F-822

IONOSPHERIC DATA IN JAPAN

FOR JUNE 2017

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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 fEs AT Wakkanai

JUN. 2017

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	31	59	110	58	34	24	92	69		78	117	96		98	100		64	51	54	32	48	34	74	113
2	112	70	92	166	59	152	40	69	72	70	115	115	107	126		59	105	84	59		G	91	164	68
3	60	38	28	24	56	52	70		92	108	85	110	84	56	123	60				48	111	56	65	50
4		34	G	G	26	38	40	71	70	76	91	94	64	49	78	56	77	133		145	129	115	C	38
5	41	G	59	46	32		80	72		130	143	71	48	83	143			144	92	112		113	146	126
6	91	47	G	69	33	53	97	142		111	92	146			102	94	90	126		170	88	70	48	40
7	57	60	70	59	59	164	41	57	65	94		107	116	112	130	135	104	110	67			86	115	36
8	32	29	30	32	30	36	53	75	93	69	116	176	61	146	50	55	76	70	82	91	28	61	35	39
9	53	27	37	31	31	44	77		94		82	112	161	133	71		76	76	110	84	91	110	40	54
10	69	44	59	36	33	129	68	84	108	149		94	74	40	70	123			115	154	128	35	46	29
11	24	26	G	94	24	40	50	170	54	130	51	127	48	47	110	86	140	114		124	110	110	38	60
12	51	34	G		G	39	148	72	86		98	70	49	83	45	86	96	95	125	57	94	48	47	70
13	38	27	G	G	G	39	61	72	111	108	86	71	65	86	60	52	52	156	97	38	34	44	34	23
14	G	28	22	G	G	43	85	69	91	72	59	55	108		37	37	38	42	37	G	G	32	G	G
15	G	G	G	G	G	33	50	41		115	72	92	65	92	85	80	60	41	69	100	70	G	33	G
16	26	G	G	G	G	38	149	60	76	151	94	94	64	C	C	57	76	54	43	31	43	27	30	G
17	G	G	G	G	G	34	50	63	76	110	71	147	93	150	54	106		59	143	156	61	90	92	40
18	26	34	26	34	G	41	71	84	91	93		125	170	77	84	47	50	52	40	91	31	35	26	38
19	90	69	53	48	26		83	113	117	101	142	91	46	62	77	70	56	112	66	51	94	50	149	32
20	27	24	G	33	G	38	39	92	106	60	53	60	64	80	78	43	54	61	52	47	56	30	43	G
21	26	32	59	G		G	48	45	69	70	70	92	93	76		40	74	69	91	31	50	44	44	40
22	28	127	41	59	38	50	60	72	84	63	92	56	56	56	102	48	40	40	41	34	35	150	38	35
23	31	25	29	26	G	92	40	59	182	109	107	57	83	160	77	116	73		72	48	32	59	38	41
24	G	26	G	32	G	54	40	122	95	96	68	60	49	37	42	44	44	40	70	39	33		85	58
25	58	35	33	33	31	64	82	74	85	59	58	134	113	68	65	G		96	96	110	108	92	58	38
26	24	38	33	G	G	162	89	71	85	69	132	47		56	47	62	60	94	58	74	128	81	41	40
27	126	60	56	32	94	48	148	58	57	60	95	123	140	76	75	88	109	93	88	69	57	60	47	28
28	24	G	G	25	G	32	45	110	148	73	47	55	64	45	84	46	58	62	81		85	156	127	G
29	G	G	G	G	91	56	43	124	60		55	102	92	70	109	64	61	66			55	65	69	108
30	92	116	92	108	92	69	69	60	84	72	74	90	51	87	111	65			112	82	113	131	113	114
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	29	29	28	30	28	26	27	27	30	27	27	27	27	24	26	25	26	28	29	29	30
MED	31	33	28	32	26	44	64	72	86	93	86	94	65	77	78	60	68	73	72	72	59	61	47	40
U Q	59	47	56	53	36	60	83	88	95	110	107	115	107	98	102	86	83	110	96	110	101	101	88	58
L Q	24	25	G	G	G	38	45	61	72	70	68	70	56	56	60	47	55	54	56	39	34	39	38	29

HOURLY VALUES OF fmin AT Wakkanai

JUN. 2017

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	15	14	15	14	14	15	14		30	32	32		29	28		22	14	14	15	15	16	14	18
2	15	14	15	14	14	14	14	17	30	21	30	32	18	28		17	15	14	14		14	14	14	15
3	14	14	16	15	14	14	14		18	18	30	18	18	18	16	16				14	15	15	14	14
4		15	14	14	14	14	15	16	20	20	30	17	18	26	18	17	17	14		14	14	15	C	14
5	14	16	14	14	14		14	15		17	28	29	18	27	14			14	15	14		16	16	15
6	14	15	15	16	15	15	16	16		20	28	29			20	15	14	14		14	15	14	15	14
7	14	15	14	14	14	14	14	17	17	18		29	32	27	26	22	16	15	14			15	14	14
8	15	15	14	14	14	14	15	17	15	29	18	30	27	20	17	17	15	14	14	14	14	15	15	15
9	15	14	14	15	14	14	14		17		28	18	20	33	17		15	14	14	14	15	15	15	18
10	14	14	14	14	14	14	14	14	15	30		29	18	18	15	15			14	14	14	14	14	15
11	14	15	14	14	15	14	14	15	17	17	20	30	16	18	32	30	18	14		14	15	14	15	14
12	15	15	15		14	16	14	17	15		30	17	17	17	16	15	14	15	14	15	15	14	14	14
13	14	14	17	20	14	16	15	15	29	17	18	15	29	22	15	15	14	15	17	14	14	14	14	15
14	17	15	14	18	16	14	15	14	17	16	17	29	16		20	15	14	14	16	14	22	15	14	14
15	15	14	16	14	14	14	14	15		17	18	17	30	29	18	18	16	14	14	14	14	28	17	15
16	14	20	18	15	16	14	14	14	15	18	28	29	16	C	C	27	18	14	14	15	14	14	14	20
17	15	17	22	20	17	16	14	14	16	18	20	30	17	28	22	21		16	14	15	16	15	14	14
18	15	15	14	14	16	14	14	14	17	16		29	30	18	29	22	18	15	15	15	15	15	15	14
19	15	14	15	14	14		14	14	16	28	18	21	29	29	18	29	20	15	14	14	14	14	16	15
20	17	16	14	14	14	17	14	14	15	18	30	32	17	30	22	20	17	15	18	15	14	16	14	15
21	15	16	14	15		14	14	15	17	17	29	29	28	27		18	18	14	15	14	17	14	16	14
22	17	14	15	14	14	14	14	17	17	20	18	32	30	27	28	28	16	14	14	14	14	15	15	14
23	14	14	15	14	14	14	16	14	29	17	23	18	20	26	18	17	14		14	14	14	14	14	14
24	15	17	15	14	15	14	14	15	16	28	30	30	18	29	28	17	16	16	14	14	14		14	15
25	14	14	14	14	14	14	14	14	16	17	18	30	18	20	29	18		15	14	14	14	15	14	14
26	14	14	14	15	14	15	14	15	15	17	18	28		20	18	17	15	14	17	14	15	14	14	14
27	14	14	14	15	14	15	14	14	16	16	29	15	29	20	23	18	15	15	14	14	14	14	14	15
28	17	14	14	14	14	17	14	14	14	14	17	29	18	18	18	18	15	14	14		14	14	17	23
29	16	18	14	14	16	14	16	14	14		17	17	18	17	18	20	18	15			14	14	14	14
30	15	14	15	14	14	15	14	15	15	15	15	17	20	30	29	20			14	15	14	14	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	29	29	28	30	28	26	27	27	30	27	27	27	27	24	26	25	26	28	29	29	30
MED	15	15	14	14	14	14	14	15	16	18	23	29	18	26	18	18	16	14	14	14	14	14	14	14
U Q	15	15	15	15	15	15	15	15	17	20	30	30	29	29	28	21	18	15	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	15	17	18	18	18	18	17	17	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

JUN. 2017

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	A	A	A	A	A	A	46	A	109	48	79	A	A			79	103	55	54	56	52	39	A	39
2	38	A	A	A	34	40	49	47	A	A	129	143	N	124	54	55	A	129	122	66	71	A	51	A
3	A	47	A	39	A	39	45	63	111	129	82	A	A	108	A	A	N	A	A	111	A	64	A	51
4	A	A	40	A	36	51	A	A	86	104		A	103	130	54	49	53	A	49	57	63	67	C	C
5	C	A	A	A	A	44	57	52	109		169	128	A	A	A	55	A	58	65	66	A	51	50	A
6	51	49	46	42	A	49	103	A	111	A		N	A	110	122	A	A	N	104		73	71	67	49
7	52	A	A	54	50	46	50	109	N	125	110	A	A	A	A	59	59	58	63	A	75	76	52	52
8	51	52	40	38	A	A	77	A	79	129	83	A	A	A	56	A		65	109		A	52	A	51
9	A	46	A	A	37	39	48	56	54	A		A	A	A	58	65	62	55	56	64	55	65	51	52
10	49	A	45	40	38	42	A	A	A	119	N	A	117	A	A	73	A	68	A	A	54	54	A	52
11	A	47	42	41	38	39		62	69	146	A	138	A	56	A	A	75	54	58	67	A	A	54	65
12	52	51	A	37	36	A	51	A	80	A	118	A	A	54	A	A		146	A	179	108	A	52	A
13	A	45	42	49	52	44	A	87	N	88	A	A		A		A	A	58	64	71	53	49	45	44
14	44	41	38	37	32	41		85	147		164	A	A	99	A	66	71	66	59	52	58	49	44	45
15	45	44	42	39	36	A					C	102		144	172	140		A	111	A	53	A	A	A
16	47	39	A	A	A	A	47	110	111		A	A	A	A	A	65	65	56	A	A	51	A	52	A
17	A	A	A	A	42	A		169	187	A			188	A	48	A		A		A	A	A	A	A
18	58	52	54	51	51	31	A	181			200		A	A	A	103	111	129		A	53	49	48	43
19	A	A	40	A	39	40	A	50	80	A	130	A	A	A		A	A	A	A	109	52	A	A	42
20	48	50	47	37	A	A	88	51	A	A	A	A	A	A	51			72	55	A	52	52	52	51
21	A	47	44	38	42	A	44	58	58		A	A				A	A		A	52	64	55	A	50
22	52	46	44	44	41	38		A	111	146	139	N		112	130	107	87	69	67	69	64	50	54	51
23	51	48	48	44	A	39	53	59	111	139	A	A	63			52	55	58	56	67	64	46	A	44
24	A	A	A	A	A	A	A	A	A	79	A	A	A	A	A	58	63	A	74	64	A	A	A	A
25	A	A	A	A	37	45	37	A	89	A	129	139	169		A	53	79		A	52	47	34	37	A
26	A	A	39	A	35	A	31	A		A	A	A	A		A	51	A	42	A	54	A	A	A	54
27	44	A	A	A	A	A	108	138		187	189	A	A	A	189	189	49							
28											139	A		68	N	109	140	141	A	A	A		A	A
29	49	A	A	A	A	A	39	99	81	106	A	180	A	A	A	149	48	51	A		64		51	45
30	40	A	35	34	A	A	48	85		182	A	119	A	99		C	65	55	55	62	58	55	49	45
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	15	16	16	17	16	18	18	18	14	14	7	5	11	10	19	16	20	17	18	21	18	16	19
MED	49	47	42	40	38	40	48	74	99	127	130	138	117	108	57	65	65	58	63	65	58	52	51	50
U Q	51	50	45	44	42	44	57	109	111	146	164	143	178	124	130	107	83	70	89	69	64	64	52	52
L Q	44	45	40	37	36	39	45	56	80	104	110	119	83	68	54	55	57	55	55	56	52	49	48	44

HOURLY VALUES OF fEs AT Kokubunji

JUN. 2017

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	114	117	73	60	52	71	37	73	103	59	74	152	83			84	95	31	33	38	34	31	24	G
2	35	40	33	45	29	40	45	35	57	65	134	98	109	96	35	47	50	57	124	85	69	78	70	60
3	72	G	72	38	50	34	46	52	113	87	80	76	90	82	88	86	109	151	115	92	153	55	65	41
4	50	45	40	42	G	36	53	78	93	110		86	117	69	37	50	G	56	G	25	60	115	C	C
5	C	55	70	39	55	44	38	55	82		140	107	60	78	117	59	69	54	43	49	104	53	60	70
6	50	35	32	33	57	35	78	94	134	164		146	144	77	115	129	115	109	84		60	47	40	53
7	42	72	59	47	38	36	46	64	72	78	117	55	54	60	56	53	34	45	50	58	58	110	84	58
8	48	49	45	28	42	47	78	79	59	64	78	103	83	124	50	52		65	91		71	70	92	46
9	57	57	92	57	56	37	42	58	52	58		61	59	96	40	55	47	38	34	G	49	41	26	42
10	38	71	70	29	25	31	45	61	77	96	136	161	114	78	58	79	107	69	94	132	36	50	79	53
11	71	35	36	29	28	37		47	56	76	132	117	85	51	62	72	83	64	34	41	109	115	56	38
12	45	55	54	27	G	42	47	69	85	111	92	57	54	55	75	65		125	154	129	116	135	81	80
13	57	36	32	32	G	30	57	77	94	90	68	66		54		62	82	36	42	43	27	34	35	43
14	48	32	31	33	28	30		85	139		166	152	168	61	114	49	53	48	37	35	46	49	31	33
15	G	G	G	G	G	38					C	83		104	97	109		117	127	91	57	53	60	116
16	37	33	70	43	34	34	48	72	142		45	55	72	65	57	59	54	54	61	67	57	57	47	57
17	78	84	49	60	34	48		135	127	164			147	86	54	93		149		113	180	106	105	109
18	57	46	43	31	29	38	149	149			152		50	51	79	70	70	81		86	52	40	31	34
19	34	46	45	93	117	69	62	92	79	96	100	174	109	57		55	65	61	69	106	57	107	127	71
20	53	57	G	45	104	45	64	57	74	76	59	52	72	82	118			57	52	70	115	57	48	56
21	59	25	32	39	28	43	42	47	46		130	55				83	134		116	30	46	50	86	35
22	30	43	34	26	G	28		59	80	137	108	91		161	111	93	75	51	51	31	54	40	52	33
23	81	85	57	57	40	G	29	42	61	129	87	65	46		G	44	G	37	32	G	42	40	39	38
24	59	55	57	70	103	53	46	43	53	85	78	108	107	62	94	51	51	55	72	47	60	59	84	73
25	58	71	69	49	31	34	38	65	69	67	94	108	150		76	43	75		79	47	53	37	30	45
26	93	50	29	40	28	44	37	56		149	68	84	65		38	48	53	31	46	28	78	129	89	50
27	57	49	59	48	45	39	129	126		155	165	70	53	57	158	116	G							
28											134	140		116	133	102	78	57	155	93	59		108	125
29	55	59	36	90	94	106	40	50	70	81	134	139	140	137	38	145	G	44	143		48		84	79
30	47	81	59	55	53	35	46	82		161	50	96	81	79		C	71	86	37	36	31	G	69	33
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	24	28	24	23	25	28	25	25	25	28	25	27	27	26	29	27	28	28
MED	54	49	45	42	34	38	46	64	78	90	100	94	83	78	75	64	69	57	61	48	57	53	62	52
U Q	59	65	64	56	54	44	59	80	98	137	134	128	115	96	112	89	82	81	115	91	74	106	84	70
L Q	43	35	32	31	28	34	41	53	60	76	76	65	59	58	45	51	48	45	37	35	47	40	39	38

HOURLY VALUES OF fmin AT Kokubunji

JUN. 2017

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	14	15	14	14	14	14	18	23	31	34	38	37			21	20	22	15	15	14	13	14	17
2	14	14	14	15	14	13	15	21	23	22	25	36	24	31	28	33	21	15	14	14	14	14	14	14
3	14	17	15	14	14	17	20	18	21	23	22	36	37	36	23	22	18	14	14	17	14	13	13	13
4	14	14	13	14	14	13	14	13	17	20		34	34	20	44	24	43	18	21	18	15	13	C	C
5	C	13	14	13	14	14	14	14	18		23	22	30	37	38	21	20	14	14	14	13	13	13	13
6	13	13	14	13	13	13	14	18	20	28		25	24	29	22	20	15	14	13		13	13	13	13
7	13	13	13	13	13	13	13	15	15	21	36	38	38	36	33	22	15	14	13	14	13	13	14	13
8	13	13	13	13	13	14	14	17	21	22	29	28	29	38	21	31		21	18		14	14	13	14
9	17	15	14	13	14	13	15	15	17	21		34	22	23	44	34	20	17	17	18	14	14	13	14
10	14	13	13	14	14	13	14	18	17	22	24	30	24	28	21	23	17	17	20	14	15	14	13	14
11	13	14	13	15	14	14		18	21	21	24	23	25	23	22	21	18	18	14	14	14	14	17	13
12	14	14	14	14	14	13	13	15	18	22	24	30	30	30	26	21		15	15	14	18	14	14	13
13	14	14	14	14	18	15	17	15	18	29	34	30		31		21	18	15	14	13	15	13	13	14
14	13	14	13	14	14	14		14	21		30	23	22	26	21	26	21	17	14	13	14	13	14	14
15	14	14	15	17	17	13					C	28		29	23	21		15	14	14	14	13	17	14
16	14	13	14	14	13	15	18	17	20		29	33	33	29	22	21	20	17	21	14	18	13	14	14
17	14	13	14	14	14	14		18	20	21			29	23	31	22		17		14	14	14	14	14
18	14	14	14	14	13	15	14	15			22		21	22	22	22	18	14		15	14	13	14	13
19	14	13	13	15	14	13	15	17	20	21	22	25	28	29		21	20	18	13	18	14	14	15	13
20	13	14	15	14	14	14	15	18	21	21	21	33	29	26	26			20	14	14	13	14	17	13
21	14	14	13	14	14	20	15	17	21		22	33				20	21		14	18	14	14	14	13
22	13	15	14	14	14	20		18	18	20	24	33		22	23	20	18	17	13	13	14	13	14	14
23	14	14	15	17	14	18	14	17	21	23	22	28	21		21	21	17	17	13	14	13	13	15	13
24	14	13	15	13	14	13	15	17	20	21	22	33	30	33	29	30	22	17	13	13	13	14	14	14
25	14	14	15	14	17	14	14	15	18	21	22	25	39		26	20	18		17	13	13	13	14	13
26	14	14	13	14	14	14	13	14		22	23	26	28		21	20	20	17	13	14	14	13	13	14
27	14	13	13	14	14	14	14	15		20	22	25	31	28	29	21	40							
28											30	28		28	22	20	18	17	13	13	14		13	15
29	13	14	14	13	13	14	13	20	20	22	20	31	22	38	33	31	31	18	14		14		13	14
30	14	15	13	14	14	13	13	17		18	22	38	22	37		C	20	14	15	14	14	14	14	13
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	24	28	24	23	25	28	25	25	25	28	25	27	27	26	29	27	28	28
MED	14	14	14	14	14	14	14	17	20	21	23	30	29	29	23	21	20	17	14	14	14	13	14	14
U Q	14	14	14	14	14	14	15	18	21	22	29	33	32	34	30	23	21	18	15	15	14	14	14	14
L Q	13	13	13	13	14	13	14	15	18	21	22	25	23	24	22	21	18	15	13	14	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

JUN. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	51	A	A	86	108	147	106	110	A	53	59	68	A	58	A	A	A	43
2	A	A	A	A	A	30	42	54	54	101	155	A	A	A	55	52	59	58	57	54	51	52	A	51
3	51	43	39	A	32	A	51	62	A	111	A	110	A	84	A	109	67	53	A	A	A	A	A	A
4	A	A	A	42	38	42	55	A	A	A	A	148	A	79	149	58	56	57	56	52	72	54	C	C
5	C	A	36	34	A	35	54	54	51	A	A	A	A	A	52	60	66	75	78	67	52	51	49	A
6	A	A	A	A	A	32	A	A	A	A	142	A	A	A	A	68	77	80	A	50	A	72	54	A
7	53	54	52	A	A		42	58	A	89	A	A	143	55	55	64	75	86	76	77	78	54	52	50
8	51	50	A	41	69	A	A	73	88	104	A	A	A	A	110	86	75	72	51	51	51	A	A	52
9	50	A	A	A	A	A	51	53	55	A	A	146	A	A	A	A	72	72	72	54	51	54	51	52
10	48	47	42	40	38	A	49	60	A	104	A	111	A	A	54	78	80	87	52	A	54	53	54	A
11	A	A	A	A	28	34	A	44	63	52	A	A	A	54	56	A	A	A	A	67	77	67	A	A
12	A	A	A	A	35	A	A	71	102	A	A	119	A	102	68	78	82	105	68	A	A	52	A	51
13	52	A	43	52	48	36	A	A	A	57	102	102	149	A	A	70	77	78	75	80	53	44	43	A
14	A	A	A	A	A	35	43	A	A	A	A	A	A	A	A	A	84	86	A	A	A	28	43	42
15	45	44	42	37	34	31	44	54	61	43	52	A	A	A	A	54	60	59	79	A	54	A	A	A
16	A	A	A	26	A	34	43	42	A	A	A	A	143	A	77	80	72	64	51	48	A	A	A	53
17	A	A	A	A	44	A	46	79	175	146	143	76	A	A	59	108	A	129	50	50	A	A	51	67
18	A	52	A	53	45	48	51	51	A	89	A	111	122	A	A	78	78	A	A	A	A	A	A	47
19	42	46	A	50	26	34	45	45	A	A	A	78	87	A	53	A	129	A	105	52	54	A	A	A
20	A	50	42	40	A	28	A	A	A	108	A	A	104	106	A	86	57	A	85	A	62	54	45	42
21	51	A	A	A	38		44	48	47	A	A	A	A	A	55	63	56	A	A	54	71	A	A	43
22	47	42	39	39	38	42	A	A	52	A	A	129	142	A	89	A	155	A	A	A	A	A	54	52
23	50	42	48	40	A	38	42	48	66	57	61	A	55	47	53	55	63	72	77	68	54	50	43	44
24	44	36	36	23	A	A	A	44	52	65	A	A	A	A	68	72	75	70	A	47	82	48	A	A
25	A	A	A	A	A	A	A	49	A	A	A	A	A	A	57	54	48	A	58	62	58	36	A	30
26	A	A	A	34	B	32	40	A	44	A	A	A	A	A	37	A	A	A	A	A	52	54	A	A
27	41	A	A	36	34	59	45	54	A	A	A	A	A	A	A	A	63	56	A	122	A	A	A	A
28	A	A	A	A	B	B	A	99	84	149	A	A	179	A	A	54	57	68	A	54	A	54	A	A
29	A	45	A	A	A	31	42	50	58	52	51	55	A	A	A	A	39	58	70	78	67	54	42	A
30	40	A	A	A	A	A	47	52	A	A	A	A	A	103	87	A	A	A	A	79	71	75	42	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	12	10	15	14	17	20	22	15	16	8	12	10	9	18	21	26	21	17	21	19	19	13	15
MED	49	46	42	40	38	34	45	54	58	89	105	111	132	84	56	68	70	72	70	54	54	54	49	50
U Q	51	50	43	42	44	40	51	60	84	106	142	137	143	104	77	79	77	83	77	72	71	54	53	52
L Q	44	42	39	34	34	31	42	48	52	57	56	90	104	54	54	54	59	58	54	51	52	50	43	43

HOURLY VALUES OF fEs AT Yamagawa

JUN. 2017

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	78	116	85	116	69	117	46	61	60	84	110	161	125	129	92	54	45	60	63	59	59	60	48	38
2	57	56	59	43	45	G	104	41	48	106	107	114	57	60	49	115	36	48	46	44	50	70	84	34
3	38	36	40	59	34	44	104	62	149	116	145	105	110	68	106	108	65	64	85	71	89	161	161	58
4	71	56	56	33	G	G	122	58	102	116	96	117	144	85	73	48	39	47	46	44	38	31	C	C
5	C	49	43	49	57	134	32	47	58	55	94	50	72	94	57	45	48	47	55	56	45	106	43	71
6	114	78	79	81	108	28	44	91	91	92	158	149	94	51	105	50	51	75	115	40	115	60	49	84
7	55	41	52	85	48		32	52	74	115	110	136	138	91	52	51	44	44	54	49	36	33	35	29
8	46	37	93	32	72	106	49	56	127	95	113	76	114	104	94	79	51	81	55	91	48	148	69	49
9	40	84	69	53	40	56	126	40	147	74	108	114	75	107	61	91	48	52	55	152	50	31	34	34
10	41	41	33	33	G	41	40	158	71	78	156	93	139	133	34	32	45	71	61	60	44	90	72	93
11	92	86	59	45	G	39	43	48	124	48	57	90	92	50	53	60	83	125	84	42	60	83	78	60
12	92	59	58	46	32	28	156	61	91	93	144	93	150	116	92	62	87	92	67	82	60	49	82	53
13	41	59	41	34	40	53	50	52	116	103	71	72	105	126	104	45	40	38	36	29	33	25	147	86
14	56	72	45	40	40	29	35	160	60	78	59	105	144	150	92	121	74	83	60	70	79	35	34	33
15	29	G	G	G	G	33	33	38	43	44	50	77	58	126	61	52	50	60	76	111	114	59	60	58
16	71	48	50	30	50	G	36	48	84	105	93	126	68	108	46	49	50	48	46	40	71	55	115	44
17	70	58	88	73	52	59	47	84	159	111	108	104	153	95	95	94	153	85	61	78	147	161	108	53
18	59	52	69	41	32	G	60	46	112	95	104	111	117	160	149	62	64	88	84	82	78	53	41	31
19	39	31	58	40	159	46	34	52	58	92	62	60	129	126	71	80	75	150	145	44	91	54	56	56
20	55	41	38	33	41	27	46	73	88	107	125	152	94	90	91	84	129	78	76	61	50	70	52	49
21	43	59	70	51	G		116	40	59	69	59	107	82	127	92	52	50	60	86	36	37	52	59	31
22	53	41	G	G	34	28	52	55	46	144	62	106	149	116	82	83	93	110	151	146	94	60	32	33
23	80	37	40	49	73	34	39	39	49	53	70	114	52	46	46	44	32	40	39	32	34	34	26	G
24	G	30	38	58	57	86	40	43	51	60	63	74	132	69	47	48	80	108	106	70	60	34	106	48
25	91	94	49	58	59	59	42	44	69	65	101	108	58	58	54	44	48	70	40	41	40	25	36	29
26	84	118	59	37	B	G	36	80	48	94	60	58	93	153	40	114	84	65	55	90	34	48	58	85
27	37	59	44	39	32	G	33	38	85	152	161	144	150	110	74	112	86	52	61	104	130	161	72	108
28	66	58	60	38	B	B	42	93	115	60	116	149	152	92	93	54	46	45	65	74	109	48	80	93
29	79	38	56	58	40	50	40	38	46	51	49	55	59	64	58	94	62	39	52	48	34	43	33	48
30	46	56	43	85	83	60	54	46	65	68	50	61	58	74	84	118	82	95	94	80	57	40	41	57
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	28	27	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29
MED	56	56	54	44	40	39	44	52	72	92	98	106	108	100	74	61	51	64	61	60	58	54	58	49
U Q	78	59	60	58	58	59	54	62	112	106	113	117	139	126	92	94	82	85	84	82	89	70	81	65
L Q	41	41	41	34	32	27	36	43	58	65	62	76	72	69	53	49	46	48	54	44	40	35	38	33

HOURLY VALUES OF fmin AT Yamagawa

JUN. 2017

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	14	15	15	14	14	16	18	21	21	34	33	26	22	22	20	16	15	14	16	20	15	14
2	14	14	14	14	14	15	16	16	21	20	21	24	23	22	24	22	20	16	15	14	14	14	14	14
3	14	14	14	14	14	14	15	14	15	18	23	30	21	21	22	20	21	15	14	14	15	15	14	14
4	14	14	14	14	15	15	15	15	16	17	20	24	22	21	21	21	18	15	14	14	15	14	C	C
5	C	15	14	14	14	14	15	15	15	18	22	22	22	21	23	22	16	15	14	15	14	15	14	14
6	14	14	14	15	15	14	15	15	17	18	20	23	21	22	23	18	17	15	15	14	14	15	15	15
7	14	14	14	14	14		14	14	15	20	21	22	22	21	21	22	20	15	14	14	14	14	14	14
8	15	15	14	15	14	14	14	15	16	16	21	20	21	22	20	18	17	14	14	14	15	15	14	14
9	14	14	14	14	15	15	14	14	15	17	20	21	21	22	22	20	18	14	15	14	14	14	15	14
10	14	14	14	14	14	15	14	14	15	16	21	21	20	21	23	21	17	15	15	14	14	14	15	14
11	14	14	14	14	14	14	15	14	16	21	21	26	27	26	21	22	20	17	15	14	14	14	14	15
12	15	14	14	15	15	14	14	15	15	17	26	26	24	20	27	23	20	15	14	14	14	15	14	14
13	14	15	14	15	15	14	15	14	17	18	21	22	23	23	21	23	22	15	15	15	14	15	14	16
14	14	14	14	14	14	15	14	15	15	20	20	21	23	20	23	21	17	14	14	14	14	14	14	14
15	14	14	14	15	15	14	15	14	17	20	21	23	22	21	26	21	21	16	14	14	15	14	14	14
16	14	14	14	15	14	14	15	15	17	17	22	22	23	22	23	18	20	14	15	14	14	15	14	14
17	14	14	14	14	14	15	15	16	15	21	20	23	22	21	22	32	22	15	15	14	15	14	14	14
18	16	14	14	14	14	15	15	16	15	18	18	21	21	22	23	20	17	16	14	15	14	14	14	15
19	14	14	14	14	14	14	15	14	18	20	21	22	20	22	23	20	18	14	14	15	14	14	14	14
20	14	15	14	14	14	15	14	14	15	20	21	21	22	21	21	21	18	15	14	14	15	14	14	14
21	14	14	14	14	14		15	14	15	21	23	22	21	23	24	18	20	15	15	14	14	14	14	14
22	14	14	15	15	15	14	15	17	15	18	20	21	20	22	21	20	16	15	15	14	14	15	14	14
23	15	14	14	14	14	14	18	14	15	18	20	21	23	22	22	20	18	14	16	15	14	14	14	15
24	18	15	14	14	14	14	14	15	15	18	21	22	22	22	22	20	18	14	14	14	14	14	14	14
25	15	14	14	14	14	14	14	14	14	15	21	21	21	22	21	20	18	15	14	14	15	14	15	14
26	14	14	14	14	B	14	14	14	15	17	20	20	26	20	20	21	16	15	15	14	14	14	15	14
27	14	14	14	14	14	66	15	15	15	20	21	22	21	28	22	20	17	15	14	14	14	14	14	14
28	14	14	14	14	B	B	14	15	15	21	21	21	21	24	22	27	17	14	15	14	15	14	14	14
29	14	14	14	14	14	14	14	15	17	17	21	22	21	22	18	21	17	16	15	15	14	14	14	18
30	14	16	14	14	15	15	14	14	15	17	17	21	21	23	20	18	16	15	14	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	28	27	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29
MED	14	14	14	14	14	14	15	15	15	18	21	22	22	22	22	21	18	15	14	14	14	14	14	14
U Q	14	14	14	15	15	15	15	15	17	20	21	23	23	22	23	22	20	15	15	14	15	15	14	14
L Q	14	14	14	14	14	14	14	14	15	17	20	21	21	21	21	20	17	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

JUN. 2017

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	A	A	A	A	A	26	47	A	A	A	104	A	189	126	A	A	72	72	78	79	62	A	A	A
2	42	42	42		A	34	45	54	53	A	48	66	55	54	64	65	66	65	70	75	75	A	A	A
3	38	A	50	A	A	A	A	A	A	A	A	49	A	161	191	77	169			A	A	A	52	51
4	52	51	47	45	42	42	49	54	A	A	A	51	A	60	62	66	67	66	70	76	81	55	C	C
5	C	A	49	A	A	A	43	54	51	A	A	A	A	A	A	A	77	91	80	76	71	61	51	44
6	48	50	40	41	34	A	177	A	A	167	A	A	A	A	81	85	96	204	A	80	82	72	71	66
7	54	62	60	54	A	A	A	73	60	A	A		57	A	61	70	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	81	86	82	71	63	A	67	52	A
9	A	51	50	A	A	32	A	A	50	A	A	A	A	59	A	72	82	94	82	A	63	63	61	50
10	40	49	42	41	39	A	53	38	A	A	A	A	52	54	66	88	100	78	60	42	A	A	A	A
11	A	A	A	A	111	A	43	67	56	A	A	A	A	A	119	62	66	70	81	78	72	71	A	54
12	50	A	A	A	A	A	60	A		A		210	142	A	77	88	95	91	78	56	54	54	51	50
13	52	52	51	41	A	A	A	A	A	104	A	A	A	A	A	82	91	94	97	94	50	44	48	42
14	A	A	A	A	38	37	48	48	188	A	A	A	A	59	A		88	A	A	50	A	52	50	42
15	A	A	47	32	A	A	A	49	65	A	A	A	A	A	58	64	66	67	72	77	52	A	A	A
16	A	A	40	39	36	32	45	34	59	52	46	A	55	64	84	81	70	64	61	64	72	60	A	48
17	A	A	A	50	47	A	52	79	A	A	A	196	71	64	91	96	A	A	70	69	67	A	A	54
18	A	52	52	51	42	44	47	64	A	A	57	A	A	A	65	82	85		205	A	A	A	A	A
19	49	47	54	51	A	29	47	A	50	58	61	A	71	A	54	A	A	90	214	A	A	A	A	A
20	A	42	A	A	36	A	A	A	61	A	N	A	A	A	A	77	60	A	N	85	A	A	A	42
21	A	A	A	A	A	A	42	54	A	53	A	A	A	A	A	A	189			193	82	A	35	A
22	34	A	A	A	A	A		179	A	A	A				88	169	A	111	A	A	A	A	A	51
23	52	52	A	47	49	A	A	A	63	57	71	A	A	A	56	67	72	74	78	71	63	54	47	45
24	39	44	39	A	34	A	34	A	60	A	A	A	55	66	75	81	85	87	88	88	87	30	28	A
25	A	A	A	A	A	A	38	A	A	A	N	A	A	A	A	A	A	A	54	71	63	40	34	30
26	31	A	A	A	31	A	35	89	A	A	A	79	A	A	A	A	A	A	A	A	72	A	A	A
27	A	42	39	39	36	35	42	44	A	A	A	A	A	A	64	65	68	71	74	78	67	52	61	52
28	50	51	41		37		35	44	50	A	50	A	A	A	A	A	60	70	75	78	76	53	50	A
29	A	A	A	A	A	32	A	35	51	52	A	A	A	A	A	A	A	109	75	A	A	A	48	A
30	A	A	A	A	A	A	A	53	A	A	A	A	51	51	53	A	A	A	A	A	82	72	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	14	16	12	14	10	19	18	14	7	7	6	10	11	18	20	22	20	21	21	20	16	15	15
MED	48	50	47	43	38	33	45	54	58	57	57	72	56	60	66	79	80	80	75	76	72	54	50	50
U Q	52	52	50	50	42	37	49	67	61	104	71	196	71	66	84	83	91	92	81	79	78	65	52	52
L Q	39	44	40	40	36	32	42	44	51	52	48	51	55	54	61	66	67	70	70	66	63	52	47	42

HOURLY VALUES OF fEs AT Okinawa

JUN. 2017

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	144	91	93	115	121	32	41	58	67	78	96	113	111	130	85	126	36	48	45	25	40	87	56	59
2	24	31	G		71	G	148	36	36	57	107	49	48	49	71	40	147	44	38	60	104	93	115	92
3	39	83	59	56	59	111	164	126	120	114	128	127	79	95	90	92	86			128	155	178	43	46
4	45	34	115	G	G	23	93	51	84	95	71	57	57	50	61	58	61	40	162	42	G	60	C	C
5	C	151	178	94	108	156	40	44	59	160	55	47	78	92	72	67	54	52	60	56	60	44	127	29
6	G	G	G	29	179	170	38	92	94	163	153	70	161	92	56	44	64	146	133	40	55	29	49	56
7	40	48	47	40	149	67	40	64	58	117	78		53	96	56	58	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	47	53	85	52	50	83	44	45	93
9	113	46	39	162	84	51	116	85	144	87	87	89	78	60	66	62	49	83	54	76	26	49	39	39
10	44	32	128	130	G	65	34	44	79	125	127	130	70	53	50	51	73	50	38	74	107	60	115	66
11	69	44	60	61	94	146	115	180	49	68	116	94	113	161	N	114	51	56	84	60	59	84	93	73
12	52	169	168	144	45	150	56	140		133		124	125	126	54	57	50	43	59	36	G	29	93	40
13	38	39	35	33	91	126	74	69	82	111	164	167	93	125	109	72	70	57	58	36	34	38	37	40
14	57	54	50	46	29	71	160	69	94	126	104	110	83	58	134		78	104	127	47	46	60	30	43
15	70	59	G	38	141	56	45	48	42	74	89	104	75	85	125	56	51	57	76	48	57	108	168	54
16	148	58	45	26	112	G	29	38	146	149	164	115	53	51	153	108	45	54	58	50	38	39	73	43
17	72	91	173	94	178	112	56	69	94	179	109	105	144	57	82	85	95	87	62	28	145	92	72	40
18	148	37	41	45	152	G	90	172	126	137	145	97	65	115	65	70	92		178	127	116	86	48	53
19	40	29	43	23	147	G	26	84	54	50	150	92	68	64	52	53	56	103	128	131	149	103	126	71
20	146	57	57	48	104	106	65	84	130	87	173	110	128	88	68	43	157	121	95	109	108	115	163	60
21	115	71	72	78	52	58	107	49	57	151	65	82	110	60	68	114	98			49	60	60	38	50
22	24	76	95	110	139	162		146	71	154	79				111	127	148	111	95	77	93	89	71	38
23	34	34	70	41	33	70	129	74	52	126	75	144	77	88	46	39	43	40	34	57	26	G	25	28
24	137	150	40	72	28	38	40	49	52	70	78	90	54	51	50	59	51	56	59	58	70	35	32	135
25	104	65	87	93	49	57	33	147	84	89	143	88	62	73	86	96	76	61	63	50	30	23	55	G
26	40	72	70	54	32	35	135	74	93	72	70	110	74	109	116	112	92	96	57	116	59	94	73	58
27	54	59	44	37	178	G	24	92	179	154	134	92	68	84	78	47	58	54	41	32	33	34	27	34
28	40	34	24		G		31	135	116	108	50	73	91	111	102	74	53	34	42	36	40	36	36	108
29	82	149	109	167	94	45	57	35	49	70	56	64	76	92	75	164	102	103	53	103	116	126	55	50
30	27	55	71	60	59	151	72	80	110	135	52	50	52	53	53	64	70	93	116	110	92	59	48	43
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	27	29	28	28	29	28	29	28	27	28	28	28	29	29	26	27	29	29	29	28	28
MED	53	57	59	56	91	62	56	74	83	114	100	94	76	86	72	64	64	57	59	56	59	60	55	50
U Q	108	79	94	94	140	119	111	109	113	143	138	113	101	102	96	102	92	96	95	90	105	92	93	63
L Q	39	35	40	38	39	33	39	49	55	76	73	73	63	57	56	52	51	50	52	41	36	37	38	40

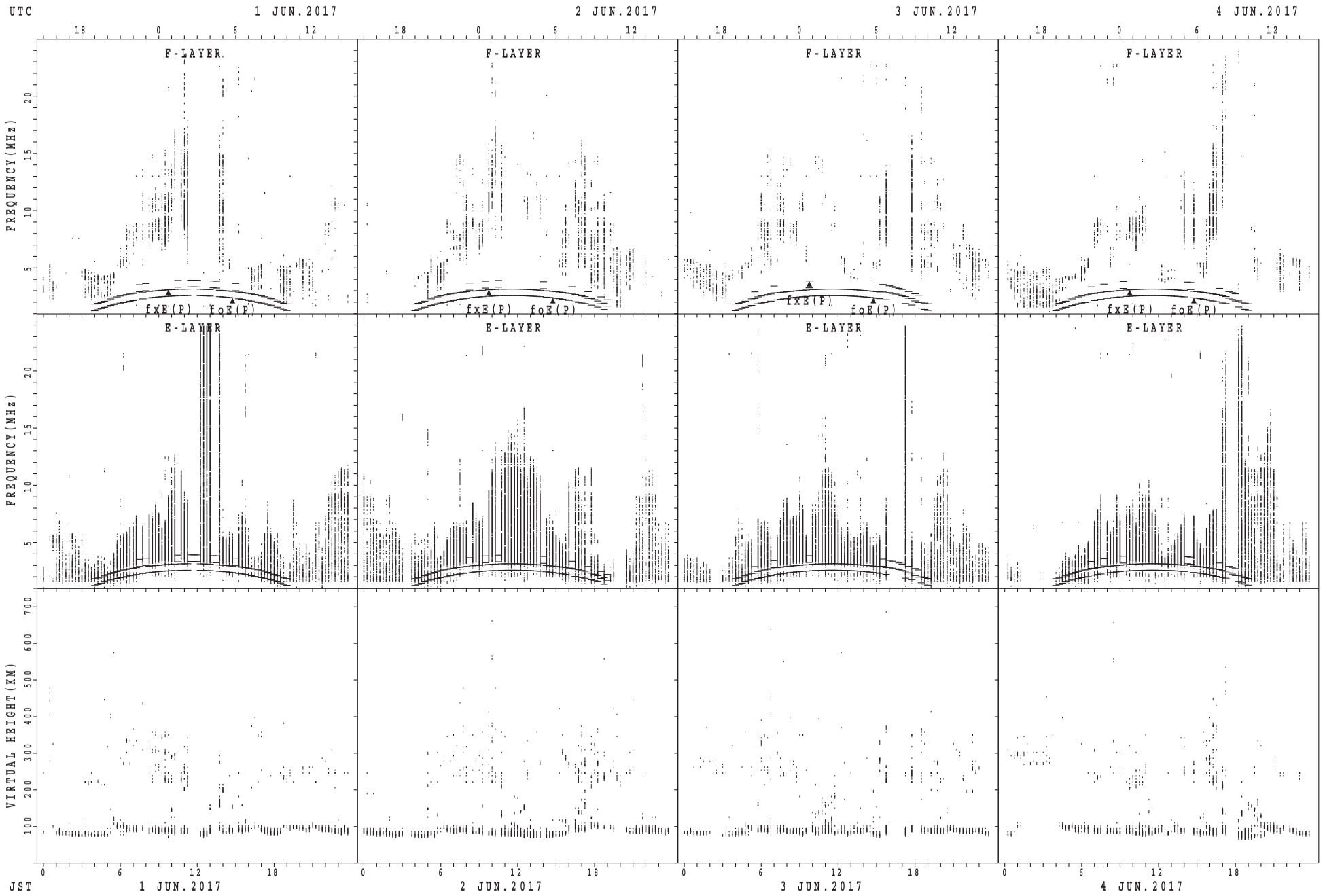
HOURLY VALUES OF fmin AT Okinawa

JUN. 2017

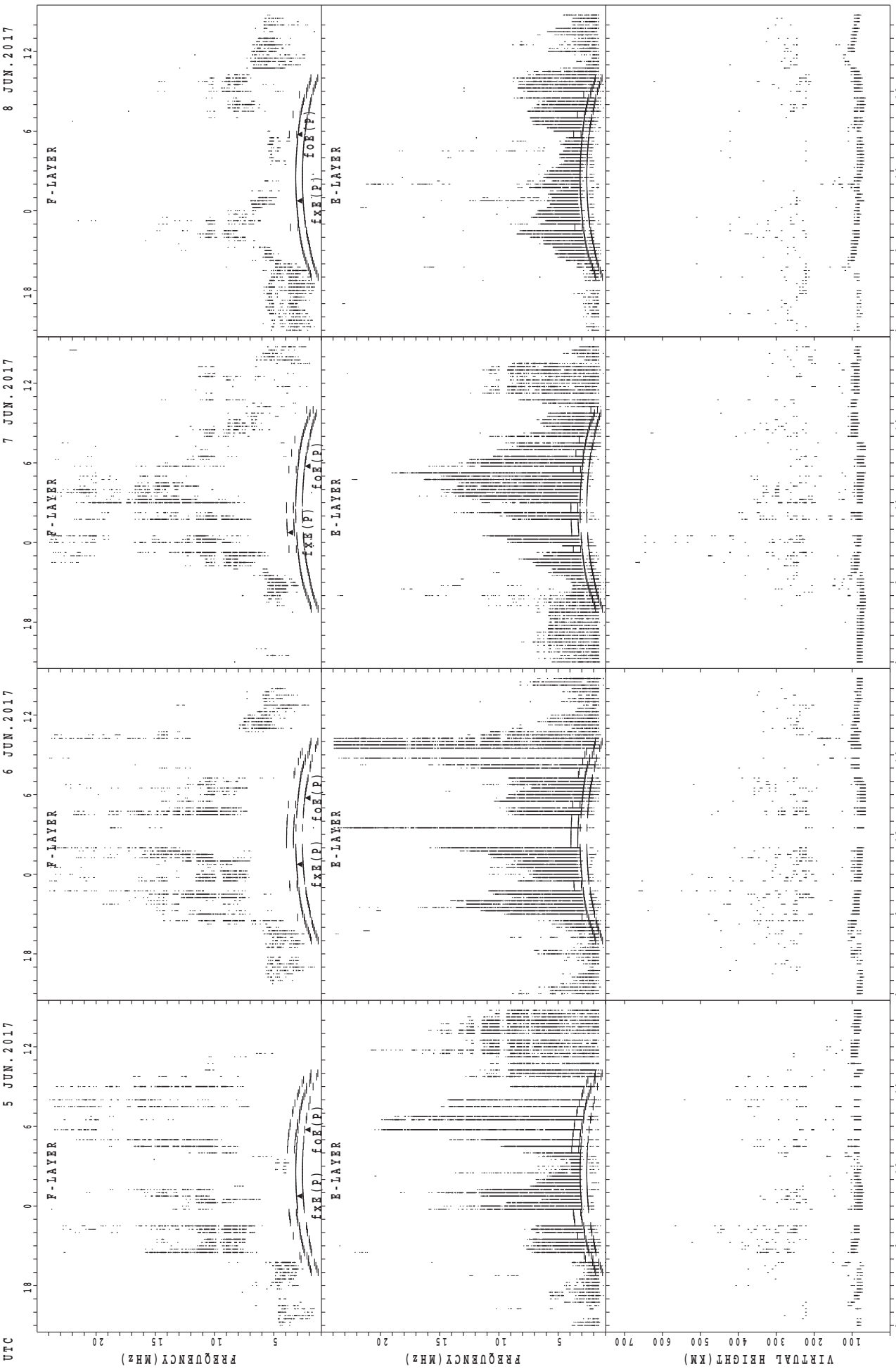
LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

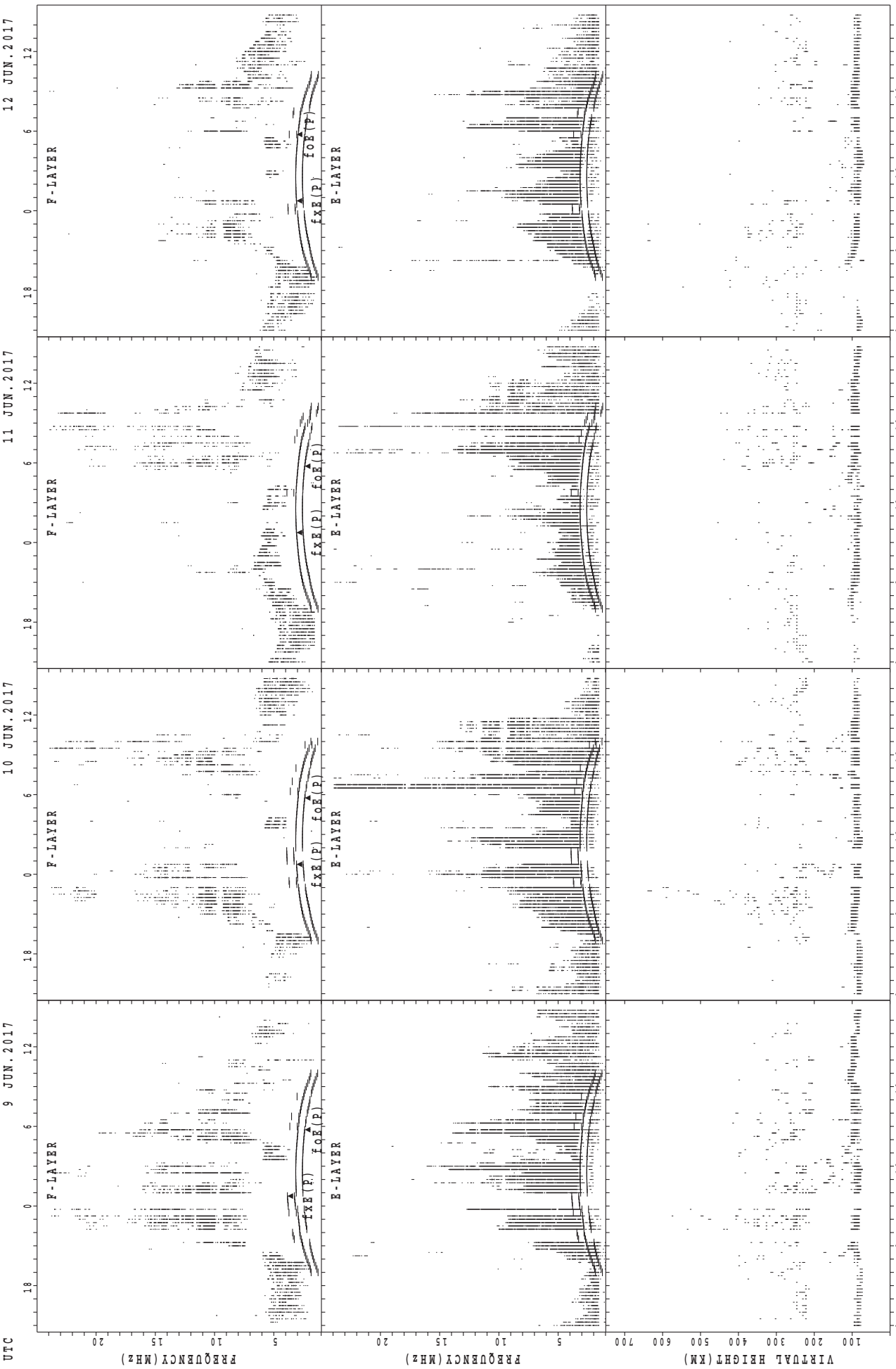
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	15	14	14	14	14	14	15	16	17	23	21	21	20	18	15	14	14	14	14	14	14	14
2	14	14	15		14	14	14	14	17	18	18	21	18	21	18	18	15	14	14	14	14	14	14	15
3	15	14	14	14	14	14	14	14	14	14	15	20	18	21	20	17	16			14	14	14	15	14
4	15	14	14	15	14	14	14	14	14	15	17	20	18	17	18	15	14	14	14	14	15	15	C	C
5	C	14	15	14	15	14	14	14	14	14	17	17	18	18	21	20	17	14	14	14	14	14	14	14
6	14	14	14	14	14	14	14	14	14	14	17	18	18	21	20	18	15	14	14	14	14	14	14	14
7	15	14	14	14	14	14	14	14	14	14	15		24	20	17	16	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	17	16	14	14	14	14	14	14	15
9	14	14	15	14	14	14	15	14	14	14	15	18	18	18	18	17	14	14	14	14	14	14	14	14
10	14	14	14	14	14	14	14	14	14	14	15	21	18	18	17	16	16	14	14	14	14	15	14	14
11	14	14	14	15	14	14	14	14	14	14	15	18	23	18	18	16	14	14	14	14	14	14	15	14
12	14	15	14	14	14	14	14	14		14		22	21	18	18	16	16	14	14	14	15	15	14	14
13	17	15	14	15	14	14	14	14	14	32	16	18	21	21	18	20	17	14	14	14	14	14	15	14
14	14	15	14	14	14	14	14	14	14	14	15	17	20	18	20		15	14	14	14	15	14	15	14
15	14	14	14	14	14	14	14	14	14	16	16	20	22	21	20	20	15	15	14	14	14	14	14	14
16	14	15	14	14	14	14	14	14	14	16	17	17	20	18	18	16	17	15	14	14	14	15	14	14
17	14	14	14	14	15	14	14	14	14	15	15	20	18	20	26	17	15	15	14	14	14	14	14	14
18	14	14	14	14	14	14	14	14	14	14	18	18	17	20	18	17	16		14	14	14	14	14	14
19	15	14	14	14	15	14	14	14	14	14	17	17	22	18	18	20	15	14	14	14	14	14	14	14
20	14	14	14	14	14	14	14	14	14	14	17	18	18	18	18	17	16	14	14	14	14	14	14	14
21	14	14	14	14	14	14	14	14	14	15	17	20	18	20	18	18	14			14	14	14	14	15
22	14	14	14	14	14	14		14	14	15	18				21	17	15	14	14	15	14	15	14	14
23	14	14	14	14	14	14	14	14	14	14	17	18	17	17	20	15	14	14	14	14	14	14	14	14
24	15	14	14	15	14	14	14	14	14	15	15	18	18	17	15	17	15	14	14	14	14	14	14	14
25	14	15	14	14	14	14	14	14	14	15	15	17	20	21	17	21	16	14	14	14	14	15	15	14
26	14	14	14	14	14	14	14	14	14	14	15	20	22	21	20	15	14	14	14	14	14	14	15	14
27	14	14	14	14	14	14	17	14	14	15	16	15	20	20	18	15	14	14	14	14	14	15	15	14
28	14	14	14		15		14	14	14	15	16	16	20	18	15	15	15	14	14	14	15	14	14	14
29	14	14	14	14	15	14	14	14	14	15	17	20	17	18	18	17	15	14	14	14	14	14	14	14
30	15	14	14	14	14	14	14	14	14	14	15	18	18	18	18	15	14	14	14	14	14	14	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	27	29	28	28	29	28	29	28	27	28	28	29	29	29	26	27	29	29	29	28	28
MED	14	14	14	14	14	14	14	14	14	14	16	18	18	18	18	17	15	14	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	14	14	15	17	20	21	21	20	18	16	14	14	14	14	14	15	14
L Q	14	14	14	14	14	14	14	14	14	14	15	17	18	18	18	16	14	14	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai

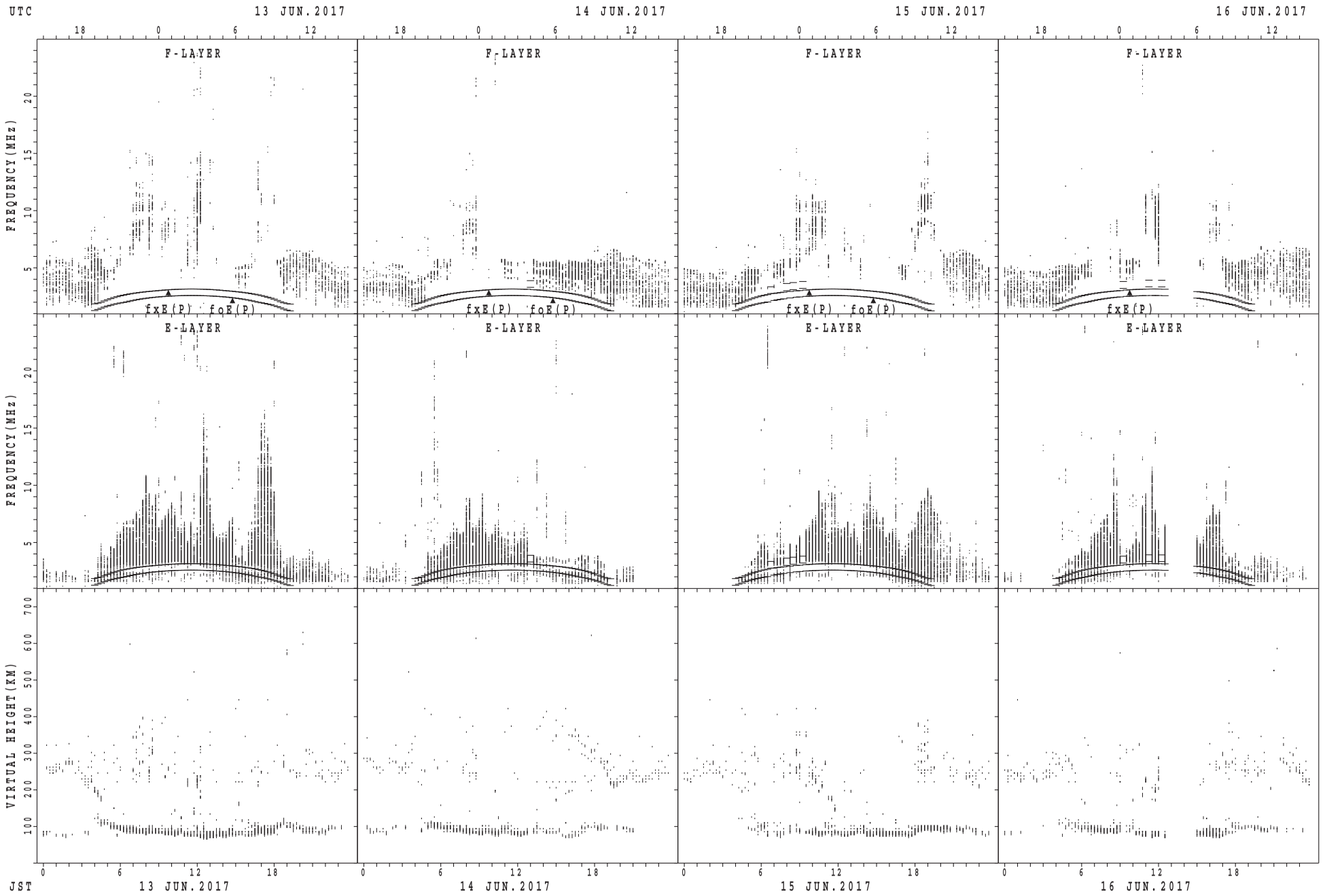


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
5 JUN.2017
6 JUN.2017
7 JUN.2017
8 JUN.2017
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

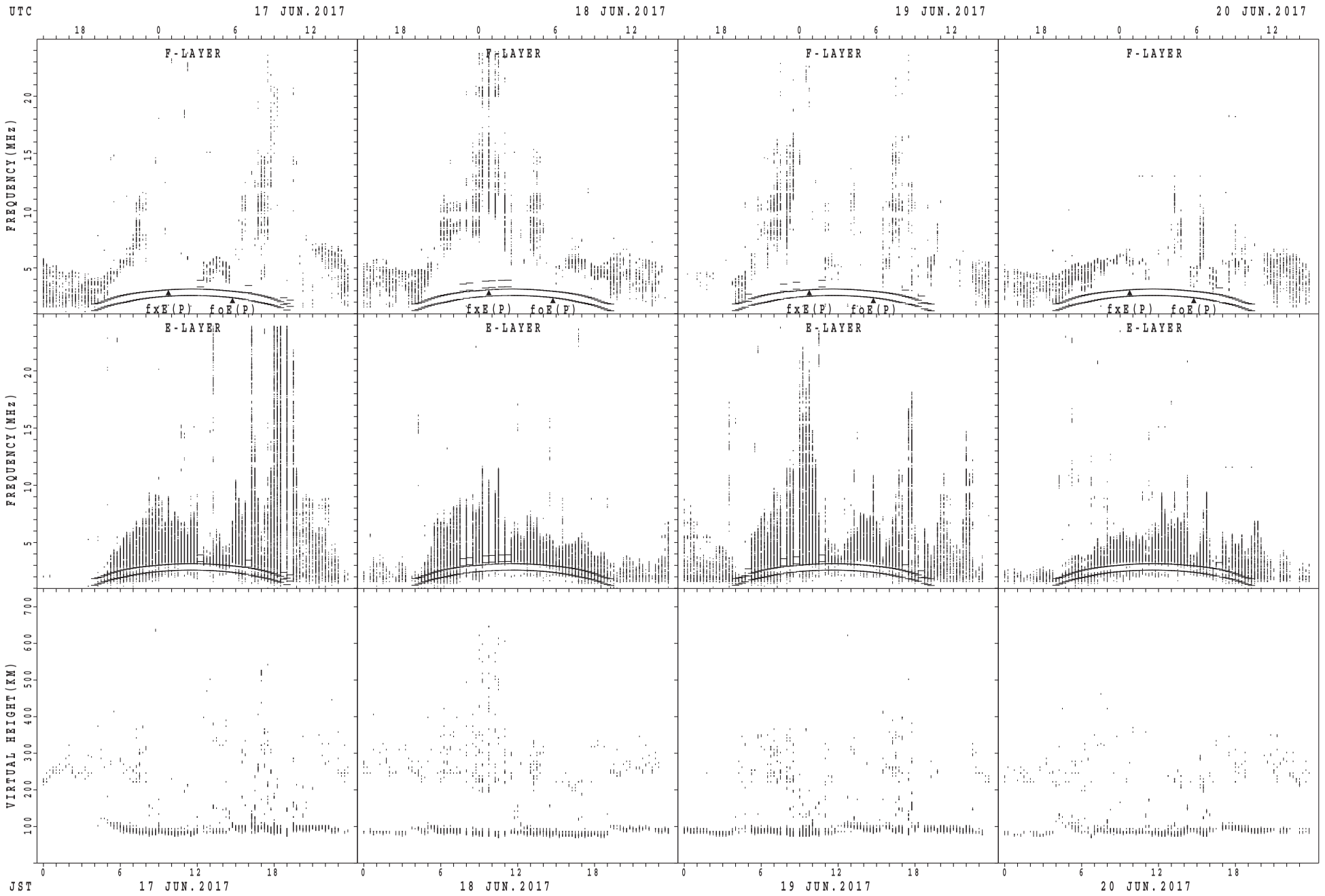

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 JUN.2017
10 JUN.2017
11 JUN.2017
12 JUN.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



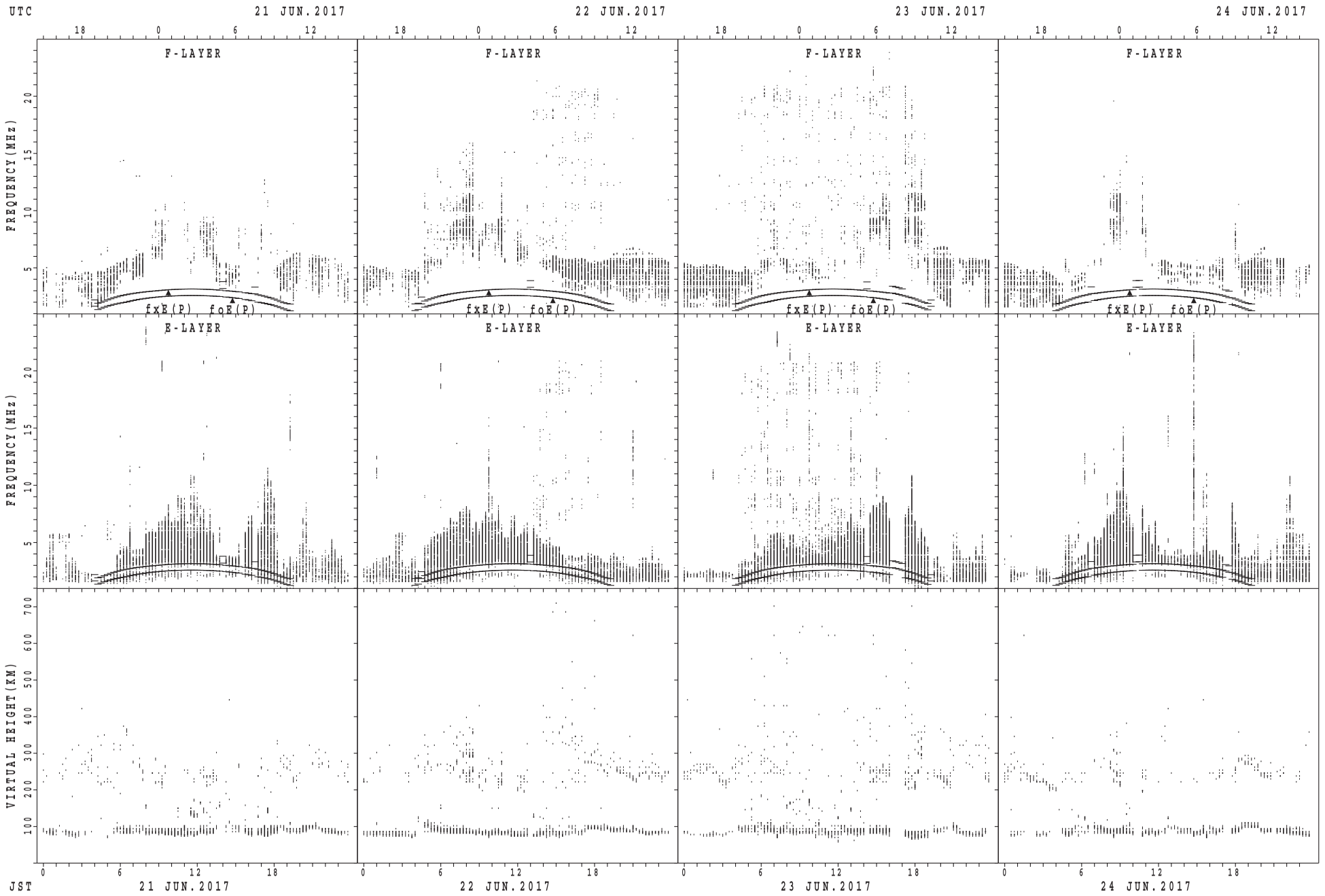
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

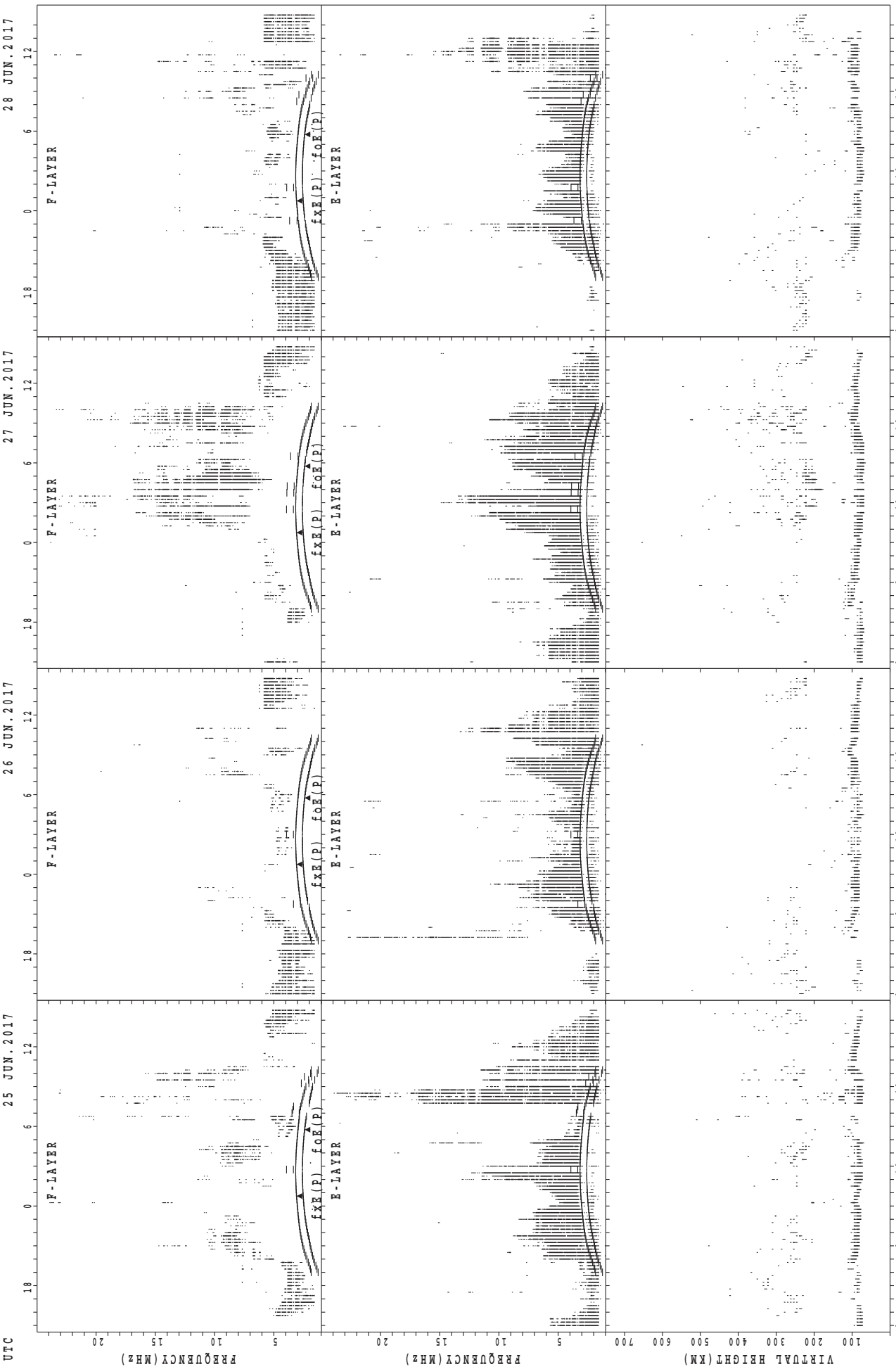


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

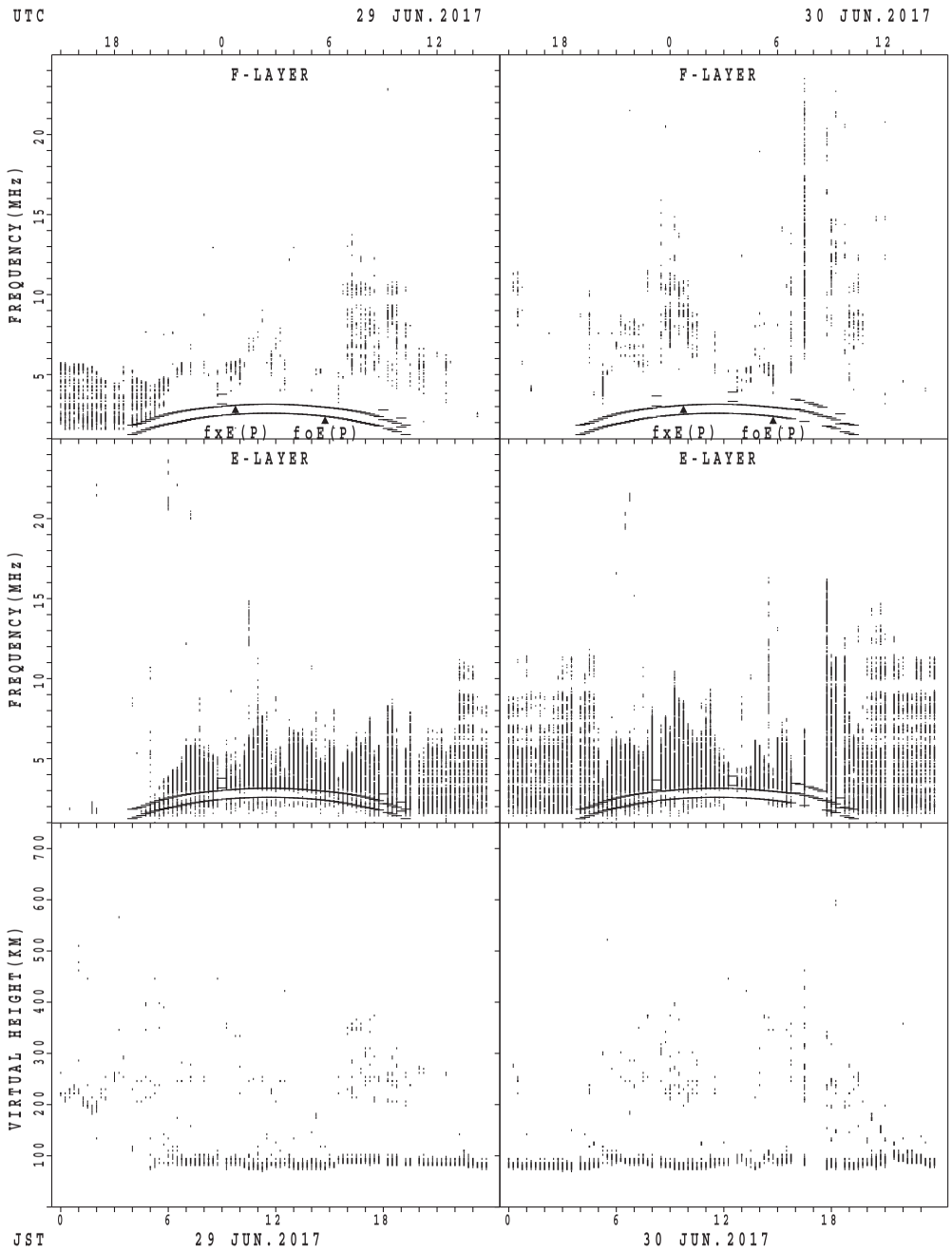
SUMMARY PLOTS AT Wakkanai



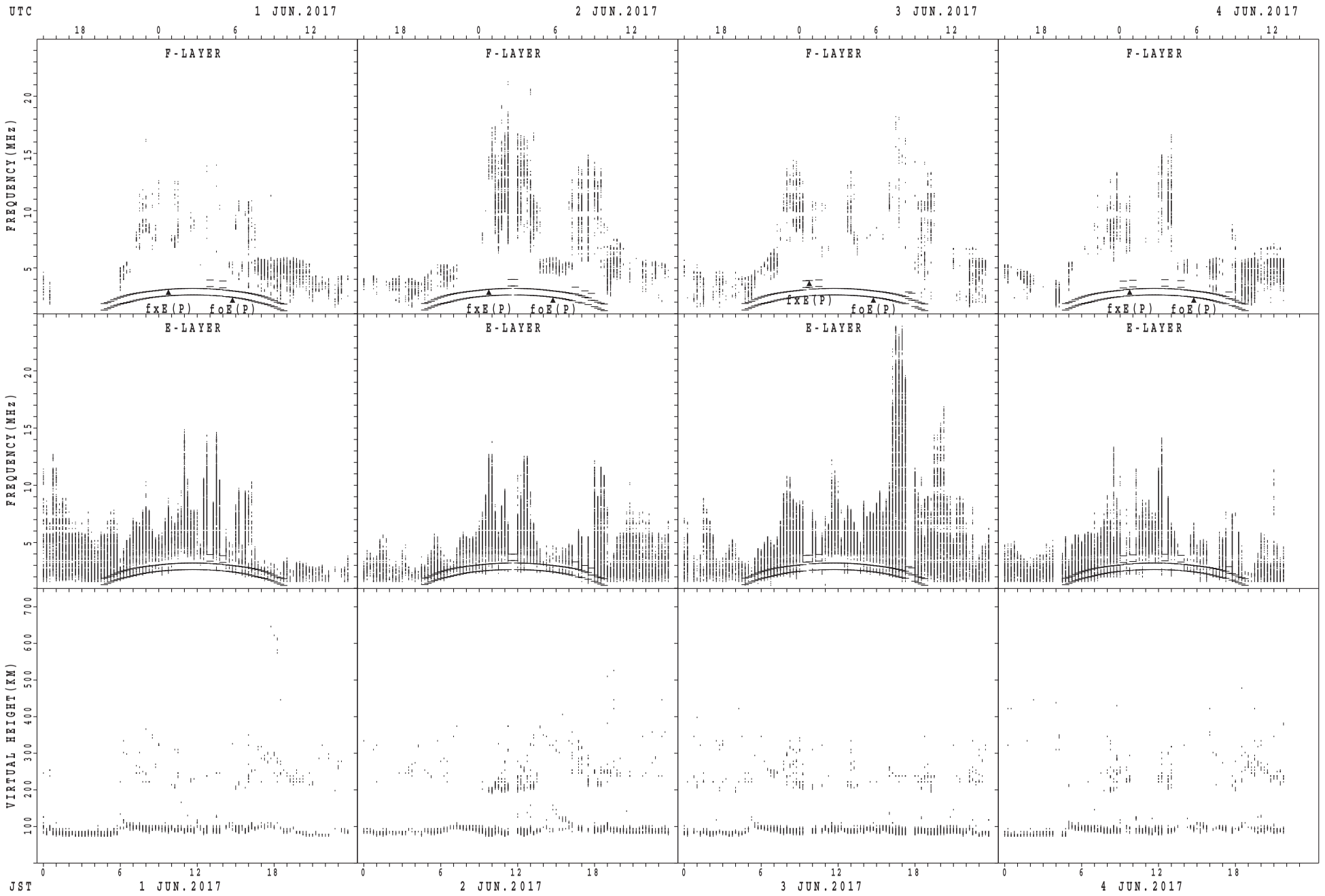
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
25 JUN.2017
26 JUN.2017
27 JUN.2017
28 JUN.2017
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

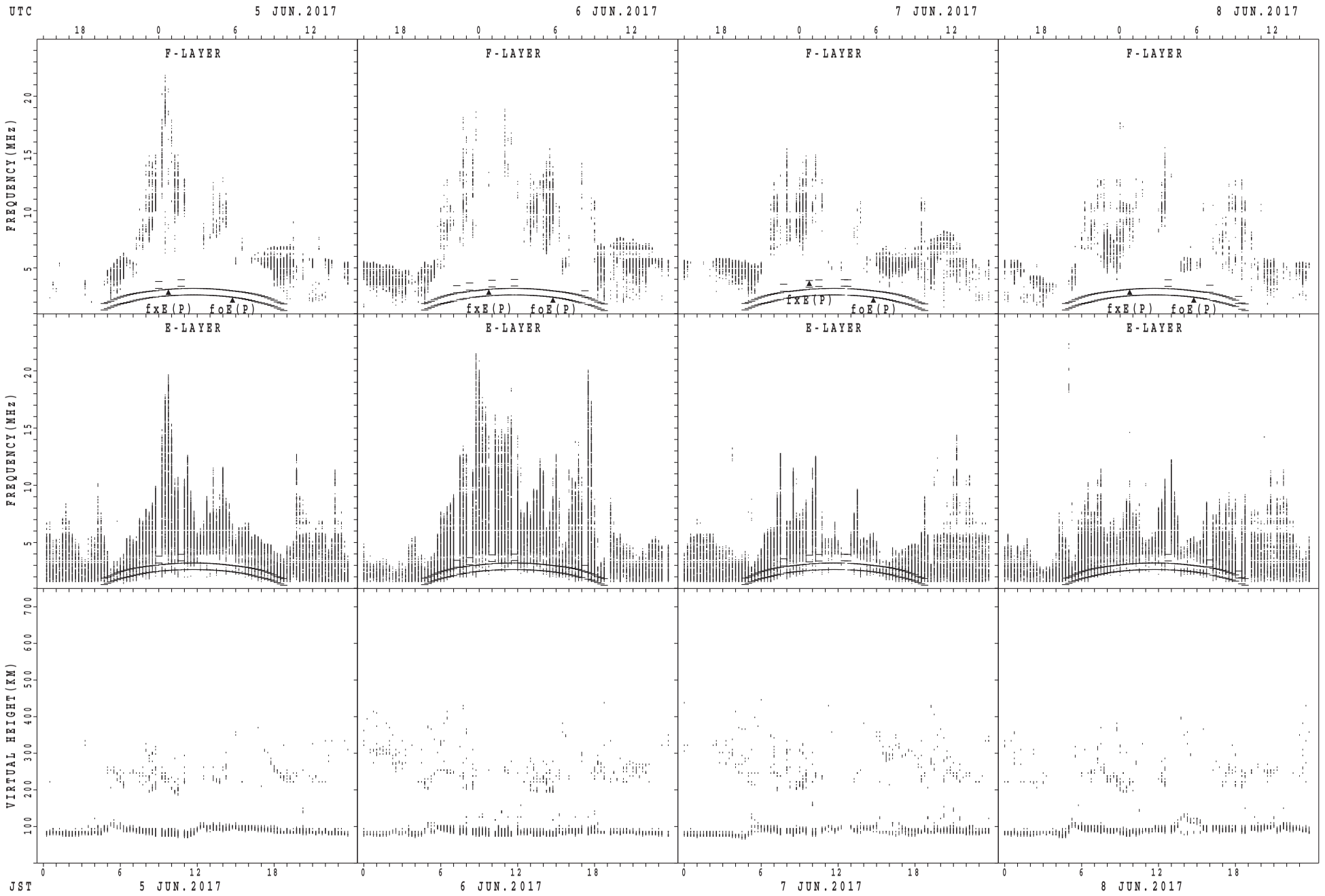
SUMMARY PLOTS AT Wakkanai



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

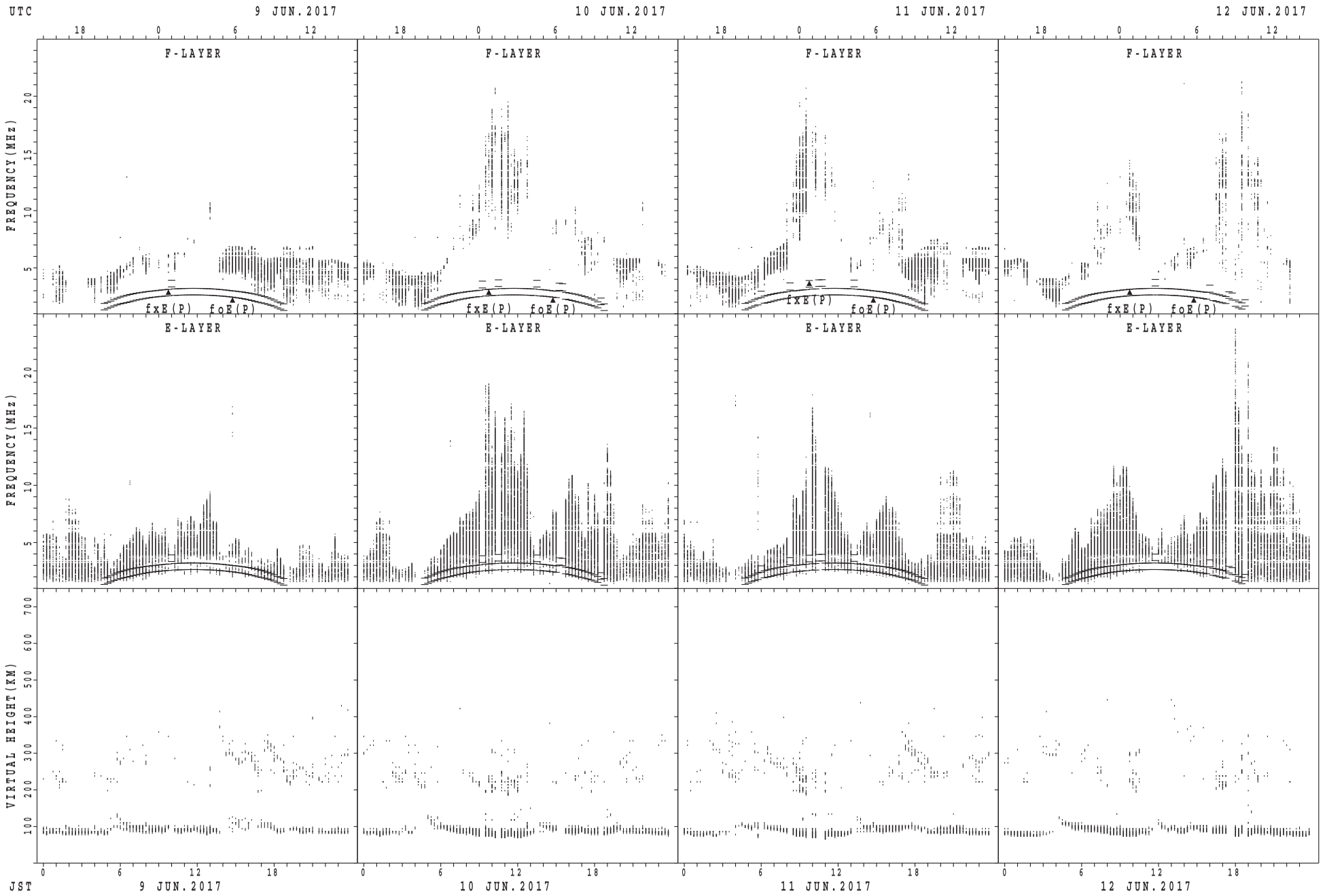

SUMMARY PLOTS AT Kokubunji
UTC
1 JUN.2017
2 JUN.2017
3 JUN.2017
4 JUN.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



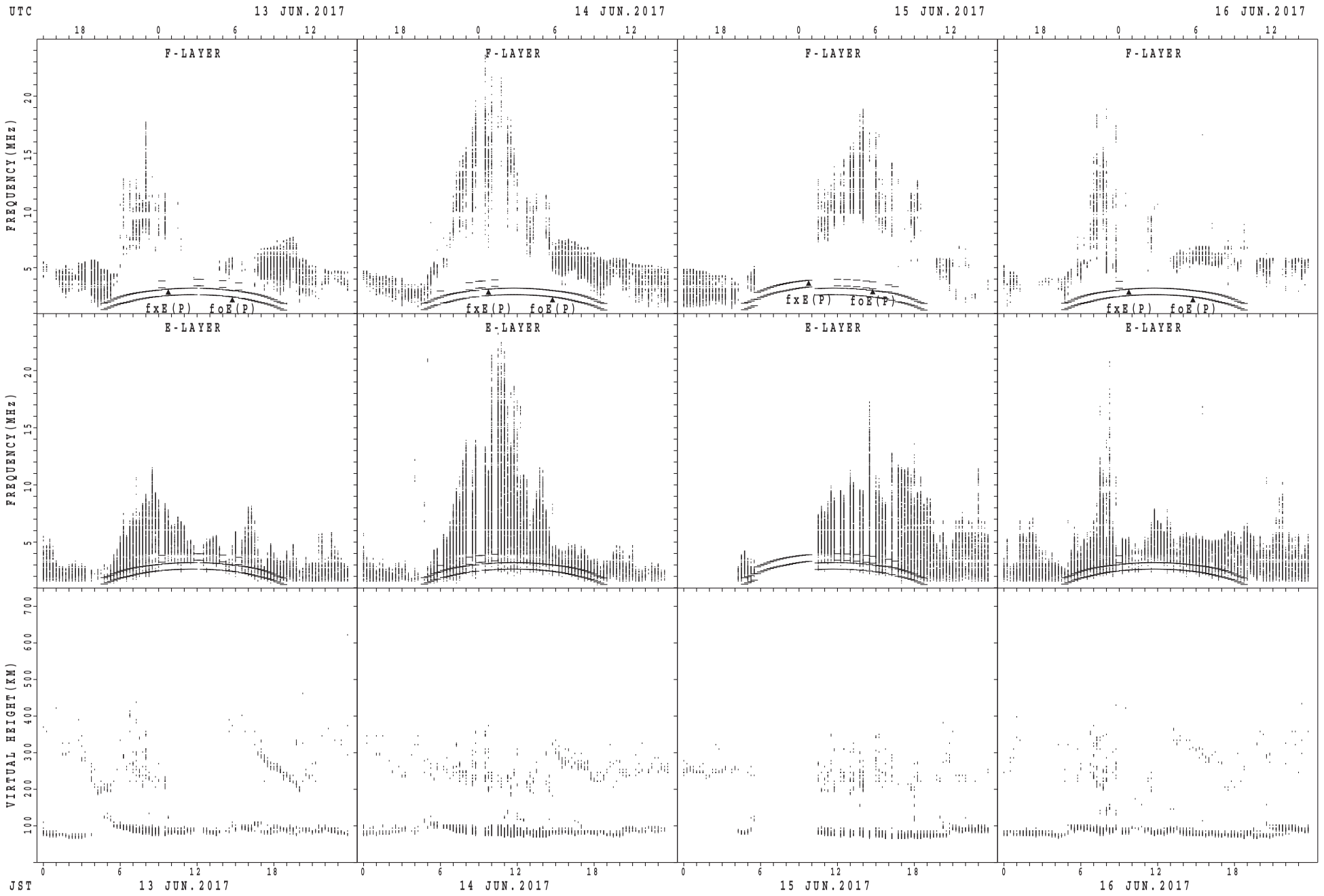
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



