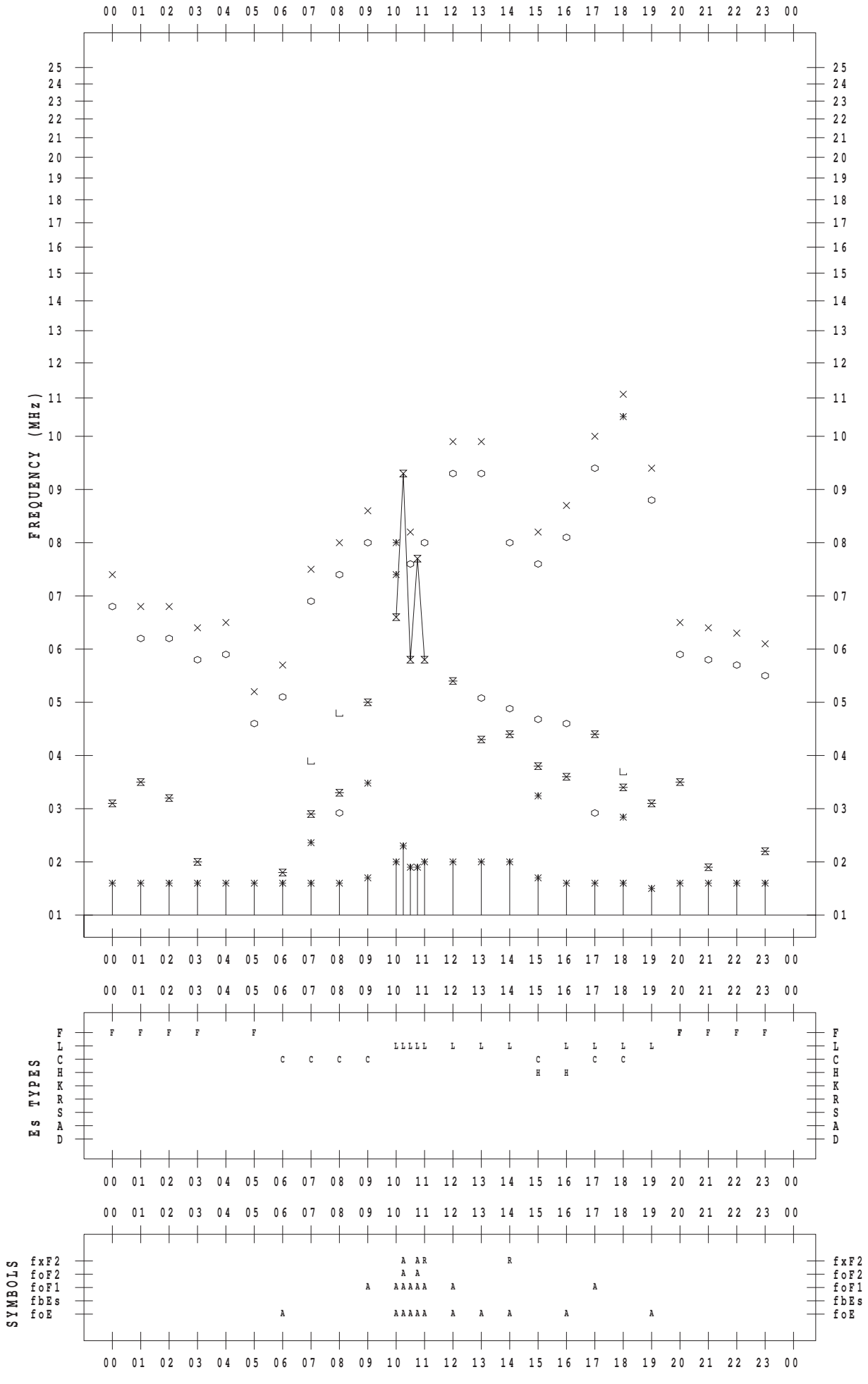
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/15

135 °E MEAN TIME



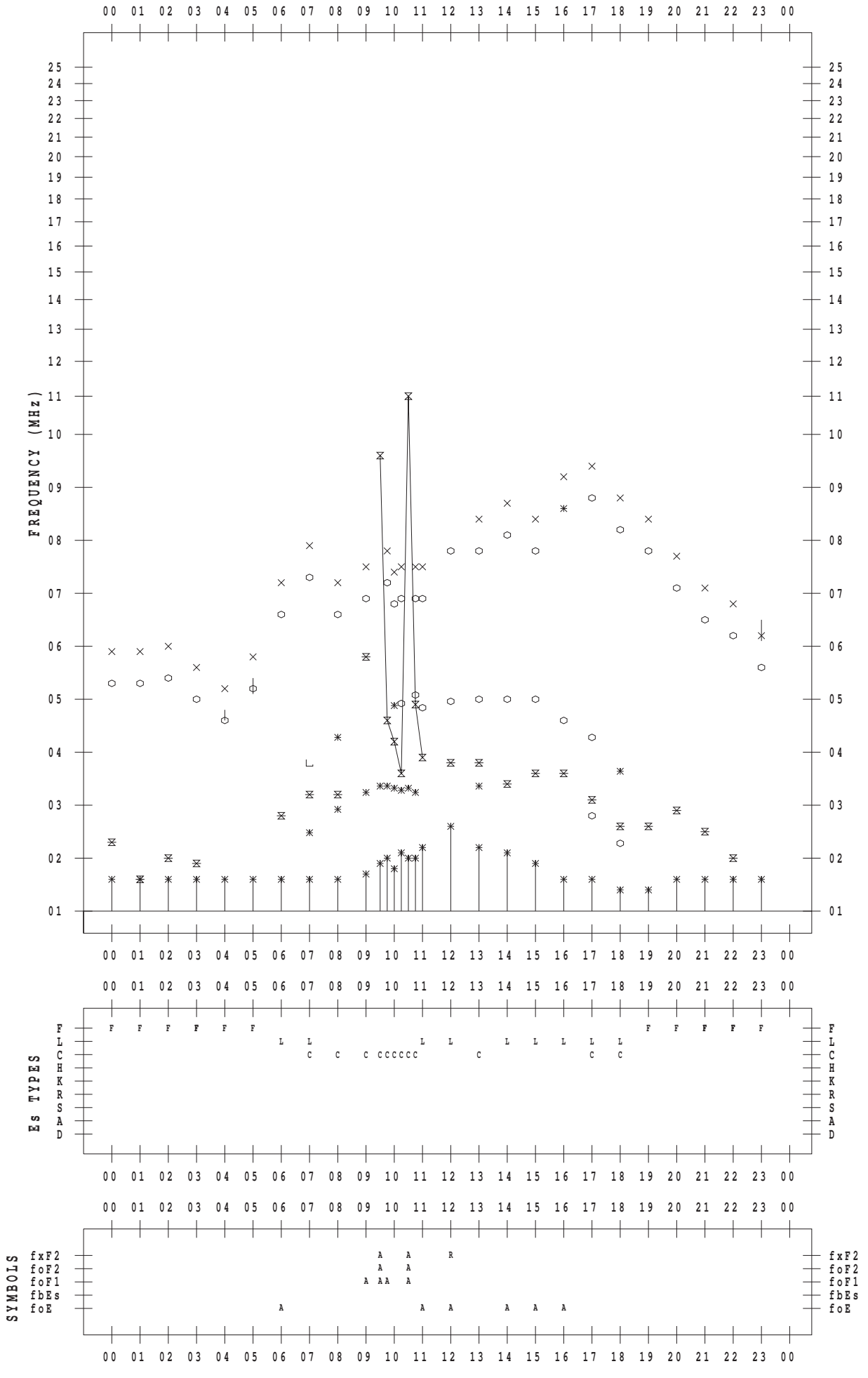
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/16

135 °E MEAN TIME



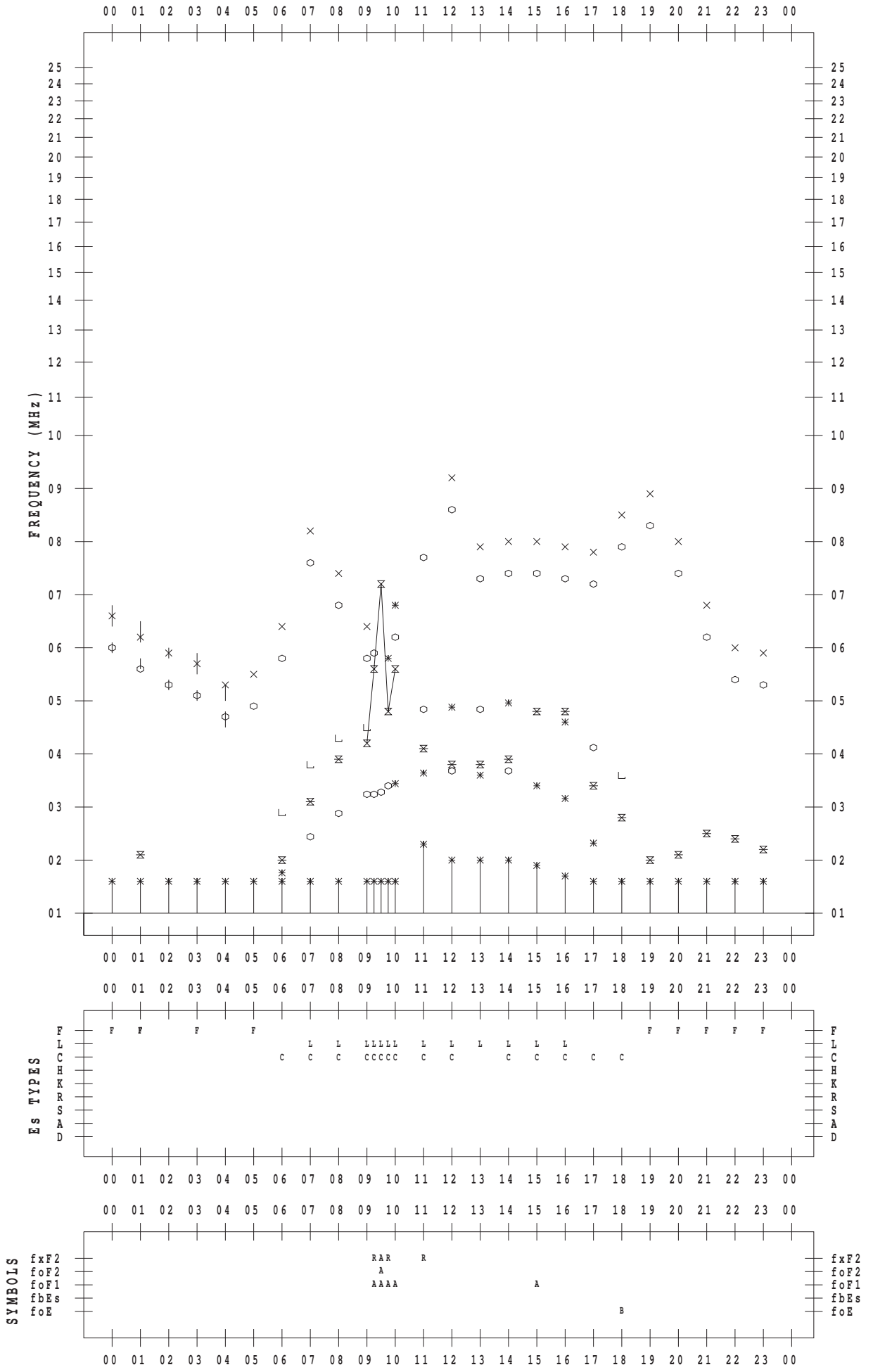
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/17

135 °E MEAN TIME



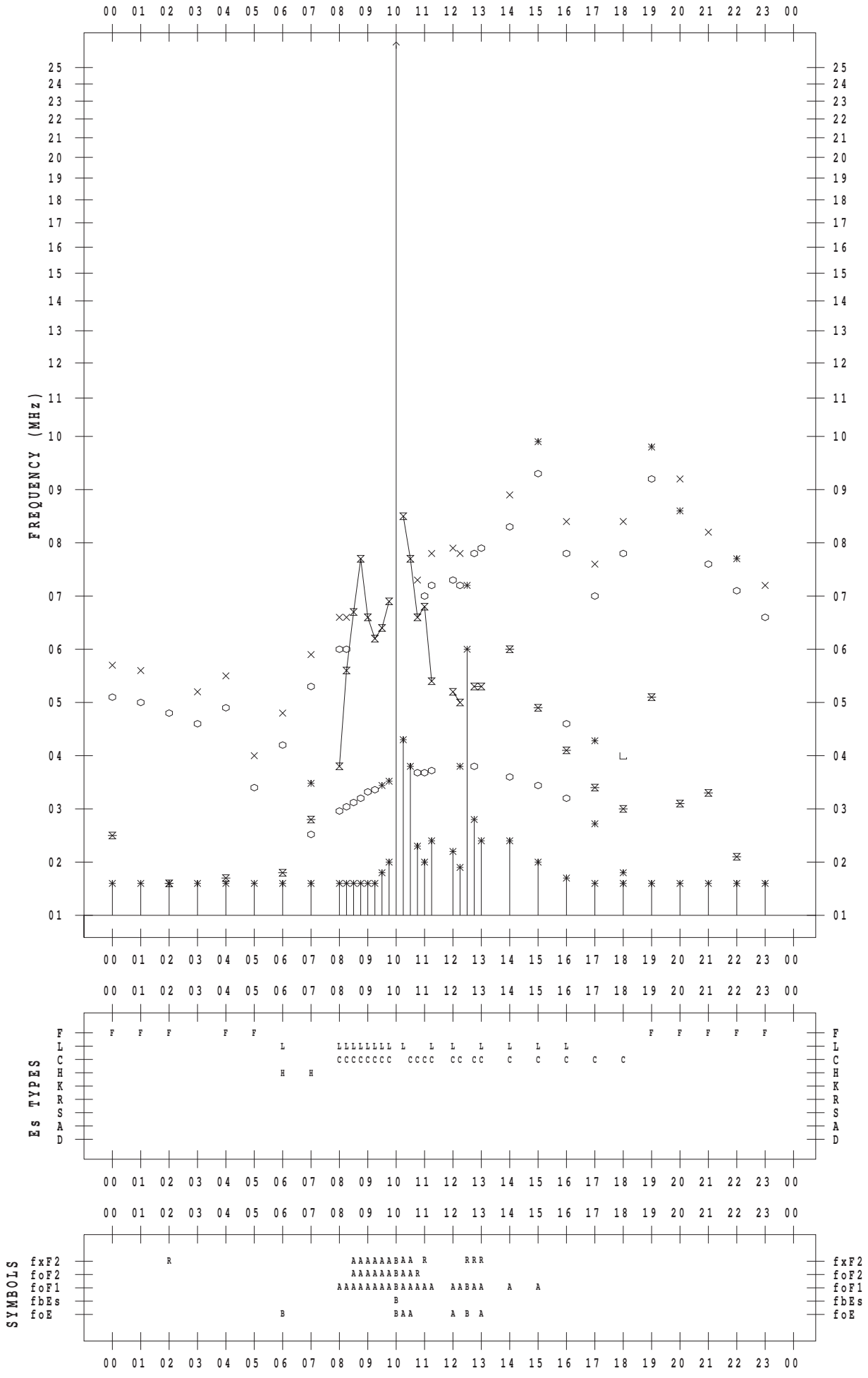
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/18

135 °E MEAN TIME



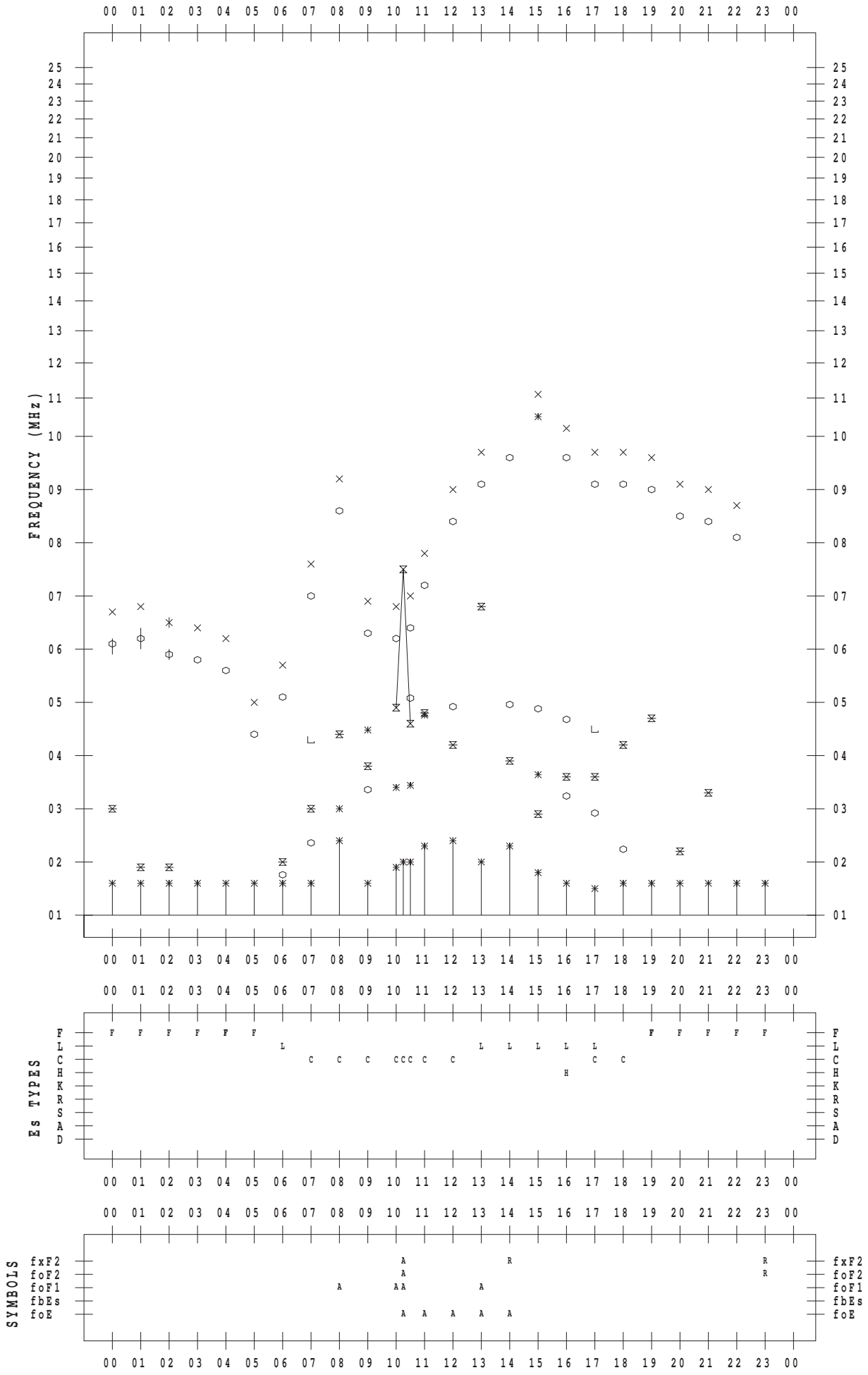
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/19

135 °E MEAN TIME



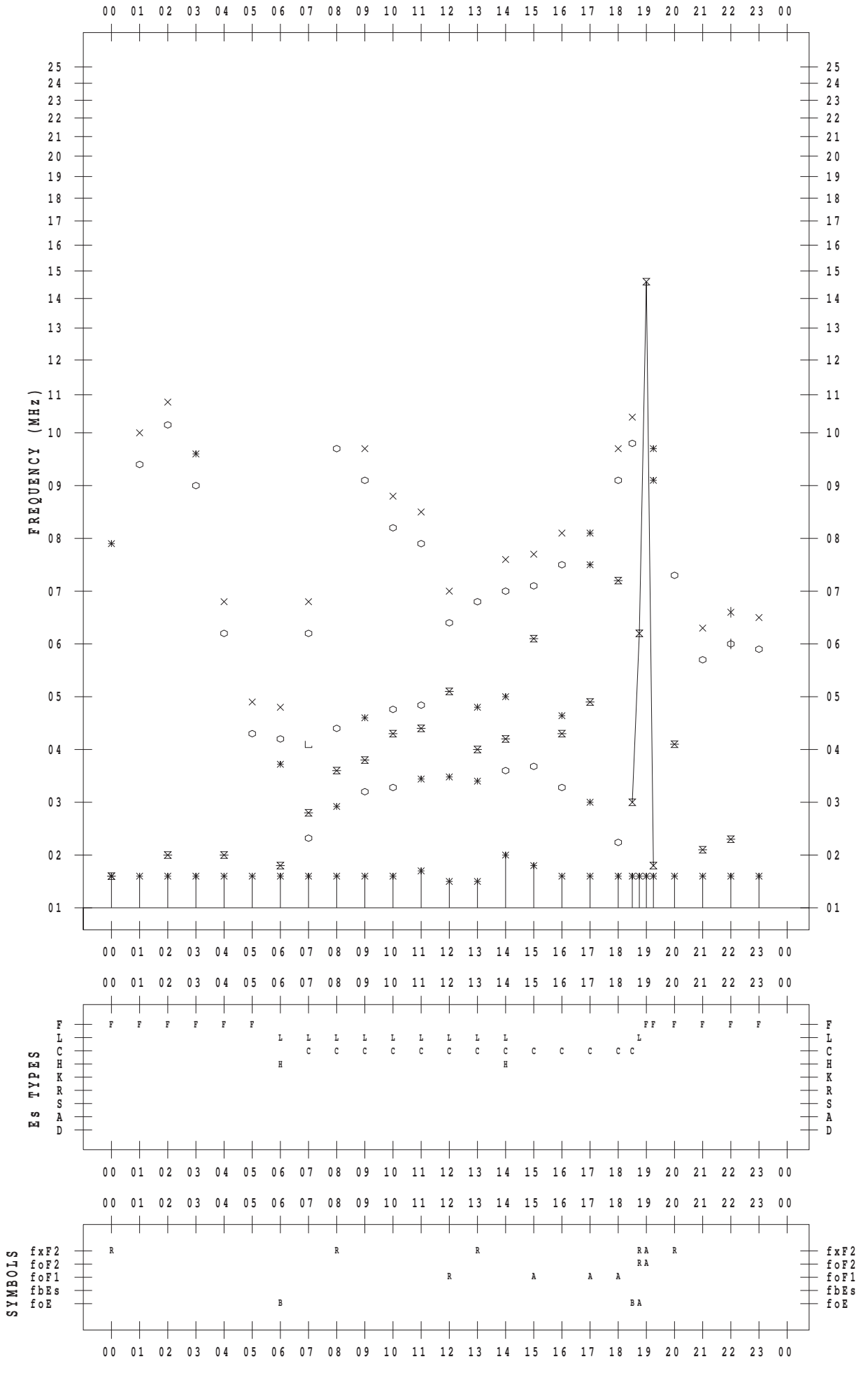
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/20

