F-778

IONOSPHERIC DATA IN JAPAN

FOR OCTOBER 2013

VOL. 65 NO. 10

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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

OCT. 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	47	33	44	50	52	44	62	60	67	69	53	68	70	69	70	72	N	65	60	54	54	54	55	34
2	42	37	45	49	47	47	58	67	66	81	N	52	70	70	67	70	70	67	59	64	58	53	52	34
3	54	34	A	A	53	54	64	67	67	70	70	68	70	70	70	85	86	67	54	53	54	48	34	38
4	34	42	32	A	34	34	63	64	69	59	59	68	67	54	70	68	68	63	60	54	54	51	42	A
5	43	34	34	34	35	37	59	60	69	59	70	69	68	74	70	71	66	64	57	55	34	52	50	N
6	34	34	37	34	37	44	60	66	66	59	76	69	67	65	67	70	70	62	52	51	50	34	32	34
7	34	46	34	47	47	50	68	70	67	64	59	74	N	59	69	83	70	65	A	54	37	32	38	49
8	34	34	43	50	44	47	62	N	66	75	69	86	69	59	70	68	81	65	61	54	34	A	32	37
9	50	53	34	43	34	46	60	64	67	59	69	67	68	69		59	66	66	65	66	64	34	42	50
10	A	A	52	34	34	34	58	70	65	69	70	67	60	67	59	70	70	66	64	64	A	A	A	A
11	34	35	34	A	35	34	58	67	67	59	43	N	68	69	70	N	74	64	46	51	52		34	32
12	34	34	34	34	36	A	54	66	59	69	59	67	70	69	89	70	69	64	58	58	59	53	54	53
13	44	53	35	52	58	53	63	66	67	92	59	65	68	74	69	70	70	65	60	54	55	55	44	30
14	34	38	34	53	60	60	54	66	66	67	64	65	70	59	N	74	69	67	63	63	61	53	34	32
15	34	53	33	53	A	A	37	54	60	65	66	65	70	76	70	86	70	61	A	53	55	52	48	34
16	54	55	54	48	34	34	54	65	59	59	90	69	69	69	86	60	86	64	62	55	54		38	34
17	29	39	32	42	34	34	52	64	67	67	72	96	59	73	70	70	69	65	58	60	37	34	36	34
18	37	37	34	34	44	42	63	68	61	45	91	59	66	59	74	75	69	67	64	A	48	A	31	43
19	41	34	34	34	46	35	60	67		59	71	64	69	70	69	69	70	66	62	55	54		54	47
20	34	39	54	52	54	60	63	69	59		72	70	N	92	68	78	69	66	54	55	54	55	34	54
21	A	59	A	57	45	37	63	49		70	62	67	48	59	70	71	59	66	54	52	A	A	A	
22	A	A	37		34	37	53	68	59	70	N	71	59	59	87	73	67	67	54		54	54	60	61
23	A	63	62	61	62	58	66	70	59	69	59	59	78	70	69	70	68	66	55	58	40	47	34	40
24	34	50	49	47	34	47	53	84	88	86	86	59	70	91	90	70	69	64	61	49	A	A	A	50
25	50	52	40	47	48	50	53	67	66	92	69	93	68			92	70	64	64	32	A	A	37	A
26	34	32	41	43	47	34	53	66	92	86		90	60	70	58	70	68	65	55	50	34	32	39	37
27		34	34	32	34	32	54	67	59	59	97	70	59	69	67	90	69	66	63	54	34	30	34	32
28	30	32	30	34	38	32	51	67	59	59	70			59	71			66	58	52	A	37	34	34
29	34	36	32	47	47	34	50	67		74	59	59	59		96	74	70	62	53	50	34	A	34	A
30	39	32	A	38	34		52	59	59	59	59	70	70	69	59	90	66	59	62	58	42	32	32	43
31	43	46	34	A	34	34	44	67	67	92	59	59	68	74	63	59	65	N	64	61	48	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	28	26	30	28	31	30	28	30	28	29	28	29	28	29	29	30	29	29	26	20	27	24
MED	34	37	34	47	41	40	58	67	66	68	69	68	68	69	70	70	69	65	60	54	53	50	37	37
U Q	43	51	43	50	47	48	63	67	67	74	71	70	70	71	70	76	70	66	62	58	54	53	48	48
L Q	34	34	34	34	34	34	53	64	59	59	59	64	63	59	67	70	68	64	54	52	37	34	34	34

HOURLY VALUES OF fEs AT Wakkanai

OCT. 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	G	G	G	G	G	G	G	32	29	30	35	33	32	32	38	35	45	59	G	30	G	G	G	G
2	G	G	G	G	G	G	34	34	32	G	38	49	40	41	42	27	35	29	G	G	38	32	G	G
3	G	33	39	49	33	30	G	G	33	35	33	32	32	G	33	32	40	39	27	27	G	G	G	G
4	28	G	34	34	38	G	G	25	29	33	32	32	40	32	29	27	24	32	G	G	G	G	G	28
5	28	25	26	G	33	G	G	25	28	G	38	32	36	34	32	35	G	G	G	G	G	G	G	G
6	G	G	G	G	G	G	G	G	34	31	33	30	32	32	34	32	29	G	28	29	G	G	G	G
7	G	G	G	G	G	G	22	51	29	36	37	35	34	38	31	59	40	35	39	29	G	G	G	G
8	G	G	G	G	G	G	32	28	33	31	G	32	30	G	29	31	28	G	31	G	G	28	G	G
9	G	G	G	G	G	24	G	26	28	G	40	G	33	32		34	51	34	60	39	32	38	34	32
10	39	49	27	25	36	29	G	G	27	32	36	51	61	38	36	26	38	38	G	45	58	38	50	29
11	G	G	32	35	G	G	27	32	35	34	32	36	38	32	34	64	35	32	29	G	G	G	G	G
12	G	G	G	G	30	28	32	39	35	34	35	39	37	38	54	57	26	69	39	34	35	33	28	G
13	G	G	G	G	G	G	G	53	27	G	G	34	31	38	38	40	37	42	32	29	34	G	G	G
14	G	G	G	G	G	G	G	27	52	31	30	34	35	34	37	33	35	27	55	46	34	31	G	G
15	G	G	G	24	43	35	G	33	44	39	40	49	39	45	43	70	37	42	40	30	31	G	G	G
16	G	G	G	26	G	34	72	39	30	32	32	30	34	35	60	41	42	33	28	27	26		G	G
17	G	28	G	24	25	G	G	G	28	29	30	31	30	G	29	34	26	G	G	G	G	G	G	G
18	G	G	G	29	G	26	G	34	36	43	36	36	39	35	36	34	35	46	26	40	30	34	G	G
19	G	G	G	26	24	G	G	G		36	40	33	36	33	30	27	35	34	G	G	G		G	33
20	G	G	G	33	G	G	G	24	28		31	32	32	33	30	26	33	G	32	G	28	32	32	34
21	48	30	38	30	G	G	G	33		71	58	33	34	45	29	26	43	38	45	32	44	64	40	
22	39	33	30		25	G	G	33	68	43	36	34	34	32	37	28	34	34	33		39	34	33	32
23	36	32	G	33	29	G	26	28	38	32	38	41	33	G	34	34	35	G	39	40	38	38	G	G
24	G	G	G	G	33	G	G	33	32	38	35	38	49	33	31	26	G	G	G	G	39	59	41	34
25	34	30	G	31	30	24	20	30	35	36	34	38	G			30	30	G	26	32	39	40	26	37
26	G	G	G	27	G	G	G	53	38	40		35	33	30	36	32	23	G	G	G	G	G	G	G
27		G	G	G	G	G	25	31	35	32	33	31	32	30	28	34	24	G	G	G	G	G	G	32
28	G	G	26	G	G	G	G	24	28	31	39			30	G			32	32	G	30	G	G	G
29	G	G	G	G	27	G	28	33		32	35	32	39		50	44	39	38	G	39	33	40	G	28
30	34	29	34	27	34		28	G	33	48	45	59	54	58	52	49	57	54	39	36	26	25	G	34
31	28	G	29	30	30	G	35	48	63	44	38	51	62	40	51	59	66	55	32	G	26	59	59	59
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	30	31	30	31	31	28	30	30	30	30	29	29	30	30	31	31	30	31	29	31	30
MED	G	G	G	24	G	G	G	31	33	32	35	34	34	33	34	34	35	33	28	28	28	28	G	G
U Q	28	28	27	30	30	24	27	34	35	38	38	38	39	38	40	41	40	39	39	34	35	38	28	32
L Q	G	G	G	G	G	G	G	24	28	31	32	32	32	31	30	28	28	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

OCT. 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	15	14	15	17	15	22	14	14	16	18	18	22	20	17	14	14	14	15	15	15	17	15	15
2	15	15	14	15	15	15	14	14	14	15	14	26	18	14	14	14	14	15	15	16	14	14	15	15
3	14	14	14	14	14	14	21	14	15	16	18	21	20	18	15	15	14	15	14	14	14	14	20	14
4	14	15	15	15	14	15	14	14	14	15	14	15	15	18	17	14	14	14	16	15	14	15	15	15
5	16	17	15	15	14	15	20	14	14	15	16	21	18	15	15	14	14	17	14	15	15	15	15	15
6	15	15	15	14	15	15	20	15	16	20	22	23	21	18	16	14	14	18	15	14	14	15	15	15
7	15	15	15	15	14	15	14	15	15	16	14	20	17	16	17	14	14	15	15	15	17	14	15	15
8	15	15	15	14	14	14	15	15	14	16	15	18	15	15	17	14	14	17	14	15	17	14	16	16
9	15	15	14	16	14	15	15	15	15	15	17	54	18	18		15	15	14	14	14	15	14	14	15
10	14	14	15	16	15	15	17	15	14	15	17	18	20	15	17	16	14	15	15	14	14	15	17	15
11	15	15	14	15	15	15	15	14	14	14	17	21	16	15	15	14	14	14	14	21	17	20	16	15
12	16	15	15	15	14	14	14	14	14	14	16	15	23	23	17	16	14	14	14	14	14	15	16	15
13	15	15	16	14	15	14	20	14	16	14	44	42	21	17	14	15	14	15	15	15	15	15	14	17
14	18	15	14	15	14	14	20	14	15	15	17	17	18	15	15	14	15	14	14	14	14	15	15	15
15	18	14	15	14	15	14	18	15	15	17	17	23	18	15	15	15	14	14	14	15	14	14	14	14
16	14	14	14	14	14	15	14	14	15	21	15	18	17	17	15	14	14	14	15	15	15		18	14
17	15	14	21	14	15	15	17	14	14	16	15	21	20	17	15	14	14	15	14	15	15	14	16	15
18	15	15	17	14	14	14	17	14	14	15	18	17	20	20	15	14	16	14	15	14	14	15	14	16
19	16	14	15	15	15	15	18	14		18	16	17	18	17	14	14	17	14	15	16	14		15	14
20	18	15	15	14	15	14	17	14	14		17	20	20	17	17	14	14	15	14	14	16	15	15	15
21	14	15	14	14	15	15	15	14		14	15	18	15	14	15	15	14	14	15	15	14	14	14	
22	14	14	14		15	16	16	14	15	16	16	20	18	17	14	14	14	14	15		14	14	15	15
23	15	16	18	14	15	15	16	15	14	17	15	14	15	41	14	14	14	15	14	14	14	14	21	16
24	15	15	14	15	15	17	14	14	14	22	20	15	14	17	15	15	21	15	15	17	14	14	14	14
25	14	15	15	14	14	15	15	14	15	15	17	16	50			14	15	15	14	14	14	14	14	15
26	15	15	15	15	17	14	16	14	14	14		15	18	14	14	14	15	15	15	14	14	15	14	14
27		15	17	15	17	15	15	14	14	17	16	17	17	15	15	15	15	14	14	14	14	22	16	15
28	18	15	16	14	15	18	16	15	15	15	17			15	35			14	14	17	15	15	14	14
29	14	15	15	15	15	15	16	14		14	20	18	17		15	14	14	14	15	14	15	14	18	17
30	14	14	14	14	14		15	33	14	15	14	14	15	17	15	14	14	14	14	14	18	14	16	14
31	15	14	14	14	14	18	21	14	14	14	15	15	16	15	14	14	14	14	14	14	15	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	30	31	31	30	31	30	31	31	28	30	30	30	30	29	29	30	30	31	31	30	31	29	31	30
MED	15	15	15	14	15	15	16	14	14	15	16	18	18	17	15	14	14	14	14	14	14	14	15	15
U Q	15	15	15	15	15	15	18	15	15	16	17	21	20	18	17	15	15	15	15	15	15	15	16	15
L Q	14	14	14	14	14	14	15	14	14	15	15	16	16	15	14	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

OCT. 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	47	43	A	44	43	42	65	72	76	73	76	84	93	87	71	84	91	80	73	47	47		44	
2	44		46		44	42	63	75	76	74	88	104	106	83		108	113	117	103	76	52		A	44
3	A	A	42		A		67	73	79	84	116	98	85	86	94	87	97	101	83	52	53	54	53	52
4	46			42	43	34	67	88	88	85	72	85	86	85	81	85	91	85	62	53	53	42	46	
5	43	38	43	43	43		72	80	81	77	90	85	81	77	84	77	81	72	54	51	38	45	45	42
6	39	36	42	38		38	67	80	99	77	78	100	107	93	92	82	87	86	55	43	N			27
7	23	N	N	N	32	32	54	74	71	72	74	84	85	82	81	81	87	90	76	51	42		42	
8	44	44	42	44	43	42	53	81	98	91	97	117	104	86	83	91	91	90	77	44	47	46	A	A
9	A	A		N	A	36	51	77	80	88	113		86	107	111	92	69	82	101	89	45			
10	N	N		N		28	67	87	102	97	88	102	101	95	91	87	84	86	74	73	54		A	
11		A	N	38	34		69	80	85	95	101	102	102	88	92	98	94	83	66		A		A	
12			39	39		N	51	64	75	88	98	102	86	87	91	92	81	74	54	A	A	A		
13			N	N	42		66	81	88	81	83	97	95	80	95	86	84	78	66	52	42		38	
14				42	44	N		73	78	74	87	94	105	102	100	95	90	76	54			44		44
15		42			27	39	52	62	107	85	98	111	108	96	91	107	96	77	53	52	46	36		38
16			43	42		46	59	83	90	102	104	111	118	101	101	87	86	78	64	54	53	A		
17		32	37	38	35	34	54	70	80		97	102	101	107	98	86	83	85	58		53	38		42
18			N	N		N	52	85	102	108	111	124	110	102	102	92	86	84	73	A	A	A	A	A
19	A			44	38	39	54	83	88	94	93	117	120	107	102	87	78	74		53	A	A	A	
20			46	43	47		67	92	100	87	84	101	110	106	101	89	84	78	63	A	A	A		38
21	34	38	A	38			62	82	90	86	107	121	118	117	110	98	97	81	55	A	A	A	42	A
22		38	44	27			58	86	89	87	108	107	102	106	104	84	76	73	53	52			38	48
23		A	A	44	43	A	57	88	95	96	107	106	111	116	104	86	87	72	68		39	N	A	A
24	A	A	32			N	53	80	101	101	N	106	97	91	104	95	81	70	53	55	38		N	
25	A	A	A		36	N	54	85	86	88	96	96	94	115	116	92	77	81	54	53		39	A	A
26	43	N			34	N	52	88	84	91	86	94	107	108	101	87	81	73	55	53	44	A	N	A
27						44	53	86	90	88	96	107	102	106	102	96	88	102	73	45	A	A	A	34
28		34			27	34	54	88	96	87	95		97	98	94	85	81	A	51	53		A		43
29	20	34		34	34		44	74	88	92	98	102	107	98	94	100	97	78	52	53	44			
30			34				53	102	98	90	91	101	106	108	108	111	98	83	54	52	53	A	A	A
31	A	44	39	34			47	74	83	137	118	118	104	112	114	111	111	94	73	72	53	43	27	39
	00	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	11	13	17	18	14	30	31	31	30	30	29	31	31	30	31	31	30	30	23	19	9	9	12
MED	43	38	42	42	40	38	54	81	88	88	96	102	102	98	99	89	87	81	62	53	47	43	42	42
U Q	44	43	43	43	43	42	66	86	98	94	104	109	107	107	104	96	94	86	73	54	53	45	45	44
L Q	34	34	38	38	34	34	53	74	80	84	87	96	94	87	91	86	81	76	54	51	42	38	38	38

HOURLY VALUES OF fEs AT Kokubunji

OCT. 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	G	G	25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G
2	G	G	G	G	G	G	G	27	G	G	G	G	G	G		G	G	G	G	G	G		59	G
3	52	32	G		22		58	52	G	G	G	G	G	G	G	G	G	37	36	38	28	G	G	G
4	G	G		G	G	G	29	G	G	G	G	G	G	G	G	G	G	23	G	G	G	G	G	G
5	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	40	34	29	G	G	G	G	G
6	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	33	29	G	G	G		G
7	G	G	G	G	G	G	G	G	G	G	51	50	G	G	51	61	G	36	23	G	24		G	
8	G	G	G	G	G	G	G	G	G	51	G	G	G	G	G	G	G	41	39	29	G	26	29	35
9	34	26		G	45	G	G	25	G	50	G		G	G	G	G	40	G	34	31	G			
10	G	G		G		G	G	70	G	G	G	G	G	G	G	G	27	G	G	G	G		33	
11		29	G	G	27		G	G	G	G	G	G	G	G	G	28	27	35	35		31		30	
12		G	G	G		G	G	G	G	G	G	G	G	G	G	64	40	50	43	44	48	40		
13		G	G	G	G		G	G	28	G	G	G	G	G	G	52	33	G	G	G	G		G	
14				G	G	G	G	25	G	G	G	G	G	G	G	G	G	G	30			G		G
15	G	G			G	G	G	G	G	G	G	G	G	G	G	G	G	G	35	48	31	G		G
16		G	G	G	G	G	G	25	28	G	G	G	G	G	G	G	26	G	G	G	29	34		
17		G	G	G	G	G	G	G	G		G	G	G	G	G	G	29	28	28		G	G		G
18			G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	52	39	33	41	28	40
19	34		G	G	G	G	G	G	28	G	G	G	G	G	G	G	G	G		29	26	28	34	G
20	G	G	G	G	G		G	G	G	G	G	G	G	G	G	28	28	G	G	61	45	36		G
21	G	G	33	G			G	G	G	50	G	G	G	G	G	29	24	G	27	36	60	34	28	36
22		G	G	G			G	24	29	49	G	G	62	71	69	27	31	34	G	G		G	33	G
23		40	50	G	29	26	G	29	G	G	G	G	G	G	G	29	25	G	G	G	G	G	81	39
24	26	41	G			G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	
25	45	27	26		G	G	G	24	46	G	G	G	G	G	G	29	G	G	G	39		29	29	29
26	26	G	G		G	G	27	29	28	G	G	G	G	G	G	28	G	G	G	34	34	56	50	29
27					G	G	G	29	62	G	G	G	G	G	G	29	29	24	50	31	32	49	29	G
28		G			G	G	G	G	27	G	G		G	G	G	G	26	81	26	32		33		G
29	G	G		G	G		G	G	27	G	G	G	G	G	G	27	G	47	33	G	G			
30		G	G		G		G	G	G	47	G	G	55	G	G	60	29	G	G	G	40	41	58	46
31	83	33	G	G		G	G	28	G	51	G	60	G	G	36	47	27	41	G	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	19	27	23	23	23	22	31	31	31	30	31	29	31	31	30	31	31	31	30	28	27	23	21	22
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	G	24	14	G	26	29	G
U Q	34	26	G	G	G	G	G	25	27	G	G	G	G	G	G	29	29	35	34	35	32	36	33	29
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Kokubunji

OCT. 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	17	14	18	14	14	14	33	35	39	42	45	49	44	55	40	40	39	14	14	17	17		17	22
2	14	17	15	14	14	14	23	20	39	37	45	55	43	42		40	38	22	15	15	15		15	17
3	14	14	20		15		14	17	37	52	39	45	44	45	42	39	44	18	14	14	14	33	15	20
4	42	23		14	23	14	14	34	37	40	40	44	43	43	39	38	37	22	33	17	15	14	14	18
5	15	20	15	14	18		20	34	40	38	43	44	49	44	40	18	14	17	14	15	17	14	18	17
6	14	17	17	15		14	39	15	36	40	44	47	43	40	45	40	18	14	14	14	18	22		15
7	14	15	15	17	17	14	36	33	39	39	38	37	44	55	34	37	33	14	14	14	17		21	
8	20	14	14	14	23	14	23	18	39	33	44	44	43	42	42	39	39	14	14	13	14	17	13	14
9	14	13		15	14	14	33	17	40	34	42		47	42	40	39	15	18	14	18	20			
10	21	21		15		21	21	14	18	40	40	44	42	39	39	39	38	20	14	15	15		20	
11		17	22	18	13		21	42	40	40	44	43	42	40	39	15	34	14	13		17		17	
12		24	17	18		14	18	38	39	43	42	44	43	49	18	38	15	14	14	14	14	14		
13		22	15	21	13		40	13	21	22	57	47	42	40	39	37	13	20	14	15	15		21	
14				15	14	14	36	37	40	42	43	44	47	53	40	15	13	22	21			18		42
15	24	17			18	15	20	32	43	40	43	45	44	44	40	38	39	33	14	17	13	21		20
16		20	20	13	21	15	22	15	20	44	44	42	42	42	42	42	31	34	17	14	21	15		
17		14	17	14	14	17	20	34	39		42	42	45	43	42	40	42	13	17		21	17		14
18			14	15		20	21	36	36	39	44	44	43	44	43	40	36	13	14	15	14	15	14	14
19	13		15	17	14	22	20	40	40	40	44	45	43	43	40	20	40	21		14	18	14	17	24
20	22	25	20	14	14		21	39	40	40	44	43	43	44	42	21	20	20	17	22	18	13		20
21	14	15	14	20			18	39	42	39	44	40	44	43	43	21	17	18	17	17	15	14	15	15
22		17	14	14			18	14	14	23	42	42	38	38	21	15	14	15	34	36		36	14	22
23		15	14	13	13	14	20	13	39	42	42	43	45	47	39	20	37	20	14	44	14	22	15	14
24	17	14	14			17	18	37	40	45	43	40	42	40	42	43	38	18	25	17	18	21	15	
25	14	14	14		14	17	18	17	15	40	42	40	54	45	43	18	13	20	14	15		15	13	14
26	17	15	21		14	21	20	14	18	40	42	42	44	42	43	20	37	18	18	14	18	14	14	13
27					21	15	17	15	20	39	43	45	42	38	40	40	13	15	14	14	14	14	14	22
28		18			14	14	17	18	21	39	42		43	40	56	40	14	17	14	15		14		15
29	14	18		14	15		18	38	18	40	40	40	49	43	44	21	40	13	14	24	15			
30		20	17		22		36	73	40	21	42	42	42	43	45	36	14	15	15	14	14	17	17	20
31	13	13	14	17		17	14	17	17	21	40	40	42	44	15	20	15	14	36	15	17	14	15	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	27	23	23	23	22	31	31	31	30	31	29	31	31	30	31	31	31	30	28	27	23	21	22
MED	14	17	15	15	14	14	20	32	39	40	43	44	43	43	40	38	33	18	14	15	15	15	15	17
U Q	20	20	18	17	18	17	23	37	40	40	44	45	44	44	43	40	38	20	17	17	18	21	17	20
L Q	14	14	14	14	14	14	18	15	20	38	42	42	42	40	39	20	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Yamagawa

OCT. 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	50	50	49	49	42	36	47	63	73	78	80	83	88	94	86	94	91	97	87	62	52	52	53	A
2	52	52	50	52	48	34	42	70	72	78	86	94	97	80	84	93	97	109	90	73	54	43	49	43
3	42	49	50	37	34	38	48	63	77	91	90	98	88	92	96	97	96	108	73	77	54	42	54	53
4	50	46	34	44	46	38	46	88	73	81	77	82	101	86	88	95	92	N	88	76	52	50	47	44
5	46	43	42	43	40	37	44	76	92	80	80	96	91	87	88	87	86	88	76	52	52	52	48	48
6	46	44	43	40	35	30	42	73	83	82	73	91	89	79	N	96	118	N	88	77	43	A	38	34
7	43	40	40	38	38	34	44	71	78	71	77	75	87	88	86	85	88	94	84	77	41	49	46	44
8	48	48	46	46	43	40	47	72	92	69	97	107	111	91	96	N	97	91	85	72	32	A	50	54
9	53	47	52	46	42	36	42	65	72	88	94	82	84	N	69	95	81	91	81	89	A	43	42	46
10	47	43	45	40	40	38	46	92	89	87	87	88	91	94	97	93	90	90	90	78	49	44	43	42
11	36	38	30	34	37	31	38	73	85	92	90	96	91	95	N	N	97	95	86	67	43	45	48	47
12	46	52	42	28	40	32	37	71	75	85	96	88	96	94	96	96	91	86	86	54	A	53	44	50
13	44	44	47	43	43	42	45	77	85	80	76	88	95	90	63	A	91	87	72	73	N	A	54	47
14	42	47	41	51	43	32	37	67	84	78	87	91	90	96	98	96	92	89	72	55	54	52	54	53
15	48	47	50	49	46	B	43	67	88	92	88	97	N	95	107	110	95	83	77	55	64	42	48	48
16	48	42	40	37	38	42	43	72	90	87	97	97	90	69	113	102	82	75	75	75	54	52	50	46
17	42	42	44	46	45	40	43	67	78	85	90	95	97	99	96	96	87	86	78	71	45	49	50	42
18	48	43	43	42	36	41	46	71	87	116	N	N	92	N	97	96	90	86	81	58	53	A	A	B
19	48	34	A	47	42	34	40	67	80	82	88	79	N	N	N	98	92	85	84	50	34	48	A	44
20	A	42	42	43	43	44	50	91	93	85	86	96	97	89	88	97	91	94	79	56	52	43	49	43
21	43	43	44	43	38	34	42	80	88	79	103	109	N	147	150	146	110	92	77	N	51	51	54	A
22	53	A	60	44	48	42	46	80	86	88	96	96	96	98	C	96	87	77	76	67	53		42	49
23	50	42	44	42	40	38	43	82	88	87	87	91	69	101	114	96	88	89	78	72	63	46	47	47
24	44	53	40	A	29	30	34	74	89	89	102	69	95	88	93	96	90	91	84	53	63	50	44	40
25	37	42	42	42	40	36	43	74	88	76	88	90	69	A	A	96	84	79	81	55	52	52	A	48
26	50	53	42	46	42	A	42	55	81	86	86	89	96	79	98	96	86	80	78	54	54	52	48	42
27	42	59	38	43	40	42	41	74	88	85	88	95	92	N	89	98	96	95	79	74	67	64	53	48
28	44	37	42	43	43	34	38	81	90	88	88	B	97	102	97	97	86	85	80	A	A	53	A	47
29	43	B	38	38	42	32	36	54	84	93	98	96	94	N	96	96	96	90	78	52	74	A	43	34
30	36	43	43	36	42	37	44	75	84	85	87	94	98	96	101	82	96	89	89	55	A	53	A	A
31	44	A	A	44	43	42	40	66	78	112	95	101	91	98	96	97	110	79	87	76	76	68	48	47
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	30	31	29	31	31	31	31	30	29	28	25	26	28	31	29	31	29	26	25	26	27
MED	46	44	43	43	42	37	43	72	85	85	88	94	92	94	96	96	91	89	81	67	52	50	48	47
U Q	48	48	46	46	43	40	46	77	88	88	95	96	96	97	98	97	96	93	86	75	54	52	50	48
L Q	43	42	40	40	38	34	40	67	78	80	86	88	89	87	88	95	87	85	77	55	49	44	44	43

HOURLY VALUES OF fEs AT Yamagawa

OCT. 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	G	G	G	G	G	G	G	25	G	31	33	43	G	55	37	32	34	44	28	35	G	G	27	30
2	26	G	G	G	G	G	G	30	35	32	34	G	G	G	32	G	G	27	G	11	32	G	G	G
3	46	28	G	G	G	G	24	26	31	34	34	G	G	G	33	32	46	34	G	40	36	30	G	G
4	G	G	G	G	G	G	G	G	31	32	33	G	G	G	G	39	43	38	34	G	G	G	G	G
5	G	G	G	G	G	G	G	32	28	32	38	44	45	G	43	35	46	51	32	51	G	G	G	G
6	G	G	G	G	G	G	G	37	34	43	34	G	G	42	G	32	30	34	25	27	30	32	G	G
7	G	G	G	G	G	G	G	28	40	51	34	G	G	57	G	41	46	48	27	29	29	G	G	G
8	G	G	G	G	G	G	G	48	36	38	47	G	50	52	G	32	49	39	40	26	44	58	52	45
9	33	35	G	G	G	G	G	48	27	32	57	G	54	G	G	G	30	33	39	50	48	G	G	G
10	G	G	G	G	G	G	G	G	26	G	34	42	44	G	G	33	31	32	32	32	G	33	G	G
11	G	28	G	G	G	G	G	26	29	41	G	G	G	34	G	32	42	40	28	G	G	34	G	G
12	32	G	G	G	G	G	G	48	28	32	G	G	G	G	50	30	54	47	44	34	37	33	27	G
13	G	29	G	G	G	G	G	28	36	35	G	34	50	50	53	58	47	56	59	31	G	46	45	28
14	G	G	24	G	G	G	G	28	34	33	G	43	36	42	34	31	33	35	33	39	48	28	G	G
15	G	G	G	G	G	B	G	G	G	31	G	G	G	G	33	33	35	G	26	G	32	40	32	G
16	G	G	G	G	G	G	G	G	29	34	33	35	G	57	54	60	51	48	51	36	39	G	G	G
17	G	G	G	G	G	G	G	24	32	30	33	G	G	G	G	31	27	28	30	G	33	G	G	G
18	24	G	G	G	G	G	G	35	35	34	34	G	G	36	G	34	34	G	33	49	46	46	33	B
19	G	G	25	G	G	G	G	G	33	32	48	G	G	G	G	G	29	G	G	G	34	31	26	G
20	29	28	G	G	G	G	G	G	36	34	34	32	G	G	35	33	34	28	27	26	G	G	G	G
21	G	28	G	G	G	G	G	32	N	39	36	35	G	G	46	34	48	36	28	33	32	G	39	40
22	34	51	G	G	G	G	G	G	36	42	61	40	G	33	C	32	36	40	38	G	G	G	G	29
23	G	G	G	27	G	27	G	24	G	32	G	G	G	G	56	56	32	32	G	G	27	28	33	G
24	G	32	37	30	G	G	G	G	36	G	35	35	G	G	G	G	34	38	32	G	28	32	G	G
25	G	G	G	30	26	G	G	G	43	52	52	42	G	113	50	40	42	G	G	40	50	49	60	43
26	35	44	26	G	G	26	G	24	44	51	37	48	61	52	30	G	42	36	36	G	G	G	G	G
27	G	G	G	G	G	G	G	24	35	40	47	44	35	34	33	30	27	G	G	G	G	G	G	46
28	30	G	G	G	G	G	G	28	34	36	48	B	G	G	G	46	39	43	51	60	57	46	33	25
29	G	B	G	G	G	G	23	G	26	33	G	G	G	G	G	31	28	G	11	G	G	32	G	27
30	G	G	G	G	G	G	G	G	30	32	33	36	48	36	36	32	34	29	G	31	39	26	31	26
31	G	72	46	34	34	G	G	G	30	45	48	46	62	49	G	30	26	G	G	G	G	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	30	31	31	30	31	31	30	31	31	30	31	31	31	31	31	31	31	31	30
MED	G	G	G	G	G	G	G	24	32	34	34	16	G	G	31	32	34	34	28	27	30	28	G	G
U Q	26	28	G	G	G	G	G	30	36	40	47	42	44	49	37	35	46	40	36	36	39	33	32	27
L Q	G	G	G	G	G	G	G	G	28	32	33	G	G	G	G	30	30	27	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Yamagawa

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

HOURLY VALUES OF foF2 AT Okinawa

OCT. 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		B		N	B	B		67	72	84	87	92	76	92	108	108	120	117	89	81	A	39	A	51
			52																					
2		67	49	51	42	B	B	67	74	95	88	87	88	87	92	128	118	119	88	73	52		B	
3	B	59	47	B		B	36	52	69	88		107	104	107	99	111	114	118	108	88	80		54	
4	53	51	52	52		B	46	88	73	75	87	106	118	129	120	115	114	110	107	88	N	58	77	67
5	72	67	N	73	42			74	81	80	92	120	133	133	108	117	107	103	87	77	A	A	51	53
6			52	47		B	B	67	80	81	102	108	115	N	123	N	N	132	111	92	80	A	48	54
7	52	53	53		32	34	34	67	78	84	78	79	88	89	106	107	112	107	88	74	54	B	48	44
8		43	50	44		32	40	66	81	96	107	108	112	109	133	123	124	120	108	104	73	53	54	B
9	A	81	79	76	46		B	67	72	102	107	B	B	118	108	102	107	116	110	107	72	50	B	54
10	52	46	59			B		82	104	88	88	84	88	108	108	117	107	108	108	86	67	44	53	N
11	B	B	B	43	B	29	B	66	96	97	105	108	107	107	110	133	132	132	107	108	87		72	B
12	A	52	B			B		72	84	87	106		106	108	107	92	108	112	107	82	76	54		58
13	49	B	47		40		44	74	82	77	83	100	100	106	107	112	109	107	90	88	77	86	59	
14	N	62	63	65	B	B	B	81	78	86	88	N	98	59	112	120	118	111	107	A	54	73	53	B
15		52			51		20	68	86	102	108	101	127	108	126	120	107	102	86	73	77	49	53	B
16	B	52	B	B	B		N	66	86	82	93	112	110	129	132	131	118	108	88	86	N	53	52	
17	46	52	44	43	53	B	30	77	70	92	107	124	108	120	129	129	119	107	107	79	54	53		B
18		62			B		36	77	88	108	121	131	109	112	N	126	120	116	84	44	57	63		B
19	34	B	39	39	30		B	64	77	84	79	108	108	89	129	129	126	94	88	A	77	59	62	61
20	44	52	B	B	39	B	32	74	93	100	102	108	118	N	130	133	96	116	108	88	52	65	53	57
21	52	52	51			N	B	64	90	93	112	120	N	134	N	69	134	132	113	86	87	86	B	86
22		73	72	52	A		47	77	88	97	108	106	120	109	121	118	108	88	88		54	72	54	
23	50		39		28	B	B	73	102	96	92	103	127	130	109	128	128	120	107	N	88	63	39	
24	67	59	B	N	B	B	B	66	92	69	104	N	106	107	119	94	108	116	99	83	79	73	53	B
25	50	48	33	B	43		31	73	90	96	106	106	B	107	122	121	116	82	88	78	54	76	73	67
26	52	52	39	49	B	B	B	71	88	95	90	104	110	110	115	118	109	112	105	69	69	53	49	B
27	46	B			B	B	B	66	88	94	100	107	108	120	130	132	121	110	109	79	89	87	97	54
28	66	54	B	B			B	66	85	87	87	B	107	110	108	107	107	88	73	81	54	83	51	66
29	52	52	37	37	B	B	B	64	80	86	114	109	104	107	118	118	122	110	107	84	73	87		
30	53	74	39	B	B	B		76	86	82	88	100	107	130	109	134	131	132	109	99	N	79		52
31		53	A	A	A		C	67	76	103	109	108	88	102	123	108	108	107	101	84	82	79	52	53
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	24	20	13	11	3	11	31	31	31	30	26	28	29	29	30	30	31	31	27	26	25	22	15
MED	52	52	50	49	42	32	36	67	84	88	101	107	108	108	115	118	115	111	107	84	73	63	53	54
U Q	53	62	52	58	46	34	44	74	88	96	107	108	113	120	124	128	121	118	108	88	80	79	59	66
L Q	47	52	39	43	32	29	31	66	77	84	88	101	102	106	108	108	108	107	88	78	54	53	51	53

HOURLY VALUES OF fEs AT Okinawa

OCT. 2013

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

HD	00	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	B	G	G	B	B	G	G	45	G	G	G	G	G	G	G	G	38	40	G	28	G	43	G
2	G	G	G	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	B	G
3	B	G	G	B	G	B	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G
4	G	G	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	37	58	G	G	G	G	G
5	G	G	G	29	G	G	G	G	G	G	G	G	G	G	G	G	G	42	40	30	40	27	G	G
6	G	G	G	G	G	B	B	G	26	G	G	G	G	G	G	G	G	G	33	G	G	25	40	G
7	G	G	G	G	G	G	G	34	53	70	55	G	50	G	G	G	G	42	35	G	25	B	G	G
8	G	G	G	G	G	G	G	26	27	50	G	52	G	G	G	G	G	G	58	G	G	G	G	B
9	40	43	37	G	G	G	B	26	34	G	G	B	B	G	G	G	G	G	35	52	40	G	B	G
10	G	G	G	G	G	B	G	G	G	38	G	G	G	G	G	G	G	35	G	G	G	G	G	G
11	B	B	B	G	B	G	B	G	G	G	G	G	G	G	G	G	36	41	G	G	G	G	G	B
12	34	G	B	G	G	B	G	G	G	G	G	G	G	G	G	G	52	49	38	28	51	27	G	G
13	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	35	G	G	G	36	26	G
14	G	G	G	G	B	B	B	G	40	G	G	G	G	G	G	G	66	53	50	57	39	34	G	B
15	G	G	G	G	G	G	G	G	G	G	G	G	G	48	G	53	34	36	26	60	28	G	28	B
16	B	G	B	B	B	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	G	G	G
17	G	G	G	G	G	B	G	G	26	30	G	G	G	G	G	G	G	61	G	49	G	G	G	B
18	G	G	G	G	B	G	G	G	27	G	G	G	G	G	G	G	G	G	45	48	40	G	G	B
19	G	B	G	G	G	G	B	25	27	G	G	G	G	G	G	G	G	G	G	53	G	G	G	G
20	G	G	B	B	G	B	G	G	G	G	G	G	G	G	G	G	G	25	G	G	G	G	G	G
21	G	G	G	G	G	G	B	35	35	G	G	G	G	G	G	G	G	56	32	35	G	G	B	G
22	G	G	G	G	26	G	G	G	G	G	G	G	52	51	77	53	41	44	G	G	G	G	G	G
23	G	G	G	G	G	B	B	G	G	G	G	48	G	61	G	G	G	G	G	G	26	G	G	G
24	G	G	B	G	B	B	B	G	G	G	G	G	G	G	G	G	30	G	G	G	G	G	G	B
25	G	G	G	B	G	G	G	25	44	41	G	G	B	G	G	G	40	G	G	G	G	G	G	G
26	G	G	G	G	B	B	B	G	G	46	52	51	G	G	G	43	G	G	28	G	G	G	G	B
27	G	B	G	G	B	B	B	G	G	G	G	G	G	G	G	G	G	35	44	G	G	G	G	G
28	G	G	B	B	G	G	B	G	29	G	G	B	G	G	G	51	G	43	25	G	G	G	25	G
29	G	G	G	G	B	B	B	G	G	G	G	G	G	G	G	G	G	G	G	33	G	G	G	G
30	G	G	G	B	B	B	G	G	G	G	G	G	G	G	G	G	30	45	56	G	G	G	G	G
31	G	G	35	34	27	G	C	G	G	G	G	G	G	G	G	G	52	34	G	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	26	25	25	21	15	17	31	31	31	30	29	29	31	31	31	31	31	31	31	31	30	28	23
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	35	25	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	27	G	G	G	G	G	G	G	30	42	40	33	26	G	G	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

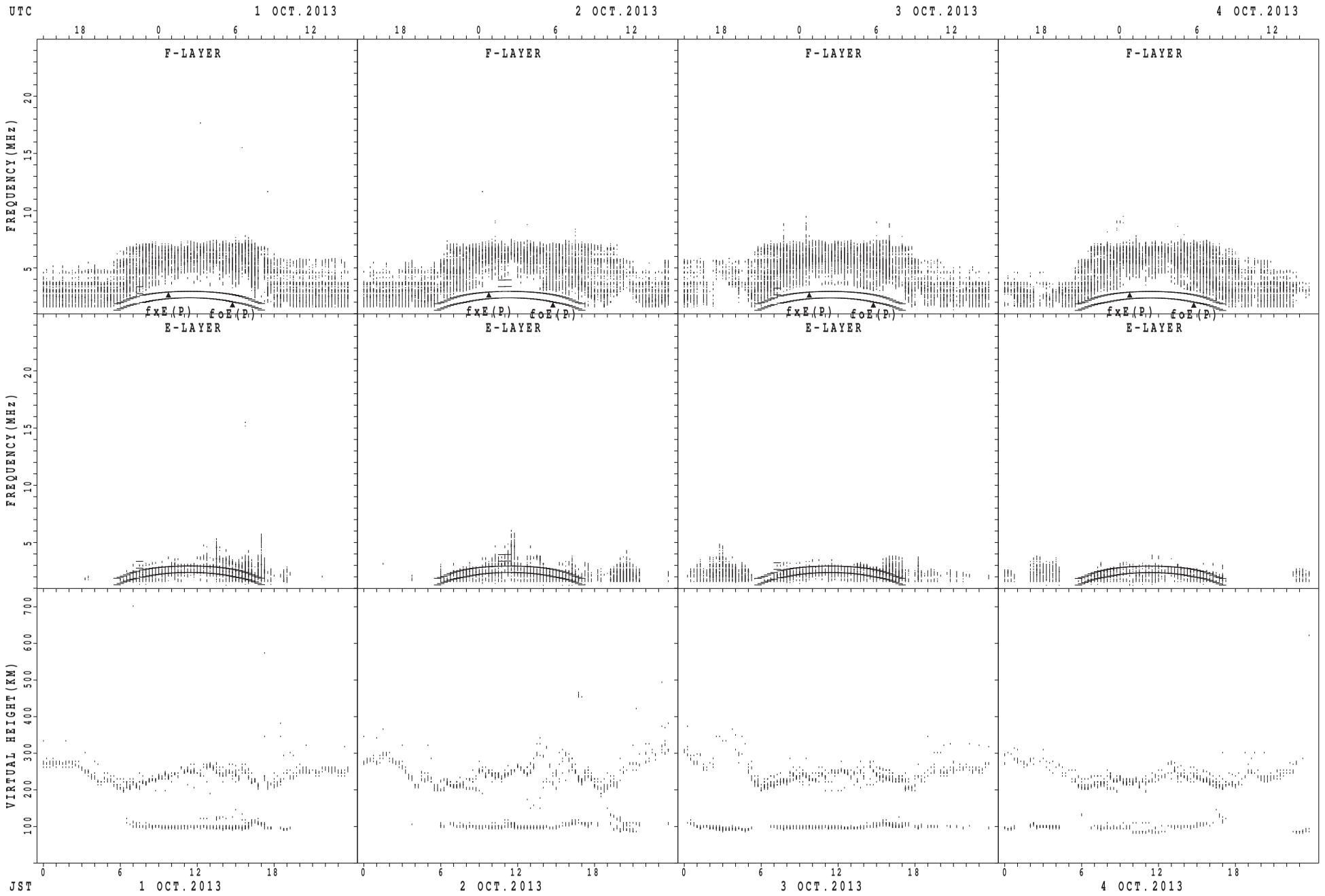
HOURLY VALUES OF fmin AT Okinawa

OCT. 2013

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

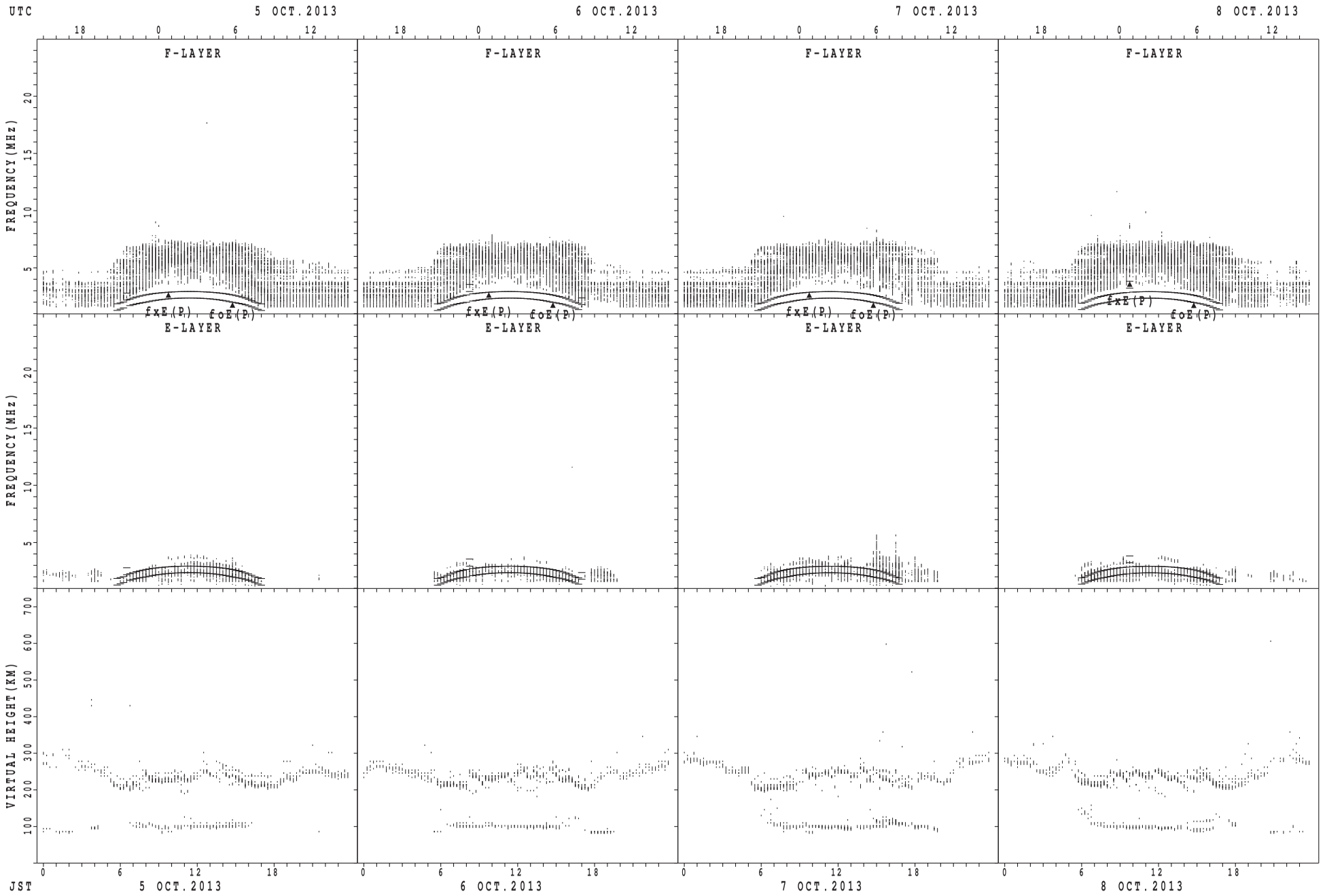
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	B	15	41	B	B	66	27	27	60	48	62	54	54	54	52	43	30	18	21	18	42	18	22
2	18	52	20	18	17	B	B	28	33	43	52	47	61	72	66	46	40	36	23	20	42	71	B	81
3	B	40	15	B	27	B	21	29	42	45		50	52	70	63	46	44	39	26	17	22	71	18	20
4	43	40	42	43	81	B	20	27	39	44	54	59	58	55	72	54	40	18	17	27	21	22	39	44
5	45	21	17	16	20	66	66	27	39	40	52	50	59	50	53	55	43	26	18	14	17	20	39	45
6	71	71	43	18	18	B	B	28	18	44	53	47	64	54	64	44	40	33	16	18	40	81	15	51
7	21	44	17	18	15	18	18	22	29	40	42	46	42	50	54	53	42	21	17	17	17	B	15	18
8	66	21	21	15	71	21	21	28	20	36	54	43	54	62	54	50	39	36	17	22	26	45	21	B
9	15	16	15	21	23	18	B	27	20	53	40	B	B	55	59	42	39	38	17	20	16	42	B	49
10	48	18	20	21	27	B	66	28	39	22	46	53	58	54	45	42	40	21	32	24	21	21	39	43
11	B	B	B	15	B	17	B	28	40	43	53	68	58	61	56	44	21	26	24	33	26	71	21	B
12	17	21	B	66	28	B	66	30	38	44	43	101	59	53	72	44	40	23	18	17	20	17	66	16
13	42	B	17	66	15	66	21	26	30	18	60	52	60	55	54	46	42	20	20	46	15	16	16	44
14	42	43	44	43	B	B	B	28	20	42	47	52	54	53	50	44	21	18	17	20	17	18	24	B
15	81	42	81	66	21	21	15	23	43	44	47	46	48	55	50	39	26	21	16	23	17	30	43	B
16	B	43	B	B	B	66	17	28	40	42	56	52	54	53	60	40	43	18	21	20	21	18	81	66
17	18	30	21	22	22	B	18	24	18	41	56	56	52	54	51	43	40	21	20	20	18	24	42	B
18	38	20	66	81	B	66	17	39	18	40	42	66	62	52	52	44	40	36	26	42	20	20	81	B
19	21	B	22	24	20	27	B	16	21	41	53	46	56	70	42	54	39	29	22	20	40	46	43	44
20	66	42	B	B	43	B	20	36	39	44	50	60	55	58	52	47	39	18	21	41	17	18	23	40
21	40	42	40	66	26	66	B	21	39	43	44	52	58	63	48	40	40	18	18	18	44	74	B	43
22	21	28	41	39	66	31	20	36	40	42	55	53	42	41	30	27	22	18	21	71	41	22	43	81
23	40	71	23	71	20	B	B	22	40	43	43	44	53	42	54	53	42	27	23	20	40	23	24	66
24	17	41	B	17	B	B	B	26	39	61	49	44	49	53	53	50	22	27	18	20	20	18	40	B
25	81	20	20	B	22	66	20	17	17	42	46	44	B	56	52	45	28	69	38	40	47	52	42	17
26	23	27	39	40	B	B	B	26	34	28	39	41	54	54	48	45	40	29	17	24	70	17	26	B
27	21	B	66	71	B	B	B	29	36	44	44	54	53	60	49	42	38	20	28	41	21	20	20	20
28	42	44	B	B	44	18	B	27	18	40	46	B	54	52	70	38	39	17	17	20	42	18	18	16
29	42	38	15	18	B	B	B	26	38	42	49	49	51	53	59	50	42	29	27	17	17	21	41	18
30	45	29	44	B	B	B	71	43	38	40	42	50	49	54	59	45	21	18	15	41	21	40	81	40
31	66	22	15	17	17	66	C	28	32	41	43	49	56	54	43	45	28	18	20	20	20	18	20	21
	00	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	26	25	25	21	15	17	31	31	31	30	29	29	31	31	31	31	31	31	31	31	30	28	23
MED	41	39	21	24	22	31	20	27	36	42	48	50	54	54	54	45	40	23	20	20	21	22	32	43
U Q	46	43	42	66	35	66	66	28	39	44	53	55	58	58	59	50	42	30	23	33	40	45	42	49
L Q	21	21	17	18	19	18	18	26	20	40	43	46	52	53	50	42	28	18	17	20	17	18	20	20

SUMMARY PLOTS AT Wakkanai

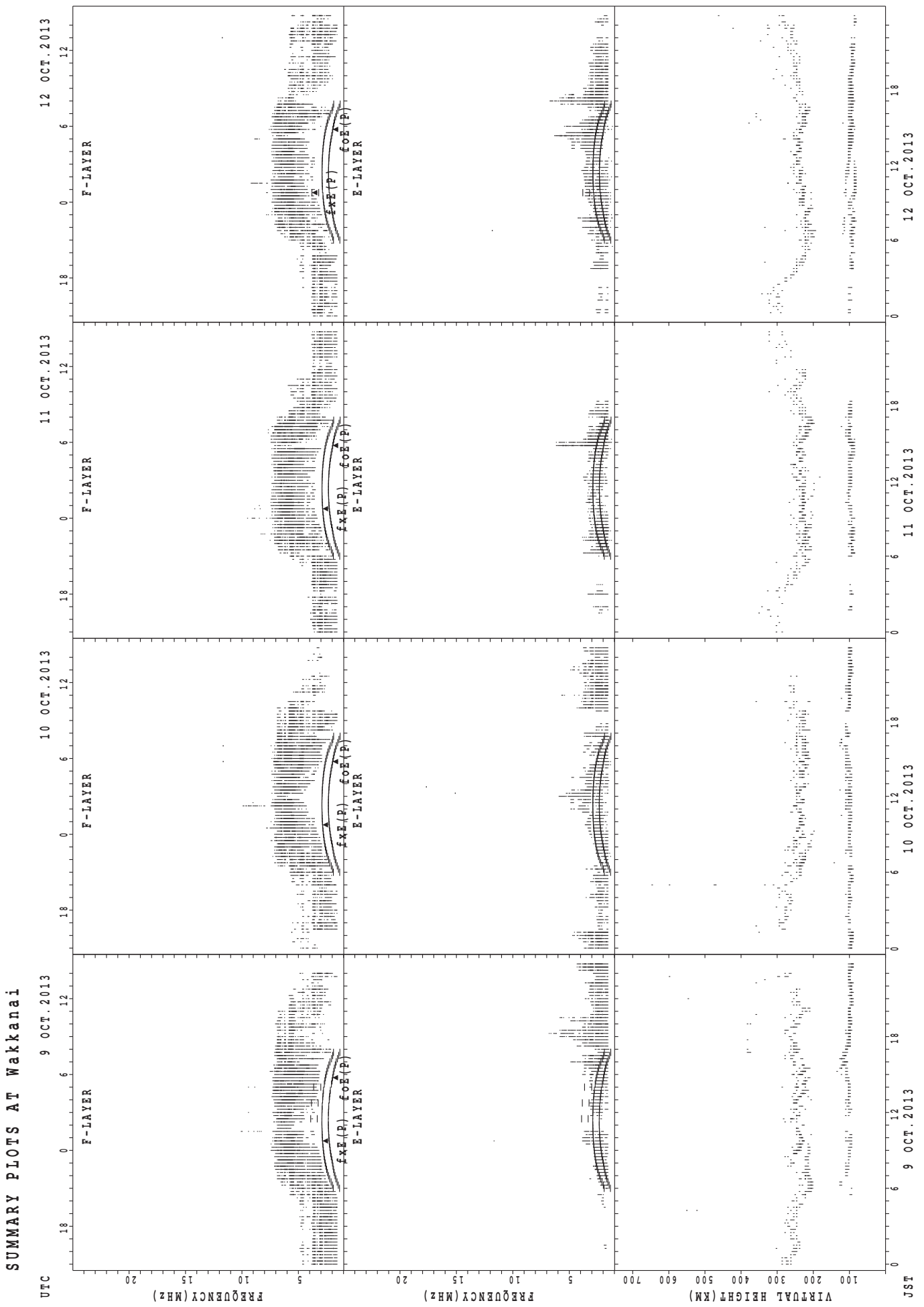


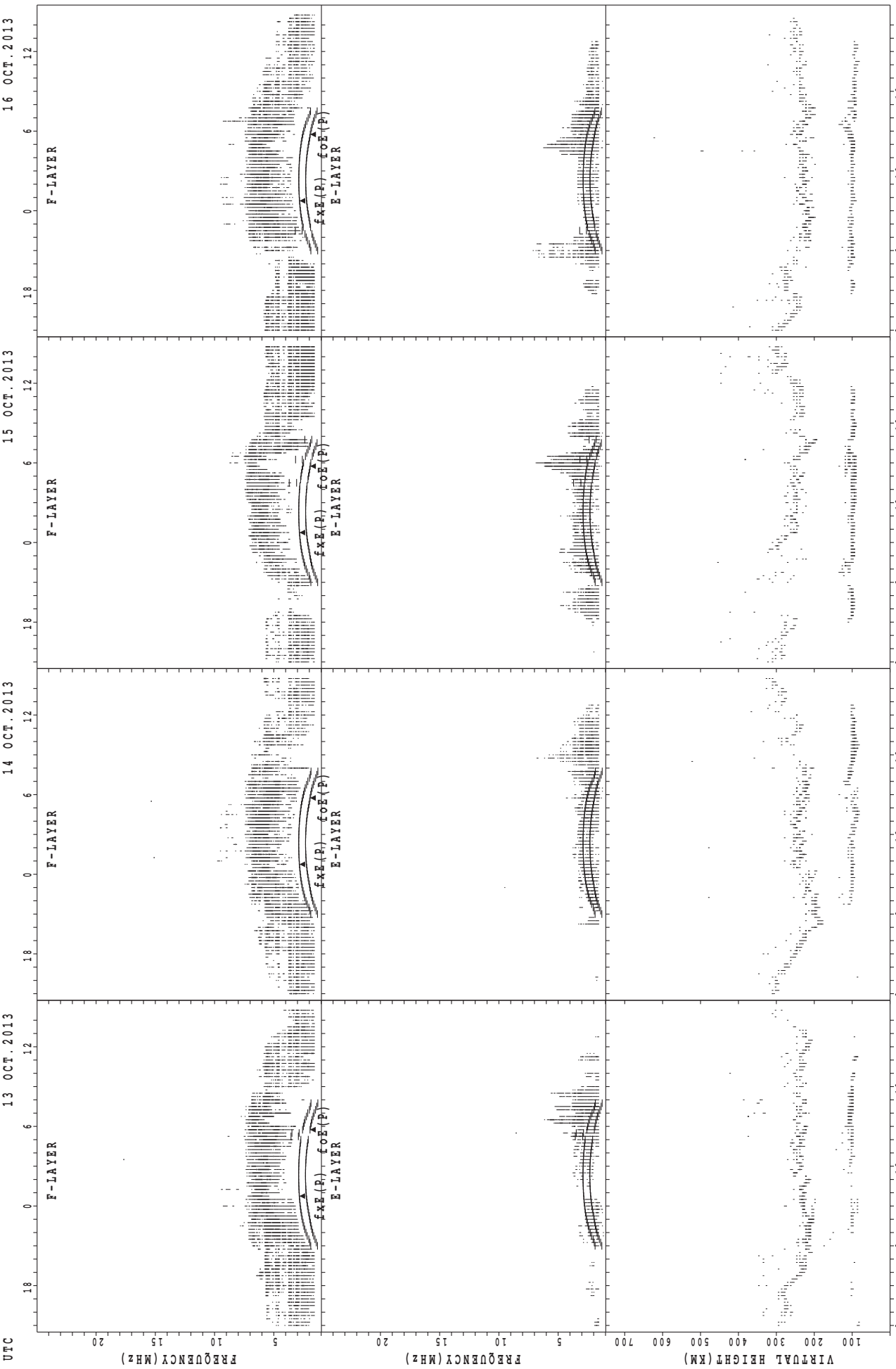
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

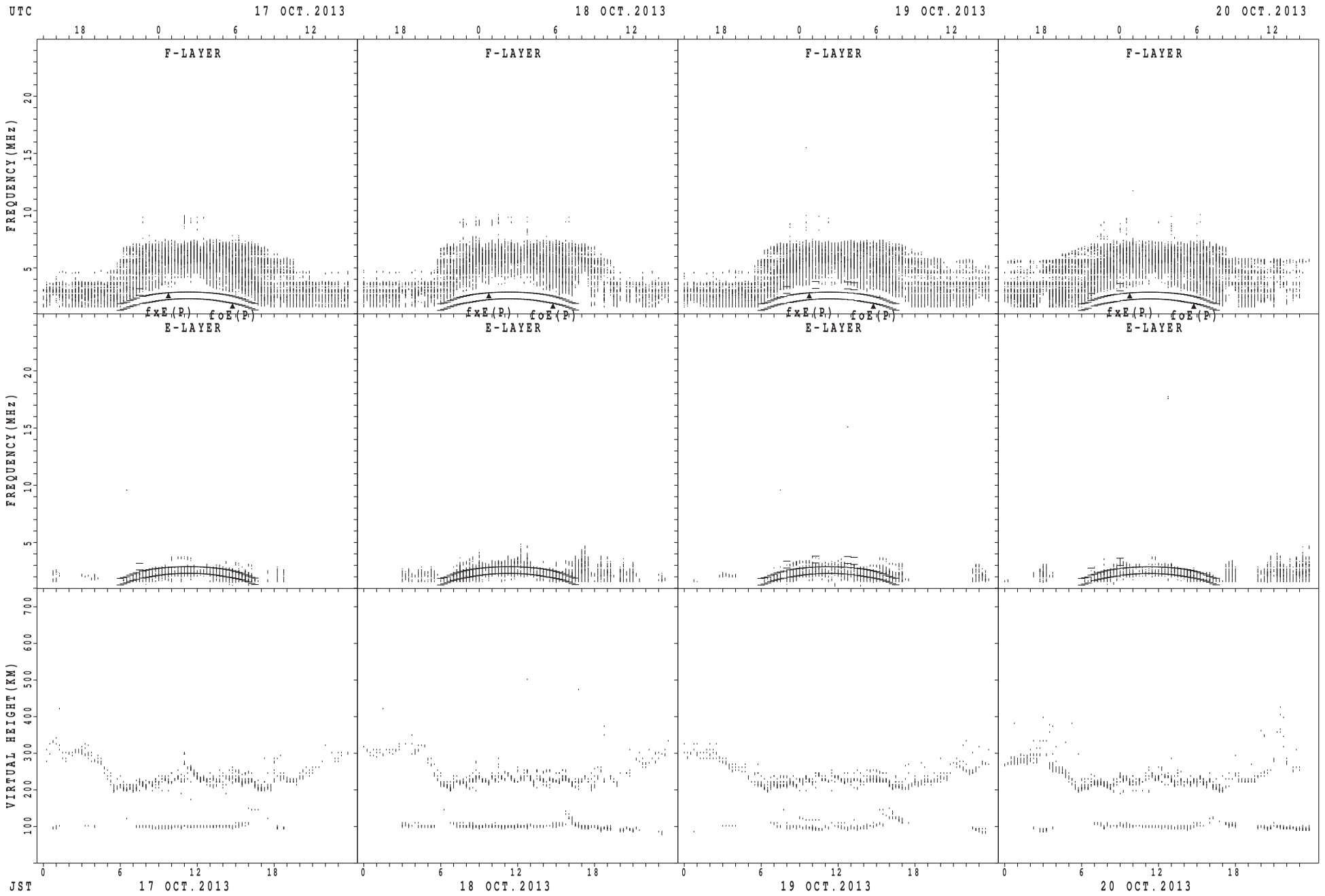


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

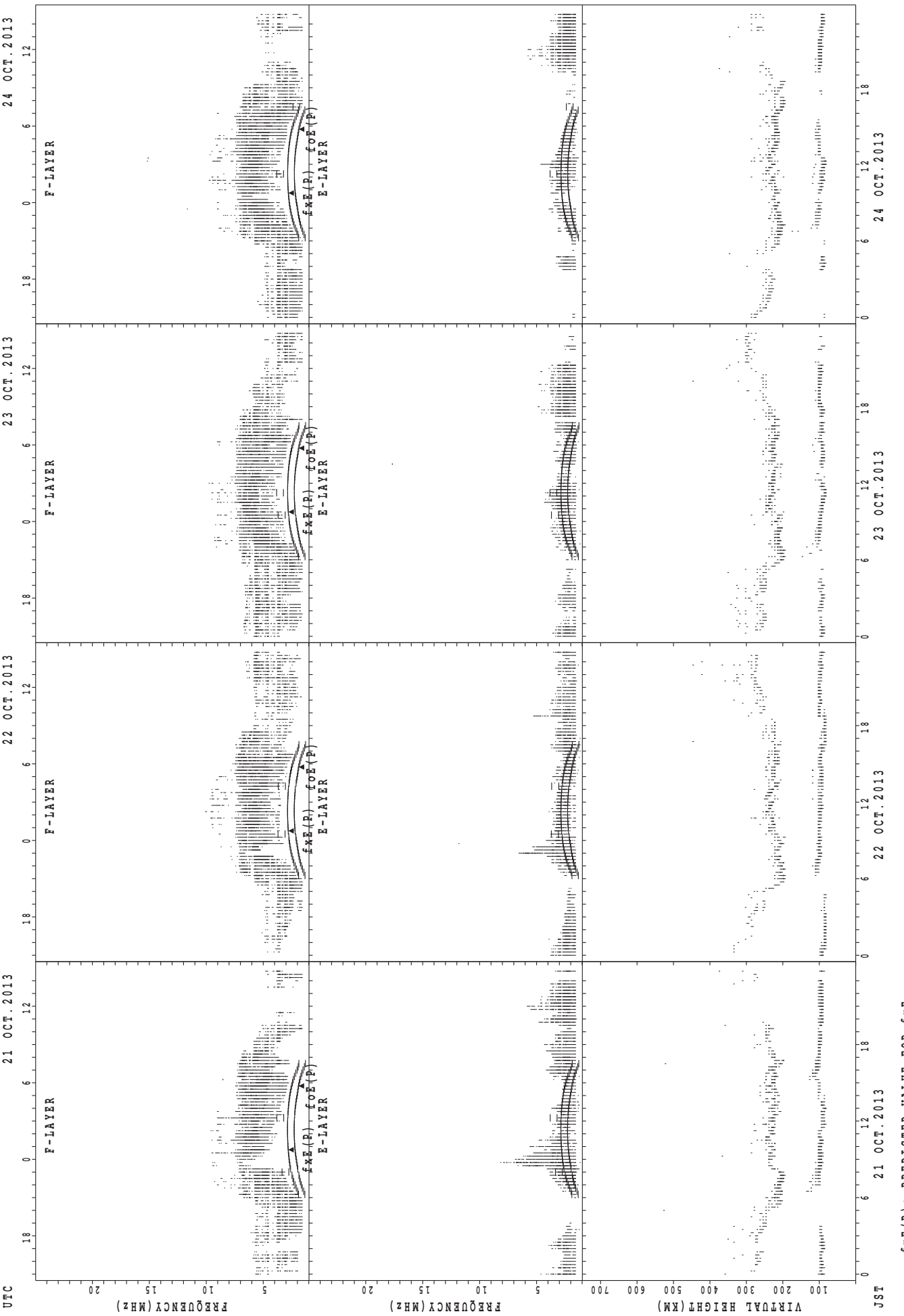

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 OCT.2013
10 OCT.2013
11 OCT.2013
12 OCT.2013
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
13 OCT.2013
14 OCT.2013
15 OCT.2013
16 OCT.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

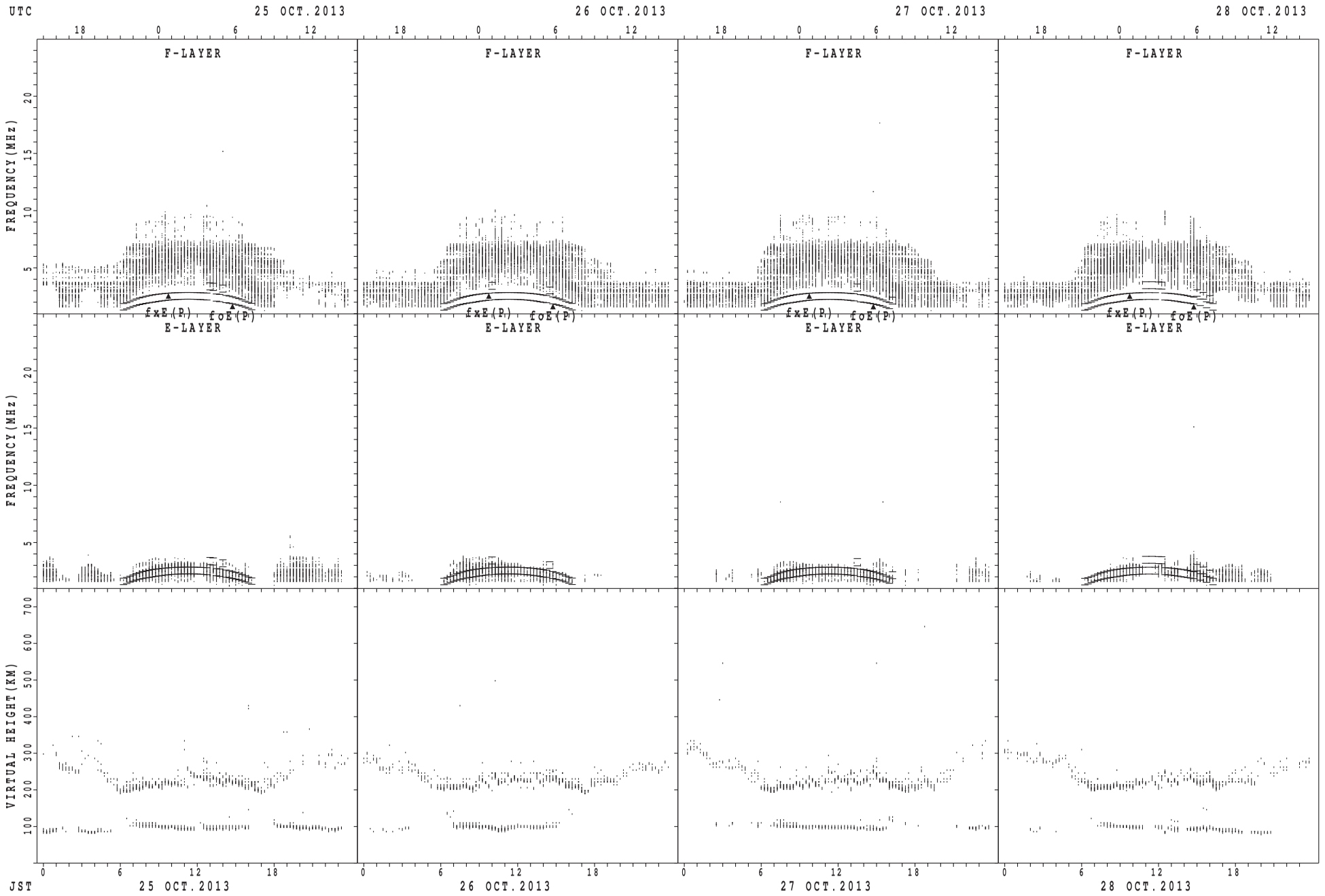
SUMMARY PLOTS AT Wakkanai



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

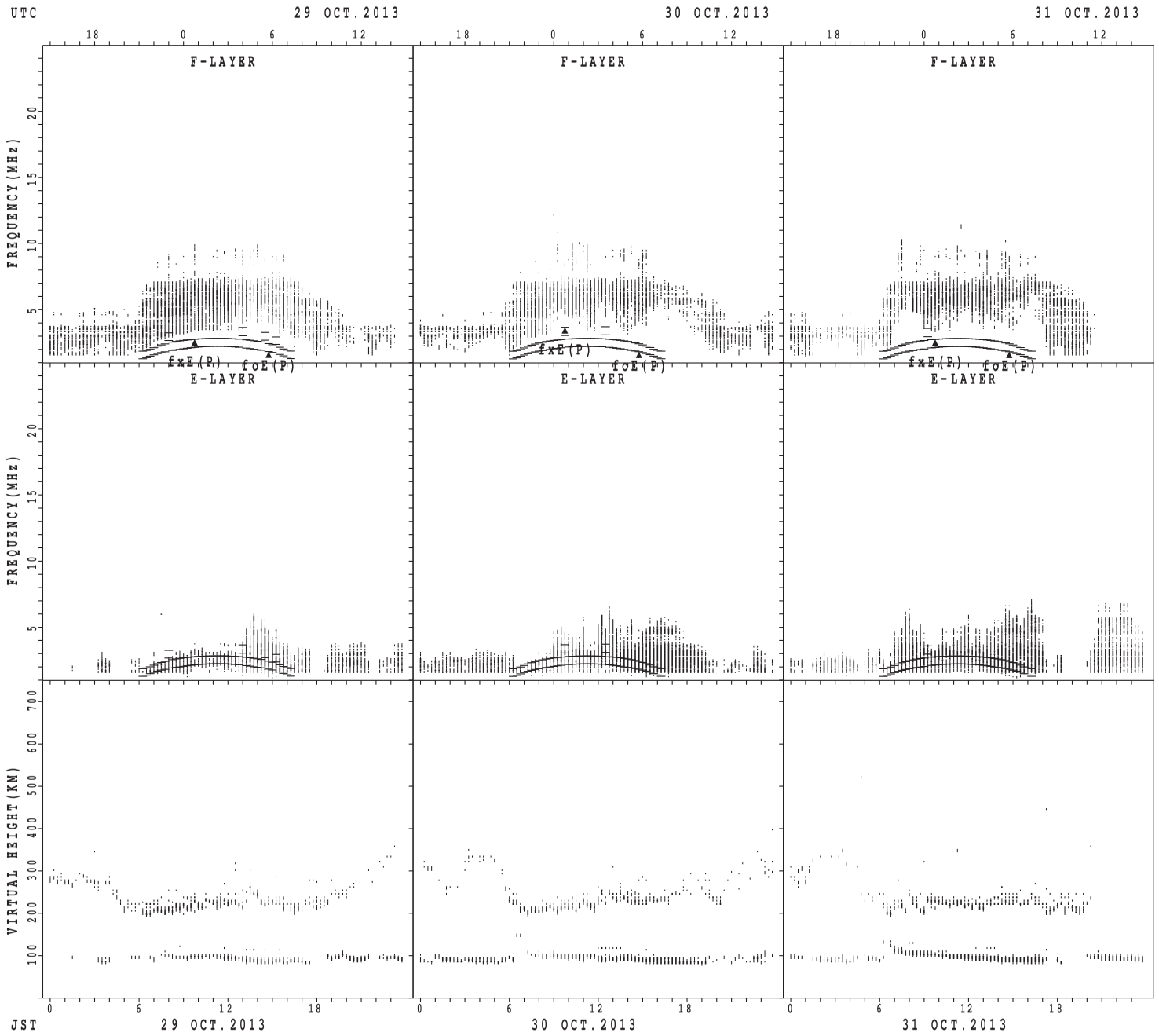

SUMMARY PLOTS AT Wakkanai
UTC
JST
21 OCT.2013
22 OCT.2013
23 OCT.2013
24 OCT.2013
F-LAYER
E-LAYER
fxE(P), foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



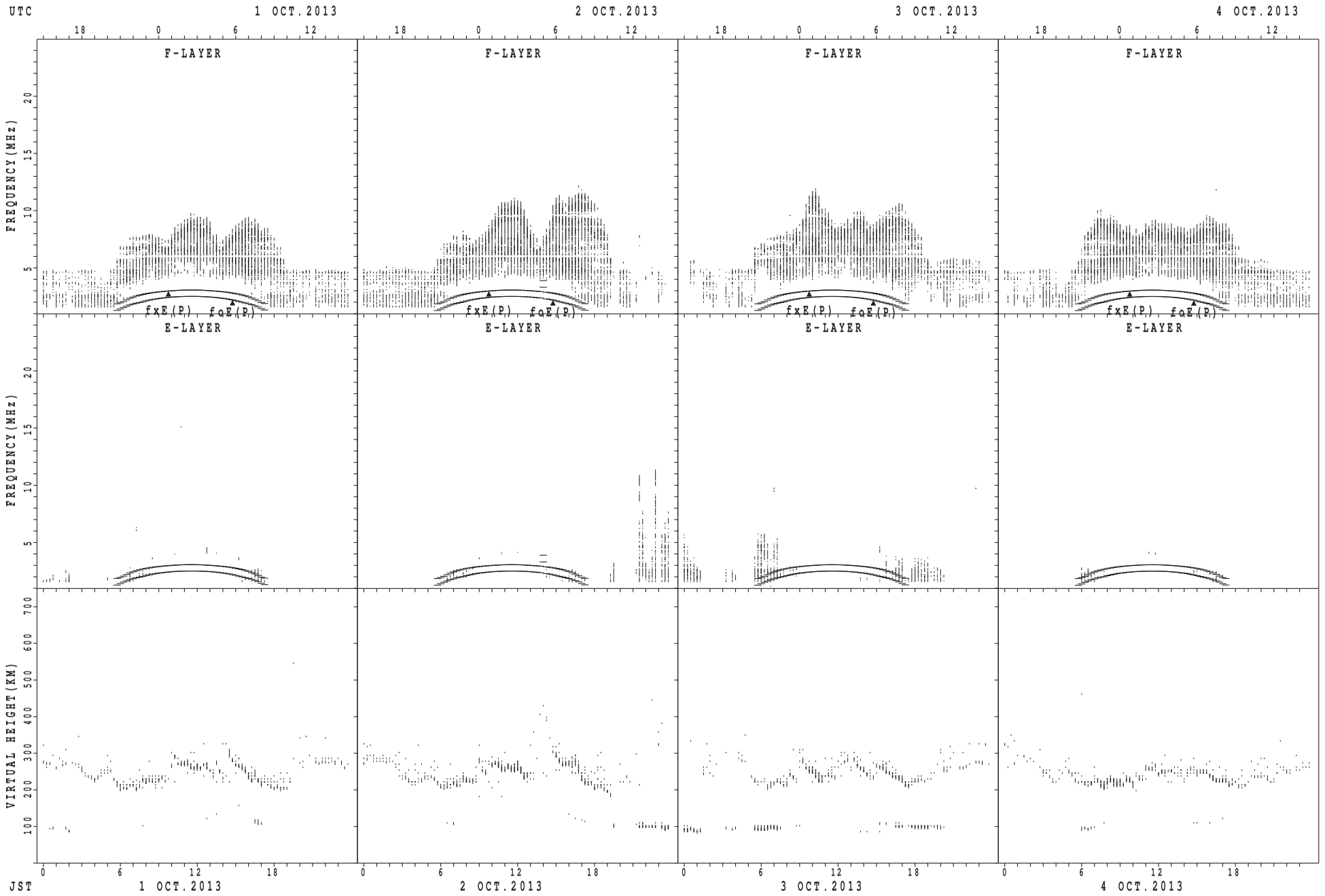
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



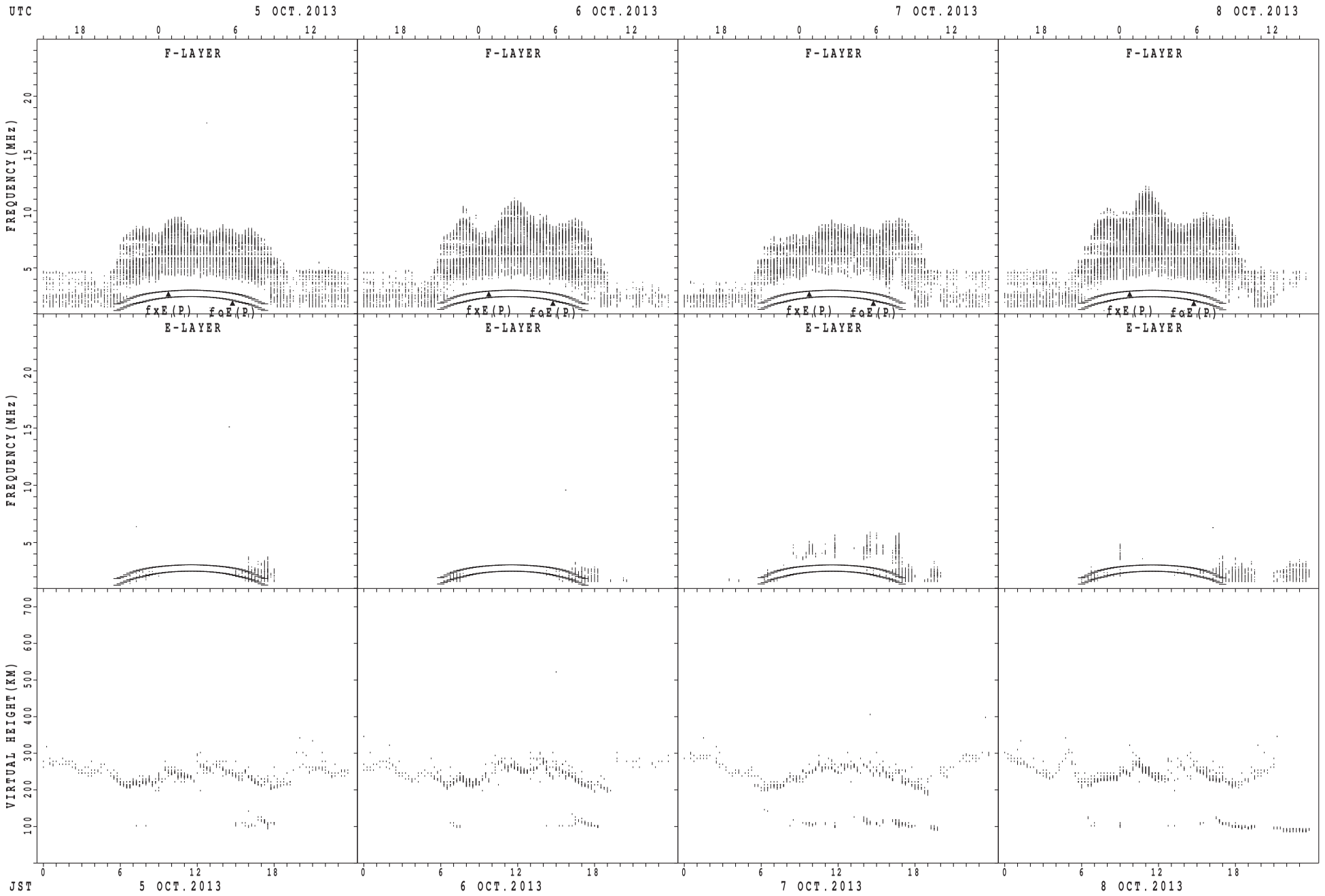
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



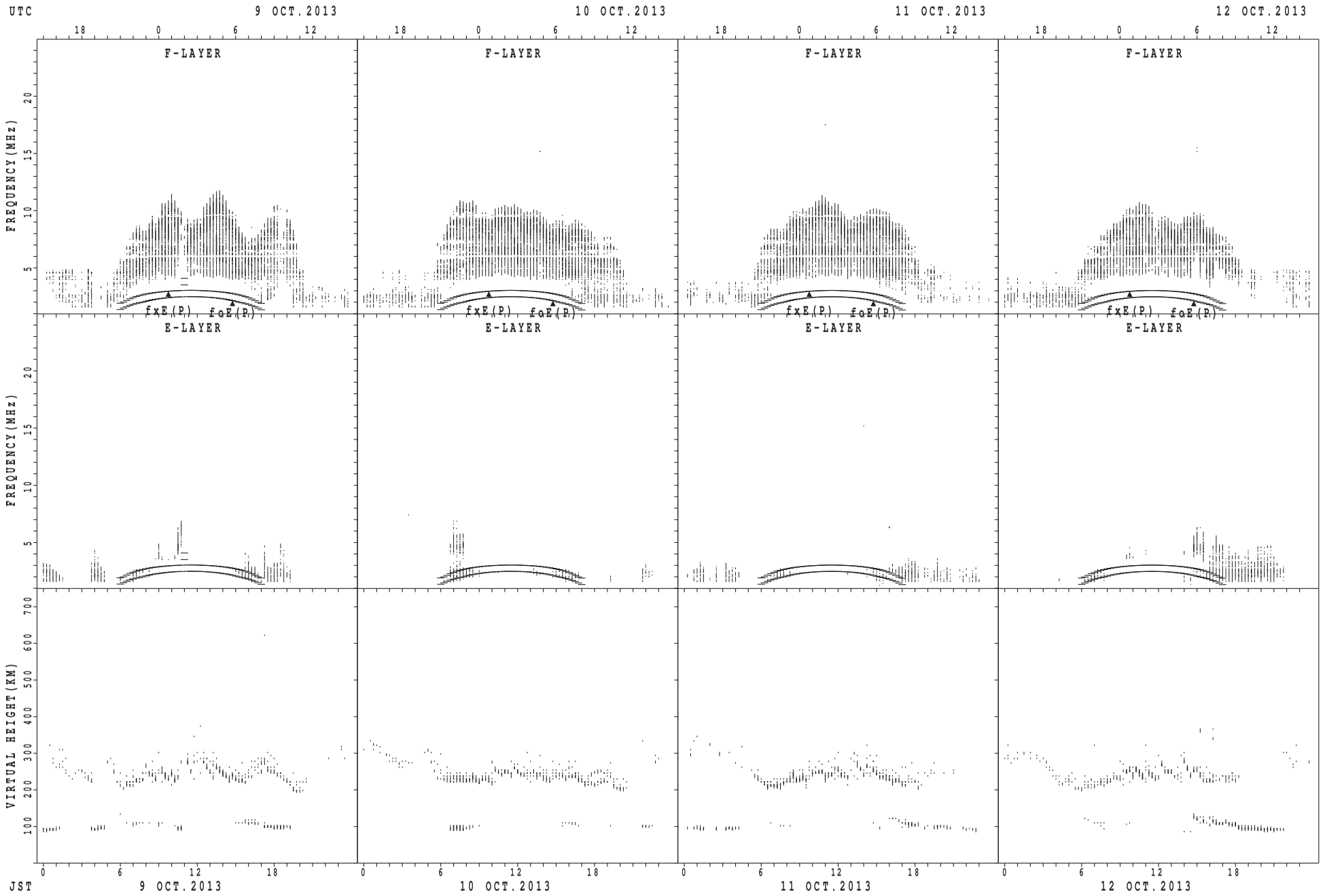
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



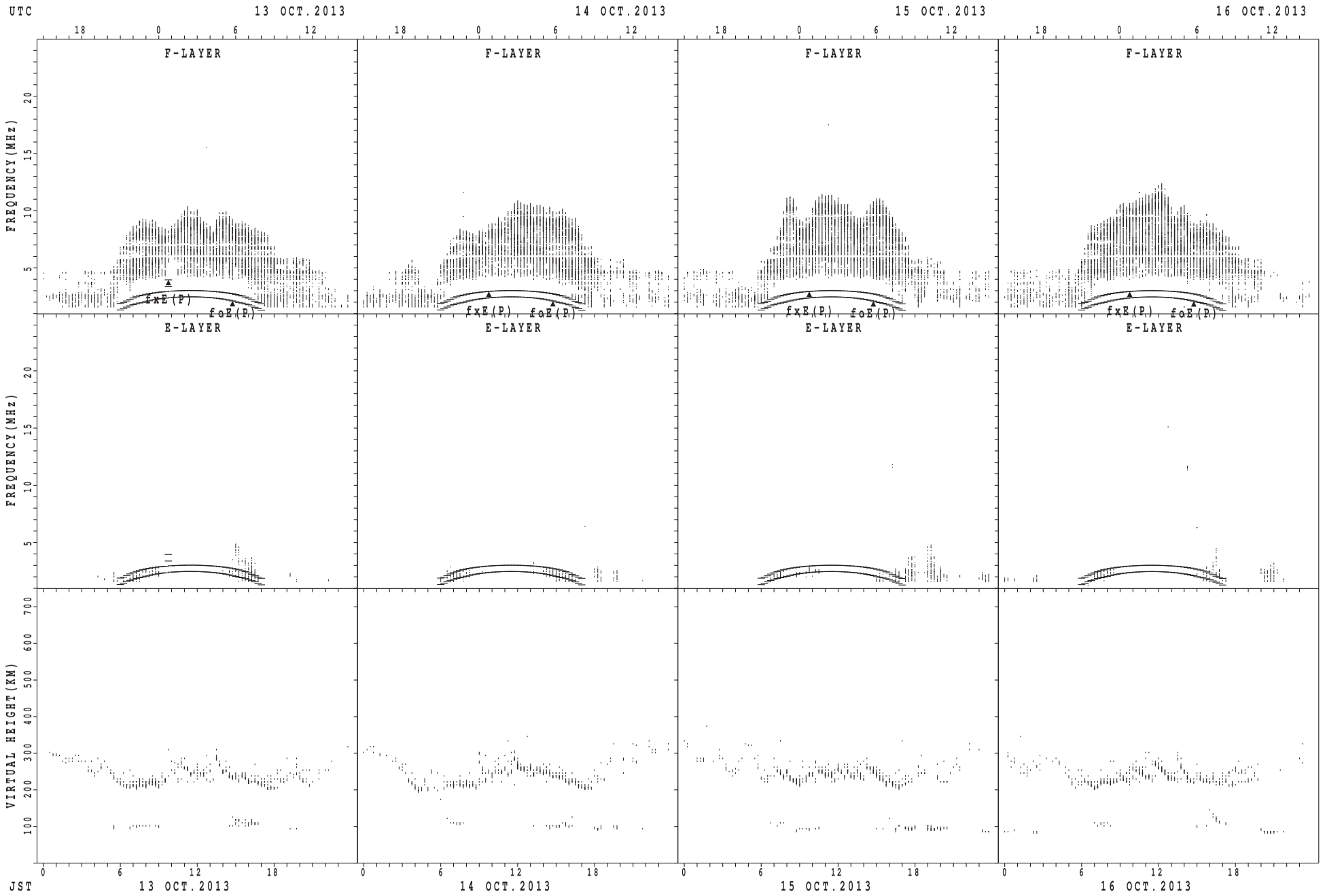
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



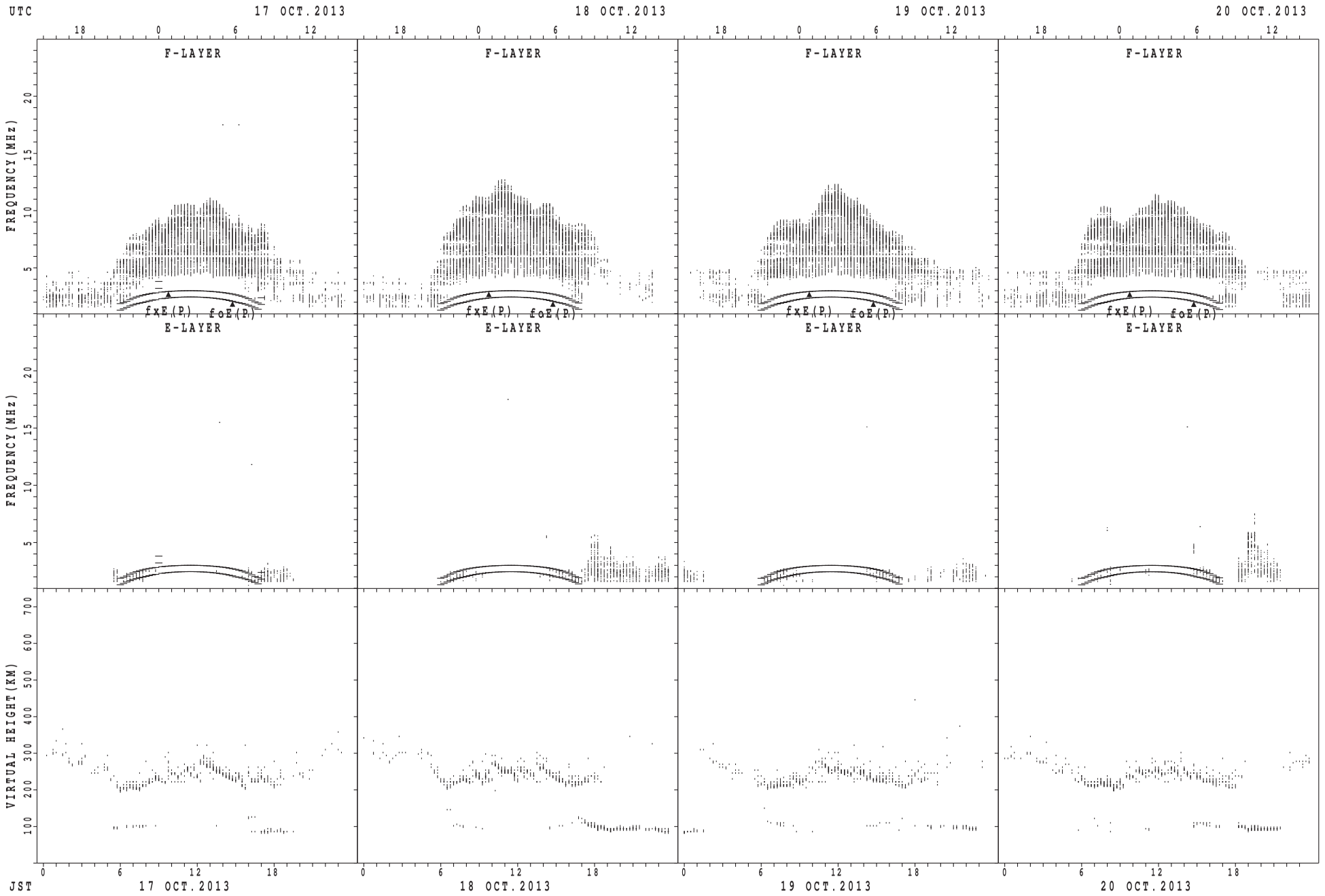
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



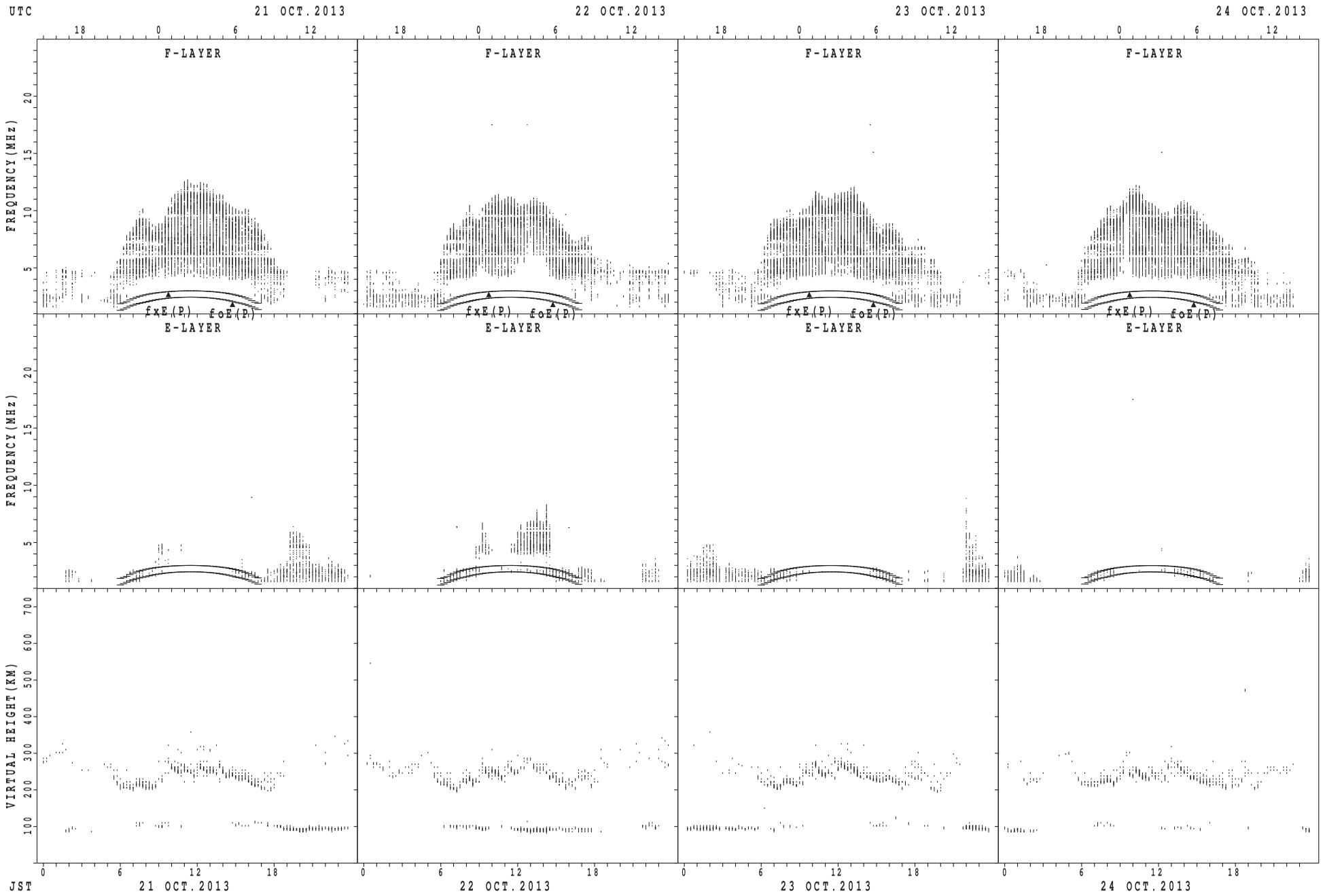
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



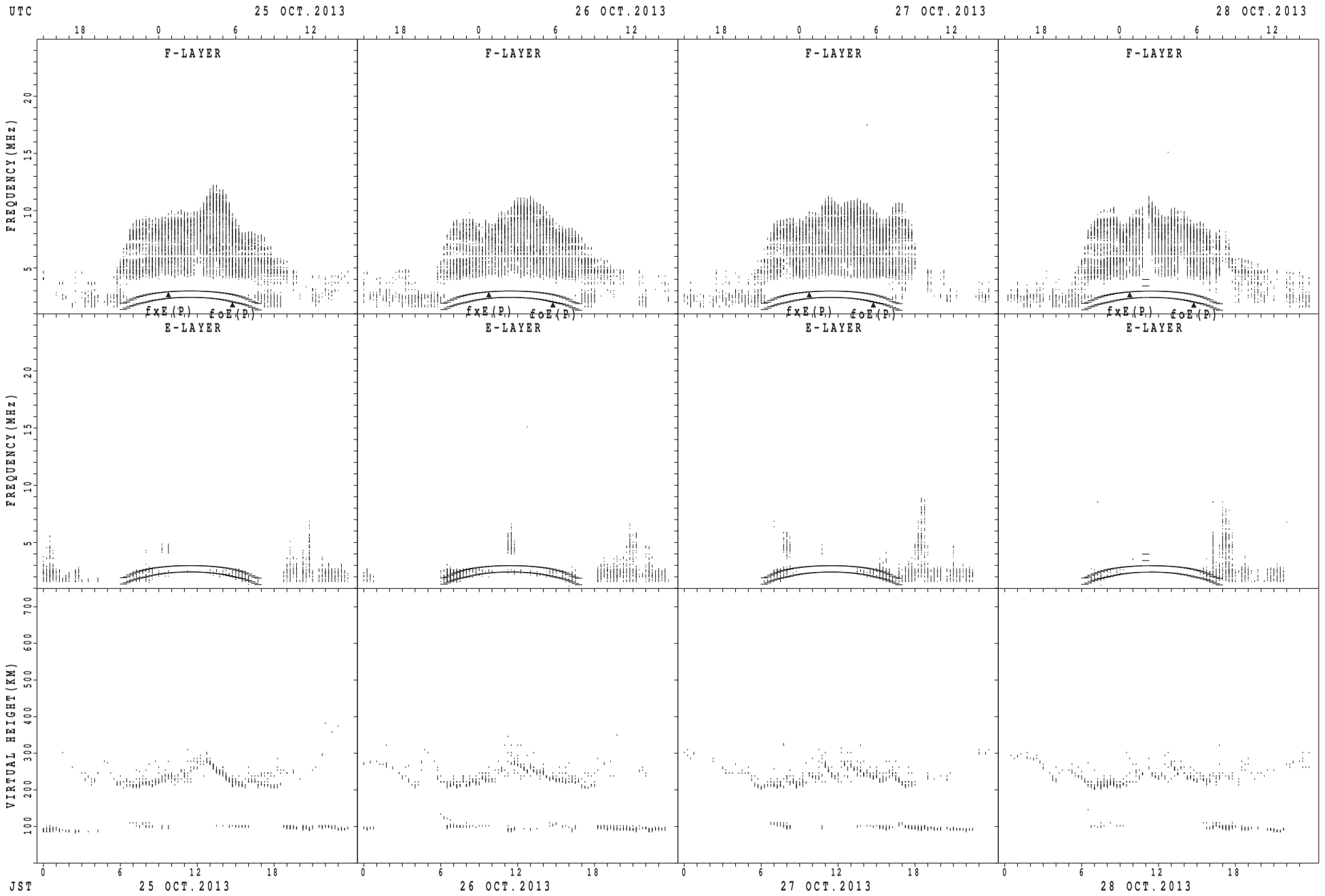
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



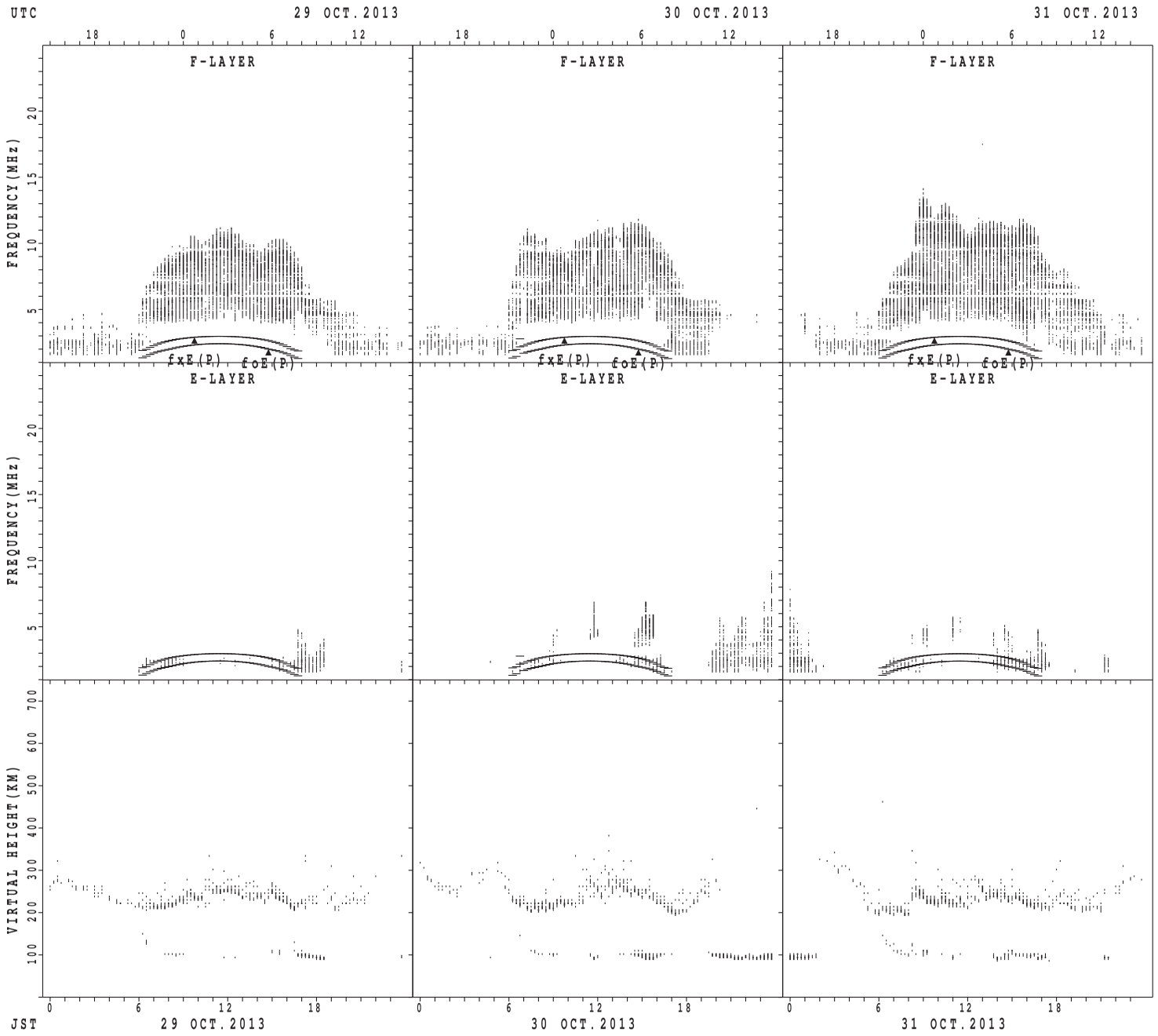
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



