F-792

IONOSPHERIC DATA IN JAPAN

FOR DECEMBER 2014

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CONTENTS

Preface
Introduction ・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 1
A. Ionosphere
A1. Automatic Scaling
Hourly Values at Wakkanai (*foF2, fEs* and *fmin*) ・・・・・・・・ 4
Hourly Values at Kokubunji (*foF2, fEs* and *fmin*) ・・・・・・・・ 7
Hourly Values at Yamagawa (*foF2, fEs* and *fmin*) ・・・・・・・・ 10
Hourly Values at Okinawa (*foF2, fEs* and *fmin*) ・・・・・・・・ 13
Summary Plots at Wakkanai ・・・・・・・・・・・・・・・・・・ 16
Summary Plots at Kokubunji ・・・・・・・・・・・・・・・・・・ 24
Summary Plots at Yamagawa ・・・・・・・・・・・・・・・・・・ 32
Summary Plots at Okinawa ・・・・・・・・・・・・・・・・・・・ 40
Monthly Medians *h'F* and *h'Es* ・・・・・・・・・・・・・・・・・ 48
Monthly Medians Plot of *foF2* ・・・・・・・・・・・・・・・・・ 50
A2. Manual Scaling
Hourly Values at Wakkanai ・・・・・・・・・・・・・・・・・・・ 51
Hourly Values at Kokubunji ・・・・・・・・・・・・・・・・・・・ 65
Hourly Values at Yamagawa ・・・・・・・・・・・・・・・・・・・ 79
Hourly Values at Okinawa ・・・・・・・・・・・・・・・・・・・・ 93
f-plot at Wakkanai ・・・・・・・・・・・・・・・・・・・・・・ 108
f-plot at Kokubunji ・・・・・・・・・・・・・・・・・・・・・・ 139
f-plot at Yamagawa ・・・・・・・・・・・・・・・・・・・・・・ 170
f-plot at Okinawa ・・・・・・・・・・・・・・・・・・・・・・・ 201

≪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

DEC. 2014

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	42	42	32	36	37	38	42	62	85	111	122	120	118	N	91	92	70	66	50	34	32	32	A	34
2	34	37	37	37	35	34	28	66	64	119	117	107	91	90	90	77	68	67	53	44	42	43	51	52
3	44	44	35	34	35	34	38	67	64	69	146	121	121	119	119	94	70	55	43	46	34	44	34	36
4	43	42	52	52	53	53	54	65	89				121	92	99	92	71	55	48	52	38	52	52	51
5	43	37	48	52	57	47	32	55	69	119	120	121	94	91	96	84	65	66	67	54	34	32	31	36
6	42	43	32	32	42	37	32	61	61	119	59	59	91	91	94	91		53	48	37	32	A	A	43
7	43	34	40	34	42	40	29	60	82	N	96	80	96	91	95	94	75	63	62	53	32	31	42	42
8		35	42	34	32	32	A	58	67	88		92	94	92	96	91	68	66	54	41	32	N	37	36
9	31	36	29	34	32	32	31	52	67	89			90		94	86		55	47	45	34	34	37	37
10	37	34	32	34	37	38	42	58	72	70		97	92	93	92	69	63	53	43	34	32	42	42	42
11	34	43	43	44	42	44	34	58	86	90	59	89	72	91	91	91	70	51	43	34	36	38	34	38
12	34	34	37	44	32	42	38	58	72	92	94	93	91	96	70	74	68	34	44	32	37	34	31	28
13	34	34	30	40	34			53	63	121		90	96	94	94	95	88	64	42	37	31	30	34	A
14	36	35	31	38	37	34		54	67	119	121	89	67	91	85	96	67	65	31	34	34	32	34	34
15	34	34	34	32	34	30	34	64	96	89		131	106	91	94	94	70	67	47	A	28	A	34	37
16	36	A	A	38	37	26	32	62	84	66	122	122	90	99	91	94	56	64	61	55	41	32	36	43
17	38	43	44	43	34	34	43	60	70	93	115	116		88	94	91	65	62	54	34	37	32	34	34
18	30	31	32	34	35	36	36	50	64	88	91	96	90	107	70	91	67	47	35	28	34	31	32	34
19	34	35	34	34	34	32	30	41	74	91	90	96	69	96	85	72	70	60	43	36	32	A	A	34
20	34	32	34	40	32	37	38	54	80		69	122	68	59	96	86	67	50	44	38	34	34	A	37
21	32	43	25	34	42	32	34	54	82	93	72	96	92	90	94	86	67	62	50	34		28	32	A
22	A	A	34	34	A	32	32	48	38	111	119	121	120	99	118	115	60	64	51	46	48	52	58	55
23	54	48	58	53	60	54	55	66	61		109	121	121	94	91	93	71	67	30	44	34	34	34	34
24	37	32	36	32	42	42	44	61	70		96	59	96	89	91	90	70	62	54	30	A	A	38	32
25	34	38	37	38	37	32	A	49	88	119	69	59	100		74	92	67	53	47	38	32	A	A	A
26	34	29	34	34	A	A	A	A	83	121		96	N	72		93	68	63	47	42	30	34	32	34
27	37	34	37	34	34	34	30	53	N	100	86	69	67	91	95	92	68	63	38	31	28		34	34
28	A	A	34	37	38	37	34	32	67	105	A	80	69	62	74	70	63	34	42	29	32	A	34	37
29	40	A	32	34	34	38	31	53	67		92	93	70	93	94	80	65	64	45	28	29	32	34	35
30	34	34	32		28		26	46	67	77	97		71	90	86	81	70	70	64	38	A	A	32	37
31	44	42	44	51	54	35	38	48	77	87	109	90	92	86	71	71	65	53	34	34	33	32	31	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	30	30	29	28	26	30	30	25	23	28	29	28	30	31	29	31	31	30	28	22	26	28
MED	36	35	34	35	37	36	34	56	70	93	96	96	92	91	93	91	68	62	47	37	34	33	34	36
U Q	42	42	40	40	42	39	38	61	82	119	119	120	98	94	95	93	70	65	53	44	35	38	37	40
L Q	34	34	32	34	34	32	31	52	67	88	86	89	71	90	86	81	65	53	43	34	32	32	32	34

HOURLY VALUES OF fEs AT Wakkanai

DEC.2014

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	G	34	G	G	39	G	G	G	G	G	G	G	25	G	25	33	27
2	G	G	G	G	G	G	G	G	35	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
3	G	G	G	G	G	G	G	G	39	G	G	G	G	G	G	G	G	29	G	G	G	G	G	G
4	27	G	G	G	G	G	G	48	G				G	38	44	34	29	32	26	G	G	G	G	34
5	G	G	G	G	G	11	G	G	33	G	G	G	G	G	G	G	G	G	G	G	24	G	G	G
6	G	G	G	G	G	G	G	36	54	80	G	G	G	G	36	46		G	G	30	34	45	36	32
7	G	26	G	G	G	G	G	24	G	G	G	G	G	G	G	G	G	31	G	G	G	28	G	26
8		G	G	G	G	G	51	45	38	G		G	G	G	G	32	28	G	G	G	G	G	G	G
9	25	G	G	G	G	G	G	G	G	G			G		G	G		G	G	G	34	G	G	G
10	G	G	G	G	G	G	G	G	G	G		G	G	G	G	G	11	G	G	G	G	G	G	32
11	30	28	29	27	G	G	G	G	G	G	G	G	G	G	G	N	11	G	G	G	G	G	G	G
12	G	G	G	G	G	G	G	G	G	44	G	G	G	G	N	G	G	G	G	G	G	G	G	24
13	23	G	24	27	G			G	43	37		G	G	G	G	G	G	11	G	G	G	G	30	26
14	G	G	G	G	G	G		33	32	35	G	N	G	G	G	N	G	G	G	G	G	25	G	G
15	G	G	G	G	G	G	G	G	64	53		G	G	G	G	G	G	G	G	40	33	51	30	27
16	25	39	52	G	27	20	32	35	117	91	51	G	G	G	G	G	G	G	G	43	G	G	38	33
17	G	26	G	G	G	G	G	G	G	34	G	G		G	G	G	G	G	G	G	G	G	G	G
18	G	G	G	G	G	G	G	G	G	G	G	G	39	G	G	G	G	11	G	G	G	G	26	28
19	G	G	G	G	G	G	G	27	G	G	G	G	60	G	40	34	G	23	G	G	G	27	39	G
20	G	G	G	G	G	G	G	G	38		G	G	68	40	G	G	G	G	G	28	34	23	54	52
21	33	32	33	G	G	G	G	G	48	G	G	G	G	G	44	38	31	35	G	G		G	G	34
22	32	48	32	25	35	G	G	11	38	42	45	39	46	54	G	G	G	G	G	G	29	36	35	27
23	28	G	G	G	G	G	G	G	53		G	G	G	G	G	G	G	G	G	G	G	G	G	27
24	G	28	G	G	33	26	G	G	G		G	48	G	G	40	G	G	G	34	25	34	57	32	38
25	27	26	G	G	28	35	27	25	G	47	44	G	49		G	G	G	G	34	G	G	28	39	35
26	26	G	G	G	33	40	50	28	G	G		40	G	G		G	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	34	G	G	G	G	G	G	G	G	G	G	G		G	28
28	33	32	G	G	G	G	32	41	54	83	87	66	G	G	G	G	11	G	G	G	G	34	G	30
29	29	27	G	G	G	G	G	31	34		G	G	G	G	G	31	39	36	G	G	G	G	G	G
30	G	G	G		G		G	24	G	G	G		G	G	G	G	32	31	G	28	29	38	25	G
31	G	G	G	G	G	G	G	26	29	G	38	G	G	G	N	G	G	G	G	G	G	30	33	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	30	31	31	30	31	29	29	31	31	26	24	27	30	29	28	29	29	31	31	31	30	30	31	31
MED	G	G	G	G	G	G	G	G	32	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26
U Q	27	26	G	G	G	G	G	28	39	42	G	G	G	G	G	G	11	11	G	G	24	28	33	32
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

DEC.2014

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	15	14	14	14	14	17	14	14	14	14	14	14	14	23	16	14	14	14	14	15	14	15
2	15	17	14	14	15	15	14	17	14	14	22	18	21	18	16	17	16	14	14	14	15	15	14	15
3	14	15	15	14	14	14	14	17	14	14	15	14	14	14	14	15	16	14	15	15	20	14	14	15
4	15	14	15	15	14	14	14	15	14				14	14	14	14	14	14	15	15	17	15	15	14
5	14	15	14	14	14	14	15	17	14	15	15	15	18	15	14	14	15	16	14	14	14	14	14	14
6	16	14	14	14	14	14	14	14	14	14	14	16	16	15	14	14		14	14	14	15	14	14	14
7	14	15	14	16	15	14	15	17	14	15	18	20	18	18	27	15	15	14	14	14	14	17	14	15
8		14	14	14	14	14	14	14	14	14		14	15	14	14	14	14	14	14	14	14	15	14	14
9	15	14	15	15	15	14	15	16	24	30			32		20	23		14	15	14	15	15	15	14
10	14	14	14	15	15	14	14	16	23	20		22	32	20	18	22	14	14	14	14	15	14	14	14
11	14	14	14	14	15	14	14	16	14	16	21	21	24	29	20	24	15	14	14	14	14	14	14	16
12	14	14	14	14	14	14	15	15	15	17	20	18	21	18	15	16	15	15	16	15	14	17	15	15
13	14	15	16	14	14			15	14	14		17	16	14	15	14	16	14	14	14	14	15	14	17
14	14	14	14	14	15	14		16	14	14	14	14	15	15	18	15	15	14	14	14	14	15	15	16
15	17	14	14	17	20	21	15	16	14	14		15	14	16	16	15	16	14	14	14	14	14	14	14
16	14	14	14	15	14	14	15	14	14	14	15	15	20	20	18	18	17	15	14	14	14	14	14	14
17	15	15	15	14	14	14	14	14	14	14	15	17		15	44	22	16	14	15	14	14	14	14	15
18	14	14	15	14	15	15	15	14	14	15	15	17	17	24	20	23	17	14	14	14	15	15	14	14
19	15	15	14	14	14	14	15	17	14	14	17	17	15	17	17	15	17	14	15	15	14	16	15	14
20	14	14	15	14	14	15	15	14	14		52	41	18	15	14	15	15	14	15	14	14	14	14	14
21	14	14	14	14	14	14	16	15	14	14	14	15	17	15	15	14	14	14	14	14		15	15	14
22	15	14	14	14	14	15	14	16	14	14	15	18	15	15	17	18	18	14	14	14	14	14	15	15
23	14	14	14	14	14	14	15	16	14		14	14	14	16	18	15	17	14	14	14	14	16	14	14
24	14	15	15	15	14	14	14	15	14		20	17	15	14	16	14	16	14	14	14	14	14	14	14
25	15	15	14	14	14	15	14	16	14	15	17	14	15		16	17	16	14	14	14	14	14	14	14
26	14	14	14	14	14	14	14	14	14	17		16	16	18		15	16	14	14	15	21	14	14	15
27	14	15	15	14	14	14	14	14	15	15	15	17	18	21	17	21	16	14	14	14	14		14	15
28	14	14	14	14	14	14	14	14	16	17	21	23	24	32	29	26	17	14	15	14	14	14	14	14
29	14	14	14	14	16	14	18	15	14		21	34	34	29	18	16	14	14	14	14	17	14	14	15
30	15	15	14		18		14	14	14	14	16		15	15	17	14	14	14	14	14	14	14	14	15
31	14	14	14	14	14	16	15	14	14	14	14	15	16	17	17	15	16	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	29	29	31	31	26	24	28	30	29	30	31	29	31	31	31	30	30	31	31
MED	14	14	14	14	14	14	14	15	14	14	15	17	16	16	17	15	16	14	14	14	14	14	14	14
U Q	15	15	15	14	15	14	15	16	14	15	20	18	20	19	18	21	16	14	15	14	15	15	14	15
L Q	14	14	14	14	14	14	14	14	14	14	14	15	15	15	15	14	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

DEC. 2014

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	37	36	36	31	30	37	36	67	87	111	127	116	111	106	103	106	90	73	50	43	39	39	39	36
2	39	39	37	28		N	38	80	98	98	131	118	115	94	105	107	97	73	39	47	39	42	43	45
3	38	31	32	A	31	31	39	78	102	115	120	128	121	111	104	105	90	68	51	47	53	47	38	36
4	39	38	39	39	43		45	81	87	105	120	130	128	107	101	101	87	76	46	44	47	43	39	38
5	39	39	39	42	44	32	36	75	110	110	131	126	121	97	100	98	84	67	71	66	37	N	28	28
6	32	34	34	34	28	32	36	64	89	100	134	127	112	89	85	84	82	78	47	38	37	34	31	37
7	36	38	36	28	36	38	30	69	85	102	118	110	111	112	106	102	91	87	85	48	39	A	36	37
8	38	39	34	N	N	N	34	67	98	102	141	111	98	100	97	101	83	72	52	48	34	A	39	42
9	42	37	38	27		N	34	72	75	87	102	125	111	97	100	97	87	80	59	44	42	27	28	79
10		A	30	31	31	34	38	54	78	92	94	110	101	101	91	87	80	67	43	43	43	39	34	32
11	30		37	32	35	34	37	76	80	87	105	108	102	94	110	98	81	58	49	48	51	38	34	30
12		32	37	38	36	36	36	N	76	88	102	101	101	98	101	90	91	63	54	44	46	36	27	34
13	34		A	36	N	N	27	67	124	135	130	117	120	110	105	104	95	76	48	A	41	34	A	36
14	38	A	38	39	34	30	34	66	90	104	130	124	107	105	110	113	107	80	52	47	42	34		34
15	34	34	34			26	36	67	122	117	136	130	134	124	115	107	94	74	55	41	A	44	35	
16	39	36	38	42	39	32	38	73	104	111	140	118	116	102	110	104	95	81	61	48	49	37	32	36
17	A	39	45	37	26	28	35	64	102	111	111	118	111	111	94	97	86	66	54	46	39	39	36	25
18	36	38	36		34	28	34	72	104	100	91	112	108	101	102	91	80	67	54	38	39		31	37
19	38	37	34	42			N	64	91	91	112	106	108	94	104	C	81	57	52	43	39	36		32
20	34		31	34	34	32	39	72	87	90	120	132	116	C	C	C	C	C	C	39	41	A	A	A
21	A	A	38	43	32	30	34	62	88	105	106	117	115	125	112	98	84	76	52	43	39	37		38
22	39	A	36	34	30	A	32	61	106	120	121	135	126	114	118	120	101	74	48	43	48	46	44	48
23	51	42	45	47	45	51	43	72	114	114	122	125	111	121	118	108	91	67	77	55	37	32	N	25
24	32	30	36	32	36	32	38	67	88	148	112	106	108	110	124	115	92	82	75	53	26	31	32	N
25	32	A	39	A	34	36	34	66	97	118	137	111	126	102	107	104	94	74	54	42	39	N	A	A
26	30		30	31	N	28	30	50	85	104	147	101	106	111	98	100	92	72	52	42	43	36	42	34
27	27	34	34	36		30	31	64	81	100	105	116	105	116	106	102	80	71	71	33	32		32	27
28	32	32	38	28	28	32	34	58	82	97	126	112	88	81	92	91	78	66	45	44	36	36	36	36
29		32	28	34	34	31	32	67	80	84	95	102	114	110	108	110	80	63	62	44	A	31		37
30	39	34	N				32	51	74	108	96	116	84	87	95	102	91	66	64	47	30	A		A
31	34	32	47	30	26	28	34	66	80	92	96	98	80	83	87	77	66	69	52	39	28	30	N	36
	00	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	22	29	25	22	23	30	30	31	31	31	31	31	30	30	29	30	30	30	30	29	23	21	26
MED	36	36	36	34	34	32	34	67	88	104	120	116	111	104	104	102	88	72	52	44	39	36	35	36
U Q	39	38	38	39	36	34	38	72	102	111	131	125	116	111	110	106	92	76	61	47	43	39	39	37
L Q	32	32	34	31	30	30	34	64	81	92	105	110	105	97	98	97	81	67	49	42	37	34	31	32

HOURLY VALUES OF fEs AT Kokubunji

DEC. 2014

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	24	G	G	G	G	22	28	G	44	G	G	G	G	G	G	47	G	G	G	G	G	G	G
2	26	G	G	G		G	G	30	40	G	G	G	G	G	G	G	33	26	G	G	G	G	G	G
3	G	G	G	28	G	28	23	G	34	G	G	42	45	G	39	44	36	35	22	24	G	G	G	G
4	G	G	G	G	G		G	G	G	G	G	42	51	G	G	G	G	G	G	32	G	G	G	G
5	G	G	G	G	24	G	G	G	G	43	49	43	G	G	G	34	38	40	40	G	G	G	G	G
6	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	22	G	G	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	35	G	25	58	49	G	47	34	G
8	G	23	23	G	G	G	G	G	G	G	53	77	G	45	G	G	30	31	43	G	G	30	G	G
9	24	G	G	G		G	G	31	G	G	G	G	G	G	G	G	G	G	G	24	26	G	26	G
10		29	G	G	G	G	G	G	G	G	G	G	50	G	G	G	G	G	G	29	G	G	G	G
11	G		G	G	G	G	G	29	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	G
12		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	39	31	G	G	G	G	G
13	G		33	G	G	G	G	G	G	41	61	60	G	G	G	G	G	31	28	26	G	G	28	35
14	28	38	G	G	G	G	G	G	G	42	44	53	43	G	G	G	G	G	G	G	G	G		G
15	G	G	G			G	G	G	G	43	56	G	G	G	48	50	48	66	43	33	25	G	G	
16	G	30	G	G	G	25	G	G	G	G	G	G	72	G	50	34	33	G	G	G	G	G	G	G
17	39	33	G	29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
18	G	G	G		G	G	G	G	G	G	G	G	G	G	50	G	G	G	G	G	G		G	G
19	G	G	G	G			G	G	G	G	G	G	G	47	42	C	G	G	26	G	G	G		G
20	G		G	G	G	G	G	G	G	G	G	G	G	C	C	C	C	C	C	G	G	34	35	43
21	50	40	22	22	G	G	G	G	G	G	G	G	50	57	G	76	G	G	G	G	G	G		G
22	23	30	24	25	24	31	23	G	G	44	47	49	46	G	G	G	G	G	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G	G	G	G	G	52	54	91	38	29	24	G	G	G	G	G	G
24	G	26	G	G	G	G	G	G	G	G	67	G	50	50	47	G	G	G	G	69	30	G	G	G
25	G	39	G	50	24	G	G	G	G	G	43	G	46	G	43	57	32	48	49	28	G	G	26	26
26	G		G	30	G	24	22	G	G	G	G	G	G	G	G	G	G	11	G	G	G	G	G	27
27	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G
28	26	G	G	33	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
29		G	G	G	G	G	G	G	G	30	32	G	G	G	29	27	28	31	29	G	27	27		G
30	G	G	G				G	G	35	31	51	35	G	G	30	36	43	34	25	24	28	31		46
31	G	G	G	G	G	G	G	25	53	33	29	33	50	45	50	33	33	G	28	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	27	31	28	25	28	31	31	31	31	31	31	31	30	30	29	30	30	30	31	31	29	26	30
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	12	29	G	11	G	G	G	G	G	31	44	35	46	G	42	34	33	31	28	26	G	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 Kokubunji

DEC. 2014

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	13	14	13	13	13	14	15	13	13	14	15	18	14	14	15	22	14	14	13	14	14	13	15
2	14	14	13	14		15	13	13	13	14	22	20	22	18	14	13	13	14	13	13	13	13	14	14
3	13	13	14	13	13	13	14	21	13	13	17	15	23	17	13	13	13	13	13	13	14	14	14	14
4	13	14	13	14	13		14	18	13	13	14	15	20	14	15	13	17	14	13	13	13	13	15	14
5	14	13	14	13	13	14	14	21	13	15	15	18	18	17	14	13	13	13	13	13	13	15	20	14
6	14	14	13	18	13	14	14	21	13	21	17	21	20	18	18	14	21	14	13	15	14	17	18	14
7	15	14	15	14	13	13	13	18	14	20	14	15	14	13	13	13	20	14	13	13	14	13	13	13
8	14	13	13	17	15	14	13	14	13	13	15	14	21	14	13	15	14	13	13	14	14	13	15	14
9	14	13	15	13		15	14	14	13	18	37	21	37	38	20	30	13	13	14	14	17	15	20	14
10		13	14	14	13	14	14	20	17	18	21	37	33	22	36	35	23	14	14	14	15	13	20	18
11	14		13	13	15	18	13	13	15	21	37	37	22	22	15	17	22	13	14	14	14	14	17	13
12		14	14	17	13	14	14	14	17	17	18	21	20	15	20	13	13	14	13	14	14	13	15	14
13	14		13	14	14	18	20	18	13	13	18	20	26	20	18	17	23	13	13	15	15	13	14	13
14	13	13	13	14	14	14	14	20	13	20	17	26	20	18	17	17	23	13	13	13	14	14		14
15	13	18	13			13	13	18	14	15	18	37	37	21	18	17	15	13	14	13	17	13	14	
16	17	14	13	14	15	14	14	13	18	21	20	36	21	20	15	14	13	18	14	14	14	14	20	15
17	13	13	14	13	13	17	13	20	15	20	20	38	38	20	55	34	23	15	17	13	13	15	14	15
18	13	14	13		13	14	15	21	15	18	20	20	39	22	21	34	17	18	13	14	13		13	13
19	13	15	14	14			15	22	17	17	18	24	21	21	20	C	24	14	14	14	14	13		14
20	14		14	14	14	14	13	20	29	17	54	43	39	C	C	C	C	C	C	14	17	14	13	13
21	13	14	14	14	13	17	13	21	14	14	17	15	36	20	36	17	14	14	13	14	13	14		14
22	14	13	13	14	15	13	13	20	14	13	15	39	20	17	20	14	14	13	14	14	13	14	14	14
23	13	17	15	13	14	13	14	20	13	14	17	20	14	18	18	14	13	15	17	14	14	14	20	18
24	18	13	13	13	13	13	13	20	14	18	20	20	18	20	15	20	13	13	14	13	13	15	14	15
25	15	13	14	13	15	14	13	18	13	15	20	34	29	33	18	17	13	13	13	14	13	14	14	15
26	18		13	14	13	13	14	18	15	20	17	39	17	21	13	15	15	13	17	13	14	14	14	13
27	14	14	14	14		13	13	20	29	18	34	22	37	20	22	18	26	14	14	13	14		20	13
28	14	17	17	13	17	13	13	18	14	17	20	36	37	38	37	31	22	13	15	14	14	14	15	15
29		17	17	13	13	15	14	18	17	18	24	39	39	38	37	17	13	13	13	17	14	14		17
30	13	14	13				13	17	15	14	18	25	37	38	37	15	13	13	13	14	14	14		13
31	13	14	14	14	17	13	14	13	13	13	15	15	13	13	17	14	14	13	14	14	14	17	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	27	31	28	25	28	31	31	31	31	31	31	31	30	30	29	30	30	30	31	31	29	26	30
MED	14	14	14	14	13	14	14	18	14	17	18	21	22	20	18	15	14	13	14	14	14	14	14	14
U Q	14	14	14	14	15	14	14	20	15	18	20	37	37	22	21	17	22	14	14	14	14	14	20	15
L Q	13	13	13	13	13	13	13	15	13	14	17	18	20	17	15	14	13	13	13	13	13	13	14	13

HOURLY VALUES OF foF2 AT Yamagawa

DEC. 2014

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	37	39	38	34	30	35	32	54	88	100	117	116	112	111	110	108	97	86	72	54	54	67	54	40
2	38	41	38	59	B	B	28	46	90	93	112	111	101	97	110	118	102	92	82	55	54	53	52	52
3	37	30	32	34	34	32	34	67	89	N	113	114	118	109	110	101	89	90	39	52	67	67	51	37
4	36	36	36	37	37	29	34	64	81	90	110	126	118	116	101	112	100	111	84	51	52	52	60	50
5	38	36	35	34	41	59	28	51	89	111	95	118	108	118	112	116	111	87	78	78	55	22	36	34
6	34	37	34	34	34	59	32	52	80	105	111	130	113	100	N	94	98	73	81	44	50	50	38	32
7	37	37		34	36	29	28	52	88	80	N	114	111	116	110	110	113	90	86	67	52	50	A	37
8	38	42	42	B	B	N	28	52	87	96	108	111	102	111	112	111	97	88	74	53	52	50	44	48
9	43	39	44	N	B	28	N	52	81	92	90	97	113	104	105	106	100	98	81	54	50	44	40	B
10	B	32	26	30	34	29	32	51	78	88	96	100	115	110	88	96	99	85	72	54	54	40	B	28
11	49	30	32	32	32	29	32	54	79	86	98	101	110	114	N	107	94	83	75	54	52	51	38	
12	29	26	32	34	38	34	32	52	81	88	96	106	110	111	109	102	110	112	83	54	52	52	52	
13	34	B	36	33	B	B	B	44	88	111	118	111	113	112	115	114	113	86	74	52	53	46	40	34
14		36	40	35	34	B	31	51	84	96	113	111	117	101	142	152	145	89	96	72	39	50	54	42
15	42	41	38	28	32	B	29	50	102	114	113	130	134	119	114	110	110	88	71	48	53	50	40	34
16	34		38	A	34	34	34	53	88	96	130	92	114	111	114	112	88	90	82	54	63	52	44	B
17	34	34	36	36	30	B	N	52	94	106	109	104	113	110	B	110	96	95	52	54	54	53	51	B
18	30	B	34	26	32		29	48	88	59	114	96	104	114	112	106	104	90	83	73	53	54	52	42
19	38	34	34	59	34	B	B	42	92	114	111	94	111	98	115	117	97	87	77	68	54	52	44	44
20	40	37	36	34	34	28	34	52	88	106	108	113	113	116	104	117	96	84	77	54	54	52	46	40
21	37	A	42	40	34	A	30	47	89	111	112	110	110	116	116	116	111	88	80	73	63	47	48	42
22	44	44	A	A	A		29	46	88	107	109	114	115	111	110	110	106	90	73	51	52	51	44	44
23	40	40	34	40	37	43	34	53	87	116	128	129	111	116	116	130	120	108	94	85	77	60	52	42
24	34	38	34	34	34	29	32	50	78	138	118	97	114	114	130	116	116	97	88	77	62	A	20	A
25	A	A	34	34	32	34	34	53	86	97	125	140	116	112	127	104	116	113	73	72	74	77	44	B
26	28	B	B	28	B	N	A	45	79	89	116	110	103	118	110	106	96	87	71	52	50	52	51	
27	A	32	33	30	26	26	32	46	75	91	109	98	108	115	115	N	100	73	74	72	53	41	31	31
28	B	31	A	A	A	A	34	45	76	90	113	123	86	86	90	98	103	86	52	53	51	43	45	41
29	A	31	34	29	34	34	36	46	86	77	86	111	111	122	93	154	166	150	81	84	74	58	51	51
30	47	42	32	B	N	29	B	48	83	116	96	109	91	94	100	N	109	99	69	53	51	43	42	89
31	A	34	37	A	B	B	26	48	85	82	90	98	91	90	86	94	83	72	44	66	54	47	36	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	25	27	24	22	18	25	31	31	30	30	31	31	31	28	29	31	31	31	31	31	30	29	23
MED	37	36	35	34	34	30	32	51	87	96	111	111	111	111	110	110	102	89	77	54	53	51	44	41
U Q	40	39	38	35	34	34	34	52	88	111	114	116	114	116	115	116	111	97	82	72	55	53	51	44
L Q	34	32	34	31	32	29	29	46	81	89	98	100	108	104	104	105	97	86	72	53	52	47	40	34

HOURLY VALUES OF fEs AT Yamagawa

DEC. 2014

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	28	36	G	41	49	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	G	B	B	G	G	32	38	41	G	G	G	G	G	36	G	G	G	G	G	G	G
3	G	G	G	G	G	G	G	G	G	G	45	42	G	G	44	G	40	32	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	37	G	42	43	G	42	40	G	30	28	28	G	G	G	G
5	G	G	28	G	G	G	G	G	G	G	G	44	G	42	44	40	34	35	34	26	40	29	G	G
6	G	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	29	G	30	26	G	G	G
7	G	G	G	G	G	G	G	G	48	G	G	G	G	G	G	G	G	27	26	G	G	33	28	G
8	G	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	G	27	G	G	G	G	G
9	G	G	G	G	B	G	G	28	37	42	46	41	G	G	G	G	G	36	59	23	G	G	G	B
10	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	79	58	28	G	G	G	G	B	G
11	G	G	G	G	G	G	G	G	G	39	40	G	G	G	G	G	G	31	28	29	27	G	G	G
12	G	G	G	G	G	G	G	G	34	G	42	G	G	G	G	G	34	G	40	36	27	G	G	G
13	G	B	G	G	B	B	B	G	32	G	G	60	48	46	50	59	40	G	G	G	G	G	G	G
14	G	G	G	G	G	B	G	G	G	G	G	62	G	G	G	G	G	G	G	G	G	G	G	G
15	G	G	G	G	G	B	G	G	G	G	48	61	46	G	41	G	G	36	G	G	G	G	G	G
16	G	G	47	40	G	G	G	28	34	G	46	47	48	47	53	G	41	44	36	34	26	G	G	B
17	G	G	G	G	G	B	G	G	G	G	G	G	G	G	B	39	G	46	34	G	G	G	G	B
18	G	B	G	G	G	G	G	G	G	G	G	G	G	G	42	44	G	39	G	25	G	G	G	G
19	G	G	G	G	G	B	B	G	G	G	39	G	49	G	G	44	G	G	G	24	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	G	G	G	41	54	75	48	34	G	G	G	G	G	G
21	G	56	G	27	G	32	G	G	G	G	G	42	G	G	G	48	36	46	38	G	40	33	G	G
22	G	29	33	30	28	G	G	G	G	43	G	48	49	57	G	G	36	41	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G	G	G	G	G	G	51	56	48	40	36	34	33	G	G	G	G
24	G	G	G	24	26	G	G	G	G	G	45	50	44	48	G	43	35	G	G	24	44	33	28	34
25	32	40	33	G	G	G	G	G	G	36	G	G	G	46	G	38	34	30	39	41	27	G	G	B
26	G	B	B	G	B	G	27	31	G	G	G	G	44	G	43	G	G	37	G	G	G	G	G	G
27	29	G	G	G	G	G	G	G	48	G	G	45	44	43	44	G	G	41	40	31	G	G	G	G
28	B	G	39	31	30	34	G	G	G	G	42	50	G	G	G	30	26	G	11	G	G	G	G	G
29	31	G	G	26	G	G	G	G	G	28	49	65	34	33	34	29	26	G	46	G	G	G	G	G
30	G	G	G	B	G	G	B	G	G	28	54	61	44	47	47	41	40	39	31	27	G	26	G	23
31	45	28	27	28	B	B	G	G	50	26	33	40	35	46	34	41	51	52	40	28	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	29	28	30	29	25	24	28	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	30	27
MED	G	G	G	G	G	G	G	G	G	G	G	41	G	G	G	29	26	31	26	G	G	G	G	G
U Q	G	G	G	12	G	G	G	G	32	28	42	49	44	46	44	43	40	39	36	28	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 Yamagawa

DEC. 2014

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	14	14	15	15	18	15	14	16	18	18	18	17	17	17	18	20	14	15	16	15	15	14
2	15	15	16	14	B	B	15	17	14	14	15	18	18	21	20	16	14	21	17	15	17	15	15	14
3	15	15	15	16	15	17	16	17	15	16	16	17	26	20	18	17	14	14	15	15	18	15	15	16
4	15	17	15	15	15	16	15	17	14	15	14	21	17	18	14	14	14	14	14	15	14	15	15	21
5	15	16	15	16	17	15	18	15	15	15	18	18	18	18	18	17	16	14	15	15	15	15	17	16
6	16	17	16	15	15	15	20	17	17	17	18	38	30	22	22	18	18	15	21	14	17	16	15	15
7	20	15	66	18	16	20	20	17	24	15	18	21	20	20	24	16	16	14	15	15	16	16	18	15
8	16	15	66	B	B	66	17	17	26	18	18	24	15	20	20	18	26	21	16	15	16	15	20	16
9	16	17	15	15	B	66	17	15	16	33	18	30	24	22	20	20	17	16	16	15	16	15	15	B
10	B	16	17	17	15	15	16	17	18	29	35	39	50	36	22	23	18	17	14	15	15	14	B	17
11	16	16	16	16	15	15	15	17	28	17	21	22	37	20	22	24	18	14	14	14	15	21	17	66
12	17	18	16	16	15	15	15	16	14	17	20	26	22	35	26	22	18	14	15	14	15	15	16	66
13	15	B	16	15	B	B	B	17	15	20	21	28	24	27	24	24	18	22	17	23	17	15	16	16
14	26	15	16	18	17	B	23	18	16	21	21	27	28	39	23	23	32	23	18	15	16	16	17	16
15	15	16	17	20	17	B	16	17	27	18	22	32	30	29	27	34	28	14	17	16	18	18	16	18
16	15	66	15	16	14	16	16	14	14	18	30	29	32	30	29	24	17	17	14	15	16	17	15	B
17	23	18	15	15	15	B	16	17	27	18	36	40	38	43	B	18	16	14	15	22	16	33	15	B
18	17	B	16	17	15	66	20	16	28	22	24	21	40	27	21	22	18	23	17	18	16	16	15	15
19	15	15	20	17	15	B	B	18	28	18	34	35	34	26	18	23	16	21	16	16	17	16	15	15
20	15	15	15	15	15	16	15	16	26	16	56	45	52	39	26	18	16	17	16	17	17	20	15	15
21	15	14	18	15	15	15	15	16	15	17	20	20	28	36	36	18	17	15	14	17	15	14	17	17
22	15	15	14	14	15	66	18	16	26	18	17	34	21	21	38	17	16	15	16	15	15	17	17	16
23	16	18	15	15	16	15	15	15	15	17	34	23	26	24	21	17	14	14	15	16	18	18	16	15
24	18	16	18	15	15	18	18	15	17	17	20	27	23	21	20	18	17	21	16	15	14	15	14	14
25	14	15	15	18	18	17	16	15	14	17	18	20	20	20	17	15	15	15	14	14	15	15	15	B
26	18	B	B	18	B	18	16	15	23	14	18	18	17	15	14	16	16	14	18	16	17	18	14	71
27	15	20	17	16	14	18	17	15	22	16	18	20	22	20	18	17	15	16	15	14	16	17	18	16
28	B	18	14	14	15	16	15	16	15	15	20	21	21	26	23	20	18	22	15	15	14	16	15	17
29	15	18	23	16	17	15	17	15	22	20	20	24	28	22	18	17	18	21	15	17	18	16	15	16
30	17	16	17	B	66	16	B	15	16	30	20	24	22	27	22	18	17	14	15	15	15	15	16	15
31	14	15	15	14	B	B	17	15	14	15	16	20	20	18	33	17	14	14	14	15	14	20	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	29	28	30	29	25	24	28	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	30	27
MED	15	16	16	16	15	16	16	16	16	17	20	24	24	22	22	18	17	15	15	15	16	16	15	16
U Q	17	17	17	17	16	18	18	17	26	18	22	30	30	29	24	22	18	21	16	16	17	17	17	17
L Q	15	15	15	15	15	15	15	15	15	16	18	20	20	20	18	17	16	14	14	15	15	15	15	15

HOURLY VALUES OF foF2 AT Okinawa

DEC.2014

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	49	48		32	B	46	46	54	100	110	110	109	103	118	128	119	108	90	86	86	84	88	74	53
2	42	26	38	B	B	B		53	88	93	107	106	104	107	N	122	114	108	88	87	78	67	67	N
3	42	B		B	B	B	43	73	111	110	115	120	119	118	130	118	110	108	86	76	72	84	73	52
4	47			41		31	B	64	87	102	123	118	131	133	172	130	143	143	131	107	77	86	88	53
5	52			B	53	B	B	51	107	111	118	128	130	131	130	147	139	110	107	105	87	67	52	B
6		52	42	40	34	A	B	52	100	101	113	118	113	121	108	111	108	111	87	54	66	74	53	42
7	37	31	34			B	B	53	106	85	77	110	131	126	119	120	131	123	107	88	84	87	52	52
8	52	52	67		B	B	31	49	104	110	101	104	111	126	129	126	121	108	88	73	80	53	56	74
9	52		48	B	B	29	34	50	88	102	110	98	108	131	117	130	129	127	127	105	67	73	54	46
10	36	34	30	34	30	B	B	48	89	102	101	107	120	123	130	130	121	116	84	84	99	83	52	28
11	34	30		34	42		N	52	87	109	116	110	117	140	152	142	128	130	110	89	80	81	66	43
12	C	B	C	B	40	C	B	51	85	103	107	106	118	128	141	132	130	144	109	108	86	87	71	37
13	B	B	52	51	B	B	B		105	111	112	110	108	125	130	132	134	118	108	72		66	54	46
14	B	34	B	B		B	B	48	91	106	115	110	120	129		129	131	146	132	109	107	82	90	66
15		50	51	44		B	B	48	106	131	125	118	116	118	143	135	134	130	107	54	66	80	78	32
16	B	B	46	49	B	B		53	101	134	133	122	111	118	121	119	127	120	108	88	53	68	67	53
17	B		49	45	38	B	B	52	88	120	143	126	121	133	99	133	126	120	107	63	76	52	63	54
18		40		42			B		90	116	134	130	132	115	139	145	137	134	108	108	110	82	107	77
19	52	39	57	48	34	B	B	44	83	110	130	100	108	130	140	139	141	132	110	88	85	86	68	67
20	52	50	48	42		B	A	52	98	130	109	118	132	131	132	130	121	108	88	80	54	80	54	
21	52	50	52	50		A		48	88	122	131	130	118	110	130	130	131	123	108	108	87	80	54	54
22	52	52	52	44	B	A	B	47	99	117	110	108	N	130	121	118	108	107	88	77	54	54	63	53
23	42	29	28	30	29	36			102	130	128	131	143	130	142	143	148	133	99	N	110	109	91	72
24	62	67	52	52	44	A	A	51	90	132	128	105	120	130	130	132	143	137	108	109	108	87	67	53
25	46	47	40	29	B	B		51	101	104	134	134	130	134	N	129	149	134	132	108	107	108	86	53
26			51	47	43	B	B	48	86	121	114	110	108	132	N	131	110	107	106	86	72	63	70	47
27	B	36		B	B	B	B	46	78	88	117	119	111	131	131	131	133	136	111	88	84	88	B	B
28	B	B	30	32	B	B	B	39	86	88	116	121	102	96	105	110	132	109	84	53	53	52	54	B
29	B		B	B		B		46	89	78	88	107	128	139	131	136	133	135	119	108	86	107	87	86
30	67	52	48	B	B	51	B	52	89	116	118	97	108	110	127	132	143	142	120	89	87	81	72	54
31	B	A	28		B	B	B	50	89	88	92	92	110	107	106	113	118	108	77	75	87	86	54	52
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	19	21	19	10	5	4	28	31	31	31	31	30	31	27	31	31	31	31	30	30	31	30	26
MED	50	47	48	42	39	36	38	51	90	110	115	110	118	128	130	130	131	123	107	88	84	81	67	53
U Q	52	52	52	48	43	48	44	52	101	120	128	121	128	131	139	133	137	134	110	107	87	87	74	54
L Q	42	34	36	34	34	30	32	48	88	102	109	106	108	118	121	120	121	108	88	76	72	67	54	46

HOURLY VALUES OF fEs AT Okinawa

DEC. 2014

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	B	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	B	B	B	G	G	G	39	44	49	G	G	G	G	G	G	G	G	G	G	G	G
3	G	B	G	B	B	B	G	G	G	G	G	G	48	G	G	G	35	G	G	G	G	G	G	G
4	G	G	G	G	G	G	B	G	G	G	G	G	G	G	45	44	36	35	G	11	G	G	G	G
5	G	G	G	B	G	B	B	G	G	G	43	G	52	49	G	43	44	52	53	34	G	G	G	B
6	G	G	G	G	G	35	B	G	G	G	G	G	G	50	G	40	54	G	30	36	26	G	G	G
7	G	G	G	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	30	24	G	G	G	G
8	G	G	G	G	B	B	G	G	G	G	46	G	G	G	G	42	42	G	24	25	G	G	G	G
9	G	G	G	B	B	G	G	G	35	G	50	48	G	G	G	G	G	G	G	G	G	G	G	G
10	G	G	G	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	43	G	G	G	G	G
11	G	G	G	G	G	G	G	G	G	36	G	G	G	G	G	G	G	G	11	G	G	G	G	G
12	C	B	C	B	G	C	B	G	G	G	G	G	G	G	G	G	G	G	G	28	G	G	G	G
13	B	B	G	G	B	B	B	G	G	G	G	50	48	G	G	57	36	G	G	G	G	G	G	G
14	B	G	B	B	G	B	B	G	G	G	G	G	66	110		42	36	48	34	G	G	G	G	G
15	G	G	G	G	G	B	B	G	G	G	G	57	61	67	G	G	40	36	29	G	G	G	G	G
16	B	B	G	G	B	B	G	G	G	G	G	76	50	48	69	49	G	G	26	G	G	G	G	G
17	B	G	G	G	G	B	B	G	G	G	G	G	G	G	G	G	38	46	G	36	G	G	G	G
18	G	G	G	G	G	G	B	G	G	G	G	G	G	G	G	41	G	34	G	G	G	G	G	G
19	G	G	G	G	G	B	B	G	G	G	G	G	G	G	49	41	G	50	G	G	G	G	G	G
20	G	G	G	G	G	B	24	G	G	G	G	G	G	G	G	54	83	40	31	G	G	29	G	G
21	G	G	G	G	G	29	G	G	G	G	G	G	G	G	45	53	56	76	50	G	G	G	G	G
22	G	G	G	G	B	27	B	G	G	G	G	G	G	G	G	54	G	G	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G	G	G	G	G	55	64	G	49	39	G	58	43	40	G	G	G
24	G	G	G	G	G	27	28	G	G	G	G	G	G	48	52	47	38	G	36	G	48	27	G	G
25	G	26	G	G	B	B	G	G	G	G	G	G	G	G	G	G	50	36	36	40	G	G	G	G
26	G	G	G	G	30	B	B	G	38	G	G	G	G	G	G	G	G	G	28	G	G	G	G	G
27	B	24	G	B	B	B	B	G	G	G	G	G	48	G	46	44	38	57	52	50	43	G	B	B
28	B	B	G	G	B	B	B	G	G	G	G	53	G	47	G	G	G	26	50	30	34	39	36	B
29	B	G	B	B	G	B	G	G	G	39	34	G	G	G	G	30	38	35	11	25	G	G	G	G
30	G	G	G	B	B	G	B	G	G	28	48	57	72	102	50	54	G	G	40	G	28	40	G	G
31	B	40	G	G	B	B	B	G	26	34	42	36	36	G	G	28	29	35	36	36	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	22	26	28	22	18	11	13	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	30	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	35	G	28	G	G	G	G	G
U Q	G	G	G	G	G	27	G	G	G	G	G	36	48	48	G	47	39	36	36	30	G	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

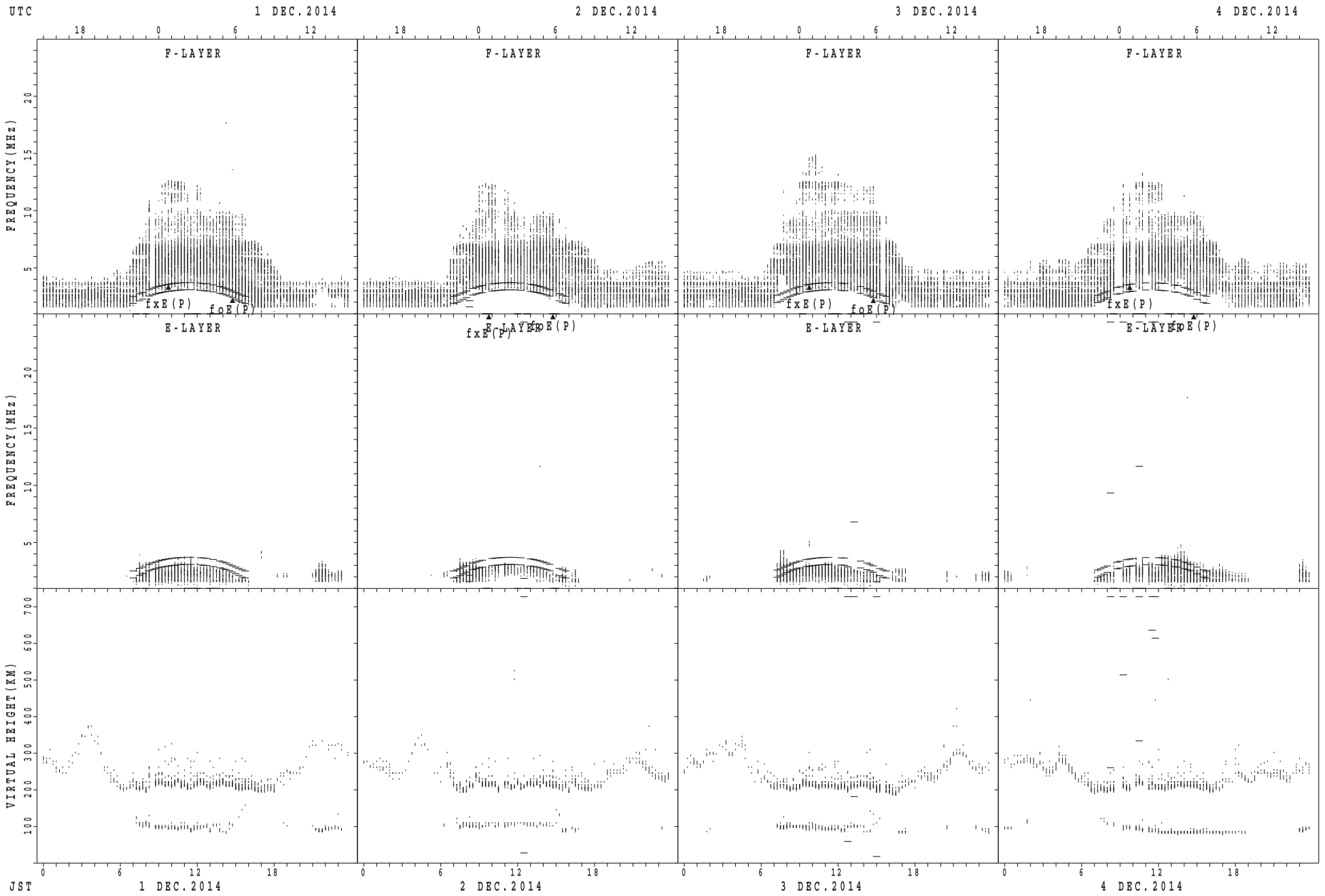
HOURLY VALUES OF fmin AT Okinawa

DEC.2014

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

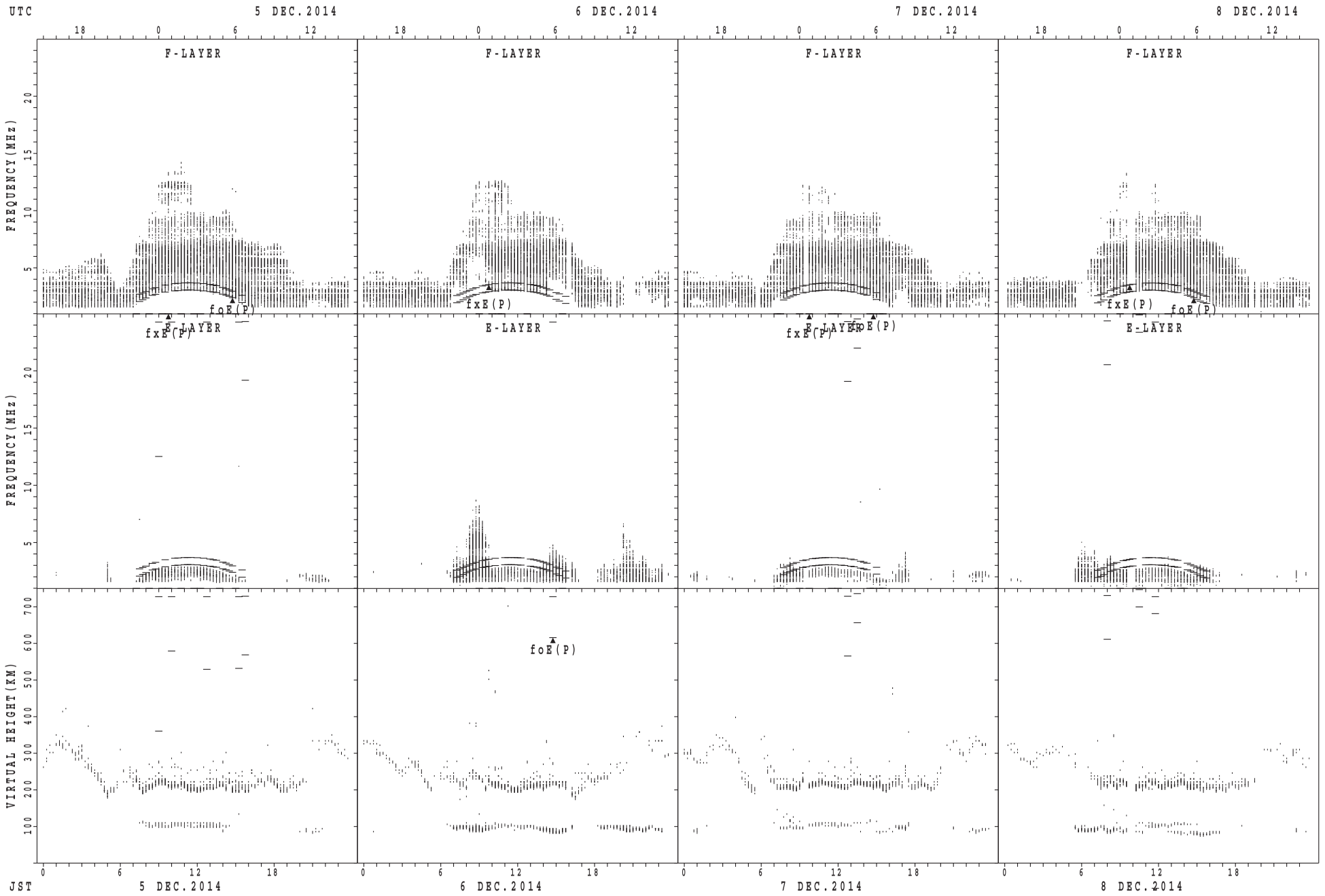
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	20	15	20	66	B	17	15	18	14	40	40	42	43	45	43	38	34	24	16	15	18	14	20	17
2	20	22	16	B	B	B	18	18	16	20	23	27	44	42	40	39	20	14	16	18	17	16	20	16
3	16	B	28	B	B	B	17	21	18	17	23	21	22	45	40	38	18	23	20	20	17	18	21	23
4	17	66	66	15	17	17	B	20	15	17	20	40	43	42	22	28	17	17	40	17	17	15	17	14
5	20	66	66	B	16	B	B	21	16	30	20	44	42	40	40	24	18	16	16	14	20	21	40	B
6	20	20	16	20	20	15	B	20	32	20	38	42	44	35	46	26	18	30	18	15	15	16	17	21
7	20	22	20	71	18	B	B	20	28	17	37	40	43	39	38	22	15	18	14	14	18	17	16	18
8	15	21	17	66	B	B	18	17	27	17	40	39	41	40	39	20	21	24	18	18	18	20	20	16
9	17	81	17	B	B	14	20	18	16	38	34	38	45	39	40	26	20	29	17	15	17	21	16	29
10	17	18	18	16	16	B	B	18	27	38	38	43	42	42	42	35	38	28	17	20	18	17	15	15
11	22	18	71	17	15	66	21	17	27	18	21	40	40	43	51	38	21	24	18	16	20	18	18	20
12	C	B	C	B	15	C	B	20	27	38	18	41	42	44	40	40	38	23	18	18	18	15	17	20
13	B	B	20	20	B	B	B	18	30	20	21	40	40	44	30	39	20	32	14	22	18	20	18	18
14	B	18	B	B	66	B	B	20	28	39	38	39	34	29		24	20	18	16	32	17	22	18	40
15	66	32	42	21	17	B	B	20	30	38	40	38	39	36	44	38	22	17	18	32	21	30	33	18
16	B	B	29	40	B	B	66	18	36	20	44	38	42	40	34	30	36	26	18	17	17	21	16	18
17	B	20	34	20	18	B	B	18	29	36	40	44	45	42	104	43	21	17	21	15	18	40	38	38
18	66	20	66	20	66	66	B	71	28	18	40	44	45	44	45	22	33	20	23	17	18	20	20	18
19	43	81	20	17	15	B	B	18	29	38	39	42	44	43	28	20	21	16	23	24	22	17	18	17
20	20	18	18	17	28	B	16	18	29	18	73	66	46	52	43	22	20	24	15	17	22	16	44	81
21	18	18	18	20	23	14	66	21	27	21	39	42	48	42	49	38	18	15	15	14	39	20	23	16
22	16	18	38	17	B	16	B	27	28	35	41	59	42	46	42	26	18	32	23	39	40	22	40	18
23	20	20	20	20	18	16	18	21	32	34	42	60	42	40	42	30	20	28	15	15	16	42	29	40
24	33	20	18	16	17	14	16	18	30	39	21	40	45	41	40	30	27	16	17	16	18	15	15	21
25	23	15	20	16	B	B	66	20	26	20	40	43	43	42	26	38	16	16	15	17	26	39	20	15
26	66	21	30	26	17	B	B	18	16	17	39	44	40	45	40	40	14	39	15	36	21	18	40	15
27	B	17	18	B	B	B	B	21	28	18	39	40	40	42	32	22	18	15	15	20	15	43	B	B
28	B	B	16	17	B	B	B	66	23	20	21	33	42	28	42	42	37	27	15	16	15	17	16	B
29	B	21	B	B	66	B	20	18	27	24	39	42	44	49	40	21	17	15	22	30	40	29	43	41
30	29	35	22	B	B	23	B	16	26	21	21	35	40	30	35	27	37	23	14	18	15	15	22	21
31	B	14	17	18	B	B	B	17	26	20	38	41	41	43	40	21	38	15	21	20	18	20	40	42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	26	28	22	18	11	13	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	30	28
MED	20	20	20	20	18	16	18	18	27	20	38	41	42	42	40	30	20	23	17	17	18	20	20	18
U Q	29	22	32	21	23	23	43	21	29	38	40	43	44	44	43	38	33	27	20	20	21	22	33	26
L Q	17	18	18	17	16	14	16	18	23	18	21	39	40	40	38	22	18	16	15	15	17	16	17	16

SUMMARY PLOTS AT Wakkanai

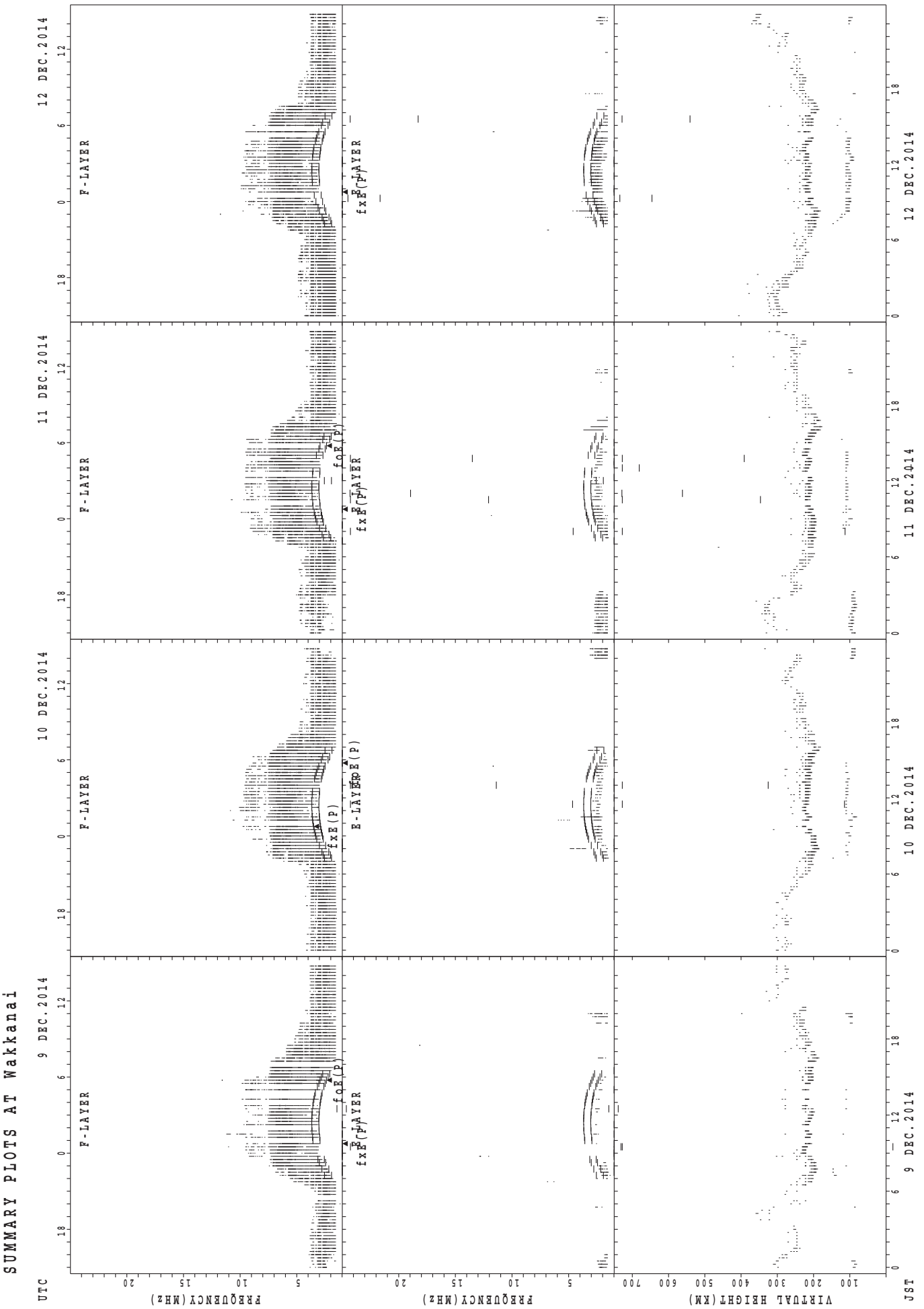


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

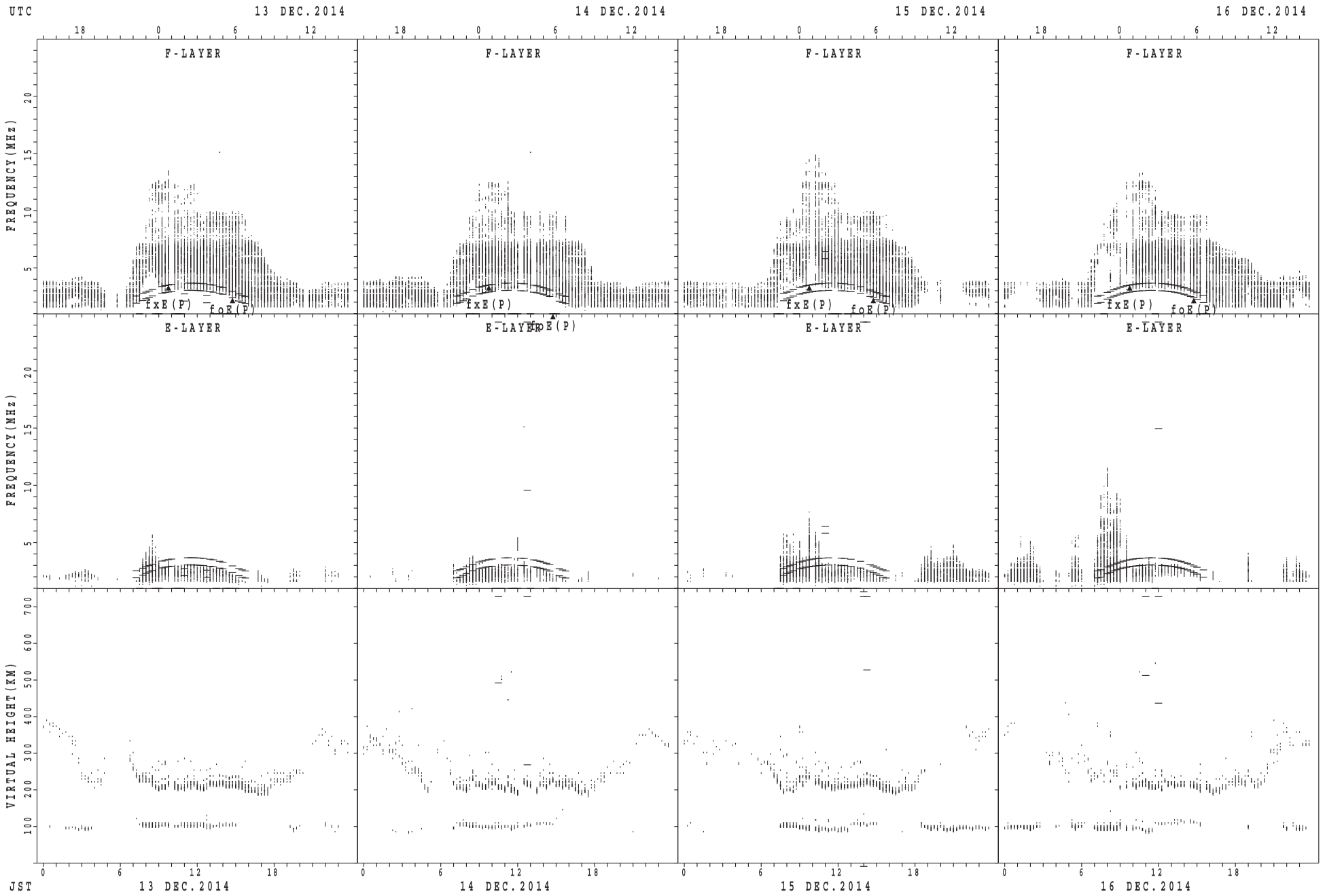
SUMMARY PLOTS AT Wakkanai



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

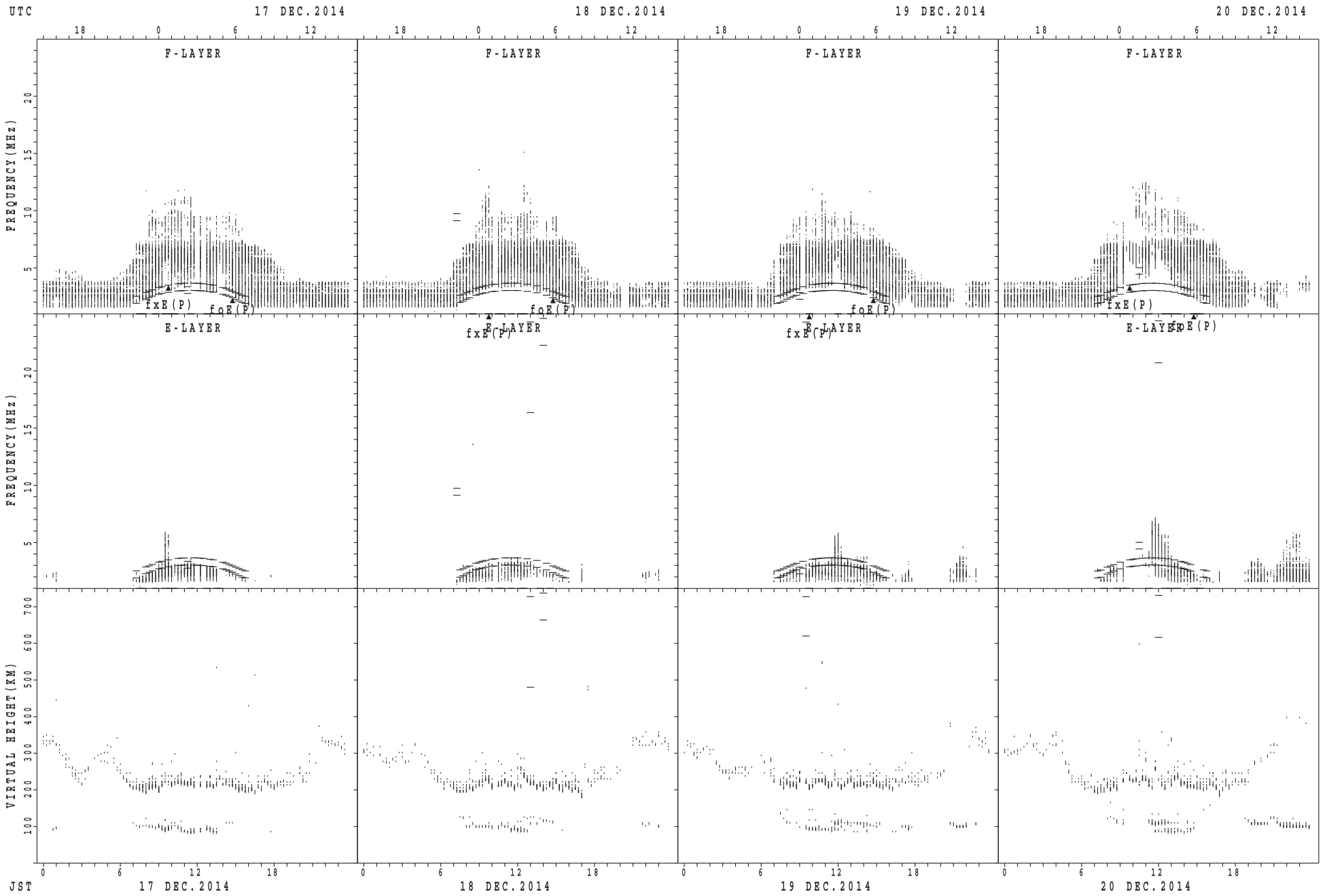

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 DEC.2014
10 DEC.2014
11 DEC.2014
12 DEC.2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

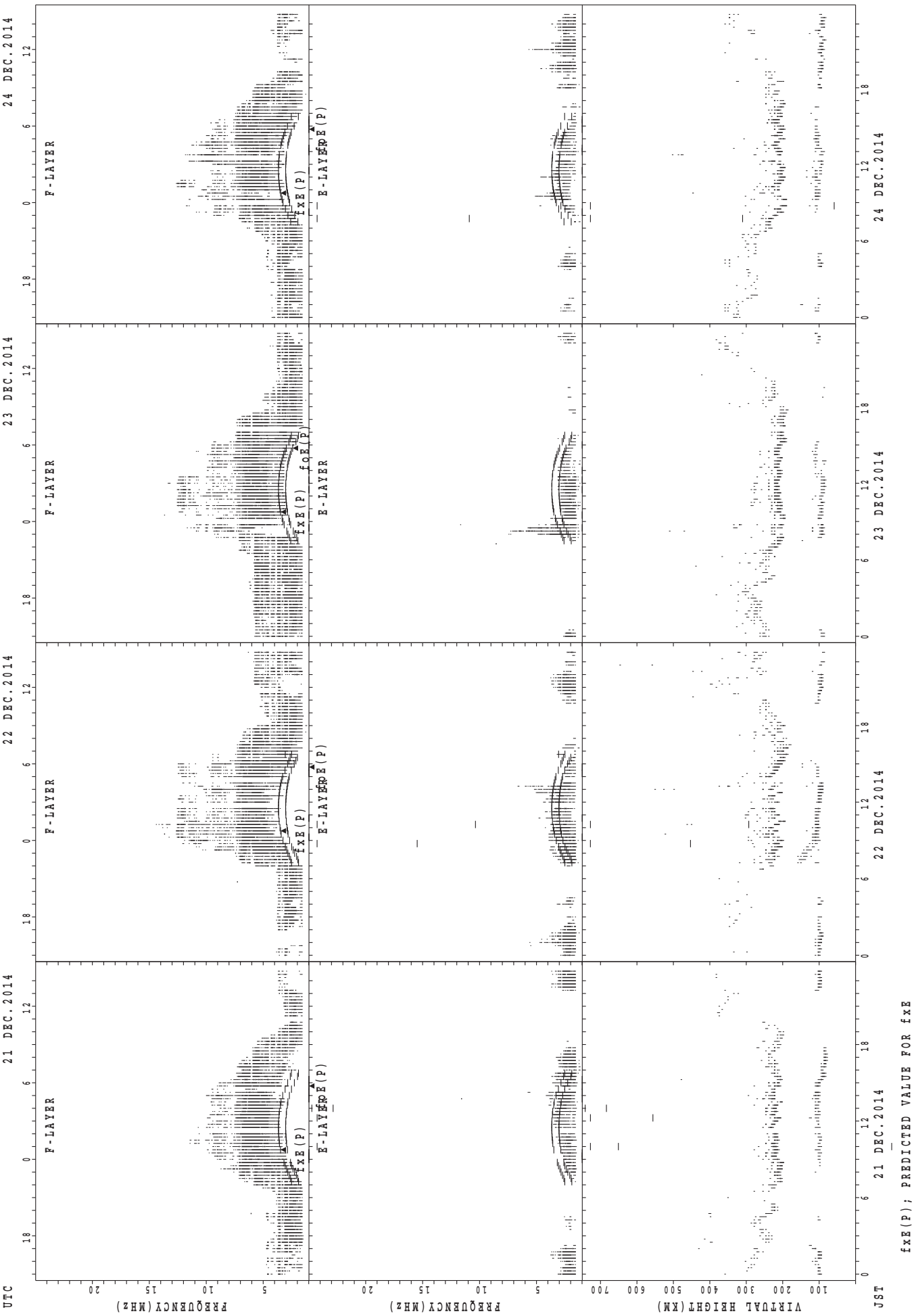


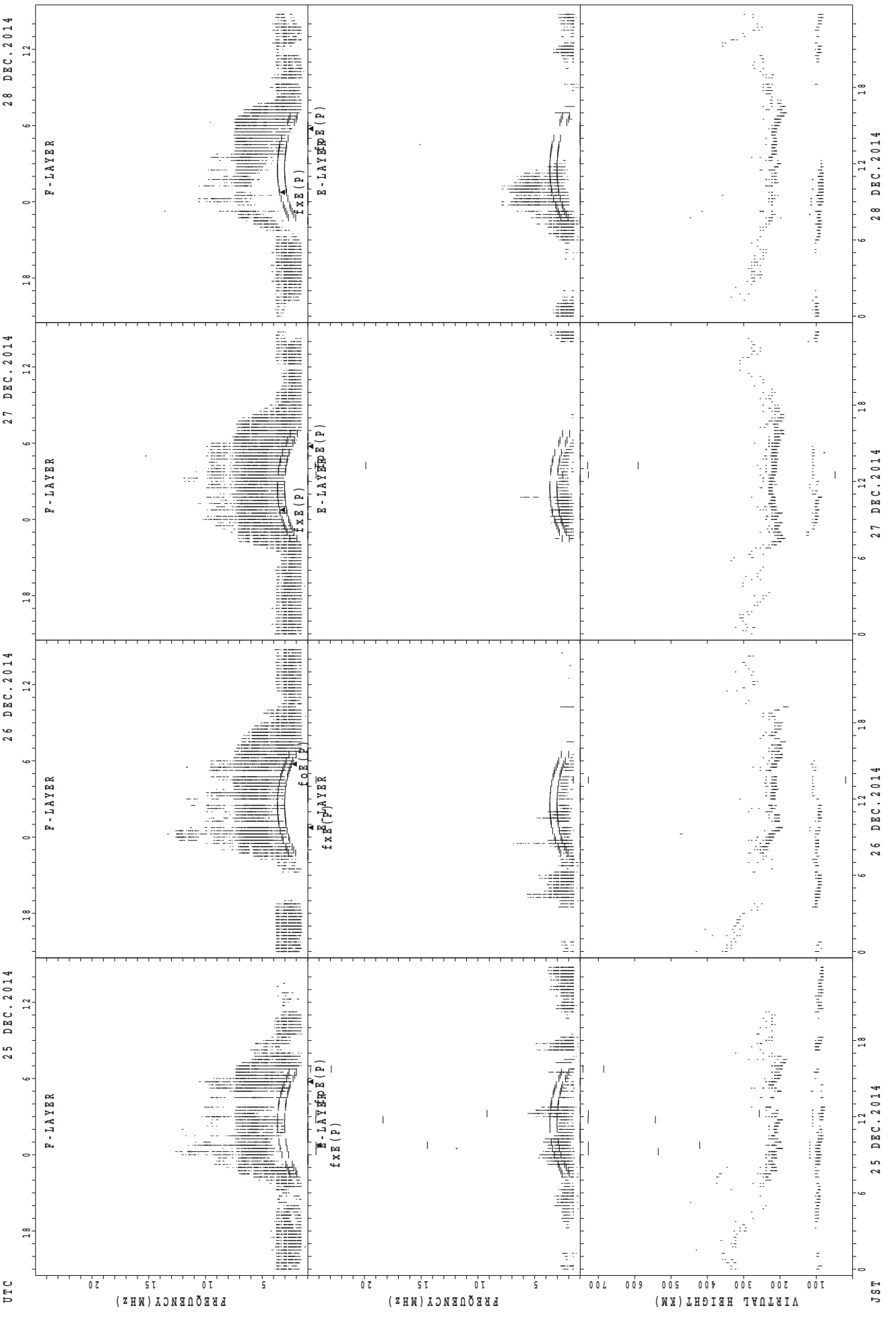
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

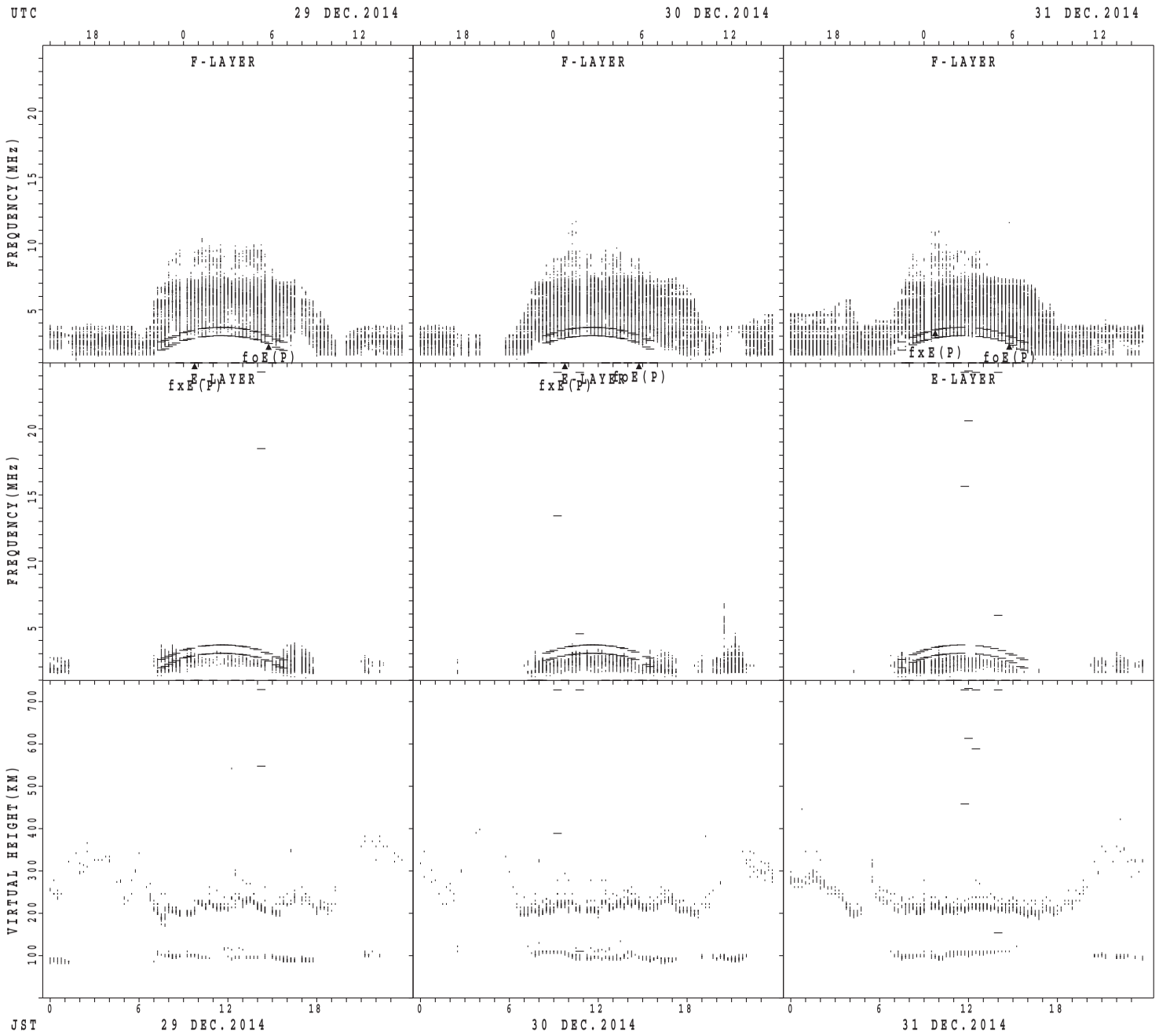


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
21 DEC.2014
22 DEC.2014
23 DEC.2014
24 DEC.2014
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

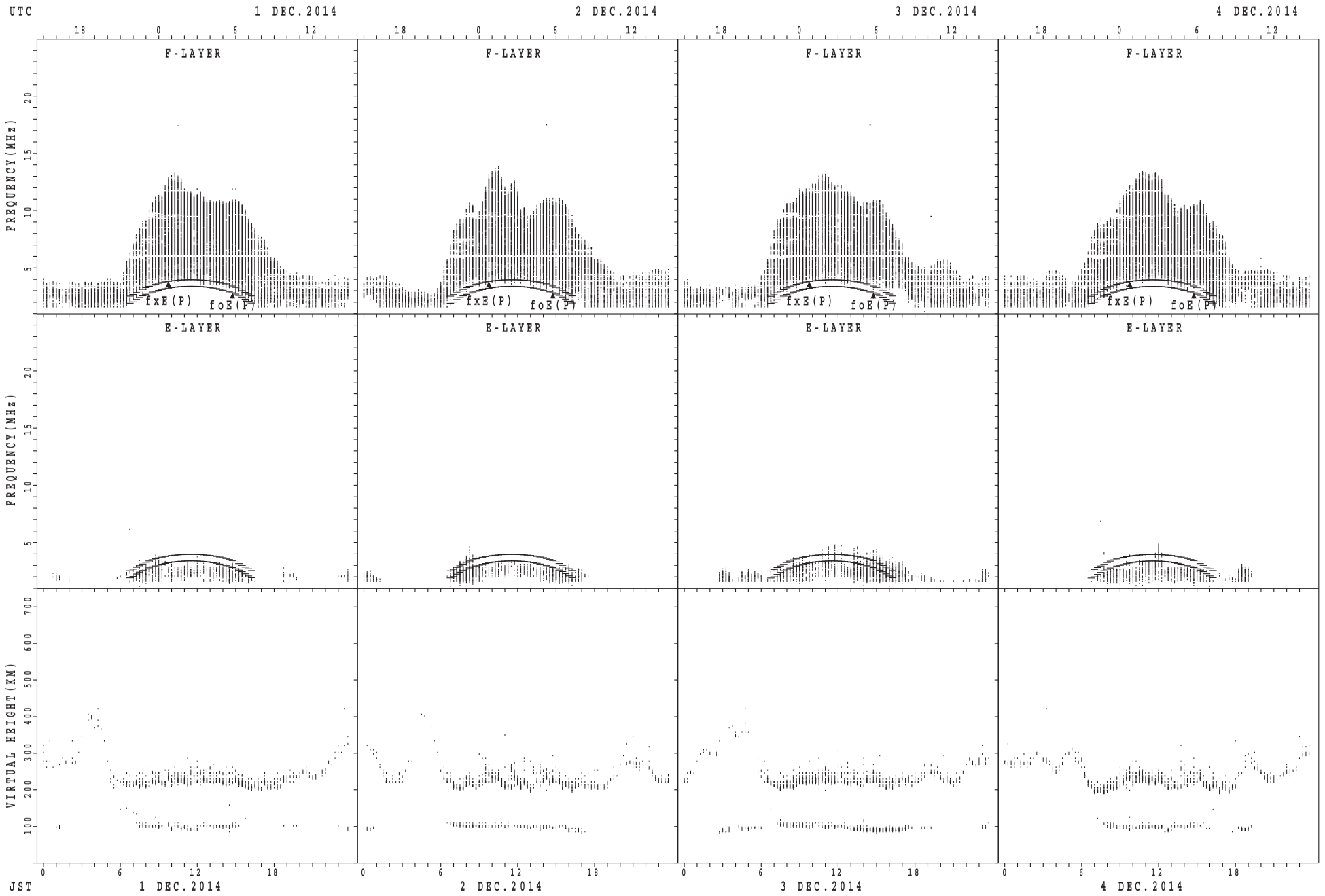

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 DEC.2014
26 DEC.2014
27 DEC.2014
28 DEC.2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



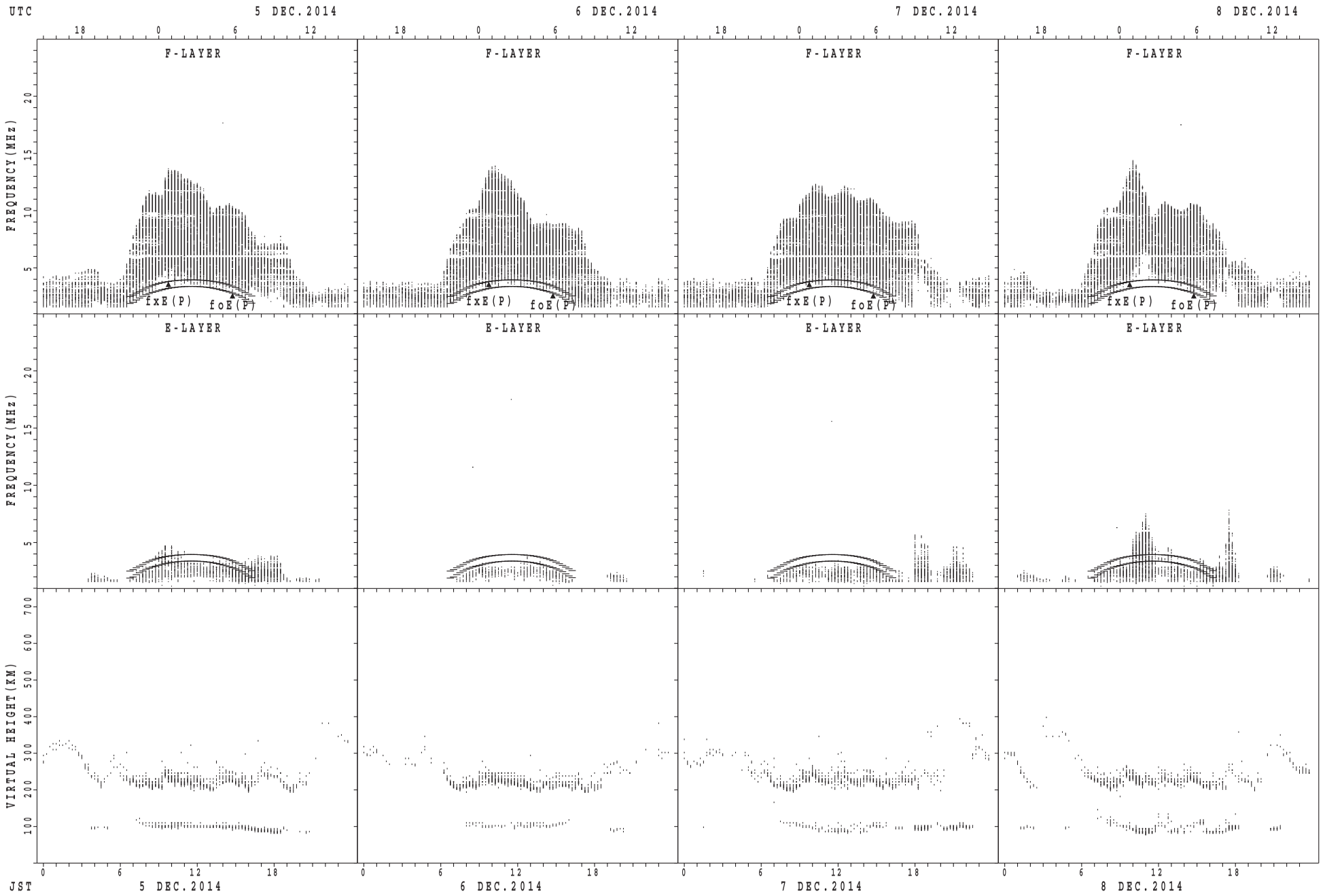
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



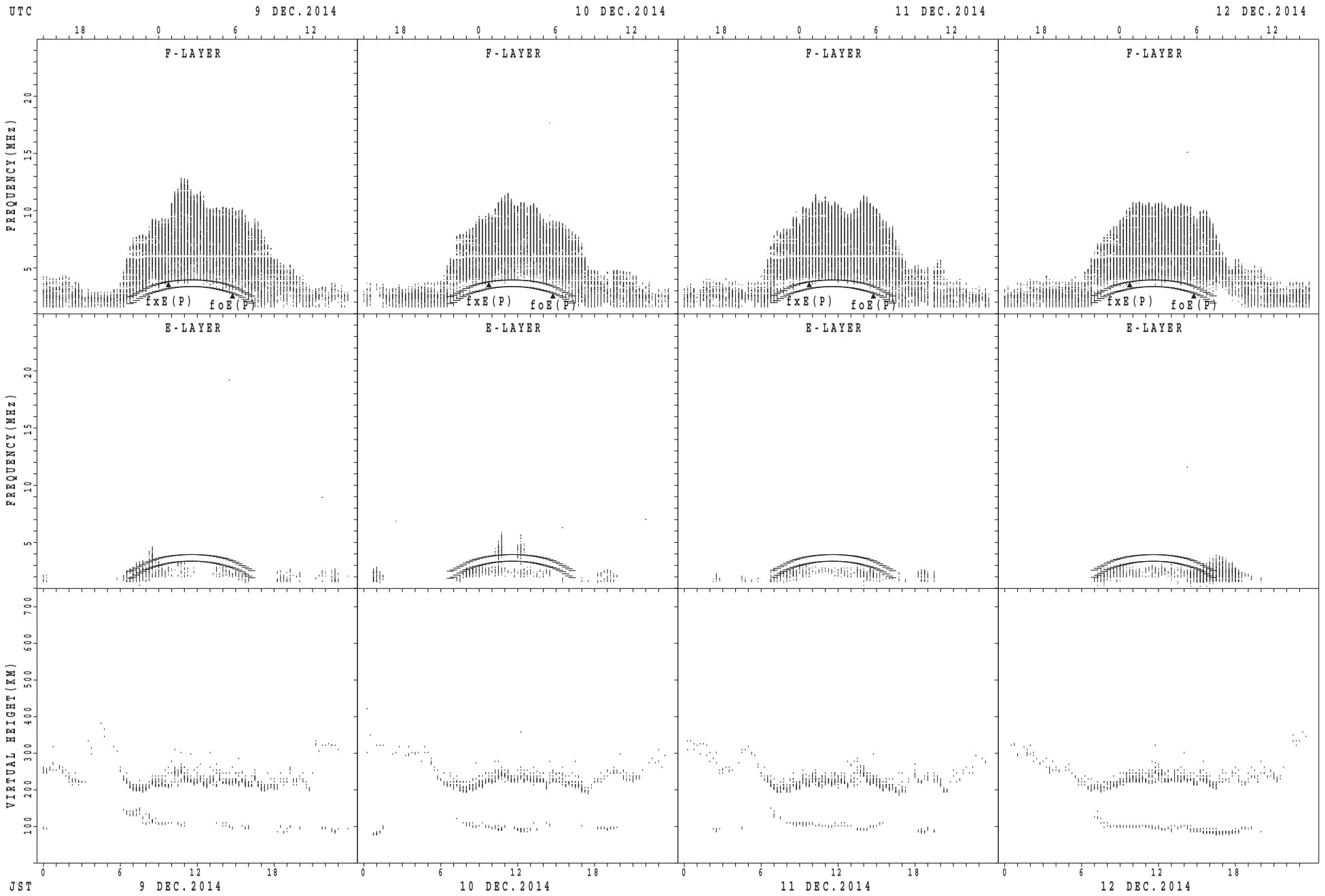
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



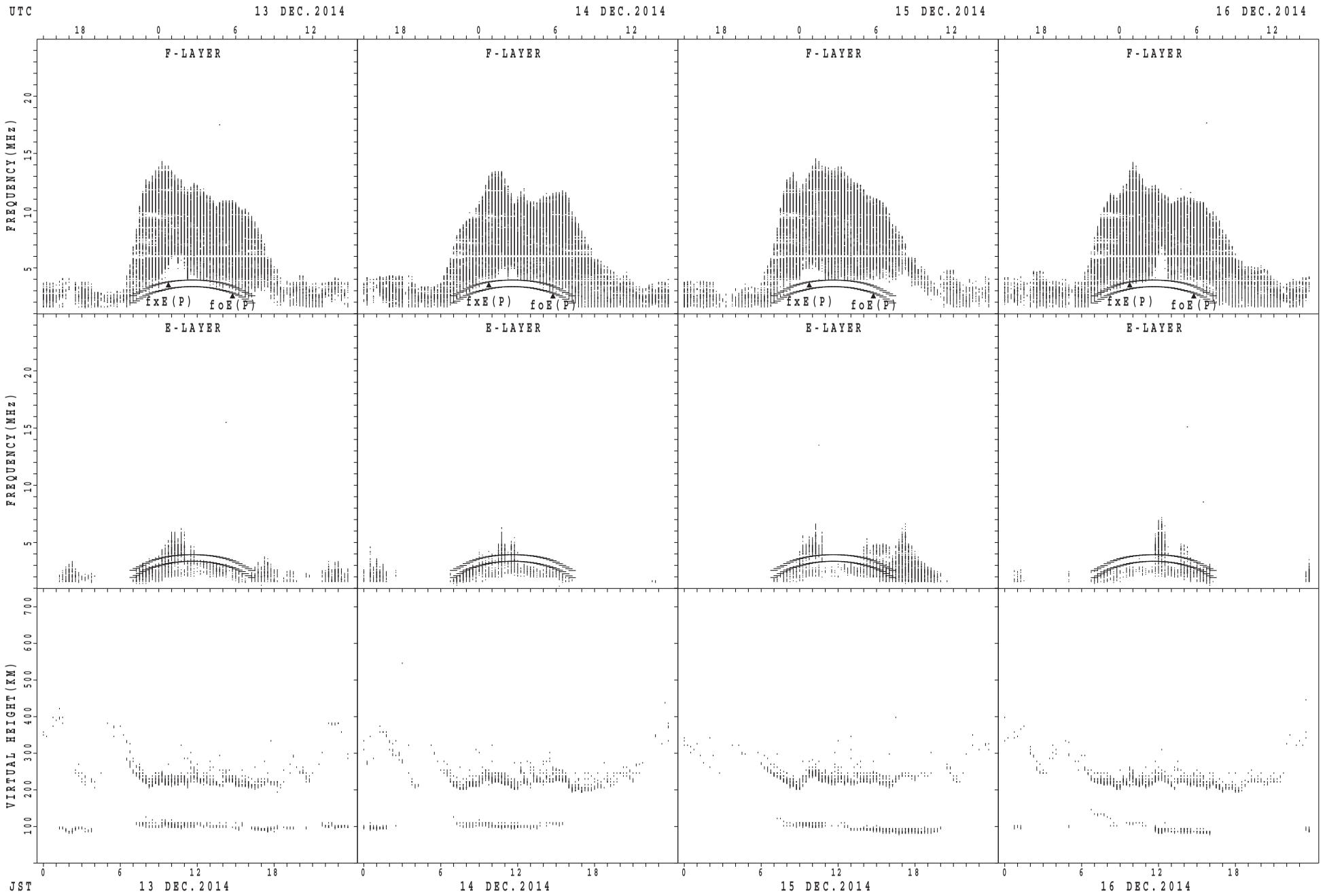
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



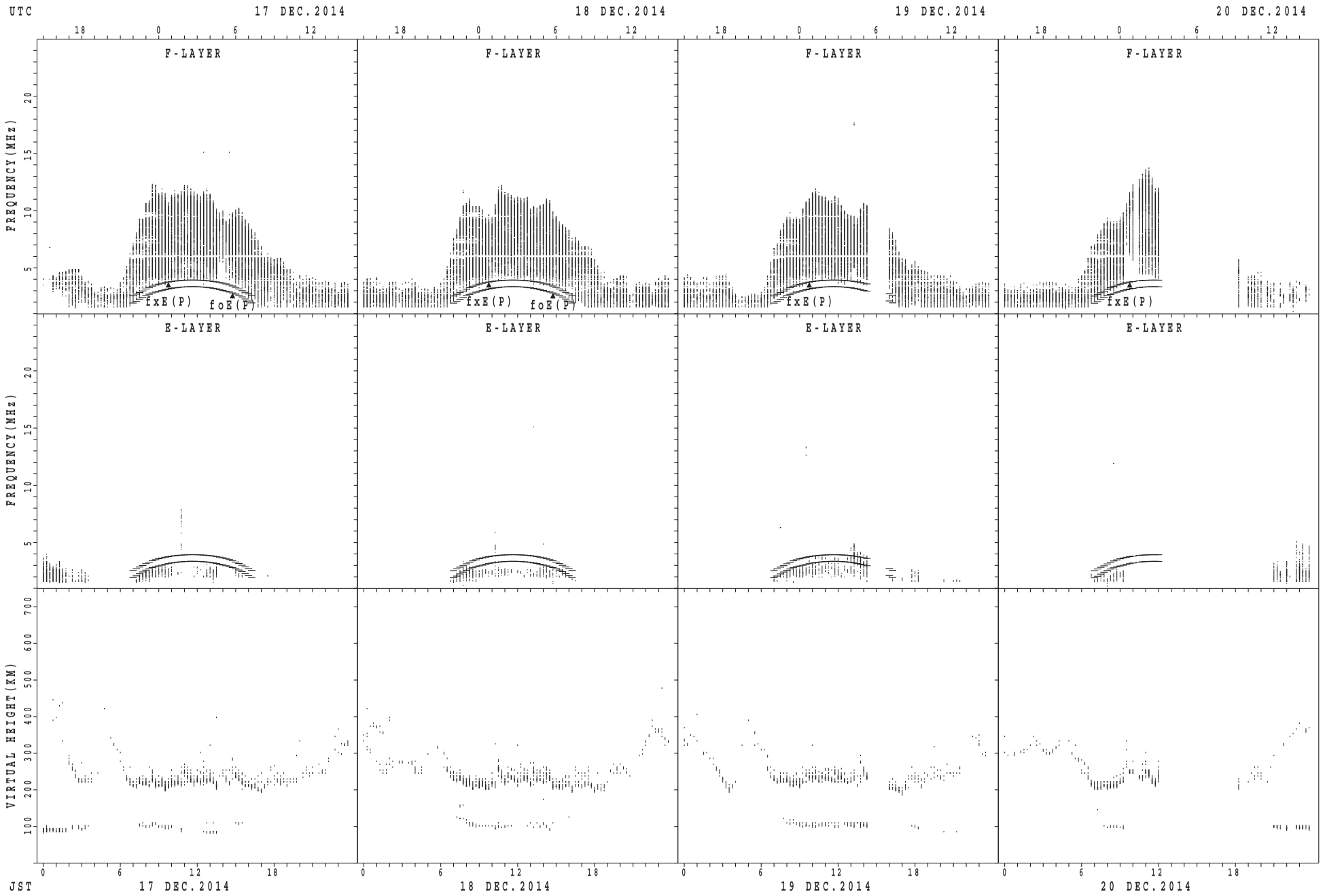
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

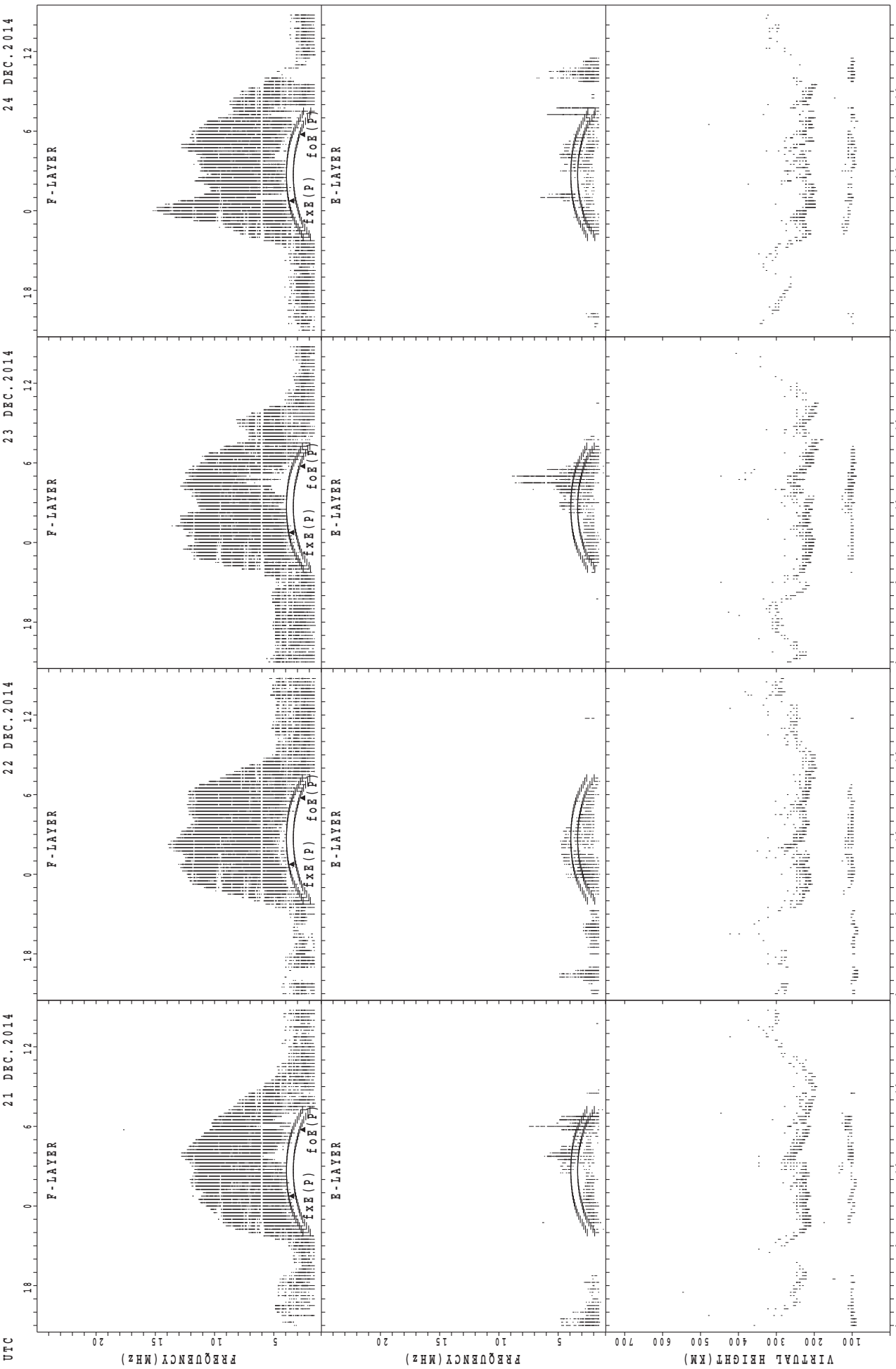


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

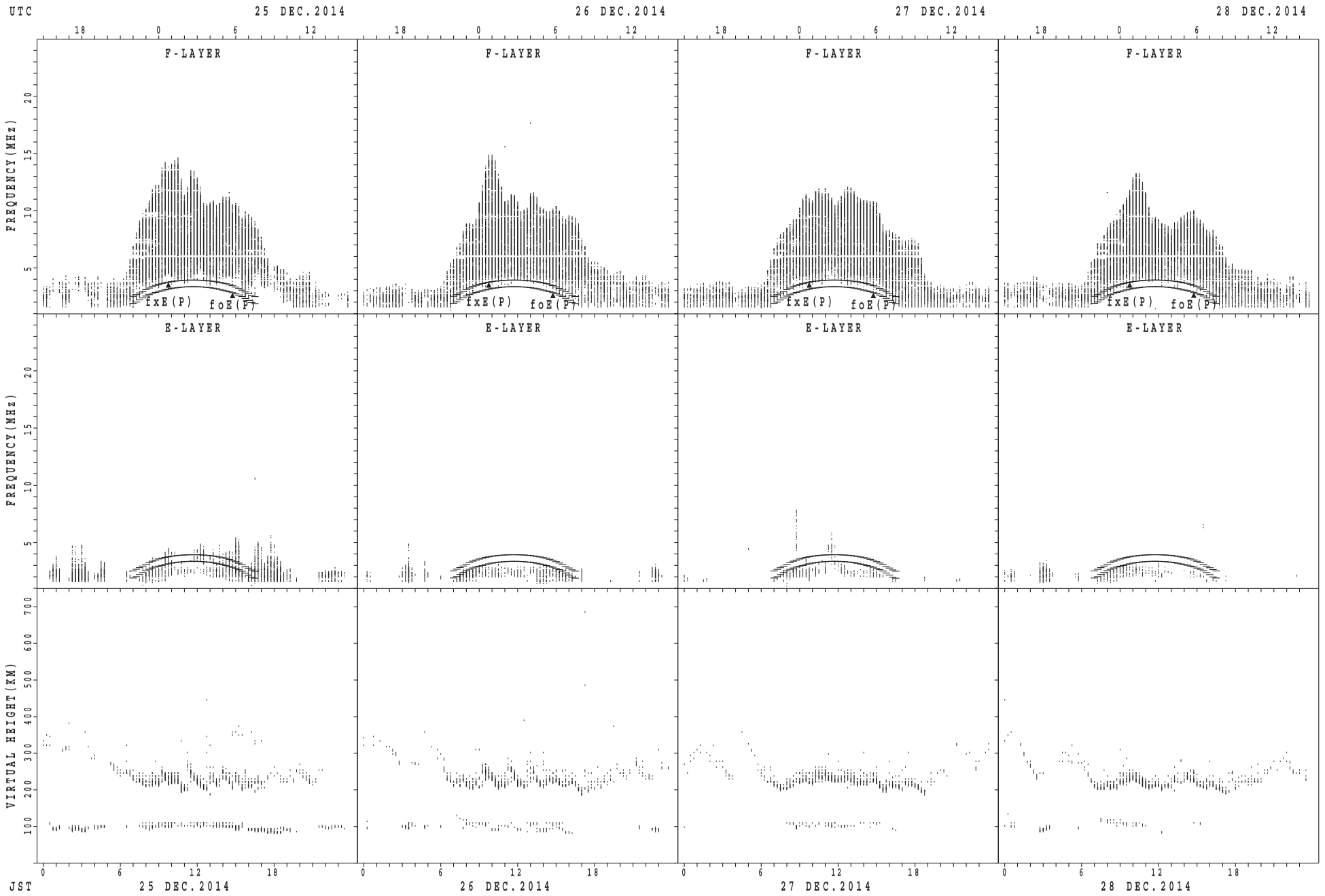
SUMMARY PLOTS AT Kokubunji



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

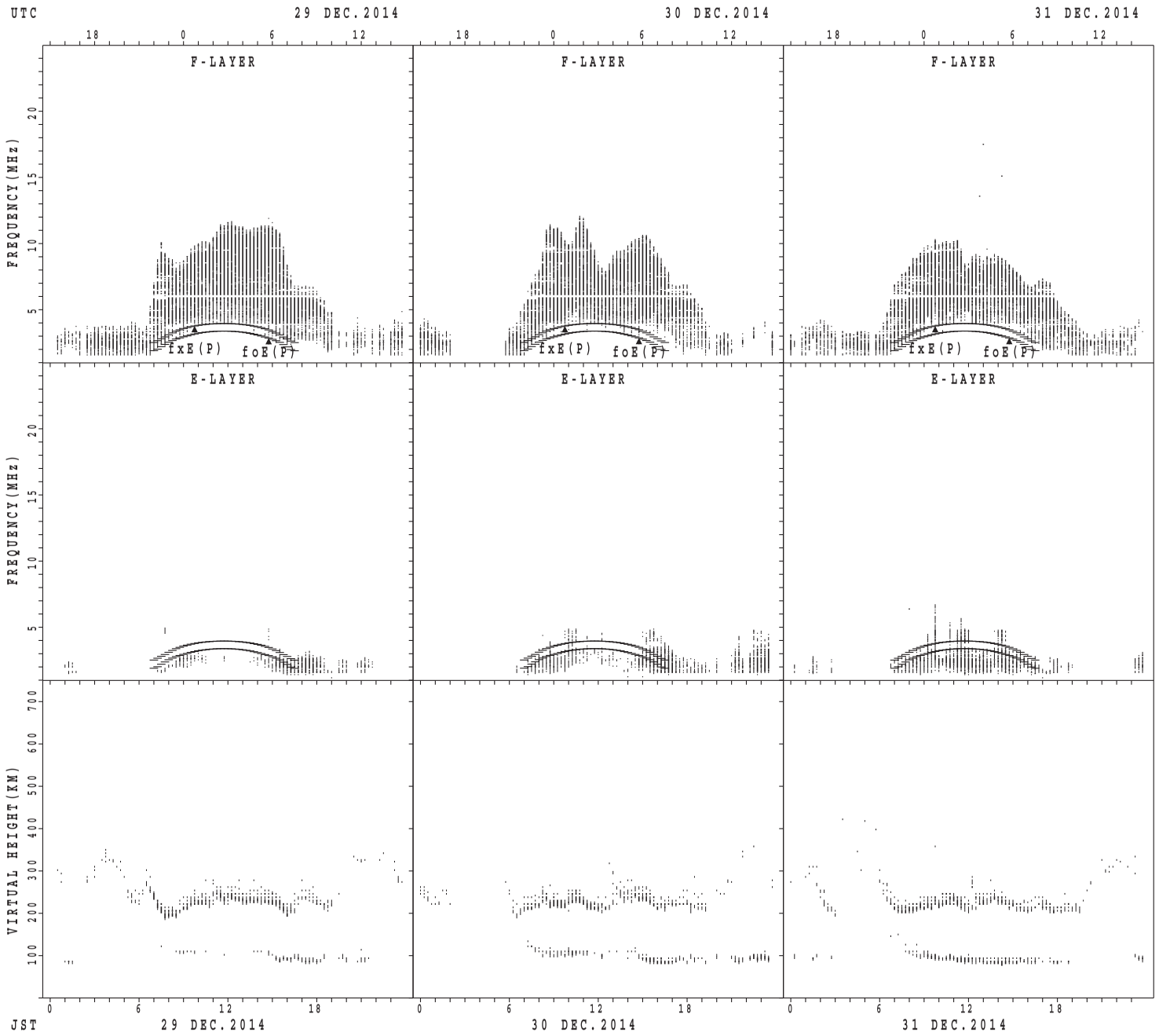

SUMMARY PLOTS AT Kokubunji
UTC
JST
21 DEC.2014
22 DEC.2014
23 DEC.2014
24 DEC.2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

