F-785

IONOSPHERIC DATA IN JAPAN

FOR MAY 2014

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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

MAY 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	66	66	37	53	54	53	60			A	A	A	A			42	56	56	A	A	A	A	A	A
2	A	42	46	53	47	56	58	56	60	61	A		65	63	64	67	68	69	66	63	64	64	63	64
3	59	62	61	A	60	64	65	66	61	65	68	68	71	70	67	68	68	70	67	65	64	65	63	61
4	62	63	63	63	64	61	67	71	67	68	59	70	70	59	49	70	48	89	68	59	64	64	64	54
5	64	64	34	64	46	61	65	67	A	69	64	69	70	61	68	59	69	69	92	65	66	65	54	54
6	67	64	52	58	60	60	68	67	67	67	55	68	64	67	69	59	70	70	70	67	65	66	54	49
7	67	34	51	53	60	62	70	69	67	68	70	67	A	63	59	80	69	88	66	66	67	65	64	63
8	52	64	61	53	64	62	68	67	66	70	68	66	66	67	62	62	69	N	70	66	64	54	63	A
9	63	52	A	A	50	66	64	A	A	A	A		A	66	A	A	64	A	65	61	61	66	A	54
10	60	37	53	A	A	66	66	68	A	A	A	A	A	A	66	69	48	68	A	66	48	66	55	67
11	52	A	53	63	64	67	67	N	68	66	67	69	67	64	71	70	67	56	71	67	66	A	A	67
12	67	66	64	54	64	66	68	A	A	A	A	A	A	69	60	A	A	A	67	67	A	64	67	N
13	54	51	40	53	66	65	70	67	67	A	65	62	67	67	71	70	70	68	68	66	63	67	54	67
14	63	64	52	64	63	64	68	68	74	N	59	69	67	68	68	67	70	67	68	67	67	67	64	54
15	64	52	64	53	66	67	67	67	67	67	59	59	69	64	71	68	68	A	67	64	54	59	64	63
16	53	63	37	58	63	66	70	59	59	68	68	59	65	66	67	59	74	70	67	67	65	65	65	65
17	63	63	64	57	63	65	69	64	59	70	69	65	59	61	70	66	70	71	70	63	67	33	64	54
18	54	34	53	63	66	67	67	62	62	67	65		64	A	62	C	67	67	70	65	65	66	63	67
19	64	61	66	64	63	69	68	67	72	70	67	68	68	61	65	67	69	69	68	63	65	66	65	63
20	63	64	54	62	64	67	66	65	67	65	62	58	65	70	63	68	70	71	69	66	65	65	58	53
21	63	64	51	62	61	69	66	67	66	70	66	A		65	A	69	66	59	71	67	65	66	64	63
22	58	62	34	63	63	68	66	68	67	A	69	65		A	69	71	68	61	68	A	A	66	65	52
23	62	62	63	62	63	64	67	68	68	68	70	64	59	68	61	69	70	66	68	66	64	64	63	59
24	64	61	53	52	66	66	72	59	62	65	A	68	64	59	64	67	58	68	68	64	64	66	65	66
25	65	64	63	66	65	68	67	59	65	A	A	A	64	67	68	72	68	A	A	66	63	65	66	65
26	66	64	62	64	61	65	67	67	87	A	68	67	A	A	68	69	70	67	71	68	66	67	66	54
27	63	64	52	54	63	65	64	65	66	62	64	63	64	63	70	65	65	A	A	66	66	64	64	62
28	54	63	58	63	63	67	66	65	59	67	64	58	61	66	66	A	67	A	69	61	63	66	52	63
29	62	63	52	60	63	64	66	A	A	64	A	59	58	A	A	A	A	69	A	A	A	65	63	A
30	52	63	54	64	63	64	A	A	A	A	A	A	A	A	A	A	A	A	A	A	65	A	A	62
31	61	60	53	46	49	61	70	A	66	64	62		65	67	66	61	67	A	67	64	67	64	66	64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	28	30	31	30	24	24	21	22	21	22	24	26	25	28	22	25	27	27	28	27	27
MED	63	63	53	61	63	65	67	67	66	67	66	66	65	66	66	68	68	68	68	66	65	65	64	63
U Q	64	64	62	63	64	67	68	67	67	68	68	68	67	67	69	69	70	70	70	67	66	66	65	65
L Q	58	60	51	53	60	62	66	64	62	65	62	60	64	63	63	63	66	67	67	64	64	64	63	54

HOURLY VALUES OF fEs AT Wakkanai

MAY 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	25	26	29	34	G	G	52	60	62	70	G	G	G	G	34	69	59	58	57	49	34
2	35	32	23	G	G	G	G	38	G	49	52	G	G	G	G	G	G	G	35	40	G	G	G	G
3	G	G	G	57	38	32	37	G	G	51	G	G	G	G	G	G	G	42	34	35	37	G	G	G
4	G	G	26	32	G	G	G	G	G	G	G	G	G	G	G	G	47	33	37	G	G	G	G	25
5	G	G	G	G	G	G	36	58	90	55	53	58	G	G	G	40	44	34	G	45	40	29	G	G
6	G	G	G	G	G	G	34	G	52	46	G	G	G	G	G	G	49	46	35	G	G	G	G	G
7	26	24	28	33	24	G	G	40	41	61	60	46	72	G	44	58	55	36	35	G	G	G	G	G
8	G	G	G	G	26	29	G	G	40	G	G	G	G	G	G	62	66	52	61	38	G	G	35	44
9	48	52	37	40	28	33	58	80	92	101	71	G	44	G	48	58	50	60	57	28	38	60	73	32
10	G	26	48	40	67	29	54	58	73	87	72	81	98	70	G	G	G	74	113	81	36	28	33	39
11	34	30	32	27	23	G	G	G	51	54	G	G	G	G	G	64	60	57	58	64	57	69	70	39
12	G	G	34	G	28	37	59	66	73	76	63	74	50	60	68	75	93	95	50	39	64	40	27	28
13	G	24	G	G	G	33	40	40	51	75	57	G	G	G	G	57	69	65	50	53	40	26	27	G
14	G	G	G	G	G	G	43	63	50	42	G	G	G	G	G	G	G	G	G	30	26	26	30	29
15	32	G	G	G	25	33	34	46	49	44	46	G	G	43	58	G	52	78	63	43	43	39	30	28
16	34	33	27	G	G	29	G	51	54	44	57	54	G	G	G	44	41	36	49	34	34	G	32	G
17	G	38	29	27	G	G	44	39	49	56	G	G	G	G	G	G	G	34	38	50	32	32	G	G
18	G	G	G	G	G	G	G	51	58	G	G	G	G	50	G	C	G	48	51	31	69	25	37	G
19	41	G	G	G	G	33	G	49	51	61	60	54	50	G	G	G	G	G	37	G	G	G	G	28
20	29	G	G	G	25	G	G	G	G	42	53	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	26	G	26	G	G	34	39	49	G	G	45	G	G	69	G	G	37	49	44	36	33	29	27
22	25	27	G	G	G	32	39	48	54	70	G	G	G	71	G	54	68	71	60	38	102	58	51	40
23	28	27	G	G	G	G	40	G	52	63	47	62	G	54	G	G	54	44	42	38	27	33	32	G
24	G	28	G	G	G	G	40	38	55	51	69	59	G	G	G	G	G	G	37	40	34	32	37	58
25	39	26	28	G	G	G	39	G	53	72	60	65	46	61	70	50	65	75	87	56	41	39	29	G
26	33	29	28	G	G	37	44	73	66	69	56	61	74	75	G	G	39	48	48	50	40	40	37	29
27	27	G	G	G	G	G	40	50	50	G	G	G	G	71	50	64	55	61	72	58	29	G	G	30
28	26	30	28	G	G	35	40	48	49	G	G	G	G	G	G	50	70	92	44	68	34	56	26	33
29	42	25	30	40	34	47	59	72	106	102	68	50	G	68	74	77	70	68	74	72	61	49	69	70
30	32	41	27	34	G	41	80	68	95	100	111	69	72	73	81	71	72	65	96	70	80	73	66	33
31	40	34	27	27	G	39	35	38	51	50	61	G	G	50	G	73	60	70	56	35	24	26	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	26	25	G	G	G	29	37	40	51	52	53	G	G	G	G	20	49	48	49	40	36	29	29	28
U Q	34	30	28	27	25	33	43	58	58	70	60	59	46	60	48	58	65	68	61	56	43	40	37	33
L Q	G	G	G	G	G	G	G	G	49	42	G	G	G	G	G	G	G	34	37	31	24	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 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	15	14	14	15	17	18	18	20	18	18	15	15	15	14	15	14	14	14	14	15
2	14	14	15	15	14	21	14	14	15	17	20	18	16	20	16	15	14	14	14	14	15	15	15	15
3	15	15	14	15	14	14	14	14	15	15	22	20	18	21	21	46	17	15	14	14	14	15	15	14
4	14	14	14	14	15	15	15	14	17	16	24	18	17	21	23	18	14	14	17	15	15	15	15	16
5	15	15	15	14	15	14	14	14	18	18	18	21	23	51	24	17	15	14	14	14	14	15	15	16
6	14	14	15	14	15	14	15	15	16	20	22	28	20	18	26	15	15	14	16	15	14	14	17	15
7	16	15	16	14	14	15	14	14	20	17	18	18	20	21	17	17	16	15	15	16	20	15	14	15
8	15	15	14	15	17	14	14	14	14	17	18	26	52	27	23	22	15	14	15	15	15	14	14	15
9	14	14	14	14	14	14	14	14	15	17	18	101	36	23	17	17	15	14	14	14	14	14	15	14
10	14	16	15	14	14	14	15	15	15	18	27	21	21	29	27	17	17	16	14	14	14	14	14	14
11	14	15	15	14	15	15	14	15	15	42	20	21	50	32	22	18	16	14	15	14	15	15	14	15
12	15	15	14	15	15	16	15	17	17	18	20	39	36	45	20	18	15	14	14	14	15	14	17	17
13	14	15	15	14	15	14	14	15	17	20	22	53	56	27	20	21	15	15	15	14	15	17	17	17
14	14	20	15	14	14	15	14	15	17	18	60	27	54	29	18	18	16	14	14	15	14	15	14	14
15	14	15	15	16	16	14	14	15	21	20	28	27	55	34	28	27	17	14	14	14	14	15	14	14
16	15	15	16	15	15	16	15	16	20	35	40	22	30	21	16	15	14	14	14	14	15	20	15	17
17	14	14	14	16	15	14	14	15	17	17	21	21	28	27	21	20	14	14	14	14	14	14	15	15
18	15	18	32	14	14	14	15	18	17	15	22	20	26	30	20	C	18	15	14	15	14	15	15	14
19	15	15	14	16	16	17	14	15	20	20	23	18	23	24	52	17	15	14	14	14	15	14	15	15
20	14	20	15	15	15	14	14	14	20	23	26	53	54	22	22	22	14	14	14	17	17	14	15	15
21	15	14	18	15	15	14	15	15	14	17	20	38	28	51	18	17	15	15	16	14	14	15	15	15
22	15	15	14	14	15	14	15	15	15	15	21	21	21	21	53	33	20	17	15	14	14	14	14	15
23	15	17	14	16	16	14	14	15	16	23	20	26	18	38	53	16	15	14	15	14	15	14	15	20
24	15	15	15	15	14	14	14	15	17	20	33	20	20	18	46	15	14	14	14	14	14	14	15	15
25	14	15	14	14	17	15	14	14	17	18	27	23	52	24	22	17	20	14	14	14	14	14	14	14
26	15	14	14	15	15	14	14	15	17	21	22	30	28	27	21	18	15	14	14	14	14	14	14	14
27	15	15	15	15	15	17	14	16	22	47	27	29	18	18	17	15	14	14	14	15	14	15	15	15
28	14	15	15	14	18	14	15	14	15	21	20	20	21	21	16	15	15	14	15	14	14	18	16	15
29	14	15	14	14	14	14	15	15	16	17	29	21	28	27	20	14	15	14	14	14	14	14	14	14
30	14	14	14	14	17	14	15	14	17	33	26	51	32	27	18	20	20	15	14	14	14	15	14	17
31	14	14	16	16	16	14	15	14	17	20	34	56	53	20	17	16	14	14	15	14	15	16	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	14	15	15	14	15	14	14	15	17	18	22	22	28	24	21	17	15	14	14	14	14	15	15	15
U Q	15	15	15	15	16	15	15	15	17	21	27	30	50	29	24	20	16	15	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	15	17	20	20	20	21	17	15	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

MAY 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	82	84	73	72	70	72	80	88	67	65	A		63	63	59	A	63	67	72	74	62	A	54	52
2	A	A	A	54	54	51	67	80	85	71	72	77	77	75	81	81	78	72	80	85	78	72	67	54
3	63	54	52	54	59	67	79	80	67	67	77	78	90	87	91	92	91	96	105	101	78	73	77	74
4	73	67	54	56	51	62	75	67	83	98	100	105	105	116	110	107	110	146	118	109	88	77	77	72
5	72	80	67	67	58	62	72	84	92	97	96	115	120	118	115	107	107	110	105	90	A	81	80	A
6	A	67	67	67	62	71	80	88	86	87	90	98	100	100	102	106	111	111	108	108	78	73	74	76
7	75	81	81	71	64	71	93	82	86	86	90	101	97	98	101	111	108	110	108	102	86	83	86	85
8	74	75	72	81	72	76	78	76	77	81	86	88	99	105	104	112	116	116	108	105	88	86	81	78
9	A	72	A	A	62	68	73	A	65	A	A		A	77	81	78	81	77	71	78	64	54	54	67
10	A	A	72	54		74	78	A	A	A	A	A	97	97	101	102	A	114	A	88	78	82	77	75
11	72	54	67	54	64	76	90	85	86	94	97	102	108	111	112	101	110	108	101	90	88	83	85	76
12	86	84	74	78	74	86	115	A	A	78	83	95	93	102	108	107	100	93	90	98	75	72	A	76
13	74	A	65	67	66	78	85	A	A	82	A	101	A	A	A	A	96	A	96	87	A	89	77	A
14	76	74	67	66	62	78	85	90	87	94	90	83	88	97	102	104	100	94	91	82	80	80	80	82
15	84	81	78	75	76	88	96	A	86	91	N	105	100	101	105	103	102	96	97	96	A	74	85	79
16	79	78	75	72	71	75	94	90	96	93	90	101	100	A	107	112	108	103	90	84	82	80	A	78
17	77	73	73	73	76	83	92	89	80	76	78	84	93	93	101	110	110	105	106	97	84	81	84	80
18	86	80	81	77	73	77	82	88	91	87	83	86	91	93	95	86	86	86	73	83	81	85	78	85
19	83	73	75	67	74	80	78	88	83	85	90	90	96	102	106	105	102	102	100	98	86	76	75	53
20	78	78	79	77	73	75	83	88	88	86	90	90	95	102	108	111	114	114	110	107	88	82	80	77
21	72	74	67	67	67	76	82	90	81	75	84	77	A	85	96	102	105	104	104	90	78	81	83	84
22	84	77	75	67	68	74	82	84	86	82	78	84	A	90	97	98	92	87	82	90	83	78	76	76
23	74	74	67	52	51	71	81	88	78	71	78	82	91	100	105	106	101	A	101	90	73	74	54	52
24	71	74	67	52	52	69	77	77	75	68	76	A	A	77	88	102	96	98	98	83	75	49	76	76
25	77	A	74	72	71	71	72	93	106	78	84	82	90	91	104	112	107	107	105	105	86	65	83	82
26	78	77	72	67	66	76	83	86	87	A	81	83	88	A	85	94	99	107	96	96	85	74	85	88
27	82	78	80	76	A	63	80	86	80	A	A	75	80	86	94	91	A	91	91	90	88	87	84	76
28	47	43	40	67	67	73	88	100	A	73	75	A	75	82	91	96	98	101	94	88	72	67	72	74
29	72	67	65	52	63	72	76	87	81	A	A	A	A	74	A	90	A	96	92	A	78	75	76	77
30	85	77	78	76	71	71	77	80	A	69	A	A	A	A	A	A	92	87	96	85	78	67	54	A
31	75	A	62	55	54	53	58	69	74	A	A	67	69	77	85	87	86	78	80	84	81	A	66	66
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	29	30	29	31	31	26	26	25	22	24	24	27	28	28	28	29	30	30	28	29	29	28
MED	76	74	72	67	66	73	80	86	84	82	84	87	93	93	101	102	100	101	96	90	80	77	77	76
U Q	82	78	75	73	71	76	85	88	87	89	90	101	99	102	105	107	108	109	105	98	86	82	83	79
L Q	72	72	67	55	60	69	77	80	78	72	78	82	88	82	91	93	92	89	90	85	78	72	73	73

HOURLY VALUES OF fEs AT Kokubunji

MAY 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	28	29	35	24	29	G	G	G	47	59	69		G	G	G	61	45	G	51	G	G	116	59	129
2	59	80	58	43	35	32	G	G	G	53	50	G	50	65	69	47	G	42	40	26	51	G	41	G
3	G	G	G	G	G	G	46	G	G	52	53	45	G	G	45	G	56	70	61	49	43	42	33	43
4	G	G	G	G	G	G	37	51	53	62	G	G	57	G	55	130	85	154	114	59	50	60	G	G
5	G	G	G	G	28	G	32	50	G	69	G	G	51	G	47	57	53	53	48	37	59	77	79	59
6	23	89	40	50	26	G	40	G	48	69	55	67	48	61	44	51	61	59	161	28	25	G	G	G
7	G	G	G	G	G	G	33	G	52	72	81	72	85	58	G	G	81	98	43	48	27	59	33	35
8	24	28	27	32	33	G	G	55	63	52	50	50	G	46	60	58	65	96	82	39	58	71	34	46
9	45	50	92	59	43	59	39	92	53	68	122		78	G	G	47	G	G	G	30	G	G	81	52
10	82	79	150	83		28	61	73	78	94	90	96	103	G	47	56	119	115	110	71	78	73	57	58
11	36	28	G	G	G	G	G	44	54	72	G	G	53	50	48	74	90	81	137	69	95	58	34	53
12	45	59	57	52	G	53	56	94	67	54	50	50	G	48	68	55	70	60	62	72	60	59	92	107
13	59	90	46	43	39	44	69	83	113	70	156	78	173	152	113	97	71	116	61	169	95	115	90	95
14	34	G	29	24	25	G	50	60	61	58	52	65	49	G	52	47	G	64	58	45	59	47	33	32
15	31	28	37	33	27	G	43	124	57	68	57	101	58	60	G	G	60	107	61	52	85	114	59	28
16	27	G	G	G	30	G	57	48	57	59	62	47	80	104	70	58	50	41	43	G	59	58	59	32
17	26	26	G	G	G	G	G	G	55	50	57	G	G	58	61	54	G	G	31	G	G	G	G	29
18	24	46	G	G	G	29	G	52	60	61	72	65	84	67	78	G	G	77	96	116	60	56	58	33
19	29	G	G	G	G	29	G	G	64	61	55	53	G	G	60	68	67	49	40	38	28	G	G	G
20	G	27	34	33	G	G	G	46	50	56	G	G	G	G	G	G	50	G	31	G	G	27	G	G
21	G	G	G	23	G	G	G	49	45	55	G	G	132	73	73	G	G	52	37	29	114	59	45	49
22	34	36	32	G	29	G	G	62	78	G	75	57	81	72	G	G	47	49	61	49	50	60	57	43
23	84	33	G	29	58	37	41	56	57	51	51	G	56	G	G	G	47	163	90	81	G	G	G	G
24	35	30	29	24	G	27	38	G	50	47	50	78	90	G	G	51	G	G	31	G	26	53	49	60
25	59	83	50	57	51	G	52	47	50	92	76	50	49	46	67	51	56	76	36	G	34	48	31	31
26	G	30	G	G	G	G	G	47	72	107	48	68	61	86	70	54	G	60	60	49	50	37	50	58
27	G	58	82	58	74	27	39	61	68	123	115	G	75	103	61	84	93	78	53	87	71	41	34	40
28	33	28	G	G	G	31	48	65	81	62	52	67	G	G	G	65	59	72	61	69	82	59	58	85
29	60	57	51	33	G	43	46	72	78	81	68	78	103	62	85	57	109	74	68	133	114	52	50	56
30	52	47	34	31	33	30	52	61	106	62	111	119	148	134	123	126	61	61	48	64	34	59	84	73
31	46	86	58	46	37	G	47	61	61	69	83	G	52	44	61	83	G	61	36	43	57	105	38	59
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	31	31	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31
MED	31	30	29	24	26	G	39	51	57	62	55	50	56	48	55	54	56	61	58	48	51	58	45	43
U Q	46	58	50	43	33	30	48	62	68	70	76	70	84	67	69	65	70	81	68	69	71	60	59	59
L Q	G	G	G	G	G	G	G	G	50	54	50	G	G	G	G	G	G	49	40	28	27	37	33	29

HOURLY VALUES OF fmin AT Kokubunji

MAY 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	13	15	13	14	13	14	15	17	33	36	38		50	50	49	24	20	13	17	13	14	13	13	13
2	13	13	14	13	13	13	14	13	18	33	24	55	39	38	36	20	22	13	13	14	13	14	13	14
3	14	14	14	13	13	13	13	17	22	34	34	34	34	52	38	45	35	14	13	18	13	13	14	13
4	17	14	15	13	15	17	14	17	24	34	44	46	37	50	39	22	18	14	13	13	13	13	13	14
5	15	14	13	14	13	15	13	17	40	22	47	40	34	52	39	24	17	14	17	13	14	14	13	13
6	13	14	14	13	14	17	17	18	23	34	39	42	40	39	46	38	17	13	13	13	13	14	13	15
7	13	15	14	13	17	23	18	18	37	37	37	39	38	37	52	40	31	14	13	14	14	14	13	14
8	15	14	13	13	13	13	14	17	23	36	37	39	52	55	39	35	31	13	13	13	14	13	14	13
9	13	13	13	13	13	14	14	22	33	38	40		37	55	57	37	23	17	13	13	14	14	14	14
10	14	13	13	13		14	21	20	22	37	37	39	39	49	38	36	21	17	13	14	14	13	13	13
11	13	14	13	13	13	18	14	20	18	38	45	60	39	38	40	37	23	17	17	14	18	14	14	13
12	13	13	13	13	15	14	14	13	22	36	39	42	42	40	39	35	37	15	13	14	14	13	14	14
13	14	13	13	13	13	14	14	14	22	36	37	38	37	38	29	38	24	15	13	18	13	13	14	14
14	13	14	13	13	13	13	14	18	36	38	39	36	34	57	35	40	21	15	13	17	13	13	13	13
15	13	14	14	13	13	21	15	20	17	35	38	38	39	37	49	49	18	17	14	20	13	13	13	13
16	14	14	14	14	13	13	18	21	21	39	38	38	39	39	38	36	21	14	14	20	18	13	13	14
17	15	14	14	14	13	20	14	20	36	38	38	53	55	38	37	24	21	18	14	20	15	20	14	13
18	14	13	18	18	14	14	15	15	17	38	38	38	39	38	36	48	42	20	13	13	14	13	13	13
19	13	15	13	13	13	13	13	18	38	38	38	38	52	53	29	23	18	15	17	14	14	34	15	14
20	20	14	13	14	13	21	13	14	21	37	52	53	54	52	48	40	21	13	15	15	14	15	14	33
21	14	14	14	14	14	21	14	20	36	38	55	50	39	40	39	44	41	20	14	13	14	13	13	13
22	14	13	14	15	13	21	14	21	33	46	38	38	40	38	45	46	20	15	15	14	14	13	13	13
23	13	13	13	13	13	13	13	20	23	36	37	52	38	53	54	30	24	14	13	15	14	14	14	18
24	14	13	13	14	17	13	20	15	18	37	39	39	39	53	33	29	20	17	15	15	14	13	13	13
25	13	13	13	13	13	13	18	17	20	34	38	38	38	40	39	40	18	20	13	18	14	13	14	14
26	21	14	13	13	14	21	14	18	30	34	34	31	33	36	37	30	22	17	15	13	13	13	13	14
27	13	13	13	14	13	13	15	18	35	34	36	60	36	35	38	18	17	14	13	13	13	14	14	13
28	14	14	21	15	14	14	14	21	23	35	35	38	59	55	50	38	22	15	13	15	15	13	13	14
29	14	13	13	13	14	13	14	30	34	38	37	37	38	38	38	38	34	18	13	13	14	14	13	13
30	13	14	13	13	13	13	17	18	33	39	40	38	40	39	33	34	33	13	17	14	13	14	13	13
31	13	13	13	13	14	21	13	15	21	36	36	35	36	39	35	30	20	14	17	13	14	14	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	30	31	31	31	31	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	13	13	13	14	14	18	23	36	38	39	39	40	39	36	21	15	13	14	14	13	13	13
U Q	14	14	14	14	14	20	15	20	34	38	39	48	40	52	46	40	31	17	15	15	14	14	14	14
L Q	13	13	13	13	13	13	14	17	21	34	37	38	37	38	36	29	20	14	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

MAY 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	88	89	82	78	78	73	86	104	96	78	94	93	97	95	91	80	86	95	96	90	72	53	51	52
2	52	52	54	52	53	50	54	72	73	A	67	77	81	A	A	88	82	85	91	79	A	77	73	72
3	54	52	67	52	56	62	74	74	64	72	A	A	95	103	95	95	97	106	A	98	80	77	77	77
4	73	78	86	87	72	60	67	70	88	95	86	86	96	69	108	99	111	111	110	75	87	A	78	78
5	83	77	76	71	66	62	72	82	87	86	100	98	116	117	116	111	129	111	108	87	87	82	80	76
6	72	85	86	74	70	70	81	90	92	77	82	95	95	102	98	116	110	106	112	90	80	N	86	84
7	88	88	88	77	67	73	77	80	82	88	92	84	96	96	97	100	114	110	109	97	87	90	86	102
8	87	86	87	88	77	66	67	75	78	83	86	90	97	107	108	115	98	111	106	97	91	A	52	73
9	78	78	77	72	A	68	67	69	77	77	78	77	72	78	85	80	81	84	81	80	77	54	54	71
10	67	A	A	52	64	61	67	67	A	A	85	91	94	95	96	112	110	110	A	90	77	76	A	78
11	76	77	75	75	69	74	80	77	78	87	93	A	97	A	98	A	A	A	149	A	A	A	85	86
12	87	81	73	67	66	74	96	86	70	A	88	100	109	113	114	115	109	116	111	96	84	78	78	A
13	74	77	72	71	72	68	67	78	76	83	96	89	94	96	90	111	97	114	N	104	87	79	80	79
14	A	76	A	A	75	75	85	86	97	92	A	80	A	A	111	115	111	113	108	A	78	84	75	86
15	87	87	109	77	81	80	87	90	A	A	A	A	A	96	96	112	98	98	97	96	84	78	53	77
16	A	88	78	85	83	76	91	81	86	85	A	A	100	95	114	97	100	114	96	90	85	83	52	77
17	80	77	76	78	75	76	85	86	72	73	80	90	95	97	100	98	116	112	110	89	88	80	88	87
18	88	86	47	N	80	87	87	93	92	78	81	92	97	98	100	97	100	114	95	88	76	88	80	89
19	86	86	86	78	80	78	82	88	86	88	86	91	92	112	112	101	60	115	114	97	N	86	88	87
20	87	86	84	81	80	76	82	82	80	86	90	88	97	96	92	96	119	116	115	110	88	86	82	88
21	86	84	81	80	72	77	73	92	77	73	77	75	A	94	94	96	114	109	100	88	80	82	81	78
22	78	80	77	75	72	81	85	82	85	75	76	78	89	96	95	96	95	75	94	89	87	76	52	A
23	52	75	66	53	57	66	78	82	76	A	72	78	84	94	97	96	98	110	98	86	77	78	85	73
24	87	83	76	74	56	65	72	80	77	58	72	78	80	77	91	95	96	96	92	91	80	77	82	81
25	75	76	71	67	66	66	79	88	86	80	94	90	86	97	97	111	112	102	106	90	80	86	54	84
26	79	74	73	74	72	67	71	82	81	80	A	92	A	96	103	92	114	110	114	98	86	78	81	86
27	76	80	80	72	60	54	72	94	85	77	86	86	61	95	94	97	96	93	95	96	88	81	79	53
28	75	75	67	66	66	68	86	87	86	A	66	75	84	96	92	113	98	N	88	80	49	73	50	77
29	77	67	67	75	65	62	75	96	A	A	A	A	A	93	94	96	95	A	112	98	78	78	84	81
30	77	86	88	78	79	77	79	87	A	A	A	A	86	96	97	112	112	117	109	90	76	54	67	A
31	66	77	77	58	57	57	61	82	A	77	67	A	A	82	90	91	78	90	88	91	83	70	76	72
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	29	30	31	31	31	26	23	24	24	25	28	30	30	30	28	28	29	28	27	30	28
MED	78	79	77	74	71	68	78	82	82	80	86	88	95	96	97	98	99	110	106	90	82	78	78	78
U Q	87	86	85	78	77	76	85	88	86	86	91	91	97	97	103	112	112	113	110	97	87	83	82	86
L Q	73	76	71	67	65	62	71	78	77	77	76	78	85	94	94	96	96	97	95	88	77	76	54	74

HOURLY VALUES OF fEs AT Yamagawa

MAY 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	33	49	30	33	33	34	54	61	69	65	63	G	59	G	G	G	40	51	34	34	44	24	38
2	G	23	33	43	27	G	G	G	G	82	54	G	53	152	107	85	50	62	61	65	104	72	60	36
3	G	24	28	G	26	G	46	58	57	96	116	112	72	79	46	G	54	61	95	71	54	86	73	50
4	59	54	52	G	32	32	31	44	50	71	73	52	73	50	G	61	57	43	85	85	60	116	33	G
5	G	G	34	34	G	32	34	41	50	49	65	G	45	54	56	79	50	47	35	37	28	78	67	56
6	58	30	33	32	28	26	34	40	G	45	G	G	56	G	G	G	G	50	54	54	82	58	59	G
7	24	G	G	G	G	G	34	40	71	50	78	47	50	G	G	48	63	64	57	78	32	44	93	67
8	58	34	G	26	36	39	38	44	49	53	G	54	63	50	75	88	105	80	78	51	93	82	70	32
9	36	36	46	54	36	40	G	43	76	G	44	G	54	61	G	50	48	42	48	28	G	28	27	29
10	32	156	82	56	49	43	58	48	73	151	50	62	86	51	61	97	51	72	131	61	36	58	94	49
11	59	45	30	55	G	G	G	44	52	51	66	62	58	96	G	99	148	124	142	161	145	116	58	28
12	36	32	24	G	G	G	35	57	87	77	84	115	97	50	G	G	G	45	40	G	G	G	83	104
13	58	83	57	56	49	35	34	36	54	72	90	68	64	65	64	75	50	66	60	64	83	92	70	84
14	102	G	92	85	46	26	30	54	74	85	94	56	101	126	99	84	69	96	132	108	70	69	59	57
15	36	46	58	41	34	32	40	50	91	119	178	155	107	67	62	49	49	45	88	52	50	43	43	54
16	58	59	49	G	G	G	31	40	56	80	106	96	63	61	G	64	40	41	49	40	29	49	34	32
17	71	G	G	23	G	G	G	38	52	51	53	46	61	50	72	G	40	50	83	116	54	69	49	G
18	44	27	G	G	G	G	G	34	50	54	60	G	58	61	84	67	61	51	64	70	70	58	49	30
19	44	34	24	G	G	G	G	39	47	54	54	63	51	50	52	52	49	56	50	54	36	34	39	40
20	G	G	30	32	28	33	36	36	63	60	53	47	56	49	G	44	G	39	45	56	40	32	26	28
21	G	G	G	G	G	G	33	G	44	65	58	74	104	120	52	52	45	G	46	46	50	46	26	27
22	27	48	36	34	G	G	G	72	49	75	G	50	G	G	G	G	G	G	G	40	71	92	56	57
23	55	59	57	41	33	56	34	40	66	71	67	55	54	69	72	52	49	48	45	34	33	50	30	25
24	50	33	33	G	G	G	33	36	46	61	53	54	48	45	54	48	43	40	39	43	39	28	25	56
25	43	40	39	32	24	36	32	35	44	54	72	70	80	49	48	68	63	45	44	57	45	46	40	30
26	34	G	G	G	G	G	G	45	58	68	90	85	135	116	65	G	45	53	68	41	32	G	67	49
27	59	34	73	53	54	33	32	44	G	48	G	G	46	61	45	G	64	57	48	36	35	40	48	39
28	32	33	30	28	G	G	44	43	77	89	47	G	58	G	G	43	41	65	97	57	55	56	34	56
29	46	36	39	33	G	G	36	70	110	91	99	123	179	45	52	71	84	107	46	43	58	74	84	71
30	72	57	48	27	G	G	42	56	115	148	106	122	50	86	50	52	41	37	G	30	28	25	57	70
31	81	50	53	30	31	G	38	56	81	64	78	90	74	82	70	48	78	58	70	44	48	58	48	44
	00	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	44	34	34	30	24	G	34	43	56	68	65	56	58	59	52	52	49	50	54	52	48	56	49	40
U Q	58	48	52	41	33	33	36	54	74	82	90	85	80	79	65	71	63	64	83	65	70	74	67	56
L Q	27	23	24	G	G	G	G	38	49	53	53	46	51	49	G	G	41	42	45	40	33	40	34	29

HOURLY VALUES OF fmin AT Yamagawa

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

HOURLY VALUES OF foF2 AT Okinawa

MAY 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	118	113	105	87	A	A
12	87	88	81	76	68	68	91	85	A	72	A	A	126	131	132	122	124	134	135	110	88	88	86	104
13	88	82	73	74	75	70	72	78	82	93	98	100	107	120	118	120	124	126	130	118	110	84	84	85
14	86	86	74	72	72	71	75	100	112	80	A	100	108	120	130	130	131	128	118	107	88	88	106	109
15	109	111	135	110	89	93	90	88	88	88	98	106	117	118	120	131	130	124	122	109	88	80	88	87
16	86	105	106	108	100	80	76	78	87	86	A	107	108	114	125	130	132	134	131	118	104	88	88	92
17	87	88	88	88	83	81	86	82	75	72	84	100	103	117	126	128	131	134	133	128	110	89	127	110
18	132	128	130	107	107	107	103	101	86	A	85	105	111	121	121	121	118	124	110	89	88	88	88	104
19	111	108	108	104	78	79	88	88	92	95	88	104	116	127	143	144	147	148	143	145	128	107	108	131
20	120	118	109	106	84	76	85	85	81	87	89	101	107	112	108	116	131	131	131	121	107	110	87	107
21	86	107	89	88	84	88	108	88	73	73	76	84	98	102	110	120	127	122	104	93	88	86	52	100
22	83	110	107	88	86	78	88	86	88	85	80	88	99	107	108	110	107	N	117	105	88	66	76	66
23	67	53	85	52	57	54	71	72	71	A	A	A	75	103	108	116	121	120	108	A	83	85	88	52
24	87	85	88	77	54	73	71	72	78	66	74	88	91	91	93	107	105	100	88	101	87	83	85	86
25	80	100	81	71	64	67	74	85	72	86	98	92	101	A	102	128	131	131	127	110	86	107	105	84
26	88	88	86	77	80	70	73	70	73	76	88	A	107	117	118	133	128	124	126	106	88	86	A	49
27	84	81	76	67	57	52	67	81	82	93	98	108	118	122	118	121	122	110	110	108	106	52	80	78
28	77	74	67	67	66	64	77	84	77	79	71	A	88	99	107	121	122	105	A	87	82	54	76	76
29	73	76	78	67	62	62	72	88	72	A	A	A	94	99	104	110	116	120	123	108	86	84	85	80
30	87	85	85	75	77	74	72	87	88	A	A	A	98	105	118	127	142	145	131	102	A	77	81	86
31	88	87	88	52	75	63	61	86	81	A	A	A	A	A	98	99	97	106	109	107	A	73	74	53
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	20	20	20	20	20	20	19	15	13	13	19	18	20	20	20	19	20	20	19	21	19	20
MED	87	88	87	76	76	72	76	85	81	85	88	100	107	116	118	121	126	124	122	108	88	86	86	86
U Q	88	107	106	96	84	79	88	88	88	88	98	105	111	120	123	129	131	134	131	115	106	88	88	104
L Q	83	83	79	69	65	65	72	79	73	73	78	90	98	103	107	116	119	120	110	103	87	78	80	77

HOURLY VALUES OF fEs AT Okinawa

MAY 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	53	63	56	85	128	115
12	27	G	26	G	G	52	34	64	78	76	108	132	102	72	64	65	60	47	40	G	26	G	G	G
13	78	72	58	55	85	54	37	50	61	53	54	54	54	48	G	58	66	50	67	110	58	67	88	59
14	58	65	56	27	39	29	68	59	78	110	101	73	77	105	72	86	61	84	78	52	53	39	85	103
15	59	55	60	77	57	66	49	61	G	54	G	66	G	61	93	50	G	44	46	53	31	58	42	27
16	28	25	G	G	G	G	G	G	49	56	117	59	82	70	63	48	61	44	G	G	G	27	G	27
17	27	G	G	24	G	G	G	G	53	52	60	64	66	62	66	62	61	55	58	41	32	25	G	G
18	58	58	G	G	G	G	G	G	47	77	52	G	G	G	78	78	55	63	62	54	57	59	50	44
19	34	G	G	G	G	G	G	G	41	44	G	55	52	52	G	52	51	52	47	36	48	28	28	103
20	33	G	44	29	24	G	G	G	54	84	68	100	71	103	52	74	52	60	45	46	30	25	G	G
21	G	G	28	G	24	G	28	57	G	48	G	58	G	G	60	G	50	48	46	32	29	27	34	52
22	34	G	G	34	25	26	G	42	46	G	G	G	G	G	G	G	G	G	35	G	G	24	69	68
23	58	44	71	55	26	G	G	40	80	75	92	83	61	80	76	64	84	117	64	105	54	34	34	40
24	24	27	G	G	G	G	G	40	44	52	67	73	57	77	66	53	60	70	72	36	51	43	39	25
25	G	58	70	60	40	35	G	G	G	46	G	87	94	116	118	59	59	54	49	G	58	59	50	44
26	34	23	30	G	G	G	G	43	46	65	80	88	95	75	80	115	99	83	61	37	59	71	90	34
27	51	58	58	35	38	G	34	53	55	63	49	G	55	63	100	92	72	65	85	84	78	40	36	71
28	G	28	35	26	G	G	G	40	85	48	G	51	61	60	65	50	56	63	112	77	59	57	53	48
29	34	36	26	G	G	G	28	42	58	76	104	125	G	G	G	49	53	G	51	52	26	41	36	65
30	51	34	32	26	45	G	32	39	73	115	132	92	79	50	62	56	52	66	61	79	93	78	G	48
31	58	58	24	45	49	24	46	60	111	176	115	154	180	107	78	78	56	93	92	85	102	60	34	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	21	21	21	21	21	21
MED	34	31	29	26	24	G	G	41	54	60	64	70	61	62	66	58	58	58	58	52	53	41	36	44
U Q	58	58	57	40	39	27	34	55	75	76	102	90	80	78	78	76	61	68	69	78	58	59	61	66
L Q	27	G	G	G	G	G	G	G	45	50	G	54	26	49	56	50	52	47	46	34	29	27	14	27

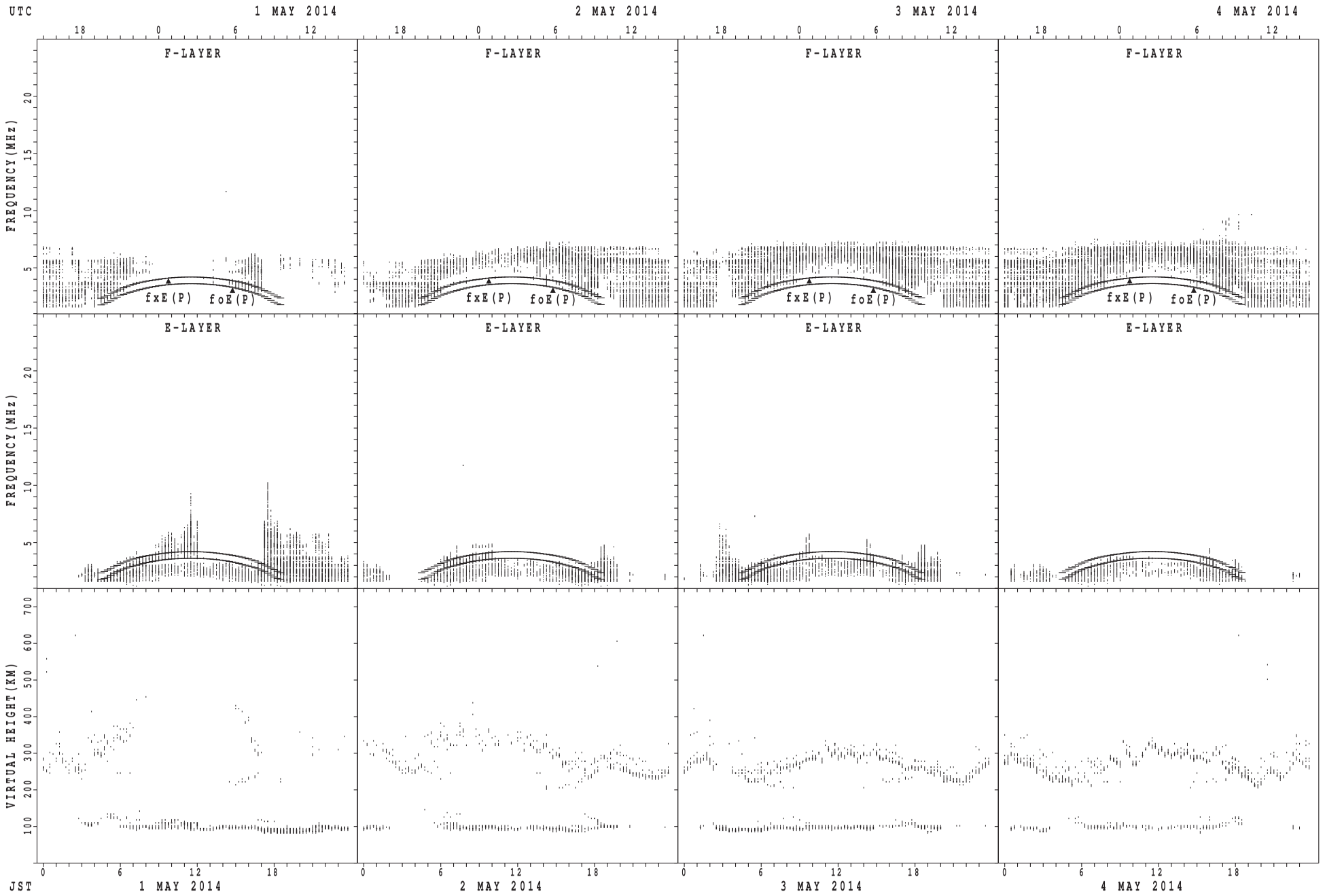
HOURLY VALUES OF fmin AT Okinawa

MAY 2014

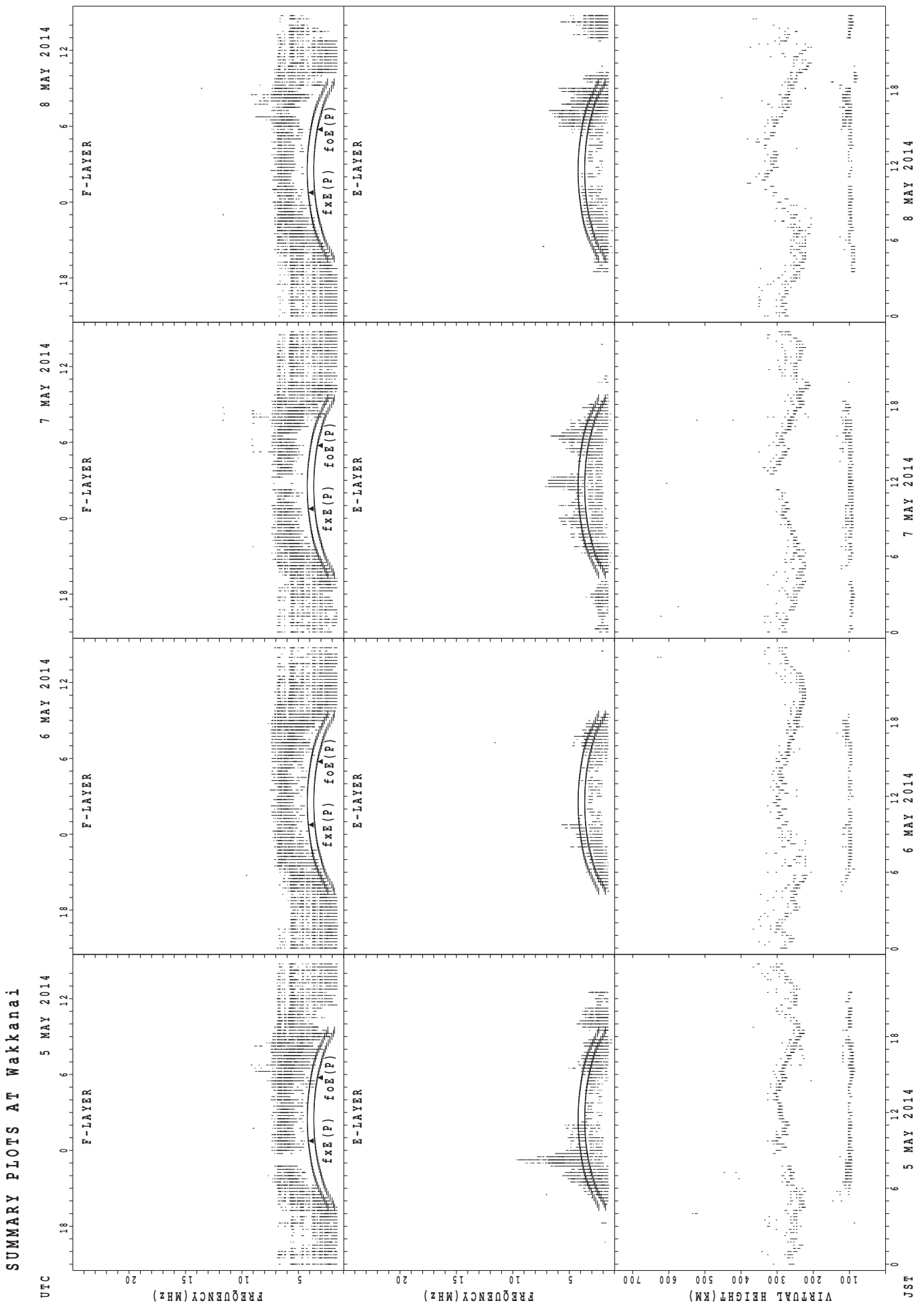
LAT.26°41.0′N LON.128°09.0′E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

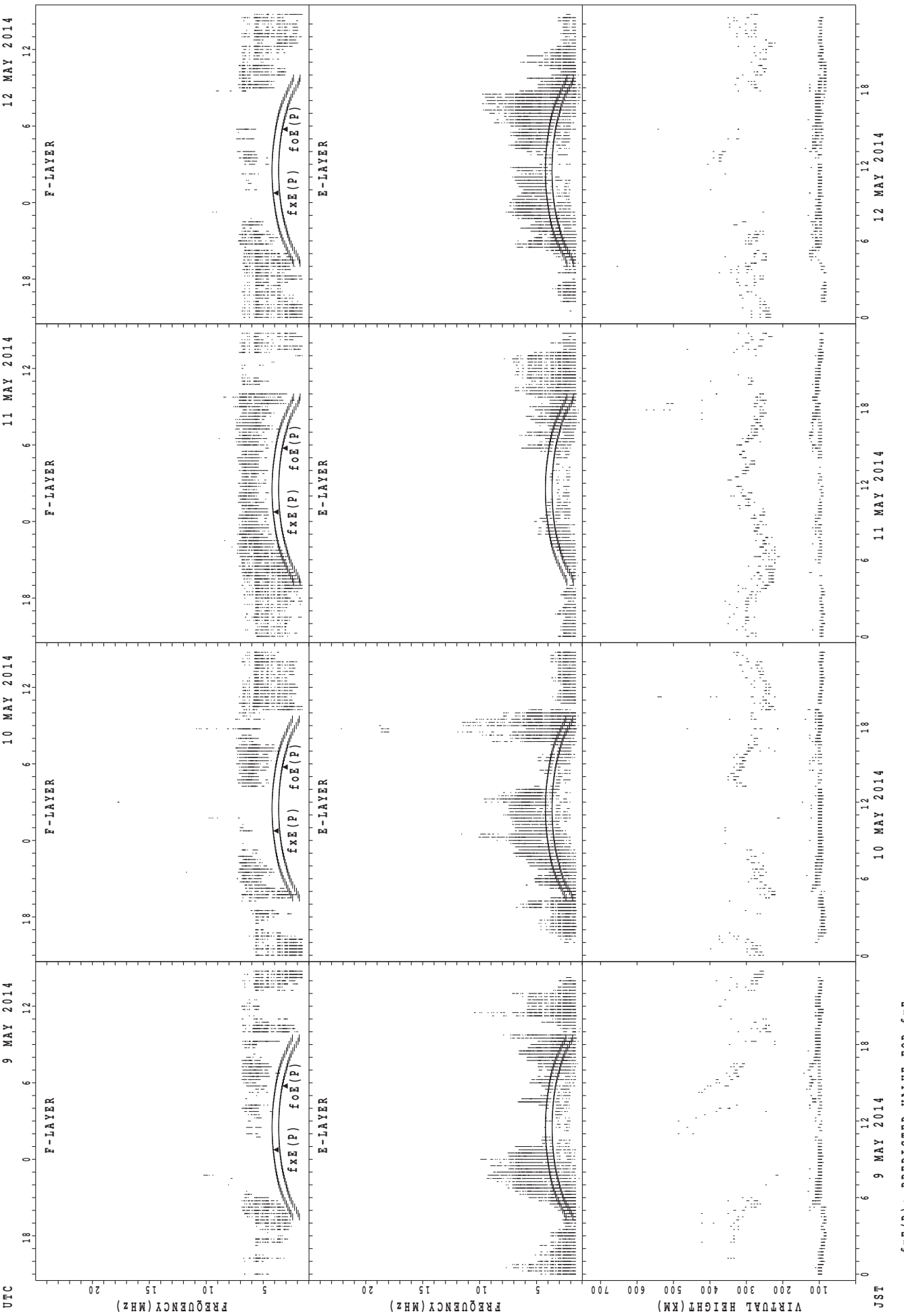
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C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

SUMMARY PLOTS AT Wakkanai

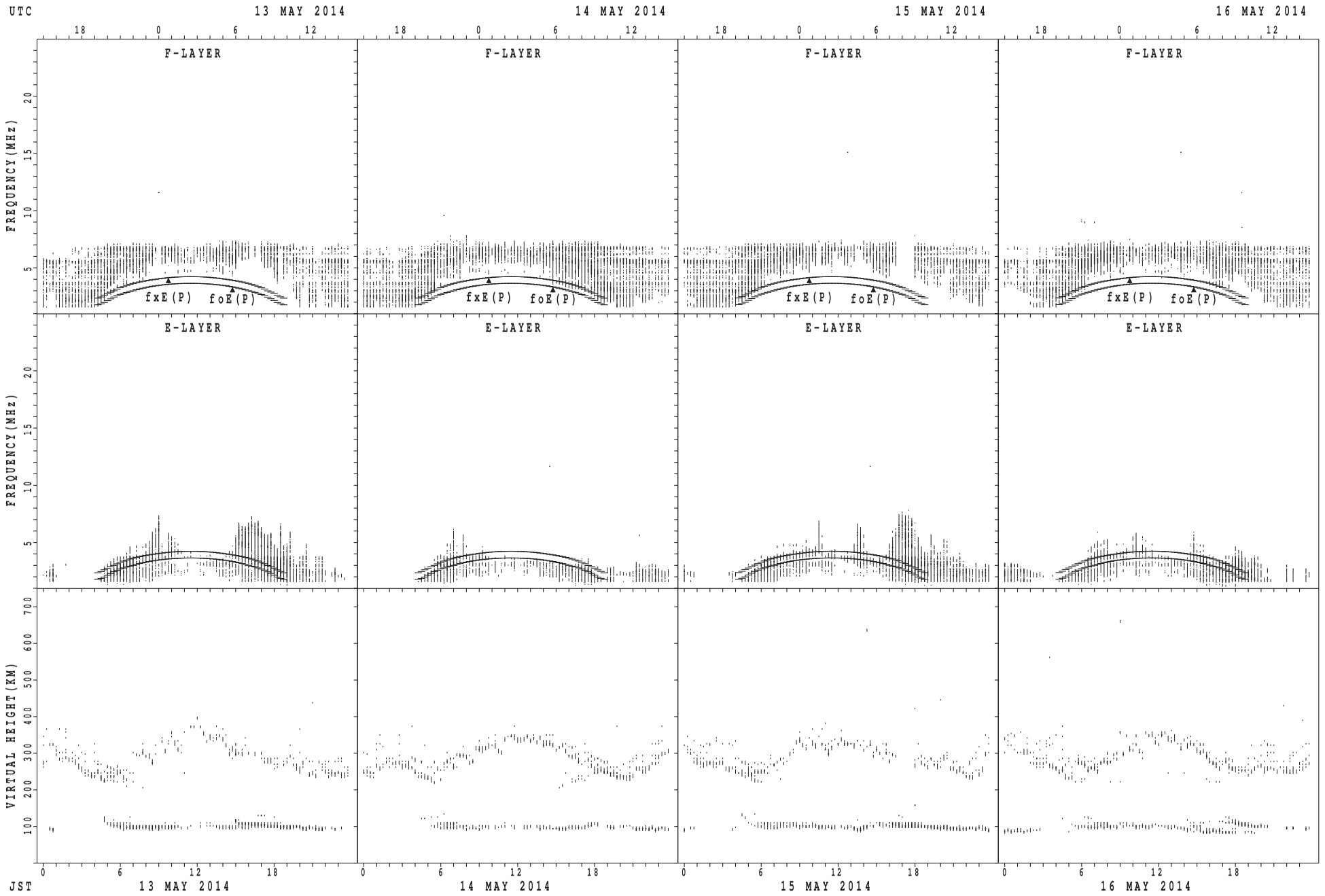


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
5 MAY 2014
6 MAY 2014
7 MAY 2014
8 MAY 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

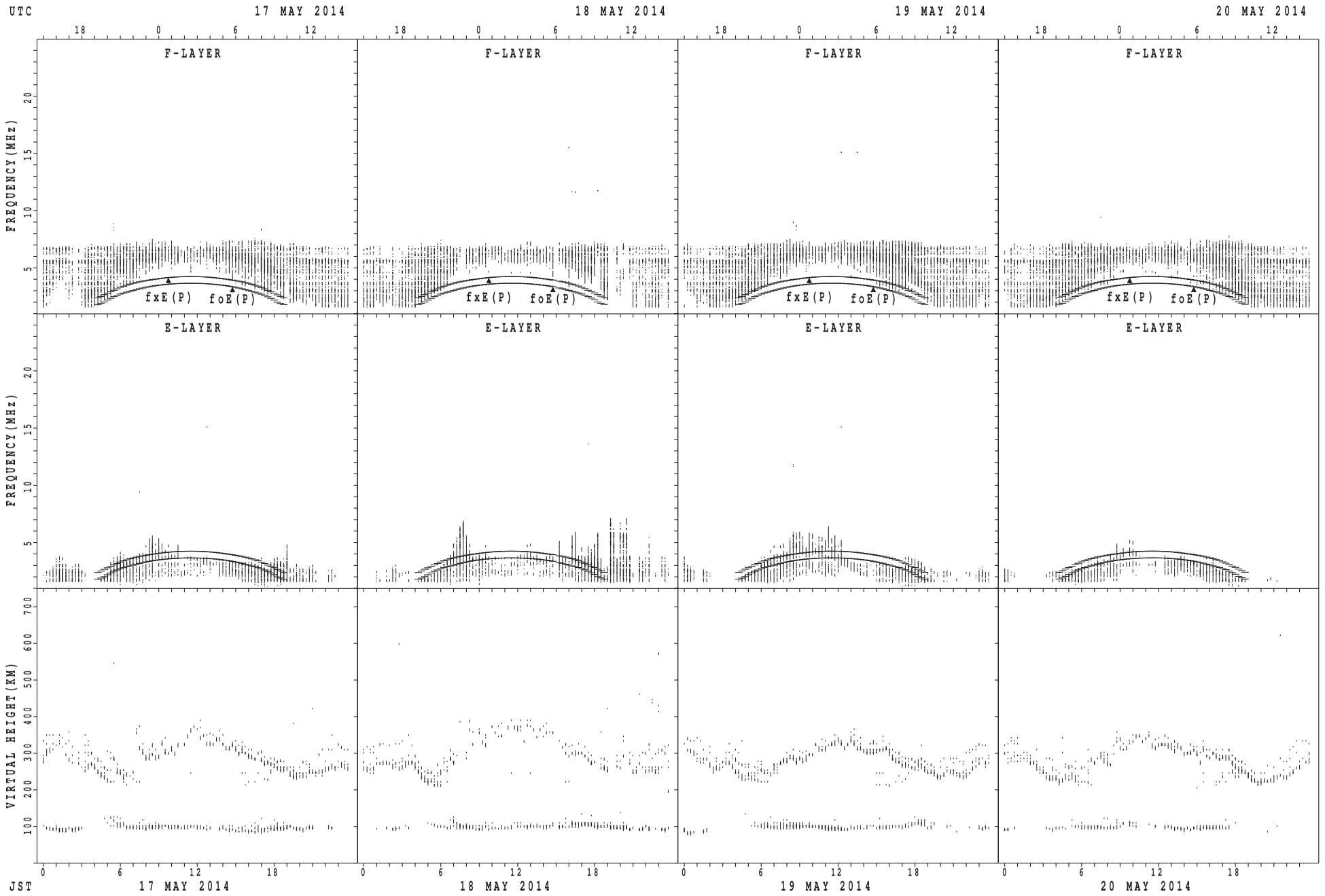

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 MAY 2014
10 MAY 2014
11 MAY 2014
12 MAY 2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

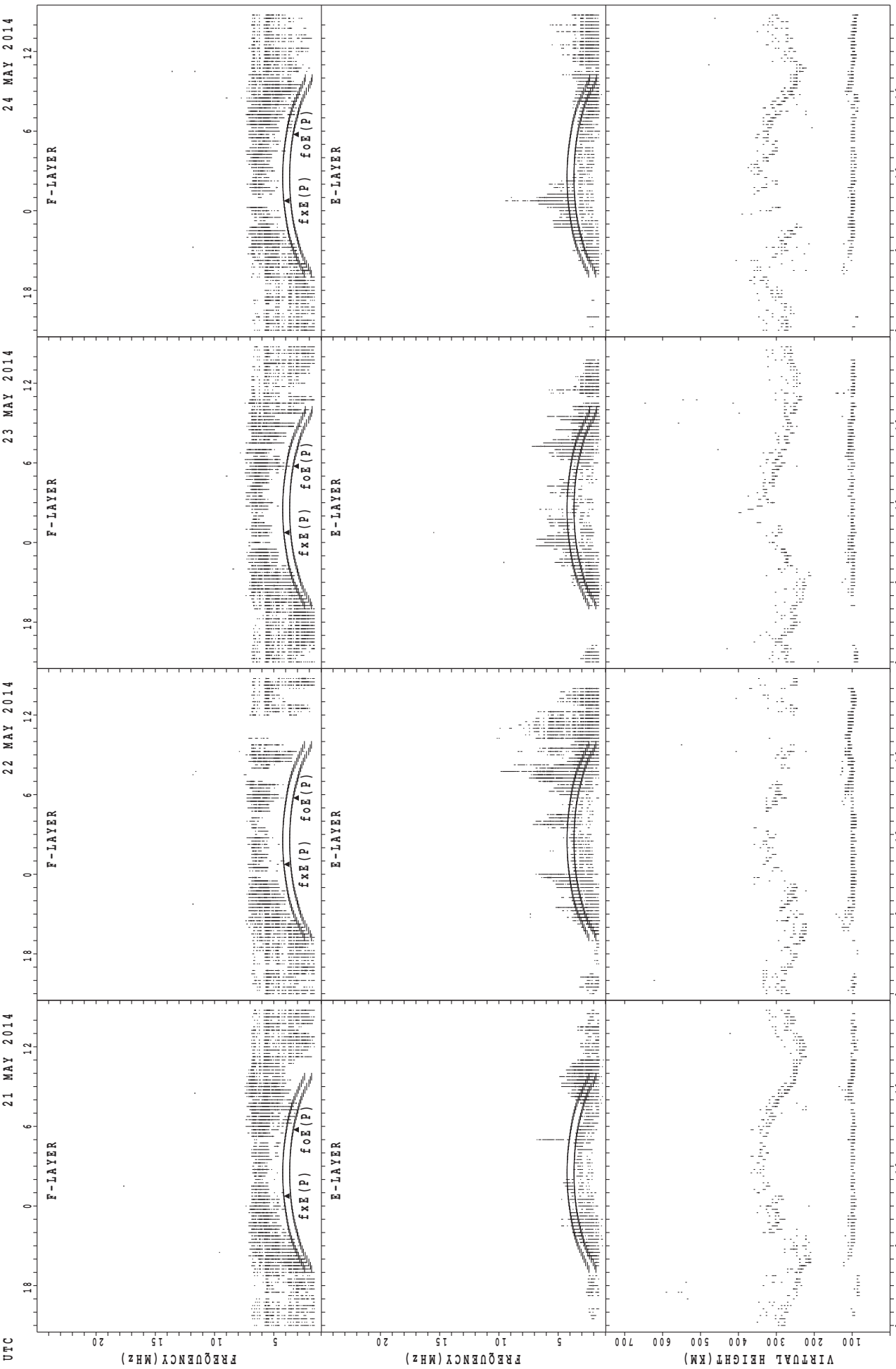


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

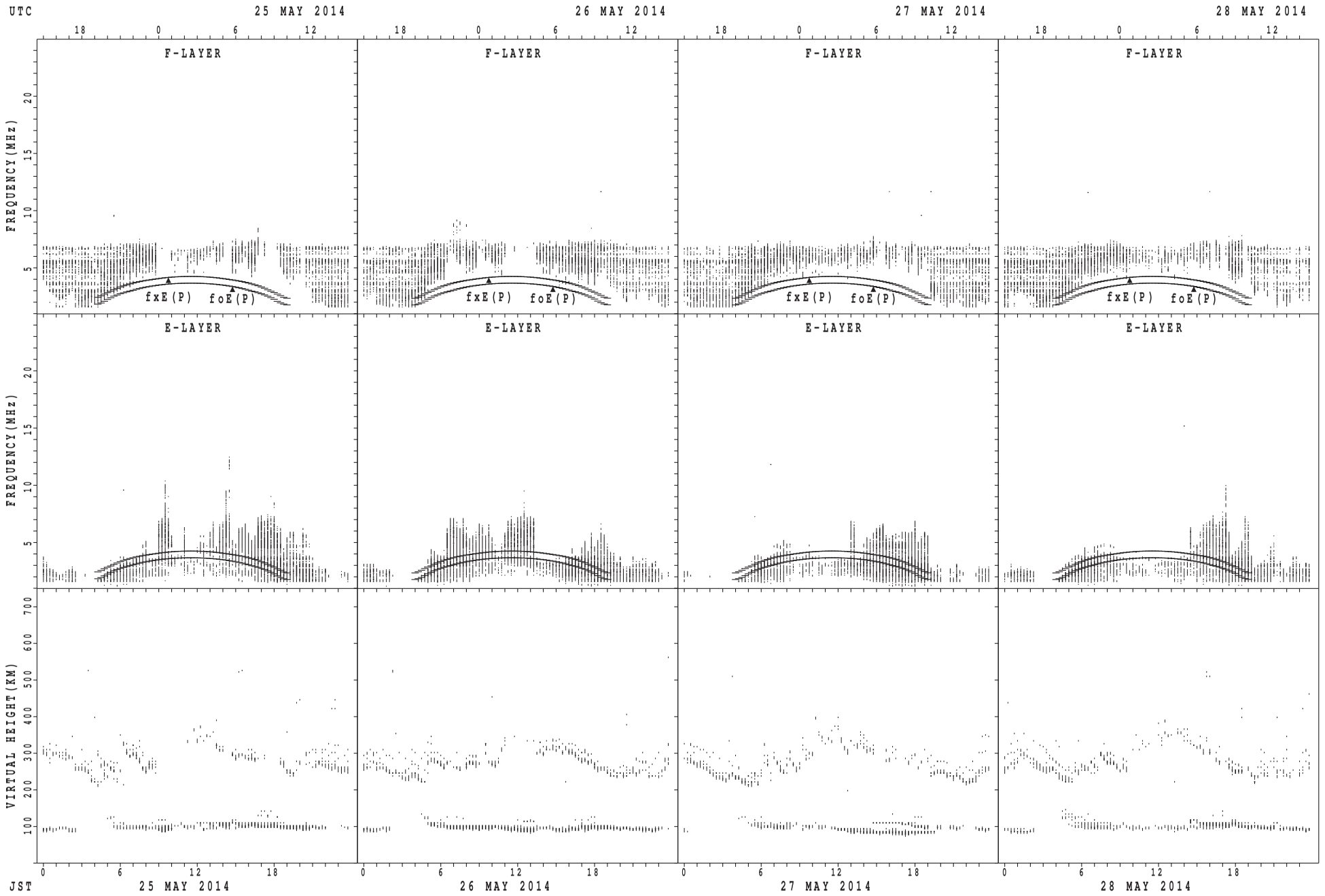
SUMMARY PLOTS AT Wakkanai



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

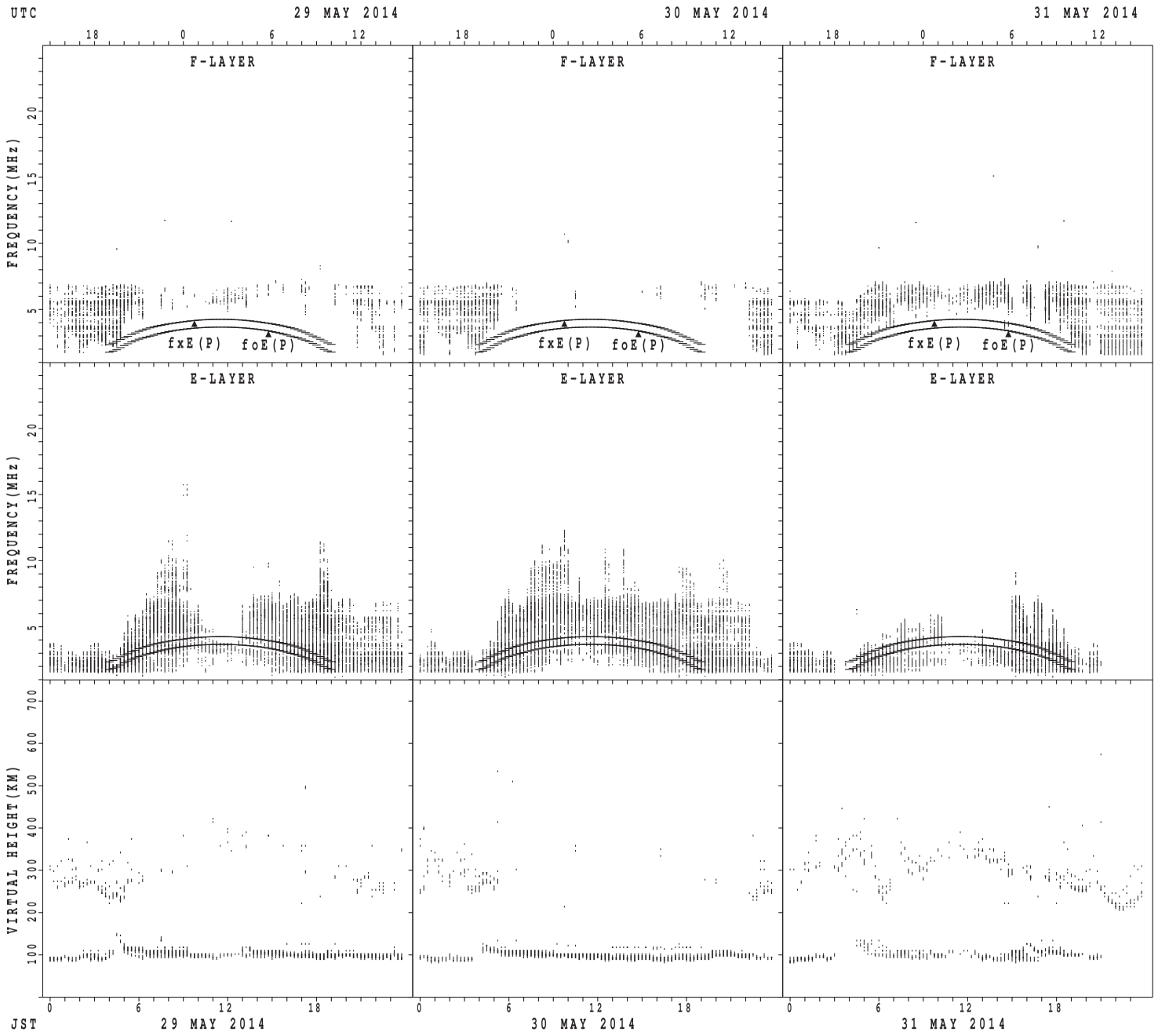

SUMMARY PLOTS AT Wakkanai
UTC
JST
21 MAY 2014
22 MAY 2014
23 MAY 2014
24 MAY 2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



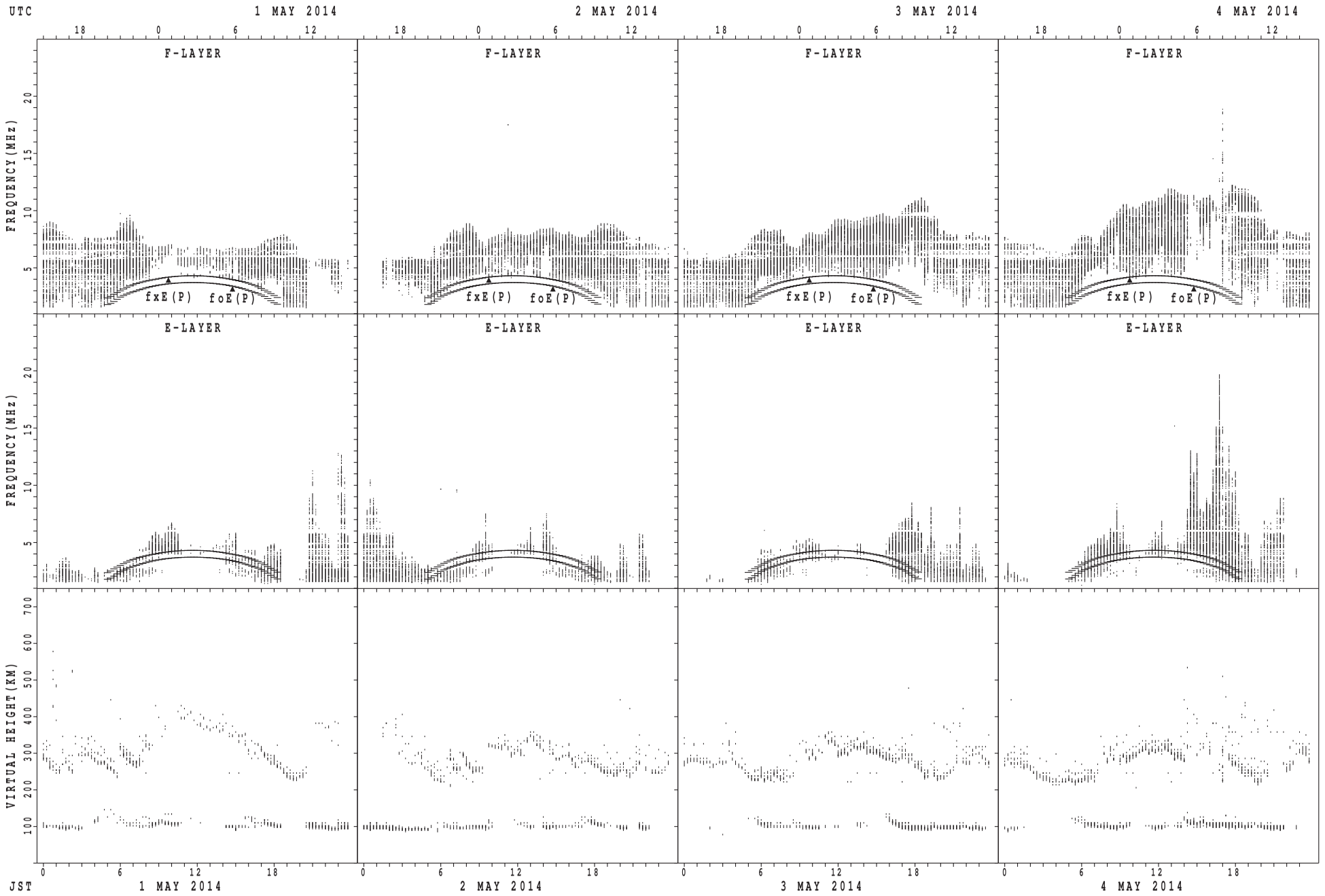
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



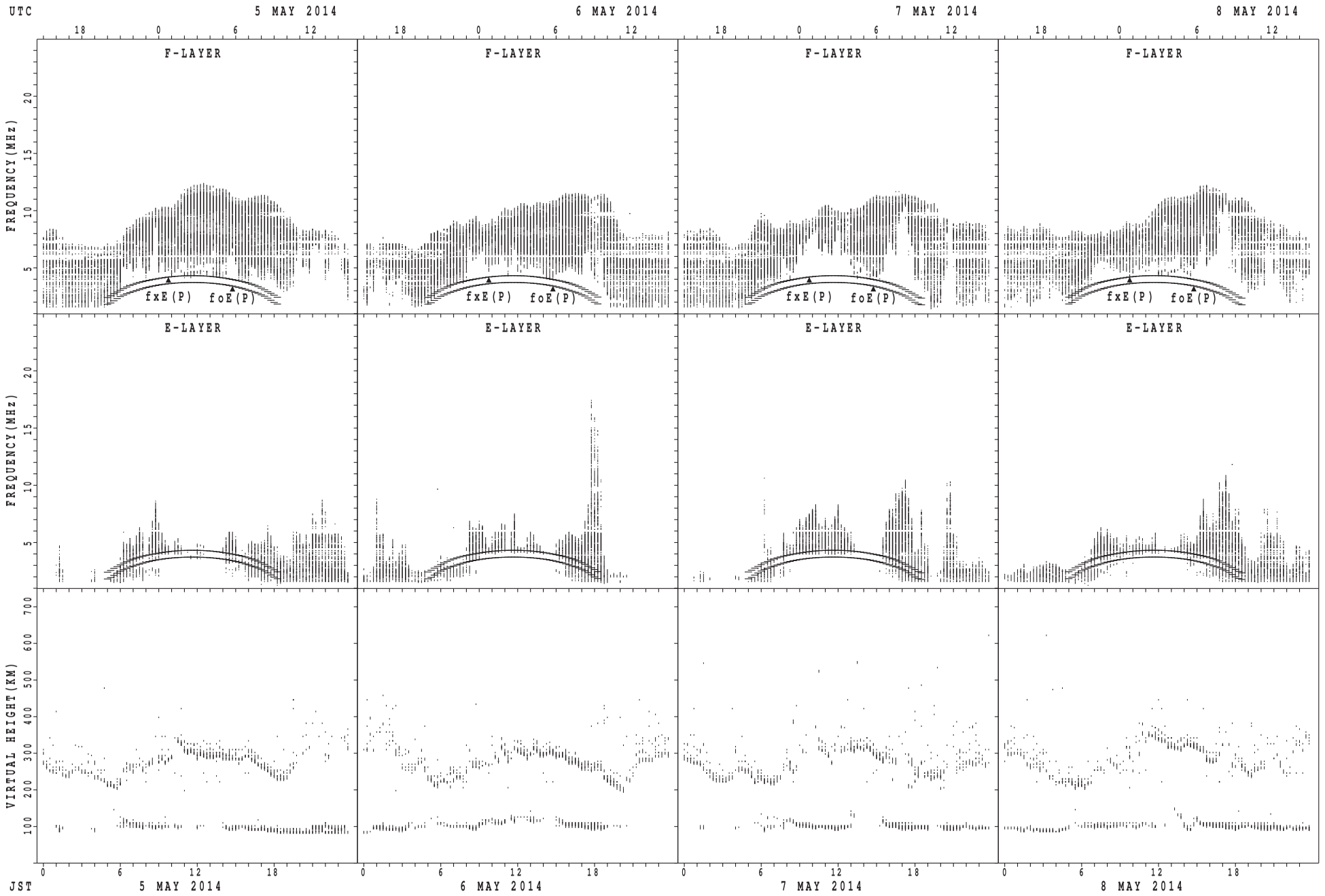
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

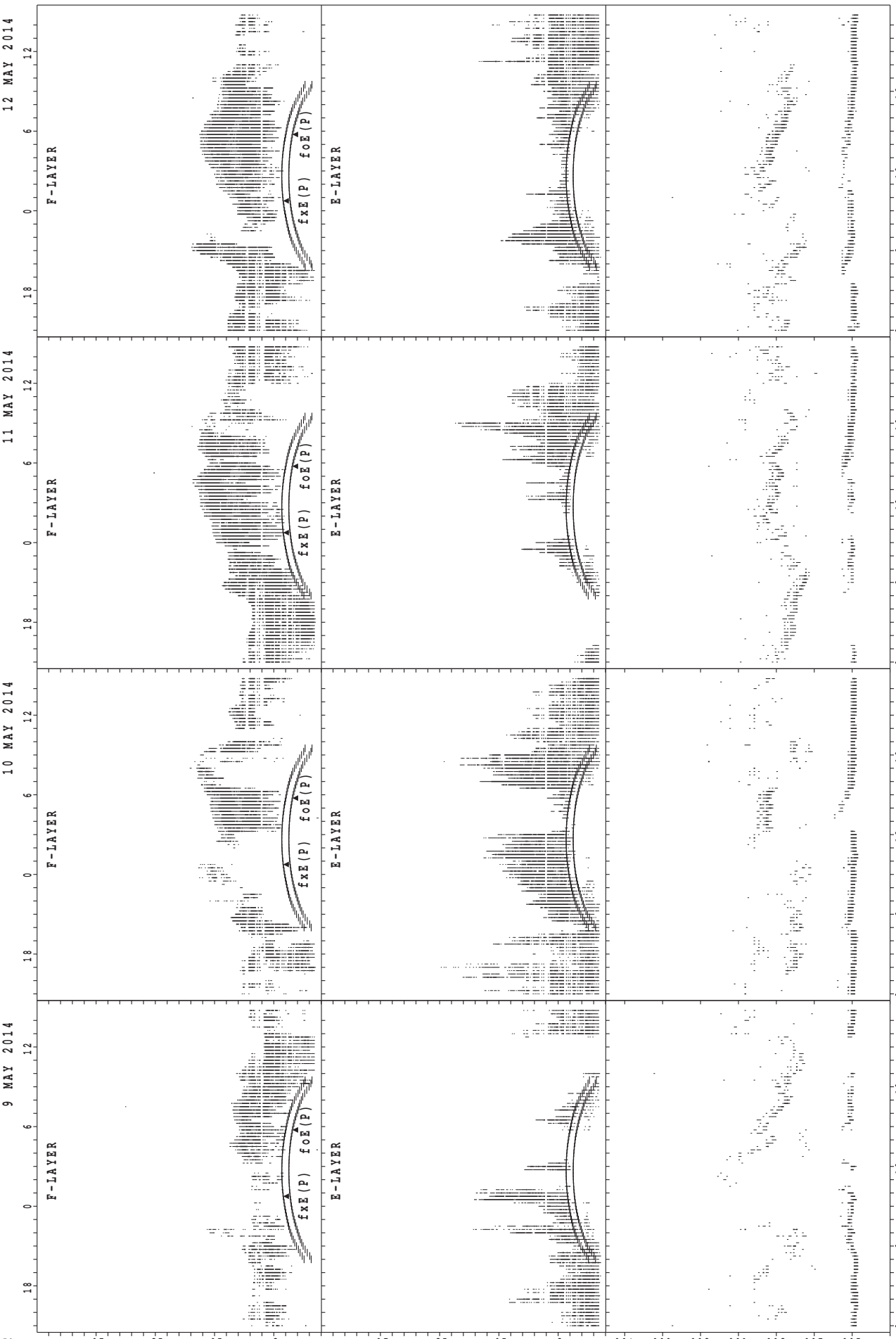


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

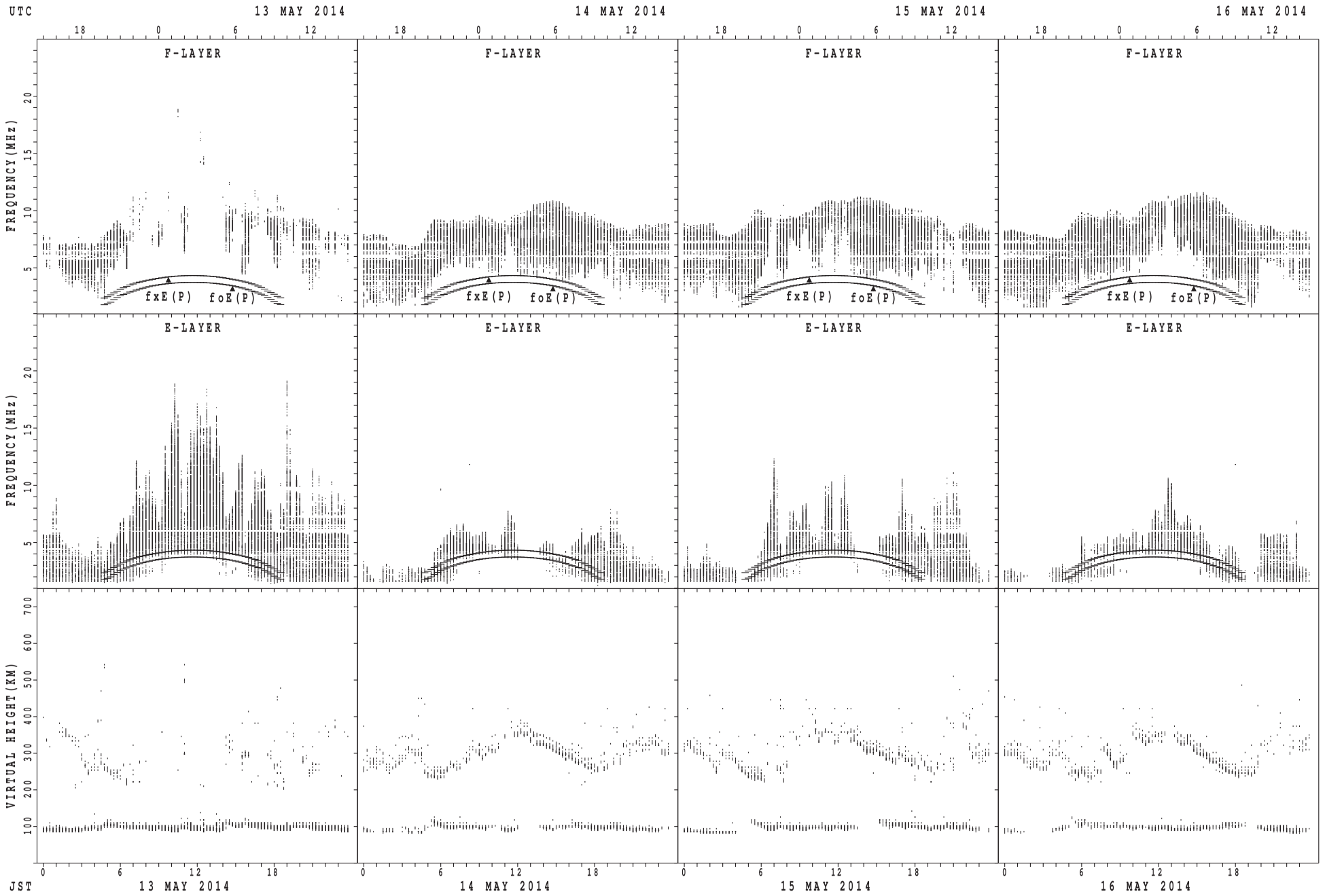
SUMMARY PLOTS AT Kokubunji



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

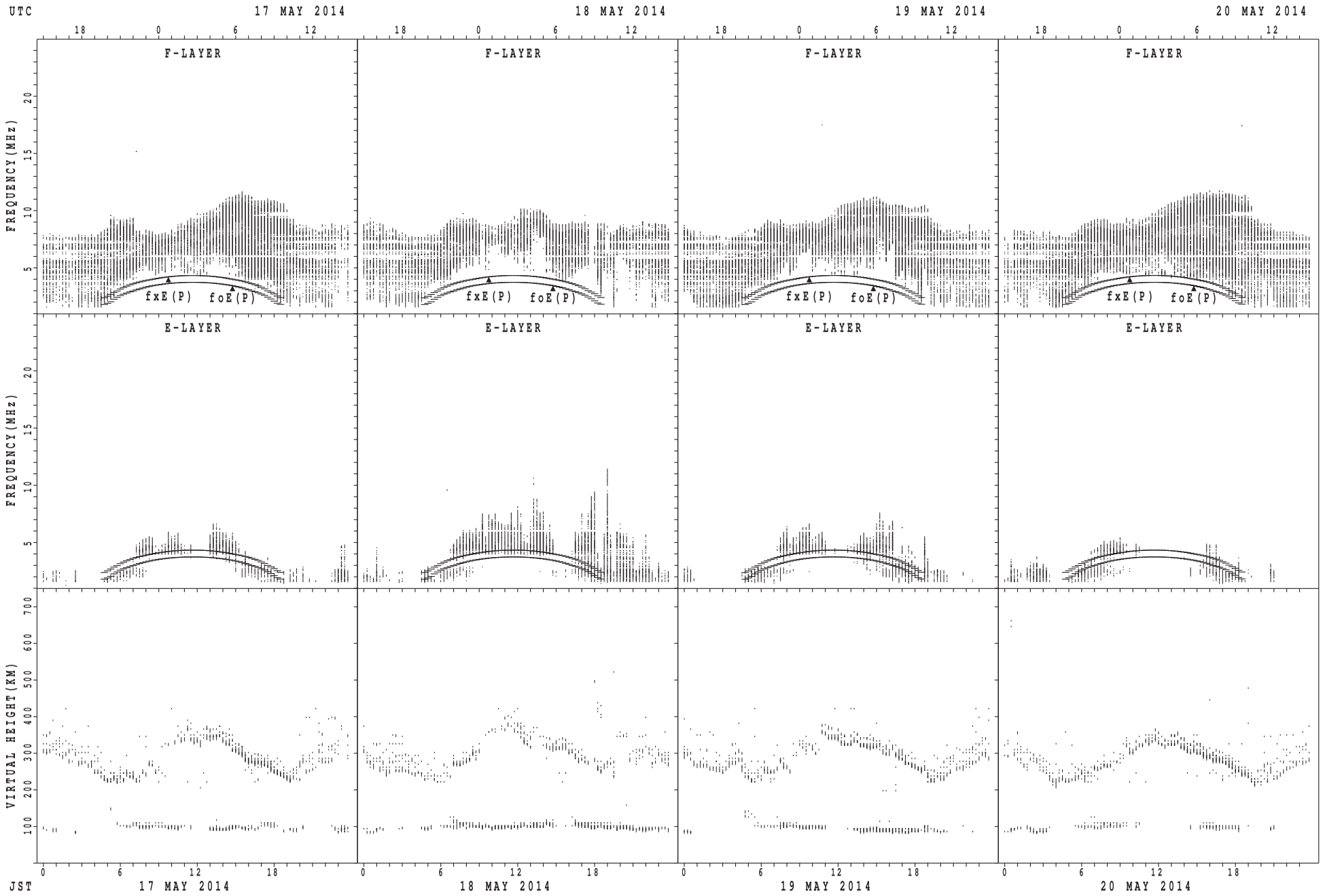

SUMMARY PLOTS AT Kokubunji
UTC
JST
9 MAY 2014
10 MAY 2014
11 MAY 2014
12 MAY 2014
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



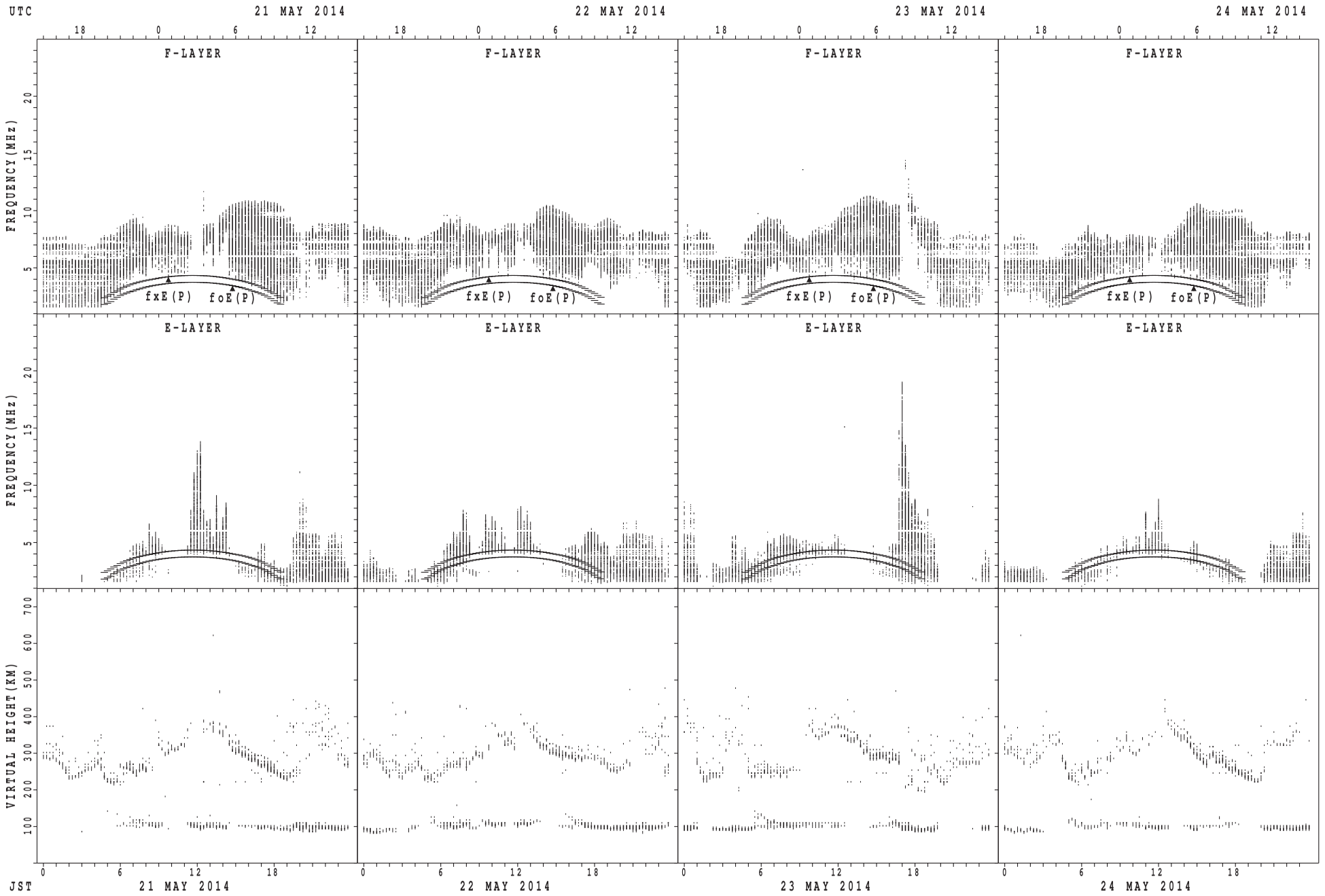
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



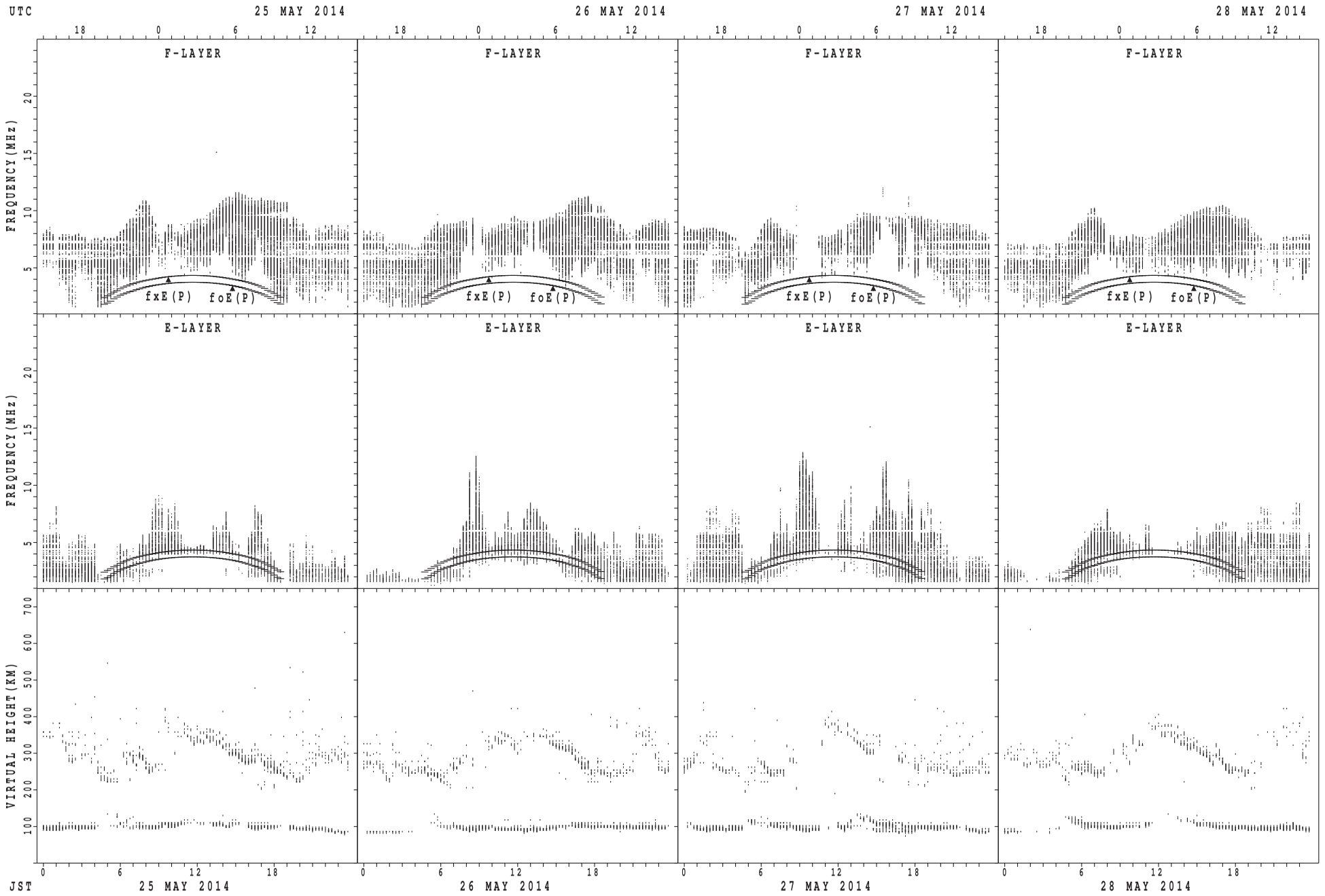
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



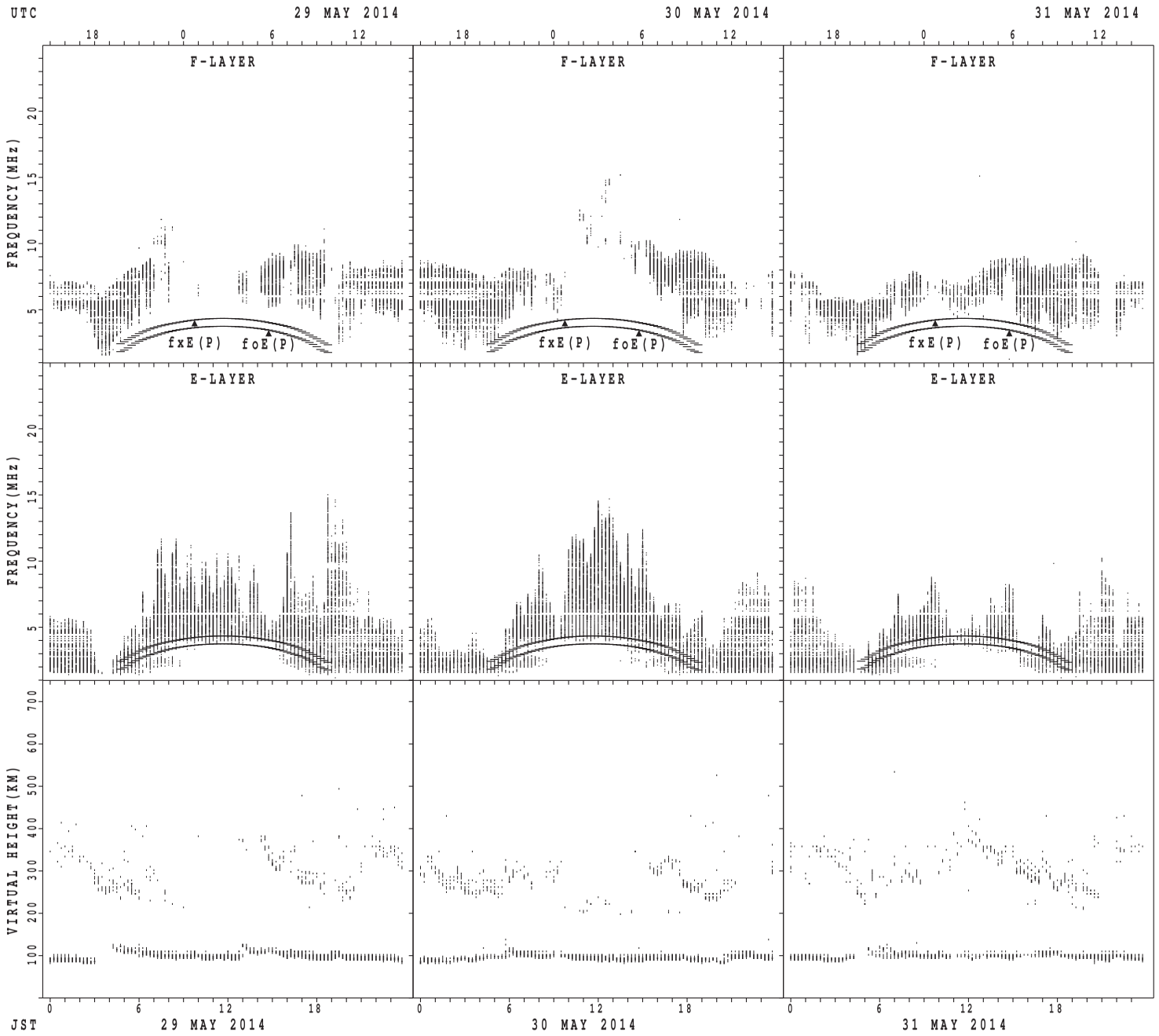
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