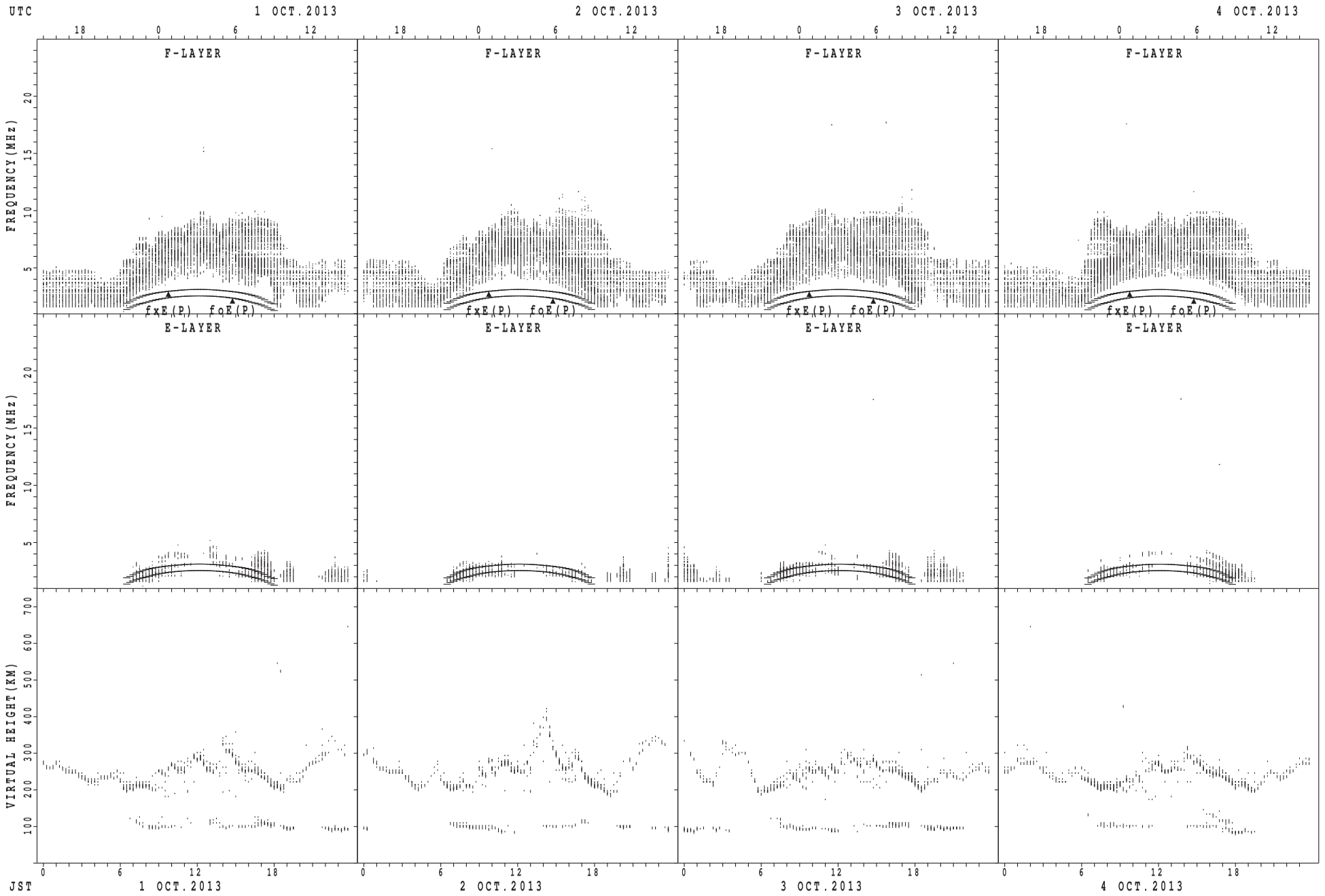
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

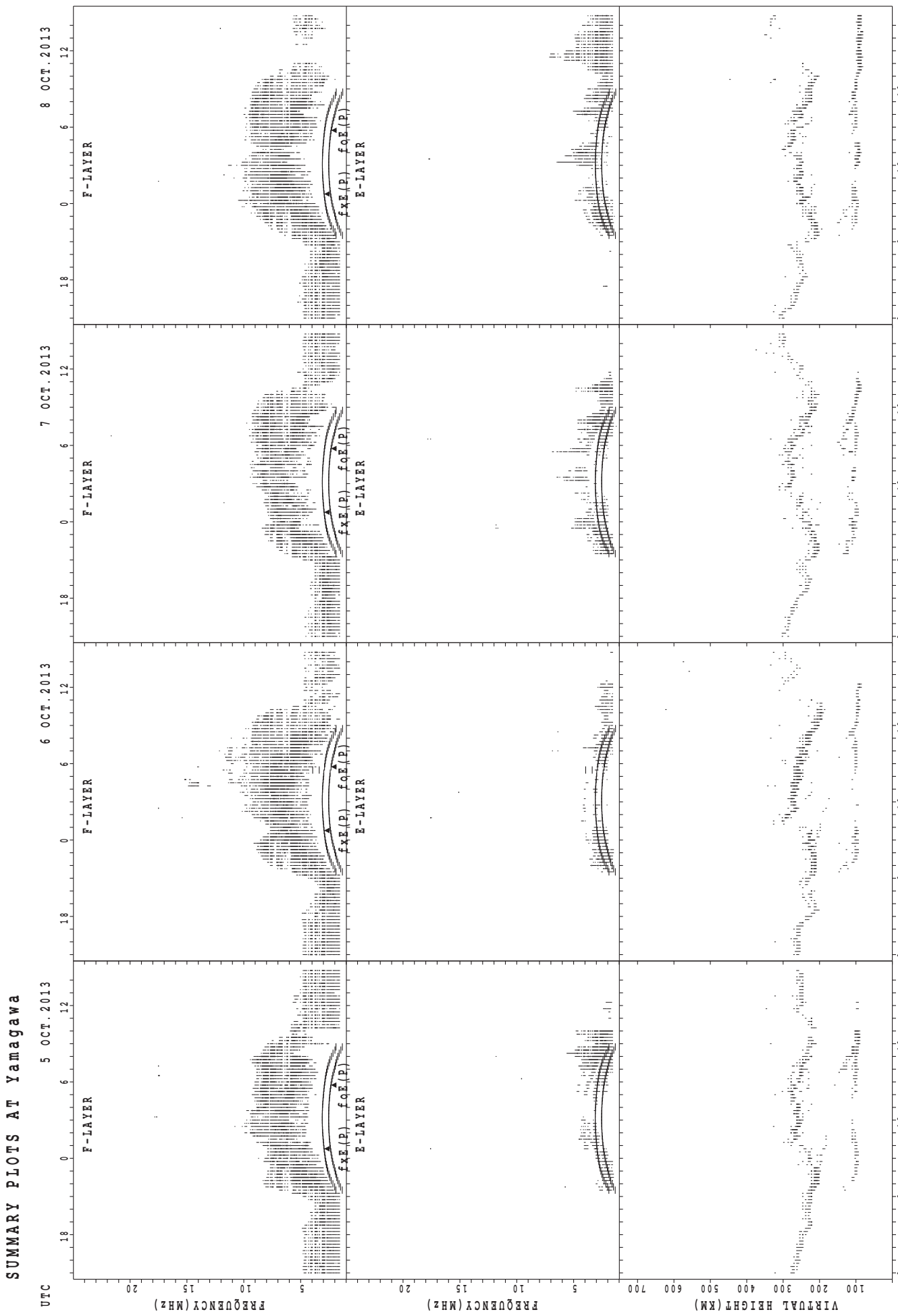


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

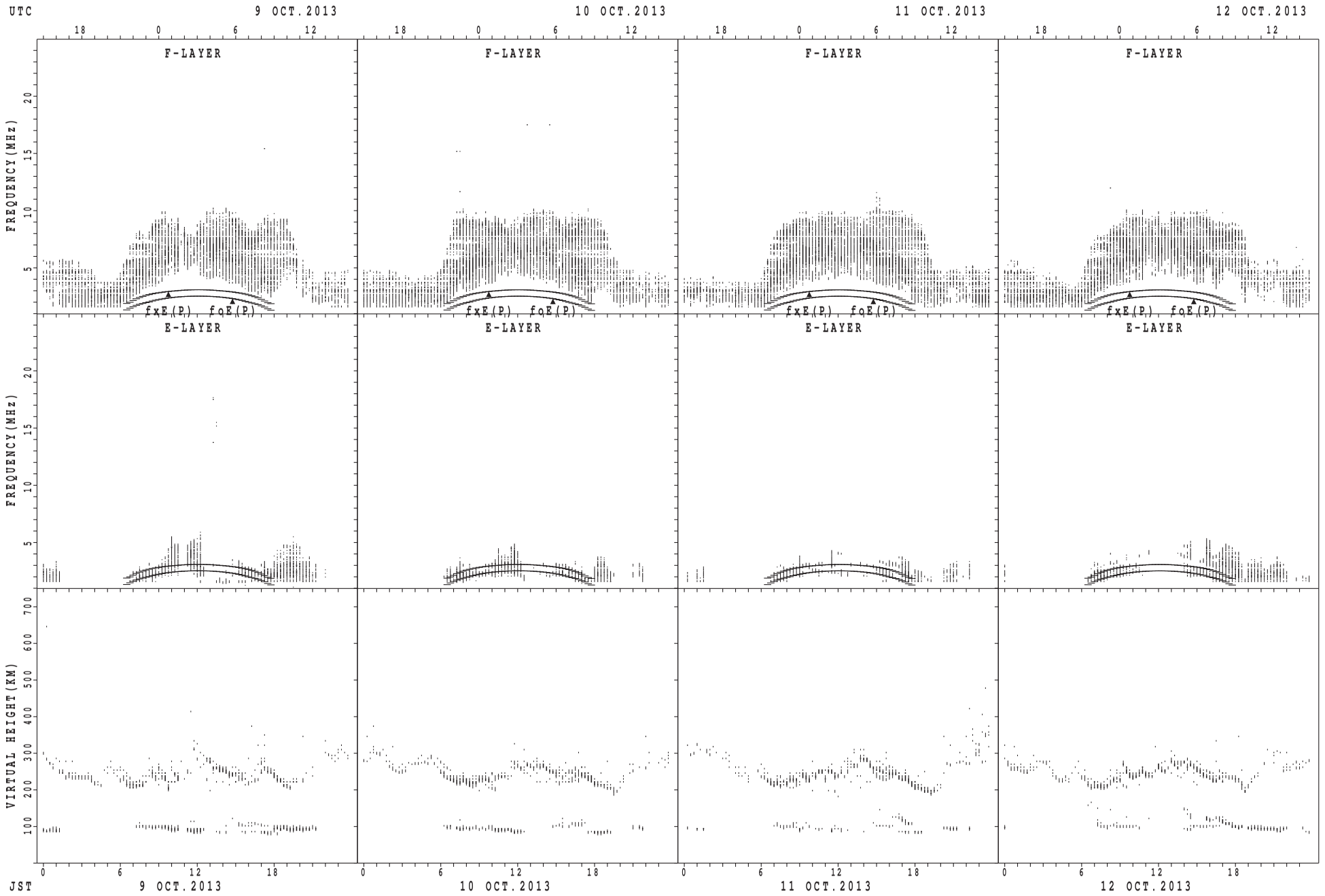
SUMMARY PLOTS AT Yamagawa



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

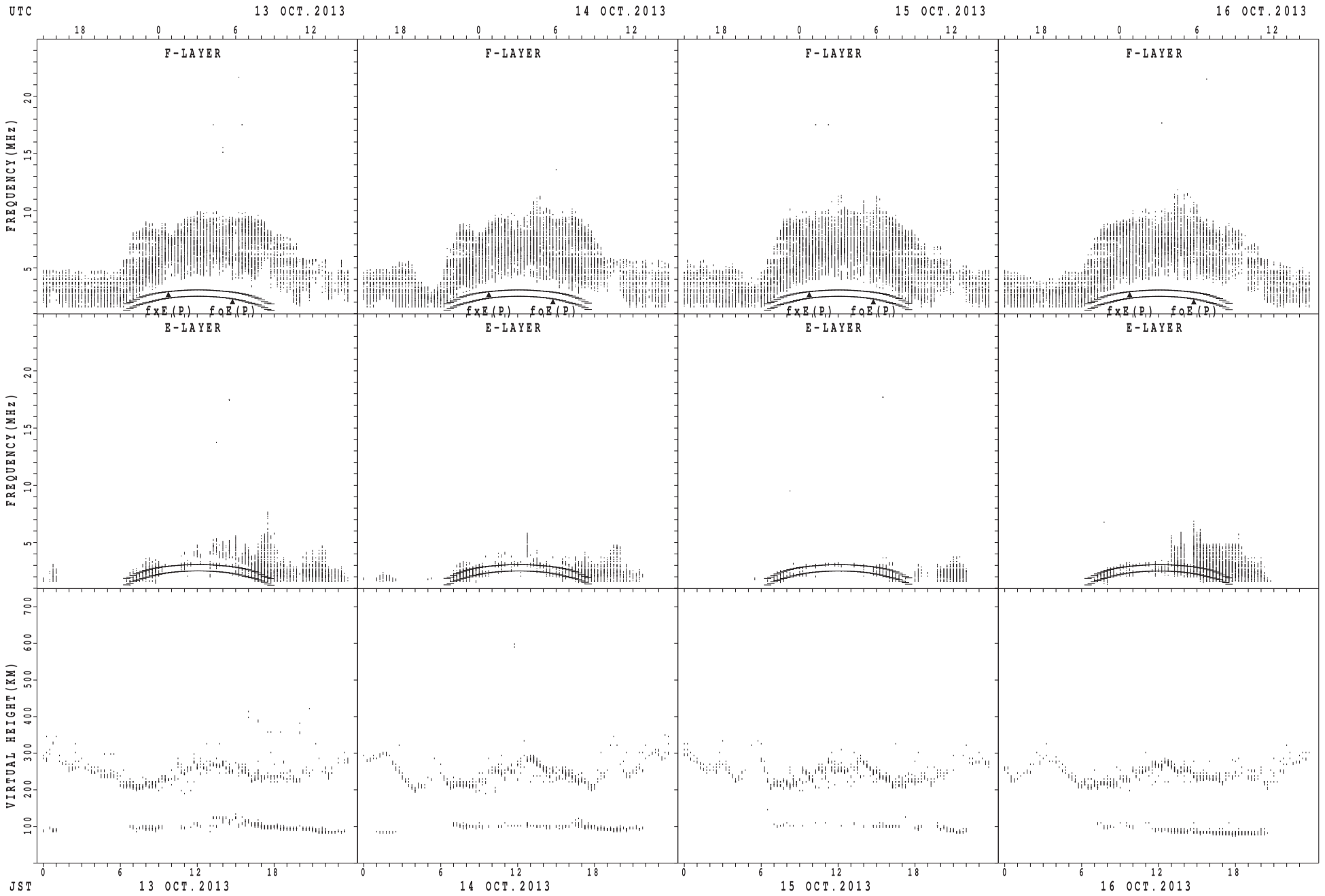

SUMMARY PLOTS AT Yamagawa
UTC
JST
5 OCT.2013
6 OCT.2013
7 OCT.2013
8 OCT.2013
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



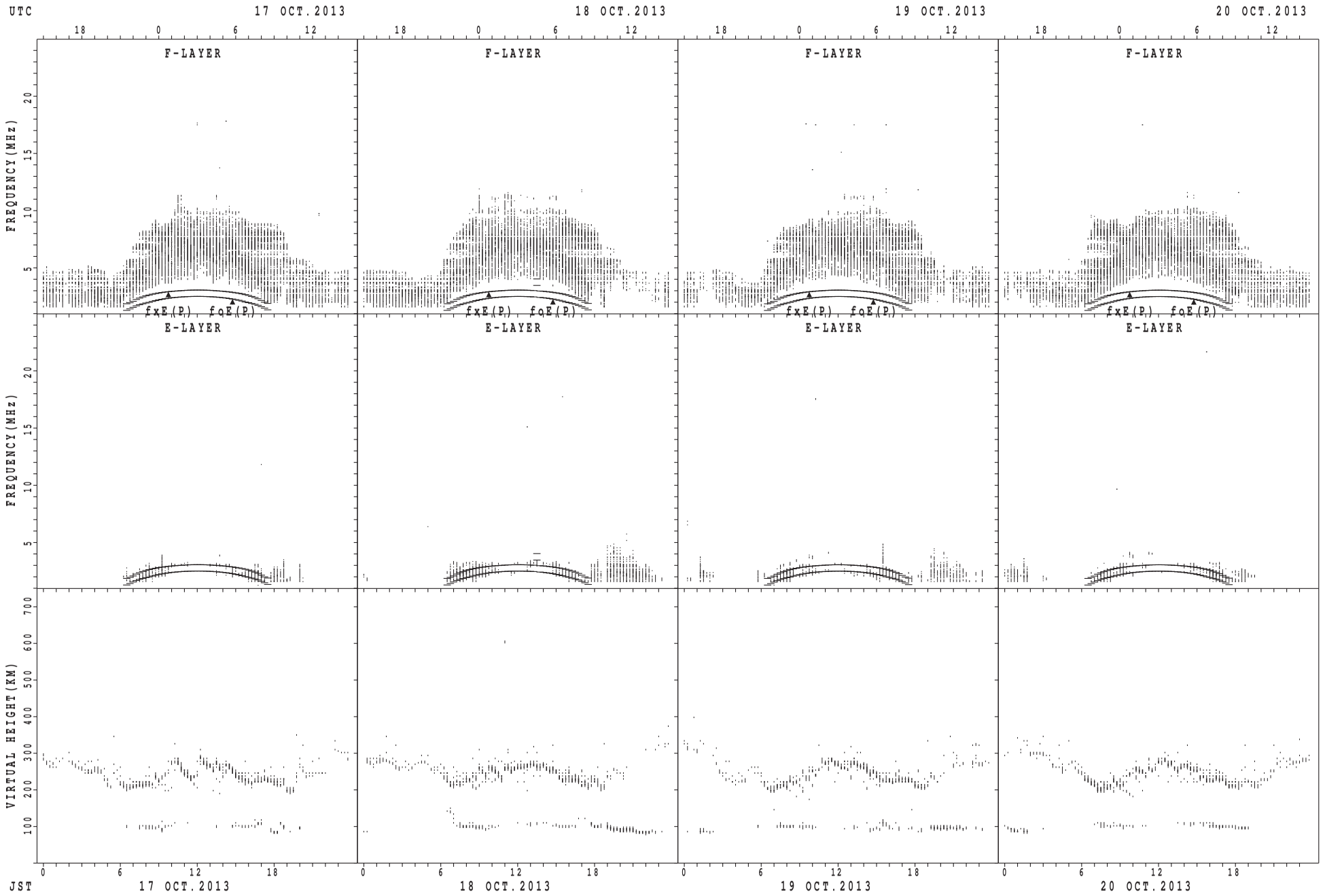
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



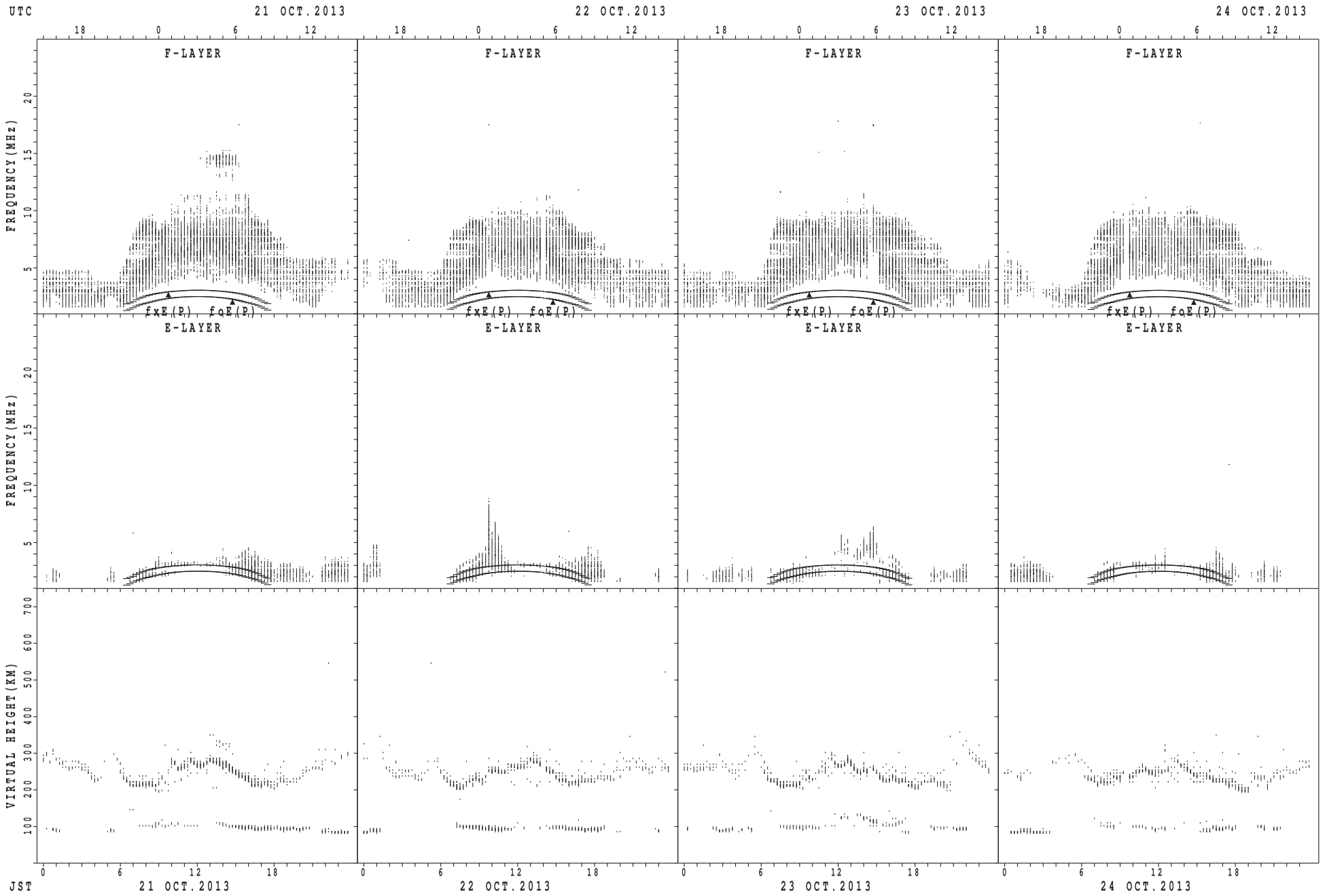
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



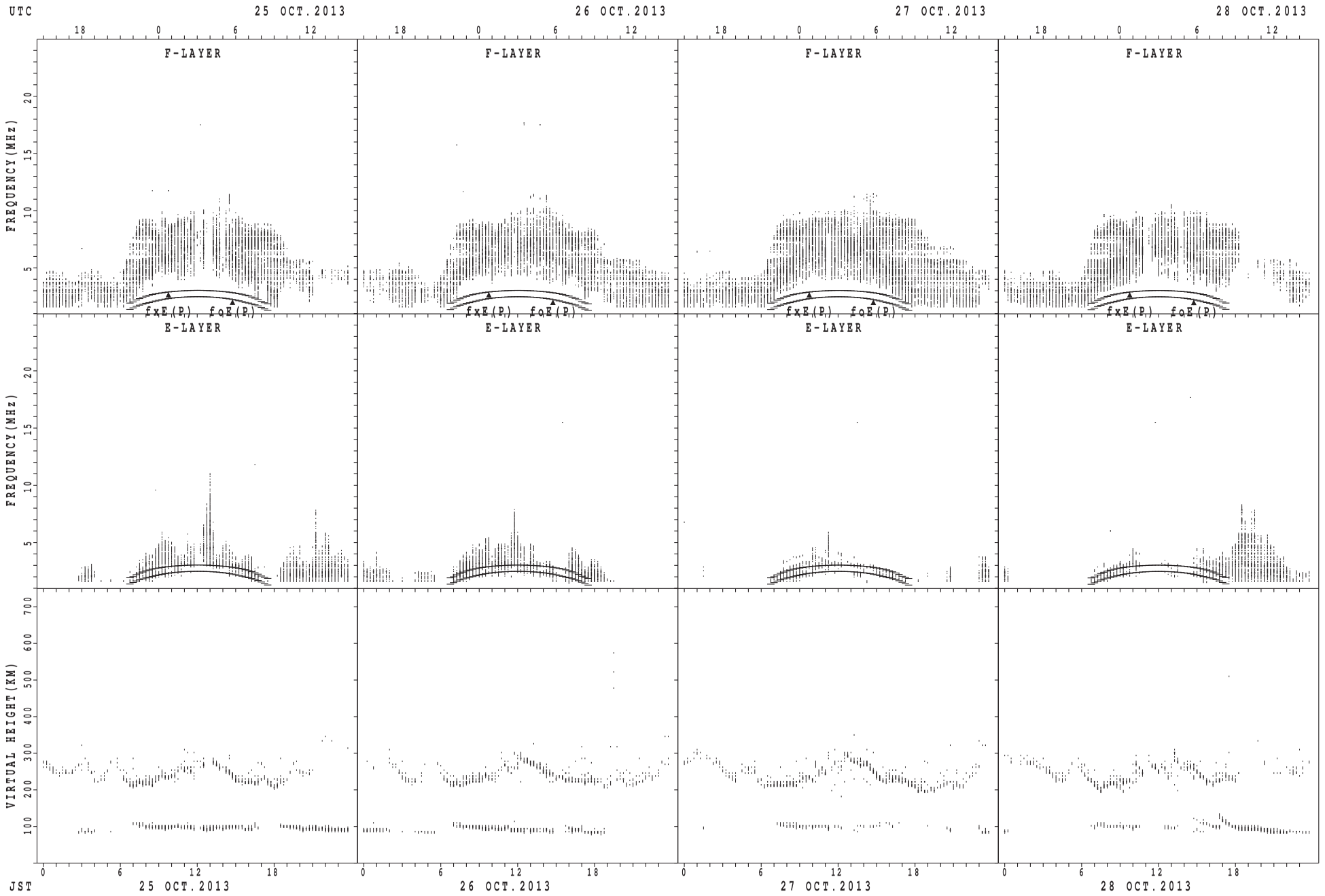
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



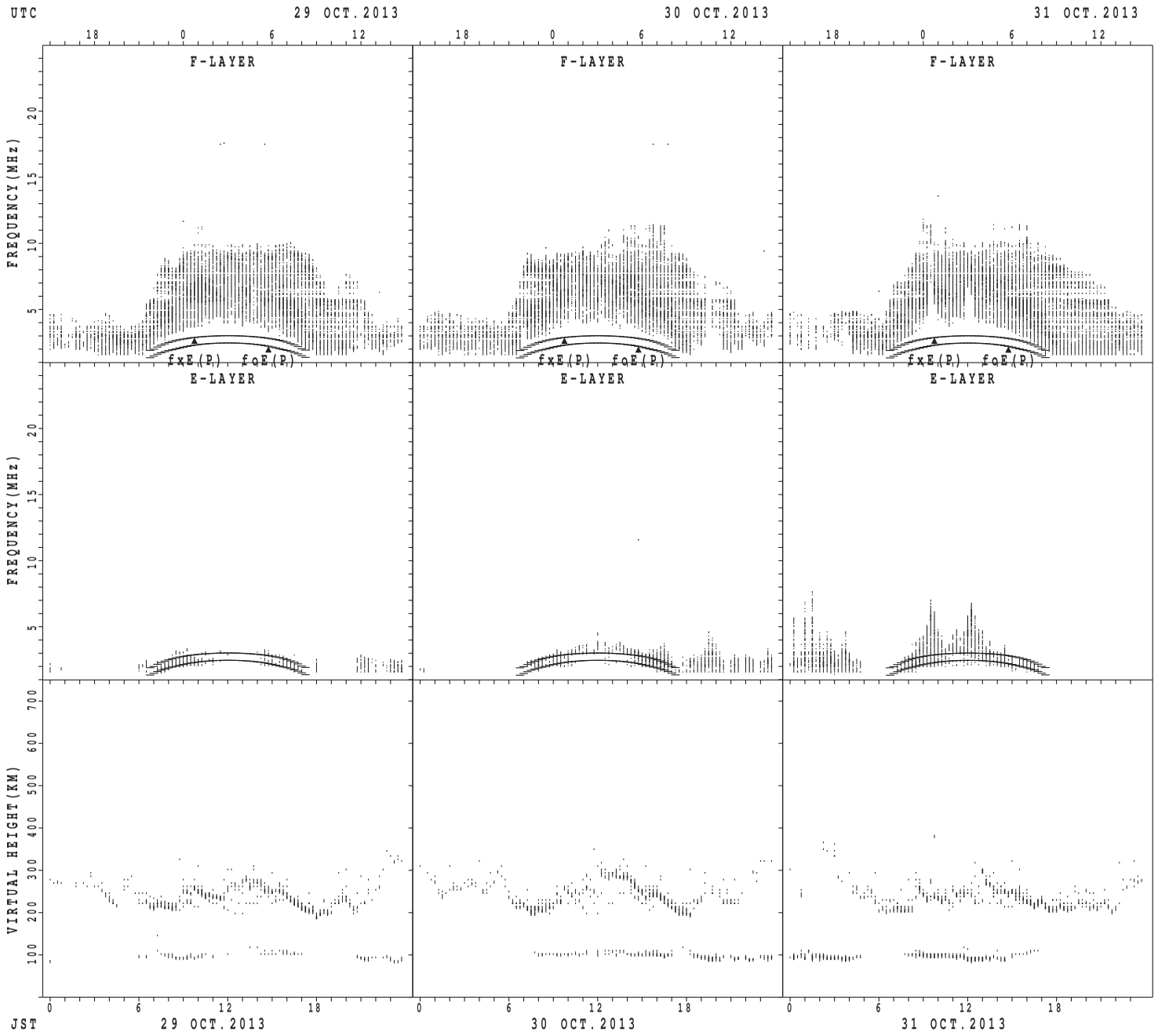
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



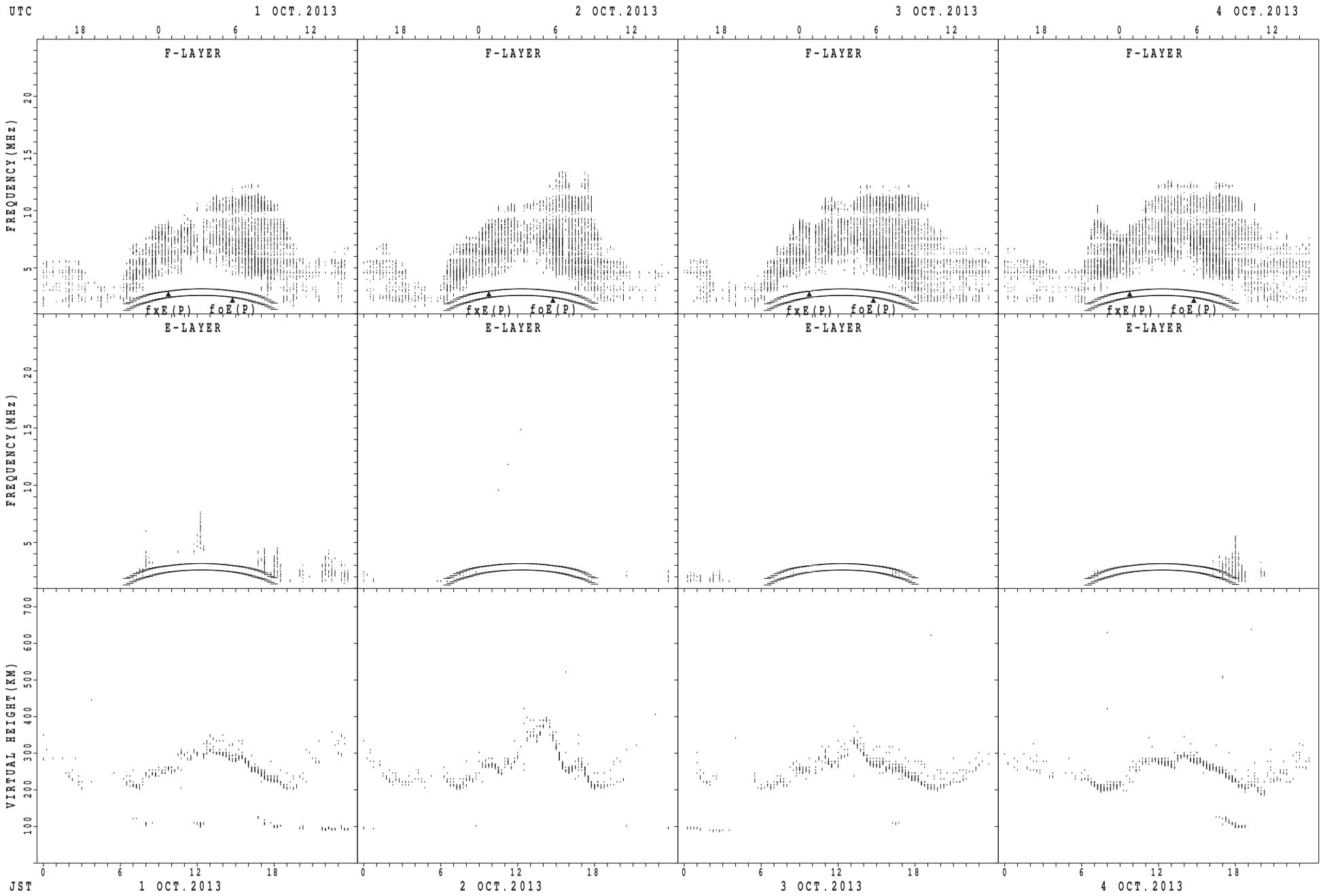
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



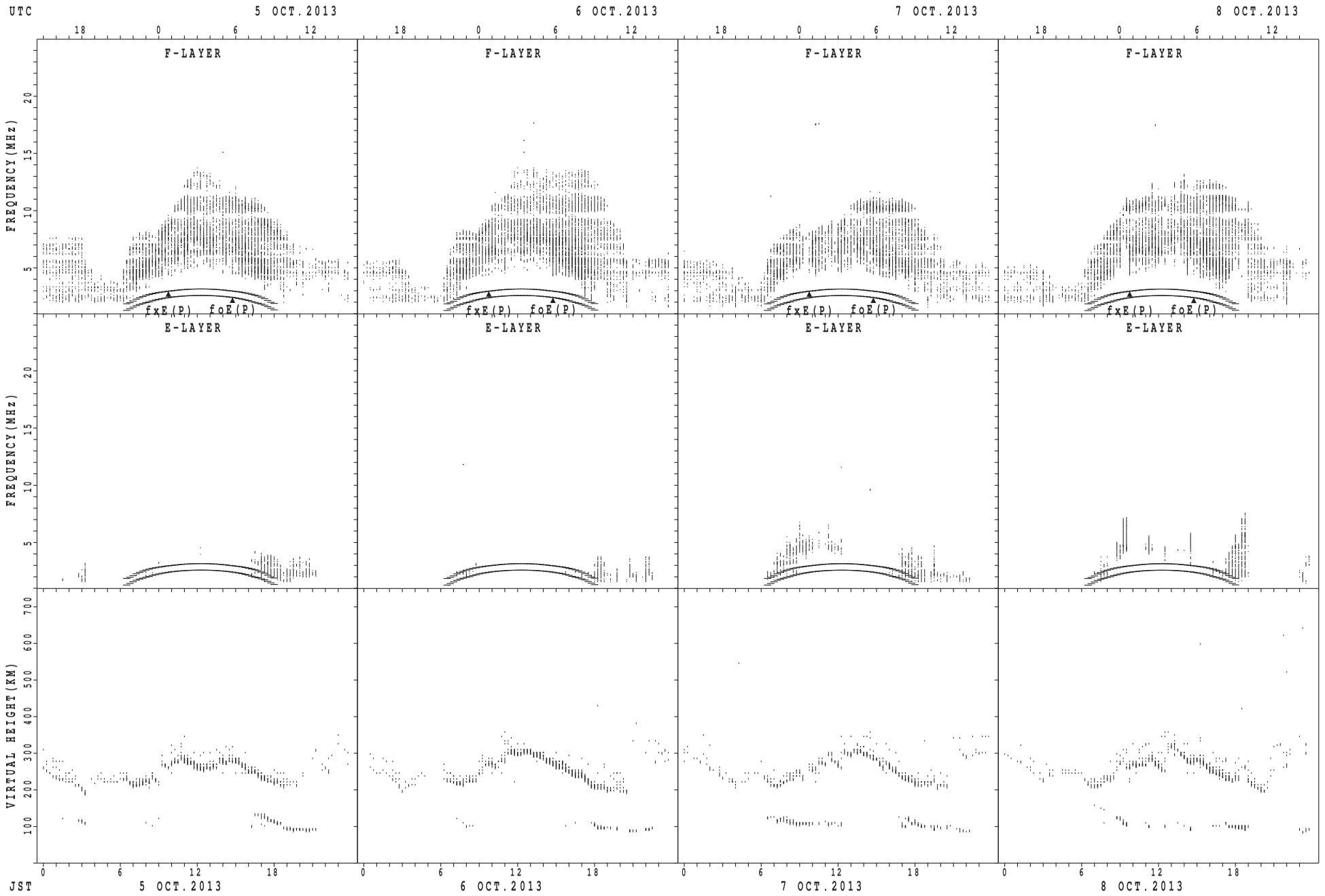
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



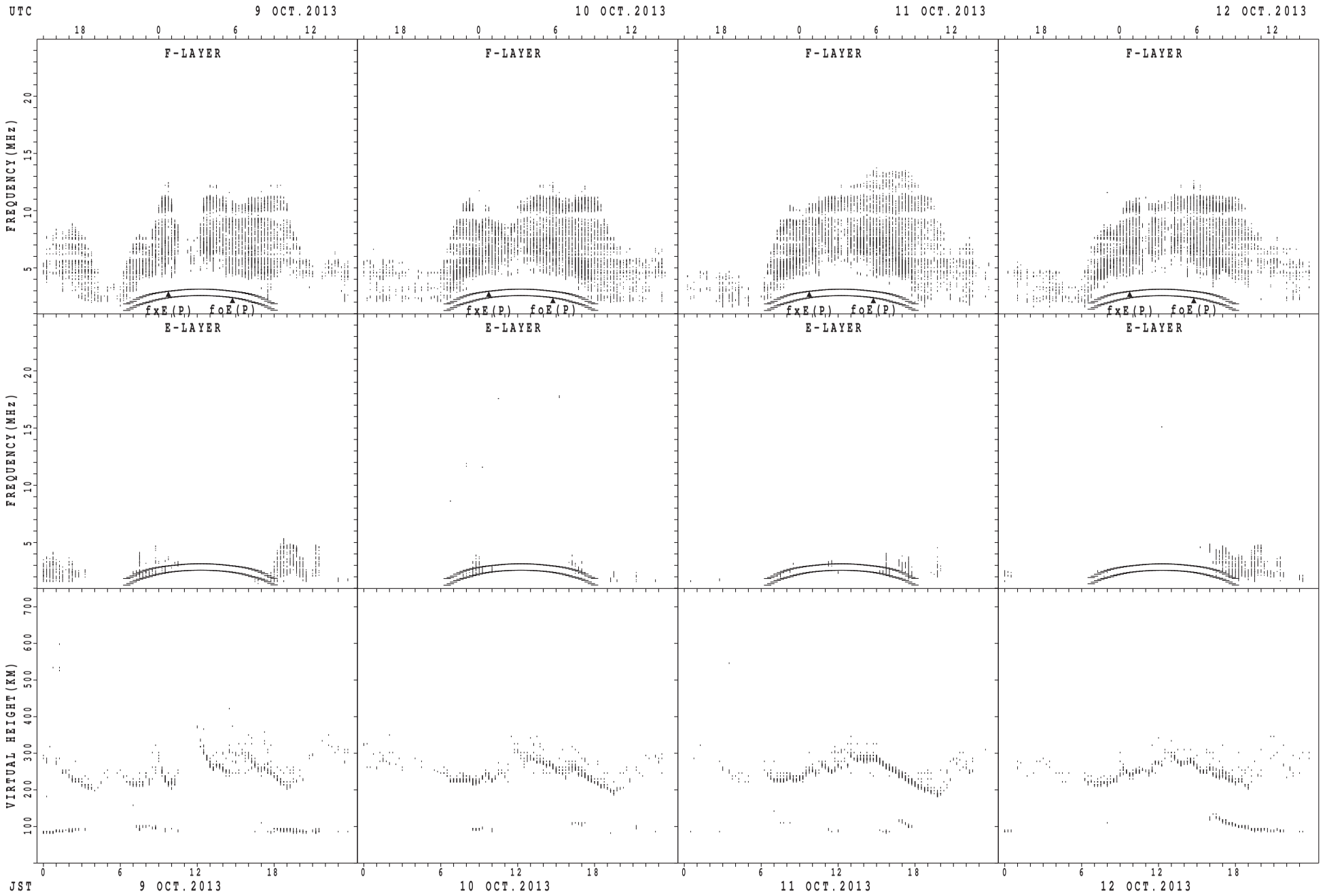
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



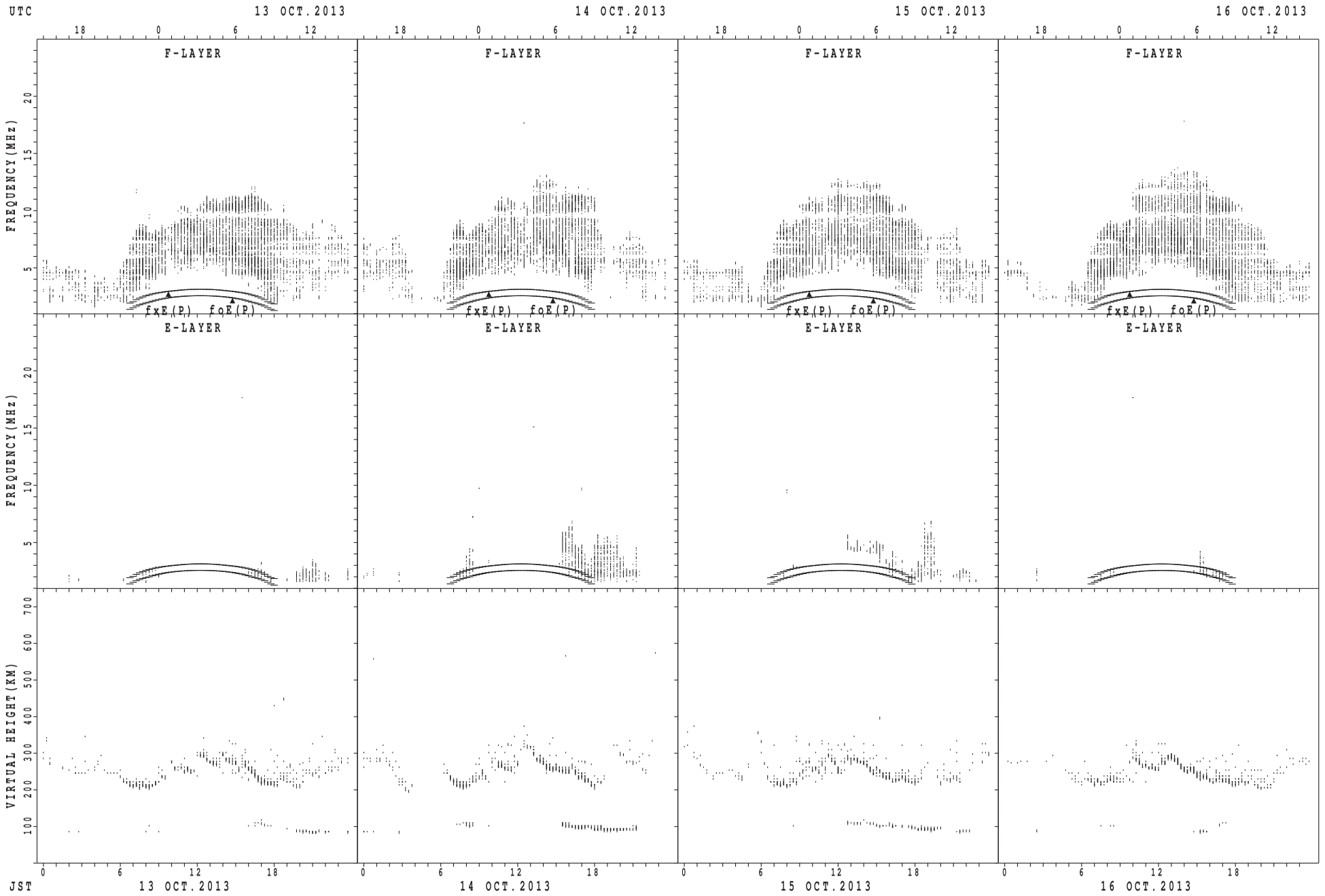
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



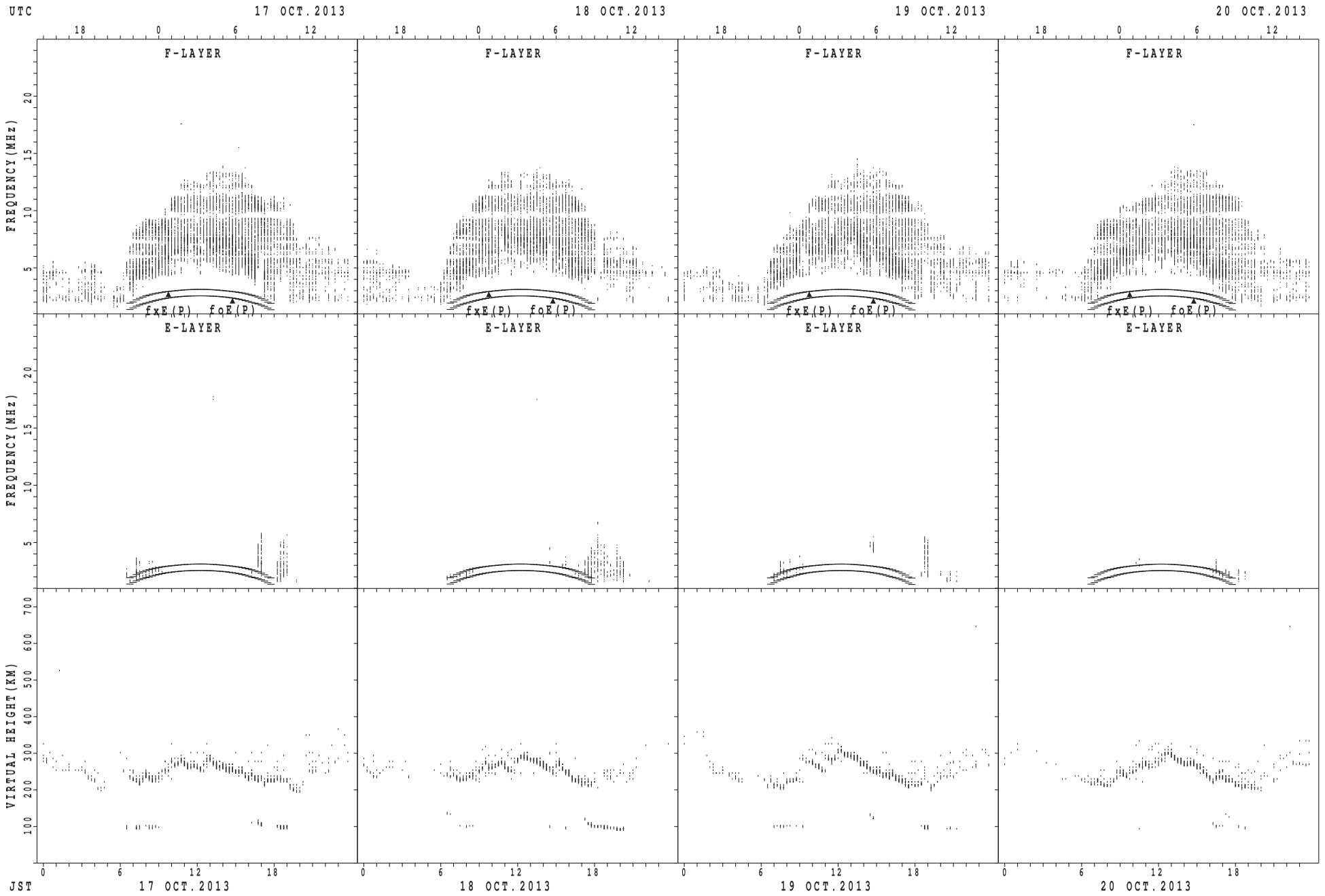
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



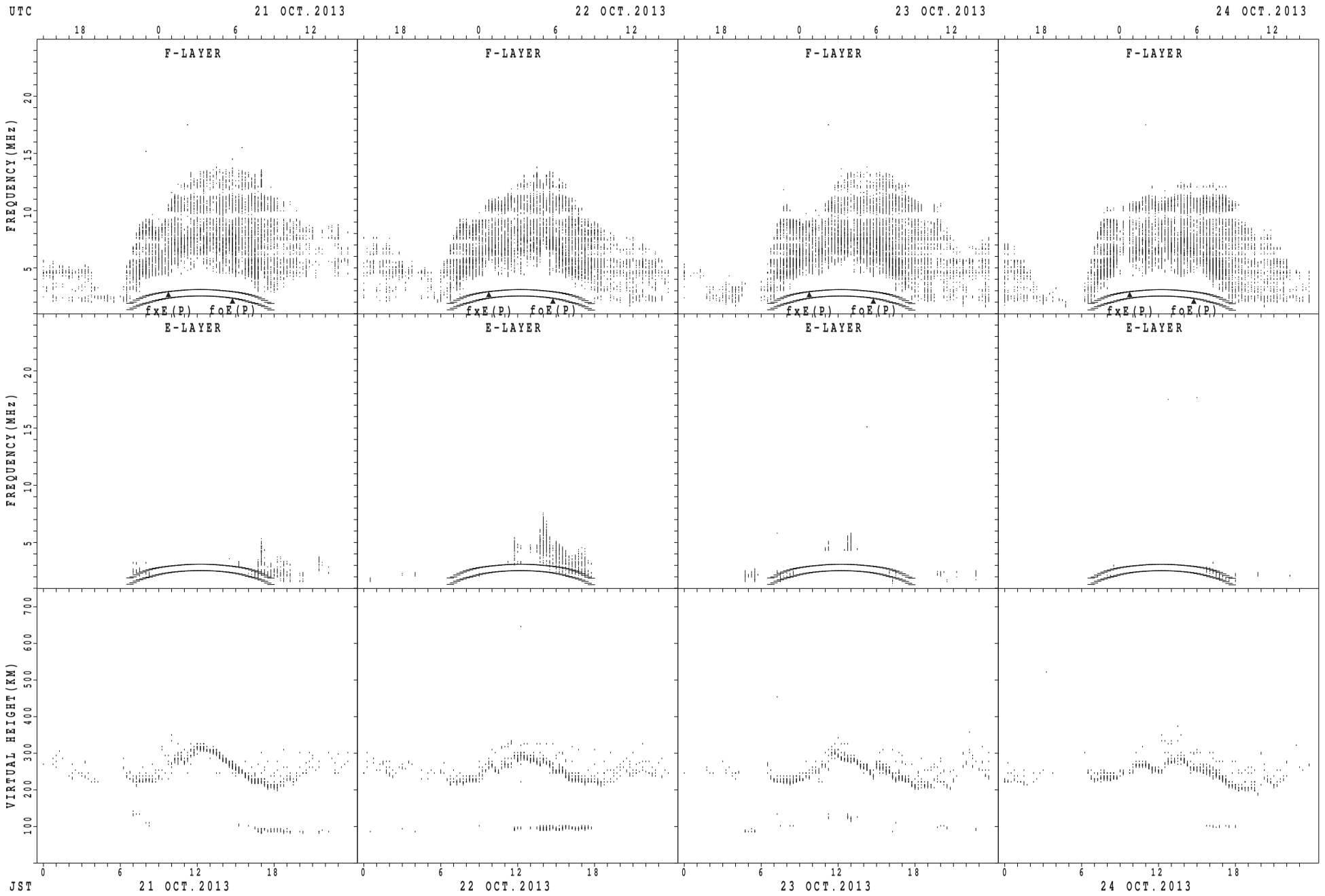
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



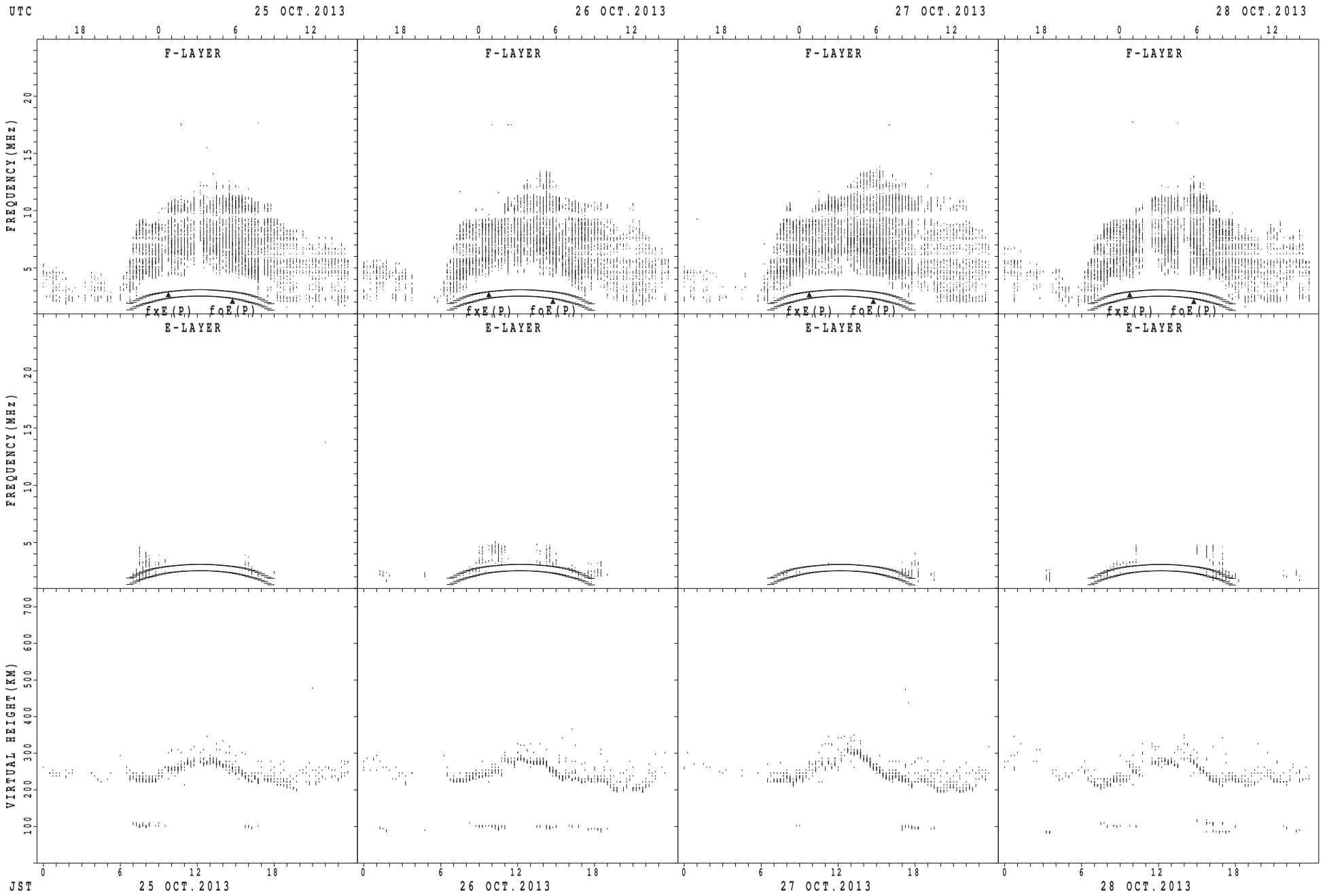
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



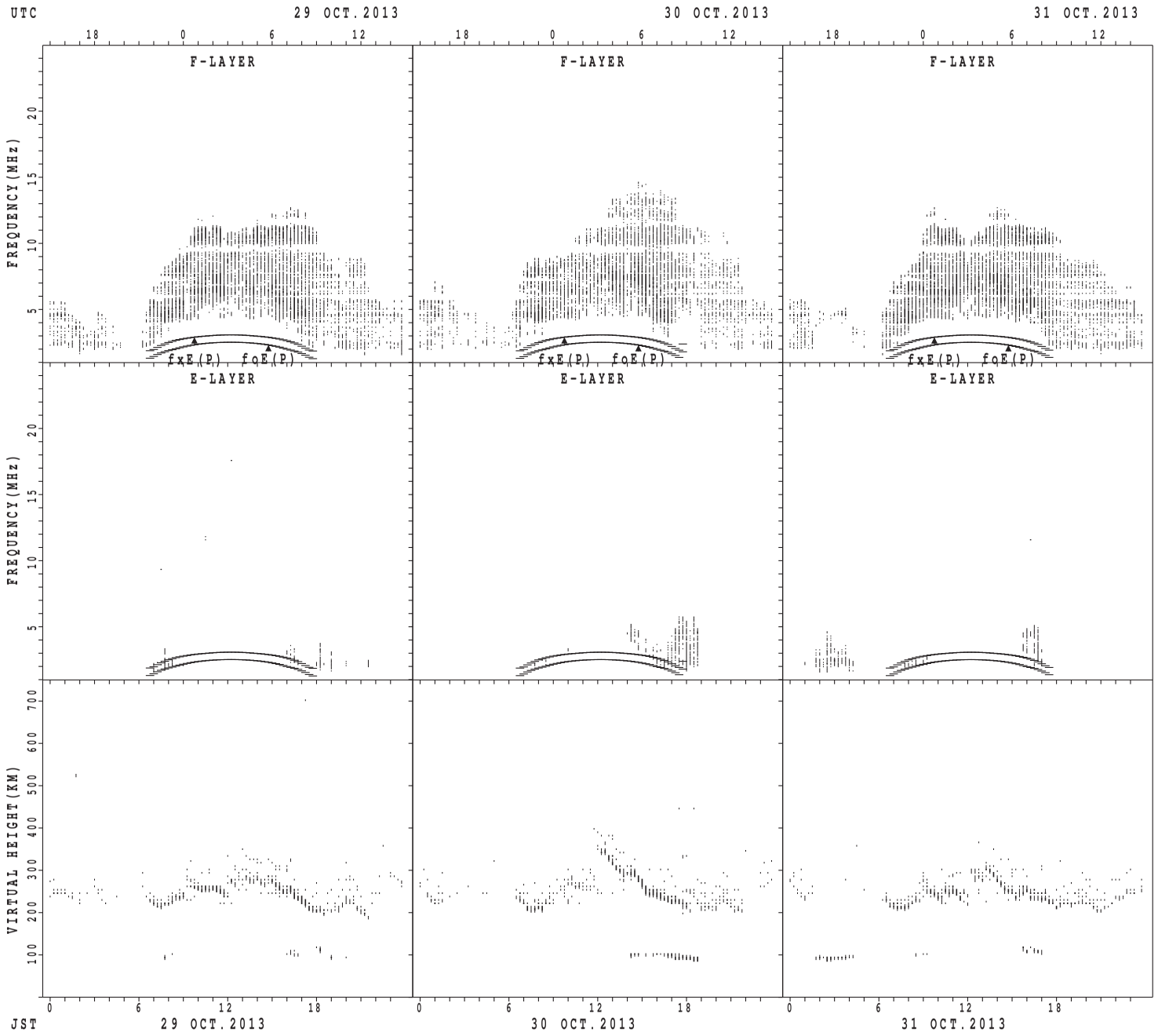
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h′F AND h′Es

OCT.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							2	30	27	15				4	22	30	30	25	5	2				
MED							242	227	224	222				231	242	238	235	242	264	258				
U Q							252	236	240	230				243	246	246	240	253	275	262				
L Q							232	220	214	214				220	232	236	232	231	235	254				

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	9	10	16	15	8	12	25	28	25	28	29	29	25	28	30	28	21	20	17	19	16	9	12
MED	95	95	94	95	95	100	101	113	105	107	101	101	103	103	102	106	107	103	100	97	97	97	97	96
U Q	97	98	99	105	101	103	125	134	107	110	105	106	107	107	110	113	115	111	105	103	101	102	98	98
L Q	91	90	91	93	89	94	97	106	101	101	98	99	99	97	95	97	98	95	93	95	93	93	97	90

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							7	29	31	7					10	31	30	28	10	4				
MED							236	222	222	224					247	246	241	236	241	240				
U Q							242	228	230	232					250	258	246	242	262	253				
L Q							234	216	216	216					244	238	234	229	232	227				

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	7	4		4	1	3	12	9	6	1	2	2	1	3	14	16	14	16	14	13	12	13	7
MED	95	95	91		95	97	97	111	105	105	107	103	96	91	91	106	109	107	103	98	95	97	99	95
U Q	99	97	94		96	48	137	113	106	107	53	111	97	45	119	111	122	111	105	101	103	97	103	95
L Q	93	93	90		95	48	97	103	101	105	53	95	95	45	91	99	100	99	99	97	95	94	96	93

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								19	29	27						18	31	30	29	7	3	1		
MED								228	222	230						245	242	241	236	230	264	274		
U Q								232	230	246						250	254	248	242	256	270	137		
L Q								222	216	228						238	236	230	224	216	256	137		

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	9	10	5	4	2	2	1	19	27	29	24	15	10	15	16	26	30	24	22	18	19	17	12	10
MED	91	93	89	91	92	92	97	131	103	103	103	105	100	105	106	105	107	110	99	97	95	95	93	91
U Q	96	95	93	92	93	97	48	155	105	105	105	111	105	113	115	113	119	117	103	99	97	97	97	95
L Q	88	91	87	89	91	87	48	115	101	99	97	97	91	95	101	103	103	99	87	95	93	94	89	91

MONTHLY MEDIANS OF h′F AND h′Es

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

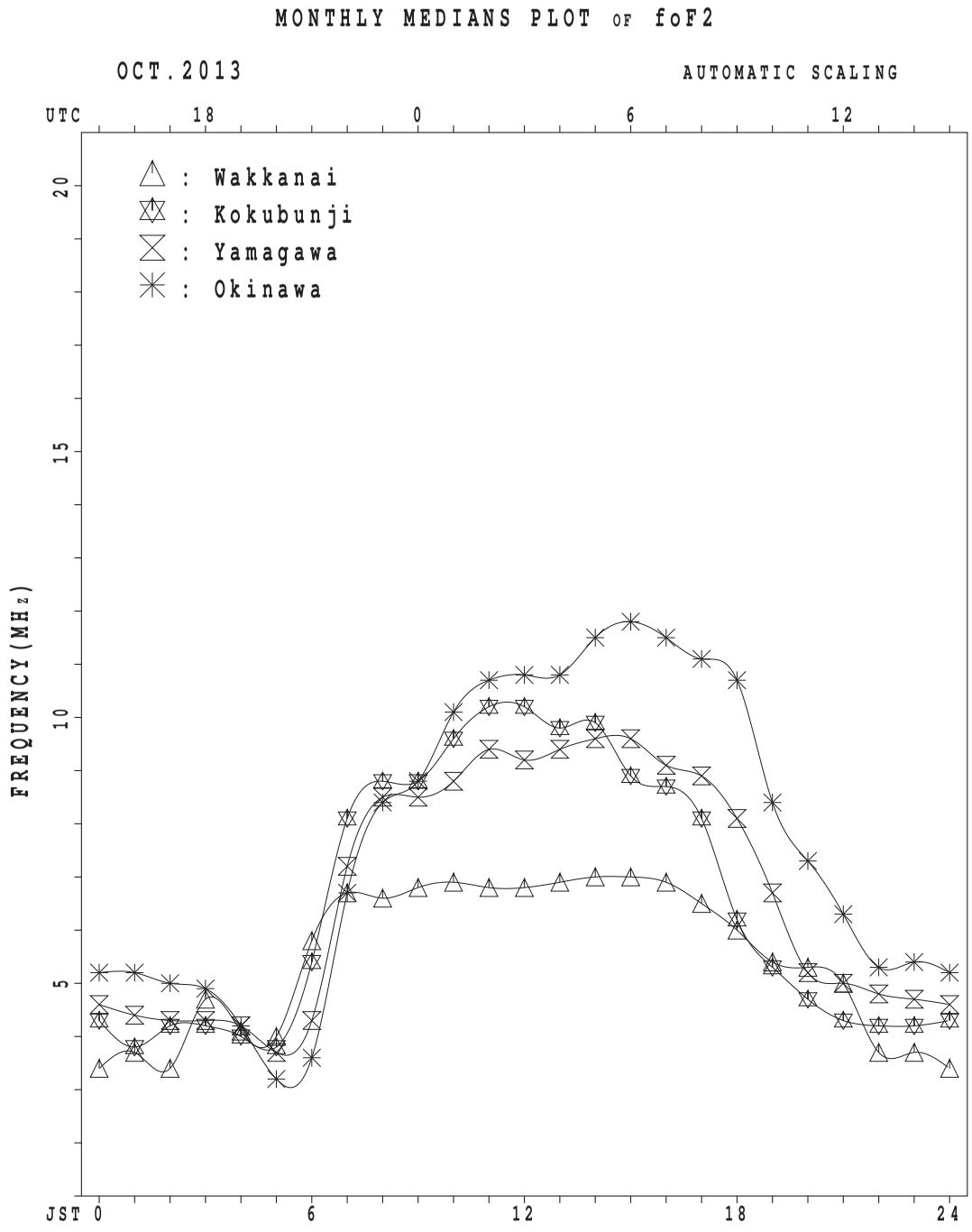
STATION Okinawa LAT. 26°41.0′N LON. 128°09.0′E

h′F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	1	3	1				20	30	31						8	31	30	31	25	9	11	6	4
MED	284	296	256	232				234	232	246						256	250	235	230	236	242	264	269	277
U Q	142	148	280	116				243	238	260						264	258	242	242	244	262	296	296	299
L Q	142	148	248	116				230	222	238						246	232	230	220	226	215	260	256	264

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	2	1	2	2	2			6	12	6	2	3	2	3	1	4	9	19	16	10	9	5	5	
MED	89	91	93	107	94			133	107	107	107	113	102	113	95	104	105	107	102	96	95	91	95	
U Q	91	45	95	117	97			163	114	111	111	133	107	119	47	112	110	115	105	99	99	97	96	
L Q	87	45	91	97	91			113	105	101	103	101	97	97	47	99	99	97	96	93	94	89	90	


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

IONOSPHERIC DATA STATION Wakkanai

OCT. 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	X 57	X 57	X 57	X 57	X 57	X 53													X 67	X 64	X 62	X 61	X 59	X 59
2	X 57	X 57	X 57	X 57	X 57	X 53													X 103	X 91	X 72	X 59	X 57	X 57
3	64	X 60	X 59	X 60	X 58	X 60													X 69	X 60	X 60	X 57	X 57	X 53
4	X 50	X 50	X 50	X 49	X 46	X 43													X 67	X 64	X 64	X 58	X 53	X 53
5	X 51	X 50	X 49	X 49	X 49	X 51													X 66	X 63	X 58	X 58	X 57	X 55
6	X 51	X 51	X 52	X 52	X 52	X 52													X 58	X 58	X 57	X 54	X 51	X 51
7	X 49	X 49	X 49	X 51	X 52	X 55													X 72	X 70	X 63	X 57	X 55	X 55
8	X 56	X 57	X 57	X 56	X 52	X 51													X 70	X 61	X 59	X 57	X 56	X 57
9	X 56	X 58	X 55	X 53	X 54	X 52													X 82	X 88	X 77	X 62	X 50	X 56
10	X 55	X 57	X 58	X 57	X 55	X 55													X 76	X 72	X 60	X 56	R	X 46
11	X 47	X 47	X 47	X 47	X 47	X 48													X 57	X 60	X 58	X 48	X 47	X 47
12	X 47	X 47	X 47	X 50	X 51	X 50													X 64	X 65	X 65	X 61	X 59	X 58
13	X 59	X 58	X 58	X 59	X 64	X 58													X 67	X 67	X 65	X 62	X 52	X 49
14	X 49	X 54	X 59	X 61	X 66	X 68													X 73	X 69	X 68	X 60	X 60	X 59
15	X 59	X 58	X 59	X 59	X 52	X 49													X 61	X 62	X 62	60	58	59
16	63	63	61	X 55	58	56													X 69	X 62	X 61	X 57	X 54	X 47
17	X 46	X 49	X 49	X 47	X 48	X 49													X 68	X 66	X 60	X 53	X 50	X 50
18	X 51	X 51	X 51	X 47	X 49	X 50													X 73	X 61	X 54	X 51	X 50	X 50
19	X 51	X 52	X 52	X 52	X 52	X 52													X 70	X 63	X 60	X 58	X 60	X 57
20	X 58	59	60	60	63	65													X 63	X 64	X 61	X 59	X 64	X 61
21	X 63	X 63	X 63	X 63	X 62	X 61													X 63	X 58	X 50	X 47	X 49	X 49
22	X 51	X 53	X 53	X 52	X 54	X 54													X 71	X 62	X 61	X 61	X 64	X 66
23	X 66	X 68	X 66	X 67	X 67	X 63													X 68	X 63	X 59	X 53	X 52	X 52
24	X 54	X 57	X 57	X 52	X 54	X 53													X 75	X 58	X 53	X 51	X 56	X 57
25	X 56	X 55	X 54	X 53	X 53	X 54													X 71	X 57	X 47	X 47	X 49	X 49
26	X 49	X 52	X 51	X 50	X 52	X 51													X 66	X 59	X 49	X 49	X 51	X 51
27	X 47	X 49	X 49	X 49	X 47	X 47												X 90	X 70	X 61	X 49	X 44	X 41	X 42
28	X 44	X 46	X 47	X 47	X 47	X 47												X 80	X 67	X 58	X 48	X 47	X 48	X 49
29	X 50	X 51	X 51	X 53	X 53	X 53												X 70	X 65	X 56	X 50	X 46	X 43	X 43
30	X 48	X 48	X 48	X 48	X 49	X 51												O X 89	X 72	X 68	X 61	X 51	X 51	X 53
31	X 53	X 52	X 49	X 45	X 45	X 47													X 77	X 73	X 53	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31												4	31	31	31	30	29	30
MED	X 51	X 53	X 53	X 52	X 52	X 52												X 84	X 69	X 63	X 60	X 57	X 53	X 53
U Q	X 57	X 58	X 58	X 57	X 57	X 55												X 90	X 72	X 67	X 62	X 59	X 58	X 57
L Q	X 49	X 50	X 49	X 49	X 49	X 50												X 75	X 66	X 60	X 53	X 51	X 50	X 49

OCT. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 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	50	50	50	50	50	46	61	70	74	76	J R 78	Y	77	U Y 78	78	79	R 80	72	60	57	55	54	52	52
2	50	50	50	50	50	46	57	69	71	U Y 79	U Y 94	U Y 81	Y	R 78	75	78	J R 93	U R 94	95	84	65	52	50	50
3	52	53	52	53	51	53	68	76	77	J R 85	Y	76	78	79	76	U R 85	88	84	62	53	53	50	50	46
4	43	43	43	42	39	36	56	70	U R 79	J R 97	Y	75	74	Y	76	75	74	65	61	57	57	51	47	46
5	44	R 43	42	42	42	44	57	65	U Y 77	R 85	78	U R 77	76	77	76	74	71	66	59	56	51	51	50	48
6	44	R 44	45	45	45	45	64	72	71	J R 96	82	U Y 78	75	R 78	72	U Y 77	R 79	71	51	51	50	47	44	44
7	42	43	43	45	45	48	63	67	73	70	Y	U R 85	U R 82	R 76	U A 79	81	78	74	65	63	57	50	48	48
8	49	49	50	50	45	44	66	R 75	71	J R 87	U Y 79	R 96	R 96	J Y 83	77	74	J R 82	74	63	54	R 52	R 51	R 50	50
9	49	51	49	46	47	45	58	65	U R 74	J R 88	R 76	U Y 77	J R 95	95	94	J R 89	70	78	R 76	J R 81	71	55	43	49
10	48	50	51	50	48	48	56	66	71	U Y 77	Y	J Y 94	U Y 83	U R 78	U Y 79	74	74	72	69	65	R 53	50	R	40
11	40	40	40	40	40	41	58	R 75	J R 81	R 96	U R 96	J R 92	Y	U R 78	Y	Y	77	65	50	54	51	41	40	40
12	40	40	40	R 43	44	R 43	52	69	U R 85	J R 89	J R 89	J R 91	U R 86	Y	87	78	78	73	57	58	58	54	52	51
13	52	51	51	52	58	52	61	U R 82	U R 79	92	Y	R 79	J R 81	J R 86	J R 87	77	75	72	60	60	59	56	R 45	42
14	42	48	52	54	59	61	56	66	J R 69	U R 75	Y	Y	J R 89	J R 97	U R 85	R 88	R 85	75	66	62	61	53	53	52
15	53	51	52	52	45	42	R 43	53	59	68	74	Y	76	78	U R 79	R 83	R 85	61	54	55	55	50	F 48	F 48
16	F 52	F 54	51	48	F 46	F 46	56	70	J R 91	J Y 89	98	R 105	J R 90	J R 87	J R 89	83	88	72	62	55	54	50	47	41
17	39	42	42	40	41	42	55	69	75	U Y 76	U R 96	97	U Y 99	R 86	75	J R 82	J R 80	69	60	58	52	46	43	43
18	44	44	44	40	42	43	63	U Y 79	J R 87	D R 100	U Y 100	J R 91	R 99	R 99	R 85	J R 83	R 93	76	66	54	47	43	43	43
19	44	45	45	45	45	45	58	73	J R 82	U R 90	J R 93	U R 97	U R 101	J R 87	U R 80	U R 83	U R 86	74	63	56	53	51	53	50
20	51	F 50	F 51	F 50	F 50	57	63	J R 80	J R 87	R 93	U R 92	U Y 90	J R 95	U R 94	U Y 80	J R 93	J R 91	70	56	57	54	52	57	54
21	56	56	56	55	55	R 54	68	J R 90	J R 80	J R 93	Y	Y	J R 96	J R 93	J R 85	J R 87	R 84	75	56	51	R 44	40	42	42
22	44	46	46	45	47	47	60	R 74	J R 90	88	J R 105	J R 107	Y	J R 104	87	U R 80	78	75	64	55	54	54	57	59
23	59	61	59	60	60	56	66	R 92	J R 97	J R 95	U Y 95	J R 118	R 103	U Y 87	J R 86	J R 87	75	76	61	56	52	46	45	45
24	47	50	50	45	V 47	46	60	U R 85	R 92	U Y 101	U R 99	U R 99	R 99	R 102	R 92	78	90	74	67	51	46	44	49	50
25	49	48	47	46	46	46	51	U R 77	U Y 100	U Y 100	R 95	U R 100	Y	R 102	R 99	R 94	83	66	64	50	40	40	42	42
26	42	45	R 45	43	45	44	52	R 74	R 90	95	R 101	U R 96	Y	U R 76	J R 85	J R 93	J R 81	72	59	52	42	42	44	44
27	40	42	42	42	40	40	54	75	J R 91	U R 98	103	Y	J R 97	U R 101	J Y 87	U R 100	J R 89	U R 77	63	53	42	37	34	35
28	37	39	40	40	40	40	54	U Y 77	U Y 100	J Y 93	U R 99	Y	J R 94	J R 92	U R 84	R 89	94	73	60	51	42	40	41	42
29	42	45	44	46	46	45	49	U R 80	R 95	U R 103	J R 95	U R 103	U R 99	95	105	92	R 88	63	58	50	R 44	39	36	36
30	41	41	41	41	42	44	56	R 94	U R 99	J R 119	J R 119	J R 106	J R 93	R 98	99	98	J R 93	U R 82	65	60	54	44	44	46
31	46	46	42	39	42	40	44	77	U Y 79	R 96	J R 107	U Y 101	U R 102	102	J R 92	U R 96	96	88	70	66	47	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	24	25	26	29	30	30	31	31	31	31	31	30	29	30
MED	44	46	46	45	45	45	57	74	R 80	R 92	R 95	R 94	R 94	R 87	85	R 83	83	73	62	56	53	50	47	46
U Q	50	50	51	50	50	48	63	R 79	R 91	R 96	R 100	R 100	U R 99	R 98	87	R 89	R 89	76	65	60	55	52	50	50
L Q	42	43	42	42	42	43	54	69	74	85	86	U 80	81	R 78	78	78	78	70	59	53	47	43	43	42

OCT. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 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							220	L	340	L	L	L	U L 464	L	L	L								
2										L	L	L	L		L 452	L	L							
3							212		L	L	L	L	L	L	L	L	L							
4										L	L	L	U L 448	L	L	U L 336	260							
5									L	L	L	U L 464	L	L	L	L	284							
6									L	L	L	L	L	L										
7									L	L	L	L 464	L	L	L	A								
8										U L 452	L	L	L	U L 464		332								
9									L	U L 468	L	L	L	L	L									
10									L	L	L				L									
11								L	L	L	L	L	L	L										
12										L	L	L	L	L	A	L								
13									L	L		L	L											
14									380	L	L	R 440	L	L	L	L								
15								L	A	U L 448		U L 456	L	L		A								
16											L	L	L	L	A									
17										L	L	U R 556	L	L		L								
18								L		L	L	L	L	L	L	L								
19								L 300		L	L	L	L	L										
20								260		L	L	L		L										
21												L	L	L										
22										L	L	L		L										
23										L	L		L	L										
24											L	L	L	L										
25											L	L		L										
26											L		L	L										
27											L	L	L	L										
28												B		L										
29										L	L	L	L											
30										L														
31										L	L	L		L										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	2	2	3		5	2	1	1	2	2							
MED							216	280	360	U L 452		U L 464	U L 456	U L 464	L 452	334	272							
U Q										U L 468		U 510												
L Q										U L 448		448												

OCT. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 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							172	248	296	316	A 324	A 332	A 332	328	A 304	276	A	A						
2							A	U A 244	280	332	332	340	352	340	324	276	224	A						
3							160	232	288	316	328	336	332	320	312	296	A	A						
4							196	244	296	320	U R 348	348	344	R 332	R 316	288	240	A						
5							188	256	292	324	336	348	R 344	336	U A 316	272	220	168						
6							204	252	292	316	344	348	332	324	308	264	224	B						
7							204	240	280	308	U A 316	A	R	A 316	312	268	224	A						
8							A	236	288	304	320	328	336	U R 328	316	276	232	A						
9							A	236	296	304	324	B	U A 328	A	304	280	U A 224	A						
10							A	248	280	296	316	320	324	312	A	272	224	A						
11							R 184	252	300	308	324	A	324	R 320	A	A	232	A						
12							A	A	292	312	328	340	U A 340	A	A	A	236	A						
13							196	220	288	296	B	332	332	332	316	276	U A 228	A						
14							176	256	296	312	R 360	356	348	336	304	284	220	A						
15							A	236	A	316	A 320	A	336	A	A	272	A	A						
16							A	232	292	308	316	328	332	320	A	288	A	A						
17							184	244	280	R 300	324	336	348	328	308	268	208	B						
18							176	244	A	A	A	A	A	A	300	268	224	A						
19							U R 172	236	284	304	348	348	336	328	308	268	220	A						
20							176	224	272	U A 300	324	336	364	328	296	280	200	A						
21							172	248	A	A	A	336	336	A	296	264	192	A						
22							160	A	A	A	328	336	336	332	296	280	A	A						
23							172	240	A	320	340	A	336	320	300	A	A	B						
24							A	236	272	A	344	336	336	324	304	272	208	B						
25							A	232	284	320	332	328	B	320	292	256	212	B						
26							B	224	A	A	320	336	344	328	292	248	172	B						
27							A	240	280	308	332	336	324	308	296	260	A							
28							B	228	296	324	332	B	320	312	320	248	220							
29							A	A	264	304	A	336	U R 332	A	A	A	A							
30							A	B	280	A	A	A	A	A	A	A	A							
31							C	U A 220	284	292	A	A	A	320	300	U R	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							16	27	25	25	25	22	26	24	24	25	21	1						
MED							176	240	288	308	328	336	336	326	304	272	224	168						
U Q							192	248	294	318	338	340	344	330	314	280	226							
L Q							172	232	280	304	322	332	332	320	298	266	210							

OCT. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 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	E B 12	E B 12	E B 13	19	J A 18	E B 14	18	27	32	36	36	36	38	36	38	32	J A 40	J A 52	J A 15	29	E B 15	E B 15	J A 16	J A 16
2	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	J A 27	27	31	39	39	40	40	41	40	G	28	28	J A 20	27	J A 30	J A 26	E B 14	E B 14
3	J A 15	J A 24	J A 41	J A 41	J A 28	J A 26	19	G	31	34	36	36	G	G 30	34	G 28	J A 31	J A 31	J A 20	J A 20	J A 20	J A 22	J A 19	J A 14
4	J A 20	J A 17	J A 26	J A 30	J A 33	E B 14	G	G 19	G 20	36	39	37	39	38	G	31	26	23	E B 12	J A 22	E B 14	E B 14	J A 22	J A 22
5	J A 19	J A 18	J A 18	E B 15	J A 25	J A 15	G	G	32	G	37	38	39	36	34	32	24	G	E B 13	E B 12	E B 12	E B 12	J A 26	E B 12
6	E B 12	E B 12	E B 12	E B 12	J A 21	E B 12	J A 16	28	31	35	G 31	G	42	G	34	30	26	19	J A 24	J A 25	J A 24	E B 15	J A 20	E B 12
7	E B 14	E B 16	E B 15	E B 15	J A 17	E B 14	G	28	31	36	37	36	34	37	36	60	33	J A 26	J A 33	J A 22	J A 17	E B 13	J A 17	E B 14
8	E B 15	J A 13	E B 15	E B 15	E B 15	E B 15	22	26	33	34	35	38	38	37	G 21	30	27	18	J A 22	J A 25	J A 15	25	J A 15	19
9	E B 12	20	J A 13	E B 12	E B 12	J A 14	21	26	G	33	40	E B 43	35	32	32	32	J A 43	J A 30	J A 52	J A 52	J A 52	32	32	J A 25
10	J A 31	46	J A 19	J A 19	J A 35	J A 25	20	G 19	G 23	33	37	J A 44	61	37	34	G	31	36	E B 14	J A 37	J A 49	J A 31	J A 43	J A 22
11	E B 14	E B 14	J A 25	J A 25	E B 14	E B 14	J A 22	31	G 27	34	36	36	36	34	36	J A 61	J A 27	J A 27	J A 25	E B 12	E B 12	E B 12	E B 12	E B 12
12	J A 23	J A 16	E B 12	J A 15	J A 25	J A 27	J A 26	J A 33	G 22	34	36	39	38	37	J A 49	J A 52	25	J A 67	J A 43	J A 25	J A 28	J A 27	J A 23	J A 19
13	J A 18	E B 13	20	J A 16	J A 16	J A 15	G	26	G	34	E B 44	35	38	37	37	J A 37	J A 31	J A 36	J A 29	J A 21	J A 24	J A 18	J A 20	E B 11
14	J A 13	J A 13	E B 12	E B 14	E B 14	E B 14	G	G	33	34	G	37	36	36	36	33	J A 32	J A 27	J A 61	J A 40	J A 27	J A 26	J A 17	E B 13
15	E B 15	J A 16	J A 12	J A 19	J A 38	J A 27	18	32	42	38	37	J A 42	G 30	J A 37	41	J A 62	J A 30	J A 35	J A 34	J A 29	J A 28	E B 12	E B 12	E B 12
16	E B 14	J A 11	E B 14	J A 19	J A 15	J A 28	J A 87	J A 34	G	G	36	36	35	35	J A 52	37	J A 35	J A 29	J A 24	J A 24	J A 22	J A 22	J A 20	J A 14
17	J A 19	J A 19	E B 15	J A 16	J A 19	E B 15	G	G	G	G	37	37	37	G	G	28	26	E B 11	E B 11	E B 12	E B 11	E B 11	E B 14	E B 14
18	E B 14	E B 14	E B 14	J A 24	J A 18	J A 21	18	G	30	36	35	35	37	36	G	28	28	J A 37	J A 16	J A 36	J A 23	J A 26	20	J A 19
19	J A 18	20	E B 13	J A 17	J A 17	E B 13	G	G	32	35	G 35	36	36	G 25	33	32	29	26	E B 12	E B 12	E B 12	18	12	J A 25
20	J A 19	E B 12	E B 13	J A 24	J A 15	E B 12	G	26	30	34	G	G 27	G 27	G 27	G 27	G 24	24	J A 19	J A 22	E B 17	J A 21	J A 24	J A 24	J A 29
21	J A 42	J A 22	33	J A 24	23	E B 15	G	G	J A 33	J A 63	J A 51	38	G 33	J A 37	G 20	G	J A 37	J A 30	J A 36	J A 25	J A 41	J A 63	J A 35	J A 25
22	J A 31	J A 25	32	J A 20	J A 16	J A 15	G	J A 27	J A 59	J A 36	G 32	G 32	36	G 28	J A 29	G 26	J A 27	J A 27	J A 27	J A 31	J A 30	J A 25	J A 25	J A 25
23	36	J A 26	J A 21	32	27	23	J A 19	26	J A 29	G 32	37	41	G 33	G 22	33	29	J A 30	J A 20	J A 51	J A 34	J A 33	J A 33	J A 29	22
24	20	E B 13	E B 12	E B 12	J A 23	19	19	26	32	35	G 33	G 33	J A 42	G 30	G 28	G	G	J A 14	J A 18	J A 18	J A 32	J A 52	J A 47	J A 30
25	J A 29	J A 28	20	J A 23	J A 23	25	18	G 21	G 27	G 29	G 32	34	E B 46	G 27	G 27	G 21	J A 23	E B 15	J A 22	J A 23	J A 45	J A 33	J A 17	J A 31
26	J A 17	J A 17	J A 16	J A 18	18	E B 14	E B 14	28	J A 31	35	35	35	38	G	G	26	21	E B 14	J A 15	17	E B 14	E B 14	E B 14	E B 14
27	E B 11	E B 11	E B 11	J A 18	19	J A 17	20	G 24	G 24	G	36	G	36	G 27	G 27	27	23	E B 11	E B 11	E B 11	E B 11	J A 17	J A 17	J A 23
28	J A 18	E B 11	J A 18	20	J A 15	J A 15	E B 14	G 20	G	G 24	G 30	E B 54	G 32	G 28	G	J A 28	32	J A 25	J A 26	J A 17	J A 25	E B 11	E B 11	E B 11
29	E B 11	J A 15	J A 15	J A 15	J A 19	E B 14	J A 20	27	28	G	32	G 28	G 31	J A 37	J A 43	J A 39	41	J A 33	E B 13	J A 32	J A 32	J A 32	J A 17	J A 21
30	J A 45	J A 25	J A 27	J A 23	J A 24	J A 27	J A 22	E B 28	G 24	J A 41	J A 40	J A 52	J A 47	56	J A 49	J A 44	J A 51	J A 53	J A 42	34	J A 19	J A 19	23	J A 26
31	J A 20	J A 13	J A 22	J A 22	J A 22	J A 19	J A 29	J A 40	J A 56	42	35	J A 43	J A 56	38	J A 44	J A 55	J A 59	J A 63	J A 24	E B 14	J A 19	J A 61	J A 60	J A 61
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 18	J A 16	15	J A 19	J A 19	15	18	26	30	34	36	36	36	36	34	30	29	J A 27	J A 22	J A 24	J A 23	J A 22	J A 20	J A 19
U Q	J A 20	J A 20	J A 21	J A 23	J A 24	J A 23	J A 21	28	32	36	37	40	39	37	J A 38	J A 37	J A 33	J A 35	J A 33	J A 31	J A 30	J A 31	J A 25	J A 25
L Q	E B 14	E B 13	E B 13	E B 15	E B 15	E B 14	G	G	G	G	G	G 35	G 34	G 30	G	G	26	19	E B 15	E B 17	E B 15	E B 14	E B 15	E B 14

OCT. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 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	E B 12	E B 12	E B 13	E B 14	E B 14	E B 14	G 17	26	31	G 31	33	U Y 36	35	35	35	31	30	42	E B 15	18	E B 15	E B 15	E B 15	E B 15
2	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	17	25	G 26	35	35	38	37	40	38	G	25	25	E B 12	15	19	19	E B 14	E B 14
3	E B 14	E B 14	E B 14	32	21	18	18	G	30	G 30	G 31	G 32	G	G 26	G 30	G 23	23	17	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13
4	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 16	G 16	35	38	37	37	36	G	G 29	G 24	22	E B 12	E B 11	E B 14	E B 14	E B 14	17
5	E B 15	E B 15	E B 15	E B 15	14	E B 14	G	G	32	G	34	37	38	35	33	29	23	G	E B 13	E B 12	E B 12	E B 12	E B 12	E B 12
6	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	G	26	30	32	G 25	G	39	G	33	29	23	17	16	16	E B 15	E B 15	E B 18	E B 12
7	E B 14	E B 16	E B 15	E B 15	E B 15	E B 14	G	26	G 26	G 29	G 29	35	34	34	34	53	26	22	28	16	E B 13	E B 13	E B 14	E B 14
8	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	19	24	G 28	32	34	36	36	34	G 19	28	G 20	15	15	E B 12	E B 12	E B 12	E B 12	E B 14
9	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	18	G 24	G	G 30	34	E B 43	G 32	31	31	30	41	20	20	20	20	26	25	19
10	26	40	E B 14	17	16	16	17	G 18	G 20	32	34	39	51	34	32	G	26	25	E B 14	32	19	23	31	20
11	E B 14	E B 14	14	24	E B 14	E B 14	E B 14	G 15	G 15	32	33	33	34	33	32	33	25	18	17	E B 12	E B 12	E B 12	E B 12	E B 12
12	E B 12	E B 12	E B 12	E B 12	19	18	18	21	G 20	33	33	35	G 34	33	40	31	G 18	40	20	20	20	20	18	18
13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	25	G	30	E B 44	G 32	G 33	36	36	31	30	29	19	17	E B 15	E B 15	E B 11	E B 11
14	E B 11	E B 11	E B 12	E B 14	E B 14	E B 14	G	G	G 29	32	G	G 35	G 34	36	35	30	G 22	19	25	26	19	E B 13	E B 13	E B 13
15	E B 15	E B 15	E B 15	E B 15	24	23	16	27	37	34	34	34	G 28	31	36	56	20	20	21	20	18	E B 12	E B 12	E B 12
16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	20	G 20	G	G	33	G 33	G 32	32	46	35	30	E B 15	16	12	12	11	11	11
17	E B 15	16	E B 15	E B 15	E B 15	E B 15	G	G	G	G	36	36	37	G	G	G 27	23	E B 11	E B 11	E B 12	E B 11	E B 11	E B 14	E B 14
18	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	28	30	32	32	32	31	G	28	27	21	E B 13	14	17	20	E B 13	E B 13
19	E B 16	E B 14	E B 13	E B 13	E B 13	E B 13	G	G	29	32	G 28	36	35	G 22	33	30	27	25	E B 12	E B 12	E B 12	E B 12	E B 12	16
20	17	E B 12	E B 13	16	E B 12	E B 12	G	24	28	32	G	G 25	G 25	G 24	G 24	G 22	22	18	18	E B 17	18	E B 11	15	16
21	28	18	22	19	E B 15	E B 15	G	G	28	44	44	35	G 23	30	G 19	G	24	24	33	22	26	26	25	E B 13
22	25	21	20	18	E B 14	E B 14	G	20	38	34	G 24	G 24	35	G 26	G 23	G 21	21	21	20	20	20	20	20	20
23	26	16	E B 12	18	18	E B 12	18	24	28	G 26	34	38	G 27	G 22	G 25	25	22	E B 12	13	18	17	17	17	E B 12
24	E B 12	E B 13	E B 12	E B 12	16	12	17	25	G 26	34	G 30	G 28	G 28	G 28	G 23	G	G	E B 12	14	16	19	18	19	18
25	23	E B 12	E B 12	18	18	E B 13	E B 13	G 15	G 15	G 16	G 16	G 17	E B 46	G 14	G 16	G 15	G 17	E B 15	16	19	20	20	E B 12	16
26	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	25	27	33	34	G 27	36	G	G	26	20	E B 14	E B 11	E B 14	E B 14	E B 14	E B 14	E B 14
27	E B 11	E B 11	E B 11	E B 11	E B 11	E B 11	12	G 13	G 13	G	G 36	G	36	G 25	G 24	G 24	21	E B 11	E B 11	E B 11	E B 11	16	E B 11	E B 11
28	E B 11	E B 11	E B 11	E B 11	E B 11	E B 11	E B 14	G 15	G	G 15	G E B 18	54	G 29	G 24	G	G 20	G 19	18	18	16	16	E B 11	E B 11	E B 11
29	E B 11	E B 11	E B 11	E B 14	E B 14	E B 14	E B 14	23	G 26	G	29	G 28	G 27	27	31	31	30	24	E B 13	24	18	20	E B 13	E B 13
30	18	18	22	18	18	18	15	E B 28	G 19	34	33	35	41	41	30	30	38	38	31	28	19	17	16	16
31	14	E B 12	19	18	18	18	25	34	40	34	32	32	33	G 26	G 22	25	42	29	20	E B 14	17	A A 61	A A 60	A A 61
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G 28	32	33	G	E G 34	31	30	G	24	20	16	16	17	E B 15	E B 14	E B 14
U Q	16	15	15	18	16	15	17	25	29	34	34	36	37	34	34	31	27	25	20	20	19	20	18	16
L Q	E B 12	E B 12	E B 12	E B 13	E B 13	E B 13	E B 16	G 20	G 26	G 30	G 30	G 32	G 32	G 26	G 24	G 25	21	G	E B 13	E B 12	E B 13	E B 12	E B 12	E B 12

OCT. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 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	12	12	13	14	14	14	14	14	14	14	16	16	16	16	16	16	16	16	15	15	15	15	15	15
2	13	13	13	13	13	13	13	13	13	13	13	13	13	14	12	12	12	12	12	12	12	14	14	14
3	14	14	14	14	14	14	13	12	12	12	12	14	14	15	15	15	15	16	13	13	13	13	13	13
4	13	14	14	14	14	14	14	14	14	10	10	8	8	8	8	10	9	10	12	11	14	14	14	14
5	15	15	15	15	14	14	14	14	14	15	13	13	13	13	13	13	13	13	13	12	12	12	12	12
6	12	12	12	12	12	12	14	14	14	19	16	16	17	17	18	16	16	15	15	15	15	15	18	12
7	14	16	15	15	15	14	14	14	11	11	11	12	13	12	13	12	12	12	13	13	13	13	14	14
8	15	15	15	15	15	15	13	13	13	13	12	12	12	12	12	12	12	12	12	12	12	12	12	14
9	12	12	12	12	12	12	12	12	12	17	17	43	16	16	16	16	16	14	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	14	15	15	15	16	16	16	16	16	16	14	14	14	14	14	14
11	14	14	14	14	14	14	14	14	14	14	14	14	14	15	15	12	12	12	12	12	12	12	12	12
12	12	12	12	12	12	12	12	12	12	12	12	12	12	17	17	12	12	12	12	15	15	15	15	15
13	13	13	13	13	13	13	13	13	13	13	44	20	20	16	16	16	16	16	15	15	15	15	11	11
14	11	11	12	14	14	14	14	14	14	14	14	14	15	15	15	14	15	15	15	13	13	13	13	13
15	15	15	15	15	15	15	14	14	14	14	14	14	14	14	14	10	10	10	12	13	12	12	12	12
16	14	14	14	14	14	14	14	14	14	18	17	17	17	17	17	17	15	15	10	10	10	10	10	10
17	15	15	15	15	15	15	14	10	10	13	10	10	10	10	10	10	11	11	11	12	11	11	14	14
18	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	13	13	13	13	13	13	13	13
19	16	14	13	13	13	13	13	12	12	12	12	12	12	12	12	12	12	13	12	12	12	12	12	12
20	12	12	13	12	12	12	12	15	15	15	15	15	15	15	15	15	15	15	16	17	12	11	11	11
21	14	14	14	15	15	15	14	14	14	12	14	14	16	15	16	15	14	16	13	12	12	12	13	13
22	14	14	14	14	14	14	14	14	14	14	14	14	12	12	15	15	15	15	15	14	14	14	14	14
23	12	12	12	12	12	12	12	12	12	12	12	13	12	12	12	12	12	12	12	13	12	12	12	12
24	12	13	12	12	12	12	12	14	14	23	20	18	16	17	13	12	12	12	13	13	13	13	13	13
25	12	12	12	12	13	13	13	13	14	13	12	12	46	16	15	15	15	15	12	12	12	12	12	12
26	13	14	14	14	14	14	14	16	16	13	16	13	16	15	15	15	14	14	11	14	14	14	14	14
27	11	11	11	11	11	11	11	11	11	19	17	17	16	15	15	14	11	11	11	11	11	11	11	11
28	11	11	11	11	11	11	14	15	15	15	15	54	19	16	16	16	16	16	11	11	11	11	11	11
29	11	11	11	14	14	14	14	14	15	17	15	15	15	15	15	14	15	14	13	13	13	13	13	13
30	15	15	15	15	15	14	12	28	16	16	16	16	16	16	16	14	14	15	15	15	15	15	15	15
31	12	12	12	12	12	12	E C 22	14	13	13	13	13	15	15	15	14	14	12	12	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	13	14	13	14	14	14	14	14	14	14	14	14	15	15	15	14	14	14	13	13	13	13	13	13
U Q	14	14	14	14	14	14	14	14	14	15	16	16	16	16	16	15	15	15	14	14	14	14	14	14
L Q	12	12	12	12	12	12	13	13	12	13	12	13	13	13	13	12	12	12	12	12	12	12	12	12

IONOSPHERIC DATA STATION Wakkanai

OCT. 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	297	295	293	308	327	312	350	352	346	357	J R 357	Y	355	U Y 353	350	344	R 341	350	331	312	315	316	311	311
2	291	290	287	301	332	318	354	375	344	U Y 352	U Y 365	U Y 349	Y	R 337	304	347	R	U R 333	343	318	303	289	276	275
3	271	291	294	287	290	307	349	350	344	R	Y	351	346	340	338	U R 336	326	343	328	307	307	307	301	312
4	301	286	284	293	313	330	367	343	U R 328	R	Y	354	351	Y	347	352	358	320	343	308	314	314	306	307
5	304	R 289	298	298	304	313	369	363	U Y 360	R 366	364	U R 370	332	357	348	354	341	331	335	320	303	298	302	314
6	309	R 301	296	298	317	317	352	368	354	R	356	U Y 374	360	R 335	345	U Y 351	R 343	323	315	300	304	321	316	306
7	298	290	290	296	311	312	343	361	353	343	Y	U R 330	U R 343	R 363	U A 348	340	351	312	329	303	322	287	290	290
8	286	292	304	301	297	294	339	R 364	357	R	U Y 370	R 329	R 349	Y	335	335	R	331	322	301	R 314	R 300	R 293	292
9	294	313	294	302	296	316	337	356	U R 352	R	R 364	U Y 363	R	325	341	R	324	312	R 320	R	326	305	311	293
10	276	295	287	291	289	287	325	338	343	U Y 367	Y	R	U Y 339	U R 341	U Y 370	345	330	344	319	339	R 312	306	R	286
11	297	295	295	295	315	309	350	R 366	R	R 351	U R 356	R	Y	U R 338	Y	Y	345	338	319	305	321	304	308	292
12	292	292	292	R 308	325	R 335	357	354	U R 367	R	R	R	U R 340	Y	337	355	359	332	328	316	316	304	302	302
13	289	289	288	295	319	315	347	U R 373	U R 371	357	Y	R 313	J R 336	R	R	346	353	357	325	329	333	349	R 333	300
14	298	286	296	301	325	362	356	364	R	U R 355	Y	Y	R	R	U R 345	R 333	R 346	341	323	291	293	306	289	283
15	275	284	286	282	275	253	R 278	311	311	320	319	Y	320	323	U R 340	R 338	R 335	338	310	302	306	297	F 291	F 276
16	F 274	F 288	303	270	F 285	F 287	329	364	R	Y	330	R 356	R	R	R	342	361	331	312	309	316	313	317	307
17	300	281	282	295	291	318	361	370	373	U Y 382	U R 352	324	U Y 375	R 331	345	R	R 341	317	324	308	293	268	282	
18	286	287	275	291	278	295	341	U Y 347	R	R	U Y 349	R	R	R	R 342	J R 343	R 354	351	330	334	306	302	302	299
19	297	290	290	290	301	303	355	353	R	U R 352	J R 379	U R 365	U R 357	R	U R 341	U R 348	U R 353	351	324	336	325	295	311	309
20	305	F 302	F 297	F 283	F 290	301	335	R	R	R 353	U R 337	U Y 315	R	U R 355	U Y 349	J R 350	R	330	312	310	313	293	301	300
21	277	290	292	294	296	R 300	339	R	R	R	Y	Y	R	R	R	R	R 356	337	314	318	R 288	295	282	294
22	296	291	294	298	302	312	355	R 386	R	335	R	R	Y	R	337	U R 347	358	311	338	309	297	295	288	278
23	293	309	302	298	298	296	331	R 343	R	J R 343	U Y 361	R	R 356	U Y 340	R	R	348	334	312	312	312	295	289	291
24	288	307	312	327	V 296	299	344	U R 374	R 362	U Y 361	U R 360	U R 345	R 340	R 353	R 340	350	349	334	350	321	321	305	289	296
25	299	301	304	307	307	315	342	U R 363	U Y 379	U Y 380	R 356	U R 317	Y	R 340	R 339	R	330	337	330	342	328	304	295	298
26	298	314	R 299	311	312	329	342	R 390	R 360	349	R 344	U R 334	Y	U R 349	J R 360	R	J R 367	355	340	341	320	314	302	302
27	299	287	287	287	298	307	358	353	R	U R 364	360	Y	R	U R 341	Y	U R 338	R	R 362	359	360	327	322	321	305
28	288	276	299	301	304	301	336	U Y 384	U Y 383	R	U R 362	Y	R	R	U R 349	R 327	342	350	322	350	329	318	312	306
29	303	286	291	293	296	312	345	U R 363	R 363	U R 360	J R 347	U R 359	U R 365	318	342	340	R 356	340	334	322	R 334	312	299	300
30	295	296	311	293	288	279	318	R 364	U R 374	R	R	R	R	R 327	329	333	R	U R 345	324	320	319	294	294	287
31	271	283	277	281	308	317	323	360	U Y 357	R 331	R	U Y 366	U R 364	332	J R 333	U R 360	362	344	338	344	314	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	29	21	20	20	18	17	20	25	24	25	31	31	30	31	30	29	30
MED	295	290	294	295	301	312	344	363	357	354	R 356	U R 350	R 349	R 340	342	344	349	338	325	318	314	304	301	298
U Q	299	296	299	301	313	317	355	369	U 369	U Y 362	363	U Y 363	U R 358	R 351	U 348	350	357	345	335	334	322	313	311	306
L Q	286	287	287	291	291	299	336	352	345	346	348	R 329	340	332	338	R 338	341	331	319	308	306	295	290	290

OCT. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

OCT. 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							423	L	430	L	L	L	U L 373	L	L	L								
2										L	L	L	L		L 385	L	L							
3							399		L	L	L	L	L	L	L	L	L							
4										L	L	L	U L 411	L		U L 417	510							
5									L	L	L	U L 411	L	L	L	L	413							
6									L	L	L	L	L	L										
7									L	L	L	L 406	L	L	L	A								
8										U L 392	L	L	L	U L 372		416								
9									L	U L 371	L	L	L	L	L									
10									L	L	L				L									
11								L	L	L	L	L	L	L										
12										L	L	L	L	L	A	L								
13									L	L		L	L											
14									409	L	L	R 432	L	L	L	L								
15								L	A	U L 365		U L 369	L	L		A								
16											L	L	L	L	A									
17										L	L	U R 356	L	L		L								
18								L		L	L	L	L	L	L	L								
19								L 397		L	L	L	L	L										
20								460		L	L	L		L										
21												L	L	L										
22										L	L	L		L										
23										L	L		L	L										
24											L	L	L	L										
25											L	L		L										
26											L		L	L										
27											L	L	L	L										
28												B		L										
29										L	L	L	L											
30										L														
31										L	L	L		L										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	2	2	3		5	2	1	1	2	2							
MED							411	428	420	U L 371		U L 406	U L 392	U L 372	L 385	416	462							
U Q										U L 392		422												
L Q										U L 365		U 362												

OCT. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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OCT. 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							218	218	218	226	226	246	246	250	250	250								
2										250	250	250	266		286	250	278							
3							216		218	220	220	222	238	238	238	238	238							
4										238	228	228	230	270	254	242	234							
5									254	240	236	236	238	238	244	244	232							
6									232	230	230	232	240	240										
7									228	244	244	244	248	248	252	252								
8										256	256	256	256	244		244								
9									268	248	248	248	298	266	266									
10									262	236	236				234									
11								244	240	238	238	238	238	238										
12										240	240	240	240	240	240	240								
13									228	228		228	228											
14									228	228	240	240	240	240	240	240								
15								L 292	A 288	292		272	268	250		264								
16											240	240	238	236	248									
17										234	252	268	248	248		242								
18								240		240	240	240	250	244	244	240								
19								222		222	222	226	236	236										
20								234		234	234	234		234										
21												244	240	240										
22										222	230	L 248		248										
23										244	244		244	242										
24											240	240	238	238										
25											232	262		248										
26											248		240	240										
27											236	236	236	236										
28												222		222										
29										222	220	220	220											
30										220														
31										242	238	238		234										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	6	11	24	26	27	24	26	12	12	4							
MED							217	237	232	237	238	240	240	240	246	243	236							
U Q								244	262	243	244	248	248	248	253	250	258							
L Q								222	228	227	230	232	238	238	240	240	233							

OCT. 2013 h′F2 (KM)