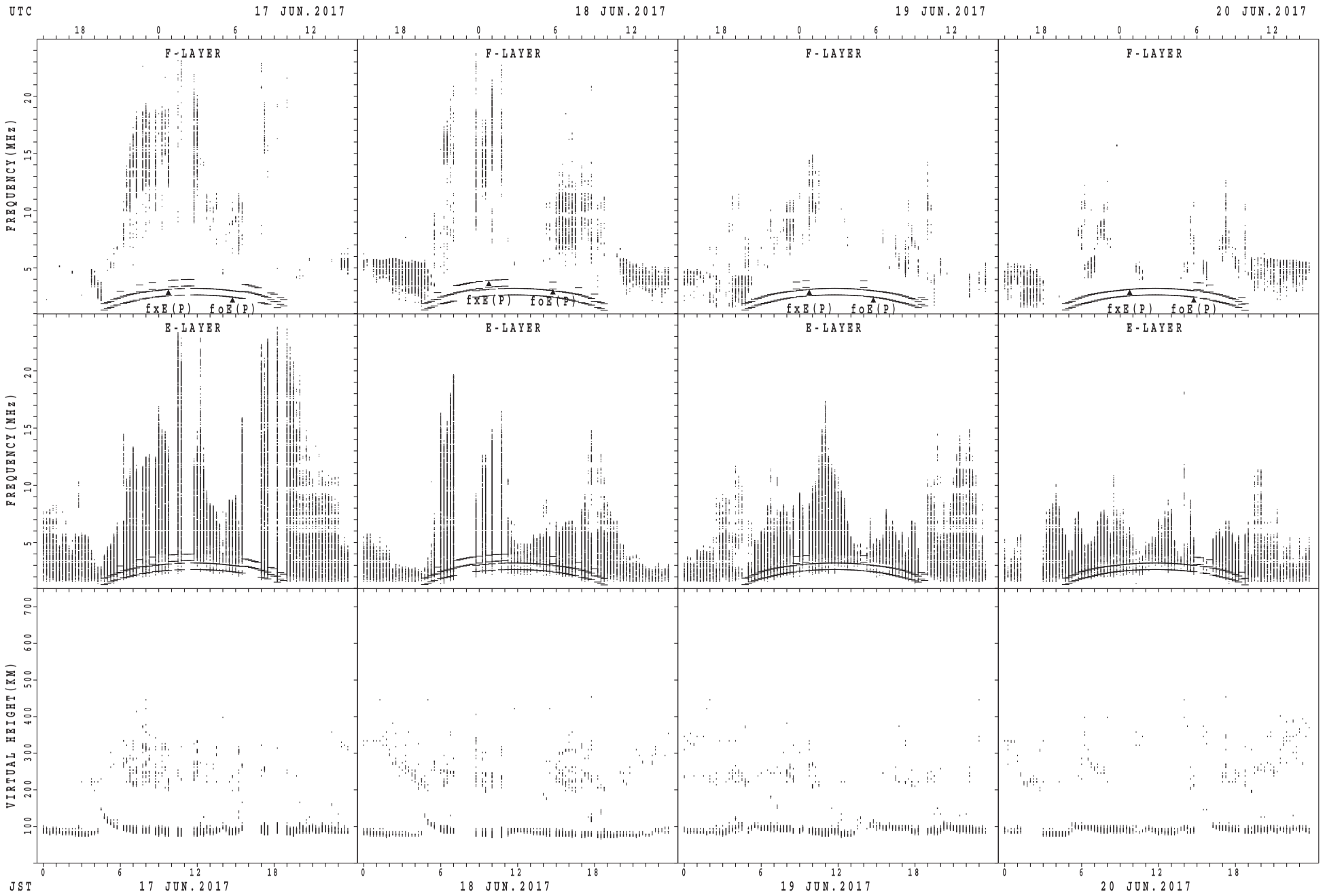
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



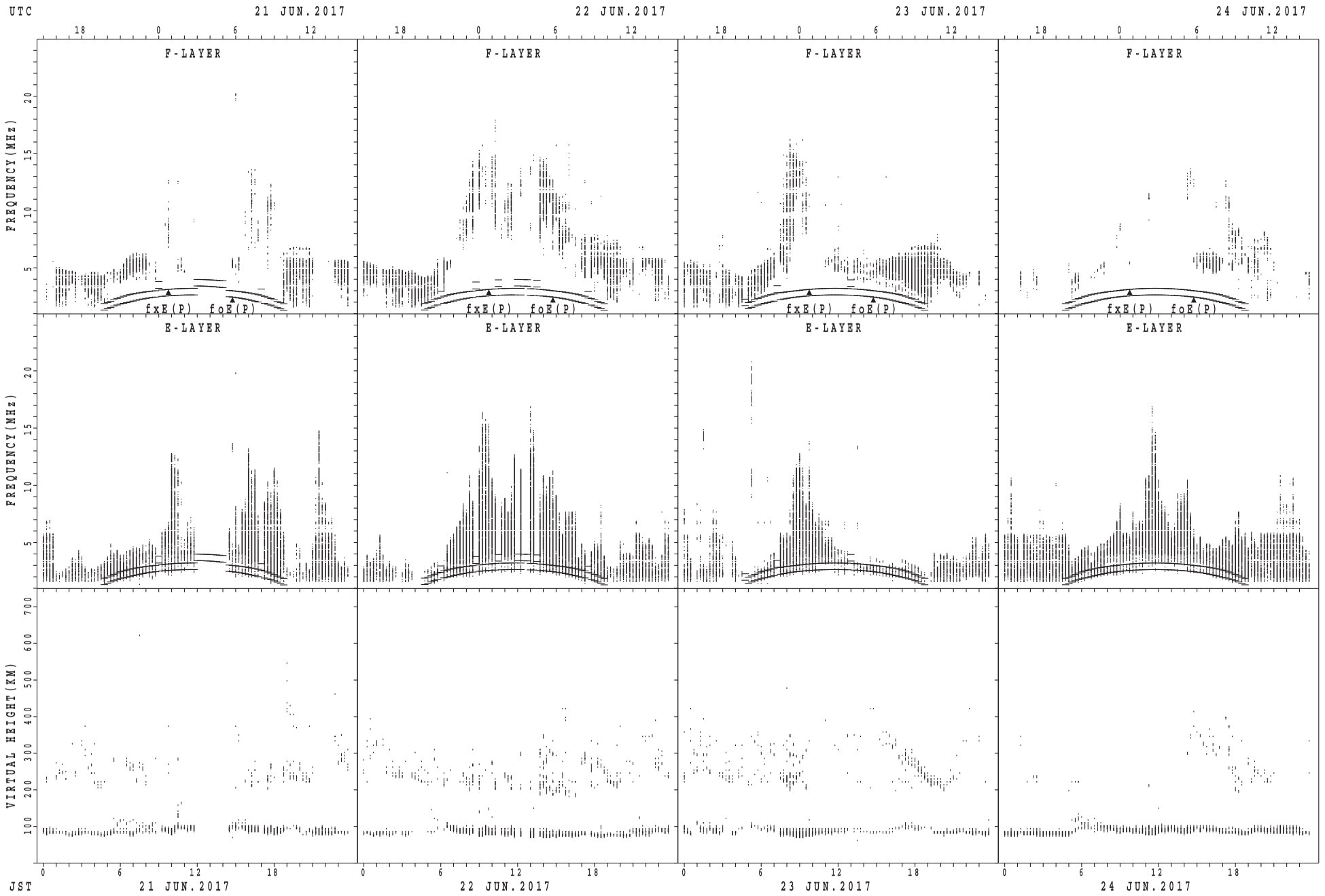
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



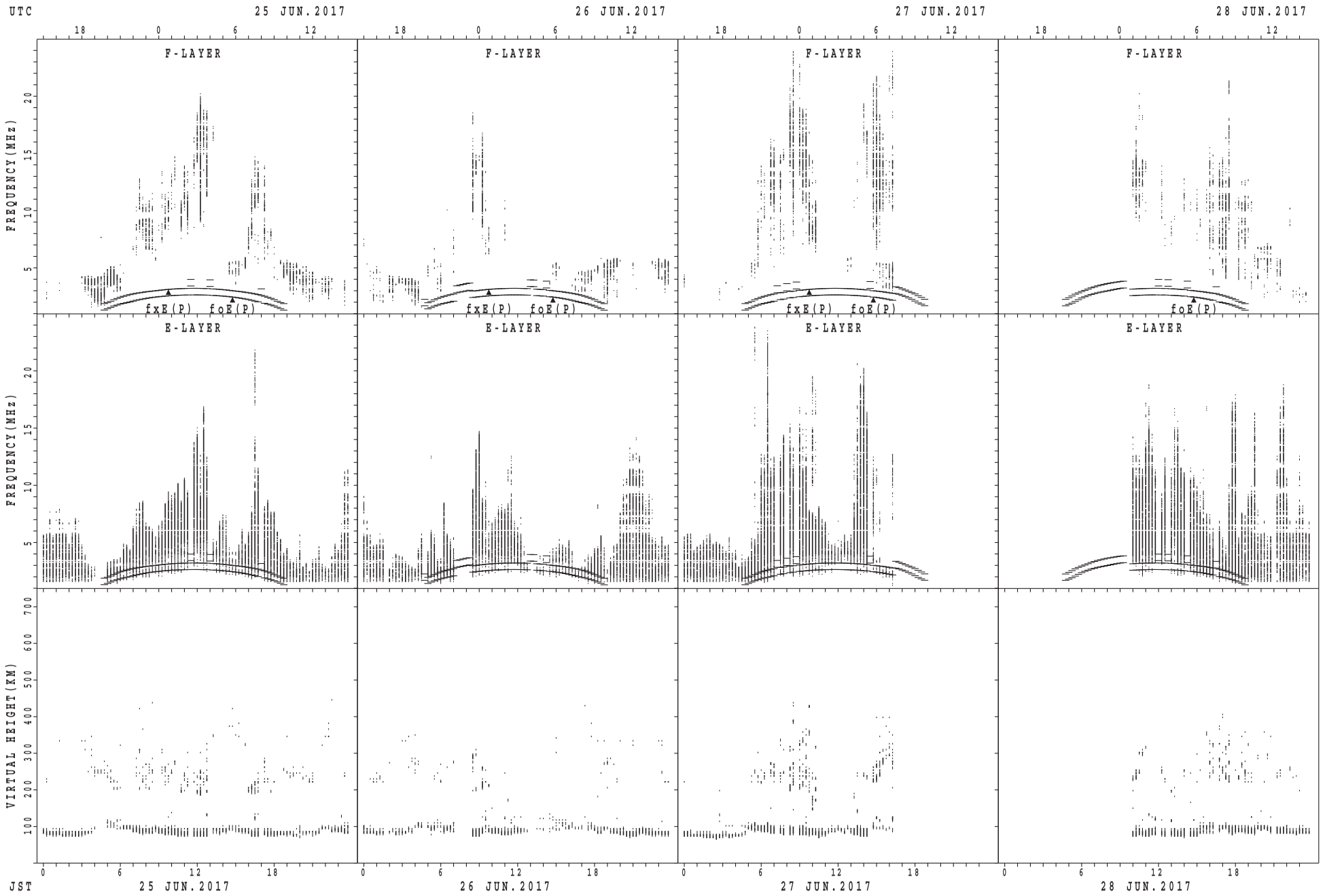
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



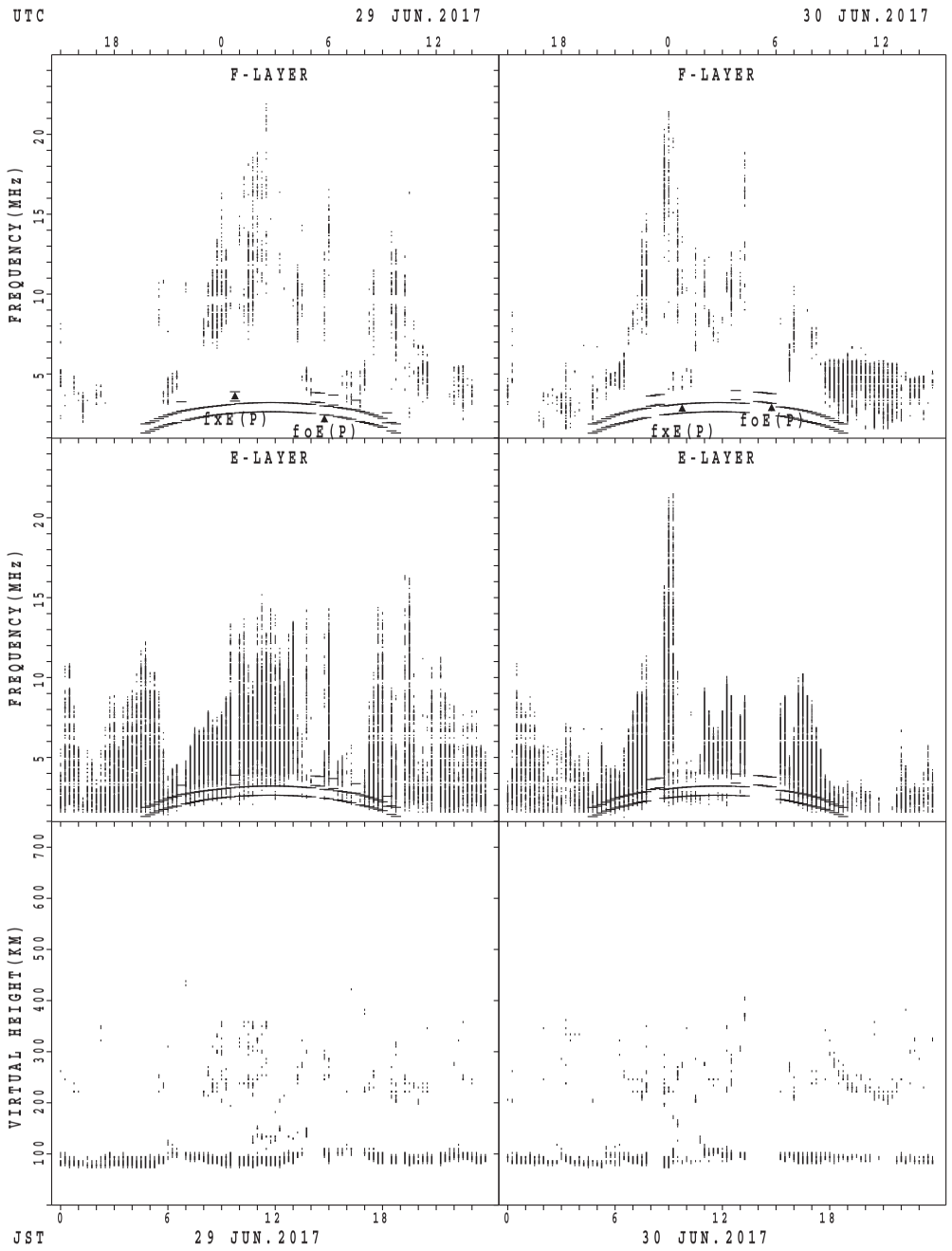
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



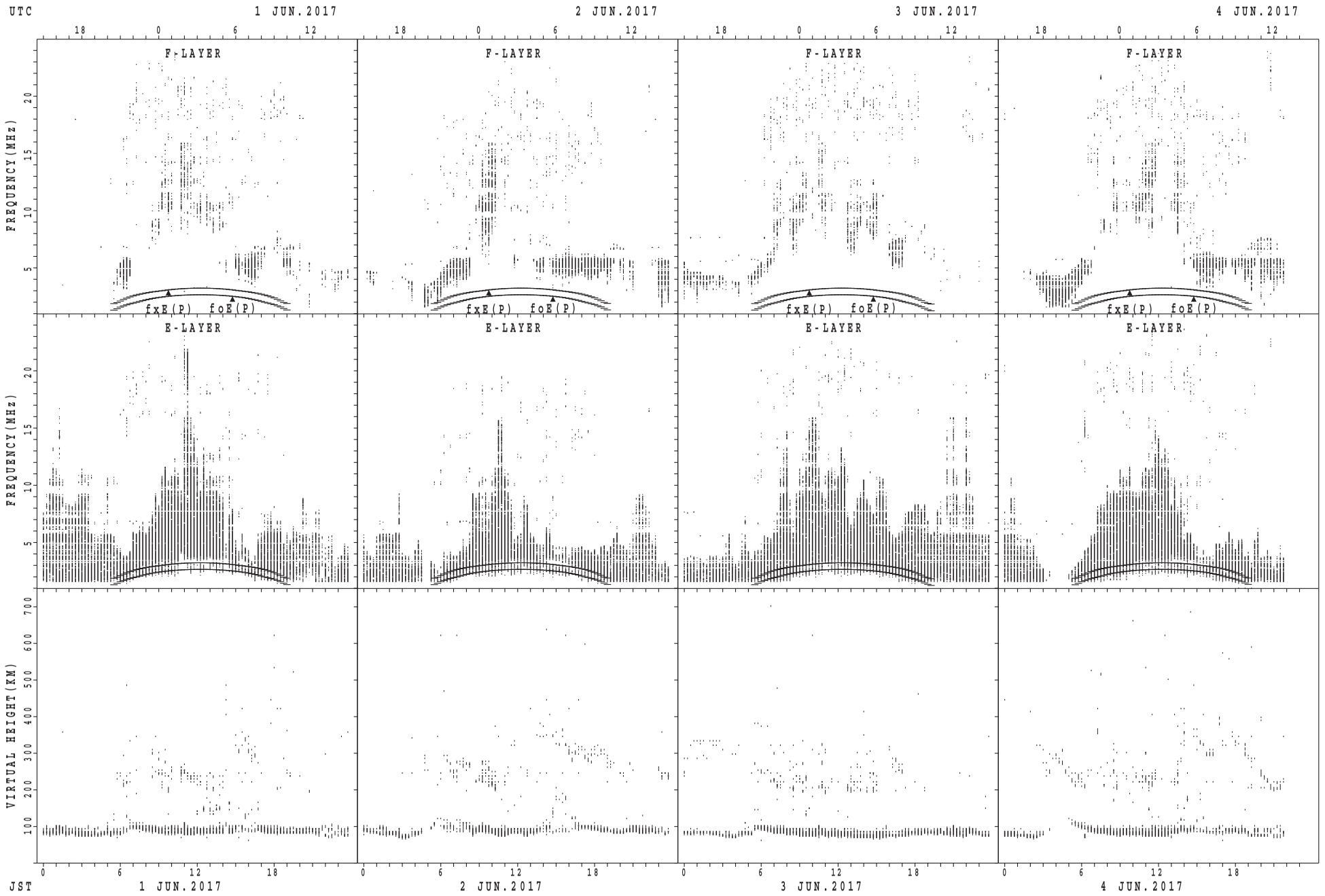
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

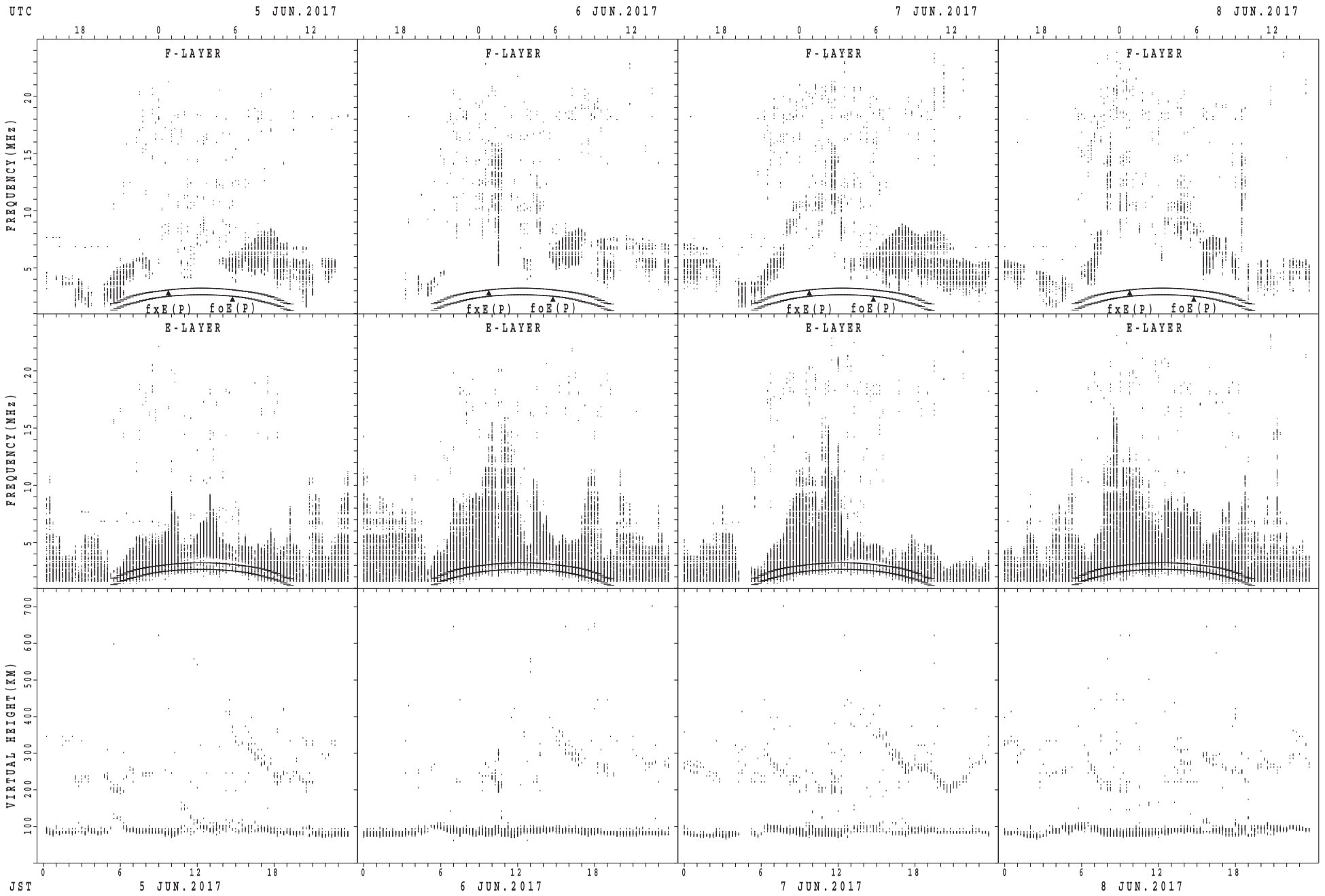


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

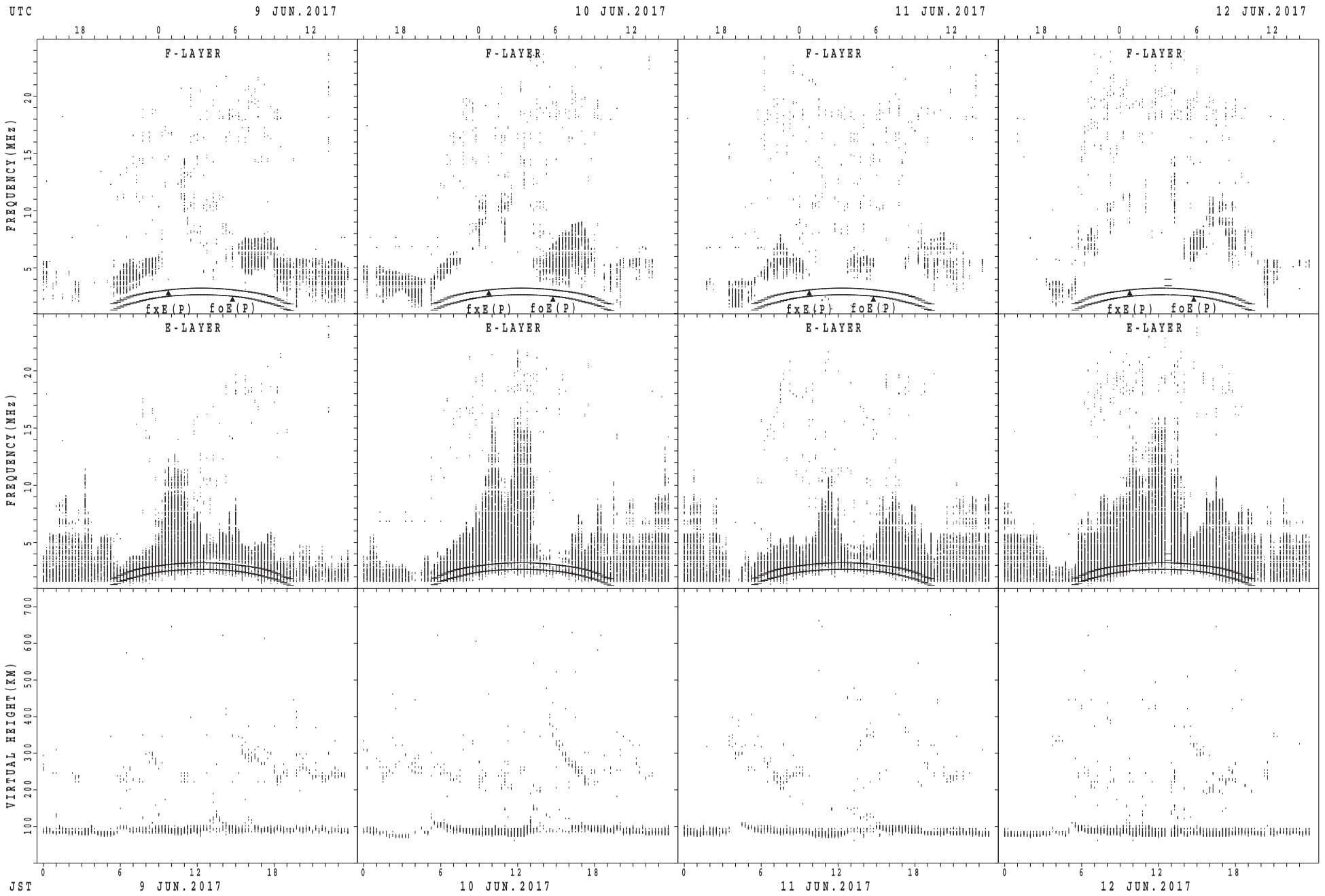
SUMMARY PLOTS AT Yamagawa



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

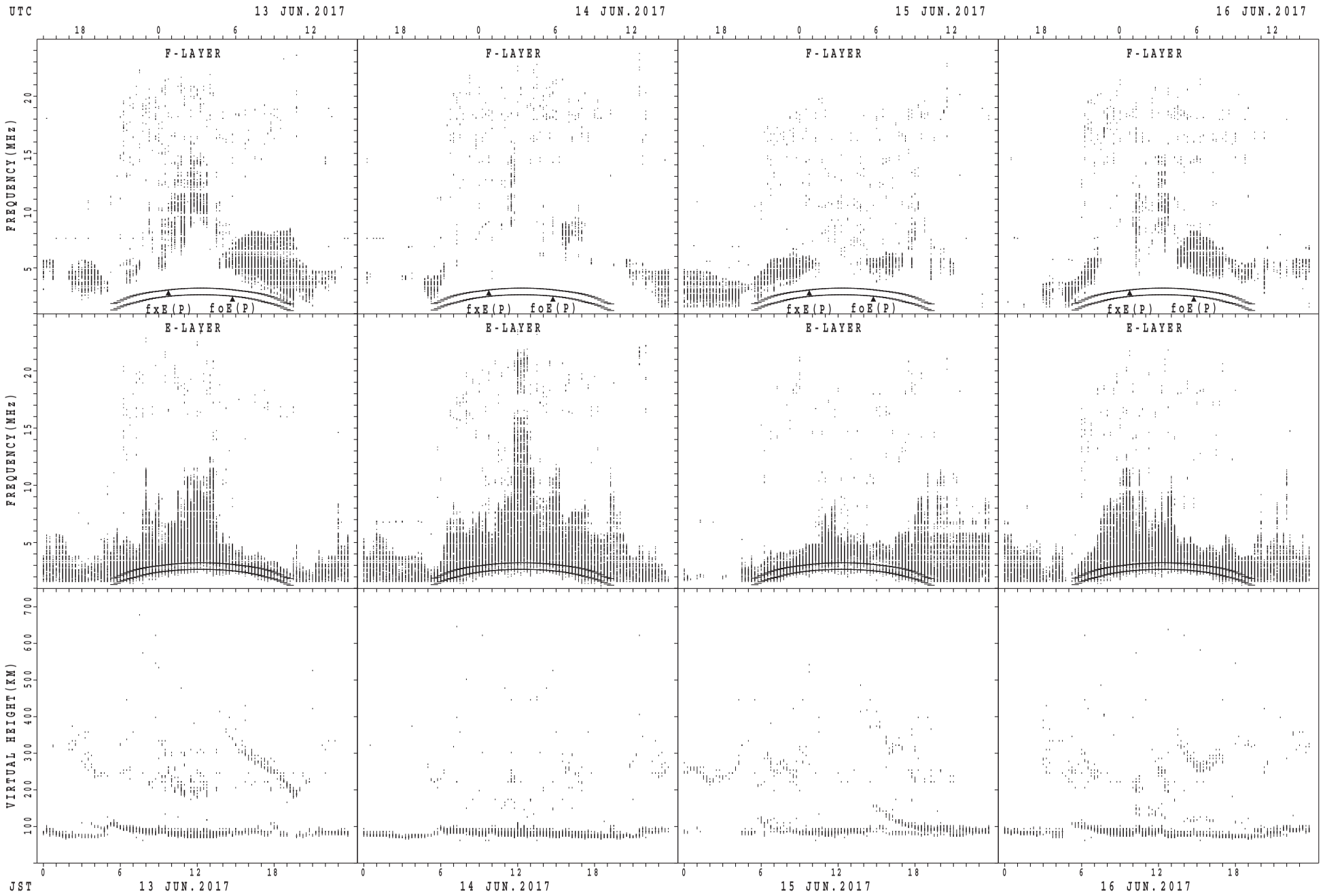

SUMMARY PLOTS AT Yamagawa
UTC
5 JUN.2017
6 JUN.2017
7 JUN.2017
8 JUN.2017
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



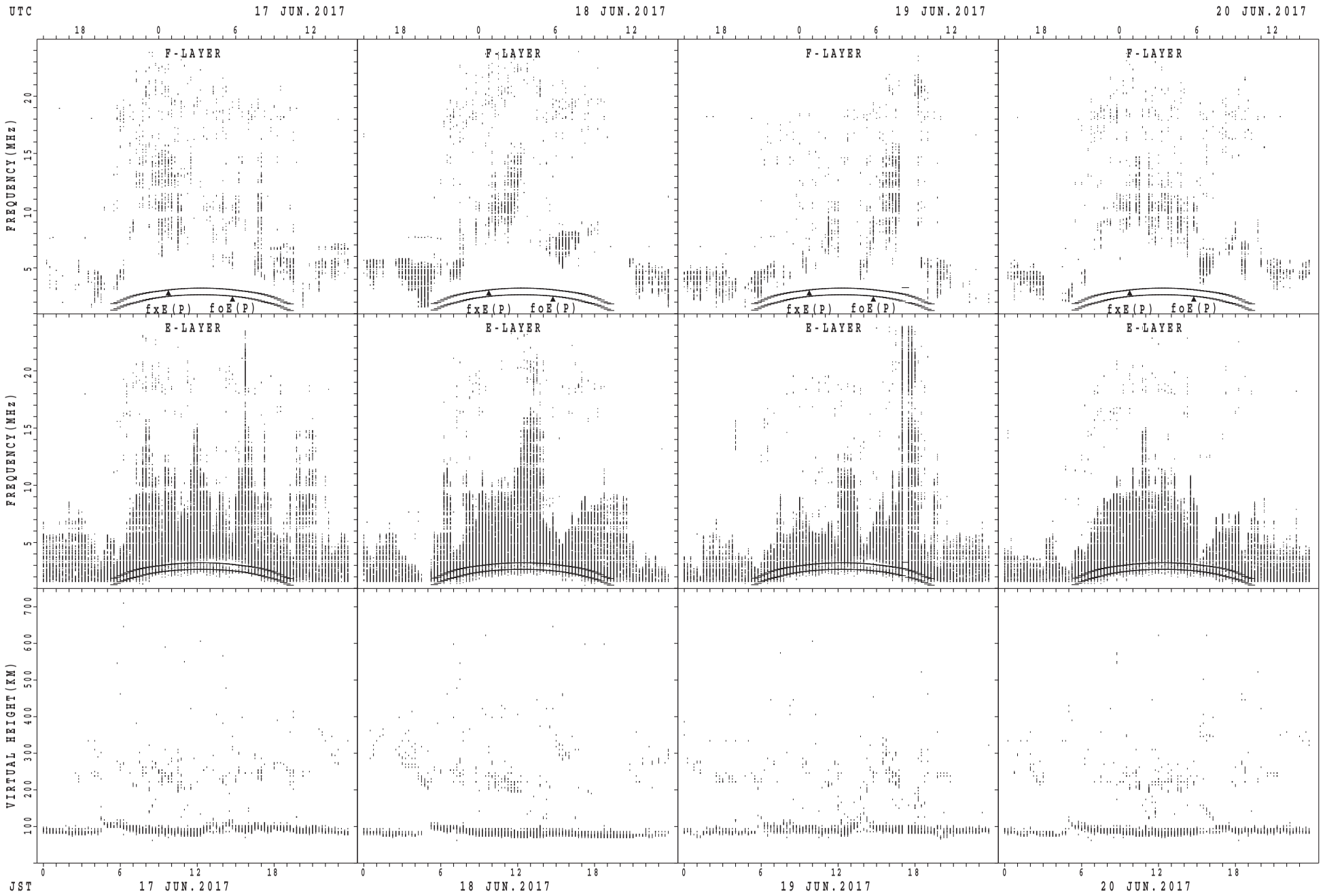
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



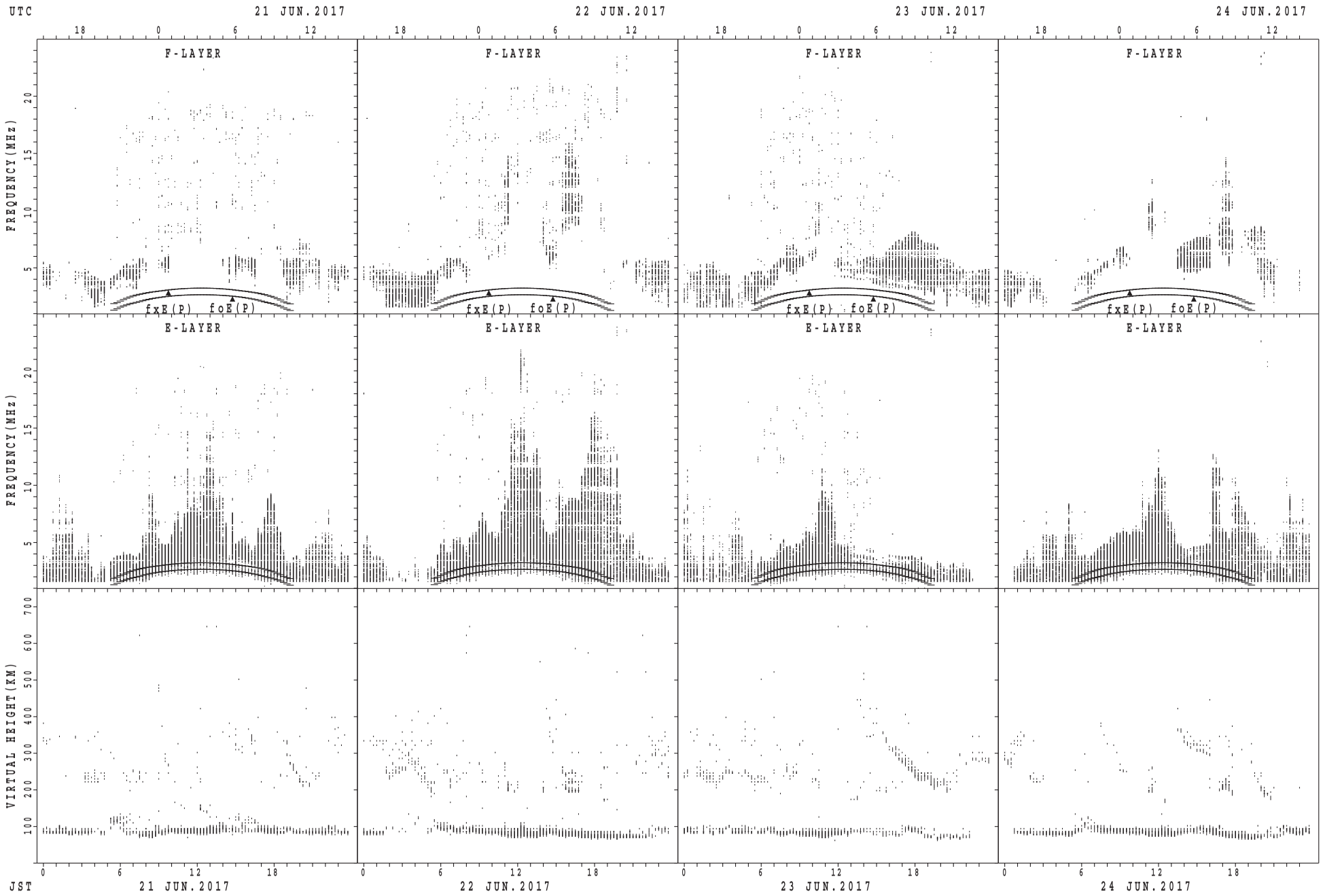
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



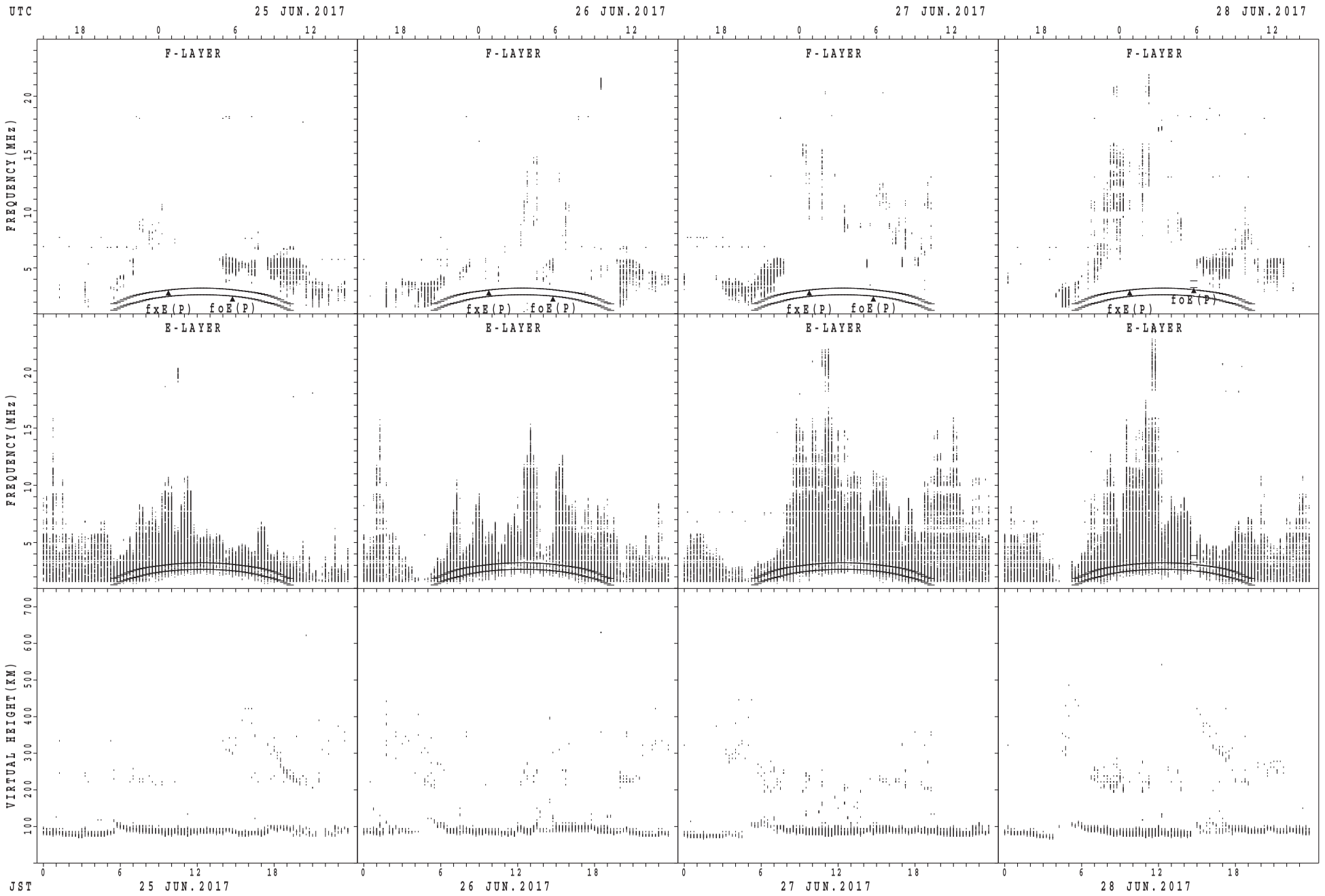
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



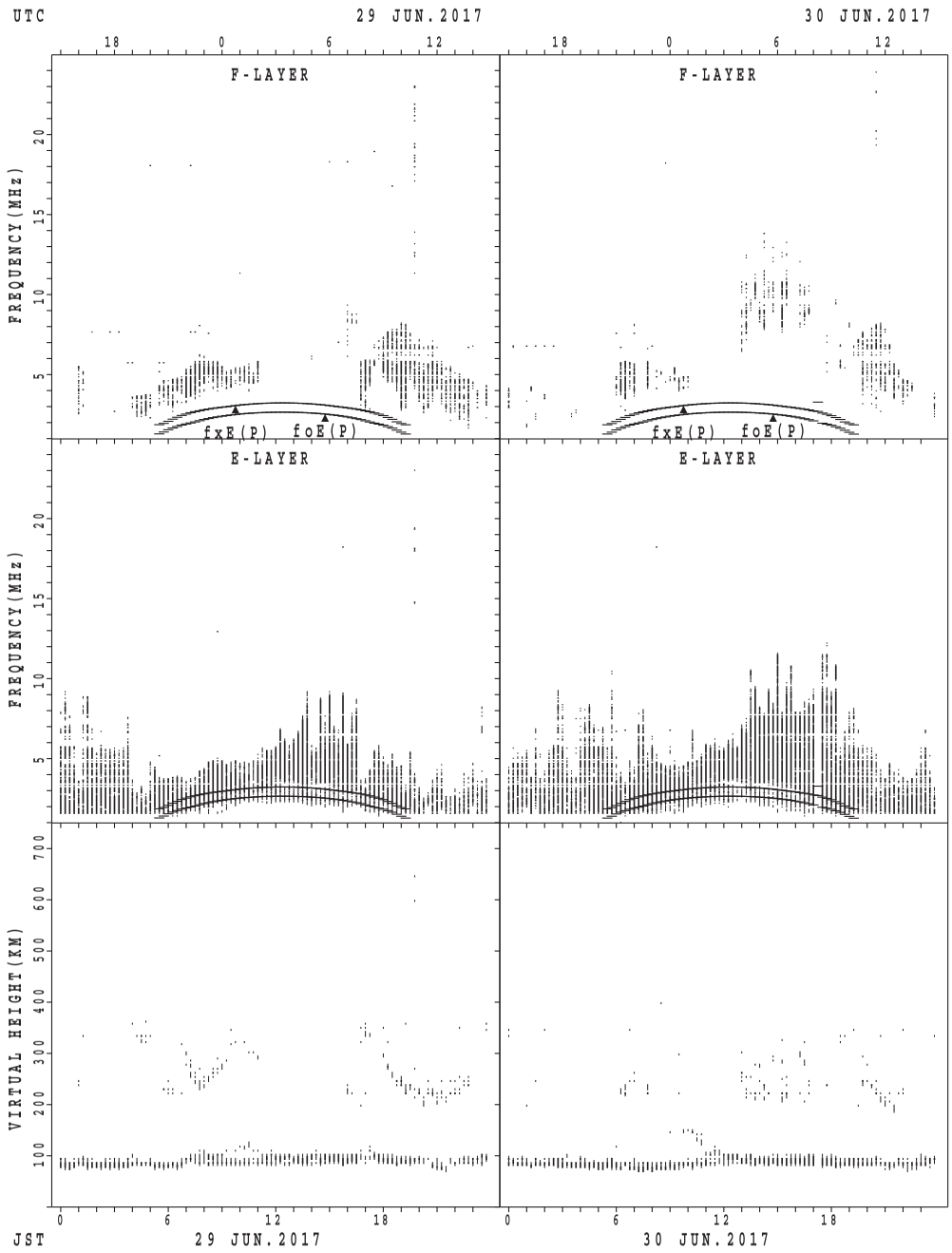
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



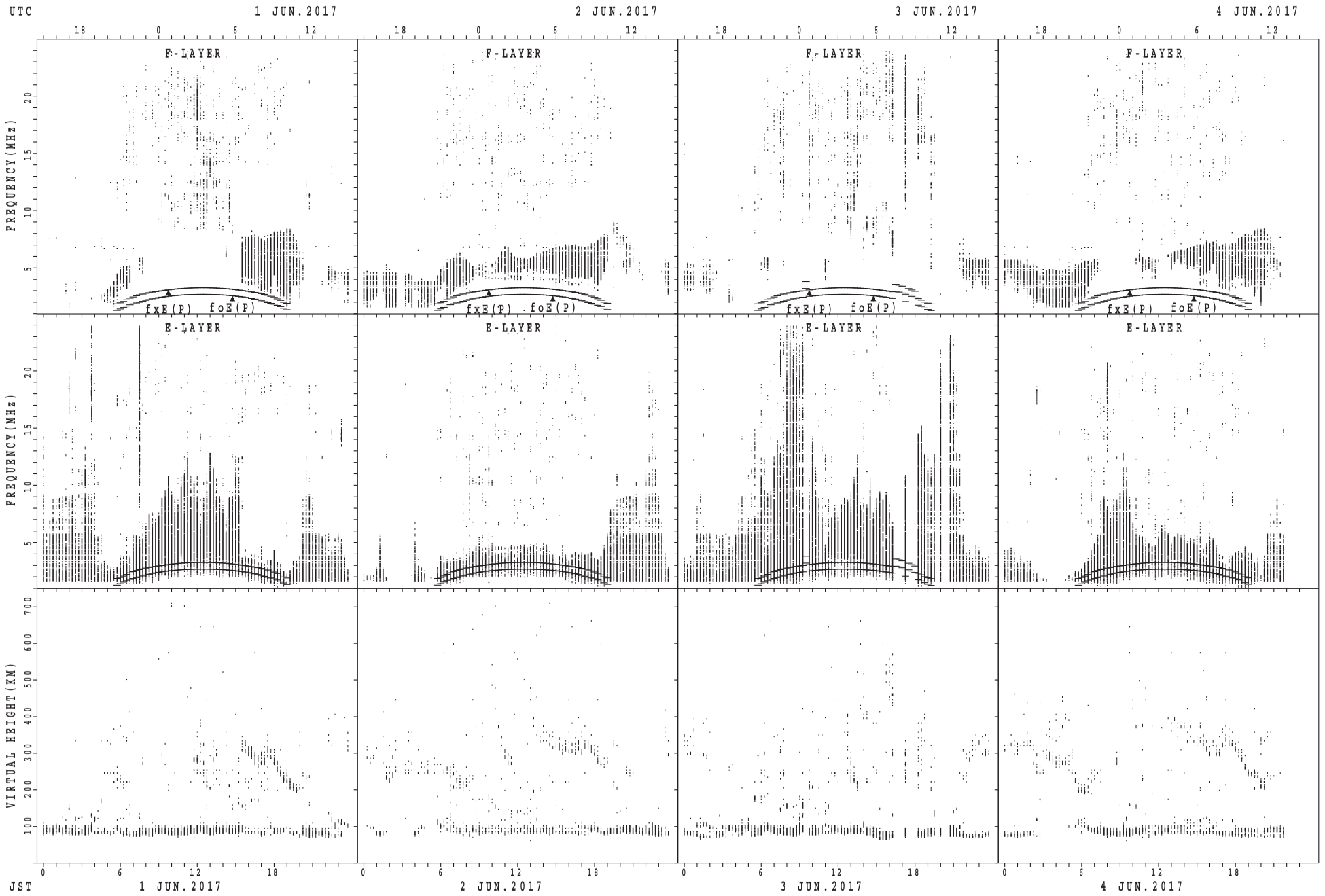
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



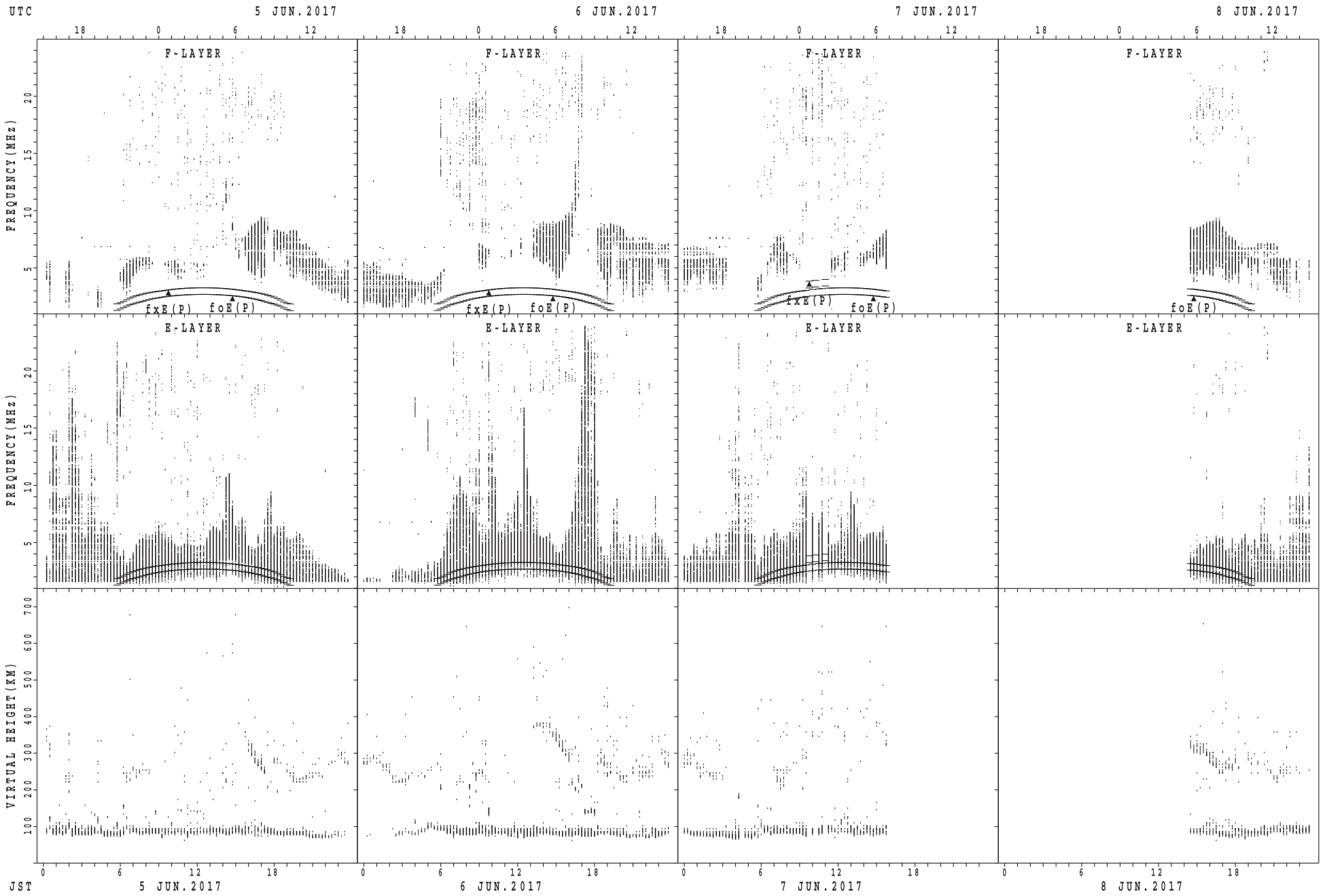
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



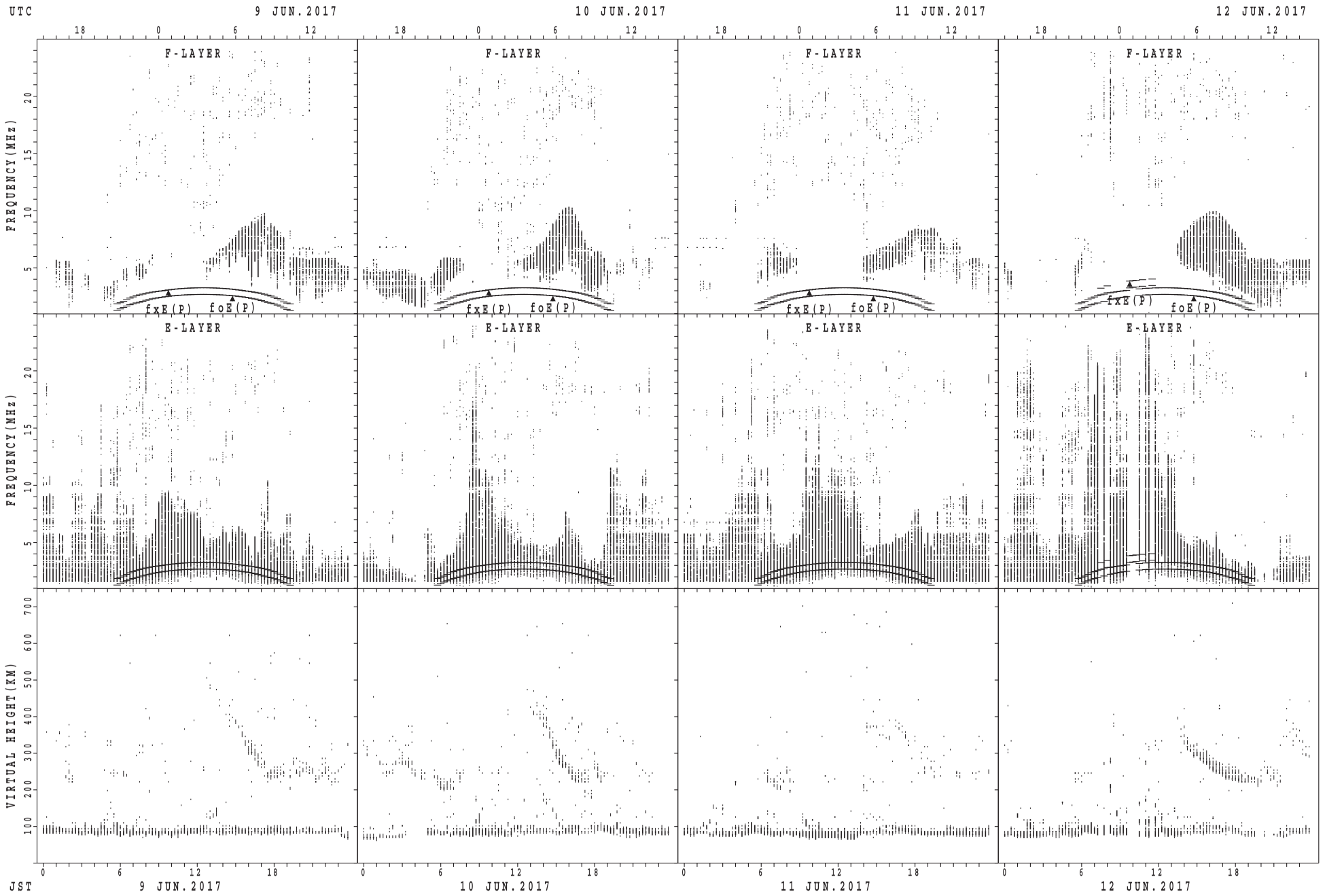
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



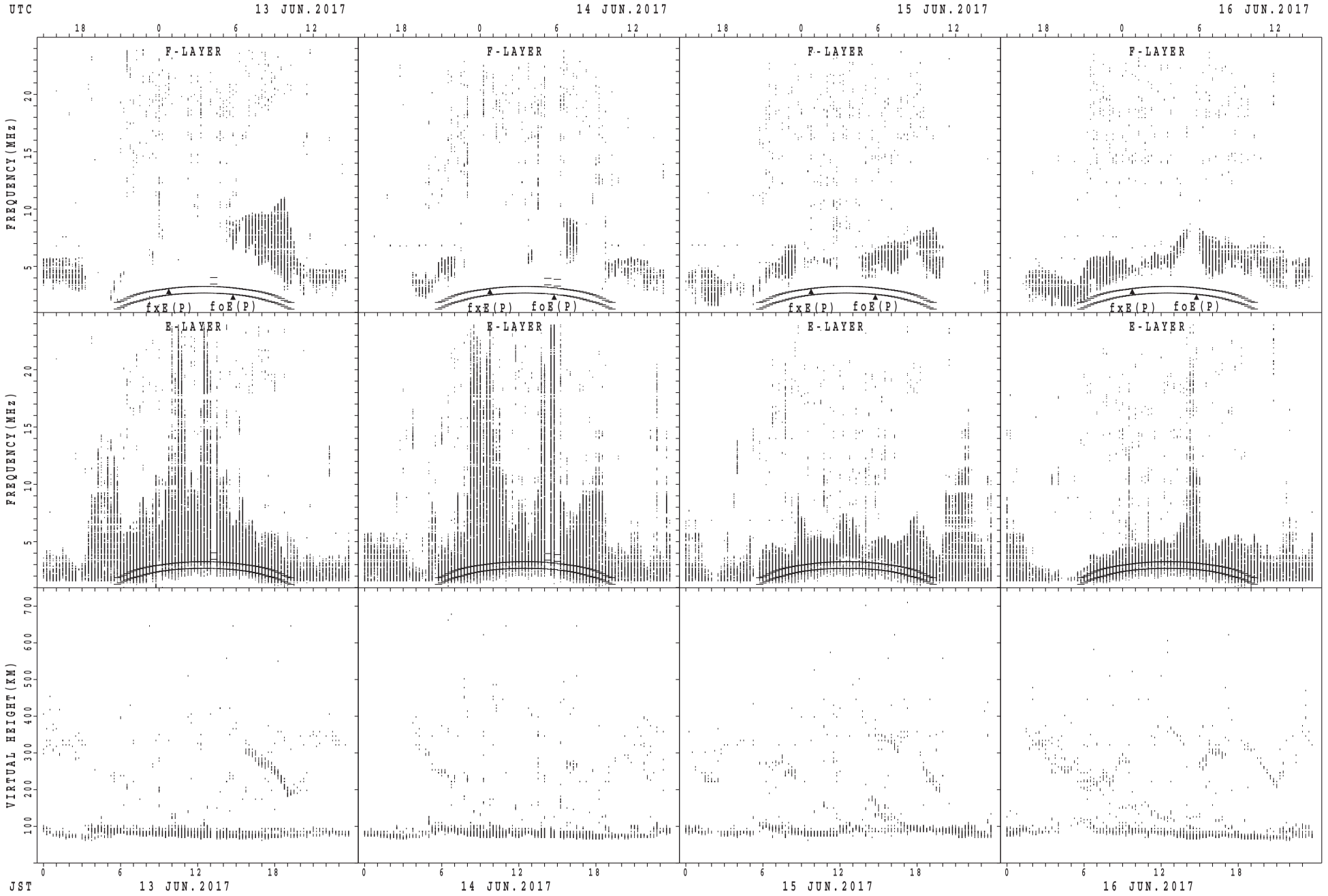
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



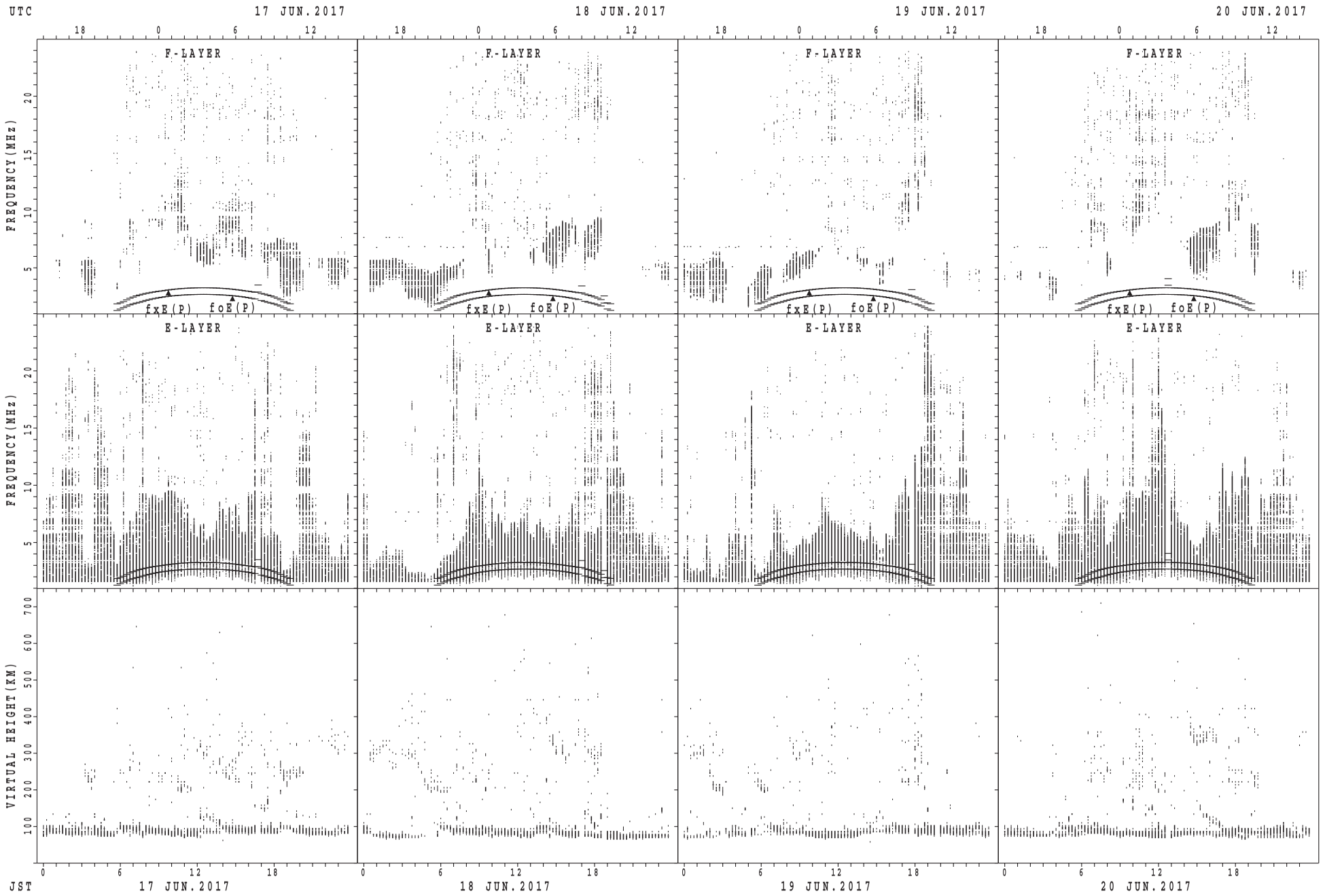
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



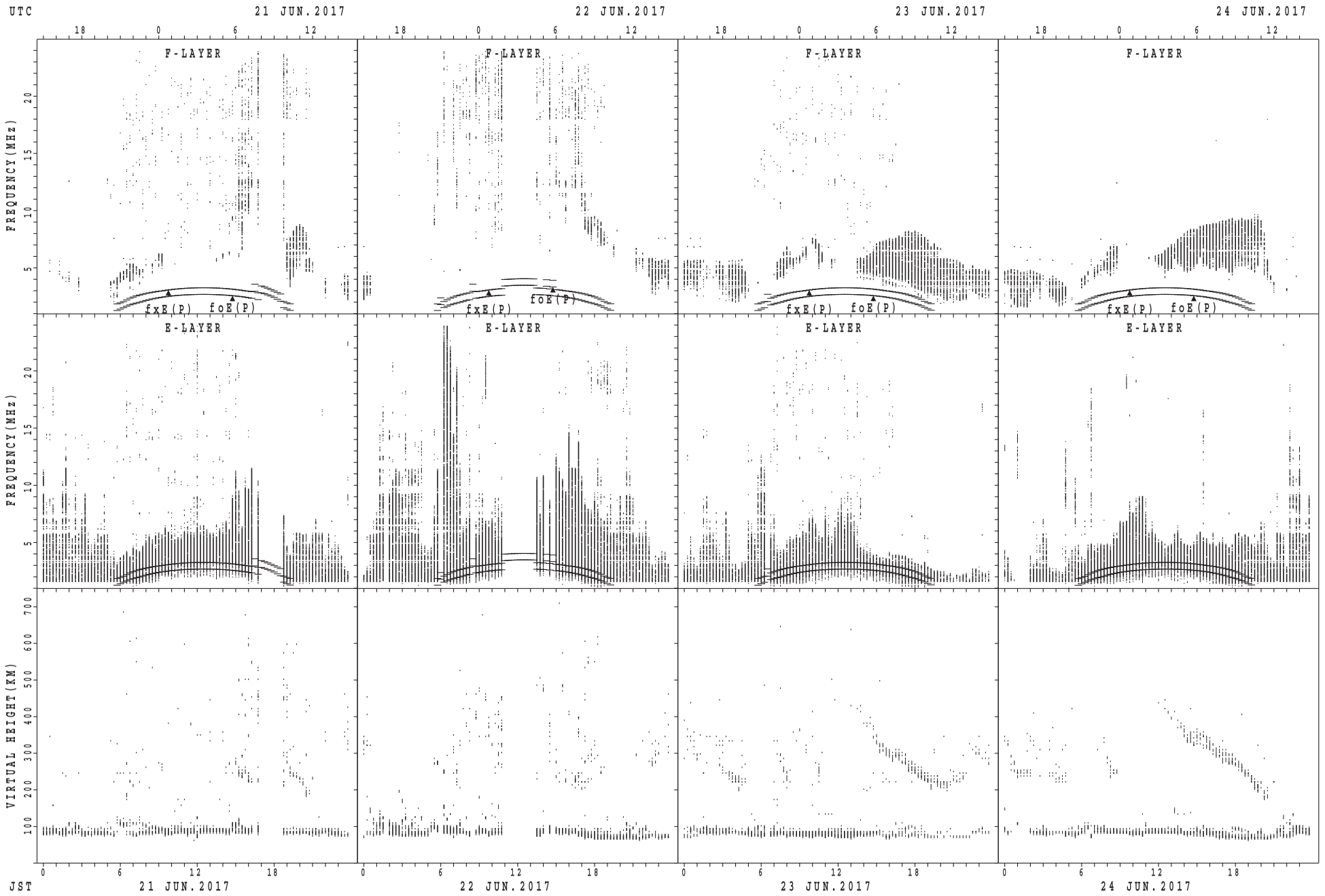
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



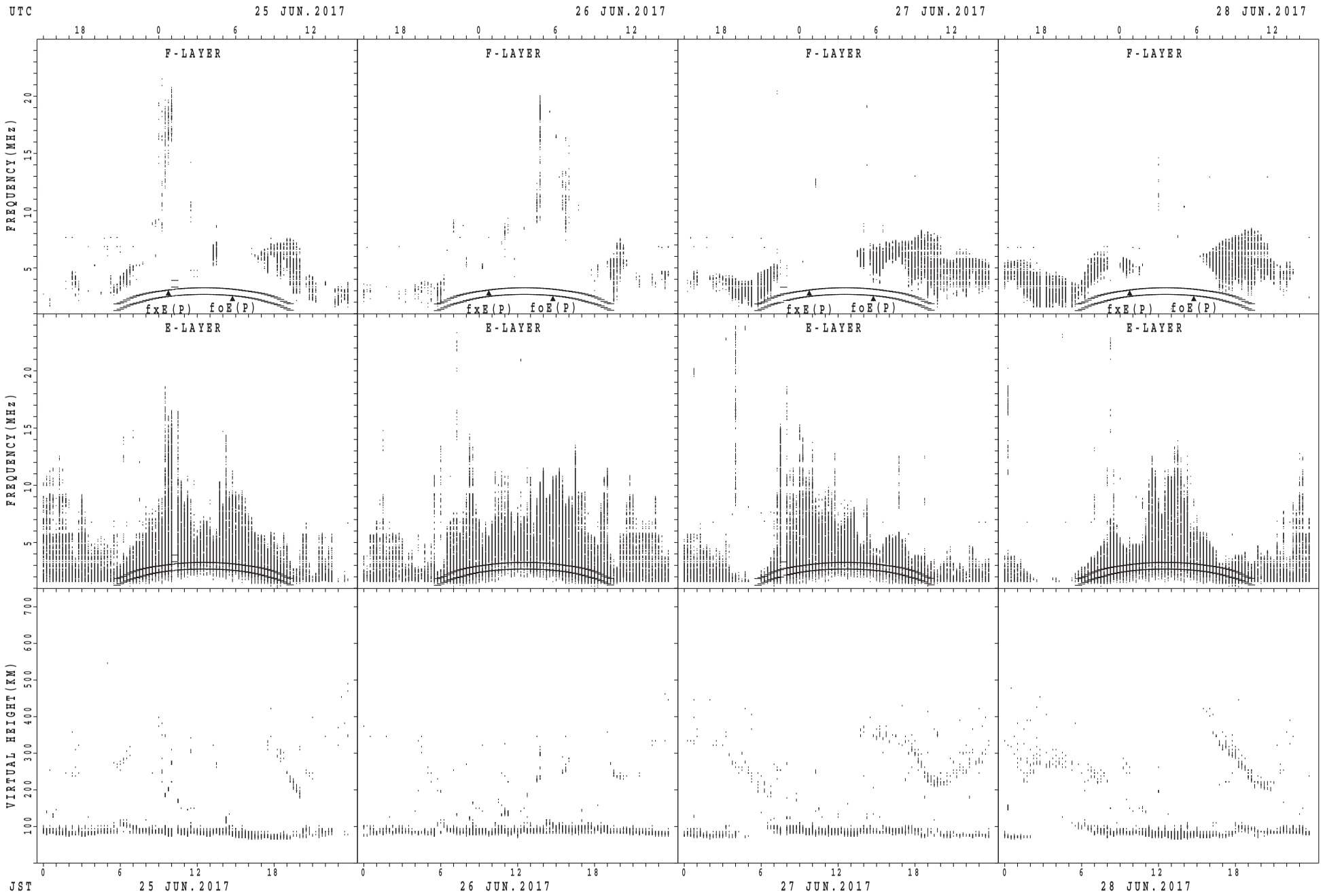
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



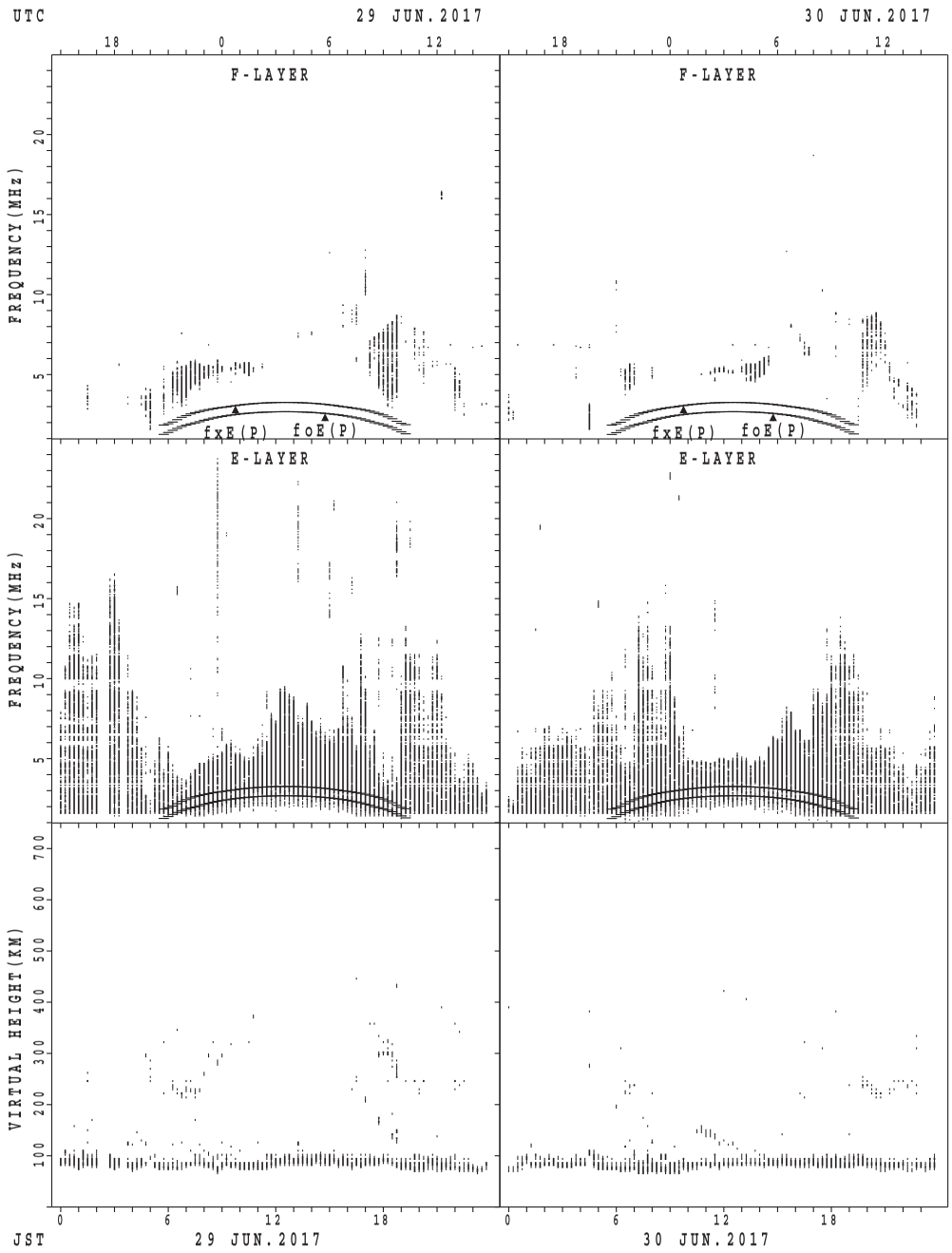
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

JUN.2017 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	8											15	11	8	4	3		
MED						288	223											216	208	214	229	274		
U Q						144	247											248	222	227	246	314		
L Q						144	209											202	200	202	206	242		

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	24	18	20	17	27	30	28	26	27	26	30	27	27	27	26	24	26	25	25	25	28	28	25
MED	87	87	88	83	87	105	101	92	90	89	90	98	95	95	99	89	94	95	93	97	97	96	92	89
U Q	93	94	101	92	104	119	113	98	99	107	101	115	113	113	123	95	101	105	99	102	117	107	107	95
L Q	87	84	83	80	81	97	95	89	89	87	87	89	89	89	89	85	89	89	89	91	93	92	89	83

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	10										12	6	5	2			
MED						216	218	209										241	212	198	243			
U Q						108	226	250										264	232	267	290			
L Q						108	212	206										208	206	194	196			

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	27	27	27	28	24	28	24	28	24	23	25	28	25	25	24	28	21	27	26	24	29	26	28	27
MED	89	85	83	85	87	92	98	94	89	87	89	88	95	89	97	95	95	95	91	87	91	89	93	91
U Q	95	89	89	91	97	105	105	98	97	93	95	96	107	97	105	105	106	101	95	94	96	97	97	95
L Q	83	81	81	82	83	85	96	91	87	83	84	81	87	87	89	89	87	91	87	84	89	87	89	87

h'F STATION Yamagawa LAT. 31°12.0'N LON. 130°37.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1		1	5	6									12	10	8	4	1		
MED					202		258	230	198									252	243	240	246	228		
U Q					101		129	231	274									283	270	263	254	114		
L Q					101		129	212	192									211	208	209	237	114		

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	28	29	28	27	23	21	30	30	30	30	30	30	29	30	29	28	30	30	30	30	30	30	29	28
MED	89	87	86	87	87	89	101	97	91	89	88	90	89	89	99	95	96	97	92	89	89	89	89	89
U Q	91	89	89	89	91	97	111	105	99	97	93	101	103	113	130	103	109	105	95	95	95	97	94	92
L Q	87	83	82	81	81	83	95	89	89	85	83	85	83	87	87	89	89	89	87	87	85	81	87	87

MONTHLY MEDIANS OF h'F AND h'Es

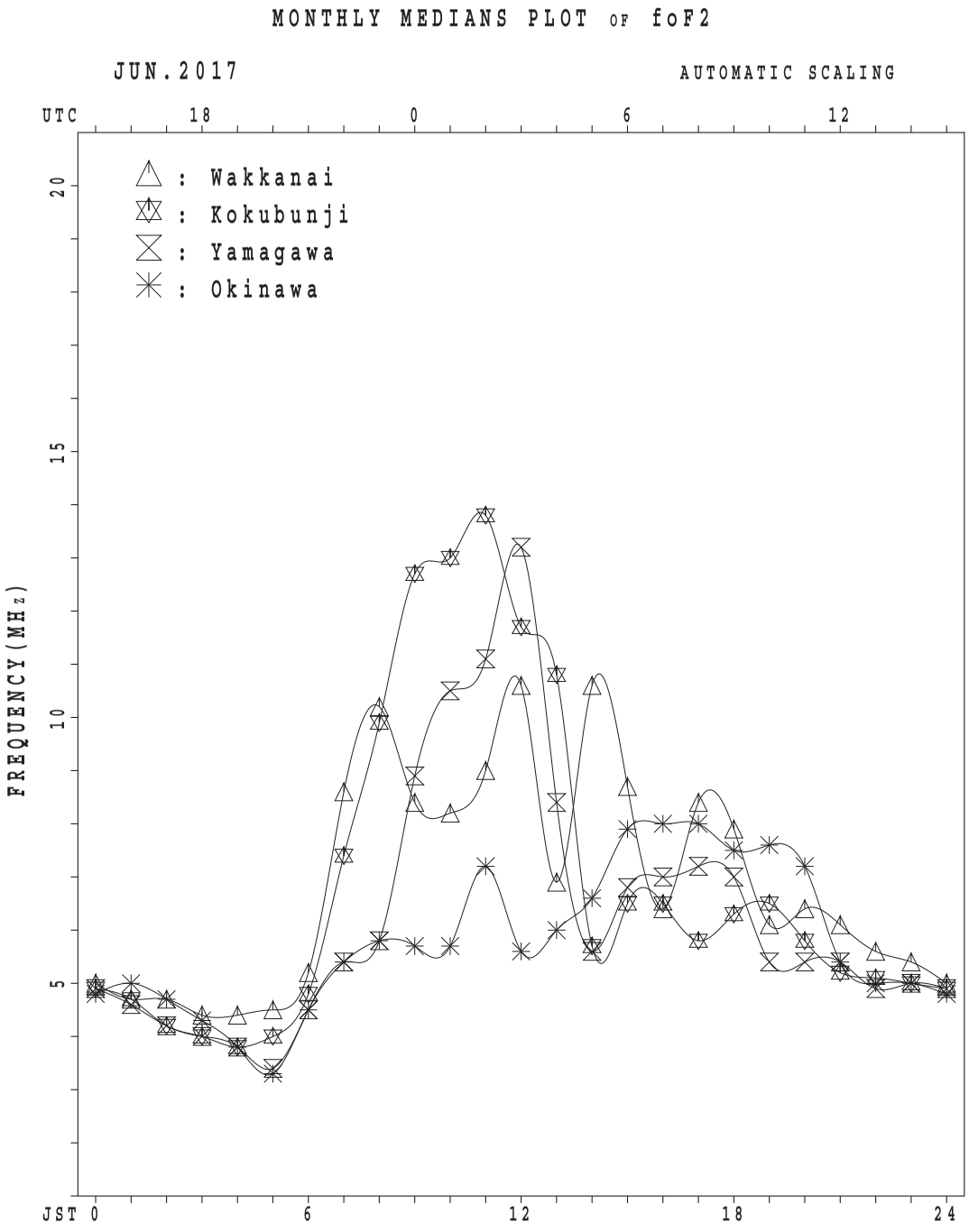
JUN.2017 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2		2	5	4									13	16	13	10	1	1	
MED					218		230	226	252									248	259	256	242	290	270	
U Q					218		254	320	268									276	293	282	260	145	135	
L Q					218		206	211	217									207	230	244	224	145	135	

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	27	28	26	26	26	23	28	29	28	29	28	26	28	27	28	29	29	26	27	28	27	28	28	27
MED	89	90	91	90	92	103	96	95	100	93	96	95	101	95	95	101	95	94	89	88	89	90	89	87
U Q	103	107	111	105	111	117	105	113	116	112	106	121	112	101	106	116	109	103	97	90	103	95	98	99
L Q	87	84	83	81	87	87	88	89	86	88	85	89	88	89	89	90	88	89	89	84	83	83	87	83


MONTHLY MEDIANS PLOT OF foF2
JUN.2017
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
✡ : Kokubunji
⧖ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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 43	X 47	X 48																			X 60	A	X 45
2	A	A	A																	X 60		X 69	X 63	X 56
3	X 56	X 51	X 55																			73	X 70	X 65
4	X 59	X 54	X 48																			A	C	X 59
5	X 47	X 47	X 48																			A	A	A
6	X 50	X 54	X 59		52																	X 73	X 60	X 59
7	X 59	X 57	A	58																A		A	A	A
8	X 49	X 46	X 47	58																		X 70	X 65	X 62
9	X 56	X 58	X 55																	A		A	X 69	X 62
10	A	X 61	X 54	54																	X 76	X 67	X 65	X 68
11	X 58	X 48	X 47																			X 81	X 79	X 68
12	X 64	X 57	X 50		X 48																	X 76	X 61	X 61
13	X 58	X 58	X 63	64	90															X 63		X 65	X 56	X 48
14	X 53	X 59	X 47																			X 62	X 57	X 53
15	X 53	X 48	X 48																			X 65	X 65	X 59
16	X 51	X 50	X 47											C	C							X 66	X 65	
17	X 59	X 52	X 48																			X 71	X 73	X 68
18	X 60	X 53	X 52																			X 65	X 64	X 54
19	A	X 55	X 47																			X 58	A	X 56
20	X 55	X 51	X 46																			X 68	X 65	X 62
21	X 50	X 47	X 47																			X 64	X 61	X 59
22	X 54	X 53	X 50																			X 67	C	X 61
23	X 54	X 51	X 51																			X 65	X 57	X 57
24	X 57	X 54	X 48		X 41																	X 65	X 59	X 54
25	58		X 41																			X 58	X 55	X 56
26	X 52	X 49	X 44																			A	X 62	X 63
27	X 55	X 43	X 39																			X 64	X 60	X 60
28	X 50	X 48	X 51																			A	X 66	X 60
29	X 61	X 58	X 54																			X 66	A	A
30	A	A	A																			X 52	X 55	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	4	4															2	1	24	23	25
MED	X 55	X 52	X 48	58	50															X 62	X 76	X 66	X 63	X 59
U Q	X 58	X 57	X 52	61	71																	X 70	X 65	X 62
L Q	X 51	X 48	X 47	56	X 44																	X 64	X 59	X 56

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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	36	40	41	41	35	36	A	A	R 51	A	A	A	A	A	A	45	46	47	J R 45	45	53	53	A	38
2	A	A	A	45	37	42	49	A	A	A	A	A	A	A	A	47	A	46	49	53	62	60	56	49
3	49	44	48	42	44	49	A	47	A	A	49	52	55	48	47	49	A	A	A	52	A	F 60	64	58
4	52	47	41	46	33	38	43	A	A	A	A	A	47	R	A	49	A	A	A	A	57	A	C	52
5	40	40	41	41	41	48	A	A	A	A	A	A	44	47	A	A	A	A	A	A	64	A	A	A
6	43	47	52	48	F 40	49	A	A	A	A	A	A	A	A	A	A	A	48	50	R 69	R 70	66	J R 53	52
7	52	50	A	F 49		53	50	52	A	A	A	54	A	A	A	A	A	48	A	A	A	A	A	A
8	42	39	40	F 46	48	37	46	A	A	54	57	50	48	49	49	49	A	A	A	A	63	63	58	55
9	49	51	48	44	47	48	A	A	A	A	56	A	53	52	58	A	R 53	48	51	A	62	A	62	55
10	A	54	47	F 40	40	A	A	A	A	54	A	56	52	51	A	A	A	53	A	68	69	60	58	61
11	51	41	40	47	41	51	53	61	60	52	52	53	52	50	50	A	49	48	A	A	72	74	72	61
12	57	50	43	45	41	41	45	A	A	A	A	53	51	52	52	A	A	58	A	68	76	69	54	54
13	51	51	56	F 54	F 67	42	A	A	A	50	A	A	A	A	R 45	45	48	A	50	56	60	58	49	41
14	46	52	40	41	33	39	44	46	A	A	45	51	50	50	50	51	50	48	48	54	58	55	50	46
15	46	41	41	39	34	44	46	47	48	54	A	52	50	48	47	47	46	48	A	A	55	58	58	52
16	44	43	40	40	42	48	47	52	55	53	53	A	52	C	C	52	52	56	48	52	62	59	58	
17	52	45	41	38	33	40	53	A	A	49	52	52	52	51	51	A	48	51	A	63	62	64	66	61
18	53	46	45	41	41	44	A	A	A	A	A	A	A	50	50	44	47	47	46	50	60	58	57	47
19	A	48	40	35	35	39	A	A	A	50	A	R	50	A	A	A	46	48	A	56	A	51	A	49
20	48	44	39	38	38	44	47	52	52	57	50	50	A	A	46	47	47	A	44	46	A	61	58	55
21	43	40	40	36	36	42	48	49	A	51	A	A	51	A	49	47	46	44	46	51	58	57	54	52
22	47	46	43	41	39	45	A	A	A	A	A	53	51	51	51	53	51	51	49	51	59	60	D C 48	54
23	47	44	44	44	40	43	43	51	51	46	50	45	51	A	A	A	A	A	A	58	64	58	50	50
24	50	R 47	41	41	34	39	40	45	A	A	A	A	49	48	49	47	46	43	46	51	59	58	52	47
25	F 43	F 43	34	33	33	A	A	A	A	A	50	A	A	A	A	44	47	A	A	A	A	51	48	49
26	45	42	37	38	35	38	A	A	A	A	42	R	43	R	47	45	A	A	43	A	56	A	55	56
27	48	36	32	30	30	A	A	A	A	A	A	A	A	A	A	A	A	44	A	56	54	57	53	53
28	41	41	44	44	41	44	49	52	50	A	50	48	A	52	48	49	47	48	50	52	62	A	59	53
29	54	51	47	40	47	39	42	A	A	50	53	A	48	48	49	46	39	A	A	57	61	59	A	A
30	A	A	A	A	R	41	A	A	A	A	A	A	46	47	42	51	46	A	54	A	53	45	48	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	27	29	28	27	16	11	7	12	13	13	20	16	18	19	18	19	15	20	25	24	24	25
MED	48	44	41	41	40	42	46	51	51	52	50	52	50	50	49	47	47	48	48	54	61	58	56	52
U Q	51	49	45	45	41	48	49	52	55	54	53	53	52	51	50	49	49	51	50	58	64	60	58	55
L Q	43	41	40	38	34	39	44	47	50	50	50	50	48	48	47	45	46	47	46	51	58	57	51	49

JUN. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	L	456	356	356					
2						336	368	A	A	A	A	A	A	A	A		A	A	L					
3							A	A	A	A	L	L	L	L	A	L	A	A	A		A			
4					L	L	356	A	A	A	A	A	L	L	A	L	A	A	A	A	L			
5					L		A	A	A	A	A	A	L	A	A	A	A	A	A	A				
6						L	A	A	A	A	A	A	A	A	A	A	A	A						
7						L	388	A	A	A	A	L	A	A	A	A	A	A	A		A			
8							A	A	A	A	A	448	L	440	424	A	A	A	A	A				
9				L	L		A	A	A	A	A	A	A	L	L	A	A	L	L		A			
10					L	A	A	A	A	A	A	A	L	440		A	A	L	A					
11					L	A	A	A	L	L	L	448	L	436		A	A	A	A	A	A			
12						L	A	A	A	A	A	L	L	L	L	A	A	A	A					
13						L	A	A	A	A	A	A	A	A	L	396	A	A	A					
14					L	L	L	A	A	A	428	L	L	L	L	L	400	372	344	260					
15						L	L	L	A	A	A	L	L	L	L	L	A	L	A	A	A			
16					L	340	A	A	384	428	432	A	A	C	C	L	A	376	344	L				
17					L	340	L	A	A	L	A	432	L	L	424	A	A	L	A		L			
18					L	L	A	A	A	A	A	A	A	A	L	408	L	A	L					
19						L	A	A	A	A	A	L	L	A	A	A	A	A	A		A			
20					L	L	L	A	L	A	A	L	A	A	A	L	400	A	L	A	A			
21						L	L	L	A	A	A	A	440	A	L	L	A	L	L					
22						L	A	A	A	A	A	A	A	A	L	L	L	L	A					
23					L	L	L	L	L	L	L	424	L	A	A	A	A	A	A	L				
24						328	L	L	A	A	A	A	L	L	416	404	L	L	L					
25					L	A	A	A	A	A	A	A	A	A	A	380	L	A	A	A	A			
26					L	L	A	A	A	A	420	404	432	408	408	400	A	A	340	A				
27						A	A	A	A	A	A	A	A	A	A	A	A	388	A	L				
28					L	L	356	L	420	A	L	440	A	L	416	L	A	A	A					
29					L	L	L	A	A	L	L	A	L	L	L	L	A	A	A	L				
30				A	L	L	A	A	A	A	A	A	L	L	L	A	L	A	L	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	4		2	1	3	6	2	4	5	5	3	4	4	1				
MED						338	362		402	428	428	436	436	438	416	400	400	374	344	260				
U Q						340	378				432	448		440	424	406	456	382	350					
L Q						332	356				420	424		422	412	388	400	364	342					