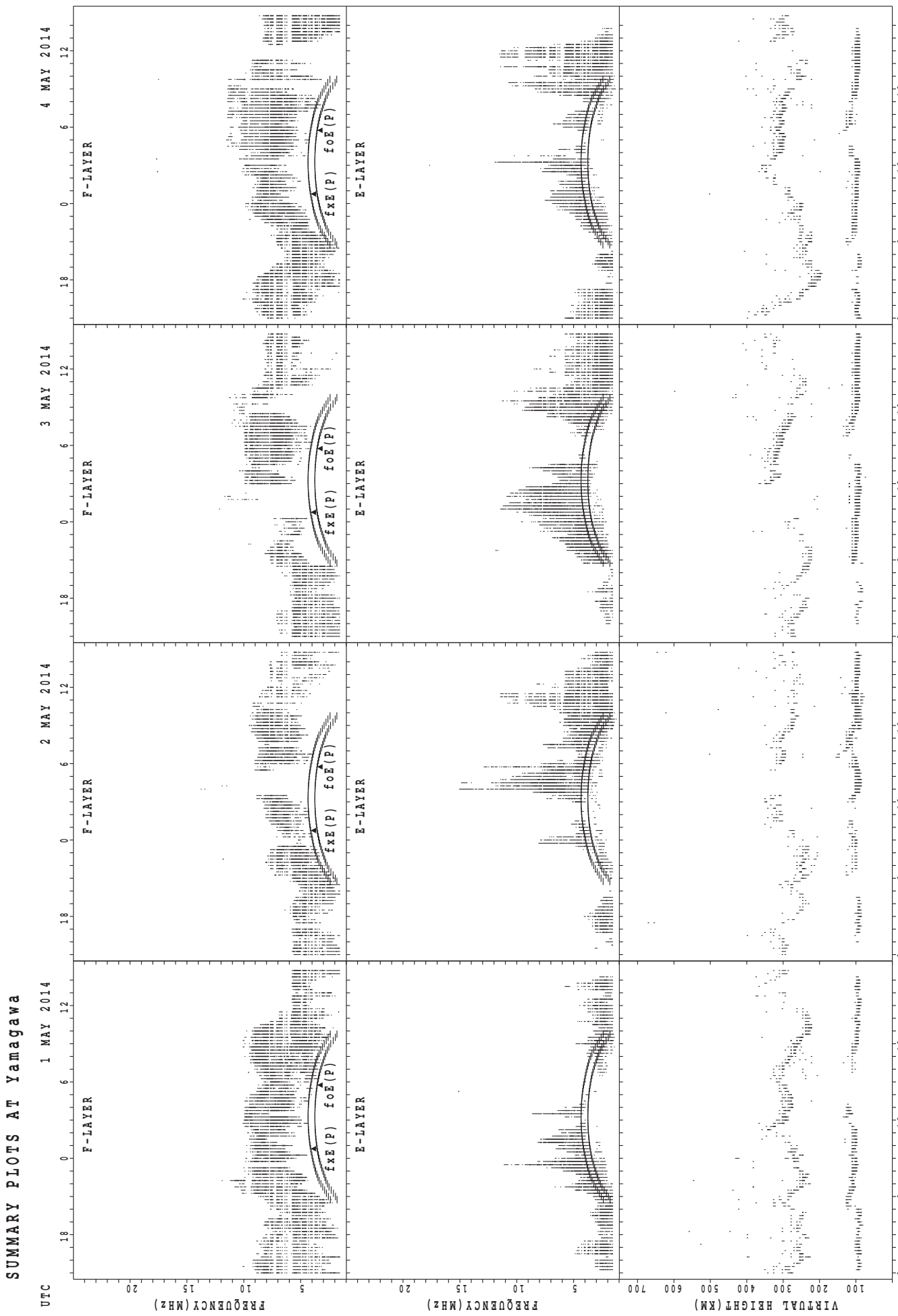


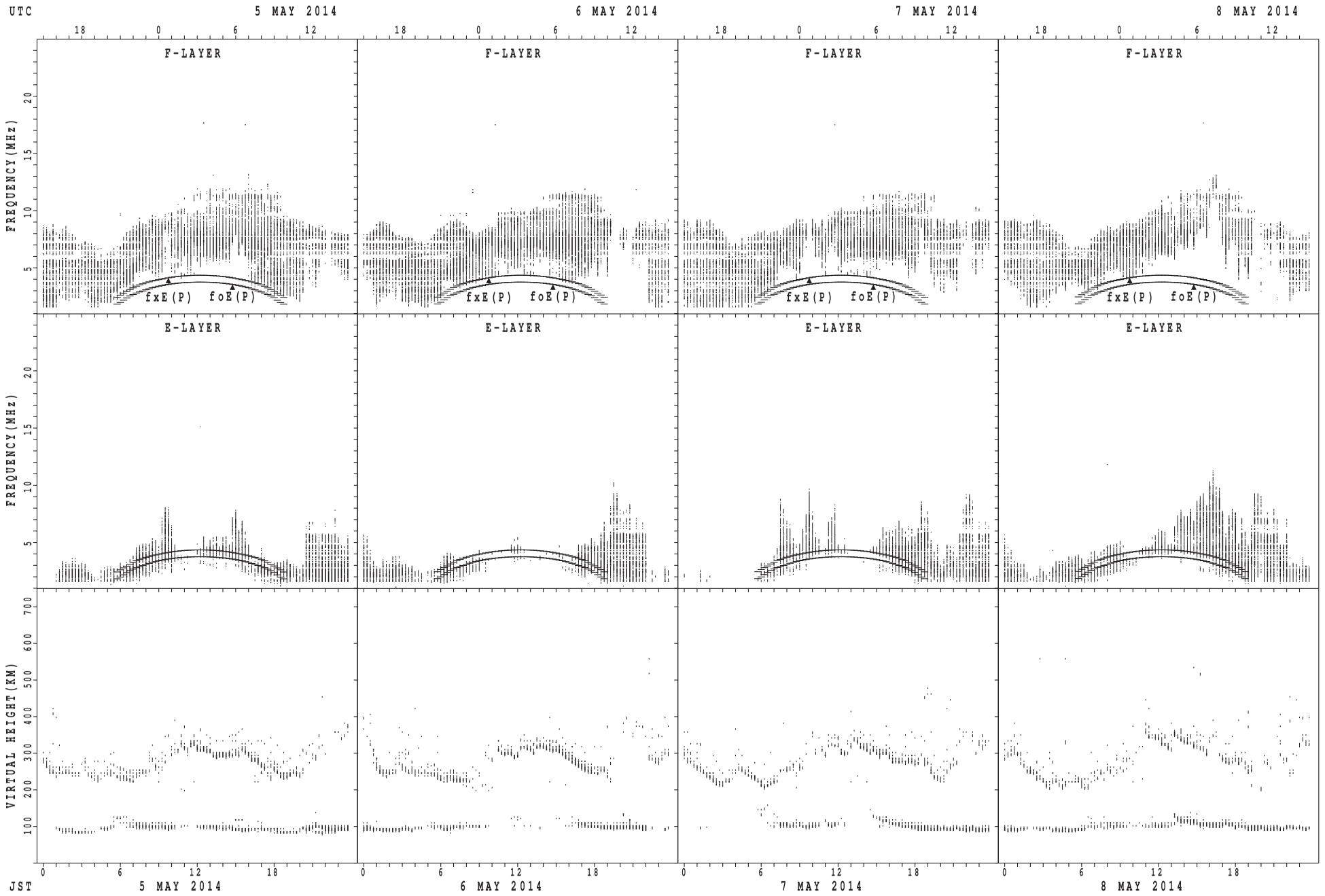
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

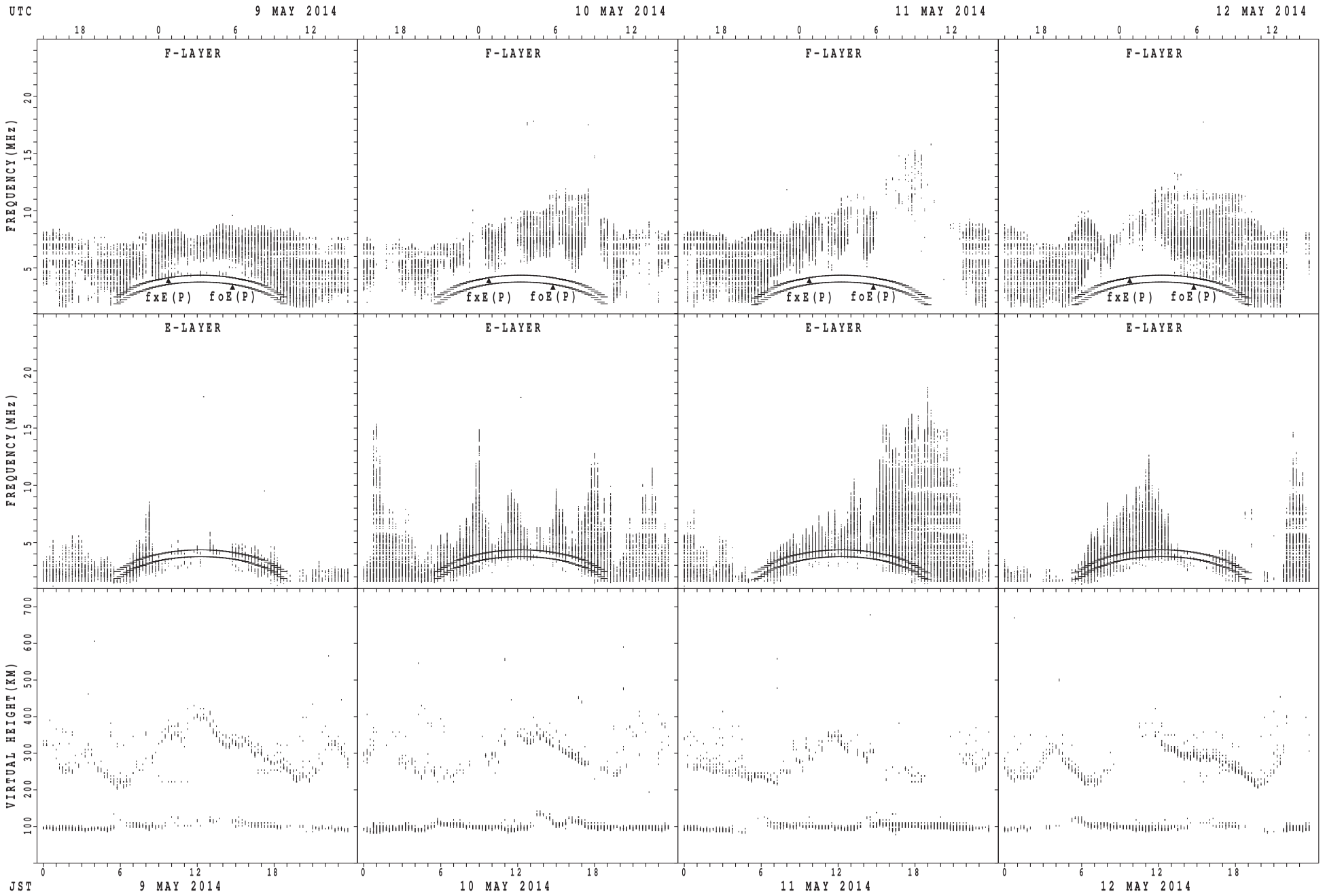


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

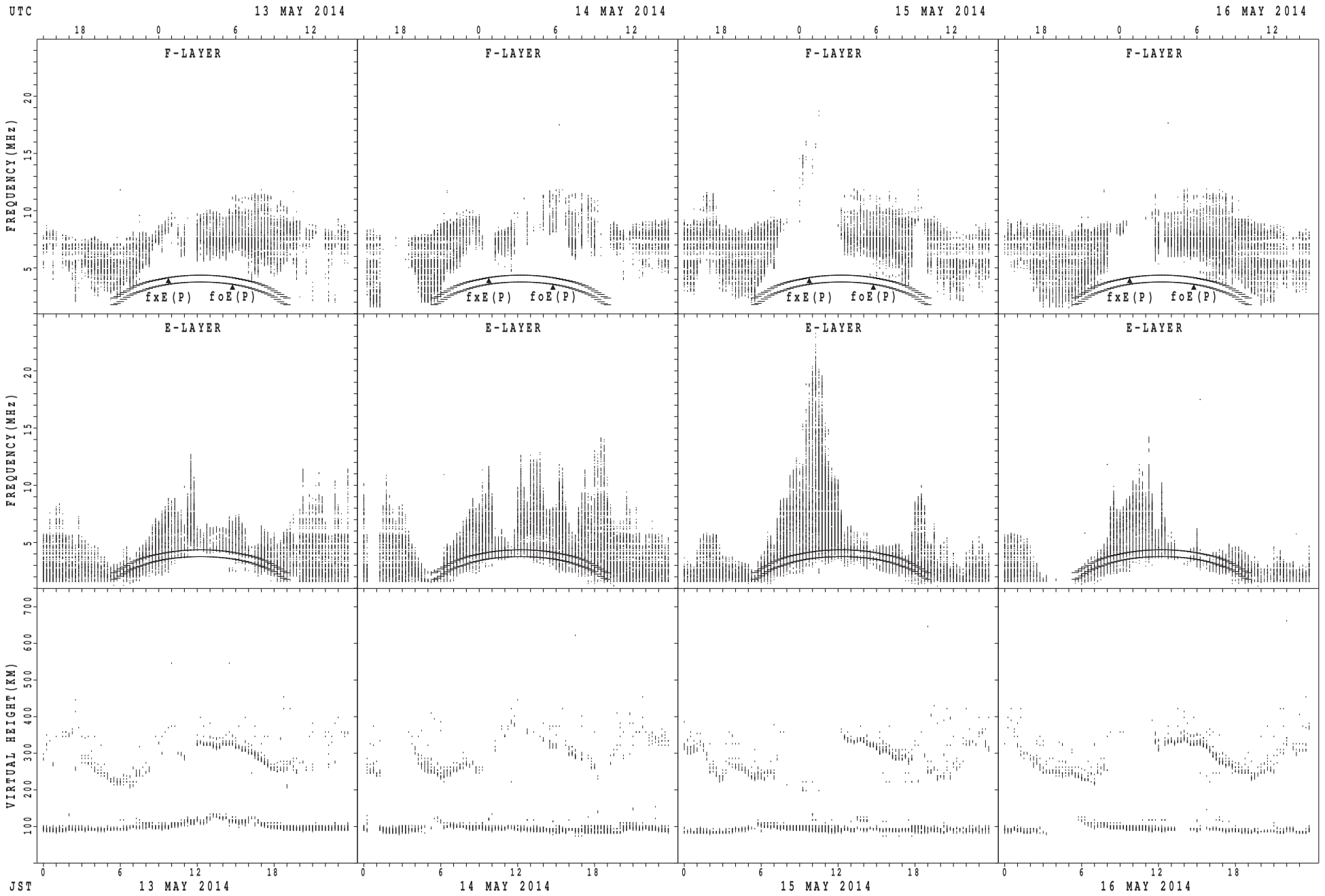

SUMMARY PLOTS AT Yamagawa
UTC
JST
1 MAY 2014
2 MAY 2014
3 MAY 2014
4 MAY 2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



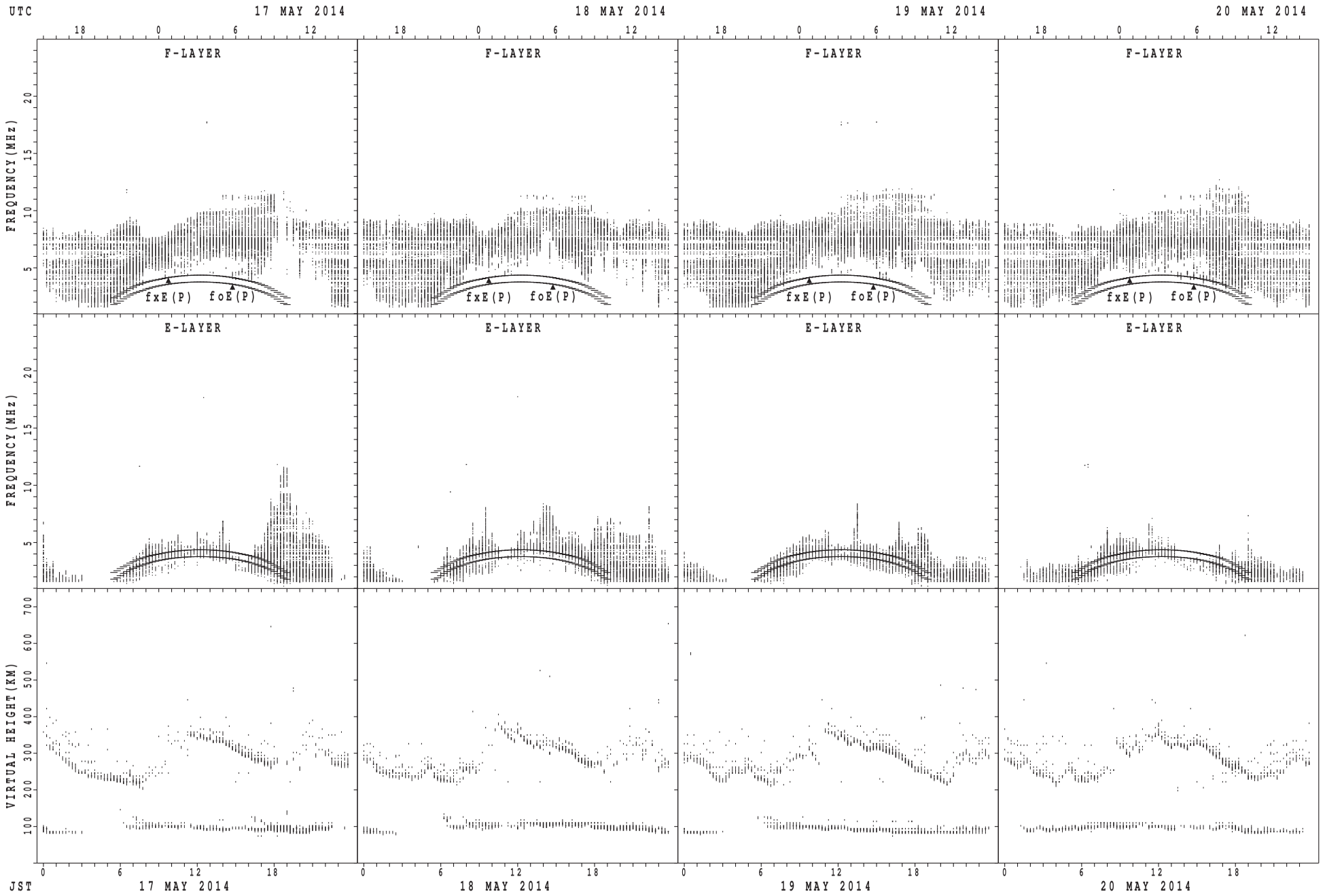
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

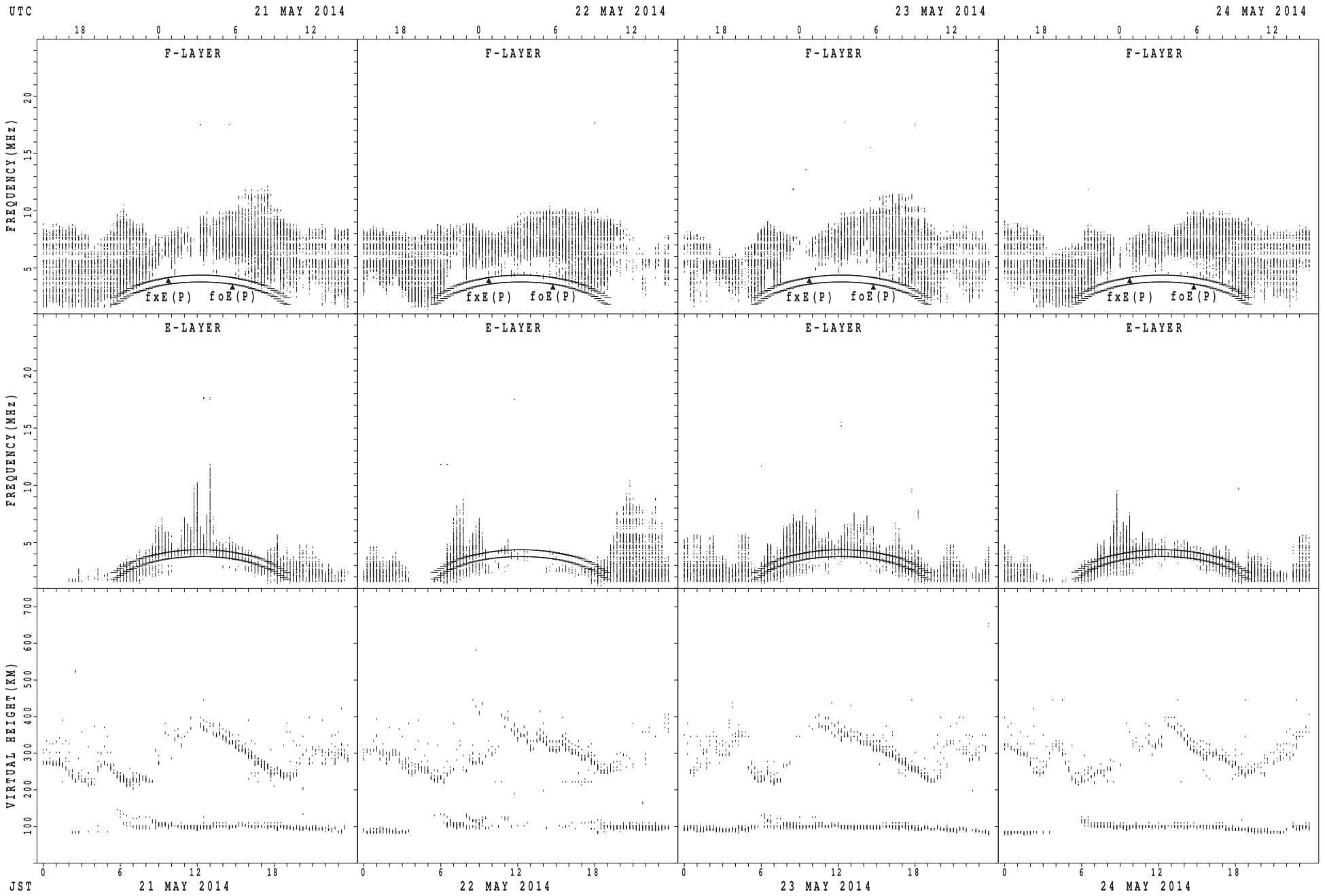
SUMMARY PLOTS AT Yamagawa



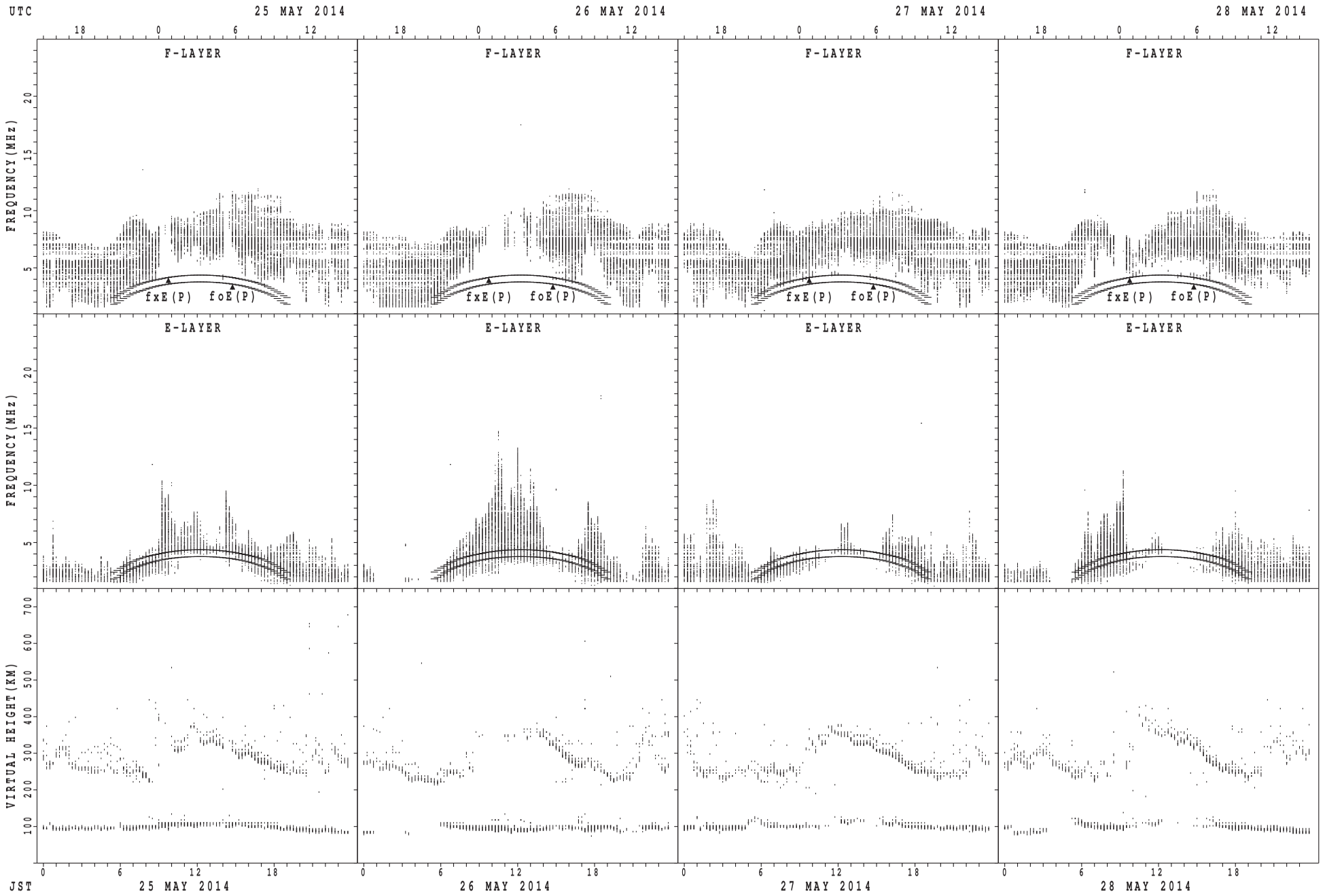
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

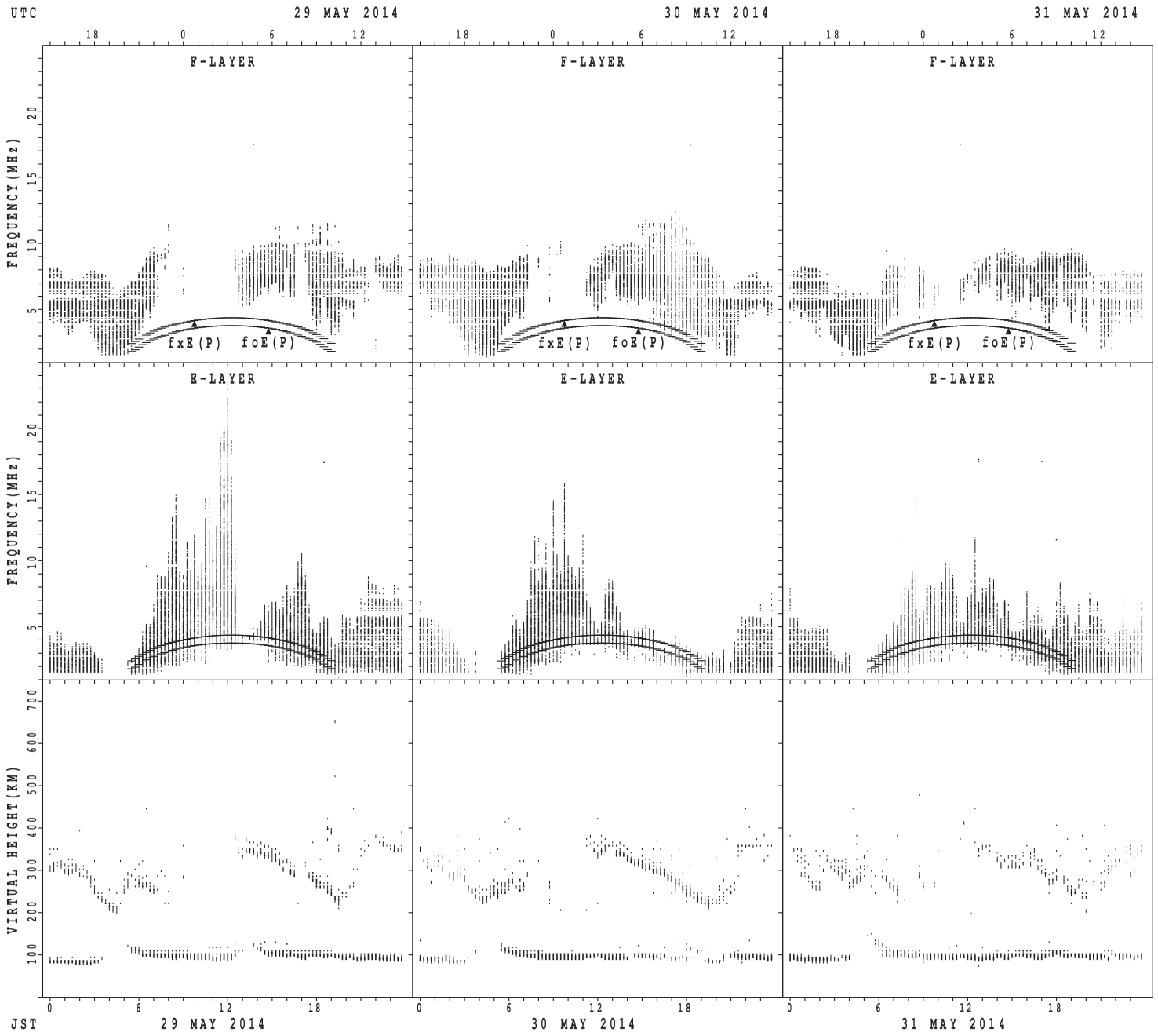

SUMMARY PLOTS AT Yamagawa
UTC
17 MAY 2014
18 MAY 2014
19 MAY 2014
20 MAY 2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

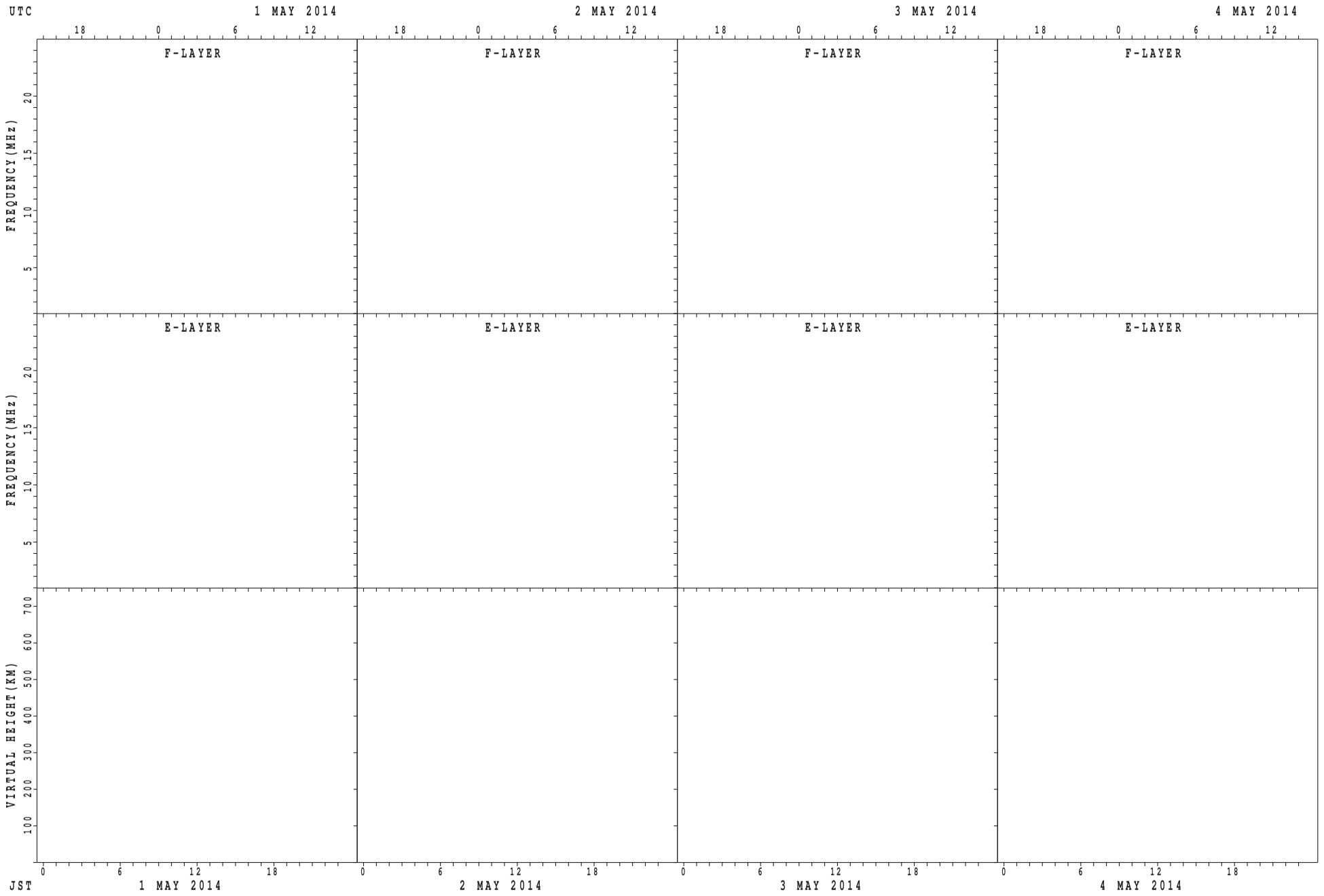


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

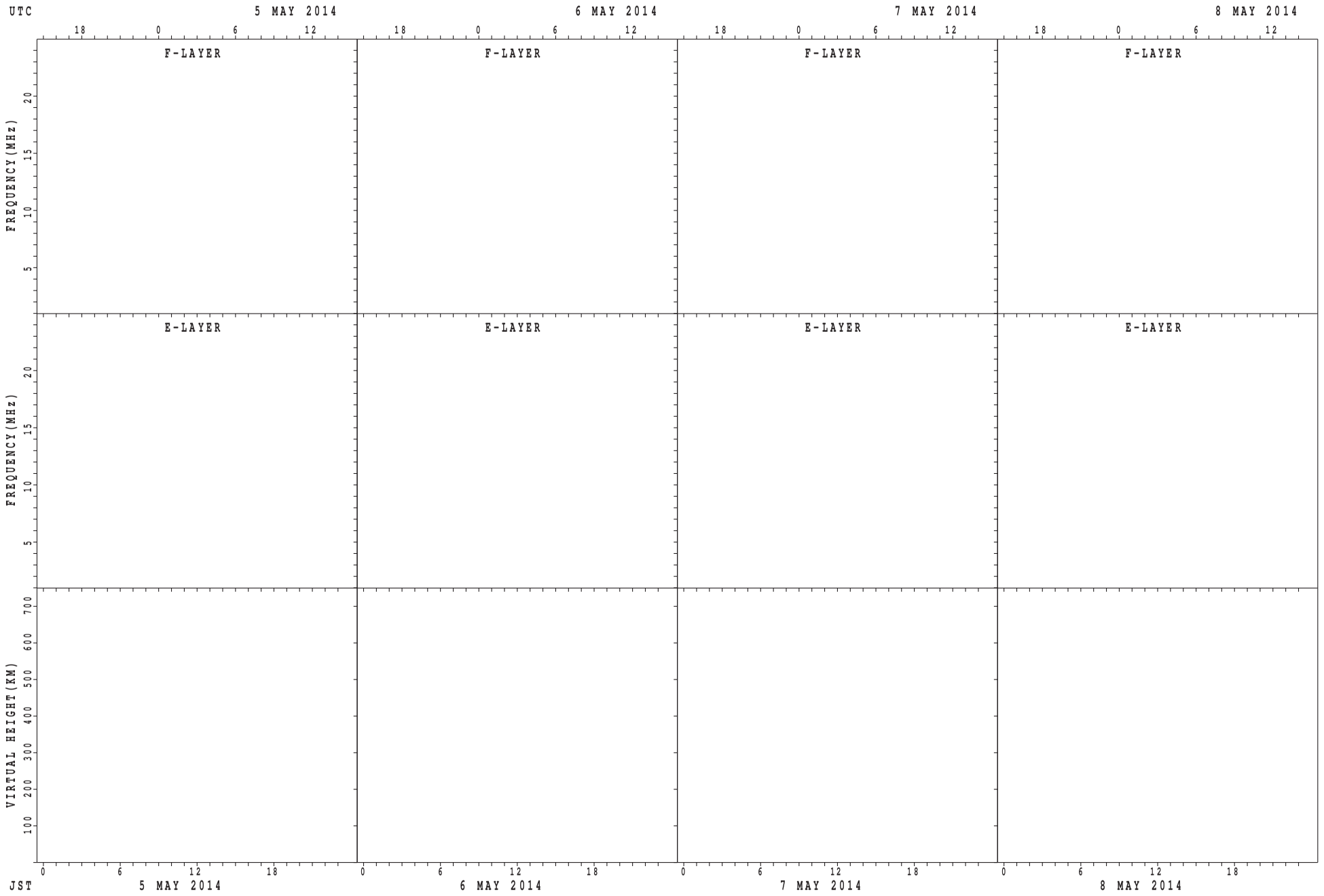

SUMMARY PLOTS AT Yamagawa
UTC
29 MAY 2014
30 MAY 2014
31 MAY 2014
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



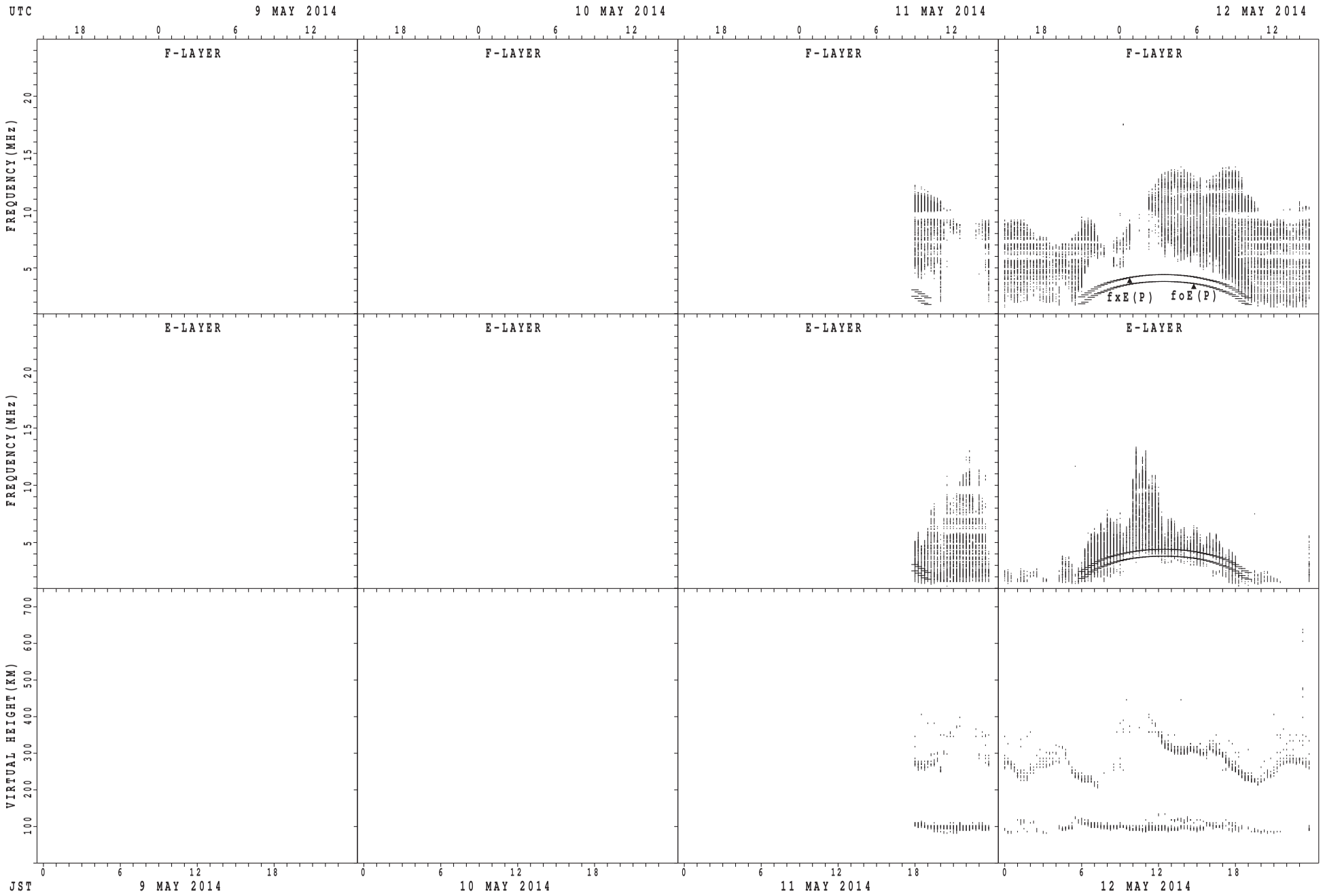
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



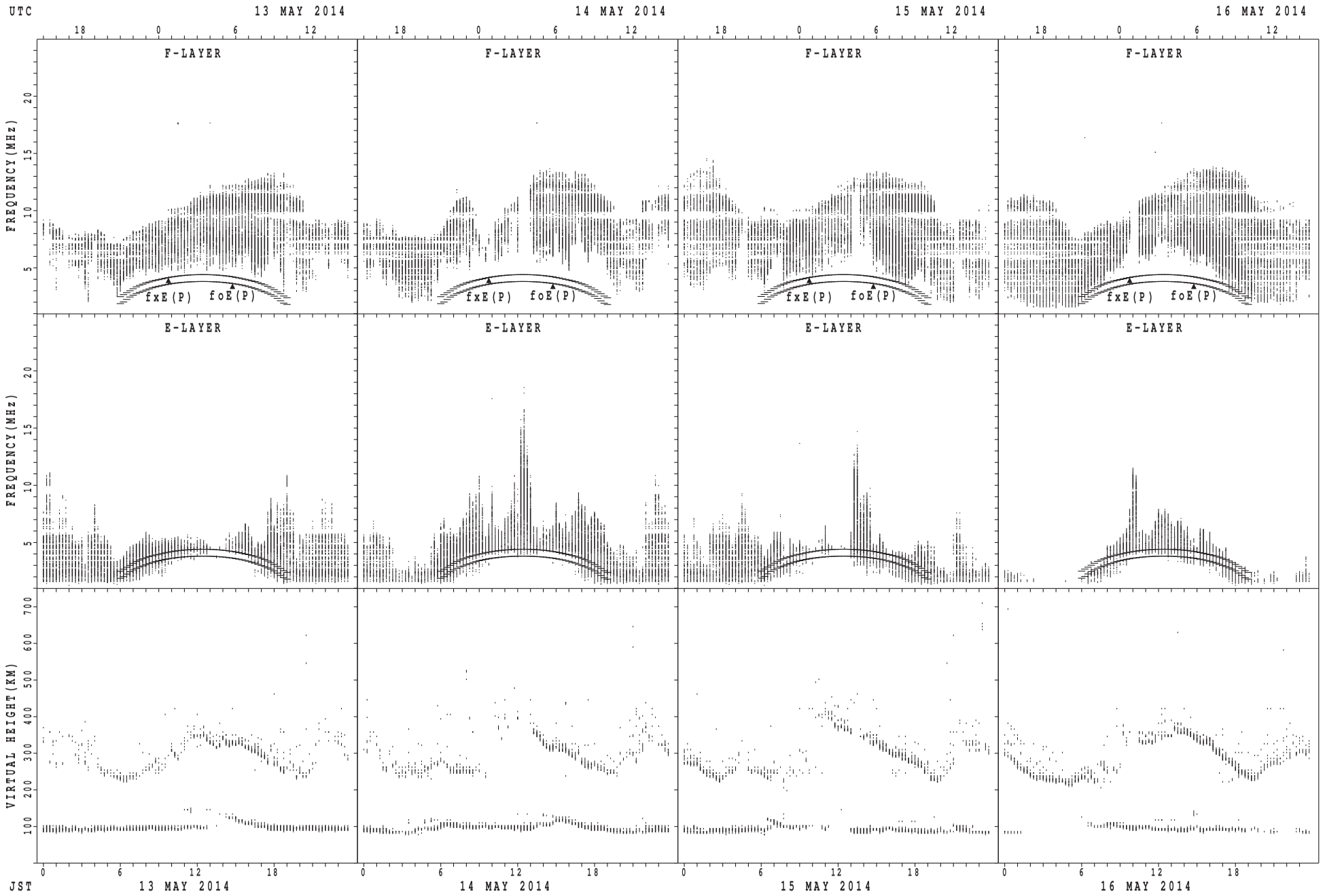
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



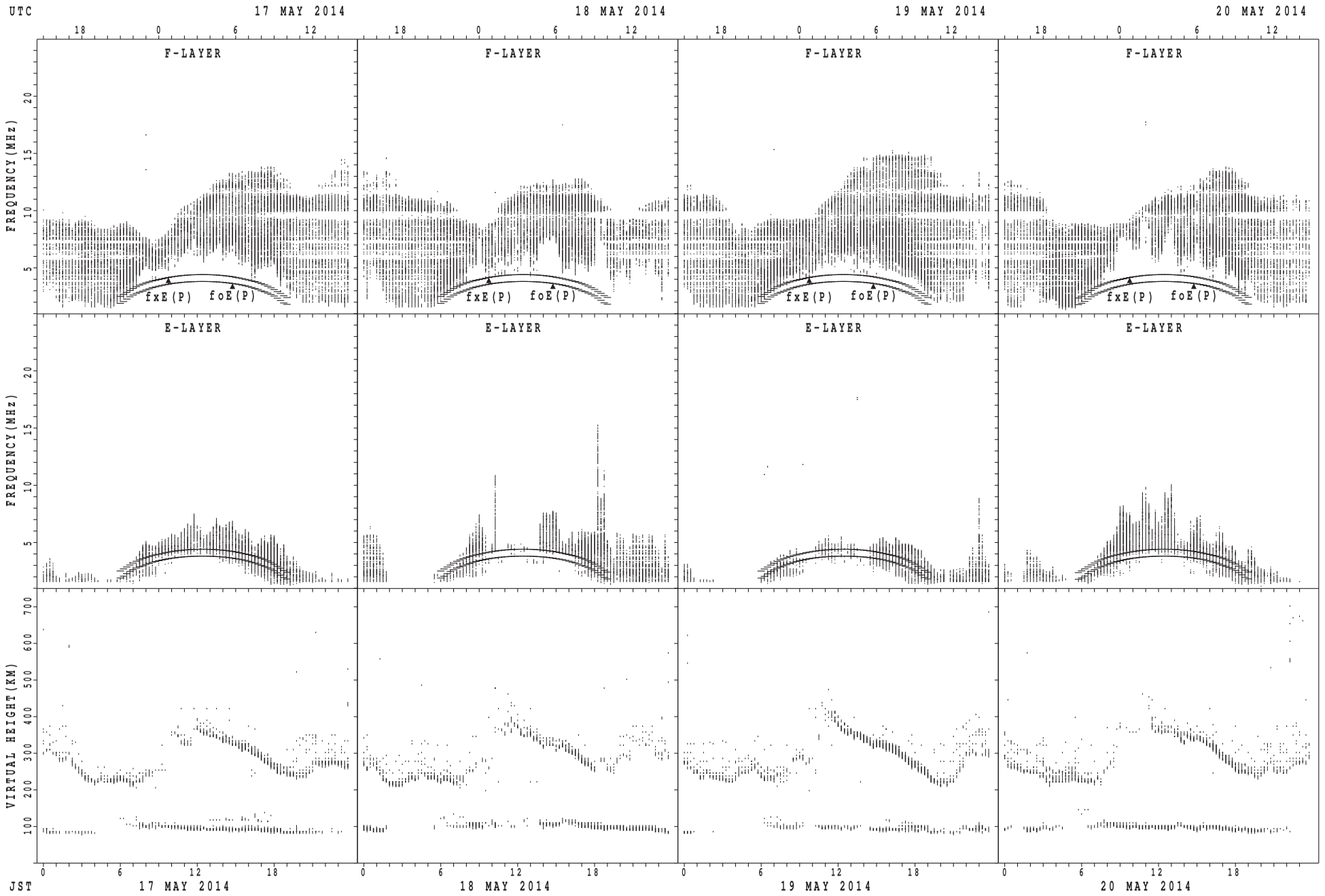
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



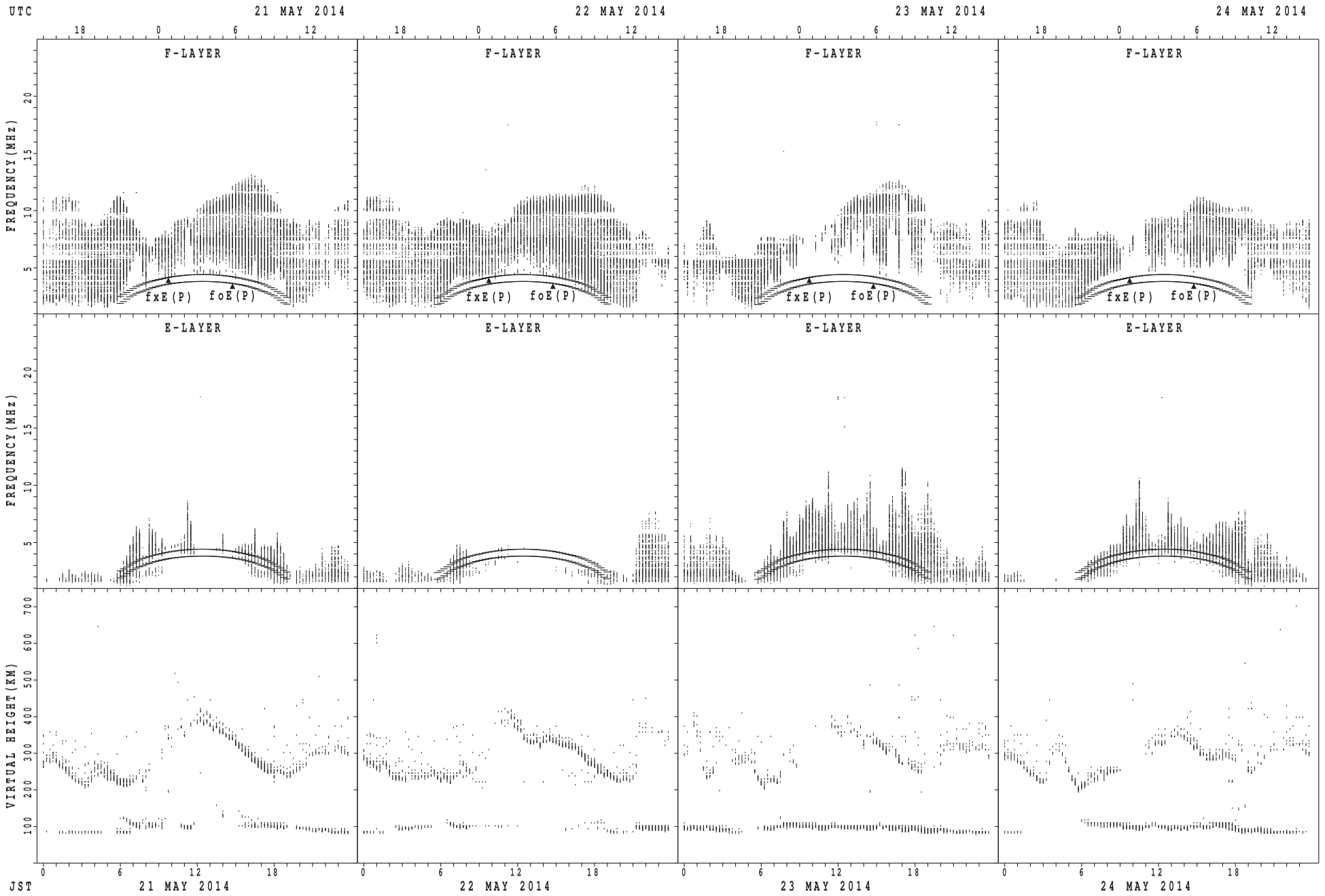
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



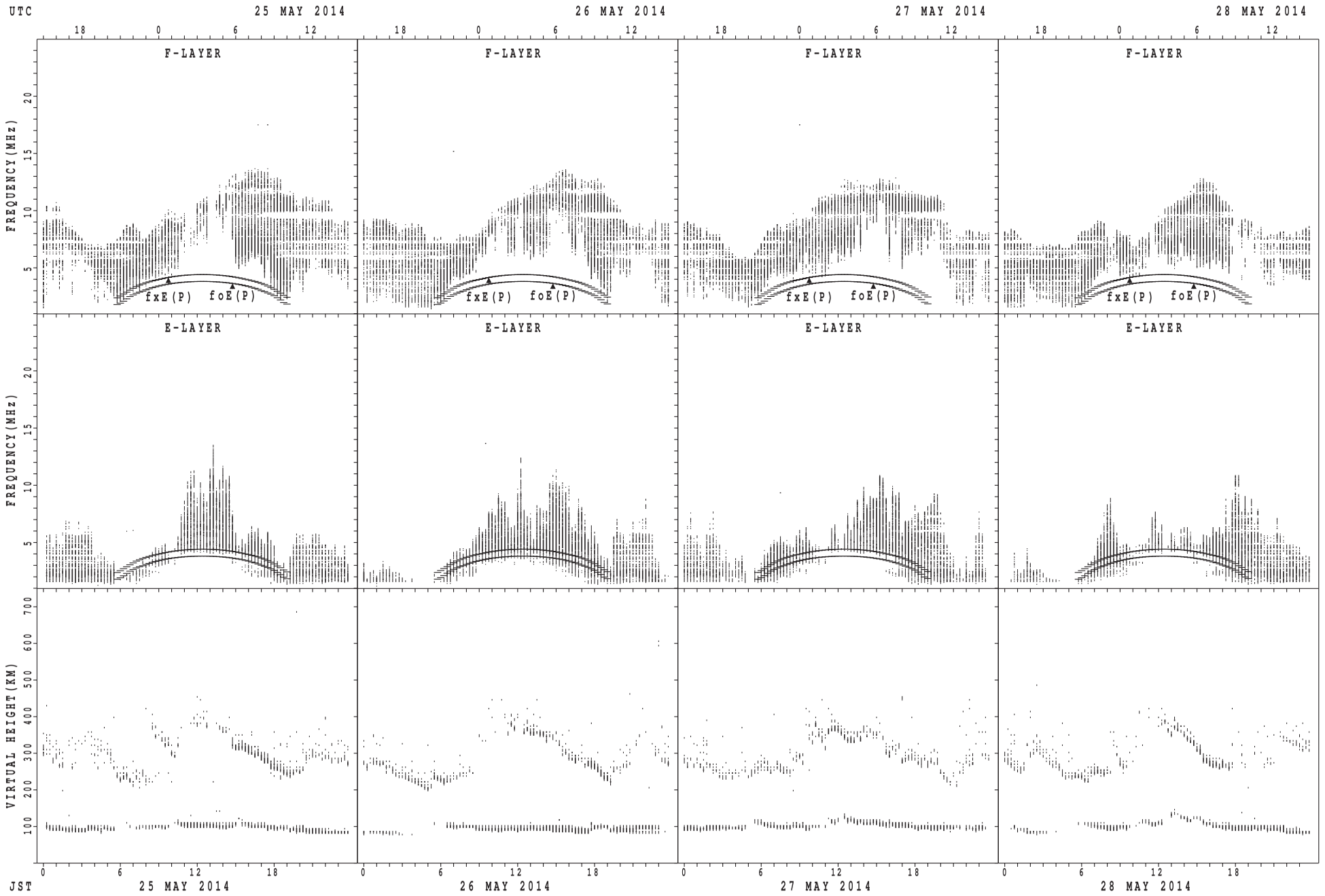
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



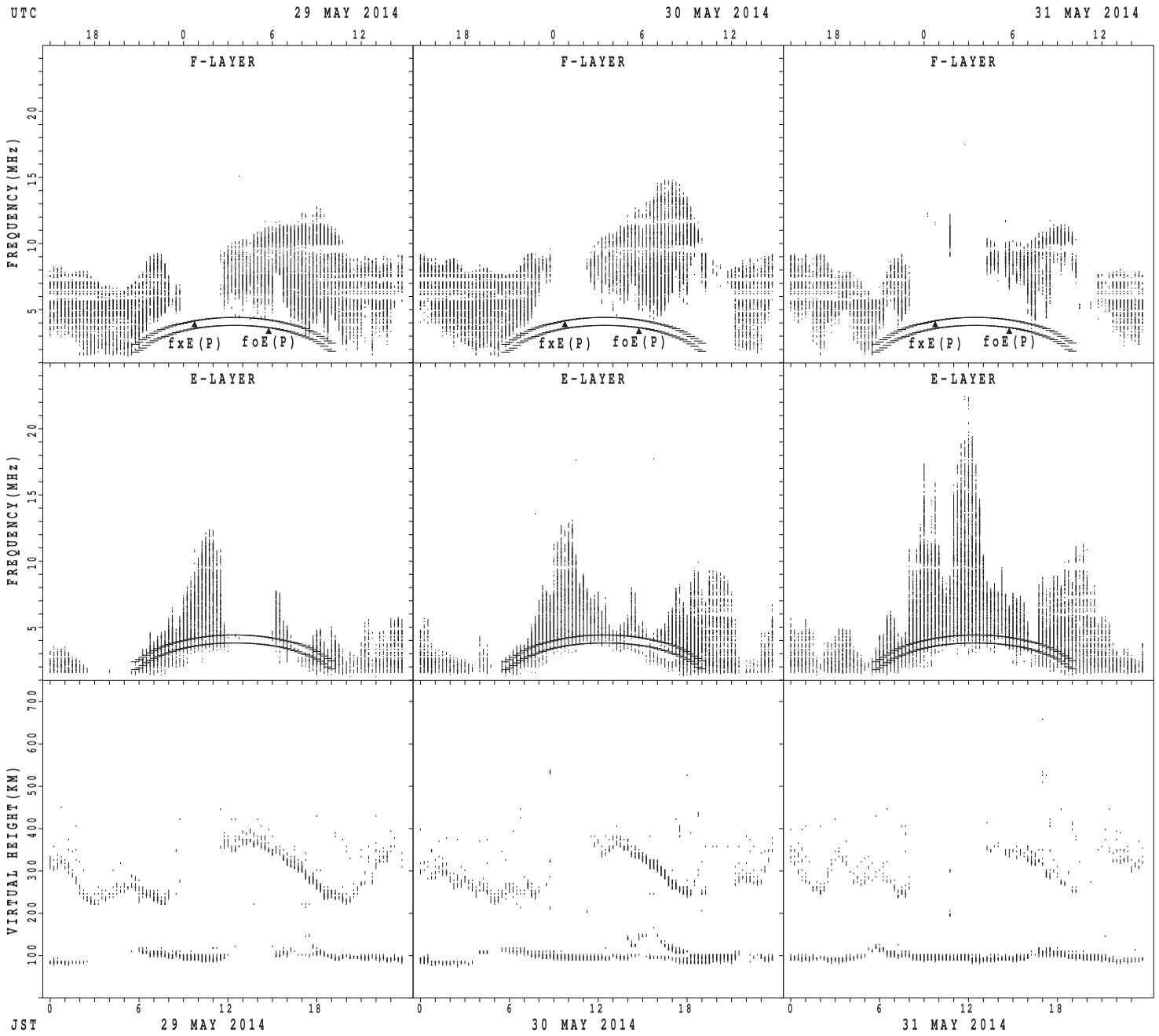
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

MAY 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	1	1	3	1	1	13	21	22									22	20	22	25	13	7	13	4
MED	306	340	332	330	330	278	276	271									292	287	278	272	286	290	298	318
U Q	153	170	346	165	165	288	290	288									302	294	288	287	302	298	310	330
L Q	153	170	296	165	165	271	260	262									278	267	266	260	268	286	276	302

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	18	15	12	11	16	22	22	26	25	19	14	9	12	9	15	20	26	28	26	24	21	20	18
MED	93	95	95	93	97	116	111	107	106	105	103	101	105	100	107	111	111	106	105	102	100	101	99	97
U Q	97	97	97	97	99	126	113	109	111	107	105	103	110	106	111	115	113	111	109	103	104	105	102	99
L Q	91	93	93	89	95	101	107	101	103	101	99	99	96	95	97	103	99	103	103	97	98	97	97	95

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	12	5	5	7	13	27	25									28	29	28	29	13	7	13	14
MED	331	330	322	320	320	274	254	260									286	274	263	256	256	336	334	333
U Q	340	353	333	373	362	302	280	279									294	286	272	273	287	358	359	344
L Q	320	300	299	296	298	252	238	243									277	245	242	246	250	294	312	308

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	18	19	16	13	20	23	28	30	26	19	23	19	22	23	22	26	30	25	26	25	25	25
MED	95	97	95	95	97	111	111	105	103	103	103	99	101	105	105	105	105	103	100	99	101	99	103	97
U Q	99	103	97	97	97	120	115	113	111	105	107	107	105	119	113	113	109	107	103	103	105	104	105	103
L Q	91	91	93	89	93	95	107	101	101	99	99	97	97	97	101	95	103	99	95	96	97	97	97	94

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	18	20	17	13	11	12	20	28	24								8	29	29	29	18	11	18	18
MED	339	322	296	312	294	284	257	256	260								297	278	262	250	266	332	330	331
U Q	350	338	312	330	346	300	271	265	266								302	286	272	259	288	348	364	338
L Q	312	313	272	270	280	275	242	236	245								288	270	253	240	258	312	312	324

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	25	21	16	14	23	29	28	30	27	24	29	27	20	23	26	29	29	30	29	29	31	28
MED	97	93	93	93	94	95	113	107	105	103	103	103	103	99	103	103	105	105	101	97	97	97	97	95
U Q	97	96	97	97	95	99	119	113	108	105	105	106	108	111	119	113	113	110	103	101	101	105	99	98
L Q	91	89	89	89	93	91	101	103	103	99	97	95	95	95	95	97	99	102	99	97	92	93	93	91

MONTHLY MEDIANS OF h′F AND h′Es

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

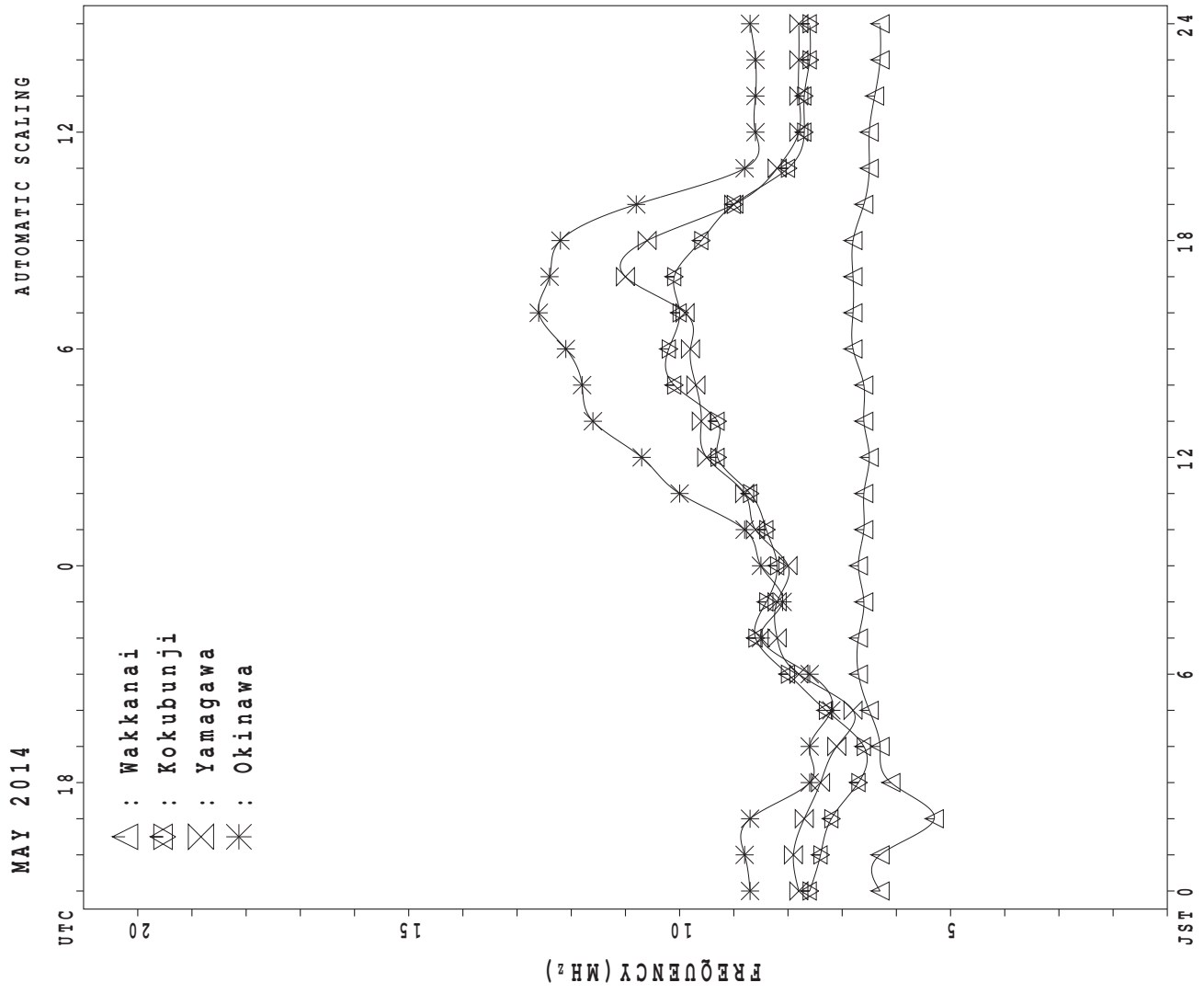
STATION Okinawa LAT. 26°41.0′N LON. 128°09.0′E

h′F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	19	19	15	12	9	12	18	16									20	20	20	16	11	15	14
MED	314	312	282	266	281	282	246	252	249									286	261	252	272	320	328	329
U Q	341	332	314	314	301	300	259	266	263									292	267	260	299	346	358	358
L Q	296	282	262	262	264	255	236	234	242									264	248	239	268	296	320	308

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	17	14	14	12	11	7	9	14	17	19	14	17	15	16	16	18	18	18	20	17	19	20	16	18
MED	93	93	93	94	97	97	111	105	103	103	98	97	99	100	103	104	106	103	99	97	97	95	95	95
U Q	97	97	97	95	105	103	114	107	107	105	101	103	103	109	119	119	111	107	103	101	101	98	101	101
L Q	87	87	89	90	91	95	95	103	99	95	95	95	95	95	96	95	101	95	95	90	91	89	89	89


MONTHLY MEDIANS PLOT OF foF2
MAY 2014
AUTOMATIC SCALING
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
UTC
0
6
12
18
JST 0
6
12
18
24
5
10
15
20
FREQUENCY (MHz)

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 78	X 72	X 67	X 60	X 60															X 65	X 66	X 66	X 63	X 59
2	X 59	X 57	X 57	X 58																X 76	X 81	X 81	X 79	X 72
3	X 68	X 67	X 67	66	X 65															O X 84	X 91	X 83	X 77	X 72
4	X 71	X 69	X 69	X 69	X 68															X 100	X 83	X 82	X 79	X 75
5	X 75	X 75	X 68	X 69																O X 83	X 82	X 81	X 78	X 76
6	X 74	X 72	X 69	X 65																X 96	X 92	X 80	X 80	X 77
7	X 77	X 76	X 76	X 72																	O X 84	X 84	X 83	X 78
8	X 73	X 73	X 72	X 71																X 88	X 84	X 78	X 79	X 71
9	X 69	X 69	X 59	X 58																X 73	X 72	X 72	O X 73	X 67
10	X 67	X 65	64	X 63	X 63															X 90	O X 83	X 86	X 78	X 75
11	X 72	X 71	X 70	X 70																X 88	X 89	X 90	X 79	X 92
12	X 82	X 81	X 78	X 72	X 78															X 90	O X 84	X 78	X 73	X 74
13	X 71	X 68	X 68	X 70																X 90	X 92	X 90	X 85	X 82
14	X 82	X 75	X 72	X 72																X 83	X 85	X 83	X 79	X 79
15	X 79	X 77	X 77	X 74																X 92	X 92	X 92	O X 81	X 76
16	X 74	X 73	X 75	X 73																X 82	X 80	X 80	X 81	X 81
17	X 77	X 77	X 77	X 76																	X 89	X 86	X 83	X 81
18	X 80	X 75	X 73	X 73												C					X 81	X 81	X 80	X 80
19	X 77	X 76	X 74	X 71																	X 85	X 84	O X 81	X 82
20	X 79	X 77	X 77	X 79																	O X 84	X 79	X 76	X 73
21	X 74	X 73	X 73	X 71																	X 86	X 85	X 79	X 76
22	X 74	X 74	X 74	X 73																	A	X 82	X 82	80
23	X 78	X 75	X 72	X 67																	X 83	X 78	X 77	X 78
24	X 76	X 74	X 70	X 65																	X 82	X 83	X 81	X 84
25	X 82	X 79	X 78	X 78																	O X 85	X 83	X 83	X 84
26	X 82	X 78	X 75	X 72																	O X 93	X 87	X 85	X 79
27	X 78	X 77	X 77	X 75																	X 85	X 84	X 84	X 77
28	74	X 69	X 74	X 69																	O X 84	X 84	X 82	X 77
29	X 75	70	73	70																	O X 82	X 85	X 75	70
30	X 75	X 72	70	74																	X 82	X 72	X 76	X 69
31	X 66	X 65	X 61	X 56																	X 81	O X 83	O X 84	X 72
	00	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	5															15	30	31	31	31
MED	X 75	X 73	X 72	X 71	X 65															X 88	X 84	X 83	X 79	X 77
U Q	X 78	X 76	X 75	X 73	X 73															X 90	X 86	X 85	X 82	X 80
L Q	X 72	X 69	X 68	X 66	X 62															X 82	X 82	X 80	X 77	X 72

MAY 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

MAY 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						U L 312	380	L 412	432	U A 412	A	A	A	R	456	R 440	440	L	A					
2						L	384	416	448	464	476	492	504	R 504	R 504	U L 504	U L 448	L						
3							L	L	U L 464	L 468	U L 480	U L 508	L 508	L 512	L 512	L 496	L	L	L					
4							L	L	L	L 488	U L 508	D 552	L 532	L 528	L 528	U L 504	L	L	L					
5							L	A	A	L 524	L 504	A	L	U L 532	L 524	L	L	L	L					
6						L		L	L	L	L	U L 528	L 552	U L 544	L	L 512	L							
7							L	L	D 480	A	A	L	A	536	L 500	A	A	L	L					
8							L	L	L	U L 524	L	R 556	U R 532	U L 532	532	L	A	A	A					
9						U L 380	A	A	A	A	A	U R 448	U R 472	Y 476	A	A	U L 472	A	A					
10							A	A	A	A	A	A	A	A	L 520	L 520	L	A	A					
11								L	L	L	L	L 584	L	L 528	L	L 544	L	A						
12						L	L	A	A	A	L	A	544	A	U A 512	A	A	A	A					
13						L	L	L	U L 520	A	L 564	U L 564	L 564	L 564	552	492	A	A	A					
14							L	L	U L 496	L 516	U R 528	L 544	L 544	L 544	544	U L 520	L 488	L	L					
15						L	L	L	L	L 544	Y 560	540	Y 540	U L 548	L 548	L 548	L	A	A					
16						L	L	L	U L 476	L 548	A	548	L	512	U L 548	L 528	U L 472	L						
17							L	L	L 480	L	504	L 532	540	540	540	L 520	U L 492	U L 448	L					
18							L	L	A	476	512	U L 524	524	524	508	C	U L 460	A	A					
19						L	L	L	L	A	A	L 524	536	532	524	520	L 488	L	L					
20								L	L 472	500	L 516	520	500	504	U L 512	512	L	L	L					
21							L	L 472	U L 484	L 492	L 548	L	U L 540	496	A	496	L	L 444						
22								U L 468	L	A	500	500	L	A	U R 512	484	A	A	L					
23								U L 476	U L 480	A	U L 520	R 504	512	U R 512	R 512	L 484	A	U L 428	L					
24					U L 296	L	L	L 444	A	L 488	A	U A 500	L 512	R 508	U L 500	500	L 464	L	L					
25						L		452	L 480	A	U L 492	A	492	A	A	L 476	A	A	A					
26						L	U L 428	A	L 472	A	L 492	L 504	A	A	L 496	496	L 476	U L 428						
27							L	L	468	U L 504	L 504	504	504	A	504	U A 476	A	A	A					
28							L	U L 460	464	472	L	L 504	504	504	504	492	U A 420	A						
29							A	A	U A 424	A	A	A	484	484	A	A	A	A	A	A				
30						L	L	A	A	A	A	A	A	A	A	A	A	A	A					
31					U L 284	340	L 404		456	R 456	U A 476	R	480	488	480	U L 476	U A 444	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	3	4	9	16	16	17	22	22	22	24	23	12	4						
MED					U L 290	U L 340	394	L 452	L 474	L 490	L 504	L 522	518	526	512	L 500	U L 468	U L 436						
U Q						U L 380	L 416	U L 470	U L 480	L 520	L 524	544	L 540	L 536	530	L 520	L 482	L 446						
L Q						U L 312	382	420	464	470	U L 492	504	504	504	504	484	U 446	U L 428						

MAY 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						176	244	284	312	336	360	A 372	A 364	364	364	312	R	276	A					
2					B	200	244	284	312	332	U A 344	A	U A 344	A	344	R 316	296	264	U R 176					
3						A 260	308	316	U R 344	U A 352	A	R	R	R	R	312	260	A					
4						204	268	304	320	340	352	364	R	360	R 348	336	308	280	196					
5					B	204	264	304	328	U A 356	A	A	R	U R 368	A	A	A	A 256	A					
6					B	200	272	308	324	344	R 364	368	U R 376	U R 360	U R 328	328	304	276	U A 208					
7					B	212	276	308	344	352	368	372	U A 372	368	364	344	320	280	A	B				
8					A	A 204	268	308	336	352	364	376	R	R	B 368	352	320	276	U A 196					
9					A	U A 200	260	316	U A 336	A	U A 372	R	372	372	R 364	352	324	284	A					
10						228	268	316	340	U A 356	U A 372	A	A	A	R 356	352	328	276	A					
11					B	236	264	324	336	A	356	U R 356	U R 364	A	U R 364	344	332	276	204					
12						204	256	300	328	U A 356	U A 376	A	A	A	376	352	320	280	A					
13					B	224	U A 264	308	332	U A 340	H 368	U R 368	U A 372	U A 388	368	356	332	288	A					
14					B	220	268	312	R 340	360	U R 360	U A 364	R	R 364	U A 348	340	320	284	220					
15					A	228	280	312	352	U A 364	U R 380	A	A	A	A	344	332	292	A					
16					B	212	272	328	356	U A 360	A	U A 360	A	A	360	A	A	A 280	224					
17					B	224	276	300	332	A 348	U A 364	A	A	U R 376	R 368	352	316	284	A 208	A				
18					B	208	280	312	332	A	372	U R 352	A	R 344	U A 312	C	320	288	A 232	A				
19					B	200	284	320	356	U A 376	U A 376	U A 376	A	R	348	340	320	276	208	A				
20					B	224	288	308	324	348	U A 364	B	R	R	A	344	308	284	220	B				
21					B	232	272	308	332	352	368	A	A	R	A	340	332	280	212	B				
22					B	228	280	312	336	A	A	A	A	A	R 336	336	304	256	196	A				
23					B	232	280	312	324	352	364	U A 368	A	A	A	352	316	272	216	A				
24					B	216	268	308	332	U A 340	U A 352	A	364	A	U R 360	328	308	276	200	B				
25					B	236	264	296	312	A	A	U A 352	A	R 364	360	348	316	272	A	A				
26					B	220	264	U A 300	A	A	A	A	A	A	R 340	A	A 308	280	A	A				
27					B	236	268	304	336	U A 352	364	U R 376	A	A	A	A	A	A	A	A				
28					B	216	276	316	332	340	352	R 352	364	U A 360	360	348	312	276	228	A				
29					A	220	260	304	A 324	A	U A 324	A	A	R 340	336	328	308	260	A	A				
30					A	228	276	328	U A 344	A	A	A	A	A	A	A	A	A	A	A				
31					B	240	276	316	336	352	A	A	A	A	348	336	U A 300	296	232	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						30	31	31	30	23	24	15	9	13	23	24	26	29	17					
MED						220	268	308	332	352	364	U 368	U 364	R 364	360	344	316	276	208					
U Q						228	276	316	336	U A 356	U A 370	372	U A 372	U 370	364	352	320	284	222					
L Q						204	264	304	324	340	U A 354	U R 356	364	360	344	336	308	274	198					

MAY 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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 14	E B 14	E B 14	J A 17	J A 18	24	28	32	38	43	J A 53	J A 58	J A 63	G	40	33	30	33	69	70	J A 52	J A 53	J A 48	35
2	J A 28	J A 26	J A 16	E B 15	E B 13	G	28	38	38	39	J A 44	37	38	36	G 28	G 27	32	29	28	J A 35	E B 14	J A 17	E B 14	E B 14
3	21	J A 19	E B 15	J A 51	J A 29	J A 27	J A 29	34	35	43	40	37	G 34	G 34	G 37	G 33	33	33	26	J A 27	J A 29	E B 14	E B 14	E B 14
4	J A 16	28	J A 21	J A 25	J A 16	23	G	32	37	38	38	39	G	39	G	36	38	G	28	J A 16	E B 14	E B 14	J A 15	J A 18
5	E B 14	J A 16	E B 14	E B 13	E B 13	23	32	J A 50	J A 83	J A 49	J A 45	56	G 37	42	38	34	J A 38	29	22	45	J A 34	J A 20	E B 14	E B 14
6	E B 15	E B 15	E B 15	E B 15	E B 15	23	30	33	42	45	43	G	G	G	G	37	39	39	26	E B 14	E B 14	E B 14	E B 14	E B 14
7	J A 17	J A 17	J A 18	J A 25	J A 19	G	32	38	39	J A 53	J A 55	46	J A 64	G	44	J A 53	49	32	26	E B 14	J A 18	19	E B 12	E B 12
8	E B 14	E B 14	E B 14	E B 14	J A 17	24	30	34	39	39	39	40	G	G	43	J A 55	J A J A 59	A 48	J A 62	A 34	E B 14	E B 14	J A 29	J A 38
9	J A 45	J A 44	J A 30	J A 30	J A 21	28	J A 53	J A 68	J A 87	J A 93	J A 62	G	45	42	47	48	41	J A 53	J A 50	20	J A 61	J A 59	J A 65	J A 25
10	E B 15	J A 25	J A 41	J A 39	J A 75	28	J A 46	J A 49	J A 66	J A 80	J A 64	J A 73	J A 92	J A 63	39	40	36	J A 67	121	J A 66	J A 29	J A 19	J A 25	J A 31
11	J A 31	J A 22	J A 23	J A 20	J A 17	G 19	G	36	43	46	44	G	41	40	G	J A 58	J A J A 56	A 49	J A 51	A 55	J A 53	70	J A 70	J A 33
12	20	E B 15	J A 28	J A 20	J A 20	29	J A 61	J A 58	J A 64	J A 69	J A 54	J A 66	53	J A 53	J A 60	J A 67	J A J A 85	A 90	J A 44	A 30	J A 59	J A 33	J A 19	J A 19
13	J A 16	J A 21	E B 13	E B 13	E B 13	28	J A 33	40	J A 44	J A 68	J A 49	43	40	40	G	51	J A J A 61	A 59	48	J A 45	40	J A 20	J A 20	J A 15
14	E B 12	E B 12	E B 12	E B 12	E B 12	24	34	J A 55	J A 45	44	39	39	G 37	G 34	38	G 32	G	32	25	J A 22	J A 21	J A 21	J A 21	J A 21
15	J A 23	E B 13	E B 13	E B 13	17	25	31	39	40	44	45	42	43	43	J A 53	37	42	J A 71	47	43	J A 36	J A 33	J A 23	J A 21
16	J A 27	J A 24	J A 21	J A 17	E B 15	24	G 24	41	47	46	J A 51	J A 49	43	38	G 34	J A 45	36	36	J A 42	J A 29	J A 29	E B 16	J A 25	E B 16
17	J A 18	J A 29	J A 25	J A 25	E B 14	G	36	37	40	J A 47	40	40	39	G 34	G 30	G 28	35	35	J A 30	J A 42	J A 26	J A 26	E B 12	J A 17
18	E B 13	J A 21	J A 21	J A 18	E B 13	23	32	43	J A 49	45	G 29	39	39	J A 44	36	C	36	39	J A 41	J A 24	J A 62	J A 16	J A 35	J A 18
19	J A 39	20	J A 17	J A 16	E B 14	25	31	41	41	J A 53	J A 53	J A 49	42	G 34	G	G	G	32	29	21	J A 14	E B 12	J A 15	J A 23
20	J A 23	E B 12	J A 16	E B 12	J A 18	G	G	32	37	42	44	E B 45	40	G 36	40	G 32	G	G 24	G	J A 17	E B 14	19	E B 14	E B 14
21	E B 14	J A 17	J A 16	J A 19	J A 18	G	30	38	43	40	40	44	40	G 33	J A 62	41	G	37	J A 40	J A 39	J A 29	J A 29	J A 23	J A 19
22	J A 15	J A 22	J A 22	20	J A 17	24	36	40	J A 45	J A 62	42	42	42	J A 63	40	J A 47	J A J A 59	A 64	J A 51	A 31	J A 105	J A 88	J A 47	J A 49
23	28	J A 21	E B 15	E B 15	J A 15	G 22	32	36	J A 45	J A 58	48	J A 56	40	J A 48	41	38	J A 46	38	J A 36	40	J A 19	J A 26	J A 25	E B 11
24	J A 17	J A 18	J A 14	J A 13	E B 11	24	33	37	J A 48	J A 46	J A 90	J A 51	39	39	G 33	G	34	33	30	J A 31	J A 27	J A 26	J A 29	J A 56
25	J A 37	J A 19	J A 21	E B 16	E B 16	28	31	36	J A 44	J A 65	J A 55	J A 58	50	60	J A 62	50	J A J A 57	A 69	A 81	55	J A 48	J A 31	J A 22	J A 14
26	J A 24	28	J A 21	E B 12	E B 12	28	35	J A 65	J A 61	J A 61	J A 49	J A 57	J A 71	75	G 34	39	39	J A 39	J A 39	J A 43	J A 32	J A 32	J A 32	J A 22
27	J A 19	J A 14	J A 16	E B 14	16	G	34	40	J A 43	40	40	G	38	J A 64	J A 45	J A 57	J A 55	60	J A 63	60	J A 22	J A 22	E B 12	J A 22
28	J A 19	J A 23	J A 21	20	E B 14	28	37	40	40	39	39	40	G	39	39	46	J A J A 63	A 91	J A 36	A 61	36	J A 51	25	J A 25
29	J A 35	26	27	J A 35	J A J A 28	37	J A 51	J A 67	J A 105	J A 181	J A 59	J A 45	44	J A 60	J A 64	J A 69	J A 63	65	72	J A 65	68	J A 49	J A 83	J A 65
30	J A 26	J A 39	J A 25	J A 28	19	33	J A 71	J A 59	J A 91	J A 93	J A 103	J A 62	J A 65	J A 67	J A 79	J A 67	J A 65	65	J A 93	J A 62	J A 85	J A 67	J A 63	J A 30
31	J A 33	J A 32	J A 27	30	17	31	34	36	42	43	J A 53	40	40	47	41	J A 68	J A J A 57	A 61	J A 50	42	J A 16	J A 17	E B 12	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	J A 19	J A 21	J A 18	J A 17	16	24	32	39	43	46	J A 45	42	40	40	39	40	39	39	J A 41	J A 39	J A 29	J A 22	J A 23	J A 19
U Q	J A 28	J A 26	J A 23	J A 25	J A 18	28	J A 36	J A 49	J A 49	J A 62	J A 54	J A 56	J A 45	J A 53	J A 45	J A 53	J A J A 57	A 64	J A 51	A 55	J A 52	J A 33	J A 32	J A 30
L Q	E B 15	E B 15	E B 15	E B 14	E B 14	G	30	36	40	43	40	39	G 38	G	G	G 33	34	33	28	24	E B 18	17	E B 14	E B 14

MAY 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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 14	E B 14	E B 14	E B 14	16	21	25	G 27	34	41	A A 53	A A 58	A A 63	G	38	32	26	G 22	52	37	36	28	26	22
2	22	20	E B 15	E B 15	E B 13	G	27	33	34	37	41	36	37	35	G 25	G 23	30	27	22	27	E B 14	E B 14	E B 14	E B 14
3	12	E B 12	E B 15	42	22	22	G 25	32	32	40	40	36	U G 33	U G 33	U G 37	U G 32	32	32	26	25	25	E B 14	E B 14	E B 14
4	E B 14	E B 14	E B 14	15	E B 14	22	G	G 30	34	35	U Y 38	38	G	37	G	G 34	36	G	28	E B 14	E B 14	E B 14	E B 14	18
5	E B 14	E B 14	E B 14	E B 13	E B 13	G 20	30	44	A A 83	43	43	52	U G 35	42	36	33	33	28	22	34	32	19	E B 14	E B 14
6	E B 15	E B 15	E B 15	E B 15	E B 15	22	G 26	G 30	40	41	41	G	G	G	G	37	37	34	25	E B 14	E B 14	E B 14	E B 14	E B 14
7	E B 14	E B 14	16	16	E B 14	G	G 27	33	37	45	51	44	60	G	41	50	46	30	21	E B 14	12	12	E B 12	E B 12
8	E B 14	E B 14	E B 14	E B 14	17	G 20	27	31	U Y 37	37	U Y 38	U Y 39	G	G	41	43	54	41	42	25	E B 14	E B 14	25	33
9	19	25	24	23	18	22	42	A A 68	A A 87	A A 93	A A 62	G	40	U Y 42	U Y 46	47	38	46	46	17	17	38	54	18
10	E B 15	E B 15	27	22	29	25	44	45	52	A A 80	54	A A 73	A A 92	54	39	38	35	52	47	46	24	18	18	18
11	20	18	18	18	E B 15	G 16	G	G 32	G 34	39	39	G	38	37	G	39	39	39	31	22	40	52	15	28
12	E B 15	E B 15	22	E B 14	18	24	G 25	52	61	A A 69	44	56	47	51	51	61	A A 85	A A 90	40	23	35	25	16	16
13	E B 14	E B 13	E B 13	E B 13	E B 13	G 22	G 26	32	40	65	45	42	U Y 38	G 38	G	46	55	55	40	40	E B 13	15	17	E B 12
14	E B 12	E B 12	E B 12	E B 12	E B 12	G 22	30	38	41	41	39	39	U G 37	G 34	37	G 29	G	29	24	19	17	17	17	17
15	20	E B 13	E B 13	E B 13	16	24	G 26	34	37	41	U Y 44	40	U Y 42	U Y 42	43	U Y 35	36	60	41	30	30	25	18	17
16	22	19	16	E B 15	E B 15	22	G 22	36	39	42	49	43	40	36	G 31	39	32	33	36	24	24	E B 16	E B 16	E B 16
17	E B 14	16	16	E B 14	E B 14	G	32	37	38	45	U Y 39	U Y 39	U Y 37	G 33	G 28	G 25	G 32	30	25	26	23	23	E B 12	E B 12
18	E B 13	18	18	E B 13	E B 13	22	G 26	38	44	40	G 28	38	38	38	B 34	C	35	39	39	22	22	E B 13	E B 13	E B 13
19	20	17	E B 13	E B 13	E B 14	24	G 26	G 31	38	51	51	47	40	U G 33	G	G	G	30	23	18	E B 12	E B 12	E B 12	12
20	18	E B 12	E B 12	E B 12	E B 12	G	G	32	G 32	U Y 40	42	E B 45	39	U G 35	U Y 38	G 28	G	G 21	G	E B 15	E B 14	E B 14	E B 14	E B 14
21	E B 14	E B 14	E B 16	E B 16	E B 16	G	28	35	38	38	38	40	U Y 38	U G 33	48	40	G	34	36	32	23	E B 14	17	17
22	E B 15	E B 13	E B 13	E B 13	16	24	31	34	39	52	39	U Y 39	U Y 39	54	U Y 40	40	55	54	26	25	A A 105	16	28	22
23	E B 15	E B 15	E B 15	E B 15	E B 15	G 14	30	34	37	48	44	44	37	44	41	36	44	32	31	20	E B 11	13	11	E B 11
24	11	16	E B 11	E B 11	E B 11	24	G 26	31	41	41	54	50	G 36	36	G 32	G	32	28	26	22	22	22	18	18
25	24	E B 14	16	E B 16	E B 16	G 24	30	34	41	57	45	55	45	53	55	43	43	54	A A 81	40	40	18	18	E B 12
26	21	18	18	E B 12	E B 12	25	30	62	40	51	45	45	56	57	G 26	36	36	36	34	34	30	30	26	20
27	18	E B 14	E B 14	E B 14	E B 14	G	31	36	40	U Y 39	39	G	U Y 37	48	44	48	47	52	52	45	20	20	E B 12	19
28	E B 12	16	16	E B 12	E B 14	24	31	35	36	U Y 37	U Y 37	38	G	38	38	38	42	80	32	51	28	28	E B 13	22
29	31	E B 14	E B 14	19	19	34	40	42	A A 105	52	A A 59	42	42	43	49	54	54	56	62	53	53	32	19	39
30	16	16	E B 13	20	17	30	A A 71	57	A A 91	A A 93	A A 103	A A 62	55	54	A A 79	62	55	55	A A 93	46	46	57	50	16
31	24	18	18	E B 15	E B 15	G 24	G 28	G 29	36	37	48	U Y 40	U Y 40	44	40	40	44	45	45	21	E B 12	15	E B 12	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	E B 15	E B 15	E B 15	E B 14	E B 15	G	G	34	39	41	44	40	38	G	38	38	36	36	34	25	23	17	16	16
U Q	20	17	16	16	16	24	31	38	41	52	51	47	42	44	43	43	46	54	45	37	32	25	18	19
L Q	E B 14	E B 14	E B 13	E B 13	E B 13	G 22	G 26	G 32	36	39	39	38	G	G 36	G 37	G 34	G 32	30	25	20	E B 14	E B 14	E B 13	E B 13

MAY 2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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	14	14	14	14	14	14	14	14	14	15	19	18	16	16	16	16	16	16	15	14	15	15	15	15
2	14	14	15	15	13	13	13	13	13	13	13	16	16	16	16	16	16	12	12	11	14	14	14	14
3	12	12	15	15	15	13	13	13	13	13	13	15	15	15	17	18	16	13	15	14	14	14	14	14
4	14	14	14	14	14	14	14	14	14	16	16	16	16	16	19	19	17	14	14	14	14	14	14	14
5	14	14	14	13	13	13	13	13	13	13	15	15	15	15	15	15	15	14	14	14	14	14	14	14
6	15	15	15	15	15	15	15	15	15	15	22	21	16	16	16	16	16	14	14	14	14	14	14	14
7	14	14	14	14	14	14	14	14	19	19	17	17	17	17	17	14	14	14	14	14	12	12	12	12
8	14	14	14	14	14	14	14	14	14	14	16	18	17	20	17	17	17	16	16	15	14	14	14	14
9	11	11	11	11	12	12	12	12	12	12	12	13	13	13	13	13	14	14	13	13	13	13	13	13
10	15	15	15	15	15	15	15	13	14	14	14	14	17	16	17	17	17	17	15	13	12	12	12	12
11	15	15	15	15	15	15	15	13	14	21	21	21	20	20	19	16	16	16	16	15	15	15	15	15
12	15	15	14	14	14	14	14	14	14	14	15	15	17	17	18	18	18	14	13	11	11	11	11	11
13	14	13	13	13	13	13	13	13	13	19	19	19	20	20	20	20	17	16	16	12	13	12	12	12
14	12	12	12	12	12	12	12	12	12	12	18	20	30	29	22	20	17	17	17	13	13	13	13	13
15	13	13	13	13	13	13	13	13	13	13	17	17	24	24	16	16	16	16	16	14	13	13	13	13
16	15	15	15	15	15	15	15	16	16	28	26	22	22	16	16	16	16	14	14	11	11	16	16	16
17	14	14	14	14	14	14	14	14	14	14	14	14	14	19	19	19	16	16	14	14	12	12	12	12
18	13	13	13	13	13	15	15	15	15	14	12	12	12	12	12	C	14	14	14	14	13	13	13	13
19	13	13	13	13	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	12	12	12	12	12
20	12	12	12	12	12	12	12	12	12	12	12	45	18	18	18	20	15	15	15	15	14	14	14	14
21	14	14	16	16	16	16	15	15	15	15	15	15	15	15	15	15	15	15	15	15	10	14	14	14
22	15	13	13	13	14	14	14	14	14	14	14	14	17	17	17	17	17	17	17	16	15	15	15	15
23	15	15	15	15	15	15	15	15	14	16	16	16	16	16	16	16	16	15	15	13	11	11	11	11
24	11	11	11	11	11	11	11	11	11	14	16	16	16	16	16	16	16	16	16	16	16	14	14	14
25	14	14	14	16	16	14	14	14	14	14	14	15	15	15	15	15	15	15	15	12	12	12	12	12
26	12	12	12	12	12	12	12	12	12	13	18	18	18	25	19	16	16	16	14	14	13	13	13	13
27	13	14	14	14	14	14	14	14	18	18	16	26	14	14	16	12	12	12	11	14	12	12	12	12
28	12	12	12	12	14	14	14	13	13	14	14	14	14	14	14	14	14	15	15	13	13	13	13	13
29	14	14	14	14	14	14	14	14	14	16	19	19	16	16	16	16	16	13	13	13	13	13	13	13
30	13	13	13	13	13	13	13	12	12	21	21	22	16	22	18	16	16	16	14	13	13	13	13	13
31	15	15	15	15	15	15	15	15	19	14	17	17	20	20	20	20	16	16	16	16	12	12	12	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	14	14	16	16	16	16	16	16	16	15	15	14	13	13	13	13
U Q	15	14	15	15	15	15	15	14	14	16	18	19	18	20	18	18	16	16	16	14	14	14	14	14
L Q	13	13	13	13	13	13	13	13	13	13	14	15	15	15	16	15	15	14	14	13	12	12	12	12

IONOSPHERIC DATA STATION Wakkanai

MAY 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	302	272	294	293	291	283	297	286	293	261	A	A	A	U R 285	U R 262	R	284	276	A 289	290	289	289	297	R 288
2	282	R 267	293	291	291	287	292	312	320	310	313	334	301	317	307	306	319	318	313	307	295	299	305	304
3	282	284	284	F 294	296	339	326	322	U R 329	333	328	311	U R 335	R 335	R 329	330	316	325	322	U R 320	R	R 320	312	293
4	285	291	294	294	314	322	314	316	R 314	326	Y	R 326	U Y 336	Y	Y	U Y 332	U R 333	303	J R 295	R	R 333	302	292	296
5	297	297	R	293	295	305	328	U R 332	A	Y	Y	Y	Y	Y	R	U Y 341	R	Y	J R 352	R 348	301	302	300	275
6	275	289	279	292	299	332	307	332	317	R 333	U R 331	U R 334	Y	R	Y	Y	R	U R 322	R 309	311	J R 299	313	288	285
7	291	285	296	315	302	312	U R 354	U Y 355	Y	Y	R 315	Y	Y	Y	Y	U R 297	Y	321	R	322	316	306	309	283
8	286	285	288	292	315	323	335	336	340	318	306	R 315	U Y	R 315	R	R	Y	299	311	R 318	305	311	306	272
9	279	277	279	277	275	294	310	A	A	A	A	275	272	307	A 286	295	296	305	290	306	290	264	U R 268	292
10	282	282	F 287	291	287	325	332	326	341	A	310	A	A	U R 326	R 312	R 304	V 300	R	A	R	315	R 308	296	285
11	282	272	278	277	309	328	U R 316	329	R 318	Y	Y	Y	284	Y	R 323	R 308	R	J R 308	R 303	R 315	R	R 301	299	R 283
12	316	317	286	300	288	306	306	A 301	A 276	A	278	299	286	289	U Y 311	329	A	A	314	R 303	U R 330	329	275	279
13	280	283	287	296	292	329	343	306	321	A 299	299	289	282	298	302	318	307	309	311	283	J R 290	J R 298	R 315	315
14	287	289	288	288	289	306	321	U R 338	R 322	U Y 323	U R 303	299	U Y 314	R 317	317	304	319	310	303	322	R 312	302	300	301
15	275	285	285	282	277	R 334	U R 328	R 333	U Y 309	U R 305	Y	Y	U Y 317	Y	R 318	U Y 320	322	314	302	R 292	283	R	325	284
16	282	282	280	282	285	298	R	R	R	297	304	R 305	R 305	Y	Y	Y	R 316	312	315	322	306	306	306	287
17	286	278	278	285	292	293	R	290	U Y 347	305	312	R 303	U Y 302	Y	R 310	U R 315	R 325	R 309	R 302	U R 319	321	299	301	287
18	301	302	312	301	299	321	328	335	329	295	296	282	291	287	299	C	303	296	286	312	300	300	307	307
19	284	273	289	290	275	312	R 336	R 341	R	Y	R 332	U Y 336	U Y 331	Y	Y	R 329	U Y 312	328	309	U R 306	R 302	R 309	310	280
20	290	282	281	294	308	316	316	321	338	313	300	R 300	R 295	R 314	U Y 317	323	314	R 311	U R 298	R	R 331	306	301	294
21	291	291	291	297	305	304	327	312	R 327	R 315	303	296	288	312	300	299	304	U R 331	318	314	338	303	293	296
22	289	294	295	292	306	286	315	Y	348	U Y 334	U R 305	R 320	R 324	303	R 324	319	311	330	294	327	A	302	300	F 304
23	303	302	292	295	284	281	318	R	338	R 319	R 321	277	R	U Y 313	U R 309	U Y 325	325	328	323	R 306	318	321	287	286
24	289	298	276	274	273	265	309	U R 348	329	R 318	283	315	302	R 309	U R 324	313	R 307	U R 309	315	315	326	303	295	283
25	289	284	287	297	293	R 314	291	Y	U R 344	327	303	314	309	U R 305	322	R 322	R 314	R 320	A	J R 333	U R 327	294	R 296	U R 301
26	305	303	305	314	303	298	U R 331	R	R	R 342	U R 339	305	U R 306	315	305	312	312	317	R	R 336	U R 337	R 307	R 314	301
27	291	293	312	322	322	333	317	R 329	309	325	324	313	299	U Y 321	305	322	327	320	322	315	R 314	R 320	331	300
28	F 298	295	F 298	301	296	322	328	R 327	R 342	R 350	318	308	299	295	304	308	J R 324	A 307	J R 314	J R 322	316	314	303	310
29	301	F 309	F 306	F 315	333	315	315	304	A	303	A	284	297	302	288	307	313	308	A 296	319	U R 327	J R 327	F 326	F 300
30	F 285	291	F 291	F 293	294	316	A	A	A	A	A	A	302	304	A	A 311	310	311	A	307	322	A 311	318	302
31	300	296	295	274	277	295	341	U R 335	314	324	306	308	299	286	317	315	313	A	322	302	308	324	U R 347	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	31	31	30	31	31	31	28	24	23	23	23	24	24	22	23	26	25	27	26	28	28	30	31	31
MED	289	289	288	293	294	312	320	328	327	318	306	306	302	308	310	315	313	311	310	315	314	306	301	293
U Q	298	296	295	297	305	323	330	U R 335	340	327	R 321	R 315	U Y 312	R 315	R 318	323	320	321	315	322	R 326	313	312	301
L Q	282	282	284	288	287	295	312	312	314	305	303	298	293	298	302	307	307	308	298	306	300	301	296	284

IONOSPHERIC DATA STATION Wakkanai

MAY 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						U L 332	351	L 349	373	A	A	A	A	R	369	R 372	360	L	A					
2						L	358	360	372	382	A 373	398	385	R 371	R 350	U L 340	U L 379	L						
3							L	L	U L 389	L 389	U L 393	U L 371	L 372	L 369	L 369	L 360	L	L	L					
4							L	L	L	L 383	U L 369	D 340	L 352	L 355	L 340	U L 345	L	L	L					
5							L	A	A	L 341	L 355	A	L	U L 349	L 354	L	L	L	L					
6						L		L	L	L	L	U L 365	L 353	U L 359	L	L 365	L							
7							L	L	D 391	A	A	L	A	350	L 375	A	A	L	L					
8							L	L	L	U L 367	L	R 351	U R 370	U L 356	356	L	A	A	A					
9						U L 318	A	A	A	A	A	U R 441	U R 354	A	A	A	A 351	A	A					
10							A	A	A	A	A	A	A	A	L 343	L 344	L	A	A					
11								L	L	L	L	L 336	L	L 373	L	L 341	L	A						
12						L	L	A	A	A	L	A	341	A	A	A	A	A	A					
13						L	L	L	U L 342	A	L 326	U L 342	L 342	L 342	337	A	A	A	A					
14							L	L	U L 374	L 360	U R 375	L 365	L 365	L 365	359	U L 342	L 347	L	L					
15						L	L	L	L	L 341	Y	370	Y	Y 346	L 347	L 347	L	A	A					
16						L	L	L	A	L 359	A	359	L	385	U L 341	L 330	U L 355	L						
17							L	L	L 363	L	Y 372	L 353	357	358	350	L 355	U L 323	U L 352	L					
18							L	L	A	389	361	H 372	373	362	Y 348	C	U L 362	A	A					
19						L	L	L	L	A	A	A 359	351	353	359	336	L 343	L	L					
20								L	L 365	Y 360	A 349	363	396	394	Y 352	352	L	L	L					
21							L	L 378	U L 371	L 365	L 365	L	U L 361	394	A	360	L	L 345						
22								U L 362	L	A	397	374	L	A	A	A 362	A	A	L					
23								U L 369	U L 368	A	U L 357	R 380	374	U R 404	R 364	L 351	A	U L 370	L					
24					U L 306	L	L	L 366	A	L 348	A	A	L 365	R 369	Y 357	358	L 354	L	L					
25						L		367	A	A	U L 392	A	A 367	A	A	A	A	A	A					
26						L	U L 371	A	L 369	A	A	L 387	A	A	L 370	364	L 342	U L 379						
27							L	L	A 385	Y 377	L 377	384	384	A	354	A	A	A	A					
28							L	U L 381	378	389	L	L 364	378	376	367	364	A	A						
29						A	A	A	A	A	A	A 375	375	A	A	A	A	A	A	A				
30					L	L	A	A	A	A	A	A	A	A	A	A	A	A	A					
31					U L 325	355	L 365		A 363	R 368	A	R	Y 351	A	351	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					2	3	4	8	14	15	14	21	21	20	22	19	10	4						
MED					U L 316	U L 332	362	L 366	L 372	L 367	L 370	365	365	364	354	L 352	L 352	U L 361						
U Q						355	L 368	U L 374	378	383	L 377	378	374	374	364	362	U L 360	U L 374						
L Q						U L 318	354	L 361	L 365	L 359	L 357	356	352	354	L 348	L 342	L 343	L 348						

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IONOSPHERIC DATA STATION Wakkanai

MAY 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						322	348	362	400	500	A	A	A	476	476	422	408	322	A					
2						322	354	338	334	328	336	310	336	336	334	300	286	286						
3							264	264	264	264	284	320	296	298	298	298	292	276	266					
4							244	270	270	270	272	298	298	298	298	298	296	294	286					
5							256	258	A	290	290	280	284	292	292	292	292	272	246					
6						244		244	272	272	272	272	296	296	296	290	284							
7							258	258	258	268	274	282	314	314	290	290	276	274	252					
8							258	258	258	294	330	330	326	318	324	324	298	280	278					
9						310	302	A	A	A	A	452	452	350	L	358	340	E A 328	A 328					
10							272	252	252	A	334	A	A	332	320	320	308	280	A					
11								272	268	268	316	312	H 308	306	306	306	288	278						
12						270	270	E A 330	A	A	398	A 352	416	376	346	340	A	A	A 280					
13						260	260	288	288	E A 390	362	362	394	344	344	310	310	310	292					
14							272	272	288	308	312	334	334	334	334	322	314	282	270					
15						270	264	264	304	334	334	320	322	322	322	322	298	E A 324	282					
16						290	290	268	268	352	318	354	346	342	342	326	292	288						
17							260	260	280	296	312	318	358	340	334	324	298	294	286					
18							260	272	272	368	368	382	382	382	352	C	308	308	294					
19						284	272	272	272	274	284	304	314	330	318	318	316	292	286					
20								284	284	312	332	336	336	326	304	304	304	304	284					
21							254	316	288	318	348	348	342	336	348	326	326	306						
22								270	270	288	312	316	312	318	322	306	306	A 284	288					
23								296	280	302	300	406	322	330	320	294	294	294	278					
24					336	360	282	280	260	316	A 364	306	348	348	316	320	320	300	292					
25						280		280	264	A 292	310	326	334	334	318	288	288	292	A					
26						300	282	274	274	274	274	312	A 322	A 326	304	304	304	292						
27							248	274	274	274	286	324	364	320	320	306	286	286	E A 286					
28							280	278	278	258	282	316	360	360	352	324	316	A						
29						250	268	330	A	A 318	A	408	384	366	366	366	334	334	E A 358	A 300				
30					276	266	A	A	A	A	A	A	E A 374	E A 354	A	E A 354	A 338	A 336	A					
31					326	326	264		312	282	316	348	348	348	336	300	300	A	300					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	15	24	28	26	27	27	28	29	31	29	30	30	27	20	1				
MED					326	284	266	272	273	293	312	322	335	333	322	311	302	292	286	A 300				
U Q					336	322	281	286	288	318	334	350	362	348	343	324	316	308	292					
L Q					276	266	259	264	268	274	284	311	314	318	305	300	292	282	278					