IONOSPHERIC DATA STATION Wakkanai

OCT. 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	274	274	274	274	252	244	192	192	192	192	192	H 180	220	218	218	218	226	226	226	240	242	242	256	256
2	268	270	280	280	208	220	220	218	218	216	216	216	216	238	230	224	240	240	234	228	228	242	260	282
3	278	278	278	332	316	268	210	210	216	216	216	216	210	210	210	210	210	210	210	228	232	244	244	252
4	276	276	276	276	260	256	216	216	216	206	230	190	188	H 188	204	204	178	202	202	234	234	234	234	244
5	258	258	258	258	258	258	220	220	H 208	208	206	206	188	188	202	208	208	208	208	234	234	244	244	244
6	244	250	250	250	250	242	226	226	222	218	218	210	210	210	234	234	234	224	224	232	232	232	232	254
7	294	294	294	282	264	264	212	212	212	204	206	206	206	220	220	A	220	220	238	238	238	238	254	272
8	280	280	278	260	260	272	234	224	222	222	222	222	204	194	212	212	226	226	226	226	228	264	276	276
9	284	278	278	274	252	252	226	226	226	226	226	B 214	H 202	202	208	216	A 234	234	250	250	250	256	A 256	256
10	A 342	E A 358	302	282	274	274	256	240	224	222	202	230	A 230	230	230	230	230	230	230	252	252	A 254	A	302
11	286	288	304	320	272	258	242	228	228	228	228	228	206	206	220	224	224	224	224	242	242	242	254	270
12	278	282	282	282	250	240	H 198	216	216	216	216	216	216	216	A	216	218	A 230	230	236	236	248	258	258
13	270	276	276	276	252	252	236	222	222	220	228	230	196	224	224	224	224	224	224	232	232	232	232	254
14	290	290	286	266	242	212	212	212	212	206	206	206	206	206	218	218	218	218	230	270	258	258	262	290
15	292	292	290	280	354	A 376	284	A 242	A	E A 242	242	220	220	220	232	A	232	230	244	244	244	244	266	Q 266
16	Q 286	282	262	262	262	262	238	220	220	220	196	212	196	210	A	226	226	220	220	230	230	230	234	234
17	288	304	296	296	296	254	218	212	212	212	H 194	H 196	220	220	220	220	220	220	222	222	230	242	282	282
18	298	298	298	298	298	294	222	222	222	222	220	220	220	224	224	224	224	224	224	224	248	258	258	258
19	276	276	282	282	282	244	226	220	220	220	220	220	220	220	220	232	232	218	218	218	226	252	252	252
20	262	262	Q 276	Q 288	270	244	220	204	210	210	210	210	226	226	226	226	226	224	224	224	224	264	276	276
21	312	282	282	282	272	258	232	232	222	222	224	194	212	216	216	228	228	228	256	256	E A 290	E A 322	A 322	286
22	A 318	314	294	286	276	274	216	216	216	216	198	198	228	228	228	228	230	230	230	240	256	260	276	276
23	270	270	268	280	270	268	222	222	222	222	218	238	230	230	230	230	230	230	230	230	242	264	290	290
24	290	248	244	242	256	256	240	222	220	220	220	218	218	220	220	220	218	216	216	222	242	276	286	286
25	306	290	274	274	274	242	220	220	220	220	220	206	230	234	230	230	230	210	210	212	258	288	288	286
26	286	286	268	266	266	234	204	204	206	206	206	220	220	220	220	224	200	200	204	220	234	248	248	248
27	290	306	296	282	282	266	228	222	222	222	222	216	216	216	216	226	224	222	214	214	214	222	238	268
28	272	272	272	272	272	270	238	226	216	216	216	B	224	224	224	224	224	224	224	224	258	258	258	258
29	274	274	274	274	274	224	224	216	216	216	216	216	216	216	236	236	236	222	222	222	222	268	282	308
30	A 308	298	282	282	304	304	236	216	212	212	214	214	214	228	228	228	228	228	238	244	244	272	272	286
31	270	274	298	312	290	246	246	222	222	222	220	218	216	208	218	218	218	218	218	218	218	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	30	31	31	30	31	31	29	29	31	31	31	31	31	30	29	30
MED	284	279	278	280	270	256	224	220	219	217	216	216	216	220	220	224	226	224	224	230	235	249	258	269
U Q	292	292	294	282	282	268	236	224	222	222	222	220	220	224	229	228	230	228	230	240	248	264	276	286
L Q	272	274	274	272	256	244	216	216	212	212	206	206	206	210	217	218	218	218	218	222	230	242	246	254

OCT. 2013 h′F (KM)

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OCT. 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							120	120	108	108			A	108	A	108								
2							A	108	108	108	108	108	108	108	122	120	120	A						
3							130	110	110	110	110	110	110	E A 122	114	114	A	A						
4							124	120	118	112	112	112	112	112	112	112	114	A						
5							136	120	118	116	112	112	112	112	112	112	112	E B 136						
6							B 136	120	120	120	120	120	120	114	114	114	124	A						
7							144	122	114	114	114		A	A	112	112	112	A						
8								112	112	112	112	114	114	116	116	116	A	A						
9								112	112	112	112	B	112	112	112	112	112	A						
10							A	118	118	118	110	110	110	110		110	110	A						
11							E B 156	126	126	118	118	A	116	116			120	A						
12							A	A	114	112	112	112	112		A	A	124	A						
13							E B 160	124	120	112	B	114	114	114	114	114	114							
14							E B 180	126	118	114	112	112	112	112	112	112	112	A						
15								124	A	A 124	A	A	124			124	B	A						
16							A	124	124	118	114	114	114	114	A	114	A							
17							E B 184	114	114	114	112	112	112	112	112	112	112	B						
18							132	130		A		A			130	128	128							
19							E B 186	116	116	116	116	106	106	106	106	106	106	A						
20							E B 188	104	104	104	104	120	120	118	118	122	122	A						
21							146	126	A	A		110	110	A	110	110	110	A						
22							110	A	A	A	112	112	112	112	112	112								
23							128	128	A	126	126	A	124	120	120			B						
24								120	118	A	118	118	118	118	118	118	126	B						
25								130	130	128	118	118	B	112	112	114	136	B						
26							B	132	A	A	126	120	114	110	110	110	116	B						
27								140	132	112	112	112	112	112	112	E A 130								
28							B	130	118	118	118	B	118	118	118	118	122							
29							A	A	120	114	A	114	114		A									
30							A	B	122	106	A	A	A											
31							C	116	116	116	A	A	A	116	116	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							16	27	25	26	23	21	25	24	23	25	20	1						
MED							131	120	118	114	112	112	112	112	112	113	115	E B 136						
U Q							E B 170	126	120	118	118	116	117	116	118	118	123							
L Q							129	116	113	112	112	111	112	112	112	112	112							

OCT. 2013 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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OCT. 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	B	B	B	102	98	B	174	174	174	144	144	144	134	154	138	138	120	118	110	110	B	B	108	96
2	B	B	B	B	B	B	106	122	122	198	128	128	128	148	218	G	120	120	120	122	94	108	B	B
3	120	116	116	112	106	106	186	G	186	152	132	132	G	102	218	110	110	110	110	110	108	122	112	106
4	106	106	106	106	106	B	G	106	106	198	198	198	172	172	G	206	164	116	B	100	B	B	100	100
5	104	102	102	B	102	102	G	G	188	G	188	188	188	182	130	130	174	G	B	B	B	B	96	B
6	B	B	B	B	102	B	94	176	176	176	102	G	206	G	206	200	168	126	96	96	96	B	106	B
7	B	B	B	B	104	B	G	150	148	132	116	116	114	158	214	128	128	128	106	106	102	B	102	B
8	B	140	B	B	B	B	140	140	138	130	126	176	184	184	102	196	126	126	116	92	108	106	98	98
9	B	108	108	B	B	108	140	140	G	140	114	B	114	114	144	142	122	122	118	118	118	114	110	110
10	106	106	106	106	106	106	106	106	106	120	120	118	112	112	112	G	112	114	B	114	114	114	102	102
11	B	B	100	100	B	B	100	100	100	120	120	116	186	186	102	108	108	108	108	B	B	B	B	B
12	108	108	B	108	102	102	100	100	100	116	116	116	116	116	112	112	112	108	108	106	106	106	106	96
13	98	B	98	110	110	110	G	158	G	158	B	140	132	132	132	132	128	114	114	110	110	110	106	B
14	102	102	B	B	B	B	G	G	172	156	G	156	128	198	134	134	134	114	106	106	106	106	106	B
15	B	130	130	124	100	100	116	130	102	130	130	108	108	108	122	118	118	116	114	114	114	B	B	B
16	B	112	B	112	112	112	110	110	G	G	122	122	122	118	112	122	122	106	106	104	104	104	104	104
17	106	106	B	106	106	B	G	G	G	G	196	196	172	G	G	190	172	B	B	B	B	B	B	B
18	B	B	B	106	106	106	106	G	106	104	104	104	104	104	G	136	136	110	110	110	104	104	104	104
19	100	100	B	110	110	B	G	G	162	134	108	204	126	96	194	170	136	130	B	B	B	96	B	96
20	96	B	B	96	96	B	G	180	148	126	G	110	110	110	110	110	130	130	128	B	114	114	114	114
21	98	98	98	98	98	B	G	G	112	112	112	178	100	100	100	G	110	110	110	110	110	110	110	110
22	104	104	104	102	102	102	G	108	108	108	108	108	192	106	106	106	106	104	104	104	104	104	104	104
23	90	90	98	98	98	98	142	142	126	116	186	88	94	96	96	96	96	116	126	120	118	116	116	106
24	102	B	B	B	102	102	100	156	118	106	106	106	104	104	104	G	G	104	104	104	104	104	104	104
25	100	100	100	98	98	98	98	116	116	114	112	104	B	104	104	104	104	B	108	108	108	108	108	108
26	104	110	104	102	102	B	B	152	120	114	154	108	208	G	G	E G 212	154	B	106	104	B	B	B	B
27	B	B	B	104	112	112	112	112	112	G	204	G	204	104	104	102	122	B	B	B	B	112	112	108
28	108	B	94	94	94	94	B	100	G	100	100	B	100	100	G	100	100	100	100	100	100	B	B	B
29	B	100	100	100	100	B	100	100	146	G	110	110	110	104	104	102	102	102	B	102	102	102	102	102
30	102	102	100	100	100	100	100	B	114	114	114	110	104	106	106	94	94	94	94	94	94	94	94	104
31	96	96	112	108	104	104	104	112	112	112	112	112	112	112	100	100	100	100	100	B	100	100	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	20	17	23	26	17	19	23	26	26	28	27	29	28	26	27	30	26	24	24	23	21	24	20
MED	102	105	102	104	102	102	106	122	119	123	118	116	122	111	112	120	121	114	108	106	106	106	105	104
U Q	106	109	107	108	106	107	140	152	148	144	138	156	178	151	138	142	134	120	114	110	110	113	109	107
L Q	98	100	99	100	100	100	100	106	108	114	111	108	109	104	104	104	108	106	105	103	102	104	102	100

IONOSPHERIC DATA STATION Wakkanai

OCT. 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				F 1	F 1		H 1	H 1	HL 11	HL 11	HL 11	HL 11	HL 11	HL 11	HL 11	HL 12	CL 21	C 4	F 1	F 3			F 1	F 1
2							L 2	C 1	C 1	H 1	HC 11	C 1	C 1	HC 11	HL 11		C 1	C 2	FF 21	F 2	FF 32	FF 32		
3	FF 11	F 2	F 3	F 7	FQ 41	F 3	H 1		HL 11	HL 11	HL 11	HL 11		L 1	HL 11	L 1	L 2	L 2	F 1	F 1	F 1	FF 11	F 1	F 1
4	F 2	F 1	F 1	F 3	F 2			L 1	L 1	HL 11	HL 11	HL 11	HL 11	HL 11		HL 11	HL 11	L 3		F 1			F 1	F 2
5	F 1	F 1	F 1		F 2	F 1			HL 11		HL 11	HL 11	HL 11	HL 11	C 1	C 2	HL 12						F 1	
6					F 1		L 1	HL 11	HL 11	HL 11	L 1		H 1		H 1	HL 11	HL 11	C 1	F 2	F 2	F 1		F 1	
7					F 1			H 1	H 1	CL 11	CL 11	CL 21	L 1	HL 11	H 1	C 2	C 3	C 3	F 2	F 2	F 1		F 1	
8		F 1					C 2	H 1	C 1	C 1	CL 11	H 1	HL 11	HL 12	L 1	HL 12	LL 12	L 1	F 3	FF 11	F 1	F 2	F 1	F 1
9		F 1	F 1			F 1	CL 11	H 1		H 1	C 1		C 1	C 1	H 1	C 2	C 2	C 3	F 3	F 5	FF 13	F 3	F 5	F 3
10	F 4	F 3	F 2	F 2	F 2	F 2	L 2	L 2	L 1	C 1	C 1	C 2	CL 11	C 1	C 1		C 2	L 3		F 3	FQ 21	F 3	F 3	F 3
11			F 2	F 3			L 1	L 1	L 1	CL 11	CL 11	C 1	HL 11	HL 11	L 2	CL 22	CL 22	L 3	F 2					
12	F 1	F 1		F 1	F 2	F 2	L 3	L 3	L 1	C 1	CL 12	CL 11	CL 11	L 1	L 2	CL 21	L 1	L 2	FQ 21	FQ 21	FQ 21	FQ 21	F 4	F 2	F 1
13	F 1		F 1	F 1	F 1	F 1		HL 11		HL 11		H 1	C 1	C 1	C 1	C 3	C 3	L 3	F 2	F 2	F 2	F 1	F 1	
14	F 1	F 1							H 1	HL 11		HL 11	CL 11	HL 12	HL 22	CL 42	CL 31	CQ 21	F 3	FF 32	F 2	F 2	F 1	
15		F 1	F 1	F 2	F 3	F 6	L 1	CL 21	C 2	CL 11	CL 11	L 1	L 2	L 2	CL 12	CL 32	C 3	L 6	F 6	F 2	F 2			
16		C 2		F 2	F 1	F 2	CQ 11	LH 21			C 1	C 1	C 1	C 1	C 3	C 2	CL 23	LQ 21	FQ 11	FQ 11	FQ 11	FQ 11	F 1	F 1
17	F 1	F 2		F 1	F 2						H 1	H 1	H 1			H 1	H 1							
18				F 2	F 1	F 2	L 1		L 1	L 2	L 1	L 2	L 1	L 1		C 1	C 2	L 3	F 1	F 4	F 4	F 3	F 1	F 1
19	F 1	F 1		F 2	F 1				H 1	HL 11	L 2	HL 11	CL 11	L 1	HL 12	H 1	CL 21	C 2				F 1		F 4
20	F 1			F 2	F 1			H 1	H 1	C 1		L 1	L 1	L 2	L 2	L 1	C 2	C 2	F 3		F 2	F 1	F 3	F 3
21	F 3	F 3	F 3	F 3	F 1				C 2	C 2	L 2	HL 11	L 1	L 2	L 1		C 4	C 5	F 3	F 3	F 4	FQ 31	F 3	F 2
22	F 4	F 3	F 3	F 2	F 2	F 1		C 2	C 2	L 2	L 1	L 1	HL 11	L 1	L 2	L 1	L 2	LQ 21	L 4	FF 21	F 3	F 3	F 2	F 2
23	F 5	F 3	F 1	F 3	F 3	F 1	C 1	CL 11	C 2	L 1	HL 12	L 2	L 1	L 1	L 2	L 2	L 2	L 1	FF 12	FQ 21	F 3	F 3	F 1	F 1
24	F 1				F 3	F 1	L 1	HL 11	C 1	C 2	L 2	L 2	L 2	L 1	L 1			L 1	F 1	F 1	F 3	FQ 21	FQ 31	FQ 31
25	F 3	F 2	F 1	F 3	F 3	F 2	L 1	L 1	L 2	L 1	L 1	L 2		L 1	L 2	L 2	L 2		F 1	FF 31	FF 41	F 6	F 2	F 2
26	F 1	FF 11	F 1	F 1	F 1			HL 22	L 2	L 2	HL 11	L 1	H 1			H 1	H 1		F 1	F 1				
27				F 1	F 1	F 1	L 1	L 1	L 1		HL 11		HL 11	L 1	L 1	L 3	CL 11					F 1	F 1	F 1
28	F 1		F 2	F 1	F 1	F 1		L 1		L 1	L 2		L 1	L 2		LH 21	L 2	FQ 21	F 2	F 1	F 2			
29		F 1	F 1	F 1	F 1		L 2	L 2	H 1		L 2	L 1	L 2	L 3	L 3	L 4	L 3	F 3		F 2	F 2	F 4	F 1	F 3
30	F 2	FQ 11	F 3	F 2	F 3	F 3	L 2		L 2	CL 21	L 2	L 2	L 2	L 2	L 2	L 2	L 3	FQ 31	FQ 21	FQ 31	F 1	FQ 21	F 1	FF 22
31	F 2	F 1	FF 22	F 3	F 2	F 1	L 2	C 3	C 2	C 2	C 2	C 2	C 2	C 2	L 2	L 2	L 4	LQ 31	F 3		F 1	F 3	F 5	FQ 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																								

OCT. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	X 53	X 51	X 50	X 51	X 51	X 48													X 80	X 56	X 56	X 56	X 57	X 58
2	X 58	X 56	X 56	X 56	X 52	X 48													X 109	X 85	X 62	X 50	X 53	X 54
3	X 51	X 59	X 55	X 52	X 52	X 58													X 88	X 65	X 62	X 62	X 60	X 60
4	X 59	X 55	X 54	X 53	X 50	X 47													X 76	X 63	X 62	X 54	X 56	X 53
5	X 50	X 51	X 50	X 51	X 48														X 66	X 58	X 57	X 56	X 59	X 54
6	X 52	X 49	X 50	X 50	X 48	X 46													X 69	X 50	X 46	X 46	X 47	X 46
7	X 47	X 46	X 45	X 46	X 46	X 45													X 82	X 59	X 56	X 55	X 54	X 53
8	X 54	X 54	X 55	X 54	X 50	X 48													X 84	X 58	X 56	X 55	X 56	X 54
9	X 53	X 56	X 56	X 52	A	X 42													X 105	X 105	X 59	X 44	X 50	X 46
10	X 44	X 51	X 51	X 49	X 49	X 49													X 81	X 79	X 61	X 40	X 43	X 44
11	X 51	X 45	X 46	X 45	X 45	X 45													X 72	X 57	X 54	X 50	X 46	X 46
12	X 46	X 46	X 46	X 46	X 49	X 42													X 66	X 54	X 52	X 51	X 54	X 52
13	X 50	X 50	X 50	X 51	X 50	X 49													X 72	X 64	X 68	X 57	X 51	X 48
14	X 45	X 45	X 48	X 54	X 57	X 42													X 69	X 60	X 65	X 59	X 55	X 56
15	X 55	X 55	X 54	X 55	X 50	X 47													X 60	X 64	X 60	X 51	X 50	X 50
16	X 51	X 52	X 52	X 51	X 53	X 52													X 74	X 68	X 61	X 54	X 49	X 48
17	X 48	X 46	X 49	X 47	X 46	X 47													X 75	O X 58	X 60	X 50	X 47	X 49
18	X 48	X 48	X 47	X 45	X 46	X 47													X 83	X 62	X 51	X 51	X 49	X 51
19	X 51	X 51	X 51	X 51	X 49	X 45													X 72	X 68	X 55	X 53	X 53	X 52
20	X 52	X 52	X 52	X 51	X 51	X 52													X 72	X 57	X 57	X 54	X 52	X 52
21	X 50	X 51	X 52	X 52	X 49	X 48													X 63	X 52		X 54	X 54	X 53
22	X 52	X 52	X 54	X 46	X 46	X 44													X 67	X 64	X 59	X 56	X 56	X 57
23	X 58	X 56	X 53	X 52	X 50	X 48													X 76	X 72	X 52	X 43	X 43	X 47
24	X 51	X 54	X 47	X 36	X 37	X 36													X 67	X 72	X 50	X 48	X 49	X 46
25	X 49	X 48	X 50	X 50	X 46	X 42													X 68	X 63	X 53	X 46	X 44	X 49
26	X 50	X 51	X 50	X 52	X 43	X 41												X 80	X 69	X 60	X 56	X 51	X 50	X 48
27	X 48	X 49	X 50	X 51	X 51	X 50													X 80	X 60	X 51	O X 51	X 43	X 43
28	X 43	X 45	X 47	X 50	X 47	X 46													X 64	X 60	X 56	X 51	X 51	X 51
29	X 47	X 49	X 49	X 48	X 49	X 47													X 65	X 62	X 54	X 50	X 41	X 44
30	X 44	X 47	X 47	X 42	X 42	X 41												X 91	X 69	X 62	X 62	X 50	A	X 49
31	X 51	X 49	X 46	X 47	X 48	X 50													X 83	X 79	X 67	X 51	X 52	X 51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30												2	31	31	30	31	30	31
MED	X 51	X 51	X 50	X 51	X 49	X 47												X 86	X 72	X 62	X 56	X 51	X 51	X 51
U Q	X 52	X 54	X 53	X 52	X 50	X 48													X 81	X 68	X 61	X 55	X 54	X 53
L Q	X 48	X 48	X 47	X 47	X 46	X 44													X 67	X 58	X 54	X 50	X 47	X 47

OCT. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	47	45	44	45	45	41	64	74	74	74	77	89	94	89	72	84	91	83	74	50	50	50	51	52
2	52	50	50	50	46	42	62	74	77	72	88	103	106	84	72	108	108	117	103	78	56	44	46	48
3	45	52	49	46	46	52	66	71	78	85	115	98	86	89	94	87	96	102	82	59	56	56	54	54
4	53	49	48	47	44	41	66	88	90	86	76	86	87	86	83	85	92	85	70	57	56	48	50	47
5	44	45	44	45	42	43	68	79	80	77	89	88	81	78	84	77	82	72	60	52	50	50	53	48
6	46	43	44	44	42	40	66	81	98	77	79	98	106	93	92	82	88	87	63	43	40	40	41	40
7	41	40	39	40	40	39	60	73	73	72	75	84	86	82	82	80	87	90	76	54	50	49	48	47
8	48	48	49	47	44	42	60	86	99	92	97	117	103	86	84	90	91	92	78	52	50	49	50	48
9	47	50	50	46	A	36	58	77	79	94	111	92	91	107	110	89	70	81	98	99	53	38	44	40
10	37	45	45	43	43	43	67	98	103	96	96	102	100	96	92	88	84	87	75	73	55	34	37	38
11	45	39	40	39	39	39	68	81	86	96	100	108	102	90	92	98	94	83	66	50	48	44	40	40
12	41	40	40	40	42	36	52	64	81	89	98	102	90	88	92	92	82	75	60	48	46	45	48	46
13	44	44	44	45	44	43	66	82	90	86	84	97	98	86	94	86	84	79	66	58	62	51	45	42
14	39	39	42	48	51	36	51	72	80	79	87	94	104	101	100	97	92	77	63	54	59	53	49	50
15	49	49	48	49	43	41	53	69	106	93	98	110	108	97	92	106	97	78	54	58	54	45	43	44
16	45	46	46	45	46	46	60	82	91	102	103	110	119	100	99	86	86	80	68	62	55	48	42	42
17	42	40	43	41	40	41	60	76	80	92	97	102	101	107	98	87	83	86	69	52	54	44	41	42
18	42	42	41	39	40	41	64	86	100	109	112	123	109	103	102	94	86	86	77	56	45	44	43	45
19	45	45	45	45	43	39	62	84	88	89	94	116	120	105	101	87	80	75	66	62	49	47	47	46
20	46	46	46	45	45	46	68	91	100	88	91	99	110	106	100	90	83	80	65	51	51	48	46	46
21	43	45	46	46	43	42	64	83	90	86	108	121	120	118	109	98	97	81	57	46	A	48	48	47
22	46	46	48	40	40	39	60	86	96	93	108	107	103	106	102	90	76	73	60	58	53	50	50	51
23	52	50	47	46	44	42	58	88	96	96	108	104	113	115	102	85	87	72	70	66	46	37	36	41
24	45	48	41	30	31	30	53	80	100	101	116	106	98	96	104	96	80	73	60	65	44	42	42	40
25	43	42	44	44	40	36	55	86	94	88	96	96	94	115	116	88	78	75	62	57	47	40	38	43
26	44	45	44	46	37	35	58	88	92	91	88	94	105	108	100	87	81	74	63	54	50	44	44	42
27	42	43	44	45	45	44	57	85	90	89	94	107	102	106	102	96	94	102	74	53	45	45	36	37
28	37	39	41	44	41	40	59	88	97	87	95	106	96	98	96	86	81	81	58	54	50	44	45	45
29	41	43	43	42	43	40	51	74	88	94	99	103	107	98	92	98	98	78	59	56	48	44	35	37
30	38	41	41	36	36	35	56	101	97	93	91	99	105	109	110	111	98	84	63	55	56	43	A	43
31	45	43	40	41	42	44	52	74	85	138	119	120	105	112	112	111	114	96	77	72	61	45	45	46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	31
MED	45	45	44	45	43	41	60	82	90	89	96	102	103	98	98	89	87	81	66	56	50	45	45	45
U Q	46	48	47	46	44	43	66	86	97	94	108	108	107	107	102	97	94	87	75	62	55	49	48	47
L Q	42	42	41	41	40	39	56	74	80	86	88	96	94	89	92	86	82	75	60	52	48	44	41	41

OCT. 2013 foF2 (0.1MHz)

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OCT. 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	L	L	U L 500	L	L	L	L								
2								L		L	U L 504	A	A	L	U L 568	L	L							
3										L	L	L	L	L	A	L	A							
4									L	L	L	L	A	L		A	A							
5									A	L	L	L	L	L	L	A	A							
6											L	L	U L 496	L	L	L								
7									L	L	L	A	L	L	L	A								
8									L		L	U L 460	L	L	L	L								
9									L		L		L	A	A	A								
10									L	L		U L 484	A	A	L									
11											L	L	L	L										
12										A	A	A	L	A	L	A	A							
13											L	U L 524	L	L		A								
14											L	L	U L 484	L	A									
15									L		L	L	L											
16											L		L	L	A									
17									A		L		A	L	A	A								
18										A	L	L			L	A								
19												L	L	L	A									
20										L	A	A	L	L	L									
21											L	L	L	L	A	A					A			
22											L	A		A	A									
23										L	L	L	L	A	A	A								
24											L	L	A	L	A									
25									A	A	A	L		L	L									
26											L	L	L	L	L	A								
27											L	L	L	L	A	A								
28										A		E B	L	L	L	A								
29										L	L	L	L	L		A								
30														L	A	A								
31									L	L			L	L										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	4	2		1									
MED											U L 504	U L 492	U L 490		U L 568									
U Q												U L 512												
L Q												U L 472												

OCT. 2013 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Kokubunji

OCT. 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	R	R	R	A	A	R	R	A	R	B						
2							R	R	R	A	R	A	A	R	A	A	R	B						
3							B	A	R	A	A	A	R	R	A	A	A	B						
4							B	R	R	R	R	R	A	R	R	A	R	B						
5						B	B	A	A	A	A	A	R	R	A	A	U A 256	A						
6							B 252		A	A	A	R	R	A	A	A	R	B						
7							B	A	A	A	A	A	R	R	A	A	R	B						
8							B 256		R	A	A	R	R	A	R	R	A	B						
9							B	R	R	A	R	R	A	A	A	A	A	B						
10							R	A	R	R	R	A	R	A	R	R	A	B						
11							U R 172	R	R	A	R	R	R	A	R	R	A	B						
12							B	R	R	A	A	A	R	A	A	A	A	B						
13							B	R	A	A	A	R	R	A	R	A	A	B						
14							B	R	A	A	R	R	R	R	A	A	A	B						
15							B	R	R	R	R	R	A	R	A	R	U R 260	B						
16							B	R	R	R	A	R	R	R	A	R	232	B						
17							R	R	A	R	A	A	A	A	A	A	U A 240	A						
18							B	R	A	A	R	R	A	A	R	A	U A 236	B						
19							B	R	A	A	A	A	R	R	A	A	R	B						
20							B	A	R	R	A	A	R	R	R	A	A	B						
21							B 240		A	A	A	A	A	A	A	A	A	B			A			
22							B	R	A	A	A	A	A	A	A	A	A	B						
23							B	A	R	R	R	R	R	A	A	A	U R 236	B						
24							B	A	A	A	R	R	A	R	A	R	R	B						
25							B	A	A	A	A	R	A	A	R	A	R	B						
26							B	A	R	A	R	A	A	R	A	A	R							
27							B	U R 264	A	A	R	A	A	A	A	A	A	B						
28							B 240		A	A	A	B	R	A	R	A	A	B						
29							B 232		R	R	A	A	A	R	A	A	A	B						
30							B	R	R	A	R	R	A	A	A	A	A							
31							B	A	A	A	A	A	A	A	A	A	A	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	6									6							
MED							U R 172	246									U 238							
U Q								256									U 256							
L Q								240									236							

OCT. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	19	20	J A 25	21	E B 15	21	22	G	G	G	G	42	G	G	G	40	G	28	E B 15	E B 14	E B 14	E B 16	E B 15	E B 15
2	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	G	G	G	38	G	41	44	G	43	34	G	22	E B 15	E B 14	E B 15	21	J A 55	J A 43
3	J A 67	J A 38	21	21	22	24	J A 54	J A 47	G	40	42	41	G	G	41	44	42	J A 62	J A 39	J A 38	J A 31	E B 16	E B 14	E B 14
4	E B 15	E B 14	E B 15	E B 14	E B 14	E B 14	J A 35	G 26	G	G	G	G	44	G	G	40	36	25	22	21	E B 15	E B 16	E B 15	E B 15
5	E B 15	E B 15	E B 14	E B 14	E B 15	E B 15	E B 15	36	39	38	42	42	G	G	42	38	32	29	J A 29	E B 14	J A 20	E B 15	E B 14	E B 14
6	E B 16	E B 15	E B 15	E B 15	20	E B 14	25	33	40	42	42	G	G	41	40	36	G	J A 30	J A 28	20	J A 23	20	E B 15	E B 15
7	E B 15	E B 15	E B 15	E B 15	20	E B 15	22	36	42	38	J A 48	45	G	G	J A 47	J A 59	G	J A 39	23	22	J A 25	E B 14	E B 15	E B 15
8	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	22	32	G	J A 46	41	G	G	41	G	G	35	J A 37	J A 38	J A 26	J A 24	J A 21	J A 28	J A 34
9	J A 30	J A 20	18	E B 16	J A 42	21	21	G	G	J A 45	G	G	41	42	39	41	36	22	J A 31	32	E B 14	E B 14	E B 15	E B 14
10	E B 15	E B 16	E B 14	E B 14	E B 15	E B 15	G	J A 72	G	G	G	39	J A 38	40	G	G	34	J A 25	21	E B 14	E B 15	E B 14	J A 43	E B 15
11	E B 13	J A 39	J A 25	E B 15	J A 28	E B 15	G	G	G	43	G	G	G	42	G	G	34	J A 36	J A 34	J A 29	J A 32	J A 26	J A 38	J A 25
12	E B 15	E B 14	E B 14	20	20	E B 15	E B 14	G	G	45	41	45	G	45	44	J A 60	35	J A 45	J A 38	J A 42	J A 53	42	J A 21	21
13	20	E B 15	E B 14	E B 15	E B 15	20	J A 24	G	38	41	45	G	G	43	G	J A 48	J A 39	E B 13	E B 15	J A 21	J A 22	E B 14	E B 14	E B 14
14	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	22	G	41	40	G	G	G	G	42	38	24	E B 14	J A 40	J A 26	E B 15	15	E B 15	E B 15
15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 14	E B 16	G	G	G	G	G	42	G	42	G	G	E B 17	J A 40	J A 60	J A 26	22	J A 20	J A 22
16	J A 19	E B 16	20	21	E B 15	E B 15	E B 14	G	G	G	J A 45	G	G	G	44	G	32	23	E B 15	E B 15	J A 30	J A 37	J A 28	E B 15
17	E B 14	E B 15	E B 16	J A 20	E B 12	E B 15	G	G 23	40	G	43	43	46	45	44	J A 40	32	J A 28	J A 27	34	E B 15	E B 15	E B 15	E B 15
18	E B 16	E B 14	E B 15	E B 15	E B 15	E B 15	E B 16	G	41	42	G	G	42	44	G	J A 39	34	24	J A 65	J A 35	J A 34	J A 48	J A 24	J A 36
19	J A 31	J A 25	22	E B 15	E B 15	E B 14	E B 17	G	42	42	42	42	G	G	42	37	G	22	J A 25	J A 24	J A 29	J A 24	J A 36	J A 26
20	E B 15	E B 15	E B 14	E B 15	E B 13	E B 14	E B 14	35	G	G	44	44	G	G	G	37	36	19	E B 14	J A 60	J A 46	J A 42	E B 15	E B 13
21	E B 16	J A 26	J A 36	J A 26	J A 21	20	E B 17	30	34	J A 44	J A 43	43	42	43	42	38	37	20	J A 21	J A 50	J A 64	J A 44	J A 30	J A 32
22	J A 19	20	E B 14	E B 15	E B 15	E B 15	J A 20	G 24	38	J A 46	46	42	J A 59	71	J A 67	40	J A 39	J A 32	J A 29	22	E B 14	J A 29	J A 34	J A 43
23	E B 15	J A 46	J A 56	J A 20	J A 23	J A 26	20	33	G	G	G	G	G	43	41	38	G	19	E B 15	J A 22	E B 15	E B 14	J A 103	J A 50
24	J A 22	J A 40	21	20	20	E B 15	E B 15	34	41	43	G	G	41	G	40	G	G	E B 15	J A 17	J A 22	E B 15	E B 14	E B 15	21
25	J A 44	J A 30	J A 24	J A 22	18	J A 24	E B 16	32	J A 42	42	43	G	42	41	G	37	G 21	E B 14	E B 15	J A 36	J A 35	J A 45	J A 29	J A 26
26	J A 22	J A 21	22	22	E B 14	E B 14	J A 24	33	G	42	G	43	45	G 27	41	J A 37	G	21	22	J A 45	J A 48	J A 70	J A 61	J A 30
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 16	G	J A 68	40	G	46	41	40	41	40	J A 34	J A 29	J A 49	J A 63	J A 30	J A 55	J A 24	J A 20
28	23	E B 15	E B 14	E B 15	E B 15	E B 15	19	27	41	44	45	E B 42	G	42	G	40	28	J A 85	J A 29	J A 30	J A 22	J A 29	J A 24	E B 14
29	E B 14	E B 14	E B 15	E B 14	E B 15	E B 15	20	30	G	G	42	J A 57	43	G	40	40	36	J A 43	32	E B 16	E B 15	E B 15	E B 15	E B 15
30	E B 15	22	E B 15	E B 15	E B 15	E B 15	E B 16	G	G	J A 42	G	G	50	40	43	J A 55	J A 31	J A 19	J A 18	E B 14	J A 37	J A 43	J A 61	J A 50
31	J A 98	J A 29	22	E B 14	E B 15	E B 14	E B 15	30	42	J A 48	J A 39	J A 54	45	43	J A 40	J A 47	J A 29	J A 36	25	20	E B 16	E B 15	E B 15	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 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G	41	41	40	38	40	41	38	32	25	J A 25	J A 24	J A 23	21	J A 21	E B 15
U Q	J A 22	J A 25	J A 22	20	20	15	22	33	41	J A 43	43	43	43	43	42	J A 40	36	J A 36	J A 34	J A 36	J A 32	42	J A 34	30
L Q	E B 15	E B 15	E B 14	E B 14	E B 15	E B 14	E B 16	G	G	G	G	G	G	G	G	G 36	G	E B 19	E B 17	E B 20	E B 15	E B 15	E B 15	E B 15

OCT. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	E B 14	E B 15	E B 14	E B 15	E B 15	E B 15	19	G	G	G	G	38	G	G	G	38	G	24	E B 15	E B 14	E B 14	E B 16	E B 15	E B 15
2	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	G	G	G	36	G	40	42	G	38	34	G	20	E B 15	E B 14	E B 15	E B 15	20	E B 15
3	32	23	E B 15	20	E B 15	20	31	28	G	35	35	35	G	G	39	39	39	32	19	18	22	E B 16	E B 14	E B 14
4	E B 15	E B 14	E B 15	E B 14	E B 14	E B 14	23	G 20	G	G	G	G	41	G	G	38	33	22	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15
5	E B 15	E B 15	E B 14	E B 14	E B 15	E B 15	E B 15	30	36	37	38	37	G	G	38	37	30	26	18	E B 14	E B 14	E B 15	E B 14	E B 14
6	E B 16	E B 15	E B 15	E B 15	17	E B 14	24	29	35	38	38	G	G	38	36	33	G	25	24	E B 16	E B 15	E B 15	E B 15	E B 15
7	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	19	31	35	33	40	44	G	G	39	38	G	34	16	E B 15	E B 15	E B 14	E B 15	E B 15
8	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	19	30	G	42	37	G	G	36	G	G	33	29	31	19	E B 15	17	22	28
9	25	17	E B 15	E B 16	A A 42	E B 15	19	G	G	38	G	G	38	38	37	37	34	18	24	32	E B 14	E B 14	E B 15	E B 14
10	E B 15	E B 16	E B 14	E B 14	E B 15	E B 15	G	34	G	G	G	37	26	35	G	G	30	18	E B 14	E B 14	E B 15	E B 14	16	E B 15
11	E B 13	E B 15	19	E B 15	20	E B 15	G	G	G	37	G	G	G	40	G	G	31	28	28	17	20	E B 15	19	18
12	E B 15	E B 14	E B 14	E B 14	E B 16	E B 15	E B 14	G	G	41	39	42	G	39	41	57	32	38	30	25	31	30	17	E B 15
13	16	E B 15	E B 14	E B 15	E B 15	E B 15	17	G	38	37	42	G	G	37	G	42	30	E B 13	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14
14	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	20	G	36	36	G	G	G	G	38	34	23	E B 14	29	19	E B 15	E B 15	E B 15	E B 15
15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 14	E B 16	G	G	G	G	G	40	G	38	G	G	E B 17	18	23	22	E B 15	E B 15	E B 15
16	E B 15	E B 16	E B 15	E B 15	E B 15	E B 15	E B 14	G	G	G	38	G	G	G	42	G	27	20	E B 15	E B 15	18	27	20	E B 15
17	E B 14	E B 15	E B 16	E B 15	E B 12	E B 15	G	G 21	36	G	38	42	42	41	39	36	30	22	20	26	E B 15	E B 15	E B 15	E B 15
18	E B 16	E B 14	E B 15	E B 15	E B 15	E B 15	E B 16	G	35	38	G	G	38	39	G	36	31	20	34	27	23	22	18	32
19	22	19	E B 14	E B 15	E B 15	E B 14	E B 17	G	40	39	39	39	G	G	39	37	G	19	21	18	20	20	19	18
20	E B 15	E B 15	E B 14	E B 15	E B 13	E B 14	E B 14	32	G	G	42	42	G	G	G	36	33	16	E B 14	45	39	36	E B 15	E B 13
21	E B 16	E B 14	19	19	19	E B 14	E B 17	29	30	38	38	38	37	38	39	34	29	17	19	26	A A 64	34	17	21
22	E B 14	E B 15	E B 14	E B 15	E B 15	E B 15	17	G 23	34	42	40	38	54	65	55	37	30	23	20	18	E B 14	E B 13	22	18
23	E B 15	33	34	E B 14	20	E B 15	18	28	G	G	G	G	G	39	38	35	G	18	E B 15	18	E B 15	E B 14	24	26
24	16	35	E B 15	16	E B 14	E B 15	E B 15	28	37	40	G	G	40	G	37	G	G	E B 15	E B 15	17	E B 15	E B 14	E B 15	E B 15
25	35	16	17	17	E B 16	E B 15	E B 16	28	32	37	38	G	37	39	G	33	G	E B 14	E B 15	27	20	18	16	18
26	18	E B 14	E B 15	E B 15	E B 14	E B 14	20	30	G	38	G	38	40	G 26	34	34	G	E B 15	20	29	25	31	E B 16	20
27	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 16	G	36	38	G	41	39	37	37	34	26	20	34	19	20	27	21	E B 15
28	19	E B 15	E B 14	E B 15	E B 15	E B 15	17	25	34	40	41	E B 42	G	39	G	34	25	37	17	22	17	21	E B 14	E B 14
29	E B 14	E B 14	E B 15	E B 14	E B 15	E B 15	18	26	G	G	39	38	37	G	39	35	34	39	26	E B 16	E B 15	E B 15	E B 15	E B 15
30	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	G	G	34	G	G	46	36	40	48	28	E B 15	E B 16	E B 14	33	32	A A 61	32
31	38	21	E B 15	E B 14	E B 15	E B 14	E B 15	28	39	36	36	48	41	38	37	32	25	29	20	E B 15	E B 16	E B 15	E B 15	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 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G	37	36	36	26	36	37	35	28	20	19	18	E B 15	E B 15	E B 15	E B 15
U Q	16	16	15	15	15	E B 15	19	29	36	38	39	40	40	39	39	37	31	28	24	25	22	22	19	18
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 16	G	G	G	G	G	G	G	G	G 33	G	E B 17	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15

OCT. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

OCT. 2013 fmin (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	305	305	307	329	336	324	377	372	371	360	319	328	330	335	306	325	347	354	345	324	300	300	303	296
2	294	292	302	326	326	330	370	381	379	333	322	331	333	321	257	295	294	326	308	344	293	278	283	282
3	287	306	305	289	292	315	363	377	329	322	333	334	316	315	330	322	325	347	342	328	302	298	300	300
4	303	290	294	313	316	325	352	361	373	370	366	335	336	333	320	324	342	343	338	319	312	306	307	305
5	309	296	302	306	312	320	367	375	375	356	347	347	331	326	337	348	354	353	342	326	306	311	312	317
6	310	301	310	325	339	326	372	363	378	358	323	327	332	314	333	332	336	363	358	361	312	324	308	305
7	285	304	299	314	311	309	357	385	364	360	344	338	317	336	327	333	340	350	353	331	305	296	288	294
8	287	303	301	316	312	292	350	344	353	333	321	339	340	324	320	326	334	336	355	329	294	299	287	287
9	291	296	328	316	A	301	359	343	323	306	340	308	301	307	335	344	321	300	323	341	352	307	293	283
10	304	280	292	318	288	297	337	342	349	346	315	333	330	319	332	329	335	346	334	340	370	303	299	295
11	277	278	278	310	319	318	363	371	338	337	333	325	336	318	320	330	348	349	343	317	300	310	289	297
12	297	299	293	303	333	354	354	357	371	333	340	335	321	336	324	341	355	341	356	303	303	291	298	304
13	292	294	297	297	311	310	361	375	373	346	341	330	328	328	325	339	338	341	335	303	326	321	310	285
14	295	302	301	311	371	356	349	375	371	338	331	320	333	330	325	330	341	346	331	291	307	288	280	283
15	273	290	285	299	299	267	321	324	347	348	320	330	334	329	310	340	344	341	294	303	329	298	278	288
16	284	311	305	299	301	319	339	368	361	337	336	314	321	322	342	333	338	331	317	328	309	308	302	303
17	302	286	311	306	315	321	387	375	350	361	330	325	305	322	338	338	343	339	341	307	312	311	282	280
18	295	301	301	281	286	294	344	348	359	340	314	334	317	325	329	348	340	346	357	321	299	253	290	287
19	296	292	303	315	315	310	357	371	362	356	317	319	331	318	331	352	339	346	337	340	308	292	299	301
20	305	295	295	292	306	306	353	376	360	351	332	324	328	325	327	328	338	338	336	312	308	300	307	289
21	303	290	299	321	311	304	344	359	376	335	318	322	306	316	328	326	345	348	347	308	A	295	299	302
22	297	315	324	332	310	300	353	363	348	328	332	313	316	318	327	343	344	331	345	317	302	296	291	290
23	304	308	301	308	301	297	335	365	357	328	316	328	317	322	326	327	339	319	327	351	322	317	287	275
24	307	329	342	326	308	314	355	355	343	327	331	338	320	310	332	336	343	346	329	336	303	313	318	297
25	278	297	302	325	323	316	362	368	356	346	343	329	314	320	339	346	334	340	330	330	327	307	274	293
26	304	288	319	345	351	302	354	370	358	340	329	321	322	326	335	333	340	342	339	318	304	328	306	295
27	290	296	303	314	316	315	362	366	357	348	334	322	315	313	318	331	317	350	367	338	324	341	309	299
28	309	304	306	317	345	308	348	366	365	359	330	329	319	316	331	327	340	341	327	306	317	309	307	303
29	305	294	303	309	337	315	346	362	358	345	334	319	322	323	320	331	343	348	341	332	326	334	317	280
30	290	313	323	310	315	288	342	373	368	343	333	316	314	303	314	327	333	340	329	305	319	323	A	283
31	287	298	279	295	301	333	335	367	330	350	322	329	317	329	326	326	339	346	327	336	340	342	313	279
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	31
MED	296	297	302	313	314	314	354	367	359	345	331	328	321	322	327	331	340	343	338	326	308	307	299	294
U Q	304	304	307	321	326	321	362	375	371	356	336	334	331	328	332	340	343	348	345	336	324	317	307	301
L Q	287	292	297	303	306	301	344	359	349	333	321	321	316	316	320	327	335	339	329	308	303	296	288	283

OCT. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	L	L	U L 391	L	L	L	L								
2								L		L	U L 393	A	A	L	U L 307	L	L							
3										L	L	L	L	L	A	L	A							
4									L	L	L	L	A	L		A	A							
5									A	L	L	L	L	L	L	A	A							
6											L	L	U L 384	L	L	L								
7									L	L	L	A	L	L	L	A								
8									L		L	U L 408	L	L	L	L								
9									L		L		L	A	A	A								
10									L	L		U L 404	A	A	L									
11											L	L	L	L										
12										A	A	A	L	A	L	A	A							
13											L	U L 376	L	L		A								
14											L	L	U L 405	L	A									
15									L		L	L	L											
16											L		L	L	A									
17									A		L		A	L	A	A								
18										A	L	L			L	A								
19												L	L	L	A									
20										L	A	A	L	L	L									
21											L	L	L	L	A	A					A			
22											L	A		A	A									
23										L	L	L	L	A	A	A								
24											L	L	A	L	A									
25									A	A	A	L		L	L									
26											L	L	L	L	L	A								
27											L	L	L	L	A	A								
28										A		E B	L	L	L	A								
29										L	L	L	L	L		A								
30														L	A	A								
31									L	L			L	L										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	4	2		1									
MED											U L 393	U L 398	U L 394		U L 307									
U Q												U L 406												
L Q												U L 384												

OCT. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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									240	232	270	276	266	256	258	278								
2								240		280	268	258	262	258	406	296	284							
3										272	254	244	260	270	262	272	250							
4									234	226	228	260	248	250		250	244							
5									224	238	256	240	280	264	258	240	242							
6											282	274	266	264	276	266								
7									244	244	252	260	254	266	274	258								
8									250		260	256	244	256	272	270								
9									270		242		288	258	250	236								
10									238	228		250	258	248	246									
11											248	246	264	268										
12										236	244	240	248	250	280	248	228							
13											252	264	264	272		242								
14											250	260	266	262	258									
15									258		246	252	264											
16											262		272	246	254									
17									222		256		238	272	248	236								
18										244	270	260			274	240								
19												270	268	258	258									
20										236	242	252	252	266	264									
21											270	262	262	266	258	244					A			
22											256	244		276	252									
23										264	280	260	268	260	246	236								
24											252	244	246	272	256									
25									220	224	244	258		288	254									
26											254	258	278	270	256	236								
27											252	276	250	276	256	238								
28										220		270	240	284	258	230								
29										250	240	260	264	244		256								
30														276	258	250								
31									250	250			256	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	11	15	26	26	27	29	25	20	5							
MED								240	240	238	253	259	262	264	258	246	244							
U Q									250	250	262	262	266	272	268	262	267							
L Q									224	228	246	250	250	256	254	237	235							

OCT. 2013 h'F2 (KM)

IONOSPHERIC DATA STATION Kokubunji

OCT. 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 B 274	E B 254	E B 260	E B 252	226	E B 246	206	210	200	196	188	196	200	216	208	212	232	218	206	E B 200	E B 256	E B 274	E B 256	E B 266
2	E B 266	E B 274	E B 274	230	212	222	208	200	226	200	198	A	A	200	224	228	230	232	210	198	214	E B 240	E A 302	E B 308
3	E A 340	E A 270	E B 230	E B 280	E B 282	E B 266	E A 202	206	216	212	192	186	182	200	A	206	A	220	212	208	E A 248	E B 254	E B 254	E B 264
4	E B 256	E B 268	E B 268	E B 238	E B 220	E B 238	216	220	198	192	186	198	A	186	208	A	A	224	208	208	E B 224	220	E B 240	E B 242
5	E B 258	E B 254	E B 260	E B 236	E B 240	244	210	216	A	192	184	184	190	204	216	A	A	216	204	208	E B 252	E B 244	E B 240	E B 228
6	E B 244	E B 248	E B 256	E B 234	224	E B 230	230	216	216	214	200	192	190	222	200	216	E A 238	212	196	198	E B 260	E B 256	E B 262	E B 262
7	E B 272	E B 280	E B 274	E B 250	E B 242	E B 232	200	216	208	196	206	A	200	202	210	A	236	226	206	194	E B 246	E B 244	E B 276	E B 276
8	E B 284	E B 272	E B 262	E B 242	E B 238	E B 272	208	220	214	230	200	196	190	200	198	216	228	224	206	210	E B 234	E A 256	E A 286	E A 324
9	E A 300	E A 256	E B 234	E B 232	A	E B 256	214	212	222	228	194	212	198	A	A	A	222	E A 250	E A 240	220	194	E B 242	E B 272	E B 290
10	E B 286	E B 306	E B 270	E B 260	E B 260	E B 286	226	220	208	198	216	188	A	A	204	230	222	224	216	216	200	210	E A 284	E B 266
11	E B 284	E B 302	E A 312	E B 278	E A 270	E B 246	220	210	216	216	196	192	196	204	232	226	228	218	216	228	E A 238	E B 238	E A 282	E A 290
12	E B 270	E B 270	E B 280	E B 268	224	212	198	206	214	A	A	A	194	A	202	A	A	220	216	E A 240	E A 300	E A 316	E A 266	E B 254
13	E A 266	E B 272	E B 270	E B 270	E B 234	E B 244	214	214	212	212	212	206	210	214	240	A	218	218	206	218	228	210	222	E B 256
14	E B 288	E B 288	E B 270	E B 250	210	204	204	214	218	210	198	198	200	196	A	220	220	208	224	E A 264	E B 244	E B 268	E B 302	E B 294
15	E B 306	E B 272	E B 272	E B 272	E B 236	E B 300	230	222	208	214	202	206	210	236	222	234	220	212	214	E A 238	218	E B 248	E B 264	E B 292
16	E B 282	E B 254	E B 236	E B 242	E B 264	E B 236	210	208	216	222	196	206	214	208	A	208	220	214	208	216	226	E A 264	E A 260	E B 264
17	E B 270	E B 282	E B 268	E B 264	E B 238	E B 246	202	206	A	226	198	224	A	E A 234	A	A	216	228	212	218	E B 234	E B 242	E B 270	E B 300
18	E B 276	E B 282	E B 266	E B 276	E B 288	E B 274	226	220	224	A	224	206	214	226	214	A	218	216	224	E A 234	E A 272	E A 340	E A 300	E A 330
19	E A 288	E A 304	E B 276	E B 258	E B 240	228	214	208	212	218	206	212	210	200	A	226	202	214	216	224	E A 238	E A 270	E A 276	E A 272
20	E B 266	E B 282	E B 280	E B 266	E B 236	E B 254	216	212	212	204	A	A	218	218	222	232	220	218	208	E A 334	E A 300	E A 320	E B 254	E B 254
21	E B 270	E B 278	E A 286	E A 254	E A 248	E B 256	204	198	210	210	194	200	202	212	A	A	222	208	202	E A 258	A	E A 310	E A 262	E A 278
22	E B 270	E B 260	E B 236	228	E B 238	E B 272	214	206	216	216	216	A	E A 248	A	A	226	212	220	214	E A 234	E B 240	E B 252	E A 282	E A 284
23	E B 258	E A 272	E A 312	E B 240	E A 244	E B 272	224	212	218	216	214	208	214	A	A	A	224	206	228	220	E B 198	E B 244	E A 330	E A 360
24	E A 262	E A 266	220	E A 222	E B 254	E B 276	214	214	224	230	204	206	A	210	A	226	216	214	E B 208	222	E B 206	E B 244	E B 244	E B 250
25	E A 374	E A 276	E A 266	E A 240	218	E B 256	212	212	A	A	A	206	218	218	206	220	214	214	208	226	222	E A 248	E A 342	E A 310
26	E A 270	E B 264	E B 258	E B 236	206	E B 278	226	214	220	220	198	194	200	220	202	A	218	208	210	E A 248	E A 266	E A 244	E B 236	E A 286
27	E B 288	E B 284	E B 274	E B 252	E B 238	E B 234	202	210	218	214	198	216	208	212	A	A	228	218	210	216	228	226	H 290	E B 278
28	E A 302	E B 266	E B 272	E B 256	216	E B 250	230	208	212	A	214	E B 248	208	218	210	A	220	220	208	E A 230	E A 236	E A 250	E B 244	E B 256
29	E B 250	E B 258	E B 252	E B 242	226	214	216	208	216	202	204	202	216	206	234	A	226	210	210	222	212	220	E B 250	E B 308
30	E B 296	E B 258	E B 248	E B 242	E B 258	E B 296	244	216	212	212	220	216	E A 256	210	A	A	218	204	E B 200	E B 242	E A 256	E A 262	A	E A 358
31	E A 400	E A 284	E A 296	E B 288	E B 290	E B 230	200	198	200	210	218	214	210	202	E A 240	220	222	212	212	212	204	200	E B 242	E B 260
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	31	28	27	28	26	26	26	19	16	27	31	31	31	30	31	30	31
MED	E B 274	E B 272	E B 268	E B 250	E B 238	E B 246	214	212	215	212	200	205	204	210	210	223	220	217	210	214	E 235	E 248	E B 265	E B 278
U Q	E A 288	E B 282	E B 274	E B 266	E B 254	E B 272	224	216	218	218	213	212	214	218	224	227	228	220	216	E A 234	E A 252	E A 264	E A 284	E A 300
L Q	E B 266	E B 260	E B 256	E B 238	224	232	204	208	211	202	196	196	198	202	204	216	218	212	206	210	218	240	E B 250	E B 260

OCT. 2013 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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 118	114	120	120	A 128	120	116	A 112	B									
2							120	120	120	A 120	A	A 116	A	A 116	B									
3							B 124	A	A	A	A	124	114	112	114	114	B							
4							B 114	112	120	120	120	122	126	114	A 120	B								
5						B	B 110	116	A	A	A	116	118	120	A 118	110								
6							B 114	114	A	A 120	120	A	A	A 114	B									
7							B 118	116	A	A	A 114	116	122	A 122	B									
8							B 122	120	A	A 122	124	A 118	118	120	B									
9							B 118	118	A 122	122	A	A	A	A 114	B									
10							124	A 114	114	114	A 116	A	112	120	A	B								
11							124	120	112	A 112	112	112	116	118	118	114	B							
12							B 124	118	122	120	120	120	126	116	118	118	B							
13							B 112	A	A	A 124	124	A	126	120	116	B								
14							B 118	118	114	114	114	116	120	A	A	A	B							
15							B 120	118	110	110	110	A	118	A	118	118	B							
16							B 118	116	116	A	116	116	116	A	120	114	B							
17							120	118	A	116	A	A	A	A	A	A	118	A						
18							B 118	A	A	118	118	A	A	A 112	B									
19							B 116	A	A	A	A	124	120	A	A	122	B							
20							B 122	118	110	A	A	122	118	118	A	A	B							
21							B 114	A	A	A	A	A	A	A	A	A	B				A			
22							B 106	A	A	A	A	A	A	A	A	A	B							
23							B 114	114	114	114	132	114	A	A	A	122	B							
24							B 122	120	A	126	126	A	122	A	118	118	B							
25							B 116	A	A	A	114	A	A	A 114	B									
26							B 118	118	118	114	A	A	114	A	A 110									
27							B 118	A	A	116	A	A	A	A	A	A	B							
28							B 120	A	A	A	B	120	120	120	118	118	B							
29							B 122	114	110	A	A	A	110	A	A 114	B								
30							B 118	118	A	118	124	A	A	A	A	A								
31							B 114	112	116	A	A	116	A	A	A	A	B							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	29	22	13	15	15	18	17	14	10	23	1						
MED							122	118	117	116	118	120	120	118	117	118	118	110						
U Q							124	120	118	119	120	124	124	120	120	120	118							
L Q							120	114	114	112	114	114	116	116	114	118	114							

OCT. 2013 h′E (KM)

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	96	96	96	96	B	108	142	G	G	G	G	108	G	G	G	108	G	108	B	B	B	B	B	B
2	B	B	B	B	B	B	G	G	G	102	G	108	108	G	102	108	G	118	B	B	B	104	104	112
3	94	94	94	94	94	100	98	100	G	102	106	98	G	G	118	118	116	106	108	106	104	B	B	B
4	B	B	B	B	B	B	94	96	G	G	G	G	114	G	G	108	120	122	90	90	B	B	B	B
5	B	B	B	B	B	B	B	126	116	102	108	108	G	G	124	104	130	118	112	B	98	B	B	B
6	B	B	B	B	106	B	134	136	112	106	104	G	G	102	108	108	G	116	102	86	88	86	B	B
7	B	B	B	B	98	B	138	124	122	102	106	106	G	G	124	108	G	108	106	100	100	B	B	B
8	B	B	B	B	B	B	160	146	G	108	108	G	G	108	G	G	124	112	106	104	104	98	98	96
9	90	90	98	B	100	100	134	G	G	104	G	G	102	106	104	108	118	106	102	98	B	B	B	B
10	B	B	B	B	B	B	G	100	G	G	G	100	98	98	G	G	106	104	96	B	B	B	100	B
11	B	98	98	B	98	B	G	G	G	106	G	G	G	114	G	G	126	112	112	98	100	100	94	94
12	B	B	B	100	96	B	B	G	G	116	116	110	G	114	120	128	126	118	114	100	98	98	92	92
13	92	B	B	B	B	98	102	G	102	104	106	G	G	108	G	120	120	B	B	98	98	B	B	B
14	B	B	B	B	B	B	162	G	126	112	G	G	G	G	100	106	106	B	106	104	B	B	B	B
15	B	B	B	B	B	B	B	G	G	G	G	G	100	G	106	G	G	B	100	100	100	100	98	96
16	94	B	88	88	B	B	B	G	G	G	106	G	G	G	104	G	146	114	B	B	94	86	88	B
17	B	B	B	102	B	B	G	102	100	G	104	102	104	104	104	102	126	92	92	92	B	B	B	B
18	B	B	B	B	B	B	B	G	106	106	G	G	100	102	G	102	118	118	108	100	100	94	96	96
19	94	94	94	B	B	B	B	G	106	102	102	108	G	G	108	108	G	106	110	100	102	102	102	100
20	B	B	B	B	B	B	B	128	G	G	108	102	G	G	G	108	106	106	B	96	96	94	B	B
21	B	92	94	94	94	92	B	144	104	106	108	106	106	102	106	106	104	112	104	100	94	98	96	96
22	96	94	B	B	B	B	102	102	104	98	98	96	96	96	96	98	94	92	92	94	B	100	104	102
23	B	98	98	98	98	98	140	128	G	G	G	G	G	108	104	106	G	108	B	108	B	B	100	98
24	98	94	94	92	92	B	B	126	114	106	G	G	102	G	102	G	G	B	106	100	B	B	B	100
25	92	92	92	90	90	96	B	118	102	98	102	G	106	98	G	106	106	B	B	102	100	100	104	96
26	96	96	96	100	B	B	124	122	G	116	G	104	100	98	106	106	G	100	106	100	100	100	100	98
27	B	B	B	B	B	B	B	G	106	106	G	102	104	102	108	108	102	108	100	102	94	94	94	94
28	96	B	B	B	B	B	150	166	108	108	108	B	G	118	G	120	116	104	106	100	100	94	94	B
29	B	B	B	B	B	B	154	132	G	G	106	100	100	G	108	108	124	106	102	B	B	B	B	B
30	B	100	B	B	B	B	B	G	G	108	G	G	96	102	104	104	102	102	102	B	102	102	98	96
31	96	96	102	B	B	B	B	122	122	118	104	102	116	106	96	106	102	100	90	88	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	13	12	10	10	7	14	18	15	22	17	16	16	18	21	25	22	26	24	24	19	17	17	15
MED	95	94	95	95	97	98	136	125	106	106	106	103	102	103	106	108	117	108	105	100	100	98	98	96
U Q	96	97	98	100	98	100	150	132	116	108	108	108	106	108	108	108	124	114	107	101	100	100	101	100
L Q	93	93	94	92	94	96	102	102	104	102	104	101	100	102	103	106	106	104	100	97	96	94	94	96

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	F2	F2	F1		F1	H1					L2				L2		L2						
2										L2		L2	L2		L2	L2		C1				F1	F4	F2
3	F3	F4	F2	F1	F2	F2	L4	L2		L2	L2	L2			C1	C1	C2	L2	F3	F3	F2			
4							L1	L2					C1			L2	C2	C1	F1	F1				
5								C2	C2	L2	L2	L2			C1	L2	C2	C2	F2		F1			
6					F1		C2	H1	C2	L2	L2			L2	L2	L2		C3	F3	F1	F1	F1		
7					F2		C1	C1	C2	L1	L2	L2			C1	L2		L2	F4	F1	F1			
8							H2	H1		L2	L2			L2			C1	C2	F4	F3	F2	F2	F4	F3
9	F4	F6	F1		F3	F2	H2			L2			L1	L2	L2	L1	C1	L1	F3	F2				
10								L2				L2	L2	L1			L2	L2	F1				F3	
11		F2	F2		F2					L1				C1			C2	C2	F4	F3	F3	F1	F2	F2
12				F2	F2					C1	C2	C2		C2	C L 2 2	C2	C2	C3	F5	F3	F3	F3	F2	F1
13	F1					F2	L1		L2	L2	L2			L2		C1	C2			F1	F1			
14							H1		C2	C2					L2	L2	L2		F2	F2				
15													L1		L2				F2	F3	F5	F2	F1	F2
16	F2		F1	F2							L2				L2		H1	C2			F1	F3	F1	
17				F2				L2	L2		L2	L1	L1	L2	L2	L2	C1	L2	F3	F3				
18									L1	L2			L2	L1		L2	C1	C2	F3	F3	F2	F2	F2	F2
19	F2	F2	F2						L1	L1	L1	L1			L1	L2		L2	F2	F2	F3	F3	F2	F2
20								C1			L2	L2				L2	L2	L1		F3	F2	F3		
21		F2	F2	F2	F2	F1		H2	L2	L2	L2	L2	L2	L2	L2	L2	L7	C2	F2	F3	F3	F4	F3	F3
22	F1	F2					L2	L1	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	F2	F1		F1	F2	F2
23		F2	F2	F2	F3	F2	H2	C L 2 2						L1	L1	L2		L2		F2			F3	F4
24	F2	F4	F3	F1	F1			C1	C1	L2			L2		L2				F1	F3				F2
25	F4	F2	F2	F3	F1	F1		C2	L2	L1	L2		L2	L2		L1	L1			F2	F3	F2	F2	F2
26	F3	F1	F1	F1			C2	C L 1 2		C1		L2	L1	L2	L1	L2		L1	F2	F3	F3	F3	F2	F2
27									L2	L1		L2	L2	L2	L2	L2	L3	L2	F3	F2	F2	F2	F2	F3
28	F1						H1	H L 1 2	L2	L1	L2			C1		C1	C2	L3	F2	F2	F2	F3	F3	
29							H1	H2			L2	L2	L2		L2	L2	C1	L2	F2					
30		F1								L2			L2	L2	L2	L3	L2	L2	F1		F4	F4	F3	F3
31	F4	F4	F1					C1	C1	C1	L1	L2	C1	L1	L2	L2	L2	L2	F2	F1				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

OCT. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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	X 56	X 54	X 54	X 54	X 48	X 45														X 71	X 58	X 60	X 60	X 61
2	X 62	X 62	X 61	X 59	X 54	X 41														X 79	X 63	X 56	X 56	X 55
3	X 58	X 62	X 57	X 46	X 46	X 49														X 86	X 69	X 71	X 60	X 60
4	X 58	X 56	X 54	X 55	X 53	X 46														X 83	X 59	X 59	X 54	X 52
5	X 53	X 52	X 50	X 49	X 46	X 45														X 64	X 58	X 60	X 58	X 56
6	X 54	X 52	X 51	X 52	X 44	X 38													X 101	X 86	X 53	X 52	X 52	X 49
7	X 50	X 48	X 46	X 46	X 46	X 42													X 93	X 85	X 52	X 56	X 55	X 53
8	X 54	X 55	X 54	X 53	X 49	X 47													X 100	X 79	X 64	X 58	X 58	X 59
9	X 60	X 61	X 62	X 54	X 49	X 42													X 120	X 109	X 61	X 49	X 50	X 52
10	X 52	X 49	X 51	X 48	X 46	X 46													X 112	X 85	X 56	X 52	X 49	X 48
11	X 44	X 45	X 43	X 44	X 43	X 42													X 104	X 74	X 51	X 52	X 54	X 54
12	X 58	X 58	X 50	X 46	X 46	X 39													X 94	X 71	X 56	X 60	X 58	X 56
13	X 53	X 52	X 52	X 49	X 50	X 48													X 88	X 81	X 70	X 65	X 65	X 60
14	X 55	X 54	X 54	X 58	X 49	X 38													X 79	X 64	X 65	X 64	X 60	X 61
15	X 58	X 60	X 57	X 54	X 56	X 45													X 84	X 74	X 70	X 59	X 55	X 54
16	X 54	X 49	X 46	X 45	X 45	X 49													X 89	X 81	X 74	X 58	X 54	X 54
17	X 55	X 52	X 51	X 53	X 52	X 48													X 92	X 77	X 63	X 58	X 53	X 52
18	X 54	X 52	X 51	X 49	X 45	X 47													X 90	X 72	X 63	X 52	X 49	X 49
19	X 50	X 49	X 52	X 52	X 48	X 40													X 93	X 70	X 56	X 54	X 56	X 56
20	X 53	X 52	X 51	X 50	X 51	X 49													X 87	X 71	X 59	X 54	X 55	X 53
21	X 51	X 50	X 50	X 49	X 46	X 42													X 87	X 74	X 67	X 66	X 71	X 70
22	X 67	X 58	X 64	X 57	X 55	X 48									C				X 84	X 73	X 64	X 61	X 58	X 57
23	X 56	X 51	X 50	X 50	X 48	X 44													X 86	X 78	X 72	X 52	X 53	X 56
24	X 59	X 60	X 46	X 39	X 38	X 38													X 90	X 68	X 71	X 56	X 51	X 48
25	X 48	X 48	X 48	X 49	X 50	X 43													X 89	X 71	X 65	X 58	X 55	X 55
26	X 56	X 52	X 55	X 56	X 48	X 40													X 87	X 70	X 69	X 62	X 56	X 49
27	X 48	X 47	X 48	X 49	X 46	X 47													X 105	X 83	X 75	X 75	X 60	X 55
28	X 51	X 48	X 49	X 49	X 50	X 43	X 47												X 90	A	X 68	X 68	X 58	X 53
29	X 51	X 48	X 46	X 45	X 48	X 41	X 43												X 87	X 68	X 80	X 66	X 49	X 45
30	X 47	X 52	X 50	X 48	X 48	X 48	X 52												X 98	X 77	X 78	X 70	X 50	X 48
31	X 51	A	X 47	X 50	X 50	X 48	X 45												X 101	X 84	X 82	X 73	X 56	X 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	31	30	31	31	31	31	4												26	30	31	31	31	31
MED	X 54	X 52	X 51	X 49	X 48	X 45	X 46												X 90	X 76	X 64	X 59	X 55	X 54
U Q	X 58	X 56	X 54	X 54	X 50	X 48	X 50												X 100	X 83	X 70	X 65	X 58	X 56
L Q	X 51	X 49	X 48	X 48	X 46	X 41	X 44												X 87	X 71	X 58	X 54	X 53	X 52

OCT. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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	50	48	48	48	42	39	46	64	73	78	80	84	96	96	88	97	94	98	88	65	52	54	54	55
2	56	56	55	53	48	35	43	66	74	79	86	100	102	90	92	U R 112	110	118	107	73	57	50	50	49
3	52	56	51	40	40	43	48	61	78	86	98	104	94	100	103	101	100	R 110	R 110	80	63	65	54	54
4	52	50	48	49	47	40	47	95	91	81	77	84	101	92	90	99	96	101	91	77	53	53	48	46
5	47	46	44	43	40	39	45	79	75	79	80	100	101	93	89	87	86	88	76	58	52	54	52	50
6	48	46	45	46	38	32	42	72	83	82	73	98	U R 118	R	J R 146	U R 114	118	110	95	80	47	46	46	43
7	44	42	40	40	40	36	44	70	78	70	76	78	90	R 92	89	89	93	92	87	79	46	50	49	47
8	48	49	48	47	43	41	48	72	86	U R 104	103	R 110	U R 113	103	R 107	100	101	98	94	73	58	52	52	53
9	R 54	55	56	48	43	36	42	70	72	94	102	83	84	114	R	98	83	90	114	R 103	55	43	44	46
10	46	43	45	42	40	40	47	91	102	95	92	90	94	101	R 107	100	92	98	106	79	50	46	43	42
11	38	39	37	38	37	36	40	74	86	96	100	102	102	J R 107	114	112	R 108	R 107	98	68	45	46	48	48
12	52	52	44	40	40	33	39	71	76	91	101	R 102	96	96	101	R 107	93	86	88	65	50	54	52	50
13	47	46	46	43	44	42	46	76	86	82	80	R 90	100	99	100	96	96	92	82	75	64	59	59	54
14	49	48	48	52	43	32	38	71	84	80	93	99	97	U R 110	U R 114	100	103	92	73	58	59	58	54	55
15	52	54	R 51	48	50	39	43	68	98	97	96	108	118	108	110	R 118	102	84	78	68	64	53	49	48
16	48	43	40	39	39	43	44	72	86	94	100	R 108	J R 110	J R 118	118	U R 108	88	80	83	75	68	52	48	48
17	49	46	45	47	46	42	43	67	78	85	96	R 115	103	U R 106	U R 110	109	88	85	86	70	57	52	47	46
18	48	46	45	43	39	41	46	73	92	109	119	R 121	U R 118	R	R	114	96	87	84	66	57	46	43	43
19	44	43	46	46	42	34	40	68	81	82	92	R 108	R	U R 118	133	U R 116	92	85	87	64	50	48	50	50
20	47	46	45	44	45	43	52	95	87	84	91	100	106	U R 110	U R 116	R 113	100	97	81	65	53	48	49	47
21	45	44	44	43	40	36	42	76	93	86	104	116	U R 140	150	152	R 146	R 116	93	81	68	61	60	65	64
22	61	52	58	51	49	42	48	81	87	96	R 102	U R 108	112	114	C	U R 110	88	78	78	67	58	55	52	51
23	50	45	44	44	42	38	42	83	91	89	90	97	116	132	U R 118	R	95	91	80	72	66	46	47	50
24	53	R 54	40	33	32	32	36	74	87	102	R 105	U R 112	100	100	U R 106	102	94	89	84	62	65	50	45	42
25	42	42	42	43	44	38	43	74	92	88	93	97	R 96	115	118	102	85	86	83	65	59	52	49	49
26	50	46	49	50	42	34	41	73	87	87	86	96	U R 106	U R 117	U R 118	102	86	80	81	64	63	56	50	43
27	42	41	42	43	40	41	42	75	89	89	93	100	U R 101	R 112	R 118	113	101	104	99	77	69	69	54	49
28	45	42	43	43	44	37	41	80	89	92	92	B	U R 108	104	R 110	R 107	88	86	84	A	62	62	52	47
29	45	42	40	39	42	35	37	65	83	92	110	103	99	100	105	102	R 109	100	81	62	74	60	43	39
30	41	46	44	42	42	42	46	81	84	86	93	99	106	116	134	131	128	116	92	71	72	64	44	42
31	45	A	41	44	44	42	39	65	78	R 121	R 108	R 112	101	110	R 114	116	115	R 107	95	78	76	67	50	48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	31	30	30	29	28	30	31	31	31	30	31	31	31	31
MED	48	46	45	43	42	39	43	73	86	88	93	100	102	107	110	107	96	92	86	69	58	53	49	48
U Q	52	50	48	48	44	42	46	79	89	95	102	R 108	R 110	114	118	R 113	103	101	95	77	64	59	52	50
L Q	45	43	42	42	40	35	41	68	78	82	86	97	97	100	102	100	88	86	81	65	52	48	47	46

OCT. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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									L	U L 488	U L 516	488	U L 524	A	L 576	L 480	L							
2								248	L	L	U L 480	L 508	L 520	L 492	L	U L 496	L	L						
3								U L 284	L	L	U L 496	L	U L 492	L	L	U L 496	L	L						
4									L	U L 420	U L 440	U L 504	L 512	L	L	L	L	L						
5									L	L	U L 484	L	U L 508	L	L	L	L							
6									L	L	U L 492	U L 520	U L 512	U L 512	U L 484	U L 460	L	L						
7									L	L	L	U L 500	U L 528	U L 512	L	U L 488	L							
8								252		L 472	L	L 508	U L 508	L	L	L	A	L						
9										L	L	L	U L 496	U L 520	L	L	L	L						
10								L	L	L	L	U L 496	L	L	L	L	L							
11									L	L	L	L	U L 476	L	L	L	L							
12									L	L	L	L	L	L	L	U L 480	A	A						
13									L	L	L	L 484	L	L	L	L	L							
14									L	L	U L 484	L	L	L	L	L	L							
15								248	L	L	L	L	L	L	L	L	L							
16								L	L	L	L	L	L	L	L	L	A							
17								L	L	L	L	L	L	L	L	L	L							
18									L	L	L	L	L	L	L	L	L							
19								260	U L 348	L	L	U L 544	L	L	L	L	L	U L 260						
20								228	L	L	L	L	L	L	L	L	L							
21									L	L	L	U L 516	L	L	L	L	L	L						
22								228	L 344	L	L	L	L	L	C	L	L							
23										L	L	L	U L 528	U L 516	L	A	L	248						
24									L	L	L	L	L	L	L	L	U L 336							
25											L	U L 500	B	A	L	L	L							
26										L	L	L	L	U L 528	L	L								
27								224	L	L	L	U L 492	U L 488	L	L	L	L							
28								224	U L 332	L	L	B	L	L	L	L	A							
29								216		L	L	L	L	L	L	L	L							
30									316	U L 408	L	L	L	L	U L 520	L	U L 372							
31								240		L	L	L	A	U L 588	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								11	4	4	7	12	12	7	3	6	2	2						
MED								240	L 338	U L 446	U L 484	U L 502	U L 510	U L 516	U L 520	U L 484	U L 354	254						
U Q								252	L 346	L 480	U L 496	U L 512	U L 522	U L 528	L 576	U L 496								
L Q								224	324	U L 414	U L 480	L 494	U L 494	L 512	U L 484	L 480								

OCT. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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								B 236	284	320	356	392	R	368	348	R 328	304	A 248	B					
2								A 224	292	320	348	R 356	U R 376	U R 364	U R 352	316	292	236	B					
3								A 224	A 284	324	R 348	U R 376	R 388	R 360	R 356	R 328	292	U A 216	B					
4								B 228	280	320	R 344	U R 344	U R 368	408	U R 364	348	308	240	A					
5								B 220	284	316	U R 360	U A 356	396	392	368	348	300	236	U A 224					
6								B 220	R 288	U A 304	364	R 364	U R 364	U R 364	R 348	328	296	228						
7								B 232	292	320	344	360	368	U A 372	364	R 336	292	232						
8								B 212	A 292	U A 324	A 332	U A 356	U A 336	A	R 344	320	284	224						
9								B 212	280	312	A	A	A	R 348	R 336	328	284	U R 276						
10								B 212	276	316	U R 348	U R 360	A	R	U A 316	U A 324	292	A 224						
11								B 212	284	328	R 368	U R 368	U R 364	364	R 364	332	288	A 240						
12								A 216	A 300	328	364	B	U R 360	B	368	328	A 292	228						
13								A 216	R 284	320	B	R 356	R 368	372	360	340	296	U A 188						
14								B 216	292	332	352	R 380	400	364	R 356	316	288	U A 232						
15								B 204	280	R 320	R 348	R 352	368	368	360	332	U A 248	216						
16								B 192	280	R 340	R 360	R 364	364	A	A	A	A	A						
17								B 200	272	324	R 344	U R 376	U R 364	U R 364	372	332	280	A 224						
18								B 204	288	320	R 352	R 360	R 376	R 372	R 364	352	276	220						
19								B 200	276	324	U R 344	U R 376	U R 376	372	U R 348	R 336	288	200						
20								B 216	A 252	A 300	U A 308	U R 368	U R 368	R 368	368	R 340	R 288	228						
21								B A 200	276	A 308	344	380	A	R	U A 364	U R 336	A	A						
22								B 204	U A 244	A	A	A	R 360	R 360	C	328	A	A						
23								A 224	280	U A 312	R 328	U R 364	380	R 376	368	U R 344	284	204						
24								A 220	284	R 332	A	A	A	R 364	R 352	344	292	A						
25								A U A 196	U A 272	U A 308	A	A	B	A	A	R 336	A	B						
26								A U A 212	U A 276	A	A	A	A	A	352	328	A	A						
27								B 196	U A 260	U A 308	U A 324	U A 332	U A 316	R 344	344	316	272	204						
28								A	284	U A 308	A	B	U R 332	360	B	340	296	208						
29								188	264	316	332	R 344	344	340	340	324	A	220						
30								B	272	316	340	A	U A 344	A	360	316	272	212						
31								200	A 260	U A 308	U A 308	U A 312	A	A	336	308	268	192						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								29	31	29	24	23	23	22	27	30	25	25	1					
MED								212	280	320	346	U R 360	U R 368	364	356	330	288	224	U A 224					
U Q								220	284	324	R 354	R 376	376	372	364	340	294	234						
L Q								200	A 272	U A 310	A 336	R 356	U 360	R 360	348	324	282	210						

OCT. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	35	39	42	G	54	37	G 23	34	J A 37	21	J A 29	20	21	J A 22	J A 27
2	J A 23	18	E B 16	E B 16	E B 16	E B 16	20	J A 25	J A 29	G	G 27	G 25	42	G	G	G	31	26	E B 17	E B 16	J A 27	21	21	19
3	J A 42	J A 23	22	20	19	18	J A 20	25	34	34	41	43	41	G	38	36	39	26	E B 16	J A 44	J A 35	J A 28	20	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	31	G 23	G	G	40	42	G	39	36	32	J A 29	J A 18	22	E B 16	E B 16	E B 16
5	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	G 24	G	40	38	42	41	42	40	38	J A 44	J A 27	J A 46	21	17	E B 16	E B 16
6	E B 16	E B 16	E B 16	E B 16	E B 16	18	E B 16	30	31	34	G 33	G 31	G 30	G	G	35	33	27	J A 21	J A 21	J A 26	J A 25	20	E B 16
7	19	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	37	J A 45	J A 39	42	40	J A 53	40	41	40	J A 42	J A 21	J A 23	J A 27	20	18	E B 16
8	E B 16	E B 16	E B 16	E B 16	18	19	E B 16	25	35	38	J A 41	38	J A 44	J A 48	G 22	34	J A 42	J A 33	J A 34	J A 23	J A 44	J A 68	J A 47	J A 39
9	J A 29	J A 28	22	E B 16	E B 16	E B 16	E B 16	24	30	37	J A 51	36	J A 56	G	G 20	37	30	32	J A 36	J A 50	J A 44	J A 25	J A 22	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	18	18	25	29	G 25	G 27	J A 42	J A 42	24	34	34	32	27	J A 26	J A 27	E B 16	J A 28	E B 16	J A 16
11	E B 16	J A 22	20	E B 16	E B 16	21	E B 16	25	31	36	G 28	G 27	G 28	G 26	G 26	36	35	32	J A 22	J A 18	J A 20	J A 37	J A 22	E B 16
12	J A 26	E B 16	E B 16	E B 16	E B 16	18	18	27	32	35	G	E B 44	G	E B 41	43	35	J A 47	J A 41	J A 37	J A 28	J A 35	J A 30	J A 25	J A 23
13	J A 22	J A 23	J A 16	E B 16	E B 16	E B 16	20	J A 22	J A 31	36	E B 42	39	45	44	46	J A 52	J A 41	J A 53	J A 72	J A 27	J A 26	J A 43	J A 40	J A 23
14	J A 17	J A 16	J A 17	E B 16	E B 16	20	E B 16	J A 25	34	37	G 26	41	43	42	38	33	32	J A 29	J A 30	J A 39	J A 46	J A 26	22	E B 16
15	E B 16	18	E B 16	E B 16	19	18	J A 22	22	G	G 23	G 24	G	G 22	39	39	34	28	24	J A 30	J A 20	J A 31	J A 40	J A 29	19
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	G 26	G	G	G	G 31	J A 52	J A 49	J A 62	J A 50	J A 44	J A 45	J A 36	J A 34	22	E B 16	E B 16
17	E B 16	E B 16	E B 16	E B 16	22	19	19	23	29	J A 74	G	40	G	G	40	35	G	J A 26	J A 26	J A 22	J A 26	E B 16	J A 20	18
18	J A 20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	G 29	34	G 29	G 25	G 24	G	G	G	G	G	J A 28	J A 49	J A 42	J A 44	J A 28	J A 21
19	21	18	J A 24	E B 16	E B 16	J A 28	21	22	G	36	38	41	40	39	G 24	38	G 22	22	J A 20	J A 25	J A 30	J A 26	J A 24	J A 19
20	J A 28	J A 24	20	J A 21	E B 16	E B 16	E B 16	22	28	34	33	40	G 28	G 26	40	G	29	J A 27	J A 21	J A 20	E B 16	E B 16	E B 16	E B 16
21	E B 16	J A 21	E B 16	E B 16	E B 16	J A 20	22	24	30	39	36	40	34	G	39	G 33	J A 44	J A 30	J A 26	J A 27	J A 26	J A 18	J A 39	J A 45
22	J A 28	J A 49	J A 20	E B 16	22	E B 16	E B 16	22	29	J A 36	J A 56	J A 39	G	G 32	C	G 32	28	J A 33	J A 40	J A 25	E B 22	E B 16	E B 16	J A 23
23	J A 29	18	J A 18	J A 25	J A 19	J A 23	J A 18	G	29	33	34	40	43	40	J A 50	57	32	25	E B 16	J A 17	J A 21	J A 22	J A 28	E B 16
24	19	J A 26	J A 33	J A 26	22	18	18	G	30	G	34	34	30	G 29	G 22	G 22	G 24	J A 32	J A 28	E B 16	J A 22	J A 26	E B 16	E B 16
25	E B 16	E B 16	19	J A 24	J A 22	19	21	22	J A 38	J A 50	J A 50	J A 42	E B 60	J A 109	J A 44	J A 43	J A 37	E B 34	E B 16	J A 35	J A 62	J A 103	J A 65	J A 41
26	J A 33	J A 44	J A 25	J A 19	J A 22	J A 20	21	25	J A 43	J A 47	J A 38	J A 57	J A 58	J A 48	G 34	G 23	J A 36	J A 37	J A 36	J A 21	18	E B 16	E B 16	E B 16
27	E B 16	E B 16	22	J A 16	E B 16	E B 16	E B 16	22	30	34	40	37	34	G	G 32	G 18	G 22	22	J A 18	J A 18	J A 16	J A 18	E B 16	J A 43
28	J A 27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	J A 22	G	34	J A 41	B	G	38	E B 46	40	39	J A 38	J A 45	J A 72	58	J A 43	J A 29	J A 20
29	J A 18	J A 16	J A 20	E B 16	E B 16	E B 16	J A 17	20	G 22	33	G 27	G 28	36	36	36	35	34	G 18	17	17	E B 16	J A 26	J A 21	J A 22
30	J A 18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 29	30	32	G	J A 40	40	38	39	33	38	J A 28	J A 24	J A 29	J A 41	J A 20	J A 28	J A 19
31	J A 18	J A 75	J A 51	J A 28	J A 33	21	E B 16	22	29	J A 40	J A 44	39	J A 56	J A 42	37	G 22	G	G	E B 16	18	E B 16	E B 16	E B 16	21
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	31	31	31	31	31	31	31	31	31
MED	18	16	E B 16	E B 16	E B 16	18	E B 16	24	30	34	34	39	38	38	38	35	34	J A 30	J A 26	J A 25	J A 26	J A 25	J A 21	19
U Q	J A 26	J A 23	J A 20	J A 16	19	19	20	25	31	J A 37	J A 41	41	43	J A 42	40	39	J A 39	J A 37	J A 34	J A 35	J A 35	J A 30	J A 28	J A 23
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	G	G 32	G 33	G	G	G	G	G	G 28	26	E B 20	18	20	E B 18	E B 16	E B 16

OCT. 2013 foEs (0.1MHz)

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OCT. 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	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	34	39	U Y 42	G	49	37	G 23	34	36	21	27	E B 16	E B 16	19	18
2	16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 21	G 29	G	G 27	G 25	42	G	G	G	30	26	E B 17	E B 16	21	E B 16	E B 16	E B 16
3	24	E B 16	16	E B 16	E B 16	E B 16	E B 16	24	G 28	34	41	42	41	G	37	36	38	26	E B 16	25	E B 16	18	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	31	G 23	G	G	U Y 40	U Y 42	G	39	36	32	23	16	18	E B 16	E B 16	E B 16
5	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G 24	G	37	38	42	41	42	39	37	43	24	45	E B 16	E B 16	E B 16	E B 16
6	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	30	U Y 34	G 33	G 31	G 30	G	G	U Y 35	32	27	16	19	16	23	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	32	37	36	40	37	41	40	38	36	32	19	21	16	E B 16	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	32	37	38	U Y 38	42	43	G 22	34	41	31	30	20	28	43	34	23
9	18	27	16	E B 16	E B 16	E B 16	E B 16	24	30	36	49	U Y 36	45	G	G 20	36	30	G 25	25	24	29	17	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	28	G 25	G 27	40	41	G 24	U Y 34	34	G 29	23	24	20	E B 16	17	E B 16	E B 16
11	E B 16	19	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	35	G 28	G 27	G 28	G 26	G 26	36	35	31	19	E B 16	E B 16	22	E B 16	E B 16
12	16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	32	34	G	E B 44	G	E B 41	39	35	44	39	36	25	20	19	16	E B 16
13	18	20	E B 16	E B 16	E B 16	E B 16	E B 16	22	G 28	33	E B 42	39	44	42	44	41	37	30	26	18	E B 16	17	24	20
14	16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	G 29	34	G 26	41	43	41	37	33	30	29	20	28	27	E B 16	E B 16	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	G	G 23	G 24	G	G 22	39	U Y 39	U Y 34	U Y 28	23	20	E B 16	17	24	E B 16	E B 16
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	G 26	G	G	G	G 31	47	38	36	36	29	36	28	22	E B 16	E B 16	E B 16
17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	29	35	G	40	G	G	40	35	G	23	18	E B 16	23	E B 16	E B 16	E B 16
18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	G 29	34	G 29	G 25	G 24	G	G	G	G	G	25	16	36	27	22	18
19	E B 16	E B 16	20	E B 16	E B 16	E B 16	E B 16	22	G	36	38	41	U Y 40	U Y 39	G 24	38	G 22	22	17	18	21	18	18	E B 16
20	16	21	E B 16	E B 16	E B 16	E B 16	E B 16	G 22	28	34	U Y 33	40	G 28	G 26	40	G	29	24	19	16	E B 16	E B 16	E B 16	E B 16
21	E B 16	E B 16	E B 16	E B 16	E B 16	18	E B 16	24	30	34	36	40	U Y 34	G	39	G 33	31	27	20	20	19	E B 16	28	34
22	26	45	20	E B 16	E B 16	E B 16	E B 16	22	29	34	44	38	G	G 32	C	G 32	28	24	20	20	18	E B 16	E B 16	20
23	E B 16	E B 16	E B 16	18	16	17	E B 16	G	29	33	U Y 34	40	43	40	46	54	31	22	E B 16	E B 16	17	16	22	E B 16
24	E B 16	18	28	21	E B 16	E B 16	E B 16	G	G 28	G	U Y 34	U Y 34	U Y 30	G 29	G 22	G 22	G 24	29	20	E B 16	17	20	E B 16	E B 16
25	E B 16	E B 16	E B 16	16	E B 16	E B 16	E B 16	22	32	41	39	37	E B 60	57	44	34	30	E B 34	E B 16	34	20	26	36	33
26	20	22	19	E B 16	18	17	E B 16	23	30	36	36	39	43	41	G 34	G 23	33	24	20	E B 16	E B 16	E B 16	E B 16	E B 16
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	34	38	U Y 37	U Y 34	G	G 32	G 18	G 22	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
28	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	G	33	37	B	G	U Y 38	E B 46	39	32	35	44	A A 72	55	30	22	E B 16
29	E B 16	E B 16	18	E B 16	E B 16	E B 16	E B 16	20	G 22	33	G 27	G 28	U Y 36	U Y 36	36	35	29	G 18	E B 16	E B 16	E B 16	22	18	16
30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 29	30	32	G	40	39	38	39	G 32	32	G 21	E B 16	21	28	E B 16	21	E B 16
31	17	A A 75	21	25	24	E B 16	E B 16	22	28	36	38	39	51	39	36	G 22	G	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	31	31	31	31	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	34	34	38	36	38	36	34	31	26	20	19	17	16	E B 16	E B 16
U Q	16	18	16	16	E B 16	E B 16	E B 16	24	30	35	38	40	42	41	40	36	36	31	24	25	22	22	21	16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	G 28	G 32	G 33		G	G	G	G 33	G	23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

OCT. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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	16	16	16	16	16	16	16	16	16	16	16	19	22	20	18	18	17	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	14	16	16	18	18	24	19	20	16	16	16	17	16	16	16	16	16
3	16	16	16	16	16	16	16	16	17	16	22	20	20	21	17	20	16	16	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	20	18	20	21	19	21	21	20	16	14	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	20	17	21	26	30	20	19	16	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	16	20	21	20	19	19	16	16	16	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	16	16	16	21	22	18	16	16	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	16	16	19	18	16	18	16	16	16	16	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	18	21	33	17	24	16	16	16	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	18	20	20	20	18	20	16	16	16	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	18	18	19	22	19	19	21	16	16	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	17	20	44	23	41	21	18	16	16	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	16	42	23	16	16	17	16	16	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	21	27	20	20	21	17	17	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	20	16	17	20	20	20	20	19	16	16	16	16	16	16	16	16
16	16	16	16	16	16	16	16	16	16	20	20	17	21	20	19	16	16	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	16	18	24	22	24	21	16	16	16	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	16	17	22	20	24	28	19	16	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	16	21	20	24	20	20	17	16	16	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	16	17	20	21	20	25	19	20	16	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	17	17	20	20	22	22	22	20	16	16	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	16	16	18	23	22	C	16	16	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	16	18	21	20	20	24	17	16	14	16	16	16	16	16	16
24	16	13	16	16	16	16	16	16	16	20	19	17	21	24	21	21	16	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	17	19	20	60	26	19	19	16	34	16	16	16	16	16	16
26	16	16	16	16	16	16	16	15	16	17	18	18	24	18	16	16	16	14	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	16	18	20	21	22	16	16	17	16	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	17	17	B	22	16	46	16	16	16	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	16	19	20	22	20	21	19	16	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	29	17	17	19	24	20	20	17	18	16	16	16	16	16	16	16	16
31	16	16	16	16	16	16	16	16	16	16	17	18	19	17	20	17	16	16	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	16	19	20	21	20	20	17	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	17	20	22	22	24	21	19	16	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	16	17	18	20	19	18	16	16	16	16	16	16	16	16	16

OCT. 2013 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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	304	305	314	332	347	333	352	381	368	348	344	326	322	340	297	321	321	338	352	339	312	289	288	293
2	297	308	324	323	356	326	330	377	368	344	338	327	341	302	269	312	313	315	338	313	288	295	272	272
3	284	315	344	282	297	307	H 355	378	337	332	322	336	312	302	313	324	321	R 332	R 351	346	315	318	305	308
4	316	296	303	316	345	319	333	382	391	378	351	327	330	330	303	318	329	339	353	368	314	316	306	300
5	304	308	315	324	343	342	346	392	384	367	326	333	337	335	314	331	333	358	361	337	303	315	308	309
6	311	306	311	351	348	345	340	375	369	382	333	321	U R 327	R	J R 265	U R 356	319	335	364	356	332	284	308	307
7	299	296	312	323	332	330	337	375	373	372	343	336	323	R 317	320	317	329	335	347	365	308	306	288	288
8	287	306	309	326	315	312	326	361	354	U R 360	344	R 341	U R 335	306	R 316	316	326	350	344	344	321	307	293	285
9	R 301	315	324	331	345	317	325	363	332	337	338	327	298	314	R	331	316	299	337	R 373	338	299	276	285
10	298	289	317	309	296	305	321	367	375	358	338	333	327	326	R 326	331	322	334	359	344	318	306	297	305
11	294	295	300	301	322	347	323	360	356	346	343	332	322	J R	313	322	R 326	R 340	359	362	293	300	303	280
12	301	312	311	305	331	330	328	364	349	324	341	348	341	323	320	R 329	348	334	347	346	288	298	299	303
13	293	297	309	303	317	336	349	387	379	358	348	R 329	327	321	322	316	346	354	337	335	319	310	324	301
14	298	297	295	342	372	341	328	362	373	346	330	327	314	U R 314	U R 332	326	335	344	336	300	322	305	287	287
15	284	304	R 300	295	339	265	294	342	344	328	333	313	335	319	326	R 341	357	335	330	321	330	313	300	294
16	313	312	307	295	310	336	342	368	367	342	334	R 325	J R 319	J R	325	U R 322	338	336	335	328	343	312	301	295
17	295	305	300	318	312	358	359	369	359	366	319	R 343	316	U R 341	U R 325	348	345	333	338	355	301	306	291	283
18	299	298	301	301	293	303	321	349	344	327	342	R 327	U R 333	R	R	337	346	341	345	323	341	290	297	279
19	278	298	309	336	351	330	336	356	364	344	353	R 318	R	R	318	U R 333	343	332	350	333	330	303	293	299
20	300	296	295	295	302	306	332	375	356	374	334	320	324	U R 341	U R 317	R 329	329	346	349	327	309	292	299	298
21	300	304	313	317	328	306	315	366	363	348	310	318	U R 313	305	315	R 322	R 349	331	319	330	294	299	303	294
22	300	318	317	316	332	306	315	373	344	348	R 338	U R 321	320	315	C	U R 336	332	325	335	317	294	295	309	307
23	311	308	311	308	329	300	308	359	372	350	344	320	318	321	U R 333	R	323	329	333	320	341	295	282	298
24	318	R 331	353	312	316	302	302	355	353	346	R 343	U R 332	331	305	U R 332	331	337	336	343	315	327	323	316	305
25	306	330	322	312	337	310	323	355	367	348	339	328	R 344	311	334	347	333	331	328	336	325	310	300	296
26	304	312	304	337	349	307	323	357	363	348	338	321	U R 303	U R 319	U R 334	333	340	326	337	328	316	322	325	300
27	299	295	303	321	328	332	341	353	360	346	323	333	U R 314	R 320	R 322	340	328	329	360	323	314	306	312	294
28	303	299	302	308	334	295	314	371	358	368	322	B	U R 319	299	R 319	R 327	338	329	349	A	306	318	319	325
29	314	310	304	313	352	312	334	360	372	331	344	354	320	313	316	324	R 343	345	342	320	326	326	306	286
30	284	314	313	308	312	295	326	369	375	332	342	319	298	307	305	314	316	342	346	303	332	331	281	276
31	297	A	283	291	307	326	341	357	338	R 356	R 340	R 330	348	315	R 326	325	337	R 349	335	329	331	329	313	307
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	31	30	30	26	28	30	31	31	31	30	31	31	31	31
MED	300	306	309	313	331	317	328	366	363	348	338	327	322	316	320	328	333	335	344	332	318	306	300	296
U Q	304	312	315	324	345	333	341	375	372	360	343	333	333	323	R 326	333	343	342	351	346	330	316	308	305
L Q	295	297	302	303	312	306	321	357	353	342	333	321	316	307	314	322	323	331	336	321	306	298	291	286

OCT. 2013 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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									L	U L 391	U L 377	401	U L 383	A	L 345	L 374	L							
2								457	L	L	U L 392	L 394	L 370	L 404	L	U L 347	L	L						
3								U L 412	L	L	U L 387	L	U L 392	L	L	U L 372	L	L						
4									L	U L 422	U L 437	U L 410	L 394	L	L	L	L	L						
5									L	L	U L 410	L	U L 414	L	L	L	L							
6									L	L	U L 411	U L 379	U L 385	U L 384	U L 381	U L 370	L	L						
7									L	L	L	U L 386	H 389	U L 375	L	U L 366	L							
8								490		L 376	L	L 378	U L 402	L	L	L	A	L						
9										L	L	L	U L 379	U L 370	L	L	L	L						
10								L	L	L	L	U L 399	L	L	L	L	L							
11									L	L	L	L	U L 417	L	L	L	L							
12									L	L	L	L	L	L	L	U L 370	A	A						
13									L	L	L	L 413	L	L	L	L	L							
14									L	L	U L 403	L	L	L	L	L	L							
15								436	L	L	L	L	L	L	L	L	L							
16								L	L	L	L	L	L	L	L	L	A							
17								L	L	L	L	L	L	L	L	L	L							
18									L	L	L	L	L	L	L	L	L							
19								H 452	U L 421	L	L	U L 368	L	L	L	L	L	U L 405						
20								421	L	L	L	L	L	L	L	L	L							
21									L	L	L	U L 383	L	L	L	L	L	L						
22								474	L 429	L	L	L	L	L	C	L	L							
23										L	L	L	U L 374	U L 368	L	A	L	A						
24									L	L	L	L	L	L	L	L	U L 410							
25											L	U L 389	B	A	L	L	L							
26										L	L	L	L	U L 367	L	L								
27								516	L	L	L	U L 395	U L 404	L	L	L	L							
28								406	U L 424	L	L	B	L	L	L	L	A							
29								499		L	L	L	L	L	L	L	L							
30									A	U L 432	L	L	L	L	U L 359	L	U L 403							
31								407		L	L	L	A	U L 364	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								11	3	4	7	12	12	7	3	6	2	1						
MED								452	U L 424	U L 406	U L 403	U L 392	U L 390	U L 370	U L 359	U L 370	U L 406	U L 405						
U Q								490	L 429	U L 427	U L 411	L 400	U L 403	L 384	U L 381	L 372								
L Q								412	U L 421	L 384	U L 387	U L 381	U L 381	U L 367	L 345	U L 366								

OCT. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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									212	252	268	250	282	254	326	272	258							
2								200	210	258	256	270	254	254	378	296	264	258						
3								202	234	268	244	A	250	278	256	266	256	242						
4									208	214	222	252	270	256	284	280	252	238						
5									214	226	252	266	256	256	278	256	250							
6									222	218	240	286	270	262	256	246	236	234						
7									224	230	238	254	280	272	266	272	250							
8								208		246	254	250	254	266	270	250	248	226						
9										248	252	286	284	274	256	246	244	250						
10								224	220	230	248	238	266	266	266	240	244							
11									216	242	242	232	240	262	286	256	246							
12									210	228	234	240	262	282	274	254	234	226						
13									216	222	232	244	262	266	268	272	240							
14									210	224	H 236	246	268	284	254	252	242							
15								214	216	228	228	246	252	264	276	250	224							
16								212	216	234	256	254	266	264	254	228	226							
17								208	218	224	278	244	H 246	264	260	238	224							
18									234	258	256	258	264	270	268	244	238							
19								198	206	230	252	274	268	274	260	236	232	222						
20								210	204	212	246	240	278	272	266	252	232							
21									216	228	278	262	266	282	262	244	222	210						
22								210	210	230	252	252	262	282	C	234	214							
23										218	230	254	266	268	252	244	228	222						
24									222	238	238	256	256	270	258	240	234							
25											238	254	270	276	264	226	222							
26										218	232	270	272	270	248	232								
27								210	216	224	228	244	250	282	272	238	234							
28								212	210	226	222	B	250	258	272	248	220							
29								210		250	250	236	258	266	264	252	240							
30									204	214	246	236	286	292	284	246	242							
31								204		244	234	254	242	298	246	250	230							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								14	24	30	31	29	31	31	30	31	30	10						
MED								210	216	229	244	252	264	270	266	248	237	230						
U Q								212	219	244	252	260	270	278	274	256	246	242						
L Q								204	210	224	234	244	254	264	256	240	228	222						

OCT. 2013 h'F2 (KM)

IONOSPHERIC DATA STATION Yamagawa

OCT. 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	262	260	244	230	212	226	222	202	206	188	H 186	224	186	A	H 192	H 182	224	236	206	220	222	266	282	294
2	278	262	240	236	204	206	230	170	194	188	190	H 186	230	192	H 184	232	224	250	208	186	216	252	308	318
3	308	244	216	288	280	264	H 186	A	202	H 182	216	A	208	E A 230	218	212	A 234	234	216	206	220	236	230	254
4	244	262	270	248	220	234	232	212	206	186	190	196	182	A 232	222	A 238	238	238	208	202	212	240	230	262
5	262	252	246	234	218	224	224	206	200	198	182	H 172	178	222	230	234	232	222	212	262	216	244	238	246
6	252	250	250	224	208	210	226	212	212	210	190	H 184	172	H 180	H 178	214	206	226	202	190	H 196	296	256	260
7	278	276	262	248	232	228	226	206	212	210	200	192	176	A 198	A 226	220	226	232	212	204	206	242	280	292
8	288	268	254	238	236	242	234	176	222	210	212	206	190	218	H 162	210	A	A	222	200	234	326	314	308
9	280	270	236	228	212	238	222	208	218	212	212	H 200	E A 242	200	218	224	218	A	236	198	226	230	288	278
10	276	292	258	242	264	264	246	H 168	218	198	H 204	188	E B 182	H 182	212	218	220	236	214	200	196	244	250	260
11	280	296	286	272	238	218	232	210	210	214	200	A 206	184	178	204	236	230	228	206	194	194	274	262	Q 284
12	278	252	244	260	228	210	232	208	208	202	212	B	H 188	H 206	222	216	A	A	222	200	246	268	252	254
13	280	292	248	262	238	232	210	208	204	H 178	210	188	H 220	222	A 242	232	A	218	216	216	218	238	244	258
14	270	270	272	228	192	220	234	210	202	196	202	H 184	222	210	220	220	218	224	196	246	260	236	258	284
15	288	268	250	262	220	274	278	188	212	198	224	H 204	196	H 210	238	218	228	212	214	224	220	252	258	266
16	250	224	244	260	266	230	204	H 182	206	206	196	198	208	E A 266	216	218	A	214	234	230	228	220	246	268
17	274	258	276	248	248	210	212	H 158	208	210	202	A 220	204	H 200	236	H 204	218	220	216	196	262	234	238	296
18	270	266	270	254	256	260	236	210	210	210	224	204	H 196	196	214	234	220	212	218	206	236	288	282	310
19	308	292	278	228	210	226	216	H 148	198	H 194	H 176	H 200	H 208	232	208	214	H 218	228	208	210	220	264	270	264
20	272	290	282	278	252	254	240	A 230	200	202	H 184	206	H 204	H 188	218	222	218	226	208	210	210	238	258	266
21	274	266	252	252	220	268	244	212	206	188	182	206	198	210	206	H 202	220	200	202	204	226	256	258	274
22	270	A 318	250	236	230	250	244	182	196	214	A 232	188	200	208	C	214	212	210	212	228	232	254	252	264
23	252	248	254	258	230	268	258	220	212	H 178	210	206	224	210	A	A	218	A	206	216	206	246	298	268
24	240	254	240	282	248	260	244	222	216	224	216	190	204	198	216	214	204	218	206	194	218	234	240	250
25	254	238	238	250	216	232	240	210	216	224	206	194	B	A	246	220	208	228	208	224	228	254	314	312
26	270	270	272	230	216	254	238	214	222	E A 218	204	198	220	220	210	220	226	220	210	204	230	212	228	234
27	264	282	268	246	220	242	210	154	210	210	210	202	188	H 182	230	232	220	222	208	192	204	204	210	260
28	272	264	264	256	224	240	248	226	214	208	198	B	244	222	246	A 248	A	226	222	A	342	240	246	234
29	254	254	258	256	226	250	220	158	212	H 202	216	214	208	196	214	220	236	210	190	194	228	210	246	300
30	294	258	250	250	250	264	232	218	A	194	216	212	192	A 204	228	216	218	212	198	226	230	218	282	270
31	280	A	306	320	264	228	200	A 228	204	232	224	H 196	A	H 200	214	212	222	222	206	206	216	214	204	262
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	30	30	31	31	28	29	29	29	30	26	27	31	30	31	31	31	31
MED	272	265	254	250	228	238	232	208	209	202	204	199	199	203	218	219	220	222	208	205	220	242	256	266
U Q	280	276	270	260	248	260	240	212	212	210	216	206	214	221	229	232	226	228	216	220	230	256	282	292
L Q	262	254	244	236	216	226	220	182	204	194	190	189	187	196	209	214	218	214	206	198	212	234	240	260

OCT. 2013 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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								B 106	106	106	98	98	94	98	96	104	102	118	B					
2								A 110	114	96	98	102	98	100	100	98	106	110	B					
3								A 120	102	100	106	106	A	98	104	106	108	106	B					
4								B 106	104	104	104	98	98	100	102	100	102	106	A					
5								B 108	106	102	110	100	106	114	100	102	100	114	A					
6								B 114	116	98	100	110	A	100	100	100	102	102						
7								B 114	96	98	96	96	102	100	98	98	98	104						
8								B 106	100	94	96	100	100	98	100	100	102	118						
9								B 118	104	110	A	A	A	104	102	106	104	104						
10								B 120	110	108	104	104	A	104	100	120	118	118						
11								B A 114	104	108	106	106	106	106	106	104	102	116						
12								A 100	106	98	100		98	B	108	102	102	110						
13								A 118	114	114	B	112	A	102	104	102	102	106						
14								B A 126	122	114	106	106	102	98	100	98	100	108						
15								B 104	106	106	108	98	104	102	102	102	100	100						
16								B 102	104	102	100	100	102	A	A	A	A	A						
17								B 106	106	106	102	100	104	104	102	102	100	128						
18								B 112	112	110	108	106	106	104	106	102	102	102						
19								B 118	100	100	98	104	106	106	104	104	106	108						
20								B A 100	100	98	106	108	108	108	106	106	112	E A 142						
21								B 122	116	102	104	104	A	104	102	116	A	A						
22								B 126	98	A	A	A	98	106	C	110	A	A						
23								A 126	116	116	100	98	98	106	108	108	106	110						
24								A 118	100	102	A	A	A	108	108	108	106	A						
25								A 106	100	98	96	A	B	A	A	116	A	B						
26								A 122	102	98	A	A	A	A	108	108	94	A						
27								B A 102	100	98	100	98	100	104	104	108	130							
28								A 100	100	96	B	98	112	B	106	106	112							
29								114	102	104	104	106	102	100	102	104	A	A 144						
30								B 108	108	102	A	98	98	100	104	120	138							
31								122	100	100	98	98	A	A	108	104	106	108						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								26	31	30	26	23	21	26	27	30	26	25						
MED								114	104	102	100	102	102	103	102	104	102	110						
U Q								120	112	106	104	106	105	106	106	106	106	118						
L Q								106	100	100	98	98	98	100	100	102	102	106						

