F-776

IONOSPHERIC DATA IN JAPAN

FOR AUGUST 2013

VOL. 65 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. 2013

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	A	58	58	54	58	57	60		A	A	A	A	A	A	A	A	62	66	67	A	A	65	62	54
2	54	52	51	54	A	56	63	66	69	A	62	A	58	61	A	64	62	A	A	A	A	A	65	66
3	A	A	A	53	A	63	65	A	A	A	A	A	A	A	64	A	A	A	A	A	69	63	A	64
4	52	54	54	58	54	53	A	A	63	A	66	62	69	66	66	65	A	67	66	67	66	64	64	
5	53	54	48	53	38	A	56	A	A	A	A	A	A		61	A	55	A	61	63	62	65	A	54
6	A	A	A	A	34	A	A	A	A	A	A	A	A	62	A	61	63	63	62	64	63	62	63	64
7	64	62	52	A	57	61	64	67	A	68	69	64	65	66	68	64	65	64	63	64	66	64	58	62
8	A	A	A	46	35	53	63	64	68	66	A	68	60	65	65	67	65	63	66	66	65	67	62	53
9	53		52	52	52	48	62	A	A	A	A	A	A	A	A	A	60	62	58	A	65	66	63	34
10	54	54	53	54	53	48	56	63	66	58	47	63	A	63	62	66	67	65	66	63	62	67	61	57
11	51	59	54	34	43	44	48	57	63	64	61	A	64	64	59	63	62	60	A	67	38	67	52	52
12	34	53	54	53	A	56	61	64	61	A	65	60	64	62	57	62	66	A	66	66	67	62	66	48
13	53	53	53	53	53	57	61	65	64	A	A	66	59	61	66	64	65	67	65	65	67	A	63	63
14	66	63	60	62	63	61	64	65	54	A	59	61	A	67	64	66	51	74	80	67	62	54	49	63
15	53	52	58	54	56	62	67	64	61	65	67	62	A	A	66	67	68	67	66	66	66	64	64	64
16	53	60	52	34	49	47	A	57	A	62	A	A	69	67	62	68	70	68	64	64	63	62	A	34
17	62	53	A	A	A	23	A	67	A	68	66	69		66	64	68	49	68	66	65	67	64	53	52
18		52	58	58	60	59	66	67	67	67	66	A	A	67	62	67	67	68	68	65	65	55	59	49
19	53	53	34	47	40	51	63	65	64	A	67	64	A	62	66	68	69	70	69	66	63	56	A	A
20	A	58	58	57	53	60	64	64	65	65	68	62	62	65	68		70	69	64	63	58	66	54	A
21		A	53	52	A	63	68	63	65	66	67	62	62	68	68	66	69	59	68	67	63	A	A	A
22	54	58	A	53	53	53	64	67	64	64	65	69	67	68	69	68	68	68	67	65	66	66	64	58
23	53	44	54	53	49	51	60	62	67			65	A	66	66	68	70	67	67	66	64	62	67	53
24	A	63	34	34	56	53	58	54	A	66	A	A	A	62	64	60	65	64	58	60	63	64	62	53
25	54	34	43	34	34	34	51	55	53	A	A	59	A	65	64	67	62	64	62	64	63	64	53	A
26	A	47	34	A	46	46	39	A		A	59	63	62	62	60	62	64	64	63	64	53	63	52	A
27	A	49	46	34	45	54	59	67	64	65	62	66	68	62		67	64	67	64	62	62	54	61	A
28	53	A	A	A	34	26	34	39	60	A	A	A	A	64	67	68	67	67	A	60	67	58	63	
29	54	53	52	52	52	52	61	64	66	67	63	61	67	67	67	65	66	65	A	67	A	A		54
30	55	32	42	47	50	54	54	60	63	64	65	A		64	65	66	67	65	61	64	N	64	62	54
31	32	54	34	44	37	A	A	A	54	58	A	58	64	60	55	66	65	62	62	62	33	62	58	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	21	25	25	26	26	28	26	23	21	16	18	19	15	26	26	26	29	27	26	27	27	27	25	23
MED	53	53	52	53	51	53	61	64	64	65	65	63	64	64	64	66	65	66	66	65	63	64	62	54
U Q	54	58	54	54	54	58	64	66	66	66	67	66	67	66	66	67	67	68	67	66	66	65	63	63
L Q	53	52	44	46	40	48	56	60	61	64	62	61	62	62	62	64	62	64	62	63	62	62	56	52

HOURLY VALUES OF fEs AT Wakkanai

AUG. 2013

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	46	32	25	G	G	36	36		49	59	43	53	35	37	57	39	36	39	42	88	61	50	60	58
2	39	33	36	36	38	G	53	52	59	73	62	40	40	35	41	56	64	74	116	124	68	103	60	45
3	72	90	72	33	33	44	60	117	73	71	80	117	113	102	63	66	61	76	72	82	68	60	71	67
4	36	68	35	33	32	38	70	84	50	52	40	52	62	35	54	34	71	70	58	36	30	G	34	
5	G	G	G	G	G	32	38	54	38	40	39	38	38	G	G	53	34	71	71	50	48	59	60	38
6	70	59	59	33	30	50	64	68	61	48	63	76	68	38	37	40	31	39	37	47	56	40	27	39
7	27	38	28	28	27	G	37	40	118	37	G	36	62	39	32	34	52	35	34	33	50	37	102	52
8	51	39	58	28	27	G	34	45	58	53	40	39	34	35	36	30	34	34	34	28	G	G	39	27
9	G		G	G	27	G	40	64	61	62	61	72	67	71	60	72	50	40	48	72	43	35	34	34
10	G	25	G	G	26	G	33	35	37	36	37	35	36	38	35	34	32	29	33	G	24	30	G	30
11	32	34	27	29	32	G	34	37	38	33	55	38	38	40	36	50	44	46	71	35	49	24	G	29
12	G	G	26	36	40	31	39	39	36	41	35	38	35	36	32	41	51	69	36	33	50	35	28	32
13	31	34	G	G	G	G	33	39	34	37	38	G	38	61	36	34	31	40	29	33	G	59	49	28
14	G	26	35	G	G	G	36	50	57	69	G	44	37	39	35	34	36	34	34	28	24	33	G	G
15	G	G	G	G	G	G	33	34	35	38	33	38	48	88	35	39	37	48	37	40	G	28	G	G
16	G	G	G	G	G	34	40	45	66	52	53	34	41	34	34	34	30	40	40	35	G	26	47	30
17	58	41	49	38	43	36	61	80	81	82	60	37		35	40	40	45	38	G	29	44	G	24	G
18		G	G	G	26	29	41	36	38	49	66	73	72	38	38	37	36	27	30	G	G	33	G	29
19	29	24	G	G	G	G	59	73	46	68	55	56	74	58	52	44	36	40	35	G	G	G	33	58
20	69	51	40	39	27	G	25	33	37	51	52	40	52	40	37		50	39	34	36	58	G	26	43
21		42	30	30	43	44	37	41	31	33	39	44	42	34	34	36	48	38	35	48	G	43	56	59
22	33	34	40	39	32	G	34	40	53	54	38	37	34	50	50	40	46	38	38	34	49	33	G	G
23	G	G	G	G	G	G	25	40	44			38	38	40	38	36	32	G	G	G	G	39	43	38
24	34	34	G	30	26	24	38	42	35	58	54	54	41	37	36	40	34	43	34	26	G	28	G	G
25	G	G	G	G	G	29	32	40	36	38	46	40	35	37	34	31	28	34	39	32	32	34	27	36
26	34	28	G	33	G	33	35	46		56	52	50	34	33	33	39	36	43	44	G	28	27	49	68
27	36	29	G	G	G	G	34	40	52	61	40	33	41	48		31	27	24	G	38	34	G	39	40
28	39	35	43	40	34	G	25	27	G	71	63	66	74	51	32	30	35	48	61	60	36	G	G	
29	G	G	G	G	G	28	33	35	49	38	62	41	39	38	34	66	56	52	111	72	73	49		28
30	33	34	G	24	G	27	33	27	29	G	G	36	G	G	G	37	34	40	G	26	G	24	G	25
31	25	33	G	G	33	40	45	35	48	40	34	33	G	35	32	33	30	42	55	48	39	35	25	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	29	30	31	31	31	31	31	30	30	30	30	31	30	31	30	30	31	31	31	31	31	31	30	29
MED	32	33	G	24	26	24	36	40	47	52	44	40	40	38	36	38	36	40	37	35	34	33	30	32
U Q	39	38	36	33	32	34	41	52	58	61	60	53	62	48	40	41	50	48	55	48	50	40	49	44
L Q	G	G	G	G	G	G	33	36	36	38	38	37	35	35	34	34	32	35	34	28	G	24	G	26

HOURLY VALUES OF fmin AT Wakkanai

AUG. 2013

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	14	14	14	15	15	14	15		15	22	15	28	22	27	22	20	15	14	14	14	14	14	14	14
2	14	14	14	14	14	14	14	14	15	15	21	27	24	22	21	18	17	14	14	14	14	14	14	14
3	14	14	14	14	14	14	14	14	16	17	20	22	27	20	18	18	14	14	14	14	15	14	14	15
4	14	14	14	15	14	14	14	14	15	18	20	18	20	20	18	16	14	14	14	14	14	15	15	
5	14	14	18	14	21	14	14	14	14	17	17	20	23	20	21	14	16	15	14	14	15	14	14	15
6	14	14	14	14	14	14	14	14	15	17	18	20	18	21	24	17	17	14	14	14	14	15	15	14
7	14	14	15	15	15	14	14	14	17	16	21	21	18	16	18	17	14	14	14	14	14	15	15	14
8	14	14	14	14	15	14	14	14	15	17	20	21	21	51	20	17	14	14	15	14	15	14	14	14
9	16		14	22	14	15	14	14	15	17	20	20	17	14	17	15	14	14	14	15	14	15	14	14
10	15	15	14	15	14	18	14	14	15	15	17	27	26	20	15	16	20	14	14	16	14	15	26	15
11	14	15	15	14	14	18	14	14	15	21	18	26	22	21	17	18	14	14	14	14	14	15	15	14
12	15	14	15	14	14	15	14	18	14	16	28	20	20	18	18	15	14	14	14	15	14	15	14	14
13	14	15	15	14	15	18	14	15	14	18	21	53	18	23	20	17	18	14	14	15	14	14	15	18
14	15	14	14	14	15	14	14	14	15	18	54	21	27	17	23	14	14	14	14	15	17	14	16	17
15	15	15	14	14	15	15	14	14	15	17	21	21	18	15	16	18	14	14	15	14	14	14	15	14
16	15	15	18	21	14	14	14	16	14	17	16	17	17	17	15	17	15	14	14	14	15	16	14	14
17	14	14	14	14	14	14	14	14	14	15	21	20		21	17	15	14	14	14	14	15	14	15	14
18		15	15	14	15	14	14	14	15	15	17	20	20	20	16	18	14	14	14	15	15	14	15	15
19	15	14	14	15	16	14	14	15	15	18	18	21	26	17	20	14	14	14	14	15	15	15	14	14
20	14	15	14	14	15	18	14	14	14	16	22	17	23	24	22		18	14	14	14	14	21	15	15
21		14	14	14	14	14	14	14	15	18	21	18	32	53	21	23	14	14	14	14	15	14	14	14
22	14	14	14	14	14	16	14	14	15	18	24	22	26	24	21	16	14	14	14	14	15	15	15	15
23	15	15	15	15	15	14	15	15	15			21	22	20	17	18	15	14	20	14	15	14	14	14
24	14	14	20	17	15	15	14	14	16	17	24	21	32	23	21	17	14	14	14	16	15	14	14	14
25	15	15	15	15	20	14	14	14	15	15	17	20	18	21	15	14	14	15	14	14	14	14	15	14
26	15	14	15	14	14	14	15	14		20	17	22	20	21	18	15	15	14	14	14	14	15	14	14
27	14	15	14	14	15	18	14	14	15	15	20	23	22	18		17	14	14	15	15	14	16	15	14
28	15	14	14	14	15	16	14	15	20	20	18	26	23	20	21	14	15	14	15	14	14	15	15	
29	17	15	15	14	15	14	15	14	15	15	18	26	23	22	18	18	15	14	14	14	15	14		15
30	14	14	15	16	14	15	14	14	14	23	46	29	54	46	45	20	15	14	20	15	15	15	14	15
31	18	15	14	14	14	14	14	14	14	18	20	18	15	14	15	20	16	14	15	15	14	14	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	31	31	31	31	31	30	30	30	30	31	30	31	30	30	31	31	31	31	31	31	30	29
MED	14	14	14	14	15	14	14	14	15	17	20	21	22	20	18	17	14	14	14	14	14	14	15	14
U Q	15	15	15	15	15	15	14	14	15	18	21	26	26	23	21	18	15	14	14	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	16	18	20	18	18	17	15	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

AUG. 2013

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	66	54	52	54	57	58	64	64	70	77	A			74	71	69	76	77	80	83	74	A	54	54
2	58	54	52	58	52	54	69	67	76	62		76	82	82	82	68	65	62	73	90	76	71	76	A
3	A	A	52	52	58	53	60	72	73	71	64	75	74	A	74	74	73	80	85	74	73	A	66	A
4	53	54	54	52	45	47	68	64	61	A	A	A	A	A	83	78	A	78	76	A	74	71	72	A
5	53	53	52	52	54		A	72		A					76	81	68	64	71	55	67	44	47	53
6	53	A	46		45	52	59	A	65	66	62	A	65	73	65	68	66	73	A	66	A	52	54	67
7	42	A	A	52	45	52	A	86	88	80	84	81	80	84	86	93	86	73	71	65	N	A	46	A
8	A	44	A	A	44	45	67	80	A	A	68	78	84	A	80	71	71	73	77	88	A	A	A	51
9	A	53	52	52	43	44	63	73	63	64	A	A	A	68	A	A	80	70	66	69	A	55	64	54
10	A	A	45	46	43	45	69	75	77	A	62	A	59	65	76	75	85	77	72	73	68		53	
11	53	53	48	53	44	49		74	84	73	65			A	69	C	74	73	79	82	66	66	72	73
12	72	67	66	63	52	53	48	75	71	A	A	A	70		72	73	A	81	85	80	48	55	54	53
13	53	52	52	54	51		69	64	68	76	58		72	66	A	77	78	77	86	89	A	73	A	67
14	54	58	59	52	52	61	64	81	81	A	A	75	74	A	100	A	90	86	85	84	63	54	63	61
15	62	53	58	51	53	51	64	72	84	65	71	74		76	80	86	87	82	88	87	77	77	53	74
16	64	52	52	54	53	44	75	74	69			92	76	76	76	91	111	106	80	A	A	A	A	A
17	52	51	52	52	53	53	59	82	81	86	82	90	87	84	94	88	91	86	96	88	A	64	54	45
18	53	53	53	A	47	45	74	75	69	82	78	84	91	107	105	107	102	98	88	90	52	54	A	58
19	52	53	52	54	44	74	64	78	72	72	74	69	78	81	88	93	93	87	84	84	54	55	55	54
20	A	58	A		50	52	72		61			77	A	80	89	90	N	86	91	90	78	58	A	53
21		53	54	53	A	51	66	80	84	64	A		77	86	94	98	94	90	113	88		A	A	A
22	A	46	46	51	A		66	87	73	75		82	A	A	91	97	83	86	83	84	72	A	54	62
23	47		53	52	53	46	63	76	90	98	88	82		80	81	88	88	85	87	81	A	A		66
24	54	47	64		52	52	69	67	62	71	73	75	A	76	80	A	65	67	62	66	64	77	67	52
25	44		47	48	43	52	66	85	73	80	85	74	90	85	75	71	68	70	80	86	80	53	53	53
26	43		53	52	N	43	54	70	77	74	74	77	75	72	69	66	70	69	72	72	39	A	A	A
27	A	54	53	A	A	A	54	64	69	77	74	76	80	87	88	83	78	75	A	74	55	53	53	44
28	49		53	53	A	A	A	78	98		66		81	84	97	97	86	76	70	76	64	A	54	
29	53	45	A	52		24	60	67	81			66	72	76	86	92	82	78	73	74	63	62	54	54
30	48	A	51	47	45	44	64	81	91	62	64	A		78	80	76	71	77	82	83	78	53	54	53
31	68	47					58	67	73	63	72	80	84	85	77	77	70	74	68	66	73	66	A	54
	00	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	22	26	24	24	25	27	29	29	21	19	19	20	23	29	27	28	31	29	29	22	20	22	22
MED	53	53	52	52	50	51	64	74	73	73	72	77	78	80	80	81	79	77	80	82	68	56	54	54
U Q	58	54	53	53	53	53	69	80	82	78	78	82	83	84	88	92	87	86	85	87	74	68	64	62
L Q	49	51	52	52	44	45	60	67	69	64	64	75	73	74	75	73	70	73	72	72	63	53	53	53

HOURLY VALUES OF fEs AT Kokubunji

AUG. 2013

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	30	29	G	29	24	33	25	G	35	G	53			70	52	51	51	34	G	32	60	53	56	34
2	48	45	51	28	26	37	G	35	51	47		49	G	58	58	G	48	50	54	53	G	43	G	47
3	29	60	28	G	G	G	28	G	G	62	62	60	57	68	61	61	33	60	70	28	G	41	58	57
4	39	G	G	G	G	G	28	32	60	92	109	48	68	78	57	79	87	79	61	127	59	58	73	83
5	24	G	G	G	G		27	32		55				G	G	65	G	39	29	G	31	G	24	27
6	50	46	28		G	40	44	57	50	57	53	66	50	G	G	39	G	70	58	45	72	49	29	41
7	G	50	41	37	30	27	68	59	60	47	73	G	G	G	G	G	G	31	40	35	28	38	35	59
8	40	24	58	36	35	37	43	53	91	82	64	60	50	81	60	62	51	66	60	40	114	59	87	59
9	50	57	26	G	29	30	29	G	48	47	83	68	68	67	58	82	51	42	27	52	92	48	41	36
10	50	50	G	G	G	G	25	49	52	70	G	79	48	G	33	G	G	26	G	26	G		G	
11	G	G	G	G	G	G		G	G	62	54	G		71	G	C	G	44	46	35	24	28	60	40
12	29	G	28	G	34	27	43	G	45	84	66	62	G		G	50	79	60	65	65	39	31	49	G
13	33	26	G	28	31	G	27	28	G	G	G	G	G	G	70	G	G	61	45	28	94	59	34	28
14	46	45	39	26	G	G	34	27	52	164	120	75	G	72	109	107	85	61	50	60	51	48	34	58
15	30	G	G	G	G	24	30	28	G	G	50	G		G	G	G	34	47	24	G	G	24	25	31
16	G	G	28	G	G	G	G	28	G			G	G	G	58	49	G	45	52	49	72	40	49	58
17	30	G	G	G	29	G	34	40	52	G	G	G	47	53	G	52	64	41	29	72	60	G	G	30
18	G	G	26	26	G	G	26	G	49	53	60	49	G	61	G	G	G	G	G	G	G	28	58	35
19	32	G	G	G	G	G	24	28	G	G	G	G	G	G	52	40	31	35	34	26	G	G	G	G
20	26	G	25		G	29	G		G			65	73	G	G	G	G	26	22	27	24	28	34	29
21		30	G	G	57	40	81	55	30	G	56		47	G	G	35	37	51	34	24		31	41	33
22	26	36	34	28	26		29	G	G	G		66	91	75	51	50	64	52	34	32	G	35	G	24
23	G		G	G	G	G	G	43	48	G	G	G		G	G	G	G	31	34	85	54	29		G
24	G	28	G		G	G	43	42	40	52	48	G	61	65	G	53	G	43	54	45	30	29	27	G
25	G		G	G	G	28	25	G	G	G	G	52	G	G	48	G	28	31	60	27	30	G	G	G
26	G		G	G	G	G	23	G	29	G	G	G	48	G	G	G	G	29	G	45	38	40	59	50
27	55	27	38	30	29	24	G	G	G	G	G	G	G	G	G	G	G	28	61	43	G	G	G	G
28	G		G	G	34	27	25	32	51	G	G		G	G	43	G	30	G	33	G	28	49	45	
29	G	G	29	26		G	25	G	G	G		49	61	G	59	90	45	29	35	34	34	40	28	34
30	39	35	G	G	27	G	G	29	G	50	50	48		G	G	G	28	34	42	36	53	29	28	28
31	26	G					G	G	57	52	52	G	55	54	59	46	39	G	G	40	36	48	33	31
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	27	30	27	29	28	30	30	30	29	25	27	25	30	31	30	31	31	31	31	30	30	30	29
MED	29	26	G	G	G	G	26	28	38	47	52	48	47	G	33	40	30	41	35	35	32	36	34	33
U Q	39	45	28	28	29	28	34	40	51	59	63	62	59	67	58	53	51	52	54	49	59	48	49	48
L Q	G	G	G	G	G	G	23	G	G	G	G	G	G	G	G	G	G	29	27	27	G	28	24	25

HOURLY VALUES OF fmin AT Kokubunji

AUG. 2013

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

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

HOURLY VALUES OF foF2 AT Yamagawa

AUG. 2013

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	52	67	53	N	53	A	A	76	114	58	A	64	72	80	87	83	80	80	87	71	A	A	A	52
2	A	52	54	A	50	54	54	66	62	61	54	74	88	85	81	74	64	67	78	86	81	77	74	75
3	72	66	67	68	66	48	53	70	72	57	71	72	56	77	78	84	86	94	A	78	71	73	71	58
4	A	52	54	64	60	43	A	61	67	62	A	68	A	78	A	90	92	87	96	84	70	A	A	A
5	52	62	52	48	45	55	71	55	43	A	A	61	A	72	78	81	78	76	80	71	67	67	67	52
6	44	54	A	44	37	47	58	54	73	A	60	A	67	81	87	78	72	80	A	A	54	54	54	54
7	54	50	53	53	48	47	42	76	72	A	A	A	70	78	81	86	82	79	71	79	78	67	54	A
8	51	A	45	52	52	53	58	76	75	61	76	86	98	87	87	88	86	83	A	88	67	54	52	
9	52	47	A	52	50	48	50	68	76	76	68	76	76	91	90	A	A	96	A	A	A	53	53	53
10	52	N	54	55	51	50	60	67	71	A	A	A	78	87	90	88	96	98	90	78	77	78	80	78
11	74	67	54	52	48	36	A	86	76	A	66	69	74	77	84	87	87	88	97	69	77	78	53	73
12	54	63	A	67	51	44	55	67	77	64	66	A	59	74	A	84	88	90	97	52	75	A	A	52
13	54	54	63	63	50	52	58	76	73	A	A	66	63	71	76	84	88	89	95	89	80	77	54	64
14	29	60	53	45	28	N	54	80	74	61	68	63	72	72	87	88	95	87	87	84	73	72	53	54
15	58	52	53	52	52	46	56	73	67	72	66	73	69	77	87	92	90	88	90	84	77	78	75	71
16	55	52	53	52	54	54	72	70	64	65	75	96	77	68	82	94	89	114	91	74	53	54	49	54
17	53	52	51	46	46	49	58	72	79	78	77	86	69	85	96	96	69	96	98	89	84	72	73	73
18	67	55	53	53	46	42	54	75	76	75	75	76	87	88	A	A	114	101	112	84	A	A	A	75
19	73	54	58	52	54	53	53	70	72	93	72	76	85	91	94	88	97	90	94	87	67	26	75	48
20	62	58	53	52	52	52	67	60	69	71	72	74	78	87	90	92	91	98	99	87	77	54	A	66
21	58	52	A	60	53	48	57	77	82	66	68	72	80	85	87	90	86	97	89	88	58	47	55	53
22	52	54	51	53	52	53	65	78	67	74	82	80	78	82	77	N	91	A	A	A	A	54	54	54
23	63	53	53	58	53	45	53	74	90	86	76	80	97	97	96	97	98	97	98	87	72	67	53	55
24	63		50	54	54	53	66	74	81	87	76	72	78	79	95	97	90	83	90	85	77	80	66	A
25	54	54	60	58	50	42	54	72	78	82	78	84	87	77	88	83	A	A	88	88	77	54	54	53
26	44	53	50	46		34	50	76	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	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	23	22	24	25	24	23	26	25	19	19	21	23	25	22	22	23	23	20	22	21	21	20	21
MED	54	54	53	52	51	48	56	72	73	71	72	74	77	80	87	88	88	89	90	84	75	67	54	54
U Q	62	60	54	58	53	53	60	76	77	78	76	80	85	87	90	92	92	97	97	87	77	77	72	72
L Q	52	52	52	52	48	44	53	67	68	61	66	68	69	77	81	84	82	83	87	78	67	54	53	53

HOURLY VALUES OF fEs AT Yamagawa

AUG. 2013

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	40	36	46	49	51	73	92	40	43	39	61	46	42	44	49	36	34	43	43	48	49	65	55	33
2	51	37	38	55	28	35	44	38	47	36	43	34	48	57	71	65	61	52	46	62	59	36	54	34
3	34	48	40	32	28	G	22	39	59	46	45	40	55	G	33	G	35	59	85	G	G	G	58	50
4	58	36	33	26	G	29	46	37	37	33	61	56	67	51	88	38	50	63	79	45	60	80	73	71
5	46	G	28	G	G	G	33	50	46	42	56	39	48	49	38	75	37	40	39	35	30	G	G	G
6	G	G	34	28	G	G	34	46	56	89	60	52	46	48	61	37	49	54	80	73	40	73	50	53
7	29	49	39	32	28	36	39	36	59	114	72	46	48	G	G	38	32	43	40	46	33	36	36	49
8	36	58	27	29	30	33	G	46	46	51	57	74	66	54	54	51	51	49	105	61	71	46	37	
9	40	49	50	51	41	35	36	69	58	66	40	62	35	33	50	82	91	80	114	116	58	40	49	38
10	36	59	G	G	G	G	34	39	65	68	90	87	46	50	46	34	62	41	40	36	33	G	G	G
11	G	G	G	G	G	28	60	46	79	82	32	G	64	G	G	39	40	36	55	44	33	59	32	G
12	G	36	70	24	27	G	G	32	45	G	50	53	58	G	67	49	68	50	54	59	78	59	53	39
13	30	36	34	45	35	35	48	50	79	72	68	54	50	48	45	62	51	55	54	36	42	32	34	25
14	G	31	G	G	G	24	G	31	45	53	57	59	34	G	54	50	53	61	47	40	30	38	G	G
15	G	G	G	G	G	G	G	33	36	36	38	48	36	36	50	40	51	45	36	G	G	G	31	34
16	G	G	G	G	27	32	G	31	33	42	34	36	36	56	54	52	58	56	35	28	36	28	G	G
17	G	G	G	G	G	G	31	35	39	31	G	G	53	G	32	62	52	45	41	33	27	49	30	32
18	G	G	G	G	G	G	G	36	48	56	56	45	46	54	97	94	62	60	61	44	44	115	59	41
19	33	28	37	27	33	G	G	32	43	48	50	G	54	46	G	G	50	44	40	31	41	34	G	G
20	G	G	34	26	24	G	G	27	42	49	51	49	G	G	47	65	59	48	50	31	41	30	48	34
21	G	33	39	40	G	52	46	40	79	61	52	42	51	62	35	57	60	43	35	26	26	G	28	46
22	28	31	G	G	G	G	G	25	34	32	48	40	G	G	G	G	45	73	116	80	50	29	31	40
23	G	26	G	G	G	G	G	36	44	38	50	G	51	G	G	35	46	28	36	33	48	26	G	56
24	23	G	G	G	G	G	G	36	60	51	54	G	54	52	50	36	35	29	33	36	34	50	G	37
25	G	G	G	G	G	G	G	39	46	52	51	44	52	50	39	34	84	95	50	46	30	32	46	33
26	G	G	G	G	G	G	G	36	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	26	26	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24
MED	12	30	28	12	G	G	12	36	46	49	51	45	48	46	47	40	51	49	47	40	40	36	34	34
U Q	36	36	38	32	28	33	39	40	59	63	58	53	54	51	54	62	60	59	70	53	49	54	51	43
L Q	G	G	G	G	G	G	G	33	42	37	44	35	39	G	32	35	42	43	39	32	30	27	G	13

HOURLY VALUES OF fmin AT Yamagawa

AUG. 2013

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	14	15	14	15	14	15	17	27	28	53	56	35	32	24	20	17	14	14	14	15	14	16
2	14	14	14	14	15	14	14	14	14	20	22	56	42	40	38	36	18	15	15	15	15	15	15	14
3	14	14	15	15	14	15	20	15	17	20	23	32	36	54	26	53	27	16	14	17	28	16	14	15
4	15	14	15	15	15	14	14	14	17	21	26	24	46	32	27	18	15	17	14	14	15	14	14	15
5	14	14	14	15	15	15	14	16	16	17	27	21	28	54	59	23	20	27	14	14	16	15	15	17
6	15	14	14	14	15	17	14	15	15	16	30	32	38	33	32	30	18	16	14	14	15	14	14	14
7	15	14	15	14	14	14	14	14	14	17	22	27	28	27	20	16	14	14	14	15	15	17	15	14
8	14	14	15	15	14	15	14	14	17	23	20	34	29	30	29	22	16	16	14	14	15	14	14	
9	14	14	15	14	17	15	14	14	16	18	23	23	22	26	55	17	20	17	16	14	14	14	14	14
10	14	14	15	16	14	15	14	14	16	17	30	33	29	29	29	22	17	15	14	15	14	16	15	17
11	15	14	14	14	20	15	14	14	16	18	18	39	39	53	59	50	44	18	15	14	16	15	15	18
12	15	17	14	15	15	14	18	17	15	20	34	33	35	54	38	21	20	16	15	15	15	15	15	15
13	15	15	14	15	16	14	14	15	15	18	24	27	29	29	27	38	21	16	14	16	14	15	15	14
14	15	15	14	16	18	14	21	14	17	26	28	38	54	52	30	27	20	14	14	15	14	15	16	16
15	15	17	15	17	15	15	20	14	15	20	26	30	59	26	24	53	16	15	14	16	15	17	15	14
16	16	15	15	17	14	14	18	15	17	24	22	28	29	28	22	24	20	17	16	15	14	15	15	18
17	24	17	15	15	18	14	14	14	17	18	21	23	24	60	21	18	15	14	14	14	15	15	14	14
18	18	15	15	15	15	15	20	14	18	22	35	49	58	39	36	18	23	16	16	14	15	14	14	15
19	15	14	15	17	14	17	18	14	15	20	34	52	40	56	18	48	21	17	15	14	15	15	17	14
20	15	16	14	15	15	15	18	15	17	20	21	36	53	58	27	33	20	18	15	15	15	15	14	14
21	15	15	14	16	17	14	15	14	18	18	18	24	24	26	56	22	18	16	14	14	14	16	15	15
22	16	14	16	15	17	15	18	14	15	20	29	30	54	66	60	45	23	14	14	15	15	14	15	14
23	16	16	21	15	15	17	18	15	16	30	33	58	38	59	21	20	17	14	14	14	15	16	15	14
24	17	35	21	15	16	17	14	15	17	20	22	62	38	28	24	21	18	16	14	14	17	14	14	15
25	17	14	18	16	15	15	18	15	17	20	34	48	38	36	30	40	20	16	15	15	14	16	16	15
26	16	17	22	17	21	14	18	15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	26	26	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24
MED	15	14	15	15	15	15	14	14	16	20	26	33	38	36	29	24	20	16	14	14	15	15	15	15
U Q	16	16	15	16	17	15	18	15	17	21	30	48	49	54	38	39	20	17	15	15	15	16	15	15
L Q	15	14	14	15	14	14	14	14	15	18	22	27	29	28	24	20	17	15	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

AUG. 2013

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	52	54	58	52	47	45	55	85	90	62	A	A	84	88	104	100	84	A	A	A	A	A	A	67
2	67	67	52	62	60	60	54	64	58	93	B		86	88	81	78	74	76	92	87	85		52	52
3	52	52	74	66	52	48	52	72	64	67	73	A			92	105	106	114	107	84	77		54	
4	42	B	49	72	60	A	43	57	69	61	92	B	A		104	112	108	124	111	83	64	54	54	54
5	A	52	A	A	49	52	A	A	A	A	A	B	A	A	74	102	88	106	103	76	76		80	73
6	A	52	34				N	72	72	62	A	A	A	88	A	88	87	82	86	72	A	67	54	A
7	A	54	54	53	48	A	54	70	69	A		71	B	87	A	87	88	81	84	88	80	54	48	
8		A	52	B	56		52	67	60	66	B	87	A		108	107	106	107	110	113	78	54	A	
9		52	A	50	46	47	A	62	67	A	A	B		110	N	133	108	127	127	107	88	B	A	A
10	39	53	72	64	60		58	60	68	A	A	A	100	108	133	109	132	132	132	109	110	89	87	
11	66		49	67		43	46	76	65	61	68	75	83	88	104	115	121	132	128	119	85	88	79	77
12		87	86		49	58	62	81	92	64	169	B		76	A	76	108	108	110	89	78	67		49
13	B	53	54	52	A	53	71	115	62	67	A	A	A	A	84	90	105	110	107	A	89	A	B	B
14	81	80	N	52	51	52	65	92	62	60	65	B		B	100	108	107	102	101	86	B	72		53
15	66	67	67	67	52	29	46	72	72	67	67	76	86	87	90	102	105	110	105	88	86	86	A	
16	59	A	B	B	46		54	58	66	63	78	92	100	85	106	110	130	118	N	92	86	67	64	53
17			51	B	B		53	67	67	94	82	76	89	96	105	N	113	125	123	110	84		86	52
18	B	72	58	50		39	48	66	72	81	80	88	82	103	106	107	119	134	118	86	81	82	A	A
19	81		54	65		A	53	66	78	62	72	76	87	106	107	115	110	108	121	107	74	83	76	99
20	78		59	54	56	64	57	67	75	73	72	B	87	102	96	90	108	126	120	99	86	83	66	
21	58	52	49	45	A	63	66	86	67	67	76	A	88		90	104	117	126	130	107	78	48	53	A
22	53	53	63	B	57	52	67	71	67	75	87	84	81	86	106	107	107	98	100	88	67	A	B	53
23	A	54	52	63	52	B	47	81	87	86		86	89	126	108	128	108	121	N	102	87		54	54
24	63	53	B	39	50	46	54	73	87	77			A		89	109	117	90	118	108	N	79	52	A
25	53	53	49	52	55	46	51	73	88	82	76	83	101	93	106	105	90	88	97	89	A	A	B	B
26	52	B			B			84	82	76	68	85	87	100	97	90	87	88	100	108	39	86	54	
27	53	53		52	46	A	53	67	82	66	68	80	88	102	108	108	107	108	108	89	72	73	54	66
28	73	74	81	81		42	53	88	94	69	B		87	91	102	88	100	100	87	88	84	68	A	
29	B	53	63	53		A	46	80	68	65		80	90	108	116	88	90	106	A	88	A	A	75	
30		60	A	52	B		43	76	81	67	74	73	B	B	88	83	97	103	106	49	59	54		53
31	58	52	52	A	B	A	46	73	75		73	77	87	95	83	86	107	108	105	82	54	62	53	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	19	23	23	22	19	17	27	30	30	26	18	16	19	22	27	30	31	30	27	29	25	20	19	15
MED	58	53	54	53	52	48	53	72	70	67	74	80	87	94	104	104	107	108	107	89	80	70	54	53
U Q	67	67	63	65	56	55	57	81	82	76	80	85	89	103	106	109	110	124	120	107	86	83	76	67
L Q	52	52	51	52	48	44	47	67	67	63	68	76	86	88	90	88	90	100	100	86	73	58	53	52

HOURLY VALUES OF fEs AT Okinawa

AUG. 2013

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	29	40	52	60	87	48	50	68	G	G	G	G	65	88	123	86	78	58	66	46
2	34	43	51	G	34	40	36	34	39	39	B	G	47	50	61	G	G	46	42	34	29	G	G	G
3	G	40	G	G	44	34	38	25	52	52	51	68	G	G	G	G	54	G	39	G	G	G	G	G
4	G	B	G	G	G	28	G	G	39	G	35	B	71	G	G	G	50	G	38	42	27	G	G	51
5	58	30	38	25	26	46	91	94	101	92	49	B	86	65	65	G	G	G	35	G	G	G	58	57
6	59	48	G	G	G	G	G	36	44	48	93	91	86	50	73	61	53	52	61	G	70	50	27	59
7	58	46	G	G	28	28	G	G	51	65	G	68	B	G	52	G	G	57	40	49	32	G	G	G
8	G	48	G	B	G	G	G	G	28	G	B	G	51	G	68	57	49	44	37	31	34	57	104	G
9	G	G	54	G	G	38	50	54	56	52	54	B	G	G	G	48	54	41	36	43	50	B	58	57
10	49	G	G	25	G	G	G	35	46	77	92	68	G	71	55	50	35	33	38	G	24	G	G	G
11	G	G	G	G	G	24	28	G	34	G	G	G	G	57	59	80	68	36	36	48	50	G	G	G
12	G	G	G	G	G	G	G	G	30	G	G	B	G	G	92	G	66	78	38	G	G	G	G	26
13	B	G	53	50	48	32	G	G	46	G	48	96	65	41	G	65	77	68	87	105	26	33	B	B
14	G	G	G	G	G	G	G	G	G	G	G	B	G	B	G	53	G	G	34	28	B	G	G	G
15	G	G	G	G	G	G	G	G	30	44	G	G	G	G	55	59	53	35	52	53	56	53	26	G
16	G	29	B	B	G	G	G	G	G	G	G	G	G	61	54	G	56	46	44	27	G	G	G	G
17	G	G	G	B	B	G	G	G	G	G	G	G	G	53	G	G	G	53	84	73	35	G	G	G
18	B	G	G	G	G	G	G	G	G	G	G	54	G	66	82	83	50	G	45	68	59	51	39	29
19	G	G	G	G	G	40	G	G	43	G	G	G	G	52	59	G	52	G	62	56	38	48	51	G
20	G	G	G	G	G	G	G	G	44	50	48	B	69	72	72	70	74	74	42	58	G	G	G	G
21	G	G	G	26	32	51	29	52	48	46	56	56	50	G	G	G	56	72	52	28	G	36	G	44
22	28	G	G	B	26	G	G	G	G	G	G	G	G	G	G	G	65	G	G	33	34	39	B	G
23	25	G	G	G	G	B	G	35	35	G	G	G	G	G	61	61	110	86	73	51	84	G	35	G
24	G	G	B	G	G	G	G	26	34	43	G	G	48	G	G	49	G	28	25	39	G	30	G	52
25	G	G	G	G	G	G	G	28	G	G	55	58	G	G	G	G	G	57	50	85	79	70	B	B
26	26	B	G	G	B	G	G	34	49	52	50	55	G	G	G	G	G	G	34	28	25	30	G	G
27	G	G	G	G	G	47	32	G	G	G	G	G	G	G	G	G	G	G	36	G	G	G	G	G
28	G	G	G	G	G	G	G	G	G	50	B	G	G	G	G	G	G	41	42	28	36	49	36	G
29	B	G	36	G	G	26	G	G	G	G	G	G	G	54	G	73	60	74	88	60	79	72	34	G
30	G	G	29	G	B	G	33	29	40	40	50	G	B	B	G	G	G	50	35	54	32	G	G	G
31	G	G	G	26	B	26	28	G	G	G	G	G	G	G	G	G	G	42	40	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	28	29	29	27	27	30	31	31	31	31	28	25	29	29	31	31	31	31	31	31	30	30	28	29
MED	G	G	G	G	G	G	G	G	35	G	G	G	G	G	G	G	50	42	40	39	32	G	G	G
U Q	25	15	G	G	26	34	29	34	46	50	50	63	49	53	61	59	60	57	52	56	50	49	35	36
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	36	27	G	G	G	G

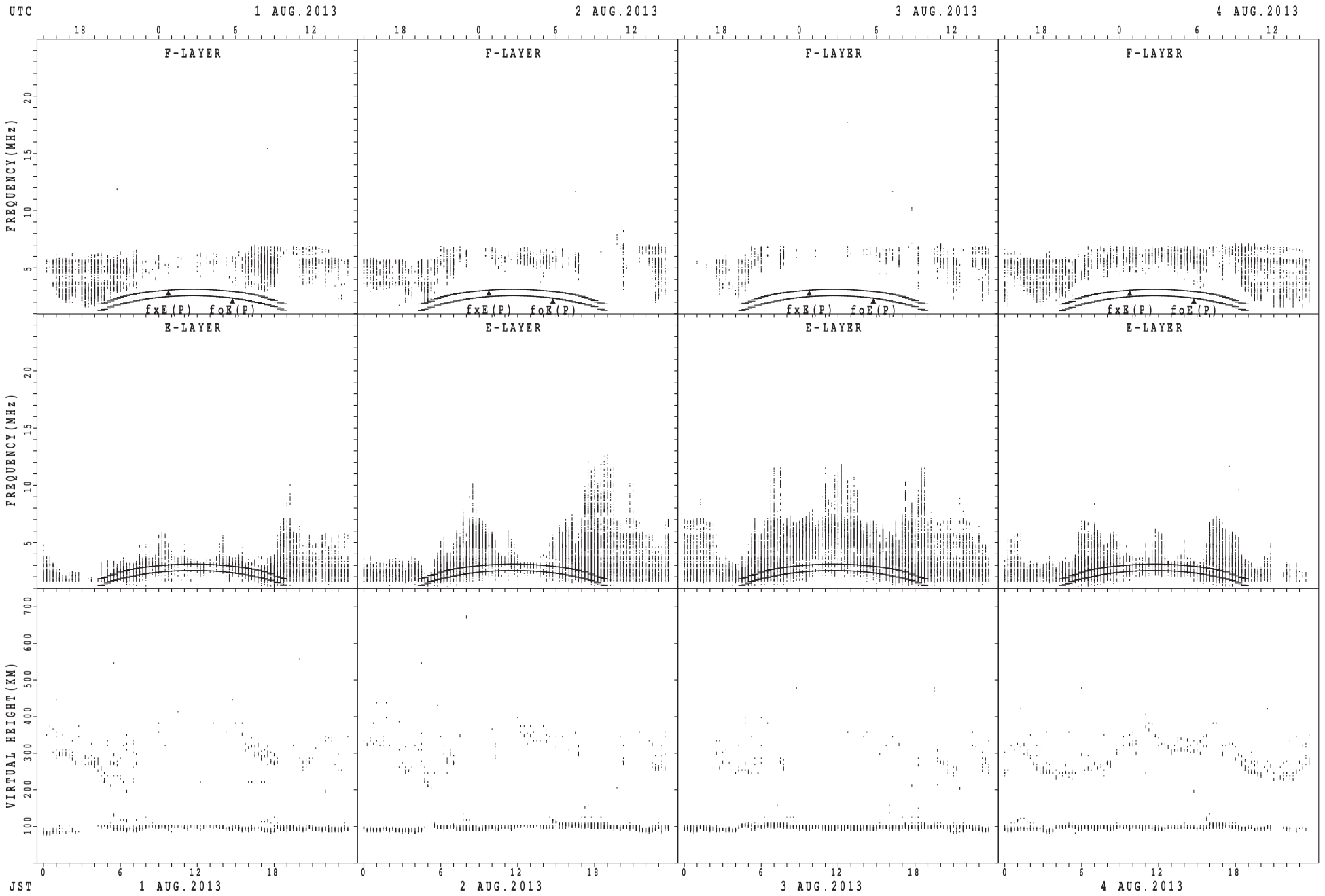
HOURLY VALUES OF fmin AT Okinawa

AUG. 2013

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

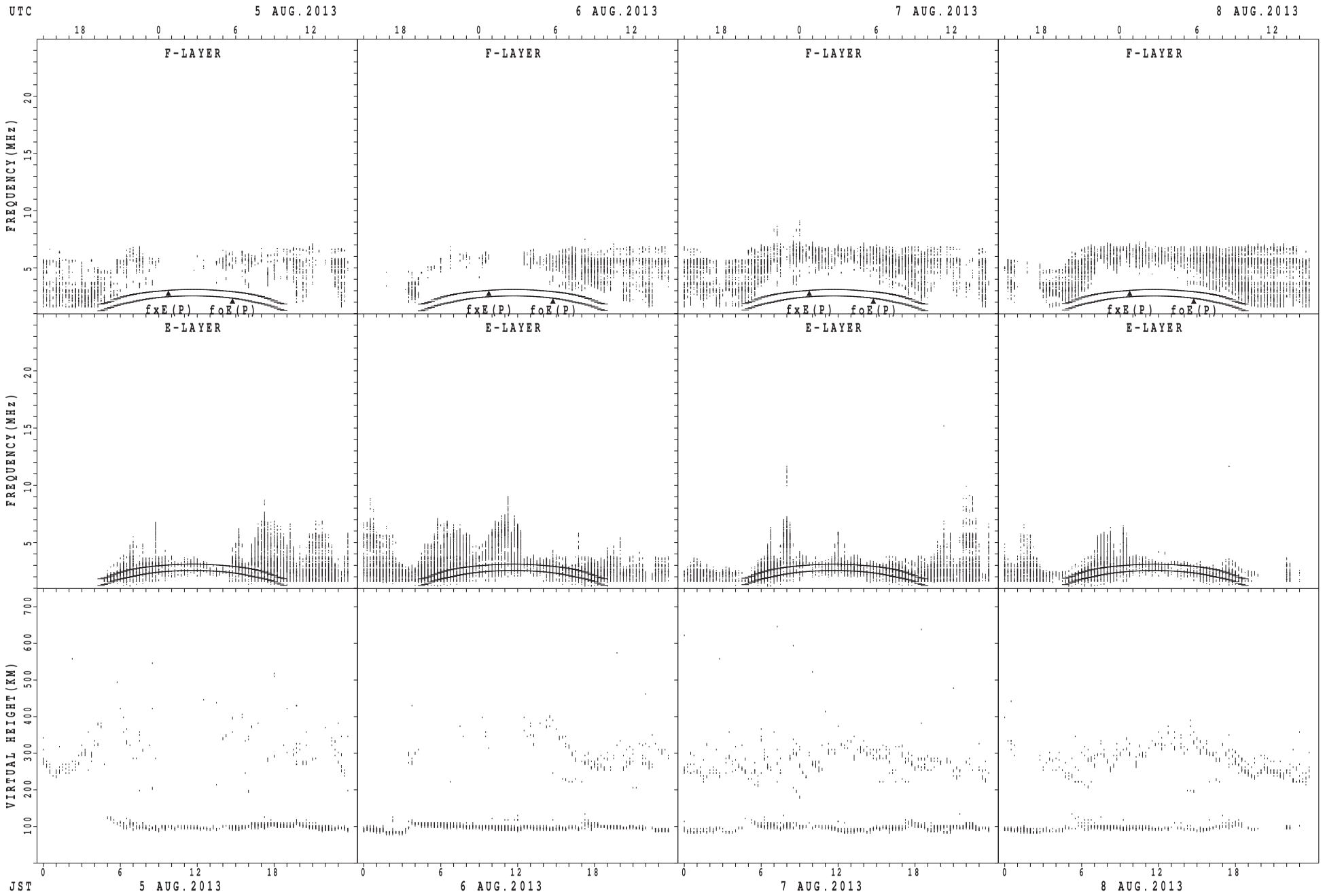
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	44	40	20	29	18	20	18	18	20	30	39	38	59	62	61	64	39	17	21	21	15	18	23	20
2	17	17	20	32	16	15	14	16	40	23	B	101	66	44	43	53	49	29	17	14	14	18	42	20
3	18	17	20	20	16	14	15	18	30	39	42	42	101	111	58	60	40	42	14	18	27	101	23	49
4	18	B	66	16	40	17	16	39	20	43	28	B	42	63	71	60	53	43	16	17	17	22	44	15
5	15	17	15	15	17	18	17	20	21	30	34	B	38	44	45	53	66	43	21	30	34	71	18	17
6	20	16	18	71	27	71	20	18	28	39	36	46	36	40	43	33	42	29	17	39	16	14	15	16
7	15	15	22	24	20	15	18	24	30	33	81	56	B	60	42	54	58	28	17	34	20	20	71	71
8	66	18	33	B	39	66	28	37	21	53	B	60	40	121	40	34	55	18	20	15	17	18	16	45
9	66	42	17	42	27	21	20	20	21	27	34	B	70	56	56	58	34	26	20	14	17	B	17	17
10	18	30	40	18	38	45	20	21	29	39	40	39	63	39	39	32	26	17	17	16	15	21	34	22
11	42	66	29	20	66	14	16	27	42	52	59	57	62	42	42	43	40	28	20	21	17	65	18	22
12	81	51	42	73	44	52	23	38	41	42	59	B	101	91	43	62	39	33	22	21	18	16	40	16
13	B	28	18	17	18	15	32	30	30	44	40	42	42	71	63	28	23	32	14	14	15	17	B	B
14	62	73	44	20	29	39	21	30	44	48	53	B	91	B	64	40	52	41	17	14	B	20	18	23
15	21	38	21	22	20	20	24	15	23	35	60	54	56	61	42	40	23	18	23	14	15	16	17	22
16	39	17	B	B	33	17	18	39	39	43	59	60	56	43	40	63	35	30	21	15	73	51	53	43
17	66	81	38	B	B	71	21	30	40	42	42	64	62	34	64	56	48	30	22	27	15	43	42	42
18	B	42	41	18	71	24	20	38	40	53	60	40	58	44	42	42	58	42	23	16	20	18	18	17
19	50	71	40	24	66	18	21	29	40	44	60	60	62	44	42	64	40	42	21	17	18	15	15	42
20	16	81	20	21	44	42	47	36	30	42	54	B	54	46	42	42	39	27	18	15	26	41	26	66
21	39	43	33	18	15	16	14	18	21	32	34	36	N	101	54	54	21	27	14	14	32	22	42	17
22	17	45	47	B	15	34	15	28	38	48	56	60	55	64	60	60	38	42	29	16	17	21	B	20
23	15	44	20	23	40	B	22	15	40	44	72	63	62	73	46	42	39	28	18	15	17	74	17	44
24	24	22	B	43	43	40	20	15	26	29	91	101	40	73	74	41	60	42	17	15	23	20	27	16
25	41	27	36	42	29	16	21	21	40	44	38	42	60	63	70	54	55	29	18	16	20	16	B	B
26	41	B	71	71	B	66	81	20	29	37	42	43	60	54	55	54	44	43	20	16	28	15	32	71
27	23	21	21	43	17	15	16	28	41	42	91	58	71	63	63	54	46	20	15	20	24	15	27	42
28	52	46	42	20	23	21	29	26	39	35	B	57	61	60	50	46	45	28	18	14	16	16	17	81
29	B	21	17	41	66	18	18	38	39	46	91	58	63	40	54	42	36	28	17	26	16	16	17	66
30	46	33	17	20	B	66	17	16	20	20	50	56	B	B	65	64	51	28	20	38	23	21	71	30
31	42	40	21	16	B	15	17	28	40	81	55	55	60	60	58	53	45	22	18	21	20	22	36	30
	00	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	29	29	27	27	30	31	31	31	31	28	25	28	29	31	31	31	31	31	31	30	30	28	29
MED	39	38	22	22	29	20	20	26	30	42	54	56	60	60	54	53	42	29	18	16	18	20	24	23
U Q	48	45	40	42	43	42	22	30	40	44	60	60	63	67	63	60	52	42	21	21	23	22	41	44
L Q	18	19	20	18	18	16	17	18	23	33	39	42	54	44	42	42	38	27	17	15	16	16	17	17

SUMMARY PLOTS AT Wakkanai

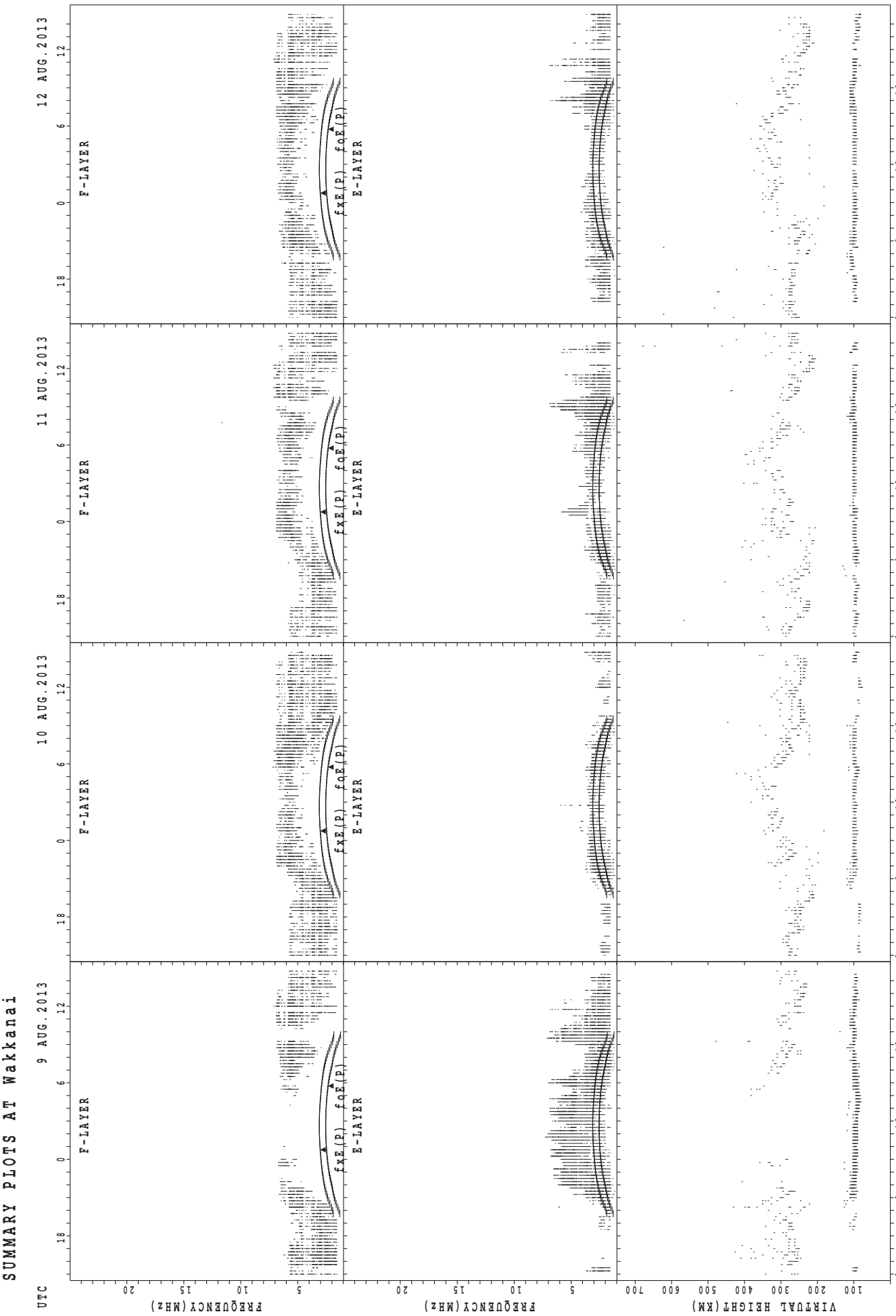


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

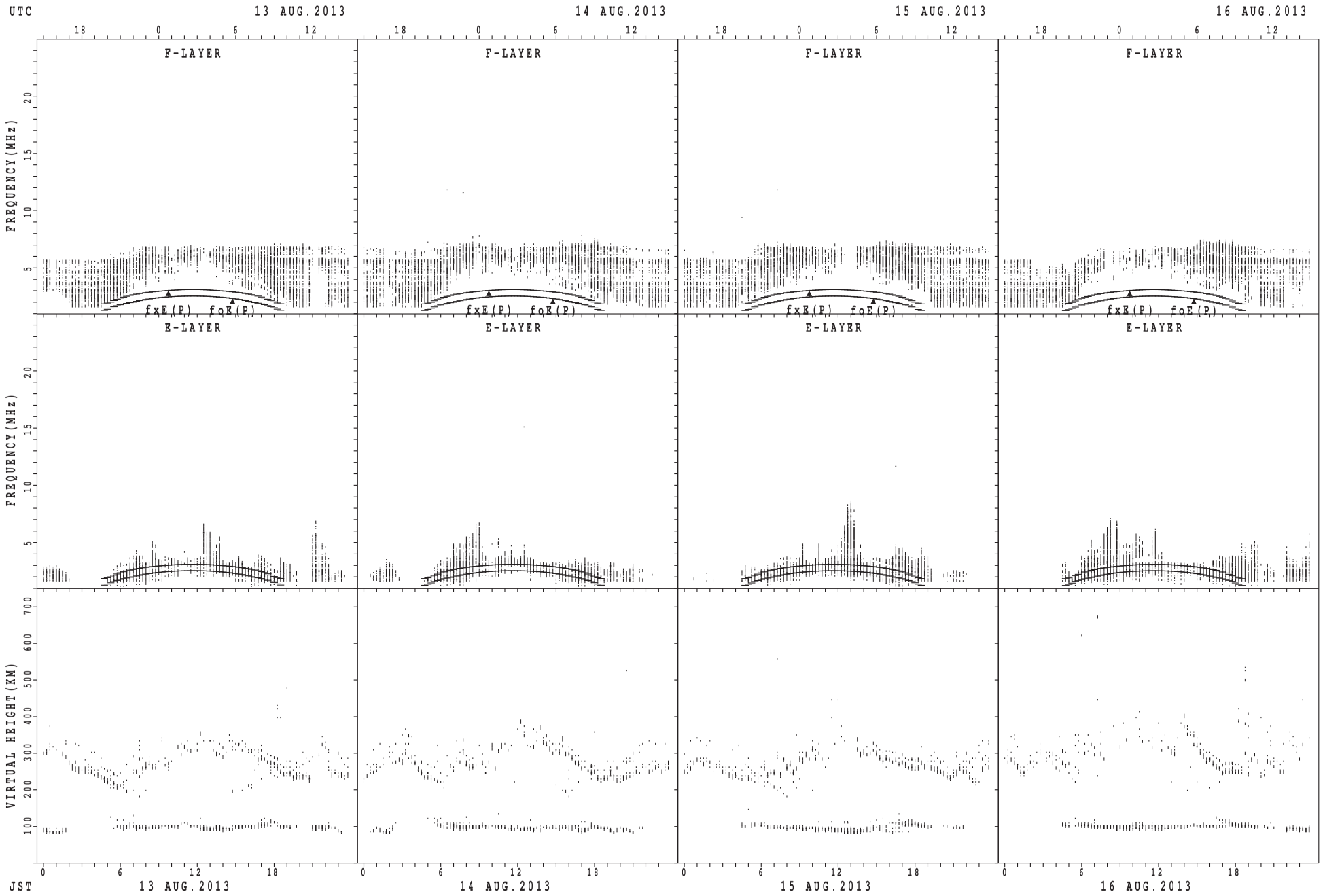
SUMMARY PLOTS AT Wakkanai



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

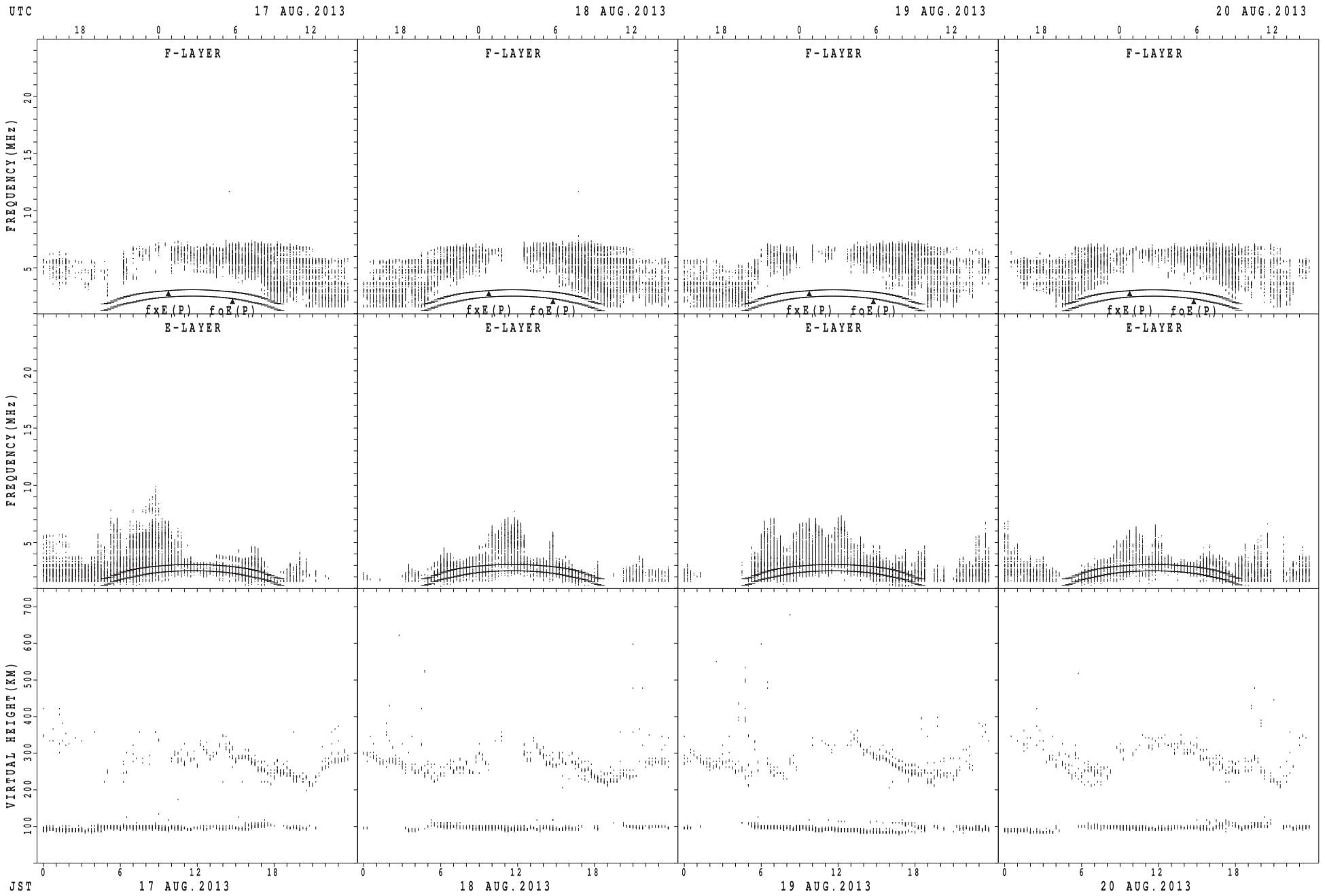

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 AUG.2013
10 AUG.2013
11 AUG.2013
12 AUG.2013
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



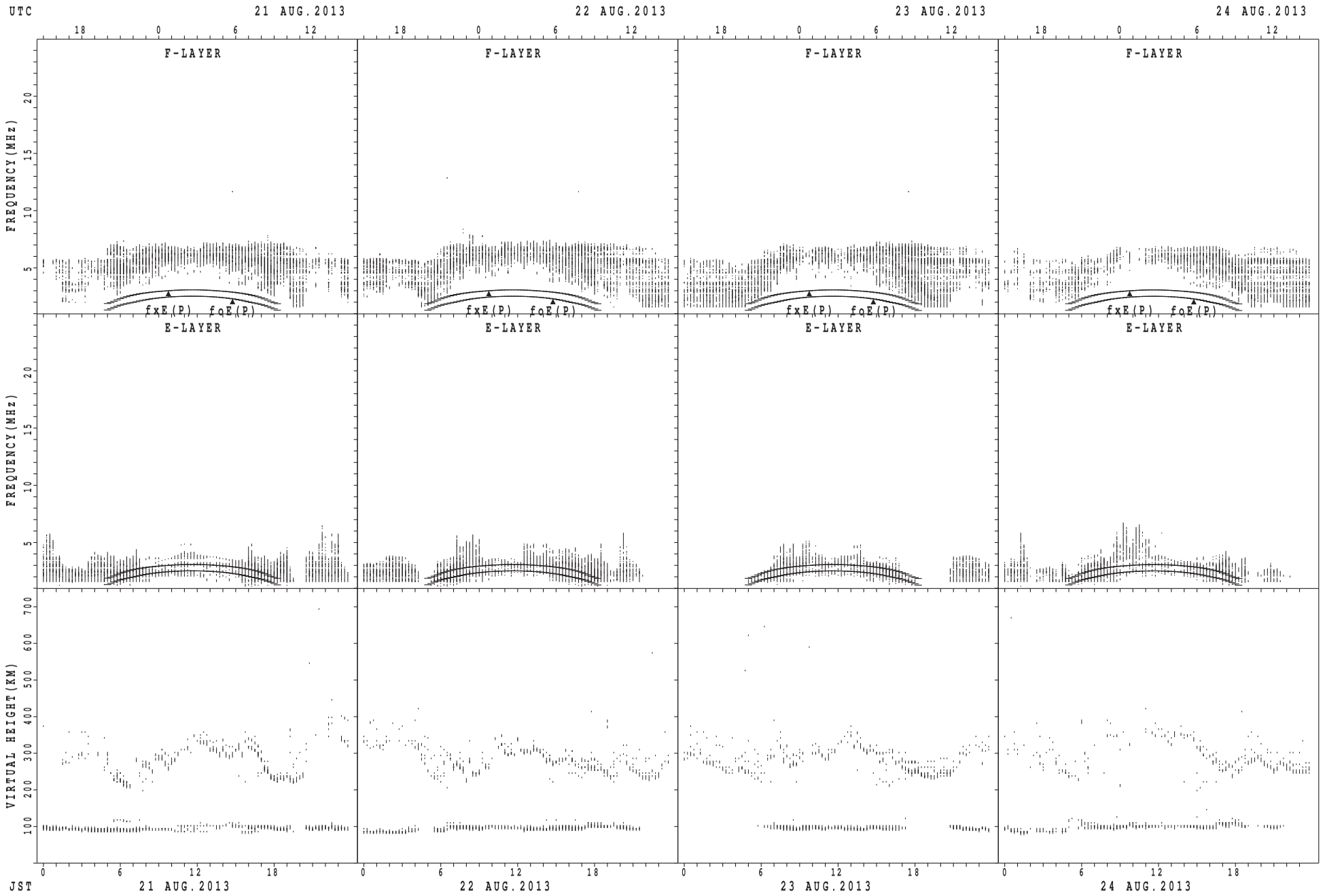
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



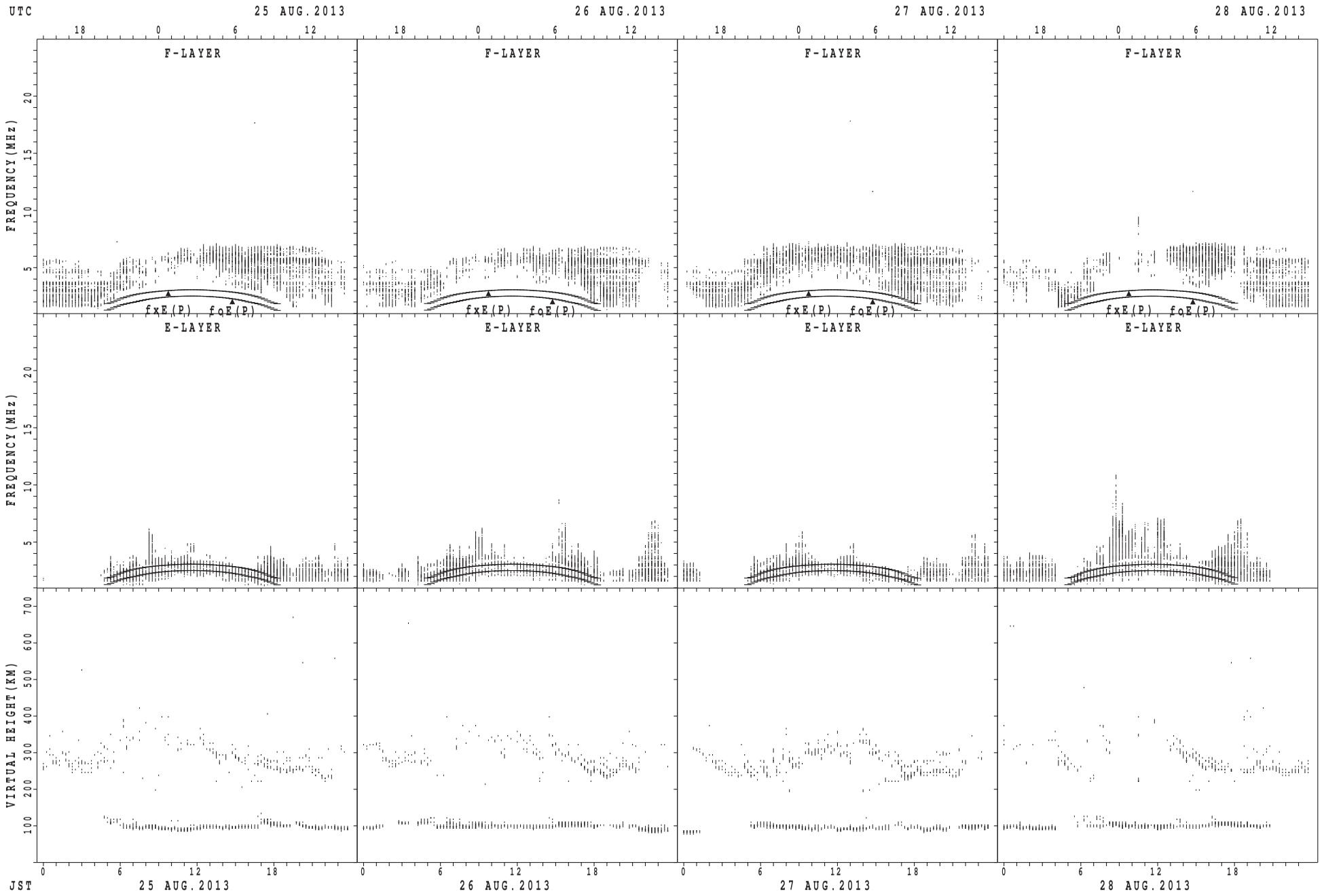
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



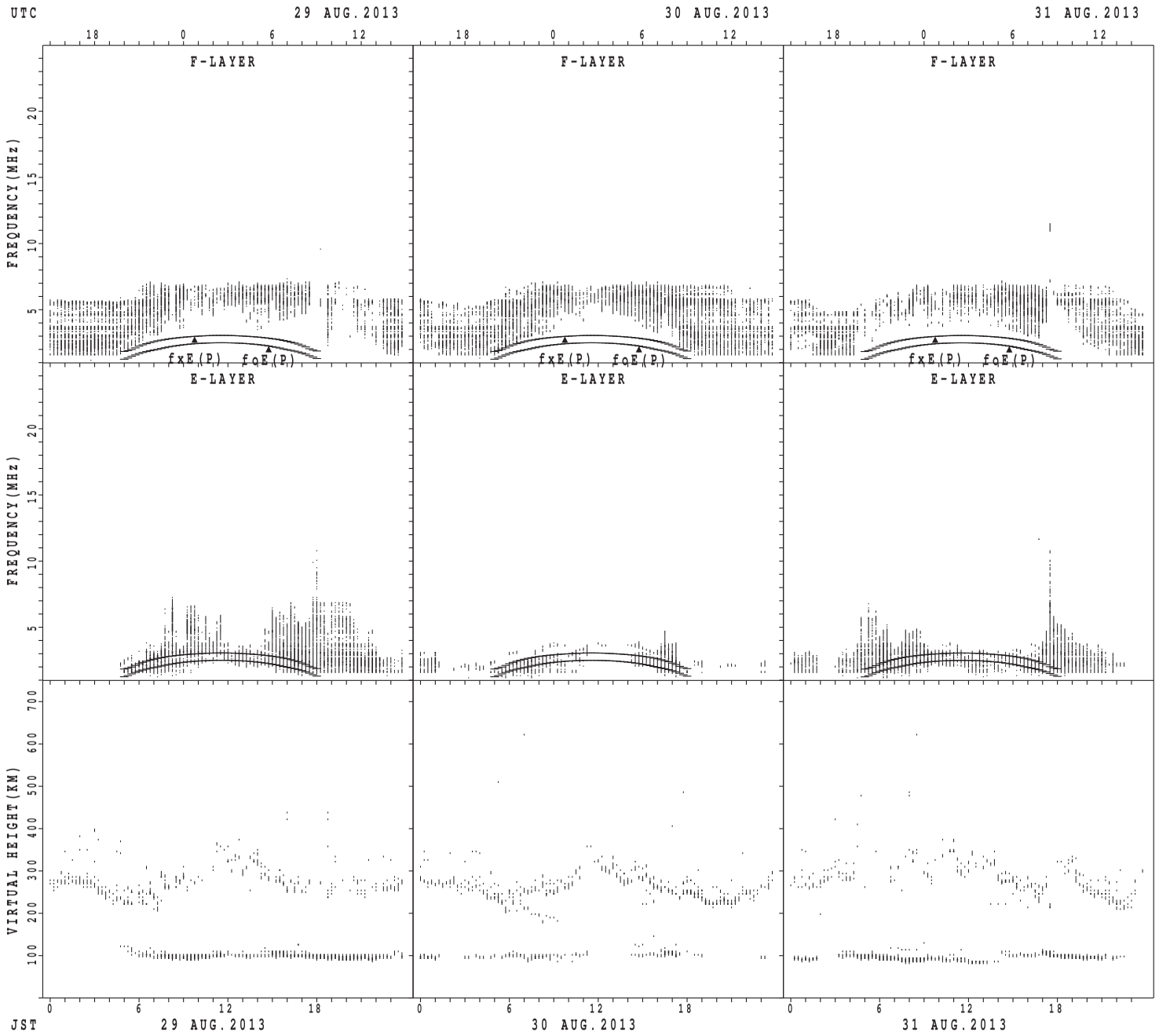
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



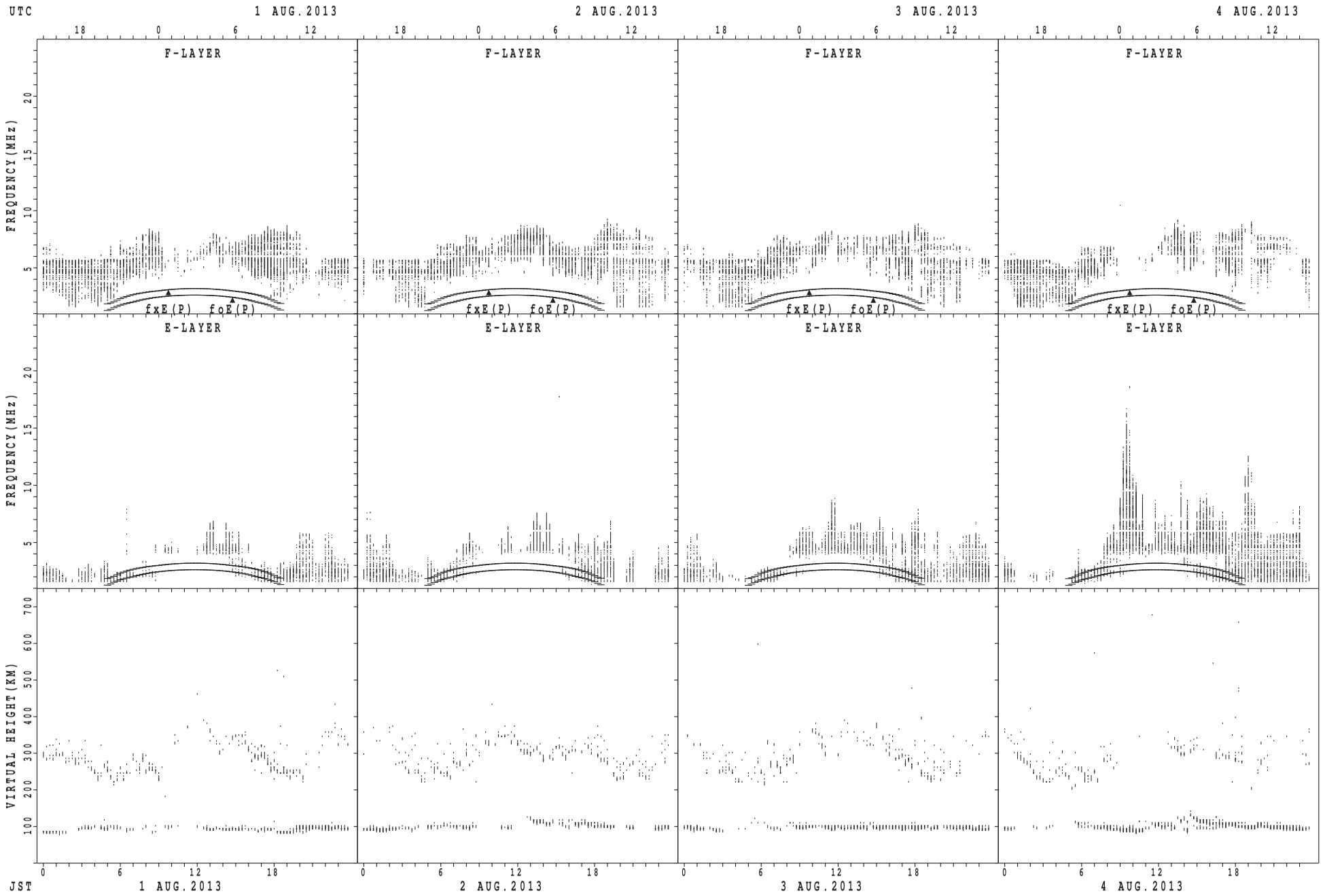
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



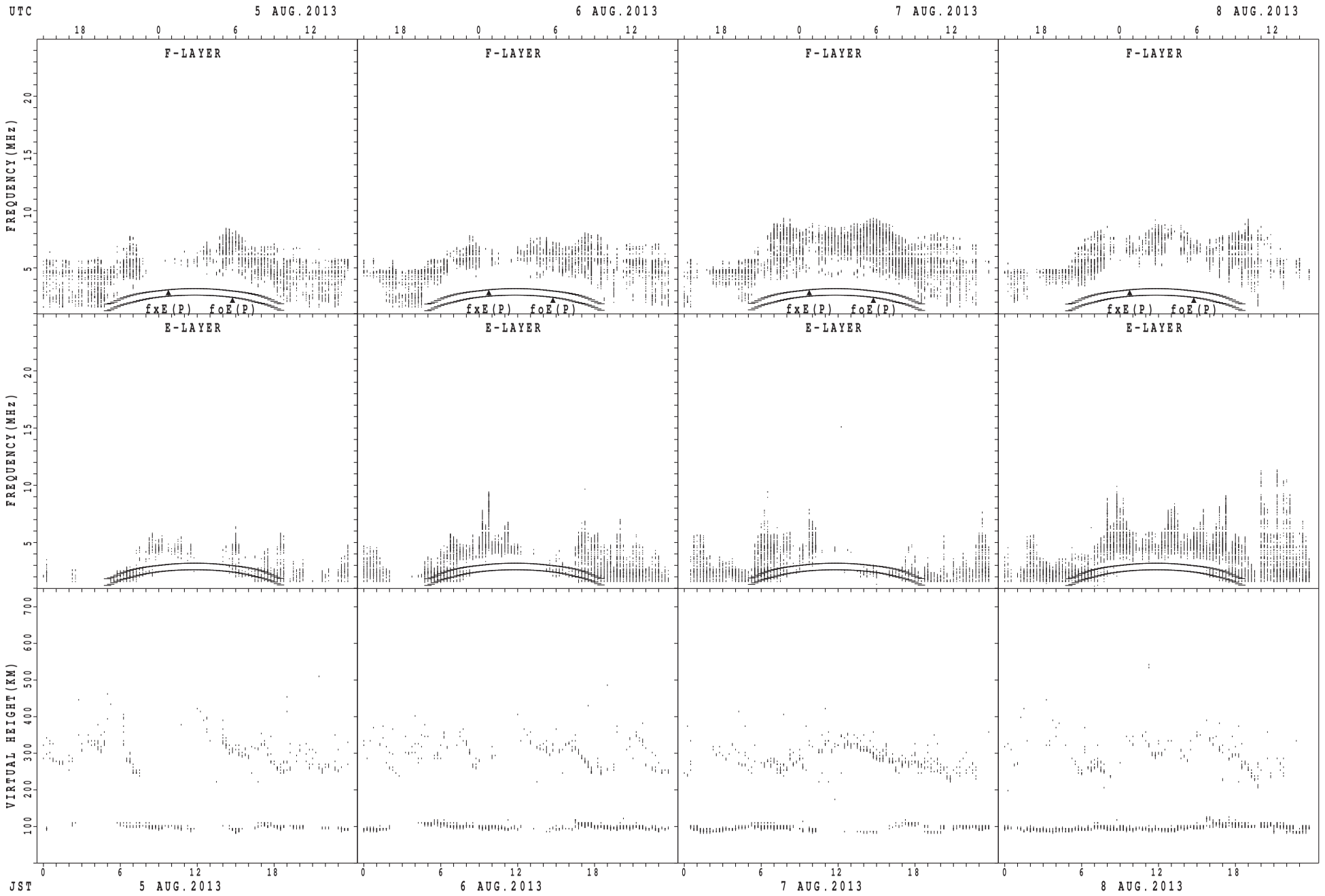
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



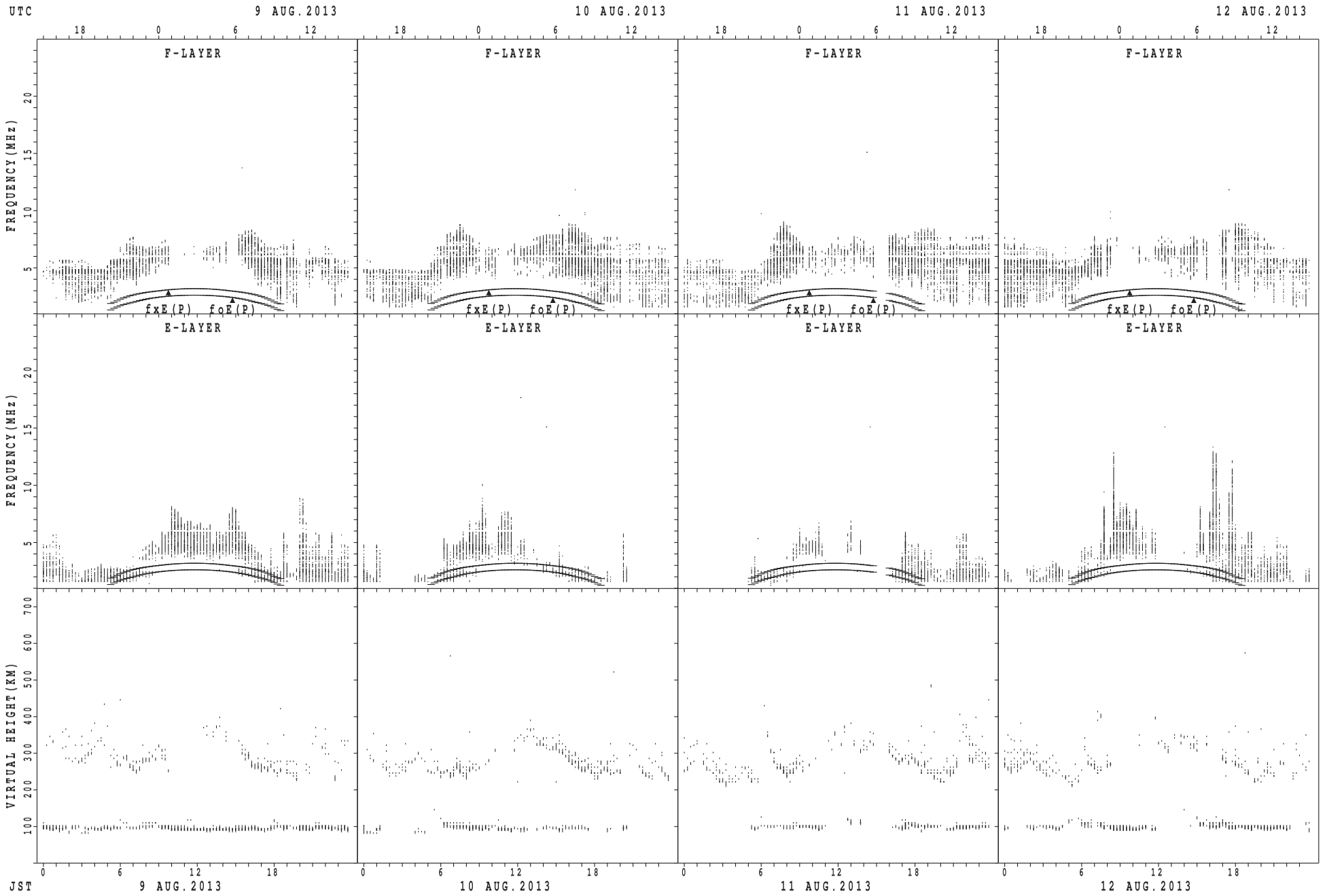
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



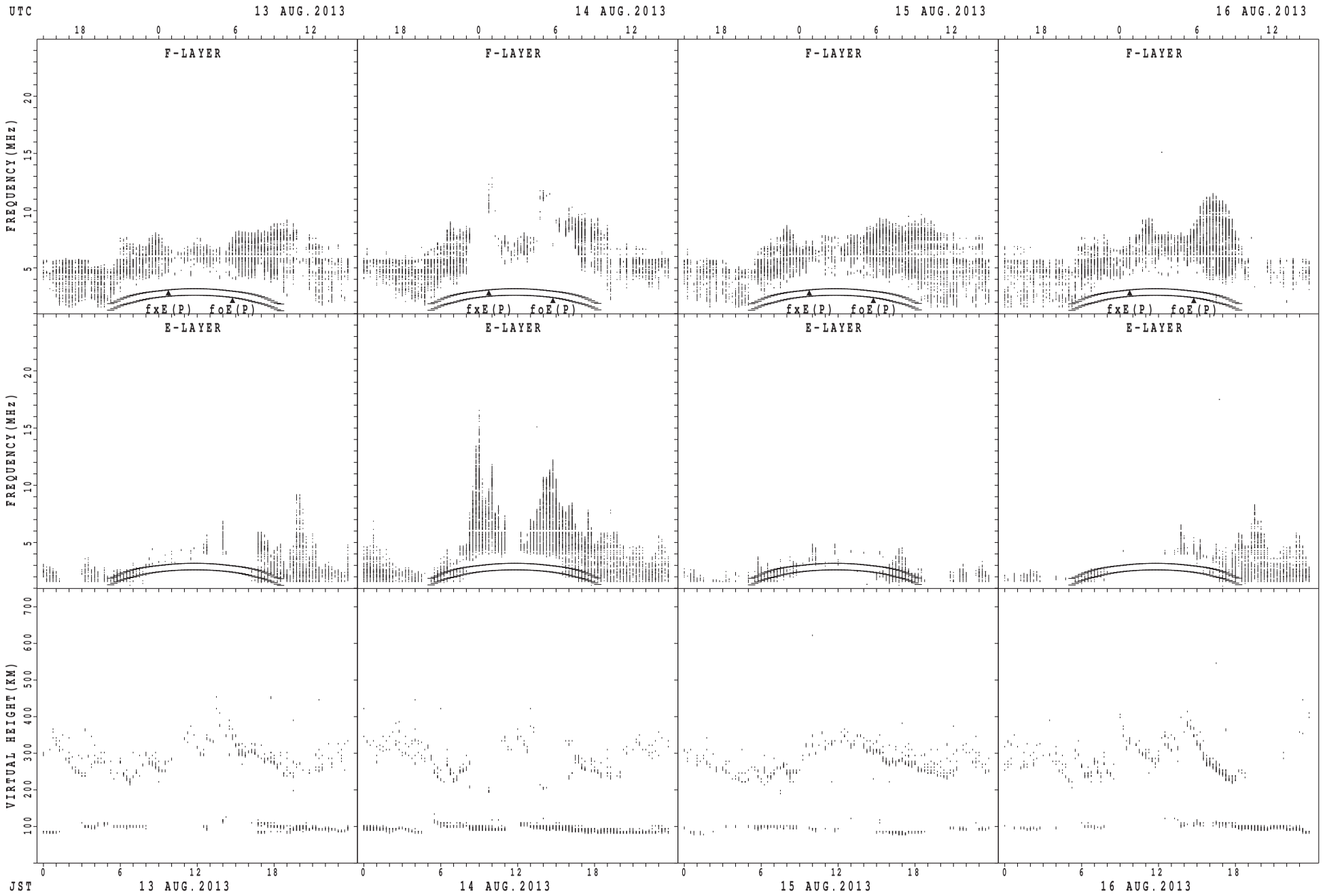
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



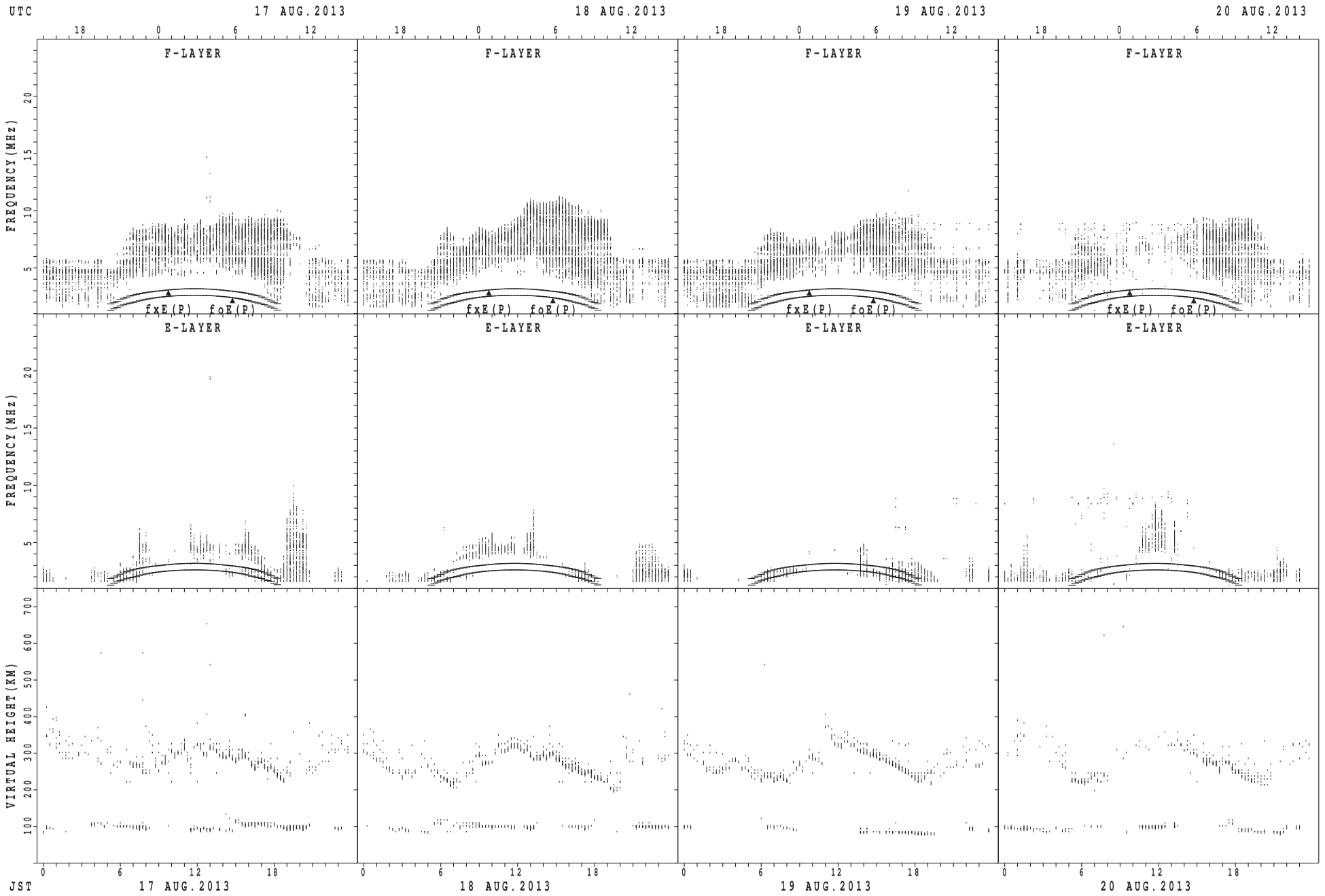
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



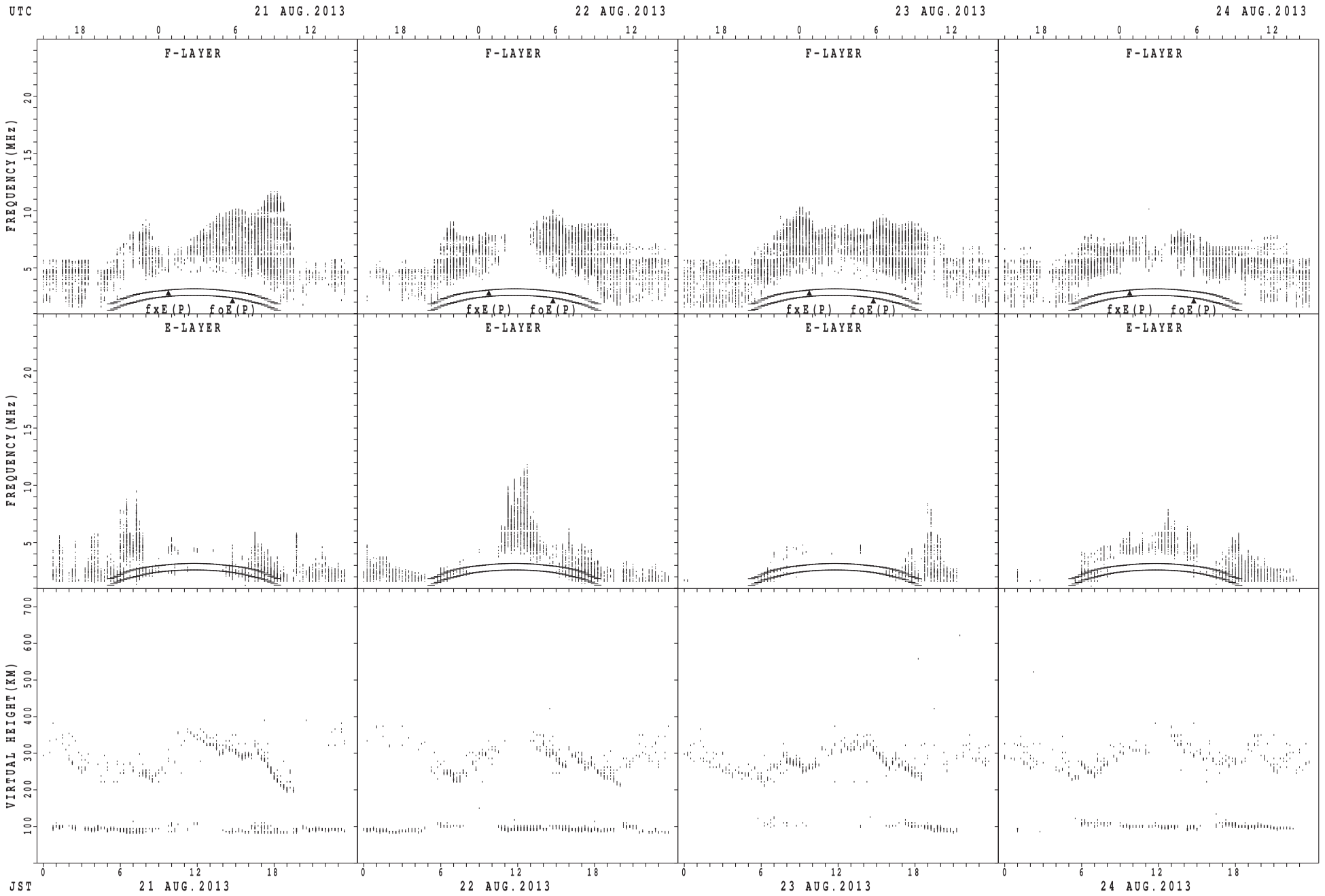
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



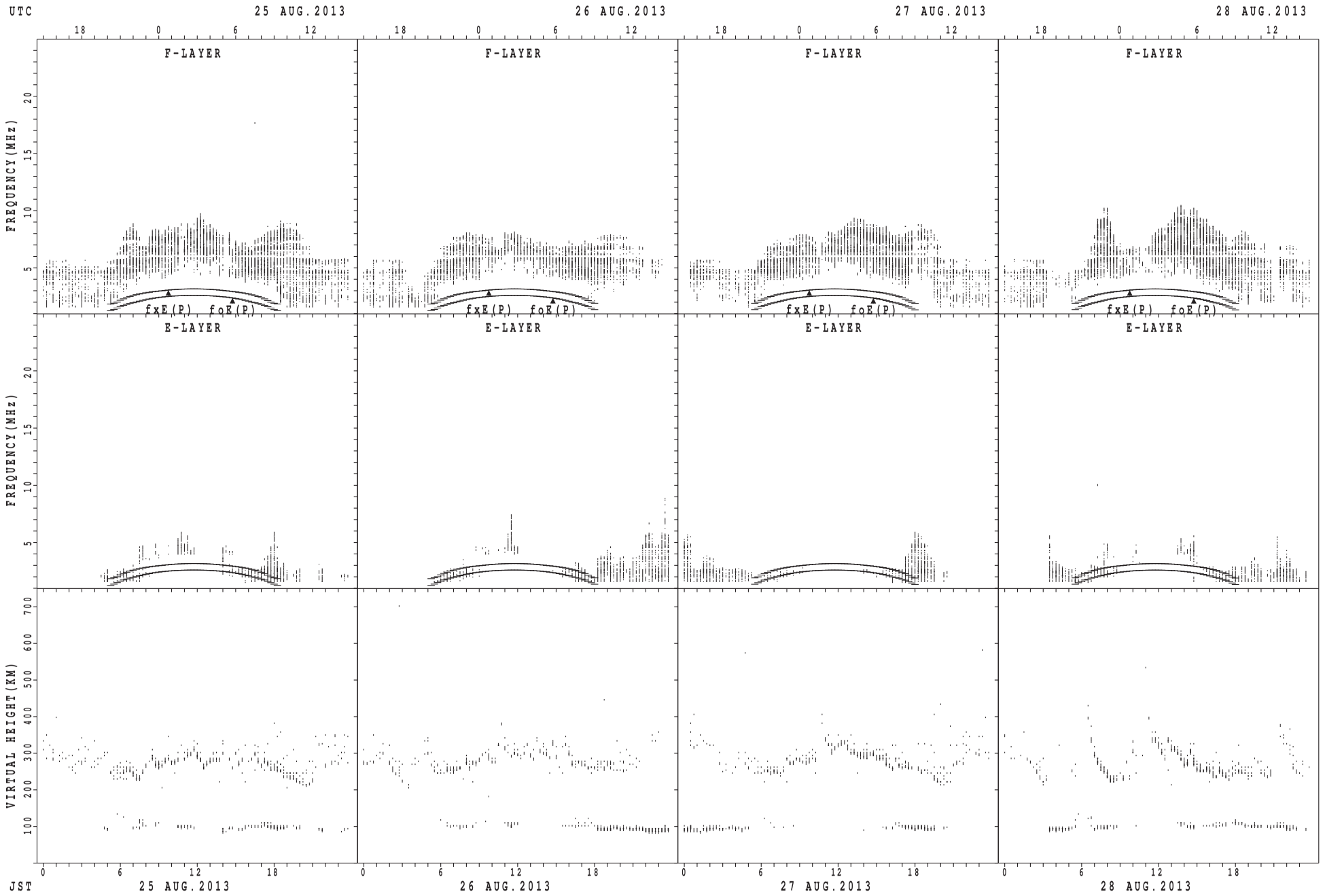
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



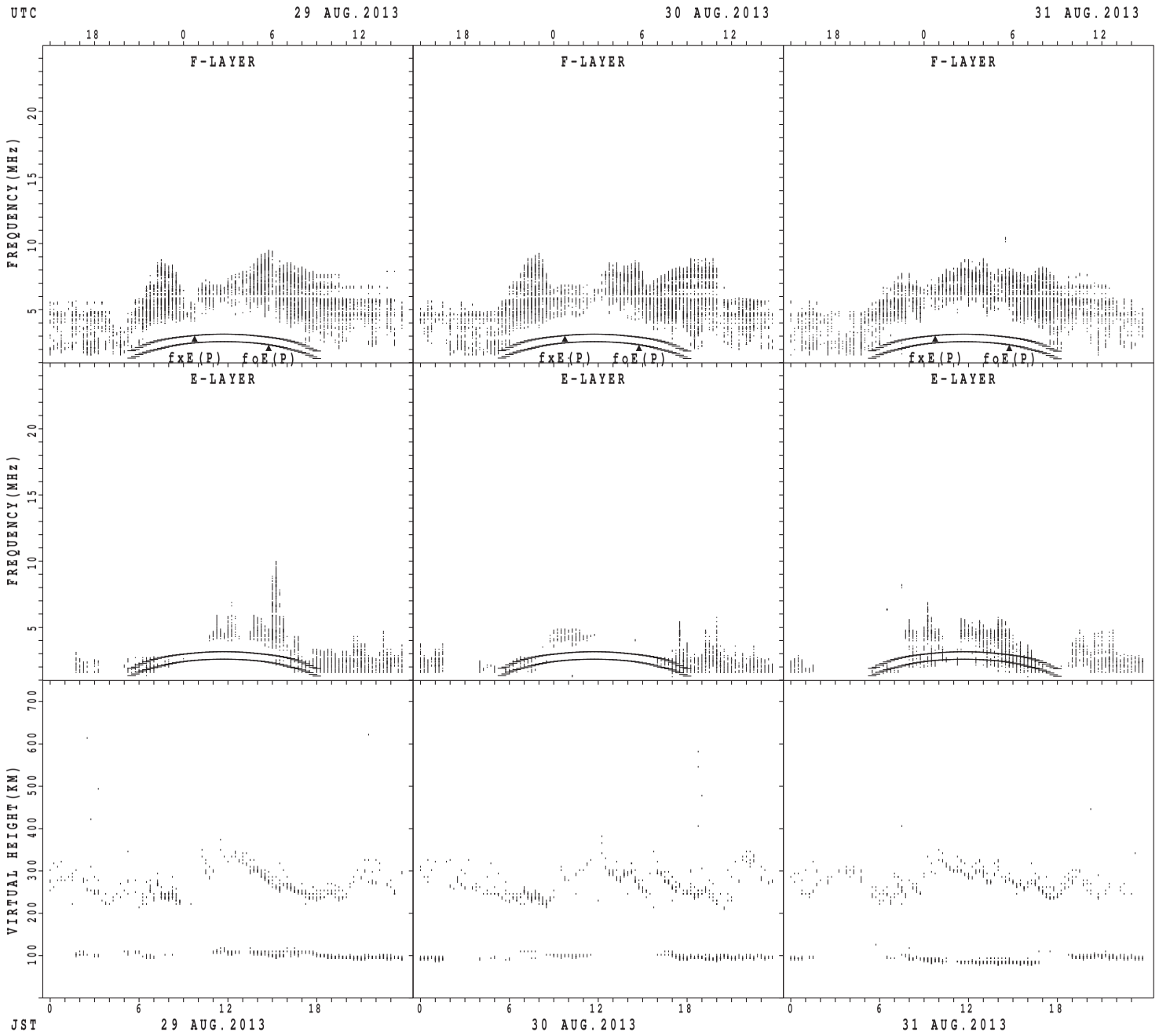
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



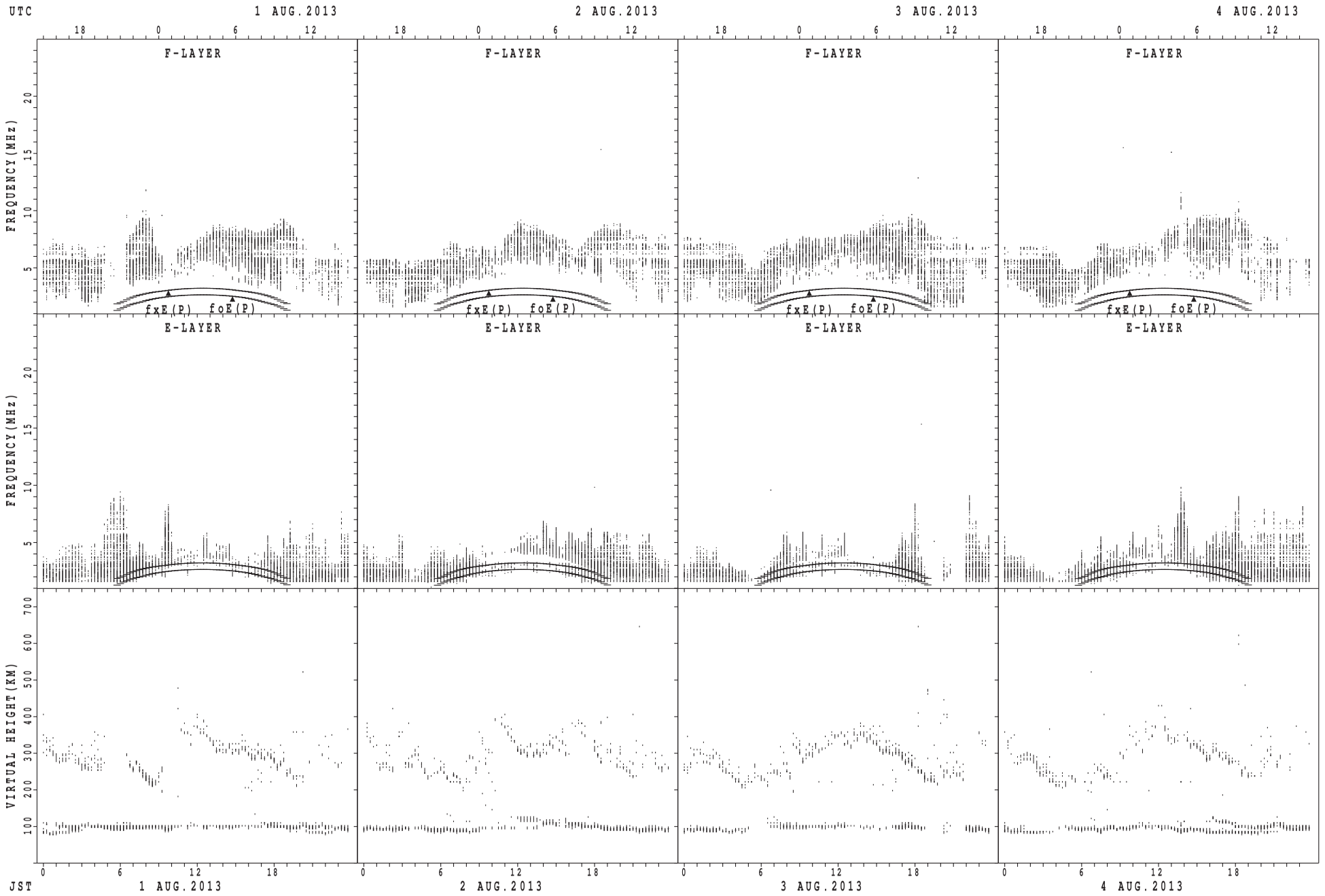
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



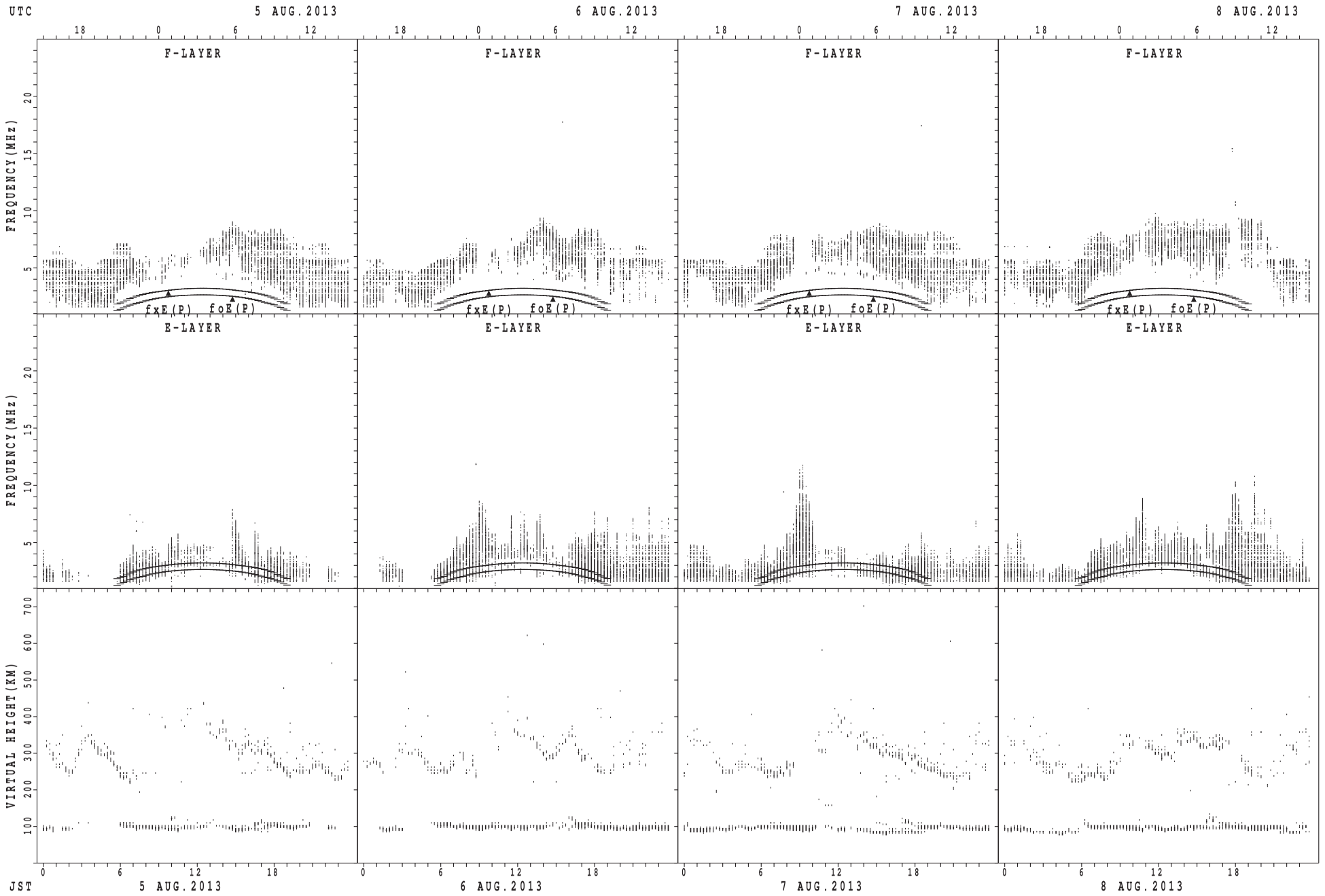
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