JUN. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				A 212	208	268	296	308	340	340	356	344	332	308	304	288	256	A	176	248				
2				232	A 224	252	292	312	324	328	328	328	304	A	A	U R 288	248	204		B				
3				A	A 224	236	280	U R 320	316	352	332	A	A	332	A	304	248	196	A	A				
4				A 208	208	248	R 292	U R 308	336	336	328	A	348	348	A	296	244	A	0 114	224				
5				204	A 224	256	288	308	308	308	308	356	340	328	320	292	248	208	A	A				
6				216	A 216	264	296	296	320	336	332	316	296	A	A	A	252	212	A	A				
7				A	A	U R 212	300	300	320	328	328	A	A	A	A	A	252	204		A				
8				A 208	260	296	300	324	328	328	328	A	312	A	A	A	216	A	A					
9				176	A 212	268	292	316	328	328	328	328	352	332	316	292	244	A	A					
10				A	A 220	256	300	300	328	336	336	316	328	328	300	276	264	208	A					
11				A	A 212	256	292	304	316	316	332	320	328	328	312	312	256	208	A	A				
12				B	208	248	304	304	320	320	320	320	A	320	320	284	256	212	A	A				
13				B	B 216	264	288	308	316	332	A	A	A	A	324	288	244	220		A				
14				B	176 208	264	288	308	312	A	A	A	A	A	A	A	240	204	A	A				
15				B	B 204	252	300	300	328	328	328	A	A	A	A	A	288	A	A	A				
16				B	172 220	292	292	308	320	336	324	A	C	C	A	A	A	212	A	A				
17				B	B 208	244	280	292	316	320	320	304	312	336	312	312	252	A	A	A				
18				A	188 224	248	284	300	328	328	U R 304	344	A	304	276	A	A	A	A	A				
19				224	A 212	240	284	296	316	A	320	320	352	U R 352	320	288	248	224	A	A				
20				A	224	192	228	284	U R 308	U R 316	U R 328	U R 328	A	A	A	A	A	272	228	A	A			
21				A	A 216	252	288	312	320	340	320	320	320	320	336	324	292	A	216	180	A			
22				A	A 212	260	304	316	316	332	332	A	332	312	A	260	A	204	A	A				
23				A	B 200	252	292	308	308	A	308	360	360	332	320	300	A	A	212	A				
24				A	168	244	300	312	320	320	320	320	344	332	244	280	268	208	A	A				
25				216	A 216	240	272	292	320	336	336	336	336	316	268	292	A	A	A	A				
26				200	208	188	236	280	296	324	324	324	324	324	A	324	300	252	212	A	A			
27				A	172	212	244	292	320	320	320	A	A	A	A	A	A	A	240	A	A			
28				A	B 212	260	288	300	308	308	312	A	A	A	292	300	276	212	228	A				
29				B	B 216	248	292	A	A	328	320	304	A	A	A	304	256	212	A	A				
30				A	A	A 240	280	316	316	316	316	316	A	A	312	U R 296	A	204	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				7	8	28	30	30	29	29	27	27	19	16	16	18	21	21	22	5	2			
MED				216	198	212	252	292	308	320	328	328	320	332	330	312	292	252	212	180	236			
U Q				224	210	216	260	296	312	324	336	332	336	346	334	320	300	260	216	220				
L Q				200	174	208	244	284	300	316	320	320	316	322	318	300	288	248	204	145				

JUN. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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	30	37	42	42	32	27	50	J A 62	J A 53	J A 72	J A 92	J A 90	264	J A 261	J A 56	J A 61	J A 51	J A 44	J A 50	J A 25	J A 44	J A 34	J A 83	J A 107
2	J A 108	J A 65	J A 57	J A 44	J A 52	J A 83	32	68	J A 66	71	J A 109	J A 125	J A 147	J A 119	J A 78	54	J A 97	J A 62	J A 33	32	E B 15	J A 40	J A 107	J A 51
3	39	38	27	J A 23	J A 51	J A 51	J A 63	60	J A 84	J A 86	79	96	J A 69	J A 51	58	J A 52	J A 106	J A 168	62	J A 42	J A 87	J A 56	J A 66	J A 48
4	J A 51	J A 29	22	25	27	J A 32	33	71	J A 63	J A 72	J A 86	J A 89	J A 57	J A 43	J A 73	J A 51	75	J A 149	174	115	J A 125	J A 107	C	J A 39
5	J A 37	E B 15	60	J A 41	J A 26	J A 39	J A 75	J A 63	J A 96	J A 127	J A 153	J A 63	J A 49	J A 87	J A 136	229	J A 209	J A 137	J A 96	91	110	J A 119	152	J A 127
6	J A 63	J A 41	24	J A 61	J A 29	J A 45	96	J A 135	108	75	96	J A 157	101	J A 106	J A 94	J A 85	J A 87	J A 132	J A 212	J A 258	J A 86	J A 76	J A 45	48
7	56	J A 51	70	J A 52		J A 60	J A 51	56	64	J A 89	J A 117	J A 100	83	J A 127	145	J A 126	J A 97	J A 104	67	J A 66	J A 107	J A 86	J A 95	J A 39
8	32	J A 23	J A 26	38	30	29	52	75	67	68	57	64	60	J A 51	J A 51	J A 48	76	69	83	92	J A 32	J A 53	J A 83	40
9	J A 61	J A 21	J A 32	J A 64	J A 24	J A 37	J A 72	J A 85	95	J A 119	J A 87	80	J A 157	J A 47	J A 65	130	J A 71	J A 69	J A 103	J A 77	J A 88	J A 78	J A 38	53
10	J A 61	36	J A 56	J A 31	J A 39	J A 60	J A 60	J A 77	J A 103	J A 142	J A 76	J A 88	J A 67	40	65	J A 83	116	J A 100	J A 107	J A 144	J A 121	J A 31	J A 44	J A 25
11	J A 27	J A 25	19	J A 105	J A 23	J A 37	J A 43	J A 55	53	J A 55	J A 44	J A 63	J A 45	38	J A 56	J A 79	J A 134	J A 89	J A 129	J A 119	J A 104	114	J A 44	J A 64
12	J A 46	J A 33	J A 22	E B 14	E B 14	30	J A 47	72	85	J A 61	J A 95	J A 76	J A 52	J A 80	38	J A 81	J A 90	J A 88	J A 123	J A 75	51	J A 46	J A 43	J A 64
13	J A 32	J A 21	25	22	22	J A 35	61	J A 65	J A 103	J A 101	J A 79	J A 62	J A 58	J A 89	J A 52	54	J A 53	J A 149	97	J A 38	J A 34	J A 43	J A 27	23
14	27	J A 23	29	E B 14	G 24	J A 37	J A 40	60	80	J A 65	J A 58	J A 51	J A 47	J A 50	38	J A 31	J A 55	34	28	J A 21	J A 21	J A 21	E B 16	E B 16
15	E B 15	E B 14	E B 14	E B 15	E B 15	25	J A 43	39	42	58	J A 65	J A 85	64	J A 85	J A 77	J A 76	J A 53	46	J A 61	100	72	25	J A 62	35
16	J A 24	24	22	E B 14	G	30	39	J A 53	J A 70	J A 53	J A 86	J A 86	J A 55	C	C	J A 51	J A 69	J A 48	43	30	42	39	J A 23	
17	24	E B 15	E B 15	E B 15	E B 18	27	J A 44	J A 63	73	J A 85	J A 66	J A 63	J A 84	J A 38	44	J A 99	J A 129	J A 63	J A 246	J A 227	J A 60	J A 84	J A 85	J A 44
18	28	J A 30	J A 30	J A 38	27	J A 35	J A 77	83	J A 85	J A 87	97	J A 66	J A 52	J A 74	J A 50	J A 41	J A 48	52	J A 33	38	38	35	J A 21	J A 31
19	J A 84	J A 63	39	J A 45	J A 24	J A 41	74	98	116	J A 129	J A 155	51	J A 48	J A 57	75	71	J A 50	103	64	50	J A 101	J A 75	J A 157	J A 25
20	28	J A 25	26	J A 26	28	J A 31	32	J A 41	J A 87	J A 53	J A 46	50	59	J A 68	J A 76	46	46	J A 54	54	J A 39	J A 49	34	J A 44	32
21	J A 25	32	58	27	26	G	J A 49	37	J A 54	J A 65	J A 65	J A 89	J A 57	J A 63	38	38	J A 63	J A 62	J A 85	J A 29	J A 54	J A 39	J A 43	J A 39
22	J A 25	J A 31	J A 37	J A 53	J A 37	J A 43	60	J A 64	J A 76	63	64	J A 49	J A 51	J A 51	J A 45	J A 41	G 33	39	J A 37	J A 28	J A 30	J A 147	J A 36	33
23	J A 29	J A 52	J A 23	25	E B 16	26	J A 38	J A 50	J A 39	J A 41	46	J A 50	51	J A 69	J A 56	J A 109	J A 69	J A 65	J A 73	J A 44	32	J A 52	J A 31	J A 36
24	J A 61	27	E B 16	J A 31	E B 16	J A 52	33	J A 49	74	J A 101	J A 60	J A 53	J A 42	G	41	J A 37	J A 37	33	J A 63	J A 33	J A 45	J A 51	J A 103	58
25	J A 52	J A 31	J A 26	J A 34	J A 27	62	J A 78	J A 65	J A 79	59	57	J A 129	J A 107	J A 62	62	34	36	J A 162	J A 89	J A 109	J A 87	J A 86	J A 63	J A 31
26	23	J A 32	J A 30	G 26	27	28	J A 51	J A 63	J A 79	J A 62	J A 102	37	J A 36	J A 49	J A 42	J A 57	J A 58	J A 89	J A 53	J A 66	J A 109	J A 77	J A 42	42
27	J A 158	J A 66	J A 52	J A 29	J A 25	J A 40	J A 51	J A 51	J A 51	J A 54	J A 87	J A 129	J A 147	J A 89	J A 68	J A 85	J A 90	J A 98	J A 89	J A 64	J A 37	60	J A 45	28
28	27	20	22	27	E B 16	24	37	J A 50	J A 139	70	J A 39	J A 49	63	45	J A 85	46	J A 50	J A 53	J A 74	J A 51	J A 85	157	J A 123	E B 17
29	20	E B 16	E B 16	E B 10	E B 16	J A 31	35	59	J A 52	J A 41	J A 50	J A 62	J A 57	J A 66	J A 63	J A 63	J A 60	J A 61	74	56	J A 51	J A 64	J A 64	J A 103
30	J A 87	J A 67	J A 66	J A 108	J A 87	J A 63	J A 63	60	J A 77	J A 65	J A 67	J A 63	J A 42	J A 87	60	65	J A 45	164	J A 108	82	J A 63	J A 86	J A 86	J A 107
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	29	29
MED	J A 32	J A 30	26	J A 30	26	J A 36	J A 50	J A 62	J A 76	J A 69	J A 78	J A 65	J A 58	J A 63	J A 60	J A 59	J A 66	J A 69	J A 74	J A 60	J A 57	J A 58	J A 45	J A 39
U Q	J A 61	J A 38	42	J A 44	J A 30	J A 45	J A 63	71	J A 87	J A 87	J A 95	J A 89	J A 83	J A 87	J A 76	J A 83	J A 90	J A 104	J A 103	J A 92	J A 88	J A 86	J A 86	J A 56
L Q	27	23	22	E B 23	E B 20	29	39	J A 53	J A 63	J A 59	J A 58	J A 53	J A 51	48	48	46	J A 50	53	J A 54	J A 38	J A 38	39	J A 40	31

JUN. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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	16	18	21	21	G 20	24	A A 50	A A 62	34	A A 72	A A 92	A A 90	A A 264	A A 261	A A 56	36	33	28	32	G 16	E A	23	A A 83	33
2	A A 108	A A 65	A A 57	26	E A 26	G 22	30	A A 68	A A 66	A A 71	A A 109	A A 125	A A 147	A A 119	A A 78	42	A A 97	40	28	28	E B 15	18	19	37
3	29	20	20	18	28	34	A A 63	42	A A 84	A A 86	40	43	42	38	42	32	A A 106	A A 168	A A 62	31	A A 87	37	44	28
4	39	20	E B 16	E B 16	E B 16	28	28	A A 71	A A 63	A A 72	A A 86	A A 89	35	35	A A 73	33	A A 75	A A 149	A A 174	A A 115	G 20	A A 107	C	30
5	20	E B 15	20	G 20	21	34	A A 75	A A 63	A A 96	A A 127	A A 153	A A 63	36	43	A A 136	A A 230	A A 209	A A 137	A A 96	A A 91	27	A A 119	A A 152	A A 127
6	28	22	16	G 21	21	30	A A 96	A A 135	A A 108	A A 75	A A 96	A A 157	A A 101	A A 106	A A 94	A A 85	A A 87	44	34	62	22	20	20	20
7	E A 46	38	A A 70	44		30	31	E A 44	A A 64	A A 89	A A 117	42	A A 83	A A 127	A A 145	A A 126	A A 97	38	A A 67	A A 66	A A 107	A A 86	A A 95	A A 39
8	E B 14	15	18	17	17	26	40	A A 75	A A 67	A 50	48	36	36	35	35	46	A A 76	A A 69	A A 83	A A 92	20	20	20	28
9	20	16	17	18	18	31	A A 72	A A 85	A A 95	A A 119	46	A A 80	45	37	47	A A 130	E A 48	E A 34	28	A A 77	E A 51	A A 78	22	39
10	A A 61	20	28	18	16	A A 60	A A 60	A A 77	A A 103	46	A A 76	47	40	36	A A 65	A A 83	A A 116	34	A A 107	39	22	16	17	17
11	19	E B 15	E B 15	E B 15	20	30	A	34	42	39	39	40	36	36	A	A A 79	A	A	A A 129	A A 119	E A 54	21	29	28
12	E A 38	E A 29	15	E B 14	E B 14	27	A A 37	A A 72	A A 85	A A 61	A A 95	39	37	36	34	A A 81	A A 90	32	A A 123	32	44	21	20	20
13	24	E B 16	16	E B 16	18	29	A A 61	A A 65	A A 103	45	A A 79	A A 62	A A 58	A A 89	33	G 31	40	A A 149	36	19	24	20	17	E B 16
14	16	E B 16	16	E B 14	G 16	21	28	32	A A 80	A A 65	34	34	32	35	32	29	29	29	25	16	16	16	E B 16	E B 16
15	E B 15	E B 14	E B 14	E B 15	E B 15	23	31	33	A	A	A A 65	38	38	38	37	35	39	31	A A 61	A A 100	A	18	18	16
16	19	E B 15	E B 16	E B 14	G	30	37	32	40	37	37	A A 86	43	C	C	34	35	34	25	19	19	24	18	
17	E B 15	E B 15	E B 15	E B 15	E B 18	24	34	A A 63	A A 73	36	46	41	36	36	35	A A 99	40	29	A A 246	28	40	A	E A 38	19
18	14	E B 14	14	20	G 17	26	A A 77	A A 83	A A 85	A A 87	A A 97	A A 66	A A 52	A	40	33	33	32	30	21	18	18	18	20
19	A A 84	20	25	G 19	16	28	A A 74	A A 98	A A 116	37	A A 155	38	37	A A 57	A A 75	A A 71	39	30	A	17	A A 101	15	A A 157	20
20	20	15	15	19	G 19	28	29	38	36	48	44	40	A A 59	A A 68	42	33	31	A A 54	32	20	A A 49	18	18	18
21	E B 14	17	17	15	15	G	32	32	A A 54	E A 46	A A 65	A A 89	36	A A 63	36	34	42	32	32	27	19	18	18	18
22	16	26	36	16	17	28	A A 60	A A 64	A A 76	A A 63	A A 64	E A 43	40	A	35	35	G 30	30	30	20	20	20	20	20
23	16	16	17	16	E B 16	24	30	34	36	37	38	37	37	A A 69	A A 56	A A 109	A A 69	A A 65	A A 73	28	20	20	26	27
24	E B 16	17	E B 16	16	E B 16	E A 28	30	33	A A 74	A A 101	A A 60	A A 53	37	G	G 32	32	32	29	40	28	20	20	29	17
25	22	16	16	G 16	18	A A 62	A A 78	A A 65	A A 79	A A 59		A A 129	A A 107	A A 62	A A 62	32	32	A A 162	A A 89	A A 109	A A 87	40	16	19
26	16	16	15	G 15	G 15	28	A A 51	A A 63	A A 79	A A 62	37	35	34	34	31	34	A A 58	A A 89	28	A A 66	50	A A 77	19	19
27	19	19	18	18	18	A A 40	A A 51	A A 51	A A 51	A A 54	A A 87	A A 129	A A 147	A A 89	A A 68	A A 85	A A 90	31	A A 89	31	22	20	19	16
28	20	16	16	16	E B 16	G 21	32	32	36	A A 70	38	38	A A 63	33	33	34	44	43	40	G 21	21	A A 157	16	E B 17
29	E B 16	E B 16	E B 16	E B 10	E B 16	22	30	A A 59	A A 52	34	38	A A 62	38	36	36	37	35	A A 61	A A 74	42	19	31	A A 64	A A 103
30	A A 87	A A 67	A A 66	A A 108	28	28	A A 63	A A 60	A A 77	A A 65	A A 67	A A 63	36	36	34	A	33	A A 164	A 43	A A 82	20	18	34	A A 107
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	29	30	29	29	29	30	30	27	28	29	29	29	29	30	28	29	29	29
MED	20	16	16	16	17	28	A A 40	A A 62	A A 74	A A 62	A A 65	A 50	39	38	41	36	41	38	A 43	31	21	20	20	20
U Q	A 29	20	20	19	G	30	A A 63	A A 71	A A 85	A A 74	A A 94	A A 86	A A 59	A A 69	A A 66	A A 84	A A 88	A A 79	A A 89	A A 77	A A 50	A A 38	A A 36	32
L Q	E B 16	E B 15	16	E B 15	E B 16	24	30	34	52	46	40	39	36	36	34	33	33	31	31	21	20	18	18	18

JUN. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	12	15	16	14	10	14	14	17	20	19	20	31	20	20	16	16	20	16	15	15	16	15	15	16
2	16	15	16	15	15	10	10	15	16	20	20	18	20	18	17	16	16	15	10	13	15	12	12	15
3	16	15	16	15	14	14	10	15	19	20	20	18	18	20	16	15	15	16	10	13	16	14	16	16
4	16	16	15	16	14	14	14	16	18	17	28	18	17	16	16	20	20	15	10	15	13	12	C	16
5	16	15	15	12	10	15	14	16	18	18	18	20	16	16	15	15	16	14	15	12	16	16	15	16
6	14	14	14	16	15	15	16	13	14	20	20	15	19	19	20	15	14	11	11	16	16	16	16	14
7	14	14	14	15		15	11	17	18	21	22	20	34	32	23	21	18	12	16	16	12	15	16	15
8	14	14	15	14	14	14	14	18	14	20	20	19	21	20	17	15	15	16	12	14	15	15	15	14
9	14	14	14	14	14	11	13	15	15	19	19	16	14	16	16	15	14	15	13	13	15	15	15	16
10	14	15	14	13	13	11	13	15	16	20	18	19	20	18	15	14	17	17	15	15	16	16	14	15
11	15	15	15	15	14	14	15	15	17	16	16	16	16	17	16	16	16	14	16	14	14	14	14	14
12	15	14	14	14	14	14	12	14	14	20	16	16	16	16	14	14	14	16	15	15	14	14	14	14
13	14	14	14	14	15	15	16	16	16	16	16	15	32	20	16	14	14	16	15	15	14	14	14	16
14	16	15	16	14	16	16	14	14	14	14	16	16	16	21	16	16	15	14	12	15	16	16	16	16
15	15	14	14	15	15	11	15	15	15	15	15	18	30	30	19	20	18	14	14	14	16	16	16	14
16	14	15	16	14	14	14	11	13	16	16	19	21	16	C	C	20	18	14	14	16	14	16	14	
17	15	15	15	15	18	14	14	14	14	17	20	20	16	20	17	17	20	16	15	16	15	15	12	12
18	14	14	14	14	16	14	14	14	18	15	16	14	22	17	16	16	20	15	14	16	14	14	14	14
19	16	16	14	10	10	15	11	13	17	19	16	19	20	20	18	20	16	15	14	14	14	13	13	16
20	16	14	14	12	16	9	14	14	16	19	19	22	16	30	21	20	15	15	13	14	13	15	15	15
21	14	15	15	15	13	15	15	14	14	18	18	21	21	19	18	16	14	14	16	10	16	11	15	14
22	14	14	14	14	15	14	11	14	17	17	20	22	16	16	19	19	14	14	12	14	15	16	14	16
23	15	15	15	15	16	12	16	16	16	16	21	21	21	26	18	18	14	11	10	10	15	15	15	15
24	16	16	16	14	16	11	14	16	16	20	18	18	18	30	19	16	16	18	12	16	16	16	16	16
25	16	16	11	14	15	12	14	14	16	16	18	19	19	19	20	16	16	15	10	15	15	15	15	15
26	15	16	10	16	16	12	13	12	16	16	14	21	16	21	19	19	14	10	10	14	16	15	12	16
27	14	16	17	16	16	12	12	14	14	16	20	16	30	37	16	20	16	12	13	16	14	15	15	15
28	15	15	16	16	16	13	15	15	15	15	15	17	19	19	18	18	15	15	9	13	10	16	16	17
29	15	16	16	10	16	12	14	14	15	16	14	16	15	18	16	19	19	11	14	15	15	15	15	15
30	15	15	15	16	10	16	11	10	14	15	15	18	18	24	18	16	16	16	12	15	15	15	16	17
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	29	29
MED	15	15	15	14	15	14	14	14	16	17	18	18	18	20	17	16	16	15	13	15	15	15	15	15
U Q	16	15	16	15	16	15	14	16	17	20	20	20	21	22	19	19	18	16	15	15	16	16	16	16
L Q	14	14	14	14	14	12	12	14	14	16	16	16	16	18	16	15	14	14	11	14	14	14	14	14

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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	322	316	314	314	351	316	A	A	R 266	A	A	A	A	A	A	273	300	305	J R 301	327	317	308	A	254
2	A	A	A	296	290	332	352	A	A	A	A	A	A	A	A	297	A	315	313	322	313	313	328	322
3	319	313	286	321	313	334	A	270	A	A	350	293	323	278	315	296	A	A	A	305	A	F 283	311	317
4	296	278	297	255	289	287	334	A	A	A	A	A	281	R	A	314	A	A	A	A	306	A	C	342
5	336	323	285	322	303	328	A	A	A	A	A	A	397	253	A	A	A	A	A	A	328	A	A	A
6	325	293	297	298	F 303	312	A	A	A	A	A	A	A	A	A	A	A	221	315	R 302	R 322	342	J R 293	307
7	304	301	A	F 293		357	337	228	A	A	A	333	A	A	A	A	A	210	A	A	A	A	A	A
8	324	339	326	F 341	305	363	283	A	A	330	364	286	256	289	301	300	A	A	A	A	301	314	306	315
9	317	333	336	324	300	300	A	A	A	A	219	A	311	305	223	A	R 238	249	336	A	333	A	300	341
10	A	293	289	F 336	334	A	A	A	A	226	A	359	293	318	A	A	A	302	A	326	340	322	320	314
11	356	338	315	273	313	326	312	327	343	310	342	313	312	298	301	A	247	237	A	A	323	303	297	316
12	331	314	324	288	282	296	283	A	A	A	A	312	302	295	295	A	A	316	A	310	335	345	326	318
13	299	313	285	F 295	F 326	332	A	A	A	322	A	A	A	A	R 255	283	310	A	310	324	314	297	334	320
14	289	290	303	305	315	279	326	354	A	A	281	321	285	284	284	306	324	320	315	336	327	302	312	314
15	311	321	306	319	337	341	288	300	309	322	A	295	278	273	281	291	291	324	A	A	237	318	322	346
16	323	321	331	331	317	328	307	337	317	335	353	A	312	C	C	315	315	347	328	303	320	290	290	
17	327	307	313	319	299	321	341	A	A	296	315	265	294	259	316	A	293	320	A	304	286	299	319	301
18	287	307	317	309	312	314	A	A	A	A	A	A	A	319	294	254	295	308	308	317	313	304	293	309
19	A	299	313	310	295	335	A	A	A	312	A	R	277	A	A	A	277	281	A	332	A	293	A	305
20	312	317	330	295	349	329	327	322	324	333	318	315	A	A	259	280	302	A	302	313	A	306	313	344
21	317	336	328	334	313	316	326	314	A	265	A	A	324	A	293	309	314	298	313	322	328	294	312	309
22	341	309	294	308	327	323	A	A	A	A	A	326	299	280	287	329	321	304	312	315	313	318	D C 344	303
23	310	315	313	330	322	346	252	325	310	305	320	328	305	A	A	A	A	A	A	319	319	321	285	301
24	271	R 285	326	323	370	321	288	269	A	A	A	A	278	290	304	286	321	281	294	307	331	298	309	303
25	F 293	F 293	310	294	290	A	A	A	A	A	257	A	A	A	A	255	295	A	A	A	A	286	301	331
26	316	327	342	290	305	266	A	A	A	A	351	R	R	R	281	296	A	A	310	A	316	A	294	321
27	335	312	281	300	272	A	A	A	A	A	A	A	A	A	A	A	A	287	A	311	311	305	319	334
28	324	321	323	292	312	290	319	312	330	A	327	329	A	329	283	317	310	231	224	322	308	A	322	316
29	328	331	352	320	317	312	326	A	A	310	344	A	294	270	316	314	235	A	A	229	319	323	A	A
30	A	A	A	A	R	326	A	A	A	A	A	A	226	254	280	218	311	A	271	A	321	311	304	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	27	29	28	27	16	11	7	12	13	13	19	16	18	19	18	19	15	20	25	24	24	25
MED	318	314	313	309	312	323	322	314	317	311	327	315	294	286	290	296	301	302	310	316	319	306	312	316
U Q	327	322	326	322	324	332	330	327	330	326	350	328	312	302	301	314	314	316	315	323	328	318	321	326
L Q	304	300	297	294	300	312	288	270	309	300	298	294	278	272	281	280	291	249	301	306	312	298	298	306

JUN. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	L	307	362	313					
2						361	376	A	A	A	A	A	A	A	A		A	A	L					
3							A	A	A	A	L	L	L	L	A	L	A	A	A		A			
4					L	L	376	A	A	A	A	A	L	L	A	L	A	A	A	A	L			
5					L		A	A	A	A	A	A	L	A	A	A	A	A	A	A				
6						L	A	A	A	A	A	A	A	A	A	A	A	A						
7						L	364	A	A	A	A	L	A	A	A	A	A	A	A		A			
8							A	A	A	A	A	439	L	389	386	A	A	A	A	A				
9				L	L		A	A	A	A	A	A	A	L	L	A	A	L	L		A			
10					L	A	A	A	A	A	A	A	L	407	A	A	A	L	A					
11					L	A	A	A	L	L	L	390	L	402	A	A	A	A	A	A	A			
12						L	A	A	A	A	A	L	L	L	L	A	A	A	A					
13						L	A	A	A	A	A	A	A	A	L	394	A	A	A					
14					L	L	L	A	A	A	420	L	L	L	L	L	380	370	372	371					
15						L	L	L	A	A	A	L	L	L	L	L	A	L	A	A	A			
16					L	364	A	A	A	472	413	449	A	A	C	C	L	A	A	363	L				
17					L	347	L	A	A	L	A	402	L	L	402	A	A	L	A		L			
18					L	L	A	A	A	A	A	A	A	A	L	368	L	A	L					
19						L	A	A	A	A	A	L	L	A	A	A	A	A	A		A			
20					L	L	L	A	L	A	A	L	A	A	A	L	373	A	L	A	A			
21						L	L	L	A	A	A	A	397	A	L	L	A	L	L					
22						L	A	A	A	A	A	A	A	A	L	L	L	L	A					
23					L	L	L	L	L	L	L	414	L	A	A	A	A	A	A	L				
24						369	L	L	A	A	A	A	L	L	401	399	L	L	L					
25					L	A	A	A	A	A	A	A	A	A	A	405	L	A	A	A	A			
26					L	L	A	A	A	A	426	437	396	417	423	382	A	A	334	A				
27						A	A	A	A	A	A	A	A	A	A	A	A	346	A	L				
28					L	L	360	L	352	A	L	426	A	L	423	L	A	A	A					
29					L	L	L	A	A	L	L	A	L	L	L	L	A	A	A	L				
30				A	L	L	A	A	A	A	A	A	L	L	L	A	L	A	L	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	4		2	1	3	6	2	4	5	5	3	3	4	1				
MED						362	370		412	413	426	420	396	404	402	394	373	362	348	371				
U Q						366	376				449	437		412	423	402	380	370	368					
L Q						354	362				420	402		396	394	375	307	346	324					

JUN. 2017 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	408	A	A	A	A	A	A	448	354	332	328					
2						296	278	A	A	A	A	A	A	A	A		A	330	302					
3							A	332	A	A	290	332	324	454	356	378	A	A	A		A			
4					372	402	304	A	A	A	A	A	430	402	A	334	A	A	A	A	288			
5					316		A	A	A	A	A	A	230	472	A	A	A	A	A	A				
6						304	A	A	A	A	A	A	A	A	A	A	A	A 354						
7						238	260	A	A	A	A	308	A	A	A	A	A	A	A		A			
8							A	A	A	E A 330	228	396	492	416	366	E A 372	A	A	A	A				
9				238	286		A	A	A	A	594	A	330	356	610	A	E A 502	528	272		292			
10					274	A	A	A	A	602	A	254	382	344	A	A	A	346	A					
11					278	256	304	262	250	338	290	330	338	360	386	A	512	512	A	A	274			
12						370	350	A	A	A	A	332	370	362	362	A	A	304	A					
13						302	A	A	A	338	A	A	A	A	482	414	324	A	292					
14					330	394	328	A 274	A	A	284	330	402	402	392	342	320	316	304	252				
15						246	316	380	356	306	A	368	418	434	370	392	374	304	A	A	E A 474			
16					288	270	326	280	312	292	294	A	344	C	C	320	314	272	264	278				
17					342	290	254	A	A	382	330	432	372	472	324	A	380	316	A		316			
18					284	298	A	A	A	A	A	A	A	336	370	352	382	330	310					
19						294	A	A	A	314	A	514	428	A	A	A	408	354	A		A			
20					262	282	294	324	308	288	330	330	A	A	464	420	370	A	348	296	A			
21						340	308	290	A	450	A	A	328	A	382	352	E A 340	350	324					
22						314	A	A	A	A	A	314	358	398	398	302	310	338	296					
23					280	264	382	294	324	374	318	326	350	A	A	A	A	A	A	258				
24						308	396	378	A	A	A	A	436	396	360	378	332	416	362					
25					350	A	A	A	A	A	444	A	A	A	A		364	A	A	A	A			
26					298	398	A	A	A	A	272	R	272	R	412	374	A	A	328	A				
27						A	A	A	A	A	A	A	A	A	A	A	A	402	A	314				
28					254	378	318	308	308	A	330	346	A	306	406	338	370	530	E A 578					
29					286	332	350	A	A	338	282	A	392	410	336	344	A	A	A	544				
30				A	R	338	A	A	A	A	A	A	338	496	352	630	354	A	430	A	302			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	15	22	15	10	7	12	13	14	20	17	18	17	17	18	14	6	6			
MED				238	286	303	316	301	312	338	294	331	364	402	376	372	359	342	312	287	294			
U Q					330	340	350	332	356	378	330	368	410	444	406	403	381	402	348	314	316			
L Q					278	282	294	280	308	310	283	326	334	358	360	340	328	316	296	258	288			

JUN. 2017 h'F2 (KM)

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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	232	266	270	252	214	226	A	A	A	A	A	A	A	A	A	224	224	200	A 310	238	276	252	A	A
2	A	A	A	276	294	210	202	A	A	A	A	A	A	A	A	384	A	A	234	244	234	230	226	264
3	266	258	260	238	258	244	A	A	A	A	204	204	200	200	A	200	A	A	A 262		A 298		280	248
4	286	272	Q 256	276	232	E A 256	224	A	A	A	A	A	194	194	A	198	A	A	A	A	174	A	C	230
5	220	208	272	258	270	268	A	A	A	A	A	A	192	A	A	A	A	A	A	A	252	A	A	A
6	258	272	250	248	230	230	A	A	A	A	A	A	A	A	A	A	A	A	250	354	236	214	232	248
7	A	A 292	A	A		E A 230	196	A	A	A	A	210	A	A	A	A	A	A	A	A	A	A	A	A
8	202	236	240	Q 228	214	200	A	A	A	A	A	170	196	208	198	A	A	A	A	A	250	252	212	250
9	240	234	230	198	244	316	A	A	A	A	A	A	A	250	344	A	A	A	E A 232	A	A	A	246	258
10	A	252	A 280	240	204	A	A	A	A	A	A	A	232	188	A	A	A	236	A	236	242	232	252	234
11	210	226	240	256	222	A	A	A	A	202	192	214	198	204	A	A	A	A	A	A	A	242	252	236
12	236	236	236	288	238	238	A	A	A	A	A	214	198	198	188	A	A	A	A	256	252	210	210	238
13	248	248	268	Q 230	208	208	A	A	A	A	A	A	A	A	180	200	A	A	A	226	238	252	228	228
14	270	266	266	262	220	228	240	A	A	A	196	196	196	196	196	192	192	202	202	214	224	240	234	234
15	238	238	264	242	228	200	194	194	A	A	A	198	204	196	210	210	A	210	A	A	A	238	238	218
16	262	244	244	246	218	208	A	A	A	192	180	A	A	C	C	A	A	A	198	222	252	272	278	
17	230	258	266	242	240	240	218	A	A	A	A	E A 246	198	198	206	A	A	228	A	256	244	A	250	250
18	256	272	252	298	228	228	A	A	A	A	A	A	A	A	218	186	214	A	208	246	246	260	270	258
19	A	282	240	288	242	228	A	A	A	A	A	196	196	A	A	A	A	A	A	246	A	224	A	250
20	238	252	236	236	206	214	198	A	228	A	A	208	A	A	A	188	198	A	244	A	A	268	252	230
21	248	248	248	252	244	212	212	212	A	A	A	A	192	A	196	184	A	236	A	250	228	254	246	246
22	232	254	262	270	246	250	A	A	A	A	A	A	A	A	194	194	200	200	A	260	256	244	242	254
23	254	254	254	228	236	210	210	222	222	196	186	186	194	A	A	A	A	A	A	194	240	240	Q 274	276
24	Q 240	252	238	238	214	A 212	212	236	A	A	A	A	194	188	194	194	208	214	A	280	242	262	226	232
25	254	Q 242	270	284	236	A	A	A	A	A	A	A	A	A	A	198	216	A	A	A	A	292	260	236
26	252	232	222	272	218	236	A	A	A	A	192	182	186	196	196	212	A	A	248	A	328	A	270	250
27	214	238	290	264	242	A	A	A	A	A	A	A	A	A	A	A	A	234	A	242	266	266	248	218
28	252	236	236	258	204	214	250	208	238	A	192	192	A	176	176	200	A	A	A	240	246	A	234	234
29	230	230	212	268	232	212	238	A	A	212	188	A	188	198	212	202	A	A	A	E A 304	242	242	A	A
30	A	A	A	A	E A 322	E A 268	A	A	A	A	A	A	190	190	202	A	216	A	A 316	A	A	220	290	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	28	27	28	29	26	12	5	3	4	8	13	17	15	15	16	8	9	10	19	21	23	24	24
MED	240	250	252	254	231	221	212	212	228	199	192	197	196	196	196	199	211	214	239	245	244	244	247	242
U Q	255	262	266	271	243	240	231	229	238	207	194	212	198	200	210	206	216	235	A 250	260	252	262	265	250
L Q	231	236	238	239	216	212	200	201	222	194	187	189	192	190	194	193	199	201	208	236	237	232	233	233

JUN. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				A 102	102	102	114	114	106	106	106	112	112	98	104	110	110	104	A	112	130			
2				102	A	102	102	100	100	102	106	106	106	100	A	A	100	108	108		B			
3				98	A	104	104	104	100	104	104	104	A	A	104	A	104	104	106	A	A			
4				A 128	118	106	106	104	104	104	104	A	104	104	A	104	104	A	104	102			
5				102	A	116	112	112	106	106	106	106	96	100	106	106	106	106	106	A	A			
6				122	A	112	112	112	108	108	104	98	98	88	A	A	A	106	E B 106	A	A			
7				A	A	106	106	106	106	106	106	106	A	A	A	A	A	100	100		A			
8					A	110	110	100	102	94	100	100	100	A	A	100	A	A	100	A	A			
9				106	A	106	106	106	106	106	106	106	106	102	102	102	102	114	A		A			
10				A	A	114	114	100	108	108	100	100	100	100	100	100	100	110	110	A				
11				A	A	112	92	104	100	104	104	104	106	106	94	102	108	108	112	A	A			
12				B		112	112	112	108	100	100	100	100	A	100	108	108	108	108	A	A			
13				B	B	116	98	106	106	106	106	A	A	A	A	106	94	94	102		A			
14				B	122	98	112	112	112	100	A	A	A	A	A	A	A	100	100	A	A			
15				B	B	108	108	108	108	108	96	96	A	A	A	A	A	88	A	A	A			
16				B	138	124	110	110	108	98	98	98	A	C	C	A	A	A	98	A	A			
17				B	B	106	108	102	102	102	102	102	102	102	102	102	102	110	A	A	A			
18				A	110	104	104	104	104	104	104	98	98	A	102	102	A	A	A	A	A			
19				102	A	110	110	106	106	106	A	106	100	100	106	106	106	106	108	A	A			
20				A	108	108	108	108	108	98	98	98	A	A	A	A	A	112	112	A	A			
21				A	A	106	106	106	106	106	106	106	102	102	102	110	108	A	100	100	A			
22				A	A	100	104	104	104	104	104	92	A	92	92	A	92	A	112	A	A			
23				A	B	102	102	102	102	102	A	102	102	102	102	102	102	A	A	100	A			
24				A		100	106	106	106	106	106	106	106	106	106	94	94	104	108	A	A			
25				108	A	108	108	108	108	108	96	96	96	104	104	112	110	A	A	A	A			
26				88	88	94	84	104	104	104	104	104	104	104	A	90	100	100	100	A	A			
27				A	126	110	96	104	104	104	104	A	A	A	A	A	A	A	120	A	A			
28				A	B	94	112	106	106	106	106	82	A	A	A	94	100	100	100	126	A			
29				B	B	114	114	104	A	A	104	104	94	A	A	A	104	104	108	A	A			
30				A	A	A	108	108	108	104	104	104	104	A	A	108	108	A	108	A	A			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				8	8	28	30	30	29	29	27	27	19	16	16	18	21	21	22	5	2			
MED				102	116	108	108	106	106	104	104	104	102	102	102	102	104	104	107	104	116			
U Q				107	127	112	112	108	108	106	106	106	106	104	104	108	108	108	108	119				
L Q				100	105	102	104	104	104	102	100	98	98	100	101	100	100	100	100	100				

JUN. 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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	90	90	90	88	86	120	120	110	106	106	106	100	106	106	100	100	106	106	96	102	102	114	102	100
2	102	94	94	90	90	88	110	98	104	104	98	106	100	100	94	94	108	110	114	108	B	100	106	98
3	98	94	92	92	92	108	108	108	102	102	112	112	100	104	104	90	110	106	108	100	100	100	100	100
4	98	108	100	100	126	108	108	104	104	96	92	102	98	106	106	102	108	108	90	98	124	102	C	98
5	94	B	94	92	92	112	110	102	98	108	98	98	94	94	106	96	106	96	98	94	108	110	106	98
6	92	92	96	102	106	106	102	102	102	94	94	94	90	90	96	90	98	98	108	120	120	96	96	96
7	92	92	84	88		90	90	106	104	94	94	100	94	94	92	92	82	104	104	104	104	106	98	98
8	98	98	86	90	98	104	108	100	98	98	94	106	94	94	88	114	108	94	104	104	124	112	112	100
9	98	90	90	90	90	92	116	100	100	100	100	100	100	116	112	96	98	98	98	110	112	106	92	92
10	92	92	92	92	92	108	108	100	100	100	100	100	100	110	102	102	100	110	98	100	100	100	100	100
11	100	100	92	98	112	112	110	98	102	98	98	98	98	156	112	110	106	106	106	104	104	104	104	94
12	94	90	90	B	B	118	106	106	102	102	102	102	90	96	122	104	104	106	106	106	100	100	100	100
13	88	88	88	88	122	110	106	106	98	98	98	94	94	94	94	104	86	98	98	110	104	100	98	98
14	98	94	94	B	126	106	114	100	100	96	96	96	96	96	94	94	94	98	110	110	110	98	B	B
15	B	B	B	B	B	126	114	114	102	96	96	100	100	100	100	100	94	94	100	108	102	102	102	94
16	90	102	102	B	G	102	102	108	100	106	112	90	92	C	C	92	98	100	118	114	102	102	100	
17	94	B	B	B	B	118	112	100	100	110	98	98	104	104	92	112	112	112	112	96	106	106	106	106
18	98	92	96	96	96	112	104	96	96	96	96	96	96	96	96	96	96	92	92	92	102	102	102	102
19	102	102	96	96	96	114	100	100	100	100	104	92	96	104	104	104	108	104	104	104	104	104	104	100
20	90	90	90	90	132	108	108	104	116	102	100	100	90	98	98	106	102	112	112	98	98	98	98	98
21	98	96	96	94	98	G	110	110	96	96	96	96	96	96	164	180	100	104	98	98	98	106	98	98
22	94	94	94	94	94	110	110	100	100	100	100	100	92	92	92	92	92	92	104	98	98	98	98	98
23	98	94	86	86	B	102	116	102	102	102	102	102	102	102	102	102	102	90	94	100	100	114	104	94
24	116	90	B	90	B	90	118	118	100	100	100	100	96	G	98	92	98	108	102	114	114	100	100	100
25	92	92	106	90	96	106	90	96	96	96	96	98	102	102	102	G 116	98	92	92	110	114	106	106	90
26	90	104	90	98	88	108	108	98	102	102	102	174	102	102	102	88	112	106	118	108	108	102	102	100
27	90	94	94	94	122	116	104	104	104	98	98	98	98	90	90	90	90	98	108	110	100	100	102	88
28	92	90	96	96	B	128	108	108	112	98	98	98	92	92	98	98	102	112	96	106	106	110	114	B
29	94	B	B	B	B	102	112	104	104	90	100	94	94	98	98	100	100	102	102	102	102	102	102	102
30	96	96	96	96	100	100	106	106	106	96	96	96	96	100	90	104	110	96	94	94	102	102	108	108
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	26	26	24	21	29	30	30	30	30	30	30	30	28	29	30	30	30	30	30	29	30	28	27
MED	94	94	94	92	96	108	108	103	102	99	98	99	96	99	98	100	101	103	103	104	104	102	102	98
U Q	98	96	96	96	117	113	112	106	104	102	100	100	100	104	104	104	108	106	108	110	109	106	105	100
L Q	92	90	90	90	92	102	106	100	100	96	96	96	94	94	94	92	98	96	98	98	100	100	99	96

JUN. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN. 2017 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	F3	L3	F2	L2	L3	CL21	CL51	C5	C2	C4	C3	CQ31	CQ52	CQ44	C2	C2	C2	C2	L3	C2	L3	L3	F4	F4
2	F4	F3	F3	L3	L2	L1	C2	C5	C3	C4	C5	CQ42	CQ32	CQ43	CQ42	CCQ22	CQ42	C4	C3	L3		F4	F2	F3
3	F3	F4	F3	L2	L3	C3	C6	C4	C5	C4	C2	C1	L1	L1	C3	L3	C5	C7	C4	L4	L6	F4	F4	F4
4	F4	F3	F1	L1	C1	C2	C1	C6	C3	C3	C5	C3	L1	C1	C4	L2	C8	C8	CLQ52	L5	CL12	F4		F3
5	F3		F2	L2	L2	C3	C3	C5	CQ52	CQ52	CQ42	CQ21	CL21	LC12	CQ62	CQ52	CQ52	CQ52	CQ52	CL21	C3	LQ21	LQ21	LQ31
6	L3	L3	LQ21	LQ31	L2	C5	C2	C5	C4	C4	C4	C5	CQ52	CQ32	CQ32	CQ32	CQ42	CQ42	CQ32	LQ31	LQ21	F4	F4	F5
7	F4	F3	F3	F3		L2	LC21	CQ31	CQ42	CQ52	CQ92	CQ32	LQ42	LQ52	LQ62	LQ52	LQ52	LQ52	LQ72	LQ72	L8	F4	F5	F2
8	F4	F2	F3	L2	L2	C2	C5	C5	C8	CQ52	CQ31	LQ11	LQ21	LQ21	LQ31	LQ31	CLQ32	LLQ23	L6	L6	L2	F2	F4	F6
9	F4	F2	F4	L2	L1	L2	C6	C6	C5	C8	C3	C3	C3	C2	C3	CQ52	CQ42	CQ42	LQ32	L5	L6	F5	F3	F4
10	F5	F3	F2	LQ31	L2	L5	L3	L5	LQ62	CQ42	CQ32	CQ21	CQ21	C1	C2	C4	C4	C7	C5	L3	L4	F5	F4	F3
11	L4	L1	L1	L1	L2	C2	C5	C5	C3	C3	C2	C2	C1	C1	C2	C3	C4	C4	C3	L6	L4	F4	F4	F4
12	F5	F5	F2			C2	C4	C4	C5	C3	C5	C2	C1	L2	C1	C4	C4	C3	C3	L4	L4	F4	F3	F3
13	F2	F2	F1	LQ11	C1	C3	C5	C4	C5	C3	C4	C3	L3	L3	L2	C1	LC12	C4	C3	L3	L3	F4	F2	F1
14	F1	F2	F3		C2	C3	C3	C3	C5	C4	L1	L1	L1	L1	L1	L1	L1	C1	C2	L1	L3	F2		
15						C2	C1	C1	C2	C2	C4	C2	L2	L3	L2	L2	L3	C2	L5	L6	L4	F1	F1	F1
16	F3	F1	F1			C3	C4	C4	C4	C2	C2	C4	C2			L4	L3	L2	L2	L3	L3	F5	F2	
17	F1					C2	C5	C3	C3	C3	C3	C2	C1	C1	C1	C3	C3	C2	C5	L3	L3	F4	F3	F2
18	F2	F2	F2	L3	C1	C4	C6	C6	C6	C5	C5	C4	C2	L2	L3	L2	L2	L4	L3	L2	L3	F5	F2	F4
19	F3	F2	F2	L3	L2	L2	C5	C5	C4	CQ32	CQ32	C3	C2	C2	C3	C3	C3	C3	C2	L3	L5	F4	F3	F3
20	F3	F2	F2	L3	C1	C2	C1	C3	C1	C3	C2	C2	C2	L3	L3	L2	L1	L4	C3	L3	L3	F2	F2	F2
21	F2	F2	F3	L2	L1		C3	C3	C5	C3	C2	C2	C2	C2	C1	C1	CQ41	CQ42	CQ21	C2	L3	F3	F3	F3
22	F3	F4	F4	L2	L2	C3	C4	C5	C5	C3	C3	C2	C3	C3	C2	L2	C2	L2	C2	L2	L3	F3	F5	F3
23	F2	F2	F2	L2		C2	C1	C3	C2	C2	C1	C1	C1	C2	C3	C5	C3	CL32	CL32	CL31	L4	F3	F3	F8
24	F1	F2		L2		L4	C1	C2	C3	C4	C3	C3	C2		C1	C1	C2	C2	C3	C2	L2	F4	F4	F2
25	F3	F3	F2	C2	C2	C3	C4	C4	C5	C2	C2	C4	C4	C3	C2	C2	C2	L8	L5	LQ72	LQ72	F8	F3	F3
26	F4	F2	F1	C1	C1	C1	C5	C4	C2	C2	C2	C1	C1	C1	C2	LC11	C2	C4	C3	C3	C5	F4	F5	F4
27	F6	F4	F5	L2	C2	C5	C5	C3	C3	C3	C5	C4	C5	L3	L4	LQ61	LQ42	LQ31	LQ83	LQ51	L3	F6	F6	F2
28	F2	F2	F1	L2		C2	C2	C2	C4	C4	C2	C2	L3	L2	L2	L1	C4	C5	C5	C3	C2	F5	FF12	
29	F1					C1	C2	C3	L2	L1	C4	C3	C2	L2	L2	L2	CQ41	CQ41	CQ41	CQ41	L8	F4	F4	F5
30	F6	F6	F5	L7	L3	L2	C3	C3	C4	C4	C4	C3	C2	L2	L2	C3	C1	L4	C3	L5	L3	F3	F3	F7
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2017 TYPES OF Es

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IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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	51	A	A	A	X 41															X 66	X 63	X 49	X 44	X 44
2	X 44	X 44	X 41	X 42	X 40															X 72	X 76	X 64	X 54	X 54
3	X 51	55	X 42	X 42	X 42															A	X 69	X 66	X 66	X 62
4	X 55	56	48	X 42	X 40															X 63	X 69	X 75	C	C
5	C	X 42	A	40	X 37															X 70	X 68	X 61	X 60	60
6	59	57	55	X 47	X 48															X 76	X 77	X 76	X 72	X 58
7	X 58	58	59	60	63															X 74	X 76	82	X 65	59
8	59	58	X 44	X 43	X 38															A	X 64	66	X 59	X 54
9	X 54	56	X 41	X 42	X 41															X 69	X 70	X 69	X 63	X 58
10	58	X 52	57	X 44	X 42															X 62	X 65	X 65	X 67	59
11	57	54	X 47	48	X 42															X 73	X 76	X 69	X 67	X 67
12	69	65	53	X 42	X 41												C			X 72	A	X 67	X 59	X 54
13	X 52	56	55	X 52	58															X 73	X 65	X 55	X 50	X 52
14	X 48	X 44	X 44	X 42	X 38															X 59	X 63	X 56	X 54	X 53
15	X 50	X 50	X 46	X 44	X 41		C	C	C	C	C					A				X 58	X 64	X 55	X 54	59
16	X 51	X 44	X 42	X 42	X 40																X 63	X 60	59	60
17	A	X 52	X 50	A	X 46															X 67	X 68	70	70	72
18	70	X 58	63	60	X 54															X 66	X 69	X 56	X 54	X 52
19	X 52	50	X 46	X 43	45															X 63	62	X 60	A	54
20	55	56	X 50	X 42	A															X 59	X 63	X 61	59	58
21	57	54	X 48	47	48								C	C	C					X 67	X 70	X 66	X 60	X 55
22	65	55	X 49	X 48	48															X 75	X 68	X 62	X 60	60
23	59	56	56	52	48															X 72	X 71	X 54	X 47	50
24	50	52	A	A	X 39													X 60		X 70	X 82	X 56	X 44	47
25	48	X 45	X 43	X 44	X 42															X 58	X 55	X 47	X 42	X 42
26	X 45	O X 46	X 42	X 41	X 39				C											X 60	X 64	X 62	60	60
27	X 50	44	A	X 40	X 36				A									C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C										X 65	X 68	74	61	A
29	X 52	45	X 39	A	A															X 72	X 69	X 59	X 56	56
30	X 44	A	X 38	43	41										C	C				X 67	X 67	X 61	55	X 50
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	25	25	27													1		26	28	29	27	27
MED	X 52	54	X 47	X 43	X 41													X 60		X 67	X 68	X 62	X 59	X 56
U Q	58	56	54	48	48															X 72	X 70	X 68	X 63	60
L Q	X 50	X 45	X 42	X 42	X 40															X 63	X 64	X 56	X 54	X 52

JUN. 2017 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	A	A	A	35	A	44	A	A	A	A	A	A	A	50	A	53	53	53	60	57	43	38	38
2	38	38	35	36	34	41	48	46	50	54	A	A	A	A	54	56	52	55	A	66	70	58	48	48
3	45	F	35	36	36	37	46	62	A	A	A	A	A	A	A	A	A	A	A	A	63	60	60	56
4	49	F	F	36	34	50	A	44	A	A	A	A	A	A	56	52	53	54	48	57	63	69	C	C
5	C	35	A	F	31	44	56	52	A	A	A	A	A	A	A	56	A	56	61	64	62	55	54	F
6	F	F	F	41	42	48	A	A	A	A	A	A	A	A	A	A	56	58	62	70	71	70	66	52
7	52	F	F	F	F	46	48	56	63	A	A	A	51	A	56	58	61	58	62	68	70	F	59	F
8	F	F	38	37	32	40	A	62	78	59	50	44	A	A	55	52	A	64	58	A	58	F	53	48
9	48	F	35	36	35	40	48	54	57	52	58	58	57	A	60	65	61	55	56	63	64	63	57	52
10	F	46	F	37	36	41	44	54	A	A	A	A	A	48	50	A	61	65	71	56	59	59	61	F
11	F	F	41	F	36	40	52	59	68	A	A	A	A	54	54	A	51	52	59	67	70	62	60	61
12	F	F	F	36	35	41	48	57	A	A	A	A	50	55	60	62	C	A	A	66	A	60	53	48
13	46	F	F	46	F	43	A	A	A	A	A	A	A	A	52	A	54	59	64	67	59	49	44	46
14	42	38	38	36	32	40	53	A	A	A	A	A	A	A	A	64	70	64	59	53	57	50	48	47
15	44	44	40	38	35	41	C	C	C	C	C	A	A	A	A	A	A	A	A	52	58	49	48	F
16	45	38	36	36	34	41	52	55	60	54	52	52	A	55	60	64	64	58	52	A	56	54	F	F
17	A	46	44	A	40	A	A	A	A	A	A	A	A	62	52	54	A	A	63	61	62	F	F	F
18	F	52	F	F	48	42	A	A	A	A	A	A	50	50	53	57	56	60	57	60	63	50	48	46
19	46	F	40	37	F	38	A	49	A	A	A	A	A	A	46	A	50	A	A	57	F	54	A	F
20	F	F	44	36	A	38	A	57	A	51	A	47	A	A	50	52	50	50	48	53	57	55	F	F
21	F	F	42	F	F	41	44	60	60	51	A	50	C	C	C		A	54	55	61	64	60	54	49
22	F	F	43	42	F	38	53	52	A	A	A	A	A	A	A	A	A	68	68	69	62	56	54	F
23	F	F	F	F	F	41	50	58	59	A	A	53	55	52	49	52	54	59	61	66	65	48	41	F
24	F	F	A	A	33	36	40	43	50	A	54	A	A	54	56	59	61	54	53	64	76	50	38	F
25	F	39	37	38	36	45	37	A	A	A	A	A	A	A	A	52	54	A	A	52	49	41	36	36
26	39	40	36	35	33	A	35	41	C	A	A	A	A	52	R	50	A	43	46	54	58	56	F	F
27	44	F	A	34	30	31	46	A	A	A	A	A	A	55	A	51	49	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	57	54	58	59	60	F	F	A
29	46	F	33	A	A	A	44	A	A	A	A	A	A	A	47	A	48	48	A	66	63	53	50	F
30	38	A	32	F	F	35	47	A	A	A	51	A	A	A	C	C	60	54	54	61	61	54	F	44
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	10	17	18	20	25	20	18	9	6	5	6	5	10	18	17	21	23	22	26	27	25	21	14
MED	45	40	38	36	35	41	48	54	60	53	52	51	51	54	54	56	54	55	58	61	62	55	53	48
U Q	46	46	42	38	36	42	51	58	66	54	56	53	56	55	56	60	61	59	62	66	64	60	58	52
L Q	42	38	35	36	33	38	44	49	54	51	50	47	50	52	50	52	52	54	53	57	58	50	46	46

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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						A		A	A	A	A	A	A	A	A	A	UL 412	UL 372	L					
2							L	UL 400	A	A	A	A	A	A	UL 444	A	A	A	A					
3							A	A	A	A	A	A	A	A	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	428	A	UL 408	A	L					
5						A	L		A	A	A	A	A	A	A	A	A	A	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7							A	A	A	A	A	A	A	A	A	A	416	A	A					
8							A	A	A	A	A		A	A	UL 432	A	A	A	A					
9								A	424	A	UL 452	A	A	A	UL 444	A	UL 460	L	UL 340					
10							A	A	A	A	A	A	A	A	A	A	A	A	A					
11							UL 396	A	A	A	A	A	A	UL 440	A	A	A	UL 376	UL 340					
12						A	A	A	A	A	A	A	UL 448	UL 460	A	A	C	A	A					
13							A	A	A	A	A	A	A	A	UL 436	A	A	UL 380	A					
14						L		A	A	A	A	A	A	A	A	UL 420	UL 396	A	L					
15							C	C	C	C	C	A	A	A	A		A	A	A					
16							UL 360	A	424	A	444	A	A	UL 440	A	A	A	A	A	A					
17						A	A	A	A	A	A	A	A	A	UL 448	A	A	A							
18							A	A	A	A	A	A	UL 440	A	A	A	A	A	A					
19							A	A	A	A	A	A	A	A	UL 416	A	A	A	A					
20						A	A	A	A	A	A	UL 436	A	A	UL 440	UL 404	408	A	A					
21								A	A	A	A	UL 448	C	C	C		A	UL 372	A					
22							A	A	A	A	A	A	A	A	A	A	A	A	A					
23							360	UL 396	UL 424	A	A	UL 448	UL 444	UL 468	UL 440	428	404	UL 376	332					
24						A	A	392	A	A	A	A	A	A	A	A	A		A					
25								A	A	A	A	A	A	A	A	UL 416	A	A	A					
26						A	A	UL 372	C	A	A	A	A	UL 420	UL 420	416	A	UL 376	A					
27							A	A	A	A	A	A	A	A	A	UL 420	416	C	C					
28						C	C	C	C	C	A	A	A	A	A	A	A	A	A					
29						A	UL 380	A	A	A	A	A	A	A	UL 424	A	UL 400	A	A					
30							A	A	A	A	UL 452	A	A	A	C	C	A	A	UL 332					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	4	3		3	3	3	5	11	6	9	6	4					
MED							UL 370	UL 394	424		UL 452	UL 448	UL 444	UL 440	UL 436	UL 418	UL 408	UL 376	UL 336					
U Q							UL 388	UL 398	UL 424		UL 452	UL 448	UL 448	UL 464	UL 444	420	416	UL 376	UL 340					
L Q							360	382	424		444	UL 436	UL 440	UL 430	UL 424	416	UL 402	UL 372	332					

JUN. 2017 foF1 (0.01MHz)

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JUN. 2017 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						A	244	A	A	A	A	A	A	A	A	A	A	A	A					
2						B	A	U A 312	A	A	A	A	A	A	A	U A 324	A	A	A					
3						A	A	A	A	A	A	A	A	A	A	A	A	A	B					
4						A	A	A	A	A	A	A	A	A	A	A	U A 292	A	A					
5						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
7						A	A	A	A	A	A	A	A	A	A	A	U A 300	A	A					
8						A	A	A	A	A	A	A	A	A	A	U A 324	A	A	B					
9						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
10						A	A	A	A	A	A	A	A	A	A	A	A	A	B					
11						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
12						A	A	A	A	A	A	A	A	A	A	A	C	A	B					
13						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
14						U A 184	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	C	C	C	C	C	A	A	A	A		A	A	A					
16						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
20						B	A	A	A	A	A	A	A	A	A	A	296	A	A					
21						B	A	A	A	A	A	A	C	C	C		A	A	A					
22						188	A	A	A	A	A	A	A	A	A	A	A	U A 412	A					
23						U R 180	A	A	A	A	A	A	A	U R 392	R	R	U A 292	A	B					
24						B	A	A	A	A	A	A	A	A	A	A	A		A					
25						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
26						B	A	A	C	A	A	A	A	R	U A 332	A	A	U R 268	A					
27						B	A	A		A	A	A	A	A	A	U A 320	R	C	C					
28						C	C	C	C	C	A	A	A	A	A	A	A	A	A					
29						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
30						B	A	A	A	A	U R 344	A	A	A	C	C	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	1	1			1			1	1	3	4	2						
MED						U 184	244	U A 312			U R 344			U R 392	U A 332	U A 324	U A 294	U 340						
U Q						188										U A 324	298							
L Q						U R 180										U A 320	U A 292							

JUN. 2017 foE (0.01MHz)

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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 129	J A 138	J A 85	J A 55	J A 65	J A 68	30	J A 68	J A 105	J A 61	J A 74	J A 149	J A 88	J A 116	J A 56	J A 80	J A 101	32	J A 30	J A 33	J A 30	J A 28	24	E B 17
2	J A 34	J A 51	J A 33	J A 39	J A 26	J A 37	J A 46	G	J A 52	J A 60	J A 142	J A 98	J A 71	J A 92	38	42	J A 51	J A 53	J A 118	J A 80	J A 70	J A 75	J A 88	J A 54
3	J A 74	J A 38	J A 66	J A 36	J A 52	J A 30	J A 43	J A 47	J A 115	J A 95	J A 78	J A 76	J A 91	J A 80	J A 84	J A 82	J A 101	J A 247	J A 115	J A 87	J A 158	J A 74	J A 65	J A 54
4	J A 52	J A 50	J A 38	J A 40	J A 30	J A 32	J A 48	J A 53	J A 90	J A 104	J A 98	J A 87	J A 113	J A 68	40	J A 47	34	J A 50	27	J A 22	J A 53	J A 110	C	C
5	C	J A 52	J A 65	J A 43	J A 52	J A 39	31	J A 50	J A 77	J A 130	J A 152	J A 109	J A 60	J A 79	J A 112	J A 61	J A 64	J A 54	J A 40	J A 43	J A 104	J A 55	J A 57	J A 86
6	J A 52	J A 31	J A 30	J A 32	J A 63	J A 31	J A 72	J A 90	J A 88	J A 208	J A 127	J A 141	J A 140	J A 83	J A 109	J A 123	J A 75	J A 105	J A 86	J A 50	J A 54	J A 47	J A 44	J A 50
7	J A 42	J A 67	J A 62	J A 50	J A 49	J A 39	J A 43	J A 68	J A 66	J A 82	J A 101	J A 51	J A 50	J A 58	J A 53	J A 50	35	38	J A 46	J A 63	J A 62	J A 111	J A 80	J A 53
8	J A 53	J A 47	J A 48	J A 27	J A 38	J A 45	J A 74	J A 74	J A 63	J A 72	J A 75	J A 49	J A 77	J A 119	J A 48	J A 48	J A 96	J A 71	J A 91	J A 101	J A 66	J A 53	J A 89	J A 44
9	J A 52	J A 55	J A 93	J A 52	J A 50	J A 40	36	J A 54	J A 48	J A 55	J A 50	J A 62	J A 54	J A 91	J A 38	J A 50	40	33	27	J A 22	J A 44	J A 45	J A 24	J A 47
10	J A 38	J A 67	J A 65	J A 26	J A 24	28	J A 40	J A 55	J A 72	J A 94	J A 131	J A 161	J A 122	J A 67	J A 52	J A 76	J A 103	J A 72	J A 91	J A 128	J A 38	J A 53	J A 83	J A 53
11	J A 96	J A 39	J A 32	J A 26	J A 24	J A 32	33	J A 42	J A 52	J A 72	J A 176	J A 111	J A 83	J A 50	J A 56	J A 67	J A 83	J A 62	J A 32	J A 35	J A 112	J A 112	J A 55	J A 37
12	J A 47	J A 53	J A 50	J A 26	22	J A 38	J A 49	J A 63	J A 82	J A 106	J A 92	J A 54	J A 50	J A 49	J A 71	J A 62	C	J A 120	J A 213	J A 124	J A 126	J A 140	J A 78	J A 78
13	J A 65	J A 37	J A 29	J A 31	J A 27	24	J A 52	J A 73	J A 96	J A 86	J A 66	J A 61	J A 47	J A 51	J A 43	J A 57	J A 77	36	J A 38	44	24	J A 38	J A 36	J A 44
14	J A 45	J A 31	J A 28	J A 47	J A 25	26	J A 44	J A 83	J A 136	J A 138	J A 216	J A 216	J A 108	J A 67	J A 111	J A 47	J A 48	J A 44	J A 32	J A 31	J A 47	J A 42	J A 26	J A 31
15	23	E B 16	J A 23	E B 16	J A 23	J A 34	C	C	C	C	C	J A 88	J A 92	J A 104	J A 96	J A 124	J A 73	J A 112	J A 78	J A 88	J A 43	J A 48	J A 54	J A 115
16	J A 40	J A 30	J A 64	J A 47	J A 31	28	J A 44	J A 68	J A 52	J A 45	38	J A 52	J A 67	J A 66	J A 54	J A 56	J A 50	J A 49	J A 56	J A 61	J A 57	J A 57	J A 42	J A 54
17	J A 79	J A 85	J A 54	J A 56	J A 35	J A 44	J A 68	J A 130	J A 121	J A 169	J A 130	J A 203	J A 144	J A 83	45	J A 88	J A 178	J A 219	J A 229	J A 250	J A 195	J A 106	J A 104	J A 88
18	J A 52	J A 50	J A 44	29	J A 26	J A 34	J A 160	J A 193	J A 156	J A 122	J A 150	J A 121	J A 48	J A 46	J A 53	J A 64	J A 65	J A 75	J A 56	J A 81	J A 52	J A 38	J A 28	J A 36
19	J A 32	J A 40	J A 50	J A 88	J A 144	J A 63	J A 57	J A 67	J A 77	J A 89	J A 98	J A 169	J A 105	J A 62	42	J A 50	J A 62	J A 58	J A 64	J A 105	J A 56	J A 106	J A 88	J A 108
20	J A 50	J A 54	E B 16	J A 48	J A 101	J A 42	J A 64	J A 54	J A 71	J A 74	J A 59	J A 47	J A 67	J A 77	J A 53	36	35	J A 54	J A 47	J A 65	J A 119	J A 52	J A 48	J A 51
21	J A 54	J A 20	J A 28	J A 36	J A 28	J A 38	33	45	J A 44	J A 49	J A 124	46	C	C	C	J A 133	J A 74	J A 112	J A 48	J A 42	J A 49	J A 82	J A 31
22	J A 34	J A 48	J A 30	J A 25	E B 16	J A 26	J A 35	J A 55	J A 78	J A 121	J A 102	J A 87	J A 122	J A 128	J A 105	J A 89	J A 72	J A 42	J A 47	J A 25	J A 52	J A 37	J A 50	J A 29
23	J A 75	J A 78	J A 52	J A 64	J A 47	G	28	J A 37	J A 64	J A 127	J A 85	J A 63	J A 43	G	G	G	34	30	J A 28	E B 15	J A 38	J A 35	J A 36	J A 48
24	J A 53	J A 50	J A 53	J A 77	J A 54	J A 51	J A 42	36	J A 48	J A 80	J A 72	J A 106	J A 102	J A 59	J A 88	J A 48	J A 46	J A 50	J A 71	J A 41	J A 57	J A 62	J A 108	J A 86
25	J A 54	J A 67	J A 65	J A 48	J A 35	28	32	J A 65	J A 66	J A 62	J A 88	J A 102	J A 145	J A 83	J A 76	38	J A 69	J A 78	J A 73	J A 41	J A 53	J A 32	J A 28	J A 44
26	J A 97	J A 49	J A 34	J A 35	J A 29	J A 40	32	J A 63	C	J A 142	J A 65	J A 80	J A 72	G	39	42	J A 49	G	J A 41	J A 27	J A 72	J A 148	J A 102	J A 50
27	J A 54	J A 46	J A 54	J A 46	J A 44	J A 37	J A 124	J A 121	J A 124	J A 168	J A 75	J A 65	J A 66	J A 59	J A 198	37	G	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	J A 112	J A 130	J A 90	J A 76	J A 127	J A 102	J A 78	J A 56	J A 178	J A 106	J A 66	J A 108	J A 123	J A 122
29	J A 64	J A 65	J A 43	J A 89	J A 98	J A 110	32	J A 50	J A 74	J A 77	J A 130	J A 133	J A 90	J A 132	39	J A 138	J A 51	J A 42	J A 139	J A 69	J A 46	J A 124	J A 83	J A 82
30	J A 52	J A 77	J A 54	J A 68	J A 50	J A 30	J A 41	J A 76	J A 89	J A 211	J A 40	J A 90	J A 77	J A 74	C	C	J A 66	J A 82	J A 32	J A 31	J A 28	J A 23	J A 74	J A 30
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	28	28	27	28	29	30	29	29	28	28	29	29	29	29	29	29	28	28
MED	J A 52	J A 50	J A 50	J A 43	J A 35	J A 37	J A 43	J A 63	J A 77	J A 92	J A 98	J A 89	J A 83	J A 74	J A 54	J A 56	J A 65	J A 54	J A 56	J A 50	J A 54	J A 53	J A 61	J A 50
U Q	J A 64	J A 66	J A 63	J A 54	J A 52	J A 41	J A 54	J A 74	J A 96	J A 128	J A 130	J A 130	J A 106	J A 87	J A 92	J A 81	J A 80	J A 76	J A 102	J A 88	J A 71	J A 107	J A 86	J A 80
L Q	J A 44	J A 38	J A 31	J A 30	J A 26	29	33	J A 50	J A 63	J A 72	J A 73	J A 62	J A 63	J A 58	42	47	47	42	J A 35	J A 32	J A 44	J A 40	J A 39	J A 40

JUN. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	A A 138	A A 85	A A 55	22	A A 68	29	A A 68	A A 105	A A 61	A A 74	A A 149	A A 88	A A 116	47	A A 80	32	28	23	25	20	21	21	E B 17
2	21	21	E B 15	30	E B 15	21	27	G	48	51	A A 142	A A 98	A A 71	A A 92	35	41	45	48	A A 118	25	25	45	20	29
3	22	20	23	22	23	19	36	39	A A 115	A A 95	A A 78	A A 76	A A 91	A A 80	A A 84	A A 82	A A 101	A A 247	A A 115	A A 87	21	37	26	22
4	27	23	19	31	E B 15	19	A A 48	40	A A 90	A A 104	A A 98	A A 87	A A 113	A A 68	38	41	32	42	24	17	24	22	C	C
5	C	E B 15	A A 65	20	22	33	30	40	A A 77	A A 130	A A 152	A A 109	A A 60	A A 79	A A 112	46	A A 64	46	32	28	34	42	37	40
6	E B 16	22	19	E B 16	E B 16	26	A A 72	A A 90	A A 88	A A 208	A A 127	A A 141	A A 140	A A 83	A A 109	A A 123	40	41	36	24	39	26	28	35
7	32	33	37	29	22	20	36	51	52	A A 82	A A 101	A A 51	40	A A 58	46	44	32	35	40	44	40	20	21	40
8	36	20	20	19	18	24	A A 74	54	41	43	41	40	A A 77	A A 119	39	45	A A 96	43	43	A A 101	27	E B 16	38	22
9	38	E B 15	20	26	19	21	28	44	39	42	40	46	49	A A 91	36	43	35	29	24	15	37	28	20	29
10	28	39	25	17	E B 16	23	34	48	A A 72	A A 94	A A 131	A A 161	A A 122	44	45	A A 76	58	50	64	38	20	20	39	36
11	37	22	22	E B 15	E B 14	26	32	39	46	A A 72	A A 176	A A 111	A A 83	40	49	A A 67	43	32	23	26	40	24	38	28
12	23	37	31	E B 15	E B 16	28	39	51	A A 82	A A 106	A A 92	A A 54	41	40	46	56	C	A A 120	A A 213	45	A A 126	46	24	39
13	24	22	19	20	E B 16	22	A A 52	A A 73	A A 96	A A 86	A A 66	A A 61	A A 47	A A 51	38	A A 57	45	30	29	39	18	22	22	31
14	20	17	18	E B 15	E B 15	22	36	A A 83	A A 136	A A 138	A A 216	A A 216	A A 108	A A 67	A A 111	38	33	35	25	24	22	20	22	E B 15
15	E B 16	E B 16	E B 16	E B 16	E B 15	30	C	C	C	C	C	A A 88	A A 92	A A 104	A A 96	A A 124	A A 73	A A 112	A A 78	46	28	22	44	34
16	20	20	19	21	23	24	31	40	38	42	37	44	A A 67	41	46	48	42	41	45	A A 61	25	43	20	41
17	A A 79	34	26	A A 56	22	A A 44	A A 68	A A 130	A A 121	A A 169	A A 130	A A 203	A A 144	54	38	45	A A 178	A A 219	30	26	24	24	23	35
18	33	22	22	21	18	28	A A 160	A A 193	A A 156	A A 122	A A 150	A A 121	39	43	46	50	50	50	46	42	29	25	22	22
19	22	22	18	20	E B 15	19	A A 57	35	A A 77	A A 89	A A 98	A A 169	A A 105	A A 62	38	A A 50	40	A A 58	A A 64	48	21	38	A A 88	E B 15
20	16	22	E B 16	E B 16	A A 101	30	A A 64	46	A A 71	43	A A 59	38	A A 67	A A 77	39	34	34	42	41	34	22	21	20	20
21	38	E B 16	19	20	E B 16	24	32	40	40	42	A A 124	40	C	C	C		A A 133	29	46	25	24	36	34	20
22	20	24	E B 15	E B 15	E B 16	G 16	30	43	A A 78	A A 121	A A 102	A A 87	A A 122	A A 128	A A 105	A A 89	A A 72	G 38	44	22	24	30	37	20
23	E B 16	E B 15	16	E B 15	20	G	25	31	38	A A 127	A A 85	41	39	G	G	G	32	29	23	E B 15	30	26	23	21
24	28	34	A A 53	A A 77	23	28	38	35	44	A A 80	50	A A 106	A A 102	44	51	43	42	45	48	37	40	40	26	20
25	24	24	30	22	19	24	30	A A 65	A A 66	A A 62	A A 88	A A 102	A A 145	A A 83	A A 76	35	45	A A 78	A A 73	37	26	20	18	30
26	20	30	20	20	E B 15	A A 40	28	30	C	A A 142	A A 65	A A 80	A A 72	G	37	37	A A 49	G	30	21	37	E B 15	38	26
27	30	23	A A 54	21	20	25	38	A A 121	A A 124	A A 168	A A 75	A A 65	A A 66	45	A A 198	35	G	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	A A 112	A A 130	A A 90	A A 76	A A 127	A A 102	40	41	45	36	36	22	22	A A 122
29	22	22	20	A A 89	A A 98	A A 110	30	A A 50	A A 74	A A 77	A A 130	A A 133	A A 90	A A 132	36	A A 138	32	38	A A 139	25	35	31	23	23
30	23	A A 77	E B 15	E B 15	19	25	36	A A 76	A A 89	A A 211	38	A A 90	A A 77	A A 74	C	C	50	46	26	20	20	E B 16	20	22
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	28	28	27	28	29	30	29	29	28	28	29	29	29	29	29	29	28	28
MED	23	22	20	20	18	24	36	47	A A 77	A A 92	A A 98	A A 89	A A 83	A A 68	46	47	43	42	43	28	26	24	23	27
U Q	31	32	28	28	22	29	A A 50	A A 70	A A 96	A A 128	A A 130	A A 130	A A 106	A A 87	A A 90	A A 78	A A 61	A A 50	A A 64	43	36	36	37	35
L Q	20	E B 20	E B 18	E B 16	E B 16	21	30	40	46	62	66	54	63	44	38	41	34	35	28	24	22	20	21	20

JUN. 2017 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JUN. 2017 fmin (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	A	A	A	322	A	314	A	A	A	A	A	A	A	285	A	317	324	327	321	347	347	306	305
2	318	326	321	327	310	357	347	311	311	325	A	A	A	A	305	324	304	320	A	312	338	325	330	315
3	316	F	298	304	326	311	322	350	A	A	A	A	A	A	A	A	A	A	A	A	308	302	303	347
4	314	F	F	304	300	385	A	334	A	A	A	A	A	A	330	303	308	343	309	304	323	338	C	C
5	C	293	A	F	308	358	387	372	A	A	A	A	A	A	A	326	A	326	334	340	341	310	310	F
6	F	F	F	304	342	391	A	A	A	A	A	A	A	A	A	A	315	313	317	307	325	301	324	318
7	297	F	F	F	F	354	324	375	356	A	A	A	326	A	308	308	330	318	320	300	311	F	362	F
8	F	F	324	332	305	333	A	318	371	380	320	339	A	A	302	287	A	340	325	A	321	F	321	316
9	323	F	293	324	334	343	352	344	346	324	342	331	333	A	307	326	323	312	310	341	322	331	333	316
10	F	311	F	335	335	350	332	378	A	A	A	A	A	292	282	A	329	332	361	319	319	312	336	F
11	F	F	320	F	339	302	319	348	360	A	A	A	A	328	328	A	319	319	310	311	327	331	324	301
12	F	F	F	288	300	275	344	363	A	A	A	A	261	273	301	326	C	A	A	324	A	302	320	307
13	304	F	F	301	F	409	A	A	A	A	A	A	A	A	295	A	305	319	314	340	356	304	295	304
14	313	303	303	326	318	330	375	A	A	A	A	A	A	A	A	320	320	329	336	320	333	309	309	306
15	308	310	332	306	318	355	C	C	C	C	C	A	A	A	A	A	A	A	A	339	355	318	331	F
16	320	314	317	320	325	321	360	342	351	371	306	320	A	307	314	328	333	356	317	A	281	293	F	F
17	A	311	299	A	378	A	A	A	A	A	A	A	A	340	298	297	A	A	334	321	320	F	F	F
18	F	298	F	F	323	397	A	A	A	A	A	A	275	280	267	315	294	330	325	326	339	316	313	294
19	295	F	319	290	F	367	A	336	A	A	A	A	A	A	280	A	296	A	A	321	F	298	A	F
20	F	F	339	319	A	343	A	348	A	331	A	303	A	A	289	309	297	319	319	322	334	319	F	F
21	F	F	324	F	349	324	343	392	349	A	316	C	C	C	A	338	307	316	313	342	303	284
22	F	F	310	327	F	313	376	350	A	A	A	A	A	A	A	A	A	320	323	329	328	304	301	F
23	F	F	F	F	F	306	325	328	352	A	A	313	331	274	274	296	315	330	324	340	352	330	305	F
24	F	F	A	A	336	379	351	269	335	A	335	A	A	294	299	306	285	310	314	311	352	387	295	F
25	F	313	312	303	329	366	400	A	A	A	A	A	A	A	A	309	325	A	A	343	341	346	287	291
26	324	316	323	325	330	A	388	276	C	A	A	A	A	268	R	342	A	275	300	315	305	294	F	F
27	361	F	A	318	320	356	308	A	A	A	A	A	A	333	A	315	302	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	319	303	330	319	308	F	F	A
29	330	F	328	A	A	A	321	A	A	A	A	A	A	A	321	A	303	299	A	331	343	320	318	F
30	322	A	319	F	F	312	325	A	A	A	324	A	A	A	C	C	342	313	307	333	335	339	F	306
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	10	17	18	20	25	20	18	9	6	5	6	5	10	18	17	21	23	22	26	27	25	21	14
MED	317	311	319	318	324	350	338	344	352	340	324	318	326	293	300	315	315	320	320	321	328	318	313	306
U Q	323	314	324	326	334	366	368	350	366	371	338	331	332	328	308	326	324	330	327	333	341	334	327	316
L Q	308	303	306	304	314	317	323	328	340	325	313	313	268	274	285	304	302	313	310	315	319	303	303	301

JUN. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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						A		A	A	A	A	A	A	A	A	A	UL 380	UL 378	L					
2							L	UL 395	A	A	A	A	A	A	UL 375	A	A	A	A					
3							A	A	A	A	A	A	A	A	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	397	A	UL 388	A	L					
5						A	L		A	A	A	A	A	A	A	A	A	A	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7							A	A	A	A	A	A	A	A	A	A	399	A	A					
8							A	A	A	A	A		A	A	UL 397	A	A	A	A					
9								A	402	A	UL 410	A	A	A	UL 438	A	UL 355	L	UL 364					
10							A	A	A	A	A	A	A	A	A	A	A	A	A					
11							UL 376	A	A	A	A	A	A	UL 438	A	A	A	UL 386	UL 359					
12						A	A	A	A	A	A	A	UL 420	UL 403	A	A	C	A	A					
13							A	A	A	A	A	A	A	A	UL 379	A	A	UL 382	A					
14						L		A	A	A	A	A	A	A	A	UL 388	UL 400	A	L					
15							C	C	C	C	C	A	A	A	A		A	A	A					
16							UL 395	A	415	A	451	A	A	UL 438	A	A	A	A	A	A				
17						A	A	A	A	A	A	A	A	A	UL 396	A	A	A						
18							A	A	A	A	A	A	UL 415	A	A	A	A	A	A					
19							A	A	A	A	A	A	A	A	UL 420	A	A	A	A					
20						A	A	A	A	A	A	UL 380	A	A	UL 420	UL 407	378	A	A					
21								A	A	A	A	UL 425	C	C	C		A	UL 413	A					
22							A	A	A	A	A	A	A	A	A	A	A	A	A					
23							368	UL 398	UL 459	A	A	UL 432	UL 449	UL 403	UL 406	401	364	UL 370	378					
24						A	A	379	A	A	A	A	A	A	A	A	A		A					
25								A	A	A	A	A	A	A	A	UL 389	A	A	A					
26						A	A	UL 419	C	A	A	A	A	UL 442	UL 424	383	A	UL 368	A					
27							A	A		A	A	A	A	A	A	UL 388	376	C	C					
28						C	C	C	C	C	A	A	A	A	A	A	A	A	A					
29						A	UL 388	A	A	A	A	A	A	A	UL 416	A	UL 386	A	A					
30							A	A	A	A	UL 452	A	A	A	C	C	A	A	UL 361					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	4	3		3	3	3	5	11	6	9	6	4					
MED							UL 382	UL 396	415		UL 451	UL 425	UL 420	UL 438	UL 406	UL 388	UL 380	UL 380	UL 362					
U Q							UL 392	UL 408	UL 459		UL 452	UL 432	UL 449	UL 440	UL 420	401	UL 394	UL 386	371					
L Q							372	387	402		UL 410	UL 380	UL 415	UL 403	UL 396	388	370	UL 370	UL 360					

JUN. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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						A		A	A	A	A	A	A	A	E A 408	A	324	296	298					
2							276	338	E A 350	E A 344	A	A	A	A	350	306	E A 348	E A 318	A					
3							E A 322	238	A	A	A	A	A	A	A	A	A	A	A					
4							A	E A 334	A	A	A	A	A	A	312	338	350	E A 274	290					
5						E A 250	246		A	A	A	A	A	A	A	E A 308	A	E A 308	258					
6							A	A	A	A	A	A	A	A	A	A	320	308	280					
7							E A 304	E A 264	E A 260	A	A	A	E A 330	A	360	326	288	292	280					
8							A	E A 330	230	234	346		A	A	352	E A 394	A	278	E A 260					
9								E A 276	278	322	300	300	E A 312	A	338	282	292	264	286					
10							E A 296	E A 276	A	A	A	A	A	E A 400	E A 422	A	E A 338	E A 268	E A 262					
11							304	278	246	A	A	A	A	322	E A 328	A	E A 326	318	304					
12						356	268	E A 270	A	A	A	A	478	420	328	E A 316	C	A	A					
13							A	A	A	A	A	A	A	A	376	A	E A 334	296	260					
14						294		A	A	A	A	A	A	A	A	310	282	266	246					
15							C	C	C	C	C	A	A	A	A		A	A	A					
16							260	288	250	254	342	346	A	358	316	292	262	254	E A 298	A				
17						A	A	A	A	A	A	A	A	E A 290	388	356	A	A						
18							A	A	A	A	A	A	428	440	E A 434	E A 328	E A 386	E A 306	E A 292					
19							A	308	A	A	A	A	A	A	448	A	352	A	A					
20						E A 238	A	256	A	318	A	400	A	A	396	348	378	E A 306	E A 312					
21								252	222	282	A	356	C	C	C		A	280	E A 312					
22							232	E A 260	A	A	A	A	A	A	A	A	A	268	248					
23							298	294	242	A	A	346	302	446	456	378	328	280	272					
24						214	E A 284	454	E A 310	A	316	A	A	386	E A 370	330	318		E A 354					
25								A	A	A	A	A	A	A	A	350	E A 302	A	A					
26						A	228	440	C	A	A	A	A	390	574	300	A	434	340					
27							E A 340	A		A	A	A	A	316	A	354	356	C	C					
28						C	C	C	C	C	A	A	A	A	A	A	302	304	E A 264					
29						A	312	A	A	A	A	A	A	A	350	A	366	356	A					
30							302	A	A	A	324	A	A	A	C	C	282	E A 310	292					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	15	17	9	6	5	5	5	10	19	17	21	22	21					
MED						250	U 282	277	240	U 284	324	346	330	380	360	327	U 314	286	U 274					
U Q						325	304	332	E A 294	322	344	378	453	420	422	352	351	308	301					
L Q						226	260	262	236	254	308	323	307	322	338	307	297	274	261					

JUN. 2017 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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 228	A	A	A	E A 244	A	220	A	A	A	A	A	A	A	A	A	194	212	212	E A 236	208	208	E A 278	E B 258
2	E A 264	E A 266	E B 254	E A 276	E B 244	222	204	202	A	A	A	A	A	A	208	A	A	A	A	E A 242	228	E A 276	226	E A 264
3	E A 240	212	E A 294	E A 296	E A 296	220	A	A	A	A	A	A	A	A	A	A	A	A	A	A	228	E A 306	E A 266	216
4	E A 254	E A 298	E A 306	E A 360	E B 286	216	A	A	A	A	A	A	A	A	220	A	208	A	216	E A 260	E A 240	220	C	C
5	C	E B 276	A	E A 302	E A 294	A	204	230	A	A	A	A	A	A	A	A	A	A	A	228	228	E A 306	E A 278	E A 296
6	E B 238	E A 254	E A 268	E B 248	E B 254	210	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 248	E A 258	E A 250	E A 242	E A 276
7	E A 278	E A 280	E A 282	E A 254	E A 244	212	A	A	A	A	A	A	A	A	A	A	208	A	A	E A 256	E A 264	208	200	E A 346
8	E A 288	E A 260	224	E A 238	E A 268	E A 258	A	A	A	A	A	A	A	A	222	A	A	A	A	A	E A 246	210	E A 260	E A 262
9	E A 298	232	E A 278	E A 276	E A 244	212	E A 242	A	226	A	214	A	A	A	166	A	204	190	202	224	E A 254	E A 240	212	E A 258
10	E A 288	E A 298	E A 260	222	E B 236	208	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 258	E A 246	E A 248	E A 272	E A 262
11	E A 302	216	E A 236	E B 252	222	230	224	A	A	A	A	A	A	206	A	A	A	216	210	E A 264	E A 252	230	E A 262	E A 246
12	E A 262	E A 256	210	E B 290	E B 280	A	A	A	A	A	A	A	206	200	A	A	C	A	A	E A 256	A	E A 316	E A 238	E A 296
13	E A 296	E A 306	E A 266	E A 268	204	198	A	A	A	A	A	A	A	A	228	A	A	220	A	232	198	222	E A 304	E A 302
14	E A 274	E A 272	E A 268	228	E B 276	220	228	A	A	A	A	A	A	A	A	E A 248	204	A	198	220	230	230	E A 258	E B 248
15	E B 240	E B 244	232	E B 232	E A 246	E A 246	C	C	C	C	C	A	A	A	A	A	A	A	A	E A 270	218	E A 266	E A 312	E A 310
16	230	E A 268	E A 284	E A 272	E A 268	216	224	A	208	A	184	A	A	218	A	A	A	A	A	A	E A 290	E A 326	E A 270	E A 306
17	A	E A 310	E A 320	A	208	A	A	A	A	A	A	A	A	A	222	A	A	A	222	E A 236	218	E A 262	E A 302	E A 308
18	E A 286	E A 276	E A 280	E A 238	220	208	A	A	A	A	A	A	196	A	A	A	A	A	A	E A 260	234	234	E A 260	E A 280
19	E A 292	E A 298	E A 242	E A 272	218	212	A	A	A	A	A	A	A	A	216	A	A	A	A	E A 300	220	E A 290	A	E B 270
20	E A 272	E A 278	216	210	A	A	A	A	A	A	A	E A 246	A	A	204	192	202	A	A	E A 252	230	224	E A 252	E A 268
21	E A 306	230	230	E A 266	218	222	214	A	A	A	A	194	C	C	C		A	198	A	E A 238	232	228	E A 270	E A 262
22	E A 244	E A 286	E B 262	E B 234	234	216	A	A	A	A	A	A	A	A	A	A	A	A	A	222	212	E A 260	E A 298	E A 256
23	226	E B 236	E A 244	E B 234	E A 220	212	212	206	192	A	A	192	174	194	202	186	194	208	204	224	212	212	E A 286	E A 306
24	E A 296	E A 296	A	A	E A 252	A	A	E A 244	A	A	A	A	A	A	A	A	A	E A 330	A	E A 260	232	212	E A 298	E A 242
25	E A 250	E A 286	E A 292	E A 292	E A 236	234	208	A	A	A	A	A	A	A	A	224	A	A	A	E A 238	E A 238	222	E A 306	E A 348
26	E A 256	E A 304	E A 266	E A 266	E B 242	A	A	198	C	A	A	A	A	198	202	228	A	208	A	E A 272	E A 254	E B 262	E A 300	E A 270
27	212	E A 278	A	E A 264	E A 264	224	A	A	A	A	A	A	A	A	A	216	194	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	E A 248	E A 272	204	224	A
29	E A 236	210	E A 260	A	A	A	204	A	A	A	A	A	A	A	204	A	202	A	A	218	226	E A 236	E A 256	224
30	E A 248	A	E B 234	E B 268	E A 296	224	A	A	A	A	178	A	A	A	C	C	A	A	E A 238	226	214	208	E A 228	E A 270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	25	25	27	21	11	5	3		3	3	3	5	11	6	9	8	8	26	28	29	27	27
MED	E A 262	E A 276	E A 262	E A 266	E 244	216	213	204	208		184	193	196	200	208	212	202	209	209	E A 245	222	U 219	E A 266	E A 270
U Q	E A 288	E A 296	E A 281	E A 276	E A 268	224	224	237	226		214	E A 246	206	212	222	228	206	218	219	E A 260	E A 249	E A 264	E A 298	E A 302
L Q	E 240	244	235	E 236	222	212	204	200	192		178	192	174	196	202	192	194	203	203	228	219	216	242	E A 258

JUN. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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						A	108	A	A	A	A	A	A	A	A	A	A	A	A					
2						B	A	110	A	A	A	A	A	A	A	112	110	A	A					
3						A	114	A	A	A	A	A	A	A	A	A	A	A	B					
4						A	A	A	A	A	A	A	A	A	108	108	110	A	A					
5						B	110	A	A	A	A	A	A	A	A	A	A	A	A					
6						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
7						A	110	A	A	A	A	A	A	A	A	A	110	110	A					
8						A	A	A	A	A	A	A	A	A	114	118	A	A	B					
9						B	112	A	A	A	A	A	A	A	110	110	110	110	B					
10						122	110	A	A	A	A	A	A	A	110	A	A	A	B					
11						B	114	A	A	A	A	A	A	A	A	A	A	A	A					
12						114	A	A	A	A	A	A	A	A	A	A	C	A	B					
13						B	A	A	A	A	A	A	A	A	A	A	A	110	A					
14						110	A	A	A	A	A	A	A	A	A	A	A	112	A					
15						B	C	C	C	C	C	A	A	A	A		A	A	A					
16						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
19						B	A	A	A	A	A	A	A	A	114	108	A	A	A					
20						B	A	A	A	A	A	A	A	A	A	A	104	A	A					
21						B	114	A	112	A	A	A	C	C	C		A	A	A					
22						114	114	A	A	A	A	A	A	A	A	A	A	110	A					
23						110	A	A	A	A	A	A	A	114	112	110	110	110	B					
24						B	116	108	A	A	A	A	A	A	A	A	A		A					
25						A	110	A	A	A	A	A	A	A	A	A	A	A	A					
26						B	110	A	C	A	A	A	A	110	110	108	108	112	A					
27						B	A	A		A	A	A	A	A	A	108	106	C	C					
28						C	C	C	C	C	A	A	A	A	A	A	A	A	A					
29						B	110	110	A	A	A	A	A	A	110	A	110	112	A					
30						B	A	A	A	A	112	110	A	A	C	C	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	13	3	1		1	1		2	8	8	9	8						
MED						114	110	110	112		112	110		112	110	109	110	110						
U Q						118	114	110							113	111	110	112						
L Q						110	110	108							110	108	107	110						