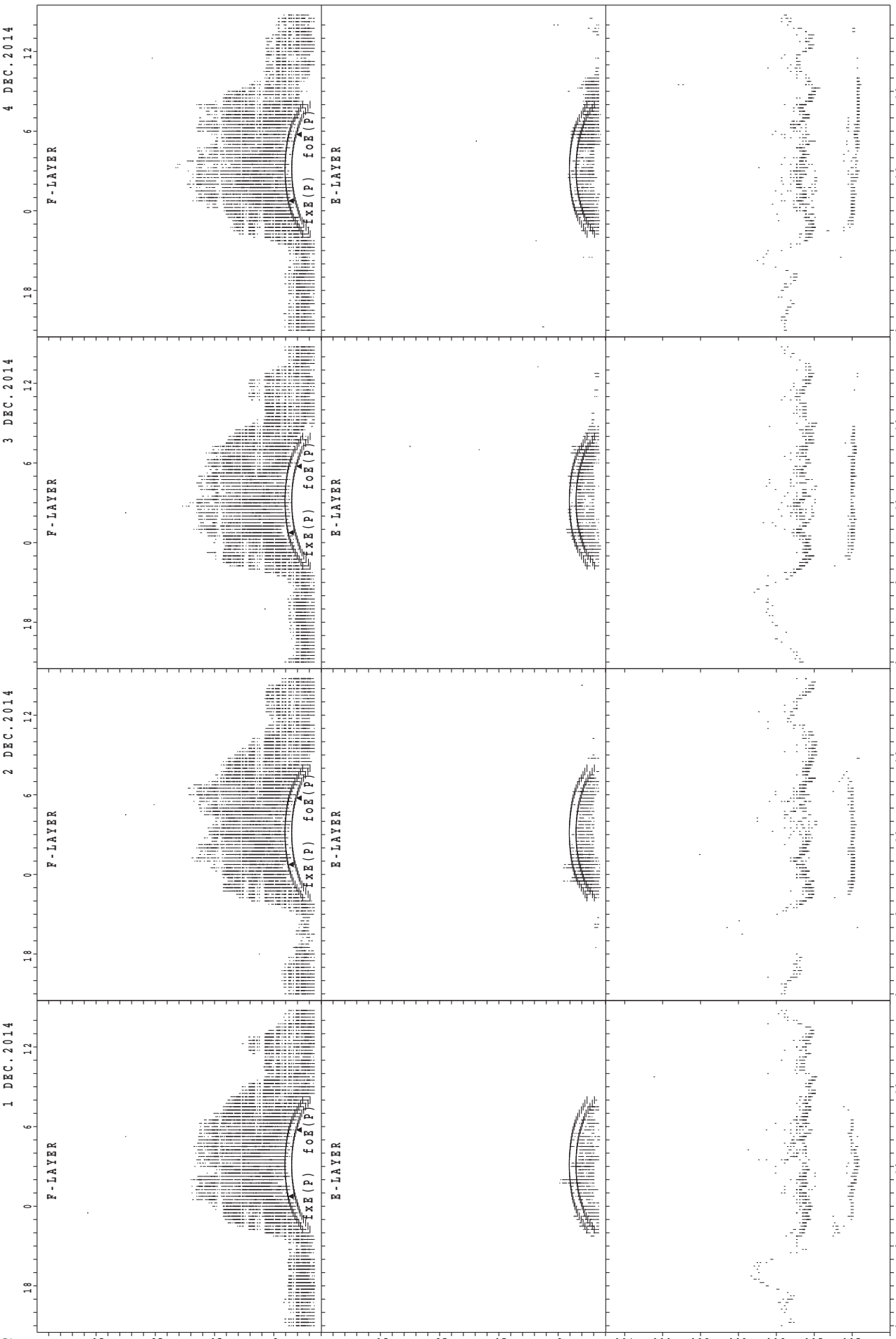


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

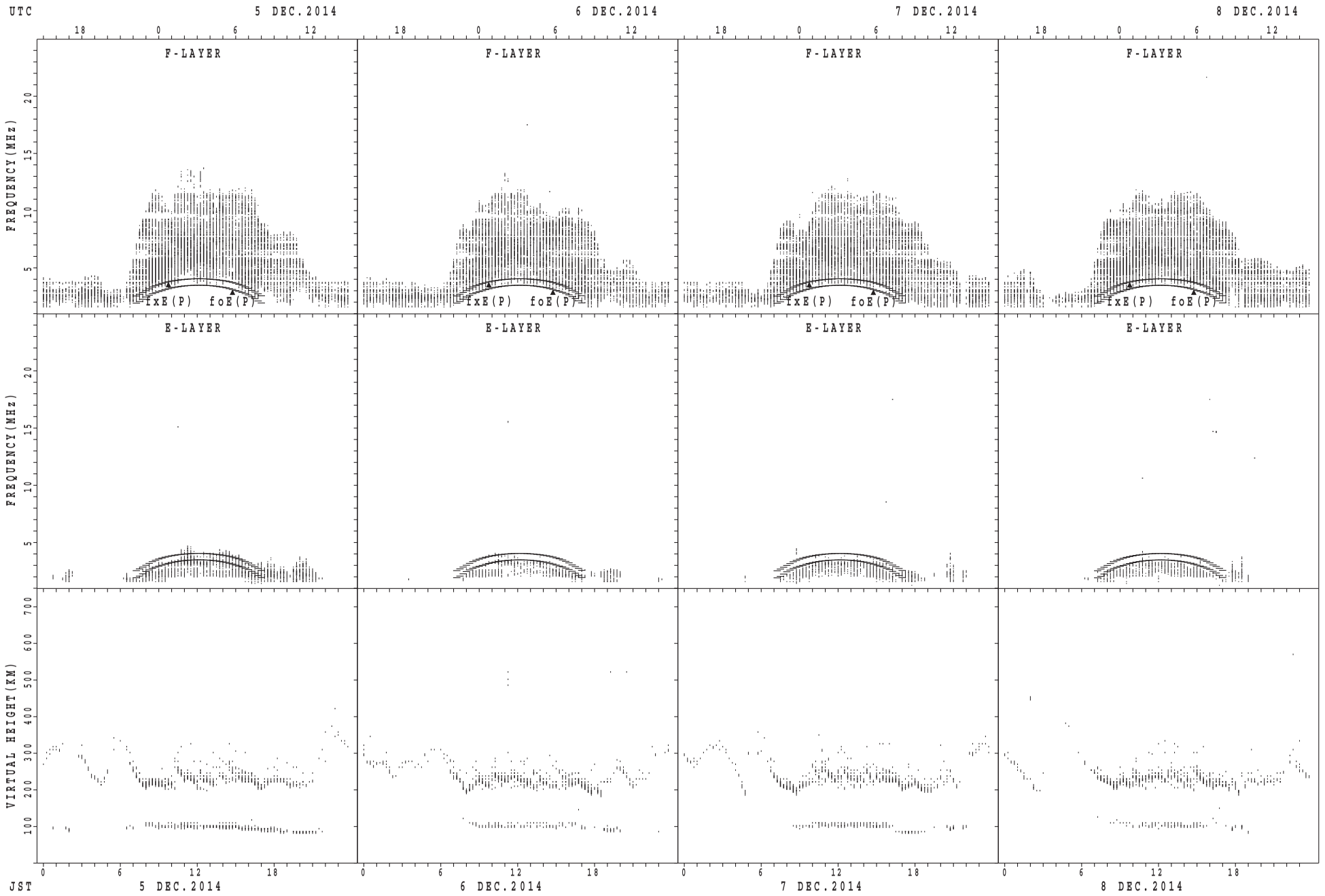
SUMMARY PLOTS AT Kokubunji



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

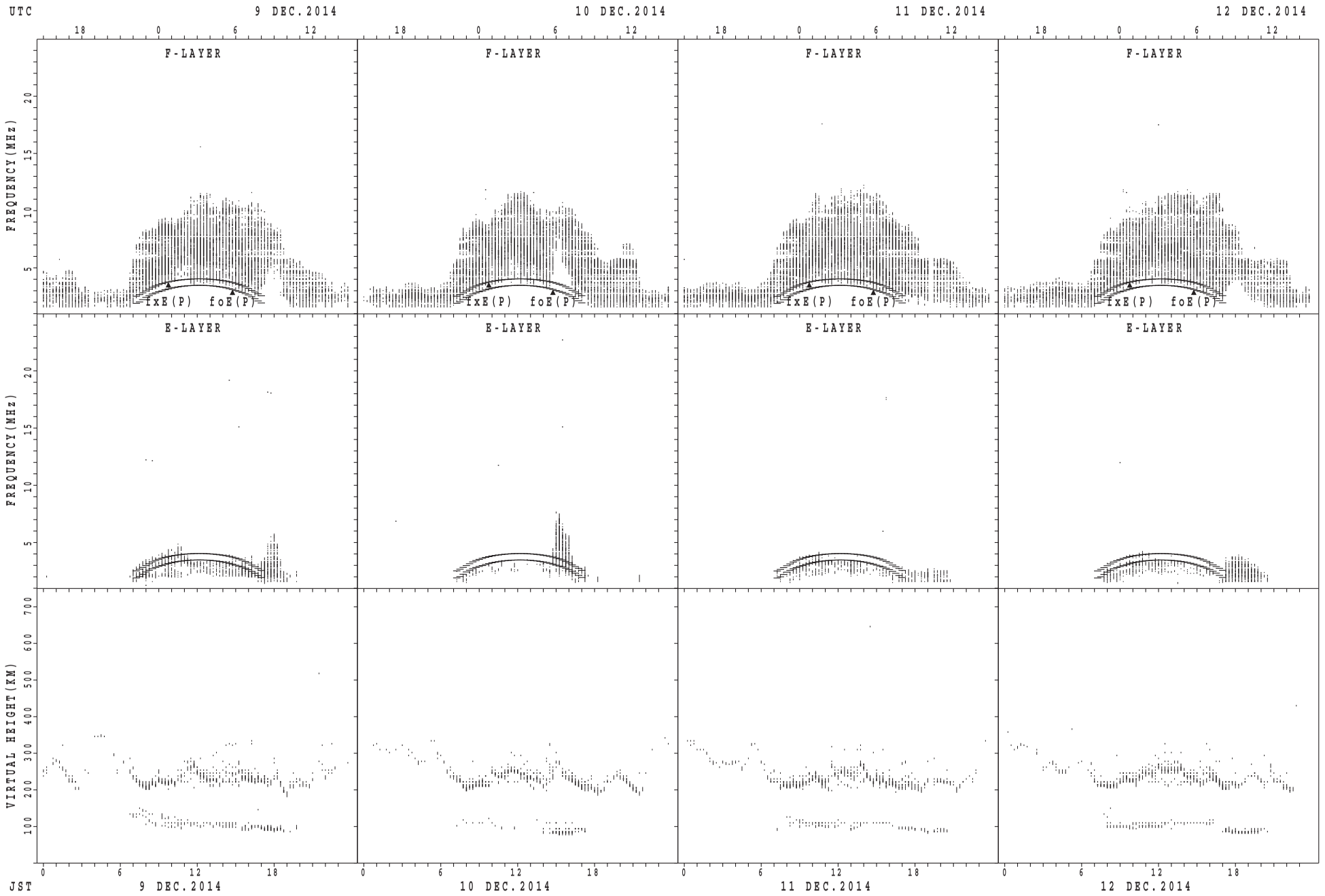

SUMMARY PLOTS AT Yamagawa
UTC
JST
1 DEC.2014
2 DEC.2014
3 DEC.2014
4 DEC.2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



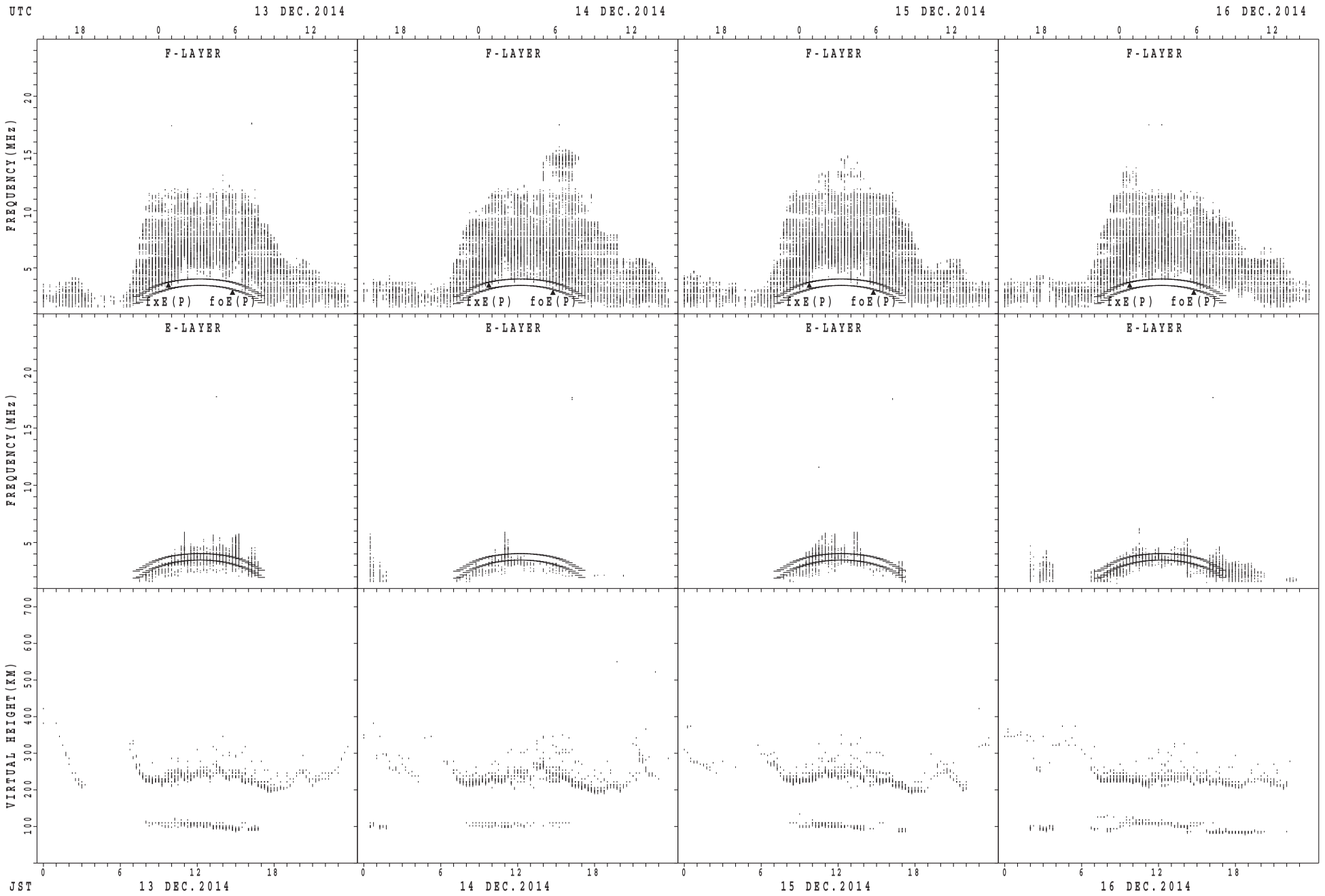
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



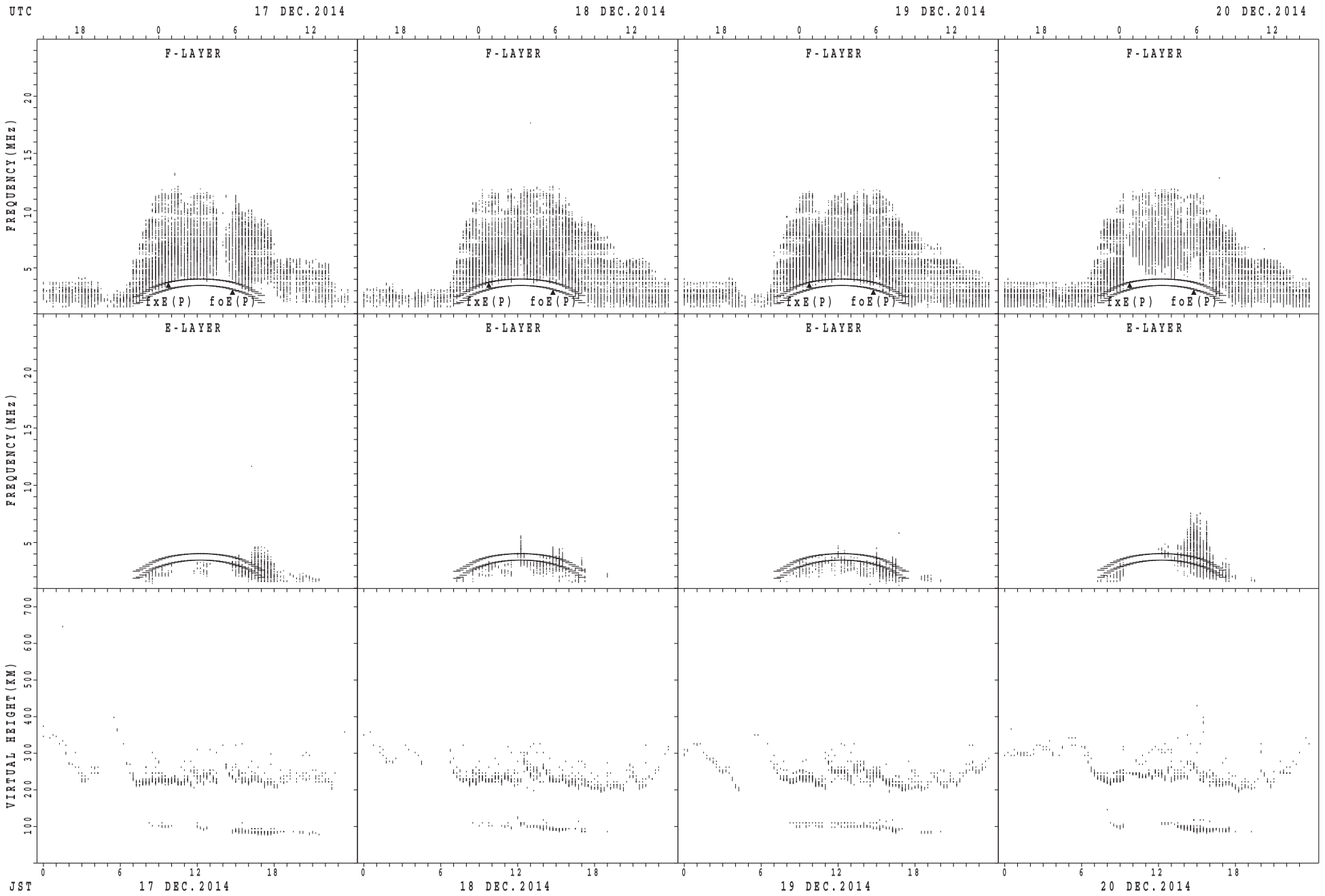
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



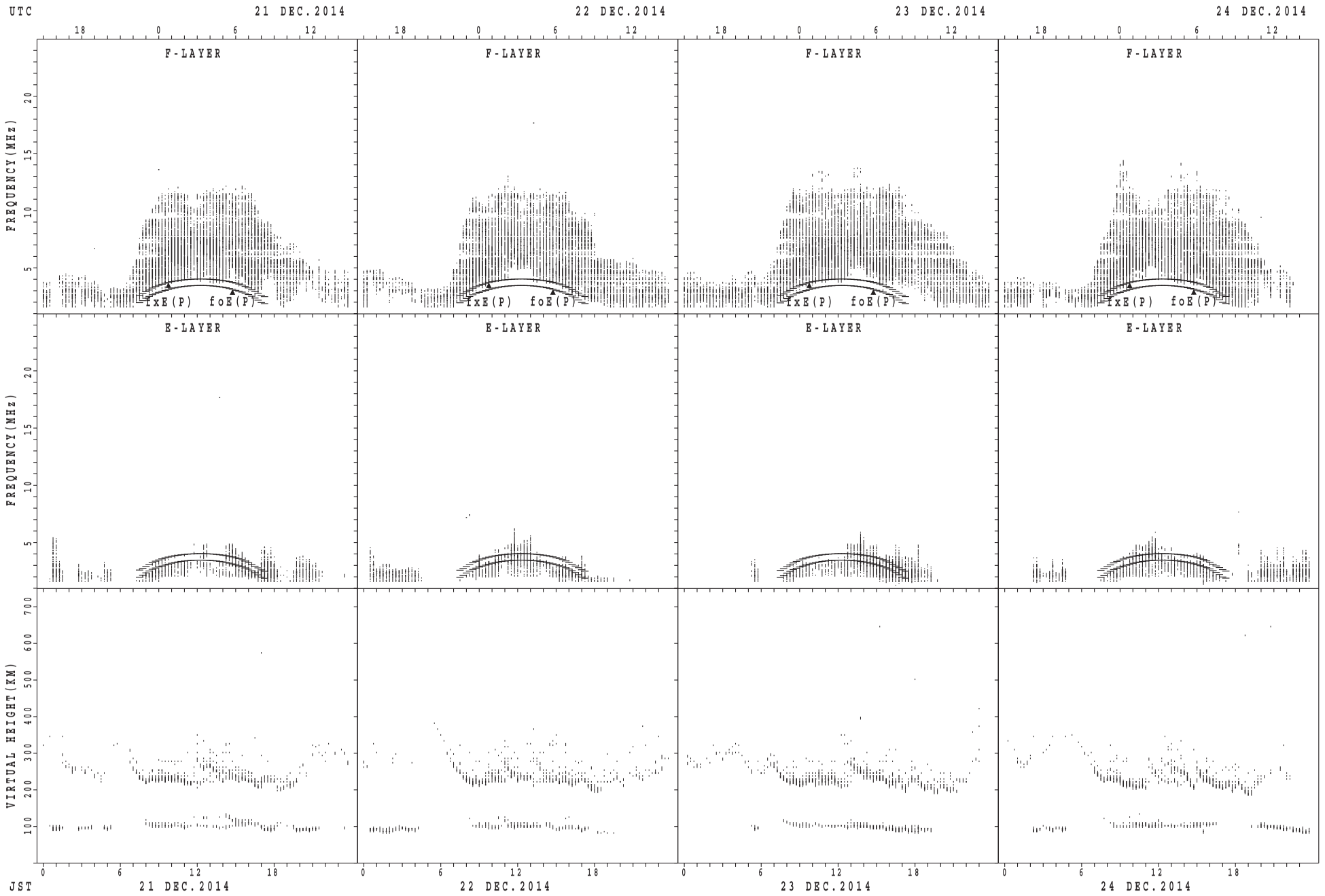
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



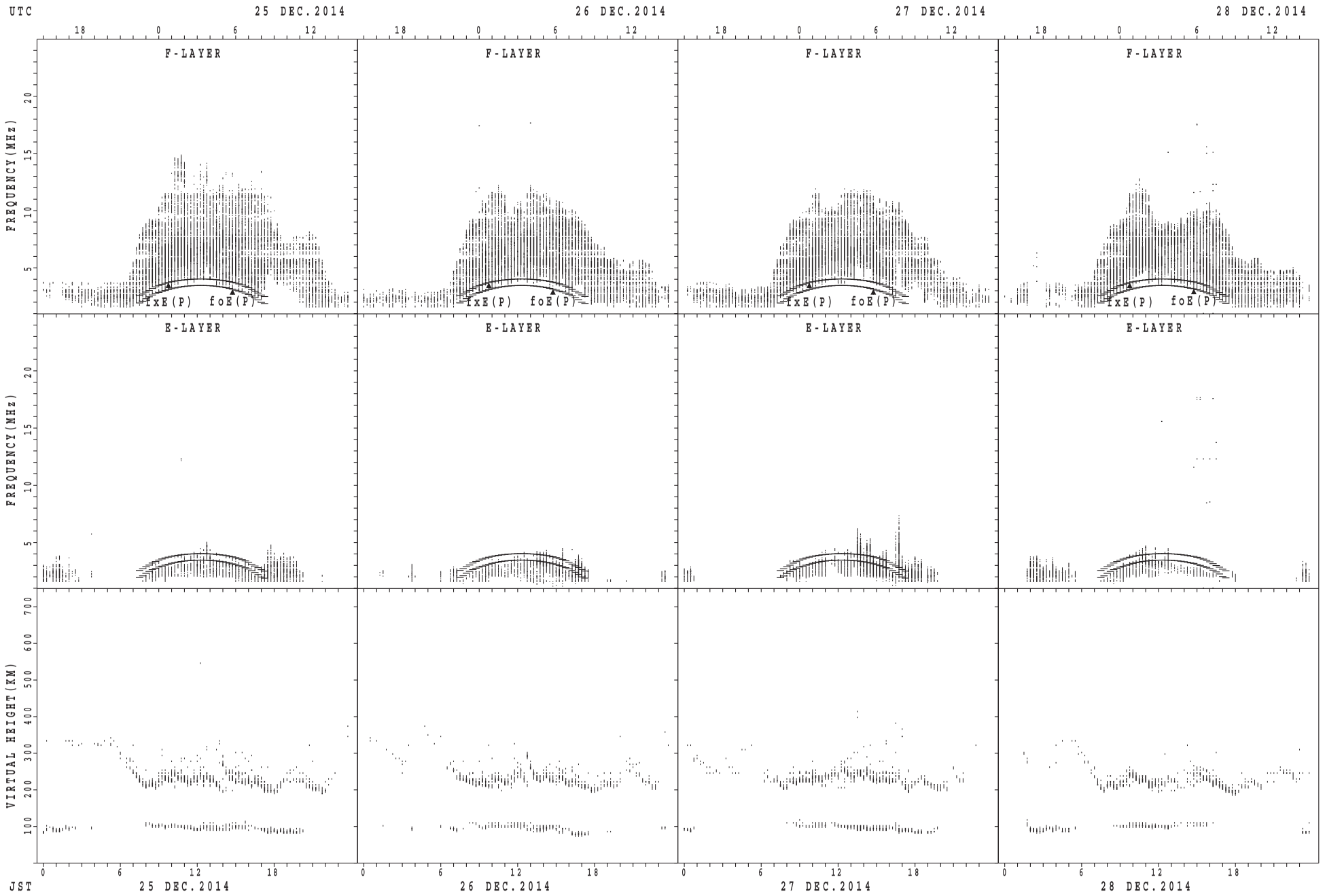
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



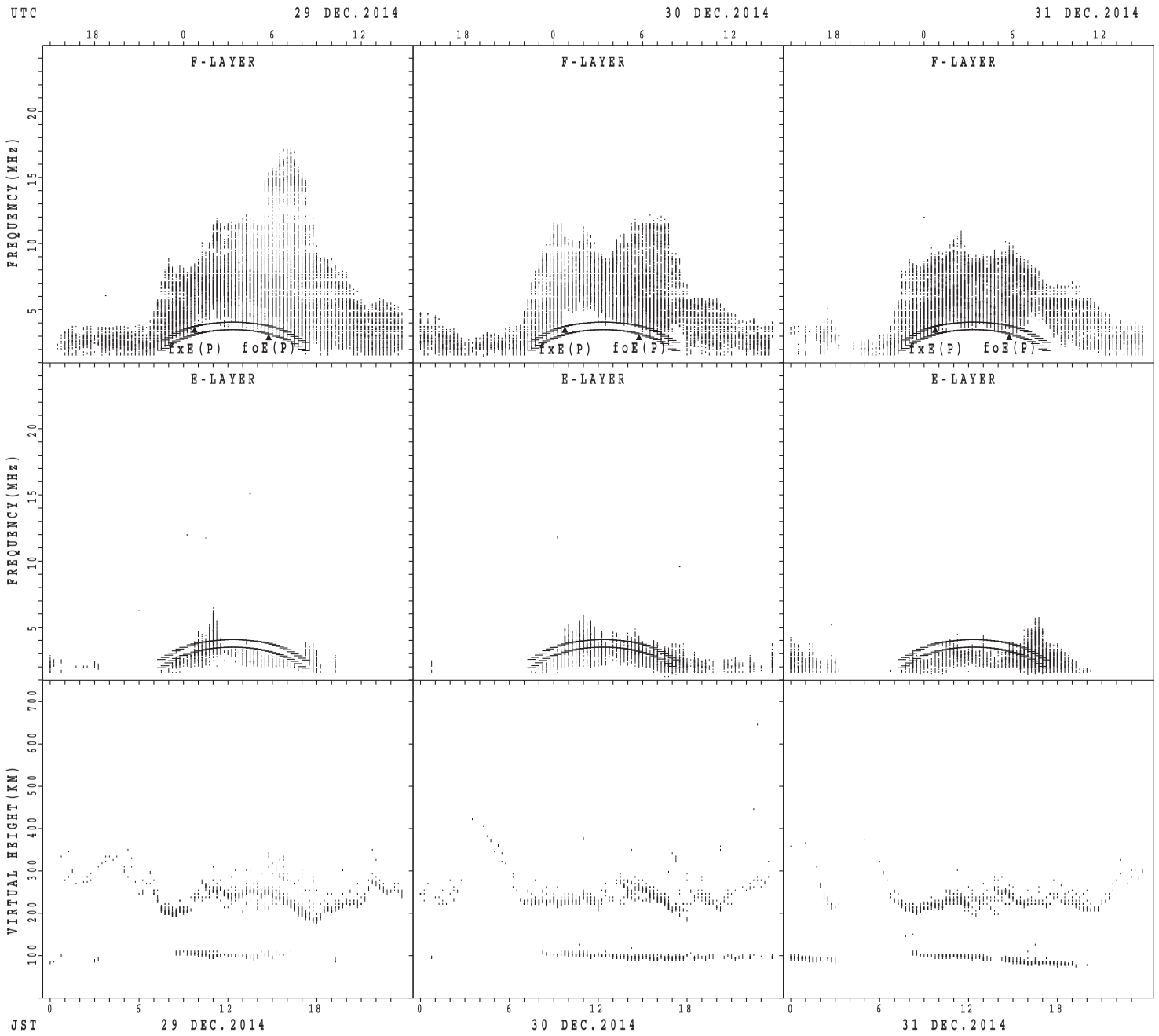
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



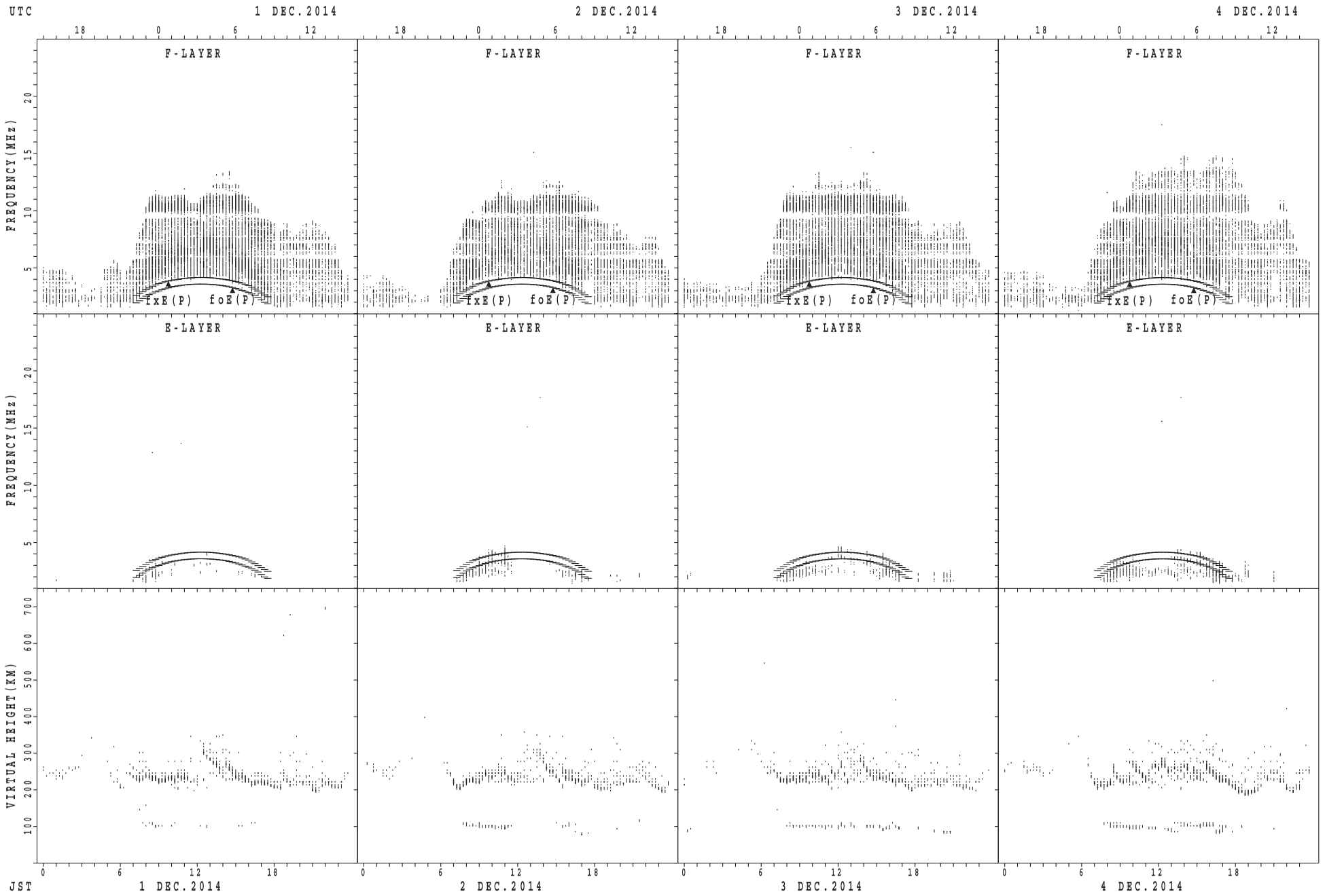
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



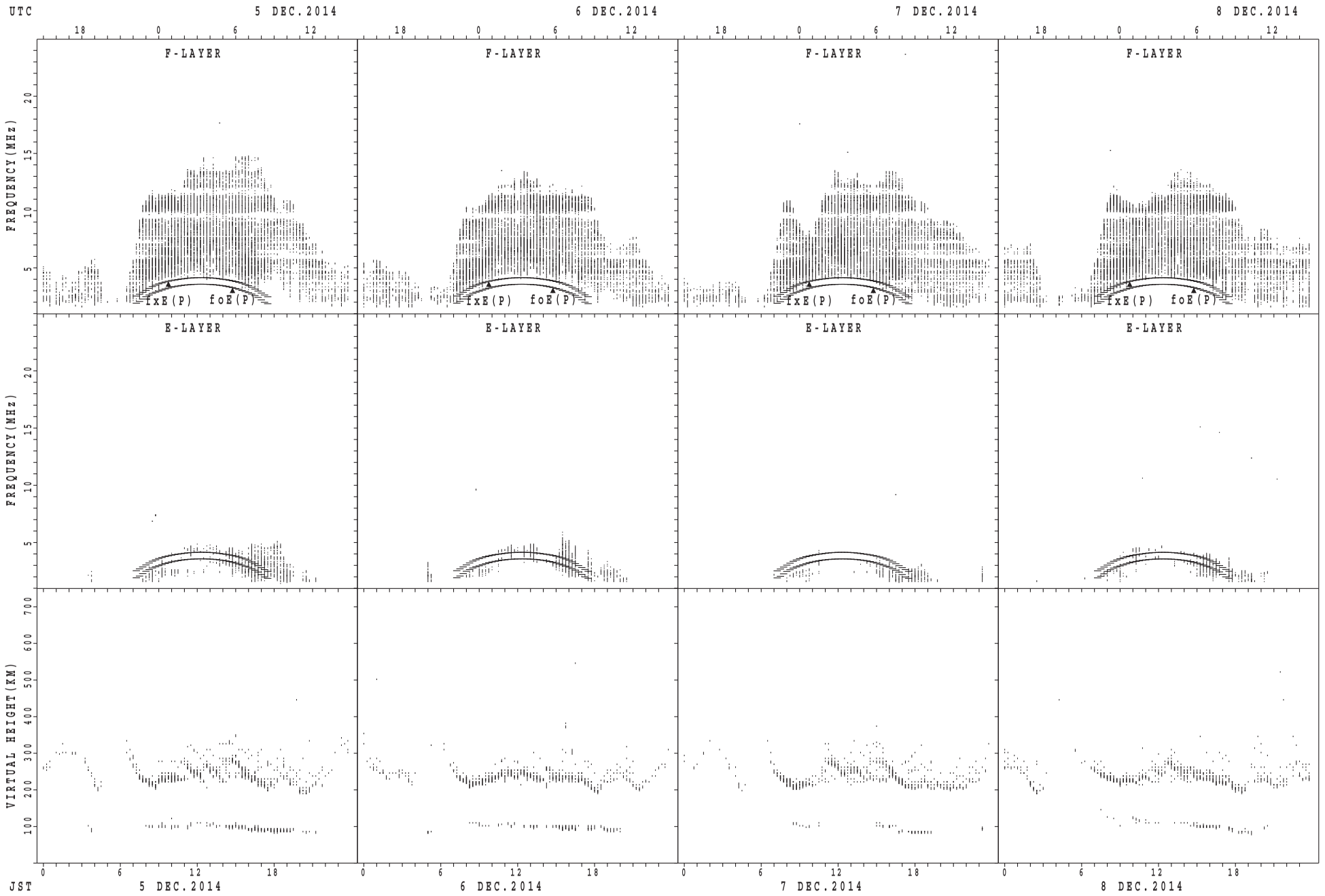
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



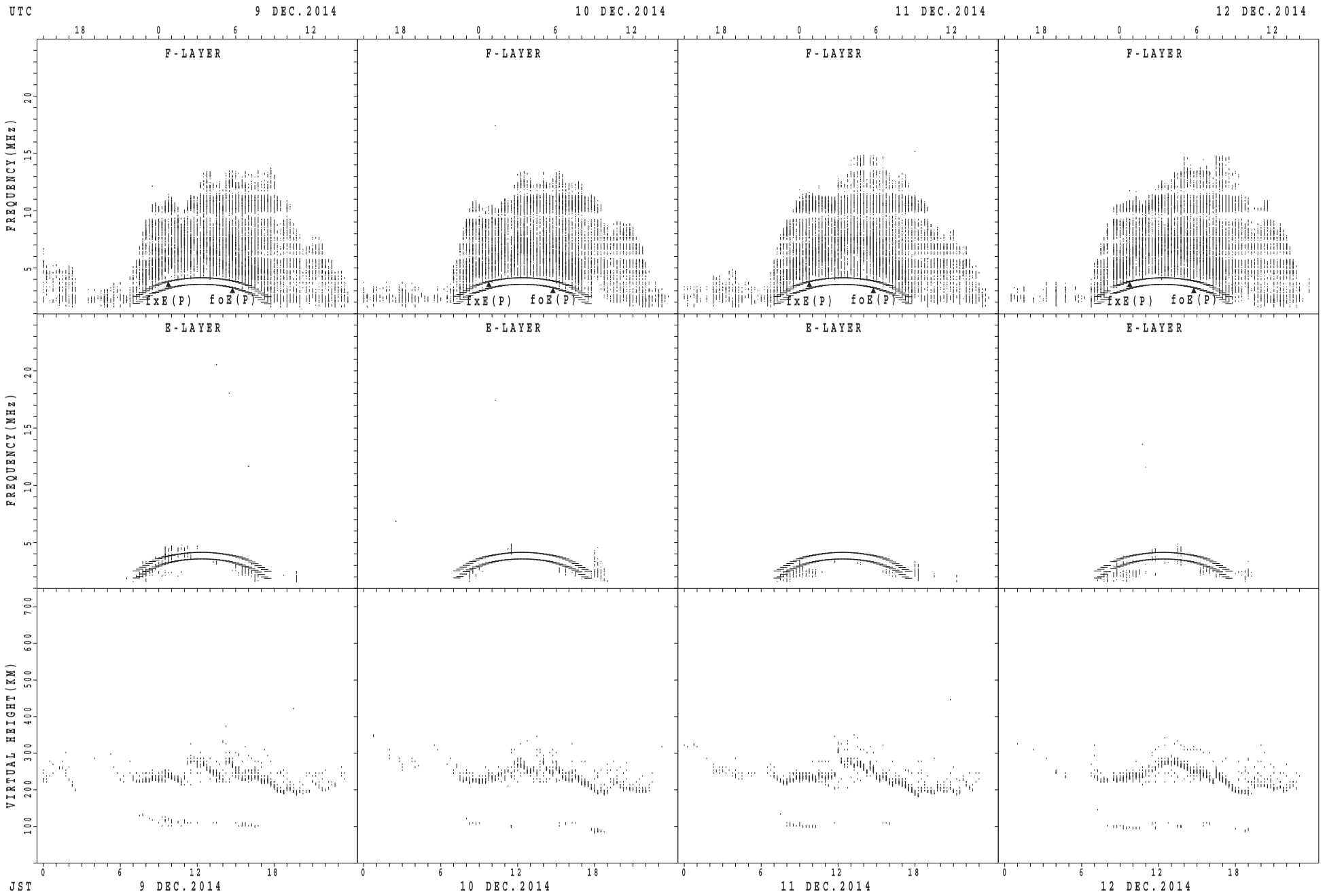
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



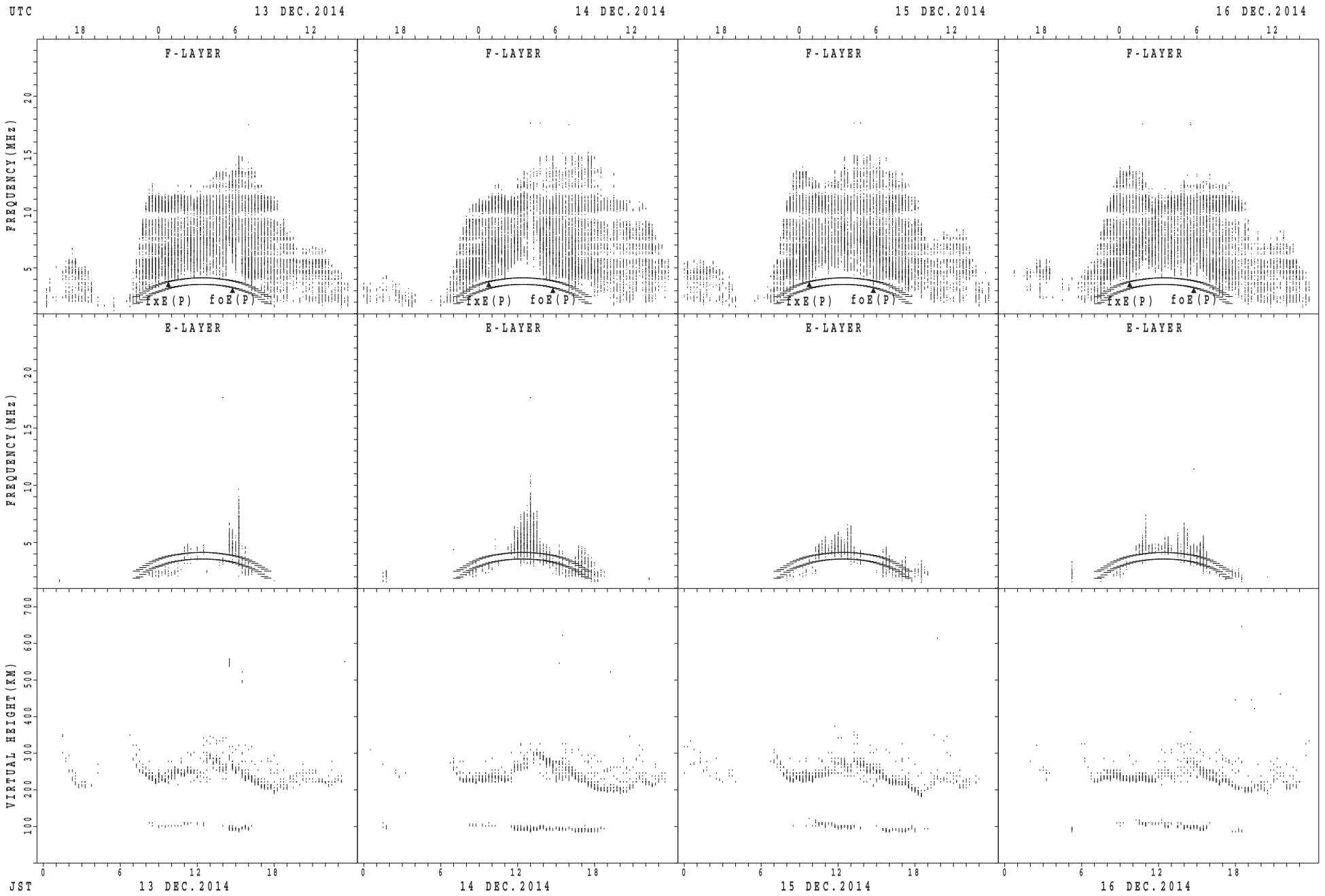
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



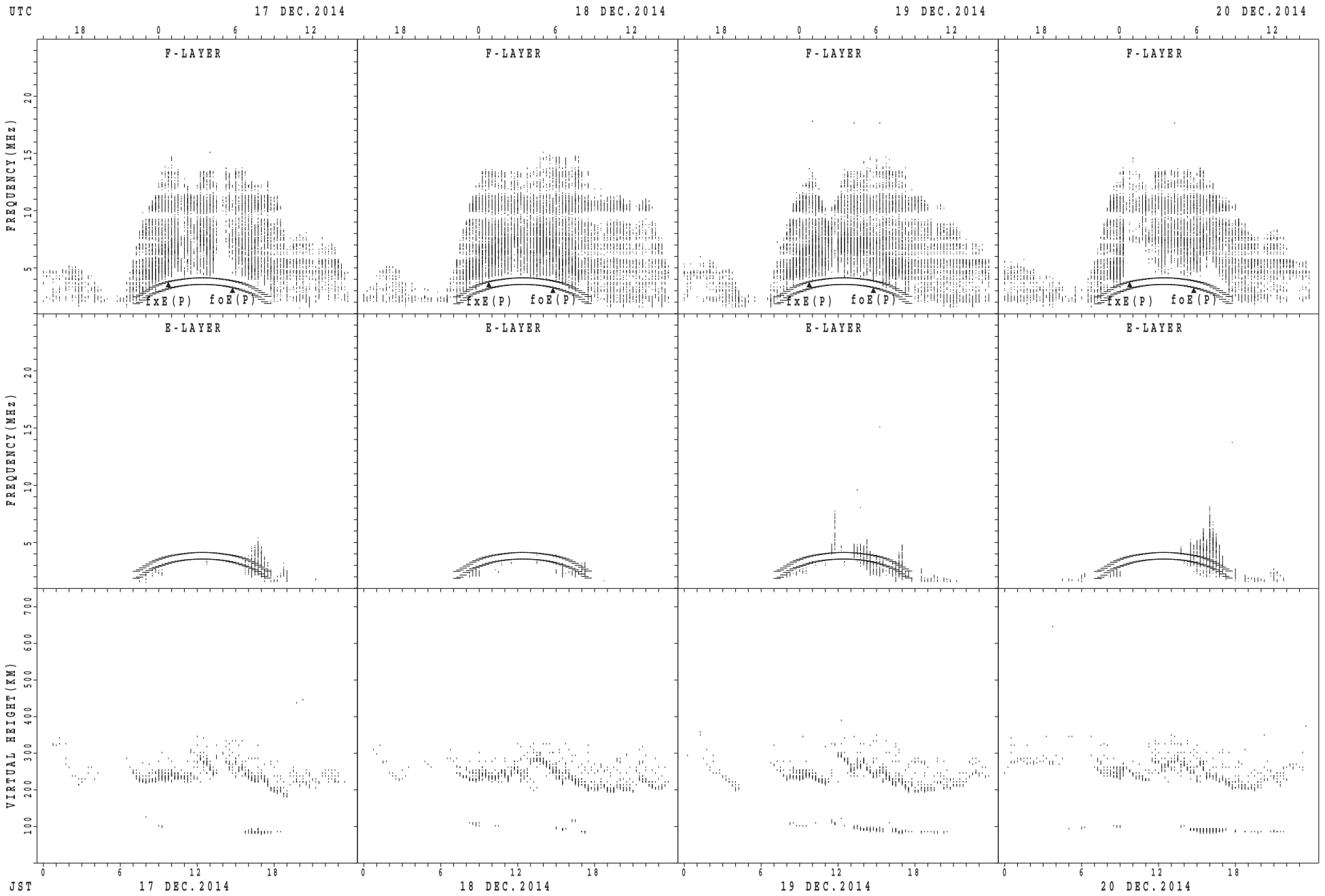
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



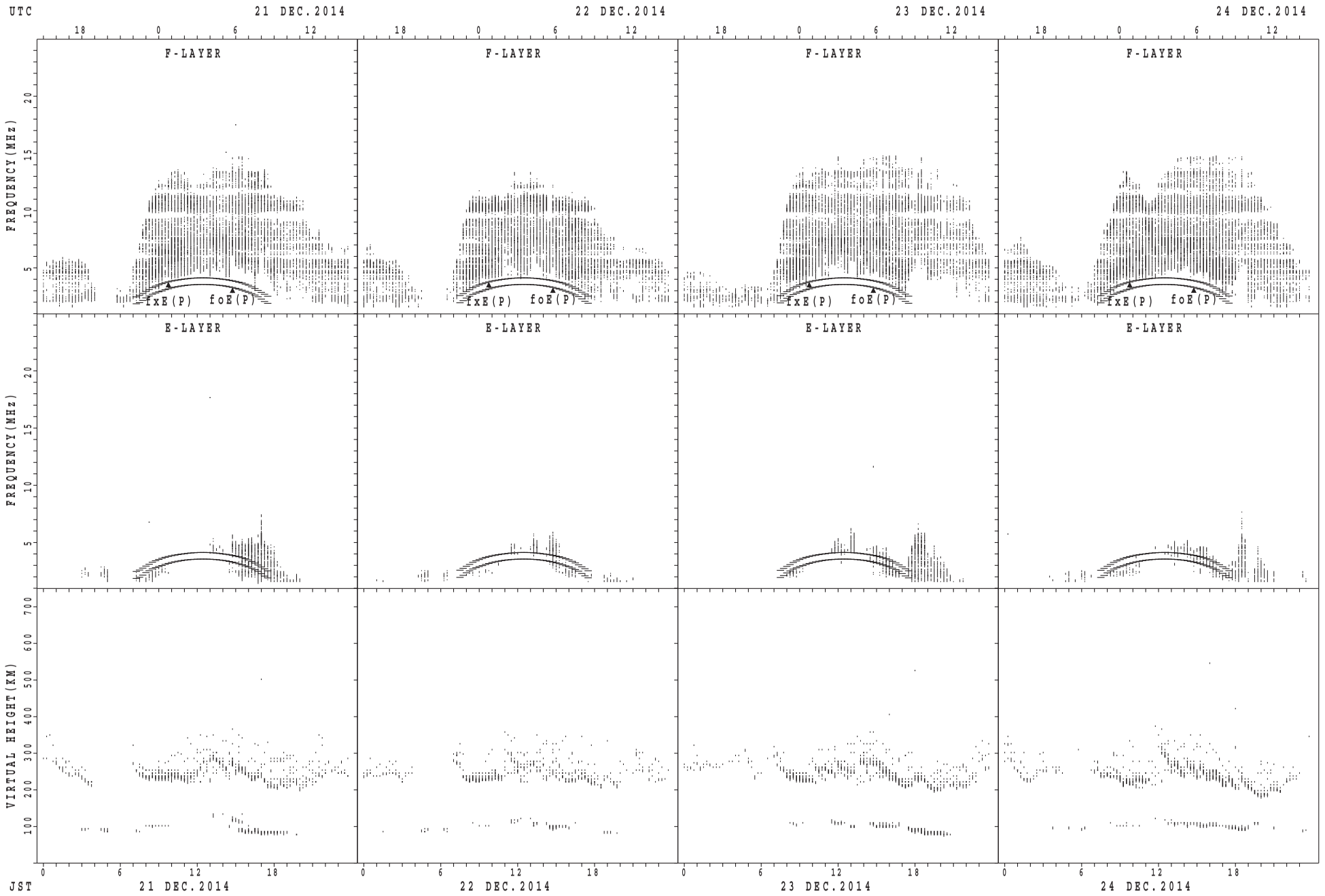
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



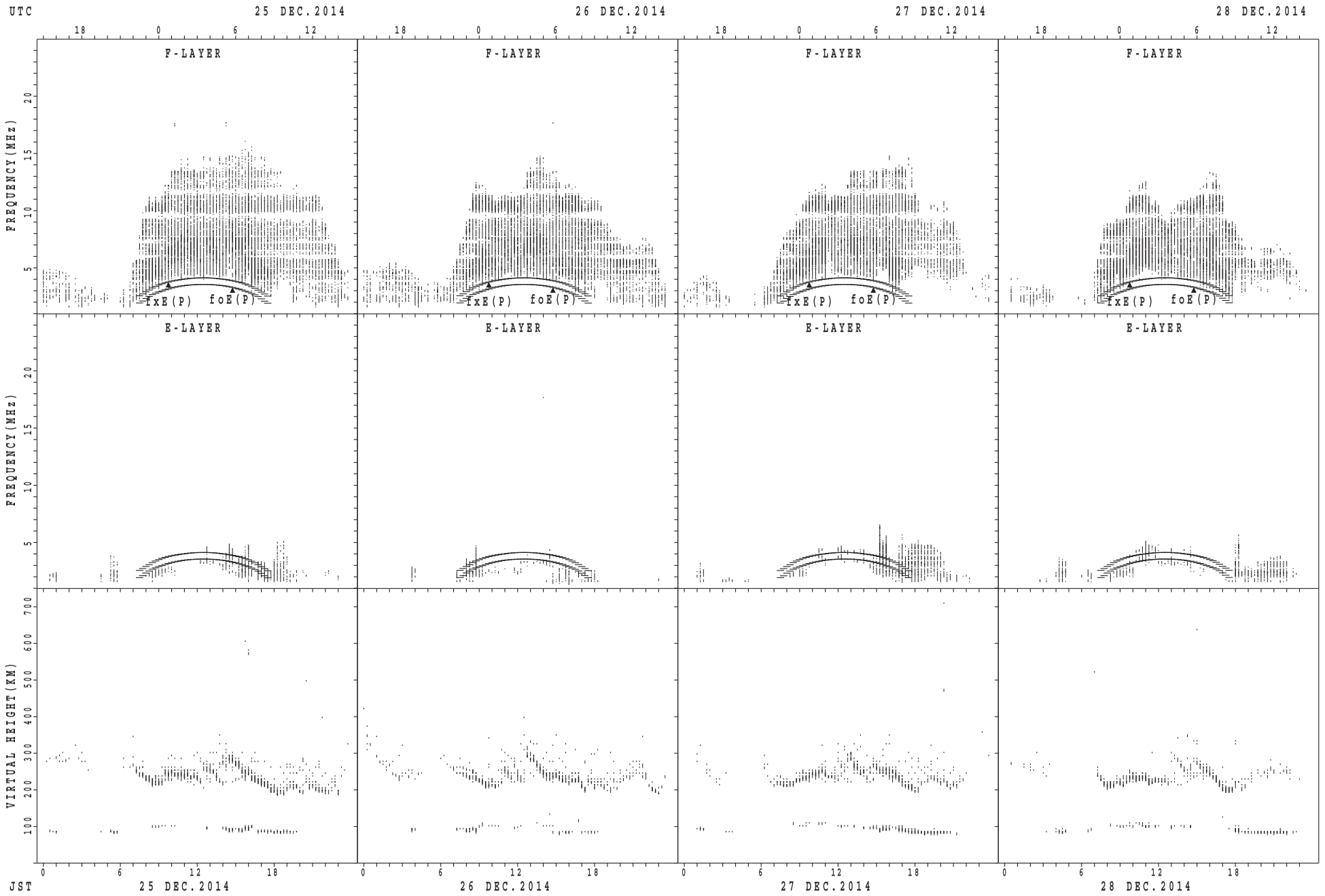
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



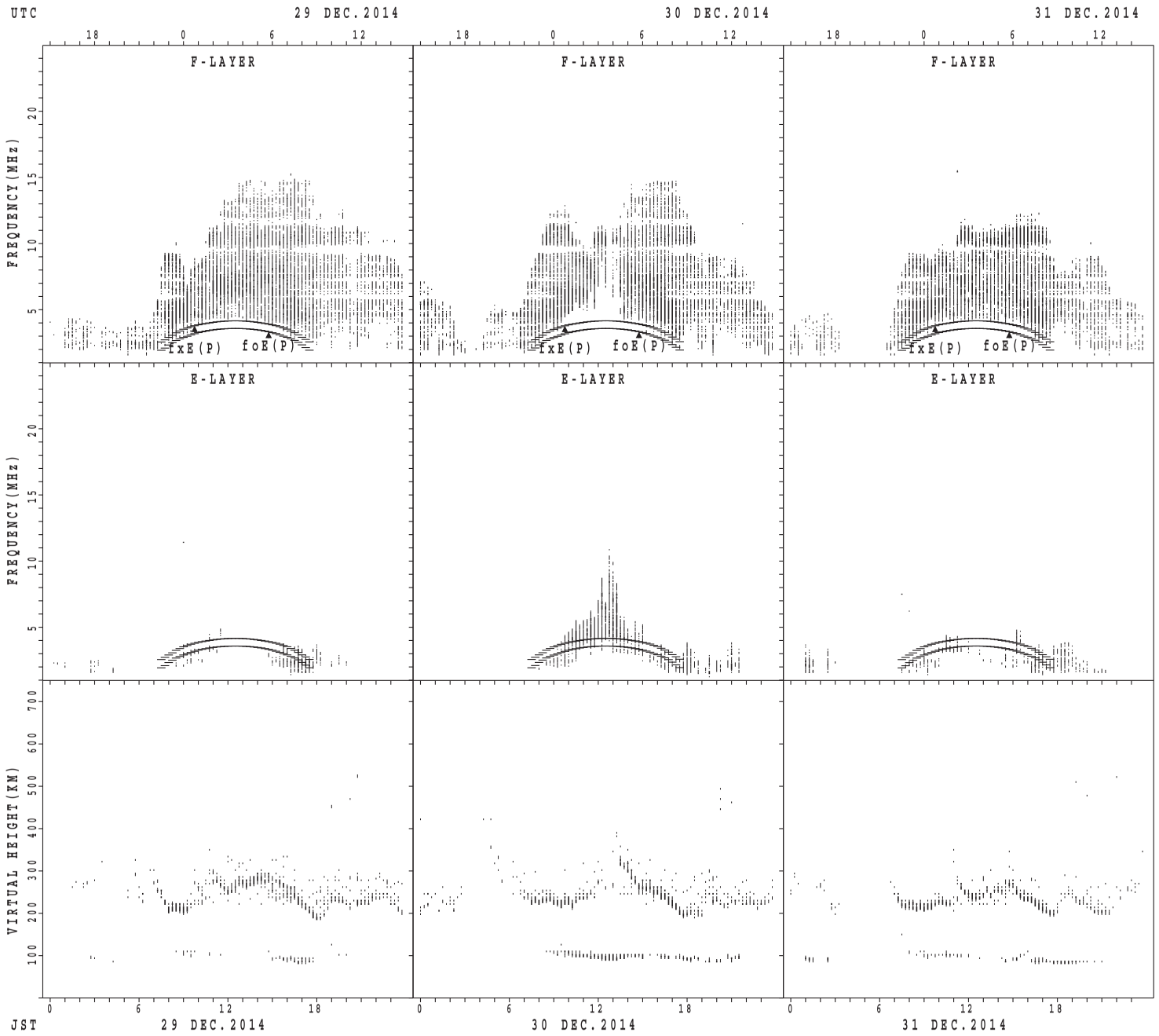
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

DEC.2014 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	30	26	23	28	30	29	30	31	25	4	1					
MED								248	223	222	218	217	218	222	222	222	234	248	256					
U Q								266	232	224	226	223	226	230	232	230	244	259	128					
L Q								232	214	214	214	212	208	214	220	218	222	244	128					

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	12	10	5	3	5	4	5	13	17	11	5	5	5	3	5	6	5	7	3	7	8	13	13	18
MED	98	100	97	97	99	98	97	101	105	103	93	105	101	95	105	92	91	89	89	101	98	95	97	96
U Q	99	103	110	99	104	111	101	121	108	107	111	109	111	95	107	103	94	99	97	107	103	105	105	105
L Q	91	95	92	95	97	96	96	94	99	103	88	93	89	87	90	87	85	85	89	99	96	92	95	91

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								14	31	31	31	31	31	30	30	29	29	15	5	1				
MED								237	222	222	230	222	230	231	239	230	224	236	246	242				
U Q								256	224	230	234	234	238	240	246	238	231	256	265	121				
L Q								222	214	216	222	218	222	224	232	225	217	232	234	121				

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	10	4	7	3	4	4	5	4	9	11	9	11	6	11	11	13	12	12	11	6	5	5	5
MED	97	97	98	95	97	99	104	135	109	107	103	103	103	105	101	95	91	92	89	97	97	97	99	99
U Q	99	103	102	103	99	105	124	141	141	112	107	108	113	107	107	103	95	95	100	97	101	101	102	102
L Q	95	95	92	91	97	95	99	119	104	101	103	97	95	103	95	95	88	89	89	93	93	94	96	96

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								2	30	31	31	31	29	31	30	31	31	31	20	4	3	1		
MED								259	231	230	230	234	238	246	246	240	232	230	238	235	256	264		
U Q								262	240	232	238	246	247	254	256	248	238	238	259	244	266	132		
L Q								256	222	222	224	226	230	234	238	234	228	222	229	222	254	132		

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	4	6	7	3	2	1	4	9	9	15	17	12	12	14	16	17	21	16	14	8	5	2	2
MED	91	95	93	95	95	93	101	114	131	107	107	103	105	106	98	98	95	91	90	90	92	99	101	98
U Q	96	97	95	97	95	95	50	136	156	110	113	107	107	108	103	102	111	97	96	93	94	101	105	105
L Q	87	92	91	91	93	91	50	96	124	103	105	101	105	100	97	91	92	87	87	87	89	91	97	91

MONTHLY MEDIANS OF h'F AND h'Es

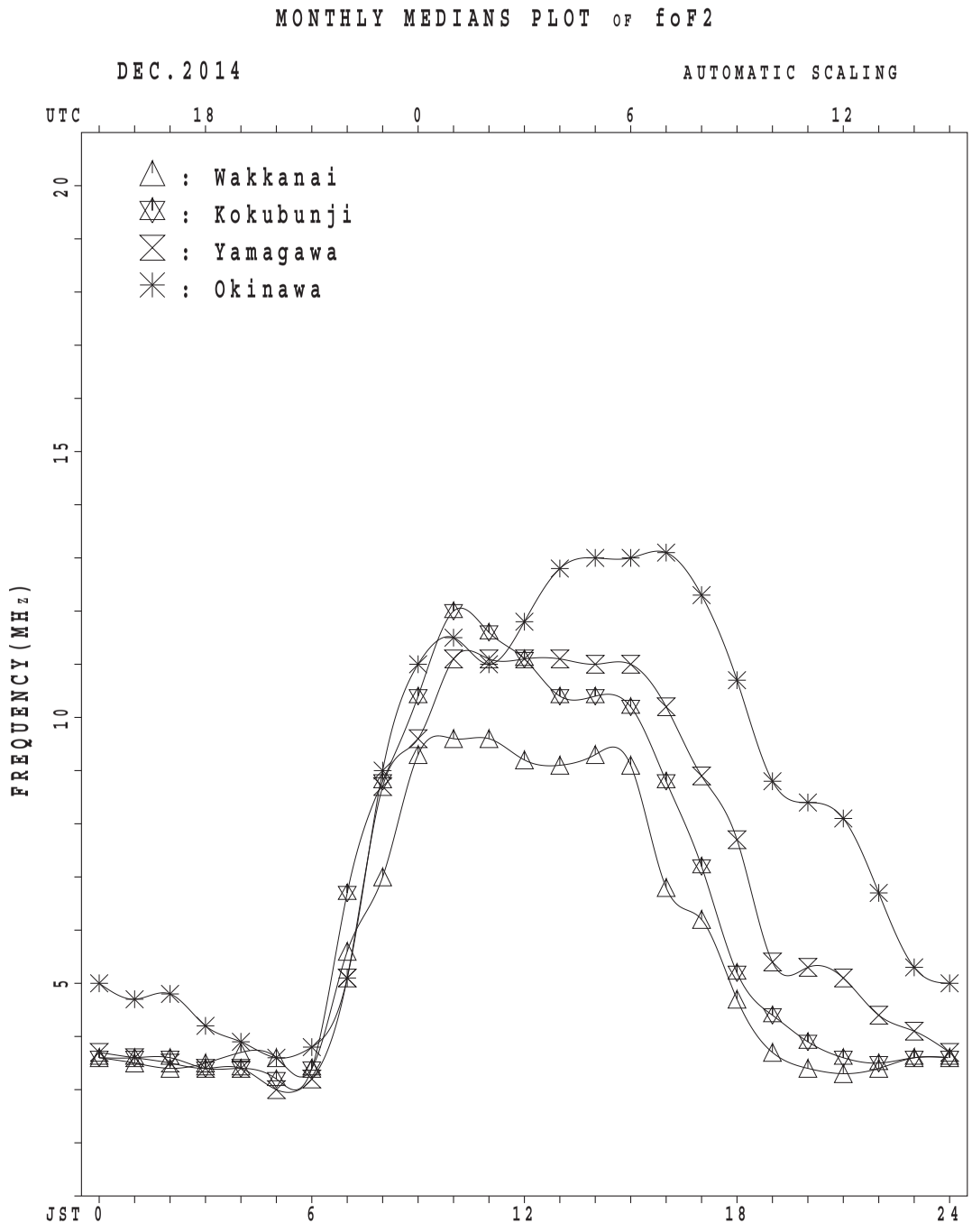
DEC.2014 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Okinawa LAT. 26°41.0'N LON. 128°09.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	31	31	31	31	3	2	30	31	31	31	31	25	24	21	15	6
MED								276	238	230	234	238	250	257	270	250	238	224	222	238	238	242	248	266
U Q								138	248	234	240	248	270	270	278	270	246	238	234	260	255	257	264	280
L Q								138	222	222	230	230	242	244	256	240	234	222	208	223	226	231	236	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		3			1	4	2		3	5	7	8	10	9	7	18	17	14	18	12	6	4	1	
MED		95			97	92	96		137	105	111	105	108	103	103	99	97	91	91	89	89	91	87	
U Q		101			48	95	97		161	110	117	111	113	110	111	105	104	93	95	94	93	95	43	
L Q		89			48	89	95		91	103	107	103	99	99	99	97	92	89	89	88	87	89	43	


MONTHLY MEDIANS PLOT OF foF2
DEC.2014
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

DEC.2014 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 45	X 47	X 46	X 43	X 46	X 48	X 49											X 74	X 56	X 43	X 41	X 43	X 45	X 46
2	X 47	X 48	X 49	X 45	X 42	X 42	X 39											X 82	X 61	X 53	X 48	X 50	X 55	X 56
3	X 53	X 51	X 51	X 49	X 49	X 48	X 48											X 62	X 52	X 52	X 48	X 49	X 50	X 51
4	X 51	X 50	59	60	60	X 60	X 60											X 61	X 56	X 57	X 54	X 58	X 57	X 57
5	X 52	X 53	X 55	X 57	X 62	X 54	X 38											X 73	X 78	X 60	X 42	X 39	X 41	X 47
6	X 48	X 48	X 48	X 47	X 49	X 46	X 40											X 61	X 56	X 45	X 45	X 44	X 47	X 48
7	X 49	X 49	X 46	X 47	X 47	X 47	X 35											X 78	X 68	X 62	X 42	X 42	X 46	X 47
8	X 47	X 47	X 47	X 47	X 46	X 46	X 42											X 73	X 63	X 48	X 41	X 43	X 46	X 46
9	X 46	X 46	X 43	X 41	X 39	X 38	X 38											X 64	X 54	X 52	X 47	X 42	X 43	X 44
10	X 46	X 44	X 45	X 45	X 45	X 45	X 47											X 60	X 51	X 50	X 46	X 47	X 47	X 49
11	X 47	X 48	X 49	X 52	X 50	X 49	X 47											X 58	X 49	X 43	X 43	X 43	X 45	X 44
12	49	49	50	51	50	X 47	X 46										X 82	X 54	X 52	X 48	X 46	X 42	X 45	X 43
13	X 43	X 44	X 43	X 46	X 42	X 33	X 31											X 71	X 49	X 44	X 38	X 38	X 39	X 40
14	X 43	X 43	X 43	X 44	X 44	X 37	X 31											X 78	X 46	X 40	X 40	X 37	X 39	X 40
15	X 40	X 41	X 39	X 39	X 42	X 38	X 38											X 74	X 56	X 43	X 40	O X 39	X 41	X 44
16	X 42	X 43	X 46	X 44	X 43	X 41	X 41											X 71	X 68	X 60	X 46	X 42	47	X 49
17	X 49	X 49	X 50	X 49	X 46	X 42	X 48											X 69	X 59	X 47	X 44	X 38	X 40	X 41
18	X 43	X 44	X 44	X 44	X 41	X 42	X 43											X 56	X 44	X 41	X 39	X 36	X 39	X 39
19	X 39	X 41	X 41	X 47	X 44	X 42	X 36											X 65	X 51	X 43	X 40	X 36	X 40	X 40
20	X 40	X 41	X 41	X 41	X 41	X 45	X 45											X 63	X 54	X 47	X 40	X 42	X 44	X 45
21	X 48	X 49	X 49	X 47	X 47	X 47	X 43										X 80	X 68	X 58	X 42	X 34	X 36	X 39	X 41
22	X 41	X 39	X 43	X 42	X 42	X 42	X 38											X 71	X 58	X 52	X 53	X 59	X 66	X 60
23	X 63	X 63	X 64	X 60	X 65	X 59	X 61											X 85	X 52	X 51	X 39	X 40	X 40	X 42
24	X 45	X 44	X 47	X 46	X 47	X 48	X 48											X 69	X 64	X 43	X 38	O X 40	X 44	X 45
25	X 45	X 46	X 46	X 46	X 44	X 37	X 36											X 60	X 52	X 44	X 39	X 34	X 39	X 40
26	X 41	X 40	X 40	X 40	X 40	X 36	A											X 70	X 54	X 48	X 36	X 43	X 43	X 43
27	X 44	X 45	X 44	X 43	X 41	X 41												X 69	X 46	X 40	X 37	X 39	X 42	X 40
28	X 40	X 41	X 42	X 45	X 45	X 44	X 41											X 51	X 48	X 41	X 43	X 40	X 42	X 44
29	X 47	X 41	X 41	X 42	X 43	X 43	X 36											X 71	X 52	X 35	X 36	X 39	X 39	X 40
30	X 40	X 42	X 40	X 33	X 34	X 32	X 34											X 86	X 71	X 46	X 39	X 41	X 44	X 44
31	52	X 47	X 52	X 55	X 59	X 42	X 45											X 59	X 47	X 41	X 39	X 41	X 42	X 43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	29										2	31	31	31	31	31	31	31
MED	X 46	X 46	X 46	X 46	X 45	X 43	X 41										X 81	X 69	X 54	X 46	X 41	X 41	X 43	X 44
U Q	X 49	X 49	X 49	X 49	X 49	X 47	X 47											X 73	X 59	X 52	X 46	X 43	X 46	X 47
L Q	X 42	X 42	X 43	X 43	X 42	X 41	X 37											X 61	X 51	X 43	X 39	X 39	X 40	X 41

IONOSPHERIC DATA STATION Wakkanai

DEC. 2014 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	39	41	38	36	40	42	42	62	R 82	114	122	R 121	118	R 106	J R 105	R 94	88	65	49	36	34	36	38	39
2	40	40	42	38	35	35	32	65	R 83	120	122	114	U R 100	U R 96	R 99	J R 95	77	74	54	46	42	43	49	49
3	46	44	44	42	41	41	40	67	J R 96	122	J R 145	R 129	R 132	J R 118	J R 116	J R 111	R 88	56	44	45	R 44	42	42	44
4	44	43	43	F 48	F 48	52	53	72	R 94	117	119	122	123	Z 103	J R 111	102	88	56	49	50	47	51	49	49
5	45	46	48	50	55	47	R 31	56	U R 82	R 121	126	U R 130	J R 105	100	97	J R 84	72	67	71	53	34	32	34	40
6	41	41	41	40	43	40	31	58	R 83	R 129	U R 127	J R 121	R 100	R 100	94	94	84	54	48	38	38	36	40	41
7	42	42	40	40	40	41	28	59	U R 91	J R 107	U R 114	114	U R 114	U R 104	102	100	81	69	60	55	34	36	39	41
8	38	39	40	39	39	37	35	60	R 84	J R 117	R 115	U R 102	R 112	R 100	U R 106	95	77	64	55	42	35	35	39	39
9	39	39	36	34	32	31	31	51	73	U R 102	J R 111	103	92	R 94	101	87	82	57	47	45	40	35	36	36
10	39	37	38	38	38	38	41	56	J R 80	R 83	U R 105	104	R 102	R 98	92	90	64	51	42	41	39	40	41	42
11	40	41	42	46	42	42	40	56	84	88	U R 98	U R 104	U R 92	R 97	92	92	74	50	42	34	36	36	38	37
12	39	F 39	F 39	F 42	F 40	40	38	57	76	97	J R 107	99	U R 98	101	R 83	R 87	75	48	46	41	39	35	38	36
13	34	37	36	38	34	26	24	52	R 104	126	R 138	118	U R 118	104	R 104	R 102	92	64	42	36	29	31	32	35
14	36	36	36	38	38	30	23	53	R 78	118	128	113	U Y 82	96	R 97	98	J R 90	71	41	32	32	30	32	33
15	33	34	32	32	33	30	31	R 64	R 93	J R 114	U R 133	R 132	R 113	U R 102	J R 107	U R 105	92	68	47	35	33	32	34	36
16	35	36	39	37	36	34	34	59	U R 78	U R 98	122	R 128	U R 98	J R 112	J R 107	100	R 90	65	61	53	38	36	F 37	42
17	42	42	43	42	39	36	40	58	75	J R 94	110	116	R 105	J R 97	96	90	75	63	53	40	38	31	32	35
18	36	36	38	37	34	35	36	52	69	91	R 110	112	96	R 108	U R 83	91	J R 83	49	37	34	30	29	32	32
19	34	35	35	39	36	32	29	52	82	U R 99	R 99	R 105	U R 96	96	88	80	71	58	44	36	32	29	33	33
20	33	36	34	34	34	38	37	51	J R 79	R 88	J R 117	121	R 116	98	99	86	80	56	46	39	33	35	37	39
21	41	42	43	40	40	40	34	54	R 82	U R 95	110	U R 106	101	J R 95	100	88	74	61	52	37	25	27	32	34
22	34	32	36	35	34	34	31	54	R 96	118	J R 142	R 130	122	110	121	122	95	64	51	46	46	50	56	53
23	56	54	58	52	57	53	54	72	U R 96	104	U R 125	R 128	R 131	R 103	U R 99	101	83	76	R 45	44	32	33	34	36
24	38	38	39	39	40	41	41	58	U R 99	117	J R 114	J R 115	106	R 101	100	91	86	62	57	36	32	R 33	36	38
25	38	39	39	39	37	30	30	47	R 88	R 115	104	J R 121	R 101	R 98	R 85	95	74	53	46	37	31	28	32	32
26	34	34	33	32	32	U A 30	A	40	R 84	128	J R 112	J R 101	R 114	R 86	R 98	96	80	63	46	43	30	36	36	36
27	37	37	38	36	34	34	30	54	74	99	J R 98	102	R 114	103	102	95	71	64	40	33	29	32	35	33
28	34	34	35	38	38	37	34	48	72	103	U Y 98	U R 95	J R 88	J R 89	R 87	R 82	64	44	42	34	36	34	35	37
29	40	34	35	35	36	36	29	52	R 82	R 88	97	101	R 90	103	J R 103	81	71	64	45	28	28	32	32	33
30	33	35	33	26	27	25	27	45	73	84	R 103	100	Y	89	86	83	73	R 79	64	40	30	33	38	38
31	F 41	41	44	48	52	35	38	47	80	J R 89	J R 112	R 90	J R 86	R 87	72	72	65	52	40	34	33	35	36	36
	00	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	30	31	31	31	31	31	31	31	31	31	31	31
MED	39	39	39	38	38	36	34	56	R 82	104	R 114	R 114	R 104	R 100	R 99	94	80	63	46	39	34	35	36	37
U Q	41	41	42	42	40	41	40	59	R 91	118	R 125	R 121	R 114	R 103	J R 104	100	88	65	53	45	38	36	39	41
L Q	34	36	36	36	34	32	30	52	78	R 94	R 105	102	R 96	R 96	92	87	73	54	42	35	31	32	33	35

DEC. 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2													L											
3																								
4										L	L													
5											L	L												
6												L	L											
7											L													
8													L											
9												L	U L 4 2 4											
10									2 8 0															
11																								
12																								
13																								
14											L													
15											L													
16													L											
17																								
18																								
19									2 6 4		L	L	L	L										
20																								
21																								
22												L				2 4 4								
23																								
24										L			L	L		U L 2 6 0								
25																								
26												L			L									
27														L										
28											A													
29											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				1			2								
MED									2 7 2				U L 4 2 4			2 5 2								
U Q																								
L Q																								

DEC.2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC. 2014 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								180	240	300	312	324	304	280	256	H 220	176							
2								168	236	288	296	316	316	304	280	204	168							
3								168	A	284	308	320	320	288	256	216	B							
4								180	228	272	292	A	300	300	276	240	A							
5								172	A	280	304	308	304	292	256	224	B							
6								180	228	A	268	304	300	284	252	A	A							
7								176	208	264	284	296	296	288	252	212	A							
8								A	A	272	300	300	296	276	260	A	A							
9								140	196	R 244	R 288	R	R	R 284	252	212	B							
10								148	U R 212	260	288	300	300	288	264	224	B							
11								168	220	264	308	316	320	304	264	216	B							
12								168	240	A	308	320	320	296	256	232								
13								B	A	272	296	312	312	300	264	220	B							
14								A	228	276	296	304	316	304	276	244	B							
15								156	A	A	A	320	320	320	280	216	B							
16								A	A	272	308	308	324	300	280	A	172							
17								A	224	264	312	324	324	300	B	232	B							
18								148	228	268	296	316	308	284	272	216	180							
19								168	200	276	300	328	328	308	U A 284	244	A							
20								168	220	264	B	344	344	308	296	224	A							
21								U R 148	220	264	304	316	316	A	A	A								
22								160	220	U A 272	U A 288	U A 312	A	A	268	220	168							
23								B	A	268	292	300	304	300	264	A	164							
24								B	212	A 248	A 264	304	312	304	A	A	A							
25								A	216	A	A	284	A	A	280	A	B							
26								A	224	252	A	A	308	280	272	216	180							
27							J B 128	148	U A 204	A	292	300	308	288	252	204	A							
28								A	A	A	A	A	A	U R 280	256	B	B							
29								B	224	264	A	292	308	296	260	232	A							
30								A	212	R 240	288	A	296	U A 292	A	A	A							
31								A	244	260	272	288	288	276	252	220	156							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	18	23	25	25	26	27	28	27	22	8							
MED							J B 128	168	220	268	296	310	308	294	264	220	170							
U Q								172	228	274	306	320	320	302	276	232	178							
L Q								148	212	262	288	300	300	284	256	216	166							

DEC. 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 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 13	E B 13	E B 13	E B 13	E B 13	E B 13	J A 19	G	26	G 26	G 26	G	G	G 26	28	G	G	E B 11	E B 11	J A 16	B 22	J A 17	J A 25	30
2	E B 14	J A 11	J A 11	E B 14	E B 14	E B 15	E B 15	G	27	29	G	G 30	G	G 29	G	25	G	J A 24	E B 12	E B 12	E B 12	E B 12	20	E B 12
3	E B 12	20	J A 17	J A 19	J A 18	E B 12	E B 12	J A 19	J A 29	G 26	G 26	32	G 25	G	G 19	23	E B 16	J A 21	E B 14	E B 14	B J A 21	J A 11	E B 14	J A 15
4	J A 21	J A 15	18	18	E B 16	E B 15	E B 15	G	G	G 26	G 26	J A 38	G 26	33	J A 38	38	J A 28	J A 49	J A 29	34	19	E B 14	E B 14	J A 27
5	J A 19	J A 22	26	E B 14	B J A 17	E B 13	E B 13	G	23	G 22	G	G	G	G	G 24	G	E B 13	E B 13	E B 13	J A 16	J A 16	J A 18	J A 18	E B 12
6	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	J A 15	38	J A 29	J A 72	30	G	G	G	J A 29	J A 37	J A 29	E B 12	B J A 12	J A 25	J A 27	46	J A 32	J A 24
7	J A 18	28	J A 19	J A 15	J A 15	E B 15	E B 15	22	27	29	G	G	32	G 18	G	G 19	19	J A 23	E B 11	J A 18	E B 11	J A 19	J A 15	J A 17
8	J A 17	19	E B 16	E B 16	E B 16	E B 16	B J A 50	J A 40	J A 31	G 27	G 25	32	32	32	G J A 20	25	J A 21	J A 19	E B 14	E B 12	E B 12	19	E B 12	J A 17
9	J A 20	21	J A 15	J A 15	E B 14	E B 12	E B 12	20	23	G	30	G	G	G	G	24	J A 16	E B 14	B J A 16	E B 16	J A E B 27	16	E B 16	E B 16
10	E B 12	J A 19	E B 12	E B 12	E B 12	E B 12	J A 50	17	G 20	G 24	31	G	G	G	G 26	G	E B 13	E B 10	E B 10	E B 10	J A 16	E B 10	E B 12	J A 25
11	J A 22	J A 23	J A 22	J A 19	E B 13	E B 13	E B 13	J A 16	G	G 25	G 22	G	G	G	G	G	E B 15	E B 12	E B 12	E B 12	B J A 15	J A 15	E B 12	J A 15
12	E B 14	E B 14	E B 14	E B 14	E B 12	E B 12	E B 12	G	G	J A 38	G 29	G 29	G 29	G 29	29	G 19	E B 15	E B 15	B J A 19	E B 15	E B 15	19	18	J A 17
13	J A 16	18	J A 19	J A 19	10	J A 16	E B 13	E B 14	J A 39	J A 31	35	G 28	G	G	G 24	G	E B 16	E B 12	E B 14	E B 14	B J A 24	J A 19	J A 21	J A 26
14	J A 17	E B 15	J A 17	J A 17	J A 18	J A 18	J A 24	J A 66	30	G 27	G 27	32	E B 13	G	G	25	E B 13	E B 14	E B 14	E B 14	E B 14	B J A 18	E B 14	20
15	J A 26	J A 20	J A 26	J A 27	J A 23	J A 21	E B 12	J A 21	C 63	J A 45	J A 58	G 26	G 26	G 20	G	23	E B 15	J A 17	J A 21	J A 40	J A 29	J A 51	J A 23	J A 21
16	J A 23	J A 33	J A 57	J A 19	J A 20	J A 53	J A 59	J A 30	J A 113	J A 82	G 31	G 28	G	32	30	24	J A 17	E B 14	E B 14	B J A 35	E B 14	E B 14	B J A 31	J A 27
17	J A 19	J A 19	J A 17	E B 15	E B 15	E B 14	E B 11	J A 19	G 19	J A 26	G	G 28	G 28	G 28	E B 42	G	E B 16	E B 12	B J A 20	E B 13	E B 13	E B 13	E B 12	E B 13
18	E B 12	E B 12	E B 12	E B 12	B J A 18	E B 12	E B 12	G	25	30	33	33	34	34	G	24	G 15	E B 12	E B 12	E B 12	E B 12	E B 12	B J A 19	J A 19
19	E B 12	J A 19	E B 12	E B 12	E B 12	E B 12	E B 12	18	24	30	33	G 32	J A 53	34	34	28	J A 23	31	J A 15	E B 12	E B 12	B J A 18	J A 32	E B 12
20	E B 12	E B 12	B J A 31	E B 12	E B 12	E B 12	E B 12	G	24	31	E B 45	G 32	J A 60	40	G 26	26	J A 26	J A 26	J A 23	J A 22	J A 25	J A 22	J A 51	J A 52
21	J A 25	J A 25	J A 25	J A 20	J A 20	E B 12	E B 12	G	27	29	32	G 24	35	35	35	J A 29	J A 25	J A 27	J A 23	E B 12	E B 12	E B 12	B J A 12	J A 27
22	J A 23	58	J A 27	J A 19	J A 28	E B 14	B J A 17	J A 17	32	36	36	36	J A 39	J A 45	G 24	24	G	E B 14	E B 12	E B 12	B J A 21	J A 29	J A 43	J A 19
23	J A 22	J A 15	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	J A 46	G 27	G 27	G 25	32	32	30	23	G 16	E B 12	15	17	18	J A 14	J A 14	J A 19
24	E B 13	B J A 23	J A 15	E B 13	B J A 27	J A 21	E B 13	E B 13	G	33	33	39	33	33	33	23	19	J A 19	J A 25	J A 15	J A 26	J A 56	J A 29	J A 30
25	J A 19	J A 19	E B 13	E B 13	B J A 19	J A 24	J A 20	J A 17	G 21	J A 41	J A 37	36	J A 43	J A 34	G 25	23	E B 16	B J A 29	J A 26	E B 12	B J A 18	J A 19	J A 31	J A 31
26	J A 20	J A 19	E B 12	E B 12	B J A 25	J A 35	54	J A 21	25	28	J A 34	39	G 25	G	G 20	G 20	20	E B 14	E B 14	E B 14	J A E B 17	14	E B 14	E B 14
27	20	E B 15	E B 15	E B 15	B J A 20	E B 14	G	G	24	J A 26	G 26	G	G 26	G 22	G	G	17	18	E B 11	E B 11	E B 11	E B 13	15	J A 28
28	J A 28	J A 28	J A 20	E B 11	B J A 16	J A 17	J A 24	J A 35	J A 46	J A 77	J A 81	J A 64	34	G	G	E B 22	E B 15	B J A 27	J A 19	J A 16	J A 19	J A 30	J A 21	J A 24
29	J A 23	J A 22	E B 12	B J A 16	E B 12	E B 13	E B 14	J A 29	24	G 25	30	31	G 25	G 25	G J A 24	27	J A 33	J A 33	J A 21	E B 12	B J A 12	J A 21	E B 16	12
30	E B 12	E B 12	E B 12	B J A 16	E B 12	E B 15	E B 12	16	26	26	G J A 26	33	G 20	30	29	24	J A 25	J A 25	J A 15	J A 22	J A 22	J A 57	J A 20	E B 12
31	E B 13	E B 13	E B 13	E B 13	E B 13	E B 12	E B 12	J A 18	G 24	G 24	J A 30	31	G 27	G	27	G	G	E B 13	E B 13	E B 13	B J A 13	J A 26	J A 26	24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 18	J A 19	15	E B 15	E B 15	E B 14	E B 14	17	25	28	G	G	G	G	G	23	G	E B 15	E B 14	E B 14	16	J A 18	J A 18	J A 19
U Q	J A 22	J A 22	J A 20	J A 18	J A 19	J A 16	J A 19	J A 21	J A 30	J A 33	33	33	33	33	29	25	J A 21	J A 25	J A 20	J A 17	J A 22	J A 22	J A 26	J A 27
L Q	E B 13	E B 14	E B 13	E B 13	E B 13	E B 12	E B 12	G	G	G 26	G 27	G 30	G 26	G 29	G 25	G	E B 15	E B 12	E B 12	E B 12	E B 12	E B 14	E B 14	E B 15

DEC.2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 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 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	G 15	G 15	G 15	G	G	G 15	G 23	G	G	E B 11	E B 11	E B 11	E B 13	E B 13	E B 13	E B 13
2	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	G	G 23	G 20	G	G 20	G	G 20	G	22	G	E B 11	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12
3	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	23	G 23	G 23	G 21	G 20	G	G 19	22	E B 16	19	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
4	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	E B 15	G	G	G 14	G 14	31	G 22	G 22	G 20	G 20	19	E B 16	E B 16	E B 14	E B 14	E B 14	E B 14	E B 14
5	E B 14	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	G	23	G 21	G	G	G	G	G 21	G	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 12	E B 12
6	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G 12	G 17	28	30	G	G	G	G 21	23	16	E B 12	E B 12	E B 12	E B 12	18	18	14
7	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	24	G 26	G	G	G 29	G 17	G	G 17	16	11	E B 11	11	E B 11	11	11	11
8	E B 14	E B 14	E B 16	E B 16	E B 16	E B 16	19	25	22	G 17	G 17	G 28	G 28	28	G 18	20	19	E B 14	E B 14	E B 12	E B 12	E B 12	E B 12	E B 10
9	E B 14	E B 14	E B 14	E B 14	E B 14	E B 12	E B 12	16	21	G	G 28	G	G	G	G	22	E B 14	E B 14	E B 17	E B 16	E B 16	E B 16	E B 16	E B 16
10	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	G 15	G 16	G 16	G 29	G	G	G	G 19	G	E B 13	E B 10	E B 10	E B 10	E B 10	E B 10	E B 12	14
11	16	16	16	E B 13	E B 13	E B 13	E B 13	G	G	G 16	G 16	G	G	G	G	G	E B 15	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12
12	E B 14	E B 14	E B 14	E B 14	E B 12	E B 12	E B 12	G	G	28	G 26	G 26	G 26	G 24	27	G 17	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	E B 14
13	E B 14	E B 14	E B 14	14	E B 12	E B 14	E B 13	E B 14	21	G 20	G 20	G 19	G	G	G 19	G	E B 16	E B 12	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
14	E B 15	E B 15	E B 15	E B 14	E B 14	E B 13	E B 13	16	G 16	G 16	G 16	G 30	E B 13	G	G	G 22	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
15	E B 14	E B 14	E B 14	E B 12	E B 12	E B 12	E B 12	G	24	24	29	G 17	G 17	G 16	G	G 22	E B 15	E B 15	E B 15	E B 15	E B 15	18	18	E B 14
16	E B 12	20	22	E B 12	15	E B 12	12	15	59	G 21	G 18	G 18	G	G 30	30	22	G 15	E B 14	E B 14	16	E B 14	E B 14	16	E B 14
17	E B 14	E B 14	E B 14	E B 15	E B 15	E B 14	E B 11	14	G 16	G 16	G	G 16	G 16	G 16	E B 42	G	E B 16	E B 12	E B 13	E B 13	E B 13	E B 13	E B 12	E B 13
18	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	G	23	G 26	G 29	33	33	32	G	22	G 13	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12
19	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	17	22	G 26	G 28	G 22	40	32	29	G 24	E B 16	E B 13	E B 12	E B 12	E B 12	E B 12	17	E B 12
20	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	G	24	G 26	E B 45	G 31	56	36	G 21	25	18	E B 17	E B 14	16	18	E B 12	18	18
21	18	E B 12	15	E B 12	E B 12	E B 12	E B 12	G	23	G 26	G 28	G 18	G 30	30	27	24	22	20	E B 12	E B 12	E B 12	E B 12	E B 12	15
22	17	17	E B 14	E B 14	E B 14	E B 14	E B 12	G	27	28	31	G 31	36	32	G 20	G 21	G	E B 14	E B 12	E B 12	21	18	16	16
23	16	E B 12	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	28	G 18	G 18	G 18	G 30	G 30	29	20	G 13	E B 12	13	E B 12	E B 12	E B 12	E B 12	16
24	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	28	32	35	32	31	31	22	17	E B 13	18	E B 13	16	18	18	E B 13
25	E B 13	14	E B 13	E B E B 13	15	17	17	15	G 15	25	28	34	34	34	G 20	23	E B 16	E B 16	17	E B 12	E B 12	16	26	24
26	E B 12	E B 12	E B 12	E B 12	14	U A 17	A A 54	17	G 17	26	28	28	G 21	G	G 17	G 17	E B 14	E B 14	E B 14	E B 14	14	E B 14	E B 14	E B 14
27	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	G	G	21	25	G 22	G	G 22	G 19	G	G	16	E B 11	E B 11	E B 11	E B 11	13	E B 13	E B 13
28	16	E B 12	E B 11	E B 11	E B 11	14	15	16	37	54	61	45	30	G	G	E B 22	E B 15	E B 14	13	13	13	16	16	16
29	18	18	E B 12	E B 12	E B 12	E B 13	E B 14	E B 14	G 22	G 22	25	G 28	G 23	G 22	G 22	G 21	21	21	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12
30	E B 12	E B 12	E B 12	13	E B 12	E B 12	E B 12	14	G	G 14	G 18	30	G 18	30	26	21	20	16	E B 12	14	16	17	E B 12	E B 12
31	E B 13	E B 13	E B 13	E B 13	E B 13	E B 12	E B 12	14	G 16	G 16	G 16	G 29	G 22	G	27	G	G	E B 13	E B 13	E B 13	E B 13	E B 13	16	E B 13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 14	E B 14	E B 14	E B 13	E B 13	E B 13	E B 13	G	G	G 23	G 28	G 30	G	G	G	G 22	G	E B 14	E B 13	E B 13	E B 13	E B 13	E B 14	E B 14
U Q	15	15	E B 15	E B 14	E B 14	E B 14	14	15	23	26	G	G	G	30	27	G	16	15	E B 14	E B 14	14	16	16	14
L Q	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 14	G 17	G 16	G 18	G 21	G 22	G 22	G 20	G 21	E B 15	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12	E B 12

DEC.2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 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	13	13	13	13	13	13	13	13	13	13	15	15	15	12	12	12	12	11	11	11	13	13	13	13
2	14	14	14	14	14	15	15	15	15	15	15	17	17	17	17	14	11	11	12	12	12	12	12	12
3	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	13	16	16	14	14	14	14	14	14
4	16	16	16	16	16	15	15	14	14	14	13	13	12	12	12	12	12	16	16	14	14	14	14	14
5	14	14	14	14	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12	12
6	13	13	13	13	13	13	13	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
7	15	15	15	15	15	15	15	15	13	13	14	15	15	15	15	16	11	11	11	11	11	11	11	11
8	14	14	16	16	16	16	13	13	14	14	14	14	14	14	14	14	14	14	14	12	12	12	12	10
9	14	14	14	14	14	12	12	11	12	13	12	24	23	23	18	18	14	14	17	16	16	16	16	16
10	12	12	12	12	12	12	12	12	12	12	12	14	17	18	18	17	13	10	10	10	10	10	12	12
11	13	13	13	13	13	13	13	13	13	13	13	18	18	18	18	18	15	12	12	12	12	12	12	12
12	14	14	14	14	12	12	12	12	13	15	17	19	19	17	17	15	15	15	15	15	15	15	14	14
13	14	14	14	12	12	14	13	14	13	13	16	16	16	16	16	16	16	12	14	14	14	14	14	14
14	15	15	15	14	14	13	13	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14
15	14	14	14	12	12	12	12	12	14	14	14	14	14	14	14	14	15	15	15	15	15	14	14	14
16	12	12	12	12	12	12	12	12	12	12	12	12	13	17	17	17	14	14	14	14	14	14	14	14
17	14	14	14	15	15	14	11	11	13	15	15	16	16	16	42	16	16	12	13	13	13	13	12	13
18	12	12	12	12	12	12	12	12	12	12	12	12	14	14	15	15	12	12	12	12	12	12	12	12
19	12	12	12	12	12	12	12	13	12	12	15	17	16	16	16	16	16	13	12	12	12	12	12	12
20	12	12	12	12	12	12	12	12	12	12	45	26	21	16	16	16	16	17	14	12	12	12	12	12
21	12	12	12	12	12	12	12	13	14	14	14	14	14	14	14	16	12	12	12	12	12	12	12	12
22	14	14	14	14	14	14	12	12	12	12	12	19	14	14	14	14	14	14	12	12	12	12	12	12
23	12	12	14	14	14	14	14	14	14	14	13	13	13	16	12	12	12	12	12	12	12	12	12	12
24	13	13	13	13	13	13	13	13	13	13	15	17	17	16	16	16	13	13	13	13	13	13	13	13
25	13	13	13	13	13	14	14	11	11	11	12	12	14	14	16	17	16	16	12	12	12	12	12	12
26	12	12	12	12	11	11	11	11	11	13	14	14	14	14	14	14	14	14	14	14	14	14	14	14
27	15	15	15	15	15	14	13	13	12	14	14	14	14	14	14	14	14	11	11	11	11	13	13	13
28	13	12	11	11	11	11	12	12	12	14	20	20	20	22	22	22	15	14	11	10	10	12	12	14
29	15	15	12	12	12	13	14	14	14	14	14	17	18	18	14	14	14	12	12	12	12	12	12	12
30	12	12	12	12	12	12	12	11	11	11	12	12	12	12	12	12	12	10	12	12	12	12	12	12
31	13	13	13	13	13	12	12	12	16	16	15	14	14	14	14	14	13	13	13	13	13	13	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	13	13	13	13	13	12	12	13	13	14	14	14	14	14	14	14	13	12	12	12	12	12	12
U Q	14	14	14	14	14	14	13	13	14	14	15	17	17	17	17	16	15	14	14	14	14	14	14	14
L Q	12	12	12	12	12	12	12	12	12	12	12	13	13	14	13	13	12	12	12	12	12	12	12	12

DEC.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 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	288	299	293	270	264	310	343	332	R 346	339	328	R 336	332	U R 328	J R 329	R 341	332	341	347	320	310	287	281	275
2	298	292	321	309	292	284	305	342	R 337	352	346	329	U R 358	U R 347	R 341	J R 334	321	337	331	319	289	290	297	312
3	301	308	293	273	278	281	307	340	R	332	R	R 354	R 330	R	R	R	R 346	328	327	314	R 311	306	307	295
4	297	296	297	F 300	F 293	294	286	325	R 372	340	333	361	339	Z 359	J R 358	363	333	318	320	338	304	293	303	301
5	279	273	260	277	321	376	R 320	319	U R 343	R 338	342	U R 363	R	339	336	R	323	323	325	350	342	287	288	284
6	278	278	294	300	294	330	332	349	R 347	R 357	U R 353	R	R 354	R 356	335	345	352	325	336	346	294	279	289	286
7	279	289	281	276	274	326	265	329	U R 350	R	U R 350	343	U R 343	U R 330	343	344	327	321	346	341	287	271	315	288
8	271	287	282	285	285	286	304	319	R 345	J R 472	R 354	U R 355	R 346	R 346	U R 348	337	341	336	342	324	293	290	314	302
9	270	308	313	328	274	296	297	345	333	U R 350	R	347	346	R 339	340	331	337	332	336	332	327	298	295	293
10	298	289	295	289	286	307	309	321	R	R 347	U R 355	355	R 338	R 339	331	342	335	336	339	326	315	307	304	311
11	285	282	280	302	317	320	345	328	367	360	U R 349	U R 356	U R 340	R 349	347	345	358	326	332	328	310	313	308	319
12	278	F 276	F 276	F 291	F 309	312	321	349	364	350	J R 371	345	U R 345	346	R 325	R 337	350	308	297	319	312	291	284	270
13	260	243	270	310	351	271	272	297	R 330	339	R 353	331	U R 340	330	R 339	R 336	346	340	334	346	340	268	273	280
14	293	262	263	287	302	371	299	335	R 356	352	348	341	U Y 384	342	R 330	329	J R 307	327	337	331	305	289	265	258
15	269	274	290	283	290	292	311	R 318	R 332	R	U R 350	R 346	R 337	U R 346	J R 341	U R 337	344	319	350	349	309	257	265	253
16	275	268	266	274	283	297	297	325	U R 332	U R 376	341	R 360	U R 368	R	J R 370	346	R 351	326	329	335	327	289	F 279	277
17	270	273	304	298	289	288	330	336	361	R	346	341	R 327	J R 327	320	333	336	316	341	334	320	293	282	273
18	287	288	289	278	287	304	332	319	322	339	R 335	343	326	R 342	U R 355	350	R	344	323	335	335	269	261	262
19	281	280	280	315	311	325	311	328	347	U R 369	R 331	R 362	U R 368	355	317	339	340	321	324	327	340	265	290	290
20	287	267	283	283	283	311	324	352	R	R 320	R	334	R 332	307	334	322	324	288	335	354	332	285	267	253
21	280	281	304	308	305	324	310	338	R 359	U R 340	325	U R 338	359	J R 328	330	362	323	315	324	357	270	261	274	272
22	295	281	287	281	285	292	268	290	R 341	308	R	R 332	310	333	325	326	342	308	345	302	286	263	288	282
23	291	288	287	277	287	292	299	330	U R 361	358	U R 337	R 342	R 337	R 355	U R 342	343	327	349	R 292	329	343	302	284	271
24	274	268	295	295	283	277	280	306	U R 365	347	R	R	324	R 370	333	324	332	311	332	338	309	A 298	290	278
25	275	272	272	272	284	305	310	296	R 332	R 350	338	R	R 337	R 338	R 347	345	354	288	348	346	330	304	269	285
26	268	275	281	285	299	A	A	301	R 317	347	R	R	R 342	R 362	R 333	340	317	327	342	365	273	279	280	280
27	302	296	288	307	309	313	318	344	351	362	R	351	R 337	339	341	346	334	341	331	341	326	283	291	292
28	286	286	276	297	310	304	327	340	356	364	U Y 368	U R 362	J R 362	R	R 329	R 347	334	354	341	336	303	288	306	301
29	330	317	281	282	272	306	263	344	R 364	R 369	359	345	R 318	324	R	348	318	335	358	340	269	271	267	268
30	277	291	309	254	264	261	309	331	348	353	R 339	356	Y	337	333	346	314	R 330	341	350	314	291	254	285
31	F 287	288	297	310	350	291	316	340	355	R	R	R 338	R	R 348	362	359	344	346	346	372	295	279	273	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	28	27	23	27	28	28	29	29	30	31	31	31	31	31	31	31
MED	281	282	287	287	289	304	310	330	R 348	350	R 346	345	R 340	R 340	336	342	334	327	336	336	310	288	284	282
U Q	293	291	295	302	309	313	321	340	R 360	R 360	R 353	R 356	R 350	R 348	R 345	346	344	337	342	346	327	293	297	293
L Q	275	273	280	277	283	291	297	319	R 335	339	337	R 338	332	332	330	335	324	318	327	327	294	271	273	271