OCT. 2013 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

OCT. 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	B	B	B	B	B	B	B	182	168	124	120	154	G	110	144	100	162	114	104	96	102	98	96	92
2	92	92	B	B	B	B	96	110	110	G	94	90	182	G	G	G	144	114	B	B	100	104	102	98
3	92	92	94	92	88	94	90	132	114	110	192	160	158	G	158	142	108	104	B	96	96	94	98	B
4	B	B	B	B	B	B	B	186	148	98	G	G	172	180	G	152	126	116	84	86	84	B	B	B
5	B	B	B	B	B	B	B	138	98	G	100	106	162	164	170	138	126	116	112	100	94	98	B	B
6	B	B	B	B	B	144	B	126	160	100	100	100	100	G	G	156	134	122	104	94	94	92	86	B
7	84	B	B	B	B	B	138	124	124	108	114	118	128	106	188	140	128	114	106	98	94	94	98	B
8	B	B	B	B	86	114	B	152	126	108	104	110	96	110	90	154	114	116	102	96	92	92	90	90
9	90	90	94	B	B	B	B	162	190	98	92	96	90	G	88	116	112	104	98	94	94	96	96	B
10	B	B	B	B	B	96	104	108	154	94	92	92	88	94	104	124	112	114	84	86	B	96	B	96
11	B	92	96	B	B	102	B	152	138	130	98	96	94	92	90	148	126	114	86	86	102	92	96	B
12	98	B	B	B	B	88	94	150	174	170	G	B	G	B	138	154	116	114	102	96	94	94	94	112
13	88	88	88	B	B	B	98	96	94	98	B	94	104	128	114	122	112	100	100	94	126	92	90	88
14	88	88	84	B	B	110	B	106	98	98	98	170	172	114	152	146	118	112	100	92	92	92	94	B
15	B	88	B	B	92	112	106	172	G	98	98	G	94	190	198	228	100	166	114	94	92	90	90	86
16	B	B	B	B	B	B	B	104	98	G	G	G	94	88	88	86	84	84	82	82	90	88	B	B
17	B	B	B	B	106	104	110	150	182	90	G	174	G	G	164	158	G	112	86	104	96	B	88	88
18	84	B	B	B	B	B	B	120	100	100	98	96	94	G	G	G	G	G	100	100	90	90	86	86
19	88	126	84	B	B	96	106	146	G	182	172	180	170	174	96	212	92	150	90	104	94	94	94	94
20	102	88	90	90	B	B	B	106	104	104	102	182	96	96	202	G	100	100	98	94	B	B	B	B
21	B	90	B	B	B	88	90	142	152	110	134	162	100	G	102	100	98	96	116	94	92	92	90	86
22	86	88	88	B	112	B	B	164	98	94	94	94	G	98	C	96	94	92	92	94	86	B	B	90
23	104	96	96	90	90	92	98	G	138	128	130	156	128	144	120	114	132	114	B	102	94	94	94	B
24	90	102	88	84	86	92	92	G	112	G	102	96	94	94	94	98	88	92	96	B	100	92	B	B
25	B	B	88	88	88	90	90	106	100	98	98	98	B	94	96	98	98	B	B	100	104	102	94	92
26	90	94	90	88	88	86	94	126	102	98	96	96	92	90	92	92	96	98	86	84	80	B	B	B
27	B	B	96	94	B	B	B	146	108	104	100	100	100	G	98	92	96	132	100	98	96	94	B	96
28	86	B	B	B	B	B	B	98	G	108	96	B	G	158	B	118	120	116	100	96	92	88	88	88
29	86	88	92	B	B	B	94	160	94	178	96	96	118	112	116	208	110	100	84	86	B	92	90	90
30	90	B	B	B	B	B	B	B	112	98	G	100	102	106	188	106	106	100	104	94	92	94	92	92
31	92	92	92	92	92	98	B	198	110	104	102	98	90	90	152	92	G	G	B	84	B	B	B	90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	16	15	8	10	16	15	28	28	27	25	26	25	22	25	28	28	28	26	29	27	25	21	18
MED	90	91	90	90	89	96	96	140	112	104	100	100	100	108	116	123	112	114	100	94	94	94	94	90
U Q	92	93	94	92	92	107	106	156	150	110	109	156	143	144	161	153	126	116	104	98	96	95	96	94
L Q	86	88	88	88	88	91	92	109	100	98	96	96	94	94	95	99	98	100	86	89	92	92	90	88

OCT. 2013 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

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

OCT. 2013 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 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 58	X 60	X 64	X 60	X 42	X 39														X 92	X 79	X 72	X 70	X 72
2	X 74	X 74	X 76	X 59	X 49	X 38														X 80	X 68	X 58	X 55	X 59
3	X 62	X 66	X 55	X 42	X 43	X 43														X 116	X 98	X 84	X 82	X 76
4	X 74	X 68	X 64	X 60	X 52	X 53														X 115	X 101	X 98	X 90	X 89
5	X 90	X 85	X 84	X 80	X 48	X 47														X 87	X 76	X 72	X 71	X 64
6	X 63	X 62	X 65	X 56	X 41	X 37														X 116	X 92	X 72	X 72	X 71
7	X 68	X 66	X 62	X 58	X 48	X 42														X 89	X 74	X 61	X 63	X 59
8	X 58	X 56	X 58	X 51	X 48	X 45														X 114	X 90	X 74	X 77	X 80
9	X 90	X 94	101	91	56	X 46														X 118	X 79	X 66	X 68	X 73
10	X 74	X 66	X 63	X 58	X 52	X 50	X 53													X 97	X 79	X 72	X 70	X 72
11	X 61	X 54	X 50	X 50	X 48	X 40														X 135	X 104	X 94	X 88	X 72
12	X 60	X 63	X 54	X 51	X 49	X 39														X 100	X 94	X 82	X 80	X 70
13	X 66	X 64	X 58	X 52	X 47	X 47														X 110	X 102	X 102	X 103	X 102
14	X 89	X 83	X 86	X 77	X 45	X 39														X 76	X 80	X 88	X 79	X 70
15	X 70	X 68	X 61	X 54	X 58	X 43														X 89	X 88	X 91	X 75	X 67
16	X 64	X 65	X 46	X 45	X 40	X 44														X 108	X 97	X 64	X 59	X 59
17	X 59	X 59	X 54	X 57	X 58	X 35														X 117	X 89	X 91	X 80	X 68
18	X 74	X 68	X 59	X 58	X 48	X 46														X 90	X 86	X 76	X 63	X 54
19	X 53	X 54	X 56	X 57	X 50	X 41														X 105	X 94	X 89	X 77	X 74
20	X 71	X 63	X 58	X 57	X 57	X 48														X 113	X 93	X 78	X 73	X 69
21	X 63	X 61	X 58	X 54	X 45	X 37														X 122	X 114	X 110	X 105	X 99
22	X 88	X 81	X 79	X 64	X 63	X 55														X 88	X 86	X 82	X 76	X 71
23	X 58	X 51	X 50	X 46	X 46	X 41														X 122	X 115	X 86	X 78	X 80
24	X 86	X 70	X 51	X 39	X 36	X 32														X 106	X 96	X 82	X 62	X 57
25	X 57	X 54	X 44	X 44	X 49	X 39														X 100	X 93	X 92	X 86	X 82
26	X 75	X 64	X 65	X 56	X 45	X 37														X 123	X 114	O X 126	X 105	X 80
27	X 66	X 58	X 50	X 49	X 47	X 47														O X 143	X 145	O X 145	X 130	X 106
28	X 88	X 76	X 65	X 56	X 55	X 46														X 96	X 91	X 106	X 102	X 88
29	X 70	X 60	X 48	X 49	X 46	X 36														X 99	X 107	X 116	X 74	X 61
30	X 70	90	X 74	X 54	X 50	X 46														X 136	X 128	X 122	X 76	X 70
31	X 62	X 63	X 52	X 55	X 44	X 47	C													X 101	X 100	X 87	X 78	X 71
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	1													31	31	31	31	31
MED	X 68	X 64	X 58	X 56	X 48	X 43	X 53													X 106	X 93	X 86	X 77	X 71
U Q	X 74	X 70	X 65	X 58	X 52	X 47														X 117	X 102	X 98	X 86	X 80
L Q	X 61	X 60	X 52	X 50	X 45	X 39														X 92	X 86	X 72	X 70	X 67

OCT. 2013 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 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	52	54	58	54	36	33	35	68	72	84	86	90	104	114	R 119	116	125	118	104	86	72	66	64	R 66
2	68	68	70	53	43	32	37	66	74	78	92	98	101	111	R 117	140	R 130	R 132	97	74	62	52	49	R 53
3	56	60	49	36	37	37	37	59	69	96	94	108	106	106	126	119	116	124	120	110	92	78	76	70
4	68	62	58	54	46	47	47	93	84	77	91	107	131	135	R 134	R 133	R 126	127	125	109	95	92	84	83
5	84	79	78	74	42	41	39	73	80	79	100	124	R 141	U R 143	R 130	121	109	103	93	81	70	66	65	58
6	57	56	59	50	35	31	32	72	80	82	103	119	U R 150	U R 155	U R 157	R 152	U R 149	J R 147	135	110	86	66	66	65
7	62	60	56	52	42	36	35	68	79	84	R 79	86	92	R 102	110	112	109	108	101	83	68	55	57	53
8	52	50	52	45	42	39	40	68	81	97	110	116	124	R 124	R 137	133	132	125	113	108	84	68	71	74
9	84	88	F 93	F 84	F 48	40	39	70	73	104	109	R 71	84	125	116	105	112	112	135	112	73	60	62	67
10	68	60	57	52	46	44	R 47	83	105	91	93	87	102	112	123	120	110	118	120	91	73	66	64	66
11	55	48	44	44	42	34	32	72	96	98	105	R 117	R 122	J R 132	U R 142	J R 144	U R 148	U R 146	142	R 129	98	R 88	82	66
12	54	57	48	45	43	33	42	72	84	90	108	110	106	117	U R 124	126	118	114	110	94	J R 88	R 76	74	64
13	60	58	52	46	41	41	45	74	83	79	89	101	R 100	113	110	114	119	108	101	104	96	96	97	96
14	83	77	80	71	R 39	33	34	81	79	87	95	110	104	125	136	128	119	119	108	70	U R 74	82	73	64
15	64	62	55	48	52	37	38	70	88	102	114	118	128	128	R 131	128	109	103	94	83	82	85	69	R 61
16	58	59	R 40	39	34	38	33	66	86	88	109	R 132	136	R 150	U R 153	U R 152	129	117	109	102	91	58	53	53
17	53	53	48	V 51	52	29	37	77	93	92	111	132	137	U R 149	U R 152	U R 142	125	111	116	111	83	85	74	62
18	68	62	53	52	42	40	42	77	95	110	130	U R 139	U R 142	U R 144	U R 148	U R 135	R 134	R 103	89	84	80	70	57	48
19	47	48	50	51	44	35	32	65	79	86	111	118	R 136	U Y 141	U Y 148	U R 150	R 140	128	111	99	88	83	71	68
20	65	57	52	51	51	J R 42	44	75	91	100	102	116	126	R 143	U R 148	U R 144	R 136	129	121	R 107	87	72	67	63
21	57	55	52	48	39	31	35	69	91	92	114	134	R 155	U R 159	U R 159	U R 157	U R 153	R 142	126	116	108	104	99	93
22	82	75	73	58	57	49	47	77	92	97	112	116	129	138	R	130	115	99	93	82	80	76	70	65
23	52	45	44	40	40	35	36	76	102	96	94	104	131	U R 144	U R 154	R 144	U R 141	U R 133	R 120	116	109	80	72	74
24	80	64	45	33	30	26	30	69	100	99	106	121	112	118	128	R 122	122	123	112	100	90	76	56	51
25	51	48	38	38	43	33	34	74	95	96	108	113	120	125	127	122	111	J R 104	104	94	87	R 86	80	76
26	69	58	59	50	39	31	34	70	93	96	98	104	R 118	J R 130	140	126	108	106	110	117	U R 108	R 120	R 99	74
27	60	R 52	44	43	41	42	36	69	101	94	100	112	114	R 129	R 144	U R 151	136	134	126	U R 137	R 139	U R 139	124	100
28	82	70	59	50	49	40	38	70	87	90	98	B	123	124	R 125	125	114	93	98	90	85	100	96	82
29	64	54	R 42	43	40	30	30	65	81	92	113	118	107	112	118	120	126	128	119	93	101	J R 106	68	55
30	64	F 81	F 63	48	44	40	40	78	86	83	97	108	113	137	R 145	R 158	U R 145	U R 146	U R 144	R 130	R 122	116	70	64
31	56	57	46	49	38	J R 41	C	68	76	106	118	115	U R 100	109	129	120	R 118	113	104	95	94	81	72	65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	30	31	31	30	31	31	31	31	31	31	31	31	31
MED	62	58	52	50	42	37	37	70	86	92	103	114	120	128	R 132	128	125	118	111	100	87	80	71	65
U Q	68	64	59	52	46	41	40	76	93	97	111	118	R 131	U R 143	U R 148	U R 144	U R 136	R 129	121	111	96	92	80	74
L Q	55	54	46	44	39	33	34	68	79	84	94	104	104	114	124	120	114	108	101	86	80	66	64	61

OCT. 2013 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 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	L 496	L 504	U L 540	U L 552	U L 568	L	L	L						
2								240	L	L	L	L 480	U L 492	U L 608	U L 552	U L 524	L	L						
3										L	U L 508	L	L	L	L	L	L	L						
4									L	L	L	U L 564	U L 524	U L 528	L	L	L	L						
5									L		L	U L 532	U L 516	U L 528	L	U L 528	L							
6									L	L	U L 528	L	U L 532	U L 508	U L 548	U L 480	L	L						
7									L	L	L	L 496	U L 492	U L 528	U L 528	U L 496	U L 436							
8										L	L	L	U L 528	U L 600	L	L	L	L						
9									L	L	L	L	U L 588	L	L	L	L							
10										L	L	L	L	L	L	L	L	L						
11										L	L	U L 528	L	U L 604	U L 556	L	L							
12										L	L	L	U L 524	L	B	L	A							
13									L		U L 572	496	L	L	L	L	L	L						
14									L	L	L	U L 536	516	U L 560	L	L	A							
15										L	L	L	L	L	L									
16										L	L	L	L	U L 560	L	L		L						
17										L	L	U L 532	L	U L 572	L	L	L							
18										L	L	L	L	L	U L 528	L	L							
19									L		U L 520	L	U L 544	L	L	L								
20								L	L	L	L	L	L	U L 572	U L 528	L	L							
21										L	L	U L 504	L	L	L	L	L							
22									L	L	L	L	U L 568	L	A		L							
23									L	L	L	L	L	A	L	L	L							
24										L	L	U L 536	L	L	L	L	L							
25										L	L	L	B	U L 524	L	L								
26									L	L	L	L	L	L	U L 532	L								
27									L	L	L	L	L	L	L	L	L							
28									L	L	L	B	L	L										
29									L	L	L	L	L	L	L	L								
30									L	L	L	L	L	U L 544	L	L	L							
31								208		L	L	L	L	L	L	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2			5	11	12	14	8	4	1							
MED								224			U L 520	U L 528	U L 526	U L 556	U L 540	U L 510	U L 436							
U Q											U L 550	U L 536	U L 542	U L 572	U L 554	U L 526								
L Q											L 502	L 496	U L 516	U L 528	U L 528	U L 488								

OCT. 2013 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 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								B A	U A 268	312		B	B	A	B	A	B	U R 320	264	A				
2								B A	U R 288	R	R	R	R	B	B	B	U R 292	264	172					
3								B 220	284	324		B	B	B	B	R 376	B	304	R 256	B				
4								B B	280		B	B	B	B	B	B	B	312	252	A				
5								B 228	R 288	320		B	A	A	B	B	R 352	R 328	240	A				
6								B 228	296	U R 324		B	B	B	B	B	B	300	236	A				
7								B 232	A	U R 312		A	A	A	B	B	U R 340	U R 292	U A 224	A				
8								B 204	284	328		B	B	B	R	A	B	R	U A 240	A				
9								B U A 208	U A 288	A		A	B	B	B	B	B	296	A	A				
10								216	U R 276	A		A	B	B	B	B	B	U A 304	U A 232	B				
11								B R 200	U R 276	U R 328		R	R	R	B	B	R	A	252	A				
12								B R 216	U R 288	U R 332		B	B	B	B	B	344	R 308	240	A				
13								B 216	276	R		B	B	B	B	B	B	304	U A 228	A				
14								B 220	A	A		R	B	B	R	U R 348	A	A	A	A				
15								A R 204	R	A		A	B	B	A	B	A	A	A	A				
16								B 200	R 272	R		U R 328	B	B	B	B	A	B	A	A				
17								B 208	U R 292	A		R	B	B	B	B	B	U R 284	236	B				
18								B 200	U R 300	U R 348		B	B	B	B	B	B	U R 316	248	A				
19								B A	A	A		U R 348	B	B	B	B	B	R	U R 228	176				
20								B 212	U R 272	B		B	B	B	B	B	U R 340	A	240	A				
21								B R 200	288	B		R 368	B	B	B	R	A	A	A	A				
22								B B	R 284	U R 344		A	R	A	A	A	A	A	A	A				
23								B 220	276	A 332		R	B	B	B	B	B	312	220	A				
24								B 204	U A 260	B		B	B	U R 348	R	B	B	A	A	A				
25								B A	U A 264	296		B	A	B	B	R	A 336	A	B	A				
26								B 196	296	A		A	A	A	B	A	A	A	A	A				
27								B 196	U R 292	U R 332		R	U R 376	B	B	B	B	B	A	A				
28								B 208	A	A		A	B	B	B	B	B	U A 300	A	A				
29								B 200	280	R		U R 348	B	B	B	B	B	A	A	A				
30								B B	A	U R 328		A	B	B	B	A	A	A	A	A				
31								B	248	U R 300		U R 332	B	B	B	B	B	288	200	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								23	25	15	5	1	1		2	5	16	18	2					
MED								208	284	U R 328	U R 348	U R 376	U R 348		R 362	R 340	304	240	174					
U Q								220	U R 288	U R 332	R 358					348	R 312	252						
L Q								200	U 274	312	U R 330					338	U R 294	U 228						

OCT. 2013 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 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	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	23	J A 39	39	40	E B 41	J A 64	41	35	E B 42	G	32	J A 34	J A 16	J A 32	J A 16	J A 39	J A 27
2	J A 50	20	18	E B 14	E B 14	E B 14	E B 14	23	G 26	G 25	G 27	G 25	25	E B 46	E B 44	E B 37	G	G	G	E B 14	J A 16	E B 14	J A 20	E B 14
3	J A 22	J A 17	J A 17	J A 20	18	E B 14	E B 14	G	G	G	E B 42	E B 41	E B 44	E B 44	G	E B 41	G	G	E B 18	E B 14	E B 14	E B 14	E B 14	J A 16
4	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	G	E B 36	E B 42	E B 45	E B 42	E B 44	E B 42	E B 42	38	34	J A 53	17	E B 14	J A 18	E B 14	E B 14
5	J A 20	J A 15	21	J A 23	E B 14	E B 14	E B 14	G	G	38	E B 40	41	44	E B 45	E B 43	G	38	36	J A 34	J A 25	J A 44	J A 29	J A 27	E B 17
6	E B 14	E B 14	E B 14	E B 14	E B 14	18	E B 14	G	G	G	E B 43	E B 43	E B 43	E B 42	E B 44	E B 38	32	28	J A 27	J A 19	J A 21	J A 26	J A 43	E B 14
7	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	28	J A 57	J A 64	J A 50	J A 48	J A 52	E B 41	E B 44	G	G	J A 41	J A 38	J A 22	J A 21	J A 20	J A 18	18
8	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	34	J A 47	E B J A 44	E B 48	E B 44	G 25	J A 46	G	G 27	26	J A J A 54	A 68	J A 22	E B 14	E B 14	J A 28
9	J A 37	J A 41	J A 34	J A 25	J A 17	19	E B 14	26	G 28	J A 42	J A 44	E B 48	E B 45	E B 45	E B 42	E B 41	35	28	J A 32	J A 47	J A 36	J A 45	27	J A 22
10	J A 20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 24	40	36	E B 43	E B 44	E B 42	E B 43	E B 42	36	30	22	J A 17	19	E B 14	J A 20	J A 22
11	E B 14	E B 20	J A 17	18	20	E B 14	E B 14	24	G 20	G	G 27	G 29	G E 29	B 48	E B 44	E B 28	38	34	J A 24	J A 16	J A 20	18	E B 14	36
12	J A 38	E B 14	E B 21	E B 14	E B 14	E B 14	E B 14	24	G	G	E B 42	E B 44	E B 44	E B 48	E B 48	42	46	J A 43	J A 32	J A 34	J A 47	J A 31	J A 19	J A 18
13	J A 22	19	J A 23	J A 17	J A 18	E B 14	E B 14	G 17	G 19	G 24	E B 45	E B 44	E B 43	43	E B 42	E B 43	34	29	J A 20	J A 19	J A 24	J A 32	J A 29	25
14	J A 26	34	26	J A 21	22	18	E B 14	G 22	J A 34	36	G 34	E B 43	E B 44	G 36	G	J A 44	J A 64	J A 51	J A 49	J A 60	J A 47	J A 41	19	E B 15
15	E B 14	E B 14	E B 14	E B 14	E B 14	18	J A 18	G	G 27	36	34	E B 46	E B 41	51	46	J A 47	40	J A 34	J A 25	J A 58	J A 37	J A 23	J A 31	J A 20
16	J A 24	22	J A 22	J A 18	E B 14	E B 14	E B 14	G	G	32	G	E B 43	E B 44	E B 44	E B 44	38	E B 42	26	19	E B 14	E B 14	E B 14	E B 14	E B 14
17	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	23	G	36	G E 27	B 44	E B 44	E B 44	E B 44	E B 36	G	64	E B 15	J A 60	J A 23	E B 14	E B 14	E B 14
18	18	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	G 25	G	E B 42	E B 44	E B 43	E B 45	E B 43	E B 41	33	29	J A 38	J A 56	J A 49	J A 18	22	20
19	J A 15	E B 14	E B 14	18	E B 14	E B 14	E B 14	J A 29	J A 29	40	G	E B 41	E B 43	E B 44	E B 41	E B 46	G	G	G	J A 50	J A 28	J A 26	27	J A 20
20	E B 14	E B 14	19	E B 18	E B 19	E B 14	E B 14	G	G	E B 42	E B 44	E B 43	E B 45	E B 42	E B 42	G	35	27	J A 20	J A 20	E B 14	E B 14	E B 14	E B 14
21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	J A 21	28	34	E B 36	G	E B 42	E B 43	E B 43	G 38	37	35	J A 53	J A 29	J A 38	J A 26	J A 37	42	24
22	J A 20	26	J A 19	37	J A 26	E B 14	J A E B 16	22	G	37	40	G 36	J A 48	J A 48	J A 74	J A 46	J A 40	J A 43	J A 28	E B 14	J A E B 19	E B 14	E B 14	E B 14
23	E B 14	E B 16	E B 14	E B 14	E B 14	J A 28	J A 14	G	G J A 25	40	G 28	48	43	J A 59	E B 43	E B 43	G	G	20	J A 20	J A 32	J A 23	J A 20	J A 19
24	20	E B 14	E B 14	E B 14	E B 14	E B 14	J A 21	22	31	E B 44	E B 43	36	G	G	E B 42	E B 43	31	23	J A 20	E B 14	E B 14	E B 14	E B 14	E B 14
25	J A 16	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	25	J A 37	36	E B 40	41	E B 71	E B 44	35	38	J A E B 39	48	J A E B 29	14	E B 14	E B 14	E B 14	E B 14
26	E B 14	J A 31	J A 26	18	E B 14	J A 28	E B 14	24	G	J A 41	J A 52	J A 47	J A 41	E B 44	J A 44	44	39	24	J A J A 29	28	18	20	E B 14	18
27	E B 14	23	E B 16	E B 14	E B 20	E B 14	E B 14	22	G	G 28	G 27	G E 29	B 43	E B 44	E B 41	E B 40	26	36	J A 40	J A 22	J A 18	E B 14	E B 14	18
28	19	J A 18	24	J A 21	20	E B 14	E B 14	22	34	39	41	B E 45	E B 40	E B 57	E B 46		J A 39	J A 43	J A 26	18	E B 14	E B 14	J A 27	J A 28
29	E B 14	E B 14	E B J A 20	E B 14	E B 14	E B 14	E B 14	24	G	G 24	G	E B 43	E B 42	E B 44	E B 42	E B 42	35	24	J A 28	J A 30	J A 24	E B 14	E B 14	E B 14
30	E B 14	E B 14	E B 17	J A 20	J A 19	E B 14	E B 14	E B 34	27	G	34	E B 43	E B 41	E B 43	J A 44	40	38	J A 52	J A 54	J A 21	E B 14	E B 14	18	E B 14
31	E B 14	J A 22	J A 35	J A 41	J A 32	21	C	E B 18	G	G	44	E B 42	E B 42	E B 43	E B 40	E B 42	J A 46	28	E B 14	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	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 14	E B 14	E B 17	E B 14	E B 14	E B 14	E B 14	22	G	36	E G 40	E B 43	E B 43	E B 44	E B 43	E B 41	35	30	J A 28	J A 20	J A 21	16	18	18
U Q	J A 20	20	J A 21	J A 20	19	14	J A 14	25	31	J A 40	43	44	44	E B 45	44	43	J A 39	J A 43	J A 34	J A 38	J A 32	J A 26	J A 27	J A 22
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 27	G	G	41	42	42	41	G 37	G	26	20	E B 16	E B 14	E B 14	E B 14	E B 14

OCT. 2013 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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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	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	23	36	39	40	E B 41	44	U Y 41	U Y 35	E B 42	G	30	30	E B 14	22	E B 14	34	20
2	21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	22	G U 21	G U 25	G U 27	G U 25	G U 25	E B 46	E B 44	E B 37	G	G	G	E B 14	E B 14	E B 14	E B 14	E B 14
3	19	16	E B 14	19	E B 14	E B 14	E B 14	G	G	G	E B 42	E B 41	E B 44	E B 44	E B	G E B 41	G	G	E B 18	E B 14	E B 14	E B 14	E B 14	E B 14
4	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	25	G E B 36	E B 42	E B 45	E B 42	E B 44	E B 42	E B 42	E B 42	37	34	32	E B 14	E B 14	17	E B 14	E B 14
5	18	E B 14	E B 14	21	E B 14	E B 14	E B 14	G	G	37	E B 40	41	43	E B 45	E B 43	G	38	35	31	22	30	21	20	E B 17
6	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G	E B 43	E B 43	E B 43	E B 42	E B 44	E B 38	31	27	26	18	19	22	24	E B 14
7	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	26	34	40	44	42	46	E B 41	E B 44	G	G	33	24	E B 14	E B 14	E B 14	E B 14	E B 14
8	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	32	44	E B 44	44	E B 44	U G 25	44	G	U G 27	26	51	22	18	E B 14	E B 14	21
9	32	38	29	19	E B 14	E B 14	E B 14	25	G 23	36	40	E B 48	E B 45	E B 45	E B 42	E B 41	35	28	31	44	34	32	24	20
10	19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 23	40	U Y 36	E B 43	E B 44	E B 42	E B 43	E B 42	35	28	20	E B 14	E B 14	E B 14	E B 14	19
11	E B 14	E B 20	E B 14	E B 14	E B 14	E B 14	E B 14	24	G 19	G U 27	G U 29	G U 29	G E 48	E B 44	E B U G 28		34	33	20	E B 14	E B 14	E B 14	E B 14	32
12	26	E B 14	E B 21	E B 14	E B 14	E B 14	E B 14	24	G	G E B 42	E B 44	E B 44	E B 44	E B 48	E B 48	E B 41	45	41	30	30	39	26	E B 14	E B 14
13	21	E B 14	17	E B 14	E B 14	E B 14	E B 14	G 16	G 17	G 22	E B 45	E B 44	E B 43	42	E B 42	E B 43	33	28	18	E B 14	23	30	23	22
14	25	30	21	20	21	E B 14	E B 14	G 19	32	36	U G 34	E B 43	E B 44	U G 36	G	42	41	38	30	43	31	24	E B 14	E B 15
15	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G U 27	G U 36	U Y 34	E B 46	E B 41	50	45	45	39	26	22	47	16	19	20	17
16	23	22	20	E B 14	E B 14	E B 14	E B 14	G	G U 32	G E 43	E B 44	E B 44	E B 44	44	38	E B 42	24	18	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
17	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	23	G	36	U G 27	E B 44	E B 44	E B 44	E B 44	E B 36	G	60	E B 15	22	E B 14	E B 14	E B 14	E B 14
18	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	23	G 20	G	E B 42	E B 44	E B 43	E B 45	E B 43	E B 41	33	29	30	21	30	E B 14	21	17
19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	29	40	G E 41	E B 43	E B 44	E B 41	E B 46		G	G	G	45	19	21	20	17
20	E B 14	E B 14	17	E B 18	E B 19	E B 14	E B 14	G	G	E B 42	E B 44	E B 43	E B 45	E B 42	E B 42	G	35	26	17	18	E B 14	E B 14	E B 14	E B 14
21	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	28	33	E B 36	G E 42	E B 43	E B 43	U G 38	36		33	44	23	27	26	32	39	22
22	20	22	19	32	25	E B 14	E B 14	E B 22	G	37	40	U G 36	44	43	64	46	32	30	18	E B 14	18	E B 14	E B 14	E B 14
23	E B 14	E B 16	E B 14	E B 14	E B 14	21	E B 14	G	G 22	G 24	U G 28	46	42	56	E B 43	E B 43	G	G	E B 14	19	E B 14	17	E B 14	E B 14
24	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	22	31	E B 44	E B 43	36	G	G	E B 42	E B 43	31	23	16	E B 14	E B 14	E B 14	E B 14	E B 14
25	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	22	35	36	E B 40	40	E B 71	E B 44	U G 35	38	37	E B 48	28	E B 14	E B 14	E B 14	E B 14	E B 14
26	E B 14	18	23	E B 14	E B 14	21	E B 14	24	G	39	42	44	41	E B 44	42	42	33	24	26	23	18	E B 14	E B 14	16
27	E B 14	23	E B 16	E B 14	E B 20	E B 14	E B 14	22	G	G 24	U G 27	G 29	E B 43	E B 44	E B 41	E B 40	U Y 26	31	33	20	E B 17	E B 14	E B 14	E B 14
28	17	18	23	20	20	E B 14	E B 14	22	32	39	40	B E 45	E B 40	E B 57	46		35	30	22	E B 14	E B 14	E B 14	19	22
29	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	24	G	G 23	G E 43	E B 42	E B 44	E B 42	E B 42		35	24	26	24	E B 14	E B 14	E B 14	E B 14
30	E B 14	E B 14	E B 17	19	19	E B 14	E B 14	E B U 34	Y 27	G	U Y 34	E B 43	E B 41	E B 43	43	39	32	30	40	19	E B 14	E B 14	17	E B 14
31	E B 14	17	26	21	20	E B 14	C	E B 18	G	G	42	E B 42	E B 42	E B 43	E B 40	E B 42	44	26	E B 14	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	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	22	G	36	E G 40	E B 43	E B 43	E B 44	E B 43	E B 41	33	28	23	18	E B 14	E B 14	E B 14	E B 14
U Q	19	18	19	19	14	E B 14	E B 14	24	31	39	E B 42	E B 44	E B 44	E B 45	E B 44	42	37	33	30	23	22	21	20	19
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 27	G	G	41	42	42	41	G 37	G	24	18	E B 14	E B 14	E B 14	E B 14	E B 14

OCT. 2013 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 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	16	34	41	24	40	27	42	22	21	14	14	14	14	15	14
2	14	14	14	14	14	14	14	14	18	20	24	22	20	46	44	37	21	18	14	14	14	14	14	14
3	14	14	14	14	14	14	14	15	19	20	42	41	44	44	32	41	23	20	18	14	14	14	14	14
4	14	14	14	14	14	14	14	22	21	36	42	45	42	44	42	42	21	17	14	14	14	14	14	14
5	14	14	14	14	14	14	14	14	17	25	40	32	32	45	43	27	18	17	14	14	14	14	14	17
6	14	14	14	14	14	14	14	14	20	21	43	43	43	42	44	38	20	17	14	14	14	14	14	14
7	14	14	14	14	14	14	14	20	20	21	24	37	41	41	44	23	21	15	14	14	14	14	14	14
8	14	14	14	14	14	14	14	14	14	23	44	39	44	20	22	41	24	18	14	14	14	14	14	14
9	14	14	14	14	14	14	14	15	17	21	22	48	45	45	42	41	22	22	14	14	14	14	14	14
10	14	14	14	14	14	14	14	15	18	20	22	43	44	42	43	42	22	15	14	14	14	14	14	14
11	14	20	14	14	14	14	14	14	14	23	24	26	22	48	44	22	20	18	14	14	14	14	14	14
12	14	14	21	14	14	14	14	14	22	24	42	44	44	48	48	27	22	17	14	14	14	14	14	14
13	14	14	14	14	14	14	14	14	13	16	45	44	43	38	42	43	20	16	14	14	14	14	14	14
14	14	14	14	14	14	14	14	14	15	21	32	43	44	34	26	31	20	15	14	14	14	14	14	15
15	14	14	14	14	14	14	14	17	24	20	30	46	41	43	39	34	20	20	16	14	14	14	14	14
16	14	14	14	14	14	14	14	14	20	30	21	43	44	44	44	24	42	17	14	14	14	14	14	14
17	14	14	14	14	14	14	14	14	16	24	22	44	44	44	44	36	20	17	15	14	14	14	14	14
18	14	14	14	14	14	14	14	14	16	23	42	44	43	45	43	41	21	16	14	14	14	14	14	14
19	14	14	14	14	14	14	14	14	14	20	26	41	43	44	41	46	21	18	15	14	14	14	14	14
20	14	14	14	18	19	14	14	14	21	42	44	43	45	42	42	24	22	15	14	14	14	14	14	14
21	14	14	14	14	14	14	14	18	20	36	26	42	43	43	32	26	23	17	14	14	14	14	14	14
22	14	14	14	14	14	14	14	22	17	17	28	30	27	31	27	22	20	14	14	14	14	14	14	14
23	14	16	14	14	14	14	14	16	16	20	20	41	41	39	43	43	20	20	14	14	14	14	14	14
24	14	14	14	14	14	14	14	17	17	44	43	32	31	29	42	43	20	16	14	14	14	14	14	14
25	14	14	14	14	14	14	14	16	16	22	40	35	71	44	31	29	23	48	14	14	14	14	14	14
26	14	14	14	14	14	14	14	17	20	20	22	24	27	44	25	24	22	17	14	14	14	14	14	14
27	14	17	16	14	20	14	14	18	20	20	24	27	43	44	41	40	24	17	17	14	17	14	14	14
28	14	14	14	14	14	14	14	14	20	21	25	B	45	40	57	37	17	14	14	14	14	14	14	14
29	14	14	14	14	14	14	14	14	14	20	30	43	42	44	42	42	24	19	14	14	14	14	14	14
30	14	14	17	14	14	14	14	34	20	20	26	43	41	43	20	29	20	14	14	14	14	14	14	14
31	14	14	14	14	14	14	C	18	17	18	25	42	42	43	40	42	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	30	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	17	21	28	42	43	43	42	37	21	17	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	17	20	24	42	44	44	44	44	42	23	18	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	16	20	24	35	41	40	32	27	20	16	14	14	14	14	14	14

OCT. 2013 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2013 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	299	303	335	369	343	353	311	366	354	349	347	317	303	304	R 300	302	320	334	335	346	308	285	285	R 290
2	288	312	356	341	339	334	299	374	364	329	332	318	307	283	R 276	298	R 331	R 304	344	295	305	283	265	R 260
3	286	320	345	311	288	323	379	361	320	334	328	311	302	284	305	313	315	317	340	347	335	316	300	299
4	296	313	311	325	332	335	337	379	394	351	333	308	318	318	R 308	R 315	R 318	339	352	334	334	301	321	289
5	307	328	335	376	345	361	353	382	364	319	315	316	R 343	U R 329	R 315	312	326	337	346	335	295	304	306	296
6	306	313	325	368	360	355	322	362	366	333	326	299	U R 322	U R 319	U R 322	R 319	U R 326	J R 336	349	345	342	267	292	297
7	298	283	298	334	358	348	330	368	360	368	R 347	329	313	296	R 302	313	319	342	350	337	328	280	282	285
8	291	300	321	335	329	320	321	357	346	320	322	310	317	R 295	R 308	307	321	334	342	337	348	293	295	296
9	296	311	F 340	F 354	F 356	333	319	361	347	318	364	R 318	276	318	323	299	300	298	333	349	321	292	284	296
10	293	297	302	321	294	317	R 322	354	360	354	356	319	301	306	316	327	316	325	343	342	316	299	301	308
11	278	296	295	311	348	330	304	348	353	355	341	R 333	R 316	J R 307	U R 313	J R 324	U R 329	U R 344	345	R 348	336	R 284	298	287
12	298	311	320	307	322	304	308	372	364	332	332	335	320	305	U R 311	326	317	328	333	336	J R 298	R 289	308	301
13	299	284	326	314	310	323	337	374	383	345	335	330	R 304	316	303	315	325	335	329	326	298	303	310	310
14	297	297	311	347	R 355	349	326	374	372	338	317	327	304	301	327	319	325	336	350	313	U R 293	307	302	288
15	283	289	331	310	332	315	291	324	340	322	319	301	320	304	R 319	318	331	329	324	306	306	319	288	R 283
16	317	318	R 312	310	317	341	347	356	356	322	306	R 321	308	R 321	U R 339	U R 340	319	321	318	319	332	313	292	298
17	295	313	307	V 329	350	362	305	364	353	330	313	323	322	U R 320	U R 328	U R 328	324	329	324	338	298	290	296	280
18	299	309	301	315	302	301	321	341	335	316	321	U R 341	U R 317	U R 328	U R 341	U R 317	R 336	R 339	327	316	314	300	281	280
19	279	293	317	330	329	328	332	374	345	327	326	306	R 308	Y	Y	U R 335	R 322	335	337	327	287	295	296	291
20	292	301	293	303	338	J R 320	334	353	366	349	324	320	310	R 321	U R 322	U R 327	R 332	325	342	R 330	308	299	289	292
21	304	310	336	333	350	304	306	350	347	322	299	311	R 315	U R 320	U R 331	R	U R 337	R 325	333	313	301	302	319	318
22	310	314	324	328	330	336	320	346	356	333	320	308	307	314	R	315	328	330	327	316	305	303	305	314
23	325	316	321	316	327	310	298	351	362	355	326	302	312	U R 320	U R 329	R 323	U R 330	U R 324	R 339	317	319	319	291	302
24	336	344	339	325	340	321	303	337	360	344	323	332	319	304	314	R 312	319	336	342	328	291	331	308	308
25	320	327	329	314	341	342	307	343	364	335	328	313	319	313	315	314	318	J R 318	324	328	307	R 305	315	310
26	303	306	330	351	342	330	306	364	359	356	332	309	R 304	J R 318	317	333	305	312	320	331	U R 333	R 354	R 322	304
27	285	R 290	320	324	327	333	309	342	357	354	324	310	304	R 299	R 317	U R 329	326	327	322	U R 345	R 332	R	327	312
28	309	288	286	308	351	341	311	367	363	352	331	B	307	314	R 297	320	334	318	325	311	300	317	310	313
29	306	314	R 342	314	340	352	302	359	359	336	332	330	305	300	303	310	316	343	333	321	307	J R 323	307	282
30	302	F 339	F 338	319	330	298	317	361	367	339	319	307	279	295	R 308	R 332	U R 337	U R 327	U R 343	R 334	R 326	333	279	301
31	299	325	285	292	285	J R 313	C	367	344	309	345	334	U R 307	296	316	323	R 327	321	320	328	323	320	309	315
	00	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	30	31	31	31	31	30	31	30	29	30	31	31	31	31	31	30	31	31
MED	299	311	321	324	338	330	318	361	359	335	326	318	308	310	R 315	318	325	329	335	330	308	302	300	297
U Q	306	316	335	335	348	342	330	368	364	351	333	329	318	U R 319	U R 322	U R 327	R 330	336	343	338	332	317	309	308
L Q	292	297	307	311	327	317	306	350	347	322	320	309	304	300	306	313	318	321	325	317	300	292	289	288

OCT. 2013 M(3000)F2 (0.01)

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L 386	L 399	U L 381	H 372	U L 345	L	L	L						
2								487	L	L	L	L 402	U L 408	U L 330	U L 326	U L 341	L	L						
3										L	U L 383	L	L	L	L	L	L	L						
4									L	L	L	U L 365	U L 395	U L 370	L	L	L	L						
5									L		L	U L 384	U L 380	U L 365	L	U L 354	L							
6									L	L	U L 361	L	U L 385	U L 386	U L 346	U L 367	L	L						
7									L	L	L	L 398	A	U L 367	U L 347	U L 360	U L 378							
8										L	L	L	U L 365	U L 337	L	L	L	L						
9									L	L	L	L	U L 346	L	L	L	L							
10										L	L	L	L	L	L	L	L	L						
11										L	L	U L 381	L	U L 363	U L 359	L	L							
12										L	L	L	U L 392	L	B	L	A							
13									L		U L 367	400	L	L	L	L	L	L						
14									L	L	L	U L 374	402	U L 355	L	L	A							
15										L	L	L	L	L	L									
16										L	L	L	L	U L 347	L	L		L						
17										L	L	U L 380	L	U L 356	L	L	L							
18										L	L	L	L	L	U L 361	L	L							
19									L		U L 373	L	U L 374	L	L	L								
20								L	L	L	L	L	L	U L 351	U L 359	L	L							
21										L	L	U L 386	L	L	L	L	L							
22									L	L	L	L	U L 354	L	A		L							
23									L	L	L	L	L	A	L	L	L							
24										L	L	U L 366	L	L	L	L	L							
25										L	L	L	B	U L 378	L	L								
26									L	L	L	L	L	L	U L 357	L								
27									L	L	L	L	L	L	L	L	L							
28									L	L	L	B	L	L										
29									L	L	L	L	L	L	L	L								
30									L	L	L	L	L	U L 343	L	L	L							
31								448		L	L	L	L	L	L	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2			5	11	11	14	8	4	1							
MED								468			U L 373	U L 384	U L 381	U L 360	U L 352	U L 357	U L 378							
U Q											L 384	L 399	U L 395	U L 370	U L 359	U L 364								
L Q											U L 364	U L 374	U L 365	U L 347	U L 346	U L 348								

OCT. 2013 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 2013 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								216	250	252	252	282	300	308	300	284	272	244						
2								214	236	270	270	268	292	344	376	320	254	270						
3										264	258	296	270	344L	300	270	266	256						
4									204	216	268	278	278	268	296	278	262	252						
5									230		274	282	264	262	278	280	254							
6									226	252	270	288	298	304	292	264	254	242						
7									232	240	260	274	270	300	300	286	266							
8										280	272	274	270	322	290	288	260	244						
9									240	292	226	308L	372	270	260	288	294							
10										226	226	238	310	292	278	256	266	244						
11										232	258	268	270	296	286	288	264							
12										248	248	254	274	296	268	262	260							
13									210		276	252	298L	280	302	276	262	224						
14									218	236L	250L	260	274	314	278	262	254							
15										272	260	264	254	282	278									
16										224	290	272	258	292	260	240		226						
17										240	284	272	262	286	266	256	234							
18										254	268	268	286	288	268	250	246							
19									226		276	290	290	294	274	252								
20								220	218	250	252	272	274	300	272	270	236							
21										242	270	280	320	312	288	260	236							
22									228	250	270	278	286	284	282		236							
23									226	232	258	270	296	280	264	270	250							
24										252	266	272	252	282	280	262	254							
25										246	264	268	278	280	268	252								
26									234	240	258	292	292	278	276	244								
27									242	240	262	266	258	308	288	260	238							
28									218	232	260	B	280	282										
29									226	248	262	262	240	286	286	280								
30									218	236	268	262	348L	324	298	268	244							
31								216		280	240	258	242	284	284	252								
	00	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	18	28	31	30	31	31	30	28	23	9						
MED								216	226	247	262	272	278	292	281	266	254	244						
U Q								218	234	253	270	280	296	308	292	280	264	254						
L Q								215	218	236	258	264	264	282	272	256	244	234						

OCT. 2013 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	284	258	236	198	216	214	240	206	204	226	206	194	192	198	H 212	232	242	222	224	202	216	254	A 310	296
2	290	246	222	214	214	208	252	166	192	Y 222	Y 216	202	194	H 224	B 258	226	228	248	208	202	208	250	324	334
3	304	240	208	A 264	290	258	200	208	210	204	214	188	B 250	B 242	208	B 228	224	234	230	206	206	218	224	262
4	264	244	248	234	226	230	226	216	204	188	182	206	180	B 222	B 214	B 244	236	252	220	202	188	224	220	254
5	254	228	220	202	212	210	220	212	208	204	194	H 172	220	B 228	228	224	244	236	222	204	236	260	234	272
6	260	238	230	196	206	216	224	218	214	202	222	216	194	196	E B 240	220	218	212	208	198	194	A 294	286	266
7	276	274	254	234	202	216	242	214	214	226	A 226	206	A	196	E B 246	Y 232	210	236	218	212	204	262	280	290
8	282	268	248	224	230	234	234	210	222	A 240	E B 230	A 226	B 220	Y 210	A 260	234	222	234	232	226	196	242	256	284
9	286	262	230	214	190	226	224	214	216	216	202	B 222	234	E B 256	B 246	B 226	242	238	242	206	230	A 260	A 290	272
10	272	250	262	244	250	252	242	228	226	214	E Y 220	B 218	210	216	B 236	B 242	230	232	220	202	198	224	228	246
11	268	276	272	254	228	214	260	228	224	208	E Y 228	198	Y 242	B 244	230	Y 214	234	238	218	198	188	248	254	E A 276
12	292	252	238	270	232	218	238	218	218	216	220	B 232	200	B 268	B	A 248	A	244	220	208	A 230	A 266	228	240
13	272	264	244	240	244	232	232	214	206	220	B 218	202	H 178	240	B 224	240	232	A 224	216	218	214	240	240	246
14	260	266	250	210	216	232	240	222	208	208	202	210	200	H 198	222	A 232	A	238	210	A 250	A 274	256	242	282
15	282	274	228	240	232	240	302	214	214	218	E Y 230	E B 238	198	252	E A 258	244	234	232	222	A 264	218	230	228	278
16	258	226	A 246	256	264	232	212	218	216	Y 212	210	220	218	E B 230	B 238	226	230	222	216	214	202	218	252	264
17	270	248	246	244	218	200	258	234	234	218	Y 224	212	226	216	E B 232	208	226	230	222	218	194	242	238	278
18	258	228	254	242	228	246	246	240	226	220	220	B 230	212	B 236	208	B 216	238	218	212	224	230	226	A 268	A 302
19	308	280	254	242	224	234	214	212	200	226	220	H 202	196	B 226	224	E B 242	238	226	212	218	210	236	252	262
20	256	262	278	278	236	224	222	212	208	232	232	212	212	204	206	Y 248	A 232	236	216	206	196	220	250	262
21	258	260	230	230	206	242	266	226	220	198	Y 216	212	218	220	Y 222	222	224	222	210	216	222	248	248	236
22	246	252	240	A 248	228	220	246	214	206	214	214	226	208	208	A	252	206	228	220	214	236	236	242	236
23	234	256	238	242	226	A 276	280	228	218	216	E Y 222	E A 242	226	A	B 234	B 232	222	236	208	210	212	218	262	254
24	220	218	208	244	236	262	286	228	234	234	B 222	206	212	206	230	B 240	220	230	206	200	198	208	226	254
25	254	230	226	242	226	210	274	232	224	208	B 218	212	B	B 210	236	236	228	236	222	208	196	214	224	228
26	248	244	240	216	222	E A 256	262	226	220	232	220	212	214	248	A 230	A	234	224	224	216	200	202	198	230
27	252	A 282	248	232	B 232	232	228	224	220	220	Y 232	218	208	E B 232	E B 220	E B 232	222	230	218	214	196	208	202	226
28	232	258	266	256	232	226	242	216	198	214	204	B	E B 236	208	B 256	266	234	214	222	212	216	224	214	228
29	228	234	218	254	210	220	256	222	214	Y 218	224	236	214	B 222	B 230	B 240	240	226	202	202	222	200	218	276
30	254	214	224	256	240	264	260	224	E Y 214	206	E Y 226	E B 220	B 220	B 214	A 244	A 242	222	226	210	208	208	208	212	254
31	264	230	A 316	A 284	E A 282	244	C	188	218	E Y 236	232	B 228	214	B 228	B 234	E B 236	254	232	212	216	222	200	226	238
	00	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	30	31	31	31	31	30	29	30	29	30	29	31	31	31	31	31	31	31
MED	260	252	240	242	227	231	242	218	214	216	218	212	212	219	229	232	230	232	218	210	208	230	240	262
U Q	282	264	254	254	236	244	260	226	220	226	226	226	220	B 236	B 242	242	237	236	222	216	222	250	256	278
L Q	254	234	228	224	216	216	226	212	208	208	214	206	199	208	222	226	222	224	210	202	196	218	224	240

OCT. 2013 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

OCT. 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							B	118	108	108	B	B	A	B	A	B	108	118	A					
2							B	A	116	A	A	A	A	B	B	B	110	114	114					
3							B	118	114	106	B	B	B	B	116	B	112	110	B					
4							B	B	110	B	B	B	B	B	B	B	108	108	A					
5							B	114	108	110	B	A	A	B	B	110	110	110	A					
6							B	112	108	108	B	B	B	B	B	B	108	108	A					
7							B	126	A	108	A	A	A	B	B	108	108	108	A					
8							B	114	108	108	B	B	B	A	A	B	A	112	A					
9							B	118	118	A	A	B	B	B	B	B	110	A	A					
10								120	120	A	A	B	B	B	B	B	114	112	B					
11							B	114	112	108	A	A	A	B	B	A	A	110	A					
12							B	122	116	110	B	B	B	B	B	110	108	108	A					
13							B	126	108	108	B	B	B	B	B	B	108	110	A					
14							B	124	A	A	A	B	B	A	110	A	A	A	A					
15							A	110	A	A	A	B	B	A	B	A	A	A	A					
16							B	108	108	A	108	B	B	B	B	A	B	A	A					
17							B	110	110	A	A	B	B	B	B	B	110	116	B					
18							B	108	110	110	B	B	B	B	B	B	110	116	A					
19							B	A	A	A	110	B	B	B	B	B	112	114	134					
20							B	128	114	B	B	B	B	B	B	114	A	A	A					
21							B	136	110	B	112	B	B	B	A	A	A	A	A					
22							B	B	108	108	A	A	A	A	A	A	A	A	A					
23							B	122	124	108	A	B	B	B	B	B	108	116	A					
24							B	124	110	B	B	B	110	110	B	B	A	A	A					
25							B	A	110	108	B	A	B	B	A	108	A	B	A					
26							B	116	106	A	A	A	A	B	A	A	A	A	A					
27							B	124	112	118	A	114	B	B	B	B	B	A	A					
28							B	118	A	A	A	B	B	B	B	B	A	A	A					
29							B	A	108	110	110	B	B	B	B	B	A	A	A					
30							B	B	A	110	A	B	B	B	A	A	A	A	A					
31								B	110	106	106	B	B	B	B	B	110	114	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								23	25	17	5	1	1	1	2	5	16	17	2					
MED								118	110	108	110	114	110	110	113	110	110	112	124					
U Q								124	114	110	111					112	110	115						
L Q								114	108	108	107					108	108	109						

OCT. 2013 h′E (KM)

IONOSPHERIC DATA STATION Okinawa

OCT. 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	B	B	B	B	B	B	B	120	108	116	124	B	110	116	108	B	G	124	108	108	104	102	100	100
2	98	98	98	B	B	B	B	110	102	100	100	98	94	B	B	B	G	G	G	B	106	B	106	B
3	102	96	96	94	96	B	B	G	G	G	B	B	B	B	G	B	G	G	B	B	B	B	B	96
4	B	B	B	B	B	B	B	134	G	B	B	B	B	B	B	B	134	122	108	90	B	92	B	B
5	126	124	124	116	B	B	B	G	G	116	B	110	112	B	B	G	146	124	116	102	96	98	96	B
6	B	B	B	B	B	122	B	G	G	G	B	B	B	B	B	B	142	138	108	100	96	110	98	B
7	B	B	B	B	B	B	B	130	114	110	110	112	108	B	B	G	G	124	114	106	102	96	92	98
8	B	B	B	B	B	B	B	160	140	120	B	112	B	94	102	G	106	132	106	100	100	B	B	96
9	92	92	94	94	94	96	B	154	102	102	98	B	B	B	B	B	120	108	100	94	94	94	94	90
10	92	B	B	B	B	B	B	G	106	100	96	B	B	B	B	B	114	108	94	88	88	B	98	98
11	B	B	94	94	96	B	B	140	100	G	100	98	96	B	B	96	96	110	106	92	94	90	B	96
12	92	B	B	B	B	B	B	166	G	G	B	B	B	B	B	128	120	118	110	100	100	96	96	92
13	96	94	98	98	98	B	B	106	94	94	B	B	B	120	B	B	120	112	110	106	94	92	88	92
14	88	90	94	94	94	92	B	110	108	112	108	B	B	108	G	122	108	102	100	98	98	98	94	B
15	B	B	B	B	B	110	100	G	112	110	106	B	B	114	114	106	108	104	100	98	98	94	94	92
16	94	92	92	92	B	B	B	G	G	108	G	B	B	B	B	92	B	114	92	B	B	B	B	B
17	B	B	B	B	B	B	B	178	G	100	98	B	B	B	B	B	G	112	B	102	110	B	B	B
18	124	B	B	B	B	B	B	148	104	G	B	B	B	B	B	B	176	132	108	102	96	96	88	88
19	90	B	B	96	B	B	B	106	104	184	G	B	B	B	B	B	G	G	G	102	100	100	96	98
20	B	B	90	B	B	B	B	G	G	B	B	B	B	B	B	G	106	156	102	104	B	B	B	B
21	B	B	B	B	B	B	92	132	138	B	G	B	B	B	112	108	106	96	96	94	92	94	94	96
22	96	96	94	96	92	B	92	B	G	166	108	102	100	100	100	100	104	102	108	B	98	B	B	B
23	B	B	B	B	B	90	96	G	106	98	102	130	142	122	B	B	G	G	88	102	102	102	100	96
24	96	B	B	B	B	B	96	202	114	B	B	108	G	G	B	B	108	100	100	B	B	B	B	B
25	94	B	B	B	B	B	B	112	104	104	B	106	B	B	112	106	102	B	102	B	B	B	B	B
26	B	98	94	94	B	112	B	142	G	102	102	104	100	B	104	100	102	102	94	98	94	88	B	94
27	B	92	B	B	B	B	B	176	G	106	104	100	B	B	B	B	108	100	100	102	94	B	B	94
28	90	96	92	92	94	B	B	202	110	106	104	B	B	B	B	116	116	112	106	88	B	B	100	94
29	B	B	106	B	B	B	B	156	G	98	G	B	B	B	B	B	102	106	124	96	96	B	B	B
30	B	B	B	90	92	B	B	B	118	G	108	B	B	B	108	108	108	104	98	98	B	B	96	B
31	B	100	98	98	98	100	C	B	G	G	116	B	B	B	B	B	114	108	B	B	B	B	B	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	15	12	14	13	9	7	5	20	18	20	16	11	8	7	8	11	23	26	26	24	22	16	17	17
MED	94	96	94	94	94	100	96	141	107	106	104	106	104	114	108	106	108	111	104	100	97	96	96	96
U Q	98	98	98	97	97	112	98	163	114	114	108	112	111	120	112	116	120	124	108	102	100	99	99	97
L Q	92	92	94	93	93	92	92	116	104	100	100	100	98	100	103	100	106	104	100	95	94	93	94	92

IONOSPHERIC DATA STATION Okinawa

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

OCT. 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

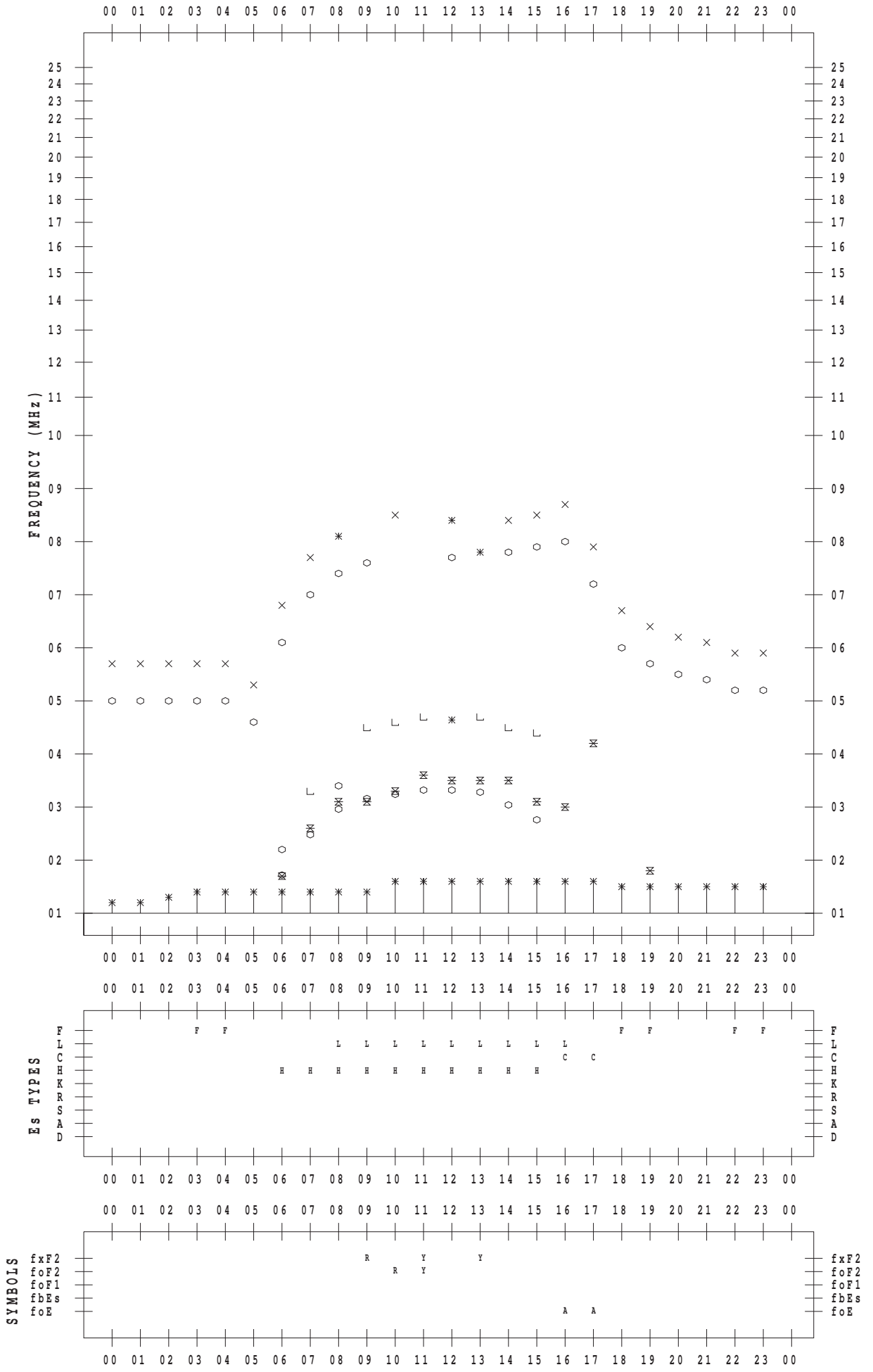
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 1

135 °E MEAN TIME



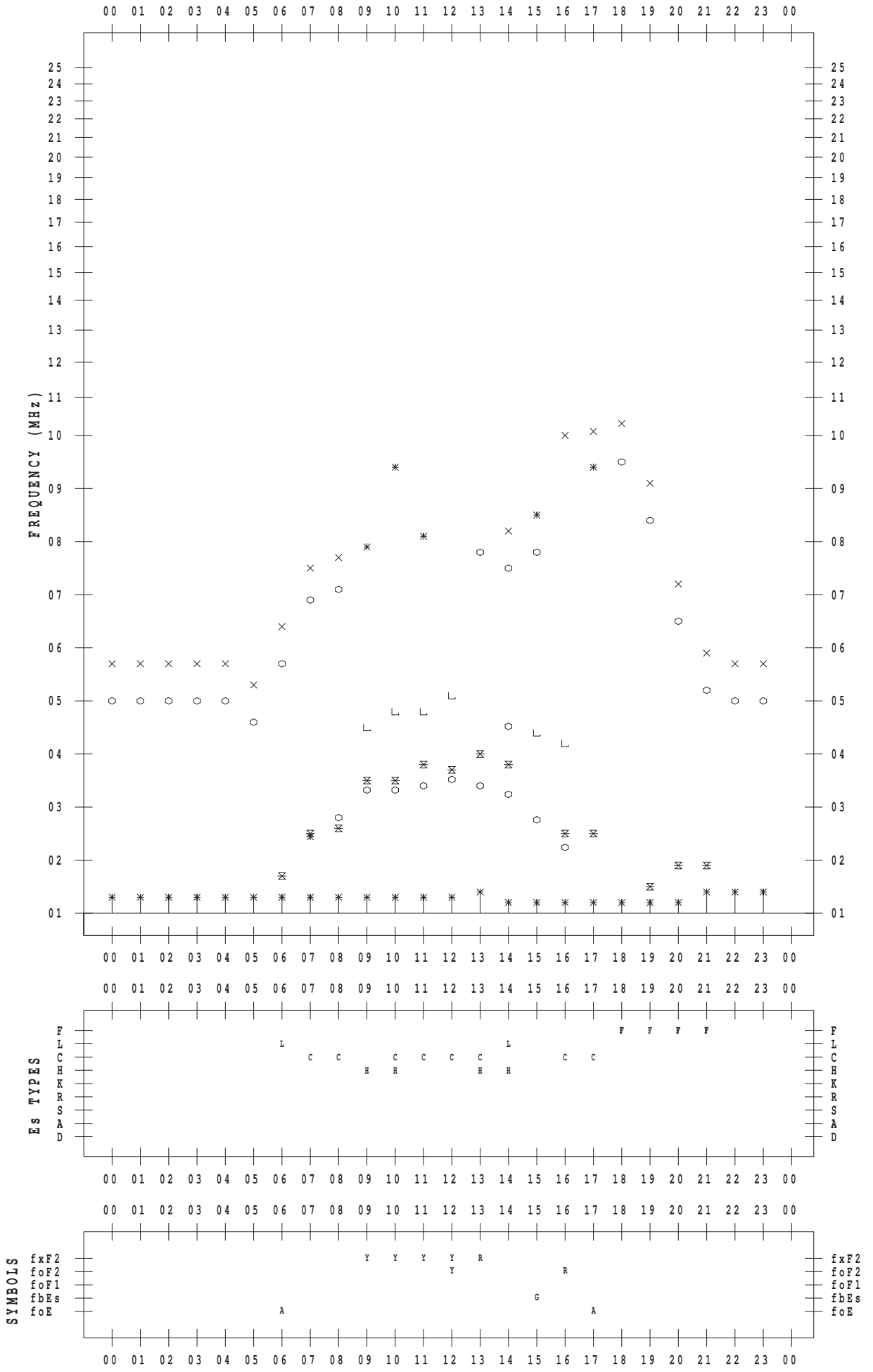
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 2

135 °E MEAN TIME



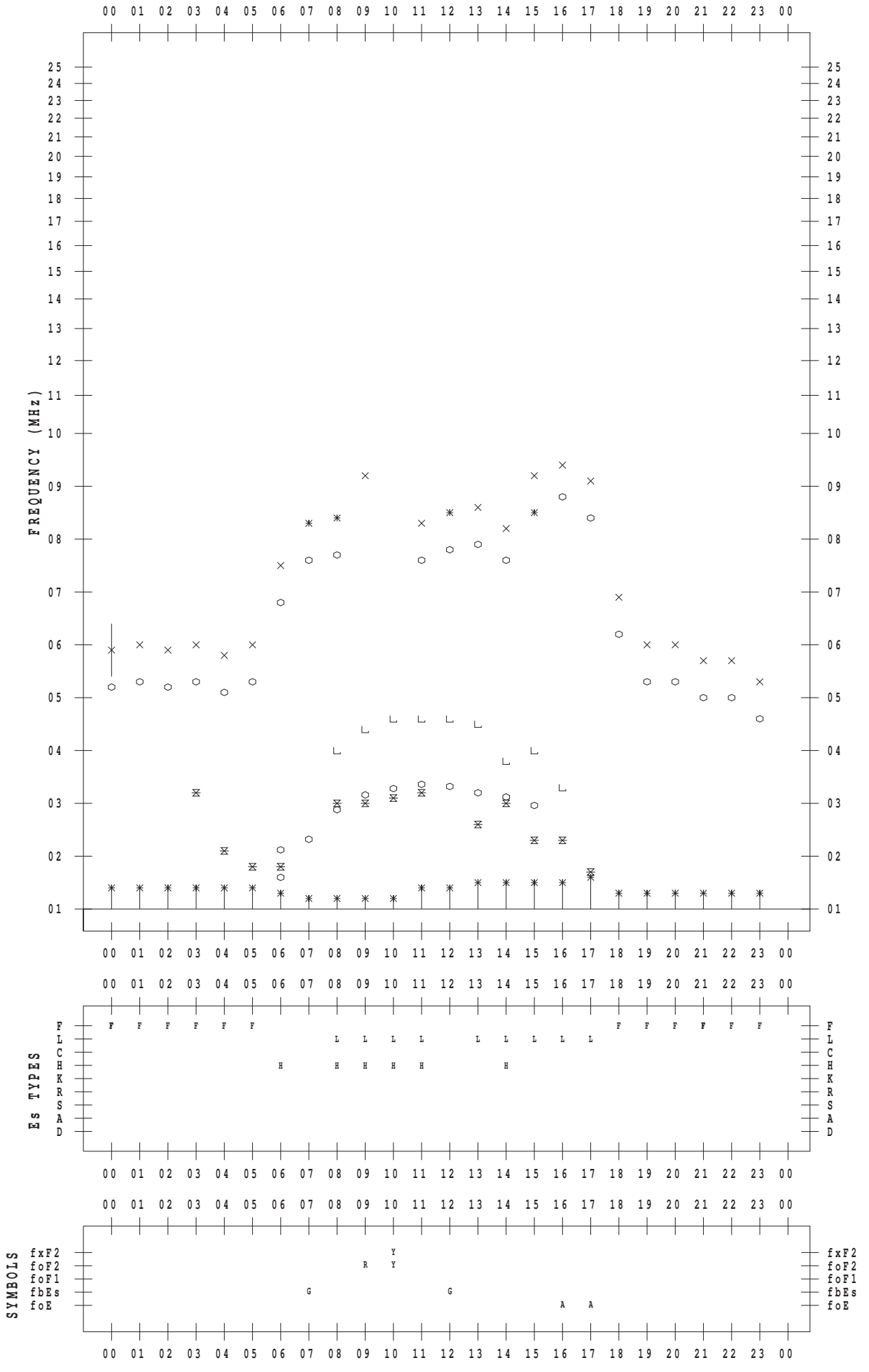
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 3

135 °E MEAN TIME



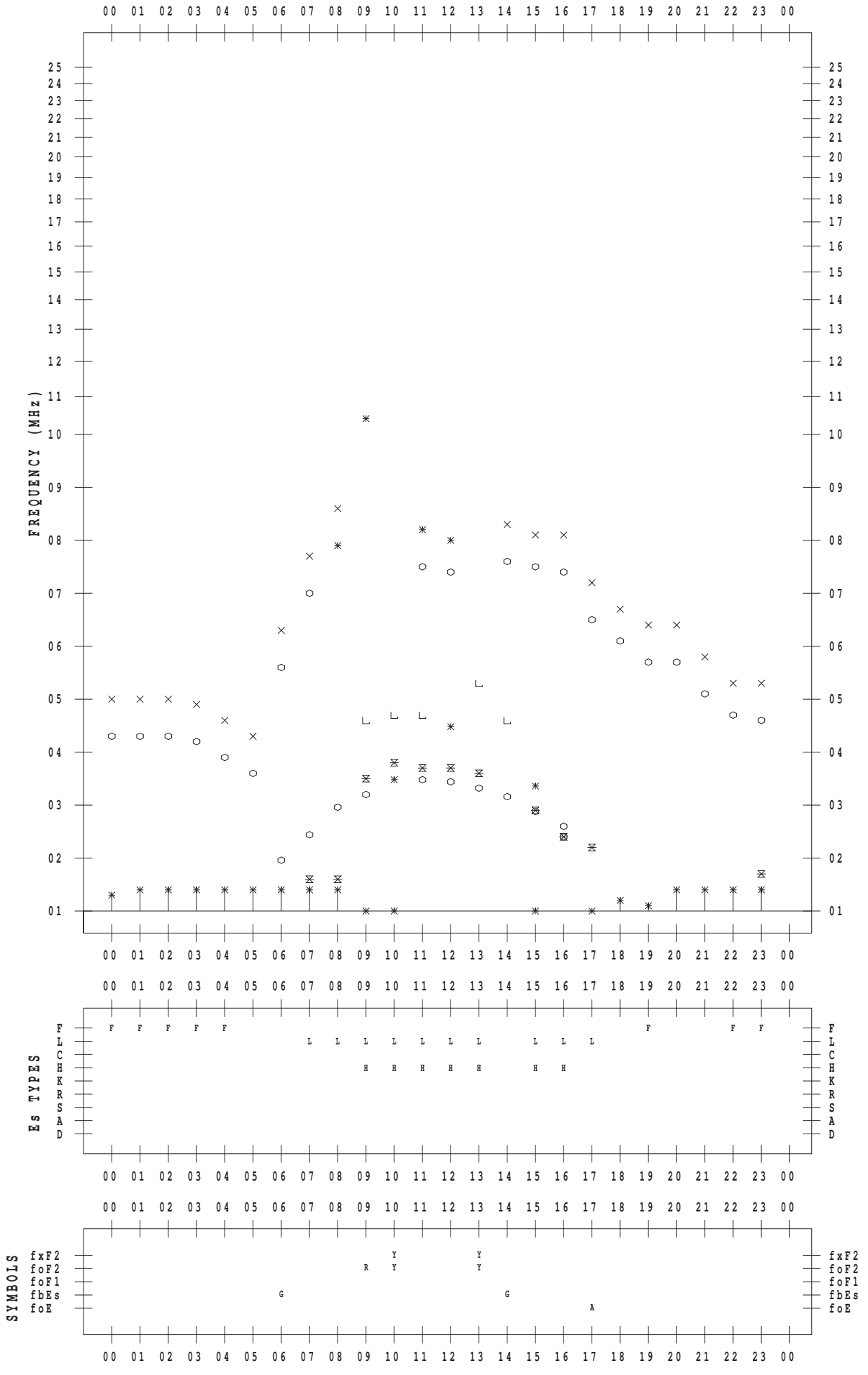
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 4

135 °E MEAN TIME



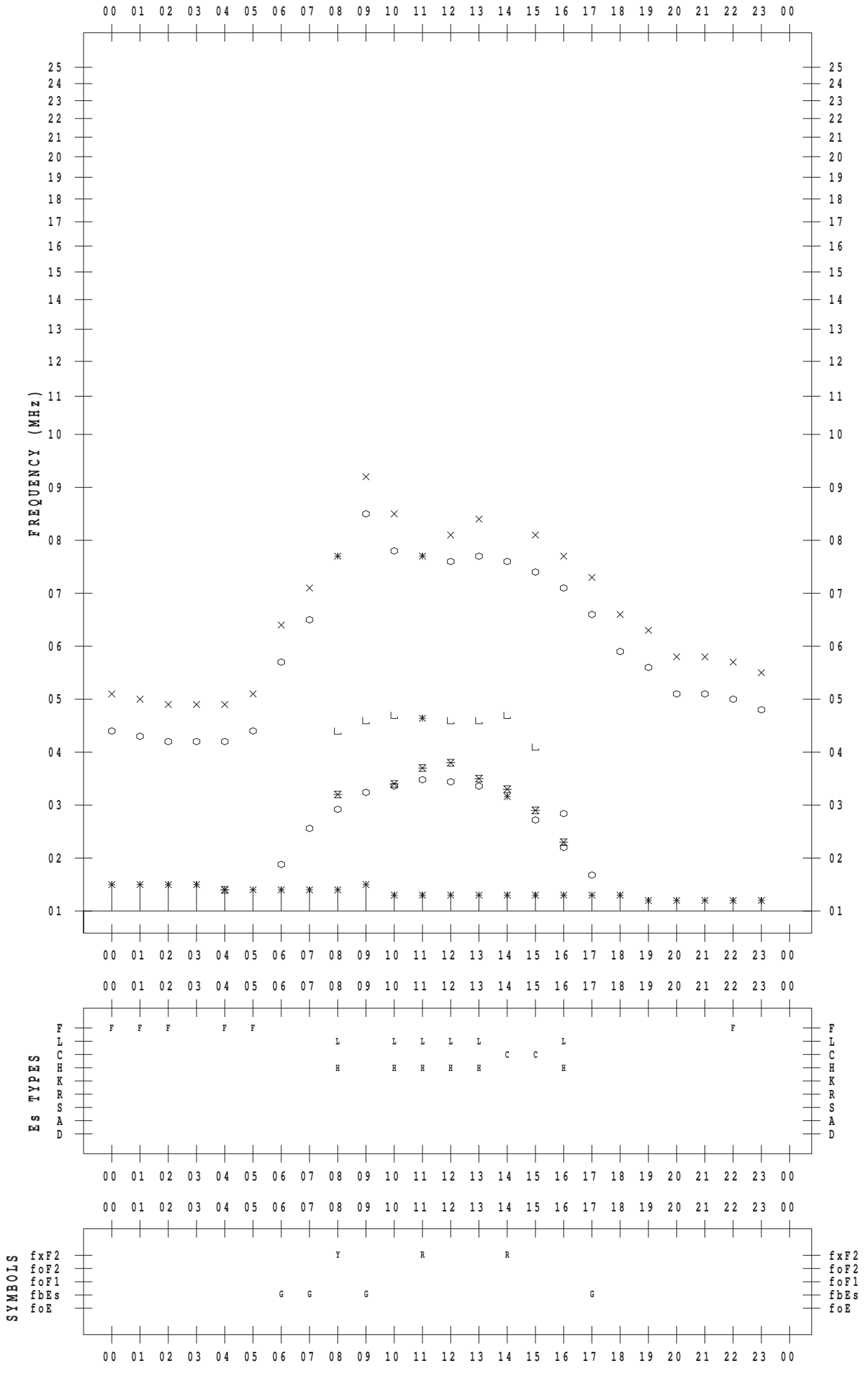
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 5

135 °E MEAN TIME



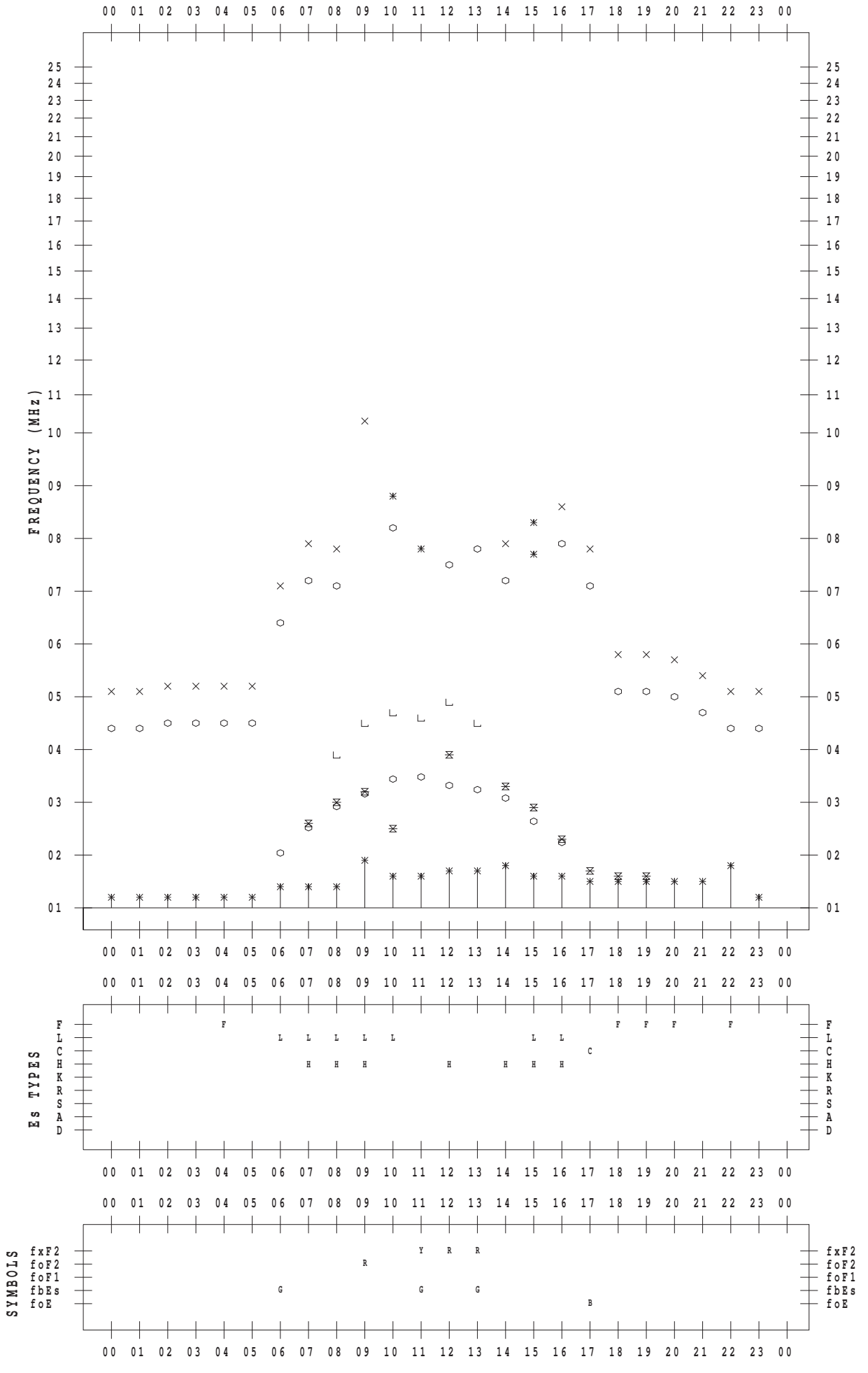
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 6

135 °E MEAN TIME



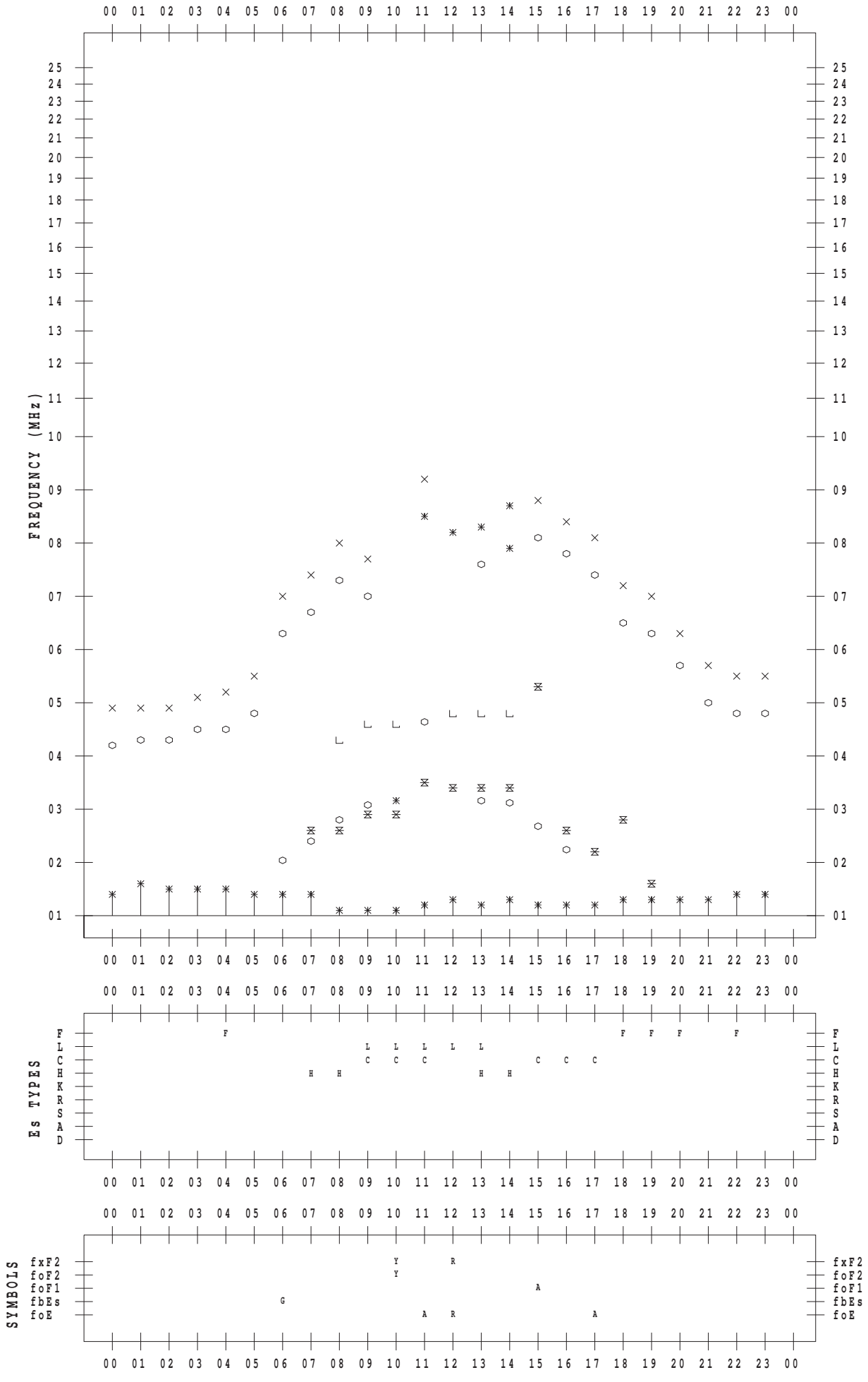
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 7

135 °E MEAN TIME



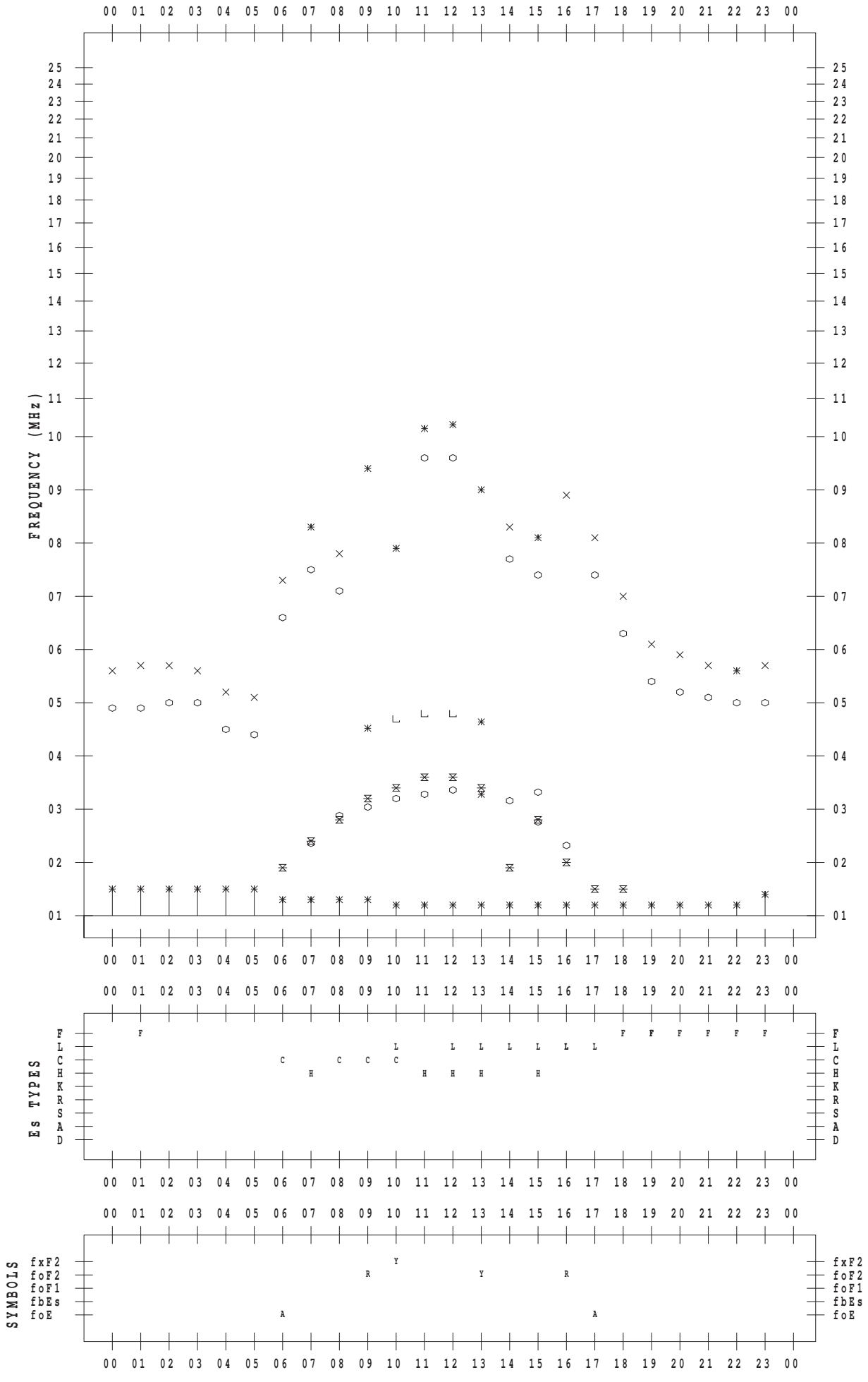
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 8

135 °E MEAN TIME



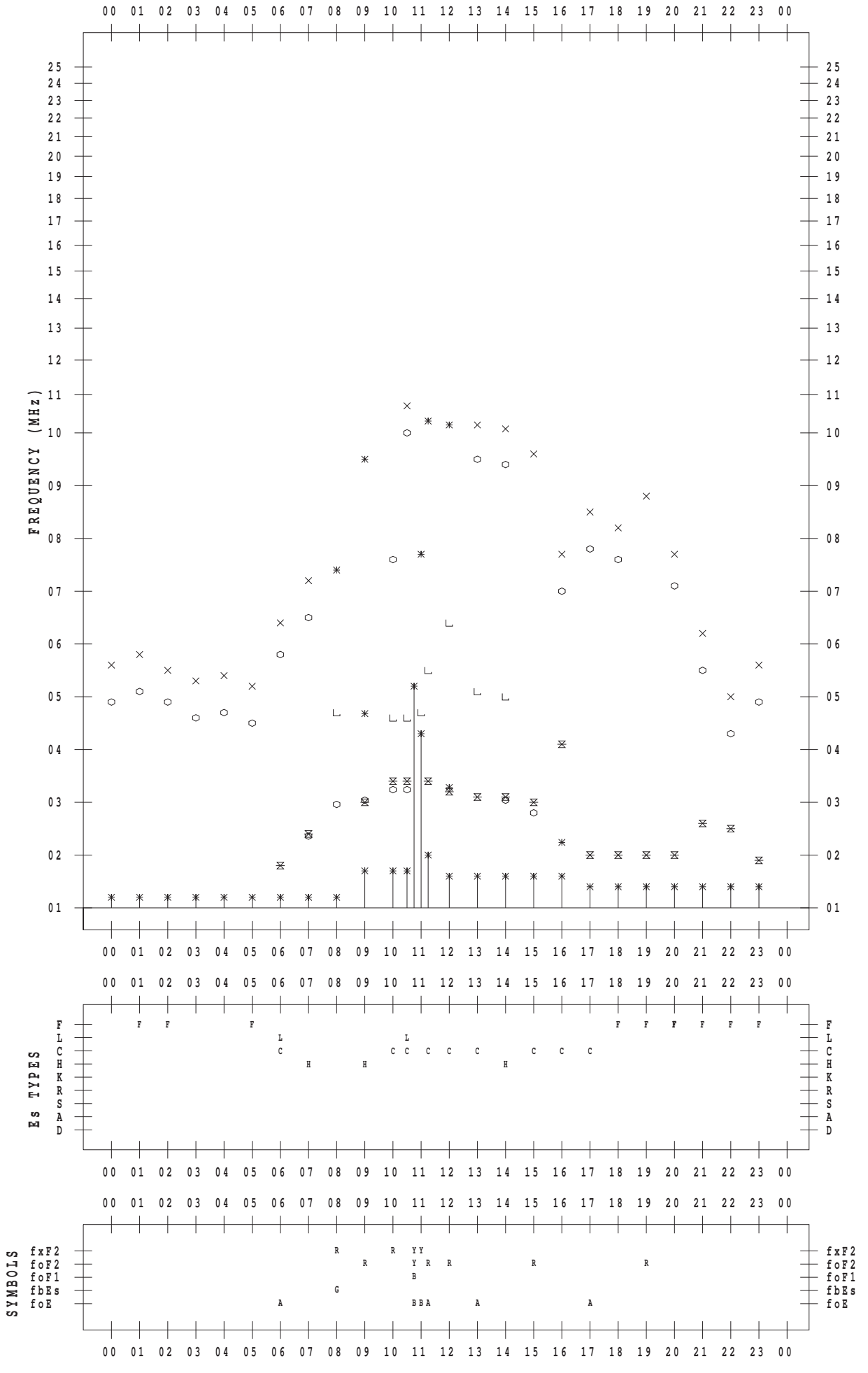
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/ 9

135 °E MEAN TIME



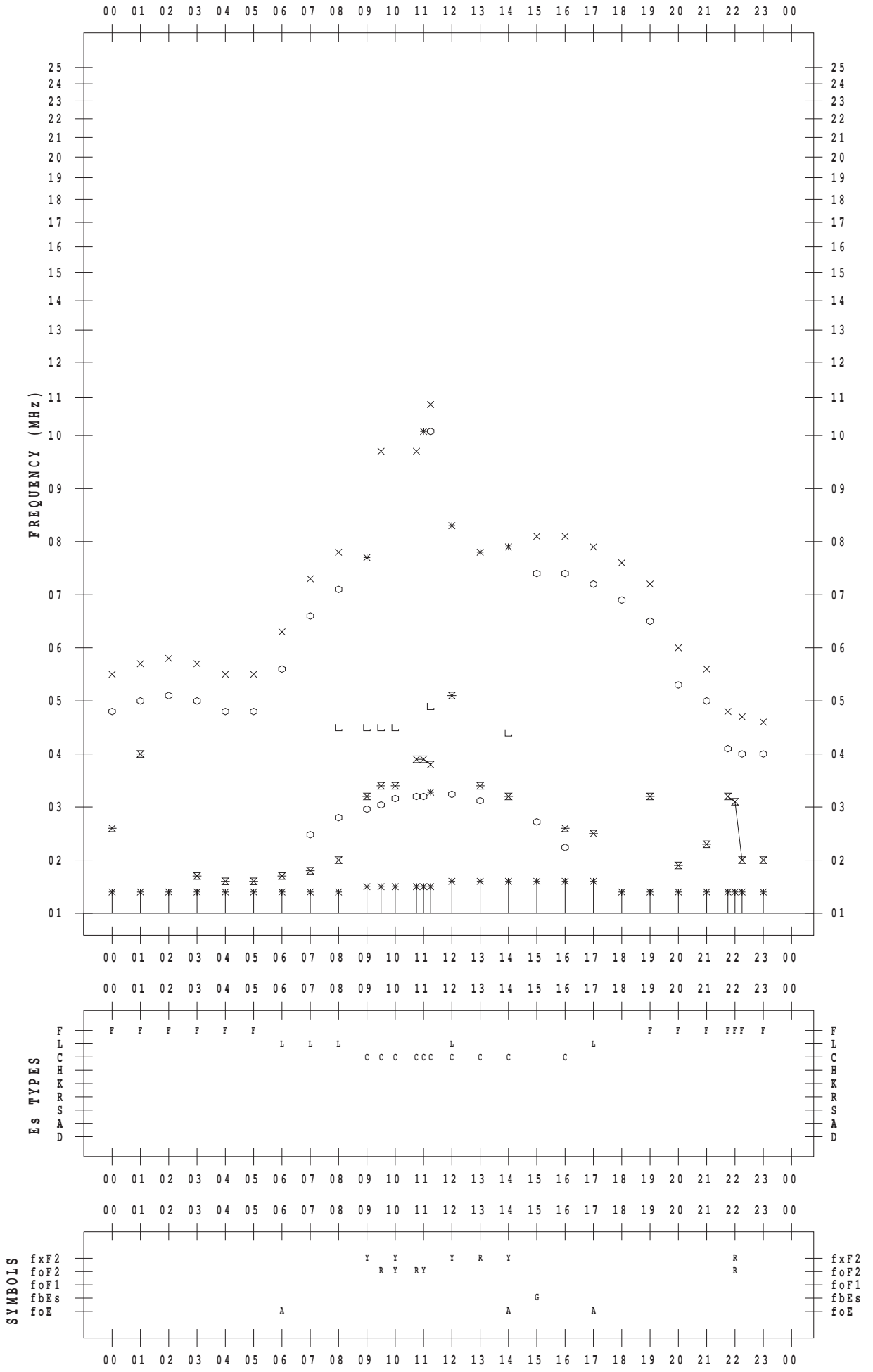
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/10

135 °E MEAN TIME



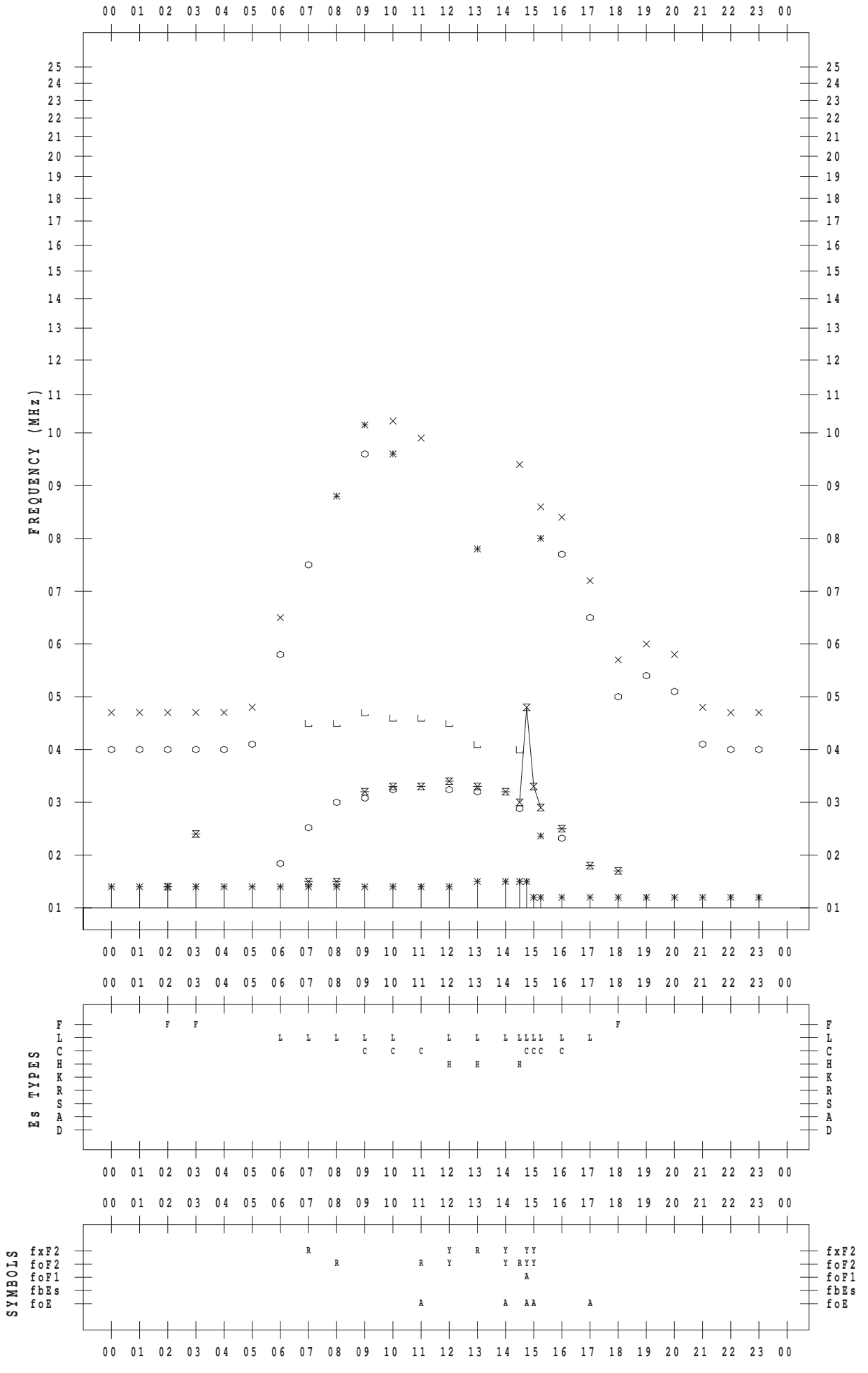
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/11

135 °E MEAN TIME



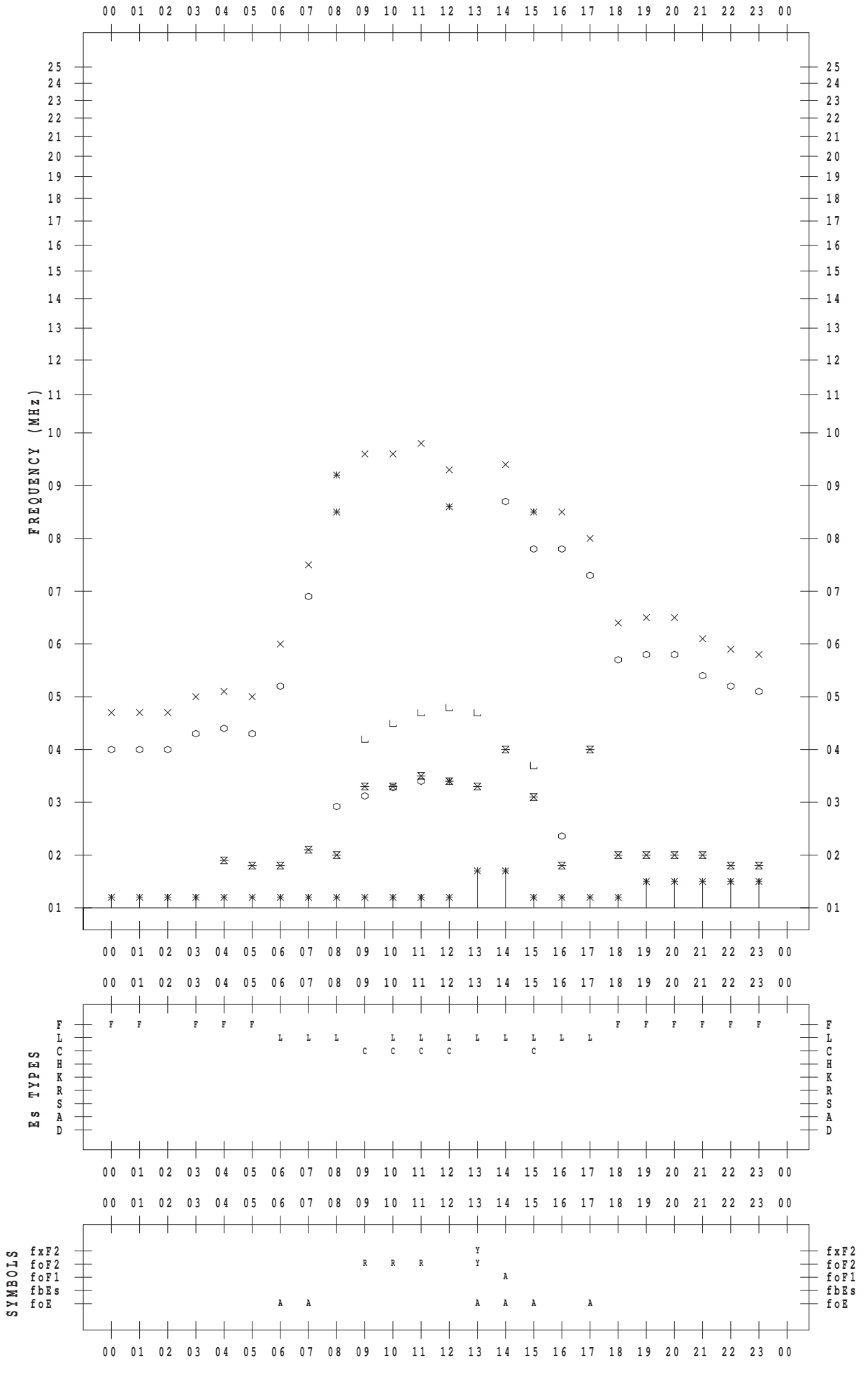
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/12

135 °E MEAN TIME



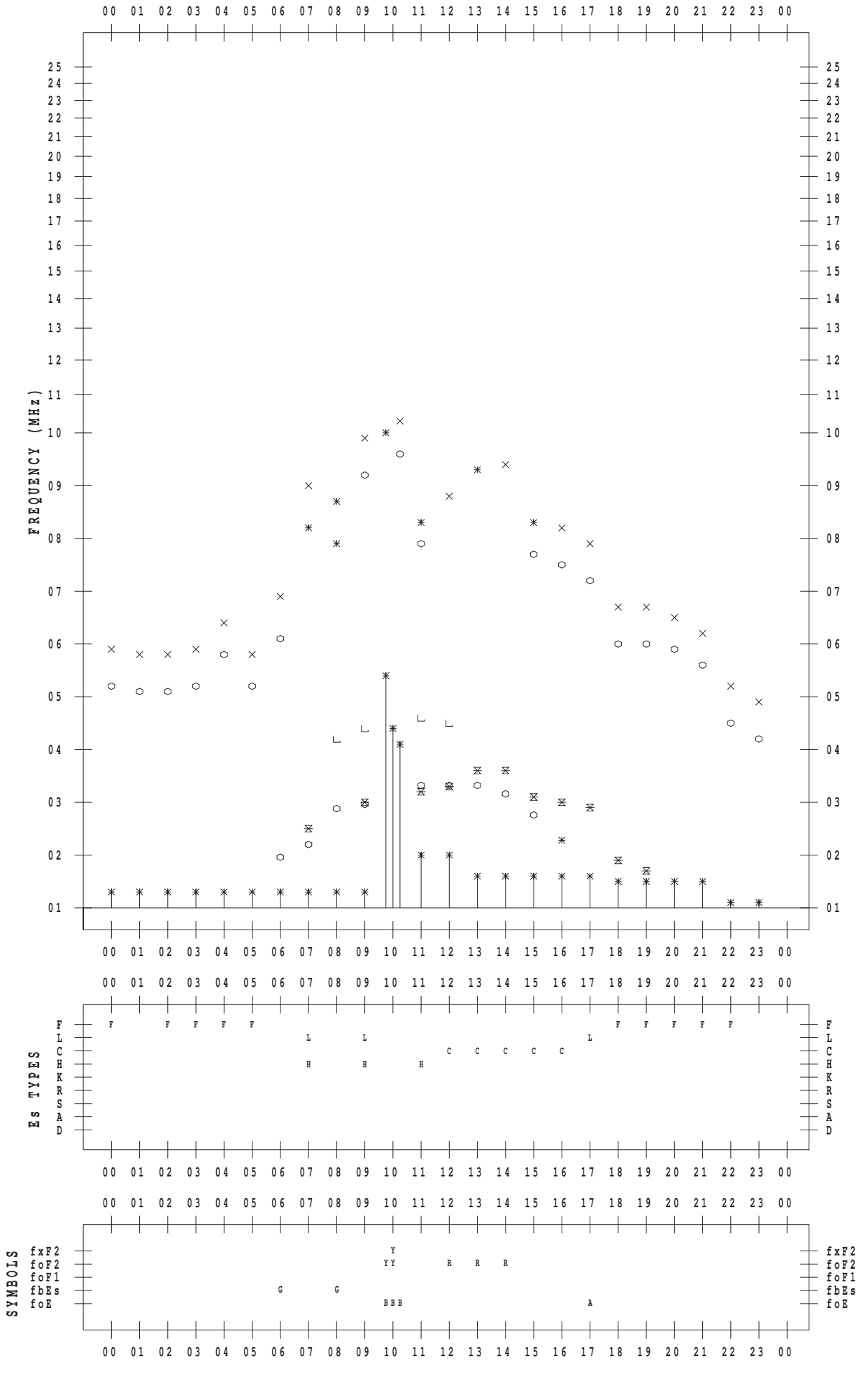
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/13