JUN. 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 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	94	94	92	84	86	86	116	98	102	100	100	90	102	98	98	100	98	100	100	92	90	86	84	B
2	92	92	88	86	92	92	92	G	102	92	90	88	92	90	90	140	114	96	96	102	92	92	98	94
3	86	96	90	92	86	88	112	102	96	98	98	100	100	96	96	106	98	90	94	96	90	92	92	88
4	88	82	82	86	104	98	104	102	94	94	104	94	90	96	116	110	108	102	100	104	96	96	C	C
5	C	84	88	88	88	94	110	92	92	88	82	84	92	100	100	100	100	100	96	94	90	90	88	88
6	88	88	86	90	86	112	98	98	90	90	90	88	86	86	84	84	90	90	90	90	88	86	86	86
7	86	82	82	82	82	82	112	98	94	94	90	94	94	94	96	104	118	114	86	92	92	92	92	92
8	92	84	84	84	84	96	102	98	98	92	90	90	94	100	128	112	94	94	98	94	94	102	100	96
9	94	92	90	90	90	90	118	104	104	98	98	94	94	94	112	120	114	114	102	94	92	92	92	90
10	90	88	88	92	94	128	114	94	90	88	86	80	88	94	110	98	92	92	92	92	98	96	88	92
11	92	84	84	84	96	106	114	96	94	86	86	82	82	86	106	102	96	98	98	92	92	92	92	92
12	86	88	84	82	112	112	102	98	94	90	90	90	104	96	96	102	C	90	90	84	90	90	90	88
13	84	84	82	82	82	120	104	98	92	92	92	92	92	90	92	98	98	110	96	96	96	96	96	92
14	84	92	92	92	92	124	106	100	94	92	88	82	86	84	84	90	90	112	88	86	86	92	92	92
15	92	B	84	B	92	92	C	C	C	C	C	90	84	84	80	82	82	78	78	78	80	96	94	92
16	92	86	84	84	84	106	102	94	94	92	92	96	88	100	88	86	84	86	80	88	82	100	100	96
17	96	92	92	82	86	120	104	100	96	90	90	90	90	88	96	94	96	96	104	94	94	94	94	94
18	92	90	88	88	88	116	104	90	90	90	84	84	88	88	90	90	90	84	84	84	82	82	82	90
19	90	90	88	88	118	90	102	100	100	96	94	88	92	86	116	112	100	94	92	94	92	102	100	94
20	96	92	B	92	88	86	102	96	96	94	94	100	94	92	98	96	124	100	100	94	94	94	96	94
21	92	90	86	86	86	86	118	118	114	104	90	96	C	C	C		94	104	92	96	98	92	92	92
22	92	86	86	88	B	90	118	98	96	90	90	90	86	86	84	82	86	86	86	82	82	88	88	92
23	92	108	96	92	86	G	102	96	94	86	86	92	92	G	G	G	124	118	102	B	96	90	90	92
24	86	86	86	86	86	86	114	112	104	96	94	90	88	96	92	92	92	92	92	86	94	96	94	92
25	90	90	88	88	94	104	112	100	92	94	94	90	88	92	92	92	90	90	88	88	88	88	102	98
26	96	90	90	90	98	104	110	106	C	86	96	92	94	G	122	118	110	G	100	96	92	86	90	90
27	90	86	86	78	80	102	102	100	94	92	92	88	96	96	90	130	G	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	86	86	88	88	88	84	100	104	94	94	106	102	96	92
29	88	90	84	84	88	86	120	110	96	92	90	88	88	96	112	96	112	116	98	94	94	94	98	98
30	98	94	94	94	94	90	100	96	90	88	136	110	106	102	C	C	102	98	94	94	94	94	94	92
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	27	27	28	29	30	29	27	27	27	28	28	29	28	29	29	28	27
MED	92	90	87	87	88	95	105	98	94	92	90	90	92	94	96	98	98	97	94	94	92	92	92	92
U Q	92	92	90	90	94	109	114	102	98	94	94	94	94	96	110	110	109	104	99	94	94	96	96	94
L Q	88	86	84	84	86	89	102	96	92	90	89	88	88	88	90	90	91	90	89	88	89	90	90	90

JUN. 2017 h'Es (KM)

IONOSPHERIC DATA STATION Kokubunji

JUN. 2017 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F5	F5	F5	F4	L5	C2	L4	L5	L3	L3	L3	L3	L3	L2	L3	L3	L2	L2	F3	F4	F4	F4	
2	F4	F4	F2	F4	F4	L2	L3		L2	L3	L4	L4	L3	L3	L1	H1	C2	L3	L6	F3	F4	F5	F5	F7
3	F6	F4	F5	F5	F6	L3	C4	L2	L4	L4	L4	L3	L3	L3	L3	L4	L5	L4	L5	F5	F5	F7	F7	F7
4	F4	F5	F4	F6	F2	L2	L4	L4	L4	L3	L2	L2	L5	L3	C1	C2	C1	L3	L2	F2	F6	F3		
5		F2	F6	F6	F3	L4	C2	L3	L4	L4	L5	L4	L2	L3	L4	L2	L4	L3	L3	F5	F4	F8	F6	F4
6	F3	F6	F3	F2	F3	C2	L3	L4	L4	L4	L3	L3	L4	L4	L3	L4	L3	L2	L4	F5	F8	F6	F6	F5
7	F5	F6	F5	F6	F4	L2	C3	L3	L3	L3	L3	L2	L2	L2	L2	L2	CL11	CL22	L4	F4	F4	F2	F3	F6
8	F7	F7	F6	F4	F3	L2	L3	L4	L2	L2	L2	L2	L3	L3	C2	C2	L4	L5	L6	F6	F6	F2	F8	F8
9	F6	F4	F6	F4	F4	L4	C3	L3	L2	L2	L2	L2	L2	L3	C1	C2	C2	C2	L2	F3	F5	F5	F3	F6
10	F7	F8	F6	F3	F2	C2	C4	L5	L4	L4	L4	L4	L3	L3	C2	L4	L4	L4	L3	F5	F7	F3	F7	F5
11	F5	F5	F5	F2	F1	L3	C2	L2	L2	L4	L4	L4	L3	L2	L2	L3	L3	L3	L3	F4	F5	F5	F5	F7
12	F6	F7	F5	F2	F1	C6	L3	L3	L4	L4	L3	L3	L1	L2	L2	L2		L5	L6	F4	F7	F4	F5	F5
13	F4	F3	F5	F2	F2	C2	L3	L4	L4	L4	L2	L3	L2	L2	L2	L2	L3	C2	L3	F4	F2	F7	F5	F6
14	F4	F2	F2	F3	F2	C2	L2	L4	L4	L5	L4	L5	L3	L3	L4	L3	L2	CL22	L2	F3	F4	F6	F4	F2
15	F2		F1		F2	L6						L4	L4	L4	L4	L4	L4	L6	L6	F4	F5	F6	F5	F7
16	F4	F4	F5	F2	F2	L2	L2	L3	L2	L2	L2	L2	L3	LC21	L2	L3	L3	L4	L4	F4	F5	FF43	F5	F7
17	F8	F5	F5	F8	F5	C4	L5	L6	L5	L5	L4	L4	L4	L3	L2	L3	L7	L5	L5	F4	F4	F6	F4	F4
18	F6	F4	F5	F2	F3	CL22	L5	L5	L5	L5	L4	L4	L2	L2	L2	L3	L4	L3	L4	F4	F3	F5	F5	F3
19	F6	F7	F8	F5	FF22	L2	L5	L4	L4	L3	L4	L3	L3	L3	C1	C2	L3	L3	L5	F4	F5	F6	F6	F2
20	F3	F6		F3	F5	L4	L4	L3	L3	L2	L2	L1	L2	L2	L1	L2	C2	L3	L4	F4	F3	F3	F4	F5
21	F7	F3	F4	F3	F3	L2	CL32	CL23	CL22	L2	L3	L2					L3	L3	L3	F2	F4	F4	F4	F5
22	F3	F5	F2	F2		L1	C3	L4	L4	L4	L3	L4	L4	L4	L4	L4	L5	L2	L3	F4	F4	F4	F5	F3
23	F3	F2	F2	F2	F2		L2	L2	L2	L4	L2	L2	L1				C1	C2	L4		F5	F6	F7	F4
24	F5	F6	F7	F5	F4	L4	C2	C2	L3	L4	L3	L3	L3	L2	L3	L2	L2	L4	L5	F4	F8	F5	F5	F4
25	F6	F5	F7	F7	F3	L4	C4	L6	L4	L3	L3	L4	L4	L3	L2	L2	L3	L4	L6	F5	F6	F5	F2	F8
26	F5	F8	F6	F5	F2	L4	C3	L2		L4	L3	L3	L3		C1	C2	C2		L4	F4	F7	F4	F6	F5
27	F5	F6	F6	F3	F2	L3	L5	L5	L4	L6	L4	L3	L2	L2	L4	C2								
28											L3	L3	L3	L3	L3	L3	L2	L3	L4	F5	F6	F3	F6	F7
29	F6	F6	F4	F4	F4	L4	C2	C3	L4	L4	L3	L3	L3	L3	C1	L4	C2	C4	L5	F4	F5	F5	F3	F4
30	F5	F6	F2	F2	F6	L4	L4	L6	L5	L4	H1	C3	L3	L2			L3	L4	L3	F3	F3	F2	F5	F6
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	A	A	A	A	A	X 36														X 71	X 70	X 54	X 50	X 49
2	A	X 48	A	X 44	X 36	X 34														X 67	X 74	X 66	A	60
3	X 54	X 48	X 46	X 46	42	X 43														A	A	X 68	A	X 58
4	A	X 54	X 53	50	X 43	X 46														X 69	X 79	X 76	C	C
5	C	48	44	45	X 32	X 39														X 74	X 65	X 68	X 63	O X 63
6	A	X 53	58	54	47	X 36														X 79	X 81	X 77	X 77	73
7	73	69	70	X 48	X 44	X 36														X 82	X 84	X 72	X 58	X 54
8	60	X 53	X 52	49	X 41	X 42														X 56	X 63	X 66	X 57	X 57
9	62	53	A	X 39	X 40	X 39														X 63	X 67	X 75	X 64	X 58
10	X 53	X 51	X 48	X 45	X 43	X 39														A	X 61	68	X 68	A
11	X 38	39	42	X 36	43	X 36														X 75	X 81	X 74	X 60	X 58
12	A	X 56	A	45	X 38	X 32														A	X 60	X 59	A	X 58
13	X 58	X 58	59	59	62	X 38														X 86	X 60	X 51	X 50	A
14	X 47	A	A	X 44	X 40	47														X 53	A	X 58	59	56
15	52	X 50	X 48	X 42	X 39	X 35														A	X 71	X 56	A	A
16	A	A	A	47	44	X 38														X 56	A	A	58	61
17	A	60	61	60	52	A														X 72	A	59	59	77
18	59	59	59	60	58	57														X 64	A	X 64	X 56	X 56
19	X 52	X 52	X 52	X 52	X 42	X 37														X 66	X 66	X 54	X 54	57
20	56	56	57	X 43	36	X 32														X 74	X 76	X 61	59	56
21	58	A	X 48	58	X 44	X 40														X 61	X 75	X 65	X 52	57
22	57	57	56	51	47	48														A	A	A	X 61	X 59
23	X 57	56	X 54	49	47	X 43														X 75	X 68	X 58	X 52	X 50
24	X 51	X 43	46	X 34	37	X 31														X 84	X 88	X 54	A	X 42
25	A	X 39	A	40	A	40														X 68	X 65	X 45	X 38	X 37
26	X 38	X 37	A	43	40	40														X 57	X 68	X 60	O X 56	A
27	46	A	49	46	X 38	X 34														A			X 54	50
28	A	A		X 36	41	37														A	X 70	X 66	X 63	A
29	A	58	46	X 32	43	40														X 84	X 77	X 68	X 56	X 49
30	X 44	X 44	X 38	A	X 36	A															X 80	X 80	X 53	45
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	24	21	28	28	28														22	23	27	24	24
MED	X 54	X 53	52	46	42	X 38														X 70	X 70	X 65	X 58	X 57
U Q	58	56	58	50	44	X 41														X 75	X 79	X 68	X 60	58
L Q	X 47	X 48	46	X 42	X 38	X 36														X 63	X 65	X 58	X 54	X 50

JUN. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	A	A	A	A	A	30	49	A	A	A	A	A	A	A	A	58	59	63	A	65	64	48	44	42
2	A	42	A	37	30	27	47	54	54	A	A	A	53	52	56	57	60	56	56	61	68	60	A	F
3	48	40	39	40	F	37	50	60	A	A	A	A	A	52	A	A	67	70	A	A	A	62	A	52
4	A	48	47	F	37	40	52	A	A	A	A	A	A	54	53	57	60	56	56	63	73	70	C	C
5	C	F	F	F	26	33	47	52	57	56	A	47	51	A	54	60	66	74	77	68	59	62	57	57
6	A	47	F	F	F	30	41	54	60	A	A	A	A	52	56	64	76	79	74	73	75	71	71	F
7	F	F	F	42	38	31	41	56	A	A	A	A	A	55	55	62	73	83	75	76	78	64	51	48
8	F	47	45	F	35	35	42	65	A	A	A	A	56	A	A	A	72	73	58	50	57	60	51	51
9	F	F	A	33	34	32	43	50	54	58	61	55	A	44	54	64	70	68	69	56	61	69	57	52
10	47	45	42	38	36	33	47	59	A	A	A	A	A	52	56	66	77	83	56	A	55	F	62	A
11	31	F	F	30	F	30	42	63	60	55	54	A	A	54	54	A	A	A	A	69	75	68	54	52
12	A	50	A	F	32	26	54	70	A	A	A	A	A	A	67	77	84	A	68	A	54	53	A	52
13	51	52	F	F	F	32	43	46	A	58	53	A	A	A	59	68	74	78	75	80	53	45	44	A
14	41	A	A	37	34	F	42	A	48	A	50	A	A	A	63	A	84	64	52	47	A	52	F	F
15	F	44	42	36	33	29	44	54	58	53	53	A	A	50	54	54	60	60	A	A	65	50	A	A
16	A	A	A	F	F	32	41	60	A	A	A	A	A	A	70	78	70	62	49	49	A	A	F	F
17	A	F	F	F	F	A	45	A	A	A	A	A	A	A	58	A	64	68	64	66	A	F	F	F
18	F	F	F	F	F	F	50	51	A	A	A	A	A	A	A	72	76	76	A	58	A	58	50	50
19	46	46	46	46	36	30	44	53	53	A	50	A	50	A	50	A	A	A	A	60	60	48	48	F
20	F	F	F	37	F	26	44	A	A	A	A	A	A	A	56	A	58	63	A	68	70	55	F	F
21	F	A	42	F	38	34	44	48	51	50	50	A	A	A	54	56	52	A	A	55	69	59	46	F
22	F	F	F	F	F	F	46	52	46	A	54	A	A	A	60	65	70	A	A	A	A	A	55	52
23	50	F	48	F	F	37	41	47	65	58	59	A	54	48	52	52	61	70	76	69	62	52	46	44
24	45	37	F	28	F	25	39	42	52	64	56	A	A	58	66	73	74	70	A	78	82	48	A	36
25	A	33	A	F	A	F	40	44	A	49	A	A	R 48	47	58	54	51	A	58	62	59	39	32	31
26	31	32	A	F	F	F	37	A	48	A	48	A	A	A	45	A	A	A	46	51	62	54	50	A
27	F	A	F	F	32	28	44	54	48	A	A	A	A	58	A	A	A	58	56	A	A	A	48	F
28	A	A	A	30	F	F	38	58	61	52	A	A	A	A	A	53	58	61	61	A	64	60	57	A
29	A	F	F	26	F	F	41	48	57	52	51	54	A	A	46	A	A	57	68	78	70	63	50	43
30	38	38	32	A	30	A	45	52	51	46	45	A	A	A	A	A	A	A	A	63	74	74	47	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	14	9	13	14	21	30	24	17	12	13	3	6	13	23	19	24	22	19	23	23	25	20	14
MED	46	44	42	37	34	31	44	54	54	54	53	54	52	52	56	62	68	68	61	63	64	59	50	50
U Q	48	47	46	39	36	34	47	58	59	58	55	55	54	54	59	68	74	74	74	69	73	64	56	52
L Q	38	38	40	30	32	28	41	49	50	51	50	47	50	49	54	56	60	61	56	56	59	51	46	43

JUN. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	428	412	A	A					
2							UL376		UL404	A	A	A	448	A	436	A	UL424	A	A					
3									A	A	A	A	A	A	A	A	A		A					
4								A	A	A	A	A	A	A	A	UL424	UL420	UL392	A					
5								A	UL412	A	A	UL448	A	A	A	444	A	A	A					
6							A	A	A	A	A	A	A	UL452	A	UL448	A	A	L					
7								A	A	A	A	A	A	UL456	A	A	UL420	384	A					
8							A	UL384	A	A	A	A	A	A	A	A	A	A	A					
9									UL404	A	A	A	A	A	A	A	UL424	A						
10									A	A	A	A	A	UL448	UL452	UL432	UL412	UL384	A					
11								A	A	UL412	UL452	A	A	UL464	UL436	A	A	A	A					
12									A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	UL436	A	A	A	A	A	440	UL432	384	UL372					
14								A	A	A	432	A	A	A	A	A	A	A	A					
15								L	UL416	UL452	A	A	A		A	A	A	A	A					
16							UL356		A	A	A	A	A	A	A	A	A	A	A					
17							A	A	A	A	A	A	A	A	A	A	A	A	L					
18							A		A	A	A	A	A	A	A	UL504	A	A	A					
19								A	A	A	A	A	A	A	A	A	A	A	A					
20							A	A	A	A	A	A	A	A	A	A	A	A	A					
21								UL416	A	A	A	A	A	A	A	A	A	A	A					
22							A			A	A	A	A	A	A	A	A	A	A					
23								UL404	UL400	A	UL444	A	UL452	UL444	444	436	UL416	396	UL360					
24							A	A	A	A	A	A	A	A	444	A	A	A	A					
25							A	UL356	A	A	A	A	UL440	L	A	UL412	UL420	A	UL360					
26								A	A	A	A	A	A	A	424	A	A	A	A					
27								UL400	A	A	A	A	A	A	A	A	A	A	A		A	A		
28			A					UL372	A		A	A	A	A	A	A	UL428	A	A					
29								UL364	A	A	A	A	A	A	A	A	A	UL384	A					
30							A	UL384	A	UL412	UL432	A	A	A	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	8	5	4	4	1	3	5	6	9	10	6	3					
MED							UL366	UL384	UL404	UL424	UL438	UL448	UL448	UL452	440	UL436	UL420	384	UL360					
U Q								UL402	UL414	UL444	UL448		UL452	UL460	444	UL446	UL424	392	UL372					
L Q								UL368	UL402	UL412	432		UL440	UL446	436	UL426	UL416	384	UL360					

JUN. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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							UA 220	UA 264	A	A	A	A	A	A	A	A	UA 320	A	A					
2							A	A	A	A	A	A	A	A	A	UA 368	316	A	A					
3							A	A	A	A	A	A	A	A	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	A	A	A	A	A					
5							UA 192	A	A	A	A	UA 380	A	A	A	A	A	A	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7							UA 216	A	A	A	A	A	A	A	A	A	A	A	A					
8							A	A	A	A	A	A	A	A	A	A	UA 304	A	A					
9							196	UA 252	UA 304	A	A	A	A	A	A	A	A	A	A					
10							A	A	A	A	A	A	A	A	A	UR 344	A	A	A					
11							A	A	A	A	A	A	A	A	A	A	A	A	A					
12							A	A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	A	A	A	A					
14							A	A	A	A	A	A	A	A	A	A	A	A	A					
15							A	UA 260	A	A	A	A	A	A	A	372	A	A	A					
16							A	A	A	A	A	A	A	A	A	A	A	A	A					
17							A	A	A	A	A	A	A	A	A	A	A	A	A					
18							A	A	A	A	A	A	A	A	A	A	A	A	A					
19							UA 200	A	A	A	A	A	A	A	A 368	A	A	A	A					
20							A	A	A	A	A	A	A	A	A	A	UA 316	A	A					
21							A	A	A	A	A	A	A	A	A	A	A	A	A					
22							A	A	A	A	A	A	A	A	A	A	A	A	A					
23							A	UR 284	A	A	A	A	A	A	UA 340	A	UA 308	A	A					
24							A	A	A	A	A	A	A	A	A	A	A	A	A					
25							A	A	A	A	A	A	A	A	A	A	A	A	A					
26							A	A	A	A	A	A	A	A	UR 336	A	A	A	A					
27							A	A	A	A	A	A	A	A	A	A	A	A	A		A	A		
28			A				A	A	A	A	A	A	A	A	A	A	A	A	A					
29							A	A	A	A	UA 336	A	A	A	A	A	A	UA 288	A					
30							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	4	1		1	1			3	3	5	1						
MED							UA 200	UA 262	UA 304		UA 336	UA 380			UA 340	UA 368	UA 316	UA 288						
U Q							UA 218	U 274							A 368	372	UA 318							
L Q							194	UA 256							UR 336	UR 344	UA 306							

JUN. 2017 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 71	J A 110	J A 87	J A 111	J A 64	J A 104	J A 39	J A 55	J A 56	J A 80	J A 106	J A 156	J A 120	J A 94	J A 84	J A 48	37	J A 54	J A 57	J A 55	J A 55	J A 55	J A 55	J A 35
2	J A 54	J A 54	J A 54	J A 46	J A 46	E B 16	26	35	J A 42	J A 99	J A 104	J A 107	J A 52	J A 56	J A 43	42	36	J A 44	J A 40	J A 40	J A 44	J A 73	J A 86	J A 34
3	J A 31	J A 34	J A 40	J A 40	J A 31	J A 40	J A 48	J A 56	J A 142	J A 112	J A 155	J A 110	J A 104	J A 70	J A 102	J A 102	J A 66	J A 63	J A 79	J A 66	J A 88	J A 206	J A 155	J A 53
4	J A 73	J A 49	J A 51	J A 30	E B 16	J A 20	J A 32	J A 56	J A 98	J A 108	J A 92	J A 113	J A 139	J A 80	J A 52	39	J A 34	J A 41	J A 43	J A 43	J A 34	J A 26	C	C
5	C	J A 43	J A 44	J A 53	J A 53	J A 53	26	J A 42	J A 56	J A 52	J A 88	43	J A 58	J A 88	J A 51	38	J A 43	J A 42	J A 50	J A 50	J A 40	J A 109	J A 44	J A 71
6	J A 110	J A 80	J A 77	J A 76	J A 76	J A 22	J A 39	J A 84	J A 85	J A 87	J A 152	J A 154	J A 91	J A 47	J A 62	J A 44	J A 45	J A 68	J A 111	J A 36	J A 110	J A 78	J A 43	J A 88
7	J A 54	J A 52	J A 52	J A 80	J A 46	J A 23	27	J A 50	J A 68	J A 109	J A 109	J A 129	J A 130	41	44	J A 47	37	36	J A 50	J A 44	J A 30	J A 28	J A 30	J A 25
8	J A 44	J A 35	J A 90	J A 26	J A 74	J A 86	J A 45	J A 49	J A 124	J A 90	J A 110	J A 74	J A 66	J A 92	J A 86	J A 74	J A 49	J A 74	J A 54	J A 27	J A 44	J A 73	J A 68	J A 46
9	J A 38	J A 53	J A 53	J A 47	J A 37	J A 52	23	32	37	J A 55	J A 101	J A 110	J A 73	J A 51	J A 56	J A 86	40	J A 47	J A 51	J A 32	J A 47	J A 30	J A 29	J A 30
10	J A 36	J A 42	J A 28	J A 29	J A 22	J A 37	J A 35	J A 48	J A 66	J A 70	J A 155	J A 100	J A 156	J A 144	40	G	36	J A 64	J A 59	J A 54	J A 52	J A 86	J A 65	J A 86
11	J A 98	J A 87	J A 55	J A 43	22	J A 36	J A 37	J A 44	J A 43	J A 43	J A 52	J A 86	J A 88	42	43	J A 57	J A 78	J A 80	J A 77	J A 40	J A 54	J A 85	J A 86	J A 56
12	J A 89	J A 53	J A 53	J A 48	J A 28	J A 26	J A 67	J A 56	J A 90	J A 88	J A 146	J A 88	J A 155	J A 111	J A 54	J A 59	J A 83	J A 87	J A 64	J A 78	J A 55	J A 54	J A 83	J A 52
13	J A 48	J A 55	J A 45	J A 32	J A 40	J A 45	J A 42	J A 47	J A 110	J A 98	J A 72	J A 70	J A 101	J A 119	J A 54	J A 40	J A 36	33	28	J A 23	J A 30	J A 22	J A 28	J A 82
14	J A 53	J A 66	J A 46	J A 34	J A 38	25	J A 29	J A 82	J A 54	J A 73	J A 56	J A 79	J A 159	J A 112	J A 79	J A 116	J A 68	J A 74	J A 54	J A 56	J A 74	J A 36	J A 32	J A 35
15	J A 27	22	E B 15	23	23	J A 33	J A 32	J A 30	J A 37	J A 40	J A 42	J A 72	J A 54	J A 53	J A 55	J A 45	J A 45	J A 57	J A 71	J A 110	J A 122	J A 62	J A 64	J A 51
16	J A 67	J A 45	J A 47	J A 38	J A 47	E B 15	J A 30	J A 43	J A 78	J A 102	J A 96	J A 79	J A 66	J A 110	J A 48	J A 43	J A 41	J A 41	J A 42	J A 37	J A 65	J A 50	J A 130	J A 43
17	J A 67	J A 54	J A 88	J A 85	J A 48	J A 53	J A 42	J A 89	J A 156	J A 103	J A 108	J A 78	J A 159	J A 90	J A 88	J A 93	J A 149	J A 90	J A 59	J A 73	J A 143	J A 156	J A 52	J A 51
18	J A 52	J A 52	J A 73	J A 42	J A 29	22	J A 54	J A 50	J A 110	J A 89	J A 100	J A 110	J A 111	J A 168	J A 83	J A 65	J A 59	J A 82	J A 81	J A 80	J A 80	J A 50	J A 43	J A 30
19	J A 49	J A 27	J A 54	J A 48	J A 41	J A 44	28	J A 47	J A 55	J A 86	J A 64	J A 56	J A 55	J A 120	46	J A 73	J A 70	J A 272	J A 151	J A 39	J A 87	J A 49	J A 51	J A 53
20	J A 51	J A 42	J A 34	J A 34	J A 35	J A 24	J A 40	J A 68	J A 88	J A 102	J A 124	J A 154	J A 88	J A 87	J A 74	J A 79	40	J A 71	J A 71	J A 58	50	J A 74	J A 66	J A 53
21	J A 44	J A 53	J A 66	J A 51	23	J A 27	J A 36	33	J A 47	J A 51	J A 55	J A 72	J A 76	J A 120	J A 91	46	J A 49	J A 56	J A 79	J A 33	J A 31	J A 50	J A 64	J A 28
22	J A 50	J A 42	25	J A 26	J A 46	J A 29	J A 45	J A 50	J A 42	J A 65	J A 56	J A 101	J A 122	J A 113	J A 68	J A 64	J A 91	J A 105	J A 164	J A 90	J A 90	J A 54	J A 29	J A 31
23	J A 78	J A 38	J A 88	J A 51	J A 83	J A 43	J A 37	G	J A 45	J A 46	J A 54	J A 88	J A 47	J A 46	40	38	35	34	J A 34	27	J A 34	J A 30	J A 25	E B 16
24	E B 17	J A 28	J A 48	J A 53	J A 54	J A 80	J A 35	J A 38	J A 46	J A 56	J A 58	J A 71	J A 113	J A 64	J A 45	J A 44	J A 76	J A 60	J A 103	72	J A 51	J A 27	J A 56	J A 63
25	J A 86	J A 52	J A 53	J A 68	J A 53	J A 54	J A 40	J A 40	J A 64	J A 60	J A 97	J A 77	J A 55	J A 54	J A 48	J A 40	J A 45	J A 67	J A 39	J A 44	J A 36	J A 25	J A 40	J A 28
26	J A 82	J A 116	J A 55	J A 34	22	J A 22	J A 31	J A 75	J A 45	J A 89	J A 54	J A 52	J A 60	J A 150	G	J A 109	J A 80	J A 63	J A 51	J A 69	J A 30	J A 51	J A 52	J A 86
27	J A 40	J A 54	J A 52	J A 45	J A 35	J A 22	J A 26	J A 30	J A 84	J A 150	J A 156	J A 156	J A 146	J A 108	J A 70	J A 107	J A 82	J A 48	J A 57	J A 99	J A 138	J A 154	J A 75	J A 108
28	J A 66	J A 66	J A 64	J A 39	J A 31	E B 15	J A 37	J A 78	J A 111	J A 56	J A 111	J A 174	J A 158	J A 92	J A 88	J A 52	J A 38	J A 38	J A 61	J A 70	J A 87	J A 52	J A 79	J A 88
29	J A 88	J A 44	J A 52	J A 53	J A 43	J A 43	J A 36	J A 33	J A 41	J A 43	J A 44	J A 50	J A 55	J A 60	J A 55	J A 90	J A 60	J A 34	J A 50	J A 42	J A 34	J A 41	J A 33	J A 47
30	J A 48	J A 51	J A 44	J A 86	J A 80	J A 73	J A 52	J A 46	J A 60	J A 62	J A 44	J A 55	J A 56	J A 68	J A 79	J A 112	J A 77	J A 90	J A 89	J A 78	J A 80	J A 40	J A 41	J A 56
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29
MED	J A 53	J A 52	J A 52	J A 46	J A 40	J A 34	J A 36	J A 48	J A 62	J A 83	J A 96	J A 87	J A 90	J A 89	J A 55	J A 54	J A 47	J A 62	J A 58	J A 52	J A 53	J A 52	J A 52	J A 51
U Q	J A 76	J A 54	J A 64	J A 53	J A 53	J A 52	J A 42	J A 56	J A 90	J A 99	J A 110	J A 110	J A 130	J A 112	J A 79	J A 86	J A 76	J A 74	J A 79	J A 72	J A 87	J A 74	J A 72	J A 67
L Q	J A 44	J A 42	J A 45	J A 34	29	22	30	38	J A 45	J A 56	J A 56	J A 72	J A 58	J A 56	46	43	38	42	J A 50	J A 39	J A 36	J A 36	J A 36	J A 32

JUN. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	A A 71	A A 110	A A 87	A A 111	A A 64	22	32	A A 55	A A 56	A A 80	A A 106	A A 156	A A 120	A A 94	A A 84	35	35	40	A A 57	43	47	35	20	20
2	A A 54	31	A A 54	29	17	E B 16	22	32	35	A A 99	A A 104	A A 107	41	44	38	39	35	40	36	35	39	E B 16	A A 86	22
3	20	16	E B 17	20	22	23	35	50	A A 142	A A 112	A A 155	A A 110	A A 104	47	A A 102	A A 102	44	46	A A 79	A A 66	A A 88	24	A A 155	28
4	A A 73	27	23	18	E B 16	E B 16	20	A A 56	A A 98	A A 108	A A 92	A A 113	A A 139	49	44	36	33	34	36	35	30	18	C	C
5	C	21	21	20	E B 16	17	22	36	34	42	A A 88	42	47	A A 88	46	37	40	40	40	38	29	25	25	40
6	A A 110	39	24	22	21	21	34	48	42	A A 87	A A 152	A A 154	A A 91	39	53	43	43	49	28	30	32	52	35	40
7	23	20	30	25	20	E B 15	24	38	A A 68	A A 109	A A 109	A A 129	A A 130	38	44	44	32	32	44	33	27	27	25	18
8	31	21	33	18	E B 15	18	36	33	A A 124	A A 90	A A 110	A A 74	45	A A 92	A A 86	A A 74	44	43	23	18	18	18	29	26
9	27	28	A A 53	23	25	25	22	30	34	42	43	44	A A 73	40	50	52	36	37	35	20	23	20	20	19
10	20	22	20	22	E B 15	21	28	36	A A 66	A A 70	A A 155	A A 100	A A 156	38	36	G	34	33	36	A A 54	E B 15	35	33	A A 86
11	27	21	21	21	E B 15	20	33	35	31	36	40	A A 86	A A 88	41	41	A A 57	A A 78	A A 80	A A 77	35	47	24	23	45
12	A A 89	38	A A 53	20	E B 15	18	48	49	A A 90	A A 88	A A 146	A A 88	A A 155	A A 111	48	53	78	A A 87	58	A A 78	41	22	A A 83	31
13	28	44	22	18	19	22	39	34	A A 110	37	45	A A 70	A A 101	A A 119	45	34	33	30	26	18	20	E B 16	22	A A 82
14	25	A A 66	A A 46	29	30	19	24	A A 82	39	A A 73	36	A A 79	A A 159	A A 112	44	A A 116	62	53	38	38	A A 74	30	24	E B 15
15	E B 15	E B 16	E B 15	E B 15	E B 16	19	24	28	32	36	40	A A 72	A A 54	43	44	43	42	43	A A 71	A A 110	40	22	A A 64	A A 51
16	A A 67	A A 45	A A 47	E B 15	20	E B 15	26	26	A A 78	A A 102	A A 96	A A 79	A A 66	A A 110	46	40	40	39	35	32	A A 65	A A 50	E B 16	24
17	A A 67	42	26	26	E B 15	A A 53	33	A A 89	A A 156	A A 103	A A 108	A A 78	A A 159	A A 90	48	A A 93	43	36	25	46	A A 143	22	22	30
18	34	26	33	E B 16	20	15	39	32	A A 110	A A 89	A A 100	A A 110	A A 111	A A 168	A A 83	46	50	71	A A 81	43	A A 80	40	41	E B 15
19	E B 15	19	20	19	19	22	25	35	39	A A 86	46	A A 56	46	A A 120	42	A A 73	A A 70	A A 272	A A 151	24	20	20	35	30
20	30	20	20	20	20	18	36	A A 68	A A 88	A A 102	A A 124	A A 154	A A 88	A A 87	49	A A 79	39	60	A A 71	54	47	23	21	22
21	20	A A 53	26	21	E B 15	18	29	31	36	41	47	A A 72	A A 76	A A 120	43	40	42	A A 56	A A 79	22	25	32	36	22
22	26	26	E B 16	E B 16	E B 16	E B 15	38	40	35	A A 65	46	A A 101	A A 122	A A 113	51	48	65	A A 105	A A 164	A A 90	A A 90	A A 54	20	21
23	20	E B 16	E B 16	E B 16	E B 16	20	25	G	34	40	39	A A 88	39	37	38	36	33	31	28	24	25	22	20	E B 16
24	E B 17	E B 16	E B 16	E B 16	21	21	21	24	40	48	50	A A 71	A A 113	45	37	41	41	53	A A 103	64	28	21	A A 56	18
25	A A 86	E B 16	A A 53	18	A A 53	23	33	31	A A 64	45	A A 97	A A 77	38	41	41	36	36	A A 67	30	22	18	E B 16	20	E B 16
26	21	E B 17	A A 55	19	20	E B 15	23	A A 75	38	A A 89	40	A A 52	A A 60	A A 150	G	A A 109	A A 80	A A 63	42	40	E B 15	E B 16	27	A A 86
27	28	A A 54	26	21	E B 15	E B 16	23	29	44	A A 150	A A 156	A A 156	A A 146	50	A A 70	A A 107	A A 82	43	48	A A 99	A A 138	A A 154	38	20
28	A A 66	A A 66	A A 64	20	20	E B 15	32	26	56	34	A A 111	A A 174	A A 158	A A 92	A A 88	40	34	36	41	A A 70	45	29	44	A A 88
29	A A 88	E B 16	21	21	E B 16	18	24	29	36	39	40	42	A A 55	A A 60	41	A A 90	A A 60	31	38	28	26	23	22	28
30	19	28	20	A A 86	E B 16	A A 73	30	31	41	36	35	A A 55	A A 56	A A 68	A A 79	A A 112	A A 77	A A 90	A A 89	46	34	38	27	27
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29
MED	28	26	25	20	18	18	28	34	43	A A 76	A A 94	A A 82	A A 90	A A 78	46	45	42	43	42	38	33	24	27	26
U Q	A A 67	A A 42	A A 47	22	20	22	34	A A 49	A A 88	A A 99	A A 110	A A 110	A A 130	A A 111	A A 53	79	A A 62	A A 63	A A 77	A A 54	A A 47	35	A A 40	A A 40
L Q	20	E B 19	E B 20	E B 18	E B 16	E B 16	24	30	36	41	43	A A 71	55	43	41	39	35	36	35	28	25	20	22	20

JUN. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	17	19	19	24	27	24	24	22	21	16	16	15	15	17	17	17
2	15	15	16	15	16	16	14	16	20	16	18	20	22	21	20	22	20	17	16	16	16	16	16	15
3	16	16	16	15	16	16	16	16	16	18	19	25	22	21	21	20	18	15	15	15	15	16	16	16
4	16	16	16	17	16	16	16	16	16	16	22	22	22	22	22	20	17	14	13	15	15	16	C	C
5	C	16	16	17	16	16	16	17	14	17	22	20	20	20	20	21	16	16	15	15	15	16	16	15
6	16	16	16	16	16	16	15	15	15	18	19	22	21	21	23	21	16	16	15	15	15	16	16	16
7	15	15	15	16	15	15	15	13	13	17	20	20	22	21	21	21	21	22	15	15	15	15	15	15
8	14	14	15	16	15	14	15	14	14	15	19	19	19	21	21	20	17	16	14	14	15	16	16	15
9	15	16	14	14	14	16	12	12	15	17	16	18	20	21	21	19	18	12	14	14	15	15	16	15
10	16	15	15	15	15	16	15	15	14	14	21	18	18	18	20	20	15	15	15	15	15	16	16	15
11	15	16	16	15	15	15	15	15	15	17	17	20	20	22	19	21	21	16	16	15	15	15	15	16
12	16	16	15	15	15	15	15	15	15	15	21	22	22	21	23	22	17	15	15	14	15	15	15	16
13	16	16	15	15	15	15	15	14	14	15	20	20	23	24	20	18	18	15	15	15	16	16	15	15
14	16	15	16	15	15	16	15	15	15	18	19	20	24	21	22	21	19	13	12	16	15	15	16	16
15	15	16	15	15	16	15	16	16	16	16	20	20	20	20	20	15	17	16	15	15	16	16	16	15
16	15	15	15	15	15	15	14	14	15	16	18	22	19	21	20	19	18	14	14	15	16	16	16	16
17	15	16	16	15	15	15	15	16	16	20	18	19	21	18	21	23	23	14	16	15	15	15	15	16
18	16	16	15	16	15	15	15	16	15	15	16	19	20	21	20	20	18	18	12	15	15	15	15	15
19	15	15	15	16	16	15	15	14	16	16	22	21	18	19	22	20	20	16	14	14	16	16	16	16
20	16	15	16	17	16	15	15	15	15	15	20	21	21	21	21	20	20	15	15	14	15	15	15	15
21	16	15	15	16	15	15	15	16	15	18	20	20	21	21	23	20	20	14	16	16	15	15	15	16
22	15	15	16	16	16	15	15	15	15	18	18	18	19	22	20	19	18	15	15	16	16	16	16	16
23	16	16	16	16	16	16	20	17	16	16	16	21	18	18	20	20	18	16	16	14	15	15	15	16
24	17	16	16	16	16	15	15	15	14	16	17	20	20	21	21	21	20	14	15	16	15	16	16	15
25	16	16	16	15	16	15	15	15	15	15	19	18	19	19	20	19	18	16	13	14	16	16	16	16
26	16	17	17	16	16	15	15	15	15	16	17	17	21	20	18	18	16	16	14	14	15	16	16	15
27	16	16	16	15	15	16	15	15	15	15	20	21	21	21	20	20	17	16	15	15	16	16	16	16
28	15	16	15	16	16	15	14	15	17	16	16	20	20	20	20	22	16	15	15	15	16	15	15	15
29	15	16	16	16	16	15	15	15	15	16	21	21	21	20	18	18	17	17	15	14	14	16	15	17
30	16	16	15	15	16	15	15	15	15	14	14	15	17	20	20	16	15	15	14	16	15	15	15	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29
MED	16	16	16	16	16	15	15	15	15	16	19	20	20	21	20	20	18	16	15	15	15	16	16	16
U Q	16	16	16	16	16	16	15	16	16	17	20	21	22	21	21	21	20	16	15	15	16	16	16	16
L Q	15	15	15	15	15	15	15	15	15	15	17	19	19	20	20	19	17	15	14	14	15	15	15	15

JUN. 2017 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	A	A	A	A	A	313	366	A	A	A	A	A	A	A	A	319	321	332	A	347	353	313	304	314
2	A	304	A	366	325	329	314	384	351	A	A	A	331	268	313	316	324	321	318	321	335	313	A	F
3	327	301	308	296	F	349	374	389	A	A	A	A	A	294	A	A	332	351	A	A	A	312	A	320
4	A	296	294	F	290	318	371	A	A	A	A	A	A	288	292	298	330	316	300	307	335	360	C	C
5	C	F	F	F	329	351	375	356	389	310	A	299	346	A	309	303	319	326	336	333	358	335	299	309
6	A	341	F	F	F	337	318	349	359	A	A	A	A	277	290	299	303	323	305	305	311	310	312	F
7	F	F	F	339	310	308	315	363	A	A	A	A	A	302	291	300	308	328	319	318	342	348	342	316
8	F	313	321	F	321	360	311	360	A	A	A	A	309	A	A	A	317	343	334	313	324	324	305	289
9	F	F	A	358	339	320	357	354	331	364	350	349	A	366	275	299	321	315	344	309	320	306	338	322
10	298	312	325	320	330	326	354	383	A	A	A	A	A	281	279	300	320	361	378	A	288	F	380	A
11	345	F	F	304	F	324	340	376	382	376	303	A	A	304	304	A	A	A	A	315	320	333	332	320
12	A	371	A	F	301	286	361	404	A	A	A	A	A	A	285	312	319	A	353	A	313	291	A	302
13	313	315	F	F	F	384	360	352	A	311	328	A	A	A	296	298	301	317	326	352	333	298	293	A
14	301	A	A	333	317	F	343	A	351	A	353	A	A	A	306	A	339	342	360	331	A	319	F	F
15	F	322	335	335	324	313	337	352	363	334	343	A	A	310	301	302	324	324	A	A	346	390	A	A
16	A	A	A	F	F	316	342	373	A	A	A	A	A	A	315	332	338	333	315	310	A	A	F	F
17	A	F	F	F	F	A	371	A	A	A	A	A	A	A	314	A	321	342	325	339	A	F	F	F
18	F	F	F	F	F	F	367	365	A	A	A	A	A	A	A	305	316	301	A	310	A	342	304	301
19	291	297	287	355	379	367	369	348	281	A	305	A	293	A	265	A	A	A	A	304	347	300	291	F
20	F	F	F	327	F	310	338	A	A	A	A	A	A	A	286	A	306	276	A	327	301	332	F	F
21	F	A	351	F	329	349	353	354	367	319	373	A	A	A	311	332	316	A	A	305	352	344	334	F
22	F	F	F	F	F	F	374	379	389	A	348	A	A	A	293	293	295	A	A	A	A	A	326	299
23	313	F	327	F	F	360	343	319	358	331	354	A	324	245	293	304	323	322	339	330	331	334	313	291
24	298	293	F	342	F	318	342	307	322	365	333	A	A	291	293	301	310	300	A	332	373	363	A	314
25	A	320	A	F	A	F	332	282	A	340	A	A	R	321	261	325	317	276	A	302	329	359	320	287	300
26	321	339	A	F	F	F	369	A	332	A	318	A	A	A	253	A	A	A	305	307	339	346	343	A
27	F	A	F	F	317	342	354	347	332	A	A	A	A	306	A	A	A	311	316	A	A	A	314	F
28	A	A	A	304	F	F	304	373	328	268	A	A	A	A	A	284	297	327	319	A	318	322	310	A
29	A	F	F	309	F	F	364	341	368	365	322	351	A	A	269	A	A	291	317	328	334	364	347	309
30	305	324	318	A	300	A	345	348	362	335	320	A	A	A	A	A	A	A	A	313	326	376	346	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	14	9	13	14	21	30	24	17	12	13	3	6	13	23	19	24	22	19	23	23	25	20	14
MED	309	314	321	333	322	326	354	355	358	334	333	349	322	291	293	302	319	324	319	318	334	332	314	309
U Q	321	324	331	348	329	350	367	374	368	364	352	351	331	305	309	316	324	333	339	331	347	347	340	316
L Q	298	301	301	306	310	314	338	348	332	315	319	299	309	272	285	299	307	315	315	309	320	312	304	300

JUN. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	410	393	A	A					
2							UL 344		UL 427	A	A	A	388	A	413	A	UL 352	A	A					
3									A	A	A	A	A	A	A	A	A		A					
4								A	A	A	A	A	A	A	A	UL 413	UL 380	UL 389	A					
5								A	UL 407	A	A	UL 408	A	A	A	390	A	A	A					
6							A	A	A	A	A	A	A	UL 431	A	UL 364	A	A	L					
7								A	A	A	A	A	A	UL 430	A	A	UL 393	373	A					
8							A	UL 391	A	A	A	A	A	A	A	A	A	A	A					
9									UL 409	A	A	A	A	A	A	A	UL 382	A						
10									A	A	A	A	A	UL 401	UL 406	UL 393	UL 413	UL 410	A					
11								A	A	UL 453	UL 442	A	A	UL 417	UL 404	A	A	A	A					
12									A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	UL 406	A	A	A	A	A	403	U L 365	410	UL 357					
14								A	A	A	440	A	A	A	A	A	A	A	A					
15								L	UL 402	UL 409	A	A	A		A	A	A	A	A					
16							UL 370		A	A	A	A	A	A	A	A	A	A	A					
17							A	A	A	A	A	A	A	A	A	A	A	A	L					
18							A		A	A	A	A	A	A	A	UL 433	A	A	A					
19								A	A	A	A	A	A	A	A	A	A	A	A					
20							A	A	A	A	A	A	A	A	A	A	A	A	A					
21								UL 375	A	A	A	A	A	A	A	A	A	A	A					
22							A			A	A	A	A	A	A	A	A	A	A					
23								UL 358	UL 416	A	UL 382	A	UL 423	UL 431	402	399	UL 388	381	UL 376					
24							A	A	A	A	A	A	A	A	400	A	A	A	A					
25							A	UL 308	A	A	A	A	UL 390	L	A	UL 426	UL 389	A	UL 372					
26								A	A	A	A	A	A	A	427	A	A	A	A					
27								UL 382	A	A	A	A	A	A	A	A	A	A	A		A	A		
28			A					UL 378	A		A	A	A	A	A	A	UL 393	A	A					
29								UL 417	A	A	A	A	A	A	A	A	A	UL 381	A					
30							A	UL 415	A	UL 467	UL 445	A	A	A	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	8	5	4	4	1	3	5	6	9	10	6	3					
MED							UL 357	UL 380	UL 409	UL 431	UL 441	UL 408	UL 390	UL 430	405	UL 403	UL 388	385	UL 372					
U Q								UL 403	UL 422	UL 460	UL 444		UL 423	UL 431	413	UL 420	UL 393	410	UL 376					
L Q								UL 366	UL 404	UL 408	411		388	UL 409	402	UL 392	UL 380	381	UL 357					

JUN. 2017 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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							242	A	A	A	A	A	A	A	A	316	300	280	A					
2							324		260	A	A	A	312	442	346	328	298	306	294					
3									A	A	A	A	A	354	A	A	282		A					
4								A	A	A	A	A	A	E A 380	390	346	298	320	308					
5								256	238	E A 274	A	406	E A 304	A	340	340	312	274	246					
6							E A 304	E A 292	254	A	A	A	A	396	E A 412	336	298	E A 262	274					
7								266	A	A	A	A	A	380	390	342	314	274	268					
8							E A 334	256	A	A	A	A	350	A	A	A	284	268	232					
9									300	266	270	E A 292	A	E A 250	E A 410	E A 338	298	276						
10									A	A	A	A	A	414	416	332	270	248	248					
11								236	226	244	334	A	A	350	350	A	A	A	A					
12									A	A	A	A	A	A	340	E A 290	E A 324	A	E A 270					
13							E A 276	E A 246	A	322	E A 304	A	A	A	350	334	296	266	258					
14								A	E A 242	A	302	A	A	A	332	A	254	266	242					
15								260	260	318	280	A	A		348	362	300	316	A					
16							316		A	A	A	A	A	A	312	270	270	286	270					
17							234	A	A	A	A	A	A	A	E A 332	A	300	268	268					
18							254		A	A	A	A	A	A	A	320	E A 272	E A 386	A					
19								262	E A 298	A	E A 376	A	410	A	E A 454	A	A	A	A					
20							E A 280	A	A	A	A	A	A	A	E A 380	A	340	E A 450	A					
21								266	236	344	E A 296	A	A	A	326	314	326	A	A					
22							E A 250			A	280	A	A	A	E A 364	346	E A 364	A	A					
23								338	264	278	278	A	326	470	396	384	320	288	254					
24							242	242	300	248	E A 304	A	A	388	344	310	302	E A 298	A					
25							E A 282	404	A	E A 334	A	A	E A 478	528	314	320	412	A	308					
26								A	296	A	344	A	A	A	E A 520	A	A	A	E A 370					
27								272	E A 314	A	A	A	A	E A 348	A	A	A	E A 316	E A 340		A	A		
28			A					256	E A 308		A	A	A	A	A	390	350	294	282					
29								282	252	252	326	280	A	A	E A 342	A	A	342	290					
30							274	274	E A 252	304	R 352	A	A	A	A	A	A	A	A	E A 294				
31																								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							13	16	16	11	13	3	6	12	23	19	24	21	18	1				
MED							U 259	262	256	276	303	292	328	384	345	333	299	280	269	E A 294				
U Q							310	278	E A 299	322	339	406	410	428	E A 396	346	322	316	294					
L Q							246	256	247	252	280	280	312	352	340	316	290	268	254					

JUN. 2017 h'F2 (KM)

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	A	A	A	A	A	E A 276	A	A	A	A	A	A	A	A	A	176	198	A	A	E A 246	E A 238	E A 258	E A 258	E A 292
2	A	E A 290	A	210	230	E B 244	232	238	188	A	A	A	218	A	192	A	E A 244	A	A	E A 260	E A 244	228	A	E A 256
3	E A 240	E B 260	E B 260	E A 270	E A 254	228	E A 238	226	A	A	A	A	A	A	A	A	A	E A 244	A	A	A	E A 236	A	E A 272
4	A	E A 298	E A 296	E A 250	E B 262	E A 238	218	A	A	A	A	A	A	A	A	188	210	220	A	E A 276	230	196	C	C
5	C	E A 300	E A 278	228	E B 254	222	198	A	198	A	A	214	A	A	A	210	A	A	A	230	230	224	E A 246	E A 276
6	A	E A 314	E A 300	E A 246	232	232	A	A	A	A	A	A	A	198	A	228	A	A	208	E A 238	E A 264	E A 306	E A 248	314
7	E A 252	E A 242	E A 242	206	228	E B 240	220	A	A	A	A	A	A	196	A	A	194	212	A	E A 248	218	212	226	E A 254
8	E A 286	E A 272	E A 278	E A 234	E B 240	216	A	216	A	A	A	A	A	A	A	A	A	A	A	216	228	234	E A 270	E A 276
9	E A 258	E A 246	A	222	E A 266	E A 266	216	216	210	A	A	A	A	A	A	A	228	A	252	E A 244	E A 256	240	226	226
10	E A 270	E A 254	E A 246	E A 278	254	E A 280	218	218	A	A	A	A	A	218	200	200	196	212	A	A	E B 240	E A 260	222	A
11	E A 278	E A 292	E A 288	E A 294	E B 290	E A 260	E A 278	A	A	188	188	A	A	196	232	A	A	A	A	E A 254	E A 254	216	216	E A 296
12	A	228	A	E A 300	E B 286	E A 302	E A 264	204	A	A	A	A	A	A	A	A	A	A	A	A	E A 294	E A 298	A	E A 290
13	E A 276	E A 300	E A 280	E A 270	206	206	A	A	A	206	A	A	A	A	A	202	202	196	196	212	202	222	E A 284	A
14	E A 294	A	A	E A 294	E A 322	E A 240	222	A	A	A	180	A	A	A	A	A	A	A	A	E A 262	A	E A 262	E A 262	232
15	E B 240	E B 240	214	222	E B 238	E A 256	218	198	208	198	A	A	A	E A 312	A	A	A	A	A	A	E A 238	194	A	A
16	A	A	A	E B 248	E A 254	214	214	214	A	A	A	A	A	A	A	A	A	A	A	E A 296	A	A	296	E A 292
17	A	E A 360	E A 290	E A 290	230	A	A	A	A	A	A	A	A	A	A	A	A	A	206	232	A	E A 264	E A 326	E A 256
18	E A 248	E A 290	E A 290	E B 254	E A 254	214	A	218	A	A	A	A	A	A	A	202	A	A	A	E A 288	A	E A 242	E A 360	E B 260
19	E B 304	E A 242	E A 270	206	206	E A 250	216	A	A	A	A	A	A	A	A	A	A	A	A	E A 250	222	220	E A 334	E A 334
20	E A 282	E A 238	E A 252	216	E A 290	E A 272	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 264	E A 264	222	E A 260	E A 286
21	E A 268	A	E A 244	E A 242	E B 230	228	E A 250	198	A	A	A	A	A	A	A	A	A	A	A	216	214	214	E A 292	E A 264
22	E A 294	E A 308	E B 230	E B 248	E B 248	208	A	206	206	A	A	A	A	A	A	A	A	A	A	A	A	A	232	E A 278
23	234	E B 234	218	224	E B 246	226	202	198	198	A	E A 236	A	192	186	186	194	192	200	206	232	220	212	E A 244	E B 274
24	E B 270	E B 288	232	226	E A 344	E A 314	A	A	A	A	A	A	A	A	212	A	A	A	A	E A 264	200	200	A	E A 250
25	A	E B 250	A	E A 250	A	E A 306	A	E A 346	A	A	A	A	228	216	A	196	206	A	E A 240	E A 234	204	198	E A 284	E B 318
26	E A 292	E B 244	A	E A 276	E A 276	214	214	A	A	A	A	A	A	A	188	A	A	A	A	E A 300	222	202	E A 238	A
27	E A 268	A	E A 290	E A 286	E B 268	E B 266	214	192	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 302	E A 276
28	A	A	A	E A 296	E A 326	E B 266	E A 346	214	A	194	A	A	A	A	A	A	194	A	A	A	E A 252	E A 252	E A 302	A
29	A	220	208	E A 312	E B 278	E A 254	208	198	A	A	A	A	A	A	A	A	A	212	A	236	222	202	206	E A 266
30	E A 284	E A 284	E A 284	A	E B 260	A	A	200	A	200	360	A	A	A	A	A	A	A	A	A	E A 234	204	212	E A 304
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	24	21	28	28	28	19	17	6	5	4	1	3	7	6	9	10	7	6	22	23	27	24	24
MED	E A 270	E A 266	E A 270	E A 249	E 254	E 242	216	210	202	198	U 198	214	218	197	196	200	198	212	206	E A 247	U 215	212	E A 259	E A 276
U Q	E A 286	E A 295	E A 289	E A 282	E A 277	E A 266	E A 238	218	208	203	298		228	218	212	206	210	220	240	E A 264	E A 252	E A 252	E A 294	E A 292
L Q	E A 252	E 242	237	225	235	224	214	198	198	191	184		192	196	188	191	194	200	206	232	220	204	229	E A 258

JUN. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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							112	112	A	A	A	A	A	A	A	A	112	A	A					
2							112	112	112	A	A	A	A	A	A	108	108	108	A					
3							A	A	A	A	A	A	A	A	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	A	108	A	108	A					
5							108	A	A	A	A	108	112	A	A	112	A	A	A					
6							A	A	A	A	A	A	A	A	A	A	A	A	A					
7							110	A	A	A	A	A	A	112	112	114	114	114	A					
8							A	A	A	A	A	A	A	A	A	A	112	A	112					
9							112	112	112	A	A	A	A	112	112	A	112	A	A					
10							A	A	A	A	A	A	A	A	112	112	112	A	A					
11							A	A	A	A	A	A	A	112	112	112	A	A	A					
12							A	A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	A	A	112	112					
14							A	A	A	A	A	A	A	A	A	A	A	A	A					
15							112	112	112	112	A	A	A	A	A	104	104	110	A					
16							A	A	A	A	A	A	A	A	A	A	A	A	A					
17							A	A	A	A	A	A	A	A	A	A	A	A	A					
18							A	A	A	A	A	A	A	A	A	A	A	A	A					
19							112	112	112	A	A	A	A	A	112	A	A	A	A					
20							A	A	A	A	A	A	A	A	A	A	112	A	A					
21							112	112	112	A	A	A	A	A	A	112	108	A	A					
22							A	A	108	A	A	A	A	A	A	A	A	A	A					
23							A	110	A	A	A	A	A	A	110	110	110	110	A					
24							A	112	112	A	A	A	A	A	A	A	A	A	A					
25							A	A	A	A	A	A	A	A	A	A	A	A	A					
26							118	A	A	A	A	A	A	A	110	A	A	A	A					
27							A	110	A	A	A	A	A	A	A	A	A	A	A		A	A		
28			A				A	A	A	A	A	A	A	A	A	110	110	110	A					
29							A	110	110	112	108	108	A	A	A	A	A	108	A					
30							A	A	A	A	A	108	108	A	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	10	8	2	1	3	2	3	7	10	11	8	2					
MED							112	112	112	112	108	108	110	112	112	111	112	110	112					
U Q							112	112	112			108		112	112	112	112	111						
L Q							111	110	111			108		112	110	108	108	108						

JUN. 2017 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	90	92	92	92	92	94	114	114	106	100	98	98	98	98	98	102	124	100	96	94	92	96	96	96
2	96	96	94	84	84	B	124	124	122	100	96	96	96	94	100	160	142	110	100	100	100	100	100	98
3	96	96	96	96	82	90	108	102	94	94	92	92	88	88	86	86	92	92	92	92	92	94	94	90
4	90	90	90	90	B	110	102	102	96	96	96	92	92	100	106	114	94	114	104	100	92	88	C	C
5	C	94	94	94	94	94	120	106	98	98	92	136	126	102	102	106	102	100	100	100	100	96	96	96
6	88	90	90	90	90	92	108	102	102	94	94	94	92	98	102	102	102	96	96	96	92	92	92	90
7	100	90	90	90	90	D 90	124	108	102	96	96	96	90	120	112	112	112	112	98	98	96	96	96	96
8	96	96	88	88	92	94	102	102	94	94	94	94	94	96	100	100	112	100	110	94	96	96	96	98
9	96	96	96	94	94	94	134	134	134	98	96	96	96	116	116	106	116	100	100	100	100	100	100	100
10	100	94	94	90	90	90	112	104	96	96	96	96	94	104	112	G	118	102	102	100	100	100	96	96
11	96	94	94	94	116	110	102	102	102	102	100	94	94	128	128	118	102	102	100	94	94	94	94	94
12	90	88	88	88	88	92	104	104	98	96	96	96	96	84	94	94	86	88	96	92	90	86	90	94
13	94	94	84	82	82	96	104	104	96	96	96	88	88	88	88	94	94	116	112	88	88	88	90	90
14	90	90	88	84	84	84	104	98	98	96	96	96	94	88	88	88	88	86	86	86	86	86	92	92
15	92	92	B	92	92	92	122	122	118	112	98	90	90	96	96	136	120	120	102	102	102	92	100	100
16	100	94	94	94	90	B	104	104	96	96	96	96	132	88	88	116	116	112	112	74	92	92	100	100
17	100	90	90	90	90	108	108	104	100	100	100	94	94	104	102	102	102	102	102	102	88	92	92	92
18	92	92	92	92	84	84	100	100	100	98	98	96	94	94	94	94	94	90	78	84	84	84	84	84
19	94	94	94	94	94	94	122	120	120	98	98	98	98	104	122	100	100	100	100	100	88	98	98	98
20	98	98	98	98	90	122	112	102	96	96	96	94	92	92	92	94	128	108	98	98	98	98	98	98
21	98	96	96	96	94	94	124	122	122	102	102	102	98	98	106	116	114	100	96	96	96	96	96	96
22	96	90	98	98	106	98	98	102	110	96	96	94	88	88	90	90	90	88	80	86	86	82	82	98
23	98	98	98	98	92	92	92	G	92	92	92	92	92	94	124	124	124	118	100	84	84	84	84	B
24	B	88	88	88	88	88	104	110	114	96	96	94	94	90	90	90	96	90	90	82	82	82	98	98
25	92	92	92	92	92	92	102	100	100	96	96	92	92	92	92	90	90	90	96	96	96	90	90	90
26	90	90	92	92	90	110	120	92	92	98	98	90	96	94	G	100	106	106	100	100	100	100	84	88
27	88	88	88	88	88	98	108	112	96	98	96	96	96	96	96	100	102	102	102	96	90	90	90	90
28	88	88	88	88	82	B	102	94	94	94	94	88	88	88	88	110	110	110	96	96	96	96	96	96
29	96	96	96	96	96	96	96	108	108	108	116	116	106	100	100	96	96	126	108	100	100	100	100	98
30	98	98	98	98	96	90	90	90	90	90	90	116	116	98	98	98	96	96	96	96	96	96	96	96
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	29	30	29	27	30	29	30	30	30	30	30	30	29	29	30	30	30	30	30	30	29	28
MED	96	93	92	92	90	94	106	104	99	96	96	95	94	96	98	100	102	101	100	96	93	94	96	96
U Q	98	96	96	94	94	98	120	111	108	98	98	96	96	100	106	113	116	110	102	100	98	96	98	98
L Q	90	90	89	88	88	90	102	102	96	96	96	92	92	90	91	94	94	96	96	92	88	88	90	91

JUN. 2017 h'Es (KM)

IONOSPHERIC DATA STATION Yamagawa

JUN. 2017 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	F4	F4	F5	F5	F4	CL34	L5	L3	L4	L5	F2	L4	L4	L3	L2	C1	L3	L6	F8	F8	F4	F4	F3
2	F6	F7	F6	F3	F4		C2	C2	C2	L3	L5	L4	L2	L2	L2	H1	H1	C2	L3	F7	F7	F3	F7	F7
3	F6	F2	F3	F3	F3	F4	L8	L7	L7	L5	L5	L6	L6	L4	L5	L6	L4	L4	L6	F8	F9	F5	F4	F6
4	F7	F7	F5	F2		F1	L3	L7	L9	L7	L7	L6	L5	L3	L2	C1	L2	C3	L6	F6	F6	F8		
5		F4	F4	F3	F2	F3	C2	L5	L3	L3	L6	H2	C2	L4	L2	C1	L2	L3	L5	F5	F5	F5	F3	F5
6	F5	F5	F6	F6	F4	F3	L8	L6	L3	L5	L5	L3	L5	L2	L3	L2	L3	L4	L4	F3	F8	F6	F5	F5
7	F4	F4	F7	F5	F4	F2	C2	L4	L5	L5	L4	L6	L6	C1	C2	C2	C2	CL22	L4	F6	F4	F8	F4	F3
8	F7	F7	F4	F2	F3	F2	L4	L3	L8	L6	L7	L3	L2	L5	L6	L3	C2	L4	CL22	F2	F4	F4	F4	F7
9	F6	F8	F6	F5	F6	F6	HL12	H2	H2	L2	L3	L3	L4	C2	C3	L3	C2	L3	L5	F3	F6	F4	F2	F3
10	F3	F4	F2	F2	F1	F3	L4	L4	L4	L6	L6	L4	L4	L2	C1		C1	L3	L5	F8	F3	F9	F5	F7
11	F5	F3	F4	F5	F1	F4	L3	L5	L3	L2	L3	L3	L3	C1	C1	C2	L4	L4	L8	F8	F5	F4	F4	F9
12	F8	F8	F9	F6	F2	F2	L8	L7	L7	L5	L5	L4	L5	L5	L4	L4	L8	L6	L7	F7	F7	F7	F7	F6
13	F7	F9	F4	F2	F2	F3	L7	L4	L5	L2	L3	L4	L7	L7	L3	L2	L2	C1	C2	F3	F2	F2	F5	F6
14	F5	F5	F5	F6	F3	F2	L3	L4	L4	L5	L2	L3	L5	L5	L3	L3	L4	L3	L4	F7	F9	F9	F5	F2
15	F2	F2		F2	F1	F3	C2	C1	C2	C2	L1	L3	L3	L2	L2	H2	C2	CL32	L7	F5	F4	F3	F4	F7
16	F6	F6	F4	F2	F3		L5	L2	L6	L5	L3	L6	CL32	L5	LC22	CL22	CL43	CL23	CL25	FF22	FF42	F5	F5	F5
17	F9	F9	F6	F6	F4	F7	L3	L7	L5	L6	L5	L5	L4	L4	L3	L3	L4	L4	L2	F7	F5	F5	F8	F6
18	F5	F5	F7	F2	F4	F2	L7	L3	L5	L5	L5	L5	L9	L7	L6	L4	L5	L7	L9	F9	F9	F7	F5	F2
19	F3	F2	F3	F3	F6	F4	C3	C4	C3	L3	L2	L3	L2	L3	C1	L4	L4	L5	L3	F4	FF33	F3	F7	F8
20	F5	F3	F2	F3	F5	FF12	C4	L4	L4	L5	L5	L5	L5	L4	L4	L4	C1	L4	L4	F7	F7	F3	F3	F4
21	F4	F5	F6	F5	F2	F3	C4	CL32	CL32	L2	L2	L4	L3	L2	L2	C2	C2	L4	L4	F3	F7	F4	F4	F3
22	F7	F9	F2	F2	F2	F2	L6	L4	C1	L4	L3	L3	L5	L5	L4	L3	L5	L5	L7	F8	F5	F7	F5	F4
23	F4	F3	F2	F2	F3	F4	L3		L3	L2	L2	L3	L2	L2	C1	C1	C1	C2	L3	F2	F5	F5	F4	
24		F2	F4	F4	F8	F4	L2	C3	C4	L5	L4	L3	L3	L3	L3	L1	L3	L4	L7	F7	F4	F6	F8	F6
25	F6	F5	F5	F3	F9	F4	L7	L3	L5	L4	L3	L3	L2	L2	L2	L2	LC21	L5	L5	F5	F2	F4	F3	F2
26	F5	F6	F7	F6	F3	F1	C2	L6	L3	L3	L3	L3	L3	L4		L4	L3	L3	L4	F7	F2	F2	F5	F5
27	F7	F7	F3	F2	F2	F1	L2	C2	L4	L4	L4	L5	L4	L3	L3	L8	L8	L5	L8	F5	F7	F8	F6	F4
28	F9	F6	F6	F6	F2		L5	L4	L7	L4	L5	L6	L3	L3	L4	C3	C2	C2	L7	F8	F8	F8	F8	F8
29	F5	F2	F3	F5	F2	F3	L3	C3	C2	C2	C2	C2	L3	L3	L3	L4	L4	C2	L4	F4	F4	F3	F4	F5
30	F6	F9	F5	F4	F4	F6	L5	L5	L5	L2	L1	C2	C2	L3	L4	L4	L4	L6	L6	L4	L5	L6	L4	L5
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2017 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 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	45	X 45	X 34	A	35	34															X 66	X 49	52	X 48
2	54	X 49	X 50	47	X 41																X 79	X 77	X 55	X 48
3	58	58	58	44	O X 39																A	X 76	X 64	68
4	68	66	59	54	54	52															X 86	X 72	C	C
5	C	X 53	59	X 41	X 33																X 76	X 66	X 56	X 52
6	58	54	X 47	X 44	43																X 86	X 78	X 78	X 73
7	78	78	69	X 59	X 40												C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C						X 73	X 72	65	X 58
9	58	60	59	X 53	A	38															X 70	X 69	X 69	X 56
10	X 51	X 49	54	57	50																X 60	X 69	X 72	A
11	X 38	X 38	X 37	X 30	A																X 78	X 76	X 64	X 60
12	55	X 54	X 45	48	43	41															X 60	X 60	X 57	59
13	69	59	59	56	55																X 56	X 50	52	X 48
14	X 48	X 43	A	A	45	44	59														X 58	X 58	X 56	58
15	57	58	49	39	39	36															X 71	A	A	51
16	58	56	53	53	49	44															X 74	X 66	X 58	59
17	X 58	X 63	A	61	59	A															X 72	X 64	X 60	68
18	68	67	X 58	59	58	52															A	A	X 54	X 54
19	59	X 54	60	X 56	X 32																X 68	X 56	X 54	59
20	X 54	48	48	48	43																A	X 54	A	57
21	X 54	58	59	X 42	44																X 88	X 58	X 42	X 38
22	48	A	A	A	A																A	X 68	X 64	58
23	58	59	59	59	58																X 69	X 61	X 53	X 50
24	X 50	X 50	X 49	46	X 38																X 93	X 39	X 34	A
25	A	X 46	54	38	36																X 69	X 44	X 39	X 35
26	40	X 38	46	40	44	46															X 78	A	X 48	X 47
27	50	50	48	48	43	40															X 74	X 60	X 66	60
28	56	58	56	55	53	48															X 81	X 59	X 55	A
29	A	X 54	A	A	X 40	45															X 86	X 72	X 55	X 34
30	44	44	A	A	39	32															X 86	X 72	X 48	X 38
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	24	24	26	13	1														25	26	26	25
MED	56	54	54	48	43	44	59														X 74	X 65	X 56	X 56
U Q	58	58	59	56	50	47															X 84	X 72	X 64	59
L Q	50	X 48	X 48	43	39	37															X 68	X 58	X 52	X 48

JUN. 2017 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 38	39	28	A	F 25	F 25	44	48	56	A	A	A	53	A	A	66	73	72	77	80	60	43	F	42
2	F 44	43	44	F 39	35	32	44	54	53	48	49	64	54	53	60	64	65	64	68	76	73	71	49	42
3	F 38	48	F 47	F 34	33	A	51	51	A	51	A	53	A	A	72	76	78	A	A	A	A	70	58	F 53
4	F	F 48	F 47	F 42	F	38	48	53	A	A	54	53	52	58	61	65	68	66	69	76	80	66	C	C
5	C	47	F 52	35	27	25	42	53	56	A	52	50	49	54	A	64	77	90	80	75	70	60	50	46
6	44	41	41	38	31	27	41	A	A	66	58	57	65	83	85	86	96	86	85	83	80	72	72	67
7	F 66	F 67	58	53	34	A	38	66	60	52	A	A	56	59	59	69	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	81	86	82	70	63	67	66	F 56	52
9	51	48	F 48	47	A	F 31	43	46	50	A	64	56	A	53	62	V 74	82	93	82	A	64	63	63	50
10	45	43	F 41	F 43	F 39	36	51	54	A	49	56	A	52	58	69	88	98	78	60	48	54	63	U R 66	A
11	32	R 32	31	24	A	23	42	65	55	51	A	A	A	A	55	61	65	70	80	78	72	70	58	54
12	F 48	48	39	F 39	31	F 32	58	A	A	47	51	A	A	59	76	88	94	92	77	58	54	54	51	F 49
13	F 52	F 51	F	F 39	F 43	23	40	48	56	60	55	A	56	A	71	82	91	92	98	93	50	44	F 44	42
14	42	37	A	A	F 32	F 32	F 48	54	A	A	A	A	52	60	A	88	88	J R 65	A	50	52	52	50	F 47
15	F 45	F 48	F 43	F 32	F 30	28	40	50	64	63	53	51	A	A	58	63	66	67	72	76	65	A	A	F 42
16	F 47	F 38	F 40	F 38	F 38	F 32	44	56	58	51	46	54	54	63	80	79	69	69	60	64	68	60	52	F 48
17	52	57	A	F 50	F 52	A	A	52	A	A	A	A	68	64	A	A	J R 71	69	69	68	66	58	54	F 59
18	F 56	F 55	52	F 50	F 44	F 41	46	46	A	A	50	A	54	59	68	82	84	82	89	83	A	A	48	48
19	F 52	48	F 52	50	26	28	47	43	49	57	60	A	A	55	52	49	54	A	A	A	J R 62	50	48	F 48
20	F 44	39	38	F 33	F 32	25	38	A	58	A	A	A	A	A	62	76	82	R	94	A	A	48	A	38
21	49	F 48	F 47	36	F 35	26	41	50	48	57	47	A	48	54	59	60	A	A	A	70	82	52	36	32
22	F 32	A	A	A	A	25	44	A	A	46	A	A	A	A	A	A	A	A	90	74	A	J R 62	58	48
23	F 50	F 48	F 49	F 49	F 48	36	35	48	64	56	V 70	56	50	50	55	65	72	74	78	71	R 63	55	47	44
24	44	44	43	F 39	32	23	36	44	58	A	A	55	58	66	76	80	84	86	87	88	87	33	28	A
25	A	40	F 33	F 28	F 29	22	38	47	53	A	A	A	E G 44	57	A	A	53	60	66	72	63	38	33	29
26	F 30	32	F 32	F 28	F 26	F 31	34	A	56	46	A	48	A	48	A	A	A	44	48	A	72	A	42	41
27	F 42	F 39	F 37	F 37	F 36	F 33	40	48	49	50	50	55	50	61	63	64	67	70	72	77	68	54	60	54
28	F 48	F 48	F 39	F 39	F 37	F 34	35	57	56	51	48	54	A	A	50	56	61	70	74	78	75	53	49	A
29	A	48	A	A	34	F 32	43	51	51	51	50	52	A	A	A	A	A	63	74	86	80	66	49	28
30	F 24	F 25	A	A	F 26	F 20	42	50	52	49	E G 43	A	50	50	54	A	60	A	A	J R 70	80	66	42	32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	28	23	24	25	26	28	24	20	19	18	14	18	20	21	24	25	23	24	24	25	26	25	25
MED	F 45	48	F 43	F 39	F 33	30	42	50	56	51	52	54	52	58	62	72	73	70	76	76	68	59	50	47
U Q	F 50	F 48	F 48	F 45	F 38	F 32	45	54	58	57	56	56	56	60	72	82	85	86	84	79	78	66	58	51
L Q	F 40	39	38	F 34	F 30	25	39	48	52	49	49	52	50	54	56	64	66	66	69	69	62	52	46	42

JUN. 2017 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	UL 376	A	A	A	A	A	A	A	424	408	396	A	L				
2							A	L	L 404	UL 424	436	436	452	440	436	420	404	400	360					
3						A		A	A	L 432	A	440	A	A	A	A	A	A	A	A				
4									A	A	428	444	444	440	UA 456	UA 432	UA 424	384	360					
5									A	A	436	444	444	A	A	A	UA 420	396	A					
6								A	A	424	444	UA 444	A	A	A	432	A	A						
7						A			408	428	A	A	A	A	UA 452	A	C	C	C	C				
8						C	C	C	C	C	C	C	C	C	C	424	UA 412	A	A					
9								UL 396	UL 420	A	A	A	A	UA 448	A	A	408	A	A	A				
10								UL 304	A	436	432	A	UA 460	440	436	424	A	396	U L 368					
11								L 372	UL 408	428	A	A	A	A	448	UA 432	412	UA 408	A	A				
12								A	A	A	444	A	A	UA 456	444	436	A	404	368					
13									A	A	460	A	UA 468	A	A	A	A	376	A					
14								L 364	A	A	A	A	A	436	A	A	U A 432	A	A					
15								UL 400	L 416	A	A	A	448	A	440	A	A	A	A					
16								L	400	428	432	440	UA 456	A	A	A	420	A	348					
17							A		A	A	A	A	A	A	A	A	A	400	352					
18									A	A	448	A	A	A	A	424	A	404	A					
19									424	L 440	A	A	A	A	UA 440	A	A	A	A	A				
20								A	A	A	A	A	A	A	A	428	A	A	A	A				
21								A	A	A	A	A	A	A	A	A	A	A	A					
22								A	A	UL 432	A	A	A	A	A	A	A	A	A					
23								UL 372	404	L 424	A	440	A	452	432	420	404	392	368	L				
24									UA 392	A	A	A	440	444	UA 440	UA 428	A	A	A					
25								L	A	A	A	A	440	A	A	A	A	392	356					
26								A	A	A	A	432	A	436	A	A	A	392	356	A				
27									UL 408	416	424	A	R 444	A	436	420	A	UA 400	364					
28							U L 300	L 372	UA 400	424	448	UA 440	A	A	A	UA 420	408	372	372					
29								L 364	L 416	A	A	A	A	A	A	A	A	A	L 364					
30								360	L 396	A	428	A	UA 436	A	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	10	13	12	12	9	11	9	11	14	11	15	12					
MED							U L 300	L 372	L 408	428	436	440	444	440	440	424	412	396	362					
U Q								UL 376	L 416	L 432	446	444	UA 456	UA 450	UA 448	432	U A 420	400	368					
L Q								L 364	400	424	430	438	440	438	436	420	408	392	356					

JUN. 2017 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	192	A	A	A	U A 352	A	U A 352	332	344	328	308	288	236	A				
2						B	A	260	288	A	328	364	344	340	356	328	304	280	228	A				
3						B	A	220	276	A	A	336	352	348	344	A	A	A	A	A				
4						B	212	240	284	A	U A 316	340	348	348	344	324	304	268	220	A				
5						B	A	U A 256	A	U A 316	A	376	368	360	340	336	324	284	U A 228	A				
6						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
7						A	A	A	A	U A 328	A	348	356	360	352	324	C	C	C	C				
8						C	C	C	C	C	C	C	C	C	C	328	320	276	228	A				
9						B	A	A	A	A	A	A	A	344	344	324	300	276	224	A				
10						B	A	A	312	304	A	A	352	352	332	332	304	280	224	A				
11						B	A	A	A	A	A	A	A	A	340	328	304	276	236	A				
12						B	A	A	A	A	A	A	A	A	340	336	312	280	224	A				
13						B	236	A	A	B	A	A	A	A	A	A	A	A	A	A				
14						B	A	A	A	A	A	A	332	B	A	A	A	A	A	A				
15						B	160	244	292	A	A	A	376	356	332	344	332	280	244	A				
16						B	A	244	280	320	336	A	A	A	A	A	A	276	A	A				
17							A	232	276	308	332	A	U A 340	376	352	332	316	292	A	A				
18						B	200	236	292	304	312	328	A	A	356	A	A	A	A	A				
19						B	172	252	A	316	A	A	A	A	A	344	312	280	228	A				
20						B	A	A	300	A	A	A	A	A	A	344	308	280	A	A				
21						B	196	A	276	312	A	A	A	348	356	A	308	284	228	A				
22						B	A	A	A	A	328	336	320	A	A	328	308	A	A	A				
23						B	A	A	A	A	A	A	A	A	A	340	312	280	A	A				
24						B	A	A	A	A	A	A	A	A	336	A	A	A	A	A				
25						A	204	236		A	A	A	A	A	A	A	A	A	A	A				
26						B	208	A	A	308	312	336	A	A	344	332	308	276	228	A				
27						B	A	240	A	320	A	A	A	A	A	336	312	272	216	A				
28						B	A	A	A	316	A	A	A	A	A	A	A	276	224	A				
29							A	A	280	A	A	A	A	352	344	336	308	288	A	A				
30						B	A	A	A	A	A	A	A	360	336	324	304	288	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	11	11	11	8	8	11	13	18	20	20	21	15					
MED							200	240	284	316	328	338	352	352	344	332	308	280	228					
U Q							210	252	292	320	334	356	356	360	352	336	312	284	228					
L Q							182	236	276	308	314	336	340	346	340	328	304	276	224					

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 138	J A 85	J A 87	J A 109	J A 119	J A 28	J A 44	J A 53	J A 63	J A 71	J A 87	J A 108	J A 103	J A 124	J A 77	J A 120	36	J A 51	J A 38	19	J A 36	J A 86	J A 52	59
2	J A 21	J A 28	19	18	J A 66	E B 16	J A 34	G	32	J A 41	G	G	39	42	40	G	35	36	31	58	J A 85	J A 87	J A 110	J A 87
3	J A 32	J A 78	J A 64	J A 52	J A 58	J A 66	J A 104	J A 120	J A 169	J A 220	J A 139	J A 47	J A 71	J A 87	J A 80	J A 85	J A 80	J A 92	J A 145	J A 122	J A 214	J A 254	J A 40	J A 43
4	J A 39	J A 31	J A 28	J A 20	E B 16	J A 17	G	J A 44	J A 76	J A 88	J A 64	J A 48	J A 50	44	J A 54	J A 53	J A 56	32	J A 38	J A 36	22	59	C	C
5	C	J A 147	J A 215	J A 88	J A 86	J A 63	J A 38	35	J A 52	J A 54	J A 47	44	41	J A 55	J A 65	J A 61	J A 53	J A 48	J A 56	J A 50	J A 53	J A 41	26	J A 25
6	J A 21	J A 20	J A 16	J A 25	J A 22	J A 29	J A 32	J A 86	J A 88	J A 146	J A 137	J A 63	J A 91	J A 86	J A 50	J A 40	J A 62	J A 181	J A 167	J A 40	J A 53	J A 32	J A 50	J A 53
7	J A 38	J A 50	J A 50	J A 40	J A 142	J A 62	J A 33	J A 60	J A 54	J A 48	J A 71	J A 64	47	J A 90	J A 49	J A 53	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	40	J A 47	J A 82	J A 46	J A 42	J A 78	J A 41	J A 52	J A 87
9	J A 109	J A 47	J A 36	J A 158	J A 79	J A 33	J A 89	J A 84	J A 227	J A 81	J A 81	J A 82	J A 66	J A 50	J A 59	J A 59	J A 43	J A 85	J A 51	J A 69	J A 20	J A 51	J A 41	J A 38
10	J A 42	J A 33	J A 38	J A 27	J A 21	J A 66	J A 34	J A 53	J A 72	J A 66	J A 82	J A 70	J A 47	J A 48	G	44	J A 67	J A 47	J A 30	J A 75	J A 53	J A 53	J A 122	J A 62
11	J A 64	J A 40	J A 53	J A 57	J A 87	J A 88	J A 52	J A 53	J A 42	J A 52	J A 109	J A 85	J A 107	J A 72	J A 46	44	J A 46	J A 51	J A 78	J A 54	J A 64	J A 86	J A 89	J A 66
12	J A 51	J A 147	J A 289	J A 164	J A 41	J A 64	J A 50	J A 174	J A 210	J A 216	J A 214	J A 279	J A 124	J A 121	47	J A 50	43	37	J A 30	J A 37	19	J A 22	J A 87	J A 40
13	J A 35	J A 42	J A 34	J A 38	J A 84	J A 127	J A 66	J A 63	J A 77	J A 106	J A 220	J A 170	J A 88	J A 143	J A 105	J A 67	J A 66	J A 52	J A 55	J A 32	J A 30	J A 36	J A 36	J A 39
14	J A 52	J A 49	J A 52	J A 41	J A 26	J A 66	J A 49	J A 53	J A 88	J A 220	J A 179	J A 100	J A 75	J A 52	J A 201	D 300	J A 76	J A 86	J A 96	J A 42	J A 48	J A 53	J A 25	J A 38
15	J A 64	J A 60	J A 21	J A 33	J A 36	J A 52	J A 39	J A 44	J A 42	J A 66	J A 51	J A 47	J A 68	J A 66	J A 90	47	44	J A 54	J A 72	J A 42	J A 52	J A 105	J A 166	J A 53
16	J A 78	J A 63	J A 42	J A 23	J A 52	19	23	32	G	G	40	J A 79	46	45	J A 70	J A 72	38	J A 48	J A 52	J A 48	J A 42	J A 34	J A 66	J A 48
17	J A 66	J A 109	J A 166	J A 101	J A 206	J A 119	53	62	88	88	93	84	J A 50	50	J A 76	J A 78	J A 89	J A 136	J A 63	J A 21	J A 143	J A 85	J A 76	J A 34
18	J A 151	J A 39	J A 39	J A 39	J A 23	19	27	J A 248	J A 66	J A 130	J A 86	J A 90	J A 58	J A 53	J A 58	J A 65	J A 85	J A 89	J A 204	J A 122	J A 114	J A 80	J A 44	J A 50
19	J A 40	J A 32	J A 51	J A 20	J A 122	J A 42	J A 26	J A 78	36	J A 46	J A 46	J A 84	J A 60	J A 58	J A 47	J A 46	J A 57	J A 100	J A 122	J A 280	J A 222	J A 96	J A 122	J A 66
20	J A 48	J A 52	J A 52	J A 42	J A 25	J A 87	J A 71	J A 78	J A 44	J A 71	J A 78	J A 85	J A 229	J A 82	J A 61	40	J A 63	J A 115	J A 90	J A 103	J A 107	J A 121	J A 102	J A 52
21	J A 109	J A 66	J A 88	J A 72	J A 48	J A 51	J A 33	J A 42	J A 49	J A 52	J A 52	J A 54	J A 62	J A 53	J A 59	J A 108	J A 92	J A 109	J A 107	J A 42	J A 54	J A 53	J A 38	J A 53
22	J A 19	J A 77	J A 142	J A 87	J A 109	J A 48	J A 196	J A 140	J A 58	J A 85	J A 58	J A 67	J A 82	J A 71	J A 104	J A 121	J A 145	J A 110	J A 90	J A 72	J A 88	J A 84	J A 65	J A 33
23	J A 32	J A 40	J A 65	J A 39	J A 31	J A 62	J A 119	J A 66	50	J A 51	J A 70	J A 71	J A 67	J A 71	J A 48	37	36	34	J A 28	J A 25	J A 22	J A 21	24	J A 24
24	J A 47	E B 12	J A 42	J A 79	J A 24	J A 31	J A 33	47	J A 49	J A 64	J A 71	J A 85	J A 48	J A 44	J A 45	J A 54	J A 46	J A 49	J A 52	J A 53	J A 65	J A 30	J A 26	J A 143
25	J A 100	J A 62	J A 53	J A 86	J A 63	J A 52	J A 26	J A 43	J A 53	J A 83	J A 164	J A 80	J A 56	J A 68	J A 81	J A 101	J A 70	J A 55	J A 58	J A 46	J A 29	J A 22	J A 54	24
26	J A 36	J A 66	J A 86	J A 49	J A 26	J A 32	J A 136	J A 72	J A 77	J A 66	J A 63	J A 72	J A 72	J A 102	J A 109	J A 106	J A 86	J A 89	J A 51	J A 110	J A 53	J A 103	J A 66	J A 53
27	J A 48	58	J A 40	J A 39	J A 21	J A 22	J A 20	J A 51	J A 80	J A 148	J A 136	J A 85	J A 51	J A 72	J A 71	J A 40	J A 52	J A 50	J A 35	J A 32	J A 29	J A 27	J A 21	J A 31
28	J A 42	J A 31	J A 17	J A 19	J A 18	J A 19	J A 25	J A 35	J A 44	J A 50	J A 41	J A 66	J A 83	J A 103	J A 97	J A 68	J A 51	G 23	J A 35	J A 29	J A 36	J A 30	J A 32	J A 137
29	J A 75	J A 148	J A 120	J A 162	J A 88	J A 41	J A 50	J A 31	J A 42	J A 48	J A 50	J A 57	J A 69	J A 84	J A 68	J A 56	J A 77	J A 96	J A 41	J A 98	J A 110	J A 122	J A 47	J A 50
30	J A 24	J A 50	J A 66	J A 75	J A 52	J A 82	J A 66	J A 74	J A 88	J A 128	J A 46	43	45	46	45	J A 58	J A 63	J A 89	J A 109	J A 110	J A 73	J A 64	J A 42	J A 40
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	30	29	29	29	29	29	29	28	28
MED	J A 48	J A 50	J A 52	J A 42	J A 52	J A 51	J A 39	J A 53	J A 58	J A 71	J A 71	J A 72	J A 66	J A 68	J A 61	J A 57	J A 57	J A 55	J A 55	J A 48	J A 53	J A 53	J A 51	J A 50
U Q	J A 70	J A 72	J A 86	J A 86	J A 86	J A 66	J A 66	J A 78	J A 84	J A 117	J A 122	J A 85	J A 82	J A 86	J A 80	J A 78	J A 76	J A 94	J A 93	J A 86	J A 86	J A 86	J A 82	J A 60
L Q	J A 36	J A 36	J A 37	J A 30	J A 24	28	30	J A 44	J A 44	J A 52	J A 50	J A 56	49	50	48	44	45	48	J A 38	J A 36	J A 33	J A 33	J A 37	J A 38