DEC.2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

DEC.2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2													234											
3																								
4										230	230													
5											224	224												
6												222	214											
7											214													
8													224											
9												224	218											
10									202															
11																								
12																								
13																								
14											234													
15											234													
16													216											
17																								
18																								
19									244		250	234	232	232										
20																								
21																								
22												266				218								
23																								
24										202			202	202		202								
25																								
26												228			232									
27														232										
28											232A													
29											242													
30											242													
31											230	228	222	222										
	00	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	10	7	8	4	1	2								
MED									223	216	233	228	220	227	232	210								
U Q											242	234	228	232										
L Q											230	224	215	212										

DEC.2014 h'F2 (KM)

IONOSPHERIC DATA STATION Wakkanai

DEC. 2014 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	276	264	264	320	320	248	226	226	212	216	216	216	216	216	216	216	216	214	206	226	230	286	286	286
2	286	262	262	246	290	290	234	232	218	218	218	218	H 218	218	218	218	218	218	218	224	234	254	254	250
3	250	252	270	300	300	278	250	232	230	226	226	226	226	224	224	224	226	226	224	224	224	264	264	264
4	258	258	258	258	Q 258	258	242	224	218	H 210	210	210	210	210	210	210	210	210	220	220	232	232	232	244
5	260	328	322	Q 298	256	178	244	214	214	214	214	214	204	204	210	210	210	214	214	212	212	290	290	290
6	280	286	286	262	262	234	234	234	224	224	224	224	214	214	214	214	214	214	214	212	226	A 324	324	324
7	310	274	286	316	304	220	350	236	222	220	H 218	218	218	214	214	214	214	214	214	214	230	288	288	302
8	340	290	272	286	286	286	286	252	214	214	214	214	214	214	214	214	214	214	214	214	278	278	278	278
9	278	278	270	256	318	252	252	224	B 182	232	232	232	198	212	216	216	216	216	216	222	222	240	258	260
10	272	272	272	272	272	268	236	232	E A 210	210	212	216	216	216	216	216	214	214	222	222	222	256	256	256
11	276	278	290	274	254	250	228	220	220	212	212	212	212	212	216	216	202	202	210	220	232	236	236	236
12	Q 298	Q 298	Q 298	Q 280	230	226	226	218	212	212	212	212	212	216	216	216	206	206	214	216	230	266	270	300
13	346	346	306	244	220	238	338	264	224	214	214	214	214	214	214	214	214	198	216	216	222	288	320	318
14	308	308	308	288	272	234	272	234	222	222	222	222	210	210	210	210	210	210	210	228	228	262	318	318
15	318	310	278	278	278	292	250	246	212	212	212	212	212	212	212	212	212	212	212	230	230	A 364	342	322
16	310	352	346	298	298	248	256	234	268	220	220	220	220	220	220	220	220	220	220	220	220	252	328	324
17	306	306	268	218	248	258	258	226	214	214	214	214	214	214	224	224	216	216	216	216	232	232	312	312
18	280	280	280	280	280	262	238	206	206	206	206	214	214	212	212	218	218	216	216	216	224	294	300	300
19	300	300	300	268	258	248	252	228	168	230	230	230	A 230	230	230	230	228	228	228	230	230	302	302	316
20	308	308	318	302	306	276	238	228	228	228	228	228	228	228	228	228	228	222	222	222	260	270	A 378	370
21	346	306	284	266	266	228	240	238	236	236	236	236	236	236	236	236	234	234	234	232	338	340	340	334
22	282	282	282	294	294	294	294	246	246	226	226	228	228	228	228	180	202	202	202	226	230	278	278	278
23	272	272	272	272	272	270	268	226	226	220	220	220	220	220	220	220	220	222	212	212	212	236	298	320
24	320	320	278	278	288	288	288	248	232	202	202	202	202	206	206	206	206	206	220	220	220	A	266	272
25	306	318	318	314	314	234	248	246	222	222	218	218	218	218	218	218	218	218	218	226	226	270	A	320
26	320	312	312	302	268	A	A	274	268	232	226	218	218	218	218	218	218	218	216	216	280	280	280	280
27	268	272	272	252	252	252	266	222	222	222	222	222	222	222	222	222	216	216	216	216	230	292	292	292
28	304	304	298	268	268	260	260	236	224	224	A	224	224	222	222	222	196	196	224	206	250	316	310	284
29	258	258	280	290	294	228	298	226	226	226	226	226	226	226	226	226	226	226	226	206	312	312	312	318
30	304	274	244	350	350	350	270	210	210	210	210	210	204	206	212	212	212	214	214	214	244	250	282	282
31	264	264	264	254	212	212	222	222	222	222	222	222	222	222	220	220	220	220	214	214	238	268	288	288
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	31	30	31	31	31	31	31	31	31	31	31	31	30	30	31
MED	298	286	280	278	272	252	251	232	222	220	218	218	216	216	216	216	216	214	216	220	230	274	289	292
U Q	310	308	300	298	298	276	270	238	226	226	226	224	222	222	222	222	220	220	220	224	238	292	312	318
L Q	272	272	270	262	258	234	238	224	212	212	212	214	212	212	214	214	210	210	214	214	224	254	270	278

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 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	122	122	116	116	112	112	110	110	150							
2								158	136	124	116	124	122	122	122	122	116							
3								E B 200		132	114	114	114	114	114	114	B							
4								160	128	120	120	A	120	120	120	120	A							
5								E B 190	A	122	110	108	108	108	118	118	B							
6								E A 152		A	114	114	114	114	114									
7								E B 158	122	120	116	114	114	114	114	114								
8								A	A	116	116	116	116	116	116	A	A							
9								116	116	116	116	116	122	122	122	122	B							
10								128	134	134	122	122	122	120	120	120	B							
11								E B 198	128	128	116	114	114	114	114	114	B							
12								144	136	A	126	126	126	126	126	132								
13								B	A	132	128	124	112	112	126	126	B							
14									110	130	128	124	116	116	116	116	B							
15								116	A	A	A	116	116	116	116	116	B							
16								A	A	118	118	118	118	118	118		118							
17								A	124	124	118	118	118	118	B	130	B							
18								142	142	134	128	126	126	126	122	122	E A 150							
19								152	130	128	128	126	126	126	126	134	A							
20								E B 190	136	126	B	122	122	122	122	122	A							
21								178	138	134	114	110	110	A		A								
22								152	152	118	118	118			118	118	B 180							
23								B	A	136	122	122	124	124	124	A	A							
24								B	112	112		112	112	112		A	A							
25									118	A	A	108	A	A	114	A	B							
26								A	A	114	A	A	114	114	114	134	E B 180							
27							B	130	130	A	126	126	126	126	126	126	A							
28								A	A	A			A	126	124	B	B							
29								B	118	124		124	124	124	124	126								
30									126	126	126	A	122	120	120	A								
31								A	126	126	126	126	126	126	126	126	128							
	00	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	21	25	24	27	28	28	28	22	7							
MED								U 140	128	124	118	118	118	119	120	122	U 139							
U Q								E B 178	136	131	126	124	123	124	124	126	B 180							
L Q								130	120	119	116	114	114	114	115	116	118							

DEC.2014 h'E (KM)

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 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	B	B	B	118	G	118	112	112	G	G	102	128	G	G	B	B	108	100	100	100	100
2	B	94	94	B	B	B	B	G	128	118	G	118	G	118	G	140	G	104	B	B	B	B	104	B
3	B	104	104	104	98	B	B	98	100	100	98	98	98	G	98	136	B	94	B	B	104	104	B	104
4	96	96	96	96	B	B	B	G	G	96	96	96	96	96	96	96	96	96	96	96	96	B	B	96
5	96	96	96	B	96	B	B	G	106	106	G	G	G	G	106	G	B	B	B	100	100	100	100	B
6	B	B	B	B	B	B	112	110	110	108	174	G	G	G	108	98	98	B	102	102	102	102	102	102
7	102	96	96	96	96	B	B	96	134	134	G	G	140	106	G	92	92	92	B	92	B	92	104	104
8	98	98	B	B	B	B	98	98	98	98	98	164	160	158	100	100	98	98	B	B	B	98	B	98
9	98	98	98	98	B	B	B	150	150	G	182	G	G	G	G	176	102	B	92	B	118	B	B	B
10	B	88	B	B	B	B	94	164	120	118	198	G	G	G	122	G	B	B	B	B	100	B	B	100
11	100	100	100	100	B	B	B	106	G	106	106	G	G	G	G	G	B	B	B	B	104	102	B	120
12	B	B	B	B	B	B	B	G	G	100	104	104	104	104	162	122	B	B	98	B	B	98	98	100
13	100	96	100	100	100	100	B	B	106	106	106	106	G	G	106	G	B	B	B	B	106	102	106	90
14	108	B	108	98	98	108	108	108	108	108	108	154	B	G	G	172	B	B	B	B	B	92	B	92
15	92	102	100	100	100	100	B	100	104	104	104	104	104	102	G	174	B	84	102	102	102	102	102	102
16	98	98	98	112	112	128	116	116	104	102	102	102	G	126	126	126	96	B	B	96	B	B	96	96
17	88	92	92	B	B	B	B	118	108	108	G	98	98	98	B	G	B	B	98	B	B	B	B	B
18	B	B	B	B	94	B	B	G	206	178	156	146	146	136	G	226	102	B	B	B	B	B	102	102
19	B	120	B	B	B	B	B	138	138	156	156	102	106	114	116	116	98	98	98	B	B	102	102	B
20	B	B	102	B	B	B	B	G	206	176	B	112	112	112	98	210	96	136	102	114	114	144	122	118
21	118	118	118	144	122	B	B	G	156	184	184	104	116	116	116	116	104	104	104	B	B	B	104	104
22	104	104	104	104	104	B	104	188	152	124	124	124	114	106	108	154	G	B	B	B	112	108	108	108
23	108	108	B	B	B	B	B	B	108	108	108	108	136	136	132	122	114	B	114	114	92	92	92	108
24	B	108	112	B	112	112	B	B	G	112	122	122	122	122	122	122	122	122	114	106	106	104	104	104
25	104	104	B	B	104	104	104	106	106	106	106	190	92	92	92	112	B	112	112	B	112	112	108	100
26	100	100	B	B	100	100	108	108	108	178	102	98	98	G	98	108	108	B	B	B	108	B	B	B
27	96	B	B	B	96	B	G	G	128	116	116	G	110	104	G	G	104	104	B	B	B	B	104	124
28	106	106	106	B	106	106	106	98	98	98	98	98	98	G	G	B	B	98	100	106	100	100	100	100
29	102	98	B	98	B	B	B	98	172	110	110	134	108	108	108	108	106	106	106	B	B	106	106	B
30	B	B	B	126	B	116	B	116	116	116	116	100	100	106	106	100	100	100	100	100	100	118	118	B
31	B	B	B	B	B	B	B	100	100	100	100	136	116	G	150	G	G	B	B	B	B	108	108	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	19	22	17	13	15	9	10	19	27	30	26	23	21	20	21	22	16	15	15	12	18	21	22	23
MED	100	99	100	100	100	106	107	108	110	108	108	106	108	107	108	122	101	100	102	102	103	102	104	102
U Q	104	104	105	108	106	114	112	118	138	118	124	134	119	120	124	154	105	106	106	107	108	107	106	108
L Q	96	96	96	98	96	100	104	98	106	104	102	100	98	103	99	108	97	96	98	98	100	99	100	100

DEC.2014 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

DEC.2014 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							FF 11		L 2	L 2	L 1			L 1	CL 11					F 1	F 1	F 1	F 2	FQ 11
2		FF 11	F 1						CL 11	L 1		L 1		L 1		H 1		F 1					F 1	
3		F 1	F 1	F 1	F 1			L 1	L 3	L 1	L 1	L 1	L 1		L 1	H 1		F 2			F 1	F 1		F 1
4	F 2	F 1	F 1	FF 11						L 1	L 2	L 2	L 2	L 2	L 2	L 1	LQ 11	FFQ 11	FQ 11	FQ 11	F 1			F 2
5	F 1	F 1	F 1		F 1				C 2	L 1					L 1					F 1	F 1	F 1	FQ 11	
6							F 1	L 3	LH 11	L 2	H 1				L 2	L 3	L 3		F 1	F 1	F 2	F 3	F 2	F 2
7	F 1	F 2	F 1	F 1	F 1			L 1	CL 21	HL 11			H 1	L 1		L 1	L 1	F 2		F 1		F 1	F 1	F 1
8	F 1	F 1					F 4	F 4	L 2	L 1	L 1	HL 11	HL 11	HL 11	L 2	L 2	L 2	F 1				F 1		F 1
9	F 2	F 1	F 1	F 1				H 1	H 1		H 1					H 1	C 1		F 1		FF 21			
10		F 1					F 1	H 1	L 1	L 1	HL 11				L 1						F 1			F 3
11	F 4	F 2	F 2	F 1				L 1		L 1	L 1										F 1	F 1		F 1
12										C 1	L 1	L 1	L 1	L 1	H 1	L 1			F 1			F 1	F 1	F 1
13	F 2	F 1	F 1	F 1	F 1	F 1			LQ 21	L 2	L 1	L 1			L 1						F 1	F 1	F 1	FF 11
14	F 1		F 1	F 1	F 1	F 1	F 1	L 1	LH 21	L 1	L 1	HL 11				HL 11						F 1		F 1
15	F 1	F 1	F 1	F 1	F 1	F 1		L 1	LQ 21	L 2	L 2	L 1	L 1	L 1		H 1		F 1	F 1	F 3	F 1	FQ 31	FFQ 21	F 1
16	F 1	F 2	F 2	F 1	F 2	FQ 11	F 2	L 2	L 2	LH 11	L 1	L 2		H 1	H 1	C 1	L 1			F 2			F 2	F 1
17	F 1	F 1	F 1					L 1	L 1	L 1		L 1	L 1	L 1					F 1					
18					F 1				HL 11	HL 11	HL 11	HL 11	HL 11	CL 11		HL 11	L 1						F 1	F 1
19		F 1						C 1	H 1	HL 11	HL 11	L 1	CL 21	CL 21	CL 21	L 2	LC 11	F 2	F 1			F 2	F 2	
20			F 1						HL 11	HL 11		L 1	CL 11	CL 11	L 1	HL 11	L 2	FF 11	F 1	F 2	F 3	FF 11	F 4	F 3
21	F 2	FF 11	F 1	F 1	F 1				HL 11	HL 11	HL 11	L 1	C 1	C 1	C 2	C 2	C 1	F 2	F 1				F 1	F 3
22	F 2	F 2	F 1	F 1	F 1		F 1	H 1	HL 21	C 2	C 1	C 1	C 2	C 2	L 1	HL 11					F 2	F 2	F 2	F 2
23	F 2	F 1							L 4	L 2	L 1	L 1	HL 11	HL 11	HL 11	L 1	L 1		F 1	F 1	F 1	F 1	F 1	F 2
24		FF 11	FF 11		FQ 11	F 2				CL 11	CL 21	CL 21	CL 11	CL 11	CL 11	CL 11	C 1	F 1	F 3	F 2	F 2	F 4	F 2	F 2
25	F 2	F 2			F 2	F 2	F 2	L 1	L 1	L 2	L 2	HL 11	L 2	L 1	L 1	CL 11		FQ 11	FF 21		FF 11	F 2	F 3	F 3
26	F 1	F 1			F 3	F 4	F 2	C 3	L 1	HL 11	L 1	L 1	L 1		L 1	L 1	L 1				F 1			
27	F 1				F 1				C 1	L 1	L 1		L 1	L 1			L 1	F 1					F 1	FF 11
28	FQ 11	FQ 11	F 1		F 1	F 2	F 3	L 4	L 2	L 2	L 2	L 1	L 1					F 1	F 2	F 1	FQ 11	F 2	F 2	F 2
29	F 2	FQ 11		F 1				L 1	HL 11	L 1	L 1	HL 11	L 1	L 1	L 1	L 1	L 3	FQ 21	F 1			F 1	FF 11	
30				F 1		F 1		C 1	LQ 11	L 1	L 1	L 2	L 1	CL 11	CL 11	C 1	L 2	L 3	F 1	F 1	F 3	FF 13	F 1	
31								C 1	L 2	L 1	L 2	H 1	L 1		HL 11							F 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																								

DEC.2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 43	X 42	X 42	X 40	X 40	X 43	X 42											X 78	X 64	X 49	X 47	X 47	X 44	X 45
2	X 45	X 46	X 43	X 36	X 34	X 32	X 46											X 81	X 69	X 54	X 45	X 48	X 49	X 52
3	X 45	X 38	X 40	X 39	X 40	X 39	X 47											X 75	X 56	X 52	X 60	X 52	X 43	X 42
4	X 45	X 46	X 46	X 46	X 51	X 45	X 52											X 81	X 53	X 48	X 55	X 48	X 47	X 44
5	X 46	X 47	X 46	X 49	X 51	X 41	X 42											X 76	X 77	X 72	X 44	X 34	X 35	X 40
6	X 42	X 42	X 41	X 41	X 40	X 41	X 42											X 85	X 53	X 45	X 44	X 41	X 40	X 42
7	X 44	X 45	X 44	X 42	X 42	X 45	X 38											X 93	X 91	X 58	X 47	X 40	X 41	X 43
8	X 45	X 45	X 41	X 34	X 35	X 35	X 40											X 77	X 59	X 56	X 42	X 43	X 45	X 48
9	X 48	X 44	X 48	X 35	X 34	X 34	X 40											X 85	X 67	X 55	X 47	X 37	X 39	X 42
10	X 39	X 41	X 38	X 39	X 40	X 40	X 44											X 73	X 50	X 47	X 50	X 48	X 40	X 40
11	X 38	X 40	X 43	X 41	X 40	X 40	X 45											X 66	X 56	X 54	X 60	X 45	X 40	X 38
12	X 37	X 41	X 44	X 45	X 45	X 44	X 44											X 71	X 61	X 52	X 53	X 45	X 39	X 40
13	X 42	X 41	X 43	X 44	X 36	X 32	X 33											X 82	X 57	X 42	X 46	X 40	X 39	X 42
14	X 43	X 43	X 44	X 45	X 41	X 36	X 38											X 86	X 65	X 54	X 47	X 40	X 37	X 40
15	X 40	X 42	X 42	X 37	X 38	X 40	X 40												X 61	X 46	X 46	X 51	X 42	X 45
16	X 46	X 46	X 47	X 48	X 44	X 44	X 45											X 87	X 67	X 54	X 56	X 45	X 39	X 42
17	X 46	X 46	X 50	X 48	X 39	X 37	X 40											X 72	X 62	X 54	X 45	X 46	X 42	X 41
18	X 42	X 43	X 42	X 40	X 41	X 37	X 39											X 74	X 60	X 47	X 44	X 37	X 39	X 42
19	X 44	X 43	X 44	X 48	X 30	X 30	X 33									C		X 66	X 58	X 50	X 48	X 43	X 37	X 41
20	X 40	X 40	X 39	X 40	X 40	X 39	X 46				C	C	C	C	C	C	C	C	C	X 47	X 48	X 41	X 41	X 42
21	X 46	X 49	X 46	X 48	X 41	X 37	X 41											X 82	X 65	X 50	X 46	X 42	X 43	X 44
22	X 46	X 45	X 42	X 41	X 38	X 39	X 41											X 79	X 54	X 49	X 54	X 52	X 51	X 54
23	X 59	X 54	X 50	X 52	X 51	X 56	X 48											X 74	X 82	X 64	X 45	X 39	X 38	X 38
24	X 40	X 41	X 42	X 42	X 42	X 44	X 44											X 89	X 82	X 61	X 39	X 37	X 41	X 42
25	X 43	X 44	X 46	X 44	X 45	X 44	X 43											X 80	X 54	X 48	X 46	X 44	X 35	X 34
26	X 36	X 38	X 38	X 37	X 36	X 36	X 38											X 82	X 59	X 52	X 50	X 44	X 48	X 41
27	X 40	X 41	X 40	X 42	X 36	X 37	X 40											X 77	X 78	X 42	X 40	X 36	X 38	X 40
28	X 40	X 40	X 44	X 40	X 40	X 40	X 41											X 72	X 52	X 51	X 42	X 41	X 41	X 42
29	X 36	X 40	X 41	X 41	X 41	X 41	X 40											X 70	X 69	X 49	X 39	X 42	X 42	X 45
30	X 45	X 40	X 37	X 29	X 30	X 29	X 38											X 74	X 71	X 52	X 38	X 36	X 36	A
31	X 40	X 41	X 46	X 40	X 37	X 34	X 40											X 76	X 59	X 47	X 37	X 39	X 40	X 42
	00	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	30	31	31	31	31	30
MED	X 43	X 42	X 43	X 41	X 40	X 39	X 41											X 77	X 61	X 51	X 46	X 42	X 40	X 42
U Q	X 45	X 45	X 46	X 45	X 42	X 43	X 44											X 82	X 69	X 54	X 50	X 46	X 43	X 44
L Q	X 40	X 41	X 41	X 39	X 36	X 36	X 40											X 74	X 56	X 47	X 44	X 39	X 39	X 40

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	37	36	36	34	34	37	36	67	86	110	128	116	111	106	103	106	90	72	58	43	41	41	38	39
2	39	40	37	30	28	26	39	79	98	96	132	118	114	94	104	107	98	75	63	48	39	42	42	46
3	39	32	34	33	34	33	41	78	102	115	120	128	120	113	103	105	91	69	50	46	54	46	37	36
4	39	40	40	40	45	39	46	80	87	104	119	131	128	106	100	100	87	75	46	44	49	42	41	38
5	40	40	40	42	45	35	36	74	108	110	132	127	120	100	99	98	82	70	71	66	38	28	29	33
6	36	36	35	35	34	35	36	70	91	106	135	128	111	90	85	84	83	79	46	39	38	35	34	36
7	38	39	38	36	36	39	32	68	92	103	119	110	112	112	105	102	92	87	84	51	41	34	35	37
8	39	39	34	28	29	29	34	70	98	104	140	113	98	100	96	101	83	71	53	50	36	37	39	42
9	42	38	41	29	28	28	34	72	75	88	104	126	111	98	100	97	86	79	61	49	41	31	32	36
10	33	35	32	33	34	34	37	63	79	93	92	110	100	101	90	86	78	67	44	41	44	41	34	33
11	32	34	37	35	34	34	39	74	81	88	104	109	101	94	110	97	82	60	50	48	54	39	34	32
12	31	35	38	39	39	38	38	62	76	89	103	102	103	98	100	90	91	64	55	46	46	38	32	34
13	36	35	37	38	30	26	27	67	124	134	132	118	120	109	104	104	95	76	51	36	40	34	33	36
14	37	37	38	39	34	30	32	65	88	104	130	123	108	104	109	112	107	80	59	48	41	34	30	34
15	34	36	36	31	32	34	36	70	123	116	139	137	134	123	114	107	92	72	55	40	40	44	36	39
16	40	40	41	42	38	38	39	73	103	112	140	118	115	102	108	103	94	81	60	48	50	39	33	36
17	40	40	44	42	33	30	34	70	102	112	110	119	112	111	97	97	86	66	55	48	38	40	36	34
18	36	37	36	34	35	31	33	72	102	99	92	112	108	98	101	93	80	68	54	40	38	30	33	36
19	38	37	38	42	24	24	27	63	93	92	112	108	108	93	102	C	82	60	52	44	42	37	31	35
20	34	34	33	34	34	33	40	71	87	88	C	C	C	C	C	C	C	C	C	41	42	35	35	36
21	40	43	40	42	35	31	35	68	93	104	106	116	114	124	112	97	90	76	59	44	40	36	37	38
22	40	38	36	35	32	33	35	64	104	120	121	137	126	113	119	119	100	73	48	43	48	46	44	48
23	53	48	44	46	45	50	42	74	112	112	122	125	112	122	118	109	92	68	76	58	39	33	32	32
24	34	35	36	36	36	38	38	68	94	149	114	106	107	108	125	114	94	83	76	55	33	31	35	36
25	36	38	40	38	39	38	37	66	98	118	137	112	127	103	107	102	93	74	48	42	40	38	29	28
26	30	31	32	30	30	30	32	57	85	104	148	104	106	114	97	99	94	76	53	46	43	38	42	35
27	34	35	34	36	30	30	34		81	98	106	116	103	116	105	101	80	71	71	36	34	30	32	32
28	34	34	38	33	34	34	35	62	82	98	126	112	88	82	92	91	78	66	46	45	35	35	35	36
29	30	34	35	35	35	35	34	68	85	83	97	100	112	108	108	109	78	64	63	43	33	36	36	39
30	39	34	31	23	24	23	32	51	76	110	97	117	84	88	96	102	89	68	65	46	32	30	30	A
31	34	35	40	34	31	28	34	64	78	92	97	98	77	84	86	78	64	70	53	41	31	33	34	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	30	30	30	30	30	29	30	30	30	31	31	31	31	30
MED	37	36	37	35	34	33	35	68	92	104	120	116	111	104	103	101	90	72	55	45	40	36	34	36
U Q	39	39	40	39	36	37	38	72	102	112	132	125	115	112	108	106	93	76	63	48	43	40	37	38
L Q	34	35	35	33	30	30	34	64	82	93	104	110	103	98	97	97	82	68	50	41	38	33	32	34

DEC.2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 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											
2											L			L										
3												L			L									
4										L					L									
5																								
6																								
7													L											
8													L											
9																								
10												L												
11												L												
12													L											
13																								
14													L	L										
15											L													
16											L													
17												L												
18																								
19												L	L		L	C								
20											C	C	C	C	C	C	C							
21																								
22												L												
23															A									
24													L											
25														L	L									
26														L										
27																								
28																								
29										L		L	L	L										
30											L			L										
31												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																								
MED																								
U Q																								
L Q																								

DEC.2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								180	A	A	A	A	A	UR 344	UR 320	248	UR 212							
2								A	A	A	R	UR 356	A	UR 340	A	UR 272	A							
3								184	A	A	UR 348	A	A	R	A	A	A							
4								B	UR 264	A	R	A	A	A	UR 292	UR 268	UR 208							
5								172	276	A	A	A	A	A	300	A	A							
6								UR 188	UR 264	R	324	R	R	A	A	R	UR 180							
7								UR 180	UR 260	R	R	R	A	UR 332	R	A	R							
8								B	UR 260	300	A	A	A	A	UR 292	A	B							
9								B	240	A	A	UR 356	A	A	UR 304	R	A							
10								B	A	UR 320	R	A	A	UR 316	A	R	UR 200							
11								B	272	A	A	A	A	A	A	UR 264	UR 196							
12								B	A	A	A	A	R	A	R	UR 272	A							
13								UR 180	A	A	A	A	UR 352	R	R	R	UR 204							
14								UR 200	UR 276	A	A	A	A	R	R	R	180							
15								UR 184	R	A	A	A	A	A	A	A	A	B						
16								B	R	R	UR 348	UR 348	A	A	A	A	A							
17								B	UR 268	A	R	A	R	R	R	UR 296	R							
18								UR 188	256	UR 320	A	A	R	A	UR 316	R	180							
19								UR 196	UR 276	A	A	A	A	A	A	C	UR 224							
20								B	UR 256	R	C	C	C	C	C	C	C							
21								B	UR 244	R	R	R	A	A	A	A	UR 228							
22								B	UR 272	A	A	A	A	UR 360	UR 328	UR 312	UR 216							
23								B	UR 260	UR 320	R	A	A	A	A	A	UR 208							
24								B	A	A	A	R	A	A	A	A	A							
25								B	A	A	A	A	A	A	A	A	A							
26								UR 180	UR 268	R	UR 320	UR 328	A	R	R	UR 280	A							
27									244	R	R	A	A	R	R	R	R							
28								B	UR 252	A	A	R	R	R	R	R	UR 212							
29								B	R	UR 312	UR 348	R	R	UR 368	R	UR 284	A							
30								B	A	A	A	A	R	R	UR 316	A	A							
31								UR 184	248	A	R	R	A	A	A	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								12	19	5	5	4	1	6	8	9	13							
MED								UR 184	UR 260	UR 320	UR 348	UR 352	UR 352	UR 342	UR 310	UR 272	UR 208							
U Q								UR 188	UR 272	UR 320	UR 348	UR 356		UR 360	UR 318	UR 290	UR 214							
L Q								180	252	306	322	UR 338		UR 332	UR 296	UR 266	188							

DEC.2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC. 2014 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	22	J A 22	J A 20	E B 15	E B 15	E B 14	E B 15	24	J A 32	J A 40	J A 37	40	37	G	G	29	G	E B 14	E B 14	J A 20	20	E B 15	E B 16	J A 23
2	J A 27	J A 24	20	E B 14	E B 14	E B 16	E B 15	J A 25	J A 37	36	G 31	G 31	36	G 28	34	G	J A 28	J A 27	E B 15	E B 15	E B 15	E B 15	J A 19	E B 14
3	E B 16	E B 15	E B 15	J A 24	22	J A 25	J A 18	22	30	36	G	J A 38	J A 42	G 28	J A 36	J A 41	J A 32	J A 29	22	J A 18	19	19	19	J A 20
4	J A 26	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	G	34	G	37	J A 45	36	G	G	J A 28	20	21	J A 27	E B 15	E B 14	E B 14	E B 15
5	E B 15	E B 16	E B 16	18	J A 20	J A 20	18	22	G	37	J A 45	J A 40	J A 39	38	G 28	J A 32	J A 32	J A 40	J A 35	20	21	19	20	E B 14
6	J A 19	19	E B 15	E B 14	E B 14	E B 14	E B 13	G	G	G	36	G	G	35	J A 38	G	G	E B 15	E B 15	J A 20	J A 20	J A 19	21	E B 15
7	E B 15	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	G	G	G	G	G 24	36	G	G 25	29	G	J A 23	J A 64	J A 46	J A 28	J A 45	J A 34	E B 16
8	J A 23	J A 21	J A 19	20	17	19	18	22	27	36	J A 48	J A 73	38	40	J A 32	32	J A 24	J A 25	J A 44	E B 15	E B 15	E B 27	J A 21	19
9	J A 21	J A 18	E B 15	E B 14	E B 14	E B 15	J A 17	J A 27	31	36	38	G	38	38	G	G 24	J A 21	E B 14	22	J A 24	J A 22	J A E B 14	24	J A 22
10	J A 22	J A 26	21	E B 15	E B 15	E B 14	E B 14	E B 16	31	G	J A 33	J A 39	J A 45	G 28	35	G	G	21	E B 16	J A 24	J A 18	J A E B 15	20	E B 15
11	E B 15	22	J A 18	19	19	J A 18	19	21	G	34	39	J A 42	J A 37	36	38	G	G	E B 16	J A 21	J A 24	E B 14	E B 16	E B 15	E B 14
12	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	J A 20	22	34	34	40	38	G 28	39	G	J A 32	J A 36	J A 38	J A 31	J A 21	E B 19	J A E B 15	20	E B 15
13	E B 14	21	J A 30	J A 20	J A 18	21	E B 15	G	31	34	J A 56	J A 59	G	G	G	G	G	J A 29	J A 24	J A 23	J A 21	J A E B 15	J A 31	J A 32
14	J A 24	J A 35	J A 20	E B 15	E B 15	E B 15	E B 13	G	G	J A 41	J A 41	J A 50	J A 40	G 29	G	G	23	E B 15	E B 15	E B 15	E B 15	E B 16	E B 14	19
15	E B 15	E B 15	E B 14	E B 15	J A 19	E B 14	E B 15	G	G	37	J A 50	42	40	38	J A 42	J A 44	J A 45	J A 67	J A 42	J A 30	J A 22	E B 14	E B 15	E B 15
16	E B 15	J A 30	J A 18	E B 16	E B 14	J A 21	E B 15	22	G	G	G	G	J A 68	J A 41	J A 43	34	J A 30	J A 24	E B 15	E B 14	E B 14	E B 15	E B 14	E B 14
17	J A 38	J A 30	J A 21	J A 23	J A 18	E B 14	E B 14	E B 17	G	36	G	40	G	G 32	G	G	G	E B 14	J A 29	J A 20	22	E B 16	E B 15	E B 15
18	E B 15	E B 14	E B 14	E B 15	E B 14	E B 14	E B 14	G	32	G	40	38	G	40	G	G	26	J A 23	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
19	E B 15	E B 15	19	E B 14	E B 15	E B 14	E B 14	G	G	J A 39	41	40	38	J A 42	35	C	G	E B 16	J A 25	E B 15	J A 20	18	E B 15	E B 15
20	E B 15	J A 24	E B 14	E B 15	E B 16	E B 14	E B 15	20	G	G	C	C	C	C	C	C	C	C	C	E B 15	E B 14	J A 42	J A 30	J A 42
21	J A 50	J A 41	J A 22	21	E B 14	19	E B 15	21	G	G 20	G	G 24	44	J A 54	38	J A 72	G	J A 18	E B 15	E B 15	E B 15	19	J A 27	E B 14
22	J A 20	J A 26	J A 29	J A 20	J A 20	J A 30	E B 19	16	G	J A 40	J A 42	43	J A 42	G 34	G	G	G	E B 13	E B 14	E B 16	21	E B 14	E B 14	J A 23
23	E B 14	E B 15	E B 15	E B 15	E B 14	E B 16	E B 15	E B 16	G 24	G	G	40	45	J A 49	J A 89	J A 34	J A 27	J A 22	E B 15	E B 14	J A 21	E B 15	E B 15	E B 14
24	E B 15	J A 21	E B 14	E B 15	E B 15	E B 14	E B 15	E B 16	31	37	J A 60	G	43	J A 46	J A 42	32	J A 26	E B 14	E B 14	J A 74	J A 28	E B 15	E B 15	E B 15
25	E B 14	J A 39	22	J A 48	J A 20	J A 24	E B 14	J A 20	J A 32	32	37	J A 38	40	36	J A 38	J A 53	J A 28	J A 44	J A 44	J A 24	E B 15	E B 16	J A 24	J A 24
26	J A 22	E B 14	E B 14	J A 28	J A 26	J A 25	J A 18	G	G	G	G 26	G	37	G	G 23	G	J A 31	20	E B 16	E B 14	E B 15	E B 15	E B 14	J A 26
27	J A 20	21	22	E B 15	20	E B 14	J A 18	29	G	G	36	J A 44	G	G	G	G	G	E B 14	E B 15	E B 14	E B 14	21	22	E B 14
28	J A 22	E B 15	J A 24	J A 33	E B 15	J A 20	J A 17	E B 15	G	34	39	G	G	G	G	G	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	22
29	E B 16	J A 19	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	G	G	G	G	G	G	G	G	J A 28	J A 28	J A 28	J A 23	J A 25	J A 23	21	20
30	J A 16	E B 15	J A 22	E B 14	J A 22	J A 23	E B 14	14	30	32	J A 45	42	G	G	G	J A 42	J A 39	J A 30	J A 24	J A 24	J A 36	J A 28	J A 30	J A 61
31	J A 21	E B 15	J A 22	E B 15	E B 15	E B 15	E B 14	G	30	34	G	G 28	J A 45	J A 45	J A 46	36	J A 29	J A 26	J A 22	J A 24	E B 16	E B 15	E B 15	J A 22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	30	30	30	30	30	29	30	30	30	31	31	31	31	31
MED	16	19	18	E B 15	E B 15	E B 15	E B 15	G	G	34	37	38	38	36	G	G	J A 25	J A 22	21	J A 20	19	E B 15	19	E B 15
U Q	J A 22	J A 24	J A 22	J A 20	J A 19	J A 20	J A 18	22	31	36	J A 41	J A 40	J A 43	J A 40	J A 38	J A 34	J A 29	J A 28	J A 28	J A 24	J A 21	J A 19	J A 22	J A 22
L Q	E B 15	E B 15	E B 15	E B 14	E B 14	E B 14	E B 14	E B 16	G	G	G	G	G	G	G	G	G	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15

DEC. 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 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 16	E B 16	E B 15	E B 15	E B 15	E B 14	E B 15	22	28	33	33	36	34	G	G	27	G	E B 14	E B 14	E B 15	E B 15	E B 15	E B 16	E B 15
2	E B 16	E B 15	E B 15	E B 14	E B 14	E B 16	E B 15	20	27	31	G 30	G 30	33	G 25	32	G	22	20	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14
3	E B 16	E B 15	E B 15	17	E B 15	E B 15	E B 15	20	28	33	G	35	35	G 26	32	32	22	22	E B 14	15	E B 15	E B 15	E B 15	E B 16
4	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	E B 15	E B 15	G	32	G	36	38	33	G	G	G 16	E B 15	E B 15	20	E B 15	E B 14	E B 14	E B 15
5	E B 15	E B 16	E B 16	E B 14	E B 15	E B 14	E B 15	20	G	34	34	34	33	33	G 25	26	20	20	24	E B 15	E B 15	15	E B 15	E B 14
6	E B 15	E B 16	E B 15	E B 14	E B 14	E B 14	E B 13	G	G	G	35	G	G	34	30	G	G	E B 15	E B 15	E B 15	E B 14	E B 14	E B 16	E B 15
7	E B 15	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	G	G	G	G	G 21	34	G	G 20	27	G	E B 16	19	19	E B 15	18	E B 16	E B 16
8	16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	20	G 26	35	36	43	36	38	G 22	29	19	21	17	E B 15	E B 15	E B 14	E B 15	E B 16
9	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	E B 15	23	30	32	35	G	34	34	G	G 22	19	E B 14	E B 15	E B 15	E B 16	E B 14	E B 15	E B 16
10	E B 16	19	E B 14	E B 15	E B 15	E B 14	E B 14	E B 16	29	G	27	35	36	G 26	30	G	G	17	E B 16	19	16	E B 15	E B 15	E B 15
11	E B 15	E B 14	E B 15	E B 15	E B 15	E B 14	E B 14	20	G	31	35	34	34	35	33	G	G	E B 16	17	E B 15	E B 14	E B 16	E B 15	E B 14
12	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	E B 15	20	28	32	36	35	G 28	32	G	G 19	25	30	20	E B 15	16	E B 15	E B 15	E B 15
13	E B 14	E B 16	22	E B 15	E B 15	E B 15	E B 15	G	27	32	35	37	G	G	G	G	G	23	20	17	16	E B 15	16	E B 16
14	20	18	E B 15	E B 15	E B 15	E B 15	E B 13	G	G	32	35	36	37	G 28	G	G	21	E B 15	E B 15	E B 15	E B 15	E B 16	E B 14	E B 15
15	E B 15	E B 15	E B 14	E B 15	E B 14	E B 14	E B 15	G	G	34	36	38	37	35	35	34	31	44	26	18	17	E B 14	E B 15	E B 15
16	E B 15	E B 15	E B 14	E B 16	E B 14	E B 15	E B 15	20	G	G	G	G	44	37	35	31	23	16	E B 15	E B 14	E B 14	E B 15	E B 14	E B 14
17	20	19	E B 14	18	E B 15	E B 14	E B 14	E B 17	G	34	G	37	G	G 29	G	G	G	E B 14	E B 16	E B 14	E B 15	E B 16	E B 15	E B 15
18	E B 15	E B 14	E B 14	E B 15	E B 14	E B 14	E B 14	G	28	G	36	36	G	36	G	G	23	16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
19	E B 15	E B 15	E B 15	E B 14	E B 15	E B 14	E B 14	G	G	34	38	38	37	38	34	C	G	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
20	E B 15	E B 15	E B 14	E B 15	E B 16	E B 14	E B 15	19	G	G	C	C	C	C	C	C	C	C	C	E B 15	E B 14	E B 16	E B 26	20
21	22	19	E B 15	E B 15	E B 14	E B 15	E B 15	19	G	G 20	G	G 23	41	48	36	36	G	E B 15	E B 15	E B 15	E B 15	E B 15	E B 16	E B 14
22	E B 16	E B 15	E B 16	E B 15	E B 15	16	E B 15	E B 16	G	31	37	40	34	G 31	G	G	G	E B 13	E B 14	E B 16	E B 15	E B 14	E B 14	E B 15
23	E B 14	E B 15	E B 15	E B 15	E B 14	E B 16	E B 15	E B 16	G 21	G	G	38	43	40	42	30	G 16	E B 16	E B 15	E B 14	E B 15	E B 15	E B 15	E B 14
24	E B 15	E B 15	E B 14	E B 15	E B 15	E B 14	E B 15	E B 16	29	34	42	G	40	38	38	30	21	E B 14	E B 14	30	E B 15	E B 15	E B 15	E B 15
25	E B 14	30	E B 15	28	E B 15	E B 15	E B 14	E B 16	26	29	37	36	38	34	34	32	22	20	28	19	E B 15	E B 16	E B 16	E B 16
26	E B 15	E B 14	E B 14	16	E B 15	E B 15	E B 15	G	G	G	G 26	G	36	G	G 20	G	20	E B 15	E B 16	E B 14	E B 15	E B 15	E B 14	E B 15
27	E B 15	E B 15	E B 16	E B 15	E B 15	E B 14	E B 14		26	G	G	34	35	G	G	G	G	E B 14	E B 15	E B 14	E B 14	E B 15	E B 15	E B 14
28	E B 15	E B 15	E B 14	19	E B 15	E B 15	E B 14	E B 15	G	31	35	G	G	G	G	G	G	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15
29	E B 16	E B 15	E B 14	E B 14	E B 14	E B 14	E B 15	E B 15	G	G	G	G	G	G	G	G	20	20	21	E B 15	16	E B 15	E B 14	E B 15
30	E B 14	E B 15	E B 14	E B 14	E B 16	E B 15	E B 14	E B 14	28	30	34	36	G	G	G	31	28	22	E B 14	E B 16	E B 15	E B 15	E B 15	A A 61
31	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14	G	28	30	G	G 23	36	36	37	31	24	18	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	30	31	31	30	30	30	30	30	29	30	30	30	31	31	31	31	31
MED	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	31	34	35	34	32	G	G	19	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15
U Q	16	16	E B 15	15	E B 15	E B 15	E B 15	20	28	33	36	36	37	36	34	30	22	20	19	16	15	E B 15	E B 15	E B 16
L Q	E B 15	E B 15	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	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14

DEC.2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 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	16	16	15	15	15	14	15	13	14	14	14	14	16	14	15	13	14	14	14	15	15	15	16	15
2	16	15	15	14	14	16	15	14	13	15	16	16	18	16	15	14	14	15	15	15	15	15	15	14
3	16	15	15	15	15	15	15	13	13	15	14	12	16	14	15	13	14	14	14	14	15	15	15	16
4	14	14	14	14	15	15	15	15	14	11	15	13	12	13	12	12	14	15	15	15	15	14	14	15
5	15	16	16	14	15	14	15	13	14	15	14	15	13	16	15	14	16	15	14	15	15	15	15	14
6	15	16	15	14	14	14	13	16	13	16	14	20	18	15	16	14	14	15	15	14	14	14	16	15
7	15	15	15	15	16	15	15	15	14	15	15	15	14	14	13	14	15	16	15	15	14	15	16	16
8	16	15	15	15	15	15	16	15	14	14	12	13	14	12	13	16	14	13	15	15	15	14	15	16
9	15	15	15	14	14	15	15	15	15	17	18	16	16	19	20	14	14	14	15	15	15	14	14	16
10	16	15	14	15	15	14	14	16	14	17	18	16	16	18	15	13	13	15	16	16	15	15	15	15
11	15	14	15	15	15	14	14	14	15	17	15	16	18	13	18	14	14	16	14	15	14	16	15	14
12	15	15	15	14	14	15	15	15	15	13	16	17	15	13	16	13	13	14	14	15	15	15	15	15
13	14	16	15	15	15	15	15	14	12	13	16	15	15	18	16	16	16	14	14	16	15	15	14	16
14	14	14	15	15	15	15	13	14	14	13	16	16	18	18	17	15	15	15	15	15	15	16	14	15
15	15	15	14	15	14	14	15	14	14	12	14	18	16	18	13	13	15	15	15	15	15	14	15	15
16	15	15	14	16	14	15	15	14	13	13	16	18	17	17	14	14	13	16	15	14	14	15	14	14
17	14	15	14	15	14	14	14	17	13	18	18	18	16	14	20	15	12	14	16	14	15	16	15	15
18	15	14	14	15	14	14	14	14	14	14	19	20	18	18	17	15	12	16	15	15	15	15	15	15
19	15	15	15	14	15	14	14	15	14	18	17	17	18	16	15	C	15	16	15	15	15	15	15	15
20	15	15	14	15	16	14	15	14	15	16	C	C	C	C	C	C	C	C	C	15	14	16	14	14
21	14	16	15	15	14	15	15	15	13	16	18	16	19	17	14	18	15	15	15	15	15	15	16	14
22	16	15	16	15	15	14	15	16	14	14	15	16	15	15	17	14	14	13	14	16	15	14	14	15
23	14	15	15	15	14	16	15	16	15	15	16	15	15	17	12	14	14	16	15	14	15	15	15	14
24	15	15	14	15	15	14	15	16	14	13	14	16	17	17	15	12	13	14	14	14	15	15	15	15
25	14	16	15	15	15	15	14	16	14	14	17	18	18	18	17	14	15	14	14	15	15	16	16	16
26	16	14	14	15	15	14	15	13	14	14	15	18	14	15	12	16	15	15	16	14	15	15	14	15
27	15	15	16	15	15	14	14		13	18	14	14	19	15	14	14	14	14	15	14	14	15	15	14
28	15	15	14	14	15	15	14	15	14	14	18	18	18	19	17	15	14	14	14	14	14	14	14	15
29	16	15	14	14	14	14	15	15	14	16	18	19	19	18	16	16	13	12	14	15	14	15	14	15
30	14	15	14	14	16	15	14	14	15	16	12	16	13	17	15	16	14	15	14	16	15	15	15	14
31	15	15	15	15	15	15	14	14	14	13	14	13	14	12	13	12	14	14	15	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	30	31	31	30	30	30	30	30	29	30	30	30	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	14	15	16	16	16	16	15	14	14	15	15	15	15	15	15	15
U Q	16	15	15	15	15	15	15	15	14	16	17	18	18	18	17	15	15	15	15	15	15	15	15	15
L Q	14	15	14	14	14	14	14	14	13	13	14	15	15	14	14	13	14	14	14	14	14	15	14	14

DEC.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC. 2014 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	297	297	297	258	255	311	322	346	352	344	326	337	321	318	315	331	342	324	332	318	312	319	310	283
2	283	306	327	336	255	266	320	362	369	329	337	330	349	296	312	327	338	324	332	329	299	299	301	334
3	342	288	284	271	264	268	325	352	358	345	326	331	321	320	321	324	336	336	331	317	318	333	298	308
4	312	297	290	292	310	275	304	349	352	338	326	332	329	332	334	329	327	334	318	294	320	321	309	283
5	295	275	279	292	323	314	331	349	355	350	342	330	336	325	320	331	347	306	326	358	339	294	263	256
6	287	283	292	298	296	288	307	371	356	333	343	338	346	352	329	330	342	346	351	325	311	306	281	295
7	292	302	279	291	283	321	306	347	361	334	337	334	326	327	324	329	329	327	350	326	328	266	273	285
8	302	319	365	260	270	284	319	338	362	334	350	345	329	329	329	334	337	345	327	334	304	294	293	310
9	303	304	341	353	273	277	321	367	356	351	318	346	327	329	323	330	338	349	355	336	320	304	285	295
10	286	301	300	287	287	299	343	350	355	351	340	339	326	328	342	338	335	358	322	323	314	338	295	311
11	284	291	298	307	301	284	336	373	380	339	348	336	343	328	337	336	346	336	329	345	358	324	316	304
12	284	283	295	295	299	303	331	359	356	347	344	324	331	313	325	316	354	327	318	302	294	316	276	262
13	263	253	311	327	330	274	278	297	355	342	343	334	330	326	325	330	337	346	349	307	330	302	292	267
14	302	274	278	287	353	286	314	351	345	332	336	350	307	324	322	319	342	325	332	321	304	327	279	280
15	272	291	291	285	274	288	301	315	349	336	317	331	317	316	317	323	338	339	351	345	306	322	282	278
16	265	259	286	299	267	288	288	334	348	334	351	333	330	326	324	327	333	338	343	328	333	325	267	271
17	265	259	300	341	318	281	296	352	342	346	349	335	328	333	319	332	338	316	327	332	309	310	303	285
18	272	315	303	282	318	287	305	333	351	352	340	329	317	316	323	318	336	314	341	290	305	325	262	257
19	266	273	292	347	355	274	298	339	356	325	334	334	337	319	330	C	351	319	323	302	308	322	267	269
20	293	280	271	291	274	283	309	364	363	345	C	C	C	C	C	C	C	C	C	308	332	294	270	261
21	270	291	328	337	337	283	294	340	360	339	329	328	311	321	320	321	332	327	330	306	294	309	269	285
22	293	309	304	282	264	266	289	313	328	323	317	313	311	303	305	304	331	327	319	302	294	304	280	280
23	300	302	283	289	267	308	297	328	350	343	329	340	316	315	322	339	335	314	335	357	327	288	276	269
24	266	280	284	293	298	273	299	344	307	347	347	318	332	312	333	336	359	325	333	350	327	290	279	286
25	270	284	272	268	298	299	311	335	344	329	340	320	333	327	334	334	335	340	328	336	326	336	293	274
26	285	271	276	306	299	294	305	341	331	311	352	336	351	308	327	338	319	315	334	321	317	296	327	298
27	317	280	306	320	296	298	319		362	346	332 B	340	325	333	326	345	331	328	348	322	307	278	292	294
28	266	284	316	325	292	295	289	350	364	351	354	371	361	326	335	341	343	352	353	347	318	312	316	320
29	287	308	301	276	272	302	338	337	378	357	347	324	333	332	311	330	343	323	354	362	267	277	281	270
30	318	322	345	250	260	248	342	352	343	353	338	356	355	320	315	327	337	333	334	347	313	297	292	A
31	297	297	334	349	275	285	300	359	359	361	356	351	331	344	345	353	338	340	349	342	314	291	278	303
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	30	30	30	30	30	29	30	30	30	31	31	31	31	30
MED	287	291	297	292	292	286	307	348	355	343	340	334	330	326	324	330	338	328	332	326	314	306	282	284
U Q	300	302	311	325	310	299	322	352	361	350	347	340	336	329	330	336	342	340	349	345	327	322	298	298
L Q	270	280	284	282	270	275	298	337	348	334	329	330	321	316	320	326	335	324	327	308	305	294	276	270

DEC. 2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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											
2											L			L										
3												L			L									
4										L					L									
5																								
6																								
7													L											
8													L											
9																								
10												L												
11												L												
12													L											
13																								
14													L	L										
15											L													
16											L													
17												L												
18																								
19												L	L		L	C								
20											C	C	C	C	C	C	C							
21																								
22												L												
23															A									
24													L											
25														L	L									
26														L										
27																								
28																								
29										L		L	L	L										
30											L			L										
31												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																								
MED																								
U Q																								
L Q																								

DEC.2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1													266											
2											250			314										
3												250			266									
4										256					258									
5																								
6																								
7													248											
8													266											
9																								
10												256												
11												240												
12													258											
13																								
14													286	270										
15											250													
16											244													
17												266												
18																								
19												244	254		268	C								
20											C	C	C	C	C	C	C							
21																								
22												278												
23															240									
24													274											
25														246	258									
26														276										
27																								
28																								
29										230		270	252	244										
30											244			280										
31												248												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										2	4	8	8	6	5									
MED										243	247	253	262	273	258									
U Q											250	268	270	280	267									
L Q											244	246	253	246	249									

DEC.2014 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 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	EB276	EB258	EB264	EB310	EB356	EB250	206	214	214	220	218	216	206	226	224	226	212	204	206	214	218	224	EB234	EB264
2	EB288	EB274	218	218	EB316	EB344	EB248	210	212	212	216	212	220	198	218	224	212	210	210	206	EB256	EB264	EB254	218
3	216	EB250	EB276	EA326	EB340	EB312	EB236	218	210	222	218	204	214	218	202	222	206	208	214	232	230	212	EB252	EB260
4	EB266	EB266	EB262	EB274	EB248	EB278	EB256	200	200	200	218	224	222	210	214	224	208	202	194	EA268	EB236	222	EB240	EB266
5	EB274	EB294	EB306	EB278	218	208	234	224	216	210	224	214	204	204	210	222	202	222	EA238	202	204	EA262	EB338	EB332
6	EB294	EB282	EB256	EB264	EB250	EB278	EB240	212	214	214	216	210	200	204	208	208	212	204	200	234	EB238	EB244	EB276	EB282
7	EB274	EB260	EB280	EB278	EB280	EB252	EB236	212	200	212	228	220	212	222	218	222	214	218	208	210	220	EA290	EB318	EB306
8	EA274	EB260	200	EB316	EB320	EB300	EB244	226	214	220	232	214	202	222	216	228	210	202	216	220	216	EB272	EB288	EB250
9	EB242	EB248	228	208	EB292	EB294	EB254	208	204	214	210	228	216	212	224	222	216	204	204	210	220	220	EB278	EB284
10	EB280	EA294	EB260	EB286	EB276	EB284	222	206	202	210	220	210	222	218	218	218	214	204	218	228	234	EB222	EB250	EB260
11	EB292	EB294	EB276	EB242	EB244	EB282	EB234	202	202	208	212	200	212	212	228	220	208	198	EA236	222	216	226	EB238	EB260
12	EB284	EB290	EB280	EB266	EB248	EB248	210	204	204	216	222	220	216	218	218	218	214	218	EA240	220	222	226	EB270	EB310
13	EB324	EB366	EA320	224	200	EB320	EB340	246	222	220	220	214	218	212	212	214	212	202	204	218	EA248	220	EA296	EB330
14	EA278	EA314	EB300	EB270	212	EB284	EB246	220	206	212	216	206	204	210	220	230	212	196	200	212	EB232	222	EB290	EB312
15	EB318	EB278	EB260	EB242	EB282	EB288	EB260	238	220	208	220	224	214	208	222	222	210	EA234	220	224	EA266	226	EB280	EB296
16	EB316	EB340	EB308	EB246	EB284	EB296	EB256	220	222	210	208	208	222	220	222	216	210	202	202	212	EB220	210	EB260	EB310
17	EA322	EA350	EB272	218	218	EB302	EB278	212	220	212	212	208	218	218	220	236	212	198	212	214	218	236	EB240	EB282
18	EB304	EB274	EB250	EB258	EB250	EB286	EB270	228	216	212	206	218	222	218	226	212	212	212	198	EB206	EB244	EB226	EB306	EB338
19	EB306	EB326	EB274	220	204	EB318	EB282	230	224	212	224	210	218	218	216	C	208	192	218	228	228	EB236	EB280	EB310
20	EB280	EB282	EB296	EB298	EB308	EB304	EB246	204	210	218	C	C	C	C	C	C	C	C	C	EB206	EB224	EB264	EA384	EA362
21	EA338	EA278	230	EB232	214	EB302	EB276	226	216	224	220	226	220	EA246	226	214	216	210	190	210	220	EB260	EB288	EB284
22	EB280	EB268	EB262	EB268	EB272	EA334	EB274	234	220	214	224	224	226	220	224	224	212	206	EB202	232	EB248	EB238	EB266	EB276
23	EB262	EB238	EB278	EB284	EB288	EB248	212	228	218	210	210	216	216	224	A	206	200	EB196	218	202	EB238	EB234	EB290	EB306
24	EB324	EB290	EB290	EB256	EB256	EB306	EB278	230	222	228	204	206	216	222	232	222	204	218	206	222	214	EB248	EB286	EB286
25	EB306	EA368	EB294	EA372	EB278	EB272	EB234	230	214	216	220	200	222	192	216	222	214	202	EA234	216	EB240	210	EB254	EB310
26	EB314	EB312	EB286	EA252	EB246	EB280	EB270	216	216	210	226	210	218	214	216	224	214	190	204	208	EB244	EB270	224	EB252
27	EB246	EB274	EB272	EB256	226	EB288	EB240		204	220	218	222	212	212	218	222	212	204	212	198	228	EB296	EB268	EB250
28	EB314	EB310	EB258	EA246	EB272	EB276	EB266	210	210	216	226	212	206	206	226	222	214	200	202	214	214	EB246	EB268	228
29	218	EB262	EB262	EB278	EB316	EB270	214	EB238	194	198	220	212	206	204	222	224	200	222	222	214	EA282	EB296	EB294	EB304
30	EB250	216	222	EB380	EB404	EB398	232	H190	216	220	204	220	206	206	230	230	214	208	220	208	EB244	EB254	EB300	A
31	EB256	EB278	EB242	200	EB254	EB260	EB272	212	208	214	220	194	204	222	232	220	208	214	204	202	226	EB288	EB288	EB296
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	30	30	30	30	29	29	30	30	30	31	31	31	31	30
MED	EB280	EB278	EB272	EB264	EB272	EB286	EB246	216	214	214	219	213	216	214	220	222	212	204	206	214	221	EB236	EB278	EB285
U Q	EB314	EB310	EB286	EB284	EB292	EB304	EB270	228	218	220	222	220	220	220	225	224	214	212	218	222	EB244	EB264	EB290	EB310
L Q	EB266	EB262	256	242	244	EB272	234	210	204	210	212	208	206	208	216	218	208	202	202	208	220	222	EB254	EB260

DEC.2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 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								116	A 116	A	A	A	A	110	112	112	116							
2								A	A 116	A	120	116	A	118	114	114	A							
3								116	A 116	A	114	A	A	114	A	A	A							
4								B	108	114	114	A	A	A	116	116	116							
5								122	110	A	A	A	A	A	116	A	A							
6								118	116	116	112	116	112	A	A	114	122							
7								124	116	114	114	114	A	112	114	A	116							
8								B	118	116	A	A	114	112	112	110	B							
9								B	116	118	112	118	A	122	112	110	A							
10								B	118	120	D 110	A	A	108	A	114	114							
11								B	120	A	A	A	A	A	A	112	116							
12								B	114	114	114	A	118	A	116	110	A							
13								120	120	116	A	A	118	116	116	116	114							
14								122	114	A	A	A	A	116	118	114	116							
15								116	116	112	A	A	A	A	A	A	A	B						
16								B	126	120	120	116	A	A	A	110	A							
17								B	116	116	112	112	112	112	122	118	116							
18								122	116	112	112	A	112	A	114	114	114							
19								128	118	114	114	114	108	A	A	C	116							
20								B	116	108	C	C	C	C	C	C	C							
21								B	114	112	116	114	114	A	A	118	122							
22								B	116	A	116	114	A	118	116	116	118							
23								B	118	112	112	112	114	A	A	A	118							
24								B	124	118	A	116	118	114	A	A	112							
25								B	A	A	A	A	A	A	A	A	A							
26								118	118	118	110	118	A	112	112	118	A							
27									120	114	118	A	A	116	114	112	112							
28								B	118	114	114	116	114	114	114	118	114							
29								B	118	118	116	120	118	118	118	118	A							
30								B	120	110	110	A	116	114	114	A	A							
31								122	116	110	110	114	A	A	A	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								12	27	23	21	15	13	17	18	20	17							
MED								121	116	114	114	116	114	114	114	114	116							
U Q								122	118	118	116	116	118	117	116	117	117							
L Q								117	116	112	112	114	112	112	114	112	114							

DEC.2014 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 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	98	102	100	B	B	B	B	138	104	106	108	104	102	G	G	144	G	B	B	106	106	B	B	104
2	94	94	102	B	B	B	B	106	106	106	106	106	104	104	114	G	96	96	B	B	B	B	102	B
3	B	B	B	100	94	94	96	160	104	104	G	104	104	98	98	96	96	96	100	100	100	98	94	104
4	144	B	B	B	B	B	B	B	G	114	G	104	100	98	G	G	100	96	94	100	B	B	B	B
5	B	B	B	110	100	96	98	166	G	106	106	106	106	102	100	104	100	92	90	96	92	88	94	B
6	88	90	B	B	B	B	B	G	G	G	156	G	G	108	106	G	G	B	B	98	96	96	92	B
7	B	B	B	B	B	B	B	G	G	G	G	96	94	G	94	104	G	98	98	96	104	96	102	B
8	126	100	100	96	100	98	146	134	158	174	96	88	122	122	90	118	92	92	100	B	B	96	98	100
9	96	98	B	B	B	B	146	140	134	124	114	G	106	118	G	98	94	B	96	92	102	B	100	92
10	92	82	98	B	B	B	B	B	126	G	100	102	94	88	106	G	G	100	B	92	96	B	92	B
11	B	94	96	90	94	94	96	136	G	106	106	104	106	100	102	G	G	B	98	92	B	B	B	B
12	B	B	B	B	B	B	112	130	124	118	118	104	104	98	G	92	92	86	88	96	96	B	96	B
13	B	96	92	94	94	96	B	G	114	118	108	106	G	G	G	G	G	98	98	100	100	B	108	106
14	102	104	102	B	B	B	B	G	G	110	106	106	106	104	G	G	148	B	B	B	B	B	B	90
15	B	B	B	B	90	B	B	G	G	114	106	106	106	100	100	100	94	90	90	88	90	B	B	B
16	B	102	106	B	B	106	B	144	G	G	G	G	92	94	94	112	88	92	B	B	B	B	B	B
17	94	94	100	96	100	B	B	B	G	118	G	114	G	92	G	G	G	B	94	94	94	B	B	B
18	B	B	B	B	B	B	B	G	150	G	122	106	G	108	G	G	130	102	B	B	B	B	B	B
19	B	B	110	B	B	B	B	G	G	124	128	120	118	104	108	C	G	B	102	B	96	92	B	B
20	B	114	B	B	B	B	B	152	G	G	C	C	C	C	C	C	C	C	C	B	B	108	100	100
21	94	100	102	110	B	106	B	154	G	98	G	98	132	104	126	118	G	106	B	B	B	106	102	B
22	102	102	96	100	98	94	102	B	G	108	116	118	106	104	G	G	G	B	B	B	114	B	B	122
23	B	B	B	B	B	B	B	B	106	G	G	120	116	106	104	102	104	104	B	B	94	B	B	B
24	B	104	B	B	B	B	B	B	124	124	106	G	118	118	104	104	108	B	B	104	104	B	B	B
25	B	90	106	98	100	100	B	108	104	102	108	108	108	108	104	100	98	98	94	92	B	B	104	100
26	108	B	B	108	108	108	98	G	G	G	94	G	96	G	98	G	88	88	B	B	B	B	B	98
27	102	100	100	B	96	B	96	G	150	G	G	104	106	G	G	G	G	B	B	B	B	98	94	B
28	100	B	100	96	B	100	100	B	G	120	114	G	G	G	G	G	G	B	B	B	B	B	B	92
29	B	92	B	B	B	B	B	B	G	G	G	G	G	G	G	G	98	98	96	98	94	94	98	98
30	98	B	108	B	100	98	B	B	120	120	114	108	G	G	G	100	94	90	92	96	100	98	108	100
31	112	B	94	B	B	B	B	G	142	116	G	100	96	92	92	90	92	94	90	94	B	B	B	110
	00	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	18	17	11	12	12	10	12	15	21	20	23	23	22	17	15	18	19	16	18	17	11	16	14
MED	99	99	100	98	99	98	99	139	124	114	108	106	106	104	102	102	96	96	95	96	96	96	99	100
U Q	105	102	104	108	100	103	112	153	142	120	115	108	108	108	106	112	100	98	98	100	103	98	102	104
L Q	94	94	97	96	94	95	96	132	106	106	106	104	100	98	96	98	92	92	91	92	94	94	94	98

IONOSPHERIC DATA STATION Kokubunji

DEC.2014 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	F1	F1	F1					H2	L2	L2	L2	L2	L2			H2				F1	F1			F1
2	F1	F1	F1					L2	L2	L2	L2	L2	L2	L2	C1		L3	F2					F2	
3				F3	F1	F2	F2	H2	L2	L2		L2	L2	L2	L2	L3	L2	F3	F2	F2	F2	F1	F2	F2
4	F1									C1		L2	L2	L2			L1	F1	F1	F3				
5				F1	F1	F2	F1	H2		L2	L2	L2	L2	L1	L2	L2	L2	F3	F4	F2	F2	F2	F2	
6	F1	F1									HL12			L2	L1					F1	F1	F1	F2	
7												L2	L2		L2	L2		F2	F2	F3	F2	F2	F2	
8	F1	F1	F1	F2	F1	F2	F1	H1	H1	H1	L2	L2	C1	CL22	L2	C1	L2	F3	F2			F2	F1	F1
9	F2	F2					F1	H3	H1	C2	C1		L1	C1		L2	L2		F1	F1	F2		F1	F2
10	F2	F3	F1						C1		L2	L2	L2	L2	L2			F2		F2	F2		F1	
11		F1	F1	F1	F1	F1	F1	H2		L2	L2	L2	L1	L1	L1				F2	F2				
12							F1	H2	C2	C2	C2	L1	L2	L2		L1	L2	F3	F2	F1	F2		F1	
13		F1	F4	F2	F1	F1			C1	C1	L1	L2						F3	F3	F2	F2		F2	F2
14	F3	F3	F1							L2	L2	L2	L2	L1			H1							F1
15					F1					C1	L2	L2	L2	L1	L2	L1	L2	F3	F2	F2	F1			
16		F2	F1			F2		H2					L2	L2	L2	CL11	L2	F2						
17	F3	F3	F2	F2	F1					C1		C1		L2					F1	F1	F1			
18									H2		C1	L1		L1			H1	F2						
19			F1							C1	C1	C1	C1	L2	L2				F1		F1	F1		
20		F1						H1														F2	F4	F3
21	F4	F3	F2	F2		F2		H2		L1		L1	H2	L3	CL12	CL22		F1				F2	F1	
22	F2	F3	F2	F2	F2	F2	F1			L2	C1	C2	L2	L2							F1			F1
23									L1			C1	C2	L1	L2	L3	L2	F1			F2			
24		F1							C1	C1	L2		C1	CL11	L2	L2	L2			F4	F2			
25		F4	F2	F4	F2	F1		L1	L2	L2	L2	L2	L2	L2	L2	L3	L2	F2	F5	F5			F2	F2
26	F2			F2	F2	F2	F1				L2		L2		L1		L2	F1						F2
27	F1	F1	F1		F1		F1		H1			L1	F2									F2	F1	
28	F2		F1	F3		F1	F1			C1	C1													F1
29		F2															L2	F1	F1	F1	F2	F2	F2	F1
30	F1		F1		F1	F1			C2	C2	C1	L2				L2	L2	F2	F2	F2	F1	F2	F2	F2
31	F1		F1						H1	C1		L1	L2	L2	L2	L1	L2	F3	F3	F1				F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

DEC.2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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 44	X 43	X 44	X 40	X 38	X 41	X 39												X 80	X 61	X 70	X 79	X 68	X 47
2	X 45	X 47	X 44	X 37	X 35	X 33	X 36												X 89	X 73	X 58	X 58	X 63	X 62
3	X 43	X 37	X 39	X 40	X 41	X 40	X 40												X 72	X 69	X 74	X 75	X 57	X 45
4	X 43	X 44	X 42	X 43	X 44	X 40	X 42												X 95	X 63	X 61	X 67	X 61	X 50
5	X 45	X 43	X 43	X 43	X 46	X 34	X 36												X 87	X 84	X 70	X 44	X 41	X 42
6	X 44	X 44	X 44	X 40	X 40	X 38	X 38												X 86	X 58	X 57	X 58	X 43	X 40
7	X 42	X 42	X 42	X 42	X 43	X 36	X 35												X 99	X 73	X 58	X 55	X 43	X 45
8	X 46	X 47	X 51	X 28	X 29	X 32	X 34												X 80	X 62	X 65	X 57	X 49	X 52
9	X 48	X 47	X 50	X 36	X 32	X 33	X 34												X 94	X 68	X 59	X 50	X 46	X 39
10	X 34	X 38	X 37	X 38	X 39	X 36	X 38												X 77	X 59	X 69	X 70	X 33	X 33
11	X 35	X 37	X 39	X 38	X 39	X 35	X 39												X 83	X 67	X 65	X 59	X 44	X 36
12	X 36	X 37	X 38	X 42	X 44	X 40	X 40												X 92	X 71	X 71	X 64	X 58	X 37
13	X 38	X 39	X 43	X 39	X 26	X 30	X 30												X 80	X 59	X 58	X 55	X 46	X 40
14	X 40	X 41	X 45	X 42	X 40	X 37	X 39												X 116	X 86	X 68	X 60	X 62	X 49
15	X 46	X 47	X 44	X 38	X 39	X 35	X 39												X 77	X 55	X 58	X 61	X 49	X 40
16	X 42	X 43	X 46	X 47	X 42	X 43	X 43												X 89	X 72	X 69	X 69	X 52	X 43
17	X 42	X 42	X 44	X 47	X 41	X 34	X 34												X 77	X 65	X 59	X 62	X 57	X 38
18	X 36	X 39	X 39	X 36	X 38	X 36	X 34												X 92	X 82	X 68	X 68	X 64	X 49
19	X 44	X 42	X 45	X 41	X 42	X 28	X 30												X 87	X 76	X 72	X 66	X 52	X 50
20	X 45	X 43	X 42	X 42	X 41	X 40	X 41												X 83	X 71	X 66	X 62	X 56	X 44
21	X 43	X 46	X 48	X 46	X 41	X 36	X 37												X 86	X 78	X 70	X 59	X 54	X 53
22	X 52	X 51	X 47	X 43	X 38	X 36	X 36												X 79	X 63	X 58	X 57	X 51	X 50
23	X 47	X 48	X 44	X 46	X 47	X 49	X 47												X 119	X 100	X 84	X 79	X 60	X 53
24	X 43	X 46	X 41	X 41	X 40	X 37	X 38												X 116	X 88	X 68	X 55	X 51	X 42
25	X 42	X 41	X 40	X 40	X 38	X 40	X 40												X 115	X 80	X 87	X 86	X 52	X 36
26	X 34	X 34	X 34	X 34	X 33	X 32	X 33												X 78	X 69	X 58	X 58	X 57	X 35
27	X 38	X 40	X 42	X 38	X 34	X 34	X 38												X 80	X 79	X 58	X 47	X 38	X 38
28	X 36	X 38	X 41	X 38	X 39	X 38	X 39												X 64	X 58	X 54	X 48	X 50	X 45
29	O X 37	X 37	X 41	X 39	X 40	X 41	X 43												X 122	X 94	X 87	X 67	X 65	X 62
30	X 54	X 47	X 38	X 30	X 32	X 34	X 39												X 74	X 66	X 64	X 51	X 46	X 42
31	X 42	X 41	X 43	X 38	X 28	X 31	X 32												X 71	X 72	X 68	X 55	X 48	X 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	31	31	31												31	31	31	31	31	31
MED	X 43	X 42	X 43	X 40	X 39	X 36	X 38												X 86	X 71	X 66	X 59	X 52	X 44
U Q	X 45	X 46	X 44	X 42	X 41	X 40	X 40												X 94	X 79	X 70	X 67	X 58	X 50
L Q	X 38	X 39	X 40	X 38	X 35	X 34	X 34												X 78	X 63	X 58	X 55	X 46	X 39

DEC.2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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	38	37	38	34	32	35	33	59	89	100	118	118	109	111	114	110	97	87	74	55	64	73	62	41
2	39	41	38	31	29	27	30	66	93	97	R 122	116	103	101	112	120	104	96	83	67	52	52	57	56
3	37	31	33	34	35	34	34	68	97	100	114	118	120	111	110	103	101	86	66	63	68	69	51	39
4	37	38	36	37	38	34	36	63	80	94	116	R 126	J R 126	U R 124	110	R 110	108	115	89	57	55	61	55	44
5	39	37	37	37	40	28	30	56	98	115	102	130	R 130	R 120	115	120	116	97	81	78	64	38	V 35	36
6	38	38	38	34	34	32	32	55	80	105	116	130	129	R 107	98	94	102	106	80	52	51	52	37	34
7	36	36	36	36	37	30	29	58	88	79	101	R 120	116	U R 120	111	110	109	96	93	67	52	49	37	39
8	40	41	45	V 22	25	26	28	52	93	96	108	110	R 107	113	114	111	100	89	74	56	59	50	43	46
9	42	41	44	30	26	27	28	54	80	89	91	102	R 124	114	105	R 107	107	110	88	62	53	44	40	33
10	28	32	31	32	33	30	32	50	77	89	95	107	118	109	98	101	101	86	70	52	63	64	27	27
11	29	31	33	32	33	29	33	52	79	86	106	103	111	113	R 128	115	96	83	77	61	59	53	38	30
12	30	31	32	36	38	34	34	52	81	89	98	107	109	116	120	110	116	113	86	65	65	58	52	31
13	32	33	37	33	20	24	24	45	102	111	118	118	116	116	U R 129	118	111	98	74	53	52	48	40	34
14	34	35	39	36	34	31	33	50	84	96	117	110	120	R 116	141	152	155	J R 141	110	80	62	54	56	43
15	40	41	38	32	33	29	33	50	102	J R 118	129	R 134	136	R 142	130	120	118	96	71	49	52	55	43	34
16	36	37	40	41	36	37	37	56	92	J R 125	133	115	116	J R 116	115	111	106	101	83	66	63	63	46	37
17	36	36	38	41	35	28	28	52	88	115	U R 128	R 114	115	118	J R 110	R 110	99	100	71	59	53	56	51	32
18	30	33	33	30	32	30	28	48	91	J R 118	115	111	111	U R 124	J R 126	113	R 106	98	86	76	62	62	58	43
19	38	36	39	35	36	22	24	45	84	110	119	100	114	R 110	U R 124	117	103	88	81	70	66	60	46	44
20	39	37	36	36	35	34	35	56	92	109	U R 127	U R 127	R 126	U R 126	116	116	98	86	77	65	60	56	50	38
21	37	40	42	40	35	30	31	49	88	110	118	117	116	U R 125	118	118	114	96	80	72	64	53	48	47
22	46	45	41	37	32	30	30	46	96	106	116	U R 128	U R 124	118	116	115	106	96	73	57	52	51	45	44
23	41	42	38	40	41	43	41	55	100	115	R 128	130	116	R 130	U R 127	131	122	113	113	94	78	72	54	47
24	37	40	35	35	34	31	32	49	77	136	J R 125	100	114	R 128	140	132	120	R 116	110	82	62	49	45	36
25	36	35	34	34	32	34	34	52	86	103	133	140	R 134	J R 130	129	R 136	120	132	U R 109	74	81	80	46	30
26	28	28	28	28	27	26	27	44	80	98	123	110	104	J R 130	116	106	100	89	70	63	51	52	51	29
27	32	34	36	32	28	28	32	46	74	92	115	102	110	120	120	108	105	103	74	73	52	41	32	32
28	30	32	35	32	33	32	33	47	74	90	U R 124	R 124	87	89	92	100	R 105	88	58	52	48	42	44	39
29	31	31	35	33	34	35	37	46	85	77	88	R 112	118	U R 123	J R 134	160	R 183	156	116	88	81	61	59	56
30	48	41	32	24	26	28	33	48	84	114	106	R 109	92	94	110	117	119	106	68	60	58	45	40	36
31	36	35	37	32	22	25	26	47	84	82	92	101	89	90	93	97	83	70	65	66	62	49	42	40
	00	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	37	36	37	34	33	30	32	52	86	100	116	115	116	R 116	116	113	106	97	80	65	60	53	46	38
U Q	39	40	38	36	35	34	34	56	93	114	R 124	126	R 124	R 124	127	120	116	110	88	73	64	61	52	44
L Q	32	33	34	32	29	28	28	47	80	90	106	107	109	111	110	108	101	88	71	57	52	49	40	33

DEC.2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L	L								
2										L	L	L	L	U L 464	L	L		200						
3											L	L	U L 500	L	L									
4										L	L	L	L	L		L								
5											L	L	L	L	L	L	L							
6										L	L	L	L	L	L	L								
7									L 280	L	L	L	L	L	L	L	268							
8											L	L	L	L	L	L	272							
9											L	L	L	L	L									
10											L	L	L	L	L	A								
11									260		L	L	L	L	L	L	L							
12											L	L	L	L	L	L	L							
13										L	L	L	L	L	L	A								
14											L	L	L	L	L	L	L							
15											L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17										L	L	L	L	L		L								
18										L	L	L	L	U L 440	L	L								
19											L	L	L	L	L	L								
20									248	U L 312			L	L	L	L								
21									252	312	L	L	L	L	L	L								
22											L	L	L	L	L									
23											L	L	L	L	L									
24											L	A	L	L	L	L		216						
25									248	U L 308	L	L	L	L	L	U R 336								
26										L	L	L	U L 432	U L 476	L	L								
27								L	264		L	L	L	L	L	L								
28									252	316	L	L	L	L	L	L		204						
29									228		L	L	L	L	L	L	L							
30											L	L	L	L	L	L	L							
31									244		L	L	L	L	L	L	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									9	4			2	3		1	2	3						
MED									252	312			U L 466	U L 464		U R 336	270	204						
U Q									262	314				U L 476				216						
L Q									246	310				U L 440				200						

DEC.2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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								212	244	296	U A 320	A	360	344	328	292	256	B						
2								A 252	276	340	360	U R 360	U R 360	332	308	256	A							
3								180	240	A 288	U A 312	A 316	348	352	R 340	312	264	252						
4								B 236	288	304	320	A 328	340	A 324	A 288	252	U A 220							
5								A	A 228	288	316	A 312	348	A	A	A	256	A						
6								B 240	292	U A 316	348	344	344	336	300	252	A							
7								B 240	292	316	344	R 348	A	U A 320	304	252	192							
8								B 236	292	328	R 344	344	R 348	328	304	248	192							
9								204	236	296	324	324	R 348	352	U A 336	304	U A 248	A						
10								B 236	296	320	R 340	U R 340	340	336	A	A	A							
11								B 240	A 288	A 316	R 360	360	R 356	332	312	R 260	A							
12								B 236	296	316	A 308	352	352	344	316	276	A							
13								B	A 224	300	332	344	A 360	328	A	A	A	A						
14								B 236	292	332	U A 332	A	348	340	332	260	A							
15								B 232	U A 300	328	340	U A 332	A	A	316	268	A							
16								A 268	308	328	348	U A 348	U A 344	A	A	A	A	A						
17								B 236	296	336	R	356	U R 364	B	U R 336	268	A							
18								B 240	308	336	364	372	364	R 348	A	272	A							
19								B 248	292	328	348	U A 352	R 360	U R 344	U A 320	264	A							
20								B 224	268	B	B	U A 424	A 368	A	A	A	A	A						
21								B 224	288	332	356	372	348	340	320	A 248	A							
22								A 204	300	324	356	U A 352	U A 336	R 348	316	U A 276	A							
23								A 236	292	336	364	364	A 372	U A 344	332	A	A							
24								B 244	300	328	340	U A 376	360	348	304	U A 236	196							
25								A	U A 192	A 252	308	332	340	A 340	U A 304	316	272	A						
26								A 224	280	320	328	U A 336	U A 328	A	308	256	A							
27								B 204	288	312	328	A 336	U A 304	336	A	256	A							
28								B 212	280	312	A	332	344	332	296	256	B							
29								B	A 204	276	A	A	352	348	332	300	256	192						
30								B 220	280	A 316	U A 328	U A 324	A	A	A	A	A	A						
31								A 208	272	U A 284	336	336	344	328	U R 284	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	31	31	29	26	30	27	23	23	24	6						
MED								204	236	292	320	340	348	348	336	308	256	194						
U Q								212	240	296	330	348	360	360	344	316	266	220						
L Q								180	224	280	316	328	A 340	A 340	328	300	252	192						

DEC.2014 foE (0.01MHz)

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IONOSPHERIC DATA STATION Yamagawa

DEC. 2014 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	J A 20	E B 16	E B 16	E B 16	E B 16	E B 16	23	28	31	34	J A 45	40	G 33	35	32	28	20	E B 16	20	E B 16	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	21	J A 16	J A 16	19	20	27	J A 32	J A 36	39	G 30	G	G 32	G	28	J A 21	J A 20	E B 16	E B 16	E B 16	18	18
3	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	26	31	J A 38	36	G 35	G 33	J A 37	J A 32	J A 33	J A 27	J A 17	20	21	J A 22	21	E B 16
4	E B 16	E B 16	E B 16	E B 16	18	22	18	E B 17	26	32	33	35	36	36	37	33	27	J A 26	J A 23	J A 28	J A 16	E B 16	18	J A 19
5	J A 17	J A 18	J A 26	E B 16	21	E B 16	18	J A 21	27	30	36	J A 40	G	J A 36	J A 38	J A 34	J A 28	J A 28	J A 32	J A 20	J A 36	J A 22	J A 17	E B 16
6	E B 16	E B 16	E B 16	20	E B 16	E B 16	19	E B 16	G	G	34	40	G	G	G	G	29	J A 25	J A 20	J A 26	J A 23	J A 16	21	J A 16
7	21	E B 16	E B 16	E B 16	E B 16	E B 16	22	E B 16	26	G	34	G 34	G 30	35	34	G	26	J A 20	J A 20	18	E B 16	J A 28	J A 21	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	J A 17	27	G	34	G	G 22	G 19	G	33	26	G	J A 26	J A 17	19	E B 16	J A 16	E B 16
9	21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	27	30	34	40	39	G	G	35	G 25	29	J A 29	J A 56	J A 19	20	E B 16	E B 16	J A 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	J A 18	27	31	G 30	G 31	35	G	34	J A 73	J A 57	J A 26	E B 16	21	E B 16	E B 16	E B 16	E B 16
11	E B 16	J A 31	E B 16	J A 28	J A 28	E B 16	E B 16	E B 16	G	31	36	G	G 32	38	34	33	G 18	J A 25	J A 21	J A 23	J A 24	J A 19	J A 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	31	35	34	40	G 25	G	34	G	J A 20	J A 37	J A 34	J A 28	J A 19	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	G	38	J A 54	J A 45	J A 40	J A 44	J A 52	J A 38	J A 21	E B 16	E B 16	E B 16	E B 16	19	E B 16
14	E B 16	J A 24	J A 23	E B 16	E B 16	E B 16	E B 16	E B 16	25	G	36	J A 59	J A 39	G	G	G 26	28	18	J A 18	E B 16	J A 17	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	E B 16	25	32	42	J A 56	J A 40	37	J A 37	G	G	J A 30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
16	E B 16	E B 16	J A 51	J A 37	E B 16	E B 16	J A 18	J A 22	G 27	33	40	J A 46	J A 44	41	J A 48	33	J A 34	J A 42	J A 31	J A 31	J A 22	J A 16	J A 24	J A 19
17	J A 16	E B 16	E B 16	E B 16	J A 19	J A 20	E B 16	E B 16	25	G 24	G 27	29	G 30	39	E B 67	J A 40	J A 33	J A 48	J A 34	19	25	22	18	E B 16
18	E B 16	E B 16	21	E B 16	E B 16	E B 16	E B 16	E B 16	26	G	G	38	42	G 34	J A 36	J A 37	29	J A 34	E B 16	J A 19	E B 16	E B 16	E B 16	E B 16
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	38	43	G	G J A 26	42	30	J A 20	J A 18	J A 19	22	E B 16	E B 16	E B 16
20	E B 16	E B 16	E B 16	E B 16	18	E B 16	E B 16	E B 16	24	G	E B 52	E B 44	46	41	J A 50	J A 70	J A 41	J A 28	J A 20	J A 17	J A 19	E B 16	E B 16	E B 16
21	E B 16	J A 51	20	J A 21	21	J A 28	J A 18	E B 16	J A 25	30	G	37	G	37	G 28	42	30	J A 45	J A 39	J A 28	J A 36	J A 27	J A 27	J A 17
22	J A 19	J A 35	J A 37	J A 28	J A 25	E B 16	E B 16	J A 16	23	J A 43	35	41	J A 44	J A 51	G	32	30	J A 38	J A 20	J A 17	20	21	E B 16	E B 16
23	E B 16	E B 16	E B 16	J A 16	J A 17	E B 16	J A 19	J A 17	25	G	G	G	38	44	J A 53	J A 43	J A 41	J A 35	J A 32	J A 29	J A 18	J A 22	E B 16	E B 16
24	E B 16	E B 16	E B 16	J A 20	J A 20	J A 18	E B 16	E B 16	G	32	38	42	J A 42	40	37	36	28	J A 21	19	J A 18	J A 40	J A 32	J A 22	34
25	J A 28	J A 38	J A 51	J A 19	J A 21	E B 16	E B 16	J A 17	23	29	G	38	J A 40	40	35	G 30	G J A 26	J A 24	J A 39	J A 39	J A 24	20	18	J A 20
26	E B 16	20	20	E B 16	E B J A 18	21	J A 26	J A 28	G	G 19	G 26	G 25	36	36	J A 38	J A 31	31	J A 32	22	20	J A 20	18	E B 16	20
27	J A 24	20	18	J A 16	20	E B 16	20	E B 16	23	G	34	38	36	J A 37	J A 41	J A 32	J A 26	J A 43	J A 34	J A 25	J A 20	21	E B 16	20
28	23	J A 17	J A 35	J A 28	J A 26	J A 28	J A 17	E B 16	22	30	35	J A 51	35	G 34	G 26	G	G	18	E B 16	E B 16	E B 16	20	E B 16	J A 21
29	J A 27	18	J A 17	J A 20	E B 16	19	E B 16	E B 16	22	G	J A 46	J A 60	G 34	G 33	G 28	G 24	J A 25	G	E B 16	J A 25	E B 16	E B 16	19	E B 16
30	E B 16	22	J A 34	E B 16	E B 16	E B 16	20	E B 16	G	30	J A 48	J A 64	J A 40	J A 45	J A 42	J A 35	J A 33	J A 48	J A 30	J A 27	J A 19	J A 25	J A 20	J A 22
31	J A 44	J A 31	J A 22	J A 22	J A 20	E B 16	J A 32	18	23	G	32	J A 40	37	J A 40	G J A 24	41	J A 45	J A 52	J A 40	26	26	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	31	31	31	31	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	E B 16	26	30	34	38	36	36	35	33	29	J A 26	J A 20	J A 20	20	16	16	E B 16
U Q	J A 19	J A 20	J A 22	J A 20	J A 20	J A 16	19	18	G	31	38	J A 45	J A 40	40	J A 38	J A 40	J A 33	J A 35	J A 32	J A 26	J A 24	J A 22	J A 19	J A 19
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	G	G	G 34	G	G	G	G	G 26	20	E B 17	E B 17	E B 16	E B 16	E B 16	E B 16

DEC. 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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	G 20	28	30	U Y 34	41	G 36	G 33	U Y 35	32	28	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	17	26	30	G 34	37	G 30	G	G 32	G	28	17	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
3	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	26	30	36	36	G 35	G 33	36	G 31	28	G 20	E B 16	E B 16	17	E B 16	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	E B 17	25	32	U Y 33	35	36	U Y 36	35	33	27	G 22	19	18	E B 16	E B 16	E B 16	E B 16
5	E B 16	E B 16	19	E B 16	E B 16	E B 16	E B 16	16	24	30	36	36	G	35	35	32	G 26	21	17	16	20	20	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	E B 16	G	G	34	36	G	G	G	G	29	20	20	18	16	E B 16	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	E B 16	26	G	33	G 34	G 30	35	33	G	26	G 19	17	E B 16	E B 16	E B 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	E B 16	26	G	34	G	G 22	G 19	G	33	26	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	29	33	38	U Y 39	G	G	35	G 25	28	24	28	18	E B 16	E B 16	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	E B 16	27	30	G 30	G 31	U Y 35	G	34	63	43	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	31	34	G	G 32	36	U Y 34	32	G 18	21	E B 16	21	17	E B 16	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	31	34	U Y 34	36	G 25	G	34	G	20	24	24	E B 16	E B 16	E B 16	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	34	41	42	36	39	48	30	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	U Y 25	G	34	40	38	G	G	G 26	U Y 28	U Y 18	E B 16	E B 16	E B 16	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	E B 16	U Y 25	31	38	43	39	37	36	G	G	26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
16	E B 16	E B 16	22	27	E B 16	E B 16	E B 16	E B 16	G 26	32	38	39	43	38	40	32	31	29	21	24	18	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	E B 16	25	G 24	G 27	G 29	G 30	U Y 39	E B 67	35	28	30	26	18	23	20	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	E B 16	26	G	G	38	40	G 34	36	33	29	28	E B 16	18	E B 16	E B 16	E B 16	E B 16
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	G	37	38	G	G 26	34	28	19	16	E B 16	16	E B 16	E B 16	E B 16
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	E B 52	E B 44	U Y 46	40	40	50	31	24	18	E B 16	16	E B 16	E B 16	E B 16
21	E B 16	20	16	18	E B 16	20	E B 16	E B 16	G 22	30	G	37	G	37	G 28	36	28	21	20	E B 16	30	25	E B 16	E B 16
22	E B 16	19	18	18	17	E B 16	E B 16	E B 16	U Y 23	31	35	40	40	43	G	32	28	27	16	E B 16	E B 16	E B 16	E B 16	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	G	G	37	42	41	G 32	28	23	23	20	E B 16	16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 30	37	41	39	40	37	35	28	G 20	16	E B 16	32	19	18	32
25	24	30	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	29	G	37	37	37	35	U Y 30	G 26	21	28	35	18	E B 16	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	G 19	G 26	G 25	36	U Y 36	35	G 31	27	26	20	E B 16	E B 16	E B 16	E B 16	E B 16
27	19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	G	34	36	36	36	G 34	30	G 26	24	23	22	E B 16	E B 16	E B 16	E B 16
28	19	E B 16	23	19	E B 16	23	E B 16	E B 16	22	30	34	37	35	G 34	G 26	G	G	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16
29	22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	G	33	46	G 34	G 33	G 28	G 24	G 25	G	E B 16	E B 16	E B 16	E B 16	E B 16	E B 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 16	G	U Y 30	43	38	36	37	38	32	29	21	20	E B 16	E B 16	E B 16	E B 16	E B 16
31	18	E B 16	E B 16	20	16	E B 16	E B 16	E B 16	23	G	31	35	36	37	G 24	32	39	28	28	20	20	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	31	31	31	31	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	E B 16	26	G	34	37	36	36	34	32	28	21	17	E B 16	E B 16	E B 16	E B 16	E B 16
U Q	16	E B 16	16	16	E B 16	E B 16	E B 16	16	26	30	36	40	38	37	36	34	29	24	21	18	17	16	E B 16	E B 16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	34	G 34	G 35	G	G 34	G 32	G	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16

DEC.2014 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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	17	16	20	16	16	16	18	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	16	16	16	16	19	20	17	18	16	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	16	16	16	17	16	16	16	14	16	16	16	16	16	16
4	16	16	16	16	16	16	16	17	16	16	16	16	16	16	16	14	16	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	16	16	16	20	20	20	20	16	18	15	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	17	18	20	20	21	20	21	19	20	16	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	16	19	20	19	20	19	16	16	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	16	16	16	20	16	16	20	20	17	16	16	16	16	16	16	16
9	16	16	16	16	16	16	16	16	16	20	16	21	21	19	20	20	16	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	20	24	25	20	23	16	20	16	14	16	16	16	16	16	16
11	16	16	16	16	16	16	16	16	16	16	19	20	27	18	20	18	16	16	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	16	16	16	17	19	20	24	18	15	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	20	19	20	19	24	24	22	18	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	20	20	20	20	20	20	20	20	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	16	16	16	20	21	24	22	20	20	14	16	16	16	16	16	16
16	16	16	16	16	16	16	16	14	16	16	24	23	24	25	20	22	16	16	15	14	15	16	16	16
17	16	16	16	16	16	16	16	16	16	16	19	21	20	21	67	20	16	16	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	20	20	21	20	24	21	20	20	16	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	17	19	20	26	20	20	20	16	16	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	16	16	52	44	30	29	21	20	16	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	16	19	18	23	20	21	19	16	16	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	17	17	24	20	19	22	16	16	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	18	19	20	21	21	18	16	16	15	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	16	20	20	21	20	19	19	16	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	16	16	17	20	20	18	16	16	16	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	16	16	20	21	17	21	16	16	16	14	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	16	17	20	20	22	21	21	20	17	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	17	20	20	22	21	16	16	16	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	16	18	21	21	21	21	20	16	14	16	16	16	16	16	16
31	16	16	16	16	16	16	16	16	16	16	16	18	16	20	16	16	14	15	16	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	16	18	20	20	20	20	19	16	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	17	20	20	21	21	21	20	18	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	16	16	18	19	19	17	16	16	15	16	16	16	16	16	16

DEC.2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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	305	307	316	282	274	277	316	336	351	338	346	340	305	313	315	326	336	337	338	301	314	328	350	294
2	290	311	331	307	277	259	300	345	373	357	R 336	341	319	311	308	317	339	338	327	312	317	299	308	360
3	334	307	298	288	285	279	304	347	371	352	345	335	345	319	323	317	335	336	327	320	319	340	342	299
4	304	308	321	300	328	277	298	336	373	337	336	R 329	R	U R 332	324	R 319	326	342	358	319	305	342	333	300
5	297	291	278	294	336	299	287	321	354	363	320	335	R 326	R 330	315	322	331	334	315	337	364	338	V 266	265
6	294	311	324	309	318	295	294	320	H 338	361	332	340	341	R 329	344	319	330	346	352	333	303	337	302	284
7	296	312	291	298	321	H 319	296	344	369	364	324	R 339	322	U R 333	318	321	322	336	336	339	320	347	276	271
8	294	318	381	V 346	264	280	319	327	367	352	339	344	R 330	330	323	333	344	338	348	319	322	300	289	317
9	316	297	335	315	289	289	324	338	373	355	355	323	R 338	330	311	R 311	325	336	331	317	321	322	318	287
10	303	298	300	287	302	292	314	338	368	371	340	335	332	342	313	317	334	348	348	314	318	367	295	295
11	289	295	312	315	313	308	313	340	372	356	347	339	327	315	R 325	335	336	334	337	322	336	359	333	276
12	279	294	282	311	326	306	302	347	359	342	354	334	321	317	330	312	321	331	356	306	329	330	366	275
13	266	265	318	378	360	285	288	288	351	357	345	341	318	308	U R 317	331	333	337	341	340	307	324	332	314
14	287	289	305	317	330	278	294	323	356	348	349	333	328	R 319	309	311	308	R	323	333	337	308	300	301
15	279	302	321	303	308	276	288	307	346	R	336	R 326	306	R 314	313	327	338	339	350	319	295	328	312	284
16	268	265	283	313	293	273	289	325	341	R	352	346	326	R	313	321	323	333	343	322	311	325	334	284
17	273	273	302	339	342	265	276	346	343	348	U R 346	R 337	331	328	R	R 317	312	341	351	319	329	311	348	300
18	289	282	319	297	300	286	291	315	357	R	347	345	321	U R 314	R	320	R 307	324	332	325	321	314	300	288
19	285	277	304	337	377	282	298	311	347	339	362	311	321	R 320	U R 327	321	324	326	324	311	326	332	300	291
20	286	291	291	282	297	269	289	323	356	334	U R 330	U R 331	R 314	U R 314	305	312	316	326	344	317	306	315	290	276
21	279	291	314	318	342	280	296	312	350	346	349	338	309	U R 319	314	319	319	329	321	322	308	285	276	278
22	296	304	317	295	290	271	284	308	341	347	328	U R 314	U R 317	305	313	310	318	330	336	319	329	311	300	301
23	291	314	290	289	279	298	304	311	344	347	R 332	332	315	R 306	U R 315	313	325	341	324	336	326	318	310	266
24	260	293	295	295	297	273	298	315	330	342	R	299	306	R 308	322	322	337	R 297	308	346	344	294	307	284
25	278	294	284	288	282	276	300	320	343	336	330	342	R 323	R	R 307	R 304	345	337	U R 309	320	305	343	326	280
26	275	287	299	332	322	287	294	325	342	339	330	352	319	R	313	319	318	338	324	336	309	300	338	332
27	296	303	329	301	343	297	327	328	352	357	340	329	322	330	322	330	322	348	331	351	333	308	331	311
28	298	293	325	313	302	281	302	328	358	350	U R 353	R 365	355	339	320	328	343	360	348	325	344	312	311	335
29	301	289	317	307	276	302	324	333	374	364	319	328	342	U R 320	R	313	R 319	333	323	339	324	313	279	285
30	293	330	324	281	255	279	294	325	344	359	365	R 342	329	308	308	329	337	334	324	329	333	318	311	304
31	291	295	326	V 390	261	273	291	338	379	370	362	348	354	334	331	348	348	350	327	335	333	314	290	287
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	28	30	31	30	28	28	31	31	30	31	31	31	31	31	31
MED	291	295	314	307	302	280	298	325	354	351	342	337	322	319	315	319	326	336	332	322	321	318	310	288
U Q	297	307	324	317	328	295	304	338	369	358	349	342	331	330	323	327	337	341	348	336	333	337	333	301
L Q	279	289	295	294	282	276	291	315	344	342	332	329	318	314	313	313	319	333	324	319	309	311	295	280

DEC.2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L	L								
2										L	L	L	L	U L 416	L	L		439						
3											L	L	U L 390	L	L									
4										L	L	L	L	L		L								
5											L	L	L	L	L	L	L							
6										L	L	L	L	L	L	L								
7									L 404	L	L	L	L	L	L	L	A							
8											L	L	L	L	L	L	427							
9											L	L	L	L	L									
10											L	L	L	L	L	A								
11									A		L	L	L	L	L	L	L							
12											L	L	L	L	L	L	L							
13										L	L	L	L	L	L	A								
14											L	L	L	L	L	L	L							
15											L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17										L	L	L	L	L		L								
18										L	L	L	L	U L 418	L	L								
19											L	L	L	L	L	L								
20									451	A			L	L	L	L								
21									455	426	L	L	L	L	L	L								
22											L	L	L	L	L									
23											L	L	L	L	L									
24											L	A	L	L	L	L		433						
25									422	U L 420	L	L	L	L	L	U R 419								
26										L	L	L	U L 421	U L 376	L	L								
27								L	510		L	L	L	L	L	L								
28									422	441	L	L	L	L	L	L		424						
29									447		L	L	L	L	L	L	L							
30											L	L	L	L	L	L	L							
31									498		L	L	L	L	L	L	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									8	3			2	3		1	1	3						
MED									449	426			U L 406	U L 416		U R 419	427	433						
U Q									476	441				U L 418				439						
L Q									422	U L 420				U L 376				424						

DEC.2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											232	232	264	244	236	238								
2										226	252	224	222	238	238	236		214						
3											238	236	242	224	246									
4										226	228	240	248	226		236								
5											218	228	224	224	236	246	228							
6										228	228	228	228	218	218	214								
7									204	210	262	254	242	232	222	238	224							
8											236	232	236	258	240	244	214							
9											222	254	250	226	226									
10											248	244	248	234	236	260								
11									206		230	222	236	240	260	230	216							
12											228	248	260	256	240	226	242							
13										228	238	228	246	236	248	236								
14											232	220	246	234	264	240	224							
15											232	252	238	244	230	226								
16										230	222	214	230	234	230	230								
17										224	222	230	238	244		248								
18										236	224	234	228	238	262	222								
19											228	276	252	238	256	242								
20									220	224			242	260	246	246								
21									218	226	232	226	272	266	248	240								
22											240	272	228	254	252									
23											230	232	222	272	236									
24											212	206	242	260	248	248		202						
25									208	216	234	228	226	226	268	220								
26										218	234	218	236	260	230	222								
27								220	206		236	238	242	242	234	230								
28									210	212	238	224	214	228	240	250		204						
29									200		226	254	240	246	248	242	224							
30											224	236	216	270	256	258	230							
31									210		218	234	220	228	252	236	218							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	9	13	30	30	31	31	29	27	9	3						
MED								220	208	226	231	232	238	238	240	238	224	204						
U Q									214	228	236	244	246	256	252	246	229	214						
L Q									205	217	224	226	228	228	235	230	217	202						

DEC.2014 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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	264	250	252	302	334	288	234	228	216	210	H 216	A 210	H 182	220	228	216	220	212	212	210	224	218	204	246
2	270	256	230	230	300	390	268	222	210	214	204	214	212	190	218	214	210	188	194	192	222	248	238	202
3	226	244	268	282	302	314	278	238	206	216	212	200	196	200	212	214	220	206	194	222	240	212	208	252
4	264	272	248	272	244	306	272	210	202	220	214	198	H 178	212	216	220	218	224	196	206	234	220	206	244
5	262	294	336	278	224	232	308	254	210	212	206	206	206	206	196	222	218	204	216	210	204	222	270	330
6	286	264	242	252	252	268	282	234	192	210	200	200	210	204	204	206	212	210	198	208	254	204	226	266
7	276	262	304	288	248	H 208	268	234	A	200	H 180	208	208	206	210	228	A	202	218	194	226	220	282	304
8	290	248	218	236	366	332	258	246	220	218	208	206	210	210	210	H 210	A	210	202	220	220	212	266	254
9	230	262	220	220	298	308	228	234	204	222	214	212	204	212	212	218	228	220	196	188	210	210	224	258
10	264	304	278	296	270	272	266	232	200	210	216	220	210	210	202	A	228	204	194	218	230	200	224	282
11	300	296	270	252	264	272	262	222	A	208	210	206	212	206	224	212	214	204	194	220	216	204	224	260
12	304	300	290	254	254	248	258	222	208	218	220	214	210	204	216	218	228	204	202	230	214	222	204	328
13	352	358	264	202	228	332	346	286	224	220	212	224	216	210	226	A	220	206	198	200	244	210	226	240
14	298	286	254	256	224	312	272	244	214	216	208	208	208	214	214	218	A	204	192	202	198	236	248	224
15	296	262	246	230	254	300	290	270	226	220	220	226	208	208	216	220	220	206	192	204	244	222	198	286
16	330	330	318	276	268	312	290	242	222	222	222	208	218	208	212	208	216	214	200	214	224	208	200	286
17	318	326	262	222	234	316	326	228	218	220	222	H 210	218	222	280	222	216	218	202	220	226	232	220	256
18	308	302	260	286	278	280	272	244	226	224	218	206	212	194	208	212	210	212	202	212	200	234	206	252
19	286	314	274	238	204	290	300	262	228	228	224	204	220	218	218	224	214	200	206	204	212	218	242	240
20	284	288	282	298	278	316	290	240	190	A	244	236	238	220	220	244	210	208	204	206	242	208	240	276
21	304	306	258	254	232	338	280	254	178	218	224	218	H 208	214	220	224	224	210	200	210	220	280	270	286
22	260	272	254	276	236	340	316	262	224	214	220	226	216	H 220	224	228	218	224	194	218	218	232	242	224
23	270	250	266	274	290	258	238	262	222	212	218	216	208	216	224	222	212	208	218	196	204	200	214	272
24	302	268	266	282	278	310	292	248	228	218	206	A	214	220	222	198	220	E A 218	202	186	218	234	230	352
25	334	370	304	294	282	320	280	244	E A 220	212	H 208	212	210	208	H 194	E A 216	218	208	184	220	220	202	188	246
26	328	310	280	242	258	308	290	250	224	214	206	208	186	220	220	210	214	204	198	212	216	246	212	220
27	302	264	242	244	226	266	226	E B 224	160	222	218	212	204	216	210	206	220	214	204	212	200	250	222	276
28	308	294	278	274	270	346	278	234	E A 214	198	H 210	216	196	198	200	220	222	204	188	202	200	220	238	228
29	270	274	260	272	318	278	216	246	190	202	206	244	212	204	208	220	220	196	182	202	220	220	264	248
30	232	232	236	300	406	334	276	222	220	224	A	206	194	H 202	236	226	226	204	186	224	208	218	248	258
31	302	254	258	200	362	352	294	226	160	210	H 178	H 202	206	198	196	222	A	206	234	216	208	212	254	276
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	29	30	30	30	31	31	31	29	27	31	31	31	31	31	31	31
MED	290	274	262	272	268	308	278	240	214	216	213	210	210	210	216	218	218	206	198	210	220	220	226	258
U Q	304	304	278	282	298	332	290	250	223	220	220	216	212	216	222	222	220	212	204	218	226	232	248	282
L Q	264	262	248	238	236	272	262	228	201	210	206	206	204	204	208	212	214	204	194	202	208	210	208	244

DEC.2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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								136	104	102	100	A	108	108	98	100	104	B						
2								A	122	116	116	104	106	100	108	102	102	A						
3								E B 162	104	98	96	94	116	108	A	116	124	136						
4								B	110	110	110	104	104	104	106	106	106	A						
5								A	108	98	100	100	98	A	A	A	112	A						
6								B	112	104	104	104	100	100	100	100	100	A						
7								B	100	96	102	114	114	A	102	96	106	A						
8								B	106	102	102	102	104	102	102	102	102	140						
9								128	110	110	98	98	104	104	100	108	106	A						
10								B	110	110	108	114	108	110	110	A	A	A						
11								B	110	100	102	102	112	108	104	104	108	A						
12								B	102	100	110	96	114	108	104	108	108	A						
13								B	108	104	100	100	98	102	A	A	A	A						
14								B	104	104	102	98	100	100	98	102	104	A						
15								B	106	100	100	100	100	A	A	104	110	A						
16								A	124	106	106	104	104	104	A		A	A						
17								B	116	112	112	112	112	112	B	108	108	A						
18								B	118	106	102	100	104	108	108	A	114	A						
19								B	108	106	102	102	104	98	108	108	112	A						
20								B	104	98	B	B	104	110	A	A	A	A						
21								B	136	104	102	96	104	102	122	110	108	A						
22								A	108	102	98	102	100	98	106	106	106	A						
23								A	114	102	102	104	104	100	100	A	A	A						
24								B	110	104	102	100	104	102	102	102	106	158						
25								A	104	100	100	110	110	100	106	108	106	A						
26								A	112	104	104	106	104	104	A	112	104	A						
27								B	112	102	100	100	100	98	A	A	110	A						
28								B	110	110	104	100	108	110	112	106	106	B						
29								B	106	106	100	A	A	110	110	108	108	122						
30								B	112	114	102	104	98	A	A	A	A	A						
31								A	108	94	106	116	116	114	110	110	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	31	31	30	28	30	27	21	22	24	4						
MED								132	110	104	102	102	104	104	106	106	106	138						
U Q								E B 162	112	106	104	104	108	108	109	108	109	149						
L Q								128	106	100	100	100	100	100	101	102	105	129						