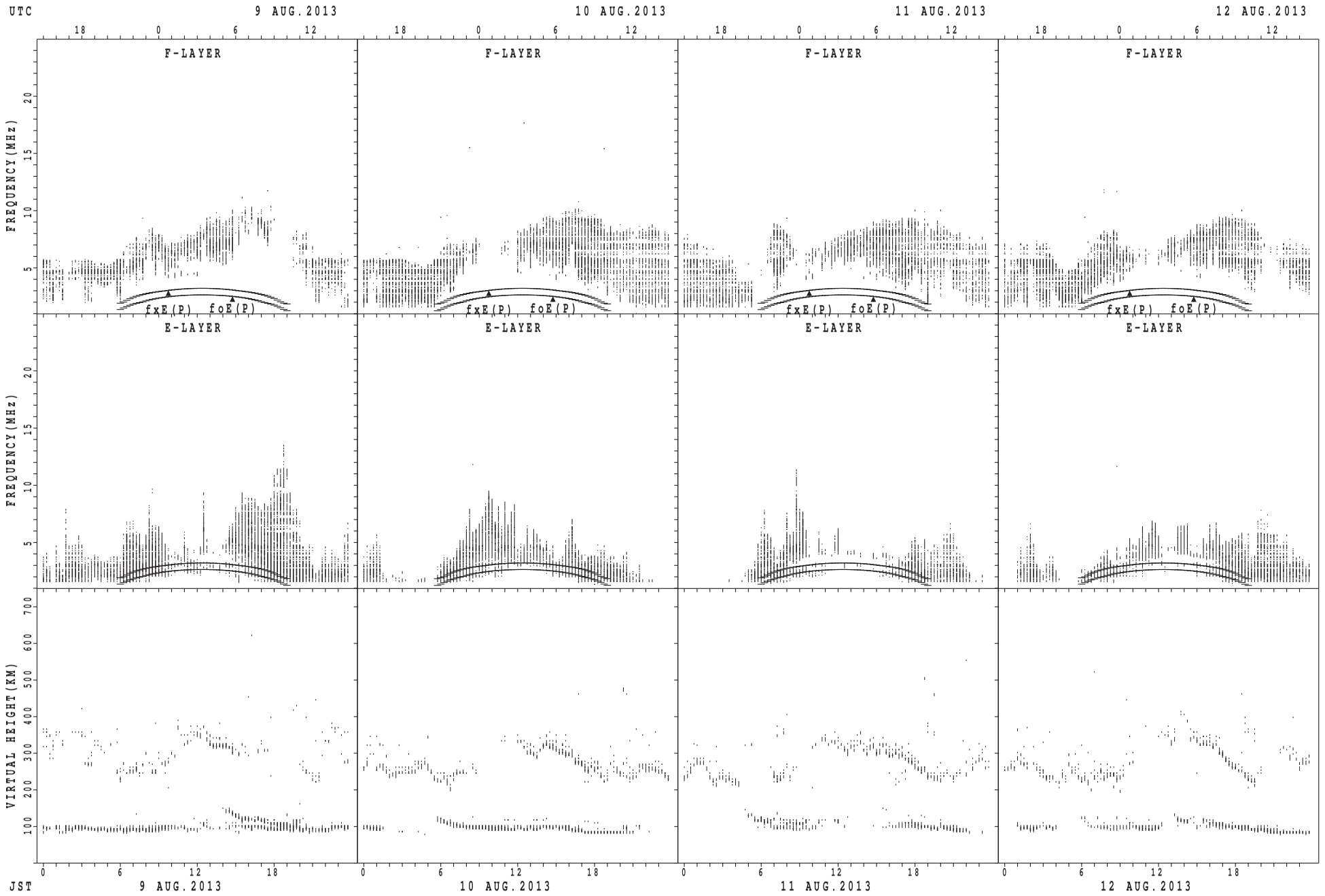
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



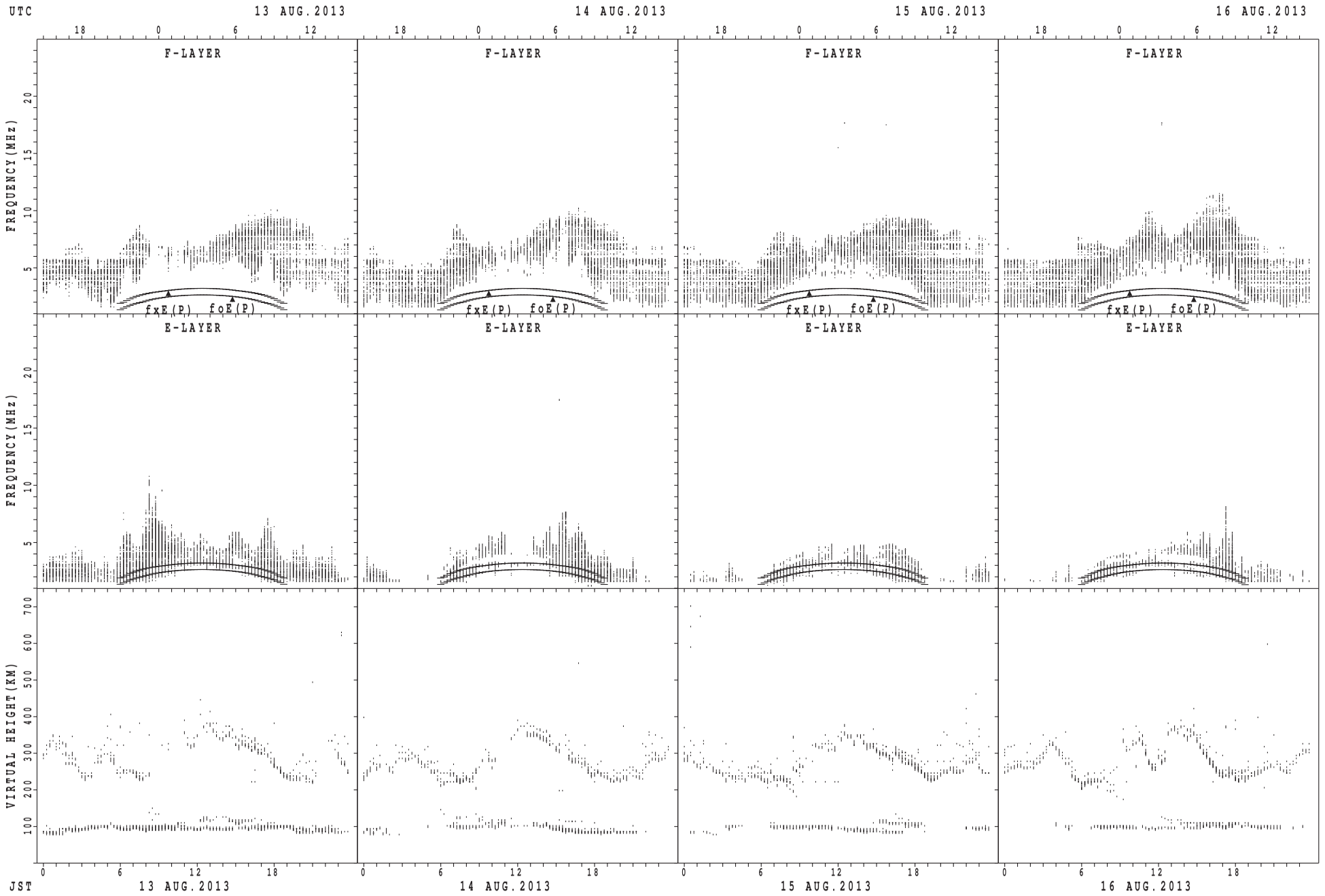
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



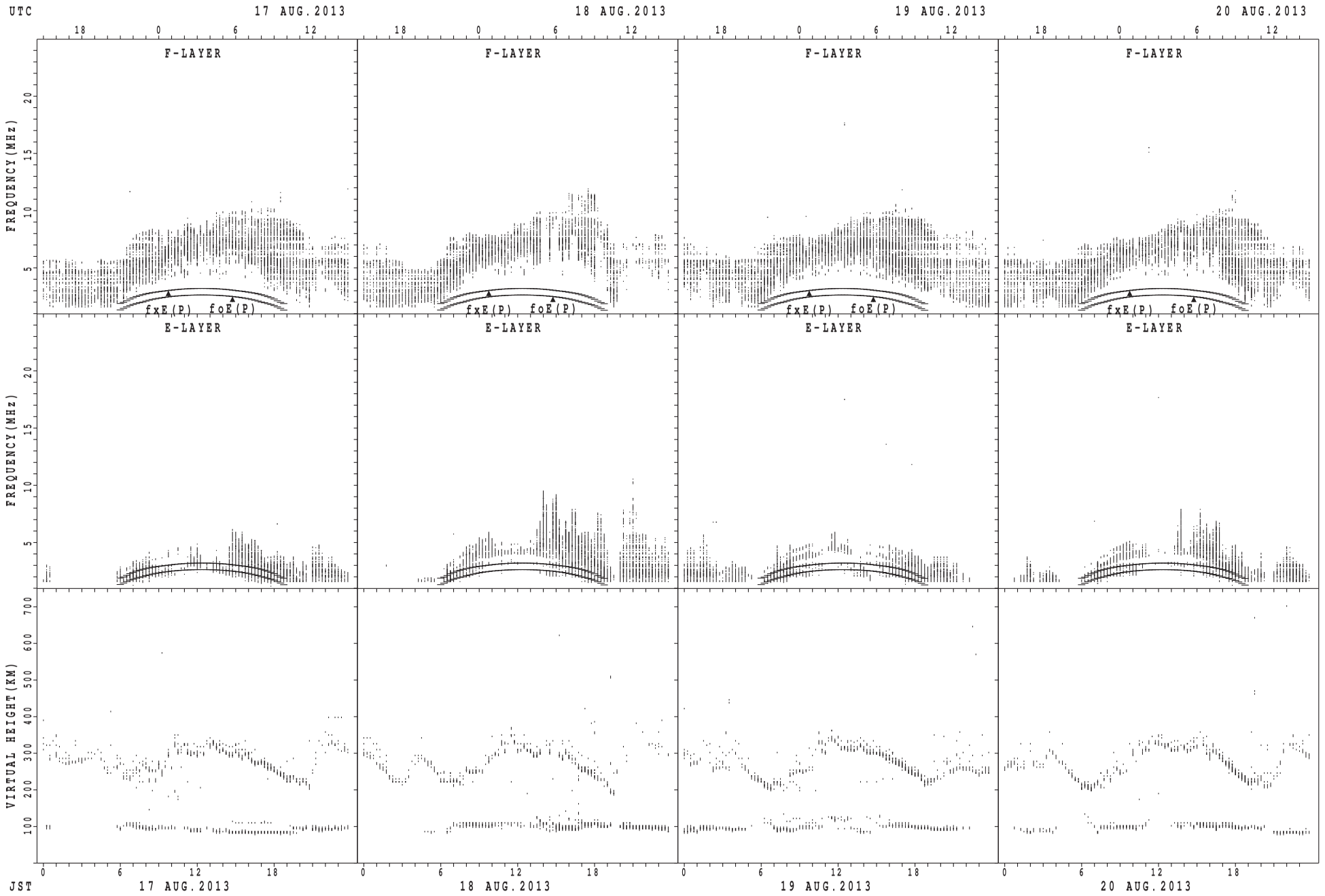
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



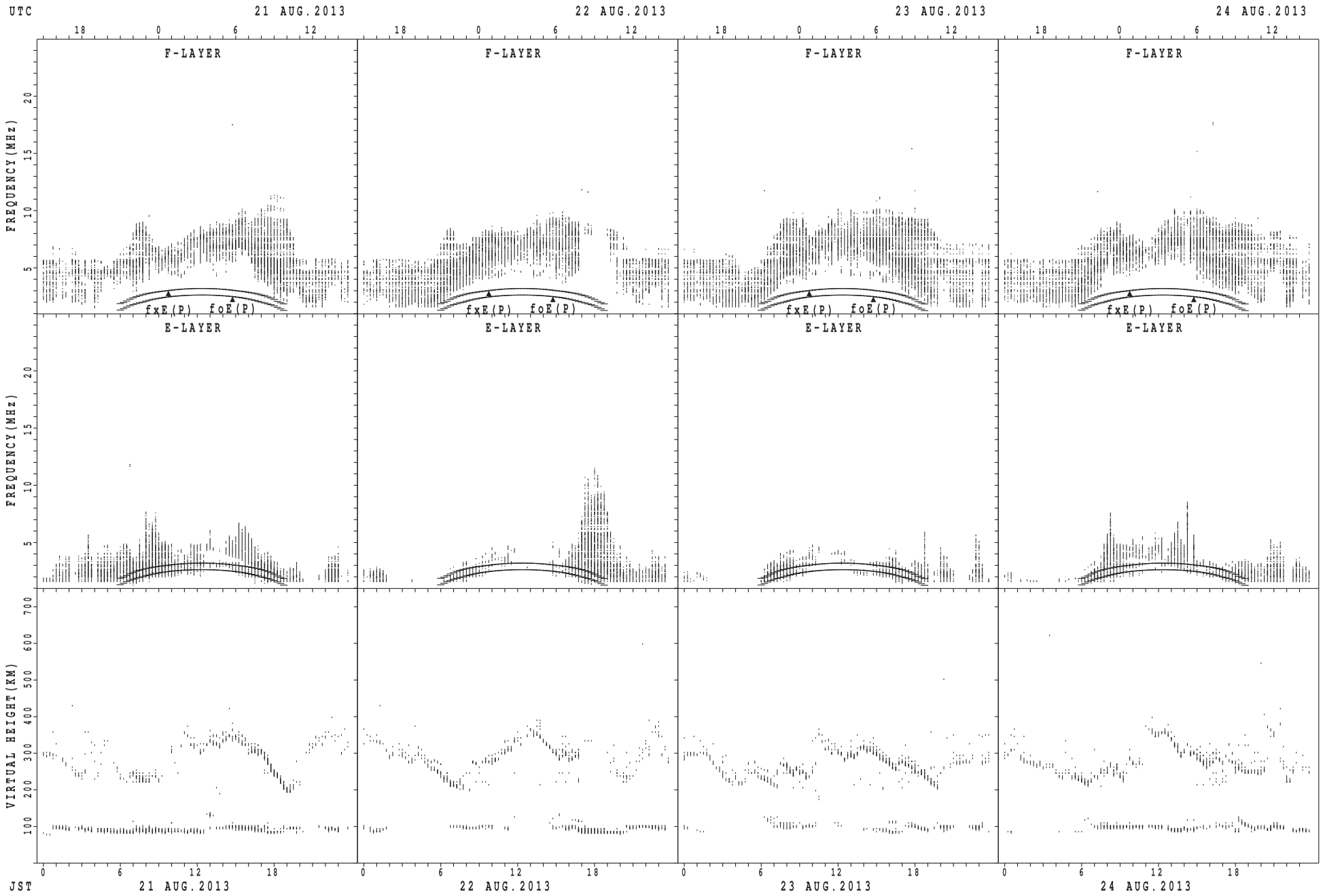
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



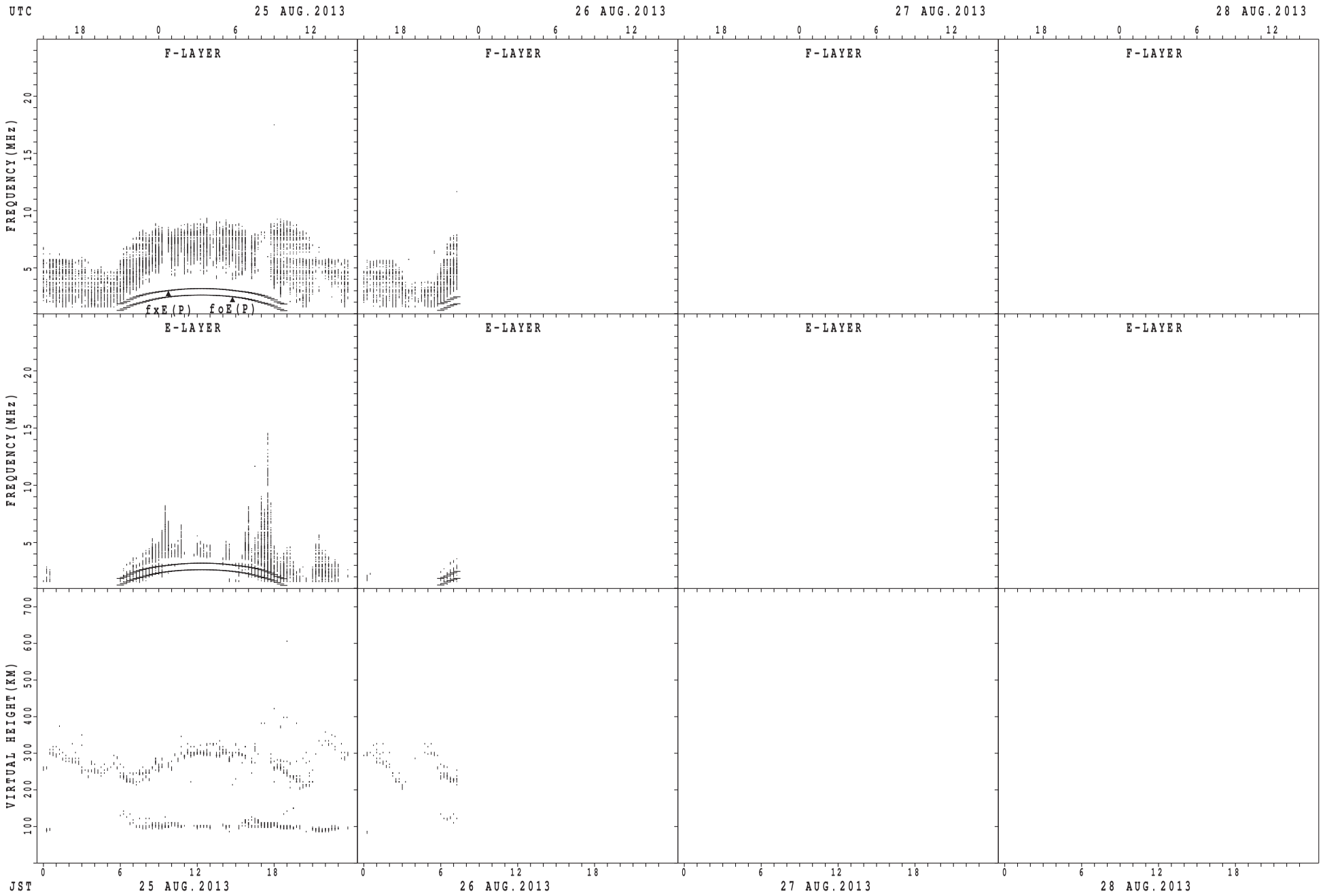
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



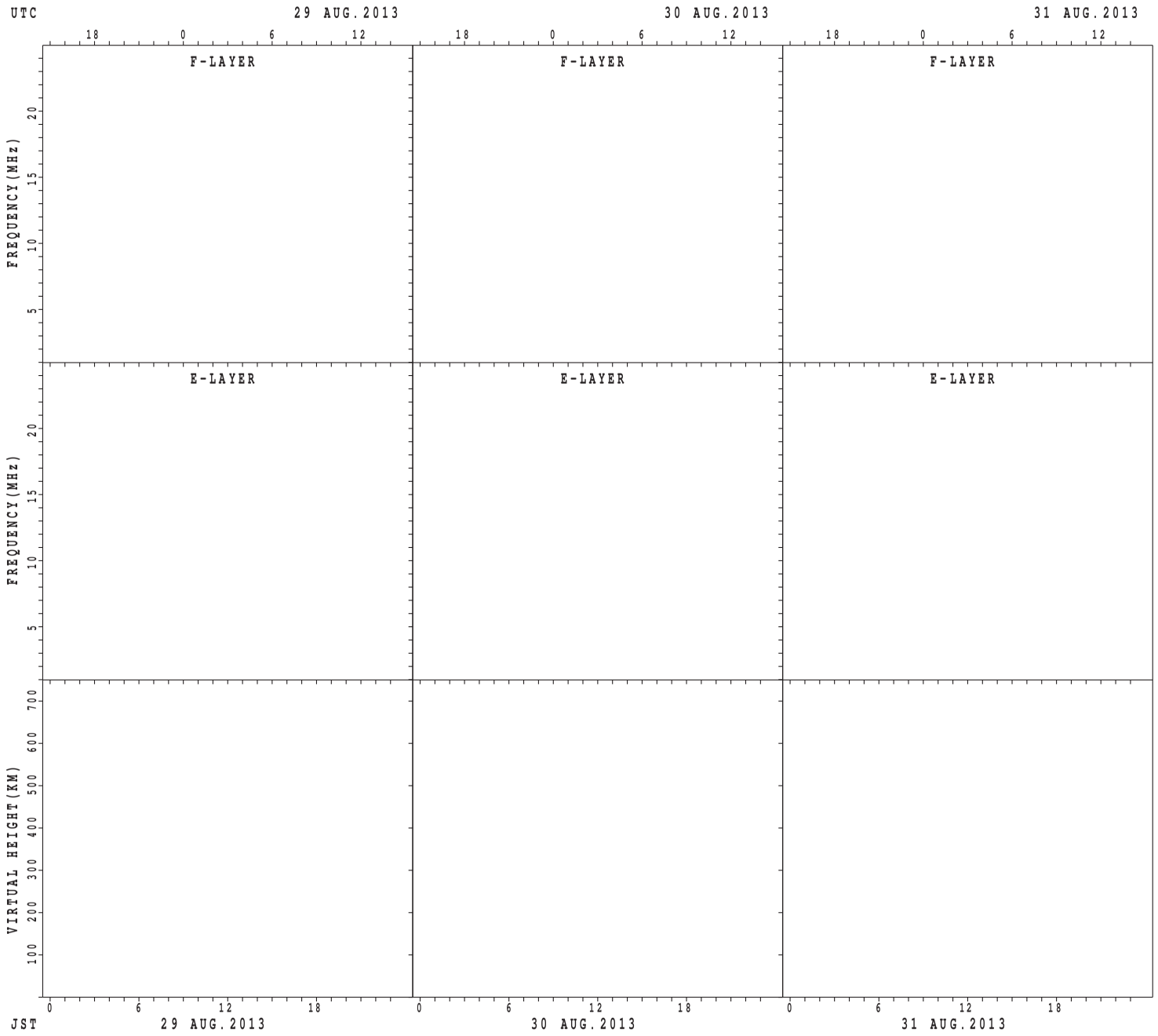
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



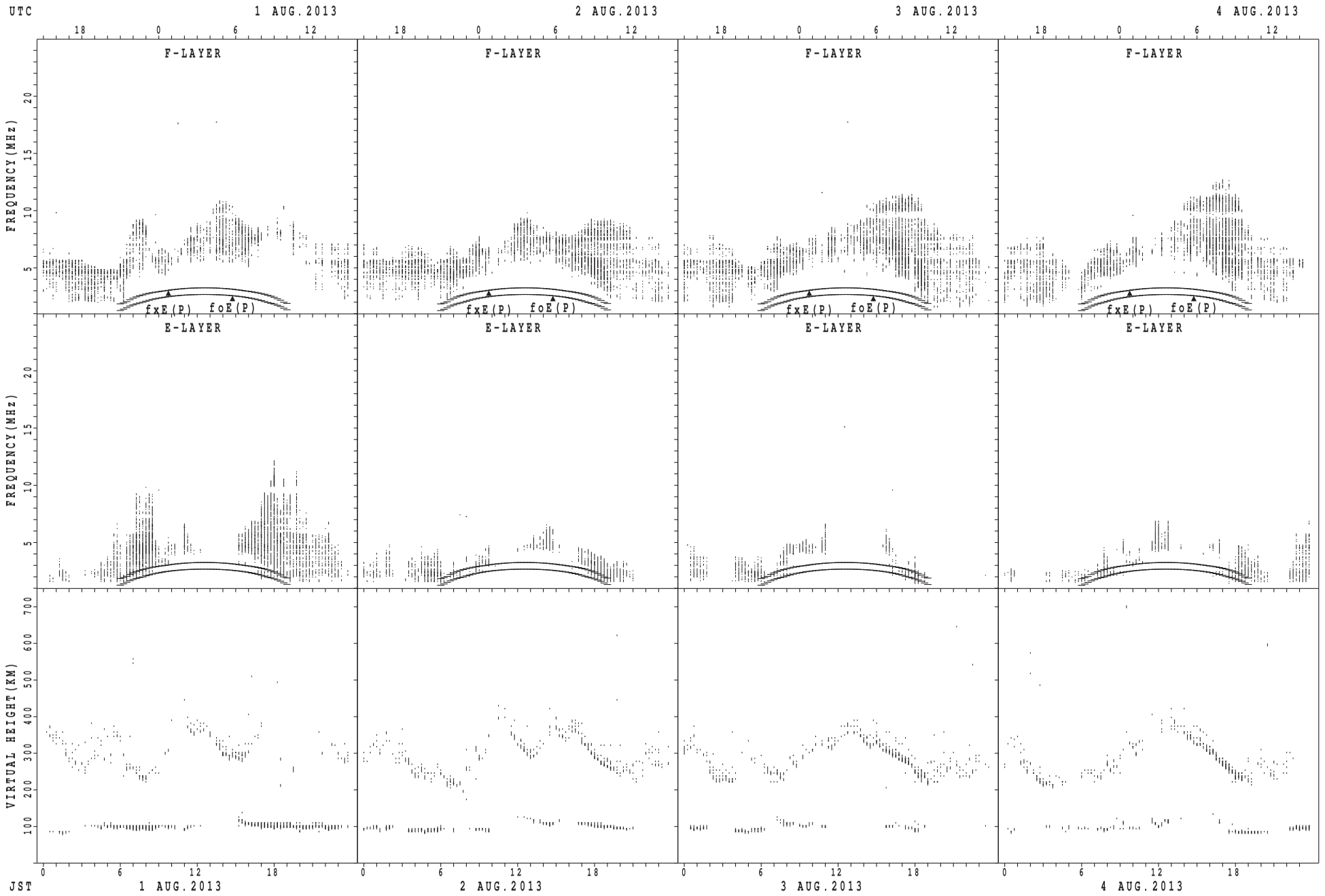
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

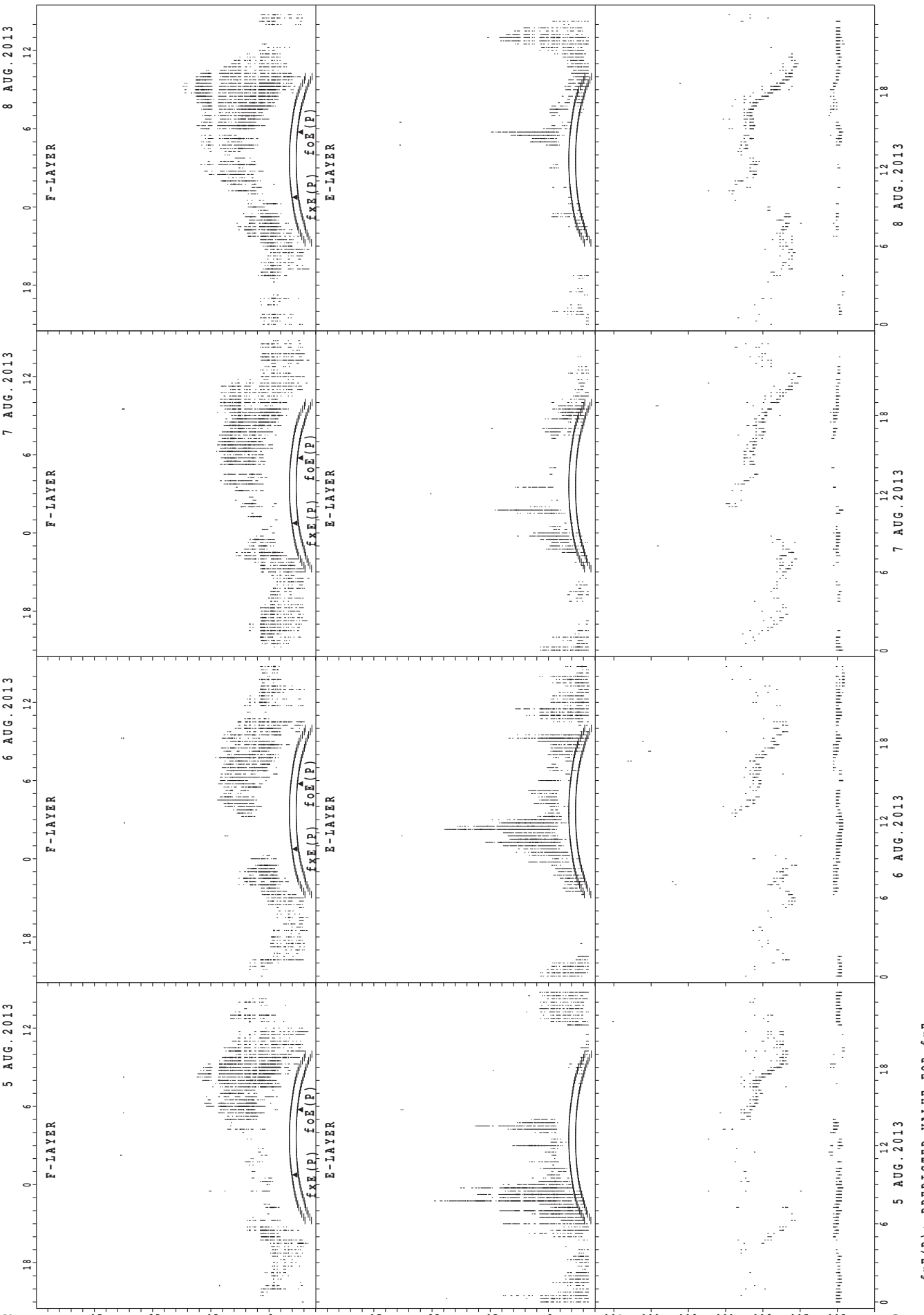


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

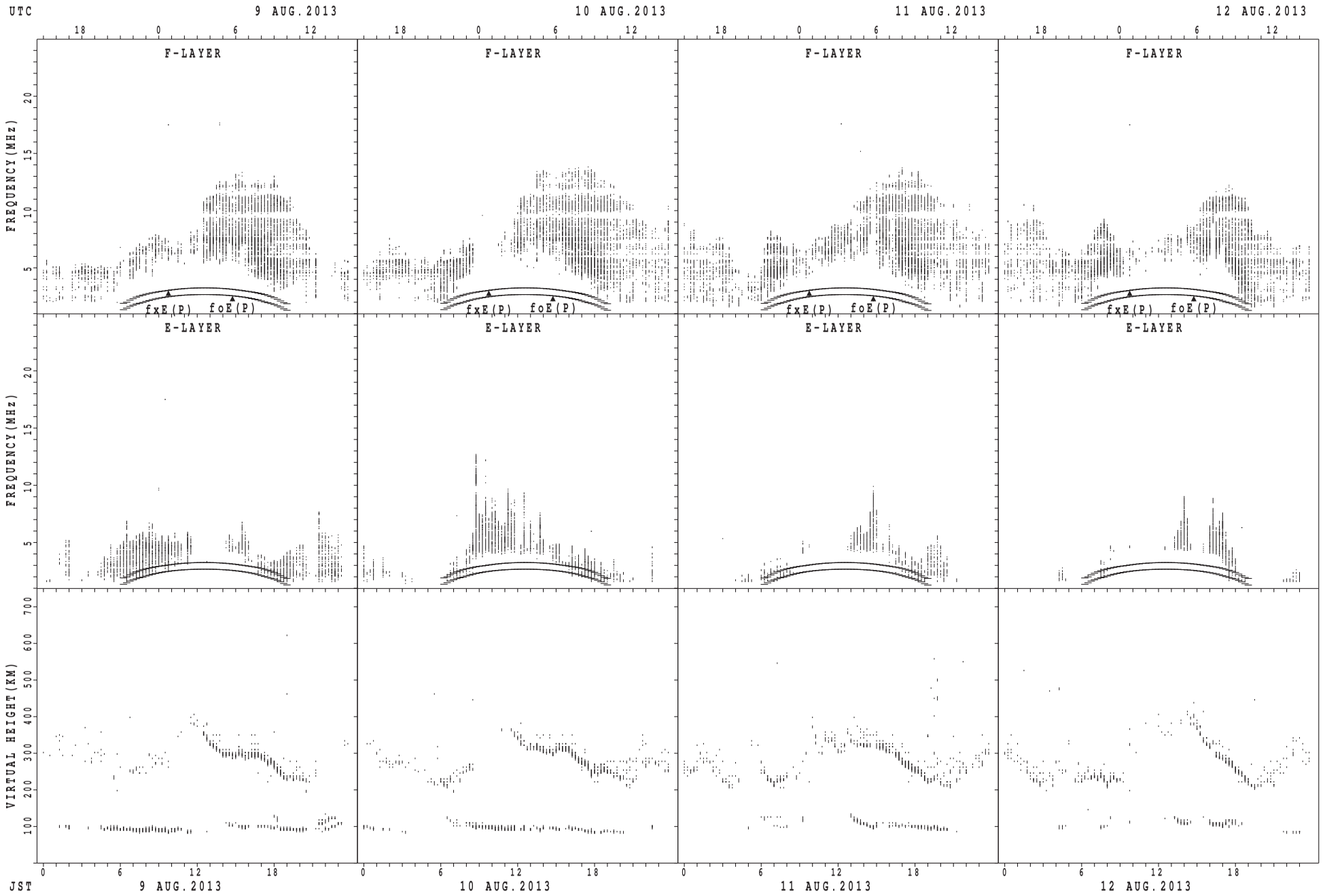
SUMMARY PLOTS AT Okinawa



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

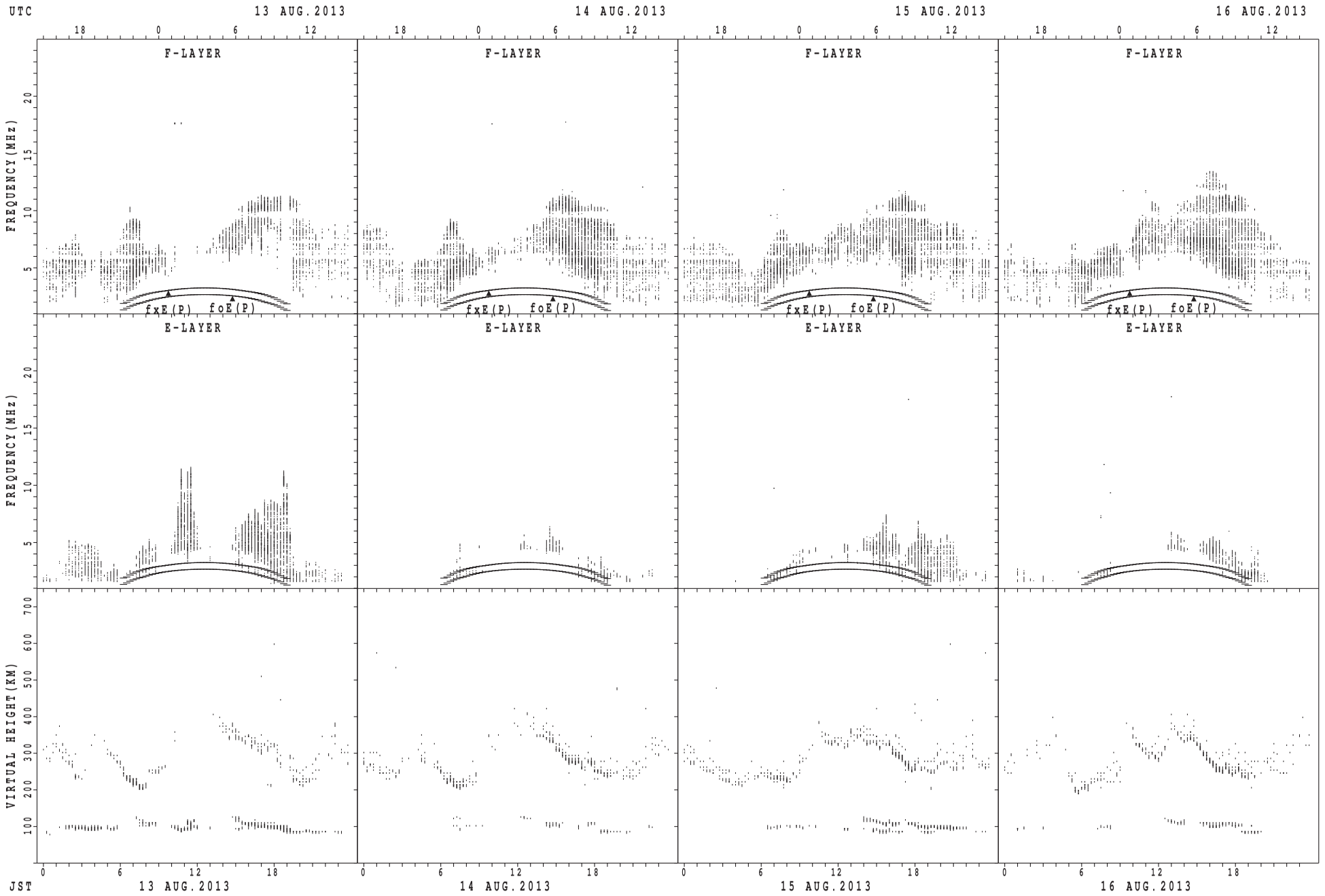

SUMMARY PLOTS AT Okinawa
UTC
JST
5 AUG.2013
6 AUG.2013
7 AUG.2013
8 AUG.2013
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



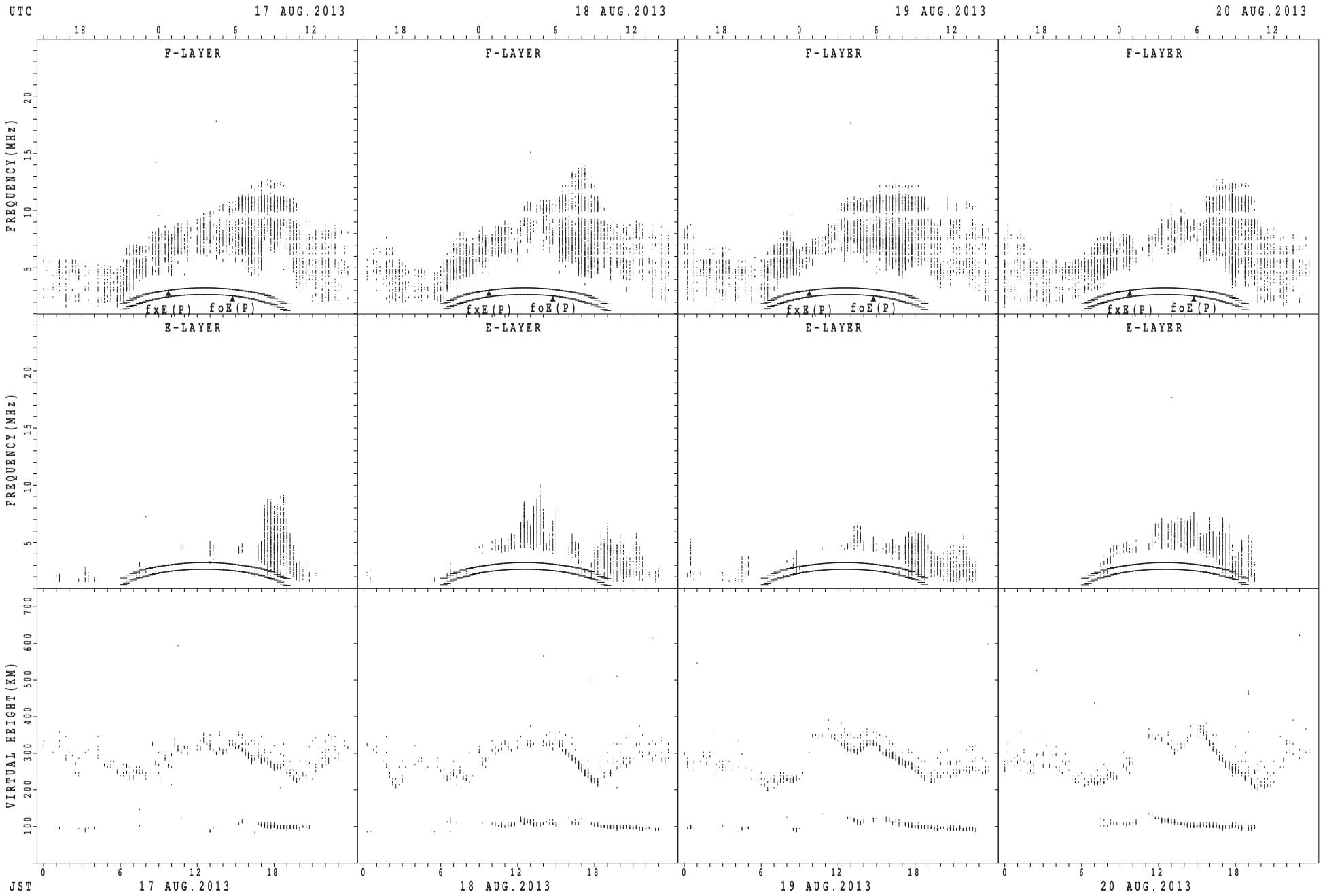
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



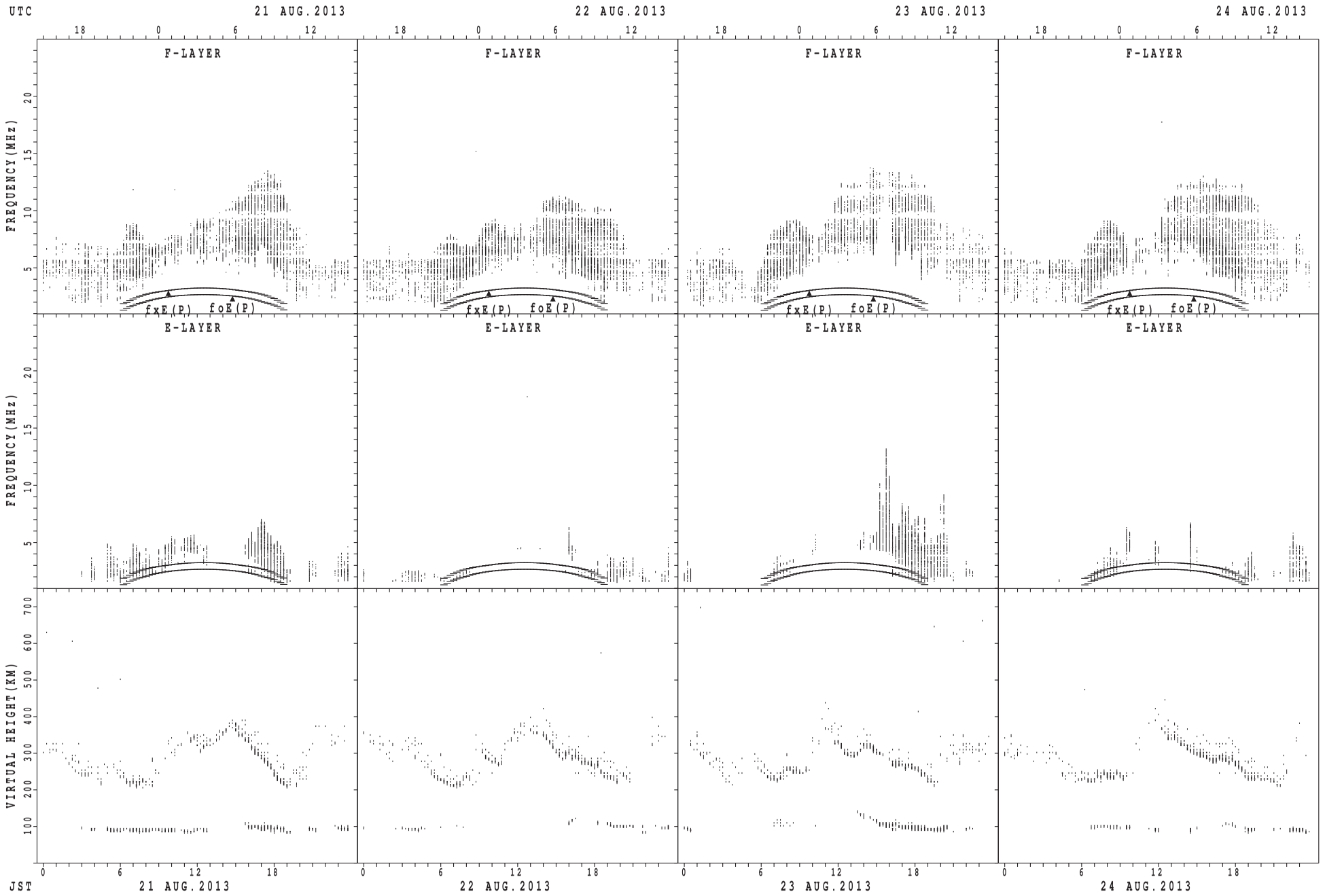
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



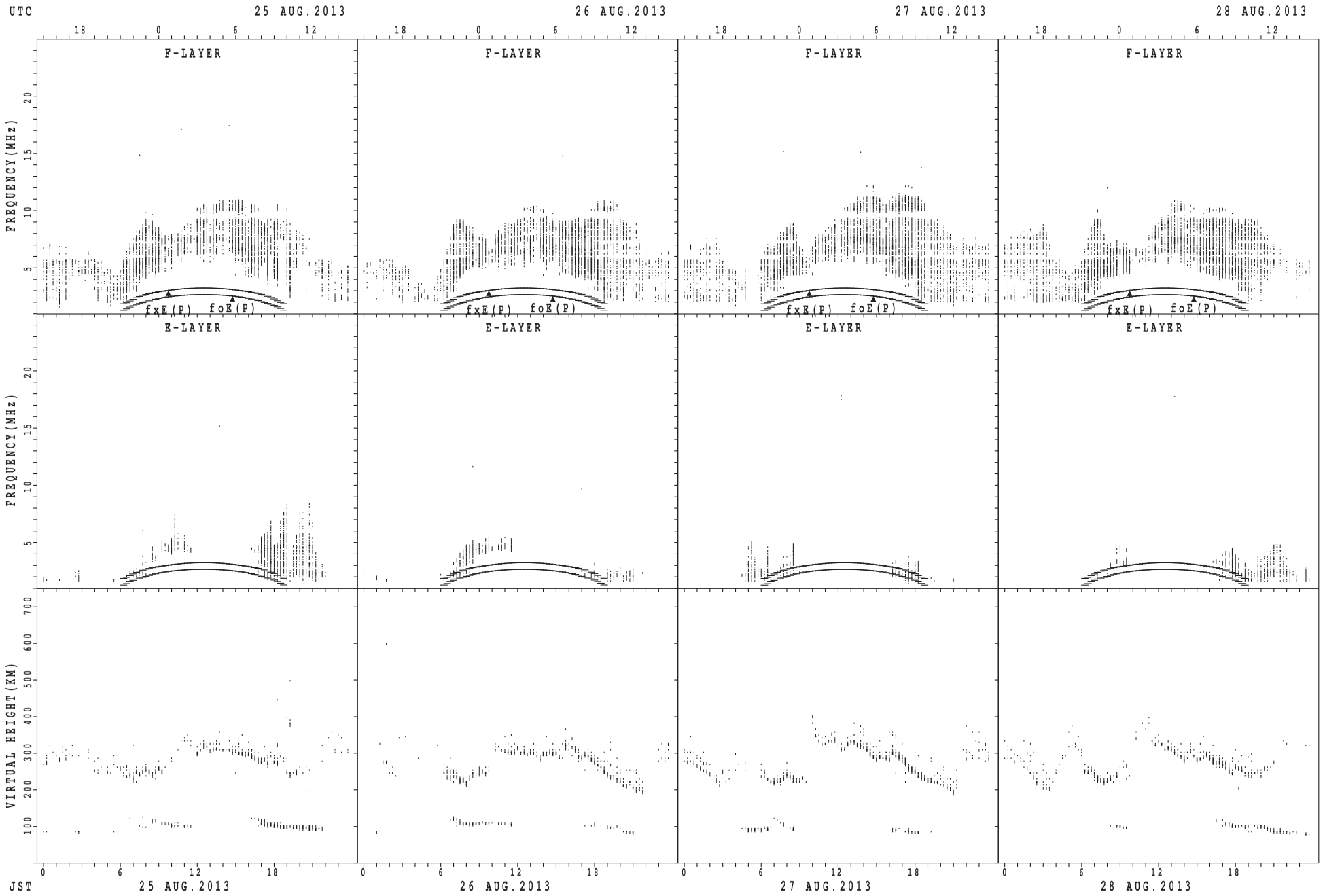
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



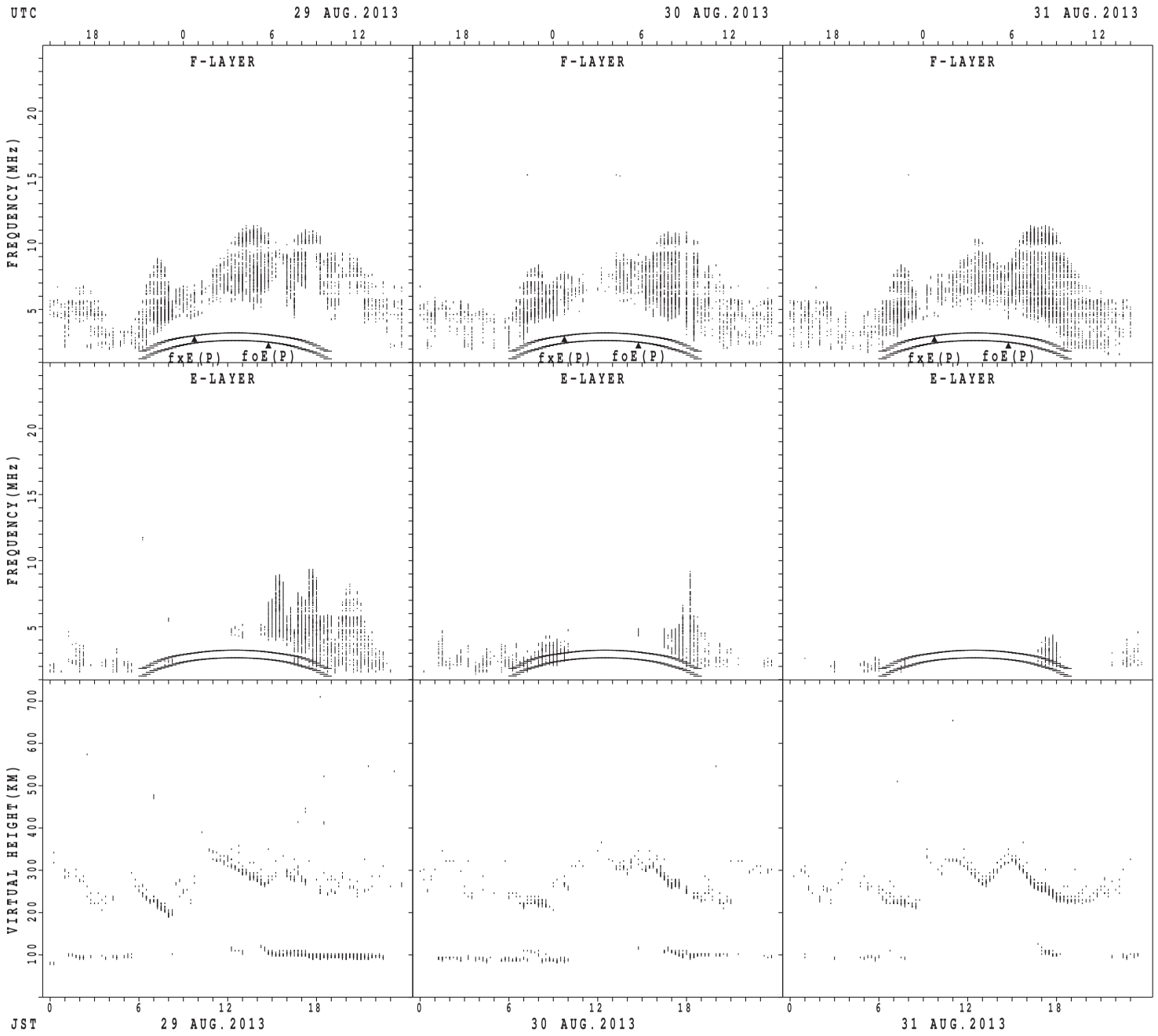
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

AUG. 2013 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	9	12									15	17	14	11	12	5	3	2
MED						302	264	270									286	282	280	276	288	288	322	302
U Q						151	334	292									312	296	296	294	298	301	332	306
L Q						151	260	254									278	265	260	268	279	263	274	298

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	22	15	16	18	16	31	30	29	29	27	30	28	29	28	30	31	30	27	26	21	24	21	23
MED	95	93	95	93	92	105	105	103	99	99	99	98	97	97	99	100	103	106	103	100	99	99	97	97
U Q	97	97	97	95	97	112	111	105	103	103	103	99	99	101	104	107	113	111	107	103	104	102	99	99
L Q	93	89	87	89	91	103	101	99	97	98	97	95	95	95	96	95	99	101	101	97	96	97	94	93

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1		6	25									21	25	22	20	7	3	2	1
MED					324		274	262									280	278	273	267	272	306	309	310
U Q					162		284	280									303	291	288	277	278	346	338	155
L Q					162		256	253									263	256	254	259	240	292	280	155

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	20	15	14	10	13	13	23	18	18	16	16	15	14	13	16	16	18	28	26	27	22	25	23	23
MED	95	93	95	96	95	97	111	103	102	98	98	99	101	95	98	99	101	105	103	97	99	99	97	97
U Q	98	99	97	99	99	103	113	105	105	103	102	103	105	103	109	108	109	110	103	103	105	101	99	101
L Q	95	91	91	93	93	93	101	99	97	96	95	95	95	93	95	95	91	97	95	93	97	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	1	1					4	18	19									23	20	18	10	4	2	3
MED	272	326					262	249	250									288	262	246	267	264	299	330
U Q	136	163					274	256	262									304	279	256	298	279	300	354
L Q	136	163					237	244	232									276	250	230	246	253	298	294

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	13	15	14	13	11	11	13	25	25	24	24	19	23	16	20	21	25	25	25	23	23	20	18	18
MED	95	93	95	95	97	95	97	105	101	100	102	101	101	101	102	103	107	107	103	99	97	98	95	96
U Q	99	97	95	99	99	101	111	111	107	106	106	109	107	114	111	111	113	113	106	103	103	103	99	97
L Q	90	89	91	91	95	91	94	99	97	98	99	97	97	99	97	95	97	99	95	91	91	94	93	93

MONTHLY MEDIANS OF h′F AND h′Es

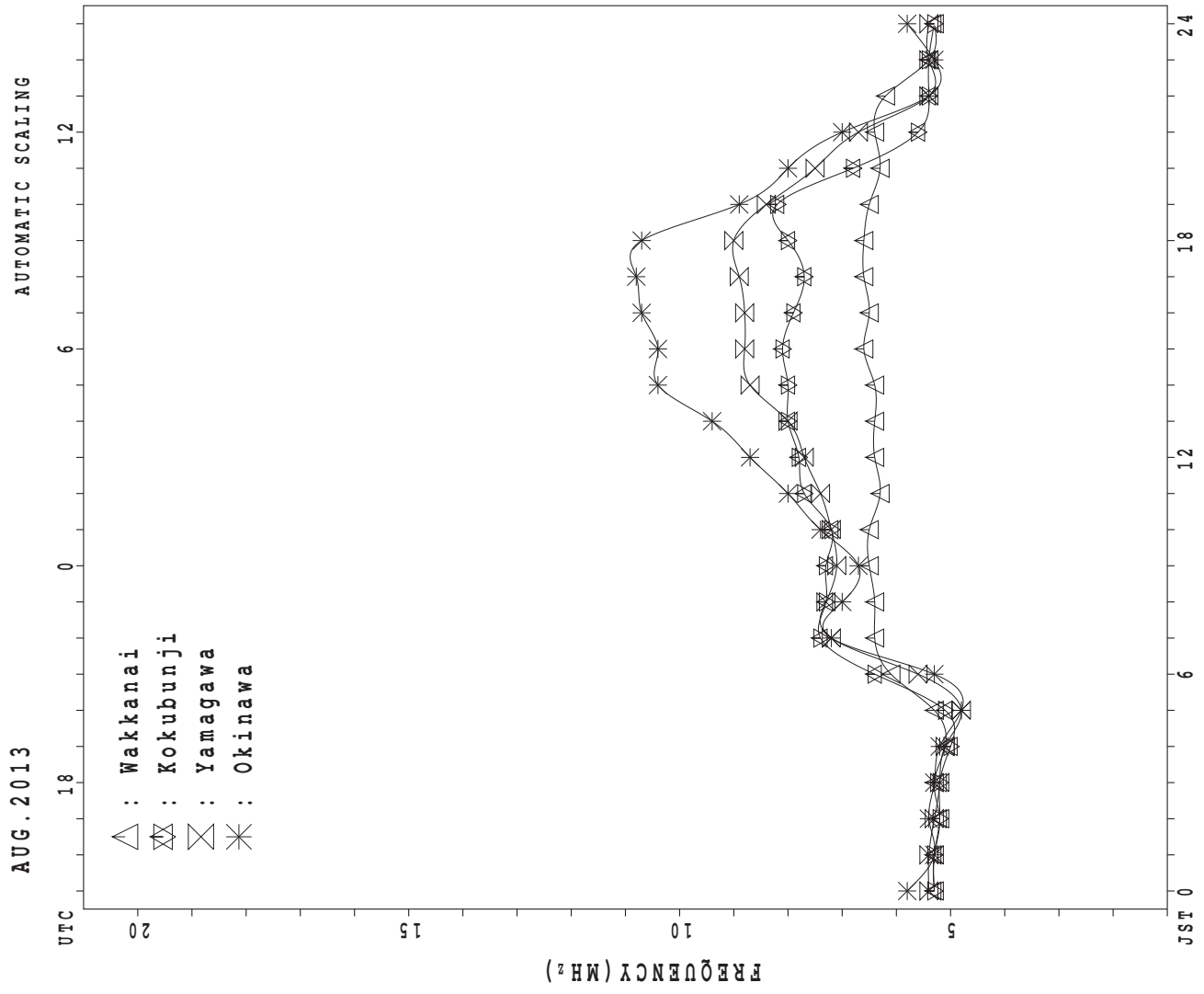
AUG.2013 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	4	2	2	5			1	21	23									30	29	28	16	10	7	2
MED	317	310	280	262			258	244	236									278	260	248	261	272	288	312
U Q	341	320	284	315			129	266	256									286	272	263	278	282	314	330
L Q	290	300	276	253			129	227	224									270	249	236	243	254	278	294

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	7	6	5	8	14	10	13	21	15	13	10	9	12	14	13	19	22	30	24	21	14	11	9
MED	97	97	99	97	96	97	95	107	107	103	99	99	99	112	111	105	109	105	103	97	97	97	97	97
U Q	101	99	101	100	102	99	103	117	113	105	108	103	113	119	115	110	113	111	107	102	102	99	101	102
L Q	97	97	97	93	93	93	93	93	103	95	95	95	94	103	107	97	103	105	99	94	97	95	97	94


MONTHLY MEDIANS PLOT OF foF2
AUG.2013
AUTOMATIC SCALING
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
UTC
18
0
6
12
JST 0
6
12
18
24
5
10
15
20
FREQUENCY (MHz)

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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	66	66	X 63	64	64															X 76	X 78	X 74	68	X 63
2	X 60	X 58	X 58	X 59																A	X 88	X 84	X 79	X 76
3	X 72	X 70	A	X 63	X 63															X 84	X 82	X 75	72	80
4	71	69	69	X 64	X 59															X 84	O X 85	X 83	X 79	X 71
5	X 71	X 66	X 64	X 60																X 67	X 73	X 77	69	70
6	X 65	X 57	R	X 49																X 70	X 74	X 75	X 75	X 71
7	X 71	X 69	X 62	X 58	X 60															X 77	X 84	X 83	70	70
8	X 71	65	X 58	X 53	X 51																X 81	X 83	X 79	X 76
9	X 67	66	64	62																	X 80	X 79	X 76	X 63
10	X 65	X 60	X 61	X 59	X 58																X 75	X 79	X 74	X 70
11	X 64	X 64	X 64	X 53	X 49															X 83	O X 81	X 83	X 65	X 67
12	X 64	X 63	X 62	X 61	X 60															X 81	X 83	X 82	X 76	X 65
13	X 61	X 61	X 61	X 59	X 59															X 81	X 83	X 82	76	X 77
14	X 74	X 72	X 68	X 66	X 69															X 82	X 78	X 72	X 69	X 69
15	X 67	X 65	X 65	X 63	X 61																O X 86	X 82	X 82	X 72
16	X 67	X 67	X 62	X 55																X 75	X 72	X 71	X 71	X 70
17	X 69	X 66	X 64	X 60	X 56															X 91	X 89	X 73	X 69	X 67
18	X 65	X 65	65	X 63	X 60															X 80	X 80	X 72	X 67	X 65
19	X 64	X 61	X 61	X 57	X 55															X 84	X 78	X 74	X 71	X 67
20	69	X 65	67	67	X 61															X 77	X 83	X 81	X 65	X 63
21	64	X 62	X 61	X 60	X 58															X 83	X 73	X 70	70	69
22	68	68	61	X 60	X 56															X 81	X 81	X 80	X 76	X 63
23	X 62	X 61	X 61	X 59	X 58															X 83	X 82	X 77	X 74	X 68
24	X 68	X 69	X 63	X 61	X 61															X 65	X 76	X 74	X 70	X 69
25	X 62	X 60	X 57	X 57	X 52															X 78	X 81	X 79	X 67	X 59
26	X 56	X 55	X 56	X 55	X 53	X 52														X 70	X 70	X 69	X 67	X 61
27	X 57	X 55	X 54	X 54	X 53															X 77	X 75	X 73	X 68	X 61
28	X 60	X 58	X 59	X 57	X 55															X 73	X 76	X 70	X 69	X 63
29	X 60	X 58	X 57	X 57	X 56															X 81	X 77	X 73	X 63	X 63
30	X 61	X 58	X 57	X 56	X 56															X 81	X 79	X 73	X 69	X 63
31	X 62	X 60	56	X 49	51															X 76	X 80	X 75	X 69	X 56
	00	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	29	31	26	1														26	31	31	31	31
MED	X 65	X 64	X 61	X 59	X 58	X 52														X 80	X 80	X 75	X 70	X 67
U Q	X 69	X 66	X 64	X 62	X 60															X 83	X 83	X 82	X 76	X 70
L Q	X 62	X 60	X 58	X 56	X 55															X 76	X 76	X 73	X 68	X 63

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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	F 58	58	56	F 58	56	54	59	Z 60	51	56	55	E G 50	58	58	J R 59	58	64	66	66	R 69	72	67	F 61	56
2	53	51	51	52	48	53	62	67	66	A	61	V 60	62	V 62	61	64	61	59	62	A	81	U R 79	72	69
3	65	63	A	56	J R 56	60	F 62	64	67	62	A	A	A	68	68	66	66	A	70	J R 77	75	68	F 63	70
4	F 62	58	F 57	57	52	R 54	62	66	68	R 66	66	63	71	R 70	68	65	62	67	72	R 78	R 78	76	73	64
5	64	59	57	R 53	47	46	53	64	U R 55	U R 54	E G 48	E G 47	J R 56	R 52	61	59	59	59	58	60	66	70	61	F 62
6	58	51	R	42	38	45	53	A	58	R 55	R 55	A	A	62	55	58	63	61	61	63	68	68	68	64
7	64	F 61	55	F 51	52	58	69	U R 79	72	J R 91	Y	70	R 71	72	71	70	69	66	65	72	77	76	F 62	F 61
8	F 64	F 52	51	47	44	53	62	67	74	70	U Y 70	68	66	66	65	67	66	64	67	75	75	77	73	69
9	61	F 50	F 51	50	50	R 48	60	62	60	60	59	62	60	60	59	60	60	62	63	U A 66	73	72	68	56
10	57	54	54	53	52	45	52	63	69	61	65	63	61	64	62	70	69	67	63	66	67	72	67	63
11	57	57	57	46	42	45	R 47	R 53	62	66	66	60	61	64	58	62	62	58	61	76	74	76	59	60
12	57	57	55	54	53	R 54	60	64	R 59	60	65	R 62	65	64	R 65	61	67	62	66	75	76	75	69	58
13	54	54	54	52	52	56	58	63	70	61	61	67	65	68	67	64	65	66	70	74	R 76	75	F 68	70
14	67	65	62	60	62	59	63	68	U Y 81	75	U R 71	67	65	67	70	74	75	80	80	75	71	65	62	62
15	60	58	58	56	54	58	67	71	72	72	71	V 68	68	A	72	74	73	73	73	R 81	R 79	R 75	75	65
16	60	60	55	48	48	47	53	57	59	60	50	65	67	74	66	74	U R 80	78	71	68	65	R 65	64	63
17	62	59	57	53	49	48	A	64	67	U R 73	76	R 76	67	73	70	75	76	77	77	R 84	82	66	62	61
18	58	58	56	56	53	58	65	71	U Y 81	70	68	73	U R 74	74	U Y 78	75	74	75	76	73	73	65	61	58
19	57	54	54	50	R 48	V 49	61	68	64	U R 61	69	68	A	68	72	74	76	76	76	77	71	67	64	61
20	F 60	58	F 58	F 57	55	57	68	71	63	67	70	68	68	69	71	70	72	70	70	70	77	74	58	56
21	54	55	55	53	52	62	70	62	70	70	68	67	68	73	R 75	74	73	R 78	R 88	76	66	62	F 62	F 60
22	F 58	F 58	F 53	54	52	51	63	72	72	70	67	U R 78	76	U R 77	J R 85	77	72	73	74	74	74	74	69	56
23	56	54	54	52	51	V 50	57	60	71	69	68	72	65	68	71	74	72	74	75	76	75	70	67	61
24	61	62	56	54	54	51	56	R 51	57	J R 64	R 57	64	63	64	64	65	65	63	58	58	69	67	63	62
25	55	53	50	50	45	44	50	R 53	52	J R 56	57	64	60	66	65	66	64	67	68	71	74	72	61	53
26	49	48	49	48	46	45	R 43	R 54	57	59	60	62	60	63	59	62	64	63	64	63	63	62	58	54
27	50	48	47	47	46	52	62	70	67	70	69	70	70	68	66	68	67	70	66	70	68	66	61	R 54
28	53	51	52	50	V 48	R 36	E G 37	J R 55	58	62	59	A	A	71	75	74	74	71	65	66	68	63	62	56
29	53	51	50	50	49	50	62	65	69	J Y 73	V 66	63	68	69	71	72	73	69	A	74	70	66	58	56
30	54	51	50	49	49	53	60	64	66	67	67	61	68	70	68	68	68	65	68	75	72	66	62	56
31	55	53	46	42	42	47	52	62	U R 60	61	61	66	64	67	72	67	66	63	61	69	73	68	63	49
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	29	31	31	31	30	30	31	30	29	28	27	30	31	31	31	30	30	30	31	31	31	31
MED	58	55	54	52	50	51	60	64	66	65	66	66	65	68	68	68	67	67	68	74	73	68	63	61
U Q	61	58	56	54	53	56	62	68	70	70	68	68	68	70	71	74	73	73	73	76	76	75	68	63
L Q	54	51	51	49	47	47	53	R 60	59	60	59	62	61	64	62	64	64	63	63	68	68	66	61	56

AUG. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	L 416	452	460	484	496	484	U R 452	464	460	L 456	U L 424						
2						U L 248	A	U L 440	L	A	A	508	R 504	U R 500	500	U R 472	A	A						
3								A	A	A	A	A	A	A	U A 476	A	A	A	A					
4							L	A	L 440	L	488	R 488	U A 468	496	L	U L 484	A	U L 440	A					
5						336	R 364	U L 432	396	436	484	468	448	U R 448	452	A	448	A	A					
6						A	A	A	A	468	A	A	A	488	L	488	L 452	L	L					
7							440	L	A	U R 532	508	U L 504	500	L 500	488	U R 476	448	L 440	L					
8						L	L	L 432	A	476	R 476	R	488	488	488	472	L 468	U L 456	U L 364					
9							392	A	A	U A 476	U A 476	A	A	U A 504	U A 500	A	A	L 392	A	A				
10								444	444	460	456	468	488	492	L 496	468	L 452	L 428	U L 332					
11							400	436	456	R 464	R 468	R 480	504	480	460	L 460	U L 456	L	A					
12							L 372	404	L 460	464	484	484	488	488	488	U L 488	448	A	L					
13							L	L	L 468	L 484	L	500	500	R 500	R 476	U L 476	U L 464	U L 432	L					
14									U A 420	A	U L 544	516	L 520	U L 516	512	U L 460	456	U L 428	L					
15						L	L	L	U L 464	480	508	R 488	U L 488	A	500	L 488	U L 452							
16						L	U L 408	L	A	R 436	A	L	L	508	500	U L 492	L 468	L						
17							A	U L 460	U L 464	U L 496	L	508	L	U L 500	U L 536	L 480	U L 476	L	L					
18							L	L	L	L	A	A	L	L	484	L	L	L	L					
19							A	A	L	R 532	A	A	A	U L 532	L 492	U L 492	L 468	L	L					
20						L	L	U L 408	U L 460	L	L 528	L 528	L 528	U L 528	516	U Y 496	U L 468	U L 412						
21						L	L	L	L 488	U L 516	U R 512	U L 504	U L 508	504	504	U L 500	L	U L 408						
22						L	L	U L 428	A	L	L	512	L	U L 532	L	L	L	L						
23							L	U L 408	L 464	U L 484	L	L 492	L	500	L 500	L 500	L	L						
24							L 428	448	Y 440	A	L	500	L 500	500	U L 504	L 496	U L 464							
25							L 392	416	436	R 480	A	L 492	520	512	L	L 468	L	L						
26									428	U A 456	A	476	484	L 496		L 460	U L 456							
27							L	U L 460	L	L 484	L 484	U L 492	492	492	L 496	U L 480	L	L						
28							368	436	U R 436	A	R	A	A	U A 460	488	L 456	L							
29							L	L	L	L 468	L 468	U L 488	496	480	492	A	A	A	A					
30							U L 364	L	L	R 444	R 456	L	R	L 492	U L 468	U L 456	L	L						
31								R 396	464	R 452	L 468	496	U L 484	L 480	L 468	U L 452	U L 412							
	00	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	10	16	18	22	17	22	20	28	26	25	18	10	2					
MED						292	392	L 432	454	472	484	494	494	498	492	U L 476	L 456	U L 428	U L 348					
U Q							L 408	U L 442	L 464	U L 484	508	504	504	U 504	L 500	U L 490	L 468	U L 440						
L Q							368	412	436	460	468	488	486	488	476	L 460	452	U L 412						

AUG. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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					B	A 192	272	304	332	A	U A 336	A	340	A	A	A	A 300	268	A					
2					A	192	A	A	A	A	A	A	A	R 368	364	344	324	272	A					
3						A	U A 268	U A 308	U A 332	U A 336	A	A	A	A	A	A	A	A	U A 196					
4						B	A	A	U A 332	A	U A 344	A	A	R 360	U A 356	332	308	268	A					
5					B	188	248	300	332	U A 332	U A 328	A	A	U R 336	332	A	308	U A 280	200					
6					B	A	U A 260	296	A 312	U A 344	U A 360	A	A	A	A	A	304	272	U A 216					
7						192	264	U A 288	320	A	R 352	R 372	A	A	364	340	A 300	280	168					
8						188	248	296	U A 312	A	A	A	U R 372	340	340	336	300	268	A	B				
9					B	180	244	296	308	U A 324	A	A	A	A	A	A	A	268	A	B				
10						168	256	296	312	U A 320	U A 328	R	R 372	A	356	332	304	252	A 176	B				
11						156	268	288	320	R 340	U A 348	A	A 368	A	A	A	A	264	A					
12						A	244	U A 308	U A 324	A	R	A	R 356	R 364	332	336	308	U A 264	204					
13						188	240	A 292	A	A	A	U R 384	A	A	R 376	U R 348	304	268	196					
14						180	252	316	324	A	A	A	A	A	352	340	316	276	228					
15						180	268	296	320	A	A	A	A	A	R 376	352	308	264	A	A				
16					B	188	A	288	324	A	U A 356	U R 368	U A 368	360	356	336	312	276	A					
17						A	A	A	A	A	A	A	R 352	368	360	336	308	U A 248	212					
18						A	U A 236	U A 284	U A 328	U A 332	A	A	A	A	A	A	312	256	A					
19						A	U A 224	A	A	U A	A	A	A	A	A	340	320	268	A					
20						U R 172	252	292	316	A	A	A	A	A	R 356	A	308	A	A					
21						A	A	A	316	340	R 344	A	A	U A 344	U A 344	U A 332	A	A	A					
22						B	A	A	A	A	A	A	R	A	A	A	A	A	A					
23						200	228	284	A	A	A	A	A	A	A	A	R 300	272	204					
24						A	252	U A 288	A 300	U A 324	A 348	U A 360	A	R	B	U R 332	288	264	U A 172					
25						B	248	284	300	A	A	A	R 372	368	344	312	296	260	A					
26							A	A	304	U A 320	A	A	R 352	340	344	316	292	240	A					
27						A	A	A	A	A	R 356	R	A	A	344	328	288	252	B					
28						B	216	292	332	340	U A 356	A	A	U A 344	344	320	292	236	A					
29						A	U A 224	268	U A 288	U A 308	A	A	U A 356	372	348	332	312	U A 220	A					
30						B	A	284	312	344	U R 344	R 352	A	B	348	328	292	240	A					
31						A	A	A	A	336	U R 340	352	R	A	324	316	288	236	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	21	22	23	14	14	6	10	12	21	21	26	27	11					
MED						188	248	292	320	U A 334	U A 346	R 364	R 362	360	348	332	304	264	200					
U Q						190	262	296	328	340	U A 356	R 372	R 372	368	358	340	308	272	212					
L Q						176	238	288	312	U A 324	U A 340	352	R 352	342	344	328	296	252	A 176					

AUG. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	JA 48	JA 28	JA 19	JA 18	19	JA 28	29	33	38	JA 50	42	JA 46	G	39	JA 51	38	34	30	JA 34	JA 111	JA 64	JA 43	JA 53	JA 53
2	JA 36	JA 27	JA 30	JA 28	JA 30	G	JA 46	JA 45	JA 59	JA 73	JA 57	39	41	41	40	JA 59	JA 59	JA 107	JA 109	179	JA 90	JA 116	JA 60	JA 51
3	JA 87	JA 88	JA 69	JA 26	JA 26	JA 47	JA 53	JA 116	JA 67	JA 64	JA 77	JA 110	JA 110	100	69	JA 59	JA 58	75	73	JA 104	JA 62	JA 61	JA 87	JA 58
4	JA 29	JA 63	JA 29	JA 26	33	JA 29	JA 63	69	JA 43	JA 43	40	JA 46	JA 55	G 34	JA 47	36	JA 63	JA 63	JA 52	JA 31	30	E B 13	JA 26	25
5	E B 12	21	E B 14	E B 13	E B 14	24	31	JA 49	37	40	40	40	40	39	G	JA 50	34	JA 73	JA 66	JA 53	JA 44	JA 60	JA 71	JA 32
6	JA 63	61	JA 54	JA 30	32	JA 44	JA 65	JA 61	JA 55	41	61	75	68	38	38	JA 33	G 27	30	JA 28	JA 38	JA 47	JA 39	26	JA 35
7	28	JA 29	JA 22	28	27	G	JA 31	40	JA 111	38	G	42	JA 54	42	G 31	G 31	JA 55	34	28	JA 27	JA 60	JA 37	JA 133	JA 44
8	JA 49	JA 33	JA 60	JA 27	27	G 18	29	39	JA 50	JA 48	40	40	G 34	36	G 27	G 27	32	31	26	JA 19	JA 27	JA 14	JA 31	JA 27
9	JA 16	E B 13	E B 13	E B 13	JA 20	20	32	JA 55	JA 54	JA 54	JA 53	JA 64	JA 59	JA 63	JA 55	JA 64	JA 44	JA 32	JA 41	JA 66	JA 34	38	32	JA 25
10	21	22	22	21	23	19	28	34	35	37	37	G 34	G 34	38	40	35	33	26	26	JA 18	JA 17	JA 22	26	JA 24
11	JA 24	JA 25	JA 23	JA 22	JA 23	22	31	32	37	37	JA 47	38	42	41	37	JA 47	JA 38	JA 38	66	JA 29	JA 50	JA 16	21	JA 21
12	E B 12	JA 21	JA 18	JA 28	JA 32	JA 24	31	36	36	39	G 34	40	G	G	G	40	JA 44	JA 62	JA 30	JA 25	JA 52	JA 33	27	JA 25
13	JA 25	JA 27	JA 20	JA 13	17	G	27	34	34	36	38	44	38	JA 53	G	G 34	G	34	G	JA 24	JA 18	JA 55	JA 46	JA 22
14	JA 15	JA 20	JA 27	JA 14	E B 13	G	29	JA 42	JA 48	JA 61	JA 51	JA 43	40	39	G 30	39	34	33	JA 29	JA 23	JA 18	JA 23	E B 12	JA 13
15	E B 14	JA 14	JA 17	19	E B 14	20	G 25	G 26	34	38	33	36	47	JA 90	G 34	39	37	JA 38	JA 33	JA 33	JA 15	JA 21	JA 17	E B 12
16	E B 12	E B 12	JA 13	JA 13	E B 12	JA 27	JA 34	38	JA 58	JA 44	JA 43	44	41	G	G	G	34	35	JA 45	40	JA 41	JA 24	JA 41	JA 25
17	JA 62	55	JA 52	JA 35	JA 50	JA 30	JA 56	JA 59	JA 56	JA 60	JA 59	39	G	40	40	40	38	32	G 18	JA 22	JA 36	E B 16	24	21
18	26	23	E B 14	JA 16	JA 18	22	36	36	36	40	JA 59	71	71	39	39	37	G 31	28	JA 25	E B 14	JA 16	JA 27	26	JA 20
19	JA 21	JA 19	E B 13	E B 13	JA 14	JA 27	JA 52	JA 67	40	JA 60	JA 53	JA 49	JA 68	JA 52	JA 45	39	G 28	34	JA 27	JA 25	18	JA 15	JA 29	58
20	JA 63	JA 43	JA 33	JA 33	JA 19	G	G	33	37	JA 43	JA 49	40	JA 47	38	37	37	JA 42	JA 31	JA 26	JA 30	JA 51	E B 12	35	JA 37
21	JA 41	JA 47	JA 24	JA 24	JA 36	JA 38	JA 29	JA 35	35	39	39	44	43	40	40	37	JA 40	JA 31	JA 28	JA 41	E B 14	JA 37	JA 51	JA 53
22	JA 27	JA 27	JA 33	JA 33	JA 27	E B 17	JA 27	JA 34	JA 45	JA 46	40	38	G 33	48	48	42	JA 39	JA 32	JA 31	JA 27	JA 47	JA 29	E B 11	E B 11
23	E B 11	E B 11	E B 11	E B 14	JA 11	G 18	26	33	42	41	48	40	38	38	40	35	G 27	G 23	G	E B 14	E B 14	JA 33	JA 34	JA 31
24	JA 27	JA 29	JA 26	JA 25	JA 21	23	29	33	40	60	JA 46	JA 46	42	G 36	G 35	34	34	JA 35	JA 19	JA 16	JA 22	JA 14	E B 14	
25	20	E B 14	E B 14	E B 14	E B 14	20	30	34	36	38	48	48	46	40	G	G	G	32	J A 31	JA 25	JA 24	JA 28	JA 19	JA 30
26	JA 30	JA 20	26	JA 27	E B 12	JA 26	28	JA 42	37	JA 47	52	JA 44	40	G	G	40	36	JA 35	JA 36	JA 21	JA 24	JA 20	JA 45	JA 61
27	35	JA 25	JA 20	JA 15	E B 12	18	26	34	JA 45	JA 57	41	G 32	38	JA 42	G 34	36	G 20	G 19	JA 25	JA 44	JA 33	JA 22	JA 32	48
28	JA 32	JA 30	JA 36	JA 36	38	E B 14	23	31	37	JA 64	JA 58	66	JA 68	JA 47	39	G	36	JA 41	63	JA 55	JA 30	E B 14	E B 14	E B 14
29	JA 19	E B 12	JA 13	JA 14	JA 14	19	25	33	40	38	JA 56	42	40	G 36	39	JA 59	JA 53	JA 46	JA 104	JA 67	JA 77	JA 51	JA 34	JA 22
30	JA 30	33	JA 15	JA 15	JA 15	27	24	G 22	G 28	G 29	37	41	40	E B 44	39	38	33	JA 34	30	JA 19	22	JA 15	E B 14	JA 16
31	JA 18	JA 24	21	JA 20	JA 25	JA 50	JA 38	34	JA 40	39	G 33	39	G 30	35	G 23	34	32	JA 34	JA 46	JA 49	JA 35	30	E B 17	11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 27	JA 25	JA 22	JA 21	JA 20	22	29	35	40	43	46	42	41	39	38	37	34	JA 34	JA 30	JA 29	JA 33	JA 27	JA 29	JA 25
U Q	JA 36	JA 33	JA 30	JA 28	JA 27	JA 27	JA 36	JA 45	JA 50	JA 57	JA 53	46	JA 54	JA 44	40	JA 40	JA 42	JA 38	JA 46	JA 49	JA 50	JA 38	JA 45	JA 44
L Q	E B 18	E B 20	E B 14	E B 14	E B 14	G	27	33	36	38	39	39	G 38	G 36	G	G 34	G 32	31	26	J A 22	J A 18	16	19	E B 20

AUG. 2013 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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	40	E B 15	11	11	E B 12	16	G 26	G 26	36	36	35	39	G	37	42	33	32	29	29	50	48	35	35	22
2	18	18	18	18	21	G	40	34	44	A A 73	53	39	U Y 40	40	39	38	46	53	43	A A 179	53	55	46	22
3	40	35	A A 69	24	24	27	42	55	64	55	A A 77	A A 110	A A 110	55	48	50	49	A A 75	57	60	45	17	47	44
4	18	17	17	17	17	23	31	55	37	37	37	42	47	G 31	39	35	51	37	42	28	22	E B 13	22	18
5	E B 12	E B 14	E B 14	E B 13	E B 14	22	G 24	35	35	35	36	36	36	36	G	45	33	37	36	29	29	31	30	24
6	42	34	29	26	18	39	40	A A 61	48	38	50	A A 75	A A 68	36	36	31	G 22	G 26	G 21	26	31	29	16	21
7	12	18	18	12	15	G	G 15	34	51	35	G	40	45	39	G 29	G 29	G 24	G 24	23	20	29	29	E B 15	16
8	30	17	27	18	E B 16	G 10	26	30	44	44	35	U Y 40	G 32	G 33	G 22	G 22	G 29	29	20	E B 15	16	E B 13	19	18
9	E B 13	E B 13	E B 13	E B 13	E B 13	19	29	51	50	48	48	57	52	50	50	50	43	G 18	36	53	30	E B 12	16	16
10	E B 12	E B 14	E B 14	E B 14	E B 14	18	G 26	G 29	33	34	34	U G 32	G 32	34	38	G 29	33	G 22	22	E B 12	E B 12	13	16	18
11	E B 14	20	E B 14	17	20	20	28	G 28	34	G 34	43	U Y 38	42	40	34	34	34	32	49	20	20	E B 14	E B 16	E B 16
12	E B 12	E B 12	16	22	25	19	26	G 28	35	35	U G 34	39	G	G	G	39	34	40	28	21	17	17	E B 14	19
13	18	18	E B 14	E B 14	E B 14	G	26	32	32	33	35	40	U Y 38	43	G	G 29	G	29	G	18	E B 14	52	36	18
14	E B 13	E B 13	15	E B 13	E B 13	G	G 24	35	42	54	38	38	36	36	G 27	37	G 31	G 27	G 20	16	E B 12	18	E B 12	E B 12
15	E B 14	E B 14	E B 14	E B 14	E B 14	G 14	G 17	G 19	34	35	32	E B 36	36	A A 90	G 24	36	36	35	25	28	E B 12	13	E B 12	E B 12
16	E B 12	E B 12	E B 12	E B 12	E B 12	G 16	23	G 28	52	38	39	40	40	G	G	G	32	33	24	17	E B 16	E B 15	15	E B 13
17	21	21	20	20	28	23	A A 56	30	32	41	41	38	G	39	39	39	34	29	G 16	18	20	E B 16	E B 17	E B 11
18	E B 14	E B 14	E B 14	E B 14	17	18	25	29	G 28	38	51	58	45	U Y 35	35	35	G 26	28	21	E B 14	E B 13	16	16	16
19	20	E B 13	E B 13	E B 13	E B 13	18	49	42	40	42	49	49	A A 68	44	44	38	G 24	31	23	18	11	11	18	35
20	38	30	24	23	E B 15	G	G	30	33	41	41	38	39	38	G 33	U Y 34	34	30	23	22	E B 12	E B 12	E B 12	25
21	25	33	17	16	29	29	27	30	G 32	36	U Y 38	40	40	38	38	36	35	26	21	36	E B 14	33	21	38
22	18	18	25	25	17	E B 17	20	28	41	40	36	37	U G 31	42	41	36	35	28	27	22	22	22	E B 11	E B 11
23	E B 11	E B 11	E B 11	E B 14	E B 13	G 14	26	32	40	40	47	38	U Y 37	37	37	33	G 22	G 19	G	E B 14	E B 14	22	29	26
24	E B 14	19	18	18	18	18	27	29	U Y 40	53	43	43	40	U G 35	U G 34	G 26	G 28	31	23	16	E B 14	16	E B 14	E B 14
25	E B 14	E B 14	E B 14	E B 14	E B 14	19	G 25	29	32	37	46	46	45	40	G	G	G	G 25	27	19	19	18	18	26
26	16	E B 12	E B 12	15	E B 12	20	24	34	34	46	45	38	36	G	G	37	32	30	19	E B 14	16	E B 14	19	22
27	28	16	E B 14	E B 13	E B 12	16	22	24	31	36	38	U G 32	35	38	G 28	34	G 18	G 16	17	17	17	17	20	20
28	26	22	25	25	22	E B 14	23	G 29	36	52	55	A A 66	A A 68	46	35	G	33	34	42	21	20	E B 14	E B 14	E B 14
29	E B 12	E B 12	E B 12	E B 13	E B 12	16	24	27	37	36	38	38	38	G 35	36	53	42	44	A A 104	20	28	17	17	17
30	14	18	E B 14	E B 14	E B 14	E B 14	22	G 19	G 19	G 21	U Y 37	38	U Y 39	E B 44	38	35	32	27	16	16	E B 17	E B 14	E B 14	E B 14
31	16	16	E B 14	E B 15	E B 15	25	35	30	34	38	G 30	38	U G 29	34	G 22	G 30	30	26	40	40	23	23	E B 11	E B 11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	E B 14	14	E B 15	18	G	30	36	38	38	39	39	38	35	35	32	29	23	20	17	17	16	18
U Q	25	19	18	18	18	20	29	34	42	44	47	43	45	42	39	38	35	34	36	28	28	23	21	22
L Q	E B 13	E B 13	E B 14	E B 13	E B 13	G	24	G 28	33	35	35	38	G 35	G	G 34	G	G 29	G 26	G	E B 16	E B 14	E B 14	E B 14	E B 14

AUG. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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	15	15	10	10	12	12	12	12	12	17	11	12	12	12	12	12	12	12	12	10	11	11	11	11
2	14	14	14	12	12	12	13	12	12	17	16	16	16	16	16	17	14	13	14	12	14	14	14	14
3	14	14	14	12	12	12	12	12	12	12	18	15	17	17	17	17	15	14	14	13	14	14	14	14
4	14	14	14	14	14	14	14	13	12	12	12	10	16	15	15	15	15	13	13	13	13	13	13	13
5	12	14	14	13	14	14	14	14	14	16	15	15	15	15	15	16	16	15	15	14	14	14	14	14
6	15	15	15	10	10	10	12	11	11	14	15	18	17	17	16	15	15	15	12	12	12	12	12	12
7	12	12	12	12	12	12	12	14	14	14	14	15	12	16	16	16	16	16	15	14	14	15	15	15
8	16	16	16	16	16	10	10	10	11	12	14	18	16	19	19	18	18	15	15	15	13	13	13	13
9	13	13	13	13	13	13	13	12	11	11	11	16	15	15	15	14	14	10	9	15	12	12	12	12
10	12	14	14	14	14	14	14	14	10	10	10	26	26	19	15	12	15	14	14	12	12	12	12	12
11	14	14	14	14	12	12	12	11	11	15	20	23	20	21	18	17	16	11	11	11	14	14	16	16
12	12	12	12	12	12	12	12	13	13	13	19	18	18	18	16	12	12	12	12	12	14	14	14	14
13	14	14	14	14	14	14	13	13	13	13	13	15	15	23	20	16	15	15	15	15	14	12	12	12
14	13	13	13	13	13	13	13	16	13	13	13	13	13	13	13	13	15	15	15	12	12	12	12	12
15	14	14	14	14	14	14	14	14	14	13	18	19	15	16	16	15	14	14	14	11	12	12	12	12
16	12	12	12	12	12	12	12	12	12	12	12	12	14	14	14	14	14	12	12	13	16	15	13	13
17	13	13	13	13	13	13	13	12	12	11	15	15	15	15	15	15	16	15	16	15	16	16	17	11
18	14	14	14	14	14	14	14	14	14	14	14	16	16	14	14	14	14	14	14	14	13	13	13	13
19	13	13	13	13	13	13	13	13	13	13	12	12	17	15	20	16	14	12	11	11	11	11	11	11
20	15	15	15	15	15	15	14	14	13	13	20	19	19	20	20	19	17	14	14	14	12	12	12	12
21	12	12	12	13	12	12	12	15	15	17	19	19	18	17	17	17	13	13	13	14	14	14	14	14
22	14	14	13	13	12	17	12	12	12	15	15	17	20	20	18	10	11	11	11	12	11	11	11	11
23	11	11	11	14	13	13	13	13	14	14	19	21	16	16	16	16	16	16	16	14	14	14	14	14
24	14	14	14	13	12	12	12	12	11	11	12	22	22	22	20	14	14	14	12	12	14	14	14	14
25	14	14	14	14	14	14	14	12	11	11	15	15	15	15	15	15	15	12	11	11	12	12	12	12
26	12	12	12	12	12	13	13	13	14	14	14	16	16	15	16	16	16	14	14	14	14	14	14	14
27	14	14	14	13	12	12	12	12	14	14	14	18	19	18	13	12	12	12	12	14	14	14	16	15
28	14	14	14	14	14	14	14	14	14	17	12	17	18	16	16	17	16	15	15	14	14	14	14	14
29	12	12	12	13	12	12	12	13	13	13	15	15	19	19	17	17	13	13	12	14	14	14	14	14
30	14	14	14	14	14	14	14	14	14	14	10	10	30	44	21	20	18	16	16	16	17	14	14	14
31	14	12	14	15	15	14	12	12	12	15	18	17	16	16	14	14	14	14	13	13	12	11	11	11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	13	13	13	13	13	13	13	14	16	16	16	16	15	15	14	14	13	14	14	13	13
U Q	14	14	14	14	14	14	14	14	14	15	18	18	19	19	18	17	16	15	15	14	14	14	14	14
L Q	12	12	12	12	12	12	12	12	12	12	12	15	15	15	15	14	14	12	12	12	12	12	12	12

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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	F 297	278	288	F 266	294	314	314	Z 321	286	306	Y 249	G	311	296	R	292	299	309	312	R 315	315	291	F 286	293
2	279	288	288	306	289	352	300	331	302	A	318	V 285	278	V 301	302	304	323	A 312	297	A	289	U R 276	303	309
3	298	297	A	299	R	321	F 313	323	A	A 338	A	A	A	309	309	298	301	A	304	R	305	314	F 293	291
4	F 306	298	F 293	302	316	R 328	321	334	328	R 334	309	292	311	R 325	312	303	316	307	298	R 297	R 327	311	315	289
5	287	293	315	R 275	276	270	287	337	U R 307	U R 329	G	G	R	R 257	308	282	307	307	301	293	281	298	274	F 290
6	290	314	R	291	282	288	289	A	287	R 267	R 266	A	A	302	315	298	307	316	319	307	289	289	289	290
7	290	F 306	307	R 299	306	282	292	U R 297	335	R	Y	295	R 300	307	313	317	331	320	311	298	307	311	F 293	F 299
8	F 314	F 310	313	305	284	319	298	337	329	321	U Y 345	330	310	314	316	306	310	299	312	315	317	309	326	309
9	287	F 292	F 283	281	280	R 290	319	326	299	337	332	344	302	288	292	304	312	297	326	A	294	301	308	293
10	300	294	297	299	300	321	306	307	345	333	314	324	294	300	305	318	320	314	308	297	294	305	313	310
11	284	302	300	303	316	324	R 311	R 286	332	345	331	301	305	321	316	321	312	310	326	299	320	342	288	296
12	296	284	291	295	298	R 348	343	361	R 345	331	316	R 326	323	308	R 309	298	319	302	311	319	305	315	320	314
13	287	285	292	304	299	337	333	329	326	337	294	308	316	315	327	306	304	305	302	311	R 325	306	F 291	299
14	294	303	286	274	287	317	312	318	U Y 330	318	U R 334	313	285	289	304	301	313	302	326	317	322	297	306	300
15	301	293	293	302	312	326	346	330	345	327	326	V 320	276	A	320	315	317	317	312	R 297	R 315	R 322	315	285
16	287	305	285	270	299	309	298	316	A 288	321	A 361	311	287	318	291	306	U R 320	330	311	297	296	R 296	283	273
17	279	284	289	286	284	307	A	321	306	U R 326	326	R 350	339	326	282	327	322	321	316	R 319	322	302	288	282
18	287	286	281	298	314	328	333	340	U Y 332	327	304	325	U R 341	331	U Y 338	320	305	322	339	328	317	308	285	279
19	285	287	285	289	R 296	V 321	319	360	316	U R 288	308	314	A	303	321	314	323	334	333	323	312	310	297	270
20	F 279	288	F 280	F 272	279	310	337	349	380	322	308	317	316	310	321	318	326	330	317	327	330	332	306	282
21	281	286	285	292	298	315	357	316	333	330	343	314	305	319	R 318	303	302	R 332	R 339	328	288	299	F 271	F 263
22	F 257	F 272	F 269	278	276	281	315	339	355	352	300	U R 340	308	U R 320	R	322	307	326	336	333	290	302	314	305
23	281	273	284	293	283	V 296	335	315	319	328	313	320	307	293	310	314	308	313	316	308	315	311	291	288
24	268	299	295	296	310	329	295	R 338	305	R	R 313	299	303	305	308	302	311	321	311	286	270	291	296	300
25	290	292	297	299	273	294	306	R 320	290	R	308	323	291	325	310	317	304	306	308	297	306	316	297	278
26	284	281	291	263	288	314	R 325	R 298	329	316	314	338	318	306	320	321	311	331	327	320	307	305	316	309
27	283	291	292	299	307	328	314	333	294	343	316	298	317	328	313	312	316	334	323	304	313	305	301	R 285
28	284	285	290	292	V 278	R 348	G	R	337	361	A 305	A	A	314	317	322	320	322	320	316	304	291	300	304
29	287	290	291	294	309	318	349	357	337	Y	V 315	319	314	324	316	320	335	326	A	313	306	315	294	294
30	303	303	289	308	306	325	347	344	334	346	344	317	311	316	322	322	321	310	304	332	327	312	292	282
31	287	294	291	288	288	311	308	341	U R 307	346	301	306	314	309	332	317	323	321	299	303	300	312	316	300
	00	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	29	31	30	31	30	29	30	26	29	28	26	30	29	31	31	30	30	28	31	31	31	31
MED	287	292	291	294	295	318	314	330	328	330	314	316	309	310	313	314	313	316	312	312	307	306	297	293
U Q	296	299	294	299	306	328	333	340	335	338	328	324	316	320	320	320	321	326	326	320	317	312	313	300
L Q	283	285	285	281	283	307	300	317	305	321	304	300	300	302	308	303	307	307	308	298	294	298	289	282

AUG. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	L 387	380	405	385	339	Y 316	U R 391	A	384	L 362	U L 346						
2						U L 409	A	U L 366	L	A	A	H 411	R 386	U R 372	373	U R 361	A	A						
3								A	A	A	A	A	A	A	A	A	A	A	A					
4							L	A	L 406	L	390	R 384	A	378	L	U L 366	A	A	A					
5						308	R 342	U L 333	417	394	409	373	389	U R 402	362	A	365	A	A					
6						A	A	A	A	391	A	A	A	356	L	357	L 349	L	L					
7							361	L	A	U R 370	363	U L 388	A	L 402	377	U R 366	386	L 353	L					
8						L	L	L 378	A	A	R 395	R	410	397	386	374	L 348	U L 342	U L 334					
9							352	A	A	A	A	A	A	A	A	A	A	L 349	A	A				
10								358	389	404	444	433	414	344	L 357	364	L 373	L 333	U L 369					
11							353	348	365	R 377	R 399	R 409	397	402	389	L 374	U L 363	L	A					
12							L 371	379	L 374	389	390	410	408	398	376	U L 370	348	A	L					
13							L	L	L 359	L 379	L	409	379	R 422	R 404	U L 390	U L 346	U L 368	L					
14									A	A	U L 359	379	L 370	U L 374	366	U L 385	379	U L 366	L					
15						L	L	L	U L 382	375	383	Y	U L 398	A	373	L 355	U L 358							
16						L	U L 336	L	A	R 400	A	L	L	356	362	U L 346	L 351	L						
17							A	U L 357	U L 371	U L 382	L	375	L	U L 375	U L 350	L 351	U L 349	L	L					
18							L	L	L	L	A	A	L	L	395	L	L	L	L					
19							A	A	L	R 374	A	A	A	U L 347	L 358	U L 358	L 367	L	L					
20						L	L	U L 387	U L 368	L	A 357	L 372	L 352	U L 353	362	Y	U L 358	U L 363						
21						L	L	L	L 355	U L 364	Y 368	U L 386	U L 383	386	L 386	U L 360	L	U L 345						
22						L	L	U L 368	A	L	L	404	L	U L 343	L	L	L	L						
23							L	U L 367	A	U L 382	L	L 383	L	377	L 367	L 345	L	L						
24							L 337	358	Y	A	L	388	L 384	380	U L 361	L 357	U L 350							
25							L 329	351	368	R 364	A	L 356	358	363	L	L 377	L	L						
26									397	A	A	398	392	L 371		L 354	U L 357							
27							L	U L 354	L	L 343	L 381	U L 375	375	375	372	U L 351	L	L						
28							361	359	U R 365	A	R	A	A	A	360	L 371	L							
29							L	L	L	L 376	L 406	U L 391	386	390	356	A	A	A	A					
30							U L 368	L	L	R 406	R 411	L	R	B 362	U L 382	U L 369	L	L						
31								R 408	388	R 399	L 398	374	U L 375	L 374	L 367	U L 370	U L 385							
	00	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	10	16	15	19	16	21	18	26	23	24	18	9	2					
MED						358	352	L 362	374	382	390	386	385	375	367	L 365	L 358	U L 349	U L 352					
U Q							L 361	L 378	389	399	402	406	397	391	382	L 372	L 367	U L 364						
L Q							L 337	U L 356	365	R 374	374	374	375	362	L 361	L 356	L 349	U L 344						

AUG. 2013 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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							288	294	398	354	376	G	346	384	406	404	346	314						
2						226	A 338	286	312	A	A 356	430	404	346	346	330	304	E A 358						
3								A 332	A	A 308	A	A	A	A 334	342	A 334	334	A	A					
4							300	A 264	264	278	328	368	322	312	312	312	A 328	300	302					
5						426	390	286	286	286	G	G	464	520	346	384	340	336	302					
6						E A 394	E A 382	A	E A 368	420	A	A	A	380	320	356	340	300	294					
7							330	336	280	280	280	298	346	346	326	300	282	284	280					
8						290	290	286	280	304	304	304	326	326	314	314	302	310	304					
9							304	A 294	340	298	304	A 304	E A 372	374	378	A 354	330	310	276	A				
10								300	282	282	306	310	376	346	350	312	290	290	276					
11							382	382	290	288	312	312	370	316	340	328	326	306	A 318					
12							262	262	262	296	314	314	314	332	332	352	322	E A 300	284					
13							256	280	276	276	382	314	314	336	302	304	304	304	286					
14									268	294	310	310	366	334	334	320	308	278	268					
15						268	258	256	256	294	314	274	310	A	310	310	290							
16						272	320	308	E A 426	302	E A 272	312	380	314	360	332	298	268						
17							A	298	298	310	306	282	282	290	344	288	288	270	270					
18							242	252	270	298	A 298	320	296	294	294	292	292	276	256					
19							E A 298	258	300	E A 430	318	318	A	334	314	306	298	270	264					
20						272	248	248	250	292	306	322	322	330	310	320	286	274						
21						286	220	324	274	282	282	304	320	320	320	320	320	298						
22						316	316	270	238	252	278	300	334	320	310	298	298	274						
23							270	288	288	288	316	288	310	348	330	320	296	284						
24							362	310	352	A 300	L 350	368	364	330	340	326	314							
25							334	322	378	426	E A 342	308	406	318	306	298	288	288						
26									304	316	330	296	322	332		310	310							
27							256	268	360	264	294	308	324	292	328	306	306	278						
28							G	498	322	270	E A 396	A	A	320	304	304	292							
29							258	254	258	282	282	298	322	302	318	A 290	268	264	A					
30							268	268	268	266	266	298	314	314	290	290	278	272						
31								272	350	272	340	340	306	306	306	292	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						9	25	28	30	30	29	28	27	30	30	31	31	25	14					
MED						279	294	286	284	292	309	310	323	330	323	312	302	286	282					
U Q						355	336	309	340	304	341	321	370	346	342	330	322	305	302					
L Q						270	258	266	268	280	296	299	314	314	310	300	290	274	270					

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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	A 336	300	300	300	294	234	234	234	234	214	214	E A 312	Y	A 228	A	228	228	228	268	A 296	296	A 296	E A 328	296
2	280	288	294	280	280	208	A	212	A 264	A	A	H 174	246	240	240	228	A	A	A 308	A	310	A	310	272
3	A 320	A 318	A	280	268	266	A 274	A	A	A	A	A	A	A	A	A	A	A	A	A 306	278	252	E A 352	A 338
4	266	282	282	274	248	242	A	A	232	232	202	228	A	224	A	200	A	A	A	242	242	242	242	250
5	260	258	252	290	290	276	276	E A 266	206	206	204	244	202	222	222	A	216	A	A	272	286	286	308	298
6	A 342	322	A 322	322	292	A	A	A	A	244	A	A	A	244	224	224	224	224	224	288	A 288	288	288	288
7	258	258	256	244	262	248	232	232	A	204	E Y 254	230	A	182	190	222	216	216	216	238	264	260	260	260
8	322	286	A 290	260	260	254	240	240	A	A	202	A	194	186	186	186	212	212	212	240	240	240	254	236
9	252	Q 256	Q 256	Q 264	272	264	A 260	A	A	A	A	A	A	A	A	A	A	228	A	A	272	270	252	252
10	258	258	258	258	242	230	230	230	218	212	196	196	196	196	204	204	204	204	218	234	252	252	252	252
11	280	280	252	252	252	228	228	228	228	204	E A 234	A 234	H 166	204	204	204	226	A 228	A	252	252	236	236	252
12	262	266	268	268	278	252	226	226	226	216	210	196	196	196	196	196	A 214	A	A	242	250	248	238	238
13	266	290	288	274	256	236	H 212	212	212	208	184	184	Y 220	194	200	200	202	220	230	236	236	A 294	296	260
14	250	250	268	268	268	248	248	A 248	A	A	182	182	182	182	202	234	196	212	232	232	232	240	254	254
15	254	266	266	266	258	250	236	224	208	H 180	190	Y	214	A	Y 254	254	A 240	A 274	268	268	264	260	260	248
16	276	276	276	286	286	256	250	A 242	A	212	A	E A 220	A 214	212	212	E A 232	230	A 248	248	248	248	248	288	288
17	316	310	310	310	A 320	A 250	A	234	A 234	234	246	200	220	220	220	A 246	232	232	232	232	232	232	248	264
18	300	300	294	290	264	262	228	A 238	228	228	A	A	A	E Y 254	208	208	208	226	234	234	234	234	266	266
19	270	270	270	270	258	250	A	A	210	210	A	A	A	A 240	E A 250	224	214	236	A 236	236	238	238	264	352
20	E A 362	322	322	322	288	260	236	228	228	E A 268	E A 252	216	E A 254	208	208	Y	212	222	244	244	244	230	230	A 302
21	A 344	326	300	300	A E A 312	274	222	208	204	200	E Y 254	212	212	212	212	212	E A 266	254	242	242	242	278	294	E A 388
22	328	328	328	328	320	280	226	226	A	226	208	206	Y	E A 248	A 274	228	A 244	244	246	246	248	248	248	248
23	278	278	278	270	270	266	236	A 236	A	236	A	212	Y	212	212	212	212	212	246	246	246	246	A 278	286
24	292	292	292	272	272	250	240	232	Y	A	E A 266	262	244	246	244	218	218	246	246	260	270	270	270	268
25	260	266	266	264	264	270	262	250	226	A 228	A	A 256	252	218	210	210	210	216	250	250	250	250	246	A 282
26	272	292	292	286	286	272	236	236	208	A	A	206	206	206	206	214	214	256	256	256	256	256	256	256
27	A 296	296	292	272	256	256	200	200	220	E A 242	234	Y 244	222	222	210	218	218	236	236	236	236	236	262	282
28	298	298	298	298	298	264	232	232	228	A	A	A	A	A	228	228	228	244	A 272	262	262	262	256	256
29	260	266	266	266	260	238	238	234	A	210	210	210	210	210	210	A	A	A	A	236	256	254	254	256
30	280	280	280	274	274	252	214	214	212	206	206	H 192	A	B	226	226	226	218	250	250	238	238	238	260
31	260	260	260	282	282	A 276	A 276	218	218	194	194	202	216	202	210	210	210	224	E A 298	298	272	254	232	232
	00	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	30	26	26	20	23	20	23	19	26	27	26	26	25	24	29	31	30	31	31
MED	277	282	281	274	272	252	236	232	223	211	204	209	213	212	210	217	216	228	244	246	250	251	255	260
U Q	A 316	300	294	290	288	266	248	A 236	228	232	E 240	234	222	228	226	228	228	244	253	261	270	262	288	288
L Q	260	266	266	266	260	248	228	224	211	206	199	196	196	202	204	208	212	217	232	236	240	240	248	252

AUG. 2013 h′F (KM)