JUN. 2017 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 16	E B 16	A A 109	E B 16	E B 15	22	32	44	A A 71	A A 87	A A 108	48	A A 124	A A 77	42	34	G 19	36	16	18	22	22	22
2	E B 16	18	E B 16	E B 16	19	E B 16	30	G	31	34	G	G	38	40	38	G	34	34	29	56	45	45	28	24
3	E B 16	E B 16	E B 16	E B 16	22	A A 66	38	46	A A 169	34	A A 139	38	A A 71	A A 87	46	70	62	A A 92	A A 145	A A 122	A A 214	46	26	26
4	24	E B 16	E B 16	E B 16	E B 16	E B 16	G	33	A A 76	A A 88	39	38	42	40	46	43	42	31	30	33	E B 16	E B 16	C	C
5	C	E B 16	E B 16	20	E B 14	E B 14	28	32	43	A A 54	42	42	40	50	A A 65	57	42	34	38	46	34	21	18	E B 16
6	E B 16	E B 16	E B 16	E B 16	E B 14	20	28	A A 86	A A 88	39	41	44	48	61	46	36	50	59	41	21	23	E B 15	22	31
7	20	27	20	E B 16	28	A A 62	30	48	32	38	A A 71	A A 64	46	52	45	46	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	37	41	41	37	37	37	E B 16	E B 16	E B 16
9	E B 16	29	E B 16	24	A A 79	E B 16	29	28	35	A A 81	53	51	A A 66	45	50	48	37	50	43	A A 69	17	36	24	E B 15
10	20	E B 16	E B 16	E B 16	E B 15	E B 14	20	27	A A 72	34	37	A A 70	46	41	G	40	53	31	28	28	28	22	37	A A 62
11	E B 16	18	E B 16	18	A A 87	18	32	32	35	40	A A 109	A A 85	A A 107	A A 72	40	43	40	41	56	52	41	20	37	30
12	E B 16	18	20	22	14	E B 15	30	A A 174	A A 210	42	37	A A 279	A A 124	46	42	40	42	33	28	22	E B 16	20	E B 16	25
13	25	23	E B 16	E B 15	31	E B 16	G 18	31	50	42	44	A A 170	47	A A 143	61	61	57	35	41	24	E B 14	E B 16	20	18
14	19	30	A A 52	A A 41	20	E B 16	36	30	A A 88	A A 220	A A 179	A A 100	46	38	A A 201	67	43	57	A A 96	40	18	E B 16	21	19
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	31	32	32	57	45	45	40	A A 66	G 25	46	44	46	56	39	36	A A 105	A A 166	23
16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	29	G	G	39	30	46	45	50	46	37	45	28	34	30	20	29	16
17	32	E B 16	A A 166	20	E B 16	A A 119	A A 53	43	A A 88	A A 88	A A 93	A A 84	48	49	A A 76	A A 78	60	31	31	17	20	50	E B 16	E B 16
18	35	26	29	24	E B 14	E B 16	22	G 16	A A 66	A A 130	39	A A 90	50	50	48	38	47	32	38	65	A A 114	A A 80	26	40
19	22	E B 16	E B 16	E B 16	18	E B 16	G 16	36	33	39	45	A A 84	A A 60	51	44	43	43	A A 100	A A 122	A A 280	46	24	30	E B 16
20	28	22	33	29	E B 14	18	24	A A 78	40	A A 71	A A 78	A A 85	A A 229	A A 82	50	39	56	58	53	A A 103	A A 107	38	A A 102	21
21	29	31	22	E B 16	28	E B 14	30	34	43	47	45	A A 54	47	46	51	48	A A 92	A A 109	A A 107	38	50	43	E B 14	E B 16
22	E B 16	A A 77	A A 142	A A 87	A A 109	E B 15	29	A A 140	A A 58	37	A A 58	A A 67	A A 82	A A 71	A A 104	A A 121	A A 145	A A 110	80	47	A A 88	32	30	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 14	26	28	33	39	51	43	46	43	35	36	35	31	26	22	E B 16	20	E B 16	E B 16
24	E B 16	E B 12	E B 16	E B 16	E B 16	15	23	33	39	A A 64	A A 71	48	41	40	44	43	42	41	50	48	63	E B 16	20	A A 143
25	A A 100	E B 16	E B 16	E B 16	E B 14	E B 16	22	36	49	A A 83	A A 164	A A 80	36	44	A A 81	A A 101	43	31	27	26	E B 14	E B 14	21	E B 16
26	E B 16	E B 16	E B 16	20	E B 14	E B 16	E B 16	A A 72	41	42	A A 63	40	A A 72	38	A A 109	A A 106	A A 86	35	29	A A 110	E B 16	A A 103	34	E B 16
27	E B 16	E B 16	20	E B 16	E B 16	E B 16	19	33	32	36	37	50	42	46	40	37	45	40	26	22	20	E B 16	E B 16	E B 16
28	E B 16	22	E B 16	E B 16	E B 16	E B 16	22	30	40	38	38	44	A A 83	A A 103	47	42	38	G 17	31	25	29	28	25	A A 137
29	A A 75	E B 16	A A 120	A A 162	A E B 16	E B 16	28	30	37	44	44	46	A A 69	A A 84	A A 68	A A 56	A A 77	45	28	50	E B 14	42	20	E B 16
30	E B 16	E B 16	A A 66	A A 75	E B 14	E B 14	38	24	30	41	38	A A 43	44	44	43	A A 58	52	A A 89	A A 109	37	23	54	20	E B 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	30	29	29	29	29	29	29	28	28
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	32	41	42	45	A A 51	47	49	47	44	43	41	38	38	28	22	22	17
U Q	24	22	A A 26	A A 24	21	16	30	A A 44	A A 69	A A 71	A A 74	A A 84	A A 70	A A 72	A A 66	A A 58	56	A A 58	A A 56	A A 54	46	44	30	26
L Q	E B 16	E B 16	E B 16	E B 16	E B 14	E B 15	22	30	33	38	39	43	43	44	42	40	40	32	28	24	E B 16	E B 16	E B 19	E B 16

JUN. 2017 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 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	16	16	16	16	16	15	14	14	16	16	18	25	22	20	20	18	16	16	13	12	14	16	16	16
2	16	16	16	16	14	16	14	16	18	21	20	21	20	22	20	21	15	15	14	16	16	16	16	16
3	16	16	16	16	16	16	16	14	14	15	16	20	21	20	20	18	18	14	13	10	16	16	16	16
4	16	16	16	16	16	16	14	14	13	16	19	20	18	18	20	16	15	14	14	10	16	16	C	C
5	C	16	16	16	14	14	14	14	14	16	18	18	19	20	22	22	19	16	12	12	14	14	16	16
6	16	16	16	16	14	16	14	12	14	15	18	18	18	21	20	20	15	14	12	14	14	15	14	16
7	14	16	15	16	16	16	16	13	14	16	16	17	21	18	18	18	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	18	15	14	14	13	16	16	16	16
9	16	16	16	16	16	16	16	12	13	14	16	16	19	18	18	17	15	12	15	14	12	14	13	15
10	16	16	16	16	15	14	14	12	14	14	14	18	18	20	17	16	17	14	11	10	16	16	16	16
11	16	14	16	16	11	16	14	12	14	14	14	19	20	20	16	16	16	15	14	12	16	16	16	16
12	16	16	16	16	14	15	14	14	14	14	18	24	21	19	17	17	16	15	14	10	16	14	16	15
13	18	14	16	15	14	16	14	14	14	32	18	20	22	22	19	20	18	14	12	12	14	16	16	16
14	16	16	16	16	16	16	14	14	15	14	16	16	20	19	20	16	15	14	10	10	16	16	16	16
15	16	16	16	16	16	16	14	14	16	18	17	18	22	21	19	19	16	16	13	14	16	16	16	16
16	16	16	16	16	16	16	16	14	14	17	18	18	20	19	19	17	17	14	12	10	16	16	16	16
17	16	16	16	16	16	16	14	12	14	15	16	20	20	20	26	17	15	14	14	14	16	16	16	16
18	16	16	15	16	14	16	16	14	14	14	20	19	18	22	19	18	16	14	14	10	12	16	16	16
19	16	16	16	16	16	16	16	14	14	15	19	19	21	20	17	20	15	14	12	14	16	16	16	16
20	16	16	16	16	14	16	14	13	14	14	18	20	18	19	19	17	17	14	12	14	15	16	16	16
21	16	16	16	16	16	14	14	12	14	16	18	18	20	19	19	20	14	14	13	12	14	16	14	16
22	16	16	15	14	14	15	14	13	14	17	19	20	22	24	20	18	16	14	12	16	16	14	16	16
23	16	16	16	16	16	14	14	12	13	14	16	18	19	18	19	16	15	12	10	14	16	16	16	16
24	16	12	16	16	16	14	14	12	15	16	16	16	17	18	18	18	16	14	11	12	16	16	14	16
25	16	16	16	16	14	16	16	14	14	17	15	19	21	22	18	20	16	14	12	12	14	14	16	16
26	16	16	16	16	14	16	16	10	14	15	16	22	24	21	20	17	16	14	12	12	16	16	16	16
27	16	16	16	16	16	16	16	12	14	14	17	17	22	19	20	17	14	14	13	11	14	16	16	16
28	16	16	16	16	16	16	15	14	15	14	16	17	17	20	16	17	15	14	12	15	14	16	16	16
29	16	16	16	16	16	16	14	14	14	17	18	20	18	19	18	17	17	14	14	12	14	16	16	16
30	16	16	16	16	14	14	16	12	14	14	16	18	17	21	20	16	14	14	14	13	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	30	29	29	29	29	29	29	28	28
MED	16	16	16	16	16	16	14	14	14	15	17	19	20	20	19	18	16	14	13	12	16	16	16	16
U Q	16	16	16	16	16	16	16	14	14	16	18	20	21	21	20	19	16	14	14	14	16	16	16	16
L Q	16	16	16	16	14	15	14	12	14	14	16	18	18	19	18	17	15	14	12	10	14	16	16	16

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 312	318	329	A	F 300	F 350	379	355	339	A	A	A	274	A	A	293	301	311	305	329	341	305	F	291
2	F 279	298	334	F 311	314	329	346	354	387	299	251	331	295	276	305	298	307	297	300	315	331	348	323	284
3	F 316	F 318	F 310	F 319	326	A	375	361	A	334	A	313	A	A	298	308	319	A	A	A	A	346	327	F 316
4	F	F 291	F 291	F 273	F	300	368	381	A	A	311	275	266	294	300	299	301	292	300	318	344	355	C	C
5	C	304	F 393	354	390	327	351	355	364	A	327	293	261	290	A	282	291	321	316	326	356	324	310	300
6	304	298	313	351	312	362	333	A	A	348	352	298	280	252	246	276	305	307	312	300	317	309	324	300
7	F 292	F 314	325	322	358	A	304	361	370	343	A	A	301	299	284	280	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	294	310	337	308	307	329	348	F 309	332
9	320	F 323	F 313	333	A	F 317	349	325	317	A	366	328	A	260	278	V 265	294	323	332	A	317	335	313	315
10	304	308	F 310	F 294	F 316	318	380	378	A	311	336	A	275	265	273	306	338	342	325	332	294	336	U R 371	A
11	294	R 344	369	325	A	318	341	388	367	380	A	A	A	A	284	281	286	287	311	315	335	339	307	334
12	F 333	302	307	F 283	F 285	F 300	374	A	A	350	315	A	A	267	286	305	322	339	346	328	307	337	270	F 299
13	F 305	F 288	F	F 293	F 367	362	377	339	333	335	318	A	295	A	274	284	309	318	326	385	329	285	F 281	303
14	299	351	A	A	F 296	F 331	F 387	396	A	A	A	A	264	282	A	311	337	J R 340	A	346	319	299	346	F 284
15	F 293	F 328	F 327	F 306	F 305	309	333	338	354	384	340	292	A	A	291	304	287	289	314	339	344	A	A	F 279
16	F 291	F 281	F 308	F 306	F 295	F 311	358	375	388	348	299	299	271	296	310	337	301	261	288	287	311	353	330	F 279
17	312	290	A	F 314	F 341	A	A	349	A	A	A	A	314	303	A	A	J R 313	308	306	312	321	297	304	F 291
18	F 305	F 286	314	F 294	F 294	F 335	360	361	A	A	351	A	275	263	263	297	305	299	300	318	A	A	276	297
19	F 281	289	F 343	369	328	328	384	349	281	330	350	A	A	301	286	242	288	A	A	A	J R 324	302	309	F 293
20	F 281	316	351	F 351	F 312	308	341	A	358	A	A	A	A	A	265	289	277	R	327	A	A	335	A	308
21	311	F 321	F 298	330	F 339	345	360	381	320	350	326	A	261	293	310	304	A	A	A	304	359	388	303	309
22	F 304	A	A	A	A	369	388	A	A	303	A	A	A	A	A	A	A	A	336	336	A	J R 305	306	281
23	F 294	F 308	F 300	F 291	F 346	339	343	325	368	308	V 318	321	301	266	286	299	303	307	330	342	R 329	324	307	299
24	304	322	338	F 323	348	350	348	327	343	A	A	311	271	268	279	288	295	308	312	331	375	390	306	A
25	A	343	F 324	F 293	F 320	308	341	331	334	A	A	A	G	303	A	A	278	290	313	334	392	343	315	280
26	F 258	298	F 314	F 302	F 316	F 324	383	A	371	305	A	318	A	283	A	A	A	267	296	A	347	A	336	300
27	F 287	F 294	F 285	F 298	F 315	F 325	367	345	358	326	299	305	256	302	279	288	300	286	294	326	347	330	313	300
28	F 279	F 313	F 320	F 302	F 302	F 318	304	368	398	322	358	333	A	A	273	281	277	292	306	326	354	344	295	A
29	A	328	A	A	307	F 305	369	369	353	349	326	319	A	A	A	A	A	281	293	332	361	332	357	309
30	F 283	F 289	A	A	F 293	F 290	383	389	400	374	G	A	302	284	286	A	295	A	A	J R 305	342	380	334	307
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	28	23	24	25	26	28	24	20	19	18	14	18	20	21	24	25	23	24	24	25	26	25	25
MED	F 299	308	F 314	F 308	F 315	324	360	358	358	335	326	312	274	284	284	294	301	307	312	326	335	336	310	300
U Q	F 308	322	334	328	F 340	339	378	376	370	350	350	321	295	298	294	304	310	321	326	333	350	348	328	308
L Q	F 285	F 292	F 308	F 294	F 301	309	342	342	336	311	311	298	264	266	274	282	290	289	300	314	320	309	305	288

JUN. 2017 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	UL 392	A	A	A	A	A	A	A	A	402	387	A	L				
2							A	L	L 404	UL 434	432	435	420	435	429	403	410	372	354					
3						A		A	A	L 415	A	443	A	A	A	A	A	A	A	A				
4									A	A	423	418	453	432	A	A	A	386	364					
5									A	A	A 393	397	440	A	A	A	A	380	A					
6								A	A	405	411	A	A	A	A	407	A	A						
7						A			408	376	A	A	A	A	A	A	C	C	C	C				
8						C	C	C	C	C	C	C	C	C	C	428	A	A	A					
9								UL 364	UL 368	A	A	A	A	A	A	A	374	A	A	A				
10								UL 423	A	420	448	A	A	466	444	A	A	394	UL 401					
11								L 404	UL 411	432	A	A	A	A	405	A	A	A	A	A				
12								A	A	A	420	A	A	A	A	382	A	402	383					
13									A	A	A	A	A	A	A	A	A	394	A					
14								L 400	A	A	A	A	A	430	A	A	A	A	A					
15								UL 383	L 386	A	A	A	428	A	449	A	A	A	A					
16								L	406	440	439	495	A	A	A	A	390	A	379					
17							A		A	A	A	A	A	A	A	A	A	366	376					
18									A	A	420	A	A	A	A	413	A	365	A					
19									H 385	L 368	A	A	A	A	A	A	A	A	A	A				
20								A	A	A	A	A	A	A	A	405	A	A	A	A				
21								A	A	A	A	A	A	A	A	A	A	A	A					
22								A	A	UL 425	A	A	A	A	A	A	A	A	A					
23								UL 384	391	L 417	A	A	A	397	425	441	400	389	361	L				
24									A	A	A	A	392	429	A	A	A	A	A					
25								L	A	A	A	A	416	A	A	A	A	372	363					
26								A	A	A	A	398	A	421	A	A	A	357	361	A				
27									UL 402	419	442	A	R 420	A	401	418	A	A	348					
28							UL 352	L 388	A	422	435	A	A	A	A	A	A 389	387	365					
29								L 399	L 395	A	A	A	A	A	A	A	A	A	L 375					
30								405	L 420	A	456	A	A	A	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	10	11	12	11	6	7	7	6	8	6	13	12					
MED							UL 352	L 396	L 402	420	432	426	420	430	427	410	395	386	364					
U Q								L 404	L 408	428	442	443	440	435	444	423	402	392	378					
L Q								UL 384	L 386	410	420	398	416	421	405	404	389	369	361					

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							216	262	294	A	A	A	E A 432	A	A	350	310	284	284	236				
2							262	256	230	376	538	296	394	448	348	334	316	314	306					
3						A		A 270	A	302	A	358		A	A	324	E A 368	304	A	A	A				
4									A	A	354	432	476	376	352	334	312	332	322					
5									250	A	316	416	490	410	A	A 398	320	272	278					
6								A	A	262	274	374	378	394	374	350	290	292						
7						A			234	272	A	A	374	352	400	376	C	C	C	C				
8						C	C	C	C	C	C	C	C	C	C	320	290	246	292					
9								326	L 332	A	248	A 314	A	484	384	368	318	276	254	A				
10								222	A	366	288	A	444	440	390	306	258	240	278					
11								222	256	260	A	A	A	A	414	386	354	342	284	270				
12								A	A	280	350	A	A	430	342	306	276	254	240					
13									E A 310	280	340	A	388	A	E A 392	348	298	282	258					
14								218	A	A	A	A	478	396	A	298	258	A 274	A					
15								276	256	252	318	414	A	A	382	338	336	336	A 292					
16								224	226	288	400	386	444	358	306	258	314	300	342					
17							A		A	A	A	A	320	310	A	A	328	300	290					
18									A	A	278	A	424	442	388	314	282	300	300					
19									418	300	274	A	A	E A 386	410	542	384	A	A	A				
20								A	262	A	A	A	A	A	410	334	358	306	256	A				
21								224	340	278	E A 346	A	E A 516	390	340	338	A	A	A					
22								A	A	376	A	A	A	A	A	A	A	A	A 282					
23								314	240	348	308	312	E A 390	482	398	342	308	292	260	238				
24									282	A	A	356	420	410	360	338	328	294	276					
25								308	A 318	A	A	A	G	358	A	A	380	354	290					
26								A	250	378	A	352	A	438	A	A	A	484	360	A				
27									276	328	390	362	510	344	362	354	326	326	308					
28							370	248	228	336	300	328	A	A	E A 460	398	386	324	304					
29								246	254	288	318	346	A	A	A	A	A	364	308					
30								228	224	262	G	A	390	434	406	A	E A 352	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	15	20	19	18	14	18	20	21	24	25	24	23	3				
MED							262	248	256	288	318	357	U 418	403	379	339	315	300	290	238				
U Q							370	276	302	348	354	386	478	439	403	368	344	329	306	270				
L Q							216	224	237	272	288	328	390	367	350	327	294	279	276	236				

JUN. 2017 h'F2 (KM)

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 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	Q 288	272	258	A	Q 260	222	196	222	A	A	A	A	A	A	A	A	208	216	A	216	196	228	316	316
2	286	280	Q 232	252	272	248	A	200	196	182	172	188	208	198	190	184	206	A 238	238	282	254	228	244	E A 304
3	280	272	240	234	A 264	A	230	A	A	178	A	180	A	A	A	A	A	A	A	A	A	228	224	298
4	286	284	Q 292	Q 246	Q 272	262	210	234	A	A	206	192	192	188	A	A	A	218	A 238	246	214	190	C	C
5	C	240	Q 188	A 226	202	256	232	224	A	A	E A 252	236	190	A	A	A	A	216	A	260	212	222	238	268
6	272	280	256	222	230	238	248	A	A	A 224	A 222	A	A	A	A	202	A	A	256	240	228	248	238	256
7	258	256	228	220	E A 246	A	A 288	250	196	E A 236	A	A	A	A	A	A	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	184	A	A	A	268	256	210	Q 212	238
9	242	290	254	234	A	254	226	224	242	A	A	A	A	A	A	A	E A 264	A	A	A	242	246	244	206
10	264	256	228	Q 256	Q 238	238	216	206	A	180	168	A	A	170	182	A	A	202	184	212	308	248	234	A
11	276	280	218	A 298	A	A 294	272	204	A 206	A 200	A	A	A	A	212	A	E A 278	A	A	A	224	236	236	240
12	224	264	268	290	Q 324	268	220	A	A	A	172	A	A	A	E A 292	A 246	A	180	208	226	226	228	310	282
13	Q 284	Q 290	284	284	246	222	204	222	A	A	A	A	A	A	A	A	A	A 240	A	198	180	272	314	296
14	308	E A 276	A	A	A 254	248	214	196	A	A	A	A	A	184	A	A	A	A	A	246	220	266	228	308
15	Q 292	248	Q 218	262	242	278	272	208	194	A	A	A	186	A	160	A	A	A	A	228	204	A	A	350
16	280	326	286	Q 276	Q 246	Q 250	216	202	174	H 160	188	168	A	A	A	A	H 194	A	238	298	252	204	262	308
17	A 288	292	A	264	198	A	A	A 270	A	A	A	A	A	A	A	A	A	210	E A 260	220	236	A 332	260	284
18	A 294	A 286	260	258	Q 272	200	204	230	A	A	184	A	A	A	A	198	A	216	A	E A 272	A	A	310	E A 340
19	Q 292	Q 278	224	196	258	238	216	E A 262	H 188	E A 256	A	A	A	A	A	A	A	A	A	A	E A 260	A 274	290	Q 296
20	A 342	280	E A 280	E A 272	218	304	238	A	A	A	A	A	A	A	A	218	A	A	A	A	A	252	A	296
21	294	302	284	232	E A 274	224	234	A	A	A	A	A	A	A	A	A	A	A	A	276	228	220	274	274
22	Q 288	A	A	A	A	216	218	A	A	182	A	A	A	A	A	A	A	A	A	232	A	276	274	268
23	Q 266	Q 274	250	Q 236	206	200	A 228	210	206	A 212	A	A	A	A 224	184	180	202	194	204	214	206	228	230	282
24	264	242	234	230	200	250	A 222	232	A	A	A	A	248	192	A	A	A	A	A	232	212	202	A 312	A
25	A	260	230	278	250	290	230	A	A	A	A	A	200	A	A	A	A	226	224	244	184	222	264	312
26	Q 340	292	256	E A 322	Q 296	234	204	A	A	A	A	226	A	190	A	A	A	266	A 238	A	220	A	E A 278	282
27	276	274	284	270	Q 256	240	202	214	192	190	178	A	226	A	228	202	A	A	192	236	216	226	228	232
28	278	250	Q 234	Q 272	Q 264	260	222	204	A	192	186	A	A	A	A	A	E A 250	214	A 234	244	220	206	264	A
29	A	254	A	A	272	Q 254	222	210	226	A	A	A	A	A	A	A	A	A	190	256	190	A 220	214	280
30	Q 330	Q 330	A	A	Q 286	Q 352	A 228	184	166	A	174	A	A	A	A	A	A	A	A	290	220	202	224	238
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	24	24	26	26	27	21	11	12	11	6	7	7	7	8	7	13	13	23	25	26	26	25
MED	285	277	248	253	254	249	222	212	196	186	181	190	200	190	187	200	201	216	229	242	220	228	248	282
U Q	292	288	274	274	Q 272	262	232	231	206	A 218	A 206	226	226	198	228	210	E A 264	232	A 238	268	239	248	278	306
L Q	272	258	229	233	238	234	214	204	188	181	172	180	190	184	182	184	202	206	198	226	209	220	230	262

JUN. 2017 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	132	A	A	A	104	A	104	104	104	104	108	108	108	A				
2						B	A	104	104	A	102	100	100	100	100	100	102	102	106	A				
3						B	A	100	100	A	A	104	104	104	108	A	A	A	A	A				
4						B	116	104	102	A	100	100	100	102	102	104	104	A	108	A				
5						B	A	106	A	104	A	104	104	100	102	102	106	106	104	A				
6						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
7						A	A	A	A	104	A	104	104	104	102	102	C	C	C	C				
8						C	C	C	C	C	C	C	C	C	C	102	104	106	106	A				
9						B	A	A	A	A	A	A	A	106	106	104	104	104	104	A				
10						B	A	A	106	102	A	A	104	104	104	104	104	104	104	A				
11						B	A	A	A	A	A	A	A	A	104	104	104	106	104	A				
12						B	A	A	A	A	A	A	A	A	102	102	102	102	108	A				
13						B	116	A	A	B	A	A	A	A	A	A	A	A	A	A				
14						B	A	A	A	A	A	A	100	A	A	A	A	A	A	A				
15						B	114	104	102	A	A	A	A	102	102	102	104	104	104	A				
16						B	A	104	104	102	102	A	A	A	A	A	A	108	A	A				
17							A	102	102	102	102	A	100	100	100	100	106	100	A	A				
18						B	114	104	104	104	102	102	A	A	102	A	A	A	A	A				
19						B	114	102	A	100	A	A	A	A	A	104	104	104	104	A				
20						B	A	A	104	A	A	A	A	A	A	A	100	100	A	A				
21						B	122	A	A	104	A	A	A	102	102	A	A	102	102	A				
22						B	A	A	A	A	102	100	100	A	A	102	106	A	A	A				
23						B	A	A	A	A	A	A	A	A	A	104	110	104	A	A				
24						B	A	A	A	A	A	A	A	A	102	A	A	A	A	A				
25						B	124	108	A	A	A	A	A	A	A	A	A	A	A	A				
26						B	116	A	A	100	100	102	A	A	102	102	102	106	106	A				
27						B	A	100	A	100	A	A	A	A	A	100	102	102	106	A				
28						B	A	A	A	100	A	A	A	A	A	A	A	100	100	A				
29							A	A	100	A	A	A	A	104	104	104	106	106	A	A				
30						B	A	A	A	A	A	A	A	104	104	100	100	100	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	11	10	11	8	8	10	13	18	19	19	20	15					
MED							116	104	103	102	102	102	102	104	102	102	104	104	104					
U Q							123	104	104	104	102	104	104	104	104	104	106	106	106					
L Q							114	102	102	100	101	100	100	101	102	102	102	102	104					

JUN. 2017 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 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	112	124	96	132	128	98	98	96	100	108	102	102	114	100	106	104	160	86	102	102	86	94	96	122
2	112	96	96	114	92	B	108	G	136	104	G	G	148	134	130	G	142	110	104	100	100	104	104	102
3	98	112	104	102	106	110	110	106	102	132	110	140	108	108	118	108	106	104	100	106	134	118	90	88
4	88	88	92	86	B	108	G	102	98	96	96	108	108	110	114	118	120	122	108	102	86	104	C	C
5	C	102	114	116	102	96	96	106	106	106	124	146	134	112	106	106	108	116	104	98	98	94	88	88
6	88	86	104	92	94	112	110	102	102	108	108	102	94	102	106	94	104	96	96	98	98	92	92	94
7	100	96	96	96	120	96	120	108	108	104	102	106	124	110	112	110	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	112	118	92	108	102	114	106	102	118
9	104	102	96	96	100	98	98	98	92	102	102	106	106	132	112	112	110	98	102	100	100	104	104	104
10	94	86	98	86	92	98	94	118	102	104	100	104	110	112	G	128	112	132	116	106	100	98	98	98
11	104	100	116	98	98	98	102	94	98	92	94	94	94	90	124	122	118	110	100	100	100	96	100	98
12	94	116	124	124	94	98	108	104	108	118	138	116	98	104	112	116	110	102	104	100	86	86	104	100
13	100	108	98	84	102	112	100	100	100	98	130	102	96	94	94	92	90	112	106	106	98	102	102	92
14	98	98	90	88	88	128	108	104	98	100	108	102	100	96	98	138	122	114	88	106	88	102	84	102
15	104	104	98	90	96	94	112	112	114	102	96	92	116	108	86	142	130	120	110	106	104	104	104	92
16	102	102	108	102	88	112	122	124	G	G	160	84	120	126	90	92	154	114	92	88	86	100	104	112
17	112	126	120	114	138	112	114	110	108	106	100	80	98	128	114	106	106	160	104	110	108	96	96	110
18	114	92	92	88	86	86	108	96	106	100	106	100	98	92	116	118	108	116	116	92	86	88	88	88
19	118	84	96	90	110	94	86	106	112	118	118	112	92	92	136	124	110	110	104	120	130	100	110	108
20	102	102	104	94	90	136	110	102	106	102	98	98	120	90	100	168	128	112	102	104	102	116	120	116
21	102	100	122	94	98	118	122	126	116	112	112	108	108	106	108	118	110	108	102	102	100	100	100	98
22	84	116	124	124	134	96	104	104	102	104	100	102	96	98	110	106	104	102	100	94	88	104	106	86
23	90	100	100	98	98	98	84	108	100	98	96	92	92	92	92	138	114	108	106	106	98	88	94	94
24	98	B	98	108	94	94	94	116	114	102	100	106	106	104	110	108	104	102	110	104	102	90	88	108
25	102	98	96	96	98	100	120	112	108	102	100	96	100	98	104	98	92	92	88	88	92	86	104	114
26	108	98	120	104	98	96	92	106	106	104	100	104	94	108	108	116	110	116	108	106	100	100	94	94
27	94	106	92	92	86	82	152	112	106	112	112	98	98	98	108	120	110	104	108	100	88	102	88	88
28	88	86	84	82	86	112	110	106	102	102	102	96	96	90	90	90	92	84	120	108	104	98	100	106
29	100	94	104	98	92	100	94	122	122	116	122	122	114	110	108	108	102	102	102	96	96	98	98	86
30	86	106	100	122	104	98	92	106	92	92	92	142	122	110	110	106	104	104	100	110	96	96	96	94
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	29	29	28	28	28	28	28	28	28	28	29	29	28	29	29	29	29	29	29	29	28	28
MED	100	100	98	96	98	98	108	106	106	104	102	102	106	104	108	112	110	108	104	102	98	100	99	98
U Q	104	106	111	111	103	112	111	112	108	108	112	108	115	110	113	121	119	115	108	106	102	104	104	108
L Q	94	95	96	90	92	96	95	102	100	101	100	97	96	95	102	106	104	102	100	99	88	94	93	92

JUN. 2017 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN. 2017 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	FF 12	FF 16	FQ 51	FFF 15	FF 12	LQ 21	LC 12	LC 42	LHQ 11	C 7	C 6	C 5	C 3	C 8	C 3	C 3	H 1	L 1	C 5	C 1	F 3	F 3	F 4	FFQ 21
2	F 2	F 3	F 1	F 1	F 2		C 3		H 1	C 1			H 1	H 1	H 1		H 1	C 2	C 2	L 6	FQ 81	FQ 51	FQ 41	FQ 41
3	F 3	FF 12	FF 22	FQ 21	F 8	CQ 31	CL 32	C 4	C 7	HQ 11	CH 32	HC 11	C 3	C 3	C 2	CL 64	CL 26	CL 84	CL 92	CL 92	FF 16	FF 14	F 4	F 6
4	F 3	FQ 21	F 2	F 1		C 2		CQ 51	CQ 61	CQ 61	C 2	C 1	C 1	C 1	C 2	C 2	CL 21	CL 11	CL 42	CL 52	F 2	FFQ 13		
5		F 3	FQ 11	FF 17	FQ 41	L 8	L 6	C 3	C 6	C 4	C 1	H 1	H 1	C 2	C 3	C 4	C 4	C 2	C 4	L 9	F 7	F 3	F 3	FQ 21
6	F 1	F 1	F 1	F 4	F 2	C 5	C 5	CQ 81	CQ 61	CQ 31	CQ 21	CQ 21	LQ 31	CQ 31	CL 21	L 1	CL 52	L 6	L 5	LH 41	F 4	F 4	F 6	FQ 51
7	FQ 41	FQ 51	FQ 61	FQ 41	FF 14	LQ 31	C 4	C 5	C 1	C 2	C 4	C 3	C 1	C 5	C 2	C 2								
8																C 1	C 2	LC 14	C 3	C 6	FF 17	FQ 21	FQ 21	FF 14
9	FQ 31	FQ 81	F 8	FQ 51	F 6	L 2	L 3	L 3	LC 11	C 7	C 4	C 4	C 4	H 2	C 3	C 2	C 3	LC 16	C 6	L 8	F 2	FQ 41	FQ 51	FQ 11
10	FQ 31	FQ 31	FF 12	FQ 21	F 1	LQ 31	L 3	CL 13	C 6	CQ 31	C 2	C 3	C 1	C 1		CL 11	C 4	H 2	C 2	C 3	FQ 31	FQ 31	FQ 51	FQ 81
11	FQ 31	FQ 71	FFQ 11	FQ 81	FQ 41	LQ 31	L 7	LQ 31	LQ 21	LQ 31	LQ 41	LQ 31	LQ 41	L 4	C 1	C 2	C 2	C 4	C 7	L 6	F 8	FQ 41	F 4	F 4
12	F 3	F 3	FF 12	FF 12	FQ 31	LQ 21	CL 33	C 8	CQ 41	CLQ 32	HC 22	CHL 11	LQ 31	C 2	C 2	C 2	C 2	C 2	CL 41	C 5	F 1	F 1	FQ 21	FQ 51
13	F 2	FF 13	FQ 31	FQ 31	FF 23	CL 42	LL 42	C 5	C 6	L 3	HC 14	C 4	L 3	LQ 71	LQ 41	L 4	L 6	CL 54	CL 44	CL 43	F 4	F 3	F 2	F 3
14	F 5	F 3	FQ 51	FQ 51	FQ 31	CL 22	C 3	C 5	C 5	CQ 61	CQ 31	CQ 41	CQ 31	L 2	LQ 61	HL 15	CL 14	CLH 44	LQ 91	CL 84	F 6	FF 23	F 6	FQ 51
15	FQ 41	FQ 61	F 1	F 3	F 2	L 2	C 5	C 2	C 1	C 4	L 2	L 3	CL 31	CL 21	L 1	H 2	H 4	C 2	C 7	C 8	F 8	FQ 31	FF 36	F 3
16	FFQ 33	FFQ 31	FFQ 13	F 3	FF 12	C 1	C 3	C 3			H 1	LH 11	CL 11	CL 11	LQ 41	LQ 41	HL 12	CL 32	LQ 31	LQ 51	F 8	FF 12	FF 25	FF 23
17	FF 23	FF 16	FF 15	FF 14	FF 15	CL 15	C 4	C 8	C 4	C 7	C 4	LC 12	L 2	C 1	C 4	C 4	CL 42	HC 12	CQ 31	CQ 31	FQ 71	F 4	FQ 31	FF 23
18	FF 14	F 5	F 5	FQ 51	FQ 21	L 1	C 1	LC 14	C 5	C 8	C 2	C 3	L 3	L 3	C 3	C 2	CL 23	CL 12	CL 25	L 7	F 8	F 7	F 7	FQ 61
19	FF 14	F 3	FQ 31	FQ 31	FF 14	LQ 11	LH 11	C 5	C 2	C 2	CL 23	CL 35	L 3	L 3	HC 21	C 1	C 2	C 8	C 8	CLQ 26	FFQ 13	FQ 51	FF 15	FQ 21
20	F 6	FF 24	FF 13	F 3	FF 21	HC 13	CL 33	C 8	C 3	CL 52	L 5	L 4	CLQ 17	LQ 41	L 3	H 1	C 4	C 8	C 8	CHL 81	FF 95	FFF 13	FF 13	FF 13
21	FF 31	F 3	FF 18	F 3	F 5	CL 13	C 5	CL 32	CL 52	C 4	CL 31	CL 31	CL 21	C 3	C 4	CL 31	CL 81	C 8	C 9	C 9	F 9	F 9	F 3	F 2
22	F 2	FFQ 28	FFQ 14	FFQ 26	FFQ 14	LQ 21	CH 62	C 8	CQ 61	CQ 21	C 3	C 5	L 5	L 4	CL 32	C 8	C 7	CL 72	CL 99	L 9	F 8	FF 19	FF 46	F 4
23	FQ 21	FQ 21	F 2	FQ 21	F 2	L 2	LQ 41	CL 51	CL 31	L 4	L 4	L 3	L 3	L 2	L 1	H 1	CL 11	CL 21	CL 21	CL 12	F 2	FF 11	FF 11	F 2
24	F 2		F 2	FF 12	FQ 11	LQ 41	LC 31	C 3	CQ 41	CQ 51	C 6	CQ 41	C 1	C 1	CH 11	C 3	C 3	CL 54	CL 54	CL 57	FF 77	F 3	FF 71	FQ 71
25	F 5	F 6	FQ 51	FQ 51	FQ 31	L 3	C 1	C 6	C 5	C 5	CQ 71	LQ 31	LQ 11	LQ 31	C 4	LQ 31	LQ 71	L 4	LC 31	L 5	F 1	F 3	FF 24	FF 11
26	FF 21	FQ 31	FF 12	F 7	FF 31	LF 51	L 1	CQ 81	CQ 51	CQ 41	C 3	C 3	L 3	CQ 21	C 3	CQ 51	CQ 41	CQ 41	C 4	C 6	F 2	FQ 51	FQ 41	F 2
27	F 3	FF 12	FF 33	FQ 21	FQ 21	L 1	HC 11	CQ 31	CQ 21	CQ 31	CQ 31	LQ 31	LQ 21	LQ 31	C 1	C 1	C 2	C 4	CL 31	CL 21	F 2	FF 15	F 4	F 3
28	F 6	F 5	F 2	F 2	F 2	C 1	C 3	CQ 31	CQ 31	CQ 21	CQ 11	LH 21	LQ 31	LQ 51	LQ 41	LCH 32	LC 32	L 2	CQ 31	C 8	FF 81	F 9	FQ 91	FQ 91
29	FQ 91	FQ 31	FQ 41	FQ 51	FQ 41	LQ 21	L 4	CL 22	CL 31	CL 32	CL 22	CL 22	CL 31	C 3	C 4	CQ 31	CQ 51	CQ 51	C 3	LQ 41	FQ 21	FQ 51	FQ 31	FQ 31
30	FQ 11	FQ 21	FQ 71	FFQ 17	FQ 41	LQ 91	L 4	CL 13	LQ 31	LQ 41	L 2	HL 11	CL 11	C 2	C 1	C 4	C 5	C 8	C 7	CL 33	F 4	FF 62	F 4	FQ 31
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN. 2017 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

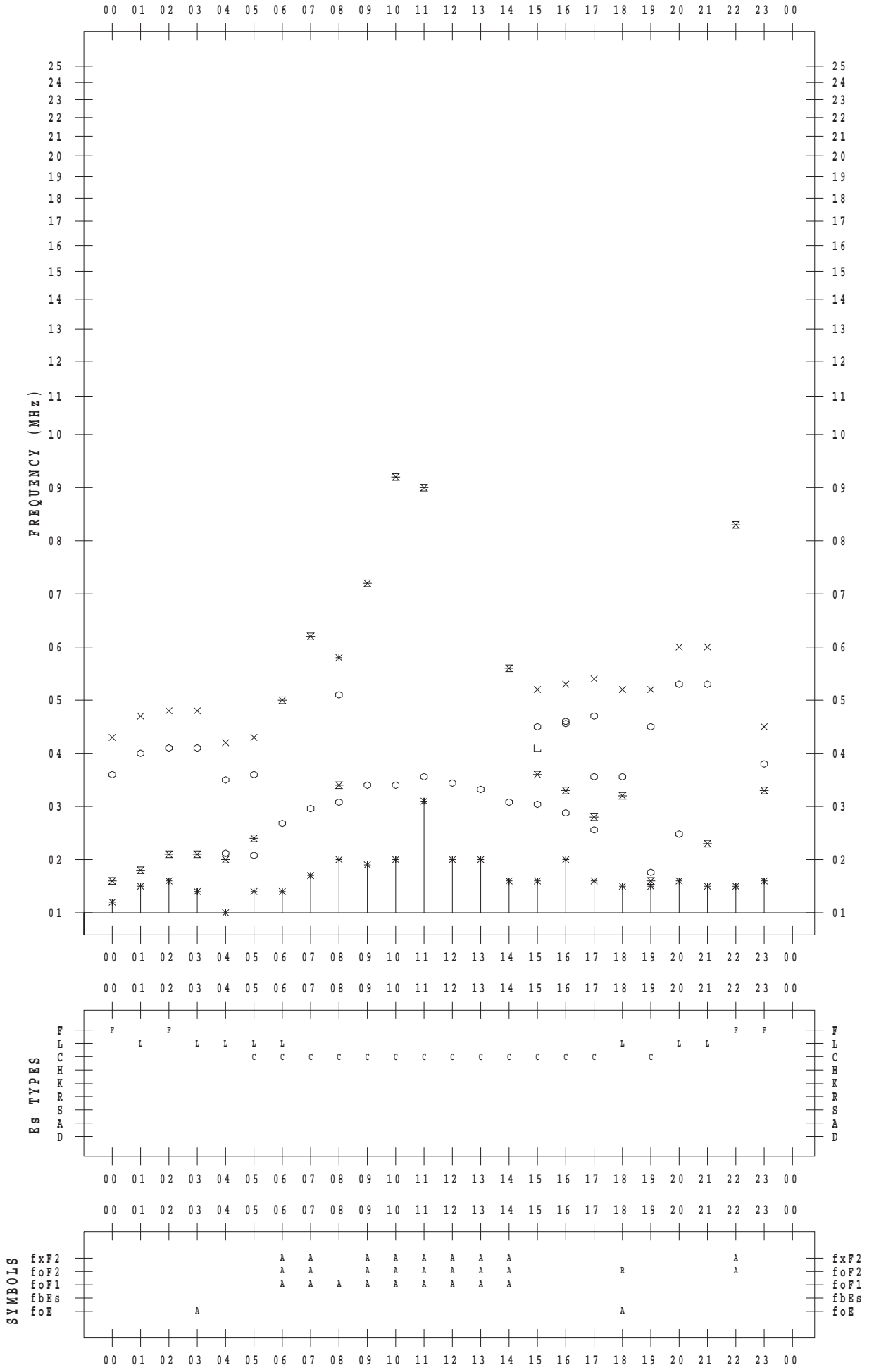
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 1

135 °E MEAN TIME



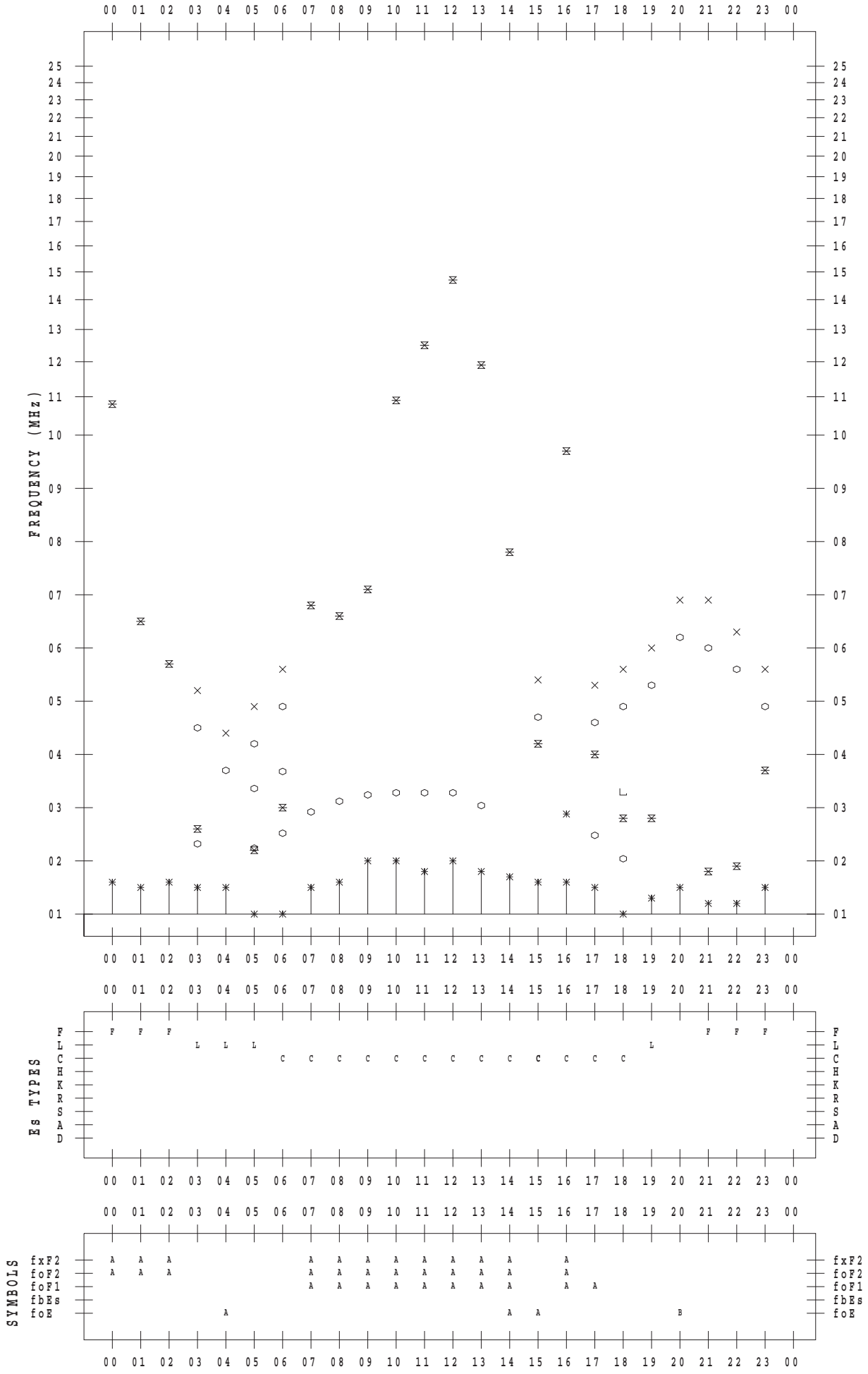
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 2

135 °E MEAN TIME



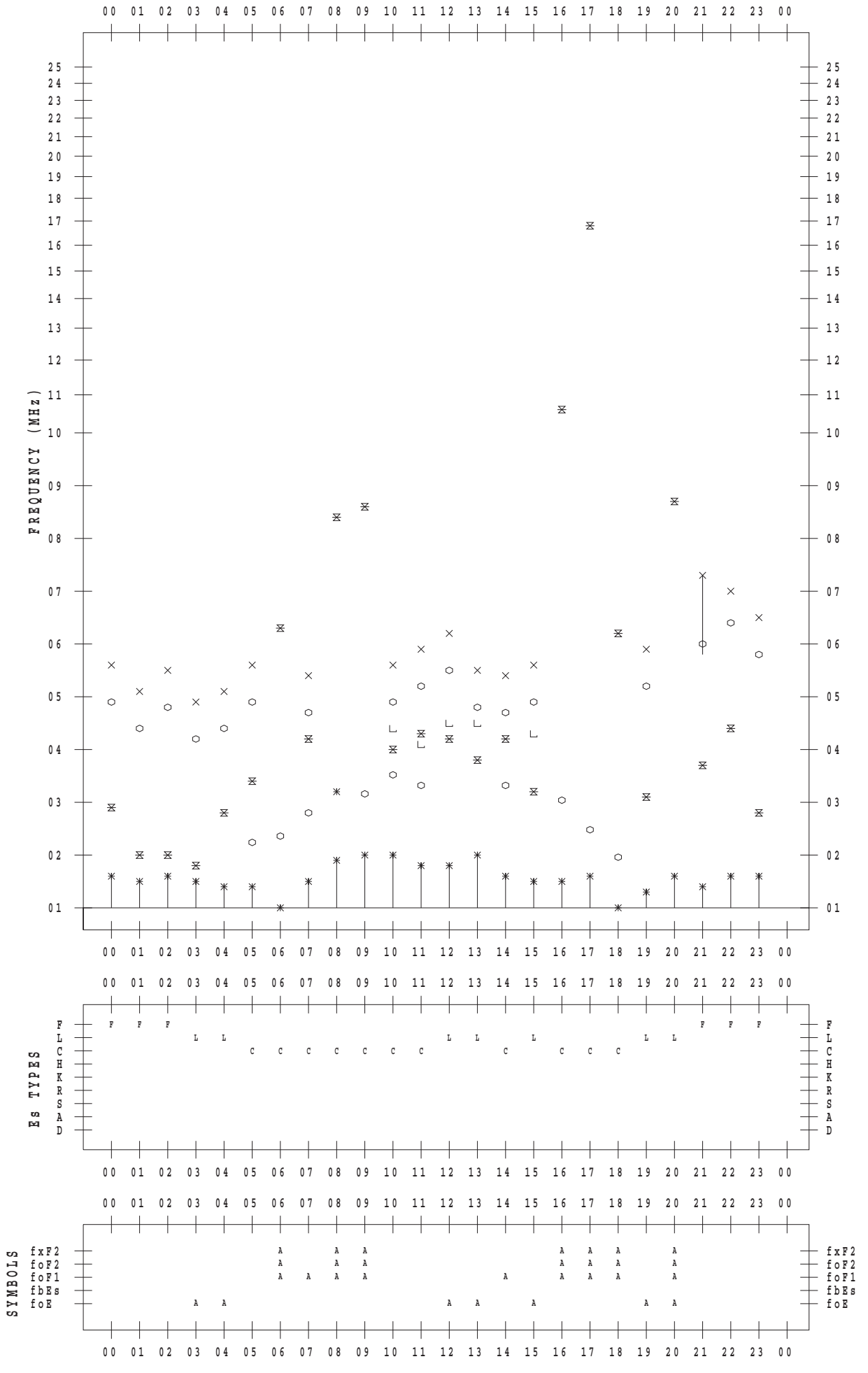
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 3

135 °E MEAN TIME



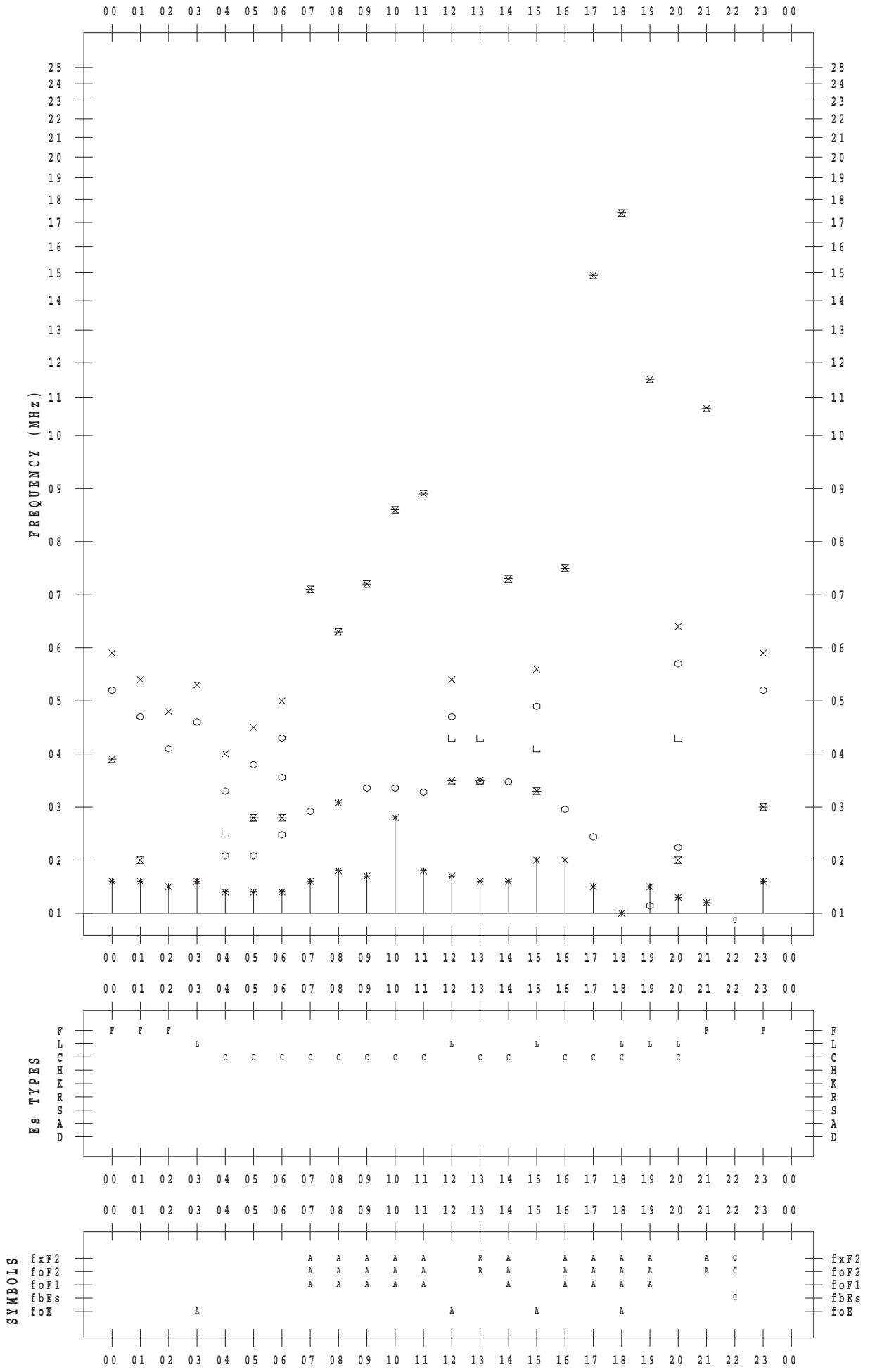
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 4

135 °E MEAN TIME



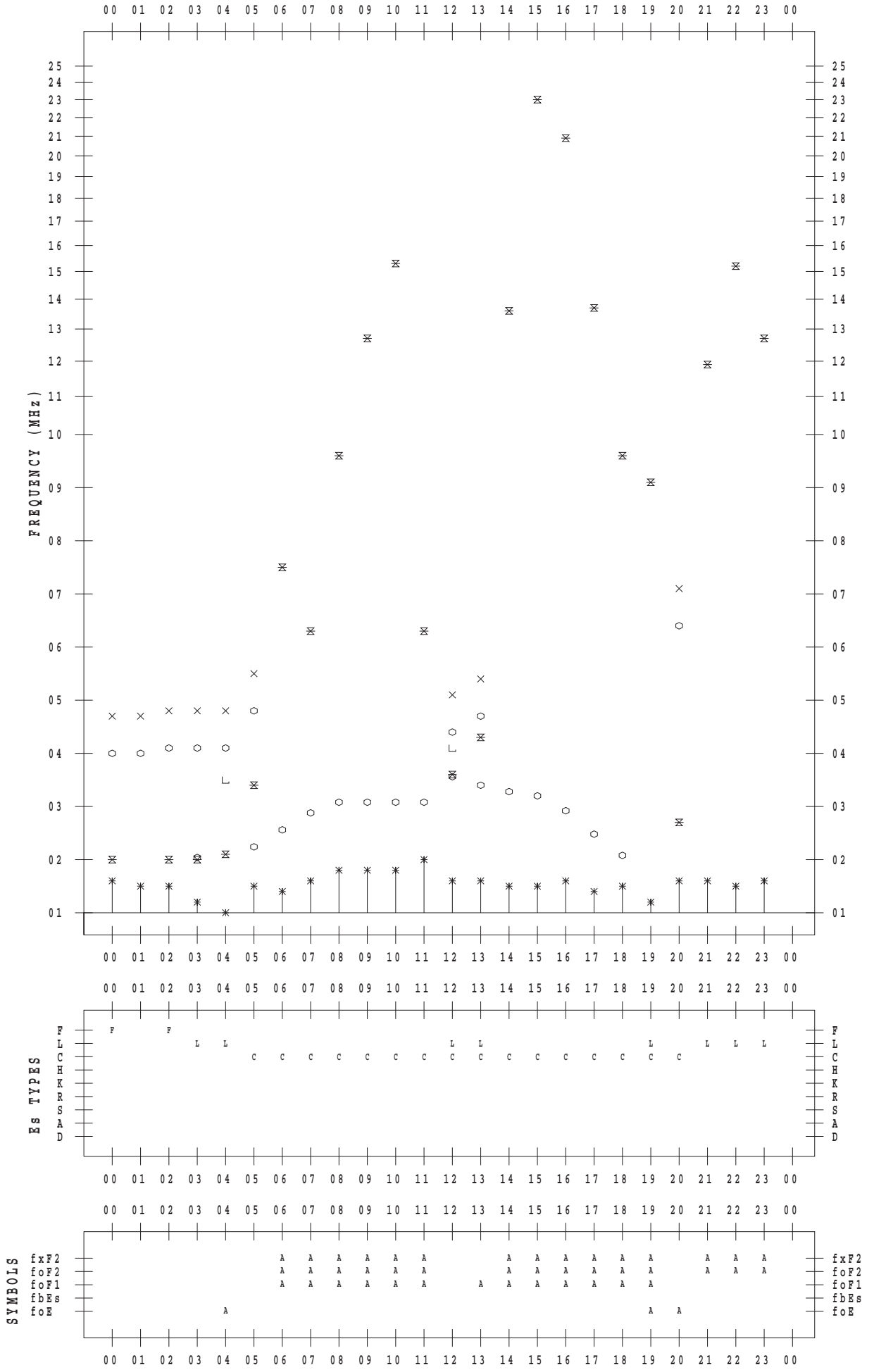
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 5

135 °E MEAN TIME



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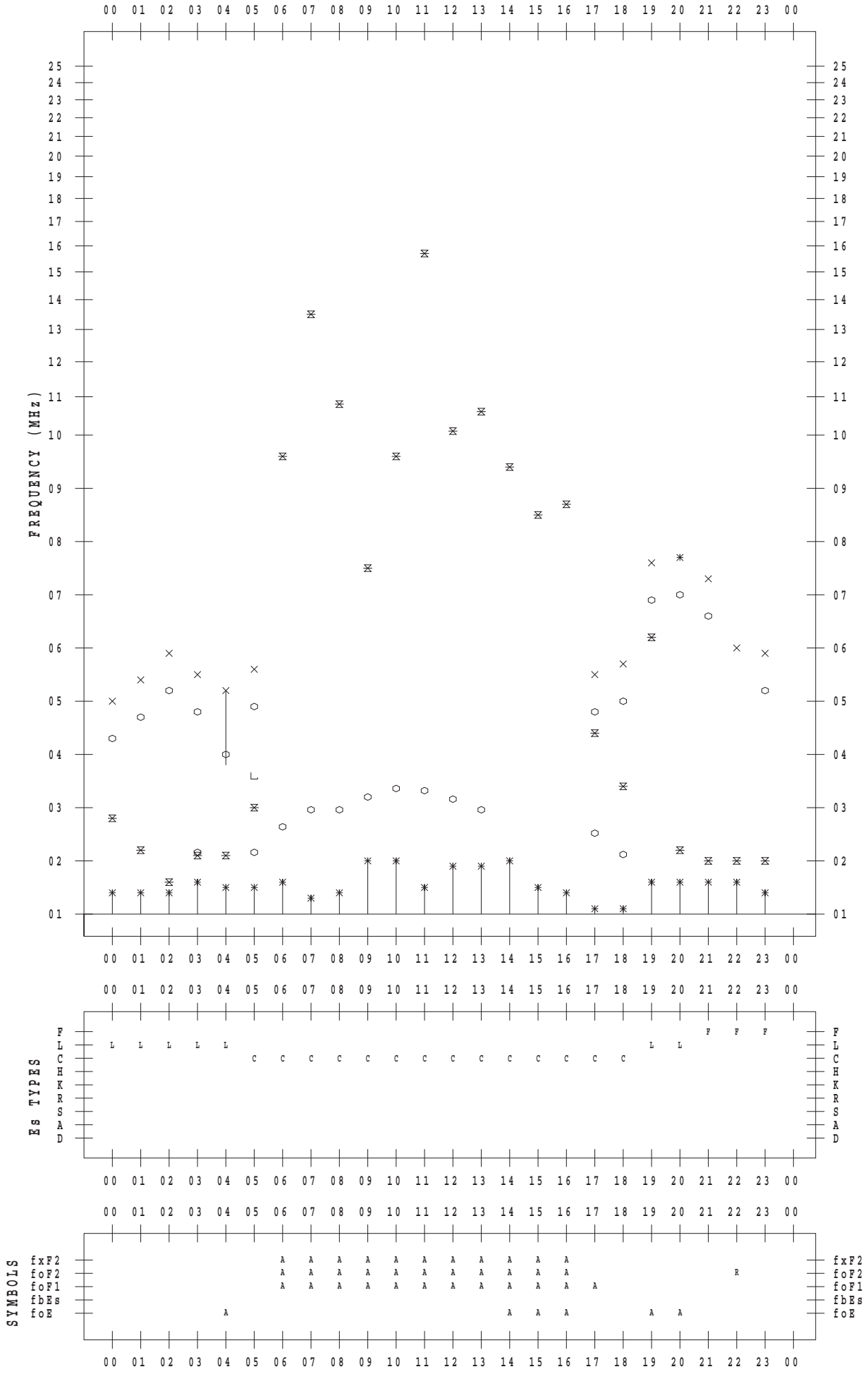
SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 6

135 °E MEAN TIME



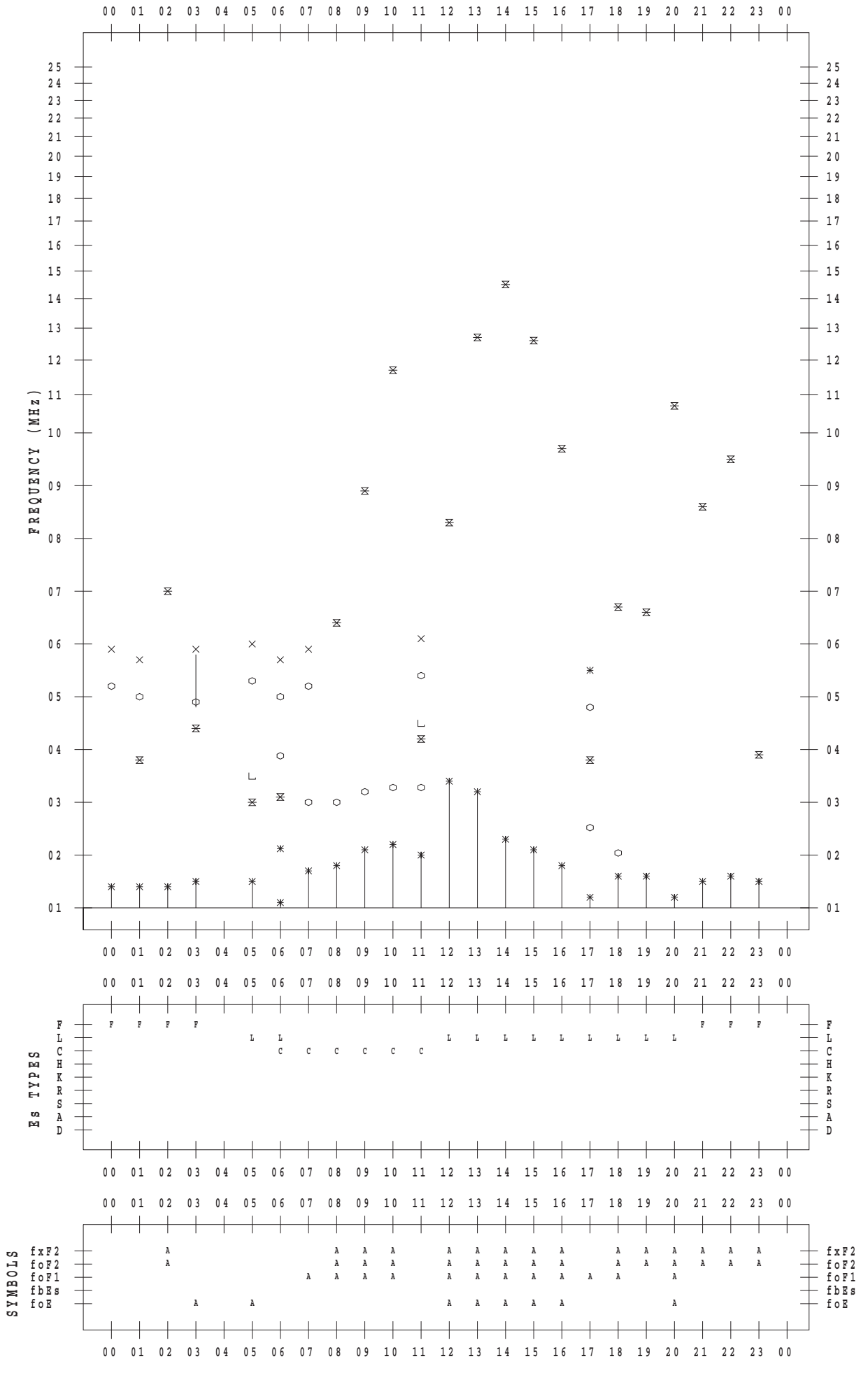
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 7

135 °E MEAN TIME



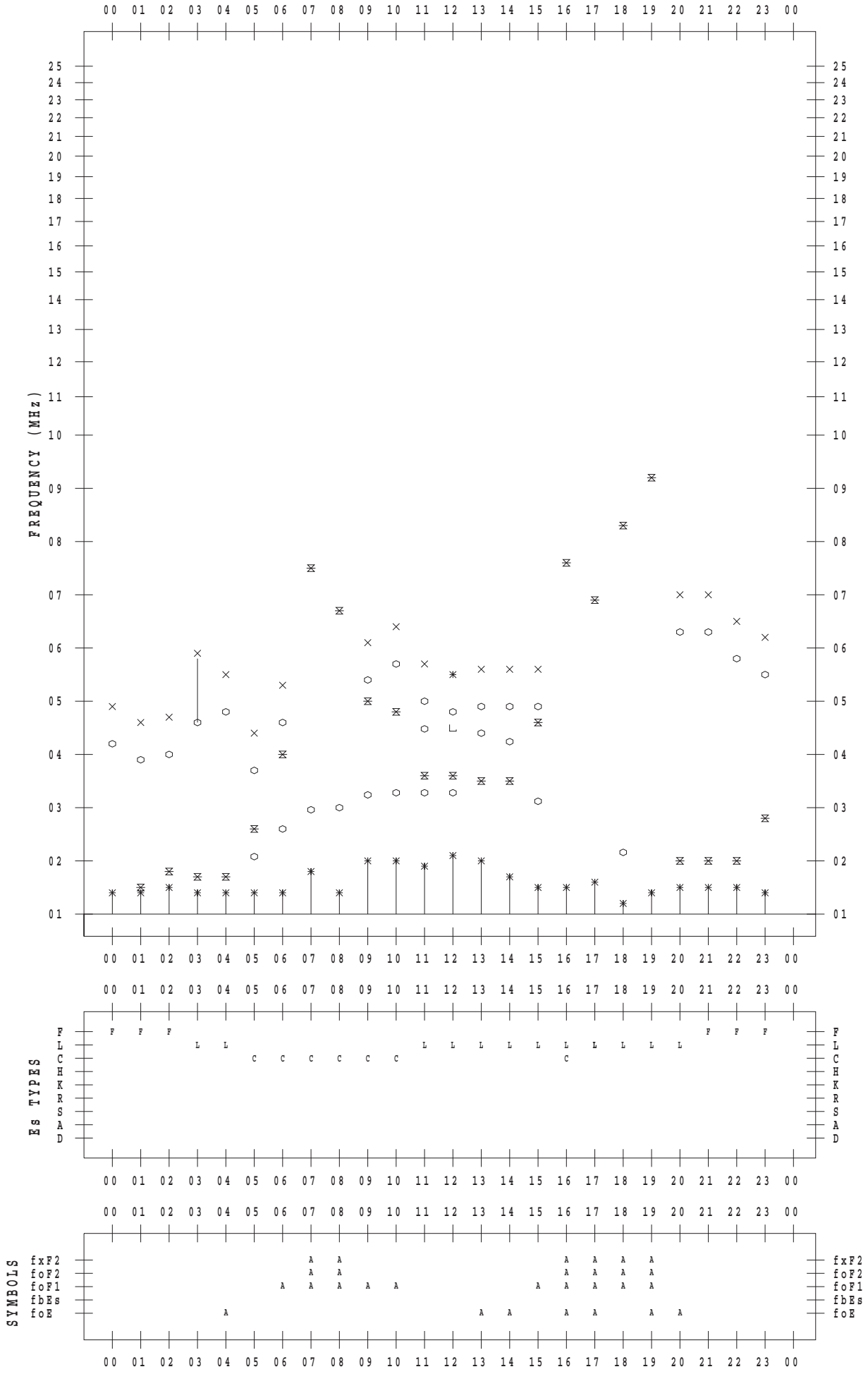
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 8

135 °E MEAN TIME



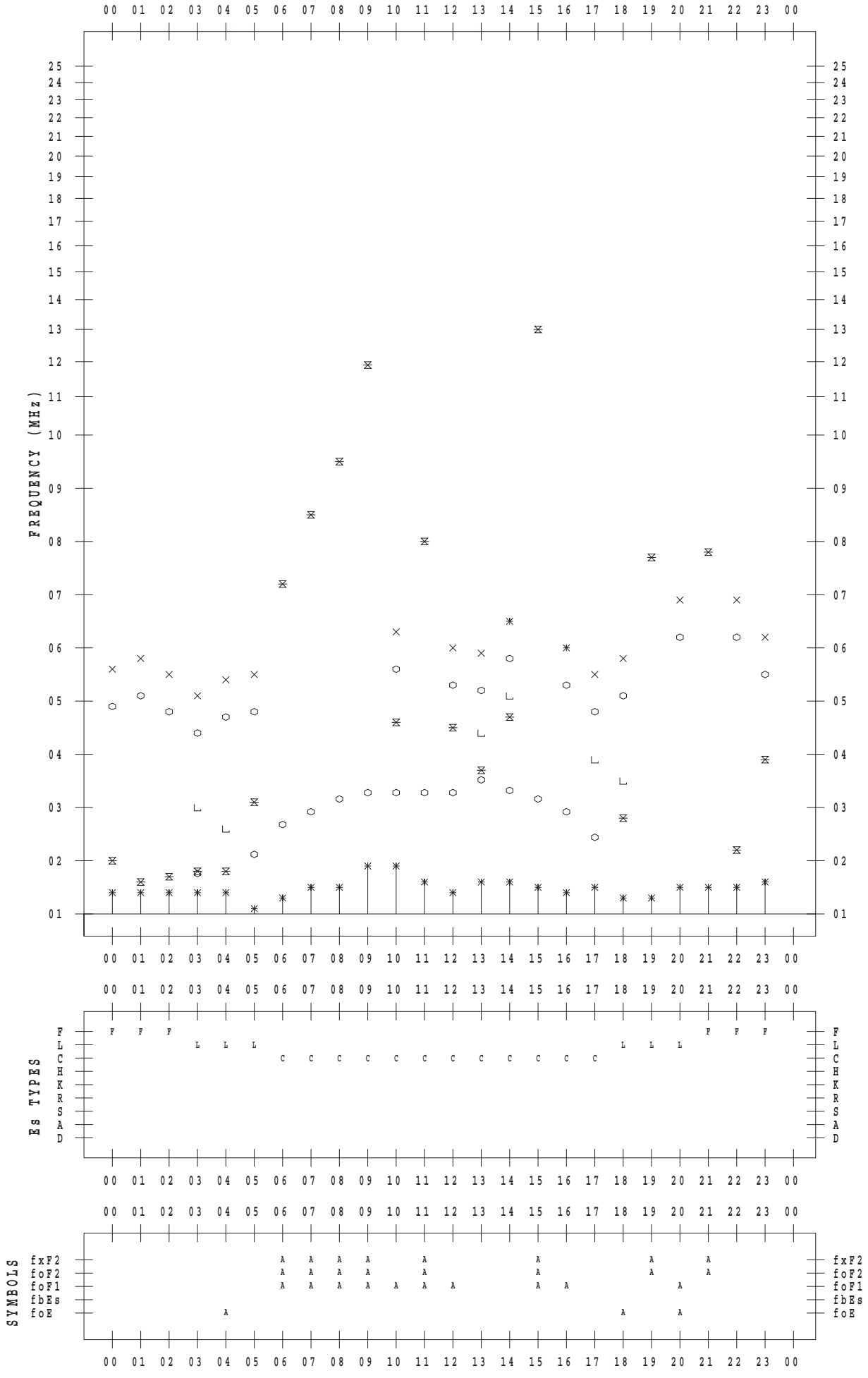
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/ 9

135 °E MEAN TIME



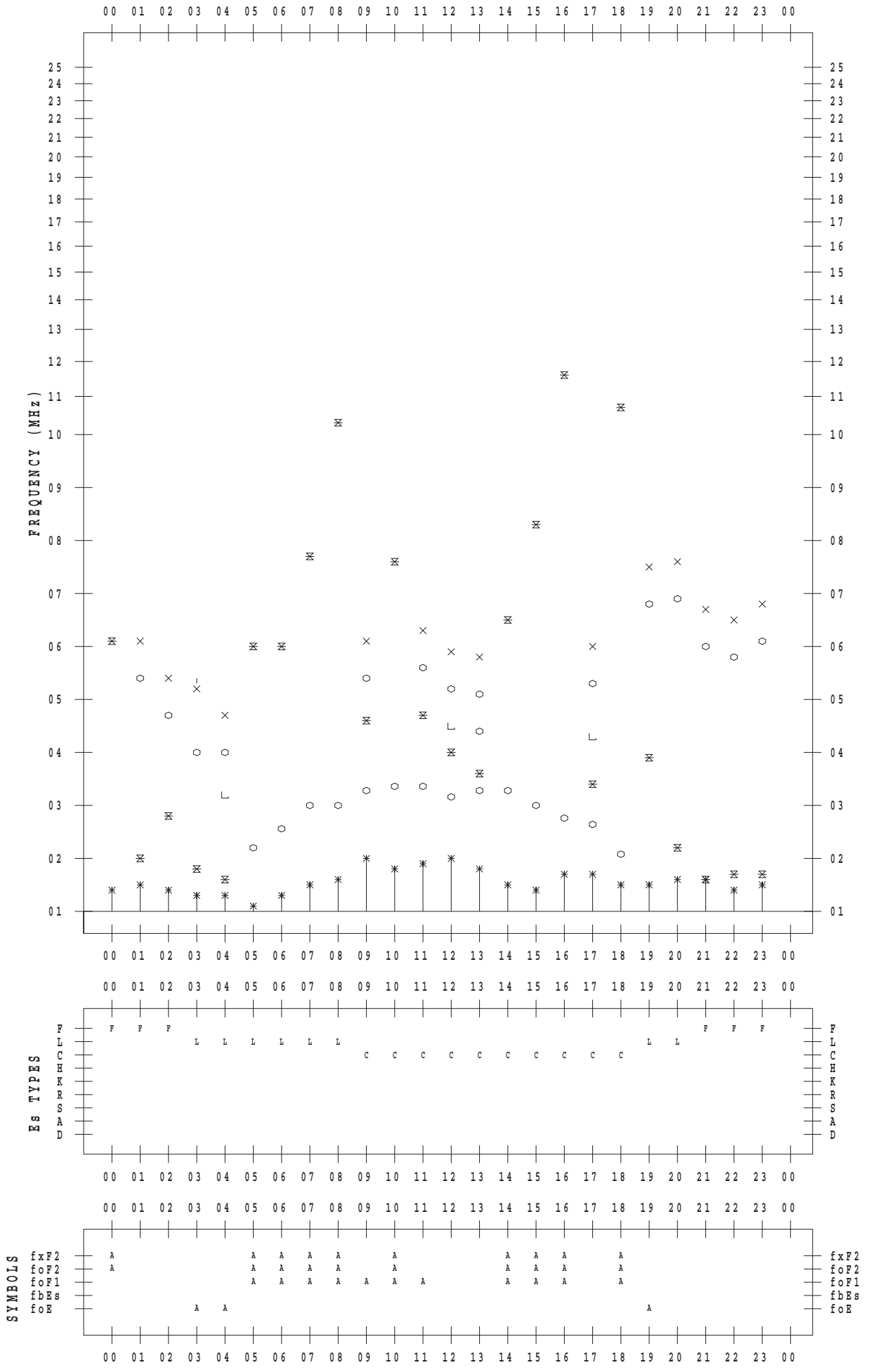
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/10

135 °E MEAN TIME



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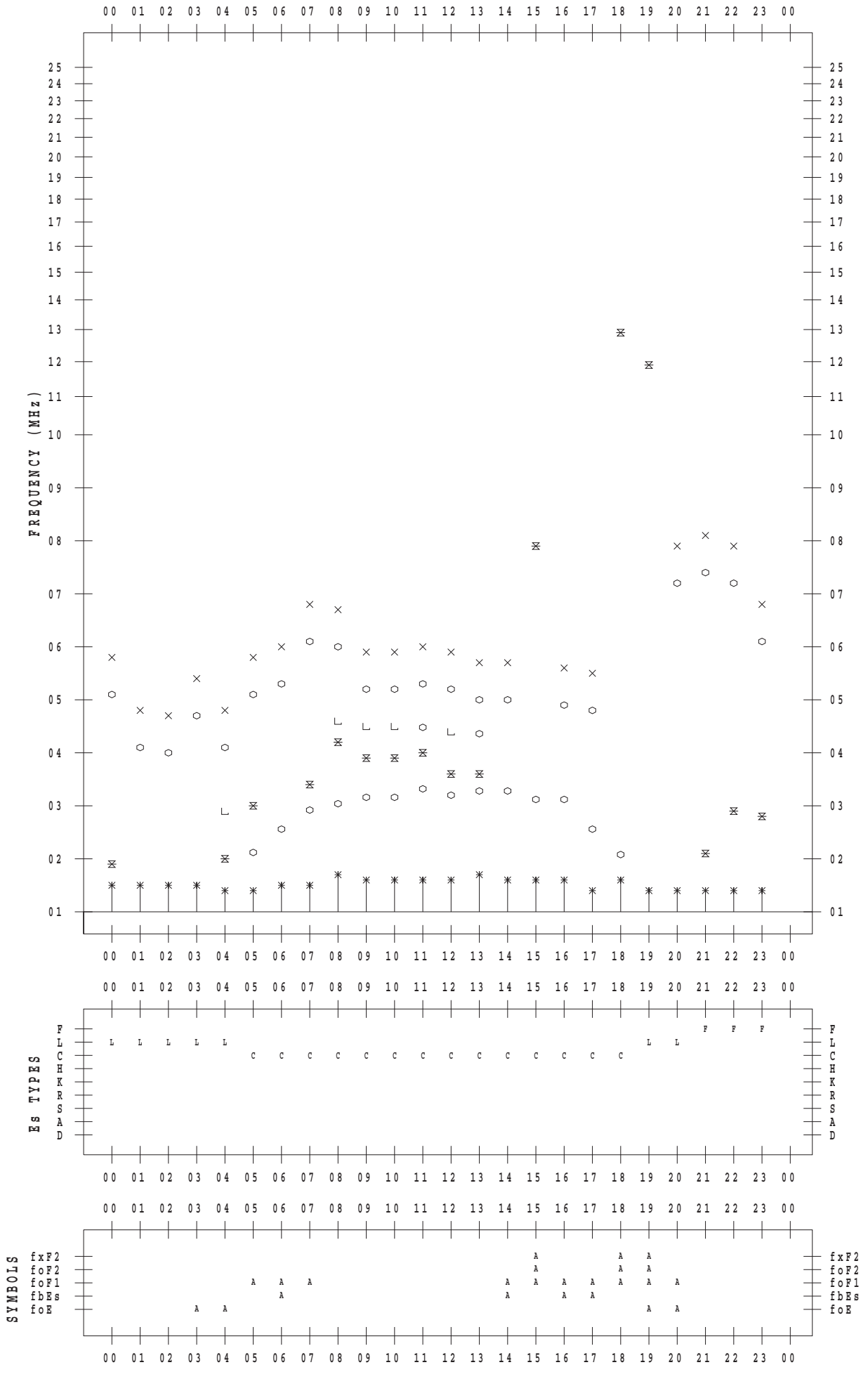
SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/11

135 °E MEAN TIME



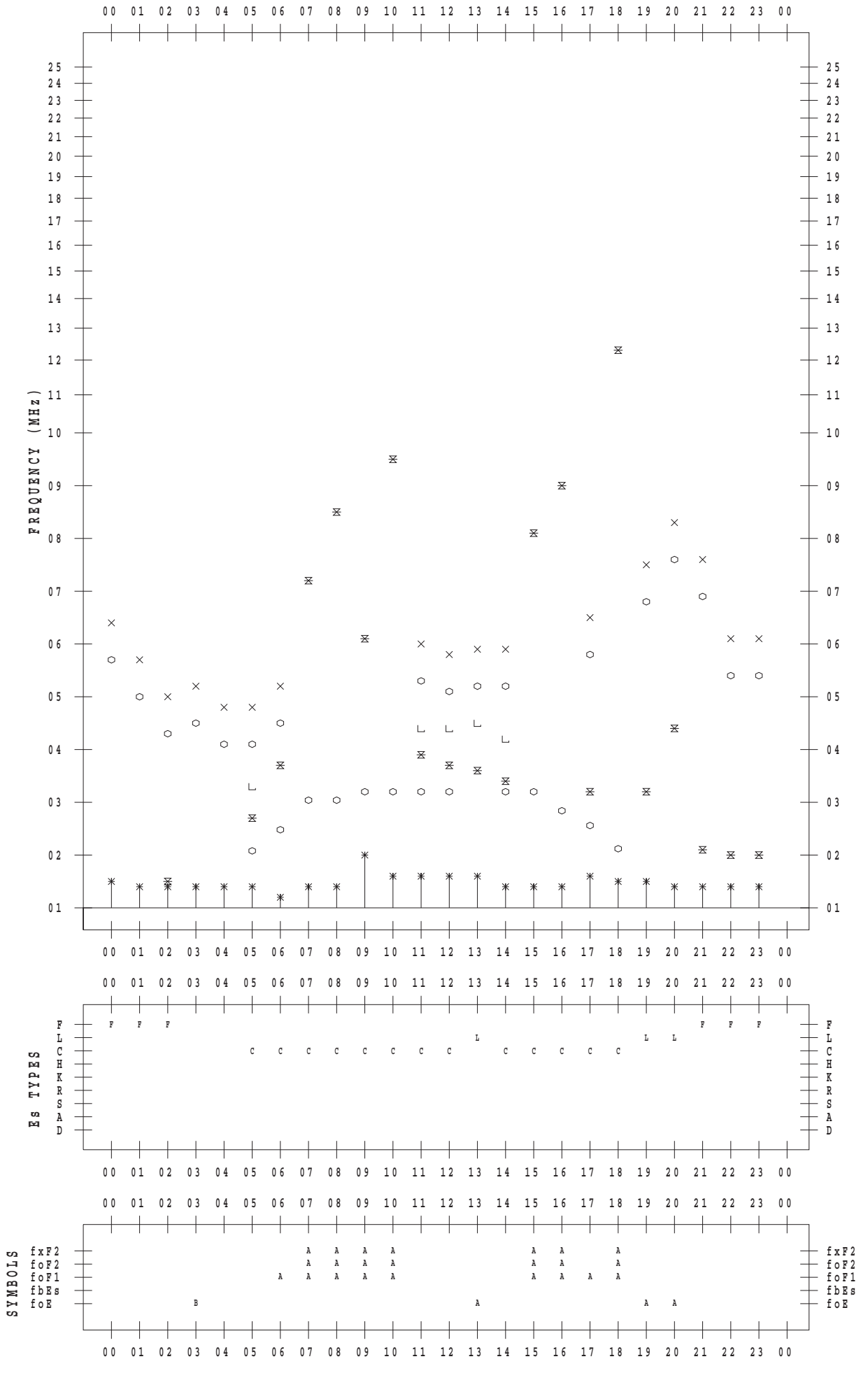
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/12

135 °E MEAN TIME



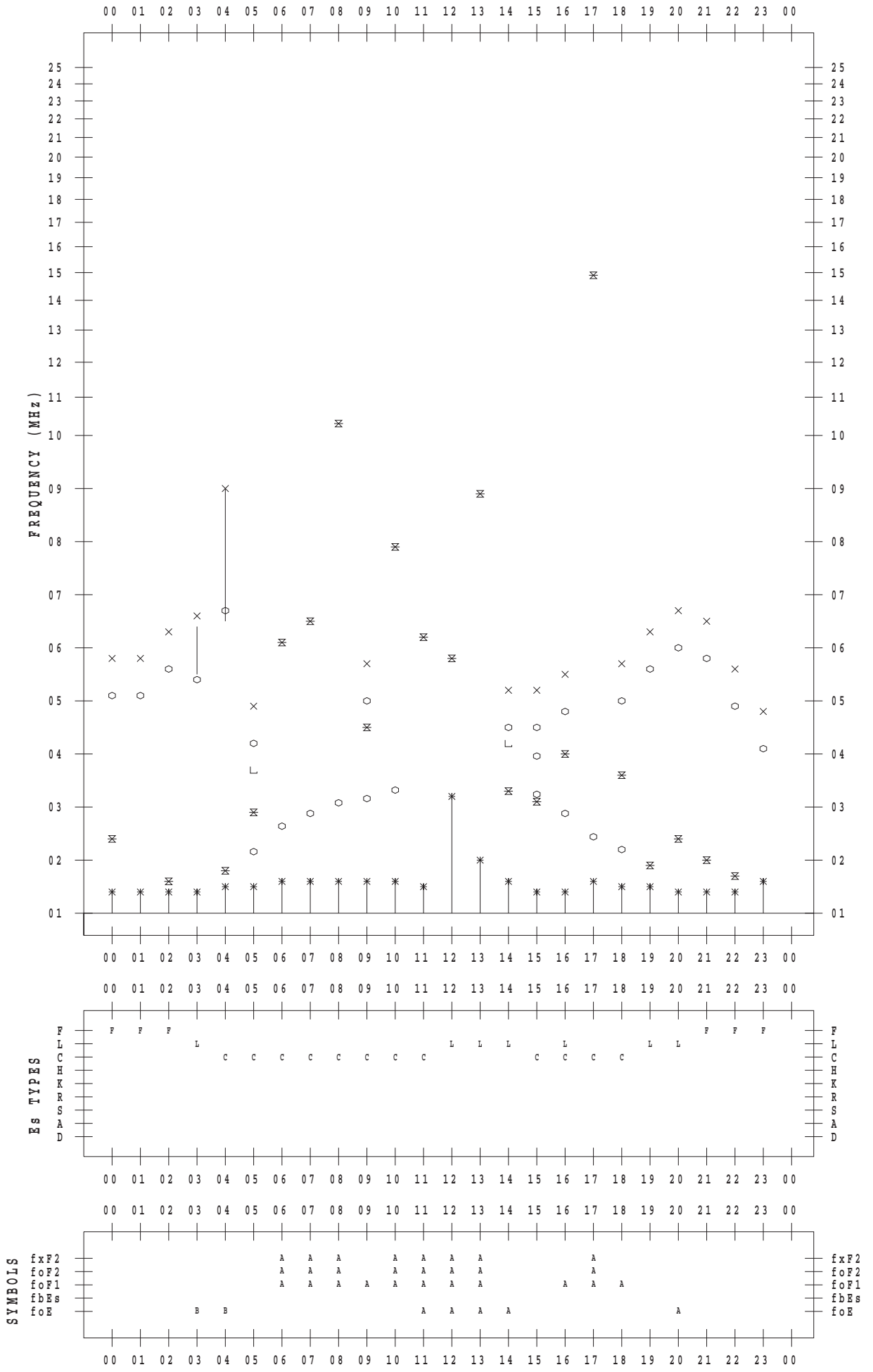
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/13

135 °E MEAN TIME



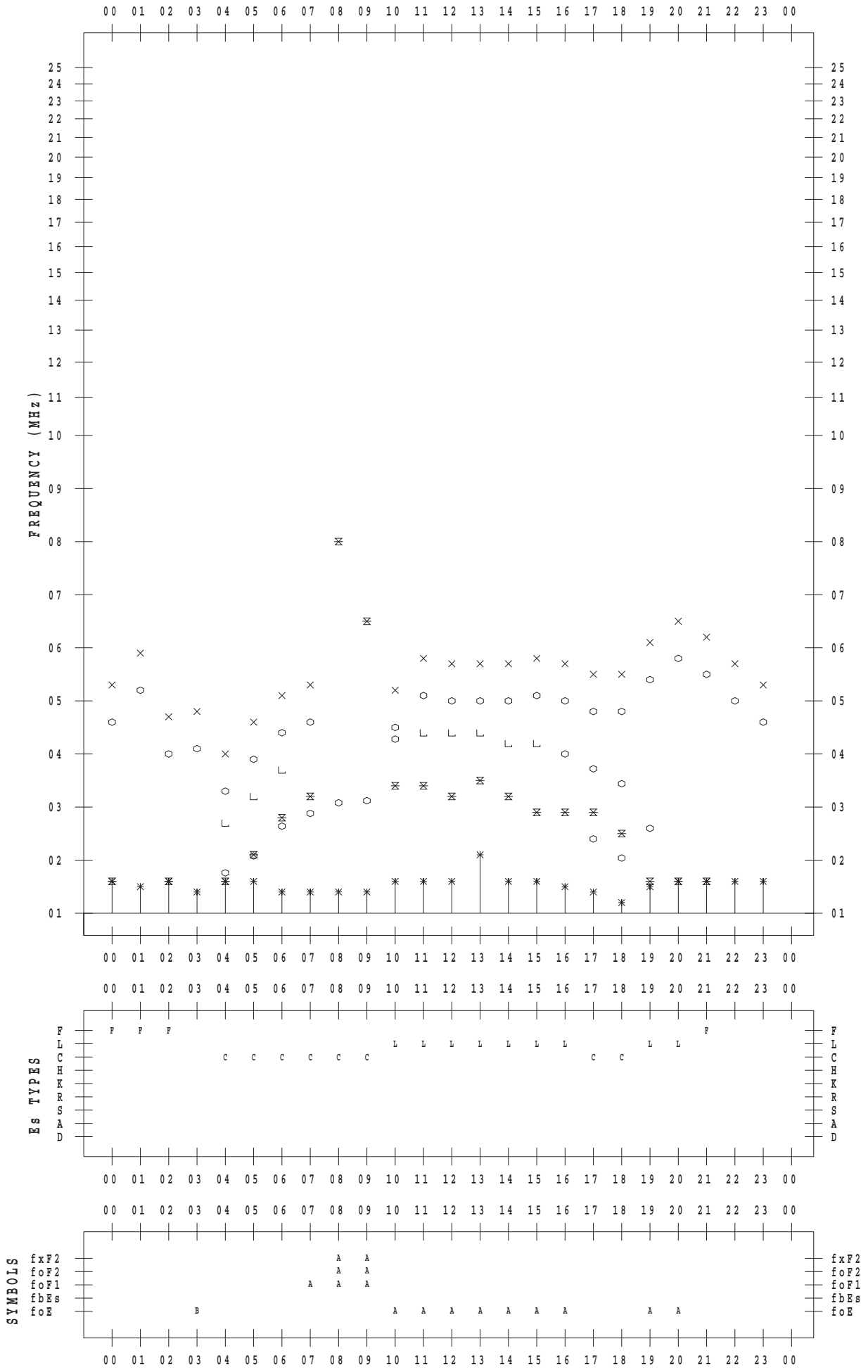
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/14