135 °E MEAN TIME



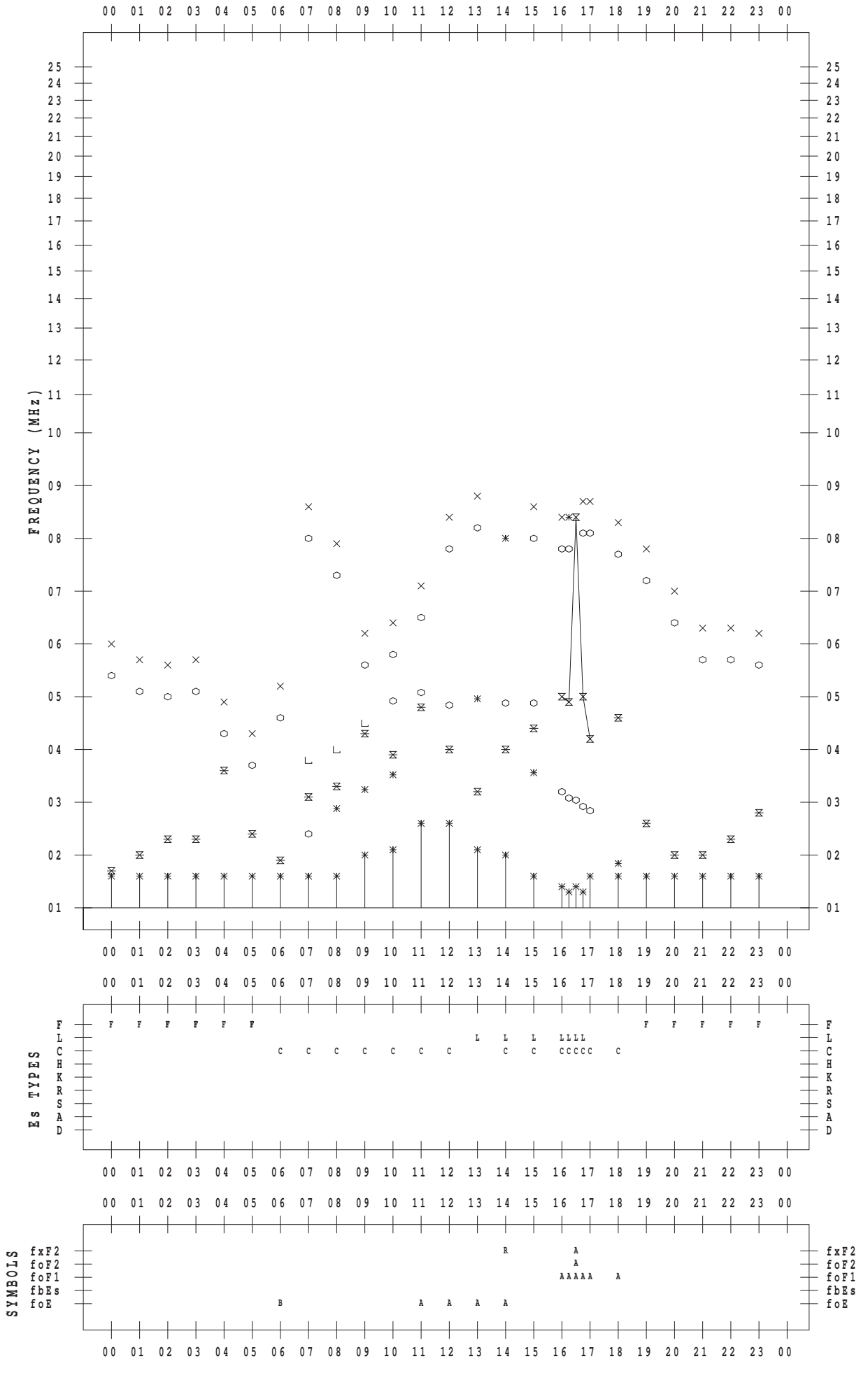
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/21

135 °E MEAN TIME



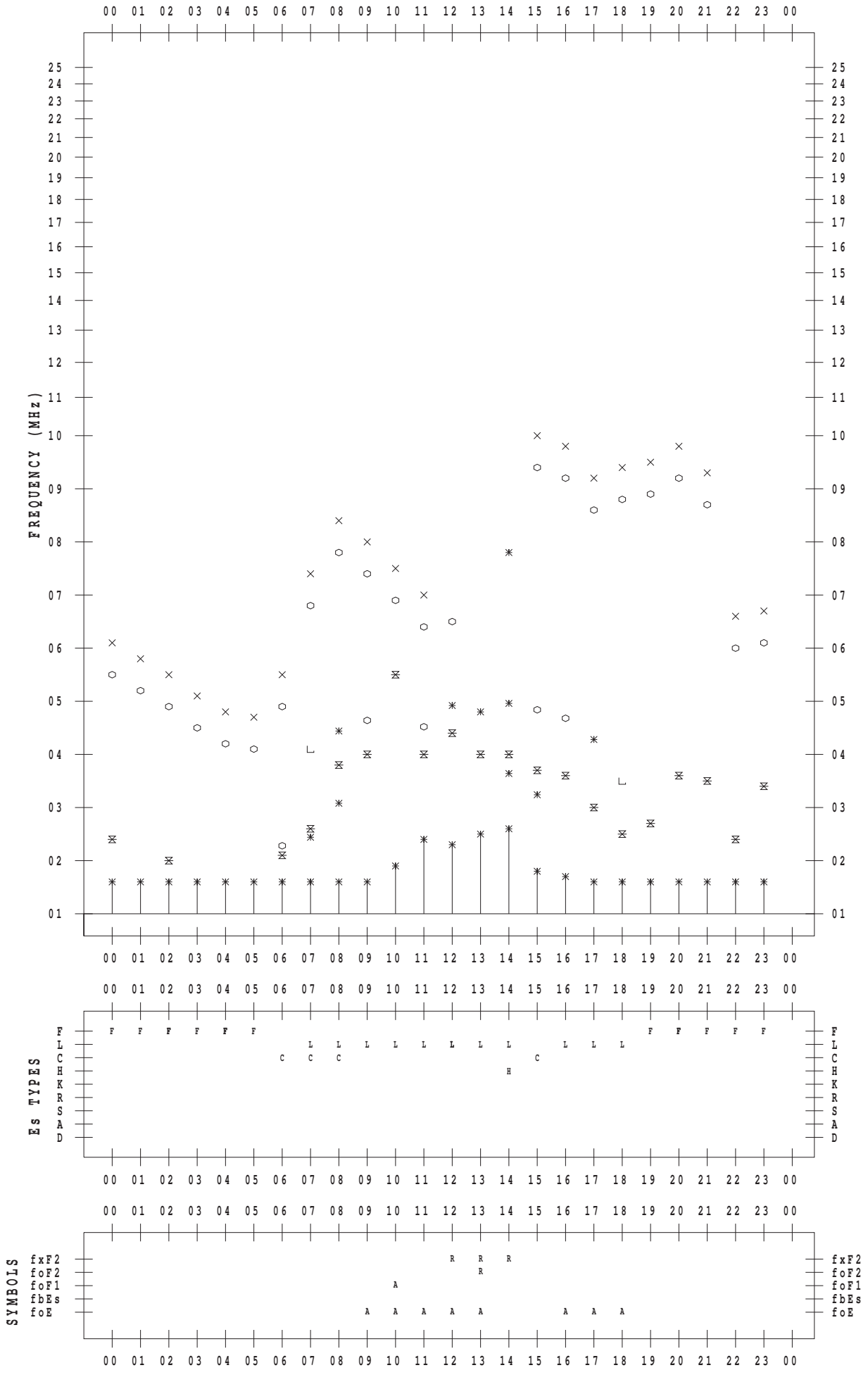
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/22

135 °E MEAN TIME



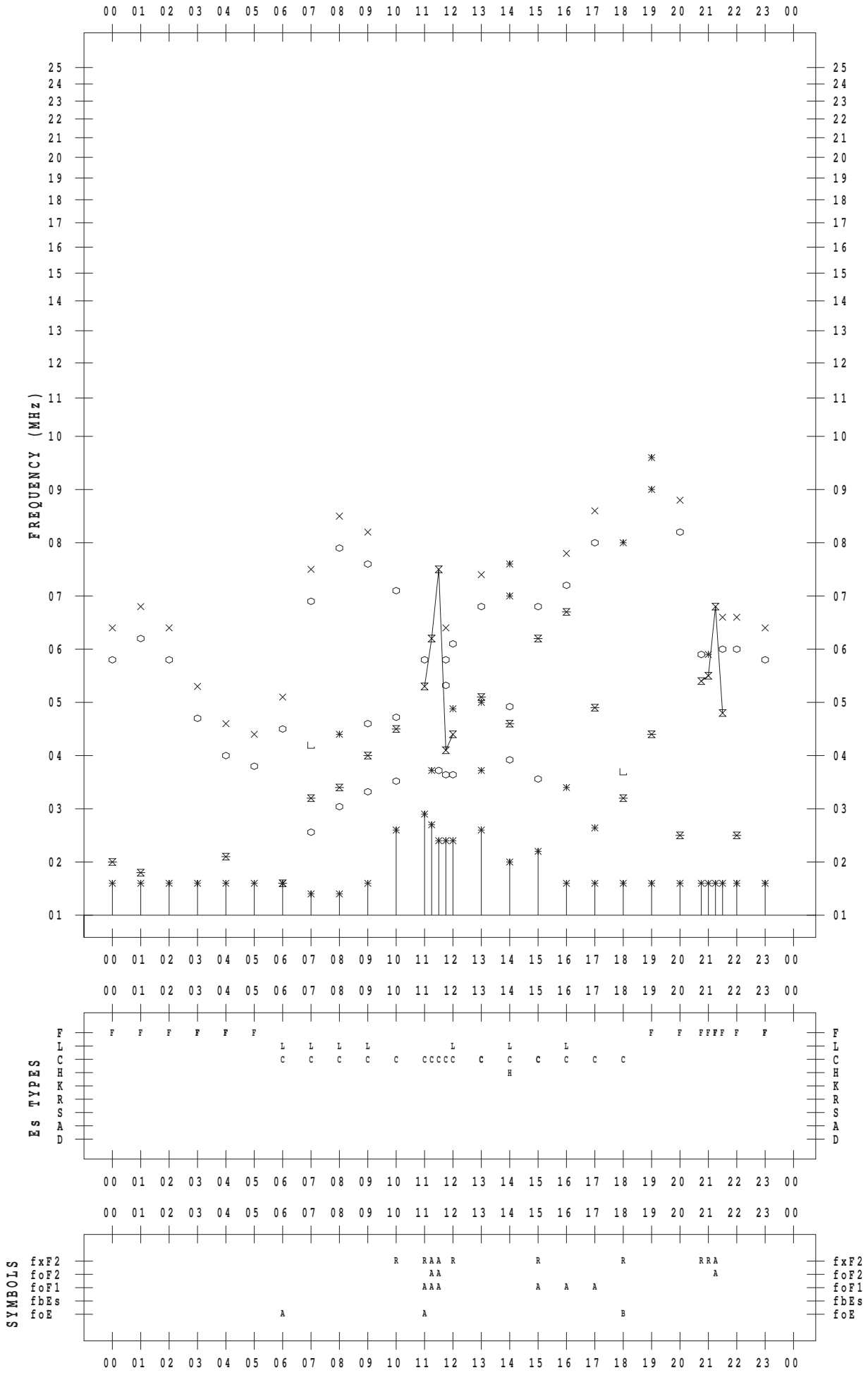
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/23

135 °E MEAN TIME



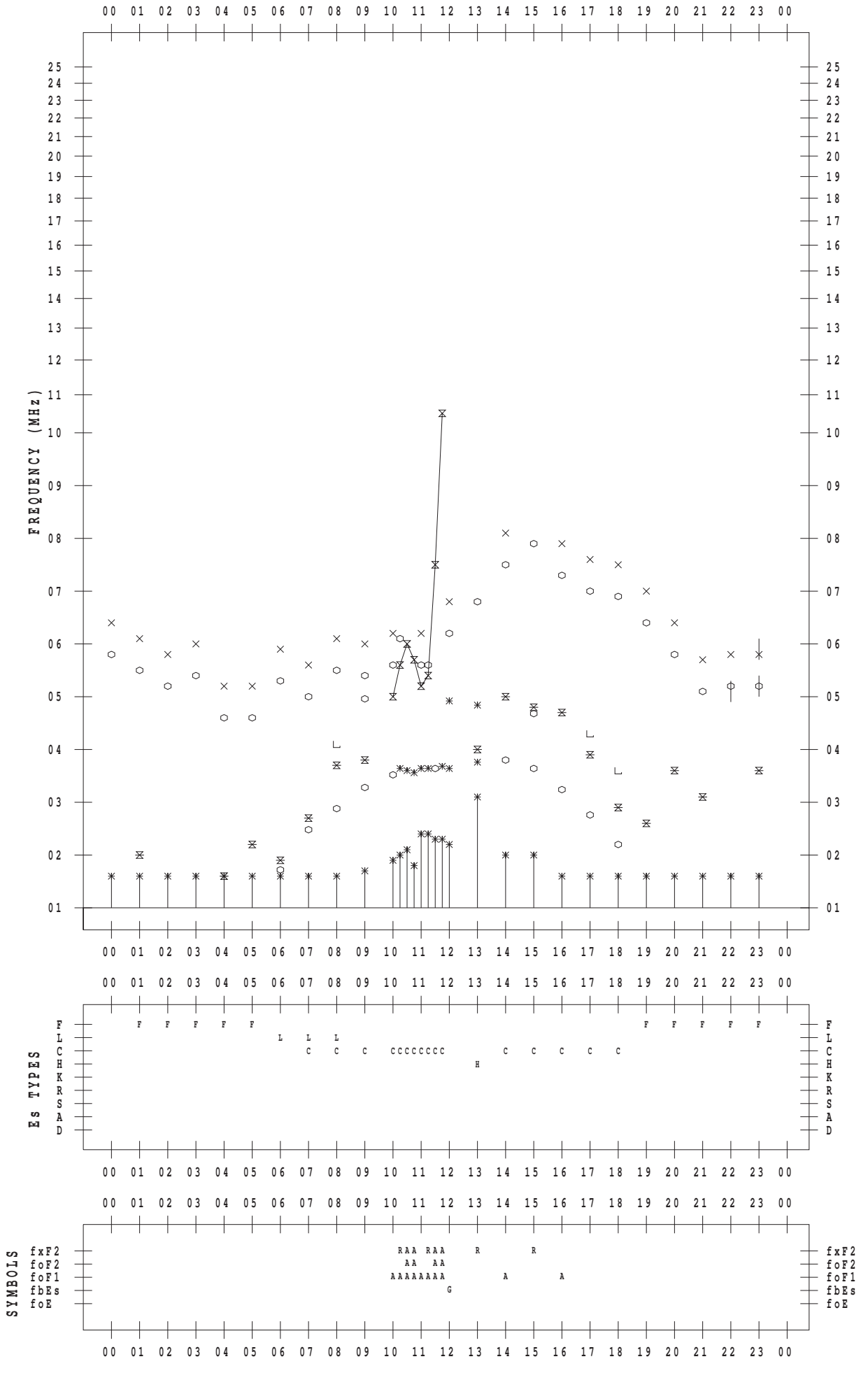
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/24

135 °E MEAN TIME



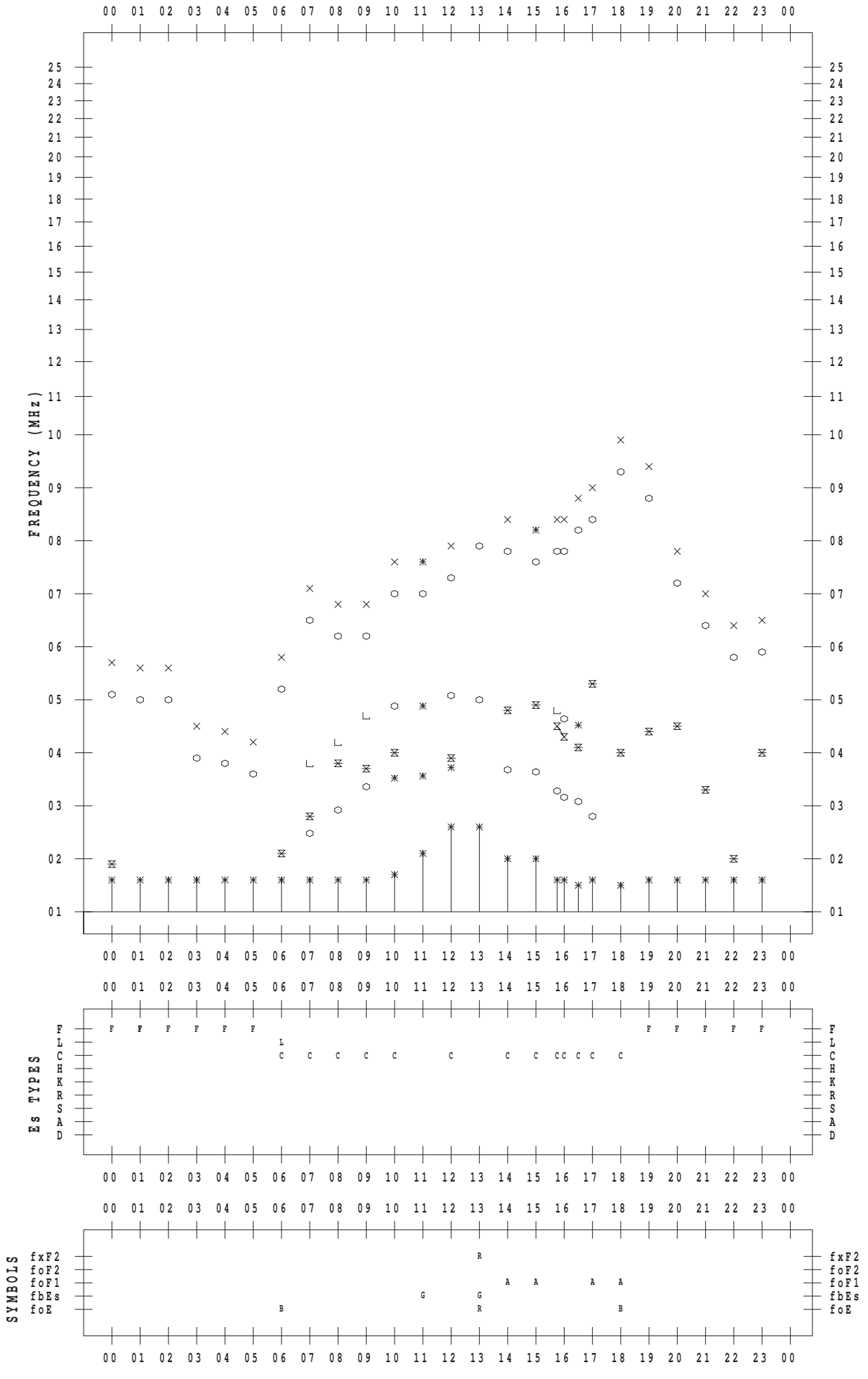
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/25

135 °E MEAN TIME



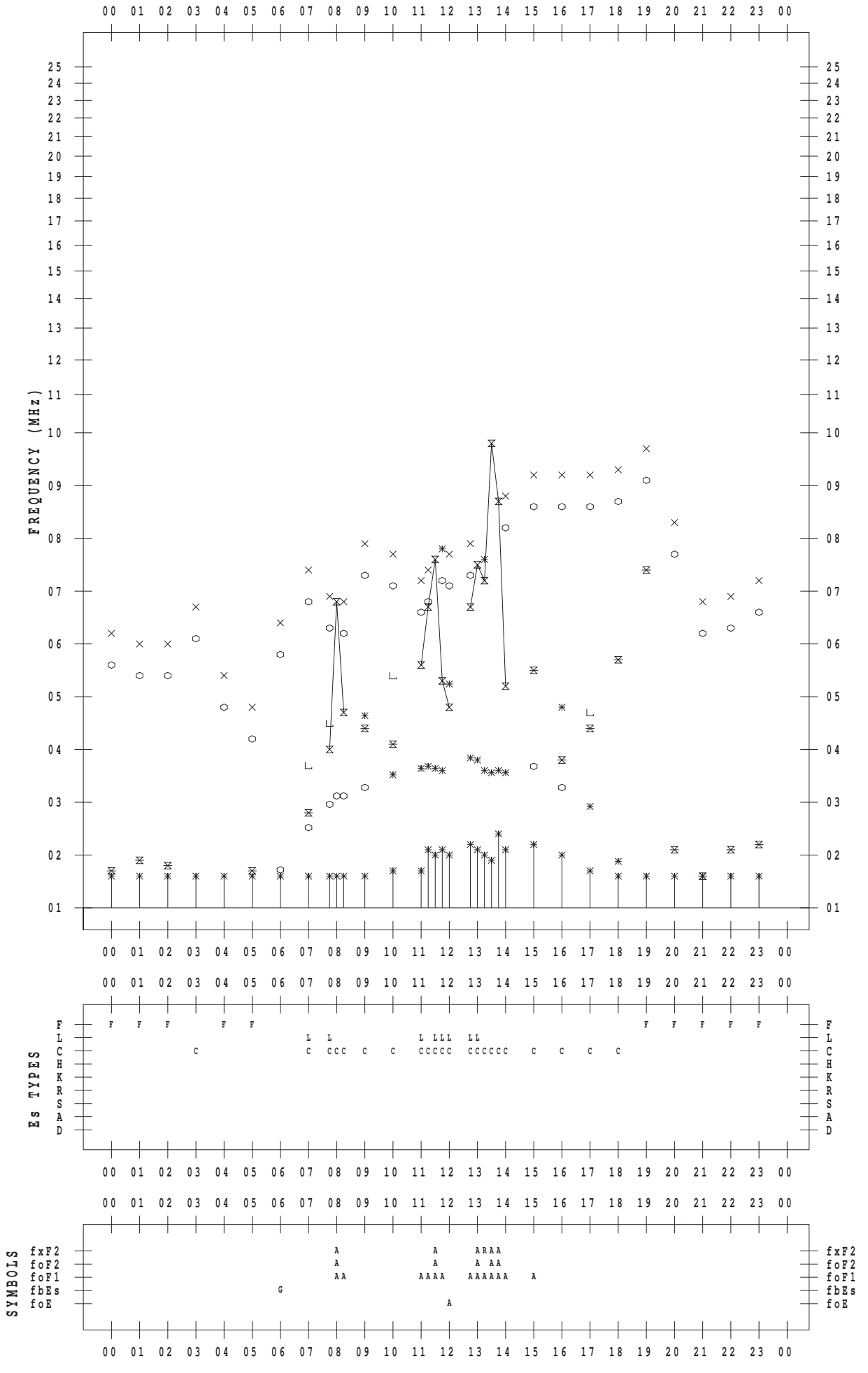
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/26