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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					B	A 112	112	112	112		96		96			96		112						
2						112	A	A						112	112	112	112	112						
3						A 112	112	112	112	112	A	A		A		A		A	112					
4						B			112		112	A	A	112	112	112	112	112	A					
5					B	120	120	116	116	106	106	106		104	104	A	104	104	104					
6					B		108	108	108	108	108			A			108	108	108					
7						108	134	120	120	120	112	112	A		112	116	A	116	116					
8						130	128	124	102	A		A	104	104	116	116	116	116	A	B				
9					B	120	120	120	114	112					A			114		B				
10						114	114	114	114	114	114	A	114		114	114	114	114	114	B				
11						A 120	120	120	112	112	112				A	A	A	112	A					
12							114	114	114	A	A		114	114	114	114	114	114	114					
13						134	124	A			A	112		A	100	112	112	112	112					
14						114	114	114	116	A			A		116	110	110	110	118					
15						E A 142	130	118	114			A	A		114	114	114	114						
16					B	130	A	116	116		106	106	106	106	106	106	106	106	A					
17						A	A		A	A		A	106	106	106	106	106	106	132					
18							104	104	104	104		A	A	A			108	108	A					
19						A 108		A		A	A	A	A	A	A	108	108	108	A					
20						E B 192	114	114	114	114		A			114		114		A					
21						A			110	110	110	110	A	110	110	110	A							
22						B	A		A	A		A	A		A		A							
23						114	114	114	A	A	A		A				114	122	134					
24						A	110	110	108	106	106	106		A	A	114	114	114	114					
25						B	114	110	110			A	106	106	108	108	108	108						
26								114	114	114	114	A	114	114	114	114	114	114	A					
27						A	A	A		A	114	A		A	114	114	110	116	B					
28						B	122	108	108	108	108	A	A	108	108	108	108	108						
29							108	108	108	108	A		108	108	108	108	108	108	A					
30						A	A	108	108	116	112	A	A	B	112	112	112	112	A					
31							A	A	A	112	112	112	A		112	112	112	112						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	21	22	23	16	15	7	9	12	21	22	24	27	11					
MED						117	114	114	112	112	112	110	106	108	112	112	112	112	114					
U Q						132	121	116	114	114	112	112	114	112	114	114	114	114	118					
L Q						114	111	110	108	108	106	106	105	106	108	108	108	108	112					

AUG. 2013 h′E (KM)

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	100	106	106	124	124	124	114	114	112	G	112	112	112	132	132	124	104	104	104	104	104
2	108	108	108	102	102	G	102	102	102	102	102	102	102	134	134	132	124	124	110	110	110	110	110	110
3	112	112	112	104	104	104	104	104	104	104	104	104	104	108	108	108	108	108	108	114	114	114	114	114
4	102	126	126	106	106	106	106	106	106	106	106	106	106	106	106	148	108	108	108	106	106	B	106	102
5	B	102	B	B	B	126	126	118	206	110	110	110	108	142	G	110	124	122	122	112	112	112	110	108
6	106	106	90	90	108	108	108	108	108	108	108	110	106	106	106	106	106	118	118	118	118	104	104	104
7	104	104	104	104	104	G	104	112	112	112	G	170	106	106	104	104	104	106	106	106	106	106	106	104
8	106	106	106	106	102	102	126	114	104	104	104	104	104	112	110	106	134	134	120	96	100	100	100	100
9	100	B	B	B	112	128	126	124	122	112	110	106	106	106	106	106	106	106	106	106	106	106	106	106
10	92	92	92	92	92	124	124	124	124	124	118	114	106	106	154	108	200	110	110	106	98	78	82	90
11	100	100	100	100	100	124	226	134	118	118	118	118	166	102	102	102	102	120	118	118	118	114	114	112
12	B	106	106	106	106	114	114	114	114	110	110	108	G	G	G	108	108	108	108	108	108	108	108	100
13	100	100	100	100	100	G	202	202	110	110	110	176	106	106	G	106	G	110	G	110	110	110	110	110
14	102	102	100	100	B	G	128	120	100	100	126	106	106	106	106	210	146	122	116	108	108	106	B	104
15	B	102	102	100	B	108	106	106	106	106	106	102	102	108	94	126	126	126	122	122	116	110	110	B
16	B	B	120	178	B	114	114	114	114	100	110	110	110	G	G	G	146	124	124	116	116	116	112	112
17	110	110	108	108	108	108	108	108	108	106	106	106	G	162	128	128	124	122	112	112	112	B	112	112
18	104	104	B	104	104	104	104	104	104	104	104	104	104	104	104	104	104	138	98	B	98	98	100	100
19	100	100	B	B	112	112	112	112	108	108	106	96	96	96	96	114	102	120	120	120	96	96	96	96
20	98	100	100	100	100	G	G	118	118	114	108	108	108	108	108	116	116	116	116	116	116	B	116	110
21	110	110	110	108	106	96	96	96	130	182	122	116	116	116	116	116	116	116	116	110	B	110	110	110
22	102	102	92	92	92	B	92	92	92	92	92	92	92	92	92	92	92	92	110	110	110	110	B	B
23	B	B	B	B	110	110	132	122	110	106	106	106	106	106	106	106	106	106	G	B	B	106	106	106
24	90	90	90	90	90	116	116	116	198	112	112	112	112	112	112	108	136	122	122	114	114	114	114	B
25	100	B	B	B	B	114	122	122	120	110	102	102	200	116	G	G	G	118	118	116	116	108	108	98
26	102	102	102	102	B	106	106	110	110	110	110	110	124	G	G	124	124	124	114	114	114	114	114	114
27	92	92	100	100	B	114	114	112	106	106	166	106	98	98	98	198	102	102	102	102	102	102	102	102
28	96	96	96	96	96	B	140	144	208	112	112	110	110	110	124	G	124	124	116	112	108	B	B	B
29	94	B	116	116	118	118	118	118	112	112	112	112	112	112	208	118	112	112	112	108	108	110	110	108
30	108	108	108	100	100	114	114	102	102	102	172	172	106	B	134	134	134	124	116	116	110	108	B	104
31	104	104	104	106	106	106	106	104	96	130	104	172	96	94	94	124	124	124	114	114	108	108	108	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	25	26	24	24	30	31	31	31	30	31	28	27	25	28	29	31	29	29	29	27	27	26
MED	102	102	102	101	104	111	114	114	110	110	110	108	106	106	106	111	116	120	116	112	110	108	108	105
U Q	106	106	108	106	107	115	126	122	120	112	112	112	110	112	120	125	129	124	119	116	114	110	112	110
L Q	100	100	100	100	100	106	106	106	104	104	106	104	104	106	103	106	106	108	109	107	106	104	104	102

AUG. 2013 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

AUG. 2013 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	FQ 21	FQ 11	FQ 11	F 1	L 1	L 2	CL 12	CL 12	CL 11	C 1	C 1	C 1		C 1	C 1	C 1	HL 12	CL 22	CL 22	FF 62	F 6	F 6	F 6	F 3
2	F 3	F 3	F 2	F 2	LQ 31		L 3	L 2	L 2	L 2	L 1	L 1	L 1	C 1	HL 11	HL 11	C 2	C 2	LQ 21	FQ 51	FQ 31	FQ 31	FQ 41	F 3
3	FF 14	F 3	F 5	F 5	F 3	L 3	CL 41	C 2	C 2	C 2	C 2	L 2	L 2	CLQ 21	LQ 21	L 2	L 2	L 3	C 4	FQ 41	F 5	FF 23	F 4	F 6
4	F 2	FF 13	FF 22	F 2	F 2	L 3	L 3	C 3	C 2	C 1	C 1	C 1	L 2	L 1	C 1	HL 11	C 2	C 3	L 2	F 3	F 3		F 3	F 1
5		F 1				C 2	C 2	C 2	HL 11	CL 12	C 1	C 1	L 1	H 1		L 1	H 1	C 2	C 4	F 4	F 5	FQ 31	FQ 31	F 3
6	F 4	FQ 31	FQ 31	FQ 11	C 3	C 3	C 3	C 2	C 1	C 1	C 2	L 3	L 3	L 2	L 1	L 1	L 1	C 1	C 2	F 4	F 5	F 5	F 3	F 4
7	FF 21	F 2	FQ 21	FQ 11	F 2		L 1	C 1	C 2	C 1		H 1	L 2	C 1	L 2	L 1	LC 21	CL 12	CL 31	FQ 21	F 3	F 3	FQ 21	FQ 31
8	F 3	F 2	F 2	F 2	F 2	L 1	C 1	C 2	C 2	C 1	L 1	L 1	L 1	C 1	L 1	L 2	HL 12	HL 22	C 3	L 2	F 1	F 1	F 2	F 1
9	F 1				L 1	C 1	CL 21	C 2	C 2	C 2	C 2	C 2	C 1	L 2	L 2	LQ 21	L 2	L 2	L 3	L 4	F 8	F 2	F 4	F 2
10	F 2	F 2	F 2	F 1	F 1	H 1	H 1	H 1	C 1	C 1	C 1	L 1	L 1	L 1	HL 11	L 1	H 1	L 1	C 2	L 1	F 2	F 2	F 1	F 2
11	F 2	F 2	F 2	F 3	F 3	HL 11	HL 11	HL 12	C 1	C 1	C 1	C 1	HL 11	L 1	L 1	L 1	L 2	CL 31	L 4	F 4	F 3	F 1	F 1	F 3
12		F 1	F 2	F 2	F 4	C 1	C 2	C 1	C 1	L 2	L 1	L 1				C 1	C 2	C 2	C 4	F 4	F 2	F 2	F 2	F 2
13	F 2	F 3	F 1	F 1	F 1		HL 11	HL 11	L 2	L 1	L 1	HL 11	L 1	L 1		L 1		C 2		F 2	F 1	F 4	F 4	F 1
14	F 1	F 2	F 2	F 1			C 1	C 2	C 2	C 2	CL 11	L 1	L 1	L 2	L 1	H 1	H 1	CL 12	L 3	F 2	F 1	F 3		F 1
15		F 1	F 1	F 1		L 1	L 1	L 1	CL 11	L 1	L 1	L 2	L 2	CLQ 12	L 2	C 2	CL 21	C 3	C 3	L 5	F 1	F 2	F 1	
16			F 1	F 1		L 1	L 2	C 2	C 2	C 1	C 1	C 1	C 1				H 1	C 2	C 3	F 3	F 2	F 2	F 3	F 3
17	F 6	F 3	F 3	F 3	FF 42	L 2	CL 32	LQ 21	LQ 21	LQ 11	L 1	L 1		H 1	H 1	C 1	C 2	C 2	L 2	F 2	F 4		F 2	F 1
18	F 2	F 1		F 1	F 2	C 2	C 3	C 2	C 1	C 2	C 2	L 2	L 2	CL 11	C 1	L 2	L 2	H 1	L 2		F 1	F 3	F 2	F 2
19	F 3	F 1			F 1	L 2	CL 31	C 2	L 2	L 2	L 2	L 2	L 2	L 1	L 2	CL 12	L 2	CL 22	CL 32	FF 12	F 1	F 1	F 3	F 6
20	F 3	F 4	F 4	F 4	F 1			C 2	C 2	C 2	C 2	C 1	C 1	L 1	L 1	CL 11	CL 12	CL 22	C 2	F 3	F 1		F 1	F 5
21	F 4	F 4	F 4	F 3	F 5	L 3	L 2	L 2	HL 11	HL 11	CL 11	CL 11	CL 11	C 1	C 1	C 1	CL 22	C 3	C 2	F 6		F 3	F 2	F 5
22	F 3	F 6	F 6	F 2	F 2		LC 21	LC 21	L 2	L 2	L 1	L 1	L 1	L 1	L 2	L 2	L 2	L 3	L 3	F 2	F 3	F 2		
23					L 1	L 1	H 1	C 2	C 2	L 2	L 1	L 1	L 1	L 2	L 2	L 1	L 2	L 2				F 3	F 2	F 3
24	F 2	F 2	F 1	F 2	F 2	CL 11	CL 21	CL 21	HCL 11	C 2	C 1	C 1	L 1	L 1	L 1	L 2	HL 12	C 2	C 3	F 3	F 1	F 2	F 1	
25	F 1					C 2	C 1	C 2	C 1	C 1	L 2	L 1	H 1	C 1				C 2	C 5	F 5	F 2	F 3	F 2	F 3
26	F 2	F 2	F 2	F 5		F 2	C 2	CL 21	CL 11	CL 21	CL 11	C 1	C 1			C 1	C 2	C 3	C 3	F 1	F 1	F 1	F 3	F 3
27	F 2	F 2	F 1	F 1		C 1	C 2	C 2	C 2	L 2	HL 11	L 1	L 2	L 2	L 1	HL 11	L 1	L 1	L 1	F 2	F 2	F 1	F 2	F 2
28	F 3	F 2	F 5	F 4	F 2		HL 12	H 1	H 1	C 2	C 2	C 2	C 2	C 1	C 1		C 2	C 3	C 5	F 2	F 3			
29	F 1		F 1	F 1	F 1	L 2	C 2	C 1	C 2	C 2	C 2	C 2	C 1	L 1	H 1	C 2	C 2	C 4	L 3	F 3	F 3	F 2	F 2	F 2
30	F 2	F 8	F 1	F 1	F 1	CL 11	C 2	L 1	L 1	L 1	HL 11	HL 11	L 1		H 1	H 1	H 2	C 3	C 1	F 2	F 1	F 1		F 2
31	F 2	F 3	F 2	F 1	F 2	L 3	L 3	L 2	L 2	HL 12	L 2	HL 11	L 1	L 1	L 1	H 1	H 1	C 1	L 4	F 4	F 4	F 3	F 1	
	00	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. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	79	79	69	X 65	X 65															X 90	X 82	A	X 64	68
2	67	X 63	X 60	X 66	X 57															X 96	X 92	X 86	X 85	X 74
3	X 71	X 76	X 72	X 65	X 65															X 85	X 78	X 76	X 72	70
4	70	71	70	X 67	X 56															A	X 88	X 82	X 77	A
5	X 66	X 66	X 66	X 60	X 61															X 69	X 75	X 73	X 67	X 67
6	X 61	X 56	62	54	55															X 73	X 71	X 74	X 76	X 74
7	X 69	X 65	X 61	X 60	X 60	X 61														X 82	X 86	X 80	X 76	A
8	66	X 58	X 52	56	X 52															X 100	X 96	O X 84	X 68	X 64
9	66	X 61	X 59	X 58	X 54															X 76	X 76	X 69	79	X 63
10	X 60	X 58	X 56	X 51	X 48															X 81	X 79	X 76	X 79	X 74
11	X 68	X 63	X 66	X 61	X 52											C				X 94	X 85	X 78	X 78	X 80
12	78	X 78	X 73	X 69	65															X 95	X 82	X 72	X 70	X 67
13	X 66	65	69	X 66	X 56															X 96	X 89	X 80	X 72	X 75
14	X 71	76	70	69	69															X 92	X 75	X 74	X 68	X 68
15	X 68	X 70	X 65	X 64	X 60															X 96	X 91	X 85	X 80	X 83
16	X 76	X 75	X 69	X 66	X 67															X 68	A	X 67	X 67	X 67
17	68	68	X 65	X 60	X 60															X 94	X 80	X 76	X 75	X 72
18	X 70	X 69	X 68	X 61	X 55															X 95	X 66	X 72	X 69	X 66
19	X 67	X 63	67	66	X 58															X 86	X 73	X 75	X 73	X 72
20	X 66	X 68	X 69	X 64	X 62						C									X 100	X 87	X 73	X 68	X 65
21	X 59	68	69	67	64															X 99	X 58	X 60	X 59	X 60
22	X 56	X 60	X 60	X 59	X 57															X 93	X 80	X 76	X 77	X 74
23	X 70	X 68	X 67	X 66	X 63															X 90	X 80	X 74	X 72	X 74
24	X 70	X 70	X 72	S	X 66															X 76	X 78	X 84	X 74	X 70
25	X 66	X 64	X 61	X 60	X 57	X 59														X 95	X 86	X 67	X 67	X 68
26	X 69	X 60	X 62	X 59	X 48															X 84	X 83	X 77	A	X 64
27	X 64	X 61	X 62	X 60	X 52															X 87	X 77	X 65	X 63	X 65
28	X 64	X 60	X 61	X 63	X 51	X 50														X 84	X 76	X 68	X 73	X 72
29	X 65	X 61	X 59	X 60	X 53	X 48														X 82	X 76	X 73	X 72	X 70
30	X 64	X 61	X 60	X 59	X 57															X 92	X 87	X 65	X 64	X 66
31	X 62	X 63	X 58	X 54	X 54															X 80	X 81	X 72	X 66	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	30	31	4														30	30	30	30	29
MED	X 67	X 65	X 65	X 61	X 57	X 54														X 90	X 80	X 74	X 72	X 68
U Q	X 70	X 70	X 69	X 66	X 63	X 60														X 95	X 86	X 78	X 76	X 74
L Q	X 64	X 61	X 60	X 59	X 54	X 49														X 82	X 76	X 72	X 67	X 66

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	F	F	F	59	59	61	69	66	80	79	55	64	63	74	70	69	75	75	81	84	76	A	58	F
2	F	57	54	60	51	53	70	68	75	67	71	75	81	84	82	68	66	64	72	90	86	80	79	68
3	65	66	66	58	59	54	60	70	73	70	69	80	76	71	74	72	74	78	84	79	71	70	66	F
4	F	F	F	60	50	50	65	63	64	A	A	64	76	87	86	78	77	77	82	A	82	76	71	A
5	60	60	60	54	55	47	54	74	55	A	R	61	62	70	77	79	68	64	69	63	68	67	61	60
6	55	50	F	F	F	51	56	61	69	68	65	A	65	72	72	68	66	72	68	67	65	68	70	67
7	63	59	55	54	54	55	68	86	87	87	85	83	82	87	91	93	84	74	70	76	80	74	69	A
8	F	52	46	F	46	49	65	78	83	70	76	81	88	88	82	70	70	74	79	94	90	78	62	58
9	F	55	53	52	47	48	59	72	69	68	A	65	65	69	A	74	80	71	66	70	70	63	F	57
10	54	52	49	45	42	45	66	72	79	68	62	A	66	69	76	76	84	79	71	75	72	70	73	68
11	62	57	60	55	45	48	44	74	86	72	66	64	72	69	71	C	75	72	78	88	79	72	72	74
12	F	72	67	63	F	54	56	73	71	A	66	62	71	72	72	73	A	81	87	89	76	66	63	61
13	60	F	F	60	50	51	66	67	69	77	64	66	72	66	A	77	78	79	88	90	83	74	66	69
14	65	F	F	F	F	60	67	84	V 82	A	A	74	74	76	A	91	91	93	92	86	69	68	62	62
15	62	64	59	58	54	51	65	70	84	66	71	74	74	77	81	86	86	82	89	90	85	79	74	76
16	70	68	63	61	60	55	72	73	73	64	73	91	81	78	76	92	111	105	82	62	A	60	61	61
17	F	F	58	54	54	52	58	82	82	87	84	89	85	89	92	90	92	93	94	88	74	70	69	66
18	64	63	62	55	49	52	74	74	71	82	80	85	92	108	103	106	102	96	95	89	60	65	63	X B 60
19	61	57	F	F	52	54	68	80	73	71	74	70	78	82	V 90	93	94	93	91	80	67	68	67	65
20	60	62	63	58	56	62	76	69	62	54	C	75	74	77	85	91	89	84	92	94	81	67	62	59
21	53	F	F	F	F	50	64	78	88	69	68	68	76	87	92	97	94	101	114	93	52	54	53	54
22	49	54	54	53	51	48	69	87	72	76	82	83	86	89	94	96	84	86	87	87	74	70	71	68
23	63	62	61	60	57	53	63	76	90	99	90	84	86	83	82	88	87	85	88	84	74	68	66	68
24	64	64	66	S	60	65	70	69	68	71	74	74	68	77	80	72	69	68	69	70	72	78	68	64
25	60	58	55	54	51	53	66	84	72	80	84	84	91	84	79	71	67	72	80	89	80	61	61	62
26	63	54	56	53	42	44	60	72	77	75	74	77	75	V 73	70	66	71	68	72	78	77	70	A	58
27	58	55	56	54	46	48	59	70	70	76	74	74	78	87	87	83	80	75	79	81	71	59	57	58
28	58	54	55	57	45	44	53	77	99	67	68	72	81	91	98	96	86	78	72	78	70	62	67	65
29	59	55	53	54	46	42	60	72	82	68	64	65	71	78	87	92	82	78	74	76	70	67	66	64
30	58	55	54	53	51	51	64	80	90	62	66	66	65	84	80	75	70	78	83	86	81	59	58	60
31	56	57	52	47	48	48	59	69	74	67	72	78	84	86	78	78	72	80	73	74	75	66	60	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	24	25	24	25	27	31	31	31	31	27	26	29	31	31	28	30	30	31	31	30	30	30	29	27
MED	60	57	56	55	51	51	65	73	74	70	72	74	76	78	82	78	80	78	81	84	74	68	66	62
U Q	63	62	62	60	55	54	68	78	83	77	76	82	82	87	88	92	87	85	88	89	80	72	70	68
L Q	58	54	54	54	46	48	59	69	70	67	66	66	71	72	76	72	71	72	72	76	70	65	61	59

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	U L 448	A	464	A	U L 508	U L 516	A	A	A	A	L	L					
2							A	L	484	U L 540	U L 564	500	U L 484	A	A	480	A	A	A					
3							L	L	L	A	A	A	A	A	A	A	U L 432	A						
4							L	L	A	A	A	U L 492	A	A	U L 464	A	A	A	A					
5						U L 260	U L 400	392	448	A	U L 472	U L 476	496	U L 504	U L 464	A	U L 432	U L 432	L					
6							A	A	456	A	480	A	A	U L 516	U L 524	U L 500	L	A	A					
7							A	A	U L 484	484	A	U L 516	504	U L 500	508	480	U L 460	L	L					
8						A	A	A	A	A	A	A	L	A	A	A	A	A	A					
9							L	L	U L 464	A	A	A	A	A	A	A	A	L						
10								A	A	A	U L 504	A	U L 516	U L 508	488	488	A	L						
11								448	U L 452	A	U L 516	508	U L 520	500	504	C	456	L	A					
12							A	A	464	A	A	U L 532	476	U L 560	492	A	A	L	A					
13							L		L	496	504	U L 536	U L 472	L	A	464	L	A	A					
14						L		A	A	A	A	A	U L 524	A	A	A	A		A					
15								L	U L 468	L	U L 508	U L 524	U L 548	500	484	L	L	A						
16							L	L	U L 448	U L 548	L	U L 528	U L 500	U L 492	U L 512	488	L	A						
17								L	A	L	L	U L 532	U L 580	A	A	A	A	A	A					
18										L		A	U L 544	A	U L 524	496	U L 464	L						
19									A	U L 512	L	U L 588	U L 532	U L 480	U L 520	500	L	L						
20									L	A	C	A	A	A	U L 516	U L 488	L	L						
21							A	A		L	A	U L 532	U L 524	L	U L 524	A	U L 484	A						
22								L	L	L	U L 516	A	A	A	U L 580	500	A	A						
23								L	U L 476	U L 496	L	U L 560	L	U L 548	A	A	A	A						
24							A	A	U L 472	U L 500	U L 500	U L 508	A	A	A	A	L	A	A					
25								A	L	L	U L 516	A	U L 532	L	U L 528	L	L		A					
26								L	U L 468	U L 500	U L 512	512	A	492	496	460	U L 468	A						
27								L	U L 504	U L 500	488	516	516	U L 512	500	476	L	L	A					
28								L	A	L	U L 520	U L 576	492	524	A	A	L	A						
29								A	L	L	U L 548	A	A	U L 520	A	A	A	A						
30								L	U L 456	L	480	U L 496	U L 540	496	L	A	U L 464	L						
31								L	A	A	A	U L 500	U L 508	A	A	L	A	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	1	3	14	10	15	20	20	15	17	12	8	1						
MED						U L 260	U L 400	448	U L 466	U L 500	U L 508	U L 516	U L 516	U L 504	U L 508	488	U L 462	U L 432						
U Q								U L 448	U L 476	U L 512	U L 516	U L 532	U L 532	U L 520	U L 524	498	U L 466							
L Q								392	456	496	488	U L 504	498	496	490	478	U L 444							

AUG. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	R	A	A	A	A	R	A	A	A	A	A	A	A					
2						B	A	A	A	A	R	A	R	A	A	A	A	A	A					
3						B	A	R	A	A	A	A	A	A	A	A	A	A	A					
4						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
5						B	A	A	A	A	A	A	A	A	A	A	R	A	A					
6						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
7							A	A	A	A	A	R	R	A	R	A	R	A	A					
8						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
9						B	A	A	A	A	A	A	A	A	A	A	A	A	U R 224					
10						B	A	A	A	A	A	A	A	A	A	A	A	A	U R 196					
11						B	U A 240	A	A	A	A	A	R	A	R	C	A	A	A					
12						B	A	A	A	A	A	A	A	R	A	A	A	A	A					
13						B	U A 240	A	A	A	A	R	A	R	A	A	A	A	A					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	R	A	R	A	A	A	A	A	R	A	A	A					
16						B	R	R	A	R	A	A	R	A	A	A	A	A	A					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
18						B	A	A	A	A	A	A	A	A	A	A	A	R	U R 196					
19						B	U R 248	A	A	A	A	R	R	R	A	A	A	A	A					
20						B	A	A	R	A	C	A	A	A	R	A	A	R	A					
21						B	A	A	A	A	A	A	A	R	A	A	A	A	A					
22						B	A	A	A	R	R	A	A	A	A	A	A	A	A					
23						B	A	A	A	A	A	R	A	R	A	A	A	A	A					
24						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
25							240	A	A	A	A	A	A	A	A	A	A	A	B					
26						B	R	A	A	A	A	A	A	A	A	A	A	A	B					
27						B	236	A	A	A	A	R	R	A	A	R	R	A	B					
28							A	A	A	R	A	R	R	R	A	A	A	A	B					
29							A	A	A	A	A	A	A	A	A	A	A	A	B					
30						B	U R 236	A	A	A	A	A	A	A	A	A	A	A	B					
31						B	U R 216	R	A	A	A	A	A	A	A	A	A	R	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							7												3					
MED							U 240												U R 196					
U Q							U 240												U R 224					
L Q							236												U R 196					

AUG. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	JA 30	JA 24	23	JA 29	JA 19	JA 29	G	36	40	JA 48	54	G	JA 46	JA 66	JA 56	JA 49	JA 45	36	23	JA 28	JA 56	JA 61	JA 64	JA 32
2	JA 58	JA 46	JA 57	JA 24	JA 22	JA 38	JA 42	37	JA 48	41	G	45	GJA 56	52	44	JA 42	JA 46	JA 50	JA 48	JA 17	JA 43	EB 14	JA 44	
3	JA 53	JA 68	JA 24	22	22	18	28	G 26	45	JA 64	JA 60	JA 59	JA 57	JA 64	JA 62	JA 58	JA 42	JA 58	JA 64	JA 25	JA 31	JA 48	JA 64	JA 64
4	JA 39	JA 22	JA 24	JA 21	JA 21	22	28	38	JA 56	JA 85	JA 102	JA 44	JA 76	JA 74	JA 58	JA 73	JA 99	JA 76	JA 60	JA 126	JA 62	JA 59	JA 76	JA 79
5	JA 18	20	JA 26	20	21	EB 14	30	35	JA 43	JA 53	JA 43	45	44	42	JA 45	JA 62	GJA 38	JA 32	JA 30	JA 33	JA 19	JA 22	JA 26	
6	JA 53	JA 43	JA 28	EB 14	JA 18	JA 38	JA 39	JA 52	JA 48	JA 53	JA 49	JA 61	50	42	43	JA 44	42	JA 65	JA 53	JA 46	JA 74	JA 46	JA 43	JA 40
7	JA 20	JA 58	JA 41	JA 35	JA 30	JA 24	JA 63	JA 57	JA 68	JA 44	JA 80	G	G	41	G	41	G	36	JA 39	JA 34	JA 35	JA 38	JA 34	JA 68
8	JA 47	JA 20	JA 54	JA 35	JA 40	JA 41	JA 38	JA 50	JA 86	JA 90	JA 64	JA 56	JA 48	JA 78	JA 55	JA 62	JA 57	JA 66	JA 59	JA 39	JA 121	JA 92	JA 111	JA 76
9	JA 55	JA 69	JA 24	21	JA 24	JA 32	34	37	JA 43	47	JA 81	JA 62	JA 66	JA 62	JA 54	JA 79	JA 46	JA 38	G	JA 58	JA 114	JA 52	JA 36	JA 36
10	JA 55	JA 56	EB 15	JA 19	JA 19	20	30	JA 44	JA 46	JA 65	JA 45	JA 74	JA 45	44	44	42	40	32	G	JA 23	JA 25	18	EB 14	JA 16
11	EB 14	EB 15	EB 15	EB 14	EB 14	22	32	37	36	JA 59	JA 48	48	G	JA 67	G	C	39	JA 39	48	JA 35	JA 28	JA 24	JA 62	JA 48
12	JA 33	EB 15	JA 30	JA 26	JA 30	24	JA 43	44	JA 48	JA 82	JA 64	JA 60	44	G	44	42	JA 74	JA 60	JA 62	JA 62	JA 39	JA 30	JA 49	AE 15
13	JA 29	JA 22	EB 16	JA 30	JA 34	JA 25	30	37	40	JA 44	44	G	44	GJA 66	40	JA 38	JA 61	JA 41	JA 28	JA 110	JA 60	JA 38	JA 23	
14	JA 47	JA 58	JA 47	JA 30	JA 25	JA 24	30	35	JA 55	JA 164	JA 116	JA 71	44	JA 66	JA 102	JA 102	JA 80	JA 58	JA 54	JA 93	JA 55	JA 48	JA 39	JA 56
15	JA 33	JA 22	JA 20	20	JA 22	JA 22	JA 36	G 26	40	G	JA 46	43	40	45	43	G	36	JA 43	26	EB 15	EB 15	JA 31	JA 20	JA 30
16	JA 20	22	JA 24	22	22	EB 15	G	G	42	G	43	43	G	46	JA 56	44	40	JA 41	JA 49	JA 44	JA 67	JA 42	JA 50	JA 68
17	JA 27	22	20	EB 14	JA 25	JA 20	35	JA 36	JA 61	42	44	41	JA 47	55	43	JA 46	JA 69	JA 38	23	JA 70	JA 61	23	EB 15	JA 25
18	20	EB 16	JA 22	JA 22	JA 19	JA 20	27	36	JA 44	JA 52	JA 56	48	45	JA 56	40	43	38	GJA 23	JA 28	JA 21	JA 17	JA 24	JA 61	JA 49
19	JA 30	20	19	19	18	21	G	36	JA 37	42	46	G	G	GJA 47	44	JA 37	JA 38	JA 29	JA 38	19	EB 15	JA 27	AE 15	
20	JA 40	JA 20	JA 22	27	25	JA 30	37	35	41	42	CJA 66	JA 83	JA 64	G	42	35	GJA 30	JA 23	JA 24	JA 28	JA 40	JA 26		
21	21	JA 47	JA 46	EB 15	JA 59	JA 34	JA 74	JA 57	JA 45	46	JA 52	45	48	G	45	45	JA 38	JA 46	JA 32	JA 21	45	JA 32	JA 38	JA 30
22	27	JA 41	JA 31	JA 26	JA 23	JA 20	32	JA 35	JA 41	G	GJA 64	JA 87	JA 76	JA 47	JA 44	JA 58	JA 45	JA 33	JA 31	21	JA 32	JA 24	JA 29	
23	21	19	EB 14	EB 14	EB 16	JA 16	26	38	JA 42	42	43	G	43	G	47	44	44	39	JA 34	JA 93	JA 52	JA 29	24	EB 15
24	EB 15	JA 27	19	JA 25	EB 15	EB 15	JA 42	JA 38	42	JA 46	47	JA 45	JA 60	JA 61	JA 50	54	39	JA 40	JA 49	JA 39	JA 28	JA 24	JA 27	20
25	EB 15	EB 15	EB 14	EB 14	EB 14	JA 26	28	36	40	42	44	JA 54	44	46	JA 45	42	38	35	JA 56	JA 26	JA 27	AE 15	20	JA 18
26	JA 19	19	EB 14	EB 15	EB 15	EB 16	G	35	40	40	42	JA 46	48	44	42	44	38	32	JA 22	JA 41	JA 36	JA 37	JA 68	JA 44
27	JA 60	JA 29	JA 42	JA 29	JA 25	JA 21	27	38	42	40	42	G	G	42	43	G	GJA 32	JA 62	JA 47	AE 22	BE 15	BE 14	BE 14	
28	EB 15	EB 15	EB 15	EB 14	JA 30	JA 28	28	37	JA 47	G	44	G	G	G	46	JA 46	37	30	JA 29	JA 26	JA 27	JA 21	JA 45	20
29	EB 15	EB 15	BJA 26	AE 23	BJA 14	19	28	36	40	42	40	49	JA 58	44	JA 56	JA 84	JA 41	31	JA 34	JA 36	JA 30	JA 38	JA 31	JA 32
30	JA 35	JA 30	EB 15	EB 15	BJA 24	22	G	34	38	JA 45	JA 44	JA 46	45	42	44	43	37	29	JA 39	JA 45	JA 70	JA 30	JA 29	JA 24
31	JA 20	JA 18	EB 16	EB 15	EB 15	EB 16	G	GJ	A 55	JA 52	JA 51	42	JA 49	JA 50	JA 54	JA 42	41	G	EB 17	JA 39	JA 43	JA 48	JA 31	JA 28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	JA 29	JA 22	JA 23	21	JA 22	JA 22	30	36	JA 43	JA 45	JA 46	45	45	46	46	44	40	JA 38	JA 34	JA 38	JA 35	JA 32	JA 36	JA 30
U Q	JA 47	JA 43	JA 30	JA 26	JA 25	JA 28	JA 37	JA 38	JA 48	JA 53	JA 56	JA 59	JA 50	JA 64	JA 55	JA 54	JA 45	JA 46	JA 53	JA 47	JA 61	JA 48	JA 50	JA 48
L Q	EB 20	EB 19	EB 16	EB 15	EB 18	EB 19	G 27	35	40	42	43	G 41	G 40	G 42	43	42	37	32	28	JA 26	JA 25	24	24	20

AUG. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	22	19	E B 16	20	E B 14	19	G	34	37	39	42	G	41	56	48	45	40	34	21	22	35	A A 61	24	22
2	E B 15	25	30	18	18	28	28	33	43	40	G	42	G	49	50	40	40	35	46	46	E B 15	33	E B 14	30
3	17	31	18	E B 16	E B 15	17	26	G 24	41	56	48	48	50	56	55	42	37	50	31	16	E B 15	33	29	31
4	26	E B 15	E B 16	E B 15	E B 14	E B 16	25	31	46	A A 85	A A 102	39	56	51	41	54	56	54	33	A A 126	32	42	37	A A 79
5	E B 15	E B 16	E B 15	E B 15	E B 15	E B 14	26	31	37	A A 53	40	39	40	40	40	53	G	33	22	E B 16	22	E B 16	14	E B 15
6	30	34	16	E B 14	E B 14	29	33	43	40	46	46	A A 61	47	39	40	39	38	44	48	38	34	18	19	30
7	E B 15	32	32	25	20	18	37	45	39	40	57	G	G	39	G	39	G	31	25	24	18	30	20	A A 68
8	31	E B 15	17	22	22	29	32	38	56	44	54	47	43	62	47	55	44	55	51	32	16	32	30	36
9	27	20	20	E B 15	19	20	28	33	39	46	A A 81	54	58	57	A A 54	60	41	32	G	19	34	36	32	20
10	20	E B 15	E B 15	E B 15	E B 15	E B 16	28	37	41	46	41	A A 74	43	E S 40	39	37	36	26	G	19	16	E B 14	E B 14	15
11	E B 14	E B 15	E B 15	E B 14	E B 14	19	26	33	35	53	44	43	G	40	G	C	35	32	46	21	21	E B 15	38	18
12	E B 15	E B 15	22	16	23	23	36	38	40	A A 82	58	42	40	G	42	42	A A 74	34	37	33	24	17	25	E B 15
13	22	18	E B 16	16	16	20	27	34	40	38	41	G	40	G	A A 66	38	34	50	33	23	42	33	18	19
14	26	21	22	18	17	19	25	33	43	A A 164	A A 116	51	42	60	A A 102	72	64	47	45	25	28	30	34	29
15	26	17	E B 15	18	18	17	27	G 26	35	G	41	39	38	44	40	G	34	37	24	E B 15	E B 15	16	E B 15	22
16	E B 15	E B 15	17	E B 14	E B 14	E B 15	G	G	38	G	40	38	G	44	45	42	37	33	34	37	A A 67	34	18	35
17	20	18	E B 16	E B 14	20	18	29	31	46	40	41	39	39	50	42	42	58	35	22	56	46	E B 15	E B 15	E B 15
18	E B 16	E B 16	17	15	E B 15	17	25	34	38	43	52	45	37	50	38	40	34	G 20	G 18	E B 15	E B 14	17	20	E B 15
19	E B 16	E B 15	E B 15	E B 15	E B 14	E B 15	G	33	35	39	43	G	G	G	40	39	35	30	28	35	16	E B 15	E B 15	E B 15
20	E B 15	E B 15	20	20	E B 15	25	31	30	37	35	C	53	58	54	G	38	35	G	22	18	18	19	17	18
21	E B 15	18	E B 15	E B 15	29	24	26	46	39	42	46	41	45	G	41	43	35	40	28	E B 15	28	29	29	22
22	24	31	26	20	E B 15	18	30	32	35	G	G	54	82	60	43	39	46	37	26	20	E B 15	18	18	18
23	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	24	35	37	41	41	G	40	G	46	42	40	35	26	58	41	20	22	E B 15
24	E B 15	20	E B 15	18	E B 15	E B 15	37	34	40	41	44	42	55	58	43	50	35	33	45	E S 35	15	19	20	E B 15
25	E B 15	E B 15	E B 14	E B 14	E B 14	22	27	34	38	40	41	48	41	43	41	39	34	30	39	20	16	E B 15	E B 15	E B 15
26	E B 16	E B 15	E B 14	E B 15	E B 15	E B 16	G	30	38	38	38	43	45	41	38	40	38	29	18	36	30	20	A A 68	38
27	40	18	27	20	20	E B 15	25	35	36	38	40	G	G	38	39	G	G	28	54	36	E B 15	E B 15	E B 14	E B 14
28	E B 15	E B 15	E B 15	E B 14	28	16	24	33	40	G	42	G	G	G	43	41	35	28	23	17	18	E B 15	30	E B 15
29	E B 15	E B 15	20	17	E B 14	E B 15	24	33	34	39	38	47	47	39	49	60	38	29	28	28	25	32	22	23
30	30	26	E B 15	E B 15	18	E B 15	G	30	36	39	42	44	44	41	41	40	33	26	32	28	23	19	E B 14	17
31	E B 15	E B 15	E B 16	E B 15	E B 15	E B 16	G	G	50	45	46	40	42	45	46	38	38	G	E B 17	31	31	23	21	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	30	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 15	E B 15	17	26	33	39	40	42	42	41	43	42	40	37	33	28	24	22	19	20	18
U Q	26	20	20	18	19	20	29	35	41	46	48	48	47	54	47	45	40	37	39	36	32	32	29	30
L Q	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	G 24	31	37	38	41	G 38	G 37	G 39	40	39	34	29	22	19	E B 16	E B 16	E B 15	E B 15

AUG. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	15	16	14	14	13	14	13	14	14	18	22	20	22	18	15	15	15	12	14	14	14	13	15
2	15	15	16	16	14	14	15	14	16	19	18	27	18	24	26	18	15	15	14	14	15	14	14	14
3	13	14	14	16	15	15	14	14	21	22	24	21	25	23	21	22	17	14	15	13	15	14	14	15
4	15	15	16	15	14	16	15	12	16	17	21	19	19	18	17	14	16	15	15	15	A 15	14	15	15
5	15	16	15	15	15	14	12	14	16	19	16	18	18	16	15	18	16	15	14	16	14	16	14	15
6	15	16	14	14	15	14	13	14	14	16	20	21	19	16	17	18	16	14	14	14	14	15	15	15
7	15	14	15	14	14	15	14	14	12	13	17	16	20	17	17	16	16	14	14	15	15	15	15	15
8	15	15	15	14	16	15	13	13	17	18	20	20	20	25	20	20	17	16	15	14	15	15	14	15
9	15	15	15	14	15	15	14	15	13	18	22	23	22	22	21	17	18	14	14	15	15	14	14	15
10	16	15	15	15	15	16	11	12	14	15	15	19	15	16	16	17	15	14	16	15	14	14	14	14
11	14	15	15	14	14	15	14	12	12	16	18	16	20	21	22	C	19	14	13	15	13	15	14	14
12	15	15	15	14	14	13	14	15	17	18	23	20	20	20	18	20	16	13	12	14	14	14	15	15
13	16	14	16	16	14	15	14	14	13	18	17	22	20	19	17	18	17	12	15	14	14	15	14	14
14	15	15	14	15	14	14	15	12	14	21	23	22	18	24	26	25	13	15	13	14	13	15	14	16
15	14	15	16	15	15	15	15	14	14	20	18	18	15	22	18	16	14	12	14	15	15	14	14	15
16	15	15	14	14	14	15	14	14	18	19	19	19	16	16	17	15	17	13	14	14	15	14	14	14
17	14	14	16	14	14	14	14	12	12	13	16	12	16	17	18	17	14	15	13	15	16	15	15	15
18	16	16	14	14	15	14	14	12	16	15	25	22	21	24	20	16	17	12	14	15	14	14	14	15
19	16	15	15	15	14	16	13	14	13	16	21	23	28	28	15	13	14	12	11	14	14	15	15	15
20	15	15	14	13	15	15	13	15	15	15	C	22	21	22	20	18	16	12	14	14	15	15	14	15
21	15	16	15	15	14	14	15	14	14	17	20	22	20	20	19	14	15	15	14	15	15	15	16	14
22	14	15	14	15	15	15	14	16	18	17	22	22	24	22	22	19	14	14	14	14	15	15	14	16
23	14	14	14	14	16	15	14	14	15	17	19	24	22	21	20	20	18	14	15	14	14	15	13	15
24	15	15	15	13	15	15	13	16	13	18	21	22	17	22	18	18	16	14	14	14	15	14	14	15
25	15	15	14	14	14	14	15	15	16	14	17	24	18	22	20	14	13	14	13	15	14	15	15	15
26	16	14	14	15	15	16	12	14	18	17	23	16	19	16	22	18	15	12	15	14	15	14	13	14
27	15	15	14	16	15	15	14	14	14	20	20	16	22	16	17	17	16	14	14	16	15	15	14	14
28	15	15	15	14	14	15	14	12	14	14	19	23	20	18	15	15	14	14	15	13	14	15	14	15
29	15	15	14	16	14	14	12	14	14	18	16	18	20	19	19	17	16	13	14	15	14	14	14	15
30	15	15	15	15	14	15	14	12	11	13	20	18	24	22	25	18	16	14	14	14	14	15	14	15
31	15	14	16	15	15	16	14	14	15	16	16	16	17	16	13	14	13	14	17	15	14	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	15	15	15	15	14	15	14	14	14	17	20	21	20	21	18	17	16	14	14	14	14	15	14	15
U Q	15	15	15	15	15	15	14	14	16	18	21	22	21	22	21	18	17	15	15	15	15	15	15	15
L Q	15	15	14	14	14	14	13	12	13	15	17	18	18	17	17	15	14	13	14	14	14	14	14	14

AUG. 2013 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	F	F	F	285	309	326	336	330	336	365	314	286	278	316	309	305	316	303	308	318	333	A	264	F
2	F	286	271	287	308	322	345	336	326	310	294	297	311	312	343	322	317	300	284	307	300	308	307	292
3	281	288	292	304	312	294	350	318	334	324	282	319	315	295	304	292	320	313	307	318	289	297	289	F
4	F	F	F	320	321	352	344	351	337	A	A	316	291	297	300	305	292	303	301	A	301	288	301	A
5	287	290	308	265	273	262	281	353	302	A	R	299	270	310	300	316	315	299	305	295	276	287	288	305
6	283	308	F	F	F	303	301	298	308	327	340	A	303	313	301	304	312	319	326	314	260	274	301	305
7	303	302	309	299	281	296	315	317	336	320	307	296	286	291	305	306	323	326	308	298	314	305	298	A
8	F	291	265	F	299	305	345	323	343	332	313	306	303	301	319	311	301	308	288	319	313	338	300	302
9	F	292	305	292	298	297	317	349	337	313	A	315	298	308	A	310	319	331	319	296	298	283	F	303
10	288	287	314	308	298	308	366	348	357	334	304	A	293	297	314	306	321	324	300	301	294	279	307	308
11	291	289	322	328	323	332	326	321	352	329	324	309	329	308	318	C	314	325	296	317	324	299	286	294
12	F	299	291	313	F	326	322	354	338	A	355	273	308	292	303	310	A	310	299	322	328	301	299	298
13	303	F	F	323	292	291	318	322	318	354	345	309	318	316	A	307	301	310	305	315	311	295	289	294
14	273	F	F	F	F	290	315	349	V 322	A	A	316	307	282	A	302	314	324	319	305	326	280	294	295
15	295	296	307	304	310	335	321	347	352	334	324	311	304	307	304	295	313	311	308	303	291	290	282	290
16	288	286	318	276	298	294	333	334	356	286	299	317	334	306	284	290	312	340	341	293	A	302	289	274
17	F	F	292	291	274	289	324	333	309	310	312	312	297	310	316	314	318	314	326	327	296	285	281	278
18	275	286	304	321	307	307	339	354	324	322	307	306	302	308	303	310	320	333	333	347	278	286	286	X B 285
19	279	286	F	F	286	316	332	355	352	345	324	290	306	304	V 310	308	312	331	340	322	296	283	283	295
20	292	281	278	292	293	330	359	359	366	384	C	326	305	317	317	315	313	310	312	325	331	299	296	289
21	288	F	F	F	F	332	341	349	365	358	308	299	296	296	300	303	294	291	332	353	260	266	266	271
22	274	272	276	273	285	279	320	362	319	311	325	303	290	299	295	310	306	315	315	313	314	276	290	291
23	280	272	297	310	298	305	346	328	324	320	326	299	314	310	297	311	308	317	320	314	300	290	260	286
24	280	278	300	S	298	325	328	361	338	316	314	325	292	295	313	316	314	312	318	286	281	303	293	282
25	277	281	301	292	291	294	317	353	329	334	335	321	325	327	323	314	315	312	308	311	331	307	294	286
26	288	290	299	334	281	289	308	344	333	319	338	322	332	V 331	317	329	316	320	312	307	305	311	A	284
27	278	281	296	302	292	304	343	346	330	327	315	312	308	309	315	319	328	316	326	329	326	285	280	279
28	278	277	297	335	298	269	276	317	358	361	326	247	307	308	326	325	336	335	318	321	306	287	281	297
29	298	293	296	306	318	315	333	347	357	309	289	310	310	311	312	334	332	334	330	317	309	295	299	314
30	292	287	291	301	308	320	336	346	362	355	336	314	301	322	313	349	321	323	324	320	340	299	273	289
31	291	299	304	287	293	293	337	328	322	341	303	313	317	320	319	328	327	336	316	299	305	301	295	288
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	25	24	25	27	31	31	31	31	27	26	29	31	31	28	30	30	31	31	30	30	30	29	27
MED	288	287	298	302	298	305	332	346	336	327	314	310	305	308	311	310	315	316	315	314	305	292	289	291
U Q	292	292	306	316	308	325	343	353	352	345	326	316	314	313	317	316	320	326	326	321	324	301	298	298
L Q	278	281	292	289	291	293	317	328	324	316	307	299	296	297	302	305	312	310	305	303	294	285	282	285

AUG. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	U L 375	A	401	A	U L 386	U L 370	A	A	A	A	L	L					
2							A	L	360	U L 368	U L 372	370	U L 409	A	A	385	A	A	A					
3							L	L	L	A	A	A	A	A	A	A	U L 399	A						
4							L	L	A	A	A	U L 380	A	A	U L 414	A	A	A	A					
5						U L 330	U L 316	389	387	A	U L 416	U L 412	318	U L 369	U L 391	A	U L 364	U L 331	L					
6							A	A	365	A	386	A	A	U L 377	U L 356	U L 393	L	A	A					
7							A	A	U L 383	419	A	U L 392	396	U L 411	375	383	U L 364	L	L					
8						A	A	A	A	A	A	A	L	A	A	A	A	A	A					
9							L	L	U L 399	A	A	A	A	A	A	A	A	L						
10								A	A	A	U L 389	A	U L 390	U L 368	385	378	A	L						
11								370	U L 395	A	U L 378	409	U L 368	389	362	C	367	L	A					
12							A	A	406	A	A	U L 371	390	U L 340	375	A	A	L	A					
13							L		L	381	402	U L 389	U L 456	L	A	396	L	A	A					
14						L		A	A	A	A	A	U L 370	A	A	A	A		A					
15								L	U L 391	L	U L 399	U L 370	U L 370	393	419	L	L	A						
16							L	L	U L 416	U L 356	L	U L 357	U L 389	U L 411	U L 383	351	L	A						
17								L	A	L	L	U L 387	U L 349	A	A	A	A	A	A					
18										L		A	U L 364	A	U L 369	372	U L 368	L						
19									A	U L 394	L	U L 347	U L 355	U L 416	U L 376	369	L	L						
20									L	A	C	A	A	A	U L 424	U L 361	L	L						
21							A	A		L	A	U L 393	U L 381	L	U L 360	A	U L 364	A						
22								L	L	L	U L 370	A	A	A	U L 327	365	A	A						
23								L	U L 377	U L 383	L	U L 373	L	U L 364	A	A	A	A						
24							A	A	U L 386	U L 397	U L 409	U L 363	A	A	A	A	L	A	A					
25								A	L	L	U L 380	A	U L 392	L	U L 362	L	L		A					
26								L	U L 379	U L 379	U L 373	387	A	387	390	384	U L 354	A						
27								L	U L 364	U L 376	404	391	389	U L 358	375	372	L	L	A					
28								L	A	L	U L 378	U L 339	392	385	A	A	L	A						
29								A	L	L	U L 361	A	A	U L 364	A	A	A	A						
30								L	U L 402	L	425	U L 409	U L 367	387	L	A	U L 349	L						
31								L	A	A	A	U L 373	U L 365	A	A	L	A	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	1	3	14	10	15	20	20	15	17	12	8	1						
MED						U L 330	U L 316	375	U L 386	U L 382	U L 386	U L 383	U L 376	U L 385	U L 375	375	U L 364	U L 331						
U Q								389	U L 399	397	404	U L 392	U L 391	U L 393	U L 390	384	U L 368							
L Q								370	377	U L 376	U L 373	U L 370	U L 366	U L 364	U L 362	367	U L 359							

AUG. 2013 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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							266	286	252	234	310	372	424	328	302	346	308	294	270					
2							248	280	300	300	388	342	326	296	280	314	302	310	312					
3							252	310	276	296	348	292	290	352	330	356	302	290						
4							252	260	278	A	A	304	E A 322	318	296	E A 322	E A 316	E A 302	282					
5						364	358	246	376	A	422	374	426	332	328	298	290	326	274					
6							280	E A 314	330	274	292	A	364	328	314	336	328	290	260					
7							270	282	264	284	288	320	318	324	314	290	280	272	286					
8						E A 290	248	258	276	282	314	340	298	E A 296	290	E A 324	332	E A 296	E A 288					
9							276	258	282	314	A	E A 334	E A 376	E A 344	A	E A 318	292	264						
10								246	238	258	316	A	344	354	320	316	282	262						
11								282	248	E A 270	314	358	302	336	316	C	312	286	E A 270					
12							E A 236	270	268	A	E A 276	406	330	342	342	308	A	290	270					
13							280		294	258	278	334	324	338	A	322	306	E A 280	274					
14						324		228	258	A	A	320	336	E A 342	A	E A 324	E A 288		250					
15								252	250	268	312	316	318	316	316	312	274	280						
16							266	278	248	386	334	294	280	310	366	328	270	246						
17								270	250	278	304	324	326	312	294	284	282	274	256					
18										294		302	316	294	302	284	266	252						
19									234	274	292	372	322	318	306	294	278	256						
20									234	276	C	304	E A 324	316	314	298	276	292						
21							228	254		252	272	338	340	320	298	310	296	290						
22								242	254	286	276	294	E A 350	316	324	286	304	280						
23								278	276	270	260	308	304	318	312	302	264	270						
24							272	238	272	308	308	304	E A 368	338	306	302	292	260	E A 274					
25								254	276	266	272	288	296	282	302	306	284		252					
26								260	274	282	278	312	292	290	300	284	298	268						
27								262	290	284	286	338	318	302	288	292	266	274	264					
28								298	240	254	296	440	324	320	270	262	258	250						
29								242	244	264	384	294	326	320	298	264	268	256						
30								254	240	258	280	310	334	290	292	258	306	274						
31								288	E A 278	290	322	304	290	288	306	280	E A 262	266						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	14	27	29	27	26	29	31	31	28	30	30	29	15					
MED						324	266	260	266	276	300	318	323	318	306	300	288	273	270					
U Q						364	276	282	278	290	316	341	340	336	316	322	304	290	282					
L Q						E A 290	248	252	248	264	278	304	304	302	297	286	274	263	260					

AUG. 2013 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 h′F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 280	E A 276	E B 266	E A 268	E B 240	252	224	202	A	206	A	208	198	A	A	A	A	218	224	238	E A 244	A	E A 304	E A 320
2	E B 282	E A 290	E A 320	E A 264	E A 232	E A 250	A	196	E A 262	202	202	226	204	A	A	206	A	A	A	E A 262	228	E A 258	E B 226	E A 250
3	E A 280	E A 294	E A 238	E B 236	226	228	204	194	200	A	A	A	A	A	A	A	226	A	E A 282	232	226	E A 262	E A 252	E A 294
4	E A 312	E B 280	E B 262	218	E B 234	226	192	204	A	A	A	208	A	A	210	A	A	A	A	A	E A 260	E A 288	E A 278	A
5	E B 272	E B 272	E B 250	E B 298	E B 306	E B 266	238	206	214	A	198	196	240	228	E A 246	A	230	228	228	E B 248	E A 278	E A 252	E B 254	E B 240
6	E A 276	E A 298	E A 258	228	E B 278	E A 300	A	A	228	A	E A 252	A	A	200	214	208	210	A	A	E A 246	E A 330	E A 282	E A 264	E A 266
7	E B 240	E A 278	E A 286	E A 276	E A 278	E A 250	A	A	208	192	A	190	208	178	184	218	208	212	218	256	238	E B 238	242	A
8	E A 258	E B 264	E B 324	E A 310	E A 308	A	A	A	A	A	A	A	218	A	A	A	A	A	A	E A 250	220	220	E A 268	E A 276
9	E A 328	E A 282	E A 272	E B 272	E A 286	E A 244	220	208	208	A	A	A	A	A	A	A	A	204	226	E A 244	E A 256	E A 296	E A 294	E A 252
10	E A 282	E B 284	E B 236	E B 246	E A 256	E B 248	236	A	A	A	210	A	218	222	204	212	A	204	234	E A 252	E A 244	E B 276	234	E A 252
11	230	E B 266	E B 238	214	212	E A 236	216	218	190	A	E A 240	198	224	204	198	C	214	218	A	244	218	E B 244	E A 324	E A 278
12	E B 260	E B 250	E B 262	E A 238	E A 248	220	A	A	216	A	A	216	200	204	234	A	A	E A 242	A	E A 242	216	230	E A 254	E B 238
13	E A 270	E A 306	E B 272	230	E A 260	E A 256	234	210	210	202	188	184	186	208	A	210	216	A	A	242	E A 256	E A 262	E A 258	E A 260
14	E A 310	E A 262	E A 292	E A 278	E A 258	E A 262	222	A	A	A	A	A	216	A	A	A	A	262	A	234	220	E A 296	E A 288	E A 282
15	E A 292	E A 264	E B 258	E A 244	228	224	222	202	190	192	198	204	210	216	190	232	208	A	E A 250	240	232	E B 232	E B 282	E A 266
16	E B 252	E B 266	E A 260	E B 270	E B 258	224	204	202	196	212	190	206	210	204	196	224	216	A	220	E A 286	A	E A E 298	E A 262	E A 342
17	E A 330	E A 300	E B 276	E B 284	E A 300	E A 264	232	212	A	200	208	204	196	A	A	A	A	A	A	E A 238	E A 282	E B 230	E B 258	E B 290
18	E B 294	E B 276	E A 246	232	E B 234	E A 260	226	212	232	234	E A 274	A	200	A	196	220	214	204	232	212	198	E A 270	E A 274	E B 276
19	E B 290	E B 276	242	E B 244	E B 268	250	226	222	A	184	222	204	204	210	224	212	212	212	228	E A 238	222	E B 248	E B 260	E B 254
20	E B 276	E B 276	E B 286	E A 258	E B 268	242	216	226	198	A	C	A	A	A	204	196	200	224	242	228	214	220	E A E 264	E A 274
21	E B 274	E A 316	E B 274	E B 246	E A 272	E A 244	A	A	242	200	A	196	206	214	206	A	210	A	236	198	E A 284	E A 342	E A 304	E A 316
22	E A 310	E A 338	E A 306	E A 296	E A 286	E B 276	244	210	200	198	208	A	A	A	212	220	A	A	264	228	214	E A 270	E A 282	E A 254
23	E B 278	E B 278	E B 268	E B 250	E B 230	236	226	218	208	208	190	190	212	200	A	A	A	A	E A 238	E A 280	E A 262	E A 266	E A 290	E B 274
24	E B 270	E A 284	E B 250	E A 264	E B 254	238	A	A	202	204	204	224	A	A	A	A	196	A	A	E A 300	E A 280	E A 252	E A 252	E B 250
25	E B 276	E B 272	E B 254	E B 262	E B 258	E A 296	230	A	210	202	198	A	194	206	216	222	210	E A 240	A	232	212	218	E B 256	E B 266
26	E B 256	E B 278	E B 264	218	E B 256	E B 300	224	214	212	198	180	194	A	204	204	212	210	A	E A 258	E A 266	E A 246	226	A	E A 334
27	E A 322	E A 318	E A 304	E A 244	E A 250	E B 256	228	216	202	198	198	192	180	190	208	210	204	220	A	E A 246	214	E B 246	E B 274	E B 286
28	E B 278	E B 278	E B 270	218	E A 302	E A 282	226	244	A	194	204	202	196	204	A	A	214	A	240	224	E A 244	E B 236	E A 302	E B 234
29	E B 254	E B 264	E B 272	E A 246	216	E B 232	226	A	204	200	214	A	A	208	A	A	A	A	228	E A 236	230	E A 264	E A 270	E A 256
30	E A 286	E A 298	E B 262	E B 254	E A 254	240	226	208	198	194	196	196	196	198	222	A	206	226	E A 244	238	214	226	E B 298	E A 284
31	E B 256	E B 242	E B 252	E B 278	E B 286	264	220	200	A	A	A	204	216	A	A	216	A	222	236	E A 262	E A 254	E A 250	240	E A 242
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	24	21	22	19	20	20	22	18	18	15	18	15	19	30	30	30	30	29
MED	E B 278	E B 278	E B 264	E B 250	E 258	E 250	226	210	207	200	200	203	205	204	206	212	210	219	232	E 242	U 220	E 252	E A 266	E A 266
U Q	E A 292	E A 294	E A 276	E A 272	E 278	E A 264	229	217	214	204	212	207	216	210	216	220	214	228	E A 244	E A 252	E A 256	E A 270	E A 288	E A 285
L Q	E B 260	E B 266	E B 252	236	234	236	220	202	200	194	197	195	196	200	198	210	208	212	228	234	218	232	E 254	E 252

AUG. 2013 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	124	114	A	A	A	120	A	A	A	A	A	A	A					
2						B	A	A	A	A	120	A	128	124	A	A	A	A	A					
3						B	122	116	114	A	A	A	A	A	A	A	A	A	A					
4						B	112	A	A	A	A	A	A	A	A	122	122	A	A					
5						B	116	116	A	A	A	A	A	A	A	A	110	114	A					
6						B	110	A	A	A	A	A	A	A	112	A	A	A	B					
7							A	A	A	A	A	112	122	A	96	A	112	112	A					
8						B	A	A	A	A	A	A	A	A	A	A	112	A	A					
9						B	116	114	A	A	A	A	A	A	A	A	A	A	114					
10						B	108	A	A	A	A	A	A	A	A	A	A	A	114					
11						B	116	116	A	A	A	116	116	A	116	C	118	A	A					
12						B	118	118	A	A	A	A	A	128	120	114	A	A	A					
13						B	118	130	116	112	A	120	A	112	112	A	A	A	A					
14						B	116	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	A	116	A	118	A	A	A	118	120	112	A	A	A					
16						B	114	118	116	120	A	A	122	124	A	A	A	A	A					
17						B	A	A	A	A	A	A	A	A	A	114	A	A	B					
18						B	A	110	A	A	A	A	A	A	A	A	A	114	122					
19						B	116	A	118	A	A	118	112	112	A	A	A	A	A					
20						B	122	118	120	120	C	A	A	A	128	A	A	112	A					
21						B	A	A	A	A	A	A	A	114	A	A	A	A	A					
22						B	A	110	A	112	118	A	A	A	A	A	A	A	A					
23						B	122	122	A	A	A	124	A	124	A	A	A	A	A					
24						B	A	A	A	A	A	A	A	A	A	A	A	116	B					
25							116	110	A	A	A	A	A	A	A	A	A	114	B					
26						B	122	108	A	A	A	A	A	A	A	A	114	116	B					
27						B	124	122	116	A	A	118	118	A	A	118	116	A	B					
28							118	116	A	120	A	120	120	114	114	A	A	A	B					
29							A	120	118	A	A	114	A	A	A	A	A	A	B					
30						B	114	A	A	A	A	A	A	A	A	A	A	A	B					
31						B	114	116	A	A	A	A	A	A	A	A	A	116	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							21	19	7	6	2	9	7	9	8	5	7	8	3					
MED							116	116	116	119	119	118	120	118	115	114	114	114	114					
U Q							122	118	118	120		120	122	124	120	120	118	116	122					
L Q							114	114	116	112		115	116	113	112	113	112	113	114					

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 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	88	88	94	94	98	98	G	112	102	100	100	G	102	98	96	98	96	94	96	88	96	96	96	98
2	98	98	94	96	92	104	102	104	102	106	G	104	G	120	106	112	106	104	108	104	104	100	B	102
3	98	98	96	92	98	104	116	100	110	102	102	102	102	100	100	102	102	100	106	102	102	100	100	100
4	96	108	100	90	110	98	114	102	104	98	96	94	106	104	120	118	118	108	106	102	106	100	96	94
5	92	100	100	102	100	B	114	120	106	100	102	104	92	104	102	90	G	118	100	106	102	106	98	92
6	98	94	94	B	110	108	114	104	104	104	102	98	96	98	112	94	94	104	106	102	102	102	102	92
7	96	102	90	90	94	100	102	100	100	100	96	G	G	96	G	96	G	114	104	102	96	98	100	100
8	102	98	98	98	98	96	104	106	102	98	98	96	94	96	96	96	124	106	104	104	104	98	100	94
9	98	102	94	94	94	100	112	118	106	108	102	100	100	94	96	94	102	96	G	100	98	98	100	98
10	96	92	B	104	88	88	130	104	100	100	104	98	98	C 100	96	96	102	108	G	96	90	100	B	90
11	B	B	B	B	B	100	132	122	106	106	104	116	G	118	G	C	120	118	106	106	104	96	98	100
12	102	B	98	98	98	112	116	116	104	102	102	102	100	G	132	124	102	108	102	102	100	100	100	B
13	92	86	B	106	100	108	160	130	122	120	106	G	106	G	118	102	106	104	100	100	98	98	96	92
14	96	96	94	96	92	98	114	108	104	102	98	96	98	104	100	98	96	96	94	90	86	92	92	96
15	98	92	88	88	100	108	102	104	104	G	100	96	96	120	114	G	88	86	92	B	B	92	94	102
16	100	92	92	94	100	B	G	G	118	G	104	104	G	118	104	106	102	108	102	98	94	100	98	96
17	92	90	90	B	106	108	104	102	98	96	104	96	96	96	130	118	106	104	102	102	98	104	B	98
18	106	B	94	92	88	86	106	118	106	102	100	100	100	102	100	106	94	104	104	96	92	108	104	98
19	102	98	102	98	98	100	G	106	112	98	100	G	G	G	90	94	88	90	86	84	80	B	104	B
20	98	98	98	92	96	92	116	116	116	116	C	100	100	102	G	110	104	G	108	94	92	92	92	98
21	98	100	102	B	98	98	94	94	90	94	106	110	108	G	98	94	96	98	96	88	94	94	94	94
22	90	92	92	92	92	94	104	114	106	G	G	102	98	98	102	100	98	100	98	92	90	102	92	90
23	90	90	B	B	B	112	124	116	104	102	102	G	102	G	104	104	102	108	106	104	96	92	92	B
24	B	94	90	90	B	B	110	104	108	102	102	104	102	100	104	96	106	122	104	102	104	94	90	92
25	B	B	B	B	B	96	128	116	104	106	104	102	102	98	92	96	100	116	102	98	102	B	94	94
26	92	88	B	B	B	B	G	122	108	98	108	106	106	96	104	106	128	116	F 108	96	94	92	94	90
27	92	92	96	96	96	100	148	120	120	102	104	G	G	100	98	G	G	104	96	98	104	B	B	B
28	B	B	B	B	92	94	124	122	96	G	106	G	G	G	108	106	104	108	108	106	104	100	100	100
29	B	B	104	102	B	108	110	114	114	98	110	116	108	108	108	108	110	108	108	104	102	102	102	102
30	96	96	B	B	96	96	G	106	104	104	104	104	106	104	104	100	106	106	100	100	94	96	96	100
31	98	98	B	B	B	B	G	G	98	98	94	92	92	92	92	92	88	G	B	100	100	100	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	25	22	21	24	26	25	29	31	27	28	24	24	25	28	28	28	29	28	30	30	28	27	27
MED	97	96	94	94	98	100	114	112	104	102	102	102	100	100	103	100	102	106	103	100	98	99	98	98
U Q	98	98	98	98	100	108	124	118	108	104	104	104	104	104	108	106	106	108	106	102	102	100	100	100
L Q	92	92	92	92	93	96	104	104	102	98	100	97	97	97	97	96	96	100	99	96	94	95	94	92

AUG. 2013 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2013 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F4	F2	F2	F2	L2		C1	L2	L2	L2		L2	L2	L2	L2	L2	L2	L2	F2	F3	F3	F2	F4
2	F2	F3	F3	F2	F3	L3	L2	L1	L2	L2		L2		C2	L2	L2	L1	L2	L2	F4	F1	F3		F4
3	F3	F3	F3	F2	F2	L2	C1	L1	C1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L3	F3	F2	F2	F2	F2
4	F2	F1	F1	F2	F1	L1	C1	L2	L2	L2	L3	L2	L2	L2	CL12	CL22	CL22	L3	L3	F3	F3	F4	F3	F5
5	F2	F1	F1	F1	F2		C2	C1	L2	L3	L2	L2	L2	L2	L2	L2		C1	L2	F2	F3	F2	F2	F2
6	F2	F3	F2		F1	F4	C2	L2	L2	L2	L2	L2	L2	L2	C1	L2	L2	L2	L3	F2	F5	F2	F3	F4
7	F2	F3	F3	F4	F2	L2	L2	L3	L2	L2	L2			L1		L2		C1	L2	F2	F3	F3	F2	F3
8	F3	F2	F3	F3	F2	L2	L2	L3	L2	L3	L2	L2	L2	L3	L2	L3	C2	L3	L5	F4	F2	F2	F3	F3
9	F3	F2	F2	F2	F3	L2	C1	C1	L2	L2	L2	L2	L2	L2	L3	L2	L2	L3		F2	F4	F3	F8	F3
10	F3	F2		F1	F2	L1	C1	L2	L2	L2	L2	L2	L2	L2	L2	L1	L2	L1		F2	F2	F1		F2
11						L2	C2	C2	L1	L2	L2	CL12		C1			C1	CL22	L2	F3	F2	F2	F3	F3
12	F2		F2	F2	F3	L2	C2	C1	L2	L3	L2	L2	L2		C1	C1	L2	L2	L3	F4	F4	F2	F3	
13	F4	F2		F2	F4	L2	HL12	CL22	C2	CL11	CL11		L2		C2	L2	L2	L2	L2	F3	F3	F2	F2	F2
14	F2	F3	F2	F2	F2	L2	C2	L2	L2	L3	L3	L2	L2	L2	L2	L4	L3	L3	L3	F3	F2	F2	F3	F2
15	F2	F2	F2	F2	F3	L2	L2	L2	L2		L2	L2	L2	C1	C1		L2	L3	L2			F3	F2	F2
16	F2	F2	F2	F2	F1				C1		L2	L2		C2	L2	L2	L2	L2	L3	F3	F4	F7	F3	F3
17	F2	F2	F1		F3	L2	L2	L1	L2	L2	L1	L2	L2	L2	CL22	CL22	L2	L2	L2	F4	F4	F1		F2
18	F1		F2	F2	F2	L2	L1	CL11	L2	L2	L2	L2	L2	L2	L2	L2	L1	L2	L1	F1	F2	F2	F2	F2
19	F2	F2	F1	F1	F1	L1		L1	C1	L1	L2				L2	L2	L2	L2	L2	F3	F1		F2	
20	F2	F2	F3	F2	F2	L2	C1	CL22	CL22	C2		L2	L2	L2		L2	L2		L2	F2	F3	F2	F2	F2
21	F2	F2	F1		F3	L3	L2	L2	L2	L2	L2	L2	L2		L2	L2	L2	L2	L2	F3	F3	F4	F3	F4
22	F2	F4	F3	F2	F2	L1	L2	C1	L2			L2	L2	L2	L2	L2	L3	L2	L3	F2	F2	F2	F2	F3
23	F2	F1				C1	C1	C2	L2	L2	L2		L2		L2	L2	L2	L2	L3	F4	F3	F2	F2	
24		F2	F2	F2			L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	C2	L3	F3	F3	F3	F3	F1
25						L3	C2	C2	L2	L2	L2	L3	L2	L2	L2	L2	L2	C2	L5	F4	F3		F2	F2
26	F1	F2						C2	L2	L2	L2	L2	L2	L2	L2	L2	C2	C2	L2	F4	F4	F3	F5	F3
27	F4	F2	F2	F3	F4	L2	H2	C1	C1	L2	L2			L2	L2			L2	L4	F4	F2			
28					F4	L2	C2	CL22	L2		L2				C2	L2	L2	L2	L3	F2	F3	F2	F3	F2
29			F2	F2		F1	L2	C1	C1	L1	L2	C2	L2	L2	L2	L2	L2	L2	L3	F3	F4	F6	F5	F4
30	F4	F3			F2	L2		L1	L1	L3	L2	L2	L2	L2	L2	L2	L2	L1	L3	F3	F4	F3	F2	F2
31	F3	F2							L3	L2	L2	L2	L2	L2	L3	L2	L2			F2	F3	F2	F2	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	83	82	78	77	72	69															X 82	O X 69	X 69	X 72
2	X 70	X 67	X 62	61	61	X 58															X 94	X 88	X 85	X 84
3	X 81	X 80	X 74	X 74	X 73	X 56															X 81	X 80	X 76	79
4	79	79	78	77	72	48															X 79	76	A	A
5	70	X 68	X 61	X 56	X 57	X 59															X 78	X 76	X 76	X 64
6	X 60	X 59	X 53	X 51	X 48	53															X 71	X 70	X 68	70
7	X 67	X 65	X 61	X 59	X 54	X 53															X 86	X 82	X 70	65
8	X 60	65	X 56	65	X 58																X 103	X 70	65	66
9	67	66	66	65	59	59															X 86	X 77	65	67
10	76	75	72	70	X 58	60	68													X 89	X 101	X 94	X 94	X 90
11	X 84	X 74	X 72	X 64	X 55																X 106	X 89	X 84	X 78
12	X 76	77	X 72	76	X 56	X 50															X 79	X 74	76	75
13	67	67	70	70	X 58	66															X 99	X 83	X 74	X 77
14	O X 79	X 68	X 60	X 54	X 56	X 57														X 91	X 80	X 77	X 72	X 72
15	X 73	X 76	X 70	X 68	X 62																X 88	X 92	X 84	X 83
16	X 74	X 67	X 65	X 60	X 60	X 65															X 72	X 70	X 69	X 67
17	X 66	X 67	X 65	X 62	X 57	X 57															X 98	X 77	X 78	X 79
18	X 76	X 74	X 70	X 59	X 53	X 52															X 74	X 77	X 82	X 83
19	X 79	X 70	X 70	X 66	X 61	X 60														X 98	X 82	X 85	X 89	X 82
20	X 73	X 70	X 65	X 58	X 60	X 60															X 89	X 78	X 72	X 73
21	X 70	X 70	X 70	69	X 60	X 54														X 106	X 64	X 60	X 60	X 60
22	X 58	X 60	X 62	X 61	X 61	X 62												O X 86	O X 89	X 96	X 96	X 69	X 70	72
23	X 70	X 70	X 70	X 68	X 64	X 51														X 107	X 79	X 76	X 75	X 75
24	X 71	X 67	X 67	X 66	X 63	X 60															X 87	X 83	80	X 74
25	X 70	X 67	X 66	X 64	X 60	X 53														X 104	X 91	X 77	X 68	X 66
26	X 63	X 63	X 62	X 52	X 43	X 43			C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	23	1											1	1	7	25	25	24	24
MED	X 70	X 68	X 66	X 64	X 60	X 57	68											O X 86	O X 89	X 98	X 86	X 77	X 74	X 74
U Q	X 76	74	X 70	69	X 61	X 60														X 106	X 95	X 83	X 81	X 79
L Q	X 67	X 67	X 62	X 59	X 56	X 53														X 91	X 79	X 72	X 69	X 67

AUG. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	F 66	F 70	F 64	F 65	F 62	F 60	61	74	R 98	60	59	R 65	70	81	86	83	83	81	86	94	76	63	63	66
2	F 63	61	56	53	F 48	52	57	72	66	H 62	U R 56	74	92	88	82	74	66	66	78	84	R 88	82	79	78
3	74	73	68	68	68	50	51	65	72	71	72	72	J R 76	78	80	88	88	89	92	85	75	74	70	F 66
4	F 65	F 65	F 65	F 63	F 59	F 40	48	60	68	65	65	68	68	83	92	98	94	94	97	85	73	R 68	A	A
5	F 62	62	55	50	51	53	69	63	57	J R 56	57	59	U R 56	71	78	86	78	76	80	75	72	70	70	58
6	54	53	47	45	42	F 44	57	60	72	A	R 64	U R 59	72	80	94	80	73	79	82	U R 66	65	65	62	F 61
7	61	57	54	52	48	48	58	74	78	U A 67	70	R 70	70	76	78	85	83	81	77	78	80	76	65	F 56
8	54	F 53	50	53	51	53	63	73	Z 73	R 70	78	R 86	98	92	89	90	86	86	A	99	96	64	F 55	F 55
9	F 58	F 54	F 54	F 54	F 51	50	56	67	74	74	69	75	82	U R 92	R 92	J R 103	R 106	99	J R 92	A	81	71	57	F 57
10	F 62	F 58	F 58	F 57	52	F 52	60	68	71	67	A	71	79	92	94	97	104	108	98	83	93	87	87	82
11	78	68	66	58	49	36	A	86	79	60	66	68	73	78	86	86	90	96	R 104	R 90	J R 100	83	78	71
12	70	70	66	66	50	F 42	51	65	76	68	64	62	69	75	74	85	88	R 98	R 102	U R 102	73	68	67	F 63
13	F 58	F 58	F 63	F 60	52	F 54	59	74	73	64	64	67	65	70	77	85	88	94	101	102	93	77	68	J R 71
14	U R 73	62	R 54	48	R 50	51	52	81	75	V 65	67	65	71	77	87	95	100	98	88	85	74	71	66	66
15	67	70	65	62	55	46	58	74	71	71	66	73	74	79	86	92	92	92	97	91	82	86	77	77
16	68	61	59	54	54	59	73	70	66	65	75	99	85	75	85	98	R 122	111	92	76	R 66	64	63	61
17	60	61	58	56	51	51	58	72	79	82	76	86	U R 92	88	R 99	102	R 105	108	107	103	92	71	72	73
18	70	68	64	53	47	46	56	74	74	74	75	75	92	R 96	A	R 102	J R 115	J R 116	120	84	68	71	R 78	77
19	73	64	64	60	54	54	66	72	70	74	73	76	85	92	98	U R 99	103	104	99	92	77	79	83	75
20	67	64	59	52	52	54	68	66	69	70	72	73	79	88	90	91	94	R 105	J R 114	100	83	72	66	67
21	64	64	64	F 58	54	48	60	77	81	66	68	71	82	83	90	94	96	R 106	J R 118	100	58	55	54	54
22	53	53	56	55	55	55	66	78	66	74	84	81	79	84	93	94	94	U R 80	U A 83	R 89	77	64	64	64
23	64	64	64	62	58	45	53	74	97	96	81	88	107	U R 112	105	R 112	112	R 100	101	101	73	70	69	69
24	65	61	61	60	57	54	66	73	82	86	75	72	82	U R 96	R 107	J R 112	99	86	86	86	81	77	F 72	68
25	64	61	60	58	54	47	56	71	78	83	81	85	89	86	90	86	U A 75	78	89	98	85	71	62	60
26	57	56	56	46	37	37	50	76	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	25	26	25	24	24	25	25	25	24	25	25	25	24	24	25	25	24	24
MED	64	62	60	56	52	50	58	72	73	69	70	72	79	83	90	92	94	94	94	90	77	71	68	66
U Q	68	65	64	60	55	54	64	74	78	74	75	78	87	R 92	94	R 98	R 104	104	R 102	100	86	77	74	72
L Q	60	58	56	53	50	46	54	67	70	65	64	68	70	78	84	86	84	81	86	84	73	66	63	60

AUG. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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							A	L	432		L	L 508	516	512	508	504	476	L 452	U L 432					
2								L	L	L	L	520	U A 460	U A 488	A	A	A	U A 428	L	A				
3								L	U L 448	460	496	504	508	504	536	508	L 456	L 452	L					
4								L	U L 452	L 476	A	U R 512	U R 500	504	A	500	472	A						
5							L		484	464	U A 452	476	A	524	U R 504	A	488	L 460	U L 396					
6								L	A	A	508	504	500	R	508	504	500	L	A					
7								L	L 424		L 520	R 516	512	508	504	500	476	464	L 396	L				
8							L	L	L	476	A	480	A	492	A	504	500	L 472	A					
9								A	A	A	L 488	A	500	U R 500	U A 488	A	A	A	A	A				
10								U L 428	A	A	A	U A 504	L 536	536	520	504	U L 492	L 472	L					
11							A	L	R	A	508	L 504	A	L 512	512	492	484	L 480	R					
12									420	456	L 476	L 540	U A 472	524	A	496	U A 456	U A 416	A					
13								L	A	A	U L 500	512	L 516	512	508	U A 492	484	A	A					
14								L	L			A	512	508	504	504	492	A	L					
15								L	L	U L 484	L	L 520	U L 528	540	Y 524	480	U L 480	L 456	L					
16							L 252			U L 560	U L 504	520	U L 524	U L 524	520	516	488	A	L					
17									U L 440	L 464	L	536	U A 492	536	U L 540	U A 504	L 508	L	L					
18								L	L	A	L	L 500	500	Y 500	A	A	U L 496	A	L					
19								L	L	L 476	L	L 516	532	536	536	L	U L 520	L	L					
20									U L 464	U L 460	L 528	L 512	L 552	L 536	536	516	L 504	L 468	L					
21								L	A	L	L 520	L 548	U L 592	L	U L 560	A	A	U L 504	L					
22							L	L	L	U L 436	L 512	L 536	L 536	536	536	L 536	524							
23								L	L	L	L	U L 568	U R 564	560	540	L 540	U L 524	U L 492	L					
24								L	A	468	L	L	L 544	544	L	L 508	L	L	L					
25									L	U L 492	L 492	U L 524	L	L	U L 548	L	A	A	L					
26									C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	1	8	13	13	22	21	22	19	18	20	13	3					
MED							L 252	U L 428	L 444	L 468	L 504	514	516	518	520	504	490	L 464	U L 396					
U Q									U L 458	U L 480	L 516	L 524	L 536	536	U L 536	L 508	L 502	L 476	U L 432					
L Q									428	460	L 490	504	500	504	508	500	478	452	L 396					

AUG. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	A	A	A	A	A	A	A	A	A	344	300	A	A				
2							A	A	A	340	R 364	384	R 388	380	376	372	340	300	U A 248	A				
3							180	272	328	A	R 352	U A 380	U A 376	R 360	U R 356	344	344	A	A	A				
4							A	284	316	A 336	U A 348	U A 368	A	A	A	A	A	A	A	A				
5							A	A	A	A	A	A 368	388	A	A	A	A	280	244	A				
6							A	A 252	U A 304	A	A	A	A	A	A	360	356	308	A	B				
7							A	A	A	A	A	R 384	A	U R 376	376	352	332	312	A	B				
8						A	A	A	A	A	A	A	A	A	A	A	336	308	U A 244	A				
9							A	A	A	A	A	A	R 364	R 364	368	A	A	A 284	A	A				
10							U A 184	A	U A 312	U A 336	A	A	A	A	A	A	A	A	A					
11						A	A	248	304	320	U R 348	364	R 400	384	R	A	368	A 312	A	A				
12							A	260	U A 320	348	A	A	A	R 388	372	364	340	308	U A 232	A				
13							A	256	A	A	A	A	A	A	A 372	U A 368	A	A 320	A	B				
14							R 148	252	300	340	368	R 368	R	U R 368	A	A	A	A	A					
15						B	196	A	A	A	A	A	R	R	A	364	344	296	A	A				
16							172	260	A	R	U R 352	A	U R 392	R 392	384	368	336	U A 304	U A 232	A				
17							A	252	A	R 332	R 360	R	A	R	R	A	A	A	A	B				
18							B	U A 264	308	A	U R 344	R	U A 368	A	A	A	A	300	228	A				
19							176	252	312	R 336	360	U R 400	400	R 400	R	364	352	304	A					
20							184	264	300	336	A	A	R	R 404	R 388	372	U A 364	A	A	A				
21							A	A	A	A	A 356	A	A	U R 408	R	372	316	A	A					
22							172	276	300	352	A	A	R	R	B	R 348	A							
23							172	A	U A 304	U A 332	A	U R 348	U R 368	A	U R 384	368	344	296	A					
24							172	U A 236	288	A	A	A	A	A	A	A	340	300	A	A				
25							A	244	312	336	R 356	R	A	A	A	R 356	340	296	U A 236					
26							B	264	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							10	16	14	12	11	9	9	11	9	14	16	17	7					
MED							174	258	306	336	R 356	368	R 388	R 384	376	364	342	300	U A 236					
U Q							184	264	312	340	R 360	R 384	R 396	R 400	R 384	368	348	308	U A 244					
L Q							172	252	300	334	U R 348	366	U R 368	R 368	370	356	338	296	232					

AUG. 2013 foE (0.01MHz)

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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 36	J A 40	J A 42	J A 42	J A 49	J A 72	J A 85	J A 37	J A 37	37	J A 55	41	41	J A 42	J A 42	37	39	39	J A 36	46	51	J A 65	J A 49	J A 26
2	57	J A 35	41	J A 54	J A 22	J A 30	J A 36	J A 31	J A 40	38	44	44	48	53	J A 64	J A 60	J A 56	J A 46	J A 41	63	J A 59	J A 39	J A 54	J A 36
3	J A 29	J A 45	J A 36	J A 29	J A 24	J A 18		22	34	J A 50	J A 40	G	42	J A 49	G	J K 32	G	G	J A 57	J A 23	J A 27	E B 11	J A 69	J A 52
4	J A 65	J A 34	J A 26	J A 20	J A 20	J A 21	43	32	36	38	J A 55	J A 49	J A 60	J A 46	J A 82	39	48	J A 60	J A 73	J A 46	J A 73	J A 82	J A 75	75
5	J A 39	18	30	17	E B 14	E B 14	J A 27	J A 43	J A 42	J A 38	J A 50	46	48	48	41	J A 69	40	39	39	J A 33	J A 30	E B 15	E B 15	26
6	J A 16	E B 14	J A 29	J A 24	E B 15	E B 15	J A 28	J A 40	J A 49	J A 80	J A 58	53	J A 44	42	J A 56	40	42	J A 46	J A 72	76	J A 41	J A 67	J A 56	J A 55
7	J A 27	J A 48	J A 36	J A 28	29	J A 30	J A 37	J A 32	J A 52	J A 112	J A 68	44	48	G 32	G 30	40	G 30	J A 38	41	J A 49	J A 31	46	J A 34	J A 49
8	J A 34	J A 61	J A 21	J A 21	J A 22	J A 27	20	J A 39	J A 40	J A 47	J A 50	J A 68	J A 60	52	52	J A 46	45	J A 42	J A 98	60	J A 99	J A 49	J A 34	J A 48
9	J A 34	J A 43	J A 45	J A 45	J A 34	40	J A 35	J A 63	57	J A 58	42	J A 54	48	42	49	82	J A 89	80	J A 108	J A 126	J A 76	J A 42	J A 42	J A 36
10	J A 33	J A 67	20	23	E B 14	19	J A 26	J A 33	64	J A 62	88	J A 80	47	49	49	37	J A 60	42	J A 36	J A 39	J A 32	J A 22	J A 16	21
11	E B 16	E B 16	E B 16	E B 16	18	J A 24	J A 55	J A 39	J A 75	J A 73	G	46	J A 57	44	G	37	42	37	J A 49	J A 46	J A 38	J A 60	J A 32	27
12	E B 12	J A 38	J A 65	J A 22	J A 21	J A 15	20	31	39	39	44	J A 49	J A 56	49	J A 63	44	J A 61	J A 44	52	J A 53	J A 76	J A 73	J A 55	J A 34
13	J A 25	J A 31	J A 38	J A 38	J A 30	J A 29	J A 44	J A 44	J A 73	J A 66	J A 62	J A 53	50	49	46	J A 55	46	J A 48	J A 50	32	42	J A 30	J A 30	J A 25
14	J A 25	J A 28	24	E B 15	E B 15	J A 16	20	31	38	46	J A 51	52	G	44	J A 48	J A 44	J A 47	64	J A 45	J A 38	J A 27	J A 32	22	E B 14
15	E B 12	21	J A 21	J A 20	J A 19	E B 14	G	26	30	34	37	40	G 34	G 34	50	40	45	38	J A 30	19	19	J A 18	J A 25	J A 28
16	J A 16	E B 12	19	E B 12	J A 20	J A 26	G	G 22	31	G 33	40	37	44	J A 55	J A 48	J A 48	J A 53	J A 49	J A 52	J A 22	J A 34	J A 22	E B 12	23
17	J A 17	E B 11	E B 11	E B 11	E B 11	E B 11	J A 26	J A 27	J A 32	G	G	G	53	G	G 33	J A 56	46	45	J A 34	J A 32	24	J A 43	J A 24	J A 26
18	22	20	E B 13	E B 13	20	20	18	31	J A 40	54	50	43	45	48	95	92	J A 60	J A 55	J A 58	J A 43	44	J A 111	J A 57	J A 41
19	J A 38	J A 43	J A 46	J A 22	J A 27	J A 18	G	G 24	36	41	41	44	48	47	G 30	40	43	37	J A 32	J A 26	J A 37	J A 36	E B 14	E B 14
20	E B 15	E B 16	J A 28	J A 22	J A 18	E B 16	G	28	35	42	50	48	G 30	44	44	J A 60	J A 54	J A 43	J A 43	J A 24	31	J A 35	J A 44	J A 34
21	J A 18	J A 34	J A 39	J A 38	J A 25	J A 44	J A 42	40	J A 71	J A 57	47	42	49	55	G 33	56	J A 54	J A 41	J A 31	J A 21	J A 21	E B 14	J A 22	J A 48
22	J A 25	J A 24	20	E B 12	20	E B 12	G	G	34	39	42	44	G 33	G 31	E B 41	G	J A 40	78	J A 114	J A 75	J A 48	J A 24	J A 24	J A 39
23	J A 21	J A 18	24	E B 14	E B 14	E B 14		J A 32	37	38	J A 43	40	45	42	G 28	40	40	31	J A 28	J A 38	J A 41	J A 24	J A 14	J A 53
24	22	E B 14	19	E B 14	E B 14	20	20	30	J A 54	J A 45	J A 47	42	J A 49	J A 46	50	37	G 29	32	32	J A 30	J A 29	J A 44	J A 26	J A 34
25	J A 26	E B 12	E B 11	E B 11	E B 11	E B 13	21	32	38	46	45	44	51	50	39	G 20	J A 82	J A 88	J A 71	J A 40	J A 25	J A 25	J A 45	32
26	24	22	E B 14	E B 14	E B 14	E B 14	19	29	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	26	26	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
MED	J A 25	J A 26	25	J A 20	20	18	22	32	J A 40	42	47	44	48	46	46	40	46	J A 44	J A 45	J A 39	J A 37	J A 36	J A 32	J A 34
U Q	J A 34	J A 40	J A 38	J A 28	J A 24	J A 27	J A 36	J A 39	J A 53	J A 58	J A 53	J A 50	J A 50	49	J A 51	J A 56	J A 55	J A 56	J A 72	J A 51	J A 50	J A 54	J A 52	J A 48
L Q	E B 17	E B 16	E B 19	E B 14	E B 14	E B 14	G 18	29	36	38	42	42	G 44	G 42	G	37	40	38	J A 35	J A 28	J A 28	J A 23	22	26

AUG. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	22	21	20	18	17	24	41	29	29	30	40	39	39	40	40	36	36	34	26	36	18	49	32	17
2	E B 14	19	18	24	20	20	25	24	26	38	40	41	46	49	62	58	49	43	38	56	30	26	34	19
3	22	21	20	20	18	E B 13	19	G 27	34	34	G	G 37	43	G	G 31	G	G	40	33	17	16	E B 11	24	24
4	32	23	19	E B 12	E B 12	16	36	31	33	35	52	44	44	41	59	37	37	51	49	32	18	39	A A 75	A A 75
5	20	E B 14	17	E B 14	E B 14	E B 14	16	32	32	32	45	40	U Y 48	48	37	50	38	32	30	15	E B 16	E B 15	E B 15	17
6	E B 14	E B 14	20	17	E B 15	E B 15	22	35	45	A A 80	40	40	40	38	40	38	38	39	42	40	23	22	22	19
7	E B 15	26	25	19	19	18	25	25	35	41	40	40	40	G 31	G 29	39	G 22	32	30	17	16	21	21	23
8	19	19	18	E B 15	E B 15	16	16	27	28	38	42	41	49	43	50	42	38	41	A A 98	53	27	19	18	18
9	19	18	24	22	22	22	20	40	49	55	37	49	40	40	49	73	76	80	88	A A 126	24	22	22	22
10	E B 15	16	E B 15	18	E B 14	E B 14	19	31	53	58	A A 88	50	42	45	46	34	42	33	27	26	22	17	E B 12	E B 12
11	E B 16	E B 16	E B 16	E B 16	E B 16	20	A A 55	30	45	56	G	46	56	42	G	37	40	33	37	16	18	22	16	E B 15
12	E B 12	20	25	E B 12	E B 15	E B 15	19	30	32	G 34	36	44	47	45	56	40	46	42	47	26	36	36	32	25
13	18	22	22	26	25	17	20	G 18	49	53	43	43	43	46	44	49	42	42	42	28	34	23	20	17
14	16	16	16	E B 15	E B 15	E B 15	18	27	35	38	40	46	G	43	43	42	43	54	22	22	20	19	18	E B 14
15	E B 12	E B 12	E B 14	E B 14	E B 14	E B 14	G	25	27	33	U Y 37	37	U G 34	U Y 34	U Y 47	38	39	38	28	13	13	17	16	16
16	E B 12	E B 12	E B 12	E B 12	E B 12	21	G	G 21	28	U G 33	38	35	U Y 43	43	46	43	43	43	25	20	20	20	E B 12	E B 12
17	E B 11	E B 11	E B 11	E B 11	E B 11	E B 11	17	G 16	29	G	G	G	49	G	U Y 32	50	43	38	30	22	18	19	18	18
18	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	29	37	49	45	42	42	U Y 45	A A 95	85	44	48	32	19	34	61	40	23
19	23	18	17	17	22	E B 15	G	G 13	33	38	41	40	42	42	U G 30	G 36	36	36	31	22	22	18	E B 14	E B 14
20	E B 15	E B 16	20	18	E B 16	E B 16	G	27	G 30	34	38	38	U G 30	42	42	41	41	33	26	19	19	18	30	22
21	E B 14	21	22	E B 14	E B 13	22	29	28	50	39	41	40	48	50	U G 33	49	49	36	22	19	17	E B 14	17	17
22	15	17	E B 12	E B 12	E B 12	E B 12	G	G	32	G 35	38	40	U G 33	U G 29	E B 41	G	29	66	U G 66	66	29	19	18	18
23	E B 14	17	E B 14	E B 14	E B 14	E B 14	G	27	G 28	38	38	U Y 39	41	41	G 26	38	38	30	24	18	36	17	E B 14	25
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 16	G 22	51	39	40	40	46	43	44	37	G 27	31	27	27	15	32	E B 17	22
25	21	E B 12	E B 11	E B 11	E B 11	E B 13	20	26	32	41	41	40	48	48	38	G 18	66	69	27	34	20	20	27	21
26	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	G 25	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	26	26	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
MED	E B 15	16	17	E B 14	E B 14	E B 15	18	27	33	38	40	40	43	42	42	39	40	39	30	22	20	20	18	18
U Q	19	20	20	18	17	18	22	30	45	45	42	44	48	45	48	49	44	46	42	35	28	24	28	22
L Q	E B 14	E B 14	E B 14	E B 13	E B 13	E B 14	G	G 25	29	34	38	39	G 40	G 39	G	G 36	36	33	26	18	18	18	E B 16	E B 16

AUG. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	11	13	13	13	14	14	14	14	14	21	24	32	30	25	22	22	20	16	16	13	13	13	13	13
2	14	14	14	14	14	14	14	14	14	17	16	19	20	20	20	20	20	17	16	14	14	14	14	14
3	14	14	14	13	13	13	16	15	15	15	15	15	20	19	19	18	17	15	15	15	12	11	11	11
4	12	12	12	12	12	15	15	15	15	15	14	15	21	20	27	18	15	15	12	10	14	14	14	14
5	14	14	14	14	14	14	14	15	15	15	15	15	23	25	25	23	21	16	16	14	16	15	15	15
6	14	14	14	15	15	15	15	12	12	12	15	18	34	24	20	20	20	16	16	15	15	15	15	15
7	15	15	14	14	14	13	13	12	12	12	15	17	16	22	22	18	15	15	15	15	15	15	15	15
8	15	15	15	15	15	14	11	11	11	20	18	27	27	25	21	23	16	15	11	12	12	12	12	16
9	12	12	13	13	13	10	10	12	11	18	18	19	20	20	16	16	16	16	15	15	14	14	14	14
10	15	15	15	13	14	14	14	12	12	12	12	14	27	30	23	19	14	11	15	13	12	12	12	12
11	16	16	16	16	16	15	15	13	13	13	13	16	22	21	21	24	20	16	15	15	15	15	15	15
12	12	12	12	12	15	15	14	14	14	14	14	30	36	29	24	22	18	17	16	13	12	12	12	12
13	12	12	12	12	12	12	12	14	14	14	16	19	28	22	24	24	21	15	16	15	13	13	13	14
14	15	15	15	15	15	15	12	12	13	13	15	17	16	15	15	15	16	15	15	15	14	14	14	14
15	12	12	14	14	14	14	12	11	11	11	17	20	19	20	20	19	14	12	12	12	12	12	12	12
16	12	12	12	12	12	12	12	12	16	16	16	25	25	25	25	22	15	15	15	16	16	12	12	12
17	11	11	11	11	11	11	11	11	13	16	19	18	18	22	22	18	14	14	14	14	14	14	14	14
18	13	13	13	13	13	13	14	14	14	14	19	19	19	27	22	18	18	14	14	14	14	14	14	14
19	11	11	15	15	15	15	15	15	15	17	16	20	20	22	22	22	15	15	15	14	14	14	14	14
20	15	16	16	16	16	16	14	14	14	14	16	22	23	24	24	24	18	18	14	14	14	14	14	14
21	14	14	14	14	13	13	13	13	16	16	17	21	20	24	26	22	21	16	15	14	14	14	14	14
22	13	12	12	12	12	12	12	12	14	14	22	22	22	25	41	18	16	16	16	13	12	13	14	14
23	14	14	14	14	14	14	14	16	15	17	19	21	25	19	18	18	14	15	15	14	14	14	14	14
24	14	14	14	14	14	14	14	13	12	15	16	20	27	21	20	18	20	16	15	14	14	14	17	14
25	12	12	11	11	11	13	15	15	15	15	16	20	32	34	22	18	17	17	17	14	14	14	14	14
26	14	14	14	14	14	14	14	12	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	26	26	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
MED	14	14	14	14	14	14	14	13	14	15	16	19	22	22	22	19	17	15	15	14	14	14	14	14
U Q	14	14	14	14	15	15	14	14	15	16	18	22	27	25	24	22	20	16	16	15	14	14	14	14
L Q	12	12	12	12	13	13	12	12	12	14	15	17	20	20	20	18	15	15	14	13	12	12	12	14

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	F 257	F 283	F 273	F 289	F 276	F 291	315	332	R 366	368	310	R 304	294	298	297	309	309	310	315	337	313	332	283	296
2	F 276	278	295	284	F 291	323	330	346	317	H 312	U R 335	281	297	296	314	302	315	297	288	308	R 314	308	294	283
3	293	289	298	305	323	338	328	357	349	334	317	306	J R 307	294	286	287	303	308	328	324	296	295	295	F 286
4	F 288	F 276	F 294	F 300	F 317	F 343	331	328	351	309	308	293	279	304	285	289	295	307	336	324	286	R 294	A	A
5	F 280	297	319	271	269	287	341	336	267	R	298	298	U R 271	299	288	304	296	299	311	316	293	287	305	297
6	295	294	301	289	290	F 295	342	326	361	A	R 290	U R 237	287	287	312	294	288	322	329	U R 318	296	290	304	F 270
7	296	293	291	299	306	306	319	347	330	U A 312	281	R 315	296	288	295	300	304	310	316	294	307	323	290	F 295
8	294	F 274	285	286	295	341	333	330	Z 326	R 298	278	R 303	308	319	276	288	293	296	A	334	344	313	F 266	F 285
9	F 280	F 283	F 274	F 272	F 288	286	318	338	321	322	302	311	287	U R 294	R 317	R	R 322	303	R	A	316	330	287	F 284
10	F 302	F 317	F 314	F 304	303	F 303	329	336	342	349	A	324	294	314	291	307	303	313	312	349	336	294	295	314
11	318	291	295	322	338	291	A	350	354	289	313	326	312	300	315	313	306	302	R 305	R 350	J R 350	320	296	288
12	308	286	296	311	328	F 301	342	359	357	370	347	305	301	305	287	292	291	R 311	R 315	U R 344	316	293	296	F 316
13	F 295	F 295	F 305	F 339	290	F 279	311	344	359	371	328	306	297	286	291	294	289	296	306	328	329	315	283	J R 298
14	U R 304	291	R 310	298	R 286	288	322	346	361	V 335	344	301	287	291	295	305	310	323	316	328	310	301	269	277
15	277	294	291	308	301	311	339	329	369	356	298	309	292	293	304	304	305	305	319	331	296	292	269	299
16	297	302	296	274	272	302	355	343	336	288	290	311	317	281	291	290	R 328	340	327	297	R 297	275	293	282
17	282	287	288	288	282	292	316	317	333	330	307	307	U R 319	301	R 300	303	R 313	306	318	319	311	296	278	277
18	284	292	315	320	298	298	344	355	345	329	306	318	300	R 328	A	R 316	R	R	349	351	288	A 276	R 288	291
19	290	301	290	303	300	320	345	358	347	347	327	316	305	303	305	U R 309	308	325	335	348	302	293	285	303
20	292	294	287	298	296	317	349	358	345	352	326	308	300	315	311	304	302	R 315	R	330	323	308	290	286
21	275	286	309	F 329	316	332	331	341	370	357	320	302	308	303	283	290	308	R 313	J R 398	360	274	259	259	275
22	265	275	286	288	277	285	336	368	337	322	316	310	300	283	292	316	310	U R 323	R	R 323	360	272	273	269
23	275	277	288	301	321	308	329	323	338	338	302	299	298	U R 315	300	R 303	323	R 312	323	325	314	282	284	284
24	277	288	302	296	303	305	338	339	333	360	344	286	283	U R 303	R 304	R	307	291	303	303	306	265	F 297	309
25	292	282	285	293	305	310	319	340	339	339	317	312	304	310	311	305	A	A 308	317	317	328	320	284	280
26	291	291	294	332	276	276	333	342	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	25	26	25	23	24	25	25	25	24	23	23	24	21	24	25	25	24	24
MED	290	290	294	298	297	302	331	342	345	335	312	306	298	300	296	303	306	309	317	326	311	294	288	286
U Q	295	294	302	308	306	317	342	350	358	356	326	312	306	308	308	307	310	314	328	340	326	314	295	298
L Q	277	283	288	288	286	291	320	332	333	312	300	300	290	292	290	292	296	302	312	318	296	284	280	281

AUG. 2013 M(3000)F2 (0.01)

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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							A	L	381	L	L	396	391	394	385	370	381	L 360	U L 320					
2								L	L	L	L	379	A	A	A	A	A	A	L	A				
3								L	U L 380	419	397	392	369	373	350	H 370	A 366	A	L					
4								L	U L 389	L 372	A	U R 382	U R 412	378	A	381	389	A						
5							L		338	368	A	370	A	392	U R 382	A	357	L 352	U L 350					
6								L	A	A	388	391	365	R	360	363	365	L	A					
7								L	A 391		L 359	R 403	407	410	398	375	357	362	L 340	L				
8							L	L	L	395	A	417	A	407	A	357	341	A 346	A					
9								A	A	A	L 387	A	381	U R 398	A	A	A	A	A	A				
10								U L 371	A	A	A	A	L 343	A 343	A 340	356	A	L 340	L					
11							A	L	R	A	374	A	A	L 384	384	384	371	L 347	R					
12									407	422	L 404	A 346	A	A 348	A	367	A	A	A					
13								L	A	A	U L 405	397	L 394	374	A 354	A	A	A	A					
14								L	L			A	378	388	369	A 351	A 345	A	L					
15								L	L	U L 384	L	L 359	U L 371	363	A	392	A 364	L 364	L					
16							L 361			H 340	U L 378	360	Y 357	U L 338	395	A 353	A	A	L					
17									U L 369	L 409	L	374	A	374	U L 352	A	L 345	L	L					
18								L	L	A	L	L 405	406	Y	A	A	A	A	L					
19								L	L	L 389	L	L 394	382	373	373	L	U L 363	L	L					
20									U L 375	U L 415	L 395	L 408	L 378	L 389	378	384	A 348	L 345	L					
21								L	A	L	L 394	L 374	U L 355	L	Y 339	A	A	U L 332	L					
22							L	L	L	U L 432	L 382	L 364	L 381	381	365	L 355	364							
23								L	L	L	L	U L 365	U R 361	364	359	L 341	U L 352	U L 345	L					
24								L	A	401	L	L	A 345	356	L	L 367	L	L	L					
25									L	U L 372	L 400	U L 377	L	L	U L 360	L	A	A	L					
26									C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	1	8	13	12	20	18	20	17	16	15	10	3					
MED							L 361	U L 371	380	L 395	L 391	380	378	376	365	367	363	L 346	U L 340					
U Q									390	417	L 398	396	391	390	383	378	366	L 360	U L 350					
L Q									U L 372	372	L 380	368	361	364	353	356	348	L 345	U L 320					

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AUG. 2013 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							A 276	276	234	240	L 320	360	374	346	336	334	316	310	306					
2								250	286	286	292	376	324	324	318	A 322	316	350	328	A 314				
3								264	264	302	302	310	326	326	350	344	320	308	276					
4								266	248	298	326	352	398	334	334	334	300	300						
5							254		472	474	386	380	E A 486	360	360	324	324	324	294					
6								272	260	A	382	Y	370	348	316	314	338	298	266					
7								256	258		356	310	364	364	352	336	306	298	298	280				
8							262	250	248	278	308	308	308	300	358	356	346	336	A					
9								268	278	282	300	322	348	344	326	324	308	E A 314	A	A				
10								250	250	A 276	A	314	336	308	310	310	310	276	272					
11							A	242	242	E A 424	330	330	330	330	330	320	320	310	272					
12									252	250	270	394	356	346	370	356	344	308	282					
13								268	256	A 256	286	348	348	382	360	336	336	320	280					
14								252	246			340	366	366	360	334	286	268	268					
15								244	244	266	312	326	332	350	346	298	298	298	280					
16							214			386	342	308	306	366	366	354	278	256	248					
17									270	270	270	326	314	320	320	320	318	292	270					
18								246	252	252	278	304	304	304	A	A 314	300	274	242					
19								240	240	256	256	294	316	316	316	316	292	286	256					
20									258	256	294	300	312	312	312	312	312	296	250					
21								260	240	240	288	344	330	330	338	338	320	312	252					
22							246	234	234	244	270	296	330	356	338	314	300							
23								L 260	260	260	260	316	316	308	318	314	288	288	278					
24								254	254	246	272	L 364	362	350	320	306	286	286	282					
25									250	252	264	280	306	306	306	306	A	A	284					
26									C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	19	24	22	23	24	25	25	24	25	24	23	21	2				
MED							254	254	252	260	294	324	330	334	335	322	311	298	276	297				
U Q							269	266	260	286	326	350	363	353	355	336	320	312	283					
L Q							230	246	245	252	270	308	315	314	318	314	299	286	261					

AUG. 2013 h'F2 (KM)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	Q 316	316	316	286	Q 280	280	A	224	224	222	A 222	208	204	204	204	204	204	208	238	238	238	E A 304	314	292
2	302	288	284	A 318	318	254	254	222	H 180	180	186	188	A	A	A	A	A	A	A	A	256	246	266	266
3	274	274	274	274	240	230	230	222	222	210	182	182	E A 258	230	208	H 206	E A 250	A	A 260	248	250	252	276	296
4	298	298	298	274	236	236	A 262	226	226	200	A	236	220	220	A	202	212	A	260	226	232	A 312	A	A
5	300	272	252	302	310	304	244	244	222	222	A	222	A	222	222	A	222	222	A 242	242	252	252	252	252
6	286	286	286	286	286	280	260	A	A	A	204	204	A 230	190	A 230	230	A 236	A	A	250	270	280	274	322
7	256	A 304	302	284	284	284	A 250	234	A 234	A 270	242	172	184	184	184	204	204	204	218	232	240	240	240	282
8	290	A 320	296	278	278	252	240	234	232	204	A	202	A	216	A	234	234	A	A	270	248	244	282	302
9	290	306	A 340	314	314	314	244	A	A	A	208	A	208	208	A	A	A	A	A	A	262	252	310	310
10	250	250	250	250	250	250	250	228	A	A	A	A	A 228	E A 244	A	212	A	212	226	226	244	244	248	248
11	246	268	248	248	236	340	A	246	246	A	218	A	A	198	198	198	224	224	268	244	244	244	244	266
12	274	274	296	252	236	260	240	240	A 200	200	200	A	A	A	A	200	A	A	A	228	252	280	294	292
13	284	292	292	260	260	278	258	236	A	A	A 234	208	208	A 260	E A 260	A	A	A	A	260	260	226	288	288
14	260	262	262	274	274	274	254	236	A 236	236	252	A	234	228	236	A	A	A	236	236	236	236	262	272
15	274	274	274	260	256	256	246	216	216	200	200	200	214	214	A	214	A	E A 230	236	236	236	250	264	264
16	256	256	256	284	300	286	238	238	206	H 190	190	218	Y	E A 288	232	A	A	A	224	228	242	258	258	284
17	304	306	290	290	290	272	272	254	212	212	212	212	A	212	212	A	A 244	250	250	248	240	240	280	298
18	284	284	246	230	244	252	228	228	228	A	E A 228	212	212	A	A	A	A	A	A	212	A 290	A	300	300
19	296	278	278	276	284	264	240	218	206	206	212	212	220	220	220	220	220	A 232	242	234	234	238	254	254
20	270	274	A 292	292	292	266	226	226	218	214	214	202	202	202	202	202	E A 278	224	224	224	224	224	A 308	308
21	296	296	278	252	250	268	248	232	A	214	214	214	A	A	Y	A	A	234	236	216	216	322	322	318
22	326	326	304	304	292	286	234	232	210	210	210	210	224	224	224	224	224	E A 304	A	308	248	248	302	328
23	286	286	286	252	248	248	244	236	236	226	210	H 176	210	210	A 216	216	224	224	228	228	238	260	262	292
24	282	288	276	274	260	258	246	234	A	A 216	A 244	198	A	210	A	210	210	214	242	244	244	A 328	240	262
25	278	284	284	264	264	264	258	246	A 236	E A 242	A 210	210	A	A	210	210	A	A	254	254	246	242	312	306
26	268	268	268	212	286	286	250	250	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	26	26	26	24	24	19	19	21	20	15	20	15	16	14	13	17	23	25	24	24	24
MED	284	285	284	274	276	267	246	234	222	211	211	208	213	213	214	210	222	223	238	236	244	248	275	292
U Q	296	298	296	286	290	284	254	239	A 234	222	A 225	212	A 228	226	230	218	A 236	233	252	248	252	270	301	304
L Q	270	274	268	252	250	254	240	226	210	200	202	199	208	206	204	203	212	213	227	228	237	241	256	266

AUG. 2013 h′F (KM)