135 °E MEAN TIME



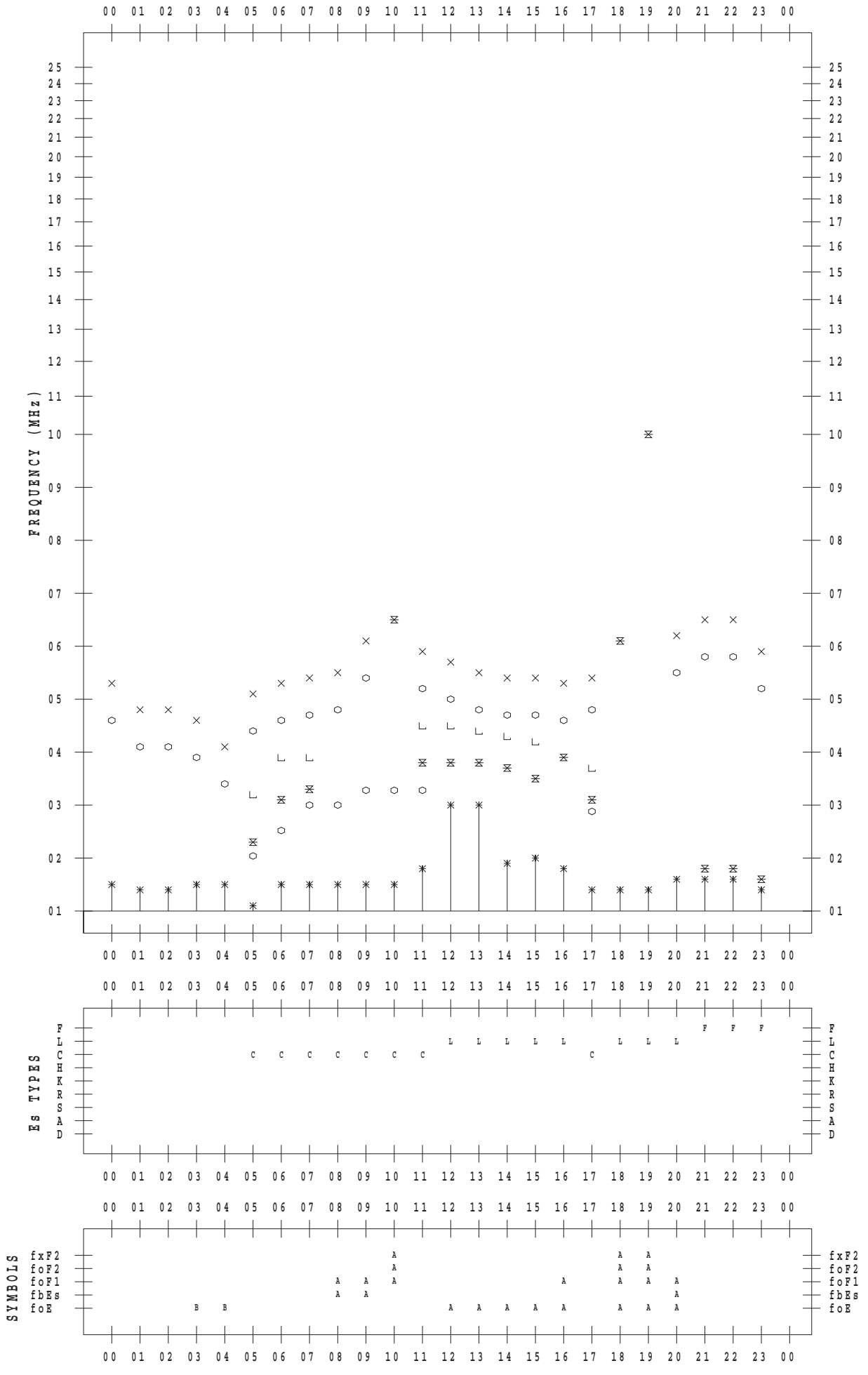
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/15

135 °E MEAN TIME



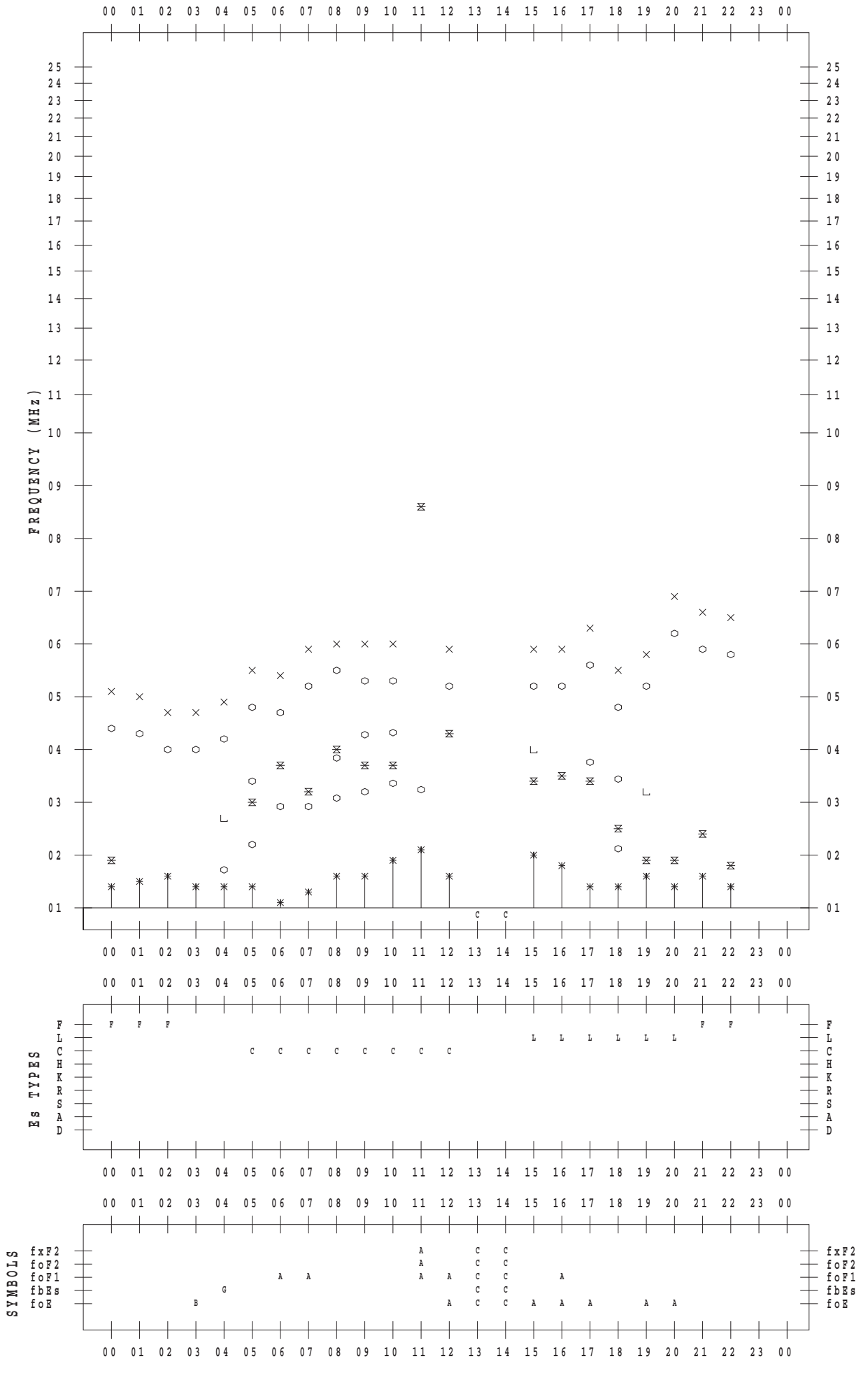
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/16

135 °E MEAN TIME



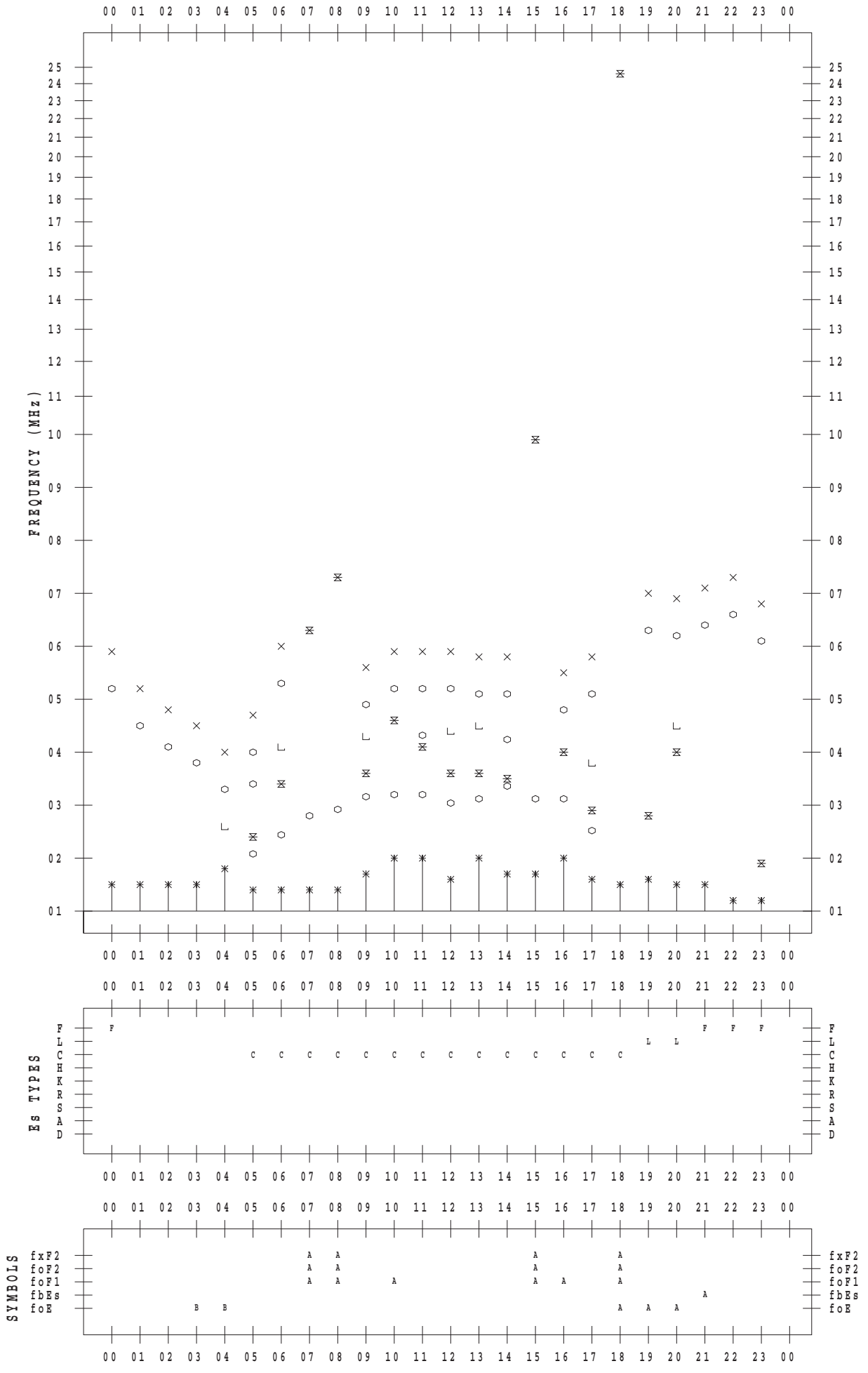
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/17

135 °E MEAN TIME



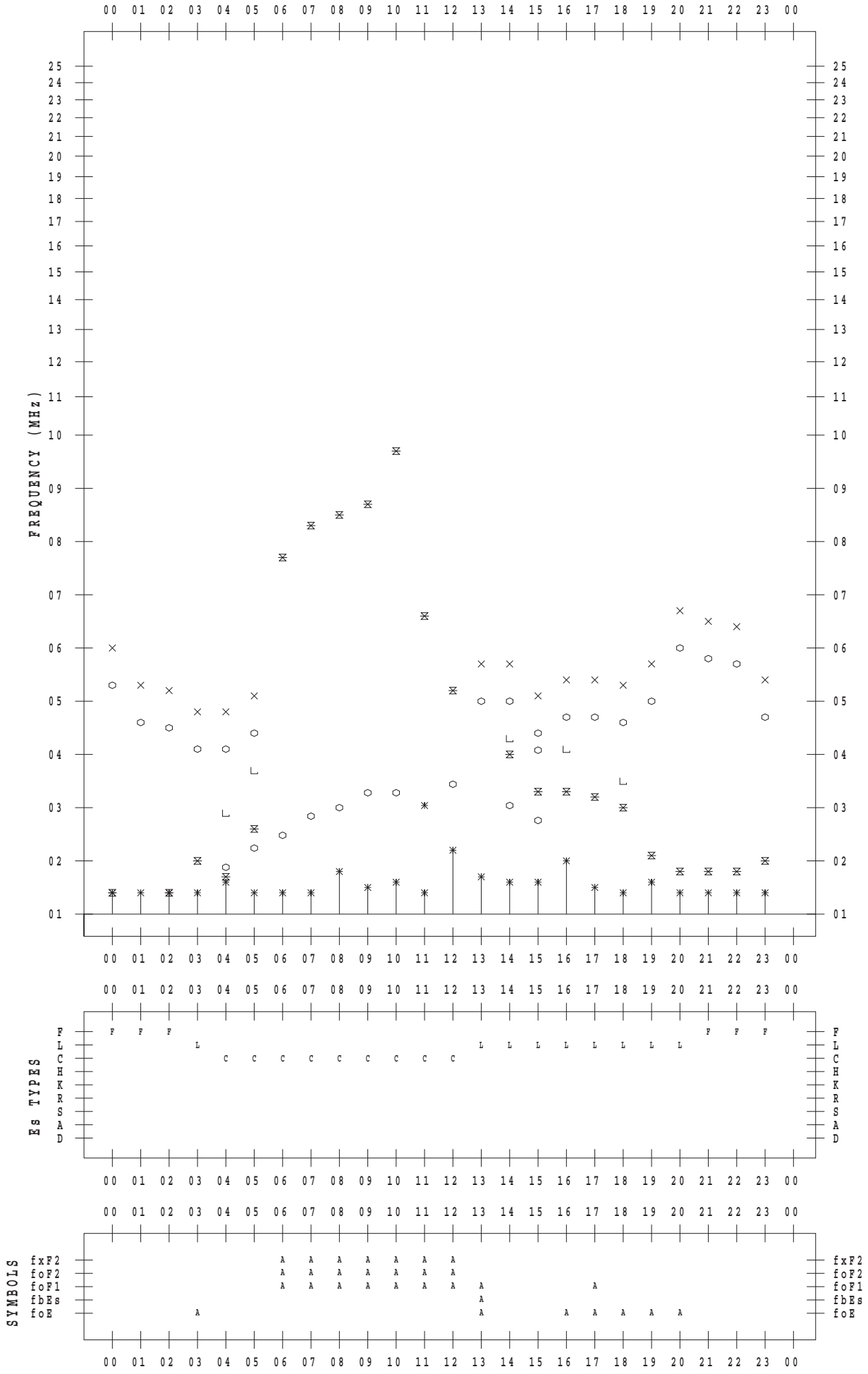
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/18

135 °E MEAN TIME



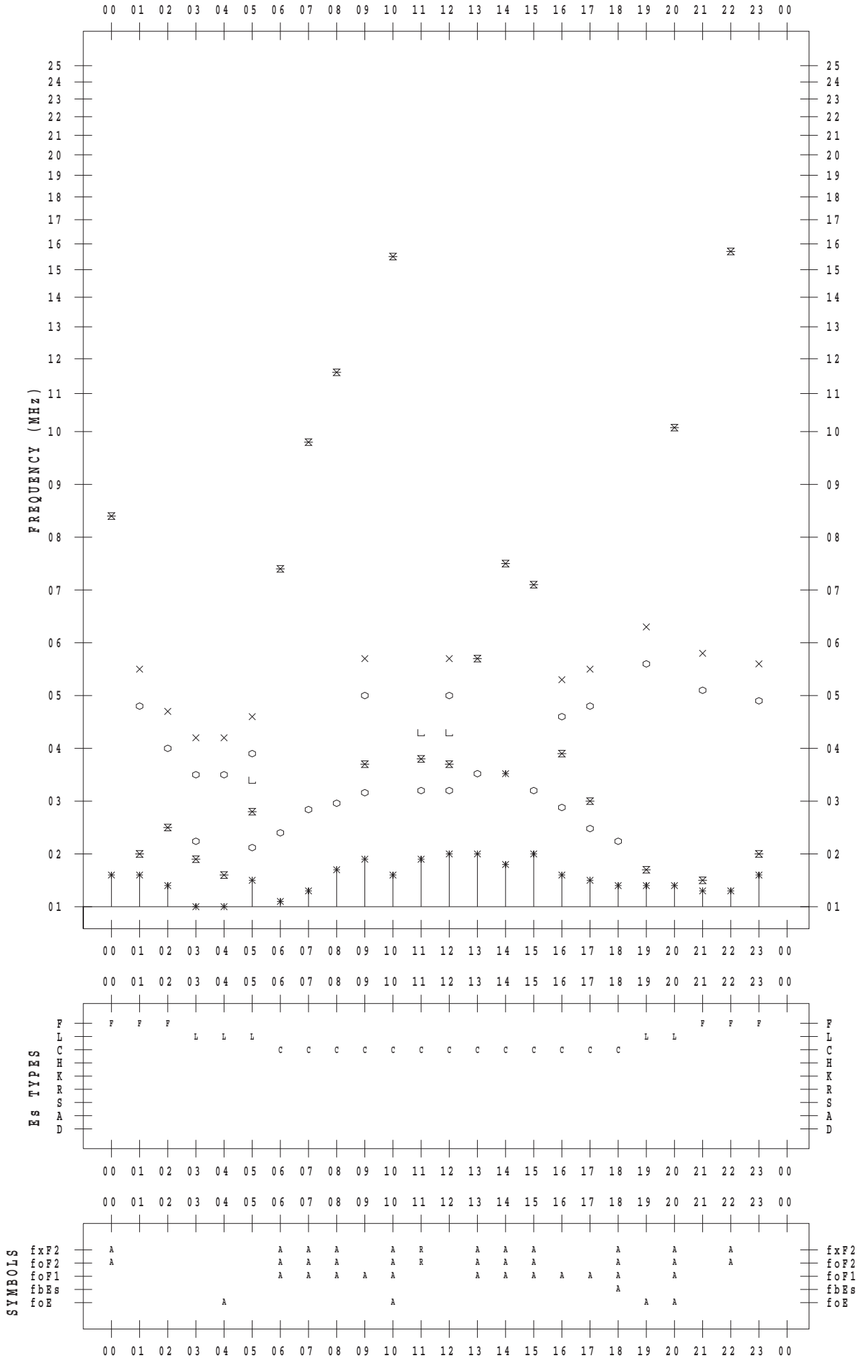
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/19

135 °E MEAN TIME



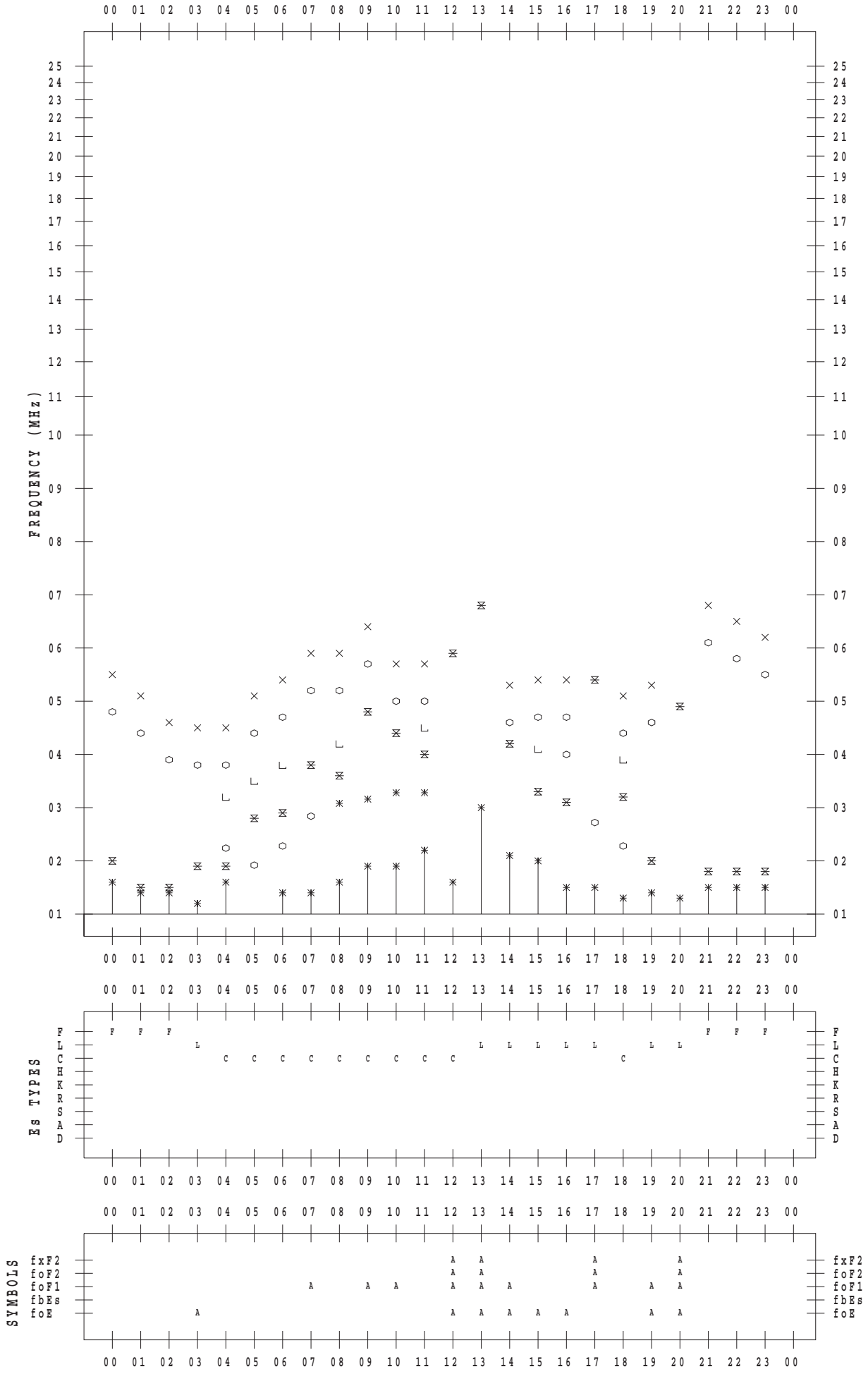
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/20

135 °E MEAN TIME



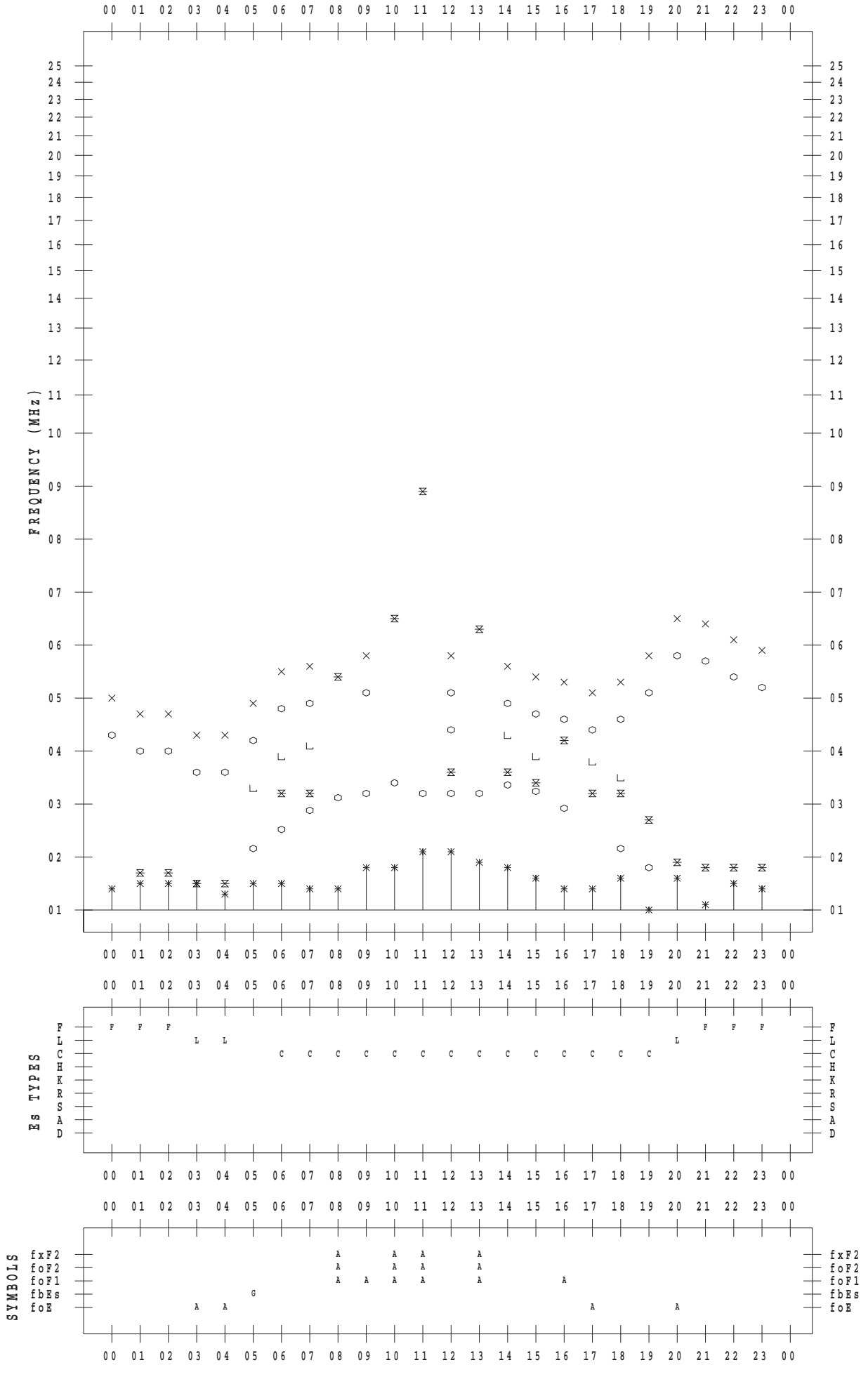
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/21

135 °E MEAN TIME



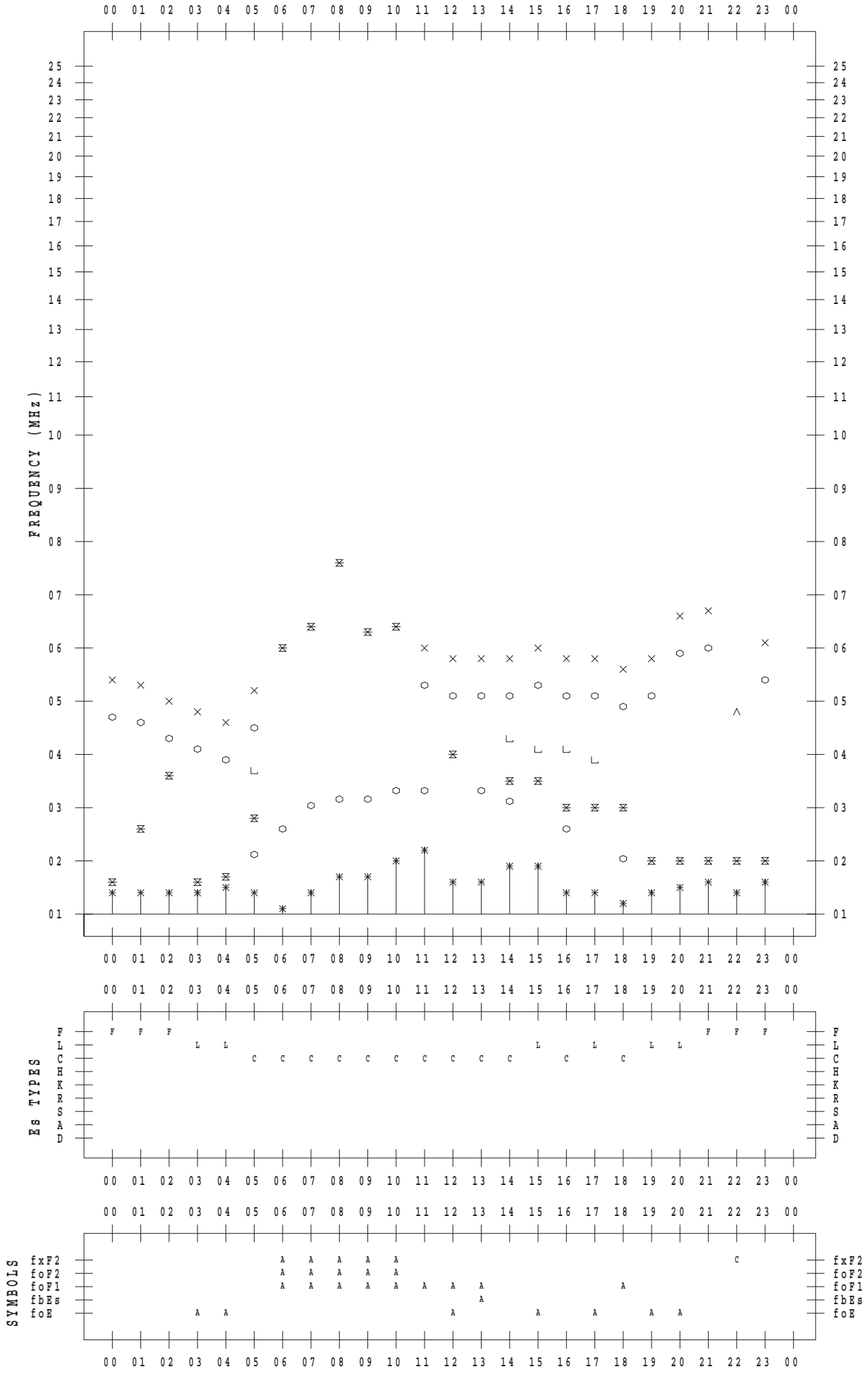
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/22

135 °E MEAN TIME



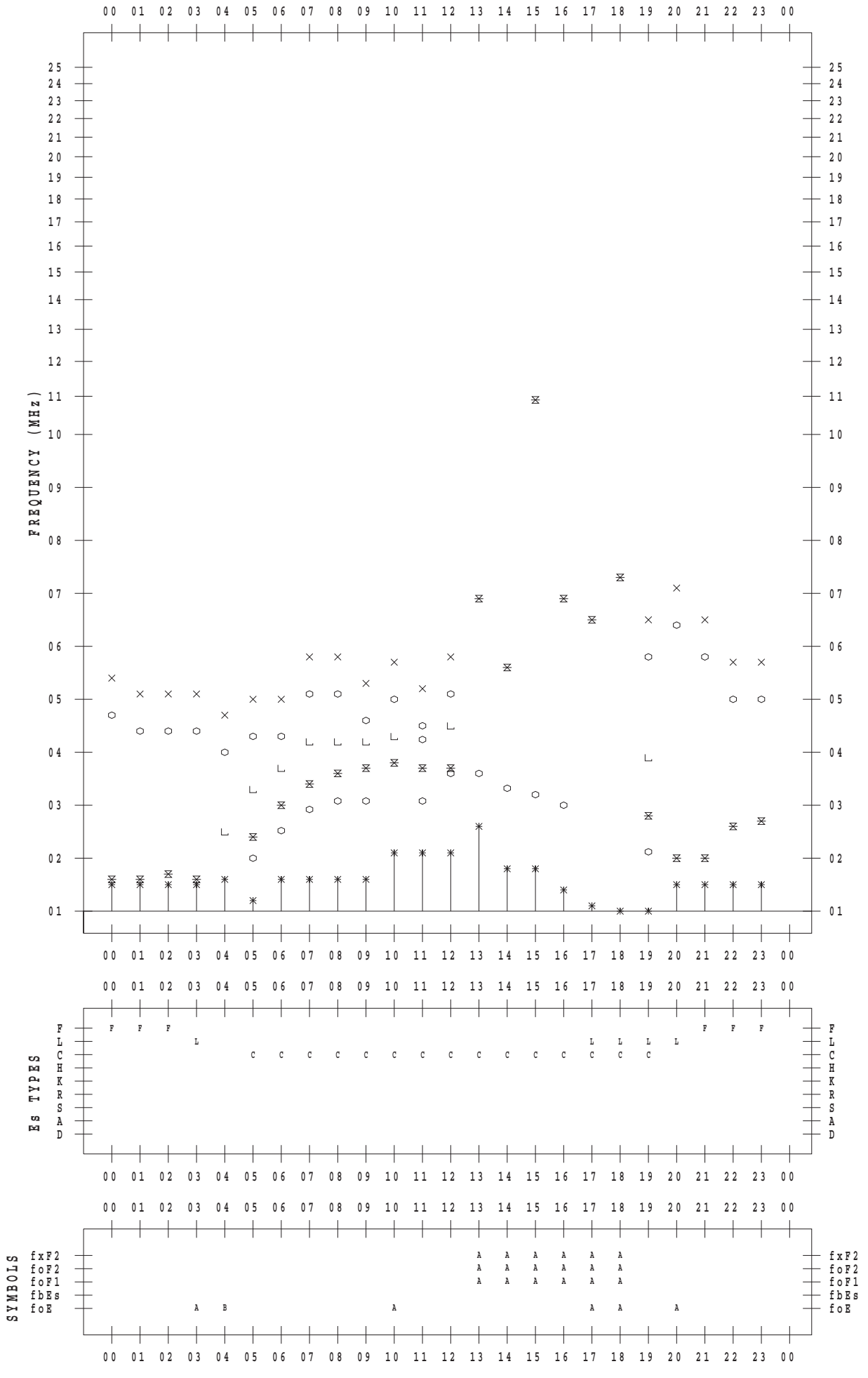
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/23

135 °E MEAN TIME



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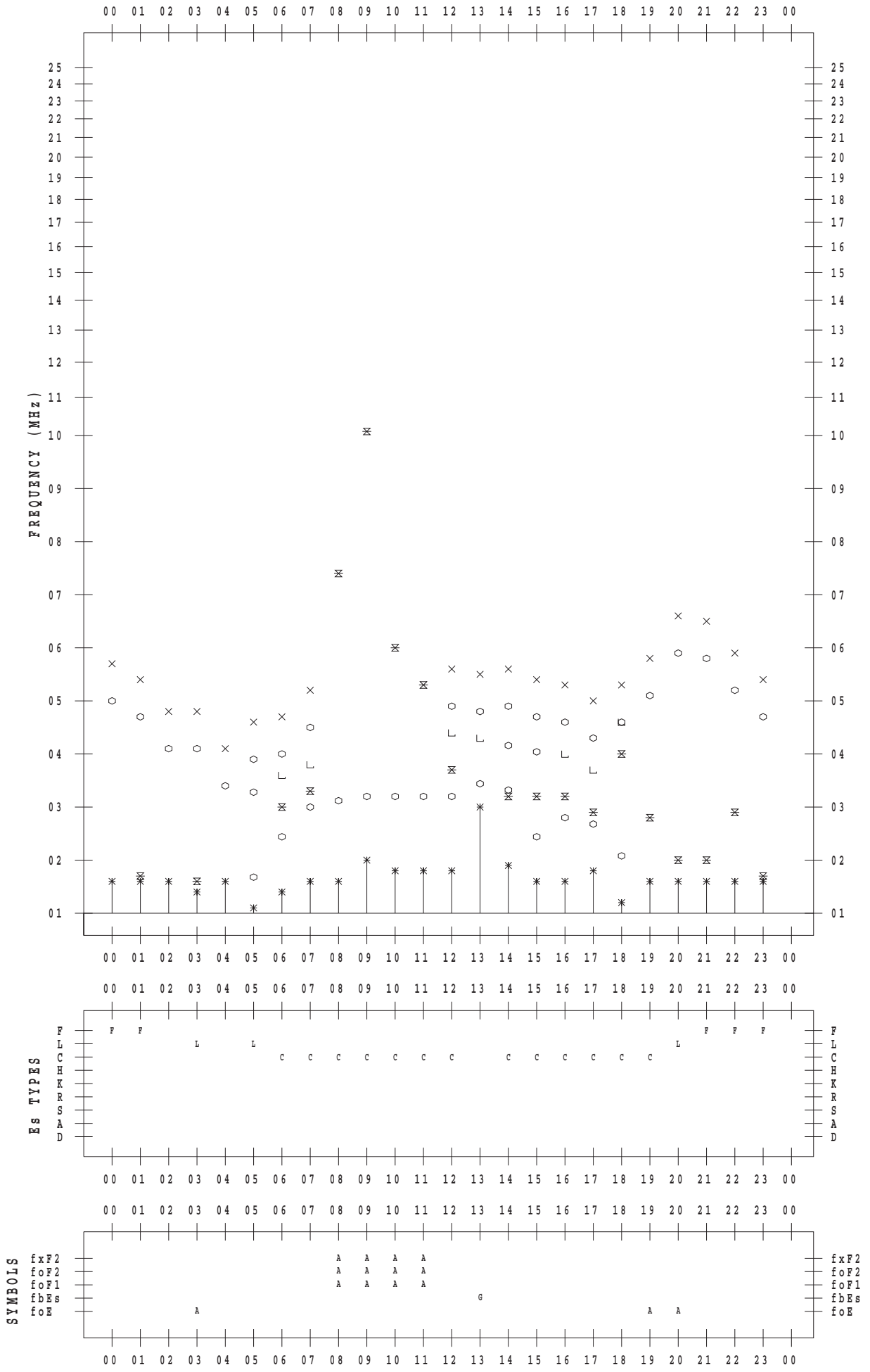
SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/24

135 °E MEAN TIME



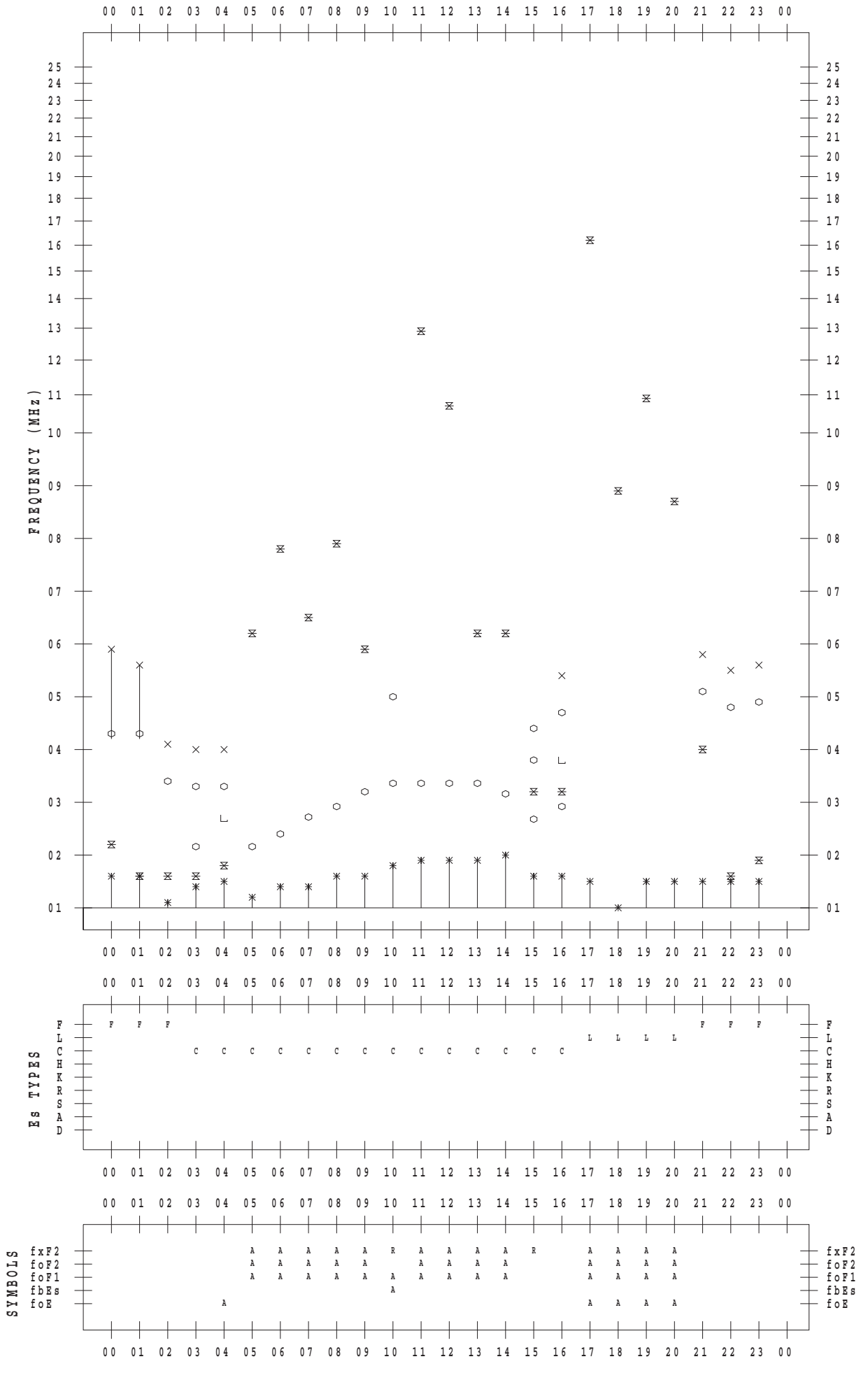
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/25

135 °E MEAN TIME



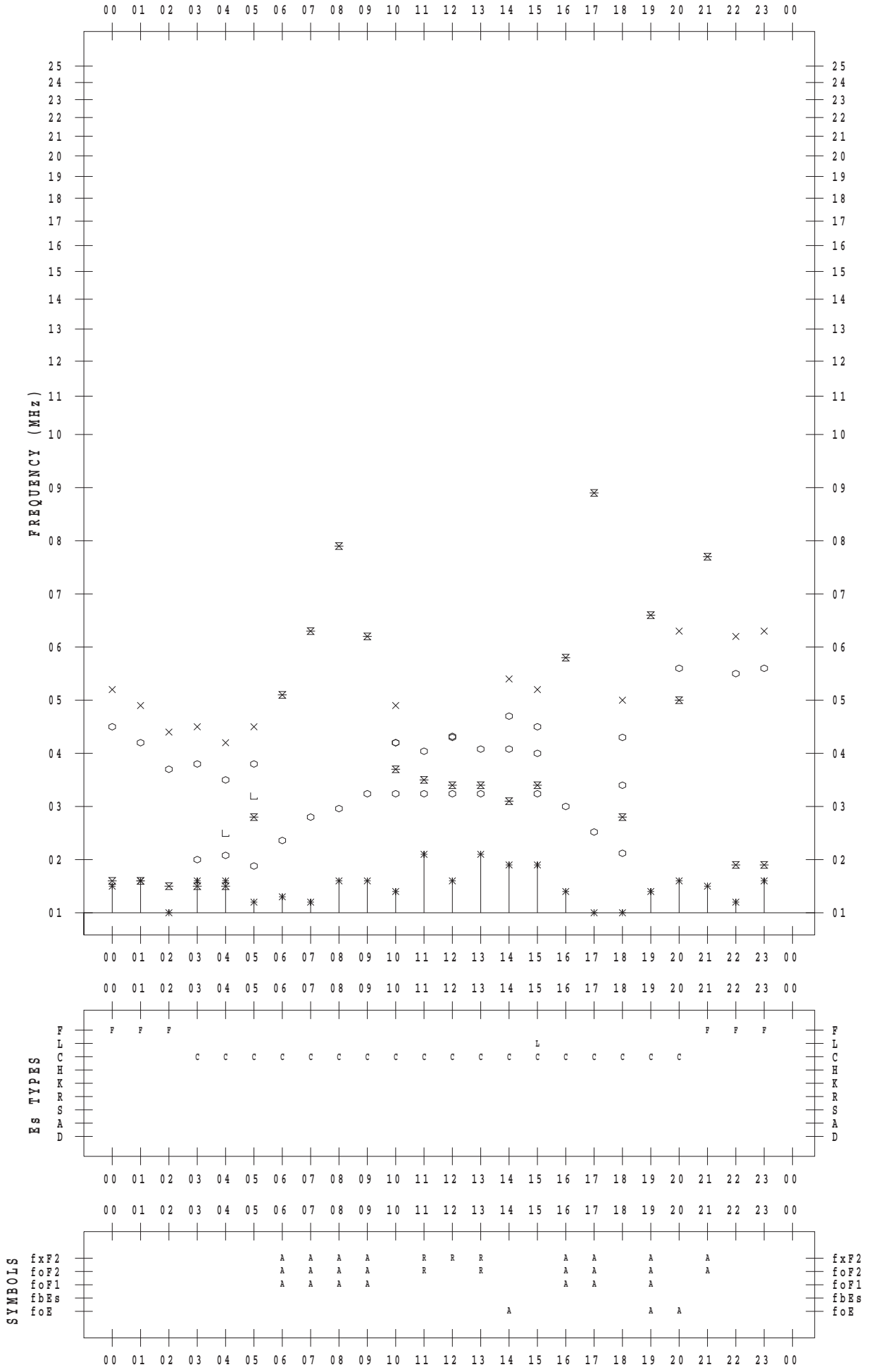
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/26

135 °E MEAN TIME



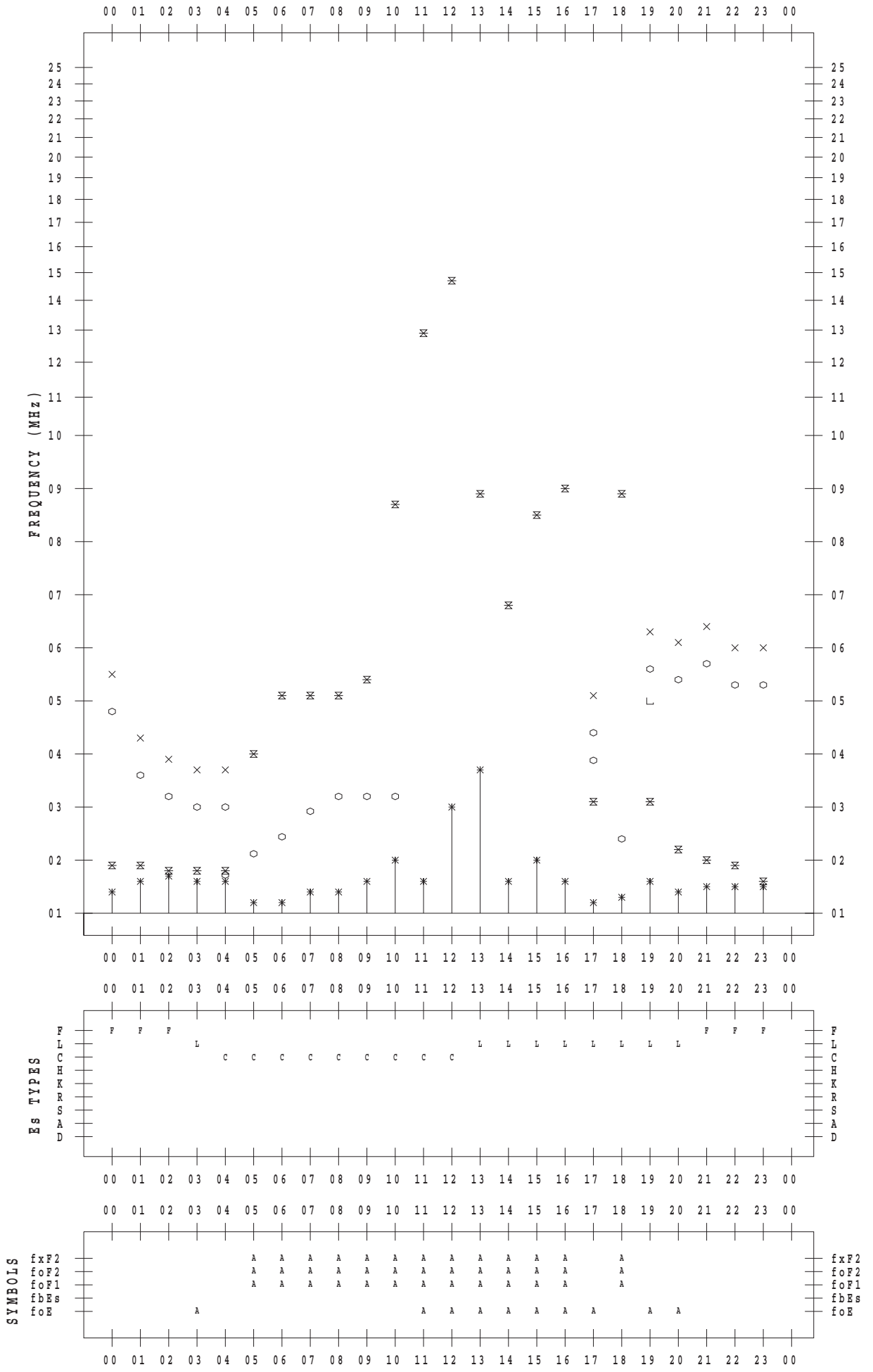
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/27

135 °E MEAN TIME



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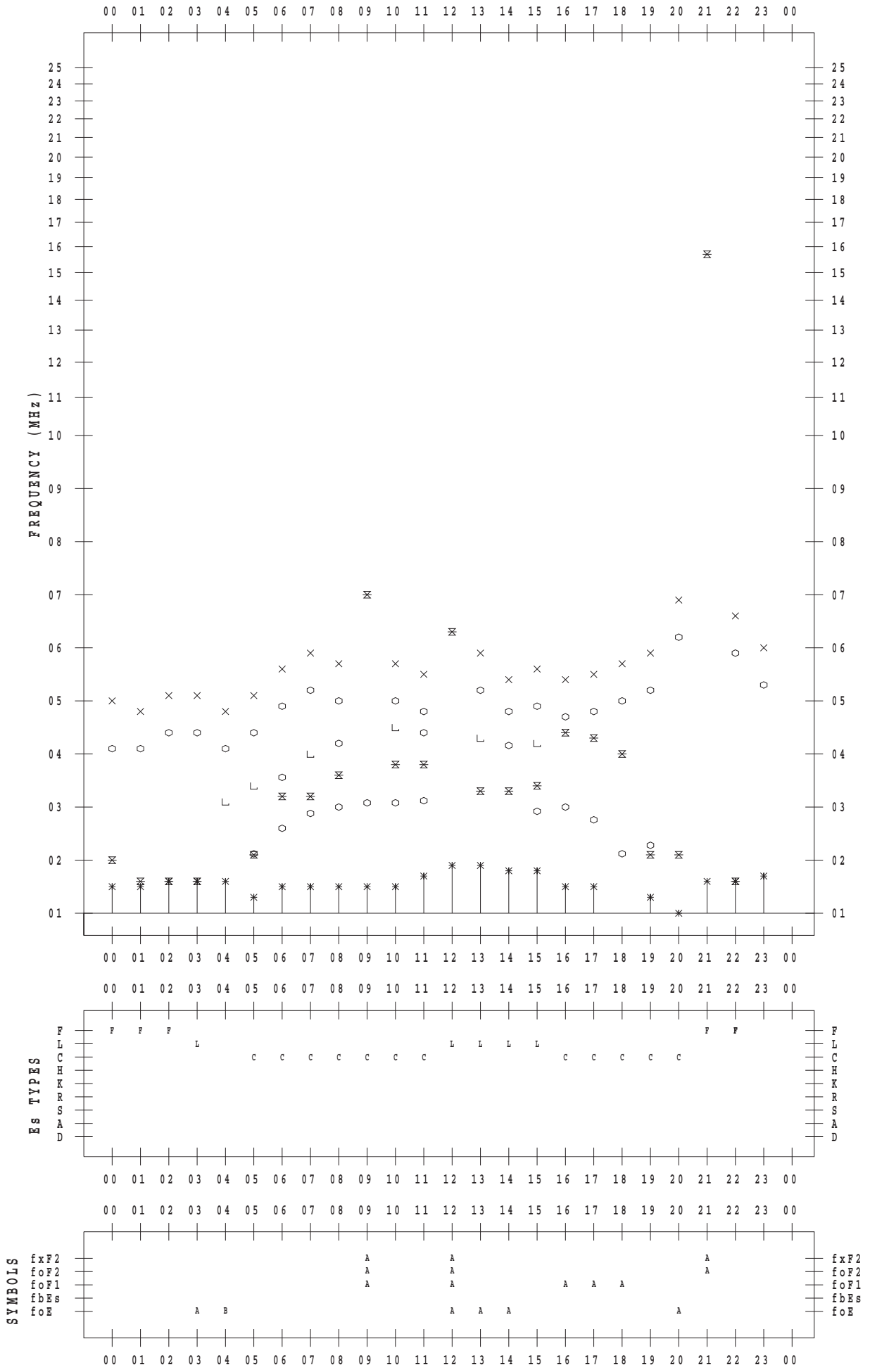
SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/28

135 °E MEAN TIME



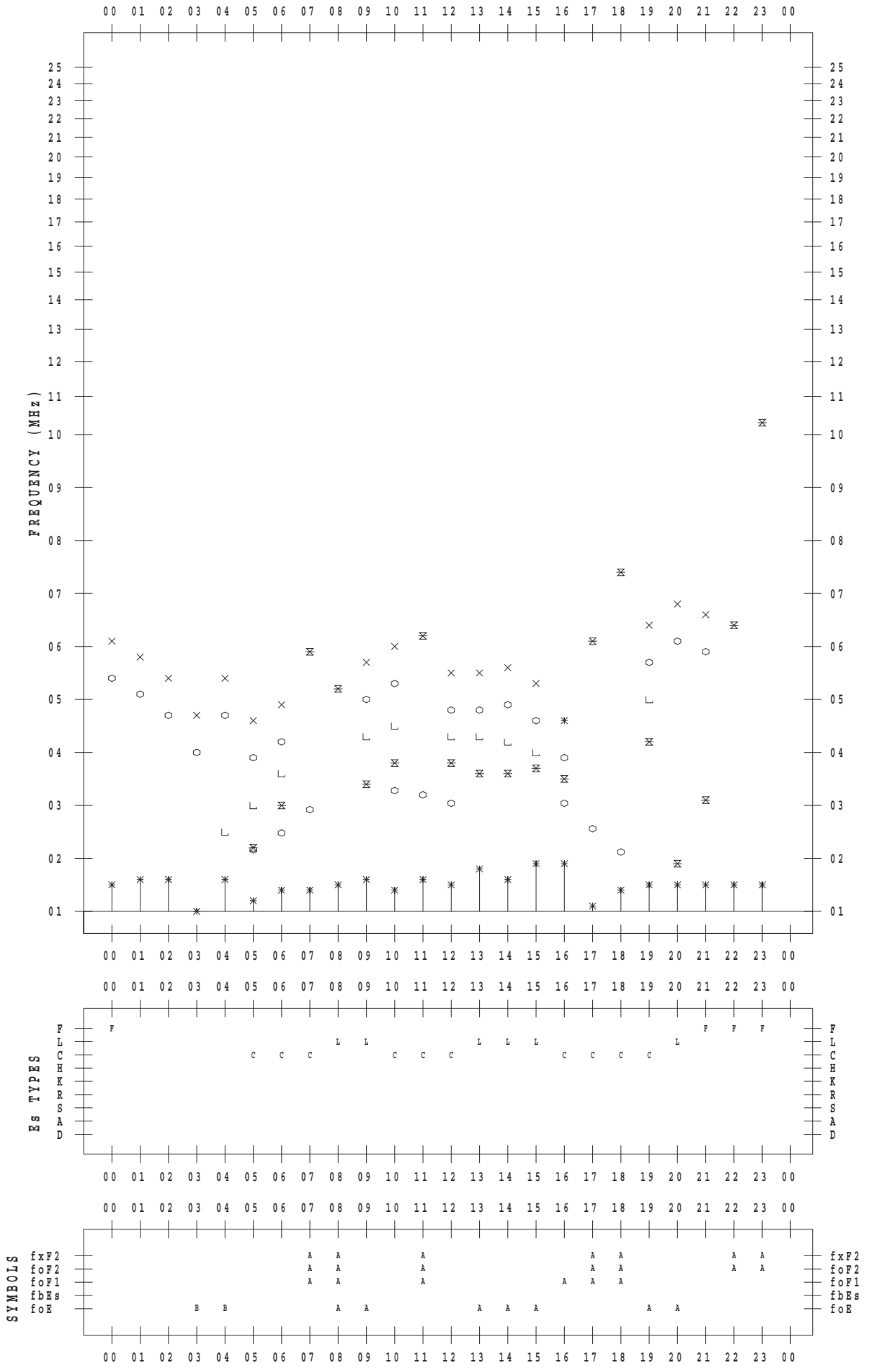
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/29

135 °E MEAN TIME



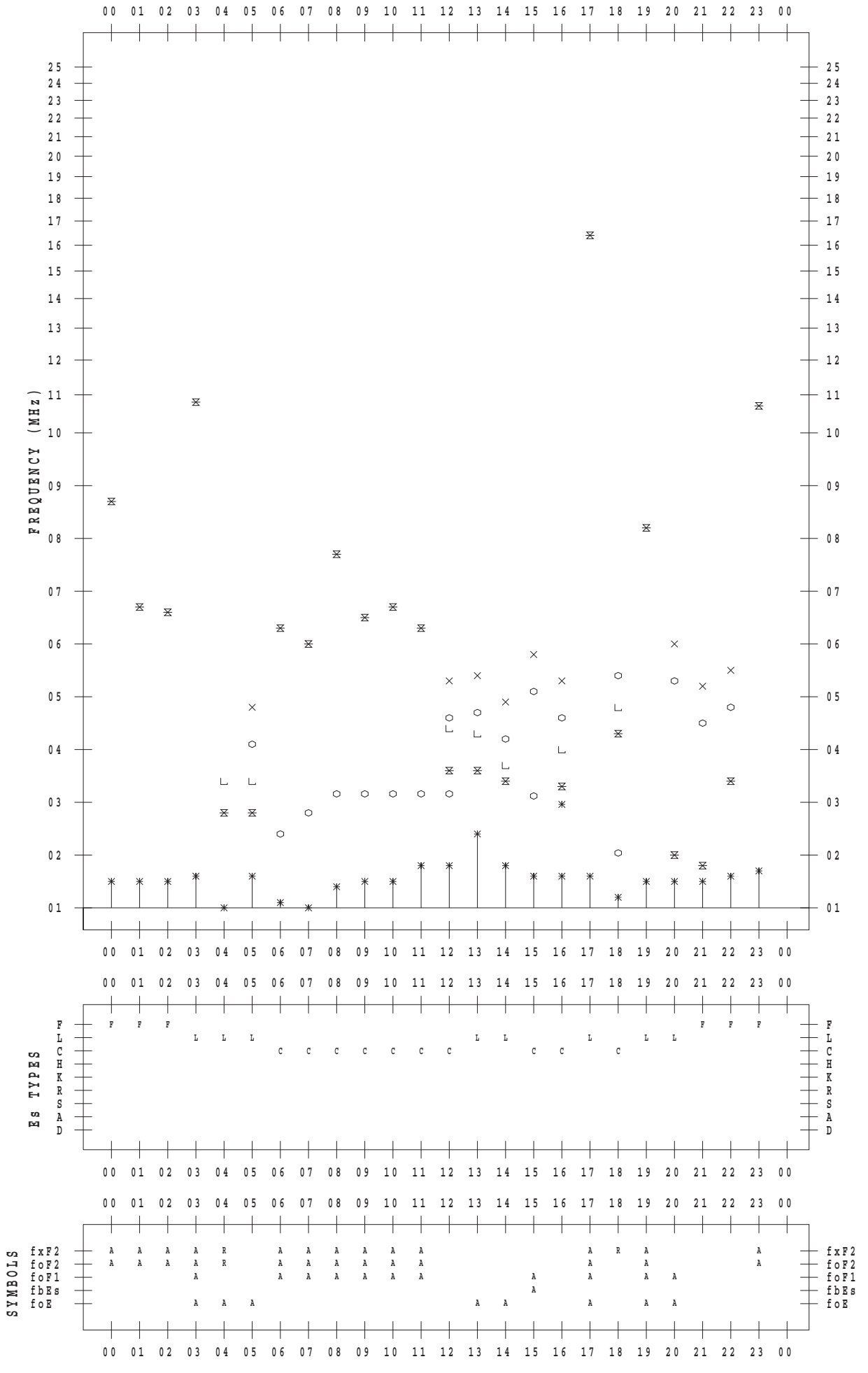
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2017/ 6/30

135 °E MEAN TIME



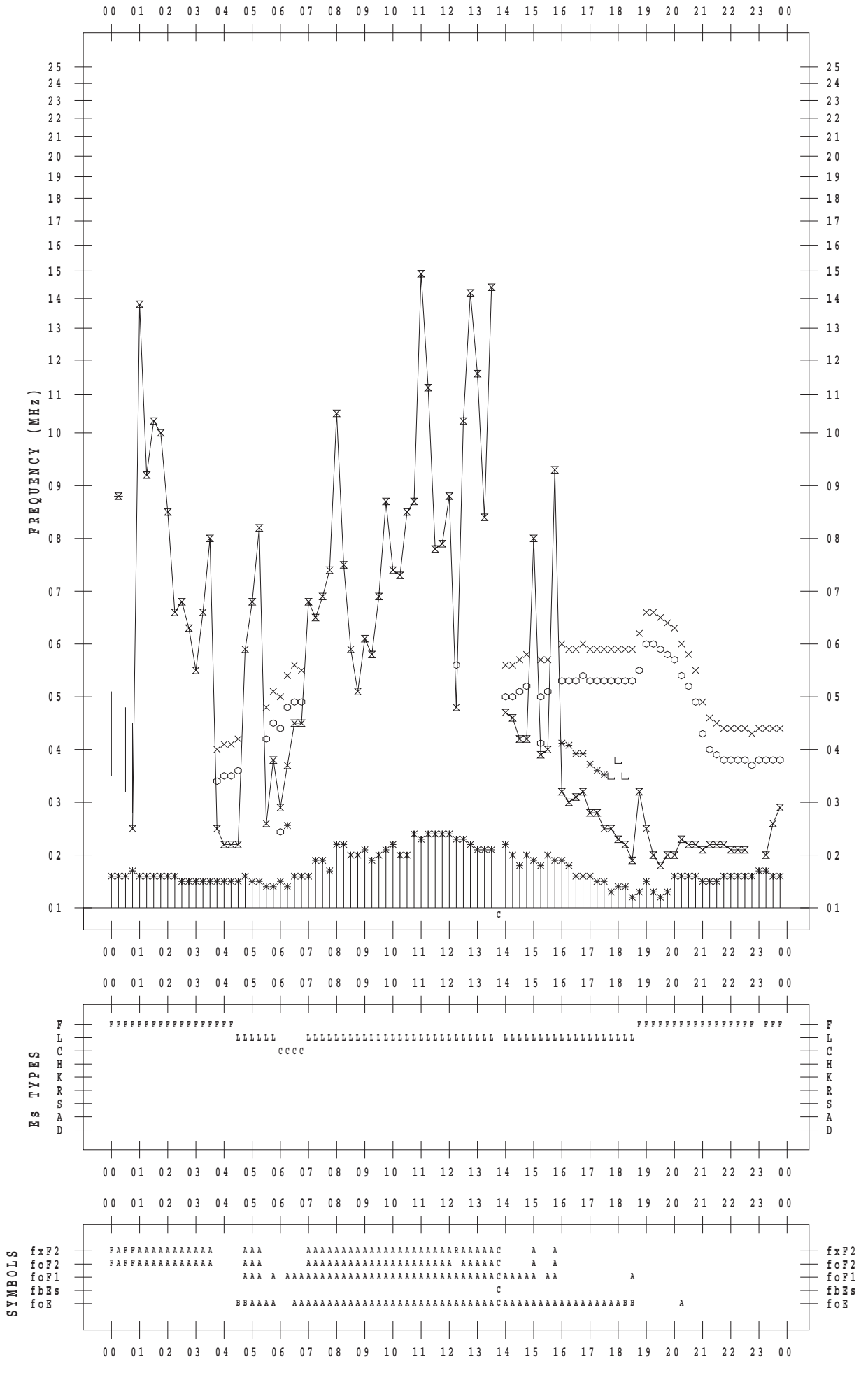
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/ 1

135 °E MEAN TIME



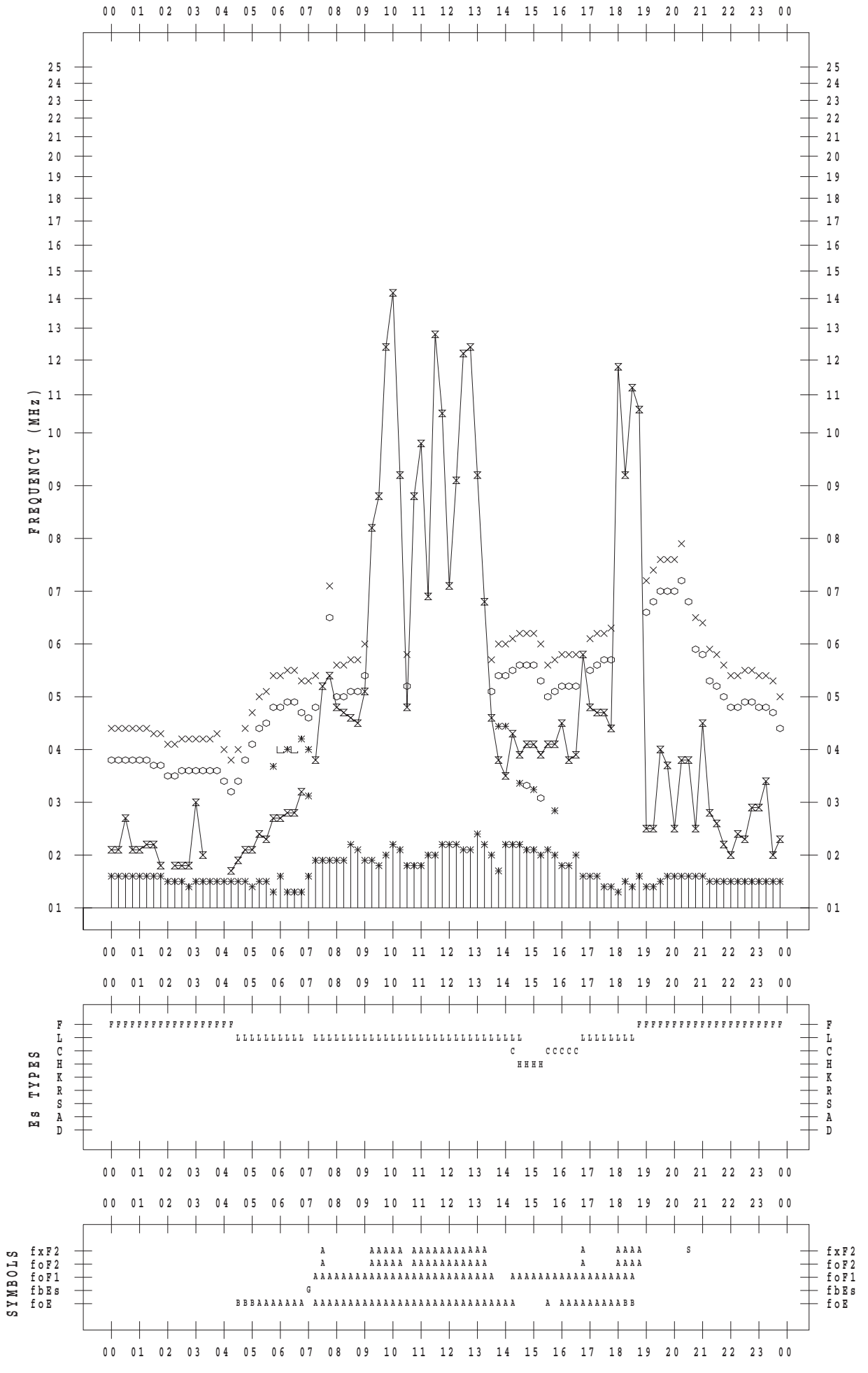
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/ 2

135 °E MEAN TIME



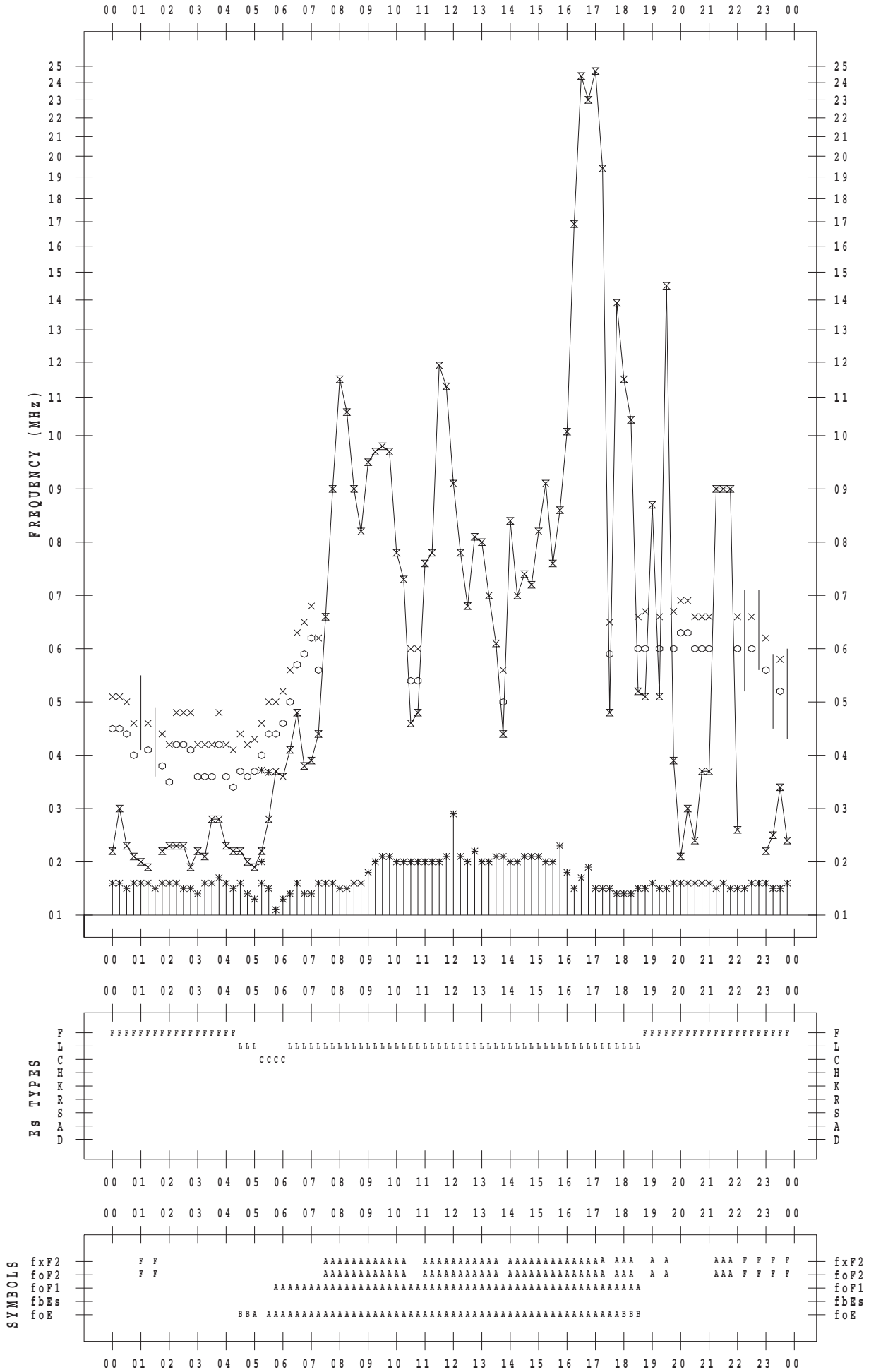
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/ 3

135 °E MEAN TIME

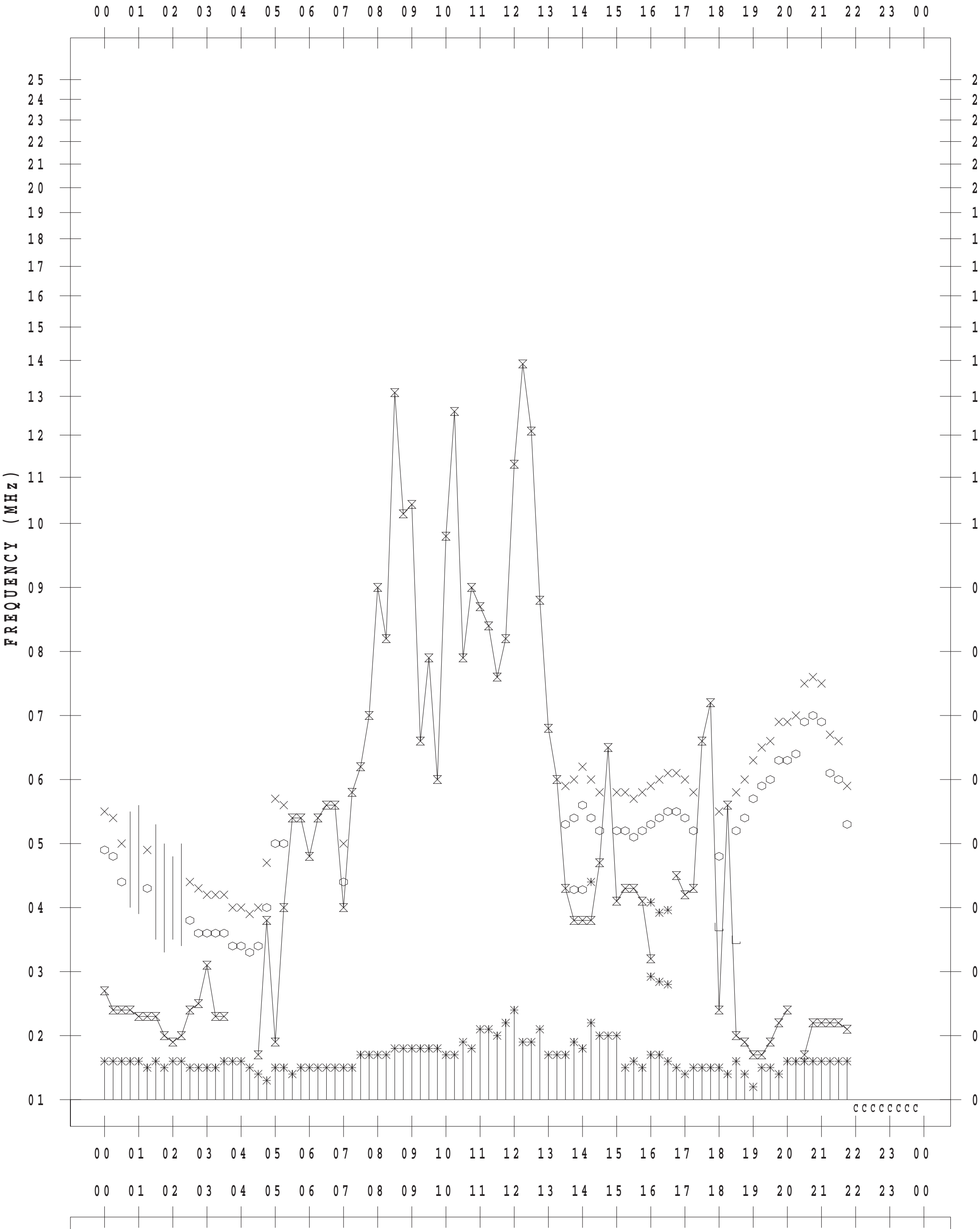


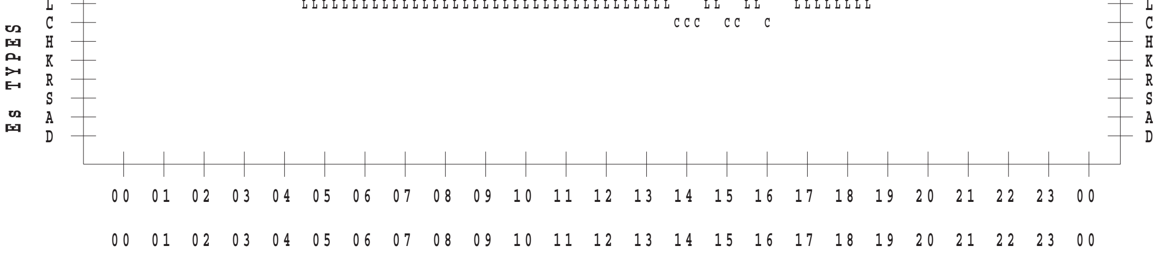
f-PLOT DATA

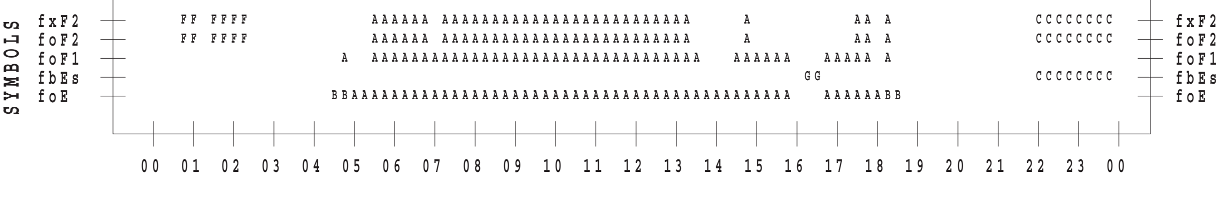
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2017/ 6/ 4

135 °E MEAN TIME







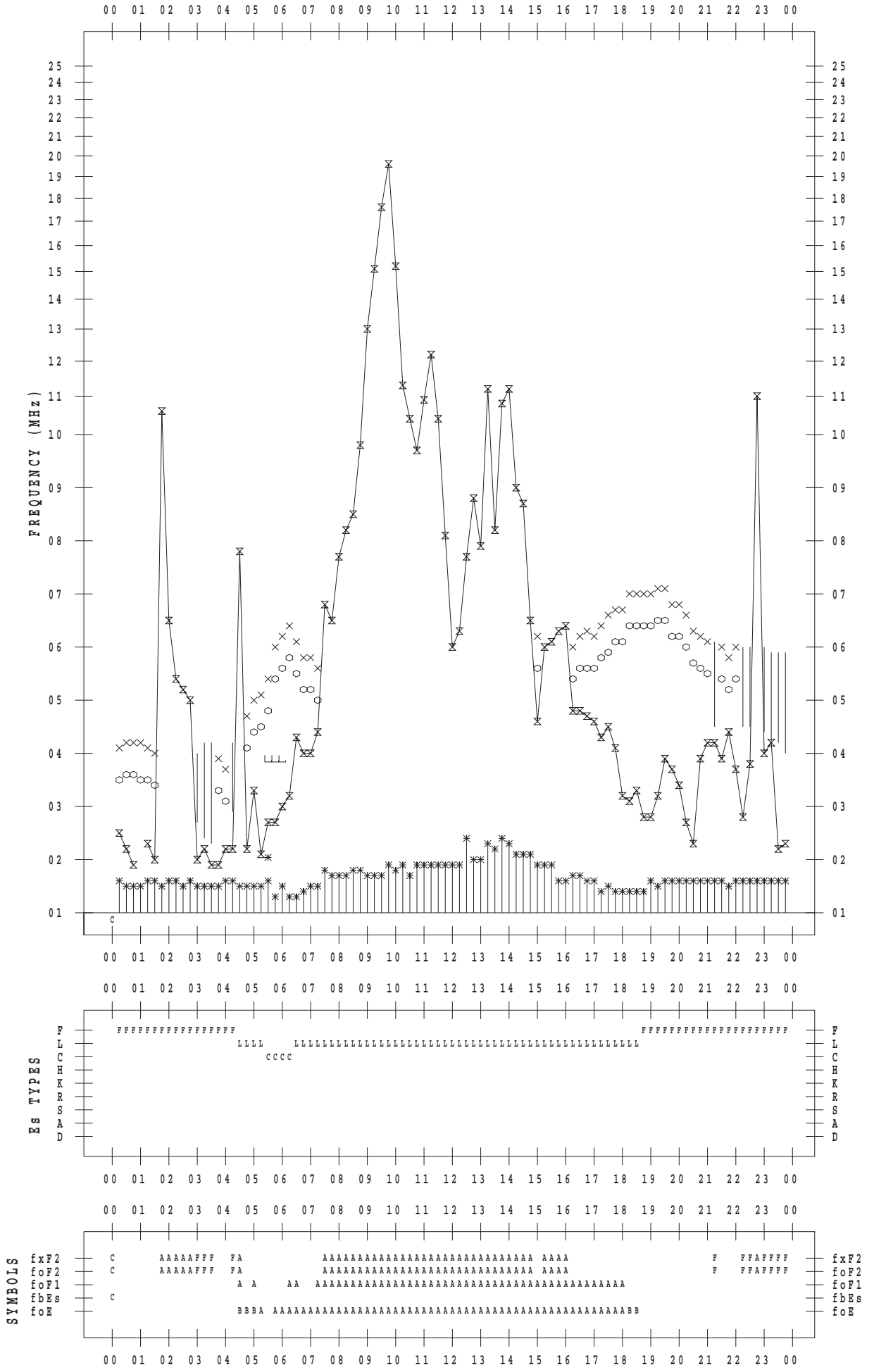
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/ 5

135 °E MEAN TIME



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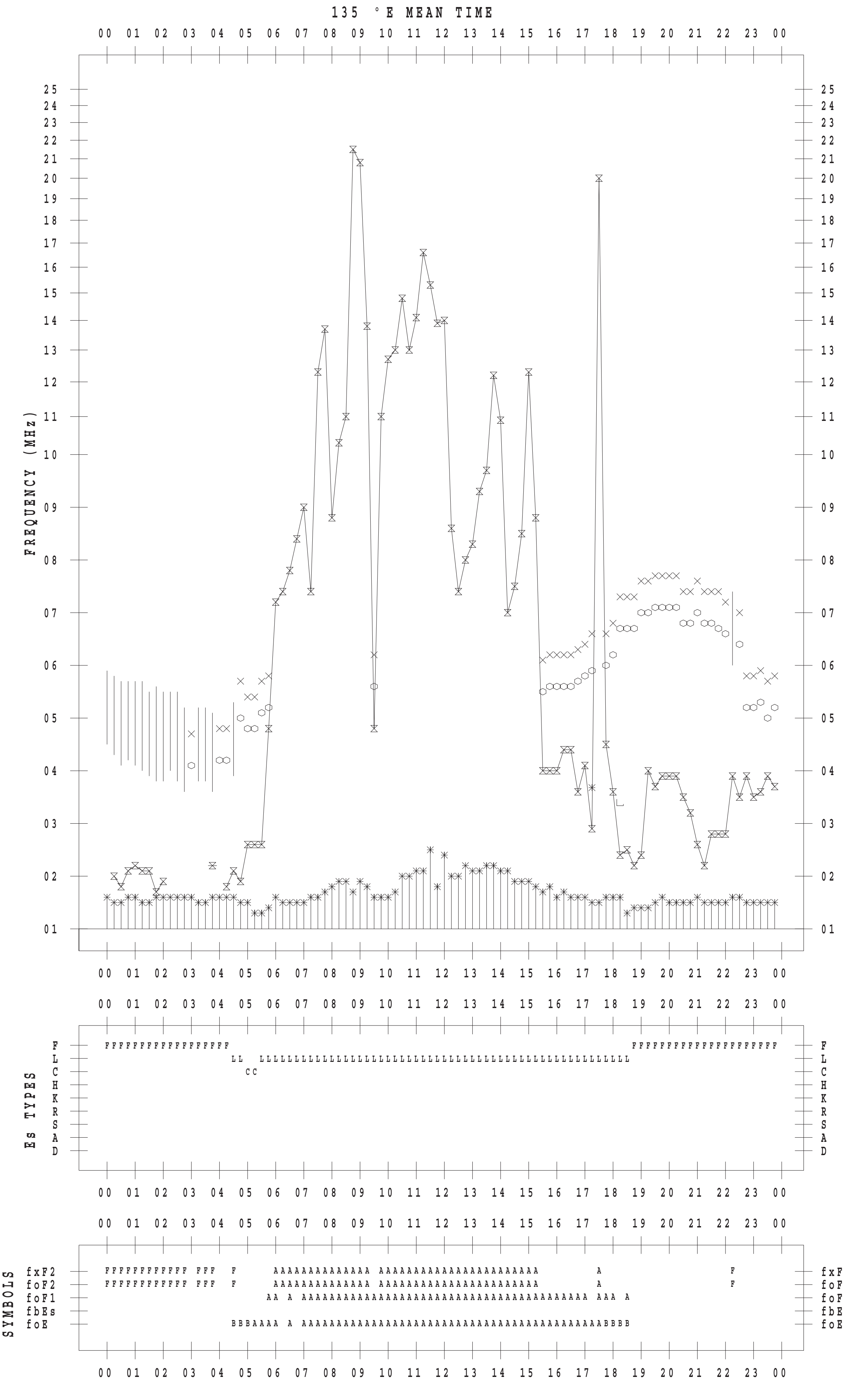
SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/ 6



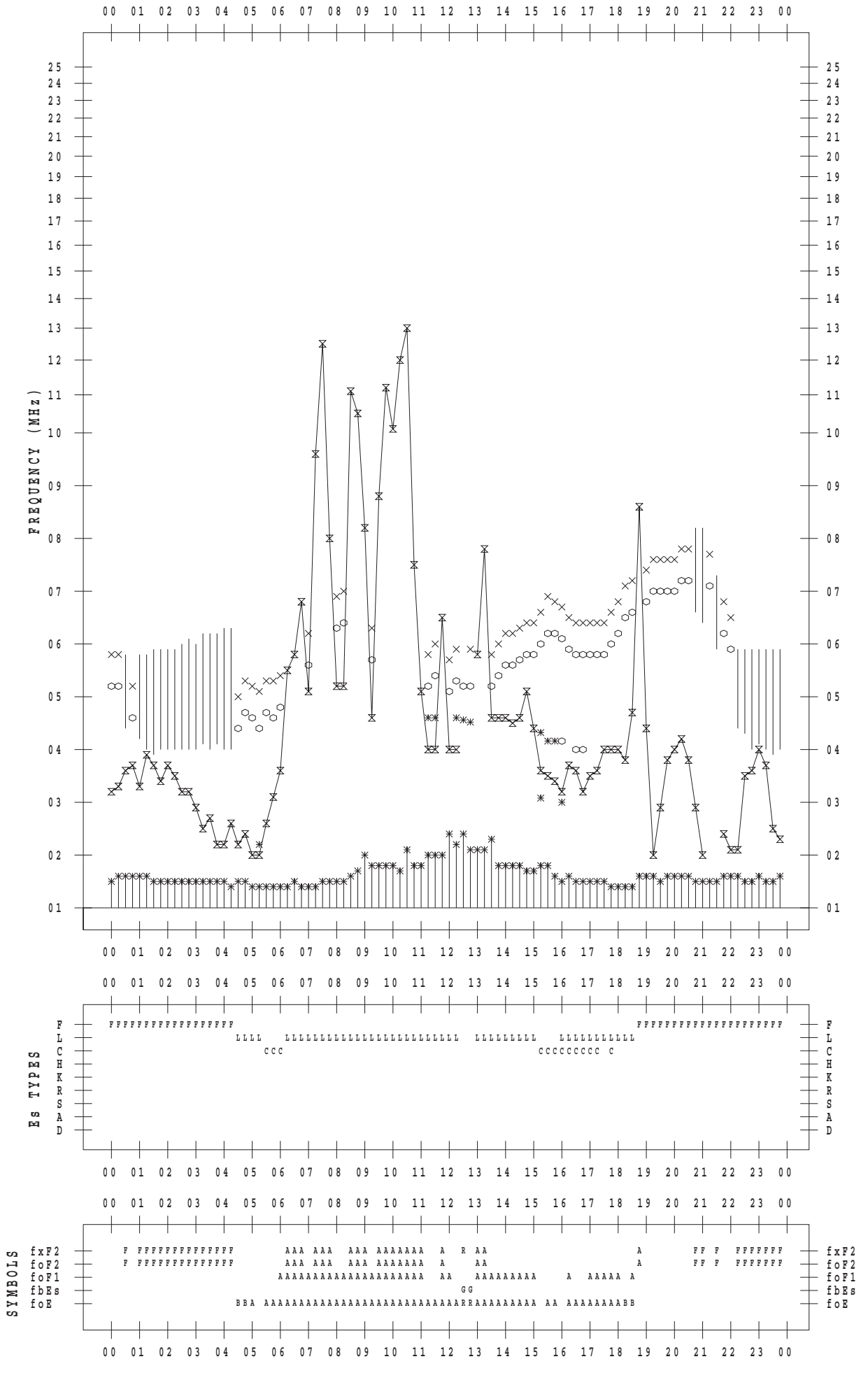
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/ 7