DEC.2014 h'E (KM)

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 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	92	B	B	B	B	B	154	148	126	110	92	88	92	172	152	148	152	B	90	B	B	B	B
2	B	B	B	92	92	88	90	96	158	98	96	194	98	G	98	G	122	92	86	B	B	B	112	92
3	B	B	B	B	B	B	B	G	142	116	104	104	100	100	98	98	94	98	100	98	94	92	90	B
4	B	B	B	B	98	108	102	B	180	126	114	108	108	118	114	106	142	86	86	86	86	B	100	94
5	96	98	90	B	92	B	92	92	116	188	110	108	G	106	100	100	94	92	92	90	86	86	86	B
6	B	B	B	98	B	B	100	B	G	G	104	106	G	G	G	G	188	94	96	98	90	90	92	86
7	94	B	B	B	B	B	136	B	224	G	128	102	100	102	108	G	100	84	84	84	B	96	98	B
8	B	B	B	B	B	B	138	142	148	G	204	G	90	86	G	194	206	G	98	86	88	B	92	B
9	114	B	B	B	B	B	B	132	128	128	116	108	G	G	116	100	108	98	94	92	90	B	B	92
10	B	B	B	B	B	B	B	104	190	168	100	100	162	G	88	86	84	90	B	90	B	B	B	B
11	B	90	B	100	102	B	B	B	G	112	108	G	98	94	188	226	96	92	92	88	88	90	96	B
12	B	B	B	B	B	B	B	B	126	144	108	100	98	90	G	220	G	90	88	86	88	94	B	B
13	B	B	B	B	B	B	B	B	120	G	122	106	104	106	98	92	94	92	B	B	B	B	90	B
14	B	104	98	B	B	B	B	B	176	G	110	102	104	G	G	90	188	94	108	B	88	B	B	B
15	B	B	B	B	B	B	B	B	188	134	108	104	102	100	96	G	G	88	B	B	B	B	B	B
16	B	B	94	94	B	B	96	92	90	128	110	110	110	106	100	100	86	86	86	84	86	96	86	82
17	82	B	B	B	98	88	B	B	218	100	100	100	100	204	B	88	88	84	84	84	82	82	84	B
18	B	B	94	B	B	B	B	B	156	G	G	146	120	98	96	94	140	88	B	88	B	B	B	B
19	B	B	B	B	B	B	B	B	G	G	G	128	106	G	98	110	92	90	88	86	84	B	B	B
20	B	B	B	B	100	B	B	B	180	G	B	B	112	108	96	92	90	90	88	90	90	B	B	B
21	B	94	96	96	100	94	102	B	104	206	G	140	G	134	96	114	108	98	96	102	92	92	106	98
22	98	92	96	94	90	B	B	92	122	110	132	114	104	100	G	164	118	90	84	84	84	84	B	B
23	B	B	B	98	98	B	98	94	214	G	G	G	134	110	102	98	92	90	102	92	90	88	B	B
24	B	B	B	100	92	100	B	B	G	136	112	104	116	108	208	106	104	88	88	98	104	100	96	90
25	88	88	92	90	94	B	B	104	102	100	G	98	92	104	102	102	92	92	90	86	86	100	88	88
26	B	90	106	B	98	100	98	92	G	94	96	96	104	106	98	98	90	82	86	84	84	102	B	98
27	94	94	90	98	94	B	94	B	146	G	118	104	104	100	98	96	94	90	86	86	92	84	B	88
28	84	84	90	90	92	90	94	B	196	188	110	118	124	100	100	G	G	156	B	B	B	96	B	90
29	84	106	96	90	B	100	B	B	124	G	106	98	100	100	94	92	88	G	B	96	B	B	104	B
30	B	102	102	B	B	B	96	B	G	232	104	102	102	100	96	96	96	94	100	110	100	96	96	100
31	98	104	92	88	102	B	98	98	148	G	106	100	98	94	92	88	84	84	82	82	82	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	10	13	13	13	15	8	14	12	25	19	25	27	27	25	25	26	28	29	24	26	22	17	16	12
MED	94	94	94	94	98	97	98	97	148	128	110	104	104	100	98	99	95	90	88	88	88	92	94	91
U Q	98	103	97	98	100	100	102	118	184	168	115	110	110	107	105	110	120	94	96	92	90	96	99	96
L Q	84	90	91	90	92	89	94	92	123	110	104	100	98	99	96	92	91	88	86	86	86	87	89	88

IONOSPHERIC DATA STATION Yamagawa

DEC.2014 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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						H 1	H 2	C 1	C 1	L 2	L 2	L 1	HL 11	HL 11	H 1	HL 11		F 1				
2				F 1	F 1	F 2	F 1	L 1	HL 21	LH 12	L 2	HL 11	L 1		L 1		C 2	L 1	F 2				F 1	F 1
3									HL 11	C 1	C 2	C 2	C 1	C 1	L 2	L 2	L 2	L 2	F 1	F 1	F 1	F 1	F 2	
4					F 1	F 1	F 1		HL 11	CL 21	CL 11	CL 11	CL 11	CL 11	CL 11	CL 22	HL 12	L 3	FF 31	F 2	F 1		F 1	F 2
5	F 1	F 1	F 2		F 1		F 1	L 1	C 2	H 1	C 1	C 1		CL 11	L 1	L 2	L 1	L 2	F 2	F 2	F 5	F 4	F 1	
6				F 1			F 1				C 1	C 1					H 1	L 2	F 2	FF 21	F 1	F 1	F 1	F 2
7	F 1						F 1		H 1		C 1	L 1	L 1	L 1	C 1		L 1	L 2	F 2	F 1		F 1	F 1	
8							F 1	H 1	H 1		H 1		L 1	L 1		H 1	H 1		F 1	F 2	F 1		F 1	
9	F 1							H 1	C 1	C 2	C 1	C 1			C 1	L 1	CL 11	L 2	F 4	F 2	F 1			F 1
10								C 1	H 1	H 1	L 1	L 1	HL 11		L 1	L 4	L 3	L 1		F 1				
11		F 1		F 1	F 1					C 1	C 1		L 1	L 1	HL 11	HL 11	L 1	L 2	F 1	F 5	F 2	F 2	F 1	
12									C 2	H 1	CL 11	C 1	L 1	L 1		H 1		L 2	F 2	F 4	F 2	F 1		
13									C 1		C 1	C 2	C 2	C 2	L 2	L 2	L 1	L 1					F 1	
14		F 1	F 1						H 1		C 1	C 1	C 1			L 1	H 1	L 1	F 1		F 1			
15									HC 11	H 1	C 2	C 1	C 1	L 1	L 1			L 2						
16			F 3	F 3			F 1	L 2	L 1	CL 11	C 1	C 1	C 2	C 1	LL 11	L 1	L 2	L 2	F 3	F 2	F 2	F 1	F 1	F 1
17	F 2				F 1	FF 11			HL 11	L 1	L 1	L 1	L 1	HL 11		L 1	L 2	L 2	F 1	F 1	F 1	F 2	F 1	
18			F 1						H 1			H 1	C 1	L 1	L 2	L 1	HL 11	L 3		F 1				
19												C 1	C 1		L 1	CL 12	L 3	L 2	F 2	F 2	F 1			
20					F 1				H 1				C 1	C 1	L 2	L 3	L 3	L 2	F 2	F 1	F 1			
21		F 3	F 1	F 2	F 1	F 3	F 1		L 1	H 1		H 1		H 1	L 1	CL 21	C 2	L 2	FQ 21	FFF 11	F 5	F 5	FF 11	F 1
22	F 1	F 3	FF 31	FQ 11	FF 21			L 1	C 1	C 1	H 1	C 1	C 2	C 2		HL 11	CL 11	L 2	F 1	F 2	F 1	F 1		
23				F 1	F 1		F 1	L 1	H 1				H 1	C 3	C 2	L 2	L 2	LQ 21	FF 12	F 2	F 1	F 1		
24				F 1	F 2	F 1				H 1	C 1	C 1	C 1	C 1	H 1	C 2	CL 11	LC 11	F 1	F 1	FF 41	F 5	F 2	F 8
25	FQ 41	FQ 31	F 2	FQ 11	F 1			L 2	C 1	C 2		L 1	L 2	CL 11	CL 12	LL 11	L 1	L 3	F 7	F 6	F 2	F 1	F 1	F 1
26		F 1	F 1		F 1	F 1	F 1	L 2		L 1	L 1	L 1	CL 11	CL 11	LL 21	LL 11	L 1	LQ 31	F 2	F 1	F 1	F 1		F 2
27	F 2	F 1	F 1	F 1	F 1		F 1		H 1		C 1	C 1	C 1	C 1	L 1	LQ 11	L 1	L 3	F 4	F 4	F 1	F 1		F 1
28	F 1	F 1	FQ 31	FQ 31	F 2	F 3	F 1		HL 11	HL 11	CL 11	CC 11	CL 11	L 1	L 1			H 1				F 1		FF 11
29	F 2	F 1	F 1	F 2		F 1			C 1		C 1	L 2	L 1	L 1	L 1	L 1	L 1			F 1			F 1	
30		F 1	F 1				F 1			HL 11	C 3	C 2	C 1	L 1	L 3	L 2	L 2	L 2	FF 21	FF 12	FQ 11	FQ 11	FQ 11	FF 11
31	FQ 31	FF 13	FF 21	F 3	F 1		F 1	L 1	H 2		C 2	L 1	L 1	L 1	L 1	LC 11	LL 32	L 2	F 3	F 2	FF 12			
	00	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																								

DEC.2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 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 56	X 54	X 49	X 44	X 45	X 57	X 52													X 96	X 94	X 103	X 88	X 64
2	X 48	X 46	X 43	X 38	X 33	X 33	X 34													X 99	X 94	X 82	X 86	X 73
3	X 48	X 42	X 43	X 39	X 39	X 40	X 49													X 100	X 99	X 95	X 86	X 58
4	X 52	X 50	X 49	X 49	X 41	X 38	X 39													X 122	X 100	X 109	X 109	X 70
5	X 61	X 50	X 49	X 52	X 60	X 33	X 34													X 115	X 106	X 84	X 68	X 50
6	X 56	X 62	X 51	X 53	X 41	O X 38	X 38													X 79	X 74	X 81	X 60	X 49
7	X 46	X 41	X 40	X 45	X 44	X 30	X 31													X 114	X 109	X 100	X 75	X 75
8	X 75	X 78	X 75	X 38	X 26	X 34	X 44													X 81	X 86	X 83	X 72	X 80
9	X 72	X 56	X 56	X 34	X 36	X 36	X 40													X 117	X 105	X 89	X 72	X 56
10	X 43	X 40	X 41	X 44	X 40	X 36	X 37													X 116	X 114	X 90	X 60	X 39
11	X 43	X 42	X 48	X 47	X 51	X 42	X 38													X 113	X 96	X 89	X 72	X 51
12	C	X 37	C	X 40	X 46	C	X 38													X 125	X 116	X 107	X 82	X 54
13	X 48	X 54	X 69	X 59	X 36	X 29	X 28													X 95	X 70	X 72	X 68	X 52
14	X 42	X 43	X 44	X 39	X 33	X 32	X 33													X 152	X 136	X 114	X 110	X 87
15	X 65	X 64	X 59	X 50	X 38	X 32	X 34													X 92	X 89	X 92	X 87	X 50
16	X 48	X 53	X 59	X 65	X 48	X 45	X 50													X 104	X 96	X 85	X 84	X 57
17	X 51	X 52	X 58	X 51	X 46	X 33	X 33													X 99	X 88	X 81	X 82	X 69
18	X 47	X 48	X 58	X 50	X 37	X 37	X 35													X 146	X 126	X 114	X 122	X 92
19	X 62	X 58	X 61	X 53	X 42	X 32	X 31													X 121	X 114	X 101	X 78	X 76
20	X 62	X 57	X 54	X 48	X 45	X 38	X 40													X 91	X 86	X 89	X 75	X 63
21	X 59	X 64	X 62	X 62	X 40	X 34	X 36													X 128	X 129	X 101	X 83	X 76
22	X 73	X 70	X 60	X 50	X 39	X 34	X 34													X 85	X 72	X 71	X 71	X 63
23	X 48	X 49	X 48	X 46	X 39	X 44	X 39													O X 162	X 150	X 150	X 121	X 91
24	X 72	X 79	X 65	X 58	X 51	X 38	X 40													O X 174	X 132	X 116	X 78	X 62
25	X 55	X 55	X 46	X 45	X 38	X 40	X 40													X 144	X 131	X 134	X 106	X 64
26	X 57	X 57	X 60	X 57	X 48	X 44	X 41													X 105	X 92	X 75	X 79	X 54
27	X 39	X 43	X 47	X 39	X 30	O X 30	X 35													X 116	X 113	X 102	X 63	X 48
28	X 46	X 44	X 39	X 39	X 36	X 34	X 34													X 71	X 74	X 70	X 68	X 53
29	X 44	X 46	X 47	X 44	X 40	X 41	X 50													X 136	X 136	X 124	X 112	X 110
30	X 78	X 64	X 56	X 31	X 32	X 61	60	67												X 114	X 116	X 96	X 88	X 66
31	X 51	X 50	X 48	X 40	X 24	X 27	X 26													X 92	X 106	X 98	X 71	X 62
	00	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	30	31	31	30	31	1												31	31	31	31	31
MED	X 52	X 52	X 50	X 46	X 40	X 36	X 38	67												X 114	X 105	X 95	X 79	X 63
U Q	X 62	X 58	X 59	X 52	X 45	X 40	X 40													X 125	X 116	X 107	X 88	X 75
L Q	X 47	X 44	X 47	X 39	X 36	X 33	X 34													X 95	X 89	X 83	X 71	X 53

IONOSPHERIC DATA STATION Okinawa

DEC.2014 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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	43	38	R 39	51	46	60	99	114	112	113	104	125	129	125	108	98	90	90	88	97	82	58
2	42	40	37	32	27	27	28	63	91	94	108	126	105	107	126	123	118	109	104	93	88	76	80	67
3	42	36	37	33	33	34	43	73	113	118	122	126	124	123	132	118	115	110	97	94	93	89	80	52
4	46	44	43	43	35	32	33	64	88	101	125	132	141	U R 150	156	R 142	R 150	154	J R 155	116	94	103	103	64
5	55	44	43	46	54	27	28	59	108	112	118	130	142	R 144	139	R 154	J R 154	J R 146	120	109	100	78	62	R 44
6	50	56	45	47	35	32	32	56	99	100	113	124	J R 129	129	117	118	116	122	103	73	68	75	54	43
7	40	J R 35	34	39	38	24	25	58	106	85	80	114	135	131	127	126	137	129	111	108	103	94	68	68
8	69	R 72	69	R 32	20	28	38	51	104	109	102	104	115	128	132	128	124	115	103	75	80	77	R 66	74
9	66	50	50	28	30	30	34	49	90	102	109	98	U R 120	133	125	137	136	139	R 142	111	U R 99	R 83	66	50
10	37	34	35	38	34	30	31	50	94	102	101	108	128	129	135	138	R 128	128	R 122	R 110	J R 108	84	54	33
11	37	36	42	41	45	36	32	54	87	112	116	118	125	R 146	R 158	R 156	R 146	142	R 124	107	90	83	66	45
12	C	31	C	34	40	C	32	51	85	102	108	106	120	139	R D 148	C 128	J R 150	R 161	U R 146	119	110	101	76	48
13	42	48	63	53	30	23	22	44	105	116	115	117	114	132	139	U C 146	J R 146	130	116	89	66	66	62	46
14	36	37	38	33	27	26	27	50	91	107	115	114	125	142	U R 156	U R 175	U R 170	U R 176	U R 166	R 146	130	108	R 104	81
15	59	V 58	53	44	32	26	28	50	106	138	127	124	139	151	U R 159	U R 158	J R 148	134	117	86	83	86	81	44
16	42	47	53	59	42	39	44	58	100	137	139	124	113	120	127	131	129	125	119	98	90	79	78	51
17	45	46	52	45	40	27	27	55	93	125	148	129	126	R 146	R 144	J R 146	135	138	126	R 93	R 82	75	76	63
18	41	42	52	44	31	31	29	49	93	131	J R 144	142	140	U R 150	U R 160	R 164	R 159	R 151	R 152	140	120	R 108	116	86
19	56	52	55	47	36	26	25	46	84	113	130	100	116	137	R 152	R 150	R 148	J R 150	131	115	108	95	72	70
20	56	51	48	42	39	32	34	54	98	131	U R 155	125	R 146	R 147	R 145	U R 136	R 133	114	J R 106	85	80	83	69	57
21	53	58	56	56	34	28	30	48	95	123	136	133	127	138	U R 146	U R 148	R 147	U R 141	130	122	123	95	R 77	70
22	67	64	54	44	33	28	28	46	99	110	113	112	133	131	124	121	110	108	100	79	66	65	65	57
23	42	43	42	40	33	38	33	48	105	134	132	148	152	149	152	159	U R 156	R 154	U R 158	U R 156	U R 144	144	115	85
24	R 66	73	59	52	45	32	34	51	86	132	130	106	123	R 142	147	151	158	U R 157	U R 164	U R 168	126	J R 110	72	56
25	49	49	40	39	32	34	34	51	100	105	138	148	137	153	R 156	U R 170	J R 169	J R 172	J R 168	138	125	128	100	58
26	51	51	54	51	42	38	35	50	87	122	114	114	115	141	149	133	121	110	111	99	J R 86	R 69	73	48
27	33	37	41	33	24	24	29	46	79	92	116	120	118	139	138	R 143	148	R 149	132	110	107	96	57	42
28	40	38	33	33	30	28	28	44	86	91	117	122	103	97	106	115	131	112	85	65	68	64	62	47
29	38	40	41	38	34	R 35	R 44	45	95	80	89	116	132	151	U R 165	U R 158	U R 158	J R 158	153	130	130	118	106	104
30	72	58	50	25	26	F 54	F 51	F 59	96	121	119	97	111	110	139	J R 150	160	160	141	108	110	90	82	60
31	45	44	42	34	R 18	21	20	50	89	89	96	94	115	107	110	122	122	118	85	86	100	92	65	56
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	46	46	44	40	34	30	32	51	95	112	116	118	125	138	139	142	146	138	122	108	99	89	73	57
U Q	56	52	53	46	39	34	34	58	100	123	130	126	135	146	R 152	R 154	R 154	R 154	R 146	119	110	101	82	68
L Q	41	38	41	33	30	27	28	48	88	101	109	108	115	128	127	126	124	115	104	89	83	77	65	47

DEC.2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 548		L								
2											L	L	L	L	L	L	L							
3										L	L	L	L	L	L									
4									L		L	L	L	L	L		L							
5										L	L	L	L	L	L	L	L							
6									L	L	L	L	L	L	L	L								
7												L	L	L	L	L	L							
8											L	L	L	L	L									
9											L		L	L	L	L	L							
10											L		L	L	L	L								
11										L	L	L	L	L	L									
12											L	L	L	L	L	L								
13										L	L	L	L	L	L	L	L							
14									272	L	L	L		L	L	L	L							
15												L		L	L	L								
16										L		L		L	L	L								
17											L	L		L	B	L								
18											L	L	L	L	L	L								
19											L		L	U L 516	L									
20													L	L	L									
21										L	L		L	L	L									
22													L	L	L	L								
23												L	L		L	L								
24													L	L										
25											L	L	L	L	L	L								
26												L	L	L	L	L								
27											L	L	L	U L 560	L	L	L							
28									240		L		L	L	L	L	L							
29											L	L	L	U L 552	L	L	L							
30										L	L	A	A	A	L	L	L							
31											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					4										
MED									256					U L 550										
U Q														U L 556										
L Q														U L 532										

DEC.2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 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								188	240	U R 288	344	A	R 352	A	R 364	R 316	R 284	212	B					
2								A	U A 240	A	A	A	A	352	R 352	R 324	280	A	B					
3								172	240	292	324	R 384	U A 324	A	A	R 320	284	192	B					
4								A	236	292	320	R 344	356	352	336	U A 296	A	A	A					
5								B	244	288	324	B	A	A	A	A	272	A	A					
6								B	236	308	328	R 340	A	A	A	A	A	R 204	A					
7								172	232	284	U R 288	344	A	A	A	A	A	A	A					
8								A	240	304	340	A	U R 320	A	A	A	A	200	A					
9								A	244	U A 292	328	344	A	A	348	U R 356	A	220	B					
10								A	236	296	336	364	B	344	B	U R 268	R 272	A	A					
11								A	220	300	324	328	R 352	R 352	R 352	R 332	284	196	B					
12								A	236	292	328	A	A	A	352	336	292	200	A					
13								B	236	296	308	U A 348	A	A	A	A	A	220	B					
14								160	A	A	R 344	A	A	A	A	A 344	A	A	A					
15								B	228	U R 284	A	A	A	A	U R 356	336	A	A	A					
16								B	264	308	348	U A 360	A	A	A	A	296	208	A					
17								B	204	276	B	B	R	U R 340	B	B	A	A	A					
18								B	240	308	336	360	B	U R 372	U R 360	A	296	A	A					
19								B	248	312	A	368	A	R 392	A	A	292	A	A					
20								B	228	276	B	B	B	A	A	A	A	A	A					
21								A	228	304	332	R 348	B	A	A	332	A	A	A					
22								B	212	U R 296	332	U R 388	U A 368	360	A	U A 340	304	216	A					
23								B	236	304	340	R 364	R 360	A	A	A	A	R 204	A					
24								B	240	300	344	348	404	356	A	312	A	232	A					
25								B	236	284	A	340	356	A	A	A	A	A	A					
26								B	U A 228	288	328	R 360	U R 372	U R 300	U A 300	320	280	228	A					
27								B	212	284	R 308	340	344	A	A	A	A	A	A					
28								B	208	280	316	328	A	A	A	R 304	288	A 204	A					
29								B	224	U A 272	336	A	U R 352	R 360	R 364	R 328	280	A	A					
30								B	220	300	316	340	A	A	A	A	A	A	A					
31								B	212	A 284	304	A	A	R	R 328	A	292	220	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	30	29	25	20	12	11	11	16	15	15						
MED								172	236	292	328	348	354	R 352	R 352	326	284	208						
U Q								180	240	302	338	362	364	R 360	R 360	336	292	220						
L Q								166	224	284	318	340	348	U R 344	336	R 314	280	200						

DEC.2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC. 2014 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 13	J A 17	E B 13	E B 13	E B 13	E B 13	E B 13	G	28	G	G	34	G	40	G	G	G 24	24	E B 14	E B 13	E B 14	E B 13	E B 13	E B 13
2	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	17	27	33	J A 40	J A 45	43	G	G	G	G 20	J A 22	J A 18	J A 15	J A 16	E B 13	E B 13	E B 13
3	J A 16	18	E B 13	E B 13	E B 13	E B 13	E B 14	18	27	G	G	G 36	42	40	35	G	G 27	21	J A 18	E B 13	J A 18	J A 20	E B 13	E B 13
4	E B 13	E B 13	E B 13	J A 18	20	18	E B 13	J A 19	G	G	G	G	38	40	39	38	J A 32	J A 31	J A 26	J A 20	E B 13	J A 22	J A 16	E B 13
5	E B 13	E B 13	E B 14	E B 13	J A 19	E B 13	E B 13	E B 14	G 22	G	38	43	J A 45	J A 44	41	J A 36	J A 43	J A 48	J A 52	J A 29	J A 21	18	21	E B 13
6	E B 13	E B 13	E B 13	E B 13	E B 13	J A 32	E B 13	E B 16	G	G	37	45	J A 42	J A 44	J A 42	J A 37	J A 48	24	J A 32	J A 40	J A 27	J A 16	E B 13	E B 13
7	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	25	G	G	G	J A 39	42	36	38	29	23	J A 29	J A 21	J A 18	E B 13	E B 13	E B 14
8	19	E B 13	E B 13	E B 13	E B 13	18	E B 13	18	28	33	40	40	40	43	J A 37	J A 36	J A 36	22	J A 20	J A 22	J A 22	J A 21	E B 13	E B 13
9	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	30	34	42	42	J A 45	42	G	G	31	G 20	E B 14	E B 13	E B 13	E B 13	17	E B 13
10	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	17	G	G	G	G	E B 41	G	E B 40	35	G	23	J A 46	E B 13	E B 13	E B 13	E B 13	E B 13
11	E B 14	18	E B 13	E B 13	E B 13	E B 13	E B 13	17	28	33	36	37	G	G	G	G	G	22	E B 14	E B 13	J A 21	E B 13	E B 13	E B 13
12	C	E B 13	C	E B 13	E B 13	C	E B 14	17	27	G	36	38	J A 40	41	G 32	G 26	G	23	J A 24	J A 28	J A 17	E B 13	18	E B 13
13	E B 13	J A 19	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	J A 44	J A 43	40	42	J A 62	J A 43	G	E B 13	20	E B 15	E B 13	E B 13	E B 13
14	E B 13	E B 13	J A 21	E B 13	E B 13	E B 13	E B 13	G	24	29	G	40	J A 61	J A 104	J A 44	J A 44	J A 41	J A 46	J A 43	J A 23	J A 20	J A 20	J A 19	J A 20
15	J A 18	E B 13	18	E B 13	E B 13	E B 13	E B 13	E B 14	26	G	J A 40	J A 50	J A 56	J A 61	G 32	G	J A 34	J A 31	J A 30	J A 30	J A 19	J A 17	J A 20	20
16	19	20	E B 22	E B 18	E B 18	J A 28	E B 14	J A 19	G	33	41	J A 73	J A 49	J A 52	J A 62	J A 44	G	G	J A 30	J A 20	J A 20	J A 20	18	18
17	E B 13	E B 13	18	E B 13	E B 13	19	20	19	24	G	E B 40	E B 42	E B 41	G	E B 67	E B 43	J A 36	J A 43	J A 28	18	E B 13	J A 16	20	J A 17
18	E B 13	E B 13	E B 13	J A 18	J A 19	J A 15	E B 13	E B 14	G	G	G	G	E B 42	G	G	J A 38	G	J A 32	J A 28	E B 13	E B 13	E B 13	E B 13	E B 13
19	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	39	G	46	G	J A 44	42	G J 22	A 44	J A 22	J A 20	20	J A 16	E B 13	E B 13
20	E B 13	E B 13	E B 13	19	J A 16	J A 22	J A 21	E B 14	G	G	E B 67	E B 46	E B 48	42	44	J A 48	J A 79	J A 44	J A 26	J A 19	22	J A 22	J A 20	J A 21
21	E B 13	E B 13	J A 18	J A 25	J A 17	J A 25	E B 14	J A 17	G	32	G 26	G	E B 44	44	45	49	J A 49	J A 72	J A 46	J A 21	J A 21	18	E B 13	E B 13
22	E B 13	19	20	E B 13	J A 15	J A 29	J A 20	20	24	G	G	G	44	44	43	J A 50	G 29	G 20	J A 20	J A 21	25	22	E B 13	18
23	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	42	49	J A 58	41	J A 43	J A 45	23	J A 62	J A 45	J A 38	25	20	E B 14
24	E B 14	E B 13	E B 13	E B 13	J A 21	J A 30	J A 32	J A 17	G	G	39	G	G	43	J A 48	41	J A 37	G 23	J A 34	J A 22	J A 20	J A 22	E B 13	J A 19
25	19	J A 22	E B 13	E B 13	E B 13	J A 20	J A 28	E B 14	G	G	38	G	G	42	39	36	J A 44	J A 29	J A 32	J A 37	J A 20	18	J A 20	E B 13
26	18	19	18	J A 16	J A 24	18	E B 13	J A 16	J A 32	G 26	G	G	41	34	35	G 26	J A 27	G 22	J A 25	J A 21	E B 13	E B 13	E B 13	E B 13
27	E B 13	J A 24	J A 20	J A 20	J A 19	J A 17	20	E B 14	25	G	G	39	42	41	J A 40	J A 46	J A 40	J A 54	J A 50	J A 47	J A 44	J A 36	31	J A 20
28	J A 20	18	18	19	J A 32	J A 20	J A 23	J A 15	G	G	35	J A 47	J A 44	J A 41	J A 41	G	G	26	J A 54	J A 32	J A 40	J A 37	J A 43	J A 22
29	J A 24	J A 25	J A 19	J A 23	J A 17	19	19	E B 14	G	34	G 29	40	G 33	G	G 32	36	J A 40	J A 36	J A 27	J A 26	J A 34	23	E B 17	E B 17
30	E B 13	J A 20	E B 13	19	18	E B 13	E B 13	J A 18	G	G	42	J A 50	J A 69	J A 104	J A 51	J A 47	J A 34	J A 26	J A 34	20	J A 24	43	J A 20	17
31	E B 13	J A 43	18	J A 25	J A 19	E B 13	E B 13	E B 14	25	J A 32	36	40	41	G 32	G 25	J A 40	G 22	J A 34	J A 34	J A 32	J A 20	J A 19	18	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 13	E B 13	E B 13	E B 13	E B 13	14	E B 13	16	G	G	E G 36	39	42	41	40	38	J A 32	24	J A 28	J A 21	J A 20	18	E B 16	E B 13
U Q	16	J A 19	18	J A 18	J A 19	J A 20	J A 19	18	27	32	40	J A 44	J A 45	J A 44	J A 44	J A 44	J A 41	J A 36	J A 34	J A 29	J A 22	J A 22	J A 20	J A 18
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	G	G 40	G	G	G	G	23	20	E B 18	E B 15	E B 13	E B 13	E B 13

DEC. 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	28	G	G	34	G	40	G	G	G 23	24	E B 14	E B 13	E B 14	E B 13	E B 13	E B 13
2	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	16	26	33	38	41	41	G	G	G	G 18	21	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13
3	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G 14	26	G	G	G 35	40	39	U Y 35	G	G 20	20	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13
4	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	17	G	G	G	G	38	40	38	38	30	24	20	E B 13	E B 13	17	E B 13	E B 13
5	E B 13	E B 13	E B 14	E B 13	E B 13	E B 13	E B 13	E B 14	G 19	G	37	42	42	39	38	34	G 22	31	30	26	20	E B 13	E B 13	E B 13
6	E B 13	E B 13	E B 13	E B 13	E B 13	25	E B 13	E B 16	G	G	37	42	37	41	40	37	41	24	20	20	20	E B 13	E B 13	E B 13
7	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	24	G	G	G	39	40	36	36	28	23	21	17	E B 13	E B 13	E B 13	E B 14
8	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	17	27	32	38	38	39	41	37	36	35	22	17	16	E B 13	E B 13	E B 13	E B 13
9	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	28	32	42	41	41	40	G	G	30	G 17	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13
10	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	15	G	G	G	G	E B 41	G	E B 40	35	G	22	31	E B 13	E B 13	E B 13	E B 13	E B 13
11	E B 14	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13	16	28	32	36	37	G	G	G	G	G	22	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13
12	C	E B 13	C	E B 13	E B 13	C	E B 14	16	26	G	36	38	40	40	G 30	G 23	G	22	E B 14	16	E B 13	E B 13	E B 13	E B 13
13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	38	40	40	42	44	30	G	E B 13	20	E B 15	E B 13	E B 13	E B 13
14	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	G	24	28	G	40	53	46	40	G 29	29	26	21	21	E B 13	16	18	15
15	15	E B 13	18	E B 13	E B 13	E B 13	E B 13	E B 14	26	G	39	43	49	44	G 30	G	32	29	20	17	19	E B 13	18	E B 13
16	E B 13	19	E B 22	E B 18	E B 18	21	E B 14	E B 14	G	32	40	41	42	42	43	42	G	G	22	E B 13	E B 13	E B 13	E B 13	E B 13
17	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	24	G	E B 40	E B 42	E B 41	G	E B 67	E B 43	34	38	19	E B 14	E B 13	E B 13	16	E B 13
18	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	G	E B 42	G	G	36	G	28	21	E B 13	E B 13	E B 13	E B 13	E B 13
19	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	38	G	46	G	42	42	G 18	36	20	17	16	E B 13	E B 13	E B 13
20	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	E B 67	E B 46	E B 48	41	41	44	61	32	22	16	E B 13	20	17	20
21	E B 13	E B 13	E B 13	20	16	22	E B 14	15	G	32	G 24	G	E B 44	43	44	48	43	62	29	19	18	E B 13	E B 13	E B 13
22	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	24	G	G	G	42	43	42	G 28	G 21	G 18	20	20	20	20	E B 13	E B 13
23	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	40	48	56	40	41	30	23	47	30	31	23	19	E B 14
24	E B 14	E B 13	E B 13	E B 13	E B 13	19	22	E B 14	G	G	38	G	G	42	45	40	35	G 21	21	20	18	19	E B 13	19
25	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	35	G	G	42	39	35	39	27	31	29	20	E B 13	E B 13	E B 13
26	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G 18	G 20	G	G	40	U Y 34	U Y 35	G 24	G 21	G 21	22	19	E B 13	E B 13	E B 13	E B 13
27	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	E B 14	24	G	G	38	41	39	39	36	29	27	34	36	35	24	30	16
28	18	E B 13	E B 13	E B 13	21	E B 13	19	E B 13	G	G	34	45	39	39	41	G	G	25	21	21	24	31	24	20
29	20	19	E B 13	19	E B 13	E B 13	E B 13	E B 14	G	32	G 28	39	G 30	G	G 30	G 24	G 20	25	20	20	22	20	E B 17	E B 17
30	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	16	G	G	40	46	66	47	38	44	31	24	16	17	22	30	18	E B 13
31	E B 13	20	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	25	G 21	34	40	40	U G 32	G 25	39	G 21	G 18	26	27	19	E B 13	E B 13	E B 13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	E G 34	38	40	40	38	36	28	24	20	17	E B 14	E B 13	E B 13	E B 13
U Q	E B 13	E B 13	E B 13	E B 13	E B 13	13	E B 14	16	26	28	38	41	42	42	41	41	32	27	22	20	20	19	17	14
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	G	G	G	G 39	G	G	G	G 22	G	E B 16	E B 13	E B 13	E B 13	E B 13	E B 13

DEC.2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	13	13	13	13	13	13	14	14	18	20	25	32	29	28	21	18	15	14	13	14	13	13	13
2	13	13	13	13	13	13	13	14	14	19	21	20	17	25	30	23	16	14	14	13	13	13	13	13
3	13	13	13	13	13	13	14	14	14	16	22	20	21	31	21	20	18	14	13	13	13	13	13	13
4	13	13	13	13	13	13	13	14	14	17	16	22	22	22	22	15	15	14	14	13	13	13	13	13
5	13	13	14	13	13	13	13	14	14	15	20	36	22	21	28	21	15	15	14	13	13	13	13	13
6	13	13	13	13	13	13	13	16	18	20	23	25	28	30	32	24	20	14	14	13	13	13	13	13
7	13	13	13	13	13	13	14	14	14	18	20	24	22	24	24	20	14	14	14	13	13	13	13	14
8	13	13	13	13	13	13	13	14	14	14	22	22	22	32	25	14	14	14	14	13	13	13	13	13
9	13	13	13	13	13	13	13	14	14	15	18	20	21	30	20	22	20	15	14	13	13	13	13	13
10	13	13	13	13	13	13	13	14	14	22	23	25	41	30	40	22	22	15	14	13	13	13	13	13
11	14	14	13	13	13	13	13	14	14	17	19	21	22	28	24	30	21	16	14	13	13	13	13	13
12	C	13	C	13	13	C	14	14	14	15	18	20	18	31	22	20	22	14	14	13	13	13	13	13
13	13	13	13	13	13	13	13	14	18	18	17	21	26	24	24	36	20	18	13	13	15	13	13	13
14	13	13	13	13	13	13	13	14	19	17	23	35	22	24	21	21	20	14	14	13	13	13	13	13
15	13	13	14	13	13	13	13	14	16	21	20	24	22	24	22	19	23	16	14	14	13	13	13	13
16	13	13	22	18	18	14	14	14	16	20	22	24	26	24	32	26	22	18	14	13	13	13	13	13
17	13	13	13	13	13	13	13	14	17	20	40	42	41	24	67	43	21	14	14	14	13	13	13	13
18	13	13	13	13	13	13	13	14	18	19	22	28	42	24	32	21	21	15	14	13	13	13	13	13
19	13	13	13	13	13	13	13	14	17	22	21	23	22	30	24	16	14	14	14	13	13	13	13	13
20	13	13	13	13	13	13	13	14	18	17	67	46	48	34	26	22	20	14	14	14	13	13	13	13
21	13	13	13	13	13	13	14	14	14	20	17	28	44	40	39	17	15	14	14	13	13	13	13	13
22	13	13	13	13	13	13	13	14	16	20	23	24	22	24	38	17	17	16	14	13	13	13	13	13
23	13	13	13	13	13	13	13	14	14	18	30	24	24	22	21	20	16	14	14	13	13	13	13	14
24	14	13	13	13	13	13	13	14	17	18	21	21	23	24	24	20	19	17	14	13	13	13	13	13
25	13	13	13	13	13	13	13	14	15	17	20	27	24	24	24	20	14	14	14	13	13	13	13	13
26	14	13	13	13	13	13	13	14	14	15	17	20	22	21	20	14	13	14	14	13	13	13	13	13
27	13	13	13	13	13	13	14	14	18	18	22	22	22	24	21	21	17	14	14	14	13	13	13	13
28	14	13	13	13	13	13	13	13	14	17	20	26	25	23	24	21	20	14	14	13	13	13	13	13
29	13	13	13	13	13	13	13	14	17	17	22	22	23	28	25	22	14	14	14	13	13	13	17	17
30	13	13	13	13	13	13	13	14	16	18	21	22	24	29	25	23	19	18	14	14	13	13	13	13
31	13	13	13	13	13	13	13	14	14	16	17	31	22	23	21	20	16	14	14	13	13	13	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	13	13	13	13	13	13	14	14	18	21	24	22	24	24	21	18	14	14	13	13	13	13	13
U Q	13	13	13	13	13	13	13	14	17	20	22	27	26	30	30	22	20	15	14	13	13	13	13	13
L Q	13	13	13	13	13	13	13	14	14	17	19	21	22	24	22	20	15	14	14	13	13	13	13	13

IONOSPHERIC DATA STATION Okinawa

DEC.2014 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	301	312	312	296	R 238	279	342	325	342	351	345	329	292	304	305	312	322	320	323	330	312	334	342	345
2	303	320	324	316	285	255	300	355	362	344	330	339	315	293	312	304	312	316	323	310	318	309	317	359
3	336	294	306	289	291	288	295	331	345	338	329	326	310	310	318	309	314	328	309	312	318	332	341	320
4	300	304	304	299	320	276	288	356	341	350	318	323	313	U R 315	313	R 309	R 317	330	J R 344	323	297	300	348	325
5	296	282	277	273	358	297	274	305	351	343	336	310	323	R 322	304	R 311	J R 331	J R 327	298	328	334	310	299	R 292
6	291	313	319	314	327	273	291	323	369	356	346	328	R	328	309	318	314	328	345	323	304	340	316	282
7	307	J R 321	282	291	340	351	288	326	366	372	315	303	326	313	310	295	318	329	320	325	299	331	334	319
8	296	R 301	357	R 330	250	275	284	321	346	363	354	327	320	314	317	318	318	335	330	321	307	332	R 313	316
9	343	296	337	293	312	272	346	329	344	349	353	307	R	321	301	309	309	322	R 350	342	U R 299	R 310	322	272
10	282	281	305	304	326	299	309	314	348	362	353	318	314	315	314	311	R 318	322	R 350	R 310	J R 314	347	330	302
11	279	292	309	327	324	331	292	333	352	350	348	340	304	R 318	R 324	R 320	R 320	331	R 336	337	338	354	340	312
12	C	285	C	302	314	C	297	324	338	347	339	319	310	307	R 313	C	J R 316	R 332	U R 343	328	307	321	330	268
13	249	257	307	314	322	277	269	291	341	351	331	327	307	304	311	C 315	J R 311	326	319	326	321	334	351	338
14	280	300	337	337	323	277	284	320	354	348	340	331	311	299	U R 324	U R 320	R	U R 310	U R 332	R 326	331	302	R 317	325
15	283	V 287	316	301	335	294	287	302	335	348	339	312	300	302	U R 321	U R 318	J R 306	316	346	289	294	324	332	285
16	262	270	299	323	305	272	282	328	345	348	353	344	313	307	296	307	311	319	324	339	303	302	334	324
17	271	280	305	316	333	309	269	325	338	336	344	341	295	R 315	R 309	J R 301	318	317	325	R 298	R 314	325	326	334
18	290	289	302	311	322	303	314	313	332	332	J R 339	333	310	U R 304	R	R 312	R 315	R 319	R 322	325	327	R 295	322	325
19	279	275	312	327	368	287	292	298	325	335	345	331	302	319	R 314	R 304	R 319	J R 324	318	314	303	321	293	315
20	296	293	303	295	311	276	296	297	319	327	U R 356	323	R 307	R 299	R 306	U R 300	R 309	317	J R 298	322	291	317	309	297
21	274	295	323	331	342	280	313	297	337	341	334	324	303	299	U R 309	U R 312	R 311	U R 322	313	319	311	298	R 295	285
22	300	314	324	341	301	295	278	304	342	343	320	296	310	304	298	302	301	306	328	308	311	296	321	316
23	312	305	304	294	301	305	323	289	328	341	320	323	307	305	304	310	U R 330	R 321	U R 328	U R 359	U R 333	328	318	278
24	R 274	310	319	314	319	282	306	304	326	335	329	325	288	R 314	304	306	312	U R 322	U R 345	U R 347	321	J R 302	320	280
25	278	279	286	295	296	284	307	306	340	334	335	333	322	317	R 318	R	R	R	J R 357	324	337	323	336	342
26	252	280	308	290	297	278	303	306	322	352	345	329	302	308	329	324	310	333	319	301	J R 268	R 287	350	353
27	282	307	334	302	295	286	294	328	354	338	344	337	302	312	306	R 307	313	R 336	342	305	315	332	325	267
28	297	285	314	333	317	275	276	325	375	361	349	363	338	302	314	308	328	349	353	335	314	322	332	357
29	279	300	328	322	286	R 326	R 340	305	370	357	328	308	314	325	U R 310	R	R	R	322	316	328	328	308	324
30	316	325	339	305	239	F 275	F 292	F 318	337	358	370	338	312	296	298	J R 318	321	330	328	298	317	327	315	304
31	276	276	308	380	R 360	277	294	324	375	379	354	325	342	315	318	320	323	328	315	311	325	357	308	314
	00	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	30	31	31	30	31	31	31	31	31	31	29	31	30	28	28	29	31	31	31	31	31	31
MED	286	294	310	311	317	281	294	320	342	348	340	327	310	310	310	310	316	324	328	323	314	323	322	316
U Q	300	307	324	327	327	297	307	326	354	356	349	333	314	315	317	318	320	330	R 344	328	325	332	334	325
L Q	278	281	304	295	296	276	284	304	337	338	330	319	302	304	305	306	311	319	319	310	303	302	315	285

DEC.2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	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 357		L								
2											L	L	L	L	L	L	L							
3										L	L	L	L	L	L									
4									L		L	L	L	L	L		L							
5										L	L	L	L	L	L	L	L							
6									L	L	L	L	L	L	L	L								
7												L	L	L	L	L	L							
8											L	L	L	L	L									
9											L		L	L	L	L	L							
10											L		L	L	L	L								
11										L	L	L	L	L	L									
12											L	L	L	L	L	L								
13										L	L	L	L	L	L	L	L							
14									381	L	L	L		L	L	L	L							
15												L		L	L	L								
16										L		L		L	L	L								
17											L	L		L	B	L								
18											L	L	L	L	L	L								
19											L		L	U L 386	L									
20													L	L	L									
21										L	L		L	L	L									
22													L	L	L	L								
23												L	L		L	L								
24													L	L										
25											L	L	L	L	L	L								
26												L	L	L	L	L								
27											L	L	L	U L 360	L	L	L							
28									418		L		L	L	L	L	L							
29											L	L	L	U L 361	L	L	L							
30										L	L	A	A	A	L	L	L							
31											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					4										
MED									400					U L 360										
U Q														U L 374										
L Q														U L 358										

DEC.2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 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											238	238	236L	294		244								
2											240	256	244	260	282	244	238							
3										240	244	240	248	282	276									
4									216		274	228	262	240	272		260							
5										224	238	284L	250	256	286L	284	246							
6									226	230	238	250	238	242	230	240								
7												274L	268	264	264	286	262							
8											230	242	254	280	252									
9											240		280	256	238	256	242							
10											236		274	256	282	266								
11										238	240	238	312	278	264									
12											252	258	276	284	270	260								
13										244	248	250	246	296	264	256	240							
14									230	234	244	232		284	294	280	268							
15												250		258	280	260								
16										240		232		244	290	274								
17											250	236		266	274	284								
18											238	248	258	290	284	256								
19											244		300	260	280									
20													282	264	278									
21										250	248		248	290	274									
22													270	270	266	292L								
23												264	278		284	276								
24													316	268										
25											256	246	238	264	282	276								
26												262	252	292	250	242								
27											252	248	284	294	254	270	250							
28									212		238		230	284L	264	282	248							
29											266	286	256	280	290	270	252							
30										232	232	240	268	260	314	268	254							
31											230	236	246	250	260	270	240							
	00	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	9	23	23	27	30	29	23	12							
MED									221	238	240	248	258	267	274	270	249							
U Q									228	242	250	258	278	284	283	280	257							
L Q									214	231	238	238	246	258	264	256	241							

DEC.2014 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 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	242	224	246	276	336	270	208	240	240	226	214	206	198	188	236	228	224	222	210	226	216	206	216	206
2	246	234	226	258	290	376	272	222	224	222	220	216	216	208	226	220	224	222	212	202	218	222	230	204
3	216	260	250	278	290	296	274	252	226	224	218	222	212	200	224	230	230	226	204	210	214	214	204	202
4	244	262	244	240	250	312	290	218	210	228	216	214	192	208	H 202	236	236	230	204	192	206	228	208	204
5	254	290	290	266	216	250	324	266	228	206	206	228	220	202	204	214	224	220	200	228	196	202	224	286
6	276	250	226	232	224	A	284	254	226	218	206	218	222	218	210	226	232	232	200	210	244	210	220	232
7	252	244	300	274	226	204	310	250	220	210	212	206	220	218	214	224	240	222	202	212	208	214	214	220
8	260	256	216	192	E B 442	366	240	256	232	220	218	206	214	222	218	230	226	222	204	194	224	208	216	238
9	226	246	224	246	256	300	212	228	230	230	230	210	218	226	216	238	228	224	210	202	198	220	196	206
10	262	312	272	250	254	258	274	248	230	228	226	230	210	208	H 210	228	230	220	200	188	210	202	198	254
11	292	300	254	238	230	222	242	238	222	226	220	214	208	204	252	238	226	220	190	196	202	198	212	220
12	C	306	C	276	242	C	270	232	226	230	220	214	210	228	224	228	228	228	196	194	208	202	196	206
13	346	340	248	200	202	342	360	286	242	224	222	220	220	212	228	244	226	212	196	204	214	222	218	222
14	276	262	238	222	234	322	310	256	E A 232	226	224	208	256	236	222	224	230	224	202	196	194	208	220	218
15	222	262	234	218	222	266	300	276	236	232	228	226	240	222	216	218	224	222	198	190	222	214	206	222
16	326	330	262	232	258	A 330	286	222	238	226	230	220	214	218	218	232	232	226	208	204	198	216	208	220
17	292	306	244	208	224	254	340	246	224	232	220	220	224	234	B	238	234	234	200	186	212	210	216	216
18	248	282	242	228	232	242	244	256	236	230	218	214	E B 232	206	226	236	234	220	204	200	204	194	222	204
19	256	286	250	238	196	272	294	264	232	232	230	222	224	234	238	240	234	224	198	198	218	214	220	236
20	236	270	262	266	256	304	294	262	242	234	246	230	242	208	224	230	A 236	220	206	198	196	224	226	A 240
21	268	268	236	236	212	E A 350	256	268	236	230	230	226	B 216	224	232	244	242	240	208	204	194	210	234	242
22	230	236	236	220	224	264	322	282	230	230	230	226	228	228	232	236	226	230	220	202	208	A 242	236	214
23	254	250	250	246	268	264	236	290	242	230	224	224	232	242	210	236	230	216	228	214	200	206	200	218
24	260	242	224	252	244	E A 294	E A 300	250	240	234	214	224	226	230	234	230	230	218	210	208	182	194	224	240
25	264	264	270	272	244	306	282	266	234	222	216	210	216	220	208	214	248	220	200	196	196	198	192	198
26	278	278	242	224	222	252	268	256	240	226	212	H 196	222	222	234	228	220	212	208	198	212	234	226	194
27	276	278	232	242	282	298	246	214	214	230	218	220	H 198	200	234	220	222	218	192	222	216	208	A 210	286
28	A 280	258	242	242	280	316	A 334	260	208	220	212	232	214	196	220	226	234	204	206	210	234	234	234	212
29	A 296	E A 276	252	A 268	280	240	230	276	210	206	212	212	224	206	224	222	224	224	192	228	220	220	226	220
30	204	218	218	260	444	298	Q 234	238	228	228	230	A	A	A	218	A 250	236	222	198	192	226	224	224	210
31	236	A 286	254	198	256	376	340	246	220	212	212	202	210	210	212	236	222	214	202	234	212	204	216	242
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	31	29	31	31	31	31	31	30	30	30	30	31	31	31	31	31	31	31	31	31
MED	258	263	244	242	244	295	278	254	230	226	220	219	218	218	223	230	230	222	202	202	210	210	216	220
U Q	276	286	254	266	280	319	310	266	236	230	228	224	224	226	232	236	234	226	208	210	218	222	224	238
L Q	242	250	234	224	224	256	244	238	224	222	214	210	212	206	214	224	224	220	198	196	198	204	208	206

DEC.2014 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

DEC.2014 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								150	112	108	108	108	114	A	112	110	114	124	B					
2								A 110		A	A	A	A	110	112	112	112	A	B					
3								156	112	108	108	118	A	A	A	108	118	120	B					
4								A 112	110	108	108	106	110	110	108		A	A	A					
5								B 118	108	108	B	A	A	A	A	112		A	A					
6								B 112	110	110	110	A	A	A	A	A	A	A						
7								142	112	106	106	108	A	A	A	A	A	A	A					
8								A 116	108	108	A	108	A	A	A	A	A	A						
9								A 114	108	108	108	A	A	110	110	A	122	B						
10								A 118	112	112	112	B	112	B	106	110	A	A						
11								A 114	112	110	110	110	110	112	116	112	112	B						
12								A 118	110	110	A	A	A	120	112	112	108	A						
13								B 114	108	108	110	A	A	A	A	A	112	B						
14								192	A	A	110	A	A	A	A	108	A	A	A					
15								B 108	108	A	A	A	A	112	106	A	A	A						
16								B 116	110	110	110	A	A	A	A	110	114	A						
17								B 108	108	B	B	B	106	B	B	A	A	A						
18								B 110	110	110	114	B	110	106	A	110	A	A						
19								B 112	110	A	110	A	110	A	A	112	A	A						
20								B 110	108	B	B	B	A	A	A	A	A	A						
21								A 110	110	108	110	B	A	A	110	A	A	A						
22								B 110	108	108	110	110	110	A	110	112	116	A						
23								B 112	112	112	110	110	A	A	A	A	116	A						
24								B 112	112	110	106	106	106	A	108	A	E A 160	A						
25								B 112	106	A	106	110	A	A	A	A	A	A						
26								B 110	110	110	108	A	106	106	108	108	122	A						
27								B 116	112	108	108	104	A	A	A	A	A	A						
28								B 110	110	108	108	A	A	A	108	106	A	A						
29								B 112	110	114	A	112	110	116	116	114	A	A						
30								B 114	110	110	110	A	A	A	A	A	A	A						
31								B 112	112	108	A	A	A	108	A	110	118	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	30	29	25	21	10	11	11	16	15	12						
MED								153	112	110	108	110	110	110	112	109	112	116						
U Q								174	114	110	110	110	110	110	112	111	112	122						
L Q								146	110	108	108	108	106	106	108	108	110	113						

DEC.2014 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

DEC.2014 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	98	B	B	B	B	B	G	158	G	G	112	G	102	G	G	98	202	B	B	B	B	B	B
2	B	B	B	B	B	B	B	94	112	108	108	104	110	G	G	G	94	88	100	100	96	B	B	B
3	94	98	B	B	B	B	B	104	166	G	G	104	110	108	108	G	104	150	104	B	94	94	B	B
4	B	B	B	98	96	102	B	108	G	G	G	G	116	116	112	108	108	108	102	118	B	98	100	B
5	B	B	B	B	100	B	B	B	106	G	118	114	112	108	108	108	98	98	94	98	96	92	92	B
6	B	B	B	B	B	92	B	B	G	G	114	110	110	106	106	104	102	168	100	96	96	94	B	B
7	B	B	B	B	B	B	B	G	158	G	G	G	108	114	112	112	104	138	90	90	96	B	B	B
8	90	B	B	B	B	102	B	132	154	144	120	112	108	112	112	106	104	164	96	94	102	102	B	B
9	B	B	B	B	B	B	B	132	140	122	114	114	112	112	G	G	108	106	B	B	B	B	94	B
10	B	B	B	B	B	B	B	152	G	G	G	G	B	G	B	114	G	168	94	B	B	B	B	B
11	B	90	B	B	B	B	B	174	166	122	122	114	G	G	G	G	G	128	B	B	110	B	B	B
12	C	B	C	B	B	C	B	154	160	G	118	114	112	112	106	100	G	172	96	96	96	B	90	B
13	B	90	B	B	B	B	B	B	G	G	G	112	112	110	106	100	100	G	B	100	B	B	B	B
14	B	B	104	B	B	B	B	G	112	108	G	116	100	98	104	100	98	96	94	94	94	92	92	94
15	92	B	90	B	B	B	B	B	174	G	120	108	106	104	100	G	98	96	96	96	92	92	90	88
16	88	88	B	B	B	98	B	96	G	130	118	112	112	112	102	102	G	G	96	92	92	92	88	88
17	B	B	88	B	B	100	102	100	130	G	B	B	B	G	B	B	94	92	92	92	B	92	88	88
18	B	B	B	100	100	100	B	B	G	G	G	G	B	G	G	100	G	94	98	B	B	B	B	B
19	B	B	B	B	B	B	B	B	G	G	140	G	112	G	100	98	98	94	98	94	88	112	B	B
20	B	B	B	102	104	98	98	B	G	G	B	B	B	114	104	98	98	96	96	96	94	94	94	92
21	B	B	98	98	98	96	B	96	G	190	102	G	B	150	132	116	108	92	92	90	90	90	B	B
22	B	90	90	B	96	98	98	98	170	G	G	G	116	116	112	106	100	92	92	90	90	90	B	90
23	B	B	B	B	B	B	B	B	G	G	G	126	110	106	114	108	104	188	100	90	88	88	88	B
24	B	B	B	B	108	98	98	98	G	G	126	G	G	110	110	106	106	104	100	100	110	102	B	98
25	94	92	B	B	B	98	98	B	G	G	108	G	G	102	102	98	102	94	94	94	94	102	96	B
26	90	90	90	96	98	100	B	100	96	100	G	G	172	108	106	94	92	92	92	92	B	B	B	B
27	B	102	96	96	96	94	98	B	192	G	G	114	106	106	100	100	102	98	94	92	90	90	86	88
28	92	96	96	96	94	94	94	96	G	G	112	106	106	104	104	G	G	126	100	92	90	90	88	94
29	94	100	104	100	96	96	96	B	G	108	104	104	102	G	102	98	98	94	94	132	110	98	B	B
30	B	104	B	96	92	B	B	138	G	G	110	106	106	102	112	102	104	104	100	100	94	100	96	90
31	B	94	102	100	100	B	B	B	156	104	108	104	104	104	100	100	100	96	90	90	90	90	90	104
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	13	10	10	13	15	8	16	16	10	17	19	22	24	24	23	25	29	27	25	23	21	15	11
MED	92	94	96	98	98	98	98	102	157	115	114	112	110	108	106	102	100	98	96	94	94	92	90	90
U Q	94	99	102	100	100	100	98	135	166	130	120	114	112	112	112	108	104	144	100	99	96	99	94	94
L Q	90	90	90	96	96	96	97	97	121	108	108	106	106	104	102	100	98	94	94	92	90	90	88	88

DEC.2014 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

DEC.2014 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F1							H1			C1		L1			L1	HL11						
2								L1	C1	C1	C1	C1	C1				L1	L2	L1	F1	F1			
3	F1	F1						L1	H1			L1	CL11	C1	C1		L1	HL11	L1		F2	F1		
4				F1	F1	F1		C1					CL11	CL11	C1	CL11	CL11	CL11	L1	FF11		F2	F1	
5					F1				L1		C1	C1	C1	C1	C1	C1	L1	L2	L4	F6	F2	F1	F1	
6						F3					C1	C1	C1	C1	C1	C1	L2	HL11	L1	FQ21	F2	F1		
7									H1				C1	C1	C1	C1	L1	HL11	L2	F2	FF11			
8	F1					F1		H1	H1	H1	C1	C1	C1	C1	C1	C1	L1	HL11	L3	F2	F1	F1		
9								H1	H1	C1	C1	C1	C1	C1			C1	L1					F1	
10								H1								C1		HL11	L2					
11		F1						H1	H1	C1	C1	C1						C1			FF11			
12								H1	HL11		CL11	C1	C1	C1	L1	L1		H1	L1	F1	F1		F1	
13		F1										C1	C1	C1	C1	L1	C1			F1				
14			F1						C1	C1		C1	L2	L2	L1	L1	L1	L1	LQ11	F1	F1	F1	F1	F1
15	F1		F1						H1		C1	C1	C2	L1	L1		L2	L2	L3	F1	F1	F1	F1	F1
16	F1	F1				F2		L1		H1	C1	C1	C1	C1	L1	L1			L2	F1	F1	F1	F1	F1
17			F1			F1	F1	L1	H1								L1	L2	L2	F1		F1	F1	F1
18				F1	F1	F1										L1		L2	L2					
19											H1		C1		L1	L1	L1	L3	L2	F1	F2	FF11		
20				F1	F1	F1	F2							C1	L1	L2	L3	L2	L2	F1	F1	F3	F1	F1
21			F1	F2	F1	F2		L1		H1	L1			H1	H1	CL11	CL33	L5	L4	F2	F2	F1		
22		F1	F1		F1	F1	F2	L1	H1				C1	C1	C1	L1	L1	L1	L1	F2	F2	F2		F1
23												C1	C1	C2	C2	C2	L1	H1	L4	F4	F4	F1	F1	
24					F1	F2	F3	L1			C1			C1	C1	C1	C1	L1	L4	F3	F1	F2		F1
25	F1	F2				F2	F2				C1			L1	L1	L1	L2	L2	L3	F3	F1	F1	F1	
26	F1	F1	F1	F1	F2	F1		L1	L2	L1			HL11	C1	C1	L1	L1	L1	L3	F1				
27		F2	F1	F2	F1	F1	F1		H1			C1	C1	C1	L1	L1	LQ11	LQ21	LQ21	F4	F3	F1	F1	F1
28	F1	F1	F1	F2	F2	F1	F1	L1			C1	C1	C1	C1	L1			CL11	L4	FQ21	F3	F3	F2	F1
29	F1	F1	F1	F1	F1	F1	F1			C1	L1	L1	L1		L1	L1	L1	LQ11	LQ11	FF21	FF11	F1		
30		FF11		F1	F1			H1			C1	C3	C2	L2	CL11	L2	L1	L1	L1	F1	F2	FF23	F1	F1
31		F2	F1	F1	F1				H1	L1	C1	L1	L1	L1	L1	L1	L1	L1	L4	F3	F1	F1	F1	F1
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

DEC.2014 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

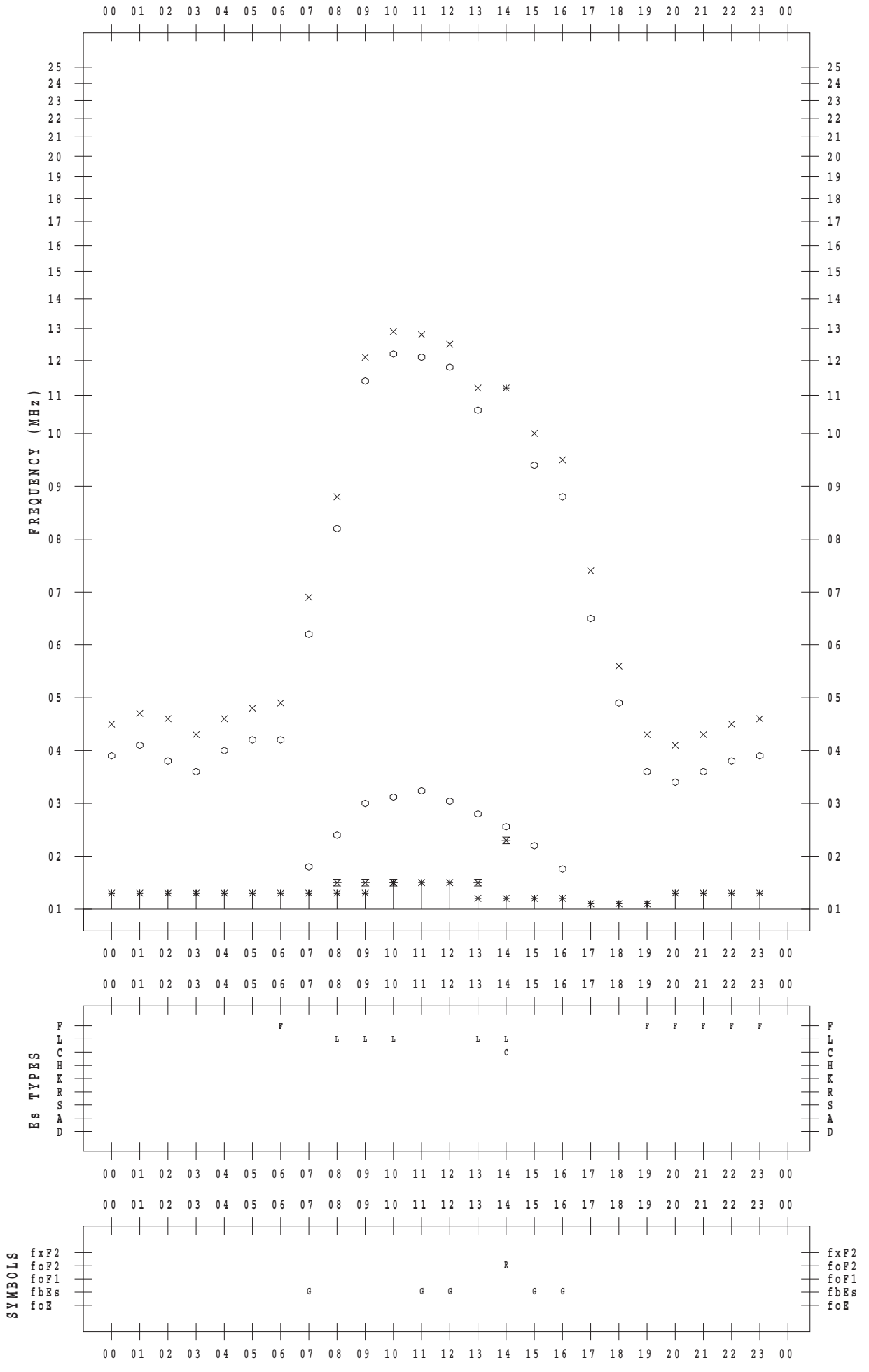
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 1

135 °E MEAN TIME



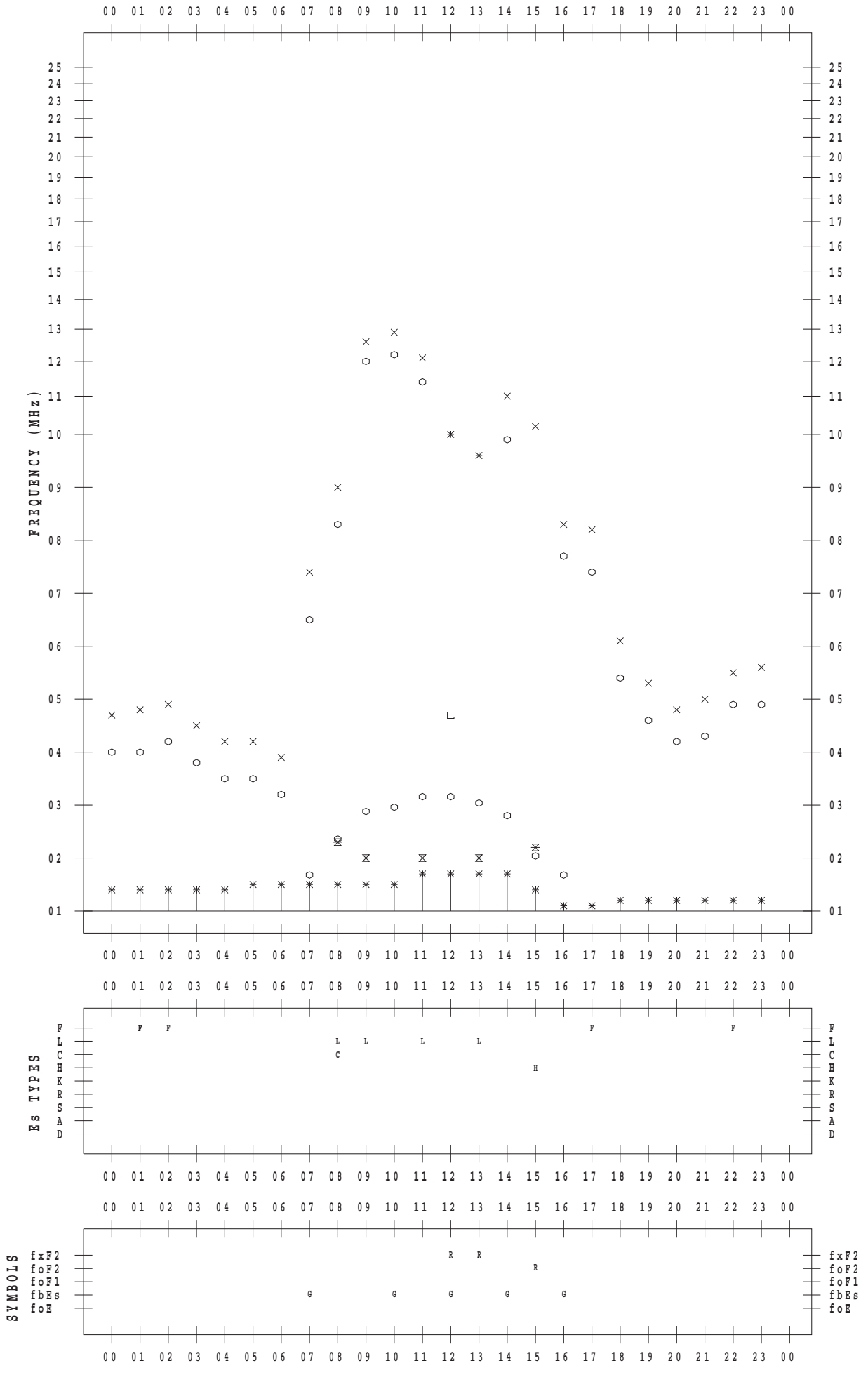
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 2

135 °E MEAN TIME



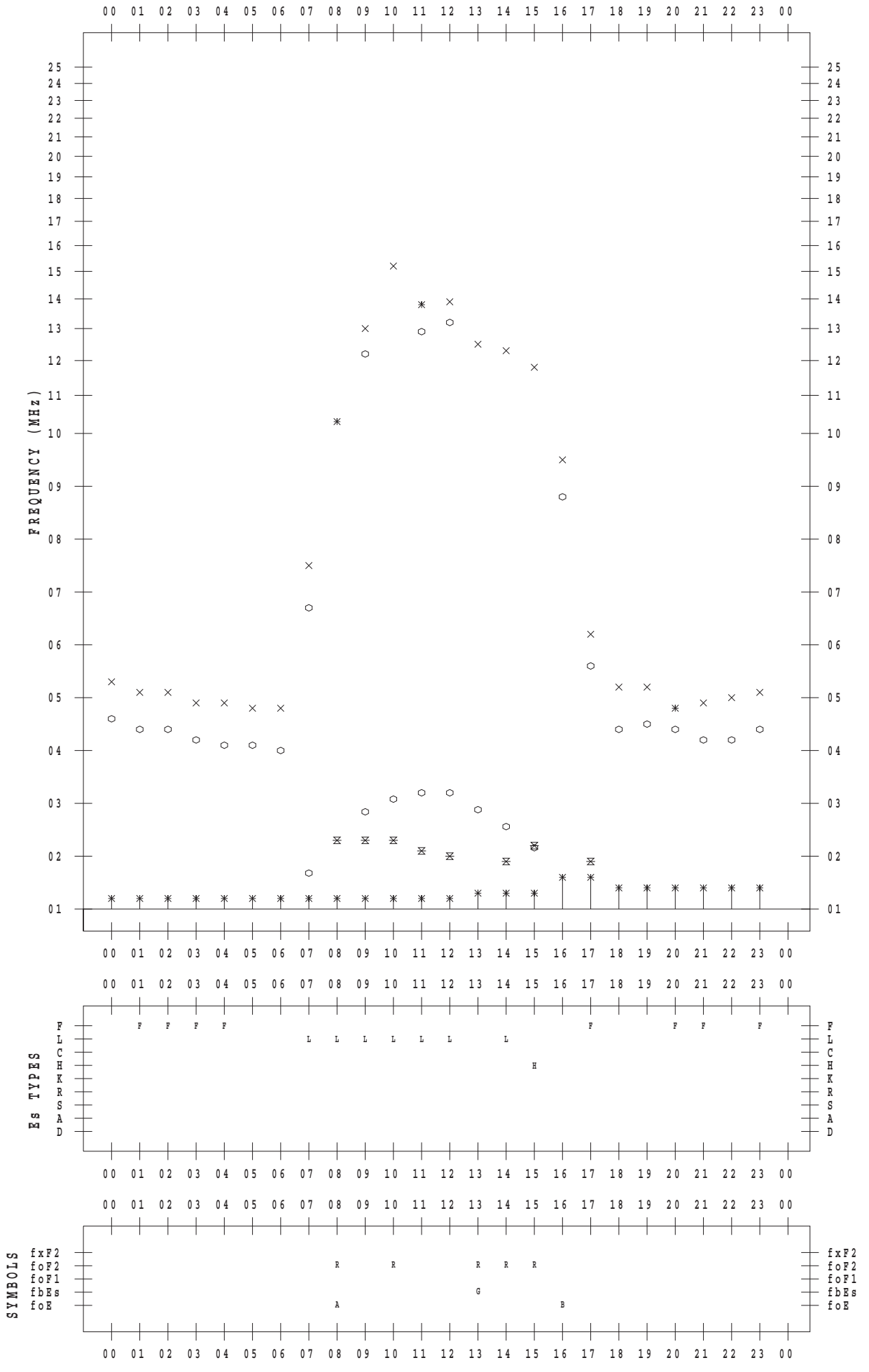
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 3

135 °E MEAN TIME



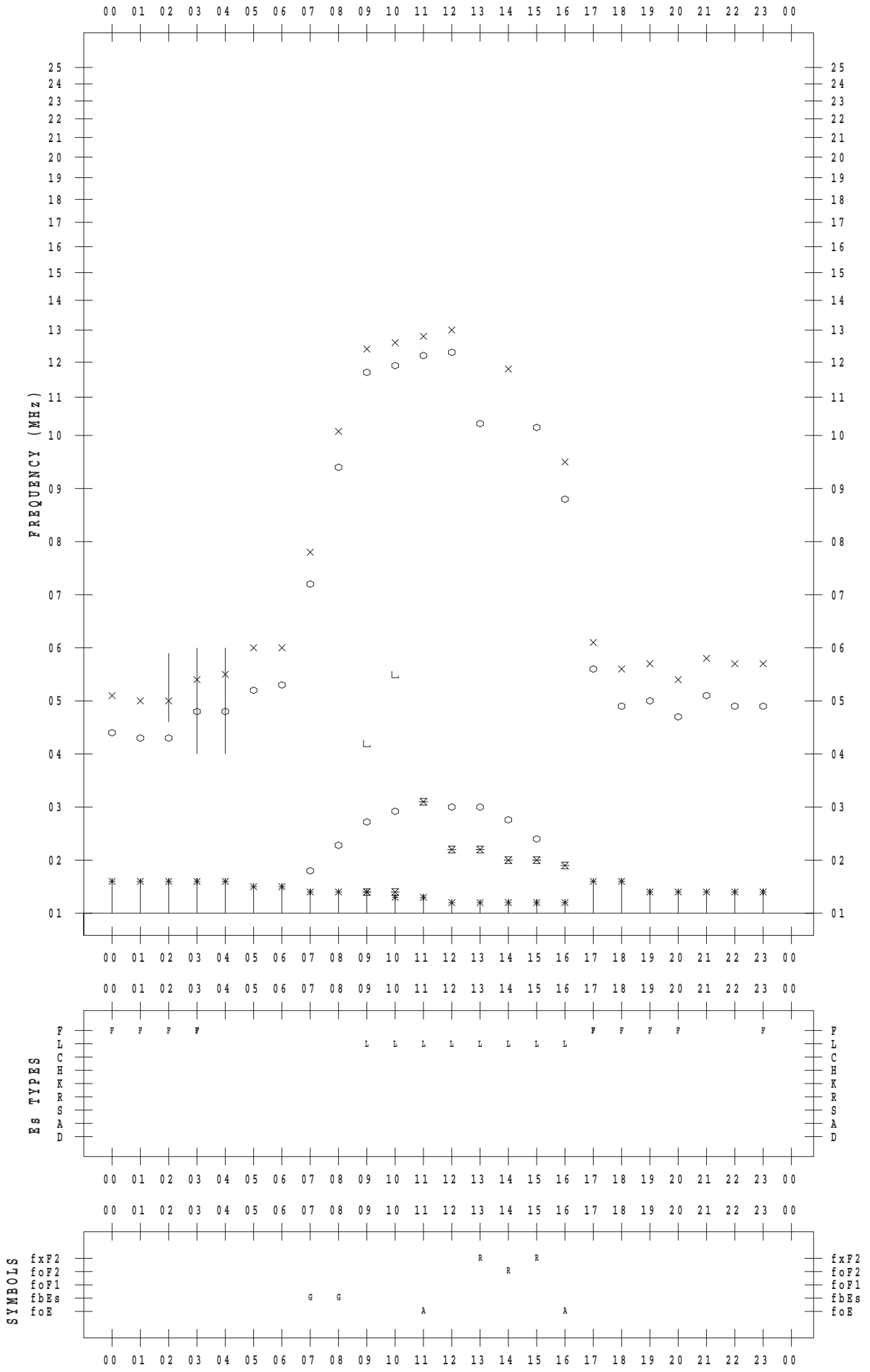
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 4

135 °E MEAN TIME



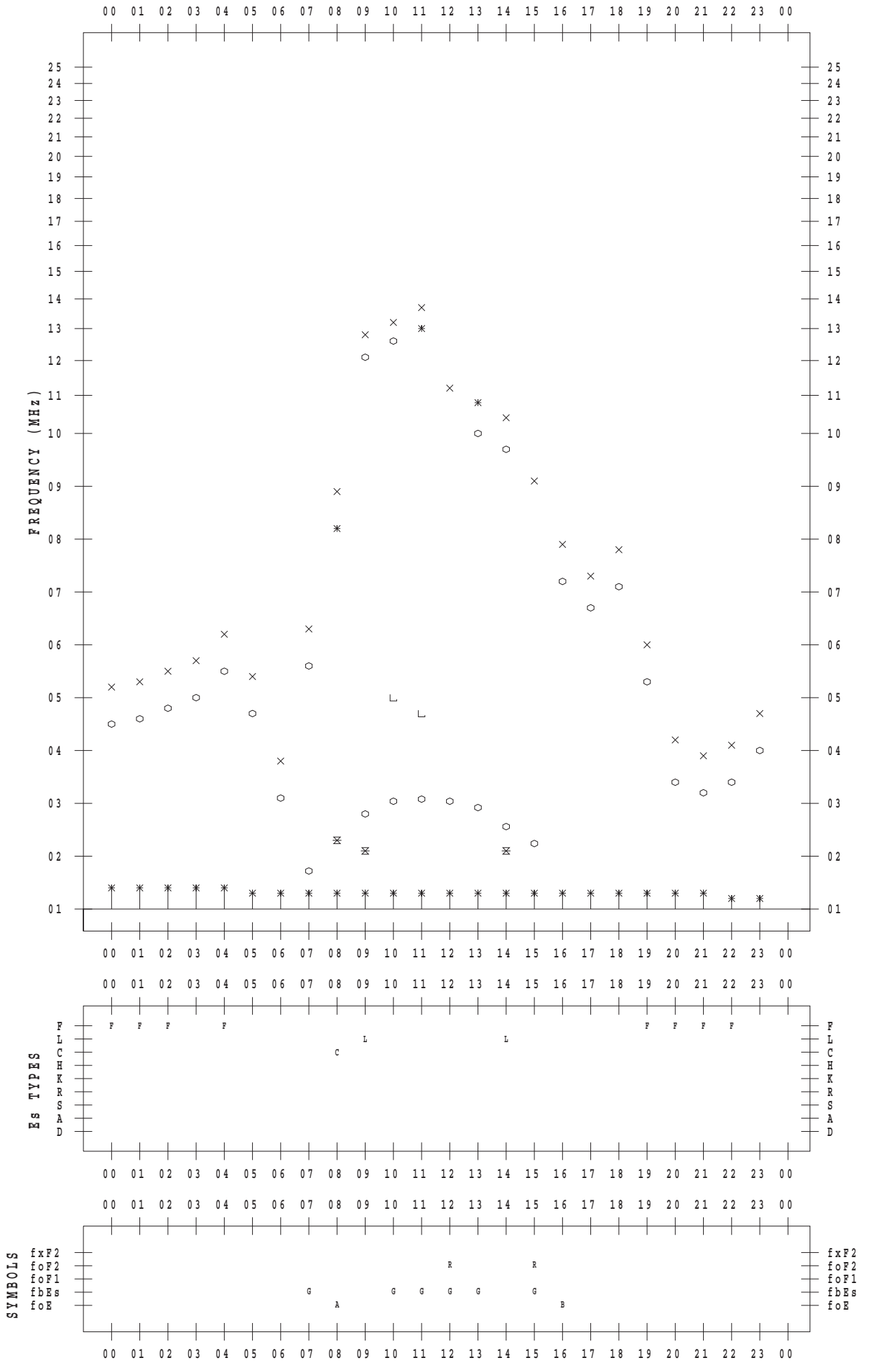
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 5

135 °E MEAN TIME



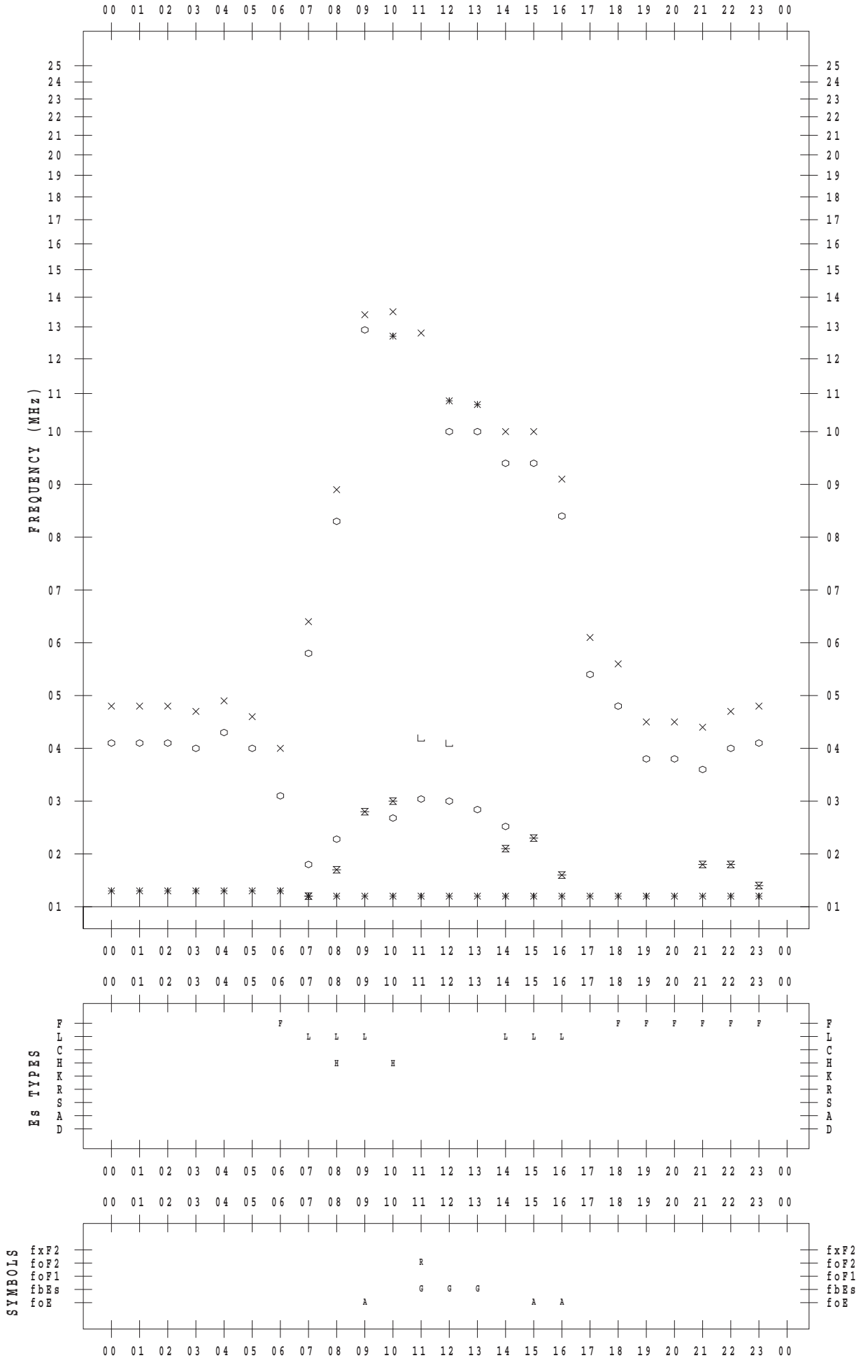
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 6

135 °E MEAN TIME



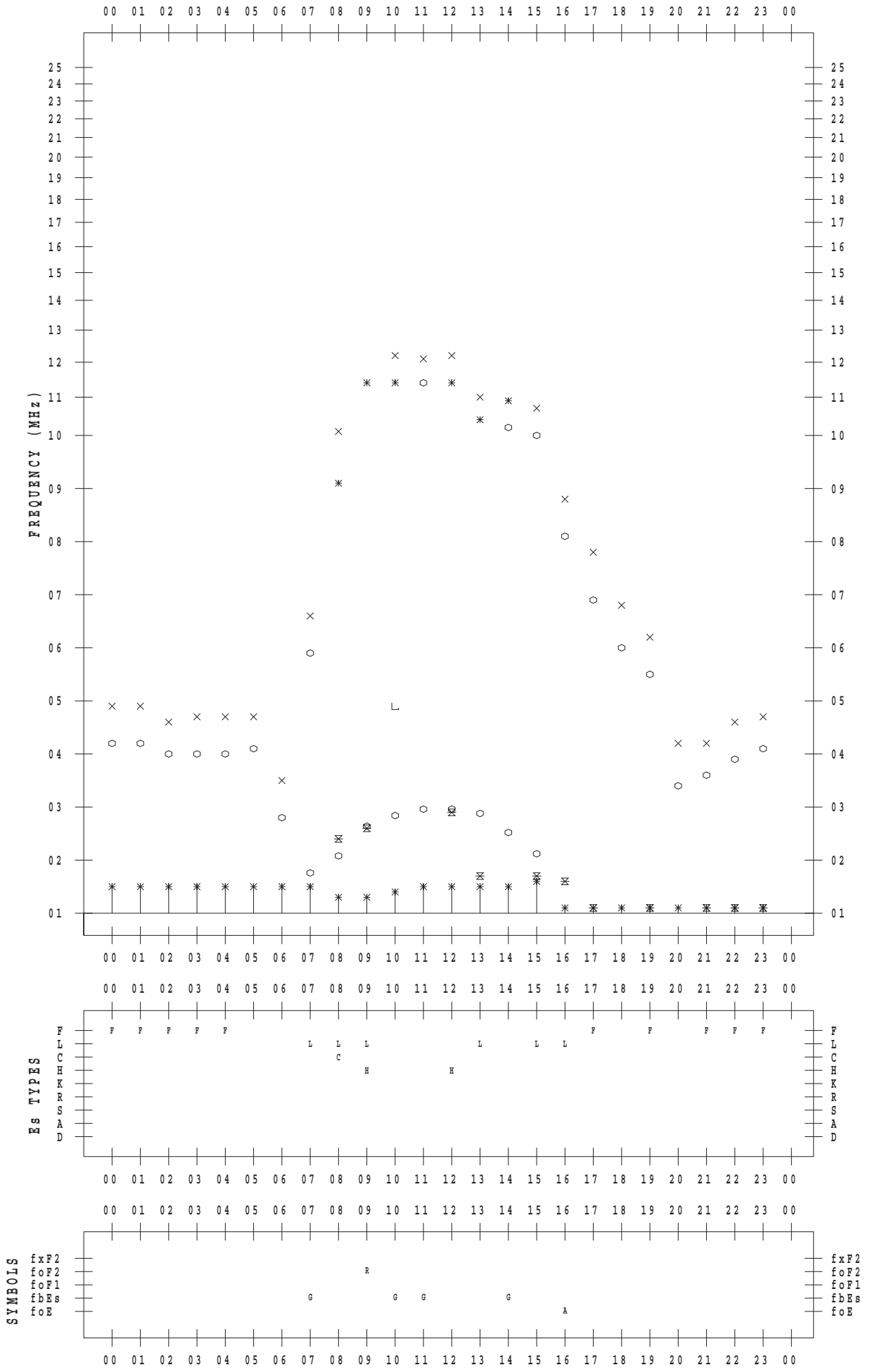
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 7

135 °E MEAN TIME



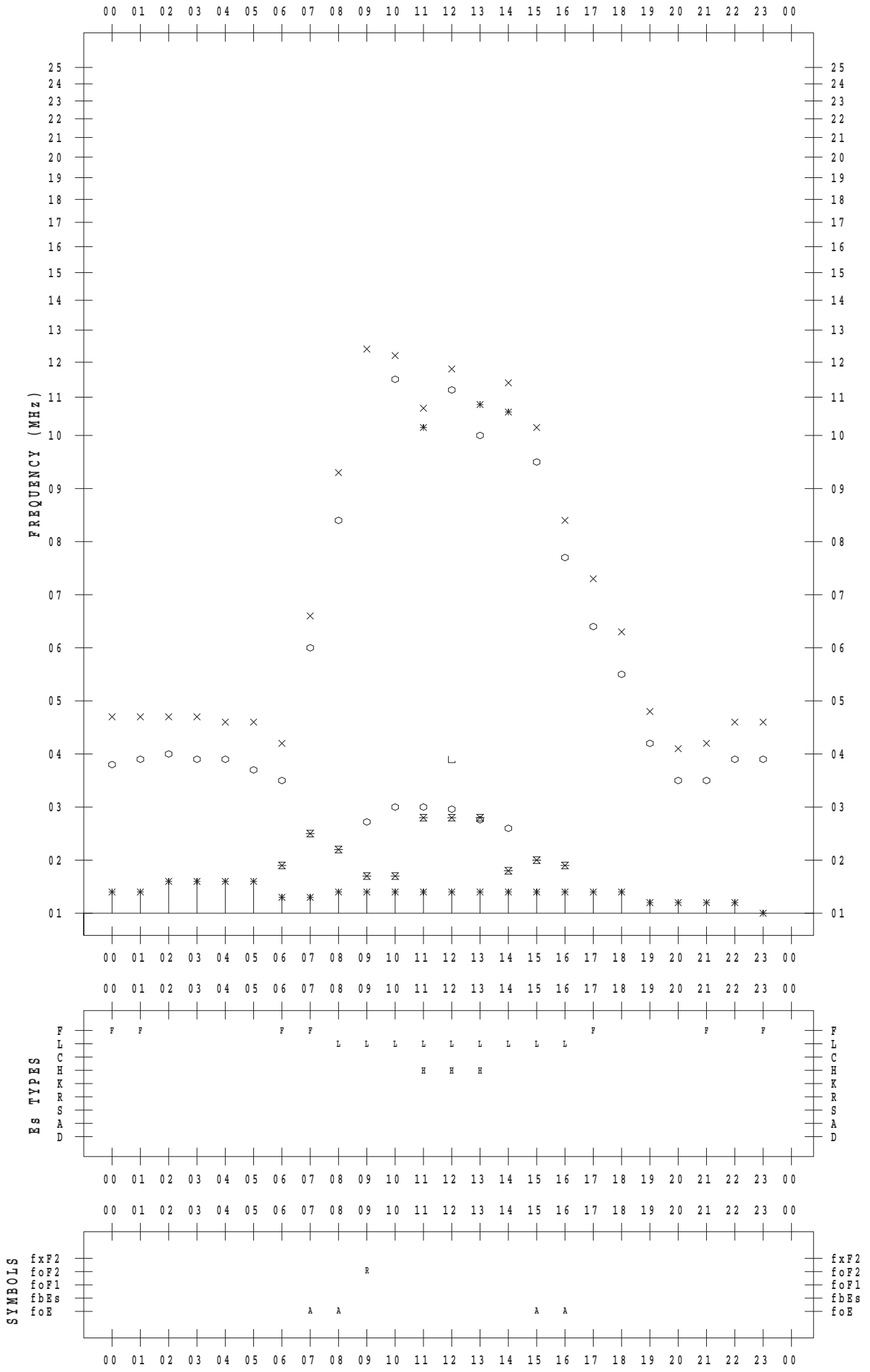
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 8

135 °E MEAN TIME



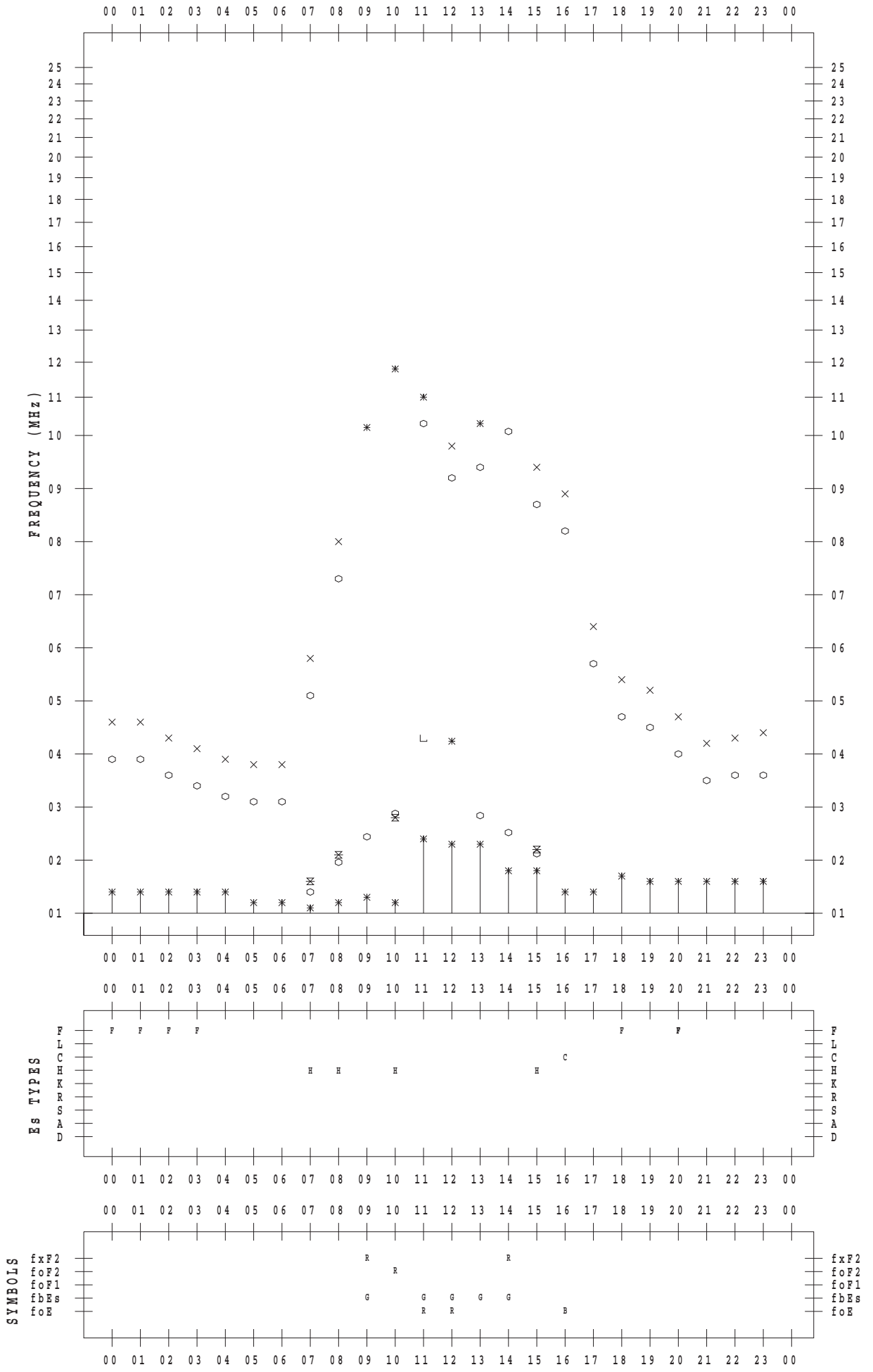
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/ 9

135 °E MEAN TIME



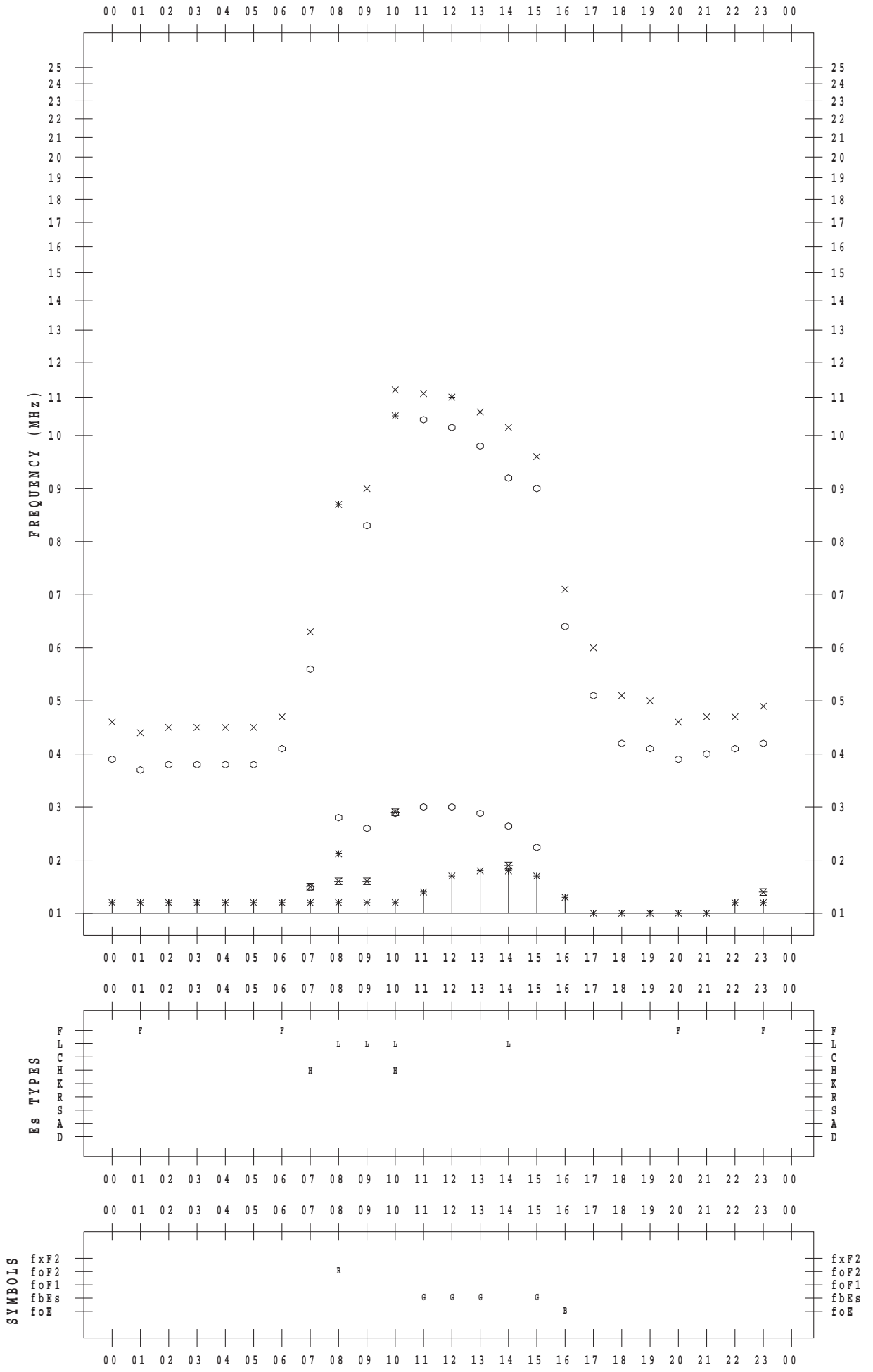
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/10

135 °E MEAN TIME



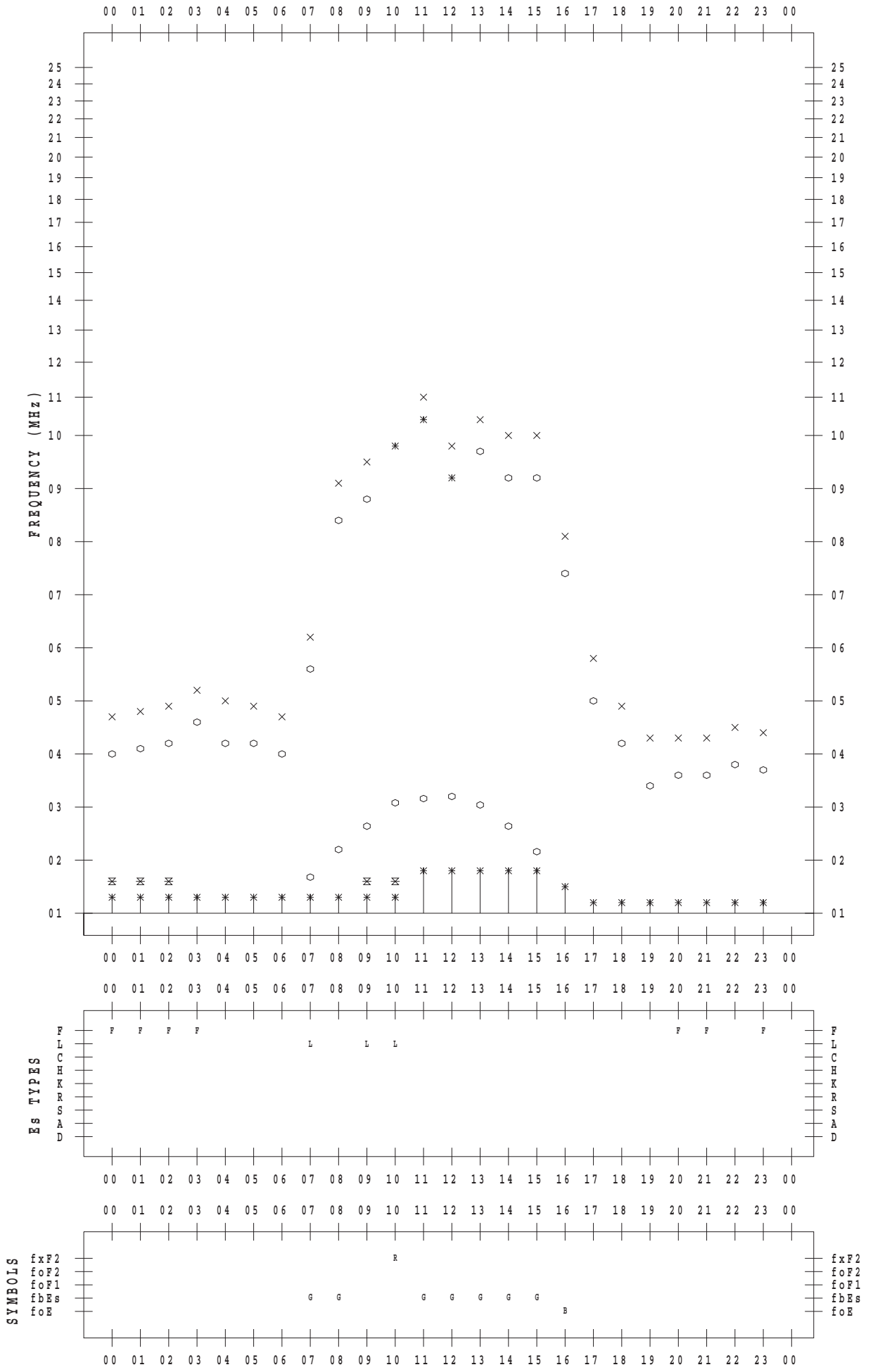
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/11

135 °E MEAN TIME



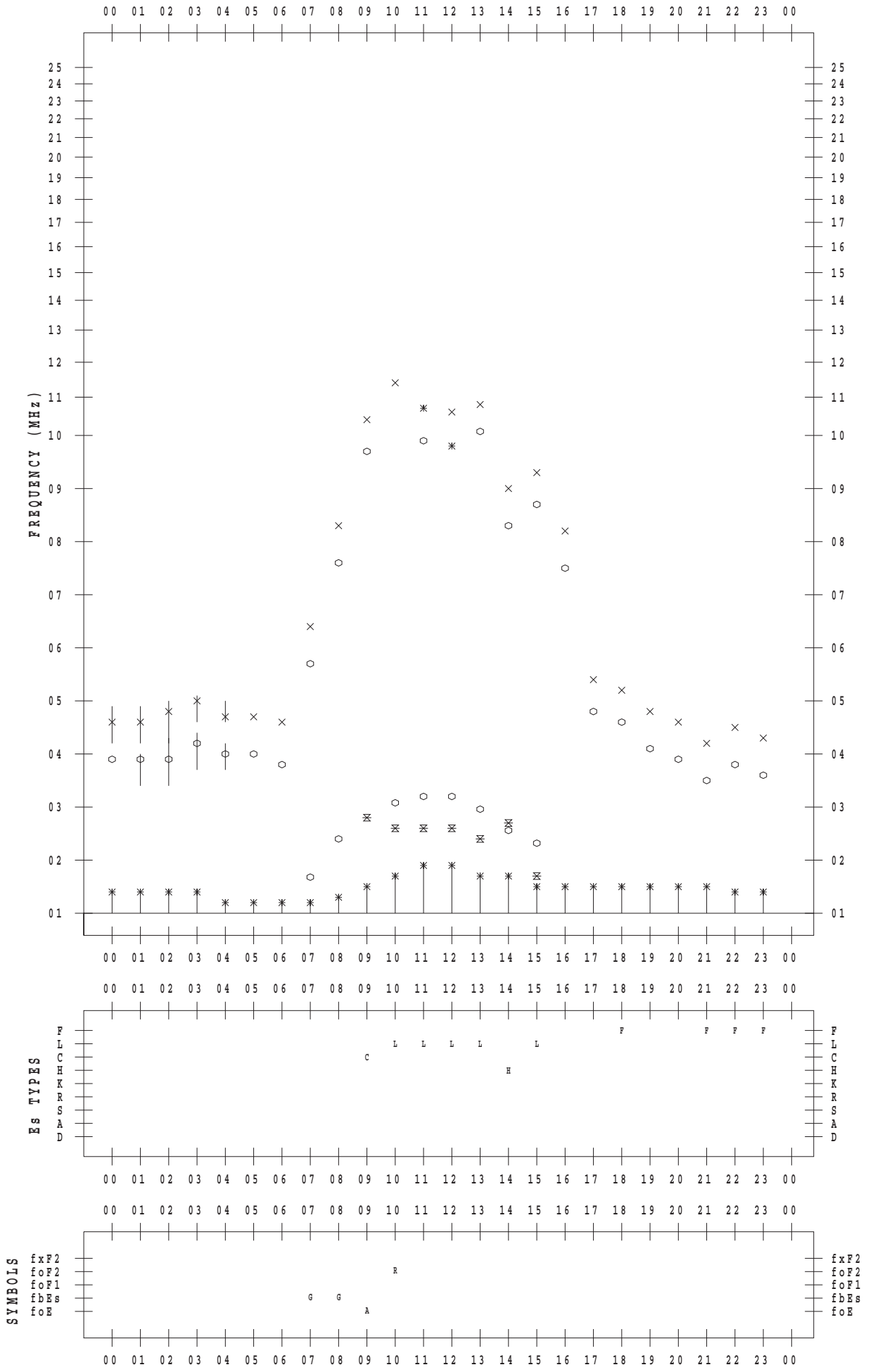
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/12