MAY 2014 h′F2 (KM)

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IONOSPHERIC DATA STATION Wakkanai

MAY 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	264	280	262	256	298	294	258	254	246	A	A	A	A	Y	224	224	224	230	A	A 304	A 304	294	292	292
2	308	308	292	258	256	256	244	244	218	212	E A 258	214	214	202	202	204	204	216	240	264	264	258	246	246
3	258	276	276	E A 344	250	226	226	226	208	E A 214	214	214	214	214	214	204	210	230	E A 252	252	252	238	238	246
4	260	266	266	250	246	236	210	210	210	210	E Y 248	212	212	212	212	212	218	232	A 258	250	236	244	244	280
5	280	278	262	254	254	248	A 238	A	A	E A 238	E A 238	A	E Y 238	E A 238	220	E Y 222	E A 244	244	244	244	270	260	260	270
6	286	286	286	258	264	254	236	236	E A 250	250	222	222	222	222	222	224	A	238	238	238	238	238	238	274
7	274	274	270	270	236	236	236	236	236	A	A	236	A	224	224	A	A	224	224	230	230	244	244	244
8	276	276	276	254	248	232	232	226	Y	218	Y 242	242	196	Y 214	218	A	A	A	A	236	228	228	268	290
9	302	302	302	312	312	260	A	A	A	A	A	204	A	A	A	A	A	A	A	230	230	E A 358	A	282
10	280	280	A 304	286	A 286	234	A	A	A	A	A	A	A	A	234	234	226	A	A	280	256	252	252	252
11	294	294	294	294	264	250	250	226	226	A 228	228	228	218	218	218	E A 270	A 270	A	262	258	A 278	E A 320	300	300
12	250	250	272	268	298	E A 248	248	A	A	A	A	A	248	A	A	A	A	A	A	260	260	258	258	258
13	292	292	292	270	248	246	240	202	214	A	E A 246	A 246	Y 250	232	232	A	A	A	A	A 272	272	260	260	260
14	260	260	260	260	260	250	248	E A 248	240	240	226	226	226	220	216	216	216	220	240	252	250	250	250	262
15	310	282	282	282	268	250	238	238	216	E A 250	Y	206	A	Y 266	E A 266	238	A 238	A	A	252	260	260	248	248
16	308	308	300	282	278	252	250	A 252	A	236	A	230	230	230	230	E A 264	234	234	248	248	248	248	248	248
17	266	286	286	276	270	248	248	220	220	A	E Y 252	244	216	216	216	216	216	216	A 244	244	244	244	250	256
18	264	264	264	264	264	232	232	A	A	E A 262	234	H 202	202	218	Y	C	218	A	A	248	248	248	248	248
19	286	286	286	286	260	244	234	A 234	A 234	A	A	E A 234	234	224	224	224	224	224	224	248	248	248	248	264
20	270	274	274	260	240	240	234	234	224	Y	E A 268	B 240	220	216	Y	216	216	228	228	228	228	228	228	256
21	274	274	270	268	262	238	236	236	E A 236	222	220	E A 242	242	214	A	A 244	240	240	256	256	256	242	242	244
22	284	284	284	268	242	230	230	A 252	A	A	220	220	Y	A	A	A	A	A	A 238	238	A	238	258	266
23	266	266	274	252	252	250	244	232	E A 246	A	E A 248	236	236	224	224	224	A	224	A	242	242	240	240	258
24	266	266	266	278	278	H 228	228	228	A	E A 248	A	A	216	216	E Y 286	220	220	234	A 236	242	242	244	254	268
25	278	288	288	266	244	244	226	224	A	A	A 224	A	A	A	A	A	A	A	A	238	252	252	262	262
26	262	262	262	246	246	246	246	A	228	A	A	A 228	A	A	228	228	228	A 256	256	256	256	256	256	256
27	266	266	256	242	242	222	218	E A 226	E A 234	Y	206	204	212	A	E A 288	A	A	A	A	288	262	252	242	242
28	246	246	262	262	262	244	244	A 244	A 236	222	202	202	202	204	212	E A 240	A	A	242	A 254	254	256	252	252
29	302	290	288	286	246	A	A	A	A	A	A	230	230	A	A	A	A	A	A	A	278	272	268	E A 328
30	260	262	262	272	262	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 274	A 274	A	E A 288	274
31	296	296	296	296	288	A 266	A 242	228	E A 268	E A 244	A	Y	Y	A	Y 246	294	A	A	A	282	282	274	238	238
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	27	23	19	15	18	23	21	20	22	20	17	16	17	30	30	30	30	31
MED	274	278	276	268	260	245	238	233	227	U 225	U 220	225	219	218	222	222	222	230	241	250	253	250	250	258
U Q	292	288	288	282	270	250	246	A 244	E A 240	E A 248	E A 248	236	235	224	232	A 239	A 236	236	254	260	264	260	260	274
L Q	264	266	264	258	246	235	232	226	218	218	220	212	213	214	216	216	216	224	237	242	242	244	244	248

MAY 2014 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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						122	122	122	118	118	112	112	112	102	102	100	A	A 138	A					
2					B 138	122	106	104	104	104	104	104	A		112	114	116	116	A					
3						A 110	110	110	110	110	110		A	A	A	A	110	110	A					
4						110	108	108	108	108	108	108	106	106	106	106	106	106	106					
5					B 136	110	110	110	110	110	110	A	A	A	A		A	A						
6					B 110	110	110	110	110	110	110	110	110	110	110	110	110	110	110					
7					B 110	110	110	110	110	110	110	110	112	112	112	112	112	112		B				
8					A	A 112	112	112	108	108	108	108	108	108	108	108	112	112	112					
9						114	114	110	106	A	106	110	110	110	110	110	110	110	A					
10						110	110	110	110	110	110	110	A	A	110	110	110	110	A					
11					B	A 134	134	114	114		114	114	114	114	114	114	114	114	114					
12						114	114	112	112	112	112	A	112		112	110	108	104	A					
13					B 106	106	106	106	106	106	106	106	106	106	106	106	108	108						
14					B 108	108	108	108	108	108	108	108	108	122	102	106	104	104	104					
15					A 104	104	104	104	104	104	104	104	A		A	104	104	104						
16					B 112	116	116	116	116		104			A	108	108	A		108					
17					B 110	110	110	110	110	110	A			110	110	110	110	110	A	A				
18					B 112	112	112	112	A	112	112			112	112	C	112	112	112					
19					B 112	112	112	112	112	112	112	112	A	A	112	112	112	112	112					
20					B 112	112	112	112	112	112	B	112		A	A	112	112	122	122	B				
21					B 122	116	116	116	104	104	A			A	104	104	104	104	104	B				
22					B 108	108	108	108	106	106			A	A	106	106	106	106	106	A				
23						114	114	114	112	112	112	112	112	A	112	112	112	112	112					
24					B 112	112	112	112	112	112	A	112			112	108	110	112	114	A				
25					B 112	112	110	110			110		110	110	110	110	110	110	A	A				
26					B 110	110	110	A	A	A	A	A	A	A	112			112	A	A				
27					B 112	112	108	106	106	106	106		A	A						A				
28					B 106	106	106	106	106	106	104	104	104	104	104	104	104	104	104	A				
29					A 112	110	110	110	A	110	A			110	110	110	110	110	A	A				
30					A 110	110	108	108	A	A	A	A	A		A		A	A	A	A				
31					B 108	108	108	108	108	A				A	108	108	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						29	31	31	30	24	26	19	15	14	25	25	25	27	15					
MED						112	110	110	110	110	110	110	110	110	110	110	110	110	110					
U Q						114	114	112	112	112	112	112	112	112	112	111	112	112	112					
L Q						110	110	108	108	106	106	106	106	106	106	106	107	106	106					

MAY 2014 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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	110	110	146	140	136	128	128	116	116	110	G	222	182	106	102	102	102	102	118	114	110
2	106	106	106	B	B	G	132	124	120	114	114	114	114	114	108	108	168	168	124	114	B	114	B	B
3	102	102	B	102	102	102	100	114	126	114	114	110	108	106	106	106	130	130	116	110	110	B	B	B
4	110	128	106	92	92	138	G	128	126	124	118	118	G	118	G	156	130	G	130	128	B	B	108	108
5	B	104	B	B	B	148	134	118	114	114	114	108	108	190	108	102	100	126	122	104	104	104	B	B
6	B	B	B	B	B	132	132	136	126	126	126	G	G	G	G	150	128	128	128	B	B	B	B	B
7	108	108	108	106	106	G	114	114	114	114	114	114	112	G	122	122	122	122	122	B	92	92	B	B
8	B	B	B	B	92	154	136	128	122	114	114	114	G	G	126	126	116	116	116	94	B	B	108	106
9	108	106	106	98	98	120	118	112	106	106	106	G	110	132	132	130	130	124	104	104	104	104	104	104
10	B	104	104	104	104	112	112	112	112	110	108	108	108	108	156	142	220	104	112	104	104	104	104	104
11	108	100	100	100	100	100	G	126	126	102	102	G	114	114	G	114	116	116	116	116	116	116	112	112
12	110	B	106	106	104	116	116	116	116	116	110	110	110	126	124	122	122	122	116	110	110	102	102	102
13	102	122	B	B	B	122	122	122	110	110	110	110	110	110	G	110	110	110	110	110	110	110	110	104
14	B	B	B	B	B	122	122	122	118	118	118	114	114	112	118	106	G	112	222	110	110	110	110	108
15	106	B	B	B	106	128	128	126	120	112	112	112	108	104	104	114	114	114	114	114	104	104	104	104
16	102	100	100	100	B	138	110	110	110	110	110	110	110	110	104	104	104	114	114	114	114	B	102	B
17	102	102	102	102	B	G	106	110	110	110	110	110	110	110	106	102	134	124	124	108	106	106	B	106
18	B	100	100	100	B	150	150	120	116	116	104	106	106	106	106	C	142	132	122	122	116	108	108	108
19	102	102	102	102	B	134	134	124	124	108	108	108	106	106	G	G	G	124	124	124	102	B	102	102
20	98	B	98	B	98	G	G	118	118	118	118	B	118	98	98	98	G	98	G	114	B	98	B	B
21	B	98	98	92	92	G	152	124	122	122	116	114	114	106	118	170	G	126	122	116	114	104	104	104
22	100	100	124	98	98	158	130	122	110	108	108	108	108	108	120	120	120	120	120	120	118	116	116	116
23	104	104	B	B	104	104	120	120	120	116	116	116	116	116	116	136	128	124	122	120	116	114	114	B
24	104	100	100	126	B	126	126	122	116	116	116	112	112	112	112	G	124	124	124	122	122	108	108	108
25	100	100	100	B	B	128	126	124	114	112	112	112	112	112	112	112	112	112	112	108	108	108	108	108
26	102	102	102	B	B	104	104	104	104	104	104	104	104	102	102	102	112	112	112	112	106	102	100	100
27	98	98	98	B	120	G	120	114	114	114	114	G	98	98	98	98	112	112	112	112	112	112	B	102
28	102	102	102	102	B	122	122	118	118	118	118	116	G	116	140	126	120	120	120	118	116	116	114	100
29	106	102	98	98	112	112	112	112	112	112	112	98	130	128	116	116	116	116	116	110	110	110	110	110
30	106	92	92	92	118	116	116	116	110	110	110	106	106	106	114	104	104	104	108	106	118	118	118	102
31	92	92	92	96	124	124	124	124	120	116	112	112	112	108	130	130	130	122	120	120	110	110	B	98
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	22	19	18	25	28	31	31	31	31	26	27	27	26	28	27	30	30	29	26	25	22	23
MED	102	102	101	100	104	124	122	120	116	114	112	111	110	110	115	115	120	120	118	112	110	108	108	104
U Q	106	104	106	104	110	138	132	124	122	116	116	114	114	116	124	130	130	124	122	119	116	114	112	108
L Q	102	100	98	98	98	114	115	114	112	110	110	108	108	106	106	105	112	112	112	108	104	104	104	102

MAY 2014 h′Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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				F1	F1	C1	CL11	CL11	CL11	C1	C2	C2	C1		H1	H1	H1	L3	L3	F4	F5	FF22	F3	F3
2	F6	F3	F2				CL11	C2	C1	C1	C1	C1	CL11	C1	L1	L2	HL12	HL12	CL32	F6		F1		
3	F1	F1		F7	F3	C3	LC21	C1	C1	CL11	C1	C1	L1	L1	L1	L1	H1	C2	C3	FF32	F3			
4	F1	FF11	F2	F3	F1	H1		H1	C1	C1	C1	C1		C1		H1	C2		C3	F1			F1	F2
5		F1				H1	C2	C2	C2	C1	C1	C2	L1	HL11	L1	L2	L2	CL12	CL12	F6	F3	F3		
6						C1	C1	H1	C1	C1	C1					H1	C2	C3	C2					
7	F2	F2	F2	F2	L1		C1	C1	C1	CL21	CL11	C1	C1		CL11	C1	CL21	CL21	C2		FF11	F1		
8					L2	HL12	C1	CL11	C1	C1	C1	C1			H1	CL11	CL21	C3	C3	F4			F6	F3
9	F2	F6	F4	F4	L2	CL21	CL21	C4	C4	C3	C2		C1	C1	C1	C2	C1	C2	C3	F3	F3	F5	F5	F4
10		F1	FF22	F2	FQ21	CL21	C2	CL21	CL21	CL21	C2	L3	CL12	LQ11	H1	H1	H1	C2	L3	FQ31	F4	F3	F3	F2
11	F3	F3	F4	F2	L1	L1		C1	C1	C1	C1		C1	C1		C2	CL21	CL21	CL21	F3	F5	F6	F3	F3
12	F1		F2	F1	F2	C2	CQ11	C2	C2	C2	C2	C2	C1	CL11	CL21	CL21	CL31	CL62	CL31	FF23	FF31	F3	F3	F3
13	F1	FF11				C1	C2	C2	C1	C2	C1	C1	C1	C1		C2	CL21	C2	C3	F6	F2	F2	F2	F1
14						C1	C3	C2	C2	C1	C1	C1	L1	L1	CL11	L1		CL11	H1	F2	F1	F2	F3	F2
15	F2				C1	C1	C1	C2	C2	C1	C1	C1	C1	L1	L1	C1	C2	C2	C3	F3	F4	F4	F3	F2
16	F4	F3	F2	F1		H1	L1	CL11	CL11	C1	C1	C1	C1	C1	L1	CL11	L2	CL22	CL32	FF21	FF21		F2	
17	F1	F2	F2	F1			C2	C1	C1	C1	C1	C1	L1	L1	L1	L1	HL11	CL11	CL22	CL32	F3	F3		F1
18		F2	F2	F1		H1	H1	C1	C1	C1	L1	C1	C1	C1	C1		H1	C3	C2	C3	F3	F1	F1	F1
19	F3	F1	F1	F1		C1	C1	C2	C1	C1	C1	C1	C1	L1				C1	C1	CL21	F1		F1	F2
20	F2		F1		L1			C1	C1	C1	C1		C1	L1	L1	L1		L1		L1		F1		
21		F1	F1	F1	L1		H1	C2	C1	C1	C1	C1	C1	L1	C1	HL11		CL21	C3	C3	F3	F2	F2	F2
22	F2	F1	FF11	FF11	C1	HC11	C1	C1	C1	C1	C1	C1	C1	C2	C1	C1	C2	C2	C3	C3	F7	FQ31	F3	F2
23	F3	F2			L1	L1	CL21	C1	C2	C1	C1	C1	C1	C1	C1	H1	C2	C2	C3	C3	F2	F3	F2	
24	F1	F2	F1	F1		C1	C2	C1	C1	C1	CC12	C1	C1	C1	L1		CL11	CL12	CL32	C3	F3	F3	F2	F4
25	F4	F2	F2			CL11	CL21	C1	C2	C2	CL11	C1	CL11	C1	C2	C2	C3	C3	C4	L3	F3	F2	F3	F1
26	F3	F3	F2			C3	C2	C2	C2	C2	C2	C1	C2	L2	L1	L2	CL12	CL22	C3	L7	F3	F4	F4	F3
27	F2	F1	F1		C1		C2	C2	C1	C1	C1		C1	L2	L2	L2	CL22	CL23	CL23	CL33	FF21	FF21		F2
28	F2	F2	F2	F1		C2	C2	C2	C2	C1	C1	C1		C1	H1	C2	C2	C3	C3	C3	F3	F7	F2	F5
29	F4	F2	F2	FF32	CL11	C2	C2	C1	CQ21	CQ21	CQ11	C1	CL11	CL11	C1	C2	C2	C2	C2	LQ21	F3	F4	F3	F4
30	F3	F3	F1	F2	C2	C3	C3	C2	C3	C2	C2	C2	C2	C2	CL13	L2	L3	L3	L5	LQ31	FF17	F7	F7	F2
31	F3	F3	F2	F1	C1	C2	C2	C1	C1	C1	C1	C1	C1	C2	CL11	CL11	CCL12	C2	C3	C3	FF11	F2		F1
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 90	X 92	X 80	X 78	X 77															X 80	X 69	X 63	X 66	X 64
2	X 66	68	67	70	X 59															X 93	X 86	X 79	X 76	X 72
3	X 70	X 69	X 67	X 64	X 65															X 107	X 91	X 82	X 84	X 82
4	X 79	X 76	X 74	X 72	X 64															X 121	X 104	X 85	X 84	X 82
5	X 87	X 86	X 75	X 73	X 70															X 99	X 89	X 87	X 85	X 78
6	X 75	X 76	X 74	76	X 68															X 114	X 84	X 81	X 83	X 84
7	X 86	X 86	X 87	X 77	X 70															X 108	X 107	X 93	X 92	X 92
8	X 90	X 88	X 87	X 90	X 80															X 112	X 102	X 94	X 88	X 83
9	X 77	X 77	X 71	X 70	72															X 85	X 75	X 71	70	75
10	84	83	80	76	70	80														X 95	X 87	X 89	X 84	X 80
11	X 78	X 74	X 73	X 70	X 70															X 104	X 96	X 93	X 93	X 90
12	X 91	X 90	X 84	X 86	X 82															X 104	X 87	X 82	A	X 82
13	X 80	X 72	78	X 73	74															X 98	X 103	104	X 83	90
14	85	X 82	X 74	X 72	X 71															X 94	X 89	X 88	X 90	X 91
15	X 91	X 89	X 93	X 81	X 82															X 102	X 96	X 84	X 91	X 87
16	X 86	X 84	X 81	X 78	X 76															X 92	X 89	X 87	X 86	X 86
17	X 85	X 83	X 82	X 82	X 82															X 103	X 92	X 90	X 93	X 93
18	X 95	X 95	X 90	X 85	X 82															X 92	X 90	X 91	X 91	X 92
19	X 89	X 85	X 82	X 78	X 79															X 105	X 93	X 90	X 91	X 88
20	X 88	X 88	X 86	X 84	X 79															X 113	X 96	X 91	X 86	X 85
21	X 81	X 80	X 78	X 74	X 73															X 101	X 88	94	96	X 92
22	94	91	82	X 75	X 75															X 96	X 90	X 86	X 85	85
23	X 80	89	81	70	70															X 98	X 86	X 82	X 84	X 84
24	X 82	X 80	X 76	X 67	X 64															X 97	X 83	X 84	X 84	X 84
25	X 82	X 75	82	82	78															X 110	X 95	X 88	X 90	X 90
26	X 89	X 84	X 77	X 76	X 72															X 103	X 91	X 86	94	X 98
27	X 89	X 86	X 86	X 83	X 79															X 98	X 96	X 92	X 91	X 85
28	X 78	X 75	X 72	X 72	X 73															X 96	X 80	X 76	82	83
29	81	76	76	75	X 67															O X 100	X 93	X 83	91	93
30	95	89	X 85	84	X 76															X 99	X 86	X 76	76	80
31	88	79	69	X 65	X 64															X 93	X 93	X 73	78	81
	00	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	1														31	31	31	30	31
MED	X 85	X 83	X 80	X 76	X 73	80														X 99	X 90	X 86	X 86	X 85
U Q	X 89	X 88	X 84	X 82	X 79															X 105	X 96	X 91	X 91	X 90
L Q	X 80	X 76	X 74	X 72	X 70															X 95	X 86	X 82	83	X 82

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	84	86	74	72	71	72	86	88	68	65	66	63	64	64	62	64	64	66	72	74	63	57	59	58
2	60	F	F	F	52	56	68	80	85	72	73	78	76	75	80	80	77	72	80	86	80	73	70	66
3	64	63	61	58	59	69	79	80	67	68	78	79	89	88	90	92	92	95	104	100	85	76	77	76
4	73	70	68	66	58	62	74	69	84	97	99	104	107	117	110	109	111	105	117	115	98	78	78	76
5	81	80	69	67	64	69	72	84	94	98	99	115	120	119	116	108	107	110	105	93	82	81	79	72
6	69	70	68	F	62	70	77	87	86	87	89	98	98	100	103	106	111	112	107	108	78	75	77	78
7	80	80	81	71	64	74	94	83	86	85	91	101	97	98	101	109	108	110	110	102	101	86	86	86
8	83	82	80	84	74	76	78	76	78	80	85	88	101	108	107	113	117	115	108	106	96	88	82	77
9	71	71	65	64	F	68	72	A	65	62	68	66	71	78	80	77	81	78	72	79	69	65	F	F
10	F	F	F	F	F	F	77	A	76	A	80	89	95	97	99	104	108	113	110	89	80	83	78	74
11	72	68	67	64	64	75	88	84	86	94	98	104	107	110	111	102	110	108	105	98	89	87	87	84
12	85	84	78	78	76	85	114	93	70	78	83	95	96	104	109	108	98	94	92	98	80	76	A	76
13	74	66	F	67	F	72	86	78	A	86	A	101	A	A	A	98	96	A	96	92	96	F	77	F
14	F	76	68	66	65	77	90	89	87	94	91	88	94	99	103	104	98	93	91	88	82	82	84	85
15	84	83	87	74	76	87	94	A	91	92	97	105	104	105	108	105	102	98	97	96	90	78	85	80
16	79	78	75	72	70	79	92	92	96	95	92	101	104	105	109	113	108	102	92	86	83	80	80	80
17	79	77	76	76	76	81	90	89	81	78	82	89	93	97	102	110	109	104	105	97	86	84	87	87
18	89	89	84	79	76	76	80	90	91	87	85	86	96	97	93	86	86	86	84	86	84	85	85	86
19	83	79	76	72	73	79	84	89	84	86	88	92	100	102	106	108	102	101	98	99	87	84	85	82
20	82	82	80	78	73	74	84	89	89	86	90	91	98	102	108	112	114	113	111	107	90	84	81	79
21	75	74	72	68	67	75	83	91	81	80	84	80	A	86	96	102	104	103	103	95	82	F	F	86
22	F	F	F	68	69	73	81	91	85	83	80	86	84	90	99	98	93	87	82	90	84	80	79	F
23	74	F	F	F	F	71	86	90	79	72	80	84	93	100	108	106	101	A	101	92	80	76	78	78
24	75	74	69	61	58	67	78	78	75	70	76	73	A	79	90	102	96	97	98	91	76	78	78	78
25	76	69	F	F	F	70	76	93	107	81	83	83	90	95	104	112	107	107	105	104	89	81	84	84
26	83	78	71	70	66	75	84	87	88	82	82	85	90	A	88	94	100	106	96	97	85	80	F	90
27	82	80	80	76	73	60	79	86	77	74	76	76	80	86	94	92	91	91	92	91	90	86	85	79
28	72	69	66	66	67	72	86	98	78	72	75	72	77	86	92	96	99	100	92	90	74	70	F	F
29	F	F	F	F	61	69	74	86	79	80	68	72	74	76	A	89	90	93	92	94	87	76	F	F
30	F	F	79	F	70	69	75	78	74	70	A	A	A	84	A	A	93	87	95	93	80	70	F	F
31	F	F	F	59	58	52	58	70	73	65	71	67	70	79	85	88	86	78	78	87	86	67	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	23	24	26	30	31	28	30	30	29	30	27	29	28	30	31	29	31	31	31	29	23	24
MED	79	78	74	69	67	72	81	87	82	80	83	87	94	97	102	103	100	100	97	93	84	80	80	79
U Q	83	81	80	75	73	76	86	90	87	87	90	98	100	103	108	108	108	108	105	99	89	84	85	84
L Q	72	70	68	66	62	69	76	80	76	72	76	78	80	85	91	92	92	89	92	89	80	76	78	76

MAY 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	L 464		A	A	U L 492	500	508	476	A	A	U L 440	A					
2								U L 464	L	A	U L 524	U L 536	512	A	496	L	L	L	A					
3							A	L	L	U L 556	L	U L 560	U L 520	U L 540	U L 516	U L 512	A	A						
4									A	L	L	U L 580	A	536	L	A	A	L	A					
5								A	L	L	U L 540	U L 524	U L 540	U L 540	528	A	L	A						
6								L	L	A	L	A	U L 568	A	U L 532	U L 500	A	A	A					
7							A	A	L	A	A	A	A	A	L	L	A	A	A					
8									A	L	A	U L 544	U L 552	U L 544	U L 576	A	A	A	A					
9							A	A	U L 584	A	A	512	A	512	U L 512	U L 472	L	L	A					
10							A	A	A	A	A	A	A	U L 564	U L 512	A	A	A	A					
11								L	A	A	L	U L 568	544	U L 544	L	A	A	A	A					
12						A	A	A	A	U L 584	U L 536	U L 576	556	A	A	A	A	A	A					
13								A	A	A	A	A	A	A	A	A	A	A	A					
14							A	A	A	A	U L 568	A	U L 616	544	560	524	L	A	A					
15							A	A	A	A	U L 652	A	A	U L 556	U L 540	L	A	A	A					
16							A	L	U L 540	A	A	552	A	A	A	488	A	A	A					
17							L	L			L	U L 580	U L 580	560	A	U L 516	A	L						
18								A	A	A	A	A	A	U L 532	A	508	A	A	A					
19								L	A	A	U L 544	U L 544	U L 544	536	A	A	A	A	A					
20								A	A	A	A	552	548	548	U L 516	512	L	L	L					
21							L	A	A	A	U L 556	532	A	A	A	484	U L 476	L						
22								A	L	U L 508	U L 584	A	A	A	U L 504	U L 520	L	A	A					
23								A	A	A	U L 540	U L 528	A	520	508	492	A	A	A					
24							L	A	U L 508	U L 512	U L 512	A	A	524	508	U L 488	L	L	A					
25							A	448	A	A	U L 524	532	536	516	A	U L 516	A	A	L					
26								A	A	A	U L 528	A	A	A	A	A	484	A	A					
27							L	A	L	A	A	L	U L 520	A	A	A	A	A	A					
28							A	A	A	A	U L 540	A	U L 520	508	496	A	A	A	A					
29							A	A	A	A	A	A	A	A	A	A	A	A	A					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31							A	A	A	A	A	U L 536	U L 520	512	A	A	456	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	4	4	13	17	16	19	15	13	3	1						
MED								456	U L 524	U L 534	U L 540	U L 544	U L 542	536	U L 512	U L 508	476	U L 440						
U Q									U L 562	U L 570	U L 562	U L 564	U L 554	U L 544	U L 532	U L 516	484							
L Q									486	U L 510	U L 526	U L 530	U L 520	516	504	488	456							

MAY 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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						B	A	A	A	A	A	A	A	R	A	A	A	A	B					
2						B	A	A	A	A	A	A	A	A	A	A	R	A	A					
3						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
4						B	U A 244	A	A	A	A	A	A	A	A	A	A	A	B					
5						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
6						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
7						B	264	A	A	A	A	A	A	A	R	R	A	A	B					
8						B	A	A	A	A	A	A	A	U R 408	A	A	A	A	B					
9						B	A	A	A	A	A	A	A	A	R	A	A	A	B					
10						A	A	A	A	A	A	A	A	R	A	A	A	A	B					
11						U R 192	A	A	A	A	A	A	A	A	A	A	A	A	B					
12						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
14						U R 200	A	A	A	A	A	A	A	A	A	A	A	A	B					
15						B	A	A	A	A	A	A	A	A	R	A	A	A	B					
16						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
17						B	R	A	A	A	A	A	R	A	A	A	A	A	B					
18						B	U R 284	A	A	A	A	A	A	A	A	A	A	A	A					
19						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
20						U R 200	A	A	A	A	A	R	R	A	A	A	A	A	B					
21						B	A	A	A	A	A	R	A	A	A	A	R	A	B					
22						B	A	A	A	A	A	A	A	A	R	U R 352	A	A	B					
23						B	U A 260	A	A	A	A	A	A	R	R	A	A	A	A					
24						B	A	A	A	A	A	A	A	A	A	A	R	A	A					
25						U R 208	A	A	A	A	A	A	A	A	A	A	A	A	B					
26						U R 216	A	A	A	A	A	A	A	A	A	A	A	A	B					
27						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
28						A	A	A	A	A	A	A	R	R	A	A	A	A	B					
29						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
30						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
31						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	4							1		1								
MED						U R 200	U 262							U R 408		U R 352								
U Q						U R 212	274																	
L Q						U R 196	U A 252																	

MAY 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	J A 26	J A 30	J A 30	J A 20	J A 26	21	30	36	41	J A 54	J A 64	43	43	G	44	J A 60	40	33	J A 45	E B 15	22	J A 114	J A 74	J A 159
2	J A 68	J A 81	J A 68	J A 46	J A 34	J A 29	28	35	40	J A 46	J A 48	42	46	J A 60	J A 65	J A 45	G	36	J A 36	J A 21	J A 50	21	J A 42	22
3	E B 14	20	22	J A 22	E B 14	20	J A 40	35	41	J A 47	J A 50	45	44	43	44	42	J A 50	J A 69	J A 60	J A 44	J A 39	J A 37	J A 29	J A 39
4	23	J A 18	19	E B 15	E B 14	19	32	J A 46	J A 51	J A 60	J A 48	45	J A 59	41	49	J A 126	J A 81	J A 151	J A 108	J A 60	J A 58	J A 62	21	J A 17
5	E B 15	J A 42	E B 15	E B 16	J A 22	18	32	J A 47	J A 43	J A 64	44	44	J A 45	42	J A 44	J A 54	J A 49	J A 50	J A 44	J A 40	J A 58	J A 74	J A 81	J A 65
6	J A 29	J A 108	J A 38	J A 46	J A 22	20	34	38	J A 44	J A 66	J A 52	J A 65	48	J A 57	46	44	J A 57	J A 53	J A 162	J A 23	J A 20	E B 14	E B 14	E B 15
7	J A 18	E B 14	22	J A 17	J A 20	E B 15	35	38	J A 50	J A 67	J A 75	J A 67	J A 81	J A 57	G	G	J A 76	J A 95	J A 39	J A 46	J A 23	J A 64	J A 31	J A 31
8	J A 18	J A 25	J A 22	33	J A 28	J A 23	30	J A 49	J A 59	J A 47	J A 50	J A 44	46	47	J A 57	J A 57	J A 60	J A 92	J A 76	J A 34	J A 62	J A 97	J A 30	J A 44
9	J A 40	J A 48	J A 98	J A 63	J A 37	J A 55	J A 36	J A 95	J A 47	J A 61	J A 119	44	J A 72	46	G	42	38	34	J A 28	J A 28	E B 14	E B 15	J A 94	J A 50
10	J A 90	J A 85	J A 184	J A 80	J A 108	24	J A 58	J A 67	J A 72	J A 94	J A 100	J A 93	J A 98	G	47	J A 53	J A 117	J A 114	J A 105	J A 66	J A 72	J A 68	J A 51	J A 52
11	J A 35	J A 24	E B 15	E B 15	E B 15	G	34	38	55	J A 67	42	45	J A 50	J A 57	48	J A 68	J A 86	J A 75	J A 134	J A 62	J A 119	J A 61	J A 38	J A 46
12	J A 40	J A 66	J A 53	J A 46	J A 22	J A 50	J A 54	J A 94	J A 62	J A 50	J A 48	51	47	49	J A 62	J A 50	J A 64	J A 55	J A 60	J A 66	J A 55	J A 56	J A 96	J A 120
13	J A 56	J A 90	J A 41	J A 39	J A 39	J A 40	J A 64	J A 78	J A 109	J A 65	J A 150	J A 70	J A 170	J A 147	J A 110	J A 91	J A 68	J A 113	J A 59	J A 228	J A 98	J A 134	J A 90	J A 90
14	J A 32	21	J A 29	J A 22	J A 20	J A 24	J A 45	J A 58	J A 56	J A 53	J A 48	J A 61	J A 47	41	J A 47	J A 43	38	J A 63	J A 52	45	J A 80	J A 48	J A 29	J A 27
15	J A 26	J A 24	J A 41	J A 31	J A 26	22	J A 38	J A 122	J A 53	J A 63	J A 52	J A 96	J A 58	J A 58	G	41	J A 54	J A 101	J A 47	J A 47	J A 87	J A 114	J A 60	J A 24
16	J A 25	J A 21	21	E B 14	J A 26	23	J A 51	38	J A 53	J A 54	63	46	J A 75	J A 98	J A 64	J A 59	J A 48	39	J A 40	E B 14	J A 65	J A 66	J A 60	J A 31
17	J A 22	J A 22	22	E B 15	E B 14	22	G	40	J A 52	46	J A 55	J A 45	G	J A 52	J A 55	J A 51	39	35	24	24	J A 20	J A 23	E B 15	J A 23
18	J A 22	J A 43	22	J A 22	E B 14	J A 31	G	J A 48	J A 54	J A 57	J A 67	J A 62	J A 80	J A 65	J A 78	41	43	J A 72	J A 94	J A 111	J A 64	J A 54	J A 56	34
19	J A 25	20	E B 15	E B 13	E B 14	25	33	J A 40	J A 62	J A 56	J A 50	J A 50	J A 44	J A 46	J A 55	J A 63	J A 63	J A 44	42	37	J A 26	24	E B 16	E B 15
20	21	J A 24	J A 29	J A 29	J A 18	G	31	38	J A 46	J A 50	45	G	G	42	41	40	J A 44	J A 30	J A 32	E B 26	J A 14	E B 22	E B 14	E B 16
21	J A 16	J A 18	E B 15	J A 20	E B 14	21	31	J A 44	J A 47	J A 51	41	G	J A 131	J A 70	J A 67	40	G	J A 47	J A 34	J A 24	J A 129	J A 67	J A 44	J A 43
22	J A 29	J A 35	J A 36	J A 24	J A 25	21	32	J A 58	J A 73	J A 44	J A 69	J A 58	J A 75	J A 67	G	41	41	J A 45	J A 58	48	J A 46	J A 60	J A 56	J A 39
23	J A 84	J A 28	E B 15	J A 28	J A 56	J A 35	35	J A 53	J A 51	J A 46	J A 47	J A 46	J A 55	G	G	44	40	J A 186	J A 84	J A 93	J A 26	E B 15	E B 15	22
24	J A 32	J A 26	J A 24	J A 22	E B 15	22	33	36	J A 44	J A 44	J A 45	J A 72	J A 83	42	43	J A 45	G	34	24	J A 24	J A 22	J A 52	J A 52	J A 60
25	J A 67	J A 78	J A 48	J A 61	J A 48	G	J A 46	37	J A 46	J A 92	J A 78	J A 49	48	46	J A 61	44	J A 52	J A 70	J A E B 31	14	J A 31	J A 48	J A 28	J A 26
26	J A 18	J A 25	J A 23	23	19	G	32	J A 42	J A 68	J A 108	J A 44	J A 62	J A 59	J A 80	J A 65	J A 50	39	J A 55	J A 53	J A 46	J A 48	J A 34	J A 58	J A 61
27	J A 28	J A 59	J A 87	J A 67	J A 79	27	32	J A 56	J A 61	J A 116	J A 110	42	J A 73	J A 96	J A 57	J A 80	J A 91	J A 77	J A 48	J A 86	J A 77	J A 39	J A 30	J A 40
28	J A 36	J A 24	J A 22	J A 20	J A 23	25	J A 43	J A 64	J A 75	J A 57	J A 46	J A 70	G	G	41	J A 60	J A 55	J A 68	J A 58	J A 62	J A 82	J A 58	J A 110	J A 87
29	J A 68	J A 54	J A 54	J A 26	J A E B 13	J A 40	J A 42	J A 68	J A 76	J A 75	J A 62	J A 73	J A 100	J A 62	J A 79	J A 53	J A 104	J A 74	J A 64	J A 155	J A 122	J A 56	J A 47	J A 53
30	J A 47	J A 45	J A 31	J A 30	J A 36	J A 30	J A 47	J A 56	J A 100	J A 61	J A 105	J A 113	J A 142	J A 135	J A 118	J A 119	62	J A 59	J A 42	62	J A 32	J A 53	83	J A 78
31	J A 46	J A 87	J A 56	J A 40	J A 34	22	J A 41	J A 62	J A 59	J A 69	J A 78	45	J A 47	J A 45	J A 56	J A 78	35	J A 56	J A 31	41	J A 66	J A 125	J A 42	J A 66
	00	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 29	J A 28	J A 29	J A 24	J A 22	22	34	J A 47	J A 53	J A 57	J A 52	J A 49	J A 55	J A 49	J A 49	J A 50	J A 50	J A 59	J A 48	J A 45	J A 55	J A 56	J A 44	J A 40
U Q	J A 46	J A 59	J A 48	J A 40	J A 34	J A 29	J A 43	J A 62	J A 62	J A 67	J A 75	J A 67	J A 80	J A 65	J A 64	J A 60	J A 64	J A 77	J A 64	J A 62	J A 77	J A 67	J A 60	J A 61
L Q	J A 22	22	E B 22	E B 20	E B 15	20	32	38	J A 46	J A 50	47	44	46	42	G 43	42	39	44	J A 36	24	J A 26	34	E B 29	24

MAY 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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 15	18	19	E B 15	20	16	27	33	38	49	58	42	40	G	40	46	38	30	40	E B 15	E B 14	23	24	E B 15
2	43	40	37	30	24	22	25	34	37	44	41	39	43	47	40	36	G	32	31	18	24	E B 14	E B 15	E B 15
3	E B 14	E B 16	E B 15	E B 15	E B 14	18	35	34	38	44	45	41	41	42	42	41	44	53	50	36	32	21	E B 15	19
4	E B 16	E B 16	E B 15	E B 15	E B 14	17	29	36	44	41	40	40	51	40	42	58	68	30	29	18	15	43	15	E B 15
5	E B 15	E B 15	E B 15	E B 16	E B 15	17	30	39	38	41	42	40	43	40	40	46	35	38	39	30	48	56	38	37
6	E B 15	E B 16	21	22	E B 15	18	31	33	38	57	47	56	46	52	42	42	50	44	40	18	E B 15	E B 14	E B 14	E B 15
7	E B 15	E B 14	E B 14	E B 15	E B 15	E B 15	32	36	42	60	64	61	57	52	G	G	71	84	36	25	18	38	E B 15	24
8	E B 14	19	E B 16	30	21	17	28	44	54	43	42	42	43	46	42	50	56	89	44	21	40	37	24	38
9	36	33	33	38	31	48	32	A A 95	44	54	58	42	55	43	G	41	36	32	26	21	E B 14	E B 15	E B 15	32
10	19	E B 15	E B 15	E B 16	18	22	45	A A 67	63	A A 94	61	73	74	G	44	47	75	84	94	51	45	43	34	41
11	19	E B 15	E B 15	E B 15	E B 15	G	28	36	50	62	40	41	45	42	44	64	54	53	64	58	62	20	21	28
12	19	30	32	27	E B 15	31	43	84	55	43	44	46	44	46	59	46	62	45	54	62	44	42	A A 96	45
13	40	36	24	33	19	33	57	69	A A 109	57	A A 150	54	A A 170	A A 147	A A 110	86	54	A A 113	53	64	63	22	42	42
14	E B 15	E B 14	19	16	E B 14	G 17	42	50	50	50	42	53	42	40	41	39	34	53	48	42	18	32	20	18
15	19	19	25	20	E B 14	19	35	A A 122	42	54	47	62	51	46	G	39	49	42	43	42	42	E B 15	44	17
16	E B 16	18	E B 15	E B 14	20	20	42	37	40	50	60	43	61	86	59	40	41	36	36	E B 14	37	35	40	20
17	E B 15	20	E B 16	E B 15	E B 14	20	G	37	46	43	47	41	G	44	51	43	36	30	23	18	16	17	E B 15	19
18	E B 15	16	18	18	E B 14	24	G	44	50	51	62	59	52	43	50	39	41	48	54	43	20	37	30	21
19	E B 15	E B 15	E B 15	E B 13	E B 14	22	30	35	54	50	45	44	41	42	53	48	58	36	38	35	19	18	E B 16	E B 15
20	E B 15	E B 15	17	21	E B 14	G	28	38	42	44	44	G	G	39	39	38	36	30	21	16	E B 14	16	E B 14	E B 16
21	E B 15	E B 15	E B 15	E B 15	E B 14	19	27	39	42	48	39	G	A A 131	62	54	37	G	30	27	19	19	24	30	24
22	E B 15	28	16	E B 15	17	20	29	43	38	40	46	53	68	58	G	39	38	40	51	46	38	36	40	26
23	29	E B 15	E B 15	17	38	26	33	50	45	44	43	41	49	G	G	38	39	A A 186	80	46	E B 15	E B 15	E B 15	E B 15
24	20	20	19	E B 15	E B 15	21	32	34	38	40	42	66	A A 83	38	39	41	G	31	22	16	E B 16	41	18	42
25	31	37	E B 15	27	22	G	44	33	42	47	43	43	47	44	56	41	46	58	25	E B 14	23	27	20	20
26	E B 15	19	16	E B 15	E B 16	G	30	38	61	67	41	50	51	A A 80	60	45	38	41	48	37	E B 15	20	31	22
27	E B 16	20	22	34	20	24	30	50	52	60	60	40	40	50	54	72	82	46	39	48	42	21	E B 15	28
28	23	17	19	E B 15	E B 15	23	38	54	72	52	42	52	G	G	40	58	49	49	52	44	34	44	32	35
29	27	38	35	19	E B 13	32	37	63	56	73	54	64	59	54	A A 79	47	76	51	57	66	20	38	33	34
30	40	21	22	19	20	23	44	53	58	48	A A 105	A A 113	A A 142	67	A A 118	A A 119	58	54	36	56	24	29	30	41
31	18	24	30	21	21	20	34	52	44	56	48	40	45	42	51	48	34	42	28	35	35	54	21	35
	00	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	18	17	16	E B 15	20	32	39	44	50	45	43	47	44	42	43	44	44	40	35	23	27	21	24
U Q	23	24	22	22	20	23	38	53	54	57	58	56	59	52	54	48	58	53	52	46	40	38	33	35
L Q	E B 15	E B 15	E B 15	E B 15	E B 14	G 17	28	36	40	44	42	41	42	40	G 40	39	36	32	29	18	E B 16	E B 18	E B 15	E B 17

MAY 2014 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

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

IONOSPHERIC DATA STATION Kokubunji

MAY 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	281	313	294	280	284	281	274	309	316	292	294	285	285	299	300	309	307	311	309	312	303	287	281	271
2	266	F	F	F	296	306	326	336	330	333	312	311	315	302	311	307	313	308	302	310	307	283	289	291
3	282	285	285	292	292	338	344	355	354	303	322	289	311	299	300	302	309	298	319	326	318	268	274	283
4	288	290	298	310	314	337	338	350	301	301	297	295	287	301	287	295	292	281	306	303	305	268	278	267
5	294	305	285	292	307	326	319	308	307	292	284	293	297	294	300	297	293	301	313	305	287	277	283	284
6	263	281	272	F	283	311	332	331	320	334	296	310	304	298	299	295	304	311	311	325	321	268	277	276
7	279	284	310	311	294	313	343	333	312	300	289	305	296	298	286	307	303	306	313	303	310	280	281	287
8	279	284	288	305	322	343	362	330	303	303	298	276	276	285	278	284	298	304	299	294	288	284	283	281
9	278	306	262	283	F	319	349	A	286	278	279	267	282	284	320	302	314	320	297	302	291	271	F	F
10	F	F	F	F	F	F	353	A	313	A	300	300	298	291	297	284	293	311	316	316	279	282	286	280
11	282	282	289	279	288	326	334	319	300	290	290	292	291	291	296	288	294	311	303	302	291	274	284	279
12	282	288	272	283	280	289	330	292	328	301	291	289	282	289	297	309	309	310	298	310	290	268	A	283
13	279	273	F	296	F	327	342	316	A	282	A	303	A	A	A	295	298	A	303	281	291	F	283	F
14	F	287	291	277	276	308	337	321	307	303	290	271	271	280	284	294	303	309	310	300	273	273	272	275
15	275	270	272	288	286	309	327	A	285	275	260	276	273	276	286	292	292	289	303	299	306	273	271	274
16	275	281	285	282	283	303	308	307	300	295	275	276	274	280	284	293	304	310	305	296	279	288	277	275
17	272	272	285	286	298	322	335	351	281	284	279	271	282	273	284	289	304	303	311	315	282	275	275	270
18	282	294	291	294	295	303	294	315	304	296	288	262	267	289	294	295	296	307	312	302	273	282	278	281
19	280	283	286	290	281	315	303	309	306	291	290	273	278	282	285	288	290	301	305	323	301	277	281	272
20	275	277	288	305	297	295	322	310	317	296	288	284	285	284	292	295	293	298	306	328	301	285	278	283
21	273	288	302	295	284	321	312	331	333	301	302	289	A	277	280	290	302	303	312	318	283	F	F	279
22	F	F	F	292	276	328	302	310	299	301	278	287	281	280	288	297	297	285	292	304	302	287	274	F
23	278	F	F	F	F	297	314	328	329	290	279	278	268	269	282	297	302	A	322	319	299	268	280	285
24	277	293	291	270	262	343	322	297	312	309	307	298	A	284	281	301	292	306	315	310	278	283	275	278
25	285	274	F	F	F	300	273	298	324	306	302	281	279	277	291	298	301	305	305	314	300	288	285	285
26	297	283	284	294	299	322	332	320	308	308	287	286	294	A	277	290	291	311	311	309	303	277	F	296
27	292	281	299	324	333	324	311	333	306	288	302	275	286	283	298	299	301	301	302	313	300	303	304	297
28	297	287	289	294	287	298	329	345	349	295	302	291	279	278	285	288	306	313	316	330	306	273	F	F
29	F	F	F	F	299	301	310	306	298	295	305	298	286	283	A	293	294	305	302	308	310	276	F	F
30	F	F	289	F	296	301	302	321	314	340	A	A	A	283	A	A	295	294	310	317	328	306	F	F
31	F	F	F	275	287	311	305	310	320	351	319	295	290	287	298	296	314	296	299	293	309	285	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	23	24	26	30	31	28	30	30	29	30	27	29	28	30	31	29	31	31	31	29	23	24
MED	279	284	288	292	290	312	326	320	310	298	291	288	285	284	290	295	301	305	306	310	300	277	280	280
U Q	284	289	291	296	298	326	337	332	320	303	302	295	294	292	298	299	304	310	312	317	306	285	283	284
L Q	275	281	285	282	283	301	308	309	301	291	286	276	278	280	284	290	293	300	302	302	287	273	275	275

MAY 2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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 SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	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 371		A	A	U L 400	375	364	390	A	A	U L 330	A					
2								U L 354	L	A	U L 403	U L 363	392	A	388	L	L	L	A					
3							A	L	L	U L 360	L	U L 365	U L 395	U L 367	U L 353	U L 348	A	A						
4									A	L	L	U L 346	A	367	L	A	A	L	A					
5								A	L	L	U L 370	U L 387	U L 368	U L 361	362	A	L	A						
6								L	L	A	L	A	U L 362	A	U L 357	U L 360	A	A	A					
7							A	A	L	A	A	A	A	A	L	L	A	A	A					
8									A	L	A	U L 368	U L 359	U L 356	U L 324	A	A	A	A					
9							A	A	U L 310	A	A	370	A	366	U L 374	U L 389	L	L	A					
10							A	A	A	A	A	A	A	U L 350	U L 369	A	A	A	A					
11								L	A	A	L	U L 359	374	U L 355	L	A	A	A	A					
12						A	A	A	A	U L 339	U L 397	U L 338	369	A	A	A	A	A	A					
13								A	A	A	A	A	A	A	A	A	A	A	A					
14							A	A	A	A	U L 347	A	U L 323	363	333	366	L	A	A					
15							A	A	A	A	U L 315	A	A	U L 353	U L 345	L	A	A	A					
16							A	L	U L 345	A	A	365	A	A	A	357	A	A	A					
17							L	L			L	U L 345	U L 333	336	A	U L 341	A	L						
18								A	A	A	A	A	A	U L 375	A	360	A	A	A					
19								L	A	A	U L 355	U L 375	U L 376	360	A	A	A	A	A					
20								A	A	A	A	356	355	356	U L 375	341	L	L	L					
21							L	A	A	A	U L 338	371	A	A	A	374	U L 341	L						
22								A	L	U L 371	U L 331	A	A	A	U L 380	U L 338	L	A	A					
23								A	A	A	U L 368	U L 379	A	366	358	360	A	A	A					
24							L	A	U L 375	U L 364	U L 366	A	A	377	362	U L 357	L	L	A					
25							A	369	A	A	U L 379	388	360	376	A	U L 349	A	A	L					
26								A	A	A	U L 381	A	A	A	A	A	343	A	A					
27							L	A	L	A	A	L	U L 383	A	A	A	A	A	A					
28							A	A	A	A	U L 379	A	U L 383	355	370	A	A	A	A					
29							A	A	A	A	A	A	A	A	A	A	A	A	A					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31							A	A	A	A	A	U L 375	U L 374	347	A	A	348	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	4	4	13	17	16	19	15	13	3	1						
MED								362	U L 358	U L 362	U L 368	U L 368	U L 372	361	U L 362	U L 357	343	U L 330						
U Q									373	U L 368	U L 380	U L 377	U L 380	367	375	363	348							
L Q									U L 328	U L 350	U L 342	U L 358	U L 360	355	U L 353	U L 344	U L 341							

MAY 2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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							318	278	316	362	E A 364	392	380	370	366	334	310	316	272					
2								260	278	254	322	322	304	332	310	282	296	296	272					
3							244	248	248	332	298	348	300	308	316	306	292	E A 286						
4									284	292	298	314	310	304	290	294	E A 302	306	262					
5								252	274	284	288	310	296	292	292	288	296	266						
6								264	272	260	306	294	312	288	298	292	276	262	252					
7							244	230	292	E A 300	E A 300	300	300	308	312	292	E A 286	E A 314	244					
8									E A 276	294	276	340	340	320	326	320	282	E A 308	E A 258					
9							256	A	414	E A 388	E A 394	430	390	360	302	330	306	276	290					
10							232	A	E A 318	A	E A 300	E A 330	E A 314	322	320	322	E A 322	E A 304	E A 308					
11								270	262	E A 328	298	330	316	316	294	E A 304	288	268	272					
12						258	248	E A 376	E A 264	316	328	324	336	312	306	294	270	256	E A 268					
13								E A 314	A	E A 290	A	300	A	A	A	E A 362	286	A	E A 264					
14							244	270	274	298	314	340	350	332	326	306	292	272	252					
15							246	A	272	310	362	340	334	336	310	310	288	292	258					
16							240	278	300	274	356	328	328	E A 370	324	306	290	266	244					
17							246	248			334	338	338	342	334	314	280	280						
18								272	276	306	E A 338	E A 362	354	324	322	314	300	280	282					
19								262	256	E A 300	314	354	342	322	324	318	E A 292	296	264					
20								262	268	284	298	330	336	324	318	300	298	286	270					
21							278	254	258	320	314	320	A	E A 350	330	306	284	276						
22								276	266	298	362	320	E A 364	348	320	302	294	290	E A 286					
23								242	236	246	362	354	372	334	304	288	280	A	E A 290					
24							254	250	290	312	310	E A 376	A	364	342	290	300	280	264					
25							E A 292	284	268	254	306	358	334	334	318	300	276	284	272					
26								268	E A 274	E A 294	320	330	300	A	E A 336	318	312	264	244					
27							290	240	318	E A 308	E A 318	318	364	340	308	E A 326	E A 350	278	262					
28							256	240	E A 276	E A 286	336	332	376	356	330	310	284	276	242					
29							242	E A 292	E A 290	E A 388	E A 318	E A 360	E A 362	368	A	316	E A 344	274	E A 280					
30							276	284	E A 310	278	A	A	A	E A 342	A	A	286	E A 300	272					
31							234	316	296	E A 264	292	384	370	350	314	316	284	294	258					
	00	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	26	29	29	29	30	27	29	28	30	31	29	27					
MED						258	246	264	275	291	310	330	335	329	318	306	289	278	261					
U Q							276	278	294	314	337	354	364	350	326	318	300	296	E A 272					
L Q							244	250	267	281	299	320	312	318	307	294	284	273	258					

MAY 2014 h′F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	E B 282	E A 250	E A 254	E B 276	E A 274	E A 258	238	E A 252	230	A	A	212	222	212	224	A	A	228	A	E B 236	230	E A 286	E A 306	E B 298
2	E A 374	E A 372	E A 354	E A 292	E A 268	E A 248	220	210	208	A	182	198	206	A	204	200	208	230	A	E A 238	E A 242	234	E B 250	E B 240
3	E B 266	E B 274	E B 270	E B 262	E B 268	234	A	216	204	212	E A 246	202	184	208	E A 238	E A 234	A	A	E A 266	230	222	E A 236	E B 266	E A 272
4	E B 260	E B 262	E B 254	E B 232	214	228	222	230	A	218	194	196	A	220	222	A	A	228	A	E A 234	210	E A 312	E A 254	E B 302
5	E B 266	E B 244	230	E B 242	E B 238	212	216	A	216	216	202	202	204	218	216	A	224	A	E A 238	230	E A 282	E A 346	E A 280	E A 296
6	E B 302	E B 294	E B 302	E A 258	E B 256	224	216	196	214	A	E A 242	A	220	A	224	E A 234	A	A	A	224	204	230	E B 274	E B 284
7	E B 284	E B 270	E B 236	224	E B 234	244	A	A	220	A	A	A	A	A	214	216	A	A	A	230	228	E A 276	E B 256	E A 270
8	E B 272	E A 290	E B 264	E A 252	210	222	212	218	A	222	A	202	210	E A 242	E A 238	A	A	A	A	E A 236	E A 260	E A 270	E A 242	E A 312
9	E A 316	E A 274	E A 338	E A 314	E A 312	E A 258	A	A	E A 260	A	A	214	A	226	206	218	230	E A 234	A	E A 246	E B 220	E B 242	E B 288	E A 344
10	E A 268	E B 312	E B 242	E B 232	E A 254	238	A	A	A	A	A	A	A	220	E A 236	A	A	A	A	E A 250	E A 294	E A 316	E A 272	E A 312
11	E A 284	E B 264	E B 264	E B 254	E B 238	234	224	214	A	A	204	190	216	216	226	A	A	A	A	E A 264	E A 316	E A 262	E A 284	E A 284
12	E A 278	E A 272	E A 298	E A 298	E B 254	A	A	A	A	204	190	236	212	A	A	A	A	A	A	E A 272	E A 252	E A 320	A	E A 316
13	E A 316	E A 324	E A 340	E A 286	E A 244	E A 242	224	A	A	A	A	A	A	A	A	A	A	A	A	E A 308	E A 316	E A 236	E A 288	E A 328
14	E B 250	E B 256	E A 244	E A 274	E B 276	E A 240	A	A	A	A	202	A	216	204	200	218	210	A	A	E A 254	E A 266	E A 292	E A 300	E A 300
15	E A 292	E A 294	E A 268	E A 270	E B 264	238	A	A	A	A	E A 242	A	A	226	216	220	A	A	A	E A 252	E A 274	E B 236	E A 336	E A 272
16	E B 280	E A 280	E B 262	E B 254	E A 280	E A 246	A	212	218	A	A	212	A	A	A	220	A	A	A	E B 238	E A 298	E A 274	E A 298	E A 282
17	E B 292	E A 294	E B 274	E B 272	E B 244	224	216	216	226	212	E A 236	200	210	214	A	E A 256	A	224	E A 248	226	224	E A 248	E B 266	E B 286
18	E B 276	E A 262	E A 244	E A 250	E B 236	220	218	A	A	A	A	A	A	212	A	218	A	A	A	E A 258	E A 276	E A 294	E A 290	E A 286
19	E B 276	E B 260	E B 258	E B 252	E B 272	232	224	214	A	A	E A 254	218	180	206	A	A	A	A	A	234	228	E A 244	E B 252	E B 280
20	E B 282	E B 276	E B 266	E A E 248	208	220	228	A	A	A	A	202	202	200	192	218	212	218	234	240	212	222	E B 246	E B 262
21	E B 286	E B 278	226	E B 234	E B 254	222	212	A	A	A	194	230	A	A	A	216	216	218	E A 242	226	E A 236	E A 286	E A 306	E A 282
22	E B 264	E A 280	238	230	E A 256	224	222	A	208	200	E A 246	A	A	A	222	230	220	A	A	E A 264	E A 252	E A 264	E A 300	E A 316
23	E A 274	E B 266	E B 228	232	E A 352	E A 248	234	A	A	A	220	194	A	220	198	202	A	A	A	E A 254	E B 220	E B 260	E B 266	E B 266
24	E A 290	E A 282	E A 264	E B 278	E B 324	238	210	A	214	228	212	A	A	190	208	E A 252	220	216	A	228	226	E A 300	E A 284	E A 318
25	E A 308	E A 326	E B 274	E A 288	E A 292	226	A	206	A	A	210	204	E A 256	208	A	230	A	A	234	232	216	E A 266	E A 278	E A 272
26	E B 256	E A 254	216	E B 248	E B 240	244	226	A	A	A	198	A	A	A	A	A	240	A	A	E A 238	214	E A 246	E A 304	E A 254
27	E B 248	E B 272	E A 272	E A 252	224	210	226	A	E A 244	A	A	188	192	A	A	A	A	A	A	E A 250	E A 254	E A 240	E B 242	E A 248
28	E A 260	E A 272	E A 262	E B 266	E B 274	212	A	A	A	A	186	A	204	218	214	A	A	A	A	E A 232	E A 246	E A 318	E A 324	E A 308
29	E A 256	E A 300	E A 310	E A 264	E B 252	E A 248	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 262	222	E A 304	E A 316	E A 318
30	E A 278	E A 270	E A 248	E A 250	218	E A 236	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 258	228	E A 240	E A 326	E A 348
31	E A 272	E A 256	E A 294	E A 304	E A 266	216	A	A	A	A	A	192	226	E A 252	A	A	212	A	A	E A 266	E A 250	E A 316	E A 308	E A 308
	00	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	18	11	12	8	18	18	16	19	18	16	10	8	6	31	31	31	30	31
MED	E B 278	E A 274	E A 264	E 254	E B 254	228	222	214	216	214	200	202	209	214	214	218	218	224	E A 240	E A 238	E A 236	E A 266	E A 284	E A 286
U Q	E A 290	E A 294	E A 274	E A 276	E A 274	E A 244	226	218	228	220	E A 242	212	218	220	E A 224	E A 232	224	229	E A 248	E A 258	E A 266	E A 300	E A 304	E A 312
L Q	E B 266	E 262	244	E 248	238	222	216	210	211	208	194	196	203	208	206	217	212	218	234	232	222	E 240	E B 266	E A 272

MAY 2014 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

IONOSPHERIC DATA STATION Kokubunji

MAY 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	102	102	100	98	112	126	126	122	120	108	106	120	118	G	104	100	122	122	106	B	104	102	102	104
2	100	100	96	96	96	96	134	104	104	102	104	114	116	104	106	102	G	118	118	104	102	102	102	102
3	B	102	96	88	B	124	116	104	106	100	100	100	100	106	106	120	124	102	100	96	104	98	104	96
4	96	96	94	B	B	130	120	106	104	104	106	102	102	106	120	108	112	108	104	104	104	100	100	100
5	B	100	B	B	94	134	122	114	112	102	102	102	102	104	102	100	102	94	94	90	90	102	106	100
6	94	102	96	98	100	108	120	120	104	104	118	110	122	122	118	116	104	104	100	98	104	B	B	B
7	104	B	104	100	100	B	130	122	120	104	104	100	96	106	G	G	106	102	102	102	106	100	102	98
8	96	96	92	92	92	98	120	104	104	108	106	106	112	140	102	120	104	104	102	102	102	102	98	100
9	96	96	96	96	96	94	120	102	108	104	102	114	102	124	G	124	108	102	102	102	B	B	108	102
10	100	100	100	94	94	114	104	104	102	102	100	98	96	G	124	114	102	102	100	98	98	100	96	94
11	96	96	B	B	B	G	116	116	104	102	104	114	104	104	128	122	108	104	100	100	98	98	98	94
12	100	100	98	96	106	122	114	102	102	104	108	124	128	122	106	116	102	102	102	100	98	98	98	120
13	94	98	96	96	100	104	104	100	100	100	100	98	94	94	108	102	106	102	102	98	104	102	98	96
14	92	92	92	94	92	96	104	100	100	104	104	96	96	100	100	98	100	104	100	100	100	98	98	96
15	96	92	92	84	86	122	116	96	100	98	98	102	100	100	G	102	106	104	104	102	98	100	98	94
16	92	92	88	B	96	102	104	116	104	100	98	102	102	100	98	100	96	118	108	B	96	96	94	94
17	92	92	92	B	B	144	G	120	100	102	106	108	G	98	98	102	100	114	104	96	94	98	B	100
18	94	94	90	96	B	96	G	120	106	108	106	102	102	104	108	126	128	106	104	104	100	98	94	96
19	90	90	B	B	B	130	132	120	106	104	102	102	104	100	96	98	98	92	92	104	94	92	B	B
20	96	92	100	92	106	G	132	122	108	104	104	G	G	102	104	102	102	100	102	100	B	100	B	B
21	100	96	B	92	B	140	130	120	110	102	102	G	102	102	102	108	G	100	100	96	106	98	100	100
22	100	92	94	96	102	126	124	106	108	108	108	104	108	108	G	148	128	110	102	102	98	98	100	102
23	98	100	B	98	98	98	124	120	104	108	110	104	106	G	G	104	116	104	100	92	100	B	B	92
24	98	92	92	90	B	114	112	120	116	108	112	100	98	98	104	98	G	120	114	106	106	100	100	94
25	98	98	100	100	100	G	112	116	104	102	108	110	116	116	104	106	102	102	102	B	96	96	94	88
26	90	90	90	88	88	G	118	106	98	100	100	100	98	96	96	94	118	104	102	102	102	102	98	98
27	100	104	98	98	98	114	118	102	102	98	96	100	102	110	128	112	110	110	100	100	100	98	98	92
28	92	92	92	92	92	124	118	106	106	104	104	110	G	G	120	106	106	104	104	100	98	98	102	100
29	94	94	94	92	B	116	120	108	104	102	100	98	98	126	108	118	104	104	104	98	100	100	100	100
30	92	92	92	96	96	102	122	104	102	104	104	100	100	98	96	96	94	94	96	94	94	104	104	104
31	96	100	92	92	96	134	126	116	106	100	104	104	104	104	106	98	124	108	106	102	102	102	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	26	25	22	26	29	31	31	31	31	29	28	27	26	30	28	31	31	28	29	28	26	28
MED	96	96	94	96	96	115	120	108	104	104	104	102	102	104	105	105	106	104	102	100	100	100	100	99
U Q	100	100	98	97	100	126	125	120	108	104	106	110	107	110	108	116	114	108	104	102	104	102	102	101
L Q	93	92	92	92	94	102	115	104	102	102	100	100	99	100	102	100	102	102	100	98	98	98	98	94

MAY 2014 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	F2	F3	F3	F2	F5	C1	C2	C1	C2	L2	L2	C1	C2		L2	L2	CL22	CL22	L4		F1	F3	F2	F2
2	F4	F5	F4	F5	F5	L2	C1	L2	L2	L2	L2	C1	C2	L2	L2	L2		C2	C2	F3	F2	F1	F2	F1
3		F1	F1	F2		C2	C2	L2	L2	L2	L2	L2	L2	L2	L2	C2	C2	L4	L3	F3	F3	F3	F2	F2
4	F2	F2	F1			C1	C1	L3	L2	L2	L2	L2	L2	L2	C1	L2	C3	L3	L3	F2	F1	F4	F1	F1
5		F1			F1	C1	C1	C2	L2	L2	L1	L2	L2	L2	L2	L2	L2	L2	L3	F4	F3	FF44	FF24	FF33
6	F2	F2	F2	F3	F2	L1	C2	C1	L2	L2	C1	L2	C2	C2	C2	C2	L3	L3	L3	F2	F1			
7	F2		F1	F1	F2		H1	C1	C2	L2	L3	L2	L2	L2			L3	L3	L3	F2	F2	F4	F2	F3
8	F2	F3	F2	F4	F6	L2	C1	L2	L2	L2	L2	L2	C1	H1	L2	C2	L2	L4	L3	F5	F5	F5	F4	F5
9	F8	F3	F5	F4	F4	L3	CL22	L3	L2	L2	L3	C2	L2	C1		C1	L2	L2	L2	F4			F2	F6
10	F2	F3	F2	F3	F3	C1	L3	L3	L3	L3	L3	L2	L2		C1	C1	L2	L3	L4	F4	F5	F5	F4	F5
11	F2	F2					C1	C1	L2	L2	L2	C1	L2	L2	C2	C3	L2	L3	L6	F4	F5	F4	F4	F3
12	F2	F3	F3	F4	F1	C3	C3	L3	L2	L1	L1	C1	C1	C1	L2	C2	L3	L3	L4	F4	F6	F4	F5	FF25
13	F5	F3	F4	F4	F3	L4	L3	L3	L3	L2	L3	L2	L3	L3	CL22	L3	L2	L3	L4	F5	F6	F4	F4	F7
14	F2	F2	F3	F1	F2	L1	L2	L3	L3	L2	L2	L2	L2	L2	L2	L2	L1	L3	L5	F3	F2	F3	F3	F2
15	F2	F2	F3	F3	F1	C1	C1	L3	L2	L2	L2	L1	L2	L1		L1	L3	L3	L3	F4	F4	F3	F4	F3
16	F2	F2	F1		F2	L1	L2	C1	L2	L2	L2	L2	L2	L2	L2	L2	L2	C1	L3		F2	F3	F3	F3
17	F2	F5	F1			H1		C1	L2	L2	L2	L2		L2	L2	L2	L2	C1	L2	F1	F2	F1		F2
18	F2	F2	F1	F2		L2		C2	L2	L2	L2	L2	L2	L1	L1	C1	C1	L2	L3	F4	F4	F3	F3	F3
19	F5	F1				C2	C1	C1	L2	L2	L2	L1	L2	L2	L2	L2	L3	L2	L2	FF32	F3	F2		
20	F2	F2	F2	F2	F1		C1	C1	L1	L2	L2			L1	L1	L1	L2	L1	L2	F1		F3		
21	F1	F1		F2		H2	C1	C1	L2	L2	L1		L2	L2	L2	L2		L2	L2	F2	F3	F3	F3	F3
22	F2	F3	F2	F1	F1	C1	C2	L2	L2	L1	L2	L2	L2	L2		H1	C1	L2	L3	F3	F4	F3	F5	F6
23	F2	F2		F2	F5	L4	C2	C2	L2	L2	L2	L2	L2			L2	C2	L3	L4	F3	F2			F2
24	F3	F2	F2	F2		C2	C2	C1	C2	L2	C1	L2	L2	L2	L2	L2		CL11	C2	F2	F1	F3	F3	F4
25	F3	F4	F4	F3	F2		L2	C1	L2	L2	L1	L1	C1	C1	L3	L2	L3	L3	L2		F3	F4	F5	F3
26	F2	F4	F2	F2	F1		C1	L2	L3	L3	L2	L2	L2	L2	L2	L2	C1	L2	L4	F4	F2	F2	F3	F3
27	F2	F3	F4	F4	F3	C2	C2	L2	L3	L2	L2	L2	L2	L2	CL22	CL21	CL32	CL32	L3	F4	F4	F3	F2	F4
28	F3	F2	F1	F1	F1	C1	C2	L3	L3	L2	L2	L2			C1	L2	L3	L4	L3	F3	F4	F6	F4	F3
29	F4	F3	F3	F2		C3	C2	L4	L3	L3	L2	L2	L2	CL22	L3	C2	L2	L3	L3	F4	F3	F6	F4	F3
30	F5	F3	F3	F3	F2	L2	C2	L3	L2	L2	L2	L2	L3	L3	L2	L3	L3	L3	L3	F3	F5	F3	F3	F4
31	F3	F4	F4	F4	F3	C1	C2	C3	L2	L2	L2	L2	L2	L2	L2	L2	C1	L3	L2	F5	F3	F3	F2	F3
	00	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																								

MAY 2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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 101	X 112	X 104	X 88	X 84	X 80														X 101	X 80	X 67	X 66	X 70
2	X 67	X 66	X 64	X 66	X 59	X 55														X 103	X 91	X 86	X 79	X 80
3	X 75	X 73	X 73	X 66	X 67	X 68														X 111	X 88	X 84	X 83	X 83
4	91	94	X 105	100	X 77	X 65														X 122	X 111	80	89	X 88
5	X 92	X 90	X 88	X 78	X 74	X 69														X 111	X 98	X 92	X 86	X 80
6	X 82	96	99	X 81	X 75															X 113	X 90	X 92	X 100	X 98
7	X 100	X 102	X 102	X 85	X 74																X 112	X 96	X 104	X 109
8	X 107	X 104	X 106	X 104	X 88																X 113	X 94	X 90	X 82
9	X 84	X 86	X 84	X 78	X 79																X 85	X 80	X 74	X 79
10	X 74	X 74	75	X 75	X 69																X 86	X 86	X 91	X 88
11	X 86	90	82	82	76																X 108	X 103	X 99	X 96
12	X 97	X 89	X 79	X 73	X 71																X 92	X 86	X 88	A
13	X 97	85	79	X 82	X 78																X 102	X 92	X 92	X 92
14	O X 90	X 82	A	X 80	82																X 90	X 94	102	99
15	X 106		119	99	X 89																X 97	X 86	X 84	X 92
16	X 94	X 103	X 96	X 92	X 90																X 94	X 92	X 90	X 90
17	X 89	X 89	X 90	X 90	X 84																X 106	X 92	X 102	X 102
18	X 106	X 106	X 102	X 100	X 96																X 97	X 102	X 102	X 109
19	X 106	X 104	X 100	X 91	X 86																X 116	X 99	X 106	X 107
20	X 103	X 100	X 96	X 93	X 87																X 104	X 101	X 98	X 98
21	X 95	X 95	X 91	X 86	X 78																X 88	X 90	X 88	X 88
22	X 90	X 89	X 84	83	X 79																X 92	X 82	73	75
23	X 86	81	X 78	67	66	69															X 86	X 90	X 93	X 92
24	X 93	X 92	X 87	X 80	X 67																X 89	X 86	X 88	X 88
25	X 91	X 82	X 77	X 73	X 71																X 98	X 96	X 89	X 92
26	X 89	X 84	X 80	X 80	X 78																X 95	X 85	X 92	X 94
27	X 90	X 93	X 90	X 78	X 66																X 99	X 91	X 85	X 88
28	X 86	X 84	X 75	X 72	X 72																X 81	X 80	X 83	X 84
29	X 84	X 82	X 75	X 80	X 75																X 96	X 87	X 93	100
30		X 95	X 98	X 86	X 85																X 84	X 73	77	78
31	X 77		83	71	65	64															X 90	X 78	X 82	X 82
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	31	31	7														6	31	31	31	30
MED	X 90	X 90	X 88	X 81	X 77	X 68														X 111	X 94	X 90	X 89	X 89
U Q	X 97	X 98	X 99	X 90	X 84	X 69														X 113	102	X 94	X 98	X 98
L Q	X 86	X 83	X 79	X 75	X 71	64														X 103	X 88	X 84	X 83	X 82

IONOSPHERIC DATA STATION Yamagawa

MAY 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	95	R 106	98	82	78	74	89	106	102	98	95	93	R 107	R 105	90	82	87	95	100	95	74	61	60	64
2	61	60	58	60	53	49	59	76	73	65	68	78	80	A	A	89	82	86	93	97	85	80	73	74
3	69	67	67	60	61	62	72	72	64	72	A	A	96	R 104	101	R 102	R 104	108	108	105	82	78	77	V 77
4	F 82	F 86	99	92	71	59	66	68	89	95	91	92	U R 110	R	115	116	115	115	118	R 116	105	74	80	82
5	86	84	82	72	68	63	71	83	86	93	101	R 110	R 122	R 132	R 130	U R 122	128	120	112	105	92	86	80	74
6	F 75	F 90	90	75	69	68	81	91	82	78	85	98	101	107	112	116	R 120	118	113	107	84	86	94	92
7	94	96	96	79	68	74	78	80	84	90	89	94	102	103	J R 112	R 114	116	R 112	115	118	R 106	V 90	98	R 103
8	101	98	100	98	82	65	65	74	83	84	87	96	R 110	R 110	R 116	U R 127	R 128	R 125	116	116	R 107	U R 88	84	76
9	78	80	78	72	73	70	68	69	77	79	81	78	75	80	86	82	82	84	81	82	79	74	68	73
10	68	68	F 66	69	63	60	69	67	75	A	85	90	96	99	R 108	115	118	118	A	94	80	80	85	82
11	F 79	F 83	F 74	F 74	68	F 72	79	75	79	87	95	97	R 108	R 115	114	104	A	112	A	A	102	97	93	90
12	91	83	73	67	65	72	99	85	72	82	94	R 108	R 118	J R 127	J R 128	U R 122	114	116	116	108	86	80	82	A
13	R 91	F 78	F 73	F 74	72	66	68	78	77	84	97	96	100	104	104	111	114	118	113	110	96	86	F 84	F 84
14	R 84	76	A	F 72	F 74	F 78	F 80	93	103	94	87	90	103	R 112	121	118	R 112	114	108	95	V 84	88	F 95	F 97
15	F 98	F	F 112	89	83	81	90	90	88	90	A	A	112	116	R 115	115	114	103	104	107	91	80	78	86
16	88	97	90	86	84	78	85	V 84	90	92	A	R 103	U R 105	113	118	116	R 120	116	110	103	88	86	84	84
17	83	83	84	84	78	76	84	91	72	74	82	91	99	U R 108	115	116	119	118	114	J R 108	100	86	96	96
18	100	100	96	94	90	91	92	90	94	82	84	95	106	112	112	U R 108	110	111	105	95	91	96	96	103
19	100	98	94	85	80	79	87	90	87	90	95	96	R 106	117	126	128	128	129	U R 126	117	110	93	100	101
20	97	94	90	87	81	76	83	84	80	86	92	96	U R 106	U R 110	U R 110	115	U R 122	J R 129	118	112	98	95	92	92
21	89	89	85	80	72	77	99	89	78	74	80	84	A	96	100	R 110	116	118	108	92	83	84	82	82
22	84	83	F 76	F 76	73	80	84	83	85	82	78	82	93	100	104	102	103	99	R 104	97	86	76	64	68
23	F 77	F 74	F 71	F 60	F 58	F 62	79	81	76	71	73	83	95	100	105	108	112	111	109	94	80	84	87	86
24	87	86	81	V 74	61	68	72	81	77	64	74	79	81	81	94	100	98	98	96	91	83	80	82	82
25	F 83	76	71	67	65	65	79	95	86	82	95	93	101	R 106	116	R 118	117	116	109	103	92	90	83	86
26	83	78	74	74	72	69	72	83	82	81	85	95	R	102	R 106	114	R 120	114	R 108	R 107	89	79	86	88
27	F 83	87	84	72	60	55	70	89	84	79	88	92	96	101	102	R 108	R 110	113	102	99	93	85	79	82
28	80	78	F 66	66	66	68	86	94	86	78	72	77	87	97	102	113	117	106	92	83	75	74	77	78
29	78	76	69	74	69	62	72	96	A	78	A	A	A	93	101	104	R 110	J R 110	111	113	90	81	87	91
30	F	89	92	F 80	79	F 79	78	86	86	A	A	75	R 87	96	J R 106	112	114	118	114	95	78	67	69	70
31	71	F	74	F 62	F 58	57	60	81	J R 71	77	67	A	74	R 84	90	92	86	92	94	100	84	72	F 73	F 74
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	31	31	31	31	31	30	29	26	27	28	29	30	31	30	31	29	30	31	31	31	30
MED	84	83	82	74	71	69	79	84	82	82	86	93	101	104	109	113	114	114	109	103	88	84	83	83
U Q	91	92	92	84	78	77	85	90	86	90	94	96	R 106	112	115	116	R 119	118	114	108	96	88	92	91
L Q	78	77	73	69	65	62	70	78	77	78	80	83	94	98	102	104	110	106	103	95	83	78	77	76

MAY 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	A	A	A	L	L	U L 536	U L 528	U L 532	L	U L 520	U L 440	L					
2								L	L 444	L	L	L 536	L 564	A	A	L 524	U L 484	A	A					
3										L 504	A	A	A	L 524	U L 528	L 488	L 480	A	A					
4									L	A	A	U L 556	L	L	L 524	L	L	U L 500	A					
5									L	L	U L 536	U L 568	L 560	L 540	L	A	U L 532	L	L					
6								L	L	L 472	U L 544	L 564	U L 560	L 560	L 560	L 532	L 504	L	A					
7									L	L	A	L 552	U L 564	L 564	L 564	L	A	A						
8								A	L	L 500	U L 556	L 568	L	A	A	A	A	A	A					
9								L	U L 516	L 548	516	536	544	A	524	500	500	U L 480	L					
10							A	A	A	A	U L 552	L 556	U L 588	U L 560	L	A	L 516	A	A	A				
11							228	A	L	L	A	R	L 576	A	L	A	A	A	A	A				
12									A	A	A	A	L 548	U L 576	L 552	L 520	U L 520	L 460	L					
13								L	A	A	A	A	A	A	A	A	U L 520	A	A					
14							L		A	A	A	L 588	A	A	A	A	A	A	A					
15									A	A	A	A	A	A	A	540	L 532	L	A					
16										A	A	A	U L 552	A	556	A	L 524	L	A					
17								L	L	U L 496	L	L	L	L 580	A	L 536	U L 536	L	A					
18									L	A	L	L 580	592	A	A	A	A	L	A					
19									L	U L 532	L 532	U L 636	L 552	560	528	520	U L 512	A						
20								L	A	A	U L 556	U L 564	576	R 536	R 536	544	L 496	L 464	L					
21								L	L	A	L	A	A	A	R 516	L 508	L 464	L 452						
22								A	L	A	U L 524	L 564	L 532	520	524	U L 524	L 504	L 456	L					
23								L	A	A	A	L 536	560	R 540	A	492	L 504	U L 452	L					
24							U L 300	L	L	L	L	L	536	524	R 520	L 488	L 492	U L 476	L	L				
25							L	L	L	L 584	A	A	A	L 524	L 528	A	A	L	A					
26								L	A	A	A	A	A	540	A	508	456	L	A					
27						A		U L 456	U L 468	L 476	524	L 520	524	A	524	496	A	A						
28								L	A	A	L 556	556	A	R 528	L 512	464	L 468	A	L					
29							L	A	A	A	A	A	A	504	A	A	A	A	L					
30								A	A	A	A	A	508	A	492	496	460	L 452	L					
31							L	A	A	A	A	A	A	A	A	500	A	U L 456	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	1	3	8	10	16	18	17	17	18	21	11						
MED							264	U L 456	U L 468	L 502	U L 540	L 560	L 556	L 540	528	508	L 504	U L 456						
U Q									U L 516	L 540	U L 556	L 568	L 564	L 560	L 544	L 524	U L 520	U L 476						
L Q									L 444	L 486	524	L 544	536	524	522	496	L 482	L 452						

MAY 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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							U A 180	A 276	324	U A 356	360	A 372	R 380	388	372	392	R 344	A 304	U A 200					
2							176	268	308	U A 348	R 368	U R 384	A 392	A	A	A	340	304	U A 244					
3							U A 164	A 272	U A 324	U A 336	A	A	A	A	R 388	B	A 352	304	U A 260					
4							U A 192	A 272	A 324	U A 364	U A 368	A 372	A	R 392	U R 384	368	340	300	U A 232					
5							A 196	A 272	A 308	A	A	U A 364	U A 384	A 376	U A 368	A	A	U A 292	A					
6						B	B	A	320	A	R 384	U R 396	400	396	B	R 384	R 348	A 304	A					
7						B	A 220	A 288	328	R 352	372	U A 396	400	R 404	R	376	352	304	U A 224	A				
8						A	A	288	324	U A 372	R 392	396	A 396	R 396	392	368	348	A 308	U A 228	A				
9						A	204	A 276	U A 312	360	380	R 388	396	R 408	R 376	372	344	A 296	U A 256	U A				
10						U A 172	U A 196	276	320	A	A	A	A	U A 456	R 416	372	R 364	A 320	U A 224	A				
11						A	U A 204	276	320	R 352	R 368	R 380	A	A	R 424	A	A 372	A 304	A 240	A				
12						B	A 216	A 284	U A 328	A 356	A	A	A	A	R 388	376	364	312	U A 224	B				
13						A	A	284	U A 352	A	U A 388	U R 412	U R 420	404	412	U A 388	364	U A 336	A	A				
14						A	U A 212	U A 288	U A 340	A 356	A	A	A	A	A	A	A	A	A	A				
15						A	U A 212	U A 284	U A 328	U A 356	A	A	A	A	R 412	A	A	A	A	A				
16						B	160	280	A 336	U A 376	U A 376	A	A	A	R 392	A	U R 360	R 316	A	A				
17						B	208	A 284	A 328	R 340	364	456	A	A	A	A	R 352	A	A	A				
18						B	A 220	284	A 336	356	364	A	A	U R 416	U A 392	U A 384	A 360	A 316	U A 252	A				
19						B	A 216	A 284	A 328	A 348	U A 360	A	A	A	A	A	A	A	A	A				
20						A	A	276	A 324	A 364	U A 376	U A 380	U A 376	A	A	A	U A 324	A	A	A				
21						A	200	280	312	R 348	360	A	A	A	A 364	U A 344	A	U A 296	U A 216	A				
22						B	A 224	276	324	356	U A 332	R 396	R 388	R	R	R 340	R 332	296	248	A				
23						A	224	280	320	R 356	364	U A 372	U A 376	A	A	A	U A 300	A	A	A				
24						A	A 212	U A 280	U A 328	U A 348	A	A	A	A	R 356	A	A	A	A	A				
25						A	224	276	U A 336	U A 360	A 392	U A 400	U A 396	U A 388	A 388	368	332	A 292	U A 212	A				
26						B	U A 204	A 268	U A 312	U A 328	A	A	A	A	A	A	U R 400	296	U A 236	B				
27						B	U A 224	U A 268	U A 324	A	U A 360	A	400	U A 400	380	368	340	A 300	A 236	A				
28						B	220	A 276	U A 316	U A 328	R 356	376	R 384	R 388	U R 380	360	332	292	U A 216	B				
29						B	U A 196	U A 272	A 308	A 344	A	A	A	U R 352	R 392	360	U A 344	A	U A 248	B				
30						B	A 224	A 280	U A 312	U A 332	A	A	U A 368	A	A	A	A	R 292	248	B				
31						B	220	A 284	A 312	A 340	A	A	A	A	A	A	A	A	236	U A 164				
	00	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	27	30	31	26	20	16	15	14	19	16	23	22	20	1				
MED						U A 172	A 212	A 278	A 324	A 354	368	386	392	396	R 388	370	348	A 304	U A 236	U A 164				
U Q							A 220	A 284	U A 328	U A 356	378	U 396	400	R 404	R 392	380	360	A 308	U A 248					
L Q							U A 196	A 276	A 312	U A 344	360	A 374	U A 380	388	376	364	340	296	U A 224					

MAY 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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 31	J A 46	J A 27	J A 28	J A 26	28	J A 47	J A 54	J A 67	J A 59	J A 57	42	J A 53	40	42	38	34	J A 47	J A 28	J A 30	J A 40	J A 18	J A 34
2	E B 16	J A 16	J A 27	J A 40	J A 20	20	20	28	35	J A 75	46	42	50	J A 145	J A 108	J A 98	J A 46	J A 55	J A 55	J A 60	J A 146	J A 78	J A 64	J A 32
3	22	J A 17	J A 24	J A 25	J A 26	J A 22	J A 40	J A 54	J A 52	J A 94	J A 110	J A 106	J A 69	J A 74	47	E B 43	J A 48	J A 55	J A 95	J A 140	J A 48	J A 86	J A 75	J A 46
4	J A 66	J A 50	J A 48	J A 18	J A 28	J A 27	23	36	J A 43	J A 66	J A 66	49	J A 68	50	41	J A 54	J A 50	36	J A 84	J A 80	J A 66	J A 141	J A 29	20
5	E B 16	J A 19	J A 32	J A 32	J A 17	J A 29	26	34	J A 45	J A 44	J A 67	39	51	54	J A 50	80	J A 44	J A 37	J A 28	J A 41	J A 22	J A 78	J A 64	J A 52
6	J A 64	J A 50	J A 32	J A 28	J A 25	J A 20	J A 31	J A 34	35	38	42	44	50	41	42	42	38	J A 45	J A 49	54	J A 86	J A 98	J A 72	E B 16
7	J A 18	J A 19	22	E B 16	E B 16	E B 16	26	34	J A 66	J A 45	J A 75	47	49	G	G	48	J A 56	J A 58	J A 50	J A 75	J A 26	J A 43	J A 96	J A 66
8	J A 58	J A 29	20	J A 20	J A 29	J A 35	J A 32	36	42	J A 46	44	48	J A 56	57	J A 68	J A 81	J A 99	J A 73	J A 72	J A 59	J A 92	J A 96	J A 73	J A 26
9	J A 33	J A 36	J A 51	J A 50	J A 33	J A 36	G	36	J A 73	40	43	43	49	60	40	47	41	36	J A 46	J A 21	J A 22	J A 25	J A 30	J A 25
10	J A 30	J A 158	J A 112	J A 53	J A 48	J A 38	J A 52	J A 41	72	J A 145	J A 44	J A 56	J A 89	51	J A 55	J A 92	43	J A 70	J A 126	J A 54	J A 31	J A 54	J A 88	J A 44
11	J A 53	J A 40	J A 25	J A 52	J A 21	J A 20	23	37	J A 46	46	J A 60	J A 56	59	J A 94	45	J A 93	J A 141	J A 118	J A 136	J A 182	J A 151	J A 144	J A 73	J A 22
12	J A 36	J A 27	J A 18	J A 21	J A 22	J A 19	29	J A 50	J A 82	J A 74	J A 79	J A 109	J A 95	J A 46	44	40	41	38	J A E B 32	J A 16	17	22	J A J A 103	J A 109
13	J A 70	J A 80	J A 58	J A 61	J A 52	J A 29	J A 28	34	J A 47	J A 64	J A 89	J A 96	J A 59	J A 59	64	J A 69	J A 46	J A 59	J A 54	J A 58	J A 76	J A 110	J A 73	J A 85
14	J A 108	J A 64	J A 99	J A 84	J A 43	J A 22	25	J A 50	J A 68	J A 80	J A 108	J A 50	J A 102	J A 142	J A 94	J A 86	69	J A 90	J A 142	J A 109	J A 98	J A 86	J A 68	J A 64
15	J A 36	J A 43	J A 52	J A 44	J A 32	J A 26	J A 34	J A 45	J A 87	J A 144	J A 218	J A 158	J A 114	J A 66	J A 56	J A 42	J A 42	J A 38	J A 84	J A 46	J A 45	J A 37	J A 37	J A 51
16	J A 57	J A 54	J A 47	J A 21	20	E B 16	J A 26	34	J A 50	J A 76	J A 99	J A 92	J A 58	J A 56	43	J A 58	39	38	J A 42	J A 34	J A 26	J A 44	35	J A 30
17	J A 73	J A 21	J A 16	J A 17	E B 16	E B 16	24	32	J A 46	44	52	49	J A 55	J A 46	J A 66	40	39	J A 44	J A 76	J A 111	J A 59	J A 66	J A 43	19
18	J A 43	J A 27	J A 20	20	E B 16	E B 16	25	32	43	47	J A 54	38	J A 54	61	J A 80	J A 61	J A 55	J A 55	J A 58	J A 65	J A 66	J A 76	J A 50	J A 26
19	J A 38	J A 28	J A 18	J A 18	E B 16	E B 16	24	J A 33	40	J A 49	J A 48	J A 57	J A 45	J A 44	J A 46	J A 47	J A 43	J A 54	J A 44	J A 48	J A 33	J A 29	J A 32	J A 36
20	20	E B 16	J A 26	J A 26	J A 25	J A 26	J A 31	31	J A 56	J A 55	J A 50	J A 44	J A 52	J A 46	36	45	36	33	J A 42	J A 59	J A 37	J A 27	J A 22	J A 23
21	E B 16	E B 16	22	J A 20	22	J A 18	26	31	37	J A 59	J A 51	J A 68	J A 98	J A 114	J A 47	J A 47	38	32	J A 47	J A 41	J A 43	J A 42	J A 24	J A 20
22	J A 24	J A 47	J A 32	J A 27	21	E B 16	25	J A 67	41	J A 69	35	50	42	40	G	G	G	G	30	J A 33	J A 82	J A 128	J A 87	J A 75
23	J A 48	J A 77	J A 66	J A 38	J A 50	J A 50	27	34	J A 60	J A 65	J A 61	J A 51	48	J A 63	J A 66	J A 56	J A 43	J A 42	J A 38	J A 30	J A 34	J A 45	J A 27	J A 19
24	J A 46	J A 30	J A 28	J A 17	18	18	26	31	J A 40	J A 61	J A 49	J A 52	46	44	J A 48	J A 42	J A 38	35	J A 33	J A 41	J A 38	J A 22	J A 20	J A 53
25	J A 39	J A 48	J A 40	J A 32	J A 19	J A 32	J A 26	J A 31	37	J A 49	J A 109	J A 68	J A 84	J A 58	J A 72	68	J A 56	J A 39	43	J A 50	J A 38	J A 45	J A 42	J A 25
26	J A 29	E B 16	E B 16	E B 16	19	J A 16	23	J A 39	60	J A 61	J A 84	J A 84	J A 128	J A 112	J A 58	42	44	J A 46	J A 62	J A 38	J A 27	J A 17	J A 62	J A 48
27	J A 59	J A 30	J A 73	J A 48	J A 50	J A 26	28	J A 40	35	J A 42	38	40	47	J A 55	45	40	J A 58	J A 56	J A 42	J A 33	J A 28	J A 42	J A 47	J A 36
28	J A 29	J A 28	J A 28	J A 26	J A 18	E B 16	J A 40	35	J A 72	J A 85	J A 43	41	58	44	G	43	41	J A 58	J A 76	J A 50	J A 49	J A 51	J A 32	J A 50
29	J A 41	J A 38	J A 34	J A 27	17	E B 16	29	J A 62	J A 110	J A 87	J A 108	J A 118	J A 260	44	J A 52	J A 64	J A 77	106	J A 40	J A 37	J A 54	J A 75	J A 86	J A 74
30	J A 75	J A 61	J A 44	J A 23	19	J A 18	J A 38	J A 48	J A 110	J A 144	J A 99	J A 125	43	J A 85	J A 46	J A 46	40	33	30	23	J A 24	J A 20	J A 60	J A 66
31	J A 77	J A 49	J A 60	J A 24	J A 25	J A 14	31	J A 50	J A 75	J A 59	J A 74	J A 90	J A 67	J A 77	J A 72	J A 41	J A 72	J A 54	J A 64	J A 40	J A 50	J A 55	J A 41	J A 39
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	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 39	J A 31	J A 32	J A 26	J A 22	J A 20	26	36	J A 50	J A 61	J A 60	J A 52	J A 56	J A 56	J A 47	J A 47	J A 43	J A 45	J A 49	J A 48	J A 43	J A 51	J A 50	J A 36
U Q	J A 59	J A 50	J A 51	J A 40	J A 29	J A 27	J A 31	J A 47	J A 72	J A 76	J A 89	J A 90	J A 84	J A 74	J A 66	J A 68	J A 56	J A 58	J A 76	J A 60	J A 66	J A 86	J A 73	J A 53
L Q	24	J A 21	22	J A 20	18	E B 16	25	33	41	46	46	44	49	46	42	42	39	36	J A 42	J A 34	J A 28	J A 37	J A 32	J A 25

MAY 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	25	28	16	23	22	28	42	49	53	57	55	42	51	40	42	37	G 30	25	25	E B 16	30	E B 16	23
2	E B 16	E B 16	17	33	20	E B 16	20	28	34	43	46	41	45	A A 145	A A 108	41	41	49	46	58	33	45	20	21
3	E B 16	E B 16	E B E B 16	E B 16	23	E B 16	36	48	44	40	A A 110	A A 106	57	45	44	E B 43	46	52	85	54	20	20	25	E B 16
4	44	25	E B 16	E B 16	20	E B 16	23	35	42	53	55	48	57	49	40	49	50	34	54	39	40	30	E B 16	E B 16
5	E B 16	E B 16	20	26	E B 16	E B 16	20	31	36	38	41	U Y 39	50	52	49	76	42	30	26	26	20	32	36	27
6	31	E B 16	24	18	18	E B 16	24	31	34	38	42	43	48	U Y 41	U Y 42	42	38	41	48	43	49	28	28	E B 16
7	E B 16	E B 16	E B E B 16	E B 16	E B E B 16	E B 16	26	34	38	45	56	42	48	G	G	48	54	55	46	65	23	30	66	35
8	32	26	E B 16	19	24	28	28	36	38	44	43	46	54	56	66	79	85	70	67	37	87	77	46	19
9	33	24	20	29	20	25	G	32	44	39	42	43	48	56	40	41	40	32	29	19	E B E B 16	E B 16	22	21
10	19	22	35	27	24	38	50	37	68	A A 145	43	49	56	47	55	91	43	62	A A 126	47	26	32	68	E B 16
11	40	19	20	24	17	16	21	36	43	44	55	48	56	74	44	91	A A 141	101	A A 136	A A 182	66	64	24	20
12	20	23	E B 16	E B E B 16	E B 16	16	23	38	42	65	54	71	51	45	42	39	40	35	30	E B 16	E B E B 16	E B E B 16	36	A A 109
13	35	53	20	36	26	23	26	33	45	61	67	58	54	56	60	64	45	54	43	55	61	21	37	61
14	70	E B 16	A A 99	46	25	E B 16	24	45	60	58	82	48	72	99	61	68	68	60	56	87	39	21	40	40
15	18	21	42	26	21	20	30	42	82	78	A A 218	A A 158	68	57	55	40	40	37	74	43	40	29	30	22
16	49	44	26	E B 16	E B E B 16	E B 16	26	32	46	68	A A 99	86	50	54	42	58	39	36	41	32	17	20	30	21
17	42	E B 16	E B E B 16	E B E B 16	E B E B 16	E B E B 16	24	30	38	43	44	47	52	44	63	39	39	42	66	70	39	22	37	E B 16
18	E B 16	21	E B E B 16	E B E B 16	E B E B 16	E B E B 16	24	30	41	46	48	U Y 38	48	60	56	60	52	44	55	65	45	19	22	E B 16
19	18	22	E B 16	E B E B 16	E B E B 16	E B E B 16	23	30	37	43	43	54	44	38	44	44	40	48	43	46	21	25	22	21
20	E B 16	E B 16	18	E B 16	16	16	25	30	54	53	44	43	44	44	U Y 36	41	35	32	25	28	19	19	16	18
21	E B 16	E B 16	E B E B 16	E B E B 16	E B E B 16	E B E B 16	23	29	37	51	48	66	A A 98	68	46	40	37	31	38	36	39	20	E B 16	E B 16
22	E B 16	20	25	23	E B 16	E B 16	24	42	39	56	U Y 35	50	41	U Y 40	G	G	G	G	29	30	34	23	21	25
23	35	23	E B 16	21	16	24	26	32	57	61	57	47	44	44	60	42	42	31	34	20	17	34	21	E B 16
24	39	18	18	E B 16	E B E B 16	E B E B 16	25	29	35	42	42	44	44	42	46	36	38	35	31	20	20	18	E B 16	43
25	24	E B 16	16	20	E B 16	20	23	28	36	42	61	57	53	46	40	63	54	38	40	47	36	30	17	21
26	26	E B 16	E B E B 16	E B E B 16	E B 16	15	22	34	53	55	76	56	75	42	53	39	G 36	44	61	33	24	E B 16	19	20
27	18	16	21	20	19	23	24	34	35	39	U Y 38	U Y 40	44	53	43	40	56	45	40	28	20	27	E B 16	22
28	20	19	E B 16	20	E B 16	E B 16	30	32	53	54	40	40	54	43	G	39	40	46	36	35	32	34	21	33
29	30	20	30	20	E B 16	E B 16	27	44	A A 110	61	A A 108	A A 118	A A 260	44	51	62	73	104	36	30	44	42	70	49
30	43	28	26	17	E B 16	E B 16	34	43	80	A A 144	A A 99	61	43	77	42	43	37	31	28	21	18	E B 16	39	40
31	38	36	20	19	17	E B 14	27	44	55	51	54	A A 90	56	59	53	38	53	36	50	36	31	17	35	32
	00	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	24	20	18	19	16	E B 16	24	34	43	51	54	48	51	49	44	42	41	41	43	36	31	25	24	21
U Q	38	24	25	24	20	20	27	42	54	61	A A 67	61	56	57	55	62	53	52	56	54	40	32	37	33
L Q	E B 16	E B 16	E B E B 16	E B 16	E B E B 16	E B E B 16	23	30	37	43	43	43	44	44	40	40	38	32	31	28	20	19	E B 19	E B 16

MAY 2014 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	18	22	25	28	32	32	30	19	18	14	14	16	16	16	16
2	16	16	16	16	16	16	16	16	16	19	24	30	28	30	19	20	18	16	14	14	16	16	16	16
3	16	16	16	16	16	16	16	19	20	20	20	27	27	31	29	43	26	19	16	15	16	16	16	16
4	16	16	16	16	16	16	16	16	19	19	28	24	31	28	21	21	19	17	16	15	16	16	16	16
5	16	16	16	16	16	16	16	16	16	20	20	23	30	29	31	28	19	16	14	14	16	16	16	16
6	16	16	16	16	16	16	16	16	16	21	24	29	30	28	40	28	27	19	26	15	16	16	16	16
7	16	16	16	16	16	16	16	16	16	23	28	28	30	30	29	24	23	18	16	16	16	16	16	16
8	16	16	16	16	16	16	15	16	16	20	19	31	39	29	26	27	18	14	17	13	16	16	16	16
9	16	16	16	16	16	16	16	16	16	24	27	26	29	30	28	23	19	16	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	19	20	30	36	28	29	27	28	28	17	16	16	16	16	16	16
11	16	16	16	16	16	16	16	15	17	27	26	29	29	29	37	28	20	16	12	15	16	16	16	16
12	16	16	16	16	16	15	14	16	19	21	20	28	30	20	28	28	27	16	16	16	16	16	16	16
13	16	16	16	16	16	16	16	14	19	19	23	24	28	26	30	26	23	19	17	15	16	16	16	16
14	16	16	16	16	16	16	16	16	20	21	24	27	36	36	30	26	20	18	16	14	16	16	16	16
15	16	16	16	16	16	16	15	16	16	20	23	26	29	29	28	26	21	19	16	12	14	16	16	16
16	16	16	16	16	16	16	16	14	16	16	23	22	29	34	18	26	18	20	16	13	16	16	16	16
17	16	16	16	16	16	16	16	14	16	19	20	27	29	31	33	20	24	19	14	14	16	16	16	16
18	16	16	16	16	16	16	16	14	19	20	20	28	27	30	22	27	28	20	16	14	16	16	16	16
19	16	16	16	16	16	16	16	16	16	19	23	19	30	29	29	26	20	16	14	14	14	16	16	16
20	16	16	16	16	12	15	14	16	16	20	28	26	28	20	27	19	20	16	14	16	16	16	16	16
21	16	16	16	16	16	16	16	16	16	16	18	38	22	29	28	21	19	16	16	13	16	16	16	16
22	16	16	16	16	16	16	16	16	16	17	19	19	20	37	29	18	18	16	14	12	16	16	16	16
23	16	16	16	16	16	16	15	15	16	16	21	20	29	21	28	23	20	20	14	14	16	16	16	16
24	16	16	16	16	16	16	14	16	18	19	21	34	32	27	29	18	19	18	16	15	15	16	16	16
25	16	16	16	16	16	16	16	16	17	19	25	28	27	18	29	27	20	16	16	14	16	16	16	16
26	16	16	16	16	16	15	16	16	16	28	22	26	20	29	26	18	20	16	14	14	16	16	16	16
27	16	16	16	16	16	14	15	16	16	21	30	28	28	30	24	23	16	16	14	14	16	16	16	16
28	16	16	16	16	16	16	14	16	16	16	24	24	30	27	30	20	21	17	14	15	16	16	16	16
29	16	16	16	16	16	16	14	14	16	19	21	19	24	30	29	21	19	16	16	15	16	16	16	16
30	16	16	16	16	16	16	16	16	16	20	20	30	26	27	23	21	18	16	12	16	16	16	16	16
31	16	16	16	16	16	16	14	16	16	16	23	24	23	31	36	24	21	16	16	13	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	20	23	27	29	29	29	24	20	16	16	14	16	16	16	16
U Q	16	16	16	16	16	16	16	16	18	21	25	29	30	30	30	27	23	19	16	15	16	16	16	16
L Q	16	16	16	16	16	16	15	16	16	19	20	24	27	27	26	21	19	16	14	14	16	16	16	16