135 °E MEAN TIME



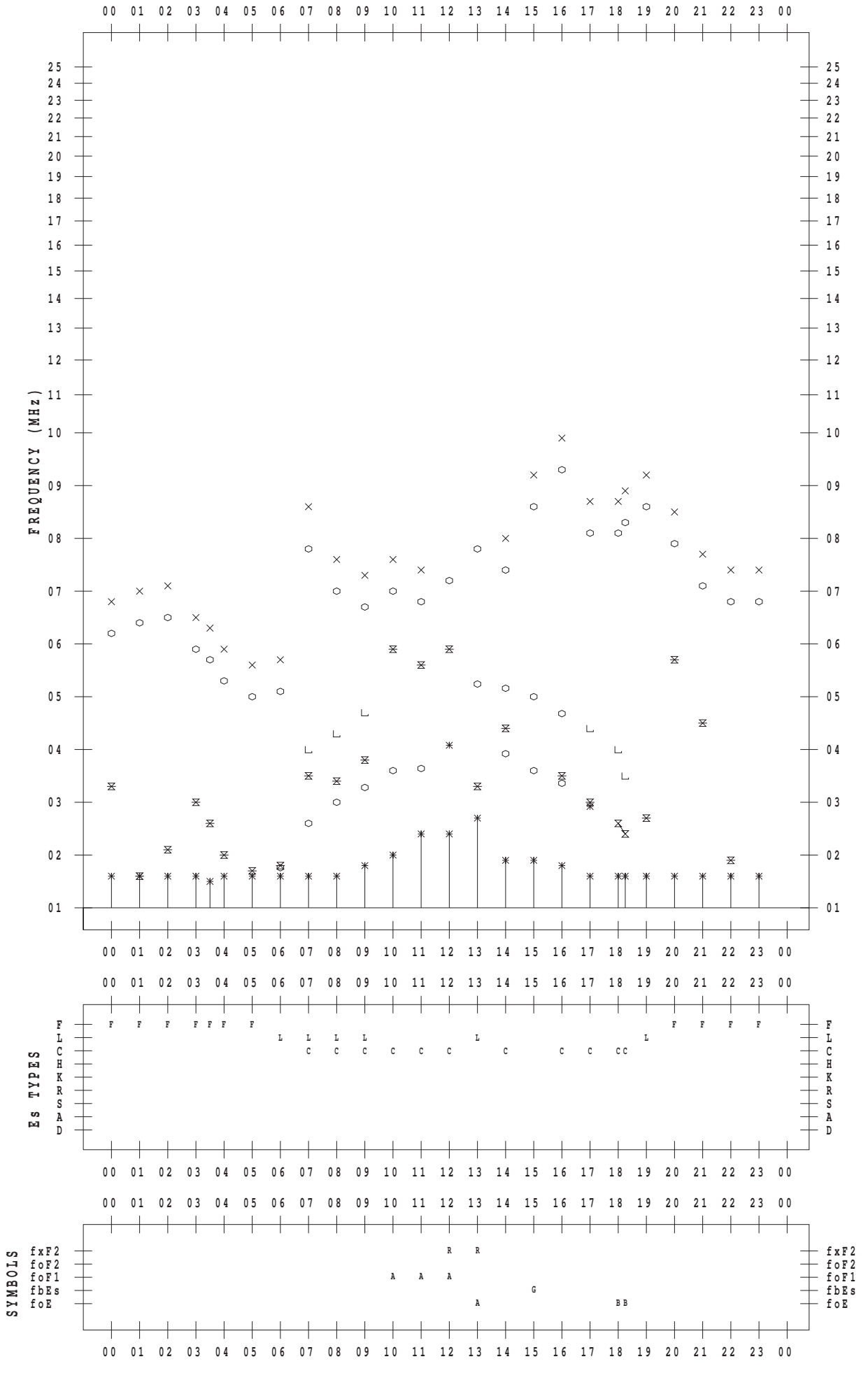
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/27

135 °E MEAN TIME



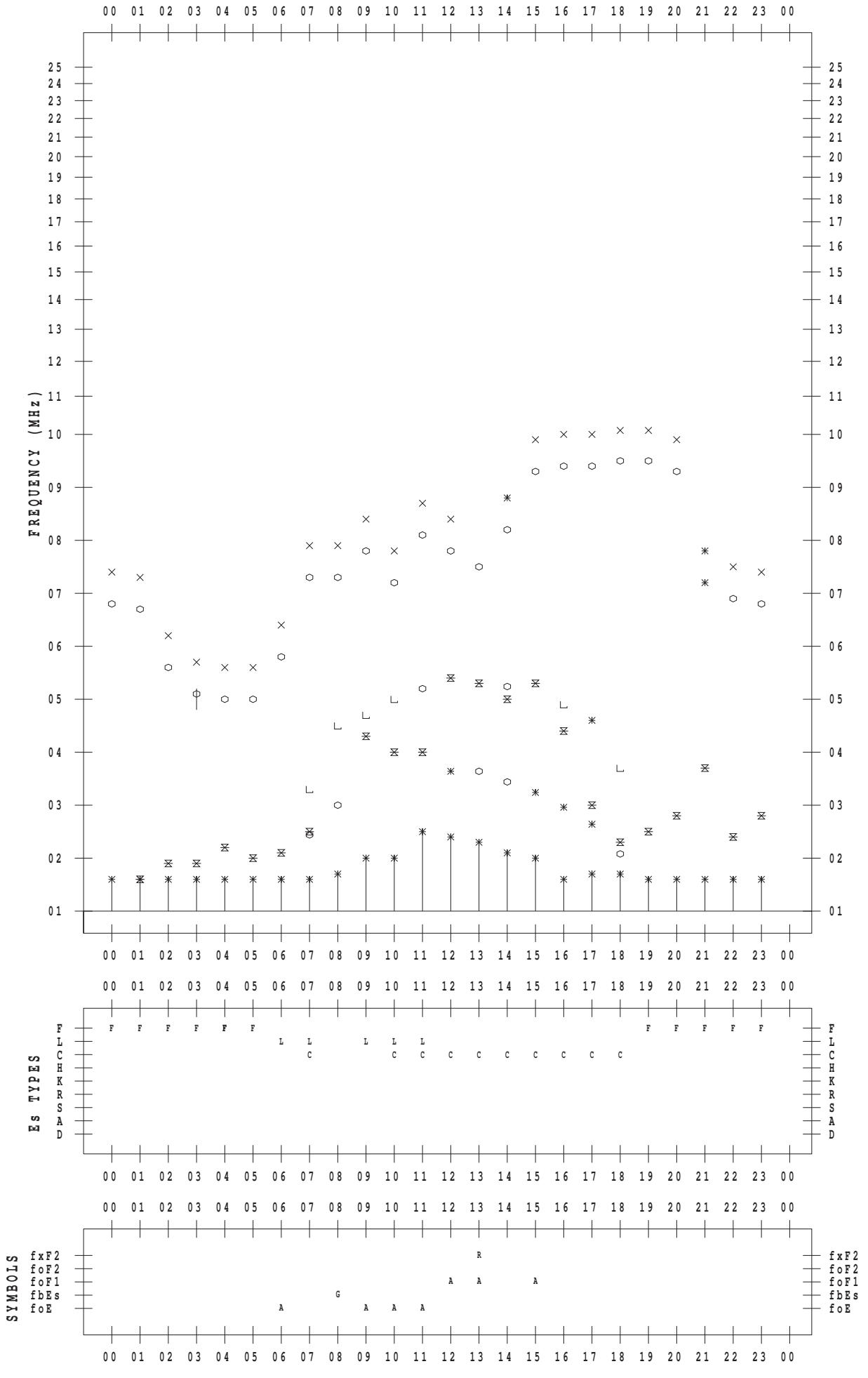
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/28

135 °E MEAN TIME



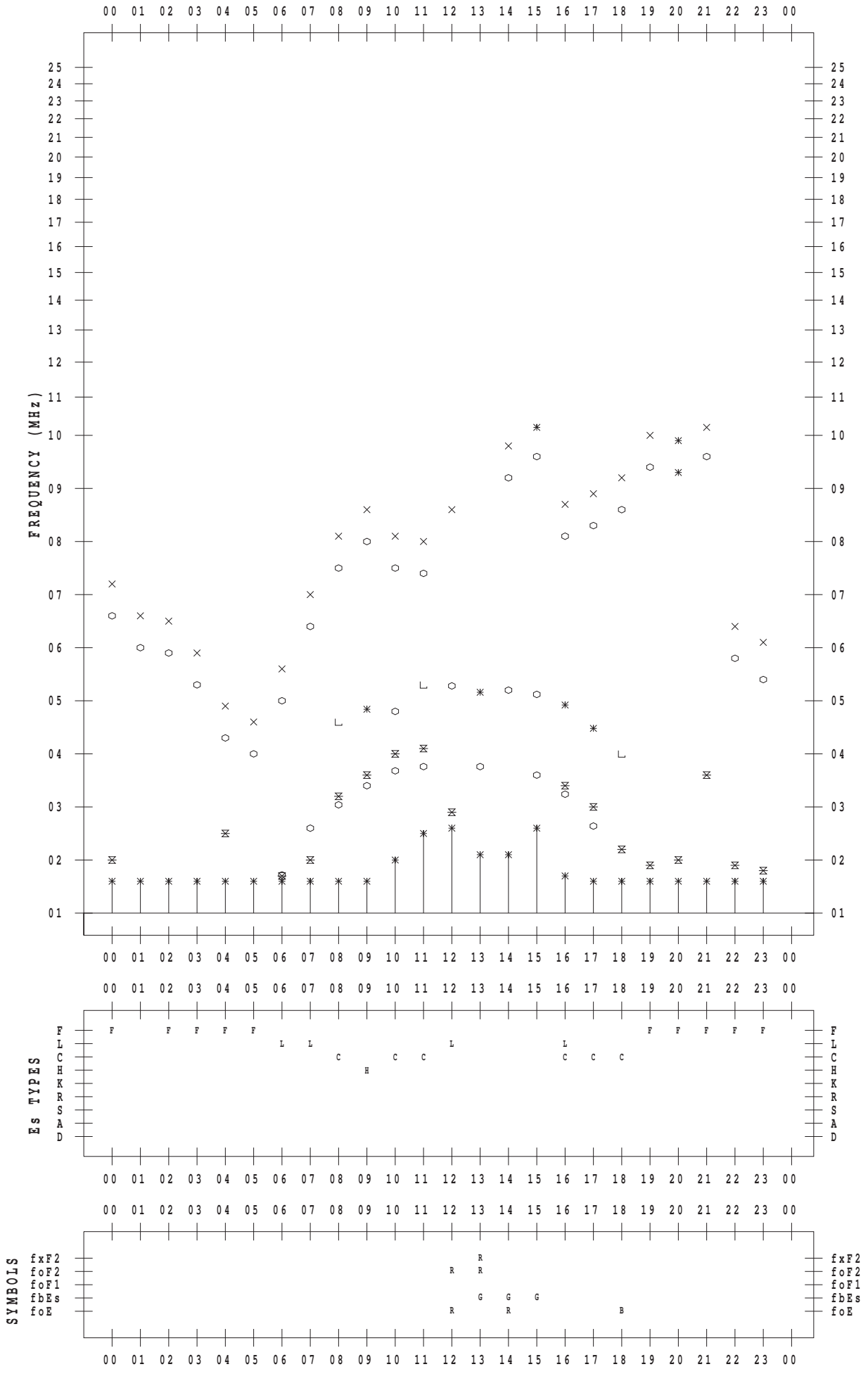
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/29

135 °E MEAN TIME



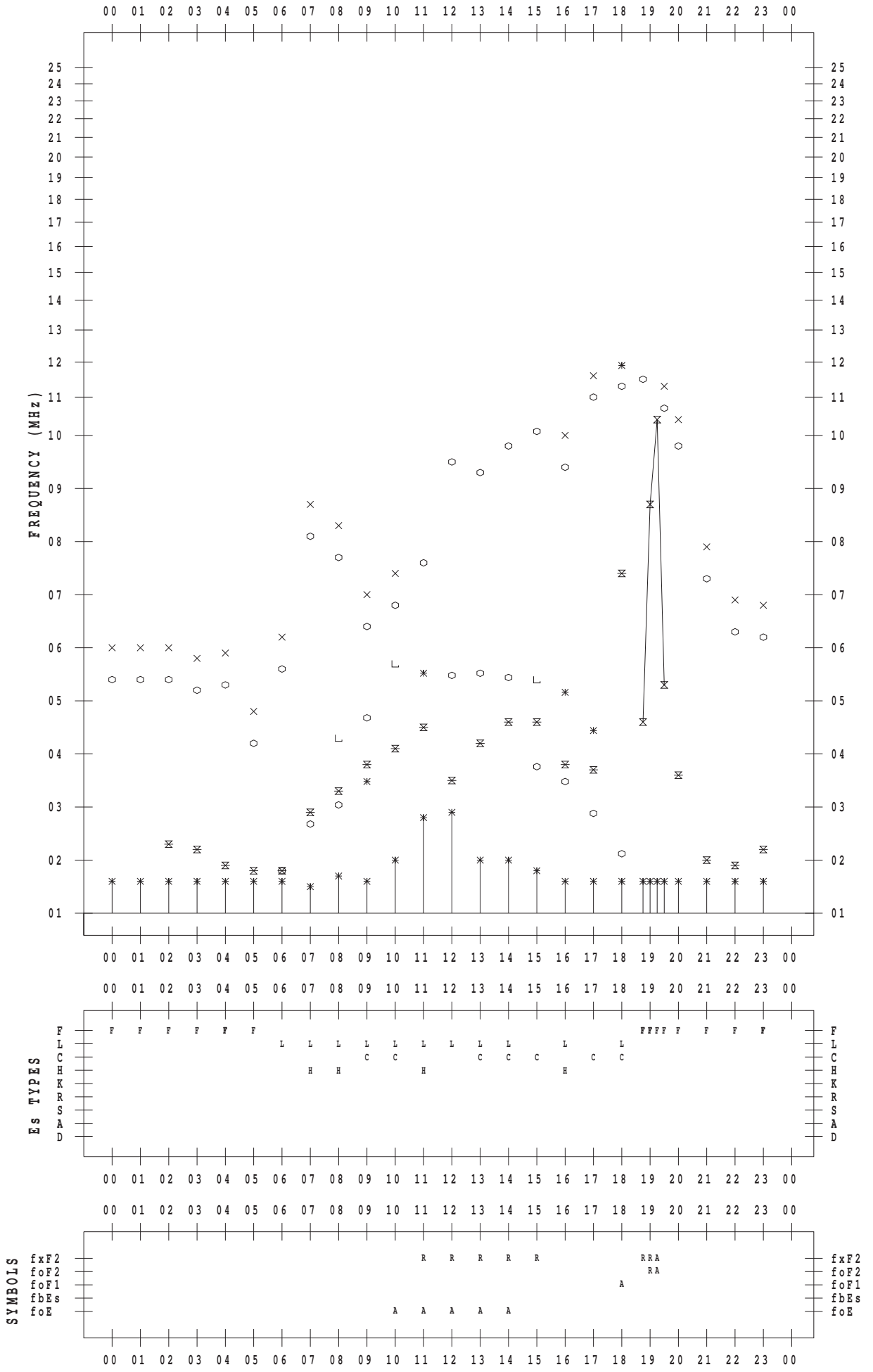
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/30

135 °E MEAN TIME



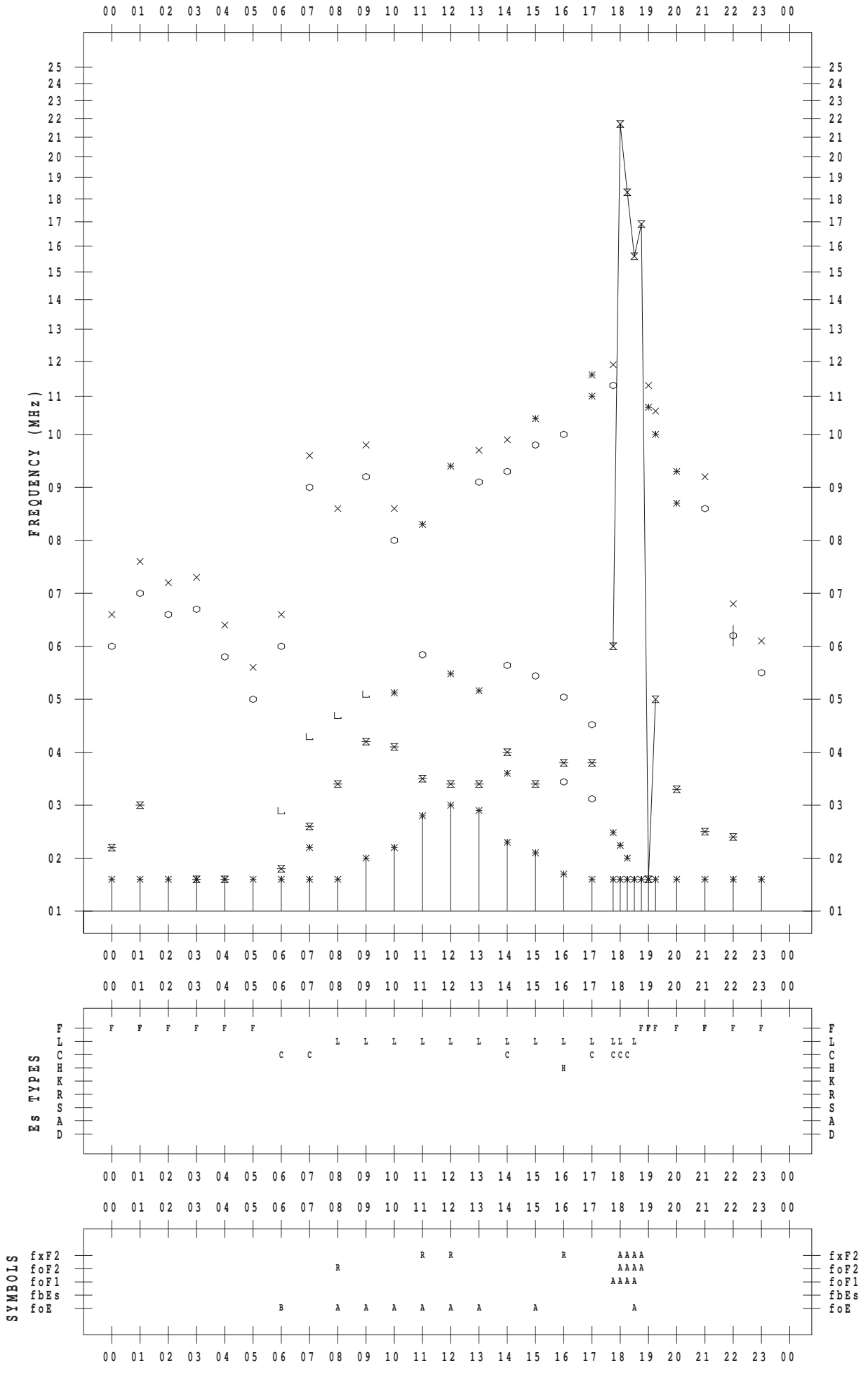
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2012/ 8/31

135 °E MEAN TIME



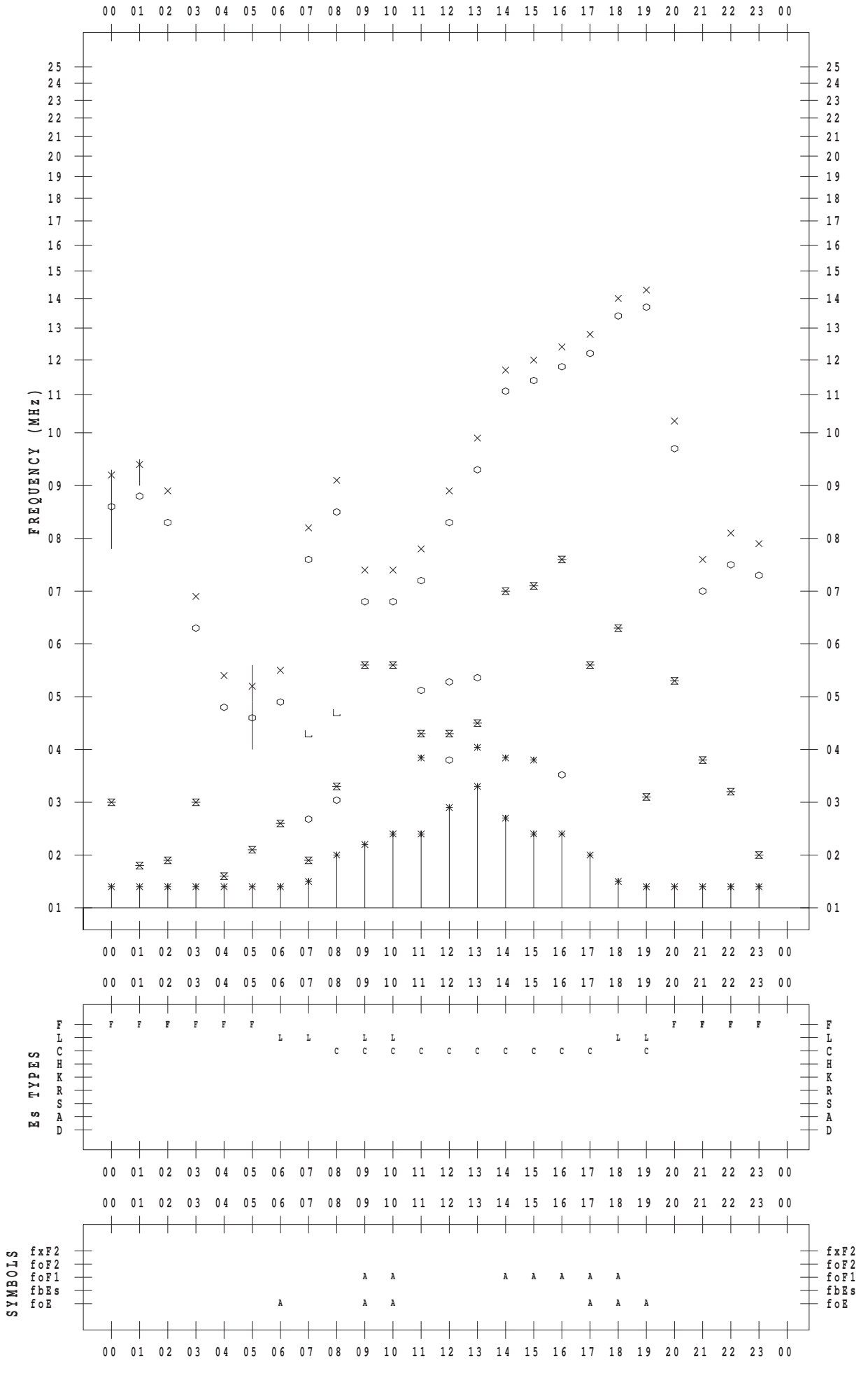
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 1