135 °E MEAN TIME



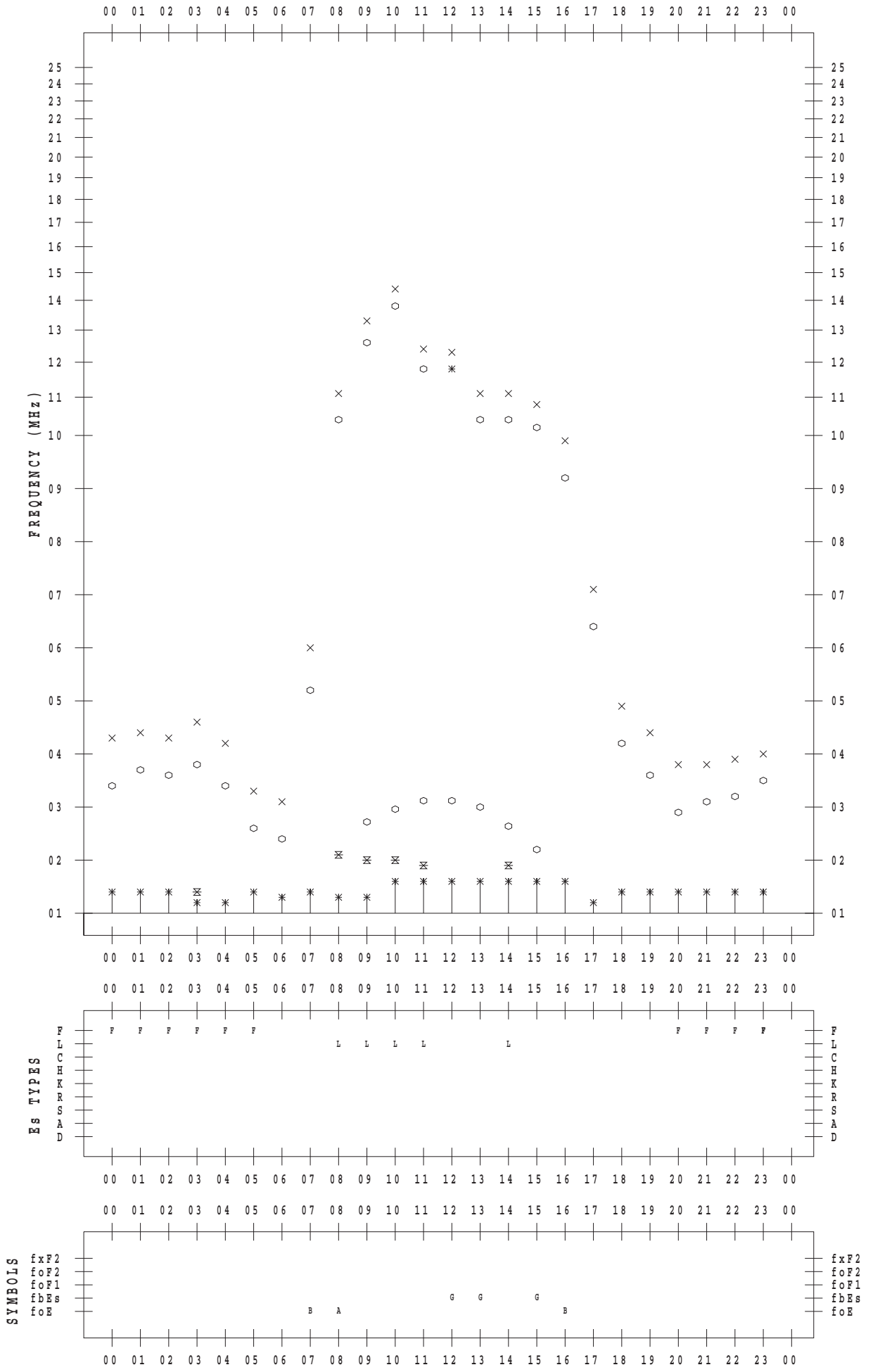
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/13

135 °E MEAN TIME



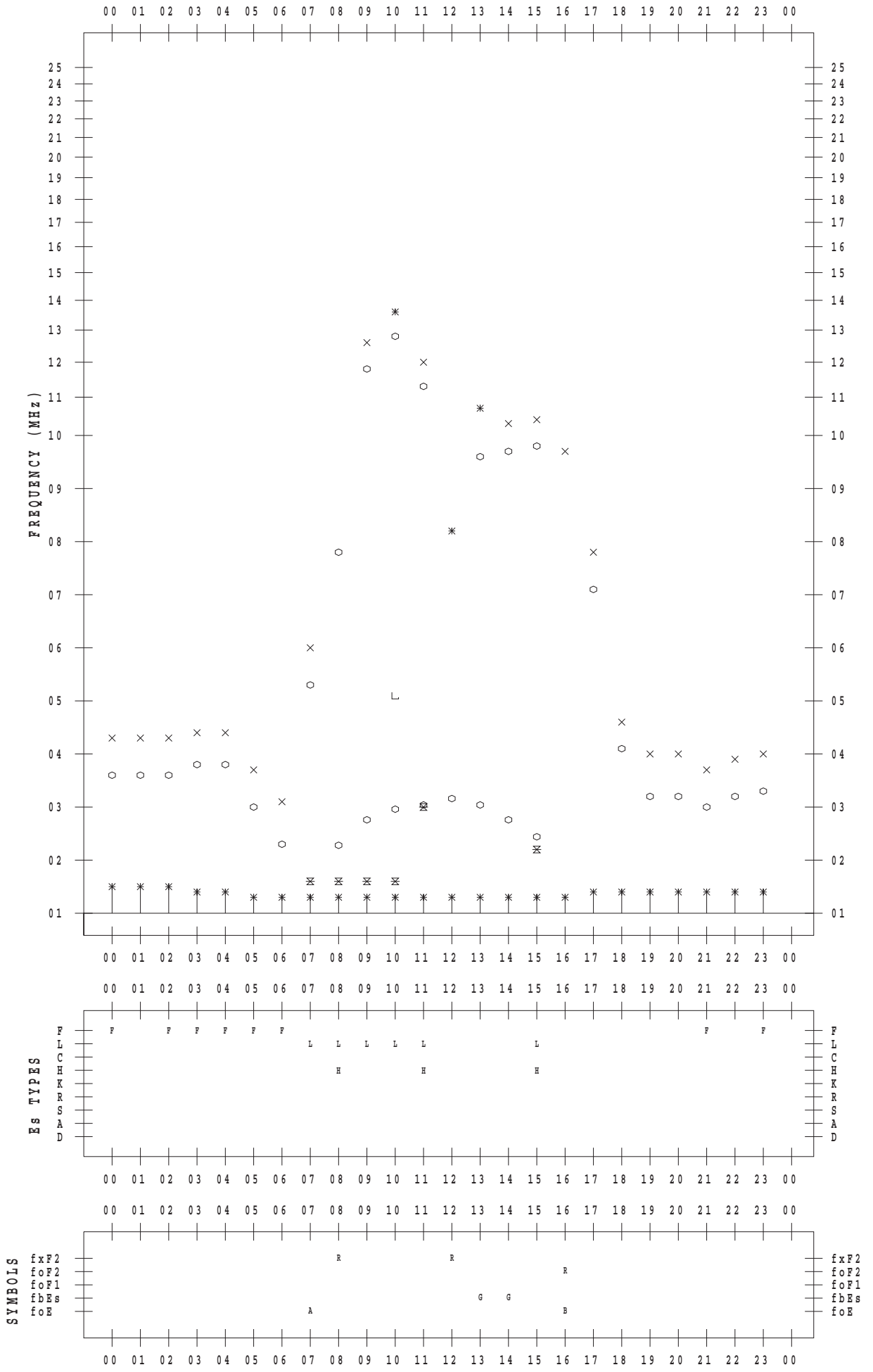
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/14

135 °E MEAN TIME



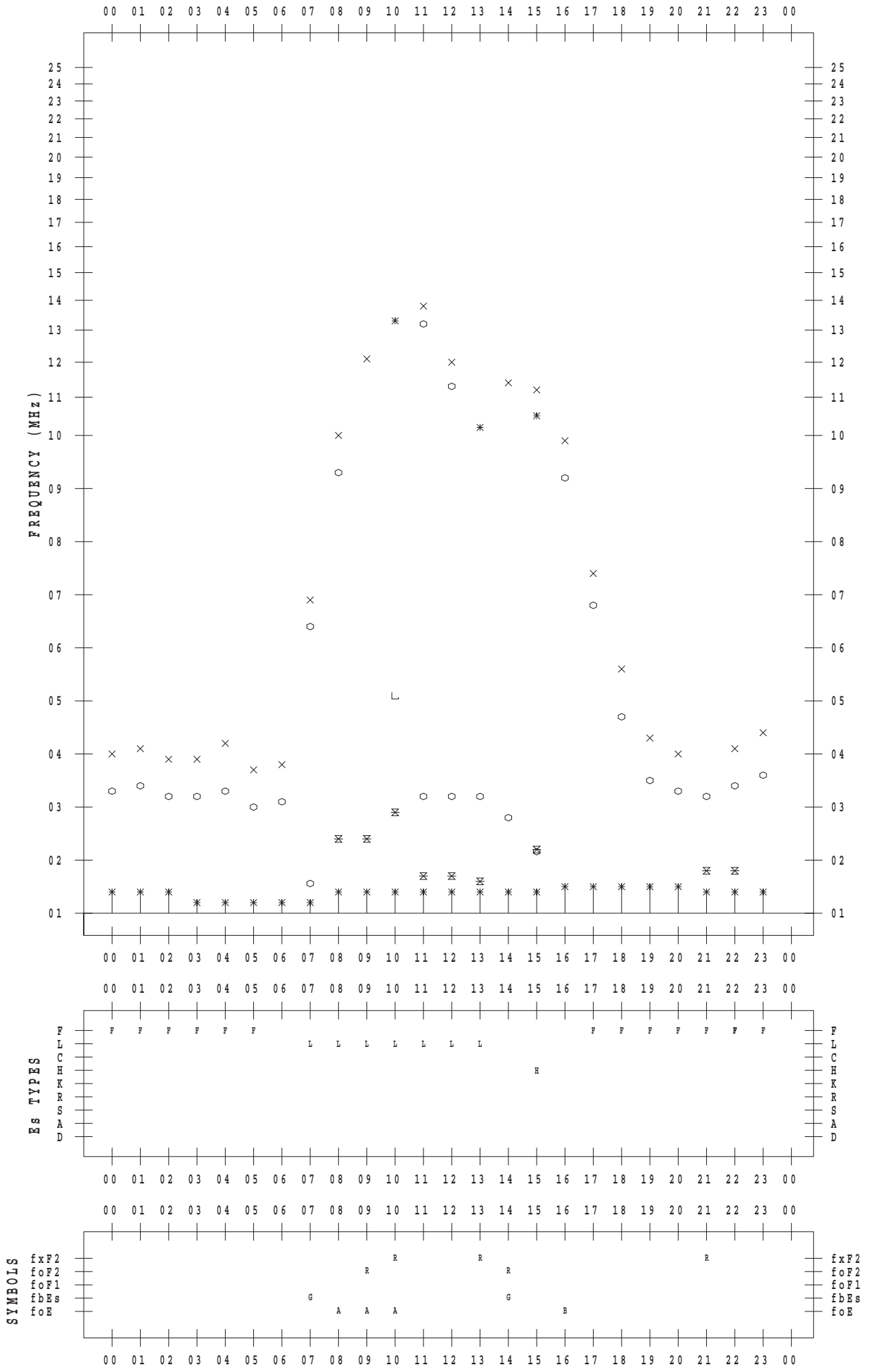
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/15

135 °E MEAN TIME



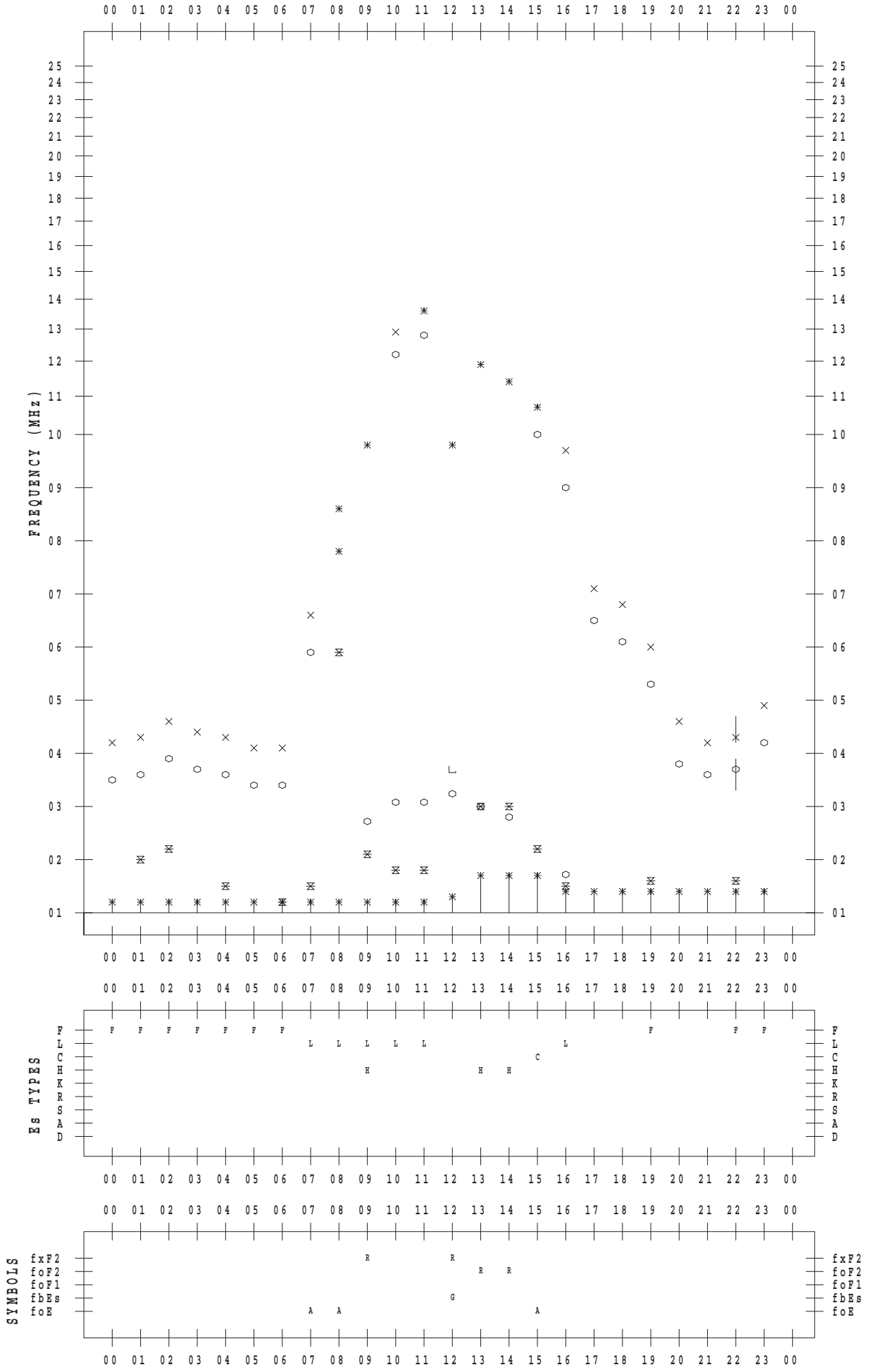
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/16

135 °E MEAN TIME



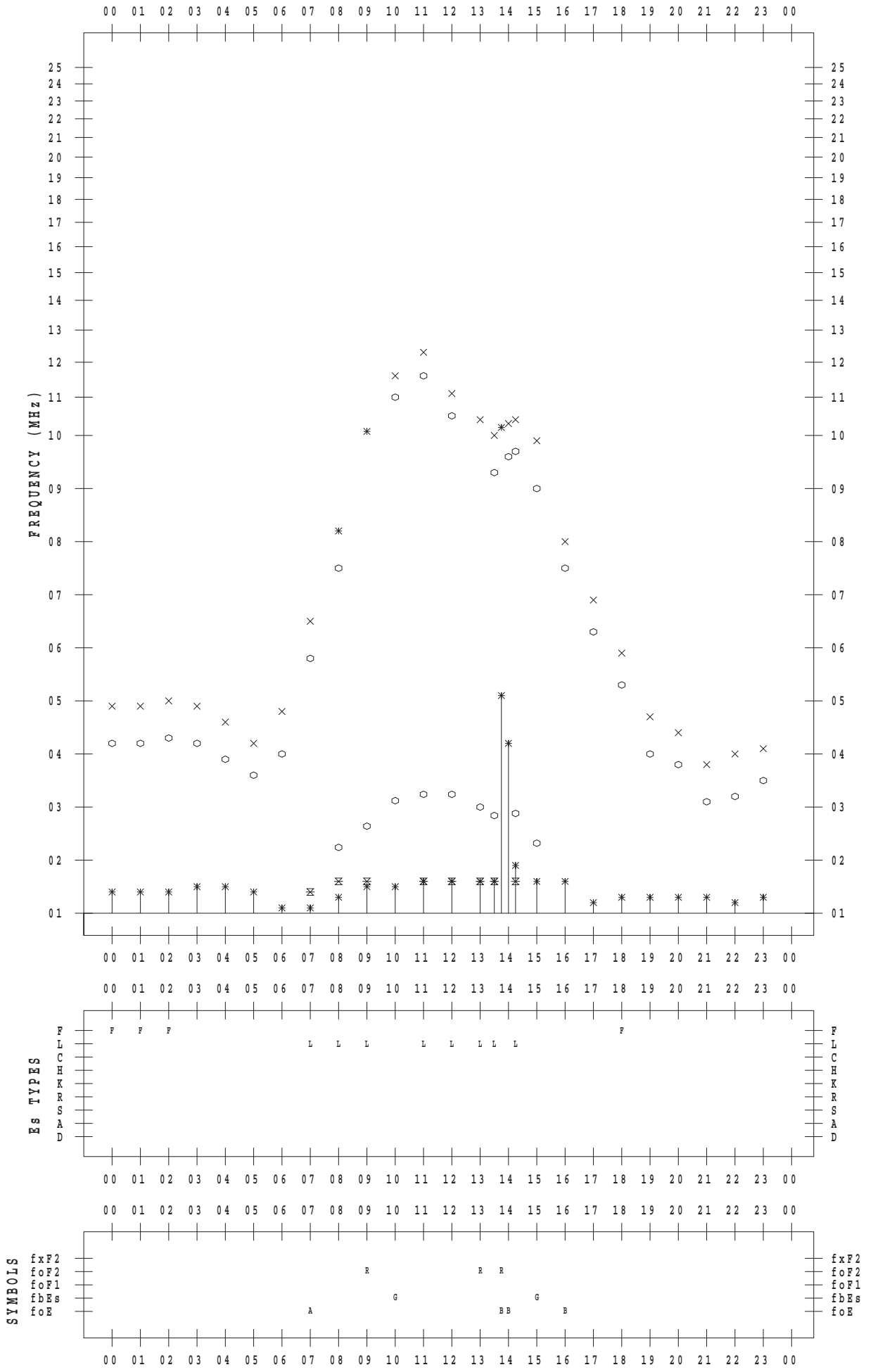
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/17

135 °E MEAN TIME



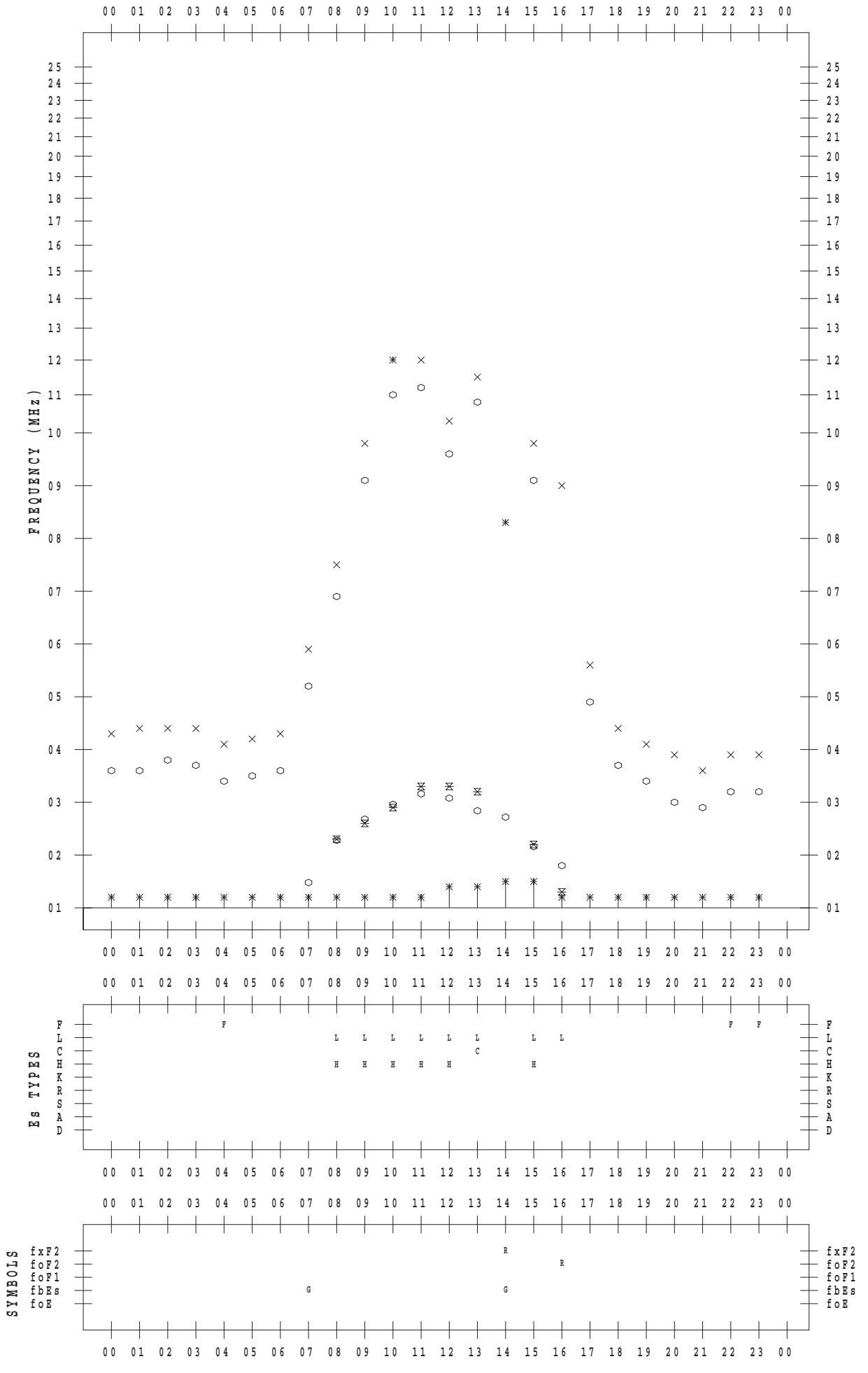
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/18

135 °E MEAN TIME



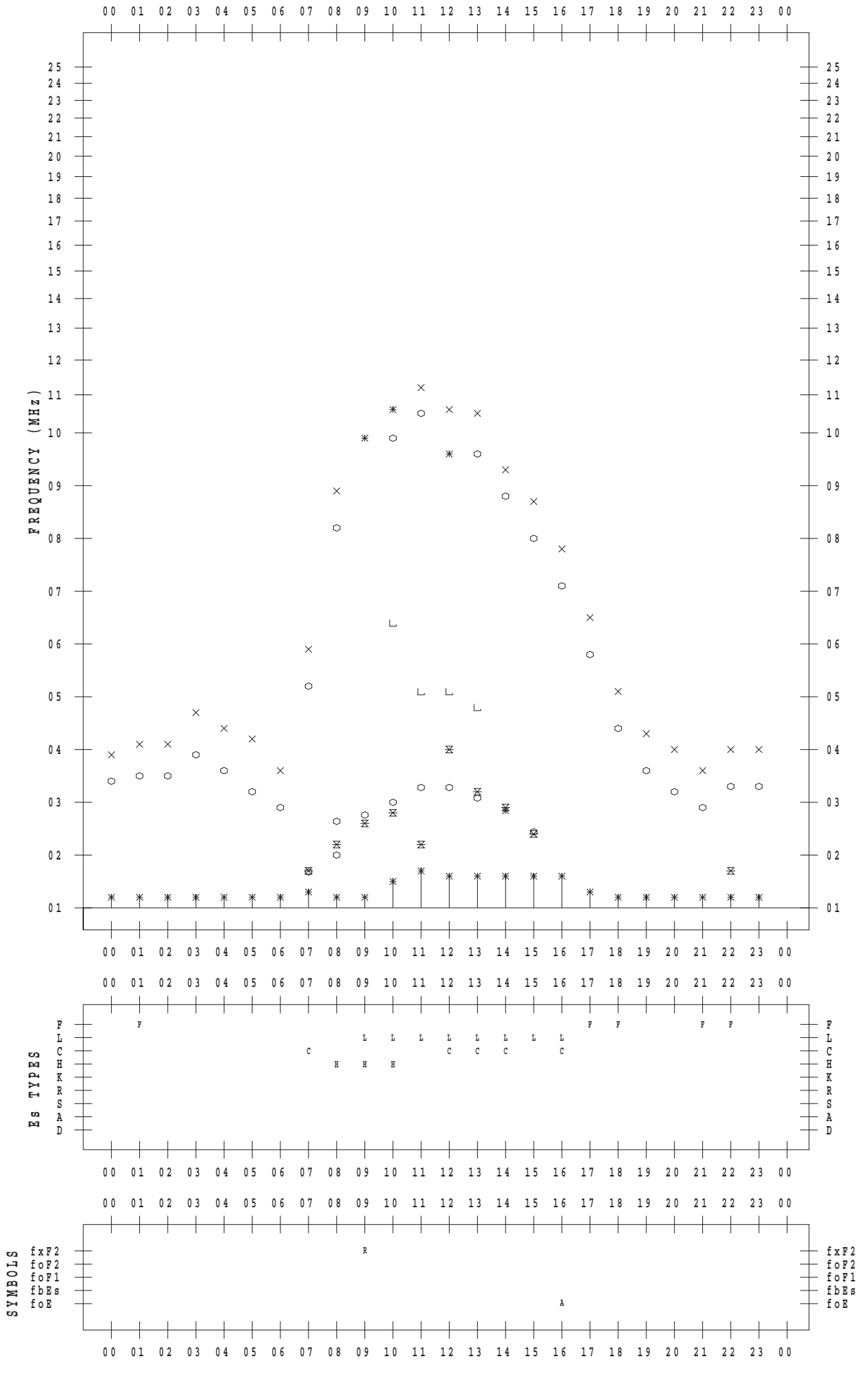
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/19

135 °E MEAN TIME



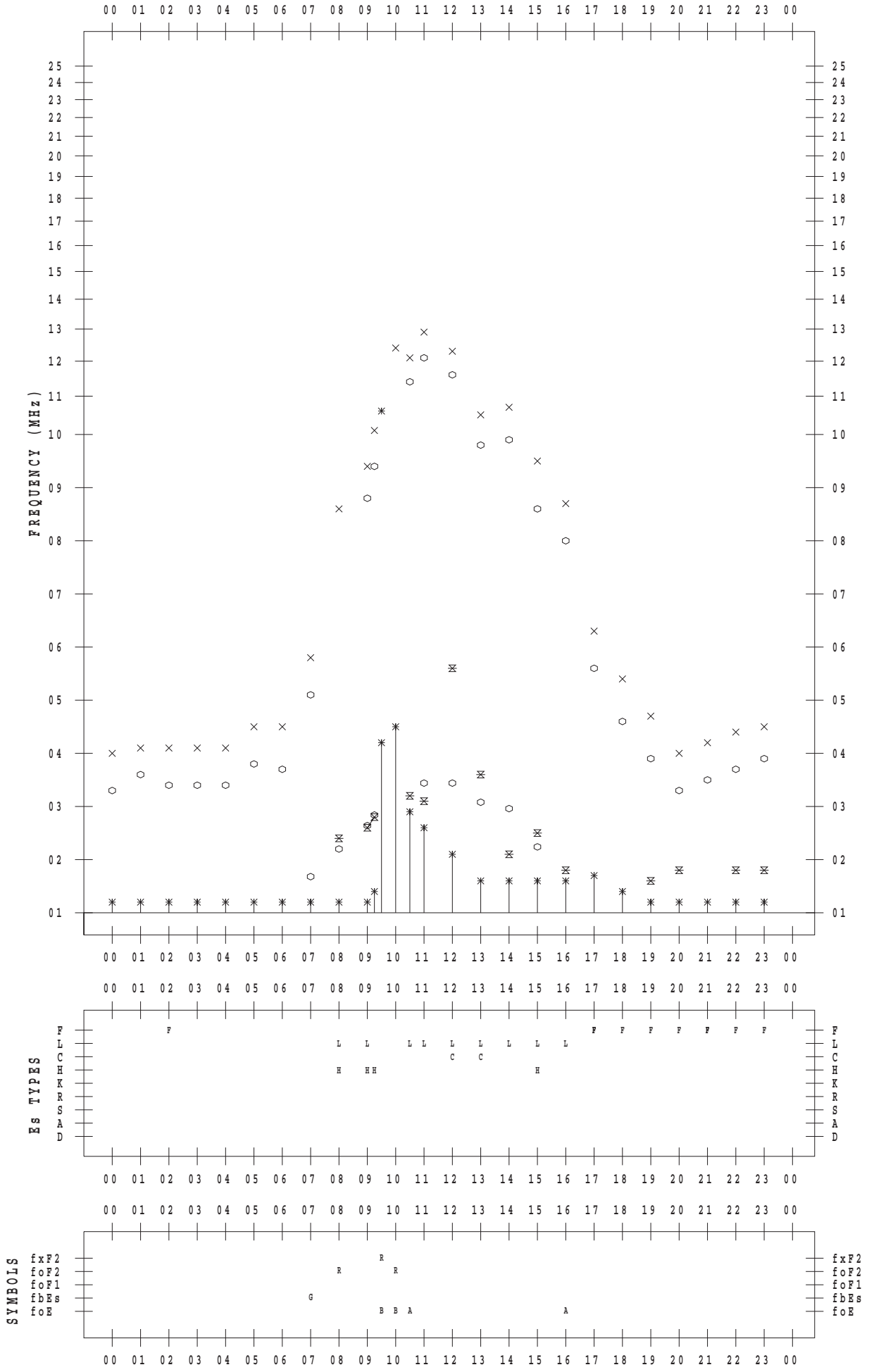
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/20

135 °E MEAN TIME



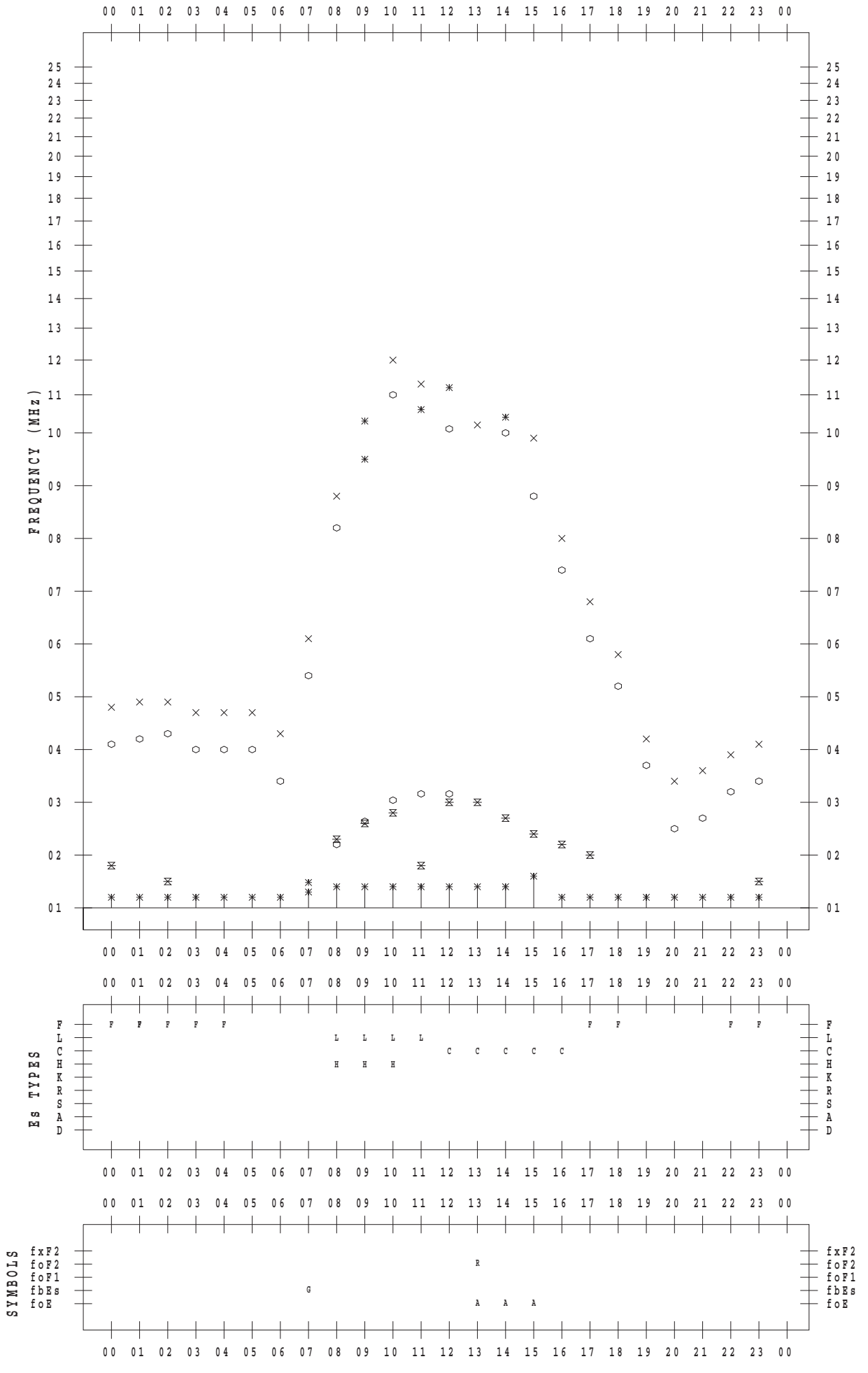
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/21

135 °E MEAN TIME



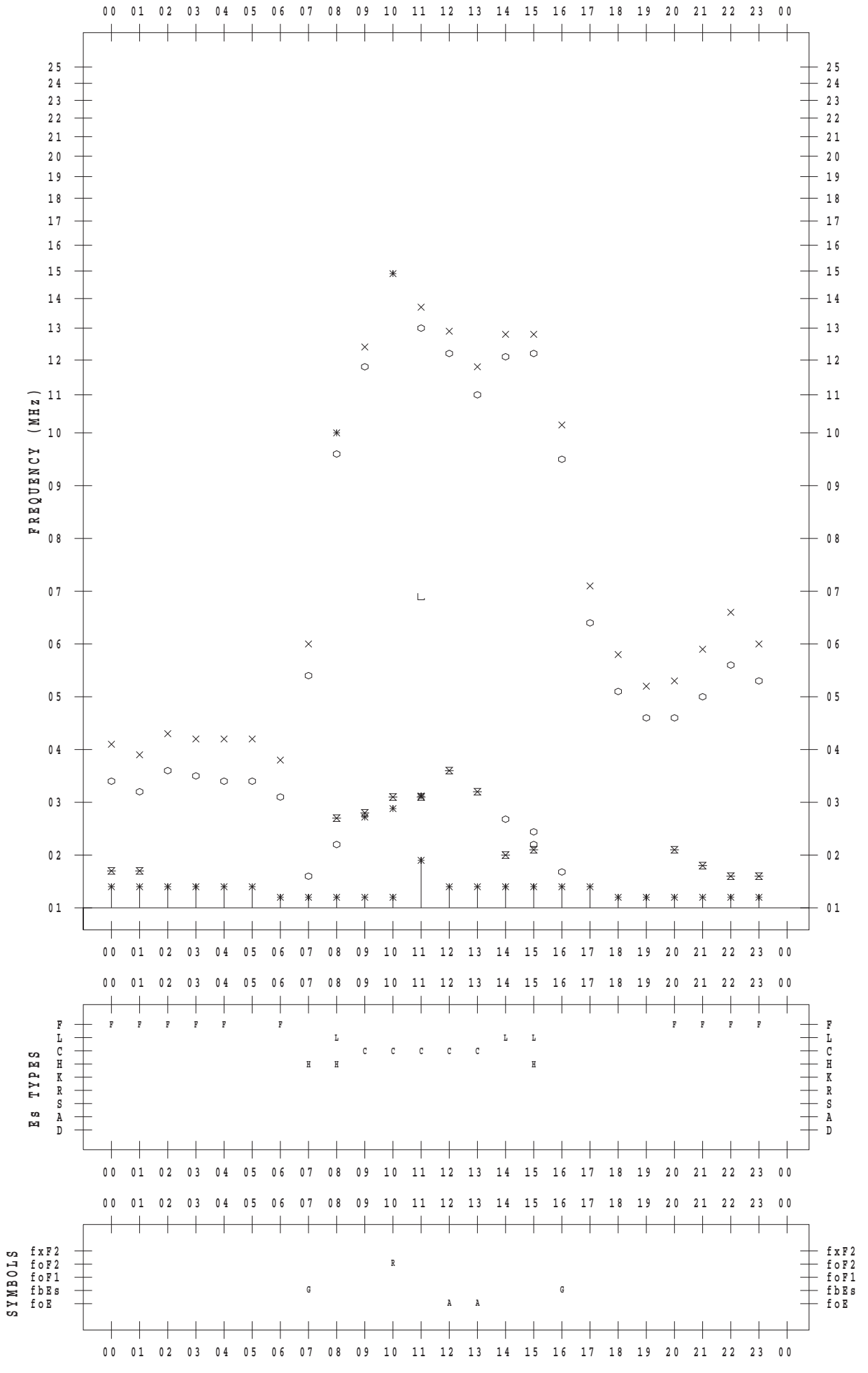
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/22

135 °E MEAN TIME



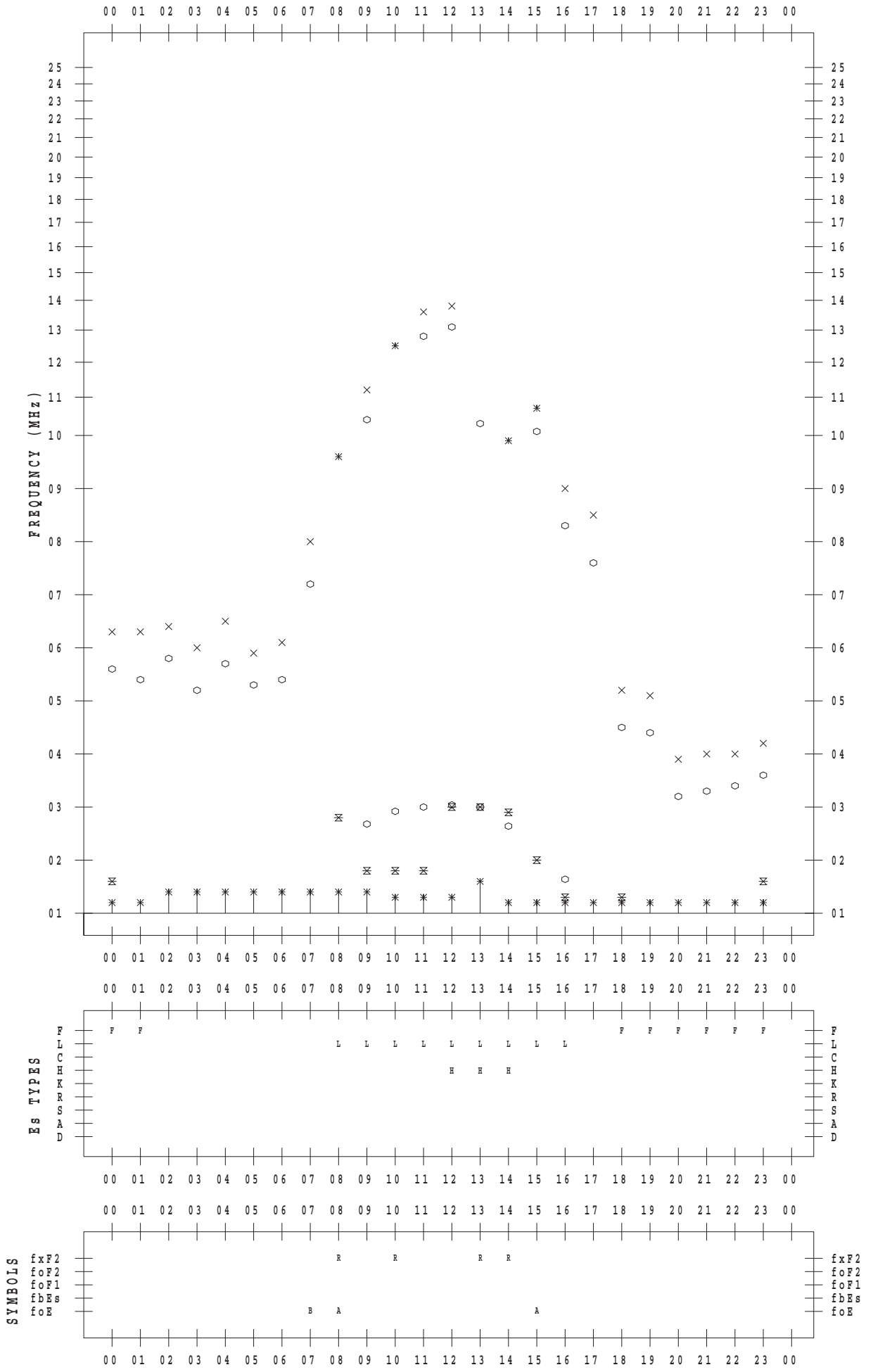
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/23

135 °E MEAN TIME



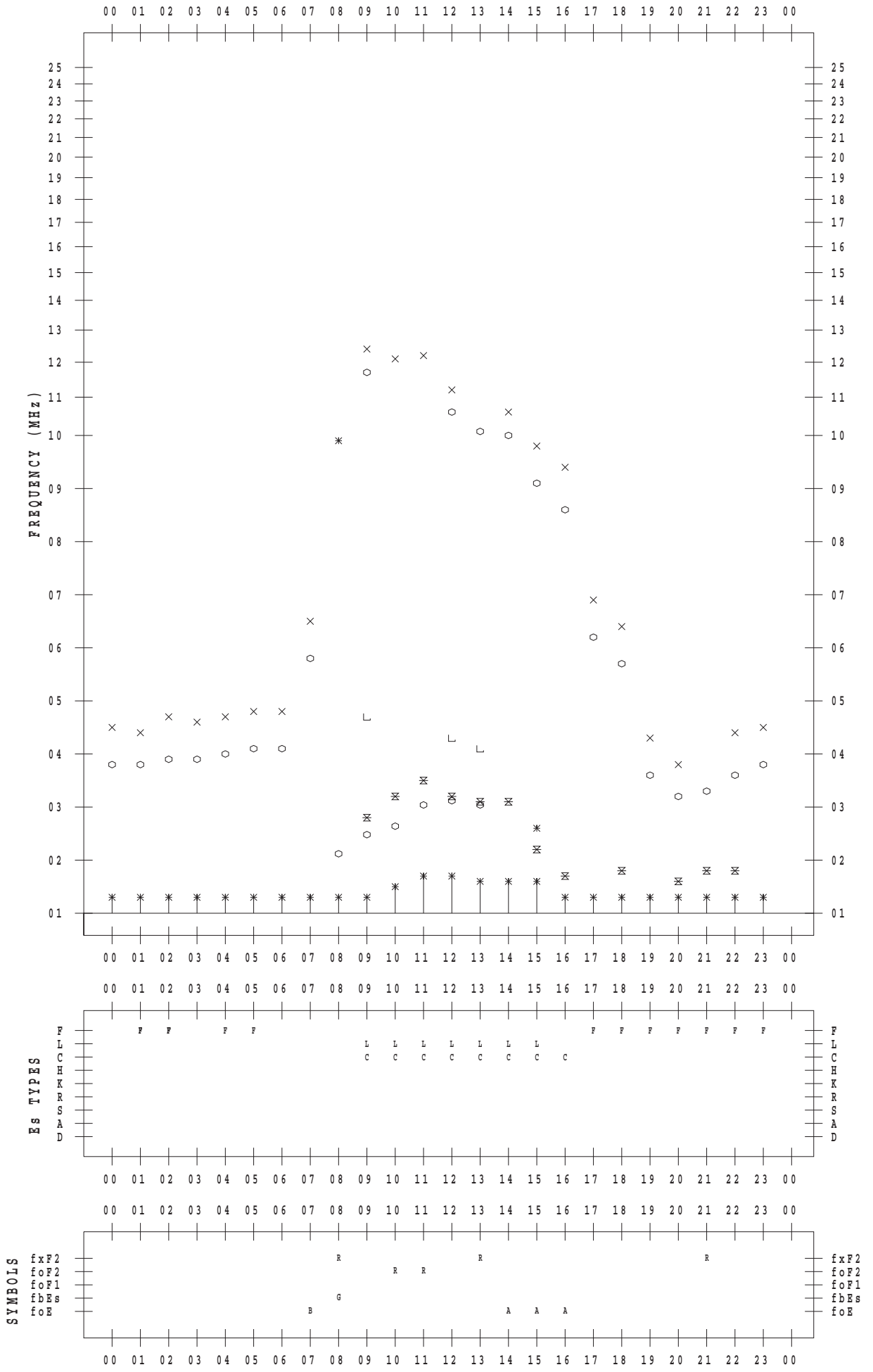
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/24

135 °E MEAN TIME



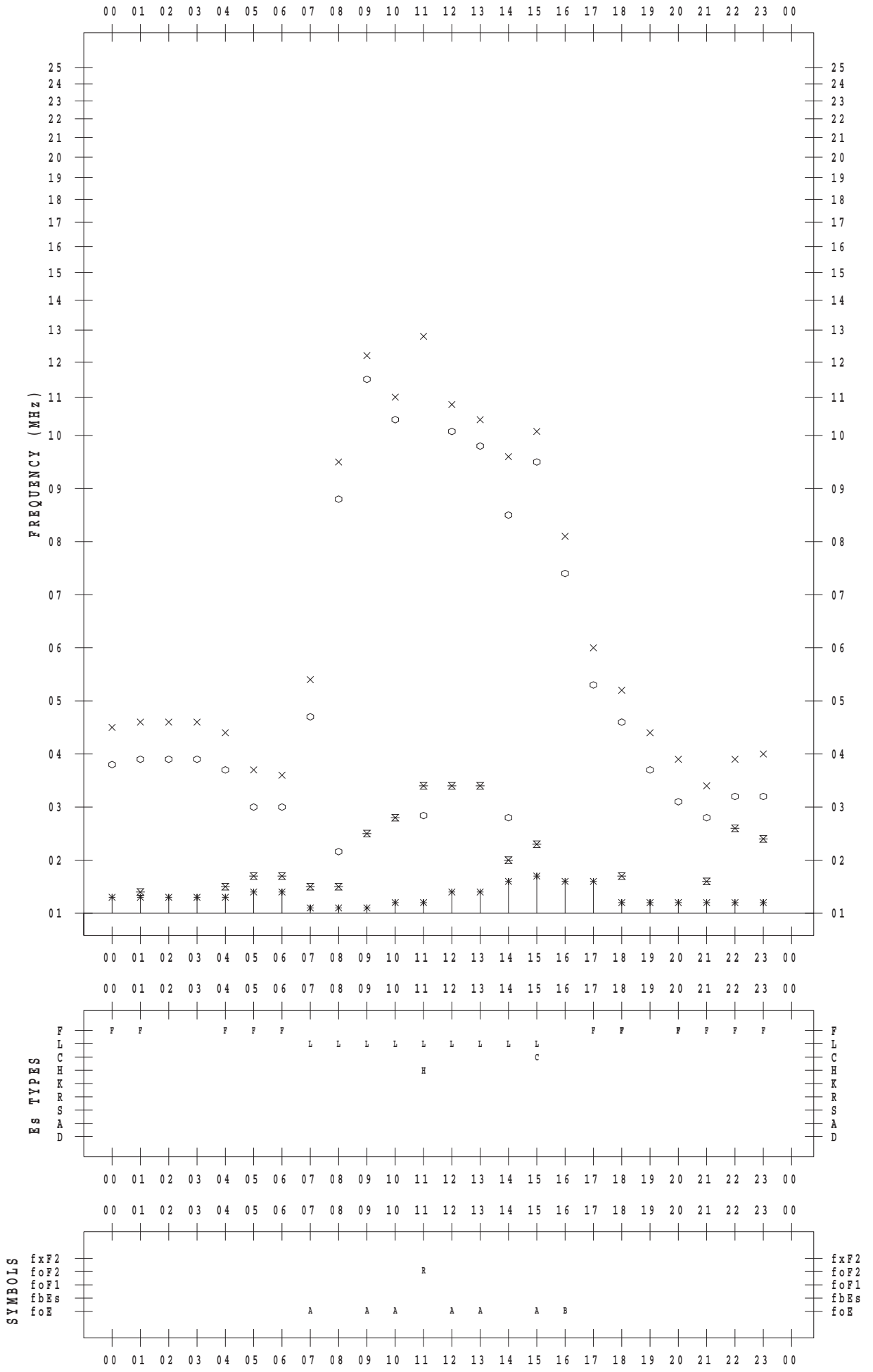
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/25

135 °E MEAN TIME



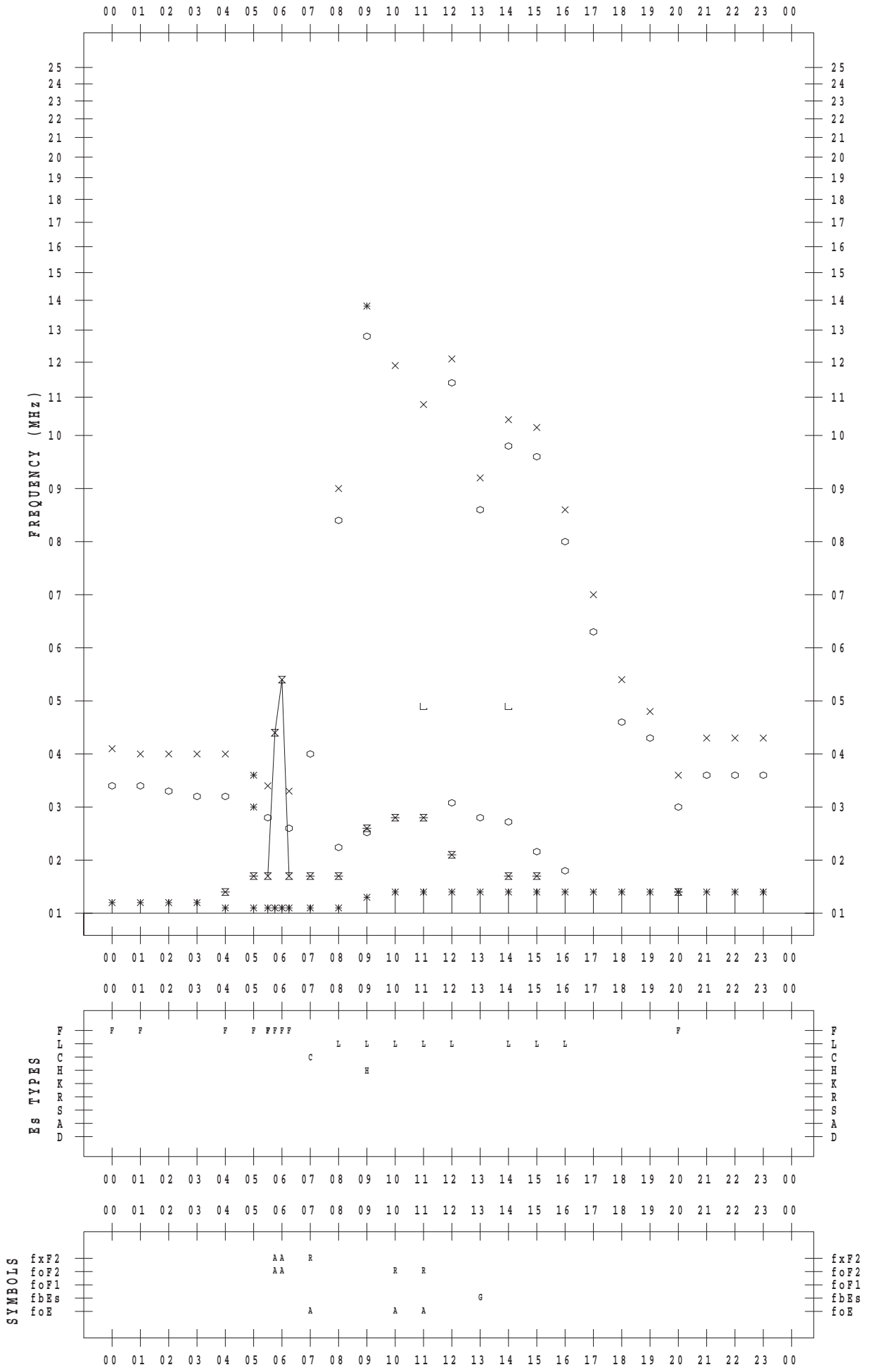
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/26

135 °E MEAN TIME



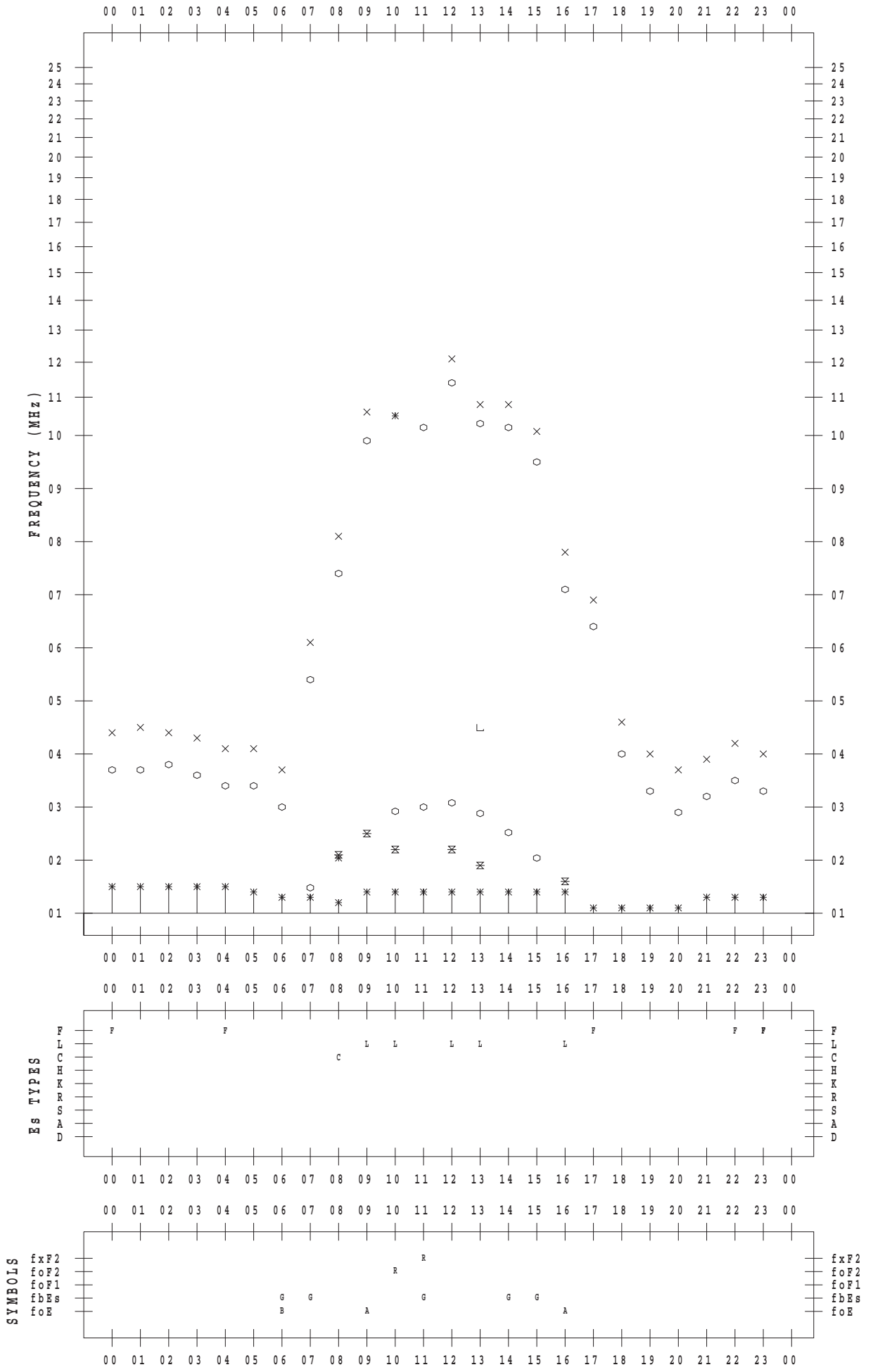
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/27

135 °E MEAN TIME



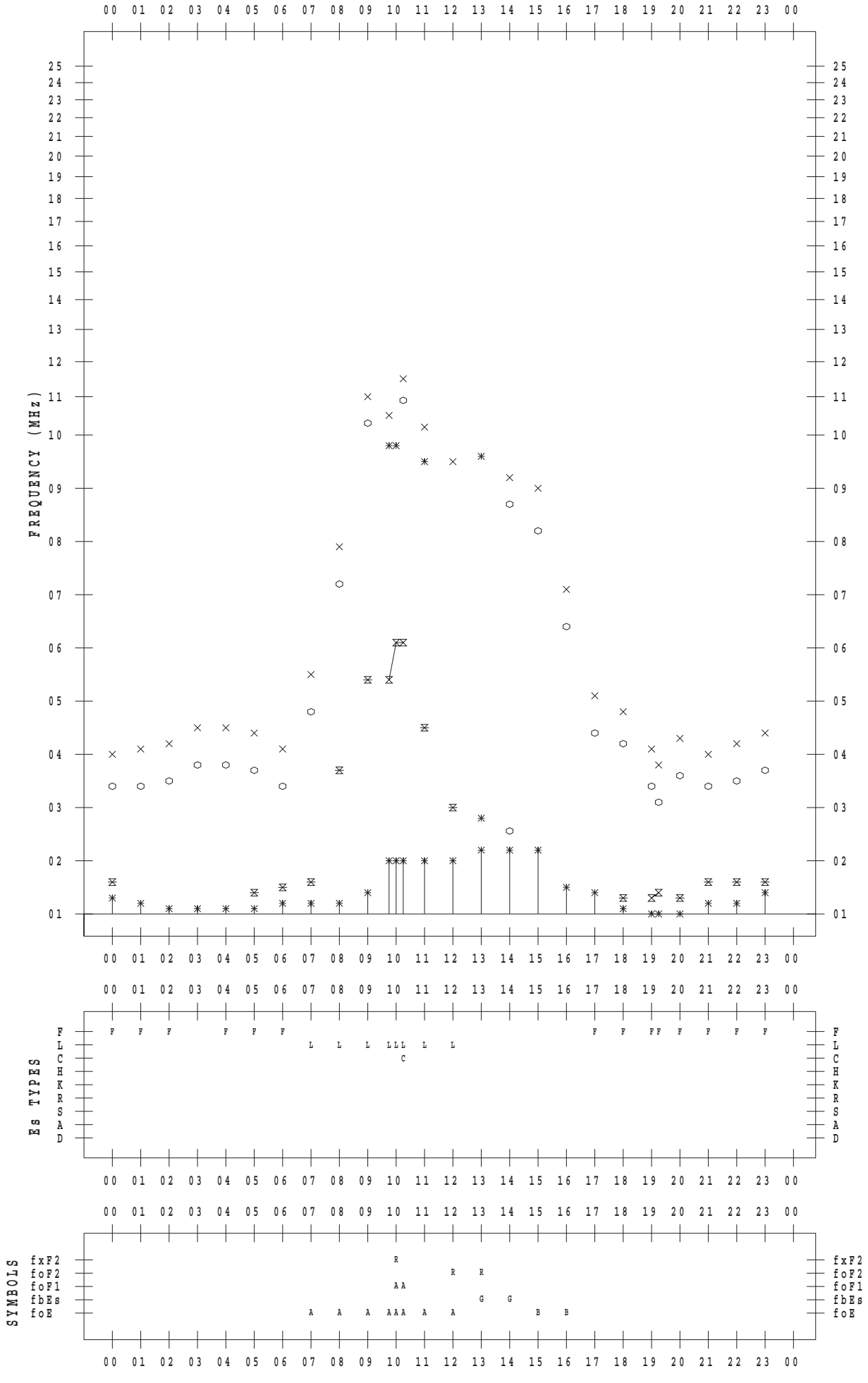
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/28

135 °E MEAN TIME



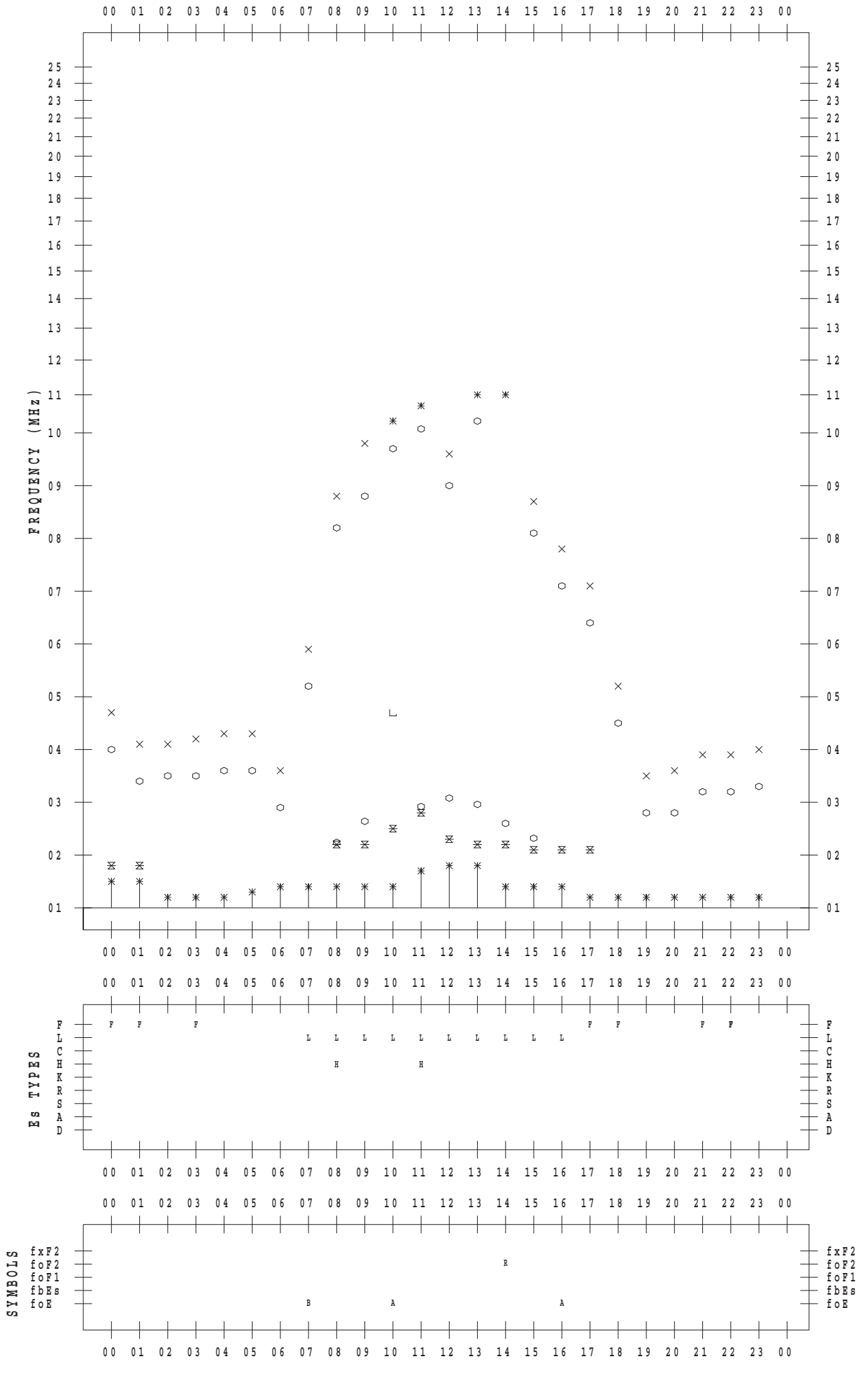
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/29

135 °E MEAN TIME



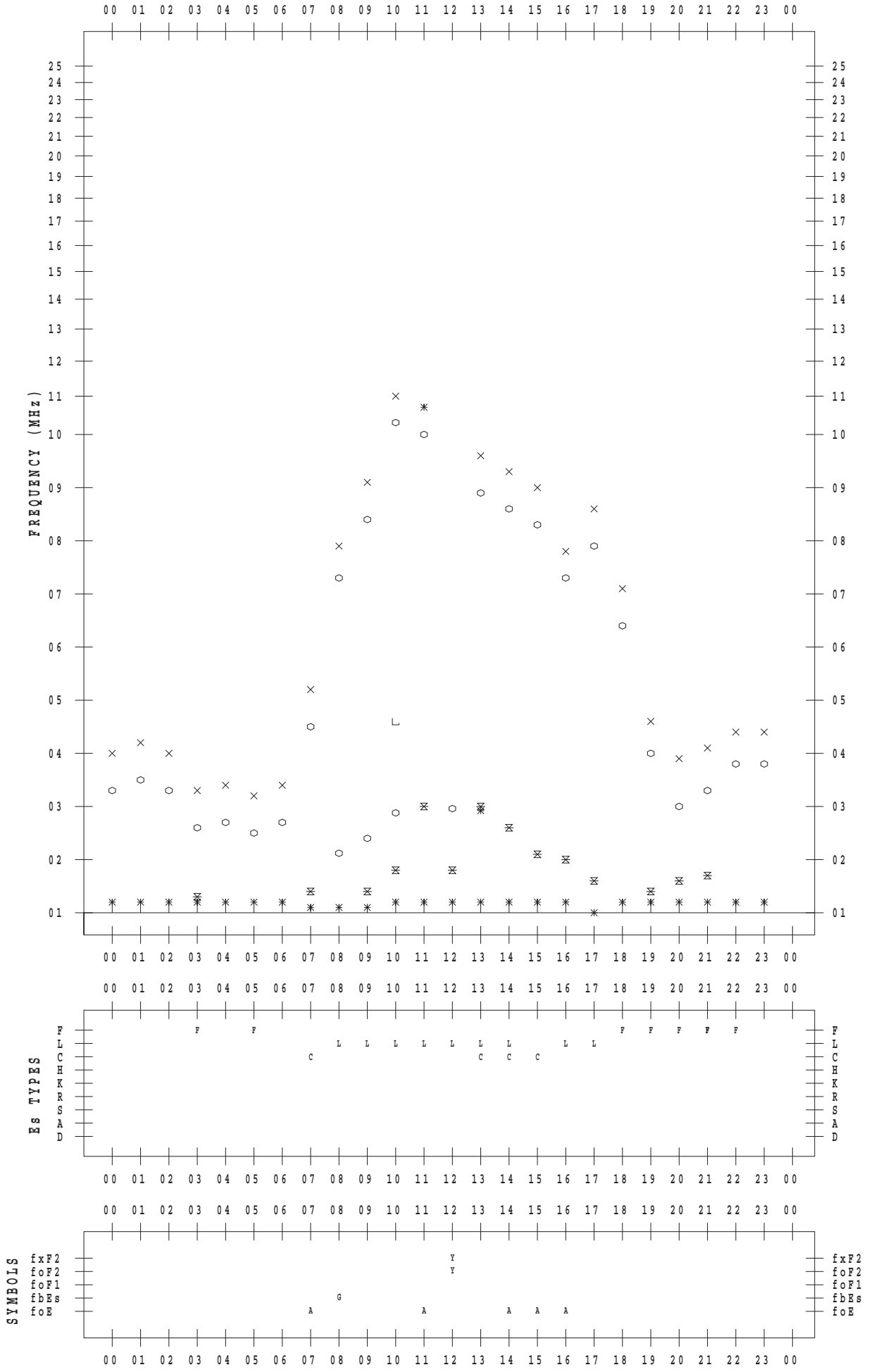
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/30

135 °E MEAN TIME



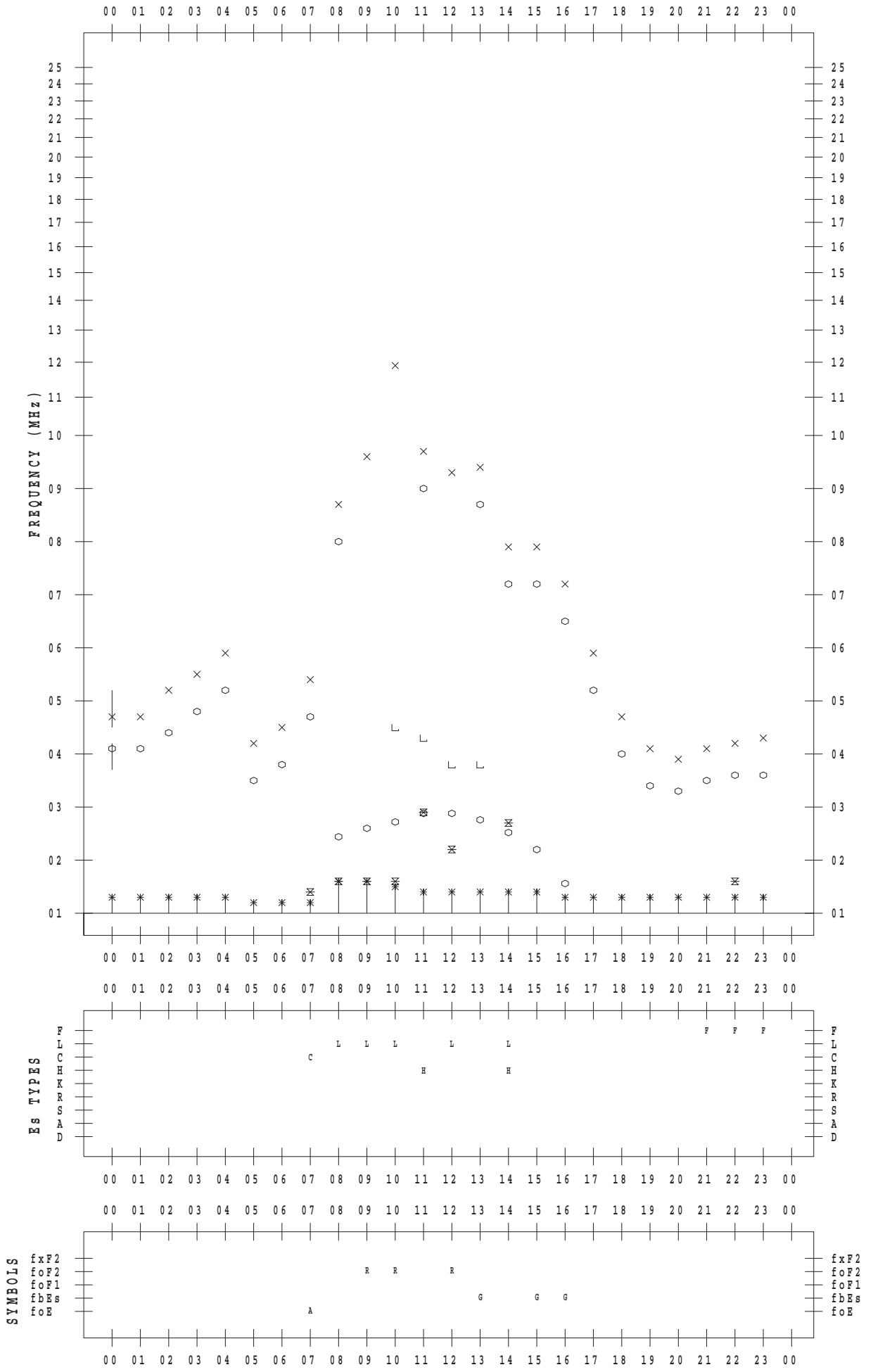
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/12/31

135 °E MEAN TIME



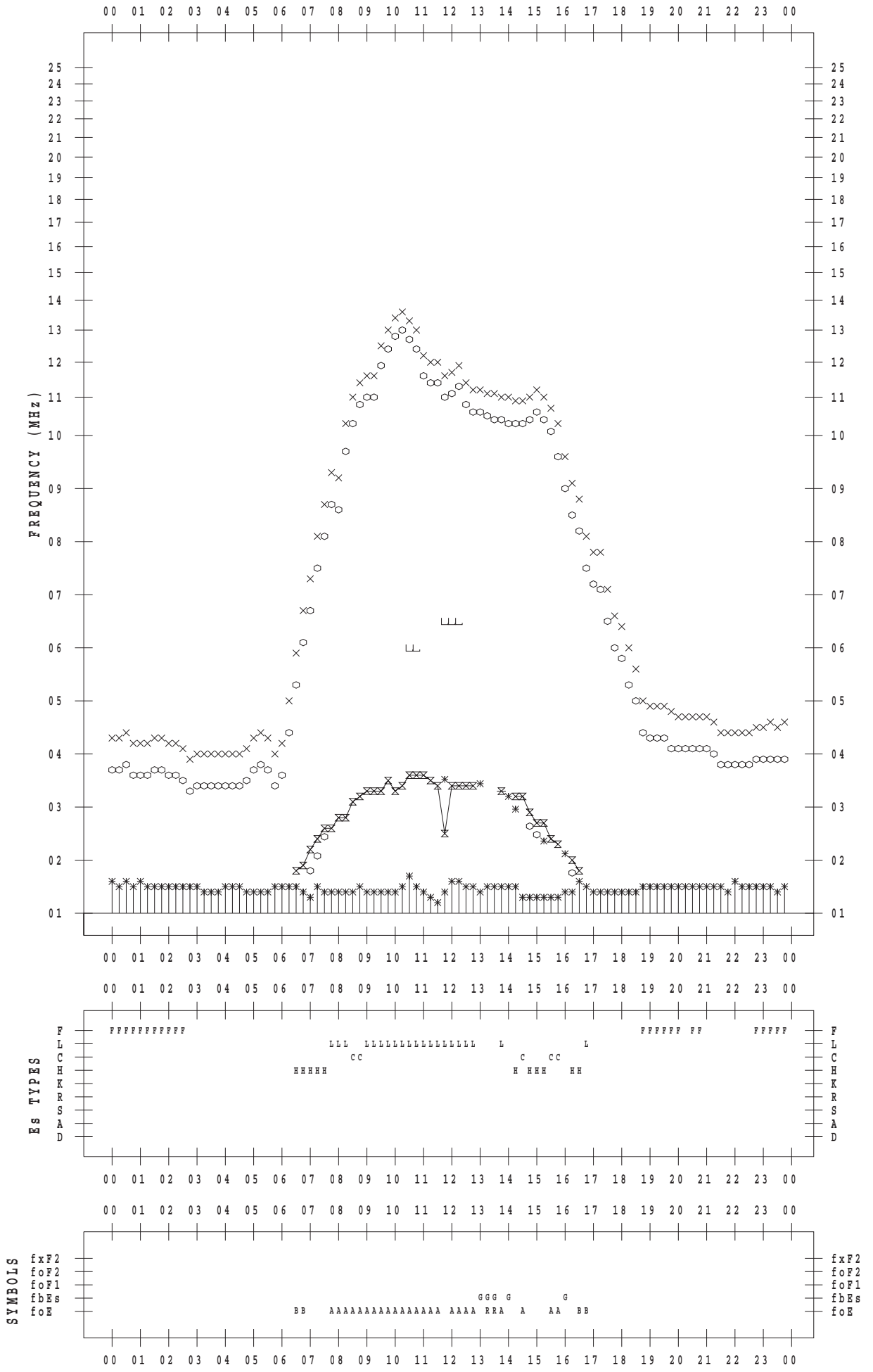
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 1

135 °E MEAN TIME



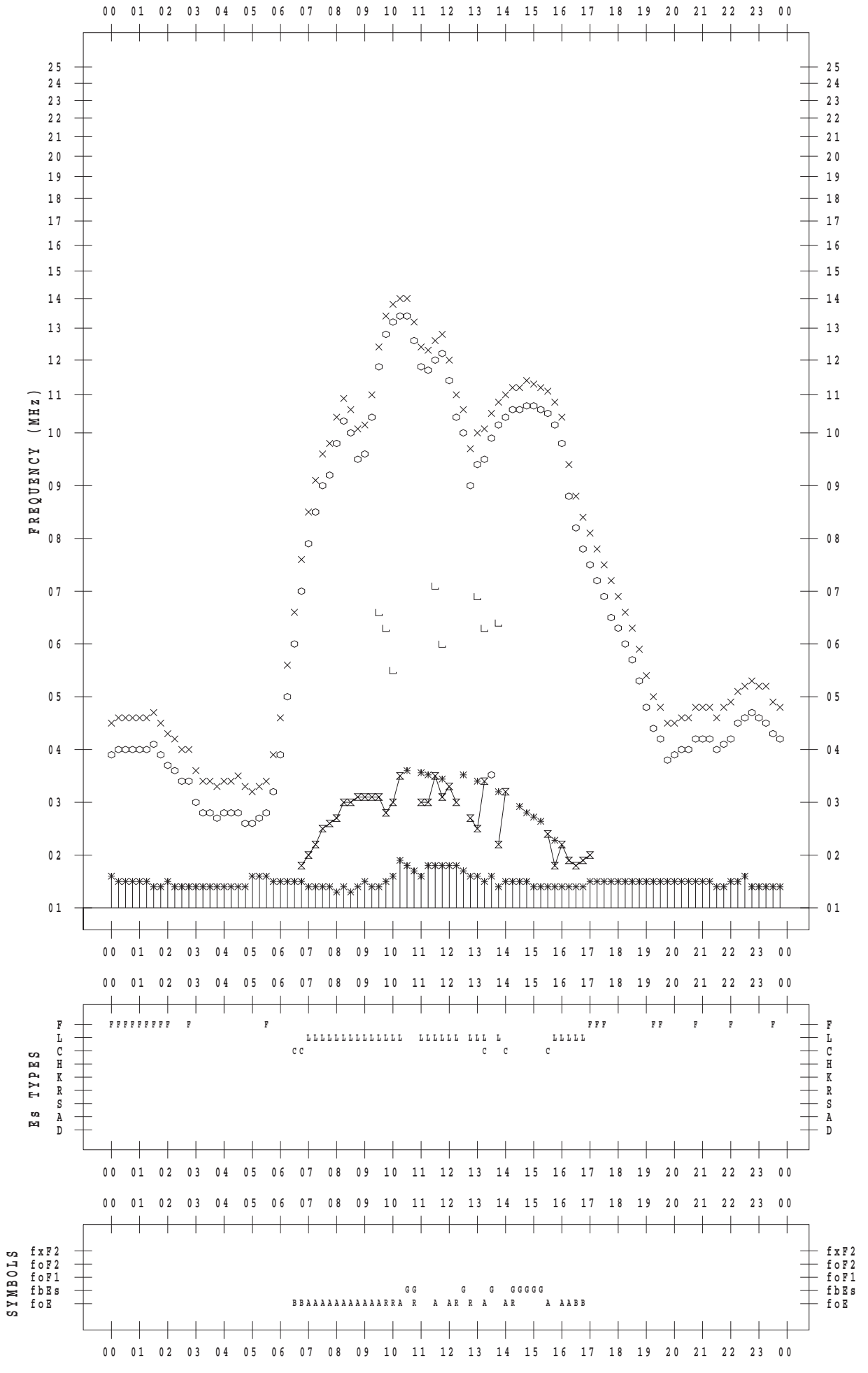
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 2

135 °E MEAN TIME



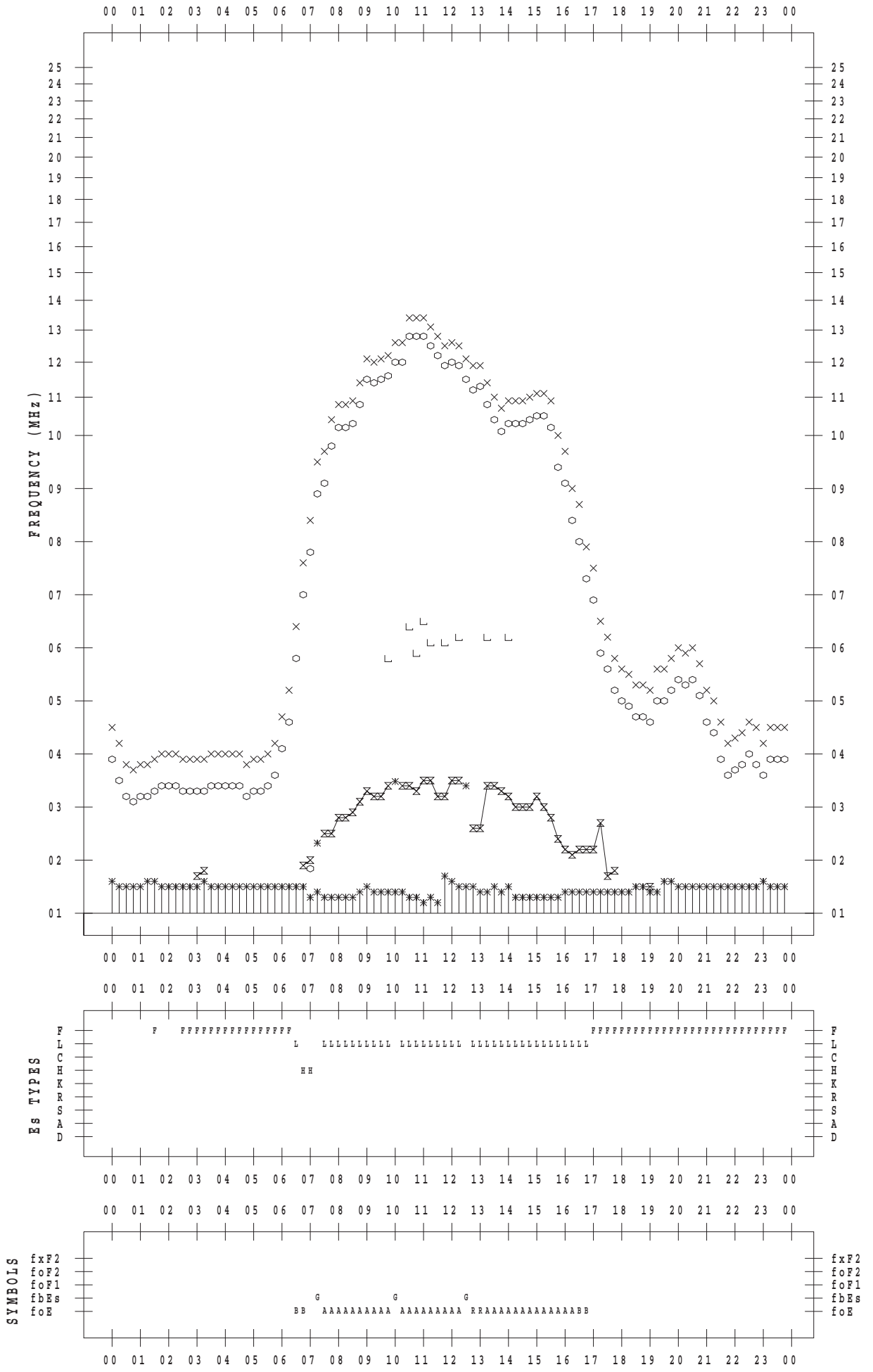
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 3

135 °E MEAN TIME



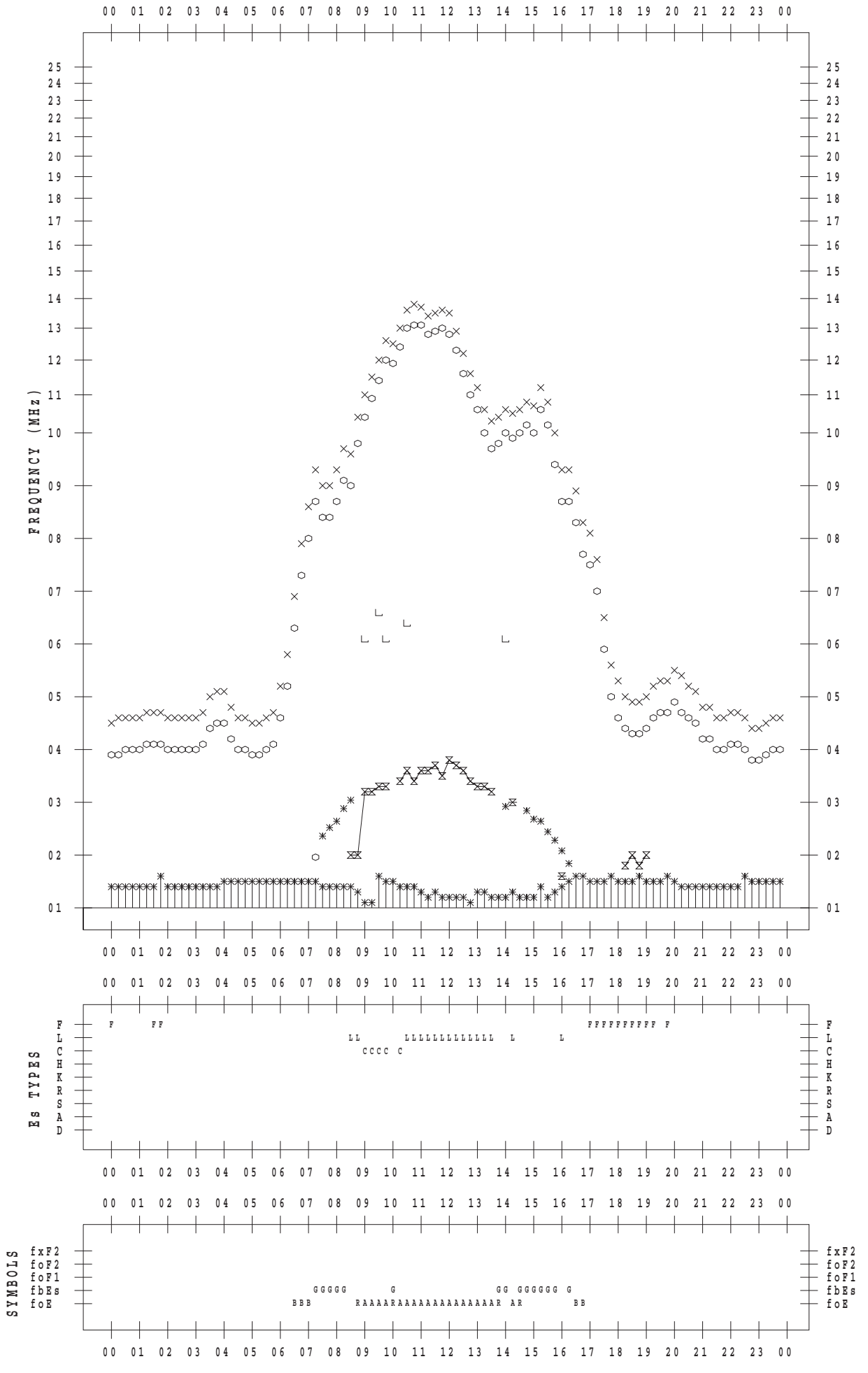
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 4

135 °E MEAN TIME



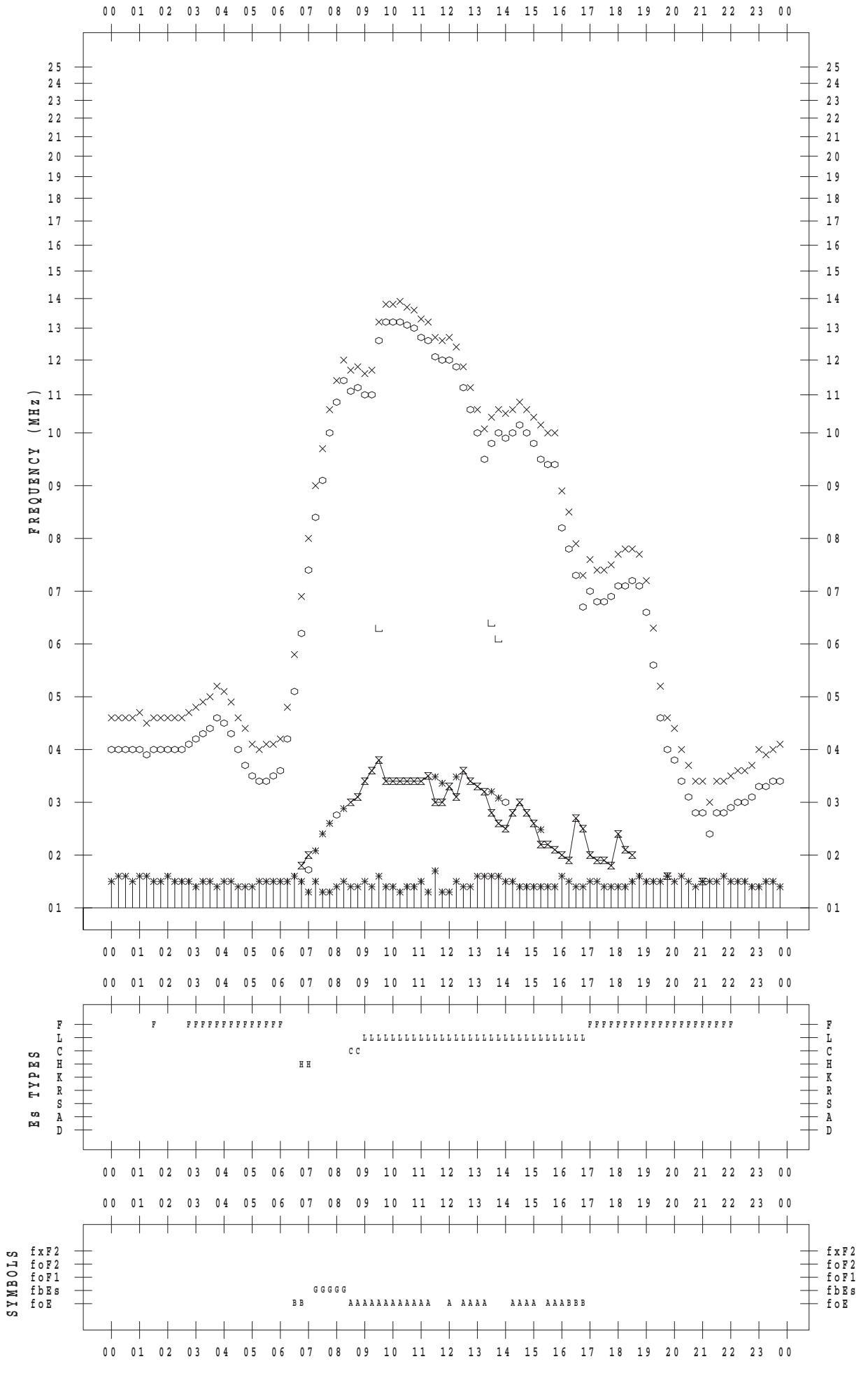
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 5

135 °E MEAN TIME



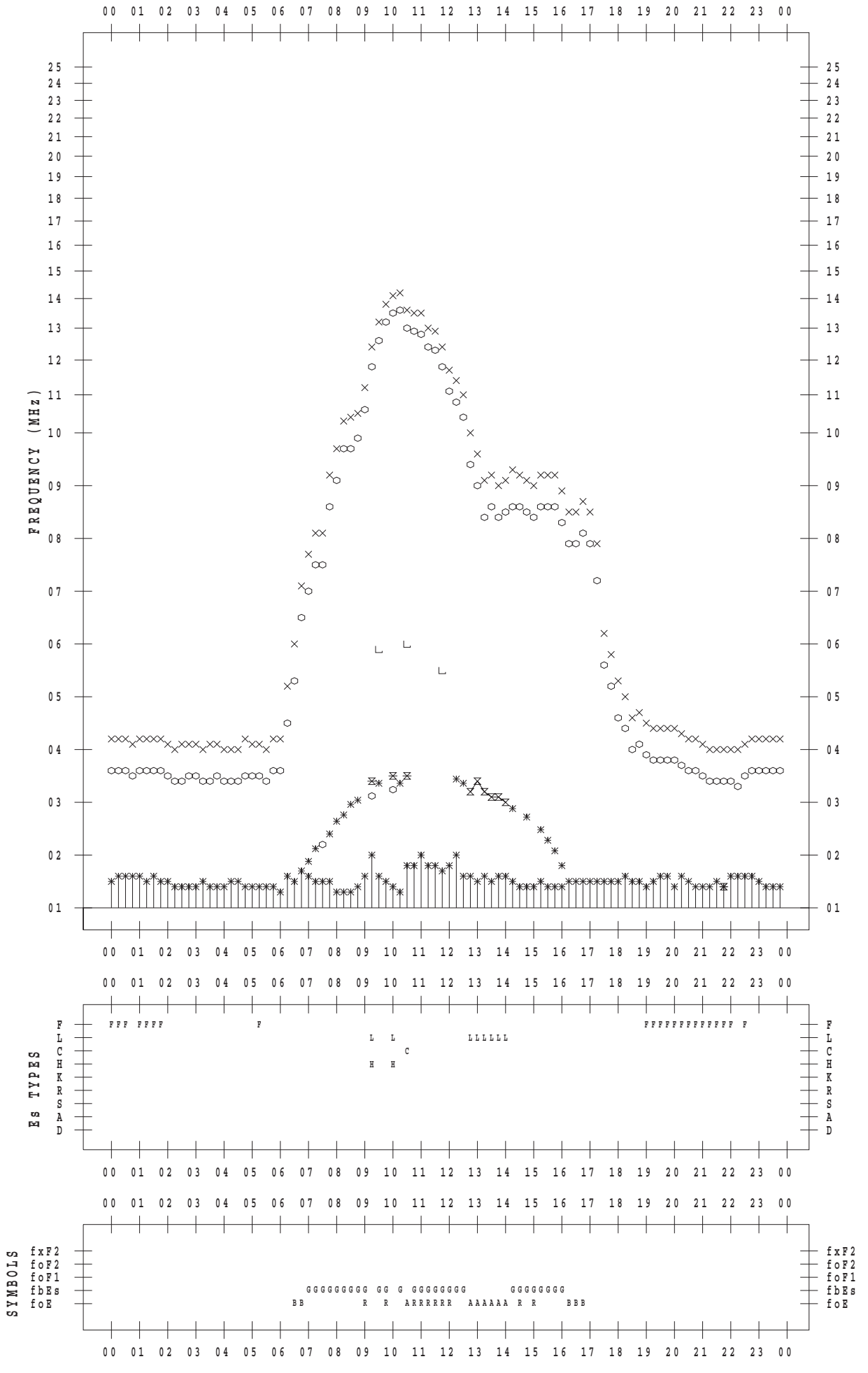
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 6

135 °E MEAN TIME



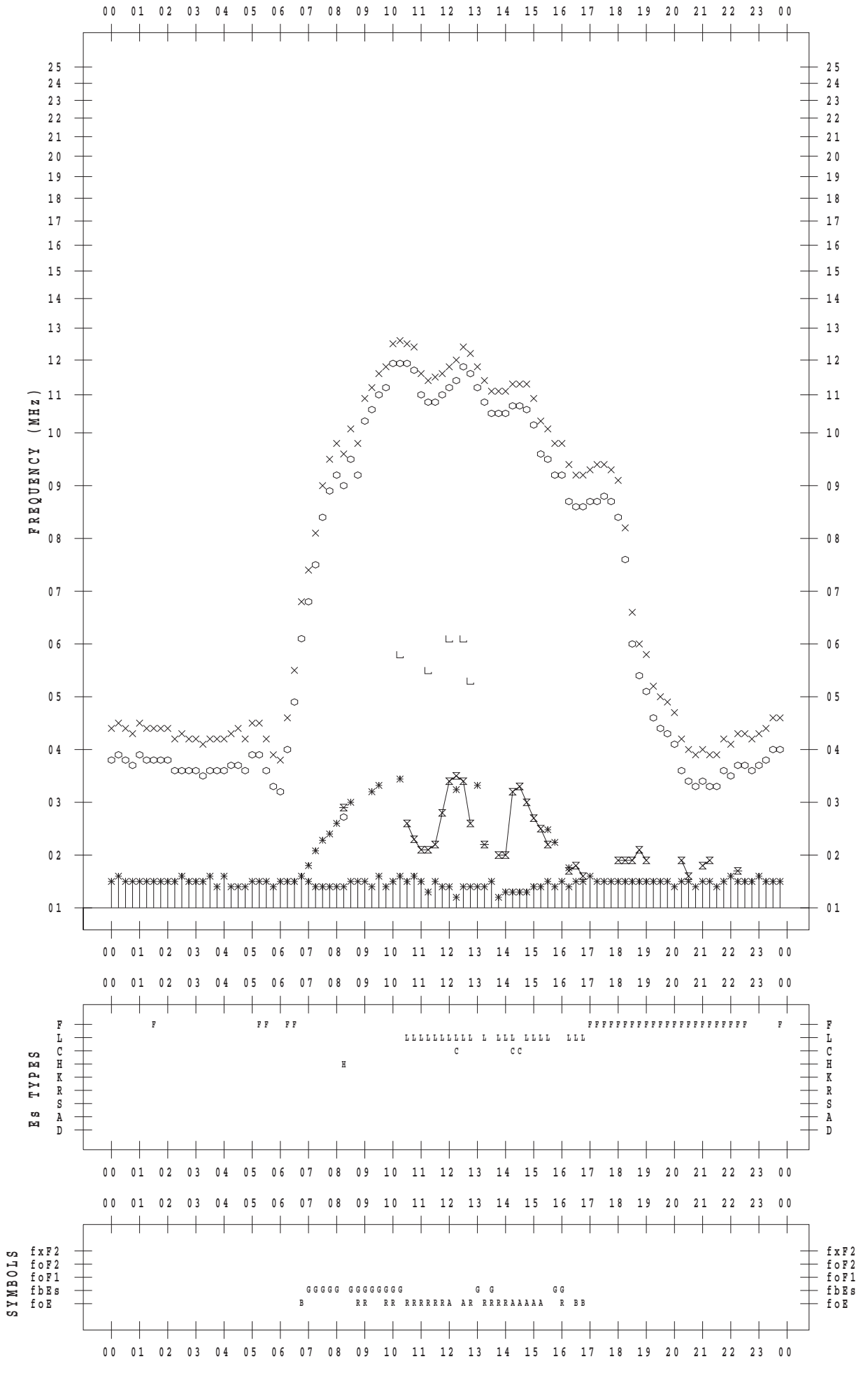
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 7

135 °E MEAN TIME



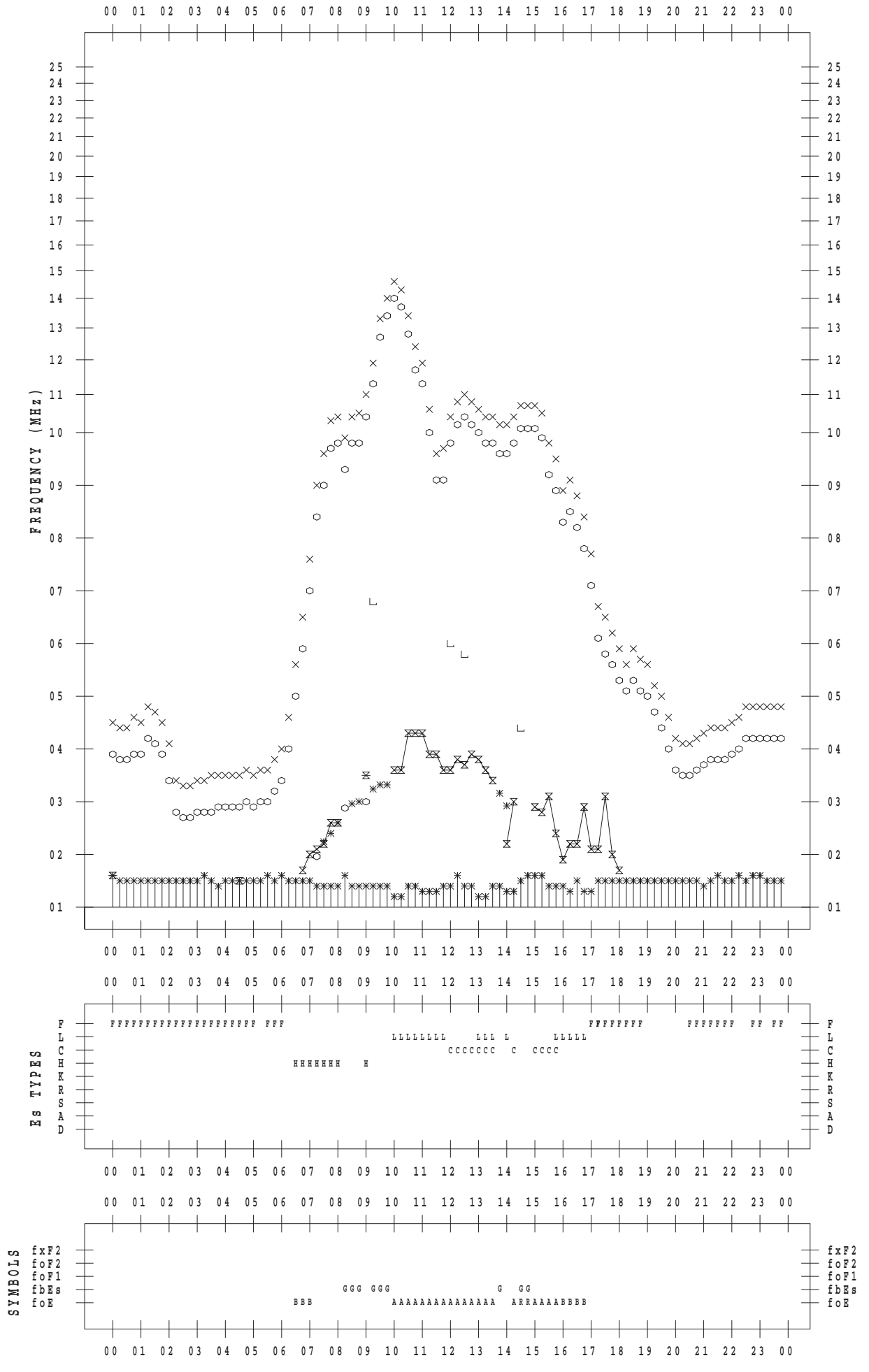
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 8

135 °E MEAN TIME



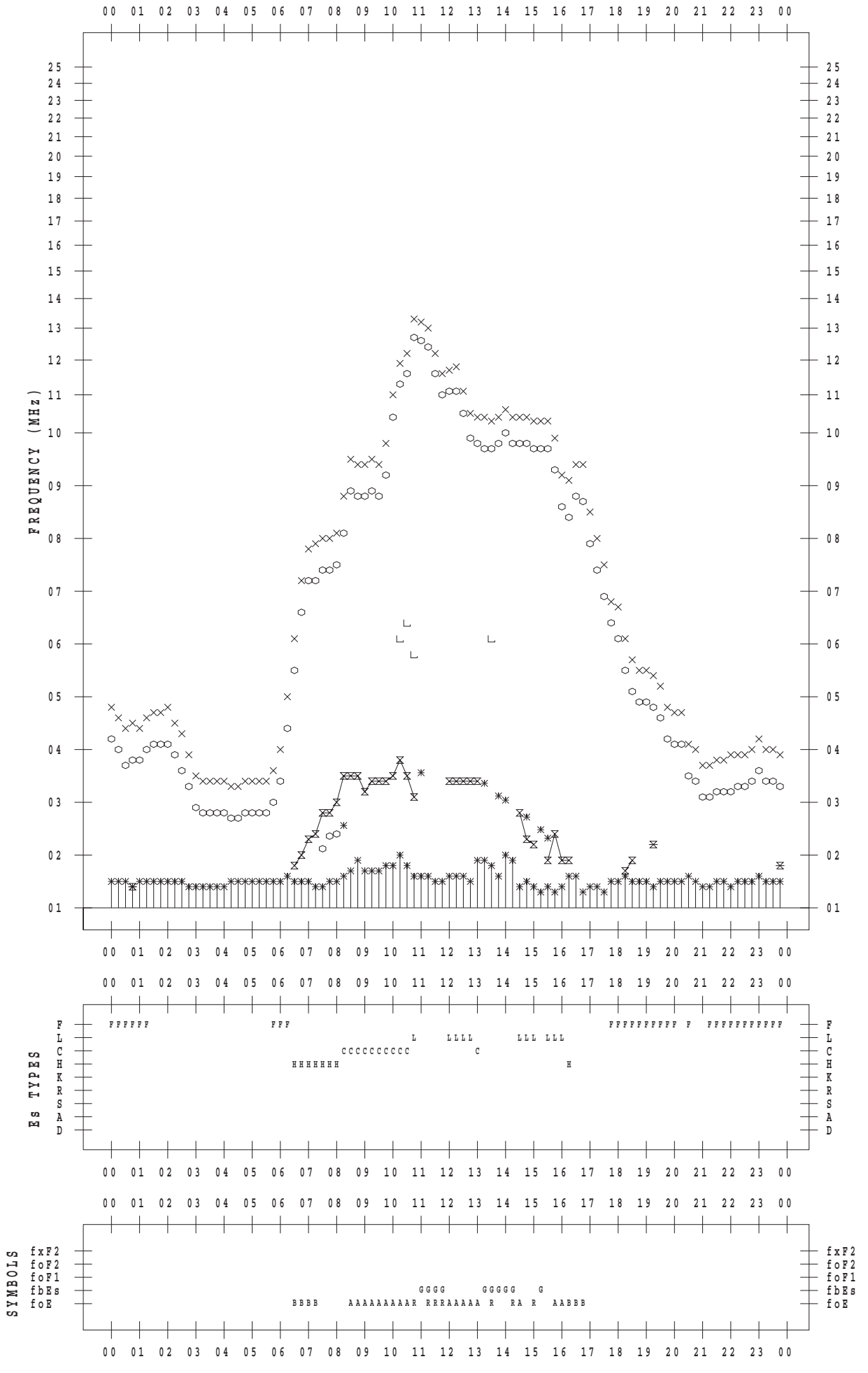
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/ 9