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IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	A							112	112						
2							A	A	A	106	A	112	112	112	112	112	112	112	112					
3							112	112	112		112	112	112	108	106	106	106		A					
4							A	112			112	112			A				A					
5								104	A		A	A	104		A	A		108	108	A				
6								108	108	108					108	108	108	108		B				
7							A	A				116		114	114	114	116	116		B				
8												A	A	A		A	114	114	114	A				
9							A						106	106	106	A				A				
10							120		120	114	A	A	A	A										
11						A	A	112	112	112	112	112	112	112	108	108	108		A	A				
12							A	100	100	116	114			114	114	114	114	114	114					
13							A	112	A							112	A	112		B				
14							B	122	122	124	108	108	108	108	108		A	A	A					
15						B	B 160	A		A	A		A	A		106	106	106						
16							148	120	A	A	A	A	A	118	116	110	110	110	110					
17							A	132		100	100	102	A	102	A		A	A		B				
18							B	104	104	A	104	104	104	104	A	A		104	104	A				
19							120	120	120	112	112	112	112	108	A	108	108	108	A					
20							130	114	114	114	A		A	110	110	110	110		A					
21							A	A	A		110	A		110	A	110	110							
22							112	110	110	110	A	A	A	A	B	110								
23							134	134	106	106	A	106	106		106	106	106	106	A					
24							A 114	114	114	A		A	A	A	A		114	114						
25								108	108	108	108	108	A			106	106	106	106					
26							B	110	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	18	13	12	10	11	9	13	11	15	16	15	7					
MED							120	112	112	111	111	112	108	110	108	110	110	110	110					
U Q							141	120	117	114	112	112	112	113	114	112	113	114	114					
L Q							113	108	107	107	108	106	105	107	106	106	107	106	106					

AUG. 2013 h′E (KM)

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	126	126	126	112	112	112	112	112
2	110	110	110	106	106	106	102	102	102	156	146	152	136	130	124	124	124	124	120	112	112	112	108	108
3	90	90	90	90	90	92	170	142	116	116	G	116	116	G	96	G	G	118	118	100	112	B	112	112
4	94	114	96	94	94	94	94	166	164	136	102	102	102	102	102	102	94	122	118	116	112	112	112	112
5	106	106	108	108	B	B	108	108	108	108	126	126	126	124	102	100	100	110	110	110	110	B	B	110
6	104	B	104	104	B	B	104	104	104	104	104	104	104	104	104	122	122	122	120	110	110	106	106	106
7	104	104	104	104	104	104	104	108	108	108	108	146	98	98	98	190	100	130	116	112	112	112	112	112
8	108	108	100	100	98	98	118	116	114	110	110	110	110	110	110	110	140	126	124	108	108	108	92	110
9	106	106	106	106	106	106	106	106	106	106	106	106	126	126	164	140	132	130	130	128	128	116	116	116
10	96	96	96	96	B	96	118	118	118	110	110	108	108	108	118	106	106	106	92	92	92	92	92	92
11	B	B	B	B	112	136	134	130	120	120	G	120	120	120	G	120	146	146	132	114	114	114	106	104
12	B	104	104	104	104	104	118	164	124	124	120	116	112	156	120	126	122	122	114	112	112	112	106	106
13	112	112	112	110	108	108	108	108	108	108	108	116	110	116	134	128	128	124	120	120	108	108	108	108
14	112	110	106	B	B	106	136	136	136	126	120	120	G	120	114	114	100	100	100	100	100	102	102	B
15	B	84	84	104	104	B	G	104	104	104	106	106	106	104	102	126	124	124	122	112	100	100	100	100
16	102	B	102	B	110	106	G	106	106	108	170	104	134	130	120	118	118	114	114	110	110	110	B	110
17	114	B	B	B	B	B	108	108	108	G	G	G	104	G	100	100	100	100	100	106	106	106	106	106
18	102	102	B	B	102	90	124	124	120	120	110	110	110	110	116	116	126	126	126	110	110	110	110	110
19	110	110	110	110	104	104	G	104	120	120	120	134	134	134	92	136	120	120	114	104	104	104	B	B
20	B	B	100	100	100	B	G	138	130	110	110	110	110	120	120	120	120	120	102	102	102	102	102	98
21	92	108	108	110	110	108	108	104	92	92	118	100	100	136	100	100	100	110	110	110	110	B	110	110
22	102	102	102	B	102	B	G	G	152	152	102	102	102	102	B	G	102	102	102	102	102	102	102	102
23	106	104	98	B	B	B	G	126	124	124	112	112	112	112	102	148	128	132	120	120	118	118	112	112
24	94	B	94	B	B	94	94	114	114	114	112	112	112	100	102	102	102	162	94	102	102	102	108	104
25	98	B	B	B	B	B	132	132	126	120	114	114	114	114	114	98	112	124	124	112	112	106	106	106
26	100	98	B	B	B	B	134	134	C															
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	19	21	16	17	17	20	25	25	24	22	24	24	23	23	23	24	25	25	25	25	22	22	23
MED	104	106	104	104	104	104	108	114	114	112	110	111	110	114	108	118	120	122	118	110	110	108	107	108
U Q	108	110	108	108	108	107	128	133	124	122	120	118	118	126	120	126	126	126	123	112	112	112	112	112
L Q	98	102	97	100	101	95	105	106	107	108	108	106	105	104	102	102	101	112	106	103	103	102	102	104

IONOSPHERIC DATA STATION Yamagawa

AUG. 2013 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 13	FF 13	FF 22	FF 12	F 2	F 3	C 4	C 2	C 1	C 1	C 1	C 1	C 1	L 1	L 1	L 1	C 1	C 1	C 3	C 3	F 3	FF 42	FF 32	F 2
2	F 2	F 2	F 3	F 4	F 2	F 2	L 3	L 2	L 1	HL 11	HL 11	HL 11	C 1	C 1	C 4	C 1	C 2	C 2	C 4	L 3	F 4	F 3	F 5	F 2
3	F 3	F 3	F 3	F 3	FQ 21	F 1	H 1	H 1	C 2	C 1		C 1	C 1		L 1			CL 22	C 4	L 1	FF 11		F 4	F 3
4	FF 22	FF 22	F 2	F 2	F 1	F 3	L 3	HL 12	HL 12	HL 11	C 1	C 2	LF 22	C 2	L 3	L 1	L 3	CL 23	CL 23	CL 43	F 2	F 4	F 6	F 8
5	F 3	F 1	FF 11	F 1			C 2	C 2	C 2	C 2	CL 21	CL 11	C 1	C 1	L 1	L 2	L 1	CL 11	C 2	C 3	F 2			F 2
6	F 1		F 3	F 3			C 2	C 2	C 4	C 3	C 1	C 1	C 1	C 1	C 1	C 1	C 1	C 2	C 3	C 3	F 4	F 3	F 3	F 3
7	FQ 31	F 3	F 5	F 2	F 2	F 3	F 4	C 2	C 2	C 2	L 2	H 1	L 1	L 1	L 1	HL 11	L 1	CL 11	CL 22	L 2	F 1	F 4	F 2	F 4
8	F 3	F 3	F 2	F 2	F 2	L 2	CL 11	C 2	C 2	C 2	C 2	L 1	L 1	L 1	L 2	L 2	C 2	C 2	C 4	F 4	F 3	F 2	F 2	FF 32
9	FF 32	FF 32	F 6	F 2	F 2	F 2	L 2	L 3	L 4	L 2	L 1	L 1	C 1	C 1	HC 11	HC 21	HC 31	CL 21	CL 84	CL 84	FFQ 22	FF 13	F 4	F 4
10	F 2	F 2	F 1	F 2		F 1	C 2	CL 21	C 2	C 2	C 3	L 2	L 1	L 1	CL 11	L 1	L 2	L 2	L 3	F 3	F 3	F 2	F 1	F 1
11					F 2	CL 21	CL 41	CL 21	CL 41	C 2		C 1	C 1	C 1		CL 11	H 1	HL 11	CL 53	C 3	FQ 11	F 3	F 1	F 1
12		F 2	F 2	F 1	F 3	F 1	L 1	H 1	C 1	CL 11	CL 11	L 1	L 2	H 1	C 1	C 1	C 1	C 2	C 4	C 4	F 4	F 4	F 4	F 3
13	FF 22	FF 23	F 4	F 4	F 4	F 2	L 3	L 2	L 3	CL 22	L 1	CL 11	L 1	CL 11	CL 11	CL 11	CL 11	CL 22	C 4	C 4	FF 62	FF 22	F 3	F 2
14	FF 12	F 2	F 2			F 1	C 1	C 2	C 2	C 2	C 1	C 1		C 1	C 1	C 2	L 4	L 6	L 5	F 5	F 6	FF 13	F 2	
15		F 1	F 2	FF 11	F 2			L 2	L 1	L 1	L 1	L 1	L 1	L 1	L 1	HL 11	CL 11	CL 12	CL 12	L 1	L 1	L 1	F 2	F 2
16	F 1		F 1		F 2	F 2		L 1	L 1	L 1	HL 11	L 1	HL 11	CL 11	CL 11	C 2	C 2	C 2	C 2	LC 31	F 3	F 3		FF 11
17	FF 11						L 2	L 1	L 2				L 2		L 1	L 3	L 3	L 2	L 3	LLQ 13	F 1	F 3	F 3	F 2
18	F 1	F 1			F 1	F 2	CL 11	C 1	C 1	C 1	C 1	CL 11	CL 11	CL 11	CL 31	CL 21	CL 12	C 2	C 3	L 2	F 4	F 3	F 3	F 4
19	FF 13	FF 13	F 2	F 1	F 3	F 1		L 2	CL 12	C 1	C 1	C 1	CL 11	CL 11	L 2	C 1	C 1	C 1	C 2	F 2	F 4	F 3		
20			F 5	F 2	F 1			H 1	C 2	C 1	C 1	C 1	L 1	C 1	C 1	C 1	C 2	C 1	C 2	L 2	F 3	F 3	F 3	F 2
21	F 1	FF 21	F 3	F 2	F 2	F 5	L 3	L 3	L 2	L 2	CL 11	L 2	L 2	CL 11	L 1	CL 11	CL 11	CL 21	CL 22	FF 21	F 1		F 3	F 2
22	F 1	F 2	F 1		F 1				H 1	H 1	L 1	L 1	L 1	L 1			L 1	L 4	L 5	L 5	FF 23	F 2	F 2	F 6
23	F 1	F 2	F 1					CL 11	CL 11	C 1	C 1	C 1	C 1	CL 11	L 1	CL 11	CL 11	HL 11	C 2	FF 12	FF 41	F 1	F 1	F 2
24	F 2		F 1			F 1	L 1	CL 11	C 2	C 1	C 1	C 1	L 2	L 2	L 2	L 1	L 1	H 1	L 3	LL 41	F 2	F 6	F 1	F 4
25	F 3						C 1	C 2	C 1	C 1	C 1	C 1	C 1	C 1	L 1	L 1	C 2	C 3	C 4	F 6	F 3	F 3	F 3	F 2
26	F 1	F 1					C 1	C 1																
27																								
28																								
29																								
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 85	80	X 76	67	62	57	58														X 88	X 75	X 75	X 78
2	X 77	77	76	72	73	X 69															X 97	X 89	X 80	X 78
3	X 76	X 80	X 84	X 78	67	56															X 86	X 92	X 93	X 81
4	X 76	X 79	X 89	X 86	X 67	X 52															X 80	X 81	X 76	X 69
5	A	X 62	60	57	57	66															X 90	X 87	X 87	X 78
6	X 72	X 72	X 55	X 52	X 48	X 50															76	X 74	X 68	X 66
7	70	X 72	X 70	X 66	X 56	X 48							Y								X 104	X 74	X 64	X 62
8	X 65	X 66	X 63	X 58	X 62	X 57															X 97	X 69	A	X 63
9	X 63	X 61	X 61	X 58	56	54															X 110	X 66	63	67
10	70	72	80	X 73	X 66	X 62															X 142	X 123	X 112	X 112
11	X 114	X 90	X 88	X 88	X 60	X 48															X 128	X 115	X 112	X 107
12	X 111	X 109	X 114	X 98	X 80	X 65															X 90	X 82	X 75	X 76
13	X 76	X 74	X 77	X 76	X 68	X 65															X 118	X 106	X 92	X 98
14	X 108	X 101	X 87	X 64	X 61	X 64															X 90	X 84	X 82	X 79
15	X 80	X 82	X 80	X 73	X 65	X 50															X 103	X 98	X 89	X 86
16	X 84	X 68	X 64	X 60	X 57	X 68															X 99	X 86	X 72	X 68
17	X 68	X 68	X 72	X 62	X 58	X 58															X 110	X 103	X 104	X 102
18	X 86	X 80	X 80	X 60	X 54	X 49															X 100	X 112	X 111	X 108
19	X 94	X 81	X 75	X 71	X 60	X 58															X 121	X 137	X 132	X 129
20	X 111	X 88	X 81	X 70	X 69	X 64															X 111	X 92	X 85	X 86
21	X 84	X 81	X 80	X 77	X 72	X 71															X 97	X 75	X 69	X 68
22	X 69	X 69	X 73	X 66	X 70	X 67															X 88	X 70	X 67	X 67
23	X 69	X 70	X 70	X 71	X 59	X 46															X 108	X 100	X 92	X 86
24	X 78	X 71	X 69	X 67	X 64	X 60															X 118	X 98	X 78	X 85
25	X 80	X 73	X 74	X 66	X 63	X 55															X 96	X 74	X 65	X 65
26	X 64	X 68	X 67	X 56	X 50	X 48															X 118	X 110	X 87	X 83
27	X 88	X 88	X 99	X 80	X 58	X 52															X 104	X 95	X 92	X 85
28	X 95	X 105	X 96	X 98	X 70	X 60															X 91	X 81	X 71	X 75
29	X 66	X 72	X 70	X 66	X 46	X 40															X 106	X 87	X 78	X 72
30	X 70	X 66	X 61	X 59	X 52	X 50															X 90	X 73	X 71	X 70
31	X 68	X 69	X 75	X 54	X 55	X 54															X 78	X 73	X 66	X 63
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	1														31	31	30	31
MED	X 76	X 73	X 75	X 67	X 61	X 57	58														X 99	X 87	X 79	X 78
U Q	X 86	X 81	X 81	X 76	X 67	X 64															X 110	X 100	X 92	X 86
L Q	X 69	X 69	X 69	X 60	X 56	X 50															X 90	X 74	X 71	X 68

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 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 78	F 71	70	F 57	F 54	F 48	F 50	85	86	64	65	75	88	96	108	99	84	82	A	A	82	69	R 69	72
2	71	F 68	F 66	F 67	F 66	63	56	63	R 61	75	64	73	92	95	83	79	75	82	93	94	91	83	75	72
3	70	74	78	72	F 58	F 48	56	71	66	68	76	R 80	83	90	104	106	110	116	112	96	80	86	87	75
4	R 70	J R 73	83	80	61	46	R 44	61	69	J R 63	74	J R 69	80	R 89	105	114	119	126	114	89	74	75	70	63
5	A	R 56	F 53	F 50	F 50	F 60	67	A	A	62	67	J R 70	A	75	92	102	101	108	104	87	84	81	81	72
6	66	66	49	46	42	44	54	66	72	62	A	A	A	90	96	92	89	90	87	79	F 70	68	62	60
7	F 63	66	64	60	50	42	52	70	70	65	R 66	73	Y	91	90	91	94	87	83	93	98	68	58	R 56
8	59	60	57	52	56	51	52	69	77	67	75	98	108	R 109	109	110	107	108	120	114	91	63	A	58
9	57	55	55	52	F 48	F 46	54	62	71	76	68	72	95	117	129	134	131	132	130	117	104	60	F 56	F 61
10	F 61	F 65	73	67	60	56	60	60	68	70	70	J R 80	103	J R 124	R 144	141	R 150	J R 154	U R 144	140	136	117	106	106
11	108	J R 84	J R 82	R 81	54	R 42	50	76	67	J R 62	J R 68	75	90	R 100	114	124	130	U R 142	R 143	R 137	122	109	106	101
12	R 105	103	108	92	R 74	59	64	82	84	65	70	68	75	80	84	97	111	116	119	102	84	78	69	70
13	70	68	71	R 70	62	59	72	97	61	67	61	A	66	73	R 86	97	106	113	119	U R 119	112	100	R 86	92
14	102	95	81	58	55	58	72	94	61	65	67	67	77	87	J R 100	112	114	102	100	99	84	79	76	73
15	74	76	74	67	59	44	50	71	78	69	68	77	86	87	95	102	106	116	107	102	97	92	83	80
16	78	62	58	54	51	R 62	54	60	65	63	81	101	104	94	106	119	R 138	123	120	110	93	80	66	62
17	62	62	66	56	52	52	52	70	72	R 82	87	90	92	104	J R 106	112	120	126	128	126	104	97	98	96
18	80	74	74	54	48	43	50	71	74	82	82	89	94	106	109	114	132	J R 151	125	J R 105	94	R 106	R 105	102
19	88	75	69	65	54	52	R 54	68	79	67	72	82	103	113	113	119	124	123	124	112	115	131	R 126	R 123
20	R 105	82	75	64	63	58	58	69	74	74	72	77	88	103	98	99	116	128	130	125	J R 105	86	79	80
21	R 78	75	74	71	R 66	65	69	86	73	68	76	80	93	97	97	108	125	135	136	113	91	69	63	62
22	63	63	67	60	64	61	68	73	68	77	91	85	86	95	106	115	110	100	101	102	82	R 64	61	61
23	63	64	64	65	53	40	50	80	91	88	83	94	121	137	138	U R 148	R 150	R 142	138	132	R 102	94	86	80
24	72	65	63	61	58	54	56	73	88	82	H 72	76	90	114	128	134	134	124	124	128	112	92	72	79
25	74	67	68	60	57	49	51	73	89	84	80	85	100	104	107	107	104	96	98	105	90	R 68	59	59
26	58	62	61	50	44	42	47	84	84	76	74	86	96	103	100	94	88	93	102	110	112	R 104	R 81	R 77
27	82	R 82	93	R 74	52	46	55	70	82	68	69	81	R 100	104	118	116	107	118	116	106	98	89	R 86	79
28	89	99	90	92	64	54	52	92	69	70	63	72	90	104	104	97	99	100	93	94	85	75	65	69
29	60	66	64	60	40	34	45	81	69	65	66	81	96	112	116	102	99	106	105	99	100	81	72	66
30	64	60	55	53	46	44	46	71	81	69	74	74	77	92	92	92	98	103	106	R 84	84	67	65	64
31	62	63	69	48	49	48	51	75	75	61	74	78	95	101	85	89	113	113	104	86	72	67	60	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	30	31	31	31	31	31	31	30	30	31	30	29	28	31	31	31	31	31	30	30	31	31	30	31
MED	70	67	69	60	54	49	54	71	72	68	72	78	92	100	105	107	110	116	115	105	93	81	74	72
U Q	80	75	75	70	61	58	58	81	81	76	76	85	98	106	113	116	125	126	125	117	104	94	86	80
L Q	63	63	63	54	50	44	50	69	68	65	67	73	86	90	95	97	99	100	102	94	84	68	65	62

AUG. 2013 foF2 (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

AUG. 2013 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	528	A	512	508	492	492	A	A	A	A				
2								L	L	UL480	500	R484	A	512	A	UL520	UL492	456	UL408					
3									A	L	UL524	A	UR524	B	UL488	500	476	456	396					
4									UL448	L	480	L	A	UR504	488	R476	464	468	L					
5								A	A	472	492	492	A	A	496	472	L468	452	372					
6								L	L	UL512	A	A	A	512	A	A	472	L436		L				
7								L	L	UL516	UR492	524	Y	496	UR516	492	R472	L	L412					
8								L	L	L	R488	488	L	R504	A	484	484	444	L					
9										L	L	UL484	R528	496	496	492	UL484	L460	UL400					
10										A	A	A	496	A	492	UL524	L484	L480	L					
11								L	L	L	UL536	B	UL504	A	UA532	A	504	456	L					
12								L	L	L	UL504	R532	520	504	A	480	A	A	388					
13							L		L	L484		A	528	488	A	A	A	A	A					
14											UL504	L	R520	516	484	516	476	436	L					
15								L	L	L	UL520	UL524	UL528	L540	L536	UA504	UL508	UL468	A					
16									L	L	L508	L504	UL520	L	R528	488	A	L						
17										L	UL504	UL492	548	UR508	L524	504	UL496	L						
18										UL536	UL544	UL540	L	A	A	A	508	L464						
19									L	L	L	L	UL540	UL540	UL532	L524	UL500	L						
20									L	L	UL532	UR524	A	A	A	A	504	A	L					
21									L	L	L	UL560	524	L524	L560	532	L528	A						
22									L	L	L	552	UL540	UY564	500	492	A	L						
23								L	L	L	L	A	UL568	L	L	A	A	A						
24									L	L	UL508	L	UL560	A	UL552	L544	UL504	UL460	L					
25									L	UL484	L	L	UL528	544	UL536	L532	UL536	A						
26								L	L	L		L552	552	544	UL520	UL536	UL484	L	L					
27									L	L	UL548	UL536	B	UL544	524	512	L476	UL456	L					
28								L	L	L		UL544	UL544	532	508	UL488	UL488	L						
29										UL456	L	504	L	520	R492	A	A	A	A					
30								L	L	L	UL476	UL512	B	B	UR500	L496	UL492	L	L					
31									L	UL492	UL508	UL512	UL524	496	UL508	UL536	472	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	9	19	19	20	21	23	24	24	14	6					
MED									UL448	UL484	UL508	UL524	U528	512	508	502	L486	456	398					
U Q										UL514	UL528	UL540	UL542	540	UL532	L524	L504	L464	L408					
L Q										UL476	492	492	520	504	492	490	476	452	388					

AUG. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 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	272	A	A	A	A	A	A	U R 368	A	348	304	U A 240	A				
2							A	A	R 328	A	A	R	U R 396	A	R	B	340	300	U A 240	A				
3							A	260	316	340	B	A	B	B	B	U R 360	328	R 292	252	A				
4							A	280	312	336	A	U R 404	B	U R 420	U R 384	U R 348	U R 376	312	244	A				
5							A	216	A	A	A	A	A	A	A	R	U R 340	296	236	A				
6							A	A	U A 284	A	A	A	A	A	A	A	U A 340	A	A	A				
7							A	240	A	A	A	A	B	B	B	R 360	344	U A 308	A	A				
8							R 160	A	A	A	A	A	A	A	A	A	U R 344	300	240	A				
9							A	A	A	A	A	A	U R 384	U A 436	R 376	B	A	A	236	A				
10							184	U A 216	300	336	U A 348	B	U A 432	A	A	A	A	296	A	A				
11							A	240	A	U R 288	U R 368	B	B	B	U R 372	A	A	A	A	A				
12							188	252	320	R 340	R	B	B	B	U R 388	B	R 340	304	236	A				
13							A	252	312	A 340	A	A	A	A	B	A	344	304	U A 224	A				
14							B	U A 240	U R 288	U R 348	U R 352	B	U R 420	B	B	R 372	U R 372	A	A	A				
15							176	A	A	A	A	A	A	U R 408	U R 404	A	U A 344	U A 308	240	A				
16							B	228	R	R	B	B	B	B	B	R 368	A	284	A	A				
17							B	240	304	352	U R 364	B	B	A	A	U R 368	B	304	U A 296	A				
18							A	U A 248	308	U A 352	B	B	B	B	B	A	R 356	304	A	A				
19							A	260	304	R 356	A	B	B	B	B	B	U A 360	308	A	A				
20							B	252	U A 292	U R 328	A	B	B	B	B	B	U A 348	A	A	A				
21							A	A	A	A	A	A	A	B	B	U R 376	336	A	A	A				
22							B	256	R	U R 396	B	B	B	R	B	B	U A 348	U R 316	240	A				
23							B	244	U A 292	R 368	A	B	B	B	A	B	U A 352	U A 296	A	A				
24							B	256	A	A	B	A	A	A	A	A	R	A	244	A				
25							A	A	304	B	A	A	B	B	B	B	U A 352	296	U A 228	A				
26							A	A	300	332	B	A	B	B	B	R	U R 336	U R 276	U A 232	A				
27							A	A	A 288	A	R	B	B	B	B	R	R 336	R 284	A	A				
28							B	228	272	A	B	B	R	B	R	U R 376	332	276	U A 200	A				
29							A	240	284	U R 332	U R 332	B	B	A	R	R	U A 328	284	A	A				
30							A	U A 204	U A 276	A	A	R	B	B	B	B	B	280	A	A				
31							A	232	292	R	B	B	B	B	B	B	360	U A 296	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	22	20	15	5	1	4	3	6	8	24	24	16					
MED							180	242	300	R 340	U R 352	U R 404	U R 408	U R 420	U R 380	U R 368	U 344	298	240					
U Q							186	256	310	R 352	U R 366		U 426	U A 436	U R 388	U R 374	U 352	304	242					
L Q							168	232	288	U R 332	U 340		U R 390	U R 408	U R 372	U R 360	338	288	U A 234					

AUG. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 22	J A 22	J A 21	J A 38	J A 40	J A 42	J A 62	J A 60	J A 88	J A 45	J A 46	J A 63	49	48	G	46	J A 62	J A 82	J A 116	J A 84	J A 83	J A 59	J A 67	J A 54
2	J A 38	J A 48	J A 51	25	J A 34	J A 45	J A 34	J A 29	38	40	41	G 35	46	51	J A 56	J A 47	37	J A 40	J A 35	J A 27	J A 24	J A 23	E B 14	E B 14
3	J A 19	J A 39	J A 23	E B 14	J A 44	J A 36	J A	G	J A 46	J A 46	J A 45	J A 62	E B 48	E B 56	E B 43	46	J A 50	G	J A 34	J A 28	18	E B 14	J A 16	E B 19
4	J A 29	J A 29	E B 14	J A 21	J A 26	J A 29	J A 27	G 22	J A 34	40	41	46	J A 66	G	42	G	44	J A 53	J A 43	J A 43	J A 31	J A 20	J A 16	J A 55
5	J A 67	J A 30	J A 33	J A 29	J A 21	J A 47	J A 90	J A 92	J A 104	J A 88	J A 45	J A 43	J A 80	J A 63	J A 61	G 28	36	34	29	24	J A 20	J A 22	J A 60	J A 60
6	J A 64	J A 48	J A 26	18	E B 14	20	20	J A 33	J A 43	J A 53	J A 100	J A 87	J A 98	52	J A 73	J A 63	J A 47	J A 53	J A 54	J A 32	J A 80	J A 72	J A 31	J A 65
7	J A 72	J A 50	J A 23	J A 18	J A 28	J A 25	J A 22	G	J A 51	J A 59	J A 42	J A 88	48	E B 42	51	43	45	J A 50	J A 43	J A 45	J A 32	J A 21	23	J A 22
8	J A 18	J A 52	J A 27	37	28	20	18	31	33	38	42	45	55	46	68	J A 54	43	J A 42	J A 33	J A 25	J A 29	J A 59	J A 110	J A 65
9	J A 22	E B 14	J A 54	20	J A 20	J A 40	J A 50	J A 50	J A 52	J A 48	J A 52	46	44	46	44	J A 45	J A 54	J A 35	30	J A 38	J A 48	J A 38	J A 67	J A 66
10	J A 49	J A 22	J A 31	J A 23	E B 14	E B 14	G	30	38	J A 70	J A 97	J A 67	49	J A 68	J A 50	50	40	G 26	J A 36	28	J A 22	J A 21	E B 14	E B 14
11	E B 14	E B 14	E B 14	18	20	J A 20	J A 21	29	33	G 26	43	E B 51	45	58	J A 54	J A 105	J A 67	J A 43	J A 30	J A 43	J A 47	20	E B 14	E B 16
12	E B 14	E B 14	E B 14	E B 14	J A 28	J A 22	G	28	35	40	J A E B 42	44	45	E B 44	J A 87	44	J A 63	J A 72	32	J A 19	J A E B 14	E B 14	J A 15	J A 23
13	J A 21	J A 19	J A 54	J A 51	J A 46	J A 27	20	30	38	37	J A 44	J A 99	J A 59	J A 44	50	J A 59	J A 72	J A 62	J A 82	J A 99	26	J A 28	J A 25	J A 28
14	J A 21	18	J A 19	E B 14	E B 14	18	E B 18	30	G	43	G	E B 44	47	48	E B 44	47	G	34	J A 27	J A 23	J A 23	J A 22	E B 14	E B 14
15	E B 14	E B 14	18	E B 14	18	18	J A 18	28	32	J A 40	45	45	44	47	J A 49	J A 53	J A 49	35	J A 46	J A 49	J A 49	J A 50	J A 24	J A 20
16	E B 14	J A 27	20	J A 17	E B 14	E B 14	E B 14	G	G 26	30	E B 45	E B 44	E B 44	J A 55	J A 47	J A 42	J A 49	J A 40	J A 38	J A 28	42	J A 20	E B 14	E B 14
17	E B 14	J A 18	19	J A 24	J A 16	J A 25	E B 14	G	34	G	G	E B 42	E B 48	J A 47	40	44	E B 42	J A 47	J A 84	J A 68	J A 30	E B 14	E B 14	J A 16
18	28	J A 18	E B 14	E B 14	18	18	23	30	36	42	J A 46	50	46	66	J A 78	J A 77	44	J A 40	J A 41	J A 63	J A 58	J A 56	J A 38	31
19	J A 19	J A 20	J A 26	J A 50	J A 22	J A 37	J A 22	G	36	42	J A 44	47	46	52	54	46	47	36	J A 56	J A 50	J A 38	J A 43	J A 50	19
20	J A 18	J A 19	E B 14	E B 14	E B 14	18	E B 14	28	39	44	46	E B 44	J A 64	J A 70	J A 68	J A 64	J A 69	J A 69	J A 38	J A 52	E B 14	J A 19	E B 14	J A 17
21	E B 18	E B 15	E B 14	J A 22	J A 28	J A 59	J A 24	J A 52	J A 42	J A 40	J A 52	J A 54	51	E B 46	E B 46	46	J A 50	J A 66	J A 48	J A 29	J A 22	J A 38	J A 21	J A 40
22	J A 28	20	21	J A 20	J A 21	J A 23	J A 16	G 20	26	44	E B 44	46	49	G 35	E B 45	E B 44	J A 60	G	30	J A 29	J A 28	J A 35	26	E B 14
23	J A 21	J A 17	20	E B 14	E B 14	E B 14	E B 14	29	36	G	J A 46	53	E B 45	46	J A 55	J A 56	J A 105	J A 80	J A 69	J A 48	J A 88	J A 24	J A 37	E B 14
24	J A 22	J A 20	J A 18	21	17	18	E B 16	J A 28	J A 34	45	E B 43	46	48	48	J A 44	J A 44	34	J A 32	26	J A 34	J A 19	J A 27	J A 20	J A 58
25	J A 19	21	20	J A 26	J A 22	J A 17	J A 21	31	35	J A 43	J A 49	J A 52	E B 46	E B 45	E B 43	E B 44	41	J A 51	J A 44	J A 82	J A 76	J A 83	29	22
26	J A 42	J A 20	E B 14	E B 14	19	E B 14	J A 18	J A 28	J A 44	J A 46	J A 47	J A 51	E B 43	45	E B 42	31	G	G	27	J A 28	J A 31	J A 24	E B 16	E B 14
27	E B 14	E B 14	E B 16	J A 14	E B 22	J A 57	J A 28	25	33	42	G	E B 43	E B 56	E B 44	E B 42	31	37	G 26	J A 32	J A 18	18	E B 14	E B 14	E B 14
28	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	32	J A 44	E B 43	E B 44	44	E B 44	27	G	40	35	41	J A 27	J A 52	J A 47	J A 47	J A 21
29	J A 23	J A 47	J A 39	J A 21	J A 20	J A 24	J A 19	G	33	G	G	E B 42	50	49	46	J A 66	J A 61	J A 70	J A 82	J A 58	J A 82	J A 73	J A 40	J A 22
30	19	J A 33	J A 27	J A 36	J A 21	J A 30	J A 29	26	J A 34	40	J A 44	G 30	E B 60	E B 56	E B 45	E B 44	E B 40	J A 44	J A 53	J A 49	J A 32	J A 42	J A 31	J A 22
31	J A 37	J A 31	E B 14	J A 29	E B 14	J A 19	J A 28	G	G	G 27	E B 40	E B 44	E B 44	E B 43	E B 44	E B 40	G	36	J A 34	E B 14	E B 14	E B 14	J A 19	J A 31
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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 21	J A 20	J A 20	20	J A 20	J A 22	J A 20	28	35	42	44	46	48	46	46	46	45	J A 40	J A 38	J A 34	J A 31	J A 24	J A 23	J A 22
U Q	J A 29	J A 31	J A 27	J A 26	J A 28	J A 36	J A 28	J A 30	J A 42	J A 45	J A 46	J A 53	J A 55	55	J A 55	J A 54	J A 60	J A 53	J A 53	J A 50	J A 49	J A 47	J A 38	J A 40
L Q	E B 18	E B 17	E B 14	E B 14	E B 14	E B 18	G	G	33	G 38	42	E B 44	45	E B 44	43	43	40	G 34	32	J A 27	22	E B 20	E B 14	E B 14

AUG. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 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	20	18	18	E B 14	E B 14	18	21	G 20	39	39	42	58	44	45	G	44	51	70	A A 116	A A 84	45	37	40	24
2	18	22	30	20	18	30	22	26	38	40	41	U G 35	46	49	54	41	U Y 37	38	34	25	21	16	E B 14	E B 14
3	E B 14	28	E B 14	E B 14	28	17	28	G	43	45	42	61	E B 48	E B 56	E B 43	44	41	G	G 18	15	E B 14	E B 14	E B 14	E B 19
4	E B 14	22	E B 14	E B 14	E B 14	20	22	G 18	34	40	40	45	61	G	42	G	43	38	29	28	19	E B 14	E B 14	23
5	A A 67	20	28	17	E B 14	30	44	A A 92	A A 104	42	42	41	A A 80	55	46	U G 28	35	34	27	20	19	17	32	28
6	32	20	18	E B 14	E B 14	E B 14	19	29	33	40	A A 100	A A 87	A A 98	48	60	51	40	33	43	17	48	24	18	32
7	32	22	17	E B 14	20	20	19	G	43	39	41	43	U Y 48	E B 42	43	43	39	44	30	32	20	E B 14	E B 14	E B 14
8	E B 14	25	20	31	23	E B 14	G 14	23	32	36	41	45	53	45	62	45	42	39	29	22	23	32	A A 110	E B 14
9	E B 14	E B 14	42	E B 14	E B 14	24	36	40	46	43	44	41	44	46	43	45	42	34	29	36	42	20	42	28
10	20	18	25	19	E B 14	E B 14	G	28	38	60	58	56	48	58	46	46	37	G 24	30	22	19	E B 14	E B 14	E B 14
11	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	21	28	U Y 33	G 24	43	E B 51	45	56	53	55	42	35	29	39	19	E B 14	E B 14	E B 16
12	E B 14	E B 14	E B 14	E B 14	E B 14	18	G	28	35	39	41	E B 44	44	E B 44	80	43	59	70	31	16	E B 14	E B 14	E B 14	17
13	19	E B 14	19	28	38	20	18	29	36	U Y 37	41	A A 99	44	44	50	58	67	59	76	96	23	24	22	24
14	19	18	E B 14	E B 14	E B 14	E B 14	E B 18	30	G	43	G	E B 44	47	48	E B 44	46	G	33	26	20	E B 14	18	E B 14	E B 14
15	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G 15	26	32	40	43	42	44	47	49	50	46	34	44	46	44	27	23	E B 14
16	E B 14	21	E B 14	E B 14	E B 14	E B 14	E B 14	G	G U 25	G E 30	E B 45	E B 44	E B 44	55	47	42	48	38	37	25	40	E B 14	E B 14	E B 14
17	E B 14	E B 14	E B 14	21	E B 14	E B 14	E B 14	G	34	G	G	E B 42	E B 48	47	U Y 40	44	E B 42	45	G 23	58	27	E B 14	E B 14	E B 14
18	24	E B 14	E B 14	E B 14	E B 14	E B 14	19	29	36	42	45	50	U Y 46	62	64	76	43	36	39	60	40	30	28	29
19	E B 14	18	23	18	19	23	18	G	36	41	42	46	46	50	52	44	46	35	56	47	24	28	32	E B 14
20	E B 14	16	E B 14	E B 14	E B 14	E B 14	E B 14	28	38	42	46	E B 44	64	64	63	62	47	58	21	38	E B 14	E B 14	E B 14	E B 14
21	E B 18	E B 15	E B 14	E B 14	21	20	22	28	34	40	49	48	46	E B 46	E B 46	43	47	63	42	25	20	30	20	28
22	18	E B 14	E B 14	E B 14	17	E B 14	16	G 19	23	43	E B 44	46	49	U G 35	E B 45	E B 44	57	G	29	26	23	22	21	E B 14
23	16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	28	36	G	45	U Y 53	E B 45	U Y 46	54	54	104	65	62	41	46	20	24	E B 14
24	20	E B 14	E B 14	20	E B 14	E B 14	E B 16	G 20	31	43	E B 43	43	46	U Y 48	44	42	U Y 34	32	26	31	18	24	19	30
25	E B 14	E B 14	E B 14	22	18	E B 14	17	27	34	41	47	52	E B 46	E B 45	E B 43	E B 44	41	51	38	26	23	24	21	17
26	E B 14	18	E B 14	E B 14	E B 14	E B 14	17	26	40	44	46	49	E B 43	44	E B 42	U Y 31	G	G	26	20	21	22	E B 14	E B 14
27	E B 14	E B 14	E B 14	E B 14	E B 14	24	21	24	32	40	G	E B 43	E B 56	E B 44	E B 42	U Y 31	37	G 20	30	16	E B 14	E B 14	E B 14	E B 14
28	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	32	41	E B 43	E B 44	44	E B 44	26	G	39	34	35	20	20	41	29	19
29	22	16	22	E B 14	E B 14	17	17	G	33	G	G	E B 42	50	48	45	65	50	65	81	51	57	52	26	18
30	16	21	20	E B 14	E B 14	E B 14	20	24	33	39	42	U Y 30	E B 60	E B 56	E B 45	E B 44	E B 40	42	25	18	23	17	18	E B 14
31	18	23	E B 14	28	E B 14	E B 14	20	G	G	U G 27	E B 40	E B 44	E B 44	E B 43	E B 44	E B 40	G	33	30	E B 14	E B 14	E B 14	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 16	16	E B 14	E B 14	E B 14	E B 14	18	26	34	40	42	44	46	46	45	44	42	36	30	26	21	20	18	E B 14
U Q	20	21	20	19	18	20	21	28	38	42	45	51	50	55	53	50	47	51	42	41	40	27	26	24
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	32	G 37	41	43	44	E B 44	43	42	37	G 33	27	20	E B 19	E B 14	E B 14	E B 14

AUG. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	14	14	14	14	16	22	24	26	32	38	31	23	21	15	17	14	14	14	14	14
2	14	14	14	14	14	14	14	15	18	22	24	30	31	40	24	39	19	24	16	14	14	14	14	14
3	14	14	14	14	14	14	14	16	20	23	39	33	48	56	43	24	25	21	13	14	14	14	14	19
4	14	14	14	14	14	14	14	14	18	20	20	24	41	27	32	24	23	17	14	14	14	14	14	14
5	14	14	14	14	14	14	14	14	15	21	24	24	20	30	30	22	21	14	15	14	14	14	14	14
6	14	14	14	14	14	14	14	17	21	21	24	26	31	29	32	26	20	23	16	14	14	14	14	14
7	14	14	14	14	14	14	14	14	14	20	22	26	43	42	41	27	24	17	15	14	14	14	14	14
8	14	14	14	14	14	14	14	15	19	21	21	32	32	31	25	26	21	14	16	14	14	14	14	14
9	14	14	14	14	14	14	14	15	16	20	23	26	24	24	25	39	25	22	18	14	14	14	14	14
10	14	14	14	14	14	14	14	14	23	26	24	35	32	32	31	30	20	15	14	14	14	14	14	14
11	14	14	14	14	14	14	14	14	17	20	24	51	42	43	24	27	20	19	15	14	14	14	14	16
12	14	14	14	14	14	14	13	18	21	24	24	44	41	44	32	40	22	20	16	14	14	14	14	14
13	14	14	14	14	14	14	14	17	19	20	25	33	32	33	42	26	22	18	14	14	14	14	14	14
14	14	14	14	14	14	14	18	14	21	24	30	44	32	43	44	31	29	17	15	14	14	14	14	14
15	14	14	14	14	14	14	14	15	20	22	30	36	36	31	30	31	20	16	16	14	14	14	14	14
16	14	14	14	14	14	14	14	16	20	22	45	44	44	42	40	25	24	20	17	13	14	14	14	14
17	14	14	14	14	14	14	14	14	20	22	21	42	48	26	22	22	42	19	20	14	14	14	14	14
18	14	14	14	14	14	14	14	14	20	25	42	41	41	42	42	32	18	15	18	14	14	14	14	14
19	14	14	14	14	14	14	14	14	17	24	22	43	43	42	42	41	28	24	16	14	14	14	14	14
20	14	14	14	14	14	14	14	20	21	24	39	44	44	43	41	41	22	18	17	14	14	14	14	14
21	18	15	14	14	14	14	14	14	14	22	25	29	28	46	46	24	20	16	14	14	14	14	14	14
22	14	14	14	14	14	14	14	14	19	22	44	44	43	30	45	44	22	20	16	14	14	14	14	14
23	14	14	14	14	14	14	14	15	20	24	38	42	45	44	36	42	22	17	16	14	14	14	14	14
24	14	14	14	14	14	14	16	14	20	23	43	32	27	26	24	21	15	14	15	14	14	14	14	14
25	14	14	14	14	14	14	14	14	17	38	37	41	46	45	43	44	22	20	15	14	14	14	14	15
26	14	14	14	14	14	14	14	15	16	22	40	34	43	40	42	24	30	18	17	14	14	14	14	14
27	14	14	14	14	14	14	14	14	21	22	32	43	56	44	42	30	21	16	15	14	14	14	14	14
28	14	14	14	14	14	14	14	14	20	27	43	44	27	44	23	29	16	20	15	14	14	14	14	14
29	14	14	14	14	14	14	14	14	20	21	24	42	42	39	31	24	21	18	15	14	14	14	14	14
30	14	14	14	14	14	14	14	16	16	19	24	24	60	56	45	44	40	19	20	14	14	14	14	14
31	14	14	14	14	14	14	14	17	17	23	40	44	44	43	44	40	23	16	14	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	19	22	25	36	41	42	36	29	22	18	16	14	14	14	14	14
U Q	14	14	14	14	14	14	14	16	20	24	39	44	44	44	42	40	24	20	17	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	17	21	24	29	32	31	30	24	20	16	15	14	14	14	14	14

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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 266	F 274	292	F 297	F 277	F 299	F 298	330	375	326	283	273	270	280	310	317	303	295	A	A	309	285	R 280	289
2	297	F 287	F 287	F 301	F 317	322	348	377	R 318	335	293	284	293	315	294	276	283	290	301	301	307	309	285	294
3	281	299	316	320	F 350	F 303	314	344	334	323	315	R 301	294	279	282	286	298	315	334	318	310	300	297	302
4	R 300	J R 307	314	318	349	356	R 341	346	342	J R 335	314	J R 294	269	R 276	281	290	304	322	333	328	297	301	302	287
5	A	R 290	F 293	F 273	F 271	F 312	348	A	A	305	316	J R 307	A	288	282	288	285	285	313	299	320	296	308	288
6	290	318	300	289	291	315	367	341	372	326	A	A	A	285	295	310	298	293	315	329	F 291	295	297	299
7	F 265	286	308	307	306	305	340	334	352	324	R 278	286	Y	283	288	287	301	298	295	306	336	351	298	R 302
8	295	299	298	293	327	338	352	336	360	335	275	277	293	R 280	283	289	280	293	320	344	343	318	A	284
9	288	275	291	293	F 302	F 311	342	348	333	335	305	266	273	293	307	304	306	304	315	316	300	347	F 291	F 287
10	F 288	F 301	326	311	309	335	364	342	335	336	309	J R 289	284	J R 298	R 307	297	R 302	J R 321	U R 318	314	323	335	288	302
11	310	J R 292	J R 290	R 319	320	R 282	336	376	354	J R 353	J R 298	302	307	R 290	298	291	306	U R 323	R 324	R 332	329	303	310	292
12	R 274	294	325	329	R 307	315	327	342	389	378	329	294	284	282	263	275	296	315	336	334	311	313	292	286
13	296	293	311	R 326	280	295	323	376	388	359	324	A	284	270	R 280	282	287	296	308	U R 333	328	300	R 298	282
14	306	311	317	289	289	299	332	379	386	318	313	285	281	274	J R 282	297	315	312	318	321	309	305	280	285
15	301	300	312	324	327	309	331	346	381	328	318	295	299	288	283	288	292	313	315	315	295	299	289	292
16	312	296	284	295	286	R 345	373	344	339	337	294	311	315	271	286	292	R 320	314	307	317	291	306	291	278
17	282	291	298	289	284	301	317	335	315	R 320	292	303	300	301	R	296	309	311	322	321	311	291	285	275
18	280	297	338	321	302	314	331	341	357	319	307	296	293	295	293	293	311	R	344	J R 297	289	R 285	R 279	269
19	299	328	295	319	314	329	R 325	351	363	335	293	281	288	299	296	294	302	311	325	328	306	314	R 309	R 307
20	R 298	309	315	304	306	328	356	357	355	330	345	289	289	300	292	283	294	319	324	339	J R 310	291	278	289
21	R 294	295	298	307	R 333	322	335	371	387	330	320	296	304	289	276	271	286	309	330	330	305	275	265	279
22	274	279	291	281	285	318	334	370	355	298	319	304	281	274	275	300	302	302	299	321	315	R 292	268	271
23	280	285	301	329	338	326	328	357	322	333	305	260	289	303	292	R	R 324	R 320	317	330	R 284	278	280	279
24	287	281	297	300	305	313	344	348	358	366	H 313	276	273	283	290	308	309	299	307	322	323	334	314	288
25	288	292	304	299	307	308	317	346	345	342	320	287	305	299	293	302	309	310	303	317	337	R 309	283	271
26	274	293	309	285	289	291	311	344	369	342	298	315	305	307	310	309	294	303	303	325	346	R 332	R 294	R 293
27	287	R 302	306	R 310	305	307	330	365	360	369	284	299	R 291	289	299	313	301	310	329	326	318	291	R 267	281
28	267	282	303	333	305	276	297	352	360	345	307	284	293	304	317	317	316	316	311	326	318	312	285	286
29	298	296	317	345	324	299	330	369	418	348	312	306	300	312	323	319	311	317	328	314	320	310	302	306
30	303	295	292	322	320	334	338	366	381	331	340	319	296	306	314	303	309	324	337	R 354	325	287	288	289
31	290	299	313	328	295	307	331	361	369	334	313	296	307	328	315	292	318	330	340	321	302	300	296	283
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	30	30	31	30	29	28	31	30	30	31	30	30	30	31	31	30	31
MED	289	295	303	307	306	312	332	348	359	335	310	294	293	289	292	294	302	311	318	322	311	301	290	287
U Q	298	300	314	322	320	326	344	366	375	342	318	302	300	301	307	304	309	317	329	330	323	313	298	293
L Q	280	287	293	293	289	301	325	342	342	326	294	284	284	280	282	288	294	299	308	316	302	291	280	281

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	365	A	393	384	382	378	A	A	A	A				
2								L	L	A	398	R 407	A	A	A	U L 365	Y 353	350	U L 354					
3									A	L	U L 358	A	B 352	B	U L 408	386	361	350	366					
4									U L 374	L	397	L	A	U R 385	420	R 412	378	357	L					
5								A	A	354	384	389	A	A	A	396	L 350	354	375					
6								L	L	H 375	A	A	A	354	A	A	388	L 369		L				
7								L	L	U L 365	U R 406	400	Y	413	R	397	R 359	L	L 363					
8								L	L	L	R 420	469	L	R 414	A	A 378	357	344	L					
9										L	L	U L 424	R 376	367	383	A 354	U L 350	L 351	U L 357					
10										A	A	A	A	A	377	A 331	L 357	L 349	L					
11								L	L	L	U L 371	B	U L 399	A	A	A	344	353	L					
12								L	L	L	U L 384	R 364	385	396	A	370	A	A	366					
13							L		L	L 397		A	399	425	A	A	A	A	A					
14											U L 391	L	A	A 363	388	328	378	371	L					
15								L	L	L	U L 376	U L 371	U L 362	L 356	A 336	A	A	U L 352	A					
16									L	L	L 381	L 379	U L 364	L	A 358	387	A	L						
17										L	U L 399	U L 411	346	U R 385	L 372	386	B 361	L						
18										U L 352	U L 361	A 353	L	A	A	A	360	L 353						
19									L	L	L	L	A 351	A	A	L 362	A	L						
20									L	L	U L 382	U R 390	A	A	A	A	A 326	A	L					
21									L	L	L	U L 351	373	L 387	L 339	356	A 326	A						
22									L	L	L	365	U L 348	Y	398	383	A	L						
23								L	L	L	L	A	U L 353	L	L	A	A	A						
24									L	L	U L 405	L	U L 362	A	U L 350	L 356	U L 348	U L 353	L					
25									L	U L 386	L	L	U L 363	B 343	U L 359	L 358	U L 332	A						
26								L	L	L		L 354	369	367	U L 383	H 350	U L 358	L	L					
27									L	L	U L 373	U L 389	B	U L 351	363	351	L 368	U L 352	L					
28								L	L	L		U L 358	U L 337	353	371	U L 371	U L 354	L						
29										U L 391	L	401	L	A	R 371	A	A	A	A					
30								L	L	L	U L 397	U L 392	B	B	U R 373	B 362	U L 342	L	L					
31									L	U L 401	U L 375	U L 387	U L 362	384	U L 379	U L 330	353	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	8	19	19	18	17	19	23	22	14	6					
MED									U L 374	U L 380	U L 384	L 389	362	384	373	365	356	352	364					
U Q										U L 394	U 398	401	376	392	383	386	361	354	366					
L Q										U L 360	U L 373	L 364	352	355	L 359	354	348	350	U L 357					

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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								266	224	L 270	388	394	368	352	300	292	308	E A 344	A	A				
2								224	262	284	358	390	326	292	332	370	344	332	292					
3									A 242	286	308	344	334	360	338	330	306	286	246					
4									274	274	320	L 328	A 376	364	358	324	304	274	238					
5								A	A	342	328	342	A	364	338	324	306	314	260					
6								264	250	314	A	A	A	340	322	308	312	296		260				
7								254	244	292	406	374	Y	344	320	326	322	302	298					
8								262	248	280	380	356	330	342	346	332	334	318	270					
9										282	L 320	310	376	324	296	294	294	292	270					
10										E A 282	A 326	346	342	314	306	312	310	274	258					
11								218	240	220	360	336	308	336	324	322	310	278	254					
12								240	216	234	286	380	366	350	E A 488	366	320	286	254					
13							268		212	254		A	402	398	362	344	330	308	292					
14											308	L 382	372	372	346	316	278	262	256					
15								238	228	264	298	334	326	344	340	328	318	286	262					
16									262	264	344	298	282	354	334	326	280	248						
17										272	266	302	312	318	306	318	292	282						
18										306	302	332	316	320	326	326	294	258						
19									234	236	L 296	340	336	310	318	326	294	274						
20									244	290	272	370	330	316	312	350	324	284	260					
21									216	232	302	338	320	322	354	366	332	294						
22									238	L 304	280	310	340	366	352	306	308	276						
23								238	262	250	L 288	362	332	292	320	306	A 286	268						
24									238	236	H 248	L 326	378	340	322	298	286	284	274					
25									258	258	282	338	300	308	312	304	298	280						
26								244	220	246		306	318	302	298	300	312	292	280					
27									244	222	386	330	326	332	320	282	282	282	252					
28								242	226	240		370	334	312	284	280	286	270						
29										254	252	330	312	296	280	272	290	280	276					
30								226	222	268	260	312	B 338	310	294	304	300	262	252					
31									220	262	302	326	304	272	300	328	286	254						
	00	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	12	24	30	27	29	28	31	31	31	31	31	19	1				
MED							268	241	239	265	302	338	331	332	321	322	306	282	260	260				
U Q								258	249	284	344	366	354	352	340	328	318	294	276					
L Q								232	223	246	282	326	317	310	306	304	290	274	254					

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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	302	312	270	242	274	258	250	224	A	194	202	A	210	230	210	228	A	A	A	A	234	A 282	E A 320	A 272
2	266	294	300	278	224	226	244	206	182	A 232	190	204	A	A	A	202	Y 224	A 234	E A 256	262	240	230	240	258
3	290	288	242	220	222	250	260	222	A	E A 250	A 222	A	E B 286	B	200	224	E A 250	194	220	220	230	246	230	254
4	256	282	244	216	204	218	234	224	194	224	204	226	A	236	204	200	E A 270	246	224	228	248	230	240	282
5	A	266	A 284	302	320	A 268	254	A	A	A 260	210	208	A	A	A	212	216	226	226	240	242	258	270	276
6	300	242	258	274	286	242	218	200	208	H 196	A	A	A	E A 292	A	A	206	228	272	218	A 306	272	252	A 290
7	A 346	A 276	262	234	A 258	A 258	240	210	A 228	216	196	H 180	Y	196	196	210	A 222	A	228	262	228	202	238	280
8	268	A 278	A 278	A 274	244	216	238	198	186	208	176	162	A	194	A	E A 252	E A 252	A 284	230	234	206	230	A	284
9	286	292	E A 326	268	264	258	A 244	250	246	E A 254	A 226	178	208	E A 264	228	E A 274	E A 252	206	220	232	232	202	E A 366	A 330
10	Q 296	Q 266	248	244	250	222	224	196	240	A	A	A	A	A	A 258	E A 284	202	214	212	248	230	224	252	264
11	242	248	264	218	206	312	248	212	220	180	202	B	A 218	A	A	A	E A 262	216	218	226	212	200	244	256
12	276	260	228	202	218	234	224	210	222	218	192	204	210	210	A	244	A	A	228	222	208	214	250	272
13	274	296	260	218	E A 290	284	260	218	208	216	194	A	190	194	A	A	A	A	A	A 270	218	218	264	294
14	246	244	226	270	282	266	250	216	212	A 230	H 192	190	A	E A 262	E B 218	A 314	Y 232	214	228	242	228	228	260	286
15	270	264	246	222	204	208	244	216	212	200	194	194	A 224	258	E A 308	A	A	234	A	250	268	252	276	260
16	242	254	282	286	314	236	208	216	214	192	E B 226	B 224	E B 234	A	E A 256	220	A	230	242	234	230	250	232	296
17	310	294	272	262	292	252	240	232	222	228	216	198	E B 270	246	222	216	E B 242	A	260	246	228	216	264	280
18	298	276	232	218	260	246	254	226	228	210	A 234	E A 280	A	A	A	A	234	224	224	270	A 258	A 270	282	282
19	270	248	268	248	248	242	216	206	216	208	192	A 232	E A 268	A	A	A 234	A	226	254	224	234	232	250	242
20	254	254	250	260	254	238	214	218	A 220	214	A 212	204	A	A	A	A	A	A	216	228	202	218	276	280
21	280	278	262	236	234	244	234	224	208	188	E A 274	E A 248	A 236	214	E B 252	224	E A 306	A	246	214	222	E A 302	334	A 316
22	320	306	278	292	274	244	228	212	204	242	244	230	E A 282	Y	222	B 220	A	228	238	232	222	230	A 314	320
23	302	296	266	234	212	222	252	228	214	216	210	A	B 218	A	A	A	A	A	260	228	A 270	260	294	274
24	290	284	276	266	248	222	232	224	206	A 220	198	192	A 222	A	240	196	Y 208	220	244	230	224	220	236	292
25	264	280	272	256	238	240	256	228	224	208	E A 260	E A 304	B 236	E B 238	208	242	230	A	276	244	222	224	A 266	294
26	294	276	236	240	258	278	258	228	A	A 238	A 218	E A 256	196	206	192	E Y 230	202	232	240	242	226	206	196	258
27	272	262	242	210	228	E A 254	236	220	208	204	182	180	B	E B 230	212	Y 240	222	214	238	226	212	190	276	278
28	284	268	240	202	238	300	266	226	216	220	B 226	B 214	E A 258	B 224	Y 220	Y 226	228	230	252	238	240	A 258	A 284	A 288
29	272	270	250	212	214	280	254	232	194	192	206	188	A	A	A 252	A	A	A	A	246	256	248	242	258
30	256	270	276	246	224	230	236	216	202	194	A 202	198	B	B	E B 248	E B 244	E B 244	A	236	228	228	214	278	286
31	290	A 272	218	A 250	280	256	246	220	210	202	190	E B 212	E B 224	B 216	B 224	B 222	216	238	234	228	220	240	240	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	30	27	30	29	24	18	17	20	23	21	20	27	30	31	31	30	31
MED	278	276	261	244	248	244	244	219	212	212	203	198	216	220	216	223	U 218	227	235	233	228	230	257	280
U Q	296	288	276	268	274	258	254	226	222	A 228	A 224	E A 228	E A 258	E A 252	E A 250	E A 244	E A 251	233	252	246	240	252	278	290
L Q	266	262	242	218	224	230	232	212	206	200	193	191	210	208	209	216	216	215	224	228	222	216	240	264

AUG. 2013 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 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 116		A	A	A	A	A	A	110	A	110	110	110	A				
2							A	A 110		A	A	A	A	A	A	B	110	110	110	A				
3							A	110	110	110	B	A	B	B	B	112	108	108	114	A				
4							A	114	A	112	A	A	B	112	112	112	112	108	A	A				
5							A	108	A	A	A	A	A	A	A	A	108	108	112	A				
6							A	A 112		A	A	A	A	A	A	A	110	A	A	A				
7							A	110	A	A	A	A	B	B	B	110	110	108	A	A				
8							116	A	A	A	A	A	A	A	A	A	110	110	110	A				
9							A	A	A	A	A	A	A	A	110	B	A	A	A	A				
10							118	112	112	112	108	B	A	A	A	A	A	108	A	A				
11							A	108	A	110	106	B	B	B	108	A	A	A	A	A				
12							128	116	116	110	110	B	B	B	110	B	110	110	110	A				
13							A	110	110	110	A	A	A	A	B	A	114	110	110	A				
14							B	124	110	110	108	B	108	B	B	108	110	A	A	A				
15							130	A	A	A	A	A	A	A	A	A	112	112	112	A				
16							B	108	110	A	B	B	B	B	B	110	A	110	A	A				
17							B	110	110	110	108	B	B	A	A	108	B	108	114	A				
18							A	116	110	110	B	B	B	B	B	A	112	112	A	A				
19							A	108	110	108	A	B	B	B	B	B	108	108	A	A				
20							B	112	110	106	A	B	B	B	B	B	108	A	A	A				
21							A	A	A	A	A	A	A	B	B	108	108	A	A	A				
22							B	A 150	108	112	B	B	B	A	B	B	112	110	114	A				
23							B	112	110	110	A	B	B	B	A	B	110	110	A	A				
24							B	112	A	A	B	A	A	A	A	A	A	A	A	A				
25							A	A 110		B	A	A	B	B	B	B	110	110	110	A				
26							A	A 112	110		B	A	B	B	B	A	110	110	112	A				
27							A	A 108		A	116	B	B	B	B	A	108	108	A	A				
28							B	108	108	A	B	B	108	B	108	108	108	108	108	A				
29							A	110	110	110	108	B	B	A	110	110	110	110	A	A				
30							A	112	108	A	A	A	B	B	B	B	B	110	A	A				
31							A	114	106	A	B	B	B	B	B	B	110	110	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	22	21	15	7		2	1	7	9	24	24	13					
MED							123	112	110	110	108		108	112	110	110	110	110	110					
U Q							129	114	110	110	110				110	111	110	110	113					
L Q							117	110	109	110	108				108	108	108	108	110					

AUG. 2013 h′E (KM)

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 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	92	92	92	104	104	104	104	102	104	106	104	100	112	106	G	106	114	110	106	108	108	108	106	106
2	100	102	102	98	96	96	100	98	174	158	100	102	128	122	114	116	130	110	106	106	102	100	B	B
3	122	100	104	B	94	94	100	G	110	106	108	106	B	B	B	122	106	G	94	106	96	B	128	B
4	100	98	B	110	106	100	98	102	98	124	102	124	108	G	130	G	152	114	90	90	90	92	110	100
5	104	100	100	100	106	112	106	104	102	102	102	104	100	116	114	102	140	134	110	94	90	100	102	102
6	100	98	98	102	B	118	110	108	108	104	102	100	114	106	104	96	110	112	102	106	104	104	102	102
7	102	102	102	102	100	100	100	G	104	104	104	104	132	B	114	114	114	110	110	104	104	104	100	100
8	96	96	96	94	94	116	98	110	110	108	104	100	100	104	100	100	122	114	114	104	104	102	102	106
9	92	B	104	86	100	100	98	96	100	96	96	96	128	194	110	110	108	104	124	98	96	98	114	114
10	104	96	96	92	B	B	G	114	112	106	106	102	158	100	100	100	100	96	94	92	92	90	B	B
11	B	B	B	100	100	100	132	126	102	102	124	B	164	130	110	106	106	106	124	100	100	94	B	B
12	B	B	B	B	118	106	G	152	162	138	122	B	126	B	114	140	118	110	114	106	B	B	88	88
13	88	86	104	100	100	102	140	138	112	112	102	98	102	102	138	124	112	110	106	104	94	92	92	92
14	90	90	100	B	B	110	B	190	G	114	G	B	140	120	B	106	G	100	108	92	92	104	B	B
15	B	B	92	B	104	104	104	104	104	104	104	104	100	146	120	114	114	114	112	106	102	102	100	96
16	B	98	102	100	B	B	B	G	102	102	B	B	B	116	114	116	106	110	108	104	98	98	B	B
17	B	100	100	108	98	94	B	G	148	G	G	B	B	96	96	122	B	108	108	104	102	B	B	100
18	92	96	B	B	96	96	94	118	116	112	110	106	114	116	114	114	122	120	112	106	104	100	100	98
19	98	98	98	102	96	98	100	G	124	130	98	132	142	126	116	118	116	120	106	104	102	98	98	98
20	98	100	B	B	B	94	B	128	114	108	108	B	124	118	112	110	106	104	106	102	B	102	B	102
21	B	B	B	100	98	96	96	96	96	96	96	94	96	B	B	130	104	104	106	102	90	96	98	102
22	106	102	102	98	96	100	100	100	100	184	B	156	132	100	B	B	114	G	120	112	108	104	88	B
23	100	98	94	B	B	B	B	118	110	G	110	110	B	166	128	120	108	106	102	98	98	92	102	B
24	98	98	94	92	92	86	B	104	106	102	B	108	96	106	100	98	112	110	148	98	94	98	96	96
25	96	94	90	92	96	96	98	120	126	118	104	104	B	B	B	B	128	116	110	102	102	102	102	92
26	102	90	B	B	122	B	124	114	112	112	116	112	B	116	B	104	G	G	108	102	98	90	90	B
27	B	B	126	B	100	96	98	118	108	110	G	B	B	B	B	102	136	98	92	110	90	B	B	B
28	B	B	B	B	B	B	B	G	106	102	B	B	134	B	98	G	118	112	104	100	104	96	92	90
29	88	110	98	100	100	100	100	G	110	G	G	B	130	106	122	110	108	108	104	100	104	102	102	102
30	88	98	96	96	96	96	96	110	108	102	94	98	B	B	B	B	B	112	112	106	104	102	102	102
31	102	98	B	100	B	100	100	G	G	104	B	B	B	B	B	B	G	114	106	B	B	B	100	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	22	21	23	26	22	23	29	28	22	21	22	21	21	25	26	28	31	30	28	26	23	21
MED	98	98	99	100	100	100	100	110	108	106	104	104	125	116	114	110	114	110	108	104	101	100	100	100
U Q	102	100	102	102	104	104	104	120	113	113	108	109	132	124	118	119	122	114	112	106	104	102	102	102
L Q	92	96	96	95	96	96	98	102	103	102	102	100	102	105	102	103	108	106	104	100	94	96	96	96

AUG. 2013 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

AUG. 2013 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	F1	F2	F3	F2	F1	F3	L2	L2	LQ21	L1	L1	L2	C1	C1		L1	C3	C5	C3	C8	FF31	FF31	FF31	F2
2	F2	F2	F2	F1	F2	F4	L2	L2	H1	HL11	L1	L1	CL11	C1	CL11	C1	H1	C1	C2	C4	F3	F2		
3	F1	F4	F1		F3	F3	L2		C1	C1	C1	C1				C1	C1		L2	L1	F1		F1	
4	F2	F1		F1	F3	F2	L1	L1	LC11	CL11	L1	CL11	C2		H1		H1	CH11	LC21	L4	F2	F1	F1	F2
5	F5	F2	F4	F2	F2	F2	L3	L3	L5	L2	L1	L1	LC21	C1	C2	L1	H1	H1	C1	LC11	F2	F2	FF31	F4
6	F4	F2	F4	F1		F1	C1	C1	C1	L1	L4	L2	CL12	L1	L1	L3	CL21	C1	L3	L1	FQ41	F3	F4	FF33
7	F3	F3	F1	F1	F3	F2	L1		L1	L2	L1	L1	H1		C1	C1	C1	C1	C1	LL21	F1	F1	F1	F1
8	F1	F2	F2	F1	F1	F1	L1	C1	C1	C1	L1	L1	L1	L1	L1	L2	C1	C1	C1	L1	F2	F3	F9	FF21
9	F1		FF31	F1	F1	F4	L3	L3	L3	L2	L2	L1	CL11	HL11	CL11	C1	C1	L1	CL22	L6	F2	F2	FF33	F3
10	F2	F1	F1	F1				C1	C1	C2	C2	L2	HL11	L1	L1	L1	L1	L1	L3	L1	F2	F3		
11				F1	F1	F2	HL11	C1	L1	L1	C1		H1	H1	C1	C1	C1	C1	CL11	L4	F4	F1		
12					F1	F1		HL11	HL11	H1	C1		C1		C3	H1	C2	C2	C1	C1			F1	F2
13	F1	F2	F2	F2	F5	F6	H1	H1	C1	C1	L1	L3	L1	L1	H1	CL11	CL21	CL41	CL81	CL61	F1	F2	F2	F2
14	F1	F1	F1			F1		HCL11		C1			H1	C1		C1		L1	CL11	L2	F2	F1		
15			F1		F1	F1	L1	L1	L1	L1	L1	L1	L1	HL11	CL11	CL11	CL11	CL12	CL21	CL82	FF81	F4	F1	F1
16		F4	F1	F1					L1	L1				C1	C1	C1	C2	C1	C2	CL22	FF12	F1		
17		F2	F1	FF31	F2	F1			H1					L1	L1	CL11		C1	C4	L4	F4			F1
18	F1	F1			F1	F1	L1	CL11	C1	C1	C1	C1	C1	C1	C1	C3	CL11	CL21	C1	C5	F3	F3	F3	F3
19	F1	F2	F2	FF21	F2	F3	L1		CL11	HL11	L1	H1	H1	C1	C1	C1	C1	C1	C5	L9	F4	F4	F4	F1
20	F1	F1				F1		C1	C1	C1	C1		C1	C1	C2	C1	C2	L3	C1	L4		F1		F1
21				F2	F3	F3	L3	L2	L2	L1	L2	L2	L1			H1	CL11	L3	CL51	CL12	F2	F2	F1	F2
22	FQ21	F1	F1	F2	F2	F2	L1	L1	L1	HL11		H1	H1	L1			CL11		C1	C4	F2	F5	F2	
23	F2	F2	F1					C1	C1		C1	C1		H1	CL11	C1	CL21	C4	L4	L3	F5	F2	F2	
24	F1	F1	F1	F1	F1	F1		L1	C1	L1		C1	L1	C1	L1	L1	C1	C1	HL11	L2	F1	F1	F1	F4
25	F2	F2	F1	F1	F1	F2	L1	C1	C1	C1	L1	L1					C1	C1	C3	L2	F5	F4	F1	F1
26	F1	F1			F1		C1	C1	C1	C1	C1	C1		C1		L1			C1	L2	F1	F3	F1	
27			F1		F1	F3	L3	C1	CL11	CL11						L1	HL11	L1	L2	CL11	F1			
28									C1	L1			H1		L1		CL11	C1	C1	L2	F2	F4	F3	F1
29	F1	FF11	F2	F1	F1	F2	L1		C1				C1	C1	C1	C1	C2	C3	L4	L6	F5	F4	F4	F1
30	F1	F2	F3	F2	F2	F2	L2	CL11	C1	CL11	L1	L1						C1	C1	L1	FF21	F2	F2	F1
31	F1	F2		F3		F3	L2			L1								C1	C2				F1	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

AUG. 2013 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

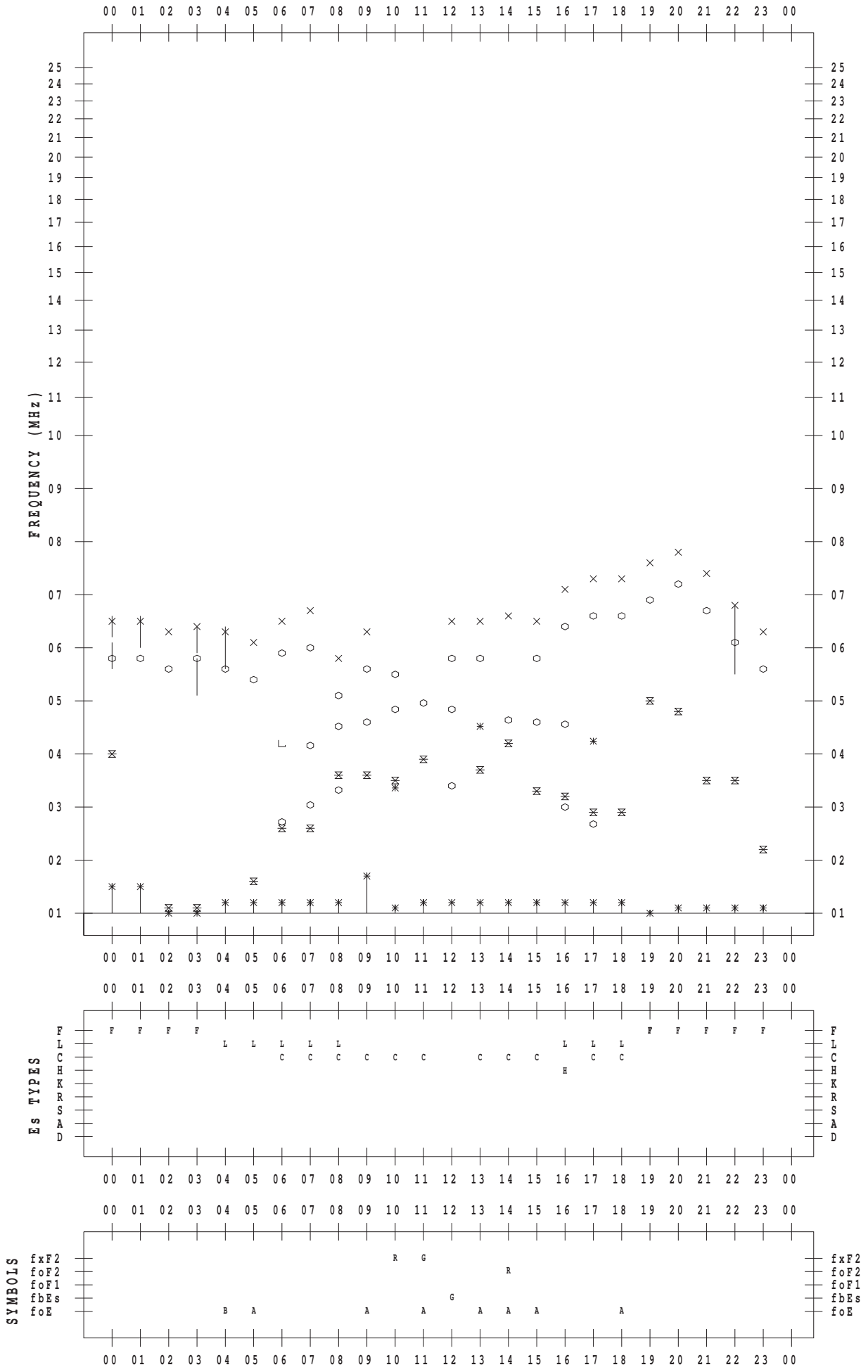
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 1

135 °E MEAN TIME



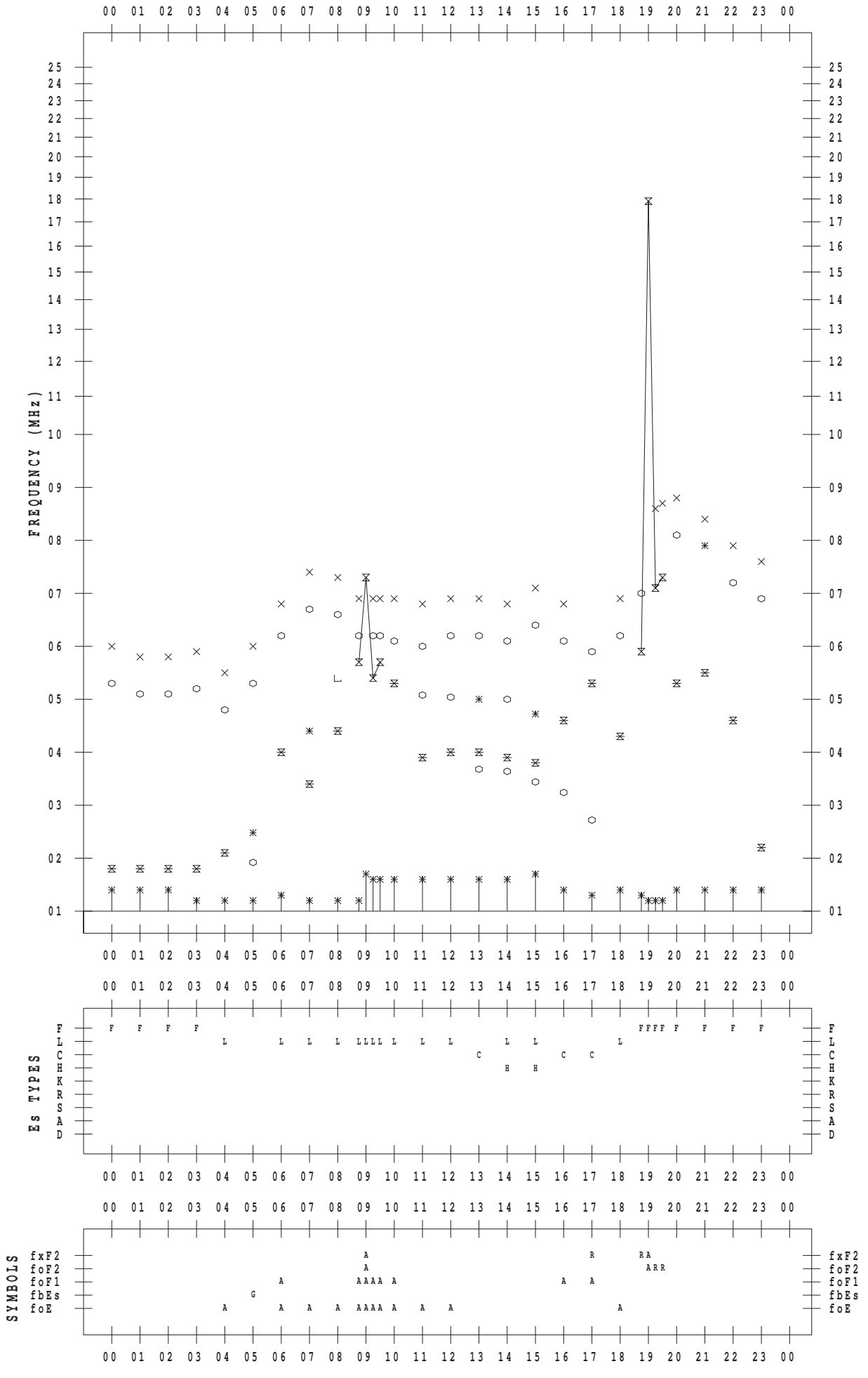
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 2

135 °E MEAN TIME



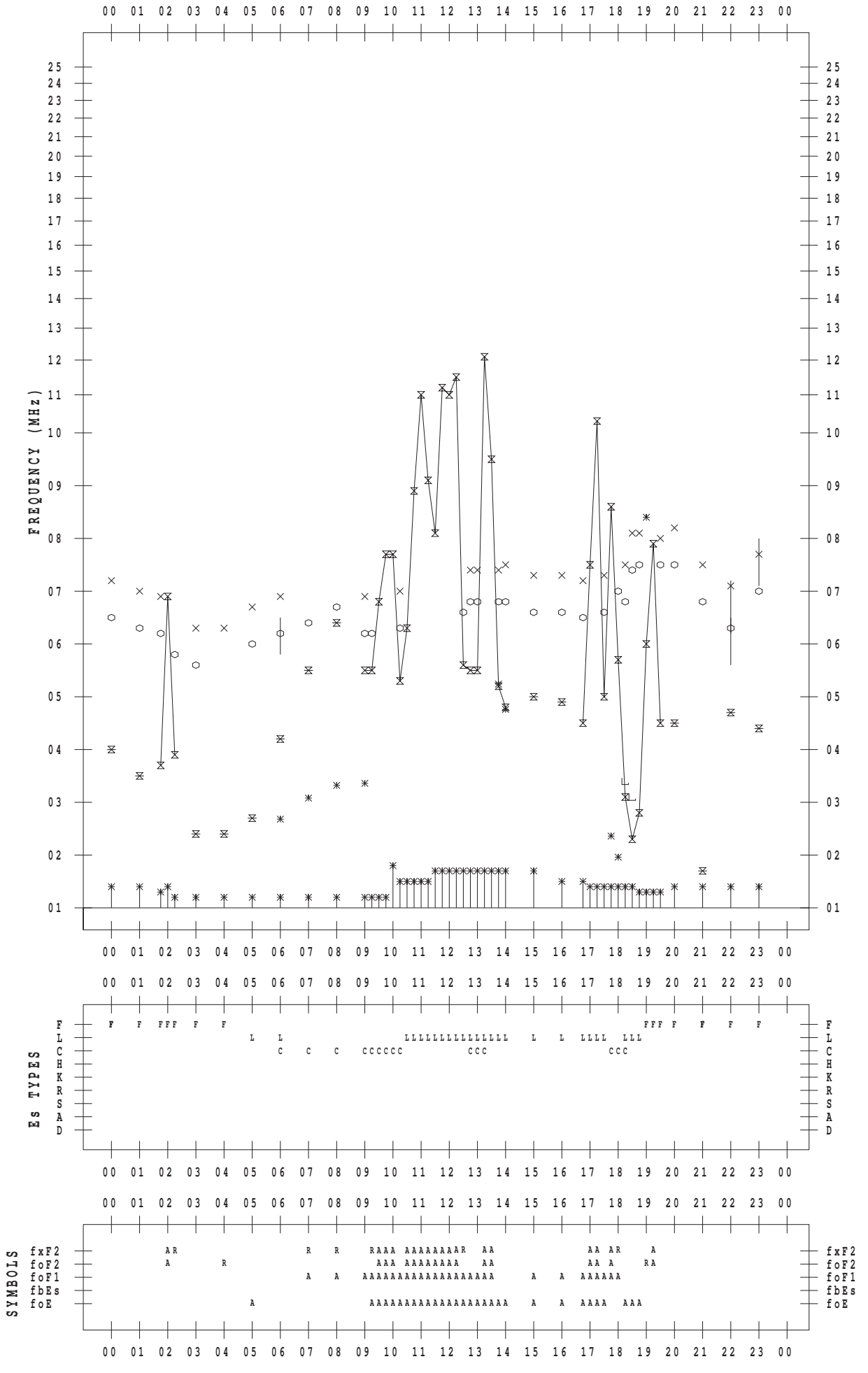
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 3

135 °E MEAN TIME



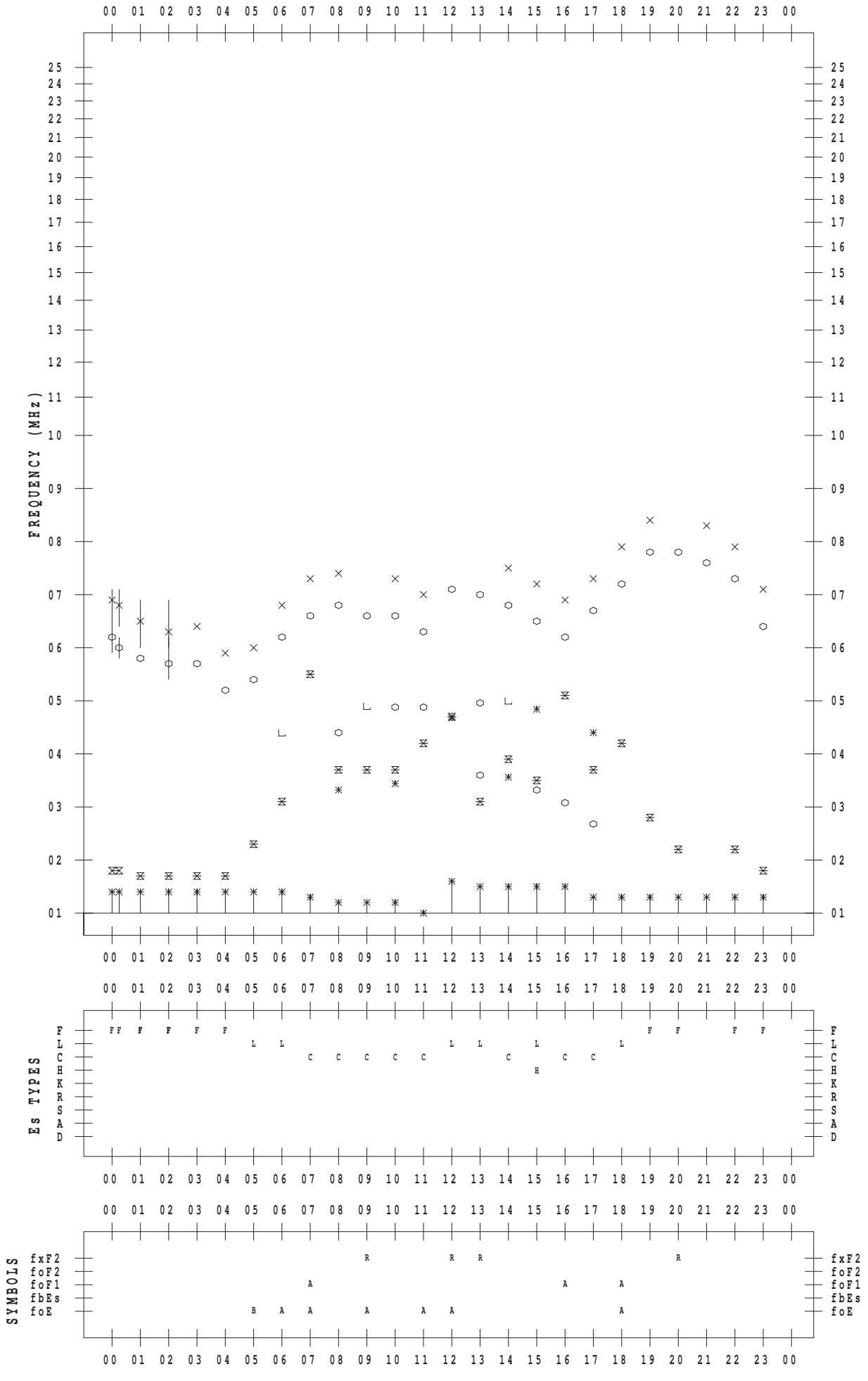
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 4

135 °E MEAN TIME



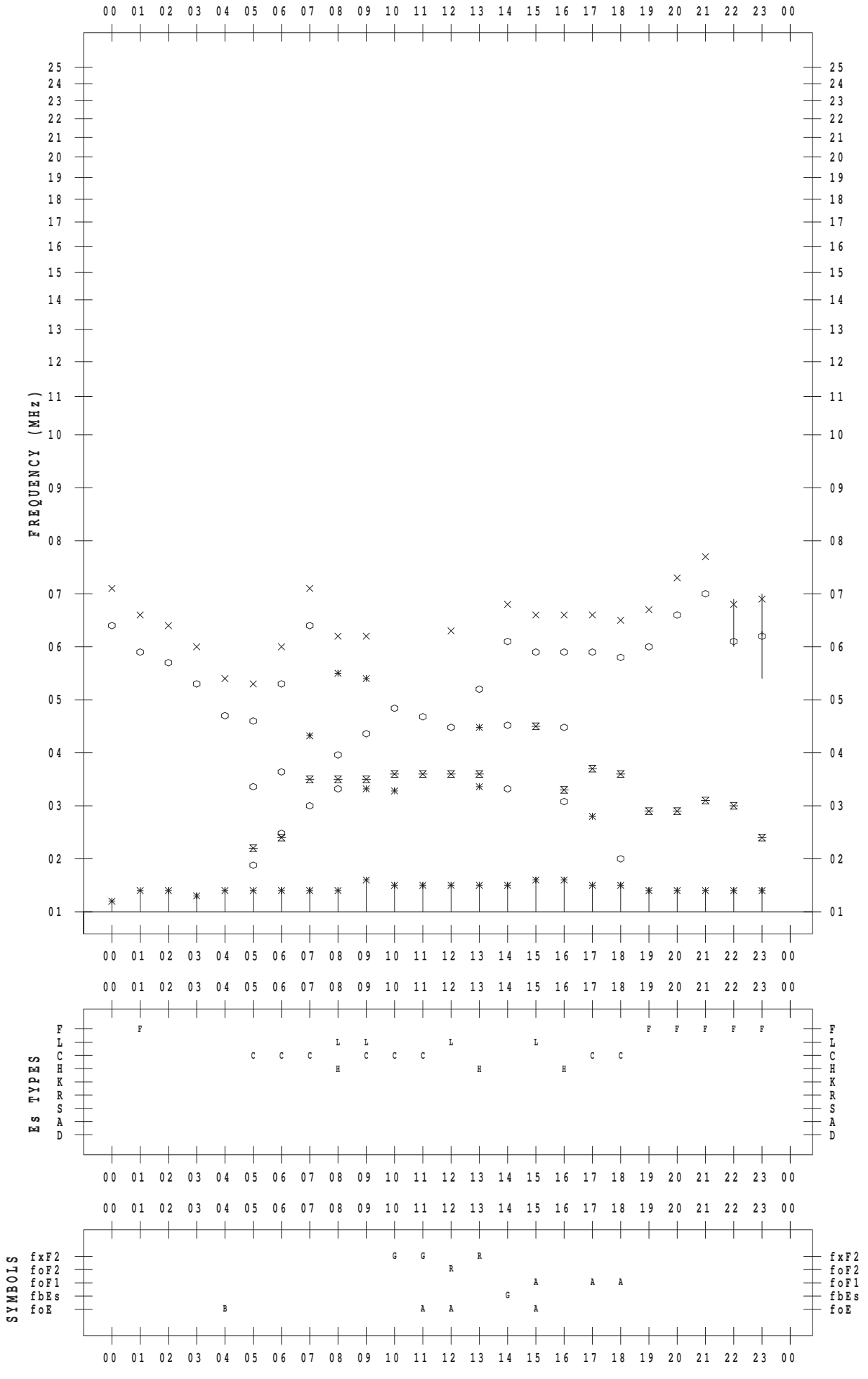
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 5

135 °E MEAN TIME



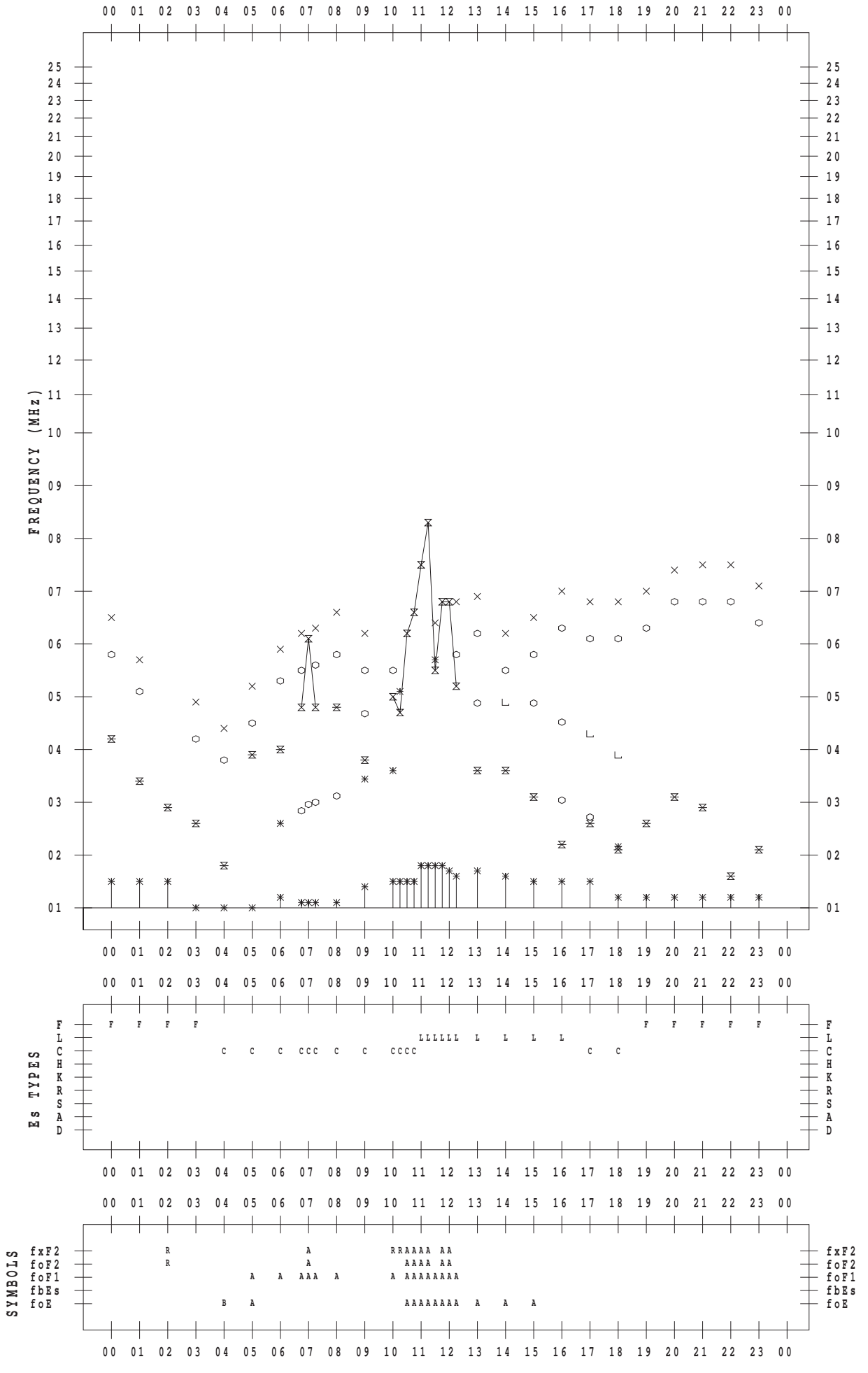
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 6

135 °E MEAN TIME



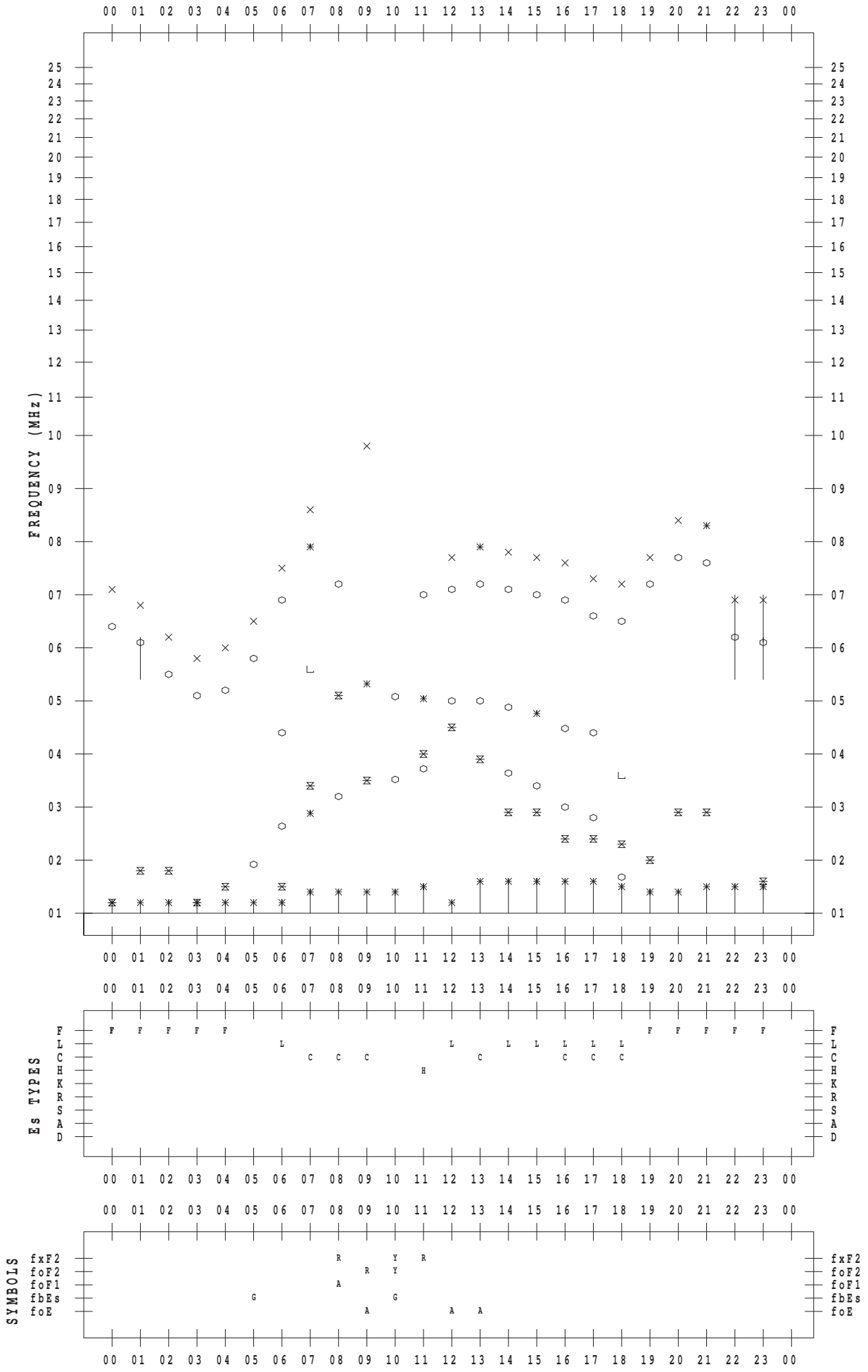
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 7

135 °E MEAN TIME



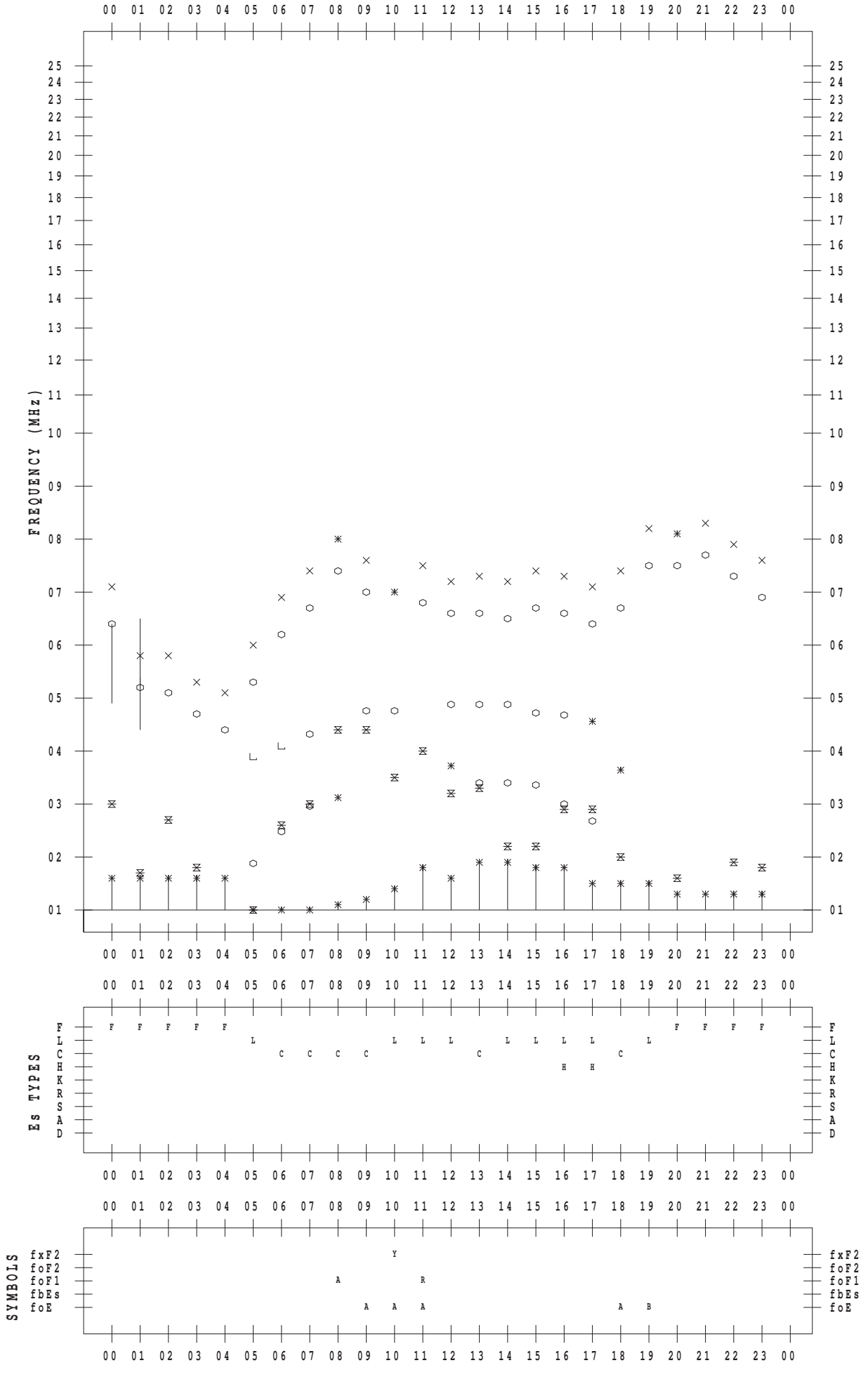
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 8

135 °E MEAN TIME



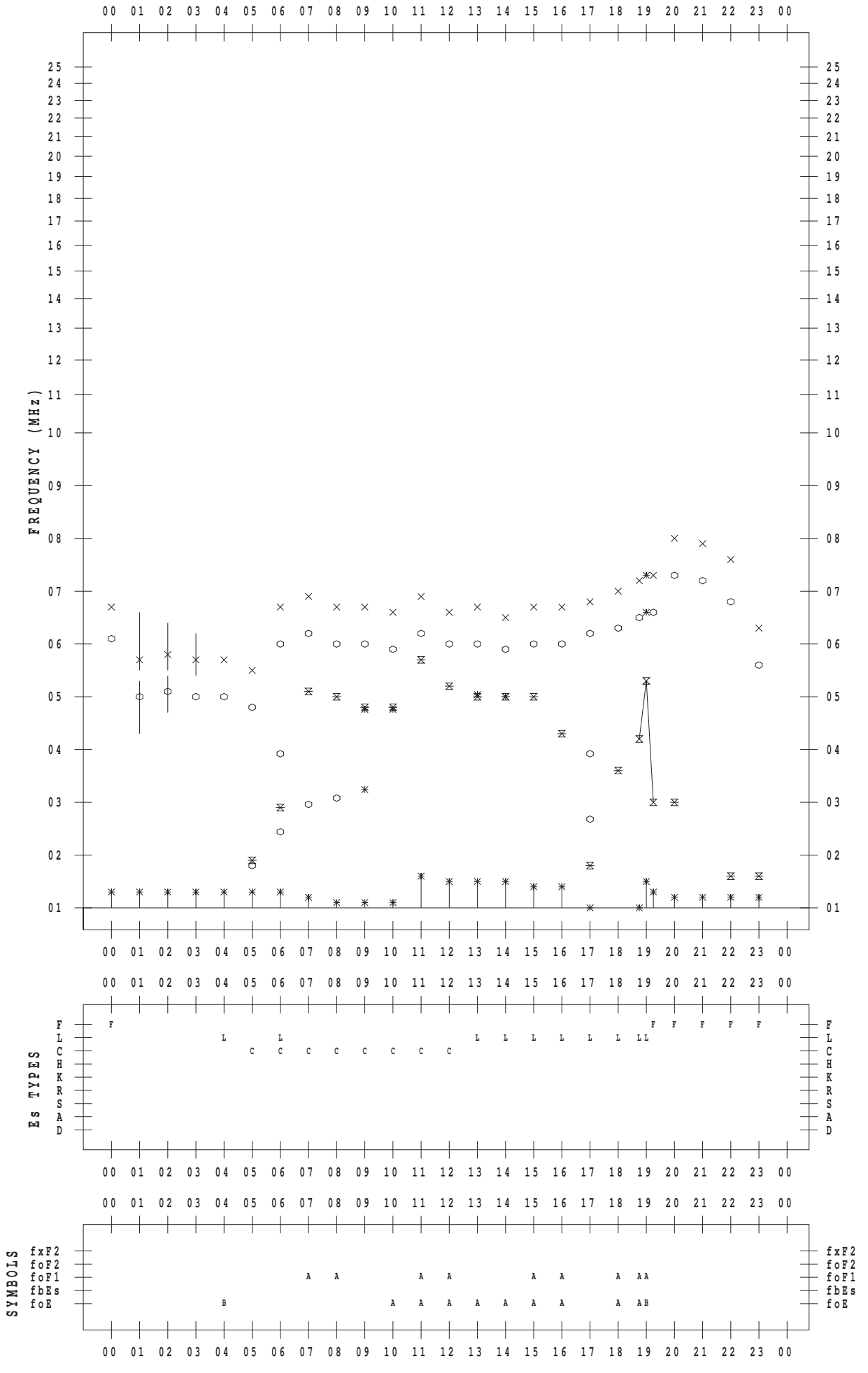
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/ 9

135 °E MEAN TIME



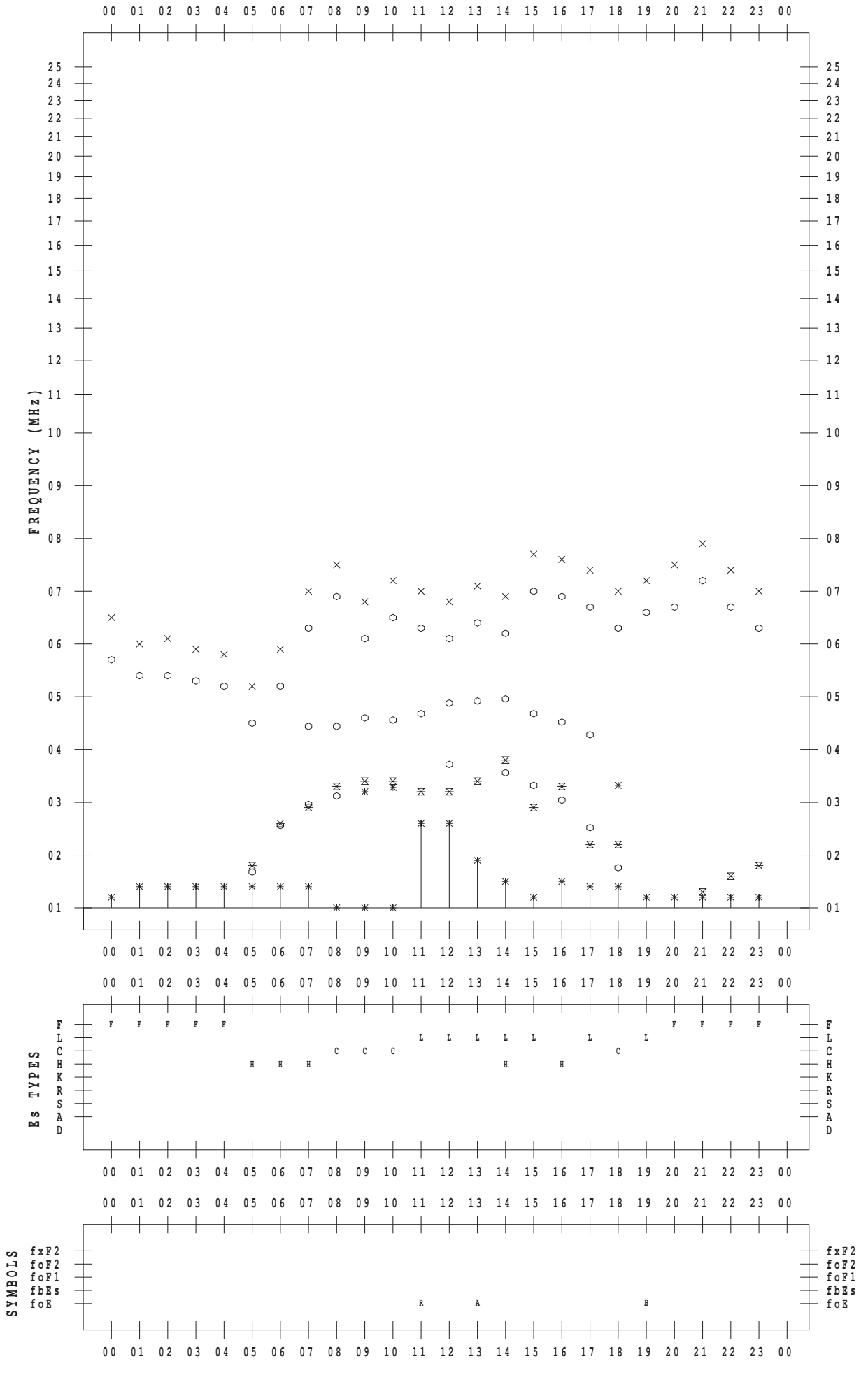
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/10

135 °E MEAN TIME



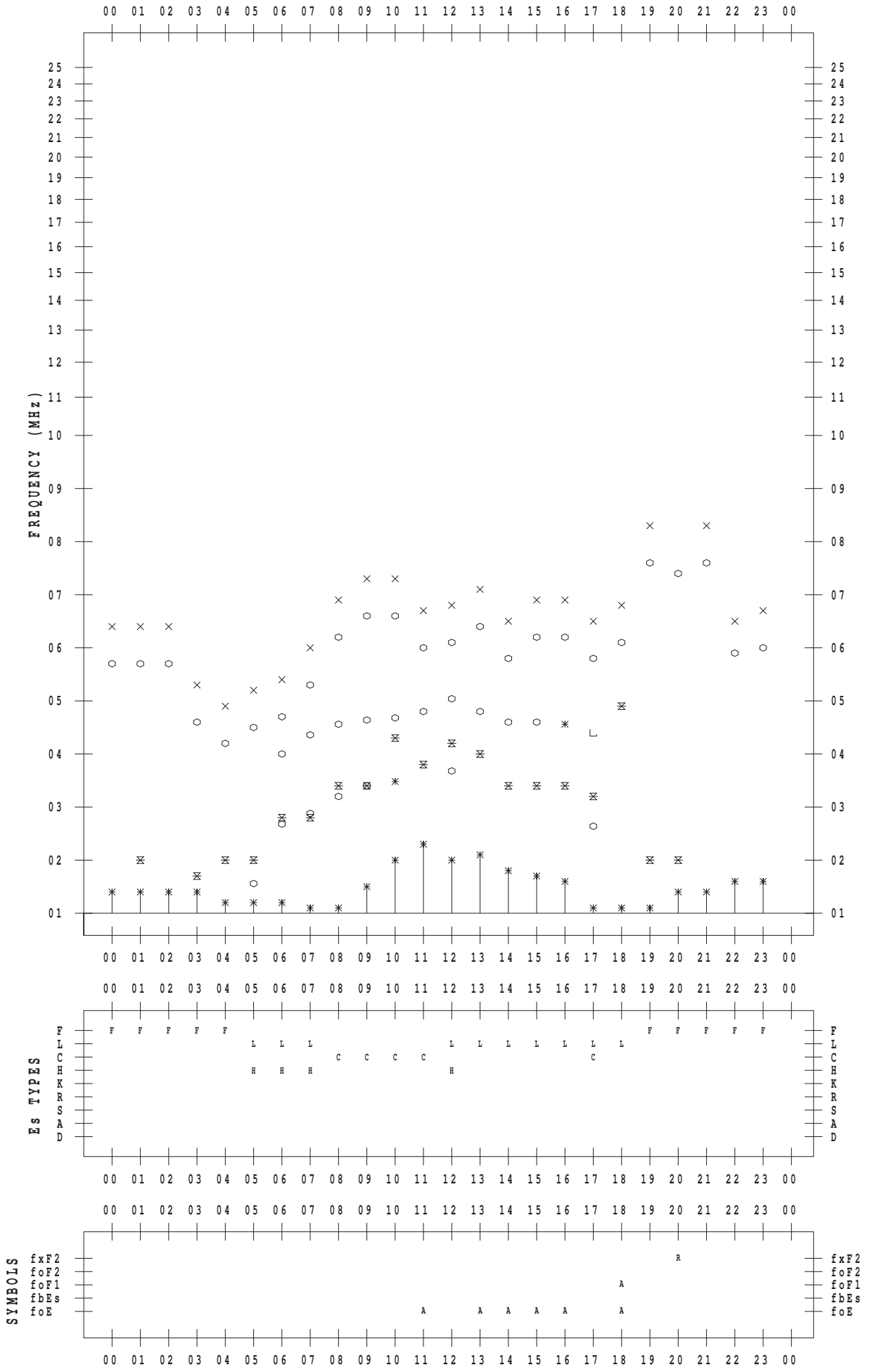
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/11