135 °E MEAN TIME



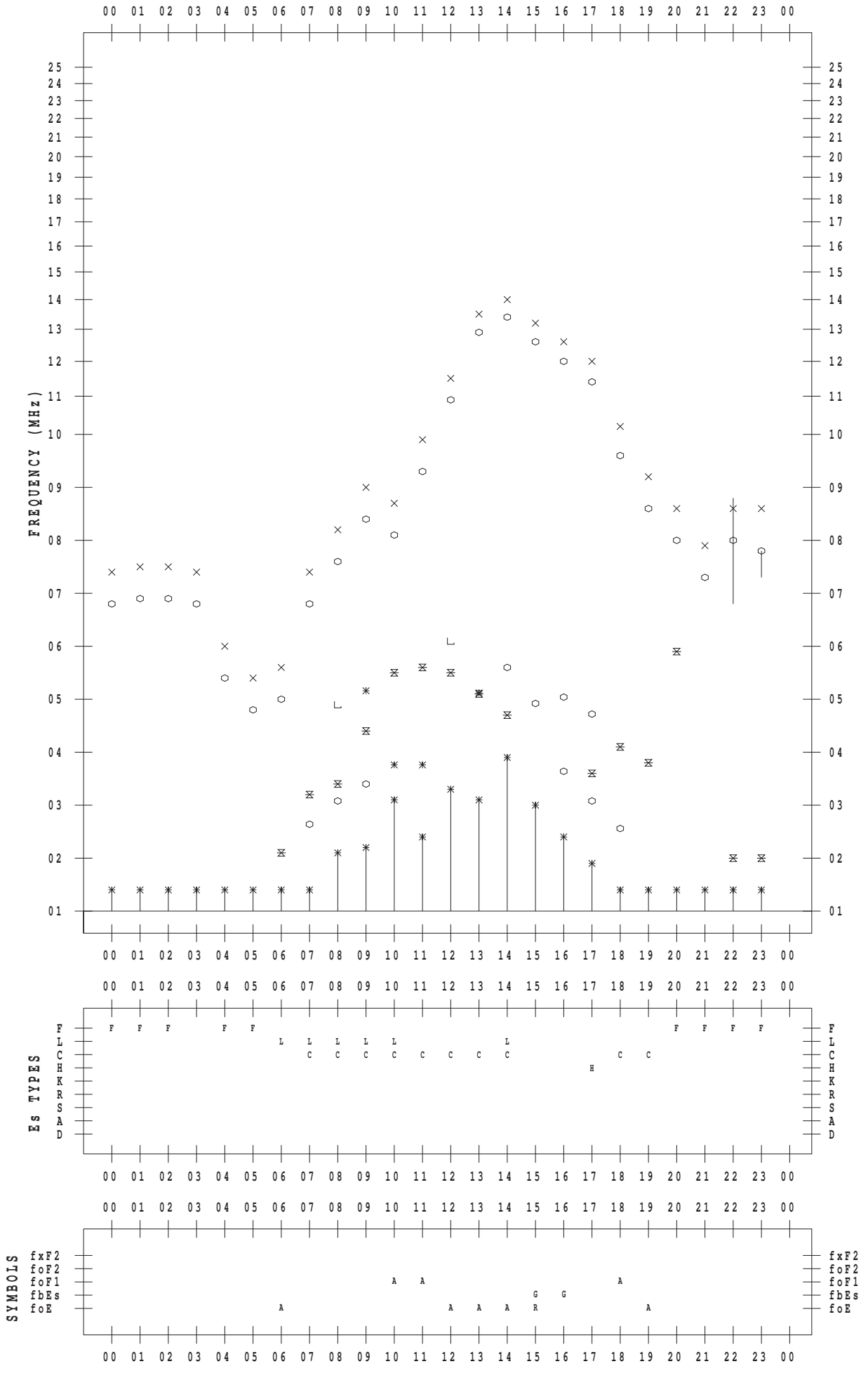
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 2

135 °E MEAN TIME



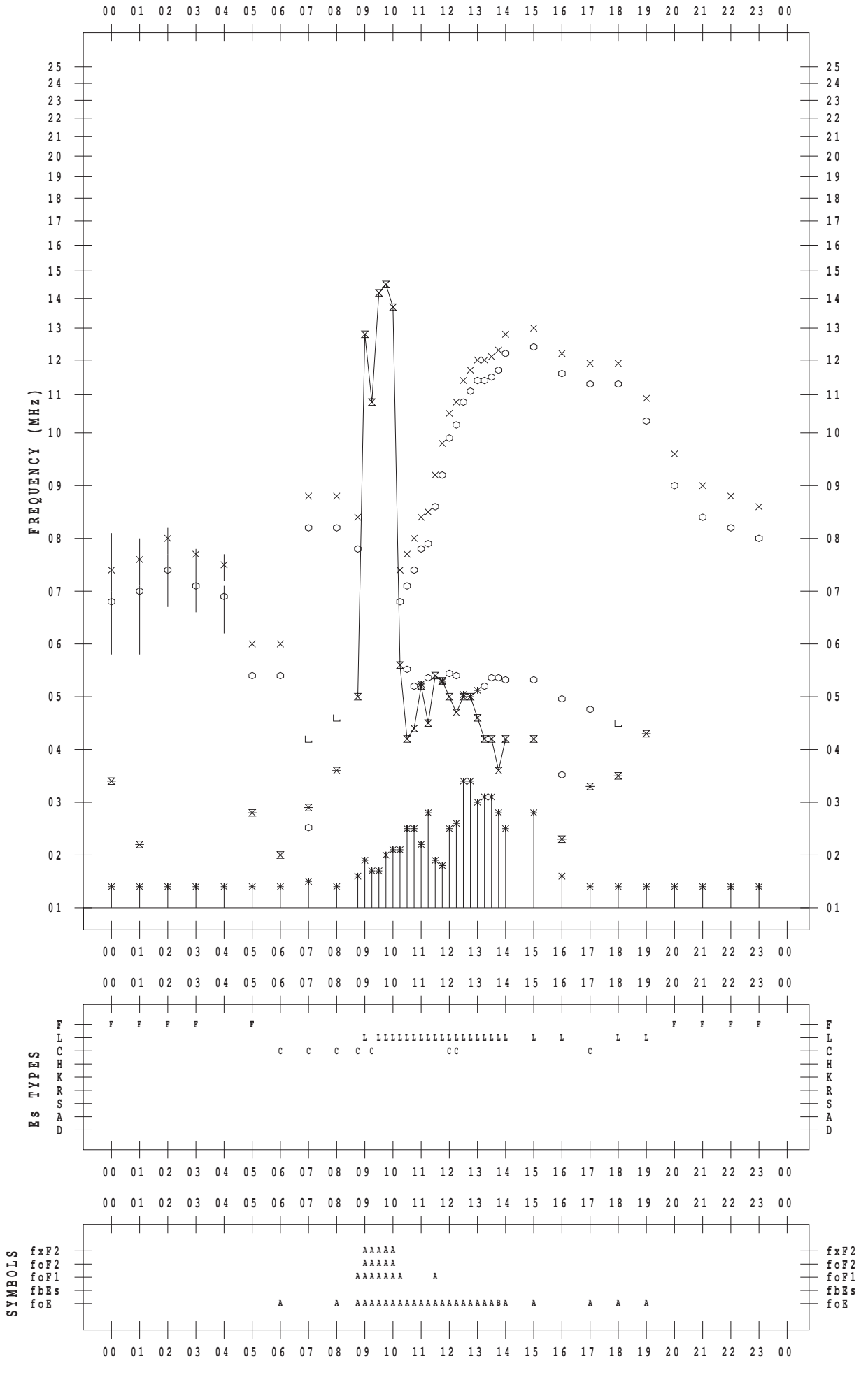
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 3

135 °E MEAN TIME



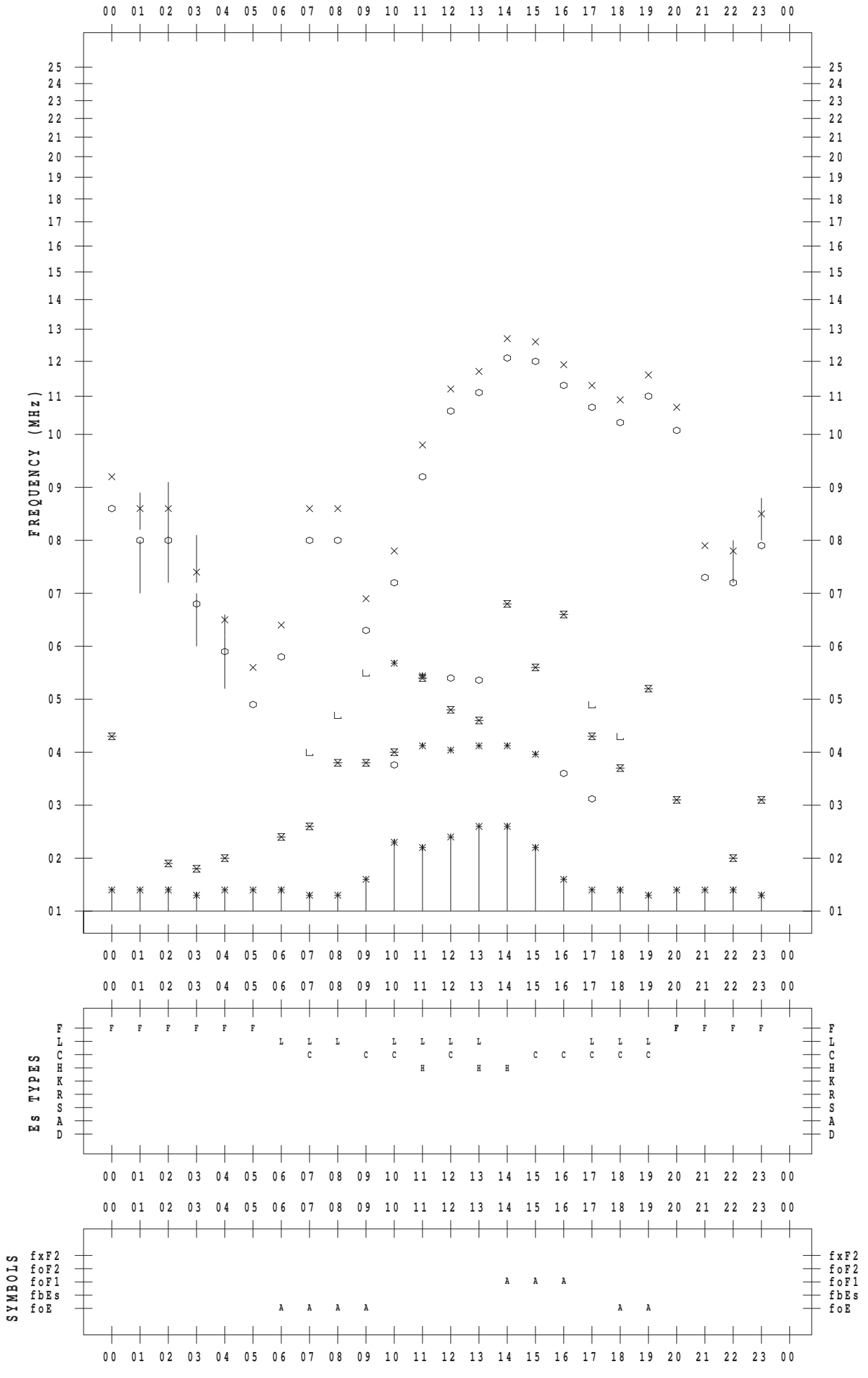
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 4

135 °E MEAN TIME



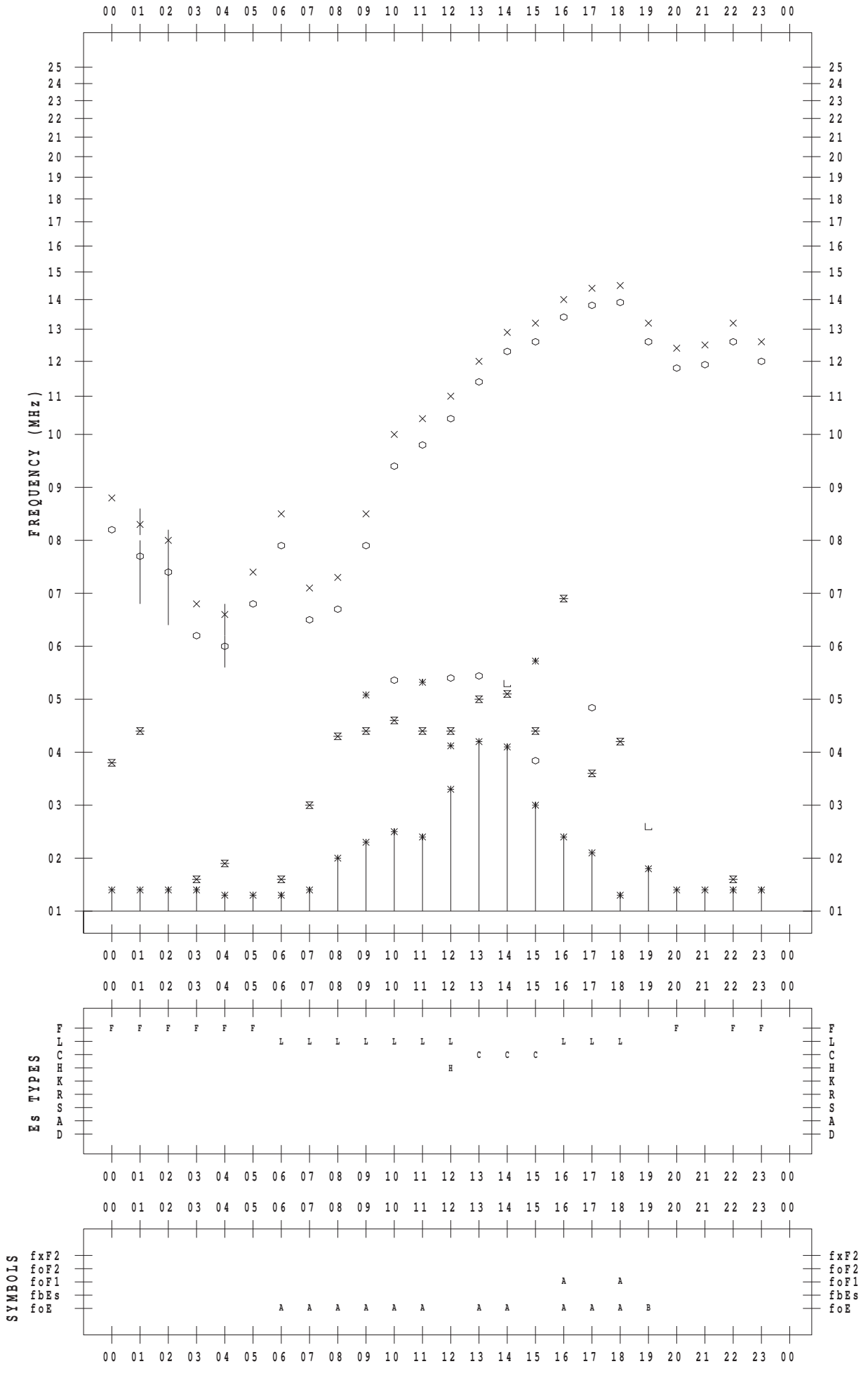
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 5

135 °E MEAN TIME



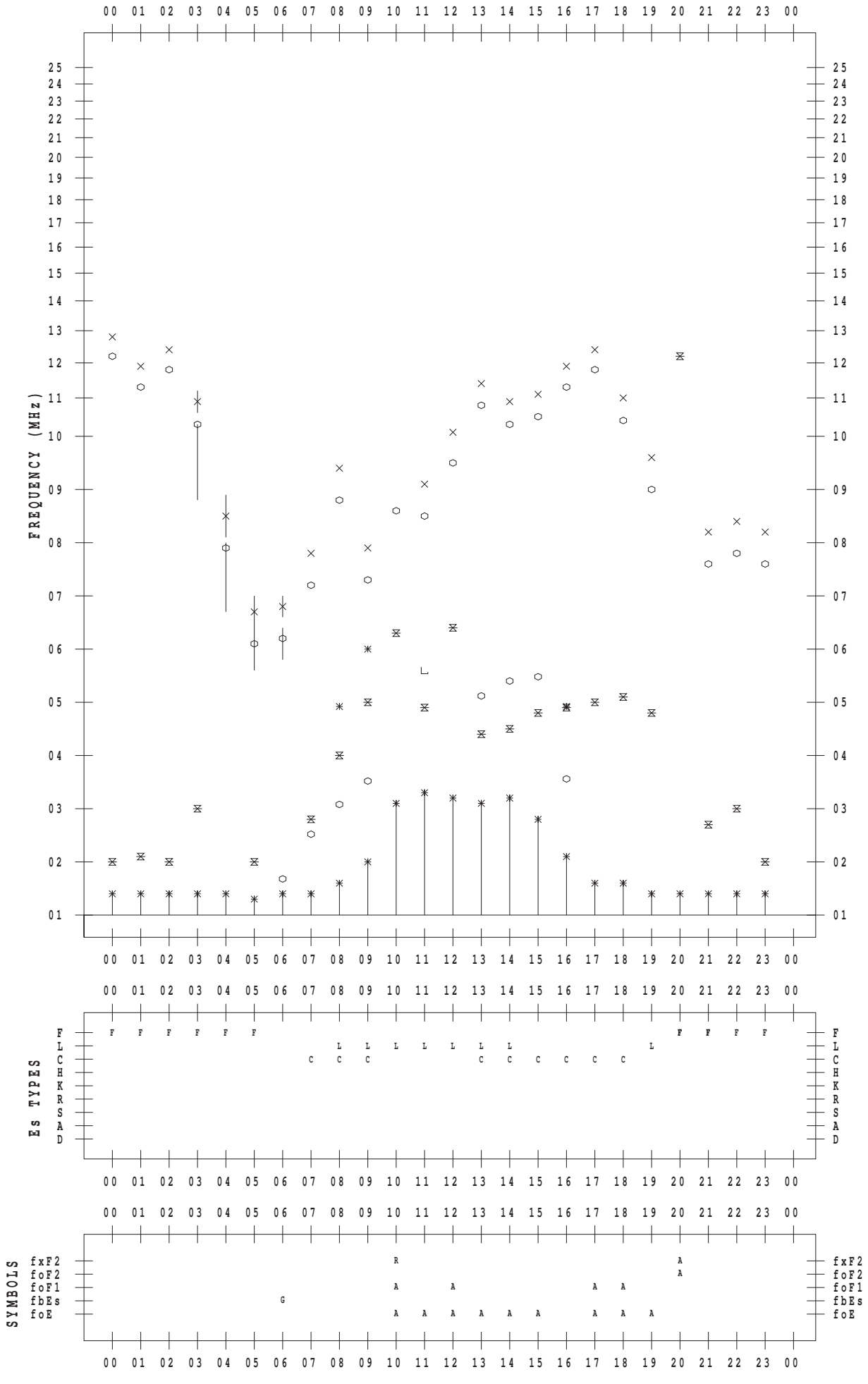
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 6

135 °E MEAN TIME



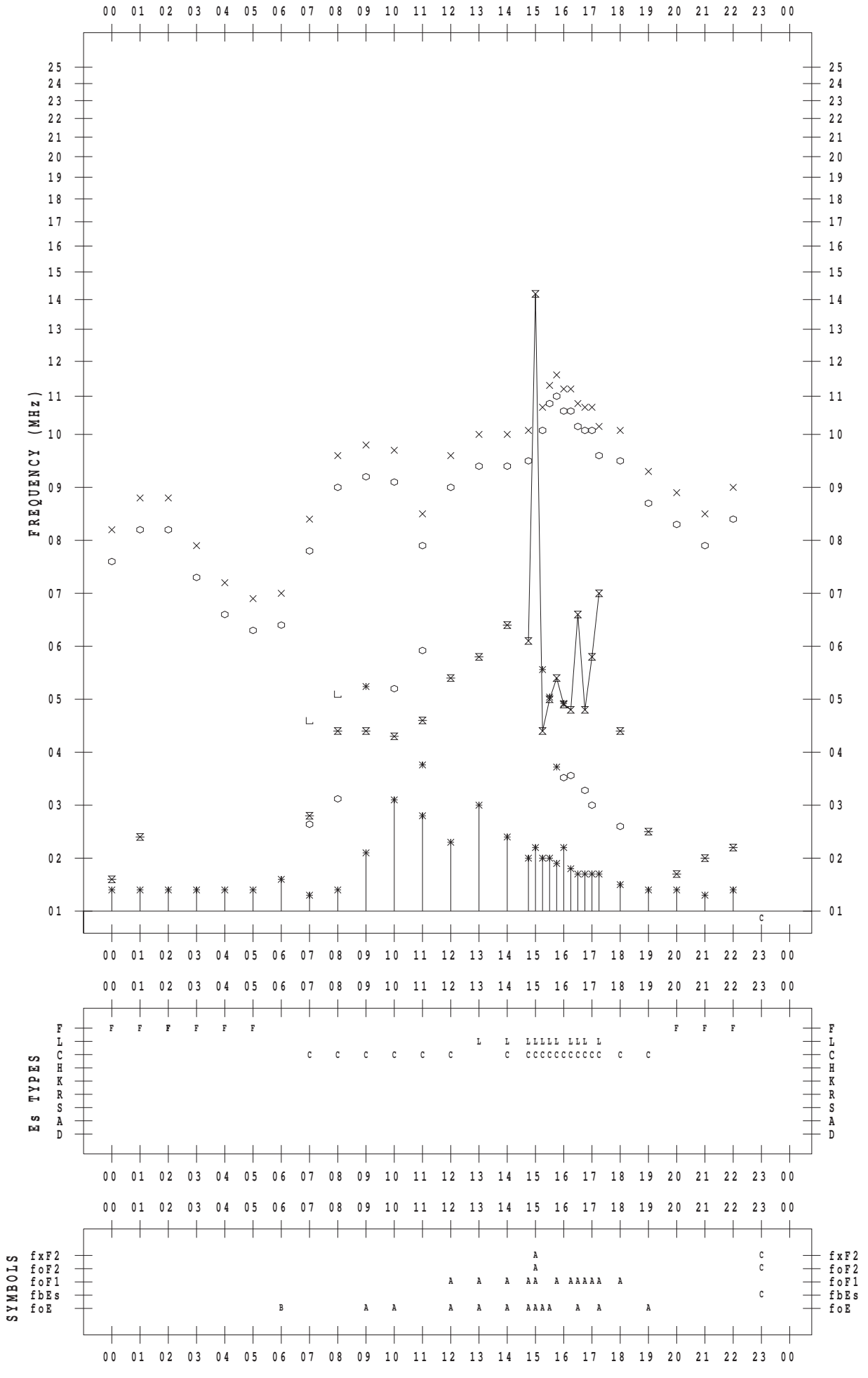
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 7