135 °E MEAN TIME



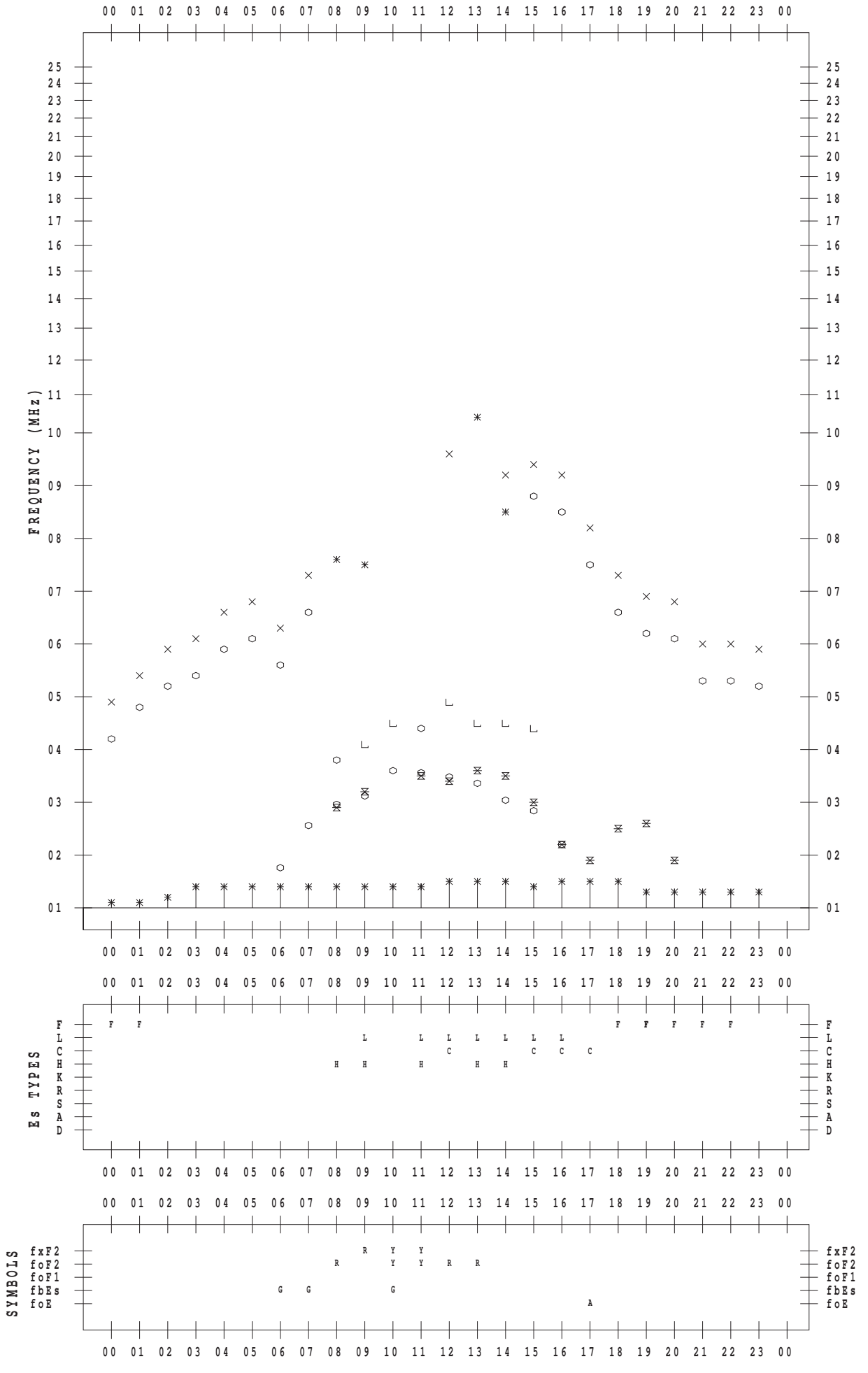
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/14

135 °E MEAN TIME



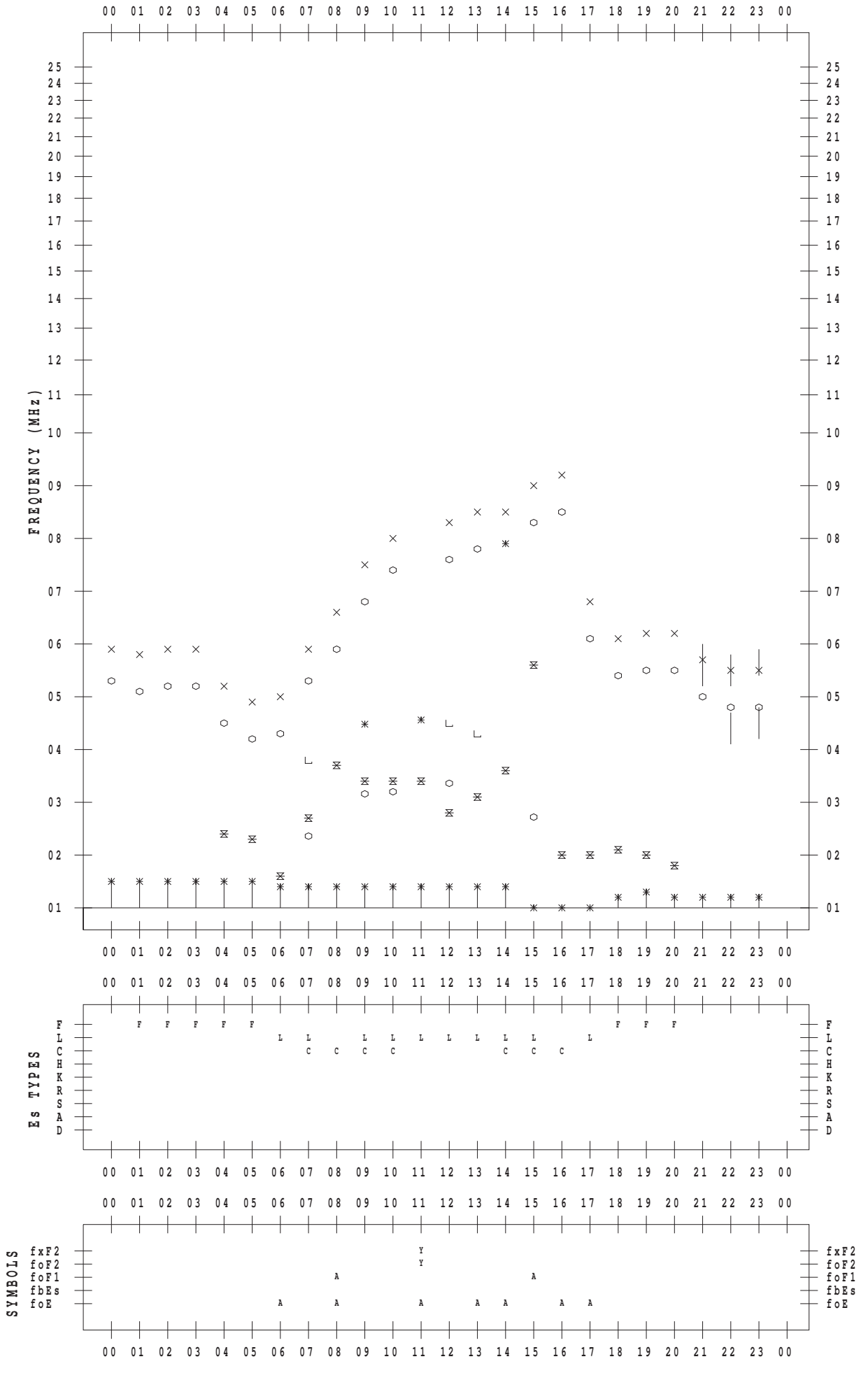
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/15

135 °E MEAN TIME



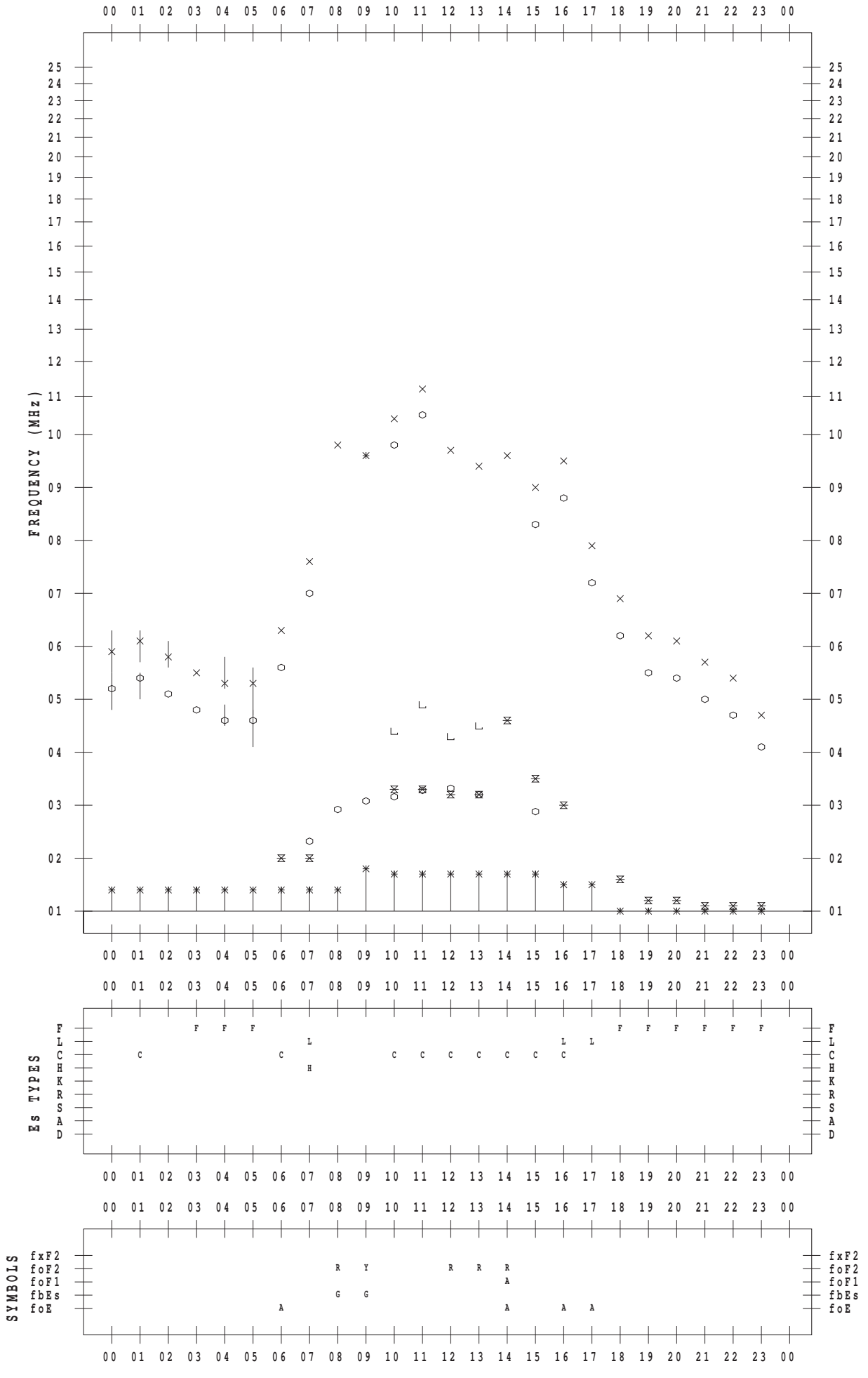
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/16

135 °E MEAN TIME



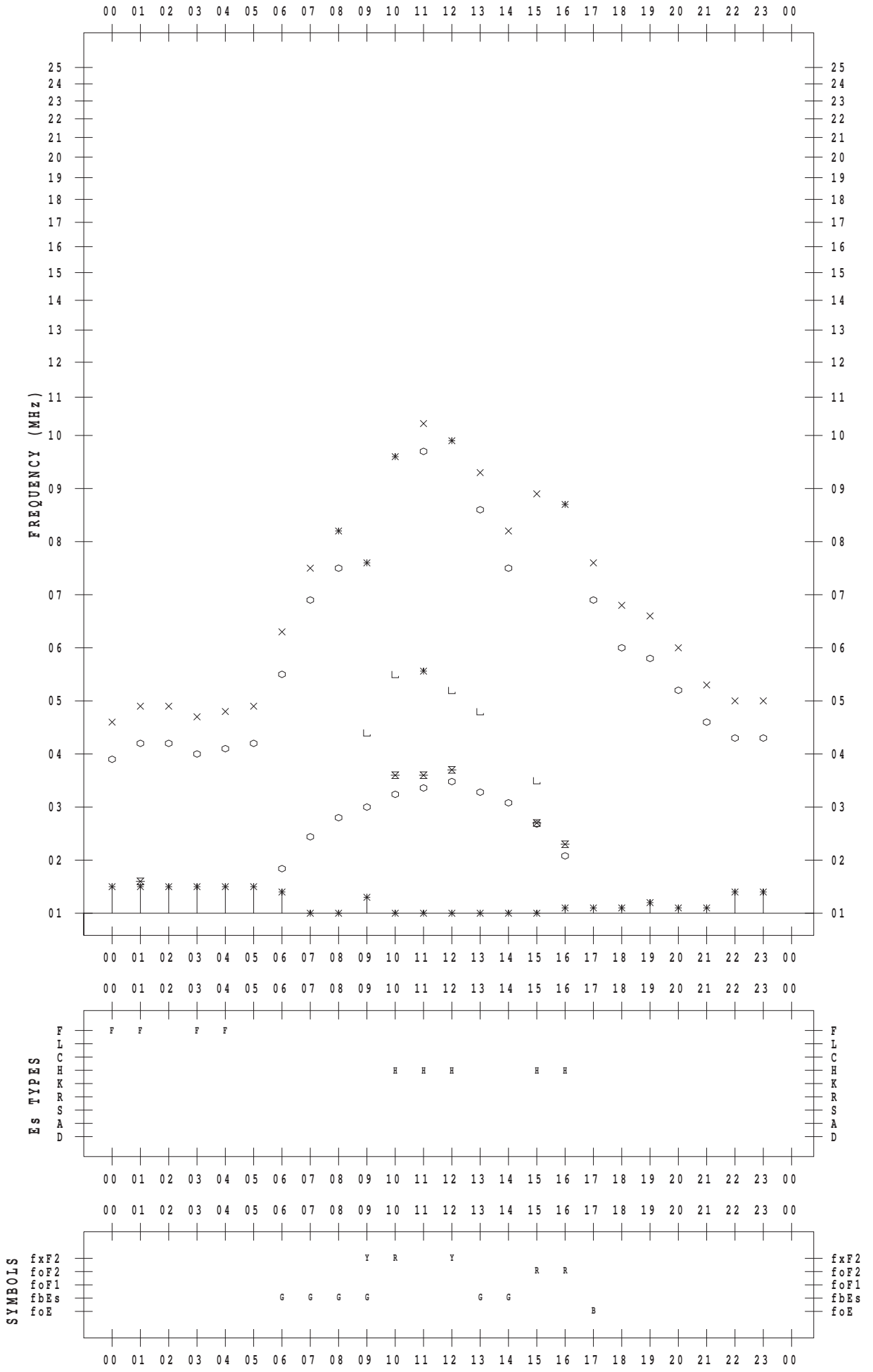
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/17

135 °E MEAN TIME



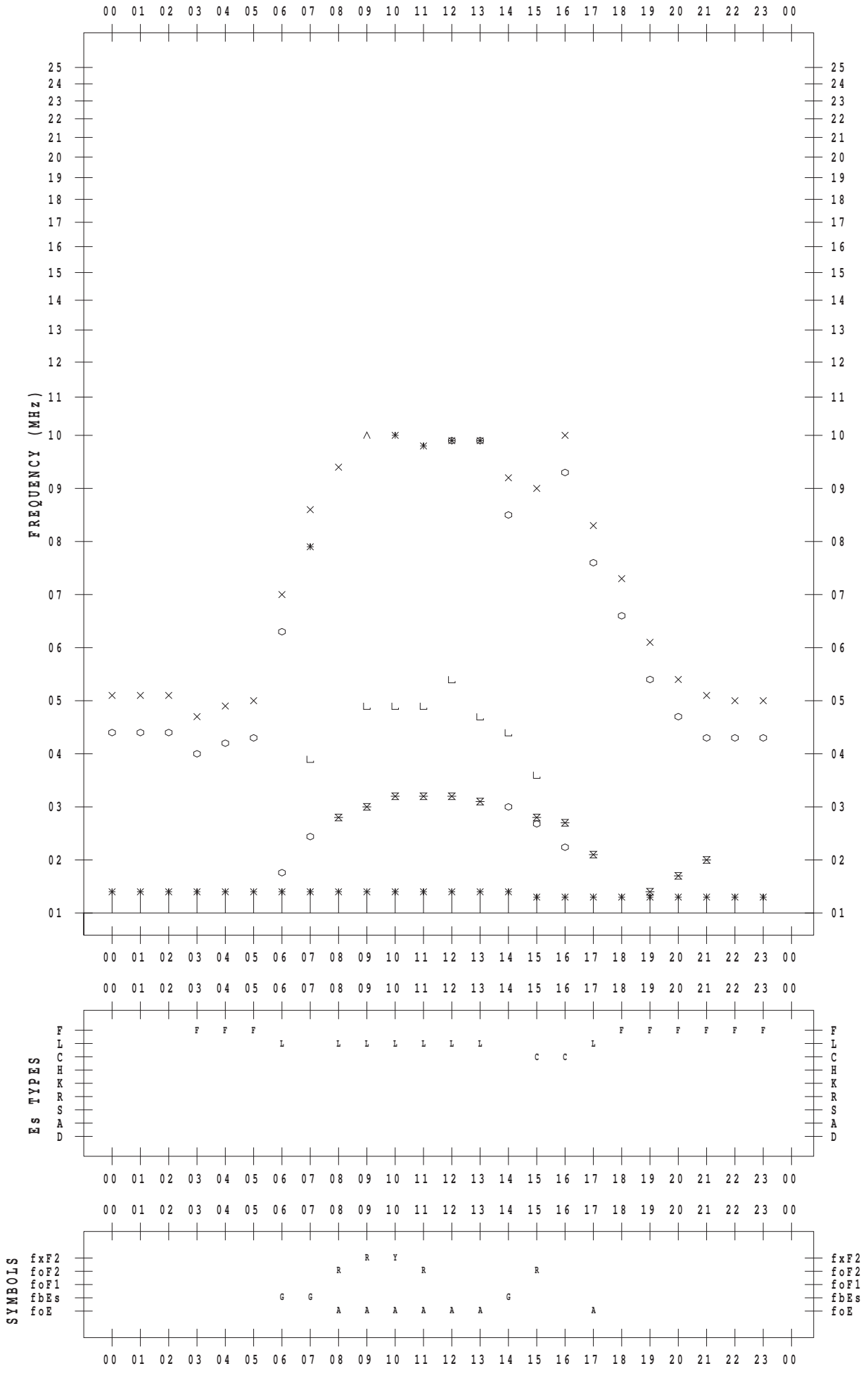
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/18

135 °E MEAN TIME



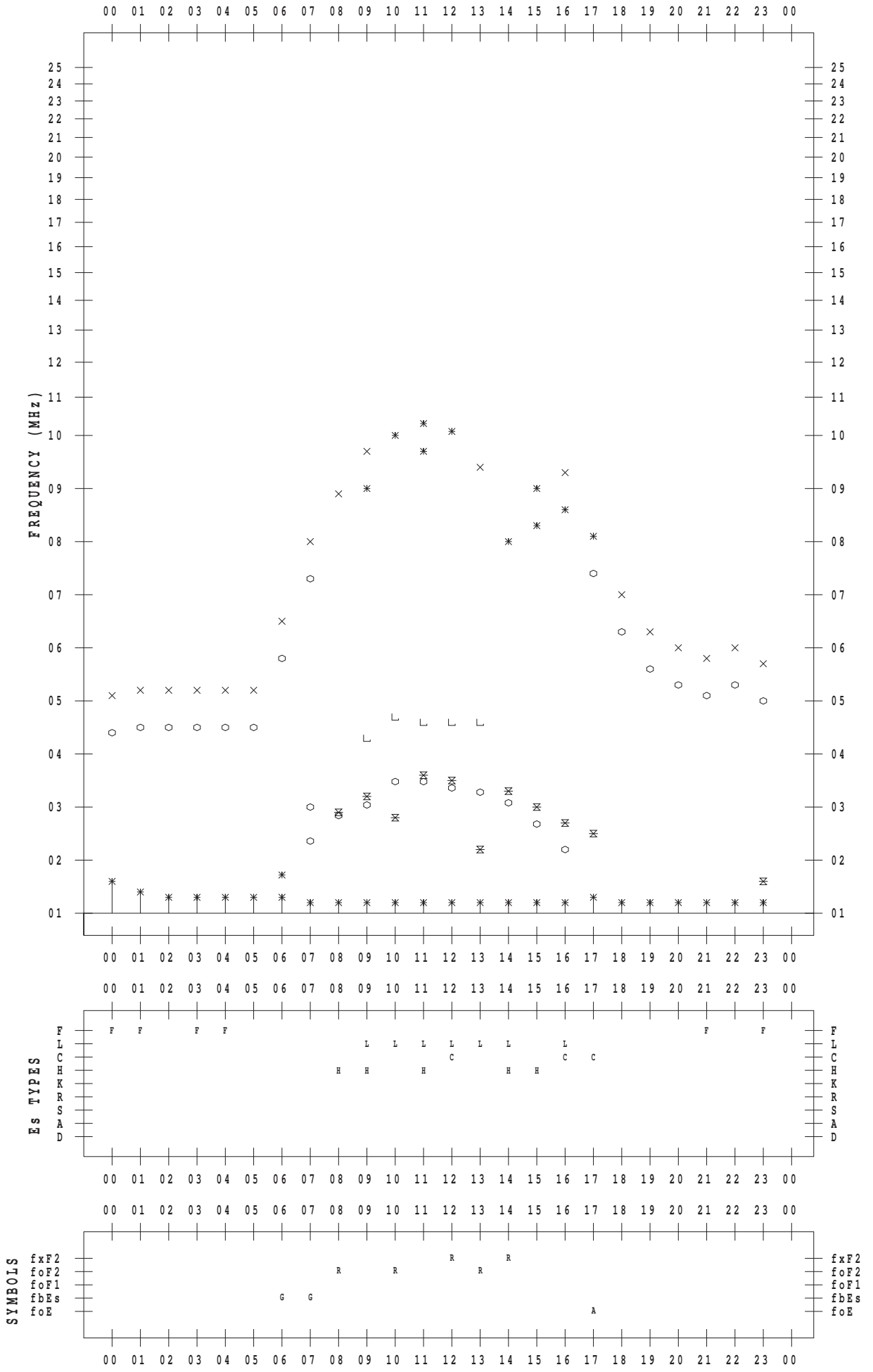
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/19

135 °E MEAN TIME



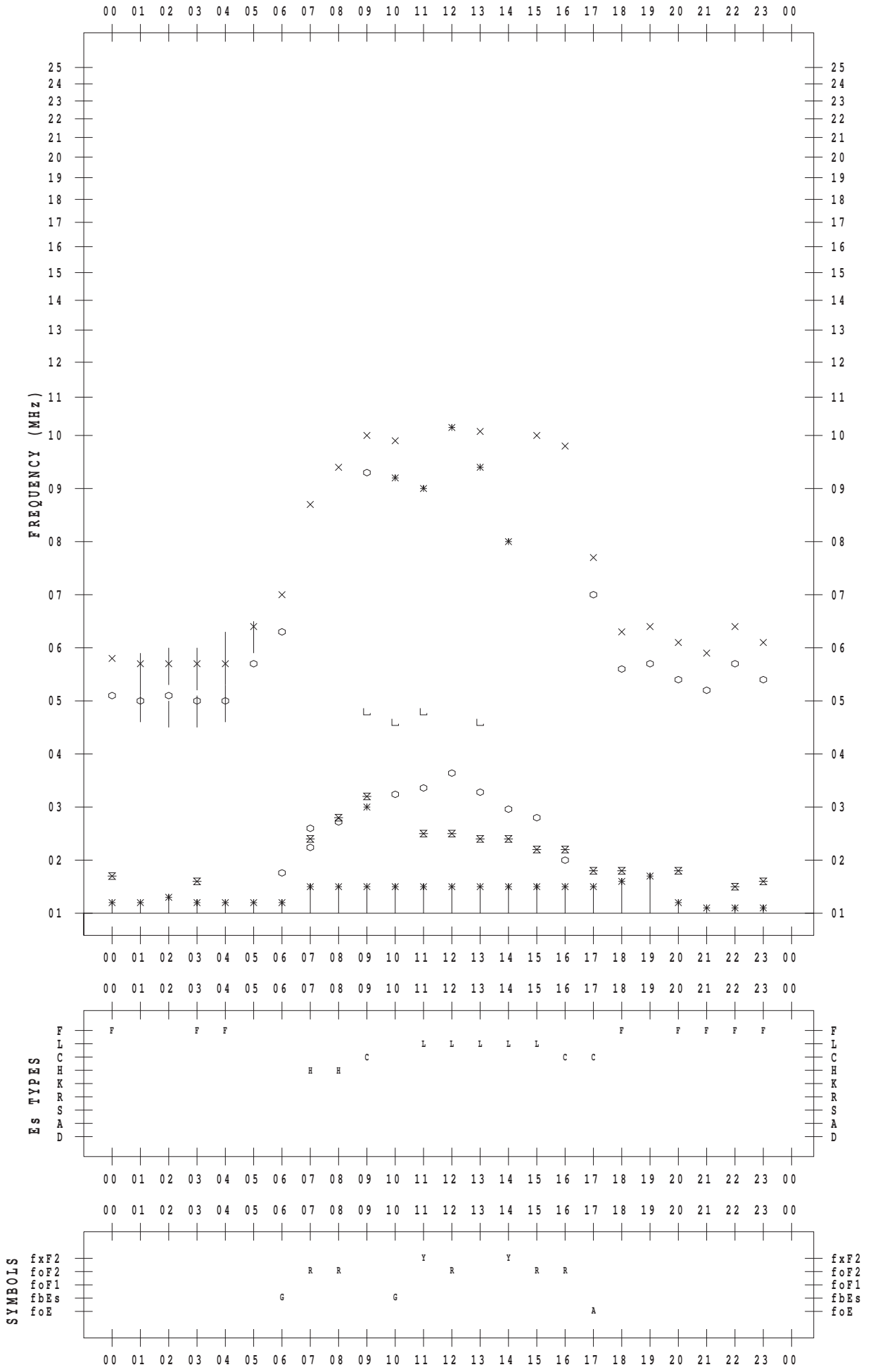
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/20

135 °E MEAN TIME



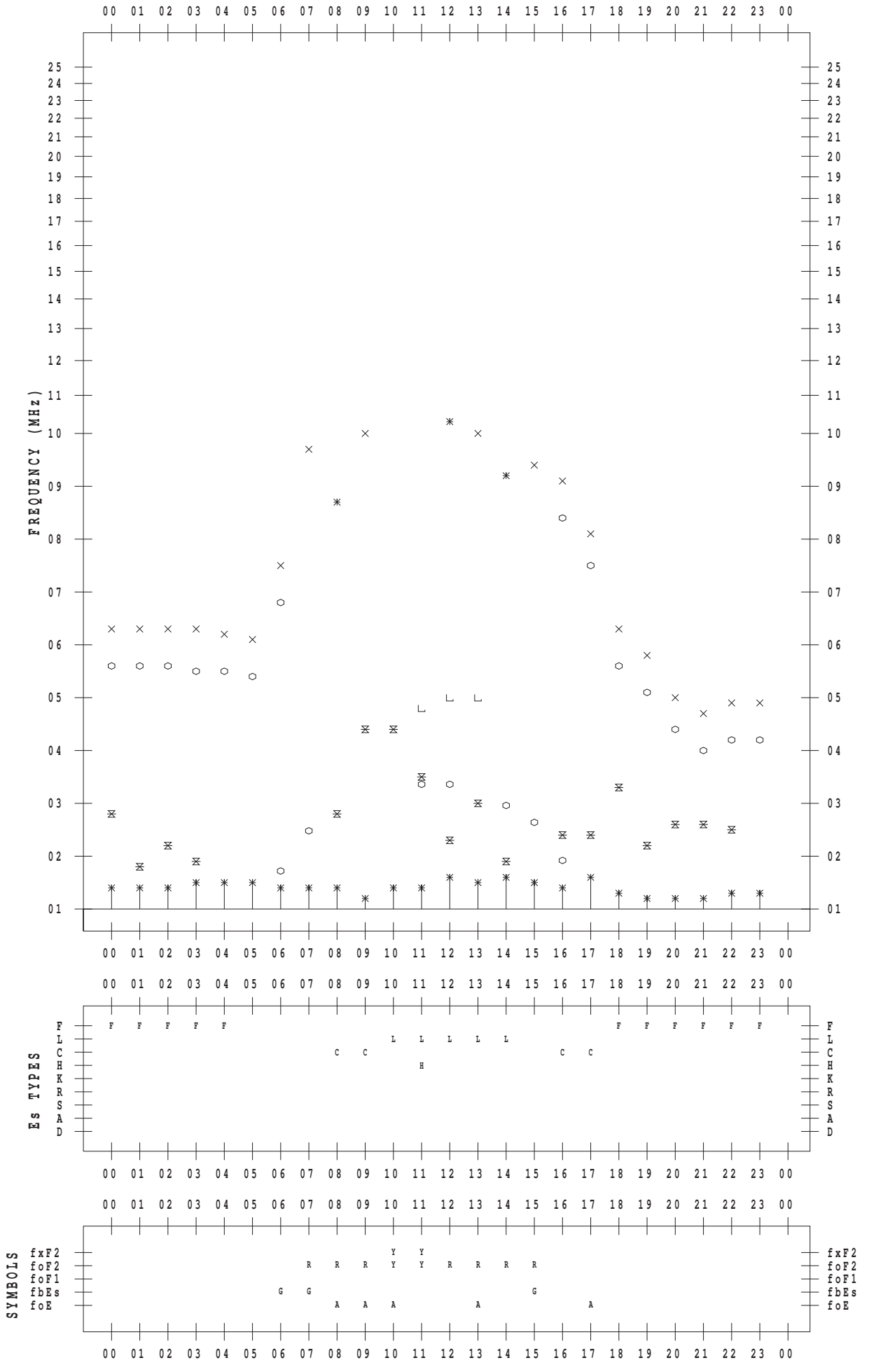
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/21

135 °E MEAN TIME



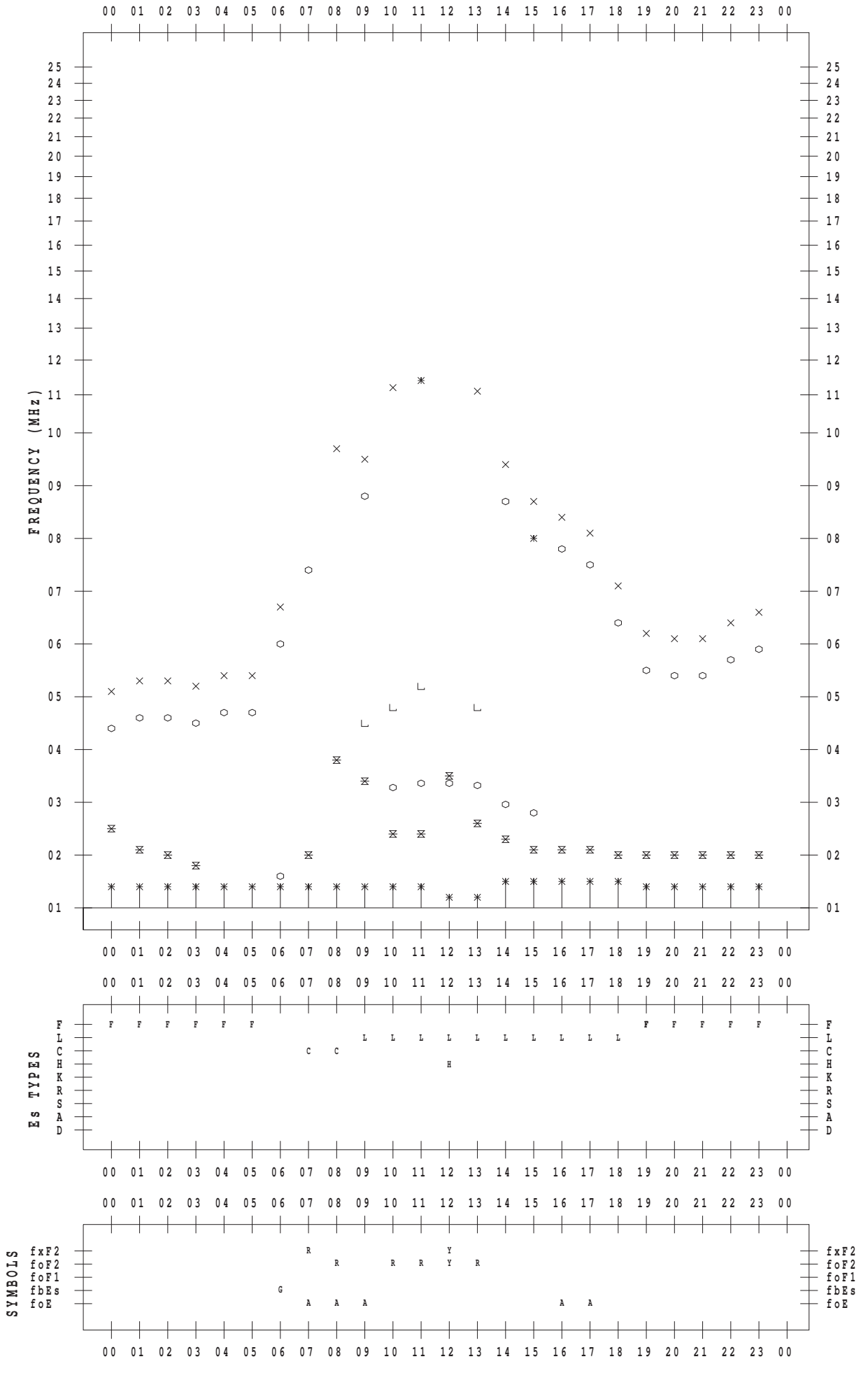
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/22

135 °E MEAN TIME



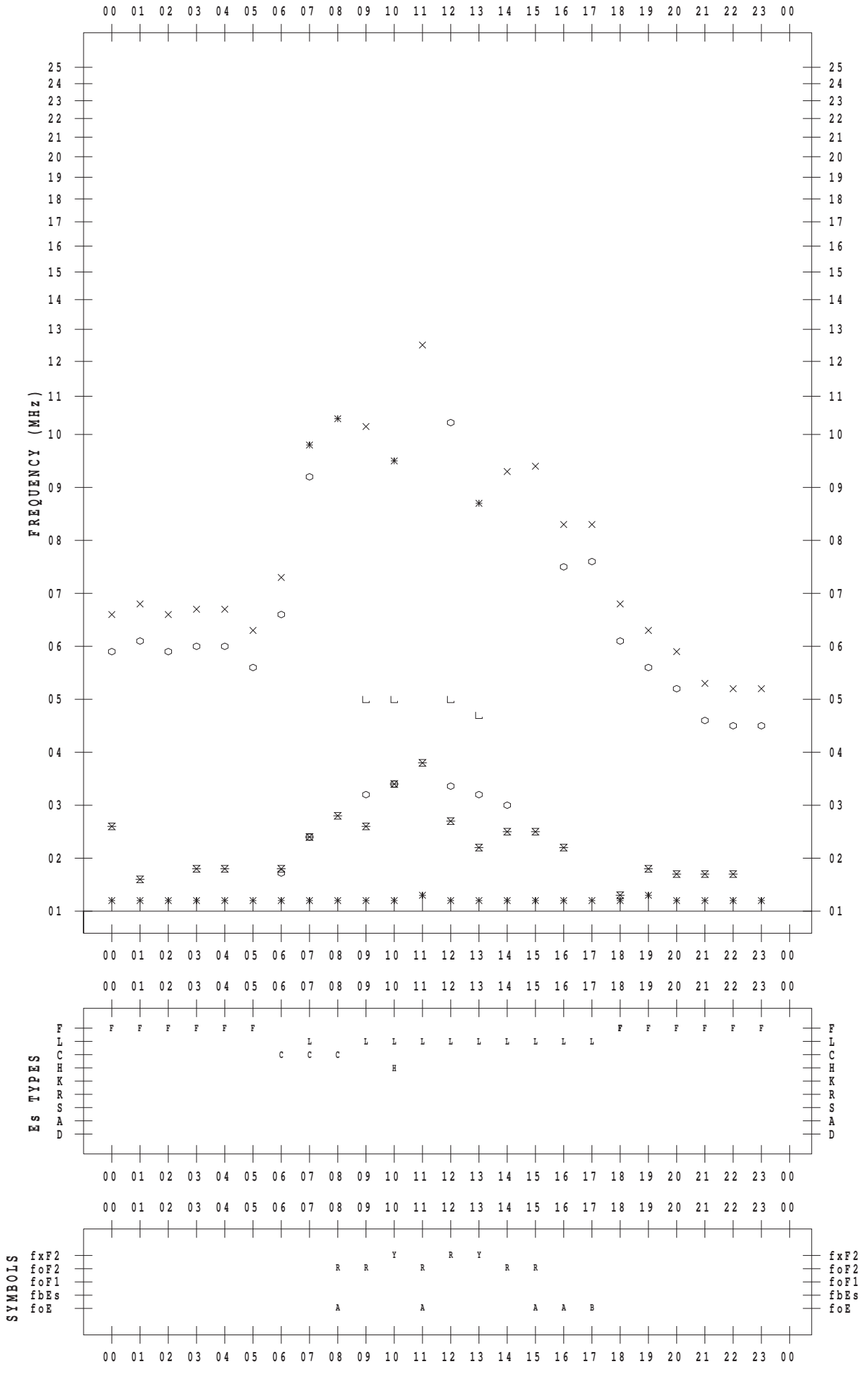
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/23

135 °E MEAN TIME



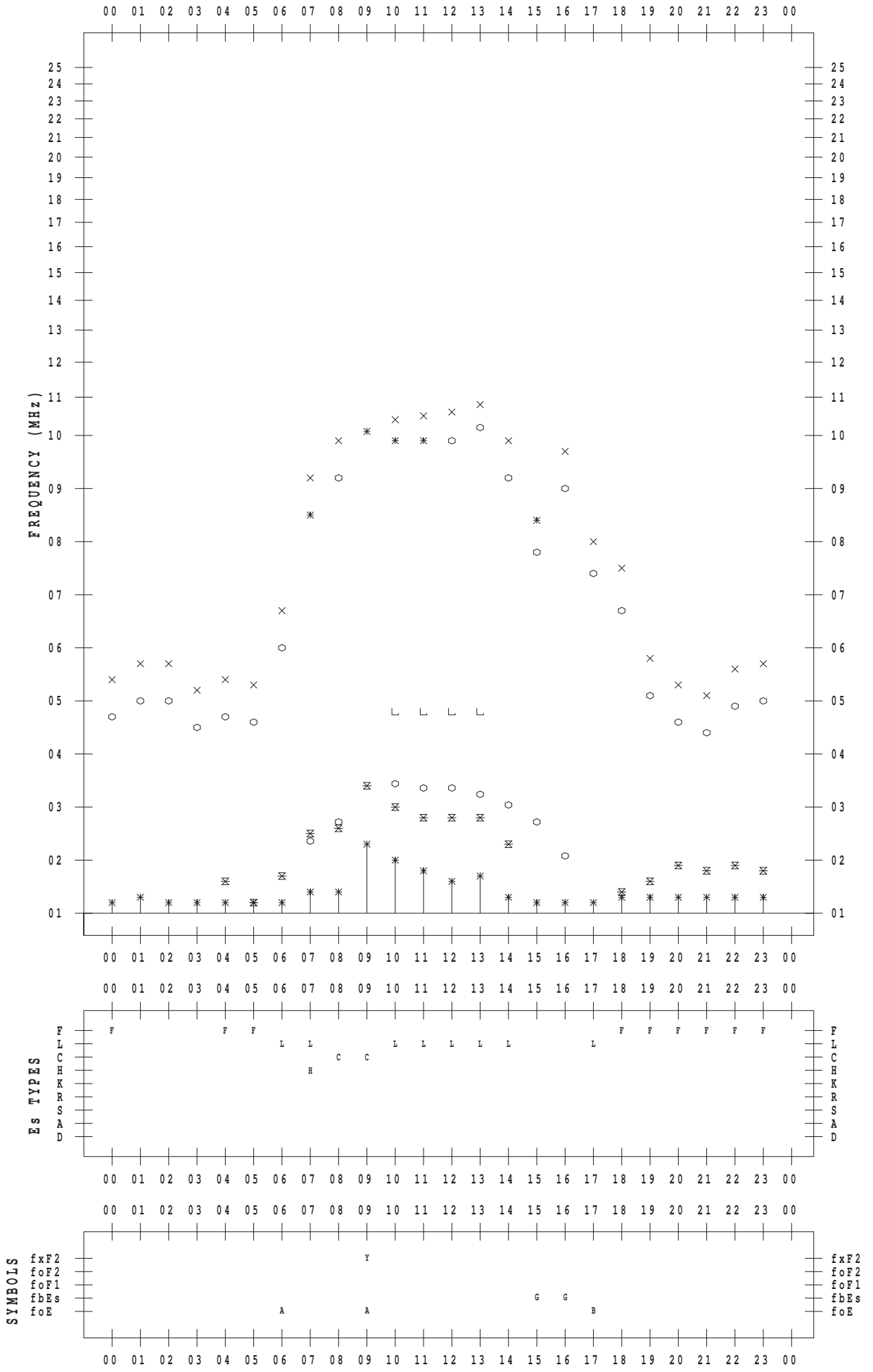
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/24

135 °E MEAN TIME



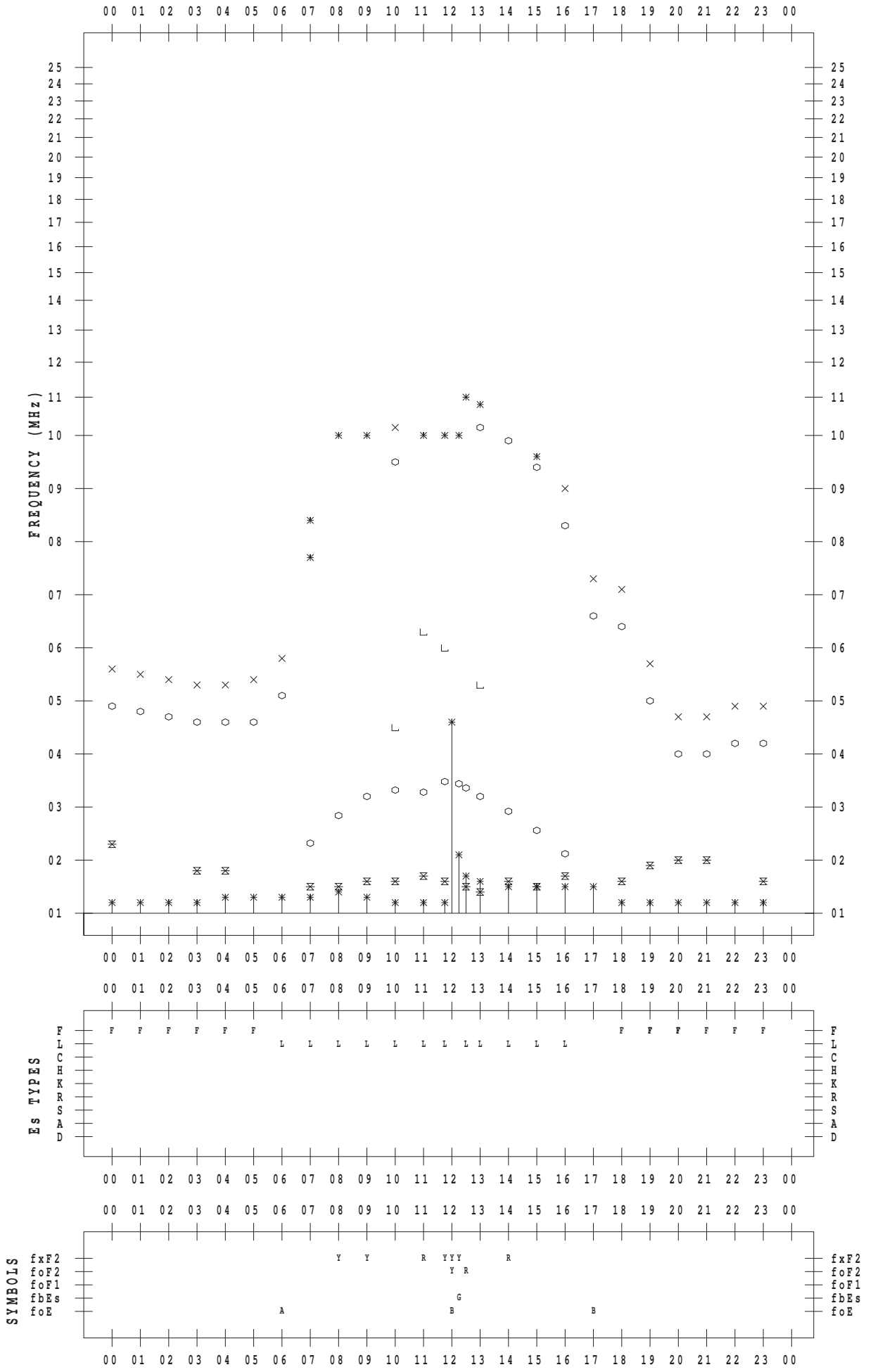
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/25

135 °E MEAN TIME



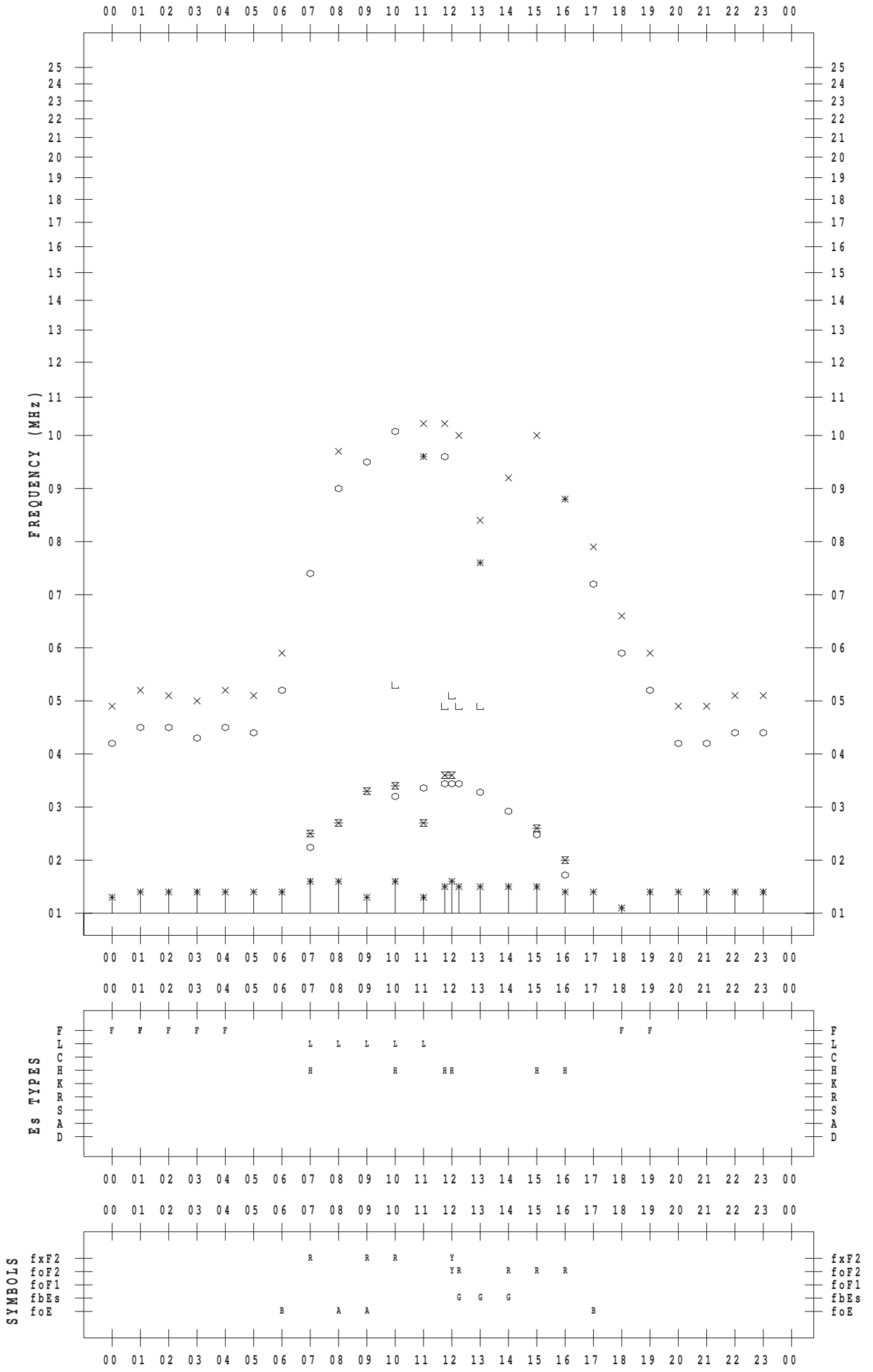
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/26

135 °E MEAN TIME



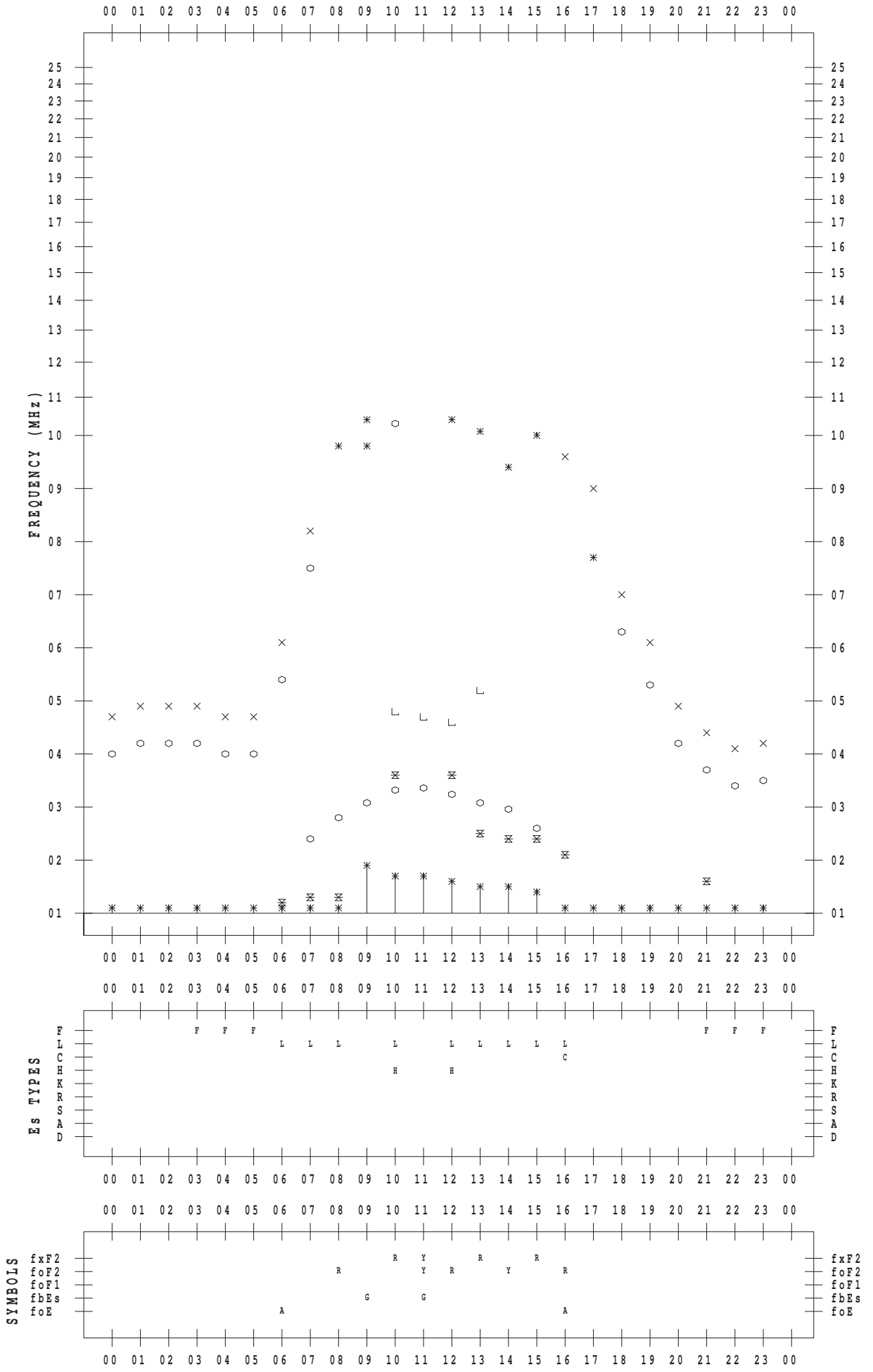
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/27

135 °E MEAN TIME



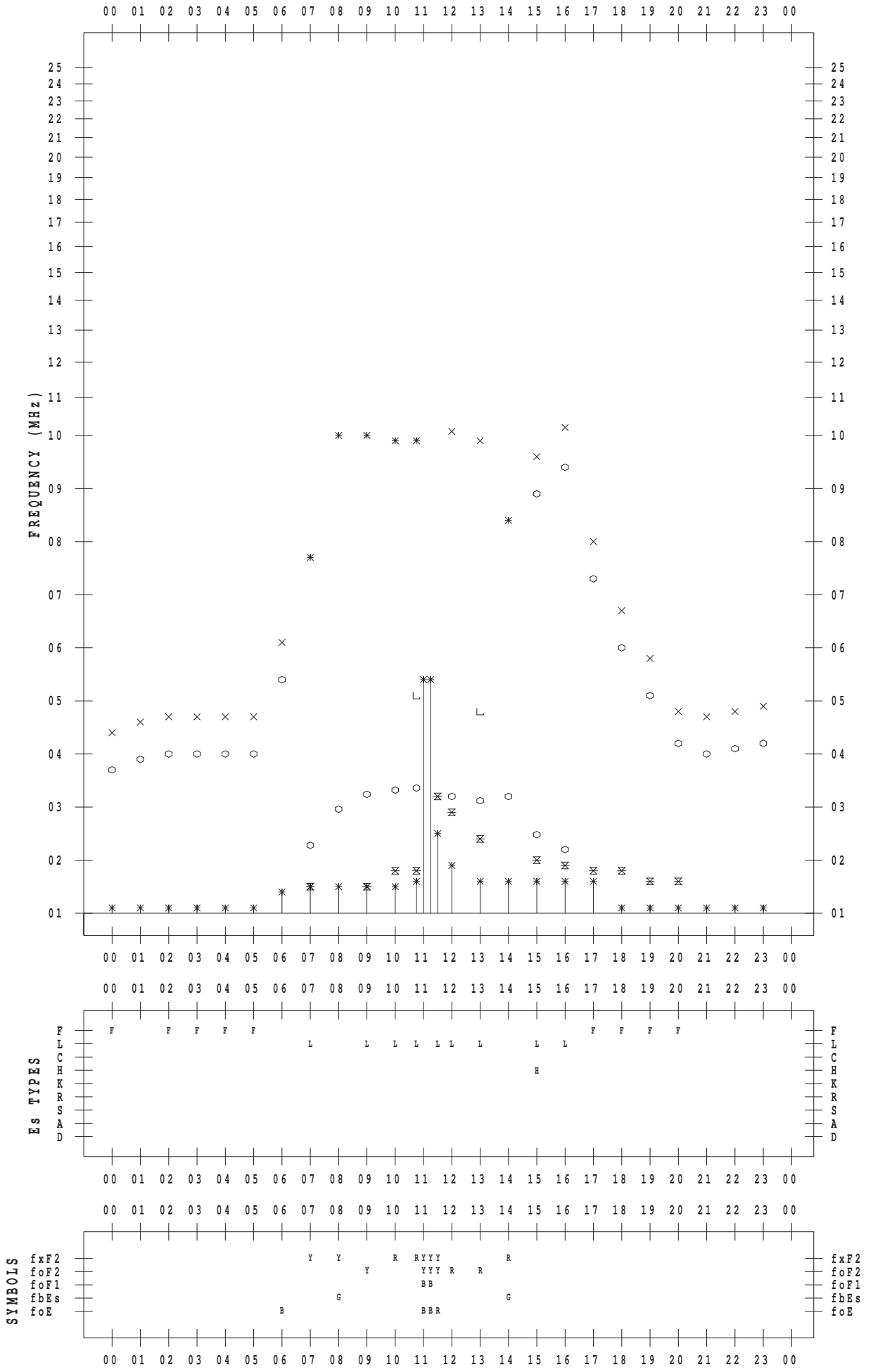
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/28

135 °E MEAN TIME



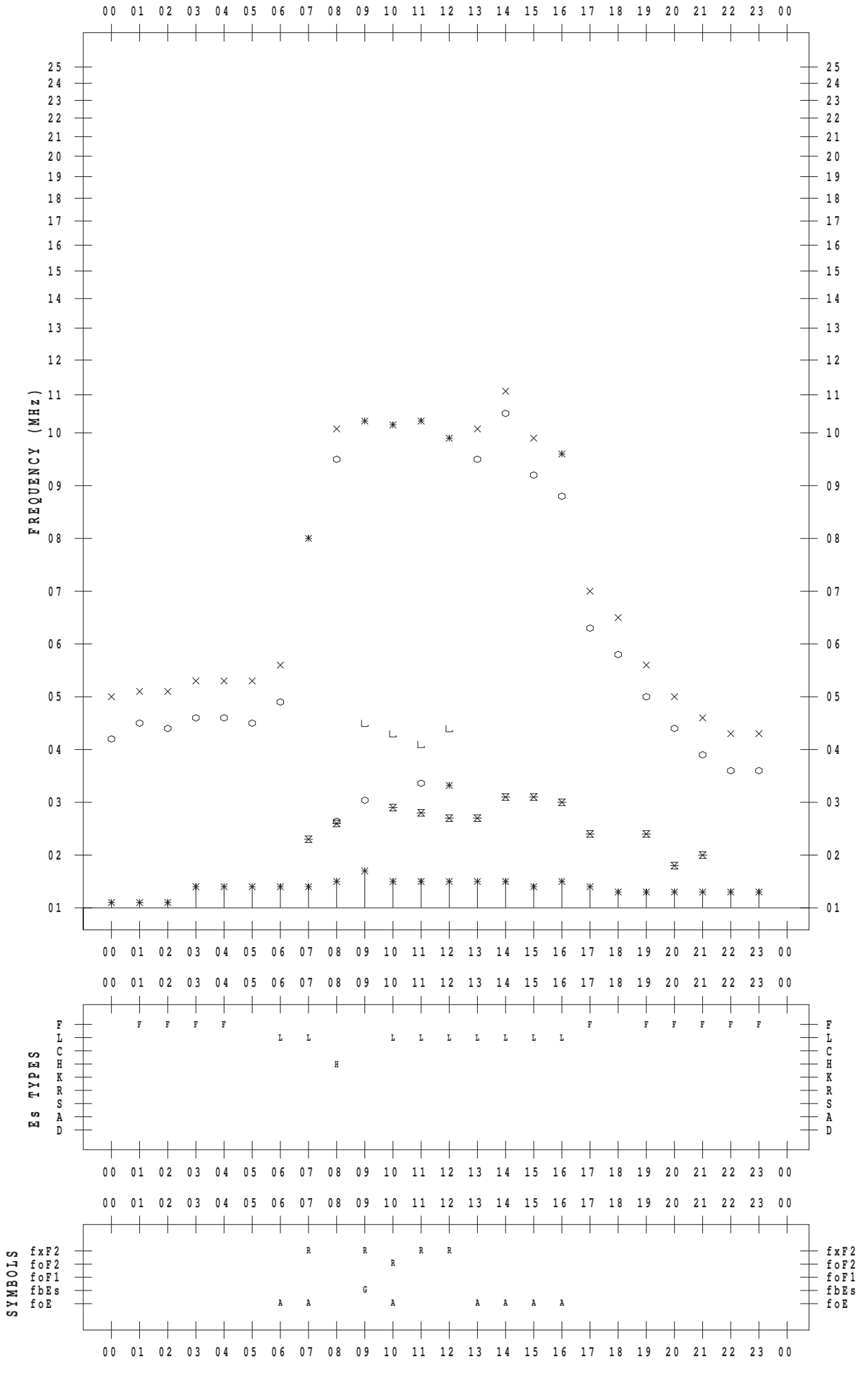
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/29

135 °E MEAN TIME



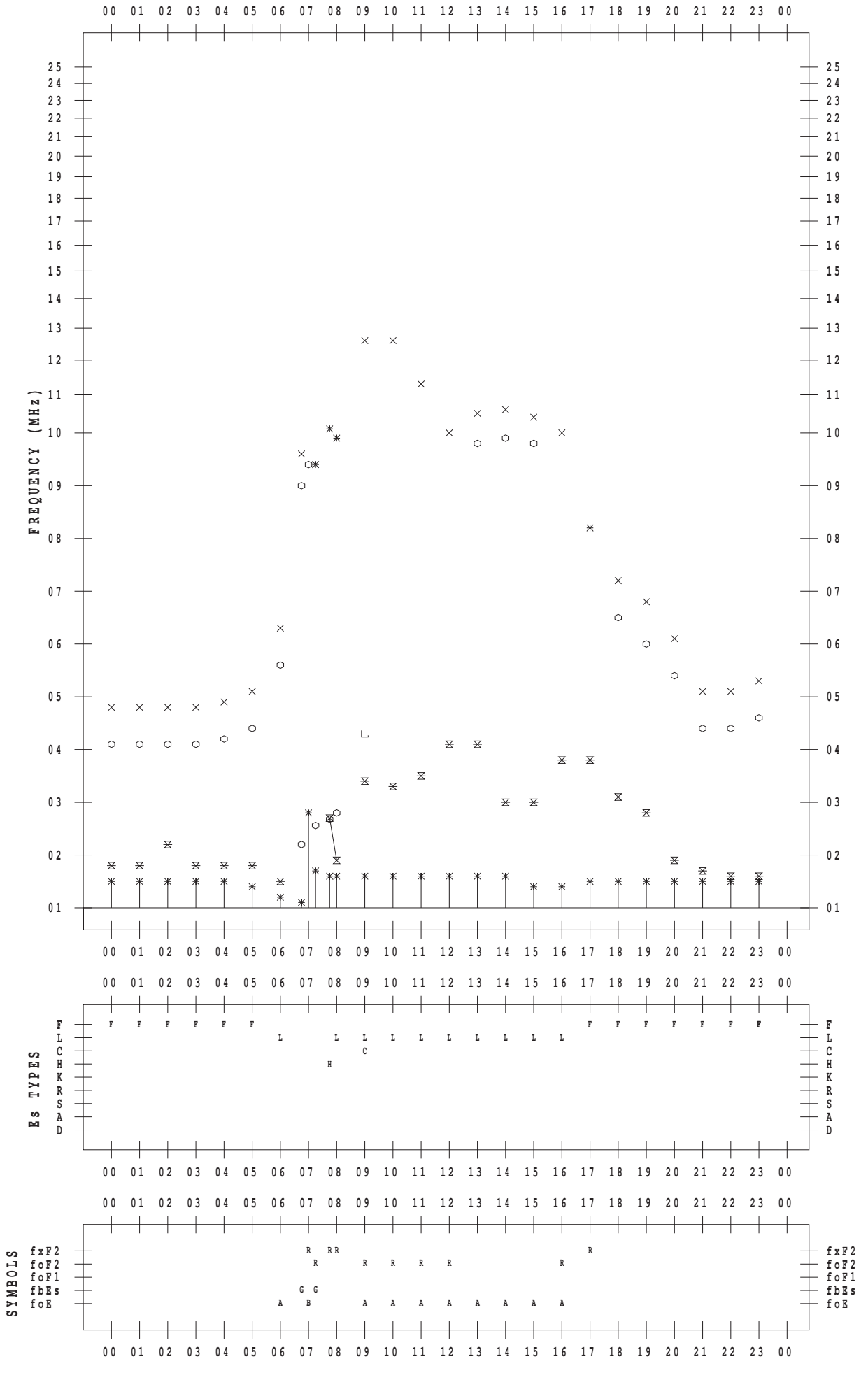
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/30

135 °E MEAN TIME



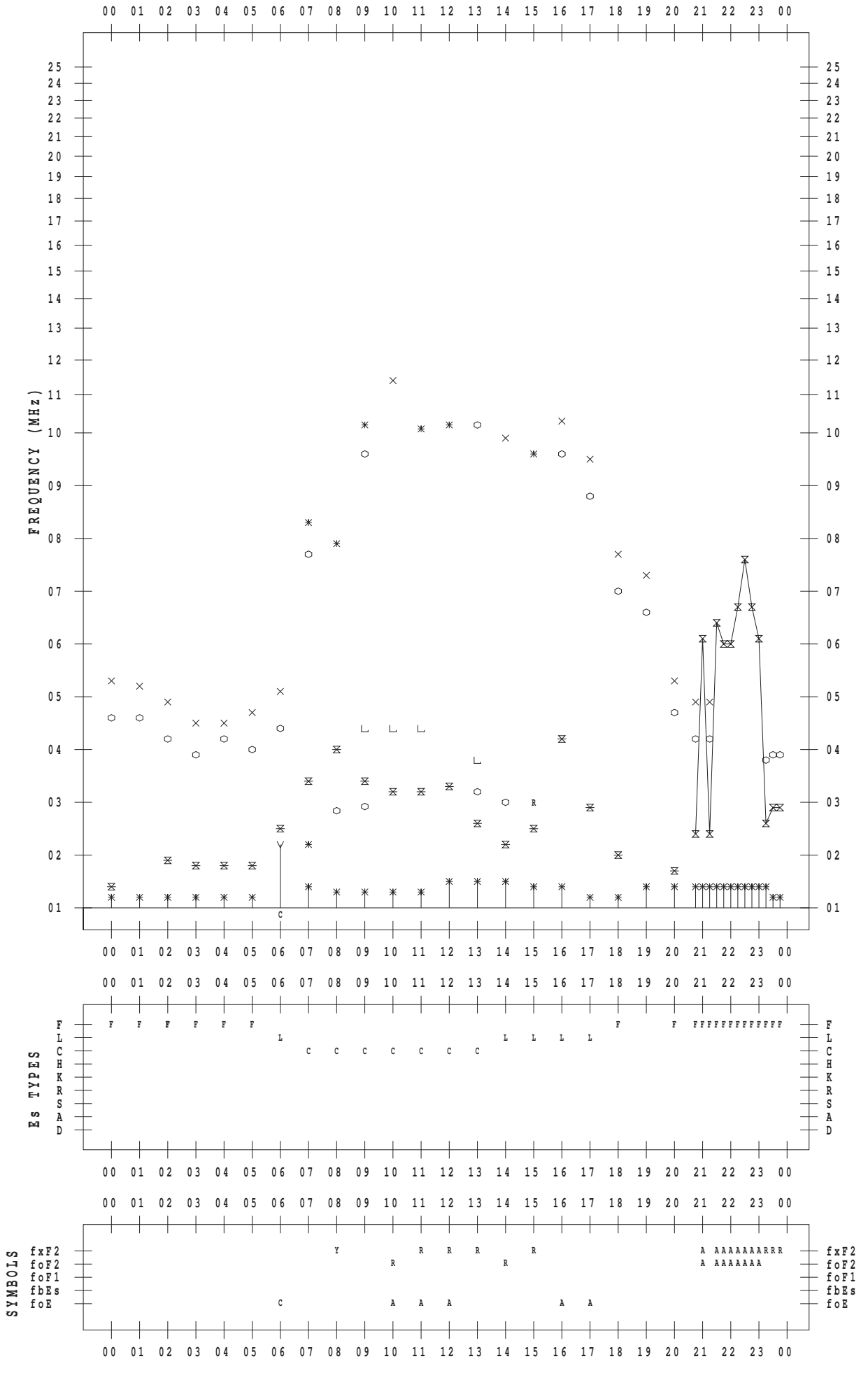
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2013/10/31

135 °E MEAN TIME



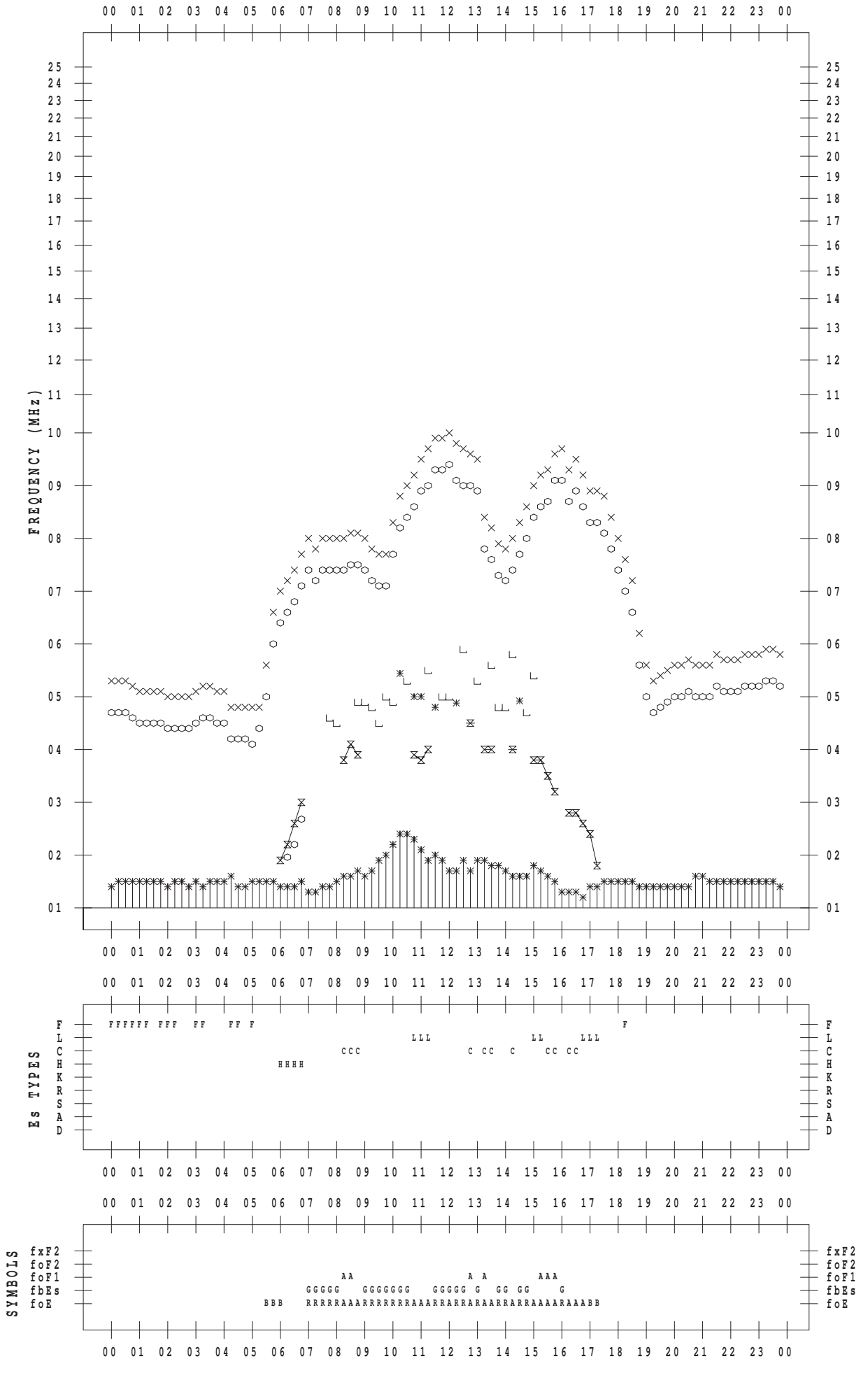
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 1

135 °E MEAN TIME



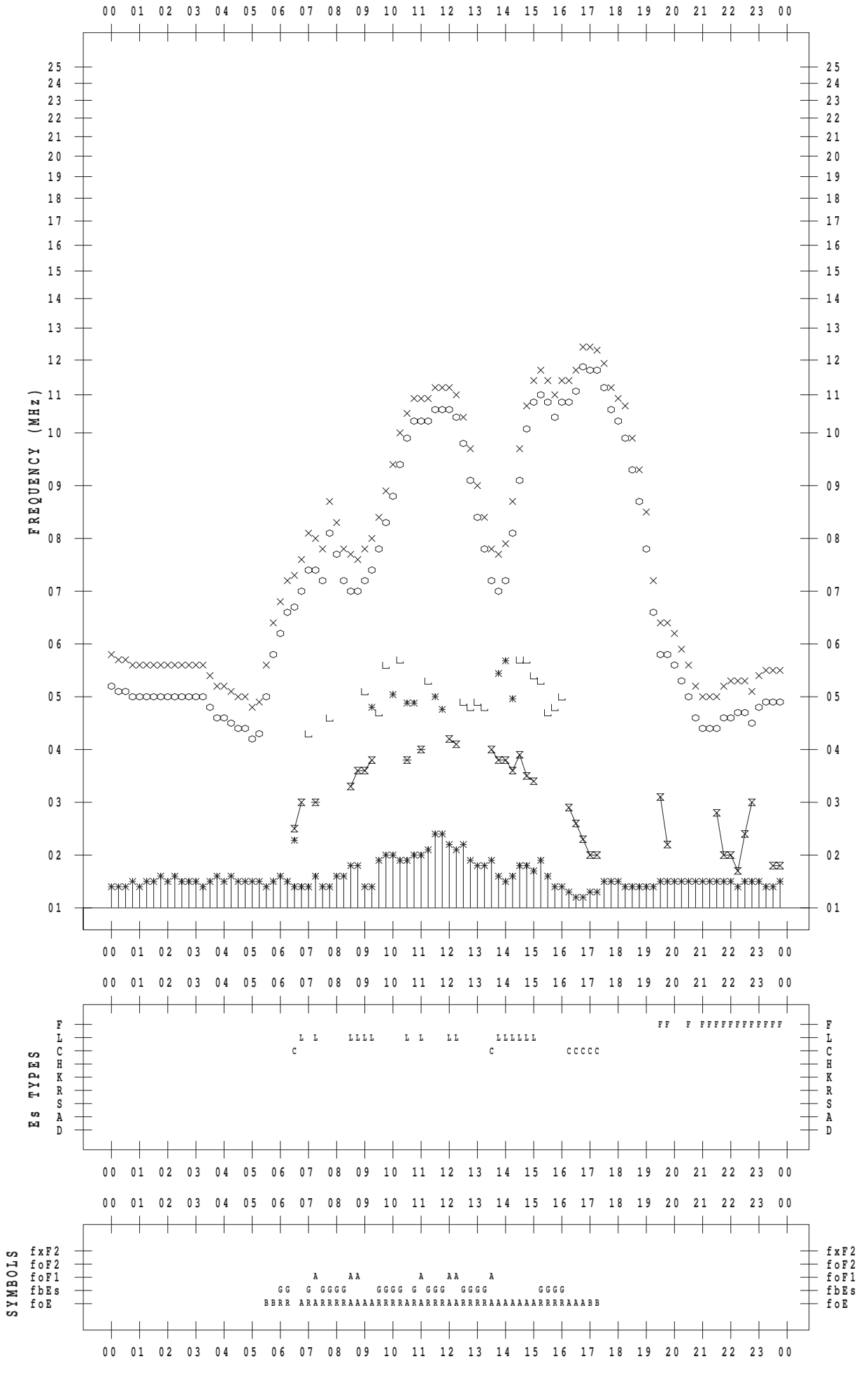
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 2

135 °E MEAN TIME



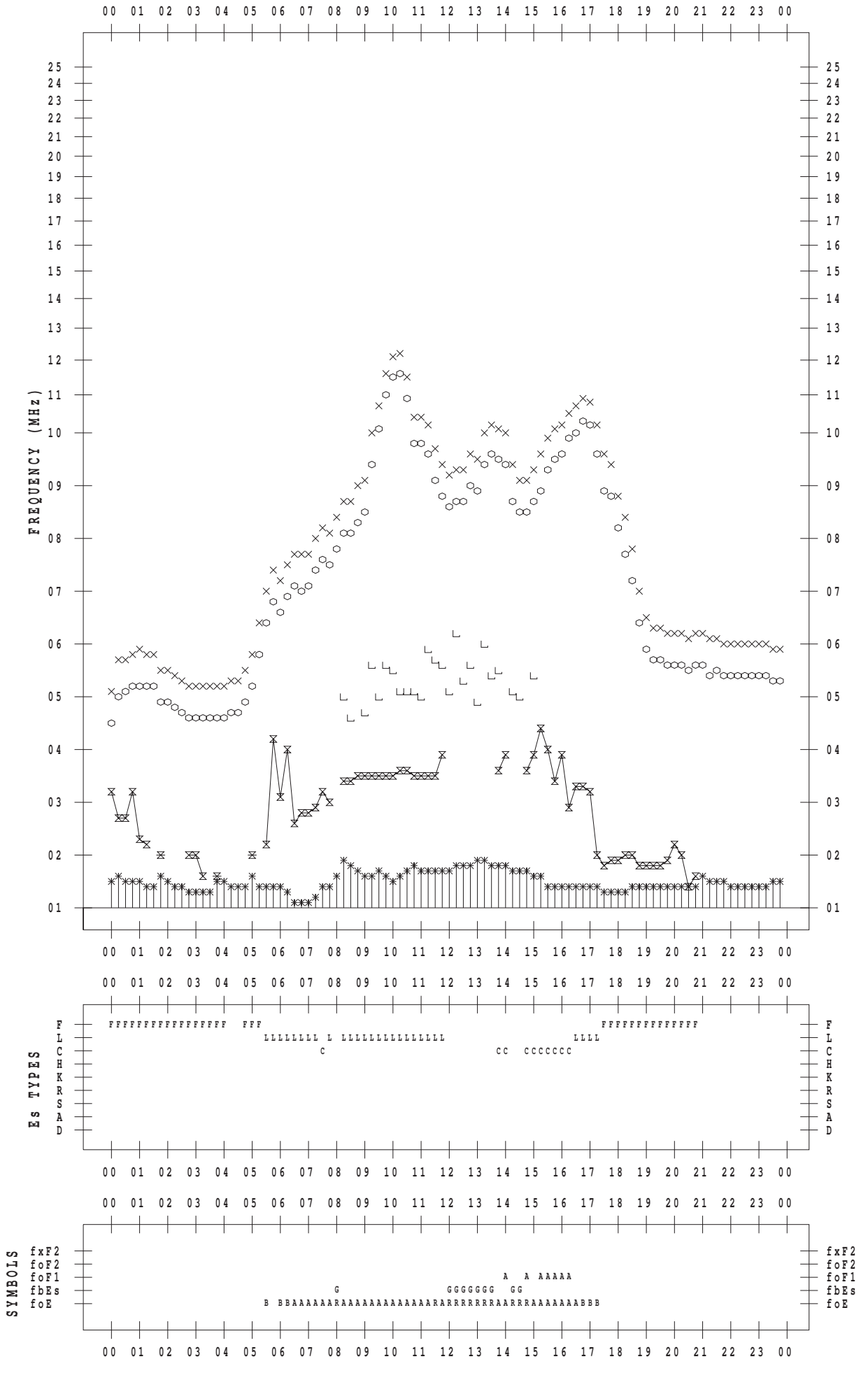
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 3

135 °E MEAN TIME



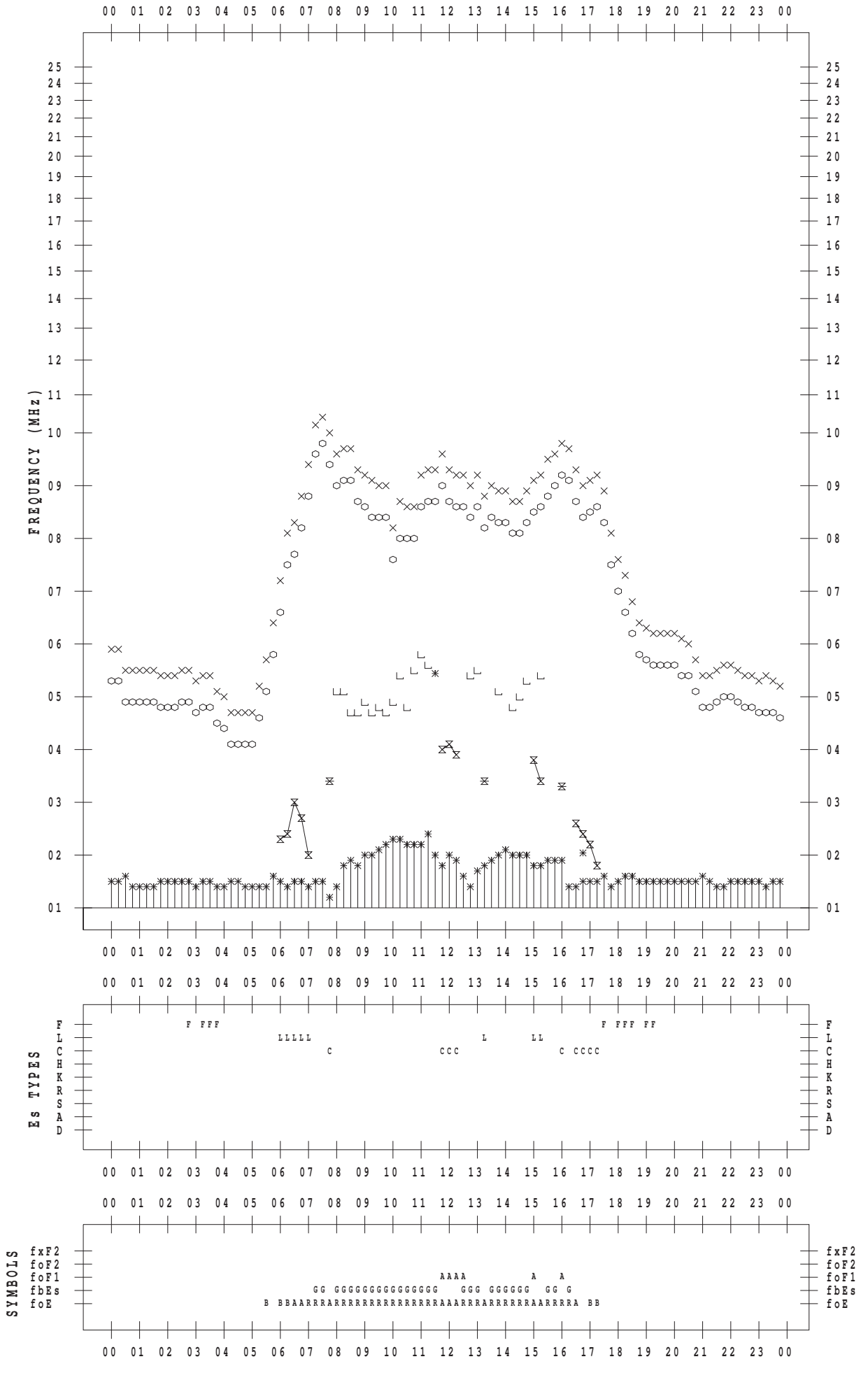
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 4

135 °E MEAN TIME



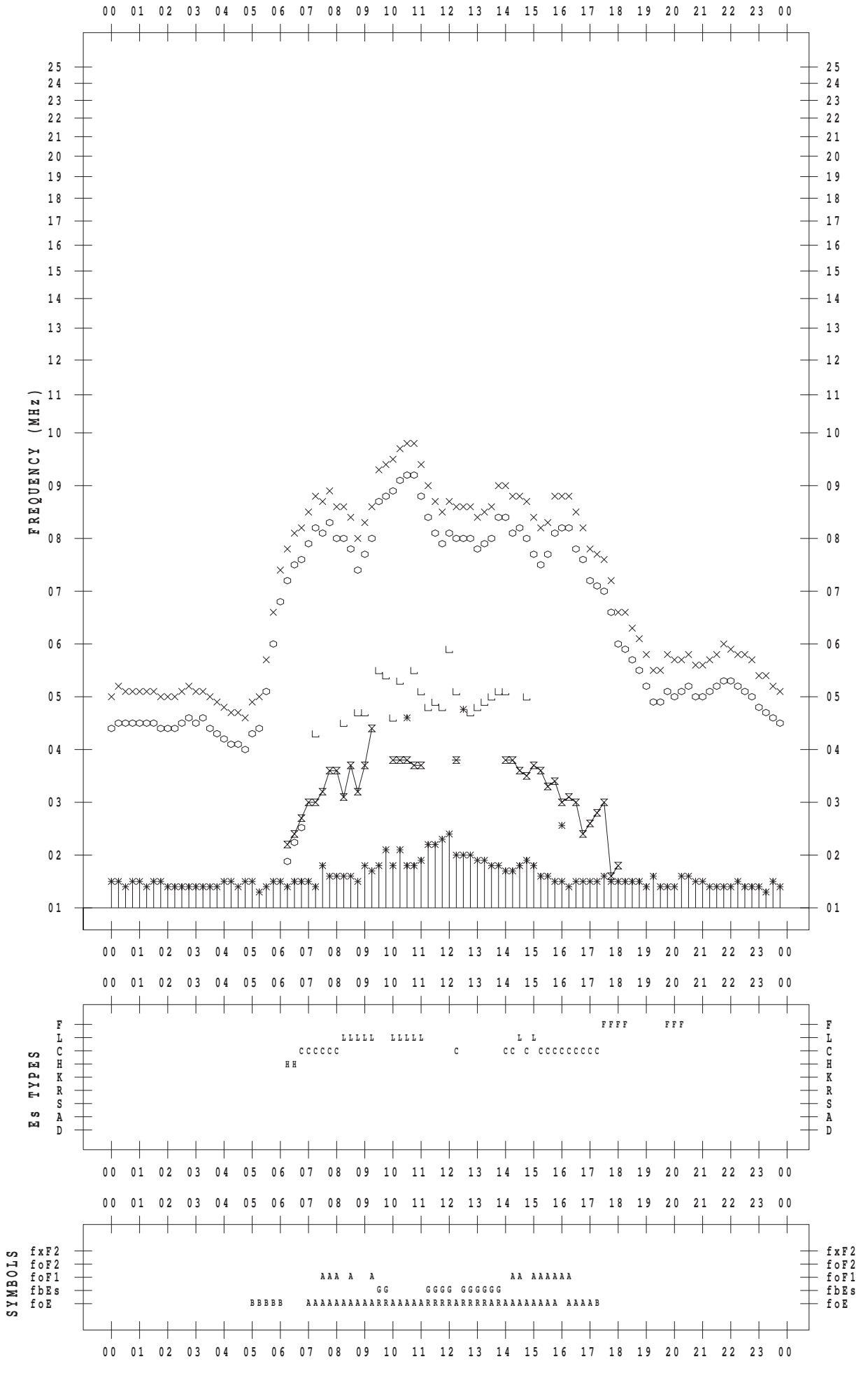
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 5

135 °E MEAN TIME



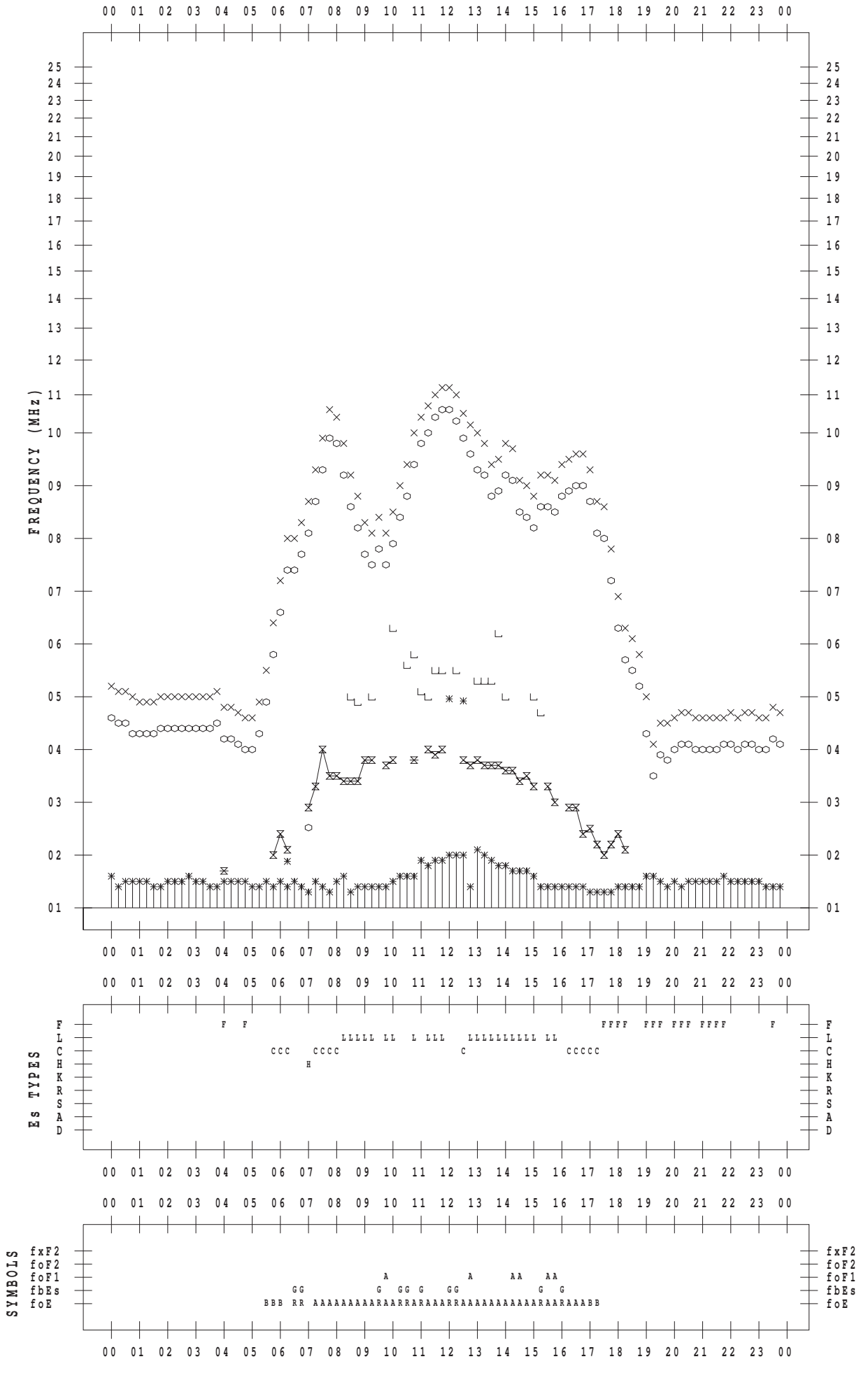
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 6

135 °E MEAN TIME



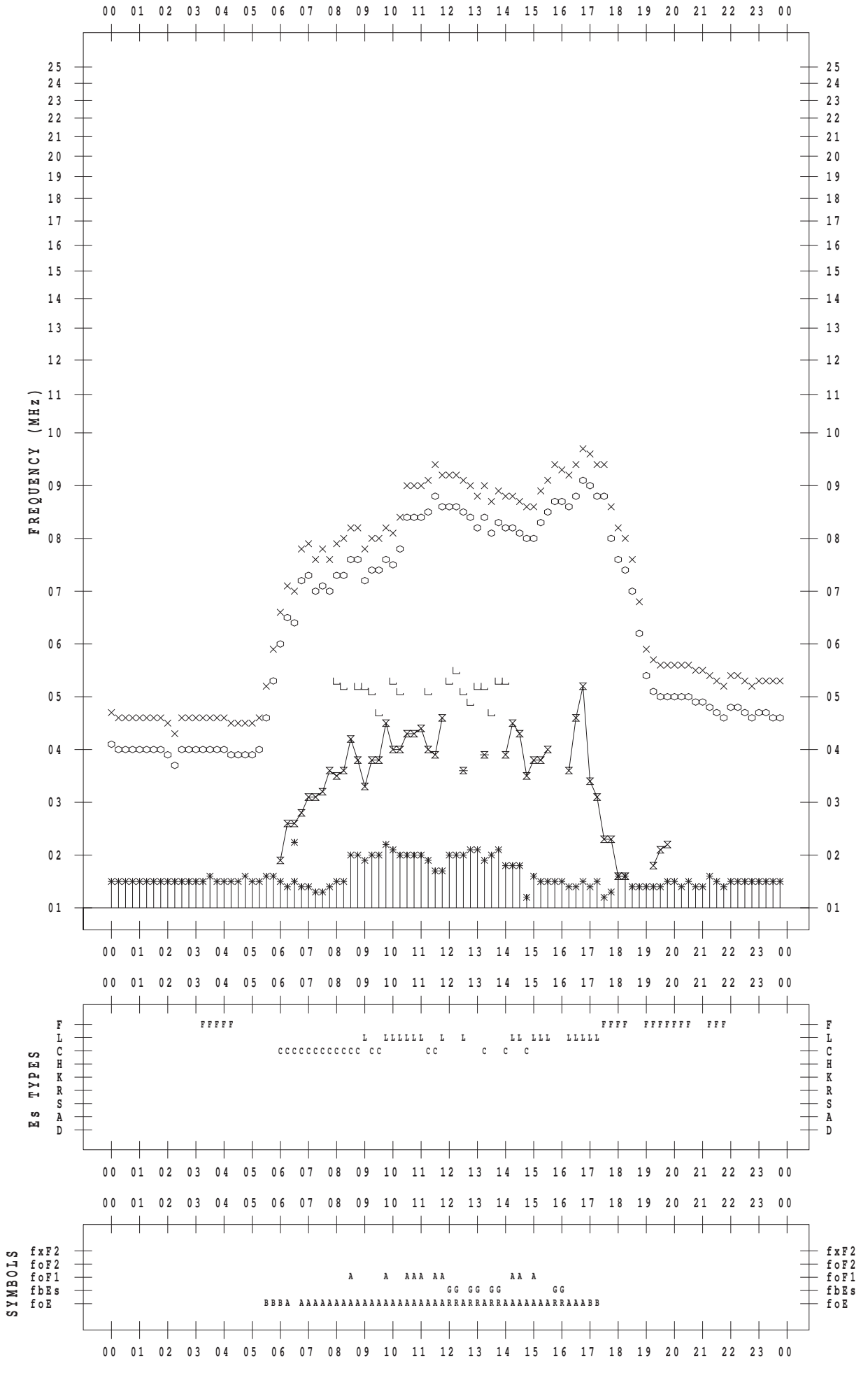
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 7

135 °E MEAN TIME



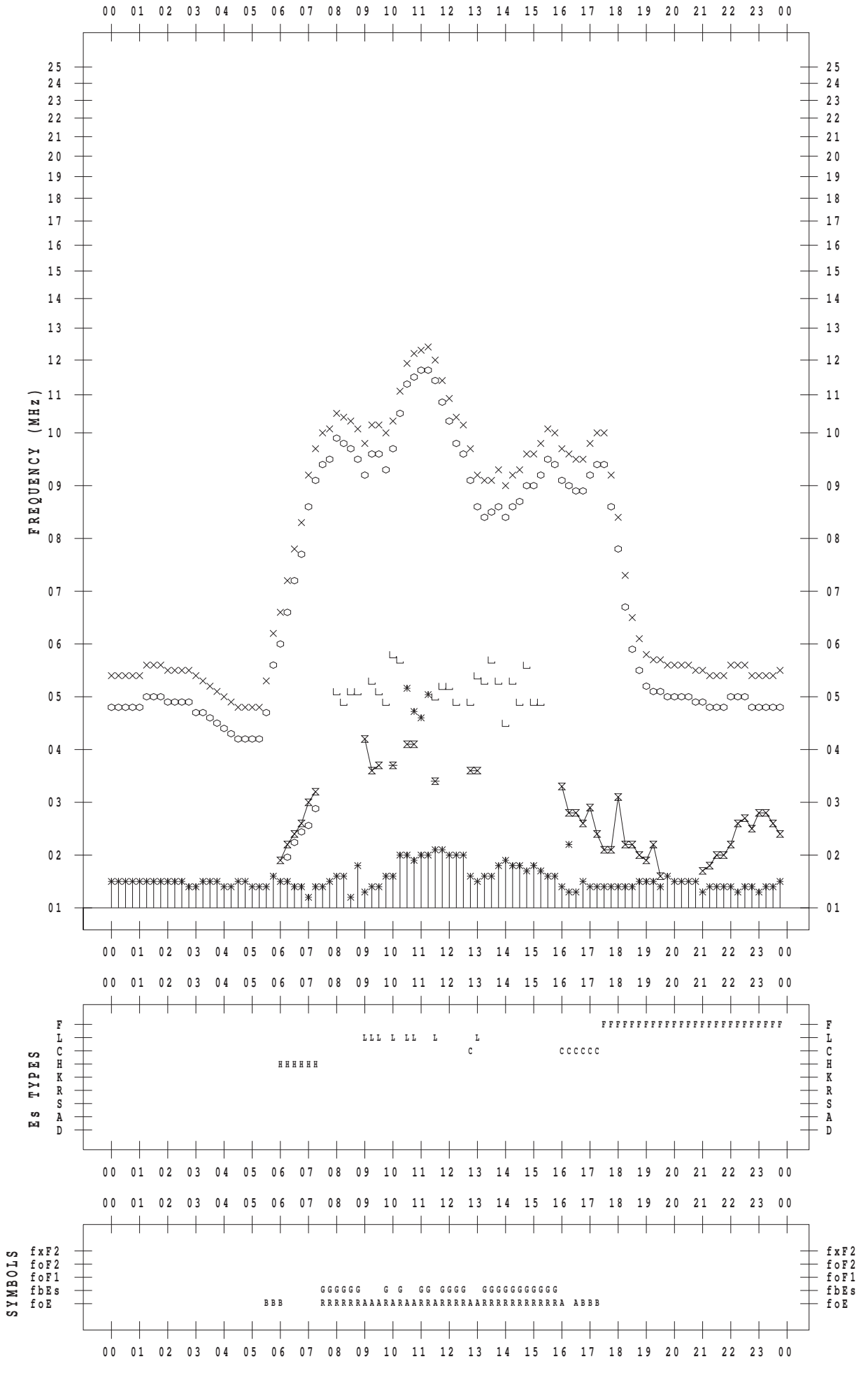
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/ 8

135 °E MEAN TIME



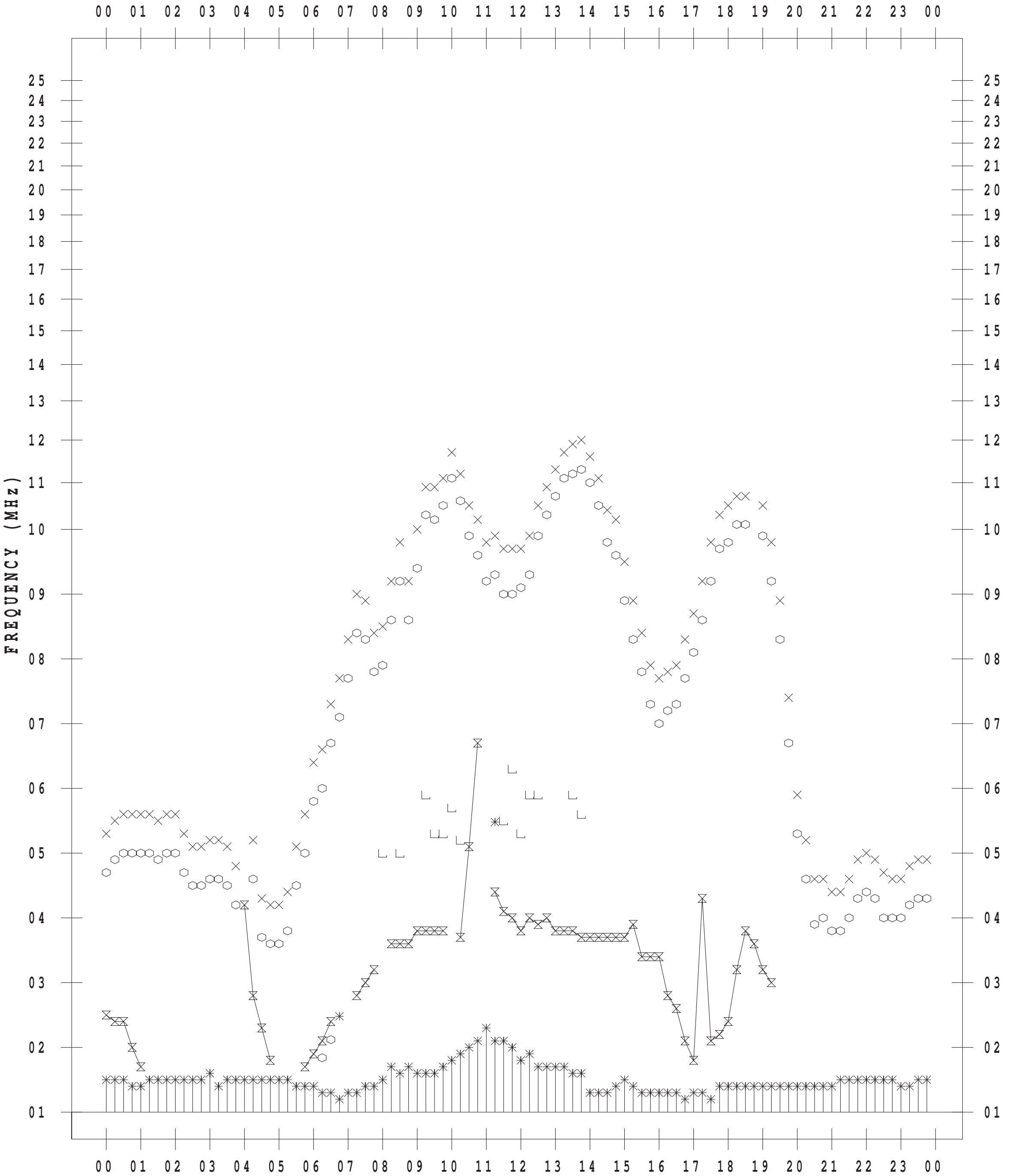
f-PLOT DATA

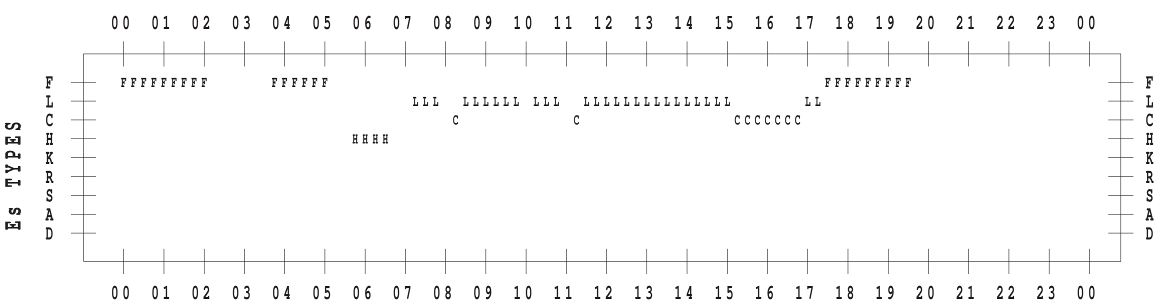
SCALER : I.NISHIMUTA

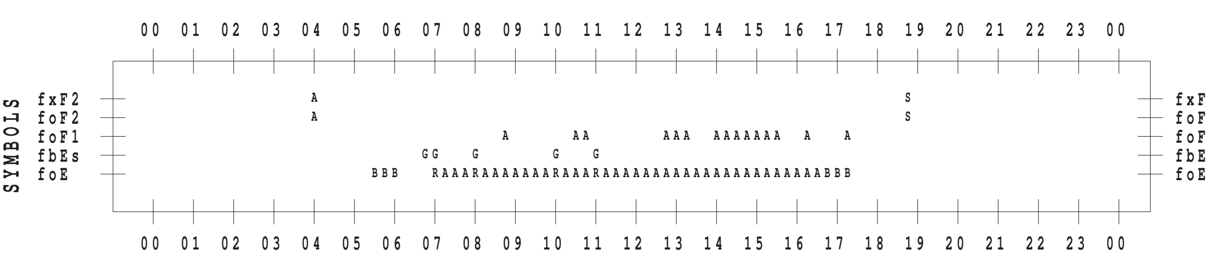
STATION : Kokubunji

DATE : 2013/10/ 9

135 °E MEAN TIME







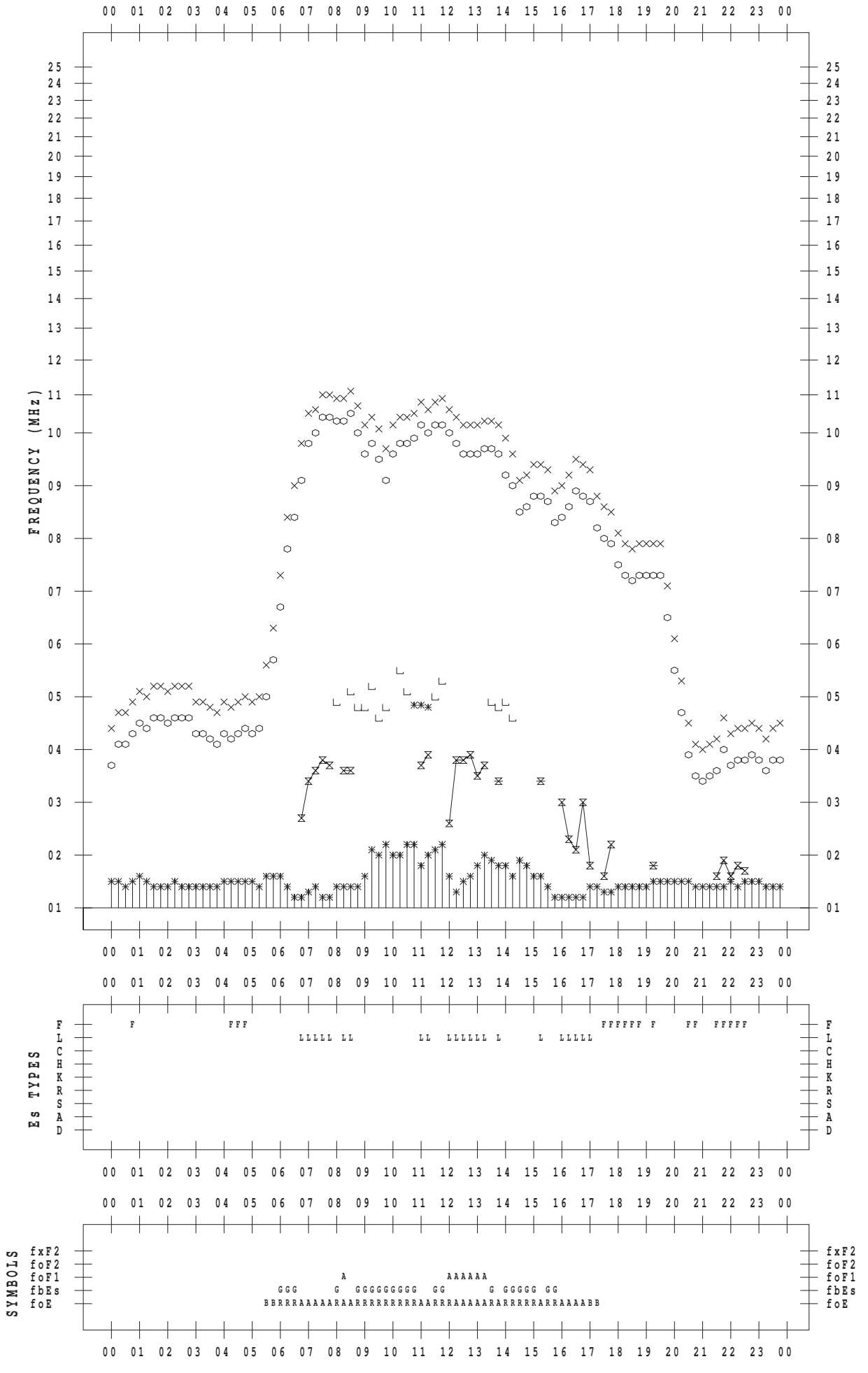
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/10