135 °E MEAN TIME



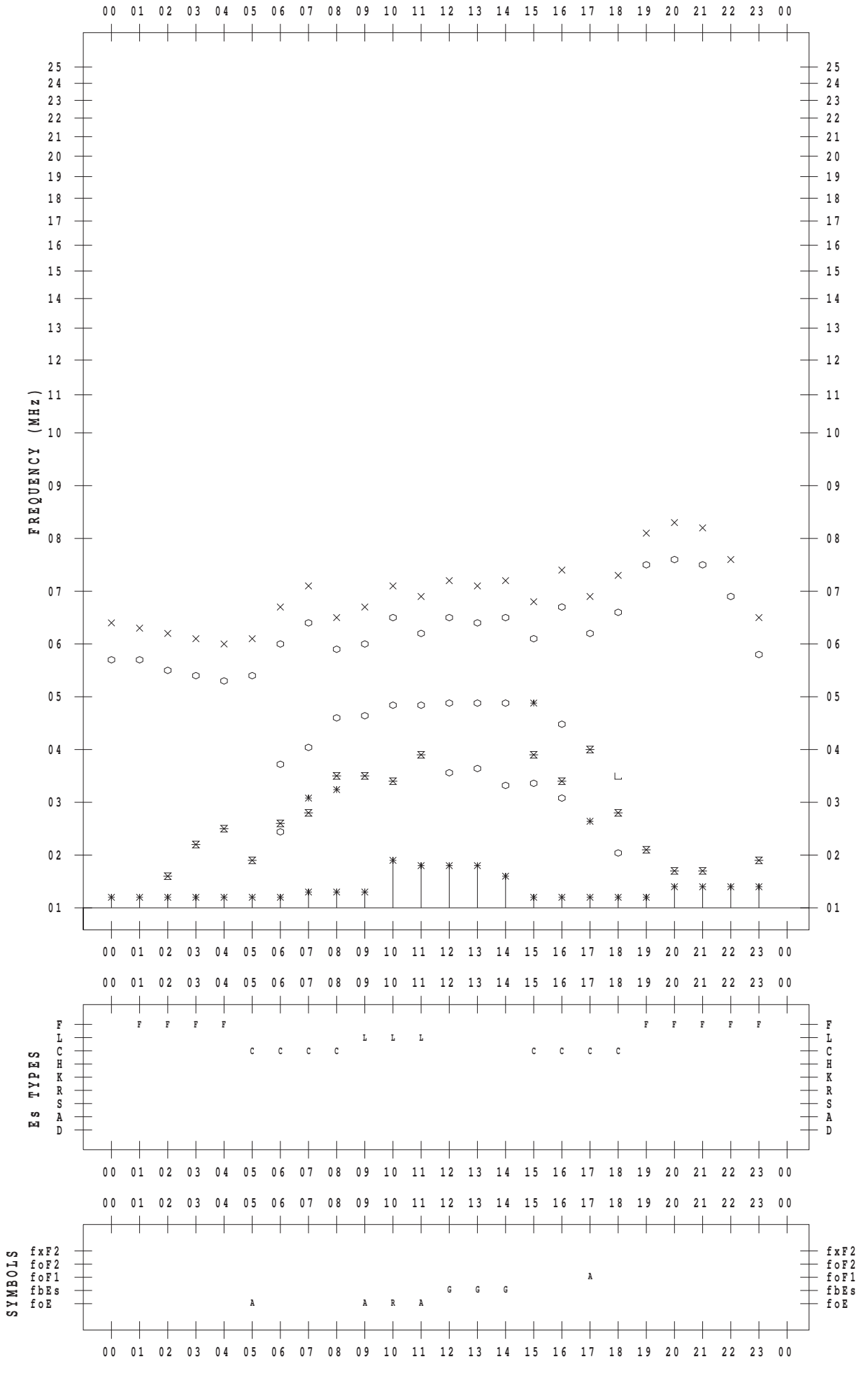
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/12

135 °E MEAN TIME



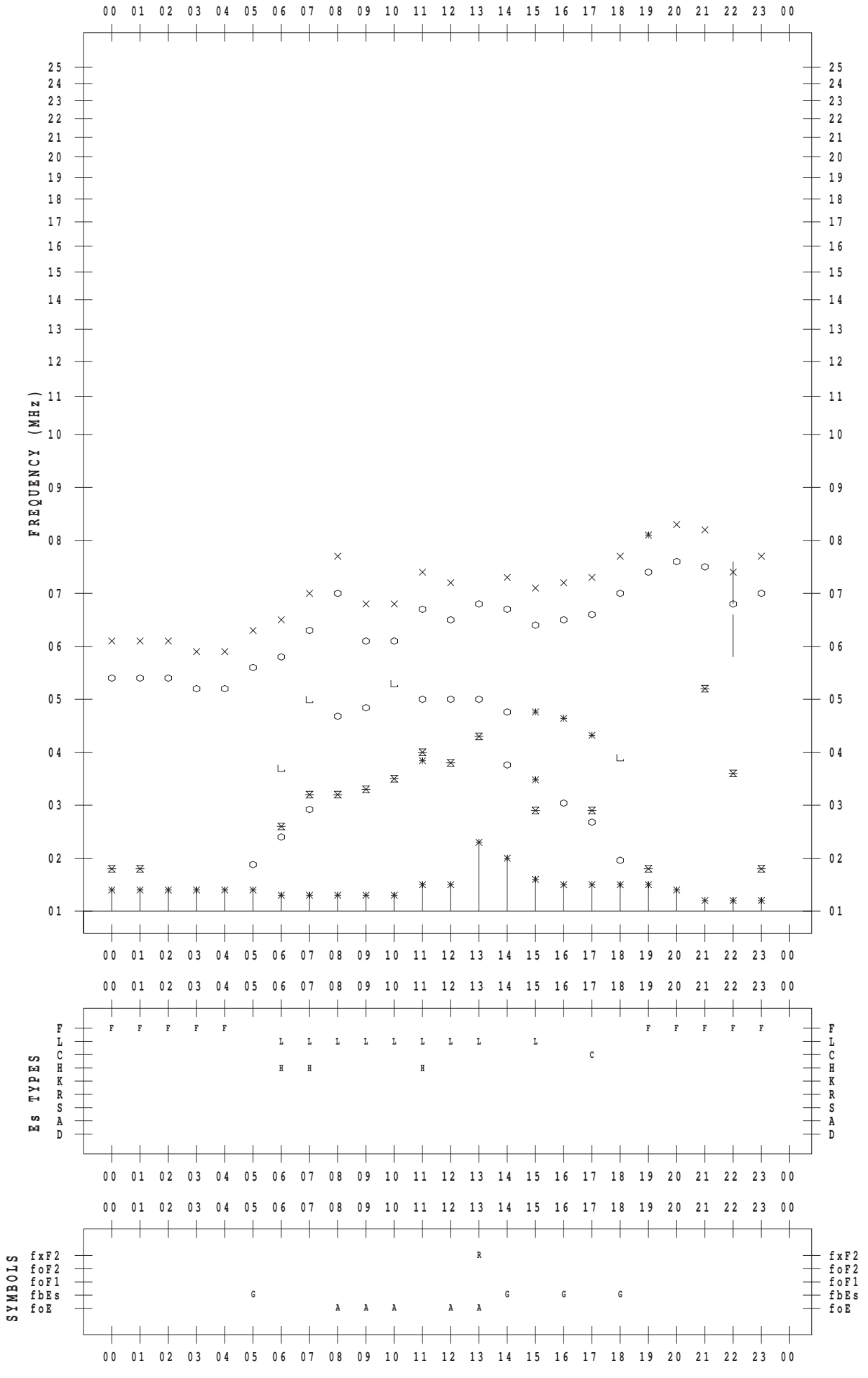
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/13

135 °E MEAN TIME



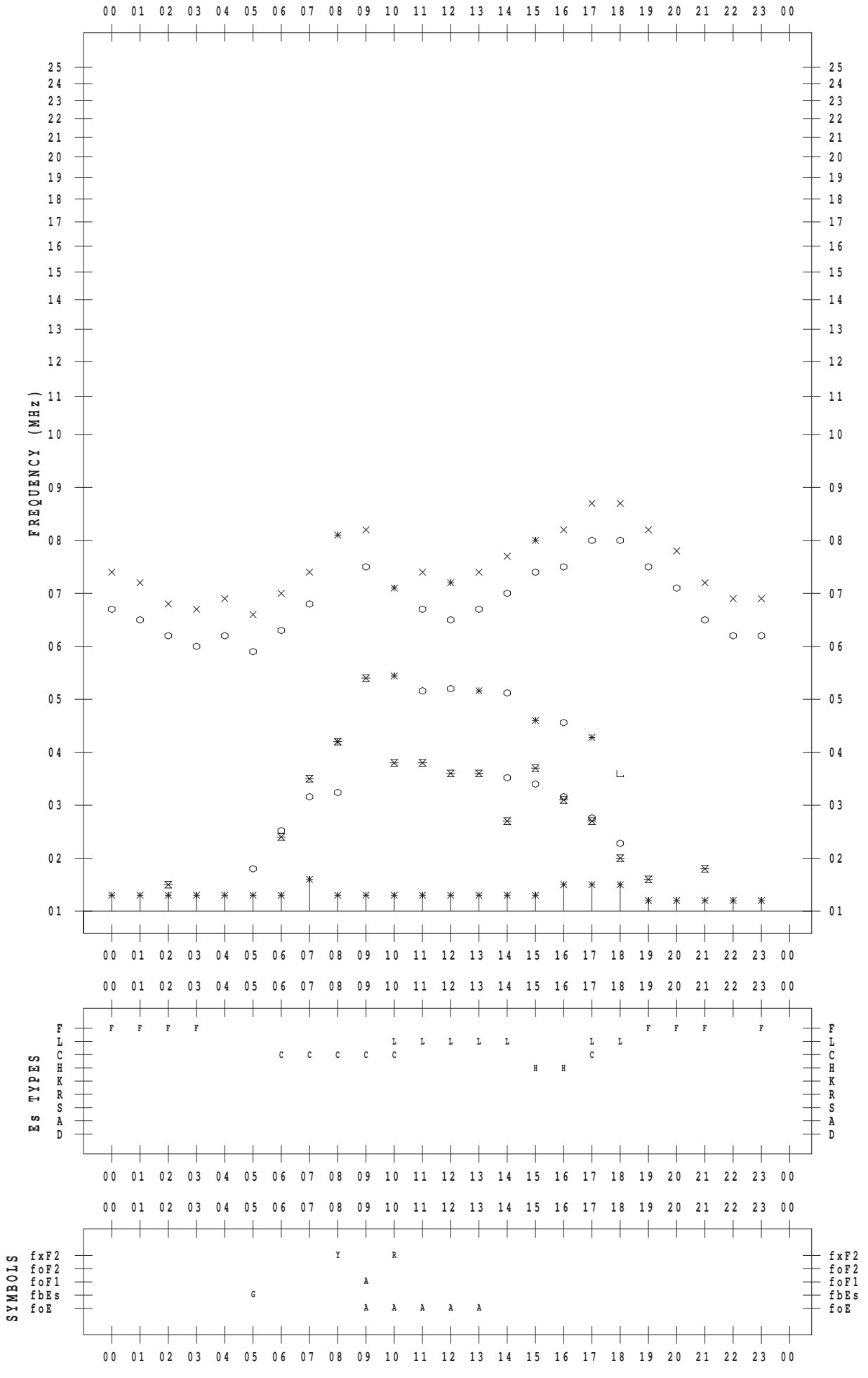
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/14

135 °E MEAN TIME



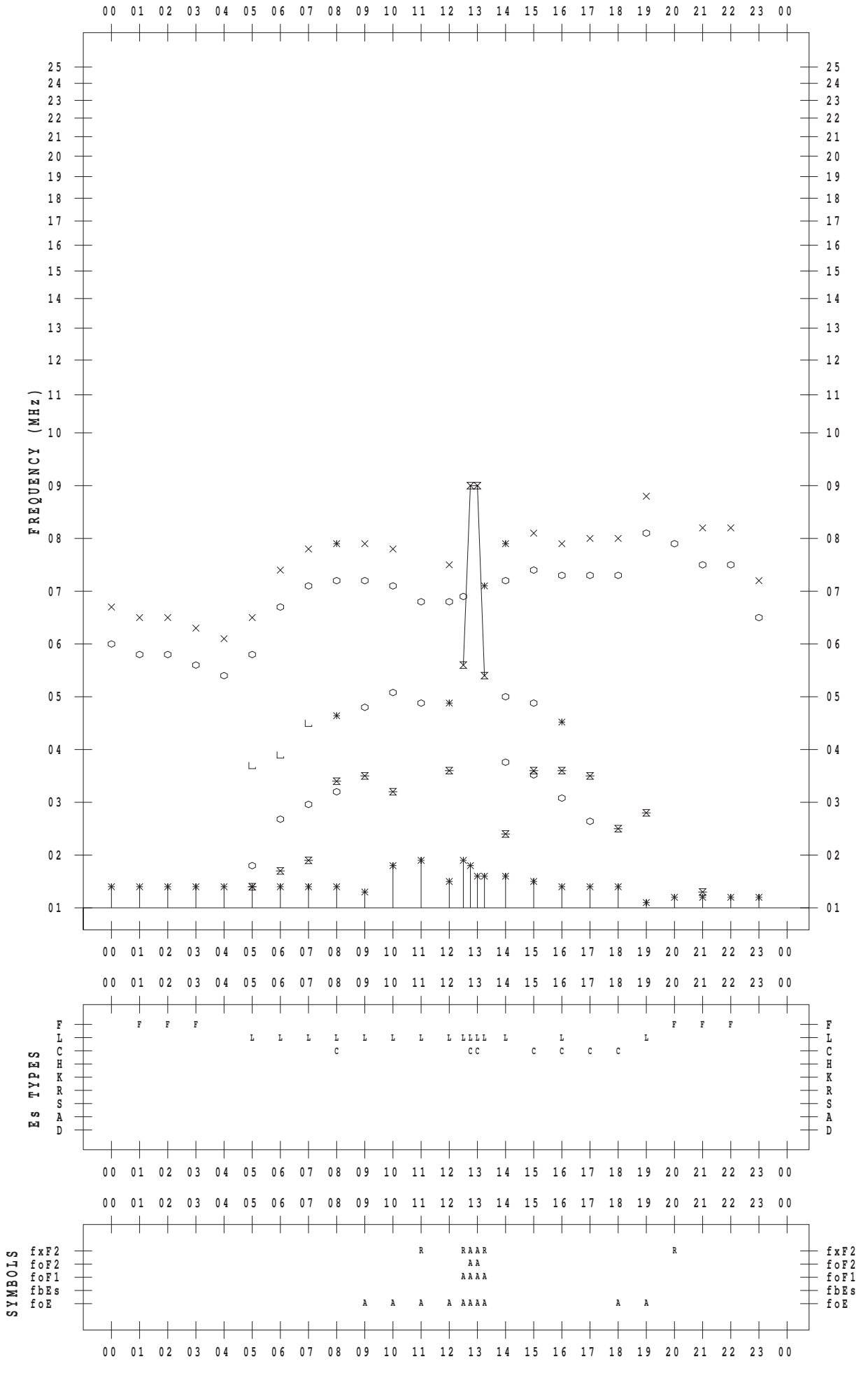
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/15

135 °E MEAN TIME



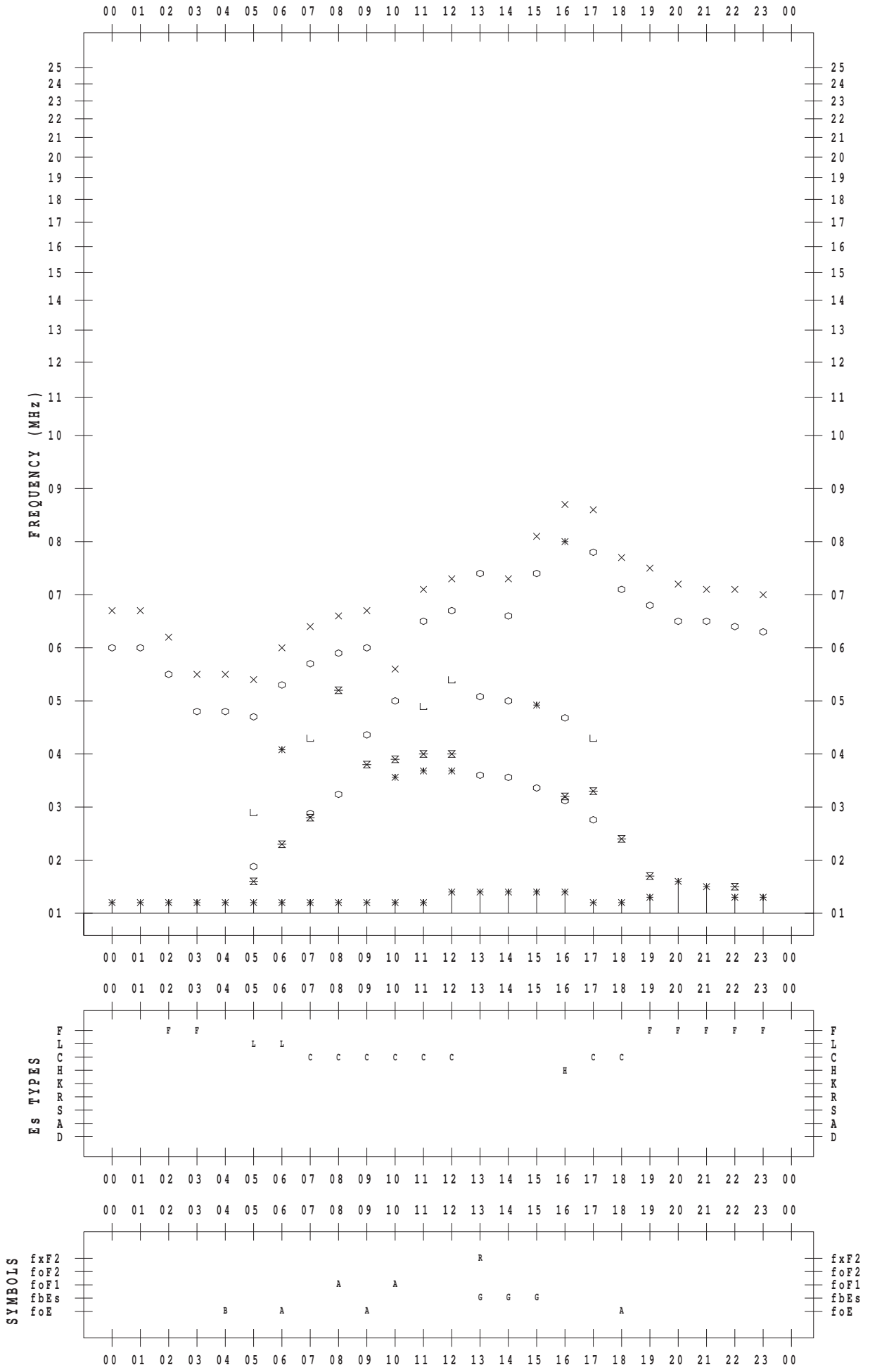
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/16

135 °E MEAN TIME



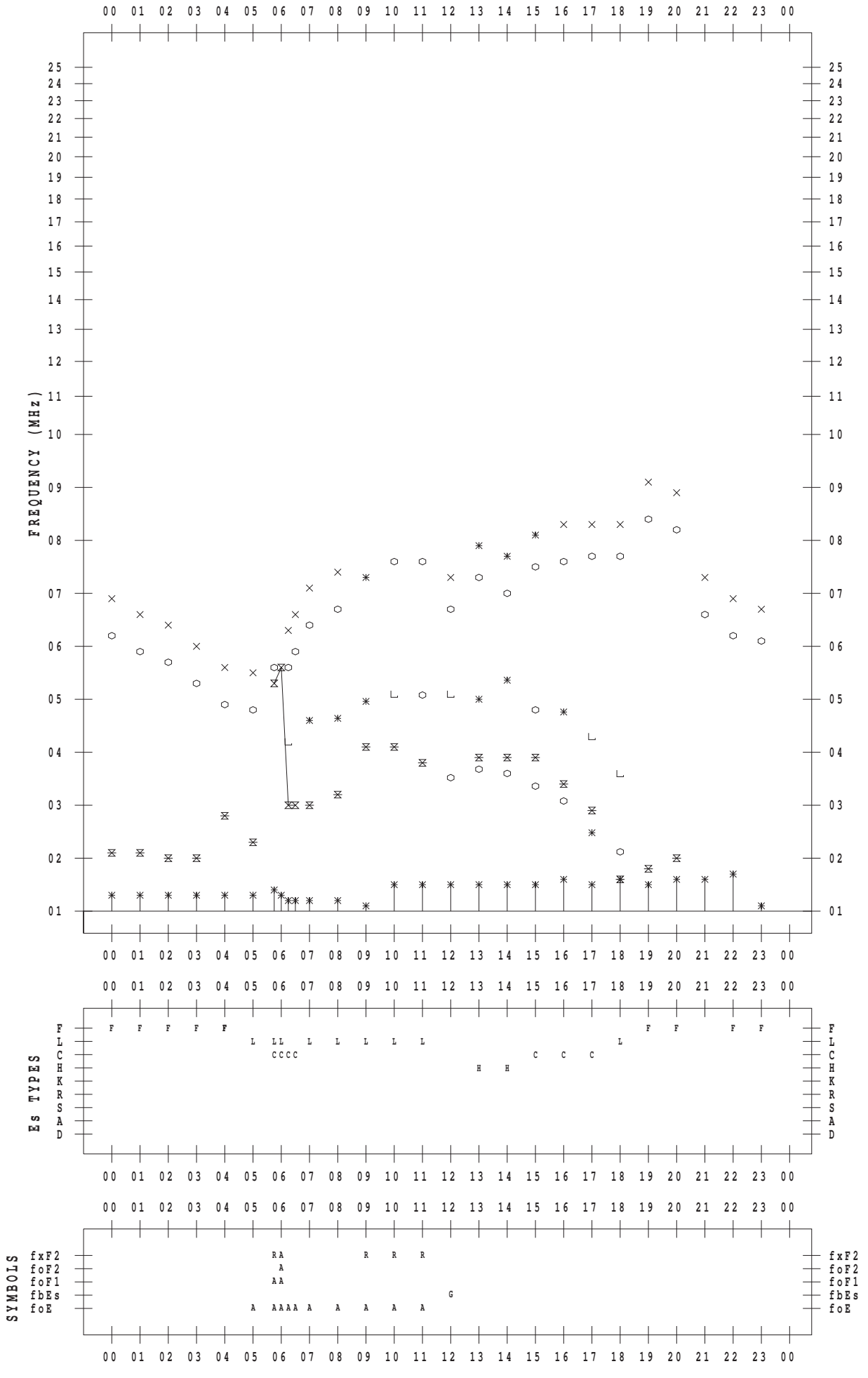
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/17

135 °E MEAN TIME



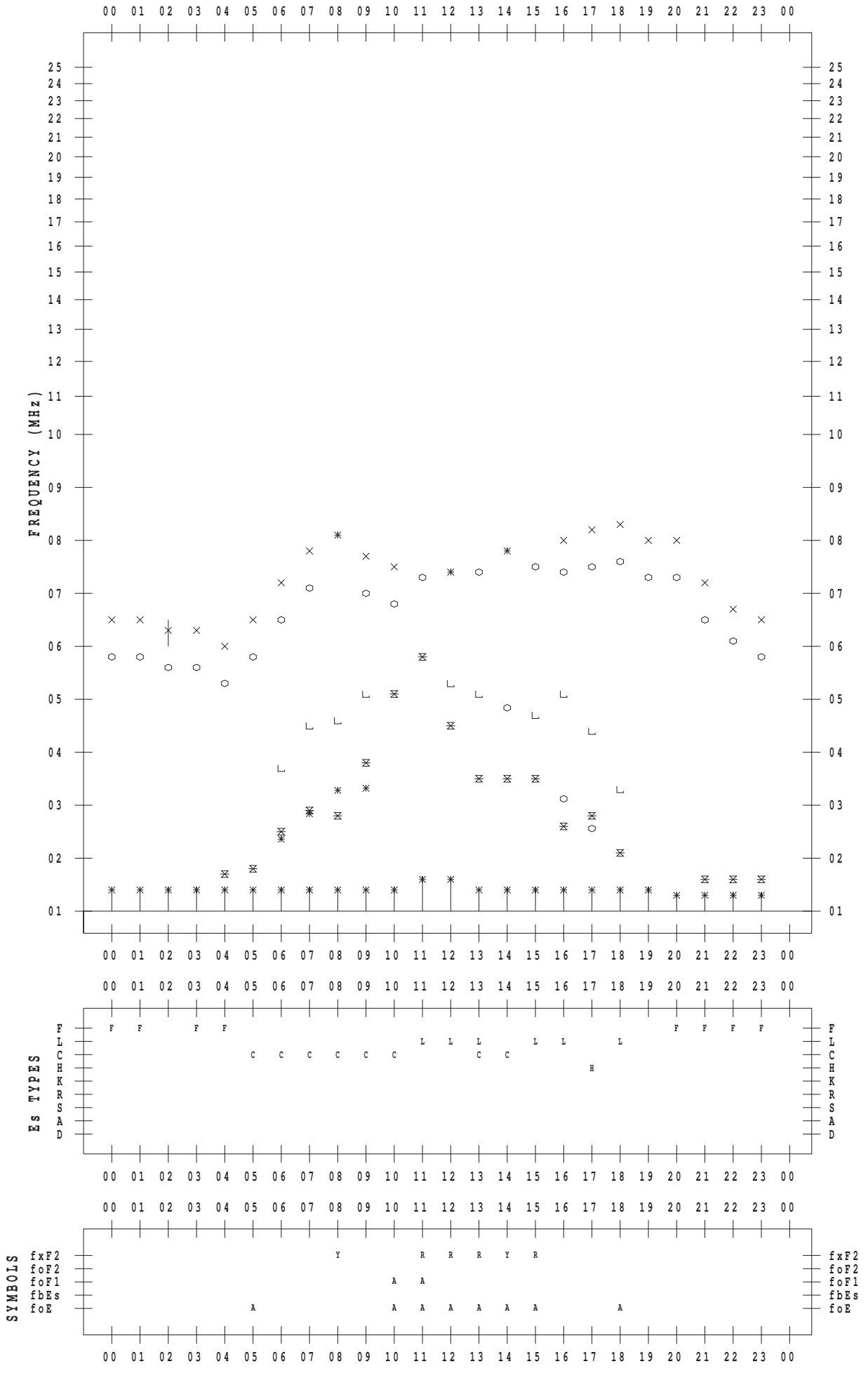
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/18

135 °E MEAN TIME



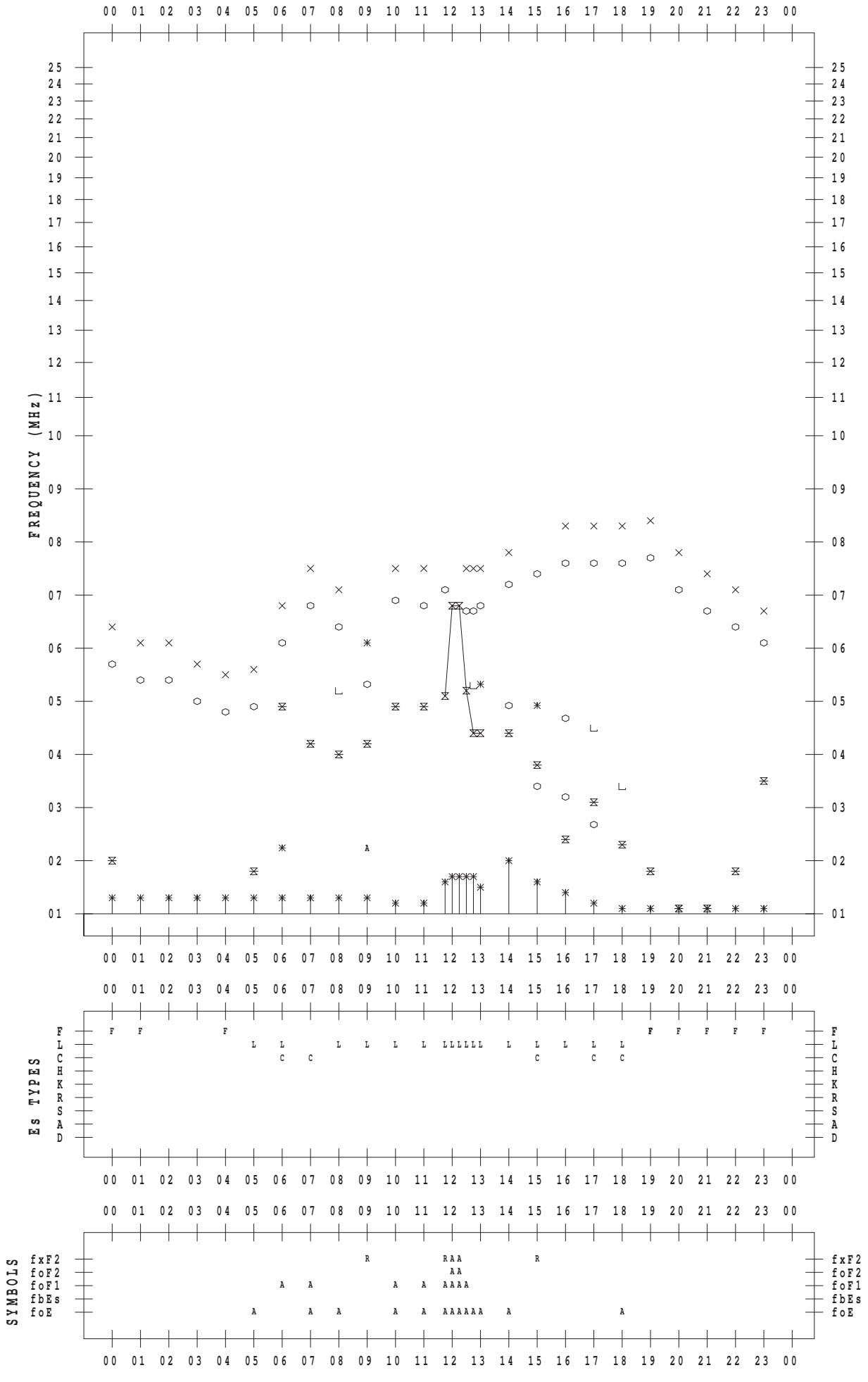
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/19

135 °E MEAN TIME



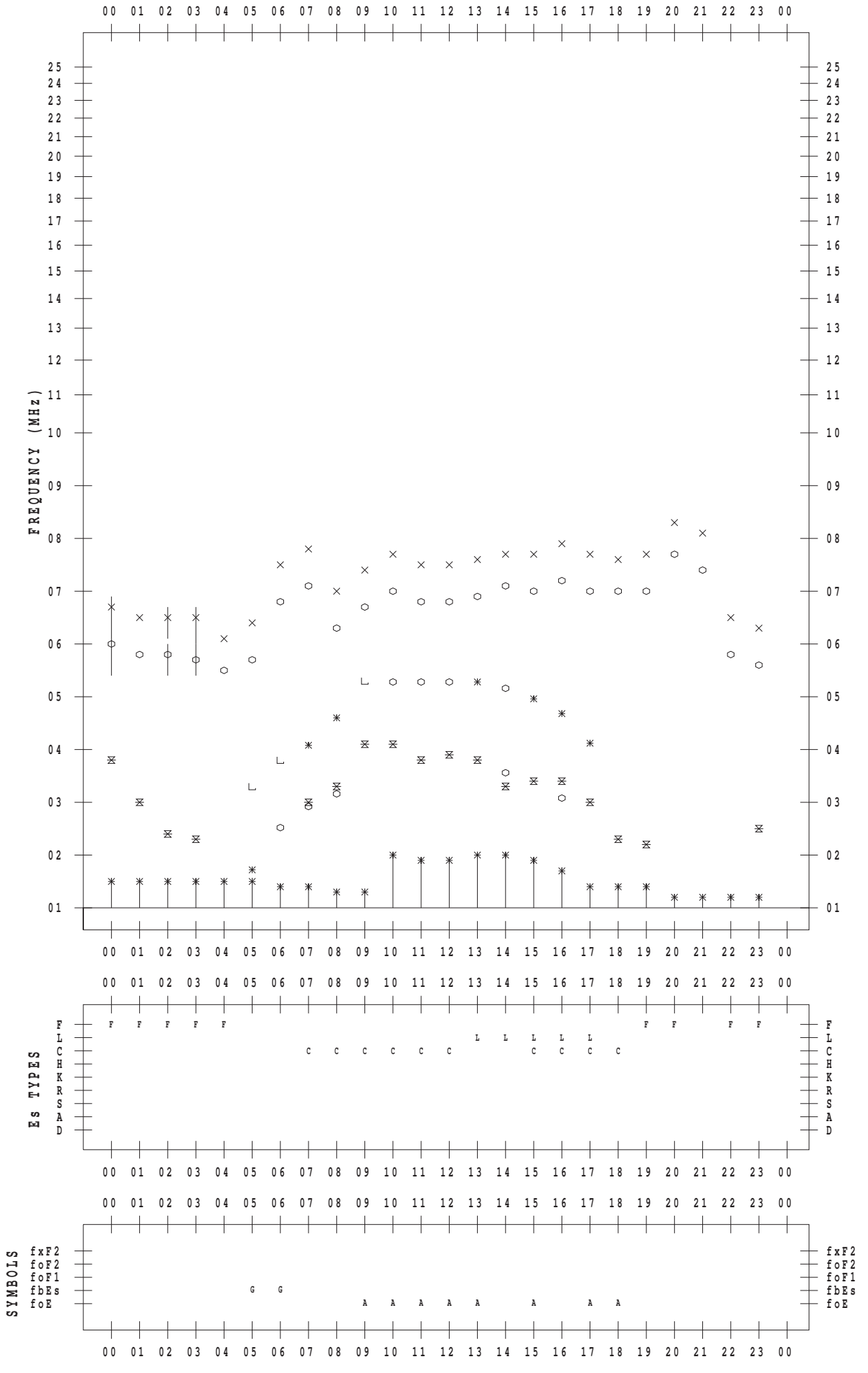
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/20

135 °E MEAN TIME



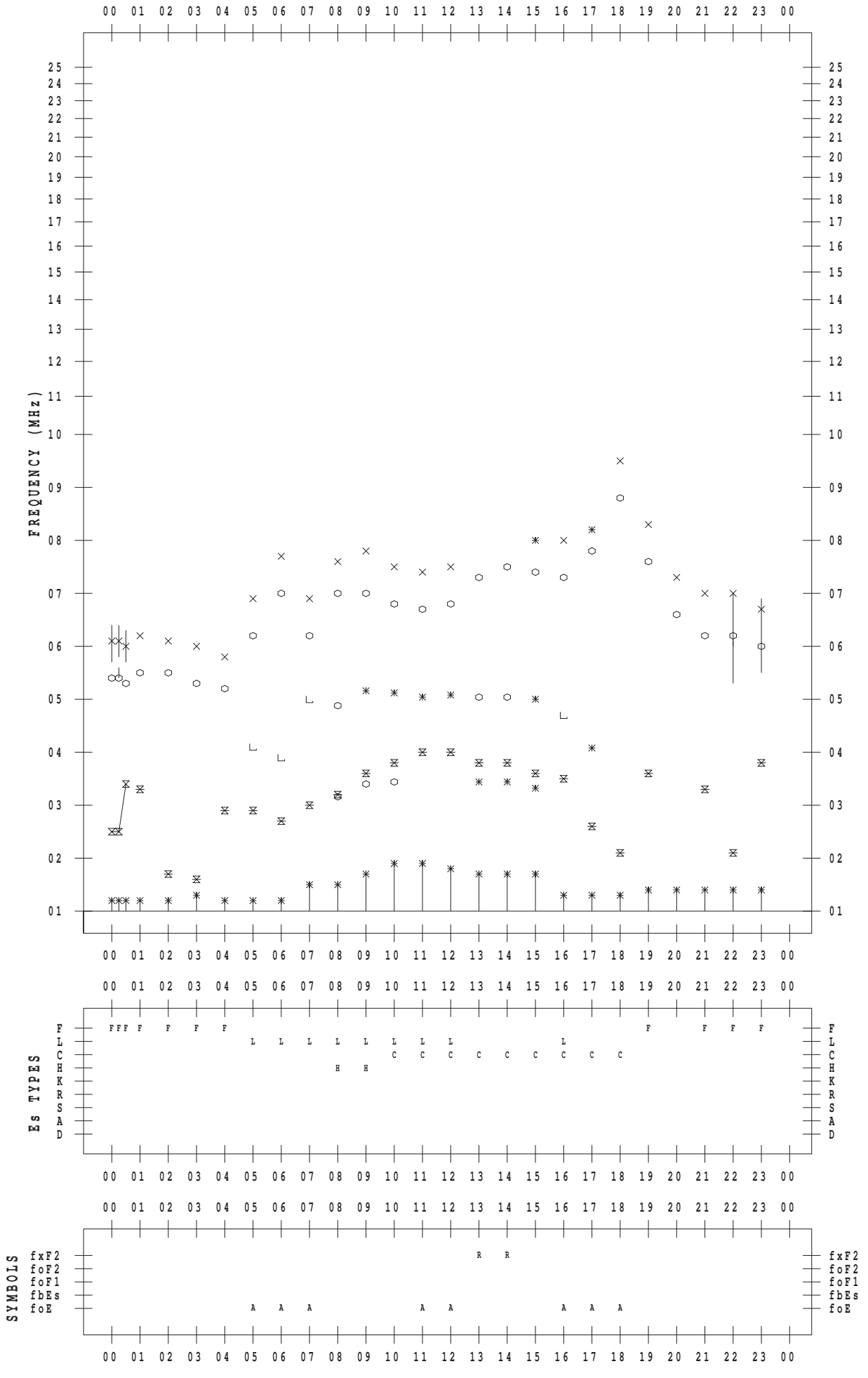
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/21

135 °E MEAN TIME



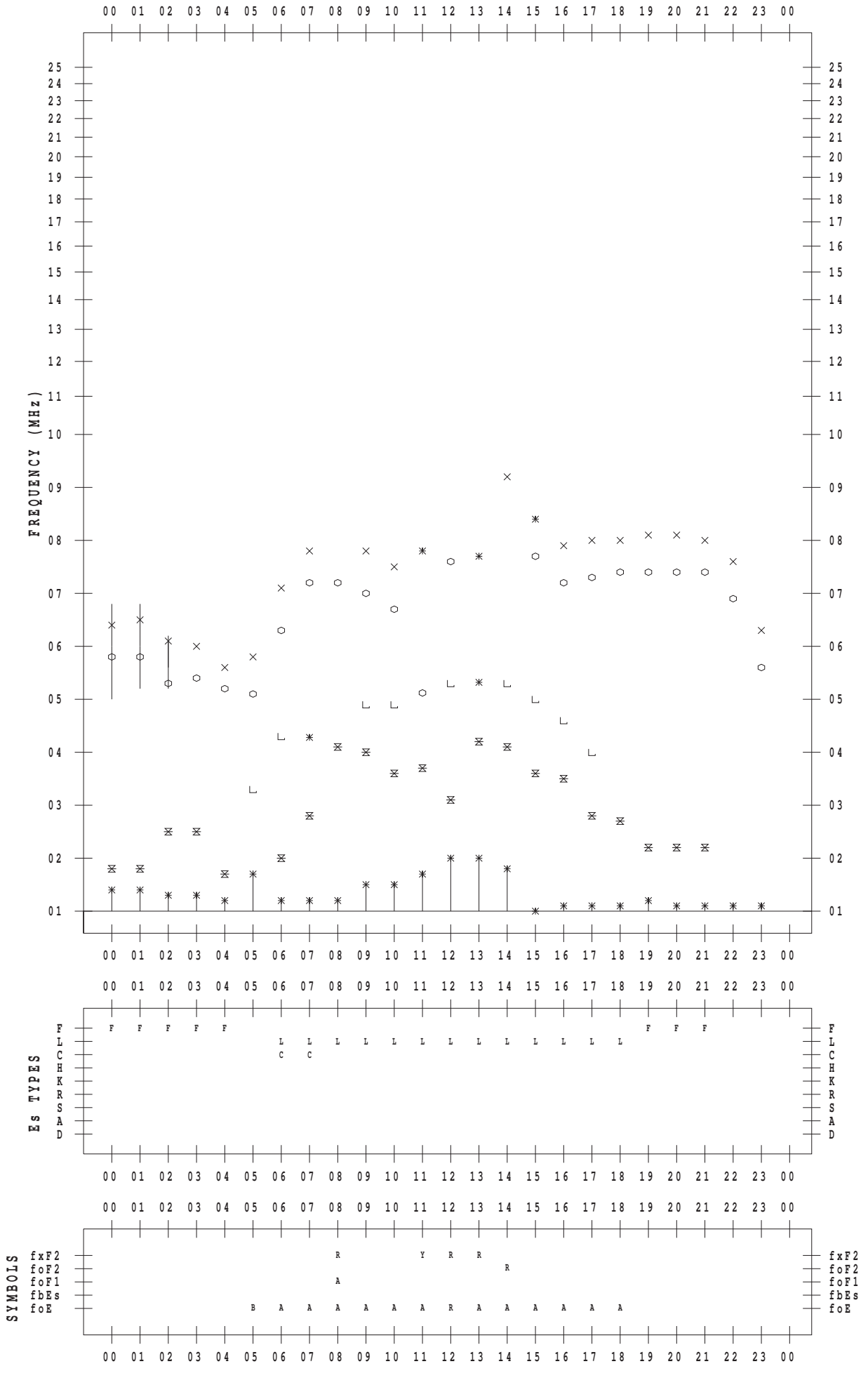
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/22

135 °E MEAN TIME



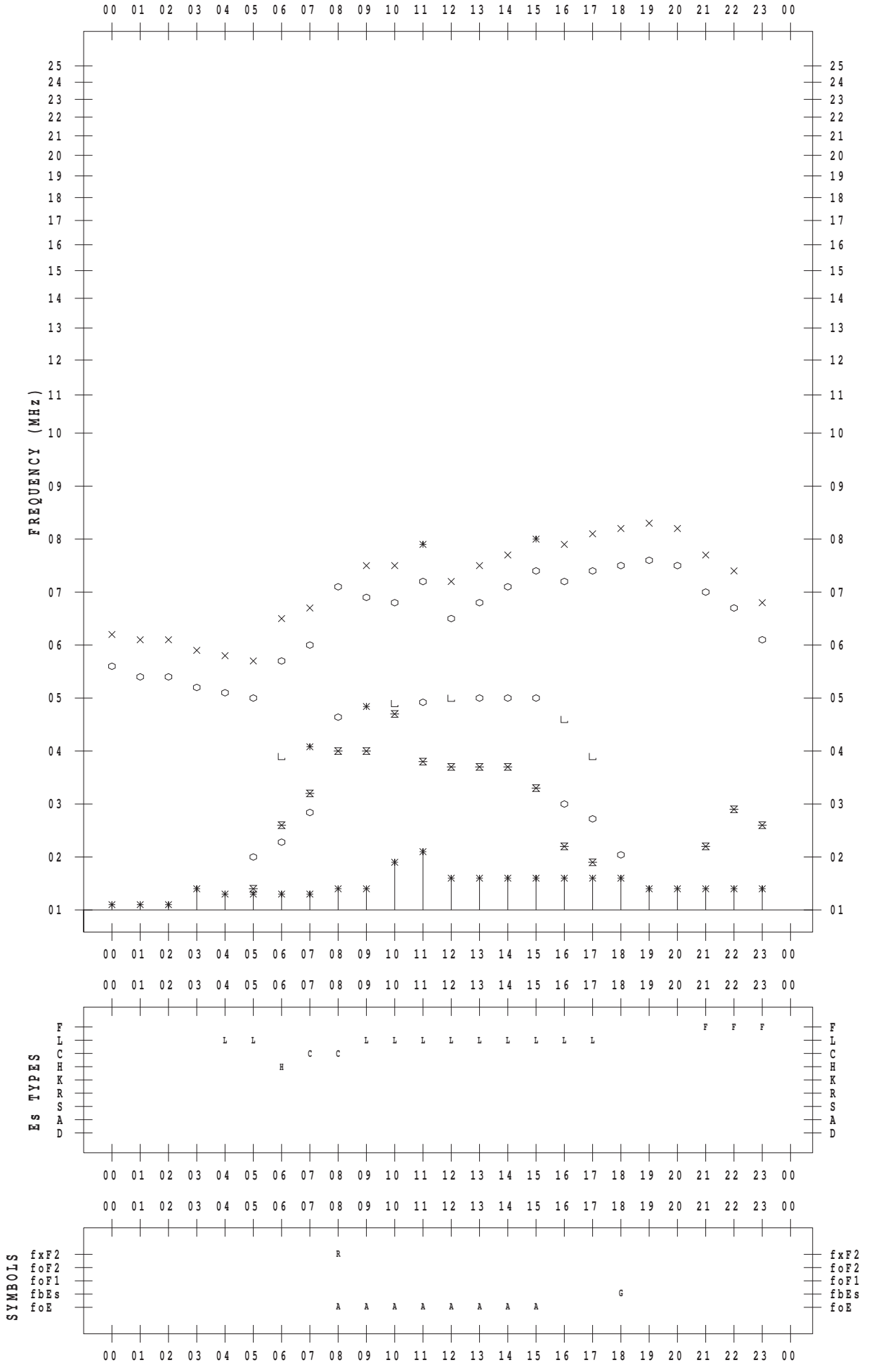
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/23

135 °E MEAN TIME



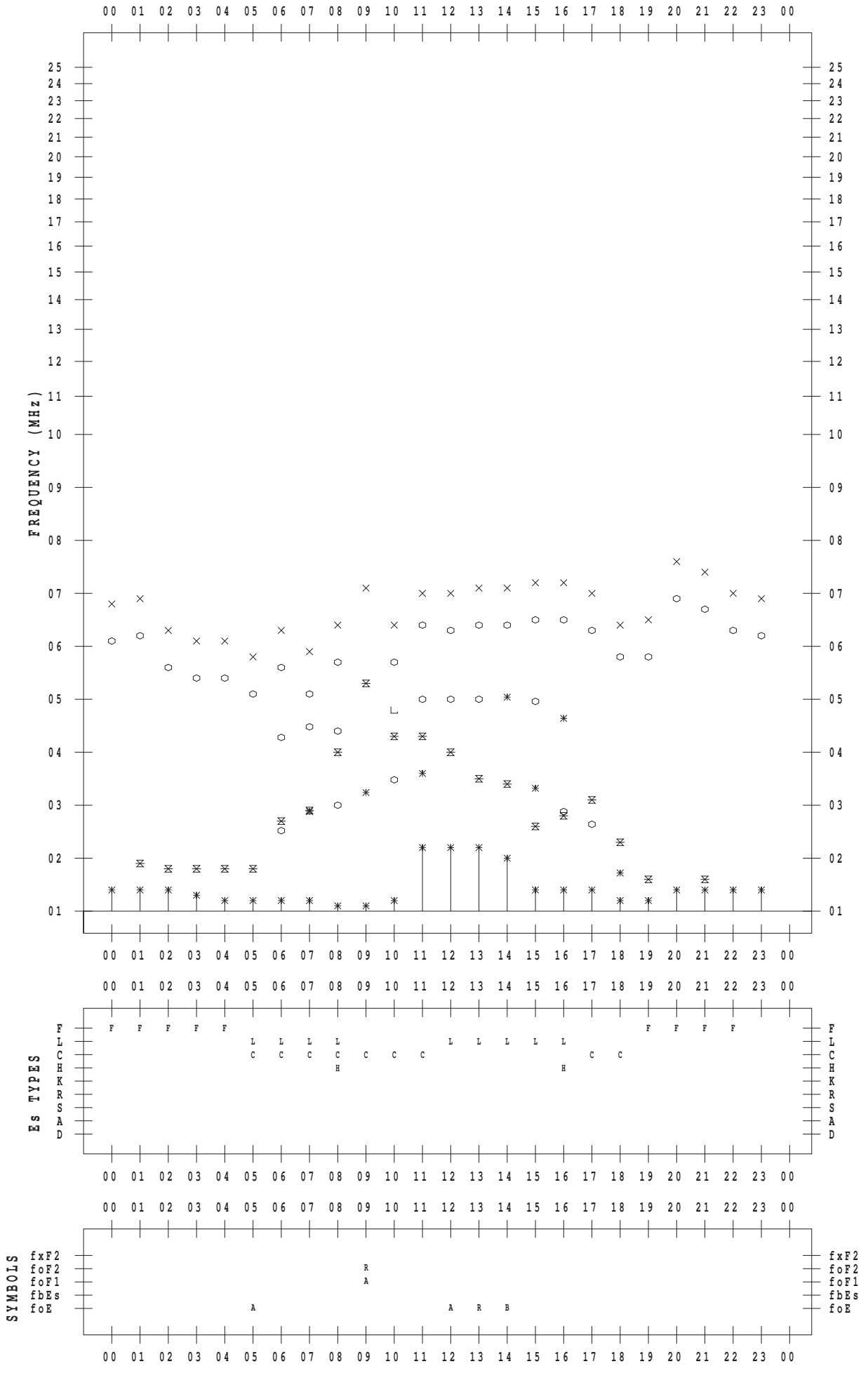
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/24

135 °E MEAN TIME



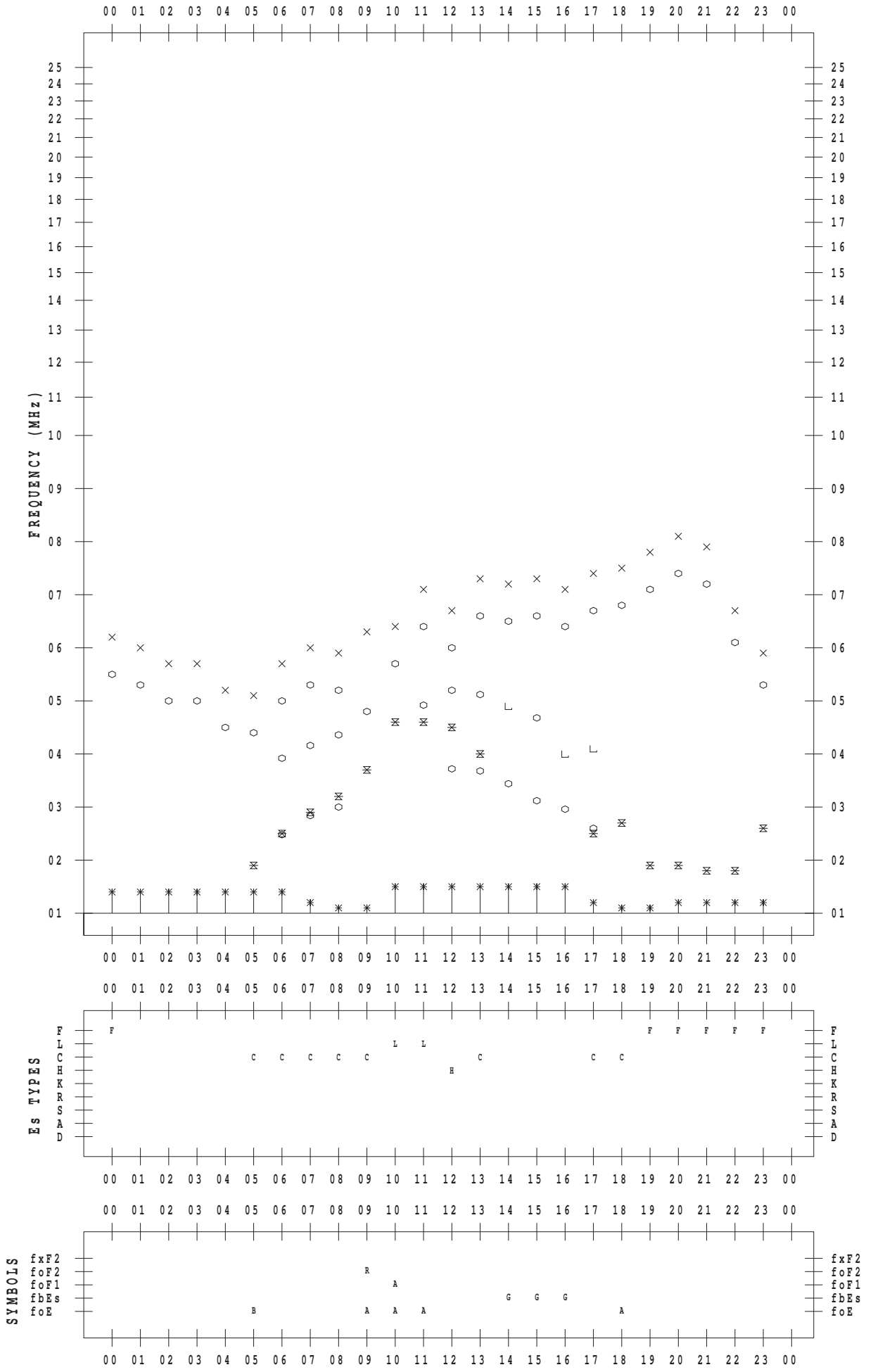
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/25

135 °E MEAN TIME



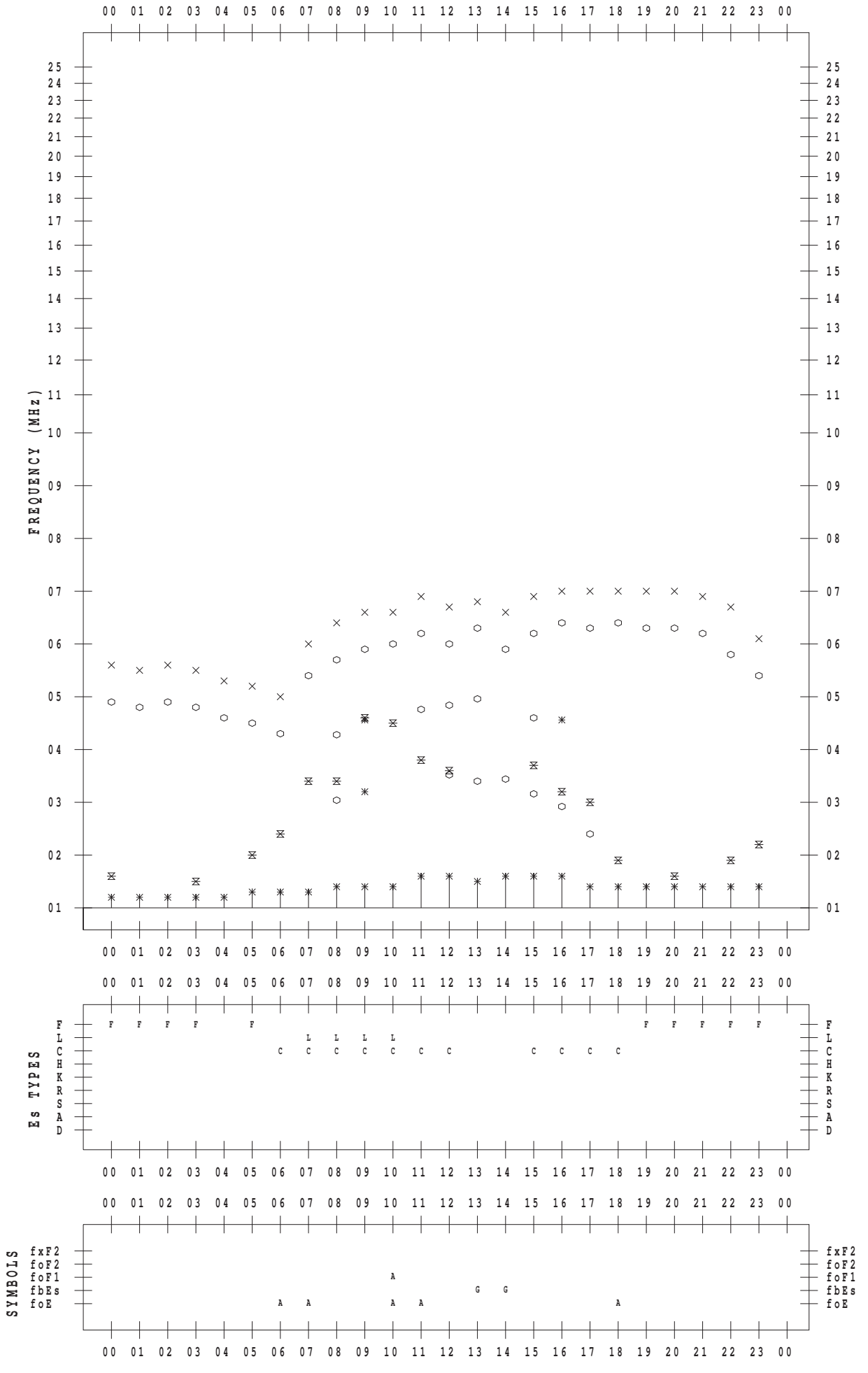
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/26

135 °E MEAN TIME



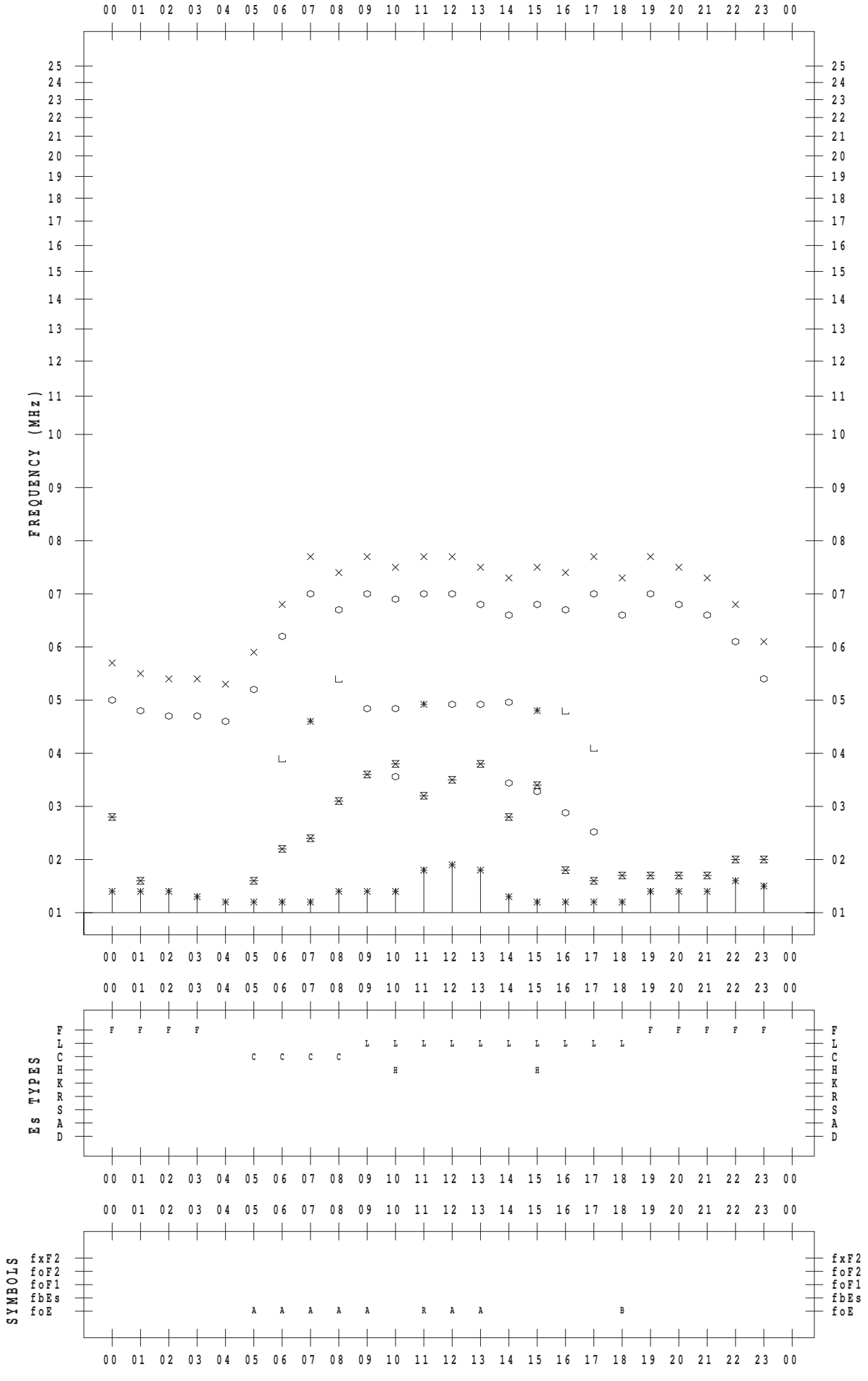
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/27

135 °E MEAN TIME



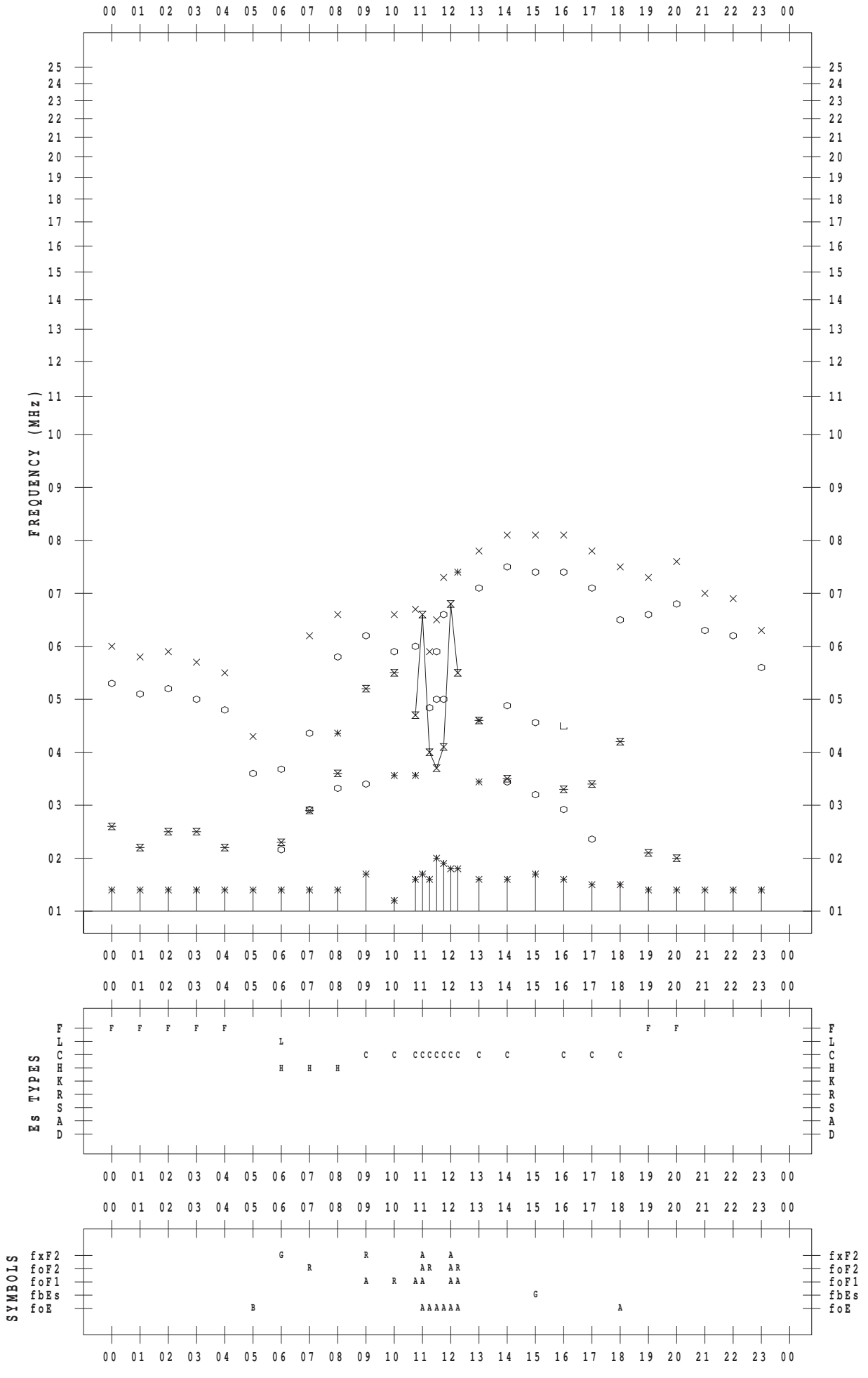
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/28

135 °E MEAN TIME



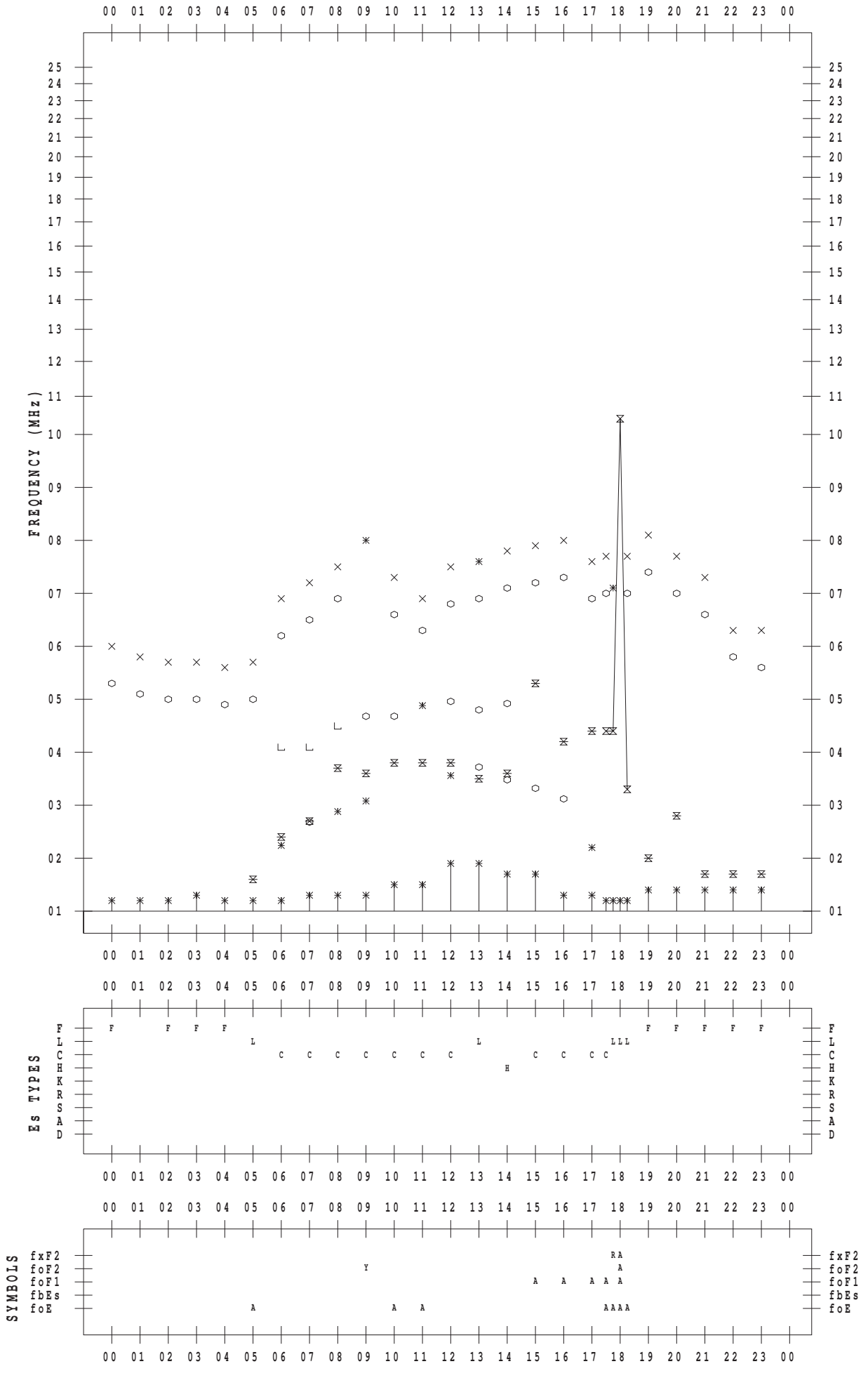
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/29

135 °E MEAN TIME



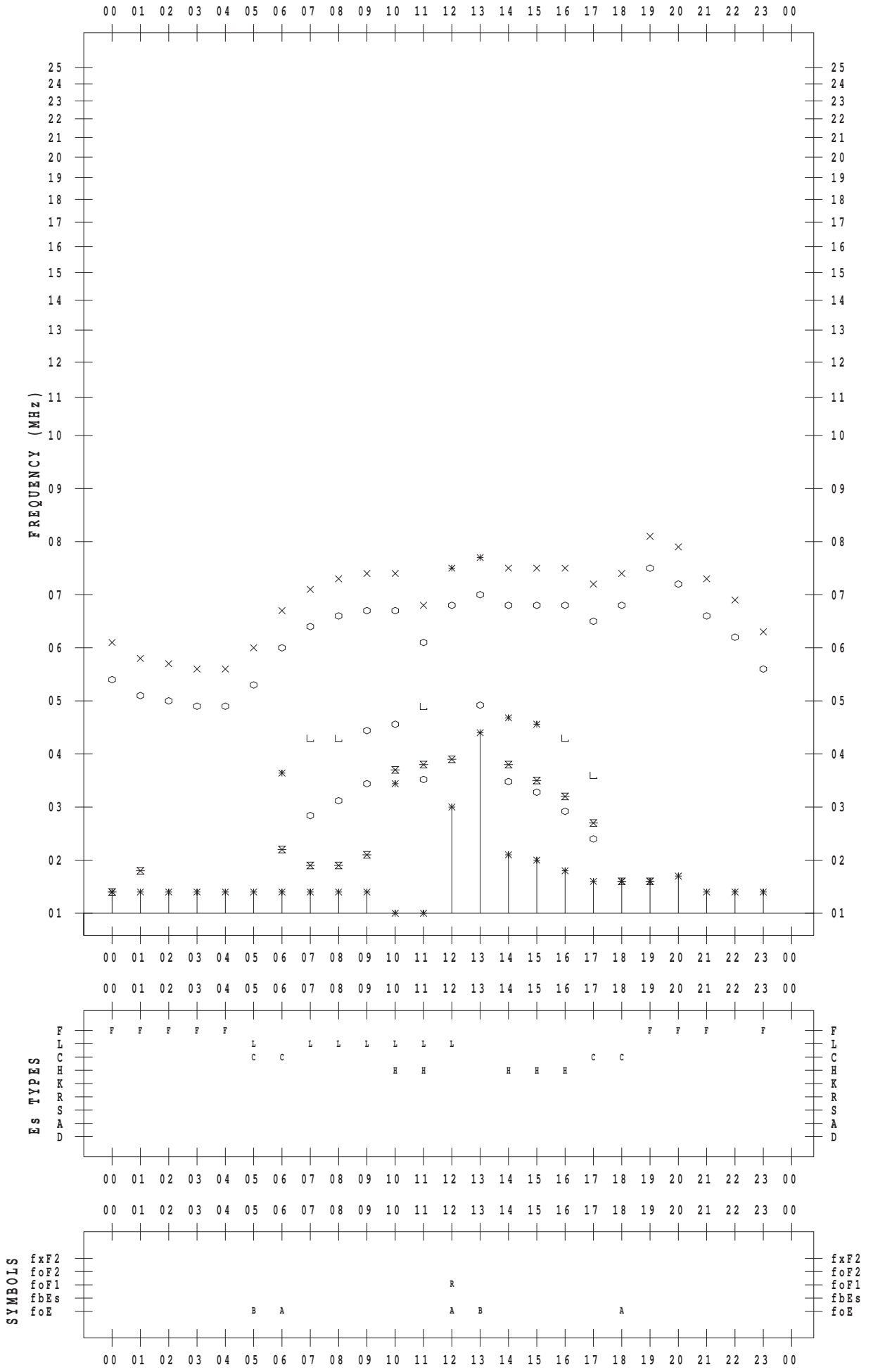
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/30

135 °E MEAN TIME



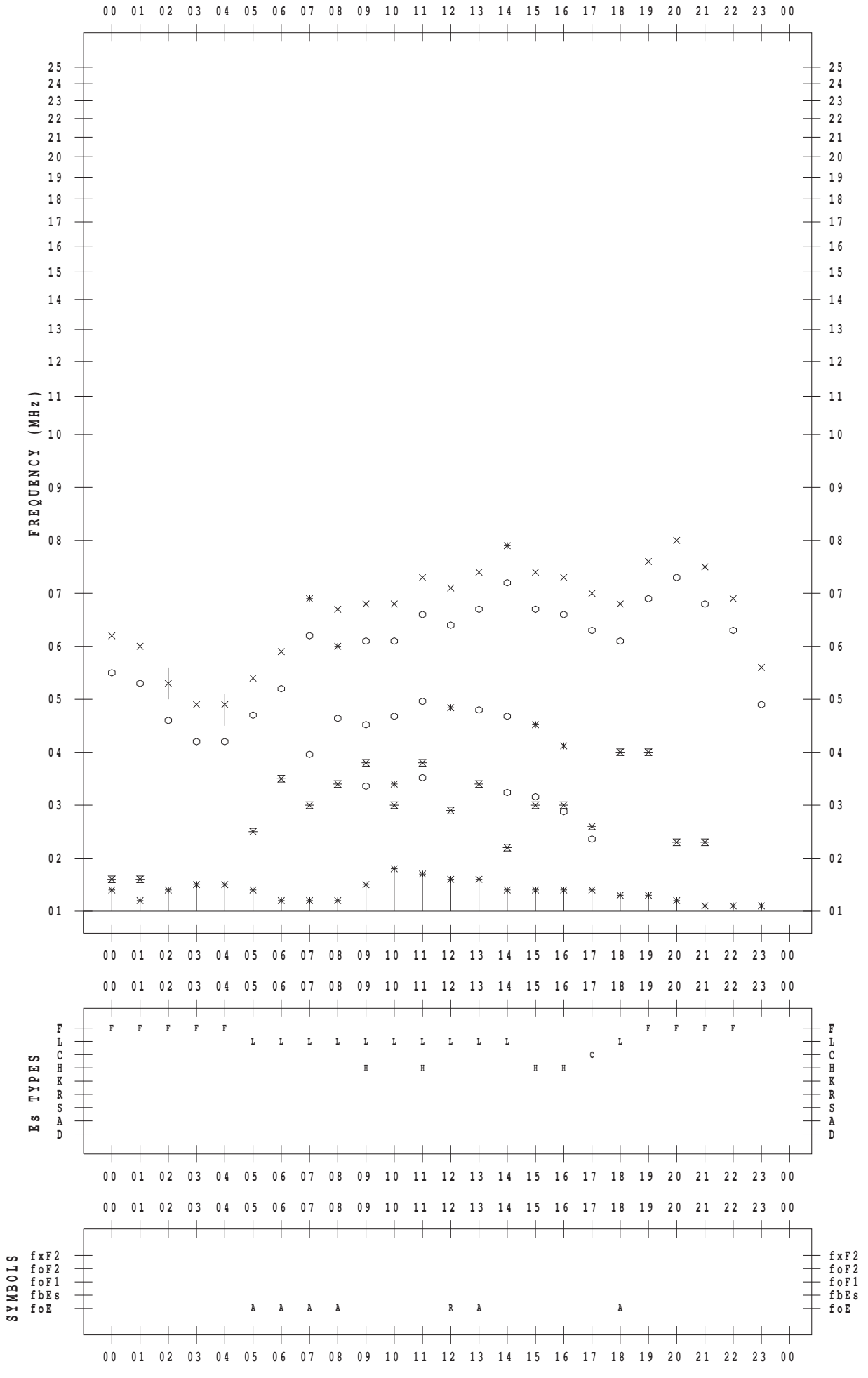
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/ 8/31

135 °E MEAN TIME



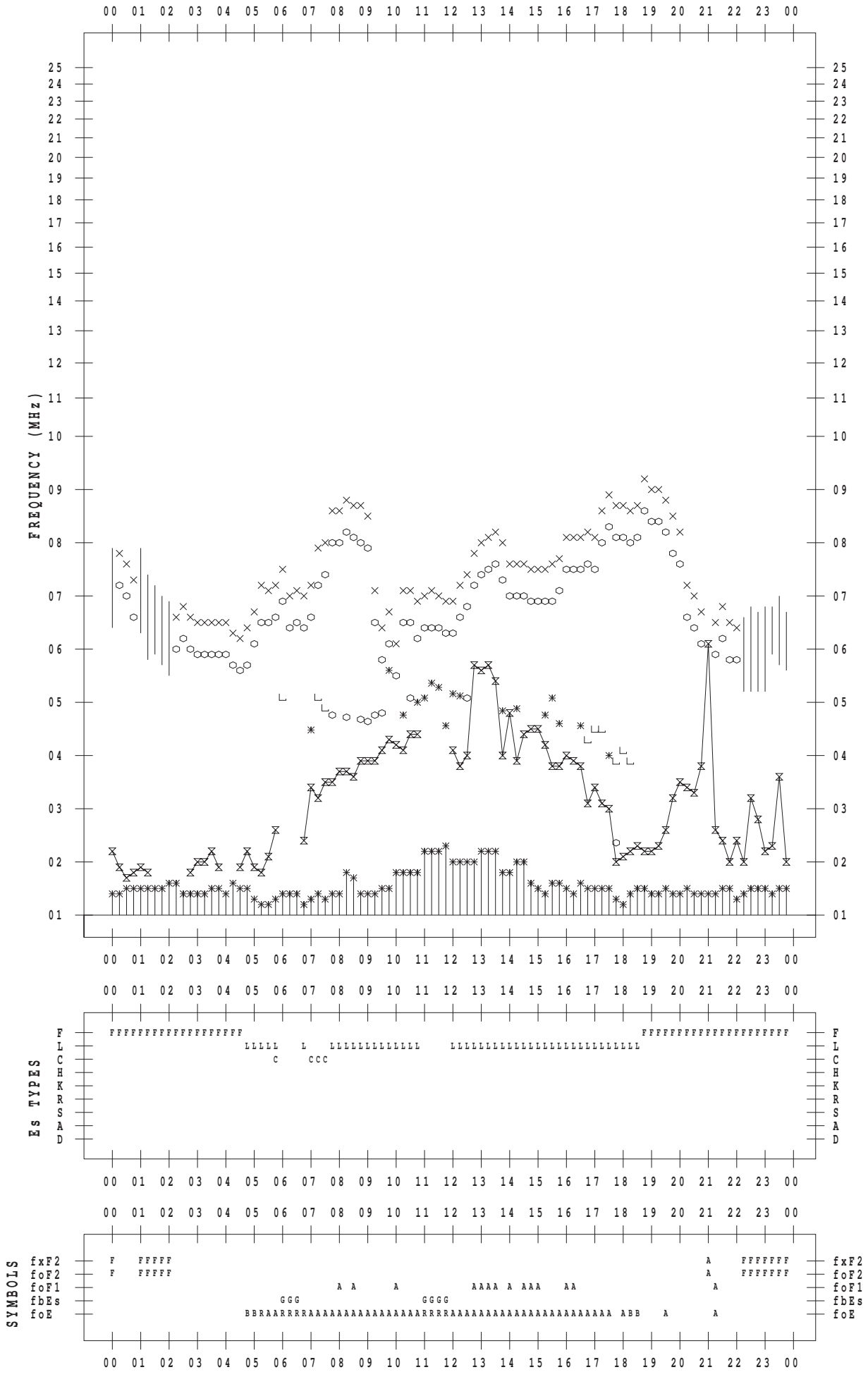
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/ 1

135 °E MEAN TIME



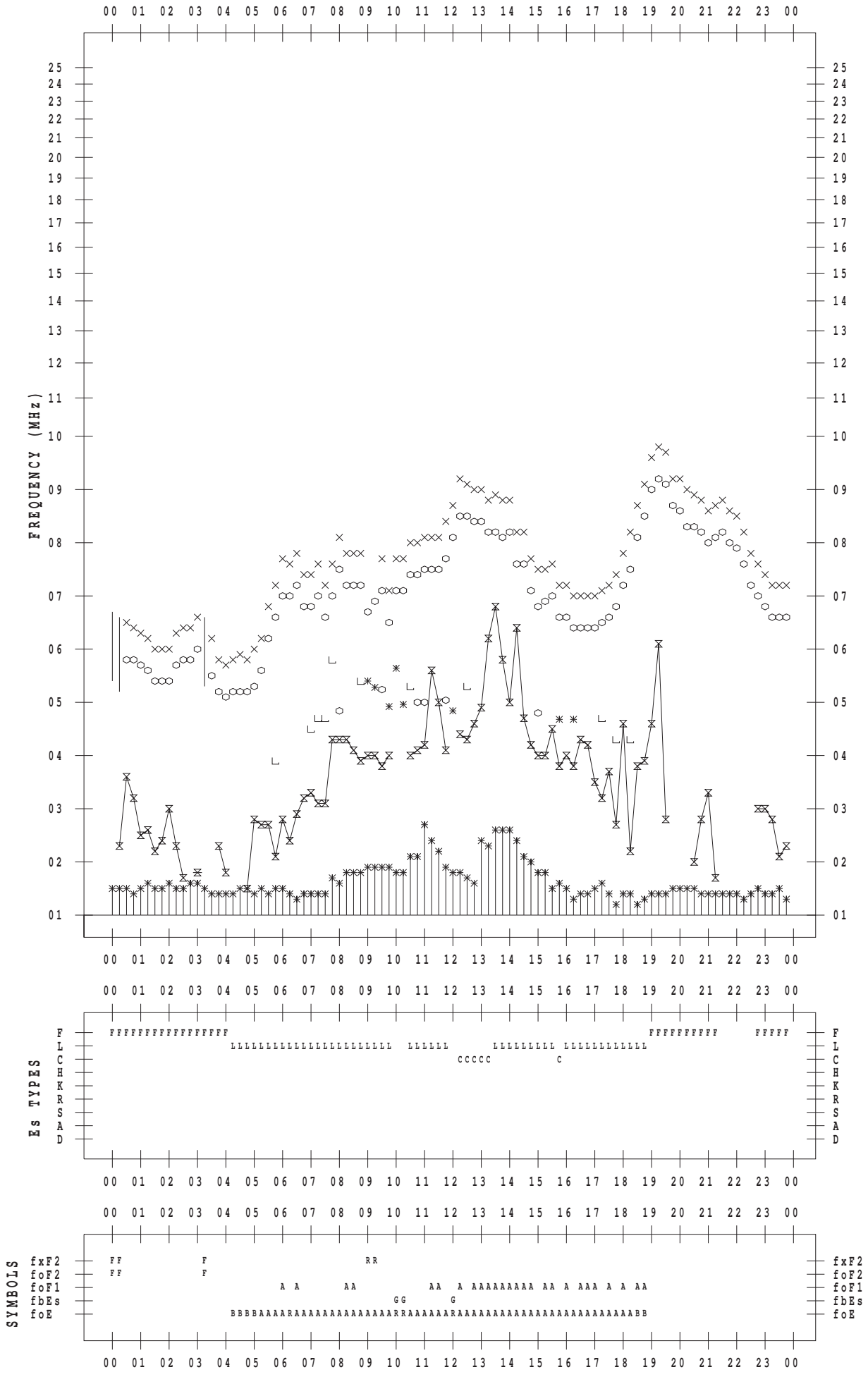
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/ 2

135 °E MEAN TIME



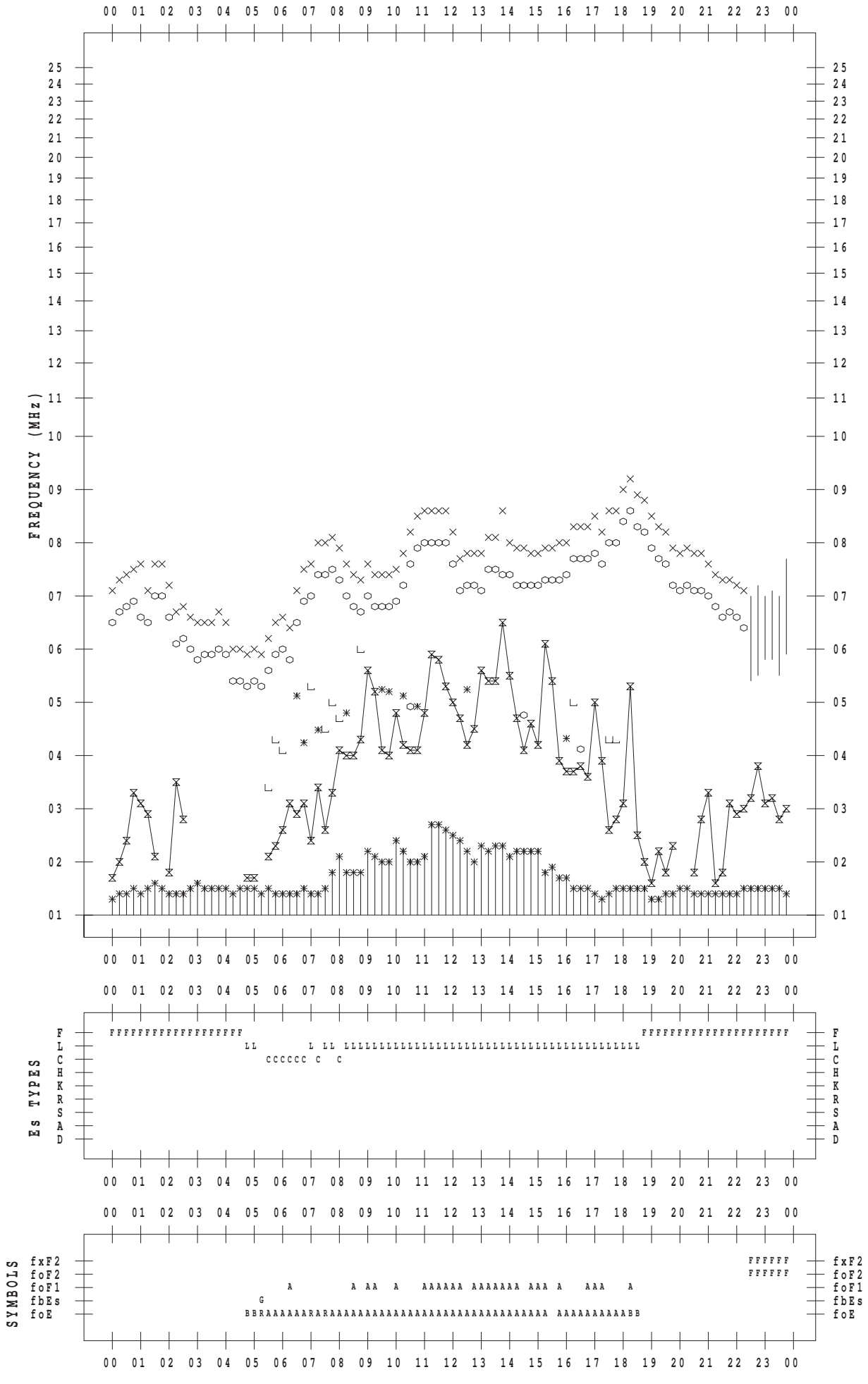
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/ 3

135 °E MEAN TIME



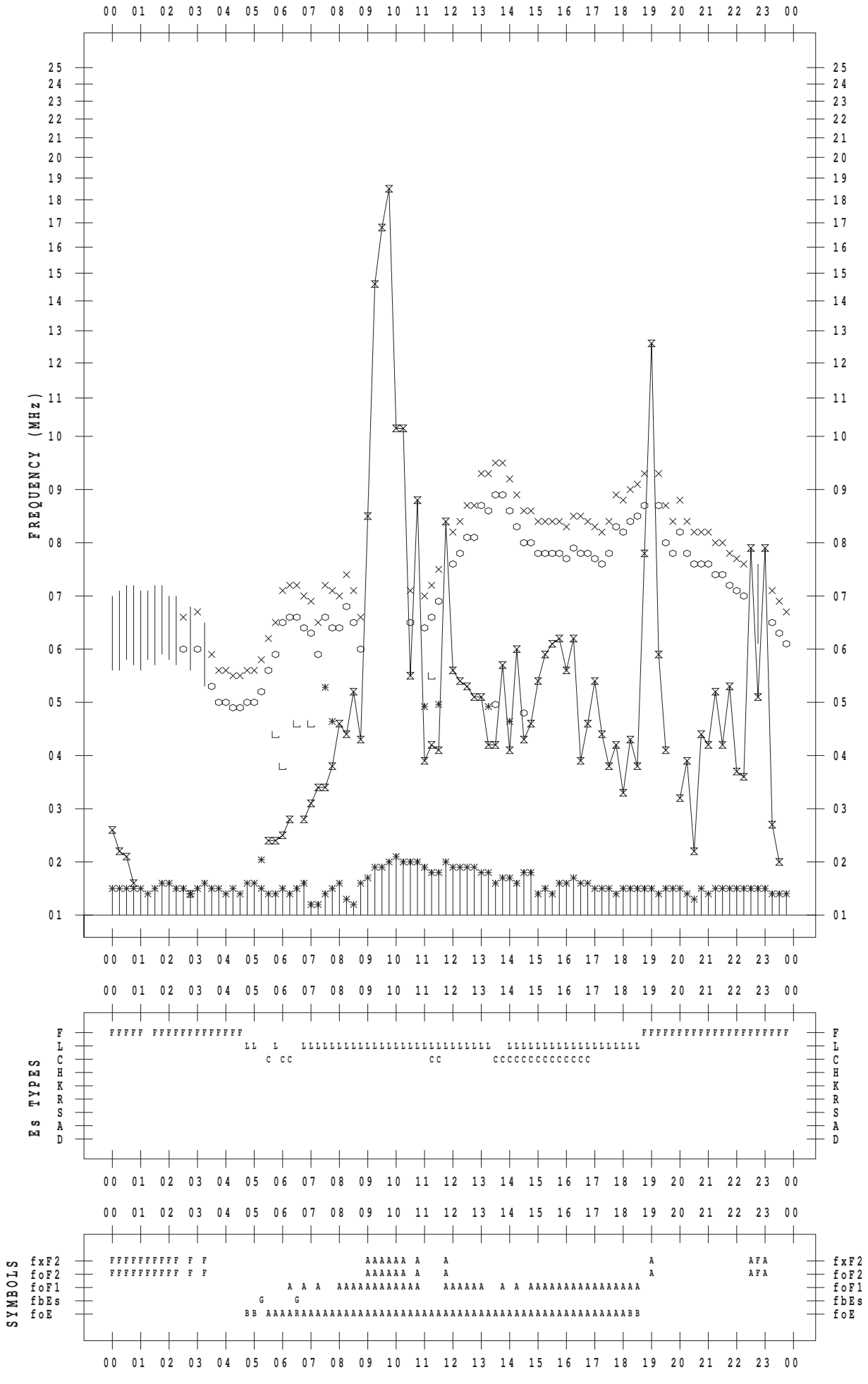
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/ 4

135 °E MEAN TIME



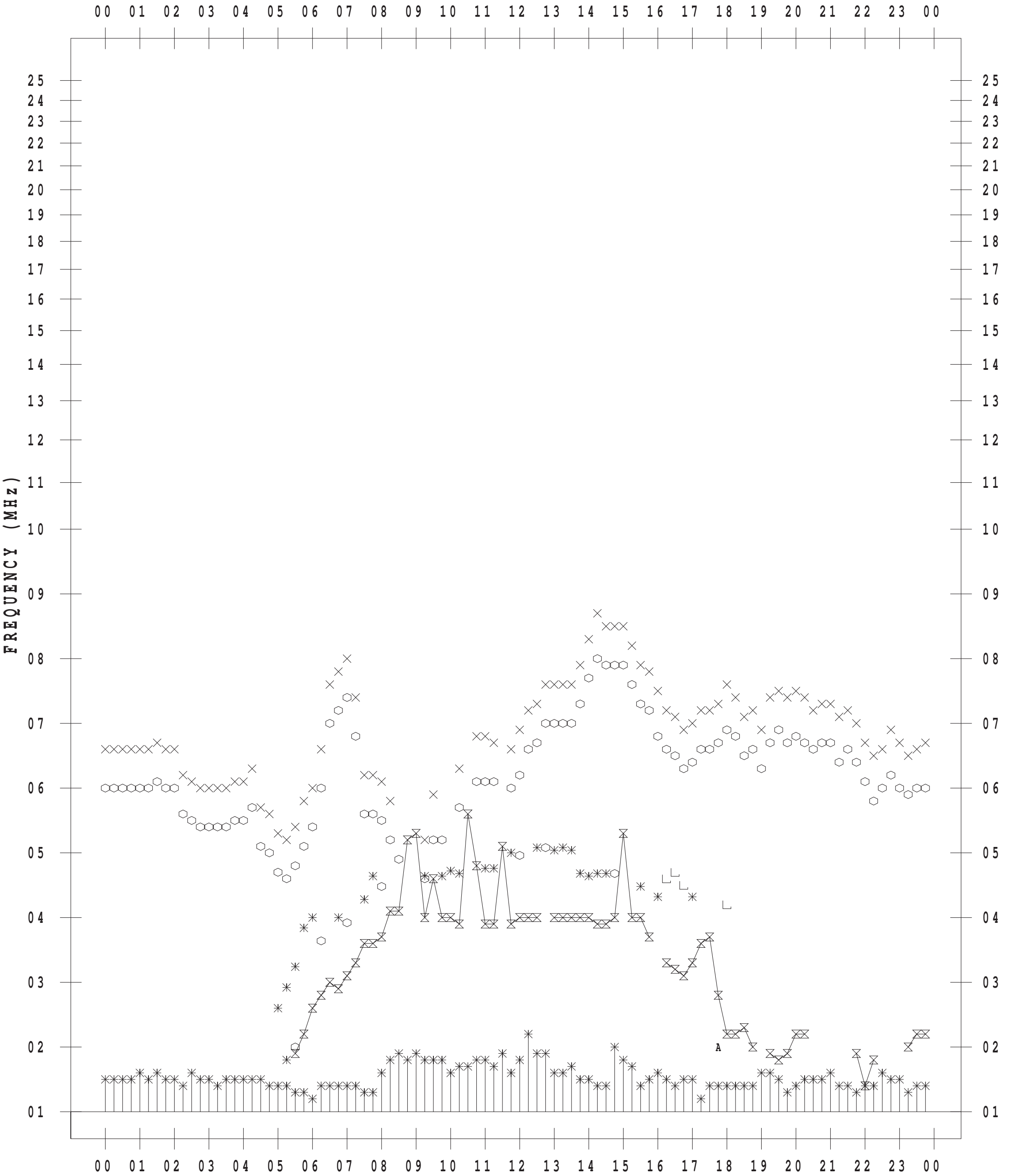
f-PLOT DATA

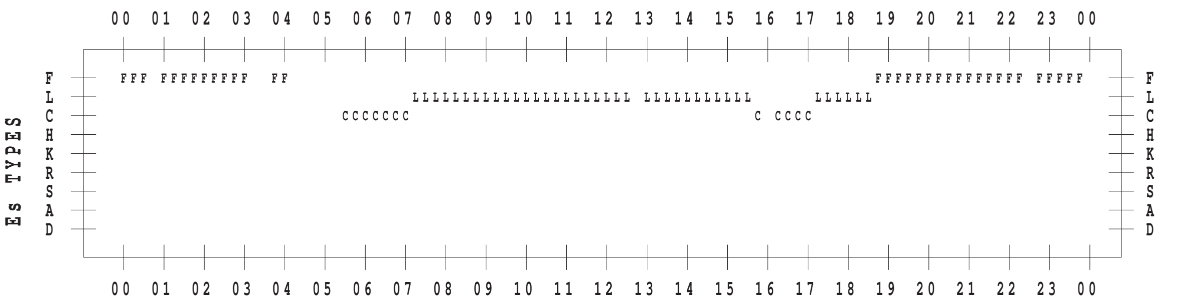
SCALER : I.NISHIMUTA

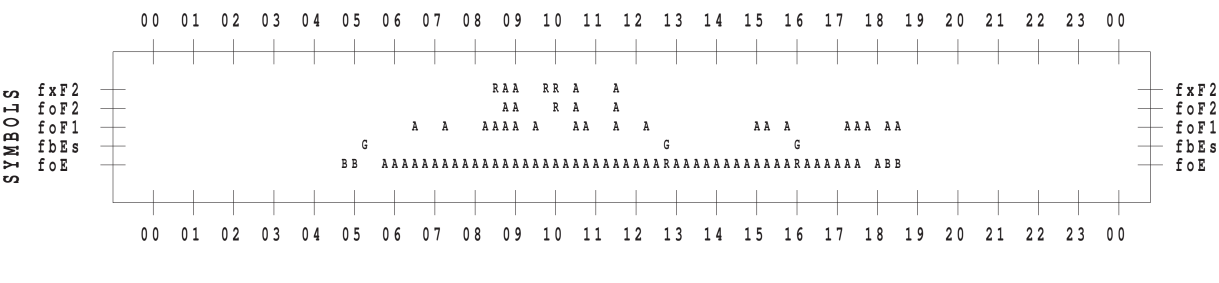
STATION : Kokubunji

DATE : 2013/ 8/ 5

135 °E MEAN TIME







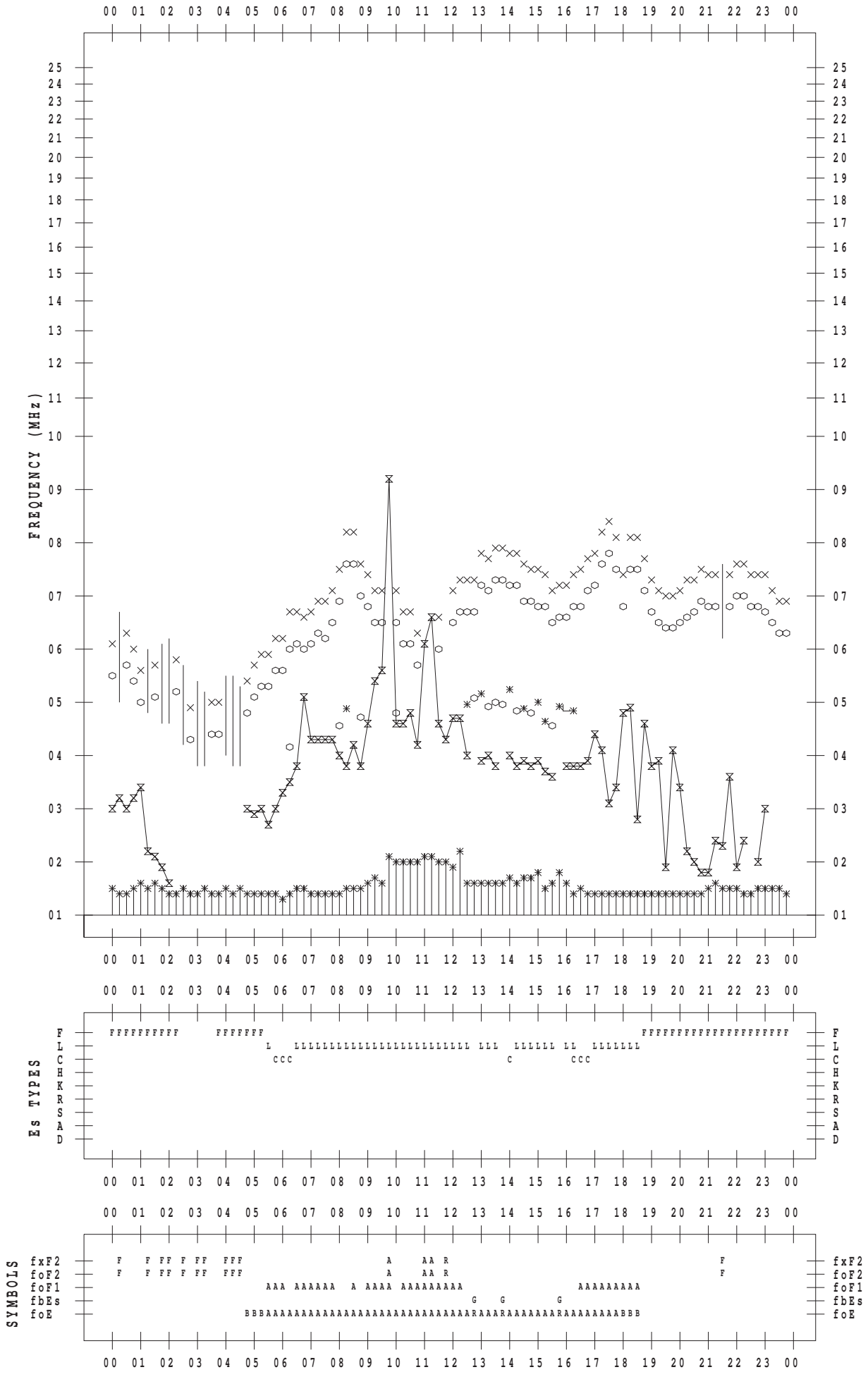
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/ 6

135 °E MEAN TIME



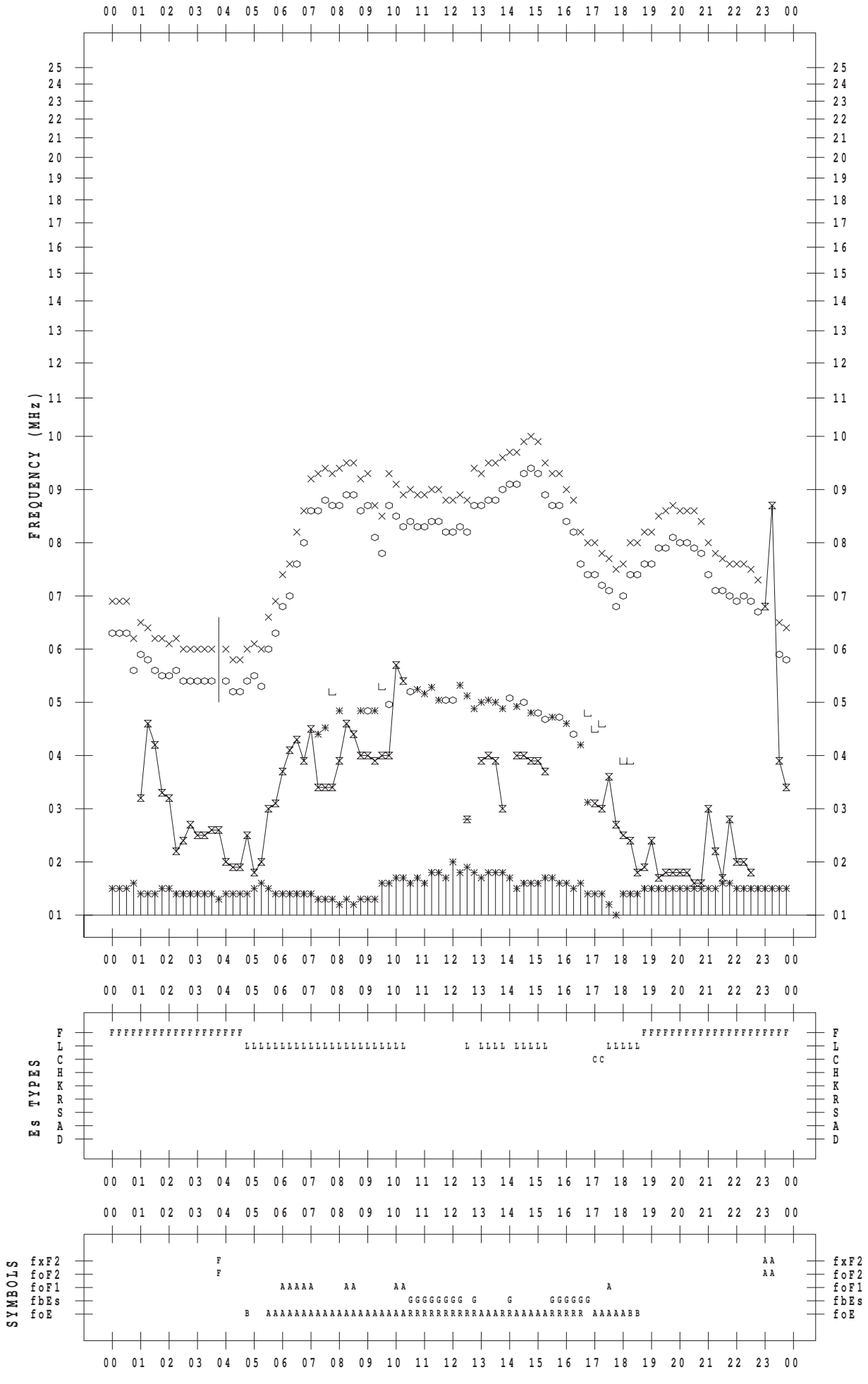
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/ 7

135 °E MEAN TIME



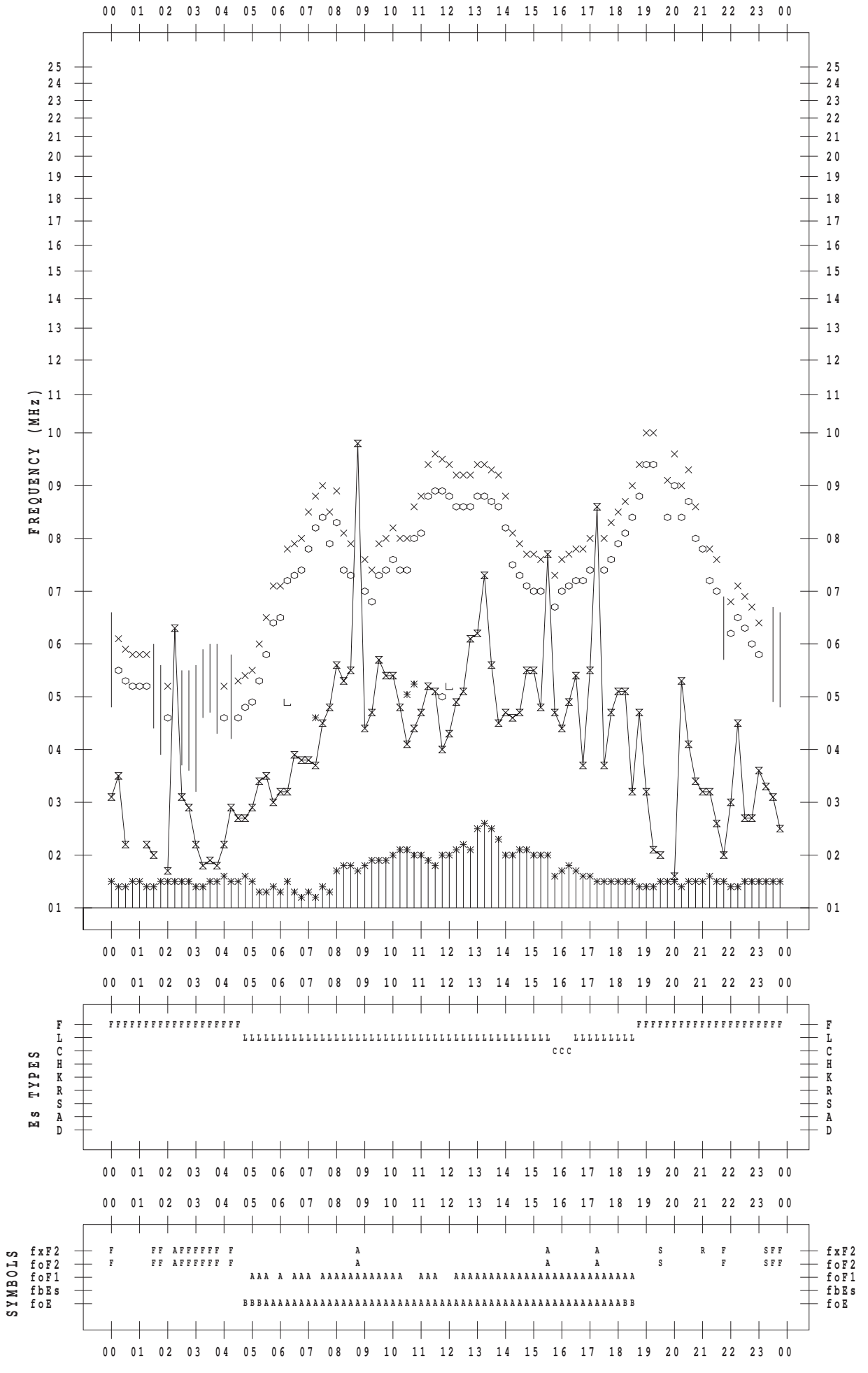
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/ 8