135 °E MEAN TIME



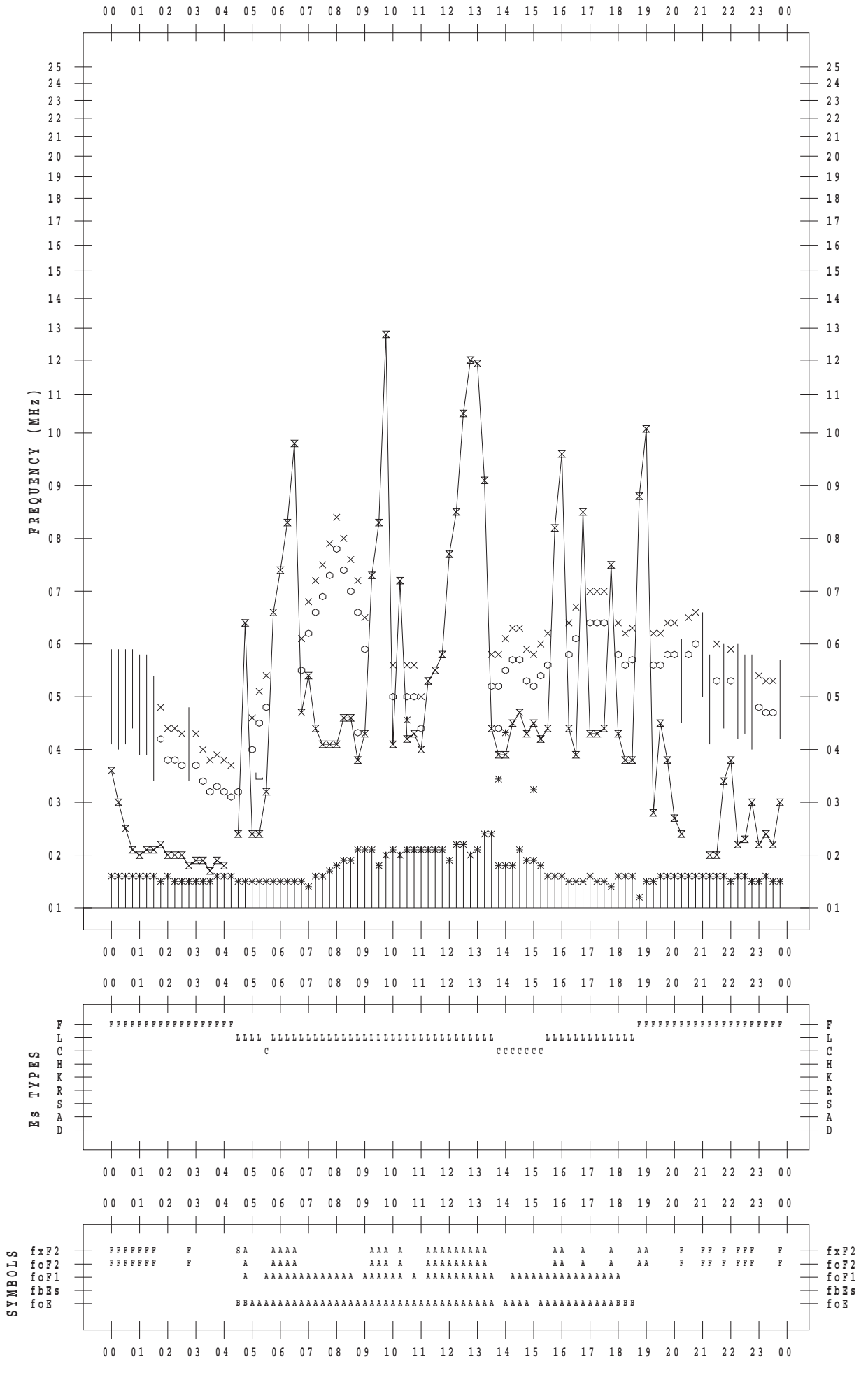
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/ 8

135 °E MEAN TIME



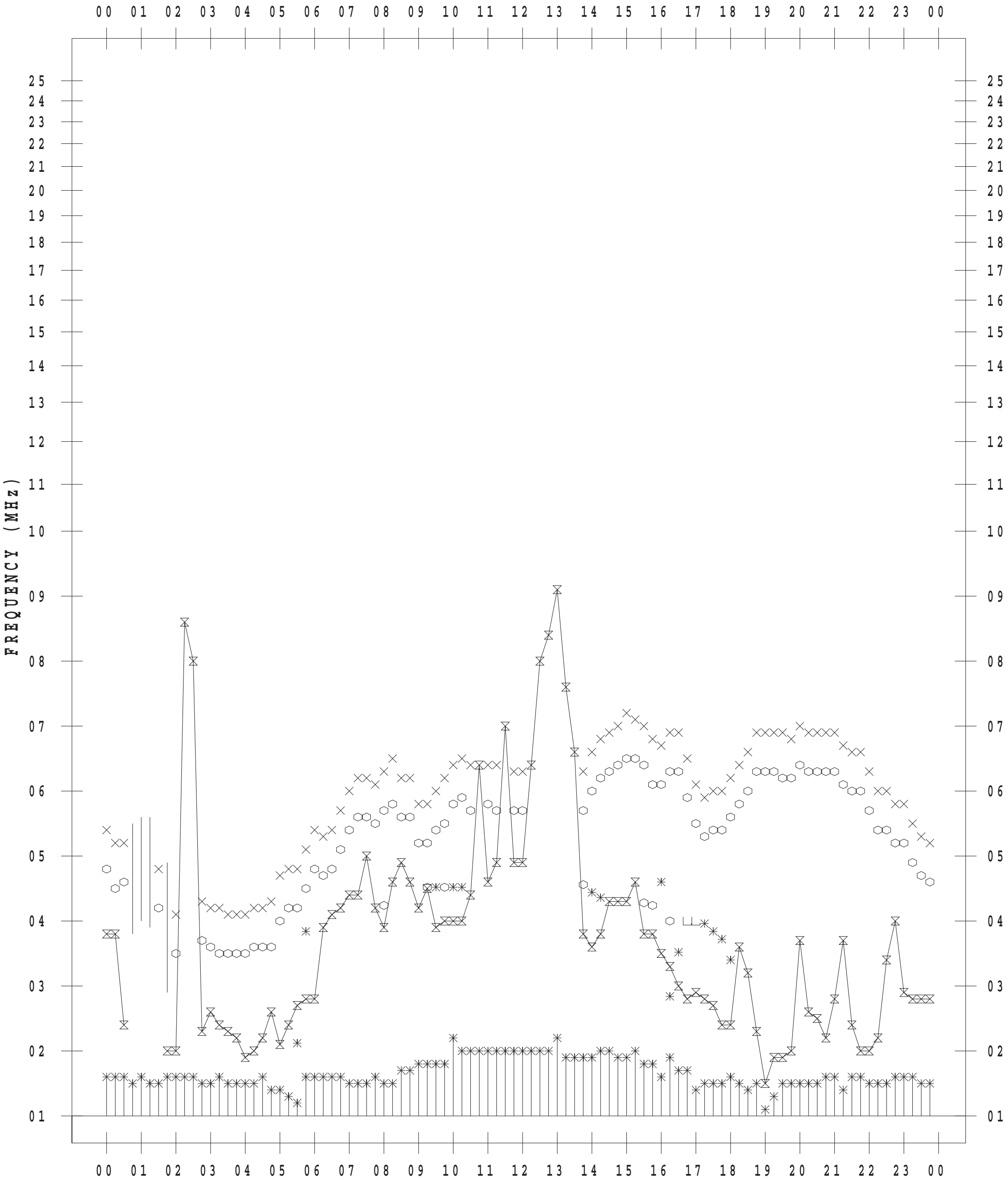
f-PLOT DATA

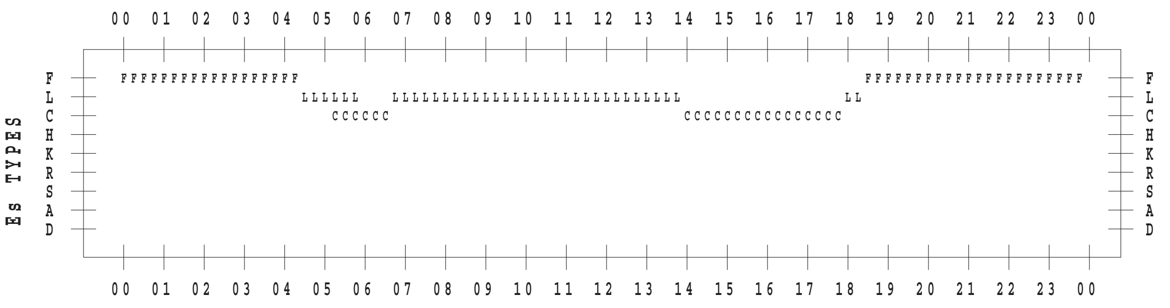
SCALER : I.NISHIMUTA

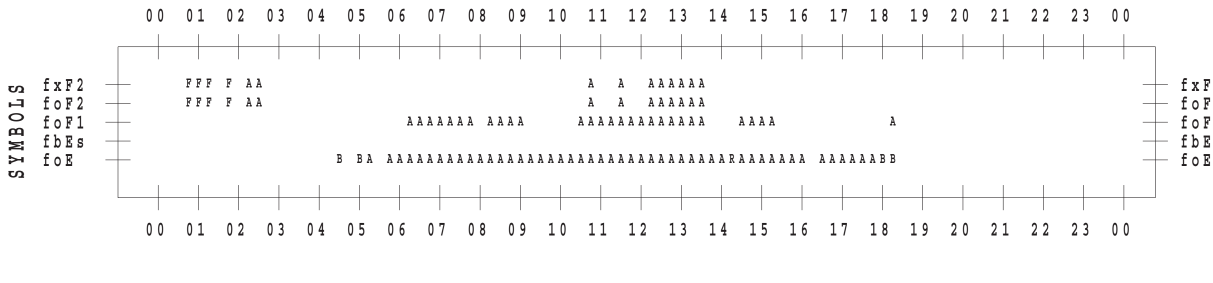
STATION : Kokubunji

DATE : 2017/ 6/ 9

135 °E MEAN TIME







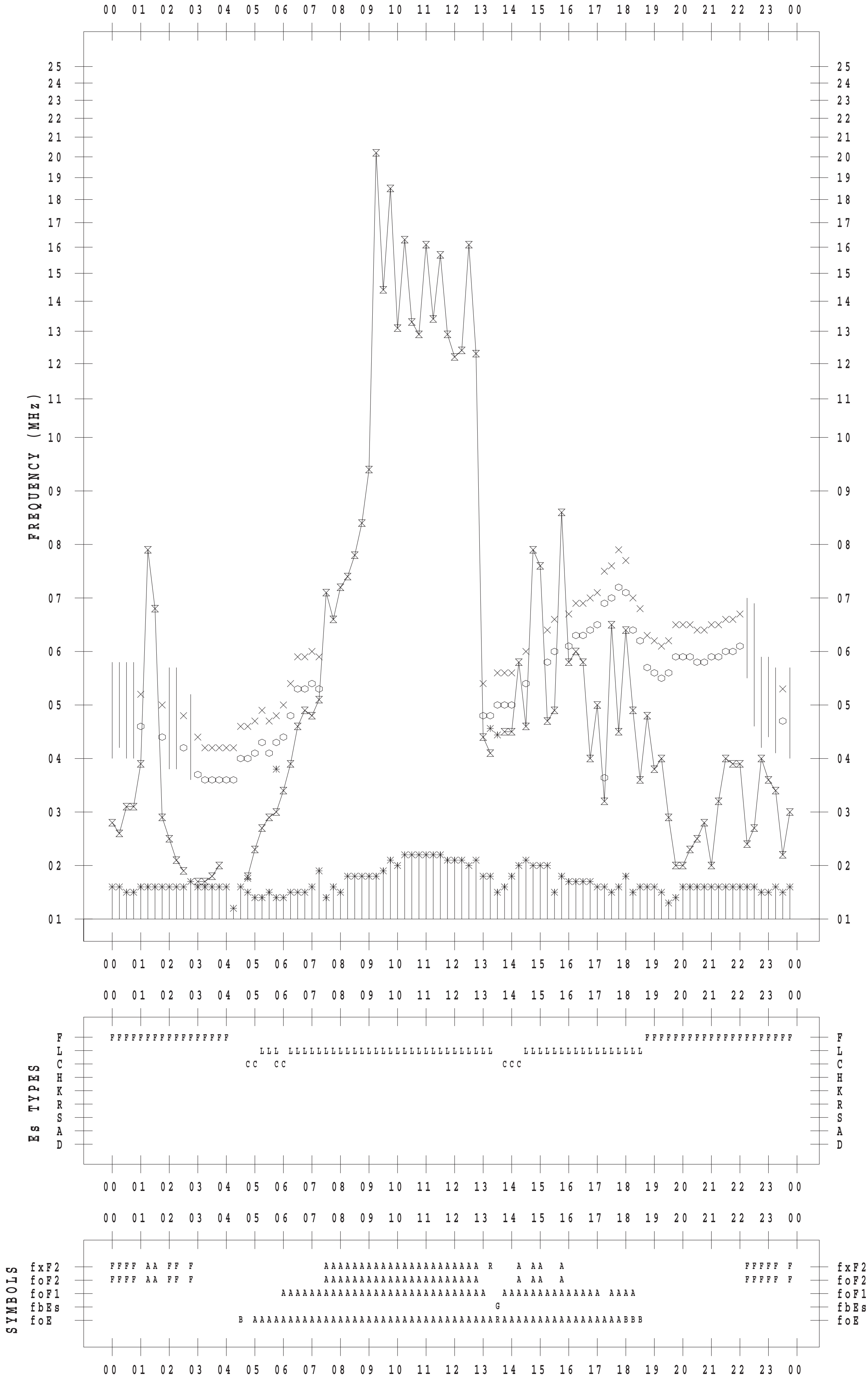
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/10

135 °E MEAN TIME



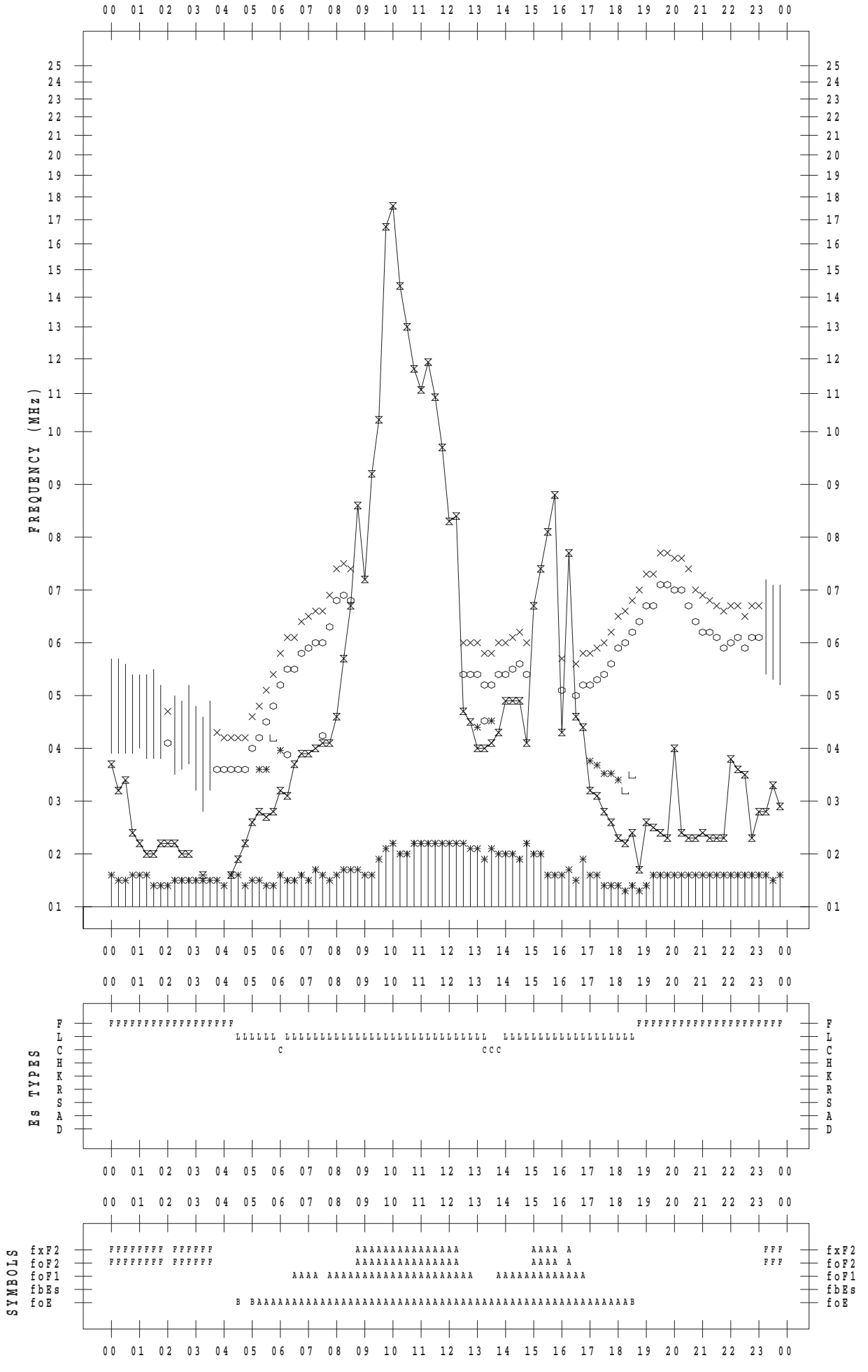
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/11

135 °E MEAN TIME



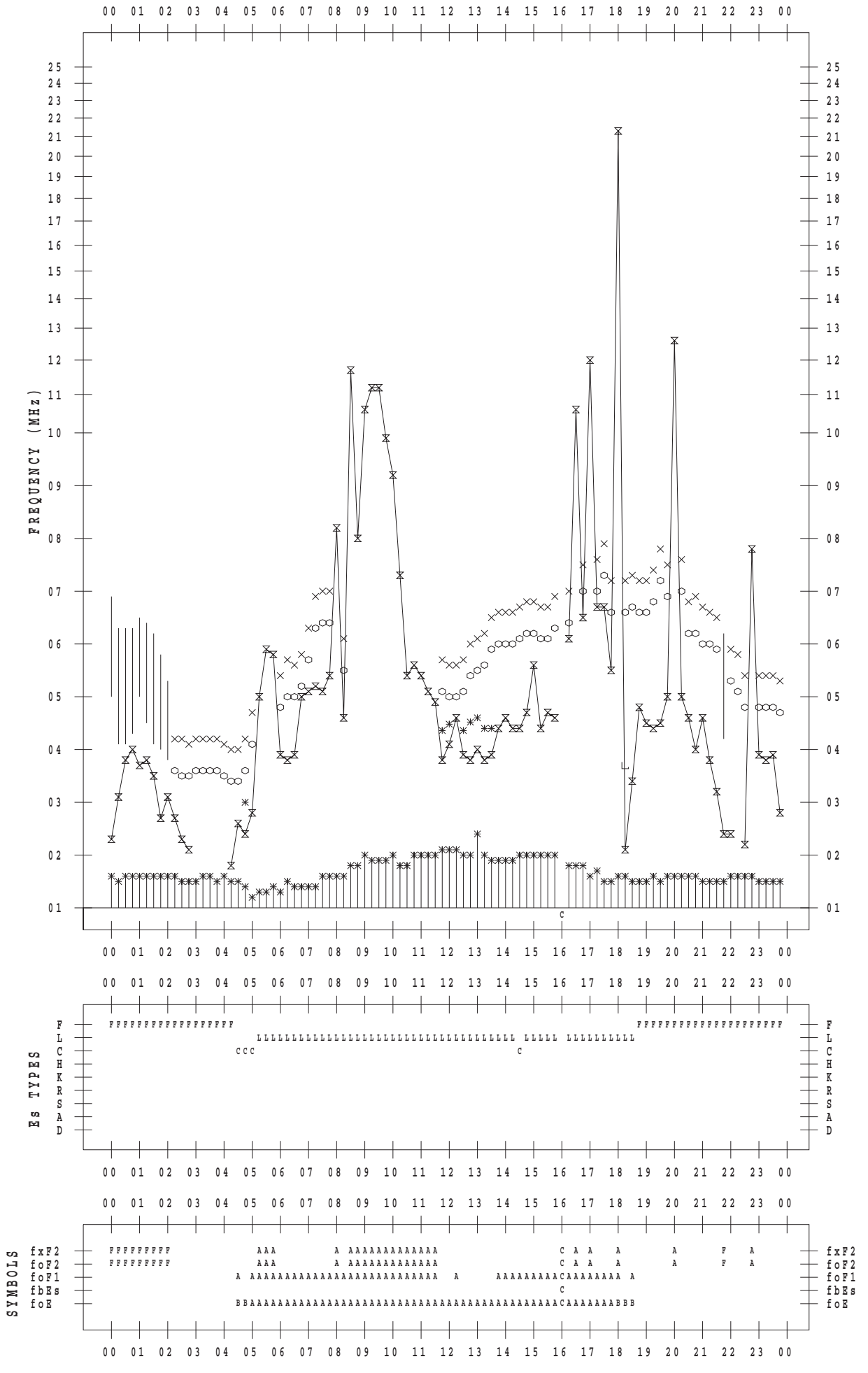
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/12

135 °E MEAN TIME



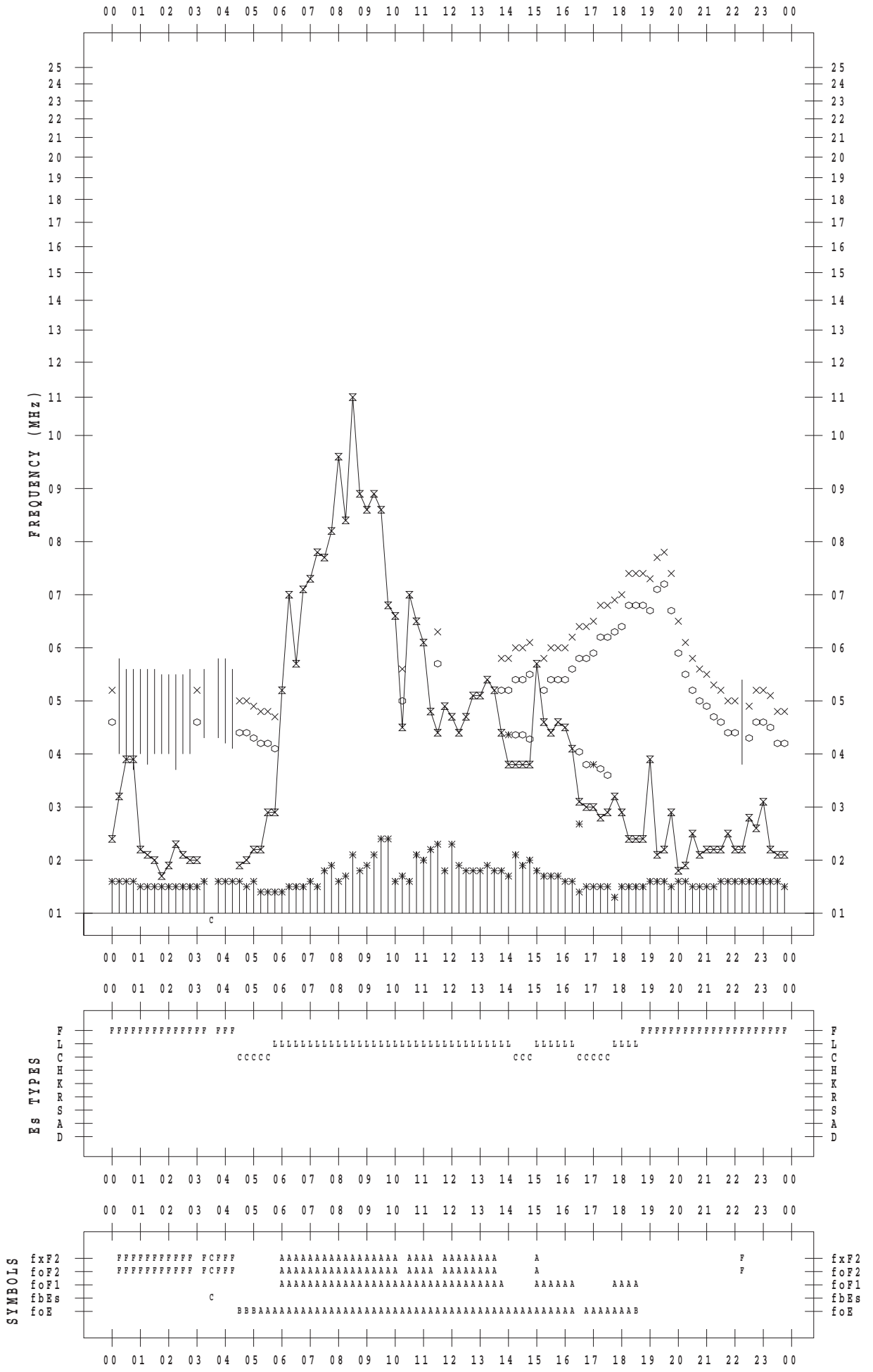
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/13

135 °E MEAN TIME



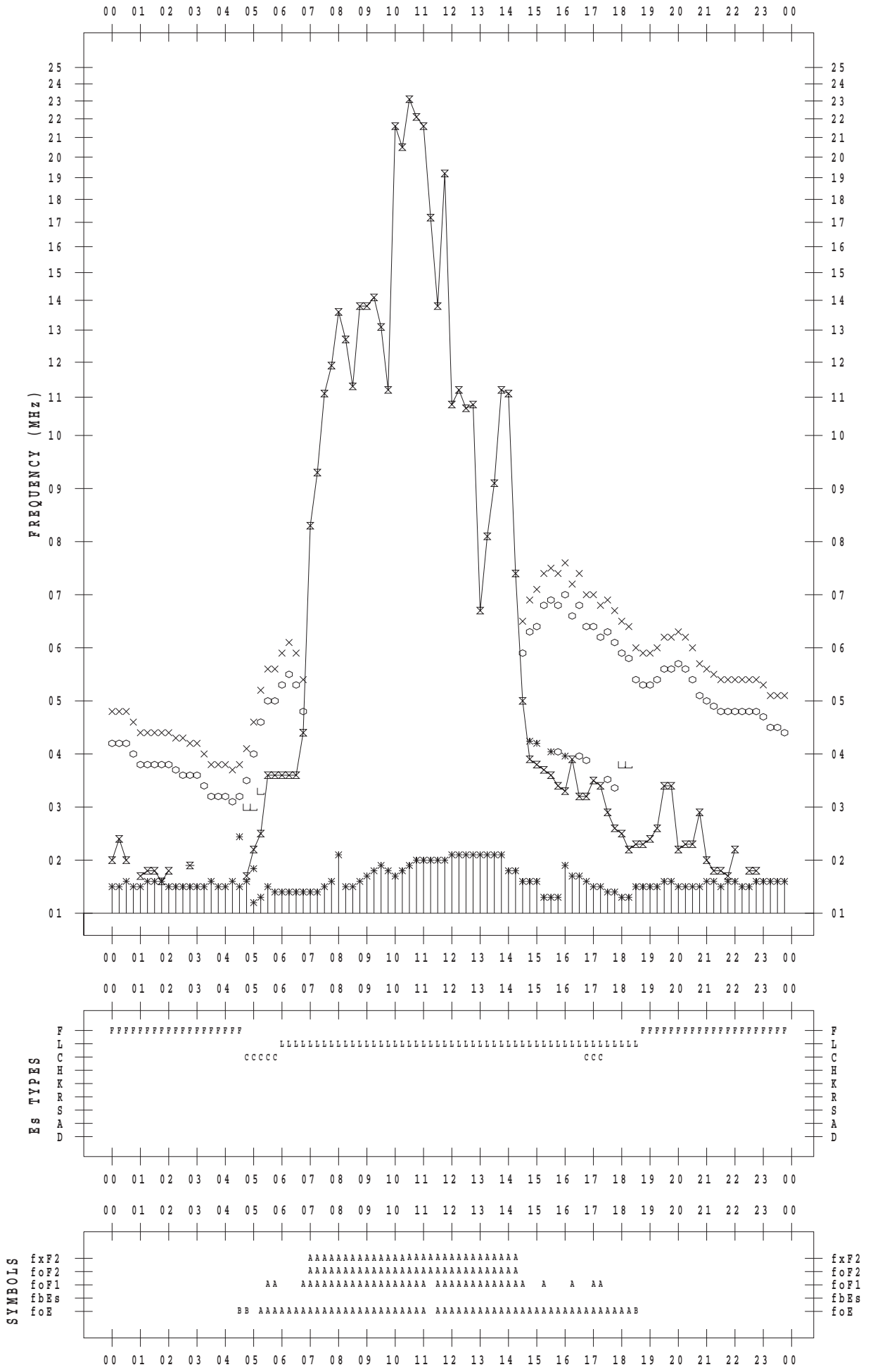
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/14

135 °E MEAN TIME



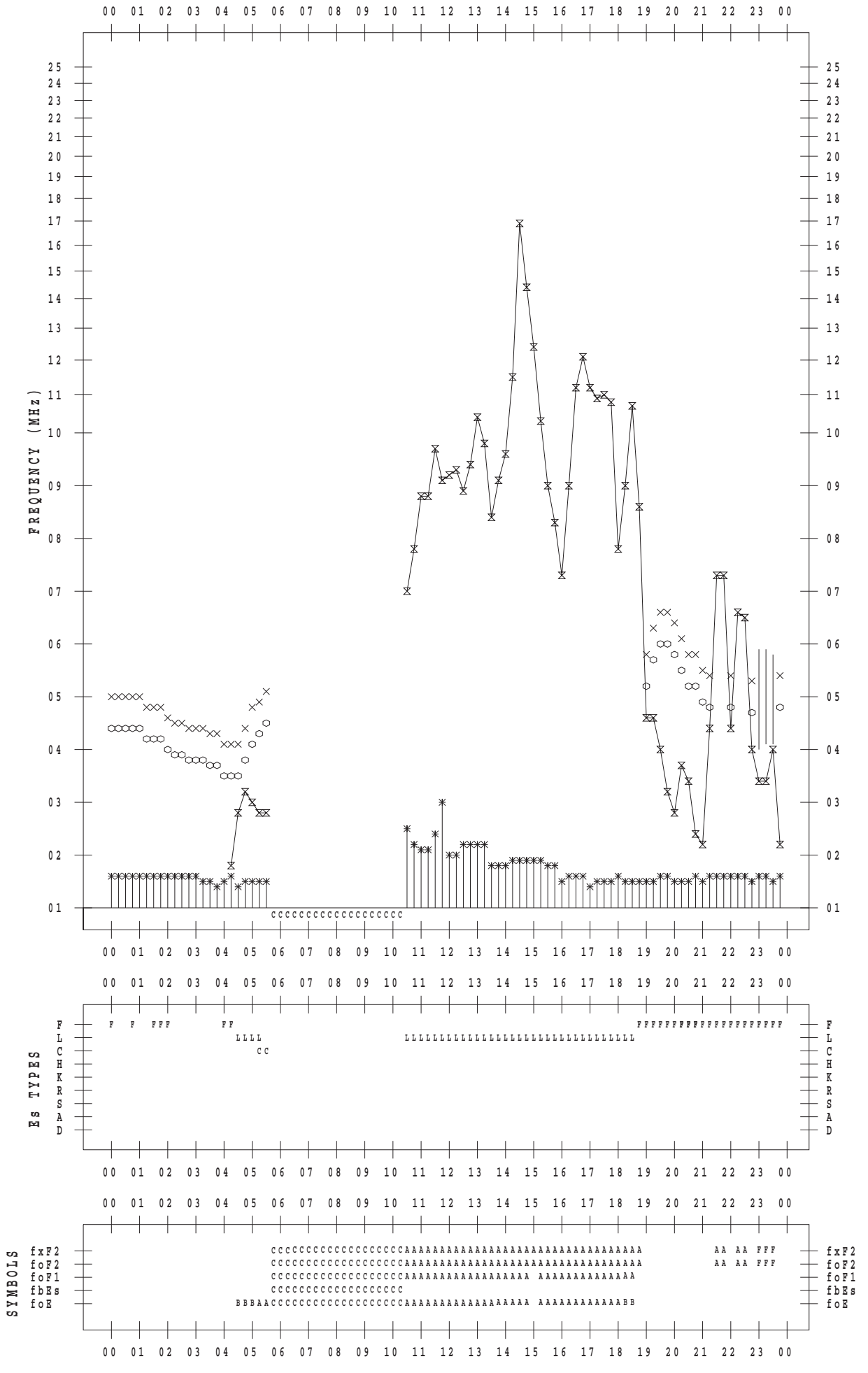
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/15

135 °E MEAN TIME



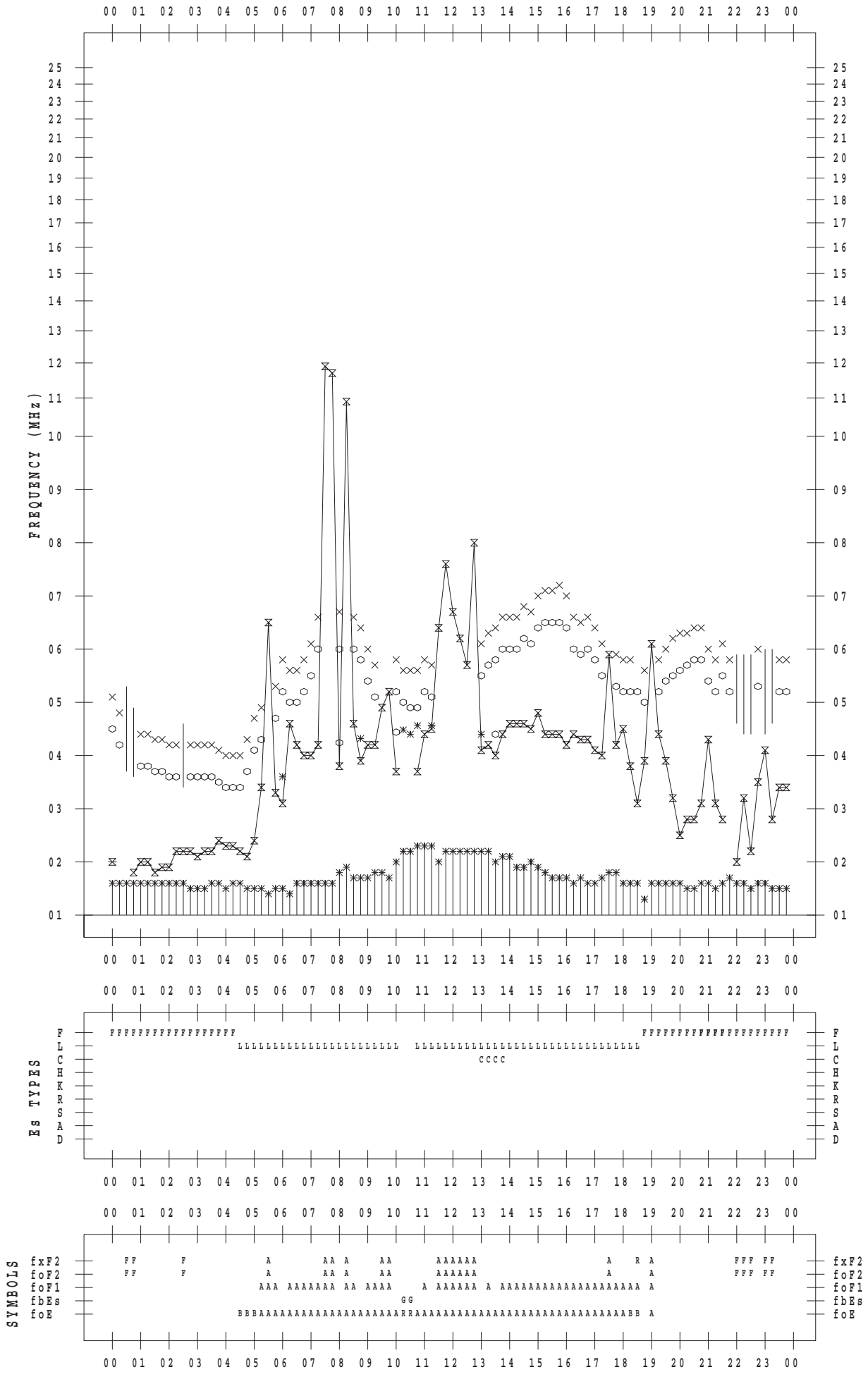
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/16

135 °E MEAN TIME



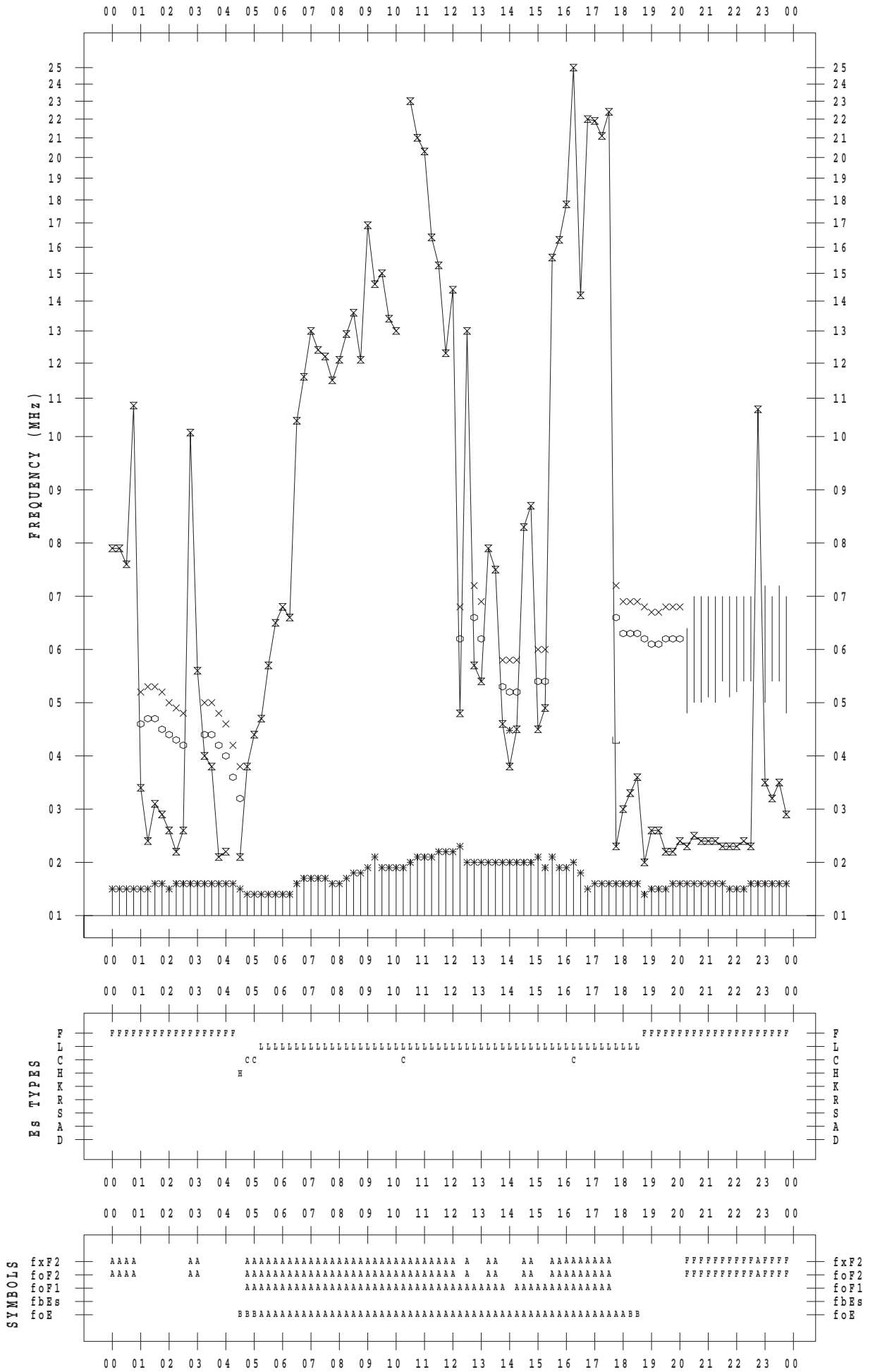
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/17

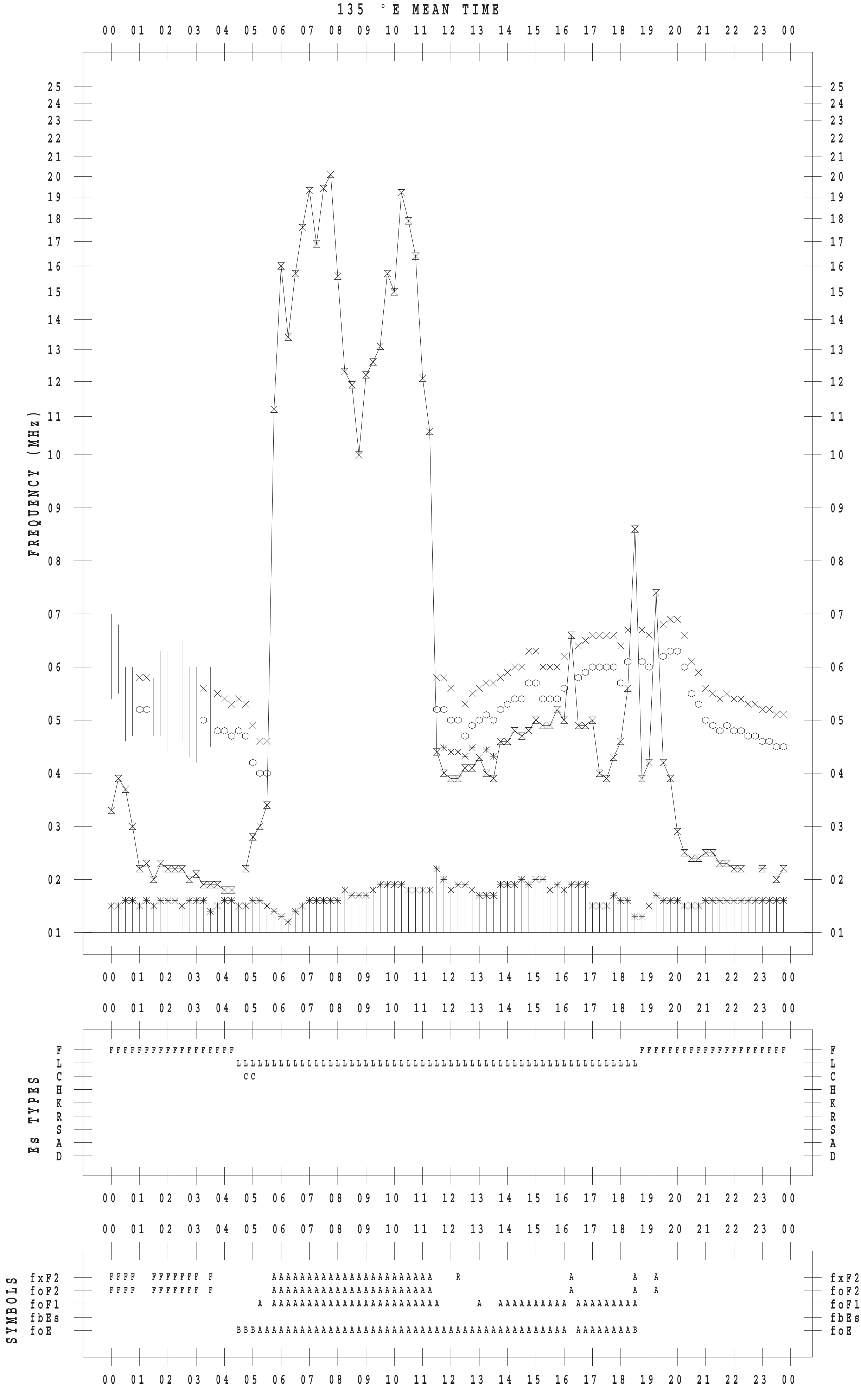
135 °E MEAN TIME



f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2017/ 6/18



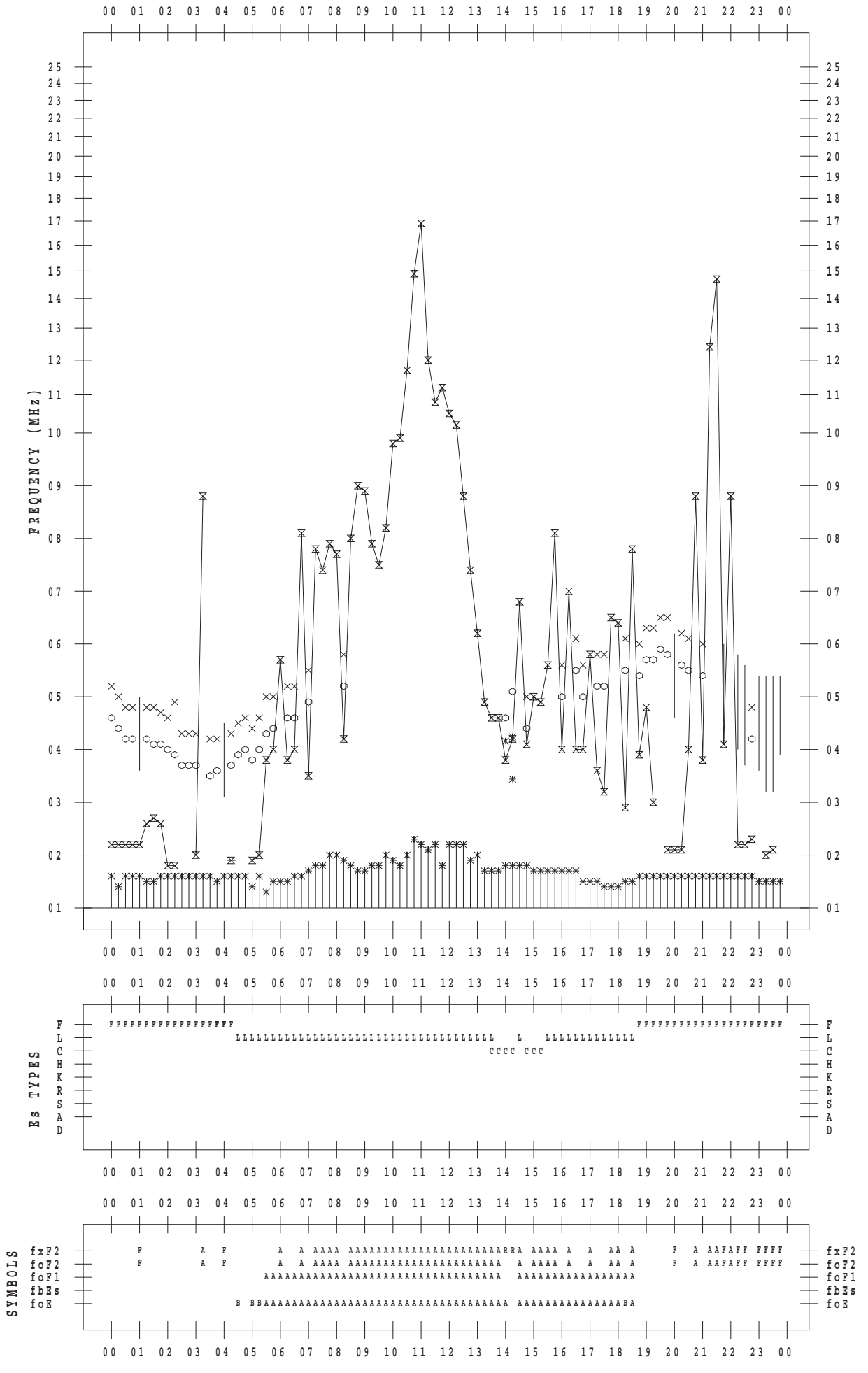
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/19

135 °E MEAN TIME



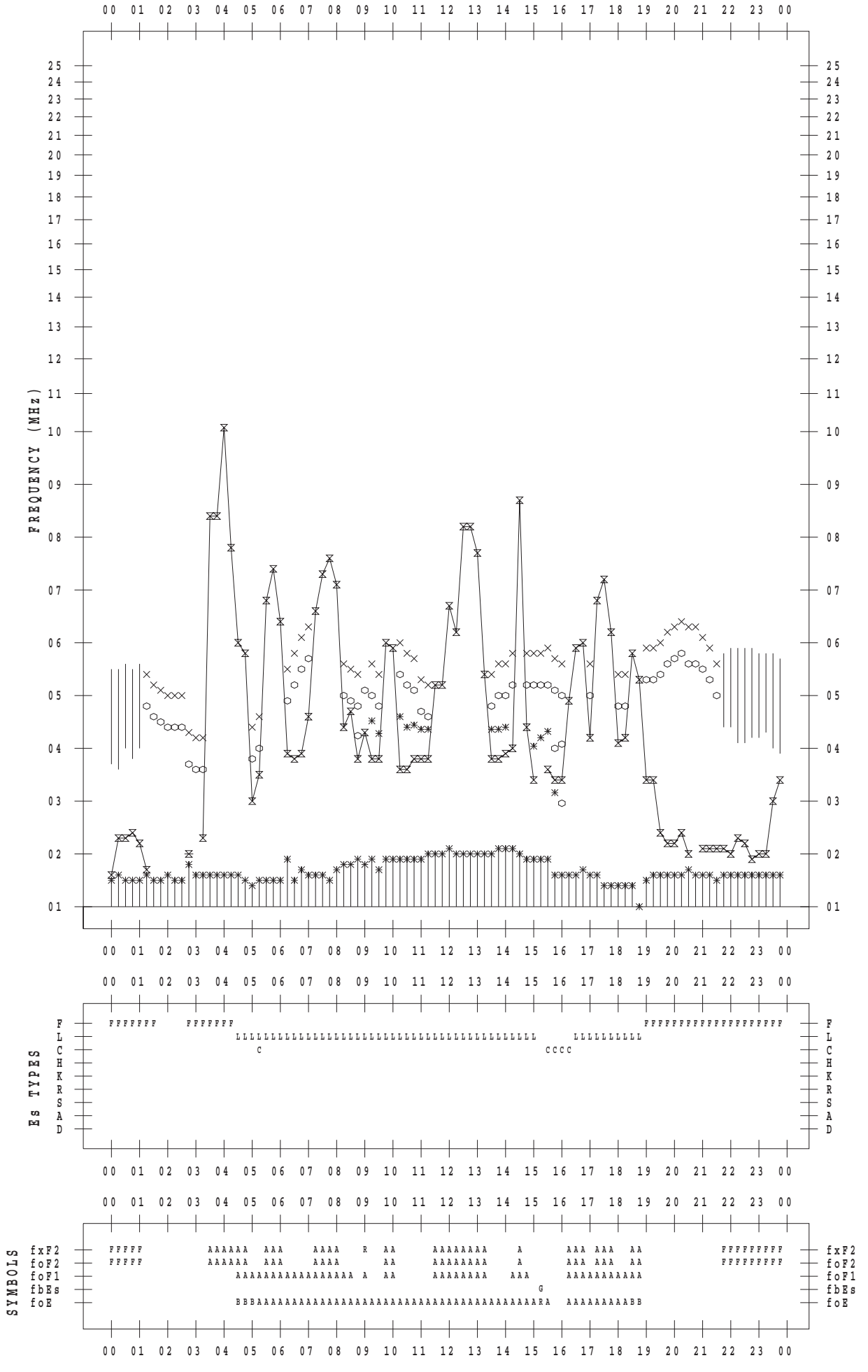
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/20

135 °E MEAN TIME



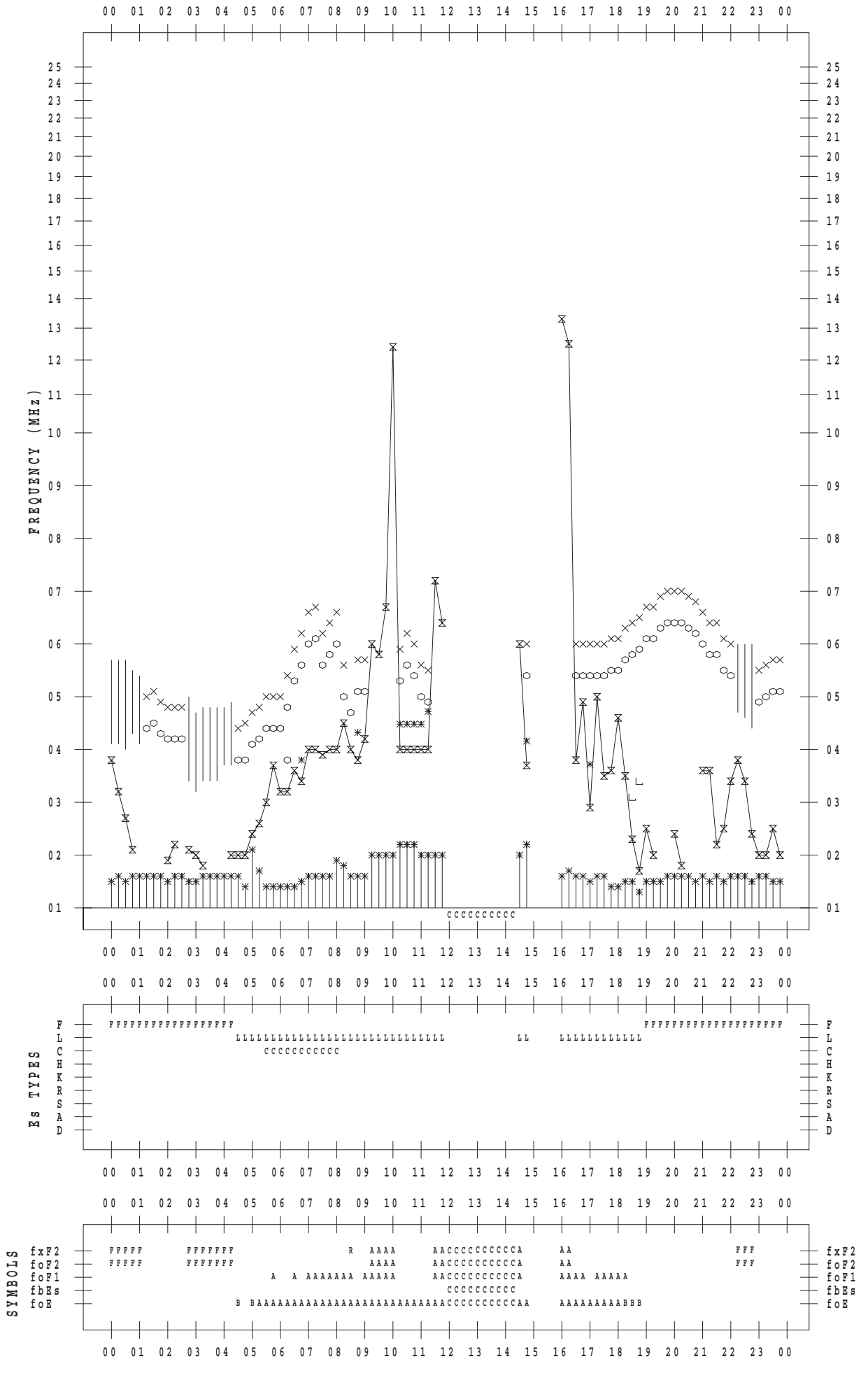
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/21

135 °E MEAN TIME



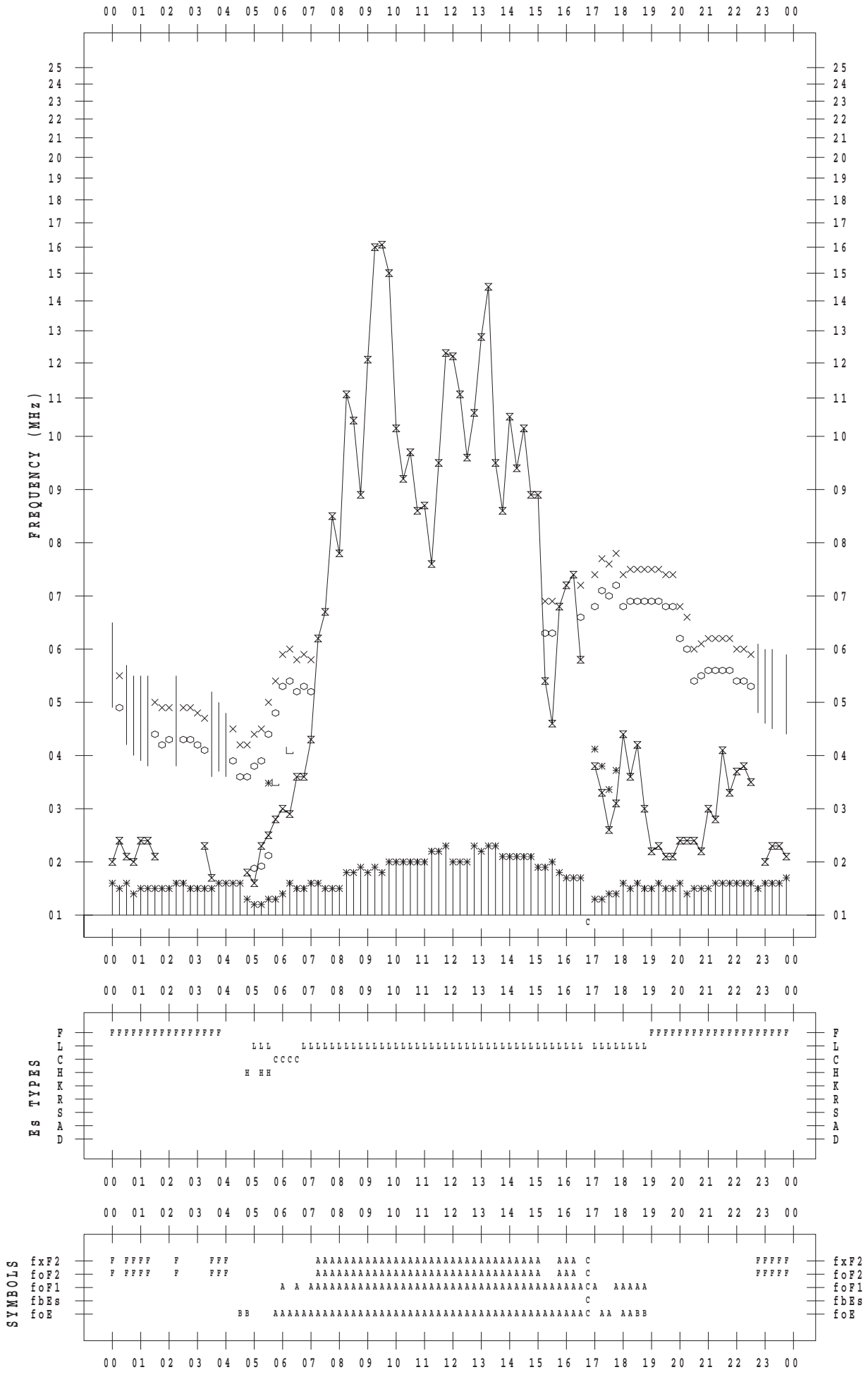
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/22

135 °E MEAN TIME



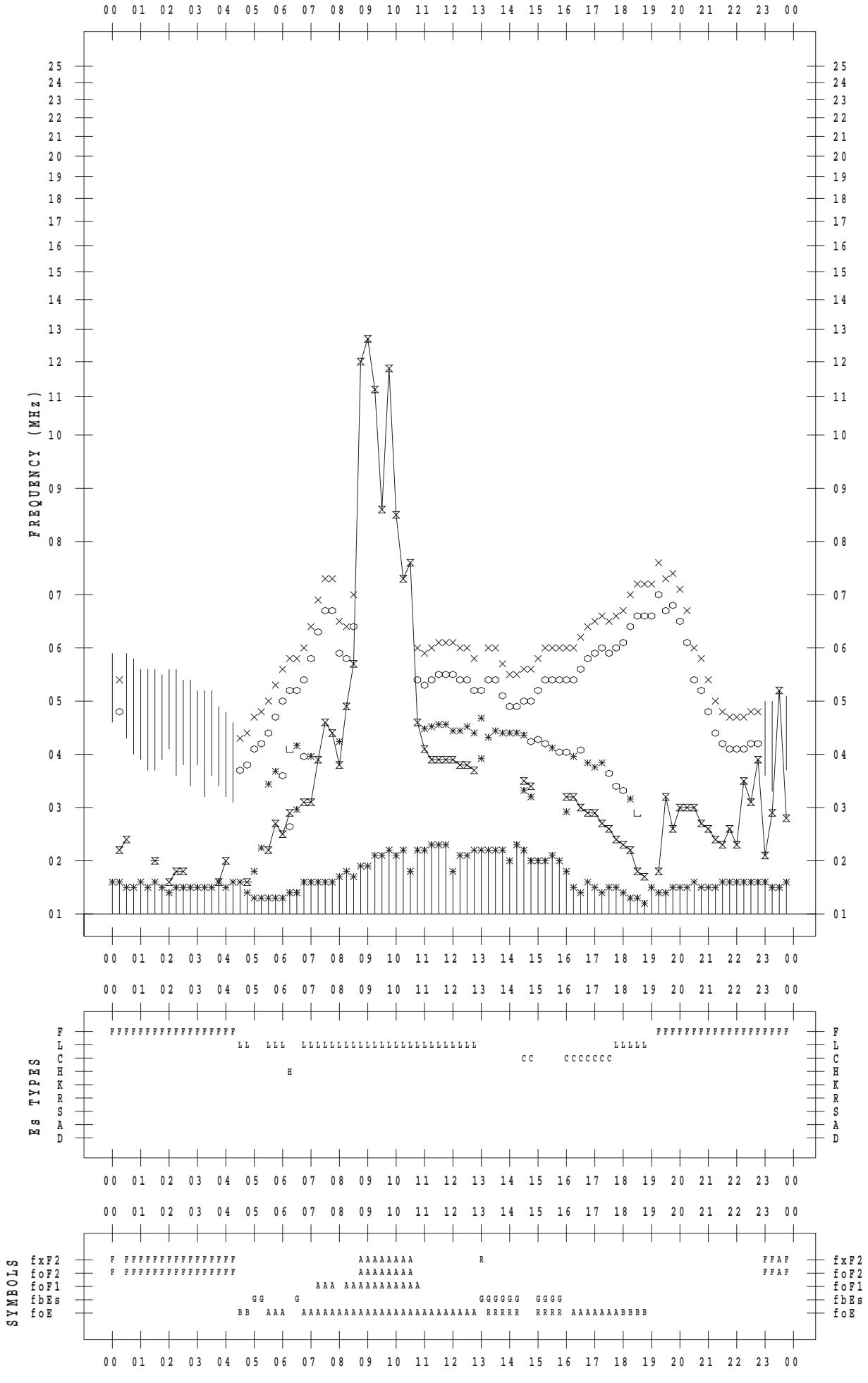
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/23

135 °E MEAN TIME



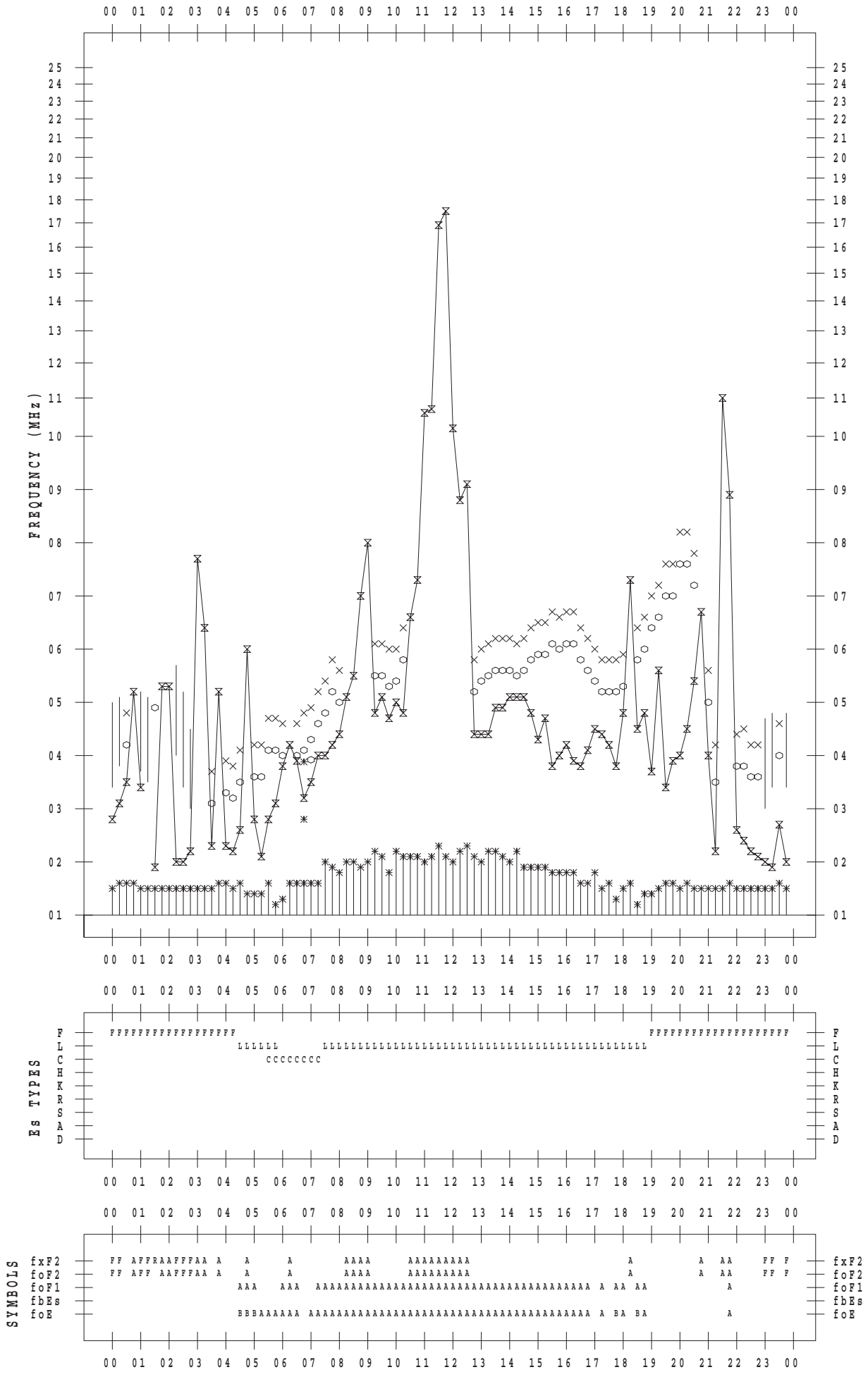
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/24

135 °E MEAN TIME



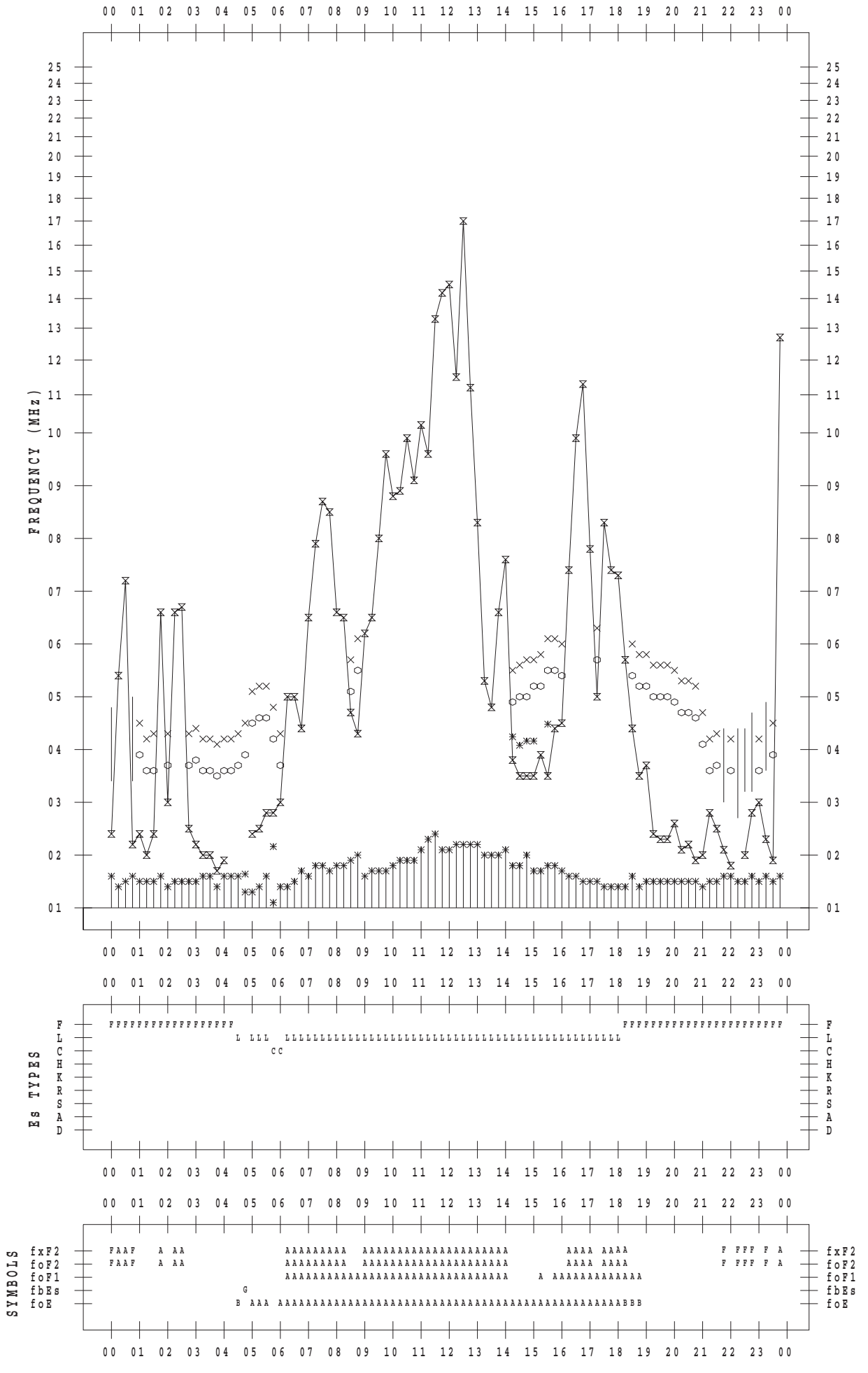
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/25

135 °E MEAN TIME



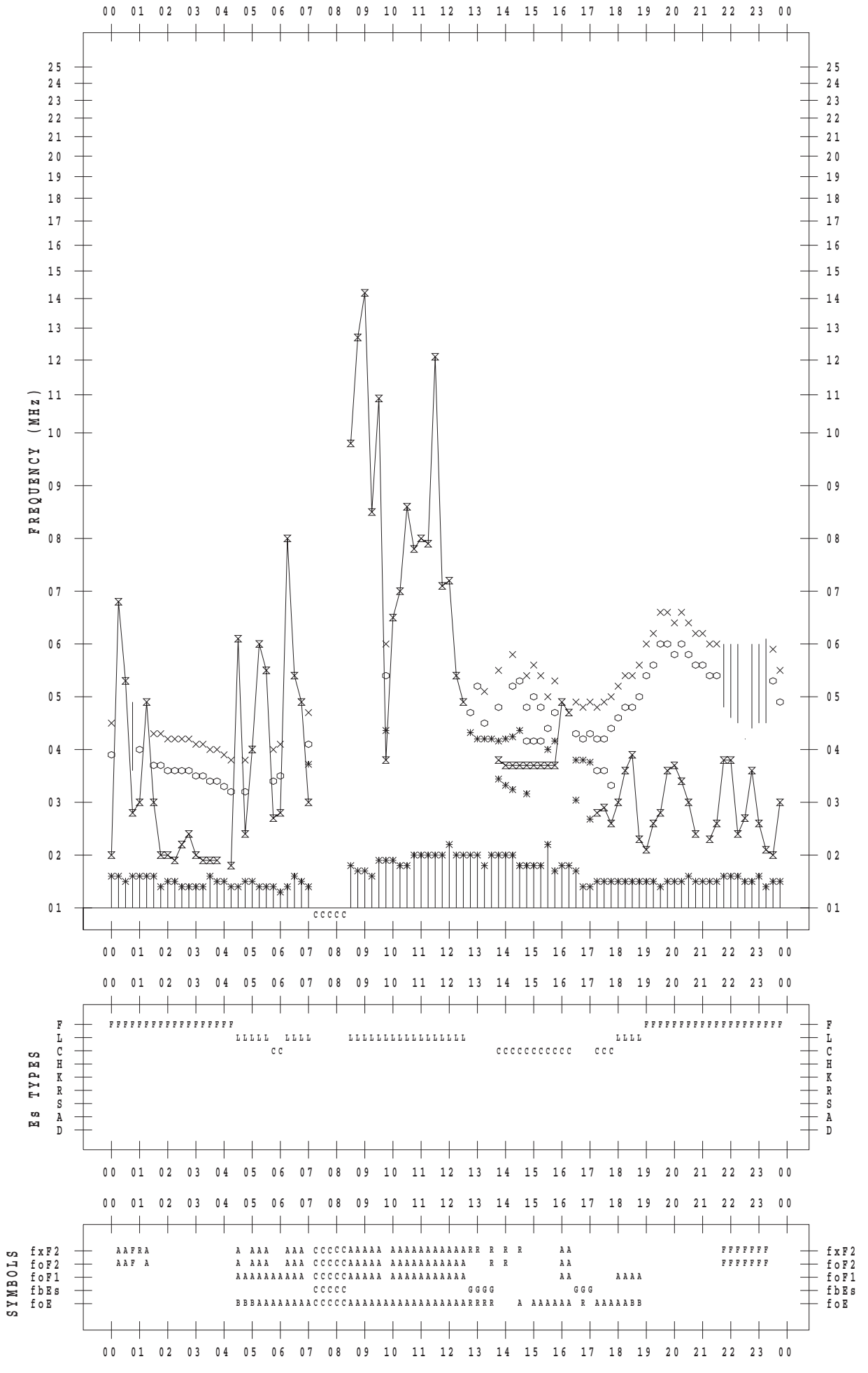
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/26

135 °E MEAN TIME



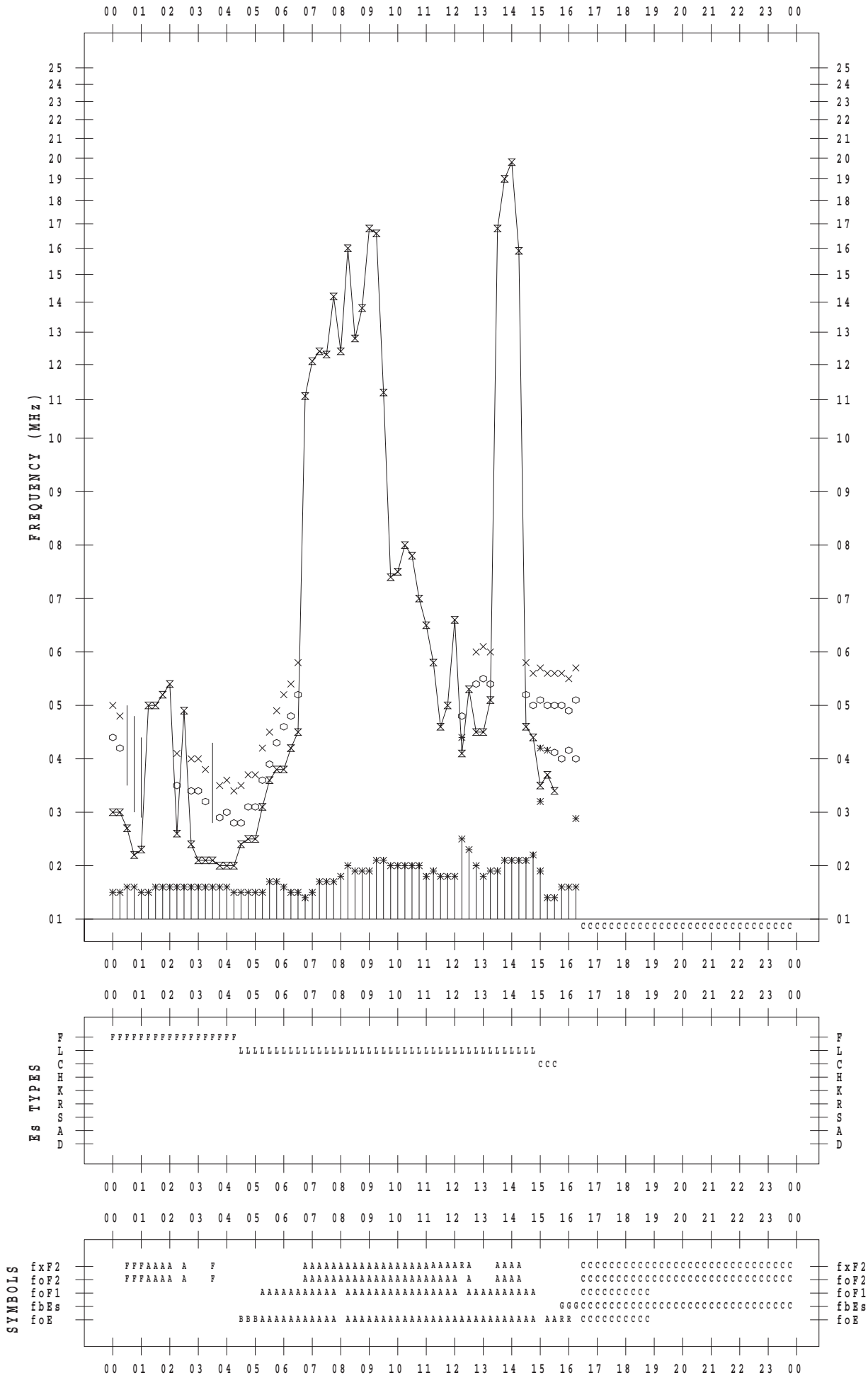
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/27

135 °E MEAN TIME



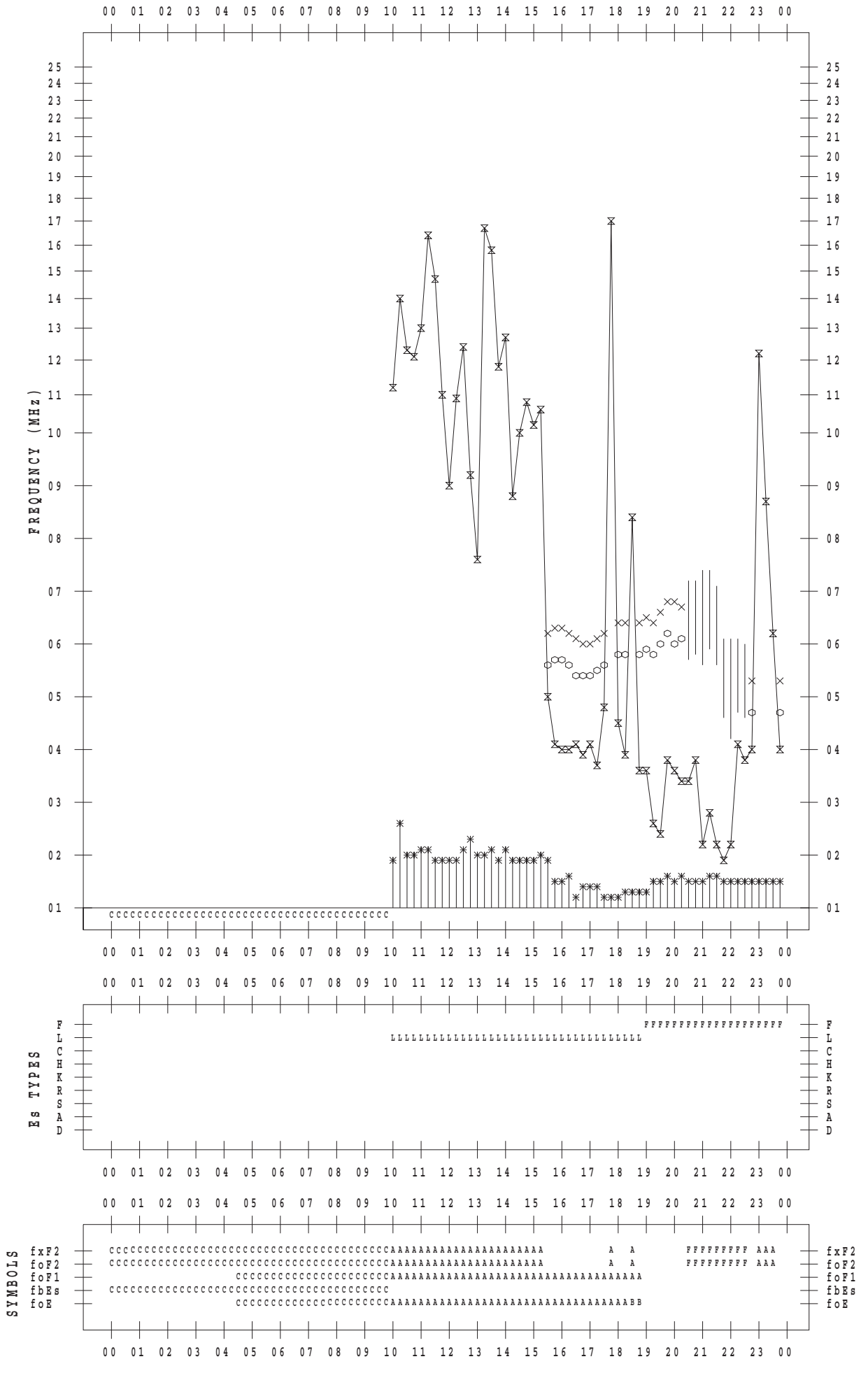
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/28

135 °E MEAN TIME



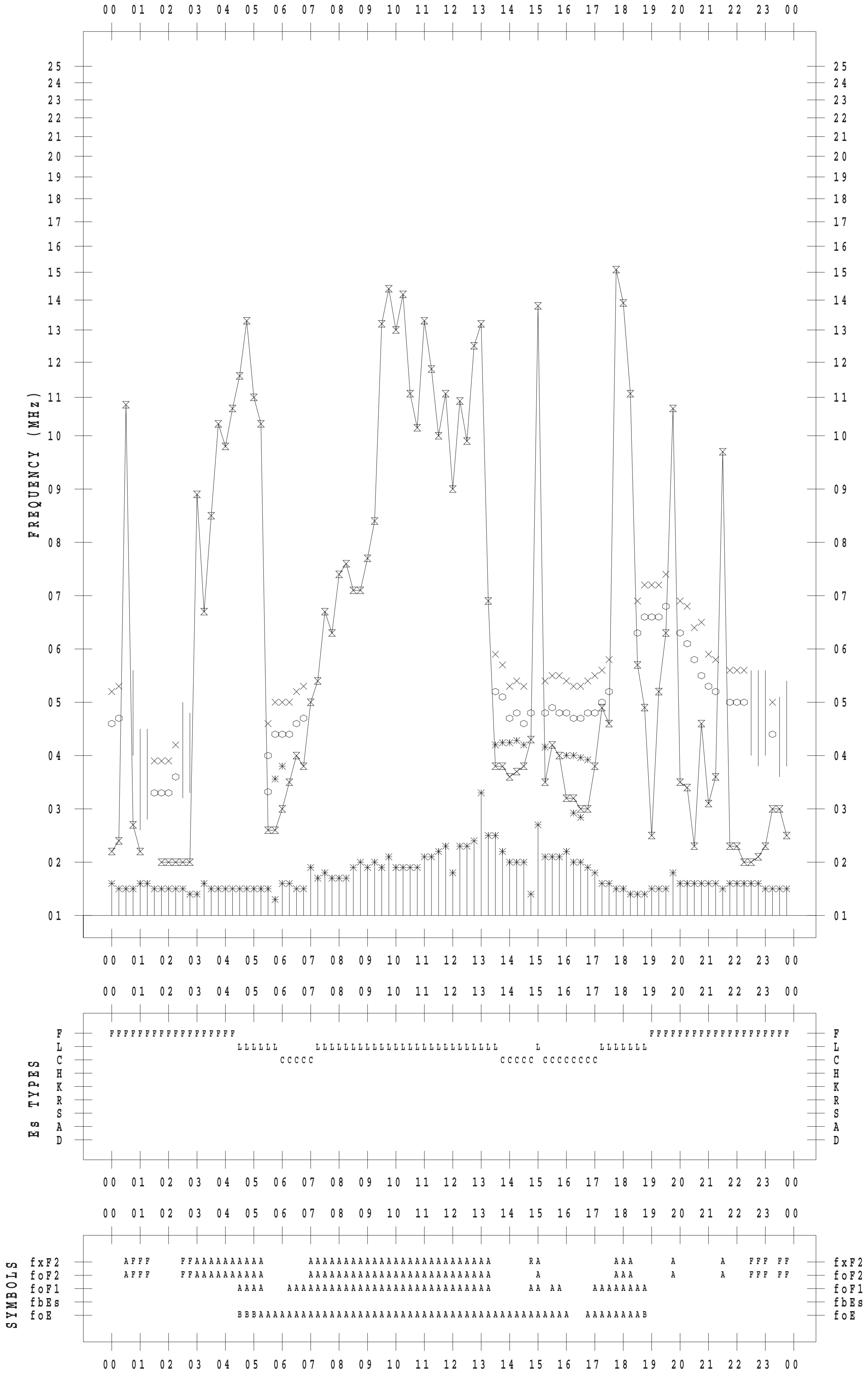
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/29

135 °E MEAN TIME



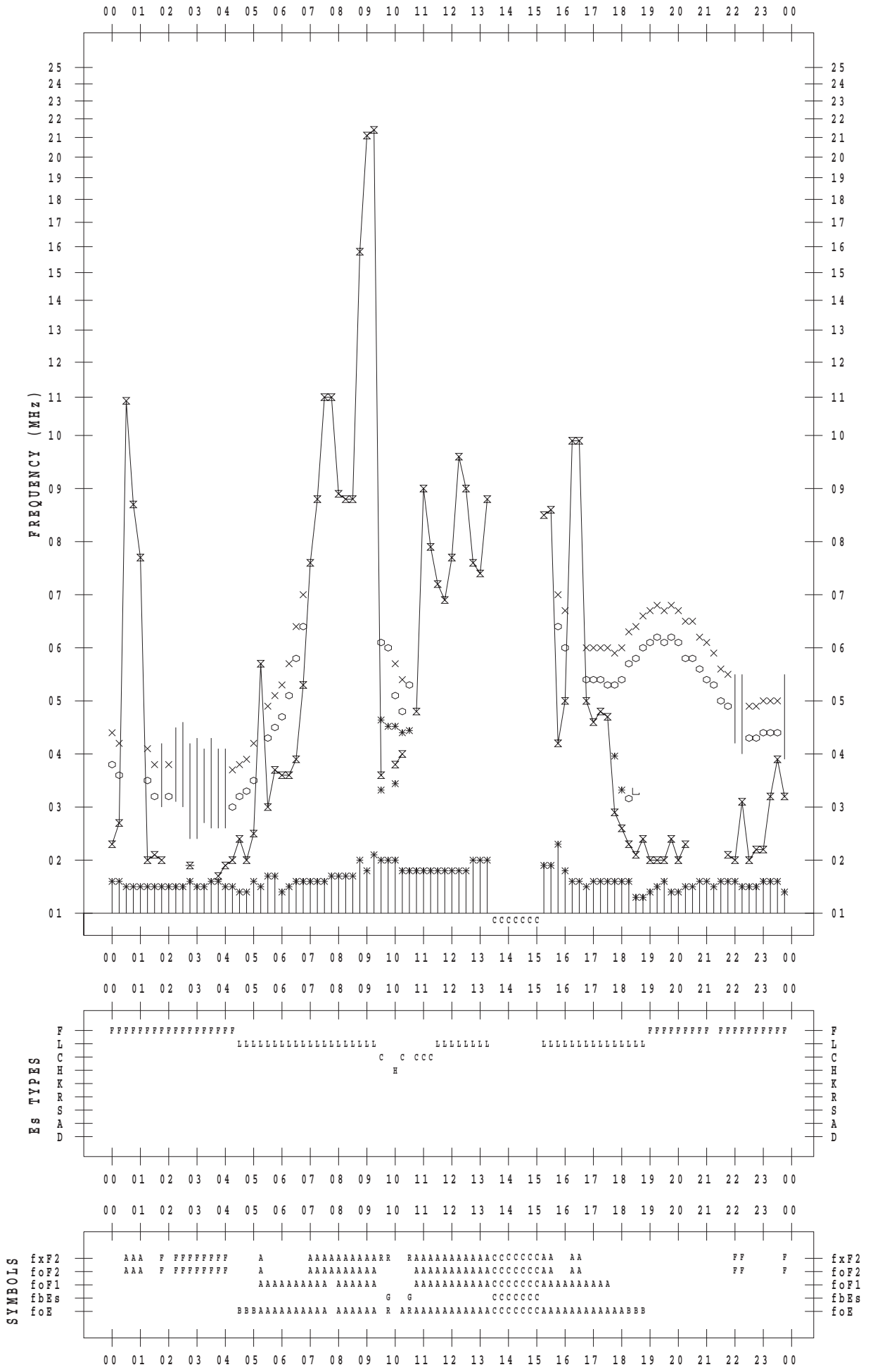
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2017/ 6/30