135 °E MEAN TIME



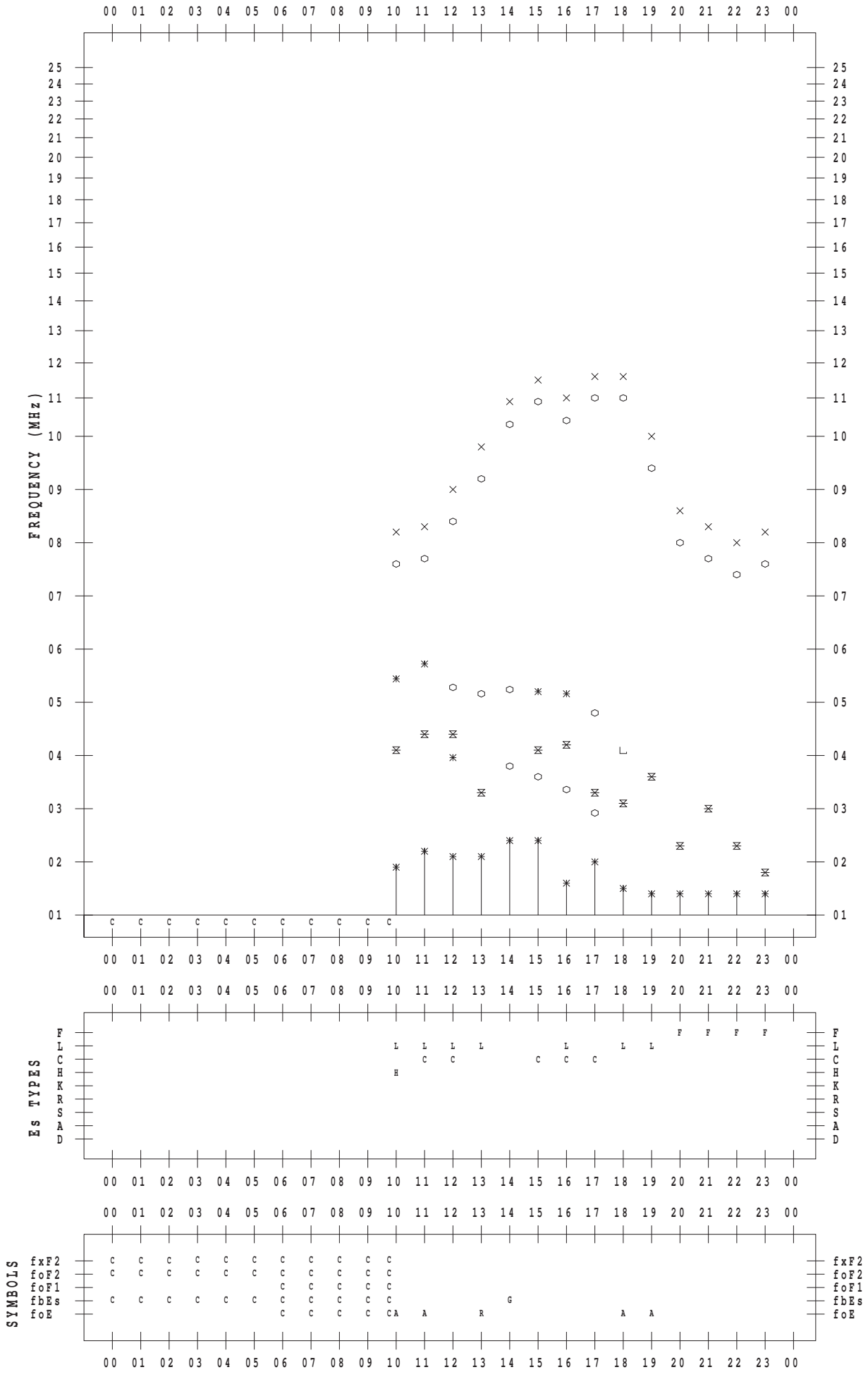
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 8

135 °E MEAN TIME



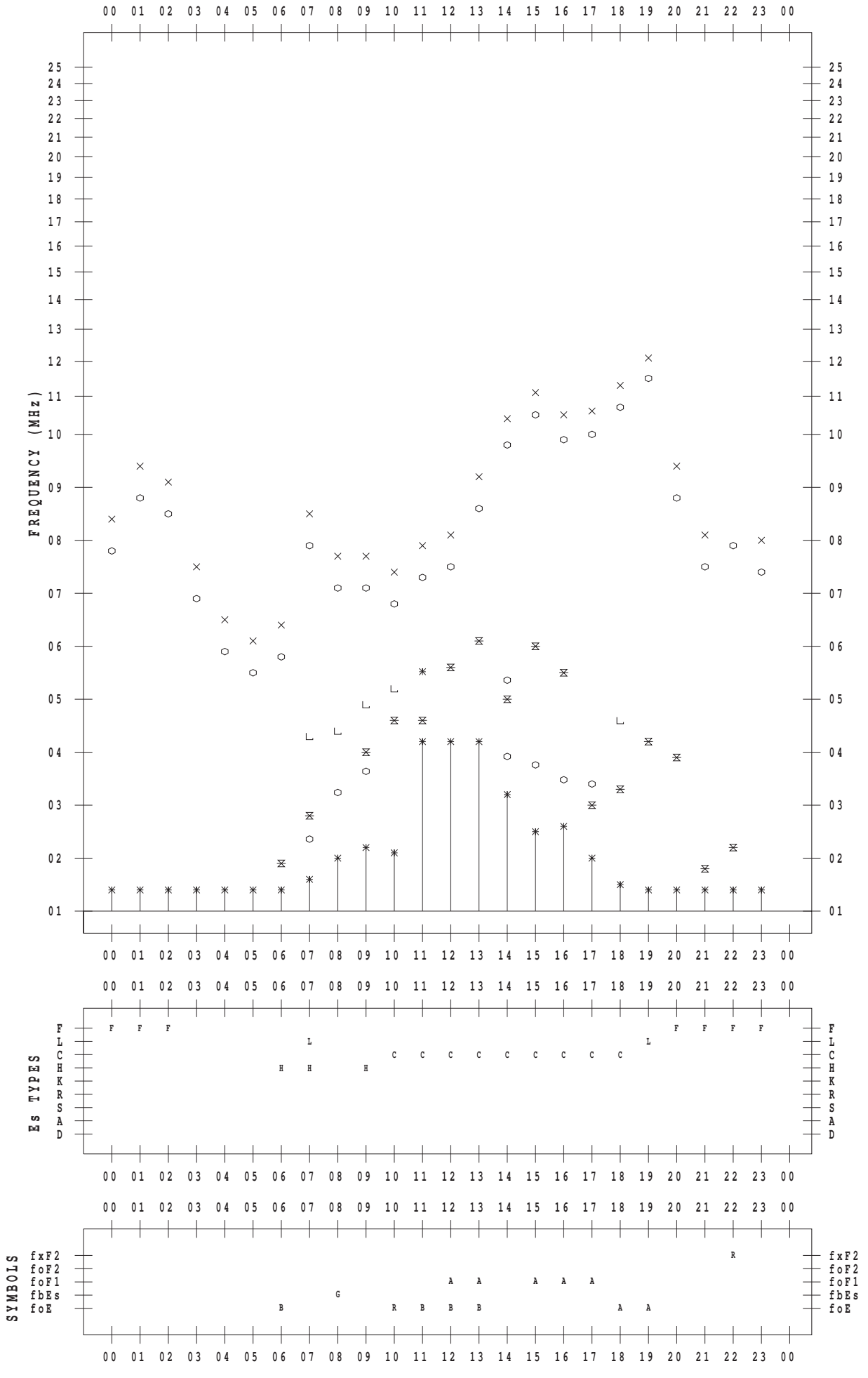
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/ 9

135 °E MEAN TIME



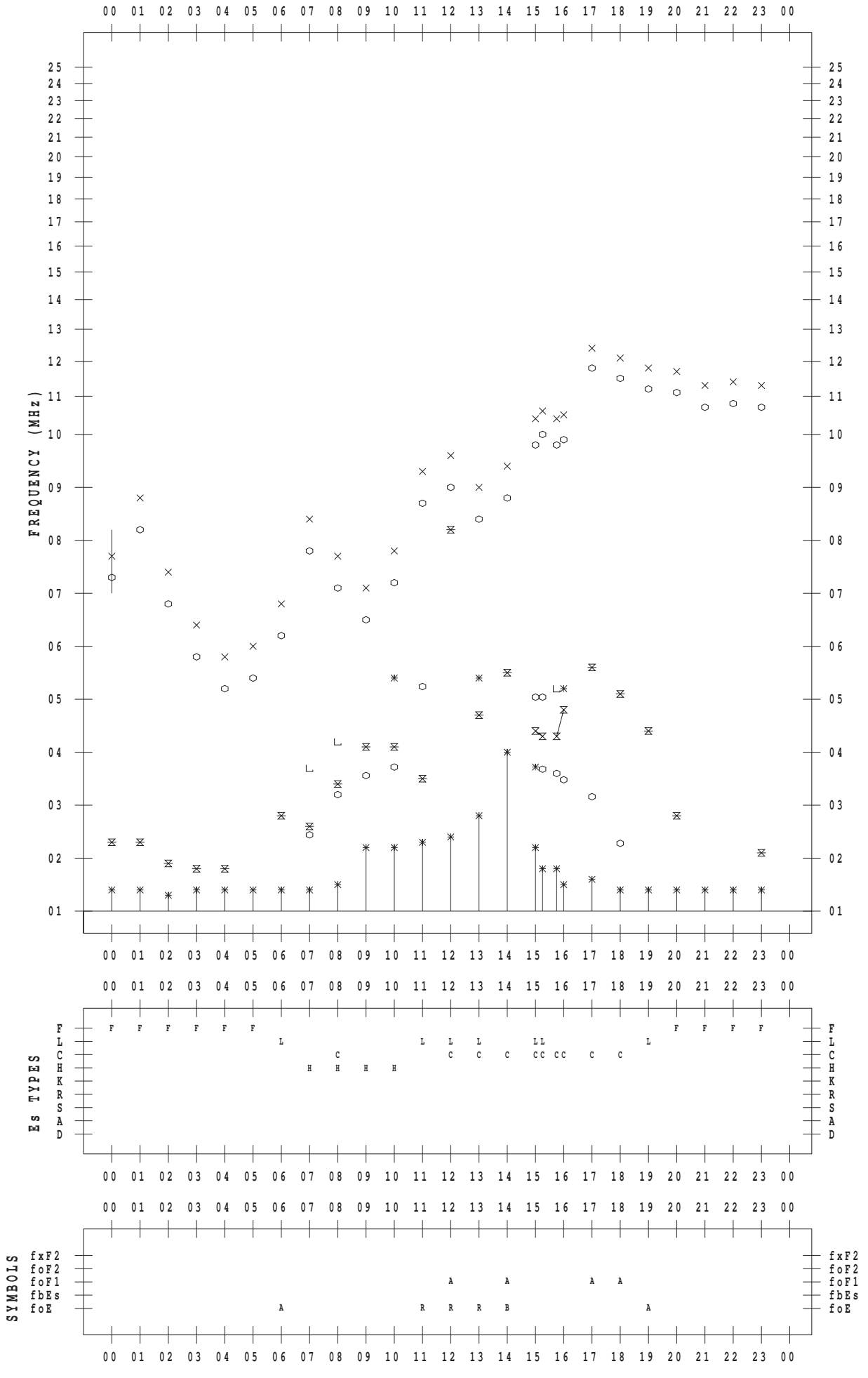
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/10

135 °E MEAN TIME



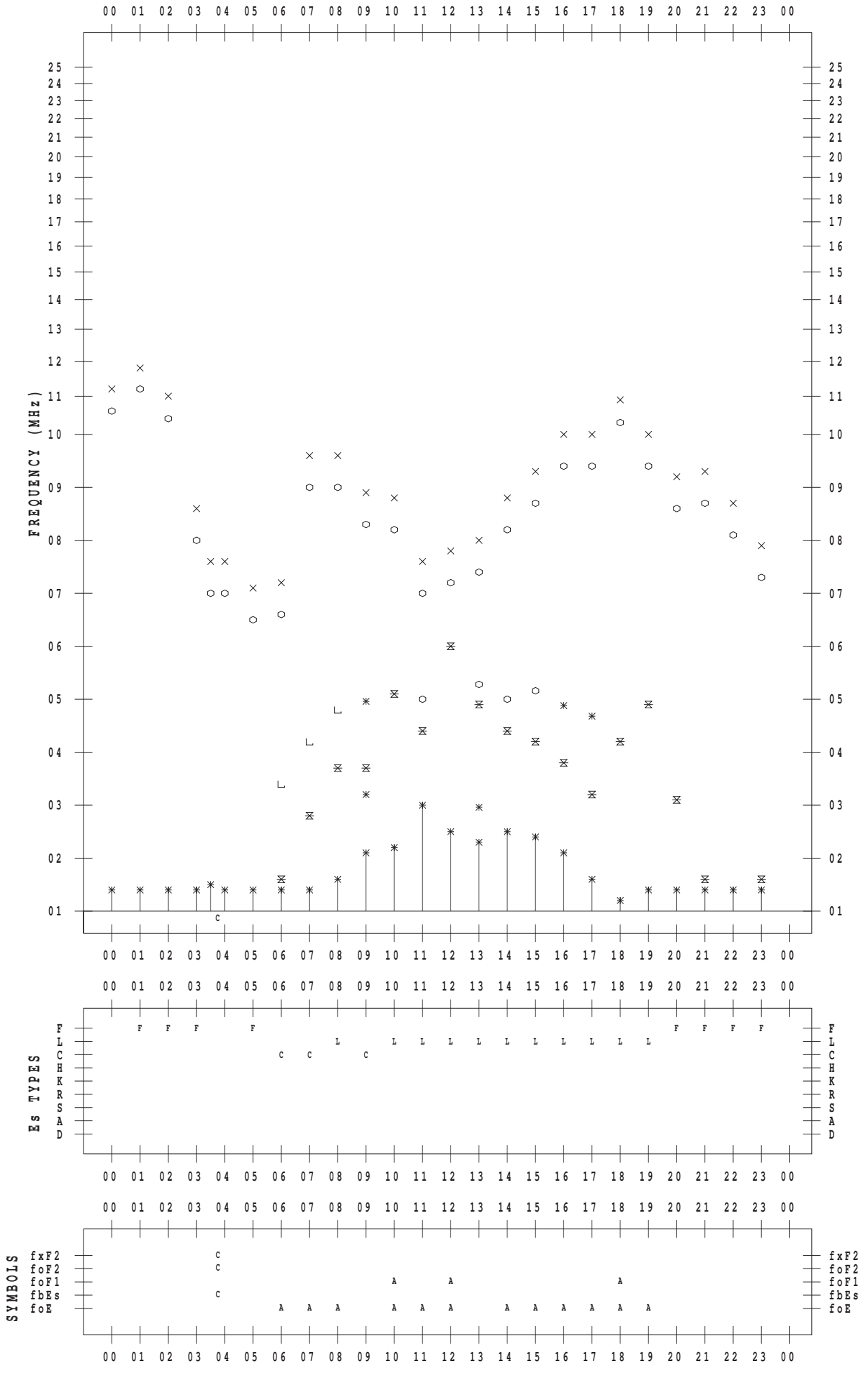
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/11

135 °E MEAN TIME



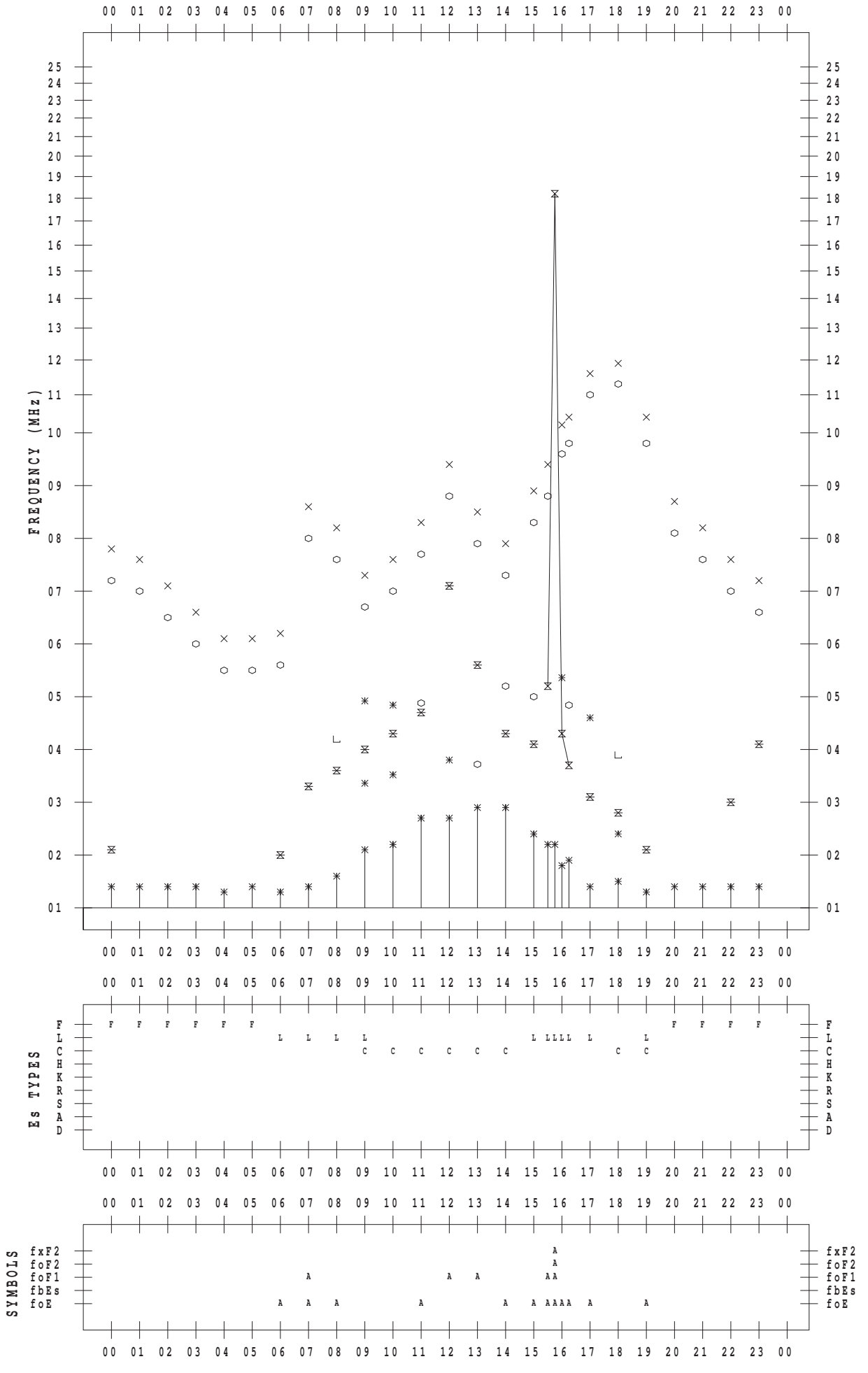
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/12