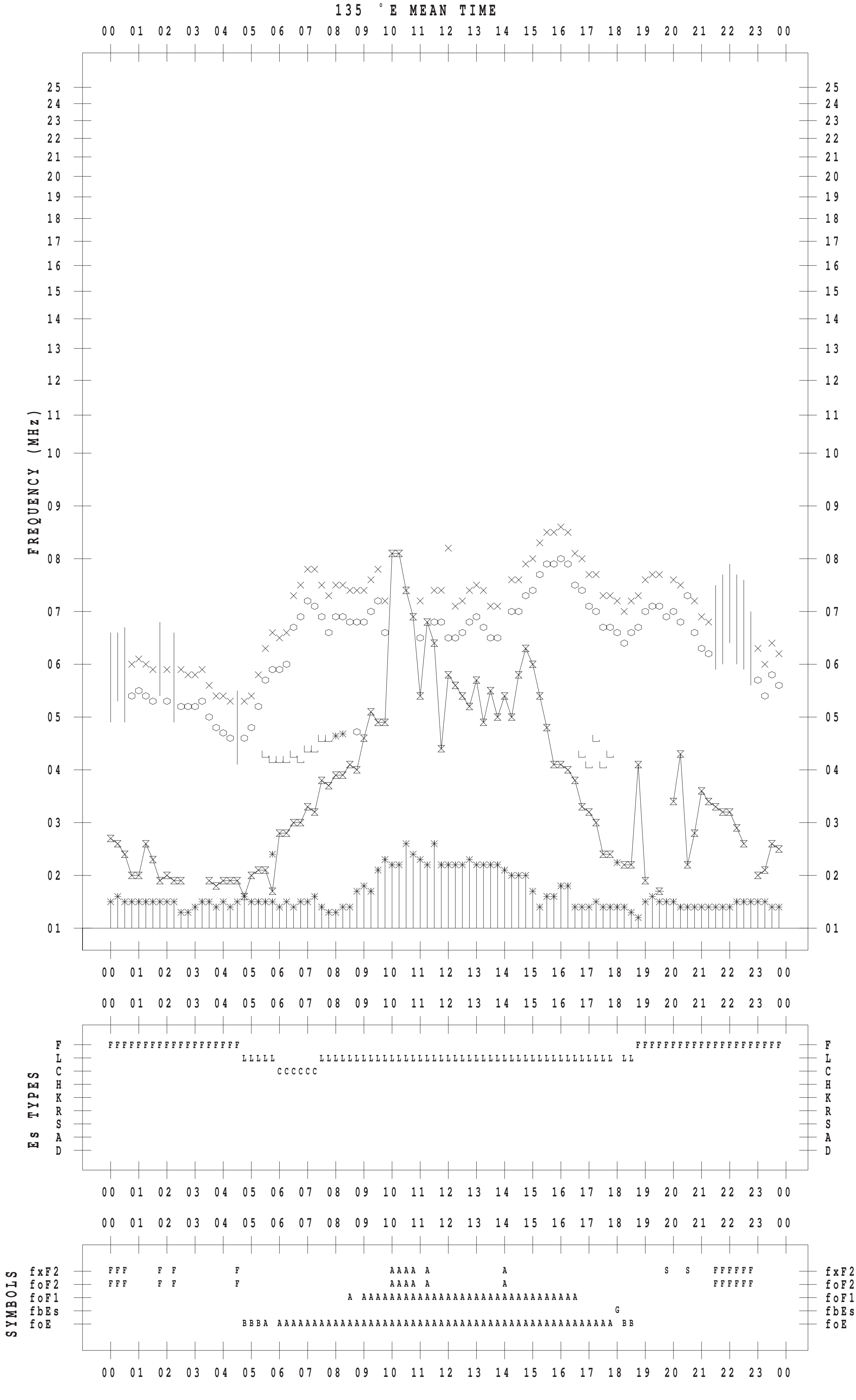
135 °E MEAN TIME



f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2013/ 8/ 9



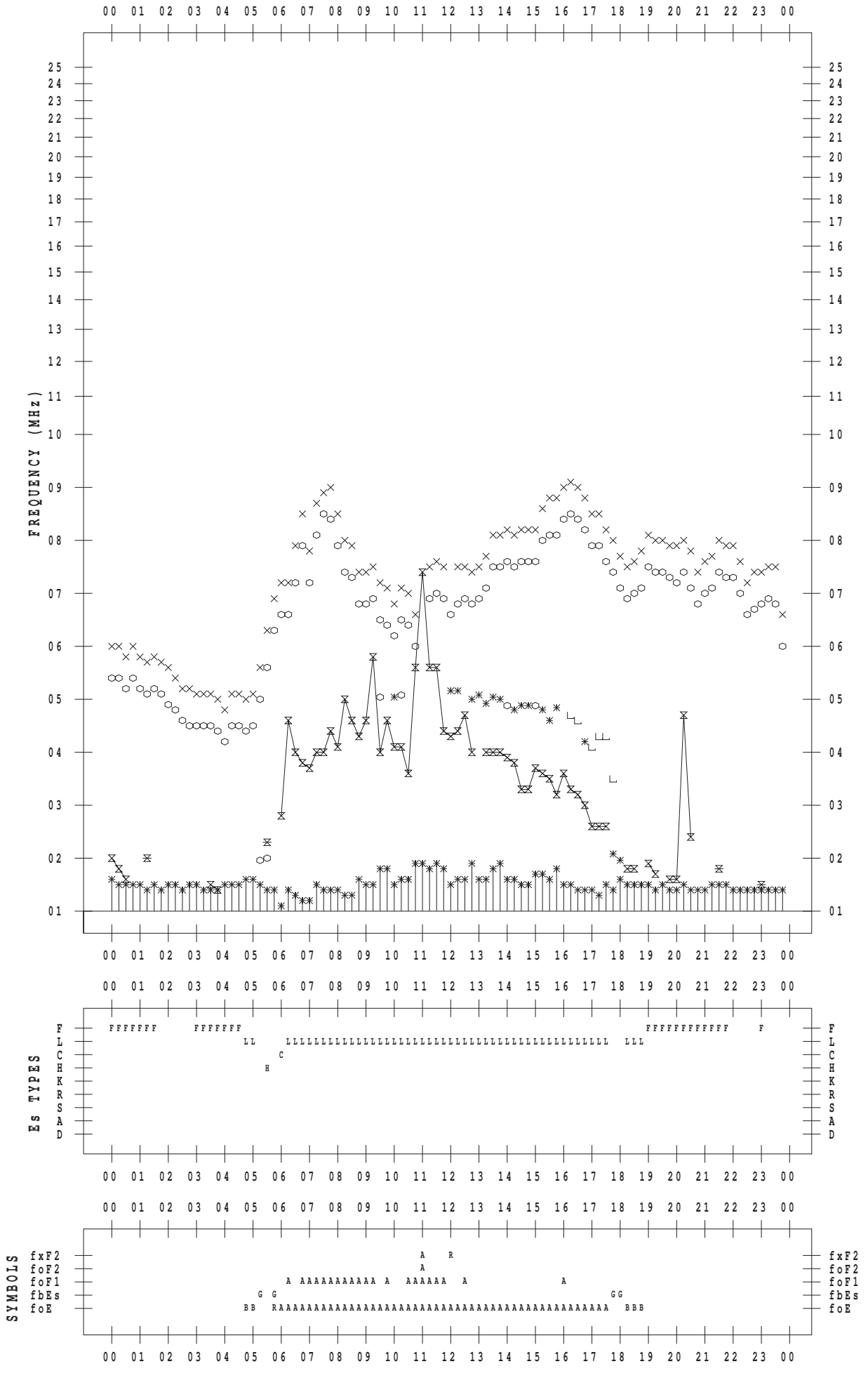
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/10

135 °E MEAN TIME



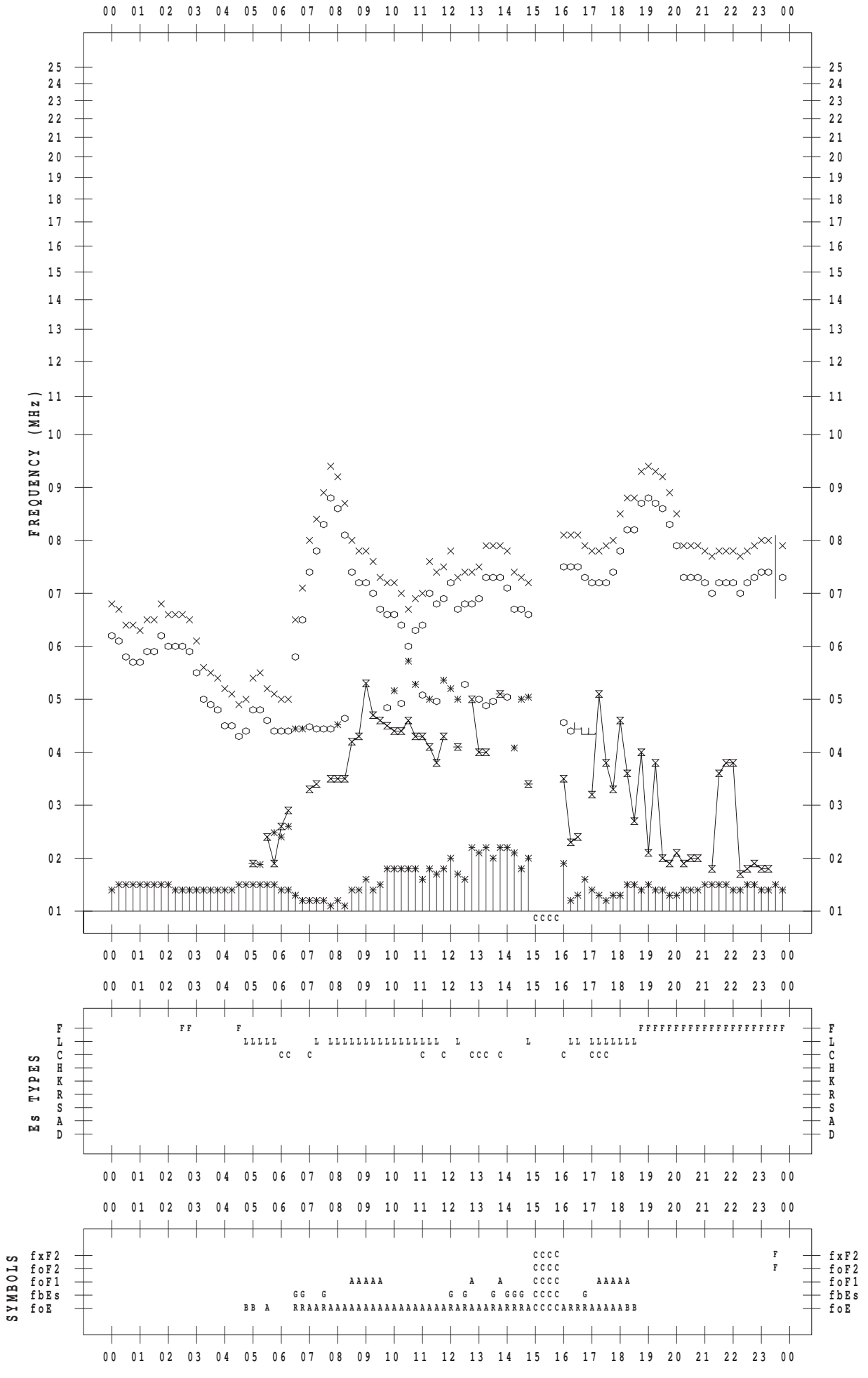
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/11

135 °E MEAN TIME



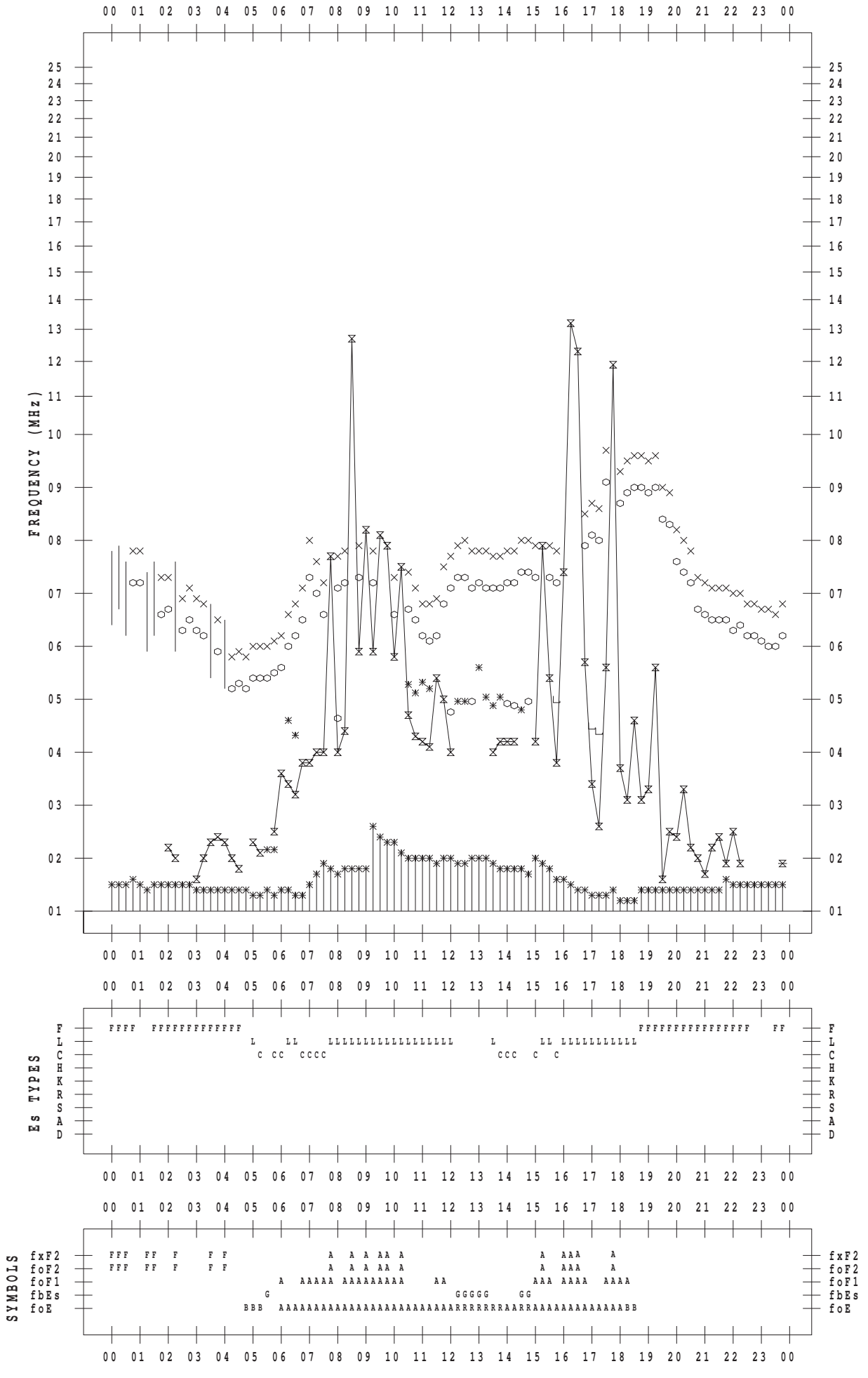
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/12

135 °E MEAN TIME



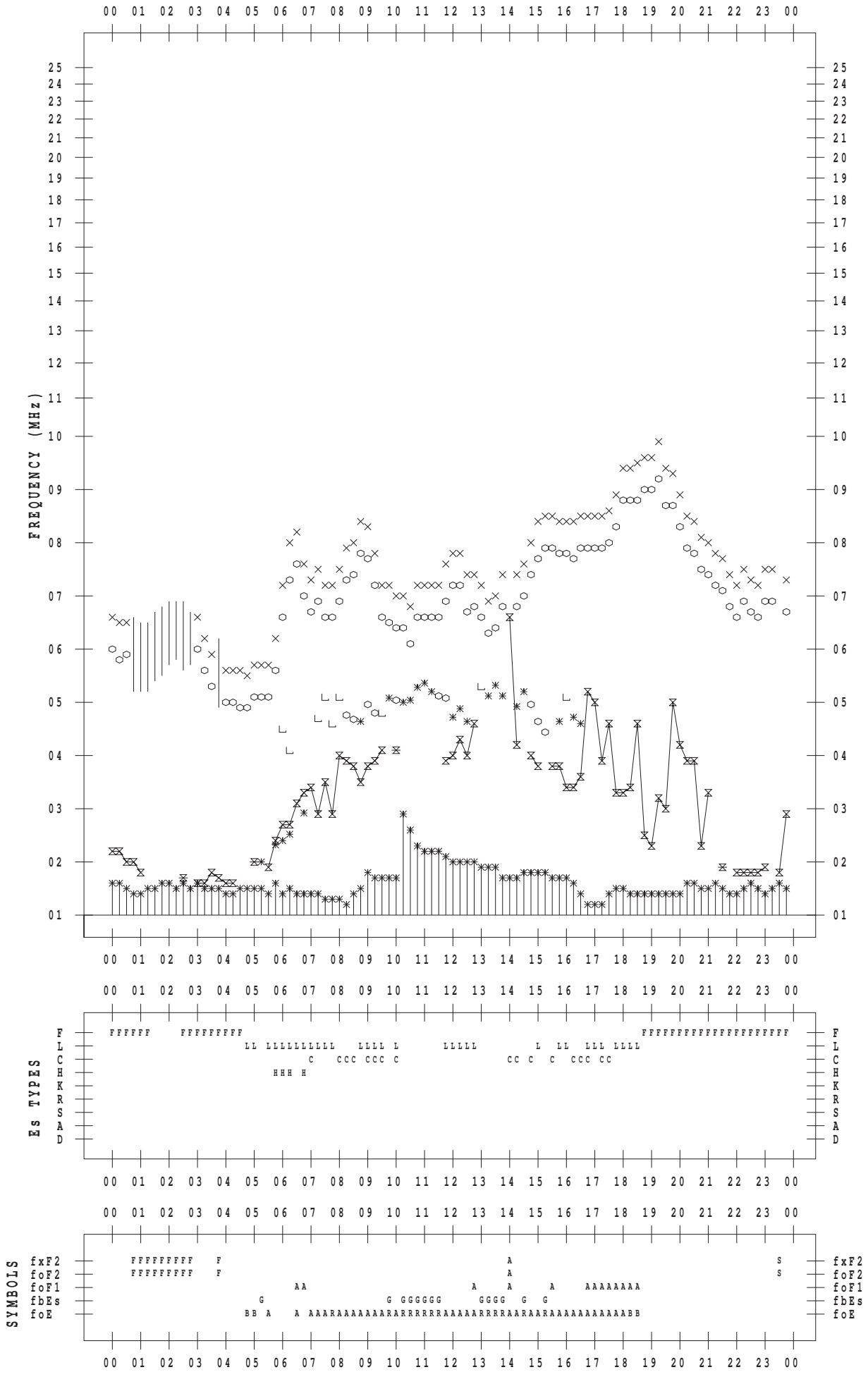
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/13

135 °E MEAN TIME

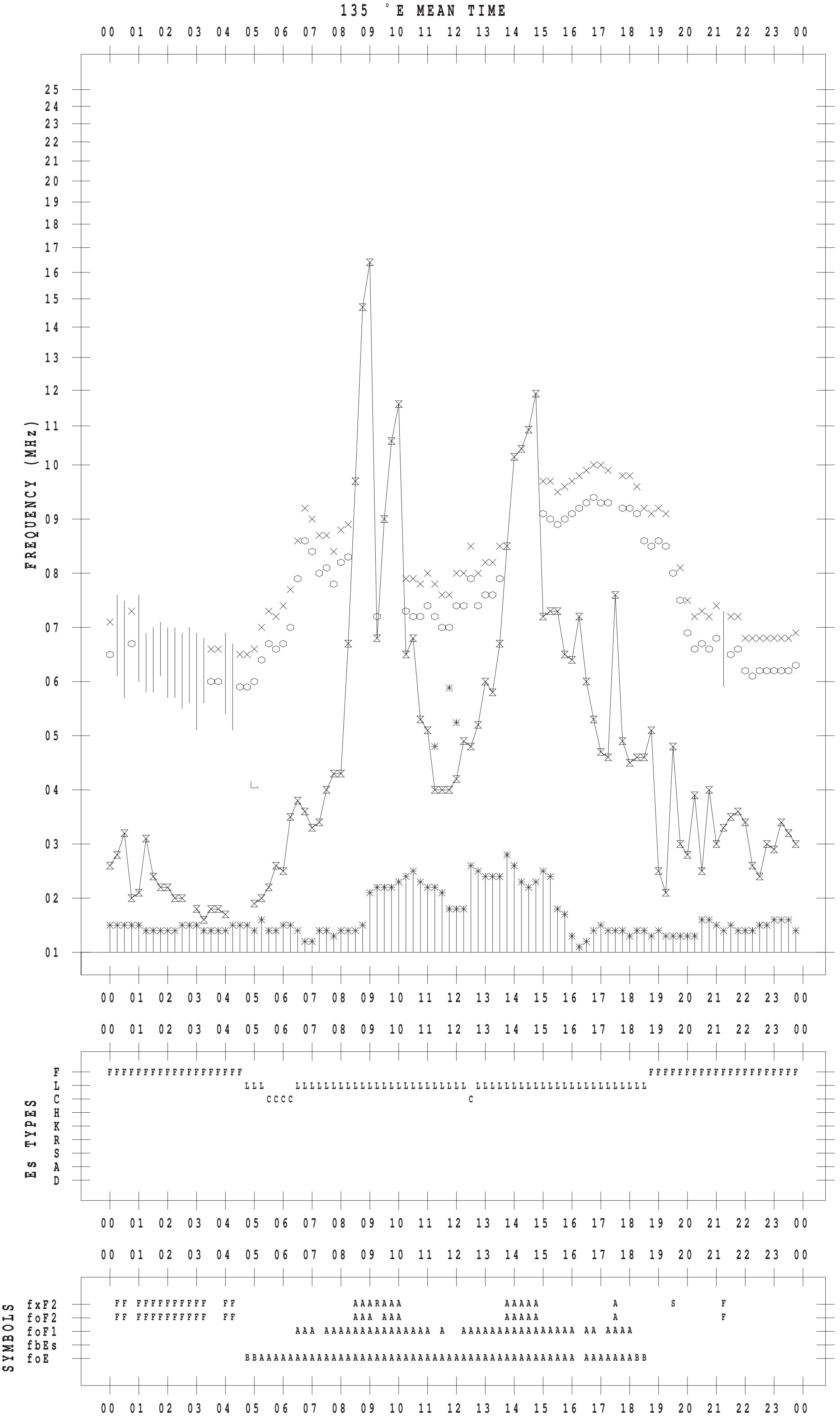


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/14



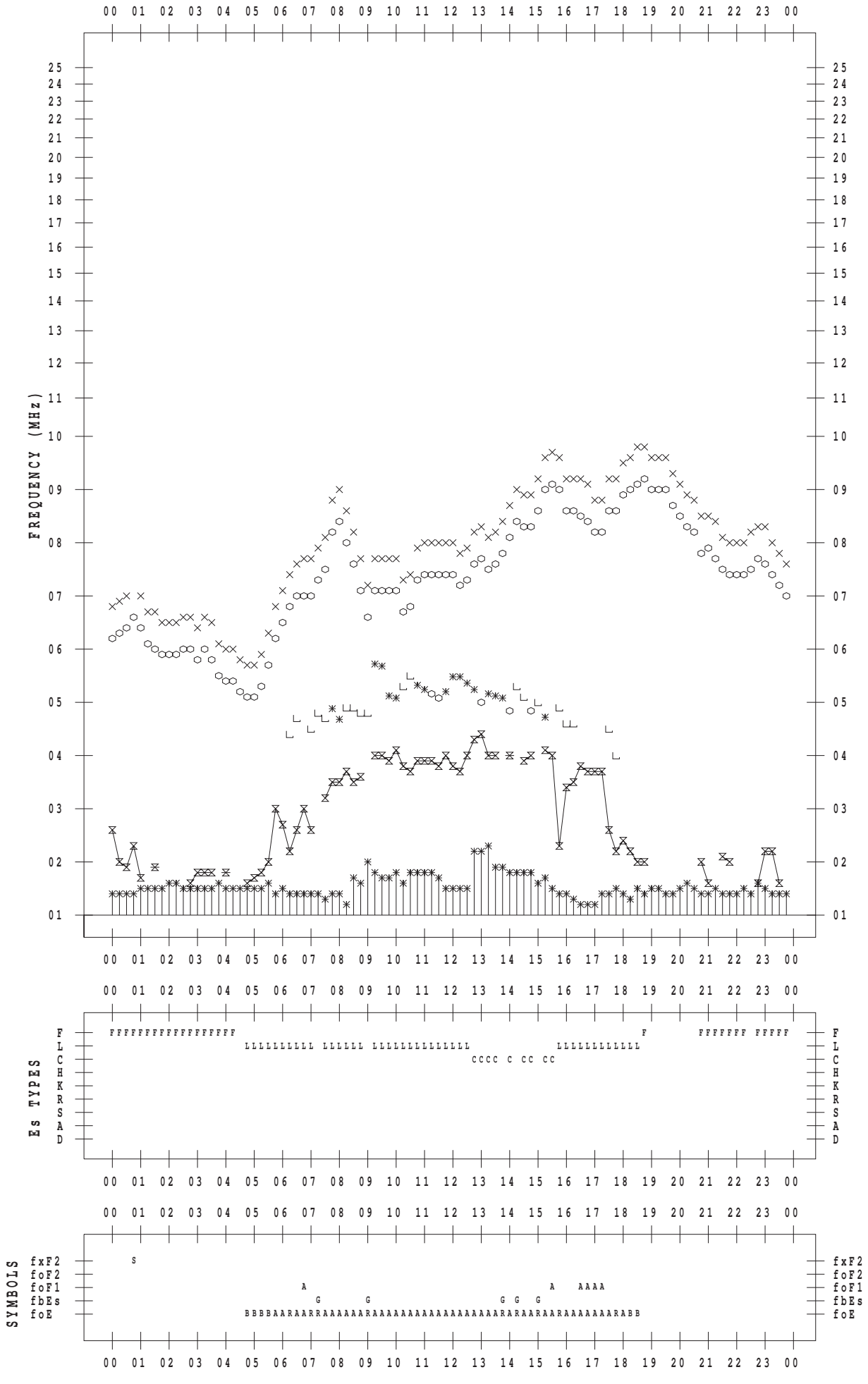
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/15

135 °E MEAN TIME



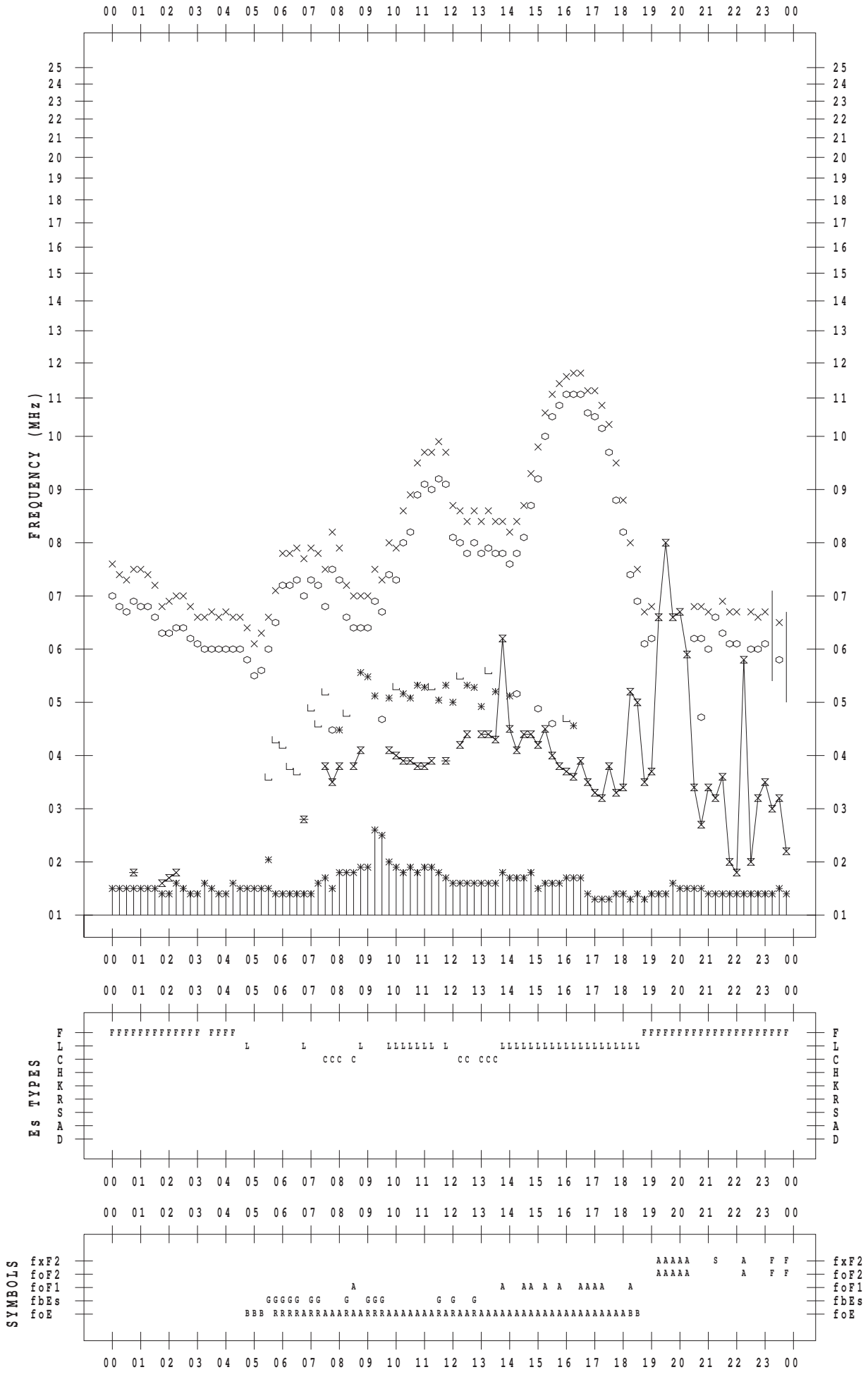
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/16

135 °E MEAN TIME



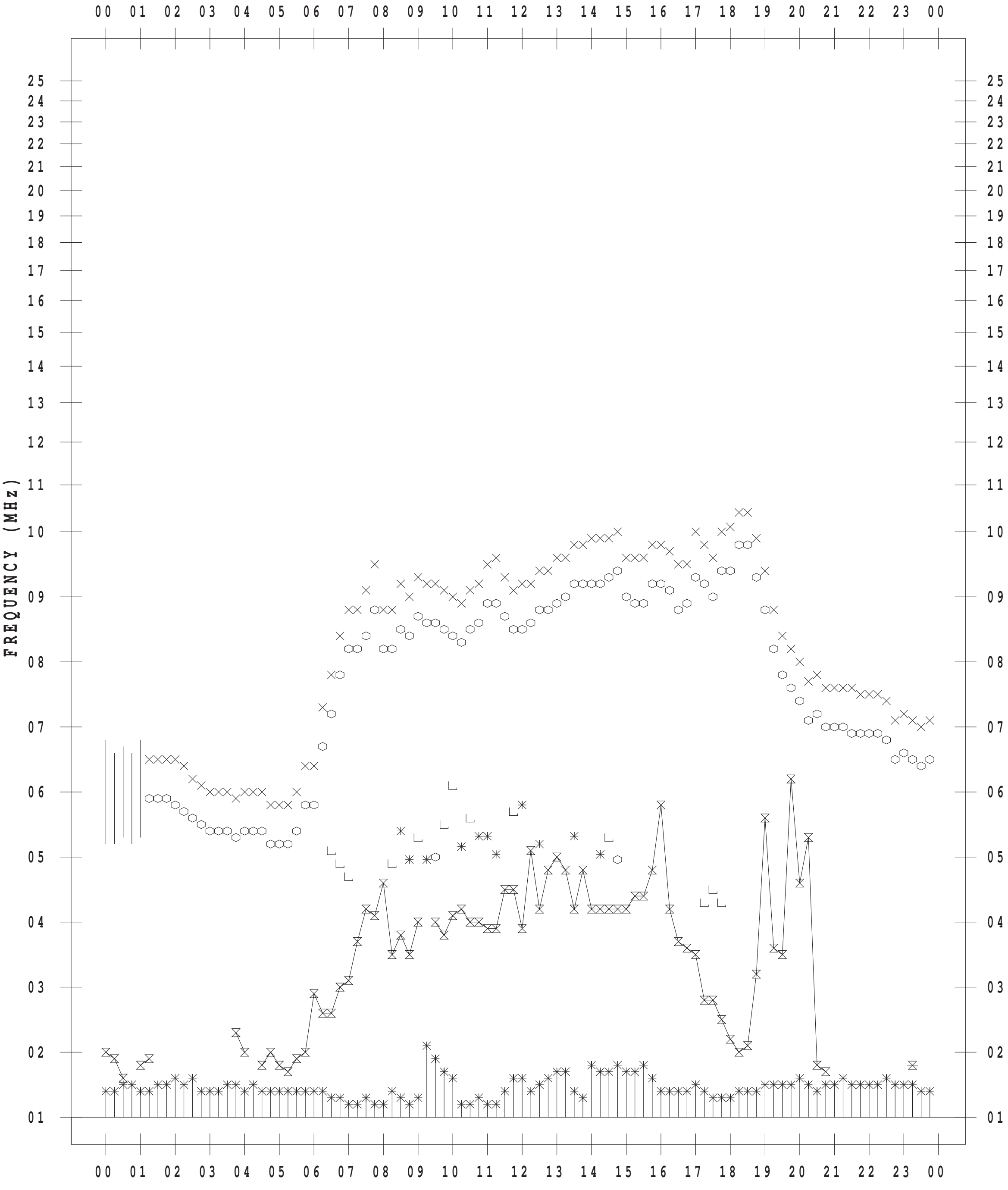
f-PLOT DATA

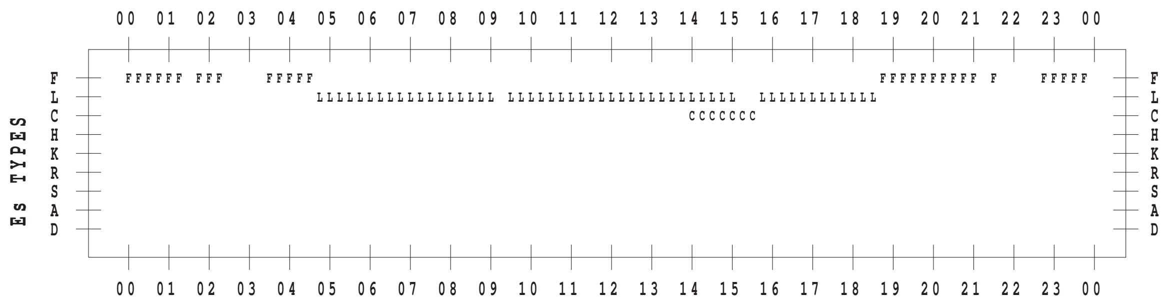
SCALER : I.NISHIMUTA

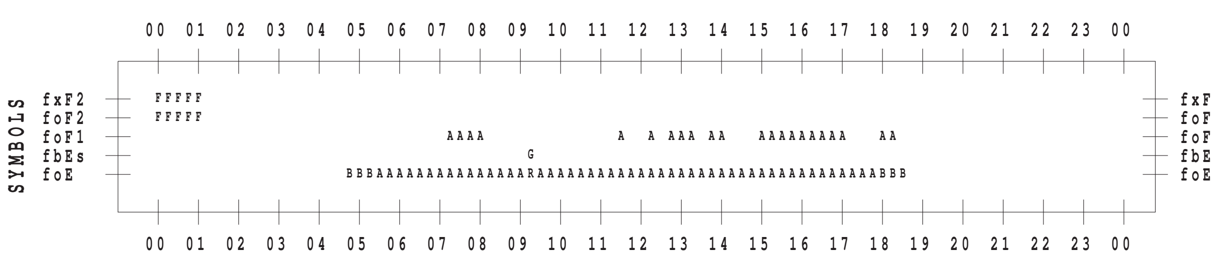
STATION : Kokubunji

DATE : 2013/ 8/17

135 °E MEAN TIME





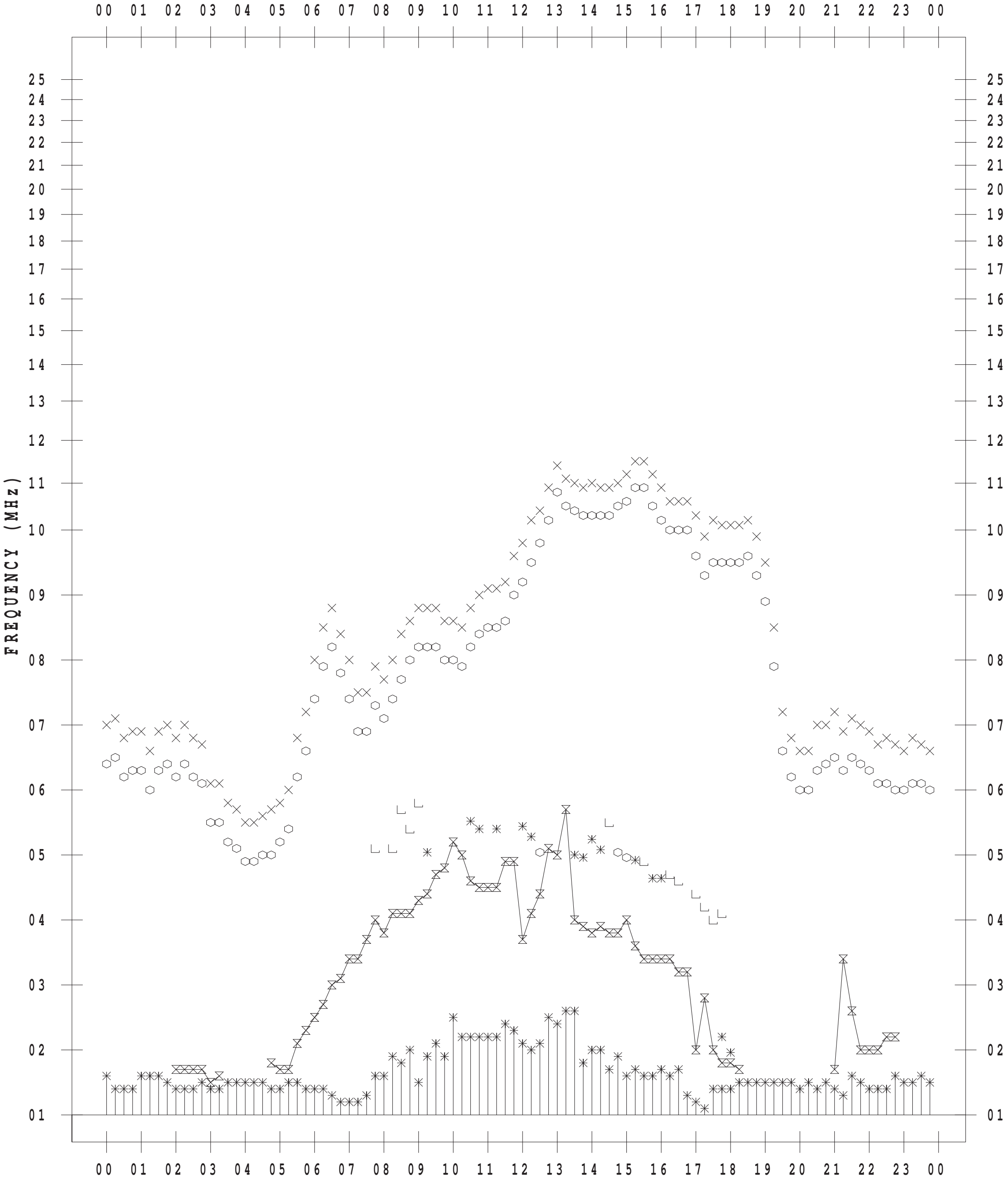


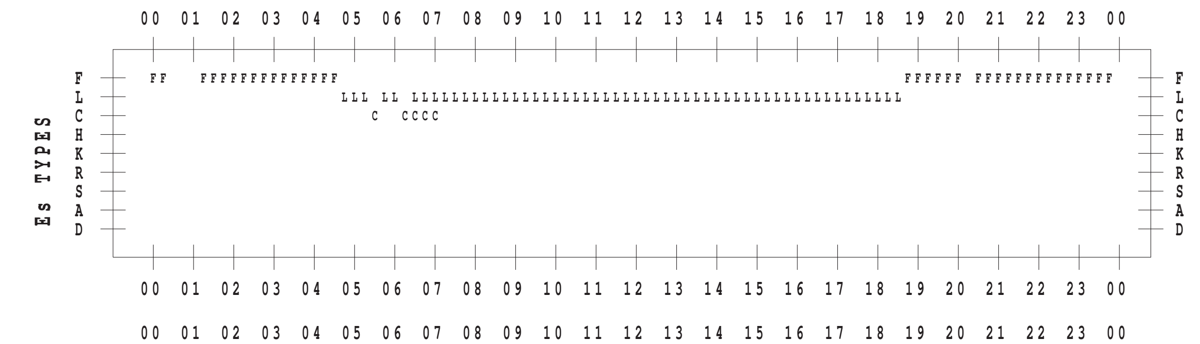
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2013/ 8/18

135 °E MEAN TIME





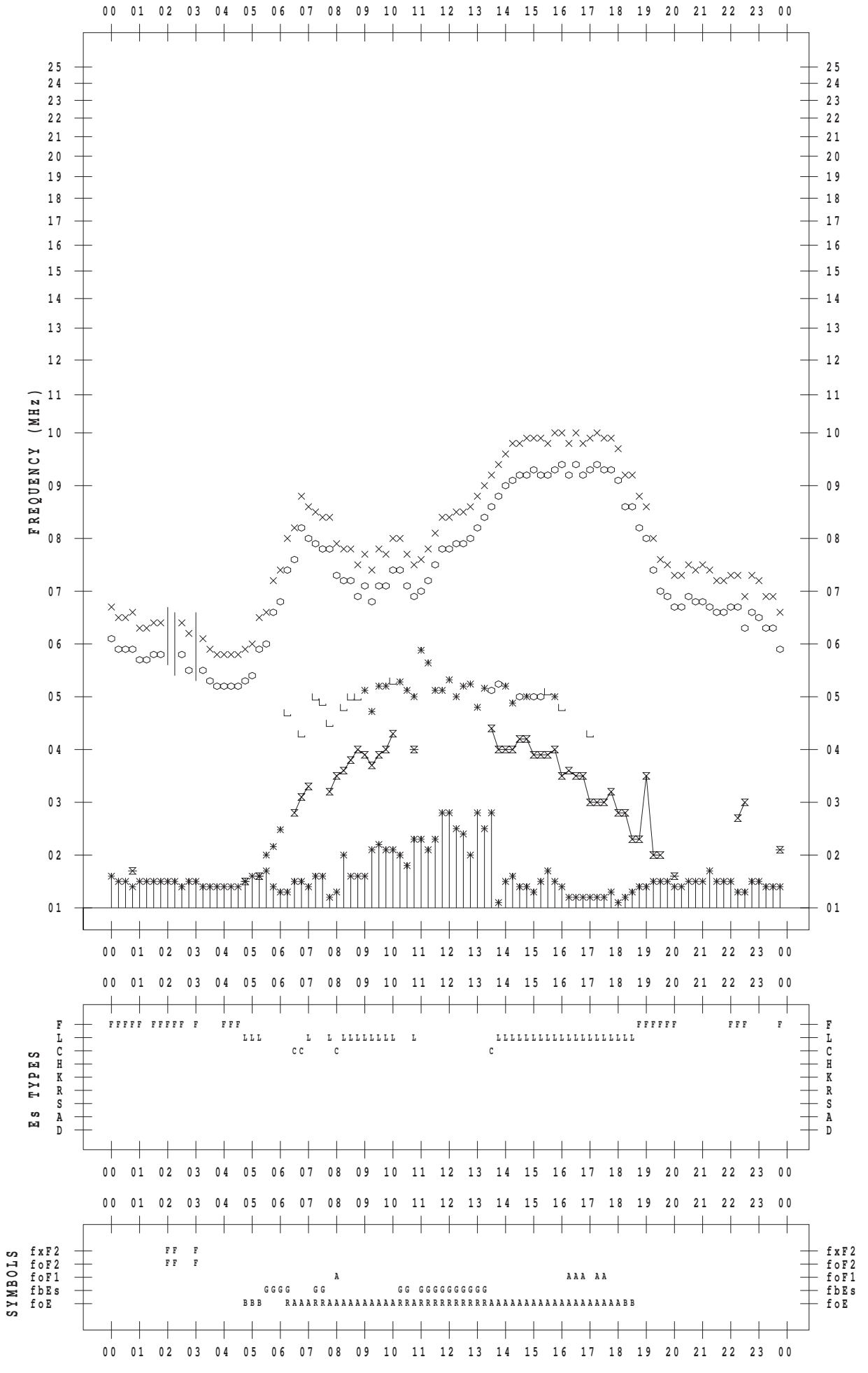
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/19

135 °E MEAN TIME



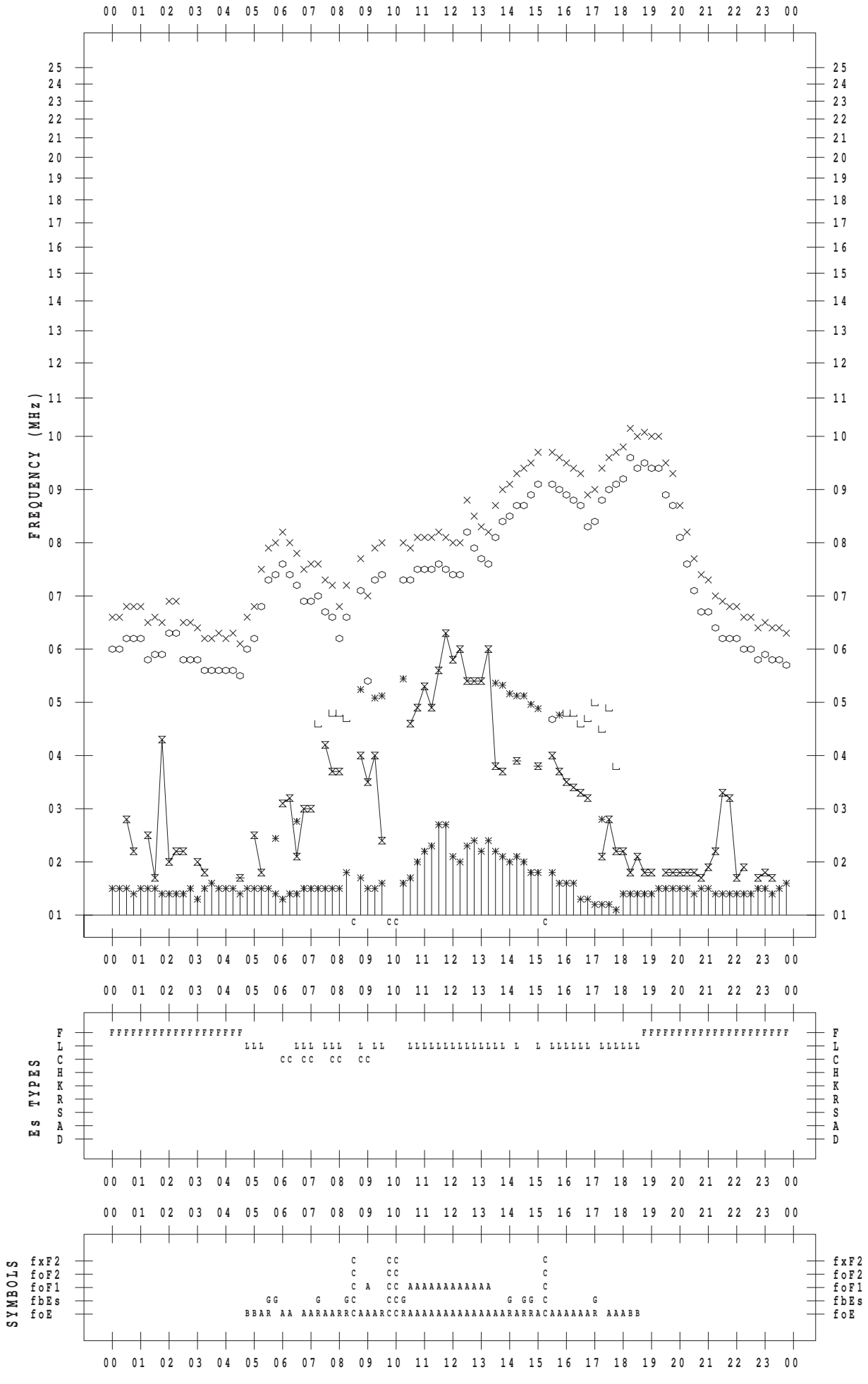
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/20

135 °E MEAN TIME



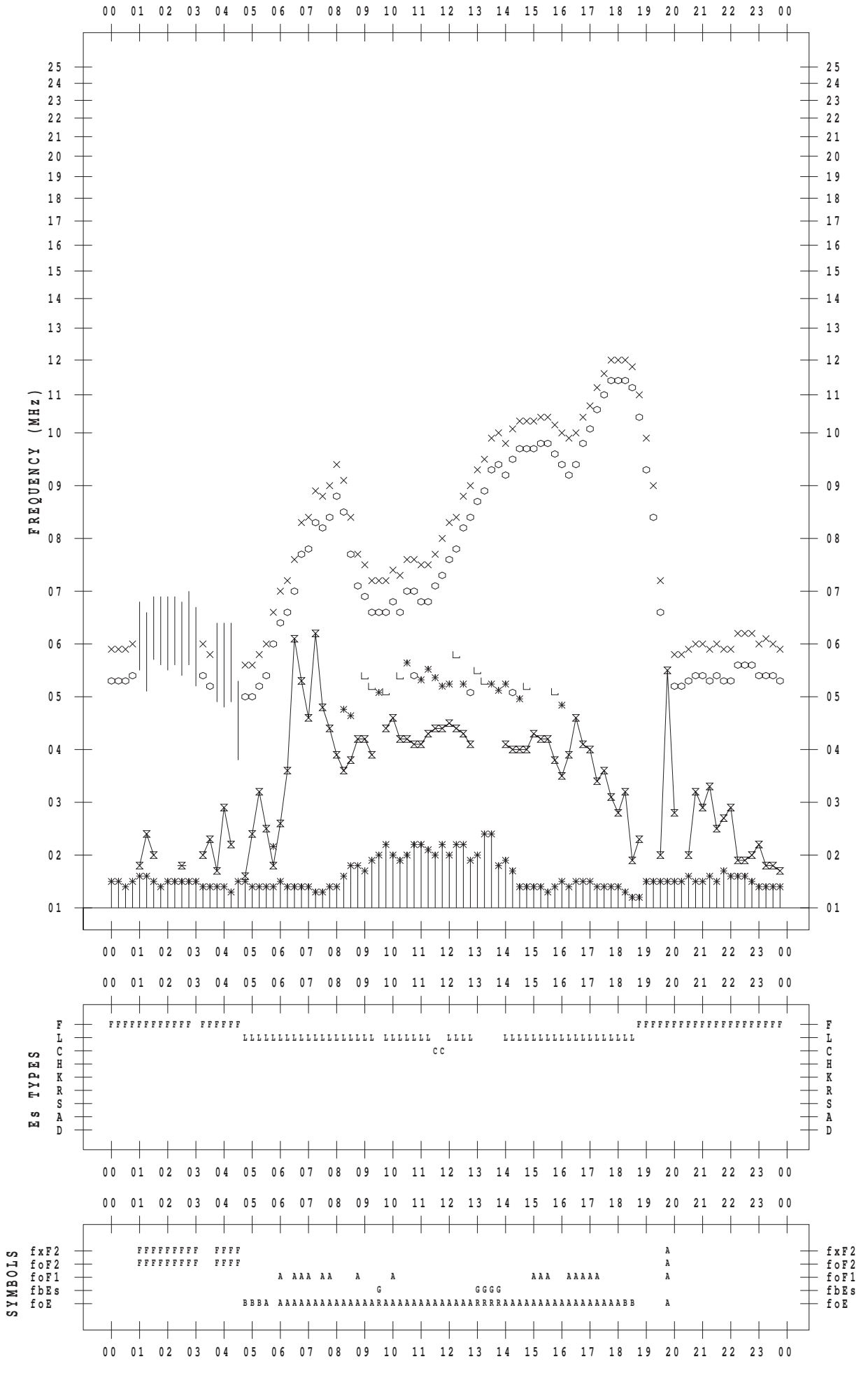
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/21

135 °E MEAN TIME



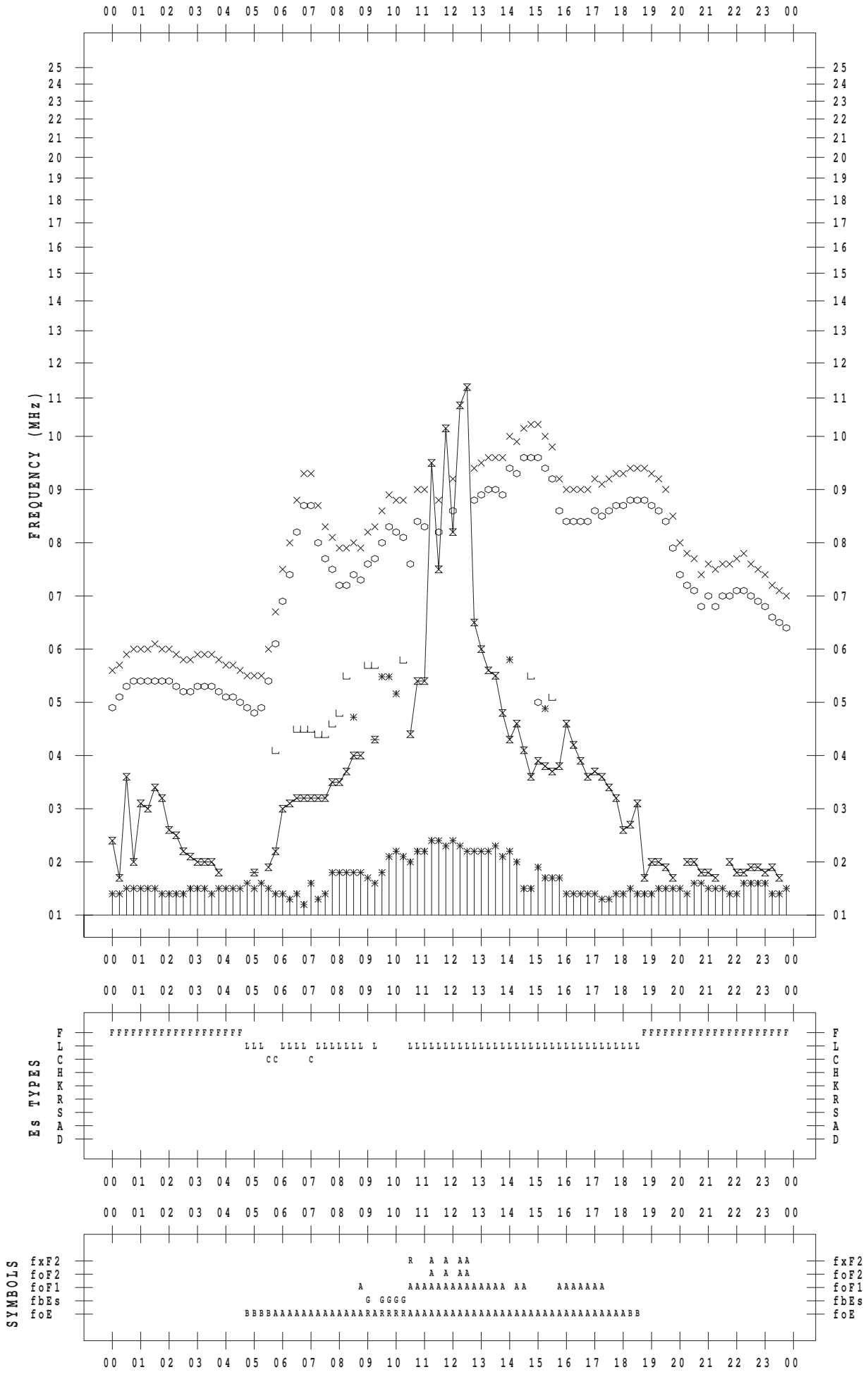
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/22

135 °E MEAN TIME



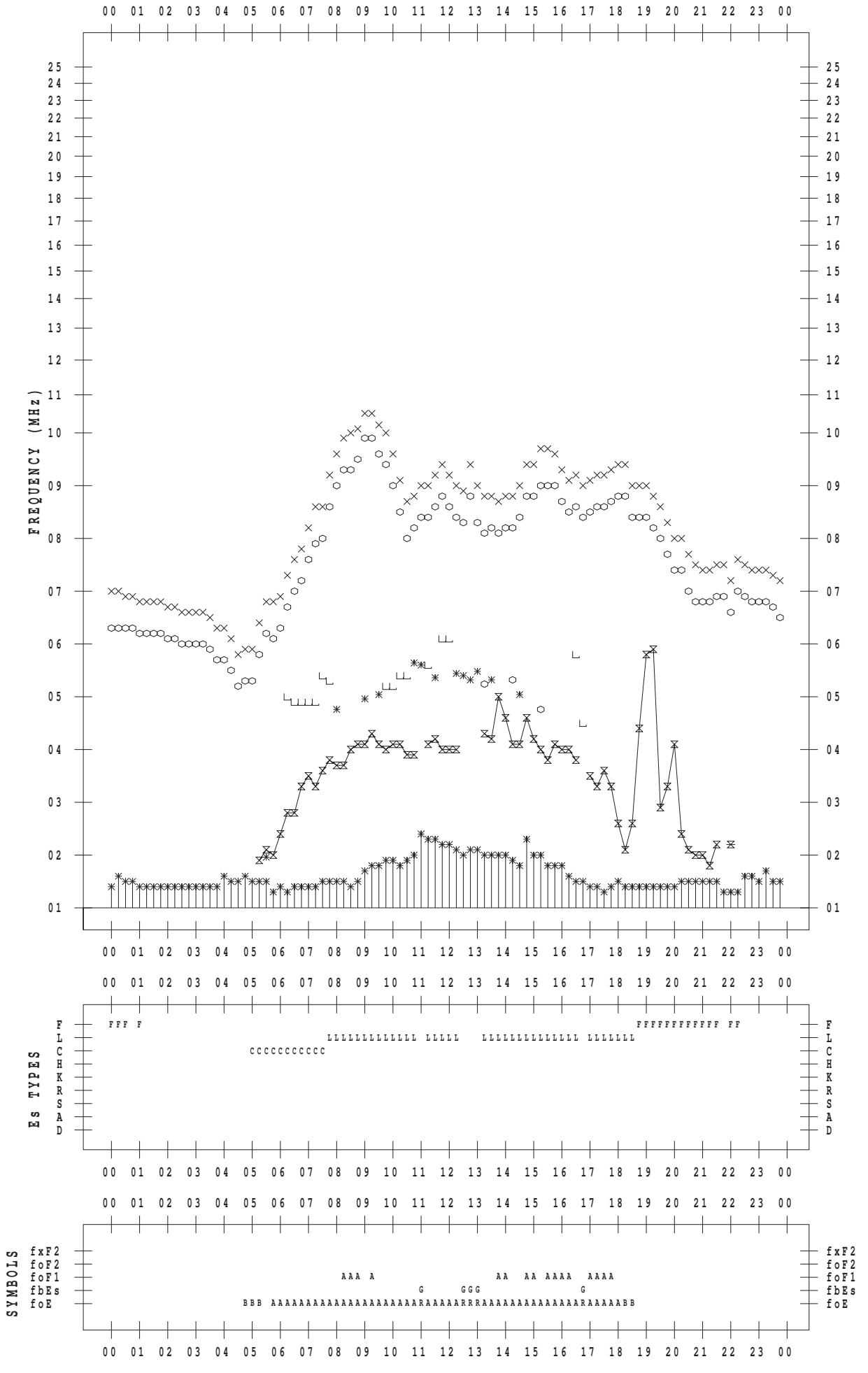
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/23

135 °E MEAN TIME



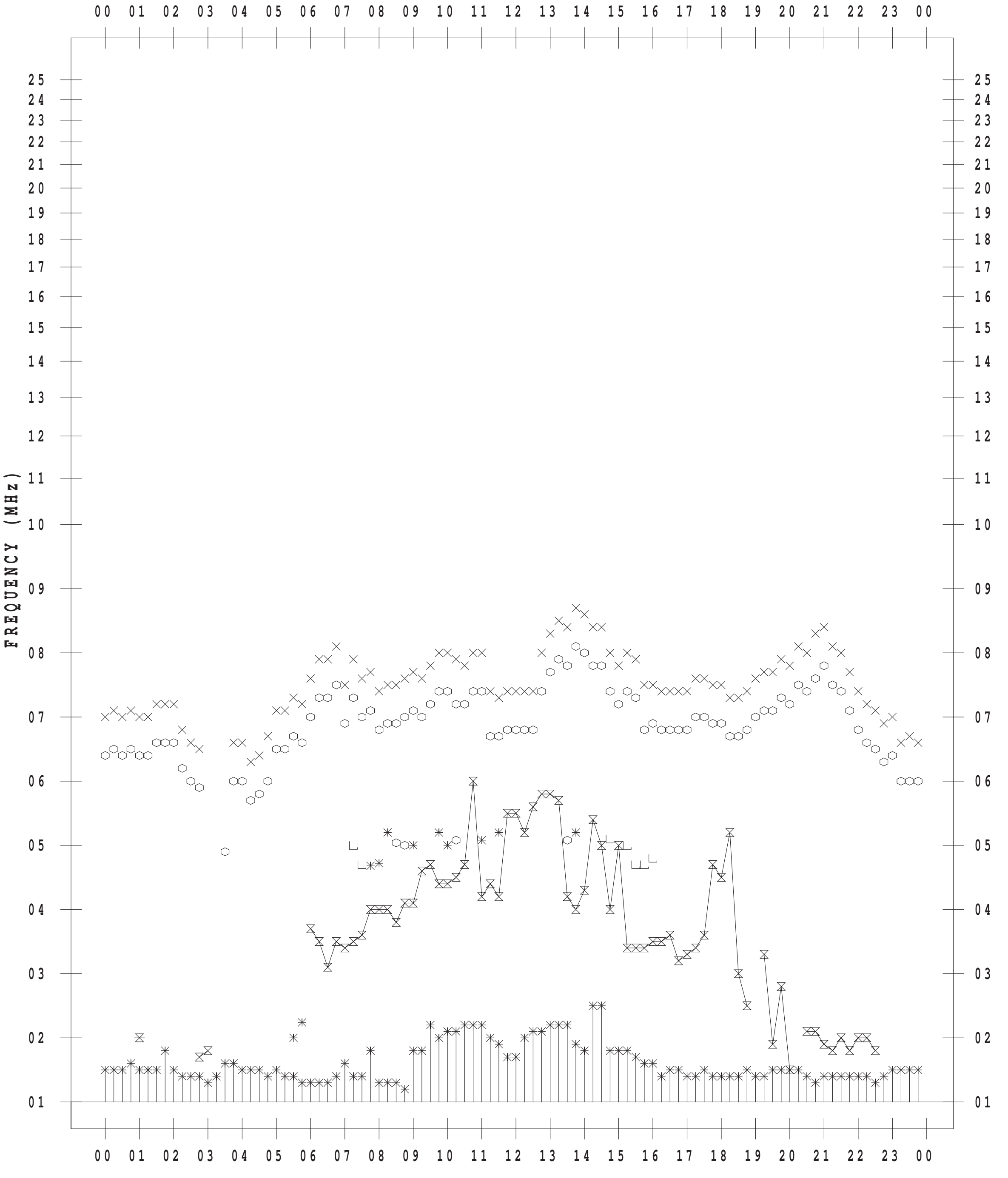
f-PLOT DATA

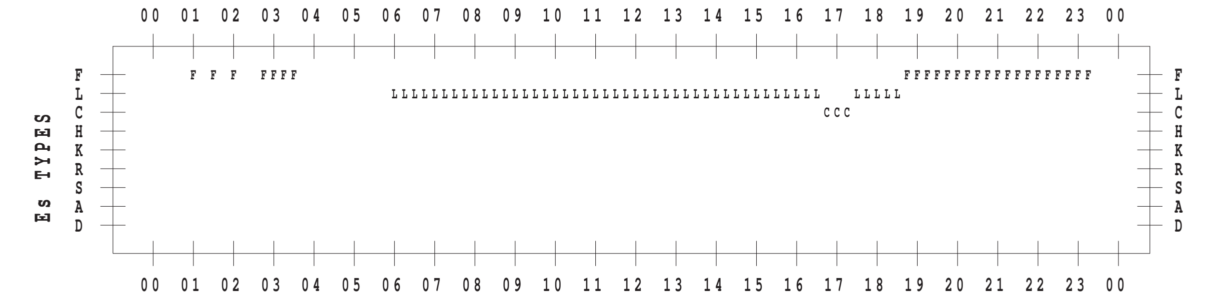
SCALER : I.NISHIMUTA

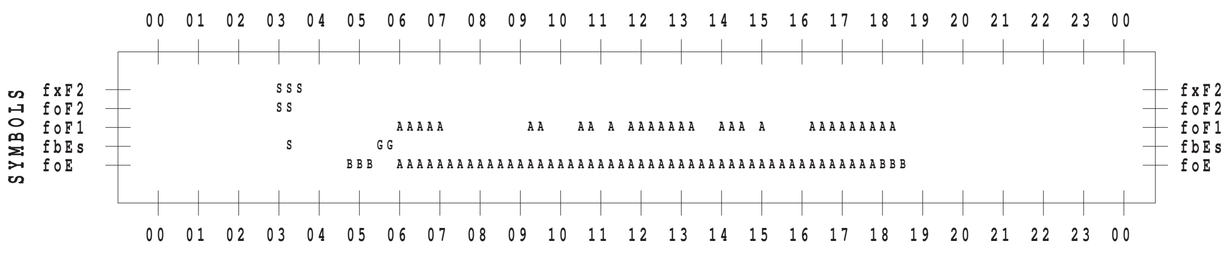
STATION : Kokubunji

DATE : 2013/ 8/24

135 °E MEAN TIME





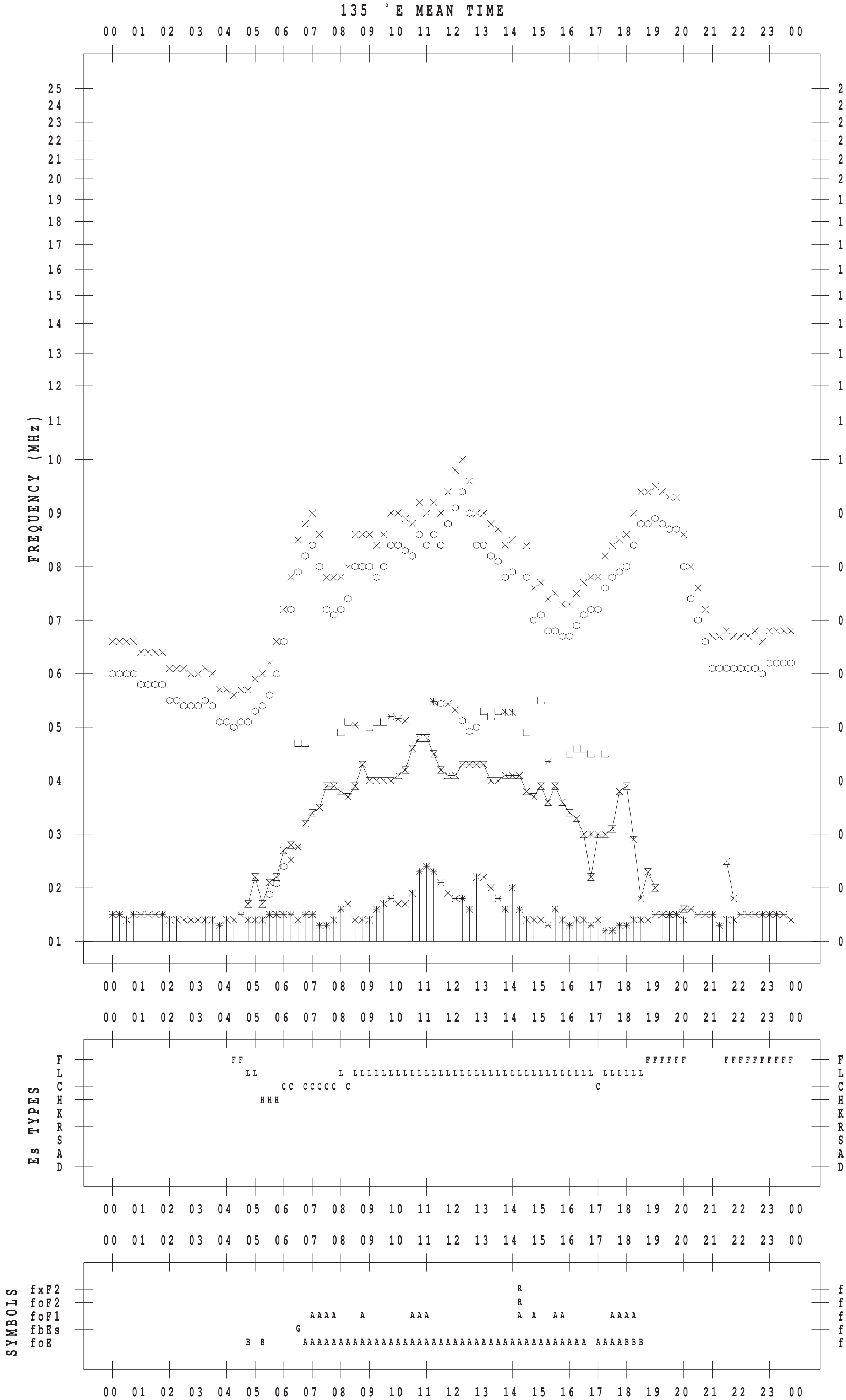


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/25

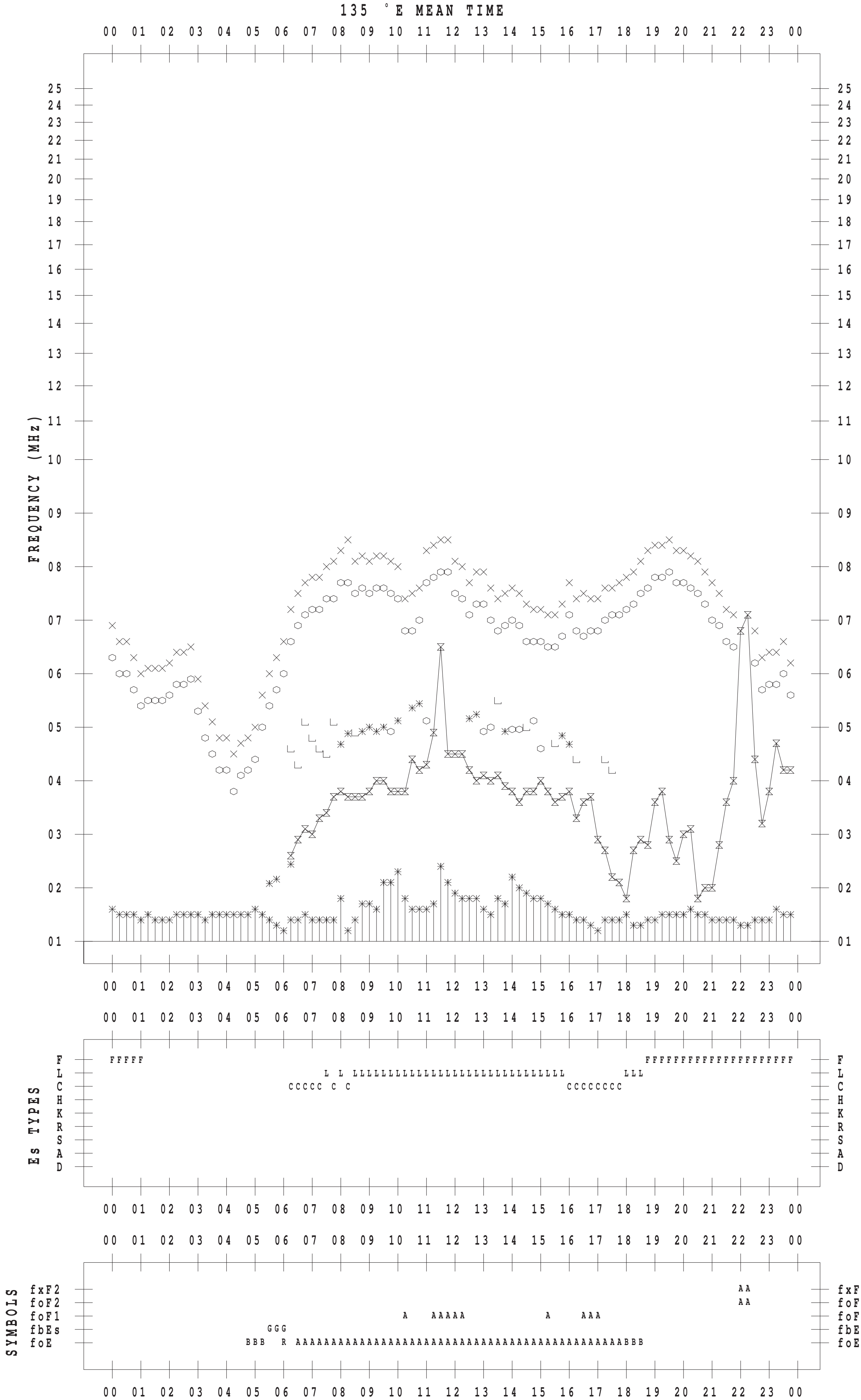


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/26



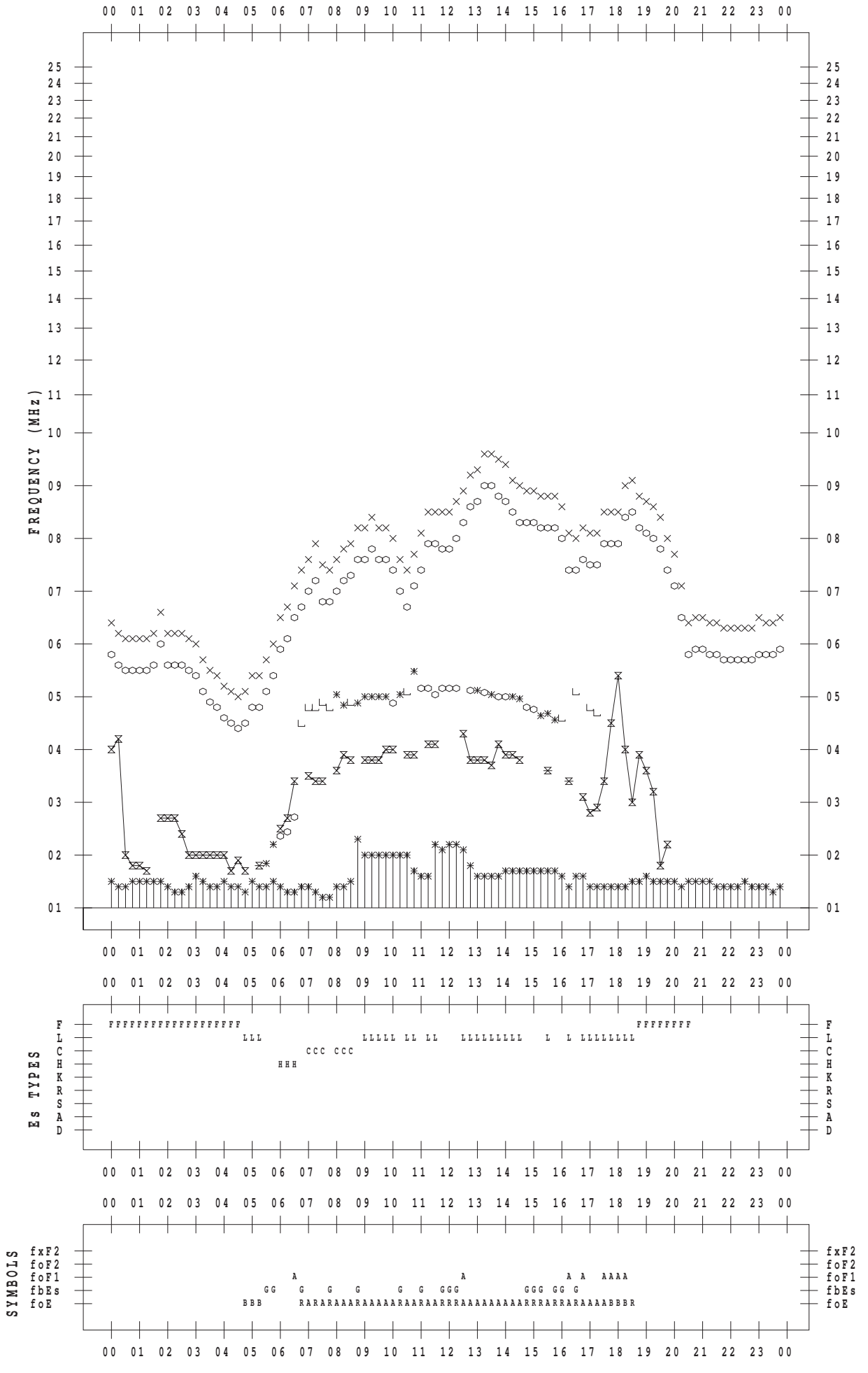
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/27

135 °E MEAN TIME



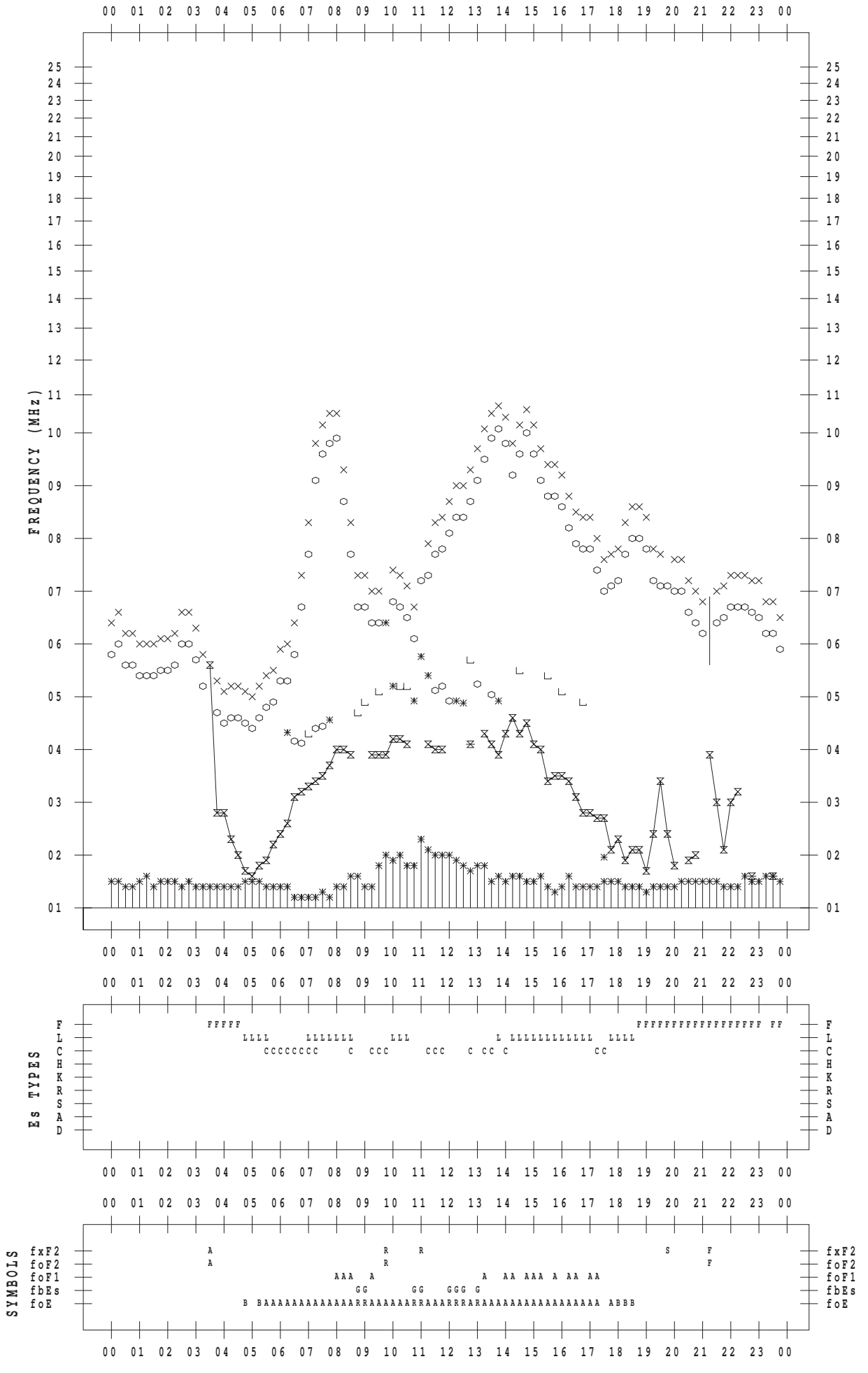
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/28

135 °E MEAN TIME



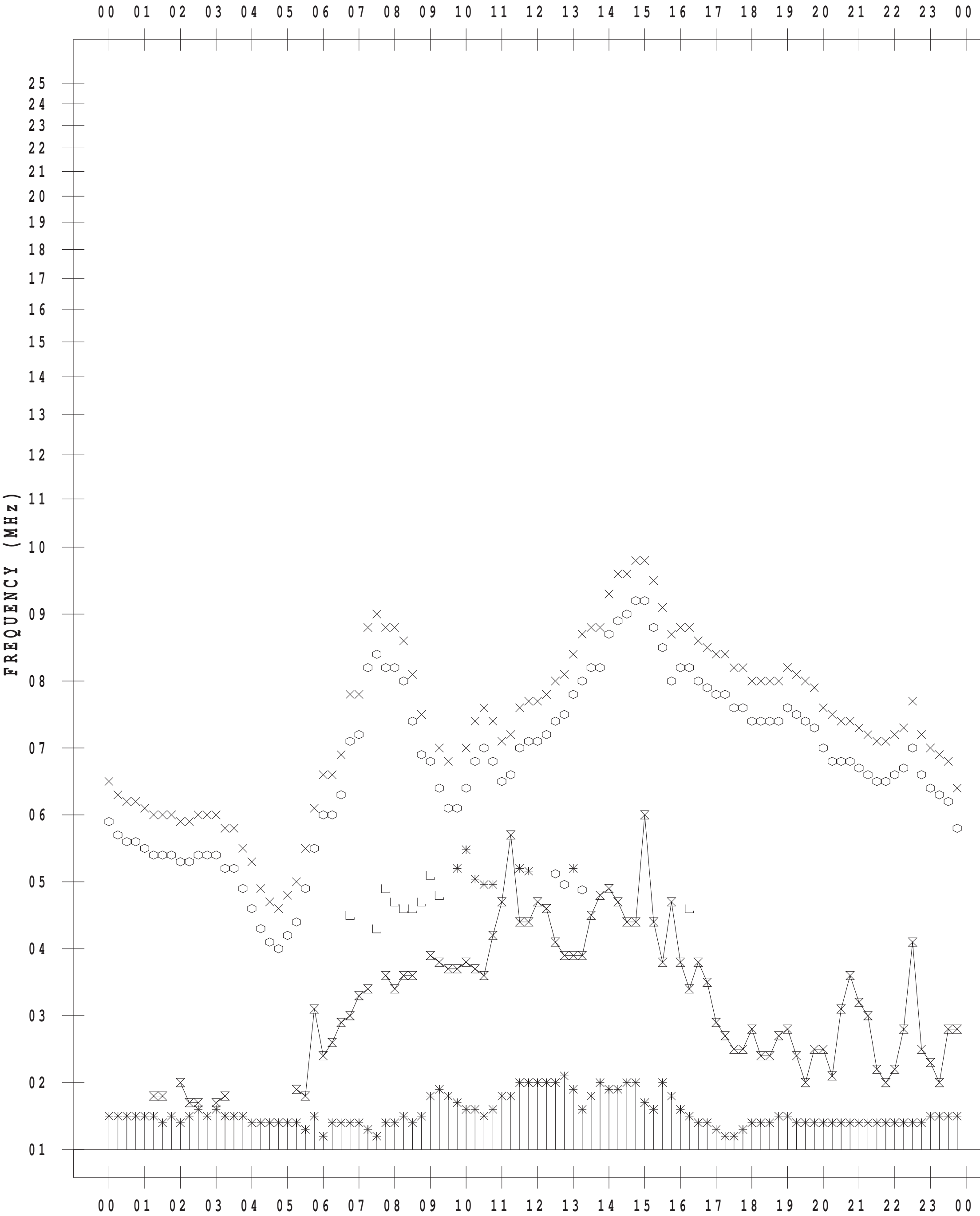
f-PLOT DATA

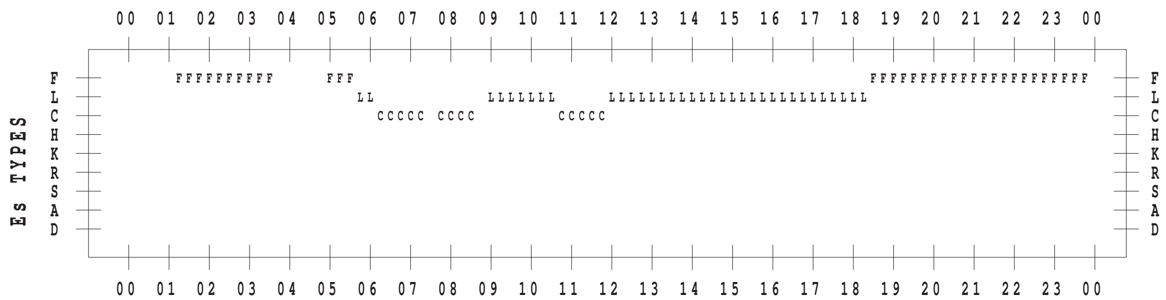
SCALER : I.NISHIMUTA

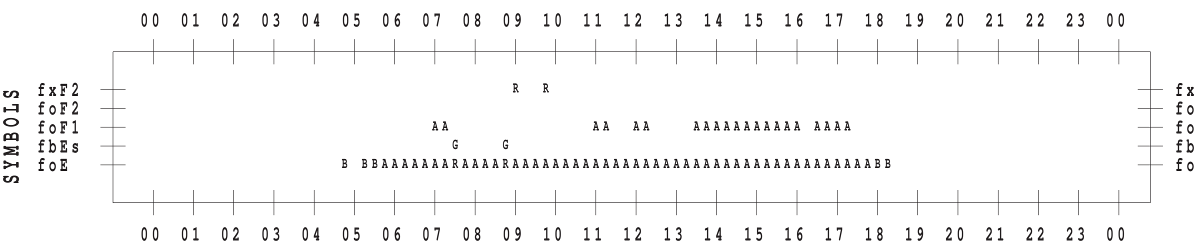
STATION : Kokubunji

DATE : 2013/ 8/29

135 °E MEAN TIME







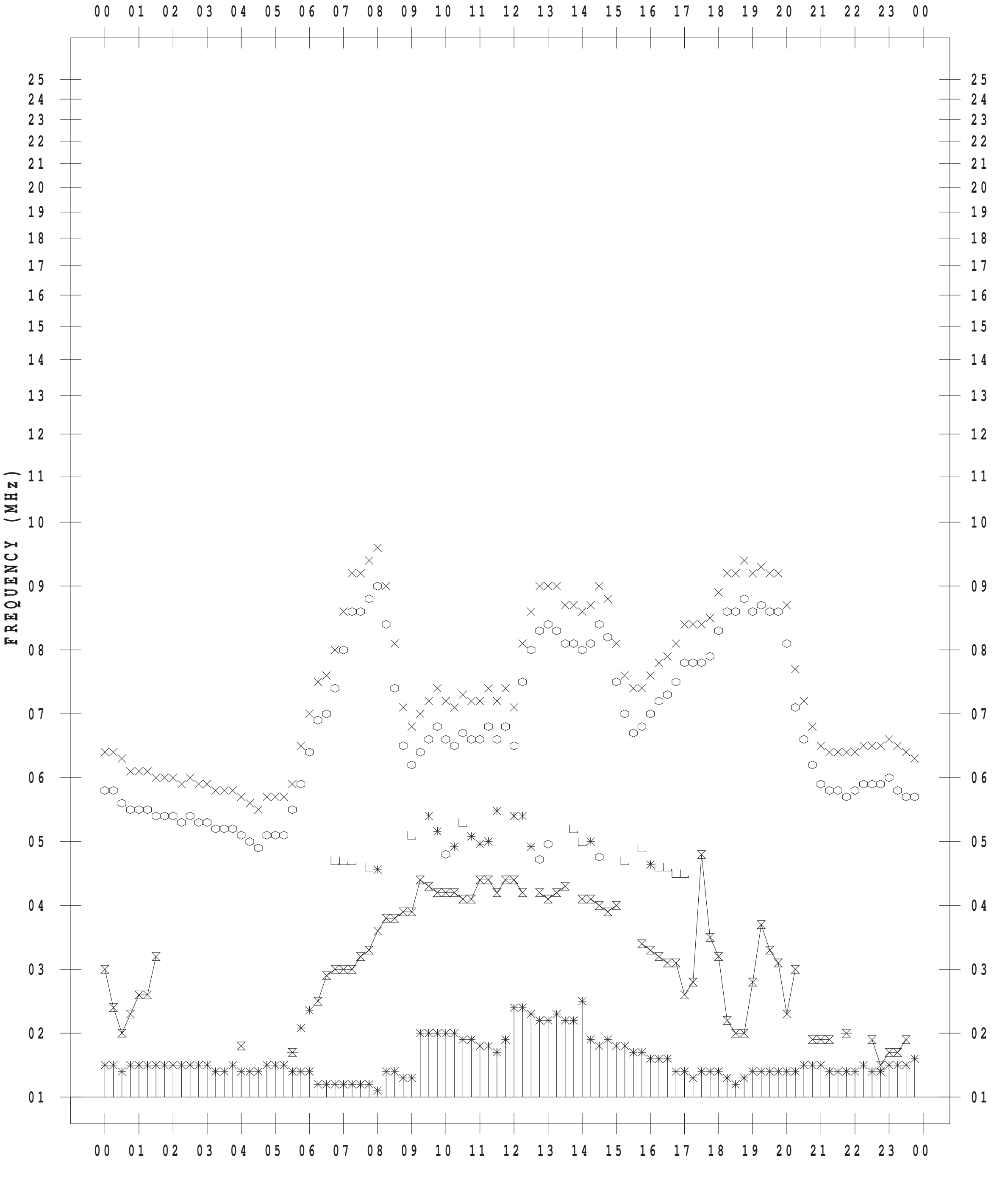
f-PLOT DATA

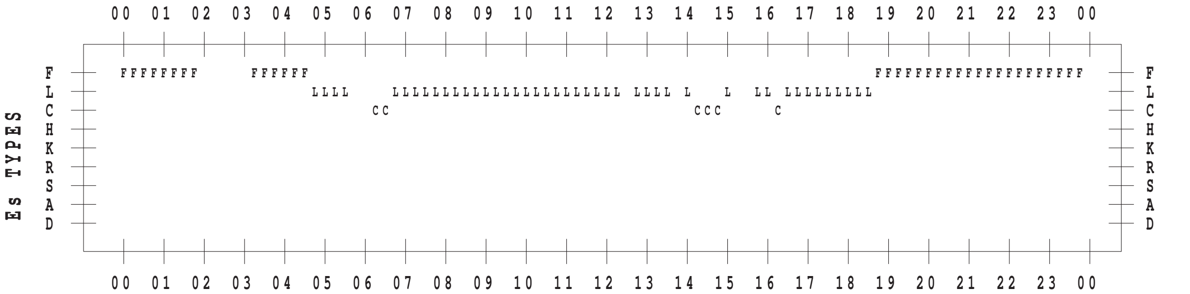
SCALER : I.NISHIMUTA

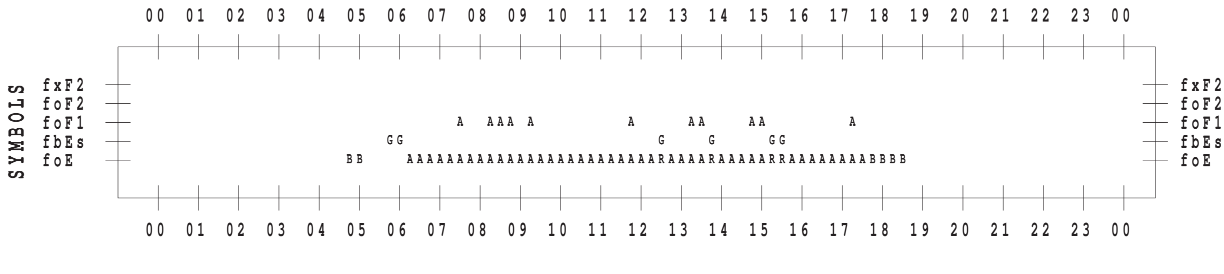
STATION : Kokubunji

DATE : 2013/ 8/30

135 °E MEAN TIME







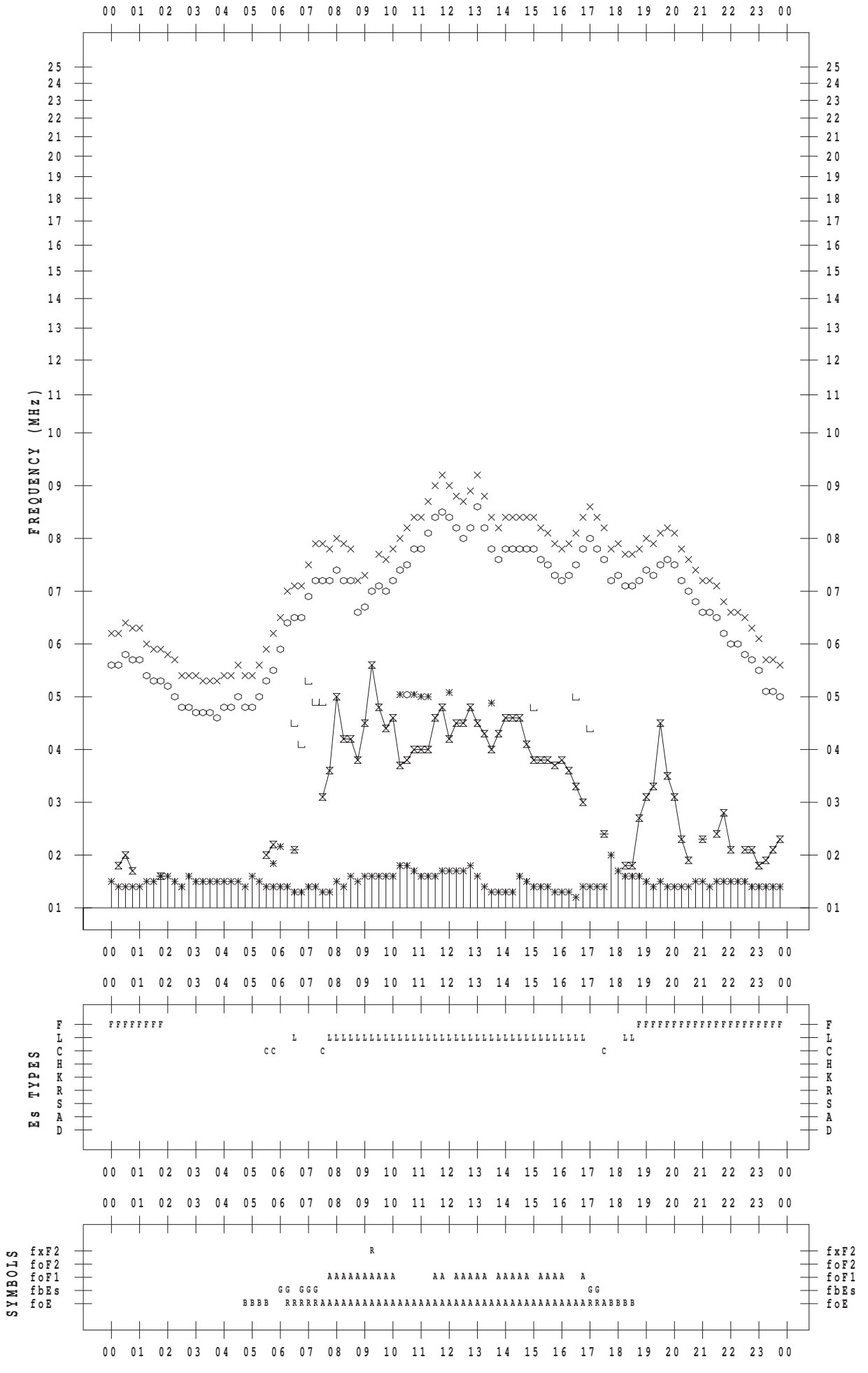
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/ 8/31

135 °E MEAN TIME



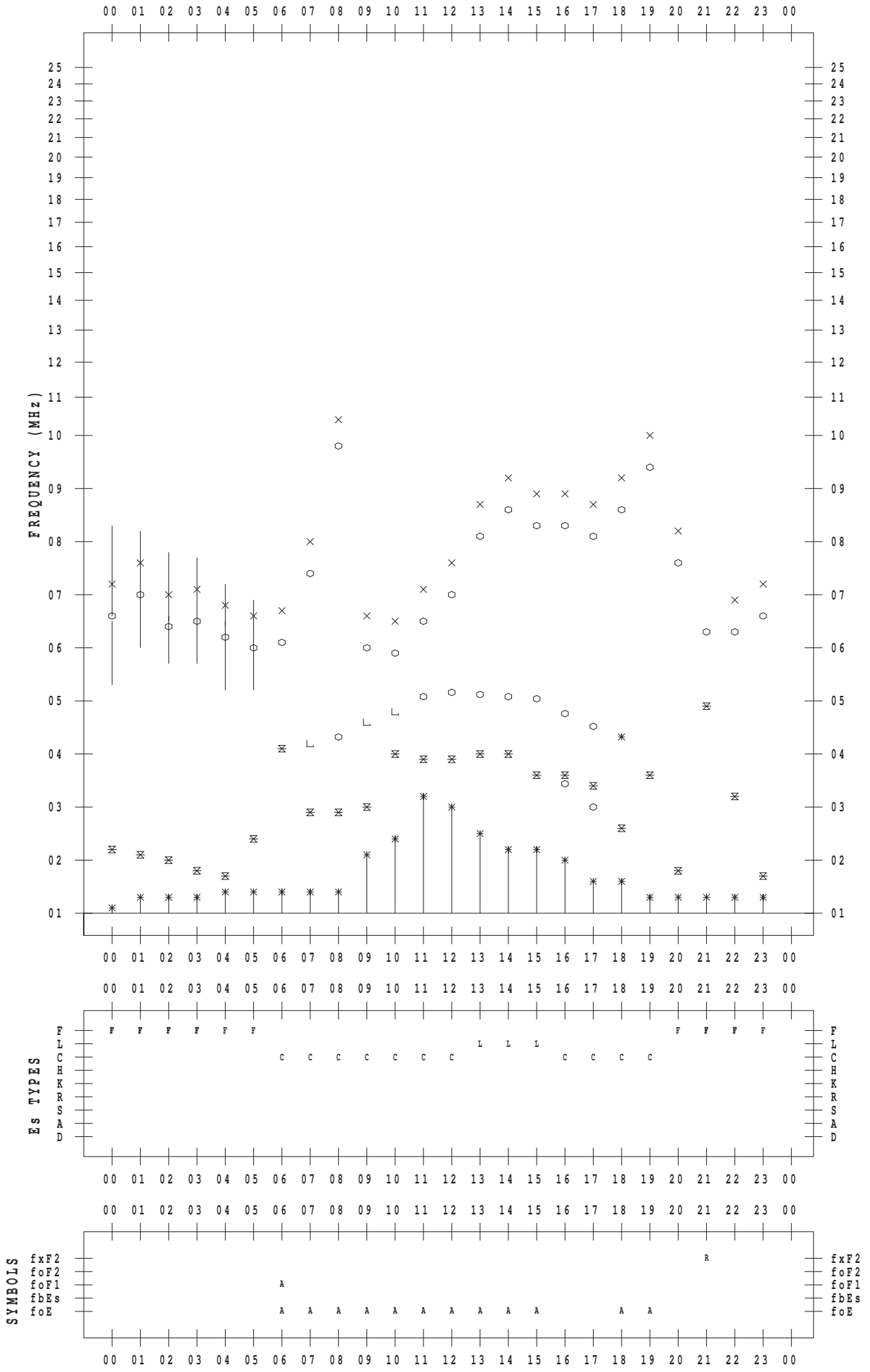
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 1

135 °E MEAN TIME



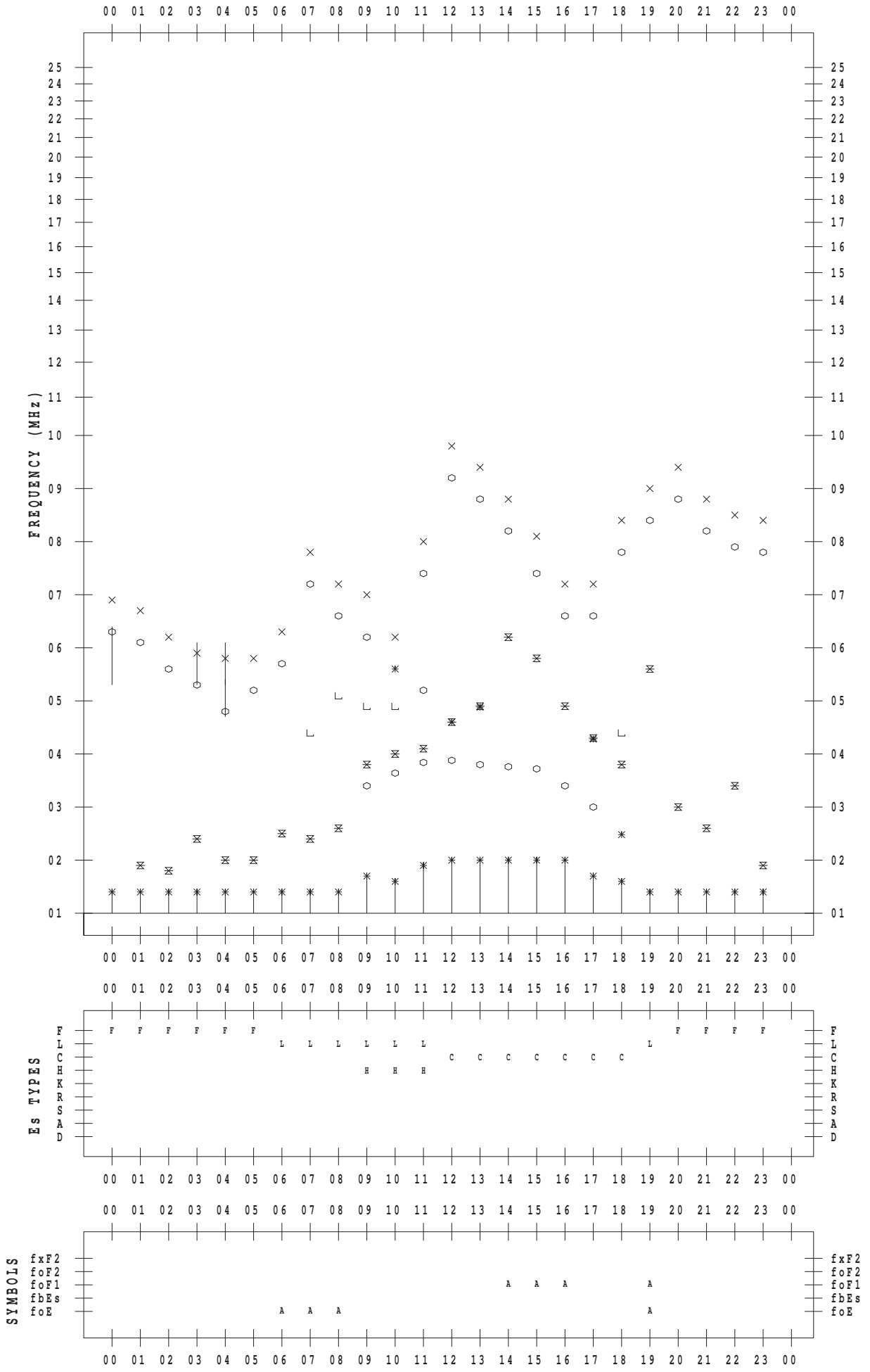
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 2

135 °E MEAN TIME



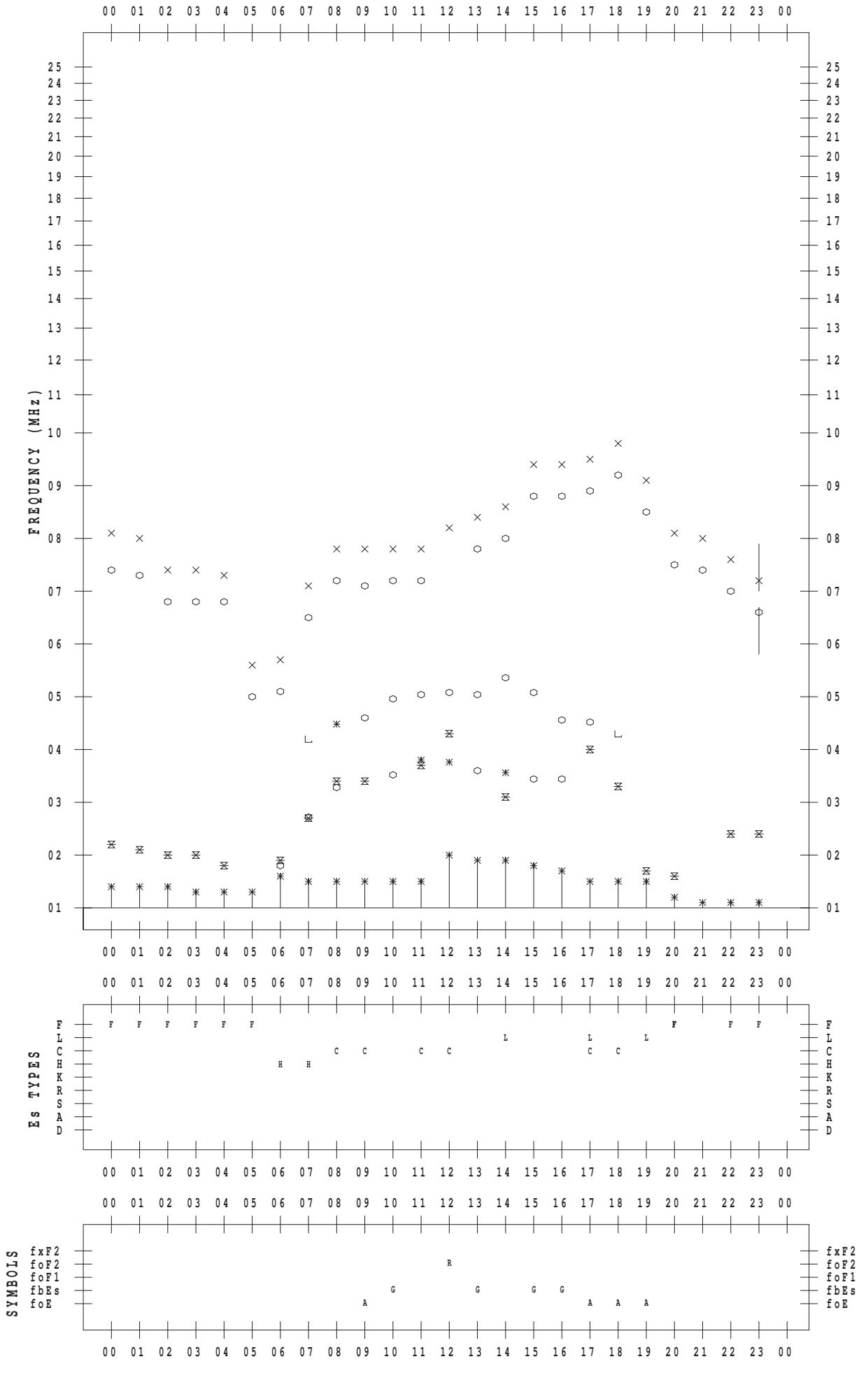
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 3