IONOSPHERIC DATA STATION Yamagawa

MAY 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	295	R 325	304	285	292	286	280	327	324	333	310	285	R 309	R 315	316	304	304	320	320	333	311	293	289	281
2	284	286	275	307	316	291	332	345	356	318	308	316	291	A	A 302		302	301	313	316	316	298	282	289
3	292	288	310	298	297	309	353	379	349	332	A	A	283	R 289	295	R 295	R 306	311	324	333	318	287	287	V 286
4	F 265	F 287	329	348	318	323	340	312	303	333	299	282	U R 280	R	302	295	295	290	312	R 326	332	263	279	275
5	286	306	310	297	313	300	315	325	302	311	287	R 287	R 294	R 296	R 299	U R 302	297	308	310	303	309	288	297	285
6	F 274	F 301	324	291	287	307	333	341	345	309	298	304	295	298	290	295	R 314	324	319	325	274	276	284	286
7	280	300	326	312	297	320	345	328	326	323	300	295	292	276	R	R 296	302	R 301	300	313	R 305	V 291	286	R 278
8	296	283	315	333	335	332	353	338	325	301	286	263	R 274	R 275	R 292	U R 291	R 294	R 303	306	314	R 302	U R 307	302	266
9	269	290	300	294	293	329	353	303	311	285	280	295	272	277	302	301	295	310	294	297	287	280	274	276
10	294	270	F 309	312	318	318	352	344	313	A	310	299	283	285	R 280	292	303	323	A	317	281	278	288	287
11	F 290	F 307	F 320	F 311	F 296	F 330	334	349	307	321	291	280	R 286	R 307	312	283	A	303	A	A	287	292	284	278
12	298	301	300	279	277	307	349	367	323	279	269	R 277	R 284	R	R	U R 305	297	297	315	322	300	270	263	A
13	R 307	F 303	F 283	F 299	318	332	343	336	318	301	286	304	280	289	283	290	294	300	307	308	327	288	F 284	F 279
14	R 304	306	A	F 309	F 300	F 320	F 330	323	321	341	262	269	263	R 276	287	294	R 295	299	311	314	V 271	281	F 285	F 291
15	F 279	F	F 300	304	294	312	325	318	289	277	A	A	268	269	R 282	295	300	299	300	313	309	277	276	259
16	298	295	307	300	310	309	331	V 301	288	286	A	R 279	U R 291	281	281	287	R 297	307	300	320	298	280	276	280
17	274	278	290	300	310	317	345	343	346	304	284	276	278	U R 277	286	305	307	315	315	R	295	285	290	280
18	293	315	327	311	305	296	317	310	326	294	266	272	273	287	291	U R 284	292	310	313	303	285	276	287	303
19	289	298	309	307	300	295	314	309	309	297	299	268	R 277	285	295	287	296	306	U R 319	329	324	293	279	286
20	282	295	305	300	307	295	332	323	309	288	284	268	U R 275	U R 288	U R 300	285	U R 293	R	322	316	306	295	289	286
21	291	287	308	314	285	295	356	352	375	334	278	291	A	279	283	R 298	301	320	319	321	287	277	292	282
22	287	285	F 290	F 296	300	308	336	326	323	316	306	269	274	291	288	292	294	298	R 312	310	306	303	278	295
23	F 282	F 303	F 283	F 303	F 274	F 307	326	338	334	318	280	271	271	278	283	291	296	313	327	327	277	271	278	283
24	282	283	298	V 298	268	299	331	333	340	326	299	278	291	277	284	296	302	305	310	305	295	283	280	278
25	F 296	291	291	294	300	288	306	314	350	267	294	278	282	R 282	289	R 302	304	312	310	311	299	288	312	295
26	295	299	291	308	308	332	326	332	310	282	276	278	R	278	R 284	291	R 314	310	R 322	R 322	301	290	274	299
27	F 283	308	322	318	307	312	322	329	320	281	278	274	276	287	291	R 296	R 299	309	320	309	319	316	295	293
28	294	287	F 302	284	302	315	328	350	366	329	301	273	271	278	281	292	318	321	316	325	306	278	293	289
29	286	302	304	317	333	306	316	328	A	329	A	A	A	287	276	295	R 304	R	319	332	307	300	284	280
30	F	300	293	F 294	310	F 311	301	312	328	A	A	276	R 286	294	R	295	301	309	323	335	317	290	275	295
31	F 266	F	F 320	F 277	F 292	F 283	295	337	R	352	317	A	279	R 294	294	300	288	293	310	320	322	290	F 293	F 306
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	31	31	31	31	31	29	29	26	27	28	28	27	31	30	29	29	29	31	31	31	30
MED	288	298	304	300	300	309	331	329	323	311	289	278	280	285	289	295	300	308	313	317	305	288	284	286
U Q	295	303	315	311	310	320	345	343	342	329	300	291	288	R 290	295	300	304	312	320	326	316	293	290	291
L Q	282	287	293	294	293	296	317	318	310	287	280	272	274	278	283	291	295	300	310	310	287	278	278	279

MAY 2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	A	A	A	L	L	U L 362	A	U L 362	L	U L 339	U L 362	L					
2								L	L 386	L	L	L 372	L 354	A	A	L 350	U L 373	A	A					
3										L 376	A	A	A	L 374	U L 370	L 372	A	A	A					
4									L	A	A	U L 345	L	L	L 383	L	L	U L 342	A					
5									L	L	U L 366	U L 356	L 342	A	L	A	U L 356	L	L					
6								L	L	L 413	U L 362	L 354	U L 357	L 357	L 351	L 353	L 352	L	A					
7									L	L	A	L 371	U L 355	L 363	L 340	L	A	A						
8								A	L	L 390	U L 370	L 368	L	A	A	A	A	A	A					
9								L	U L 356	L 338	376	361	345	A	368	361	343	U L 344	L					
10							A	A	A	A	U L 359	L 353	A	U L 332	L	A	L 348	A	A	A				
11							536	A	L	L	A	R	A	A	L	A	A	A	A	A				
12									A	A	A	A	L 357	U L 338	L 355	L 359	U L 346	L 370	L					
13								L	A	A	A	A	A	A	A	A	U L 337	A	A					
14							L		A	A	A	L 342	A	A	A	A	A	A	A					
15									A	A	A	A	A	A	A	359	L 351	L	A					
16										A	A	A	U L 339	A	352	A	L 343	L	A					
17								L	L	U L 398	L	L	L	L 342	A	L 349	U L 349	L	A					
18									L	A	L	L 350	326	A	A	A	A	L	A					
19									L	U L 360	L 373	U L 317	L 370	353	362	353	U L 343	A						
20								L	A	A	U L 340	U L 347	349	R 361	362	343	L 349	L 349	L					
21								L	L	A	L	A	A	A	R 347	360	L 394	L 356						
22								A	L	A	U L 355	L 347	L 394	387	389	U L 353	L 343	L 356	L					
23								L	A	A	A	L 344	341	R 366	A	376	L 356	U L 347	L					
24							U L 395	L	L	L	L	L	372	376	R 359	L 366	L 372	U L 348	L	L				
25							L	L	L	L 344	A	A	A	L 372	L 373	A	A	L	A					
26								L	A	A	A	A	A	363	A	358	382	L	A					
27						A		U L 360	U L 392	L 396	380	L 388	385	A	368	370	A	A						
28								L	A	A	L 355	376	A	R 372	L 337	413	L 374	A	L					
29							L	A	A	A	A	A	A	363	A	A	A	A	L					
30								A	A	A	A	A	385	A	397	353	371	L 351	L					
31							L	A	A	A	A	A	A	A	A	355	A	U L 348	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	1	3	8	10	16	16	15	17	18	20	11						
MED							466	U L 360	U L 386	L 383	U L 364	L 354	L 356	363	362	358	L 350	U L 349						
U Q									U L 392	L 397	373	L 370	371	372	L 372	366	L 372	L 356						
L Q									U L 356	L 352	U L 355	L 346	344	L 353	L 352	353	L 343	U L 347						

MAY 2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2014 h′F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							294	226	240	262	320	330	290	276	280	312	302	274	260					
2								252	236	314	316	306	344	A	A	306	296	300	270					
3										282	A	A	340	302	320	304	296	278	288					
4									262	248	282	322	A	308	302	310	304	304	268					
5									240	254	298	316	312	304	292	296	294	266	258					
6								230	236	242	288	298	294	310	316	310	284	258	242					
7									248	262	308	292	322	318	314	300	290	274						
8								230	264	264	272	356	340	312	330	316	306	282	280					
9								336	304	326	340	318	402	378	326	324	322	298	274					
10							244	224	A 340	A	294	322	340	330	348	348	294	270	A	252				
11							236	220	242	276	282	344	336	302	292	A 380	A	352	A	A				
12									216	E A 332	306	334	328	308	288	288	280	270	256					
13								260	234	308	322	286	322	322	326	316	304	280	258					
14							240		266	246	E A 480	348	372	A 398	318	302	296	282	258					
15									E A 402	E A 388	A	A	352	334	332	312	300	284	306					
16										310	A	A 370	310	330	338	328	306	274	248					
17								224	226	254	320	334	340	340	332	306	294	280	262					
18									260	244	338	358	356	328	310	316	306	274	260					
19									260	296	298	362	338	320	314	314	304	282						
20								240	256	310	312	330	354	318	318	328	308	272	262					
21								228	226	272	358	320	A	354	342	316	290	264						
22								226	256	278	298	370	336	312	332	306	312	280	270					
23								222	256	306	A 352	366	360	336	320	310	294	270	254					
24							222	238	260	264	326	346	332	372	338	302	300	284	274	244				
25							282	258	236	392	322	312	344	334	316	302	302	278	262					
26								246	282	A 302	E A 410	344	354	338	344	314	280	266	250					
27						246		262	252	H 260	324	328	354	338	322	310	298	278						
28								228	236	288	316	390	352	346	330	322	278	250	242					
29							272	240	A	282	A	A	A	332	336	324	306	396	264					
30								252	E A 324	A	A	376	330	346	328	310	296	280	242					
31							318	248	276	256	330	A	380	340	322	312	312	298	280					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	8	21	28	29	26	27	28	30	30	31	30	31	25	2				
MED						246	258	238	253	275	316	334	340	330	322	312	299	278	262	248				
U Q							288	252	265	309	330	358	354	340	332	316	306	284	272					
L Q							238	226	236	258	298	318	329	312	314	306	294	270	255					

MAY 2014 h′F2 (KM)

IONOSPHERIC DATA STATION Yamagawa

MAY 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	276	244	254	232	252	256	260	A	A	A	256	292	214	A	200	H 244	242	218	242	226	214	252	276	298
2	288	284	292	274	230	252	240	212	206	230	242	178	232	A	A	228	246	A	A	264	254	270	232	270
3	266	266	240	228	282	236	222	218	228	202	A	A	A	A 222	A E 226	A 234	A	A	A	240	224	258	294	278
4	360	304	230	200	204	236	224	218	A 234	A	A	E A 266	A	E A 274	210	288	A	230	A	240	232	270	282	Q 286
5	274	234	244	258	226	236	228	222	218	218	208	194	A 278	A	A	A	252	224	228	232	234	276	284	304
6	Q 350	258	240	252	234	240	228	220	210	192	208	206	256	212	218	224	212	A 254	A	232	284	300	300	272
7	282	256	230	210	232	238	214	220	A E 212	A 256	A	198	E A 244	218	A E 258	E A 292	A	A	270	270	220	264	330	292
8	278	288	244	218	214	198	208	A	228	A 222	224	214	E A 330	A	A	A	A	A	A	244	312	342	280	292
9	320	280	252	280	268	232	220	218	258	H 216	218	212	A 270	A	218	242	244	216	238	254	228	234	294	306
10	286	308	290	262	244	260	A	A	A	A	A 212	262	A	A 266	A	A	A 250	A	A	A	246	306	356	254
11	316	256	250	242	240	228	142	A	E A 234	A 242	A	E A 230	A	A	H 220	A	A	A	A	A	308	310	270	256
12	258	232	230	274	302	260	228	212	A	A	A	A	A 274	236	214	204	234	226	242	228	210	244	340	A
13	278	296	318	272	250	226	218	210	A	A	A	A	A	A	A	A	E A 274	A	A	258	268	250	288	364
14	338	236	A	302	284	Q 248	234	248	A	A	A	A 246	A	A	A	A	A	A	A	338	300	278	340	302
15	300	286	248	228	262	238	232	226	A	A	A	A	A	A	A	H 190	220	226	A	246	232	260	300	316
16	310	300	276	246	240	240	228	218	242	A	A	A	E A 304	A	208	A	H 216	234	A	242	242	248	312	294
17	340	284	260	240	234	230	226	218	210	A 210	204	A 250	A	210	A	224	234	A 268	A	268	256	280	294	264
18	270	252	236	236	234	260	224	222	234	A	E A 254	192	E A 282	A	A	A	A	A 280	A	282	282	282	286	254
19	266	272	246	222	246	260	228	216	206	A 222	210	300	194	198	240	250	A 226	A	258	244	222	234	286	276
20	274	262	260	228	208	246	224	226	A	A	A 238	212	208	218	210	220	200	216	224	232	226	230	252	278
21	272	268	240	218	206	266	226	206	A 220	A	A 266	A	A	A	E A 278	222	208	206	246	232	268	272	270	280
22	276	276	278	260	246	250	232	A	A 224	A	A 222	E A 274	188	206	196	H 182	210	216	246	244	246	236	256	302
23	334	252	264	270	308	260	224	216	A	A	A E	A 268	A 230	220	A	222	248	206	A 250	226	234	308	282	274
24	312	290	264	242	314	254	A 222	216	210	E A 230	A 210	212	A 202	206	A 252	H 210	216	228	234	A	240	260	280	336
25	280	276	270	252	246	268	234	220	A 210	234	A	A	A	A 236	202	A	A	268	A	246	244	274	246	278
26	264	266	256	248	226	222	222	224	A	A	A	A	A	220	A	220	212	A	A	240	232	238	312	264
27	284	236	236	216	230	A	224	216	216	196	198	188	202	A	A 216	212	A	A	250	242	220	226	238	282
28	260	268	254	286	264	254	228	222	A	A	188	182	A	A 206	220	210	232	A	A	228	242	300	270	292
29	282	280	276	242	210	250	242	A	A	A	A	A	A	A 248	A	A	A	A	A	246	230	274	364	334
30	324	276	270	272	234	242	250	A	A	A	A	A	200	A	194	E A 258	210	220	236	224	216	242	342	310
31	354	278	250	288	260	278	242	A	A	A	A	A	A	A	A	218	A	230	A	248	232	242	306	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	30	30	23	18	13	16	20	17	16	18	21	20	18	13	28	31	31	31	30
MED	282	272	253	246	240	247	227	218	218	219	213	208	U 217	218	216	221	226	226	242	243	234	264	286	284
U Q	320	284	270	272	262	260	232	222	234	232	A 240	A 264	E A 276	A 236	A 226	243	245	A 234	250	251	256	280	312	302
L Q	274	256	240	228	230	236	222	216	210	206	208	196	202	208	208	211	212	216	235	232	226	242	270	274

MAY 2014 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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							124	104	102	98	98	102	102	110	114	112	108	102	104					
2							122	108	100	98	102	100	100	A	A	A	100	100	116					
3							B	100	100	100	A	A	A	A	102	B	108	104	104					
4							116	100	100	96	100	100	A	104	98	98	98	100	104					
5							118	98	98	100	A	100	98	98	92	A	A	108	A					
6						B	B	A	98	A	100	100	98	100	B	98	114	102	A					
7						B	112	98	98	100	100	100	100	106	104	104	104	106	104	A				
8						A	A	102	100	100	100	100	B	100	100	100	96	100	106	A				
9						A	110	98	98	102	102	100	100	100	100	98	98	100	98	B				
10						B	114	100	100	98	A	A	A	100	104	98	110	104	104	A				
11						A	122	98	100	104	100	100	A	A	106	106	A	110	100	A				
12						B	112	104	94	94	A	A	A	A	96	104	106	106	106	B				
13						A	A	110	A	100	106	A	104	98	110	110	106	104	A	A				
14						A	110	98	98	98	A	A	A	A	A	A	A	A	A	A				
15						A	104	102	100	96	A	A	A	A	A	A	A	A	A	A				
16						B	114	96	98	98	98	A	A	A	94	A	A	A	A	A				
17						B	106	108	102	96	94	A	A	A	A	A	A	A	A	A				
18						B	128	120	100	98	98	A	A	100	100	102	104	102	102	A				
19						B	106	98	94	94	98	A	A	A	A	A	A	A	A	A				
20						A	A	A	98	98	100	100	100	A	A	A	94	A	A	A				
21						A	108	98	98	96	96	A	A	A	100	98	98	98	100	A				
22						B	112	102	100	100	100	96	A	A	110	96	96	94	106	A				
23						A	128	96	100	100	100	100	102	A	A	A	98	98	A	A				
24						A	110	102	100	98	A	A	A	100	100	90	86	98	A	A				
25						A	110	112	110	102	98	100	98	98	104	106	100	98	98	A				
26						B	104	100	96	104	A	A	A	A	A	A	A	110	110	B				
27						B	110	98	98	A	102	102	102	102	102	102	98	98	100	A				
28						B	104	96	94	94	94	102	106	102	102	98	102	96	96	B				
29						B	B 112	98	96	98	A	A	A	112	108	106	102	A	104	B				
30						B	108	104	98	98	A	A	102	A	A	A	A	A	114	B				
31						B	106	100	98	96	A	A	A	A	A	A	A	A	102	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							26	29	30	29	20	15	13	15	20	18	21	22	20	1				
MED							111	100	98	98	100	100	100	100	102	101	100	101	104	104				
U Q							116	104	100	100	100	100	102	104	105	106	106	104	106					
L Q							108	98	98	96	98	100	99	100	100	98	98	98	100					

IONOSPHERIC DATA STATION Yamagawa

MAY 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	90	92	92	92	120	118	110	106	102	104	104	124	118	124	180	196	120	100	96	100	92	92	92
2	B	92	92	92	90	96	132	132	122	102	110	112	110	94	94	98	130	118	108	102	100	100	94	94
3	96	96	96	100	84	98	104	104	104	102	96	94	94	94	114	B	122	108	100	116	96	96	96	96
4	94	96	96	96	92	92	116	106	104	104	100	100	98	112	150	120	114	116	102	100	96	96	96	98
5	B	94	92	86	86	94	112	106	106	108	98	102	102	100	100	94	92	108	88	104	104	Q 104	100	96
6	96	112	92	92	96	100	100	98	132	98	146	134	116	138	136	118	128	106	104	98	98	118	94	B
7	94	118	100	B	B	B	132	126	106	106	104	112	108	G	G	122	110	106	100	96	96	96	94	114
8	92	92	96	94	92	90	92	112	108	104	108	104	104	102	112	108	106	106	100	98	96	96	96	96
9	96	96	96	94	94	92	G	108	102	124	120	130	116	114	130	114	108	108	102	102	98	112	112	92
10	92	94	108	96	94	98	108	108	102	100	94	94	94	106	130	104	120	108	102	98	98	96	96	96
11	94	94	92	92	Q 102	Q 92	122	108	104	102	100	100	96	96	142	110	110	108	102	100	124	Q 96	96	96
12	94	94	94	102	104	124	114	102	104	102	96	94	98	98	120	130	108	108	104	B	90	86	104	96
13	94	92	92	94	94	94	94	118	108	102	104	126	116	116	122	114	114	108	100	98	98	94	94	96
14	96	116	90	90	90	100	112	106	100	98	122	96	96	92	90	88	92	104	102	100	128	116	98	118
15	88	88	86	102	94	96	104	102	96	96	92	92	90	90	116	94	90	90	100	98	94	92	90	100
16	96	92	86	84	84	B	124	114	104	100	96	94	94	94	150	90	136	116	90	88	88	108	92	86
17	92	88	86	82	B	B	140	108	104	100	100	188	96	94	92	96	132	118	102	100	100	104	96	90
18	90	90	84	84	B	B	146	126	112	108	104	100	114	106	104	104	104	104	102	98	98	98	96	96
19	92	84	84	86	B	B	132	114	110	102	98	94	96	94	92	92	90	88	88	102	100	100	98	94
20	98	B	92	92	114	96	96	144	106	104	104	106	100	98	100	98	102	98	96	88	88	90	90	88
21	B	B	88	86	86	88	126	120	118	106	106	100	96	98	100	100	102	104	102	98	96	96	110	88
22	90	90	90	88	90	B	136	108	128	112	106	120	124	100	G	G	G	G	112	100	98	98	98	112
23	94	92	92	90	106	94	130	122	106	102	102	104	104	98	96	98	100	100	98	96	96	94	94	90
24	86	86	84	86	86	96	116	110	112	102	102	102	98	102	100	100	100	100	94	94	88	88	90	96
25	98	108	96	96	96	96	96	96	120	112	106	106	106	106	110	106	102	106	102	98	92	92	92	88
26	86	B	B	B	86	114	110	100	100	96	94	92	92	106	92	98	136	112	104	102	100	88	96	96
27	96	124	98	94	98	112	118	102	104	98	102	104	128	112	118	134	108	108	104	98	96	96	98	96
28	96	82	92	90	88	B	110	110	98	100	114	120	110	134	G	120	120	102	100	100	92	92	92	90
29	90	88	84	84	94	B	106	104	102	100	98	94	94	252	114	104	102	98	104	102	94	94	94	92
30	92	92	88	88	88	118	110	106	100	100	96	96	102	96	96	96	96	142	120	104	86	98	96	94
31	94	90	90	90	94	186	126	104	102	98	96	94	96	92	96	98	98	98	104	104	98	98	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	30	29	27	23	30	31	31	31	31	31	31	30	28	29	30	30	31	30	31	31	31	30
MED	94	92	92	92	92	96	115	108	104	102	102	102	100	100	111	104	108	107	102	99	96	96	96	96
U Q	96	96	96	94	96	112	126	114	110	104	106	112	110	112	123	116	120	108	104	102	100	100	98	96
L Q	92	90	88	86	88	94	106	104	102	100	96	94	96	94	96	97	100	102	100	98	94	92	94	92

IONOSPHERIC DATA STATION Yamagawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F4	F5	F3	F3	FF22	C3	C4	C3	C3	C3	C2	C1	C1	C1	H1	H1	C1	C2	F3	F1	F5	F2	F4
2		F2	F2	F5	F3	F1	H1	HL11	C1	C1	C1	C1	C1	L3	L2	L1	C2	C3	CL31	FF52	FF22	FF21	F2	F2
3	F2	F2	F2	FF11	F1	FF11	CL31	C3	CL21	C1	L3	L2	L2	L2	C1		C2	C3	C8	FF28	FQ31	FQ41	F3	F3
4	F5	FQ21	F2	F1	F2	F2	C2	C2	C3	C2	C2	C2	L3	C1	H1	C2	C2	C1	C5	F3	F5	FQ41	F2	F1
5		F2	F2	F3	F1	F2	C1	C1	C1	C1	L1	C1	C1	C1	C1	L3	L3	CL12	L2	FF14	FF22	FF32	FF32	FF31
6	FF22	FF12	F3	F3	F4	C2	C2	L2	HL11	L1	H1	H1	C1	H1	H1	C1	C1	C2	C2	F6	F5	FF13	F3	
7	F2	FF11	F1				H2	C2	C1	C1	C2	C1	C1			C1	C2	C4	C4	L6	F4	F5	F7	FF14
8	F5	F5	F1	F4	F5	L4	L2	CL21	C3	C2	CH11	C1	C2	C1	C2	C3	C5	C4	C3	L8	F7	F8	F5	F4
9	F5	F4	F4	F4	F3	L4		C2	C2	C1	C1	C1	C1	C1	C1	C1	C1	C1	C2	C2	F1	FFF12	FF12	F3
10	F5	FF33	FF15	F5	FF44	LC41	C4	C2	C3	C4	L1	L2	L1	C1	C1	C4	C1	C4	C8	L3	F7	F4	F4	F5
11	F8	F4	F6	F4	FF11	LL11	C1	C2	C2	C1	C1	C1	L1	L3	H1	CL21	CL41	CL61	C6	L8	FF35	F3	F6	F4
12	F4	F3	F2	FF11	FF11	CC11	C1	CL31	C2	C3	L2	L3	L2	L1	C1	C1	C1	CL11	C2		F1	F1	FF32	F5
13	FQ31	FQ41	FQ61	FF51	FF31	L4	L3	CL21	CL21	C2	CL21	CCL11	C1	C1	C1	C3	C1	C3	L5	L7	FF61	F3	F5	F6
14	F7	F1	F4	F3	F2	CL11	C1	CL31	C3	L2	CL13	L1	L3	L2	L3	L3	L4	CL24	CL55	CL65	FFF12	FF13	F5	FF14
15	F5	F5	F4	FF22	F1	L2	CL31	C2	L6	L4	L5	LQ21	LQ21	L2	CL11	L1	L2	L2	CL42	LL62	FF45	F6	F5	FF24
16	FF32	F4	F2	F1	F1		C2	C1	C4	C3	L3	L4	L1	L1	HL11	L2	HL11	CL12	L4	L4	F4	FF23	F5	F4
17	F4	F2	F2	F1			H1	CL11	C1	C2	C2	HC11	L2	L1	L2	L1	HL11	CL23	CL63	LLH62	FF35	FF14	FQ51	F1
18	F2	F2	F2	F1			H1	CL11	C1	C1	C2	L1	CL11	C1	C2	C1	C2	C2	C4	L9	F4	FF31	F3	F2
19	F3	F6	F2	F2			H1	C1	C1	C1	L1	L2	L1	L1	L2	L2	L3	L2	L4	LL36	FF33	FF25	FF23	FF32
20	FF11		FF31	F2	FF13	LQ21	L2	HL12	C3	C2	C1	C1	C1	L1	L1	L1	C1	L1	L2	L3	F3	F3	F2	F2
21			F2	F2	F1	L1	C2	C1	C1	C3	C1	C2	L2	L2	C1	C1	C1	C1	C5	L3	FF61	F4	FFF13	FFF21
22	F2	F2	F3	F2	F1		H2	C4	C2	C3	C1	C1	CC11	C1					CL11	LL41	FF32	FQ31	FQ31	FFQ13
23	F8	F6	FQ21	F3	FF12	L4	CC21	C2	C4	C2	C2	C1	C1	L2	L3	L2	C2	C1	L4	L2	F2	F4	F3	F2
24	F6	F5	F3	F1	F1	L1	C2	C1	C1	C2	C1	C1	L1	C1	C1	C1	C1	C1	L2	L2	F5	F3	F2	F6
25	F7	FF13	F3	F5	F2	L3	L2	LH21	CC11	C1	CC21	C2	C1	C1	C1	C1	C3	C2	C2	LL61	F7	F6	F3	F2
26	F5				F1	CL11	C2	C3	C3	L2	L2	LQ21	L3	CL12	L2	L1	HL12	CL32	CL63	CL31	FFF22	F2	F3	FQ21
27	F2	F1	F3	F2	F3	C3	C1	C2	C1	L1	C1	C1	C1	C1	C1	H1	C2	C4	C5	L5	F5	F4	F2	FQ41
28	FQ21	F2	FF12	FF11	F1		C4	C3	C3	C3	C1	C1	C1	H1		C1	C2	C4	C3	C4	F7	F5	F5	F4
29	F3	F3	F4	FQ21	F1		C3	C4	C6	C2	L3	L3	LQ31	C1	C1	C2	C3	L3	C4	C5	F5	F5	F6	F6
30	FQ41	FQ41	FQ31	FQ11	FQ11	C1	C3	C3	C6	C3	L3	L2	C1	L2	L1	L1	L2	HL11	CL11	CL11	F4	F2	F7	F6
31	F4	F5	FQ31	F5	F2	H1	C3	C3	C4	L3	L2	L3	L2	L2	L2	L1	L2	L2	C6	C8	F5	F3	F6	F3
	00	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																								

MAY 2014 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			X 113	102	102	105
12	103	X 99	X 89	X 82	X 76	X 76															X 104	X 104	X 108	X 114
13	X 106	102	88	89	88	77															X 118	X 93	X 94	100
14	96	97	95	86	83	81	84														X 102	X 112	X 112	
15	X 153	X 161	X 156	X 132	X 110	X 98															X 99	X 99	X 104	X 103
16	X 116	X 123	X 123	X 119	X 106	X 86															X 111	X 112	X 115	X 111
17	X 105	X 102	X 100	X 102	X 90	X 87															X 125	X 141	X 154	X 158
18	X 150	X 152	X 146	X 124	X 118	X 115															X 104	X 103	X 107	X 112
19	X 122	X 132	X 118	X 111	X 90																X 144	X 125	X 133	X 138
20	X 137	X 140	X 130	117	102	95	92														X 117	X 121	X 121	X 136
21	X 132	X 129	X 126	X 109	100			96													X 96	X 98	X 97	110
22	X 122	X 125	X 116	X 103	96				96												X 97	X 76	84	78
23	78	81	92	70	67	64	79														X 92	X 94	X 102	88
24	X 103	X 110	X 110	X 90	X 76																X 96	X 94	X 97	X 100
25	101	X 110	X 97	79	73	74															X 115	X 118	X 112	X 103
26	X 100	X 101	X 98	X 92	X 95																X 107	X 95	X 92	X 96
27	X 98	91	91	77	68	63															X 118	X 88	X 86	X 84
28	88	X 82	76	76	76	72															X 90	X 84	X 84	X 85
29	88	85	X 83	X 76	X 70																X 100	X 96	X 94	96
30	X 94	97	95	89	88	82															X 88	X 84	93	X 100
31	102	X 100	X 99	X 84	X 80																A	X 80	X 86	X 85
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	20	20	20	13	3	1	1												20	21	21	20
MED	X 103	X 102	X 98	X 90	88	81	84	96	96												X 104	X 98	X 102	X 102
U Q	X 122	X 127	X 120	X 110	98	X 91	92														X 116	X 112	X 112	X 112
L Q	97	97	92	80	76	73	79														X 96	X 90	X 92	92

MAY 2014 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	119	114	V 107	F 93	F 88	F 95
12	F 94	93	83	76	70	70	88	84	A	78	A	A	126	136	133	126	125	136	137	117	98	98	102	V 108
13	V 100	F 88	F 74	F 80	F 80	F 70	70	77	82	87	99	100	110	120	121	120	126	128	J R 130	126	112	87	V 88	F 91
14	F 84	F 86	F 85	F 74	F 75	F 68	F 74	98	108	80	A	101	111	124	136	132	134	130	121	109	96	R 106	V 106	134
15	R 147	155	150	126	104	92	92	98	89	100	102	109	119	125	128	132	130	126	122	118	93	93	98	97
16	110	R 117	117	113	100	80	74	83	86	89	A	110	114	120	131	137	140	136	134	122	105	106	109	105
17	99	96	94	96	84	81	87	83	73	74	86	101	108	118	127	132	133	136	134	127	119	135	J R 148	R 152
18	144	146	140	118	112	109	104	100	92	86	92	106	118	124	124	122	123	125	112	101	98	97	101	106
19	116	126	112	105	84	82	90	94	90	96	95	106	R 117	134	146	153	154	158	153	152	138	119	127	132
20	131	134	124	F 108	F 92	F 86	F 84	85	84	89	95	102	112	117	117	121	131	138	132	123	111	115	115	130
21	R 126	123	V 120	F 100	F 91	F 95	F 110	87	73	72	82	97	100	107	113	121	127	124	105	93	90	92	R 91	100
22	116	119	110	97	F 84	78	87	87	F 86	87	82	92	103	110	112	113	113	118	118	104	91	R 70	F 76	F 66
23	F 68	F 71	F 84	F 60	F 60	F 55	F 68	72	72	74	A	87	99	107	112	116	122	121	112	100	86	88	96	F
24	97	104	104	84	70	74	74	76	80	67	76	89	92	92	97	110	105	100	96	100	90	88	91	94
25	F 95	104	91	70	64	F 65	73	84	74	87	98	94	104	114	U R 119	129	133	136	128	117	109	V 112	106	97
26	94	95	92	86	89	69	72	69	74	82	96	102	111	117	124	130	128	125	126	113	101	89	86	90
27	92	81	F 78	F 71	F 60	F 56	66	81	84	R 89	99	112	120	125	124	124	124	117	114	112	112	82	80	78
28	F 79	76	F 68	F 66	F 67	F 64	77	85	76	79	70	78	92	101	110	124	122	107	A	88	84	78	78	79
29	F 80	F 77	77	70	64	62	70	91	73	67	A	A	96	100	106	112	116	121	126	112	94	90	88	F 88
30	88	F 86	F 86	F 81	F 78	F 74	72	86	87	A	A	A	R 100	106	119	130	143	148	137	102	82	78	F 85	94
31	F 94	94	93	78	74	66	60	84	81	A	71	A	A	A	98	98	97	106	115	108	A	74	80	79
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	20	20	20	20	20	20	19	18	14	16	19	19	20	20	20	20	20	21	20	21	21	20
MED	96	96	92	82	79	72	74	84	82	84	94	101	110	117	120	124	126	126	124	112	98	92	91	96
U Q	116	121	114	102	90	82	88	89	87	89	98	106	117	124	128	131	133	136	133	120	110	106	106	107
L Q	F 90	F 86	F 84	F 72	68	F 66	71	82	74	74	82	93	100	107	112	118	122	120	114	102	90	84	86	89

MAY 2014 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11							C	C	C	C	C	C	C	C	C	C	C	C						
12									A	L	A	A	A	A	A	L	L	U L 524	L					
13									L	L	U L 568	U L 568	L	U L 596	U L 620	L 560	A	L						
14								A	A	A	A	A	L 608	A	540	A	U L 536	A						
15										L	L	L	U L 588	L 584	A	L 560	U L 528	L	L					
16								L	L	L	A	L 552	A	A	A	520	L	480	L					
17								L			L	L	U A 568	A	556	A	U L 540	L						
18								L		A	L	U L 548	U L 596	U L 604	A	A	L	A						
19								L	L	U L 516	L	U L 620	576	584	544	U L 560	L 548	L	L					
20										A	A	A	L 572	A	532	A	492	A	L					
21									L	L	L	L 540	584	544	U A 528	516	496	452						
22								L	L	U L 536	L	L	U L 580	492	540	508	516	U L 484	L					
23								L	A	A	A	A	L 544	A	L 540	A	A	L						
24								L	L	L	U L 592	U L 524	548	U A 520	528	520	A	A						
25										L	508	A	A	A	A	500	U A 492	U A 460	L					
26									L	A	A	A	A	536	U A 520	A	A	A	A	L				
27							L	A	L	L	U L 528	L 512	544	U A 556	A	A	A	A	A					
28								L	L	464	L	U L 548	A	U A 516	A	492	A	U A 456	A					
29								L	A	A	A	A	524	H 544	516	488	480	H 480	A					
30							L	L	A	A	A	A	A	516	L	492	484	A	A	A				
31								L	L	A	A	A	A	A	A	A	480	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										3	4	8	12	12	11	11	11	7						
MED										U L 516	U L 548	U L 548	574	544	540	516	496	U 480						
U Q										U L 536	U L 580	U L 560	L 586	L 584	544	L 560	U L 536	U L 484						
L Q										464	518	L 532	546	518	528	492	484	456						

MAY 2014 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11							C	C	C	C	C	C	C	C	C	C	C	C	252	A				
12							A	U A 272	A	A	A	A	A	A	A	A	U R 360	U A 308	A	A				
13							A	A	A	A	A	A	U A 432	U A 428	A 420	388	360	A	A	A				
14							A	U A 264	A	A 340	A	A	A	A	A	404	372	320	A	A				A
15							A	260	A	A	A 400	A	A	A	A	A	A	A	A	A				
16							192	280	U A 316	A	A	A	A	A	A	U A 408	A	A	U A 248	A				
17							208	A 264	U A 332	U A 360	U A 368	A	A	A	A	A	A	A	A	A				
18							196	240	U A 316	U A 360	A	A	A	A	A	A	U A 364	U A 340	U A 284	A				
19						B	188	296	296	A	A	A	A	A	U R 416	A	A	312	A	A				
20						B	204	264	U A 360	A	A	A	A	A	A	A	A	A	A	A				
21						B	A 180	276	308	U A 344	R	A	B	U R 396	A	A	A	300	244	A				
22						B	192	A 252	A	R 356	A	A	A	A	A	R	360	300	248	A				
23						B	200	A	A	U A 348	A	A	A	U R 368	A	A	A	A	A	A				
24						B	A	A	A	A	A 360	A	A	A	A	A	A	A	A	A				
25						B	196	256	A	A	R 396	U A 392	U A 392	A	A	U A 368	332	296	A	A				
26						B	188	A 284	348	U A 336	A	A	A	A	A	A	A	A	U A 228	A				
27						B	A	U A 264	A	A	A	A	A	A	A	R 376	344	U A 308	U A 240	A				
28						B	A	A	A	A	A	A	A	A 404	400	356	336	U A 304	A	A				
29						B	A	U A 260	A	A	A	A	A	B	U R 388	U R 372	336	296	244	A				
30						B	A	U A 264	U A 328	U A 332	A	A	A	A	A	U R 364	R 352	300	A	A				
31						B	176	A	U A 328	A	A	A	A	A	A	A	A	U A 300	244	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							11	15	9	8	4	1	2	4	4	8	10	12	9					
MED							192	A 264	U A 328	U A 346	A 382	U A 392	U A 412	U A 400	408	374	356	302	244					
U Q							200	276	U A 340	U A 358	398			A 416	418	396	U 360	310	U A 250					
L Q							188	260	312	U A 338	A 364			U R 382	394	U 366	336	300	U A 242					

MAY 2014 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J A 46	J A 60	J A 56	J A 102	J A 138	J A 141
12	J A 28	J A 20	J A 30	J A 19	J A 19	J A 64	27	J A 62	J A 75	J A 72	J A 101	J A 145	J A 98	J A 70	J A 58	J A 59	J A 54	J A 41	34	23	J A 21	J A 16	E B 13	E B 13
13	J A 94	J A 74	J A 71	J A 54	J A 88	J A 49	J A 32	J A 43	J A 58	J A 50	J A 48	52	50	48	46	J A 53	J A 60	J A 46	J A 64	J A 105	J A 54	J A 64	J A 89	J A 61
14	J A 60	J A 62	J A 57	J A 22	J A 39	J A 24	J A 64	J A 54	J A 75	J A 109	J A 95	J A 70	J A 104	J A 124	J A 69	J A 80	J A 57	J A 82	J A 72	J A 47	J A 54	J A 36	J A 104	J A 115
15	J A 75	J A 64	J A 69	J A 82	J A 62	J A 70	J A 44	J A 56	40	J A 48	45	J A 62	48	J A 55	J A 89	J A 44	39	J A 37	J A 47	J A 47	J A 34	J A 67	J A 55	J A 24
16	J A 28	J A 22	J A 22	J A 22	J A 19	18	G	G	J A 42	J A 50	J A 113	J A 54	J A 77	J A 64	J A 57	47	J A 55	J A 37	J A 28	J A 21	J A 20	J A 20	19	J A 22
17	J A 28	J A 23	20	J A 21	J A 17	19	G 18	30	J A 47	J A 47	J A 54	J A 58	J A 65	J A 56	J A 63	J A 57	J A 56	J A 49	J A 53	J A 46	J A 29	19	20	J A 18
18	J A 54	J A 56	J A 19	E B 13	E B 13	J A 18	G	30	J A 43	J A 70	J A 54	47	44	44	J A 72	J A 72	J A 52	J A 60	J A 58	J A 62	J A 55	J A 56	J A 54	J A 53
19	J A 31	J A 20	19	18	E B 13	E B 13	21	G	36	40	40	J A 49	J A 46	J A 46	46	J A 46	46	J A 46	J A 41	J A 30	J A 24	J A 24	J A 32	J A 110
20	J A 32	E B 13	J A 44	J A 29	J A 22	J A 20	G	30	J A 48	J A 79	J A 63	J A 96	J A 68	J A 104	J A 49	J A 70	J A 46	J A 54	J A 39	J A 41	J A 24	J A 20	21	19
21	20	18	J A 26	J A 26	J A 19	J A 17	J A 28	J A 50	36	J A 49	48	J A 53	46	G	54	42	44	J A 44	J A 42	J A 27	J A 26	J A 22	J A 30	J A 49
22	J A 27	J A 31	J A 16	J A 28	J A 32	J A 20	22	J A 36	J A 40	38	41	42	42	44	41	G	G	G	28	J A 20	J A 17	J A 19	J A 81	J A 110
23	J A 54	J A 47	J A 82	J A 74	J A 22	J A 20	G 19	J A 36	J A 78	J A 70	J A 86	J A 84	J A 61	J A 73	J A 72	J A 59	J A 80	J A 113	J A 66	J A 104	J A 61	J A 36	J A 29	J A 42
24	J A 19	J A 22	19	E B 13	20	E B 13	22	J A 35	J A 40	J A 47	J A 62	J A 73	J A 52	J A 72	J A 59	J A 58	J A 55	J A 66	J A 65	J A 35	J A 90	J A 43	J A 38	J A 19
25	17	J A 82	J A 66	J A 64	J A 39	J A 32	G	G	34	J A 43	G	J A 88	J A 89	J A 110	J A 113	J A 58	J A 53	J A 49	J A 44	J A 24	J A 55	J A 56	J A 52	J A 41
26	J A 38	J A 20	J A 25	22	E B 13	E B 13	G	J A 37	J A 40	J A 59	J A 76	J A 84	J A 97	J A 90	J A 76	J A 121	J A 99	J A 77	J A 61	J A 32	J A 60	J A 66	J A 89	J A 31
27	J A 50	J A 52	J A 73	J A 48	J A 36	E B 14	J A 28	J A 48	J A 55	J A 57	J A 46	42	J A 48	J A 59	J A 95	J A 86	J A 75	J A 64	J A 79	J A 79	J A 74	J A 51	J A 42	J A 87
28	18	J A 22	J A 33	J A 21	J A 22	18	20	32	J A 80	J A 40	44	J A 48	J A 57	53	J A 60	44	J A 49	J A 62	J A 106	J A 76	J A 70	J A 58	J A 61	J A 46
29	J A 38	J A 34	J A 29	18	J A 41	E B 13	22	J A 37	J A 53	J A 73	J A 99	J A 121	J A 43	44	G	42	J A 46	G	J A 45	J A 46	J A 20	J A 45	J A 38	J A 64
30	J A 52	J A 33	J A 28	J A 23	J A 42	J A 15	24	32	J A 72	J A 116	J A 127	J A 85	J A 73	J A 45	J A 57	50	45	J A 60	J A 61	J A 80	J A 109	J A 82	J A 22	J A 45
31	J A 58	J A 56	J A 22	J A 43	J A 53	J A 19	J A 40	J A 54	J A 106	J A 172	J A 109	J A 156	J A 228	J A 101	J A 72	J A 71	J A 50	J A 90	J A 86	J A 80	J A 109	J A 68	J A 32	J A 32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	21	21	21	21	21	21
MED	J A 35	J A 32	J A 28	J A 22	J A 22	J A 18	22	J A 36	J A 48	J A 54	J A 58	J A 66	J A 59	J A 58	J A 60	J A 58	J A 52	J A 52	J A 53	J A 46	J A 54	J A 45	J A 38	J A 45
U Q	J A 54	J A 56	J A 62	J A 46	J A 40	J A 22	J A 28	J A 49	J A 74	J A 72	J A 97	J A 86	J A 83	J A 82	J A 72	J A 70	J A 56	J A 65	J A 66	J A 78	J A 66	J A 65	J A 71	J A 76
L Q	28	J A 21	21	20	19	E B 14	G	30	40	J A 47	46	50	47	46	52	45	46	J A 42	J A 42	J A 28	J A 24	J A 21	26	J A 23

MAY 2014 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	44	51	20	45	34	24
12	E B 14	16	22	17	E B 14	26	24	43	A A 75	42	A A 101	A A 145	56	62	55	52	54	39	32	21	18	12	E B 13	E B 13
13	29	22	32	32	31	30	27	34	40	40	43	44	48	46	44	49	57	42	56	57	24	30	36	20
14	34	32	41	22	14	21	44	44	61	51	A A 95	63	53	78	51	79	38	72	70	41	26	29	32	29
15	32	28	38	31	31	31	37	48	39	44	44	49	48	48	62	42	38	35	36	42	E B 13	E B 13	20	22
16	23	18	E B 13	E B 13	E B 13	E B 14	G	G	35	43	A A 113	52	73	63	54	46	54	35	27	19	17	18	E B 13	20
17	20	20	E B 14	E B 13	E B 13	E B 13	G 11	30	42	43	49	52	57	54	53	55	43	44	43	28	20	18	E B 13	E B 13
18	20	31	E B 13	E B 13	E B 13	E B 13	G	29	36	64	42	43	44	43	69	66	48	52	53	42	28	24	20	23
19	26	E B 14	E B 14	E B 13	E B 13	E B 13	20	G	33	39	40	43	43	45	45	44	44	43	38	26	20	20	24	42
20	20	E B 13	23	E B 13	E B 13	E B 13	G	29	42	72	60	71	49	62	42	56	42	51	32	34	20	E B 13	E B 13	E B 13
21	E B 13	E B 13	18	18	E B 13	E B 13	23	42	33	44	47	50	46	G	53	41	43	40	39	24	18	16	21	39
22	21	E B 13	E B 13	19	E B 13	E B 13	20	32	35	38	40	40	41	43	41	G	G	G	26	17	E B 13	E B 13	20	19
23	18	29	E B 13	30	E B 13	E B 13	G 16	31	56	64	A A 86	56	48	62	50	56	75	42	49	81	17	20	20	29
24	E B 13	E B 13	E B 13	E B 13	E B 14	E B 13	21	28	34	41	57	44	44	52	44	42	52	54	62	29	29	28	22	E B 13
25	E B 13	32	26	33	17	E B 13	G	G	33	37	G	62	57	99	71	46	49	46	28	21	30	39	34	23
26	24	E B 13	E B 13	E B 13	E B 13	E B 13	G	G 23	G 29	56	65	56	74	45	52	63	52	74	44	18	27	45	20	E B 13
27	22	32	22	E B 13	21	E B 14	22	40	35	52	42	42	45	56	91	84	54	49	69	61	38	22	24	30
28	E B 13	E B 13	23	18	E B 13	E B 13	19	30	34	37	40	44	55	52	60	42	48	46	A A 106	61	34	24	27	27
29	21	20	E B 13	E B 13	E B 13	E B 13	21	29	43	54	A A 99	A A 121	42	44	G	41	45	G	39	44	18	18	21	19
30	30	30	22	E B 13	E B 13	E B 13	23	30	54	A A 116	A A 127	A A 85	70	44	49	45	44	56	55	68	63	30	E B 13	19
31	32	38	E B 13	30	24	E B 13	35	40	42	A A 172	65	A A 156	A A 228	A A 101	71	70	46	60	85	78	A A 109	48	19	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	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	21	21	21	21	21	21
MED	21	20	16	15	E B 13	E B 13	20	30	38	44	53	52	48	52	52	48	47	45	44	41	20	22	20	20
U Q	28	30	23	26	16	14	24	40	42	60	A A 90	A A 67	57	62	61	60	53	53	59	59	30	30	26	28
L Q	E B 16	E B 13	E B 13	E B 13	E B 13	E B 13	G	G 28	34	40	42	44	44	44	44	42	43	40	34	22	18	17	E B 16	E B 13

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	14	14	13	13	13	13
12	14	13	14	13	14	13	14	14	16	20	25	33	30	24	31	24	22	18	13	12	12	12	13	13
13	13	13	13	13	13	14	14	14	17	21	24	28	33	32	33	23	20	20	14	13	14	13	13	14
14	13	13	13	14	14	13	13	14	20	22	30	33	33	30	32	32	23	18	13	13	13	13	13	13
15	13	13	13	13	13	14	13	15	21	22	20	32	44	30	22	23	21	16	13	13	13	13	13	13
16	13	13	13	13	13	14	14	14	16	20	30	29	33	32	28	22	23	16	13	13	13	13	13	13
17	14	13	14	13	13	13	14	14	20	21	22	30	39	35	29	25	20	17	14	12	13	13	13	13
18	13	12	13	13	13	13	14	15	15	19	23	24	34	32	30	25	32	20	14	14	13	13	13	13
19	13	14	14	13	13	13	13	16	18	20	20	27	32	30	29	25	22	17	14	12	13	13	13	13
20	13	13	13	13	13	13	13	13	17	21	24	32	36	34	21	21	20	16	13	13	13	13	13	13
21	13	13	13	13	13	13	13	15	16	22	20	38	43	33	40	32	20	15	13	13	13	13	13	13
22	13	13	13	13	13	13	14	13	16	21	29	33	21	34	30	21	21	14	14	12	13	13	13	13
23	13	13	13	13	13	13	14	14	16	20	24	30	28	22	33	22	21	15	14	14	13	13	13	13
24	13	13	13	13	14	13	14	16	17	24	29	33	24	30	25	23	23	18	13	12	13	13	13	13
25	13	13	13	13	13	13	14	19	18	21	22	23	23	31	27	22	21	18	16	12	13	13	13	13
26	13	13	13	13	13	13	14	16	22	30	22	25	25	24	22	22	20	16	13	13	13	13	13	13
27	13	13	13	13	13	14	14	14	17	21	23	23	30	41	33	25	21	16	14	14	13	13	13	13
28	13	13	13	13	13	13	14	14	15	13	23	24	32	25	23	21	24	21	14	14	13	13	13	13
29	13	13	13	13	13	13	14	14	15	17	21	24	31	41	24	22	21	15	14	14	13	13	13	13
30	13	14	13	13	13	13	14	14	13	24	22	33	38	33	26	22	21	15	14	13	13	13	13	13
31	13	13	13	13	13	13	14	14	17	20	21	30	24	36	26	20	21	18	14	14	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	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	21	21	21	21	21	21
MED	13	13	13	13	13	13	14	14	17	21	23	30	32	32	28	22	21	16	14	13	13	13	13	13
U Q	13	13	13	13	13	13	14	15	18	22	24	33	35	34	32	25	22	18	14	14	13	13	13	13
L Q	13	13	13	13	13	13	14	14	16	20	22	24	26	30	24	22	20	16	13	12	13	13	13	13

MAY 2014 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	302	300	V 293	F 291	F 255	F 297
12	F 290	303	302	292	286	300	349	375	A	276	A	A	286	293	298	294	287	300	316	310	275	273	276	V 278
13	V 287	F 308	F 282	F 306	F 316	F 323	337	336	322	305	293	275	272	282	280	286	289	296	J R 299	319	306	295	V 269	F 284
14	F 291	F 299	F 295	F 323	F 310	F 317	F 318	333	334	340	A	255	258	271	286	290	293	305		296	283	R 280	V 271	284
15	R 303	304	321	324	295	306	321	321	279	264	249	256	261	272	283	286	294	296	299	309	295	264	263	272
16	282	R 298	313	316	330	330	325	291	303	265	A	277	275	271	276	283	286	292	304	314	281	265	258	268
17	274	288	285	315	314	324	337	337	329	283	270	272	268	279	284	288	294	304	315	305	298	274	J R 286	R 305
18	303	306	332	316	299	310	310	322	296	302	246	255	271	280	288	288	294	311	309	299	286	272	273	284
19	300	308	313	312	304	300	309	318	302	297	256	261	R 274	280	284	291	300	303	320	329	315	286	274	280
20	284	300	304	F 317	F 302	F 306	F 320	315	295	280	270	259	269	278	279	283	289	309	308	303	287	288	289	267
21	R 295	296	V 307	F 338	F 292	F 324	F 359	358	346	301	275	253	259	266	277	289	303	316	313	298	285	275	R 297	276
22	293	298	309	316	F 309	299	322	319	F 327	281	250	249	267	283	281	283	289	295	313	314	303	R 305	F 275	F 276
23	F 296	F 269	F 341	F 291	F 288	F 284	F 364	340	315	321	A	246	261	271	289	289	301	314	311	319	275	274	270	F
24	287	283	312	320	268	308	351	321	341	321	261	294	294	280	273	294	306	302	299	304	298	273	273	276
25	F 281	289	298	304	286	F 289	297	314	289	270	296	257	270	272	U R 290	289	300	303	305	309	296	V 291	280	294
26	295	289	300	309	332	338	346	326	309	272	264	276	274	283	282	299	310	311	308	317	289	290	276	295
27	305	310	F 307	F 322	F 306	F 307	314	308	284	R 294	271	276	277	283	286	289	303	305	308	313	334	315	283	285
28	F 280	301	F 294	F 293	F 300	F 302	340	335	363	349	302	249	262	268	280	301	316	307	A	299	301	275	280	282
29	F 282	F 281	308	309	303	305	318	344	360	296	A	A	272	273	274	285	291	302	320	323	307	284	276	F 264
30	290	F 293	F 295	F 287	F 311	F 320	304	304	332	A	A	A	R 276	276	281	292	302	325	337	332	310	295	F 286	279
31	F 286	306	300	281	294	285	285	334	315	A	263	A	A	A	280	288	284	300	322	340	A	275	277	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	20	20	20	20	20	20	20	20	19	18	14	16	19	19	20	20	20	20	19	21	20	21	21	20
MED	290	298	306	314	302	306	322	324	315	295	267	258	271	278	282	289	294	304	309	310	296	280	276	281
U Q	296	305	312	F 318	310	322	343	336	334	305	275	276	275	282	286	292	302	310	316	319	304	291	282	286
L Q	283	289	F 296	298	293	300	312	316	296	276	256	254	262	271	280	286	289	300	304	302	286	274	270	276

MAY 2014 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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 SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	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																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11							C	C	C	C	C	C	C	C	C	C	C	C						
12									A	L	A	A	A	A	A	L	L	U L 344	L					
13									L	L	U L 349	U L 356	L	U L 332	U L 322	L 340	A	L						
14								A	A	A	A	A	A 320	A	A 340	A	U L 339	A						
15										L	L	L	U L 336	L 338	A	L 350	U L 335	L	L					
16								L	L	L	A	A	A	A	A	A 340	L	357	L					
17								L			L	L	A	A	A	A	U L 330	L						
18								L		A	L	U L 380	U L 342	U L 319	A	A	L	A						
19								L	L	U L 371	L	U L 336	355	335	354	U L 325	L 323	L	L					
20										A	A	A	A 336	A	362	A	358	A	L					
21									L	L	L	A	326	355	A	351	351	367						
22								L	L	U L 368	L	L	U L 349	435	367	372	332	U L 342	L					
23								L	A	A	A	A	A 345	A	A	A	A	L						
24								L	L	L	A	A 374	364	A	368	362	A	A						
25										L	372	A	A	A	A	A 363	A	A	L					
26									L	A	A	A	A	368	A	A	A	A	A	L				
27							L	A	L	L	U L 388	L 384	361	A	A	A	A	A	A					
28								L	L	422	L	U L 360	A	A	A	365	A	A	A					
29								L	A	A	A	A	H 383	H 364	351	386	A	H 350	A					
30							L	L	A	A	A	A	A	410	L	A	A	A	A	A				
31								L	L	A	A	A	A	A	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										3	3	6	11	9	7	10	7	5						
MED										U L 371	U L 372	U L 367	345	355	354	356	L 335	350						
U Q										422	U L 388	L 380	361	389	367	365	351	362						
L Q										U L 368	U L 349	U L 356	A 336	U L 334	340	L 340	L 330	U L 343						

MAY 2014 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11							C	C	C	C	C	C	C	C	C	C	C	C						
12									A	248	A	A	342	312	304	308	318	298	260					
13									260	264	316	322	334	334	342	328	318	296						
14								248	254	246	A	392	394	372	328	320	304	272						
15										316	L 384	L 398	370	360	346	332	302	294	278					
16								234	250	L 358	A	330	344	350	360	338	328	290	262					
17								224			358	330	372	348	338	328	312	292						
18								222		A 308	L 374	356	372	356	322	316	310	282						
19								236	258	296	294	396	378	362	340	328	316	296	274					
20										A 356	A 336	E A 380	364	340	332	342	324	292	260					
21									244	L 302	322	350	388	380	360	328	294	264						
22								242	260	296	L 254	L 380	370	330	338	332	322	300	272					
23								232	A 272	A 302	A	A 388	354	362	320	332	300	276						
24								238	250	254	428	306	332	338	342	320	290	290						
25										346	300	A 394	360	A 404	348	316	308	290	264					
26									258	A 326	A 358	A 350	374	358	352	322	284	278	270	236				
27							284	246	L 240	294	332	318	366	338	A 350	A 338	298	278	286					
28								254	244	262	338	384	376	354	352	308	276	270	A					
29								234	240	E A 310	A	A	364	370	366	342	320	306	264					
30							268	296	248	A	A	A	A 358	358	358	332	310	268	248	248				
31								262	262	A	E A 460	A	A	A	A 350	A 332	332	318	A 284	250				
	00	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	13	14	17	14	16	19	19	20	20	20	20	12	3				
MED							276	238	252	299	336	360	366	356	344	328	310	290	267	248				
U Q								251	260	321	374	390	374	362	352	332	319	296	276	250				
L Q								233	244	263	316	330	354	338	335	320	299	277	261	236				

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	270	268	252	A 272	A 362	282
12	264	236	242	258	278	268	232	216	A 202	A 202	A	A	A	A	A	A	A	242	E A 246	230	218	236	274	276
13	292	258	A 302	A 268	A 266	A 230	230	226	E A 228	A 216	202	222	E A 256	242	230	E A 282	A	E A 266	272	248	A 232	244	A 290	288
14	276	A 292	Q 270	Q 234	Q 246	Q 238	A 260	A	A	A	A	A	E A 306	A	E A 318	A	222	A	268	244	A 254	278	A 328	298
15	272	272	238	226	248	252	244	244	218	E A 238	222	E A 260	250	E A 248	A	210	208	230	A 258	246	224	260	304	304
16	294	264	238	234	222	216	236	218	232	220	A	A	A	A	A	E A 290	A	212	230	236	246	268	282	296
17	286	288	276	240	216	224	234	214	232	214	E A 266	E A 298	A	A	A	A	E A 260	E A 280	266	248	240	254	264	266
18	258	262	216	216	230	236	224	216	206	A	202	188	194	224	A	A	A	A	256	256	272	284	296	280
19	270	244	238	230	226	248	234	224	206	202	190	204	182	A 234	234	A 246	E A 266	E A 284	A 266	242	222	220	286	308
20	278	256	248	Q 232	Q 214	Q 226	224	218	250	A	A	A	E A 274	A	222	A	256	A	260	248	242	254	248	266
21	Q 260	Q 272	Q 246	214	Q 240	Q 234	222	224	202	A 240	272	A	248	218	A	232	E A 254	E A 248	244	240	260	280	284	A 312
22	282	258	Q 240	228	234	228	228	206	224	218	198	194	188	188	212	206	224	224	236	242	222	228	298	318
23	280	A 340	230	A 298	264	282	218	206	A	A	A	A	E A 262	A	A	A	A	A	260	E A 292	248	298	302	302
24	278	274	244	214	304	250	208	224	210	A 222	E A 398	A 216	202	A	A 224	222	A	A	A 280	258	262	292	A 306	308
25	Q 292	280	262	260	254	278	226	212	218	184	202	A	A	A	A	E A 264	A	A	238	248	252	288	278	264
26	262	268	248	232	220	200	228	212	210	A	A	A	A	206	A	A	A	A	A	A	242	A 282	A 304	288
27	268	268	262	216	238	232	236	A	214	A	186	192	A 226	A	A	A	A	A	A	266	236	214	268	296
28	284	252	286	274	254	234	236	226	212	204	194	208	A	A	A	A 232	A	A	A	E A 290	A 264	270	306	294
29	296	296	252	220	238	250	230	220	A	A	A	A	H 190	204	E Y 248	206	E A 294	218	A	246	222	254	292	324
30	280	280	268	264	236	228	238	224	A	A	A	A	A	188	A	E A 312	A	A	A	A	E A 294	A 274	272	266
31	A 304	A 272	246	A 294	A 260	274	E A 284	A	A 240	A	A	A	A	A	A	A	A	A	A	A	A	A 346	A 304	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	20	20	20	20	20	17	15	11	11	9	12	9	7	11	8	9	15	18	20	21	21	21
MED	279	270	247	233	239	235	230	218	216	215	200	201	U 213	212	226	U 219	U 235	U 227	260	247	243	270	292	294
U Q	289	280	265	262	257	251	236	224	232	A 222	E A 266	E A 241	E A 259	A 238	E 248	E A 282	E A 263	E A 273	268	258	257	283	A 304	306
L Q	269	258	239	223	228	228	225	213	210	202	194	193	192	196	222	210	223	221	244	242	228	249	276	278

MAY 2014 h′F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11							C	C	C	C	C	C	C	C	C	C	C	C	112	A				
12							A	108	A	A	A	A	A	A	A	A	106	110	A	A				
13							A	A	A	A	A	A	A	A	A	112	110	108	A	A				
14							A	110	108	108	A	A	A	A	A	116	106	106	A	A				A
15							A	106	A	A	A	A	A	A	A	A	A	A	A	A				
16							126	108	108	A	A	A	A	A	A	A	A	A	A	A				
17							120	110	106	110	106	A	A	A	A	A	A	A	A	A				
18							122	110	108	108	A	A	A	A	A	A	116	112	112	A				
19						B	118	108	104	A	A	A	A	A	112	A	A	112	A	A				
20						B	130	110	110	A	A	A	A	A	A	A	A	A	A	A				
21						B	A	110	116	E 108	A 108	A	B	110	A	A	A	108	108	A				
22						B	116	108	A	110	A	A	A	A	A	A	106	106	106	A				
23						B	140	A	A	110	A	A	A	106	A	A	A	A	A	A				
24						B	A	A	A	A	110	A	A	A	A	A	A	A	A	A				
25						B	118	110	A	A	110	110	110	A	A	110	110	110	A	A				
26						B	116	108	110	106	A	A	A	A	A	A	A	A	112	A				
27						B	A	106	A	A	A	A	A	A	A	106	106	106	108	A				
28						B	A	A	A		A	A	A	110	110	110	110	106	A	A				
29						B	A	110	A	A	A	A	A	B	110	110	110	110	110	A				
30						B	A	110	108	110	A	A	A	A	A	108	A 124	110	A	A				
31						B	110	A	110	A	A	A	A	A	A	A	A	108	108	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							10	15	10	8	4	1	1	3	3	7	10	13	8					
MED							119	110	108	109	109	110	110	110	110	110	110	108	109					
U Q							126	110	110	110	110			110	112	112	110	110	112					
L Q							116	108	108	108	107			106	110	108	106	106	108					

MAY 2014 h′E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	114	106	106	110	106	106
12	98	96	118	92	98	98	114	112	108	108	100	100	100	100	116	100	112	108	108	94	94	90	B	B
13	98	98	98	98	98	102	102	102	100	100	100	140	152	144	138	124	114	106	106	102	102	102	102	102
14	100	100	92	92	96	96	116	110	108	106	106	106	134	102	136	120	122	110	104	104	92	92	110	100
15	100	94	100	96	100	102	100	118	192	104	160	100	148	98	96	96	98	98	98	92	96	108	124	94
16	90	90	112	92	94	88	G	G	108	108	104	106	98	100	98	136	98	100	120	98	96	94	100	94
17	94	92	92	88	88	88	88	116	110	108	108	102	102	102	100	100	122	120	114	94	94	92	92	92
18	100	98	96	B	B	102	G	128	114	110	114	124	124	128	114	114	114	112	110	102	104	102	102	98
19	92	94	90	90	B	B	122	G	106	110	106	100	100	102	170	96	114	114	106	106	104	92	102	106
20	98	B	98	98	102	128	G	128	112	110	106	106	106	102	102	102	102	102	98	96	96	96	96	96
21	126	90	92	94	90	92	126	112	114	118	184	102	178	G	132	140	124	116	110	106	96	96	96	94
22	92	104	88	100	106	100	188	106	100	152	104	102	104	104	104	G	G	G	122	94	94	106	106	106
23	106	100	102	96	96	96	104	104	108	108	110	106	106	102	102	102	102	102	102	98	98	94	92	92
24	88	90	90	B	108	B	116	110	110	110	106	106	104	104	100	108	122	116	108	98	110	90	94	94
25	94	102	100	100	100	100	G	G	104	104	G	110	110	110	110	110	110	106	102	102	100	94	94	94
26	94	92	90	90	B	B	G	106	106	102	102	102	100	104	104	102	102	94	110	106	104	104	108	102
27	104	102	102	102	102	B	112	108	104	106	104	140	118	118	116	116	116	114	108	106	104	102	104	104
28	92	94	92	88	88	90	112	106	100	108	112	112	116	128	128	116	112	106	100	102	102	102	96	92
29	90	90	90	90	94	B	112	112	108	104	100	100	104	126	G	118	108	G	116	106	104	102	102	102
30	100	88	88	88	110	118	112	110	110	110	102	104	104	104	144	148	148	122	114	108	108	104	106	102
31	102	96	100	100	100	106	118	116	110	100	104	100	100	100	100	100	100	116	114	104	104	104	98	114
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	19	20	18	17	15	15	17	20	20	19	20	20	19	19	19	19	18	21	21	21	21	20	20
MED	98	94	94	93	98	100	112	110	108	108	106	105	105	104	110	110	112	109	108	102	102	102	102	99
U Q	100	100	100	98	102	102	118	116	110	110	110	108	121	118	132	120	122	116	114	106	104	104	106	103
L Q	92	90	90	90	94	92	104	106	105	104	102	101	101	102	100	100	102	102	103	97	96	93	96	94

IONOSPHERIC DATA STATION Okinawa

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																			C 4	L 3	FF 71	FFQ 42	FQ 41	FQ 31
12	F 2	FF 11	FF 11	F 1	F 1	FF 15	C 3	C 5	C 5	C 1	L 2	L 5	LQ 21	LC 21	CL 21	LC 32	C 1	CL 11	CL 31	L 1	F 2	F 2		
13	FQ 51	F 3	F 4	F 5	FQ 51	FQ 31	L 3	L 2	L 2	L 2	L 1	HL 11	HL 11	HL 11	HL 11	CL 11	C 3	C 2	C 8	L 6	FF 51	F 4	F 4	F 3
14	F 5	F 5	F 3	F 1	FF 22	F 3	CL 63	C 5	C 3	C 2	C 4	C 2	HL 22	LQ 31	HC 21	C 2	C 1	C 5	L 2	CL 51	F 4	F 5	FF 25	FQ 41
15	F 4	F 4	FF 33	FF 32	FF 33	FQ 31	L 3	C 5	HC 11	L 2	HL 11	L 1	H 1	LH 21	LQ 21	L 1	L 1	L 2	LC 42	L 4	FQ 21	FF 21	FF 13	F 4
16	F 3	F 2	FF 11	FF 11	F 1	F 1			C 1	C 1	L 4	L 2	L 2	L 2	L 2	HL 11	L 3	L 1	CL 11	LL 21	F 1	F 2	F 1	F 3
17	F 2	F 2	F 1	F 3	F 2	F 1	L 1	C 1	C 2	C 1	C 2	L 2	L 2	L 1	L 2	LC 31	CL 22	CL 13	CL 45	C 4	FQ 41	F 3	F 2	F 2
18	F 3	F 5	F 1			F 1		C 1	C 1	C 2	CL 11	C 1	CL 11	CL 11	CL 21	CL 21	C 1	C 3	C 5	L 8	F 4	FQ 61	FQ 41	F 5
19	F 5	FF 11	F 2	F 1			C 1		C 1	C 1	C 1	L 1	L 1	L 1	H 1	L 1	CL 12	CL 32	CL 22	CL 22	FF 33	F 3	F 3	FF 52
20	F 4		F 6	FQ 11	FQ 11	CL 11		CL 11	C 2	C 4	C 2	C 3	C 2	L 3	L 1	L 3	L 2	L 3	L 1	L 5	F 4	F 2	F 2	F 1
21	FF 12	F 1	F 3	F 3	F 2	L 1	CL 22	C 2	C 1	CH 11	H 1	L 1	H 1		H 1	HC 11	CL 11	C 2	C 4	C 3	F 3	F 2	F 5	F 5
22	F 3	FF 11	F 1	F 4	F 1	L 3	H 1	C 1	L 2	H 1	L 1	L 1	L 1	L 1	L 1				C 1	L 1	F 1	FF 21	FQ 21	FQ 41
23	FF 32	F 7	F 3	F 5	F 2	L 1	L 1	L 2	C 4	C 2	C 5	L 2	L 1	L 2	L 2	L 2	L 3	L 3	L 6	L 8	F 4	F 5	F 5	F 5
24	F 2	F 2	F 1		F 1		C 1	C 1	C 1	C 1	C 2	C 1	L 1	L 2	L 2	C 1	CL 21	CL 31	CL 44	LC 42	FF 15	F 5	F 4	F 2
25	F 1	F 5	FQ 51	F 4	F 4	L 3			L 1	L 1		C 2	C 2	C 4	C 2	C 2	C 2	C 2	L 3	L 2	F 6	F 7	FQ 51	F 5
26	F 5	F 2	F 3	F 3				C 2	C 1	L 2	L 3	L 2	L 3	LH 11	LQ 21	LQ 31	L 3	LQ 51	CL 51	C 3	FF 35	FF 33	FF 32	FF 42
27	F 3	F 4	F 3	F 2	F 2		C 2	C 3	L 2	L 2	LH 11	HC 11	C 1	C 1	C 2	C 2	C 3	C 3	C 8	C 9	F 5	F 3	F 3	F 4
28	F 1	F 1	F 3	F 2	F 1	L 1	C 1	C 1	LQ 21	C 1	C 1	C 1	C 2	C 1	C 2	CCL 11	C 2	C 4	L 4	L 7	F 4	FQ 41	F 5	F 5
29	F 4	F 5	F 3	F 1	F 1		C 1	C 2	C 3	C 3	L 4	L 3	L 1	C 1		C 1	C 2		C 3	L 4	F 2	F 3	F 5	F 2
30	F 4	F 4	F 5	F 4	F 3	C 1	C 3	C 1	C 5	C 3	L 4	L 3	L 2	L 1	HL 12	HL 11	HL 11	CL 51	CL 73	CL 74	FF 64	FF 62	FF 11	F 2
31	F 3	F 2	F 2	F 4	FQ 41	C 1	C 4	CL 32	C 6	L 4	L 3	L 5	L 5	L 5	L 3	L 3	L 2	C 5	C 8	L 8	F 6	FF 43	F 7	FF 64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 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

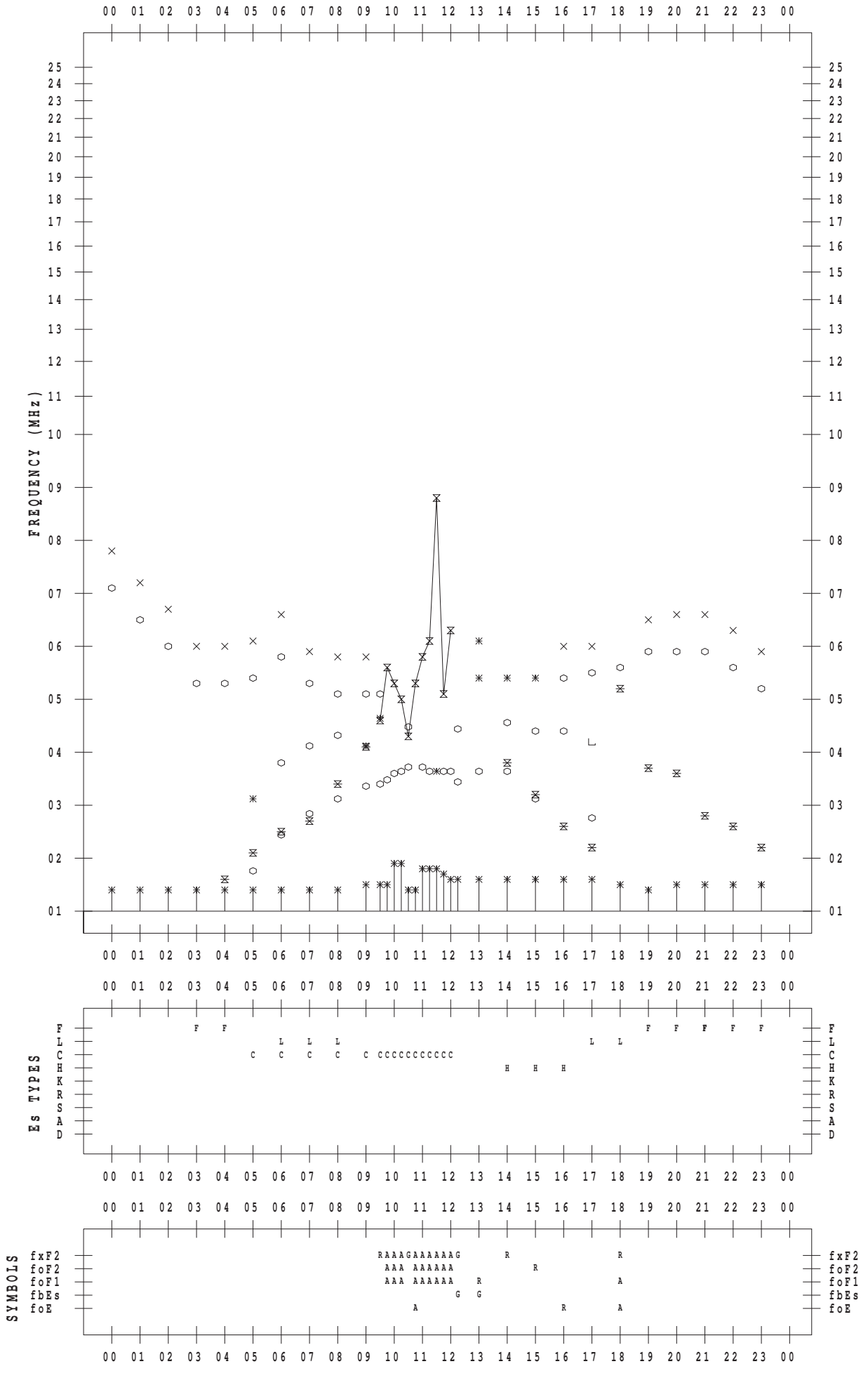
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 1

135 °E MEAN TIME



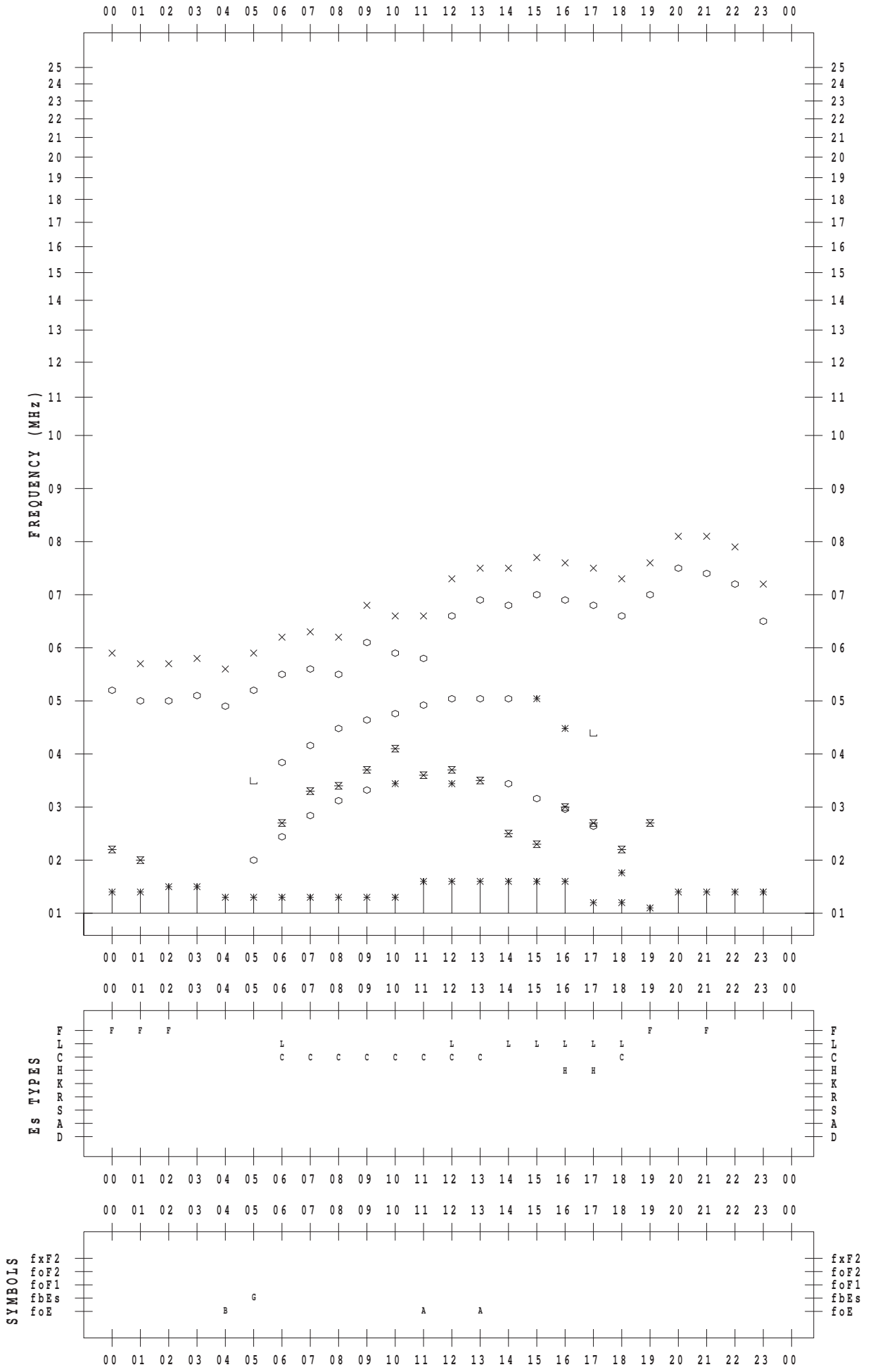
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 2

135 °E MEAN TIME



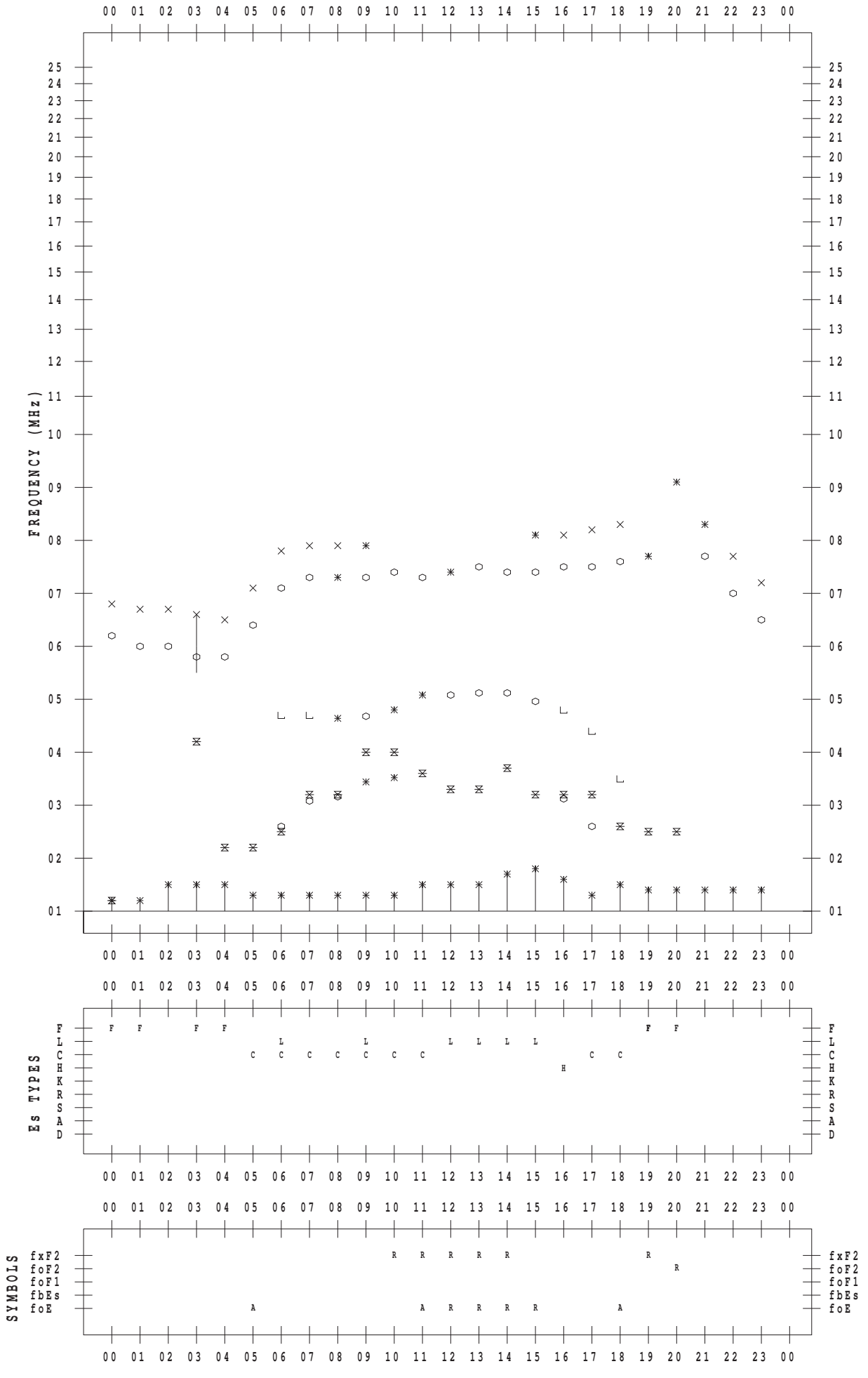
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 3

135 °E MEAN TIME



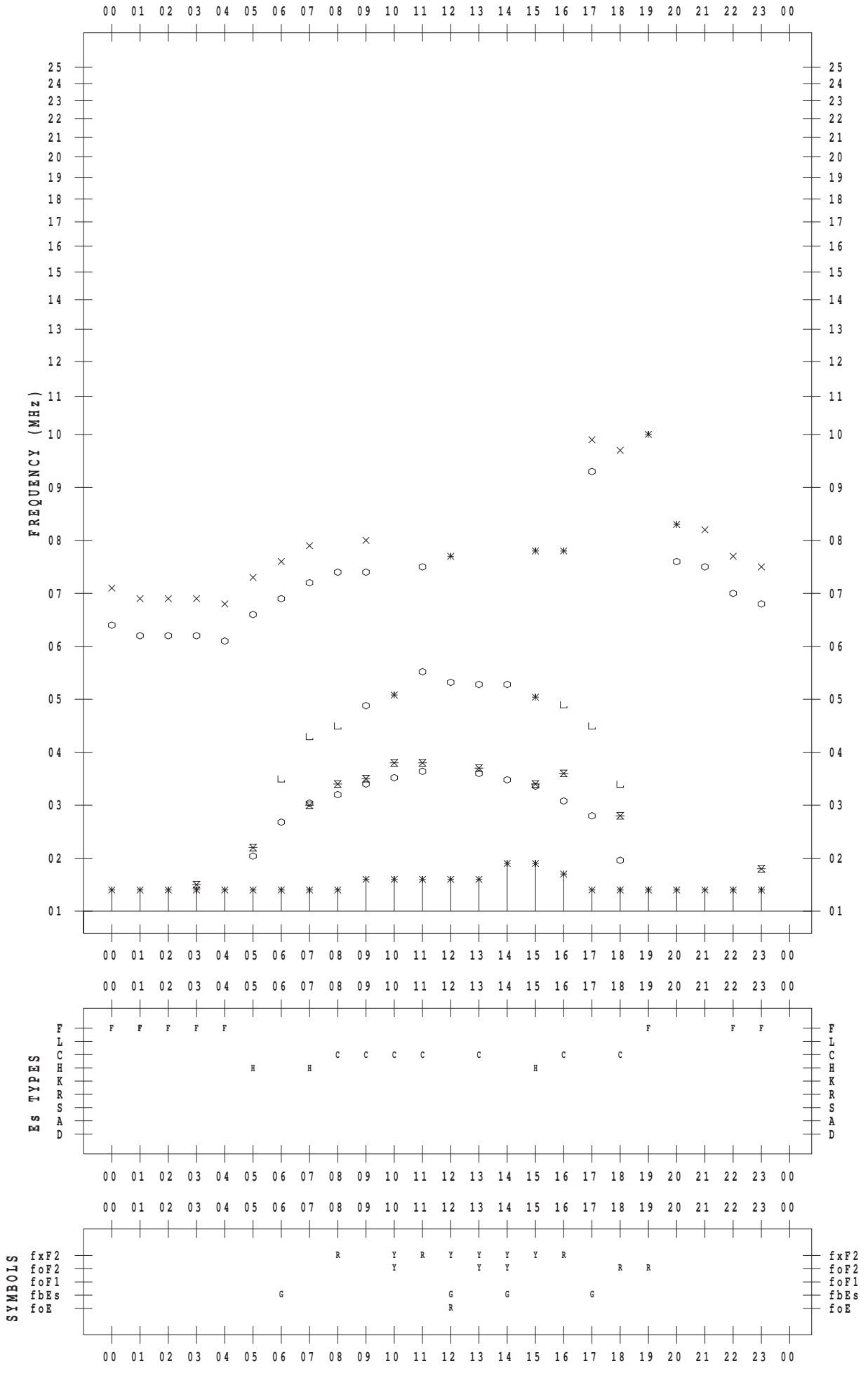
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 4

135 °E MEAN TIME



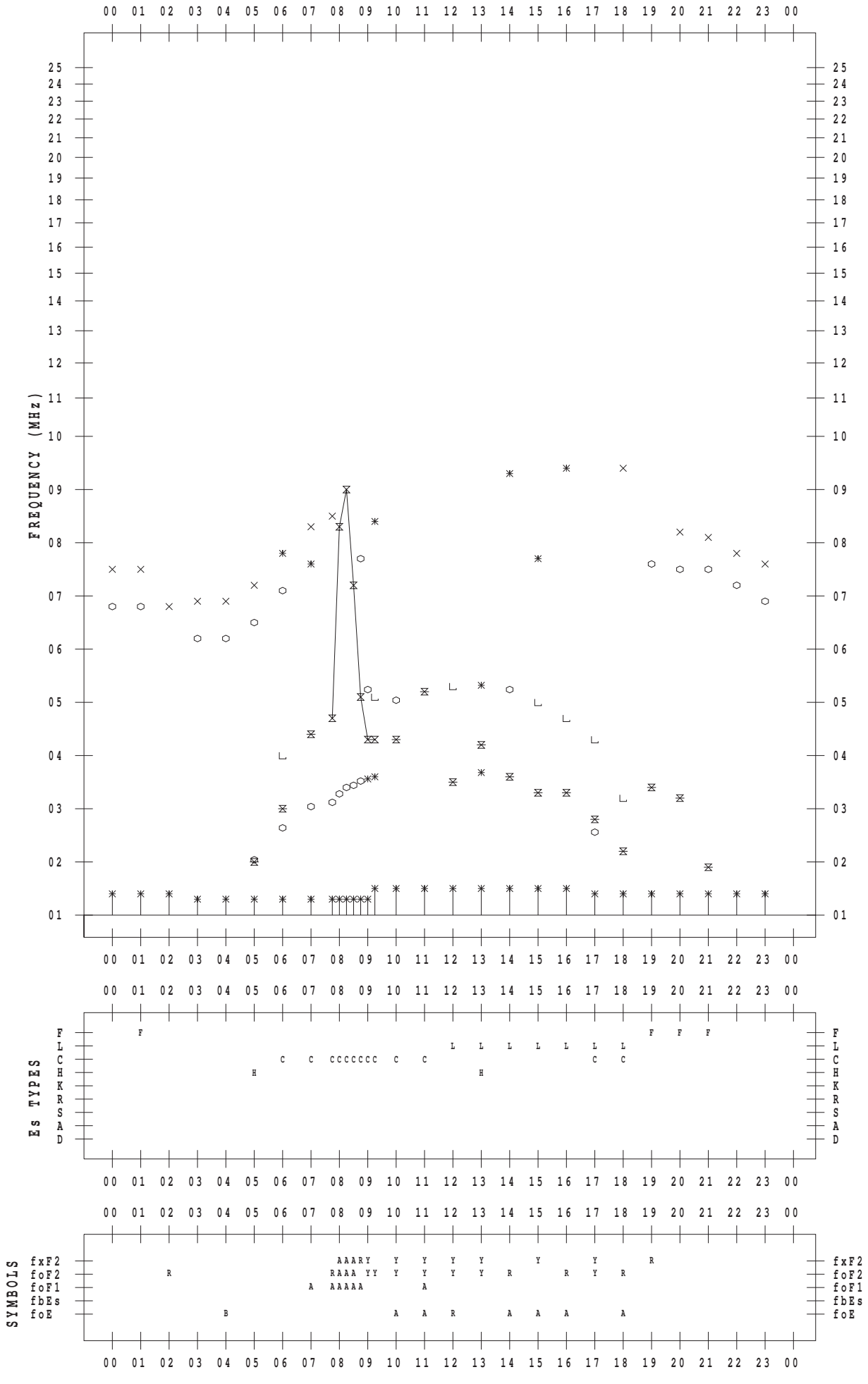
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 5

135 °E MEAN TIME



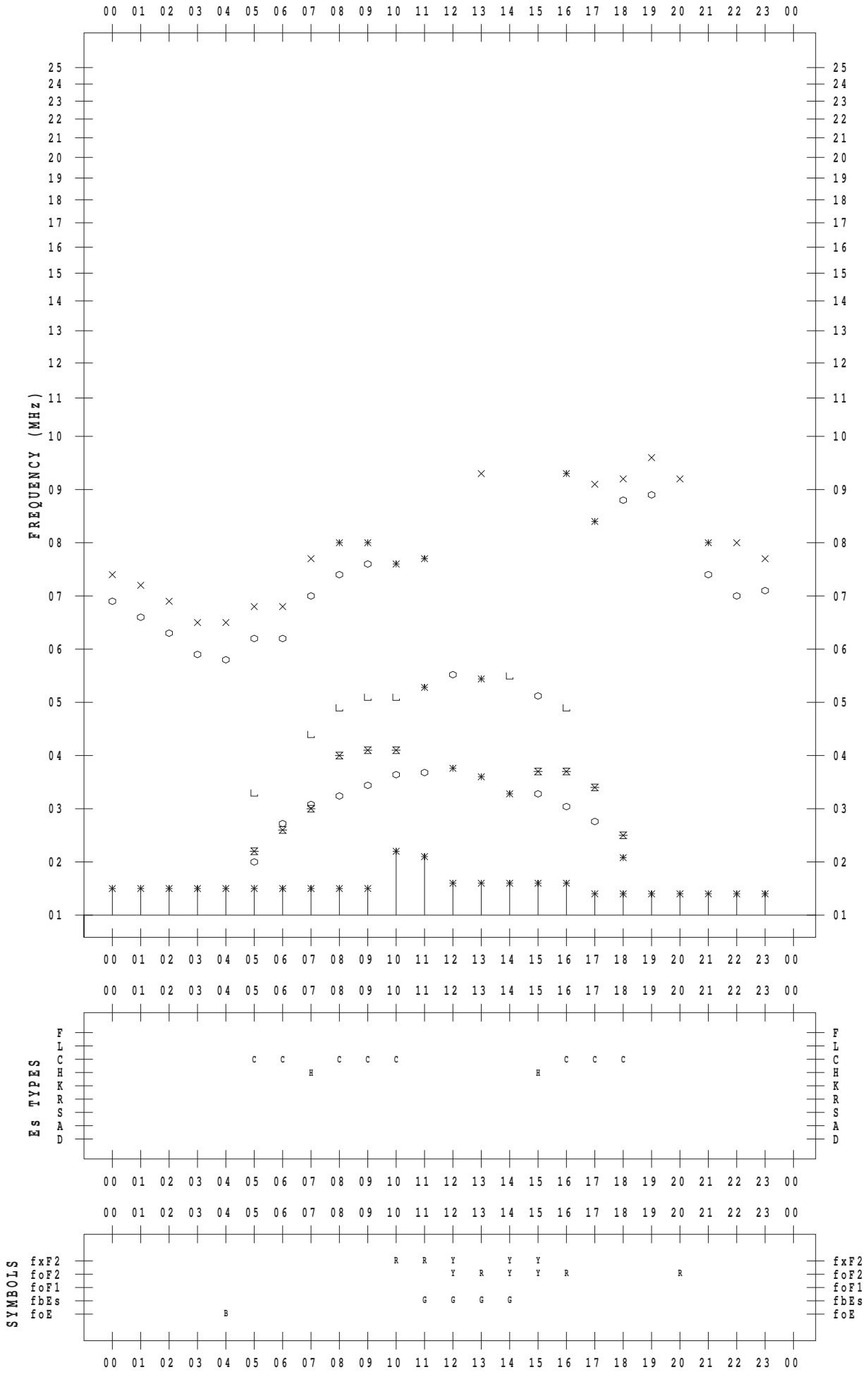
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 6

135 °E MEAN TIME



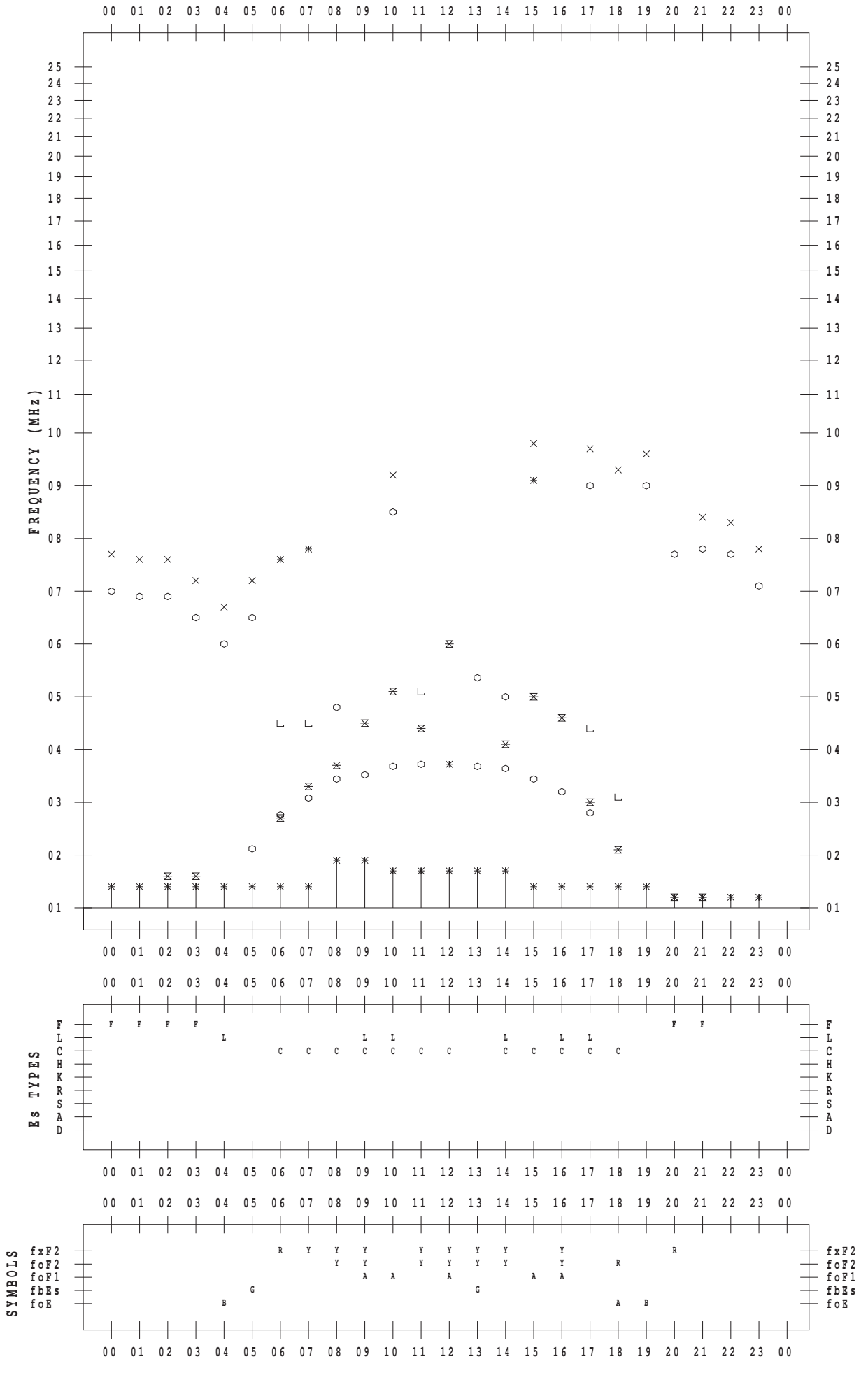
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 7

135 °E MEAN TIME



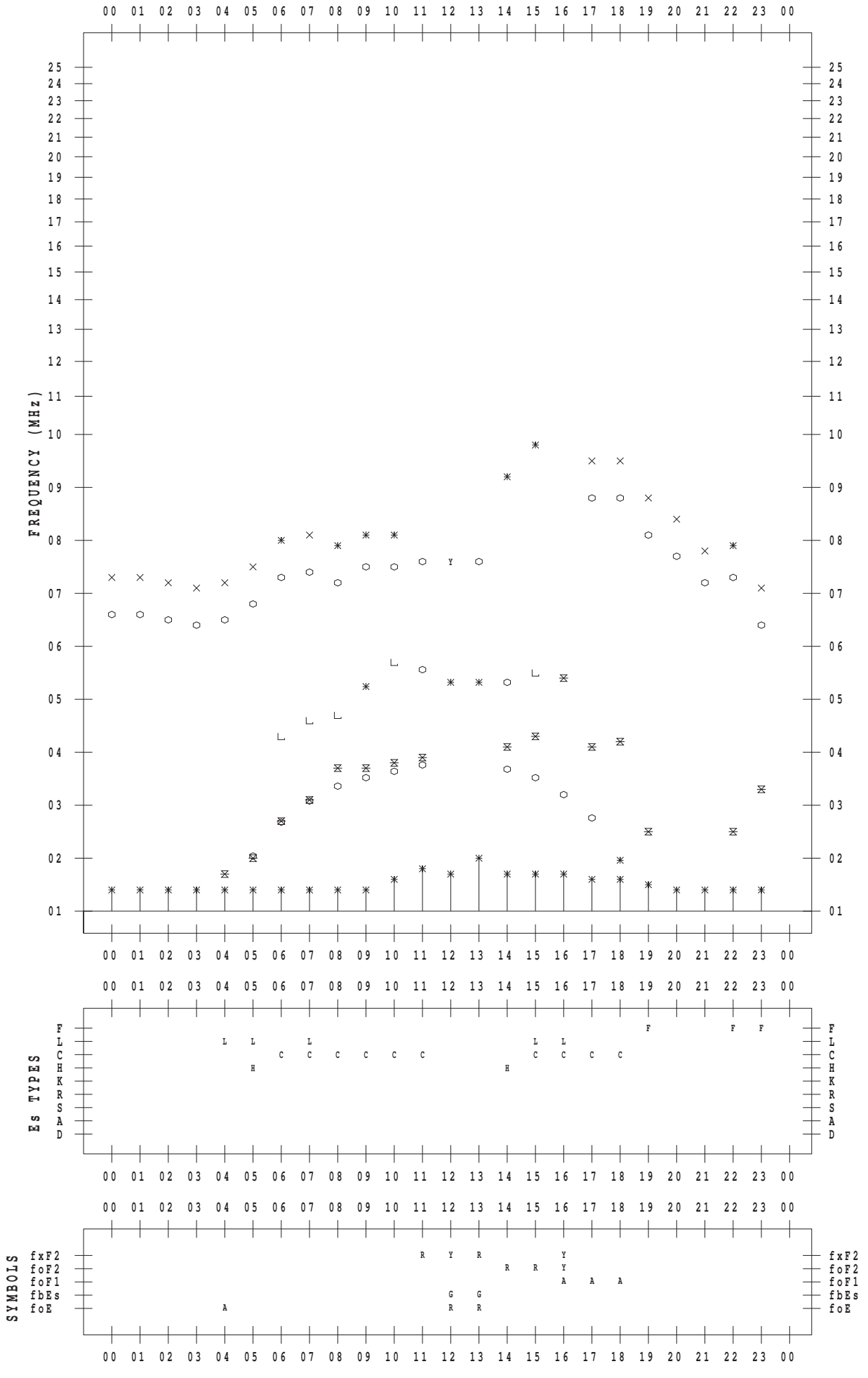
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 8

135 °E MEAN TIME



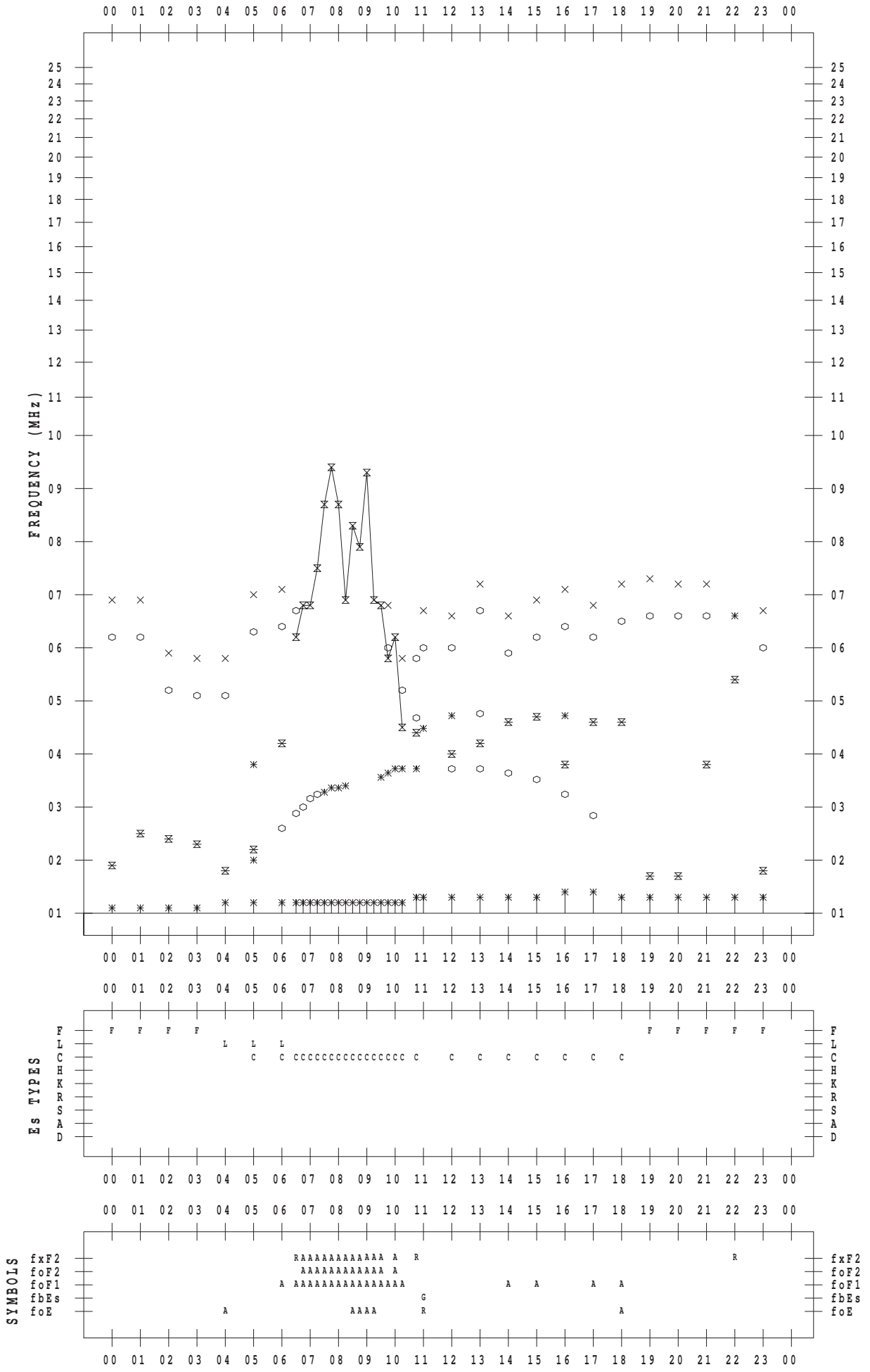
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/ 9