135 °E MEAN TIME



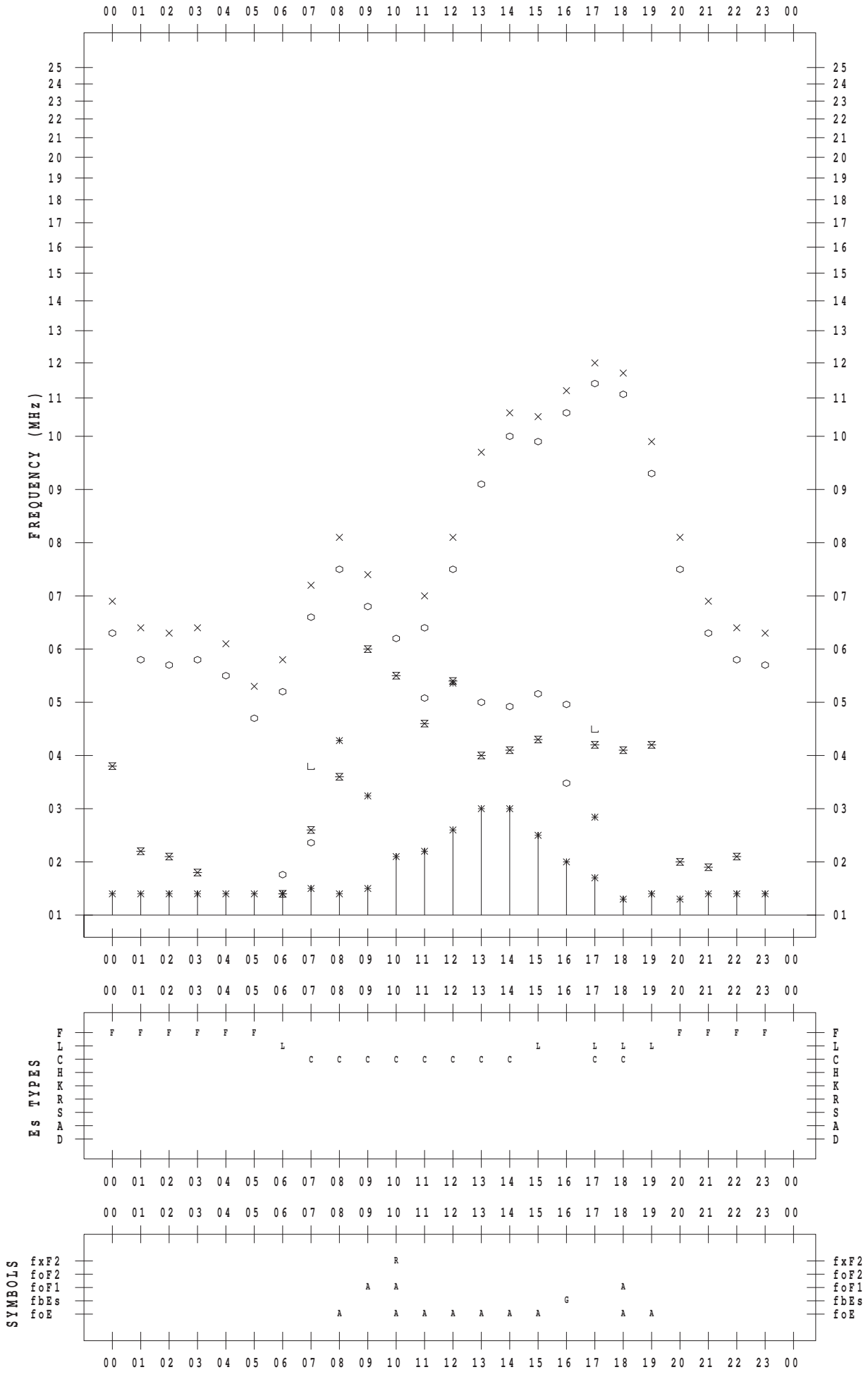
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/13

135 °E MEAN TIME



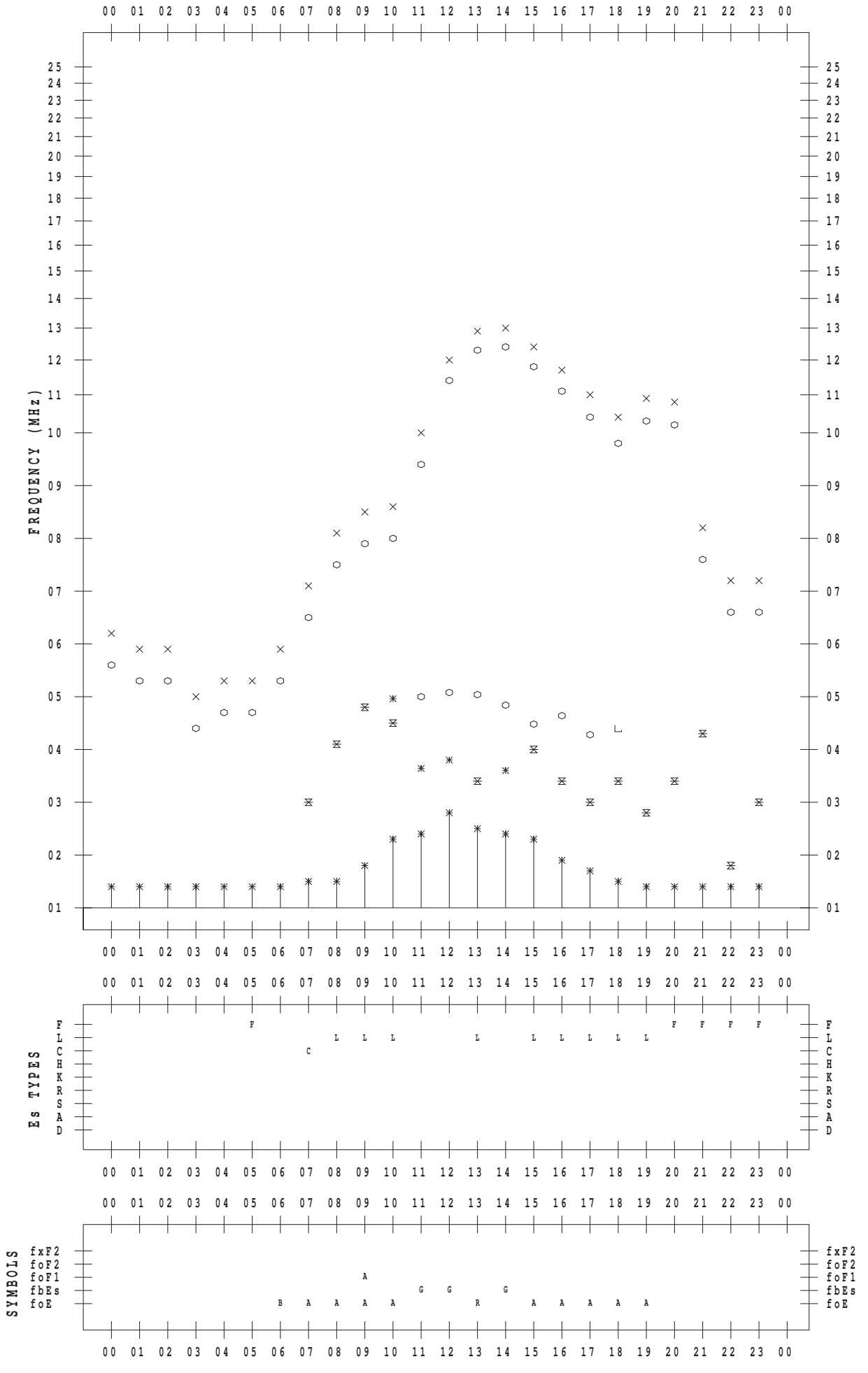
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/14

135 °E MEAN TIME



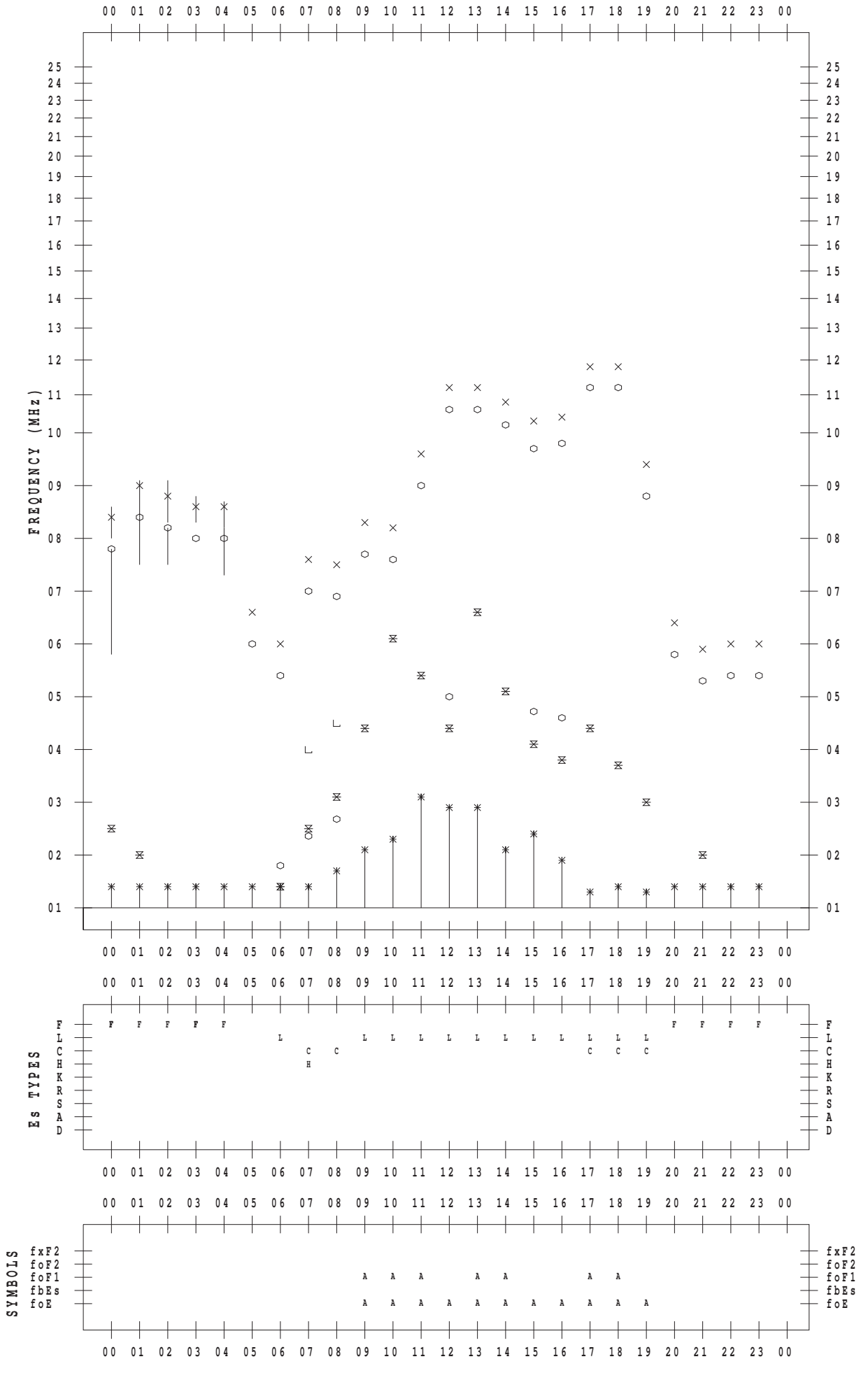
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/15

135 °E MEAN TIME



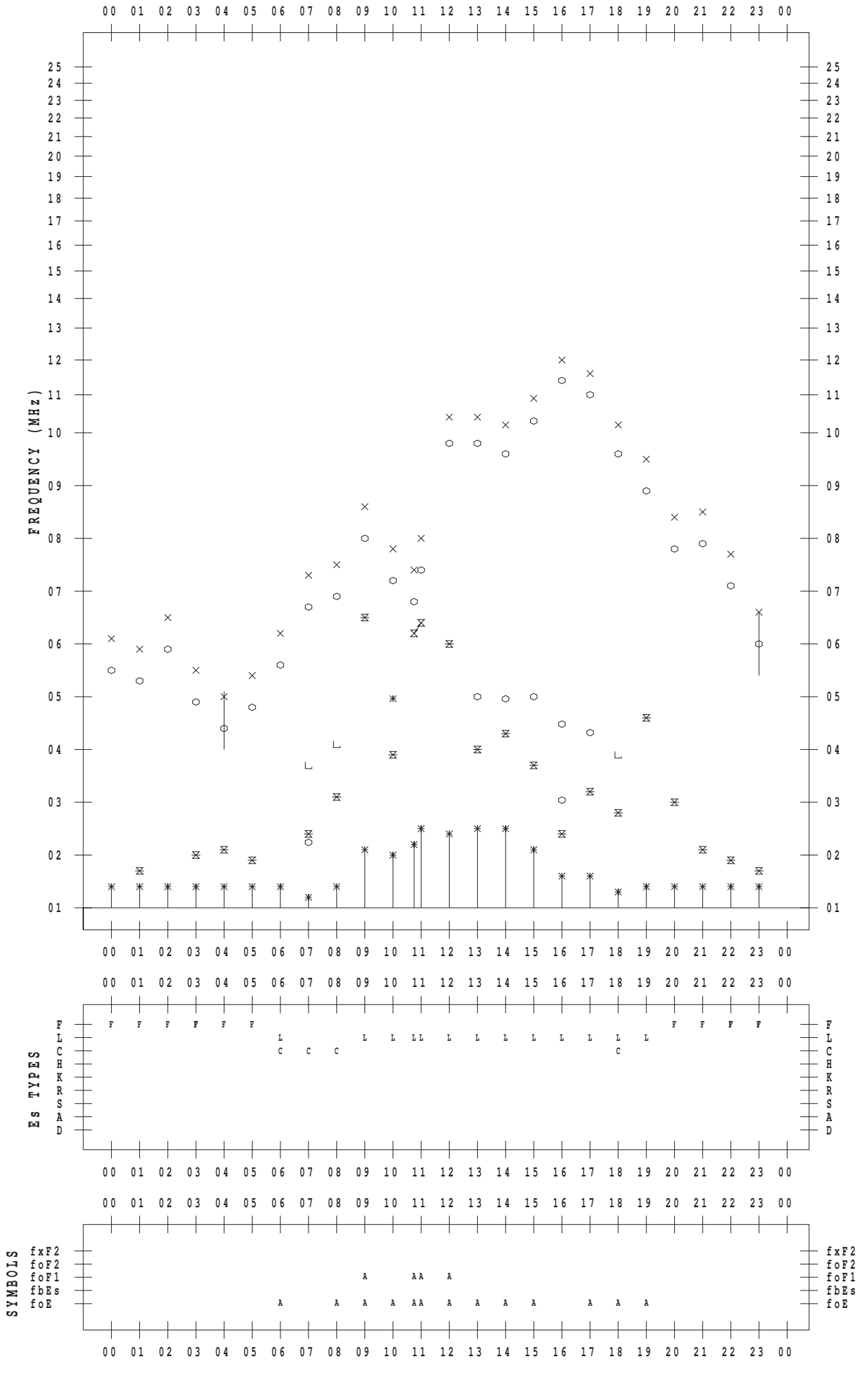
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/16

135 °E MEAN TIME



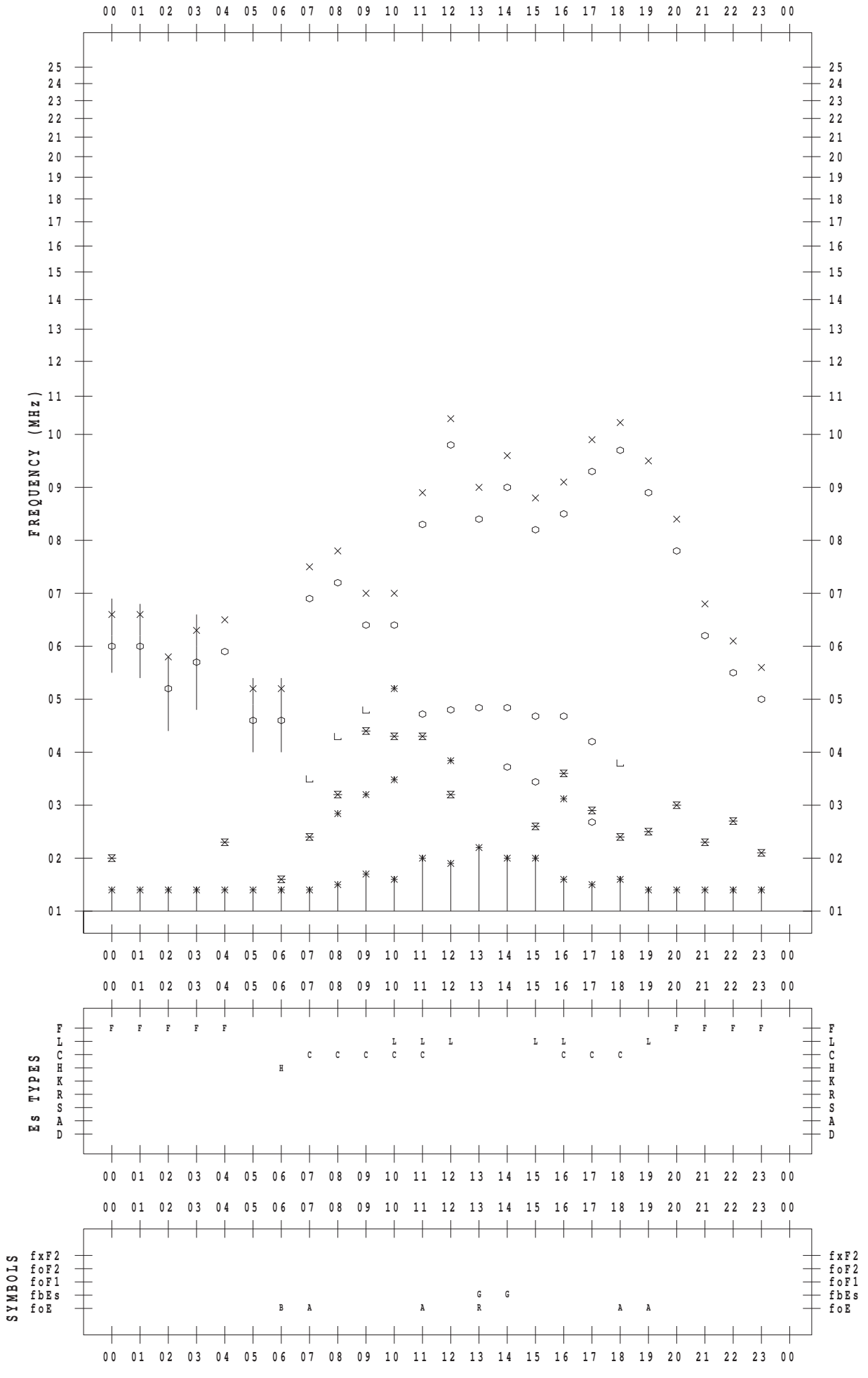
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/17

135 °E MEAN TIME



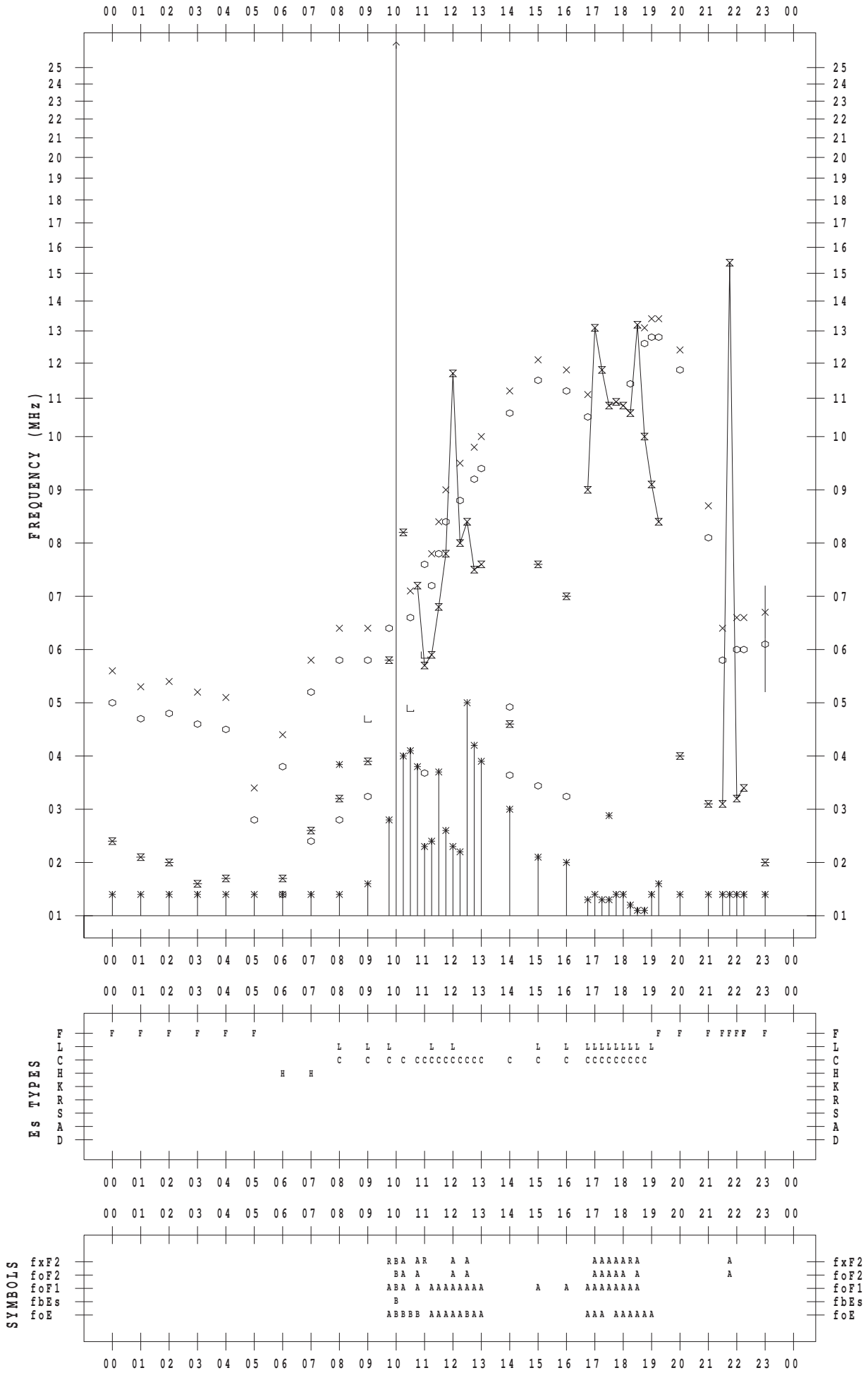
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/18