135 °E MEAN TIME



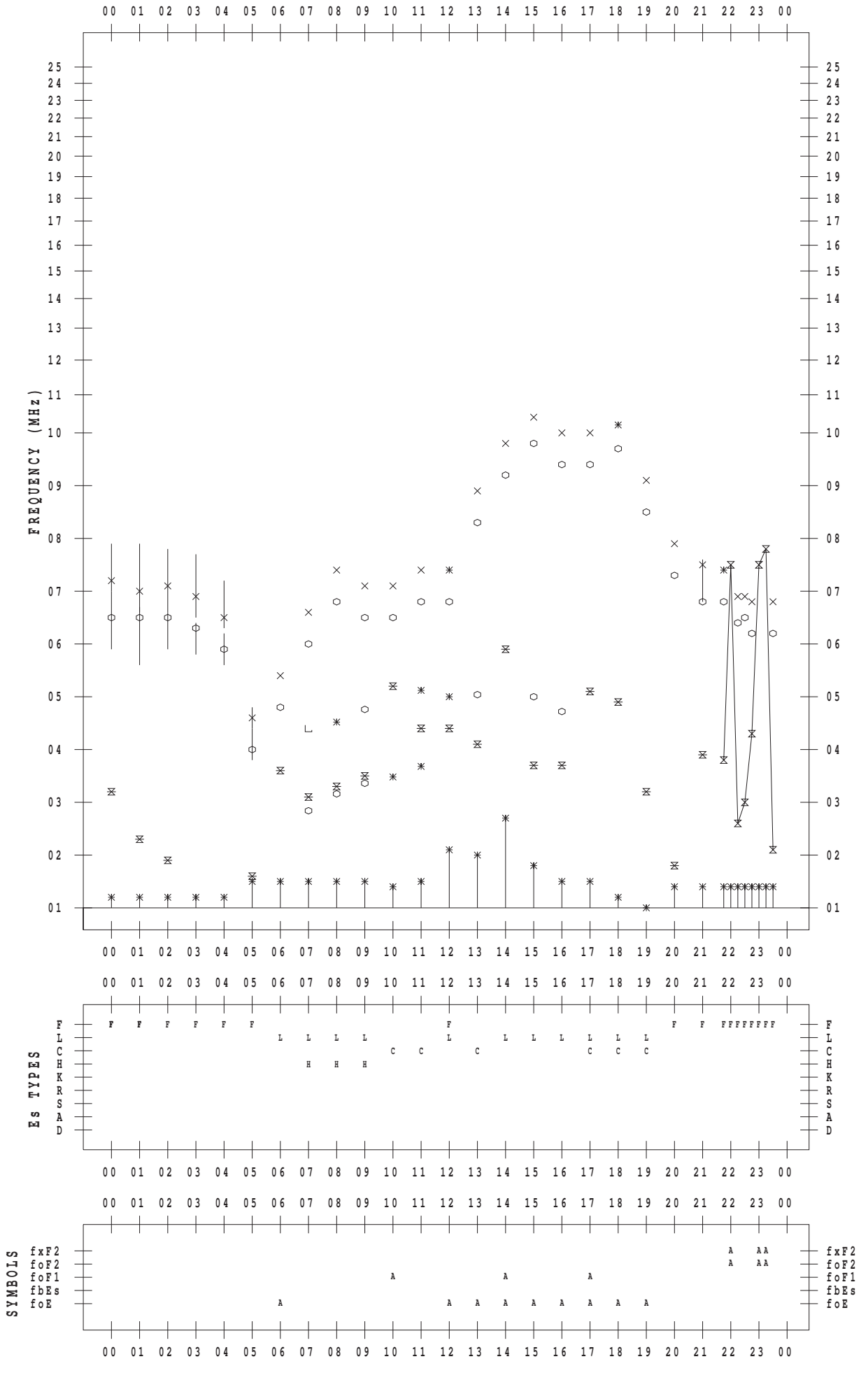
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 4

135 °E MEAN TIME



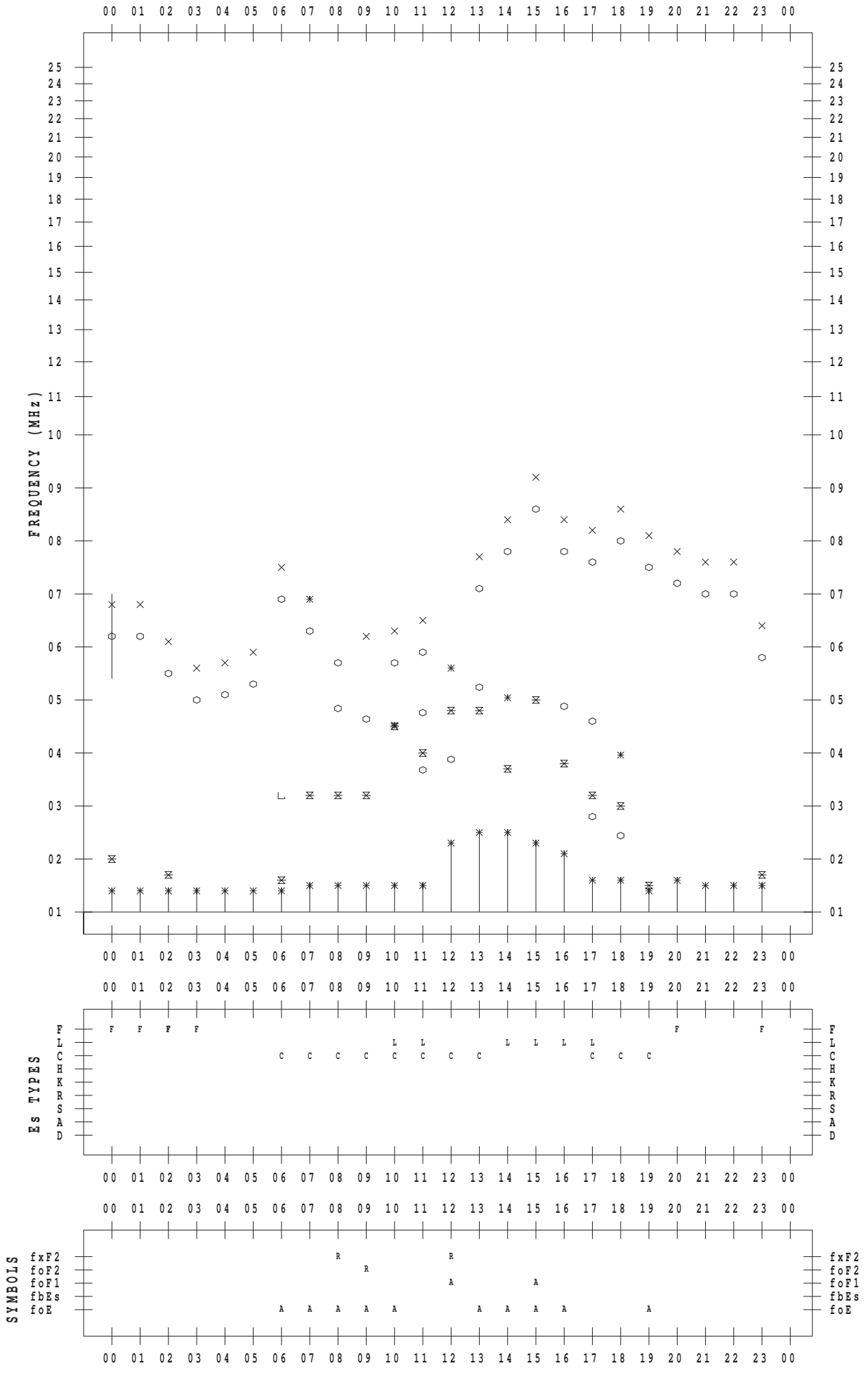
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 5

135 °E MEAN TIME



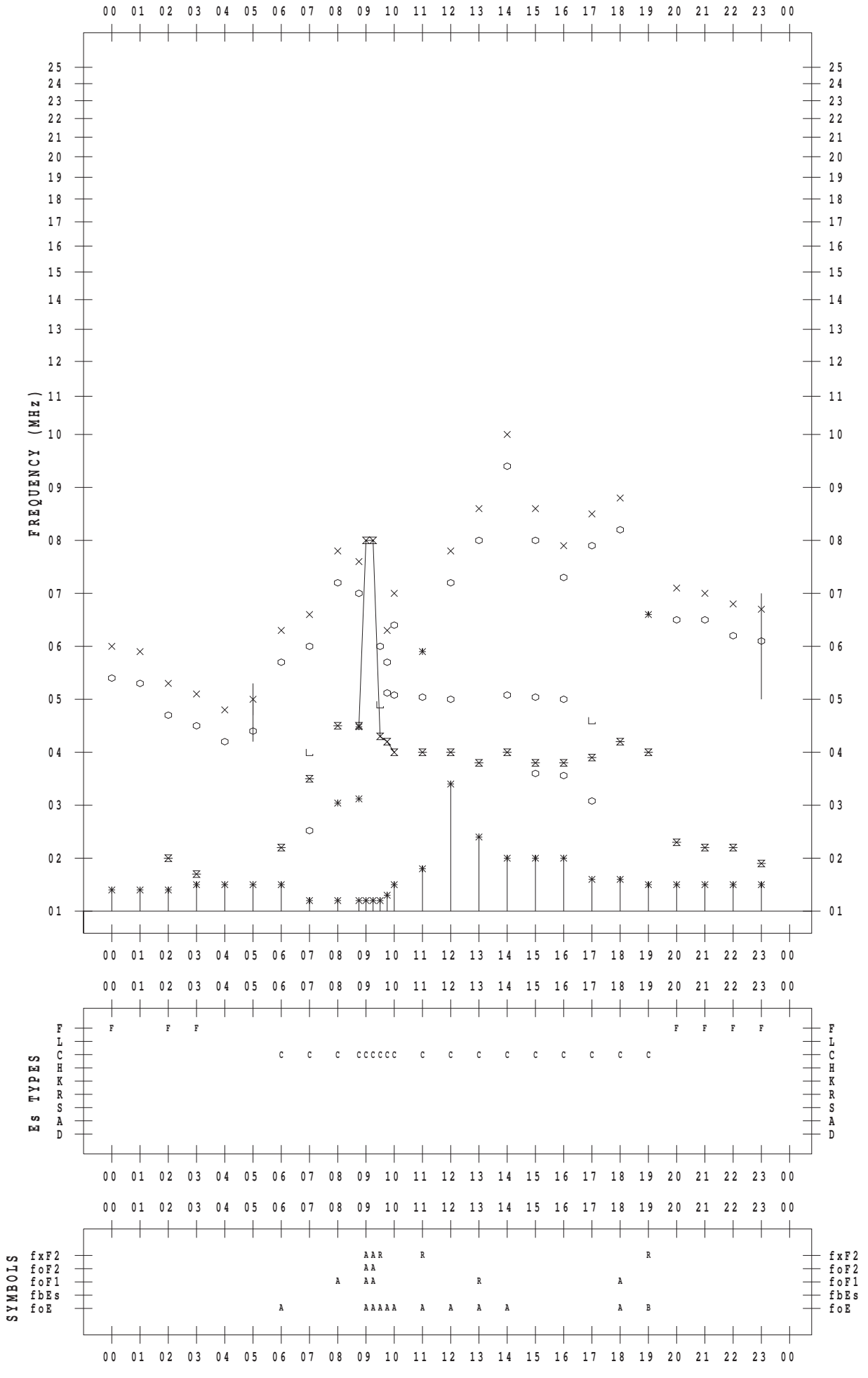
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 6

135 °E MEAN TIME



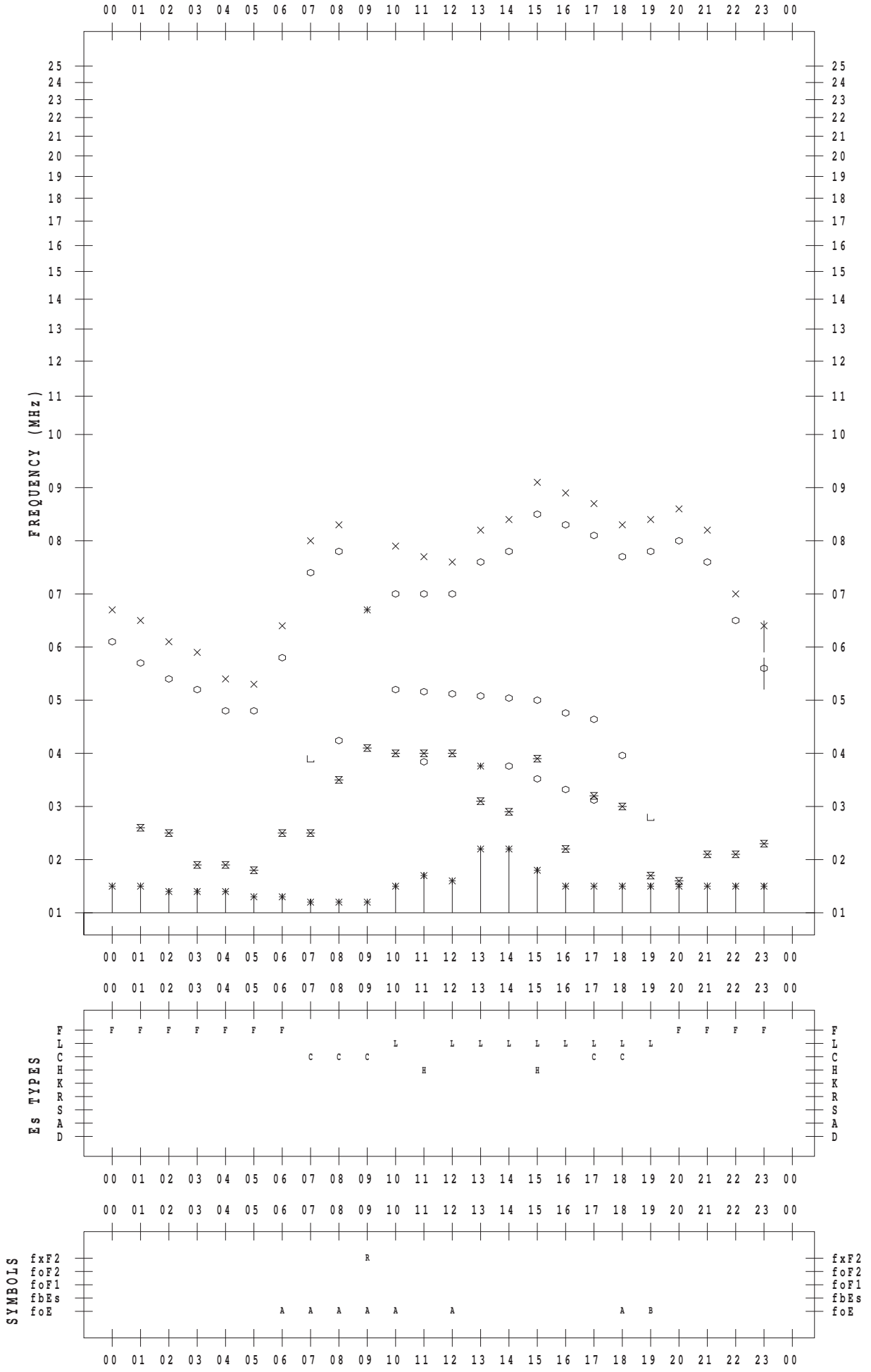
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 7

135 °E MEAN TIME



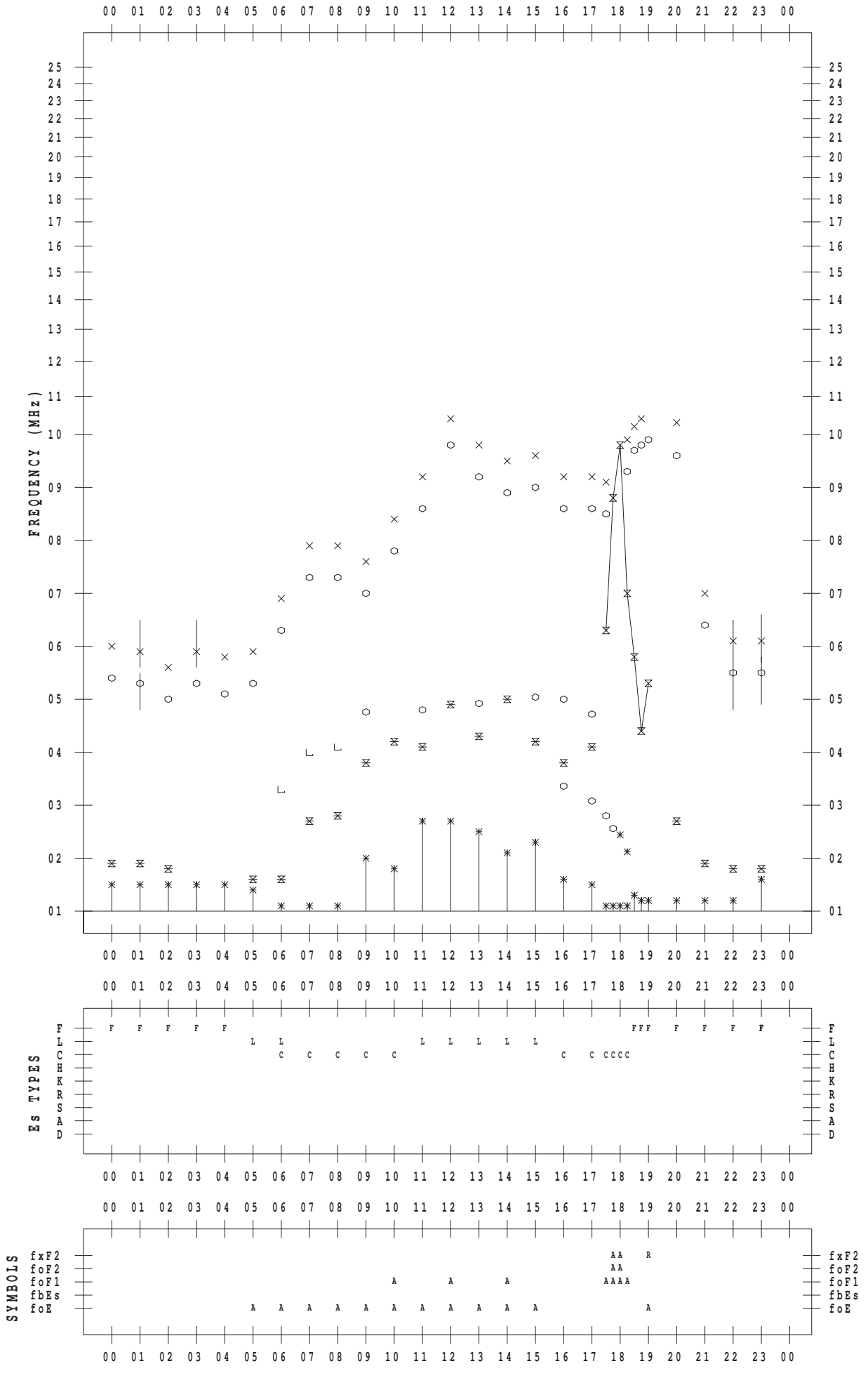
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 8

135 °E MEAN TIME



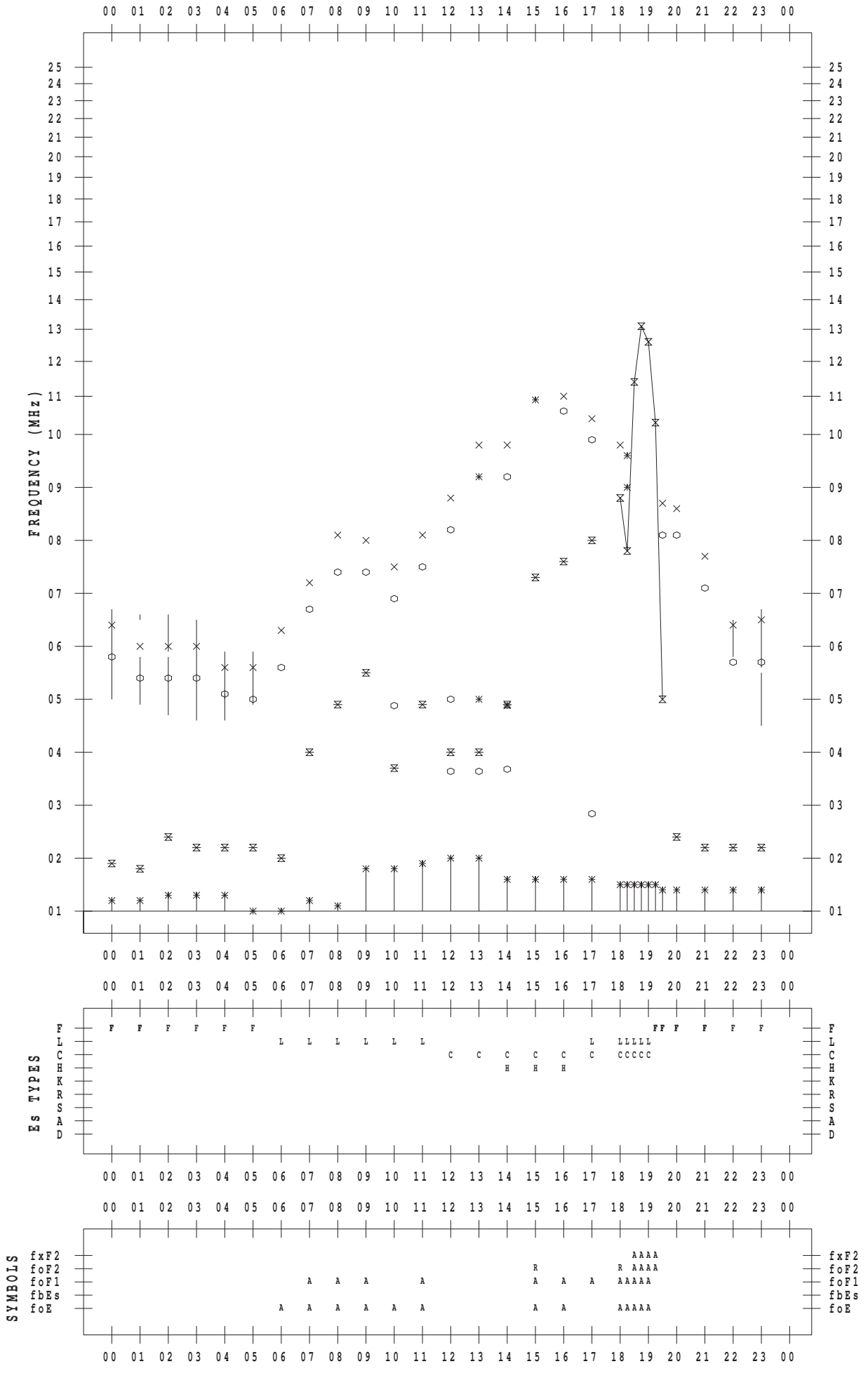
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/ 9

135 °E MEAN TIME



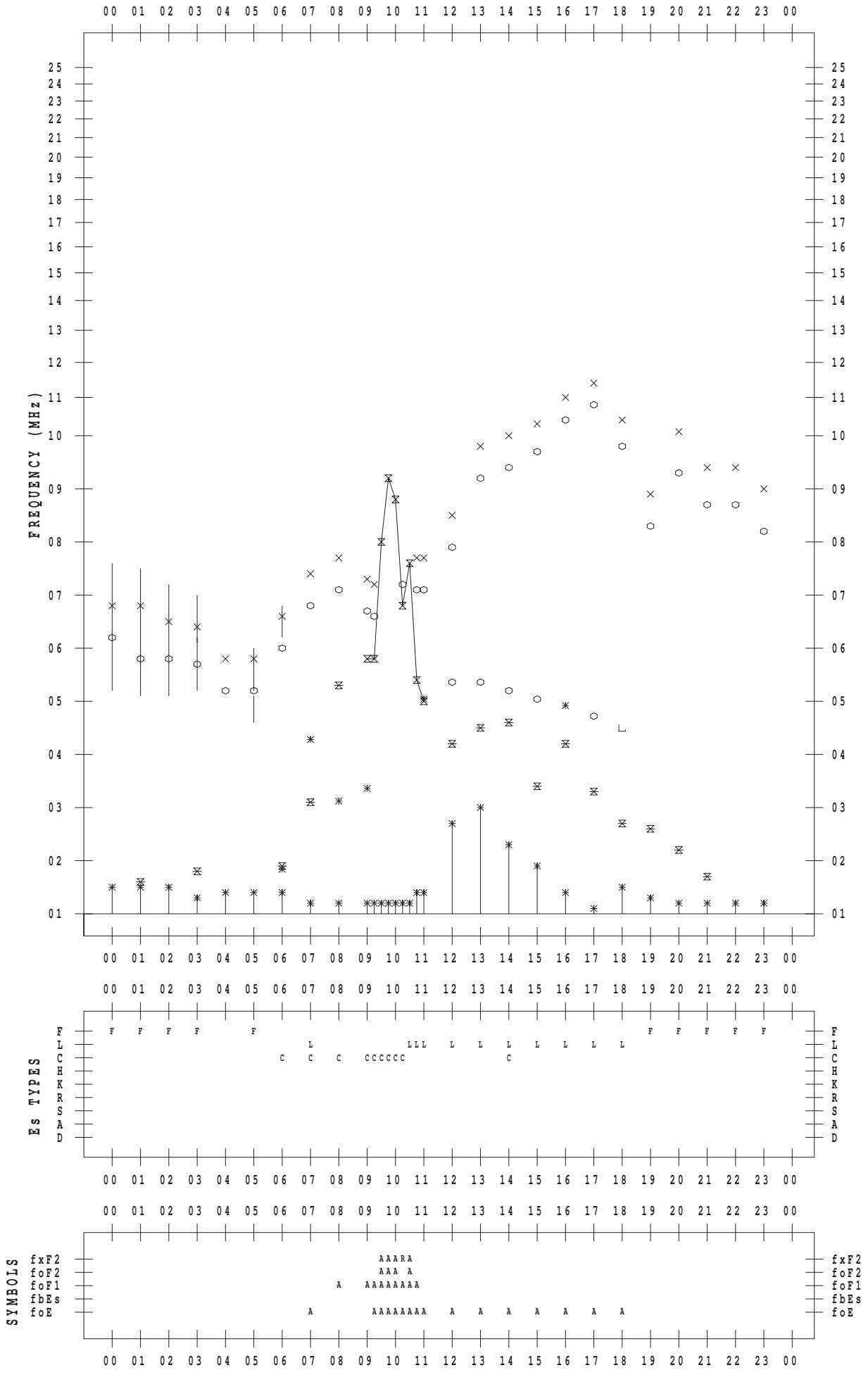
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/10

135 °E MEAN TIME



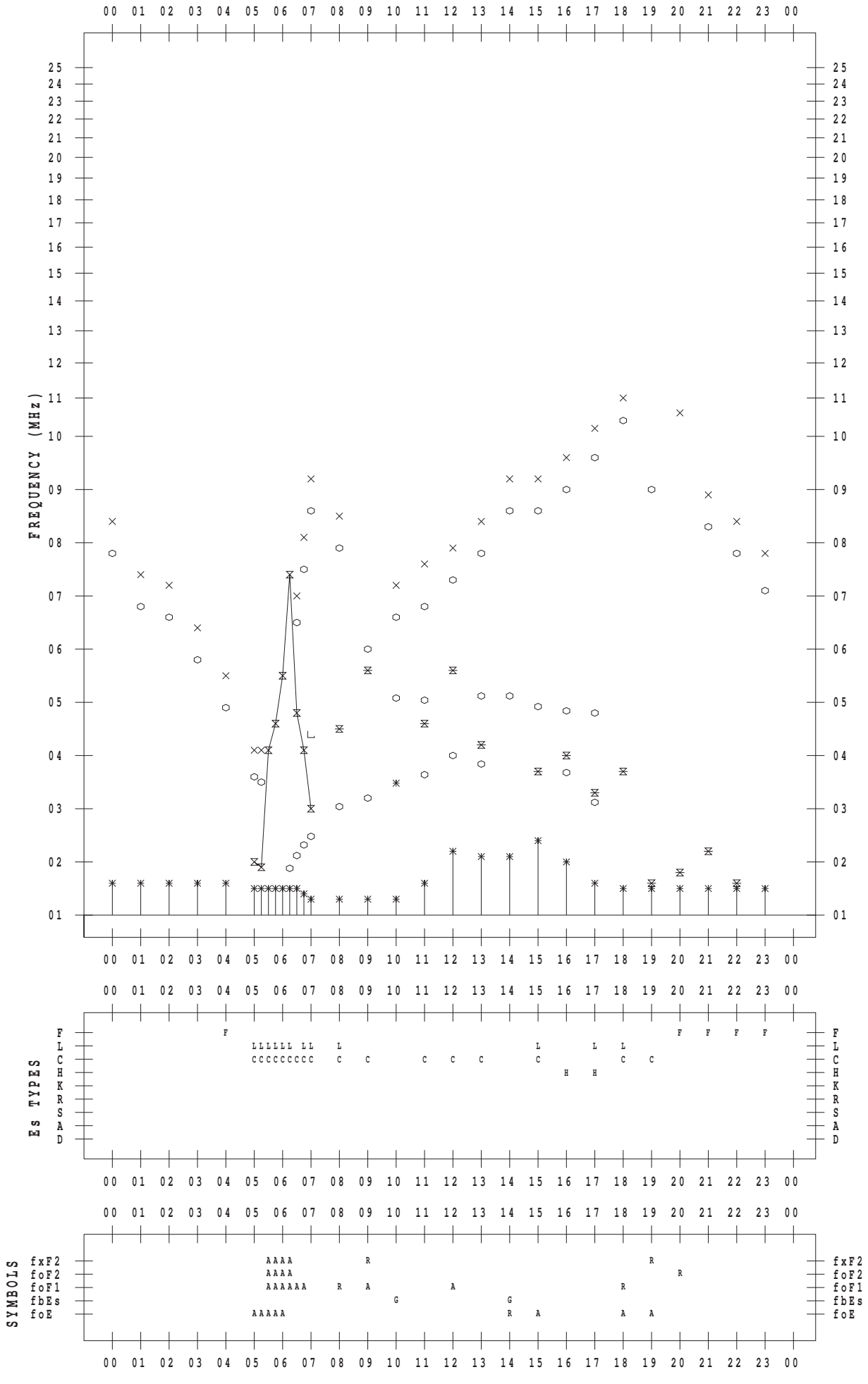
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/11

135 °E MEAN TIME



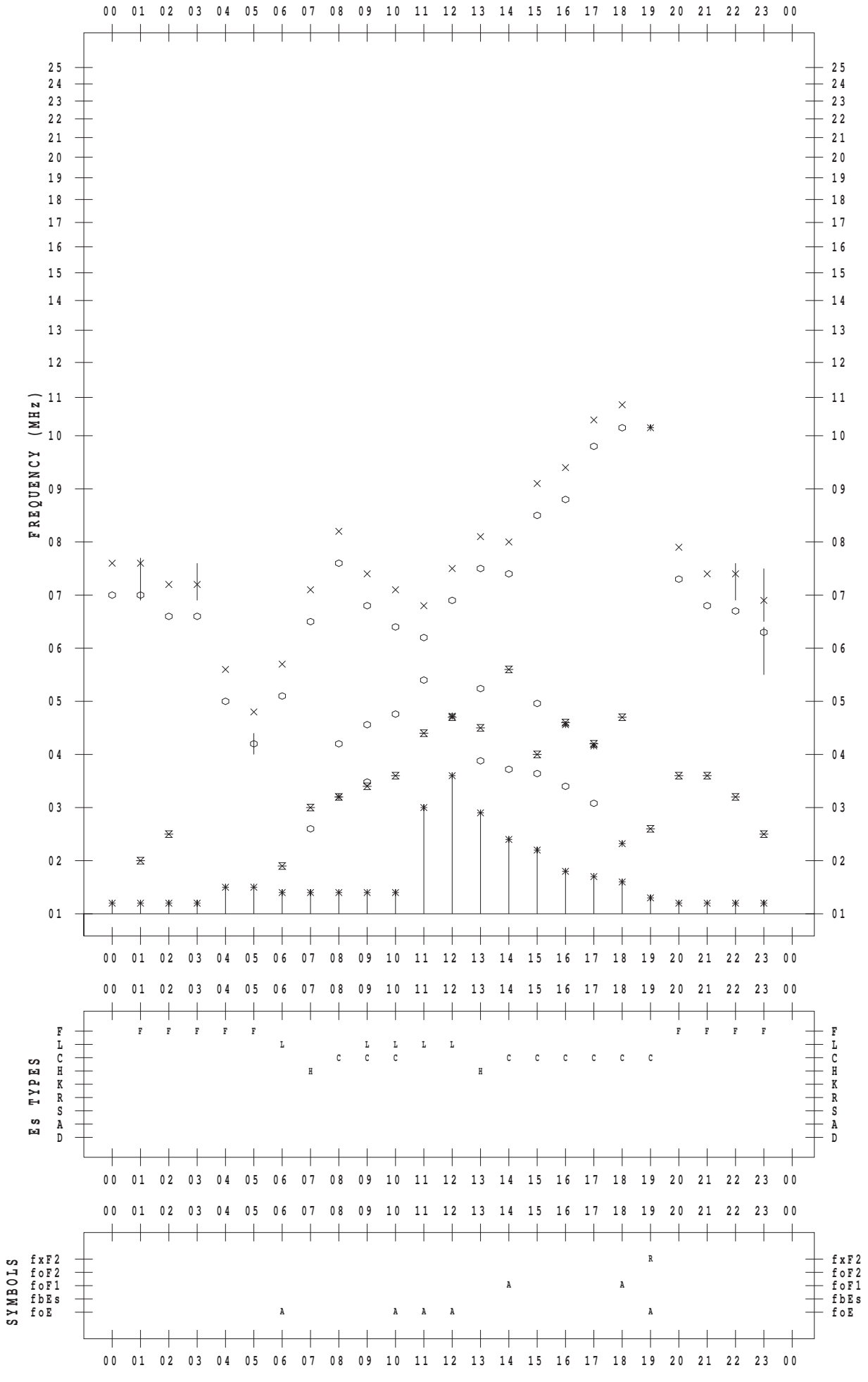
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/12

135 °E MEAN TIME



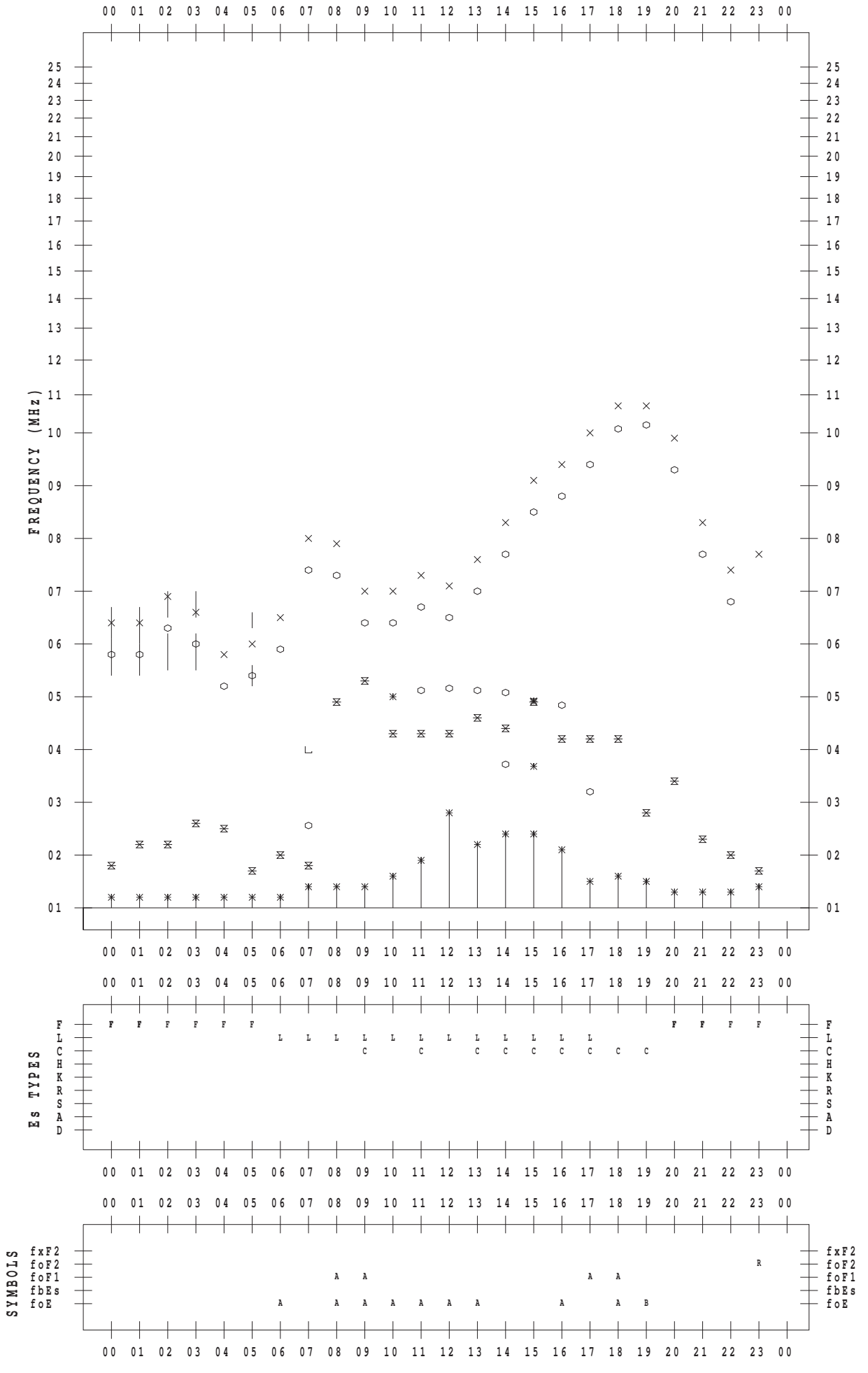
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/13

135 °E MEAN TIME



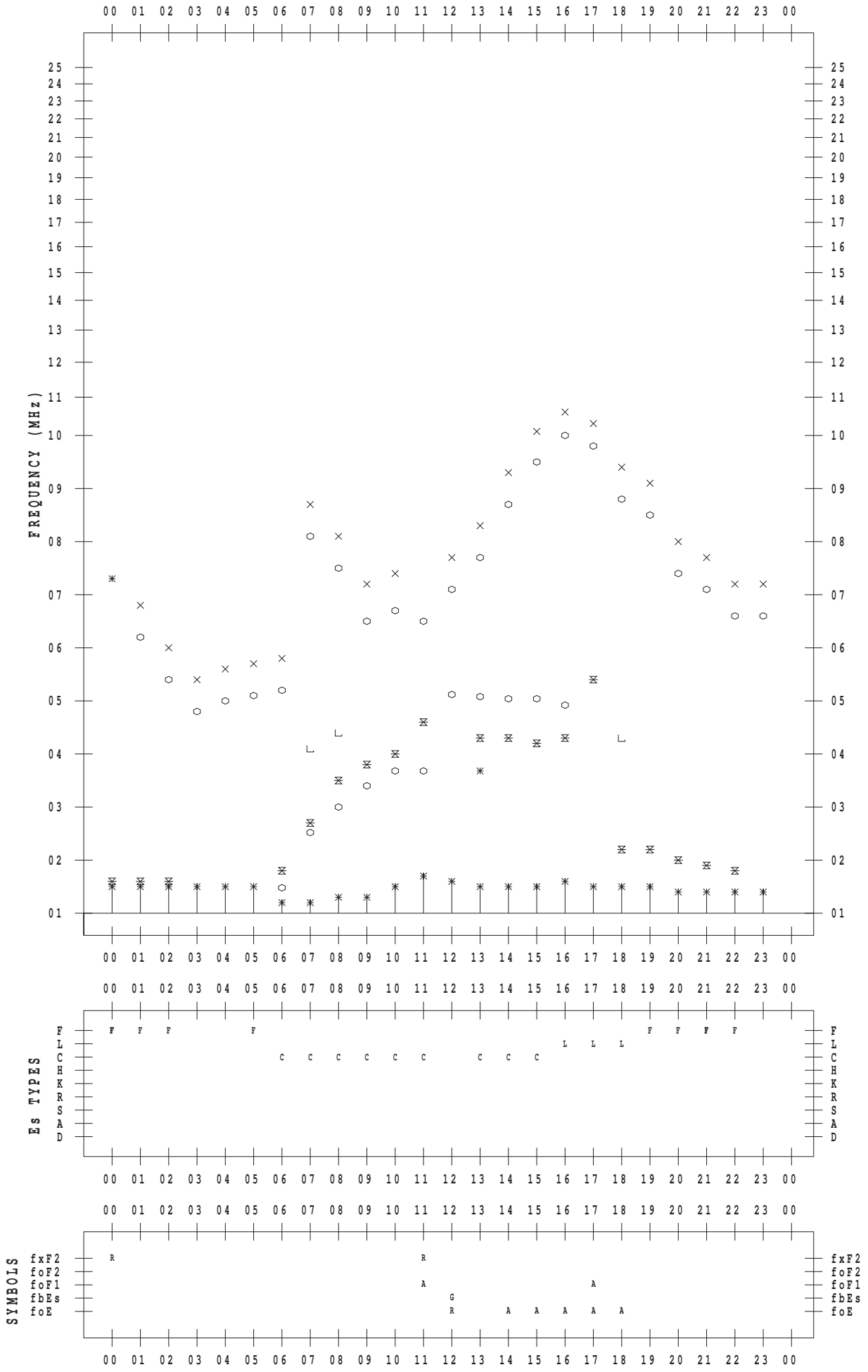
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/14

135 °E MEAN TIME



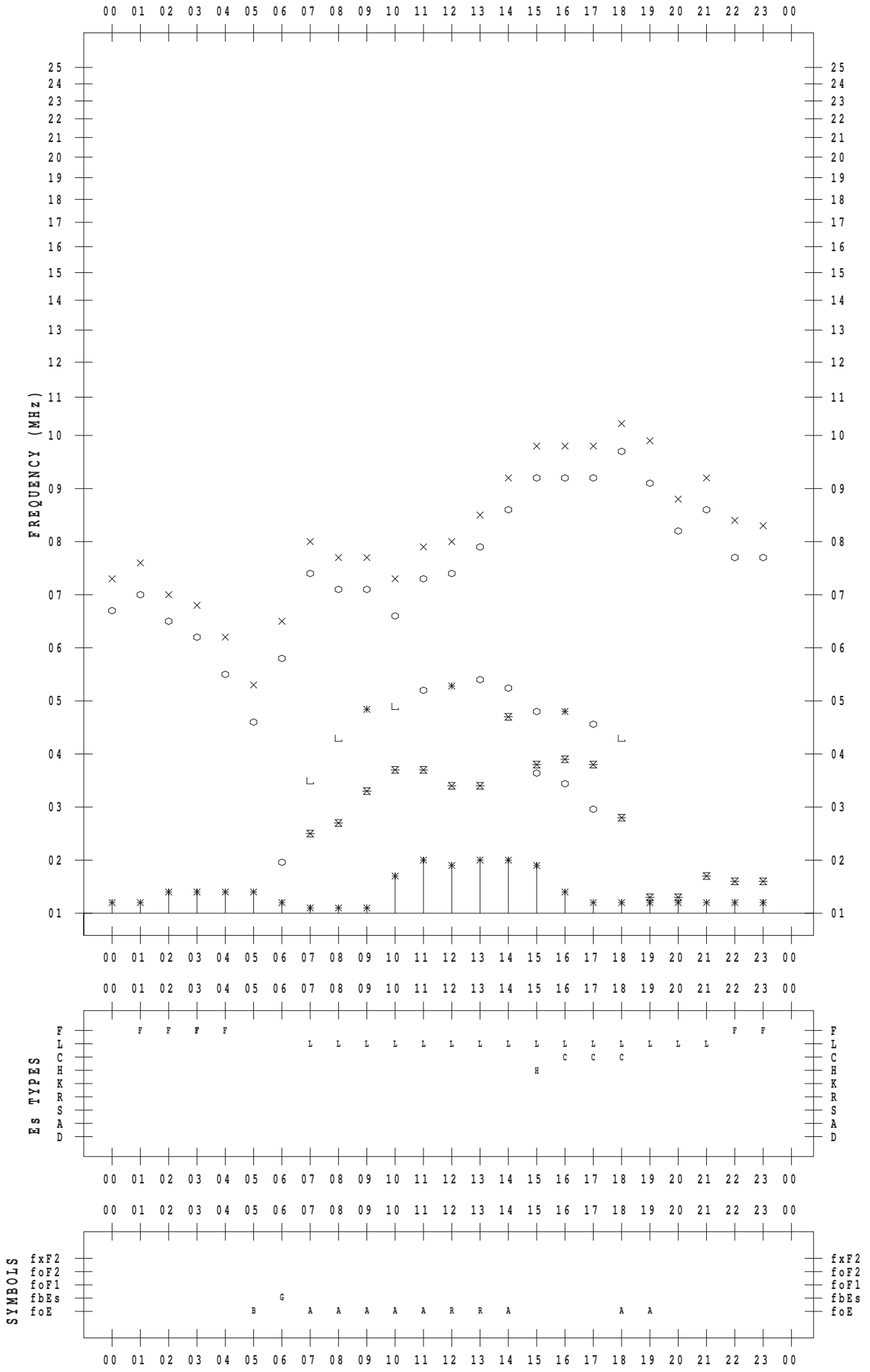
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/15

135 °E MEAN TIME



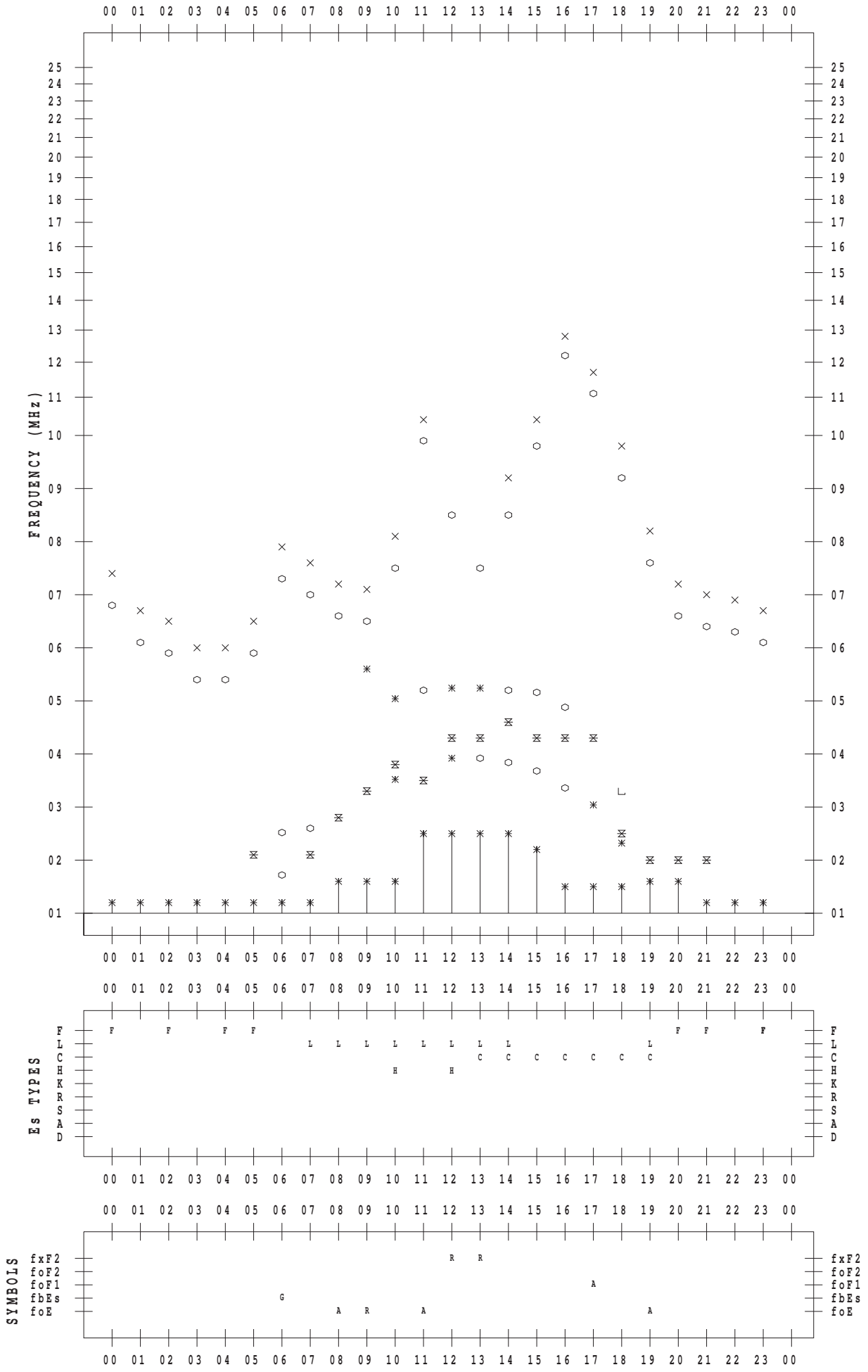
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/16

135 °E MEAN TIME



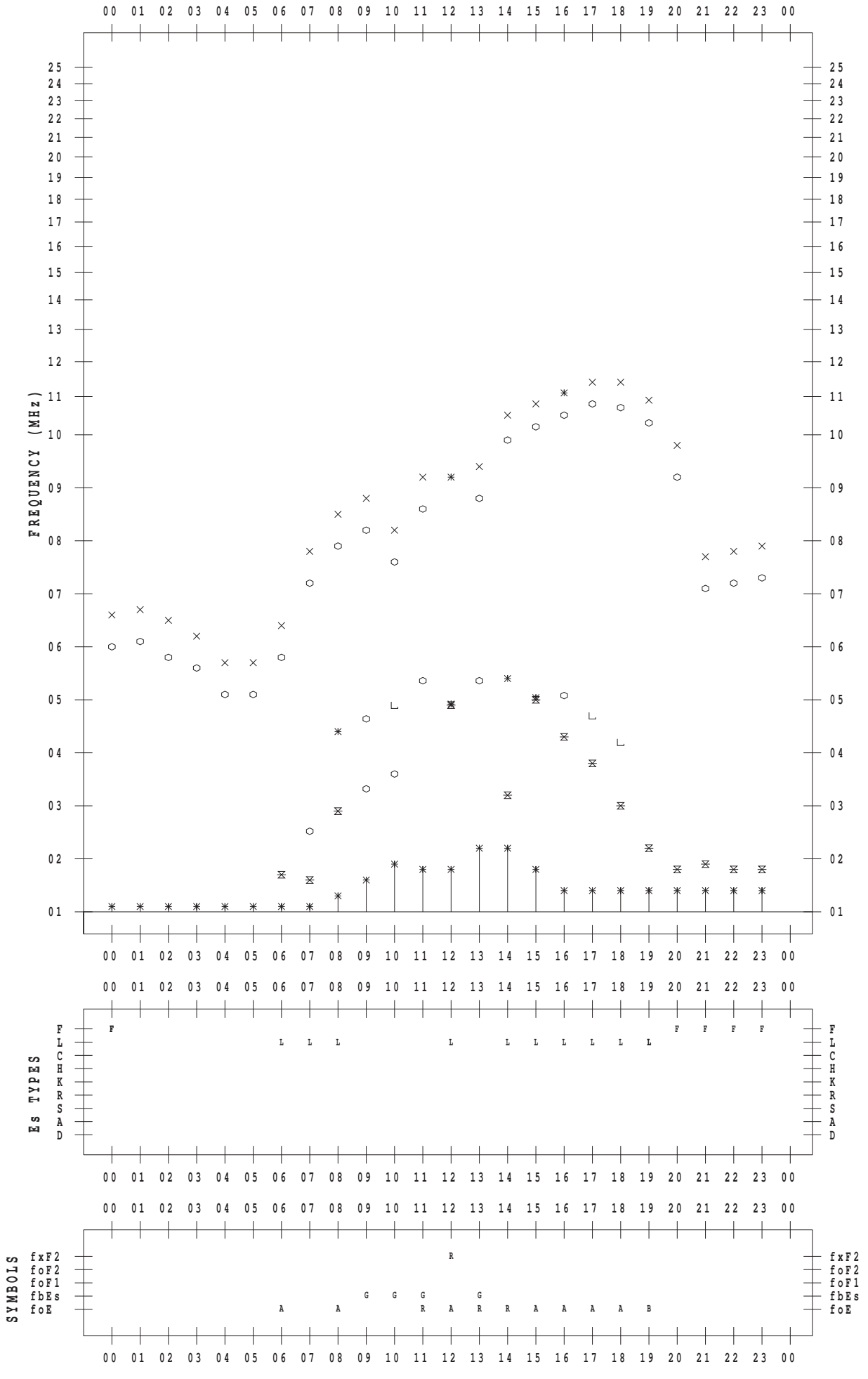
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/17

135 °E MEAN TIME



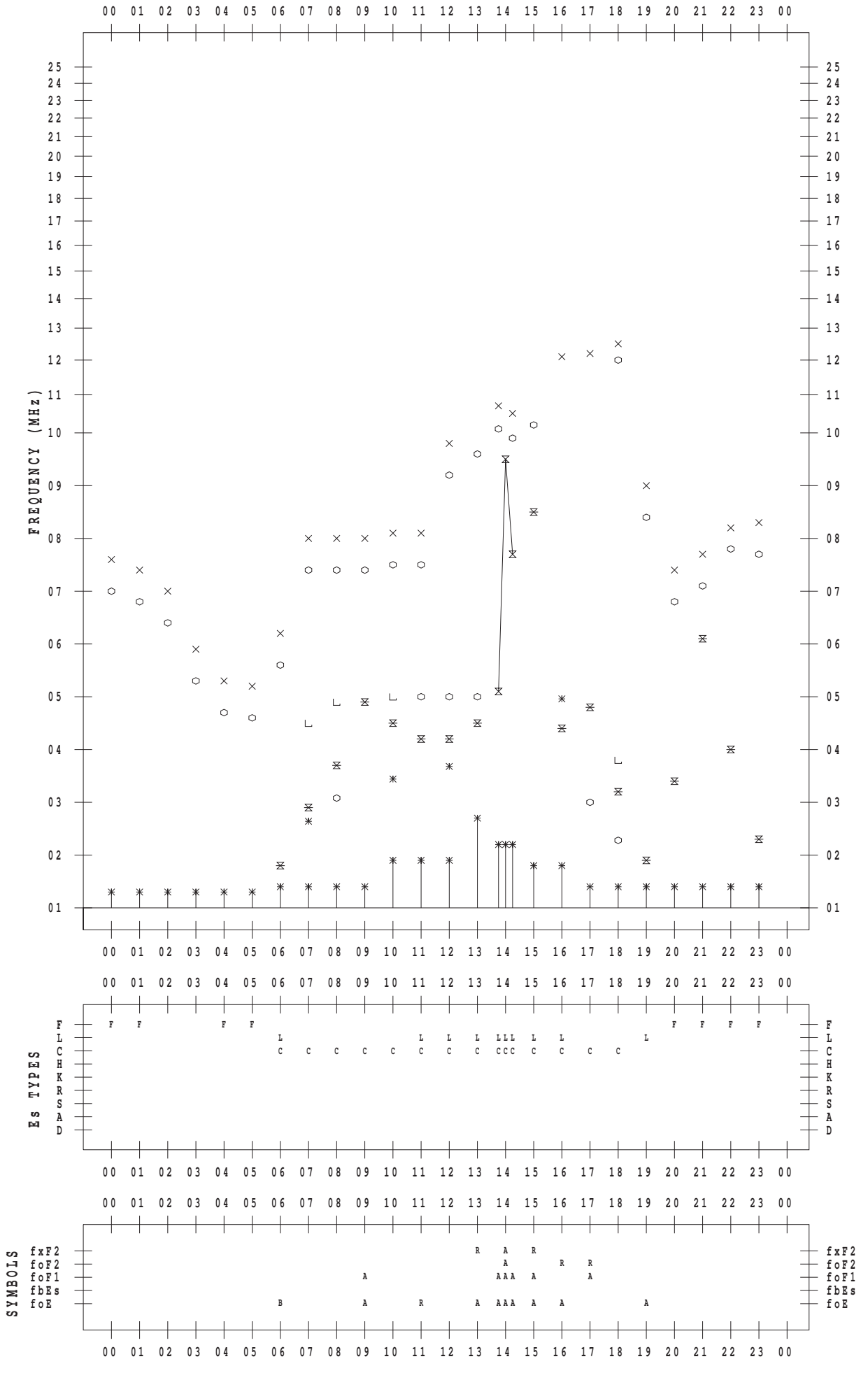
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/18

135 °E MEAN TIME



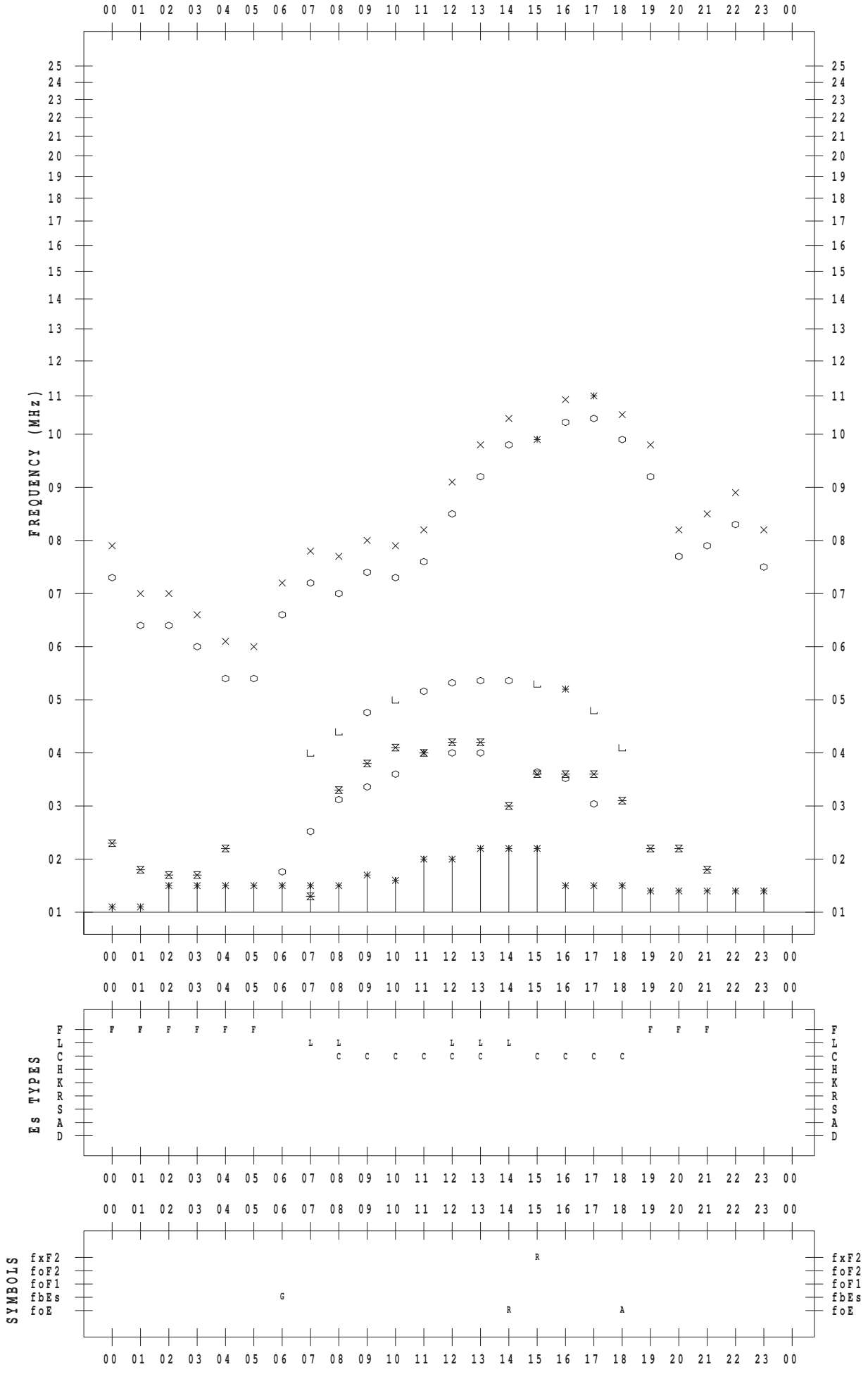
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/19

135 °E MEAN TIME



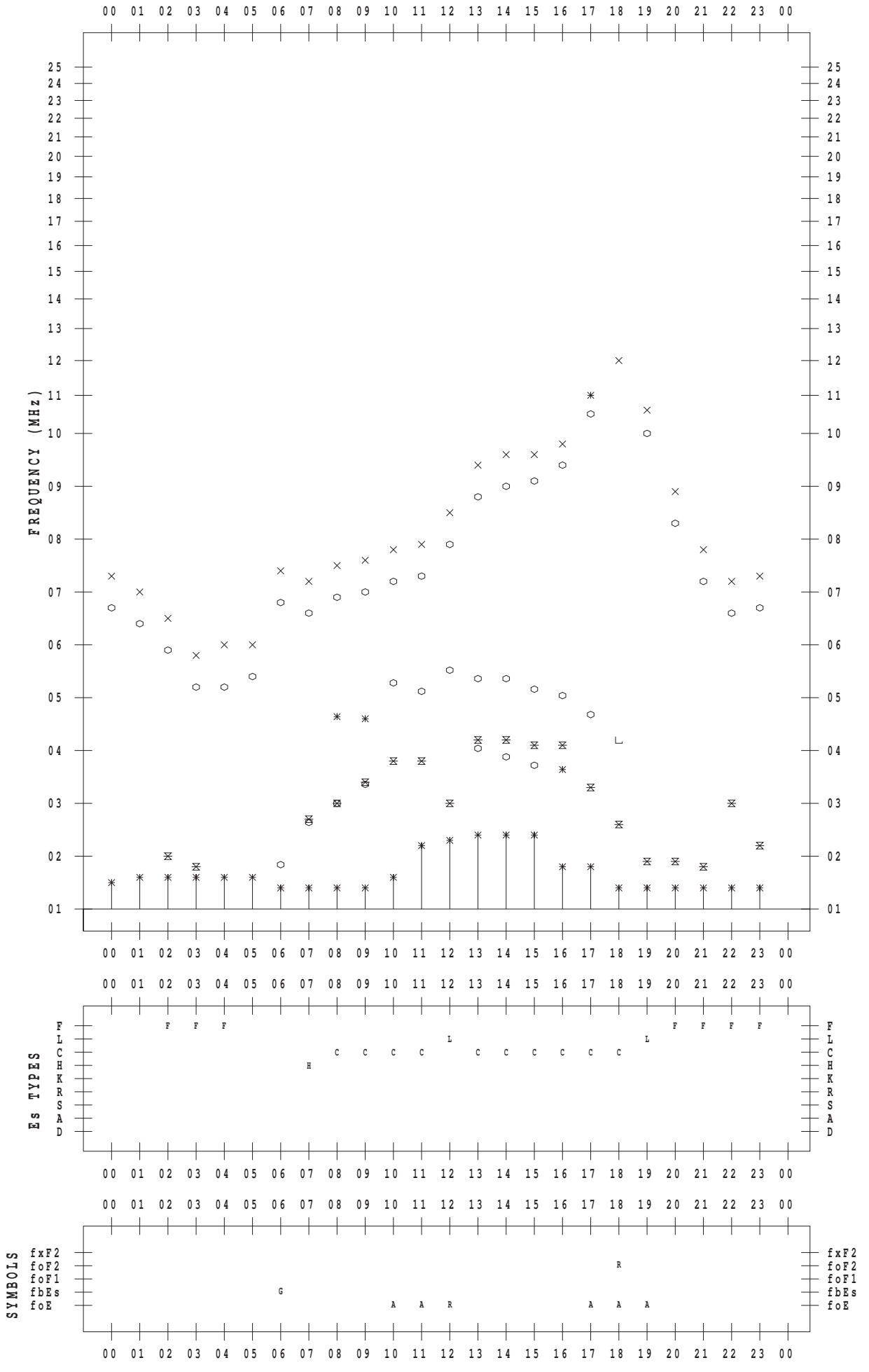
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/20

135 °E MEAN TIME



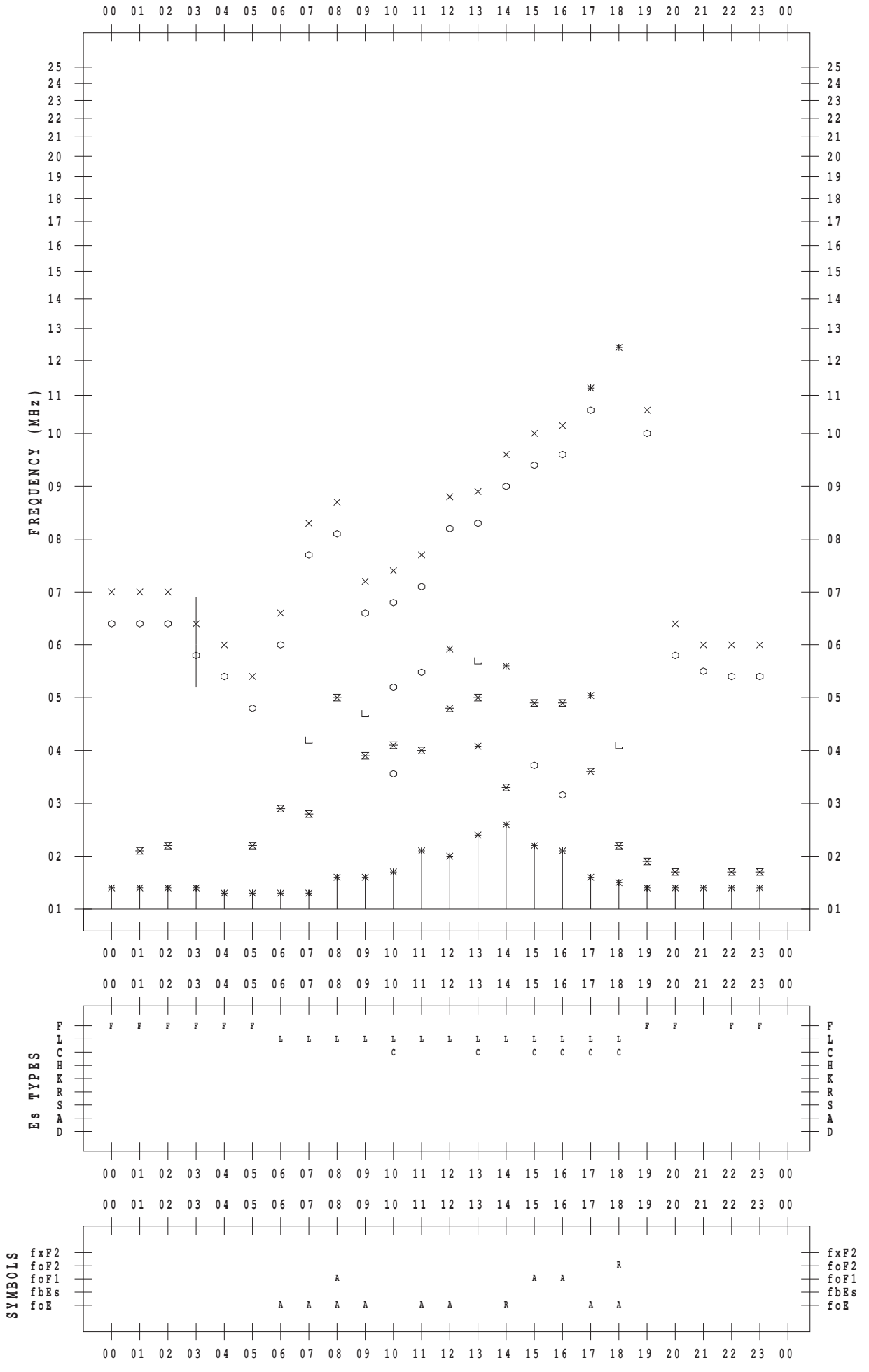
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/21

135 °E MEAN TIME



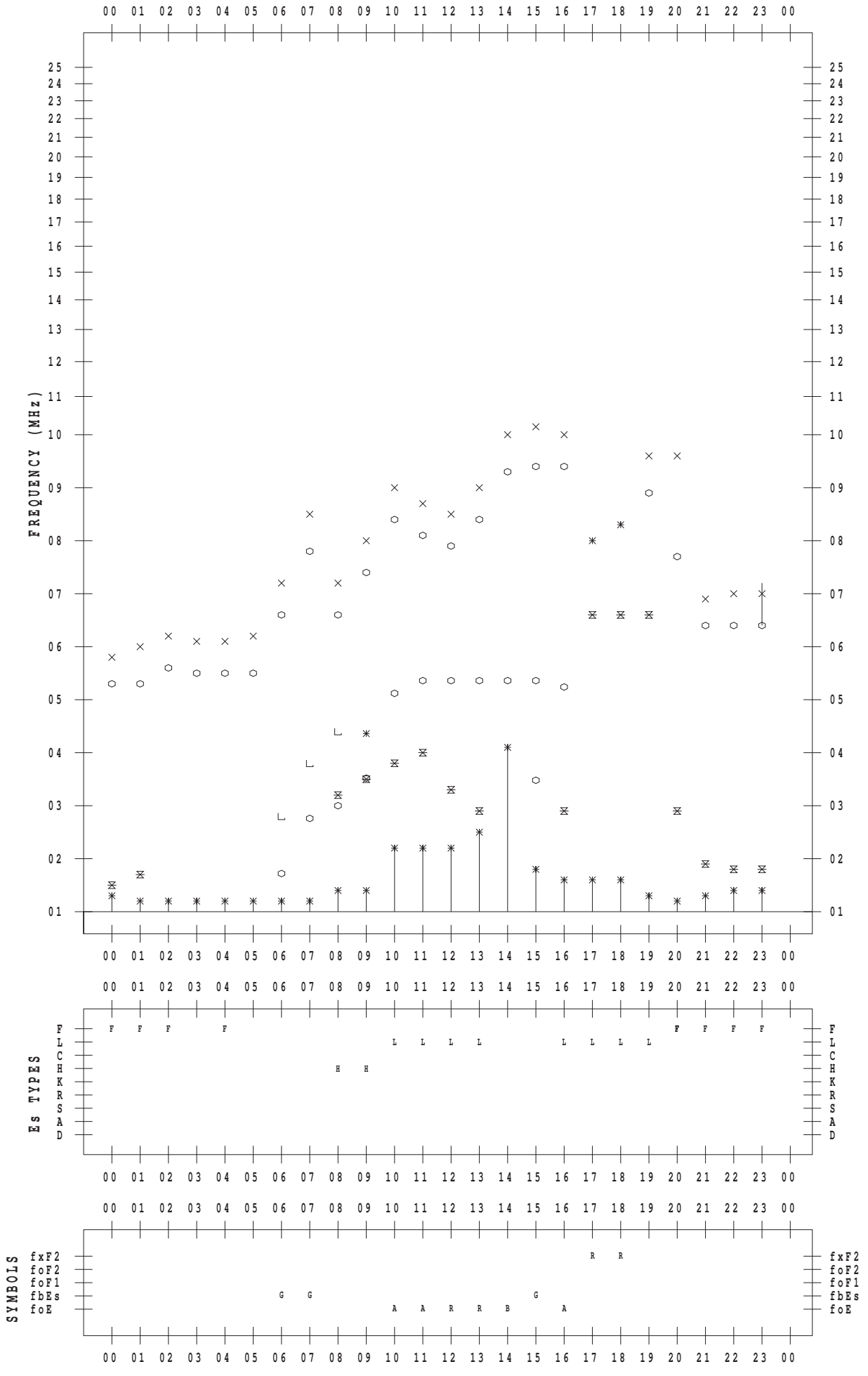
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/22

135 °E MEAN TIME



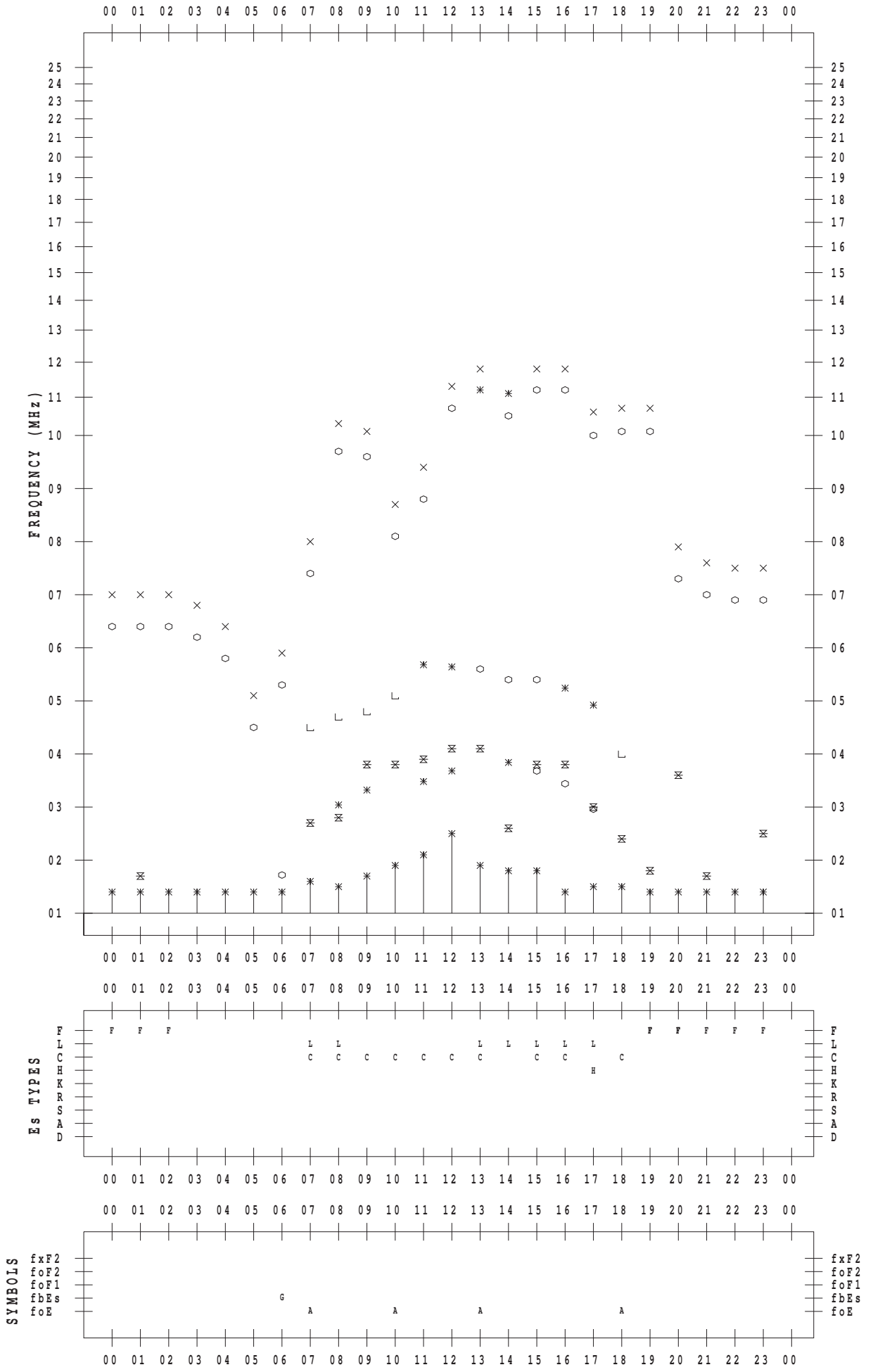
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/23

135 °E MEAN TIME



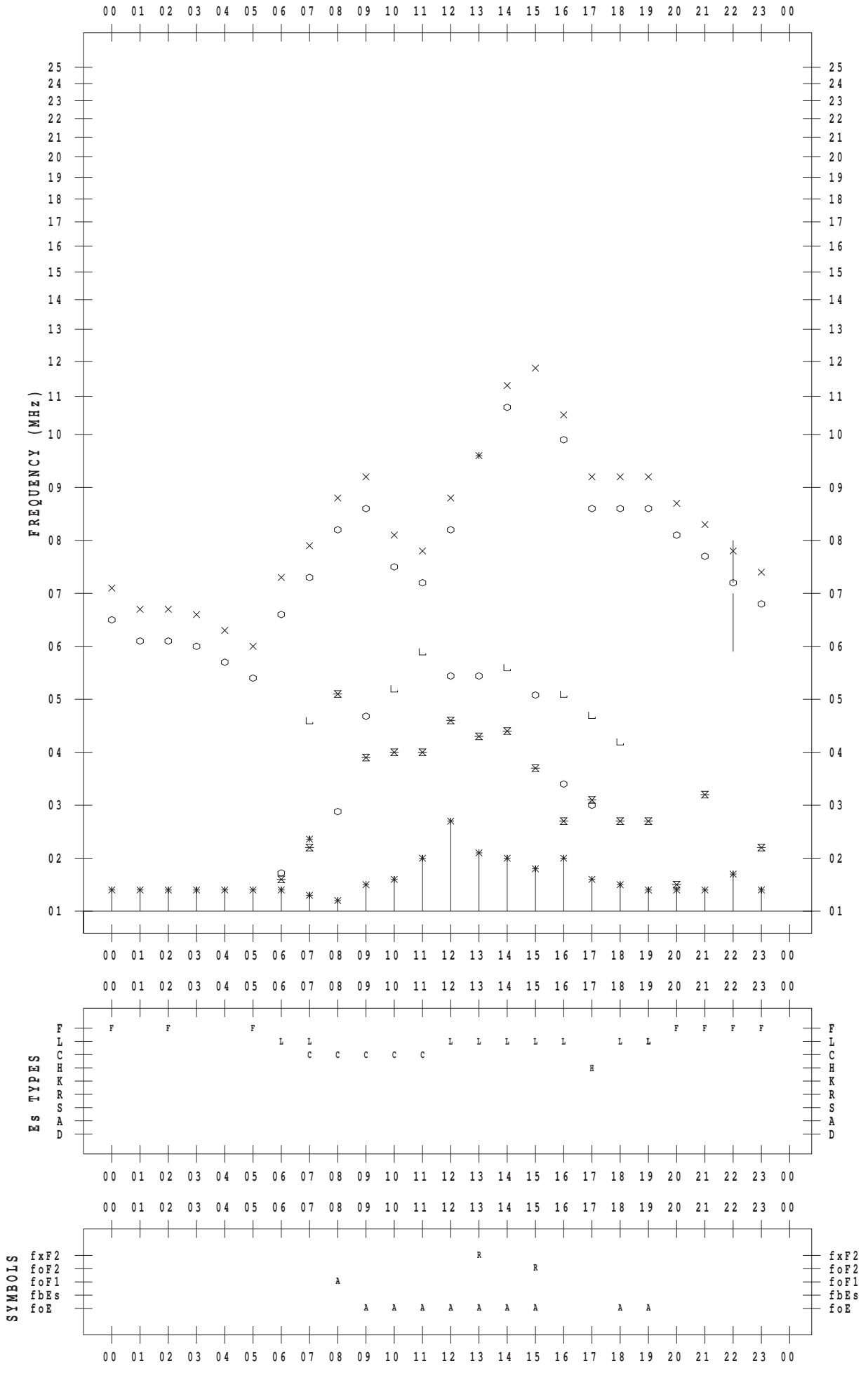
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/24

135 °E MEAN TIME



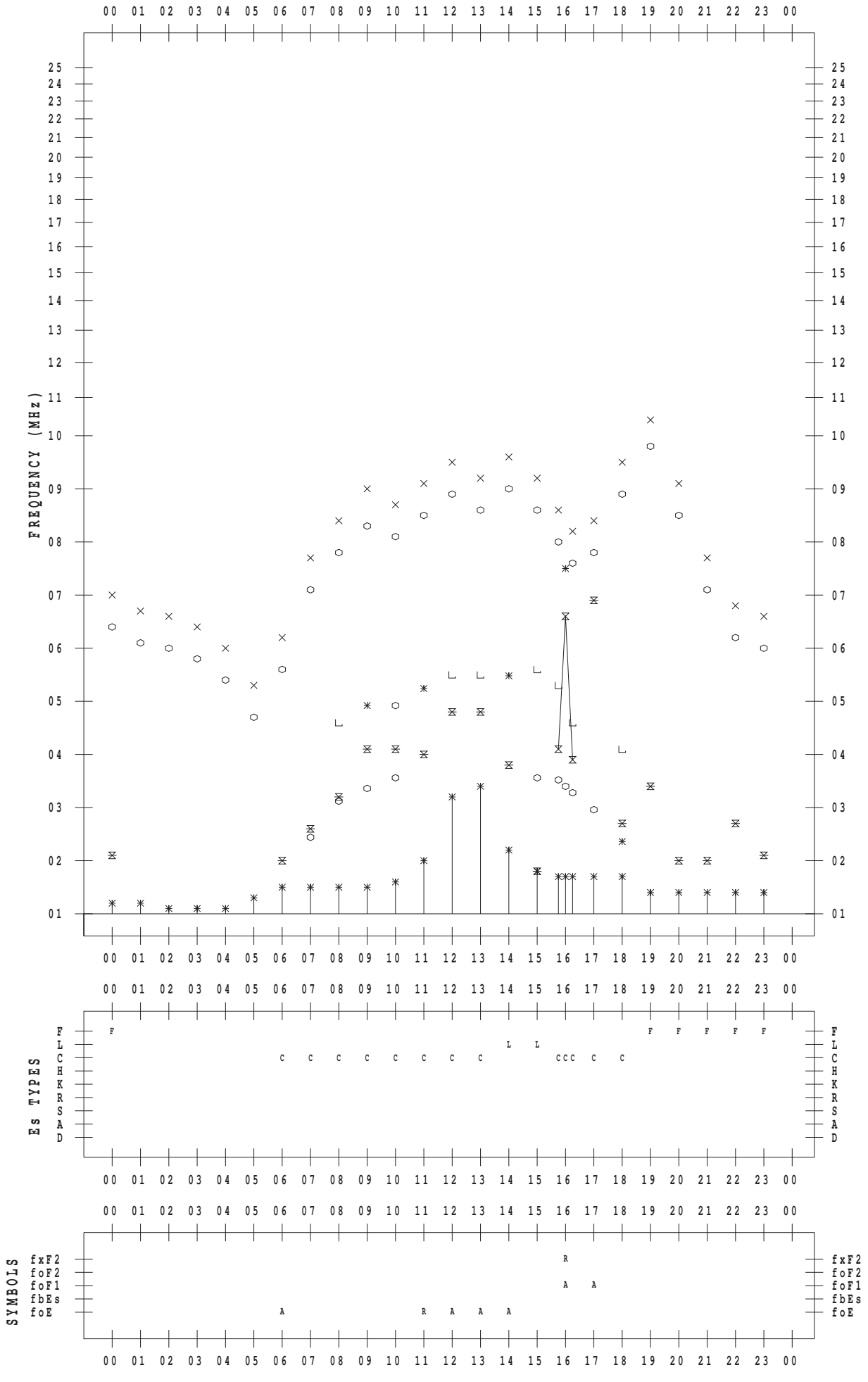
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/25

135 °E MEAN TIME



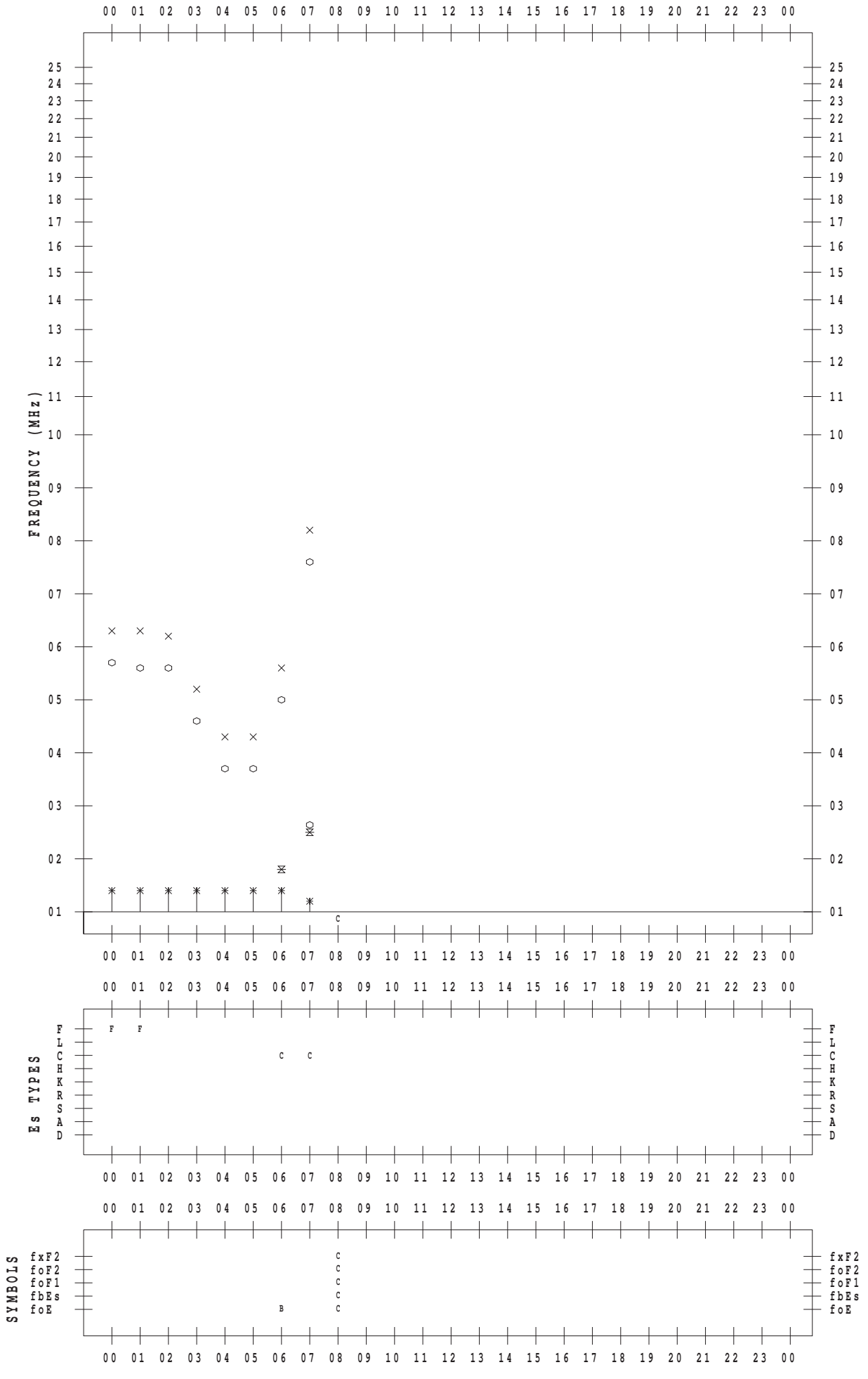
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/ 8/26

135 °E MEAN TIME



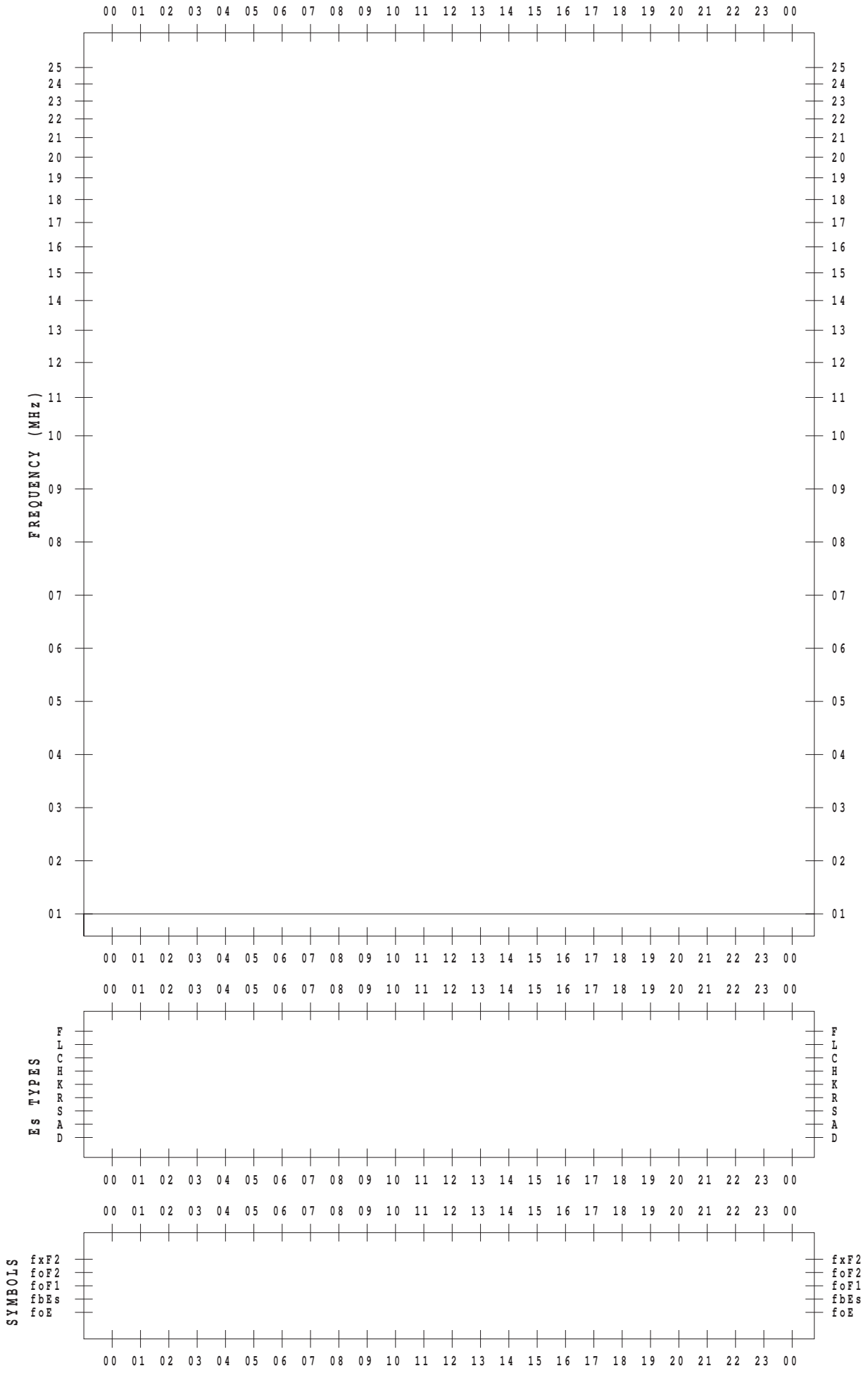
f-PLOT DATA

SCALER :

STATION : Yamagawa

DATE : 2013/ 8/27

135 °E MEAN TIME



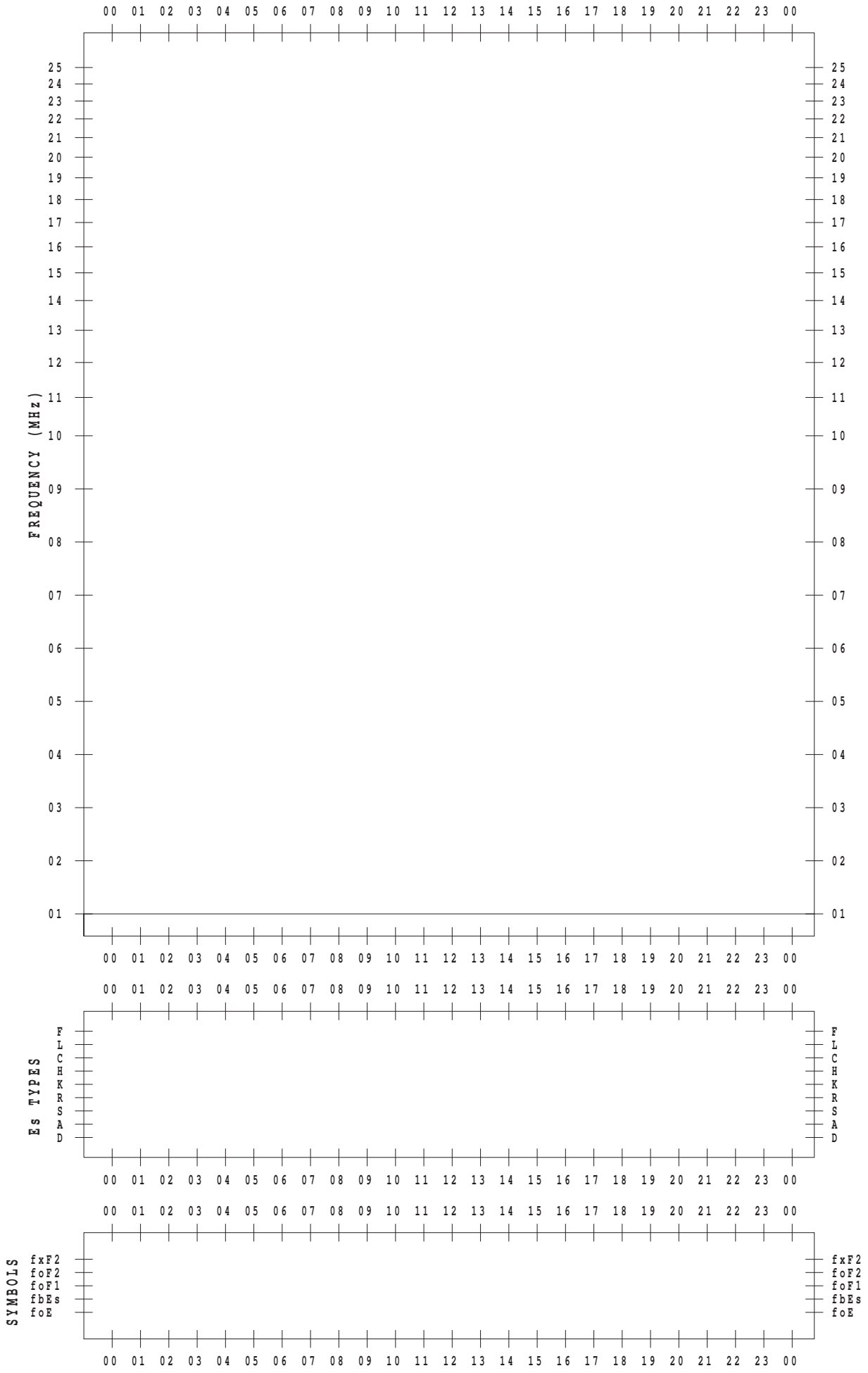
f-PLOT DATA

SCALER :

STATION : Yamagawa

DATE : 2013/ 8/28

135 °E MEAN TIME



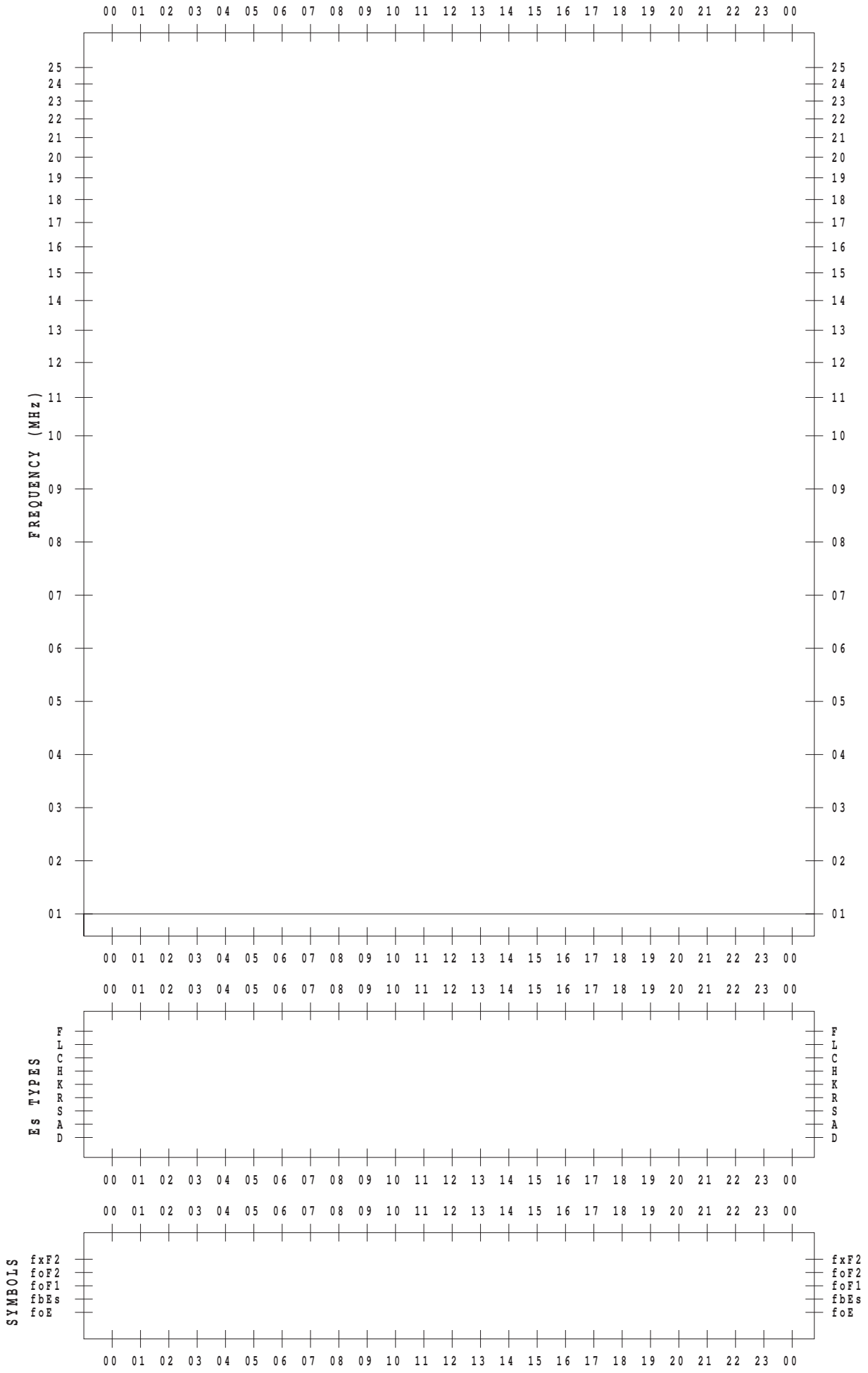
f-PLOT DATA

SCALER :

STATION : Yamagawa

DATE : 2013/ 8/29

135 °E MEAN TIME



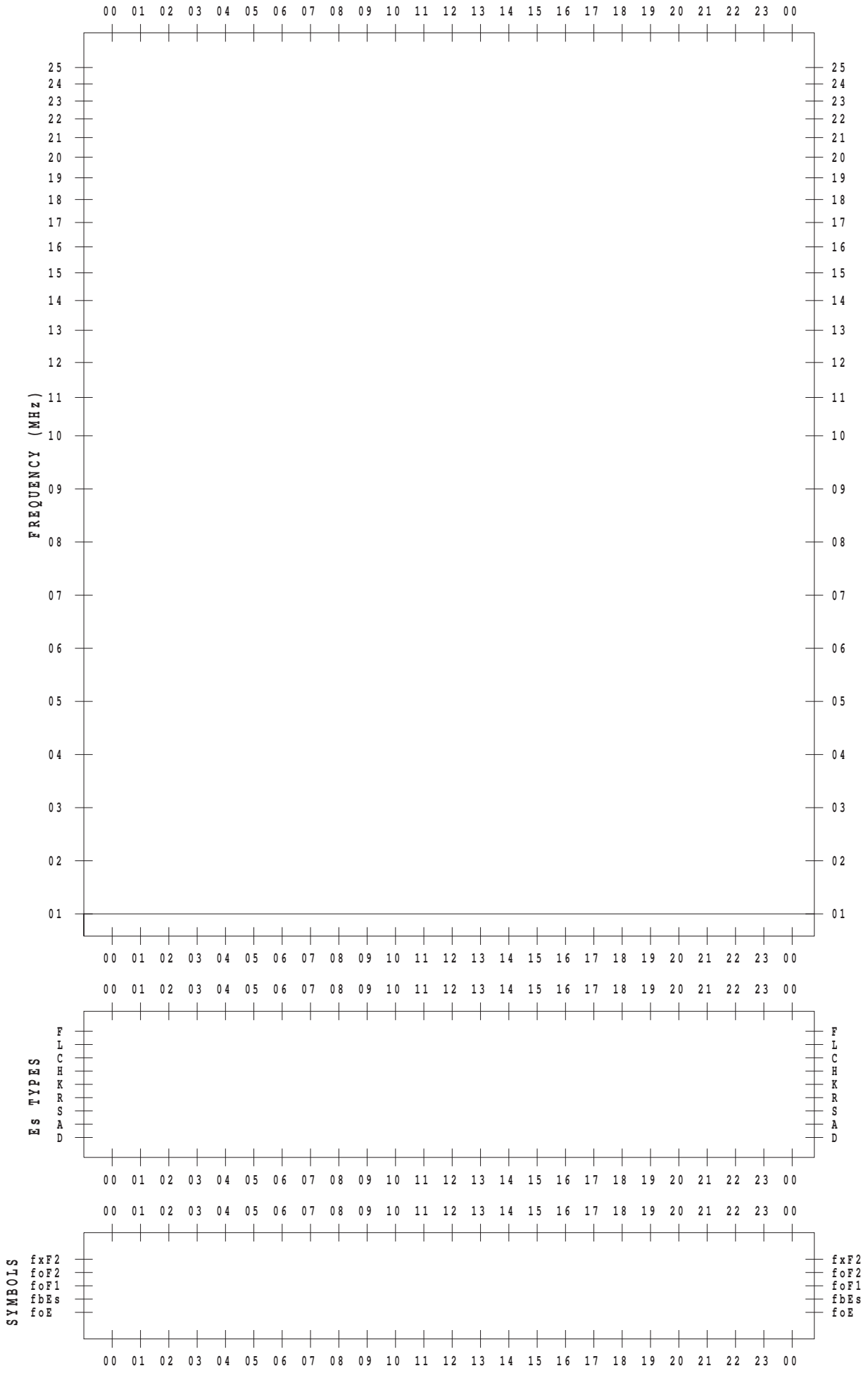
f-PLOT DATA

SCALER :

STATION : Yamagawa

DATE : 2013/ 8/30

135 °E MEAN TIME



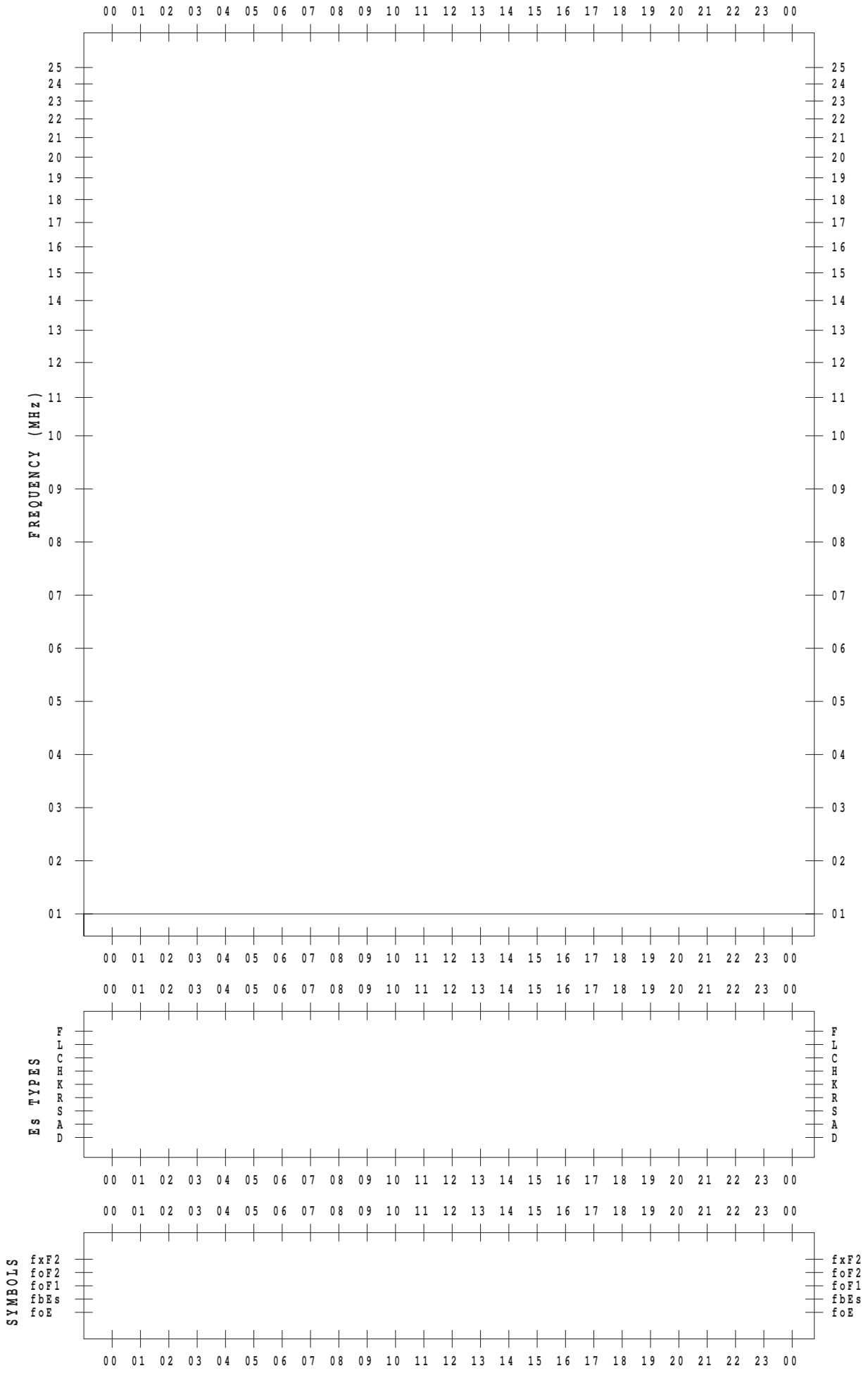
f-PLOT DATA

SCALER :

STATION : Yamagawa

DATE : 2013/ 8/31

135 °E MEAN TIME



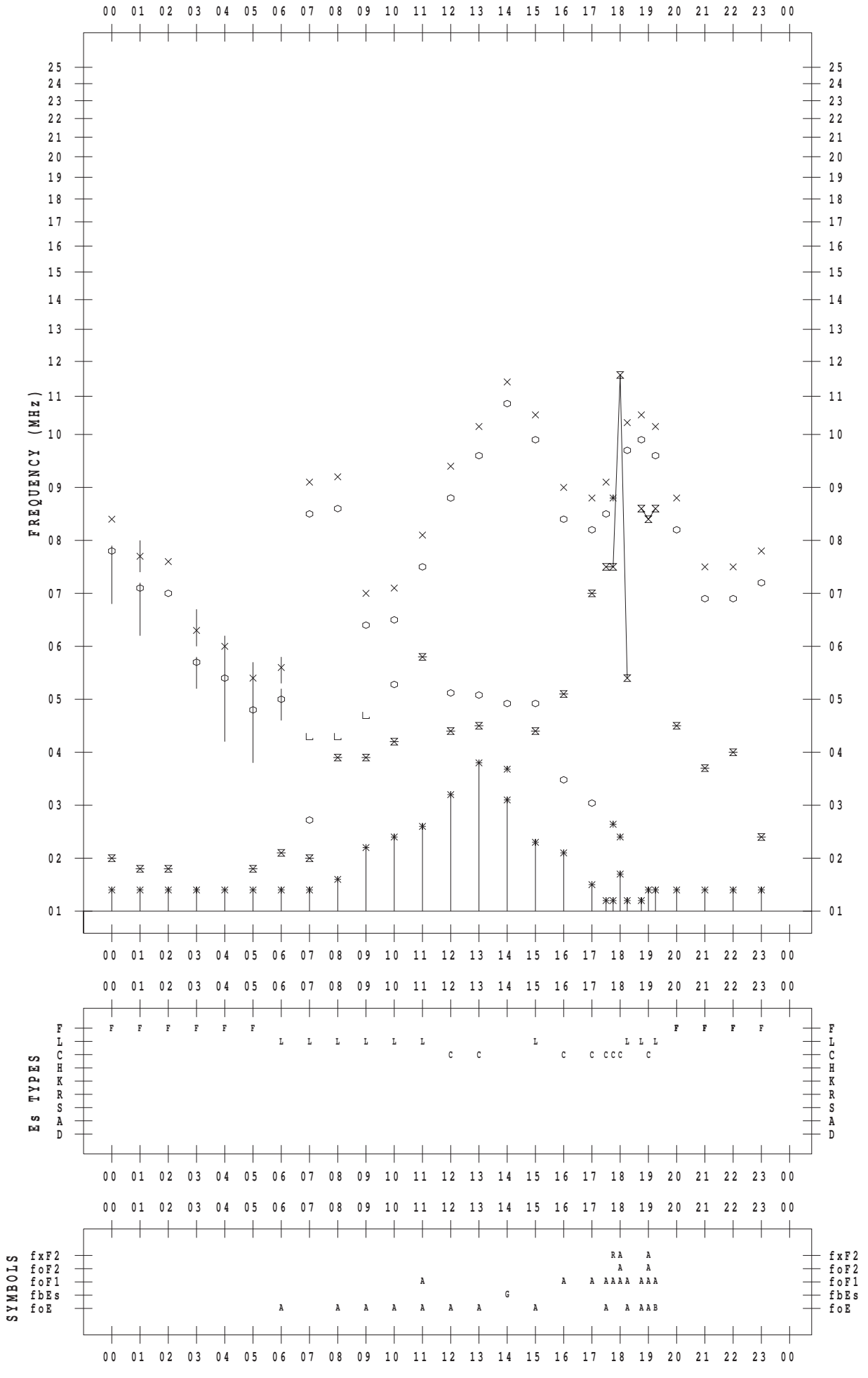
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 1