135 °E MEAN TIME



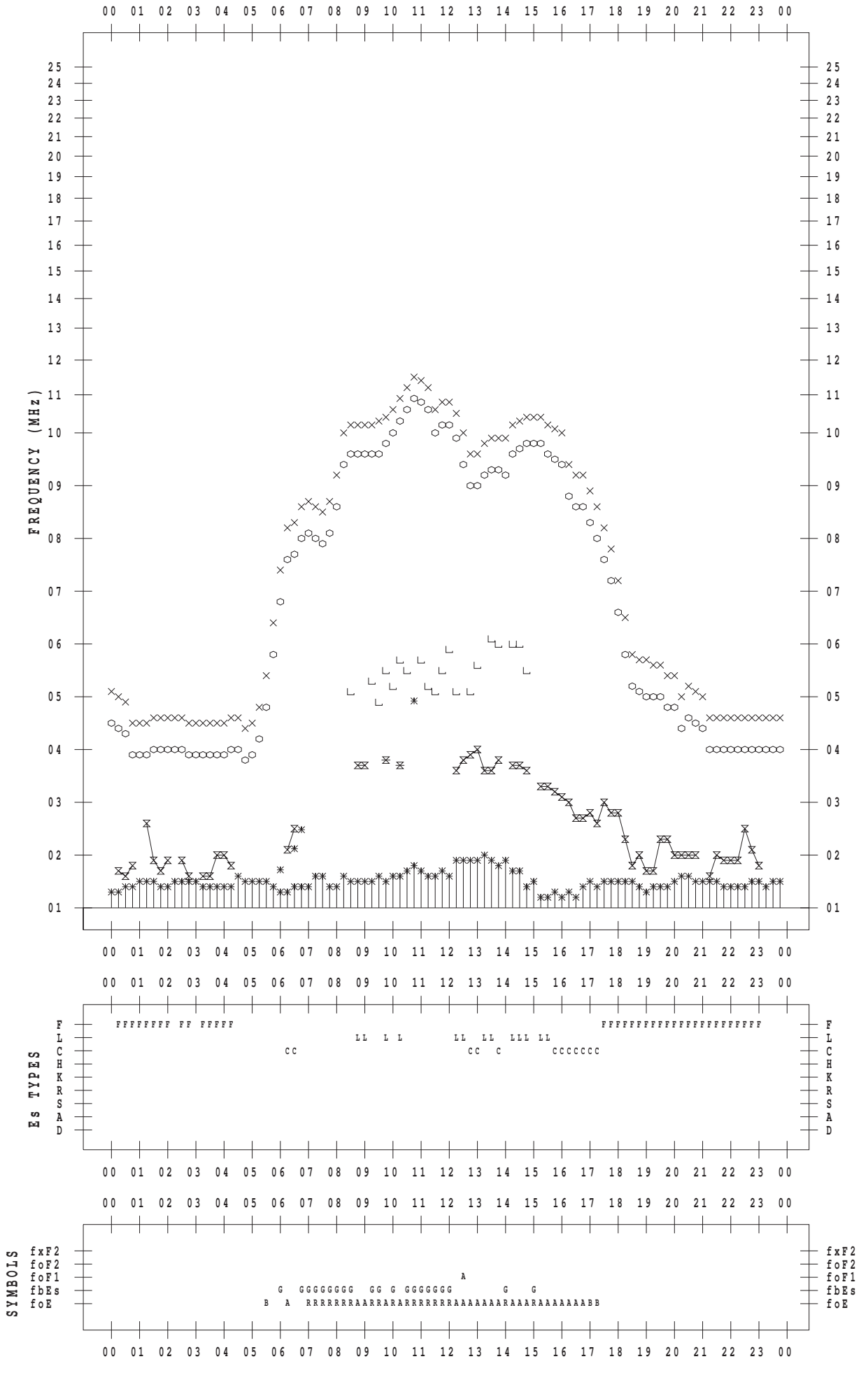
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/11

135 °E MEAN TIME



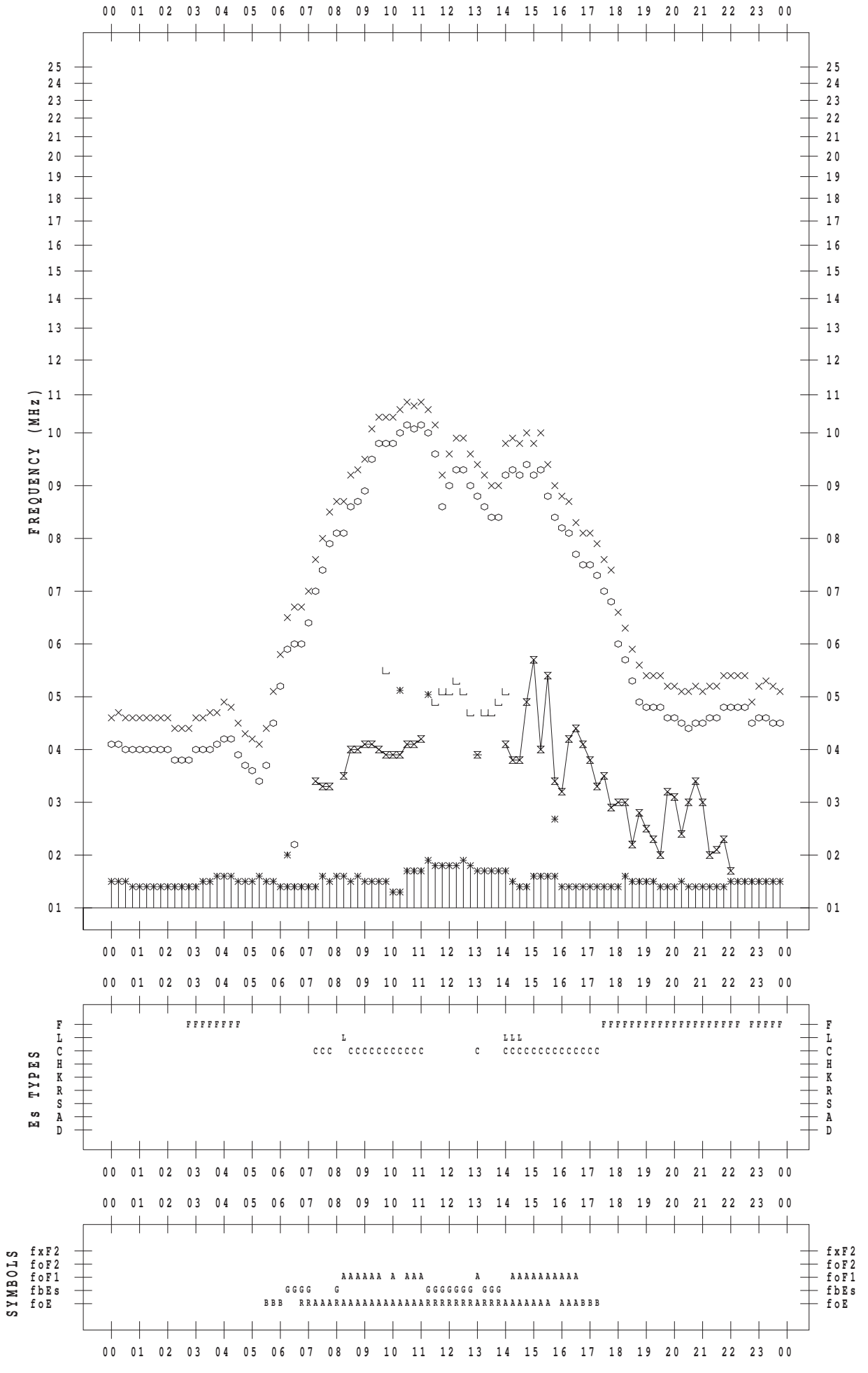
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/12

135 °E MEAN TIME



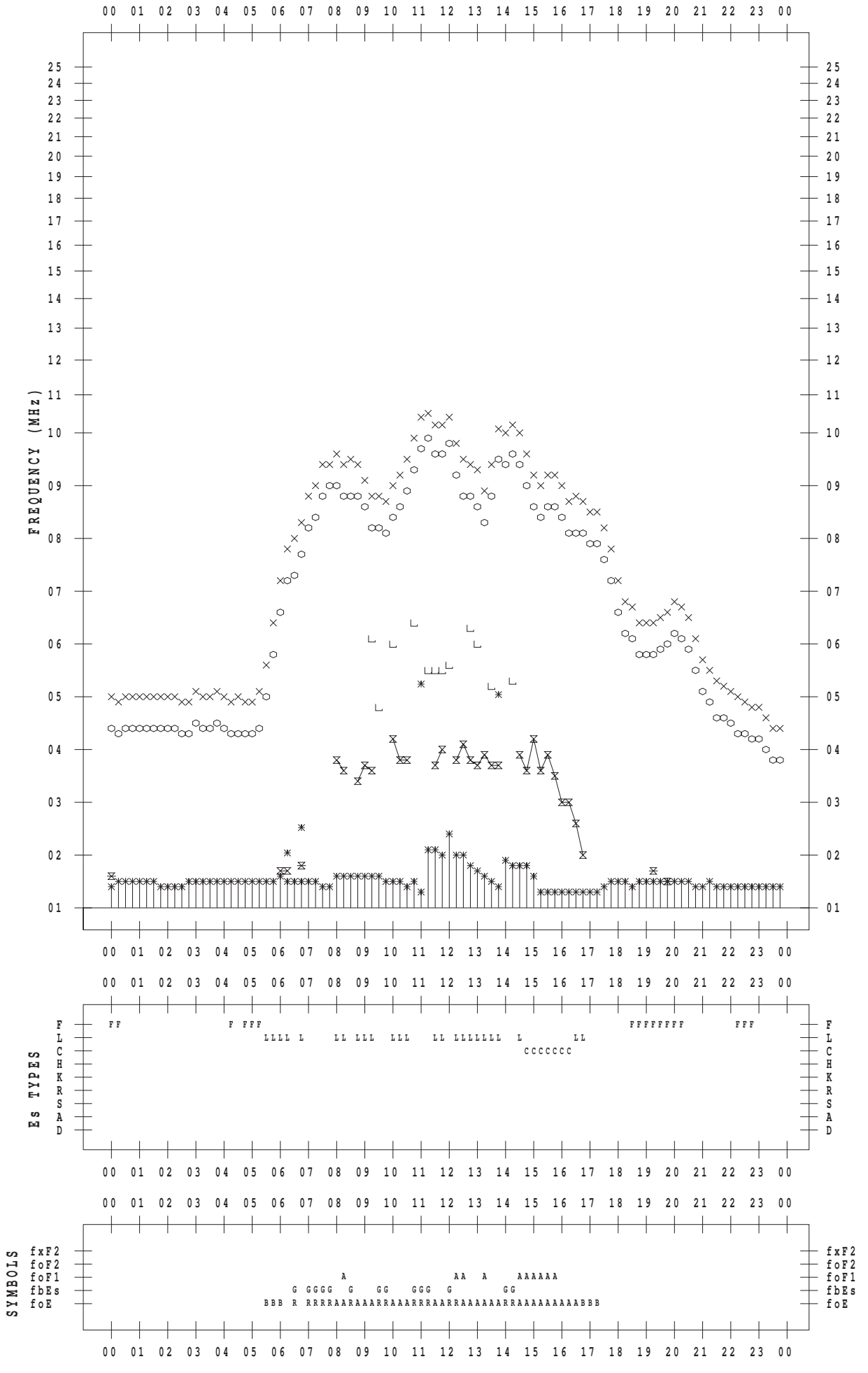
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/13

135 °E MEAN TIME



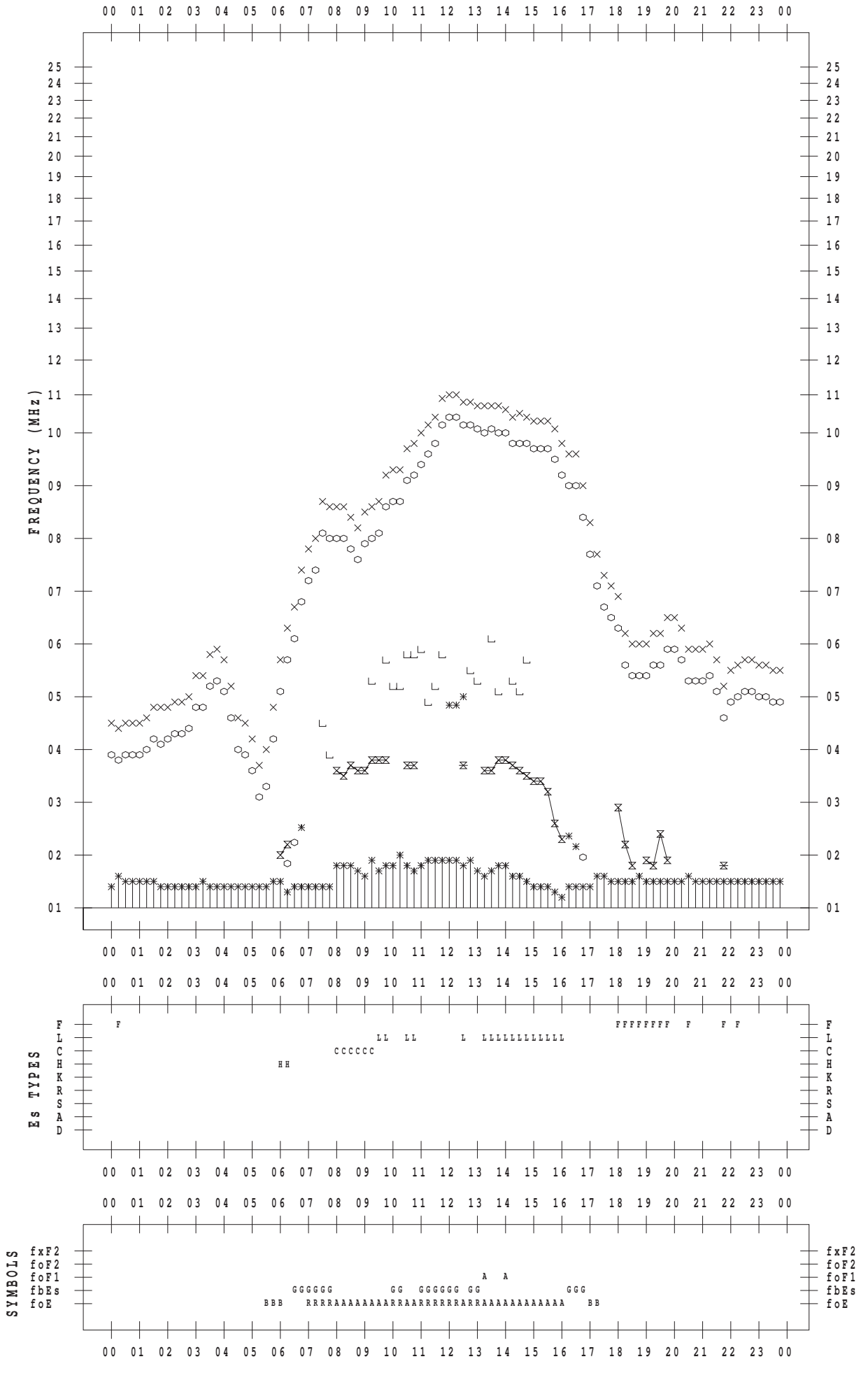
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/14

135 °E MEAN TIME



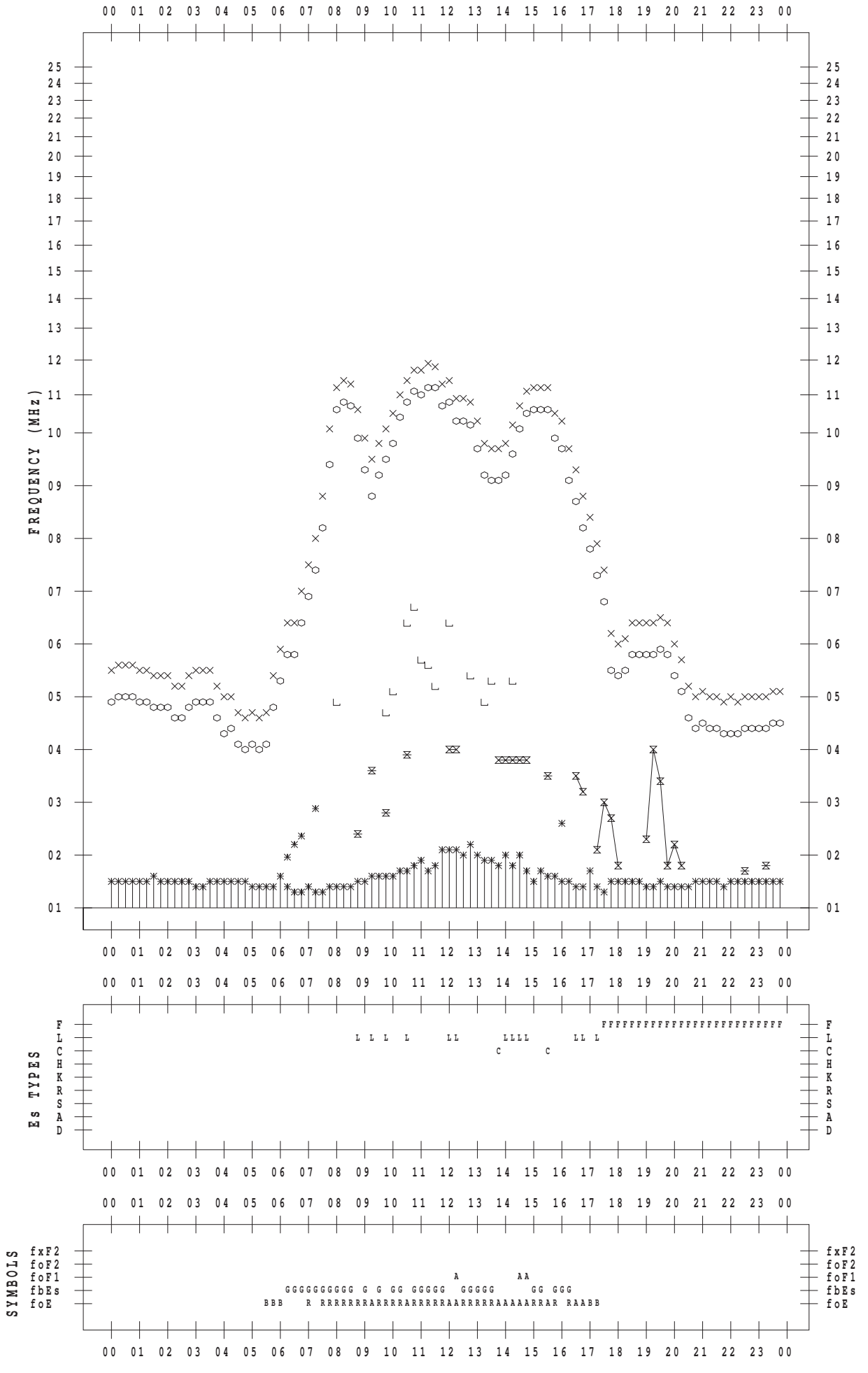
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/15

135 °E MEAN TIME



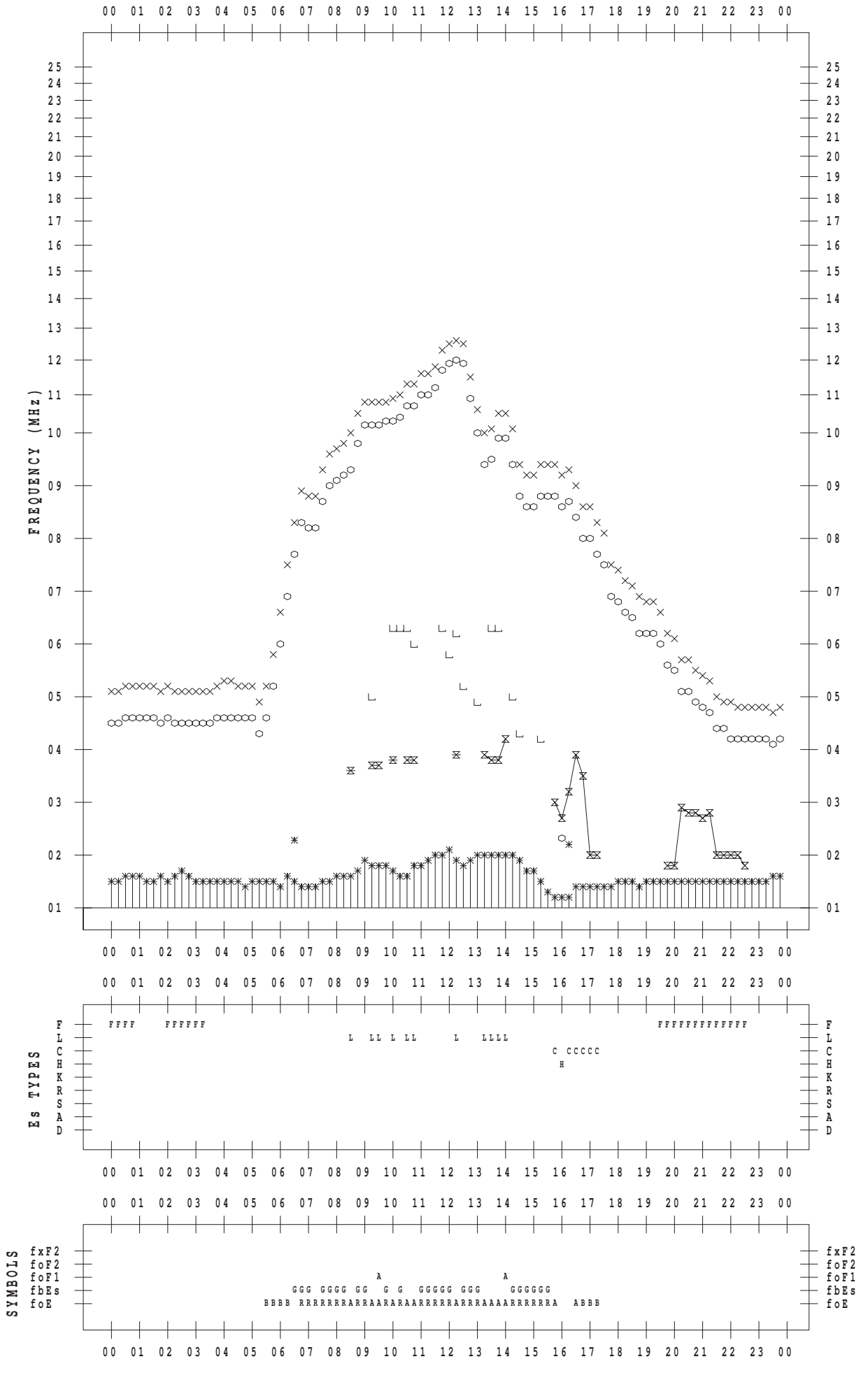
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/16

135 °E MEAN TIME



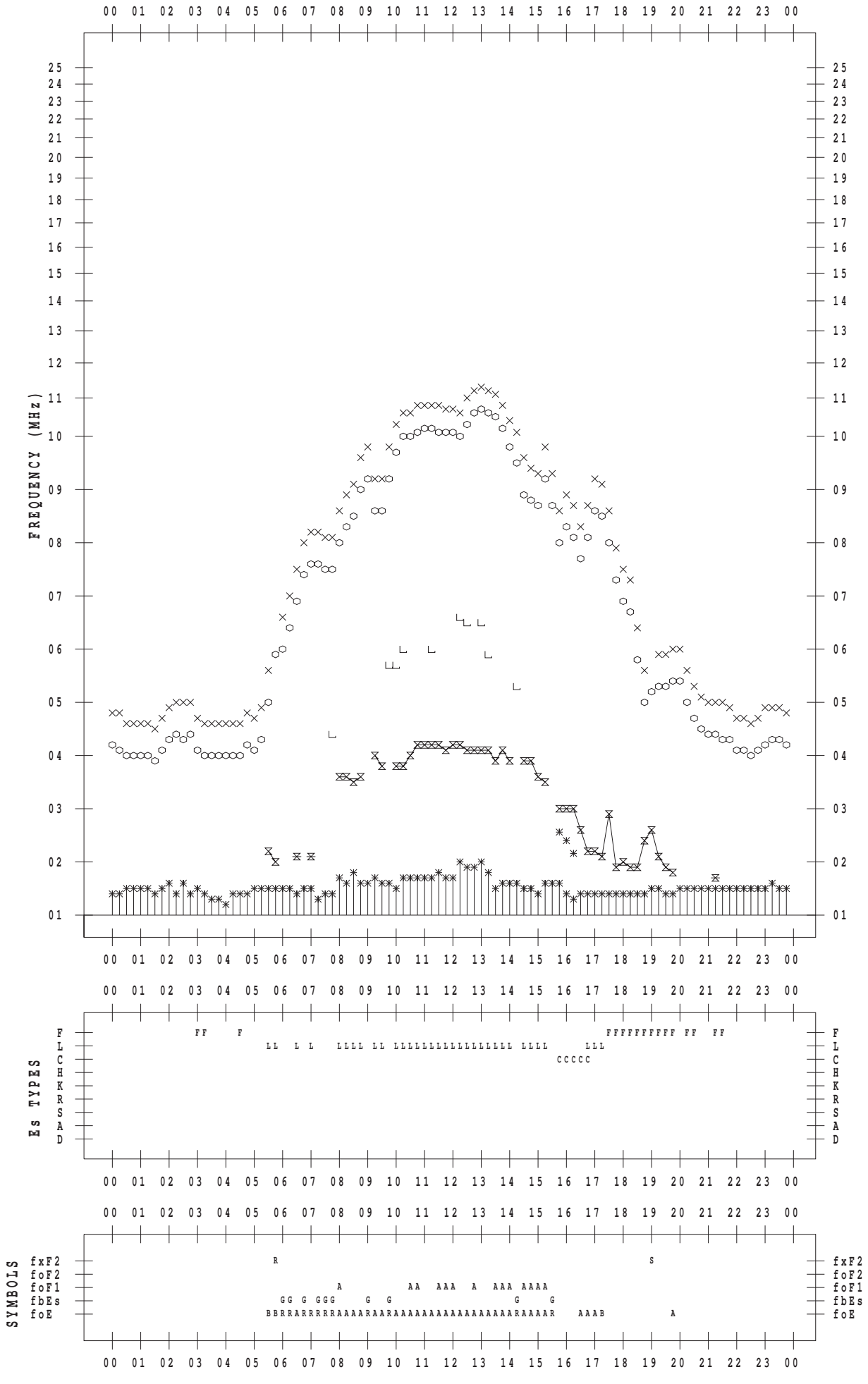
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/17

135 °E MEAN TIME



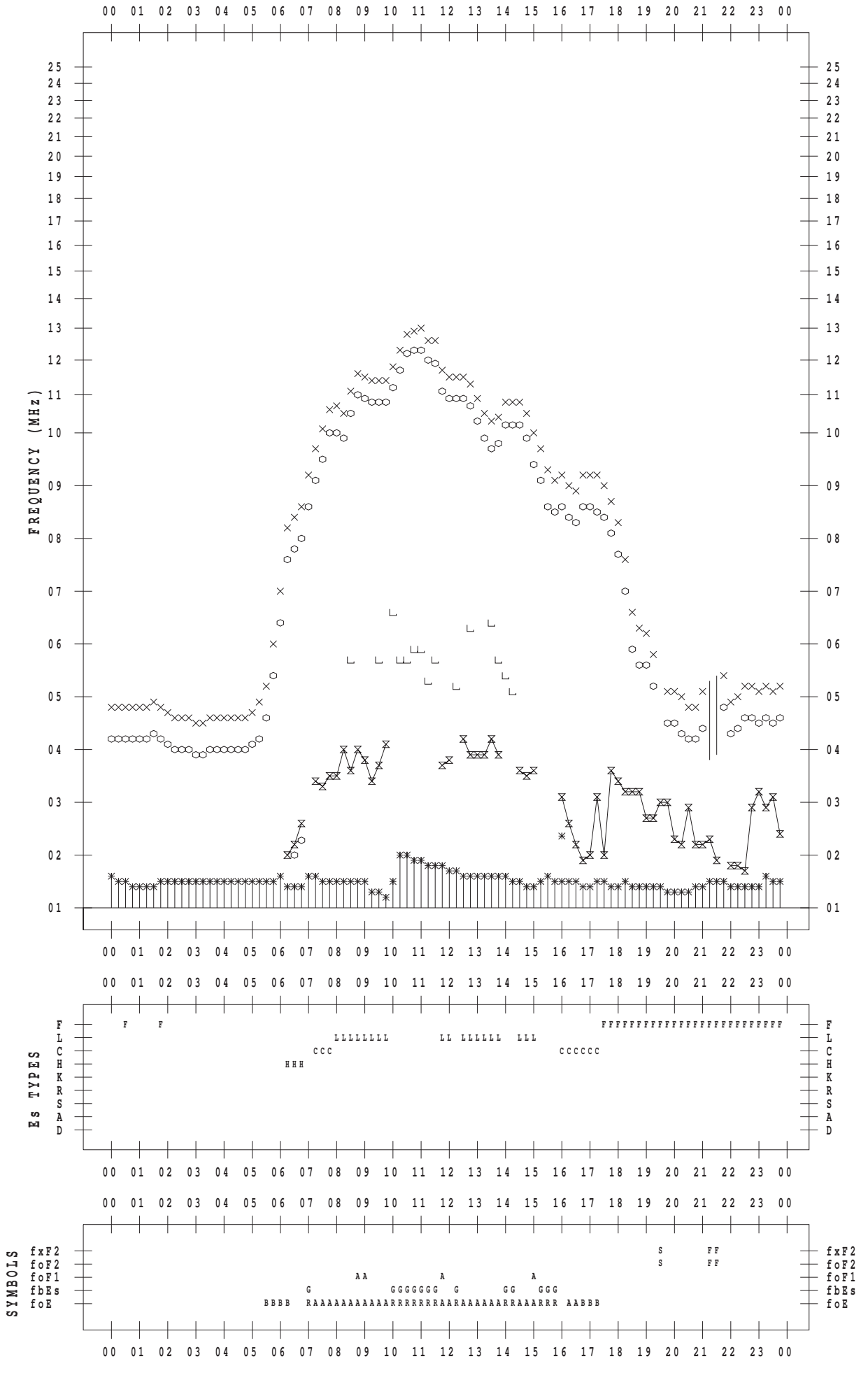
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/18

135 °E MEAN TIME



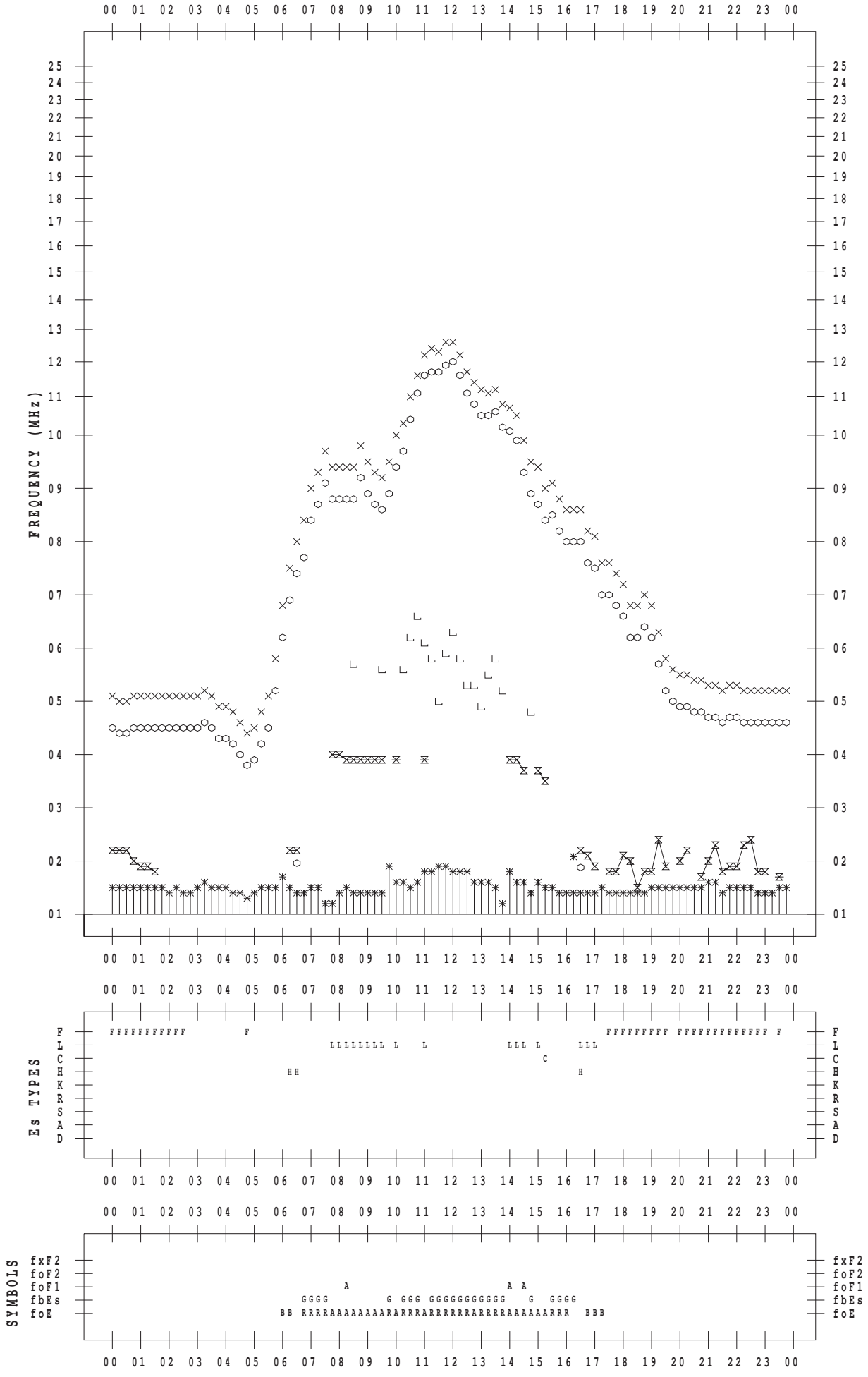
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/19

135 °E MEAN TIME



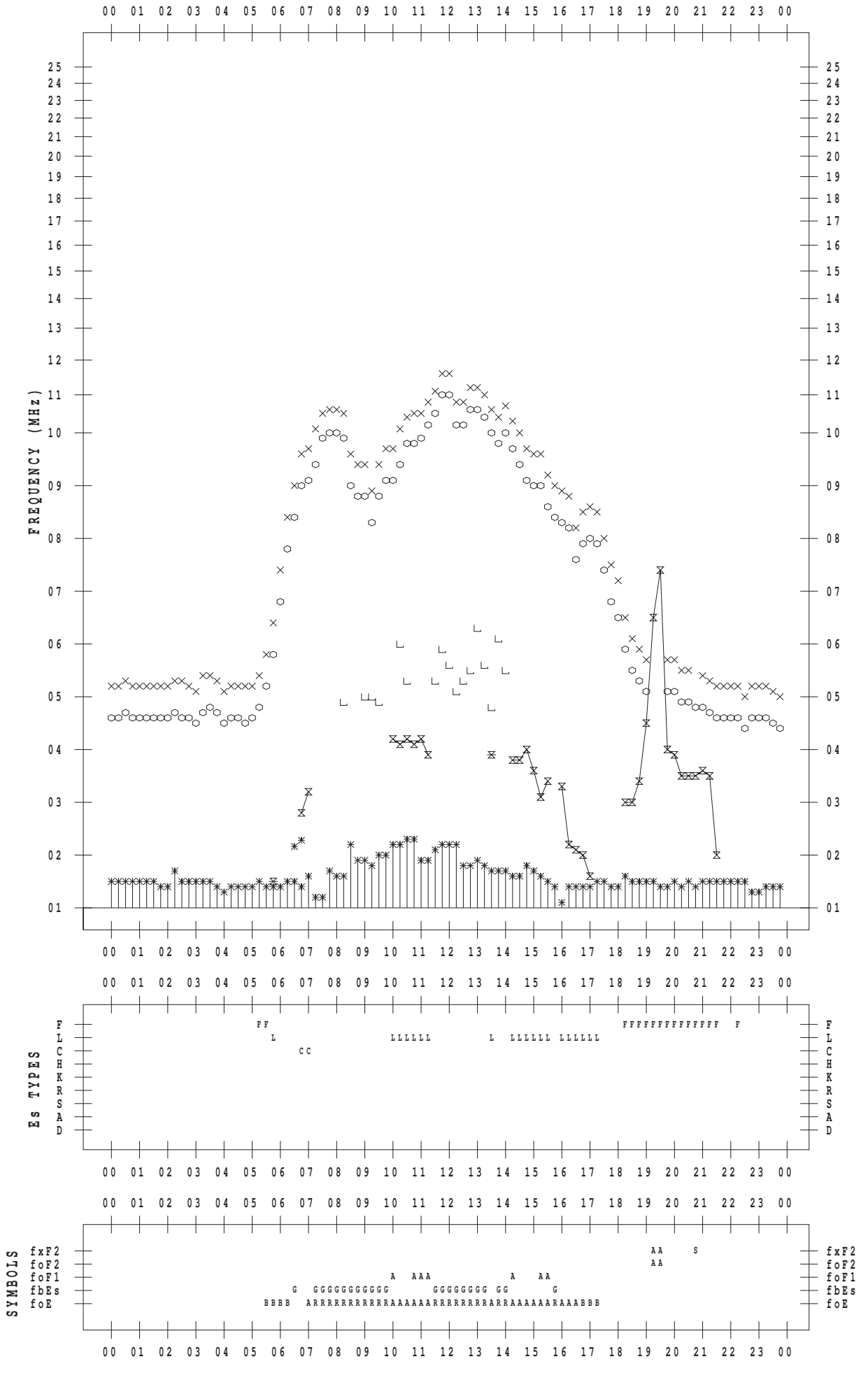
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/20

135 °E MEAN TIME



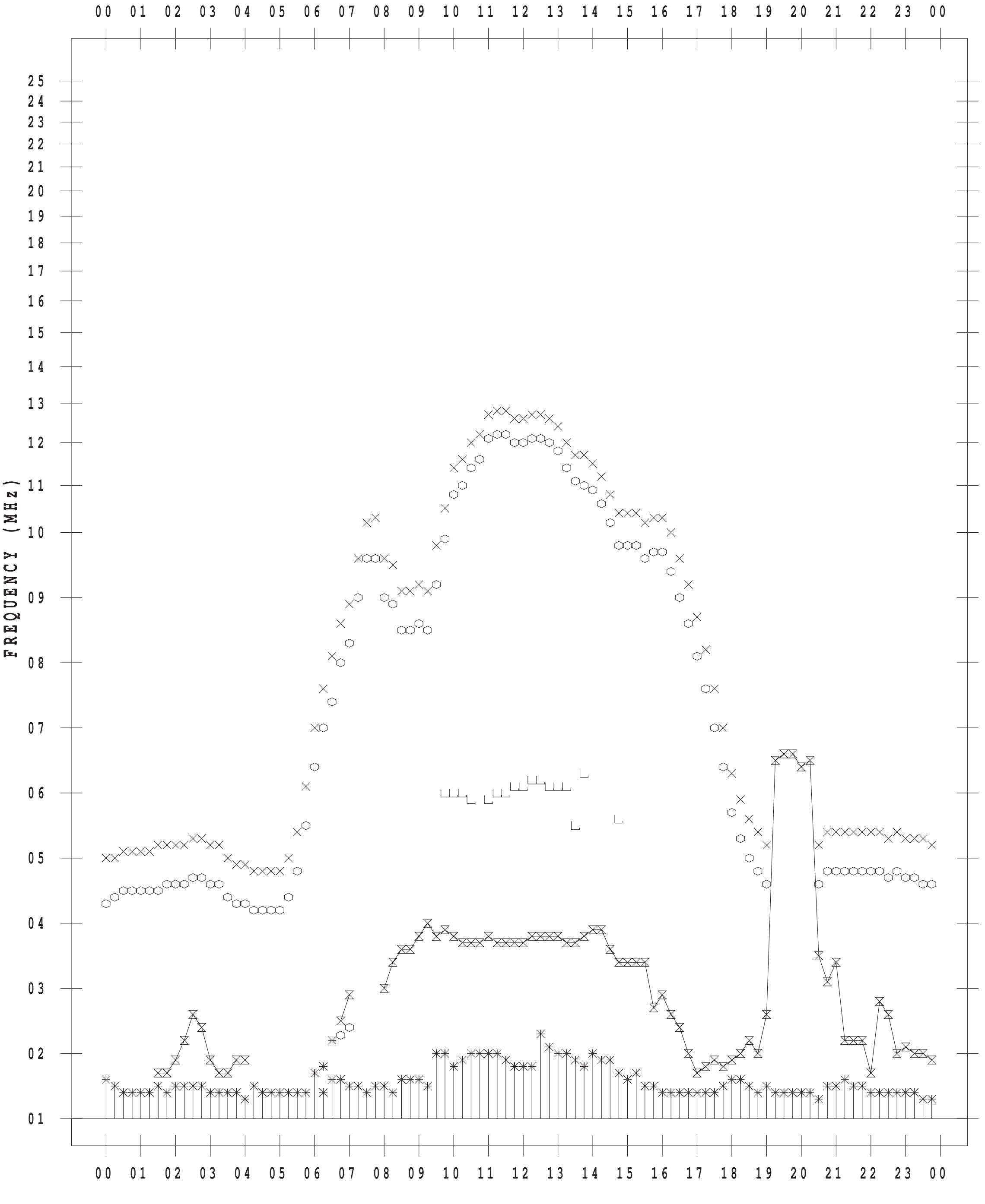
f-PLOT DATA

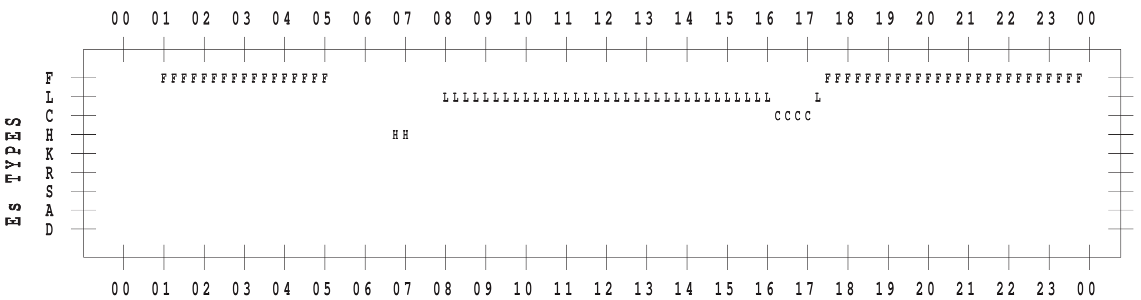
SCALER : I.NISHIMUTA

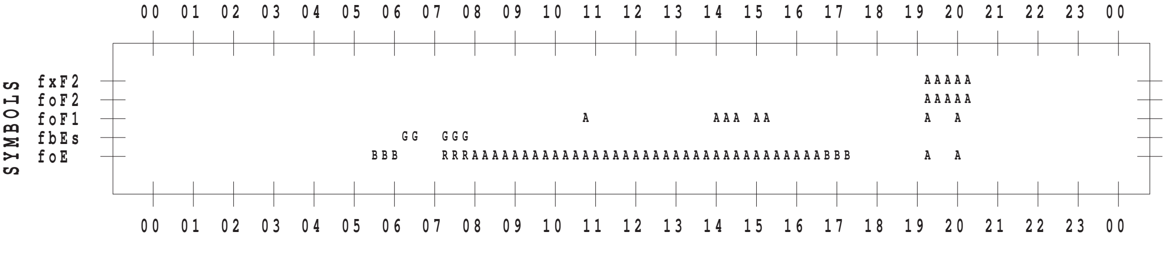
STATION : Kokubunji

DATE : 2013/10/21

135 °E MEAN TIME





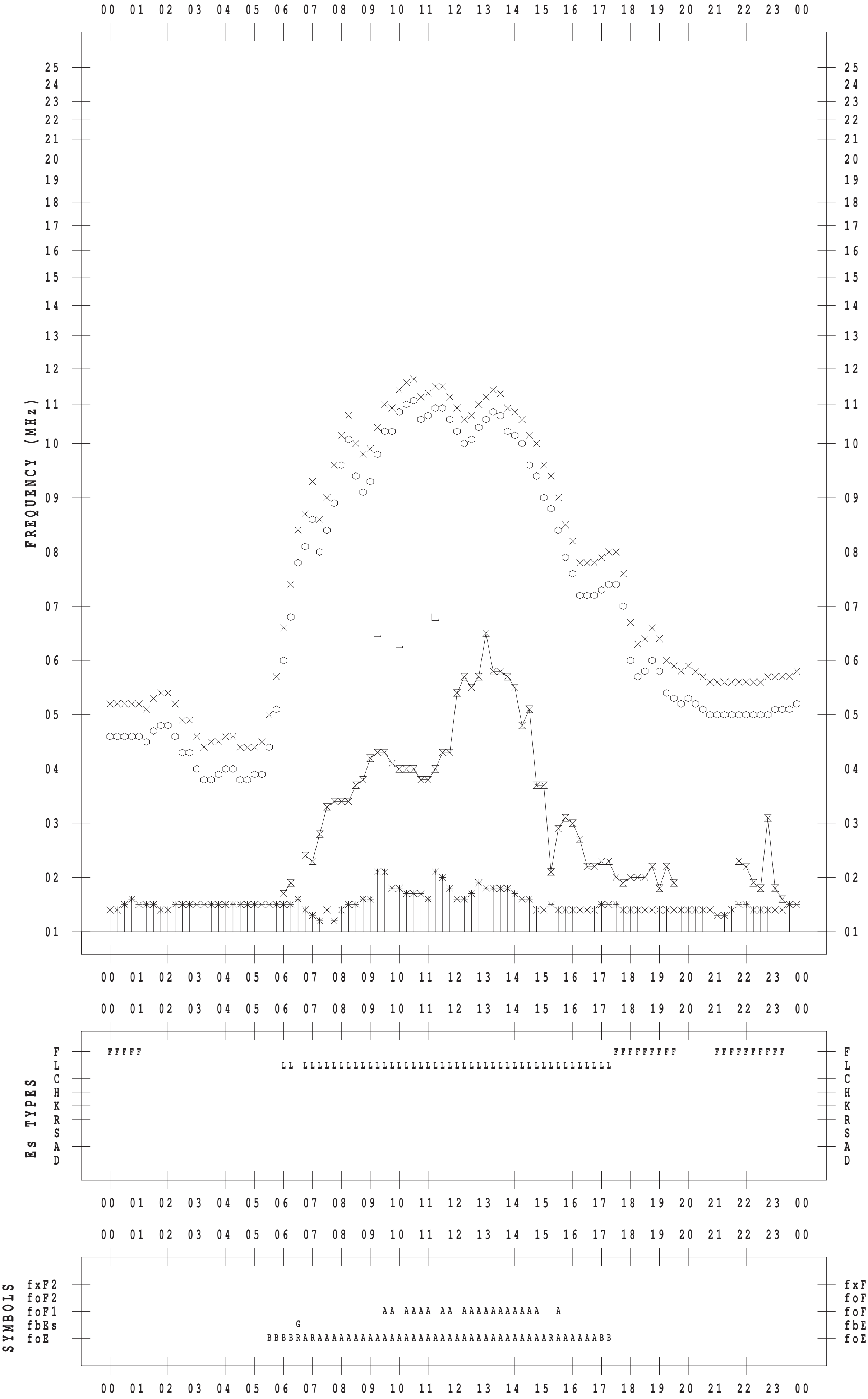


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2013/10/22

135 °E MEAN TIME



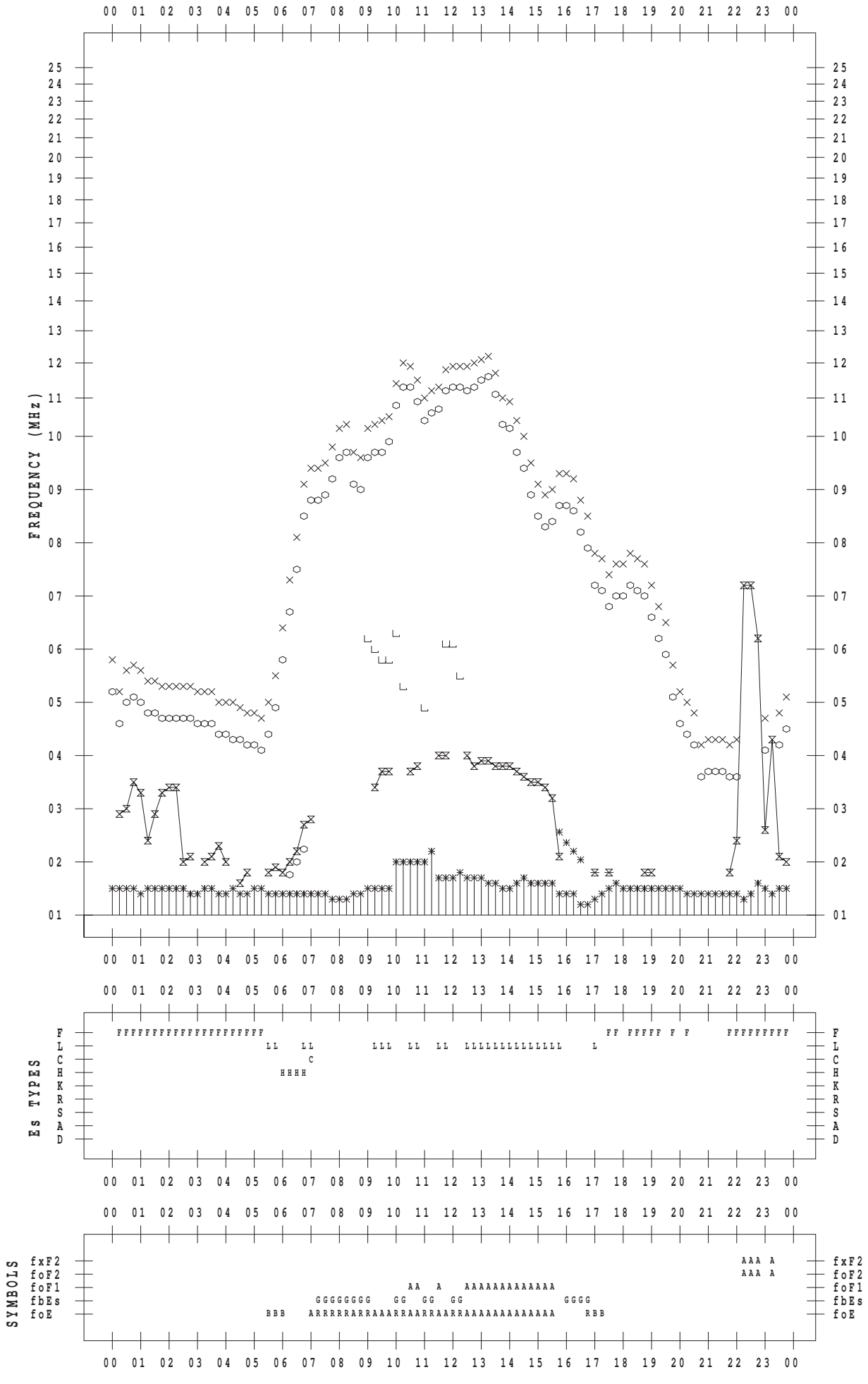
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/23

135 °E MEAN TIME



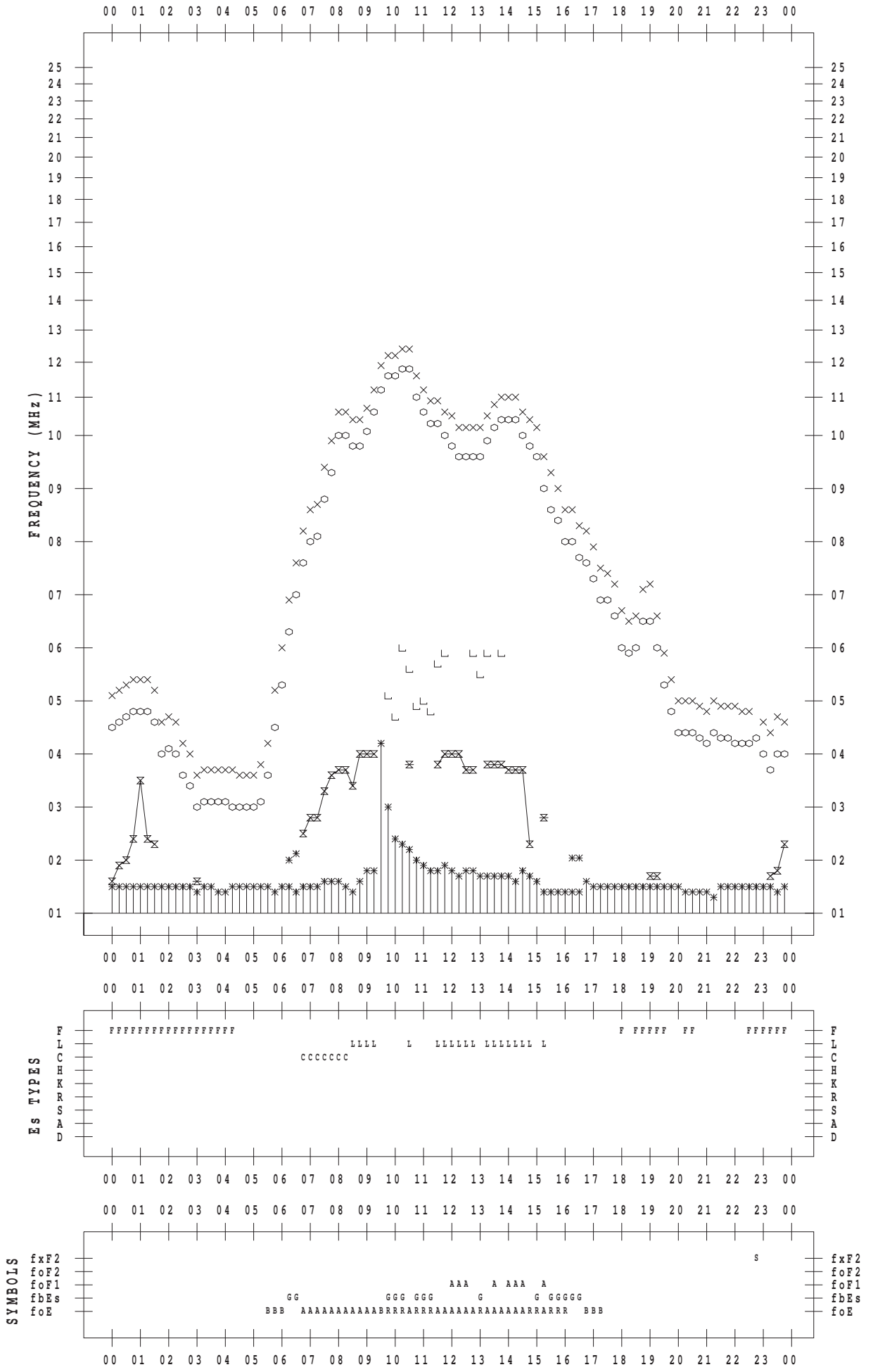
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/24

135 °E MEAN TIME



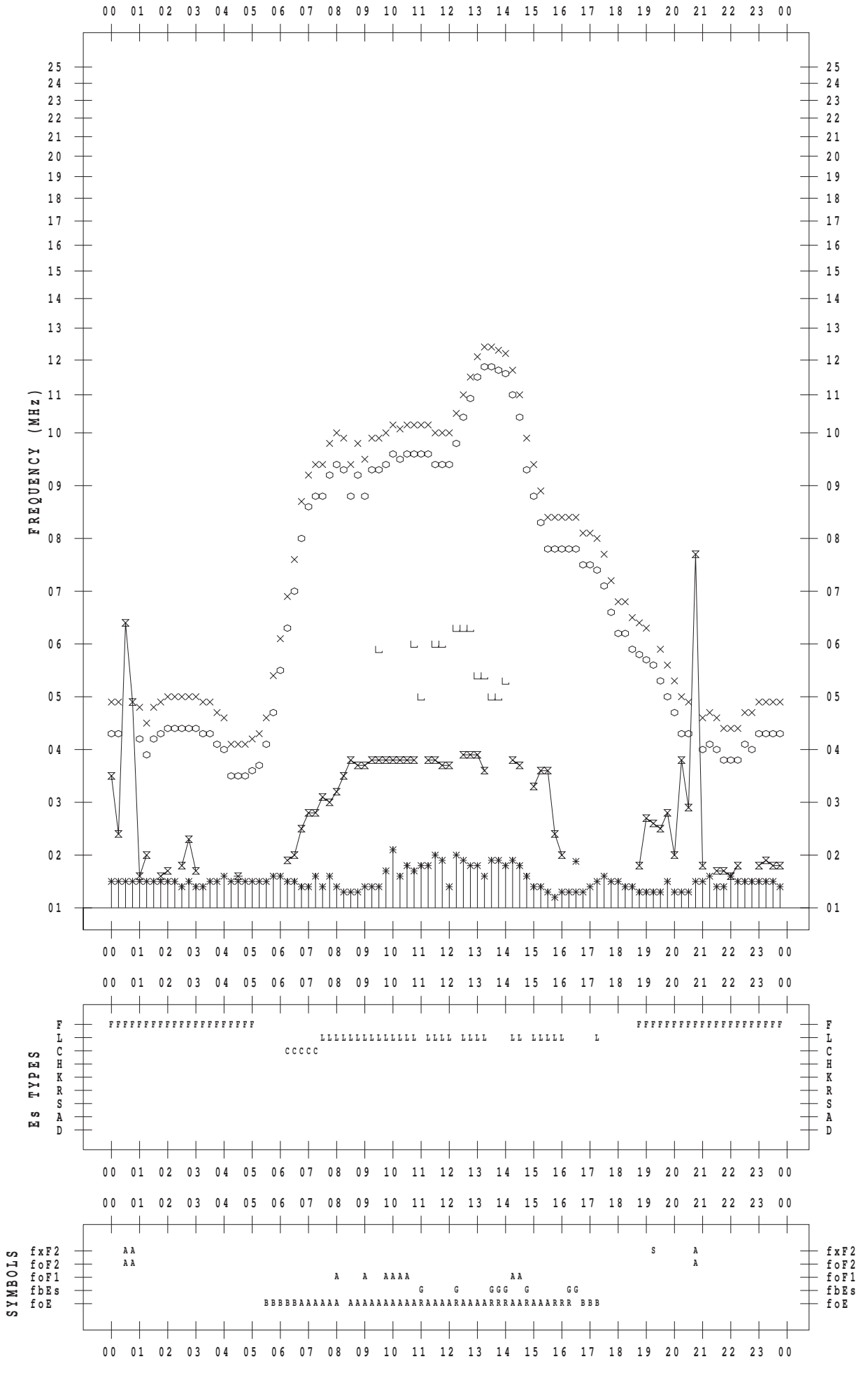
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/25

135 °E MEAN TIME



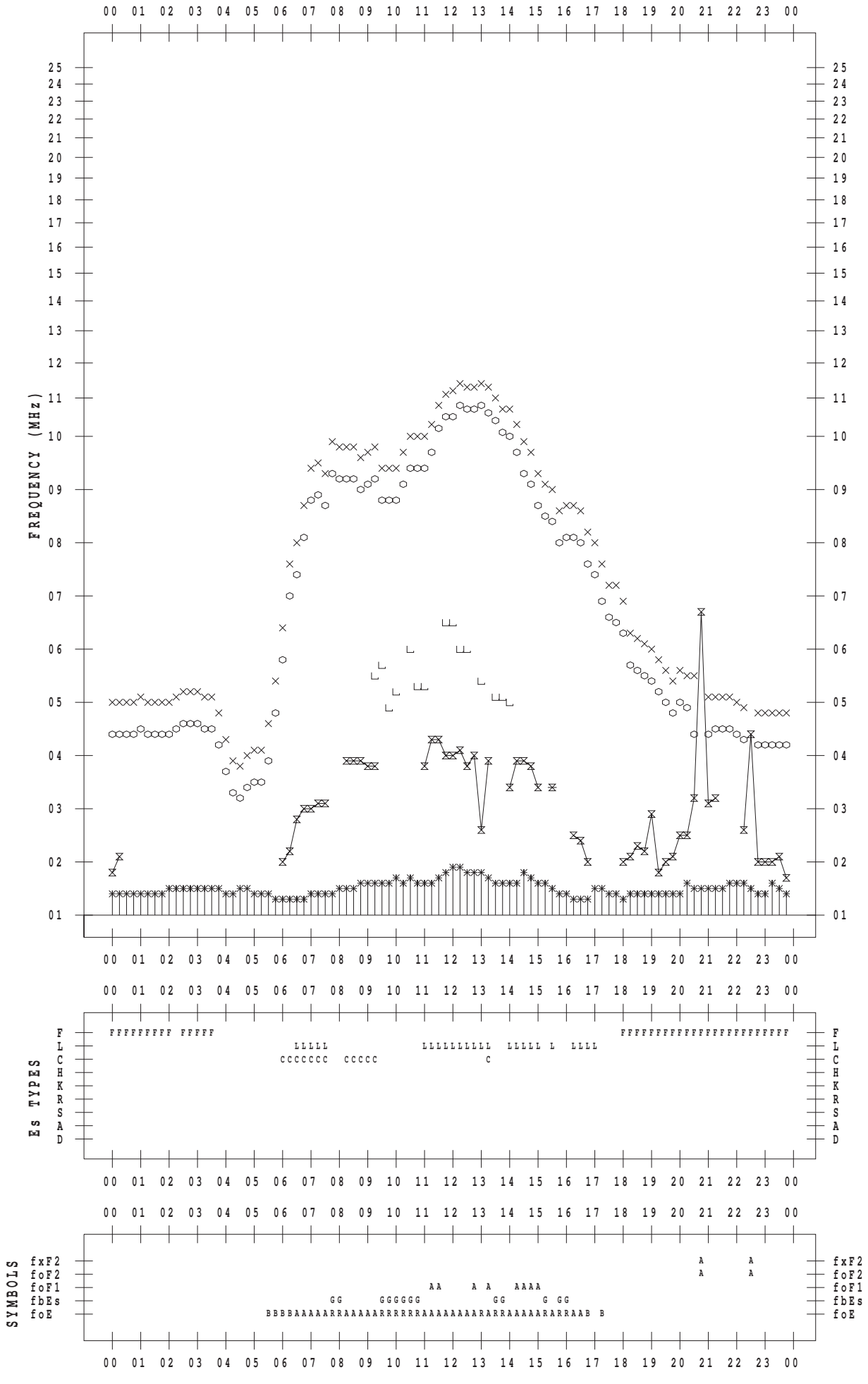
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/26

135 °E MEAN TIME



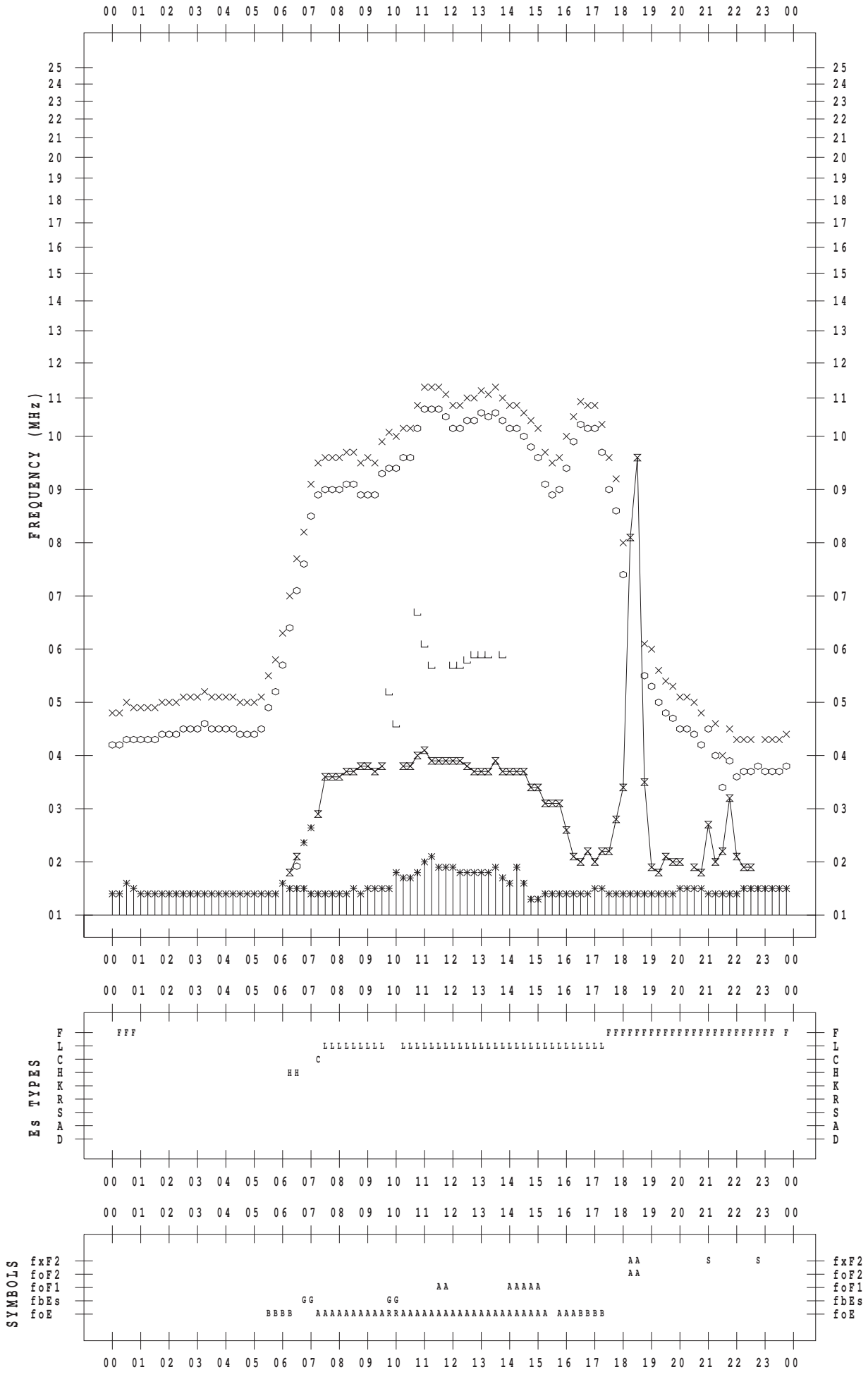
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/27

135 °E MEAN TIME



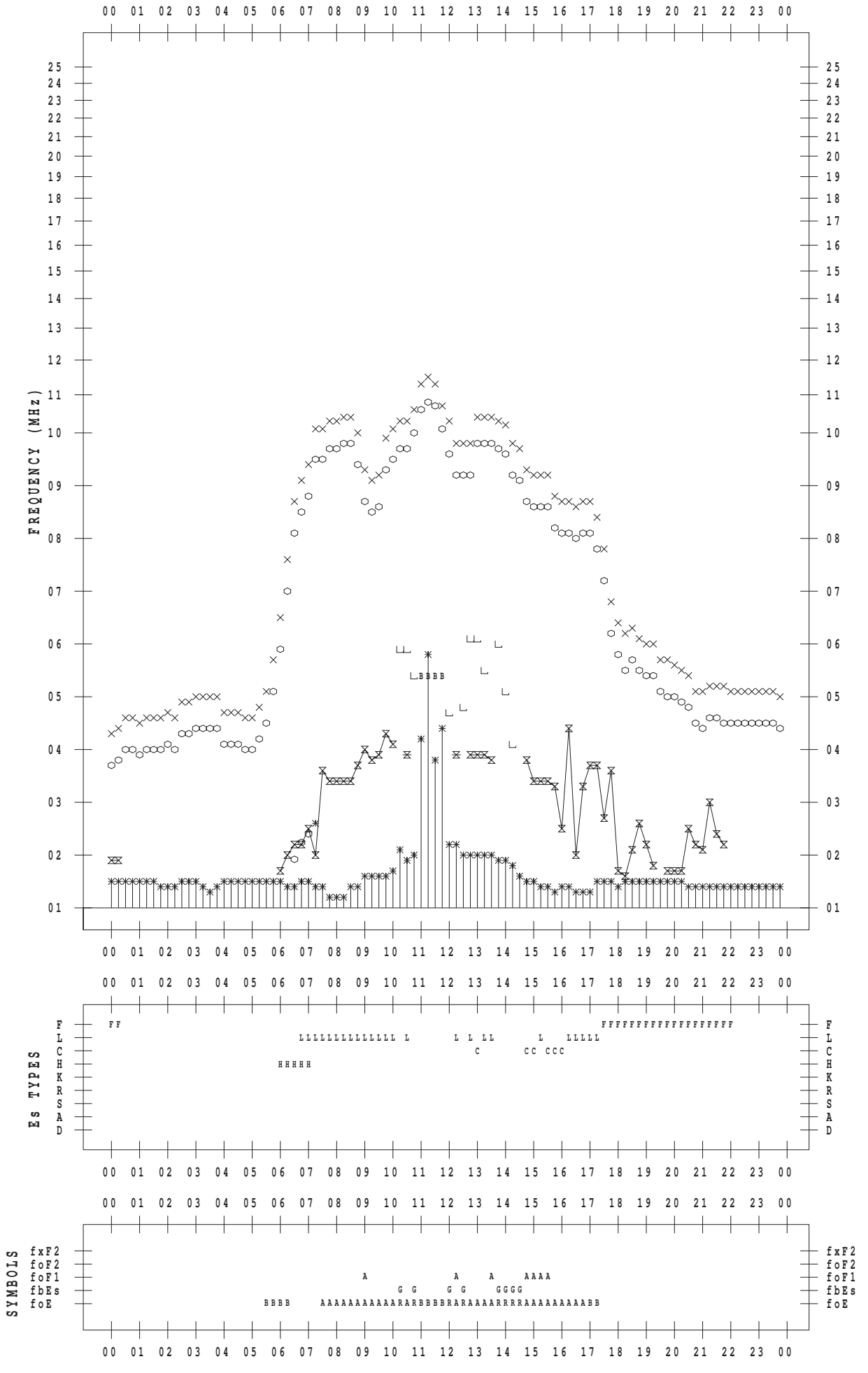
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/28

135 °E MEAN TIME



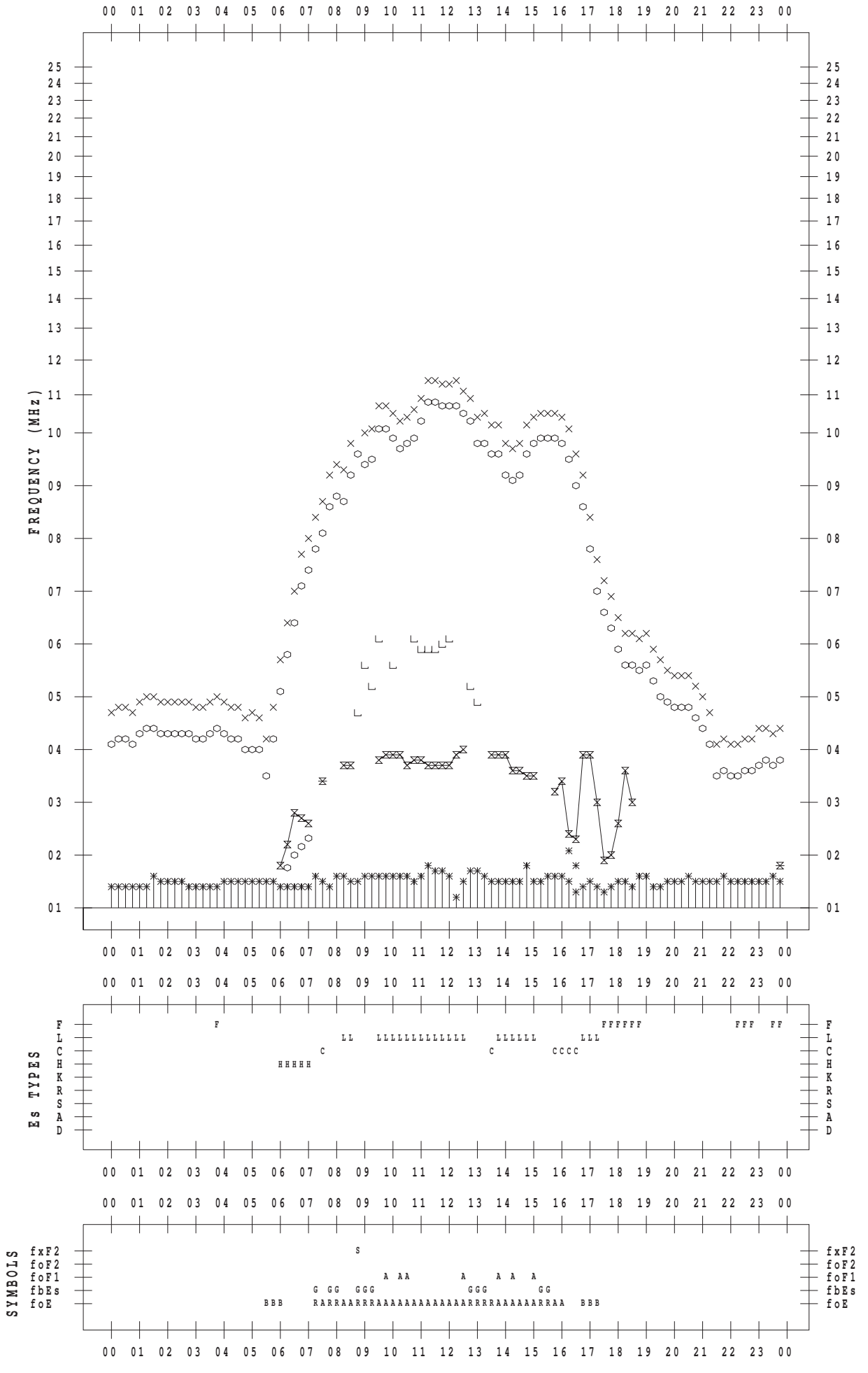
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/29

135 °E MEAN TIME



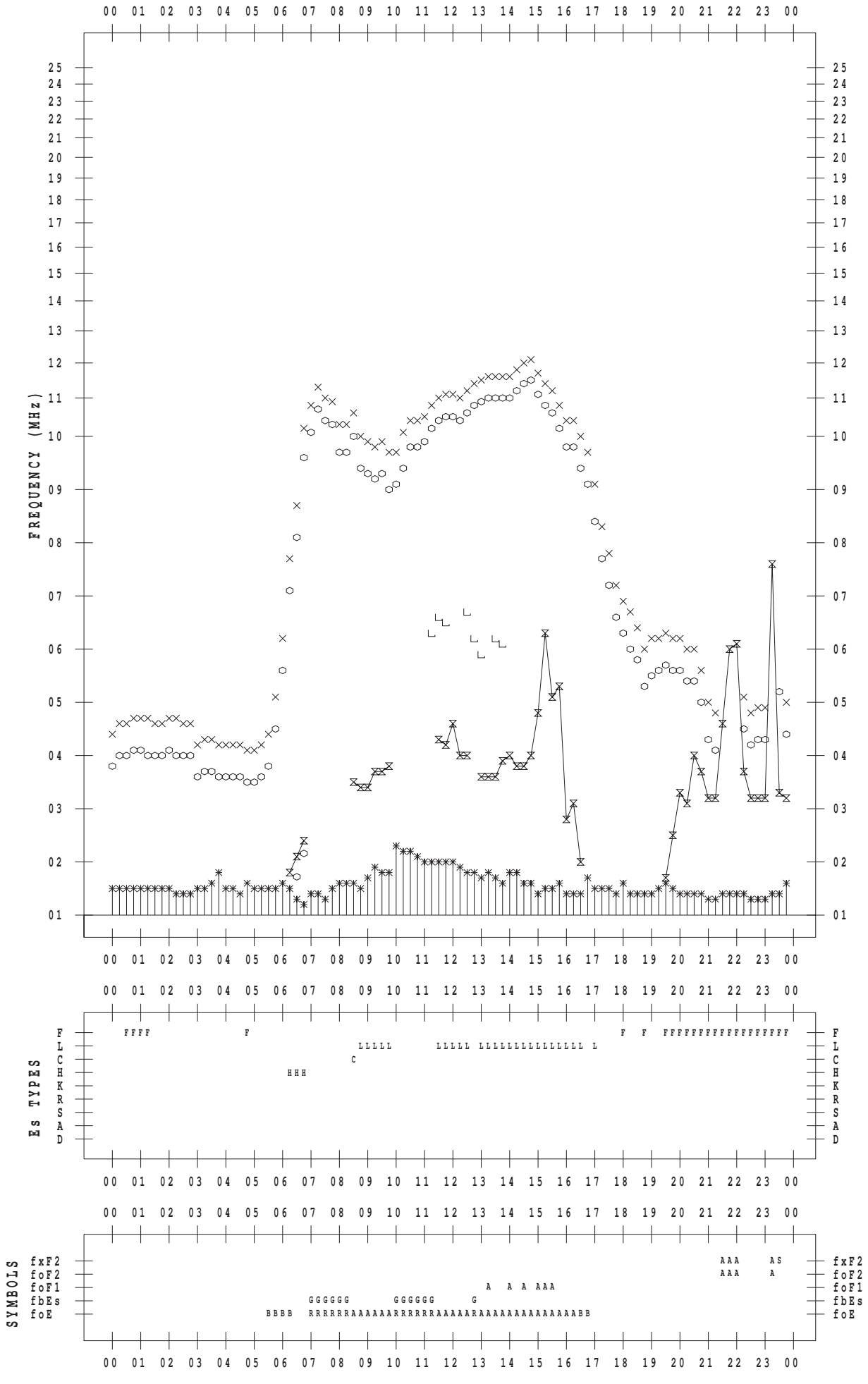
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/30

135 °E MEAN TIME



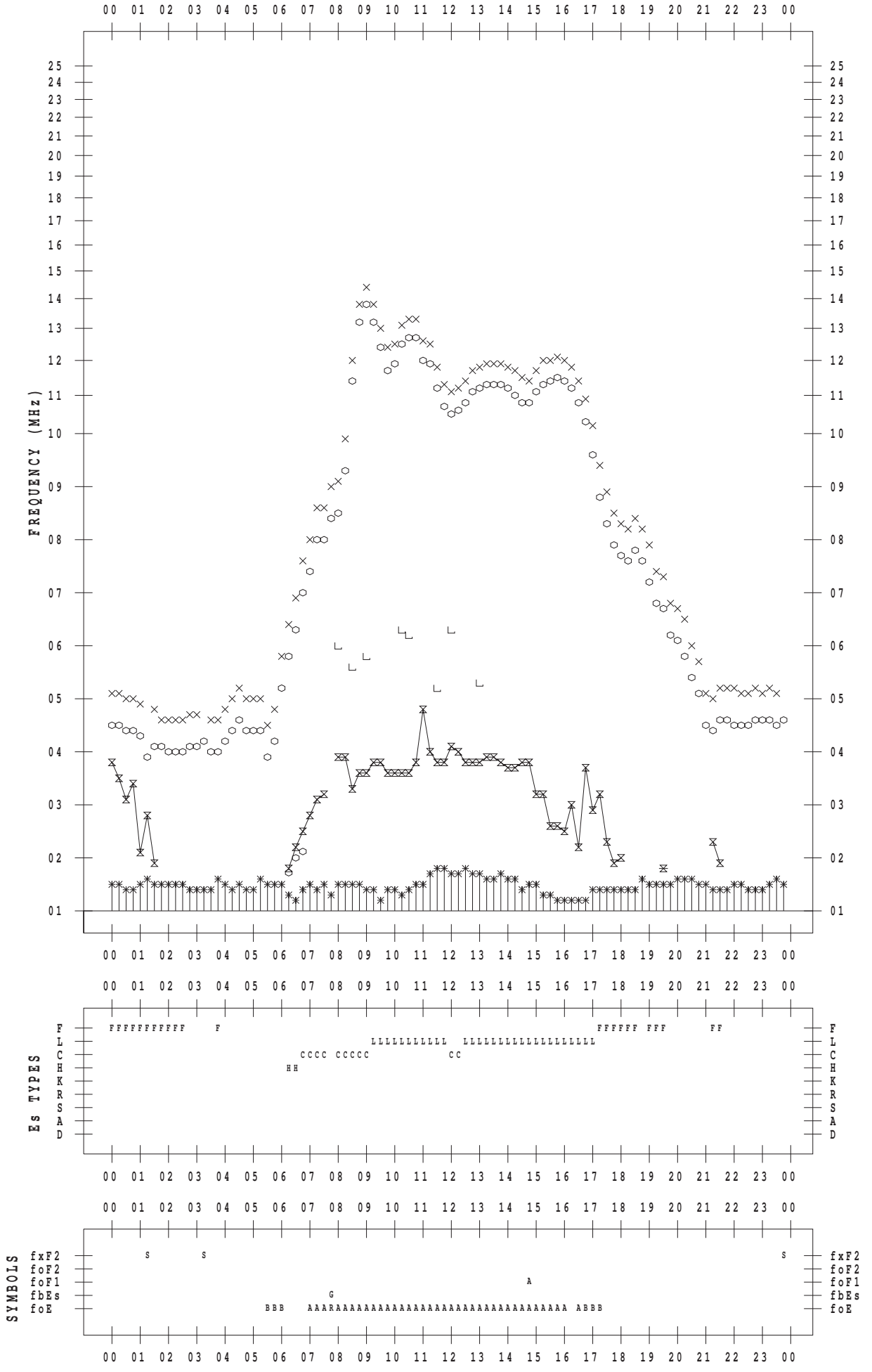
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2013/10/31

135 °E MEAN TIME



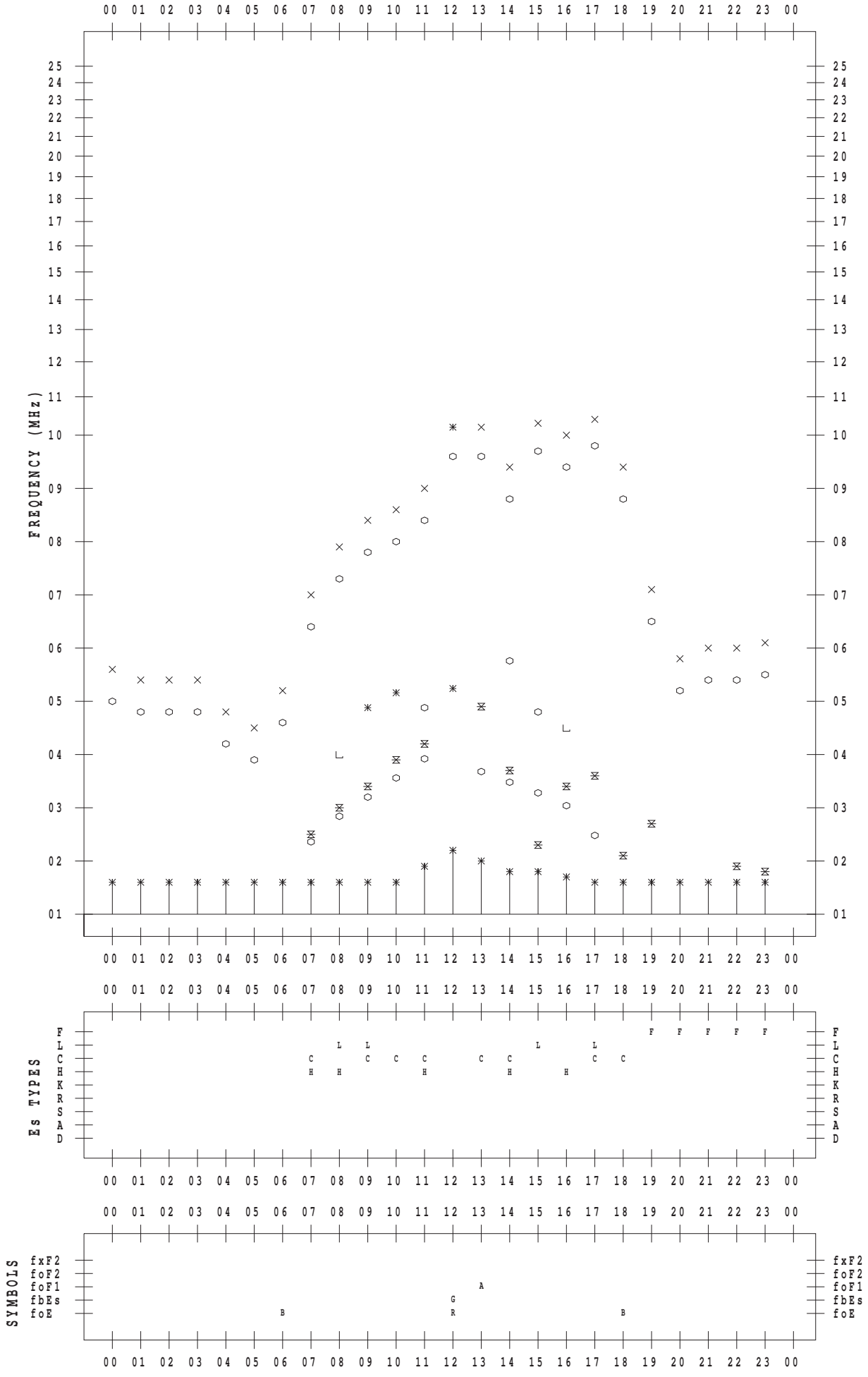
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 1

135 °E MEAN TIME



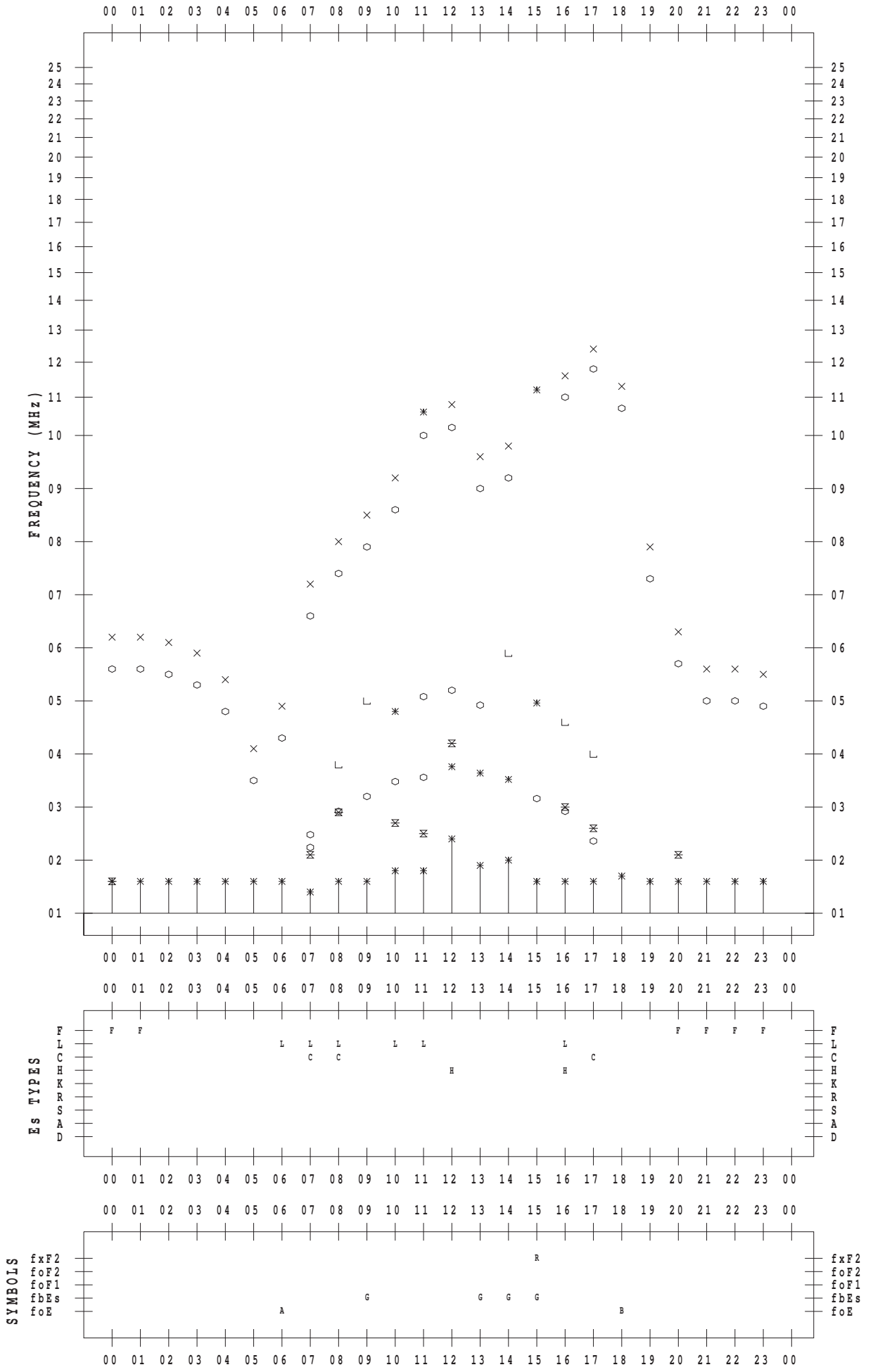
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 2

135 °E MEAN TIME



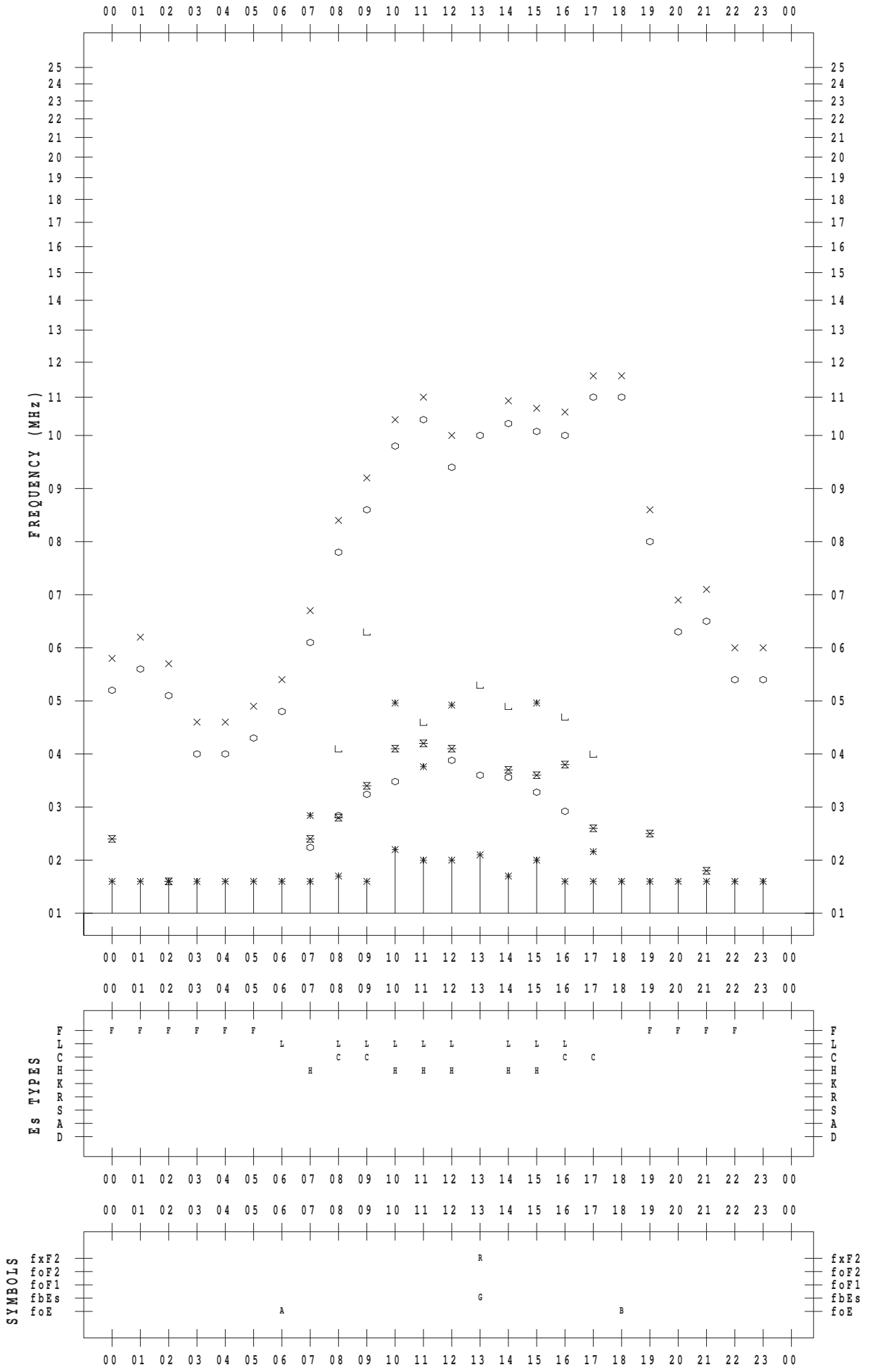
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 3

135 °E MEAN TIME



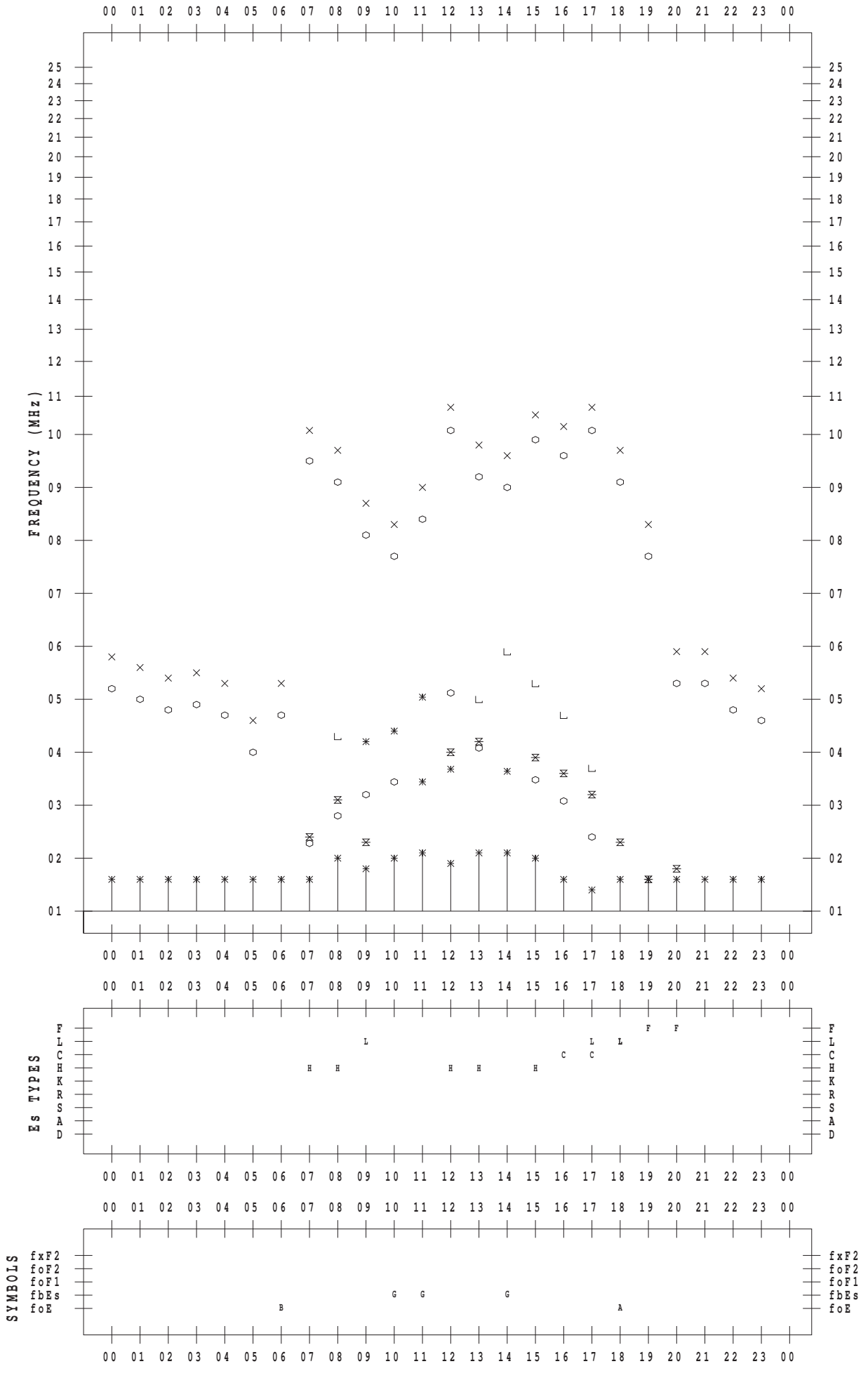
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 4

135 °E MEAN TIME



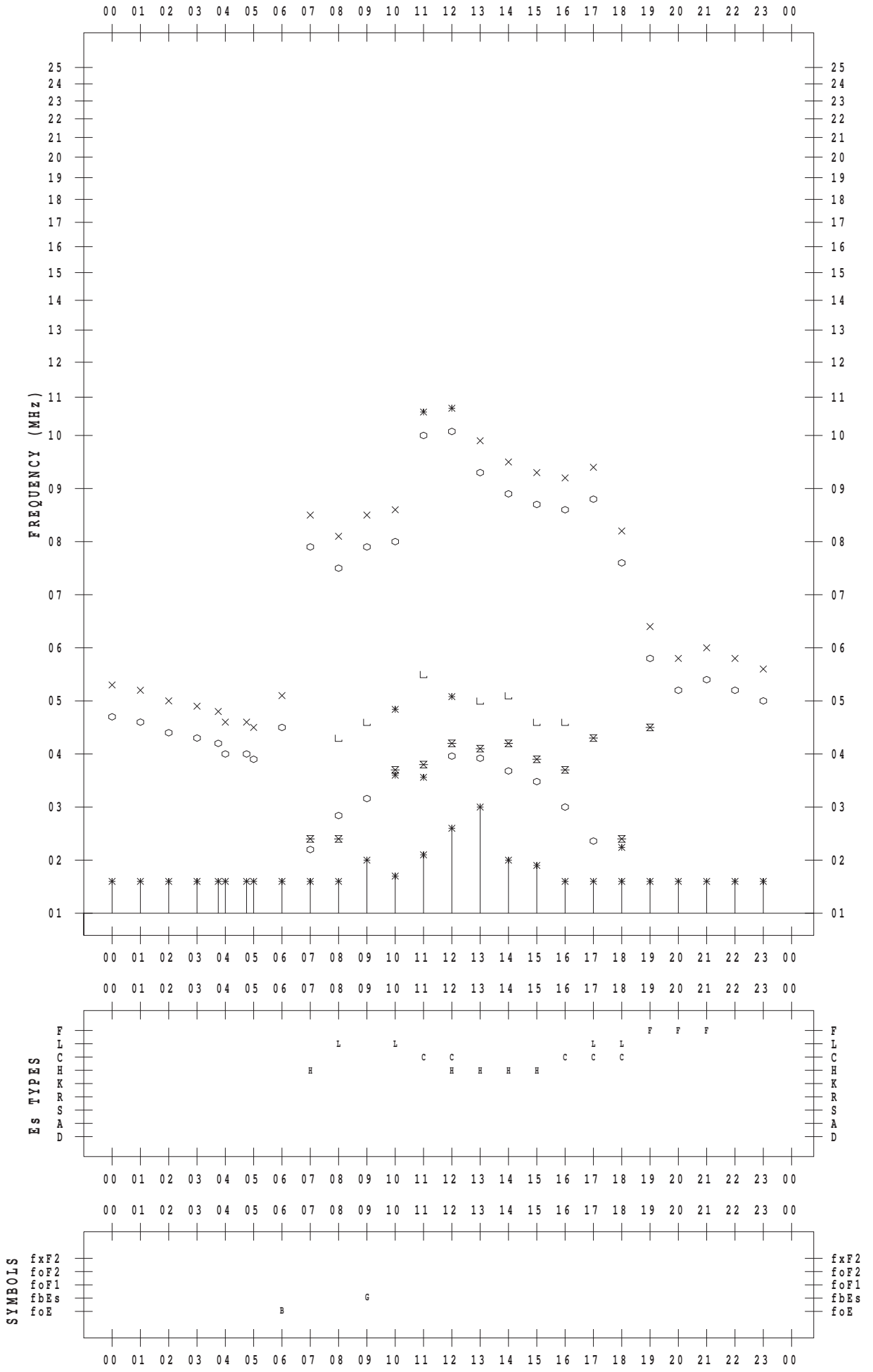
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 5