135 °E MEAN TIME



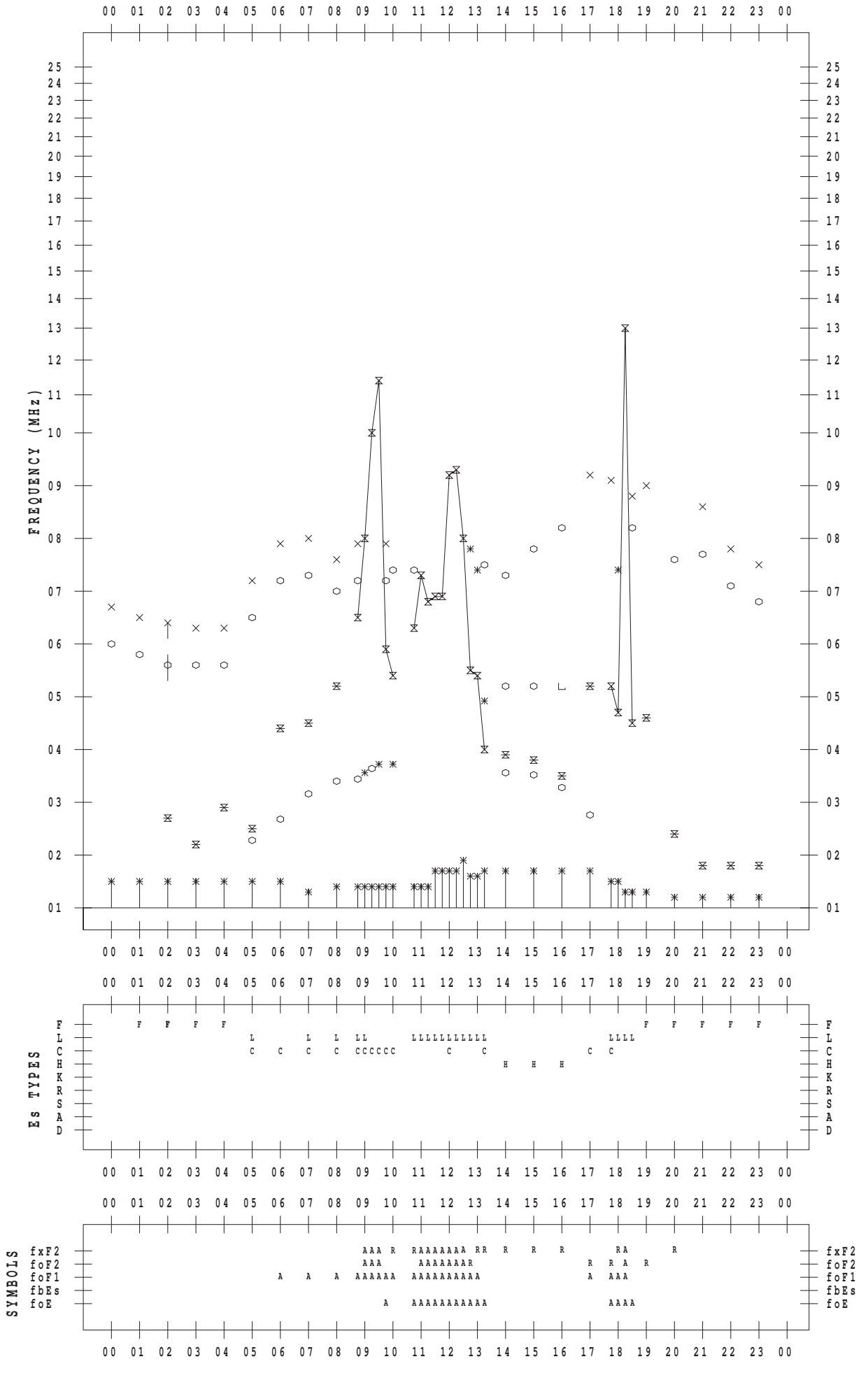
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/10

135 °E MEAN TIME



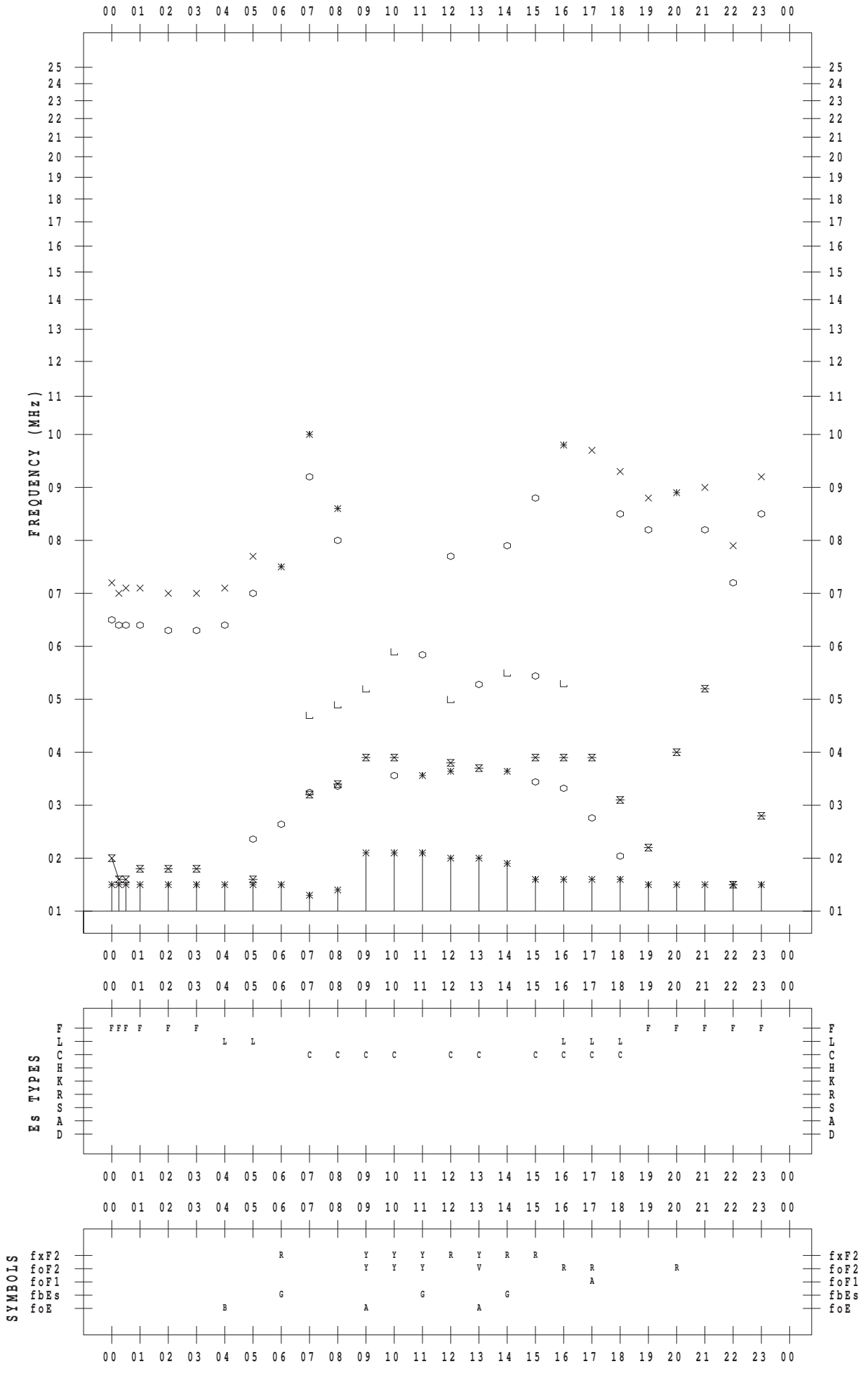
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/11

135 °E MEAN TIME



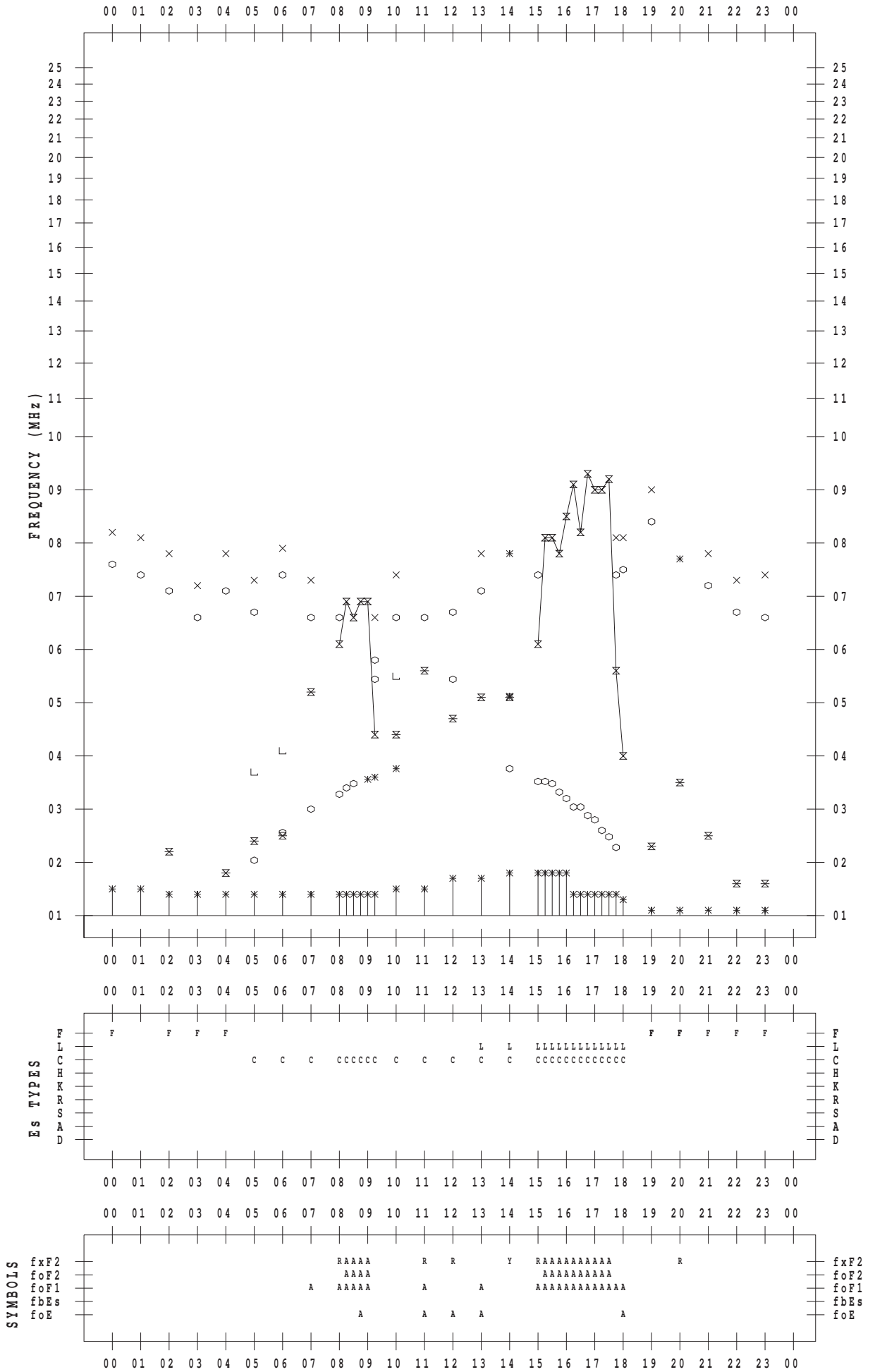
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/12

135 °E MEAN TIME



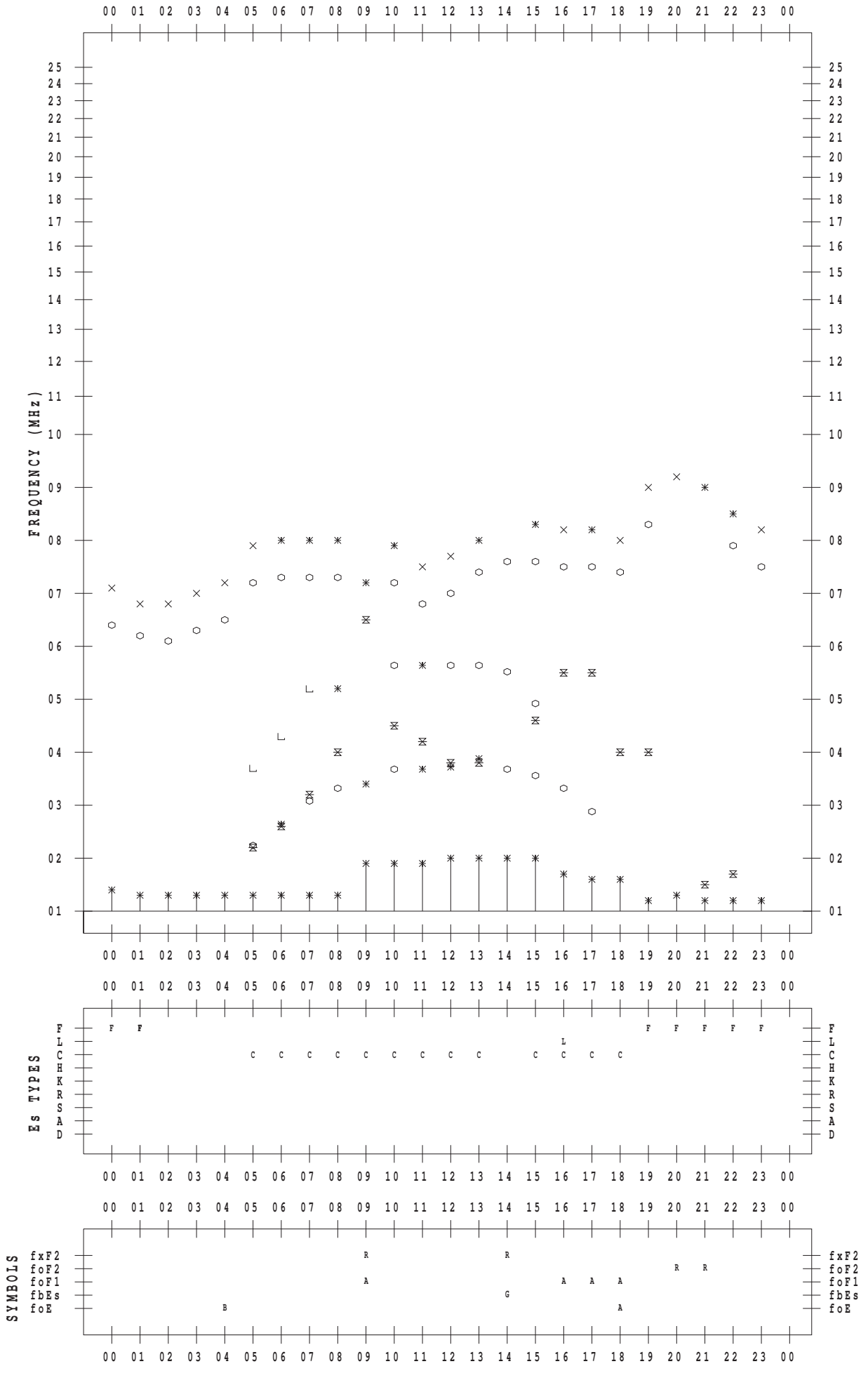
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/13

135 °E MEAN TIME



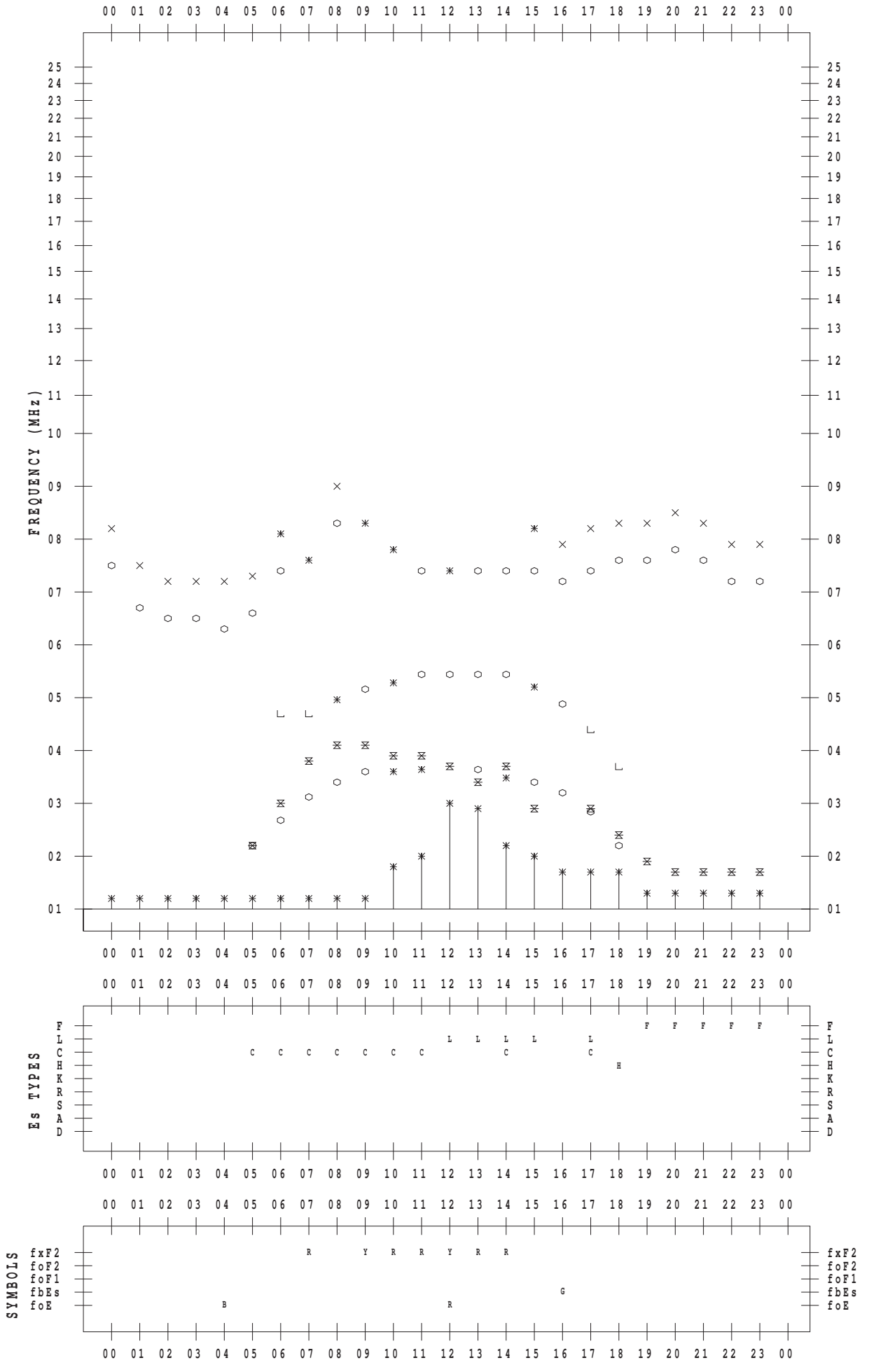
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/14

135 °E MEAN TIME



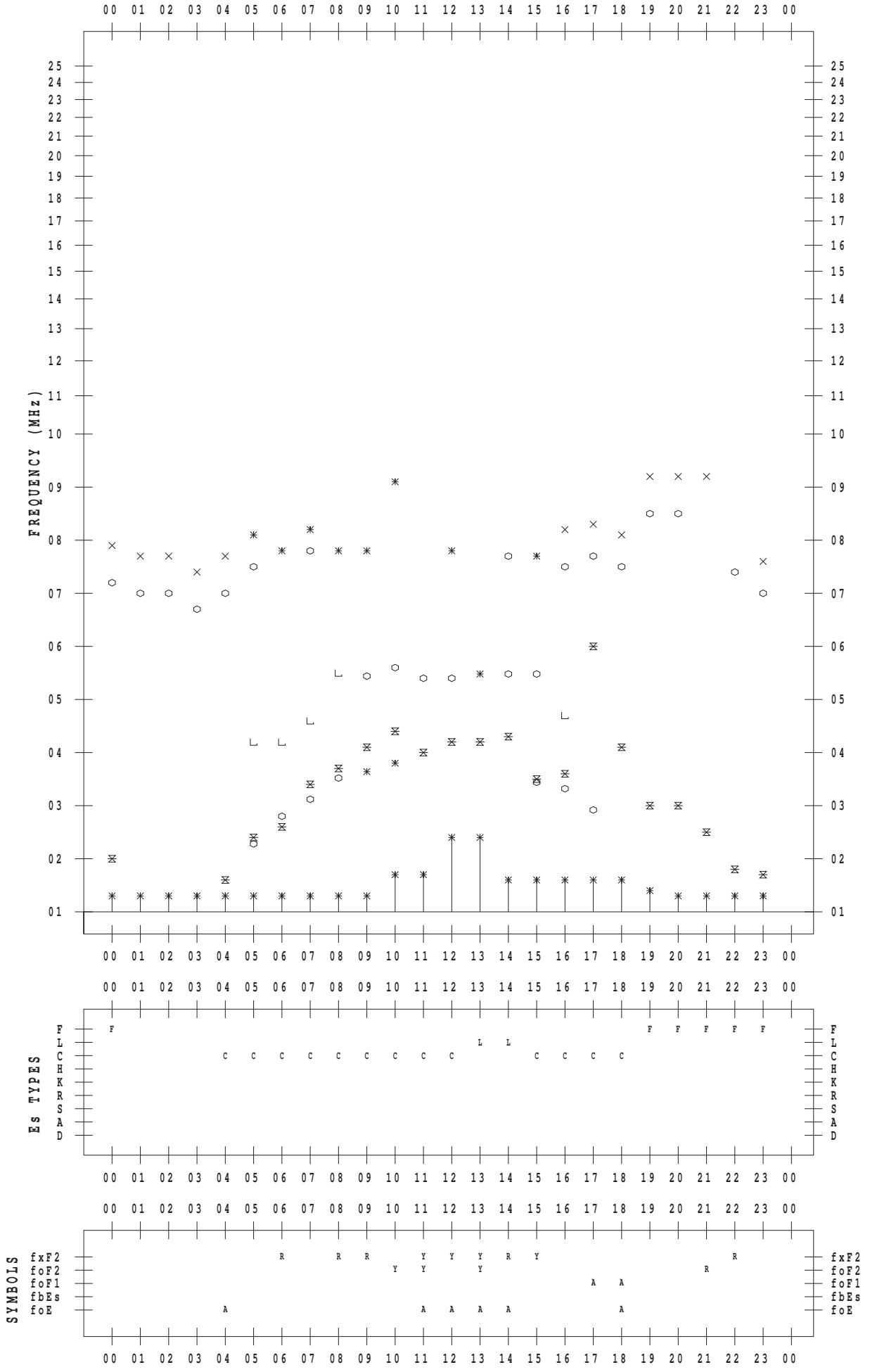
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/15

135 °E MEAN TIME



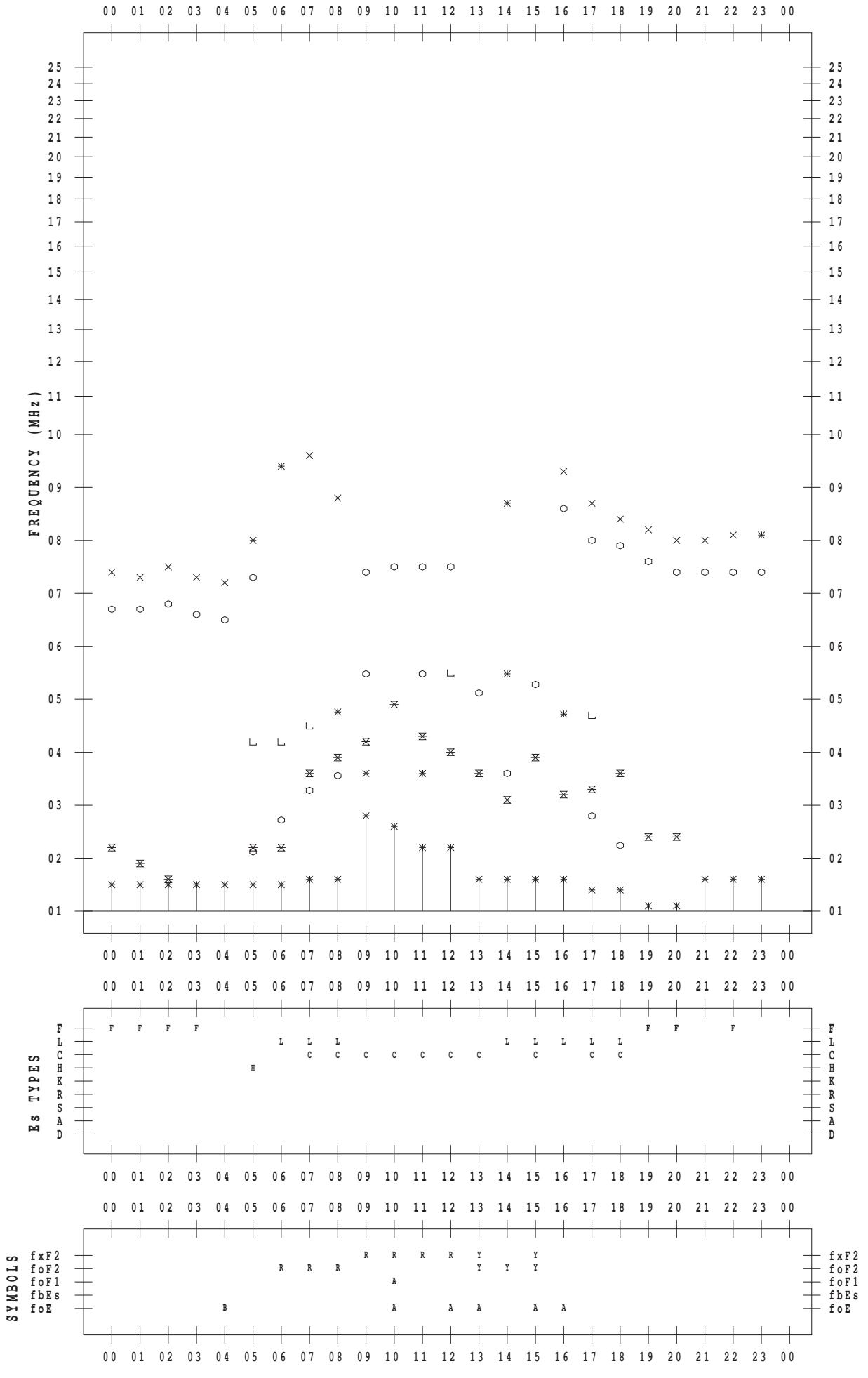
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/16

135 °E MEAN TIME



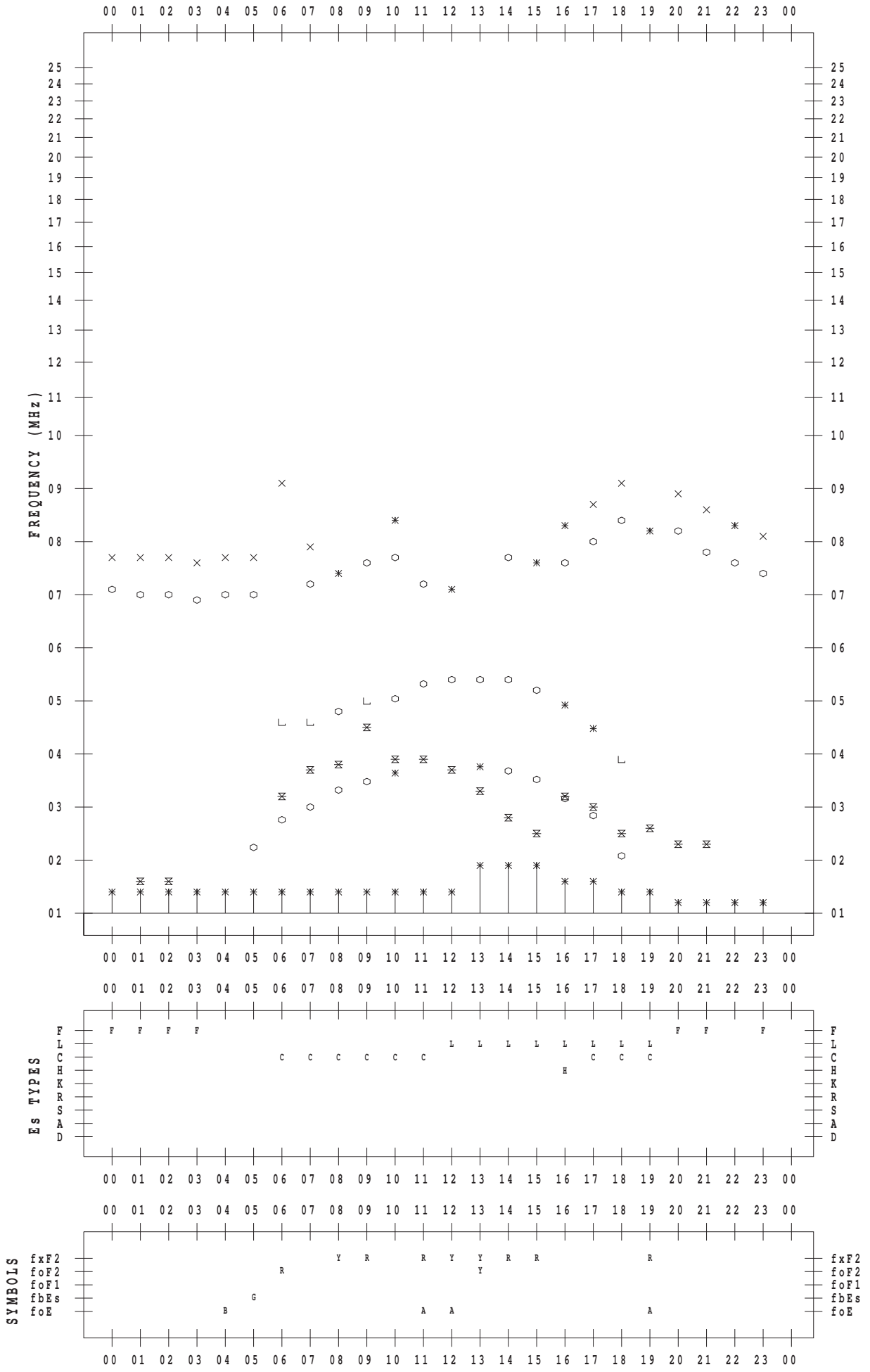
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/17

135 °E MEAN TIME



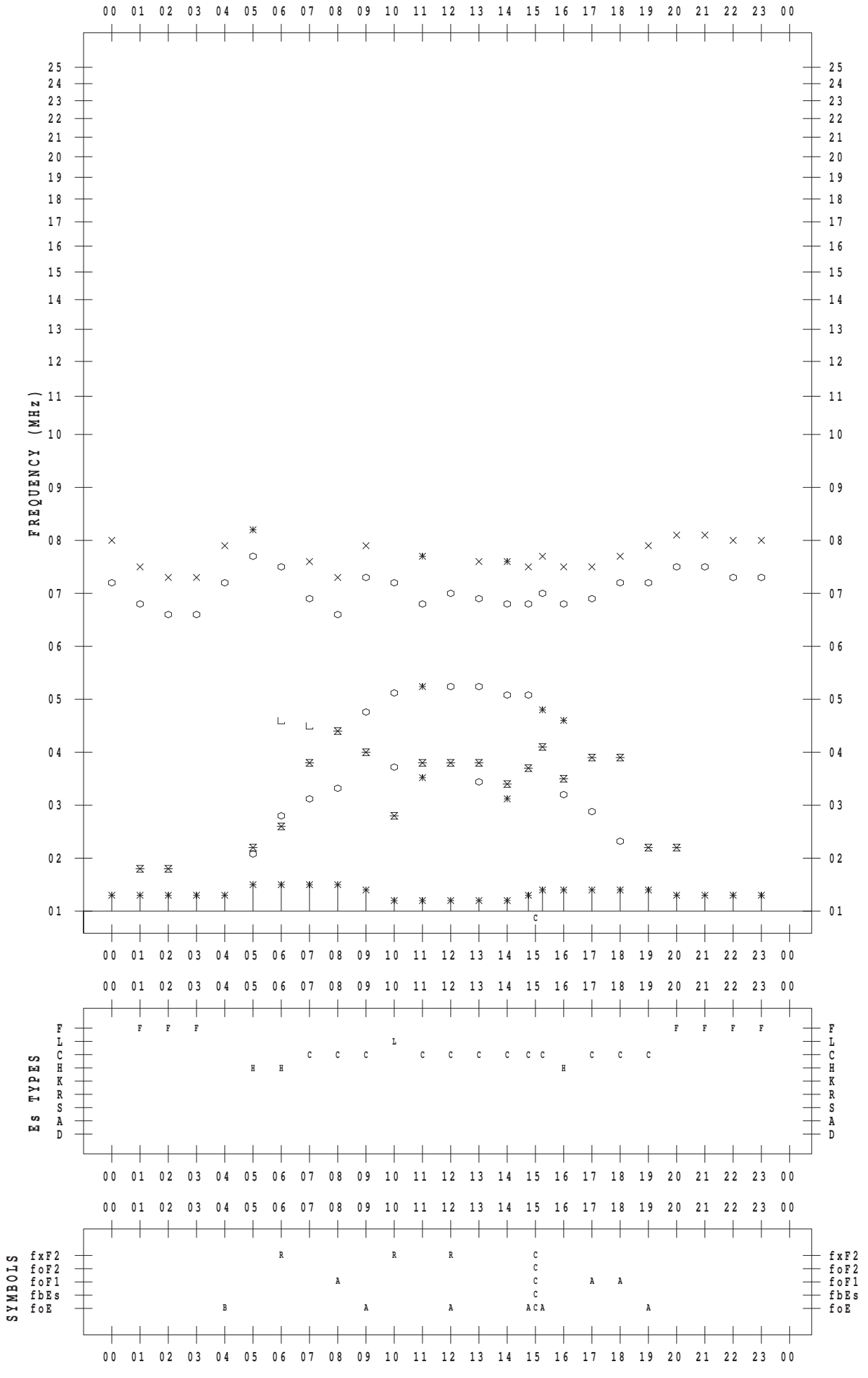
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/18

135 °E MEAN TIME



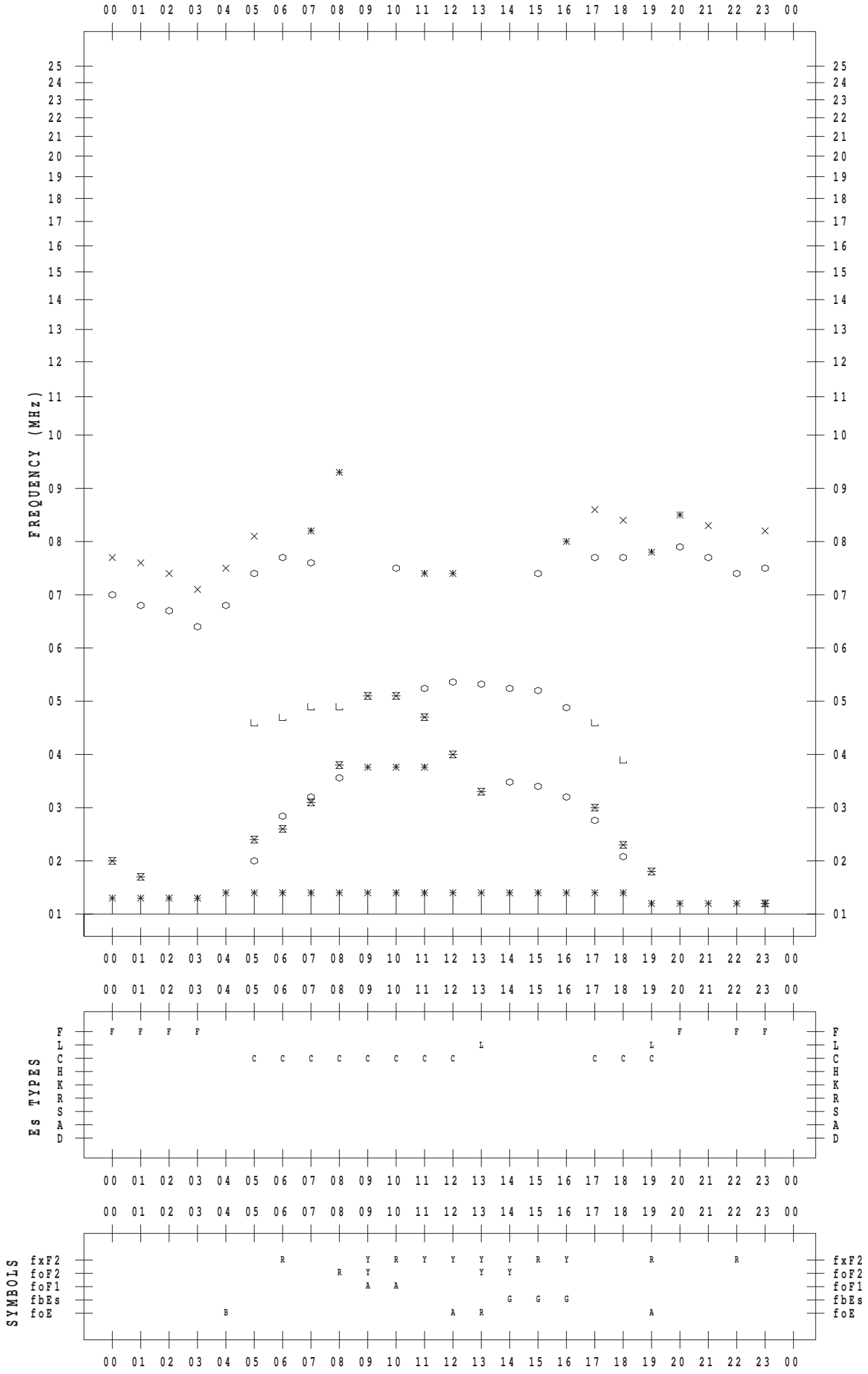
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/19

135 °E MEAN TIME



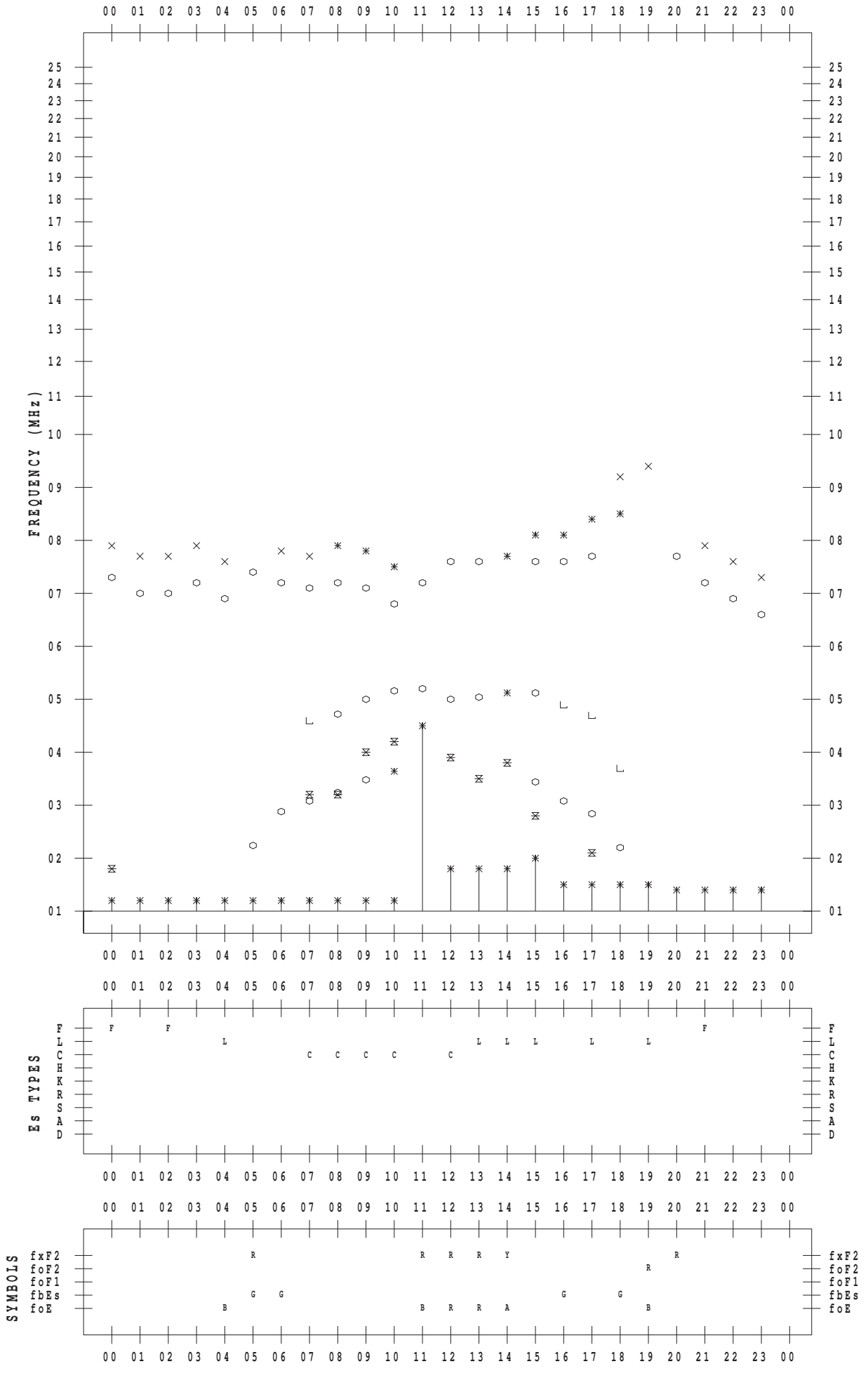
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/20

135 °E MEAN TIME



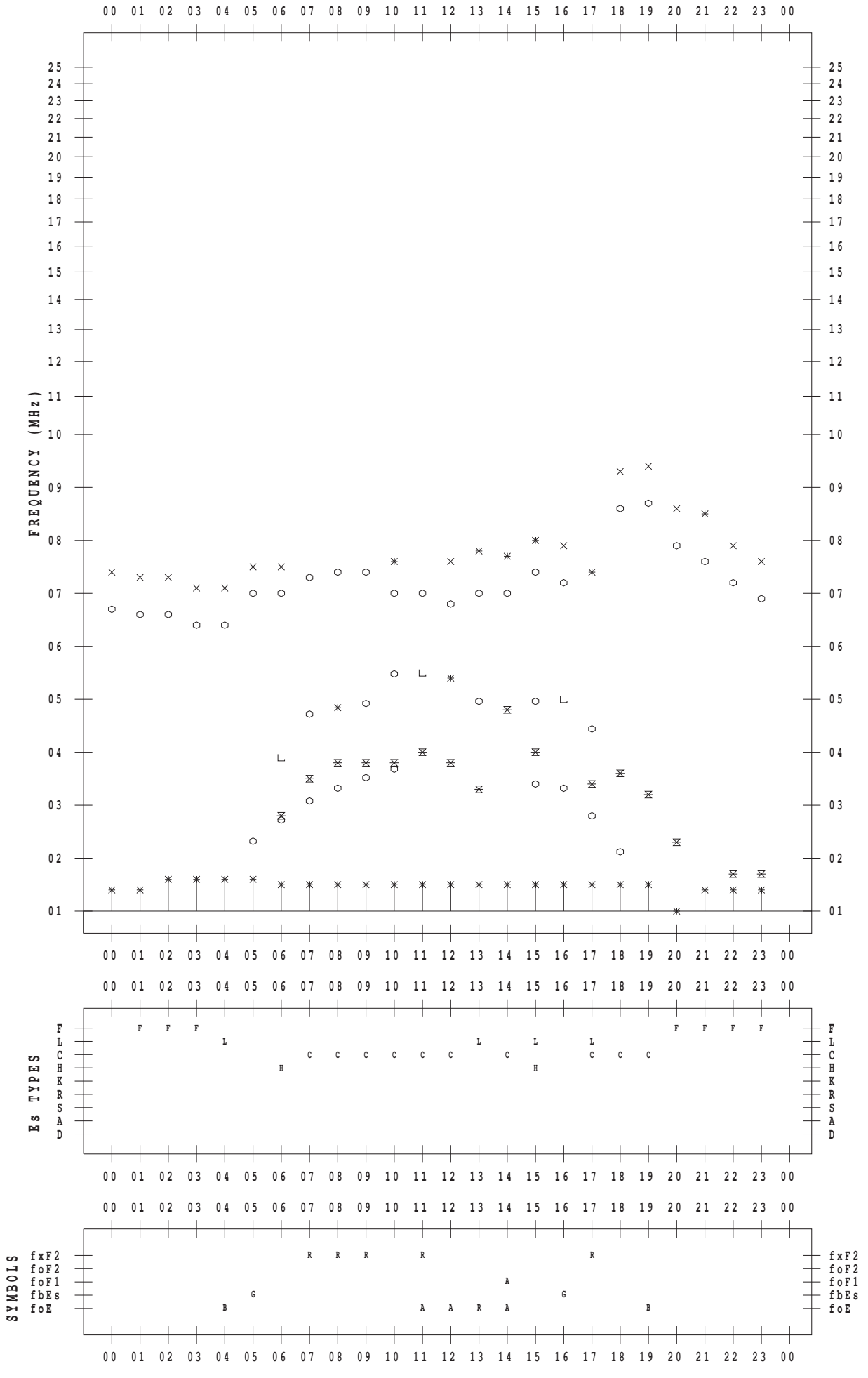
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/21

135 °E MEAN TIME



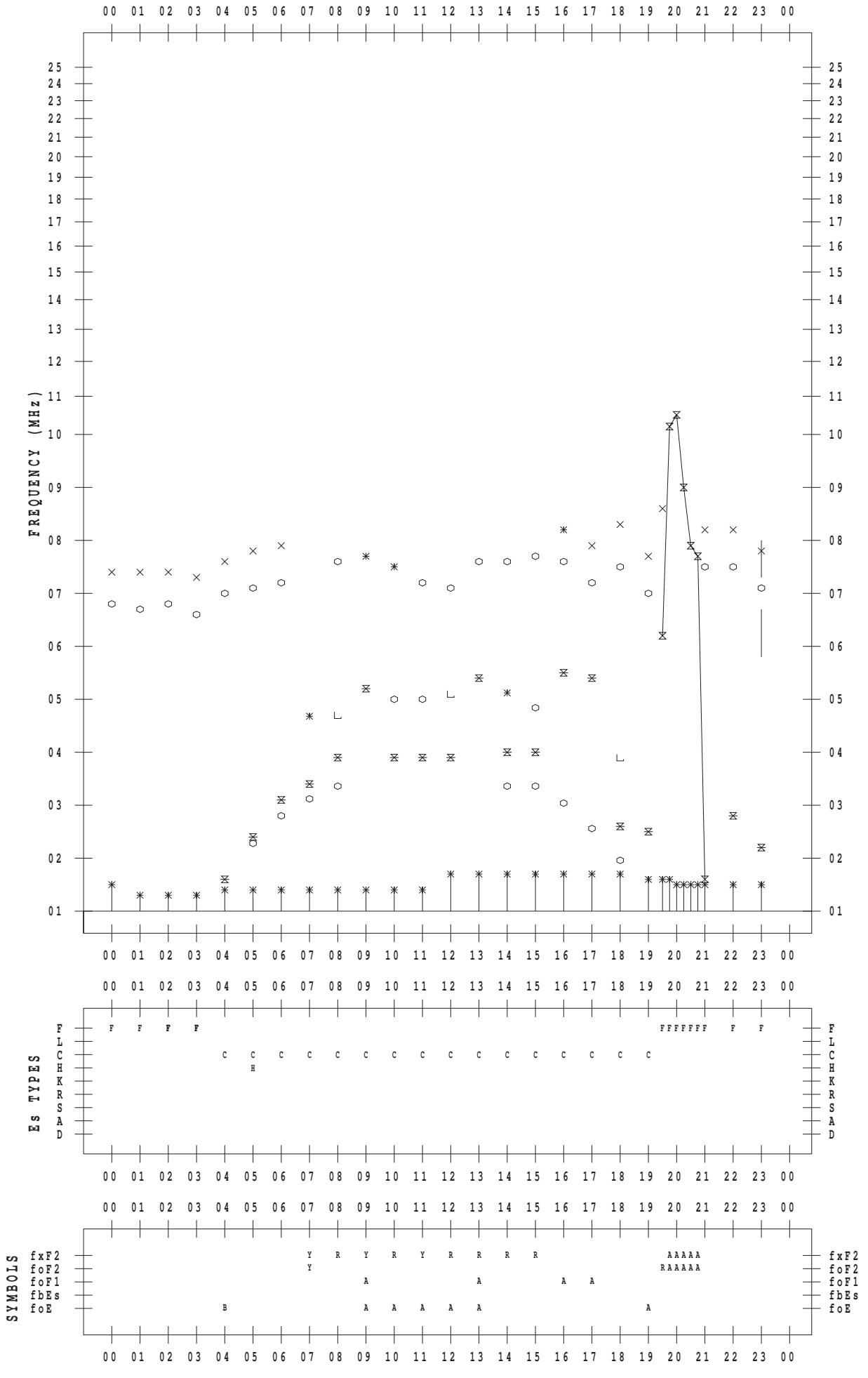
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/22

135 °E MEAN TIME



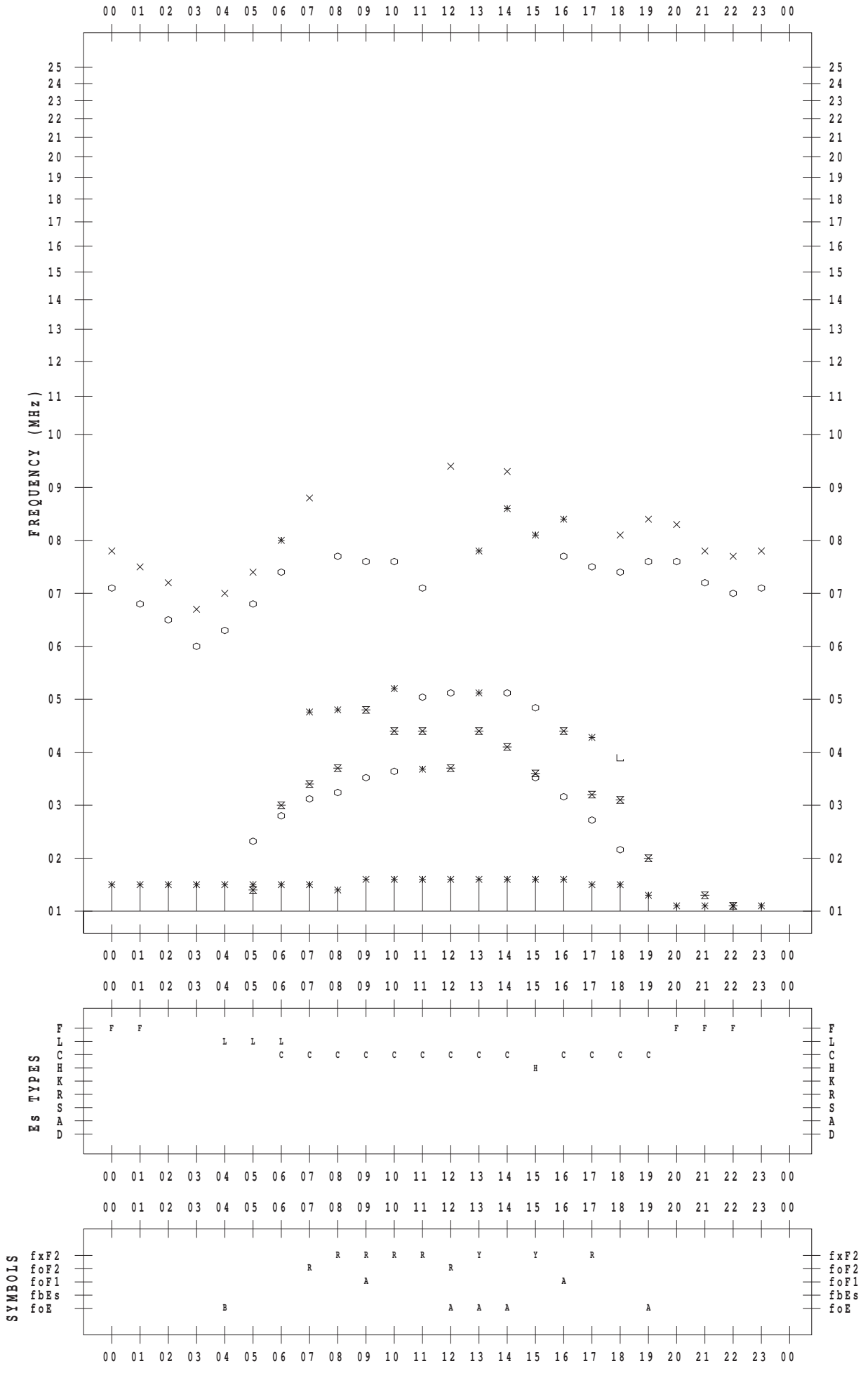
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/23

135 °E MEAN TIME



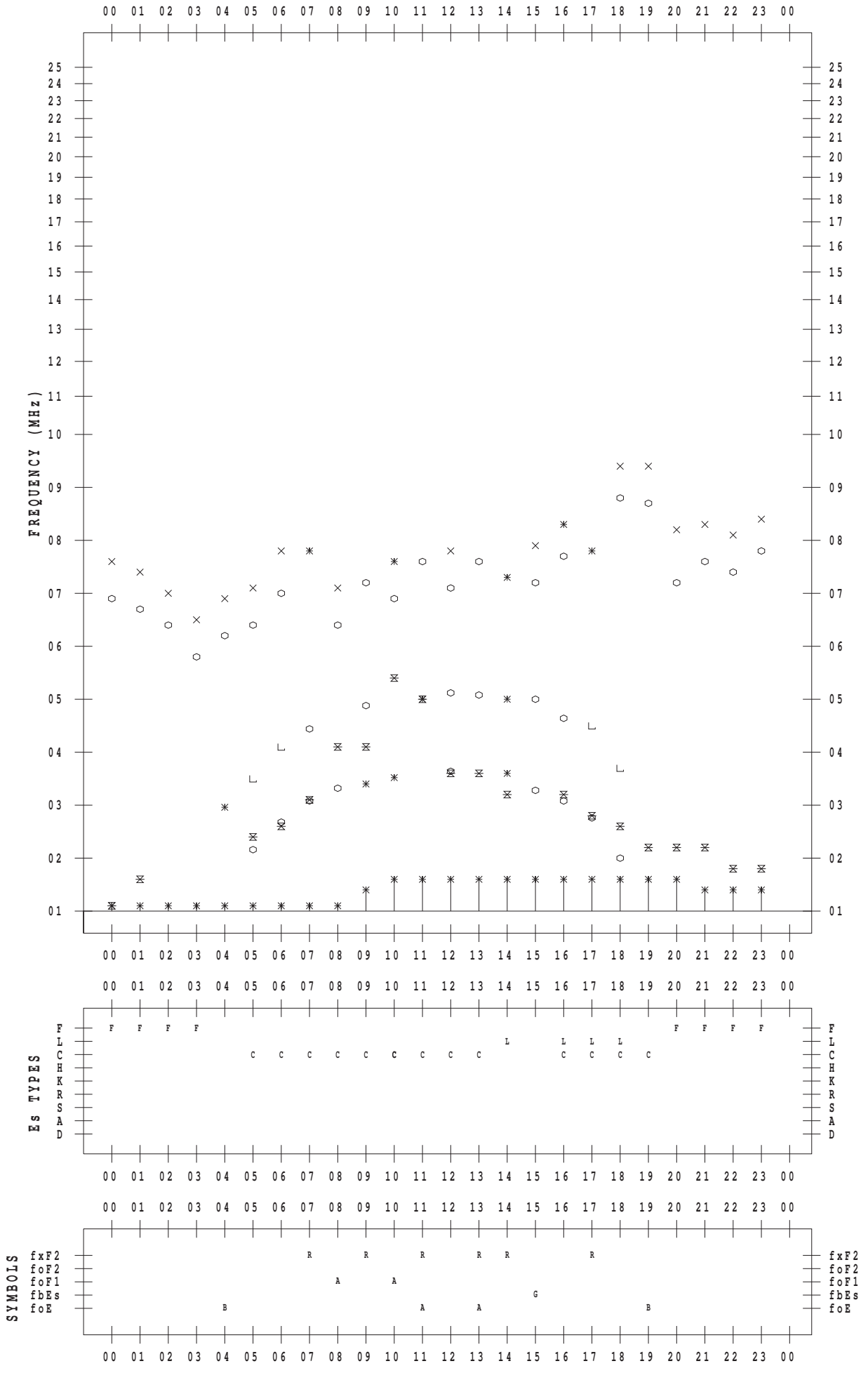
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/24

135 °E MEAN TIME



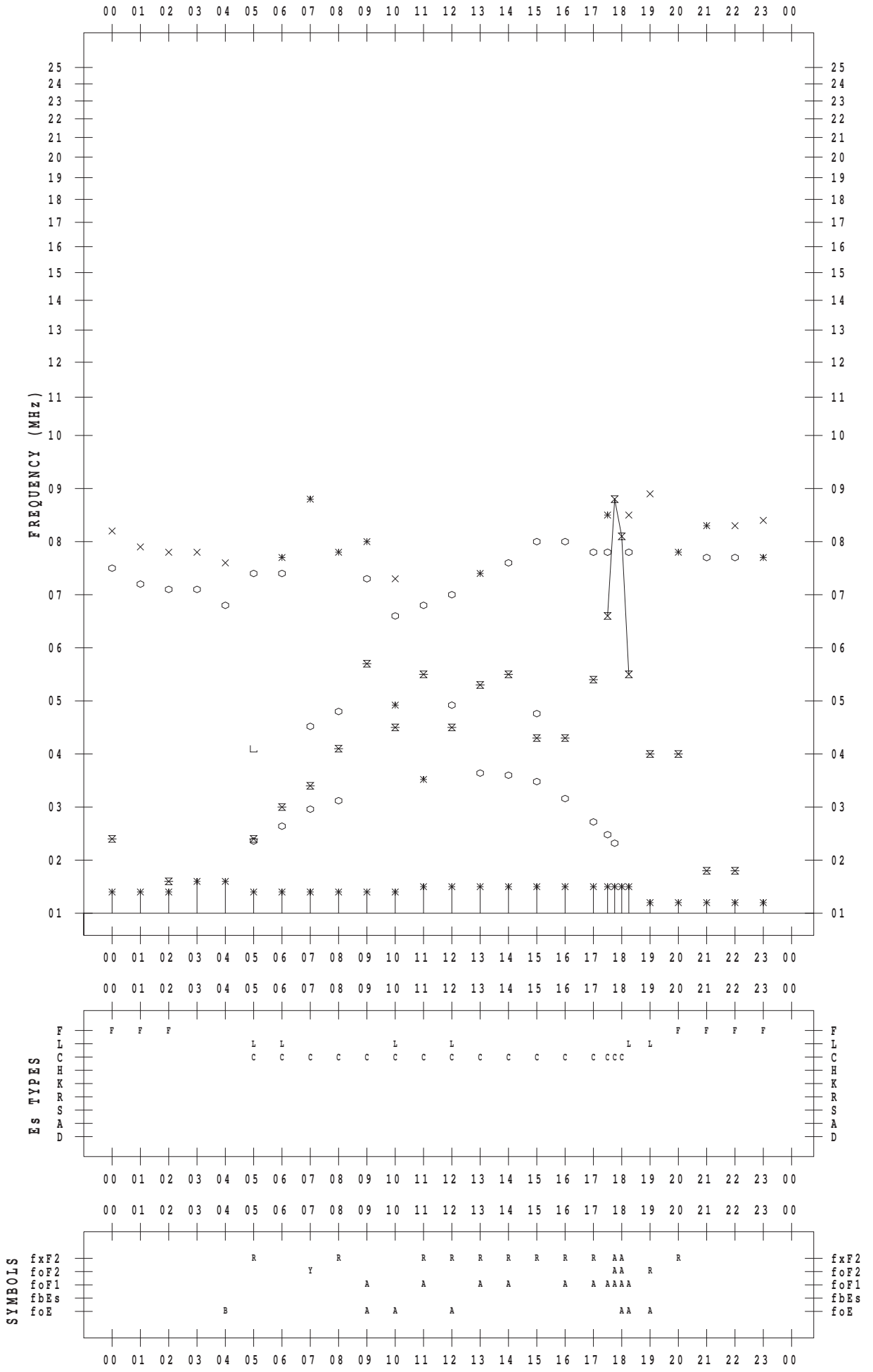
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/25

135 °E MEAN TIME



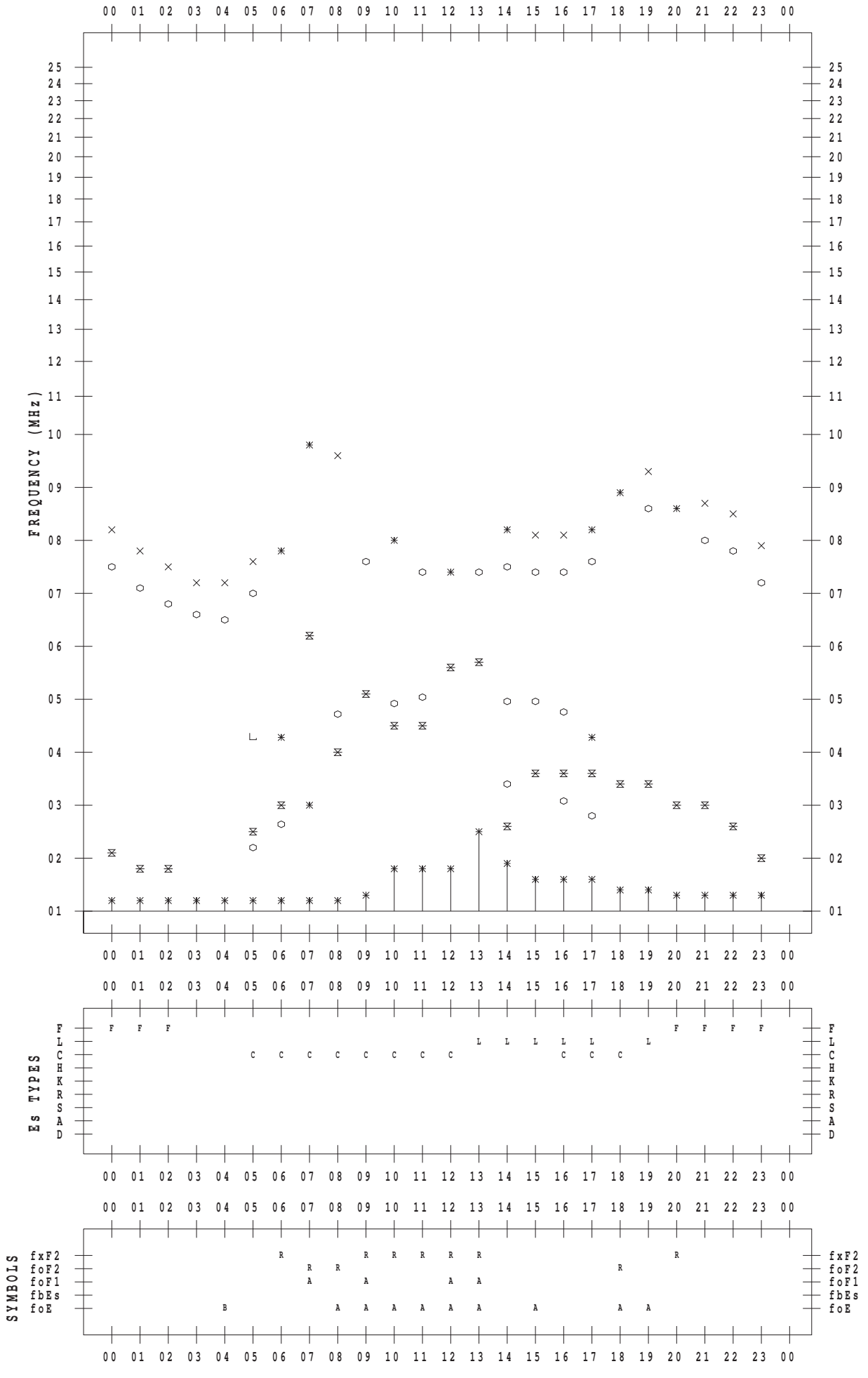
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/26

135 °E MEAN TIME



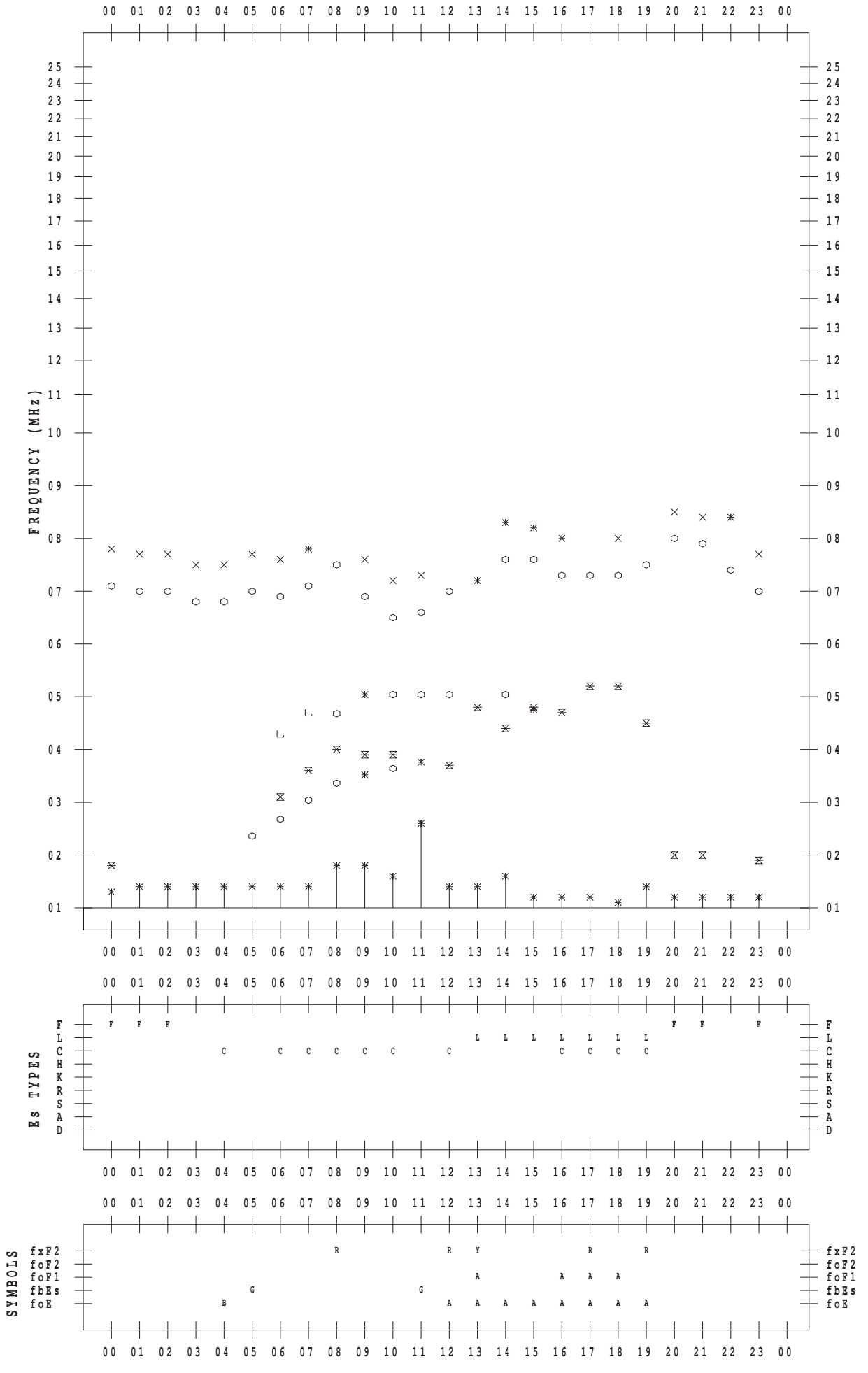
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/27

135 °E MEAN TIME



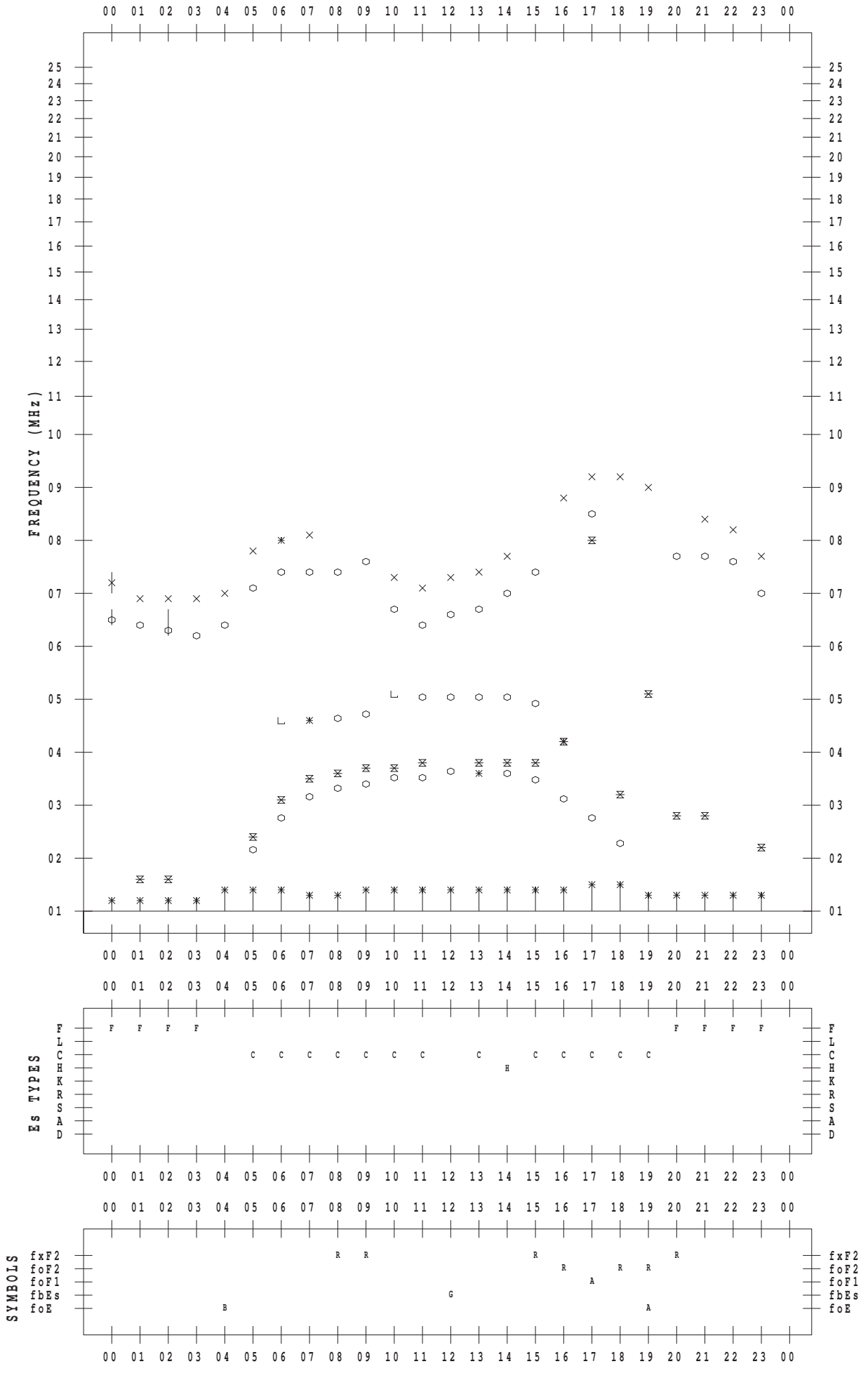
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/28

135 °E MEAN TIME



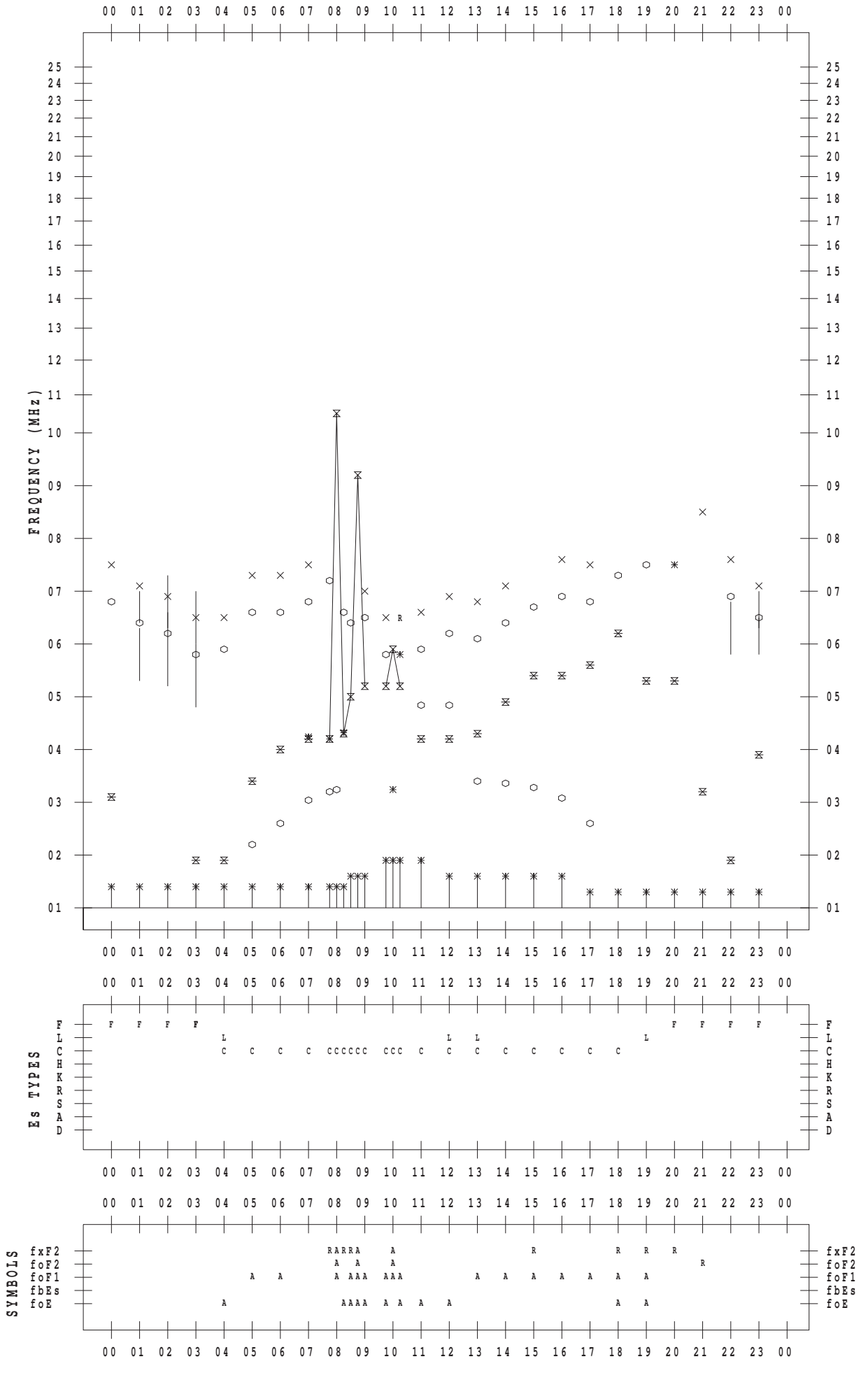
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/29

135 °E MEAN TIME



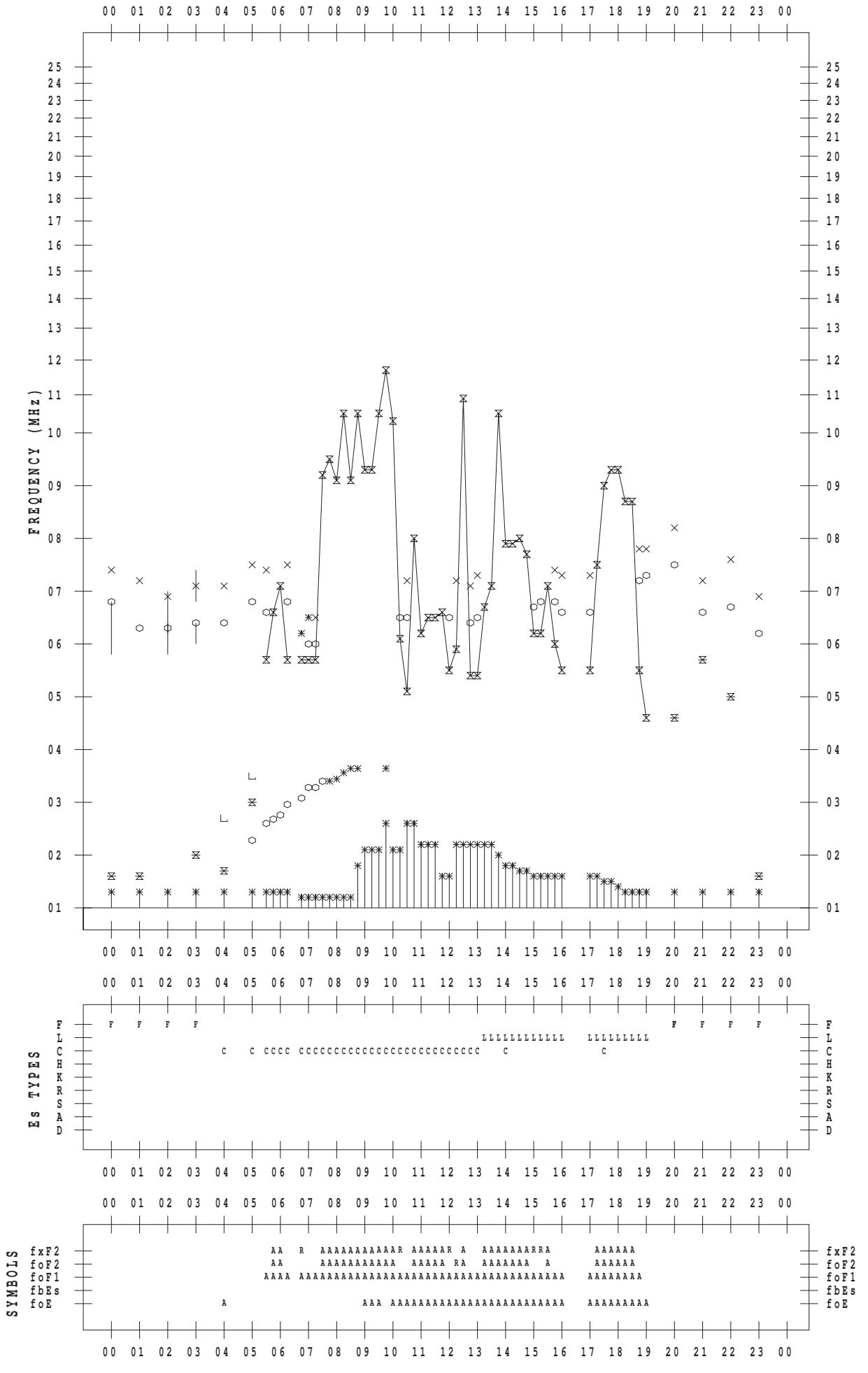
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/30

135 °E MEAN TIME



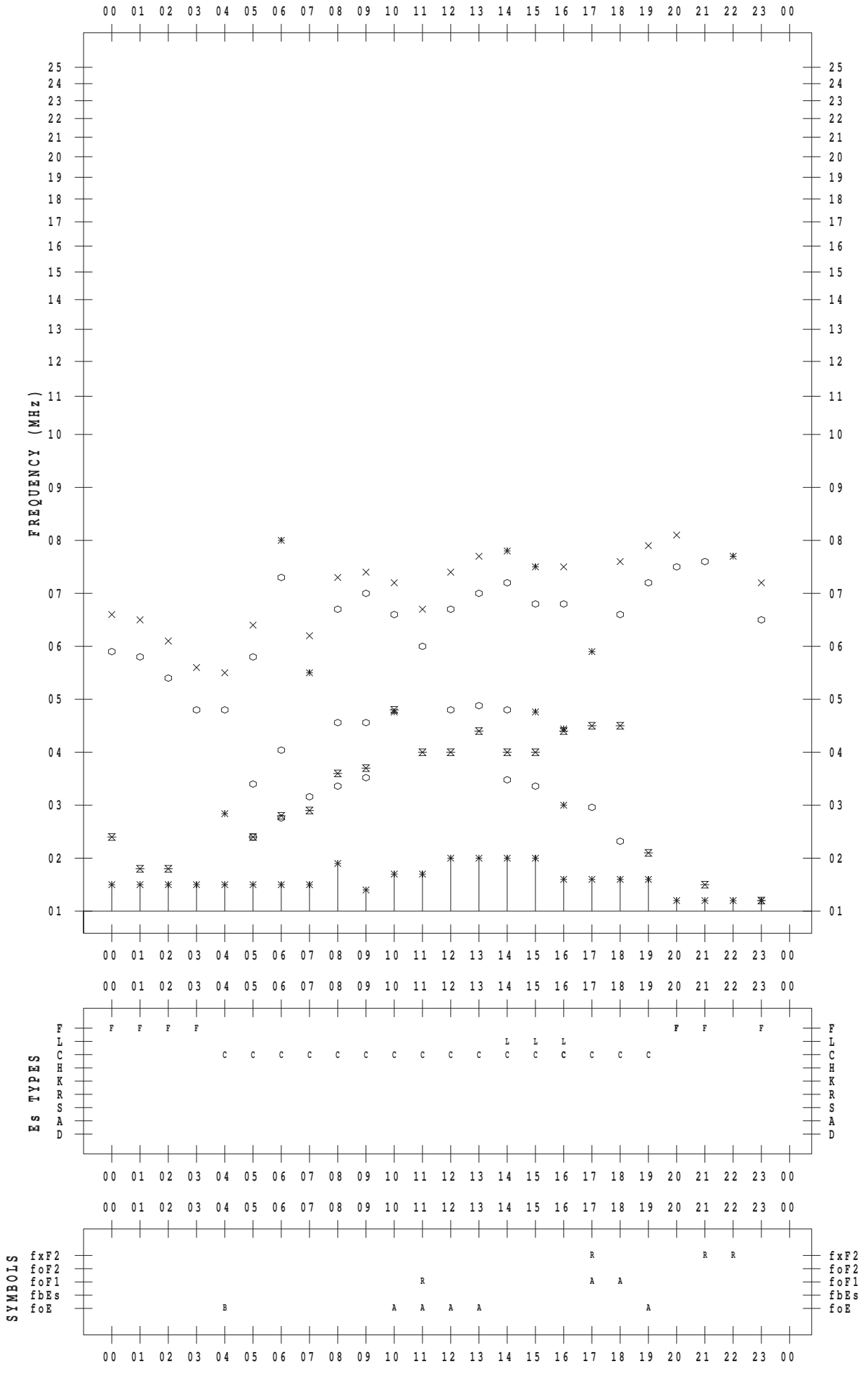
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2014/ 5/31

135 °E MEAN TIME



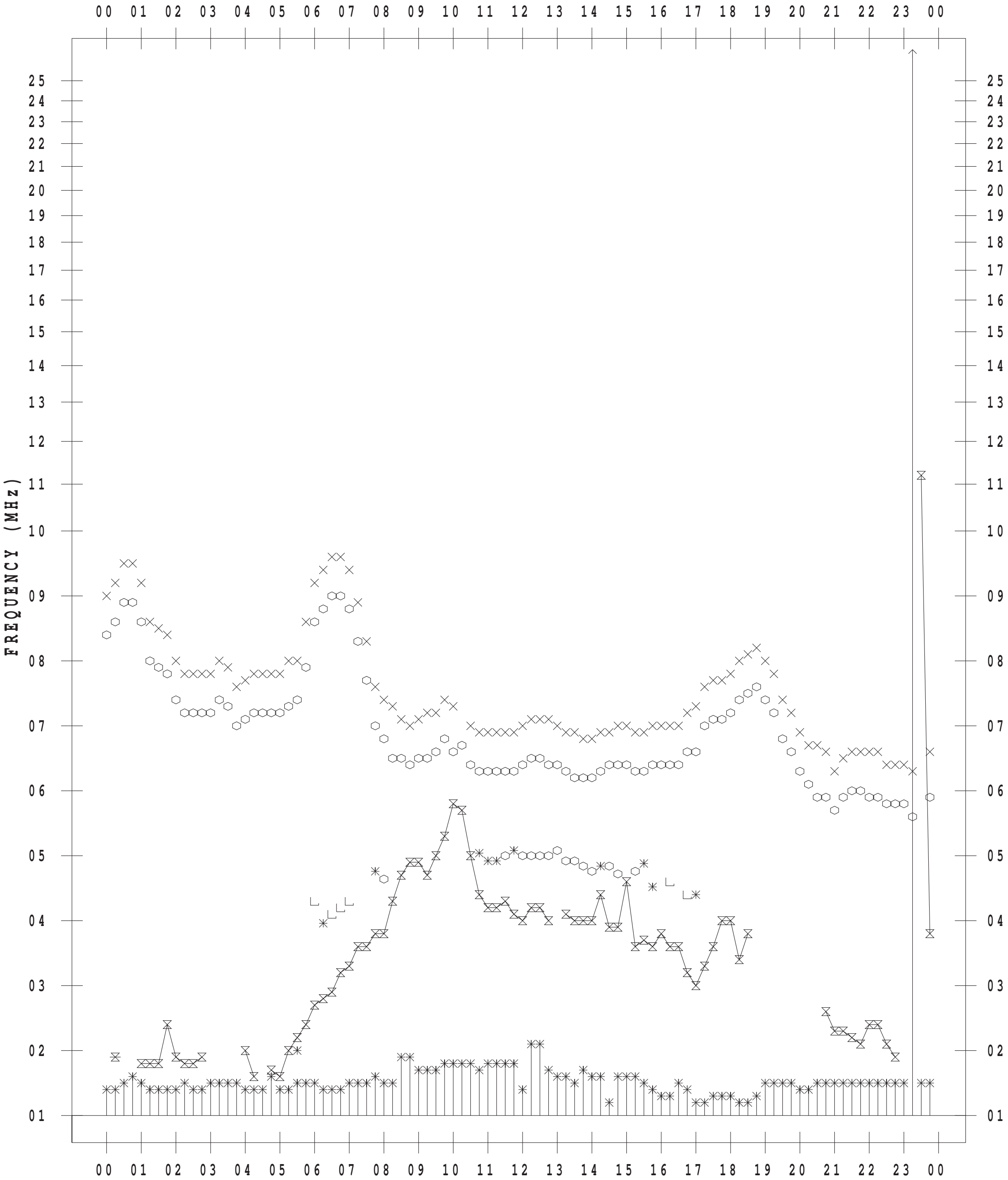
f-PLOT DATA

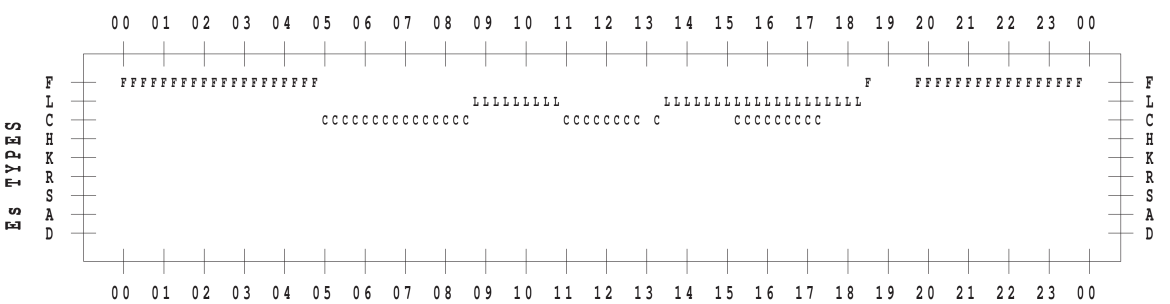
SCALER : I.NISHIMUTA

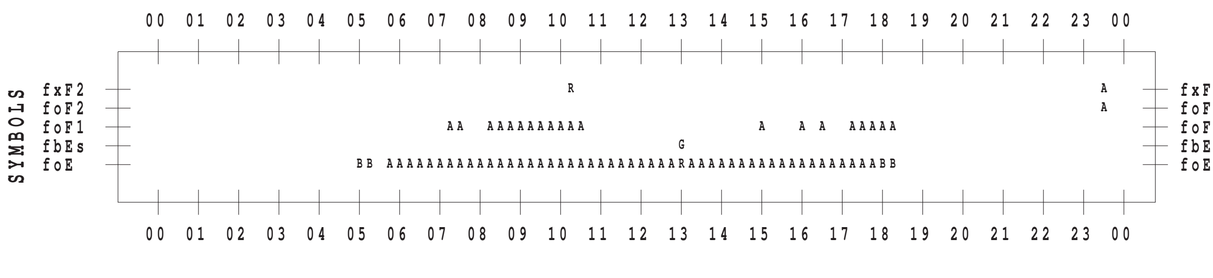
STATION : Kokubunji

DATE : 2014/ 5/ 1

135 °E MEAN TIME







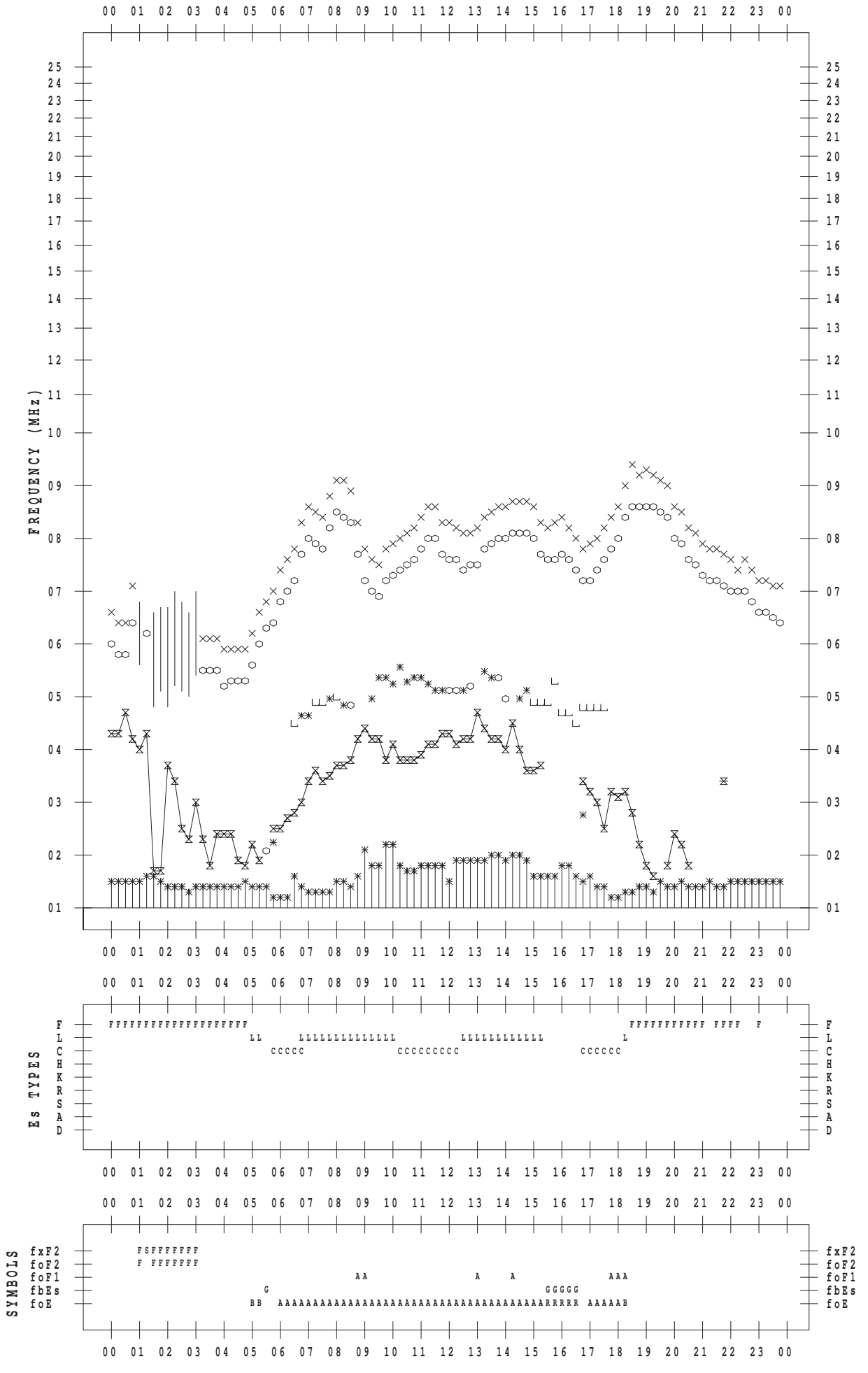
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/ 2

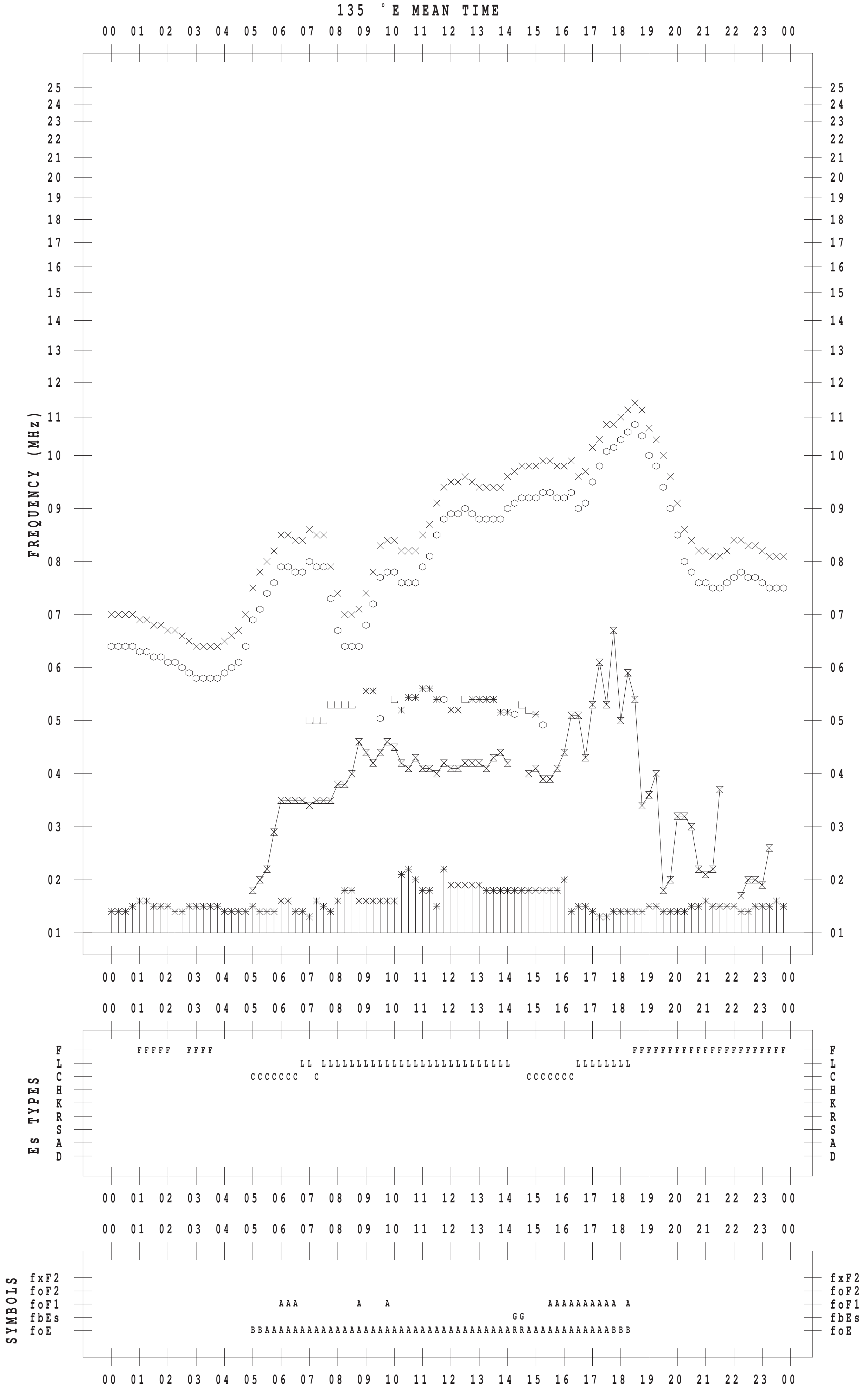
135 °E MEAN TIME



f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2014/ 5/ 3



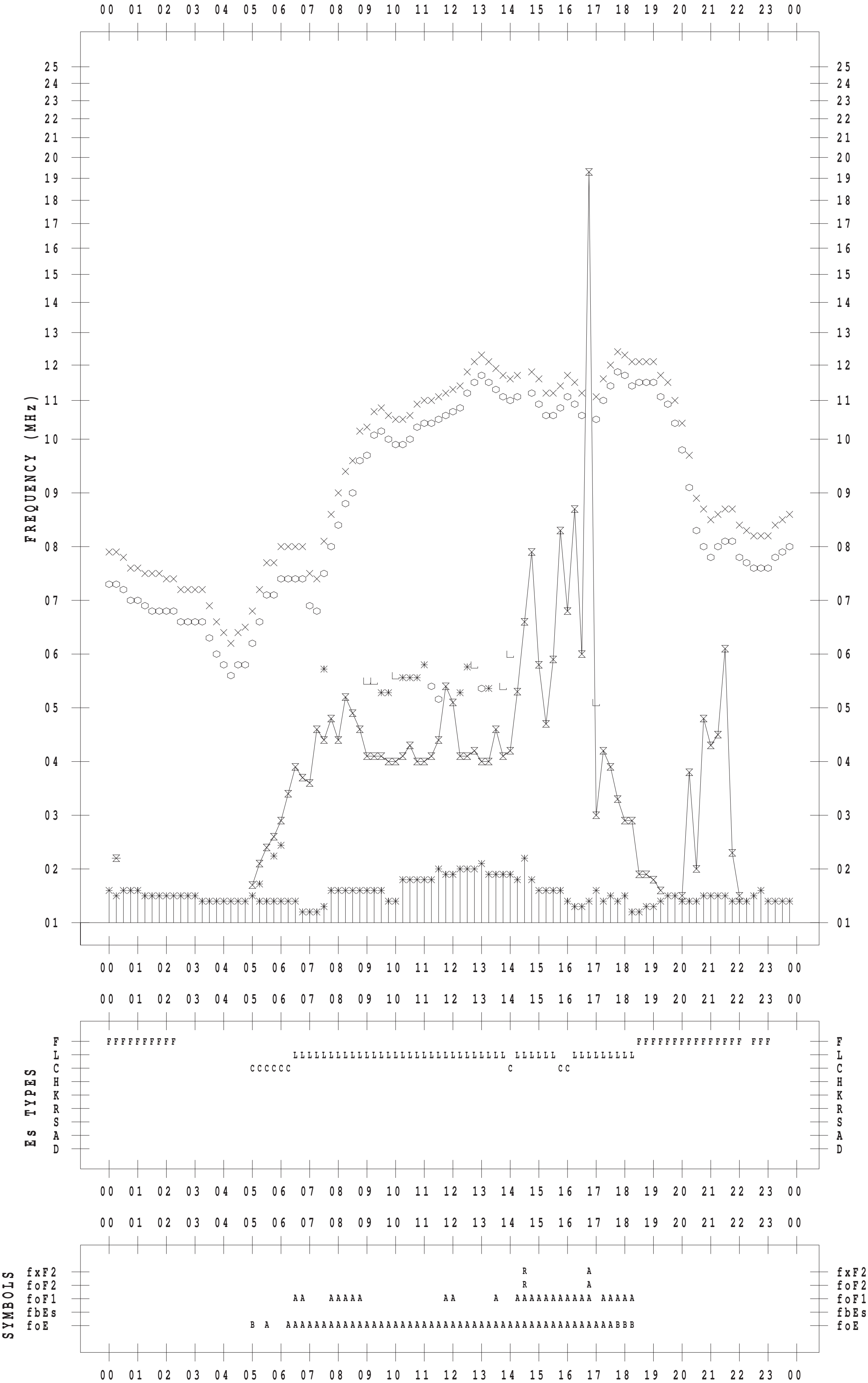
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/ 4