135 °E MEAN TIME



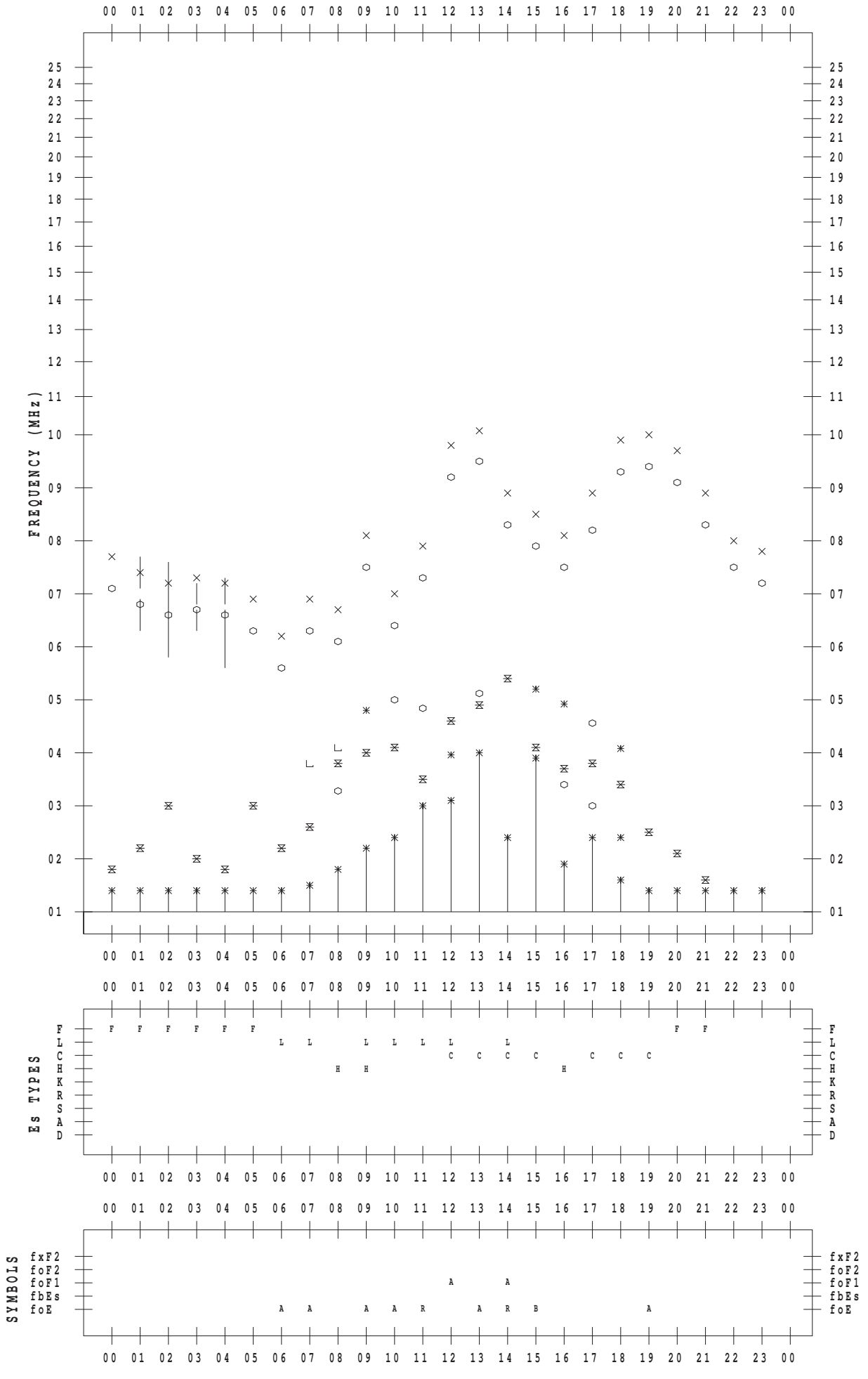
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 2

135 °E MEAN TIME



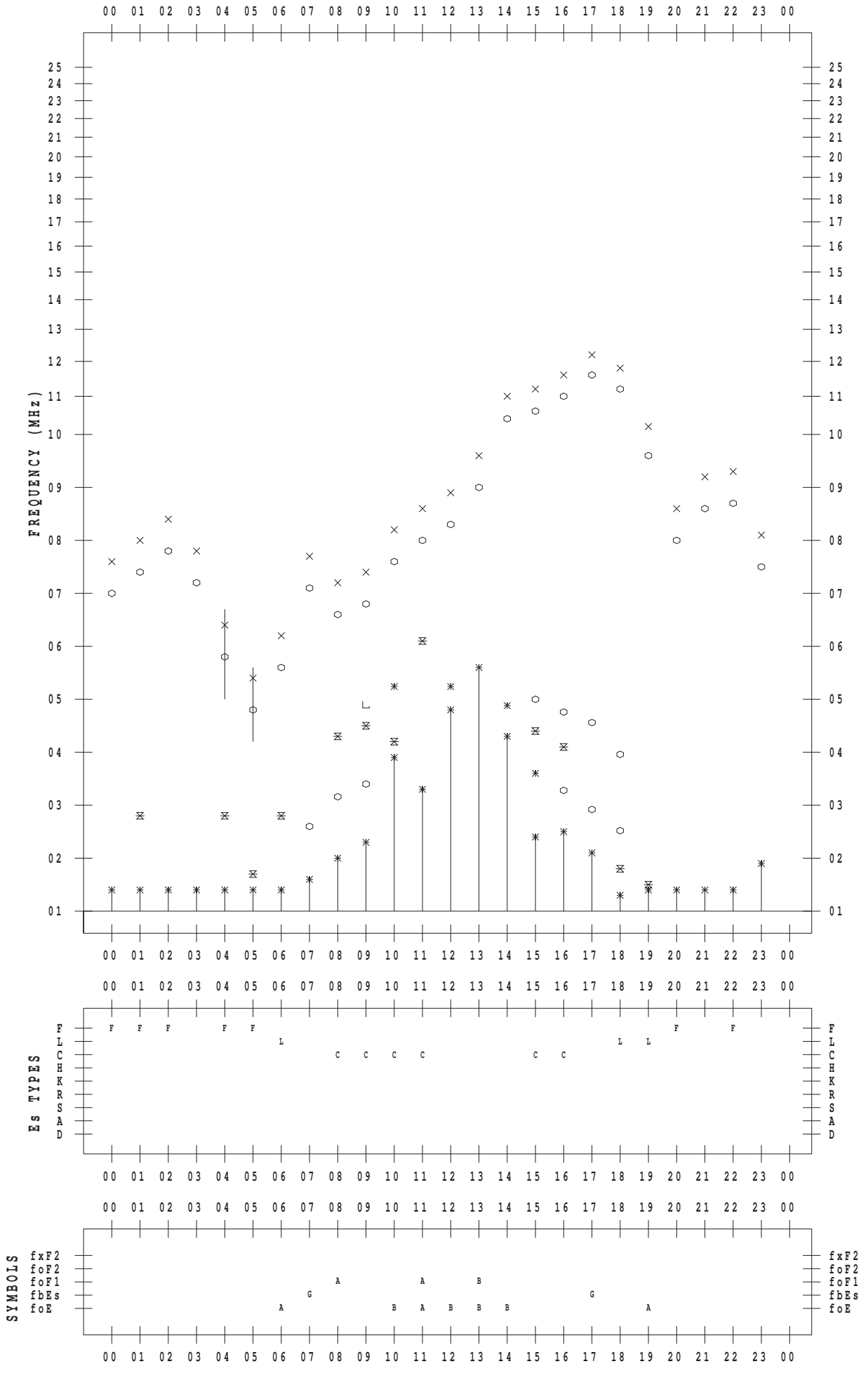
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 3

135 °E MEAN TIME



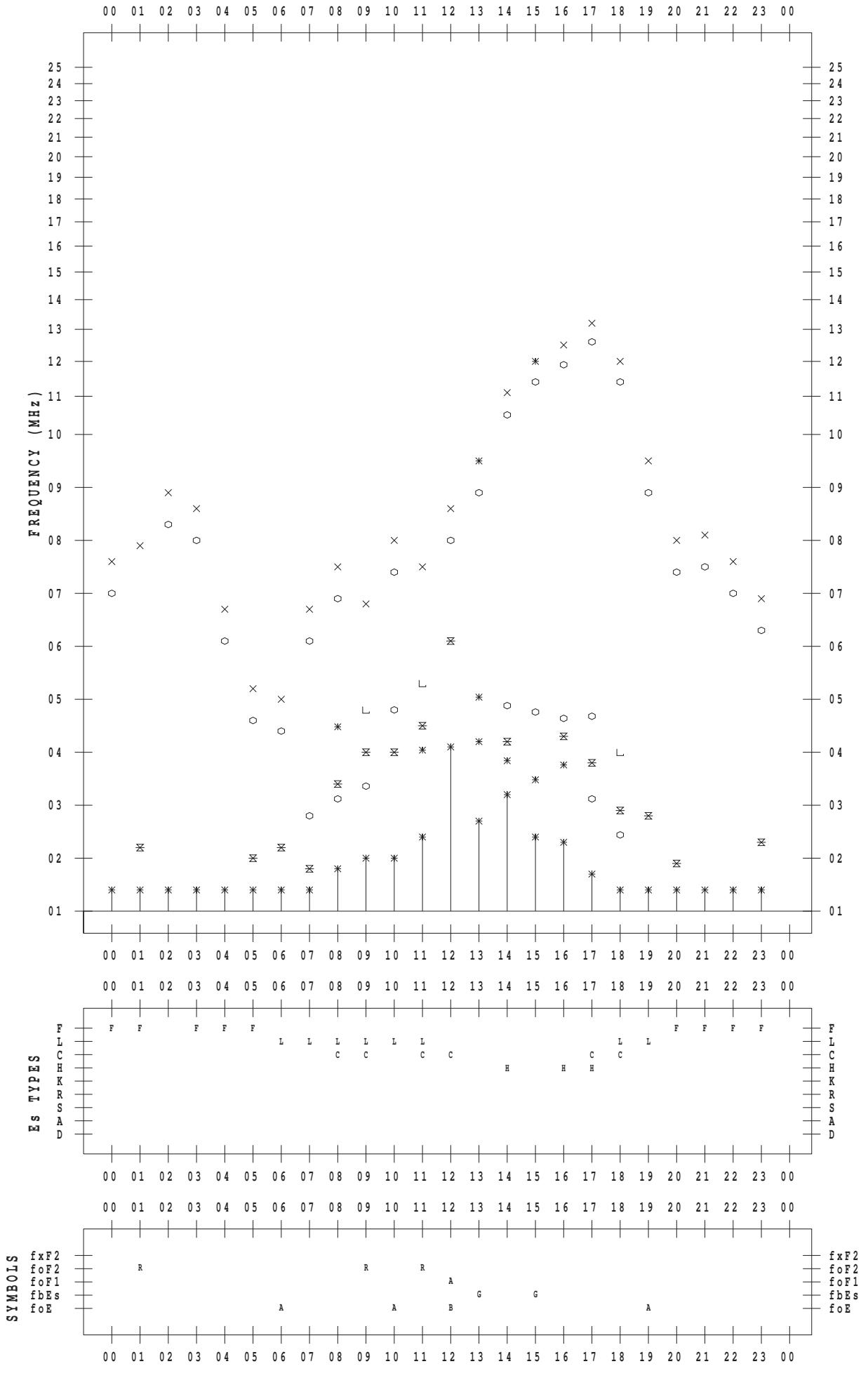
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 4

135 °E MEAN TIME



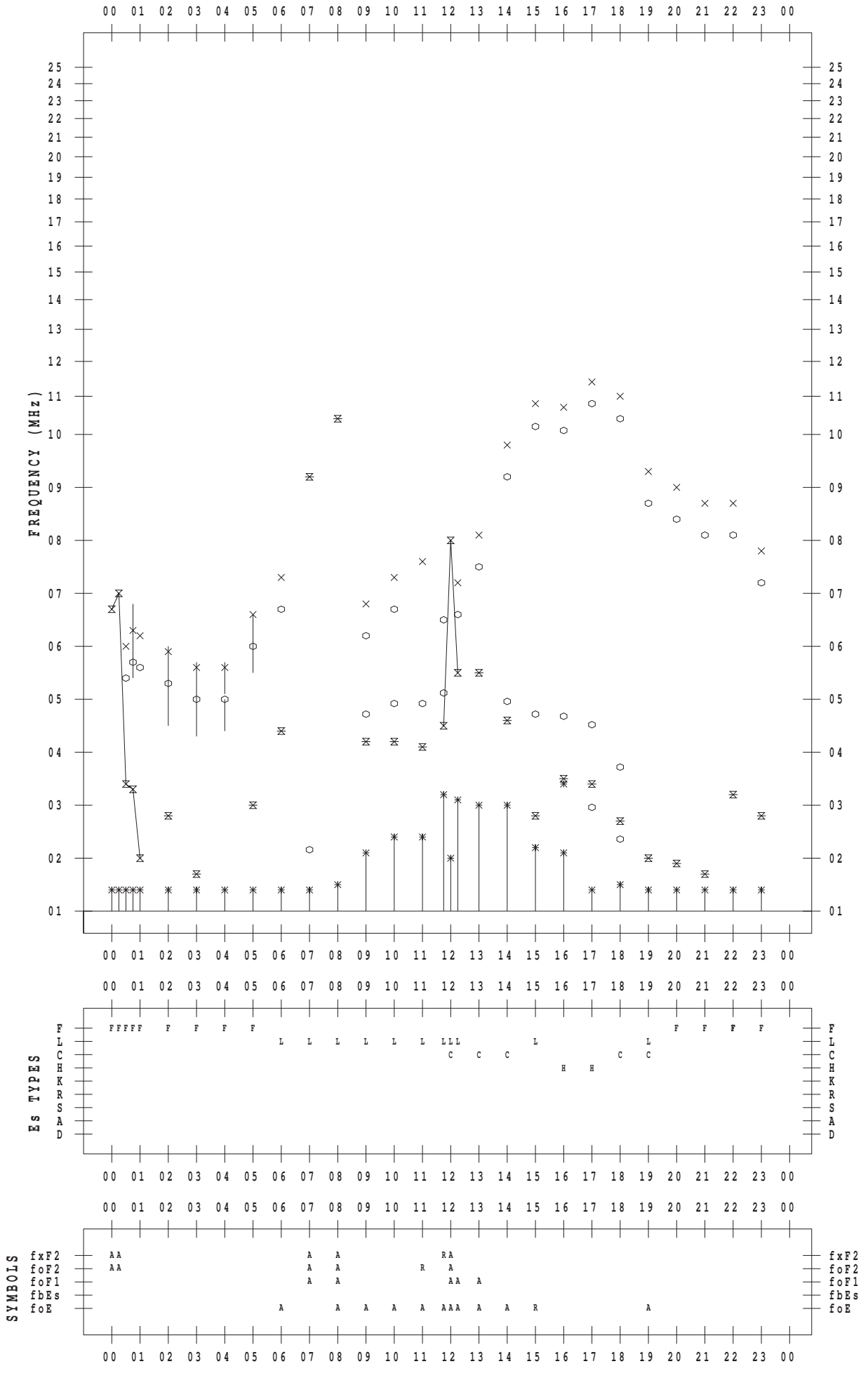
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 5

135 °E MEAN TIME



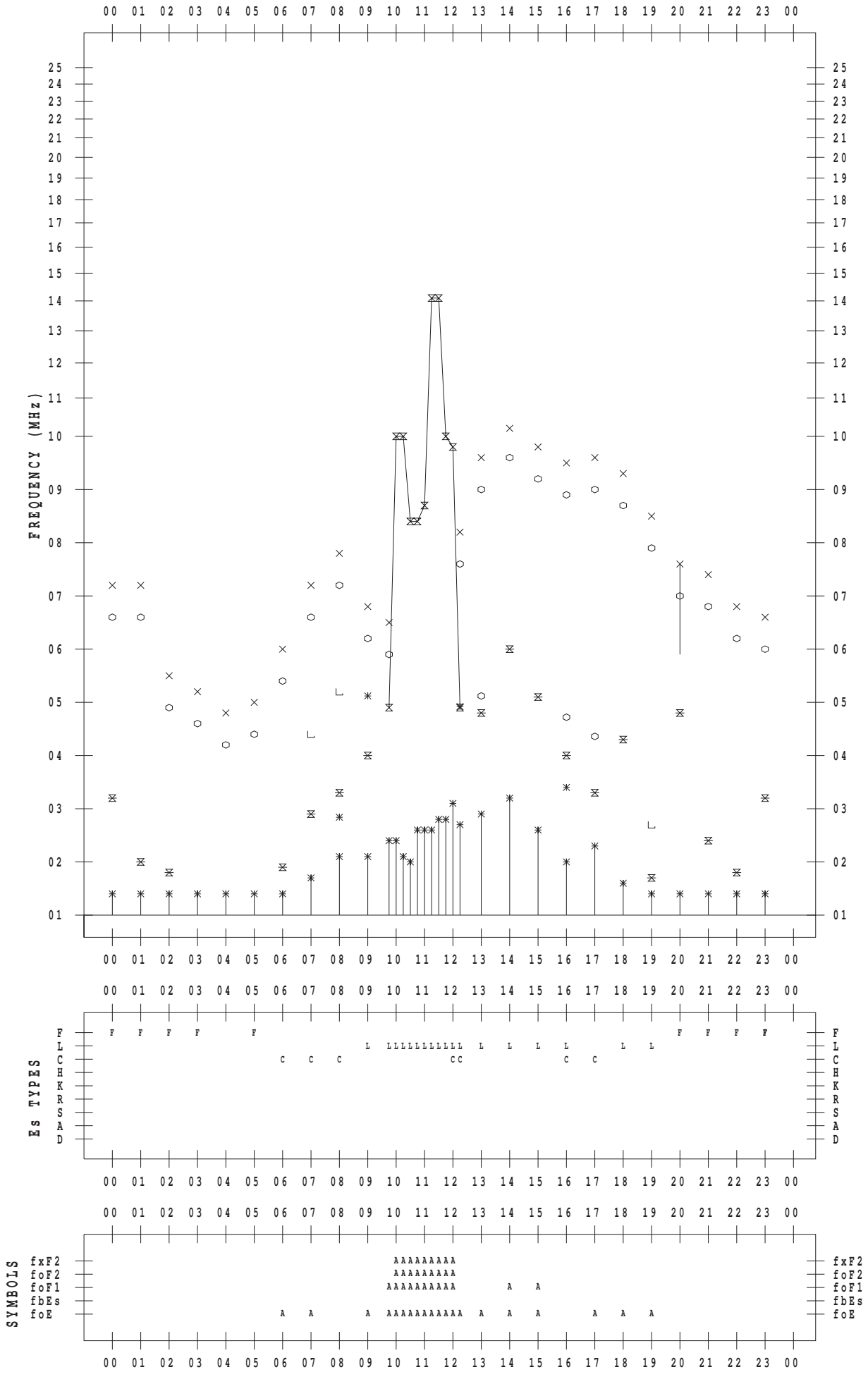
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 6

135 °E MEAN TIME



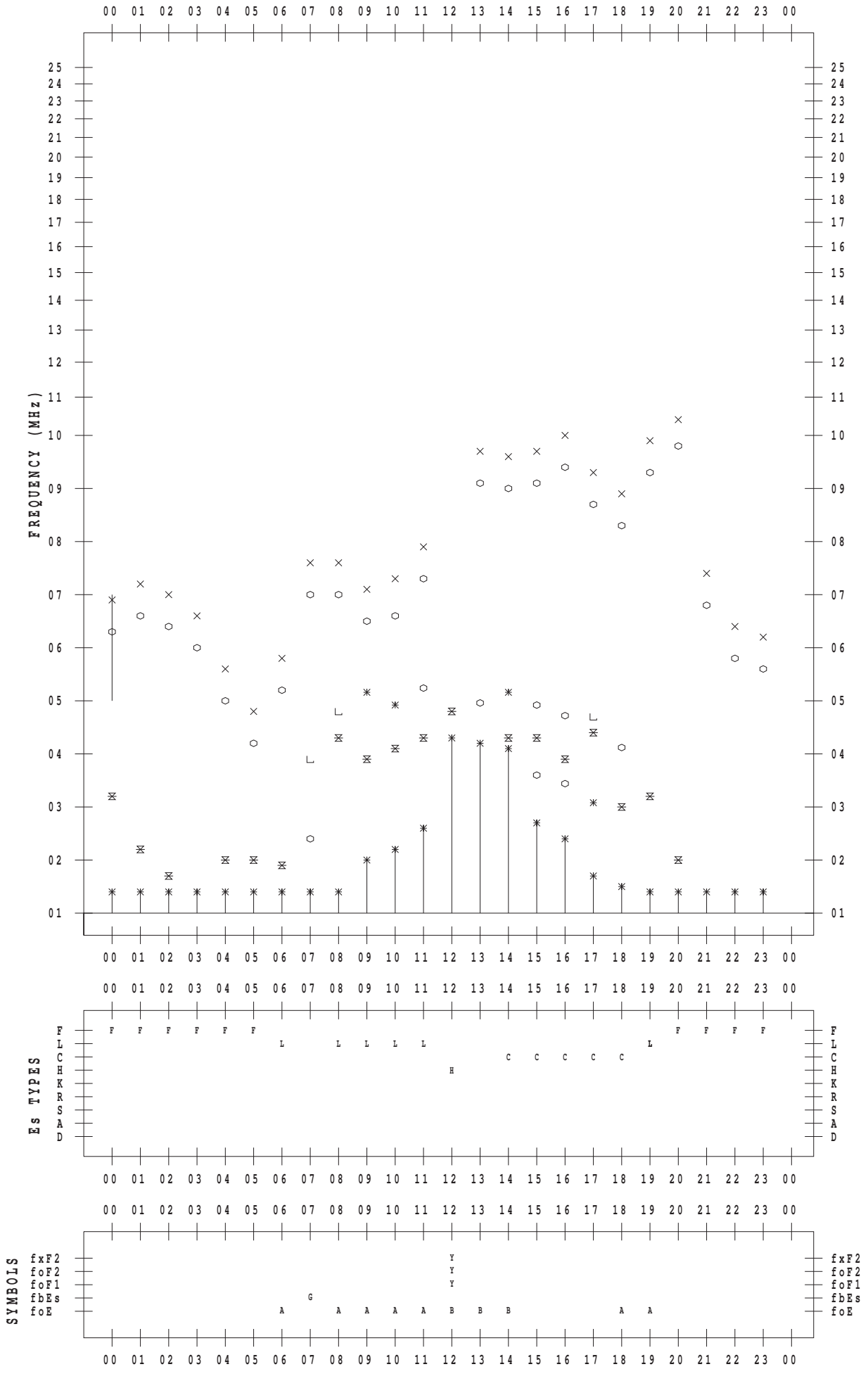
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 7

135 °E MEAN TIME



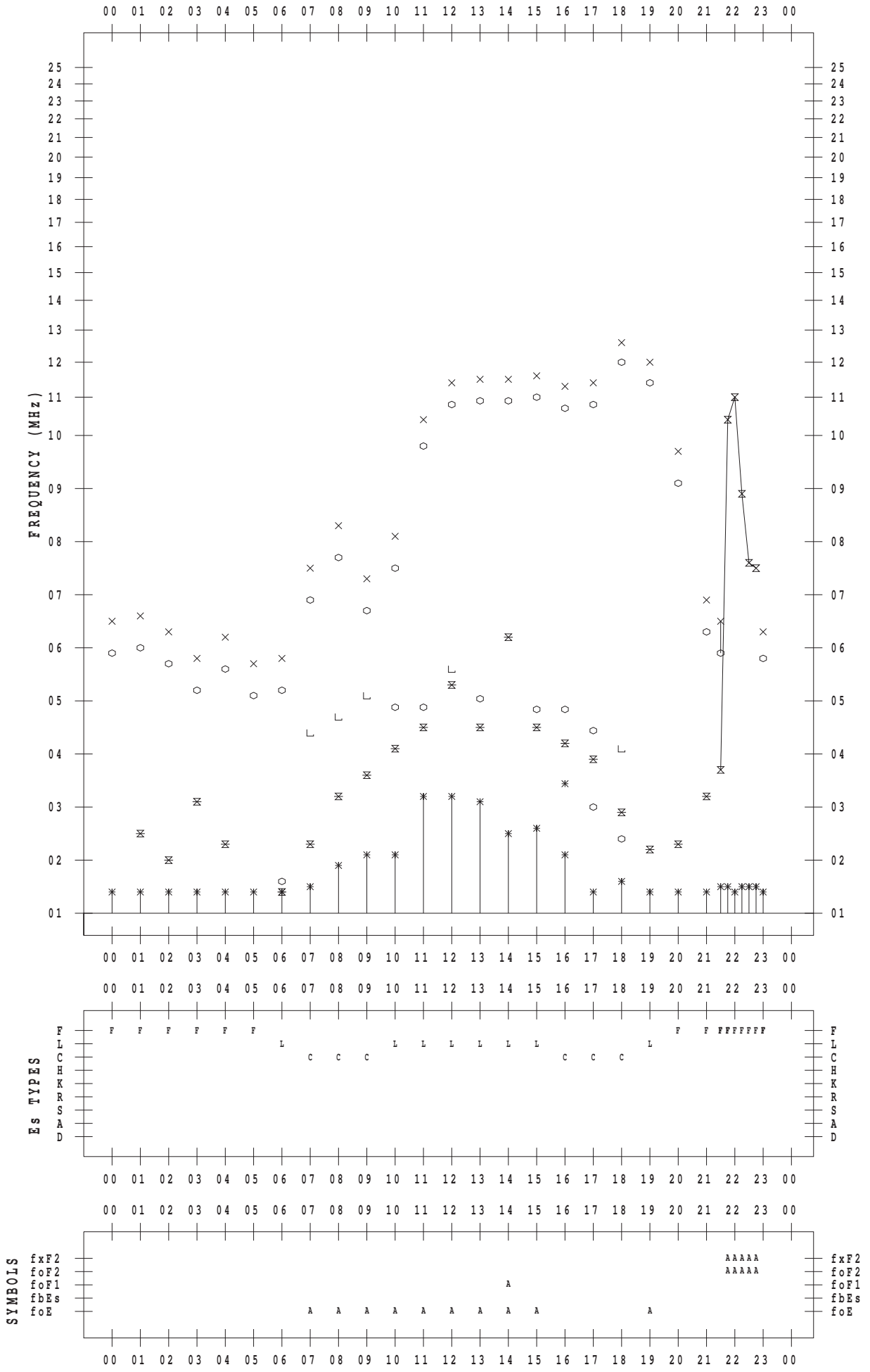
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 8

135 °E MEAN TIME



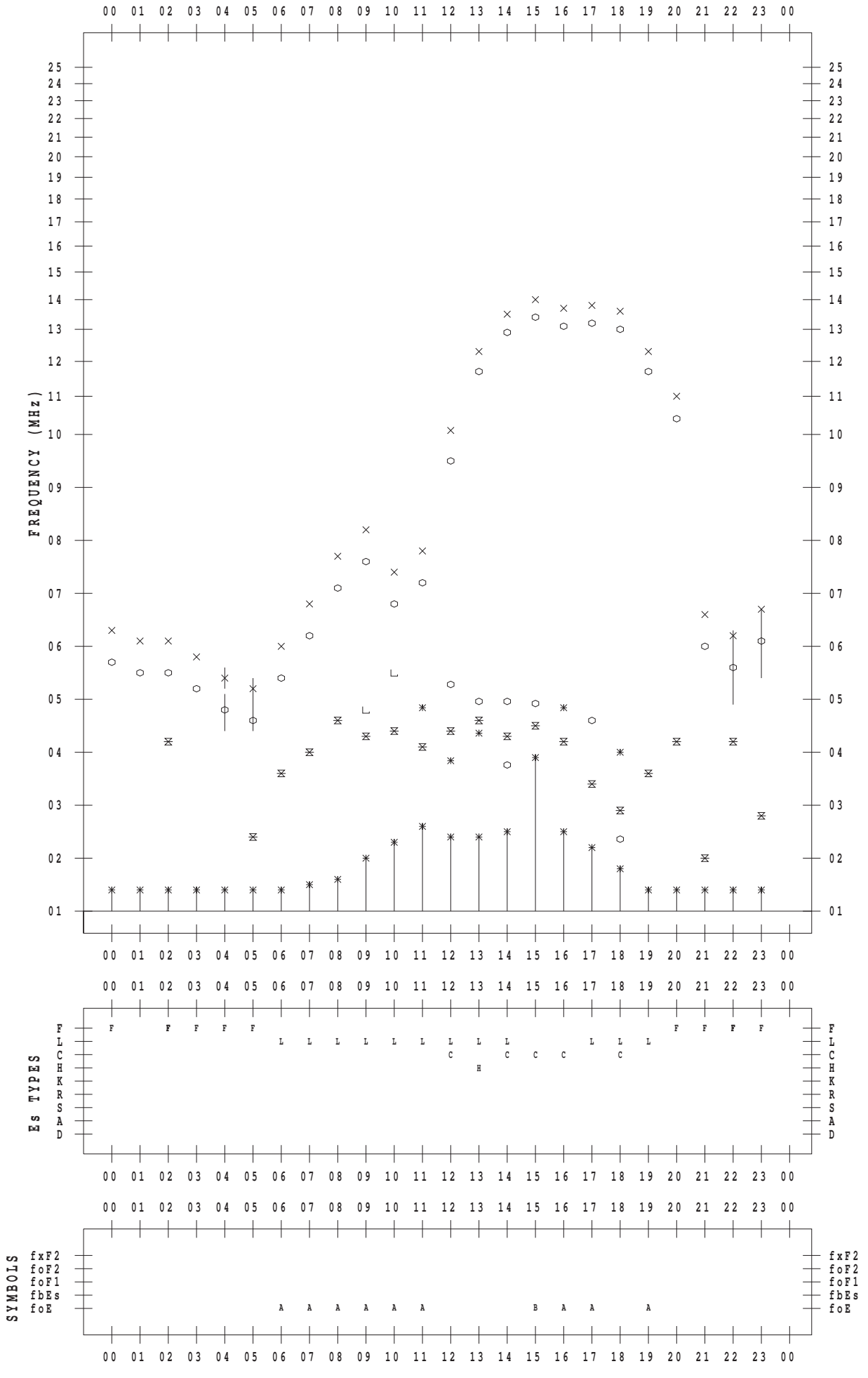
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/ 9

135 °E MEAN TIME



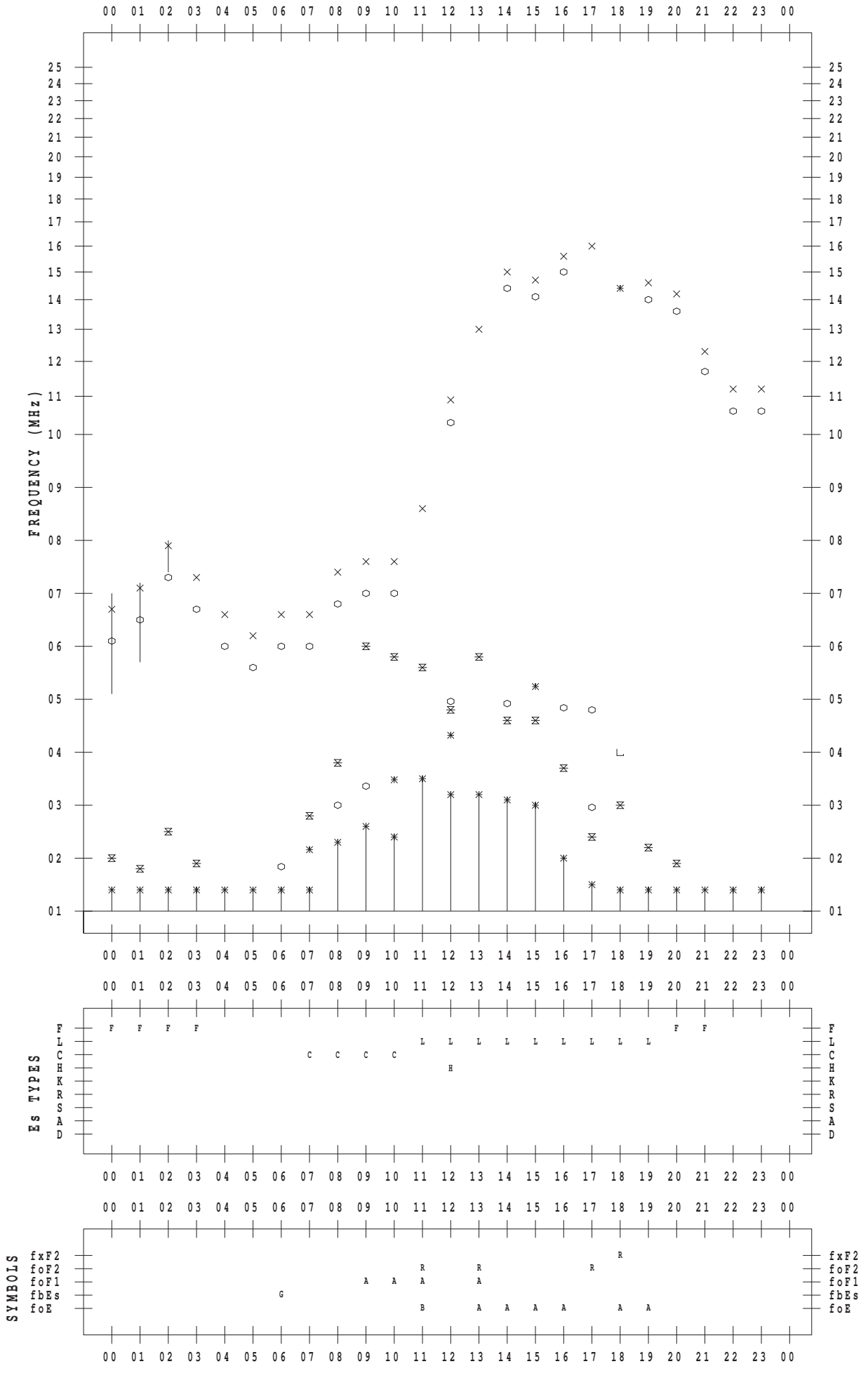
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/10

135 °E MEAN TIME



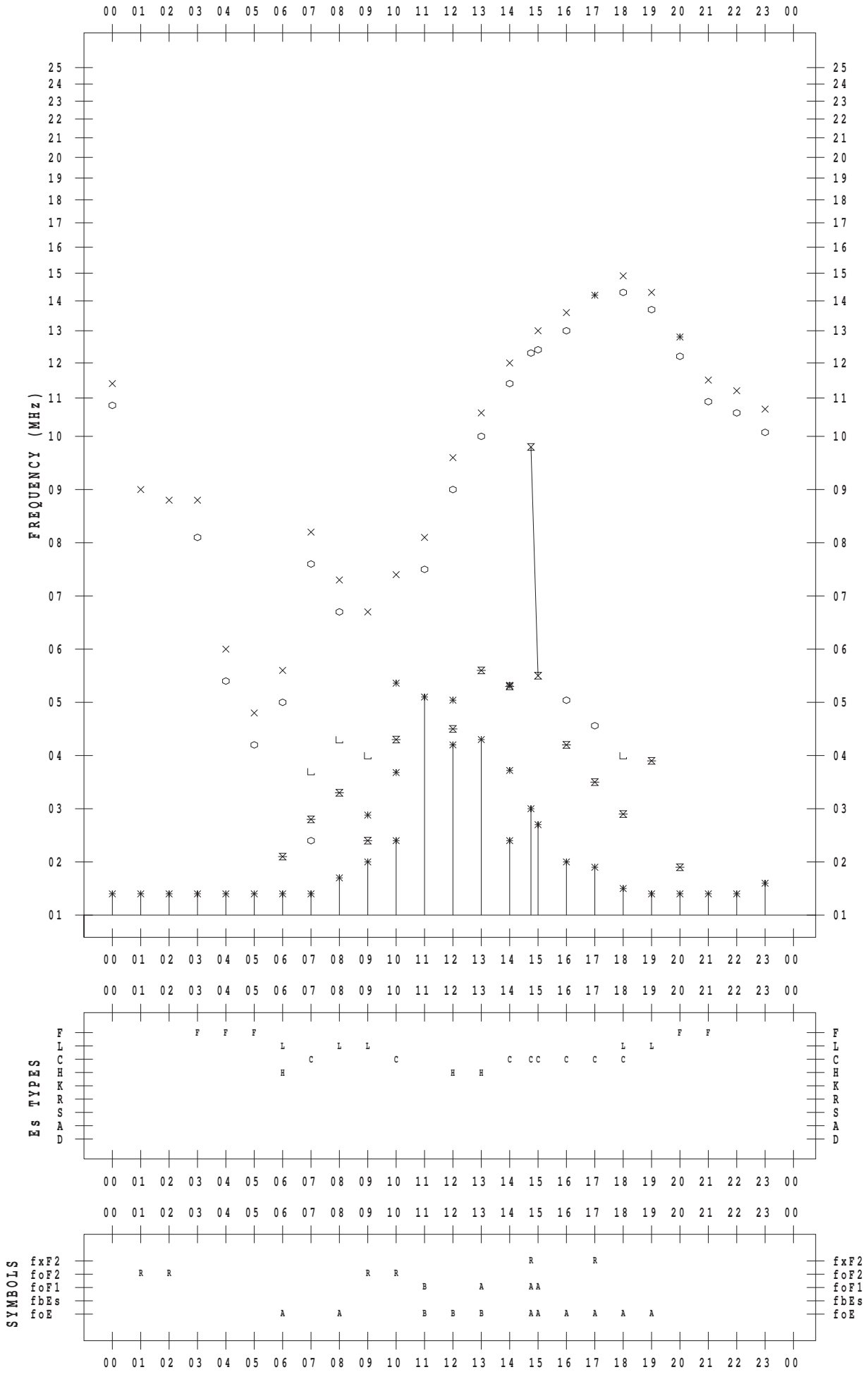
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/11

135 °E MEAN TIME



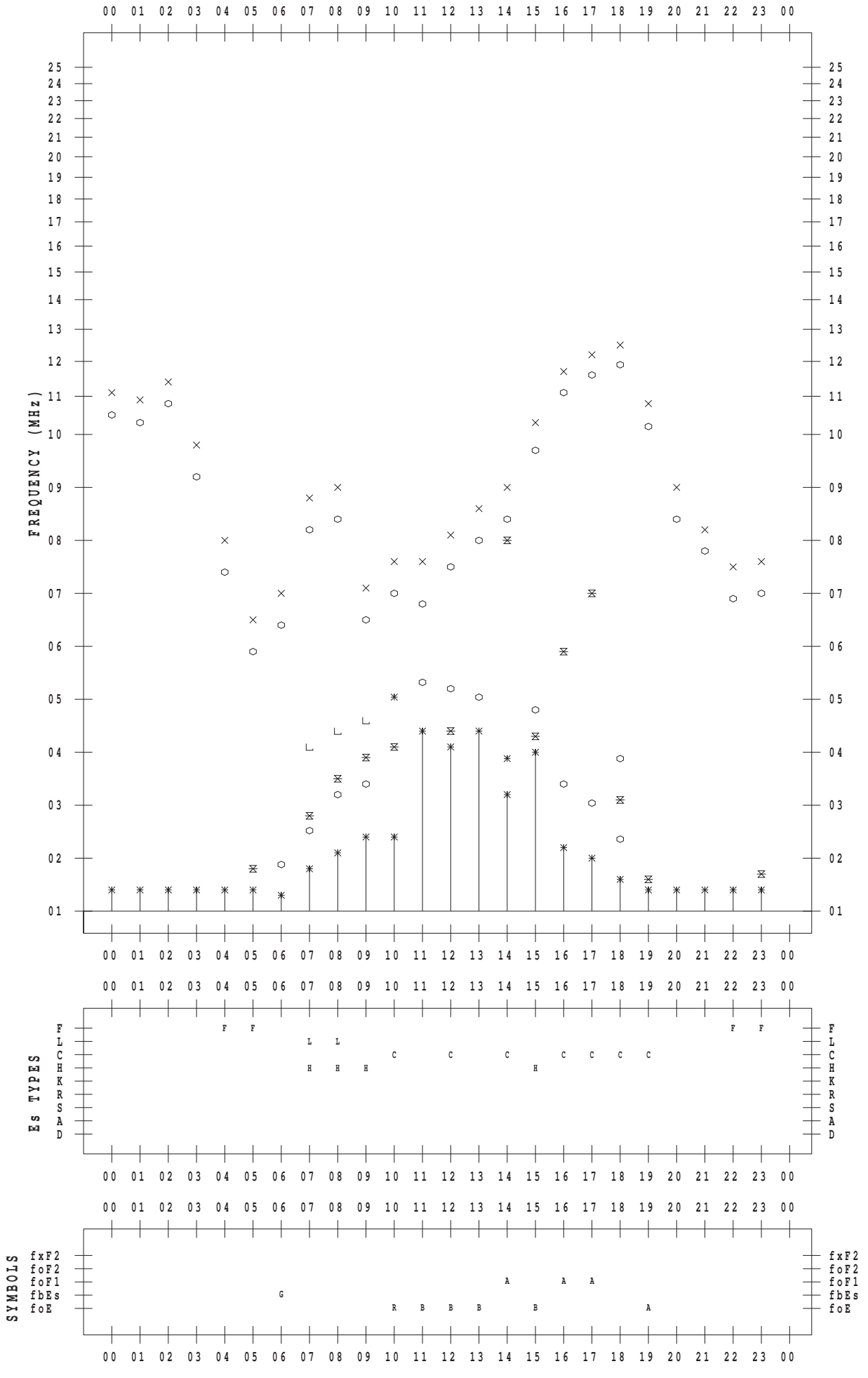
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/12

135 °E MEAN TIME



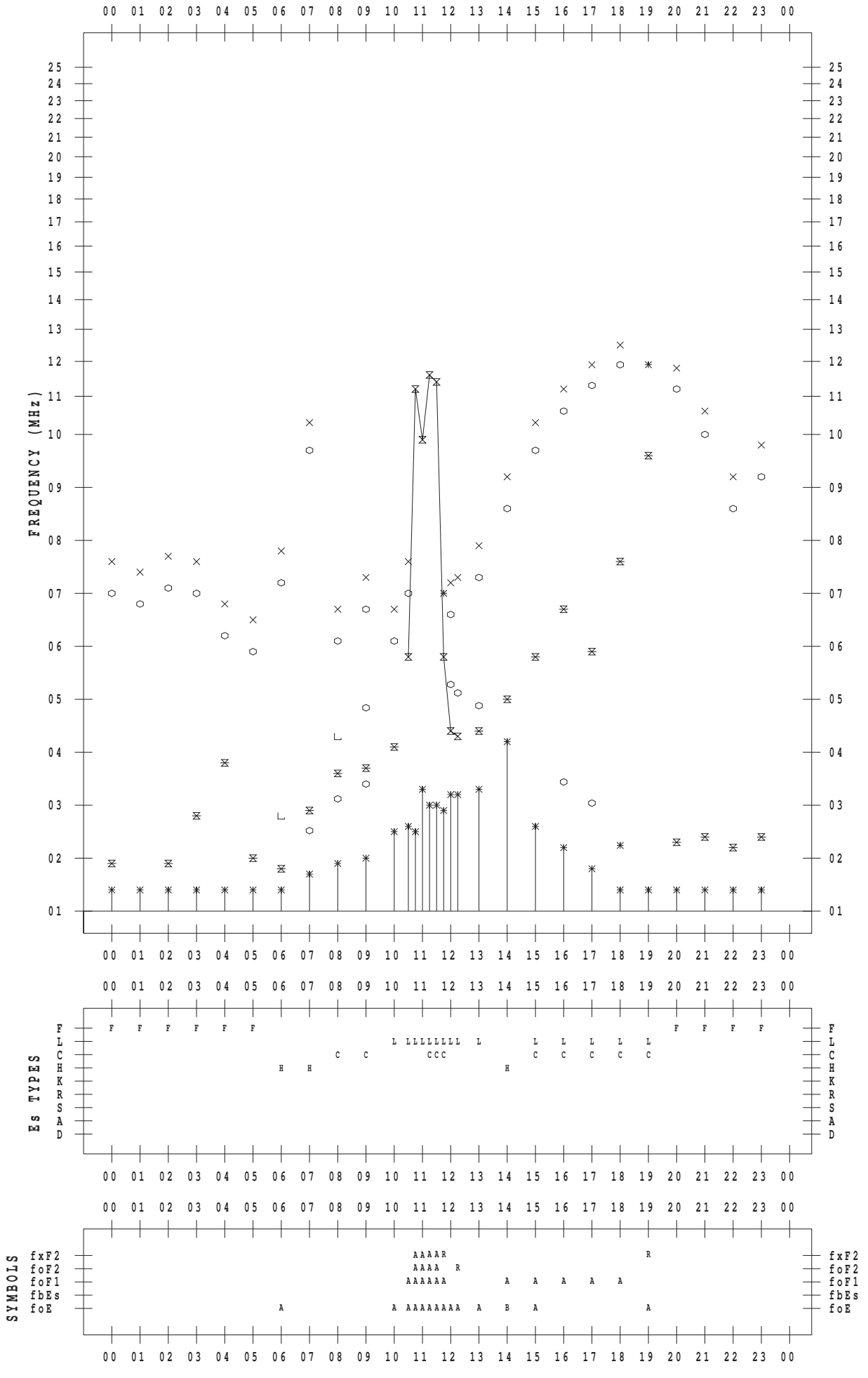
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/13

135 °E MEAN TIME



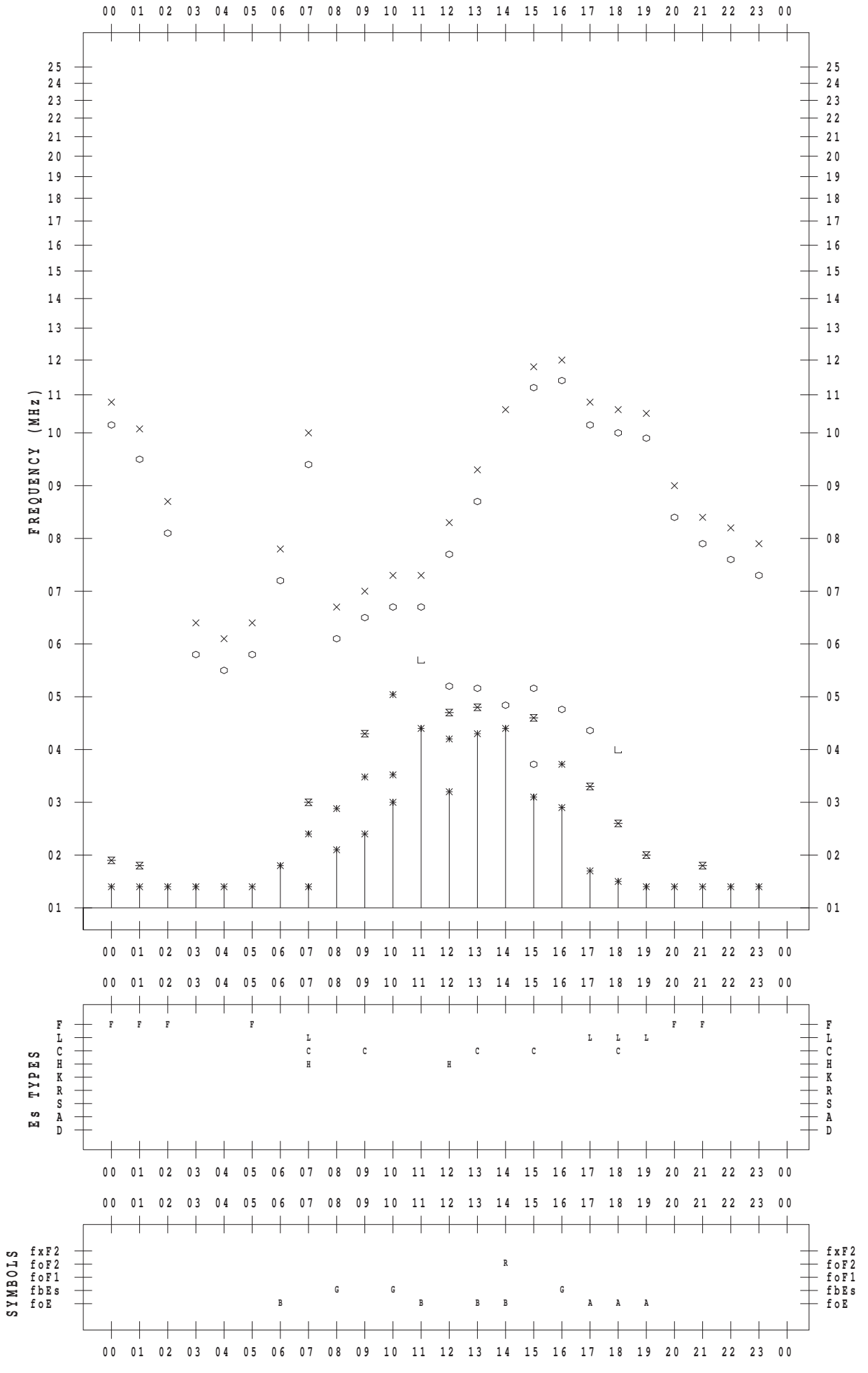
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/14

135 °E MEAN TIME



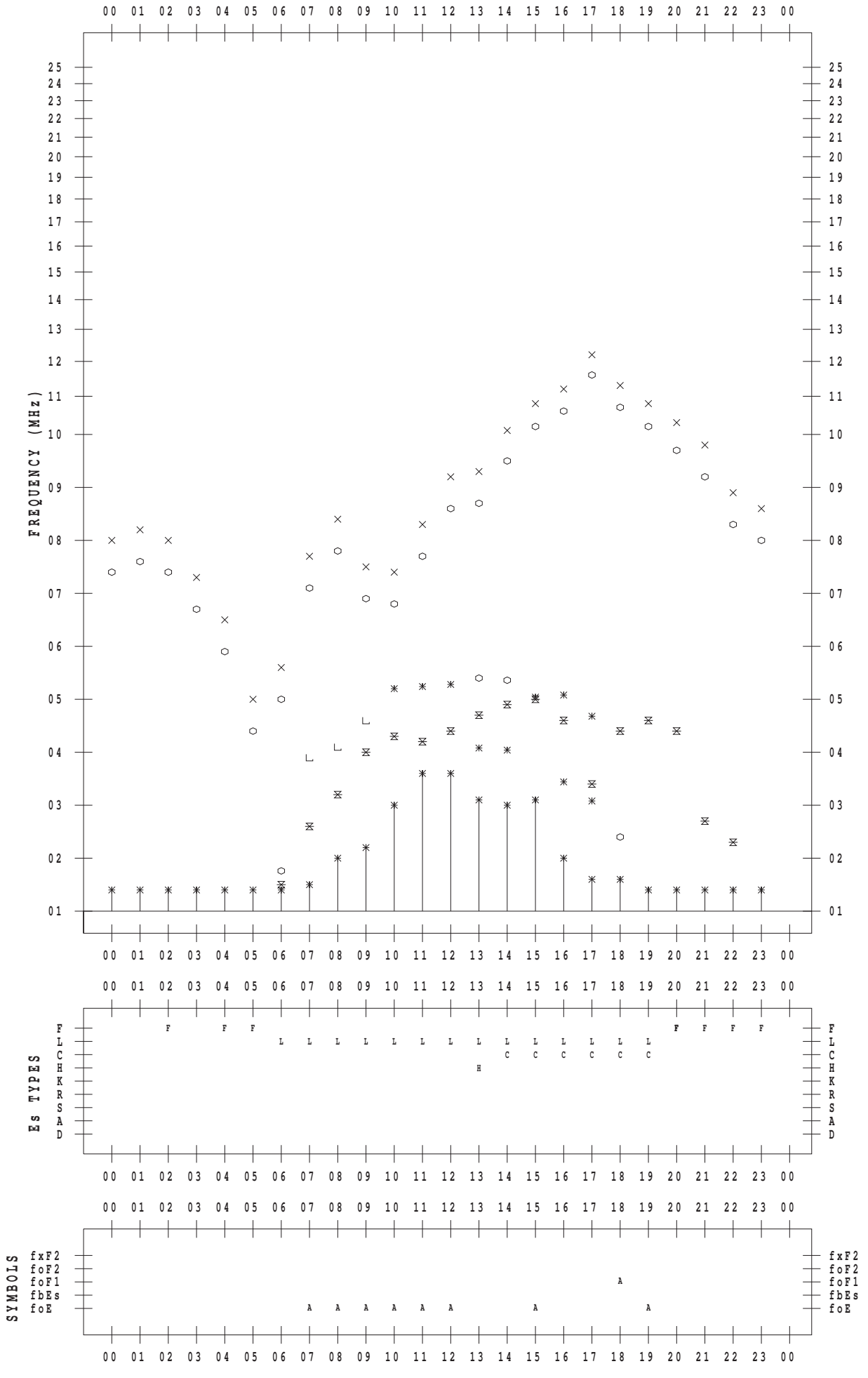
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/15

135 °E MEAN TIME



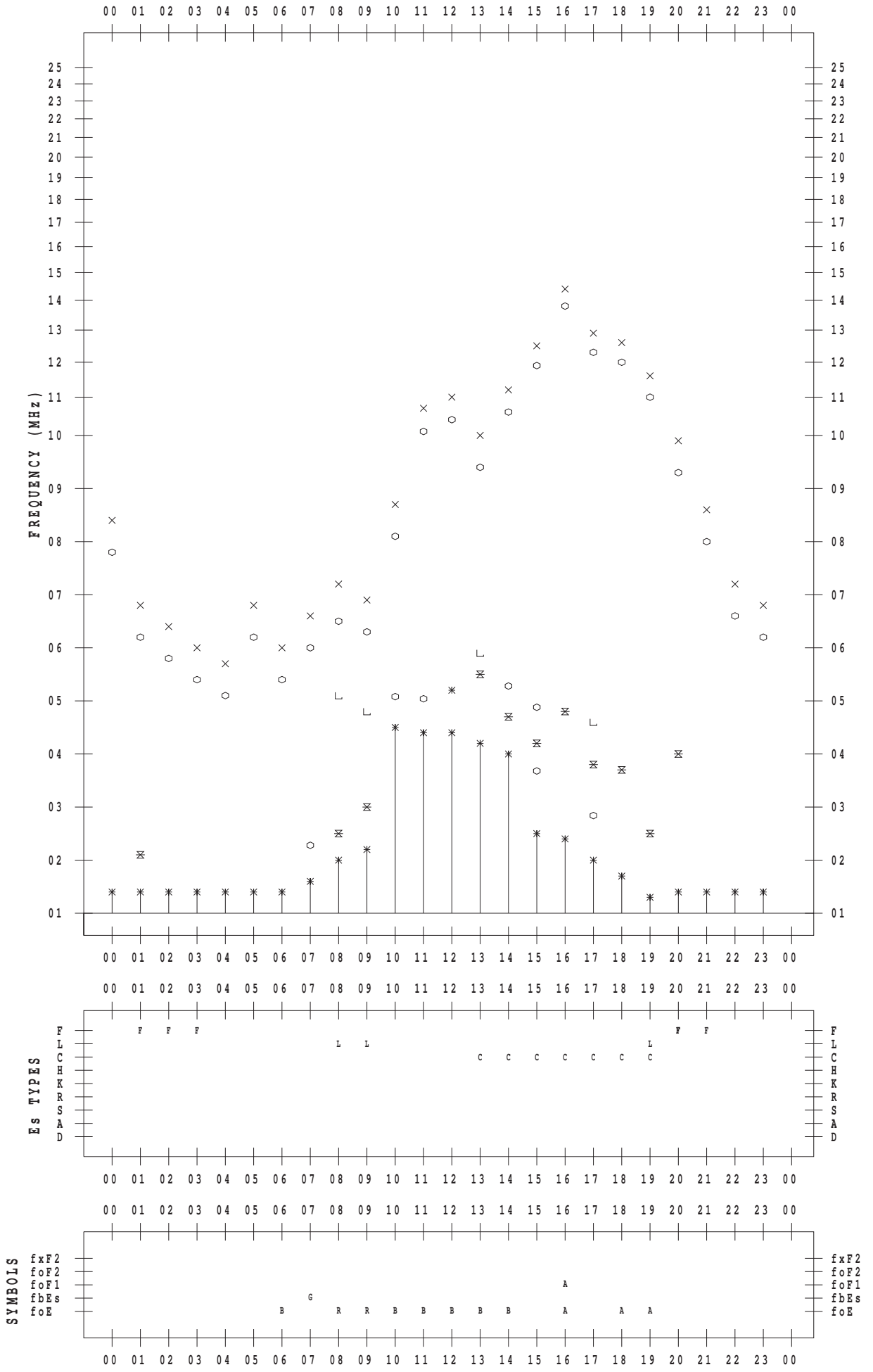
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/16

135 °E MEAN TIME



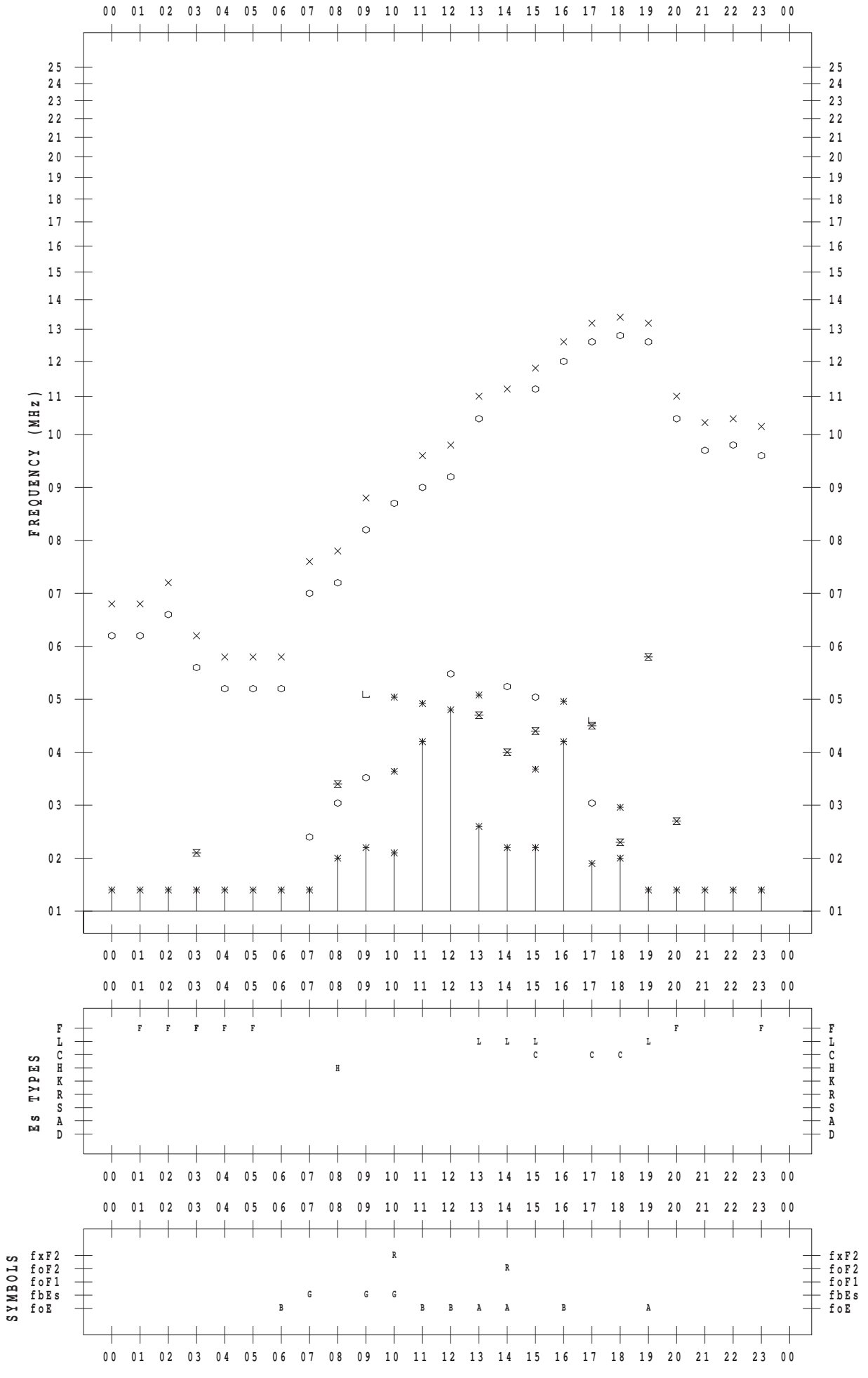
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/17

135 °E MEAN TIME



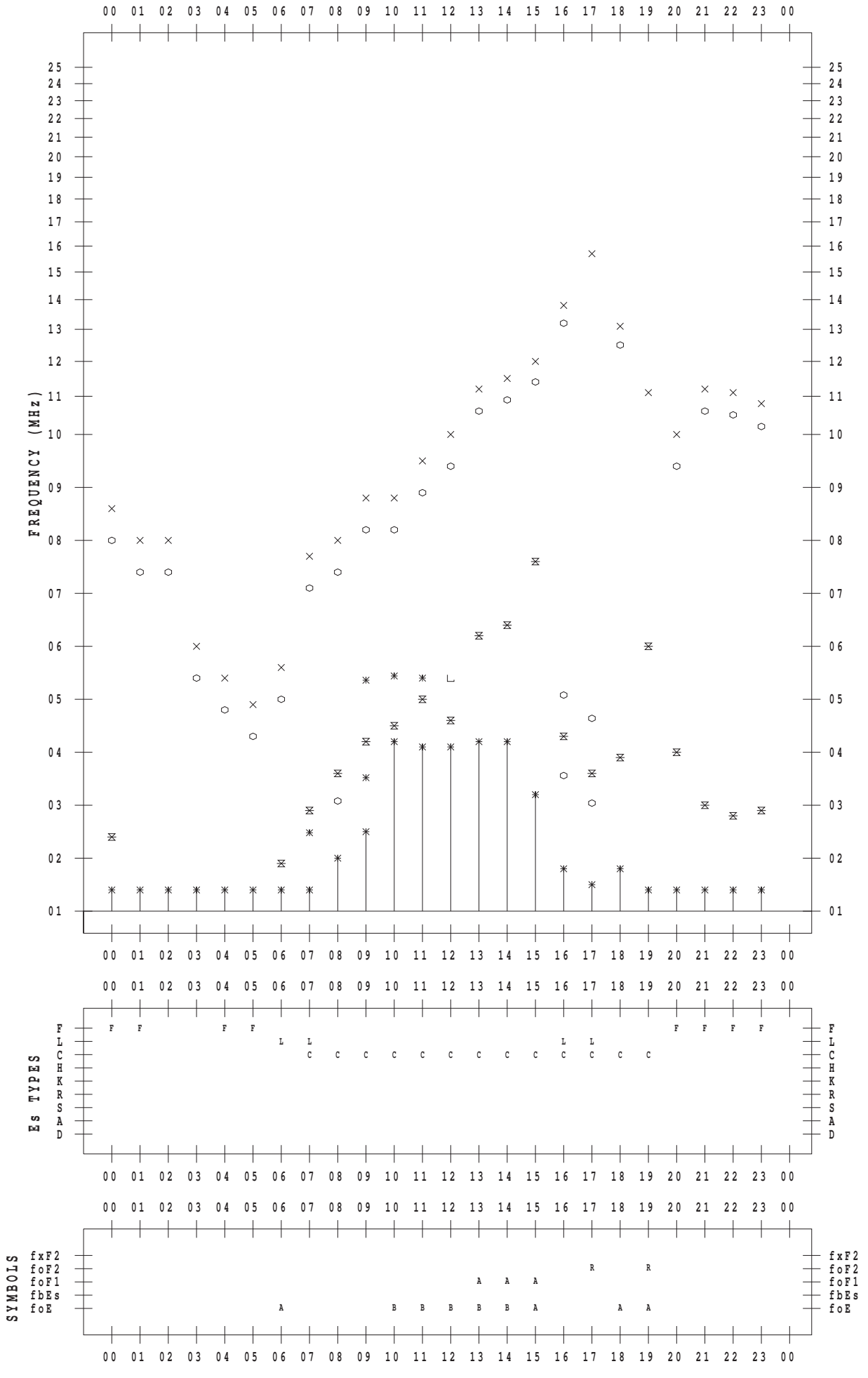
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/18

135 °E MEAN TIME



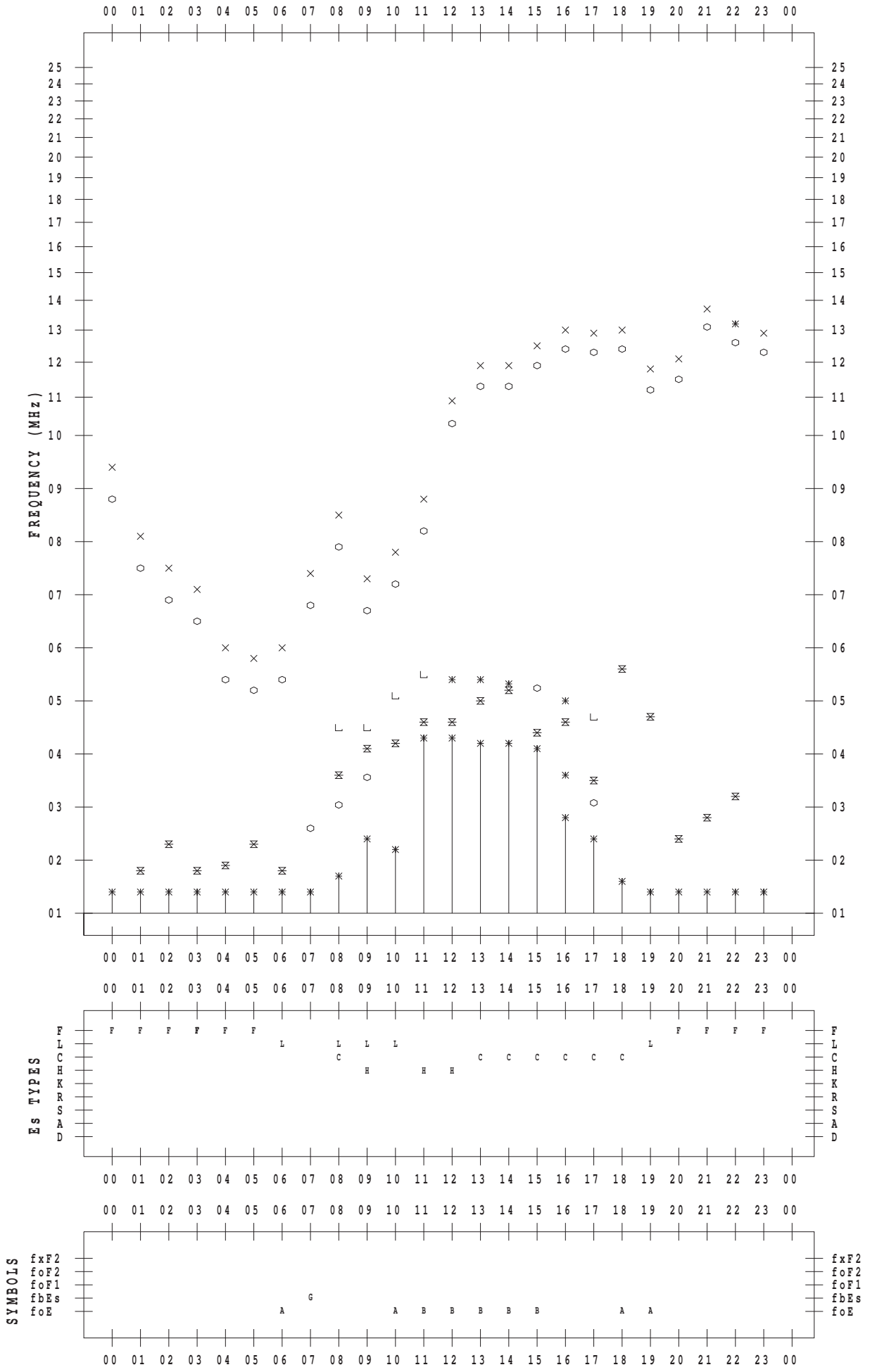
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/19

135 °E MEAN TIME



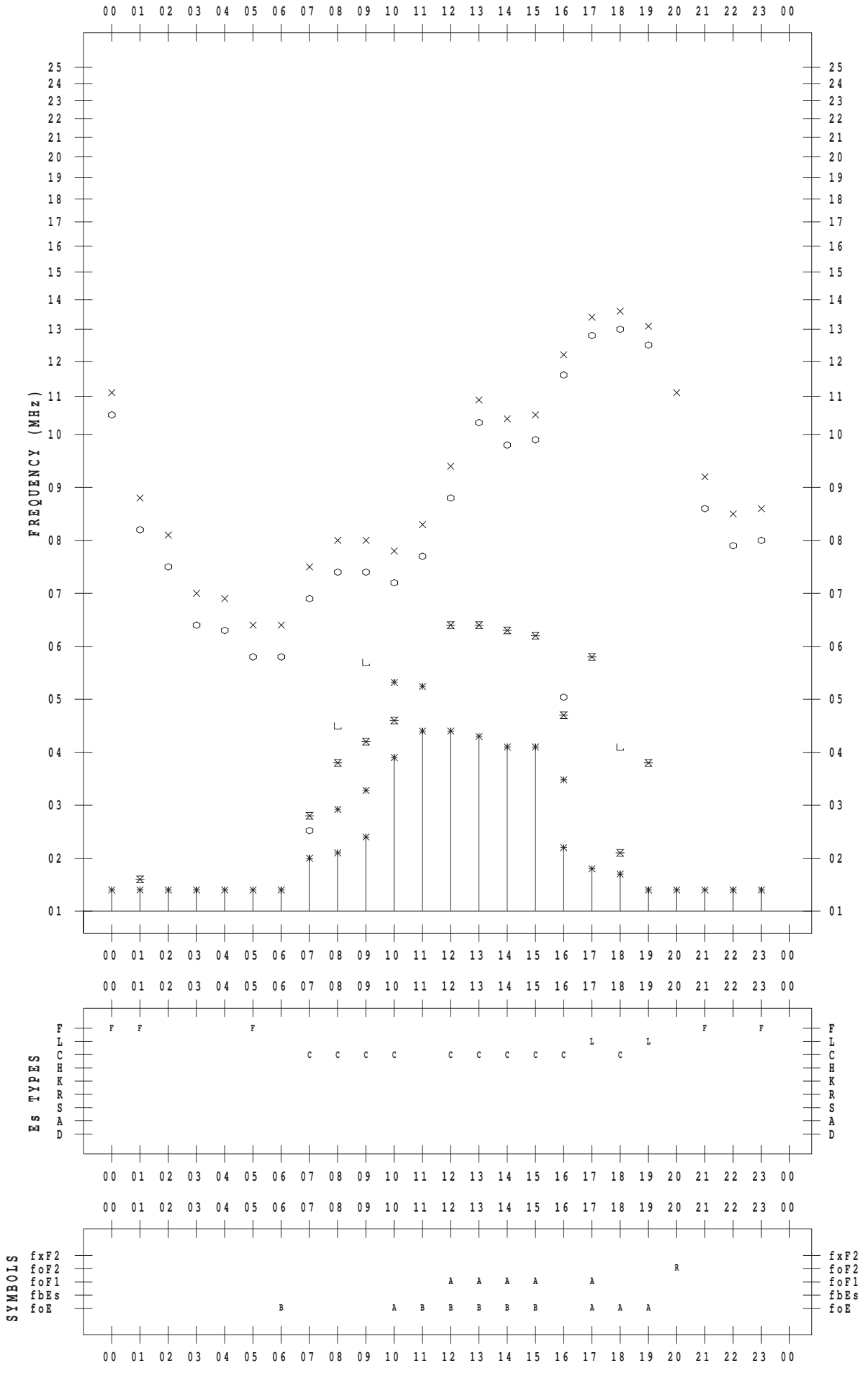
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/20

135 °E MEAN TIME



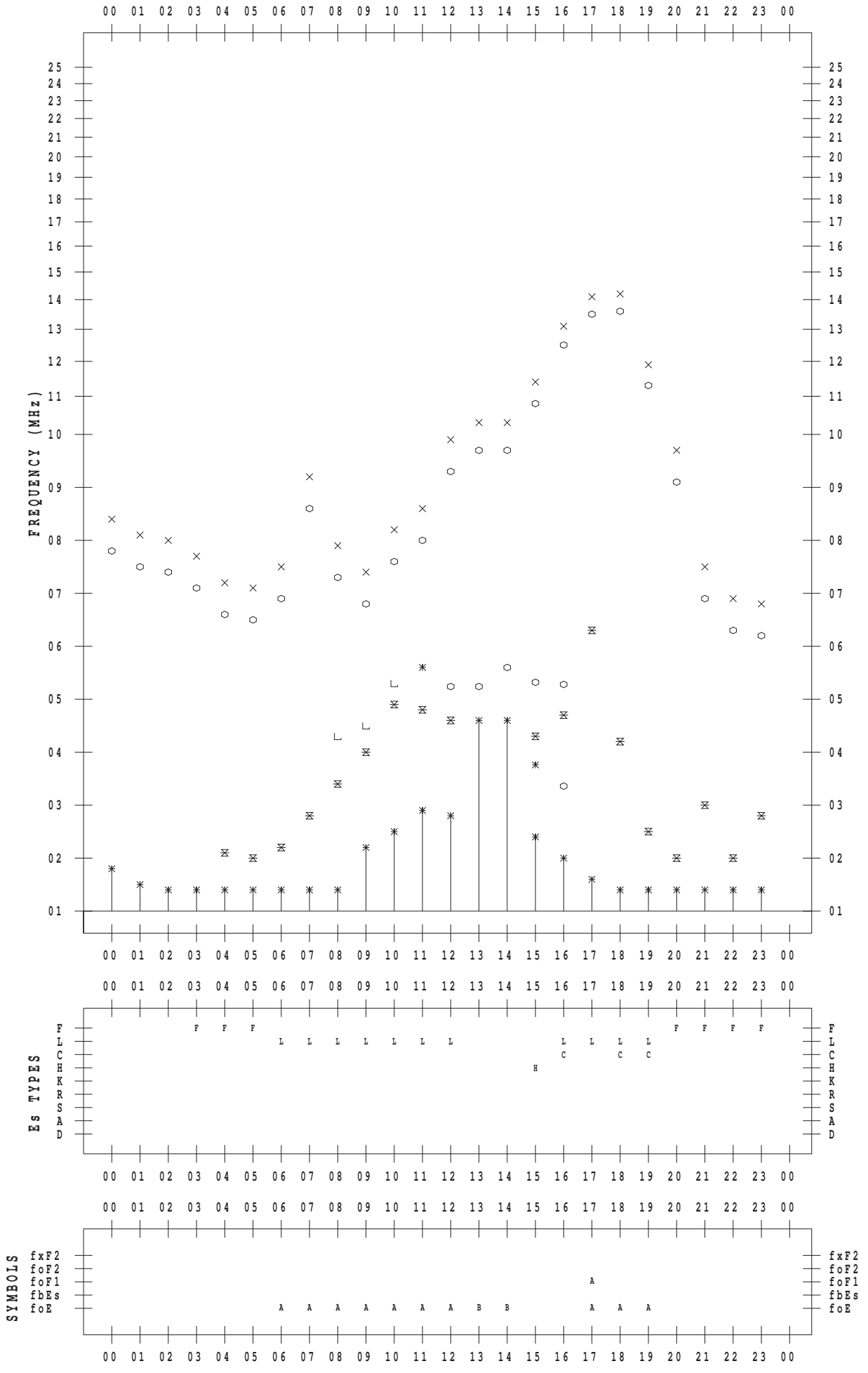
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/21

135 °E MEAN TIME



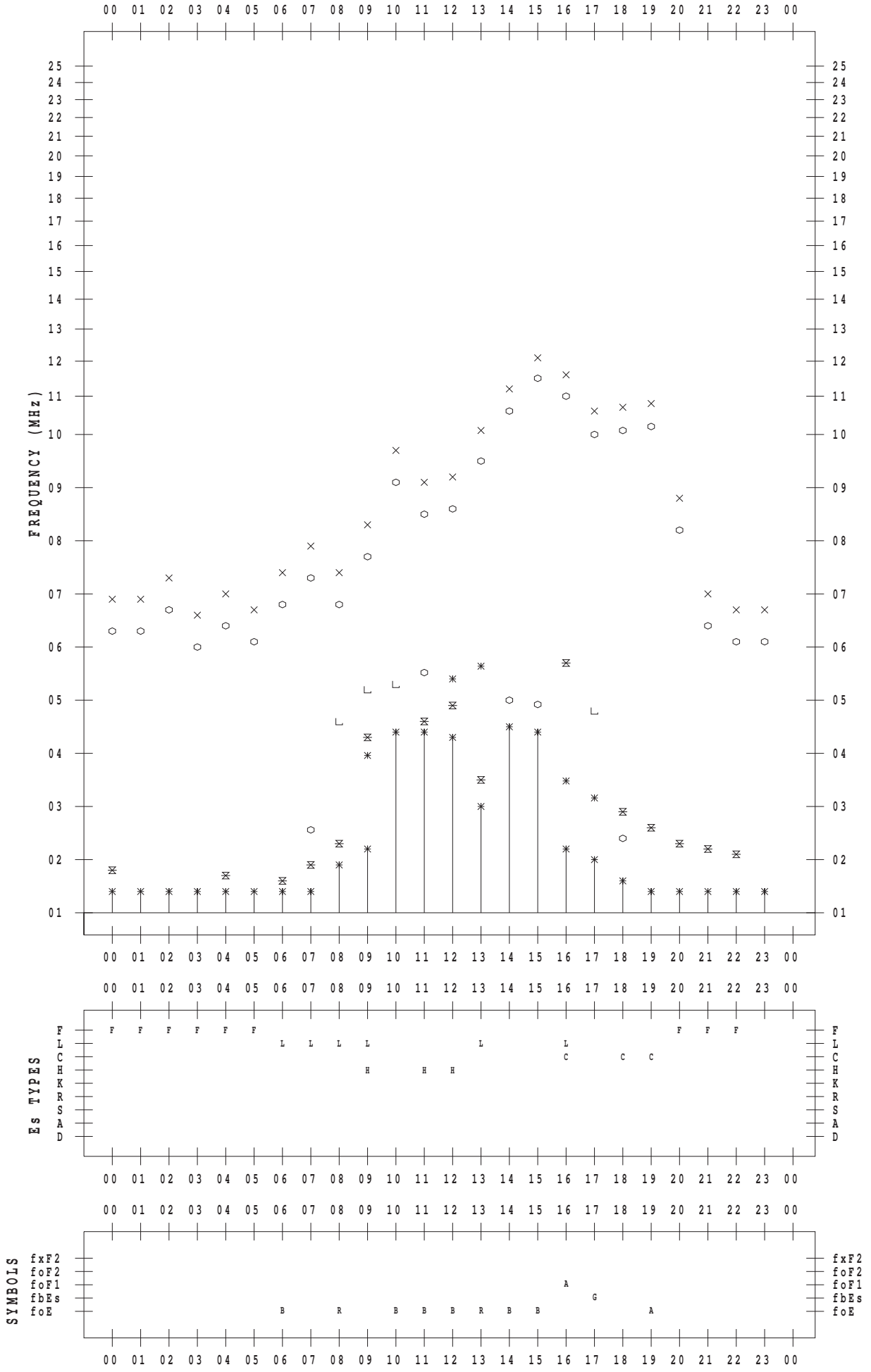
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/22

135 °E MEAN TIME



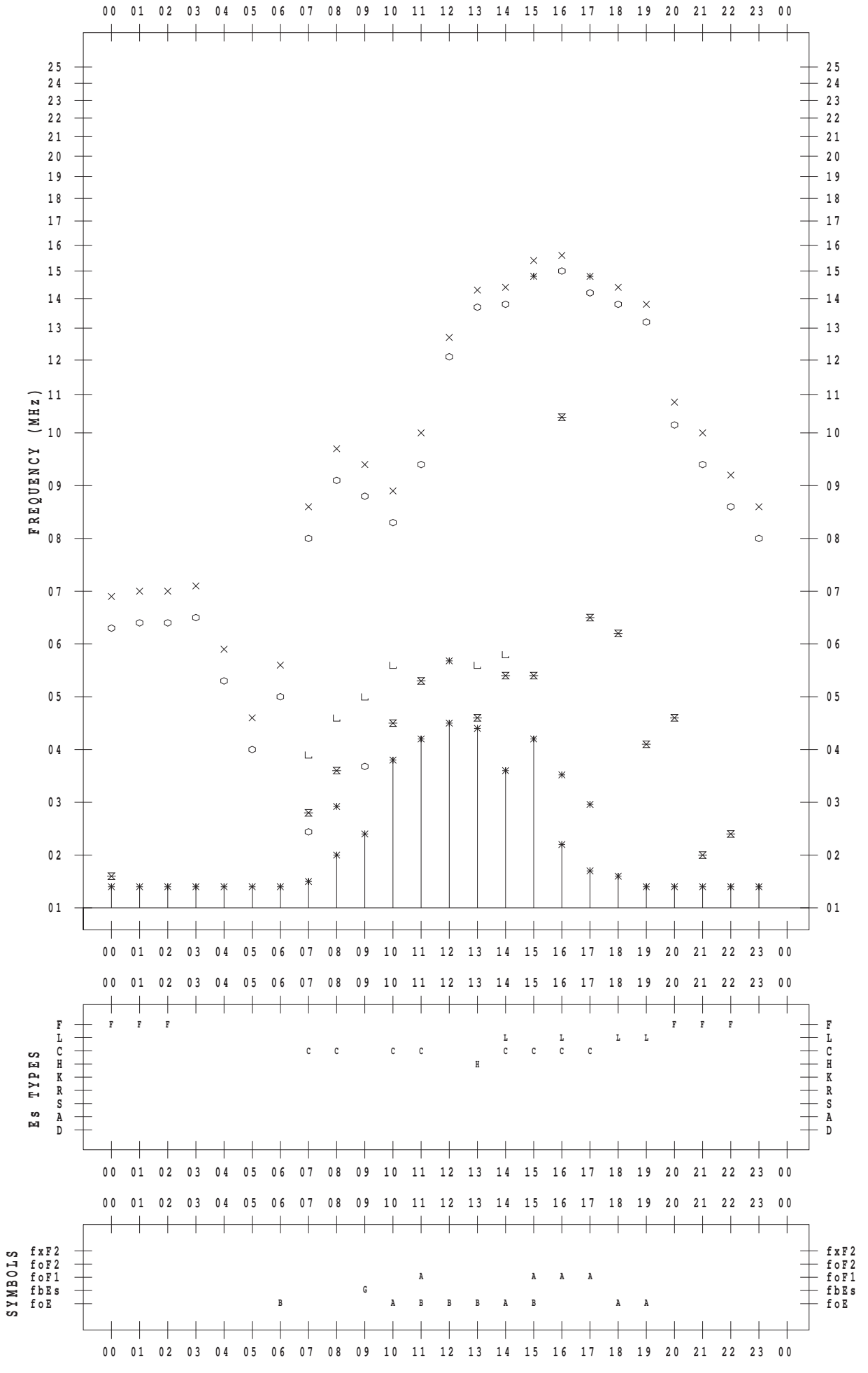
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/23

135 °E MEAN TIME



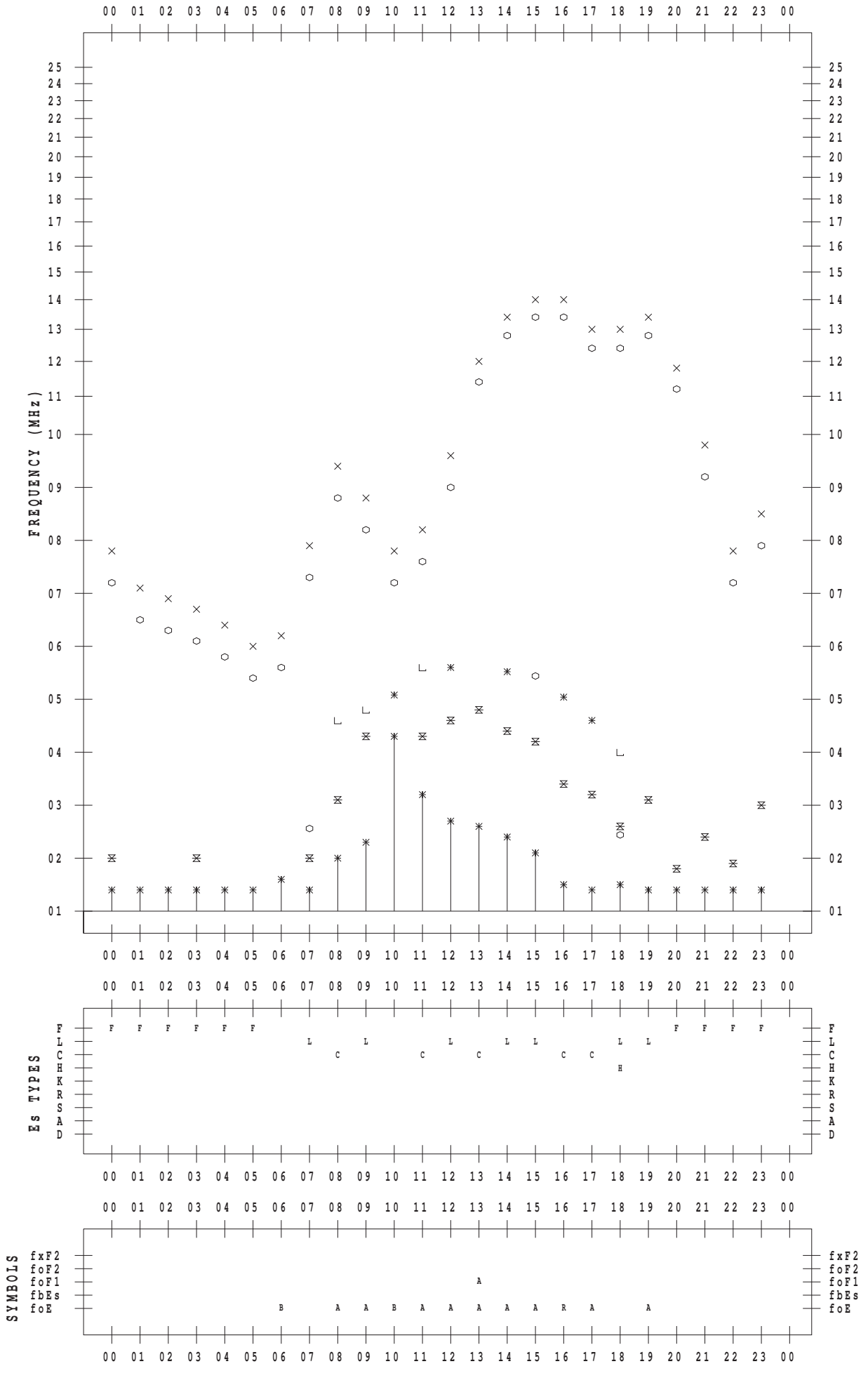
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/24

135 °E MEAN TIME



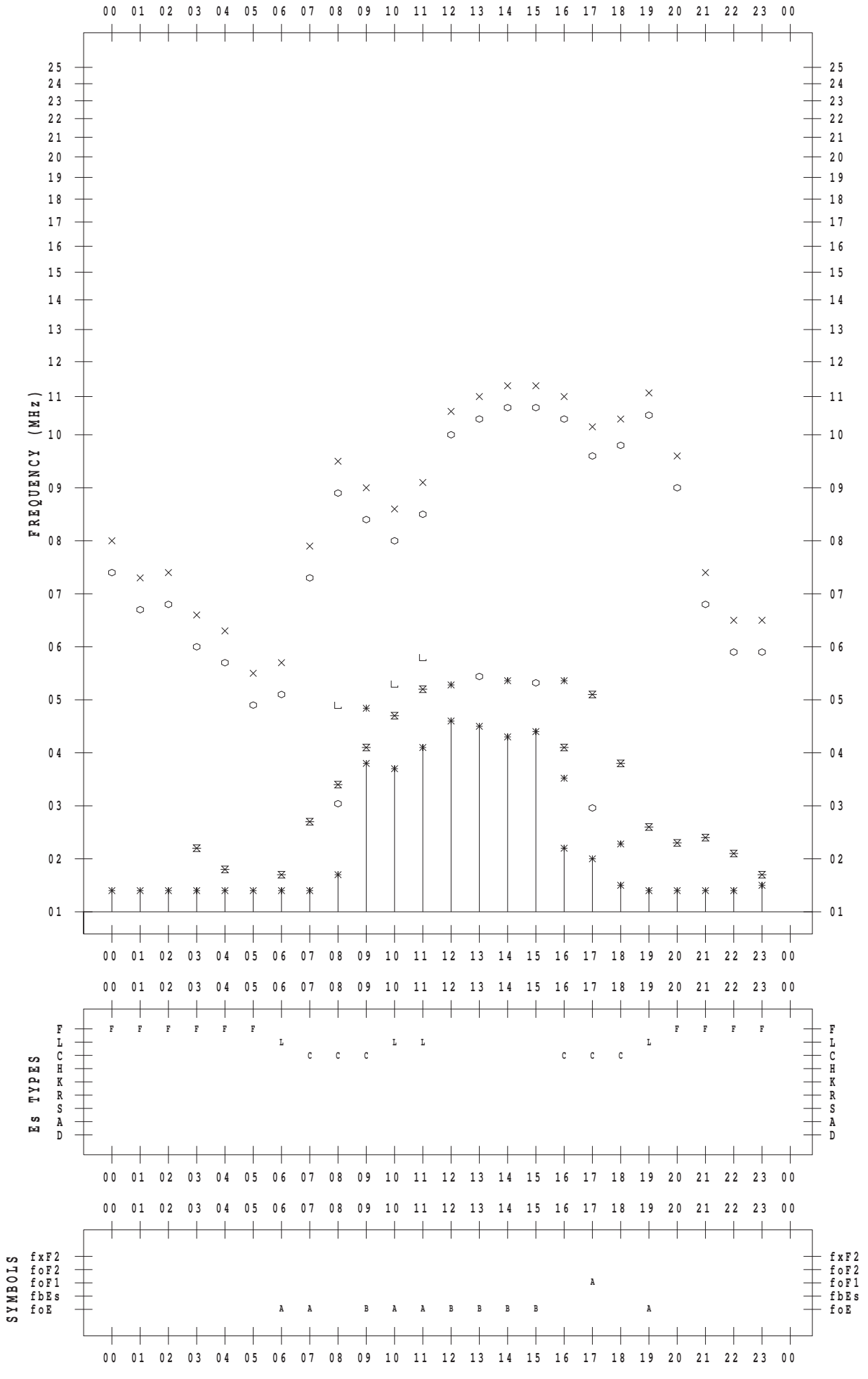
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/25

135 °E MEAN TIME



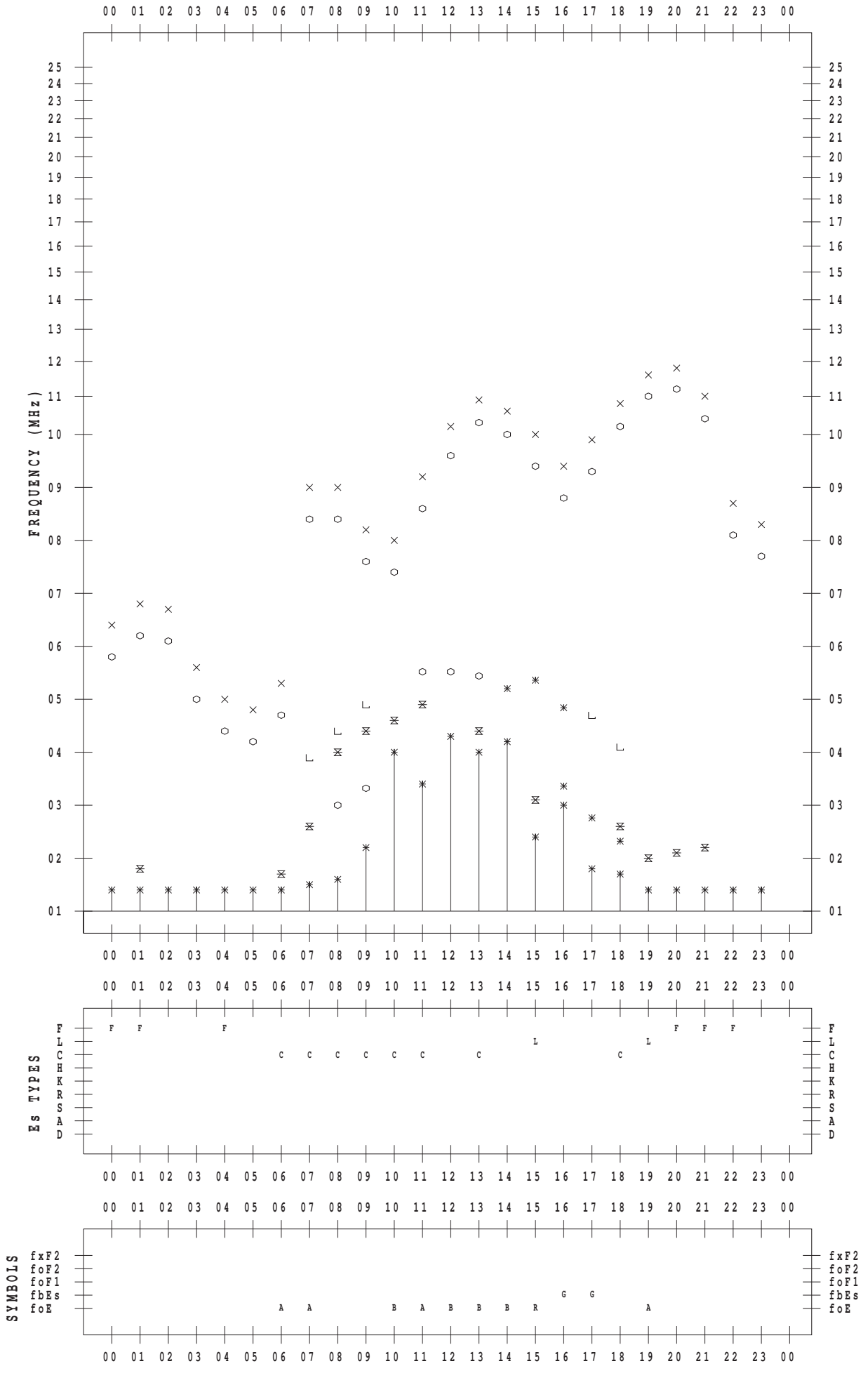
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/26

135 °E MEAN TIME



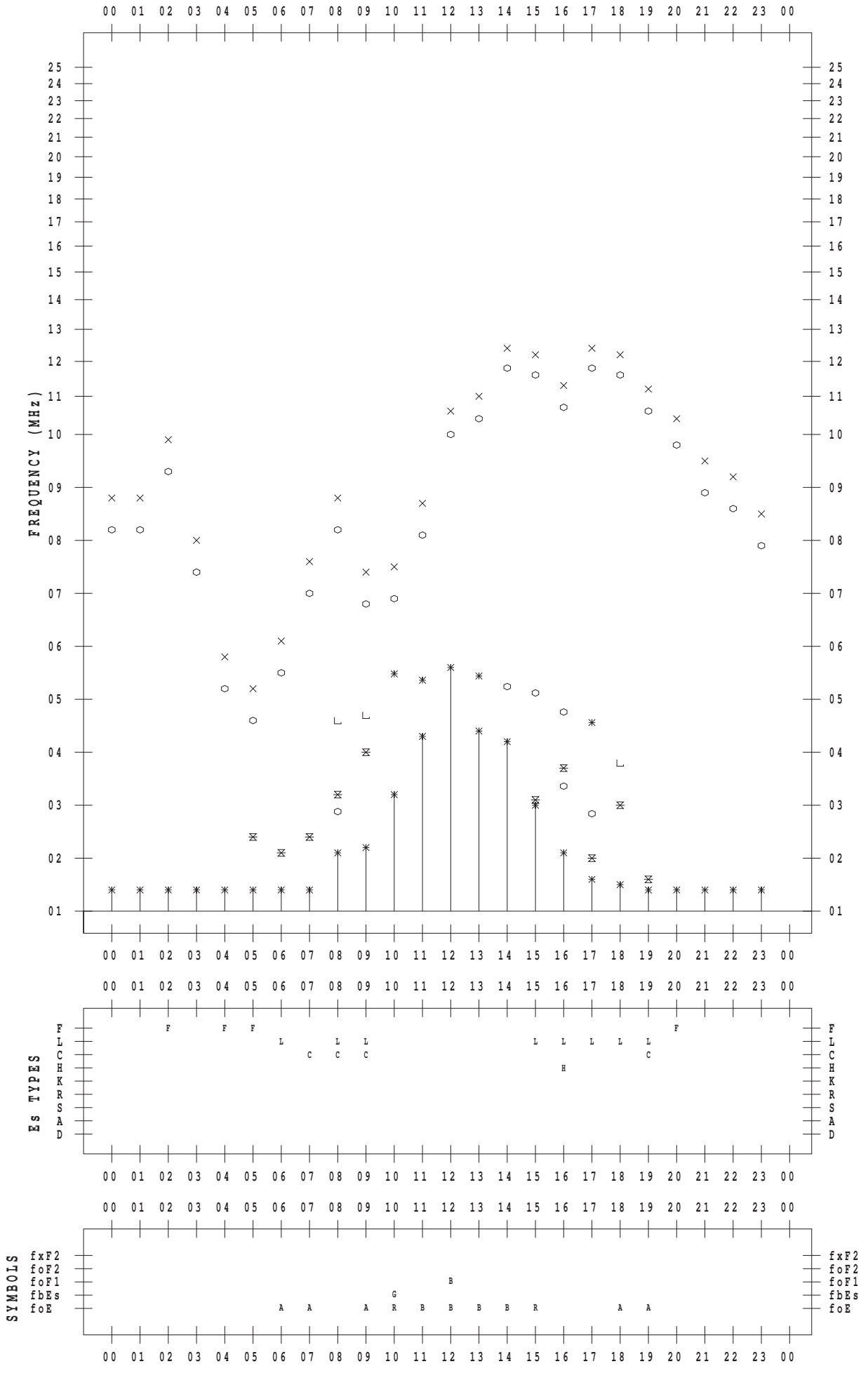
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/27

135 °E MEAN TIME



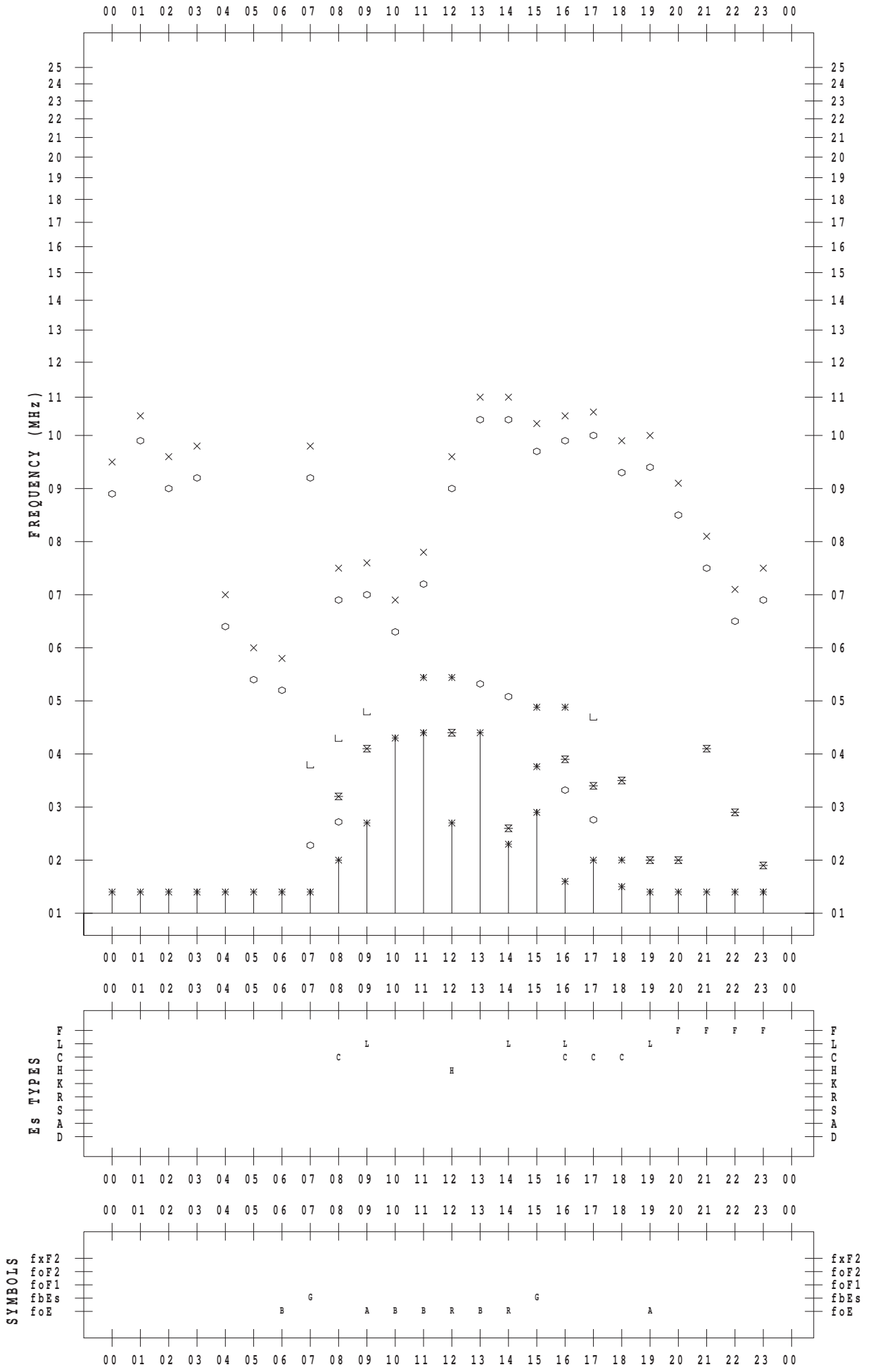
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/28

135 °E MEAN TIME



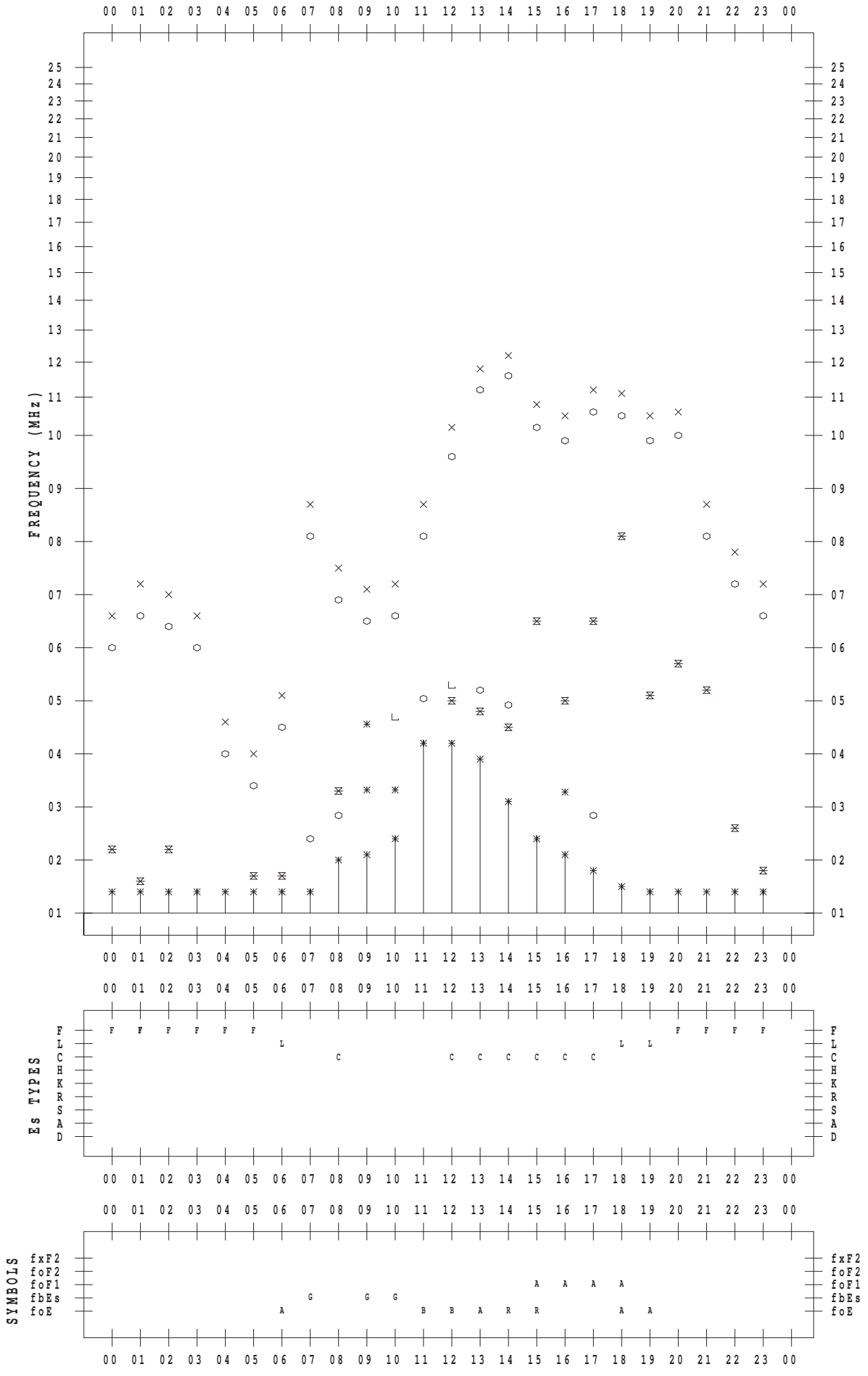
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/29

135 °E MEAN TIME



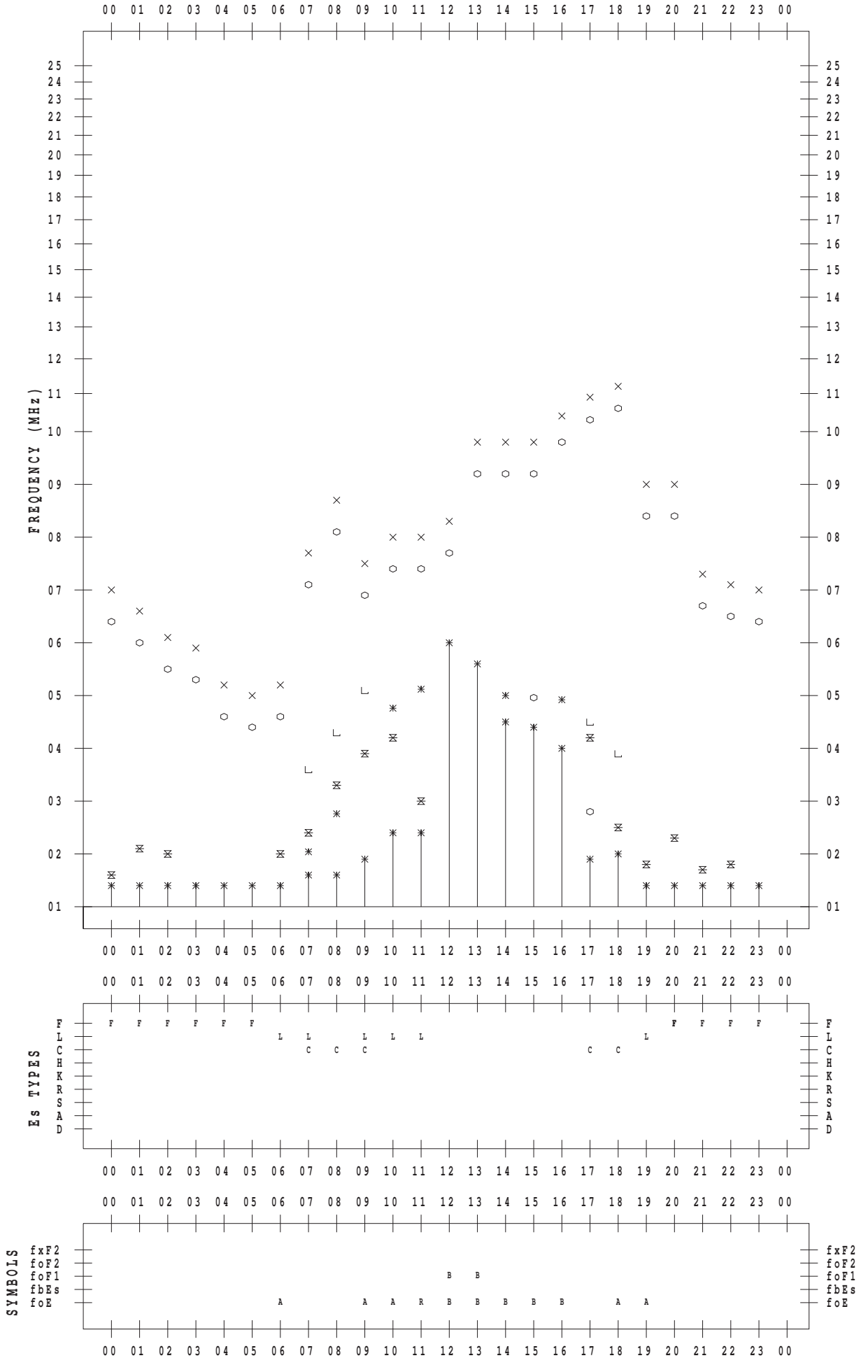
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/ 8/31

135 °E MEAN TIME