135 °E MEAN TIME



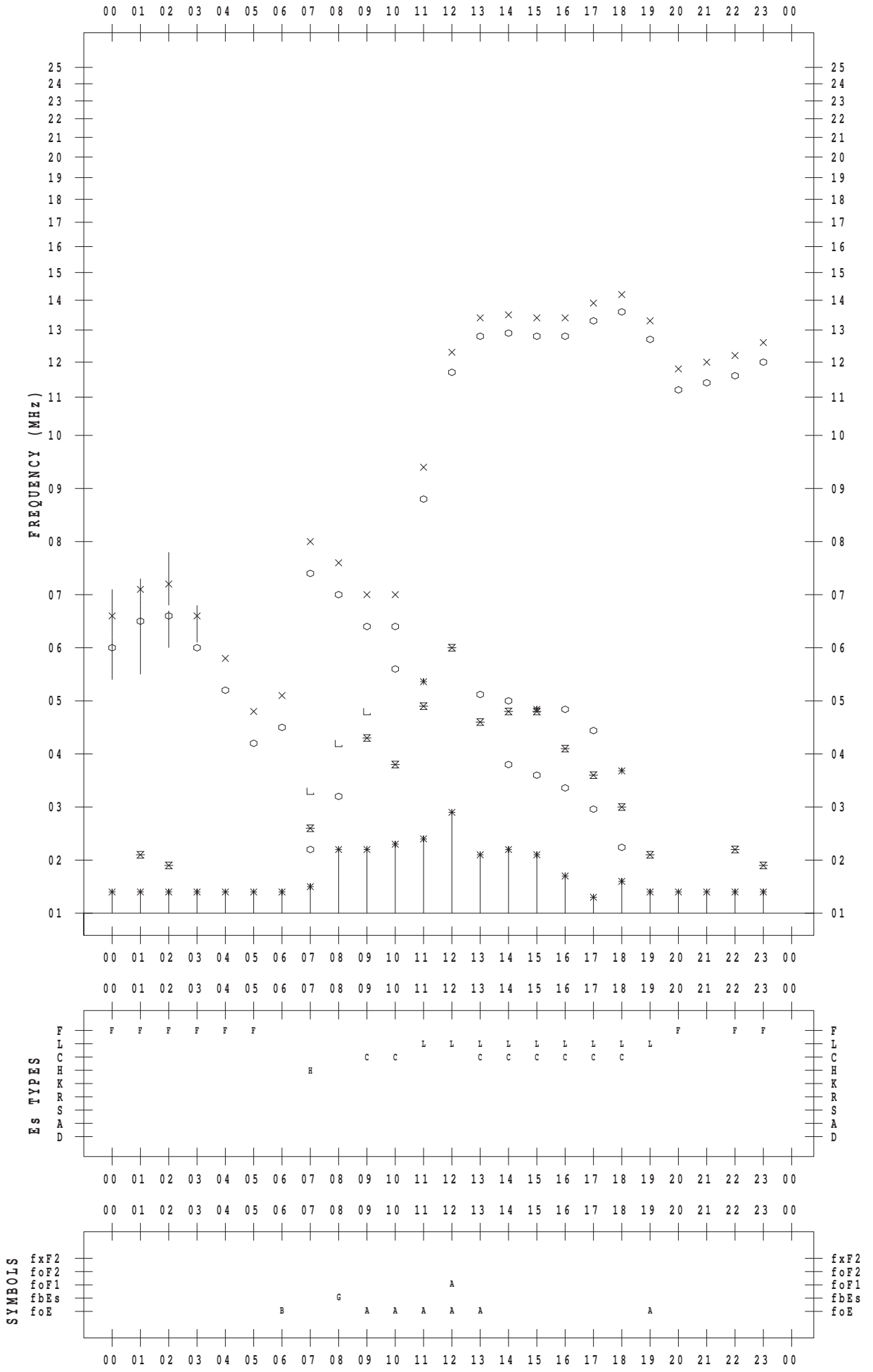
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/19

135 °E MEAN TIME



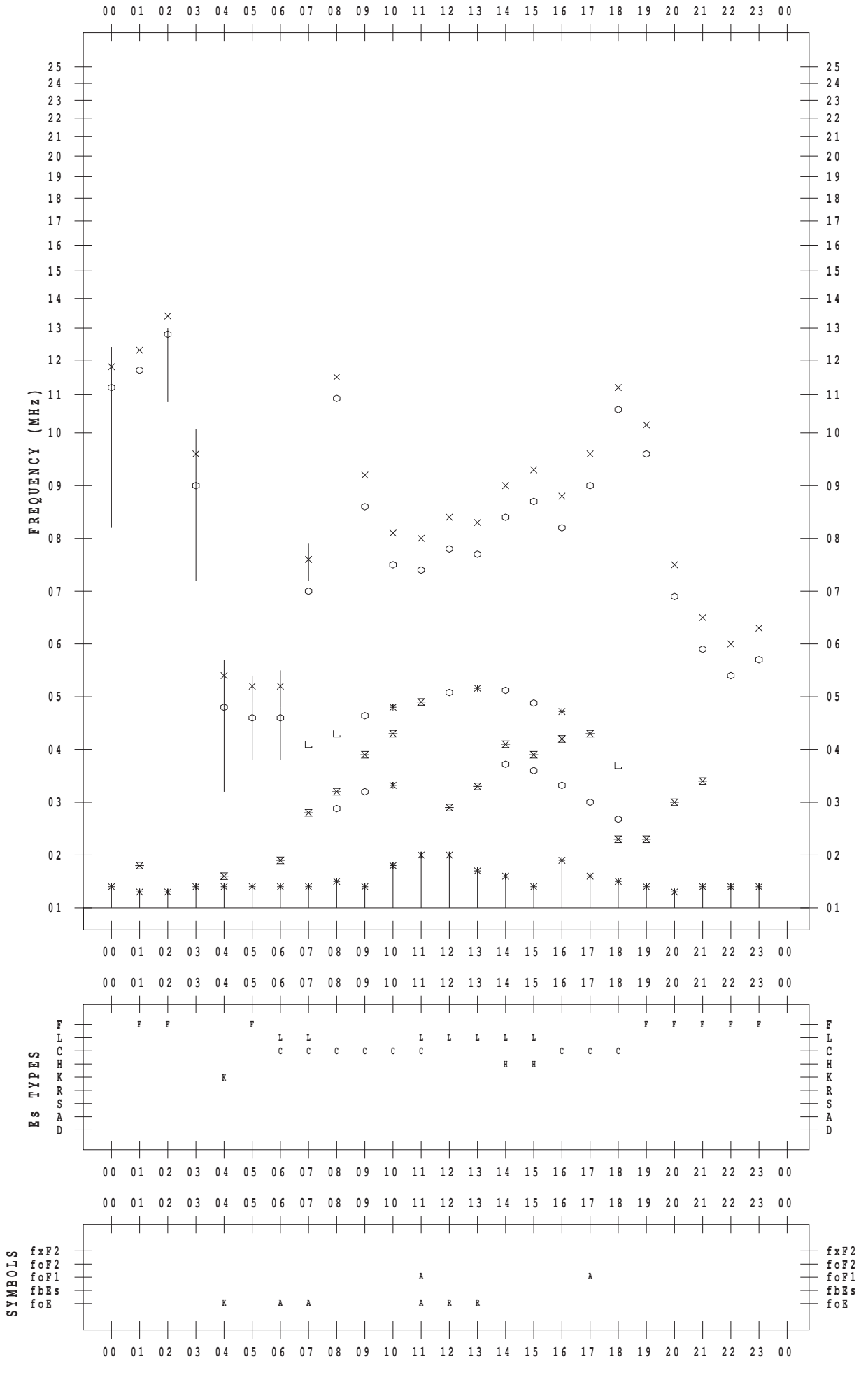
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/20

135 °E MEAN TIME



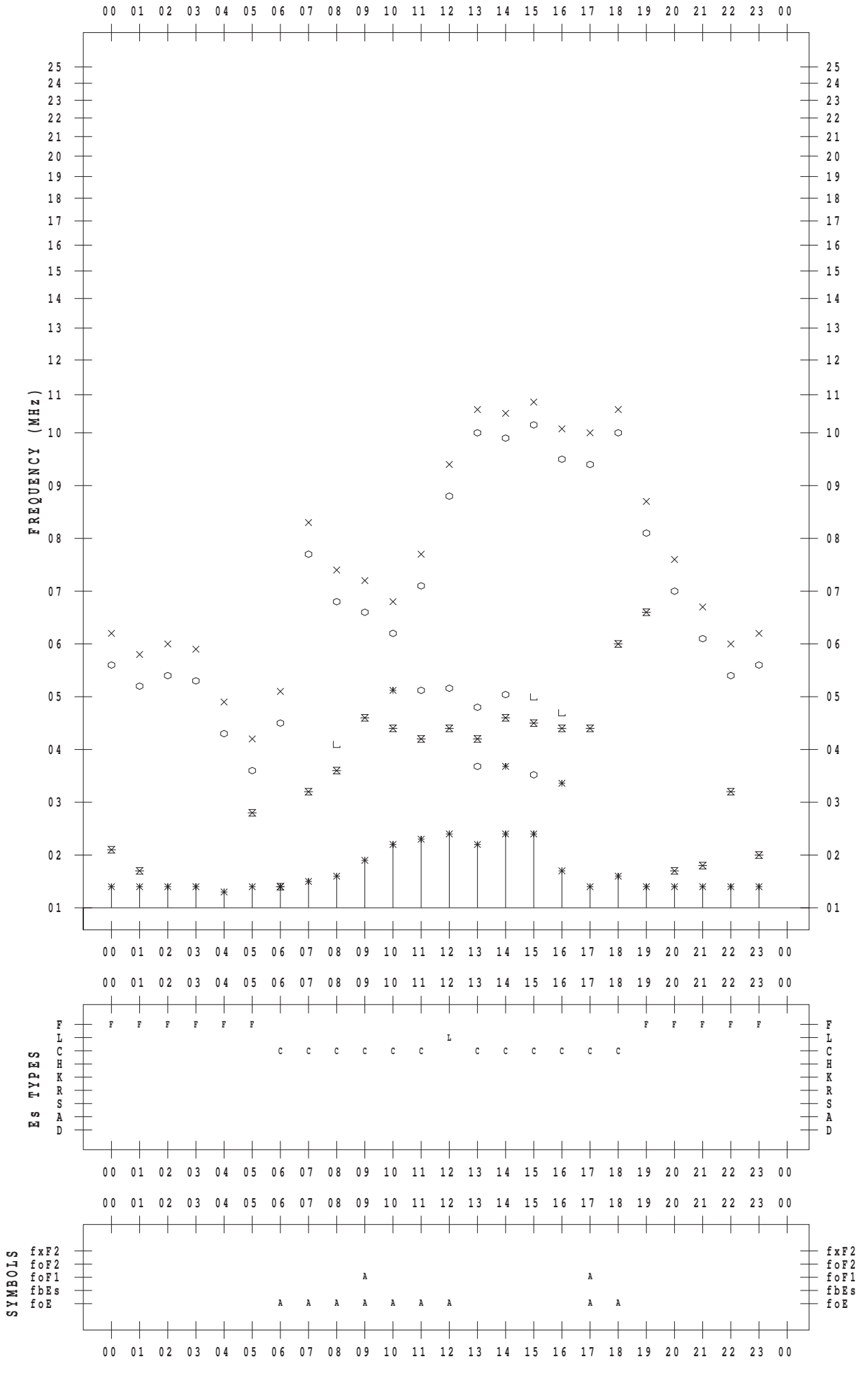
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/21

135 °E MEAN TIME



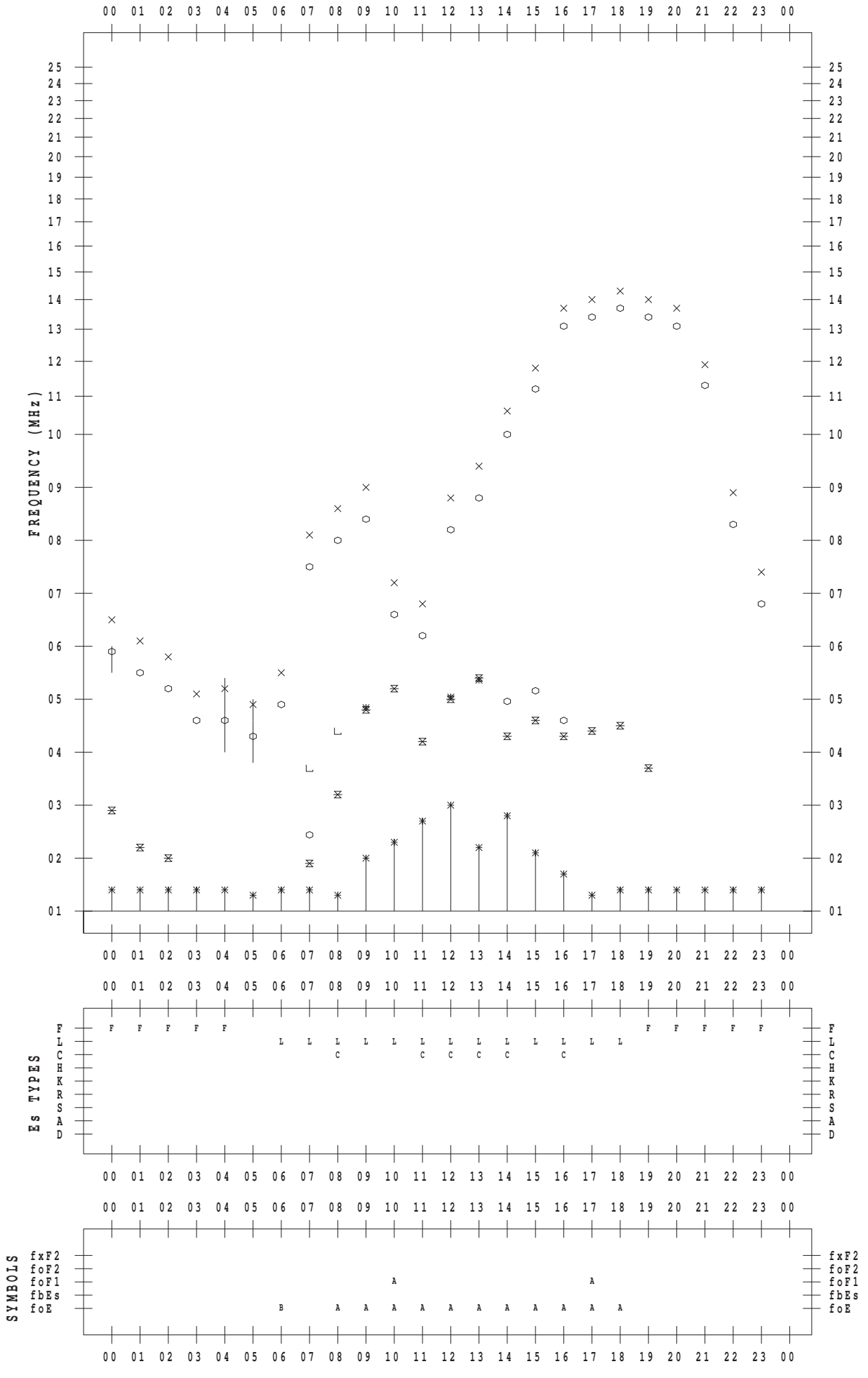
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/22

135 °E MEAN TIME



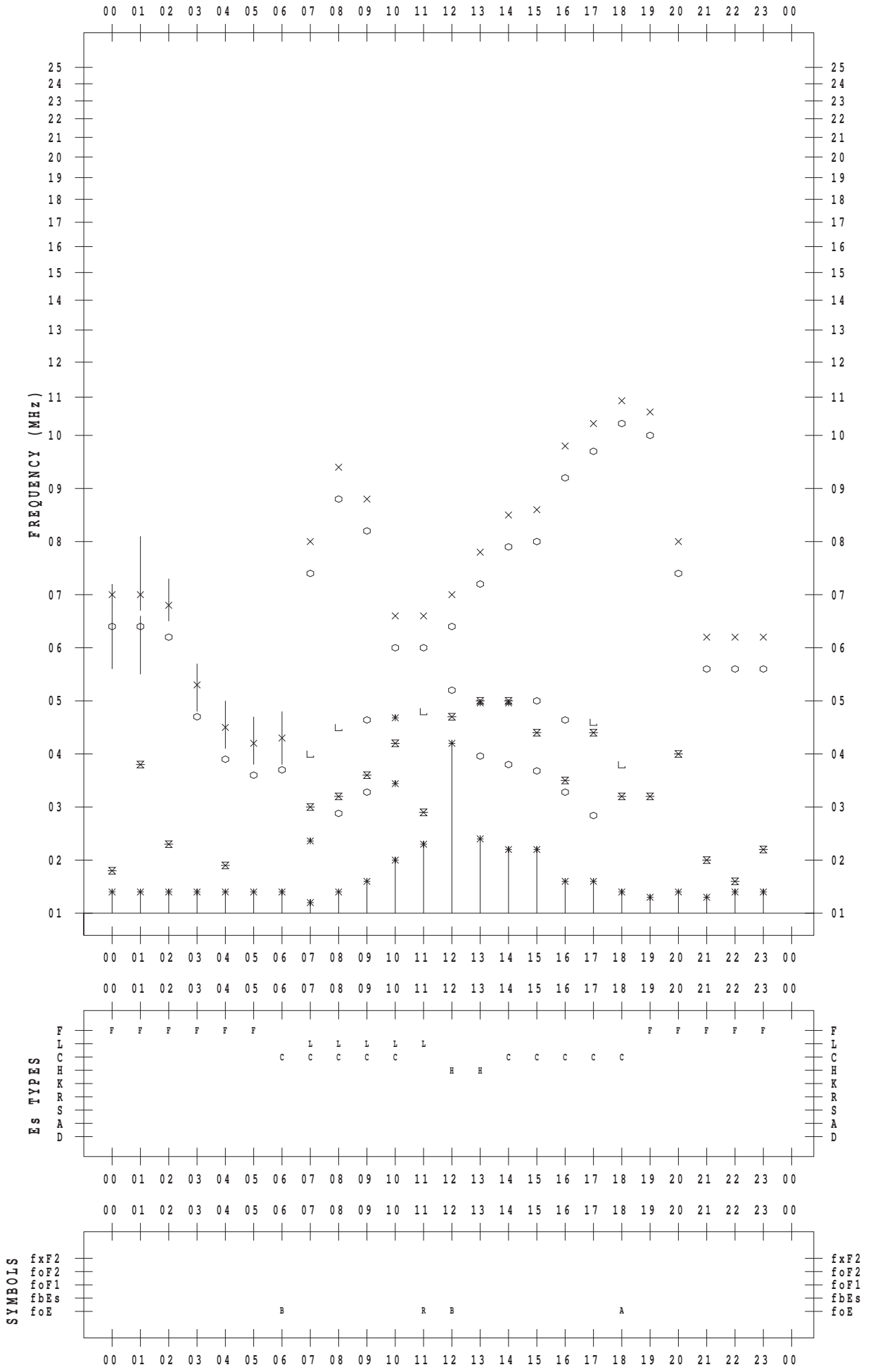
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/23

135 °E MEAN TIME



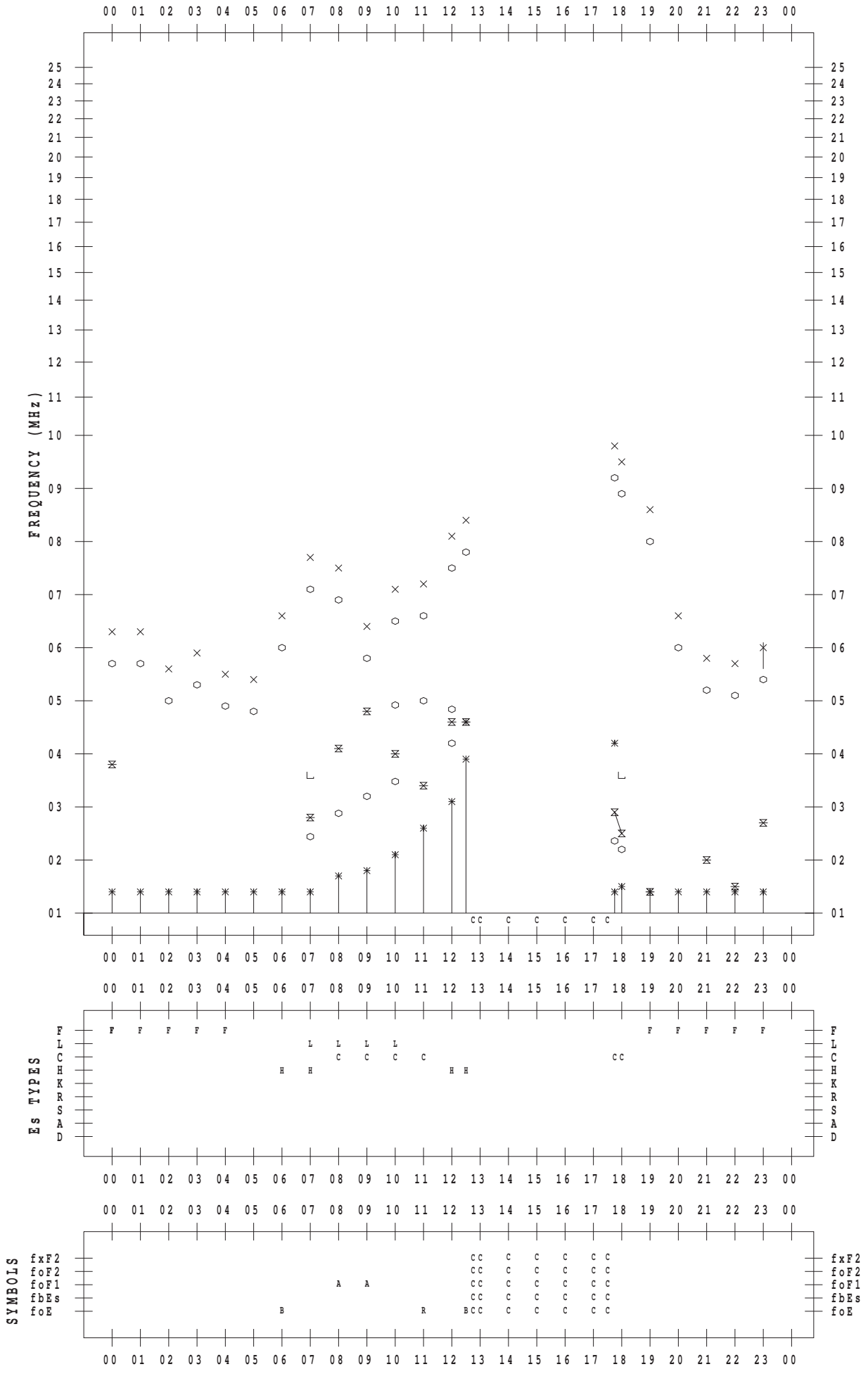
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/24