135 ° E MEAN TIME



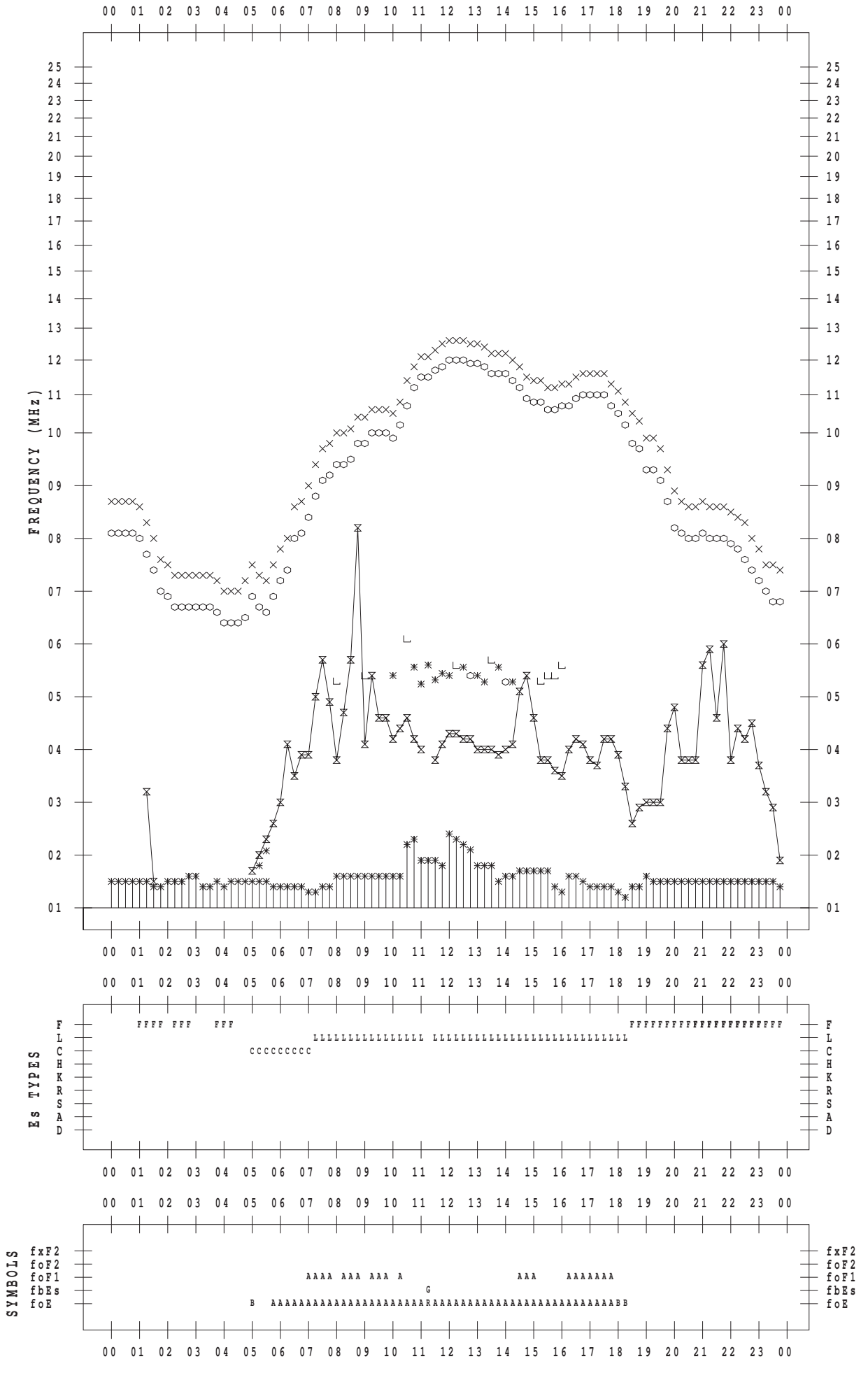
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/ 5

135 °E MEAN TIME



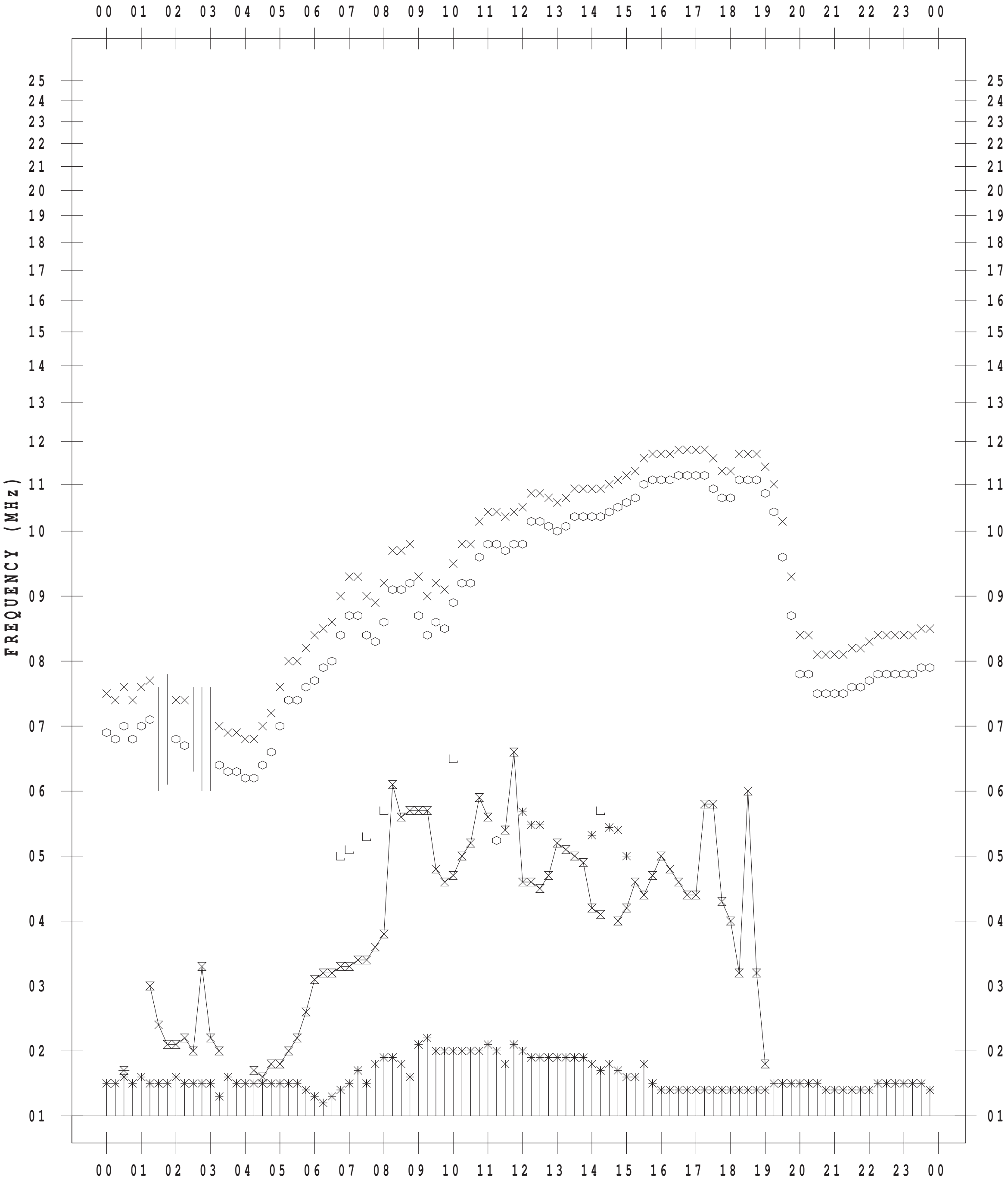
f-PLOT DATA

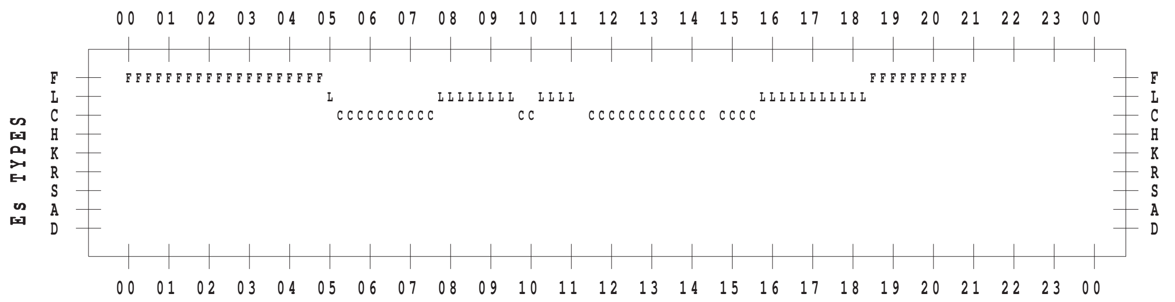
SCALER : I.NISHIMUTA

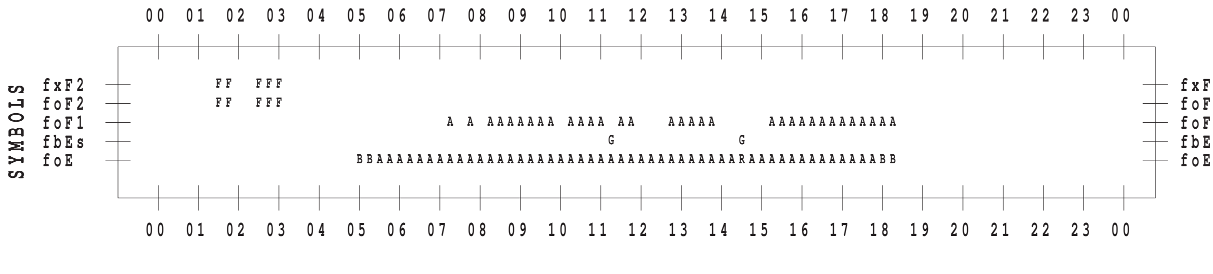
STATION : Kokubunji

DATE : 2014/ 5/ 6

135 °E MEAN TIME







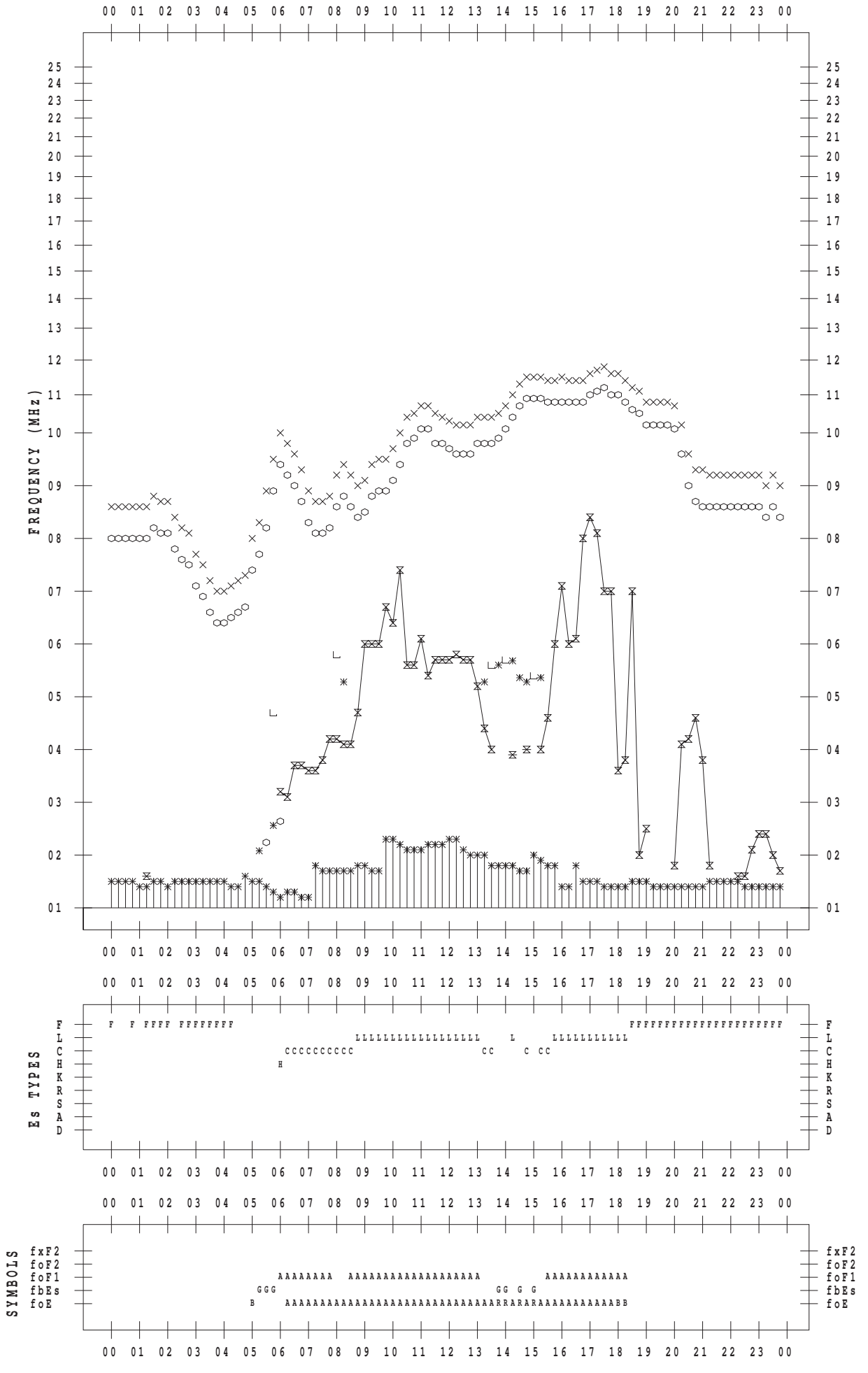
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/ 7

135 °E MEAN TIME



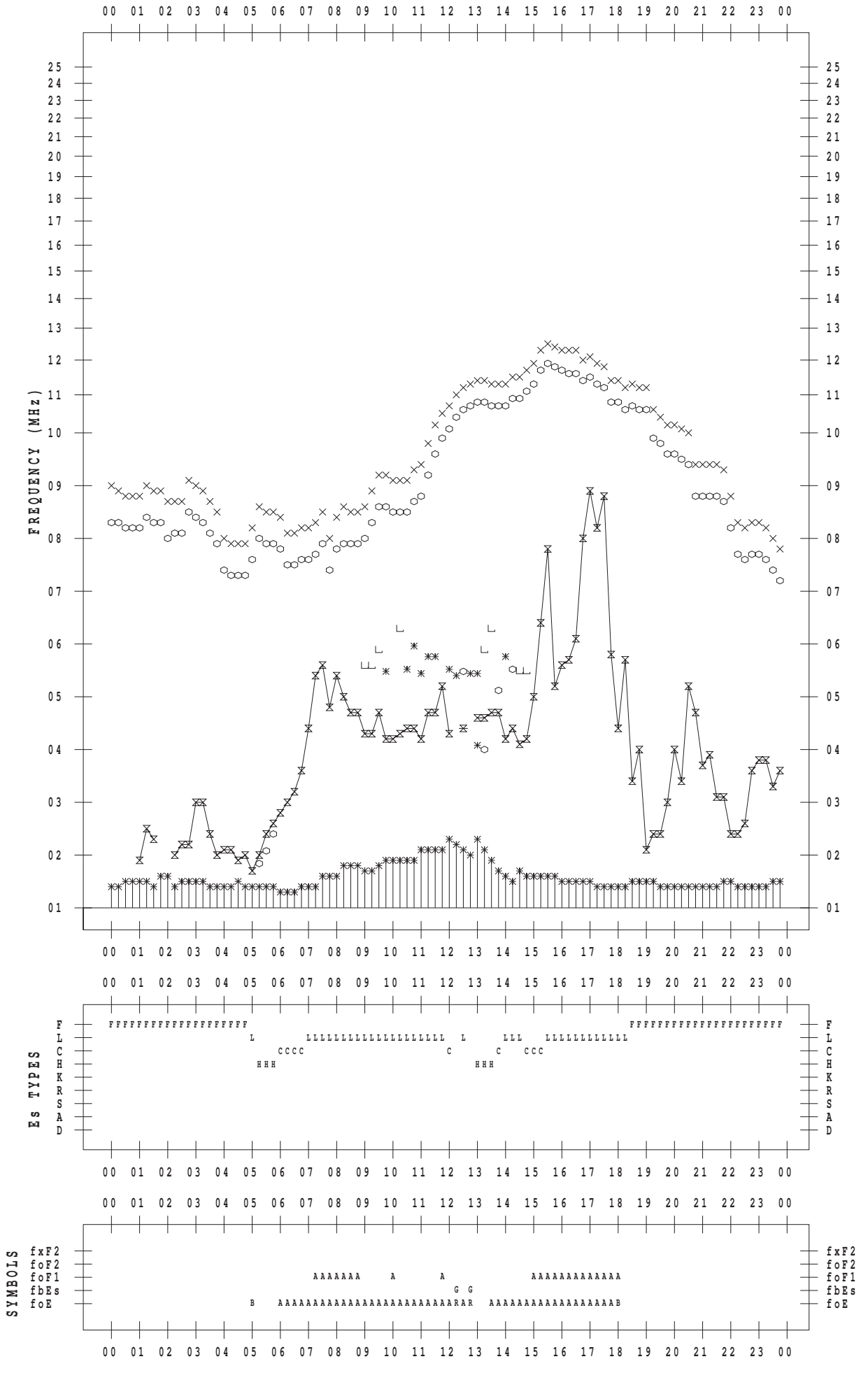
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/ 8

135 °E MEAN TIME



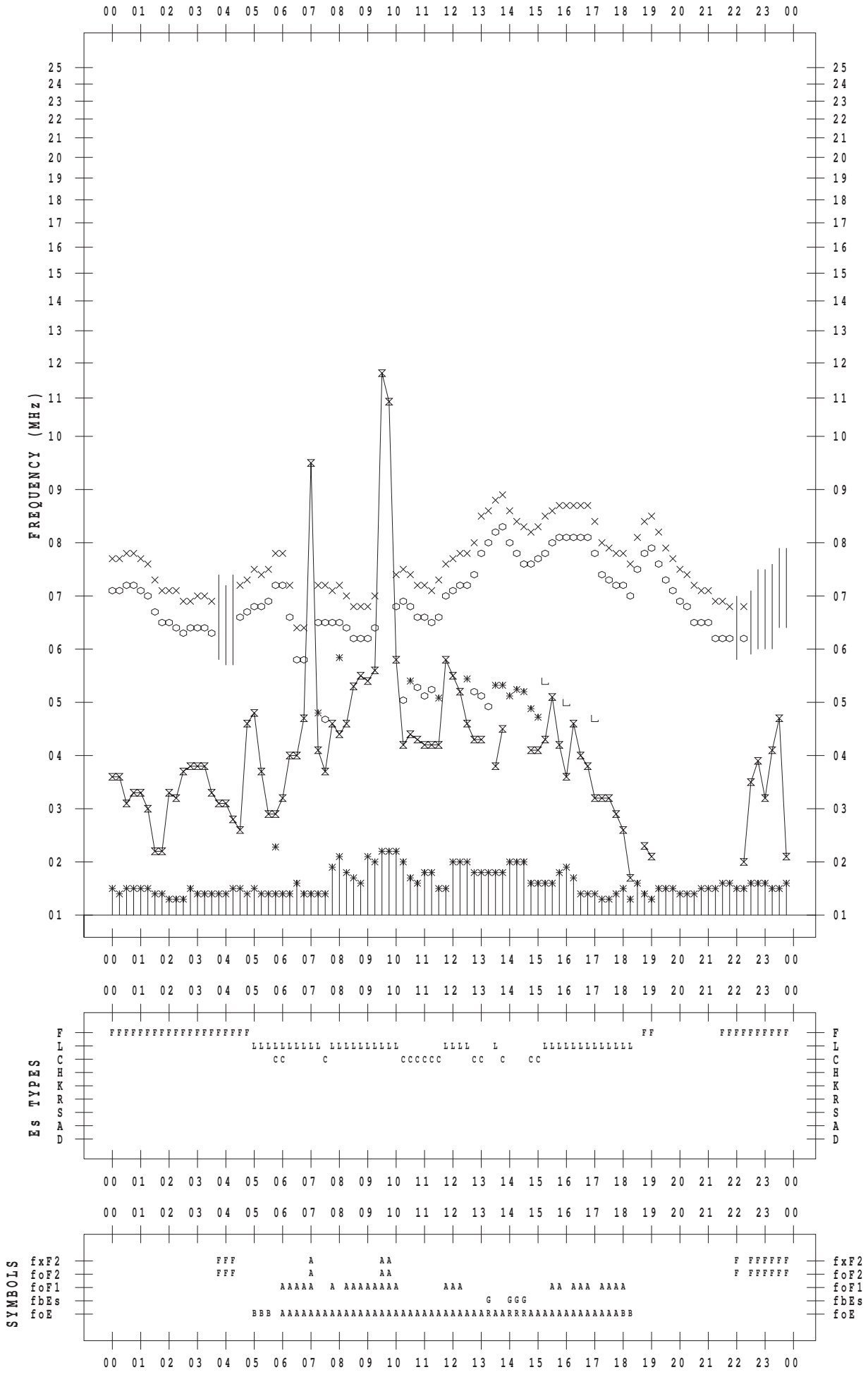
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/ 9

135 °E MEAN TIME



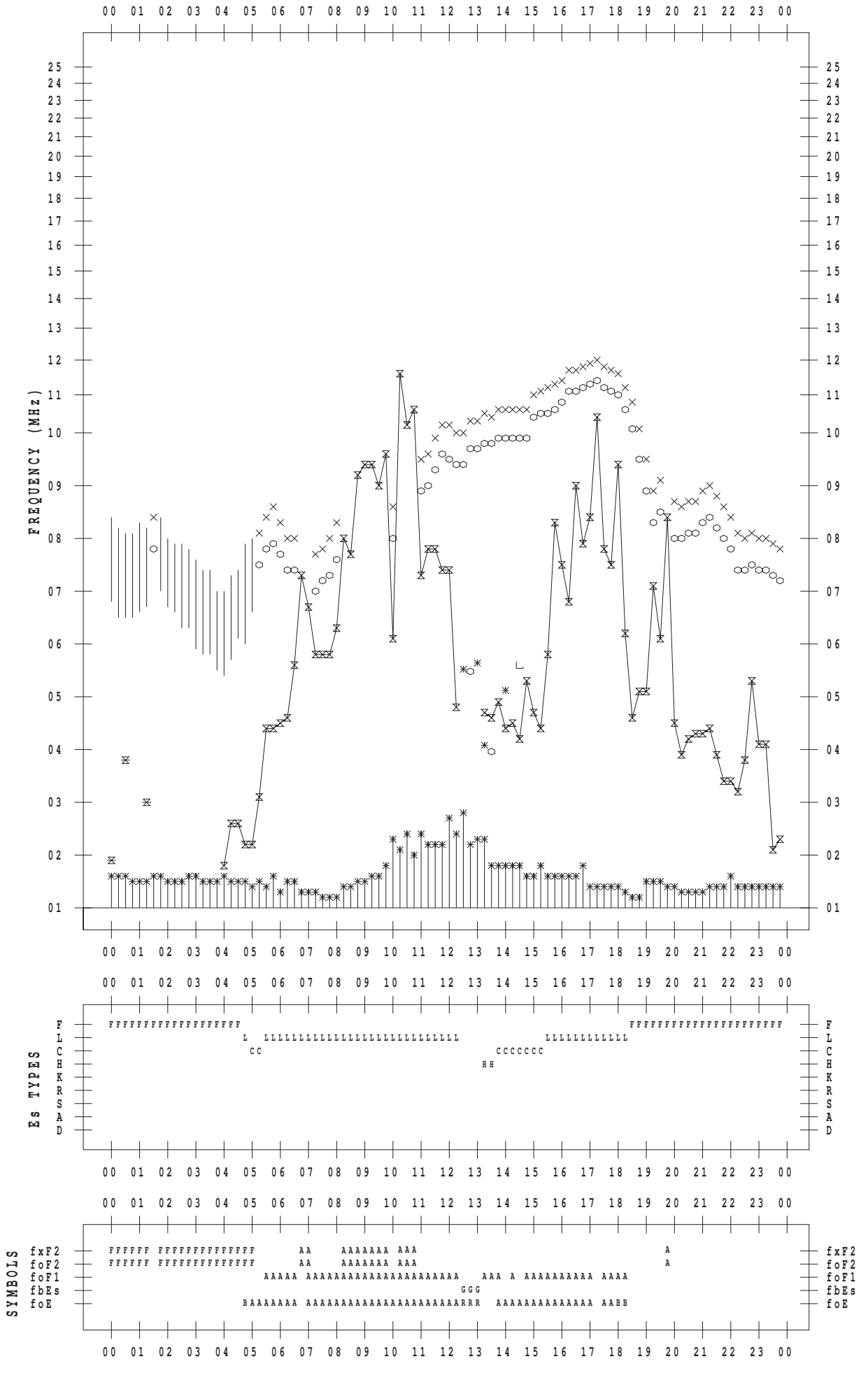
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/10

135 °E MEAN TIME



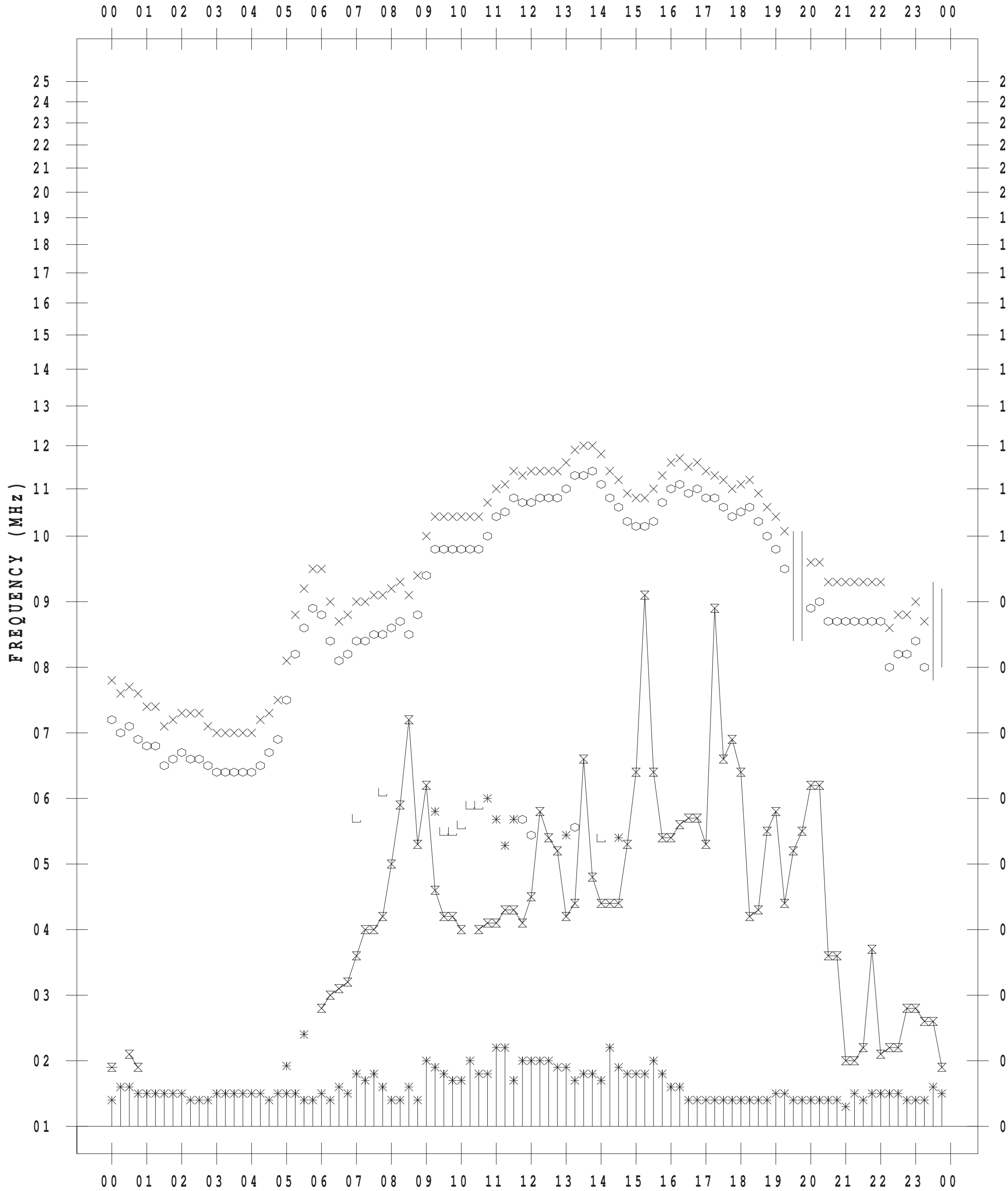
f-PLOT DATA

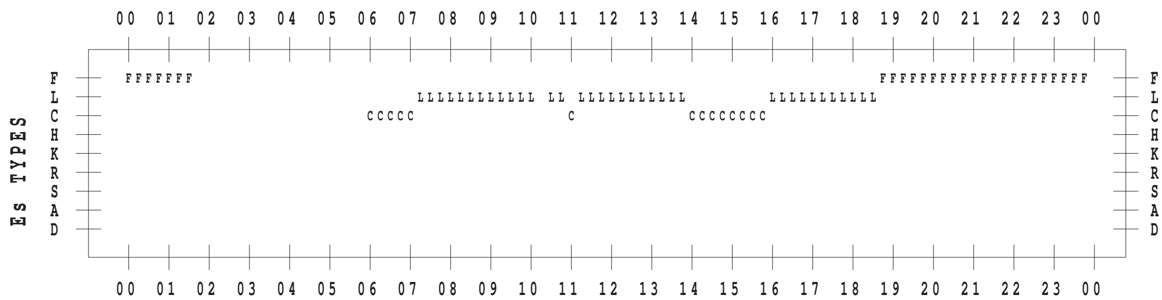
SCALER : I.NISHIMUTA

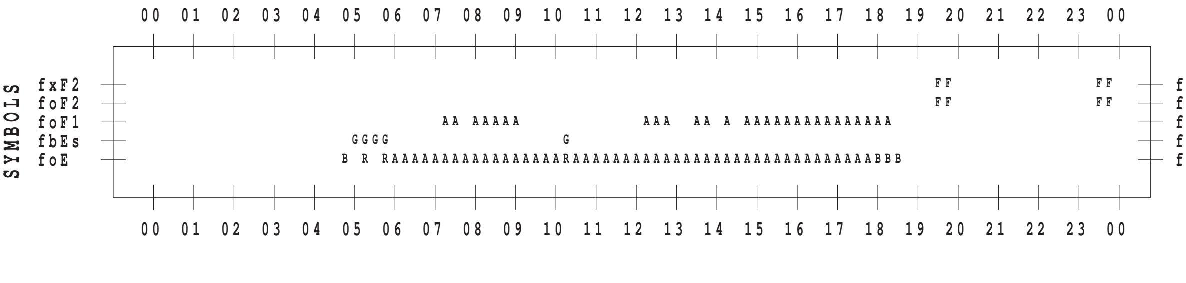
STATION : Kokubunji

DATE : 2014/ 5/11

135 °E MEAN TIME







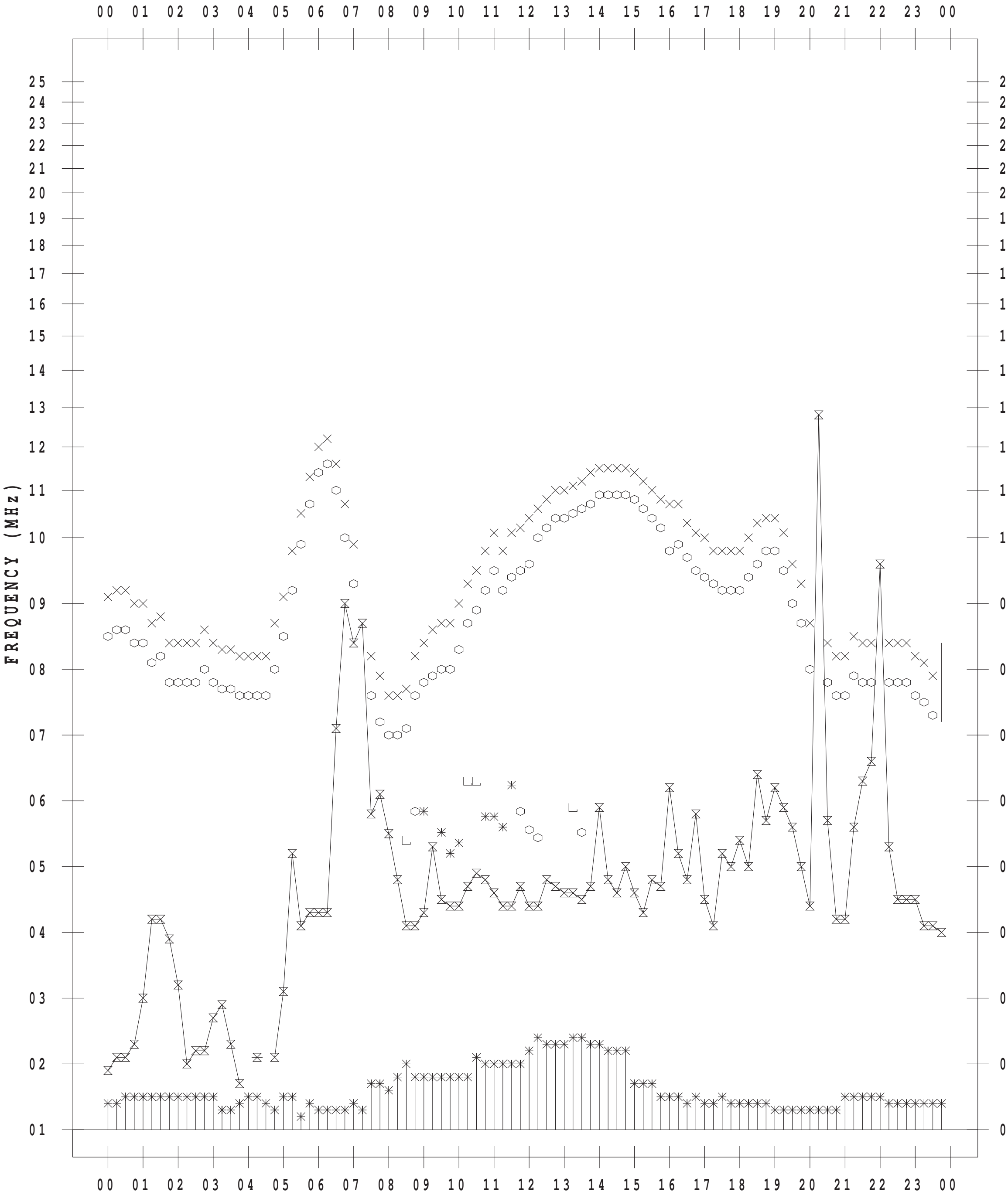
f-PLOT DATA

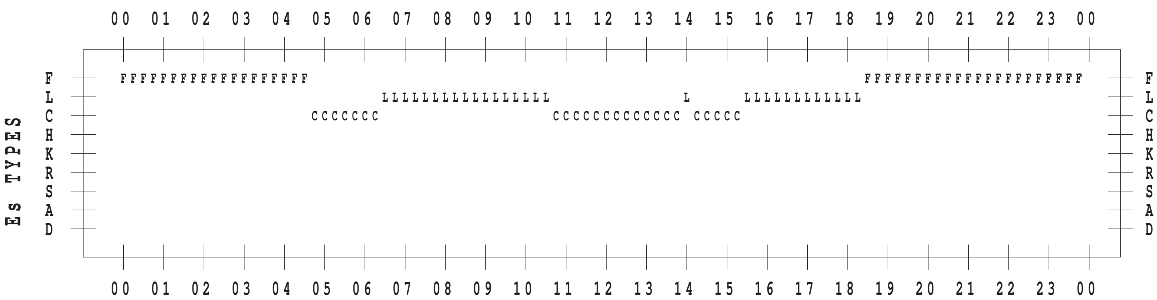
SCALER : I.NISHIMUTA

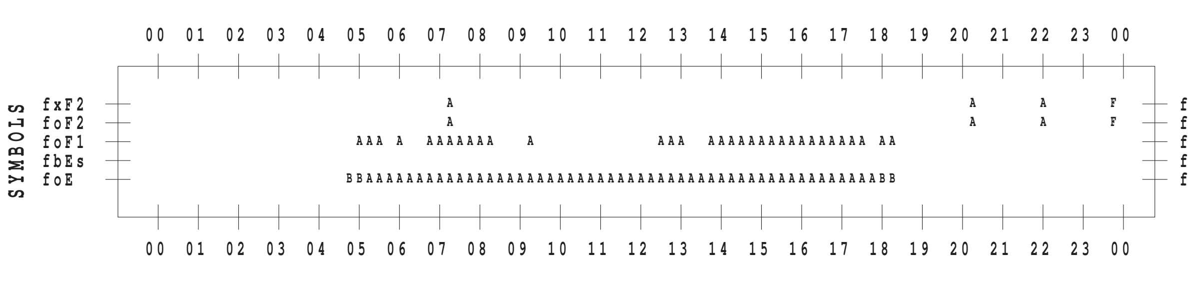
STATION : Kokubunji

DATE : 2014/ 5/12

135 °E MEAN TIME







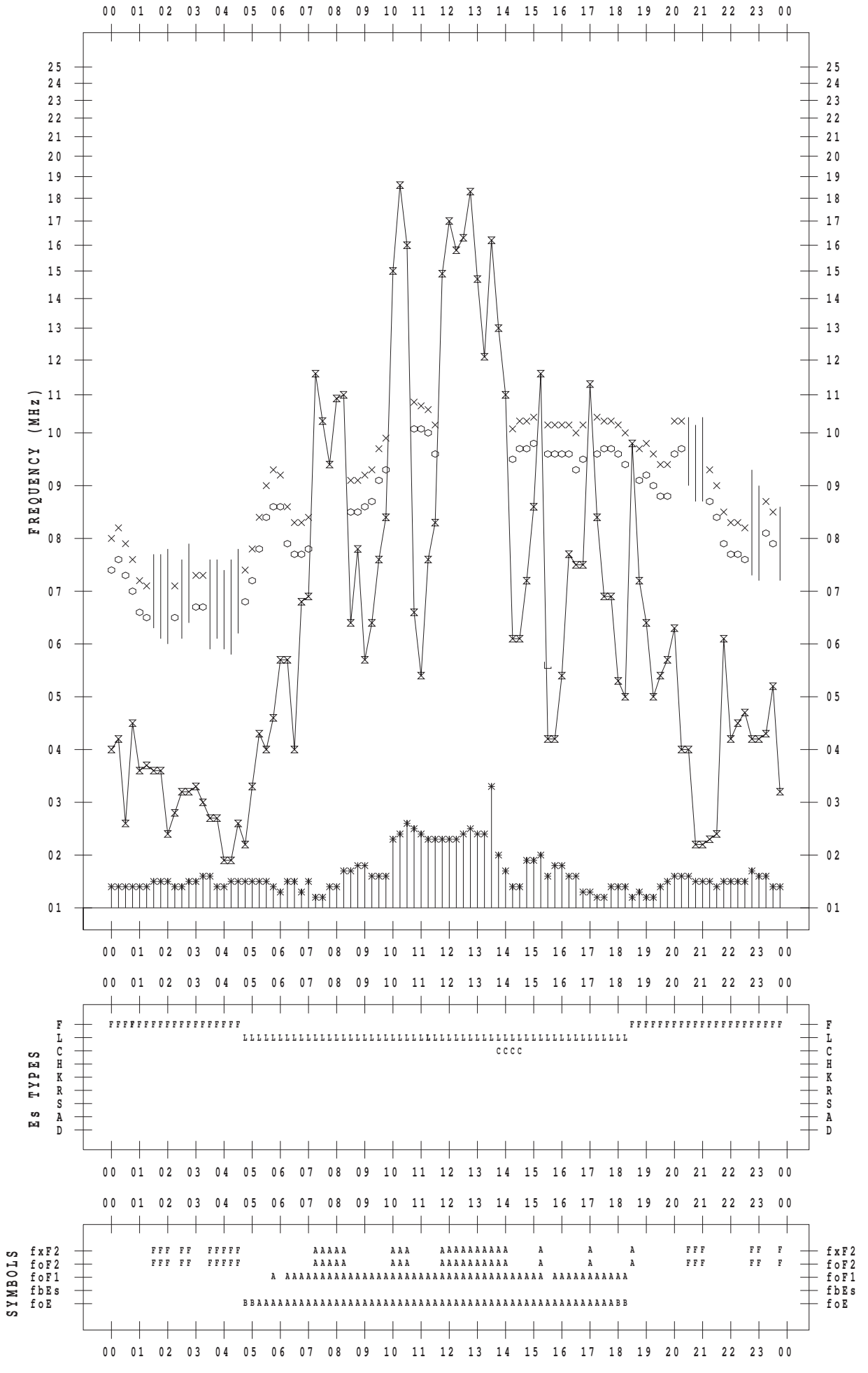
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/13

135 °E MEAN TIME



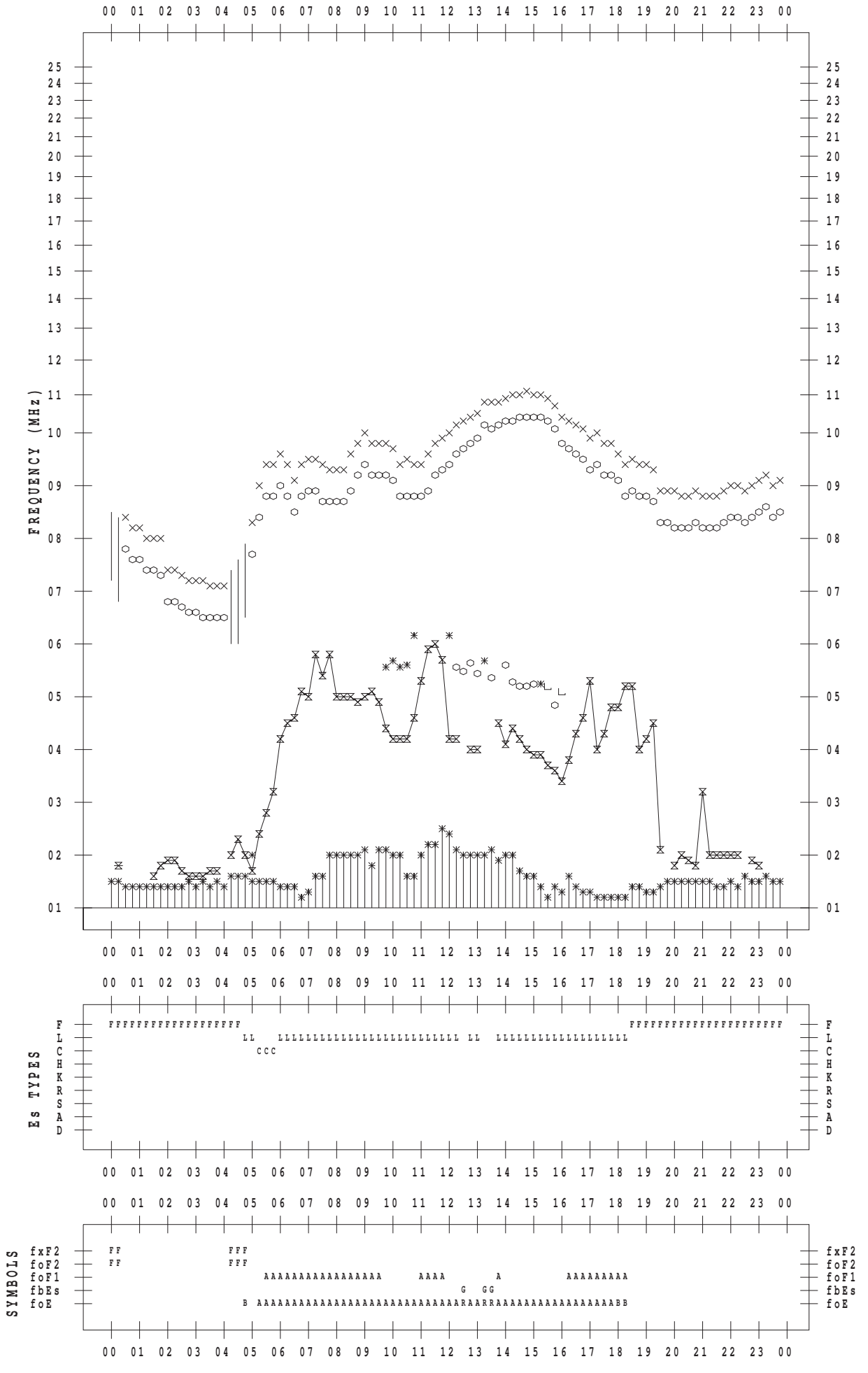
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/14

135 °E MEAN TIME

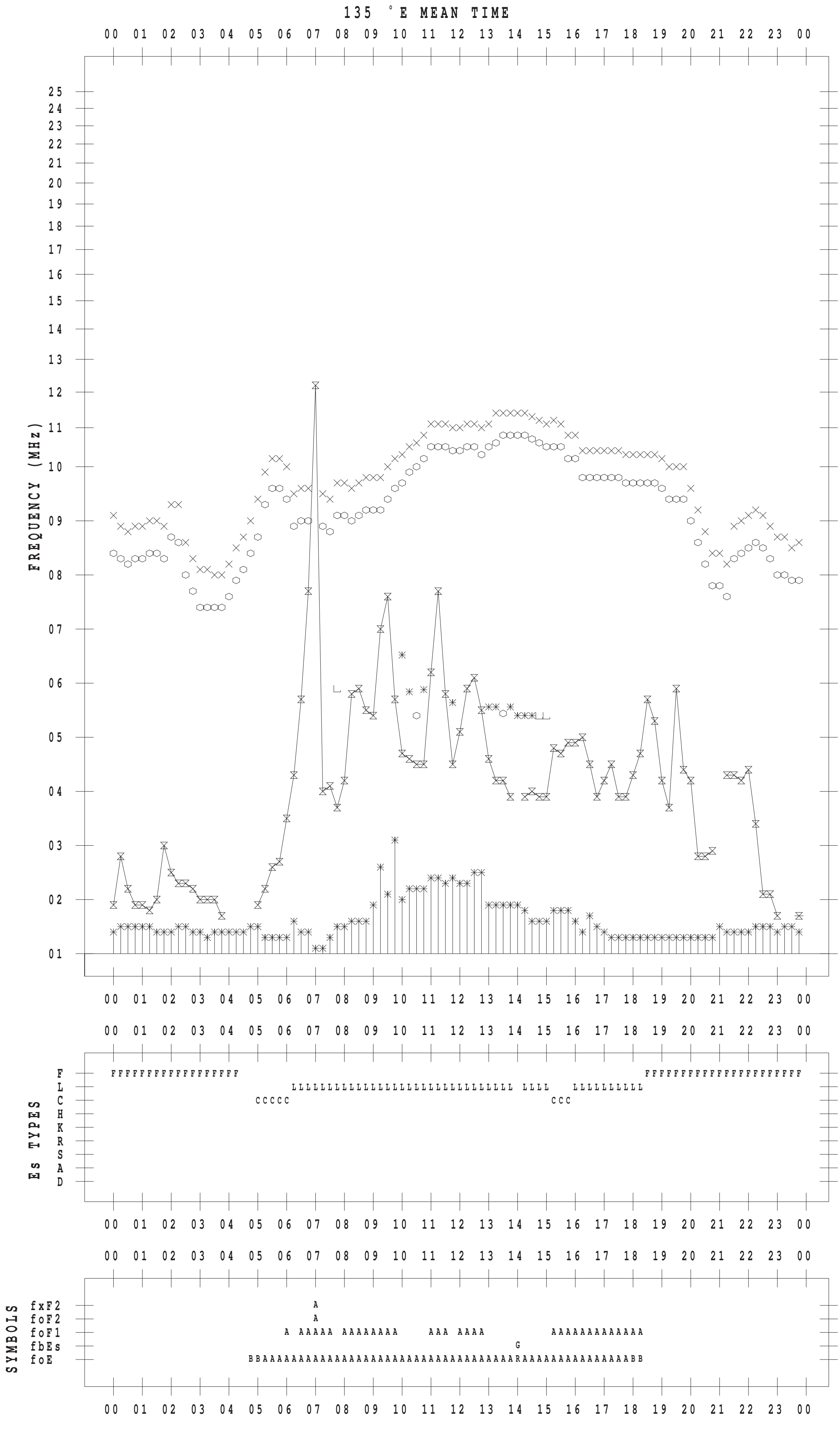


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/15



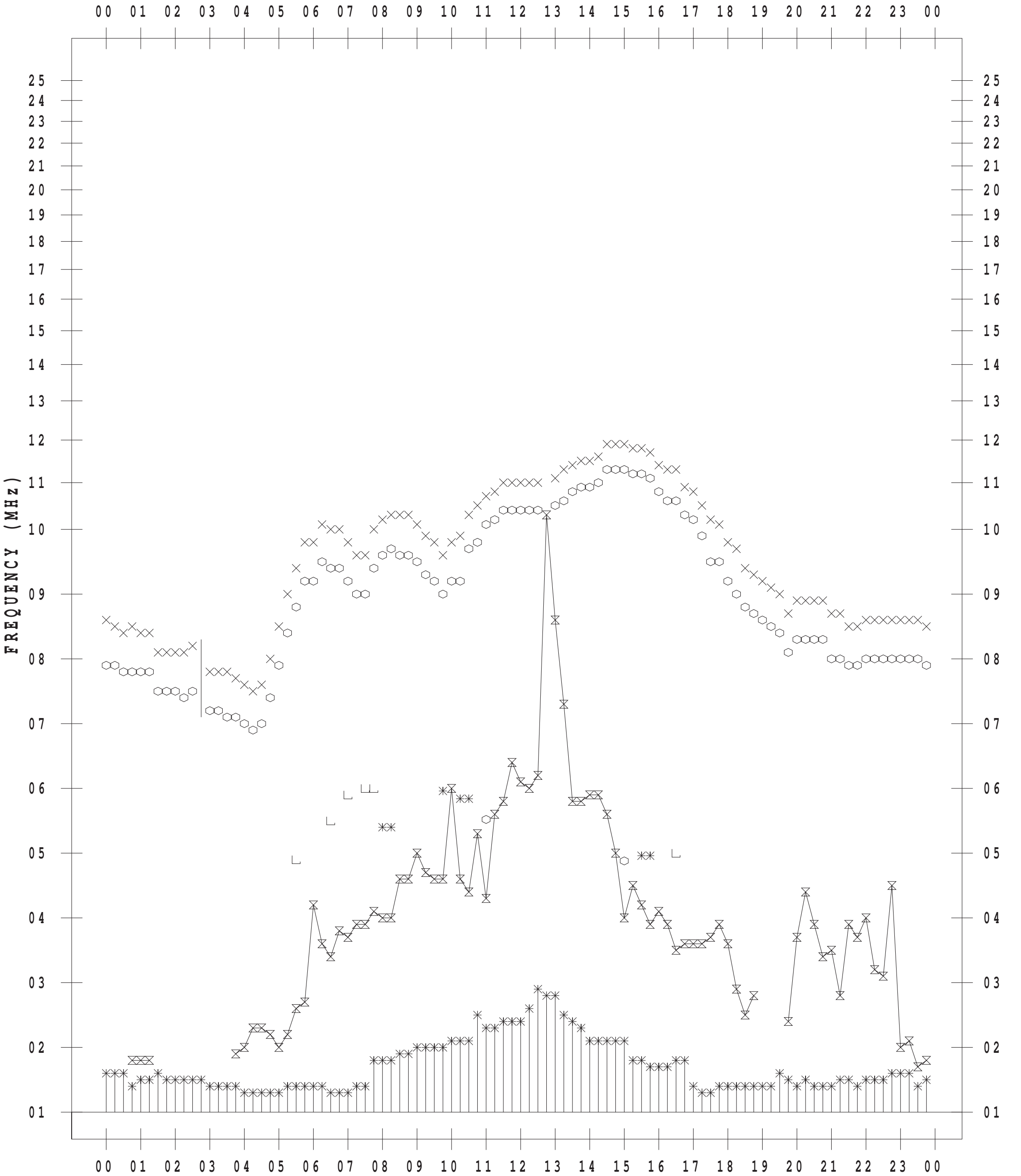
f-PLOT DATA

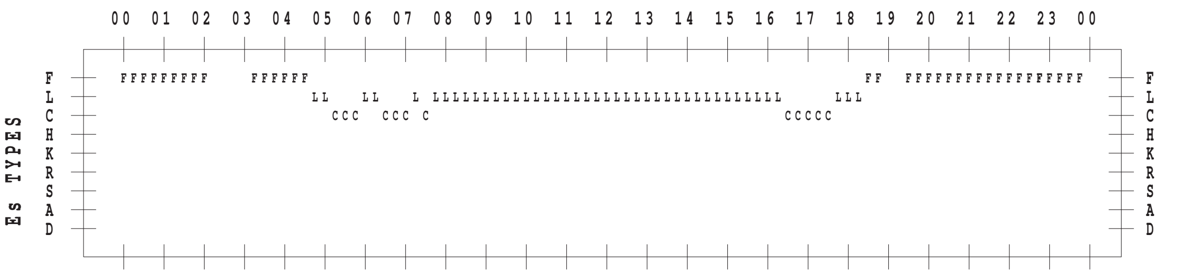
SCALER : I.NISHIMUTA

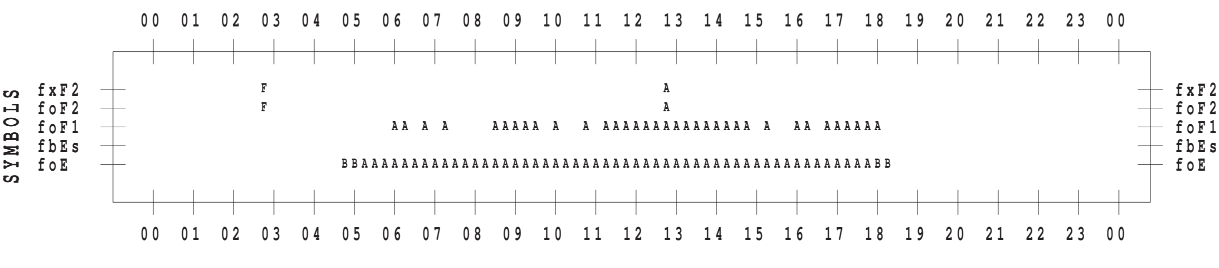
STATION : Kokubunji

DATE : 2014/ 5/16

135 °E MEAN TIME







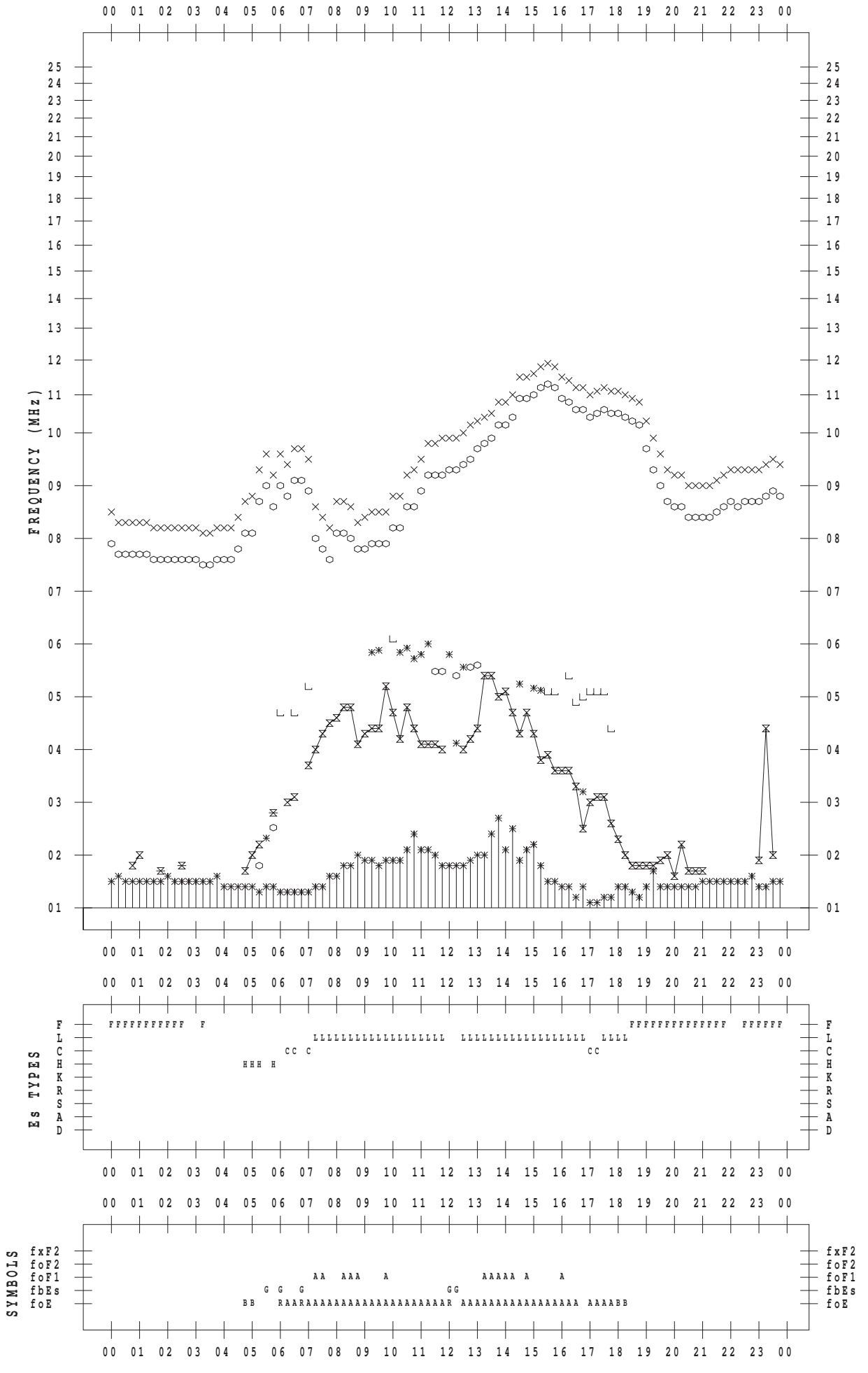
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/17

135 °E MEAN TIME



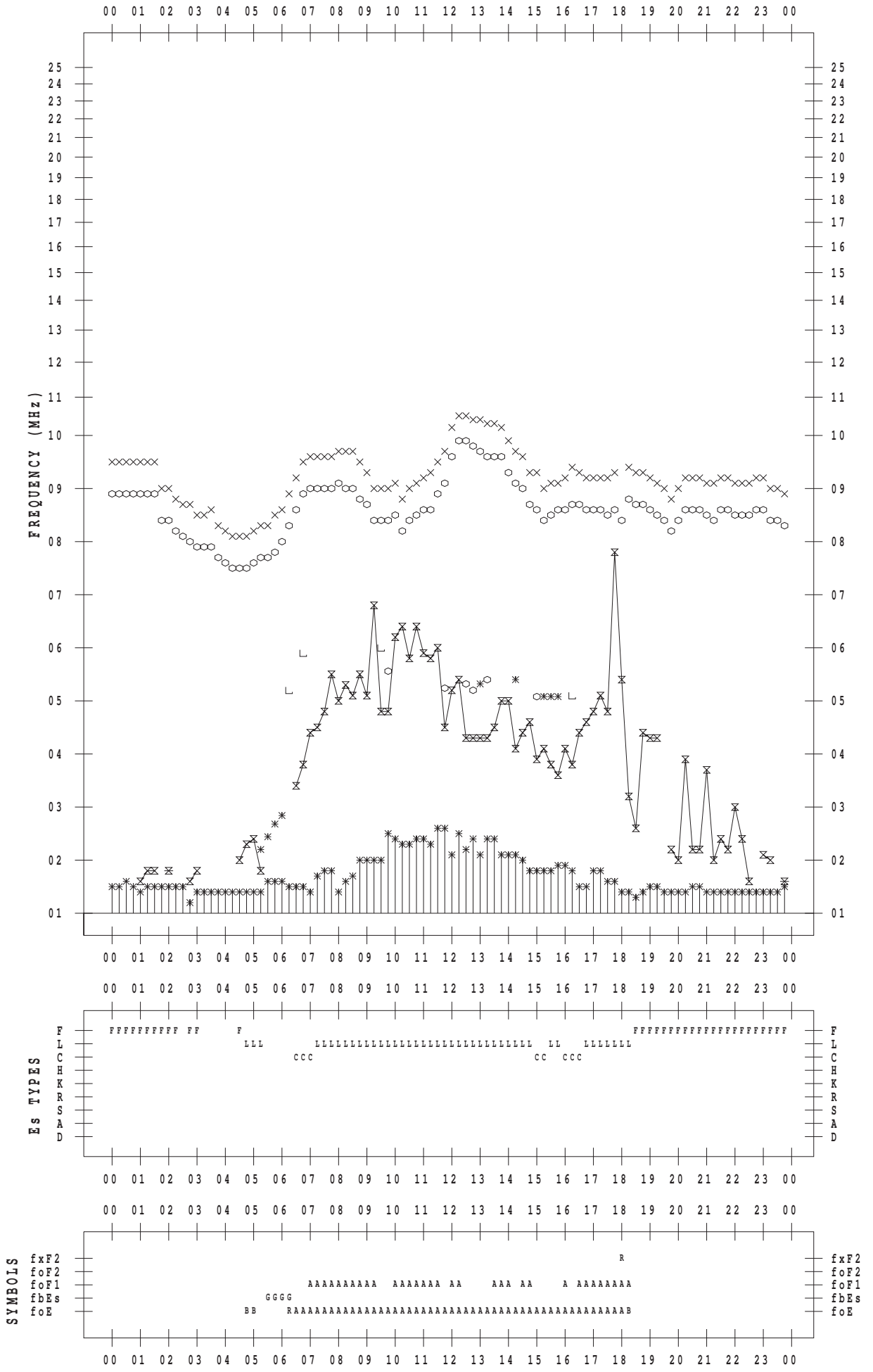
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/18

135 °E MEAN TIME



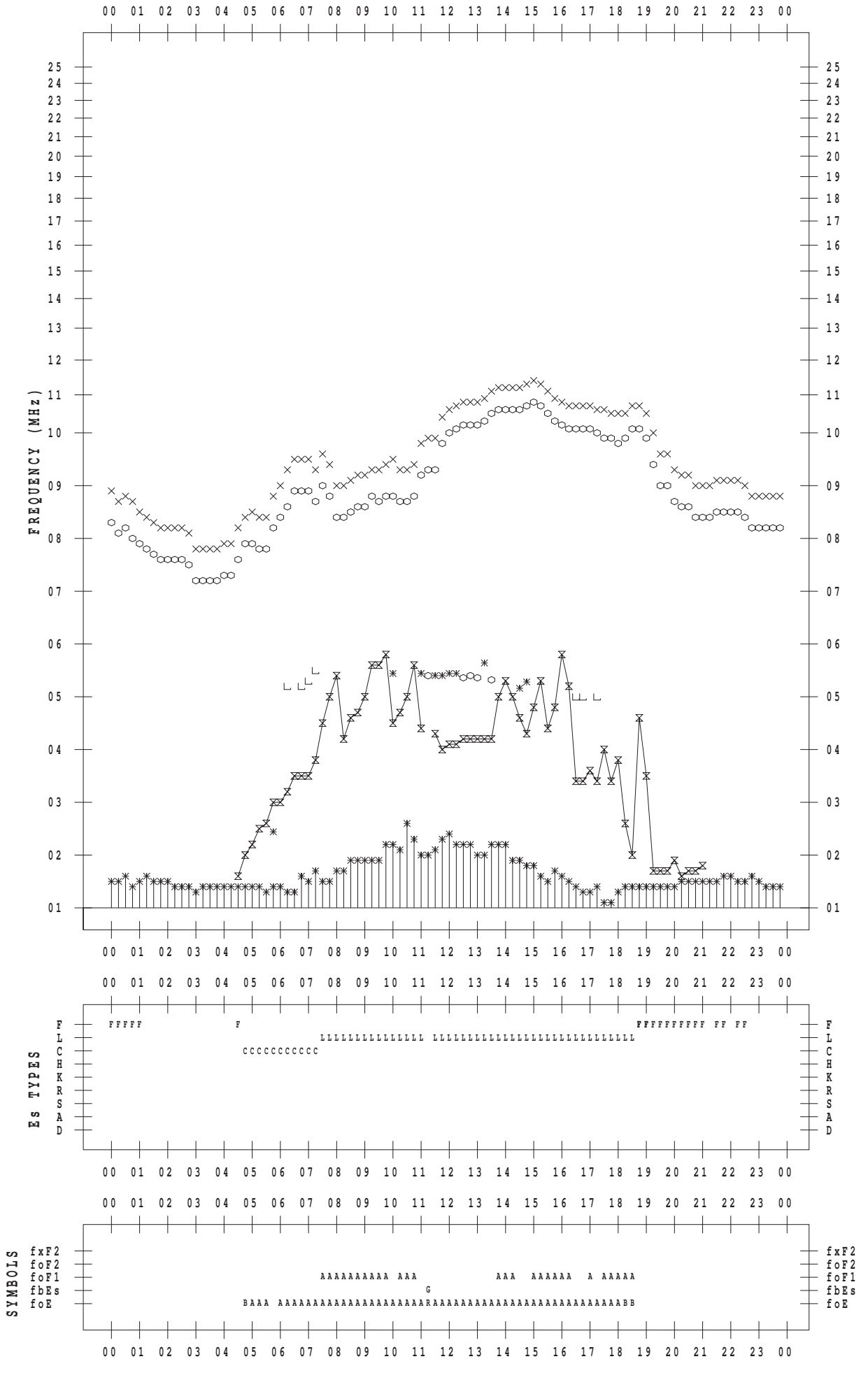
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/19

135 °E MEAN TIME



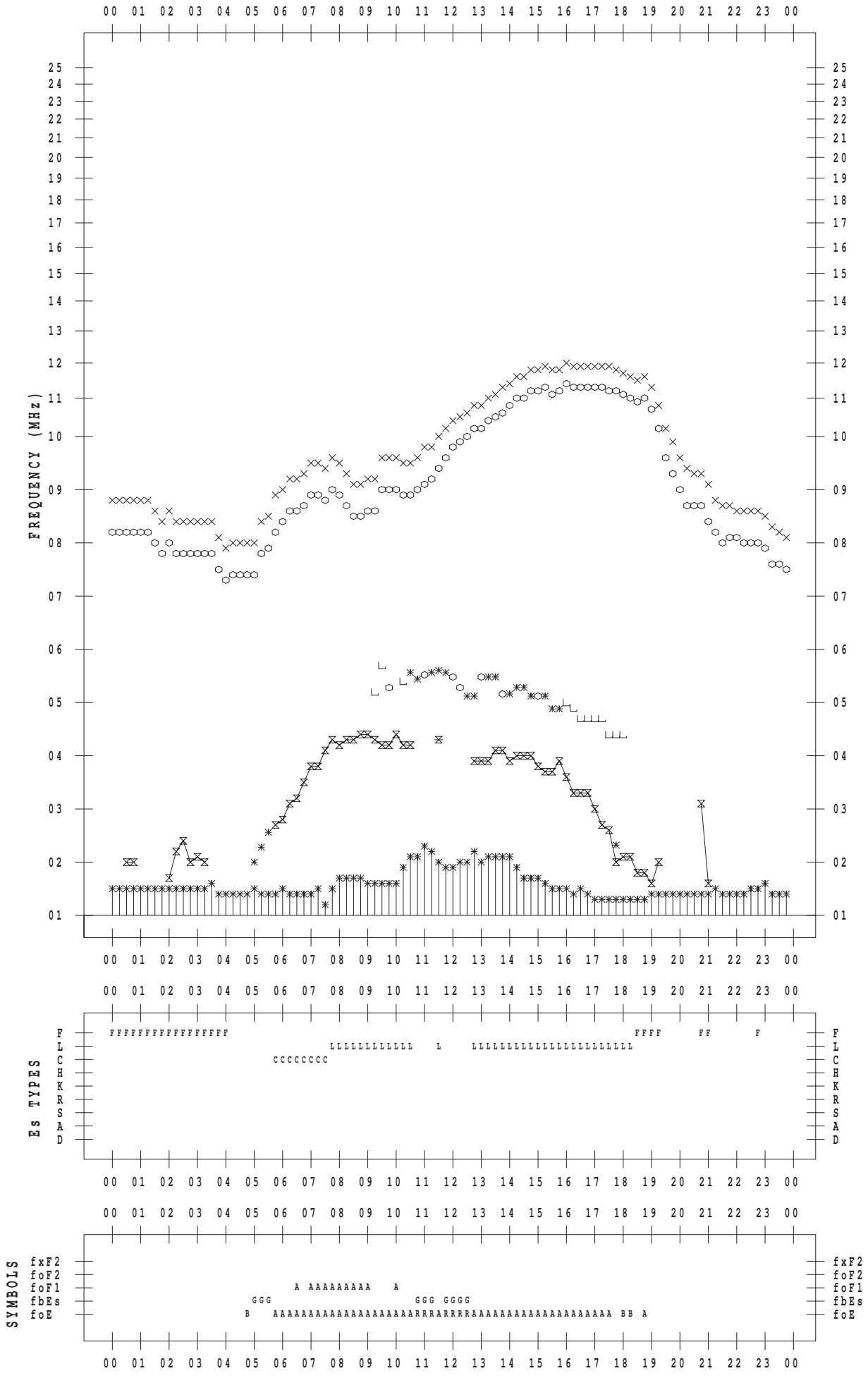
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/20

135 °E MEAN TIME



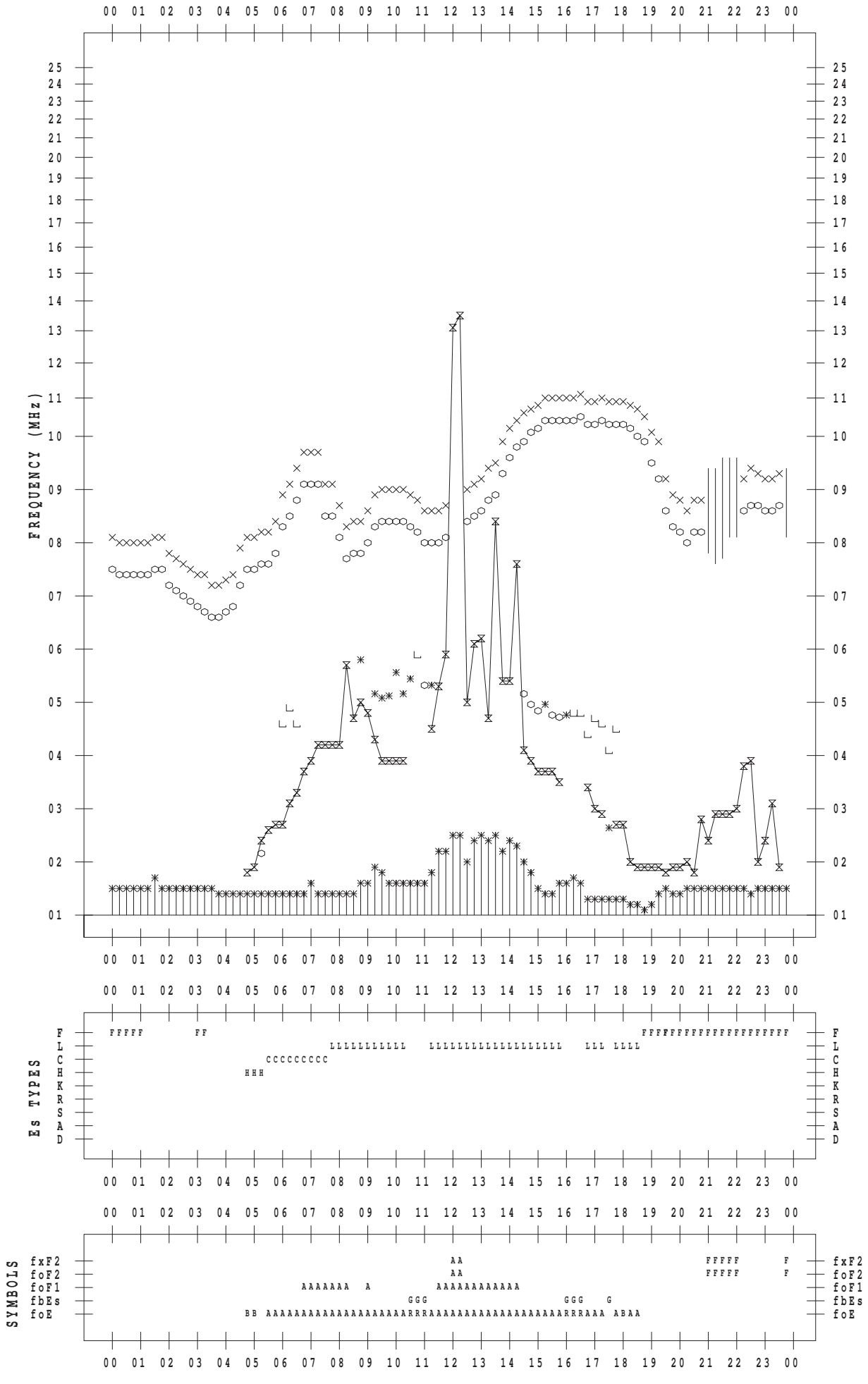
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/21

135 °E MEAN TIME



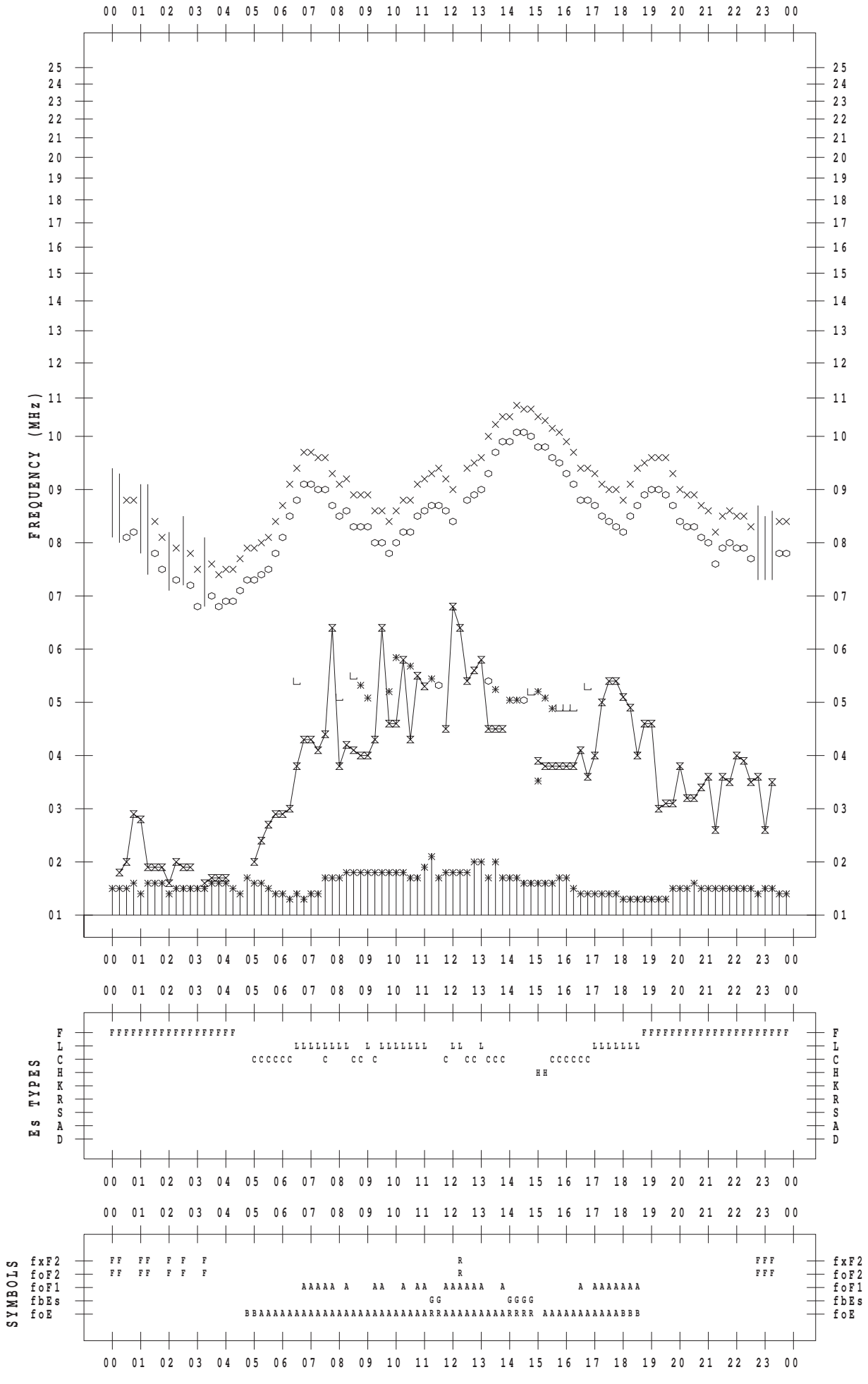
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/22

135 °E MEAN TIME



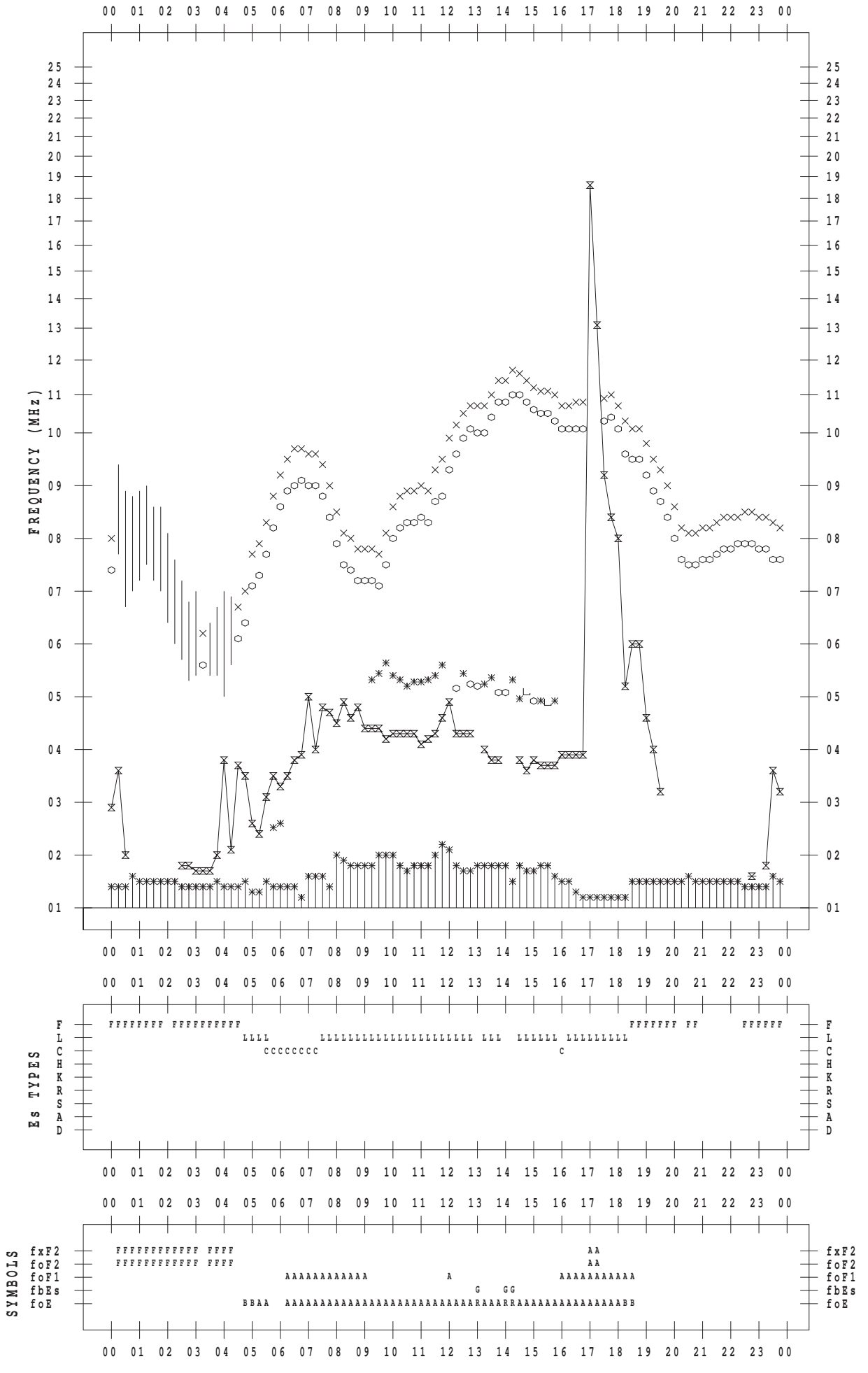
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/23

135 °E MEAN TIME



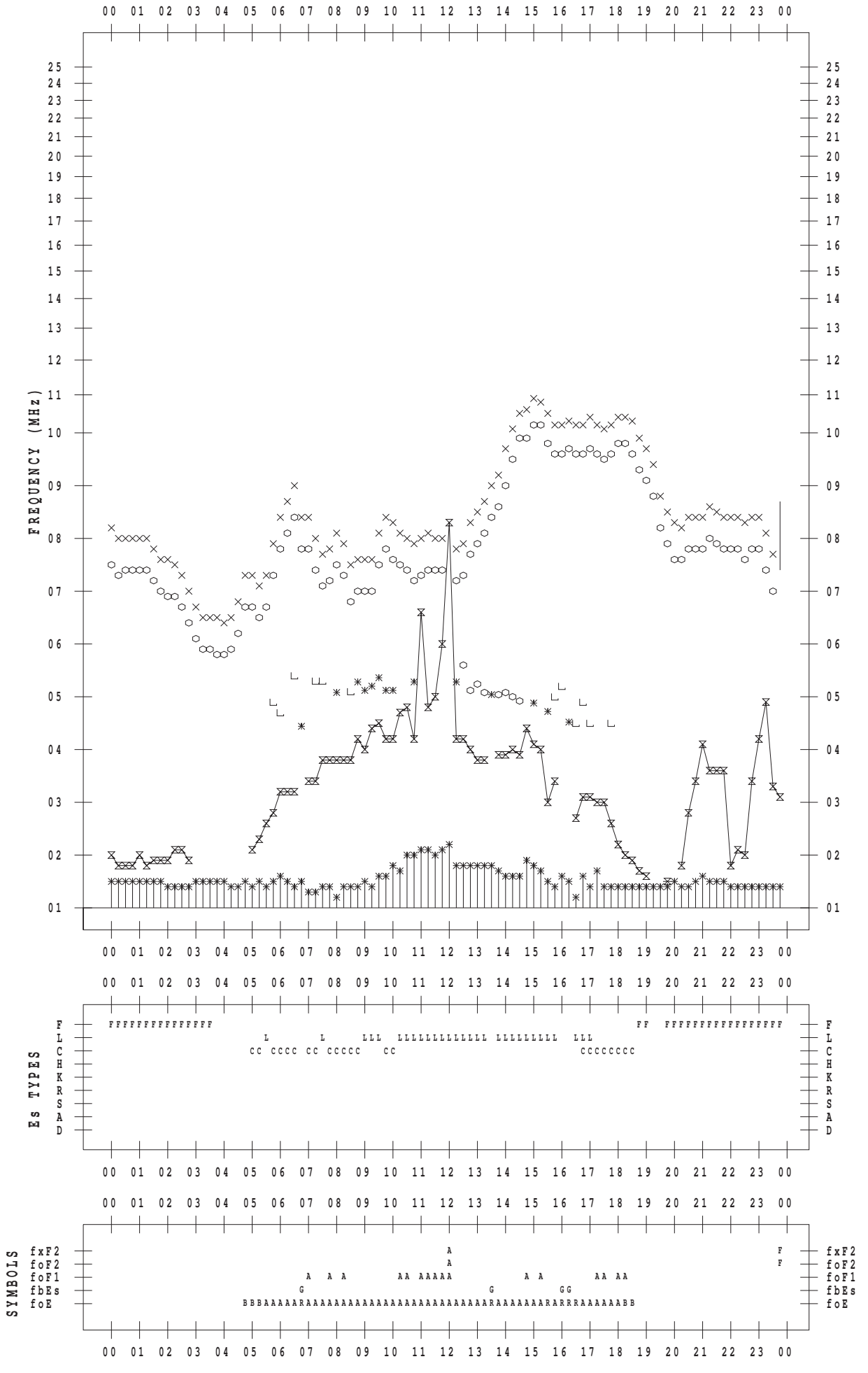
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/24

135 °E MEAN TIME



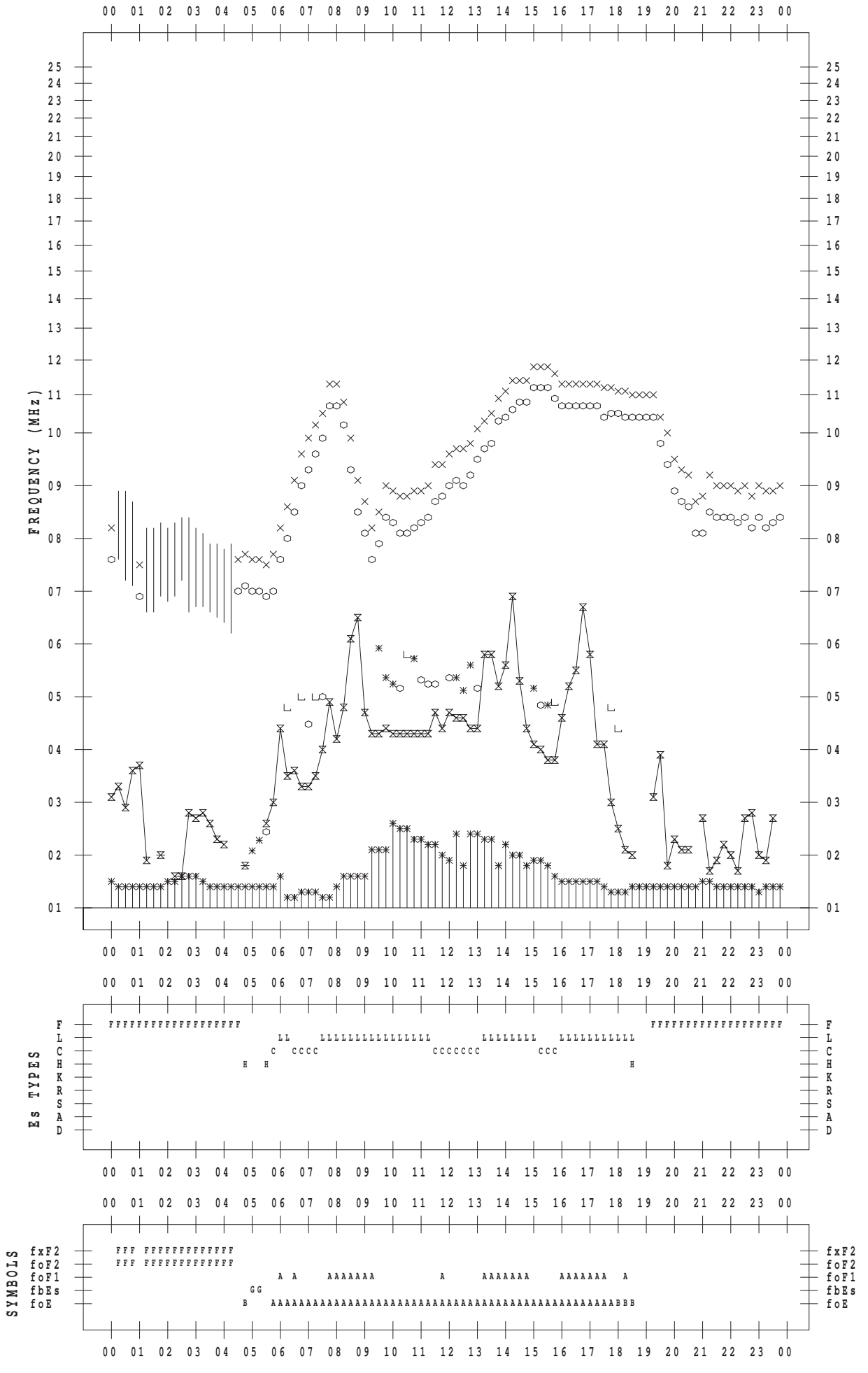
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/25

135 °E MEAN TIME



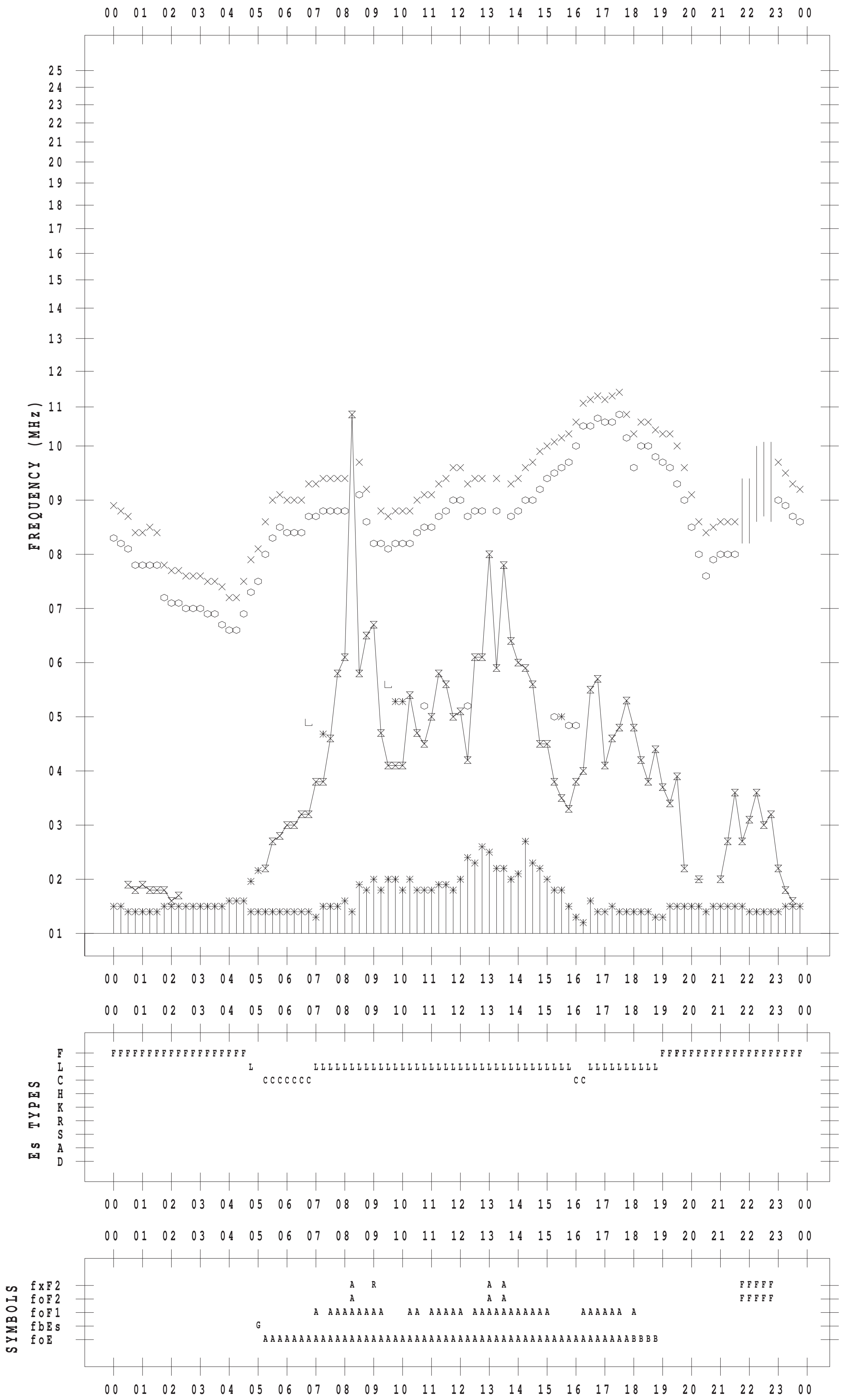
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/26

135 °E MEAN TIME



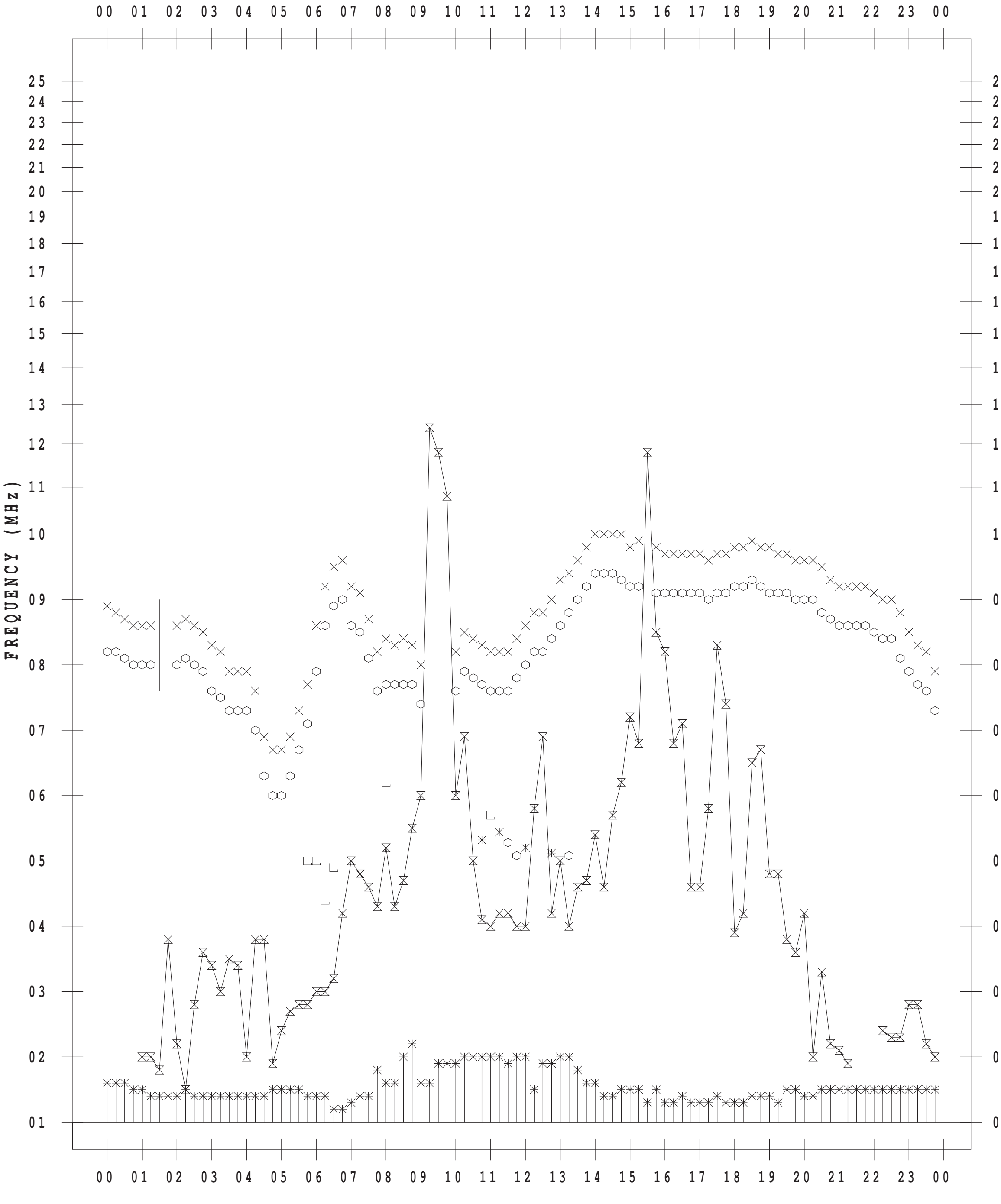
f-PLOT DATA

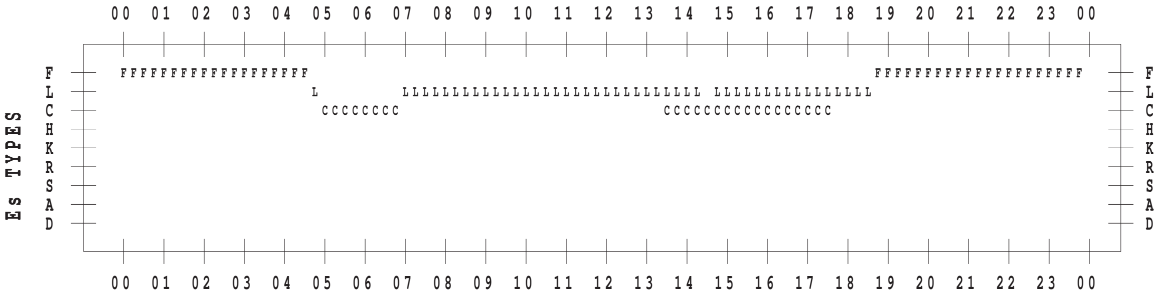
SCALER : I.NISHIMUTA

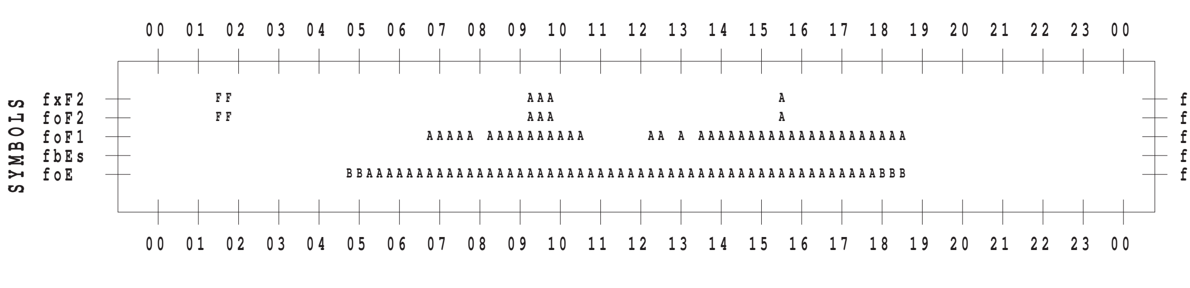
STATION : Kokubunji

DATE : 2014/ 5/27

135 °E MEAN TIME







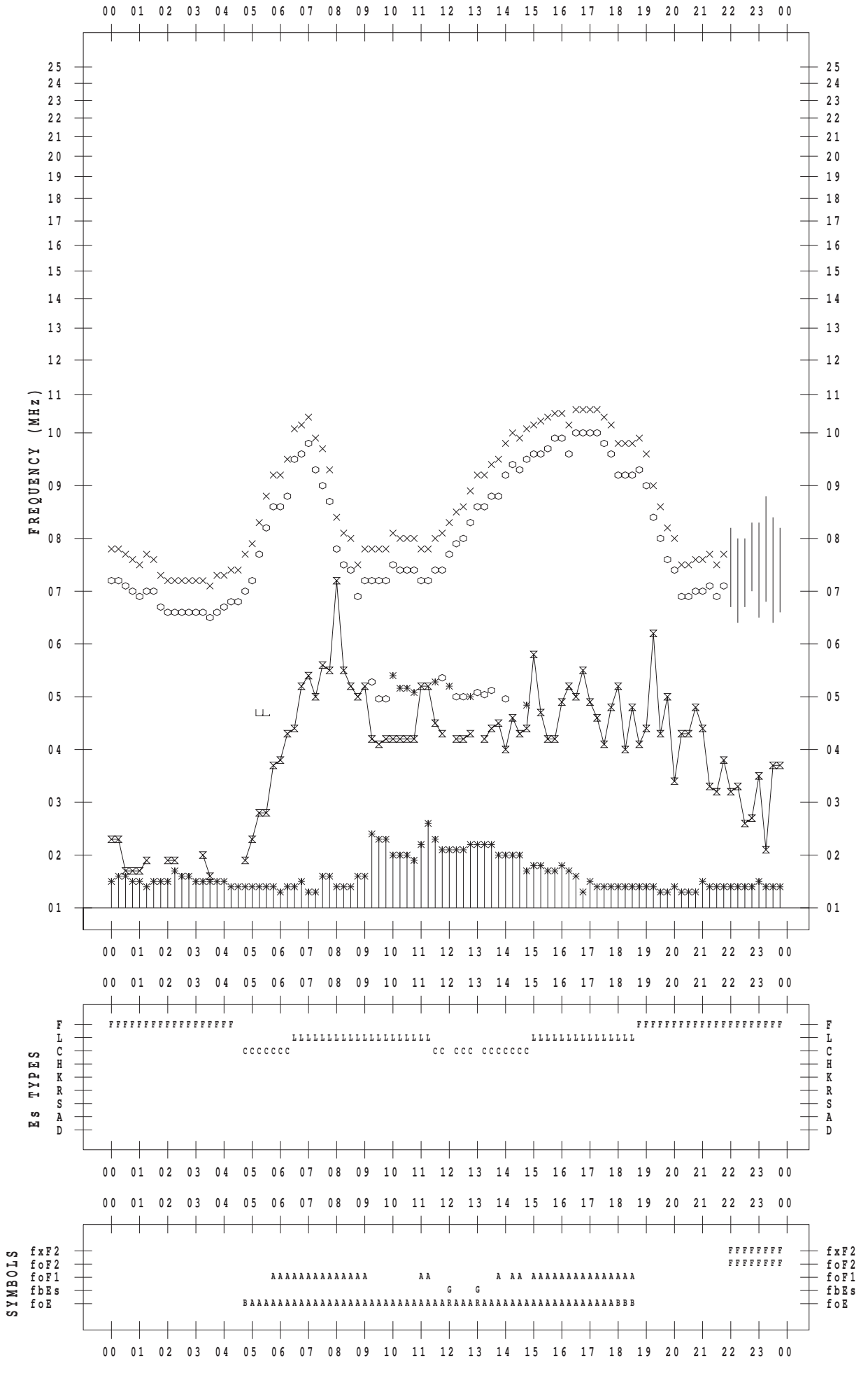
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/28