135 °E MEAN TIME



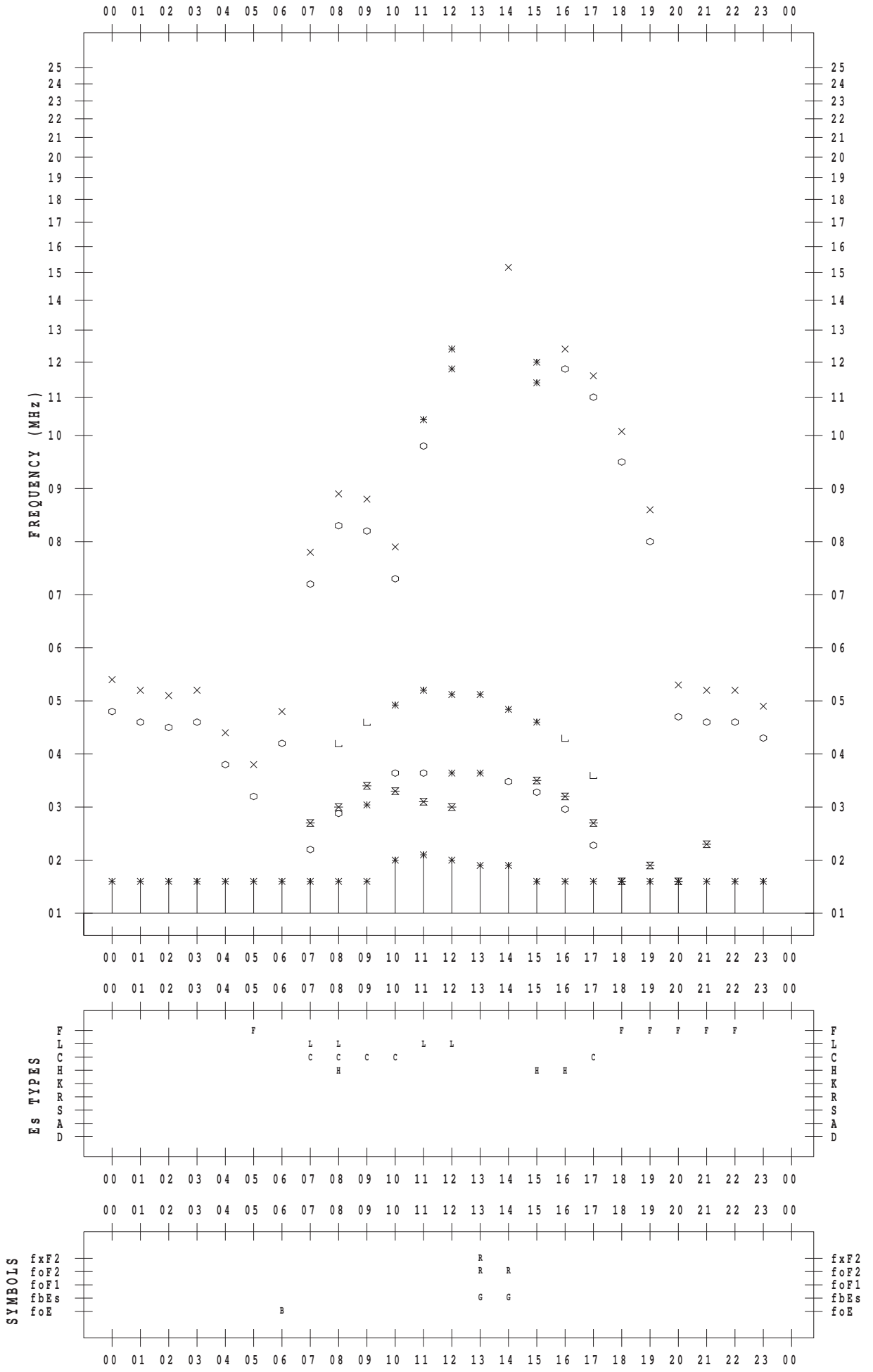
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 6

135 °E MEAN TIME



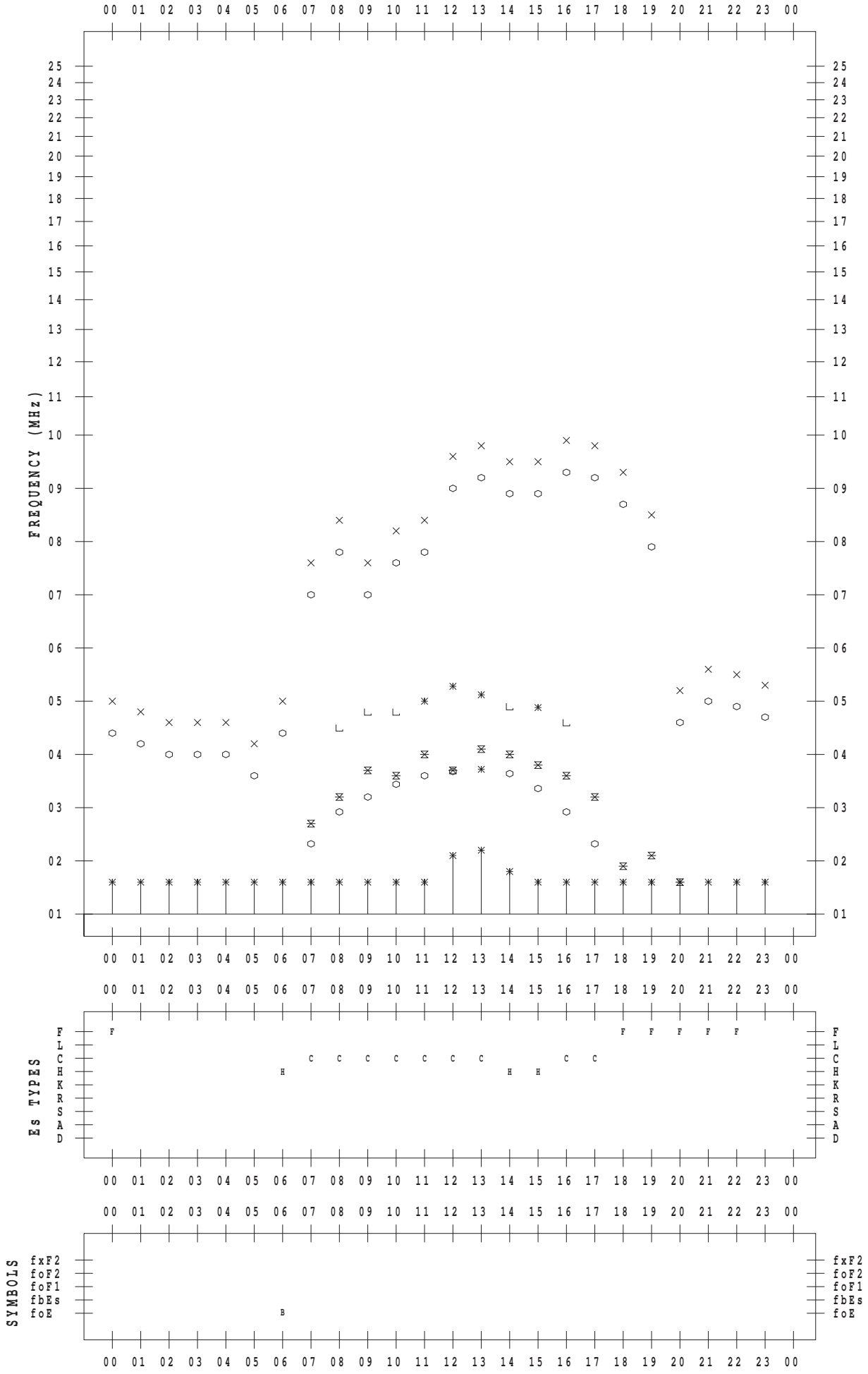
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 7

135 °E MEAN TIME



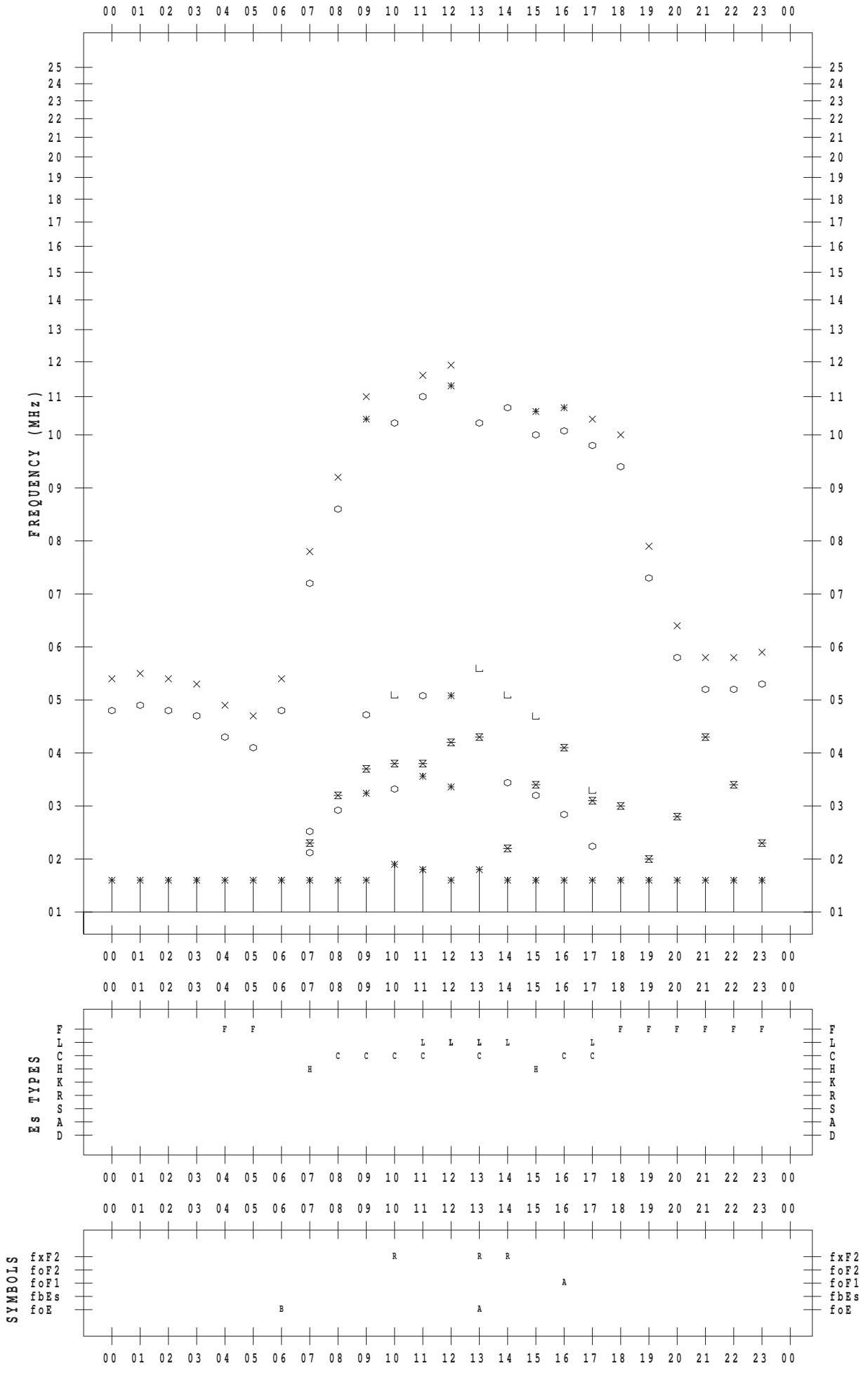
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 8

135 °E MEAN TIME



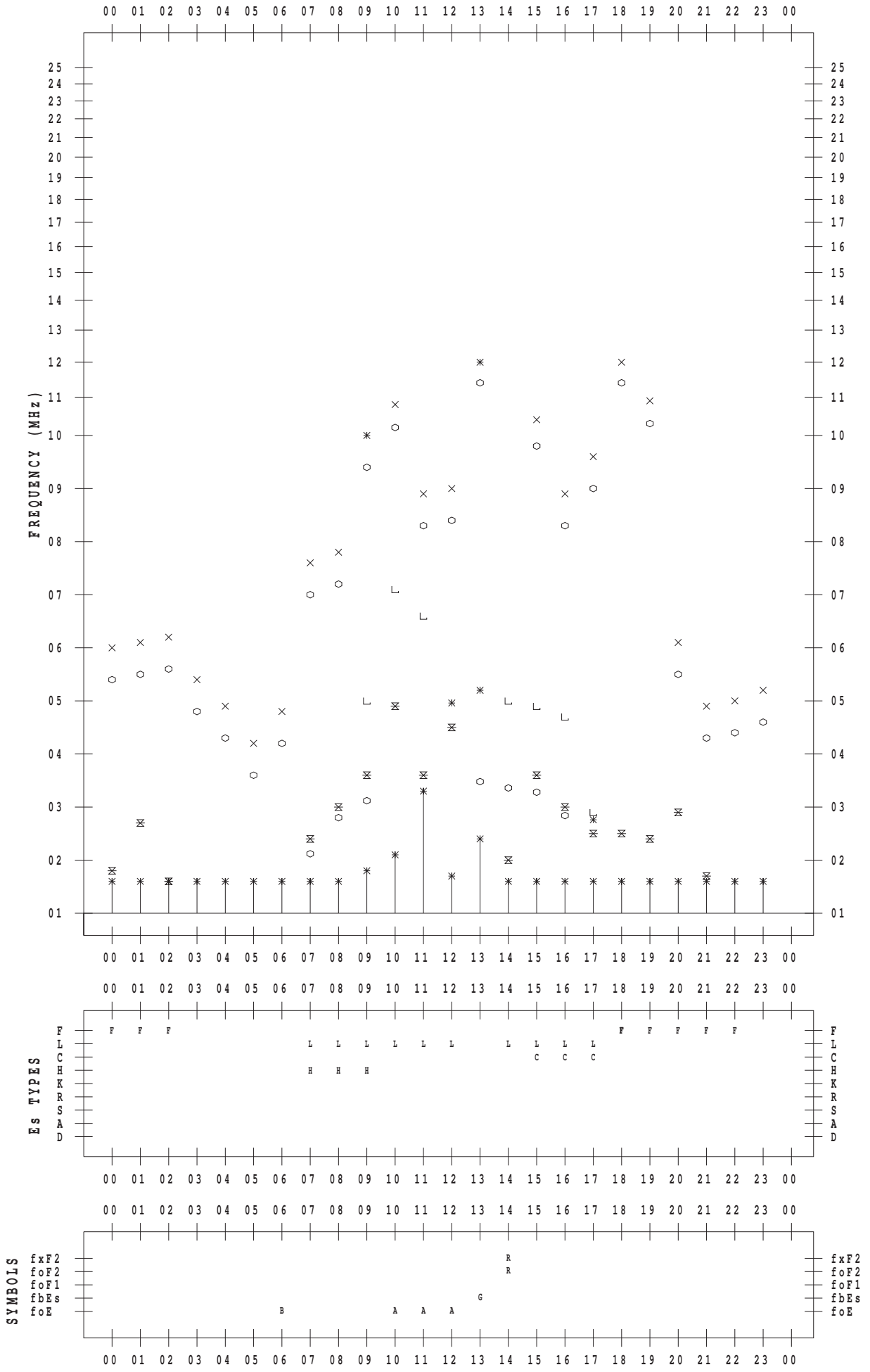
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/ 9

135 °E MEAN TIME



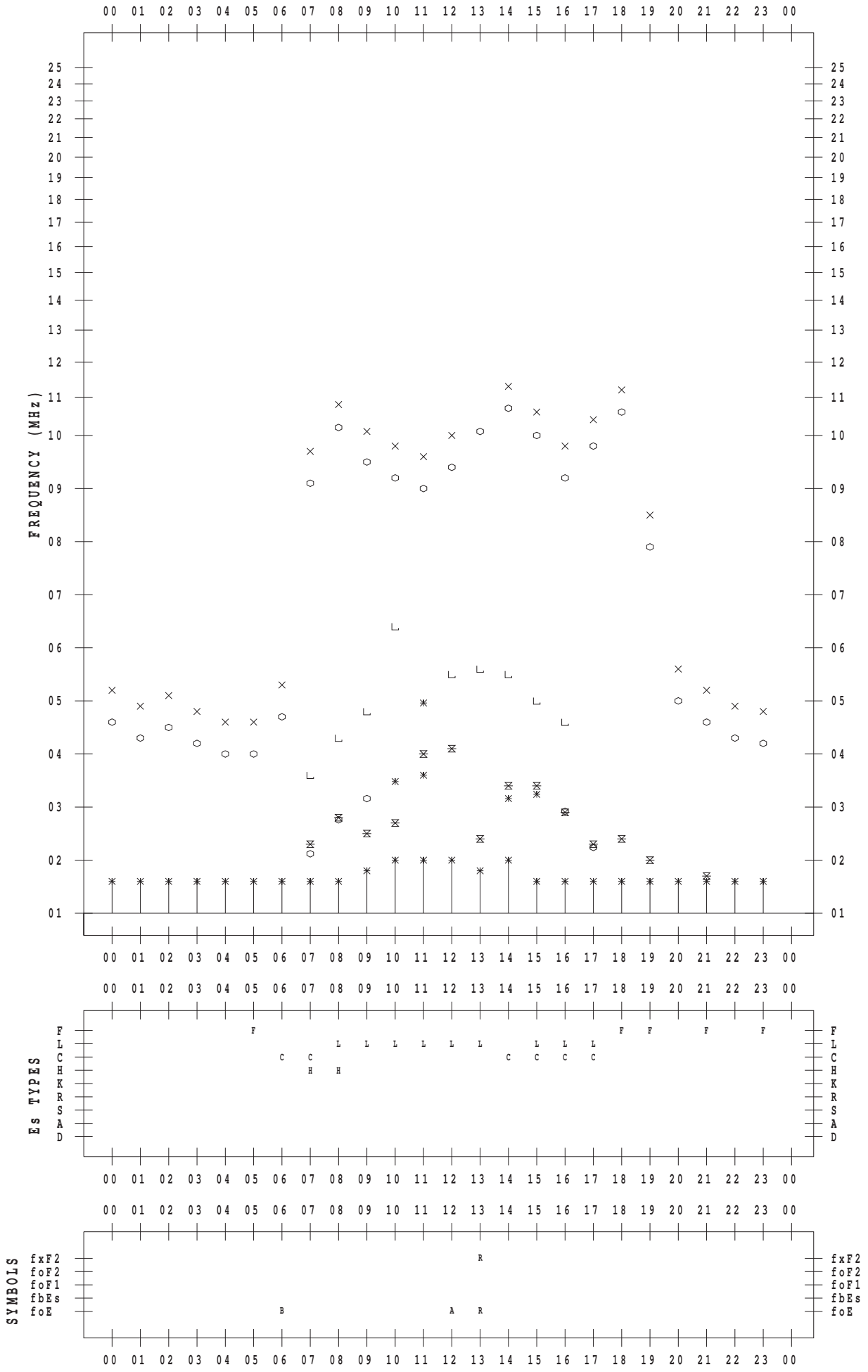
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/10

135 °E MEAN TIME



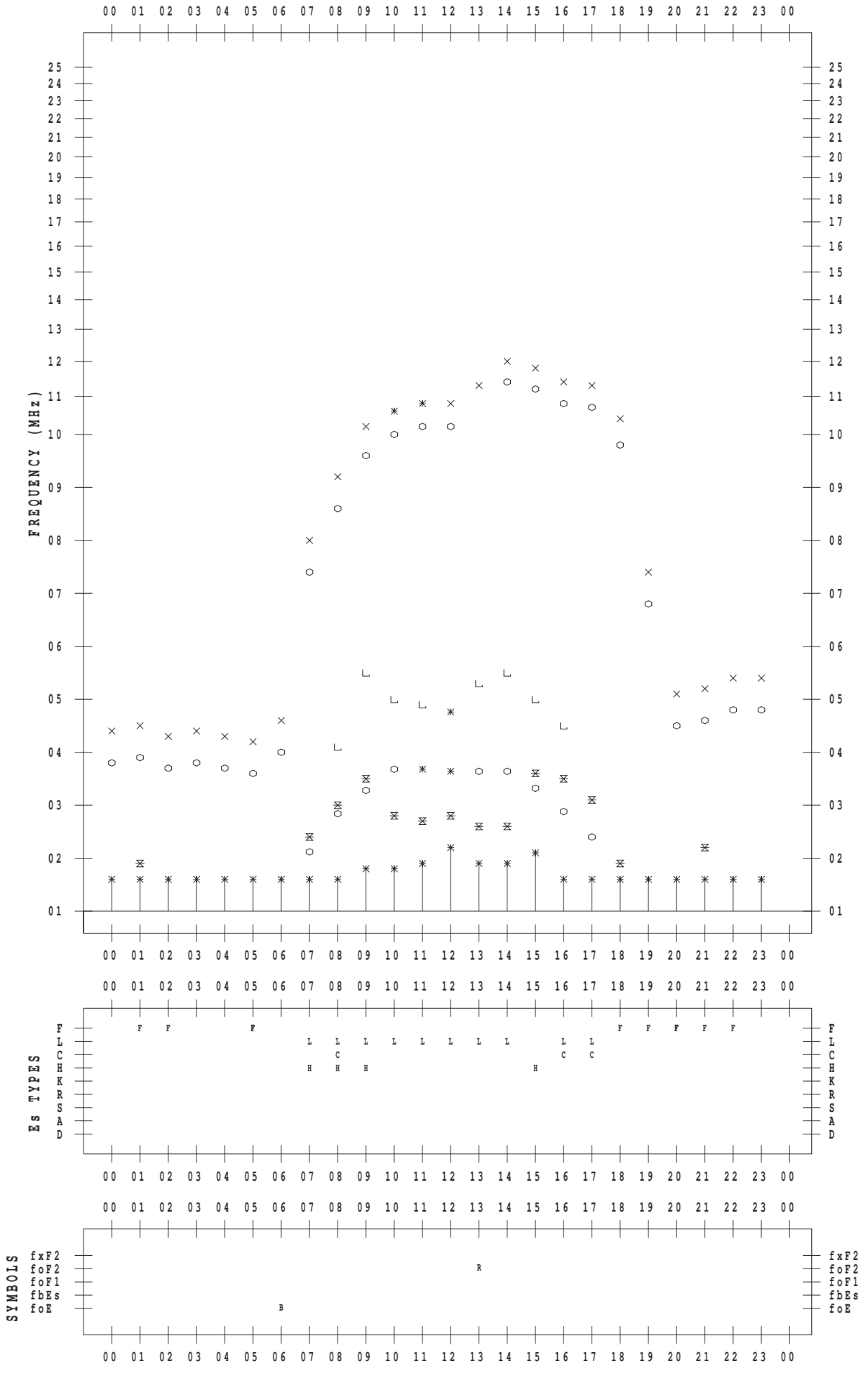
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/11

135 °E MEAN TIME



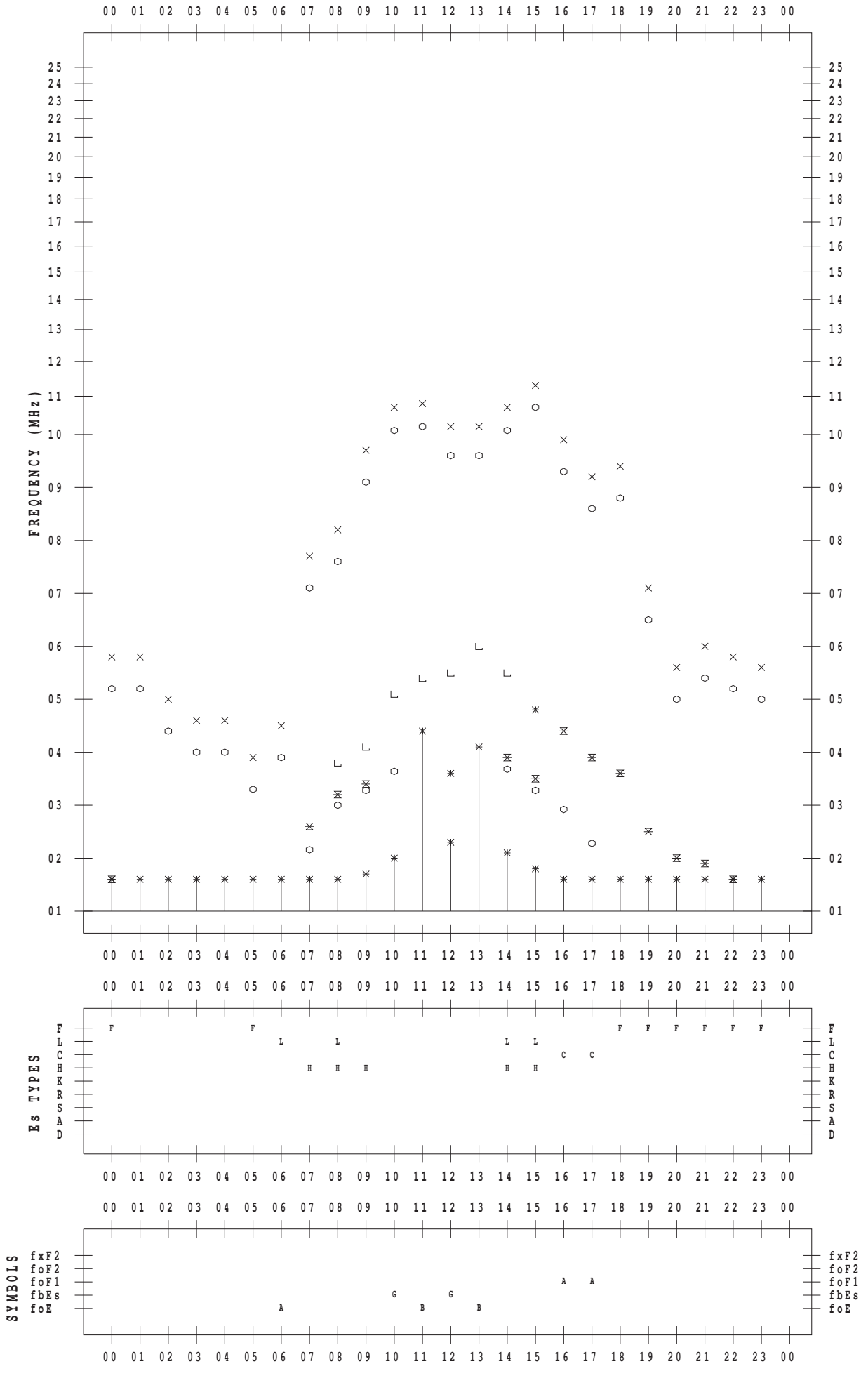
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/12

135 °E MEAN TIME



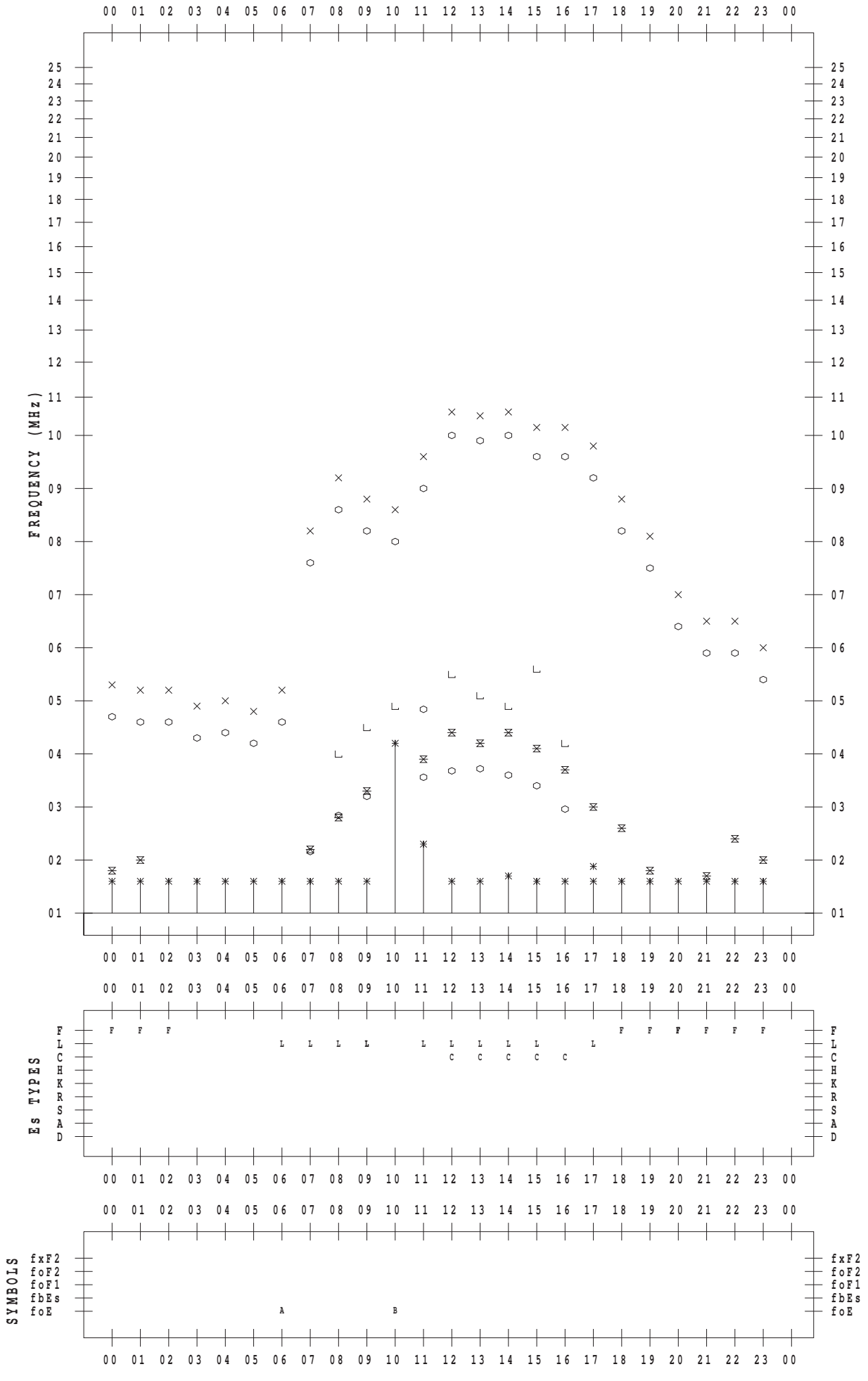
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/13

135 °E MEAN TIME



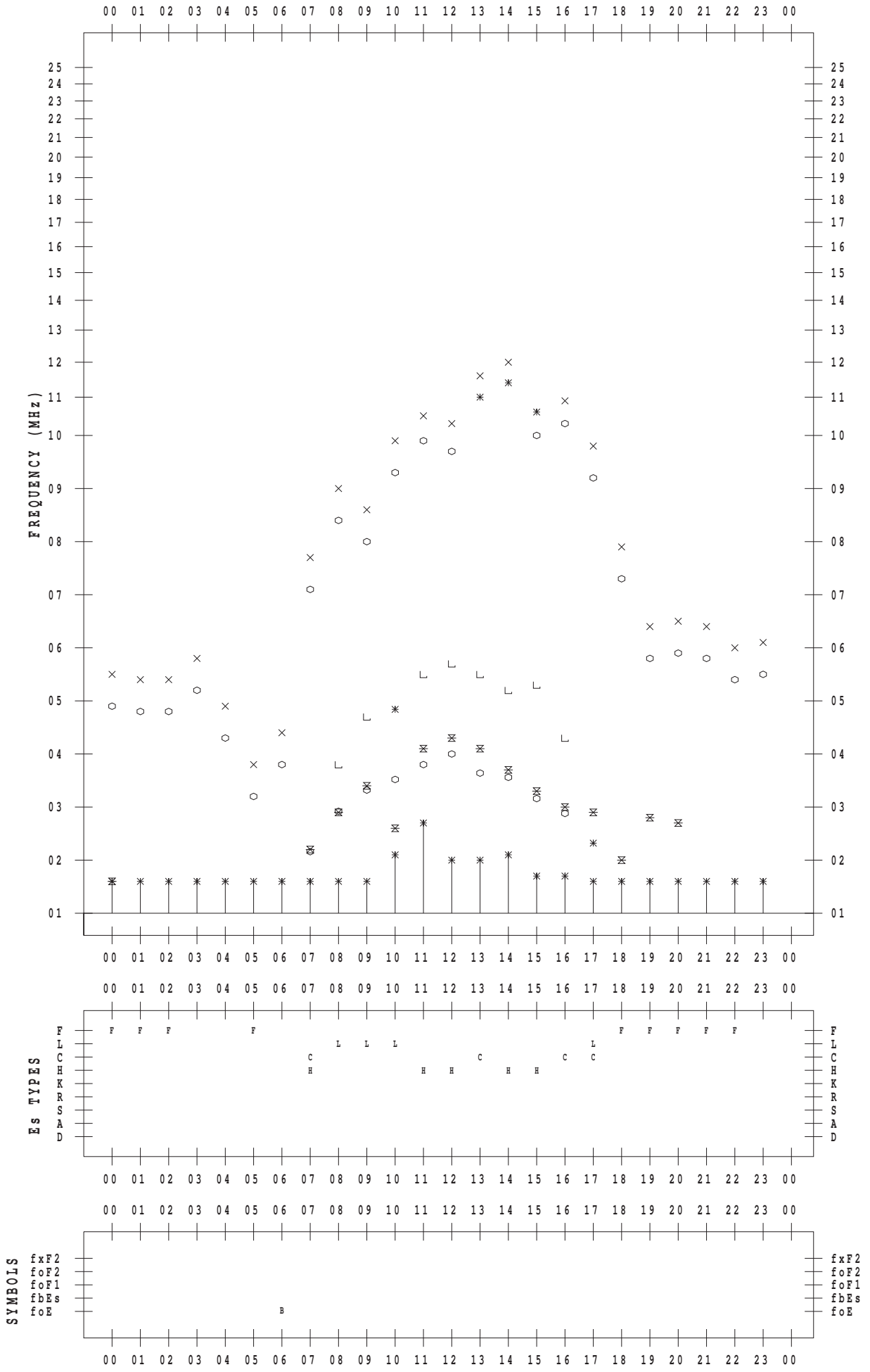
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/14

135 °E MEAN TIME



f-PLOT DATA

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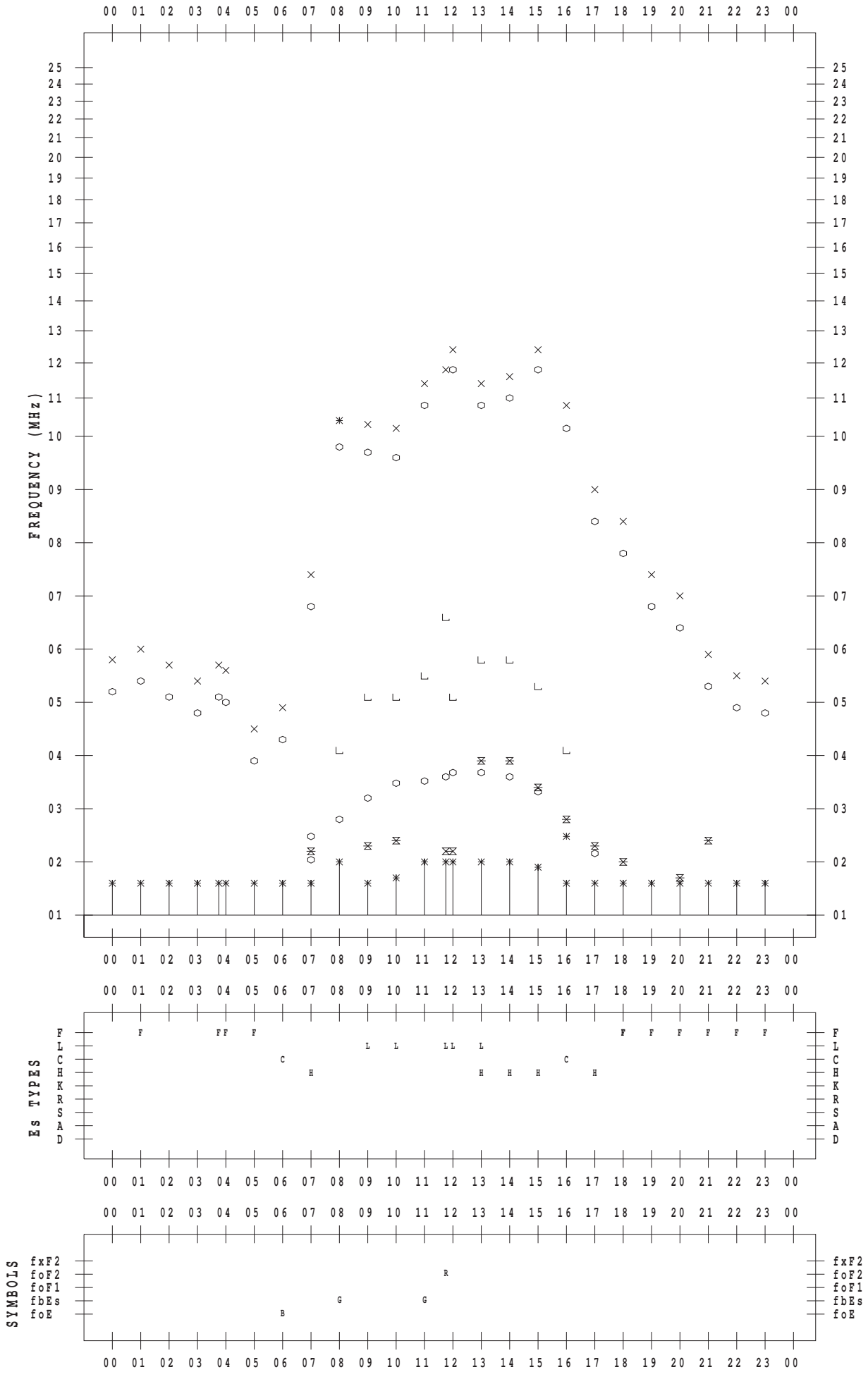
STATION : Yamagawa

DATE : 2013/10/15

135 °E MEAN TIME



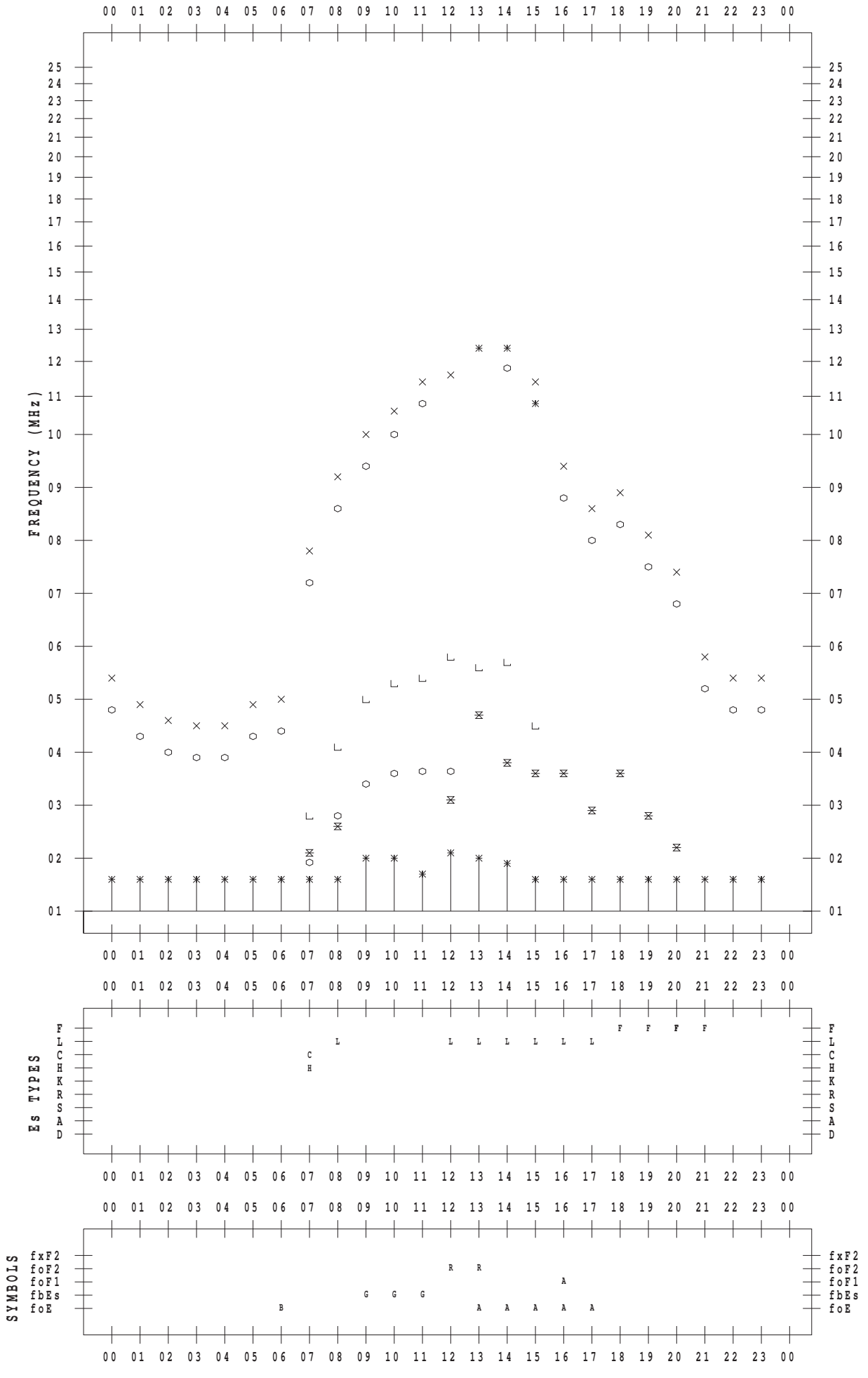
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/16

135 °E MEAN TIME



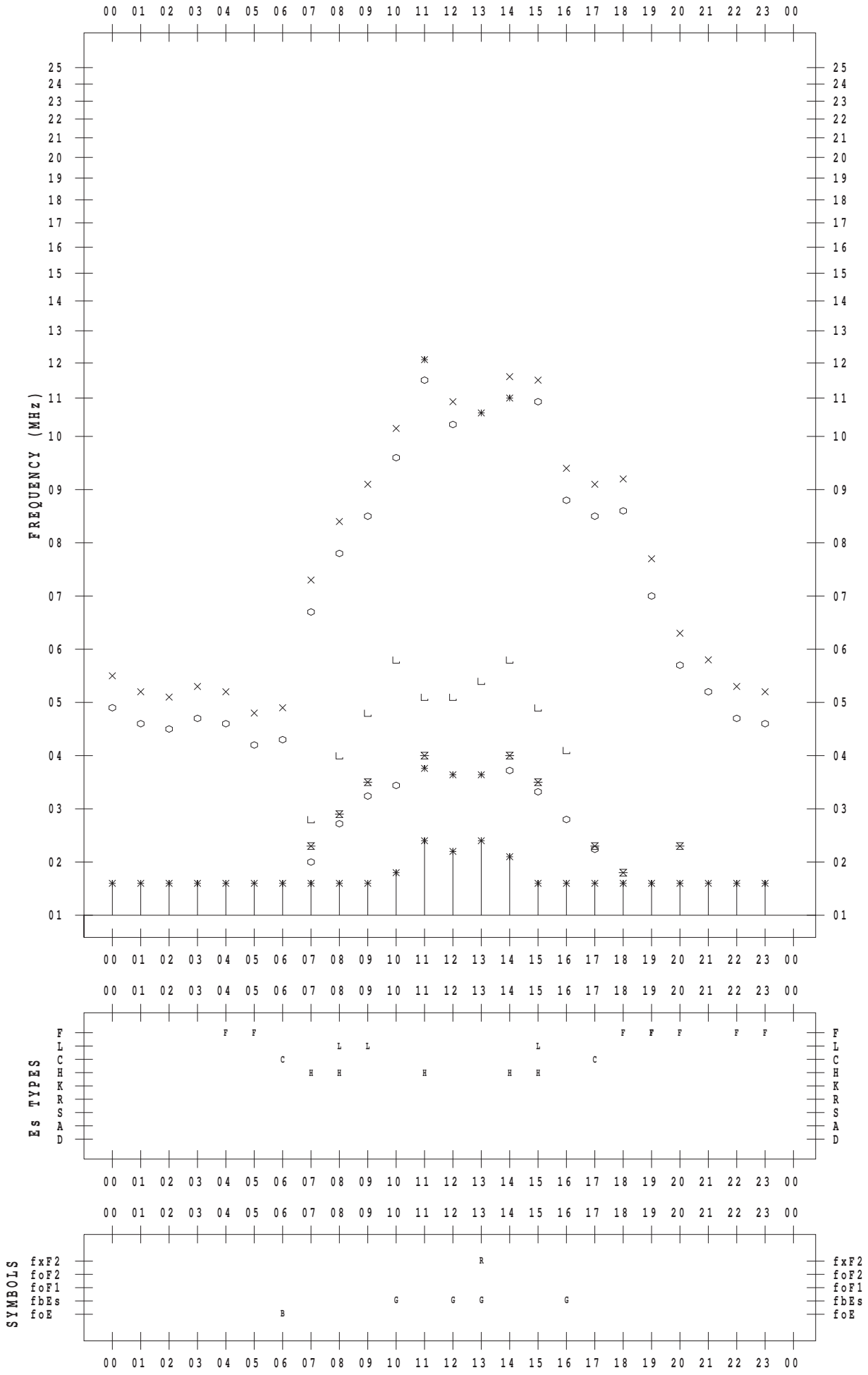
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/17

135 °E MEAN TIME



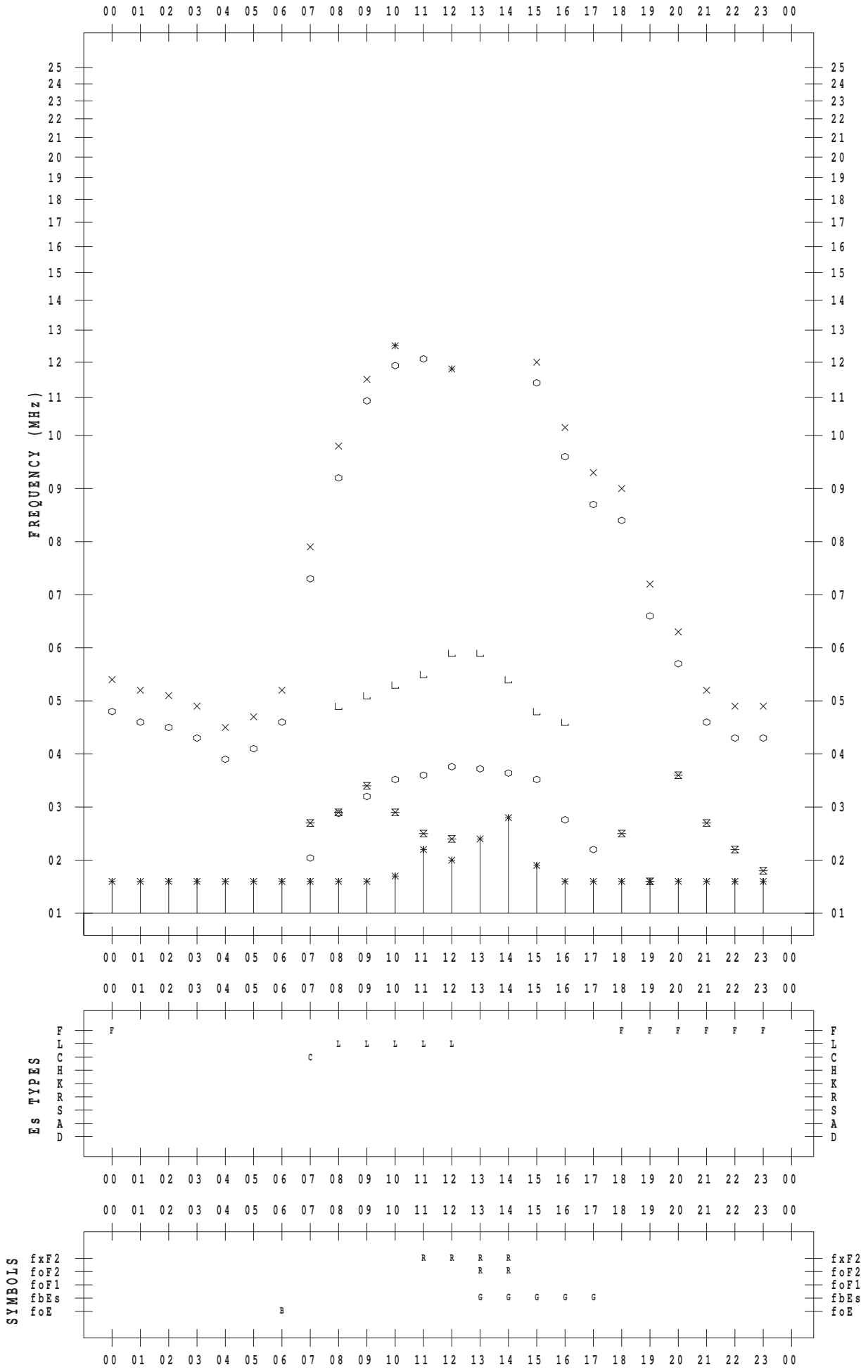
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/18

135 °E MEAN TIME



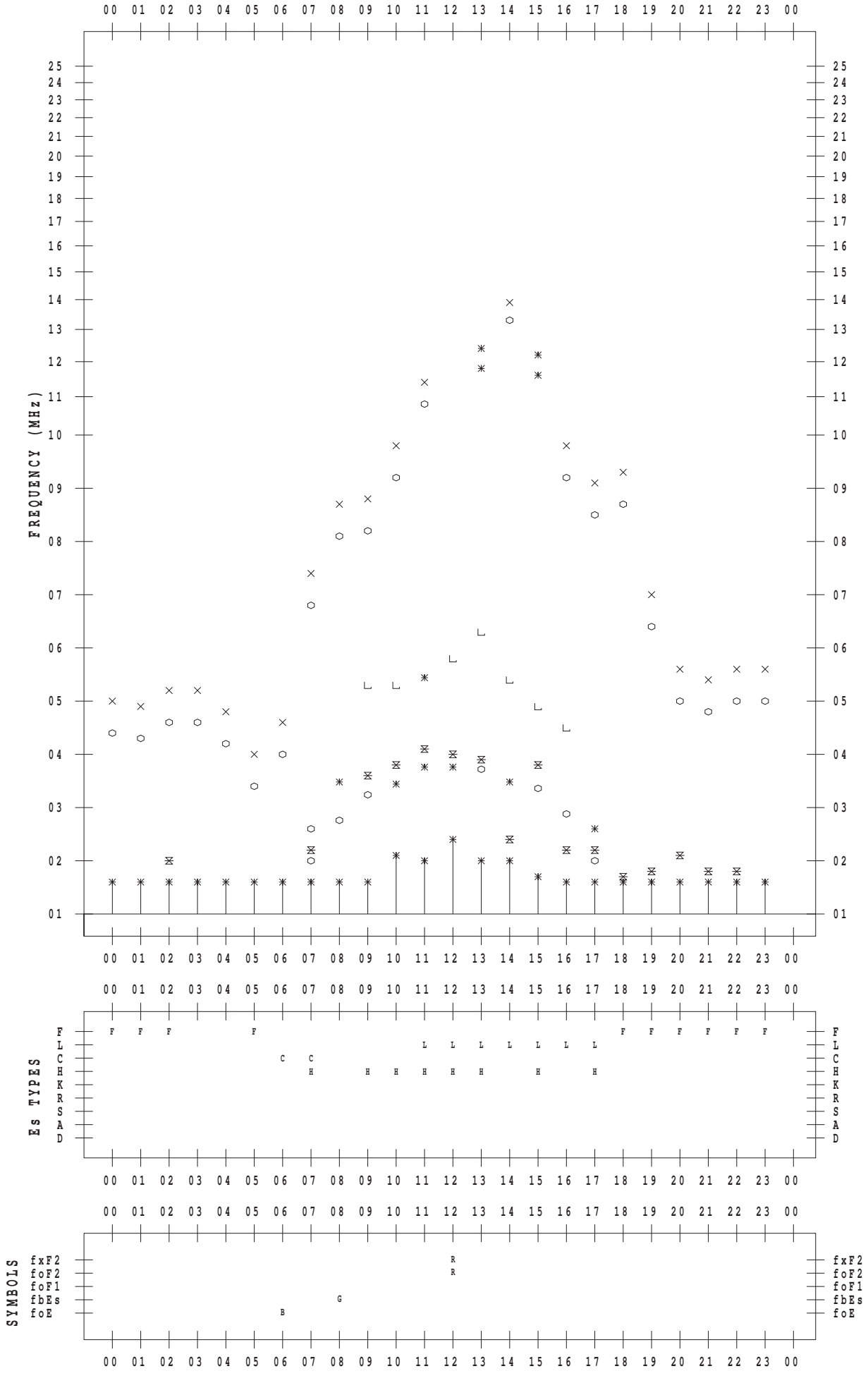
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/19

135 °E MEAN TIME



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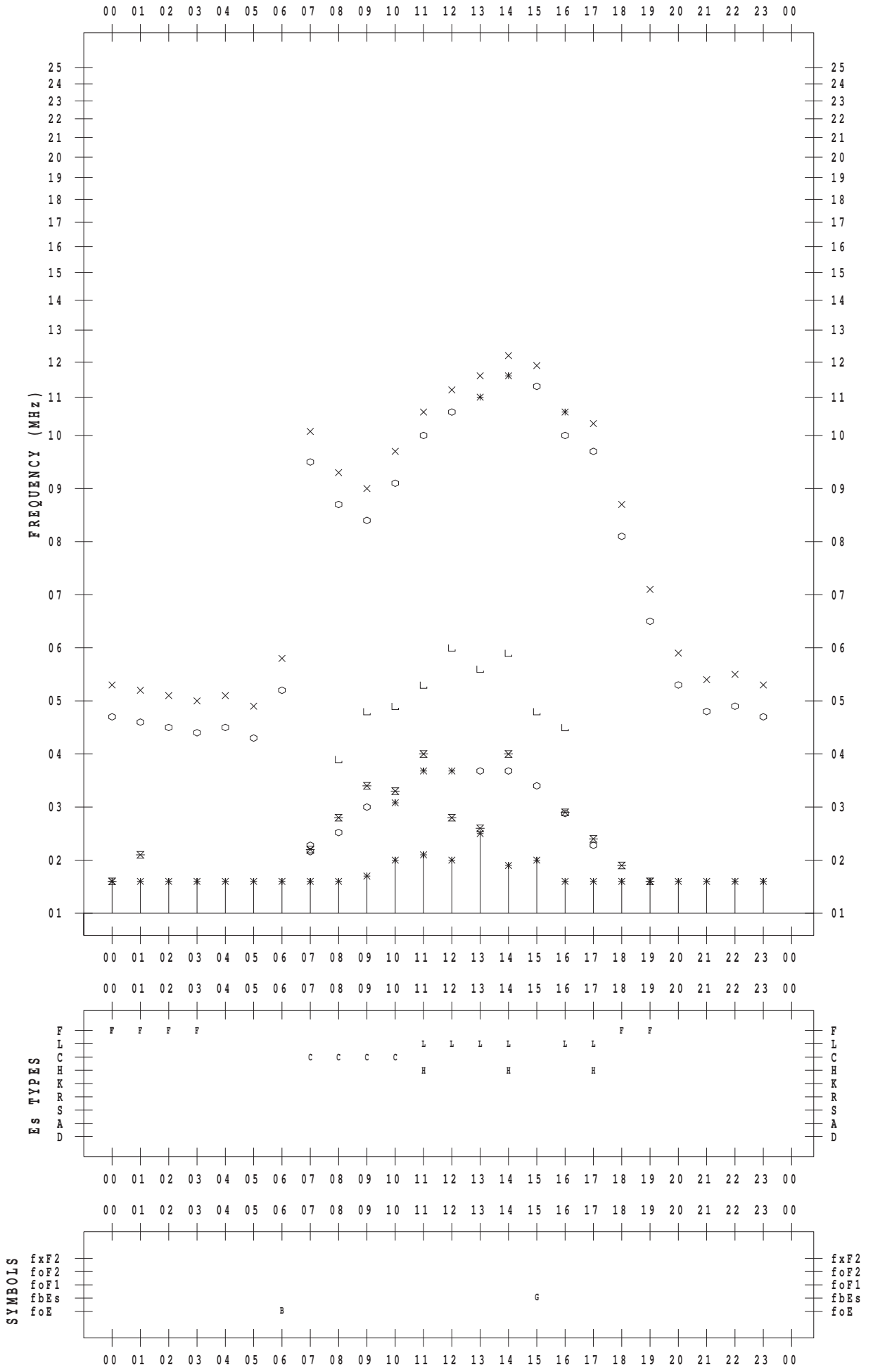
STATION : Yamagawa

DATE : 2013/10/20

135 °E MEAN TIME



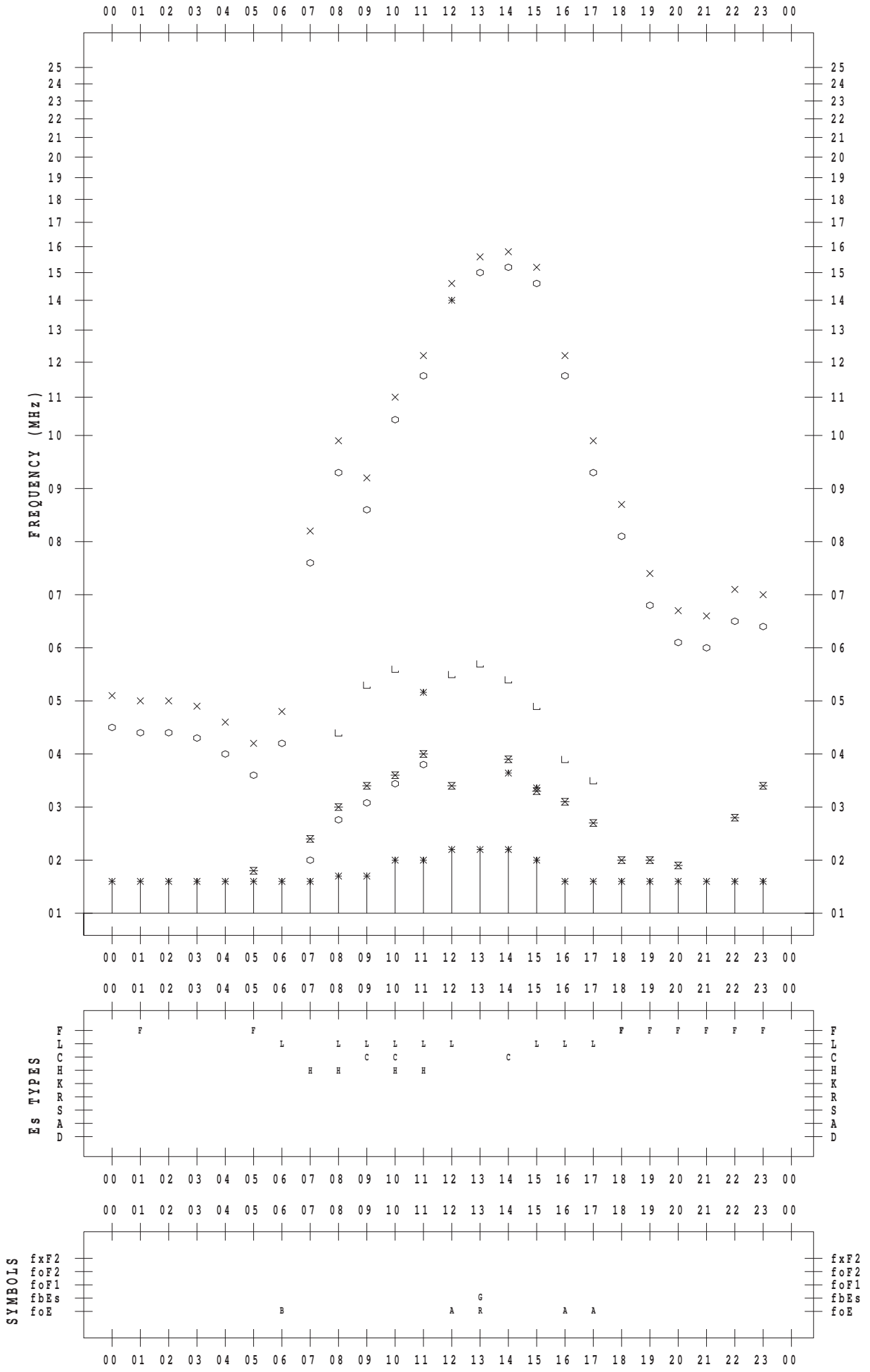
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/21

135 °E MEAN TIME



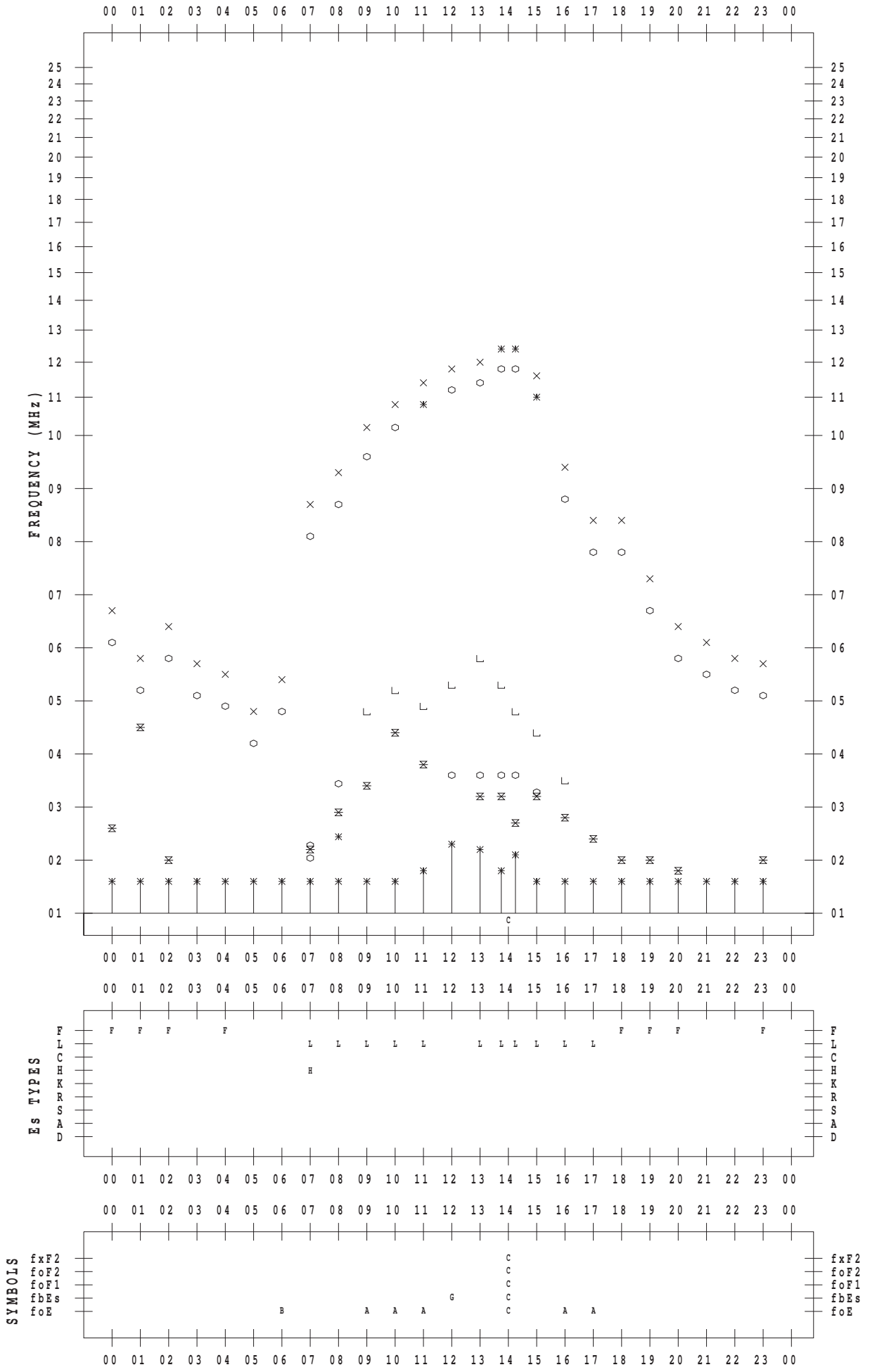
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/22

135 °E MEAN TIME



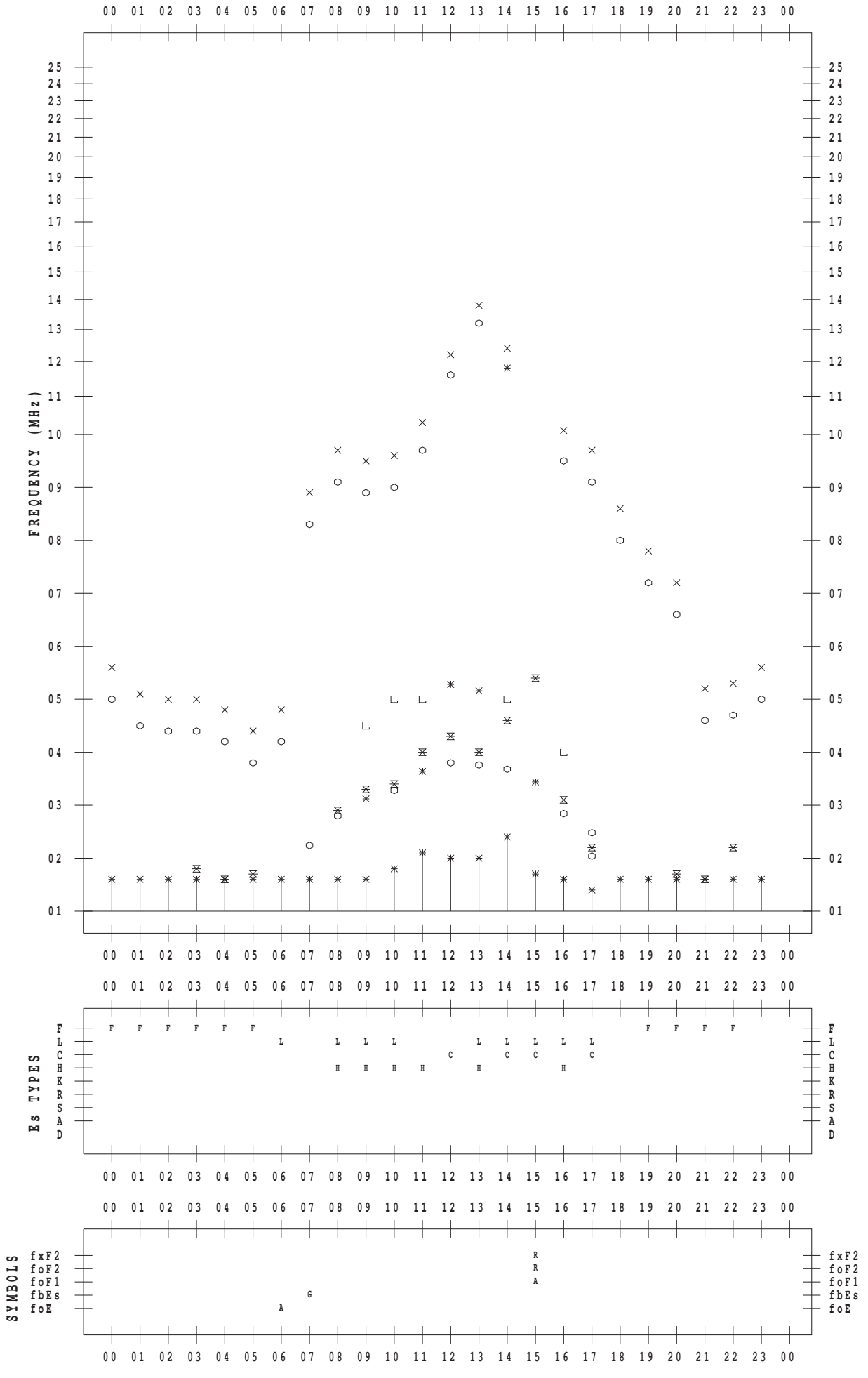
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/23

135 °E MEAN TIME



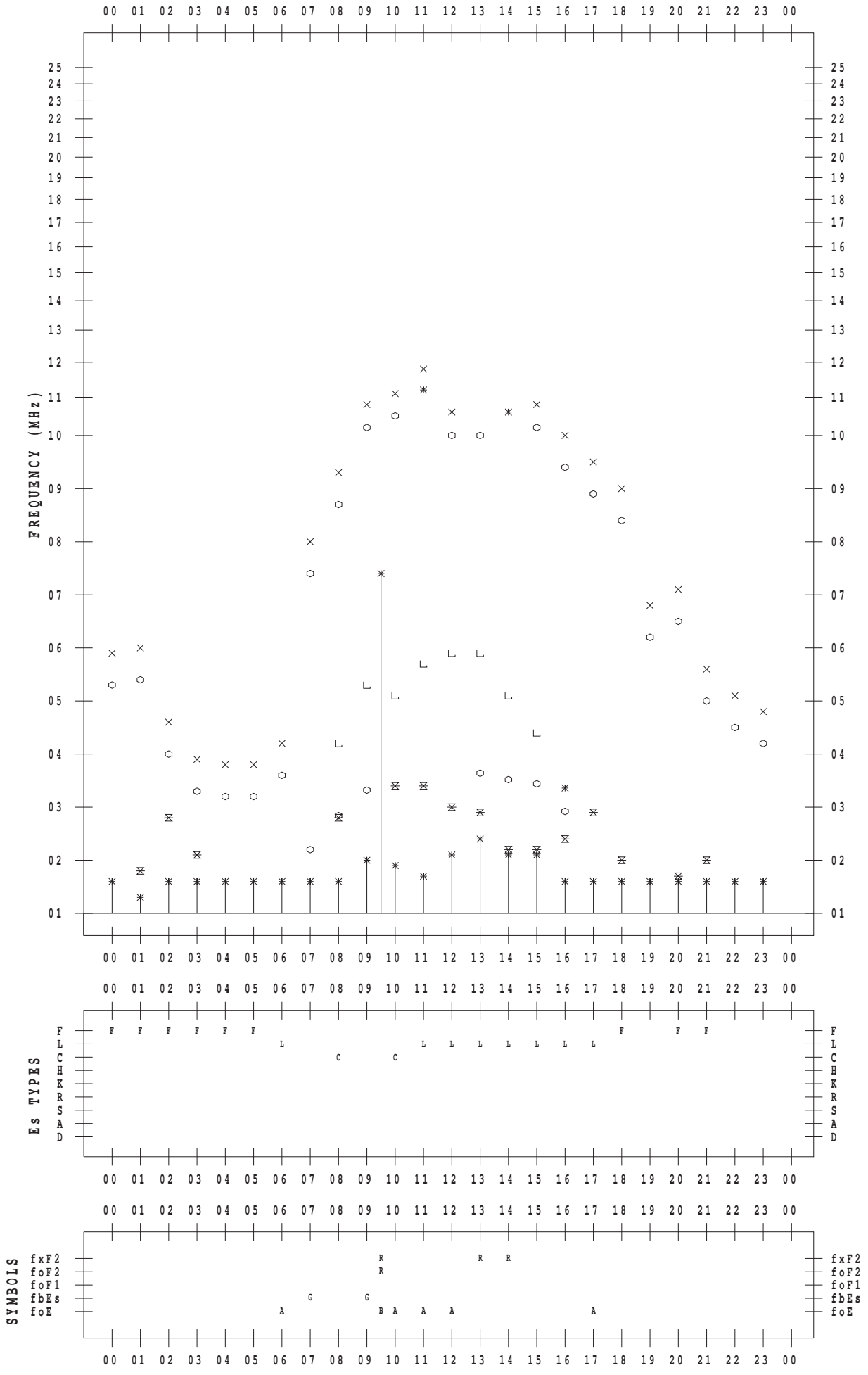
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/24

135 °E MEAN TIME



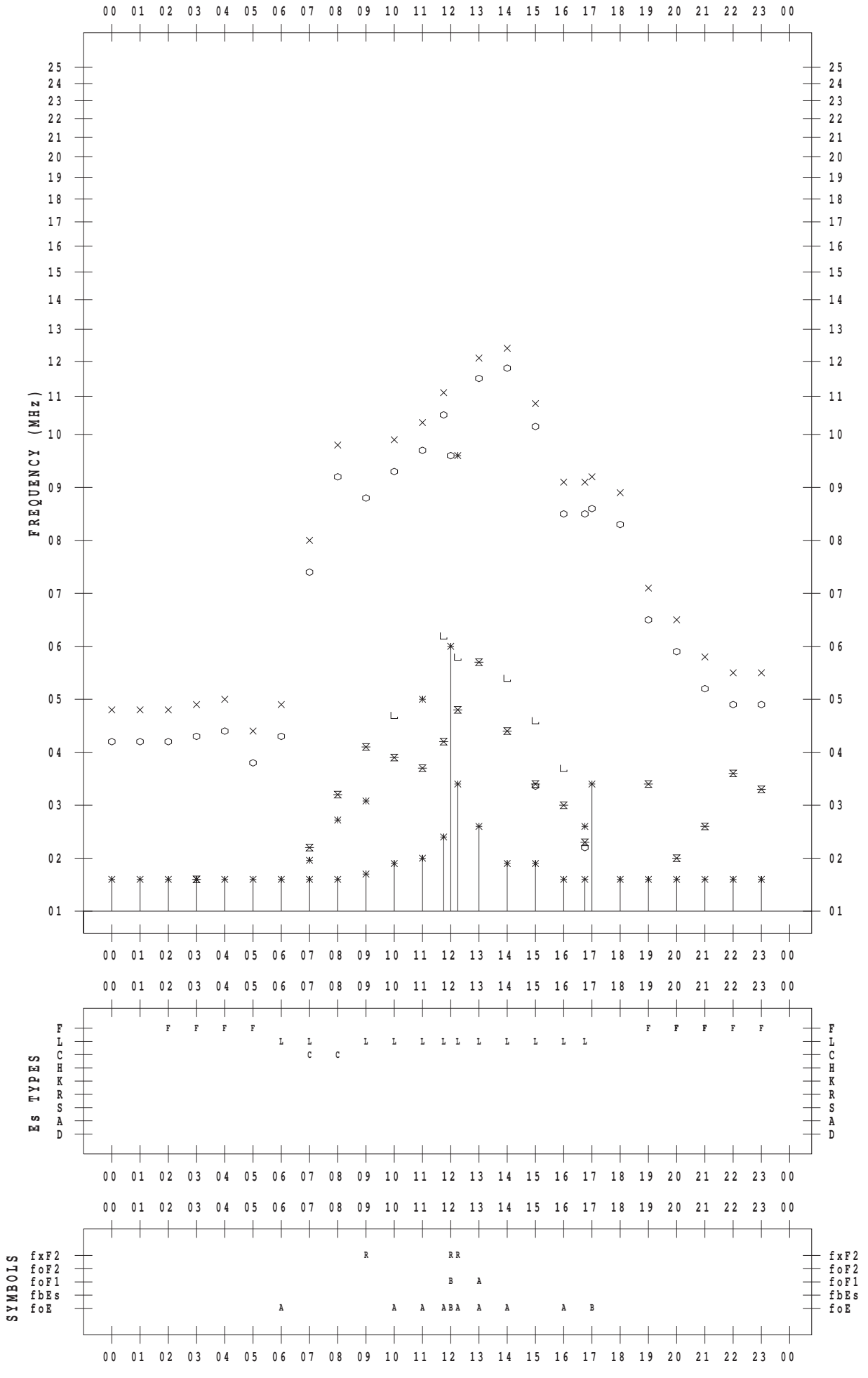
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/25

135 °E MEAN TIME



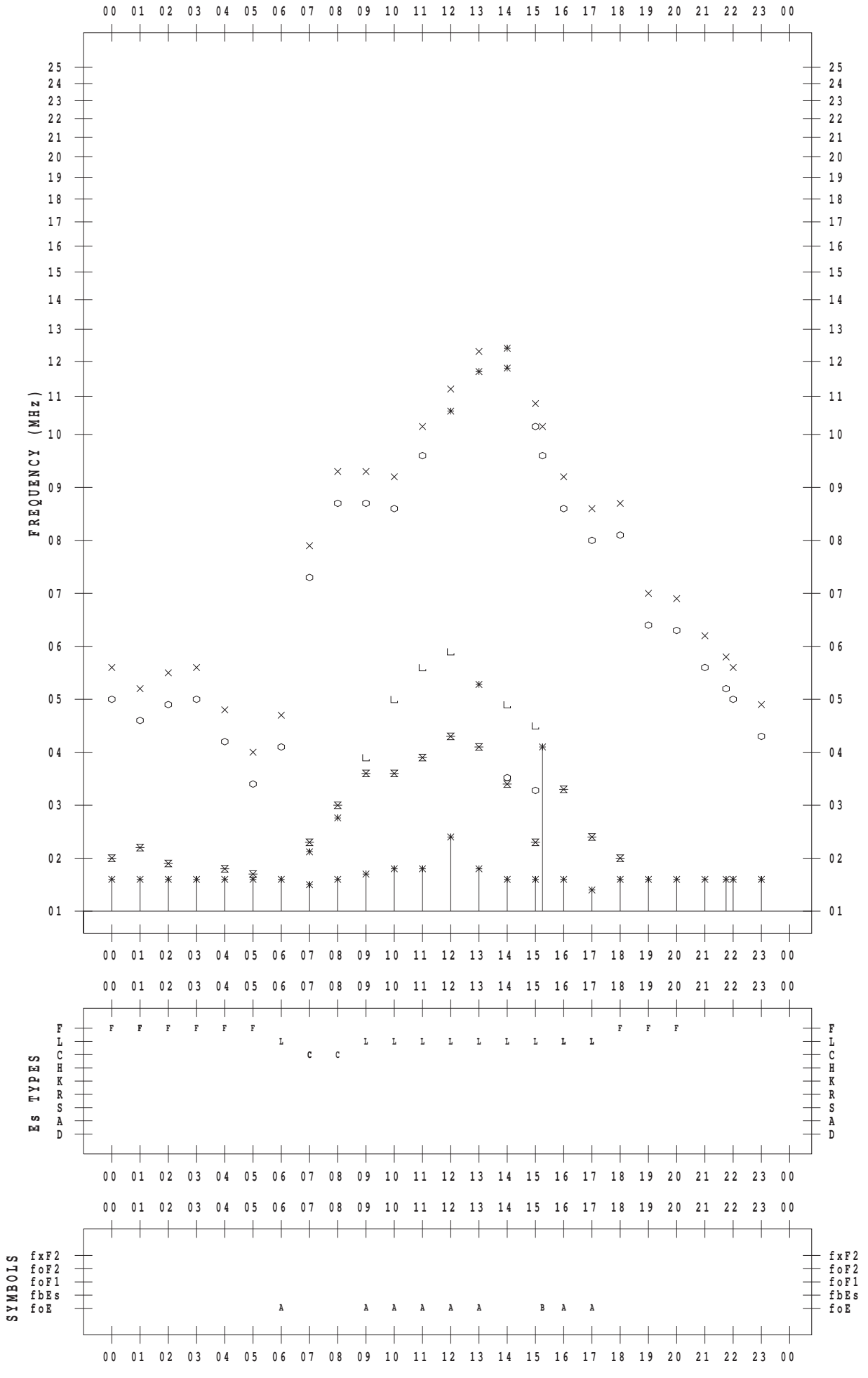
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/26

135 °E MEAN TIME



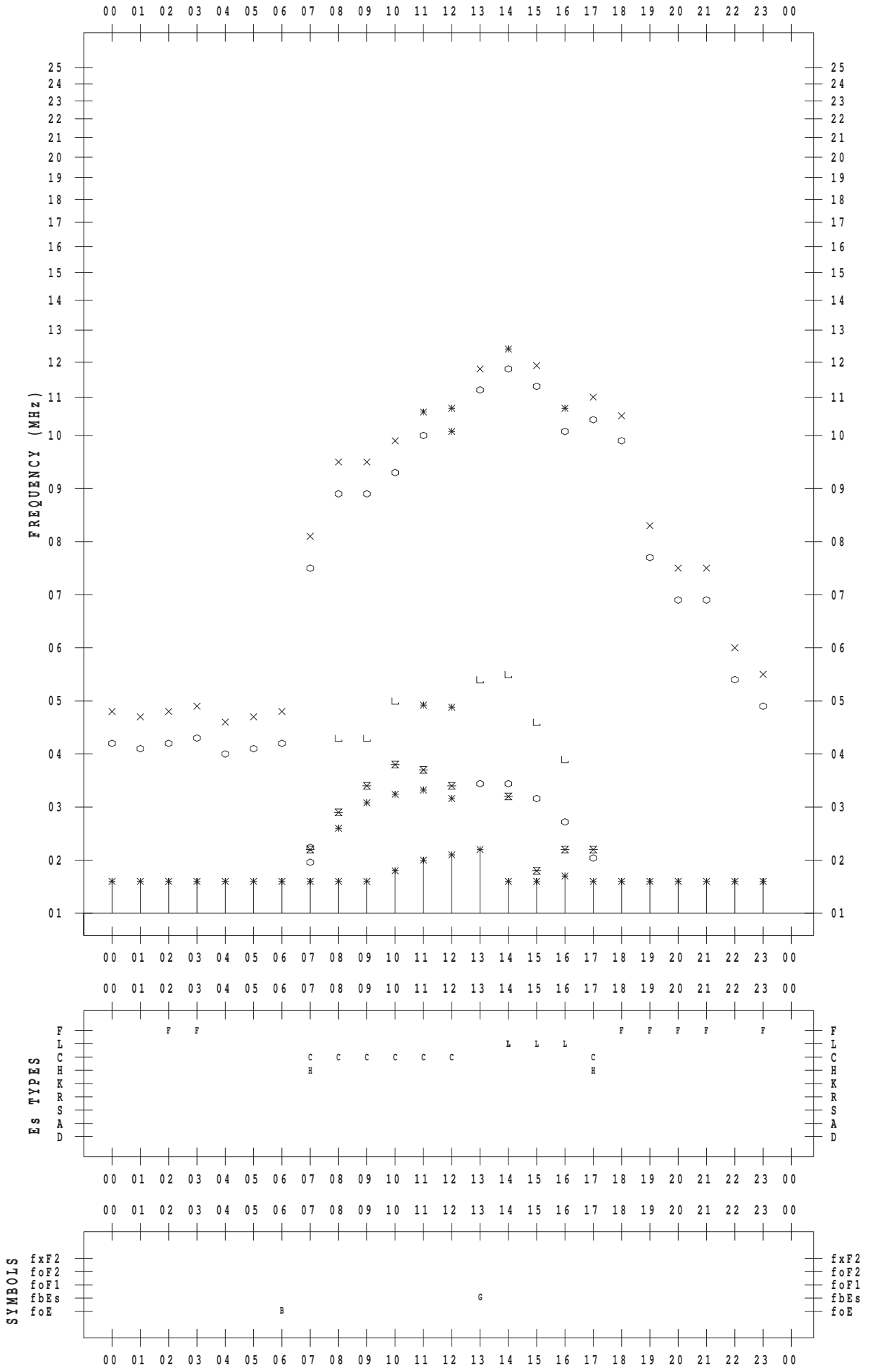
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/27

135 °E MEAN TIME



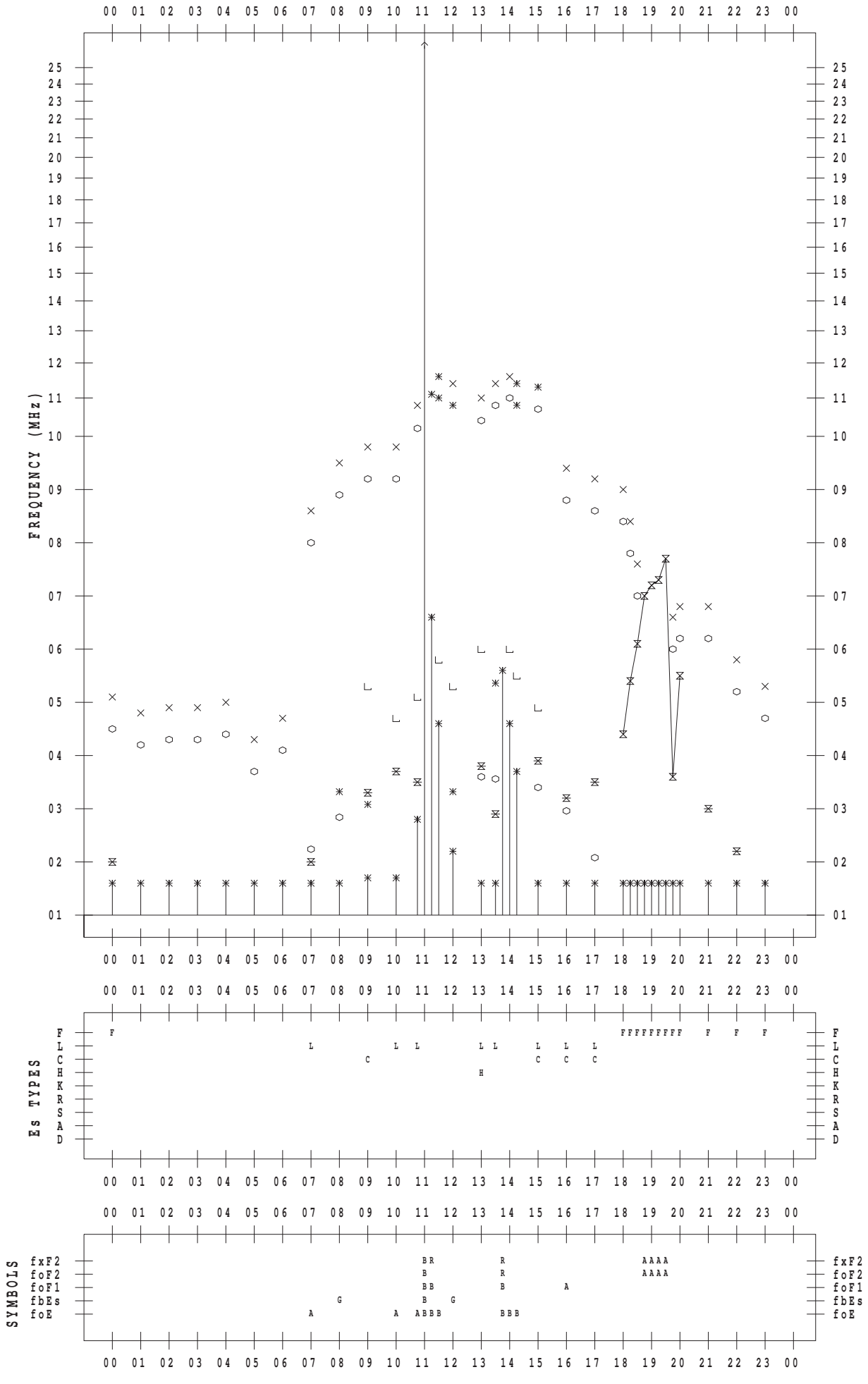
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/28

135 °E MEAN TIME



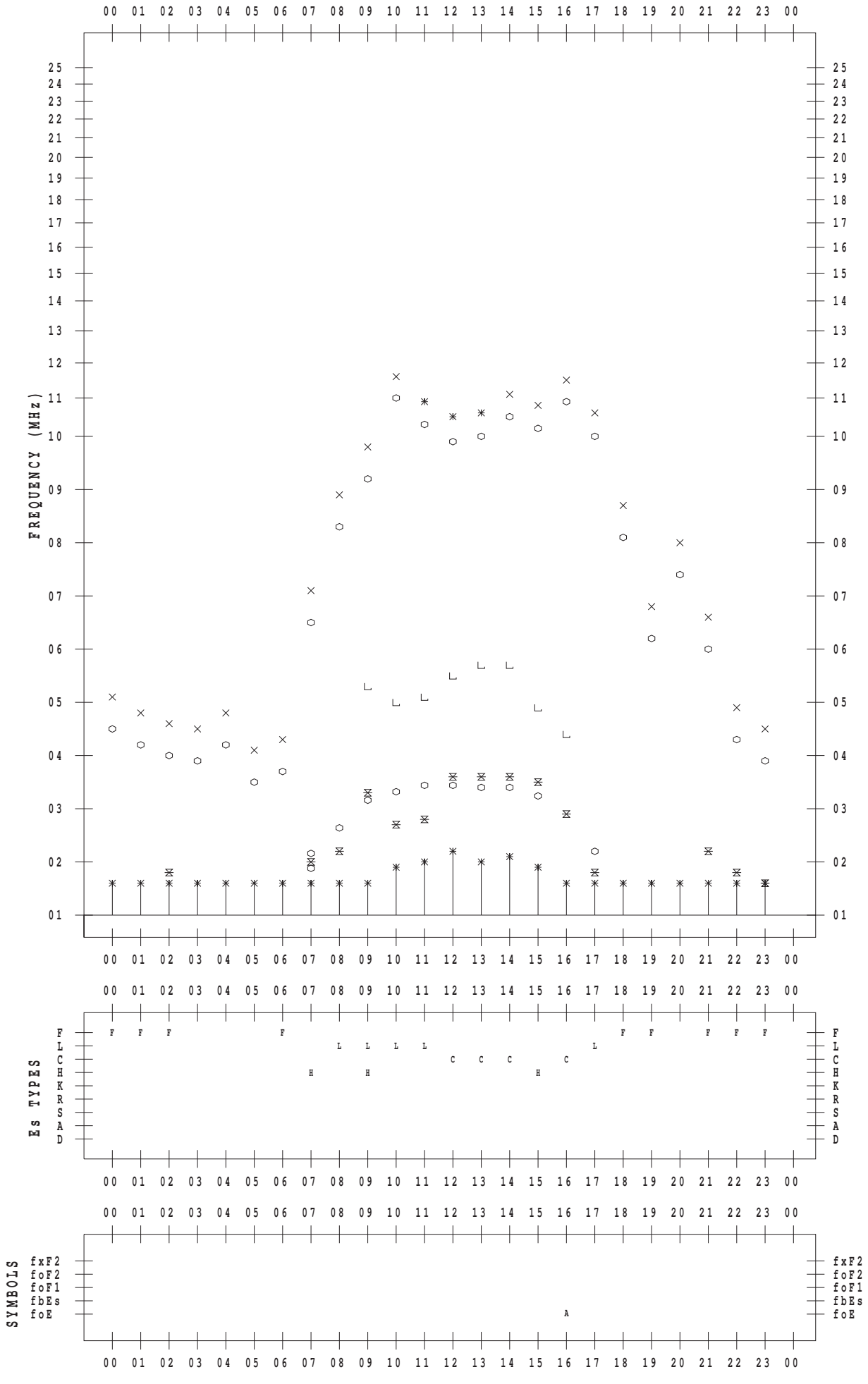
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/29

135 °E MEAN TIME



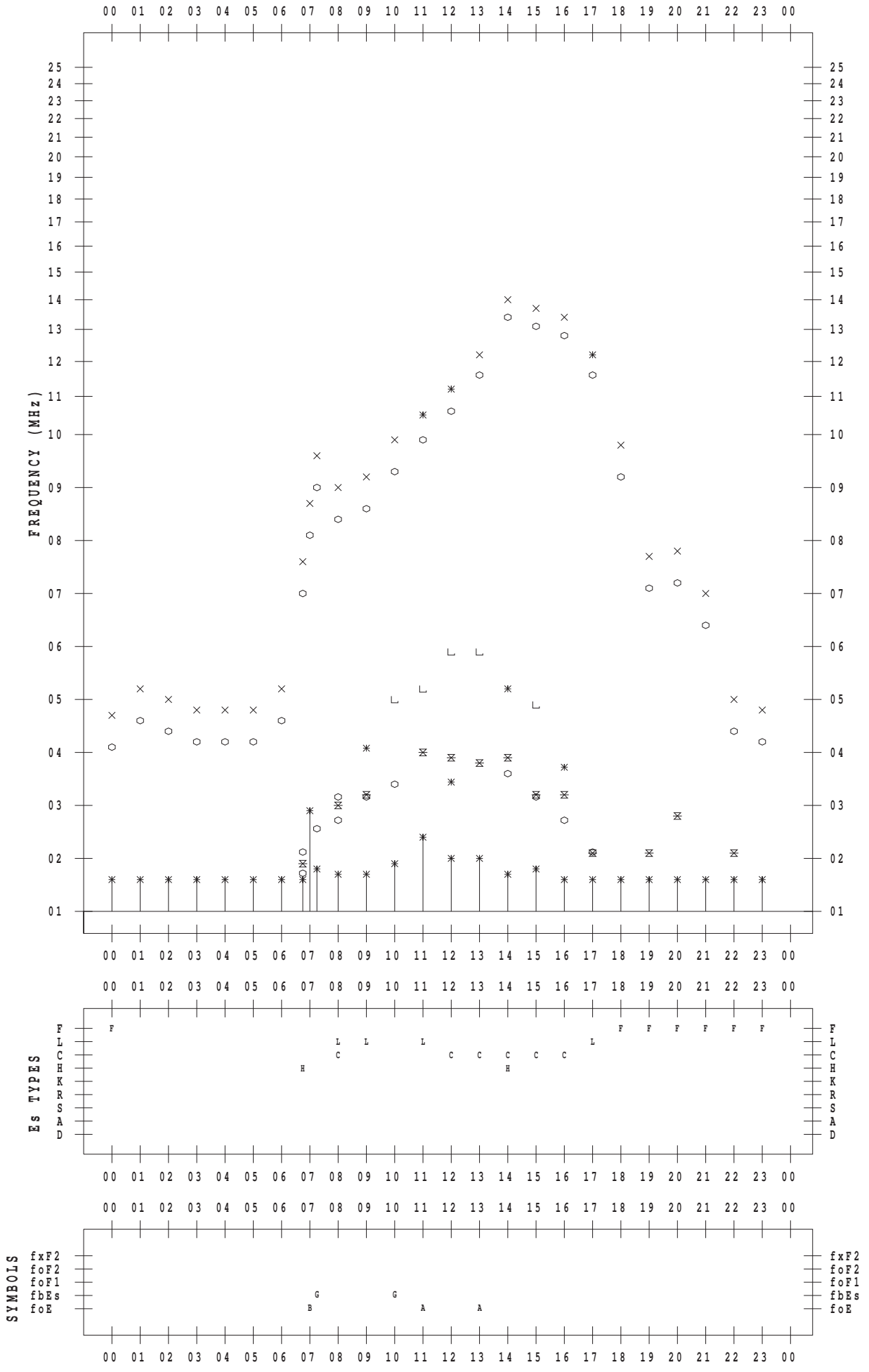
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/30

135 °E MEAN TIME



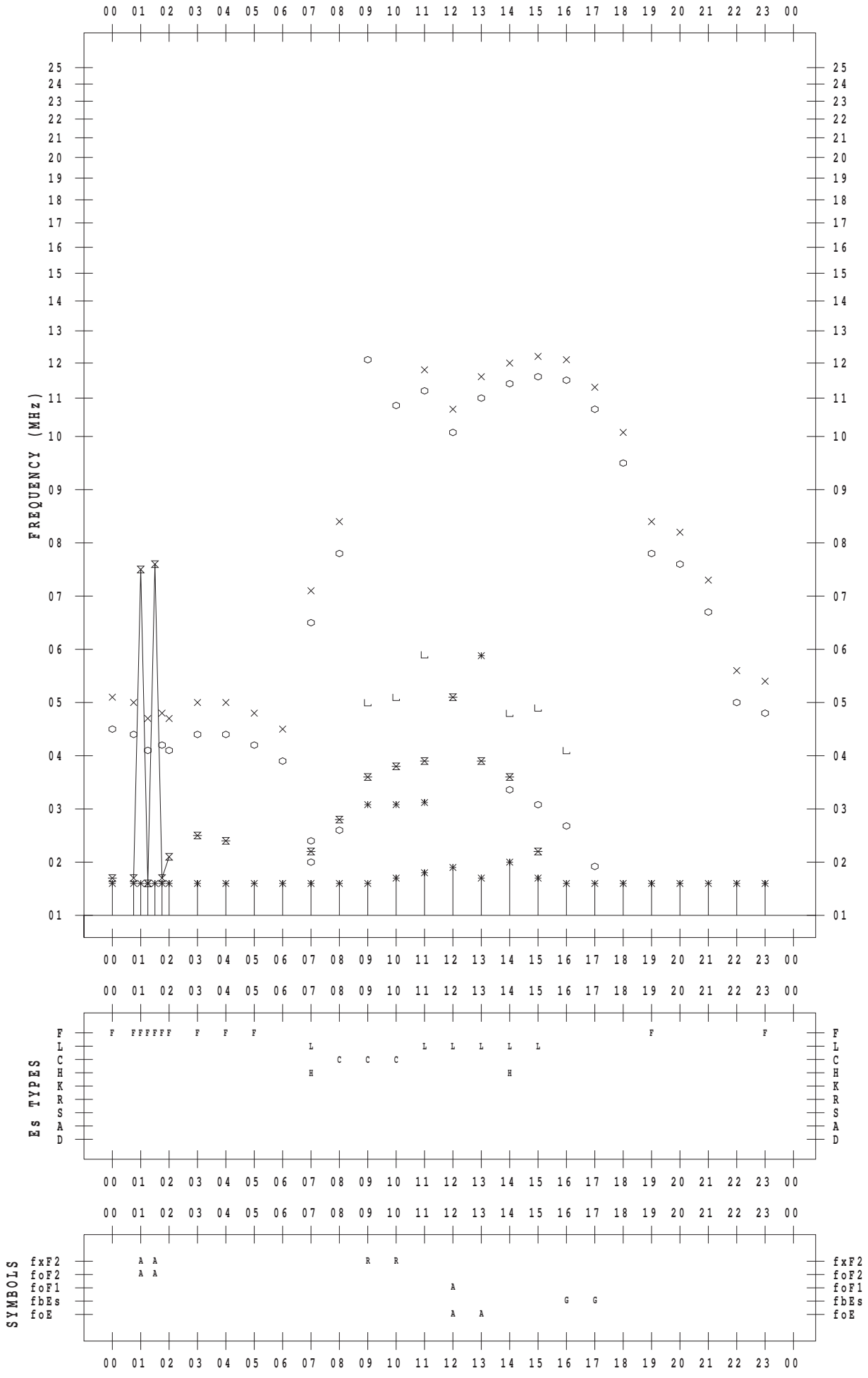
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2013/10/31

135 °E MEAN TIME



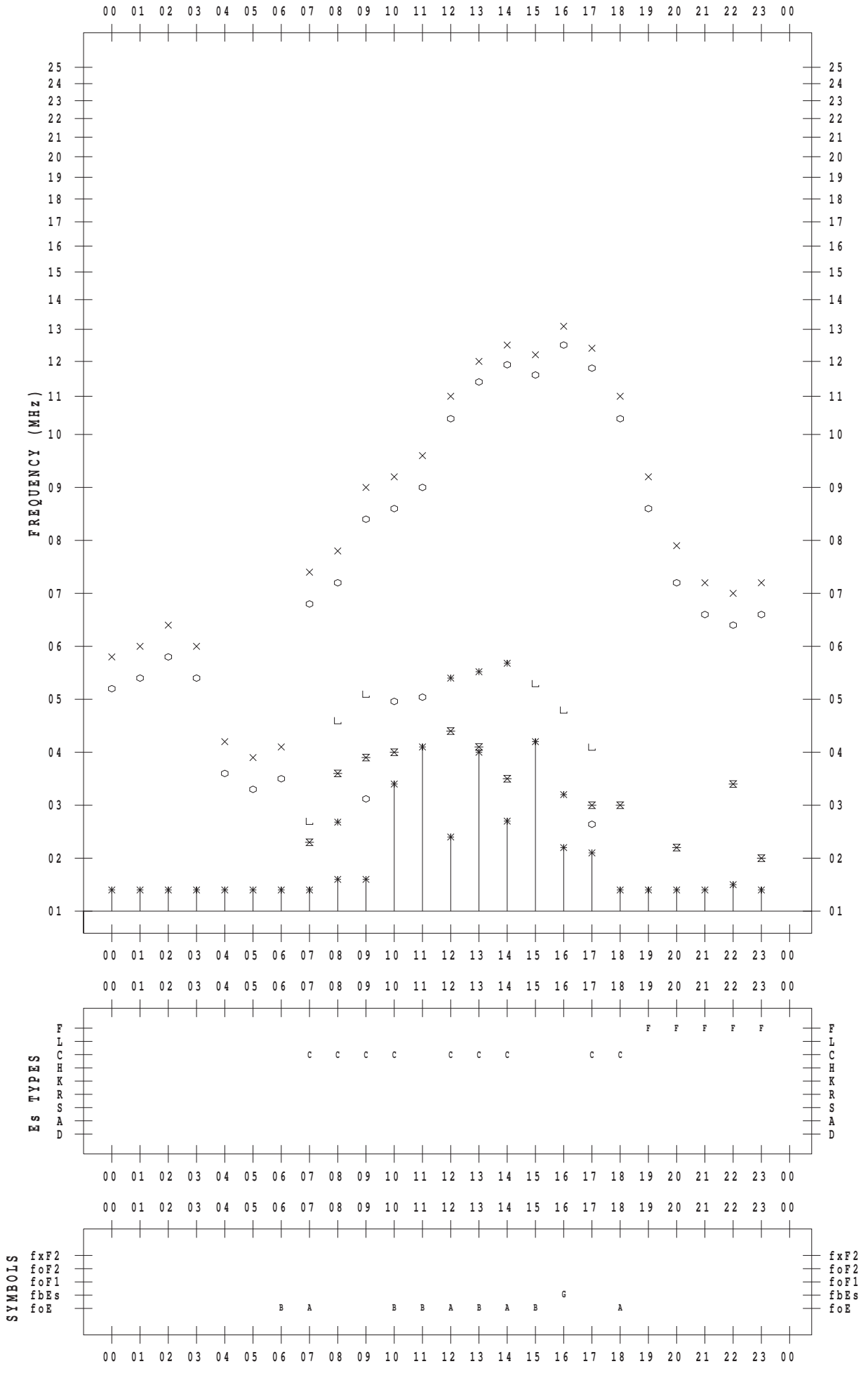
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 1

135 °E MEAN TIME



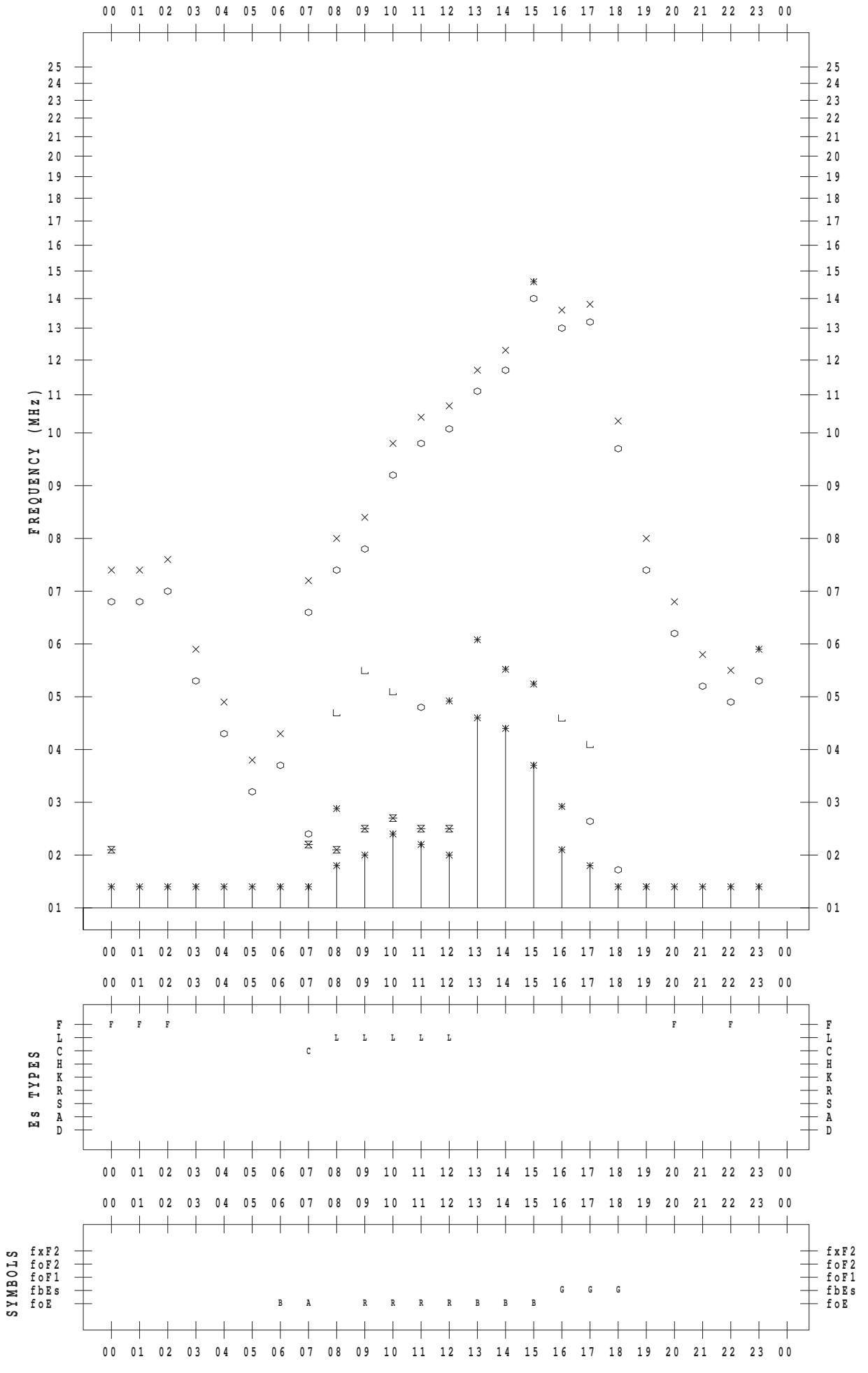
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 2