135 °E MEAN TIME



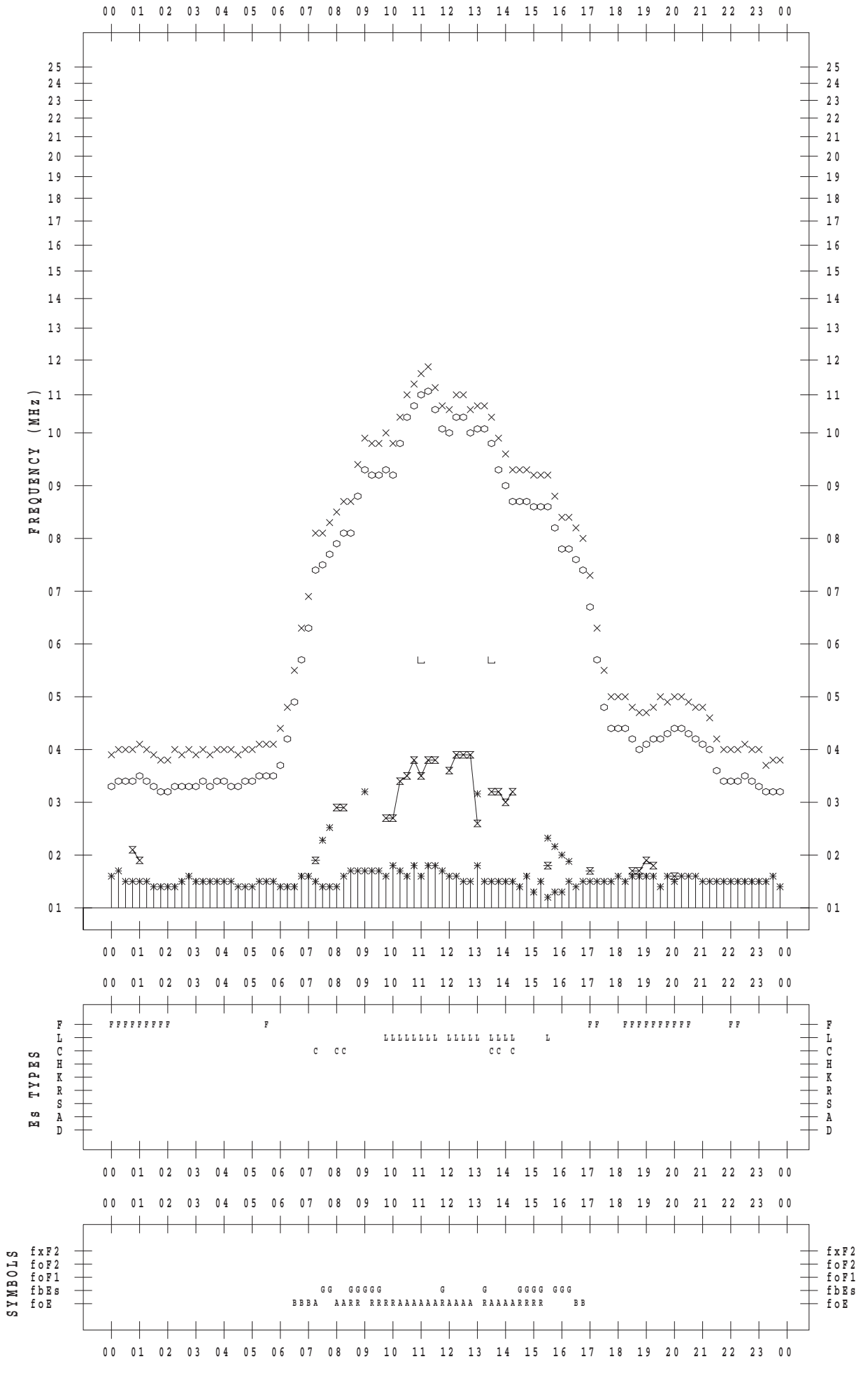
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/10

135 °E MEAN TIME



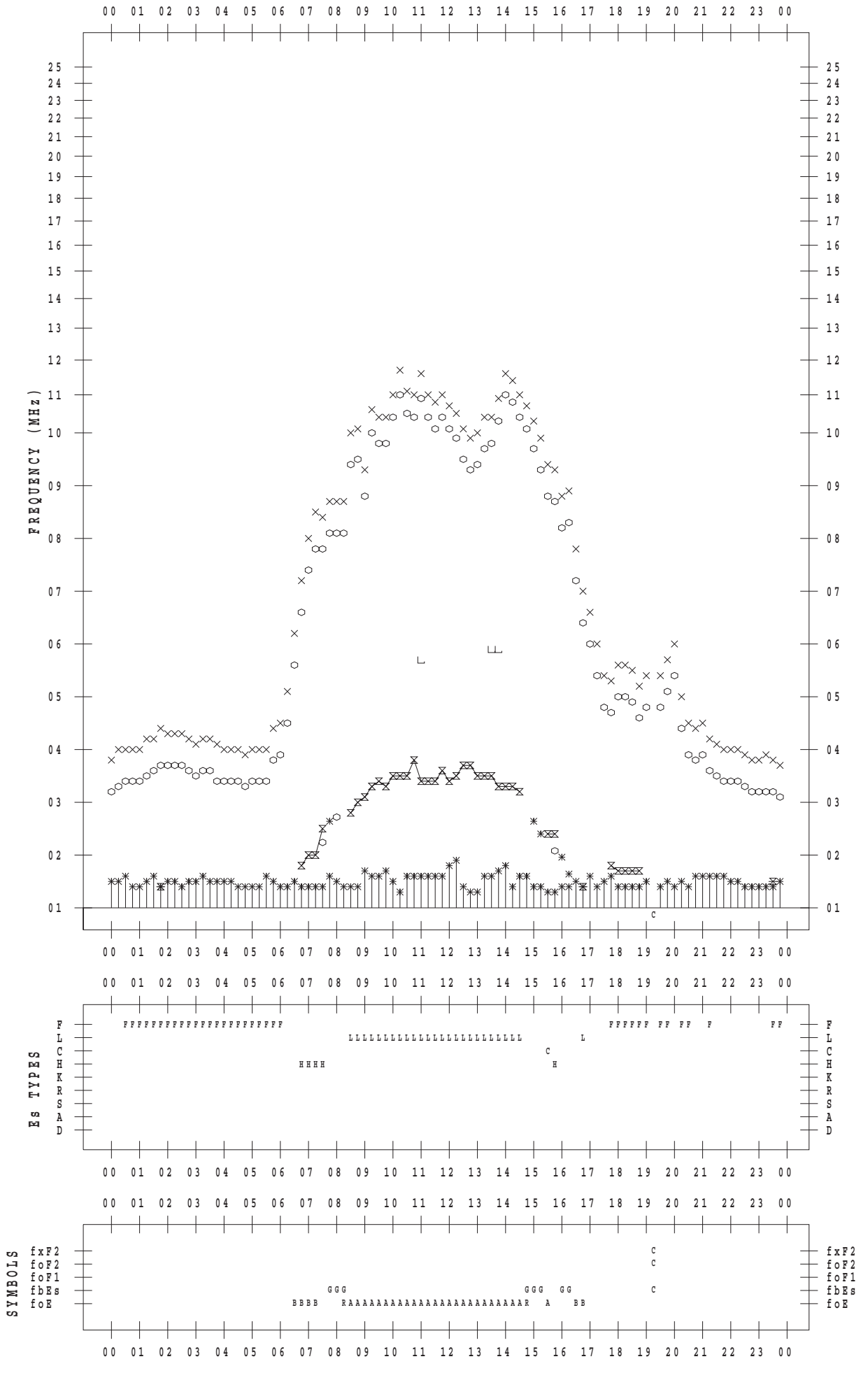
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/11

135 °E MEAN TIME



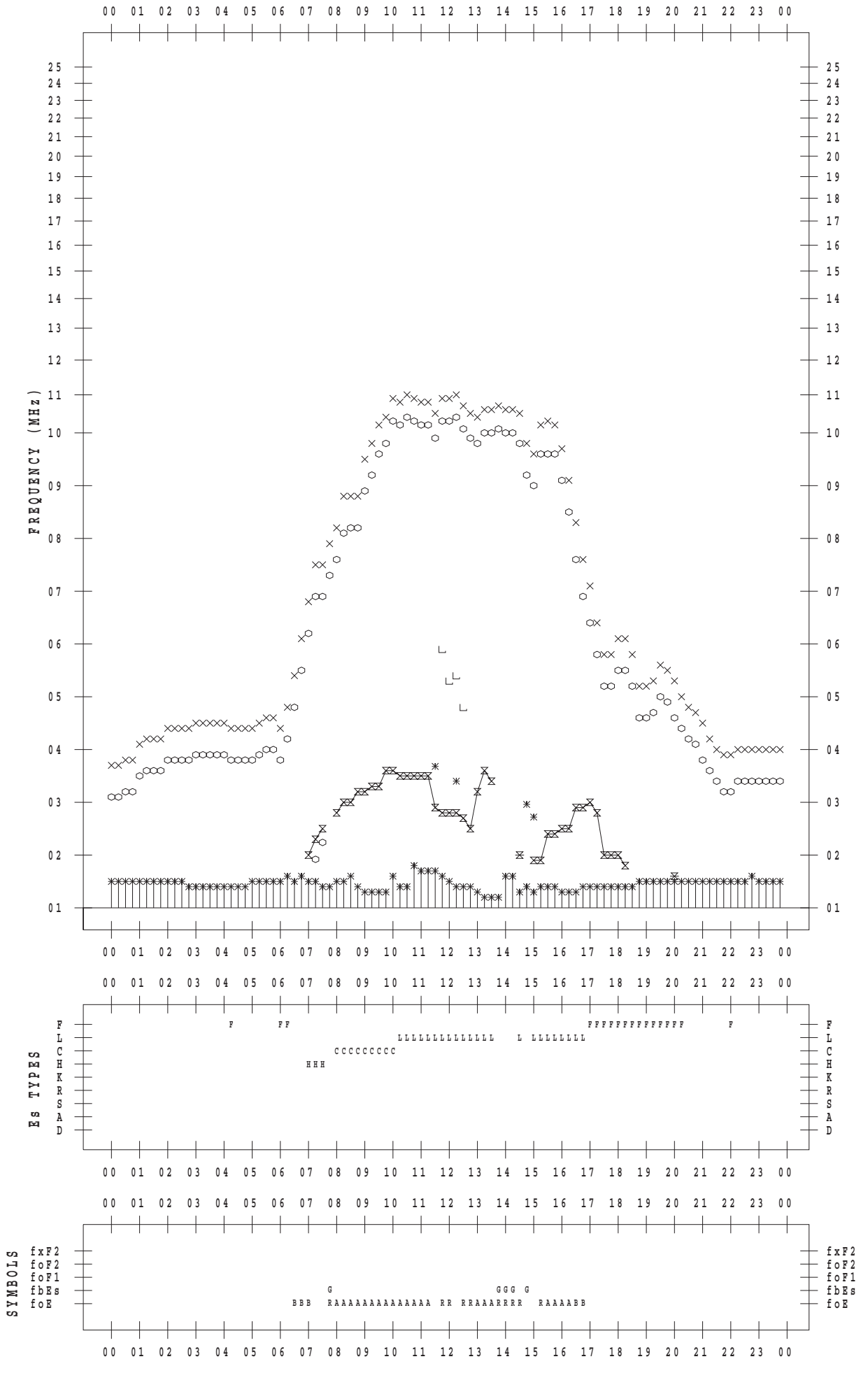
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/12

135 °E MEAN TIME



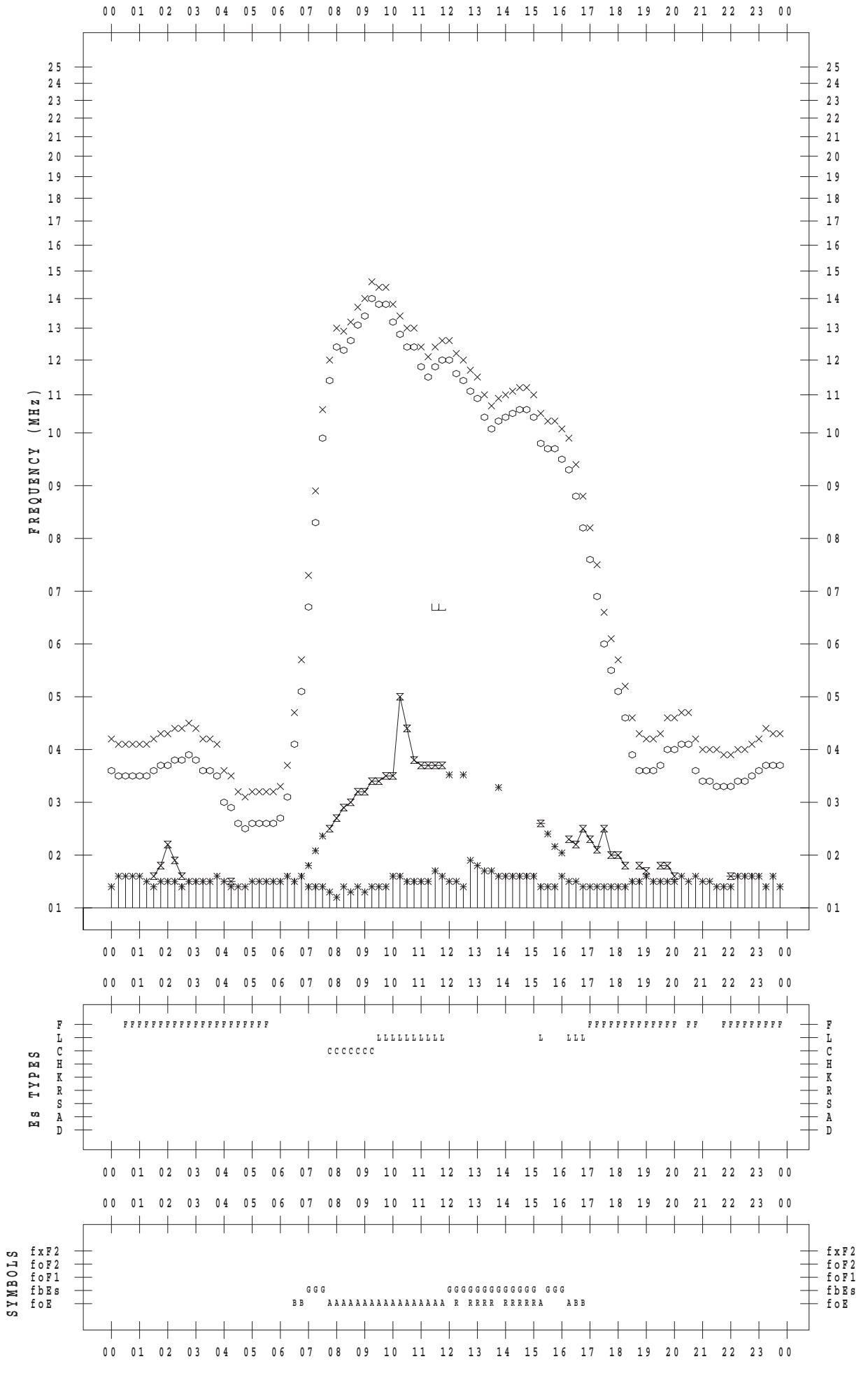
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/13

135 °E MEAN TIME



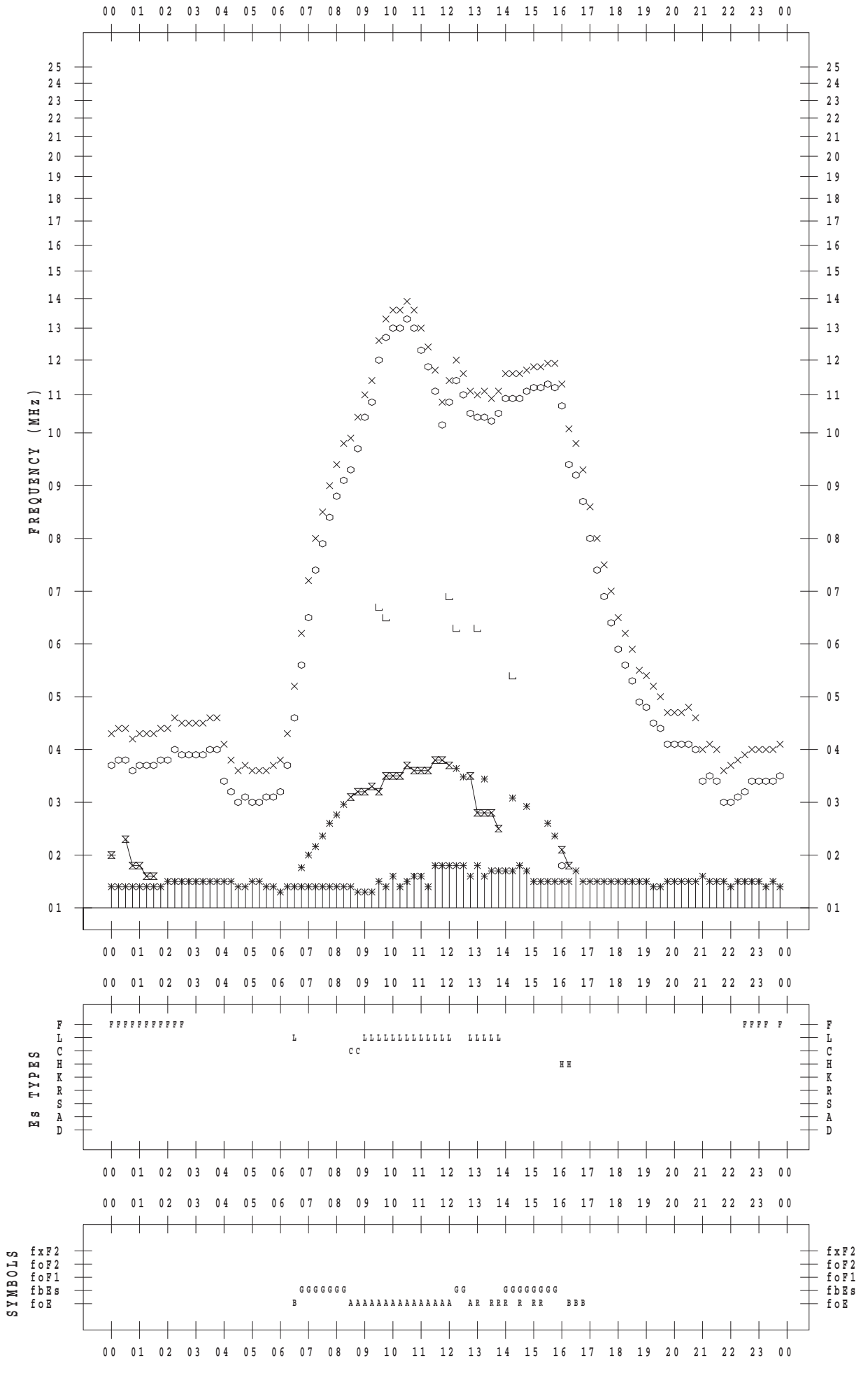
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/14

135 °E MEAN TIME



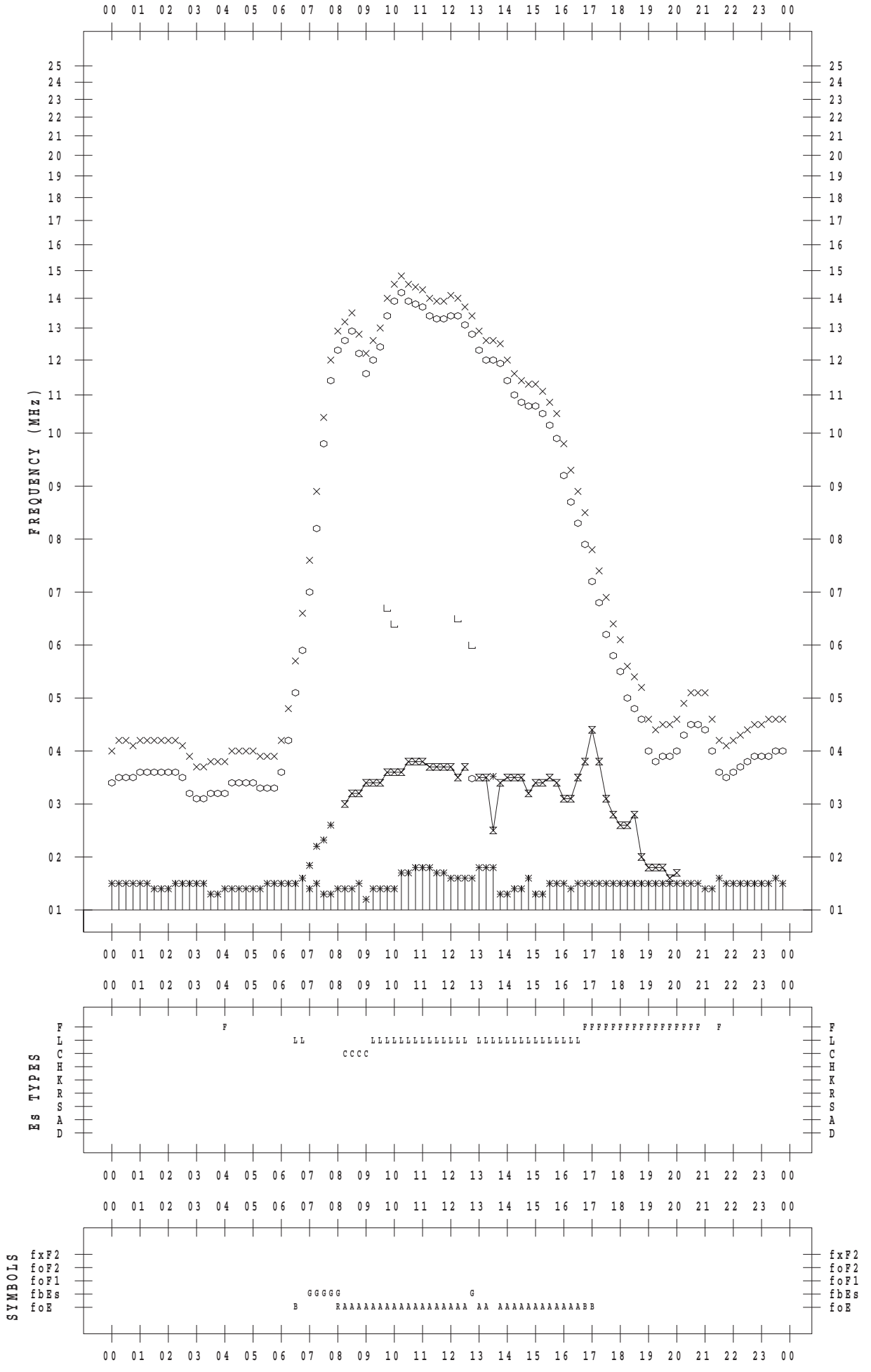
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/15

135 °E MEAN TIME



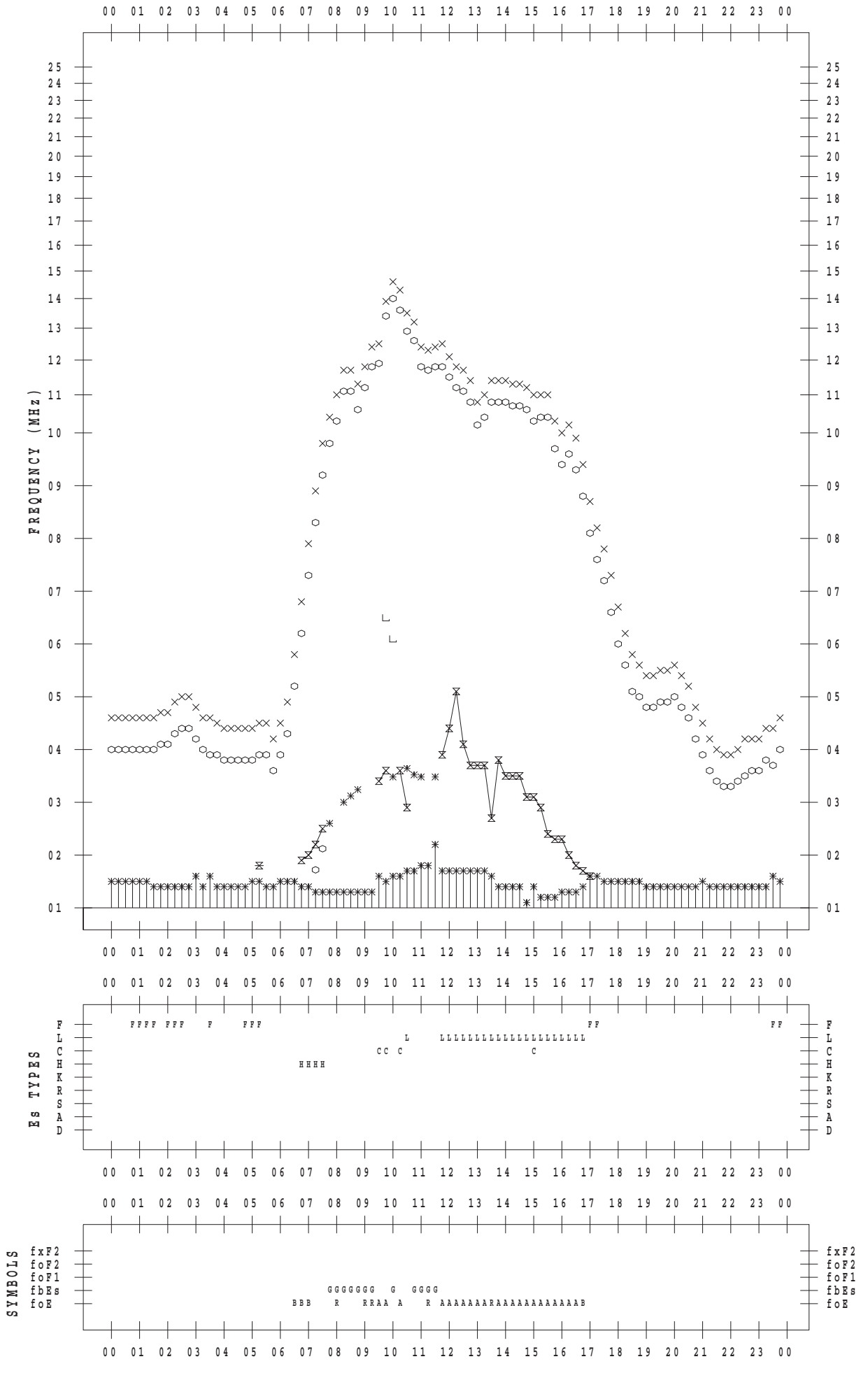
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/16

135 °E MEAN TIME



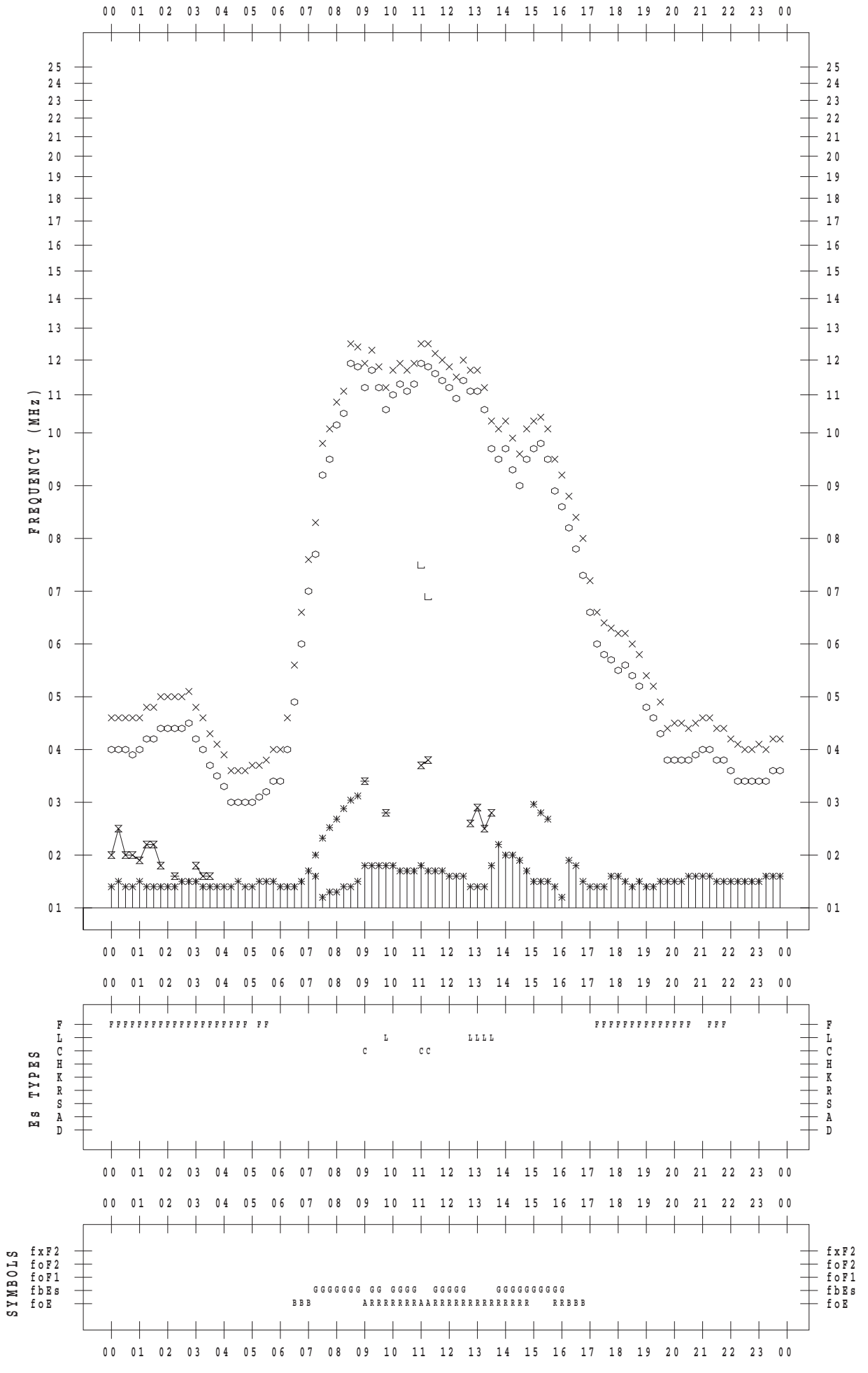
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/17

135 °E MEAN TIME



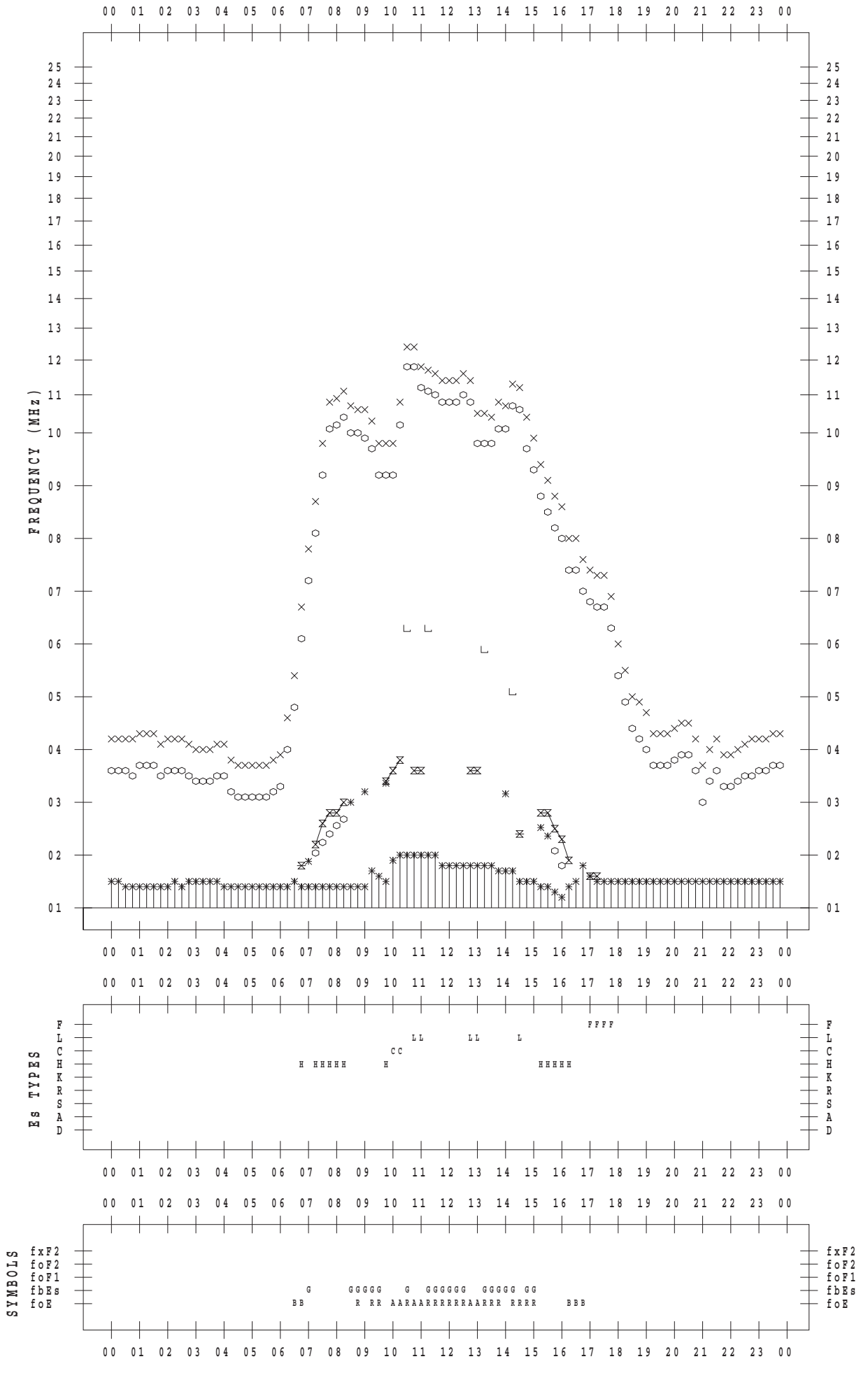
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/18

135 °E MEAN TIME



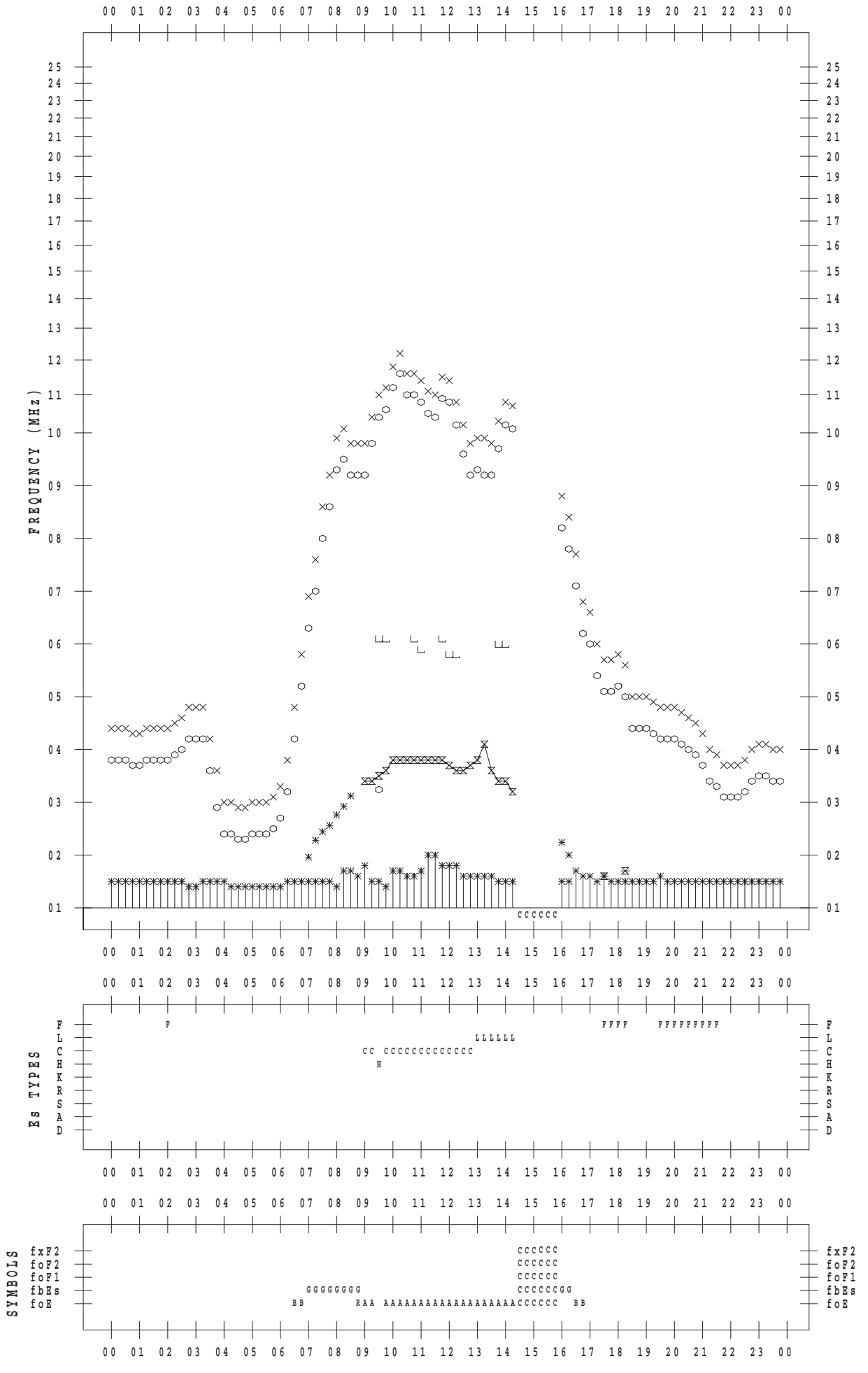
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/19

135 °E MEAN TIME



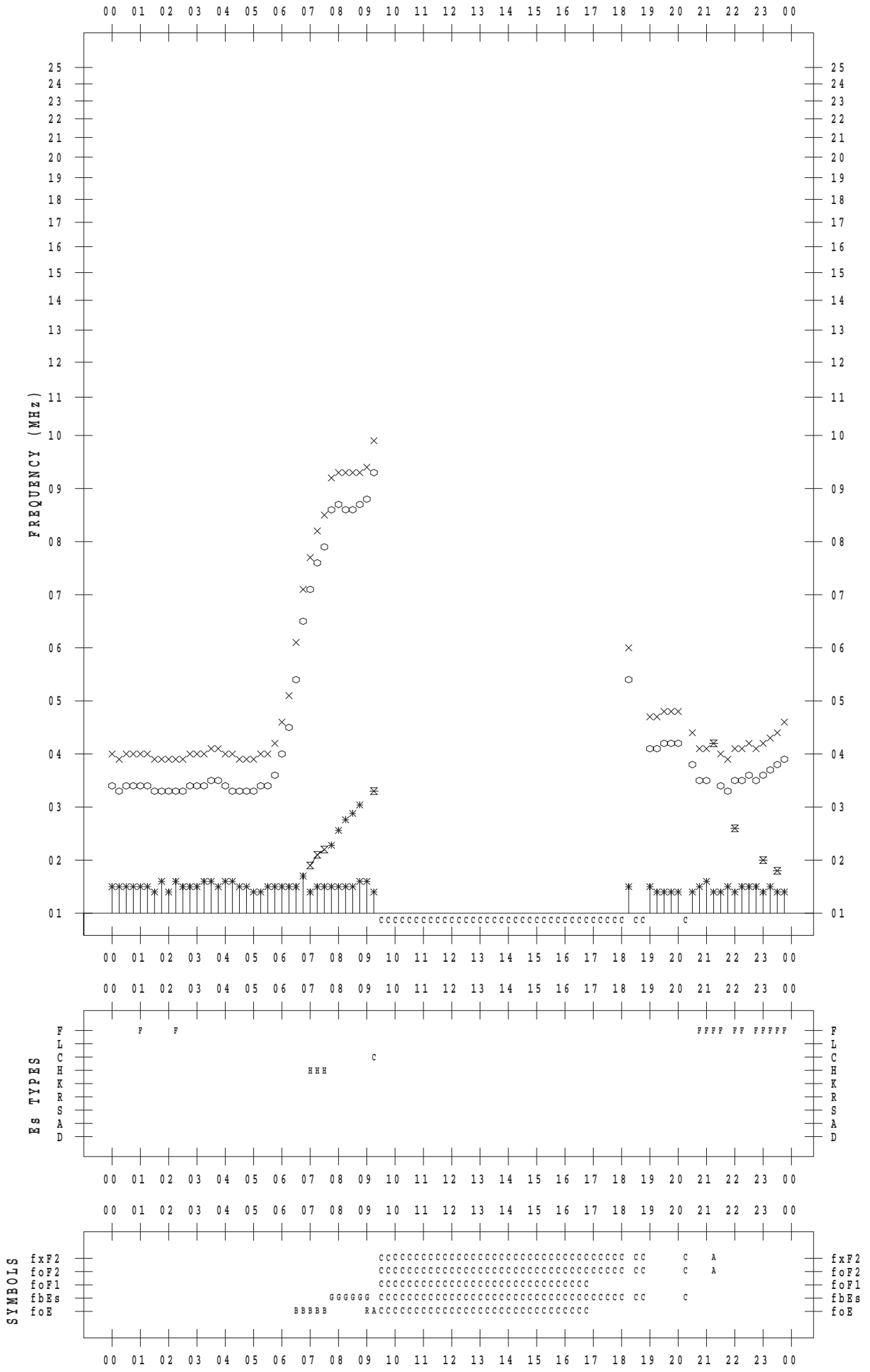
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/20

135 °E MEAN TIME



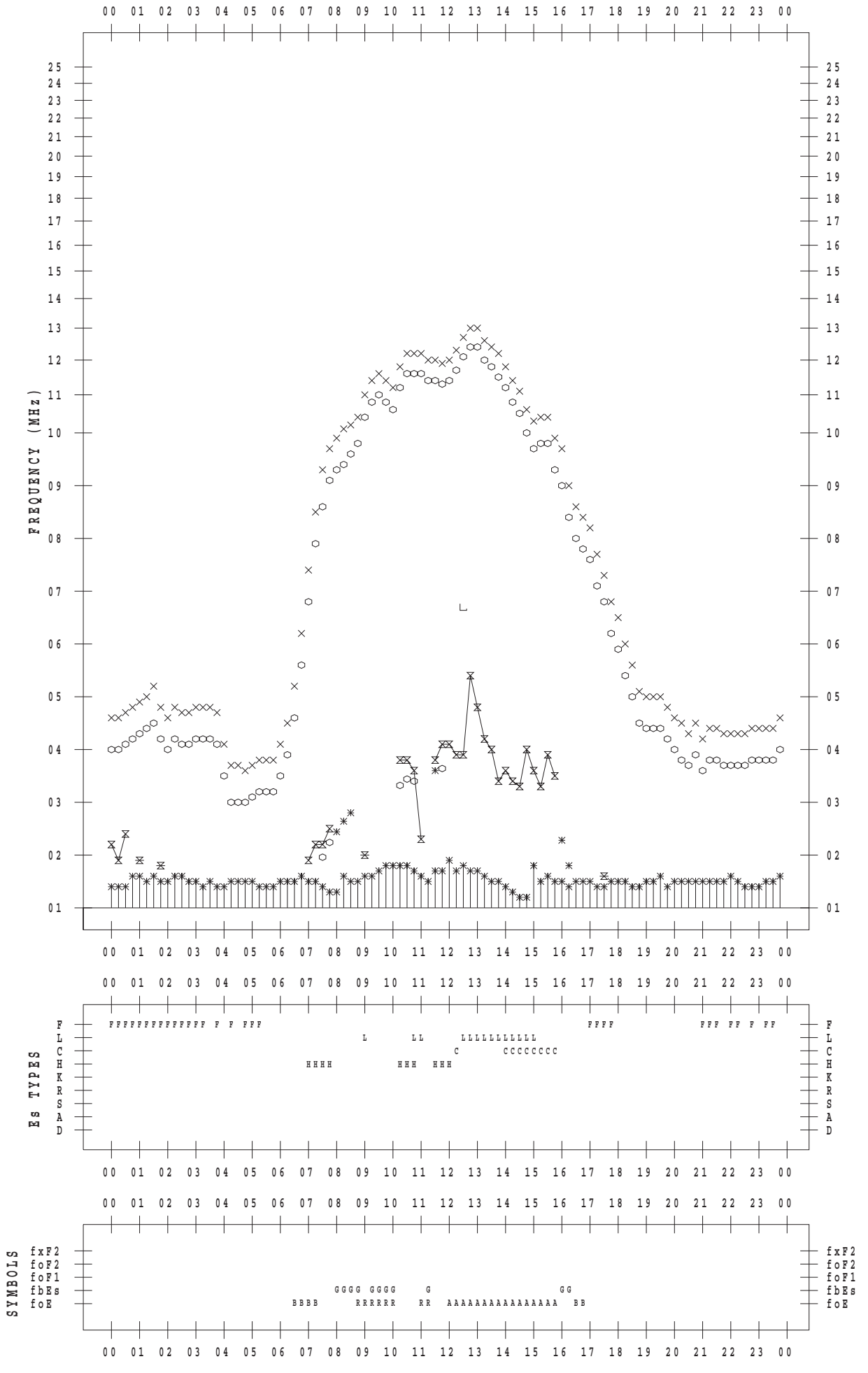
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/21

135 °E MEAN TIME



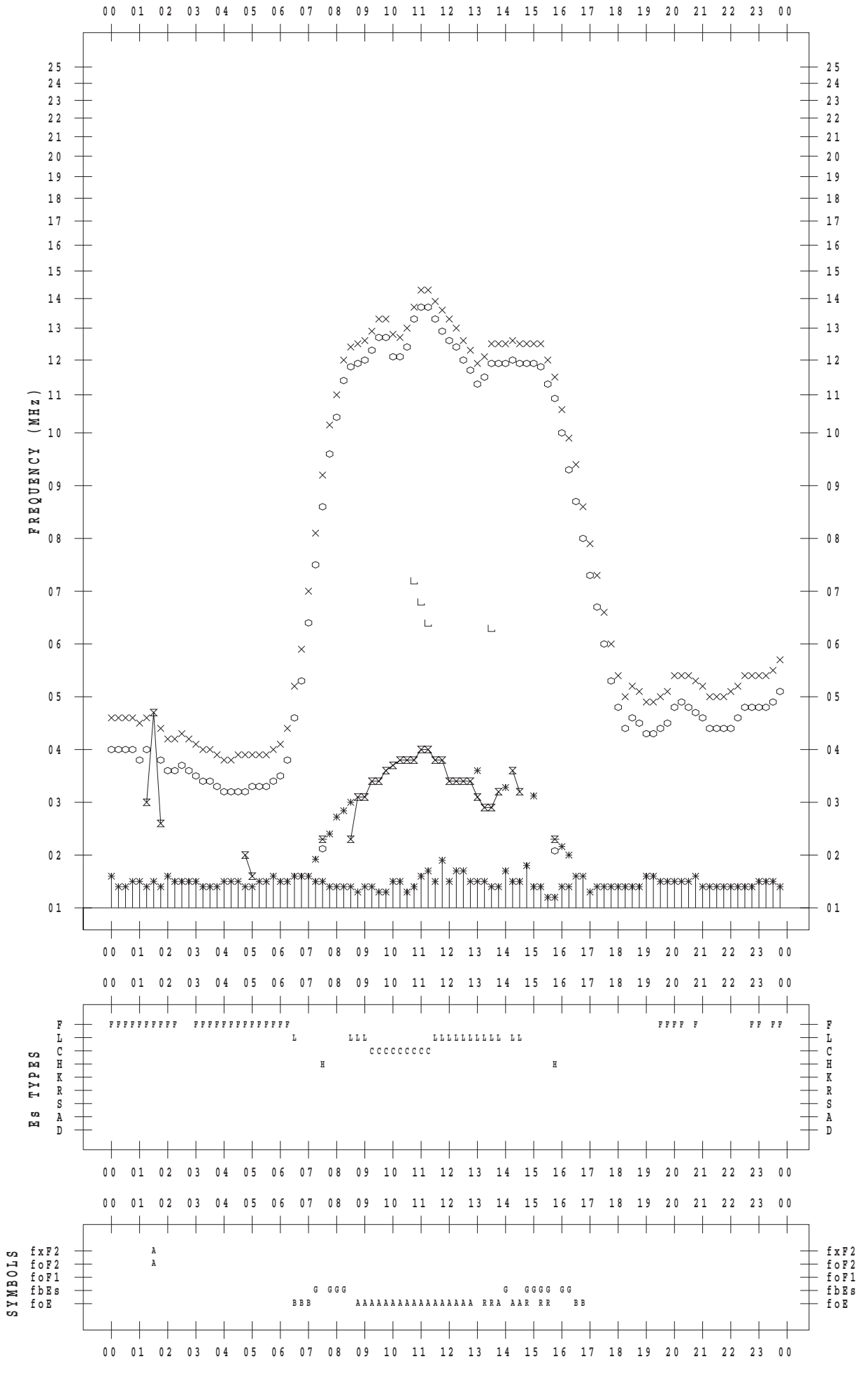
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/22

135 °E MEAN TIME



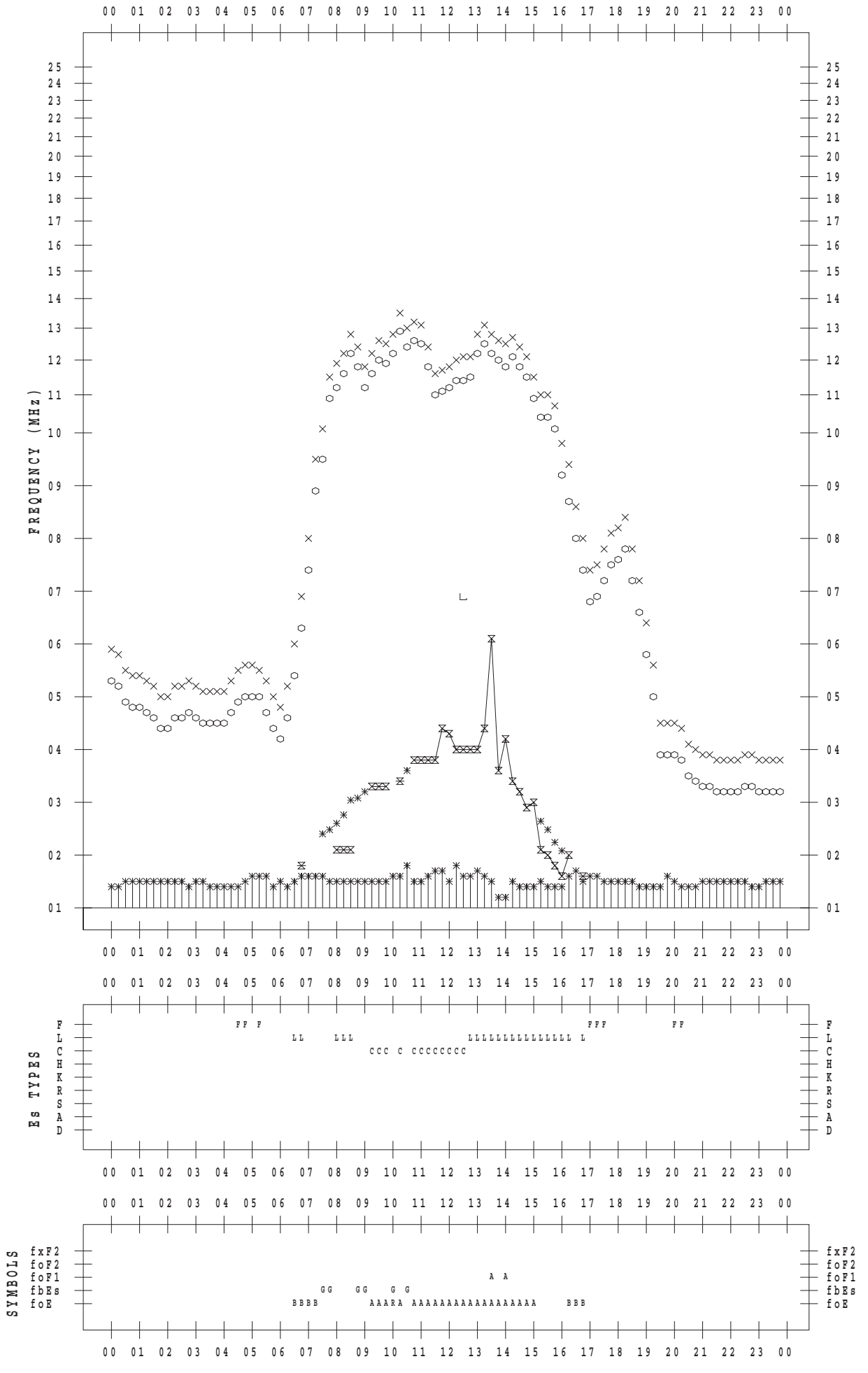
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/23

135 °E MEAN TIME



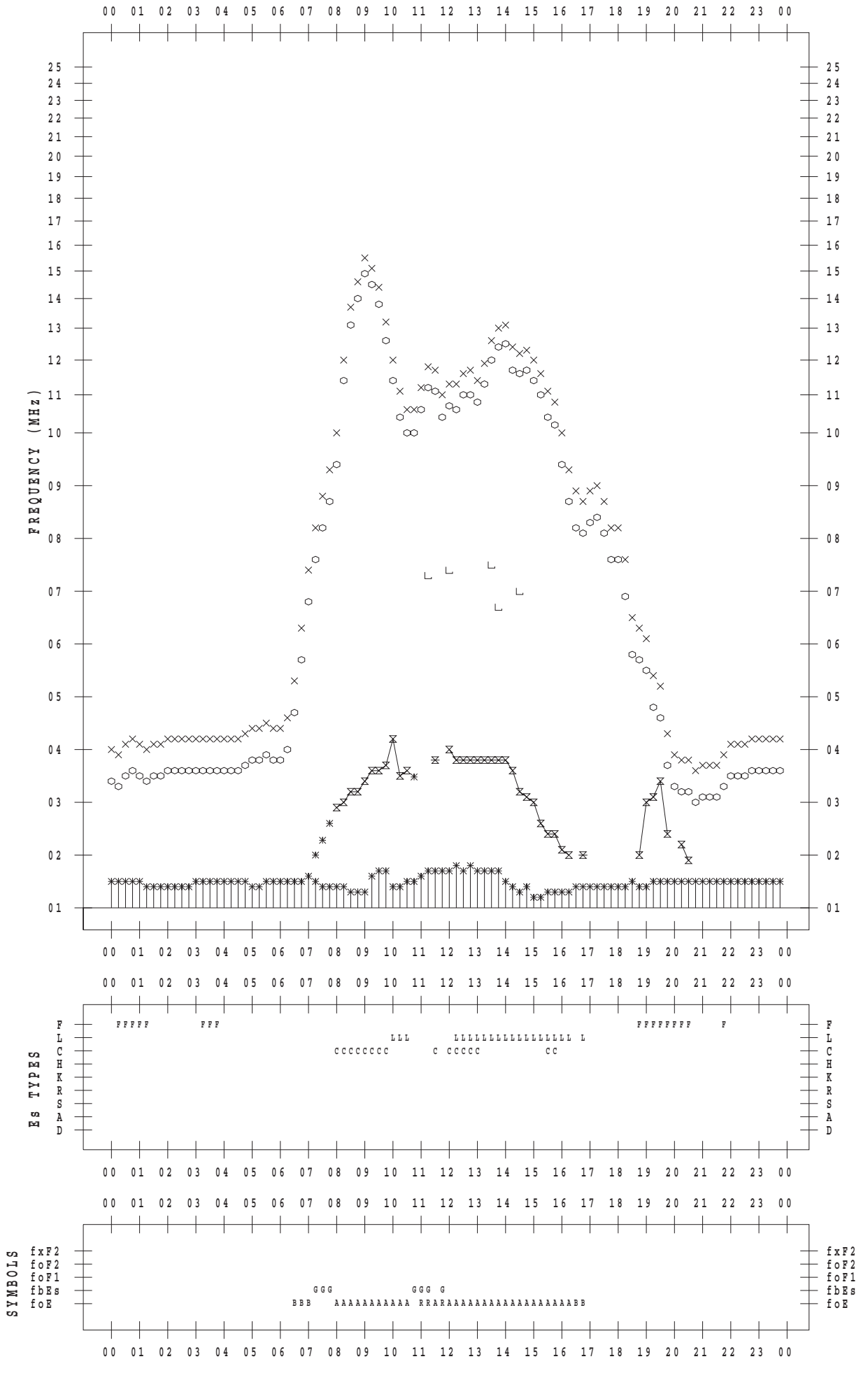
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/24

135 °E MEAN TIME



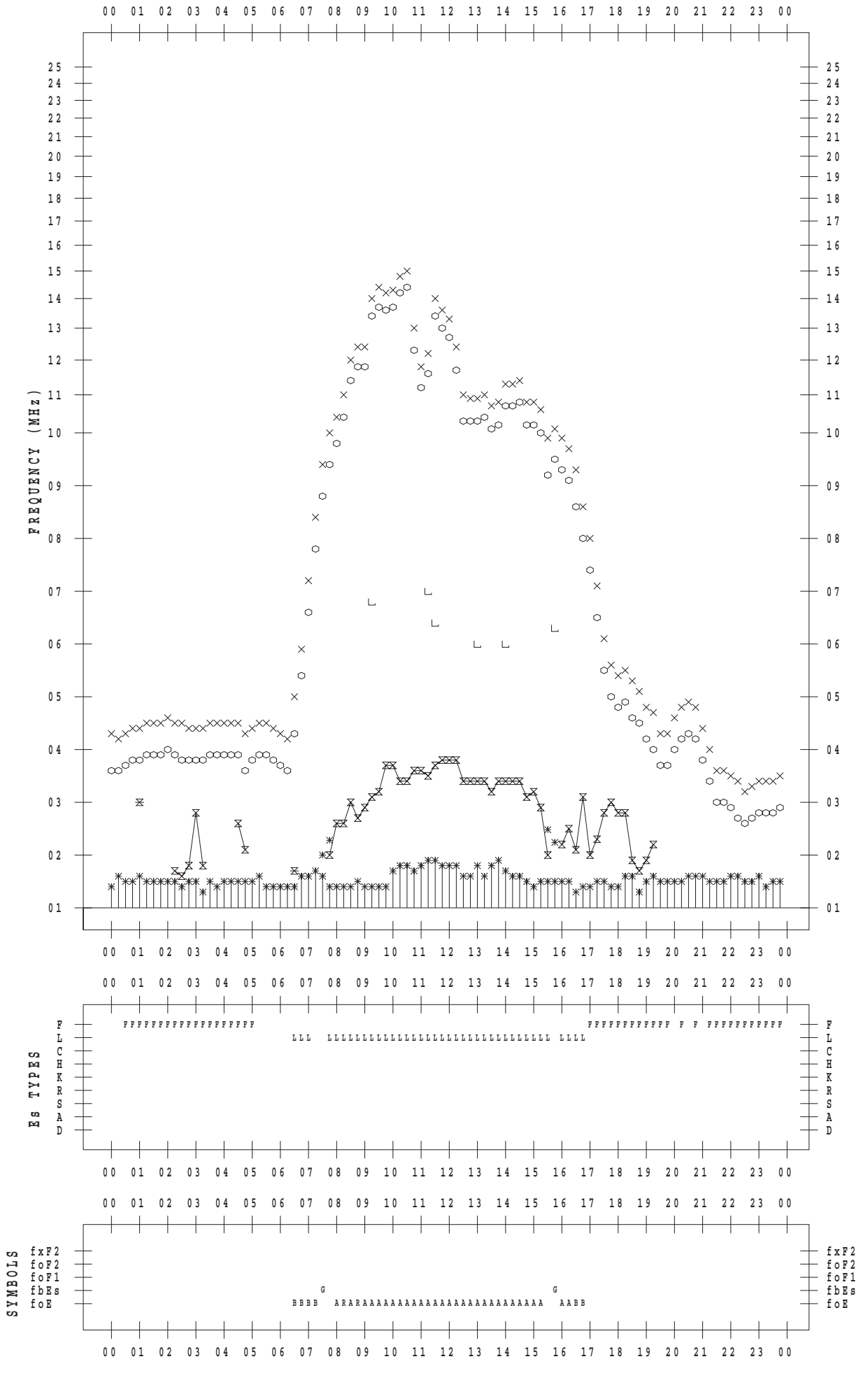
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/25

135 °E MEAN TIME



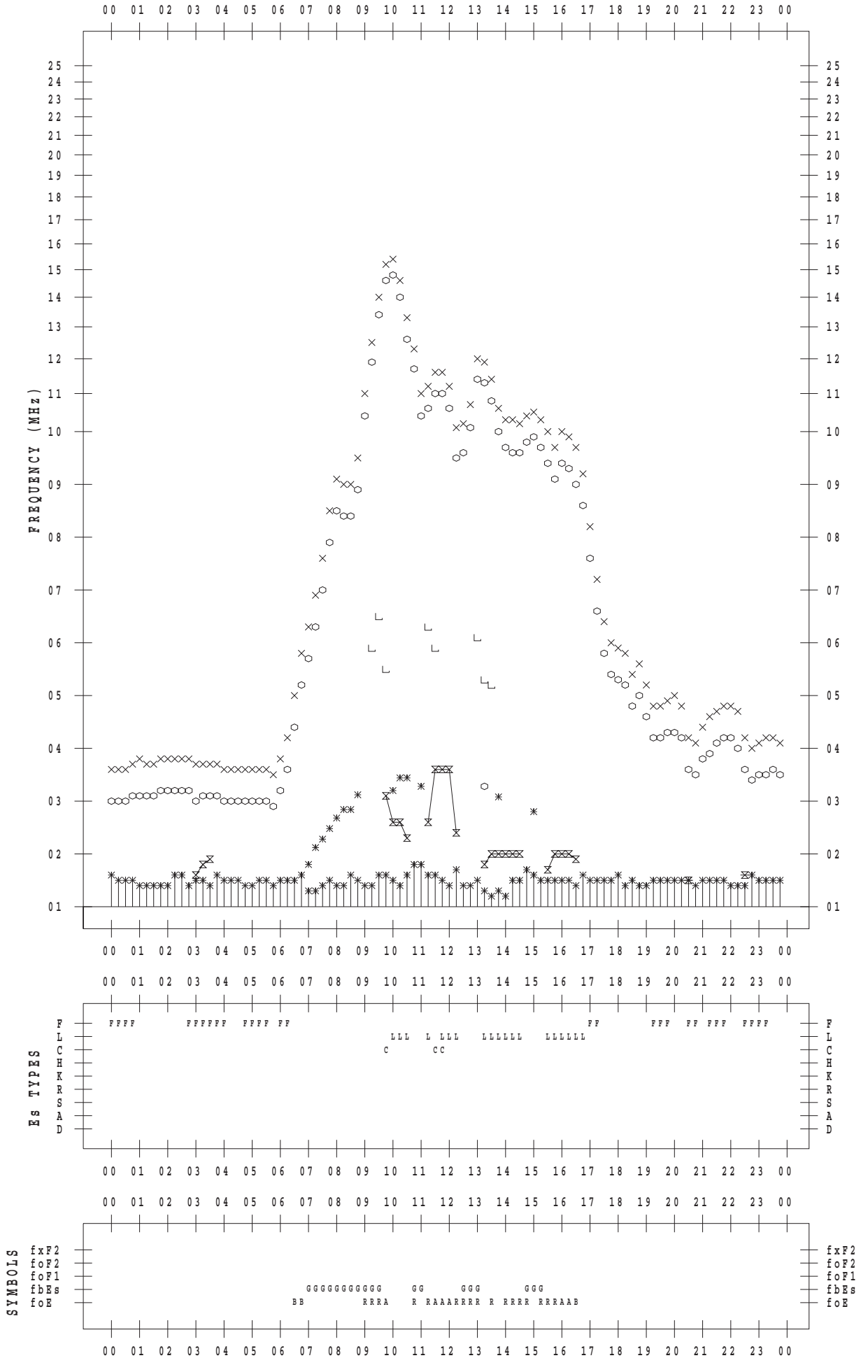
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/26

135 °E MEAN TIME



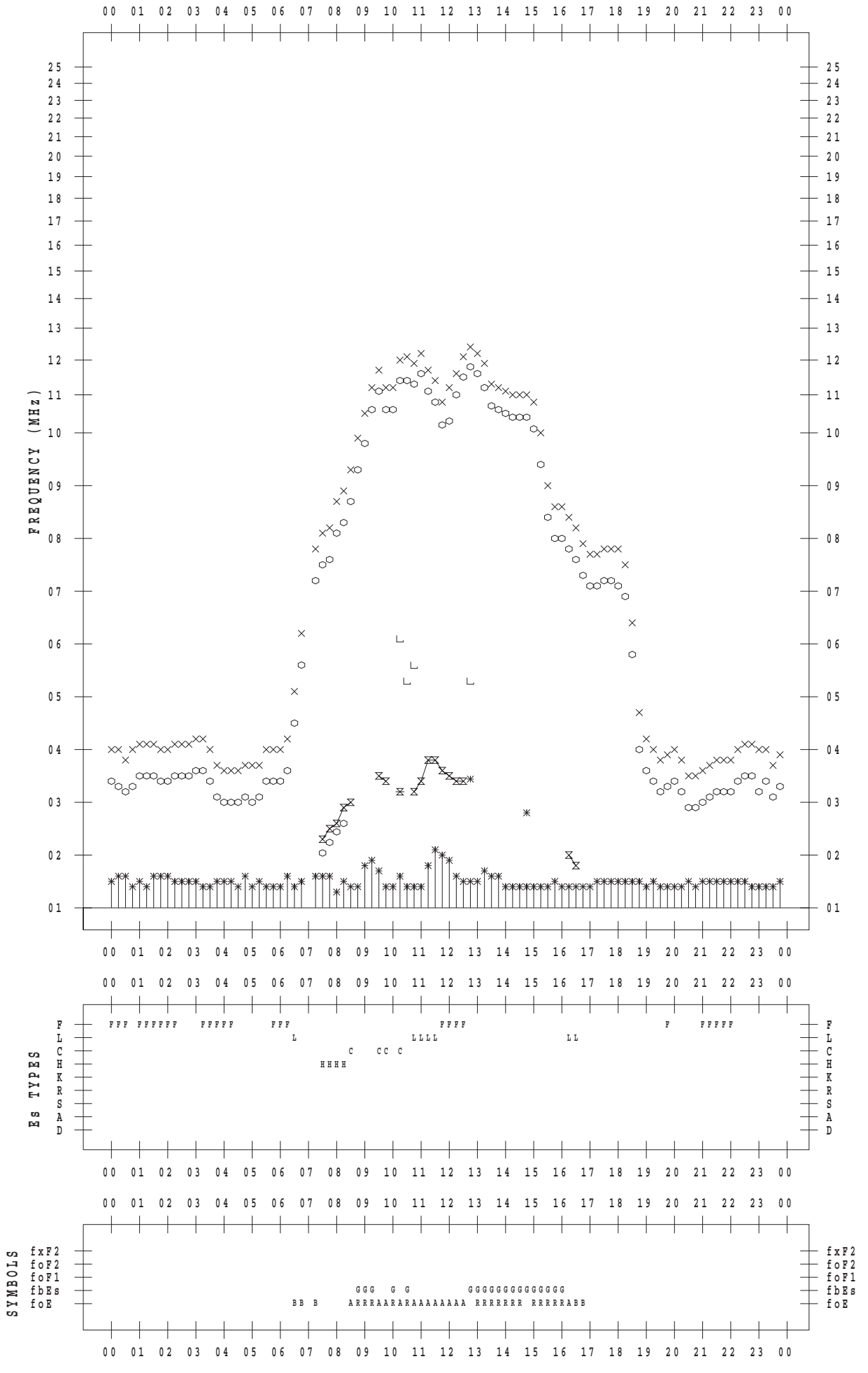
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/27

135 °E MEAN TIME



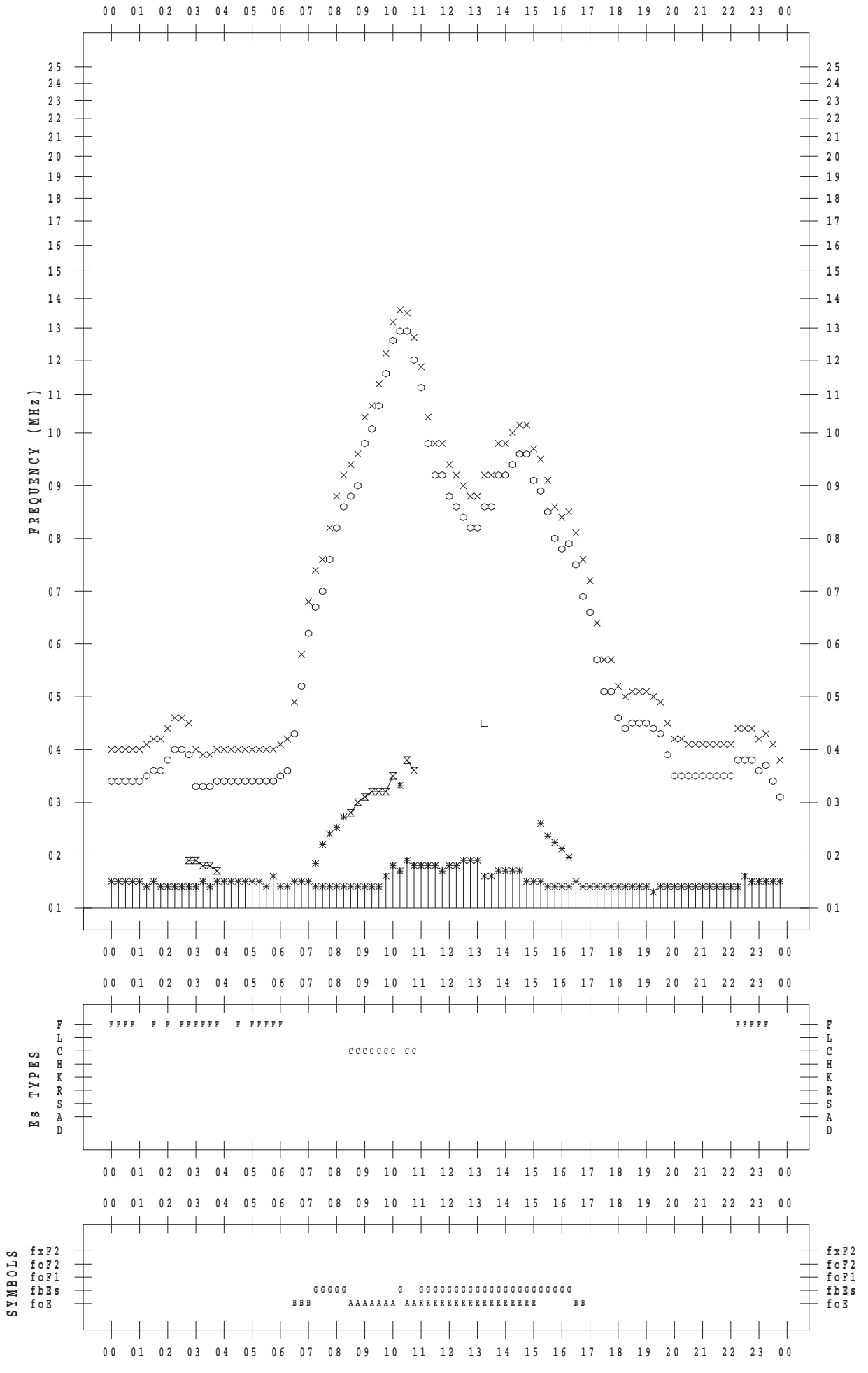
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/28

135 °E MEAN TIME



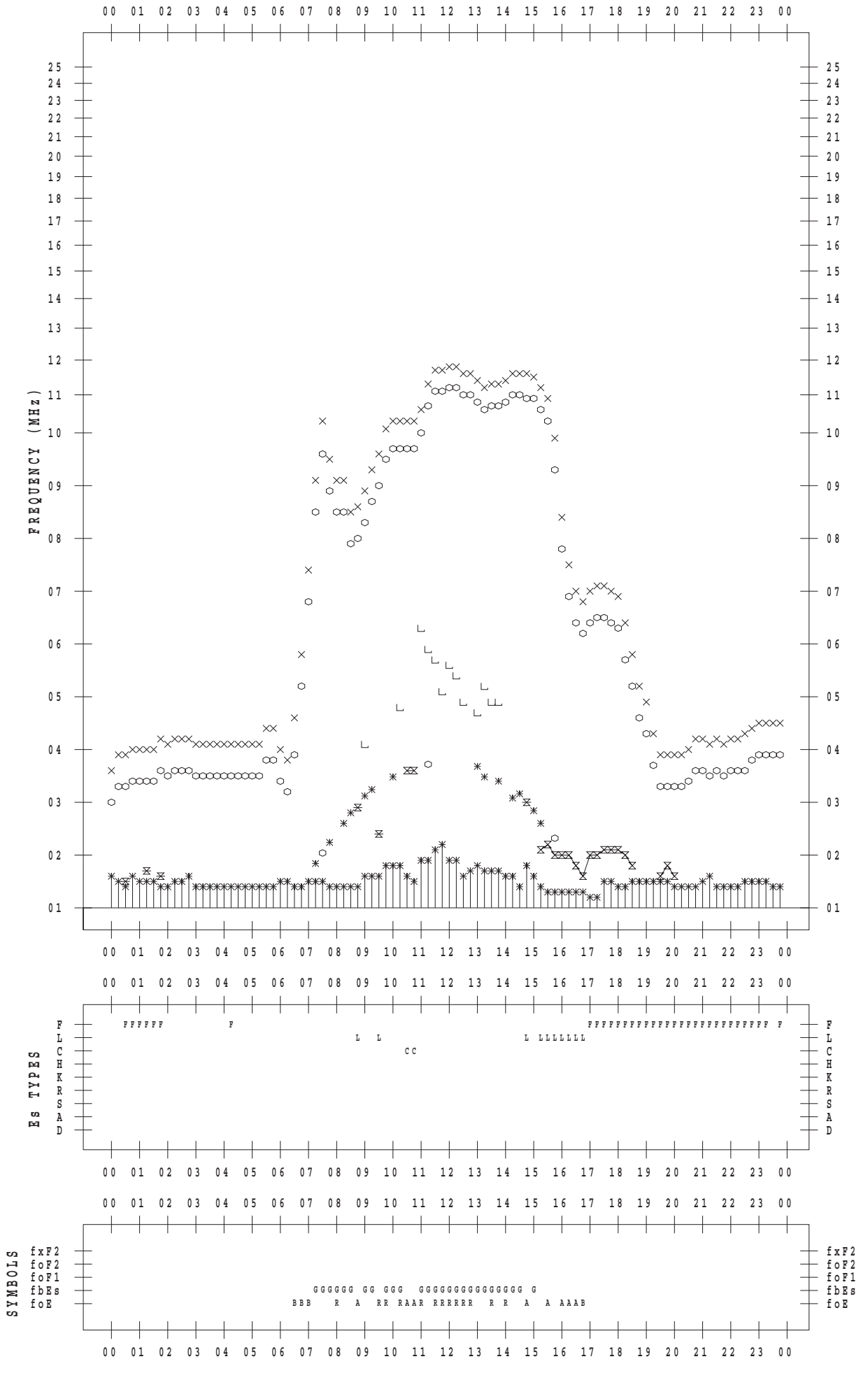
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/29

135 °E MEAN TIME



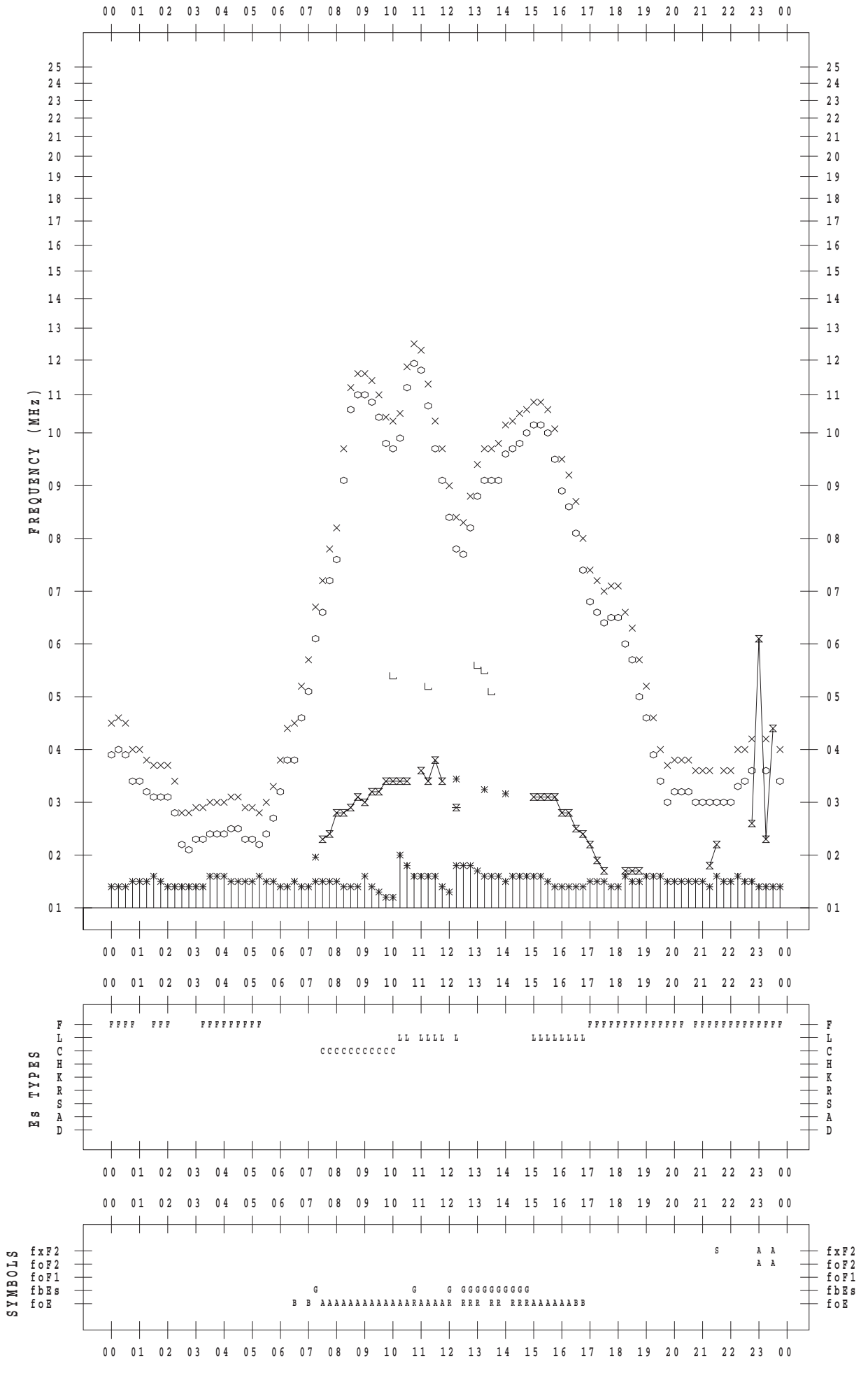
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/30

135 °E MEAN TIME



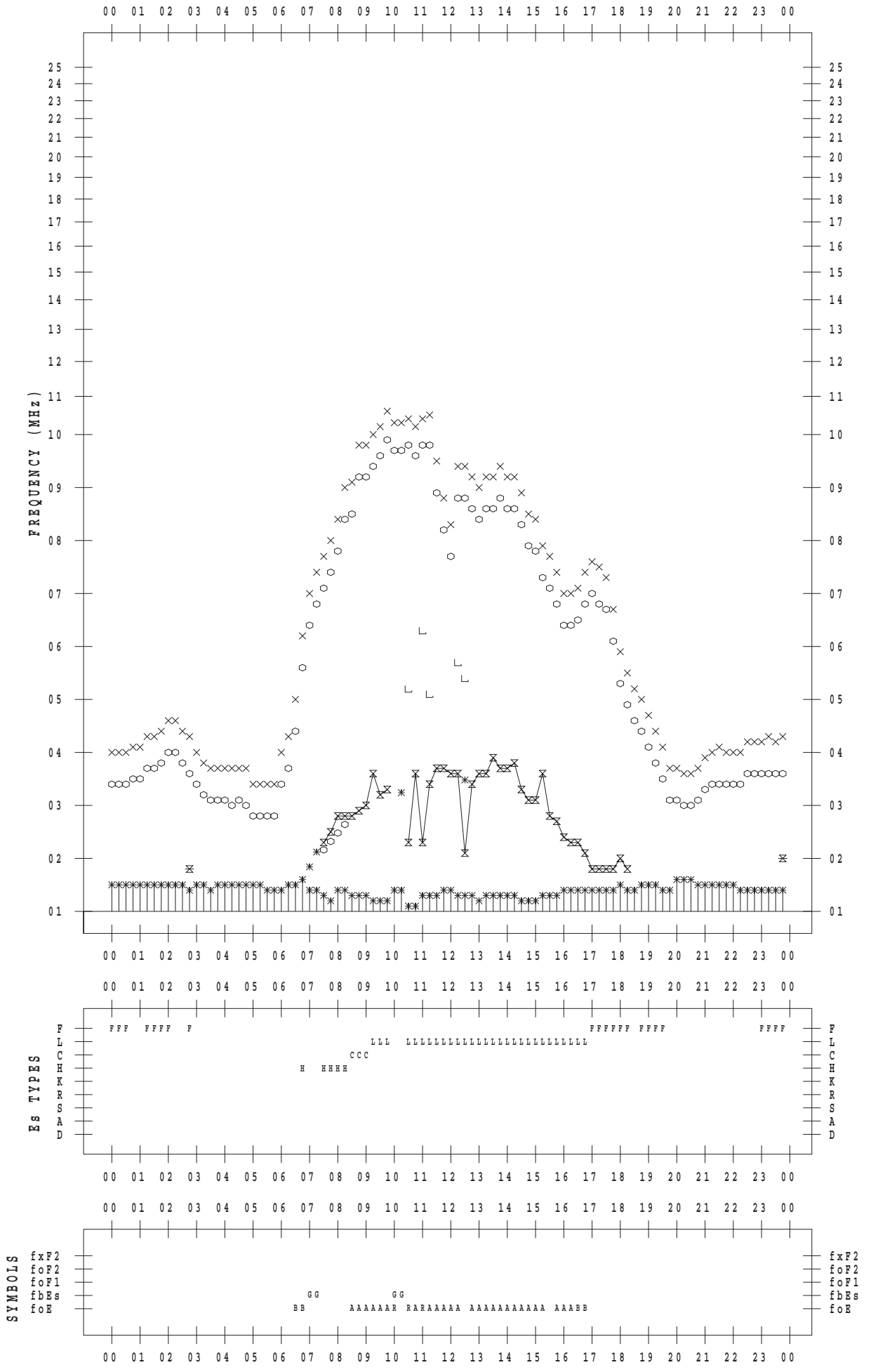
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/12/31

135 °E MEAN TIME



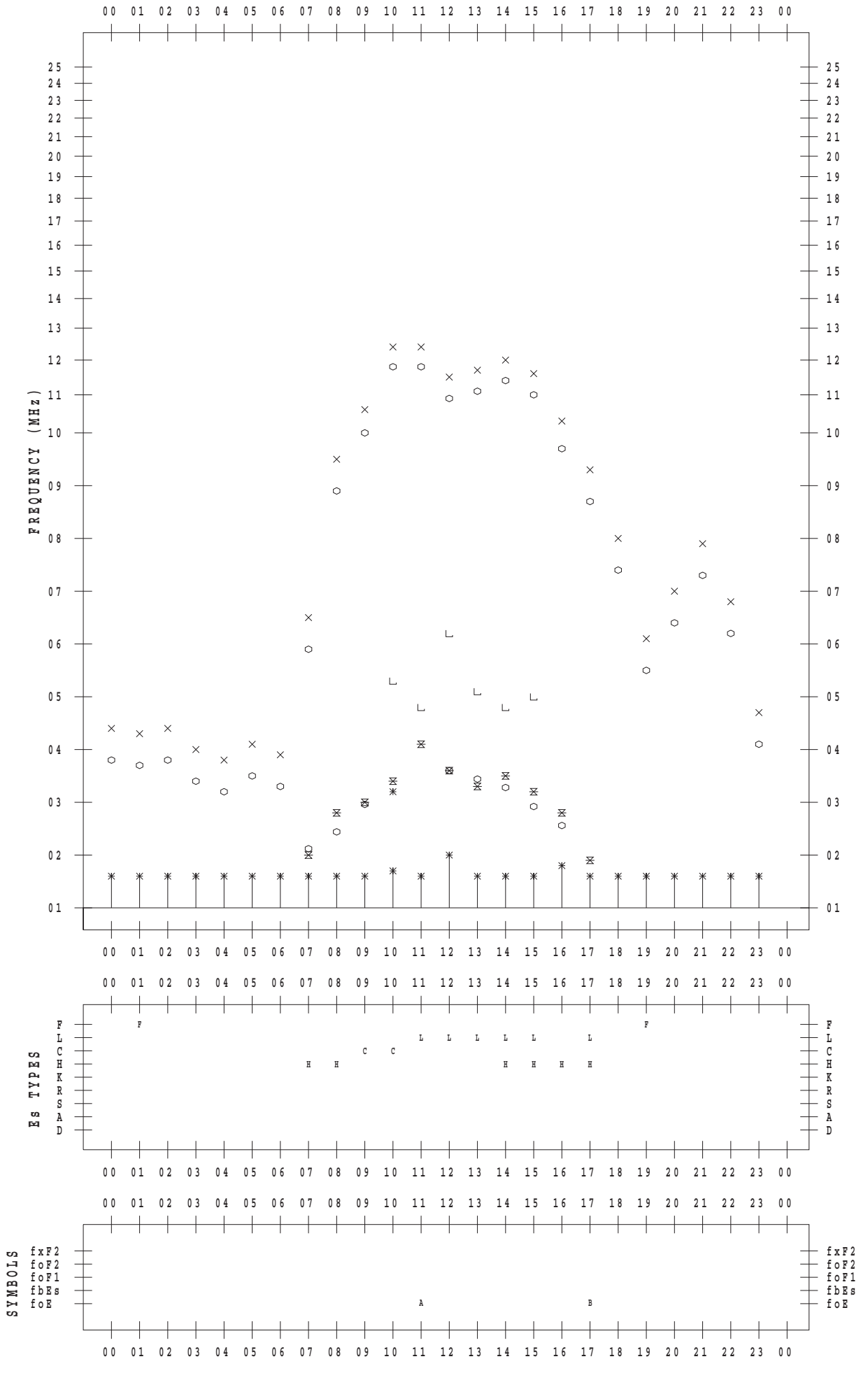
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 1

135 °E MEAN TIME



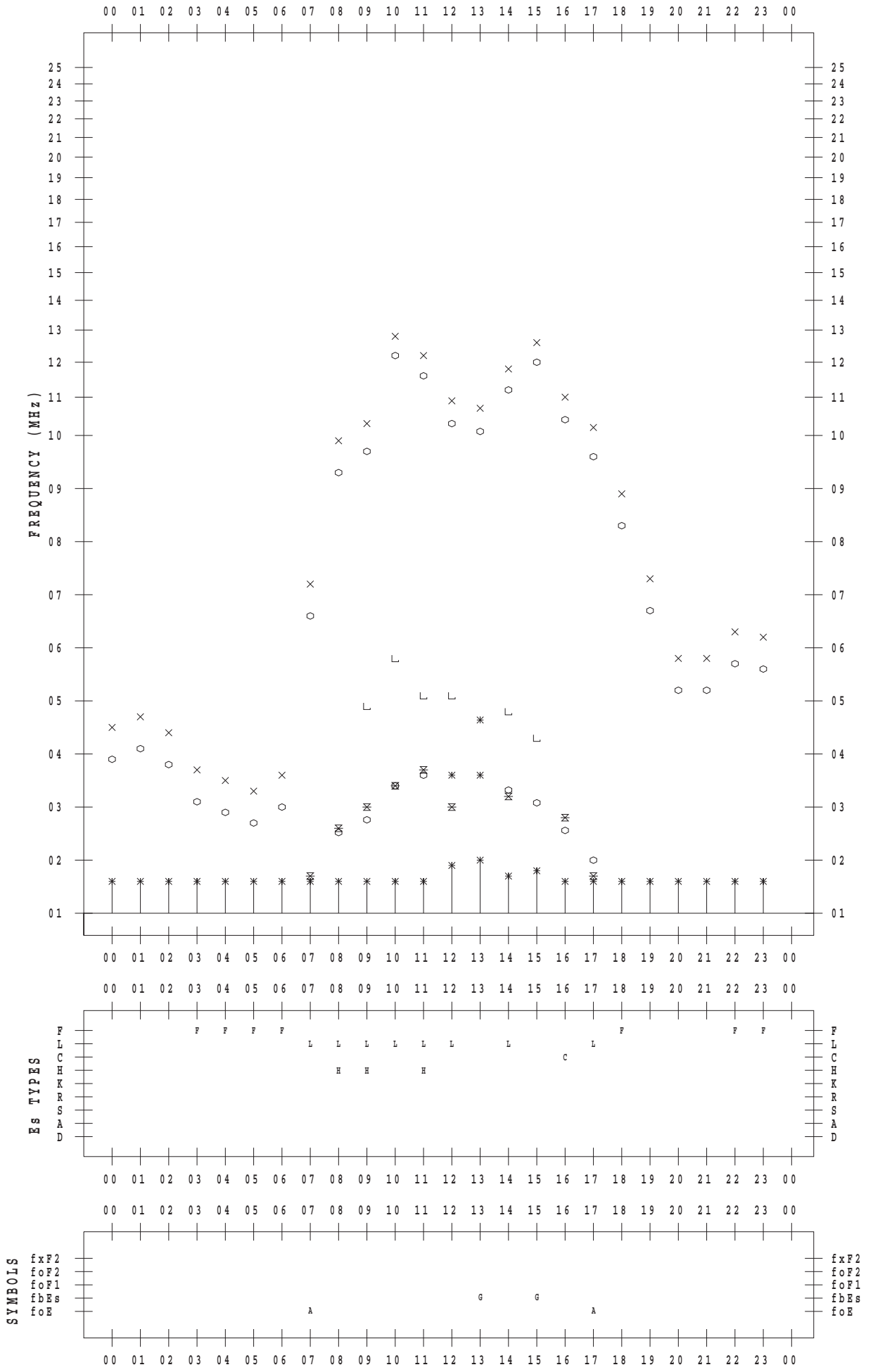
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 2

135 °E MEAN TIME



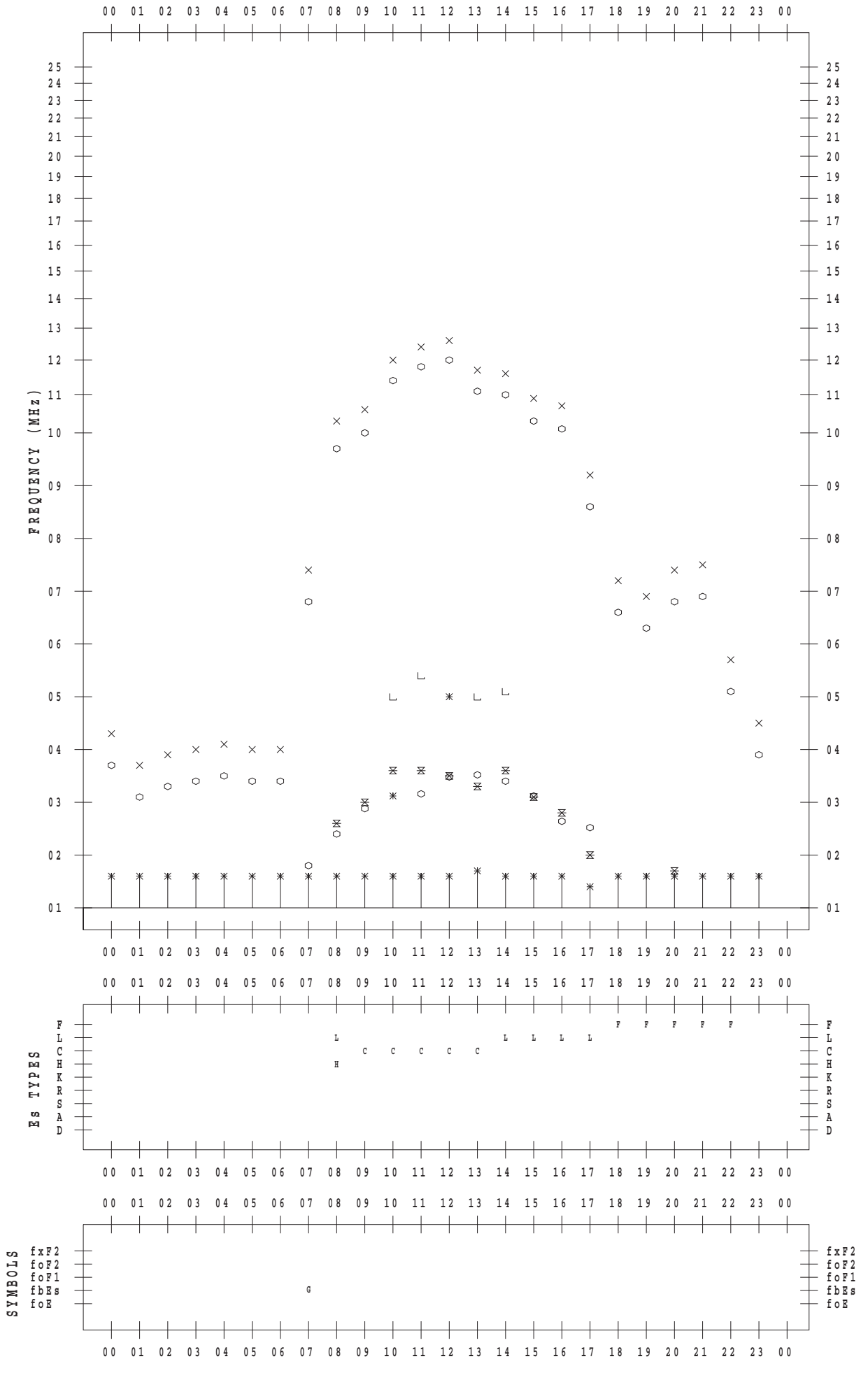
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 3

135 °E MEAN TIME



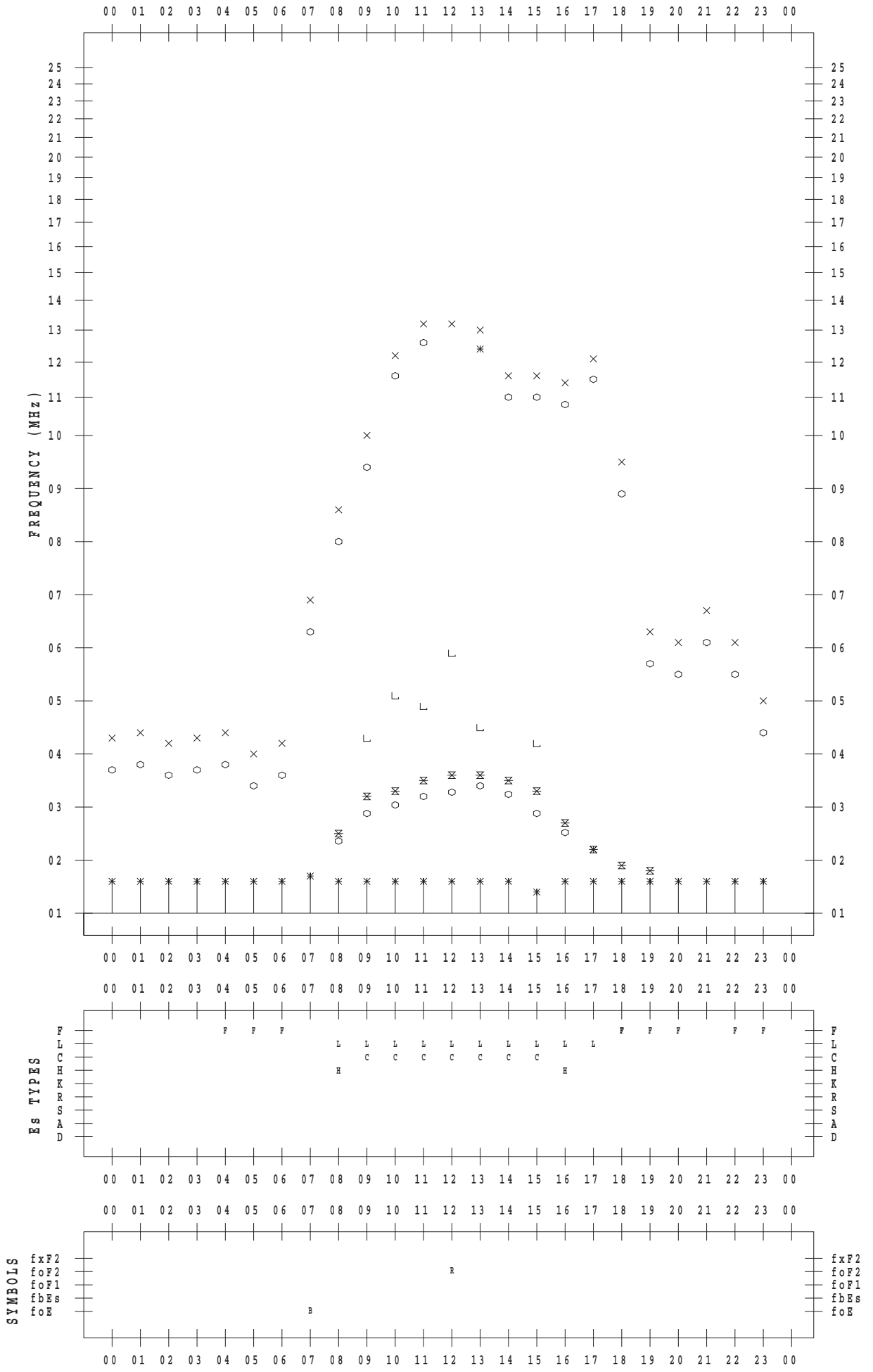
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 4

135 °E MEAN TIME



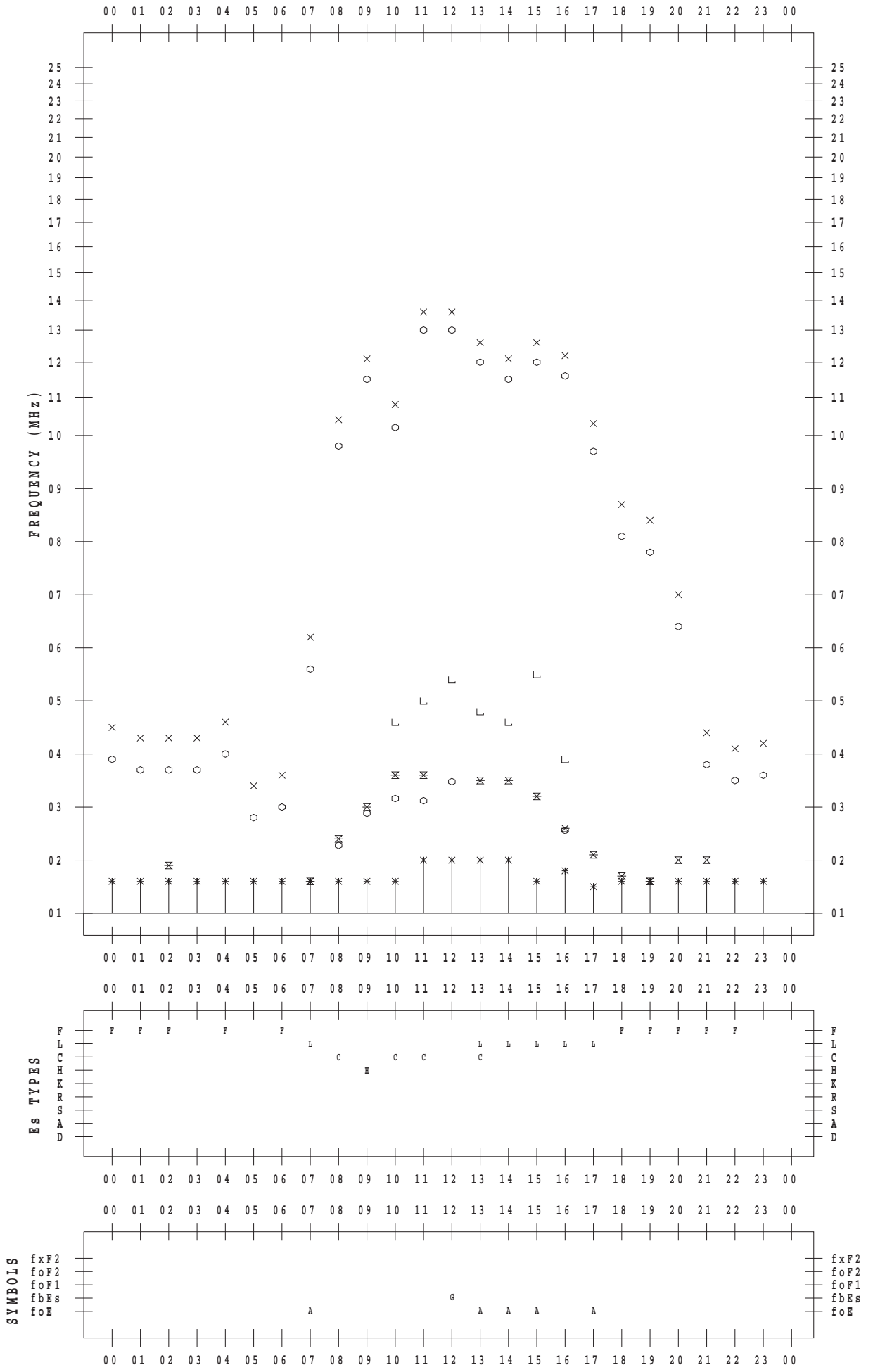
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 5