135 °E MEAN TIME



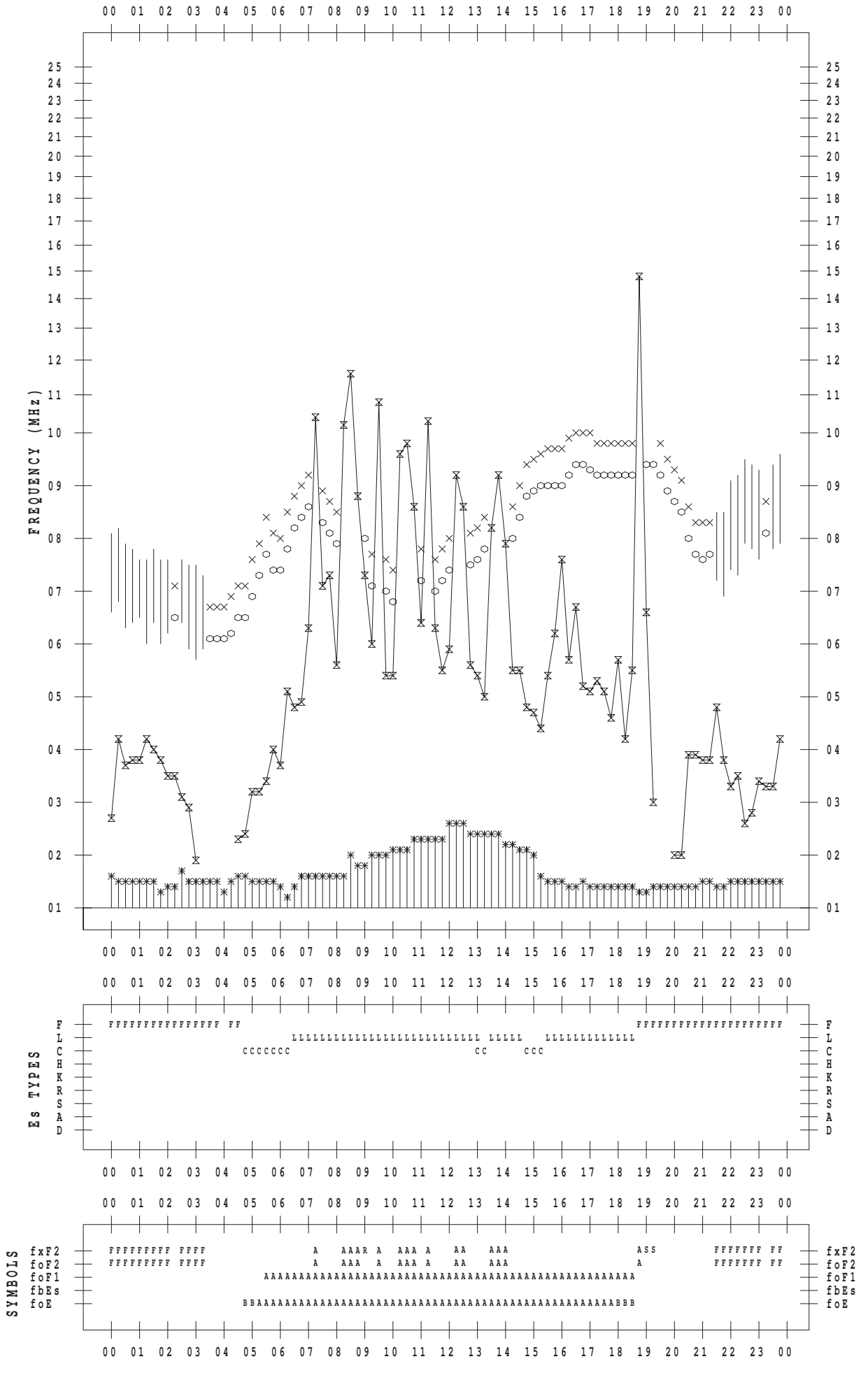
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/29

135 °E MEAN TIME



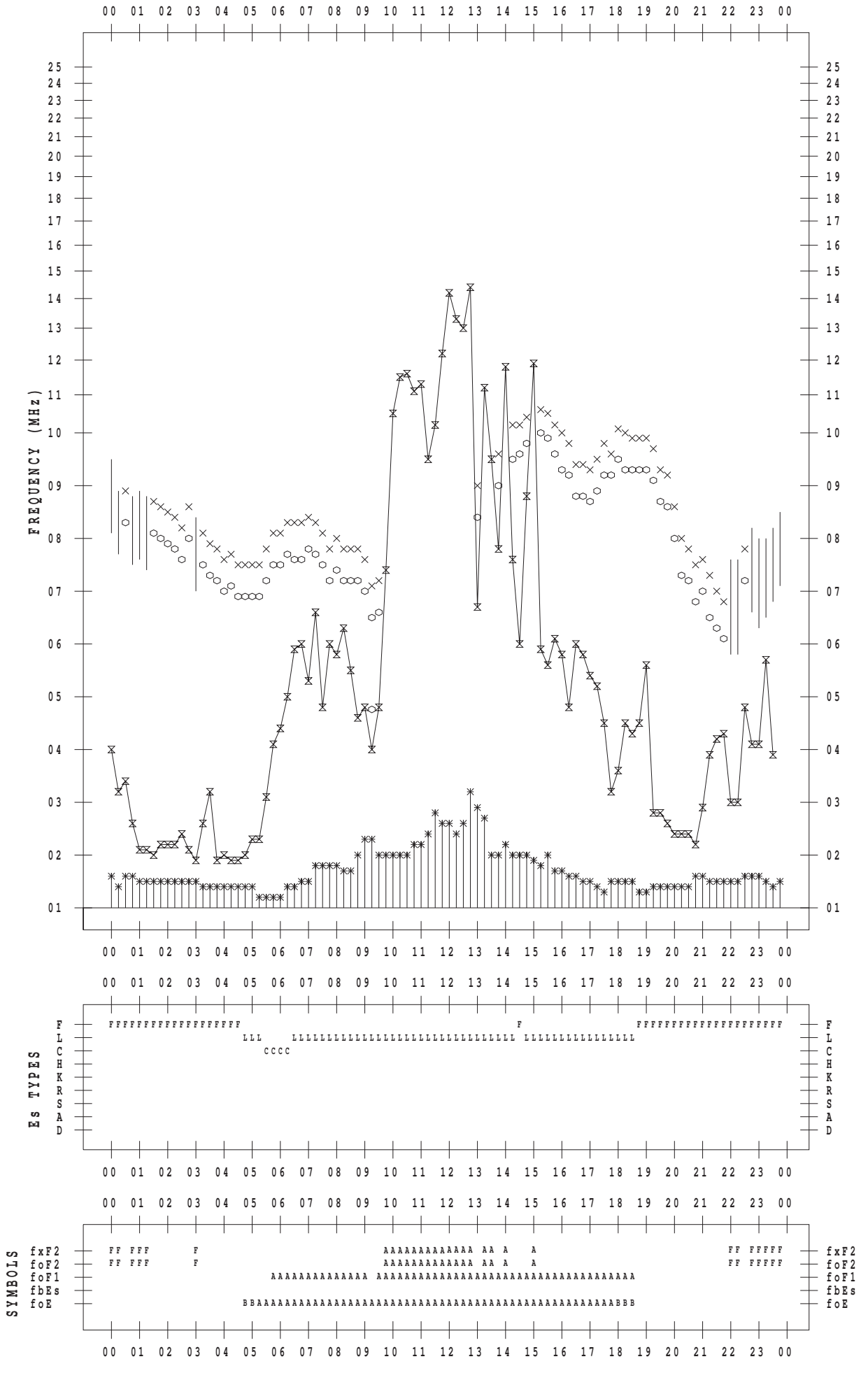
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2014/ 5/30

135 °E MEAN TIME



f-PLOT DATA

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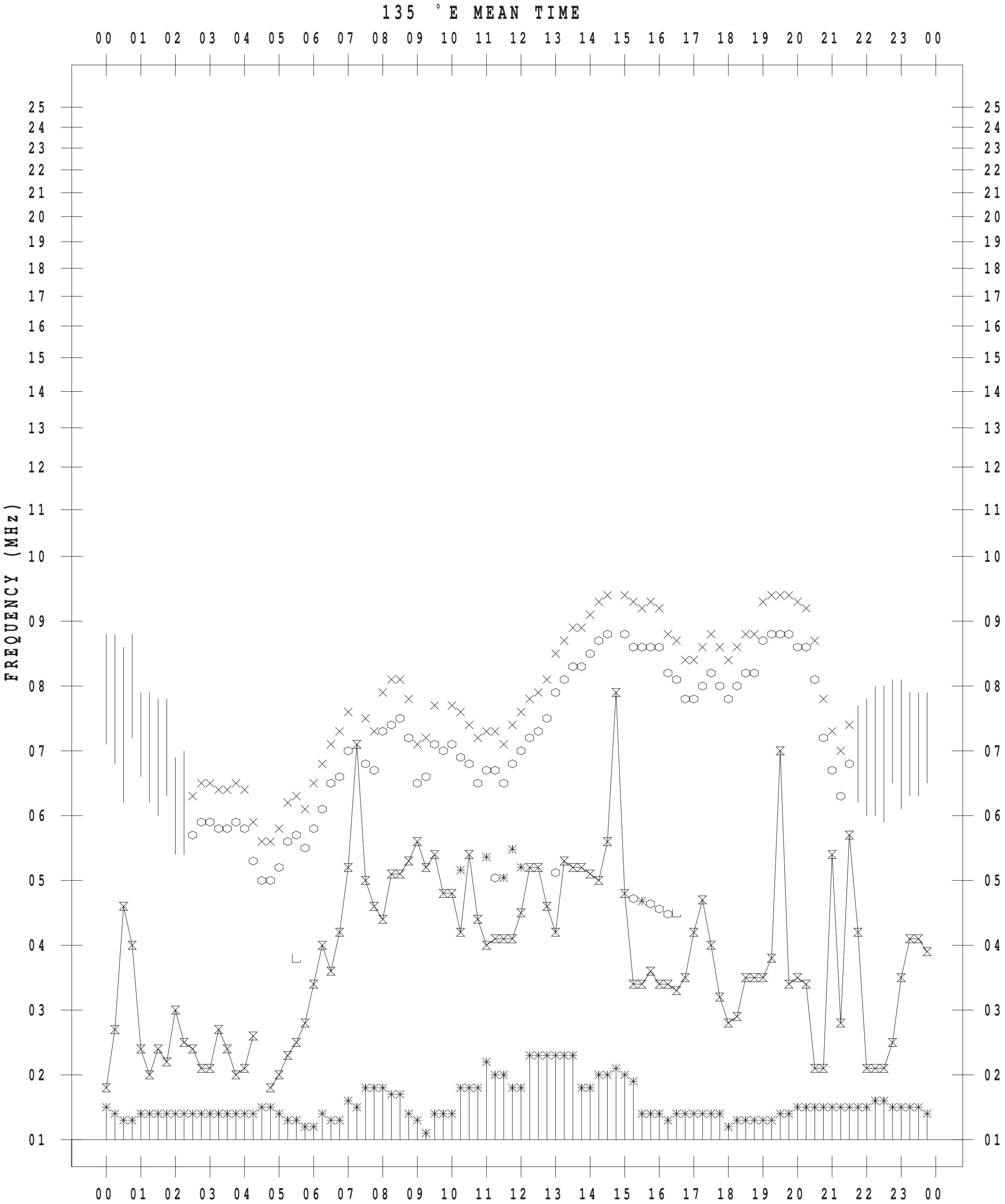
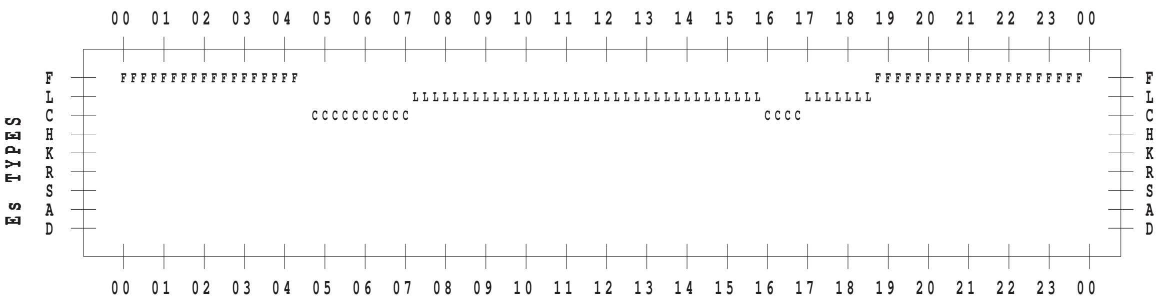
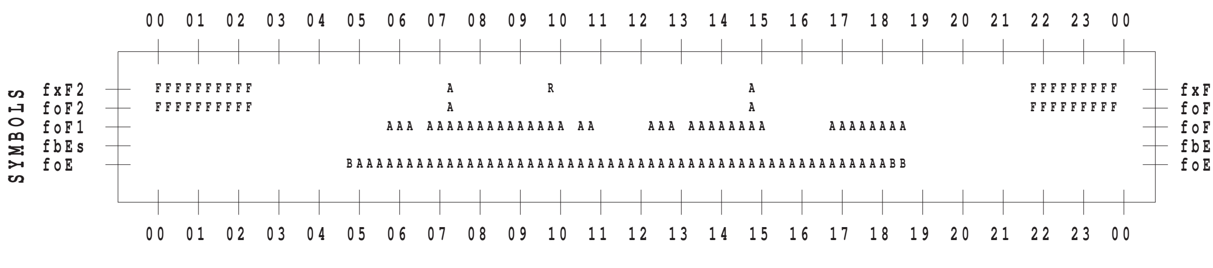
STATION : Kokubunji DATE : 2014/ 5/31







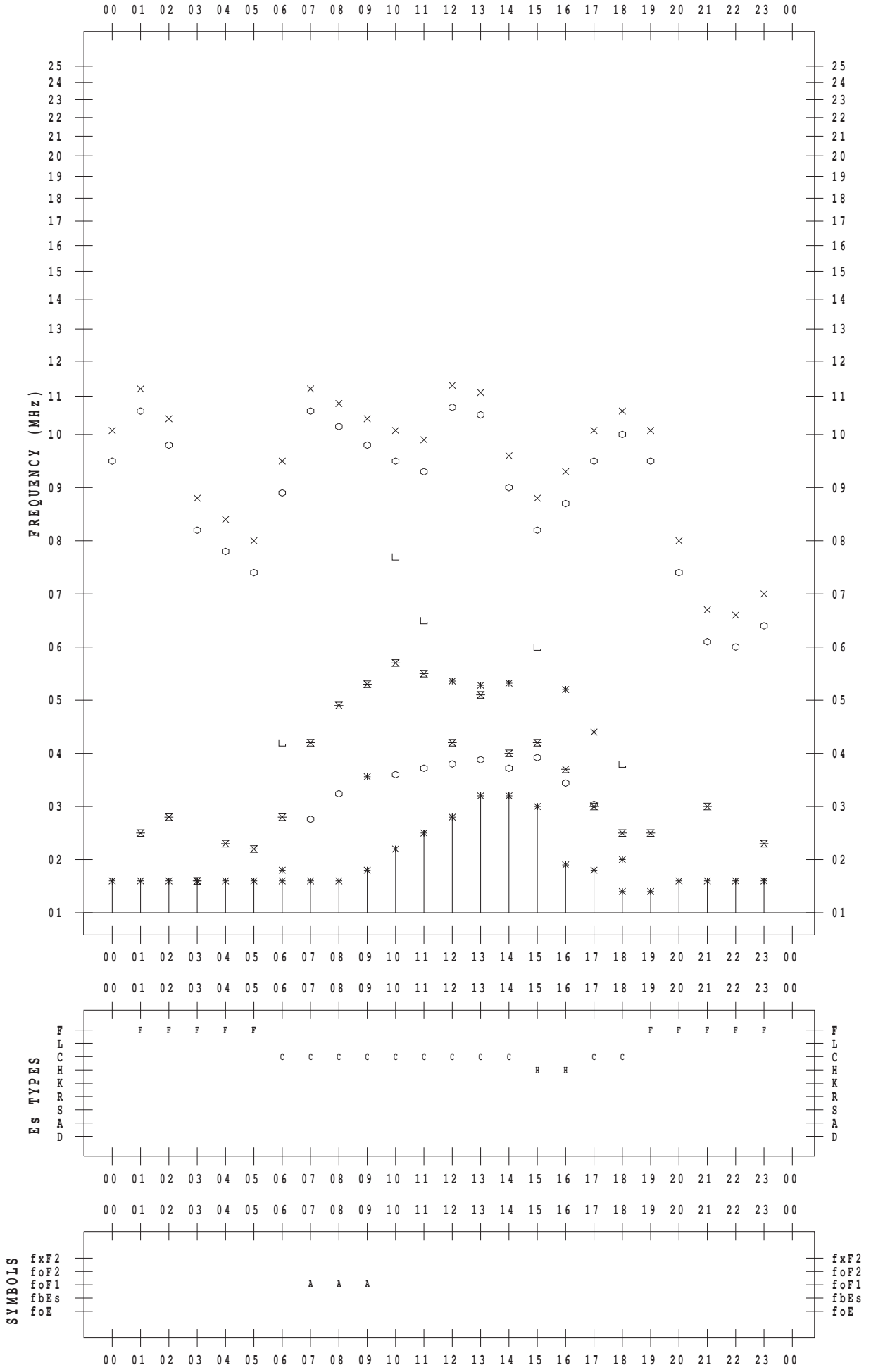
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 1

135 °E MEAN TIME



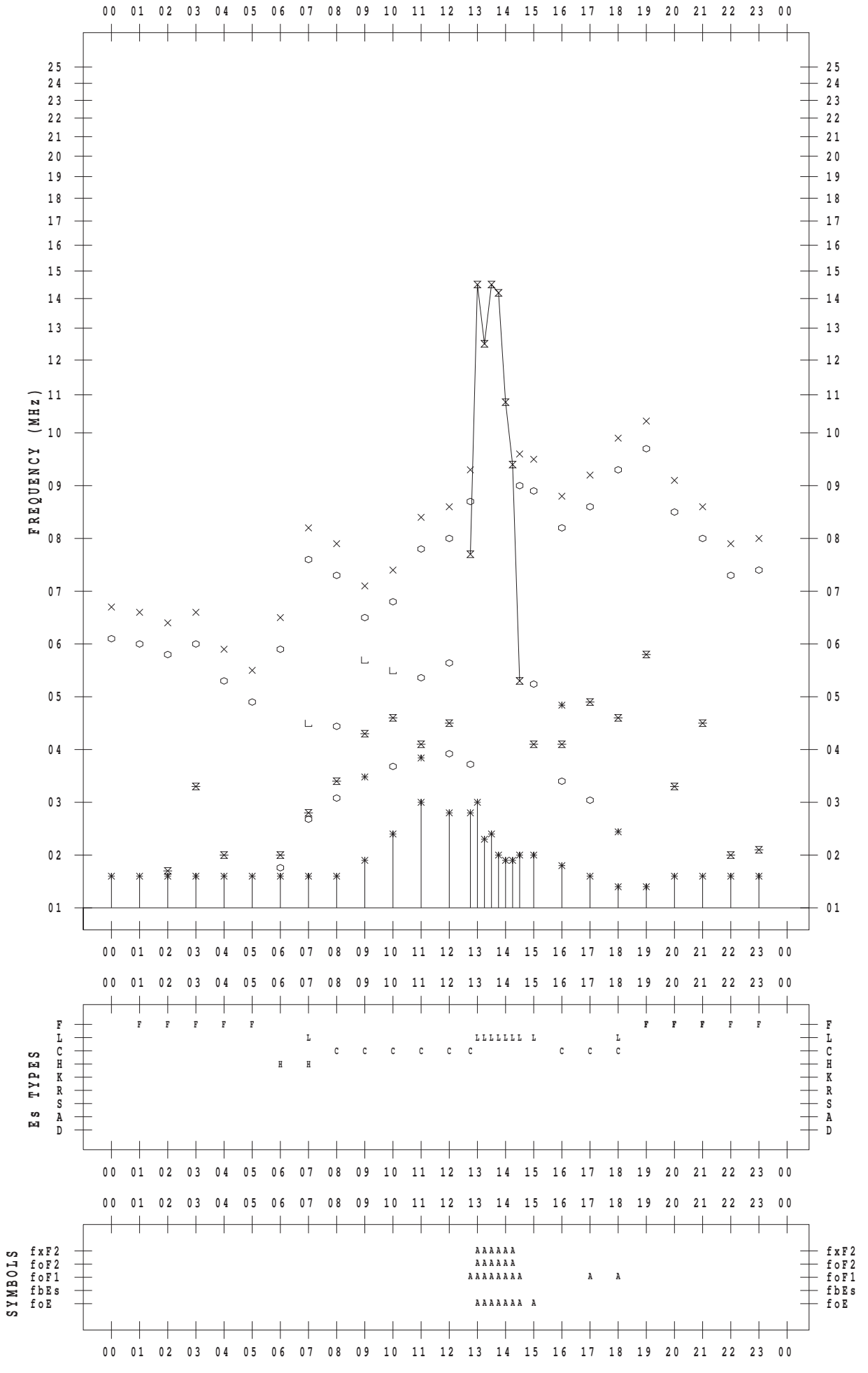
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 2

135 °E MEAN TIME



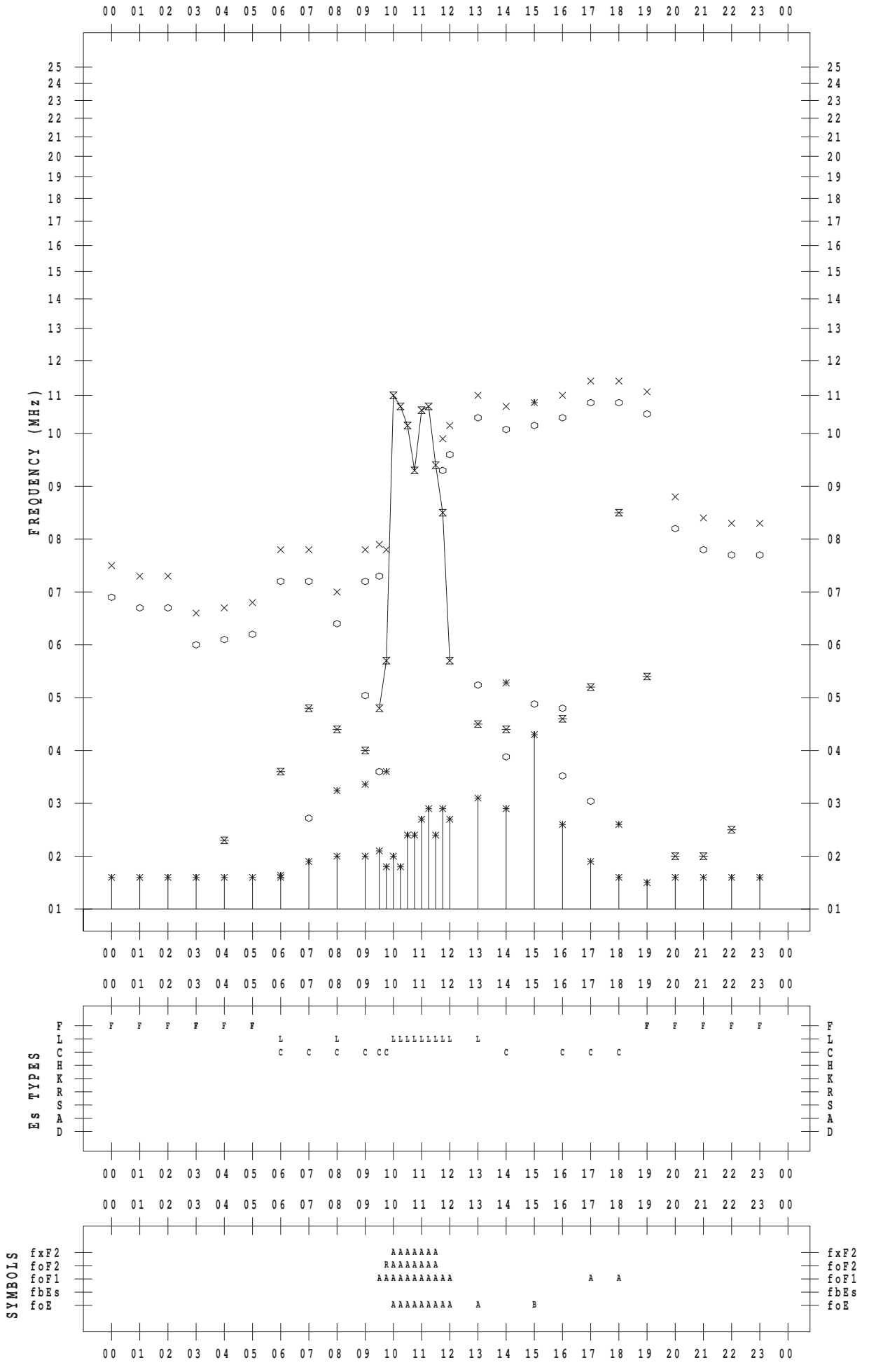
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 3

135 °E MEAN TIME



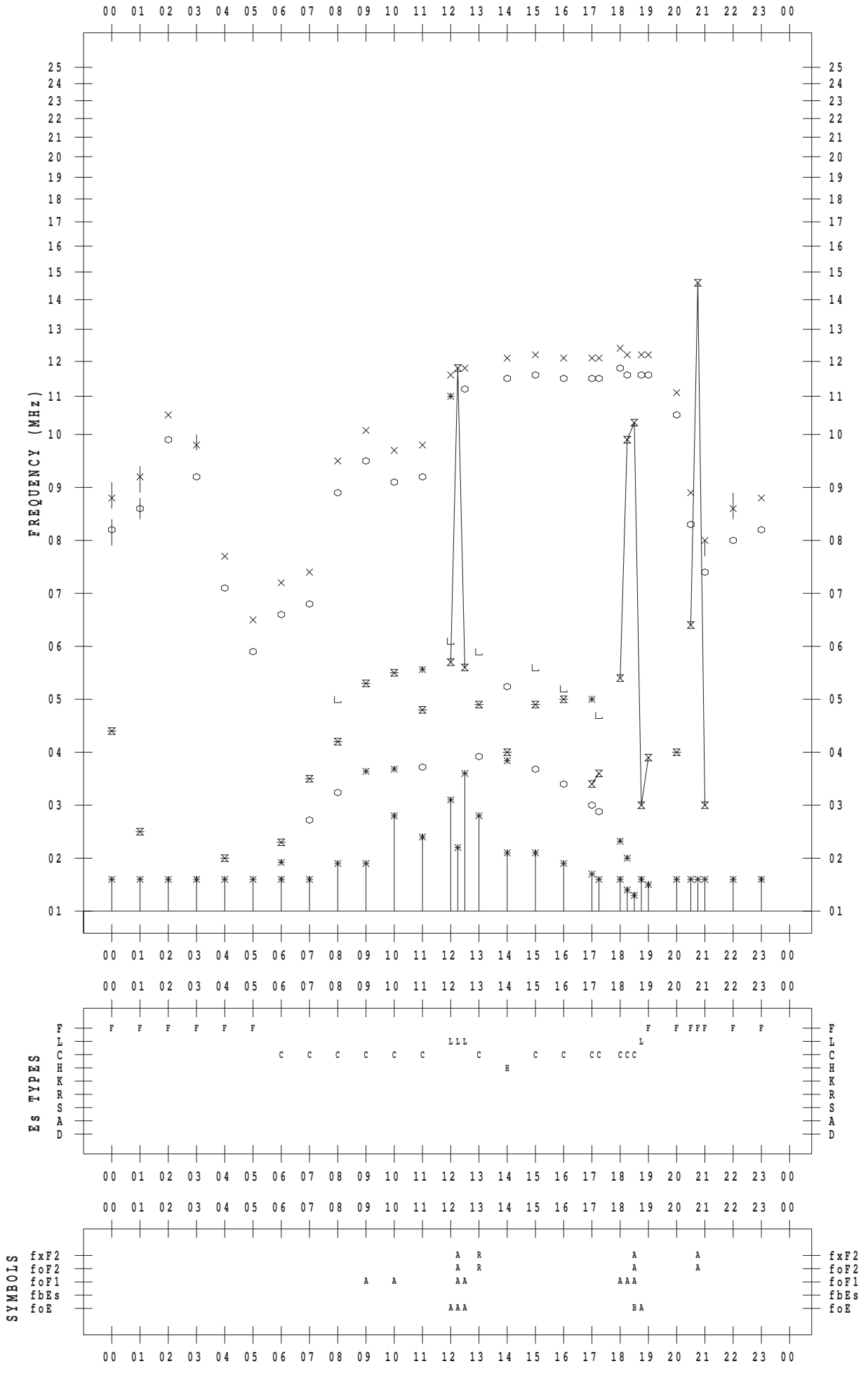
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 4

135 °E MEAN TIME



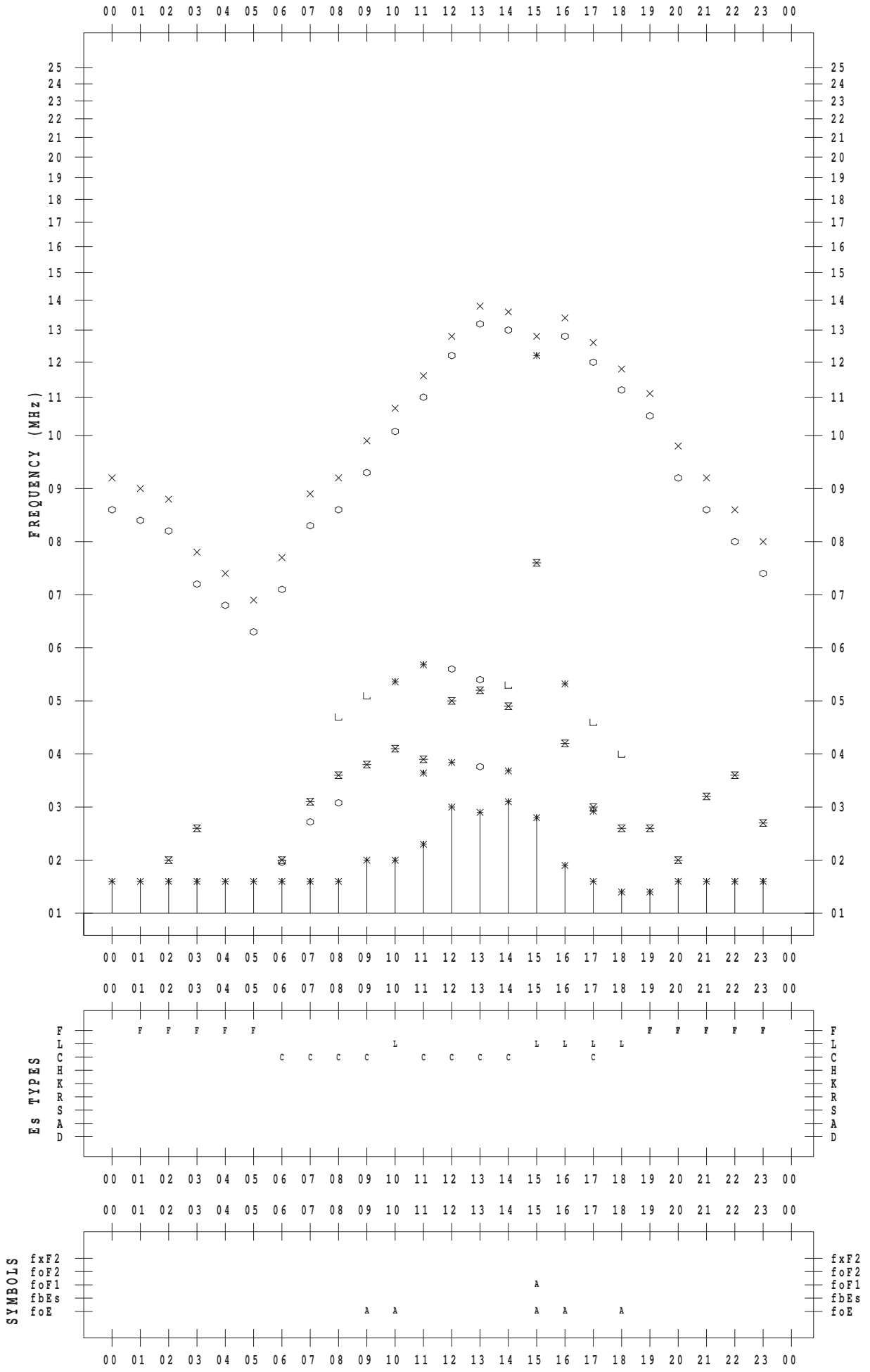
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 5

135 °E MEAN TIME



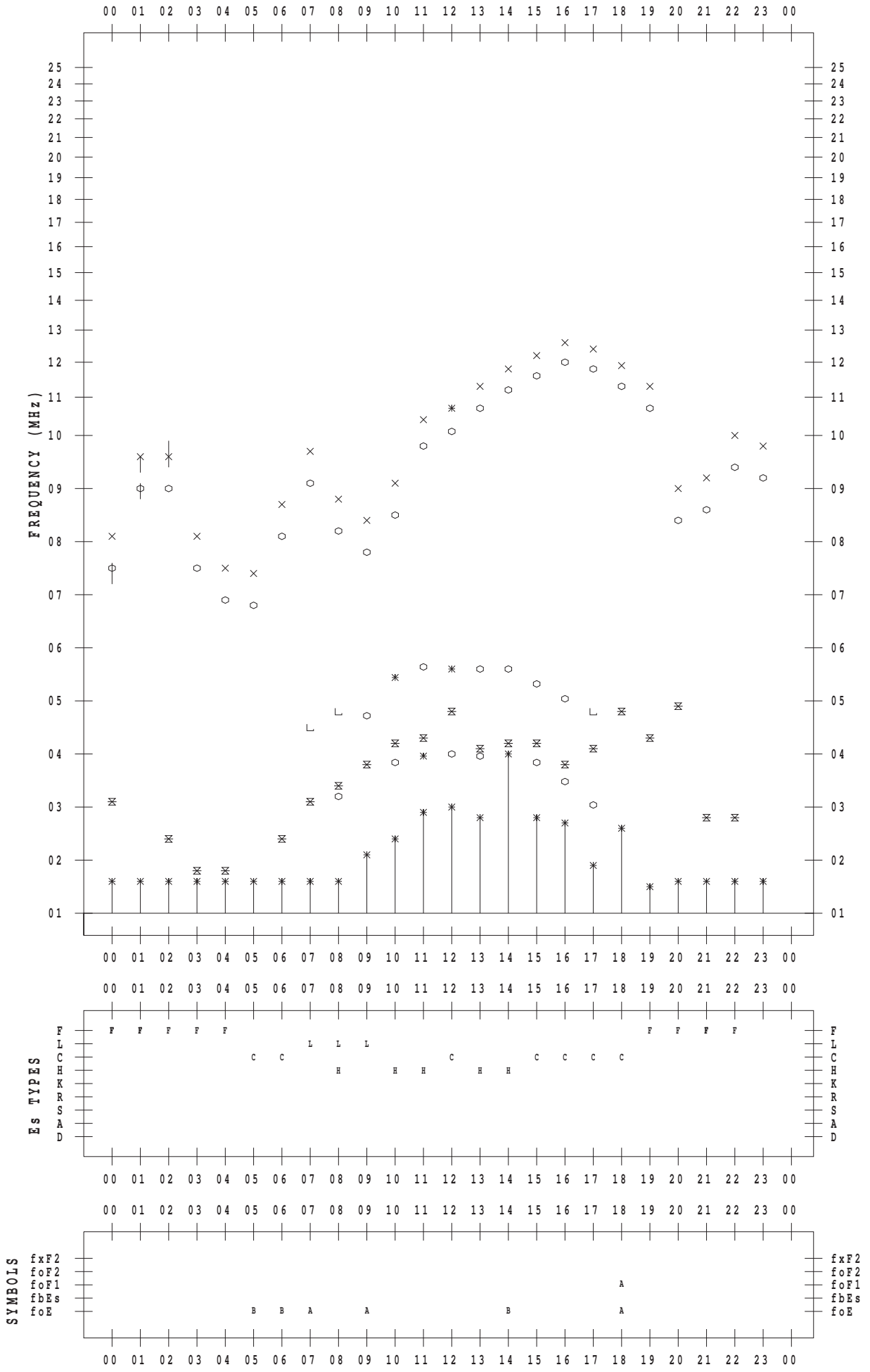
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 6

135 °E MEAN TIME



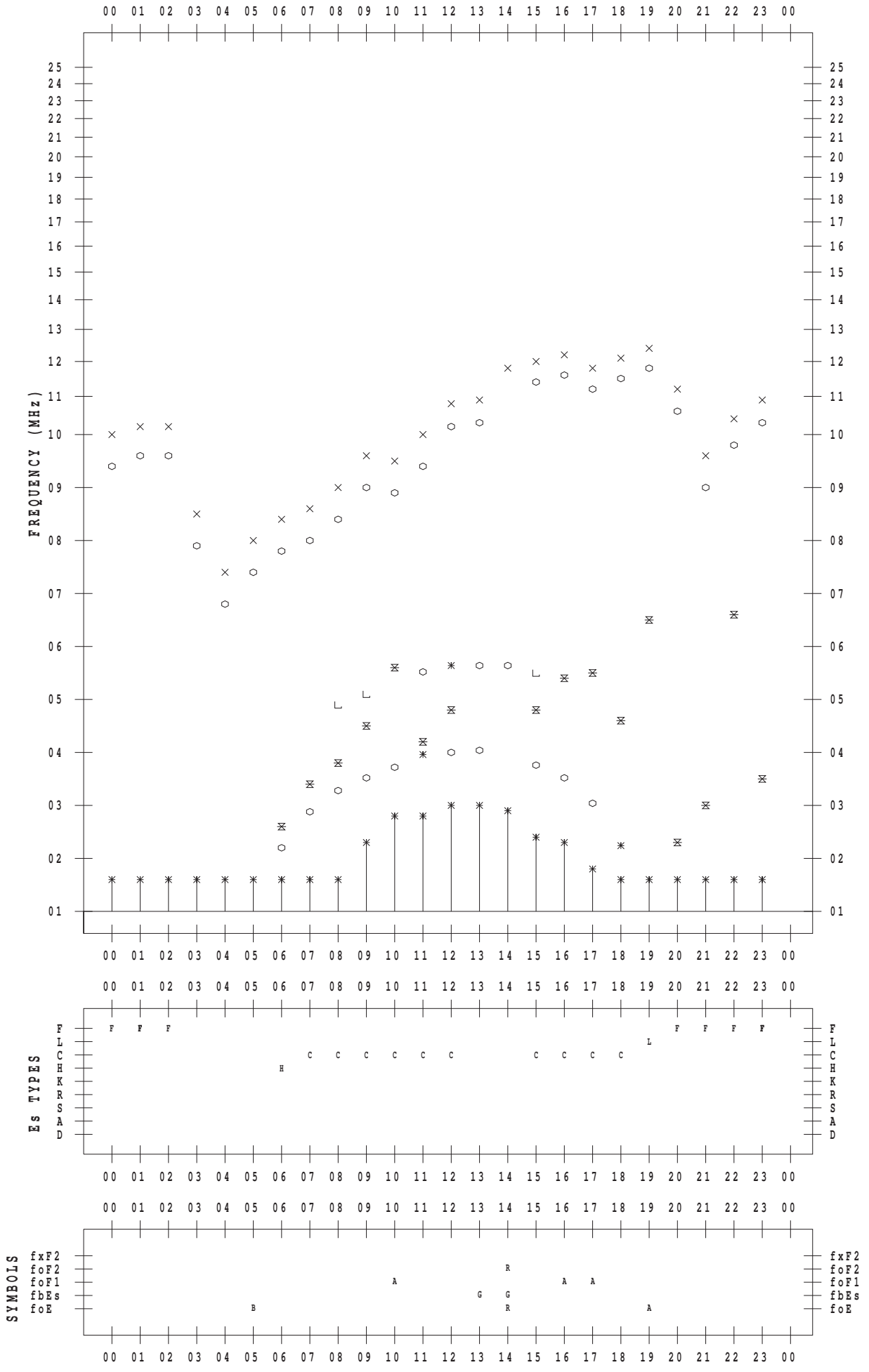
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 7

135 °E MEAN TIME



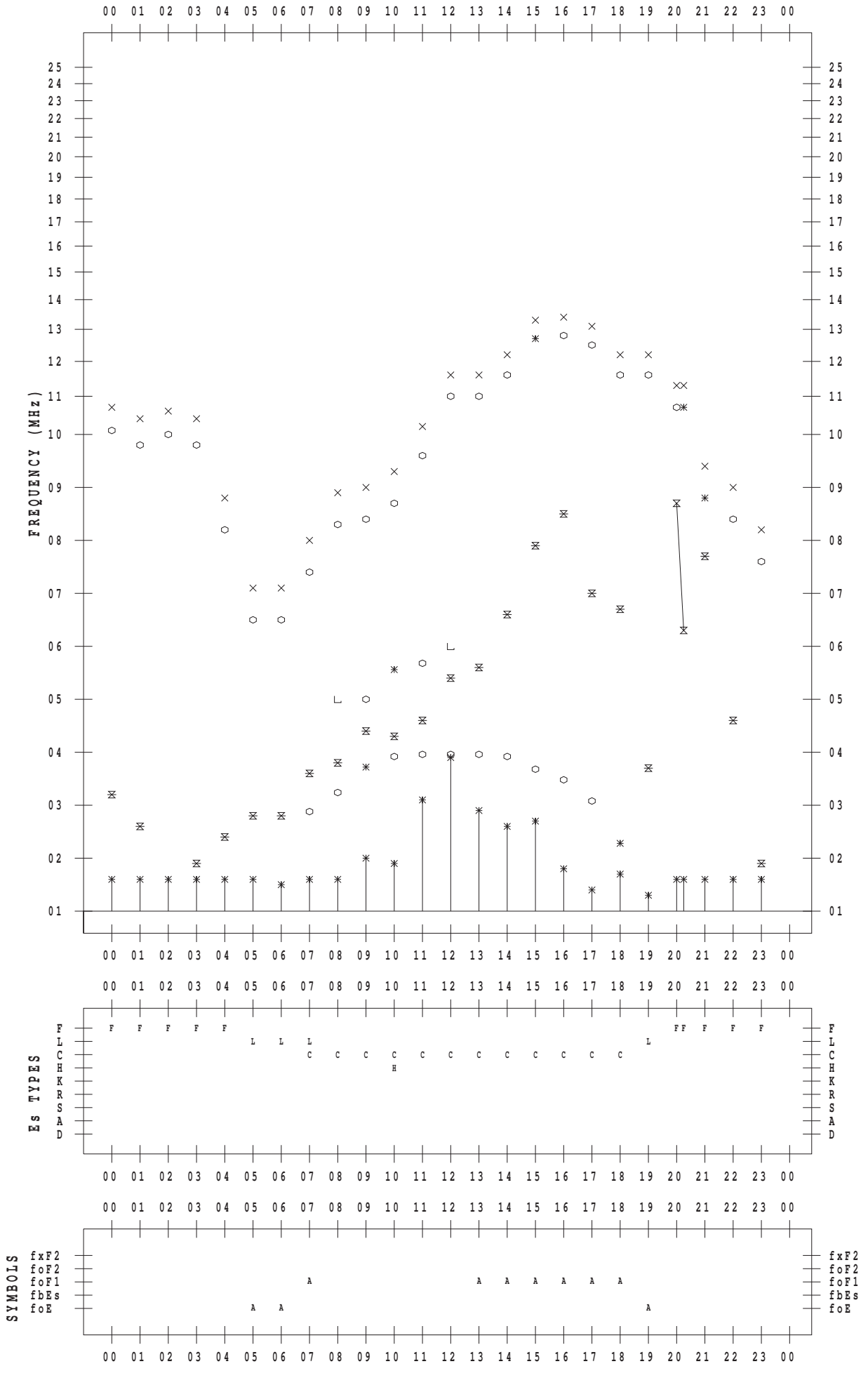
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 8

135 °E MEAN TIME



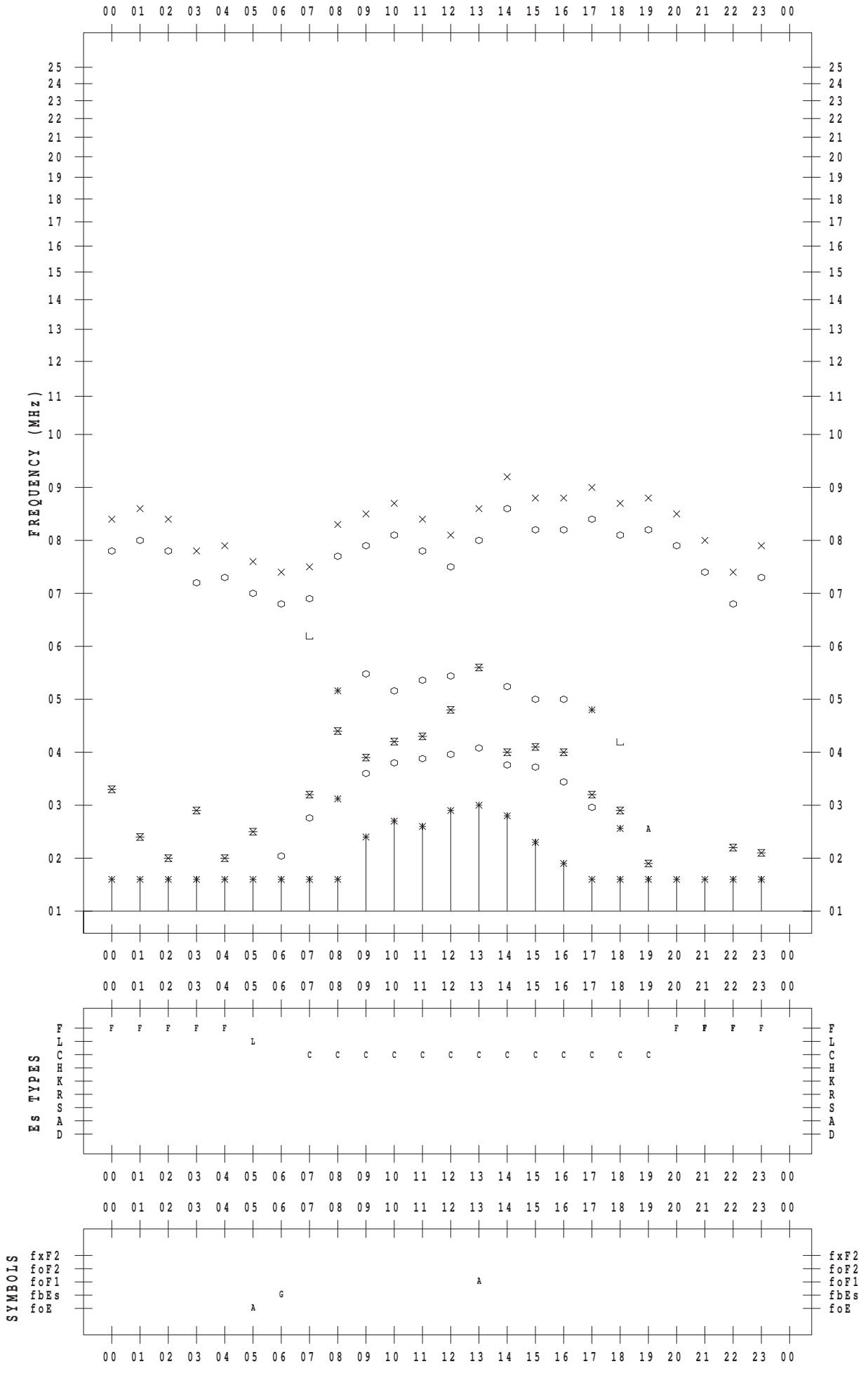
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/ 9

135 °E MEAN TIME



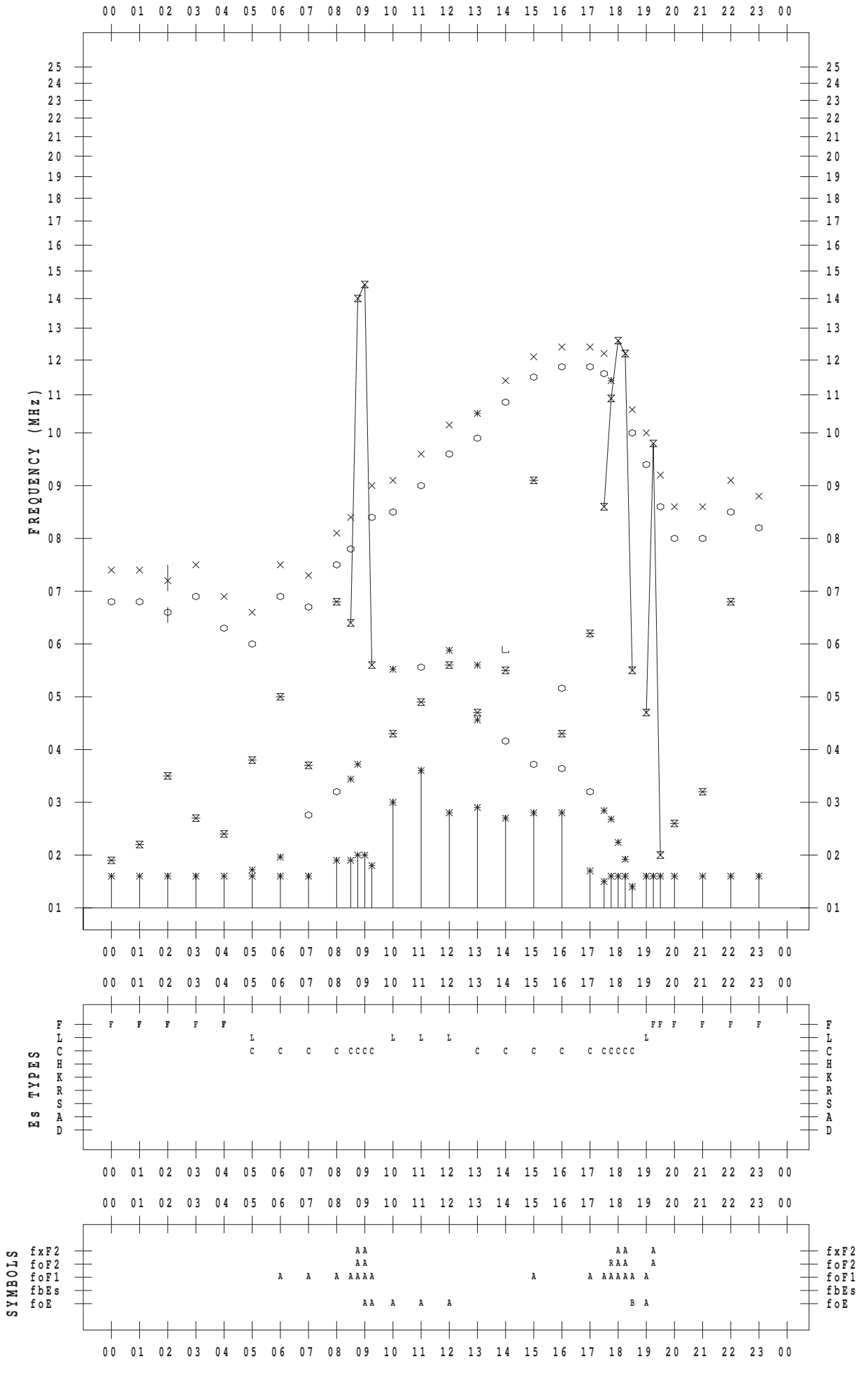
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/10

135 °E MEAN TIME



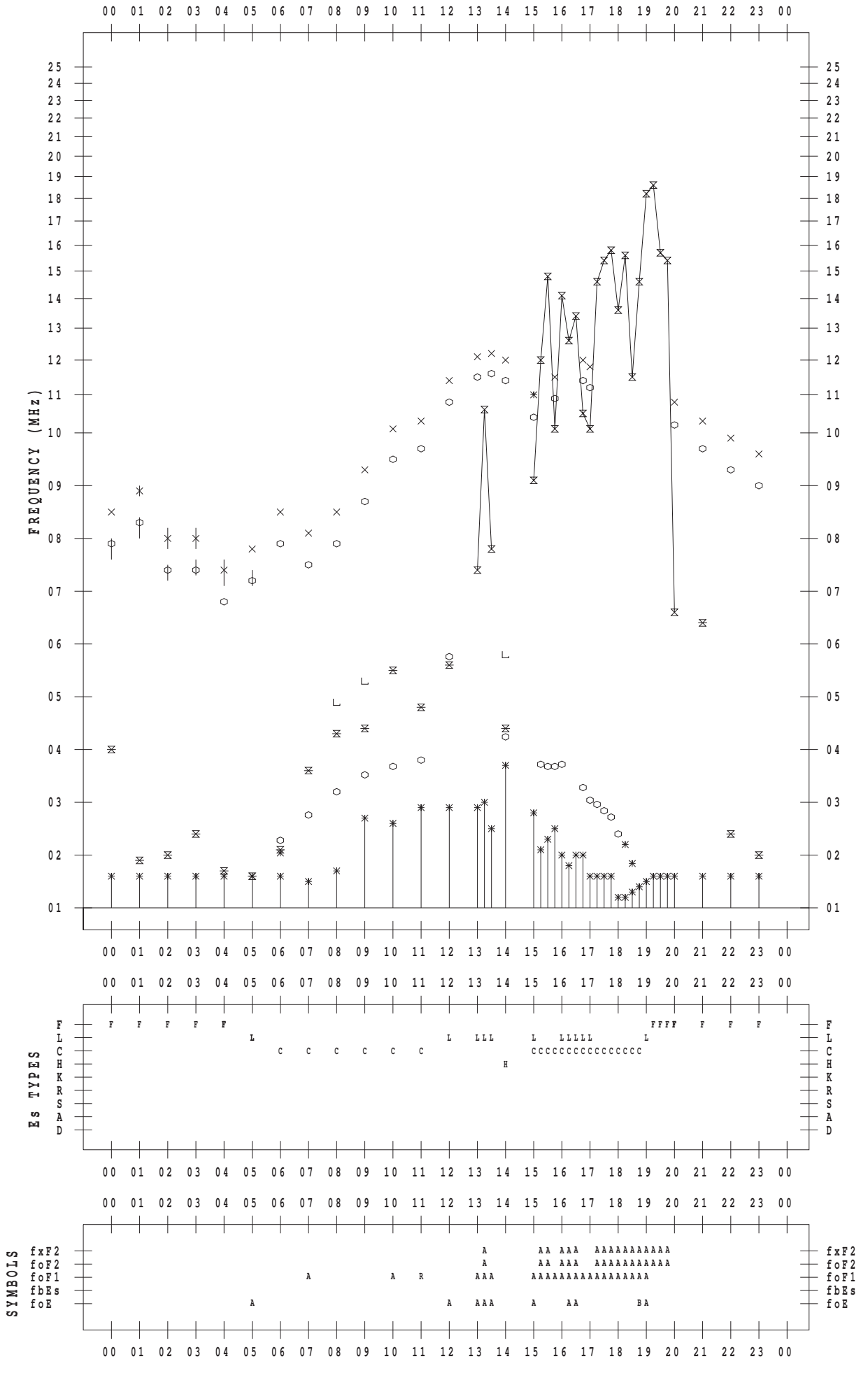
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/11

135 °E MEAN TIME



f-PLOT DATA

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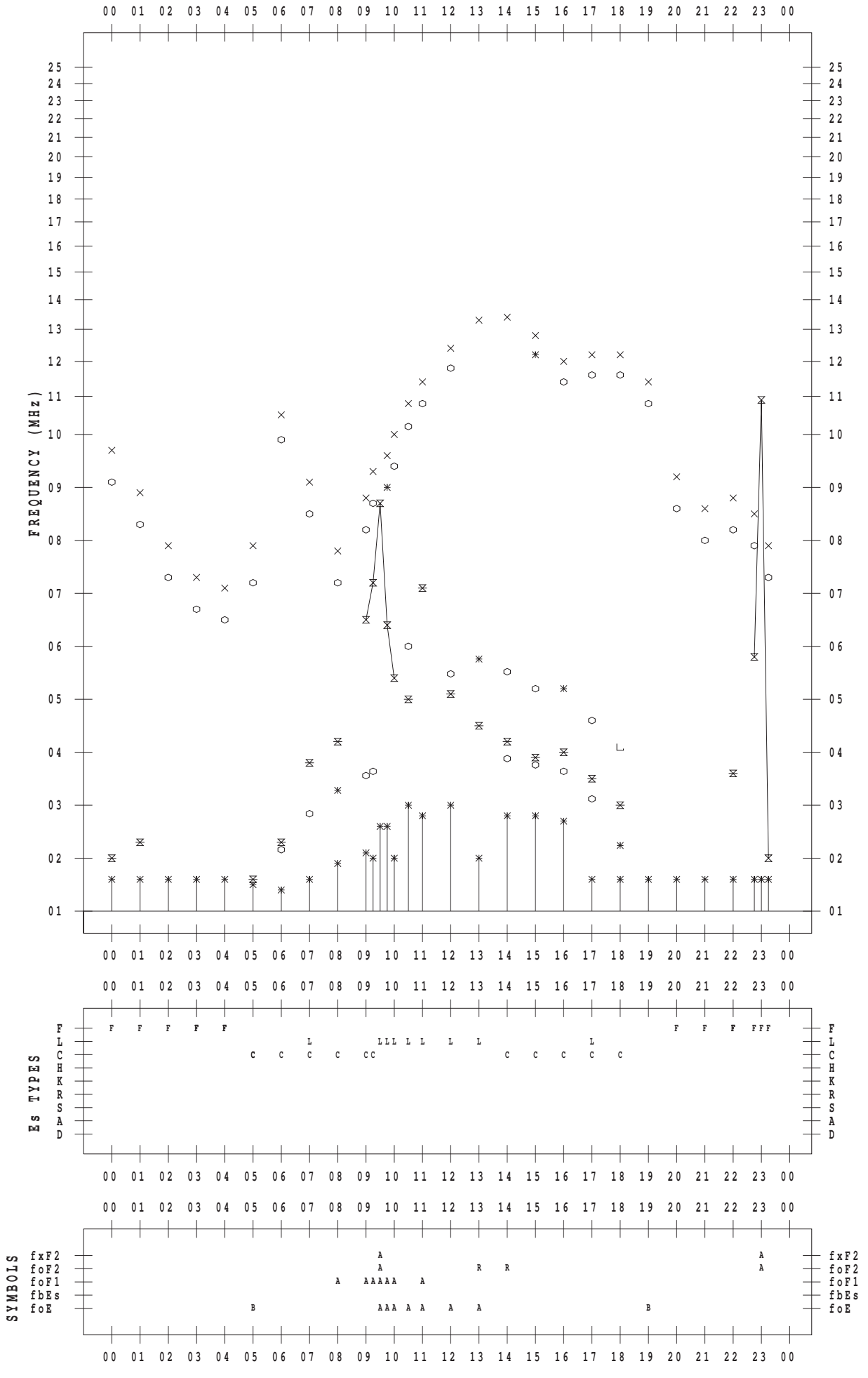
STATION : Yamagawa

DATE : 2014/ 5/12

135 °E MEAN TIME



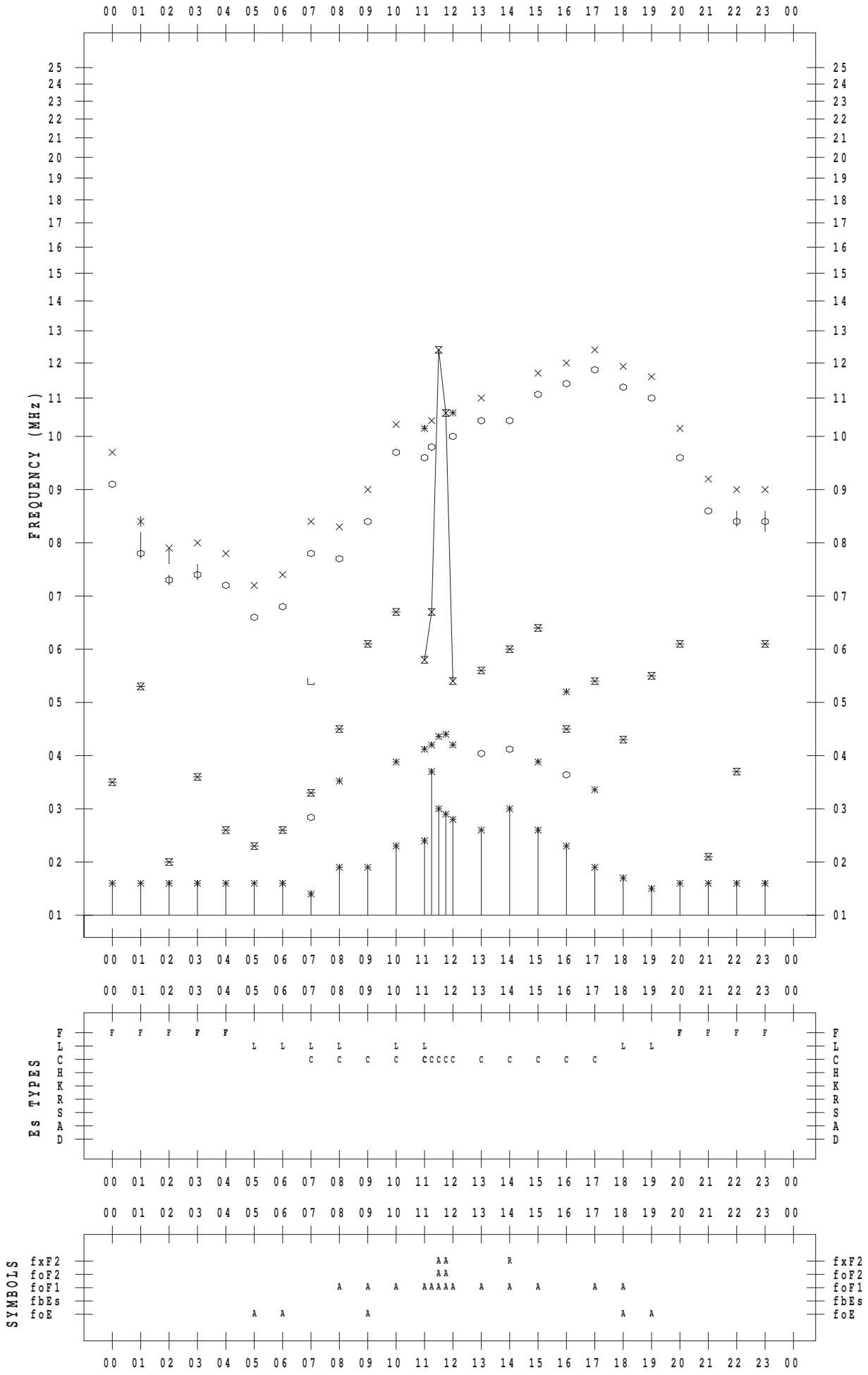
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/13

135 °E MEAN TIME



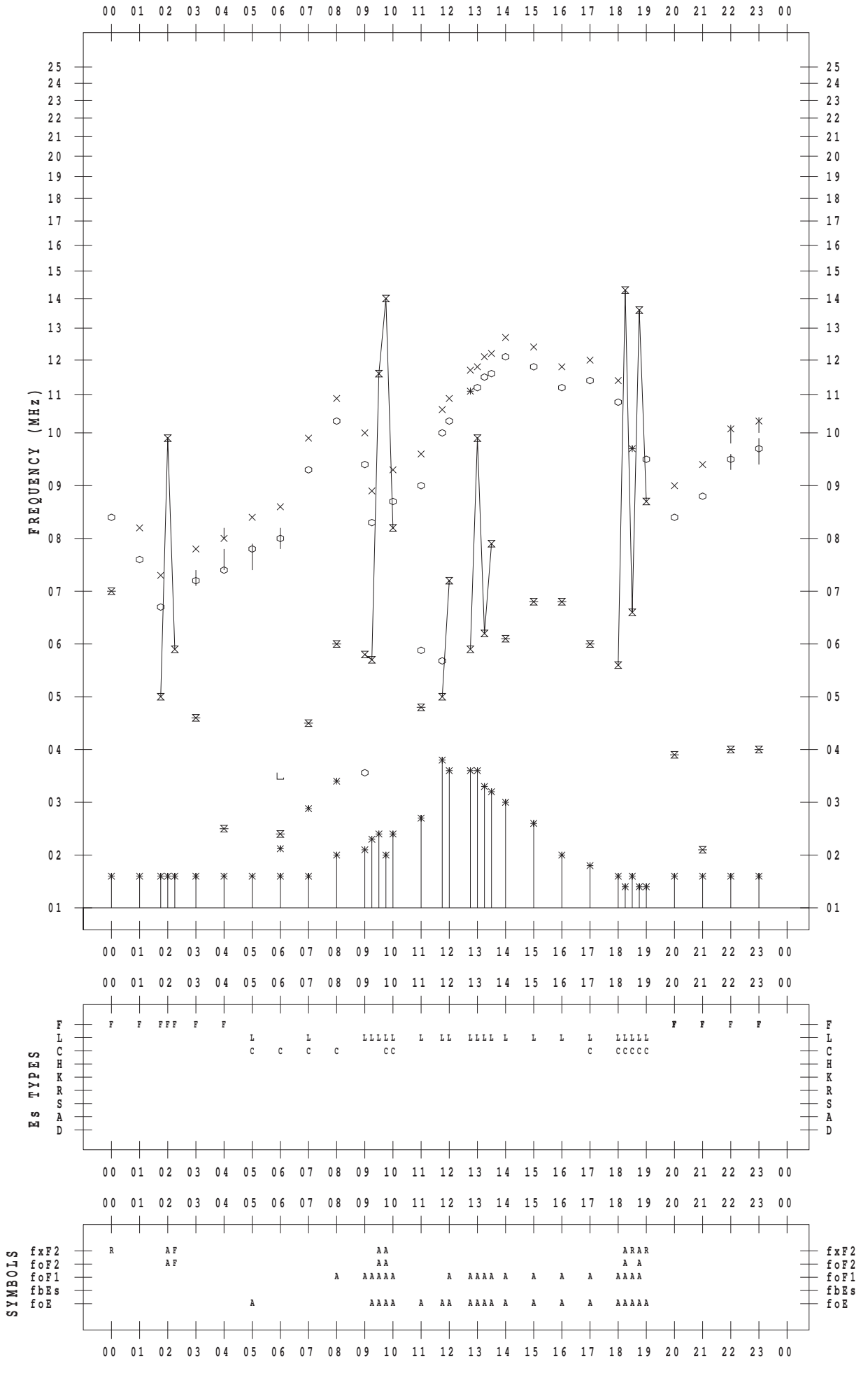
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/14

135 °E MEAN TIME



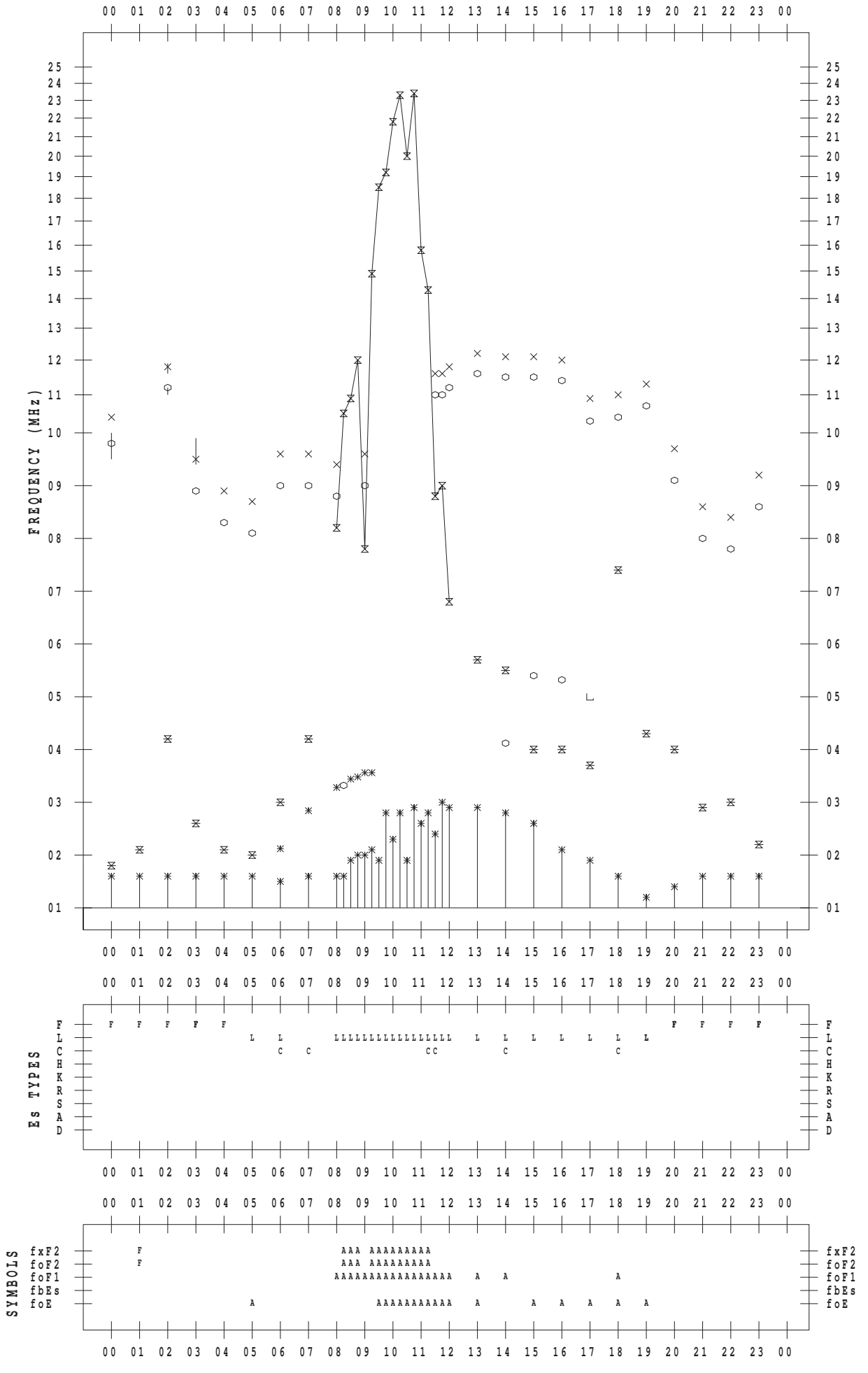
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/15

135 °E MEAN TIME



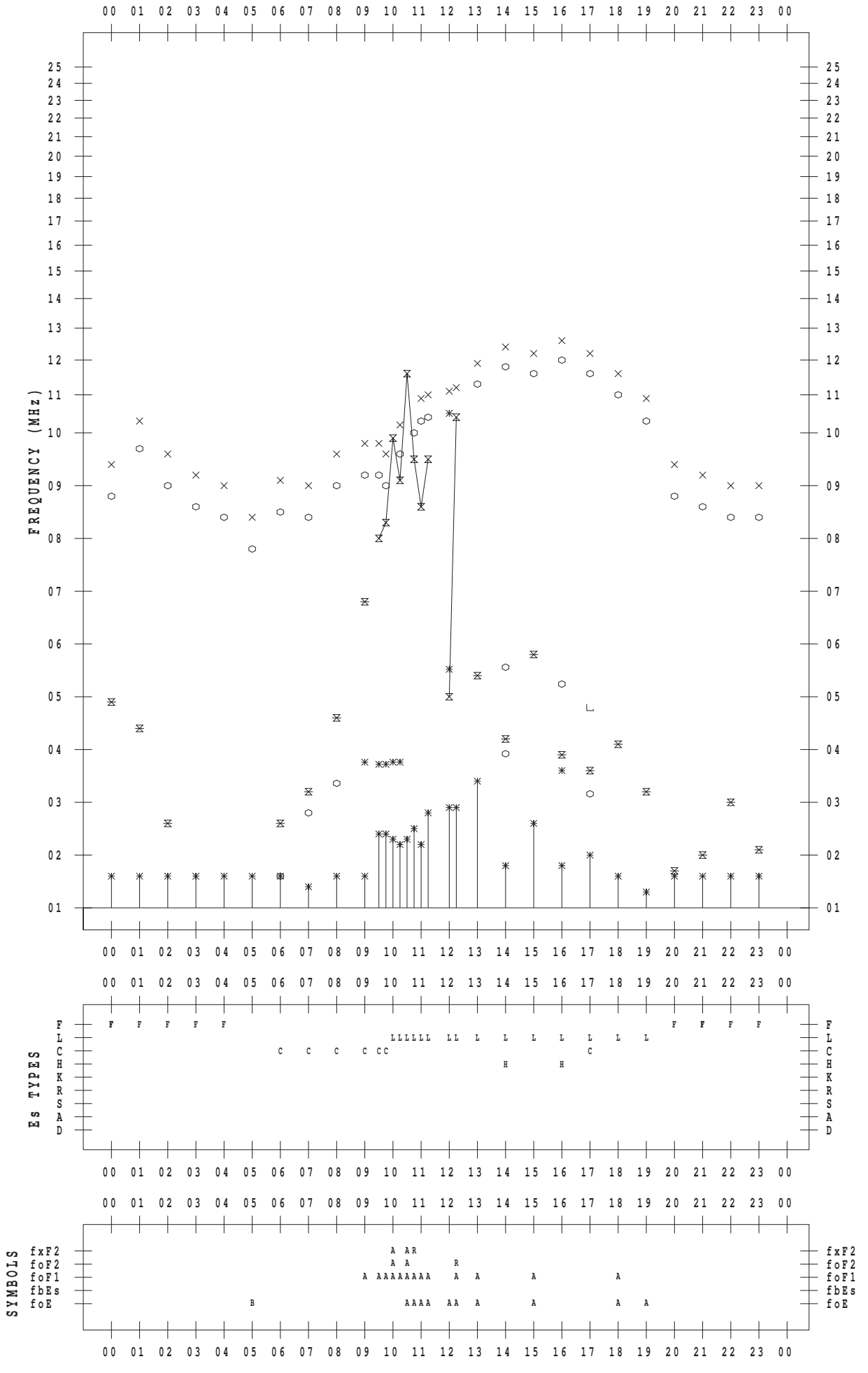
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/16

135 °E MEAN TIME



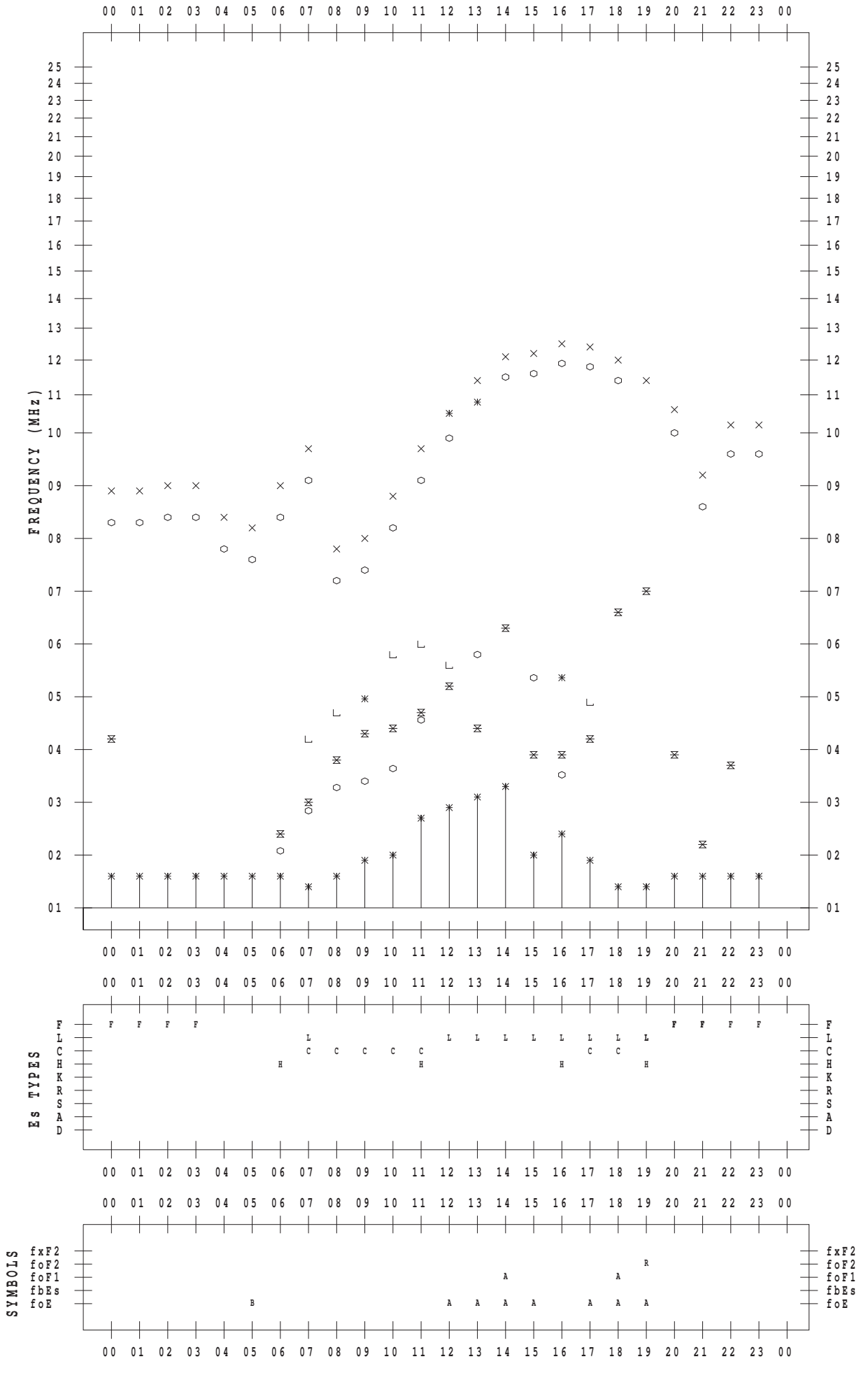
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/17

135 °E MEAN TIME



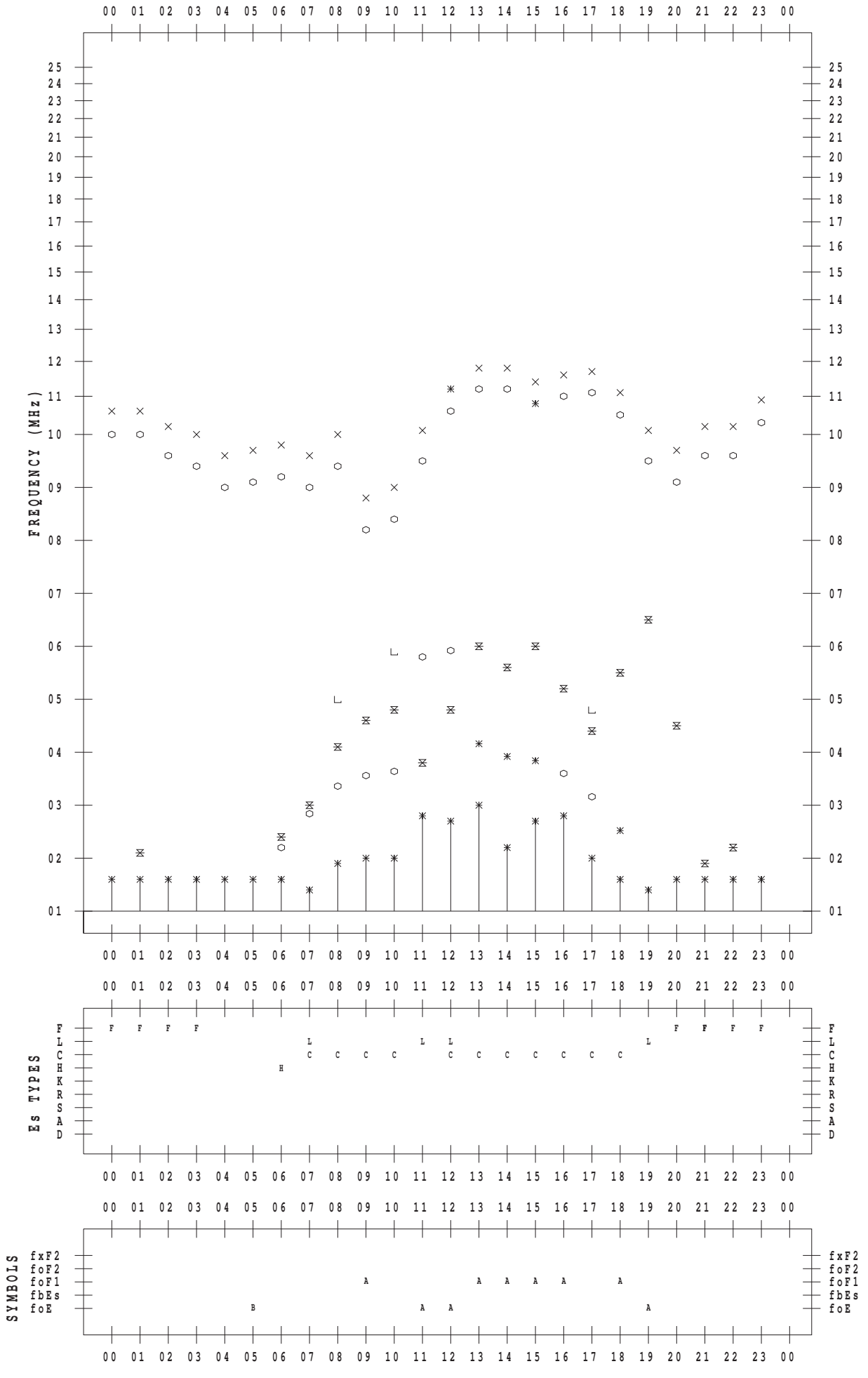
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/18

135 °E MEAN TIME



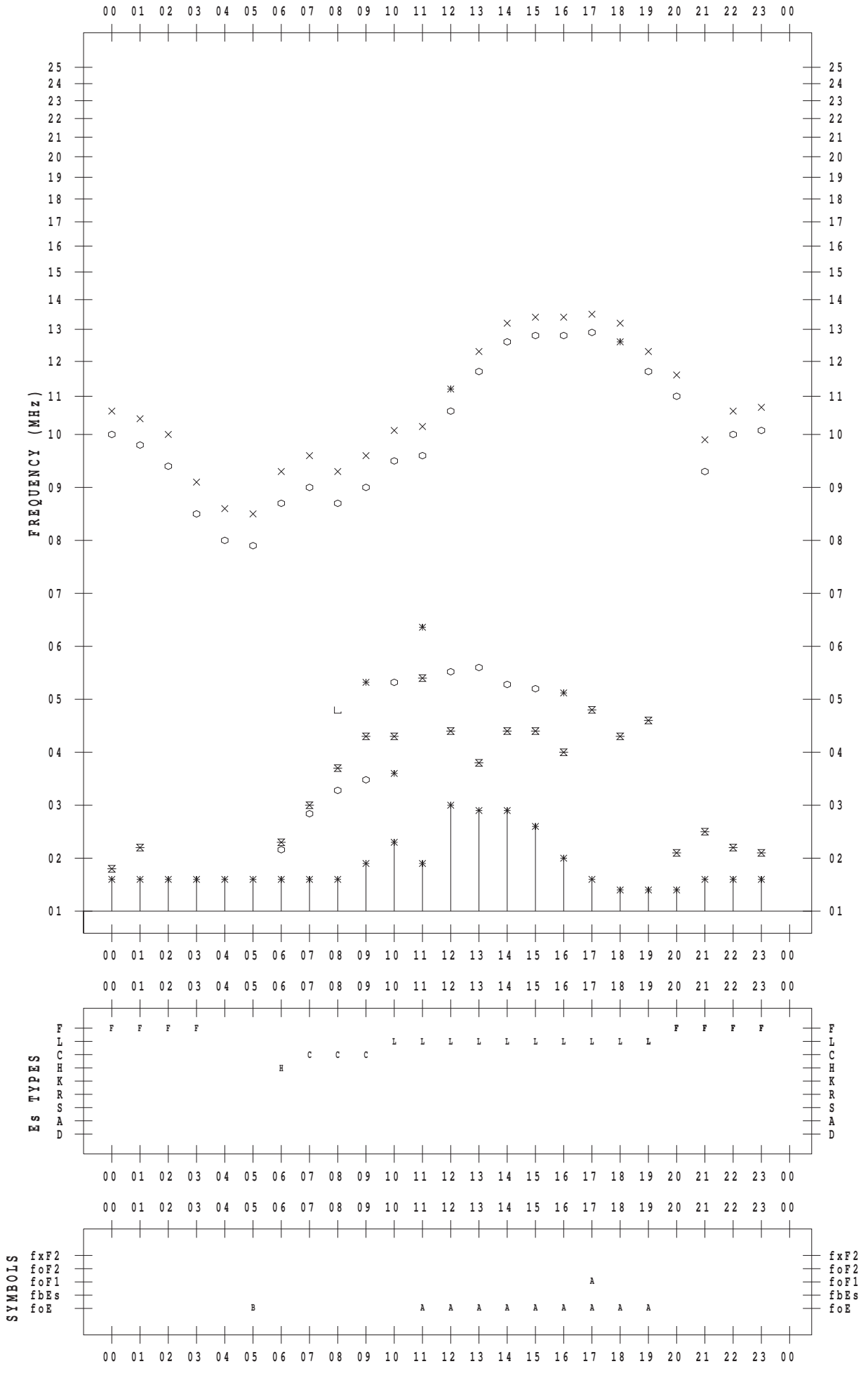
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/19

135 °E MEAN TIME



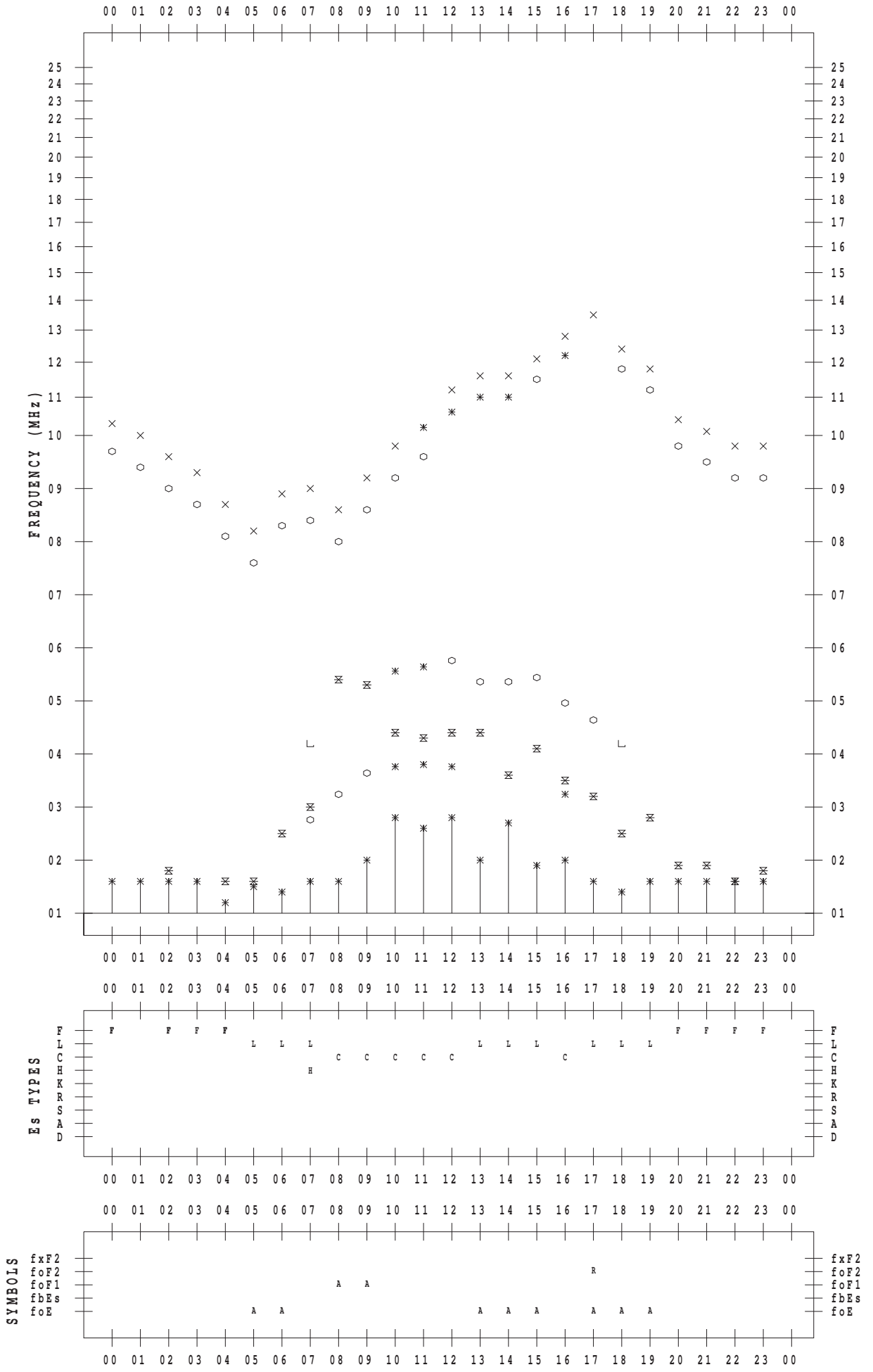
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/20

135 °E MEAN TIME



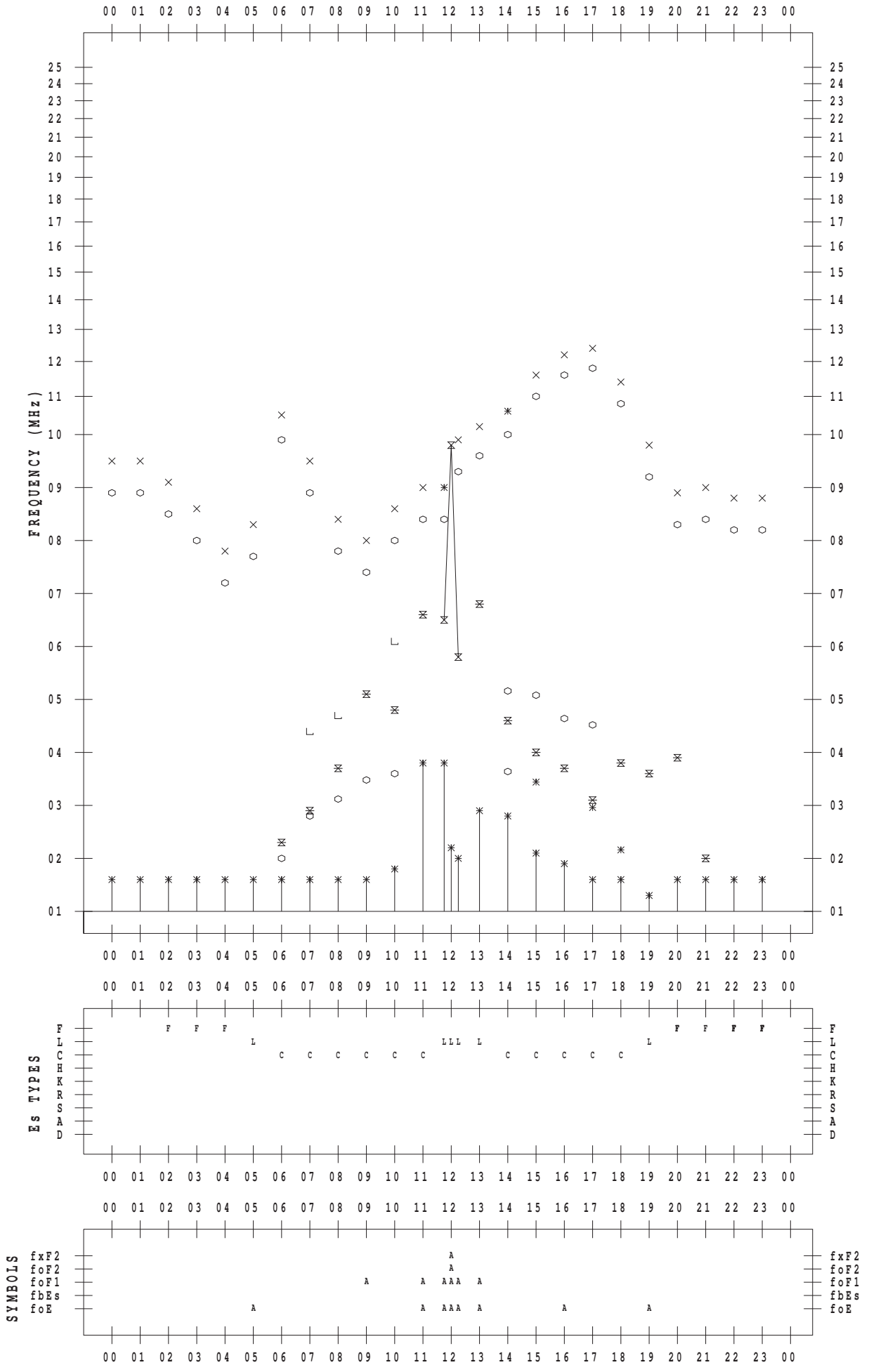
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/21

135 °E MEAN TIME



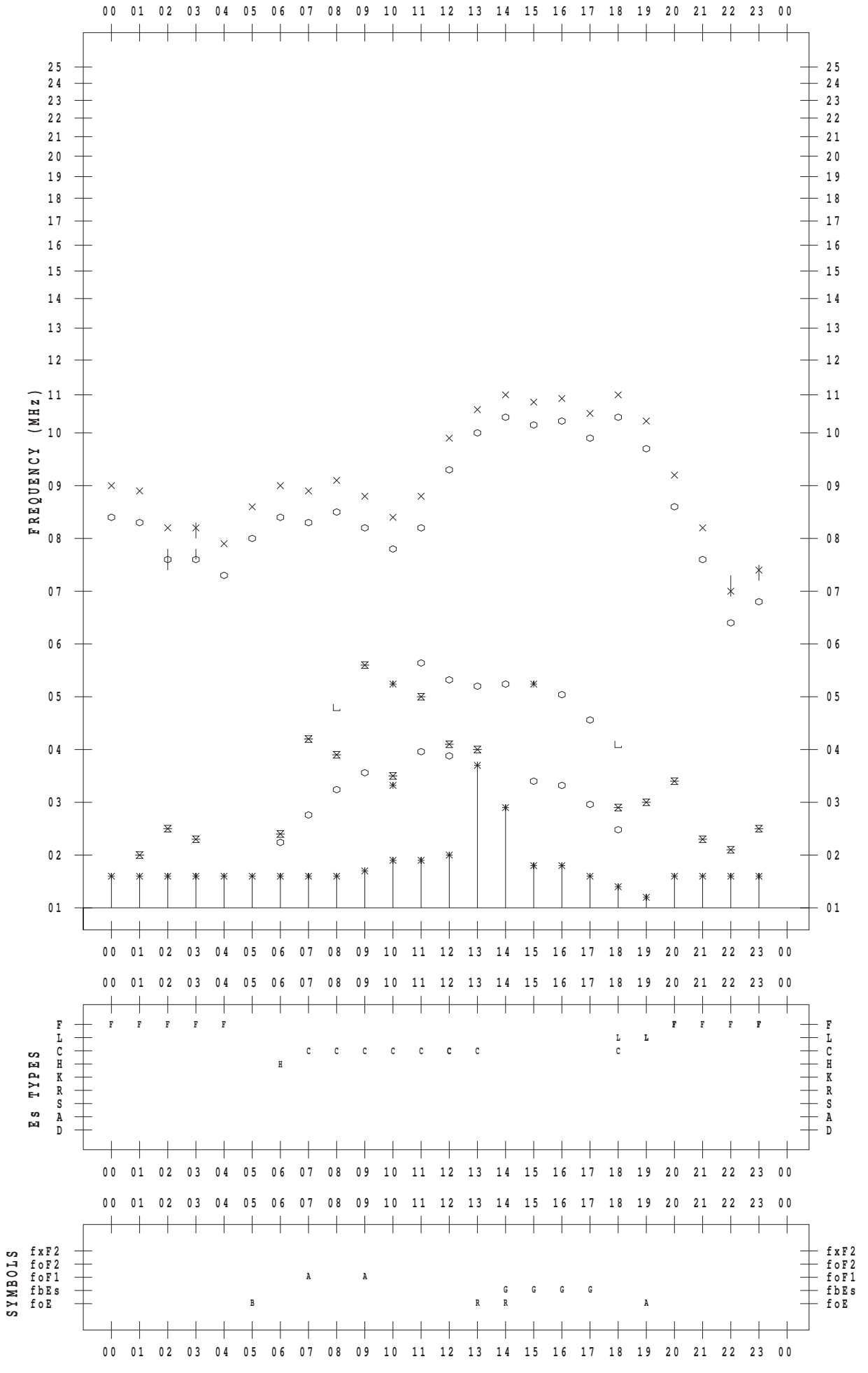
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/22

135 °E MEAN TIME



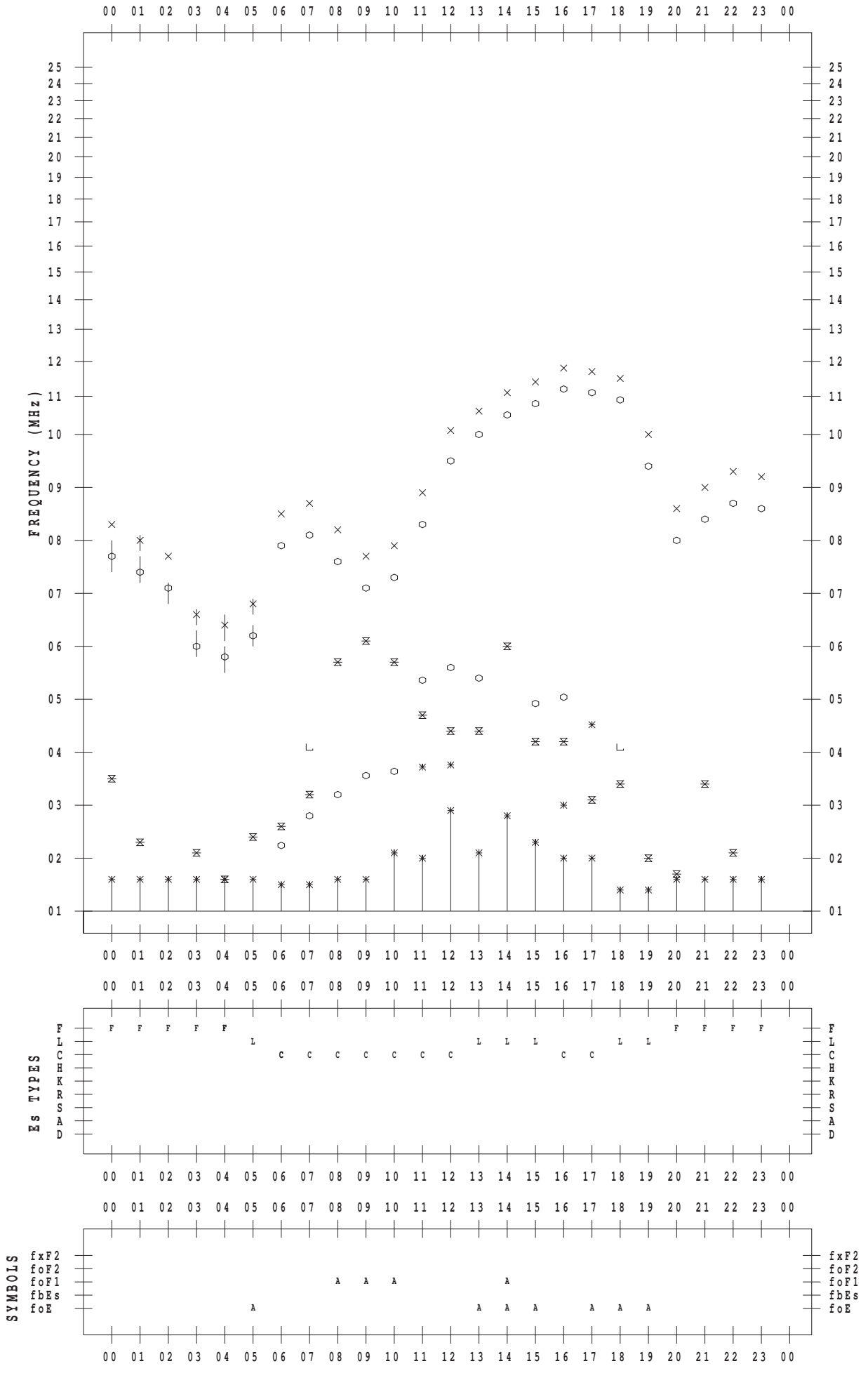
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/23

135 °E MEAN TIME



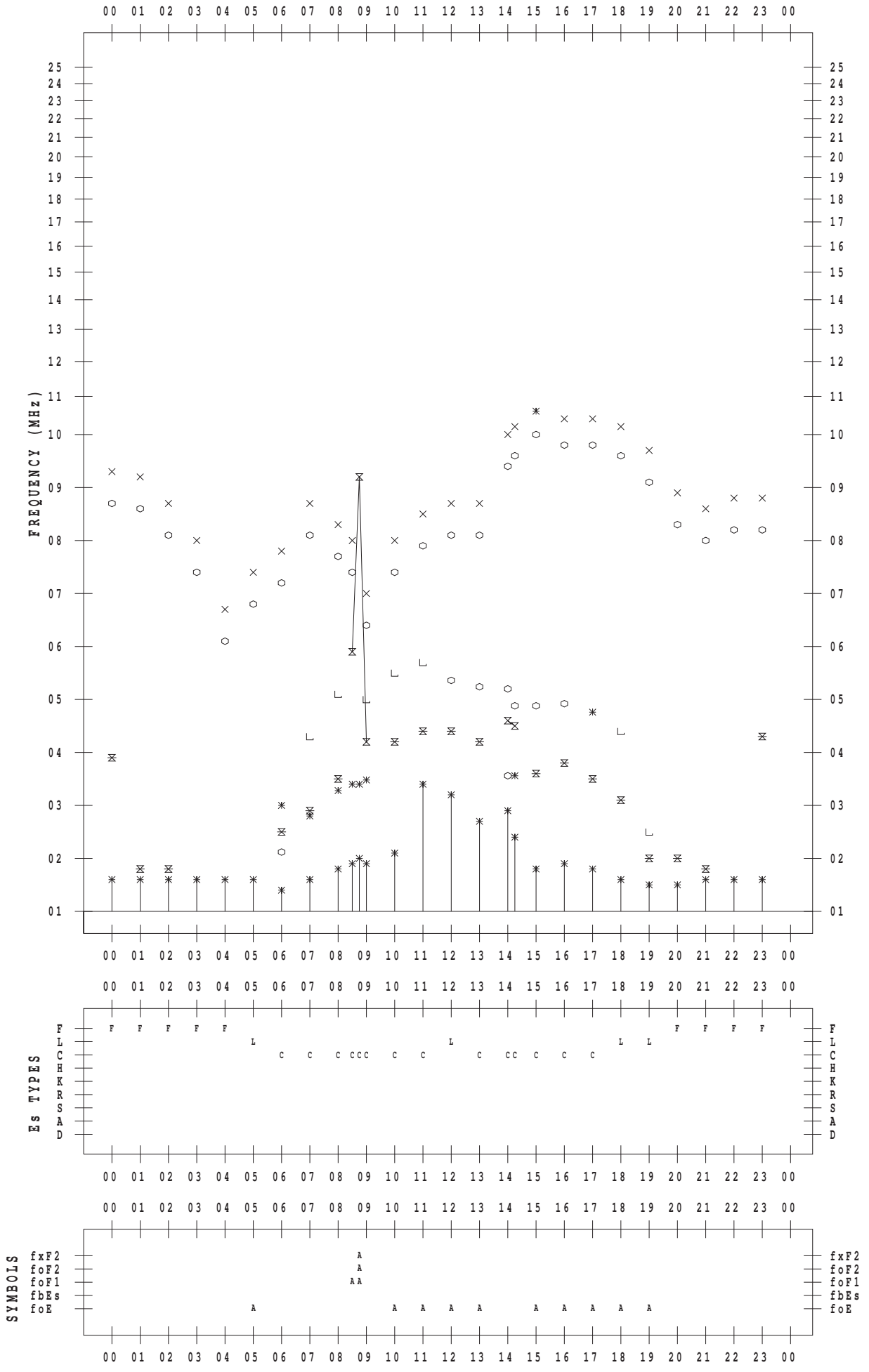
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/24