135 °E MEAN TIME



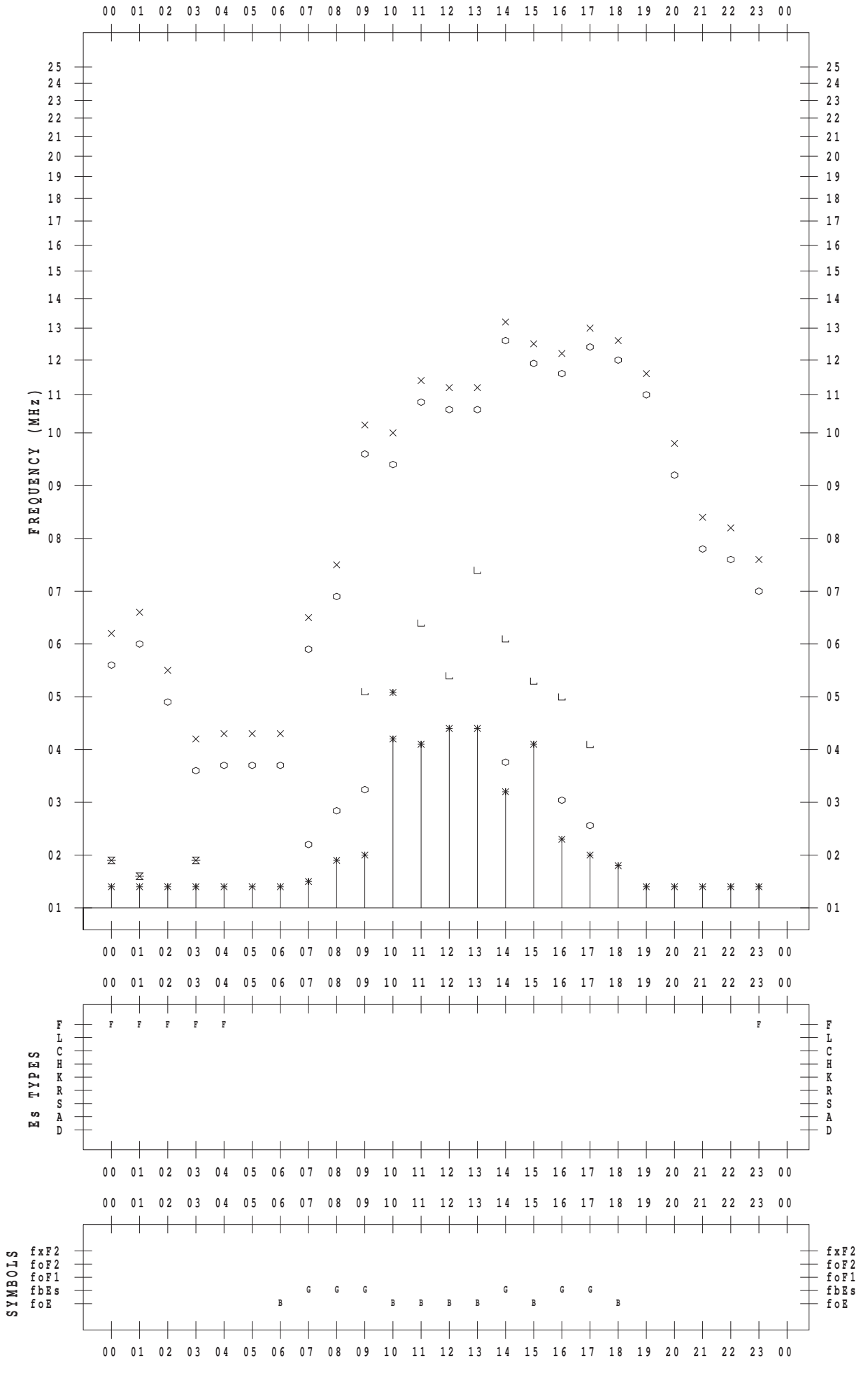
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 3

135 °E MEAN TIME



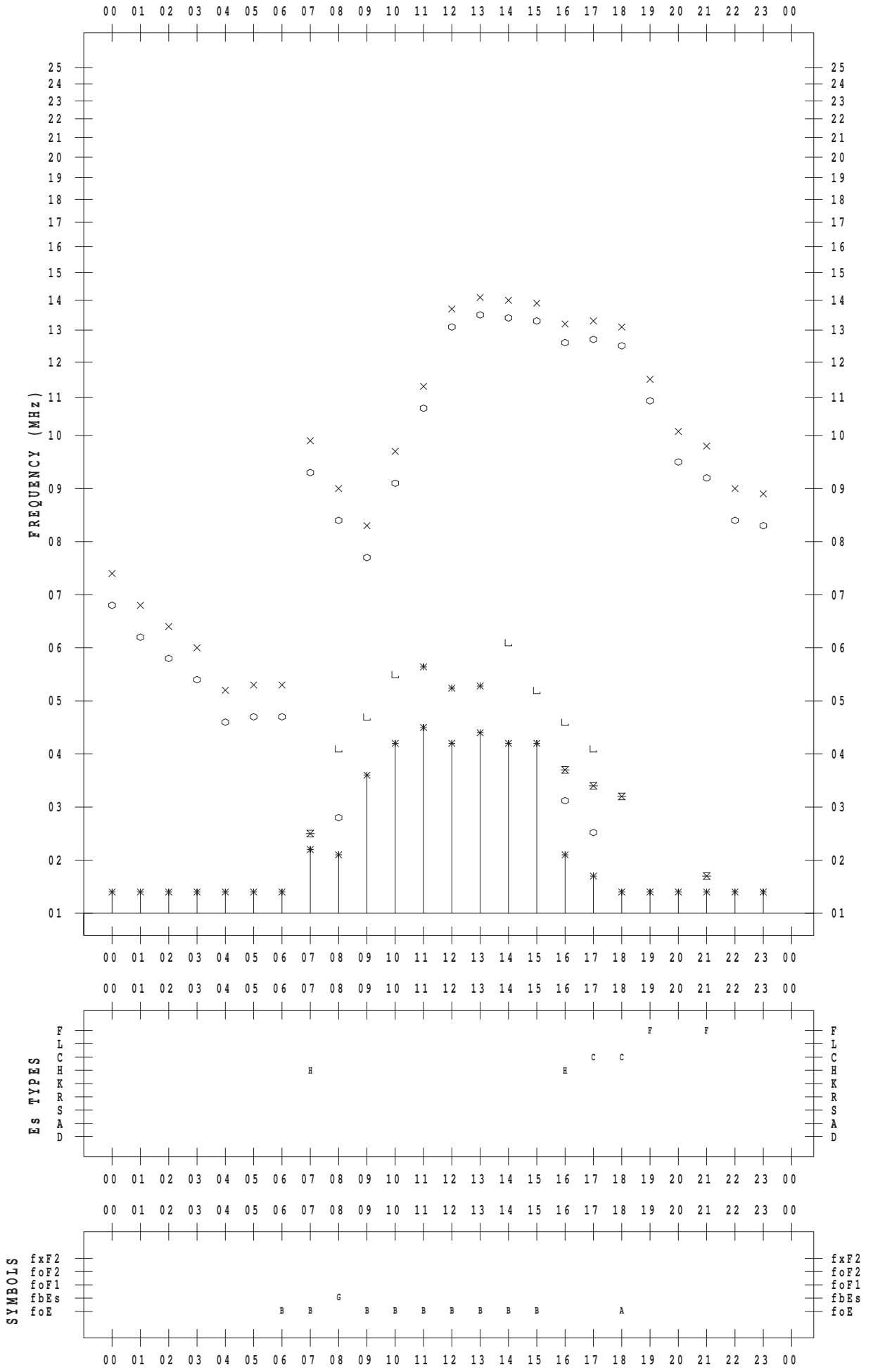
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 4

135 °E MEAN TIME



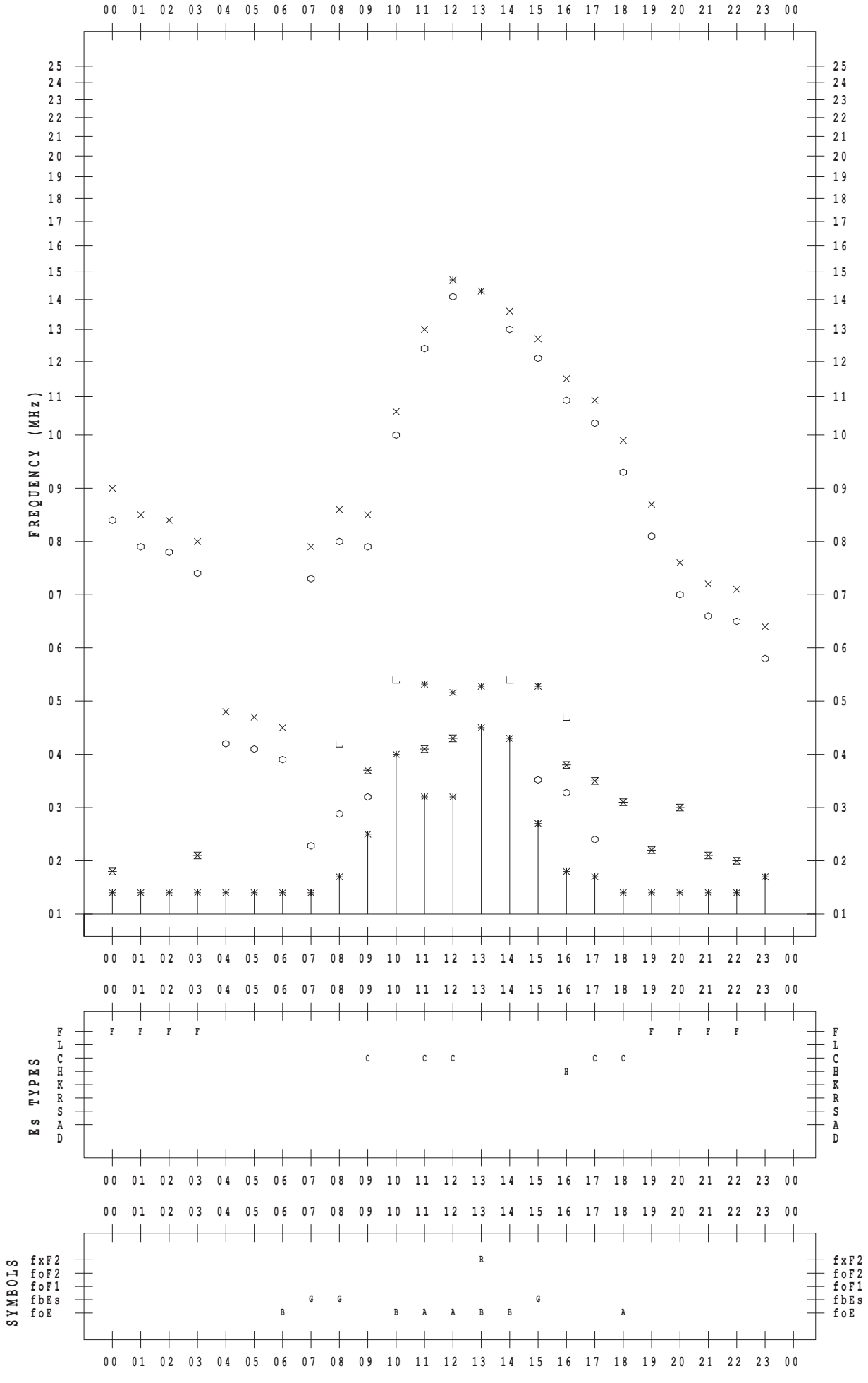
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 5

135 °E MEAN TIME



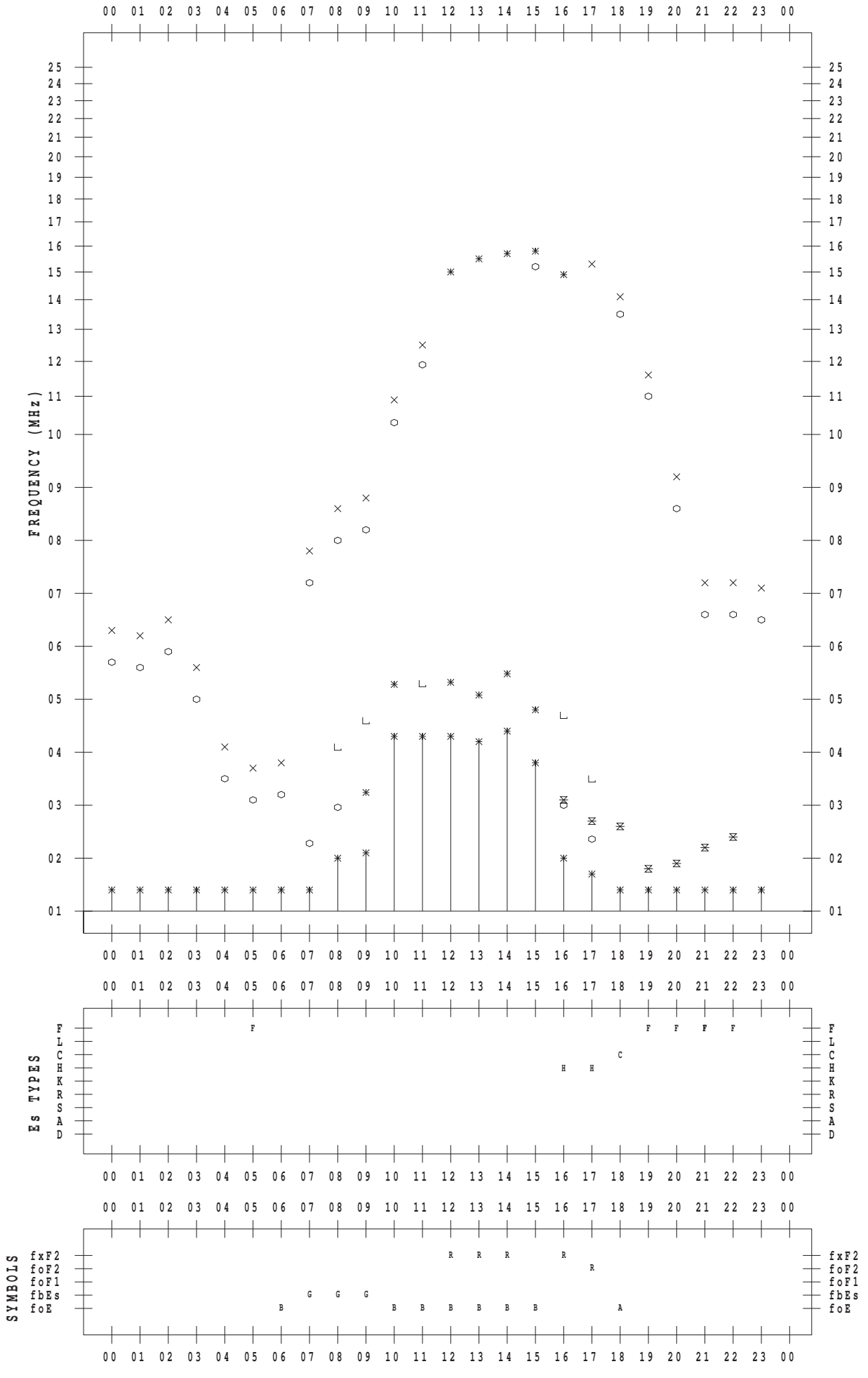
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 6

135 °E MEAN TIME



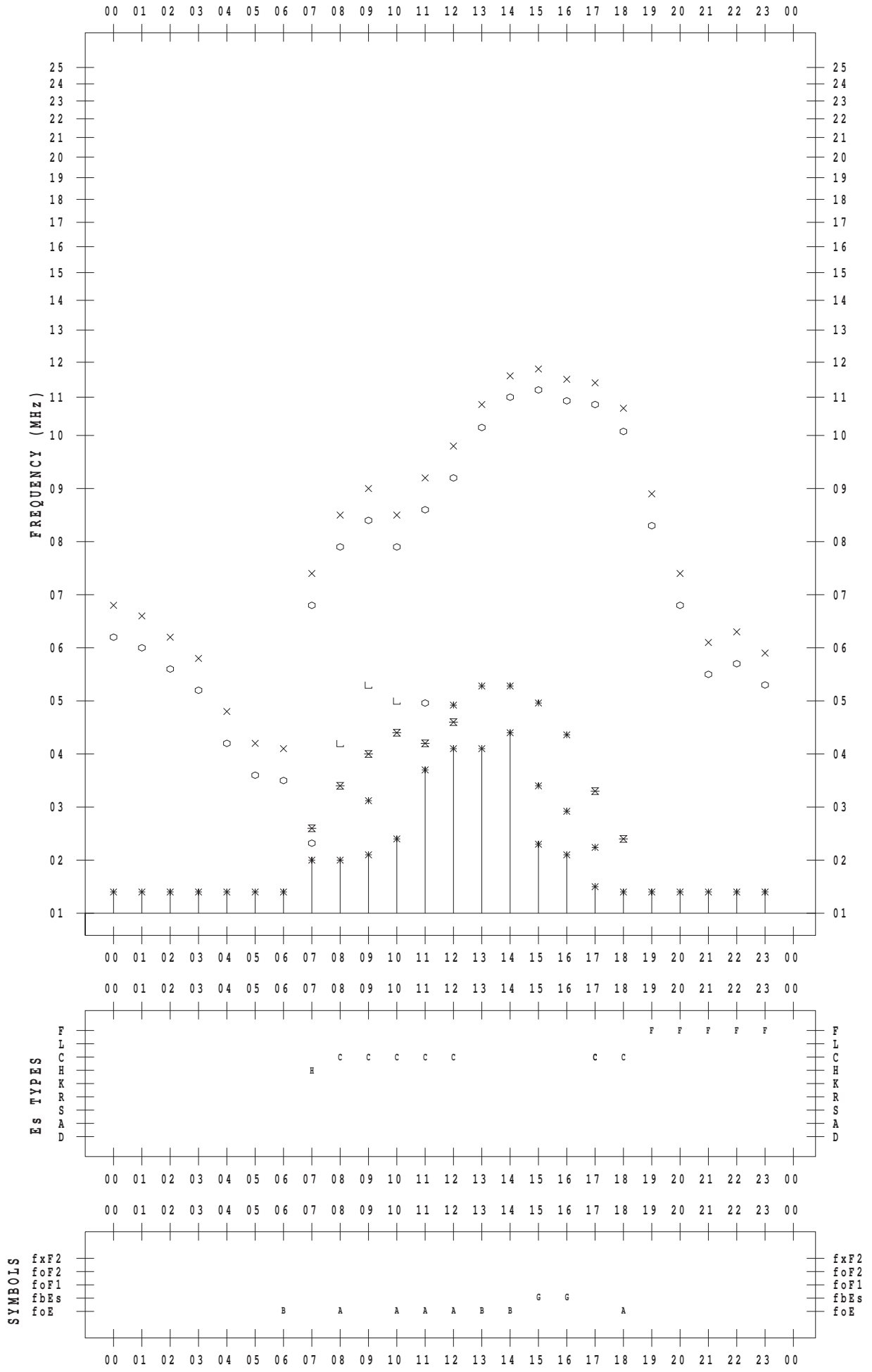
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 7

135 °E MEAN TIME



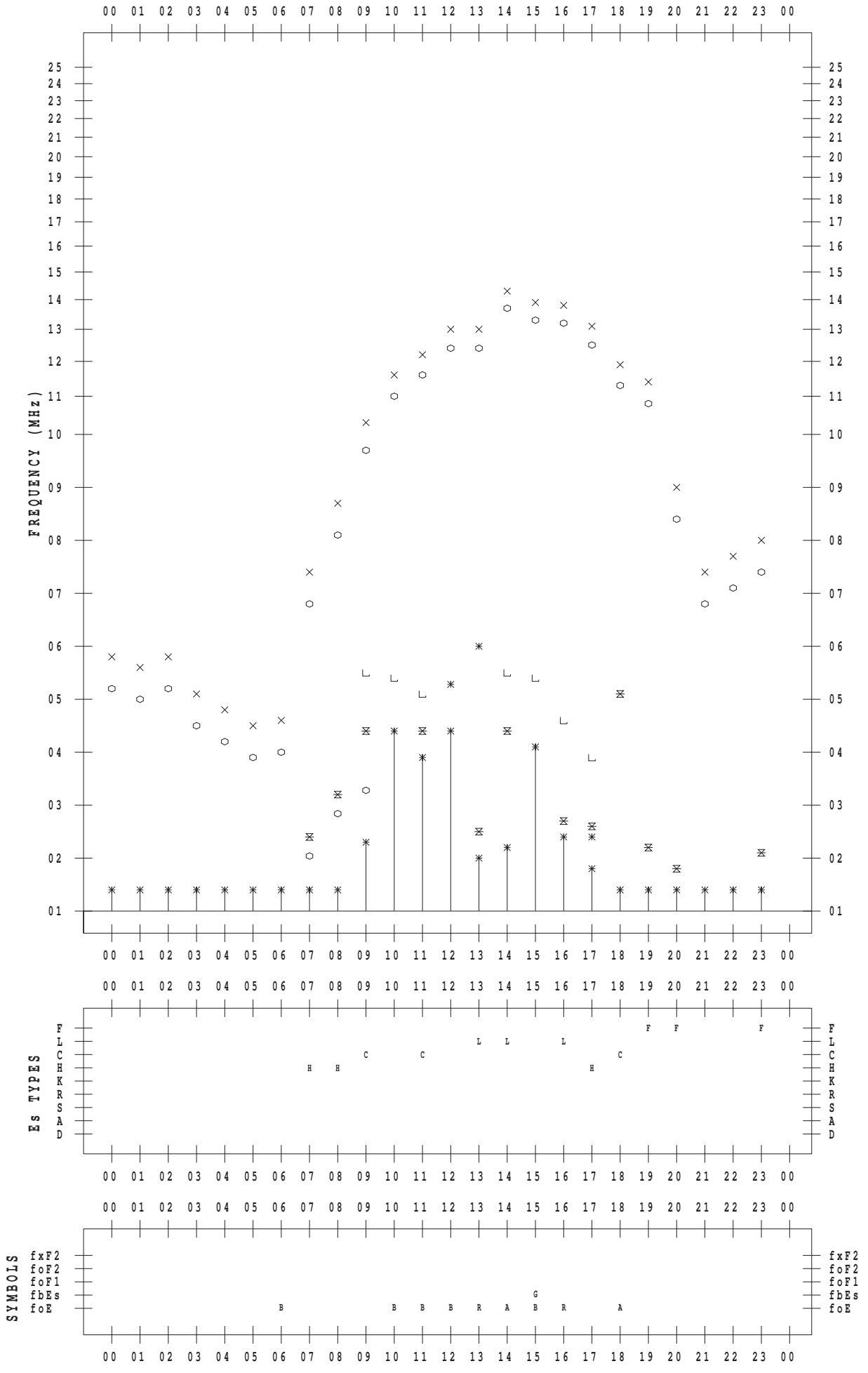
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 8

135 °E MEAN TIME



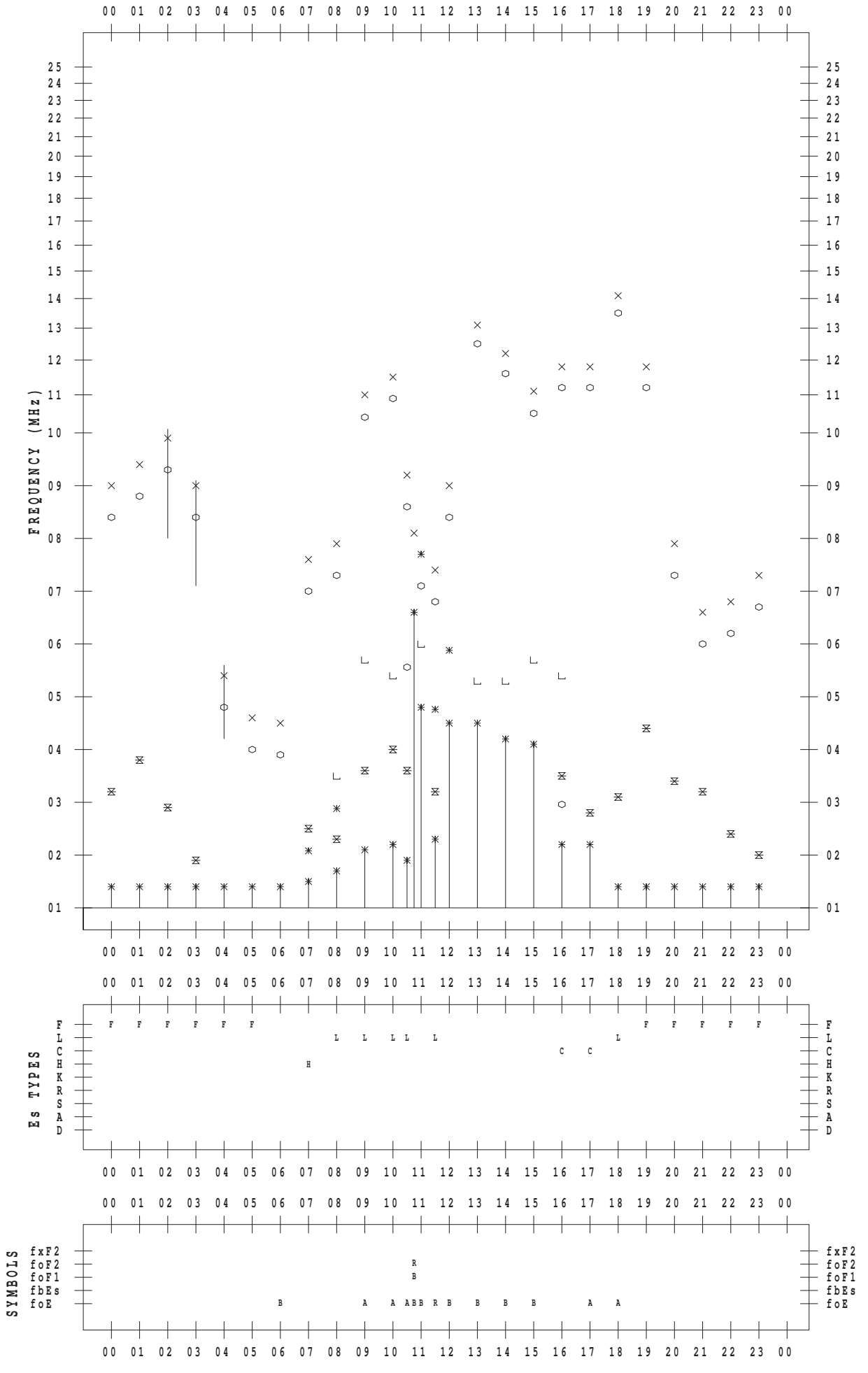
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/ 9

135 °E MEAN TIME



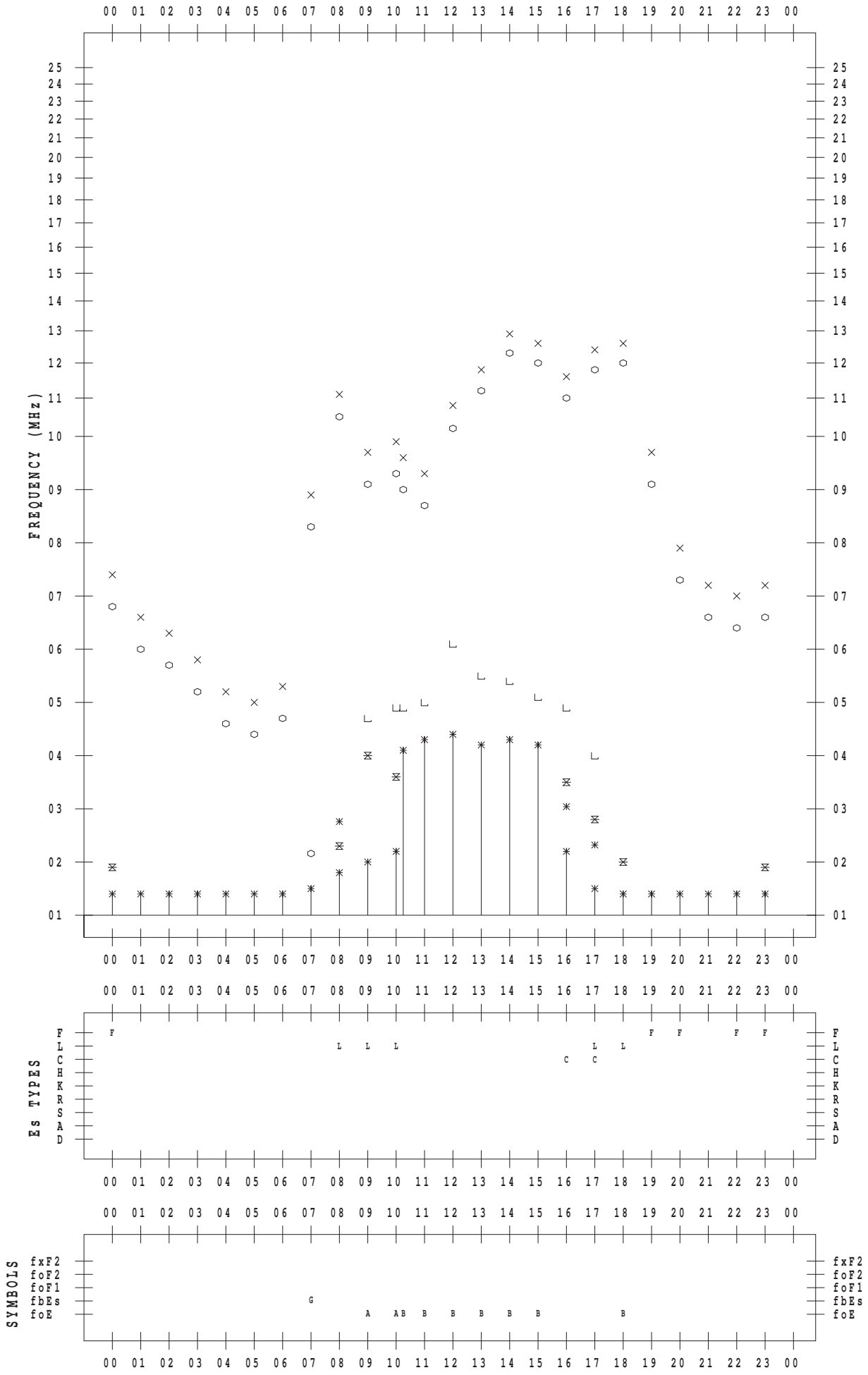
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/10

135 °E MEAN TIME



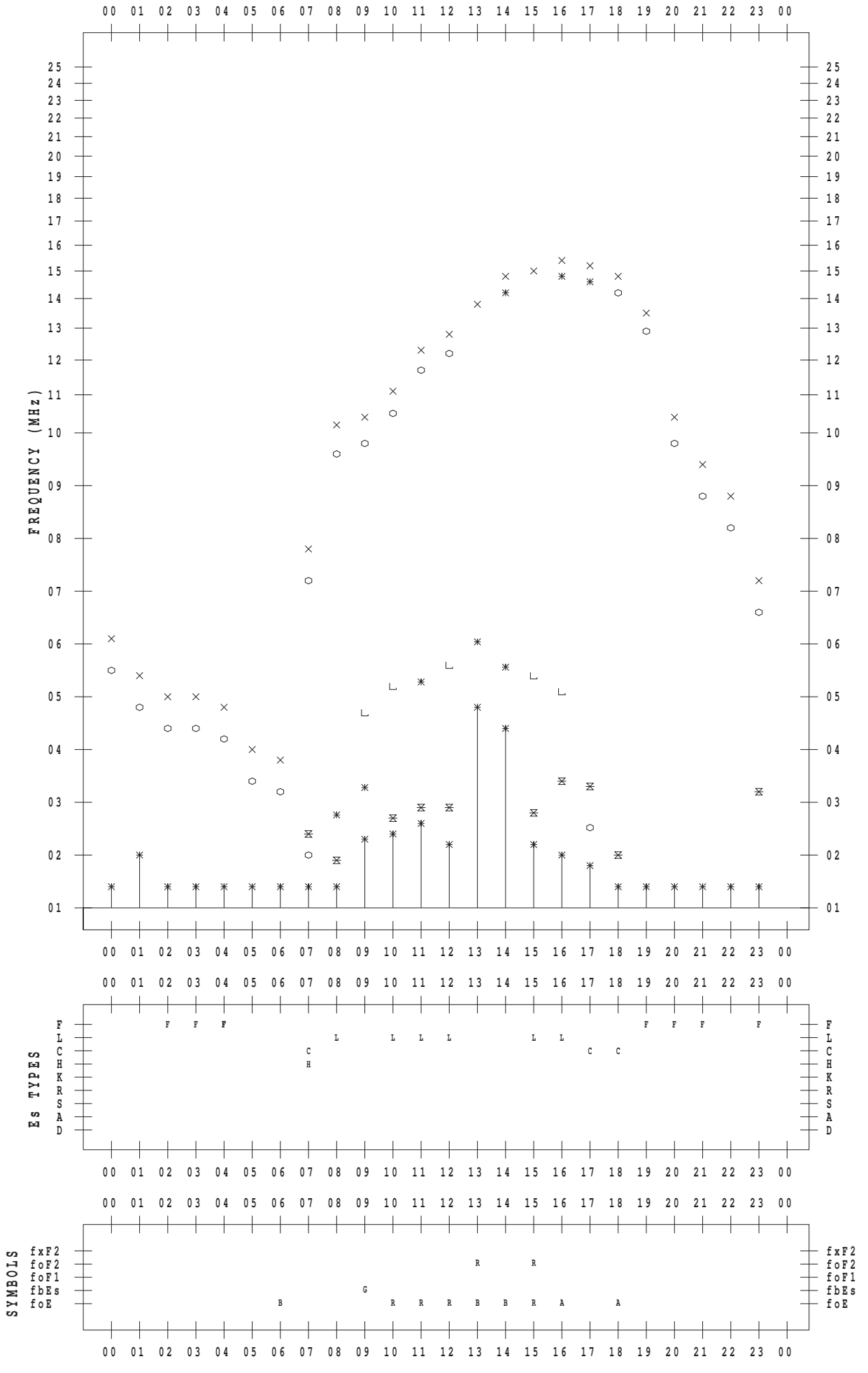
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/11

135 °E MEAN TIME



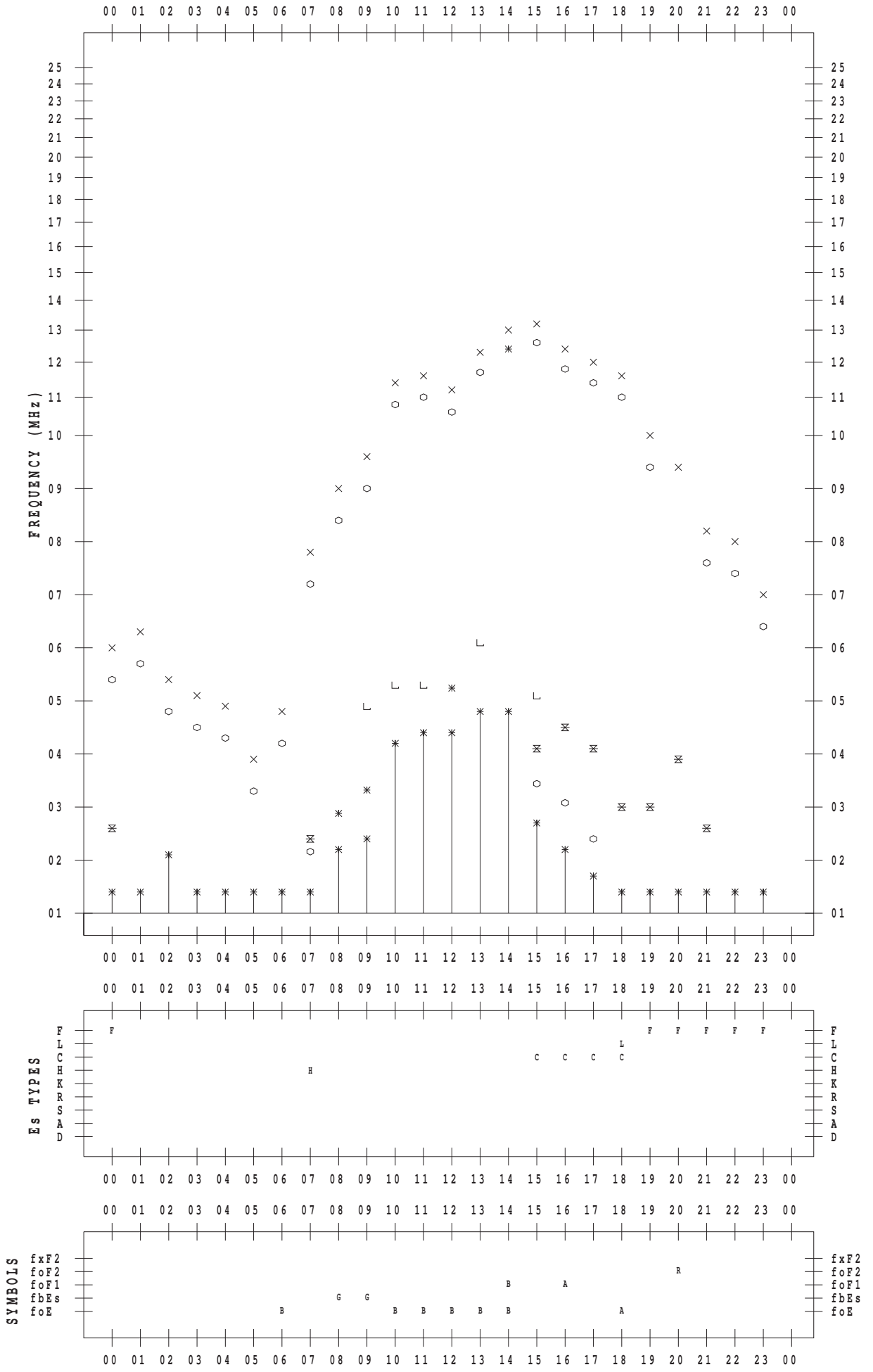
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/12

135 °E MEAN TIME



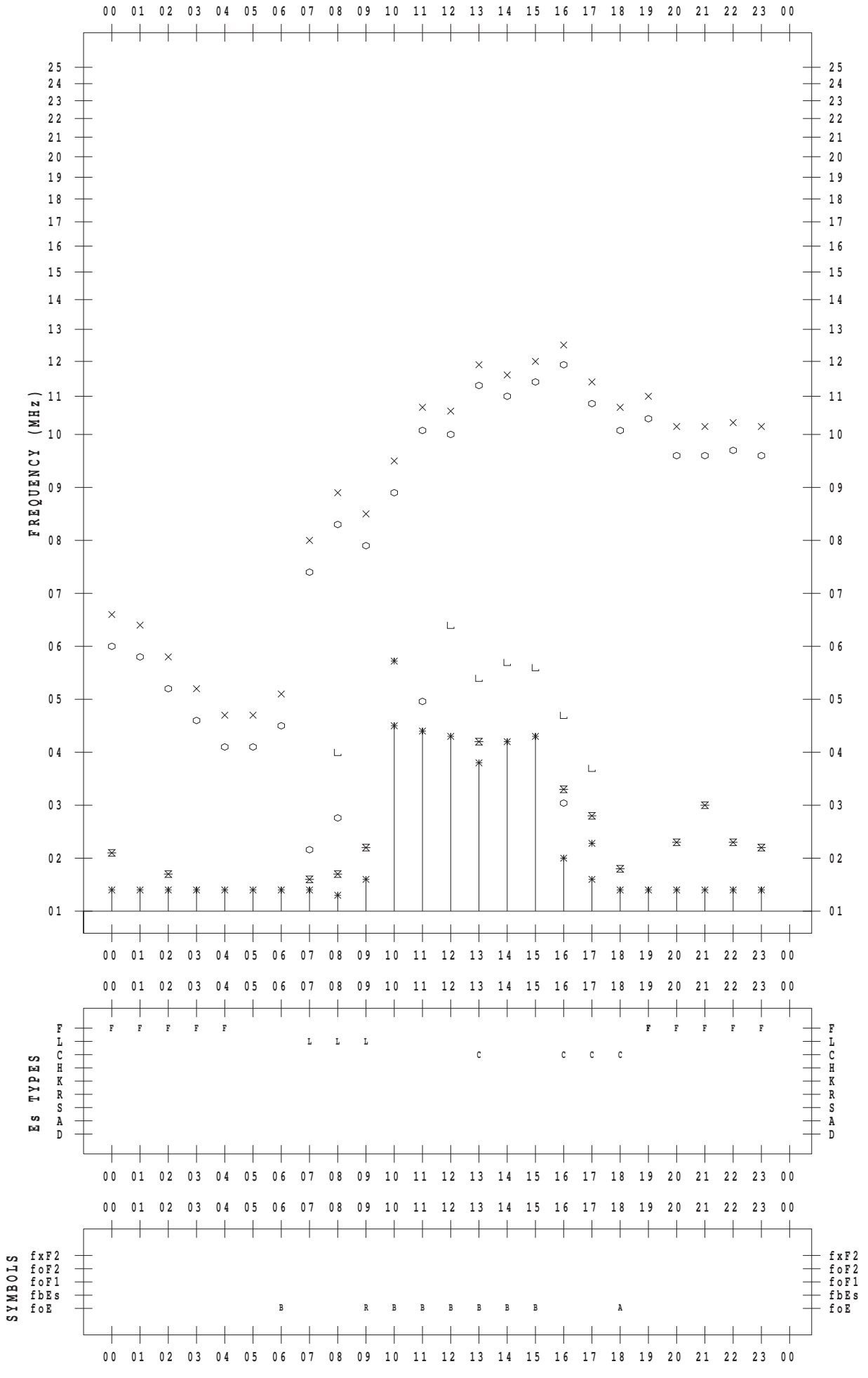
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/13

135 °E MEAN TIME



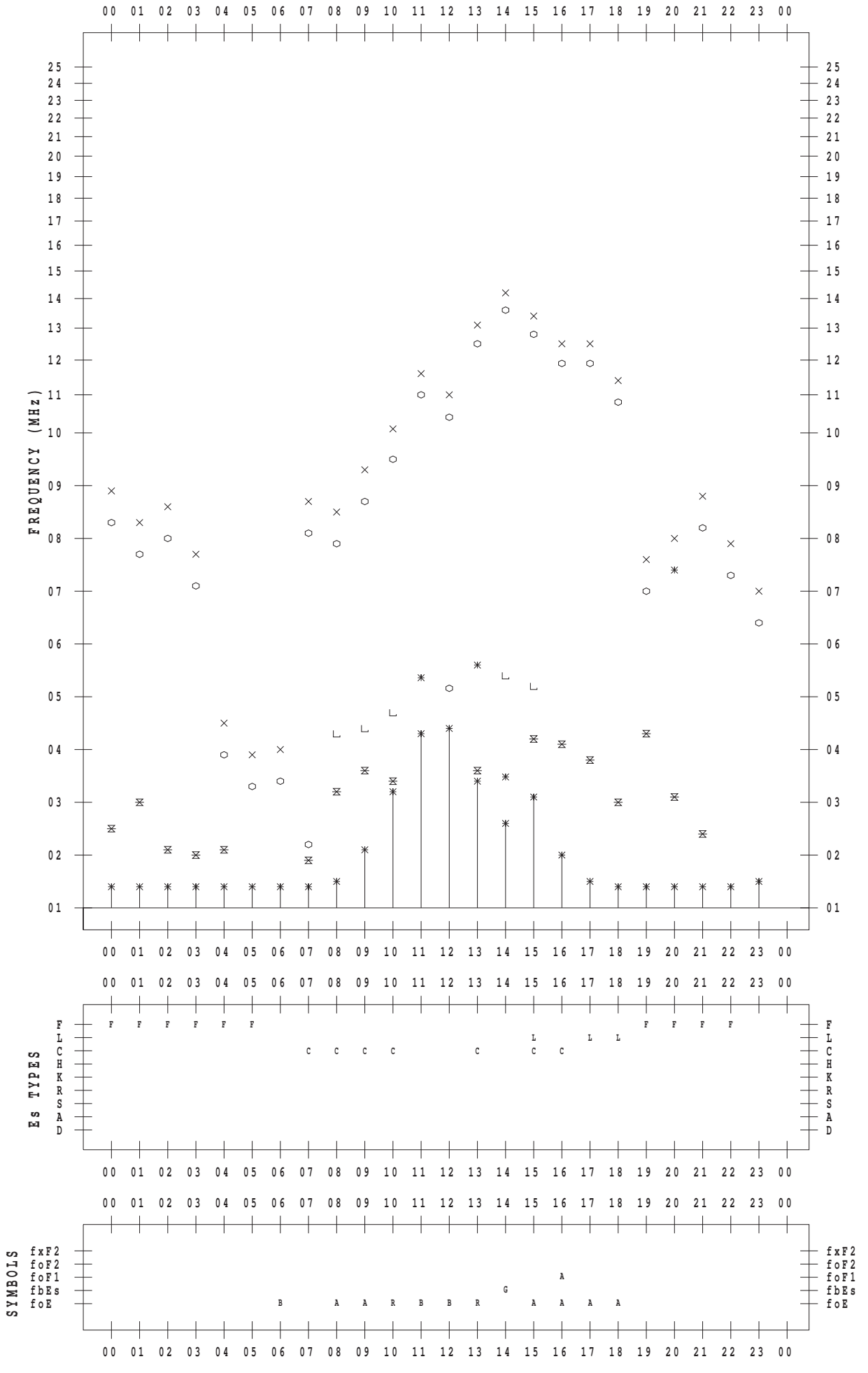
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/14

135 °E MEAN TIME



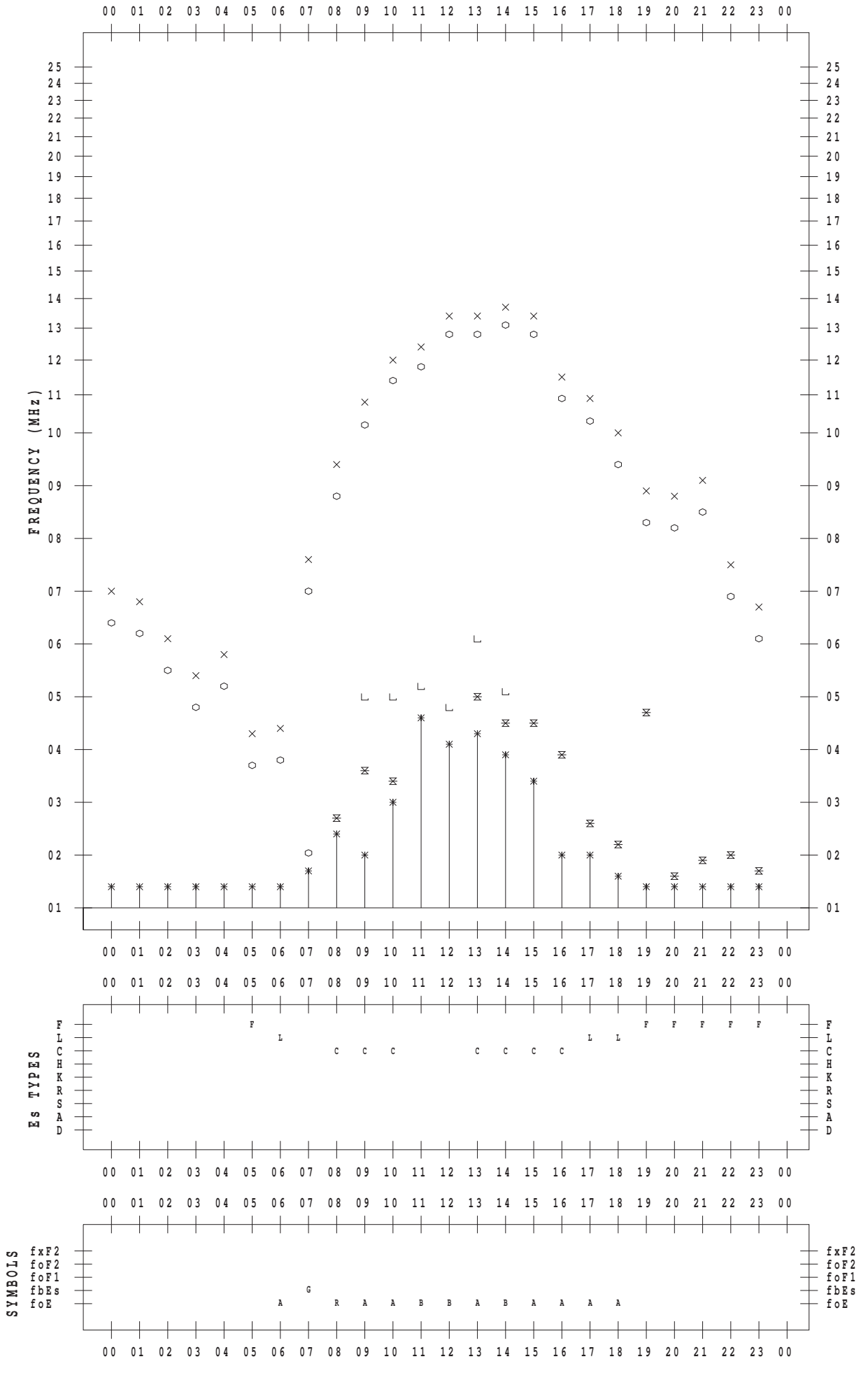
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/15

135 °E MEAN TIME



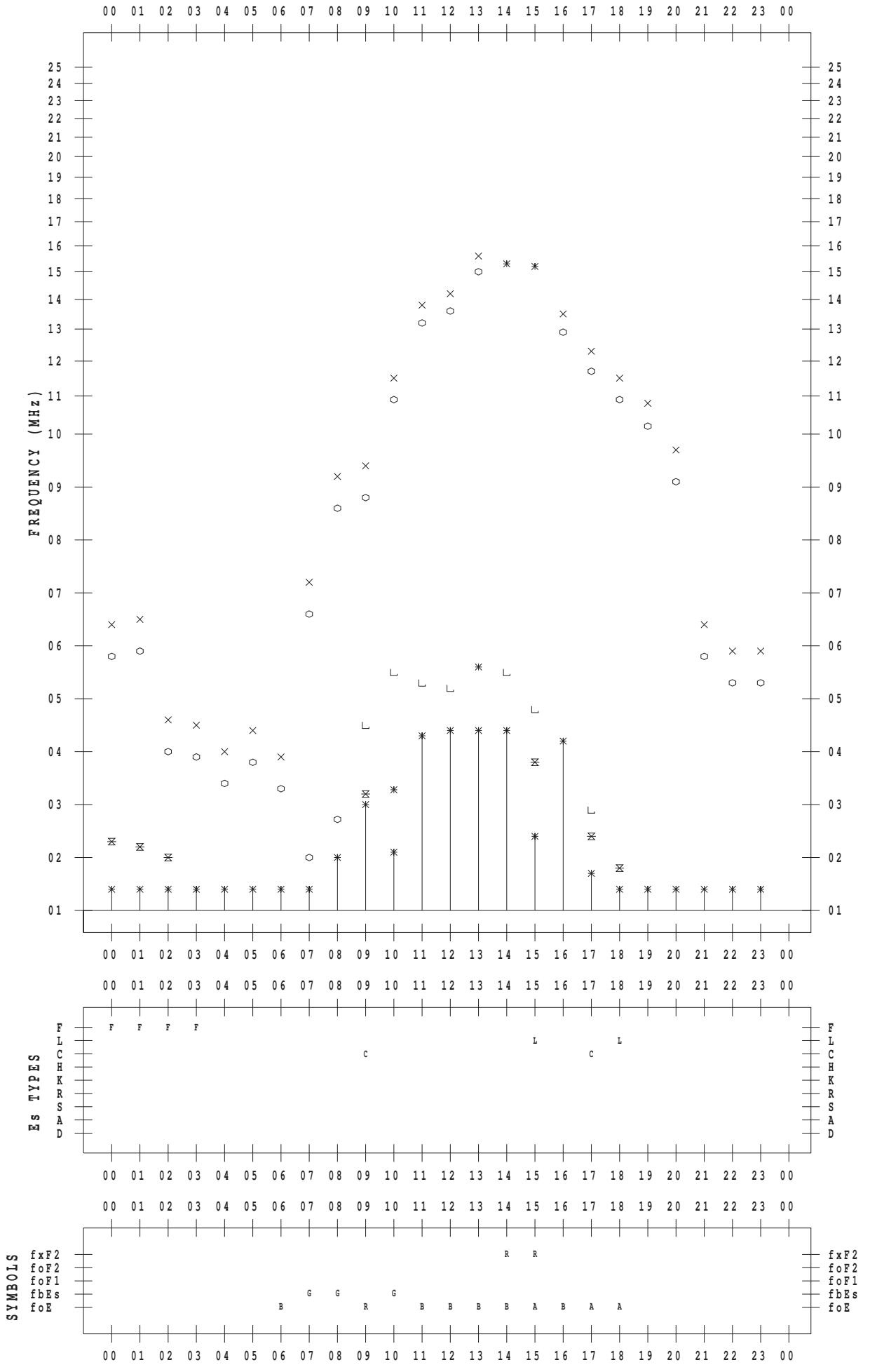
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/16

135 °E MEAN TIME



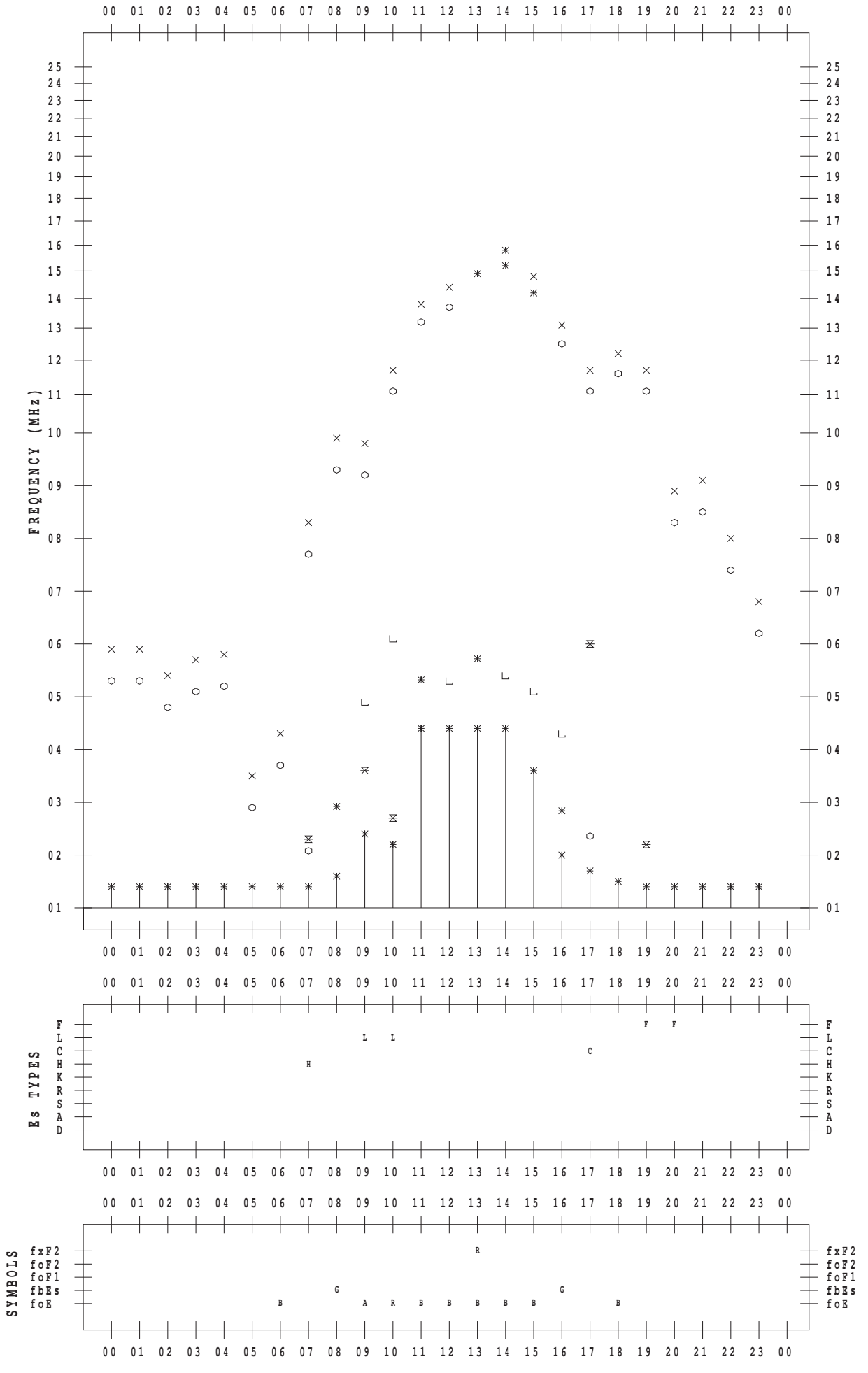
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/17

135 °E MEAN TIME



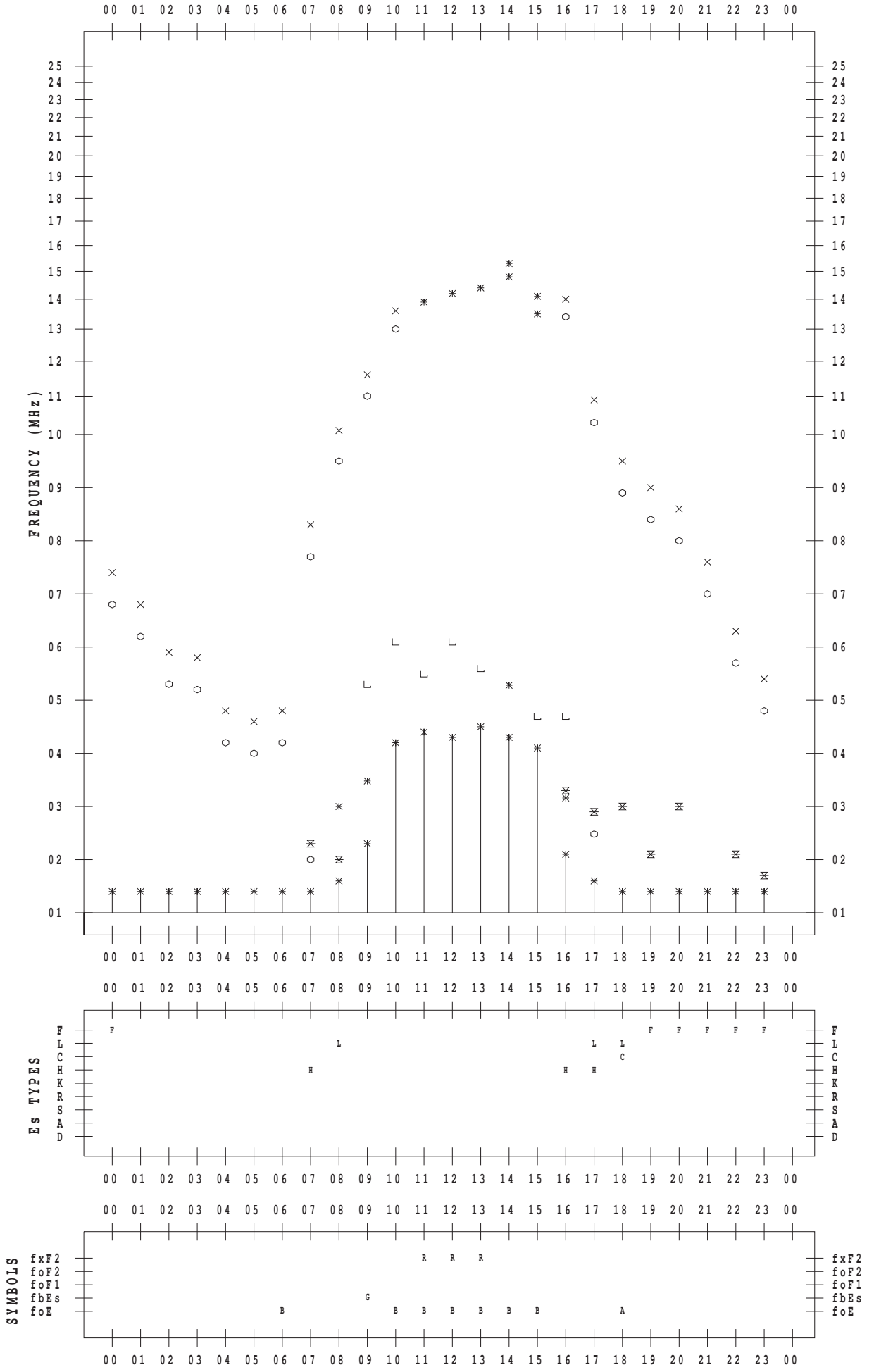
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/18

135 °E MEAN TIME



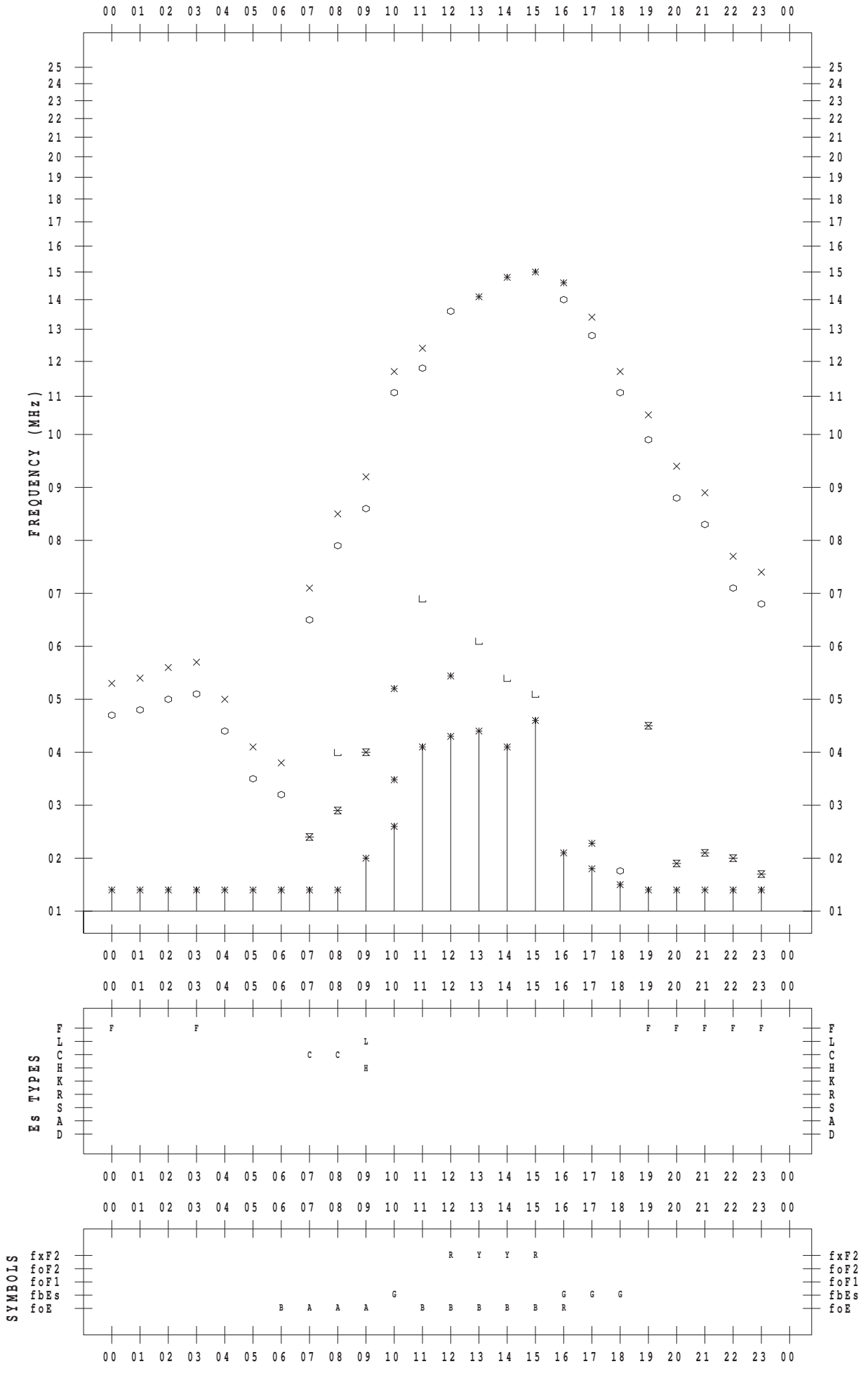
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/19

135 °E MEAN TIME



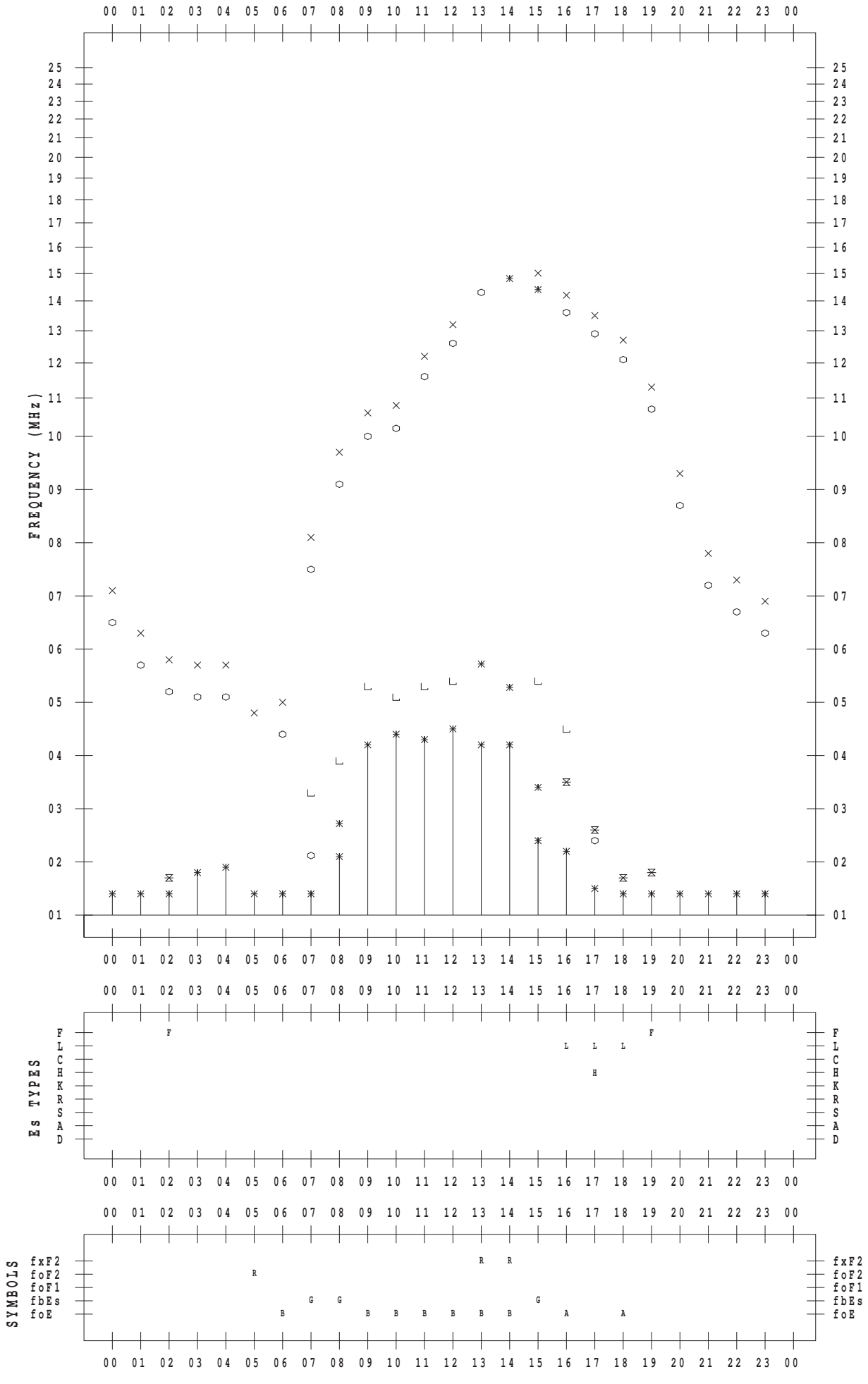
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/20

135 °E MEAN TIME



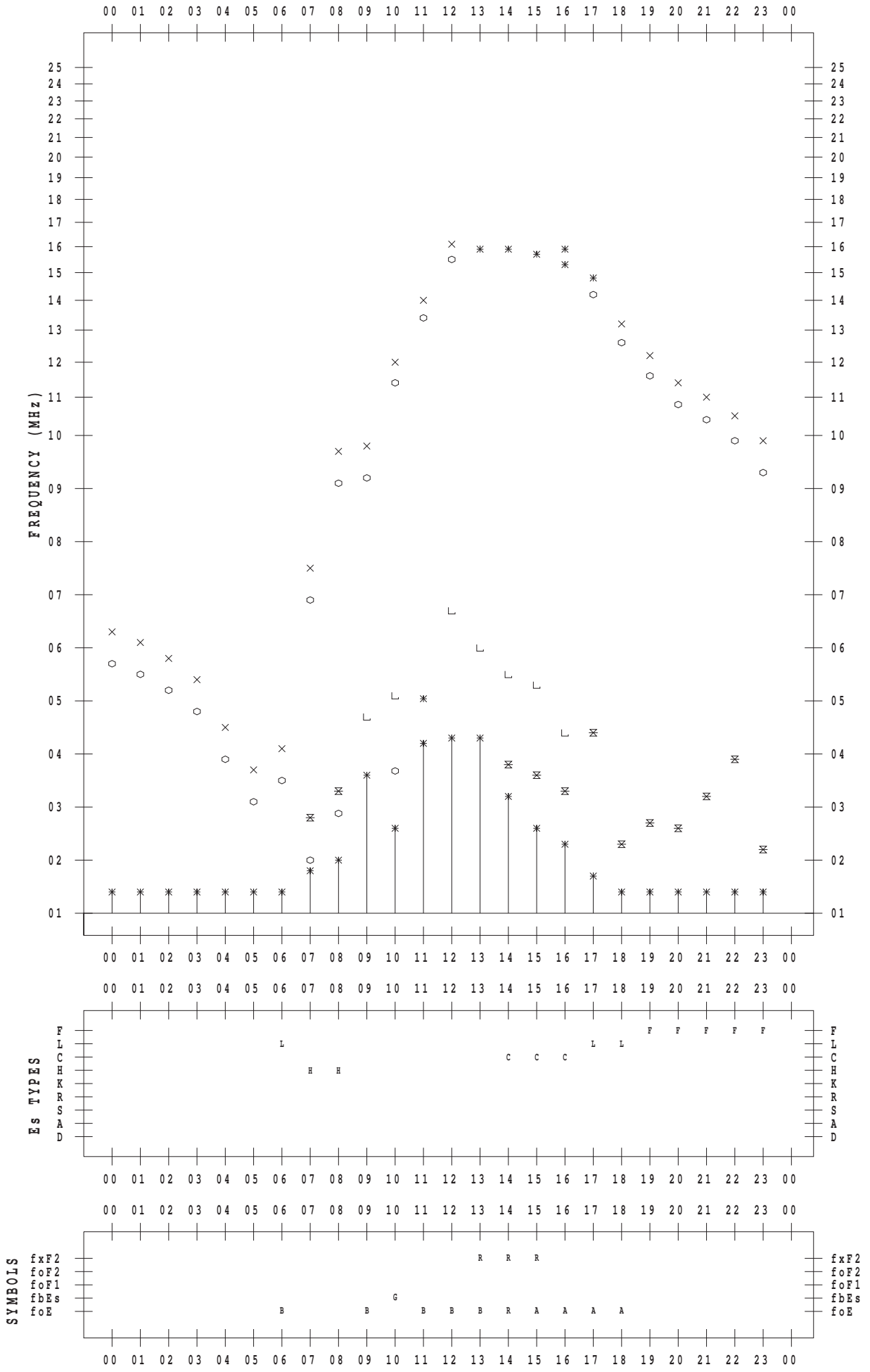
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/21

135 °E MEAN TIME



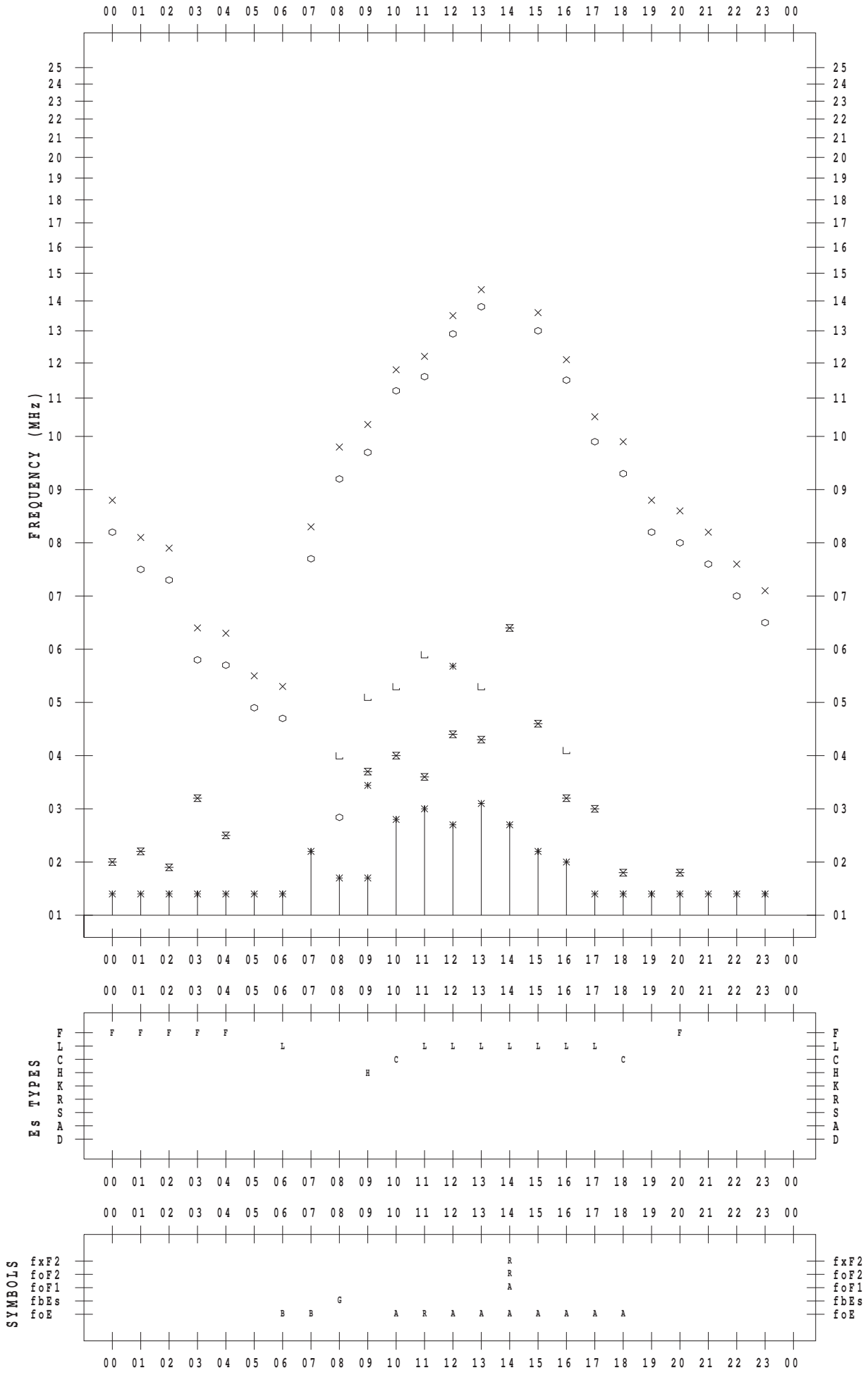
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/22

135 °E MEAN TIME



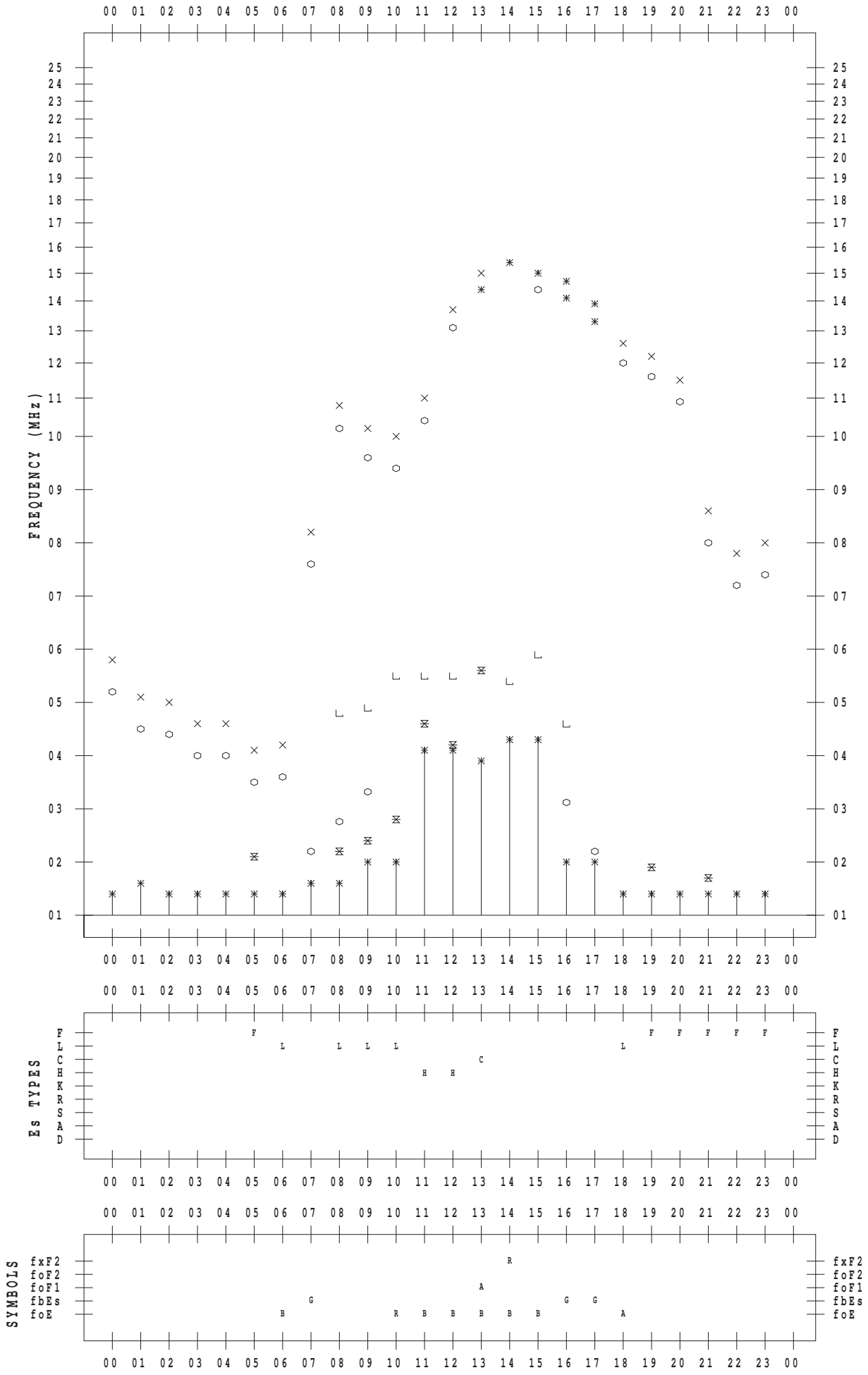
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/23

135 °E MEAN TIME



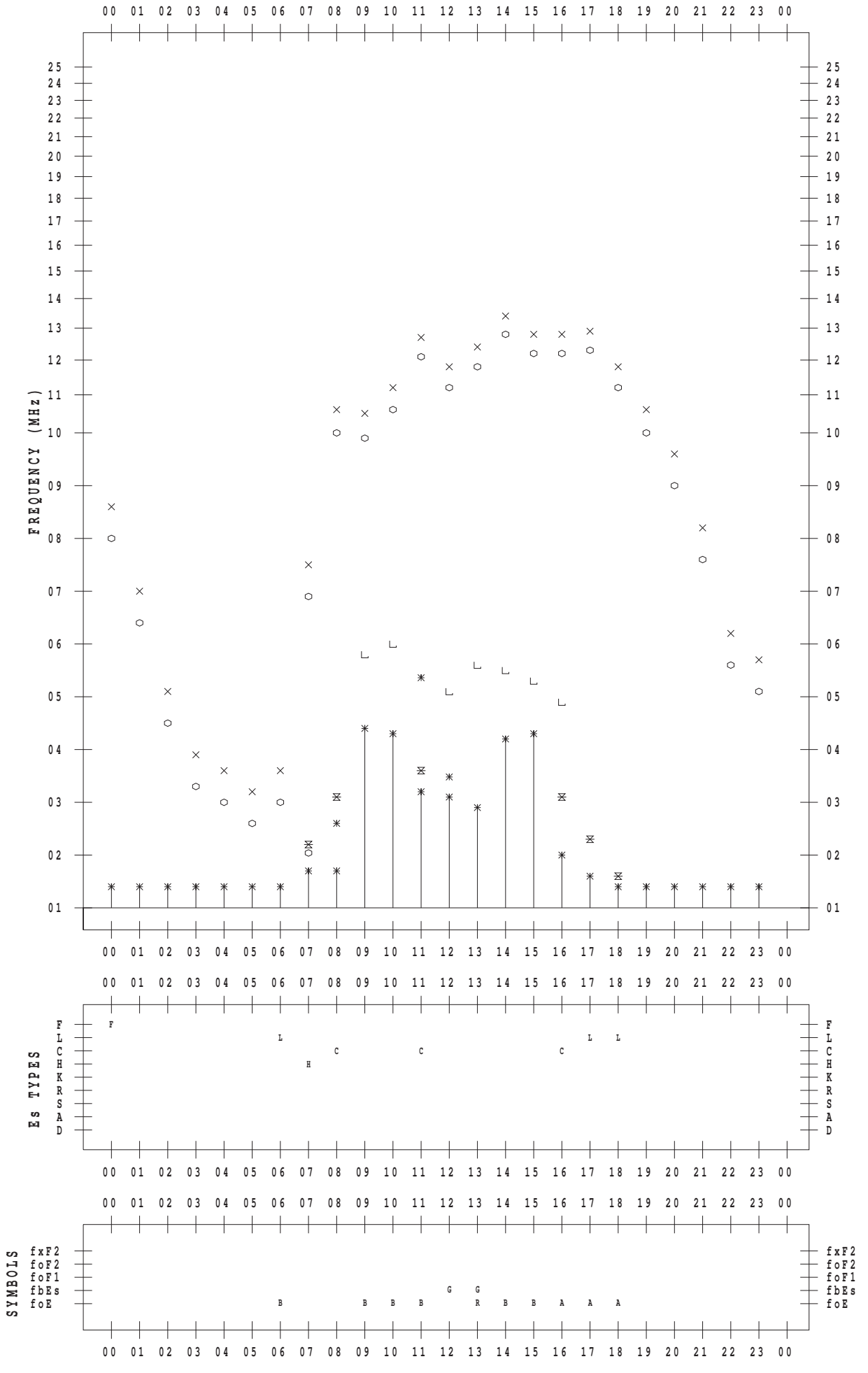
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/24

135 °E MEAN TIME



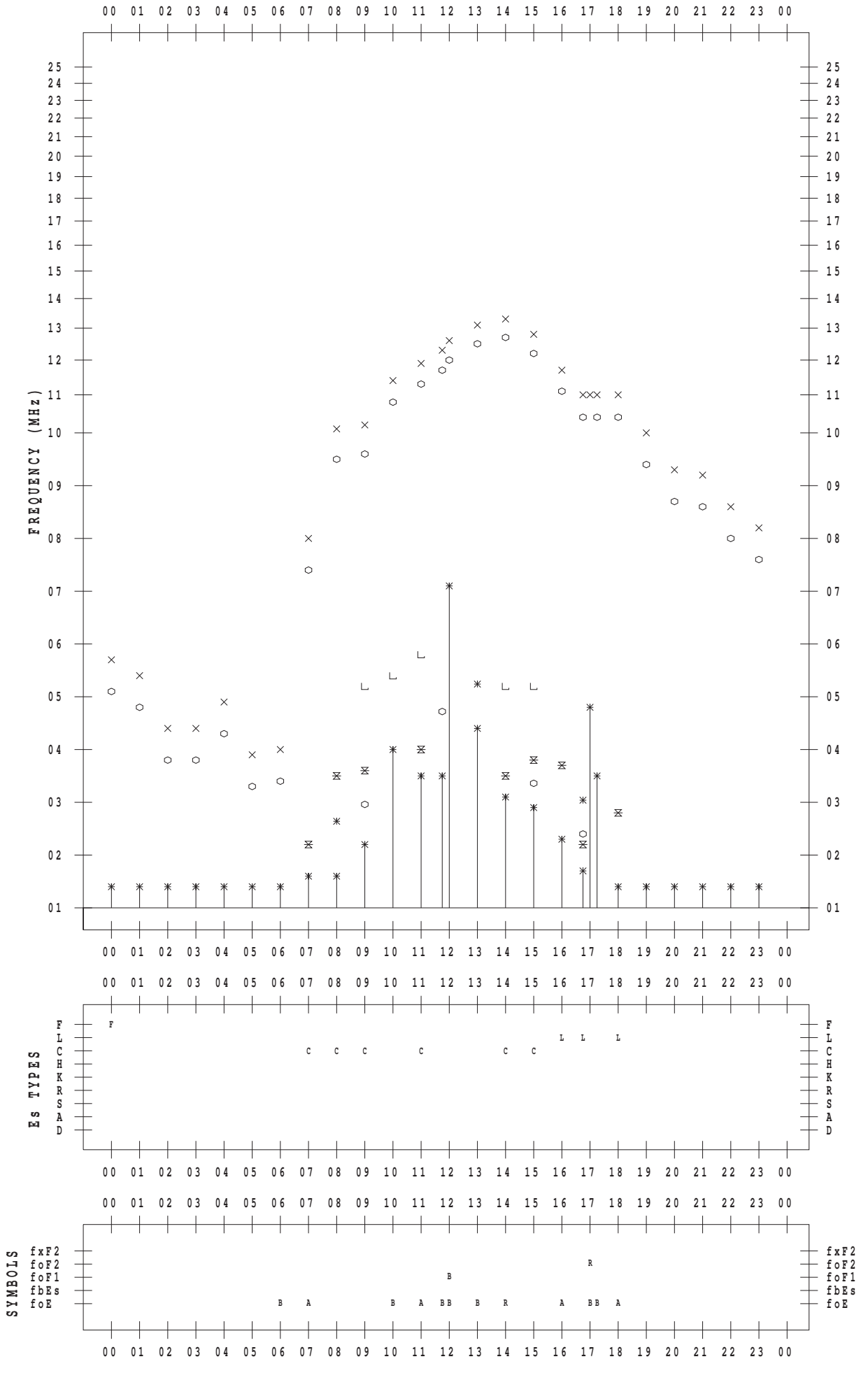
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/25

135 °E MEAN TIME



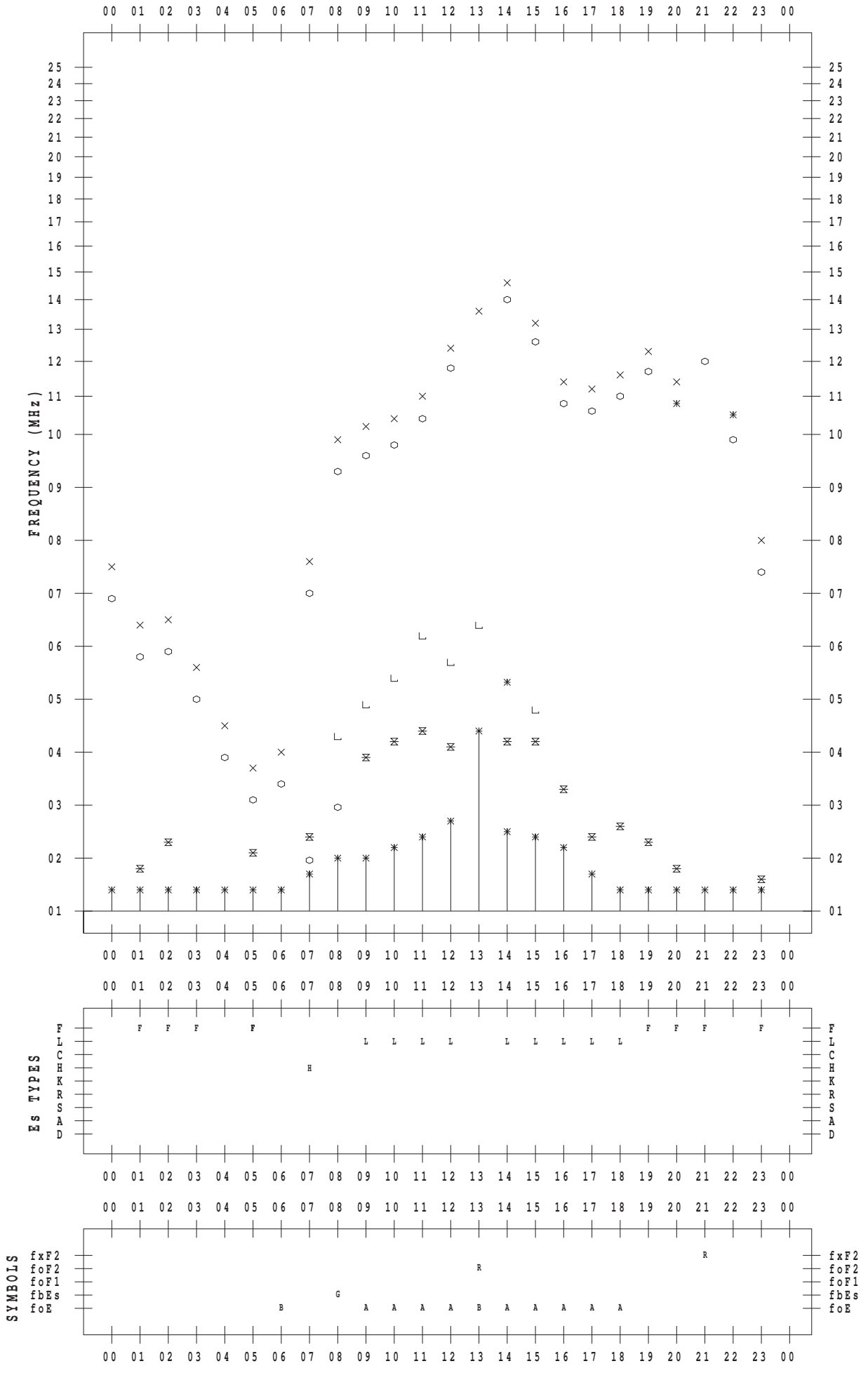
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/26

135 °E MEAN TIME



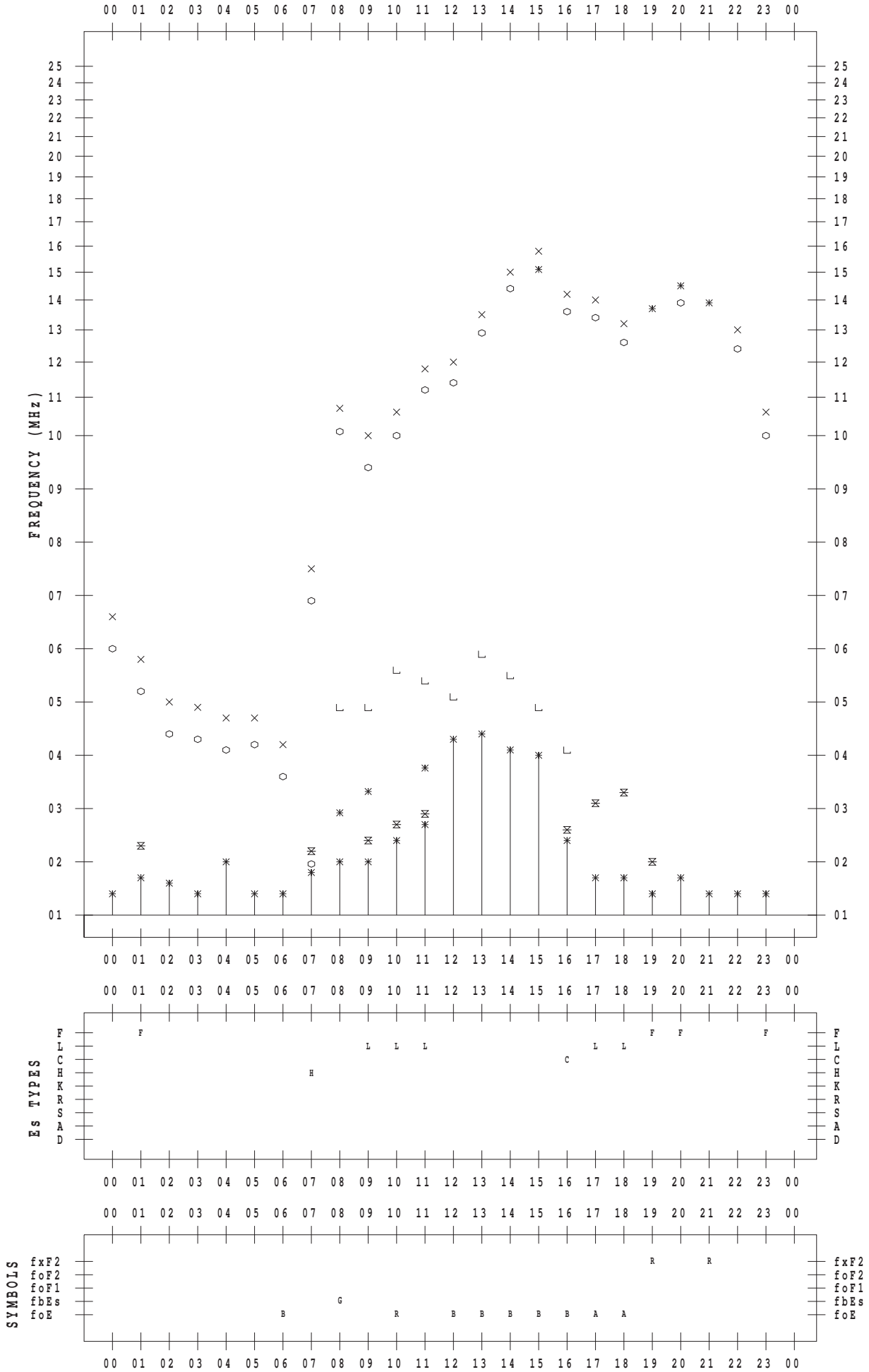
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/27

135 °E MEAN TIME



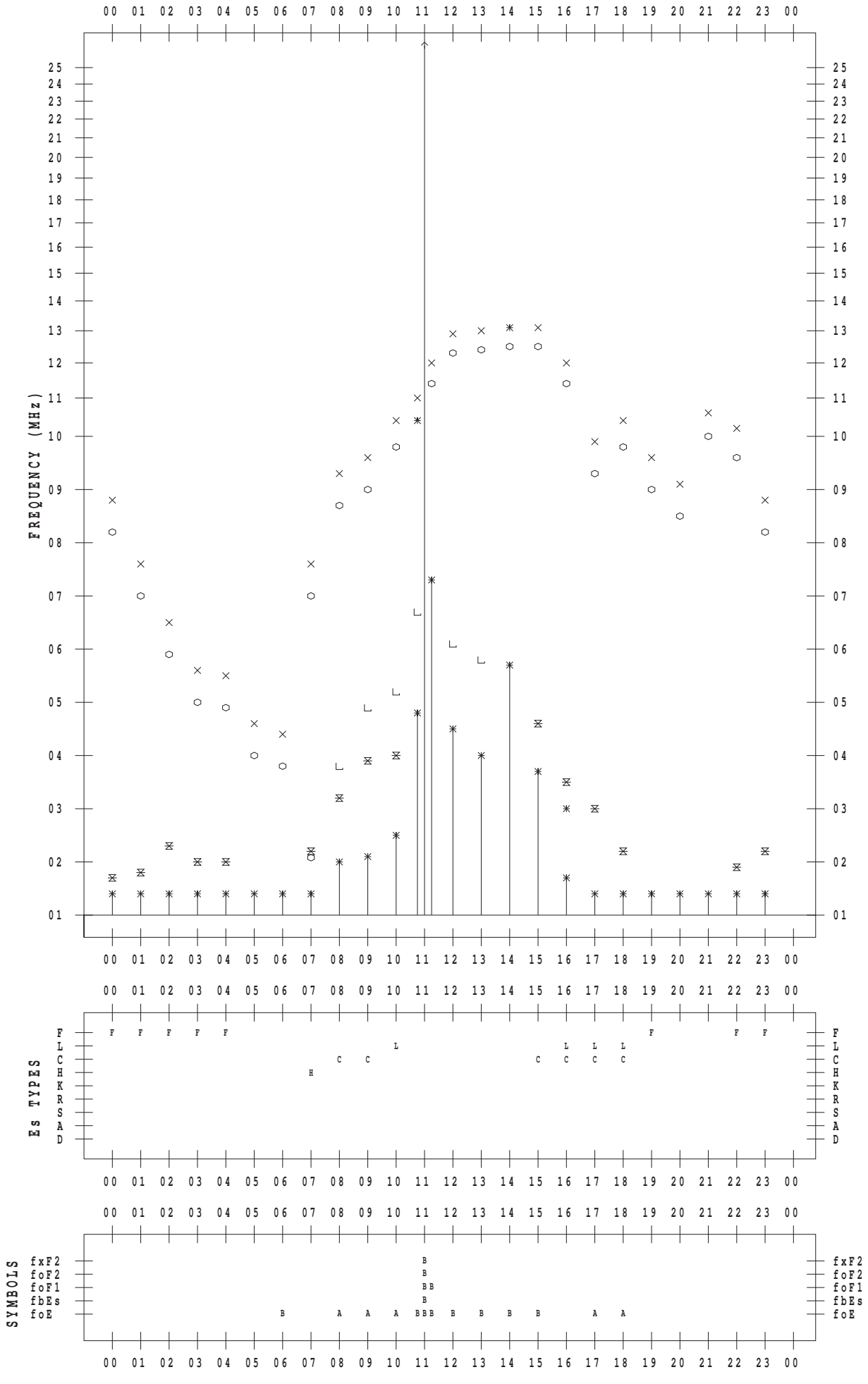
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/28

135 °E MEAN TIME



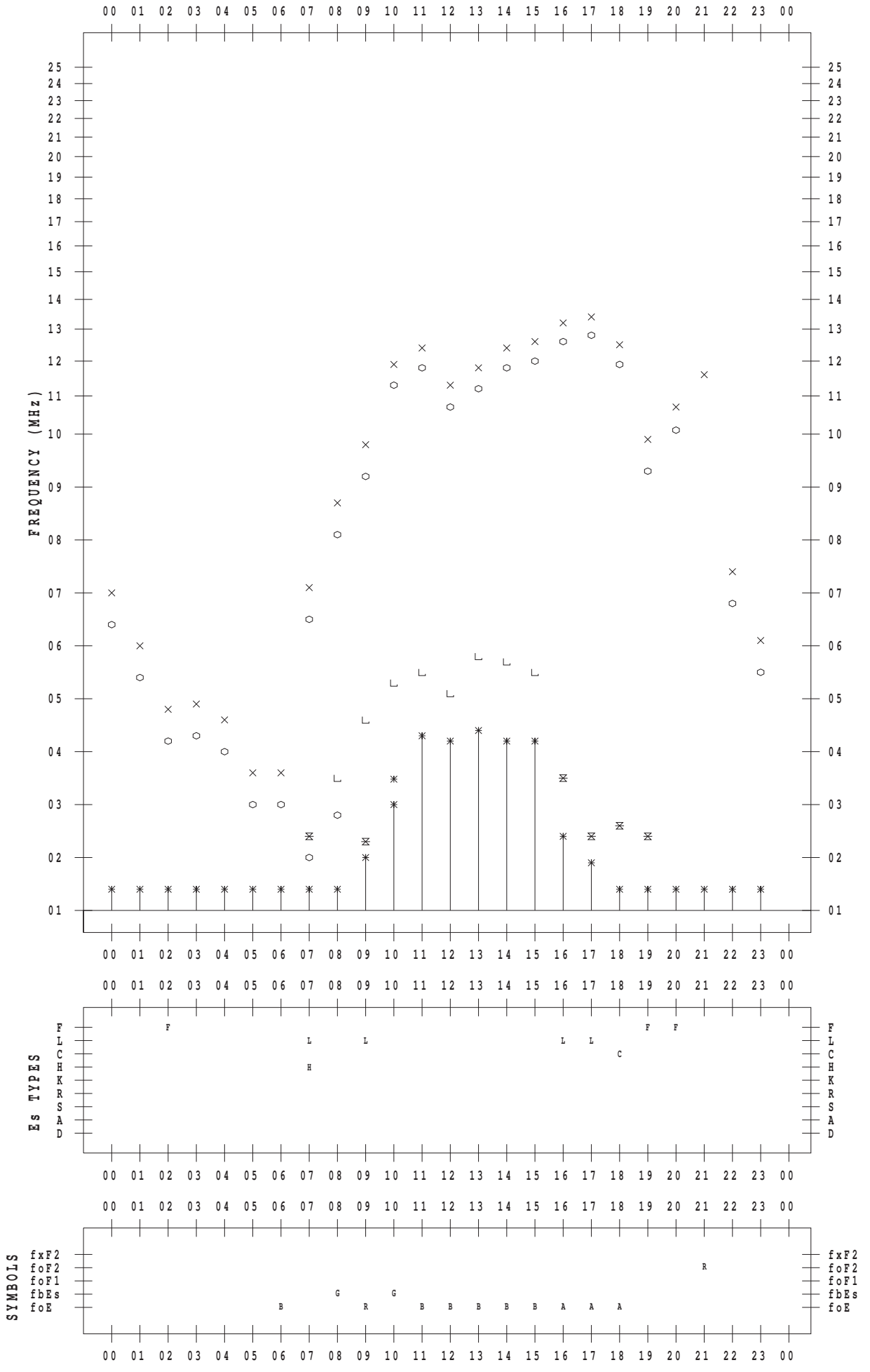
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/29

135 °E MEAN TIME



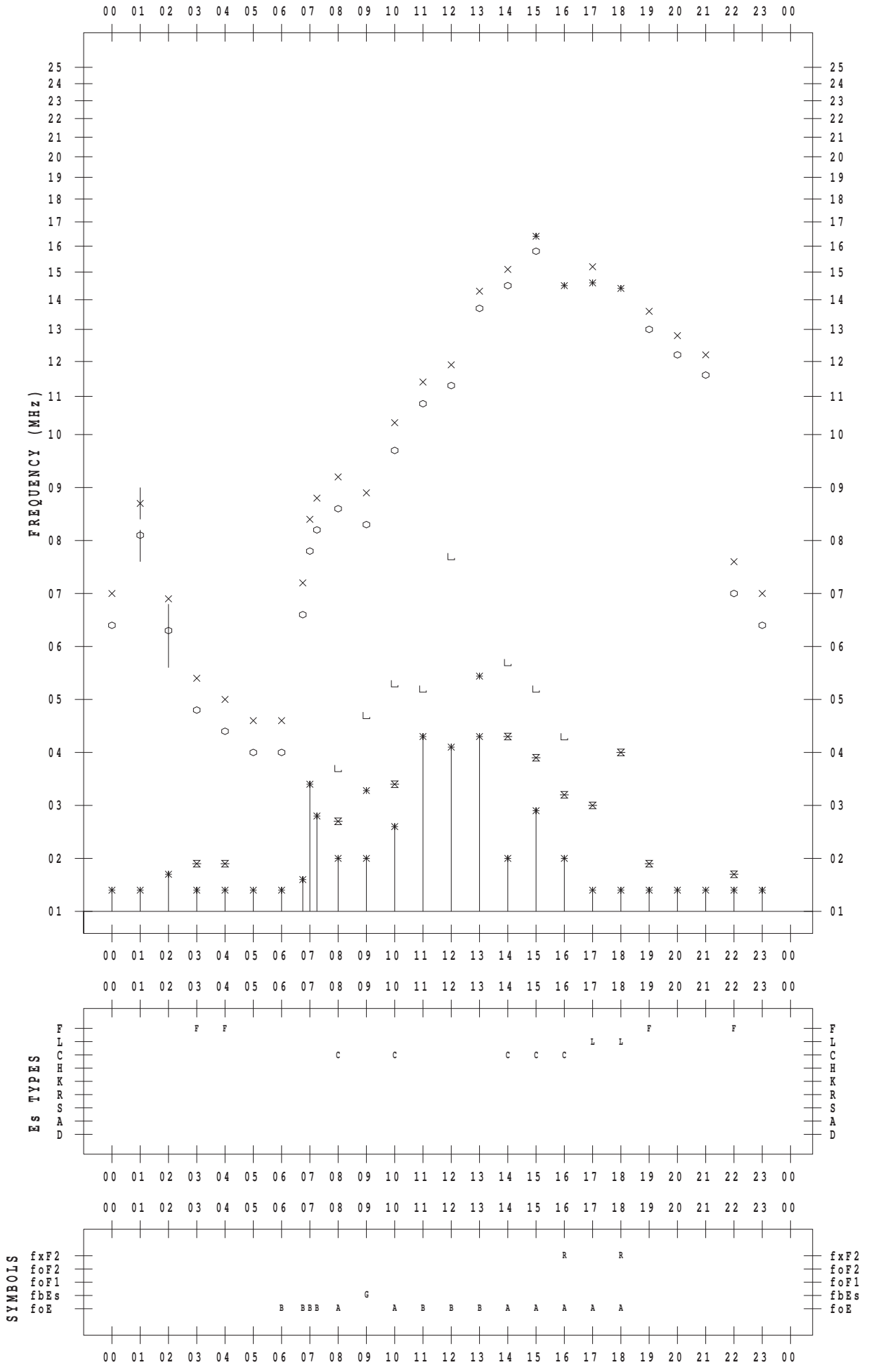
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2013/10/31

135 °E MEAN TIME