135 °E MEAN TIME



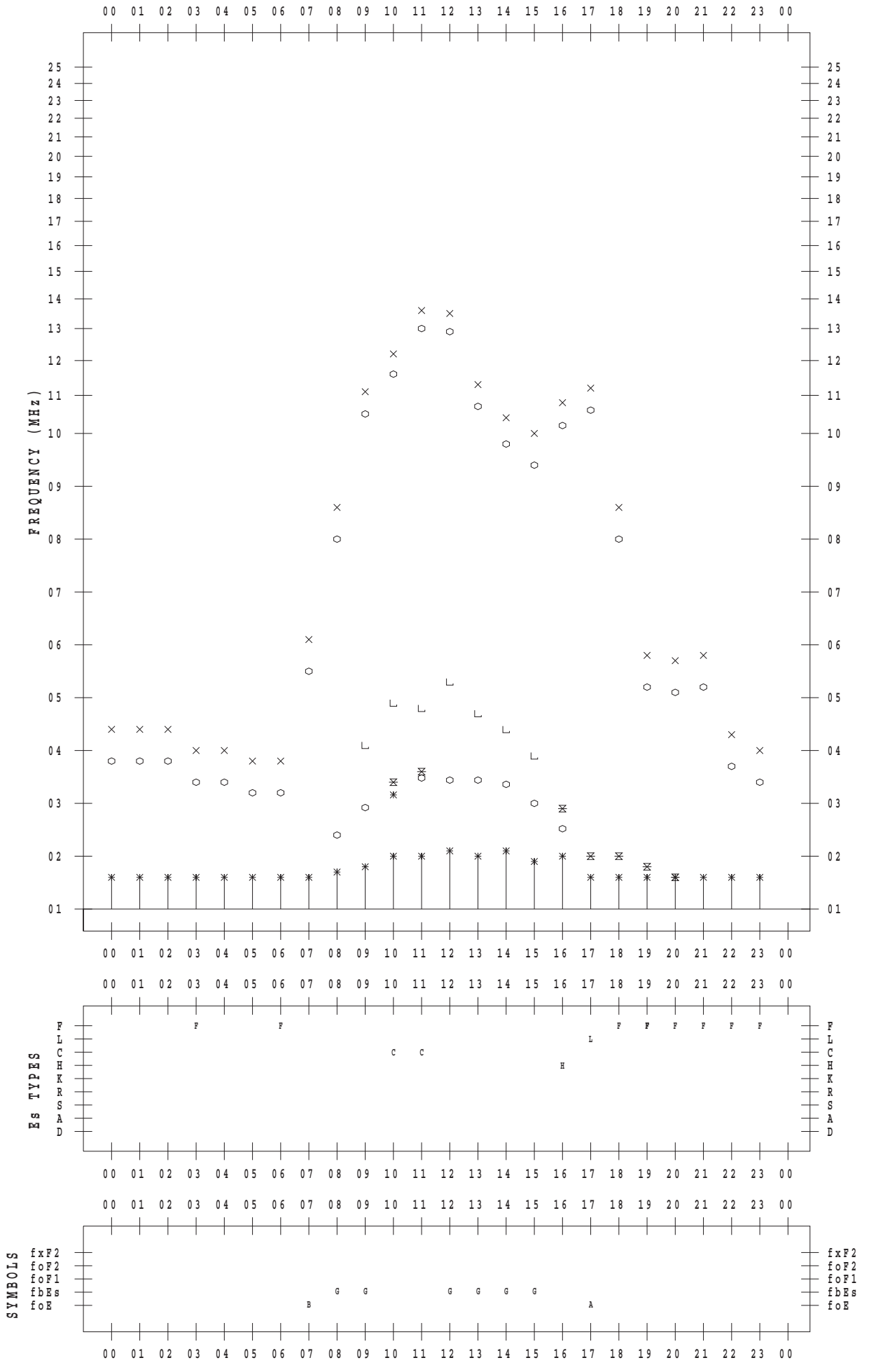
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 6

135 °E MEAN TIME



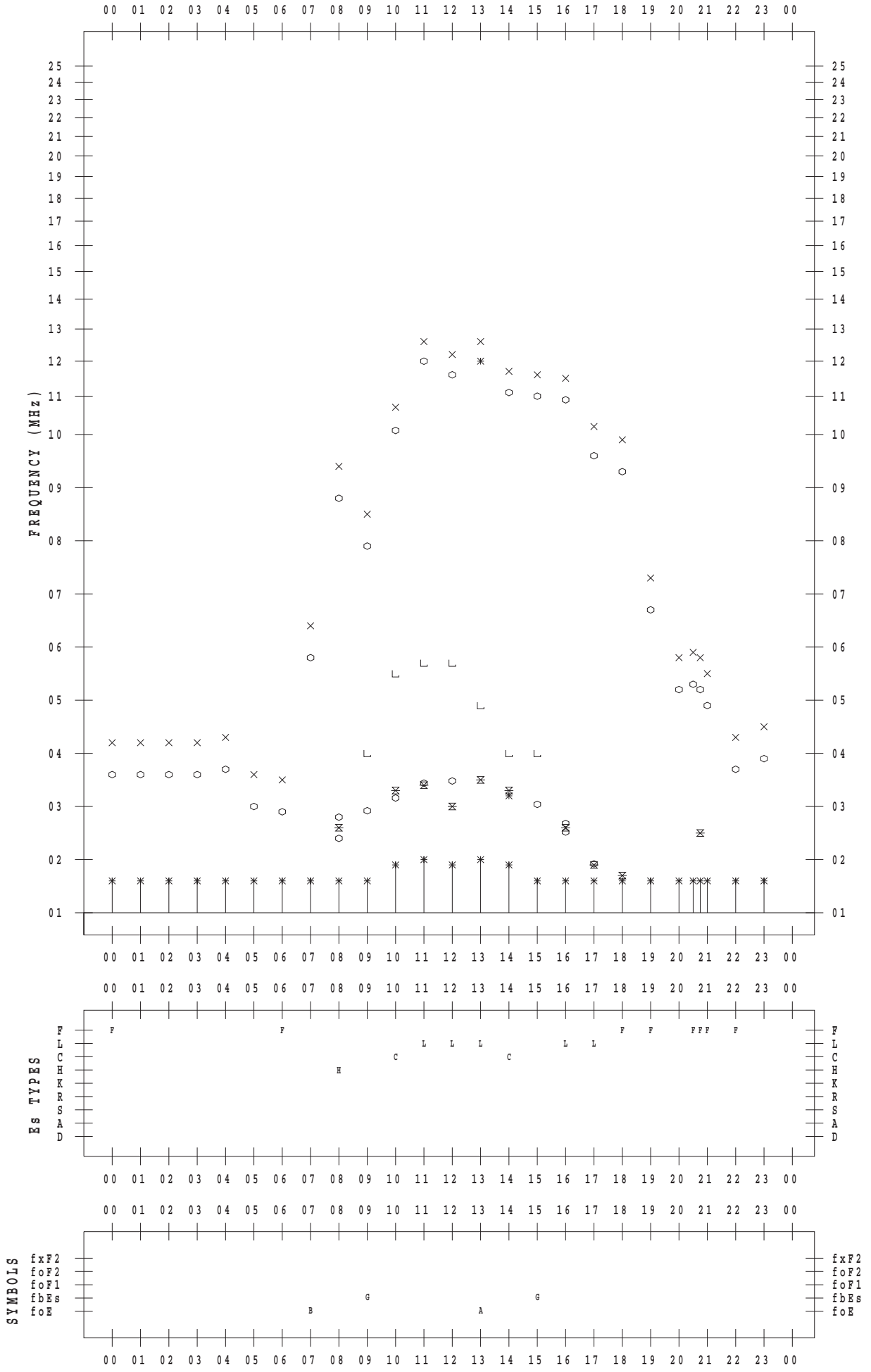
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 7

135 °E MEAN TIME



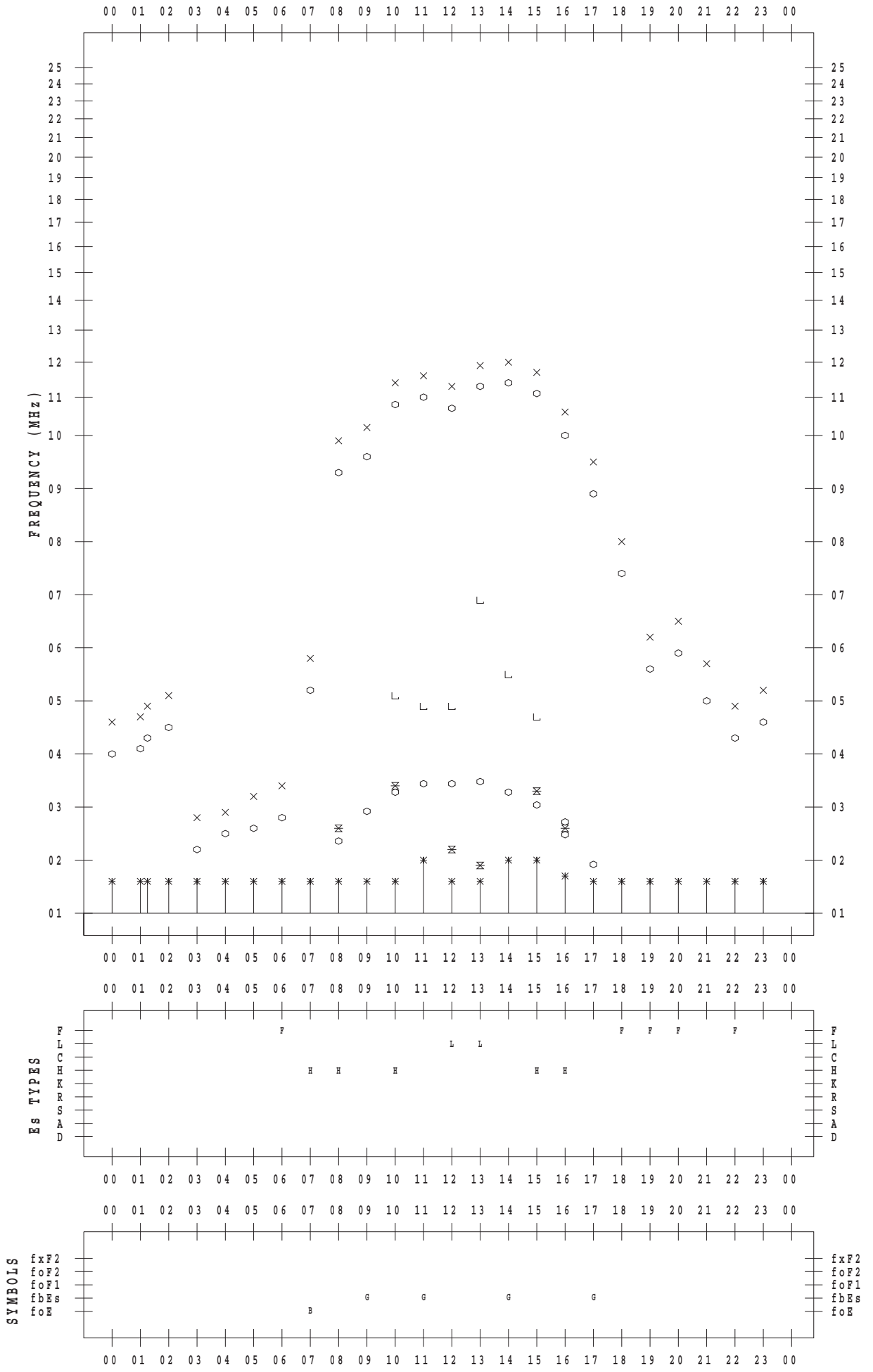
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 8

135 °E MEAN TIME



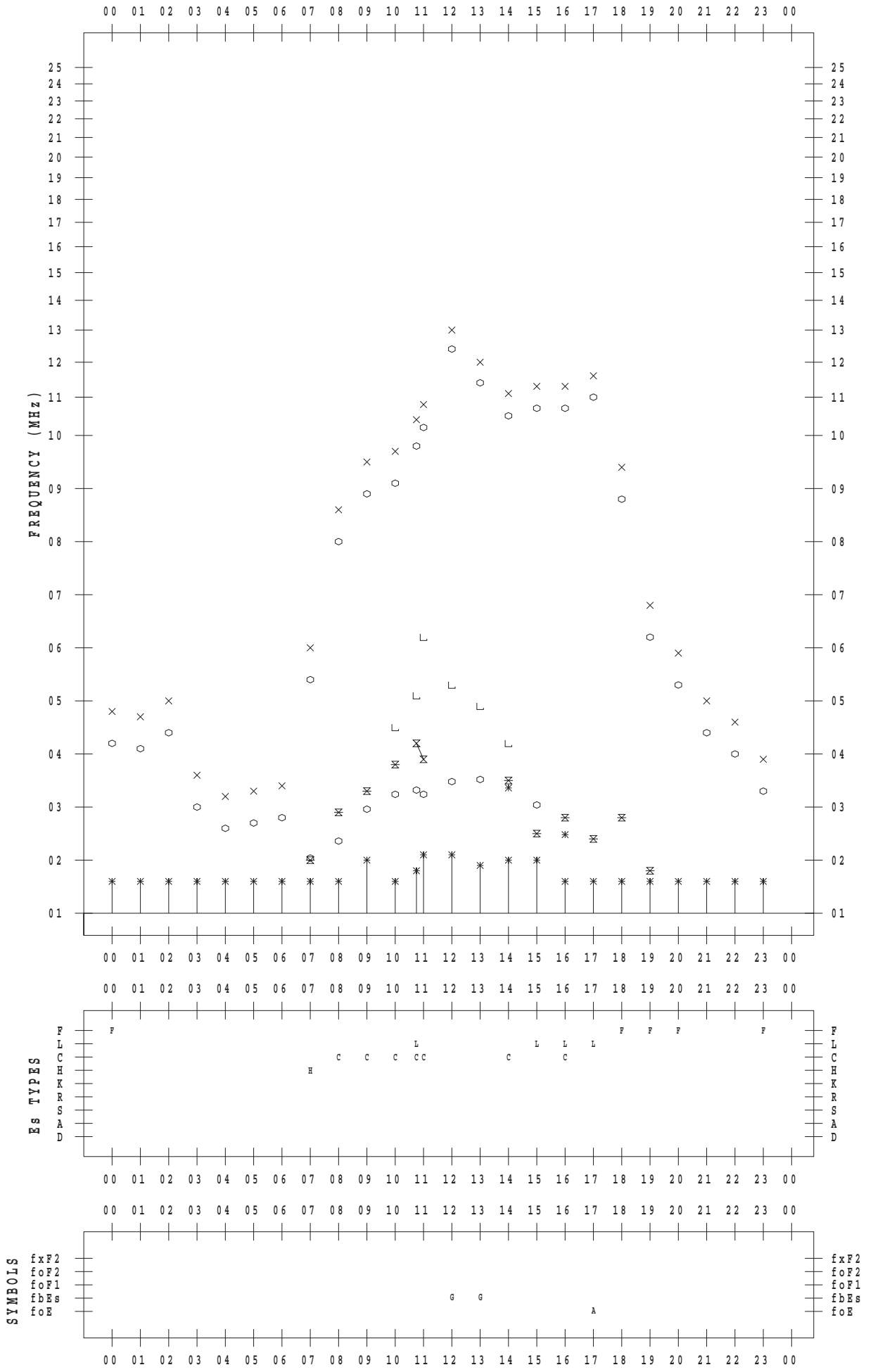
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/ 9

135 °E MEAN TIME



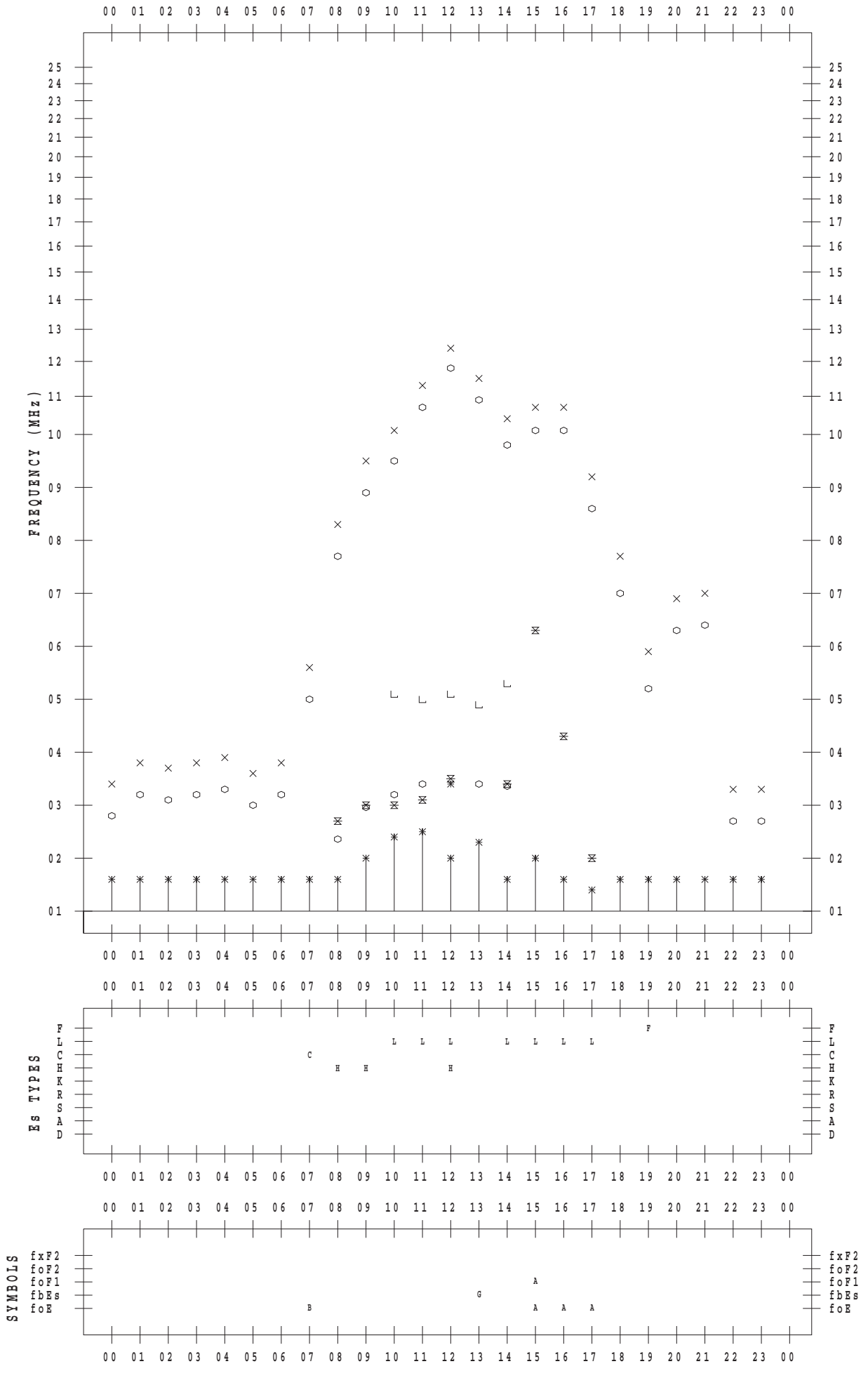
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/10

135 °E MEAN TIME



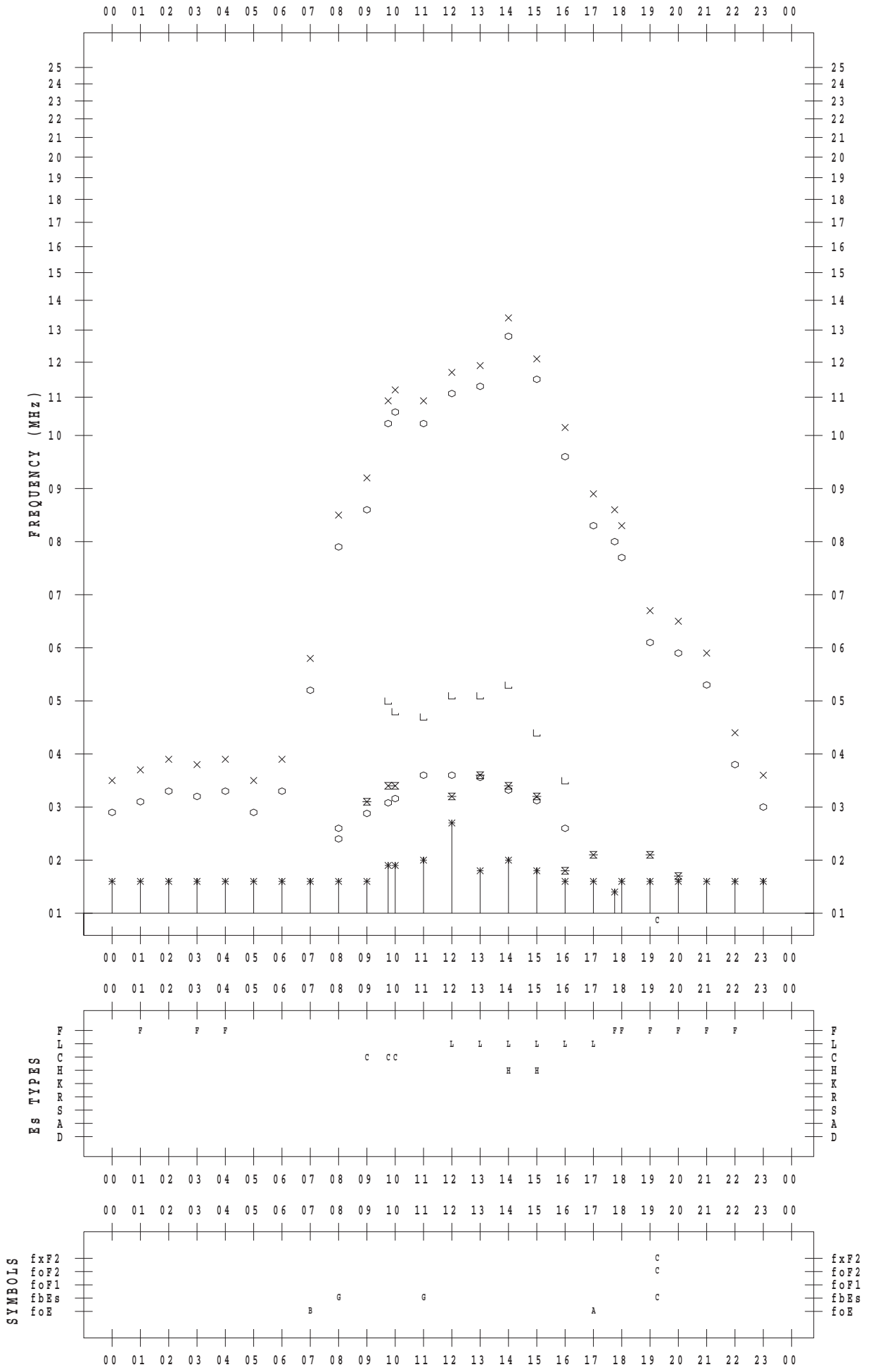
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/11

135 °E MEAN TIME



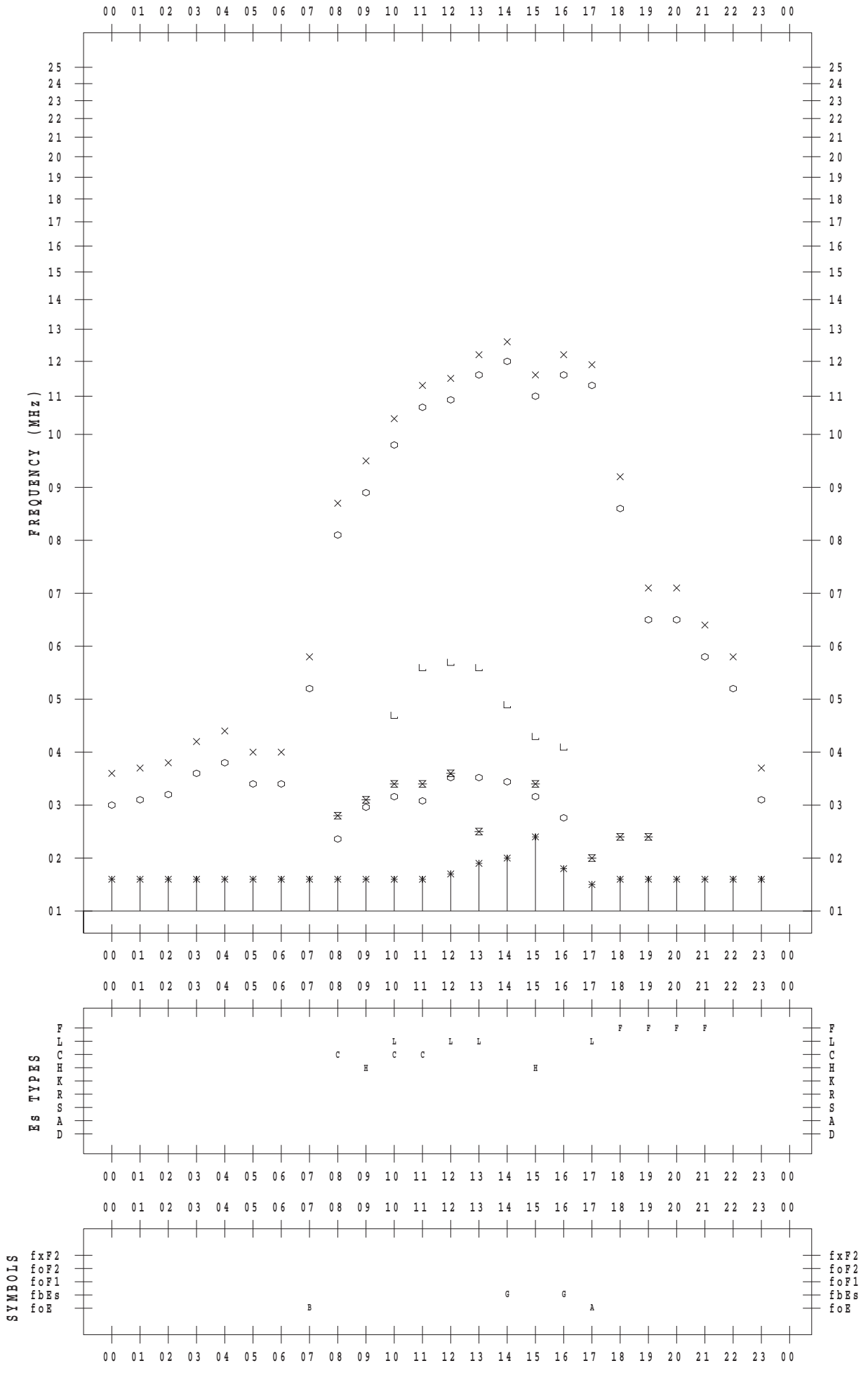
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/12

135 °E MEAN TIME



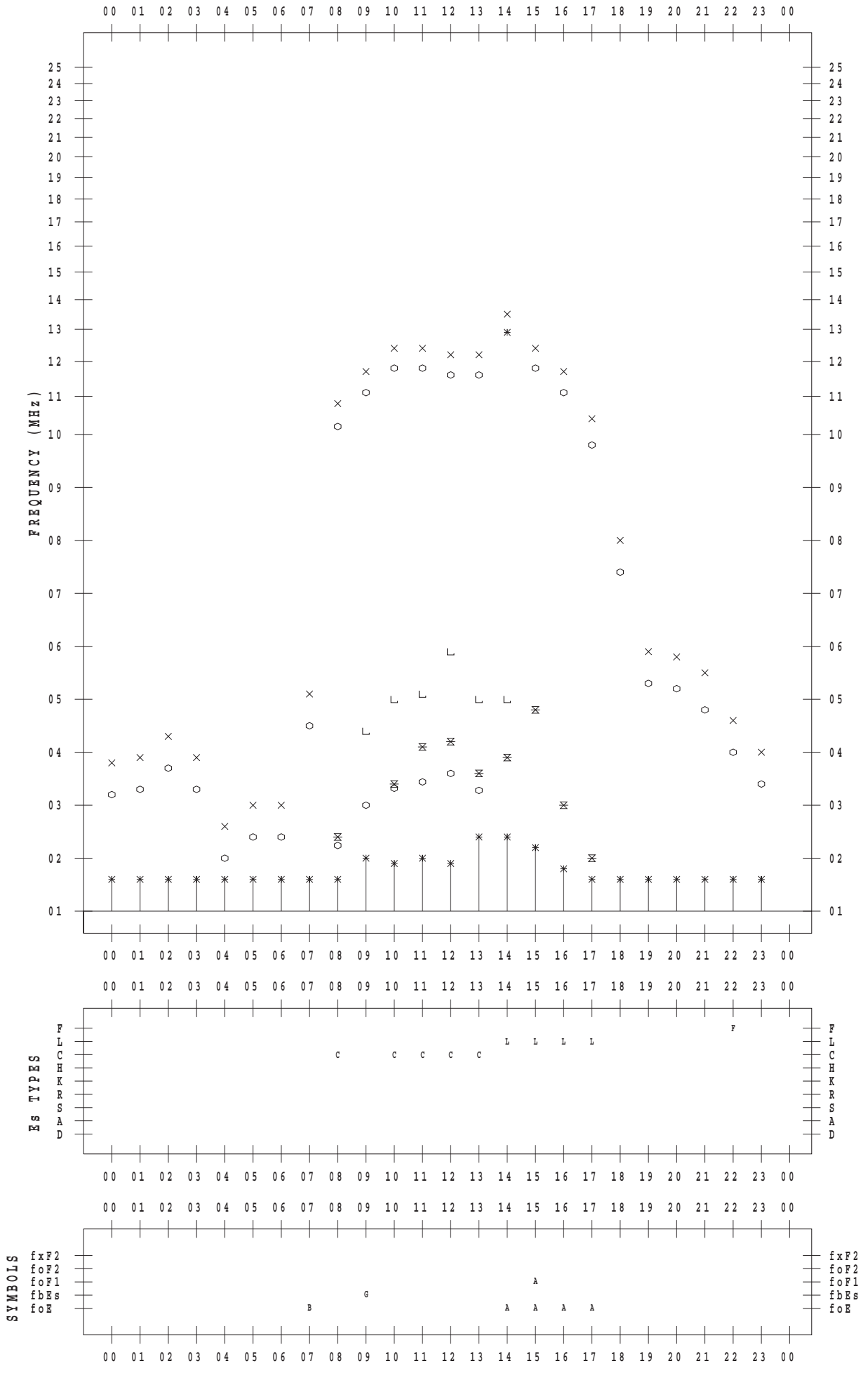
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/13

135 °E MEAN TIME



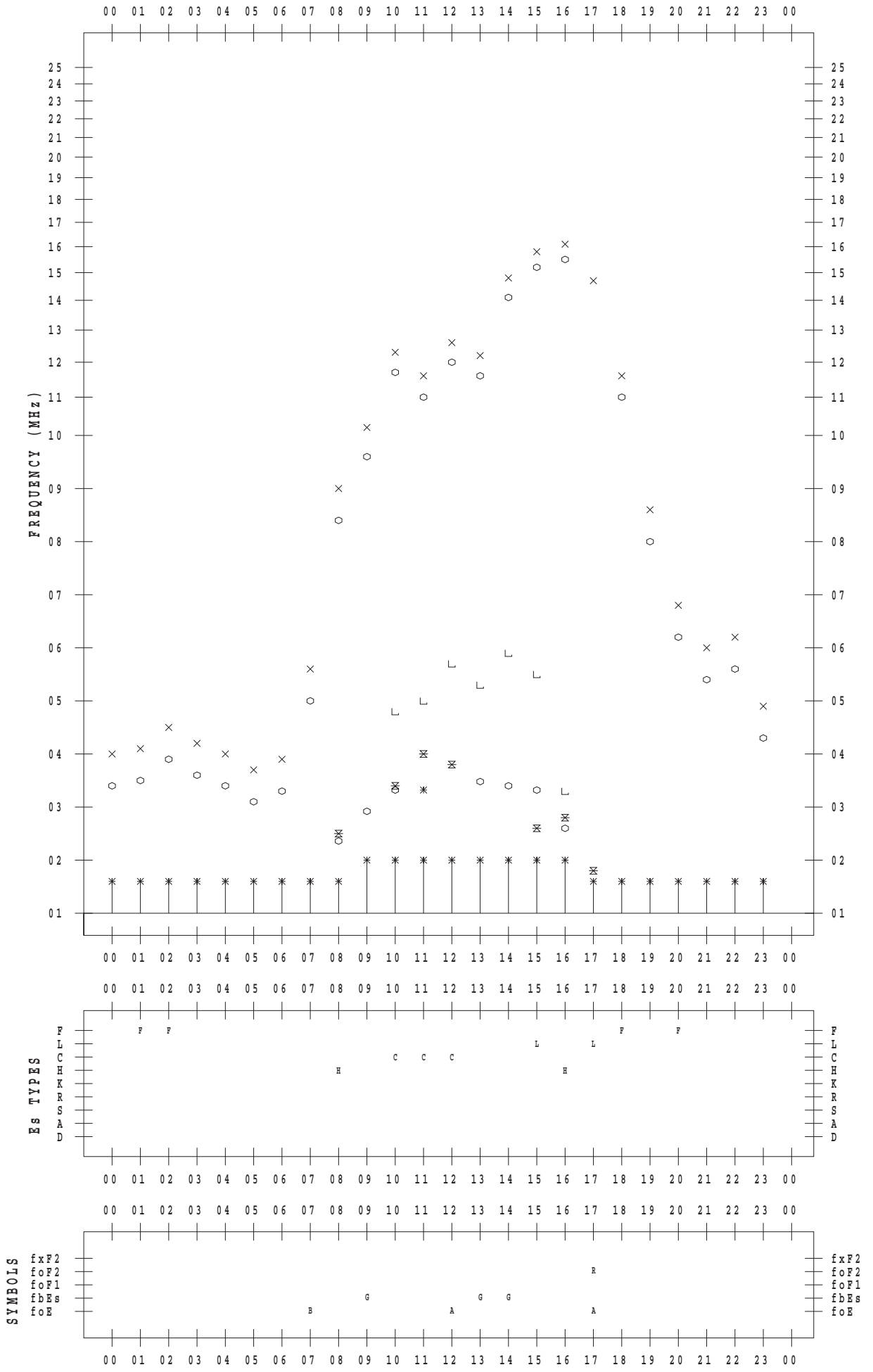
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/14

135 °E MEAN TIME



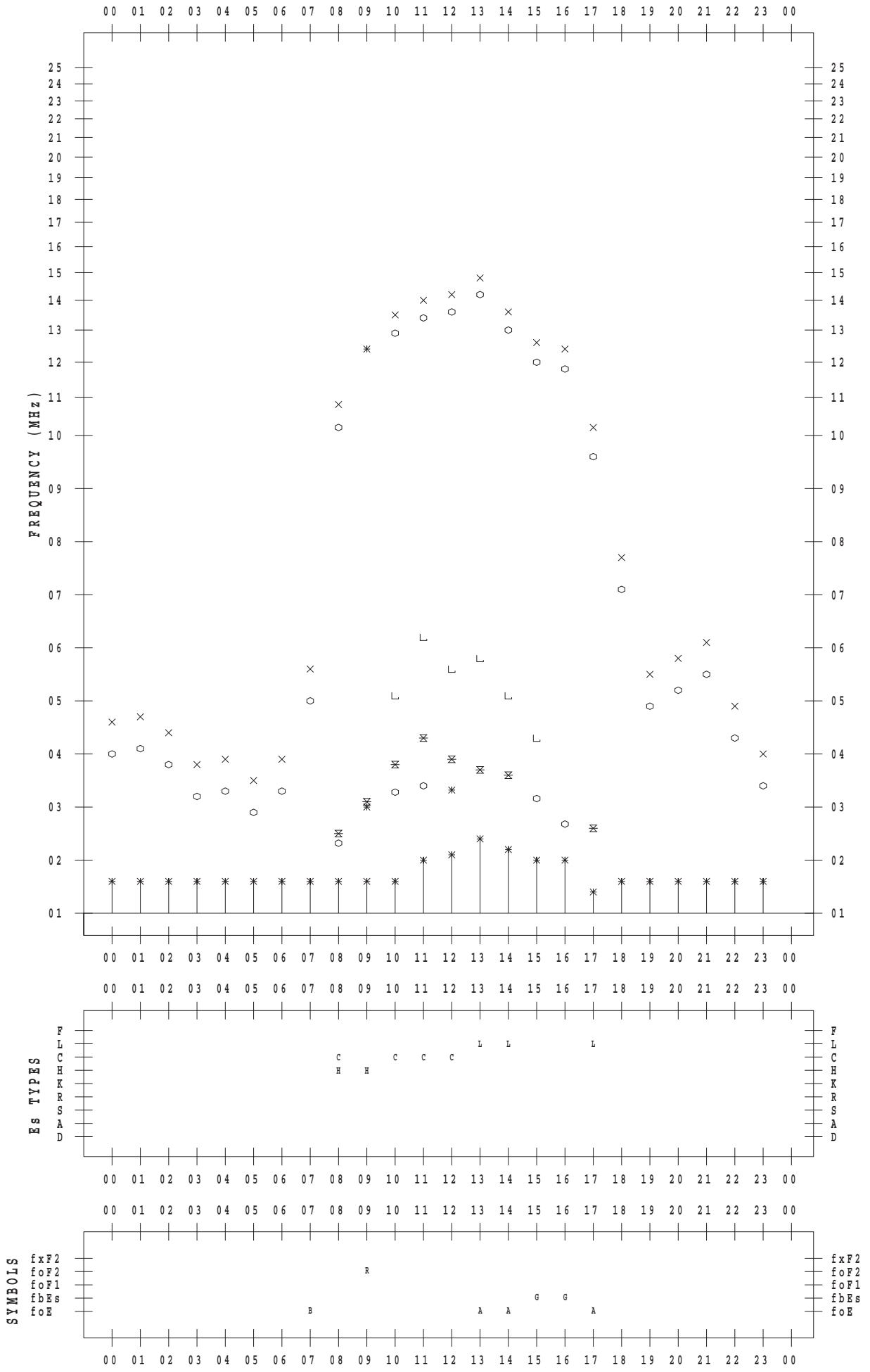
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/15

135 °E MEAN TIME



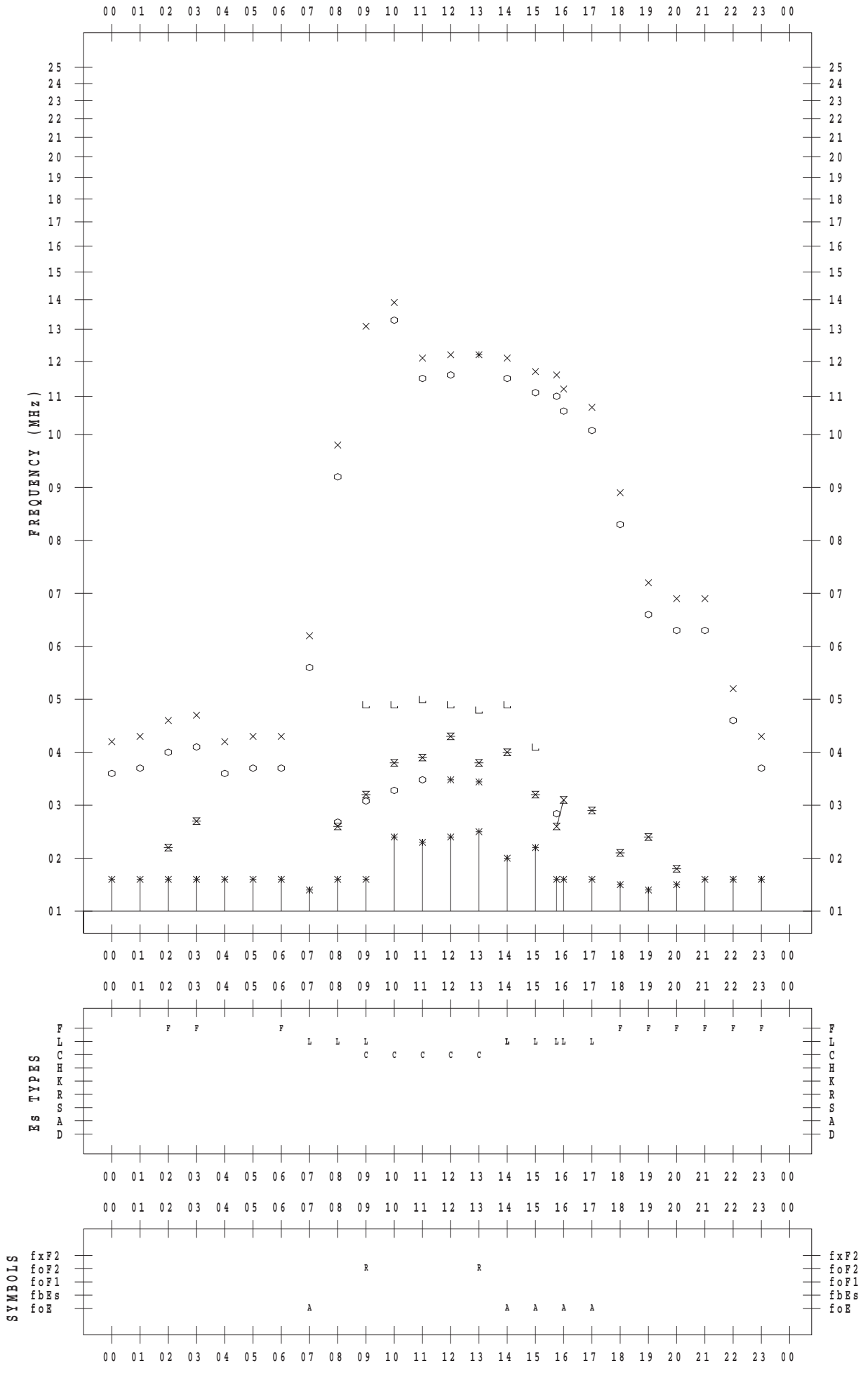
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/16

135 °E MEAN TIME



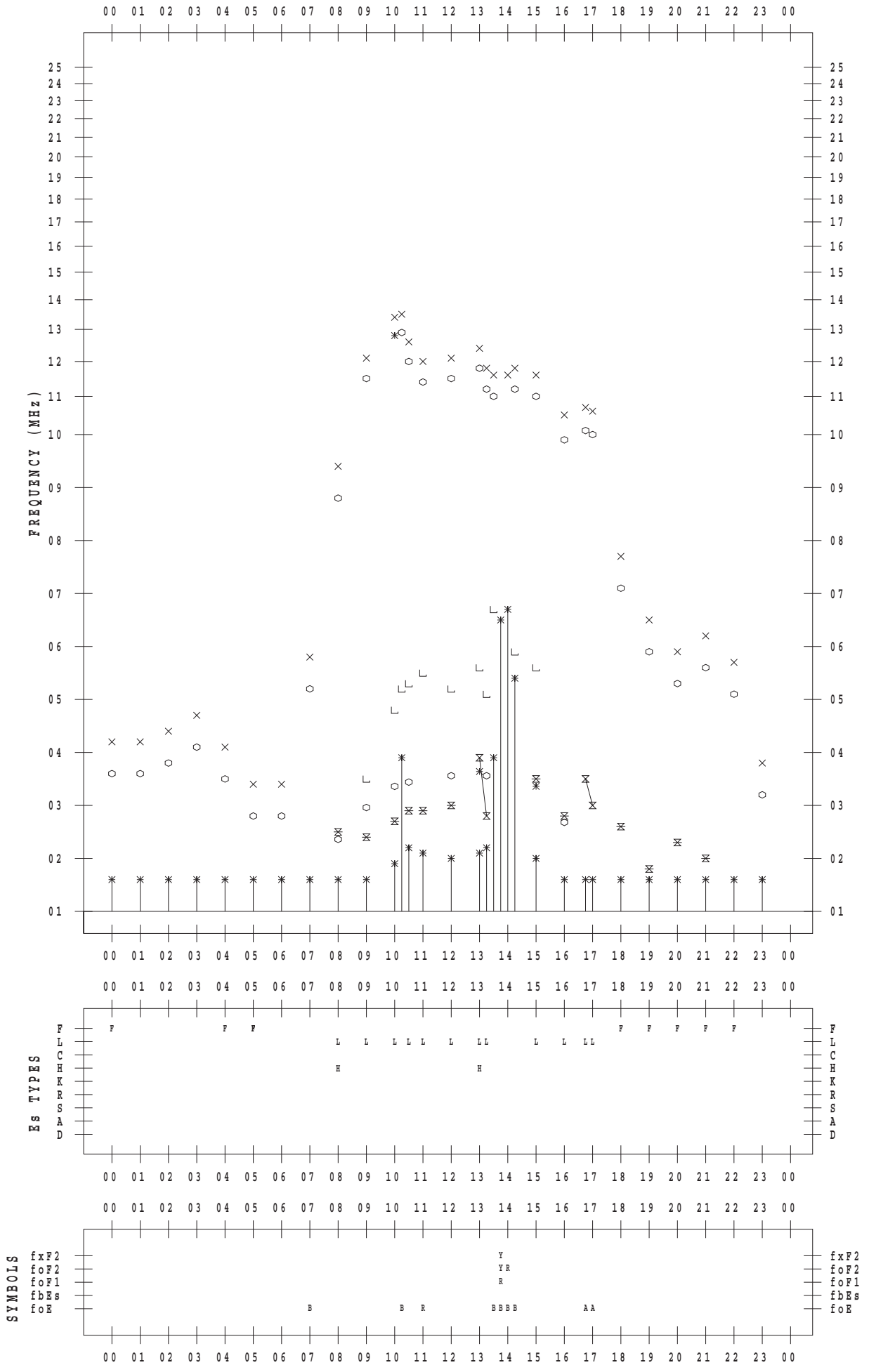
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/17

135 °E MEAN TIME



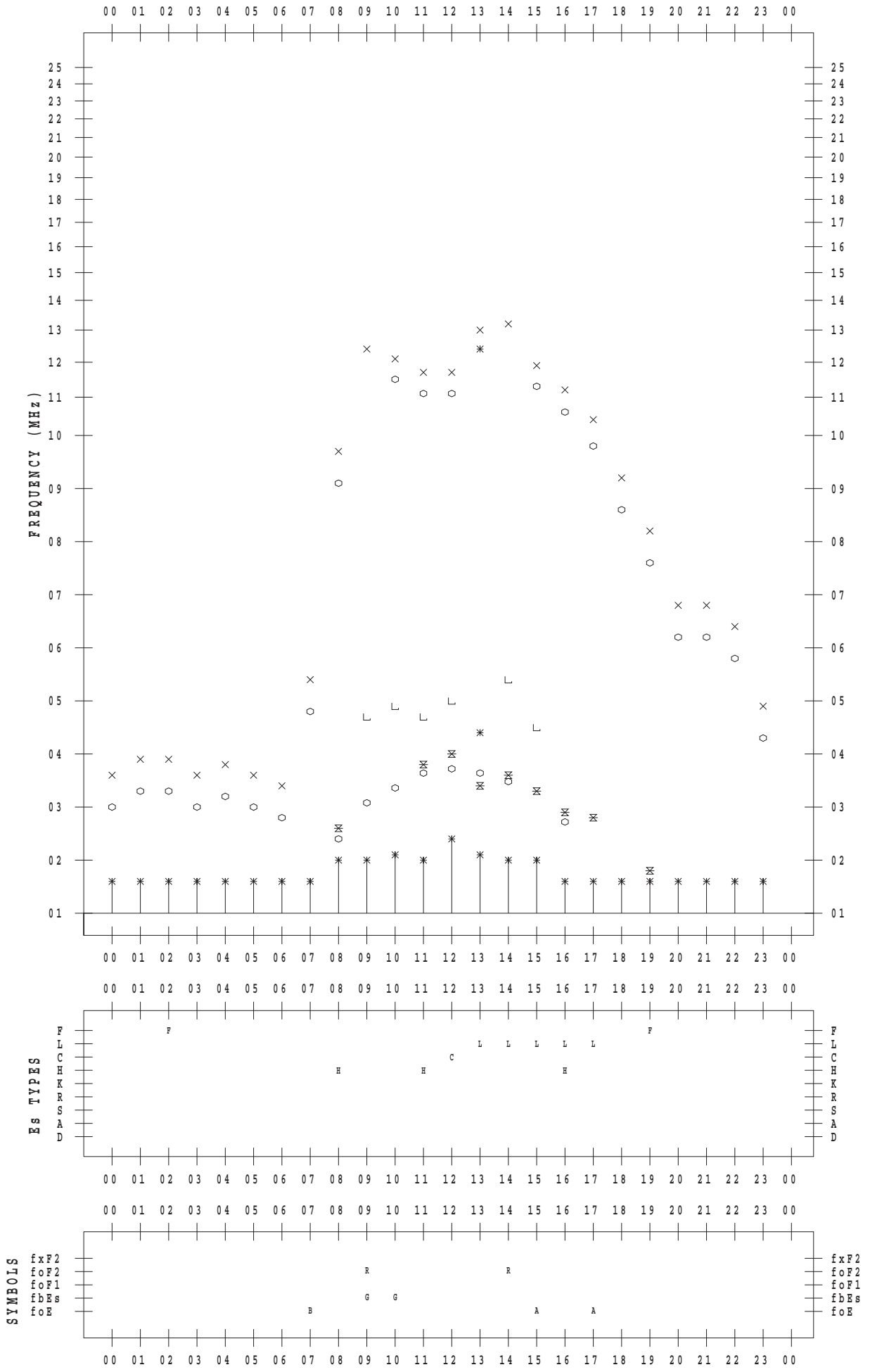
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/18

135 °E MEAN TIME



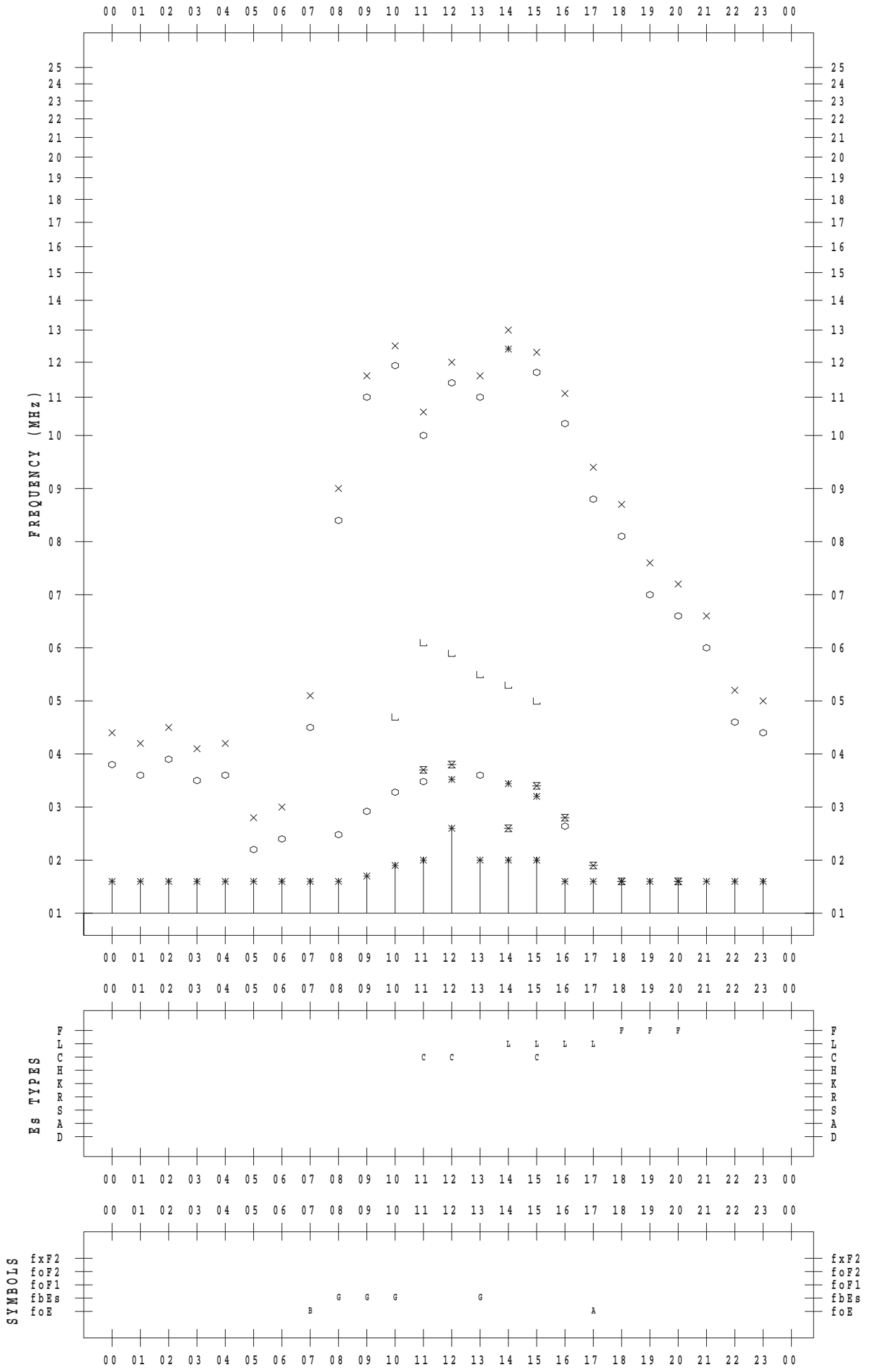
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/19

135 °E MEAN TIME



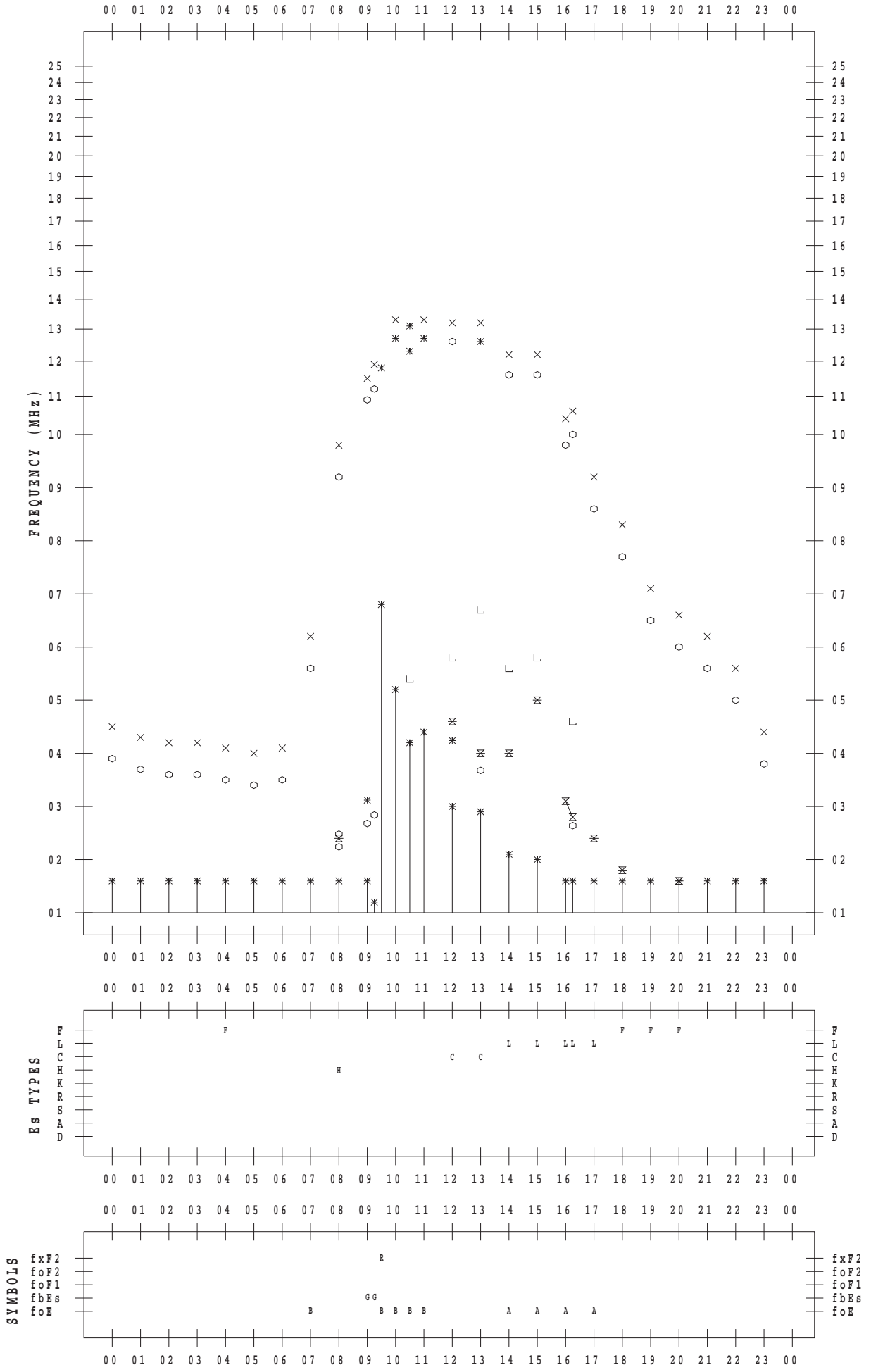
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/20

135 °E MEAN TIME



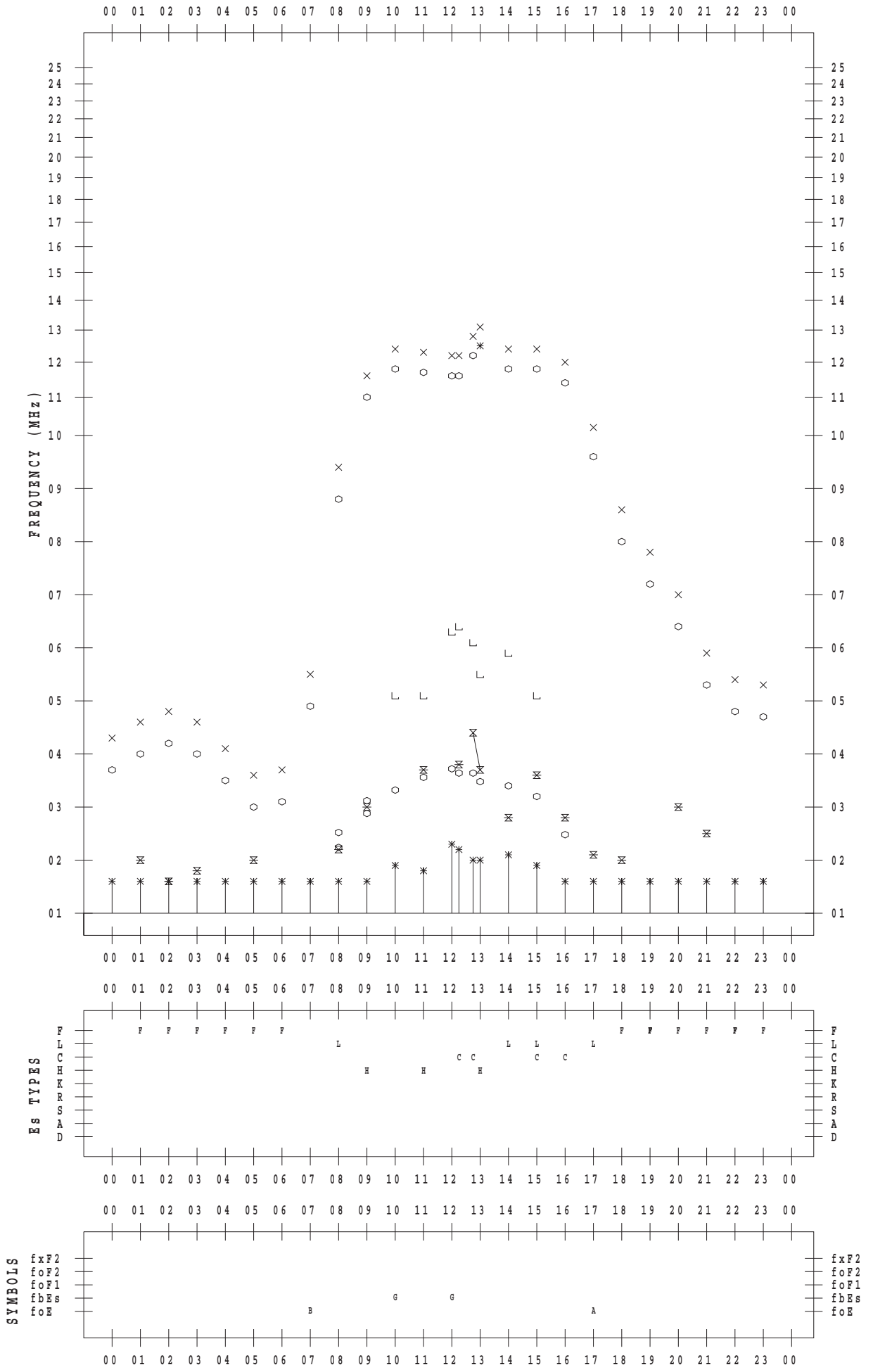
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/21

135 °E MEAN TIME



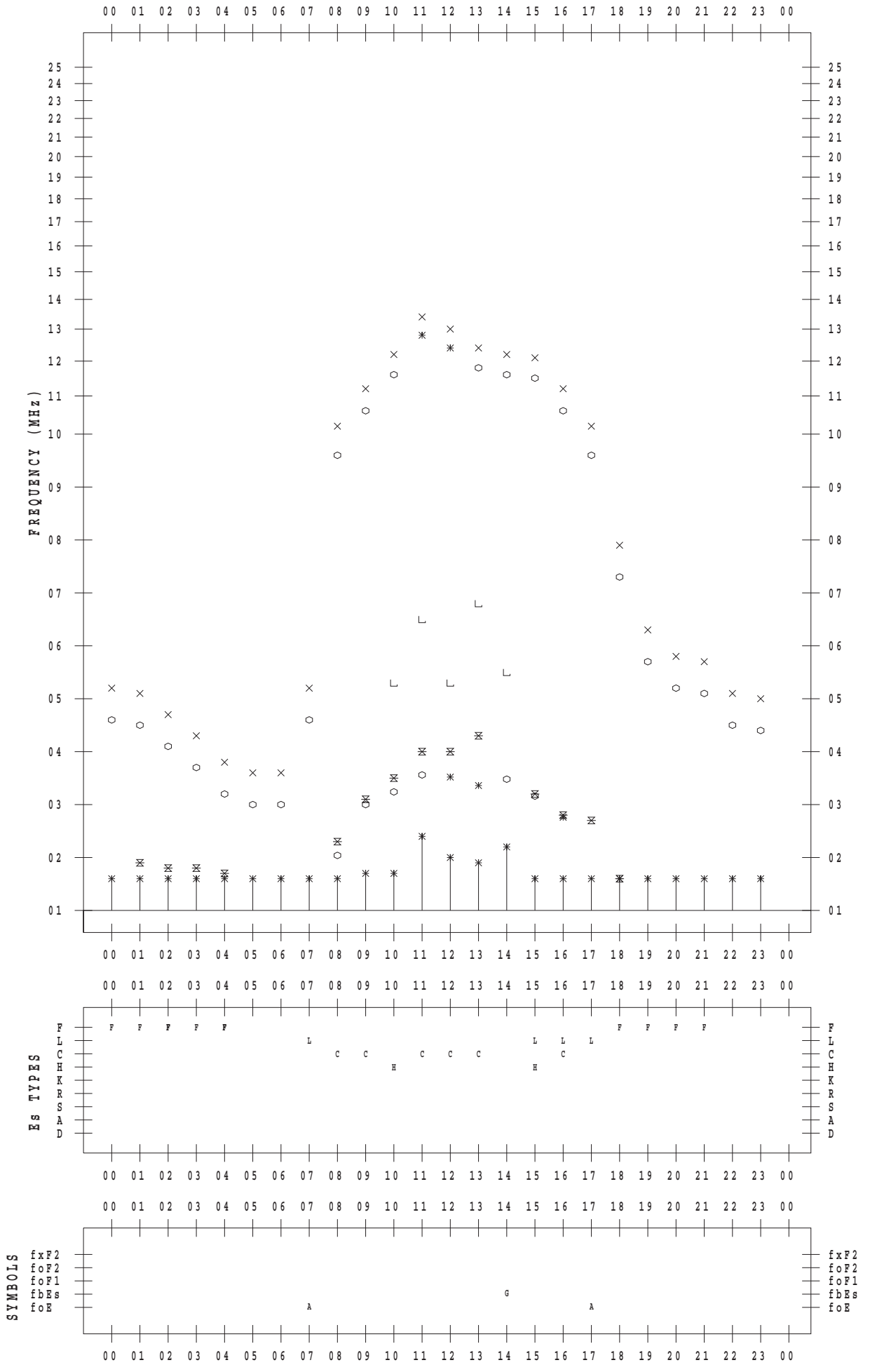
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/22

135 °E MEAN TIME



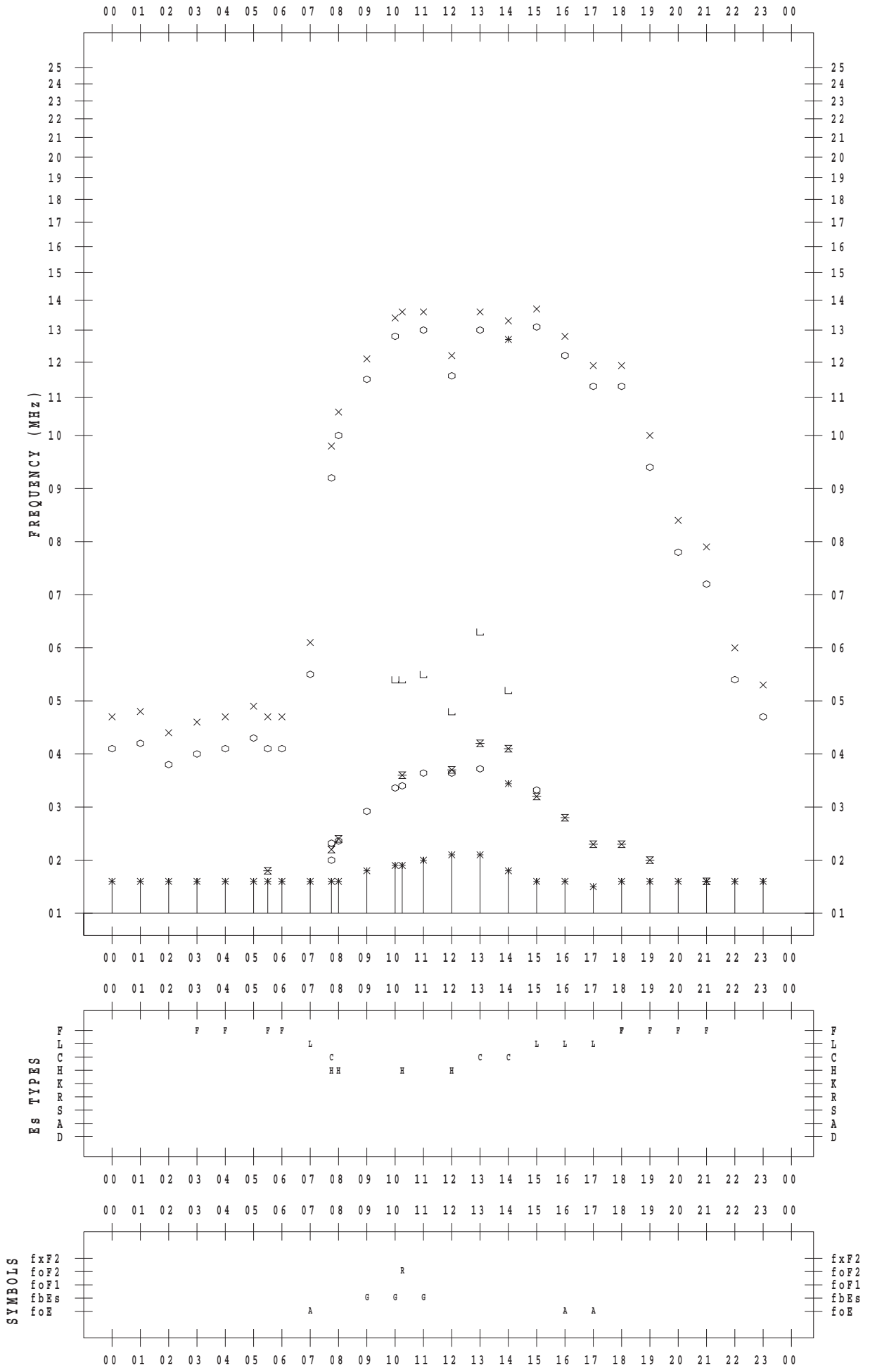
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/23

135 °E MEAN TIME



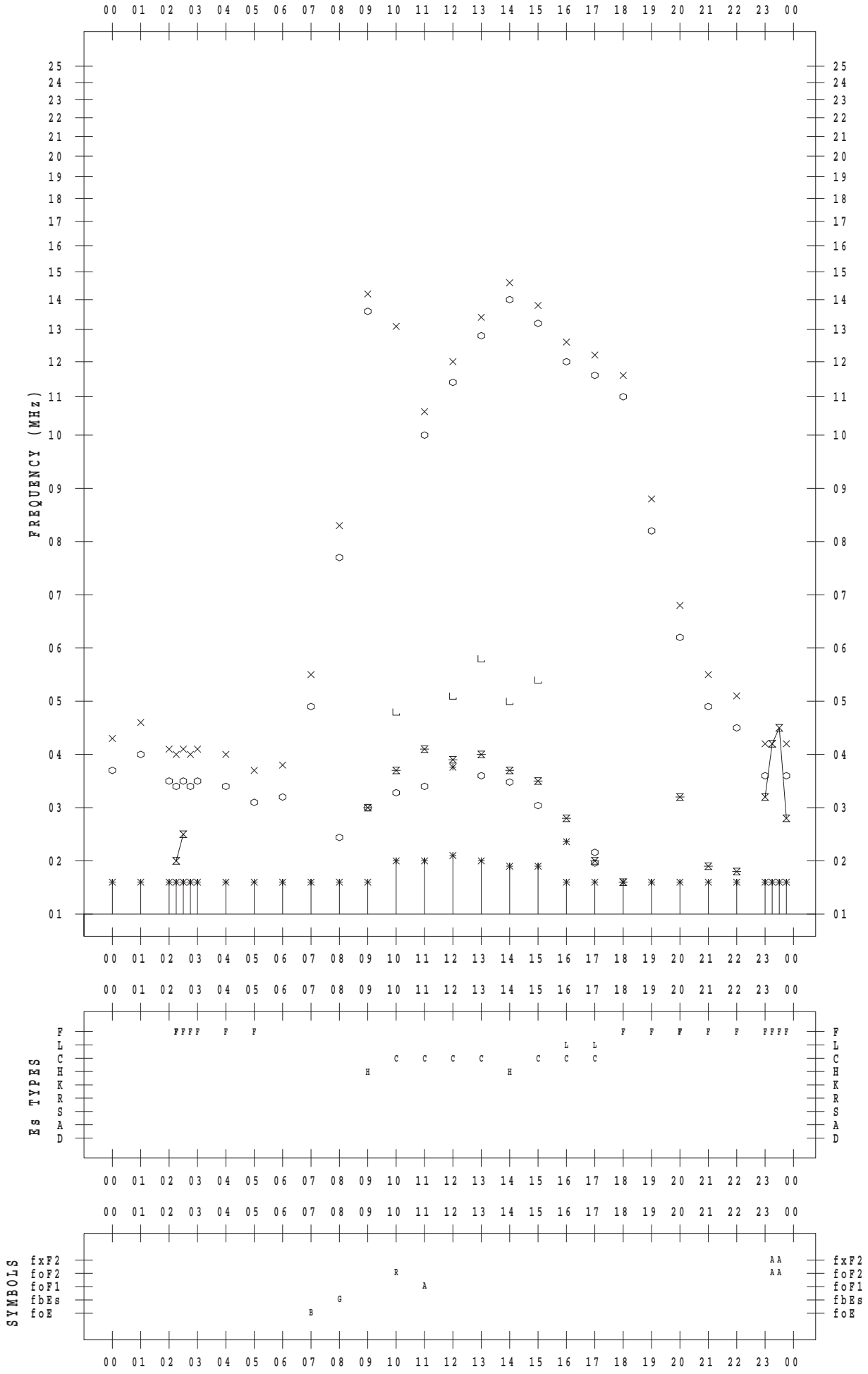
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/24

135 °E MEAN TIME



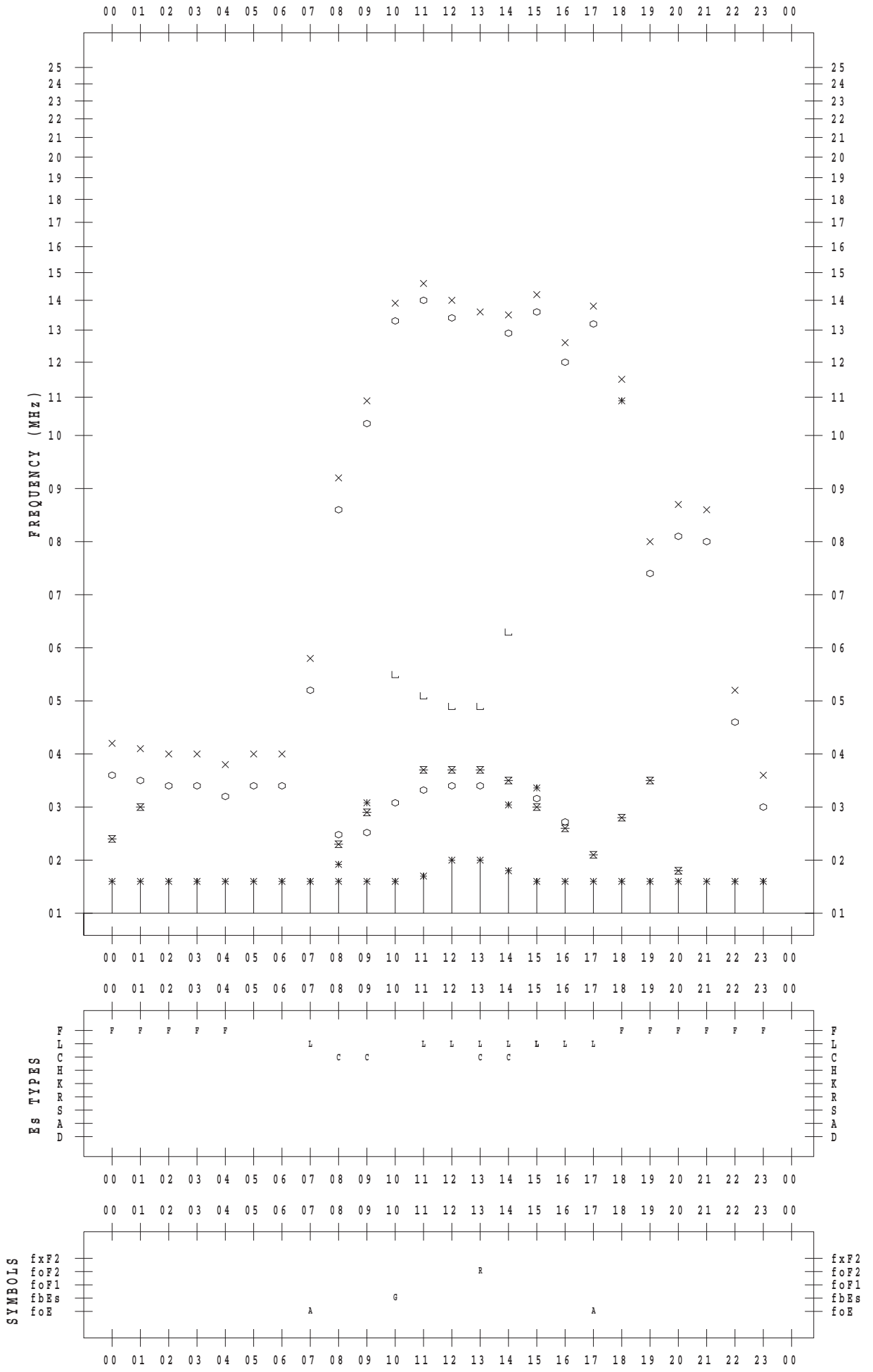
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/25

135 °E MEAN TIME



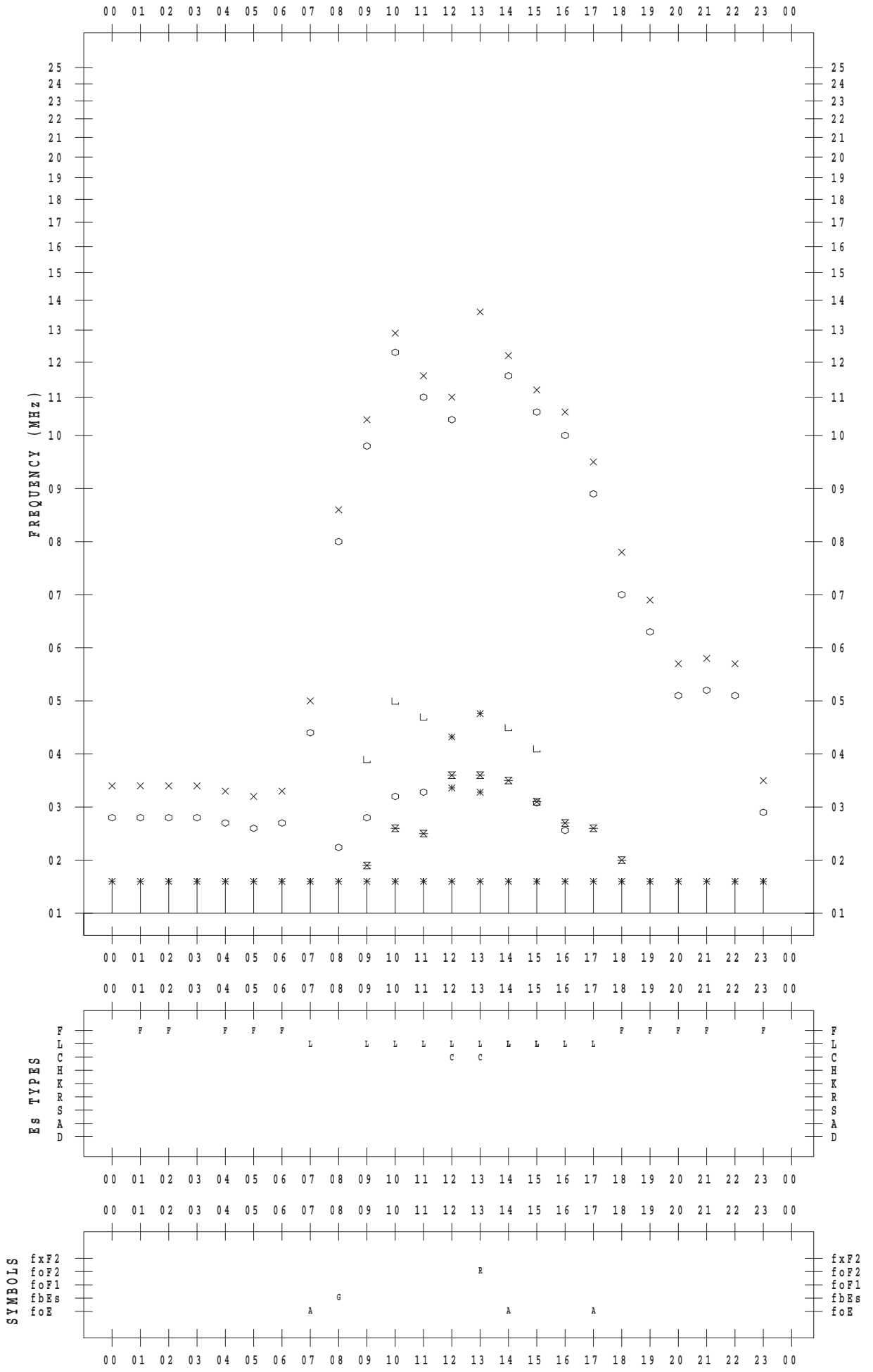
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/26

135 °E MEAN TIME



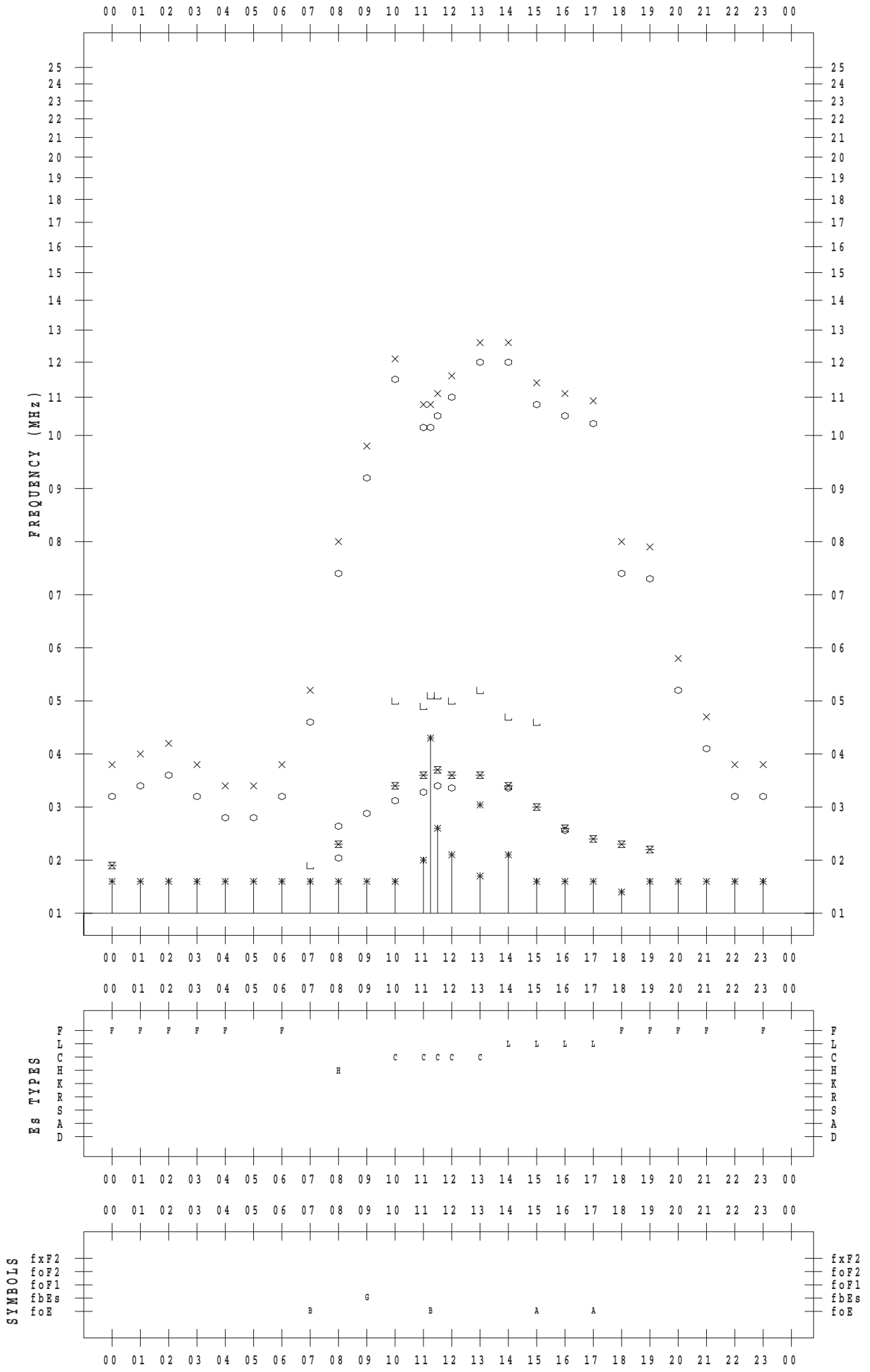
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/27

135 °E MEAN TIME



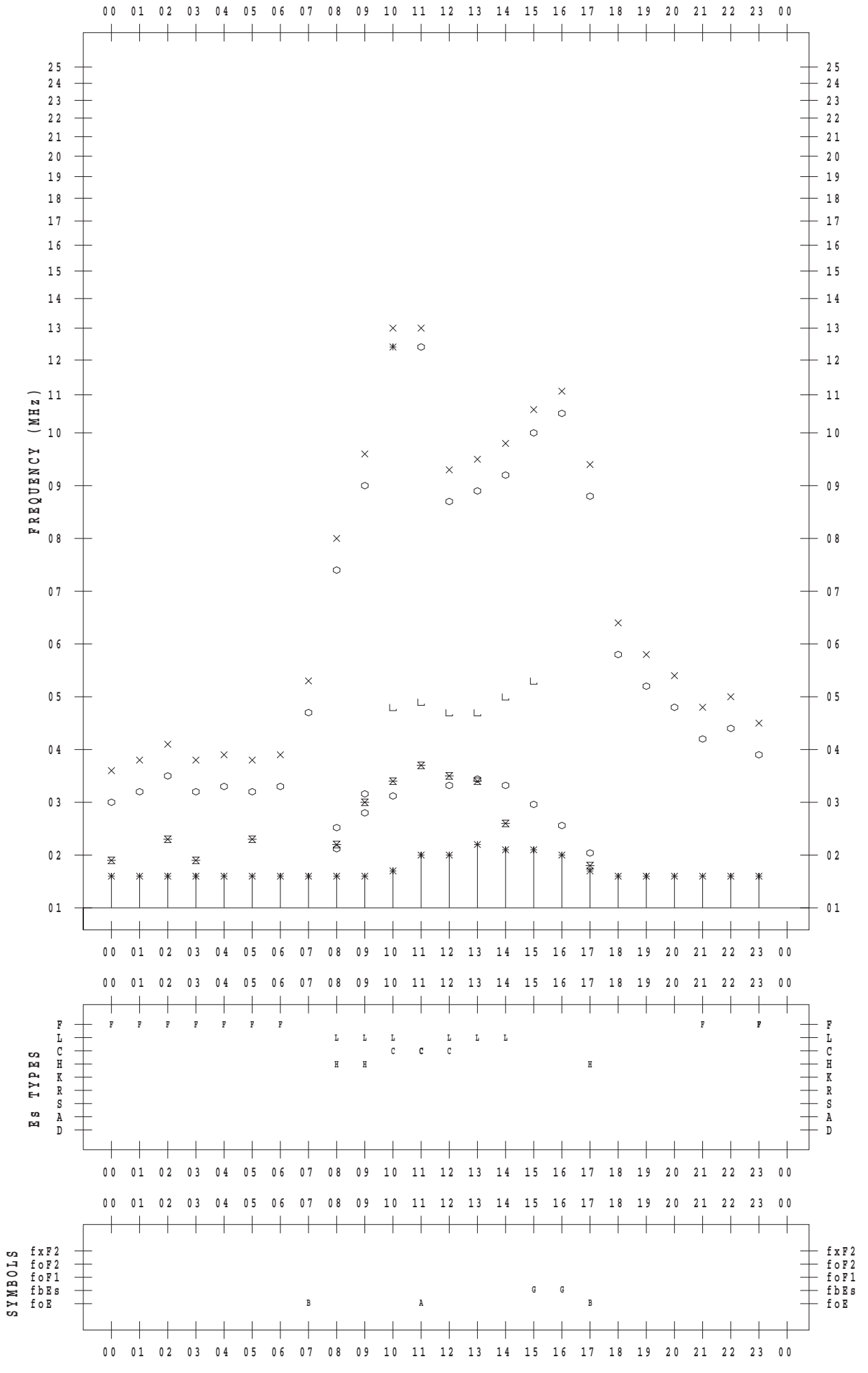
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/28

135 °E MEAN TIME



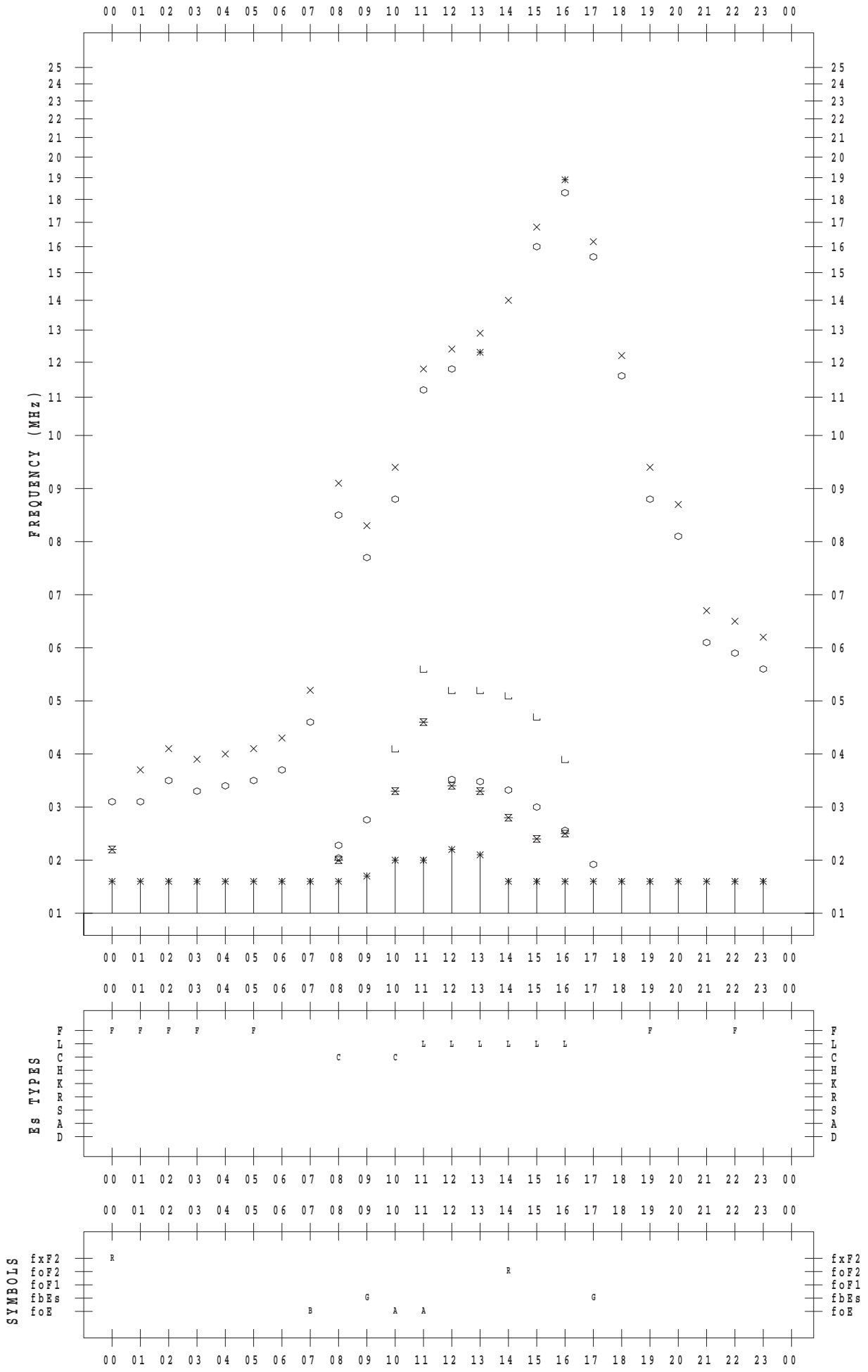
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/29

135 °E MEAN TIME



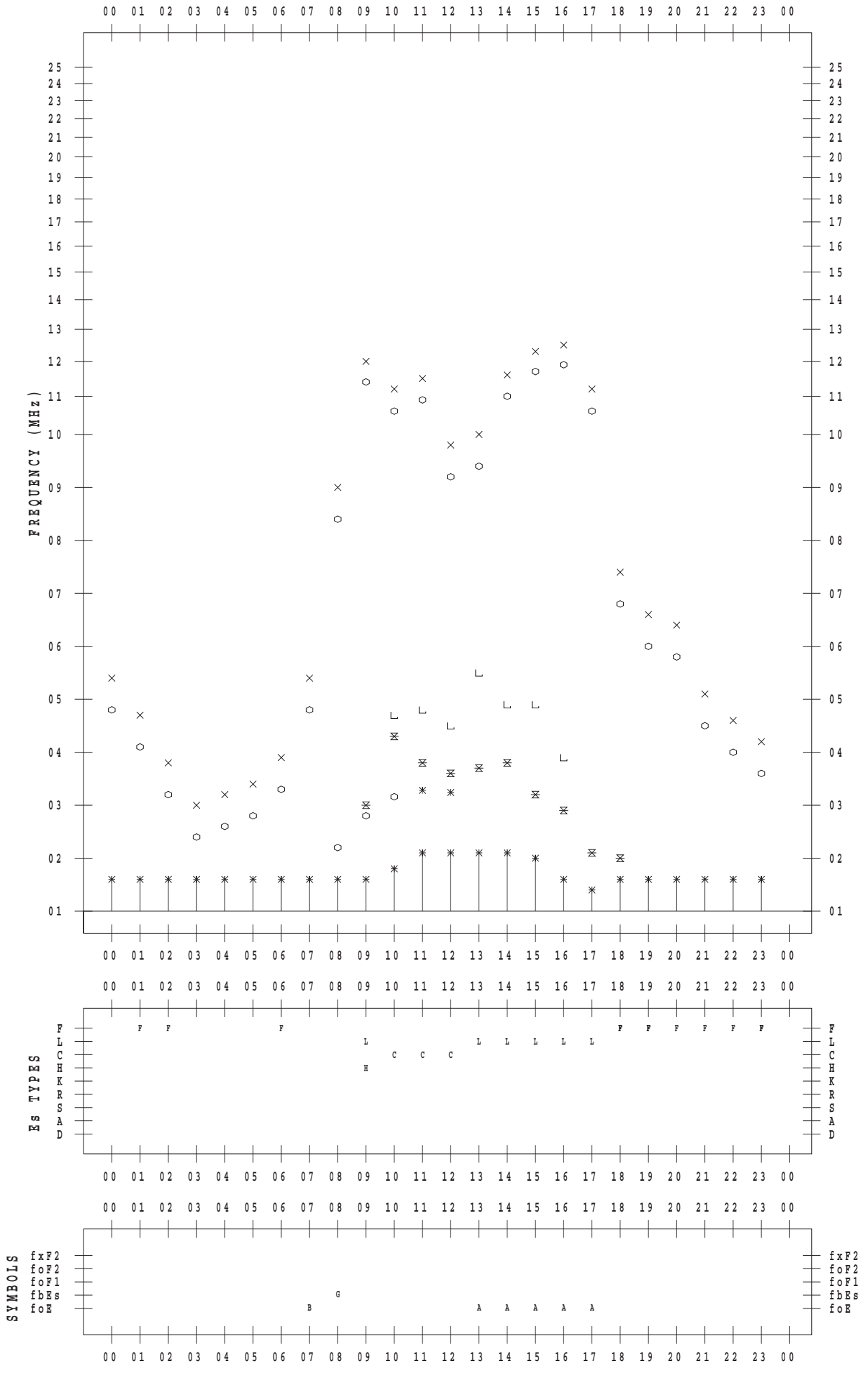
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/30

135 °E MEAN TIME



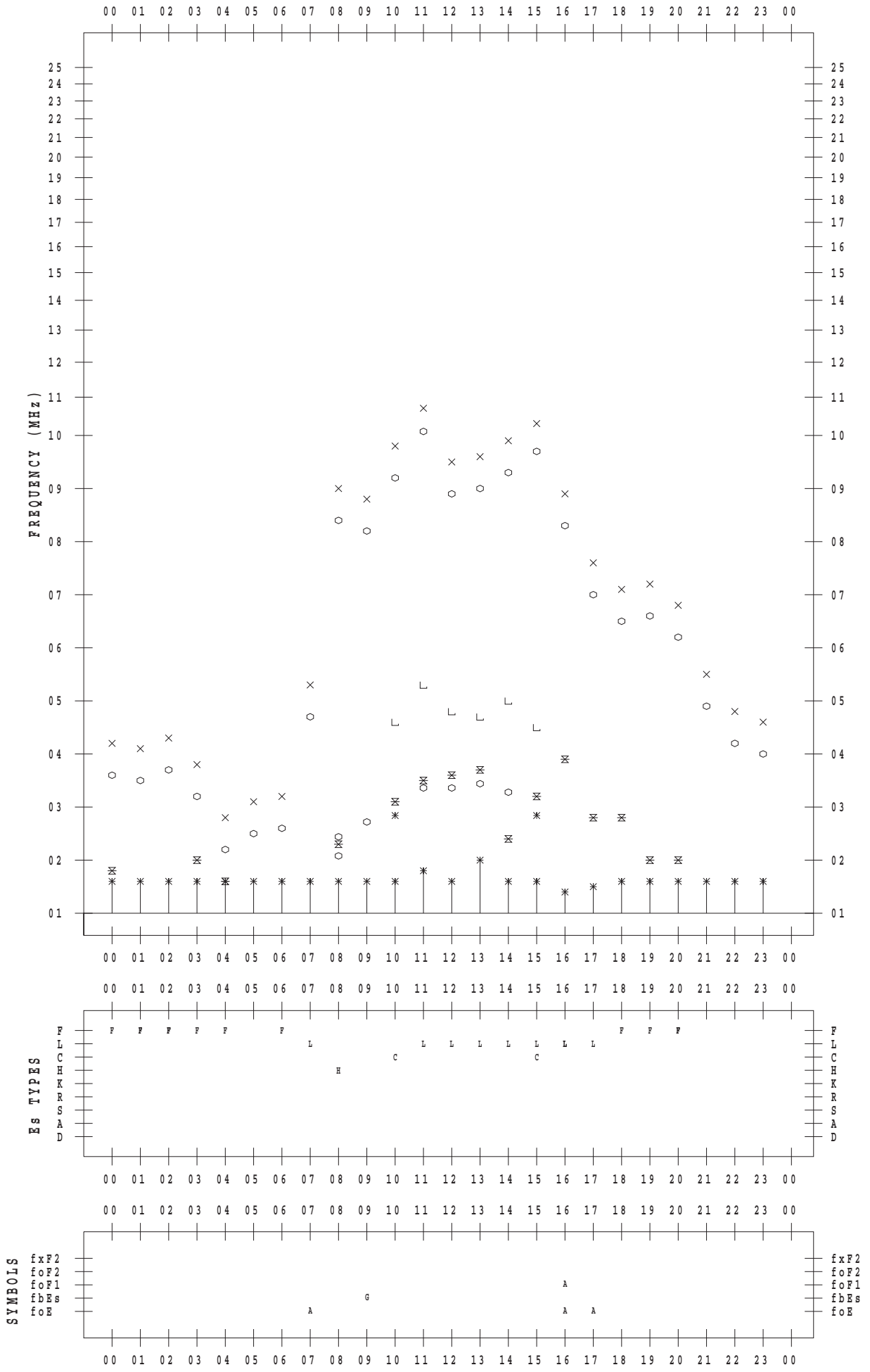
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/12/31

135 °E MEAN TIME



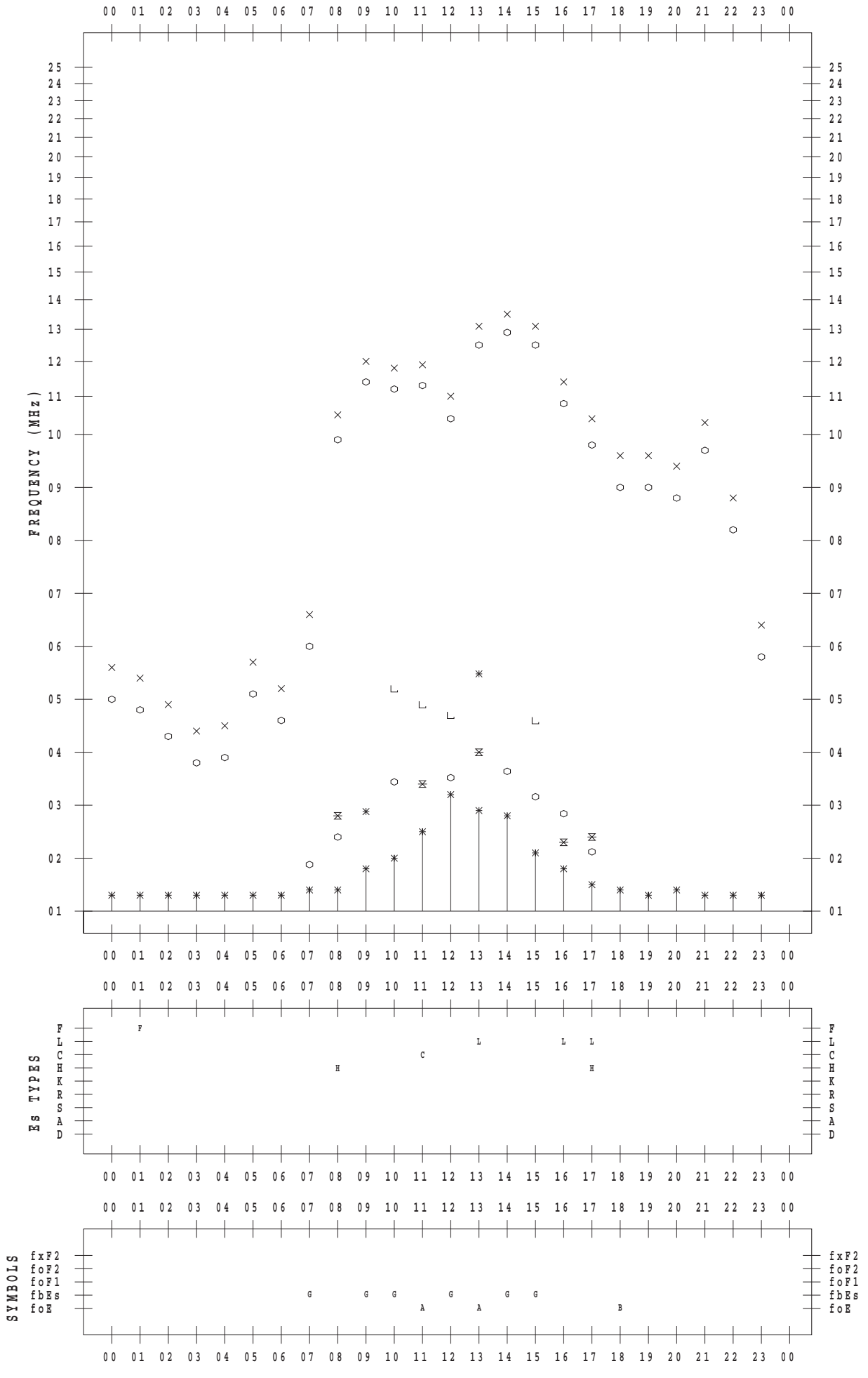
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 1

135 °E MEAN TIME



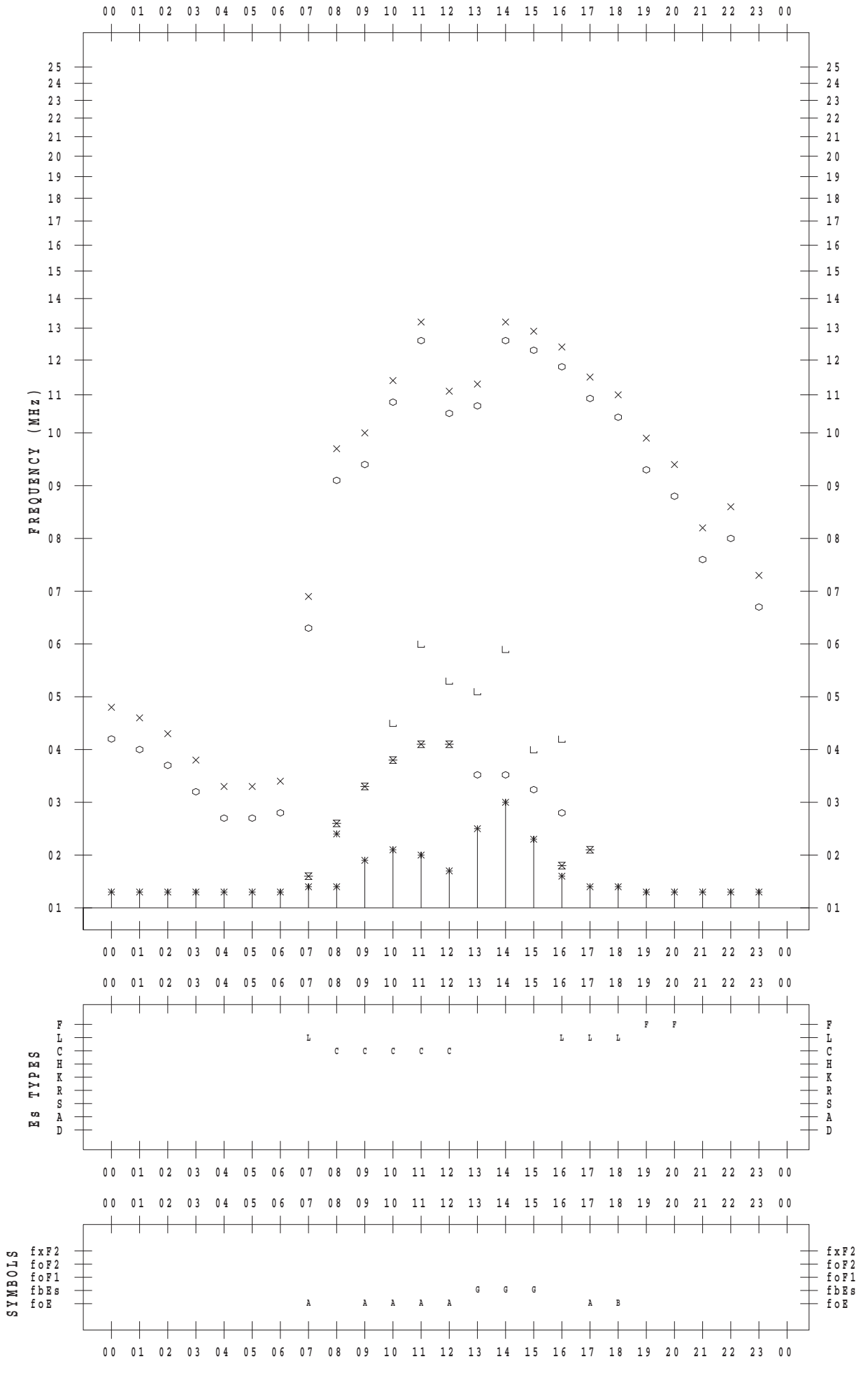
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 2