135 °E MEAN TIME



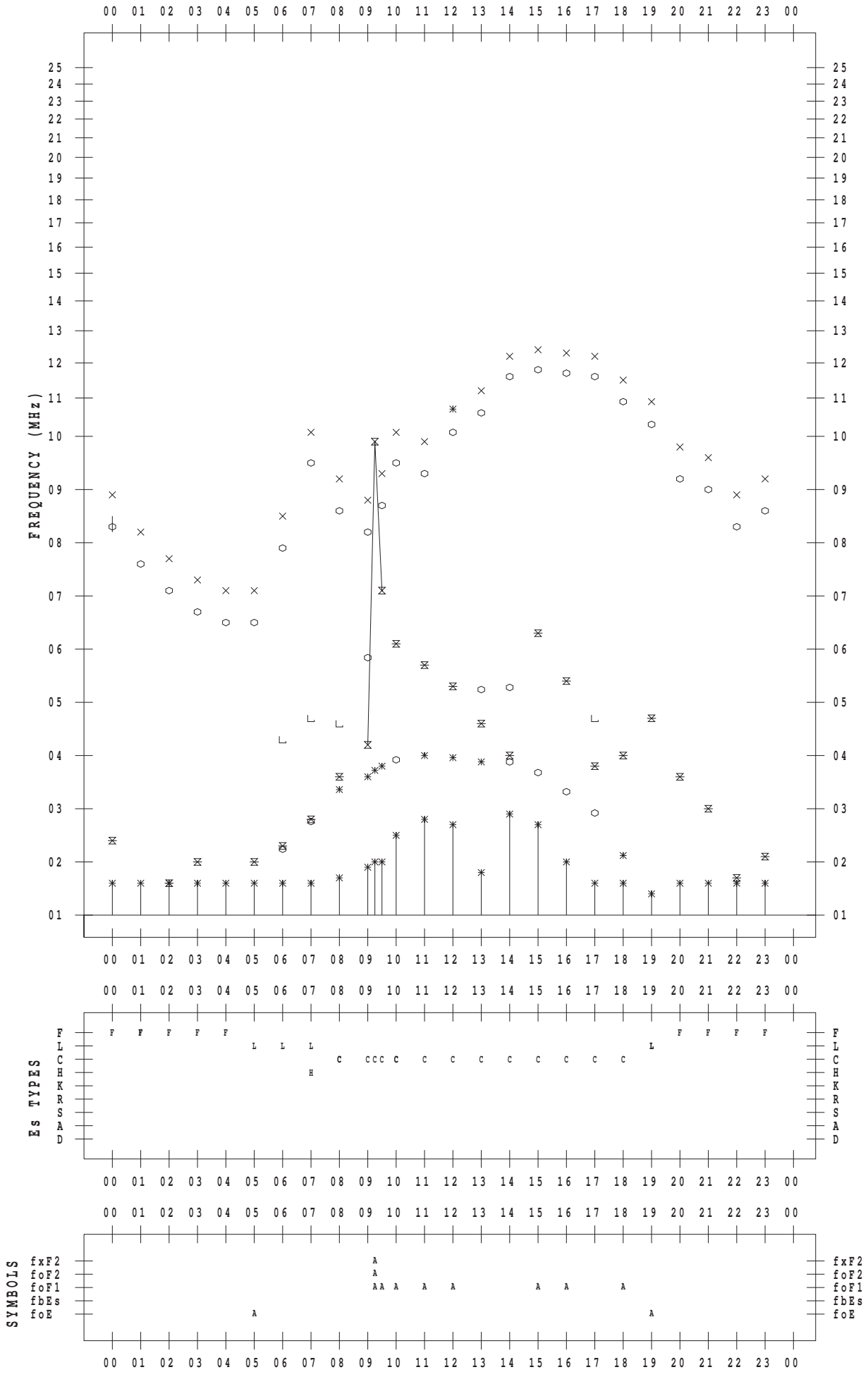
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/25

135 °E MEAN TIME



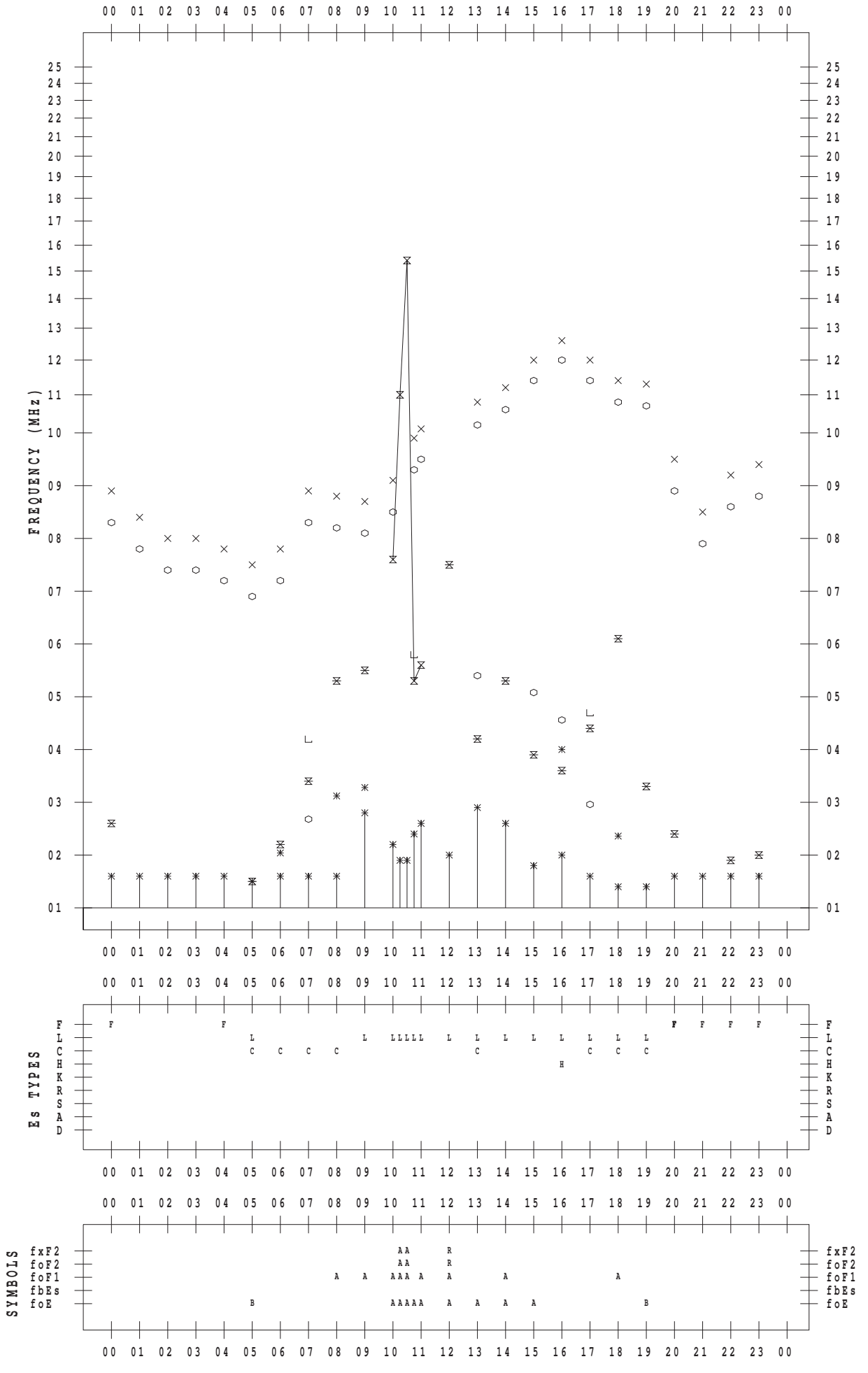
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/26

135 °E MEAN TIME



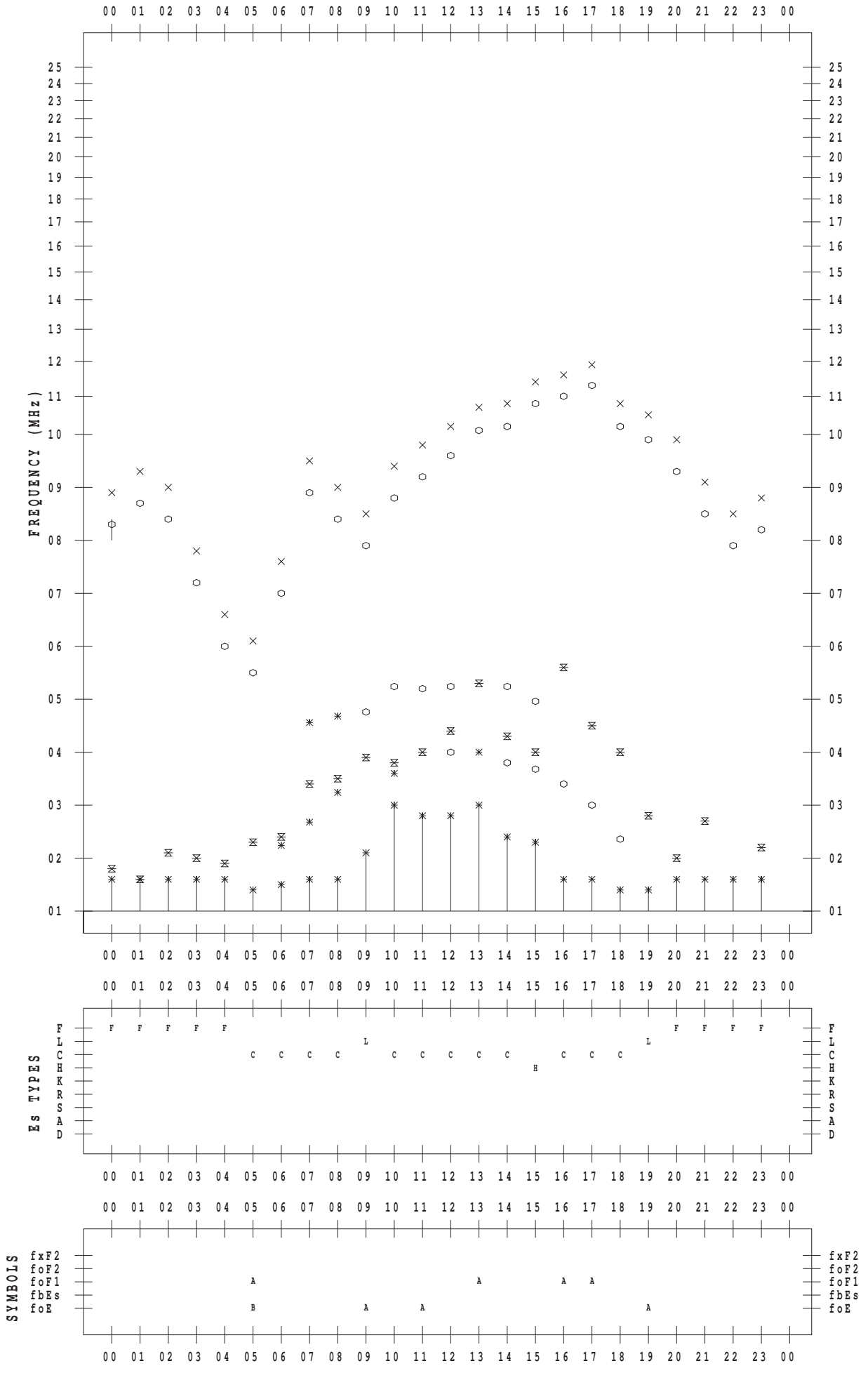
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/27

135 °E MEAN TIME



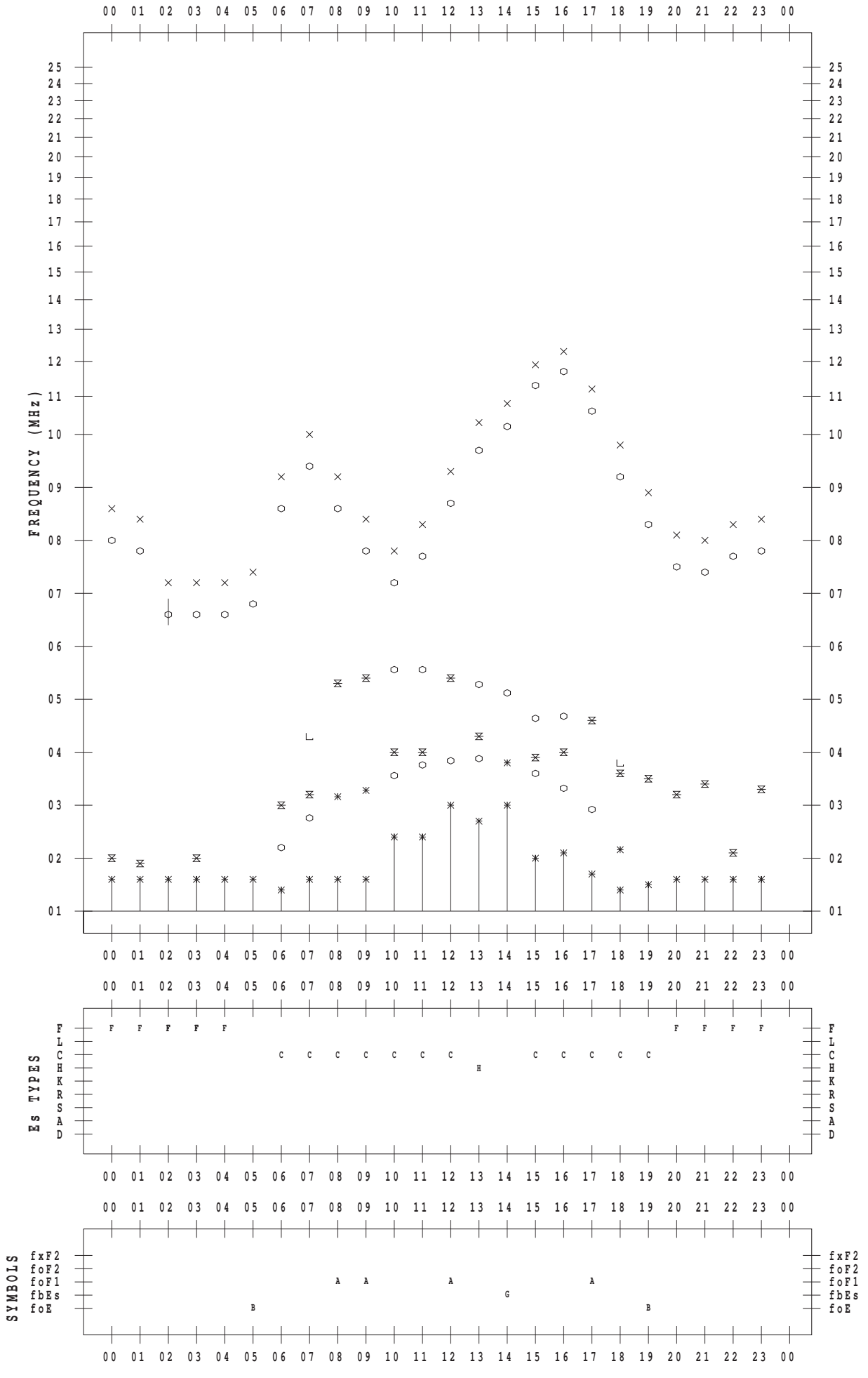
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/28

135 °E MEAN TIME



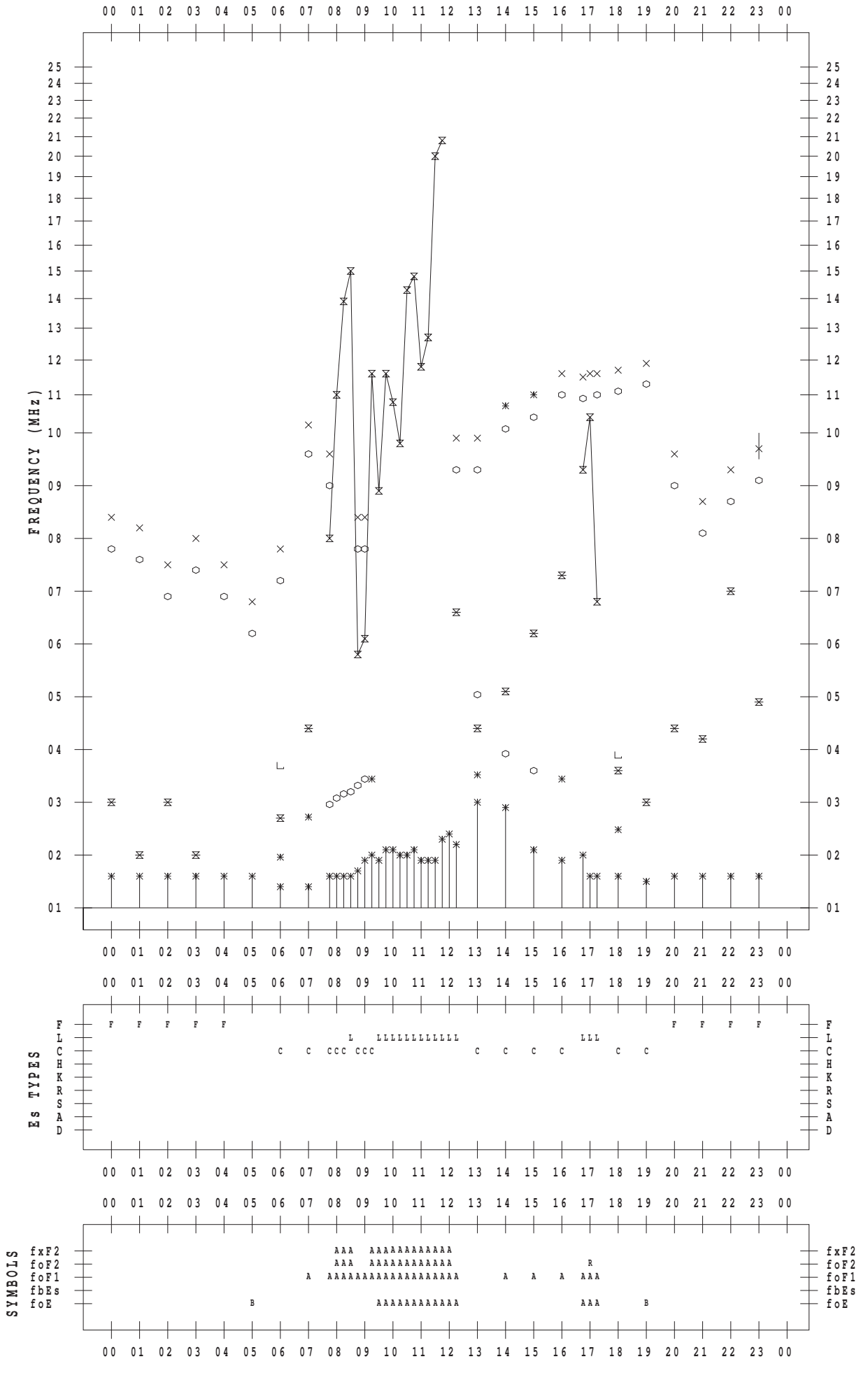
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/29

135 °E MEAN TIME



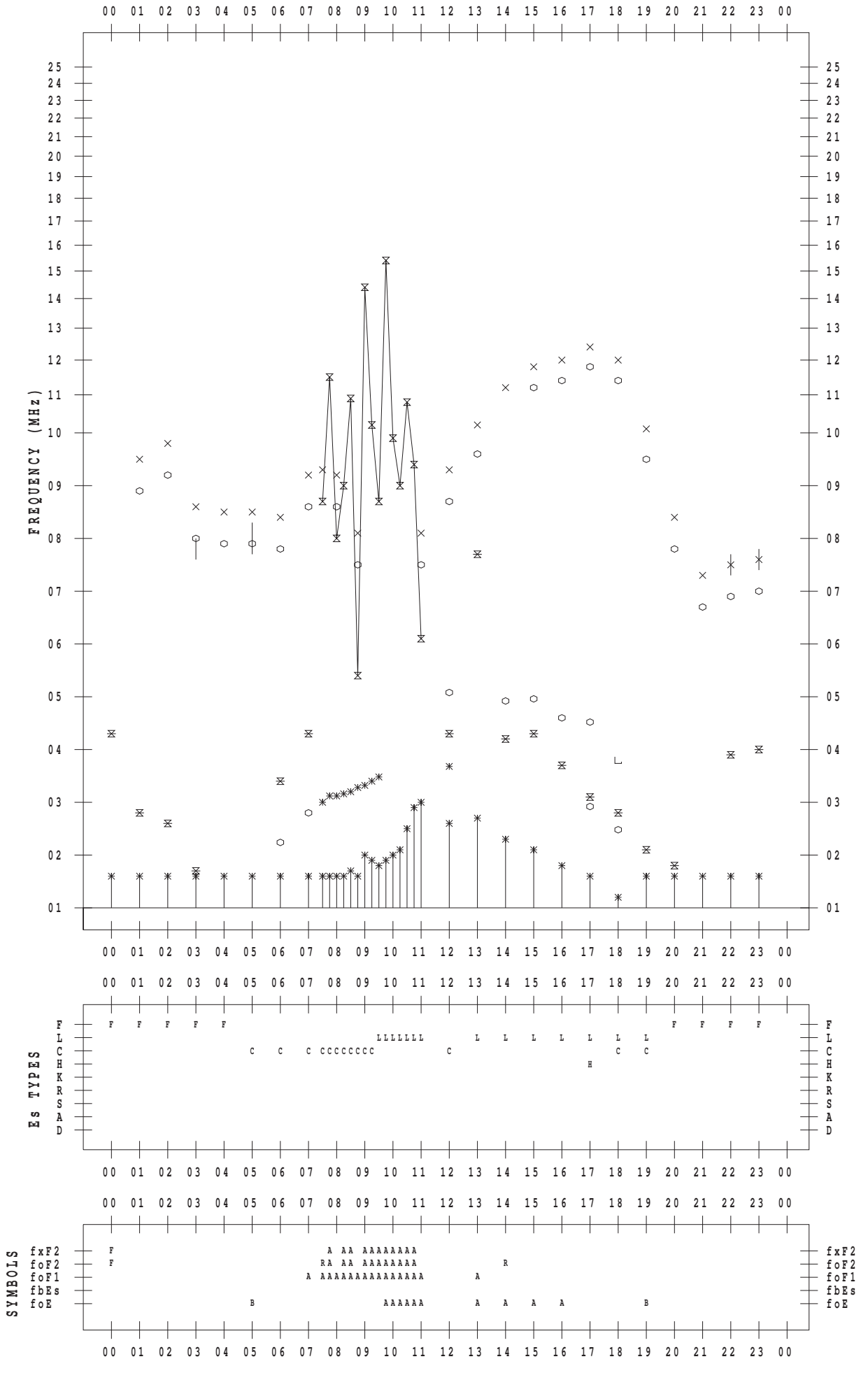
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/30

135 °E MEAN TIME



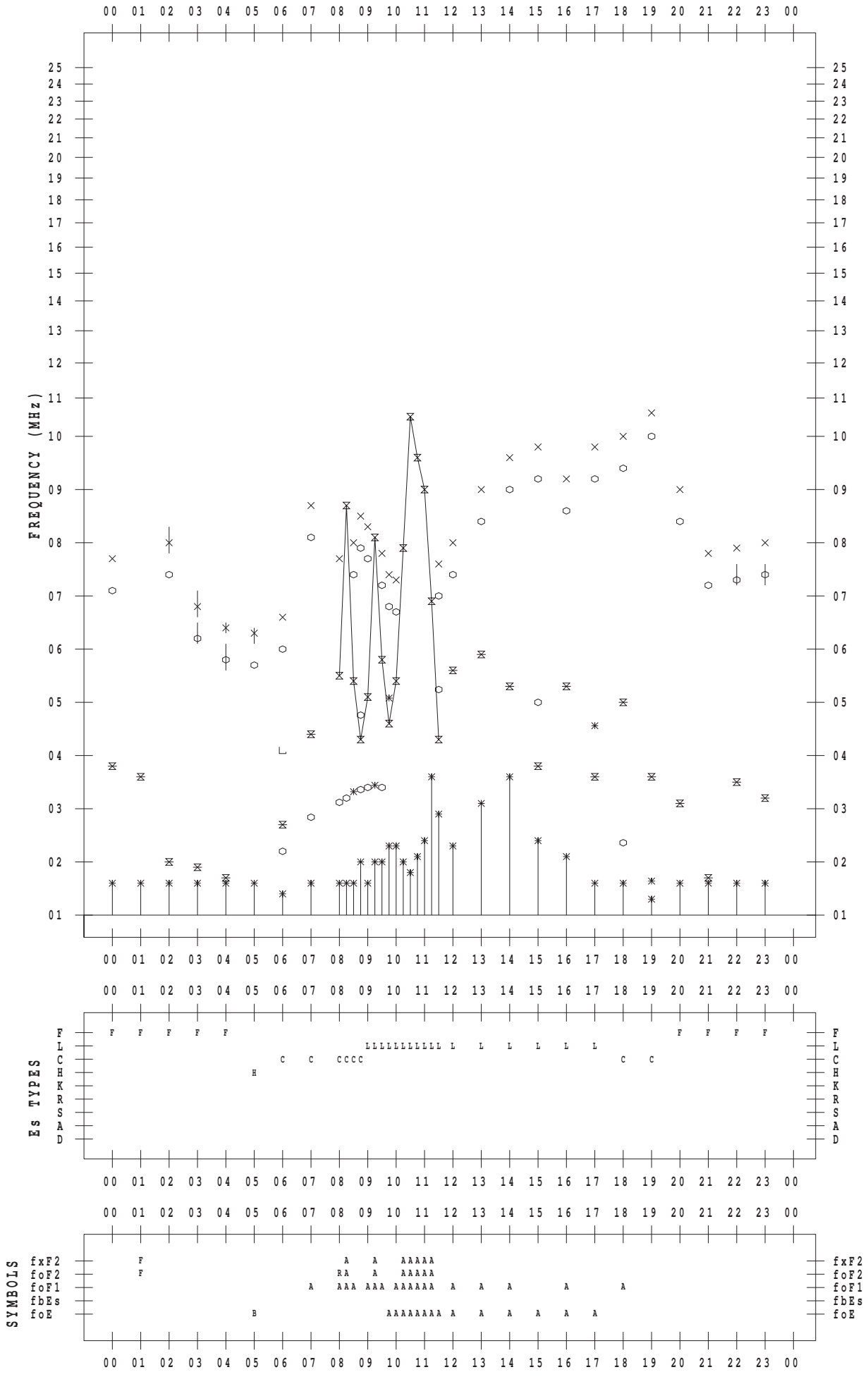
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2014/ 5/31

135 °E MEAN TIME



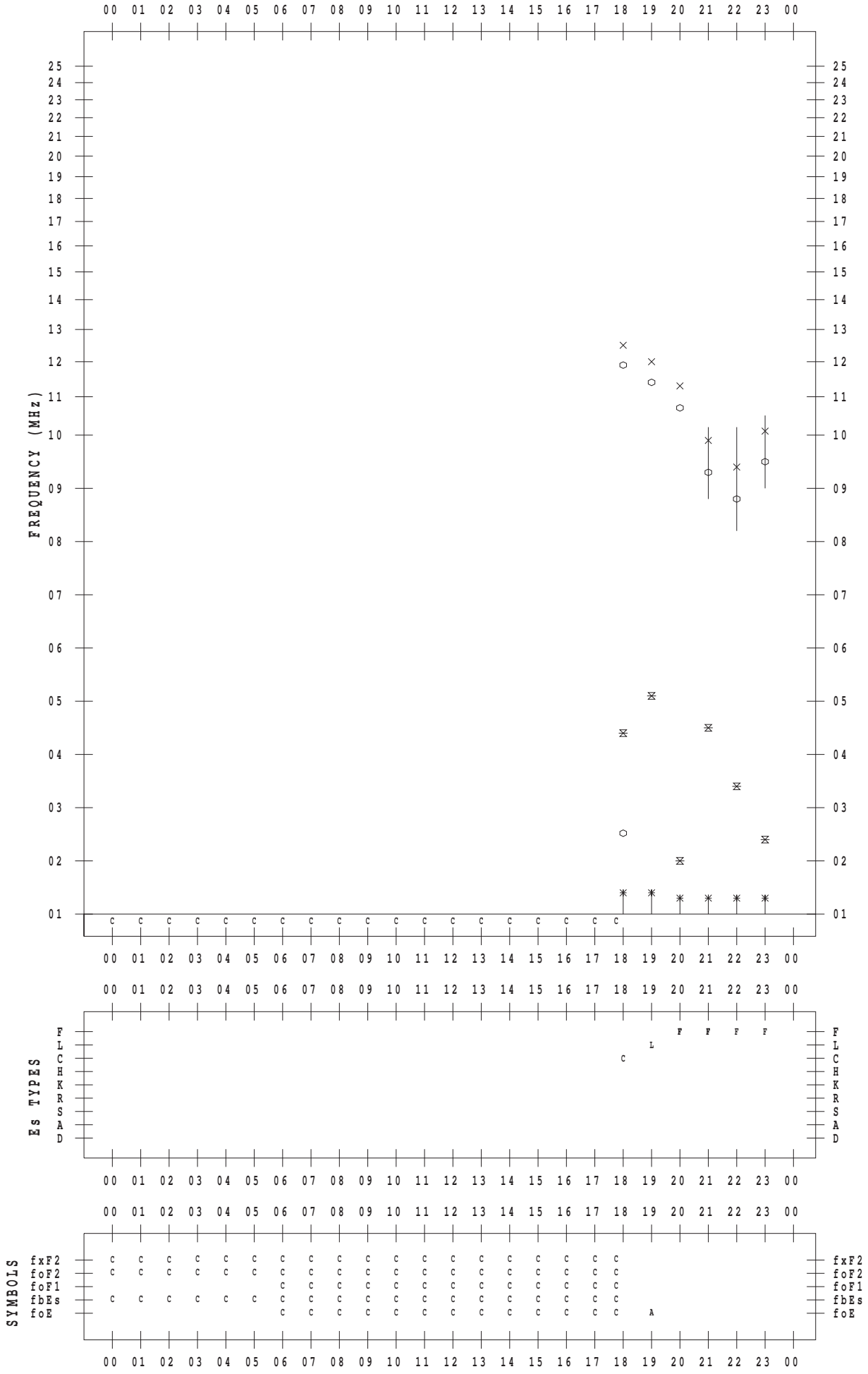
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/11

135 °E MEAN TIME



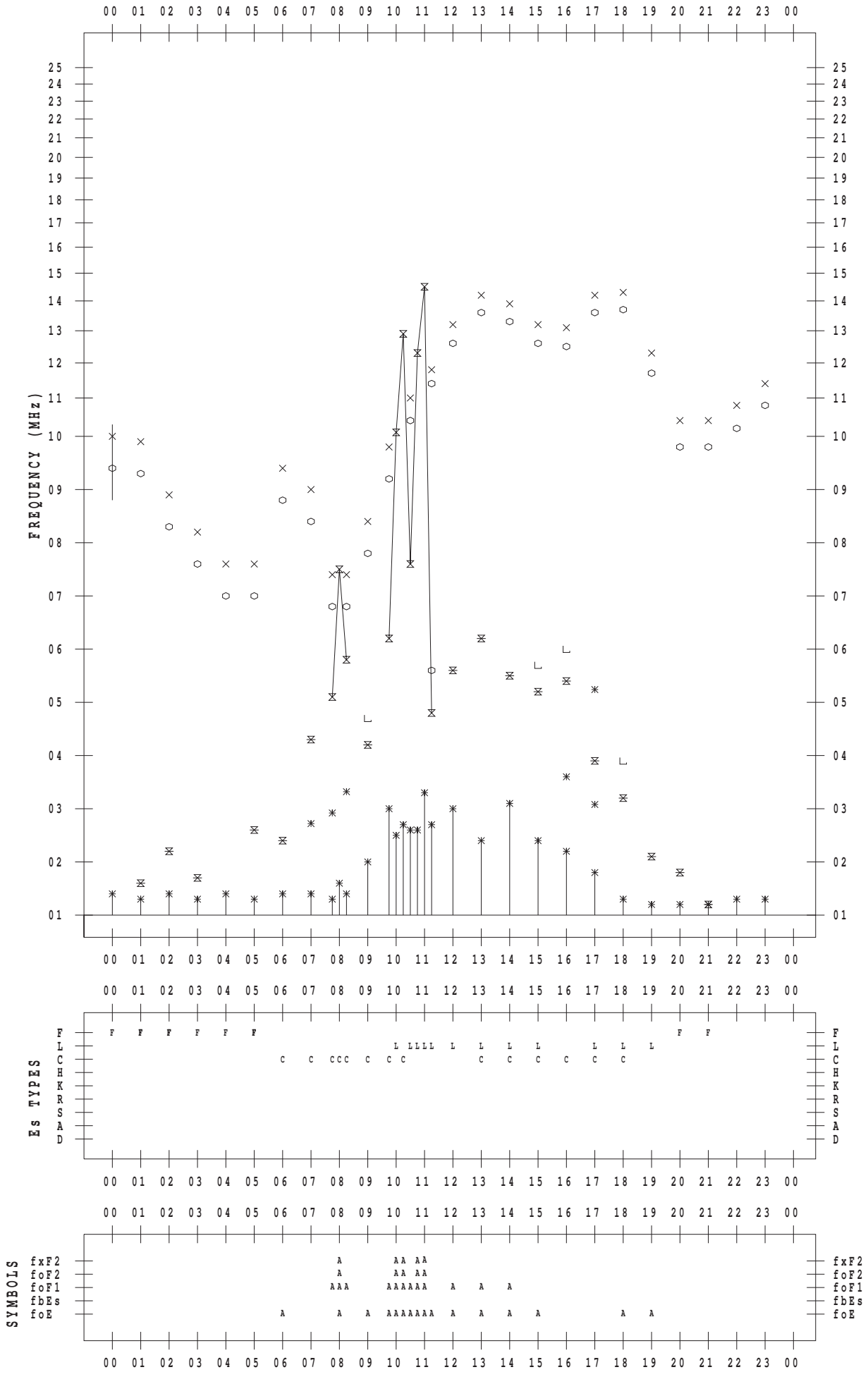
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/12

135 °E MEAN TIME



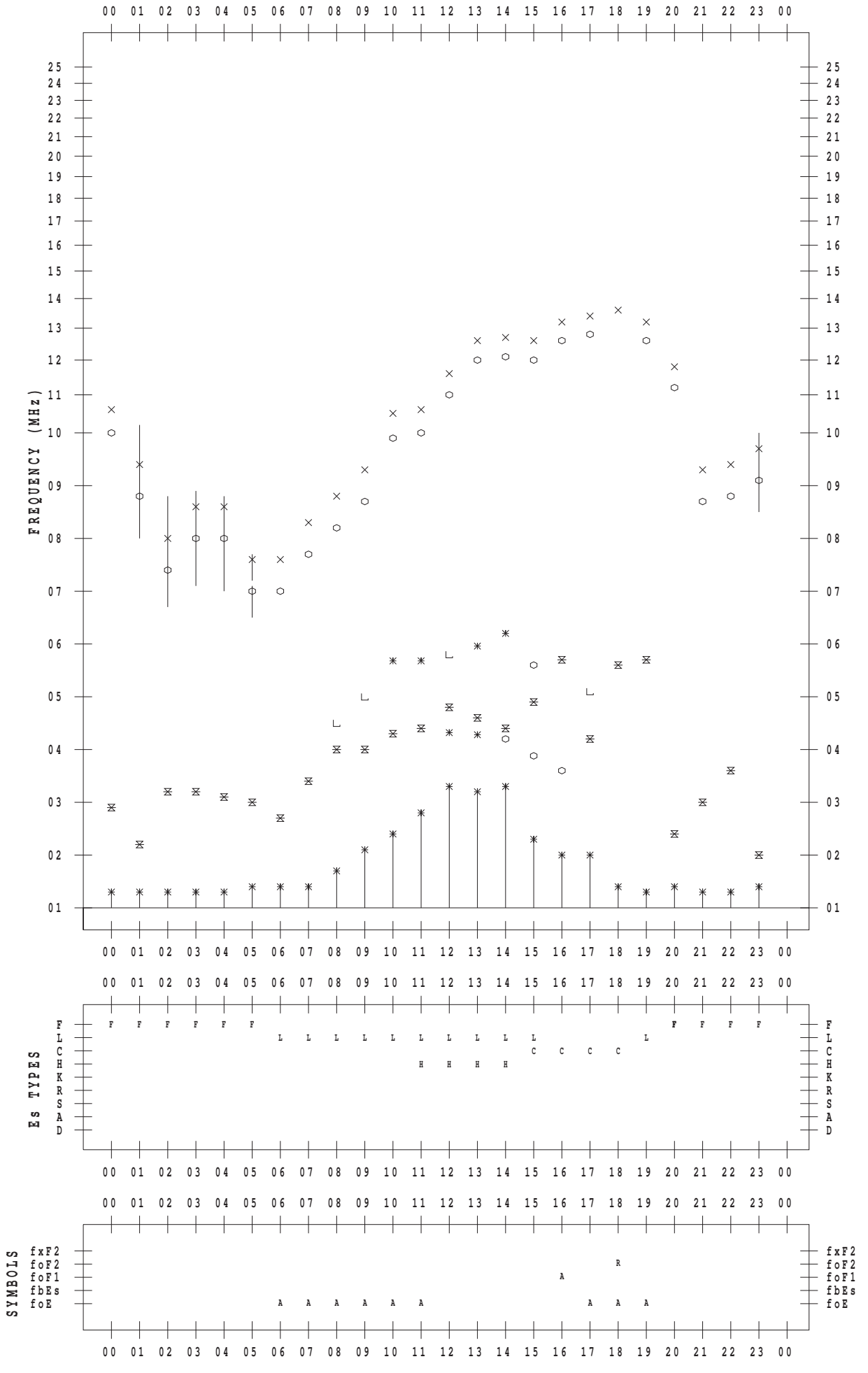
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/13

135 °E MEAN TIME



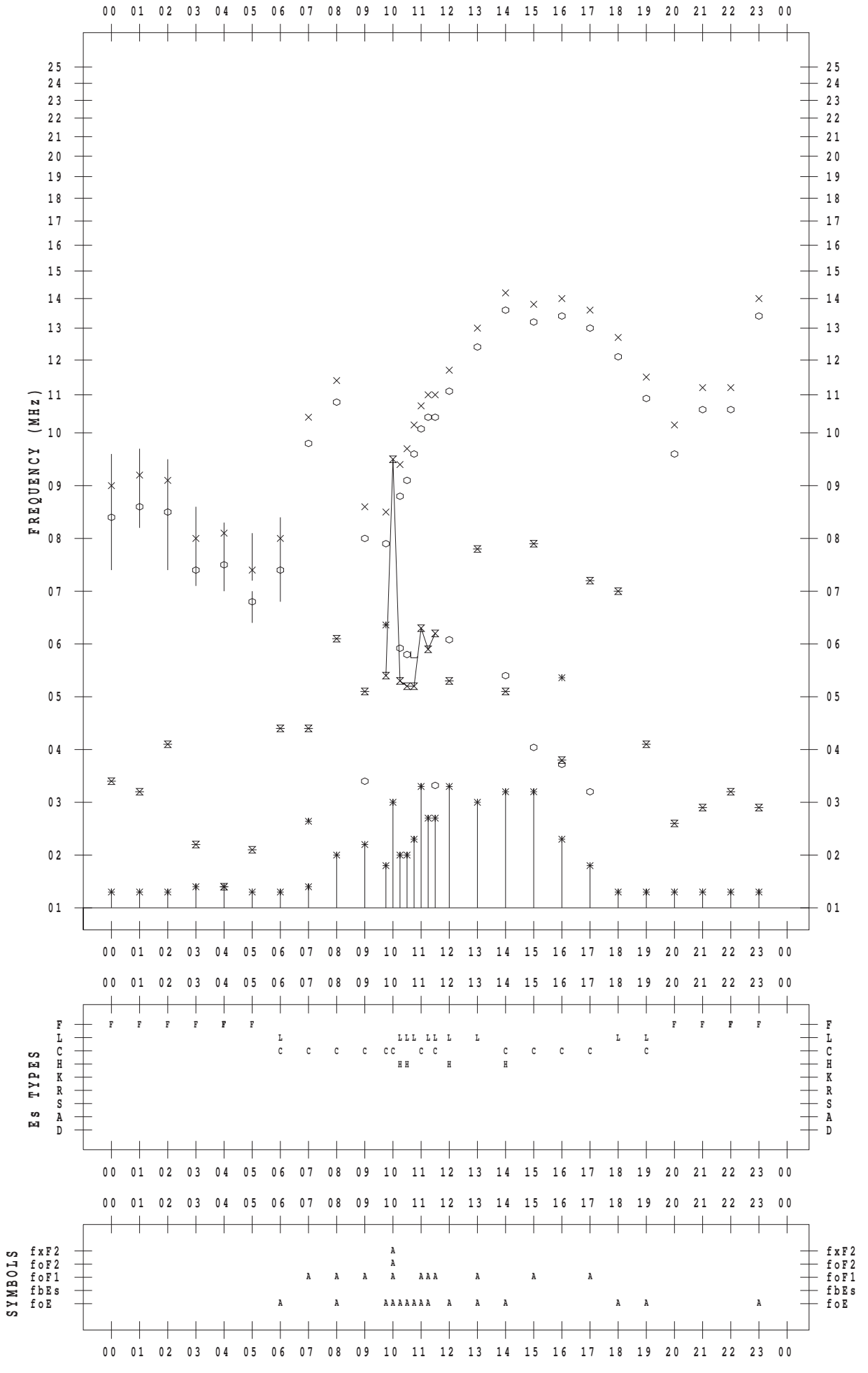
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/14

135 °E MEAN TIME



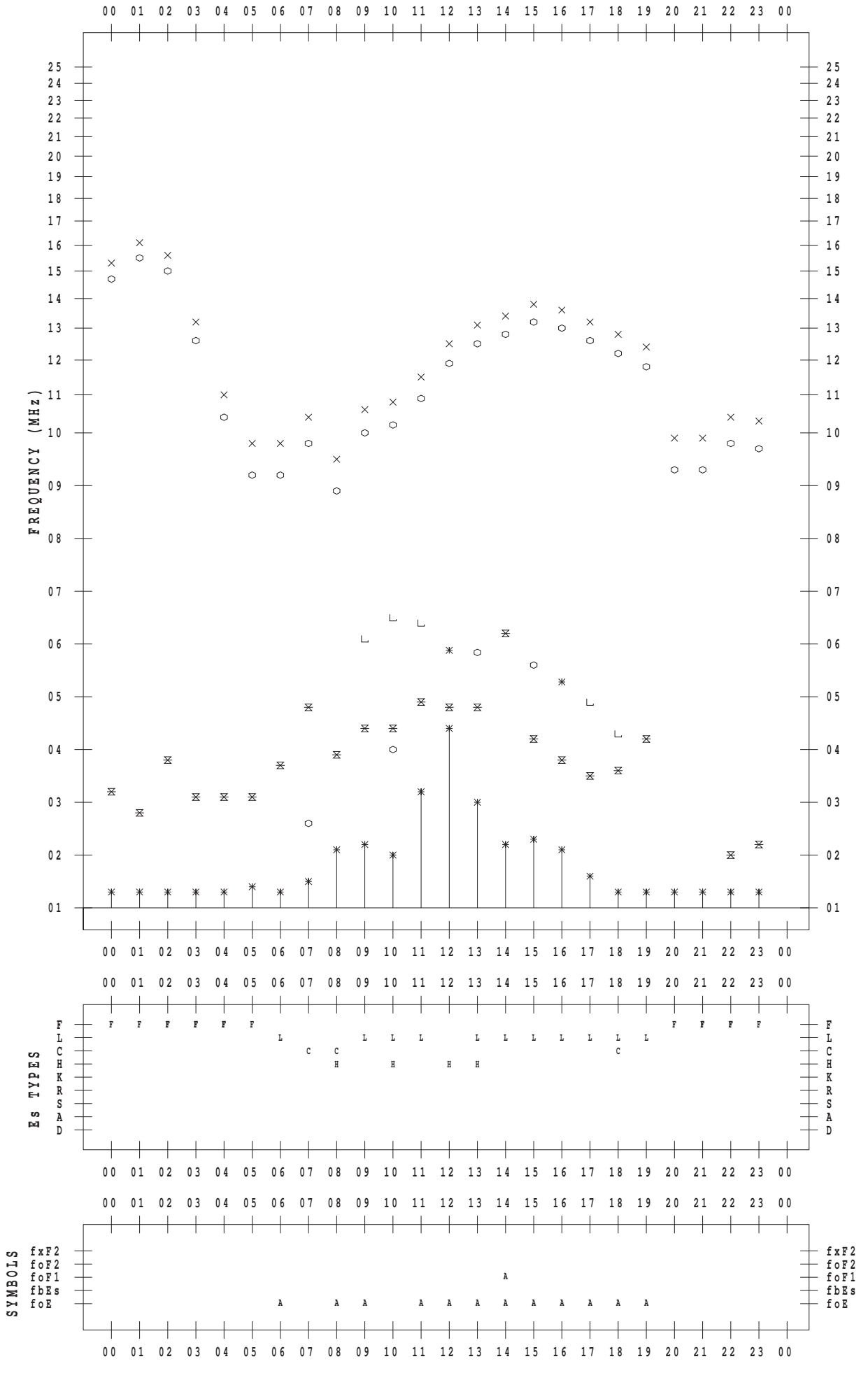
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/15

135 °E MEAN TIME



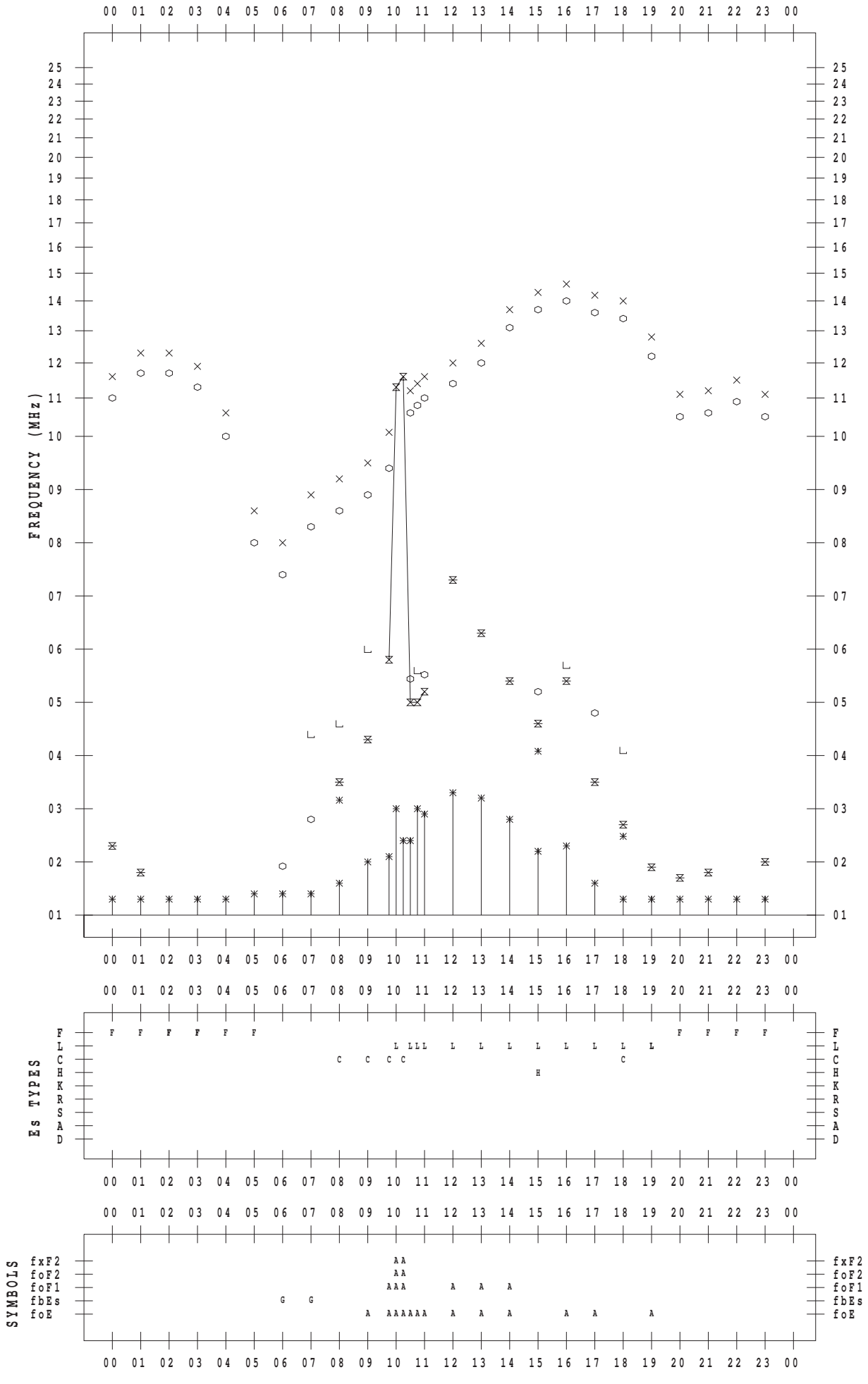
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/16

135 °E MEAN TIME



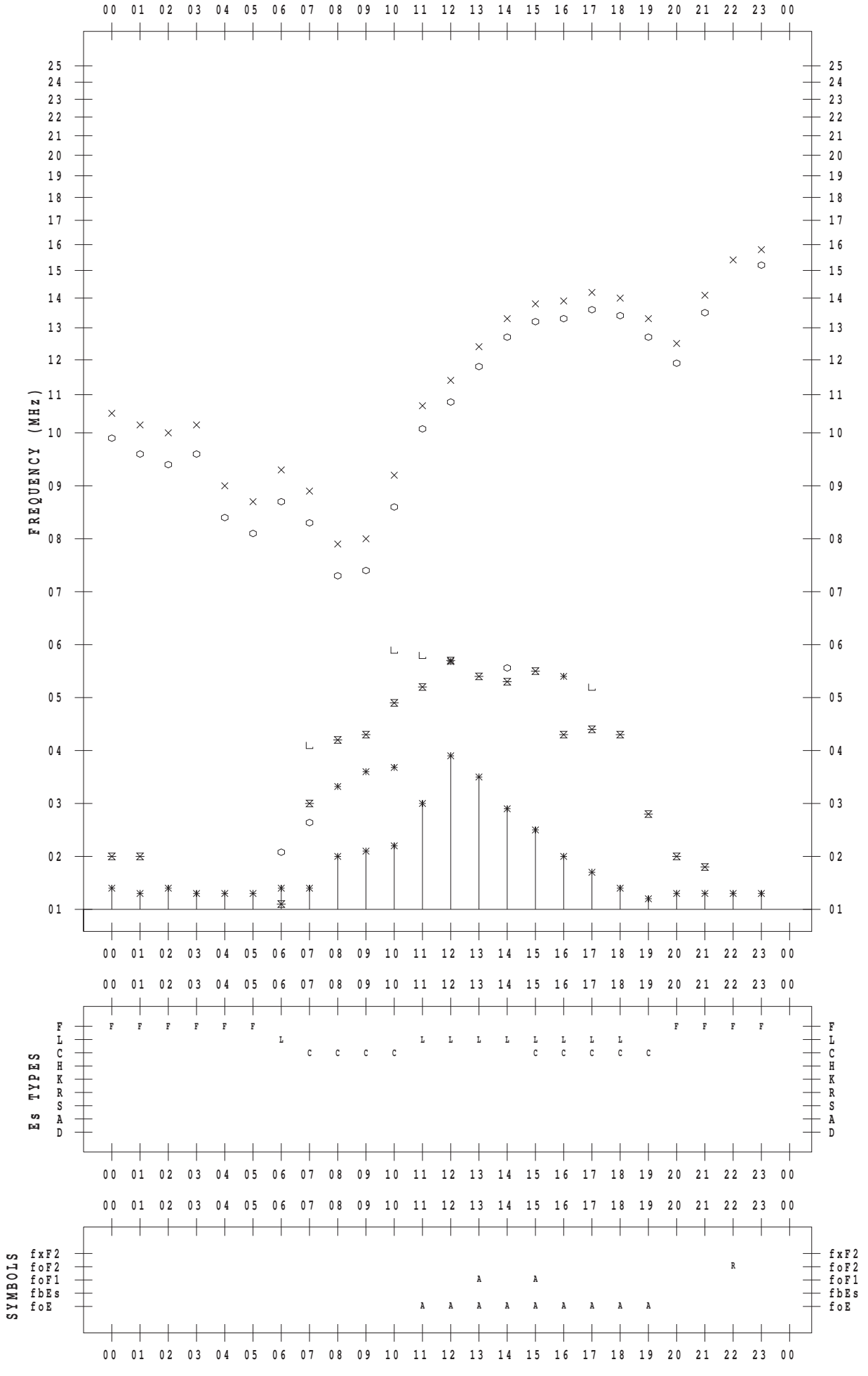
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/17

135 °E MEAN TIME



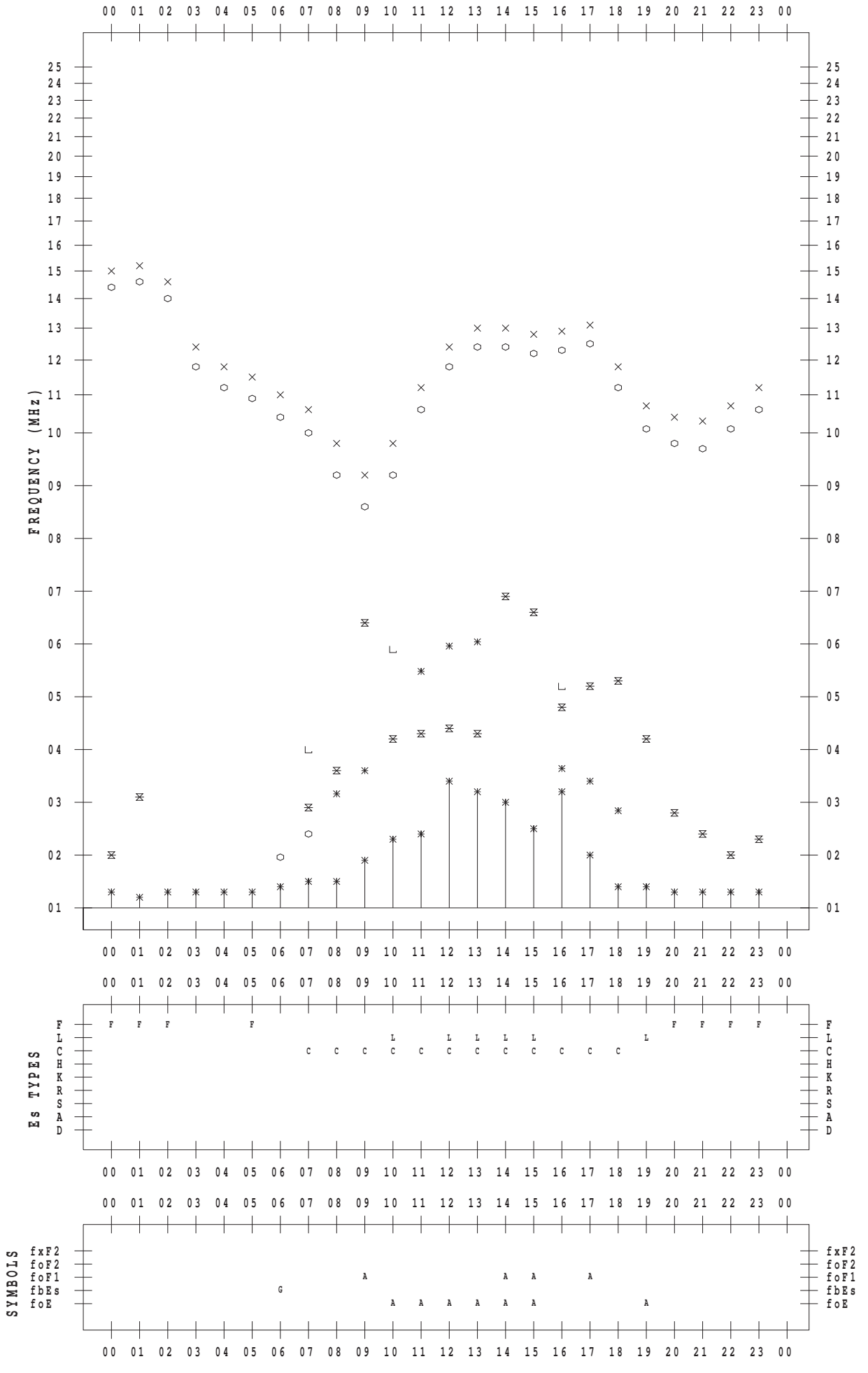
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/18

135 °E MEAN TIME



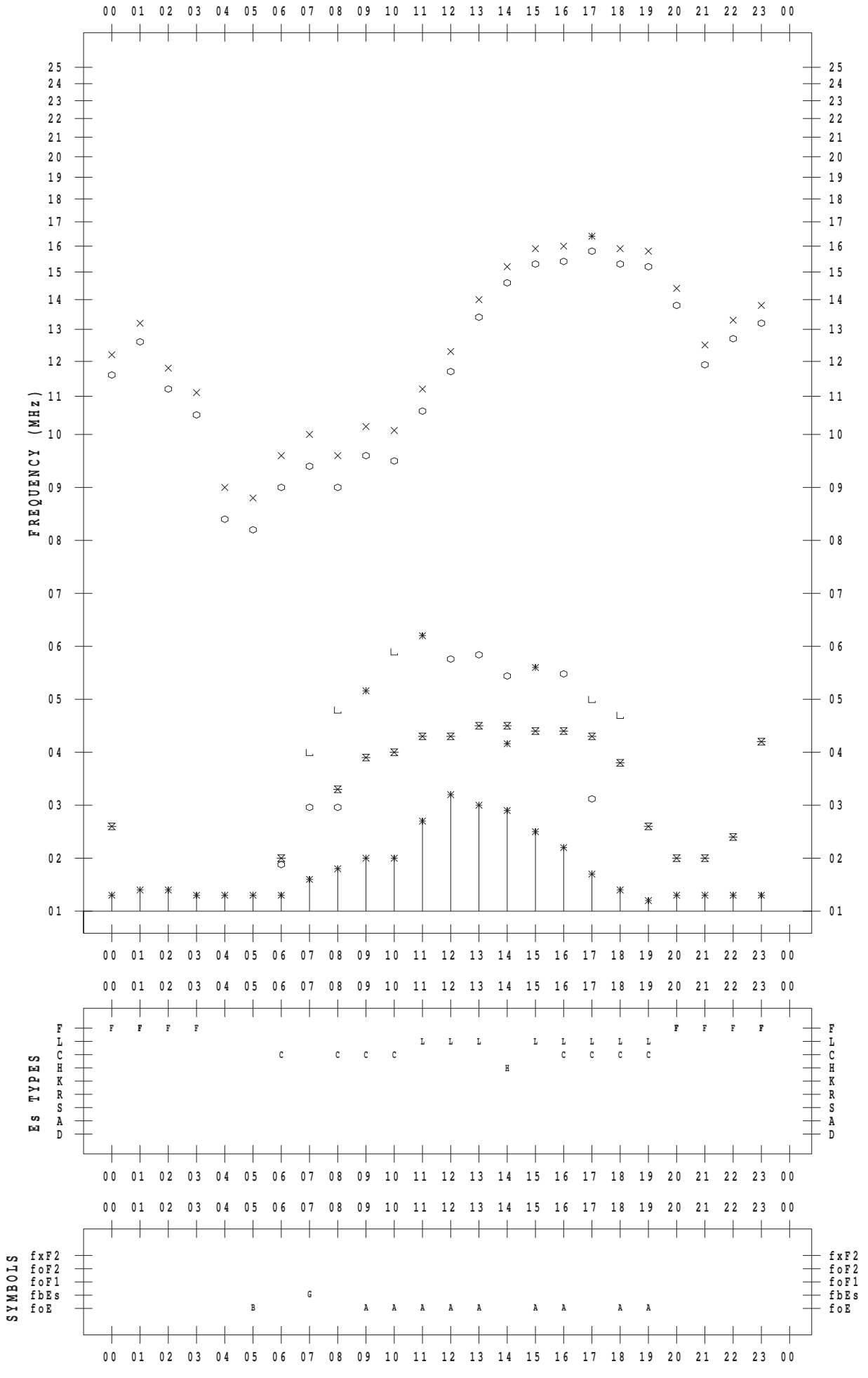
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/19

135 °E MEAN TIME



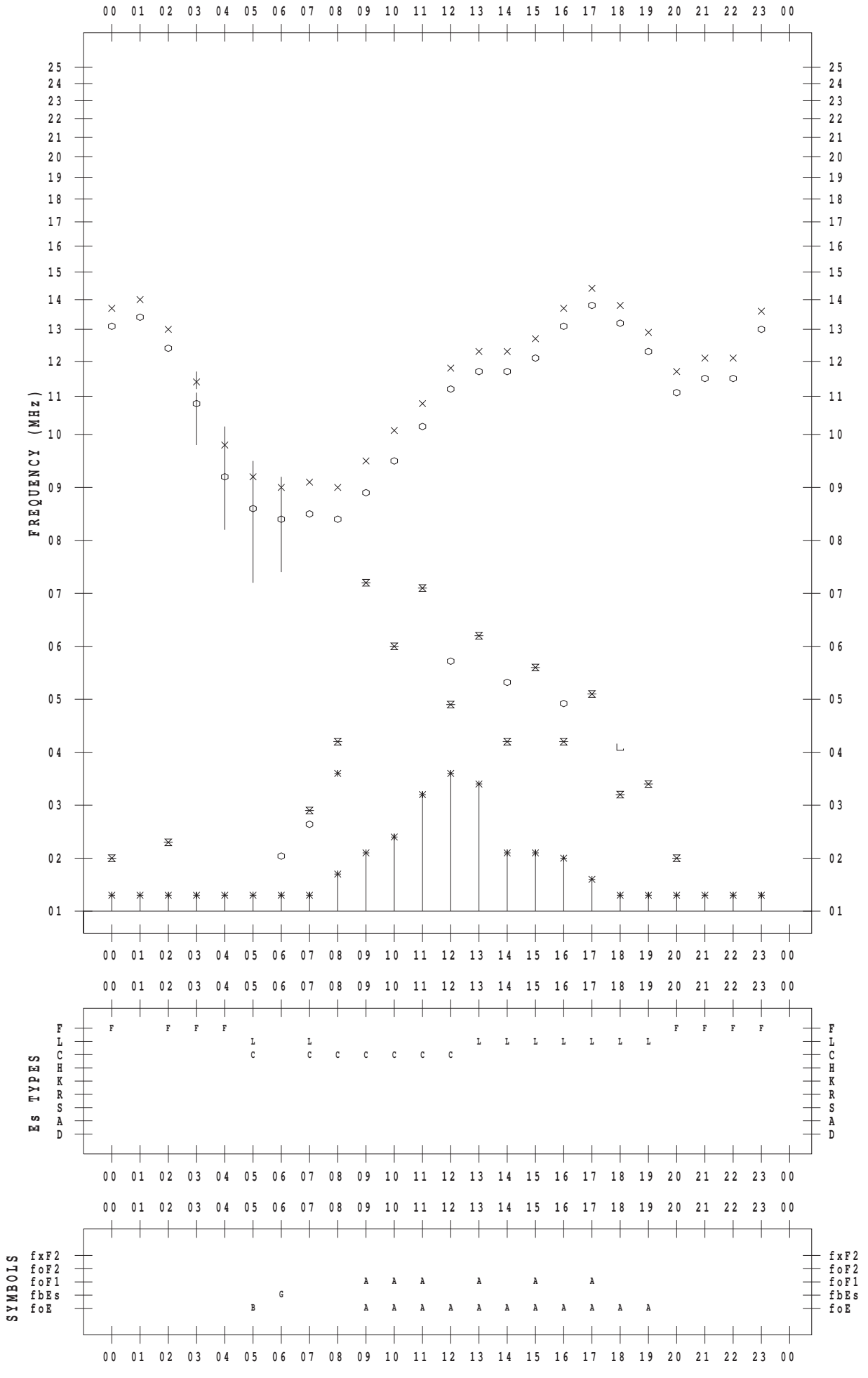
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/20

135 °E MEAN TIME



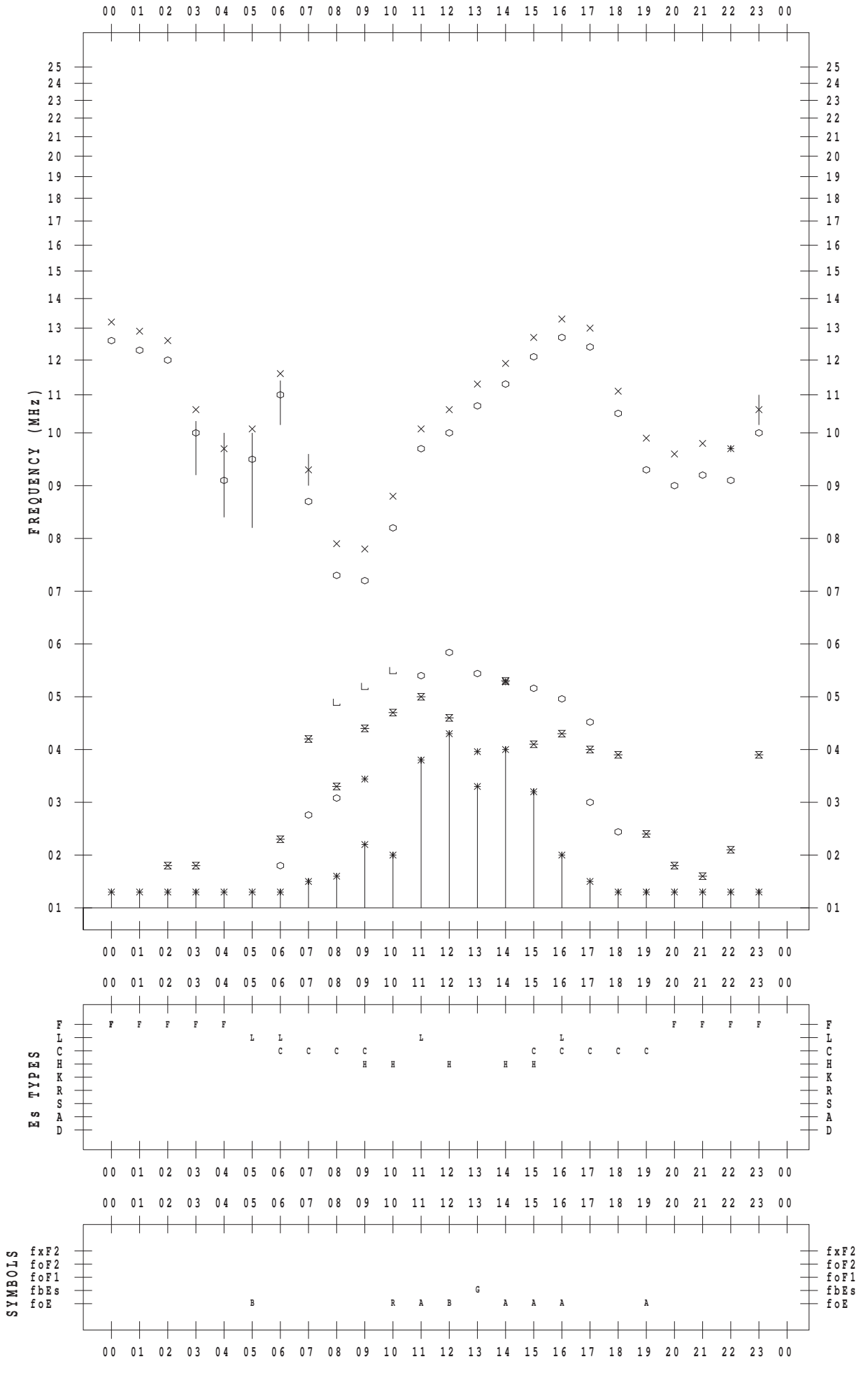
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/21

135 °E MEAN TIME



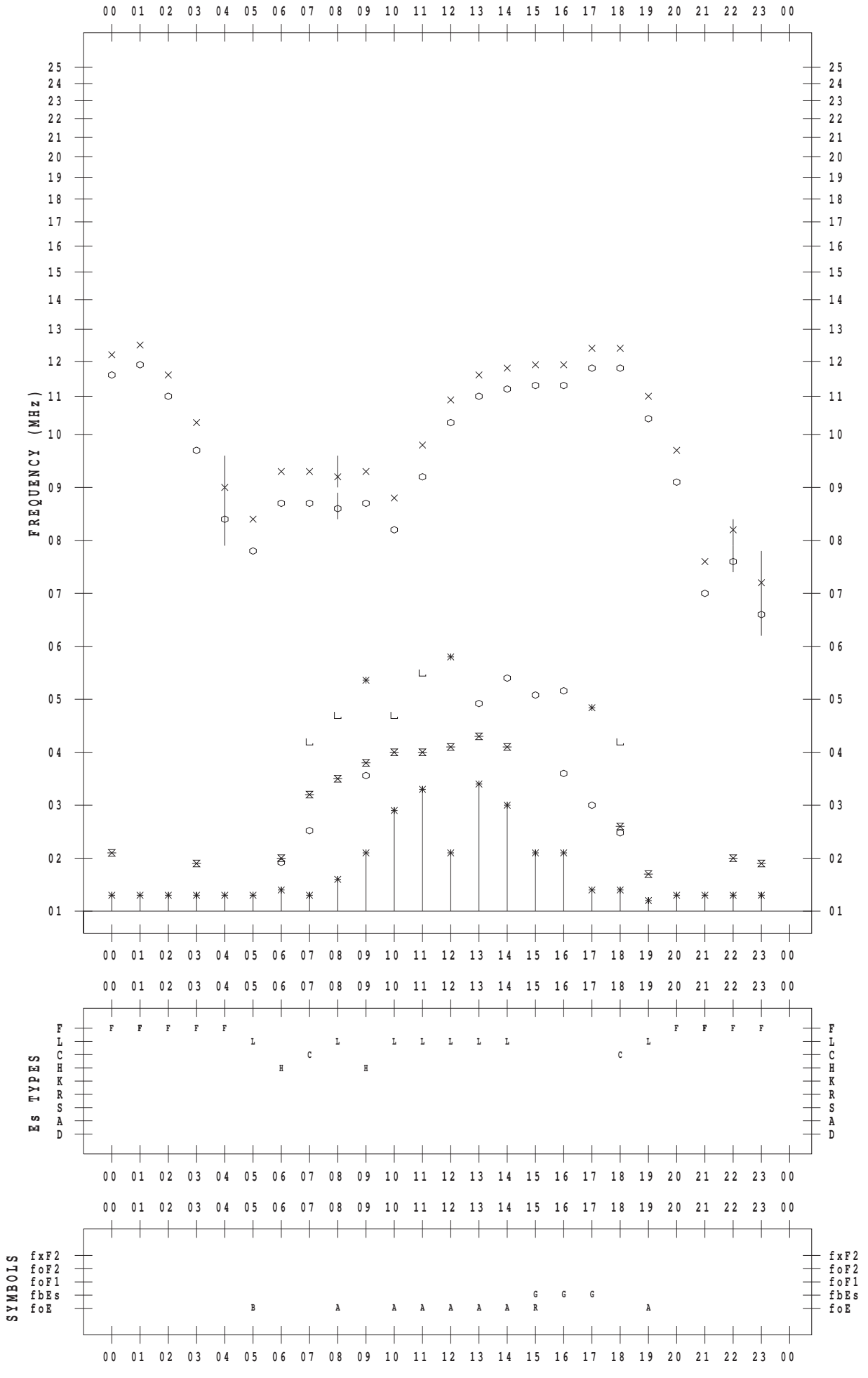
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/22

135 °E MEAN TIME



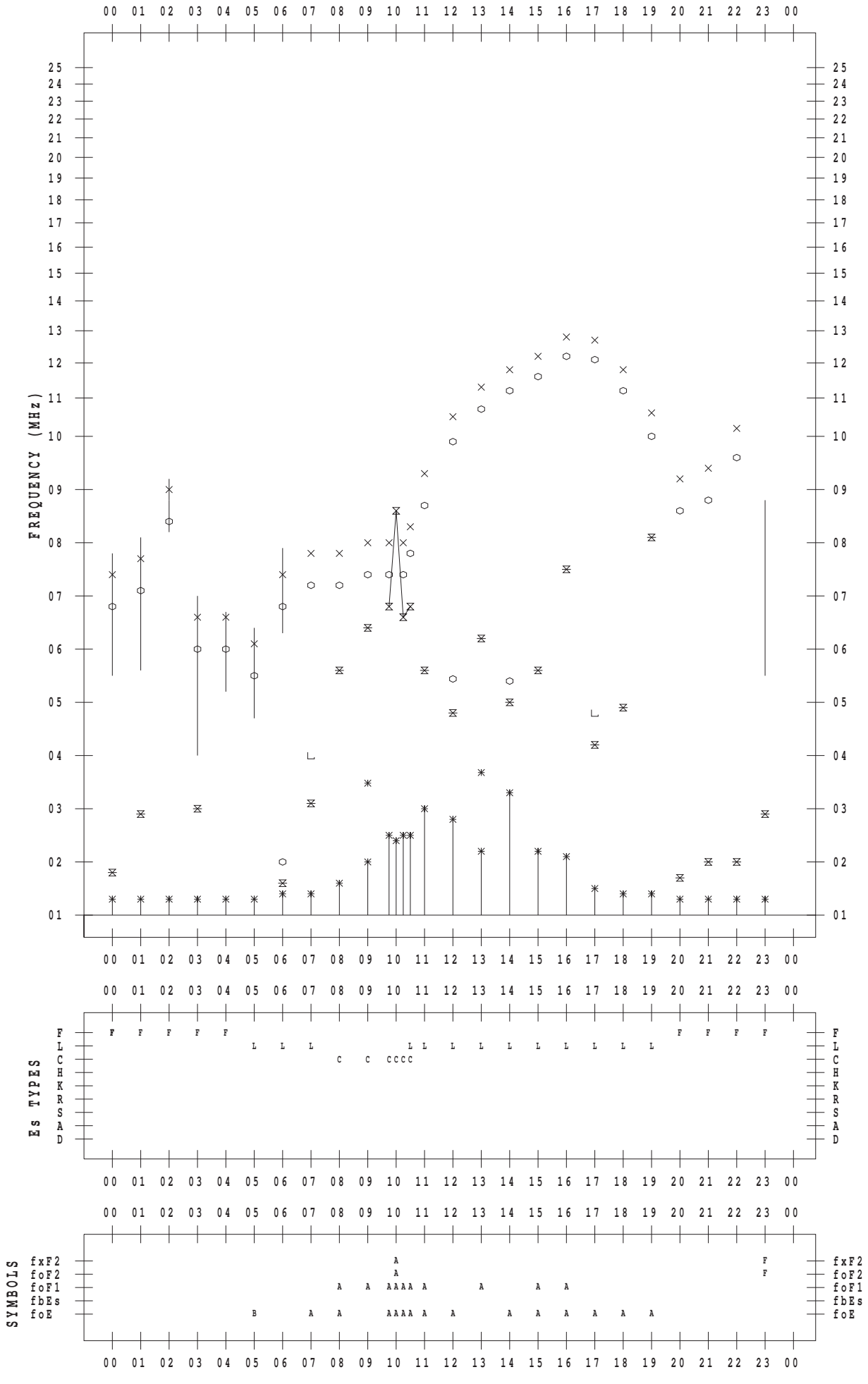
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/23

135 °E MEAN TIME



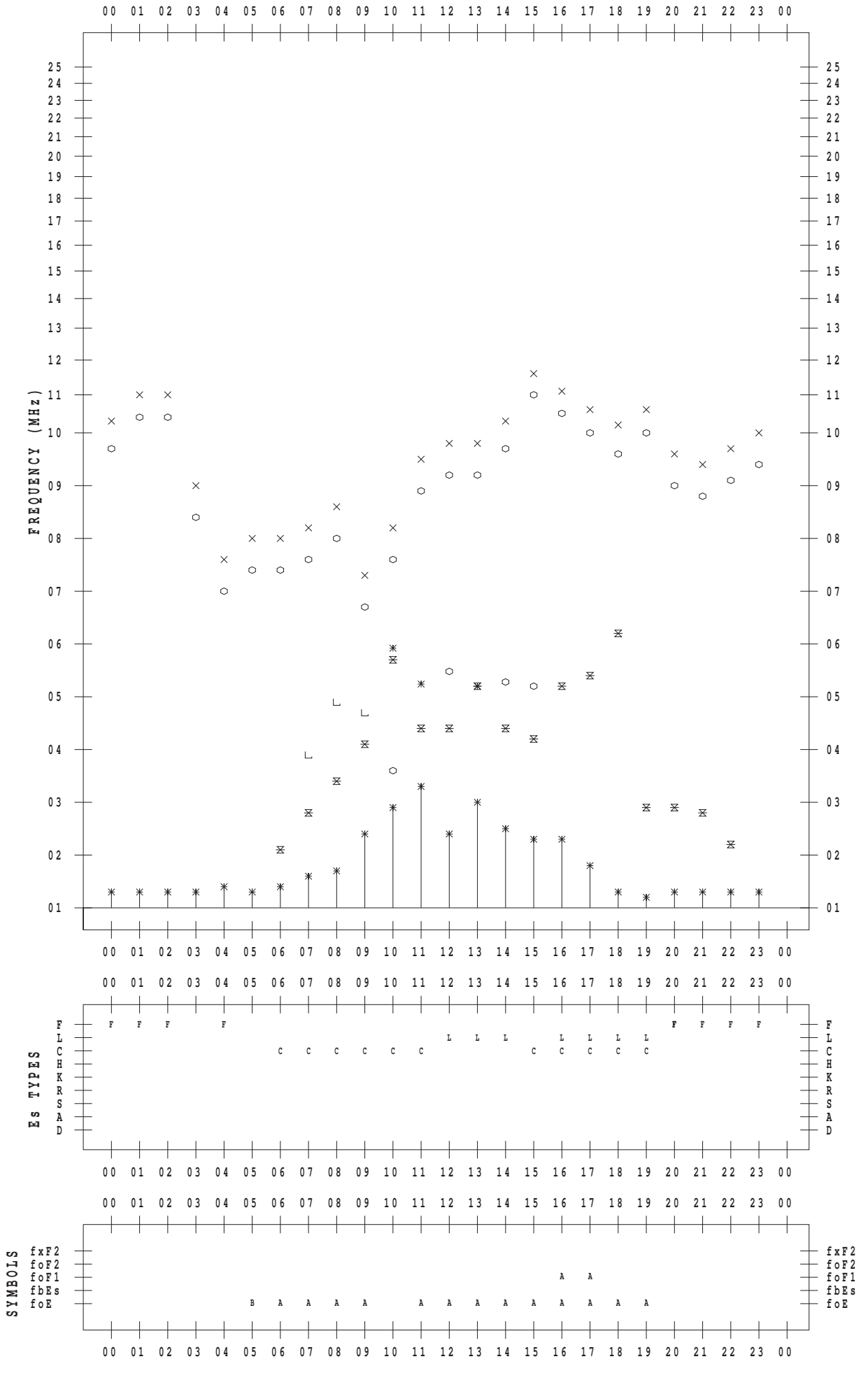
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/24

135 °E MEAN TIME



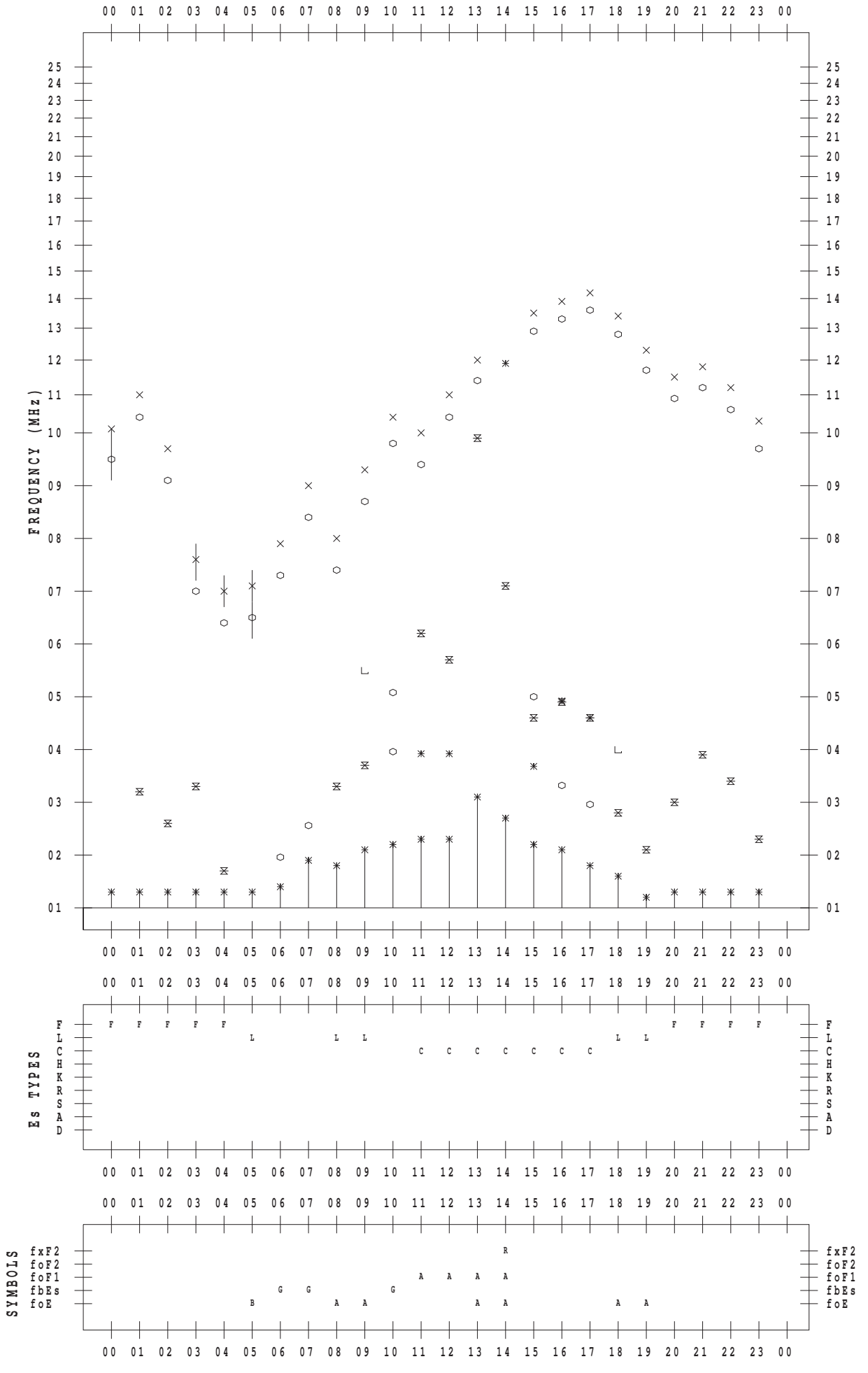
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/25

135 °E MEAN TIME



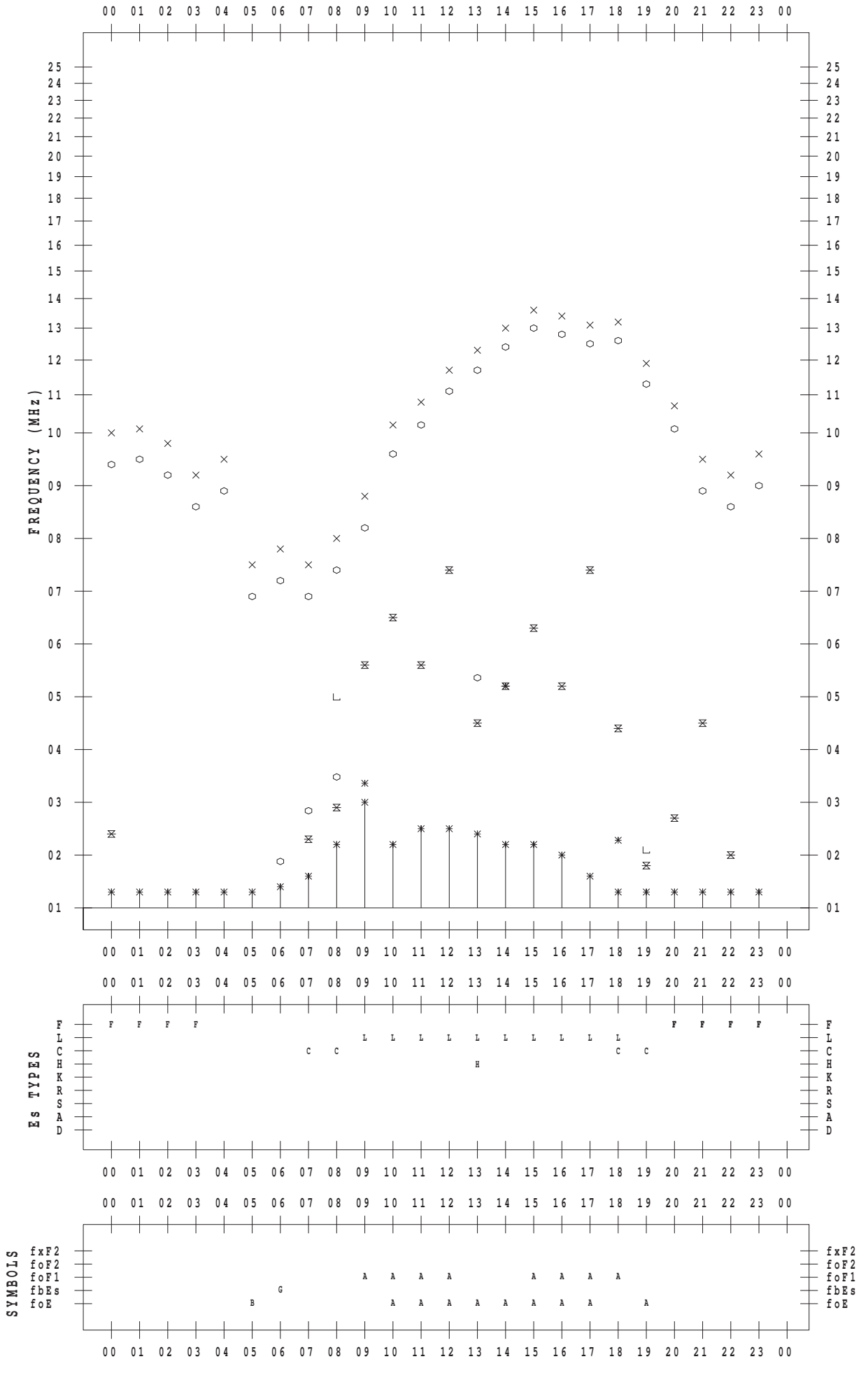
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/26

135 °E MEAN TIME



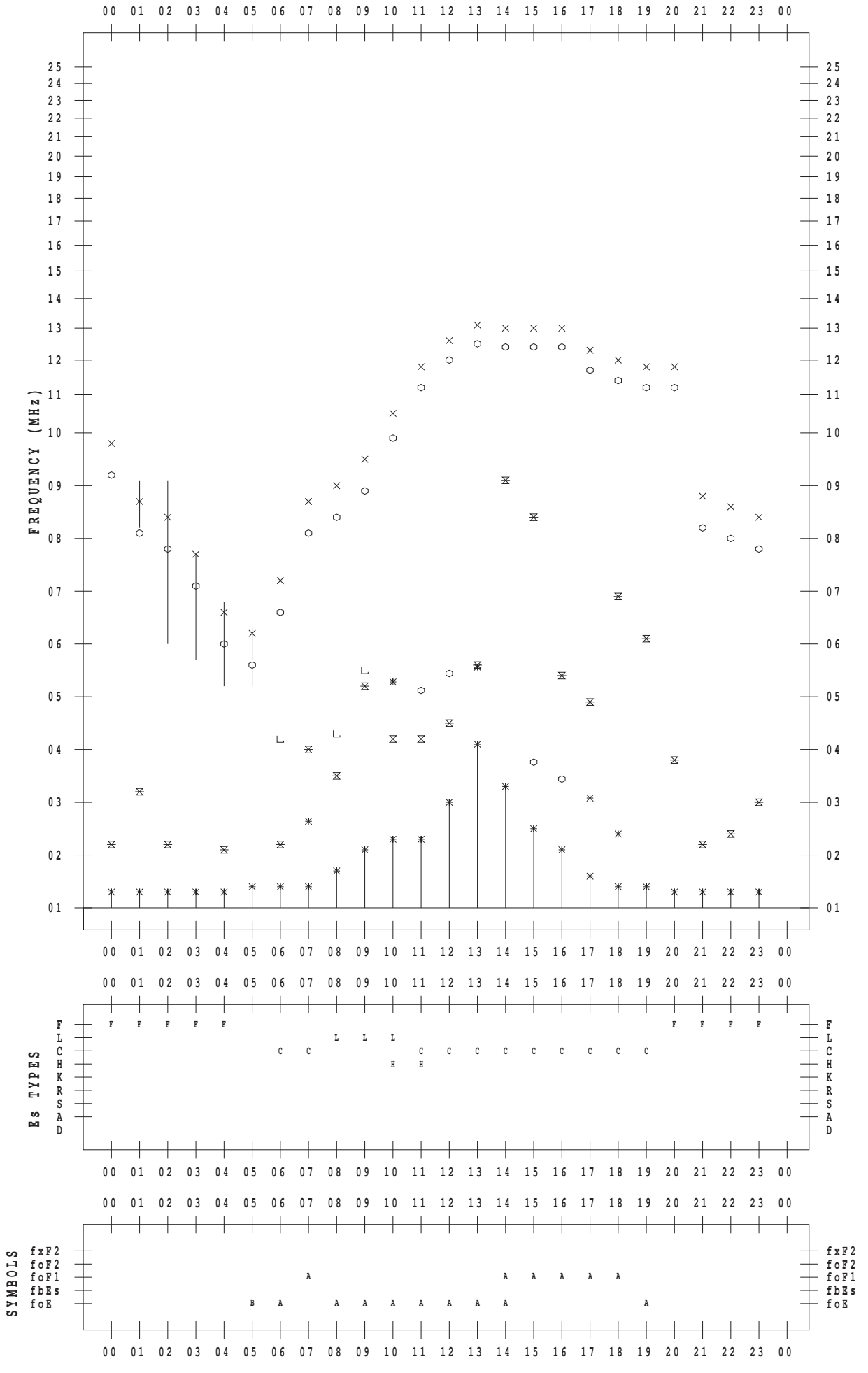
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/27

135 °E MEAN TIME



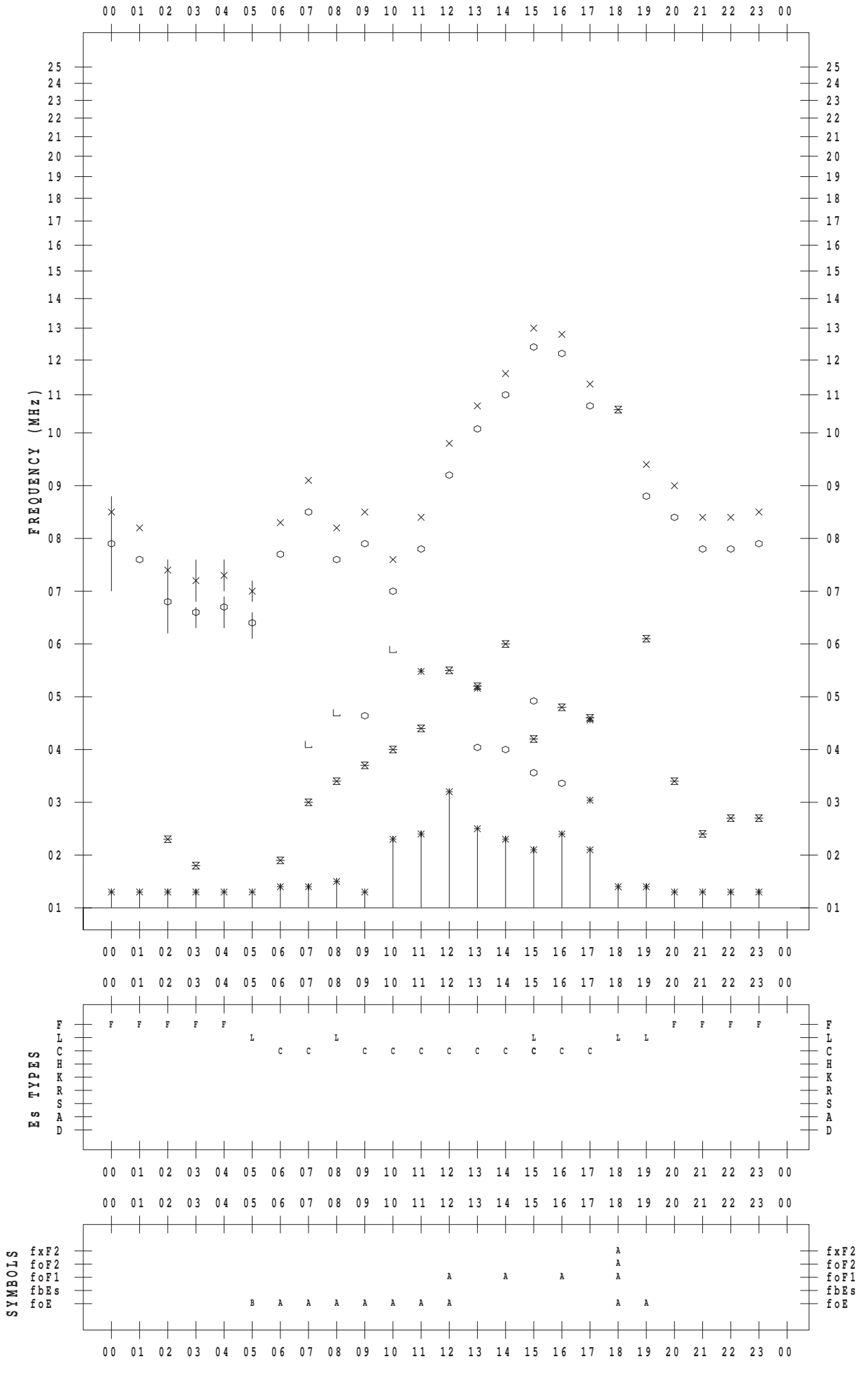
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/28

135 °E MEAN TIME



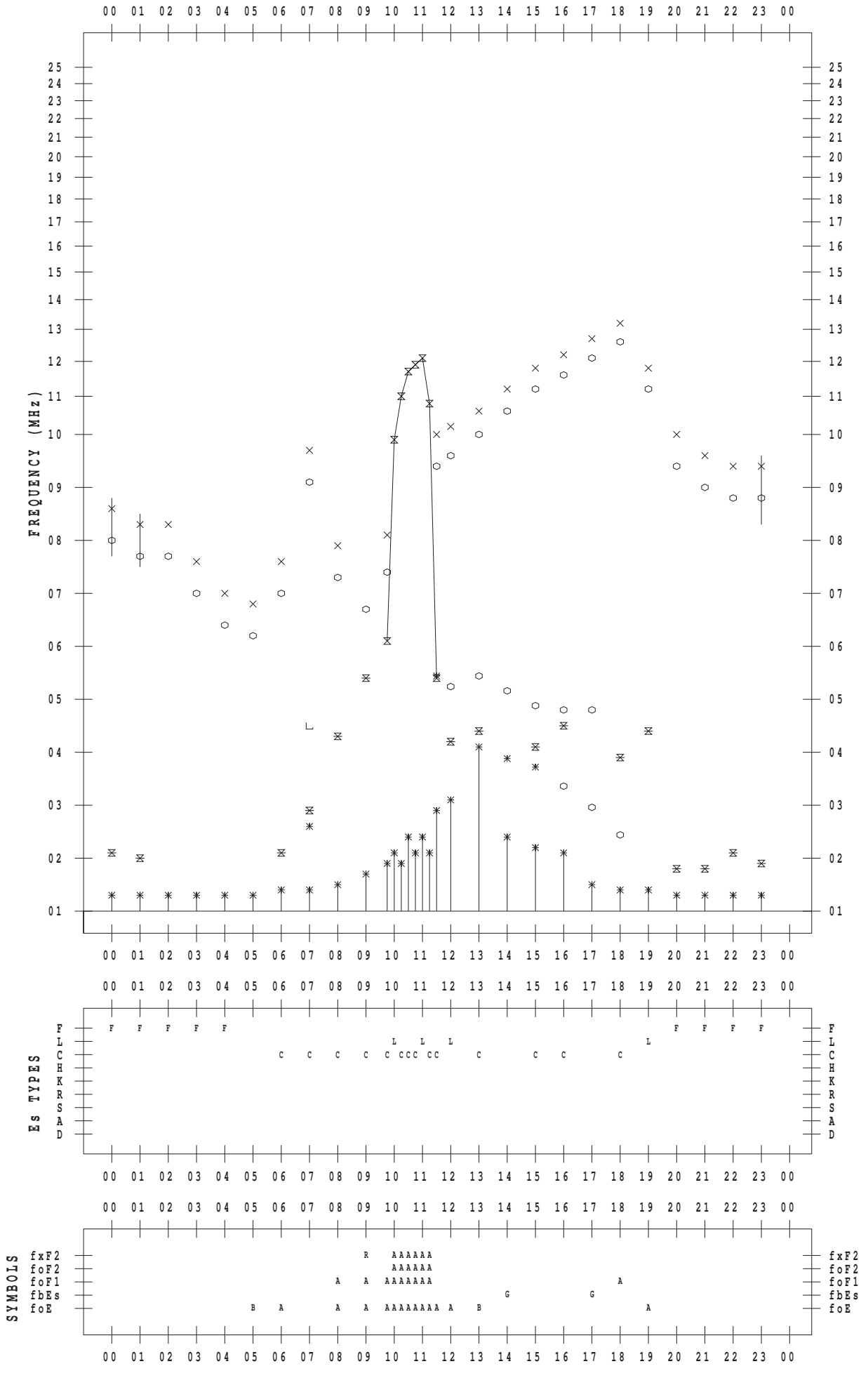
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/29

135 °E MEAN TIME



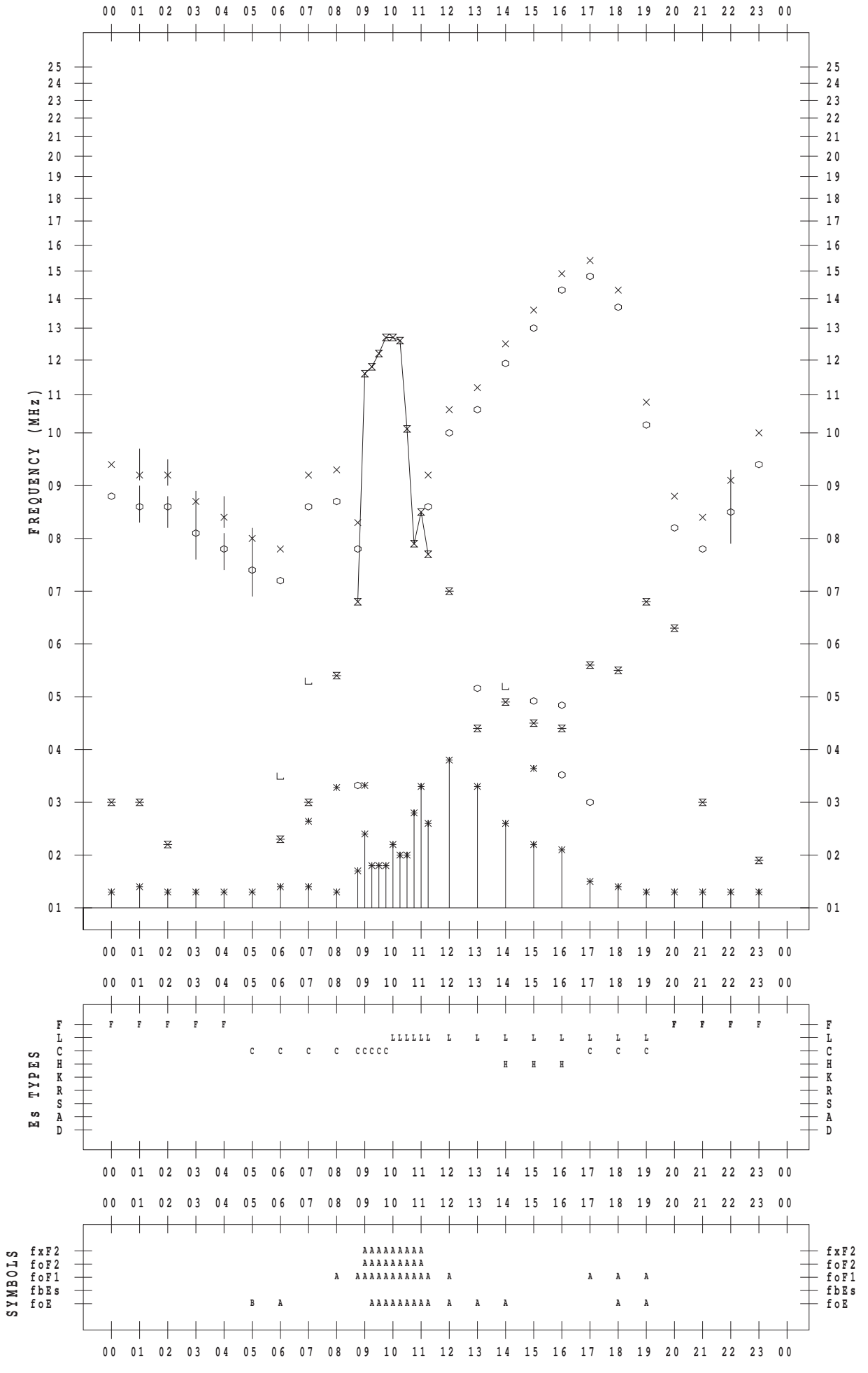
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2014/ 5/31

135 °E MEAN TIME