135 °E MEAN TIME



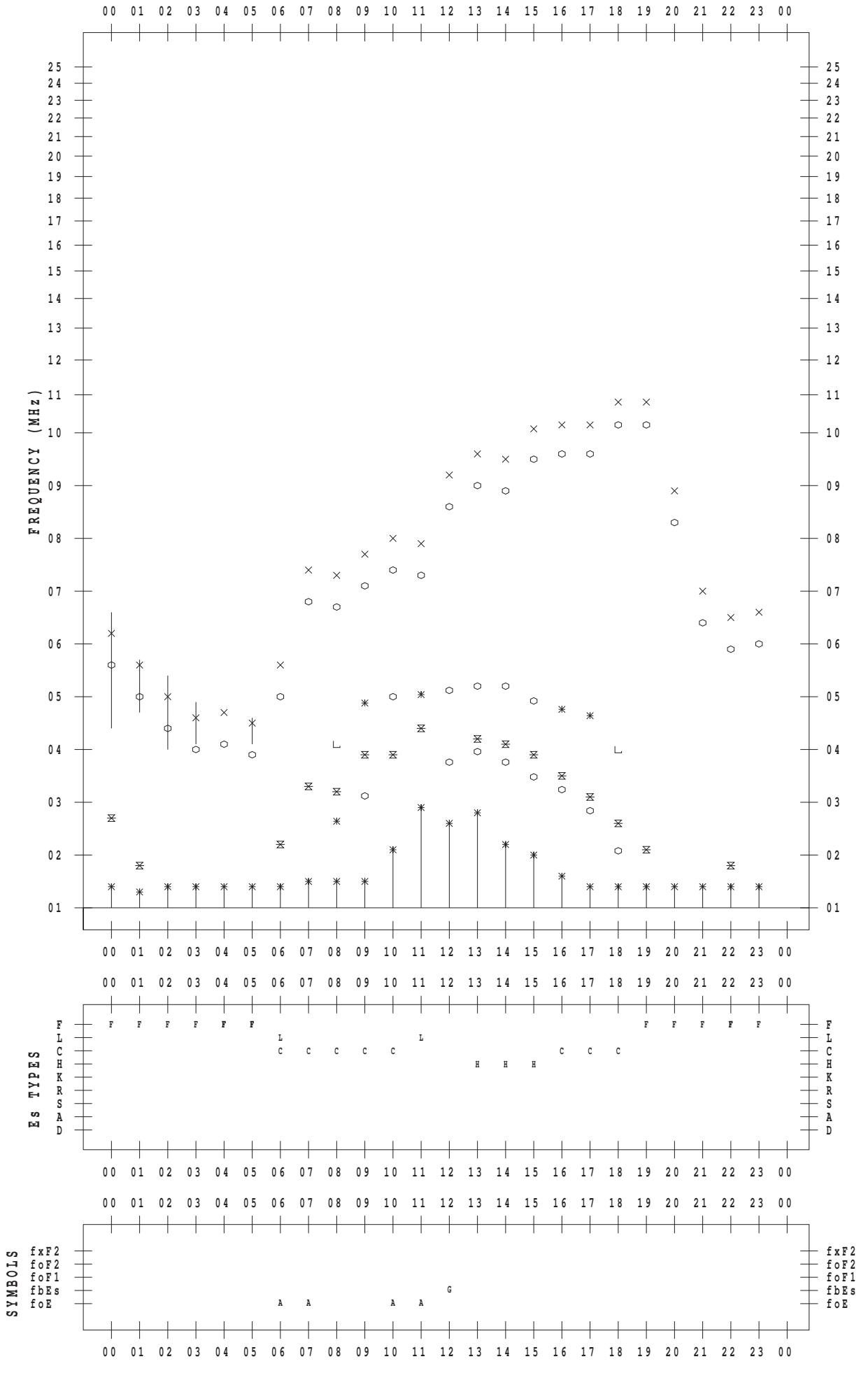
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/25

135 °E MEAN TIME



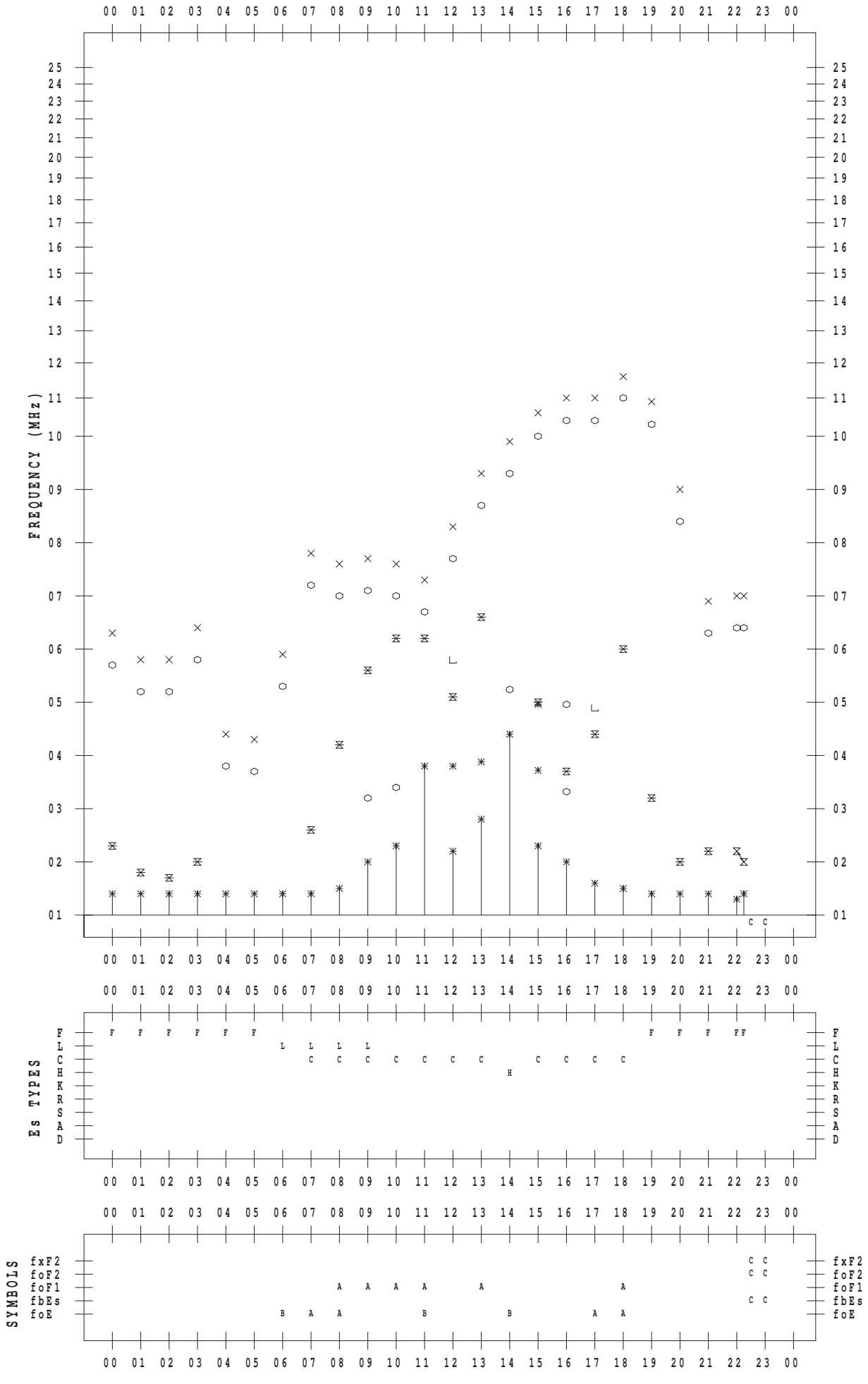
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/26

135 °E MEAN TIME



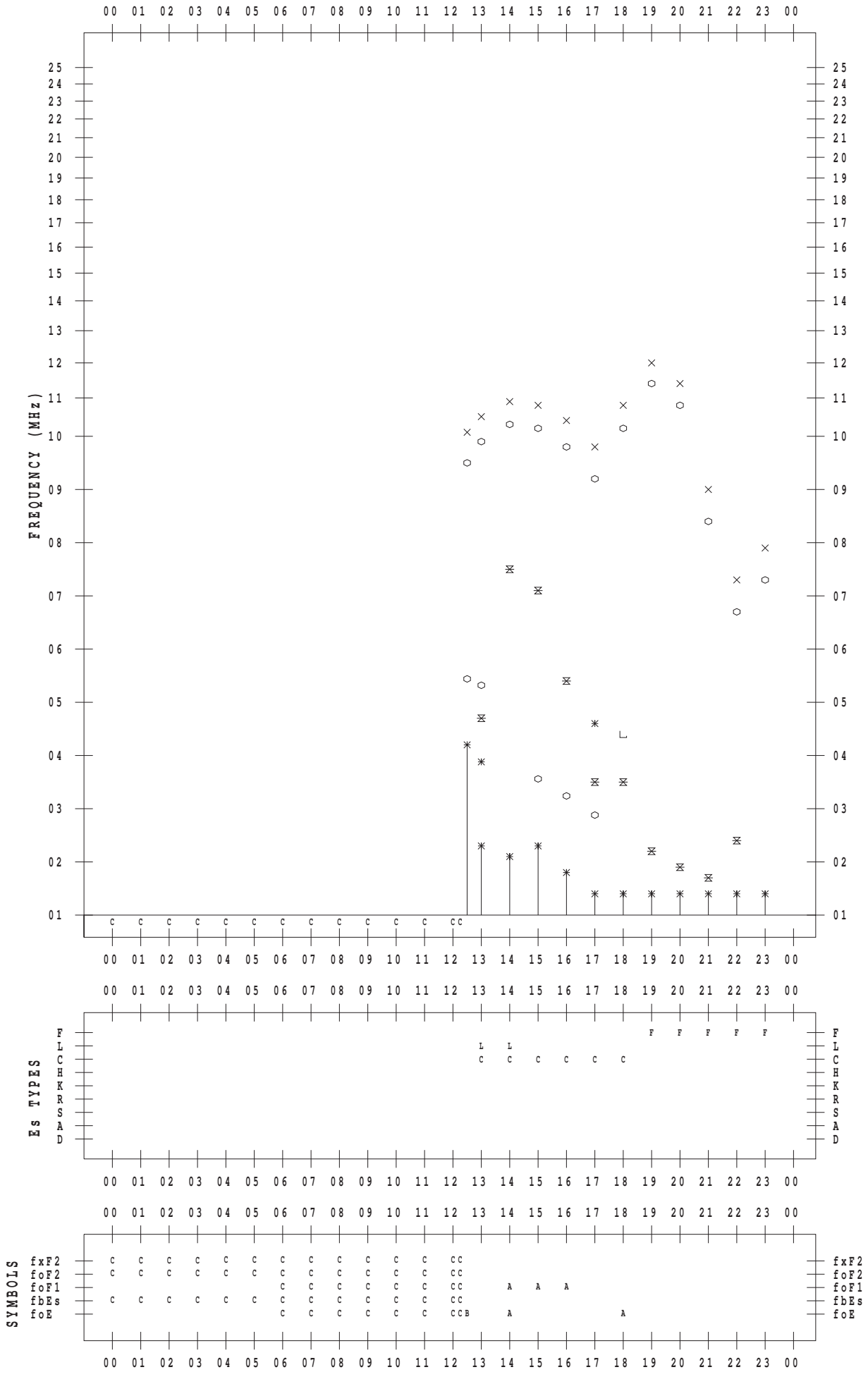
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/27

135 °E MEAN TIME



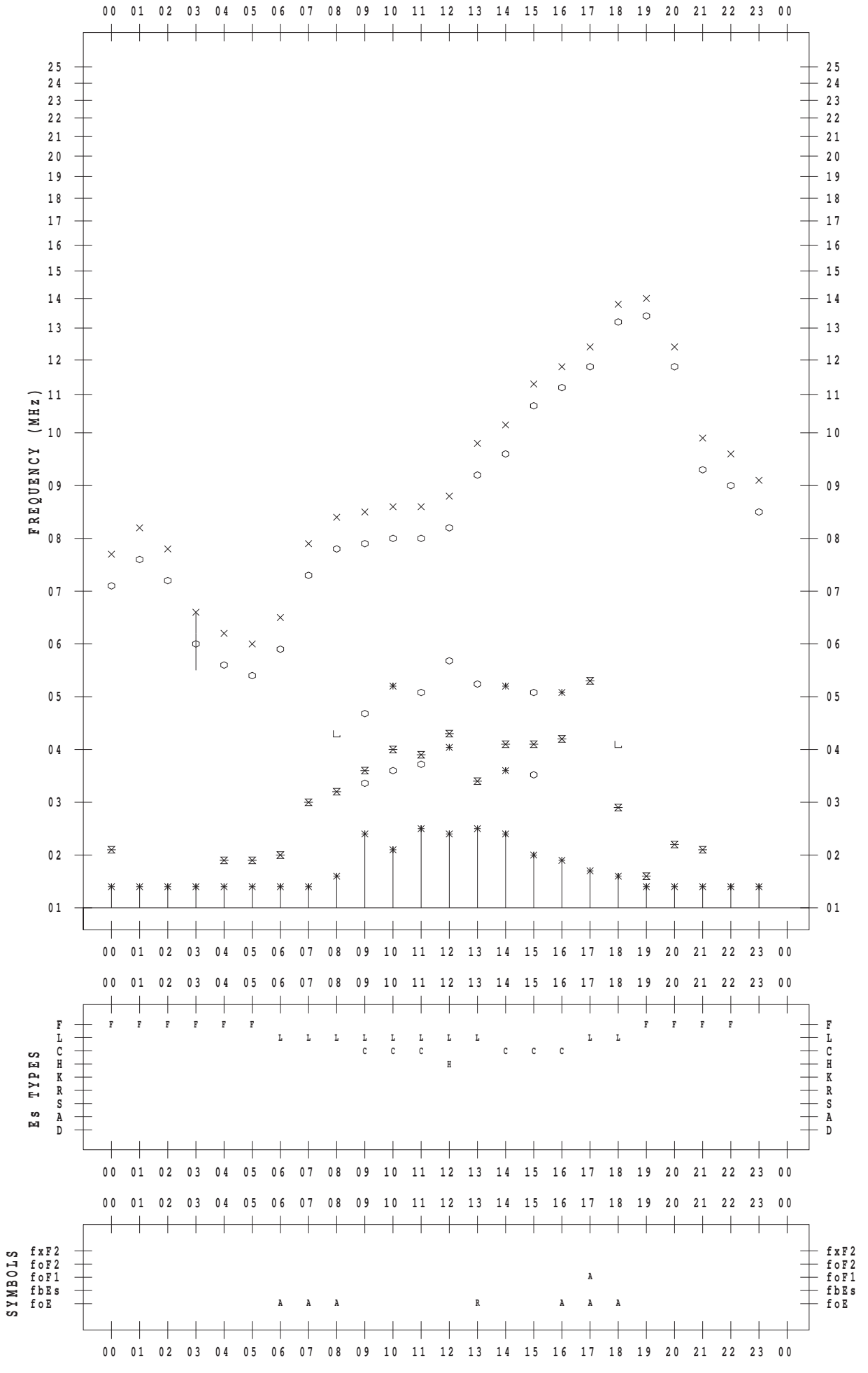
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/28

135 °E MEAN TIME



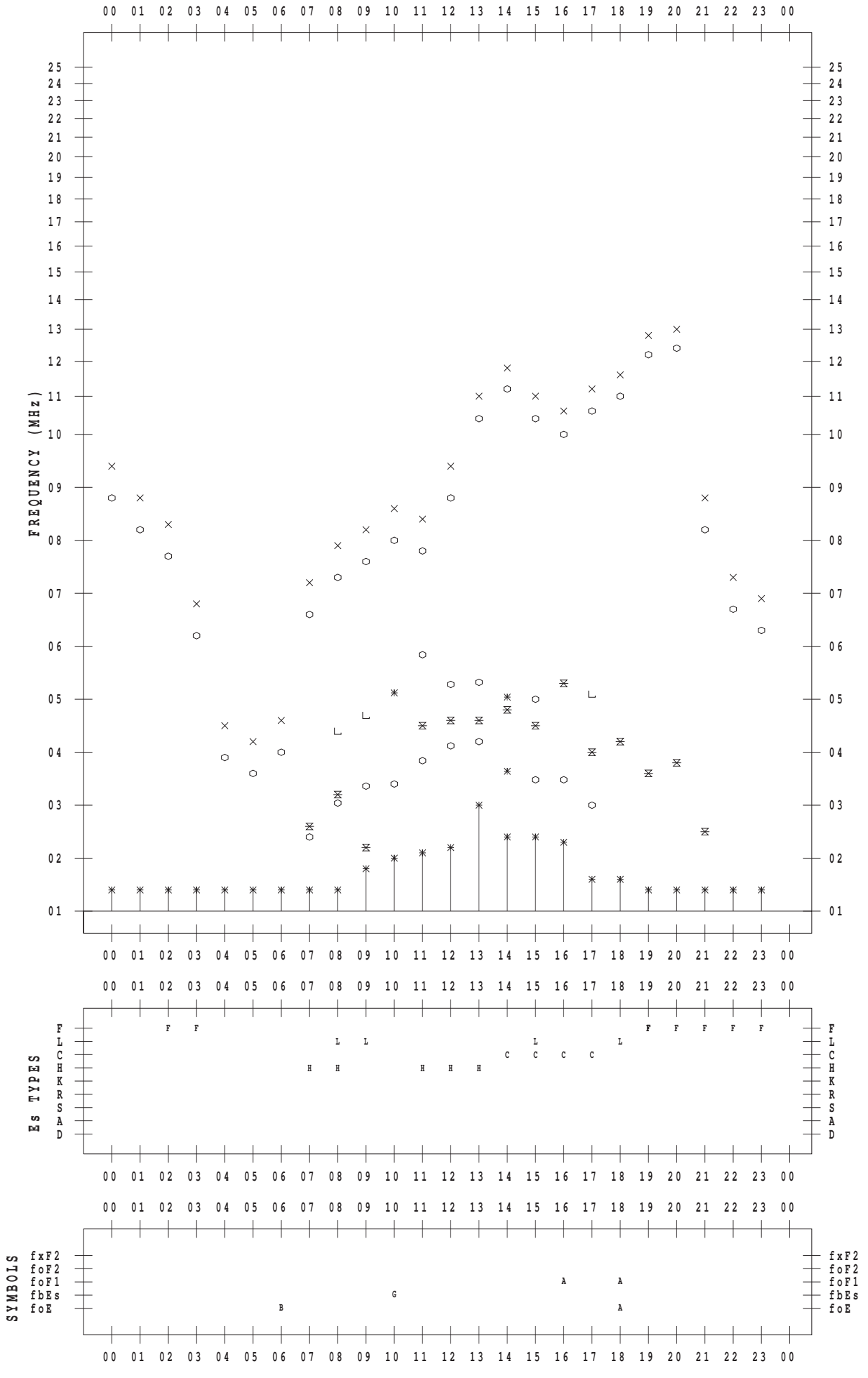
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/29

135 °E MEAN TIME



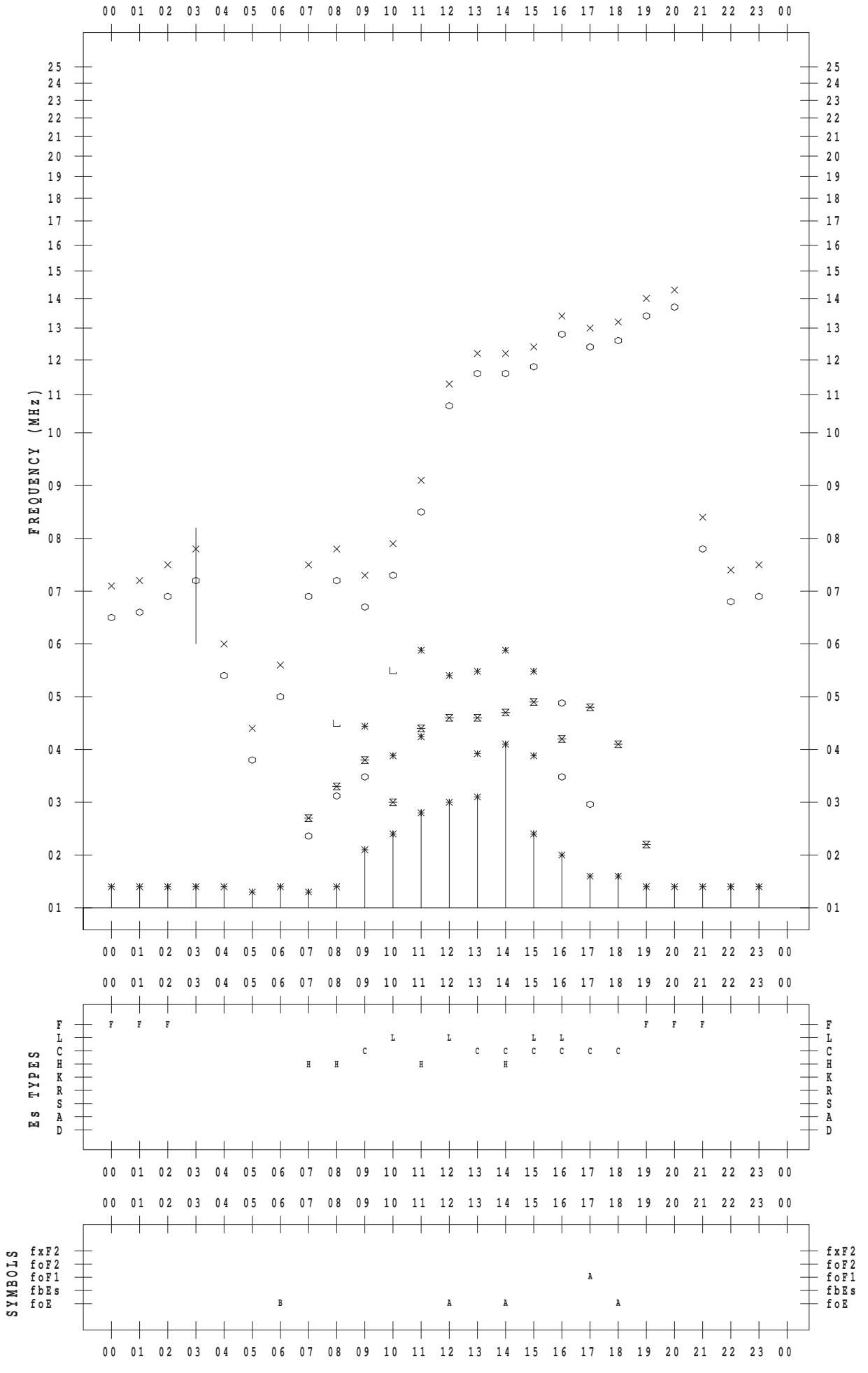
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2012/ 8/31

135 °E MEAN TIME