135 °E MEAN TIME



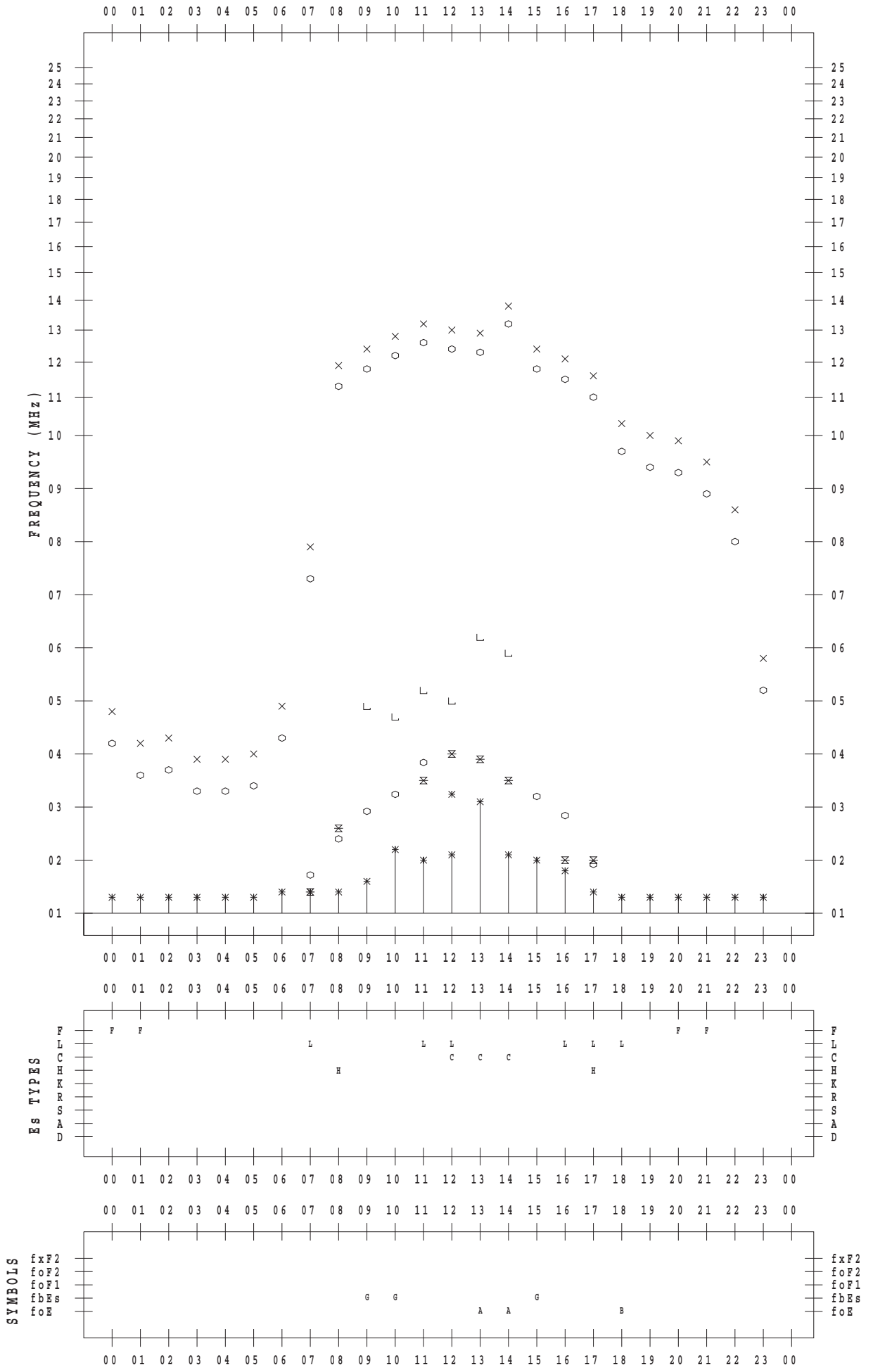
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 3

135 °E MEAN TIME



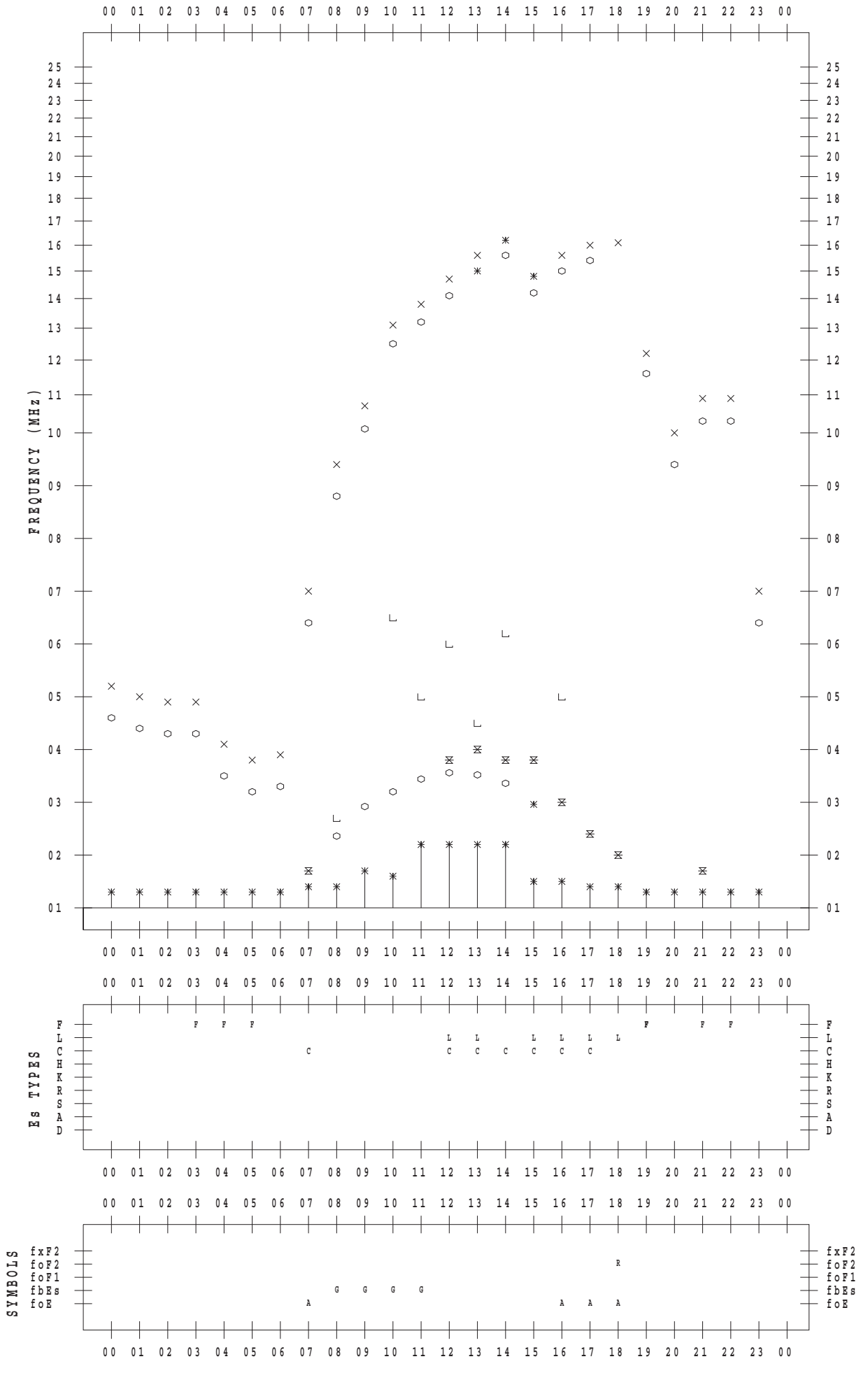
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 4

135 °E MEAN TIME



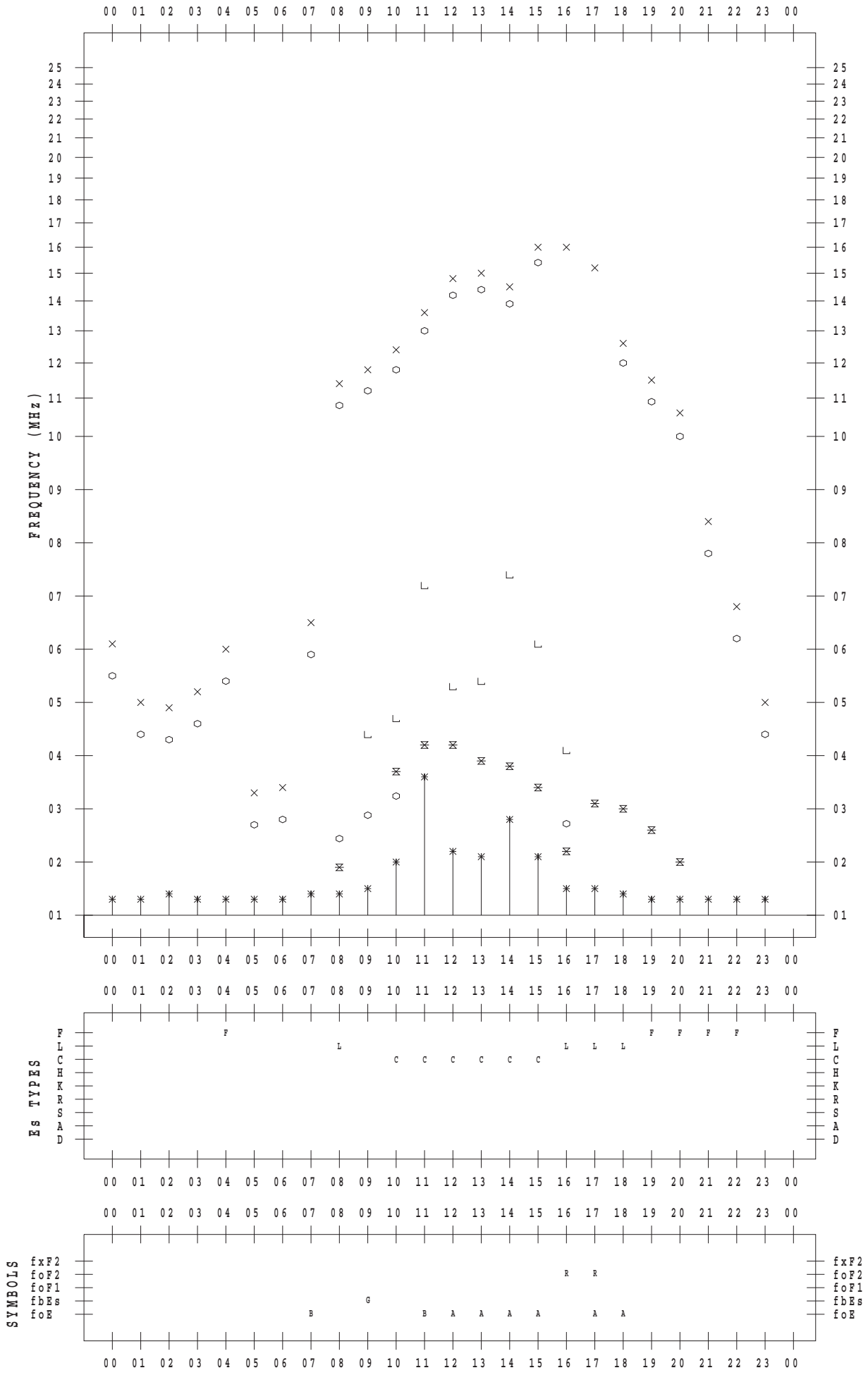
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 5

135 °E MEAN TIME



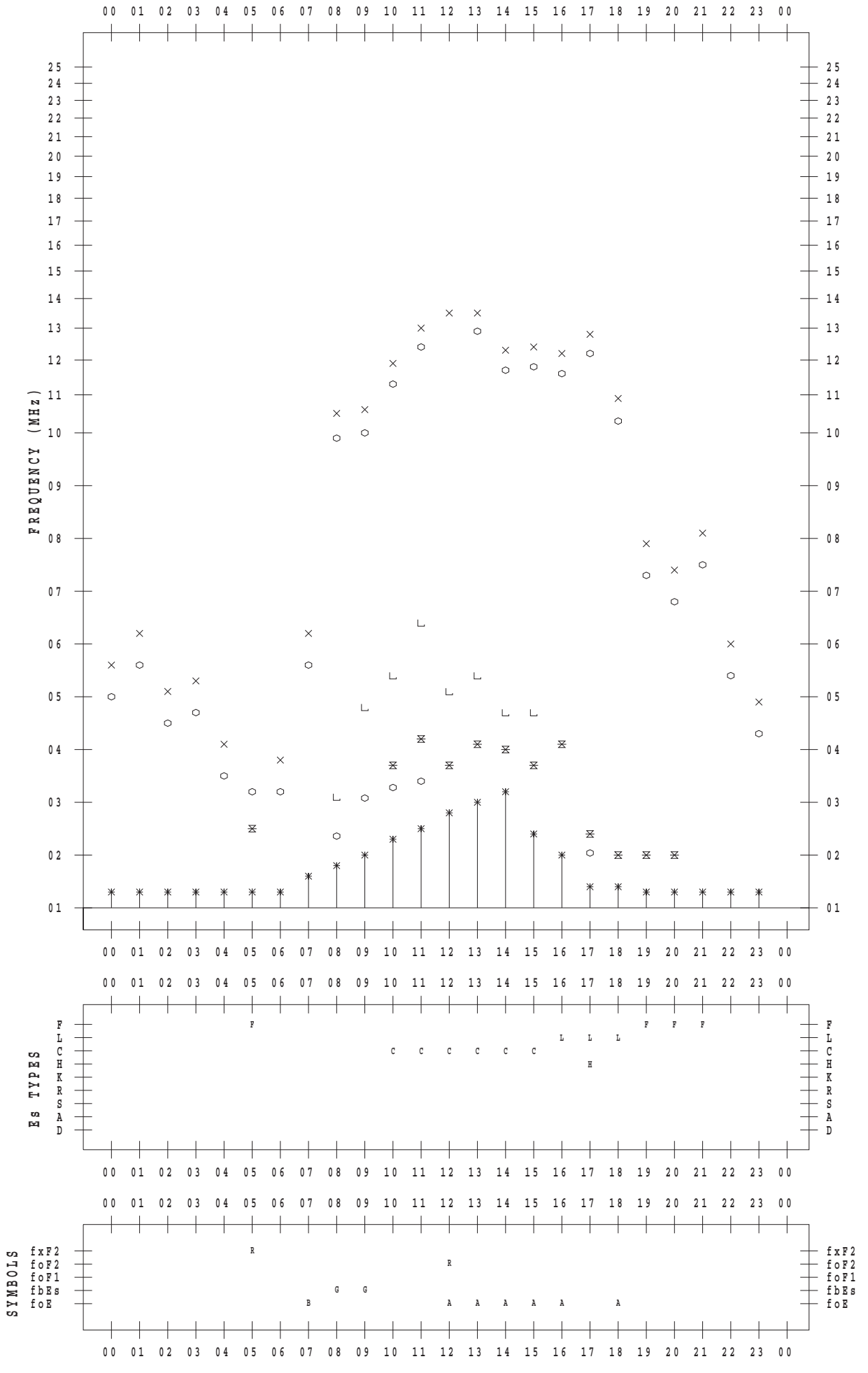
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 6

135 °E MEAN TIME



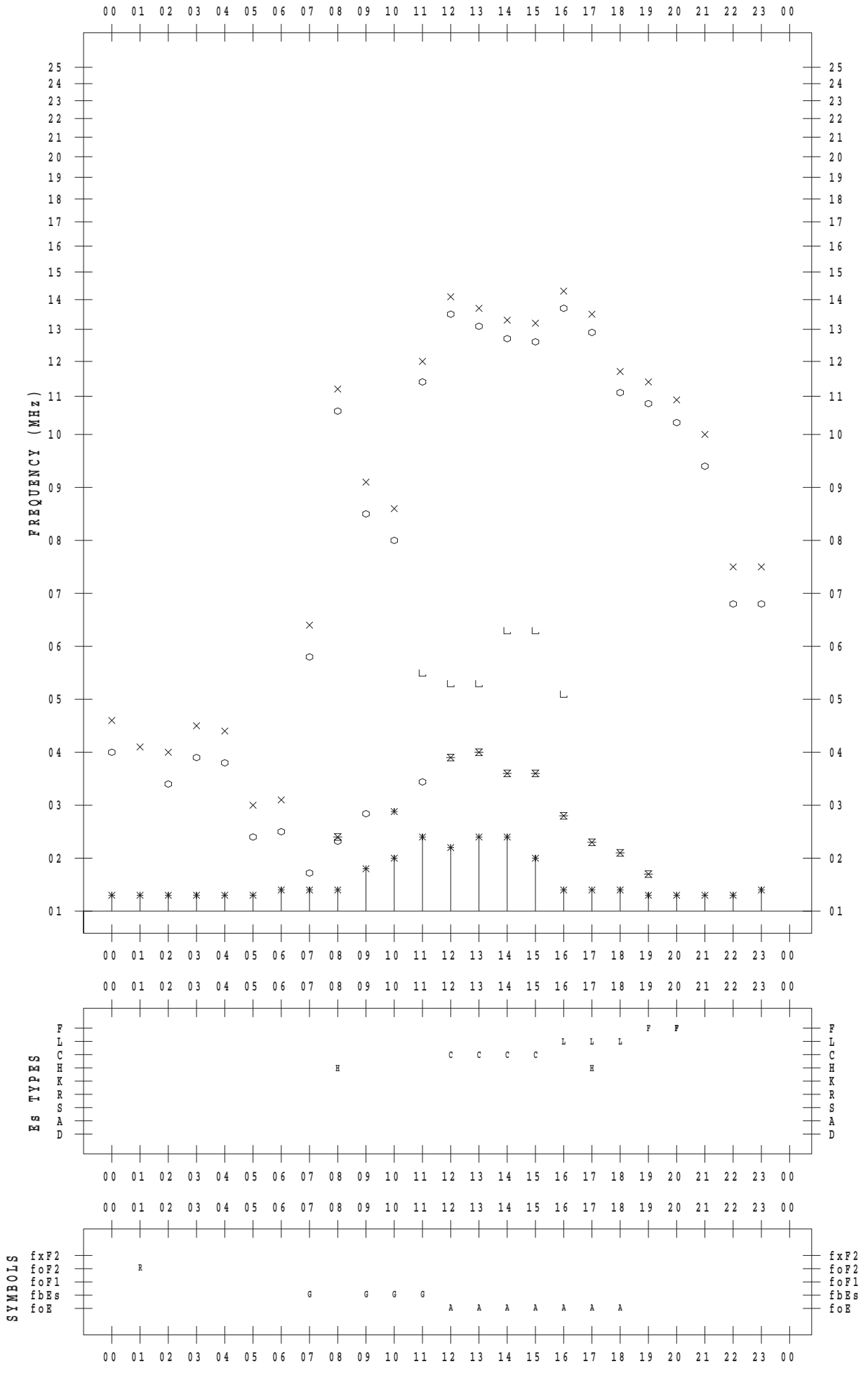
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 7

135 °E MEAN TIME



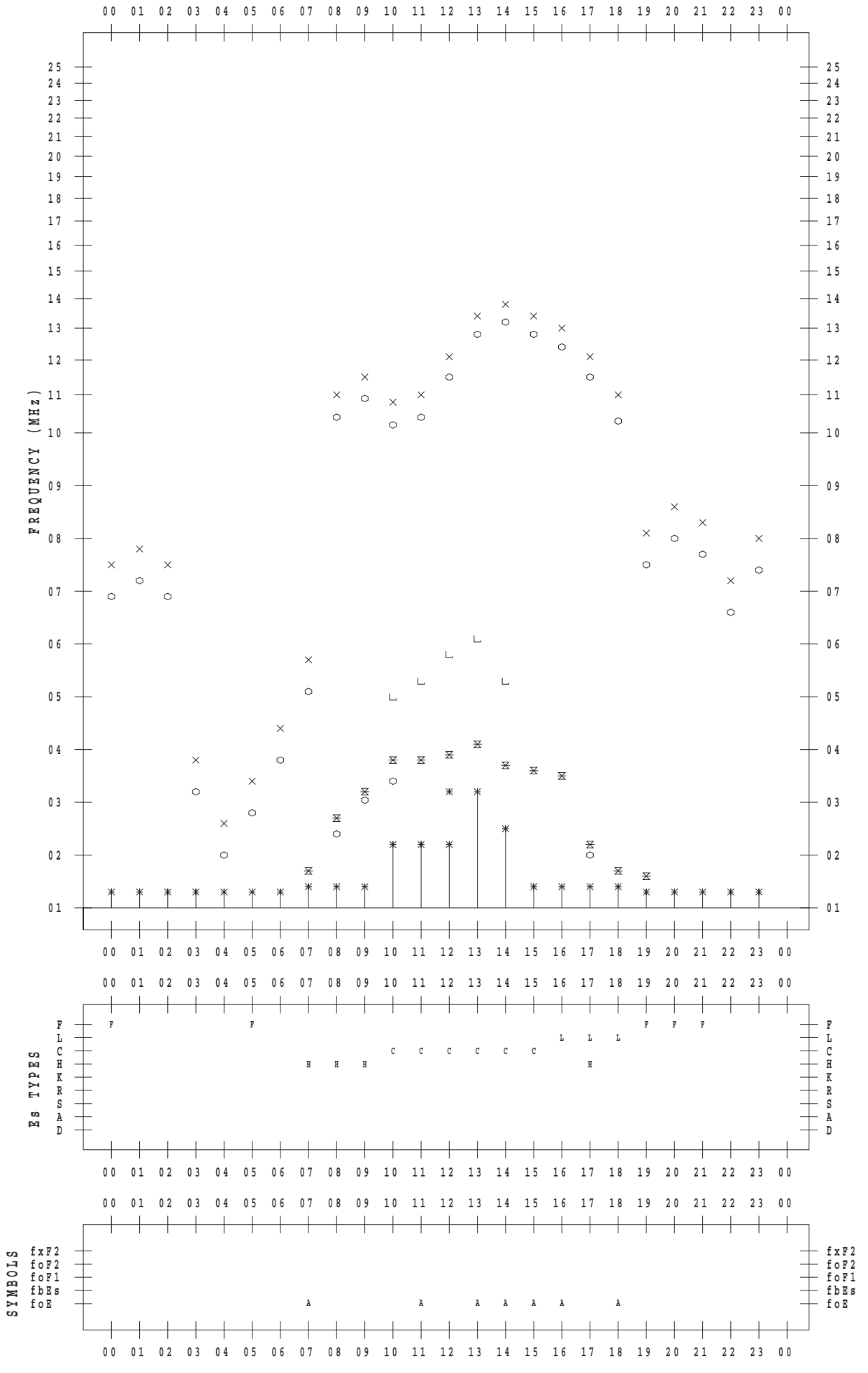
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 8

135 °E MEAN TIME



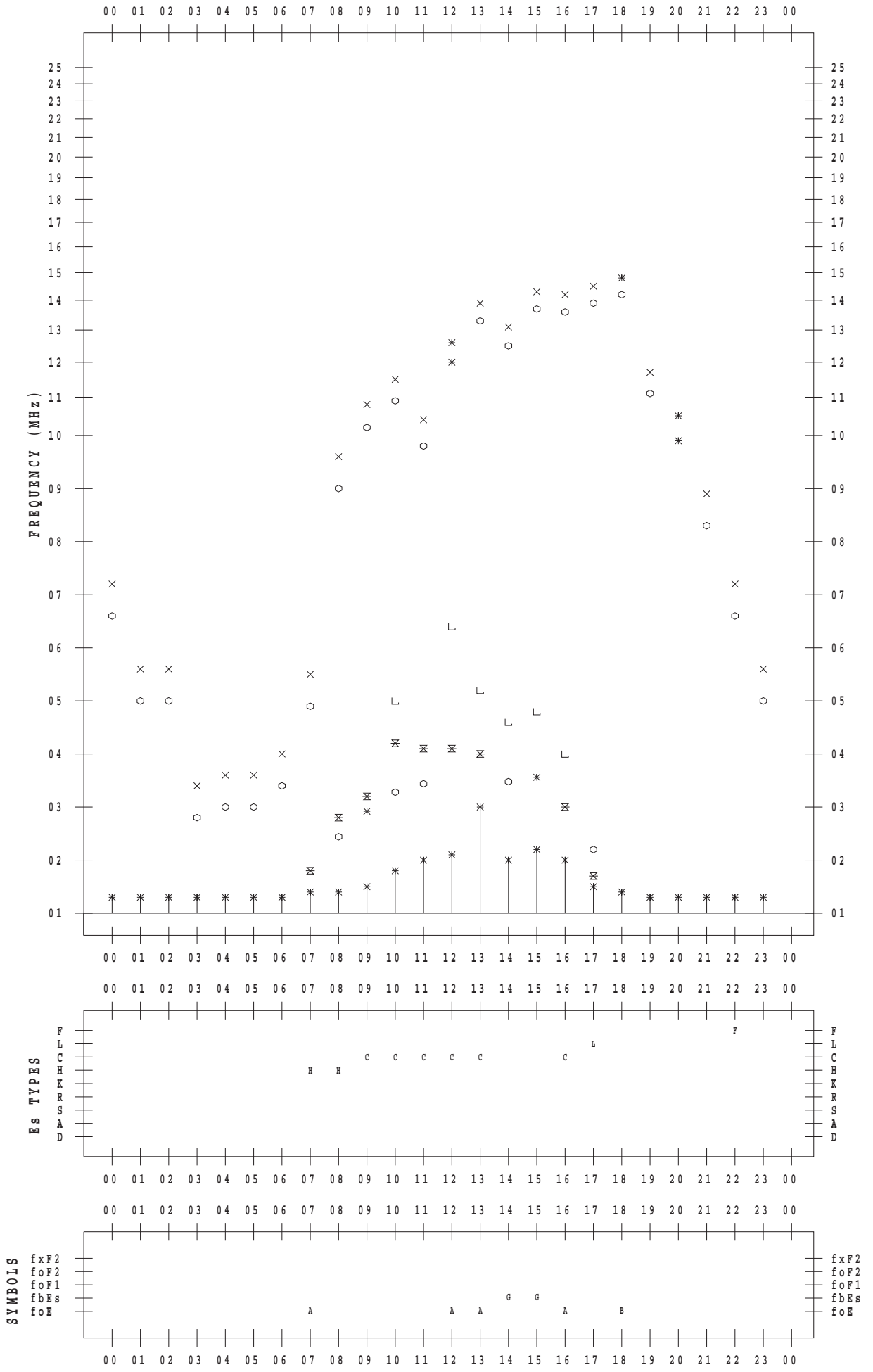
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/ 9

135 °E MEAN TIME



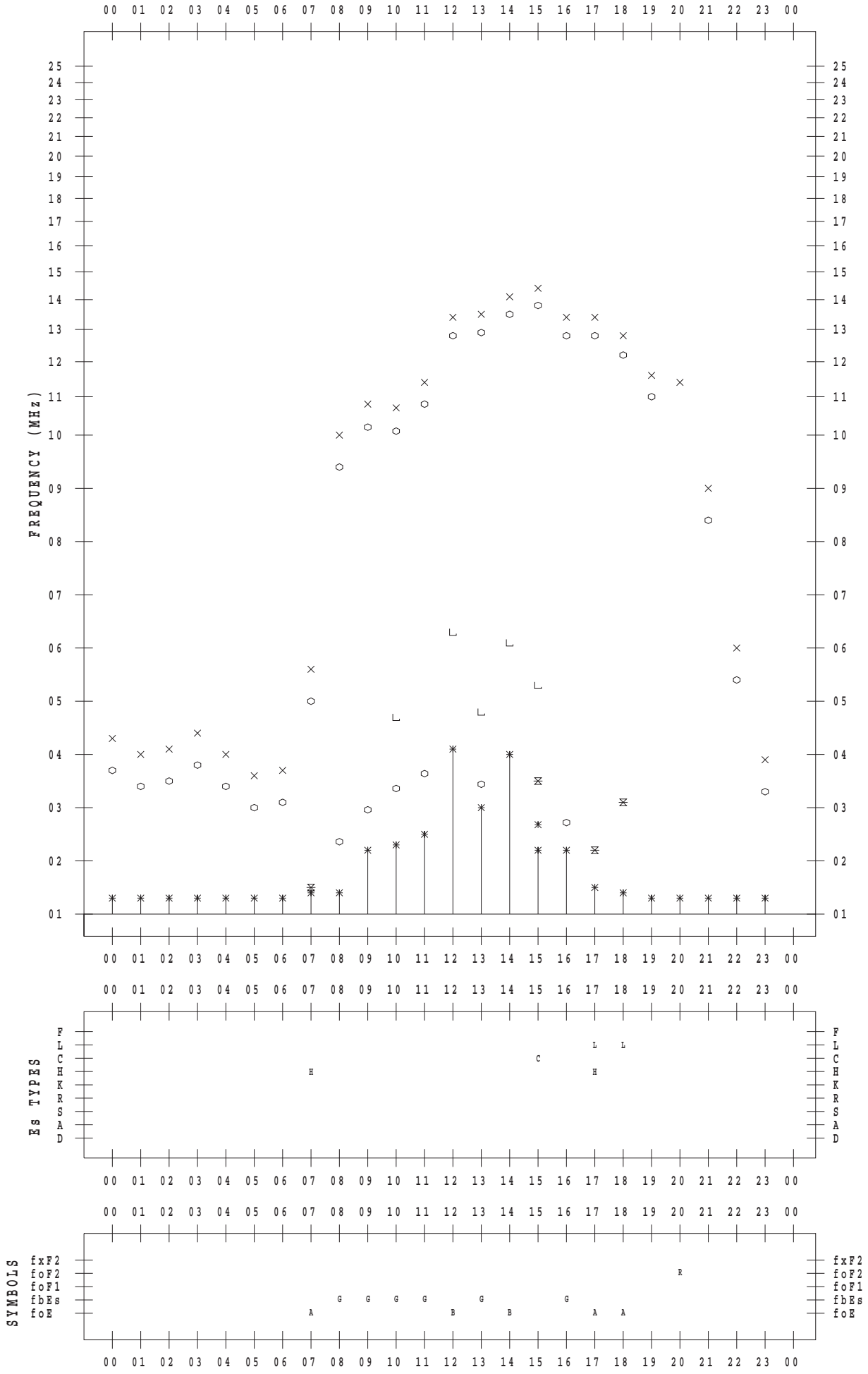
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/10

135 °E MEAN TIME



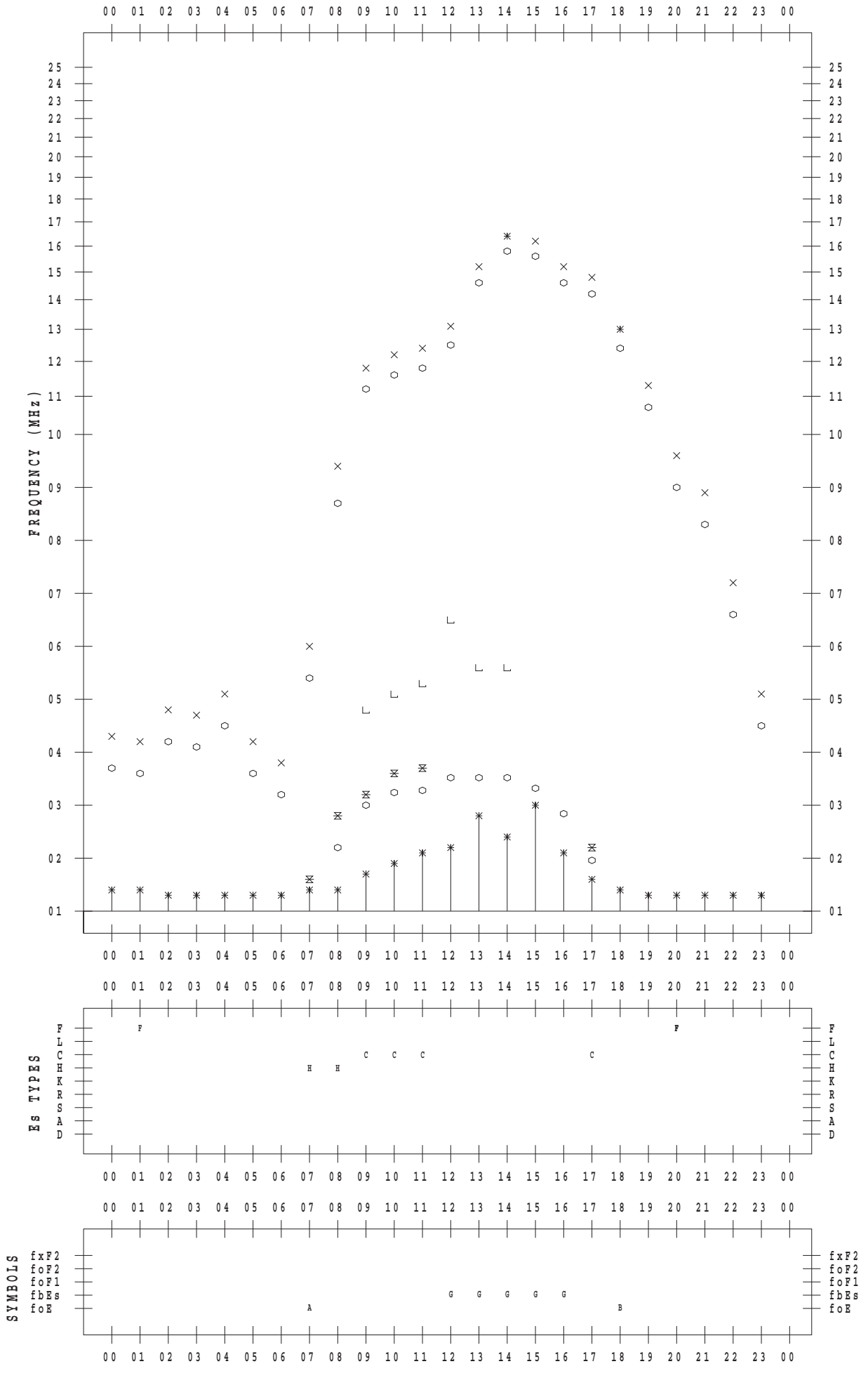
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/11

135 °E MEAN TIME



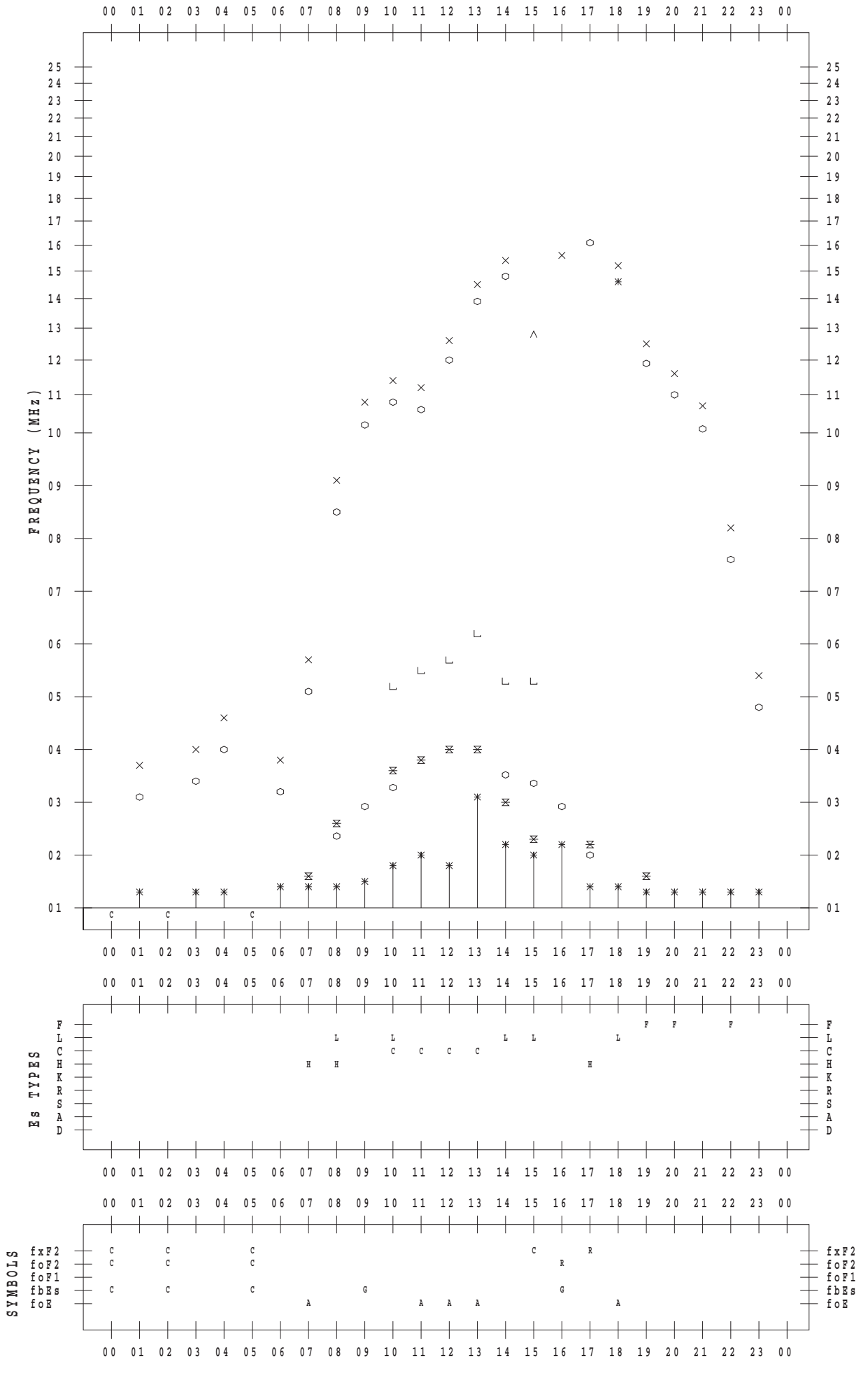
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/12

135 °E MEAN TIME



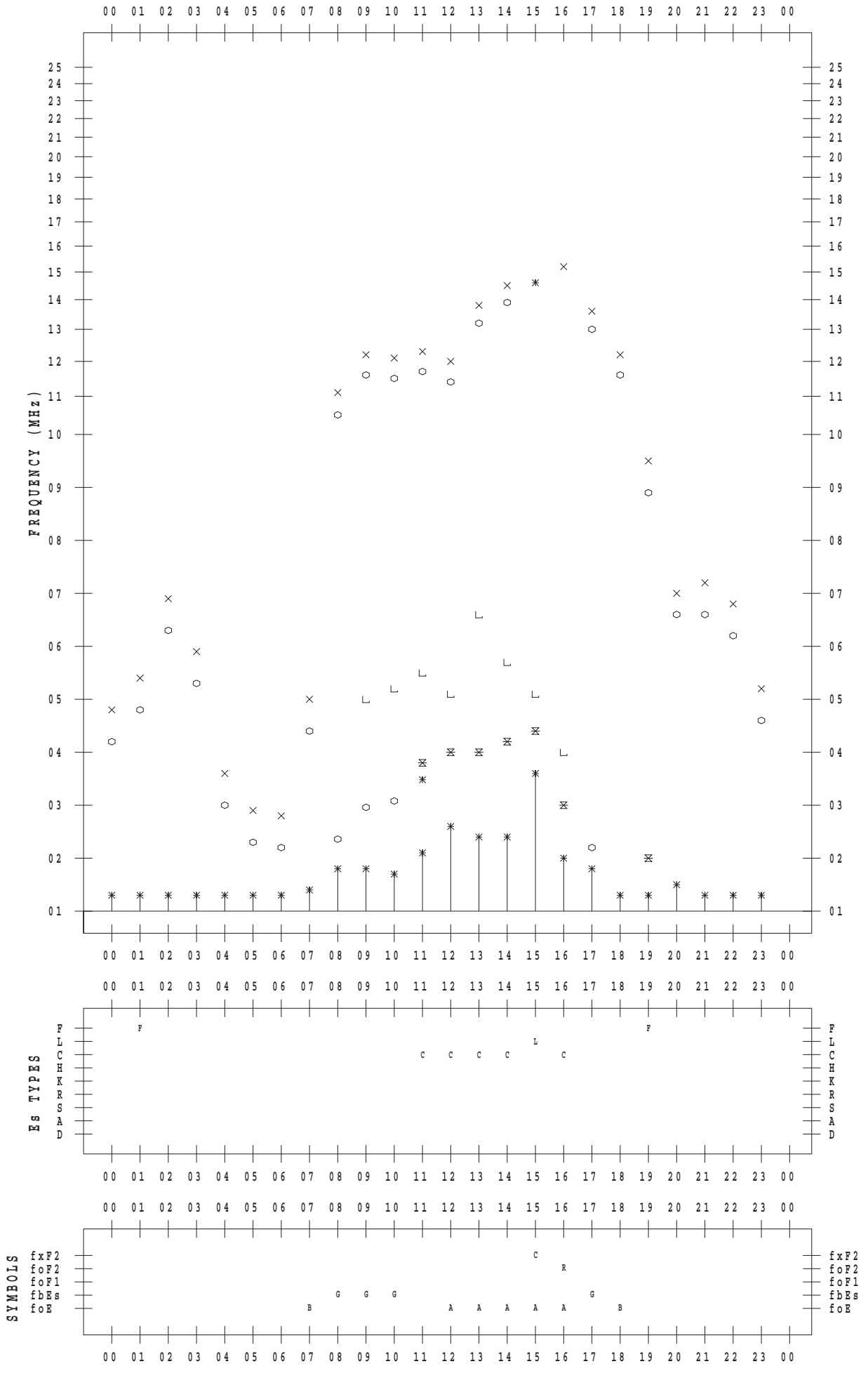
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/13

135 °E MEAN TIME



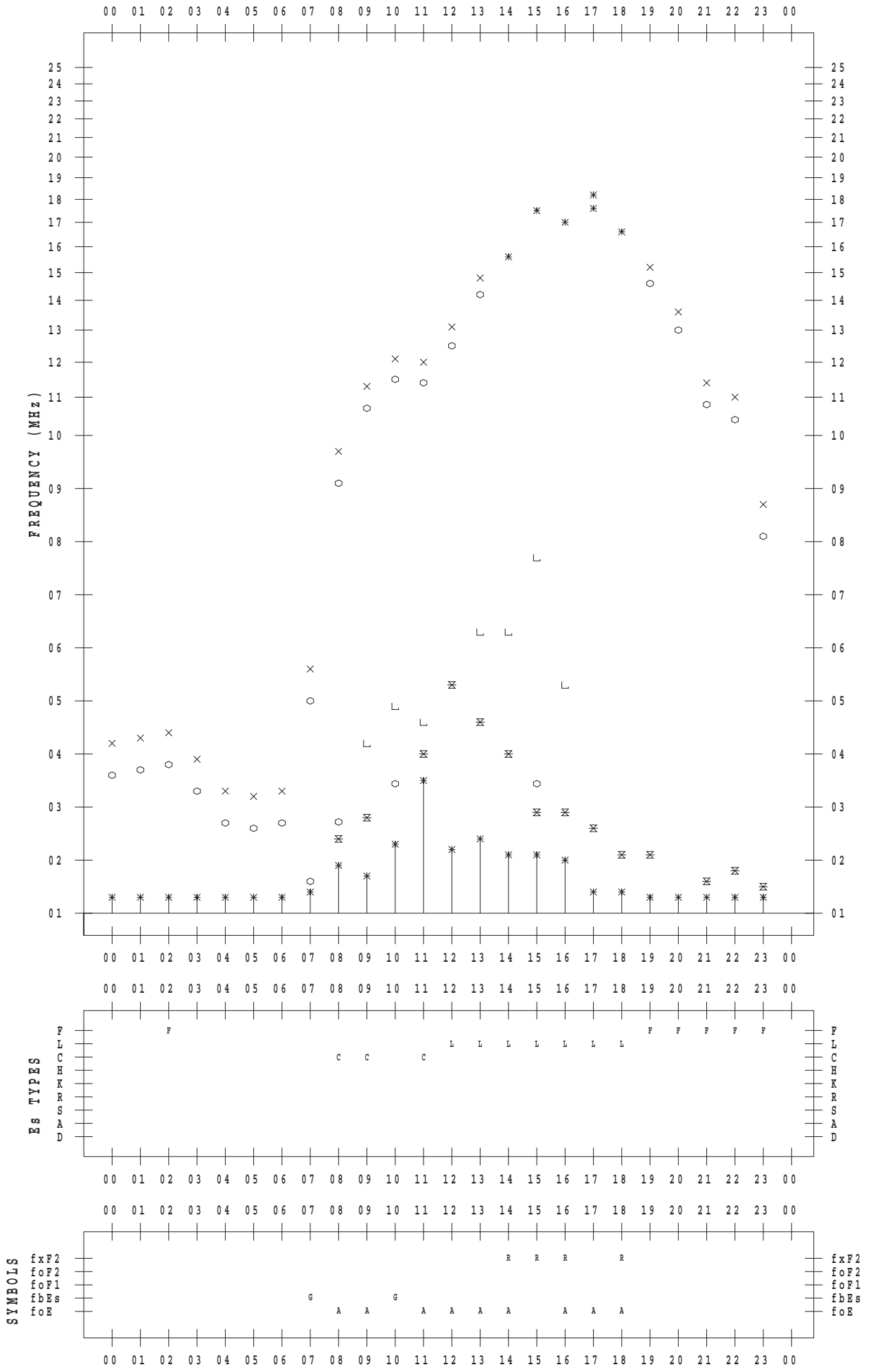
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/14

135 °E MEAN TIME



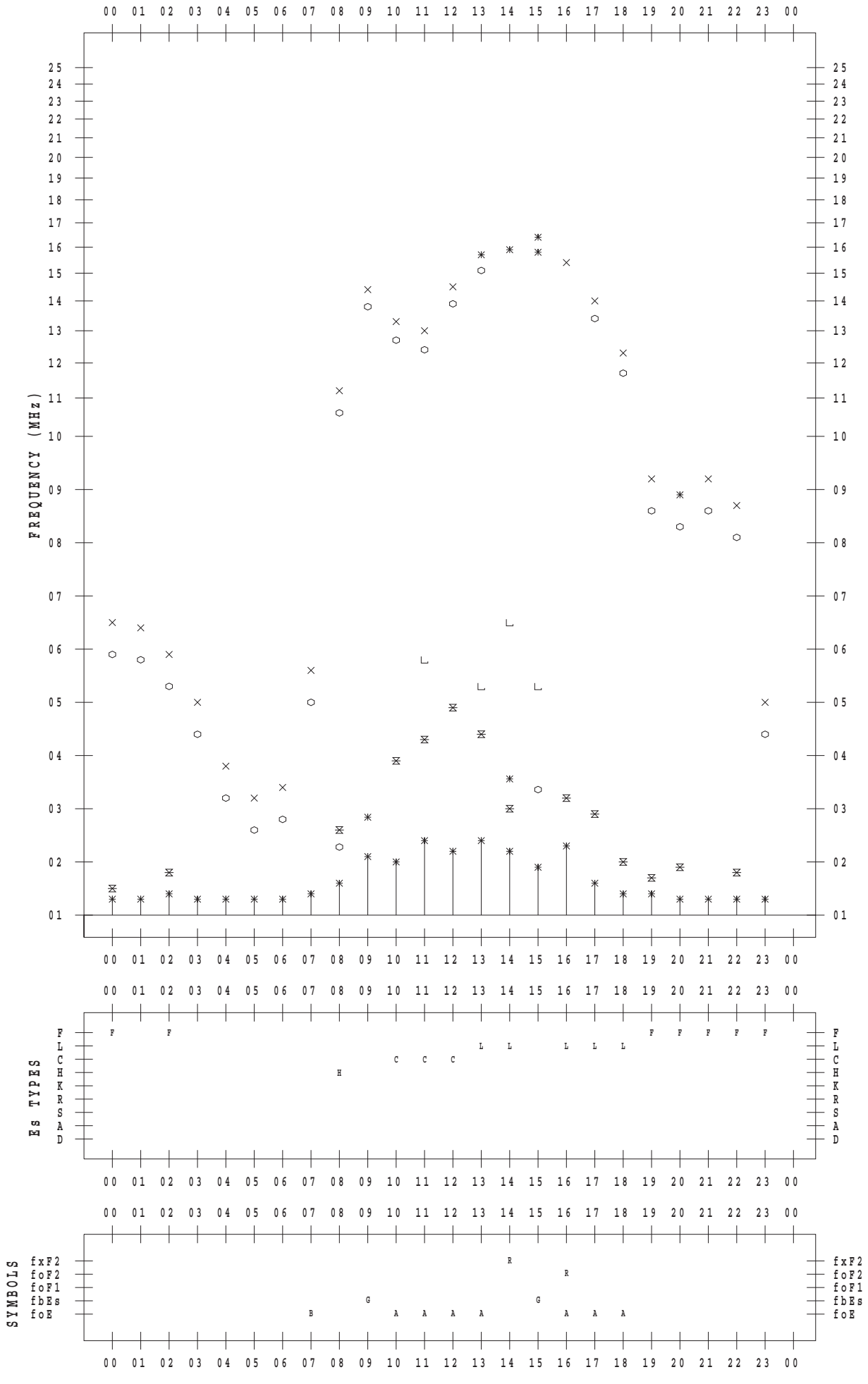
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/15

135 °E MEAN TIME



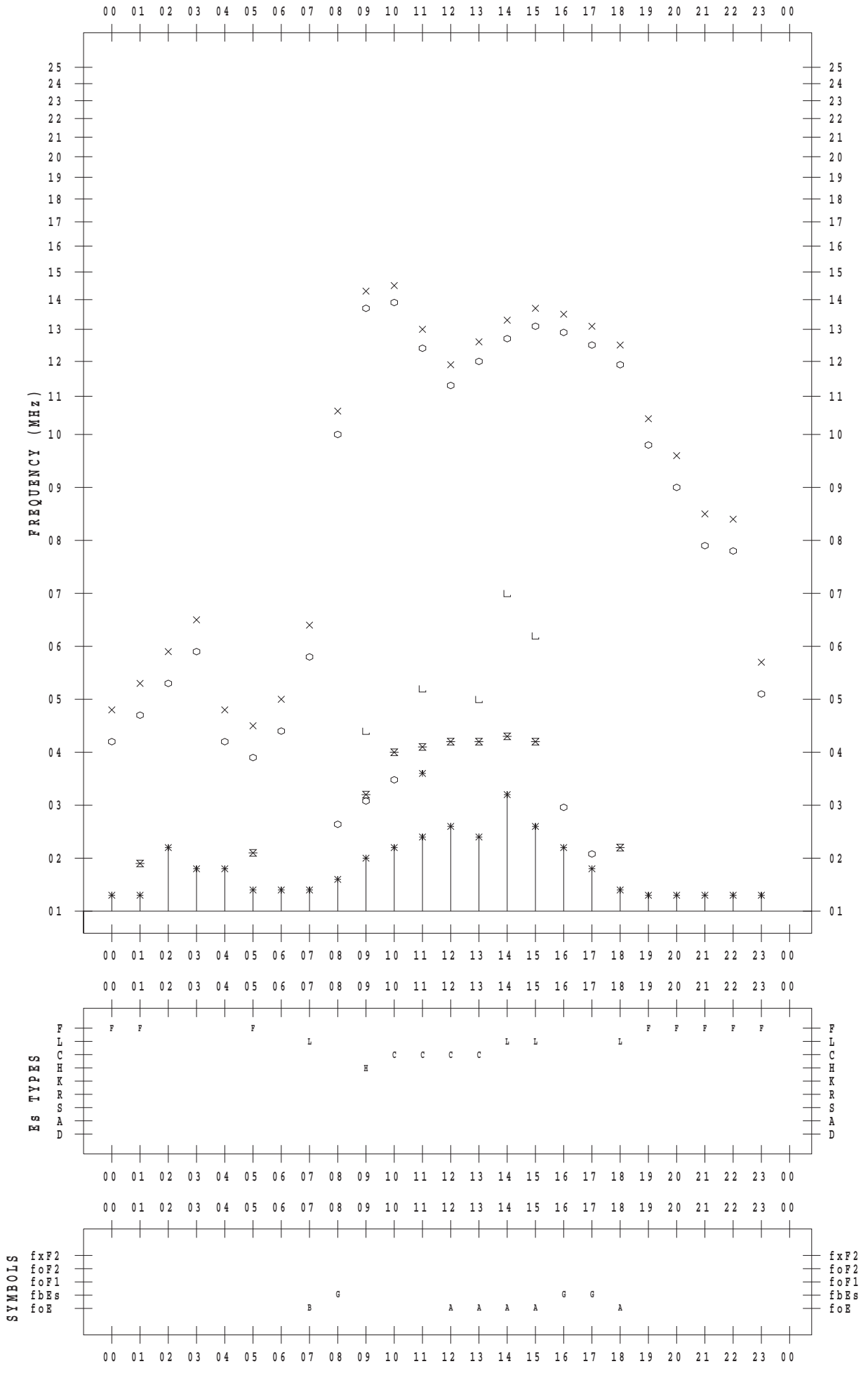
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/16

135 °E MEAN TIME



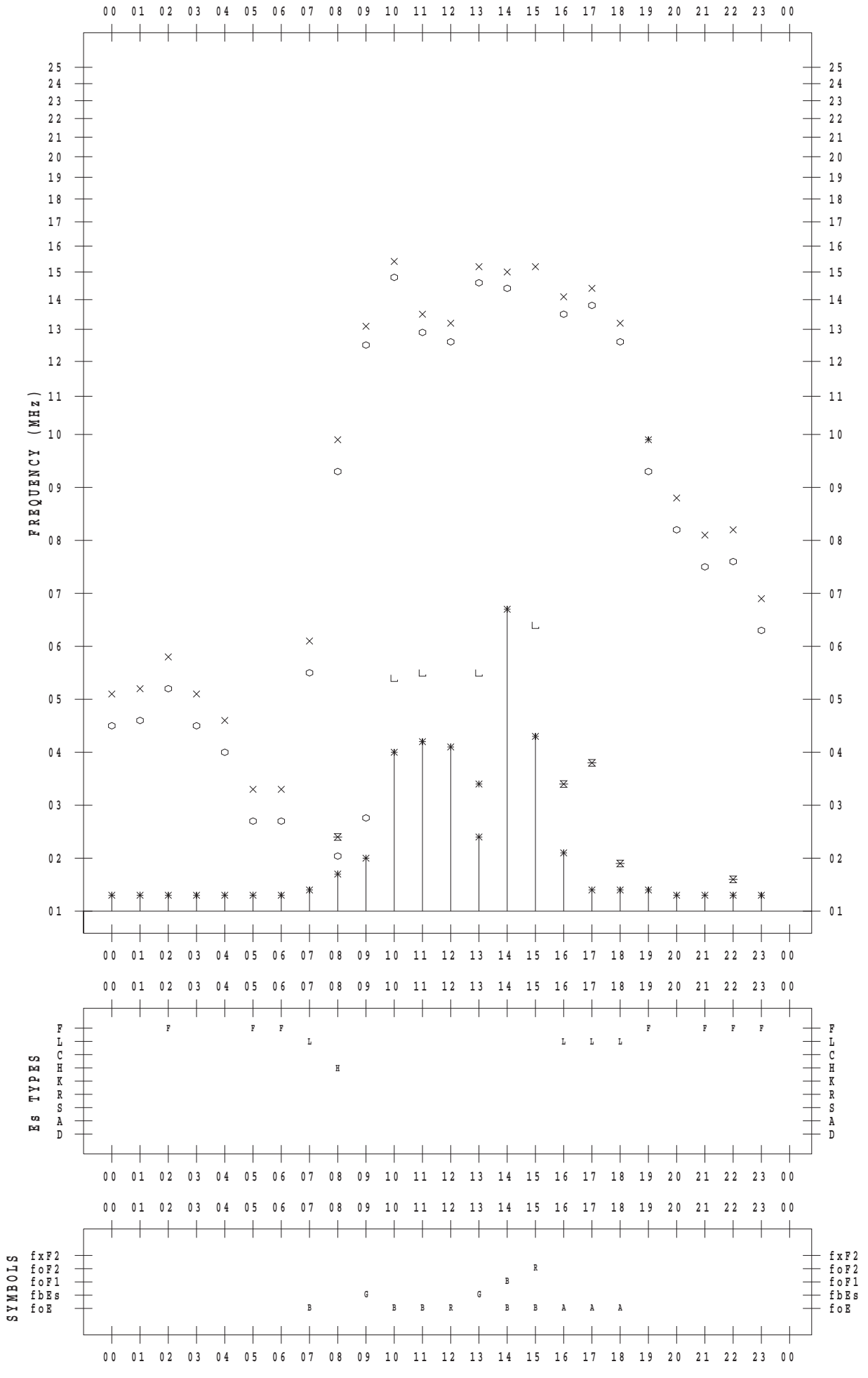
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/17

135 °E MEAN TIME



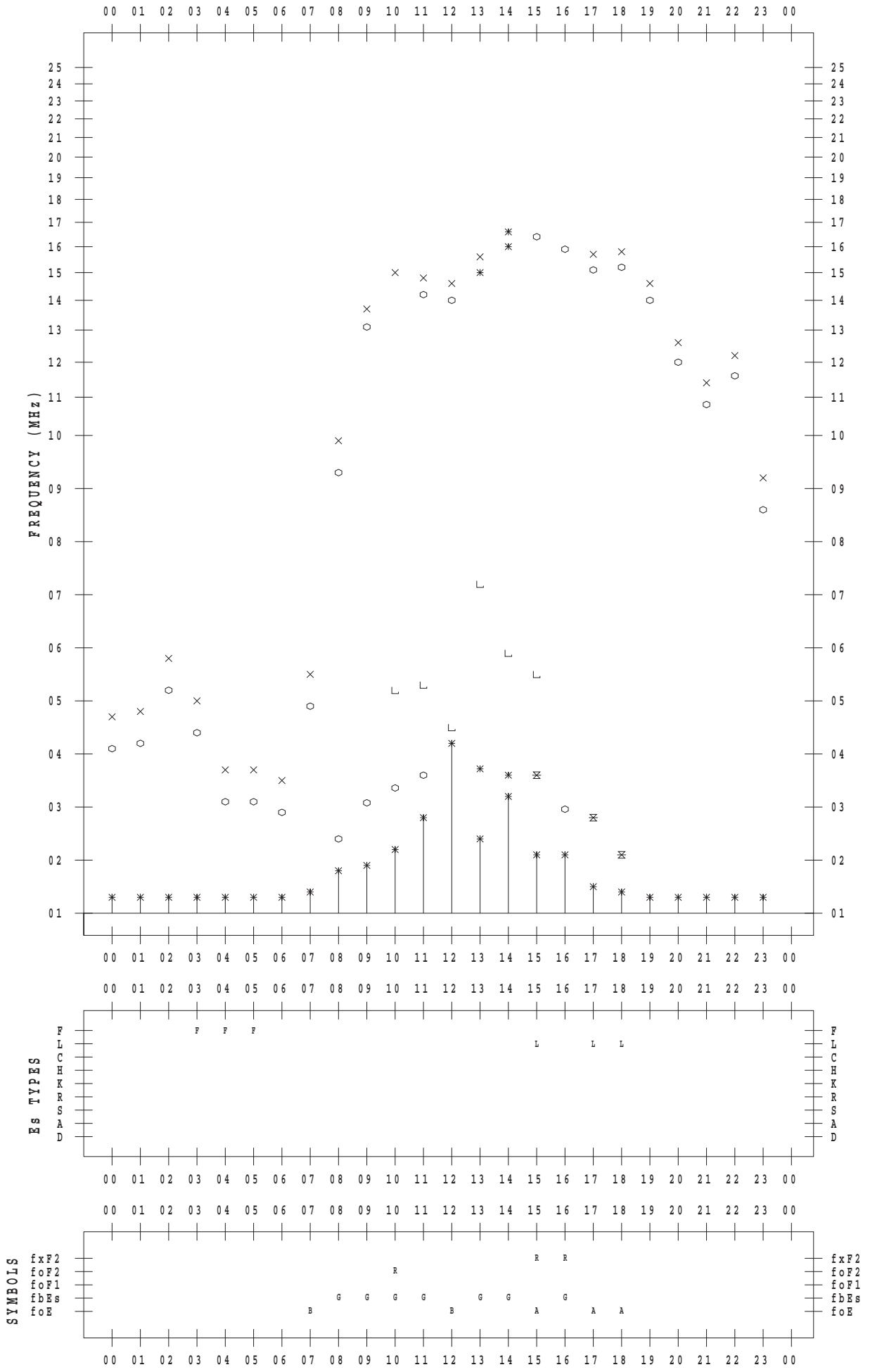
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/18

135 °E MEAN TIME



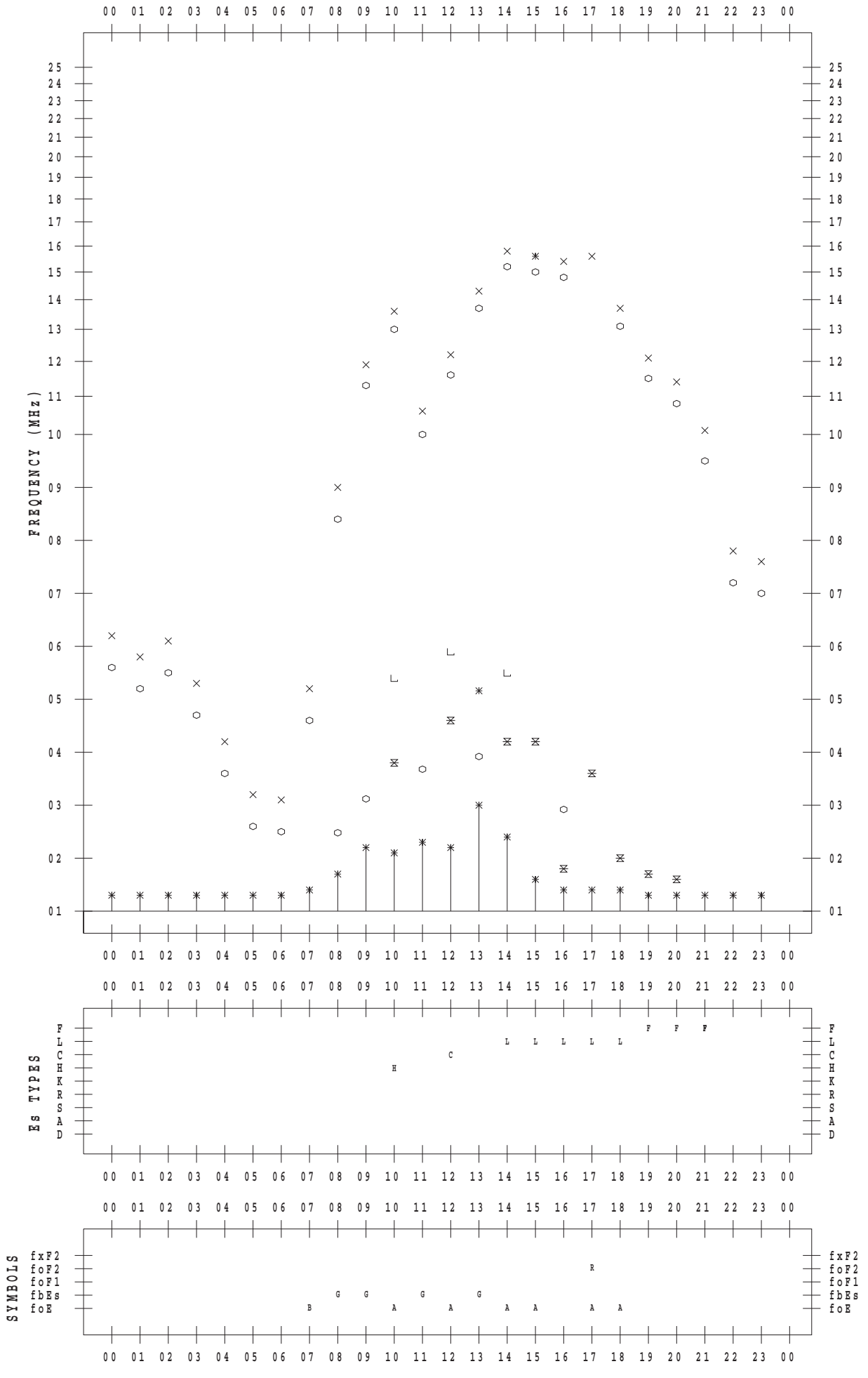
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/19

135 °E MEAN TIME



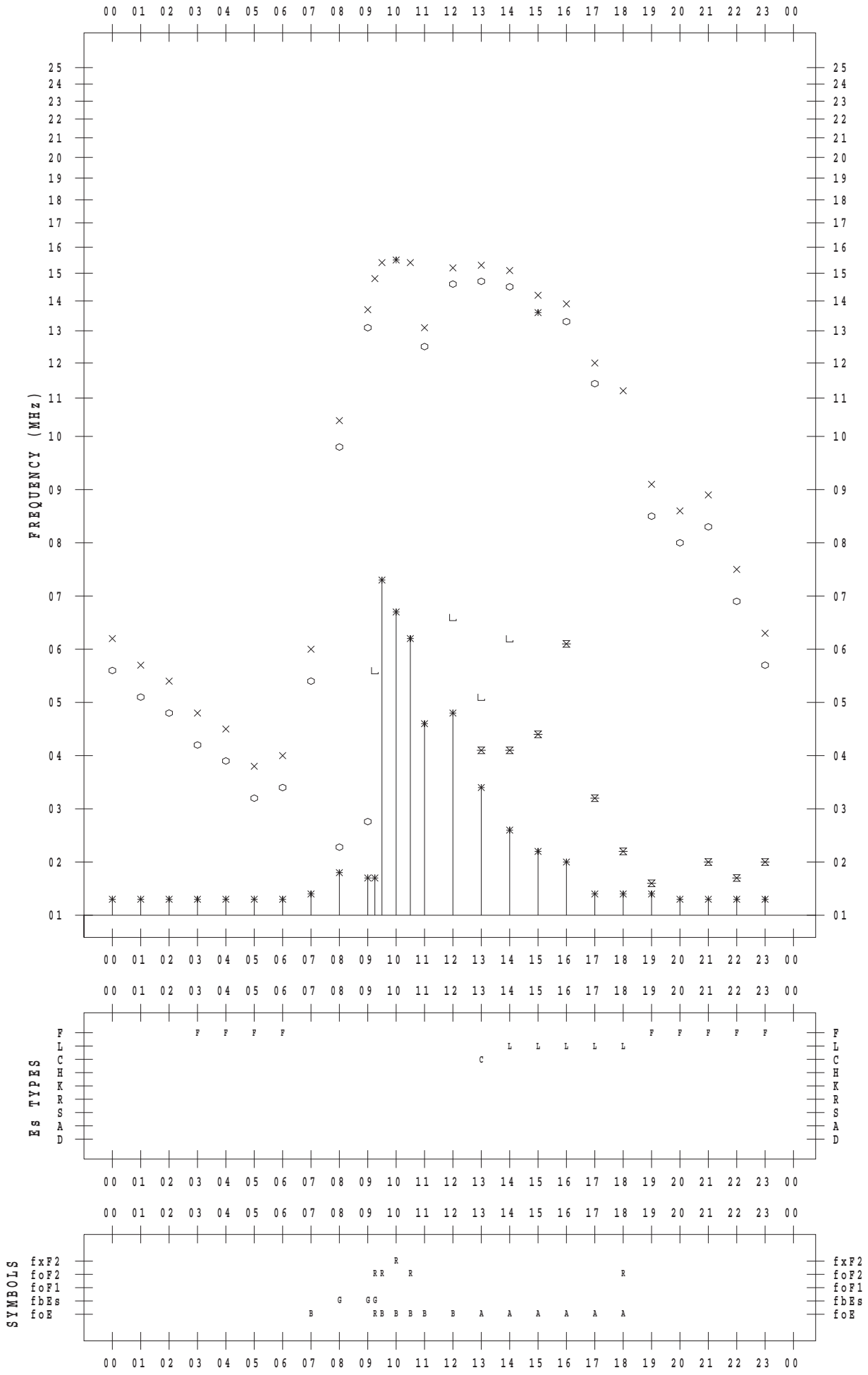
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/20

135 °E MEAN TIME



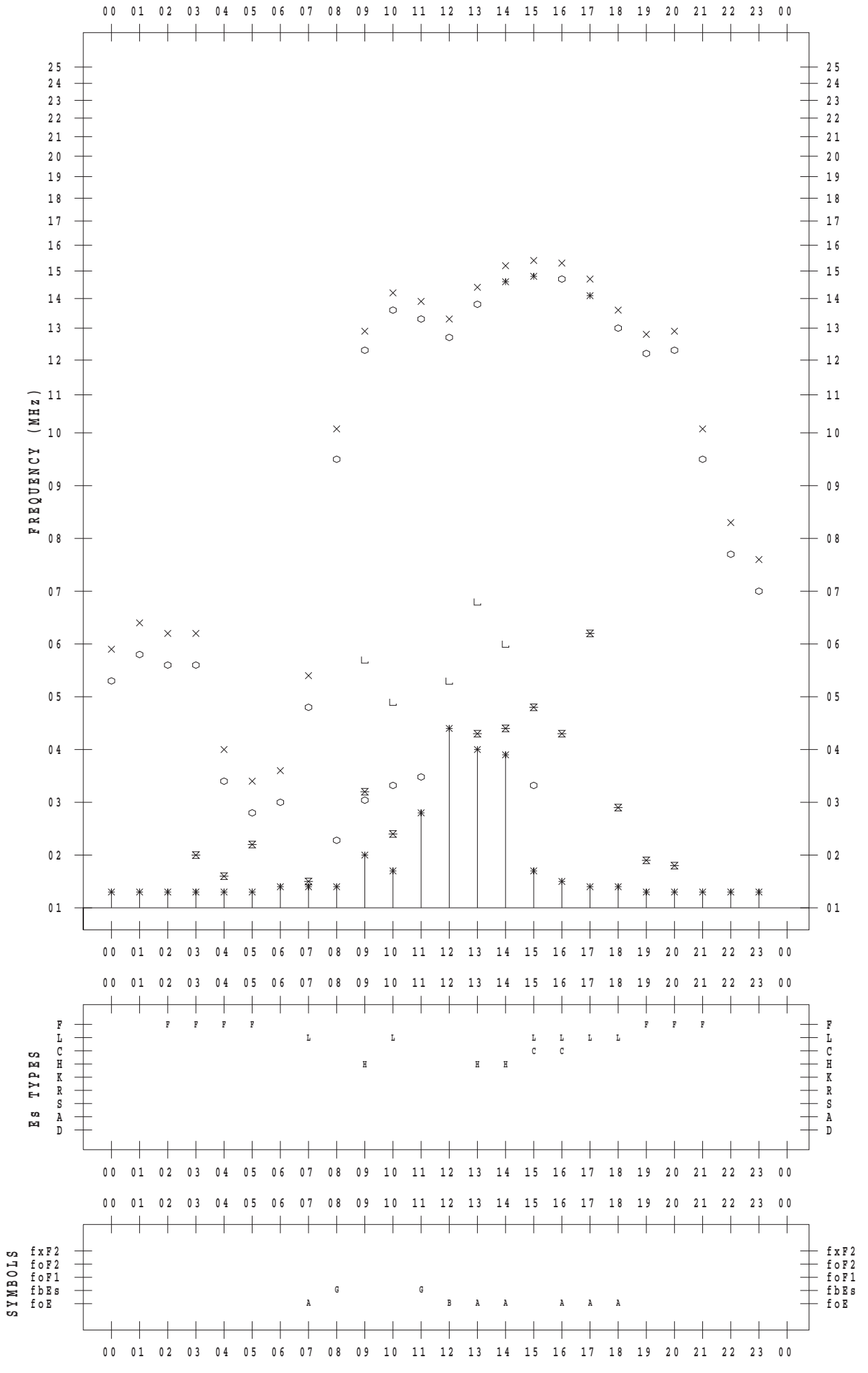
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/21

135 °E MEAN TIME



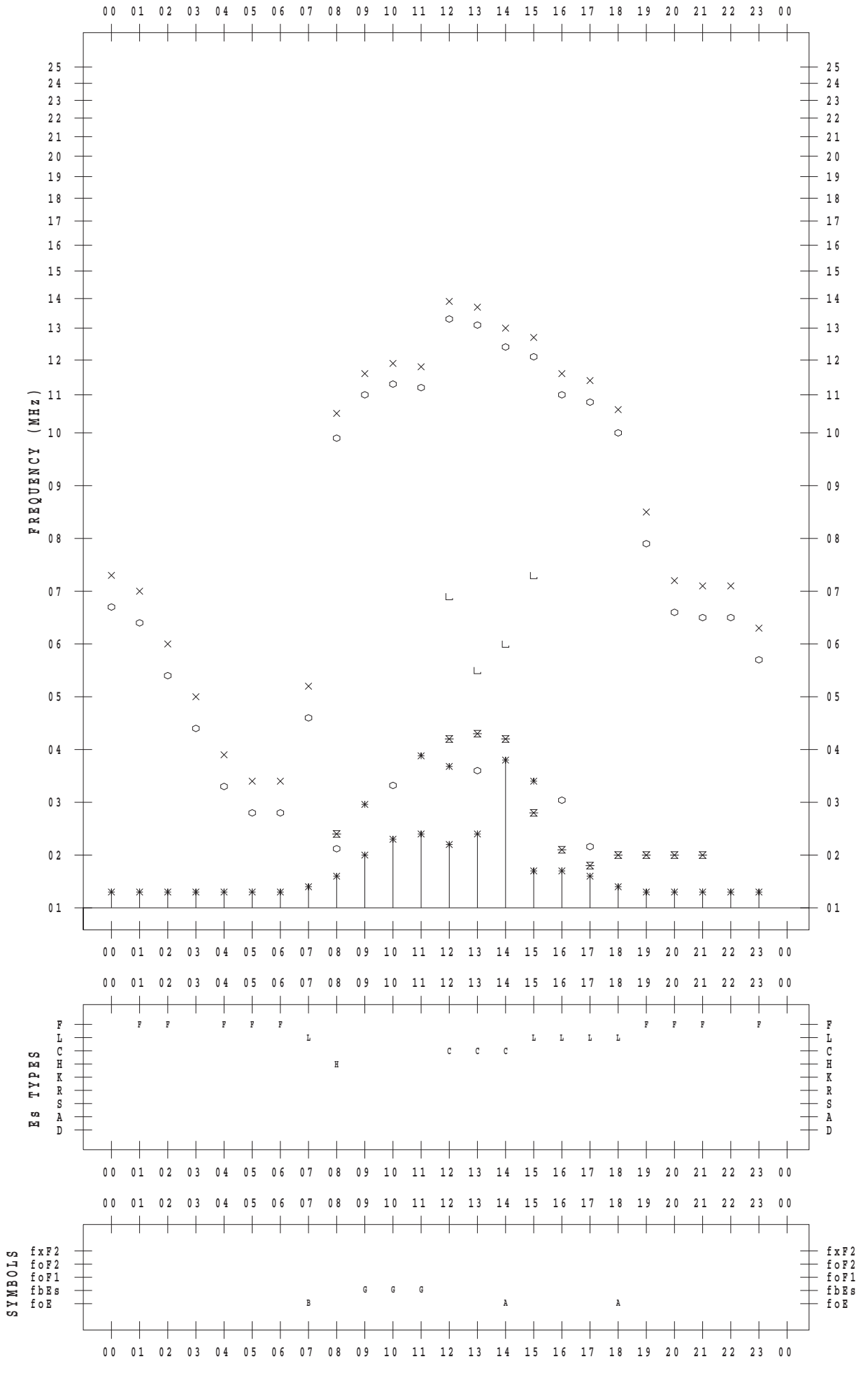
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/22

135 °E MEAN TIME



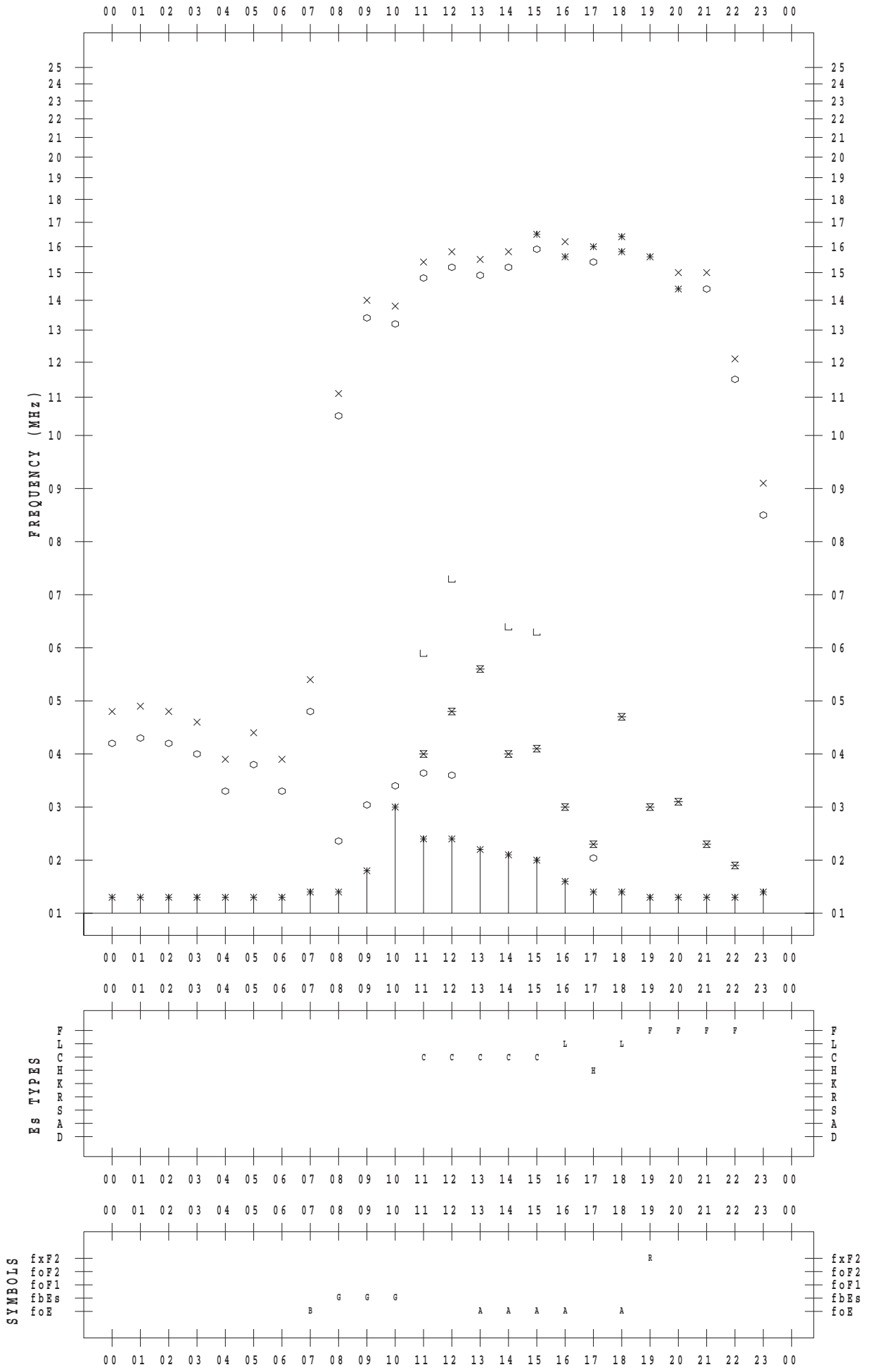
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/23

135 °E MEAN TIME



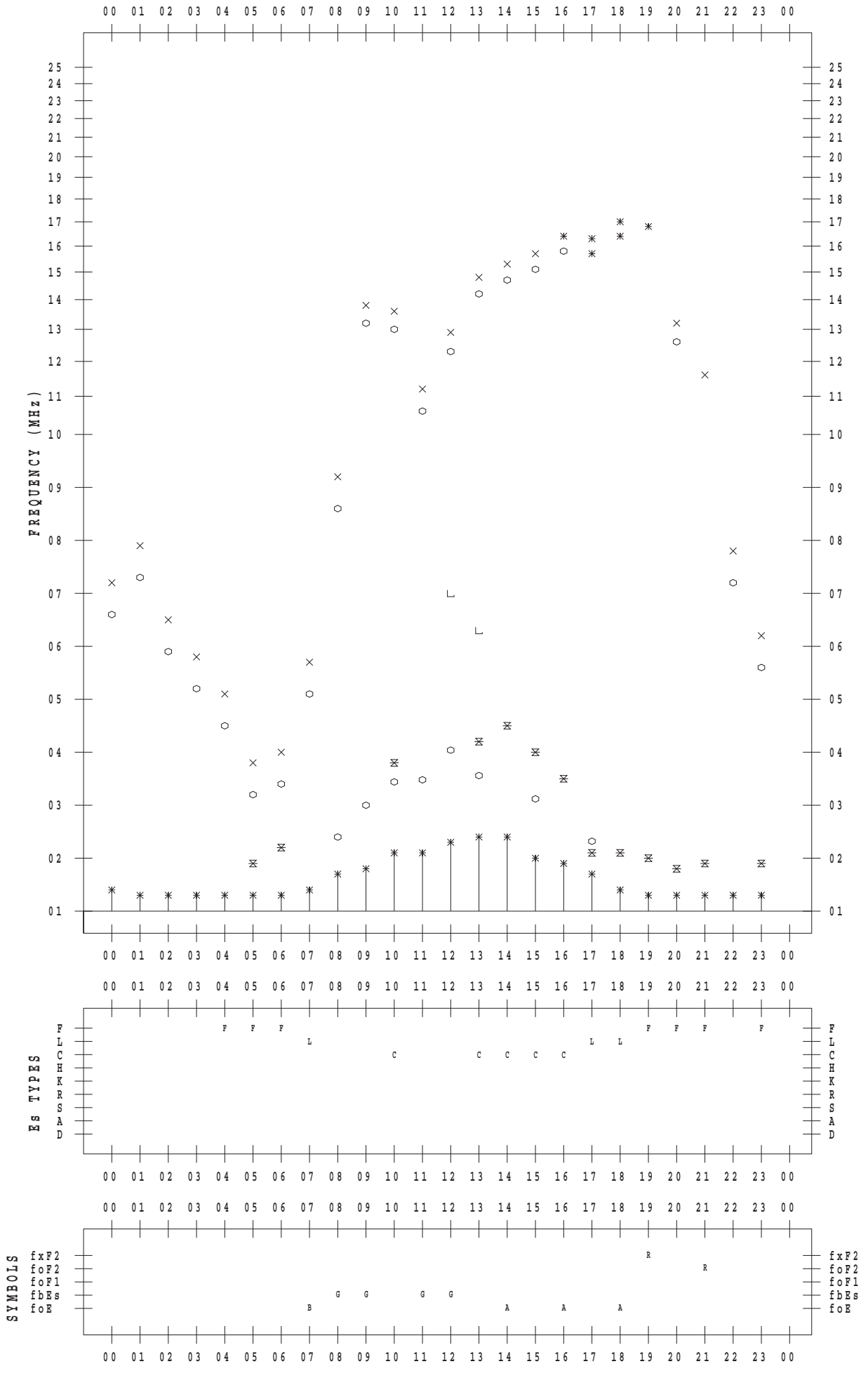
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/24

135 °E MEAN TIME



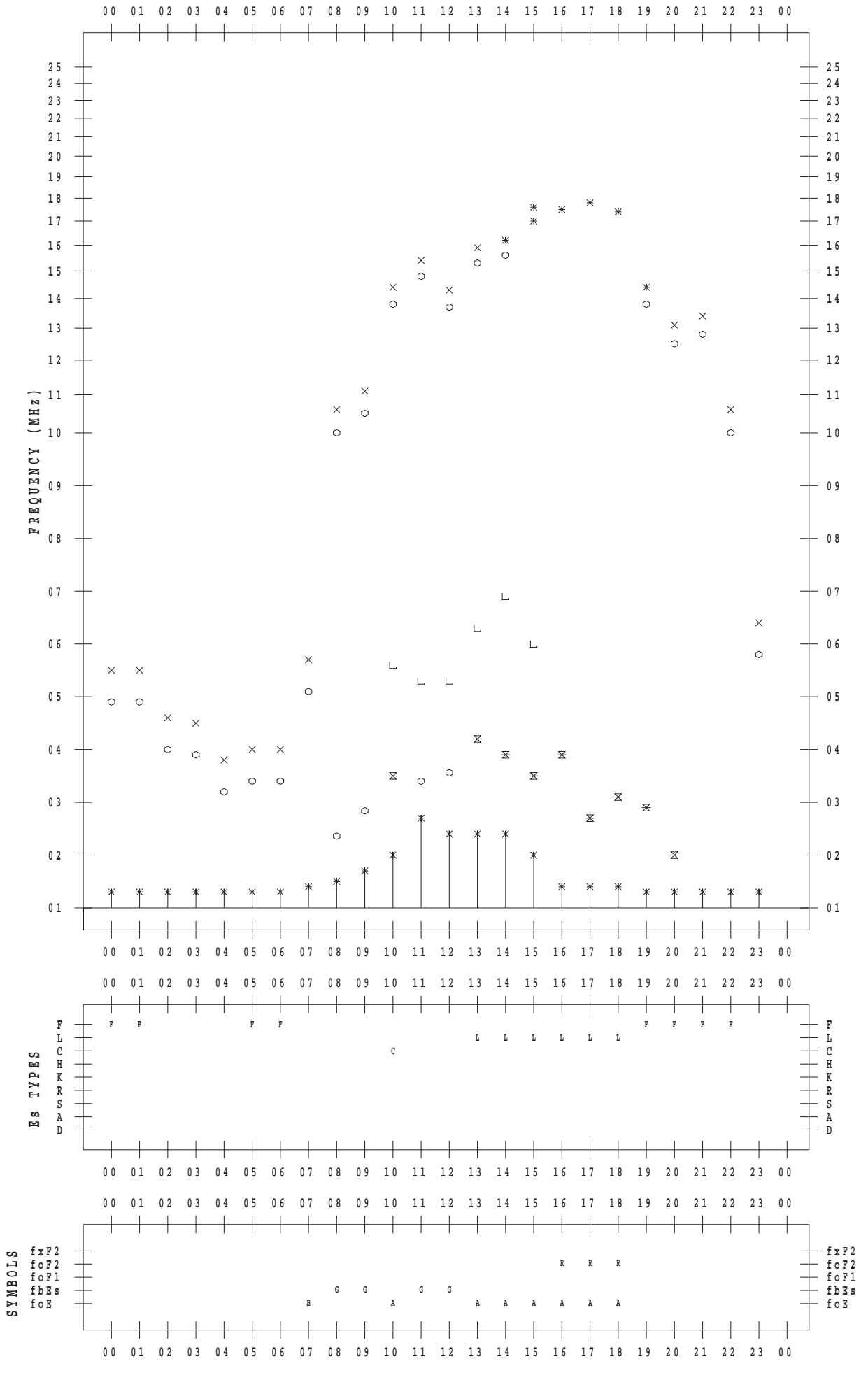
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/25

135 °E MEAN TIME



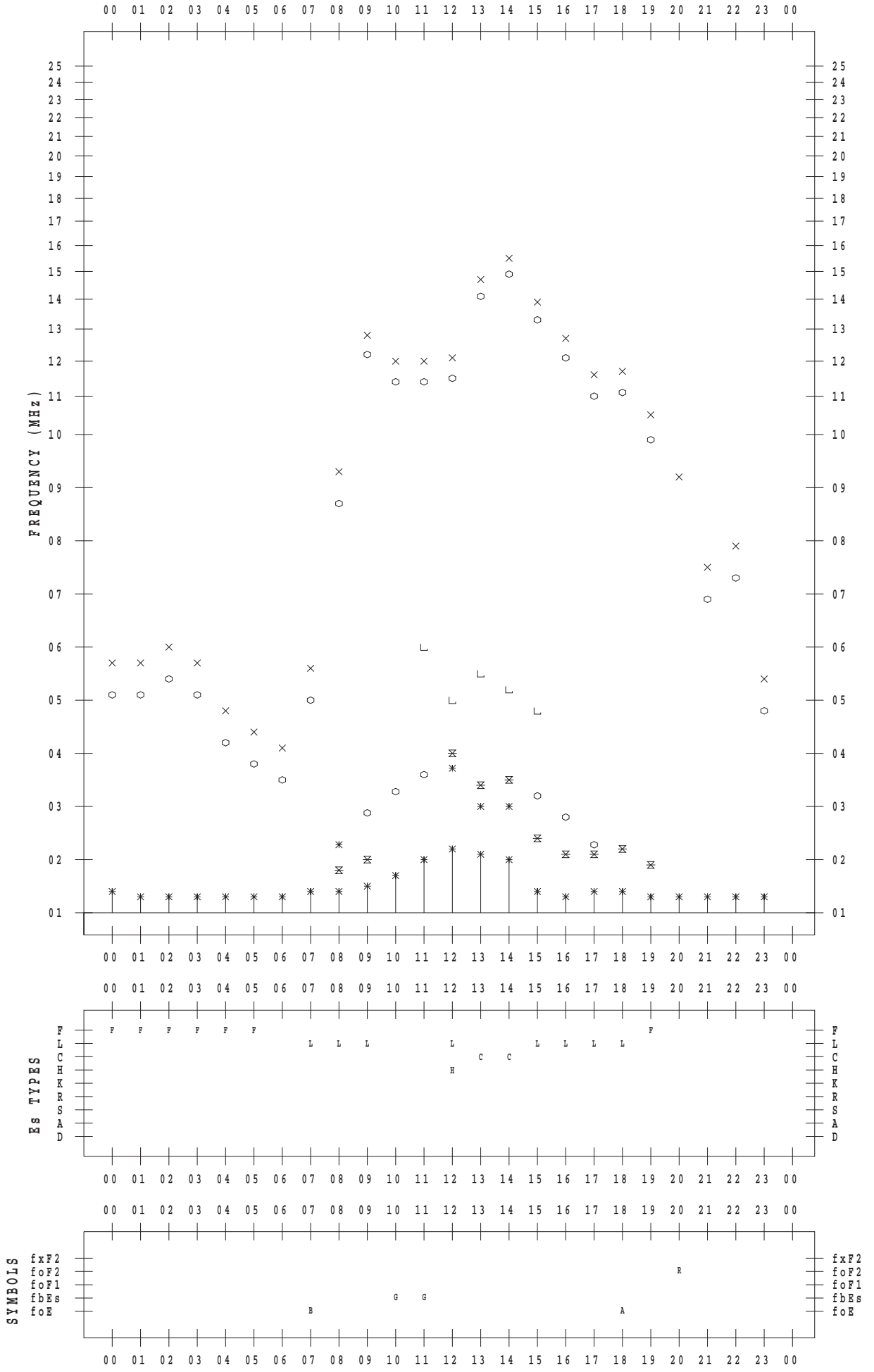
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/26

135 °E MEAN TIME



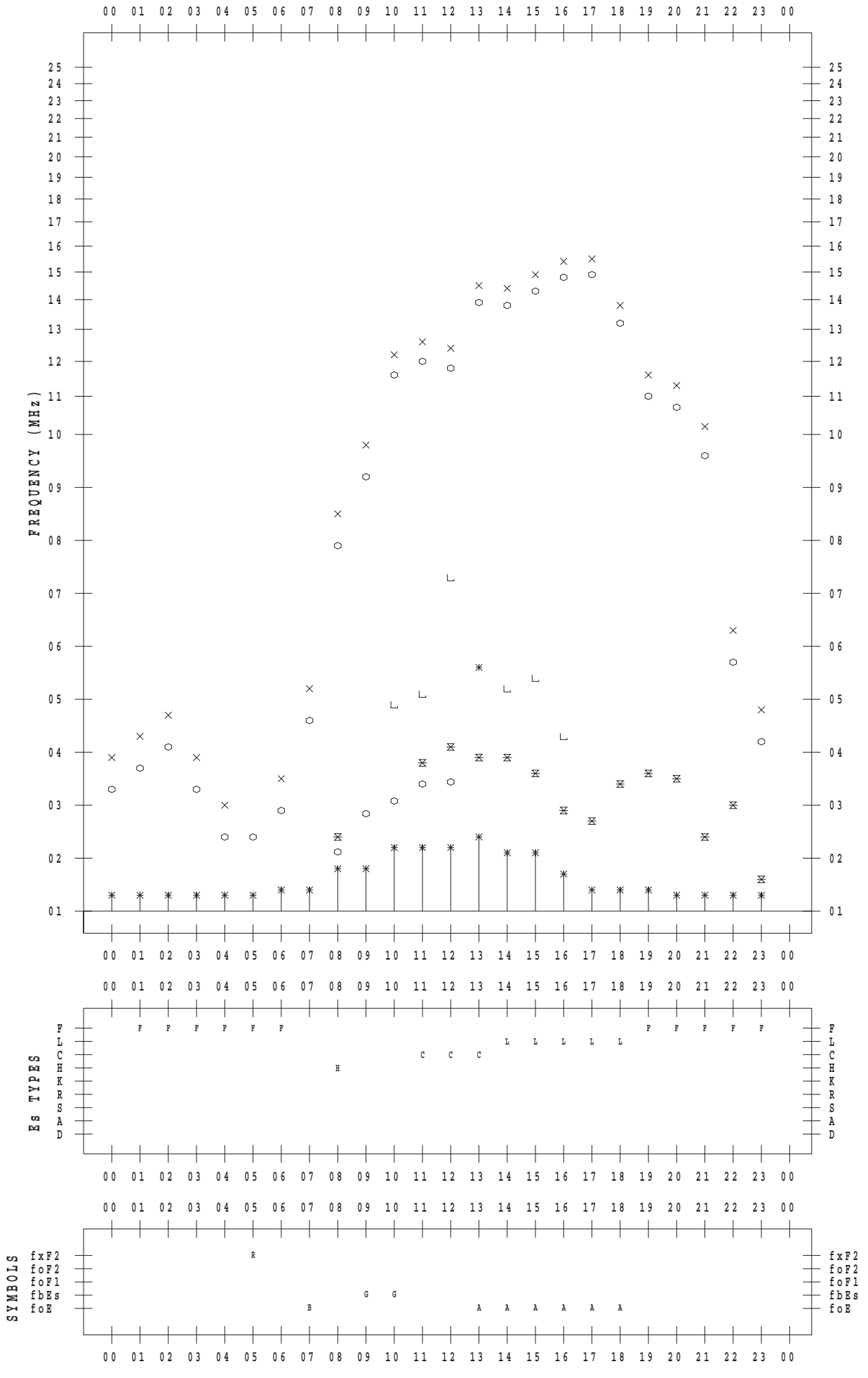
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/27

135 °E MEAN TIME



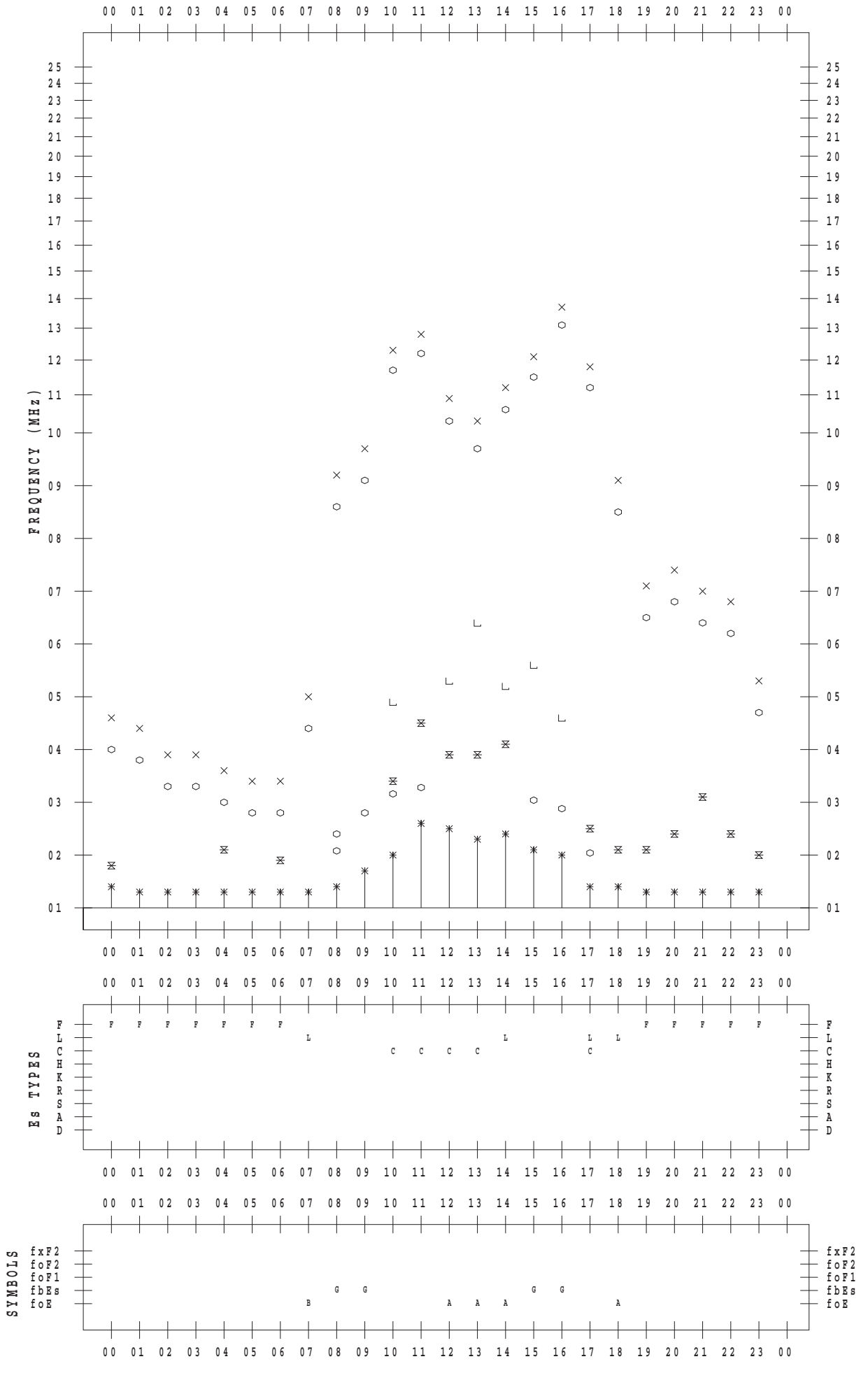
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/28

135 °E MEAN TIME



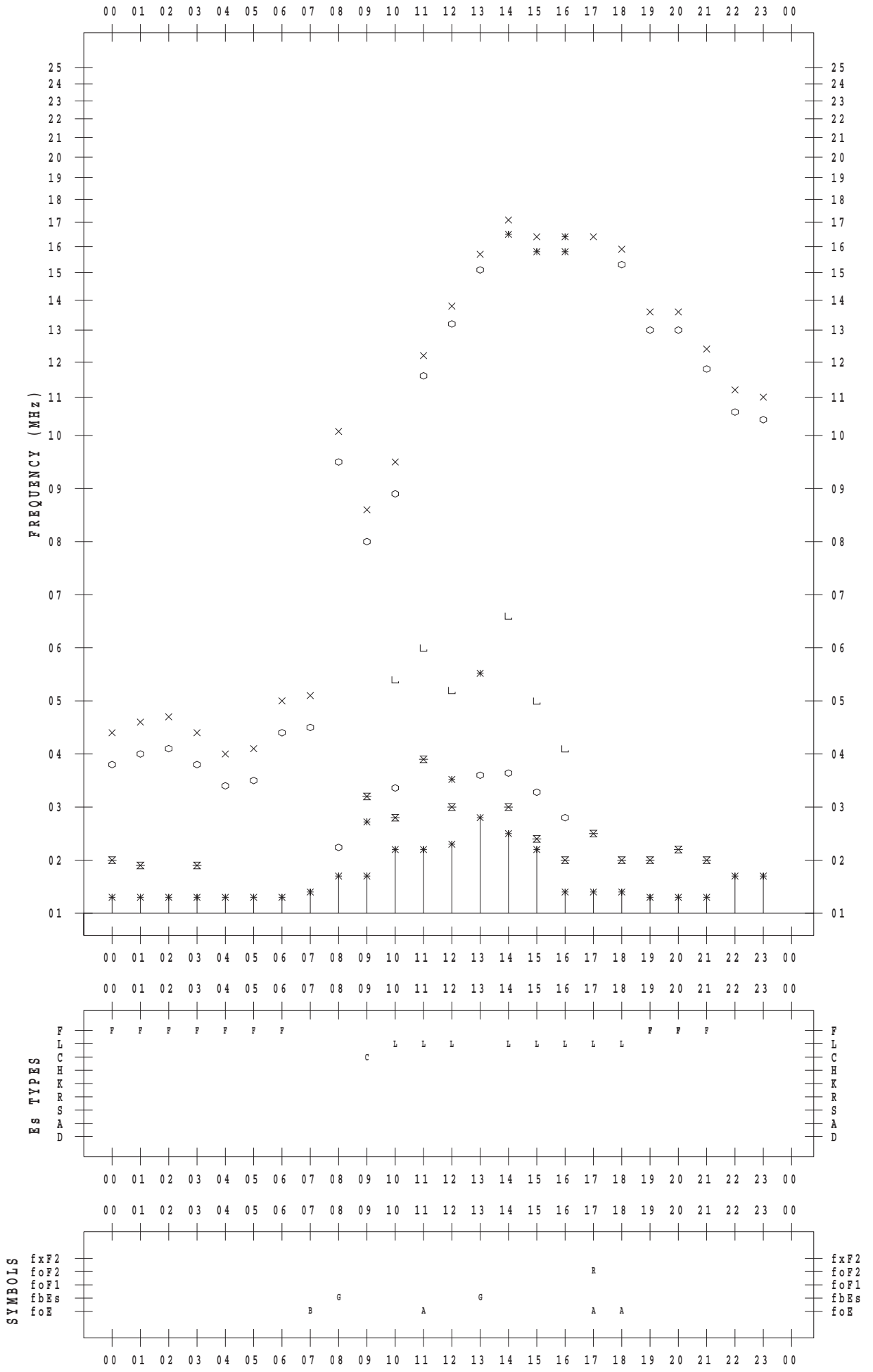
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/29

135 °E MEAN TIME



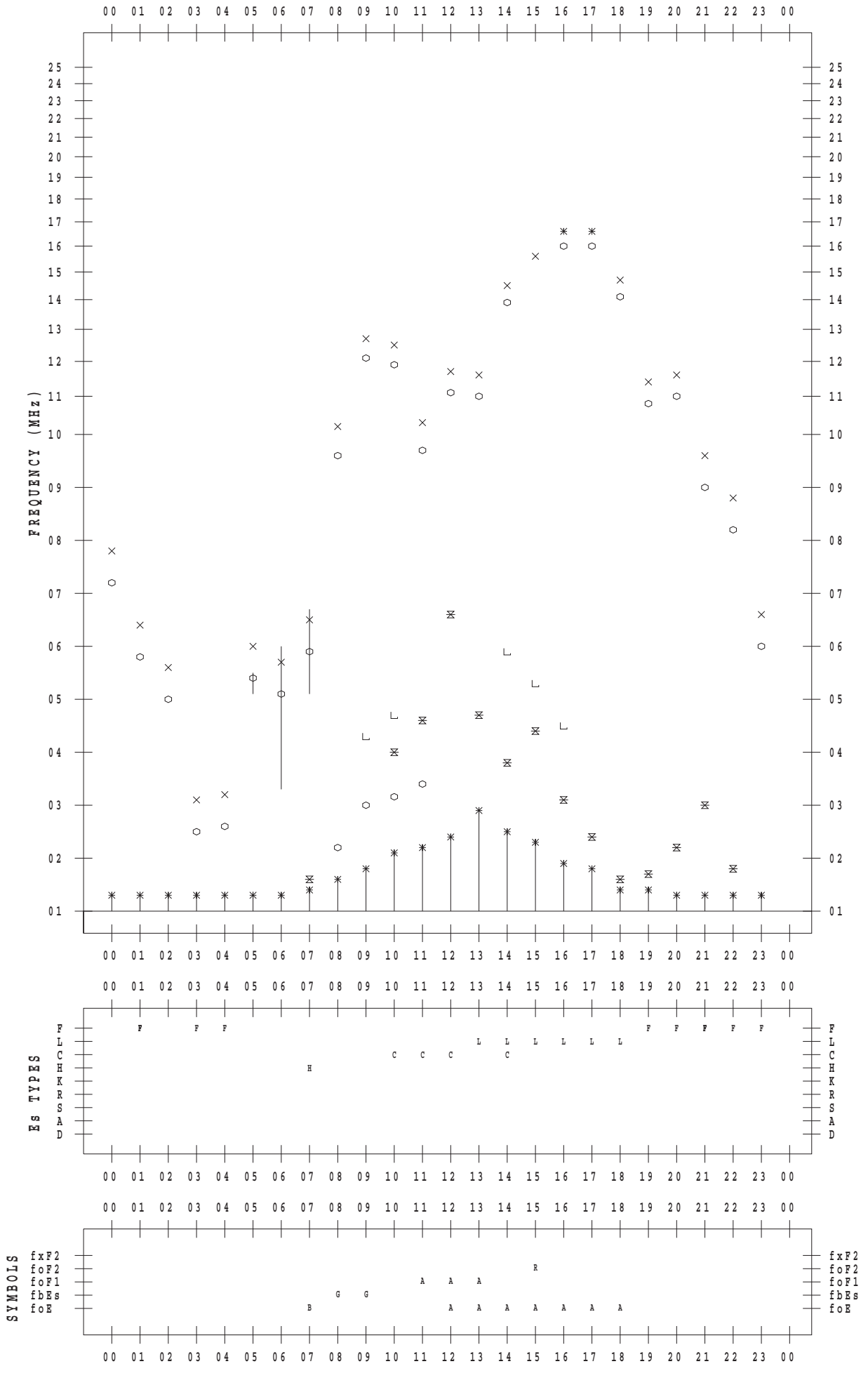
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/12/31

135 °E MEAN TIME