135 °E MEAN TIME



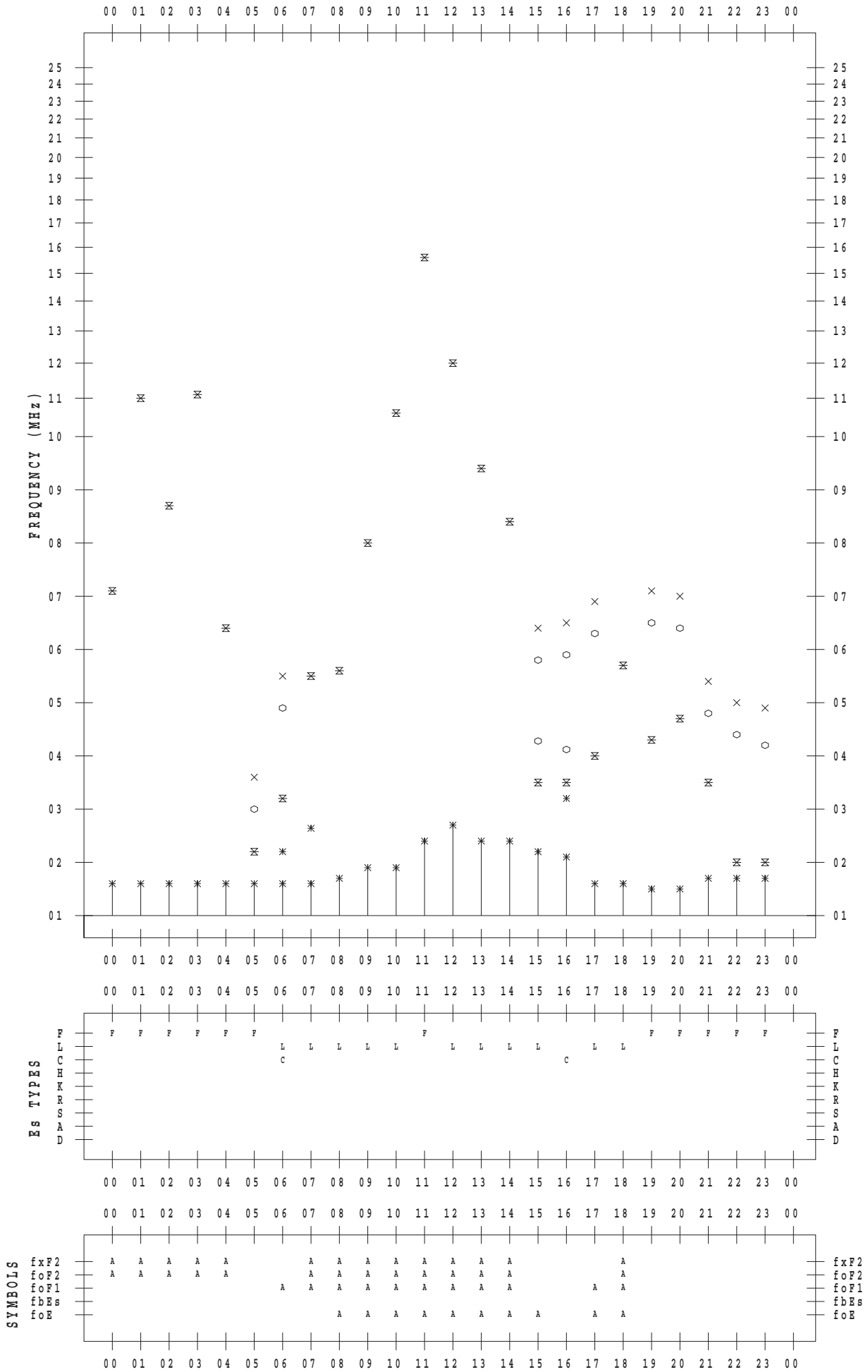
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 1

135 °E MEAN TIME



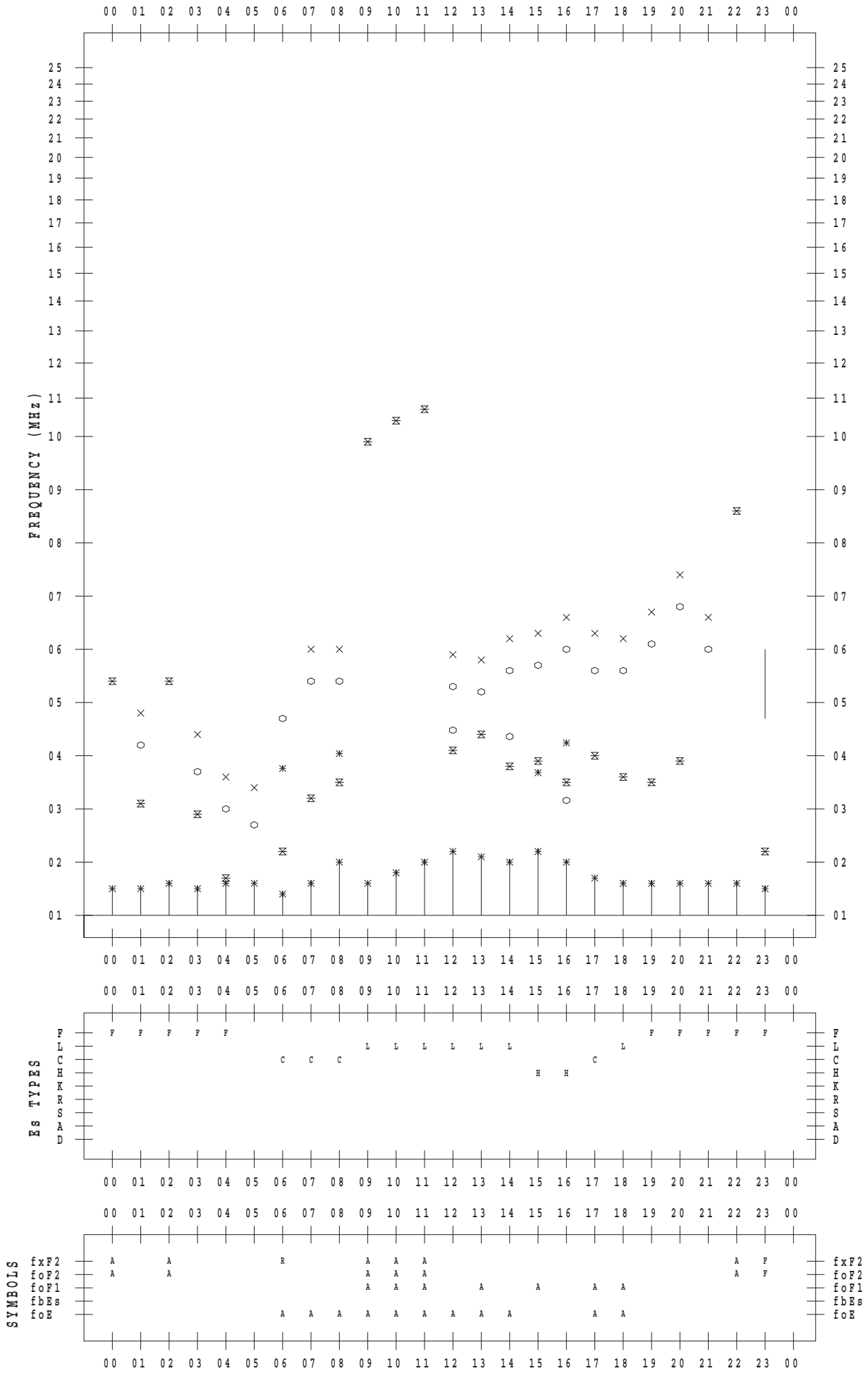
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 2

135 °E MEAN TIME



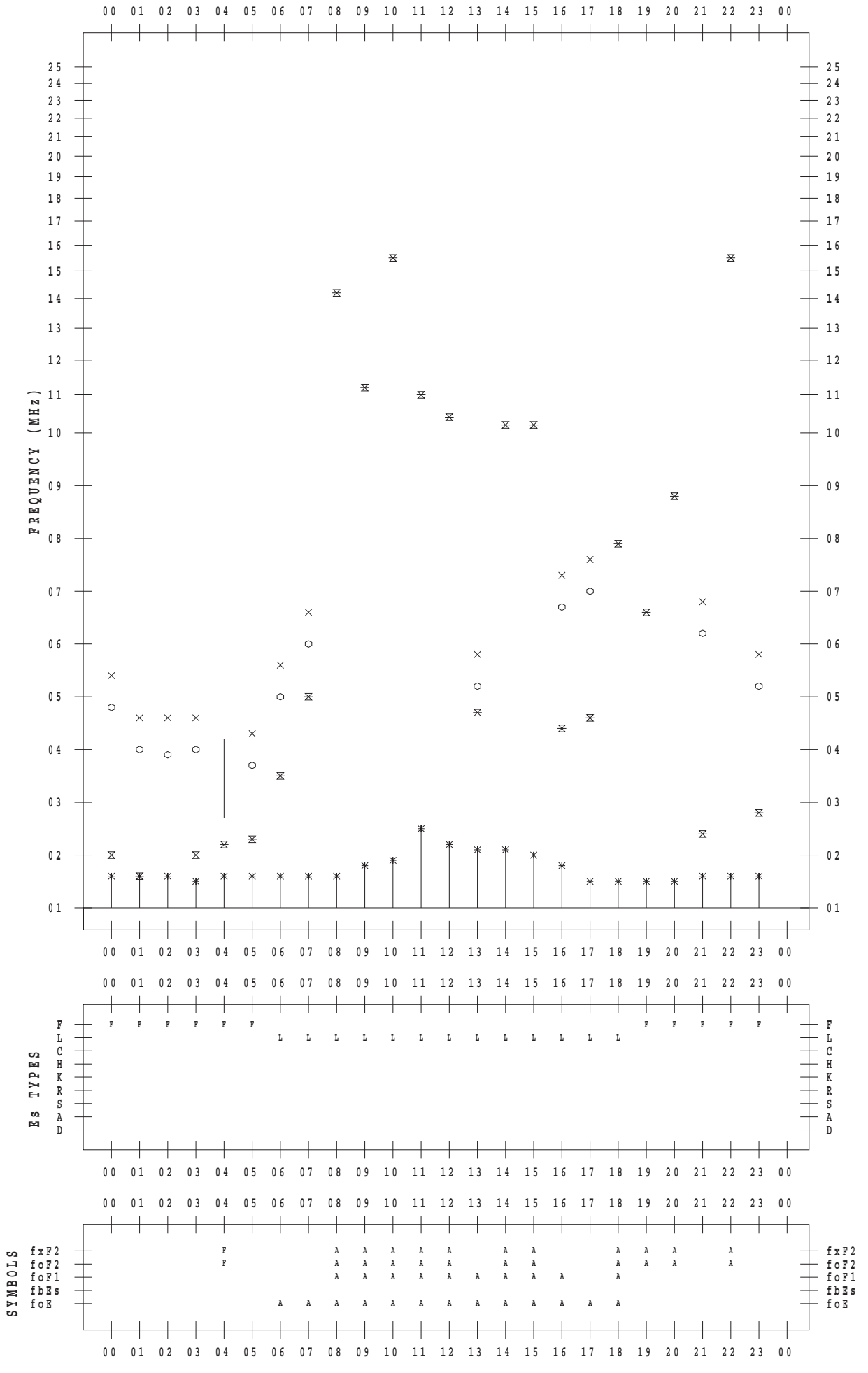
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 3

135 °E MEAN TIME



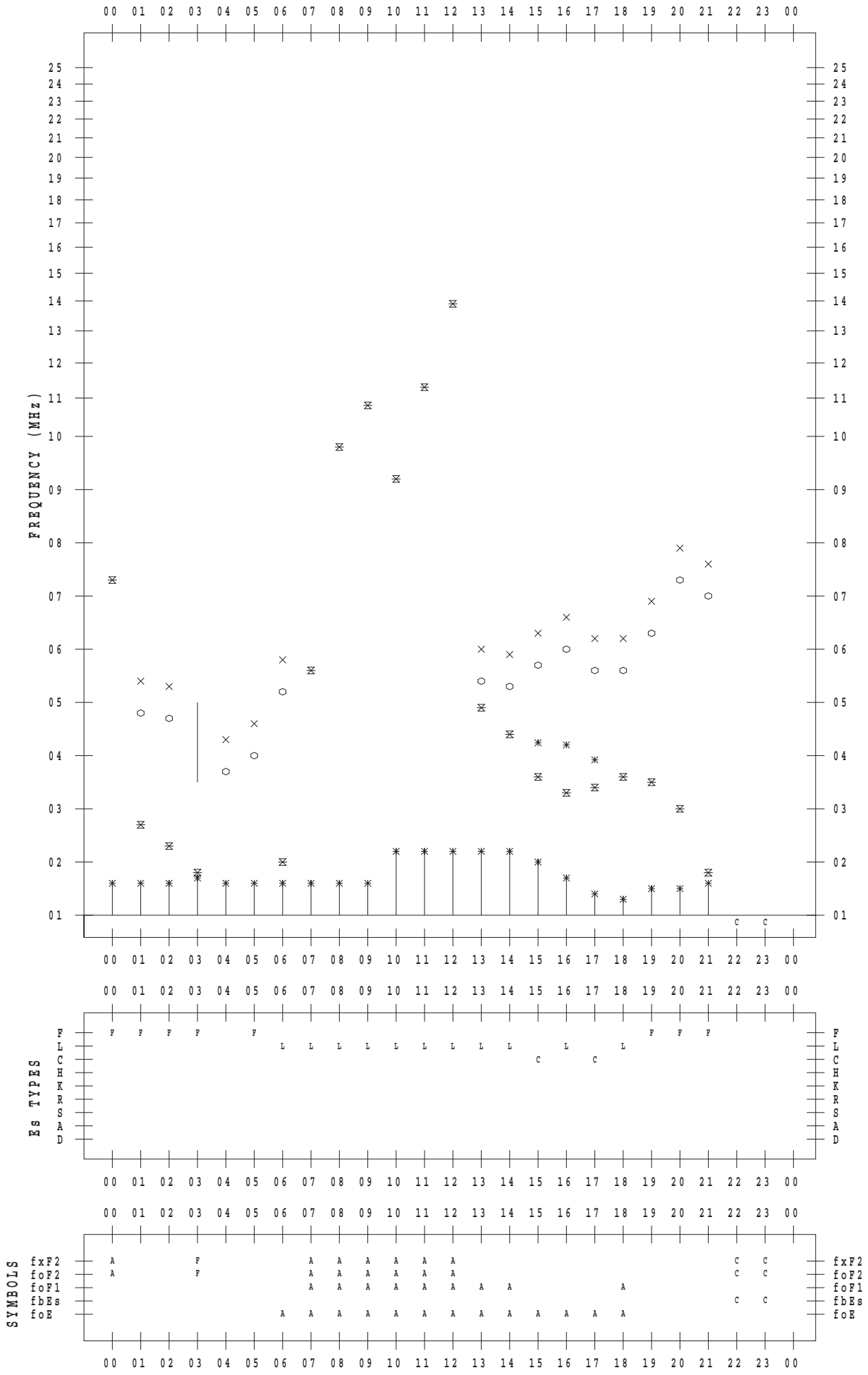
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 4

135 °E MEAN TIME



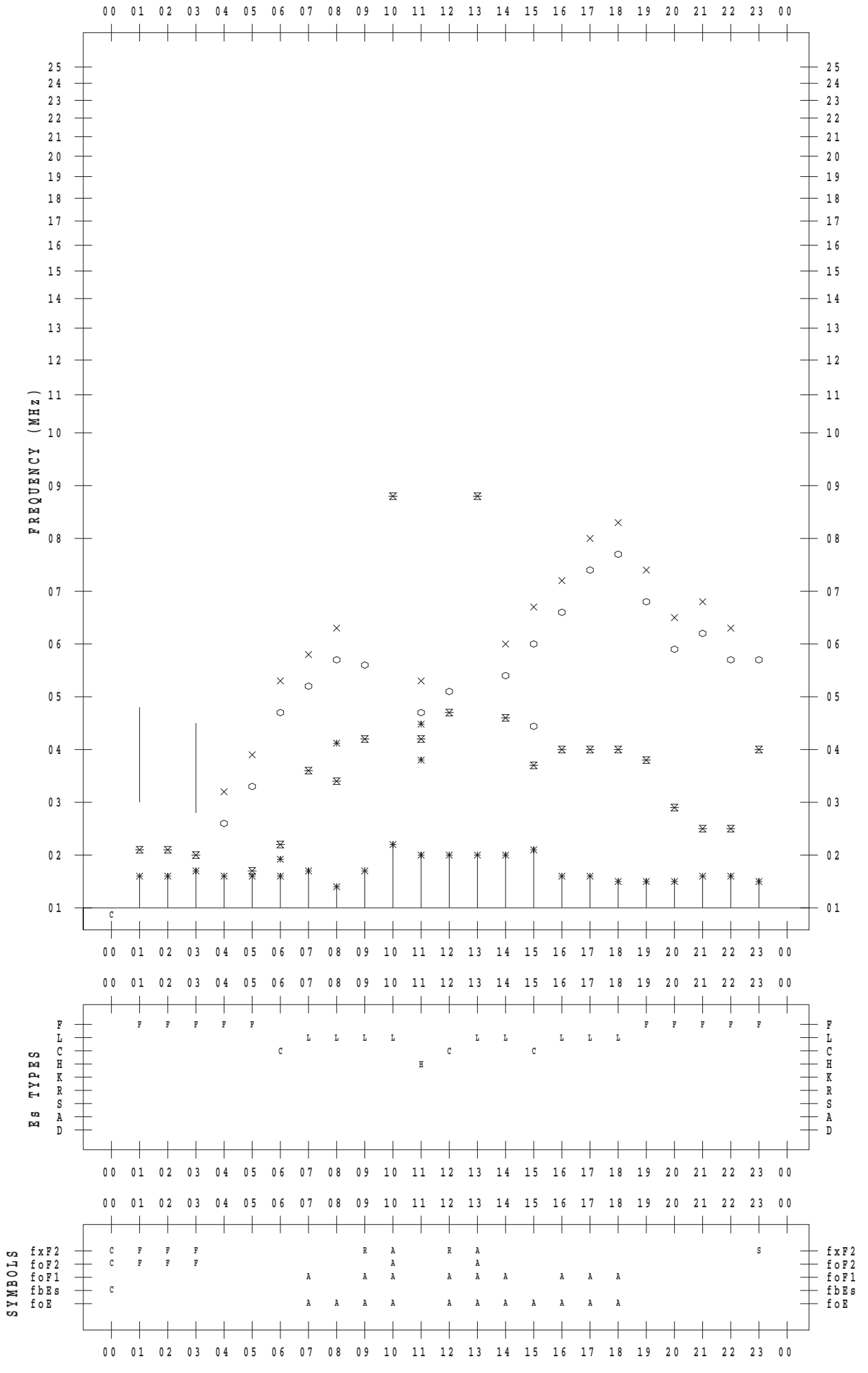
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 5

135 °E MEAN TIME



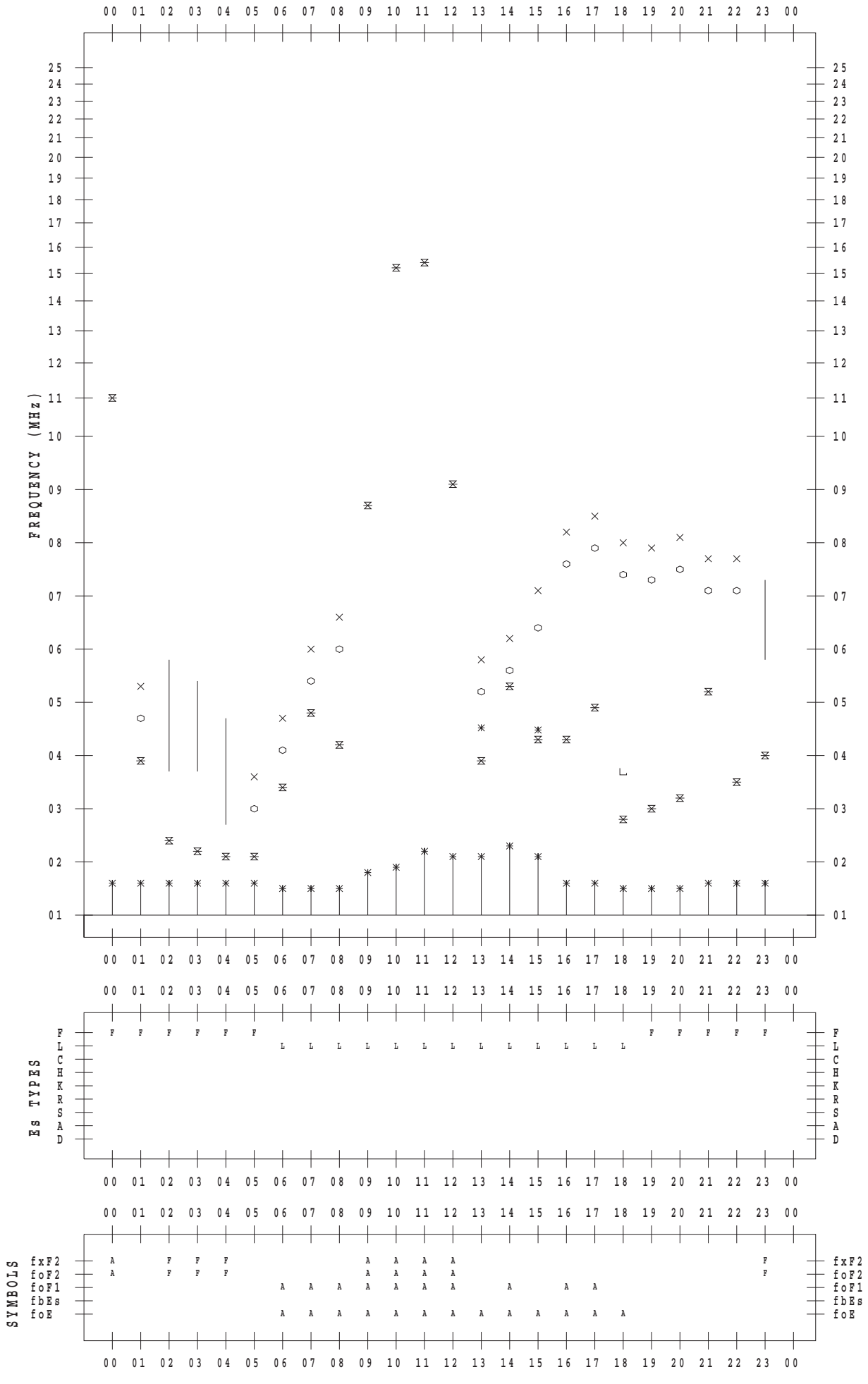
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 6

135 °E MEAN TIME



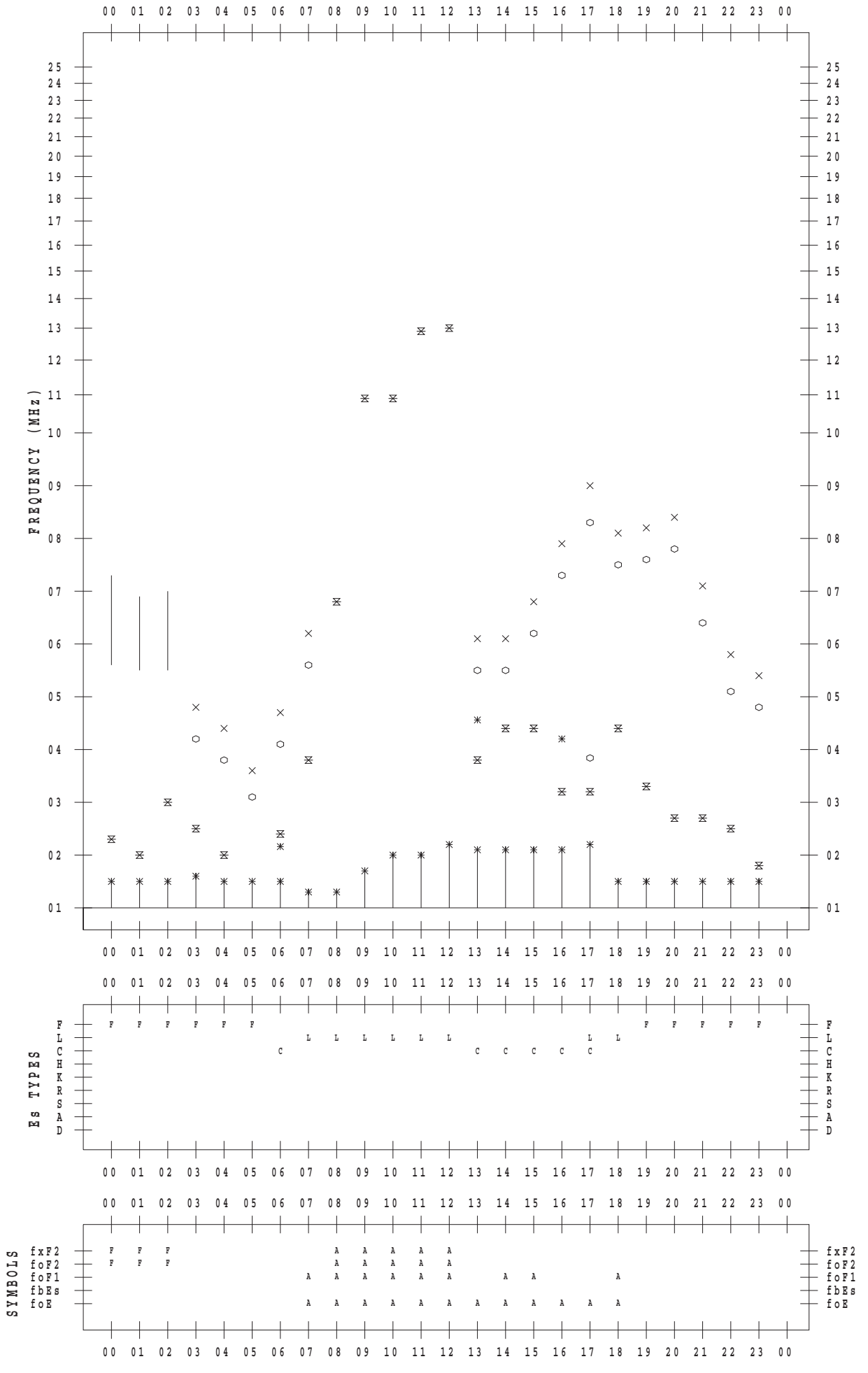
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 7

135 °E MEAN TIME



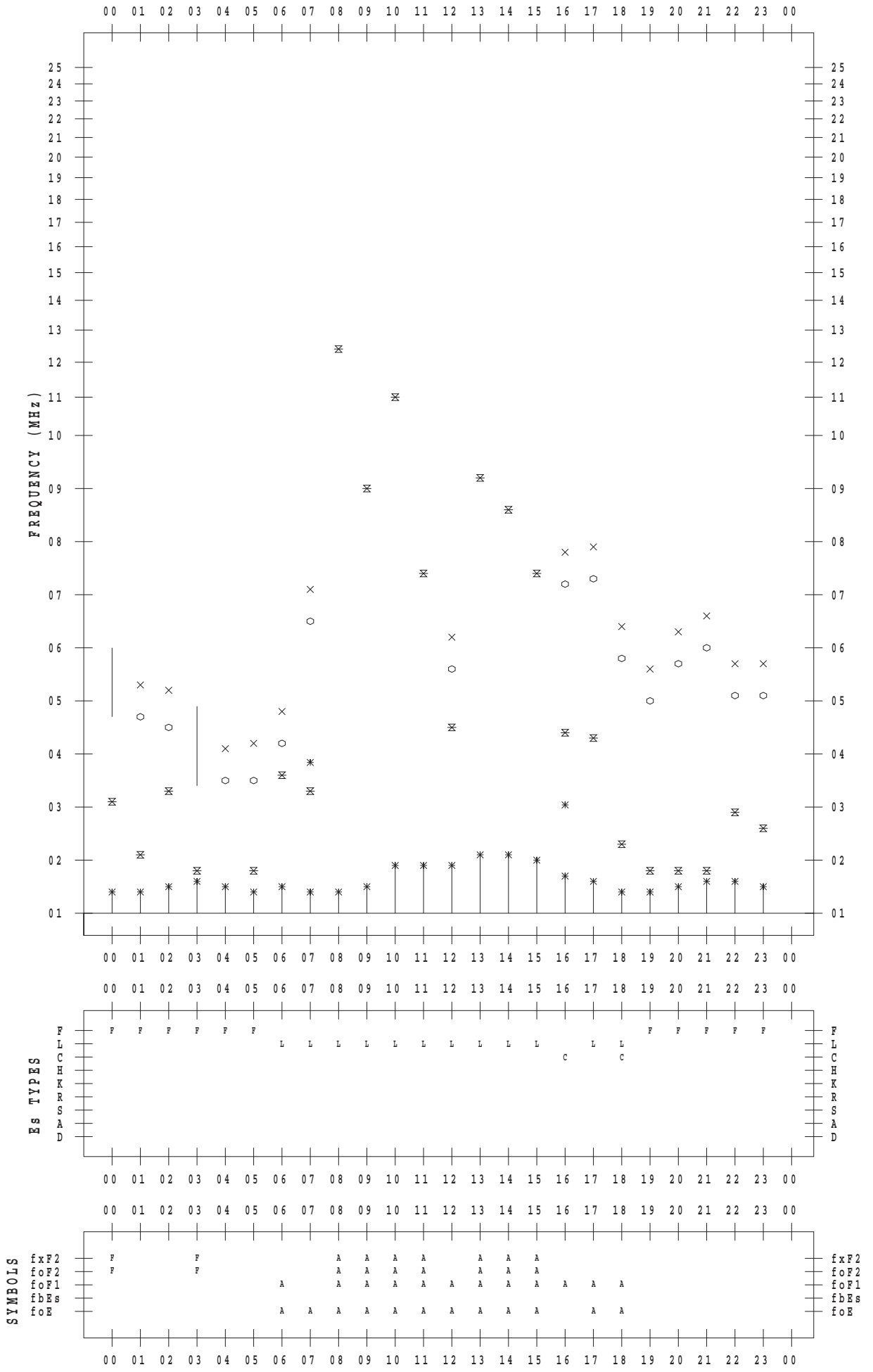
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 8

135 °E MEAN TIME



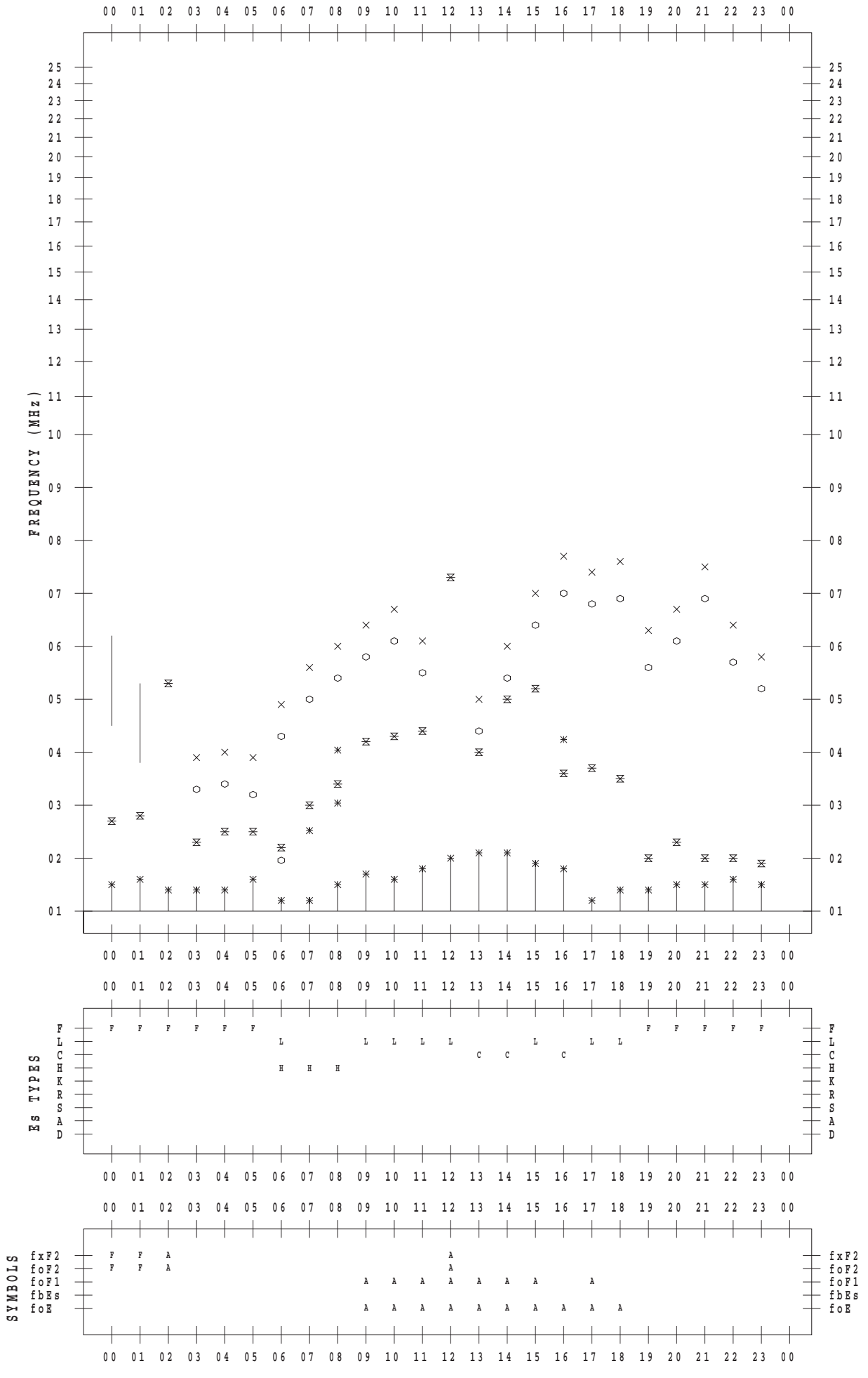
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/ 9

135 °E MEAN TIME



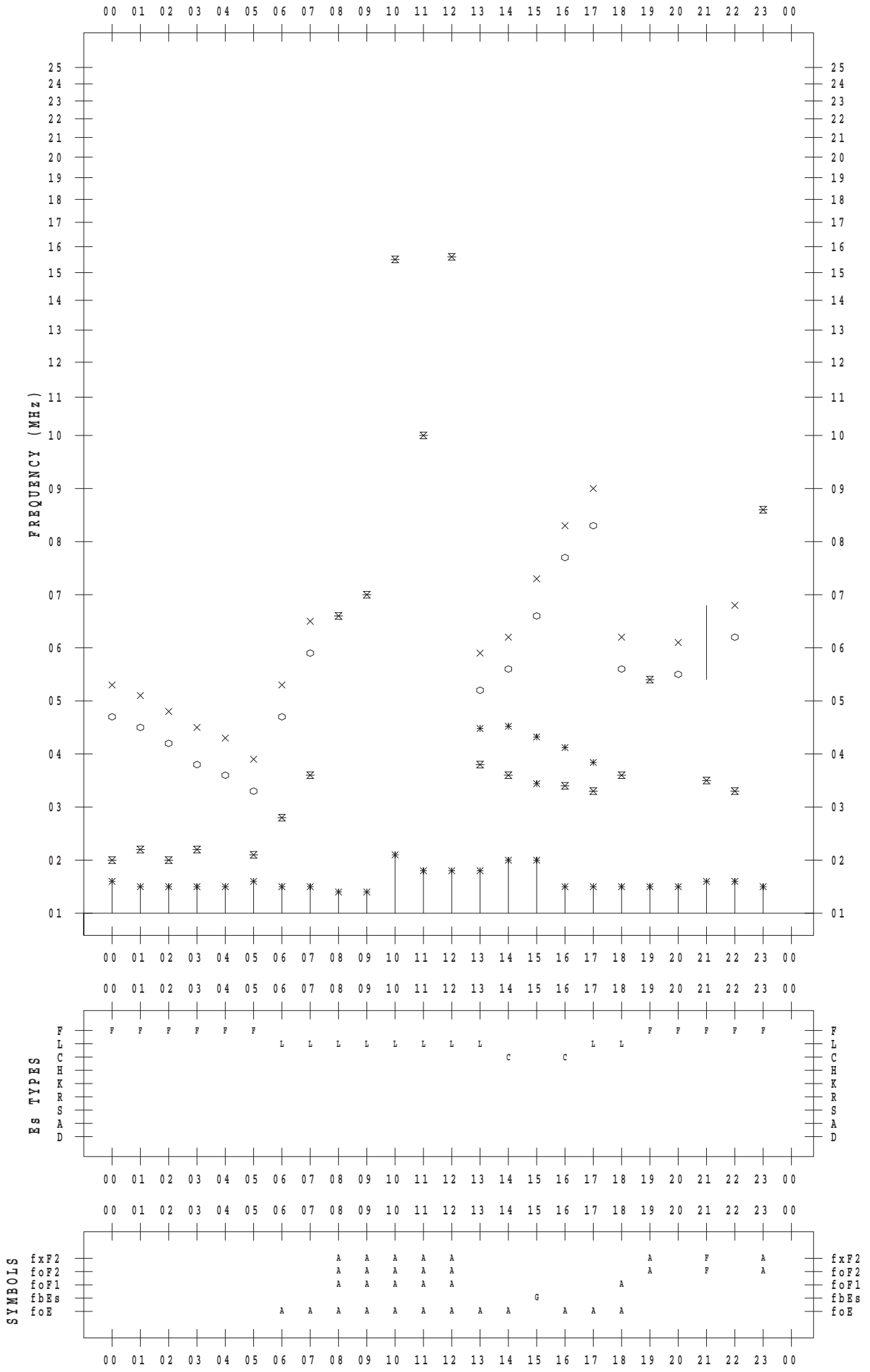
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/10

135 °E MEAN TIME



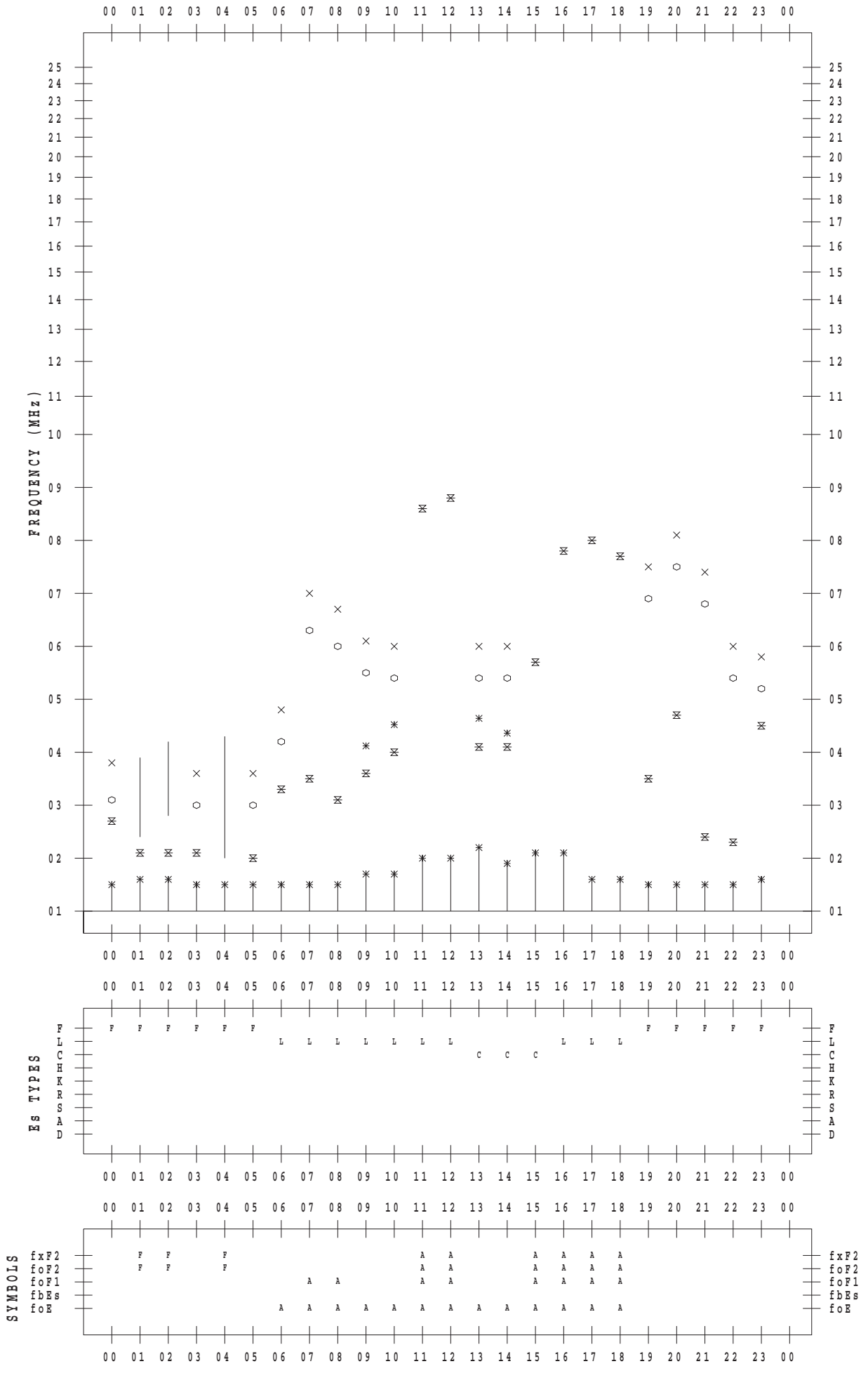
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/11

135 °E MEAN TIME



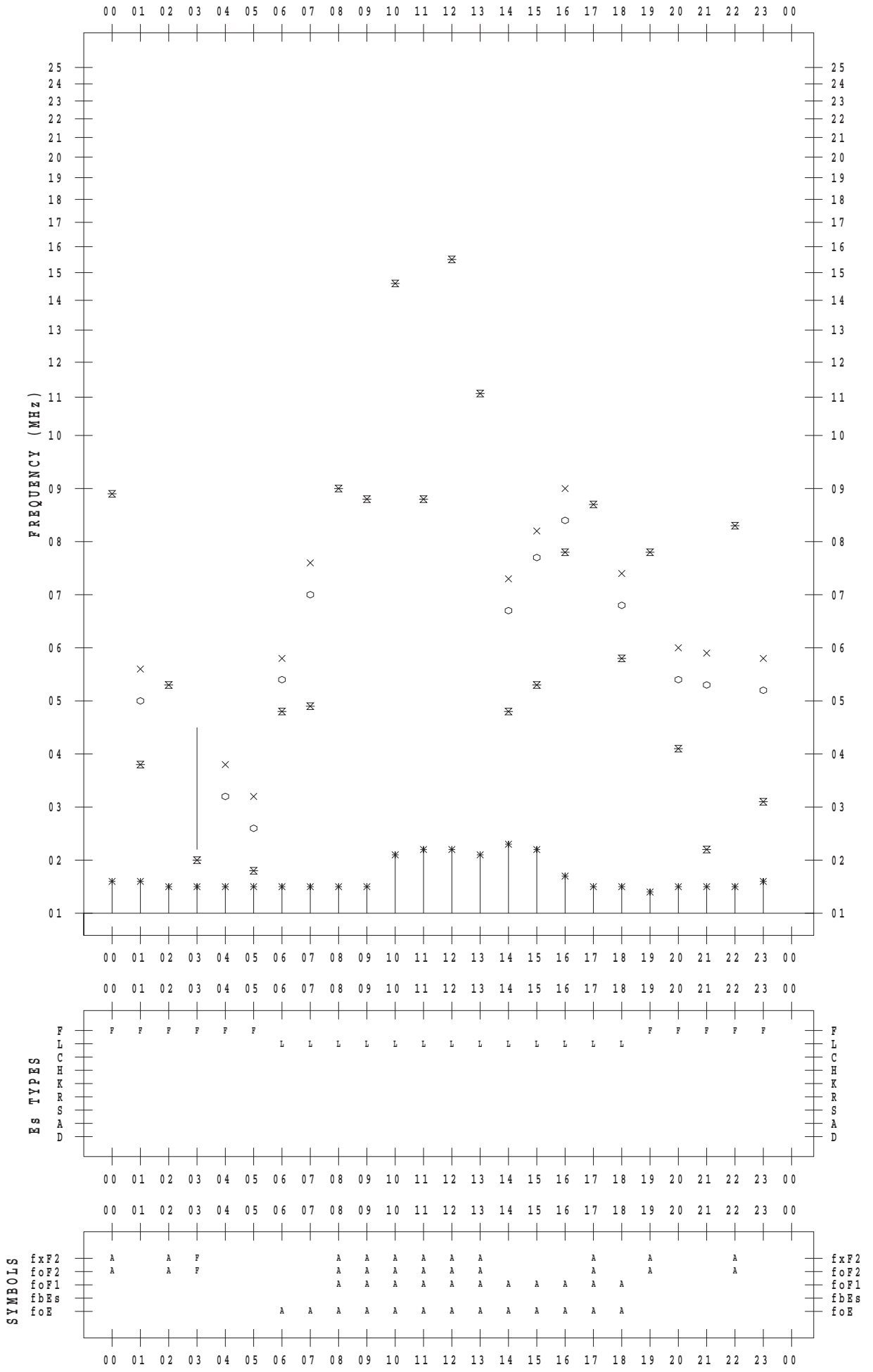
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/12

135 °E MEAN TIME



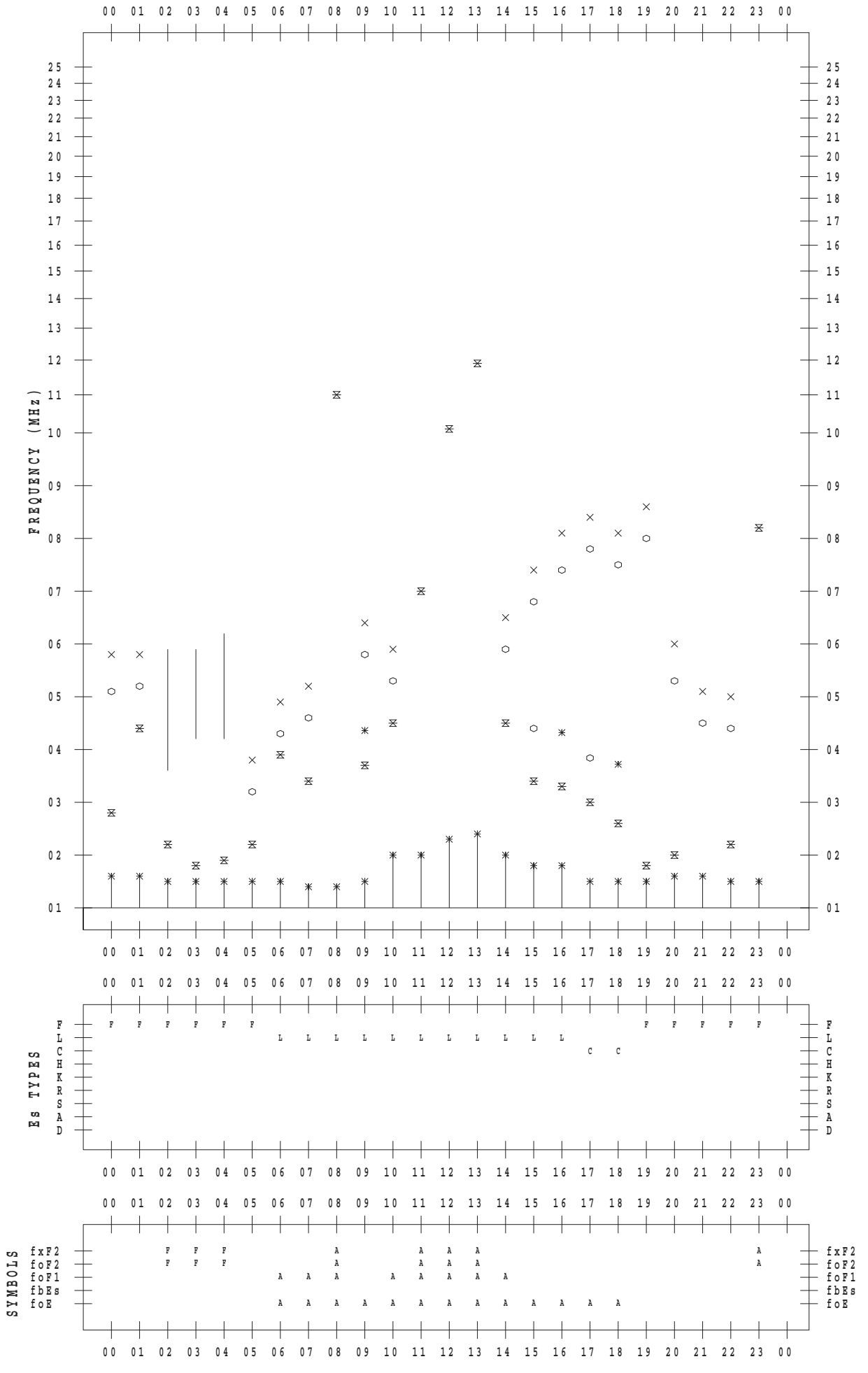
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/13

135 °E MEAN TIME



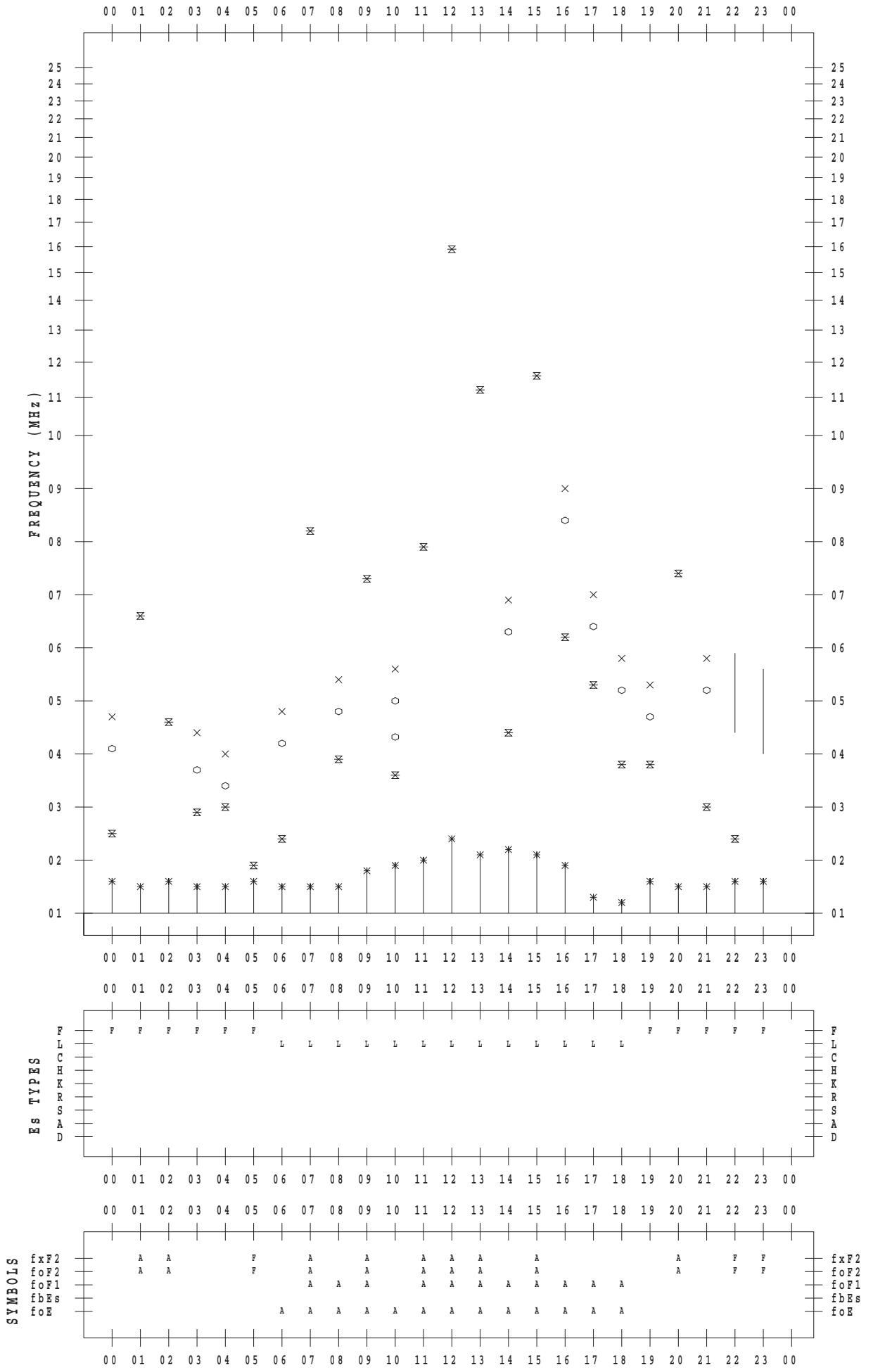
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/14

135 °E MEAN TIME



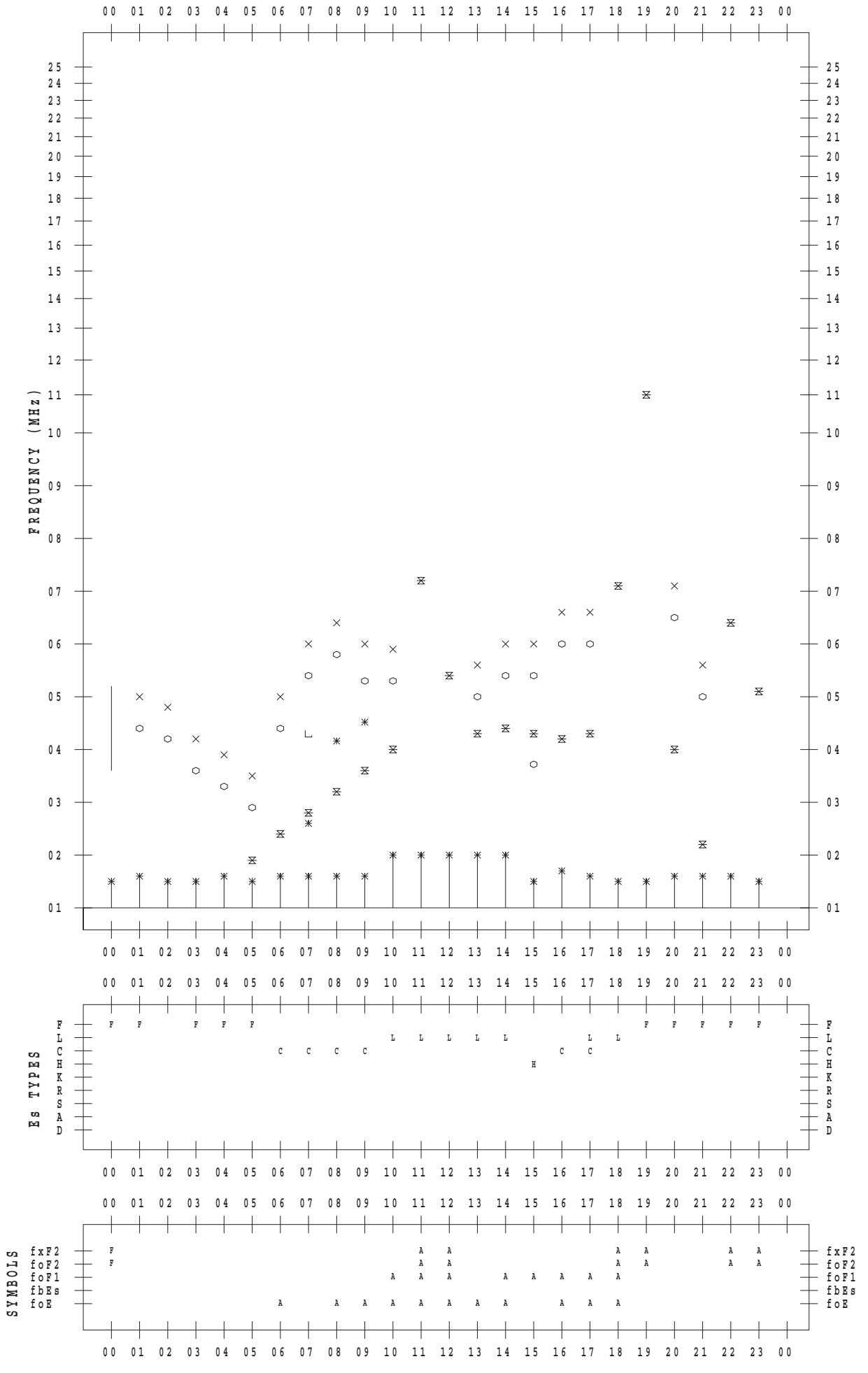
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/15

135 °E MEAN TIME



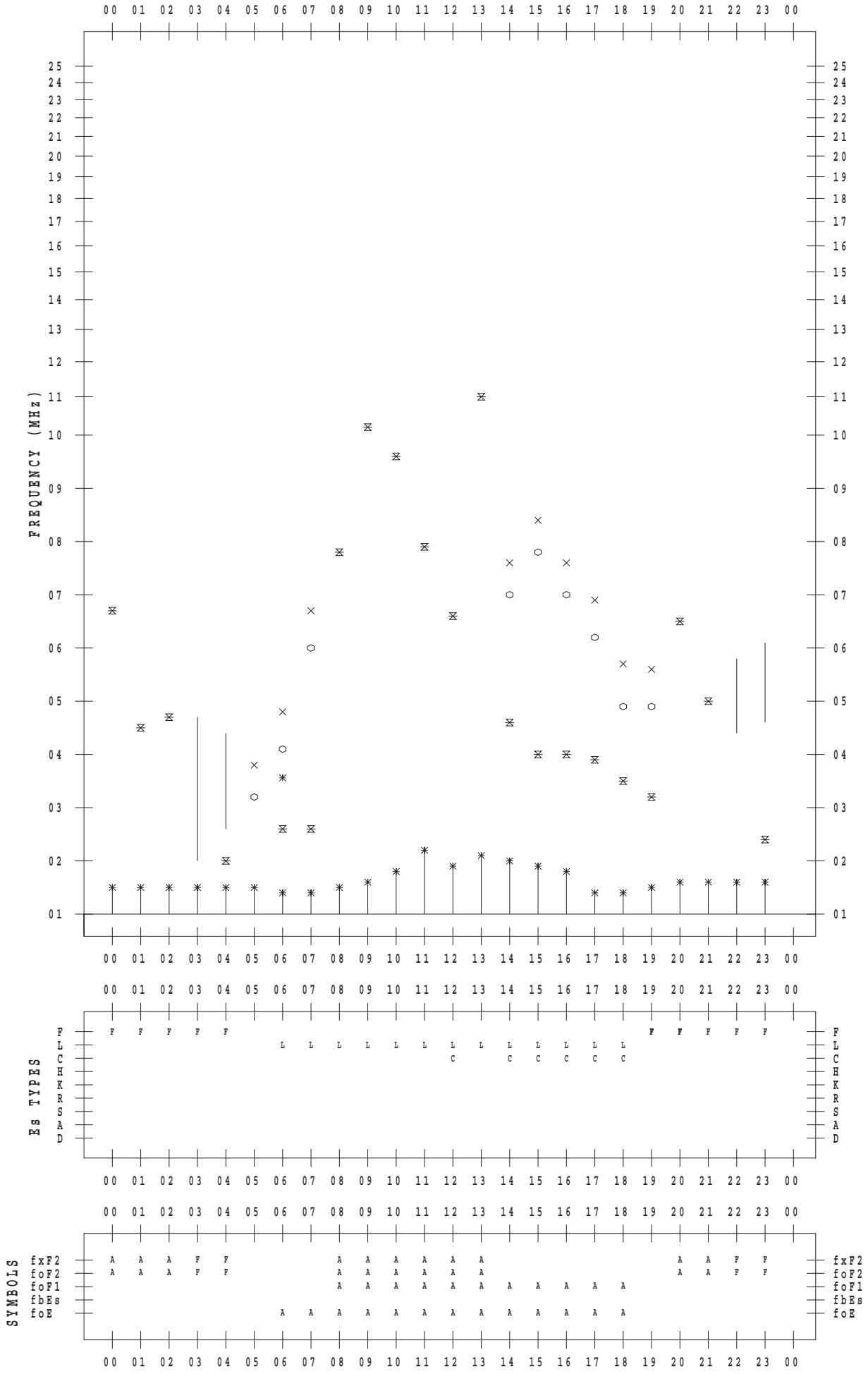
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/16

135 °E MEAN TIME



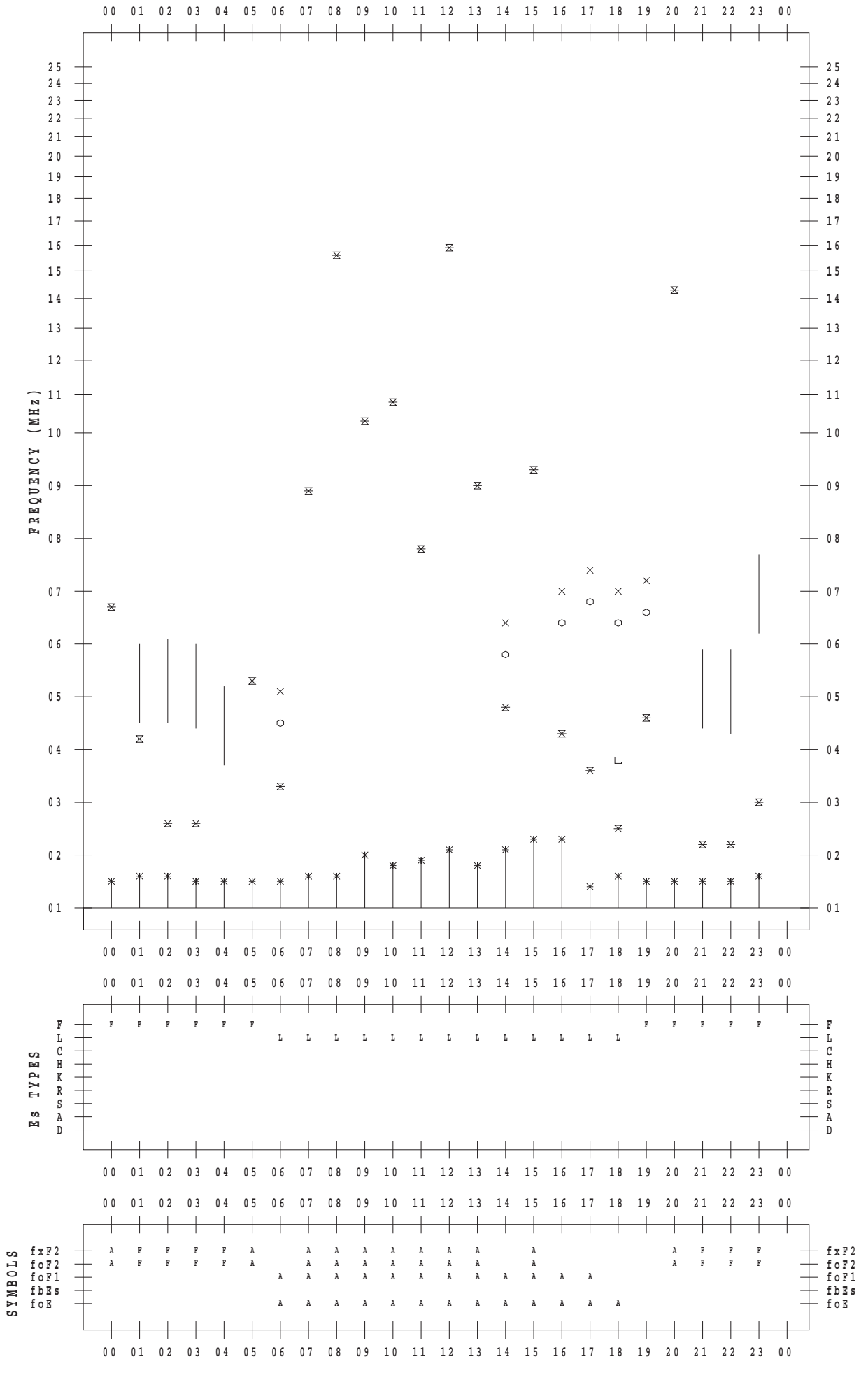
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/17

135 °E MEAN TIME



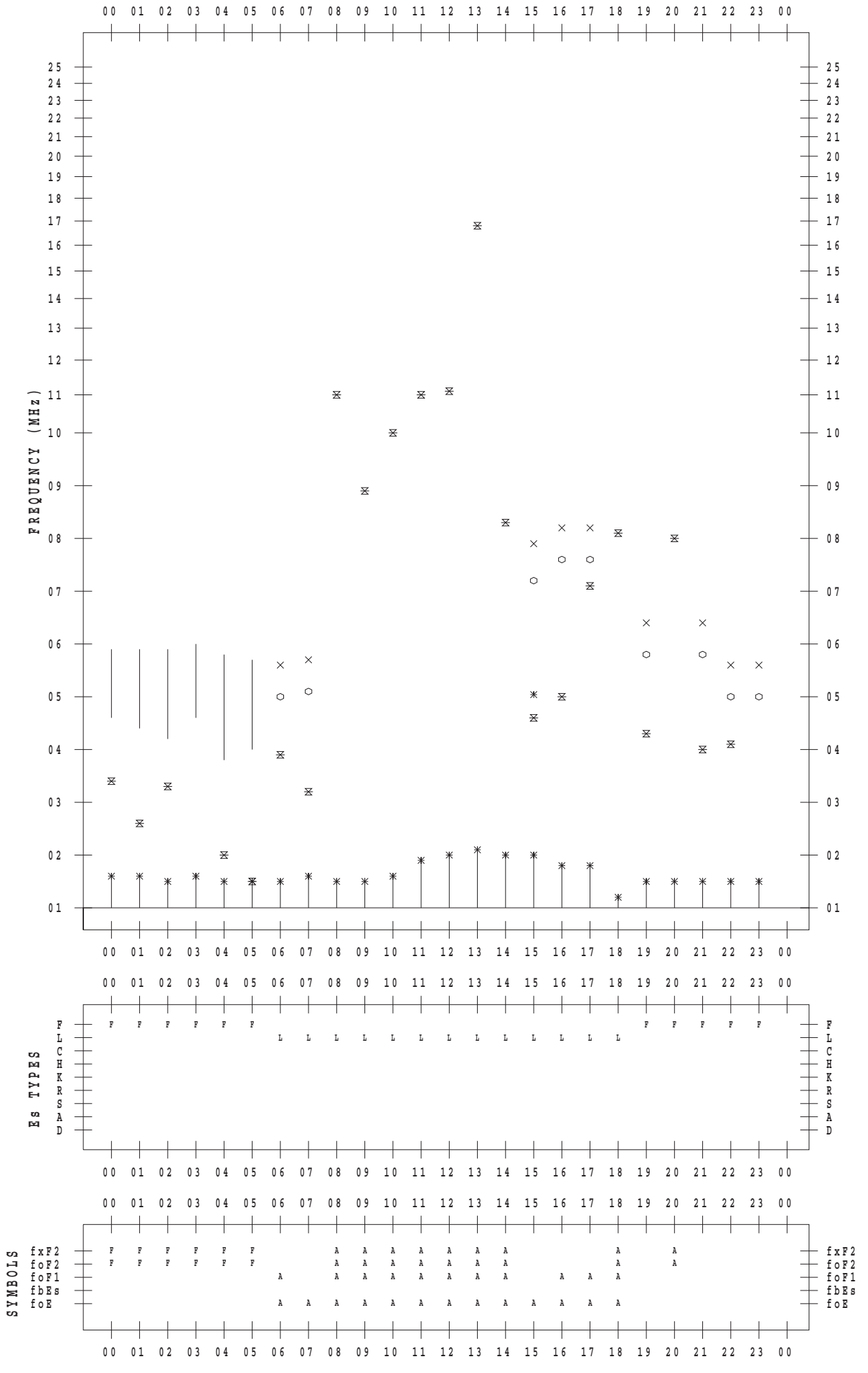
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/18

135 °E MEAN TIME



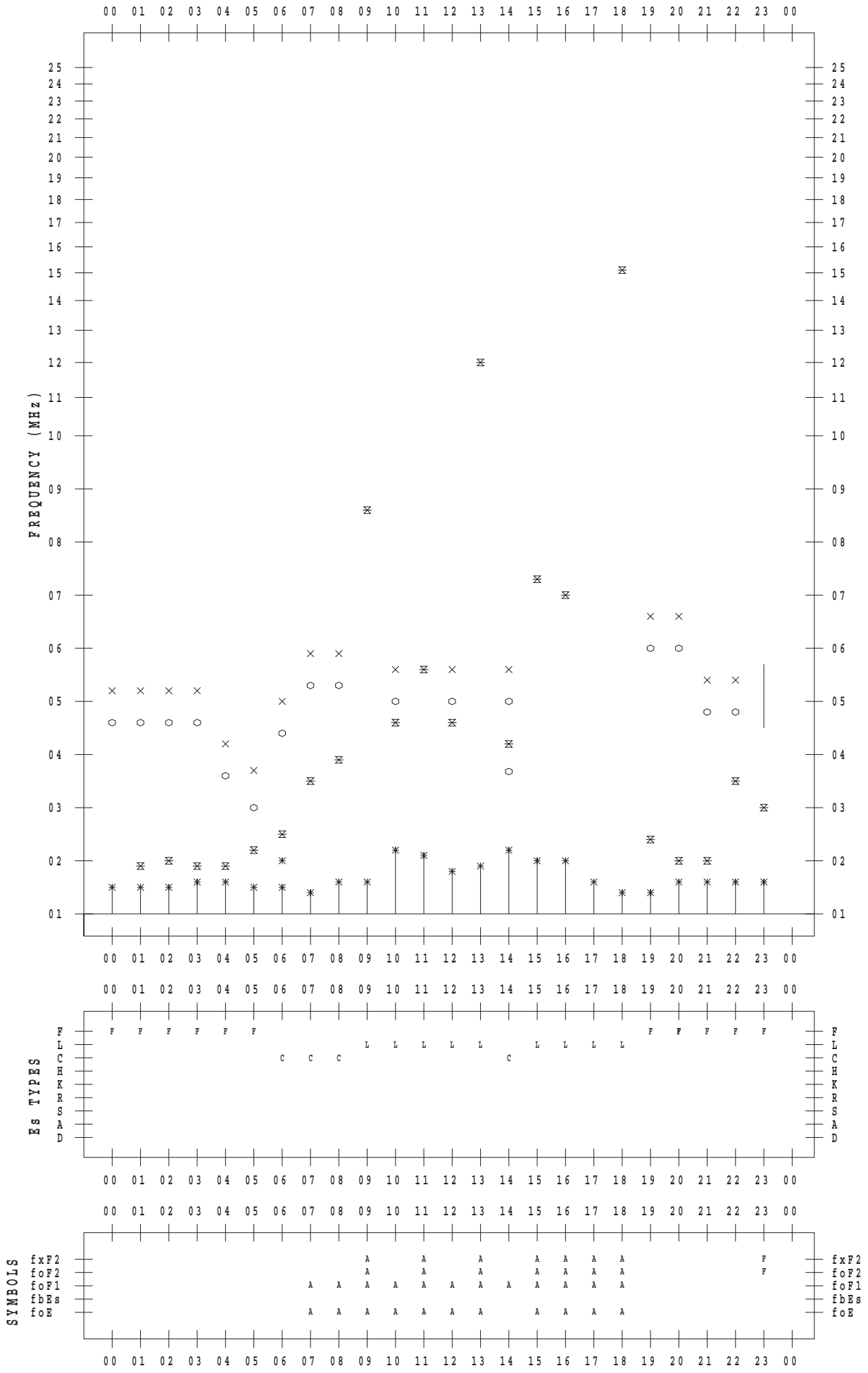
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/19

135 °E MEAN TIME



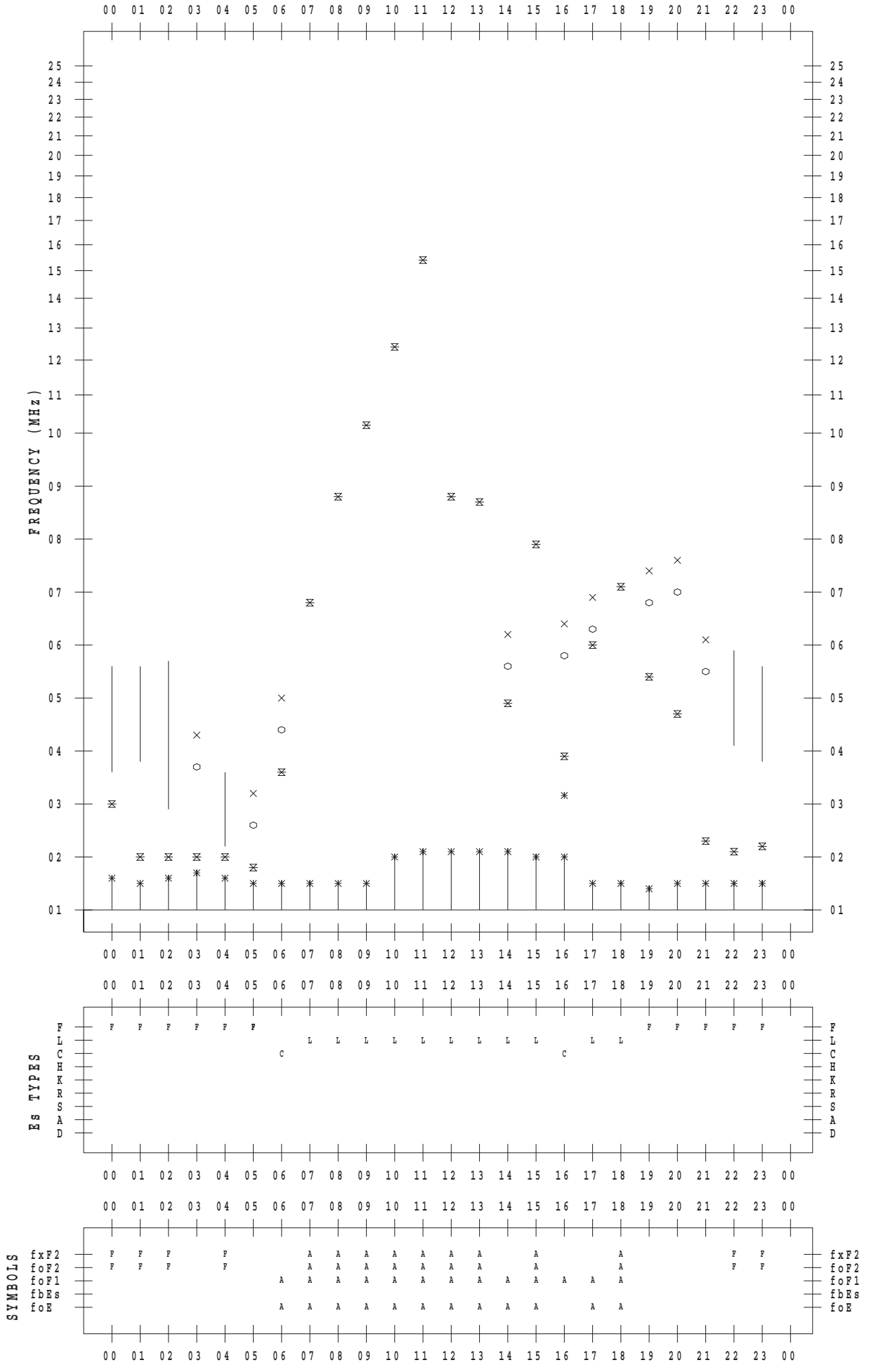
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/20

135 °E MEAN TIME



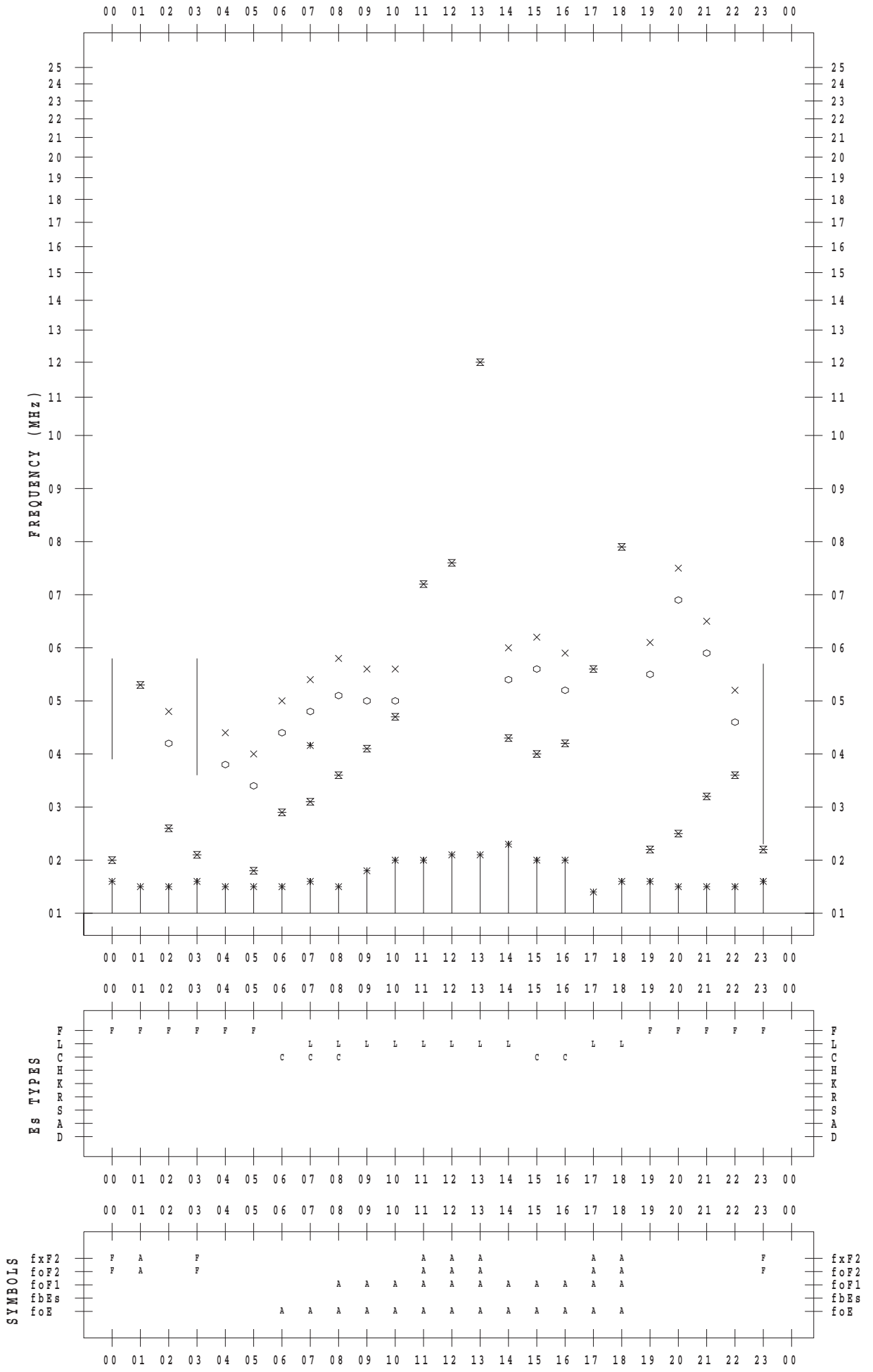
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/21

135 °E MEAN TIME



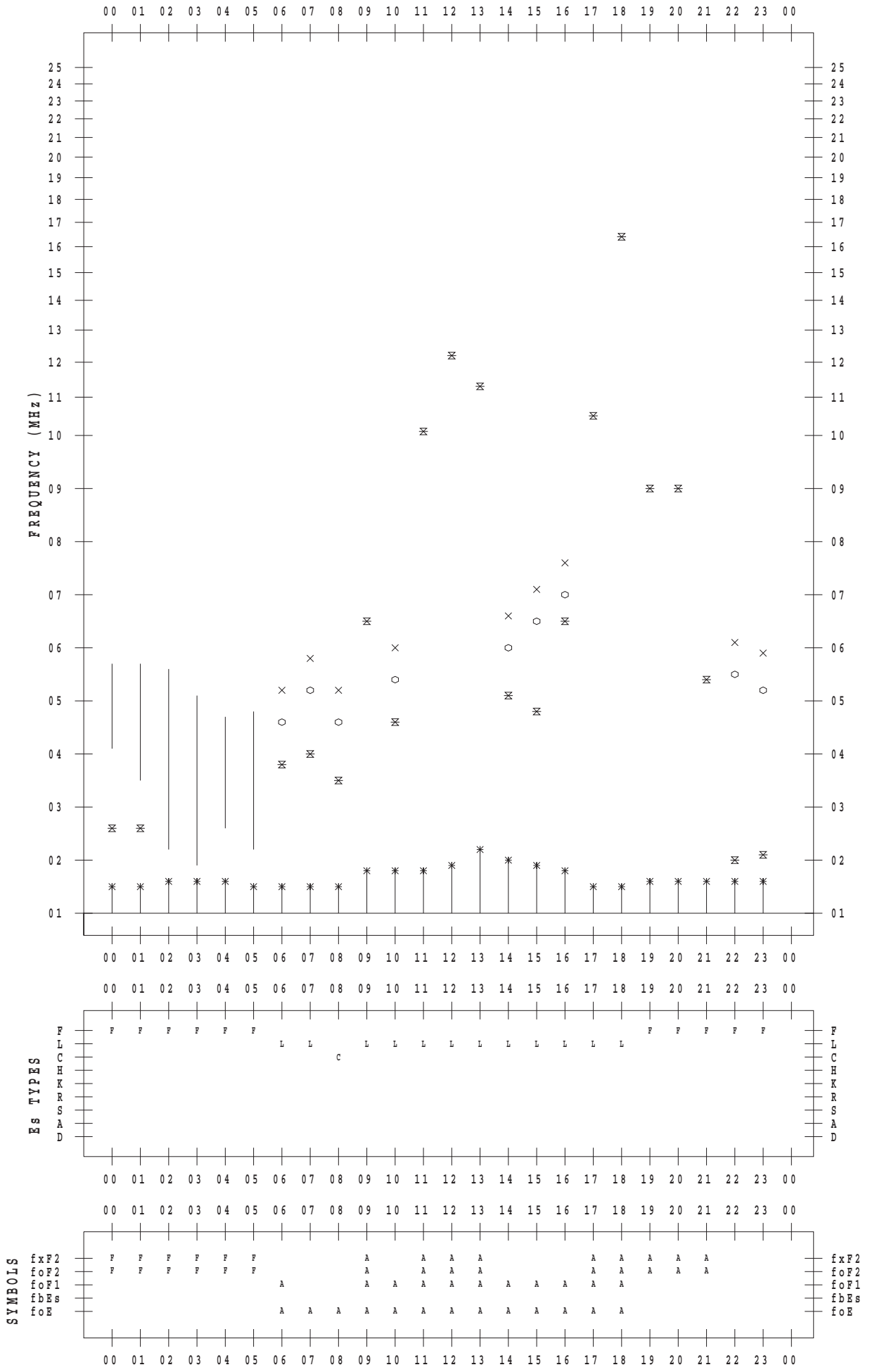
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/22

135 °E MEAN TIME



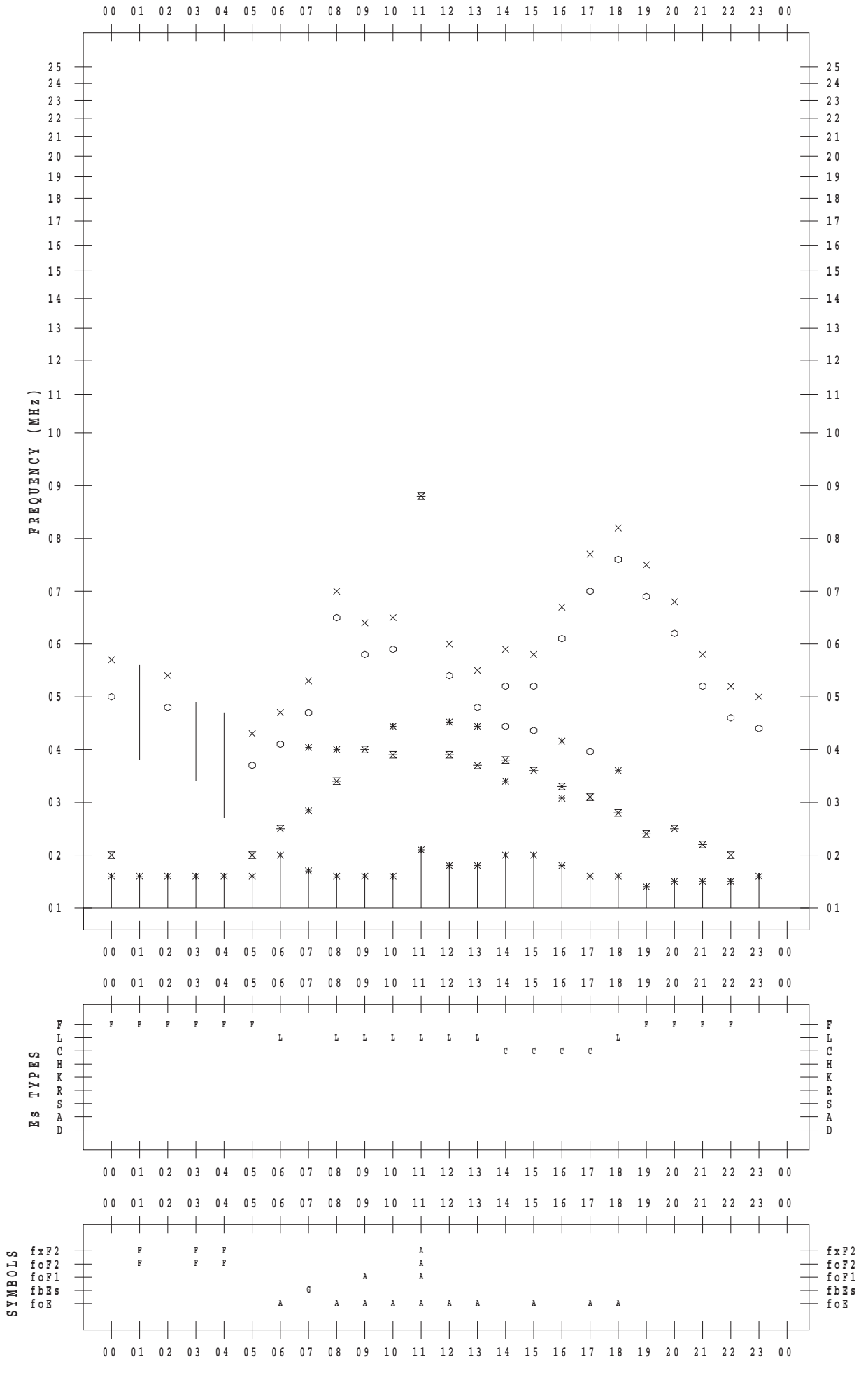
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/23

135 °E MEAN TIME



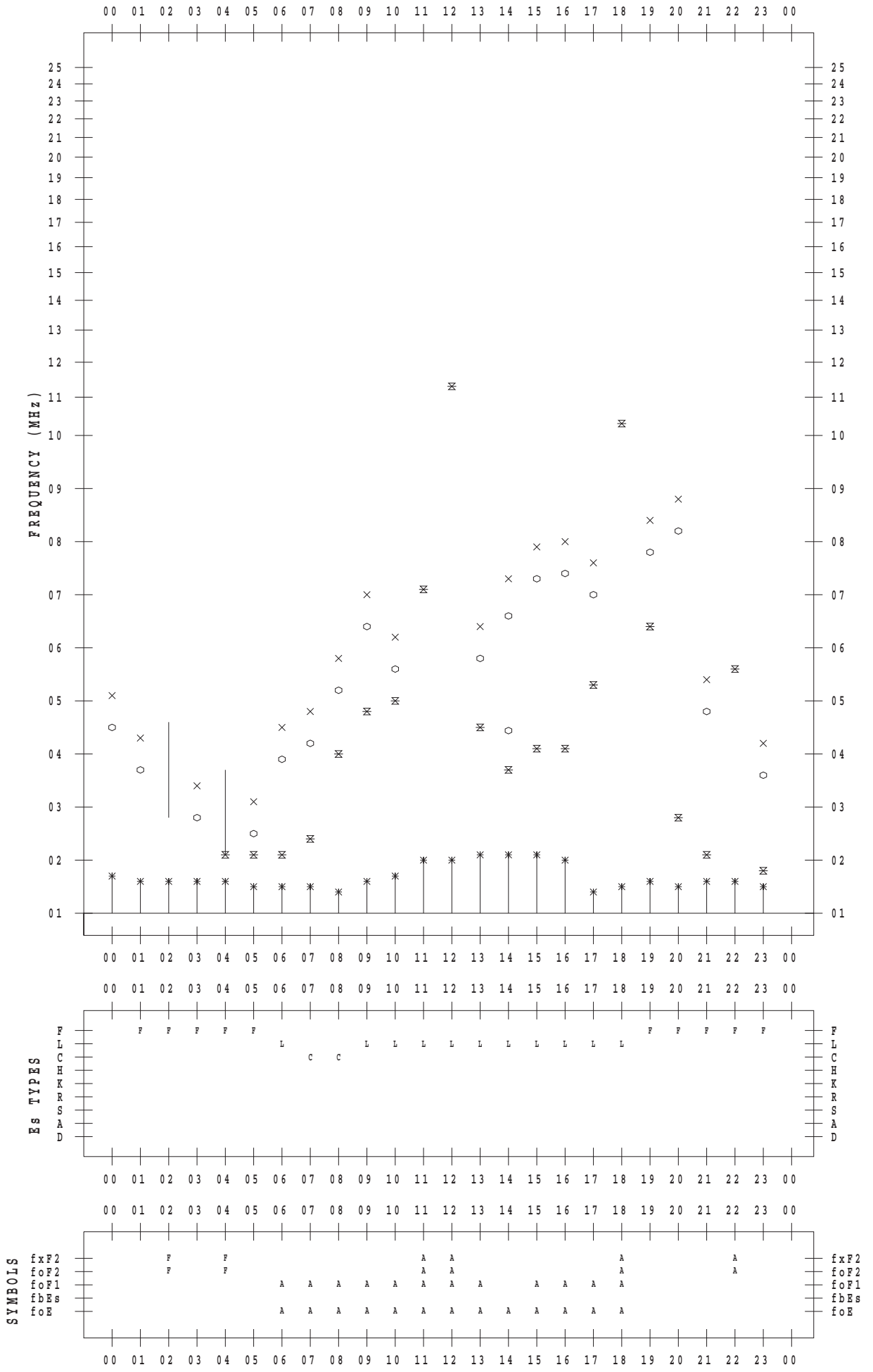
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/24

135 °E MEAN TIME



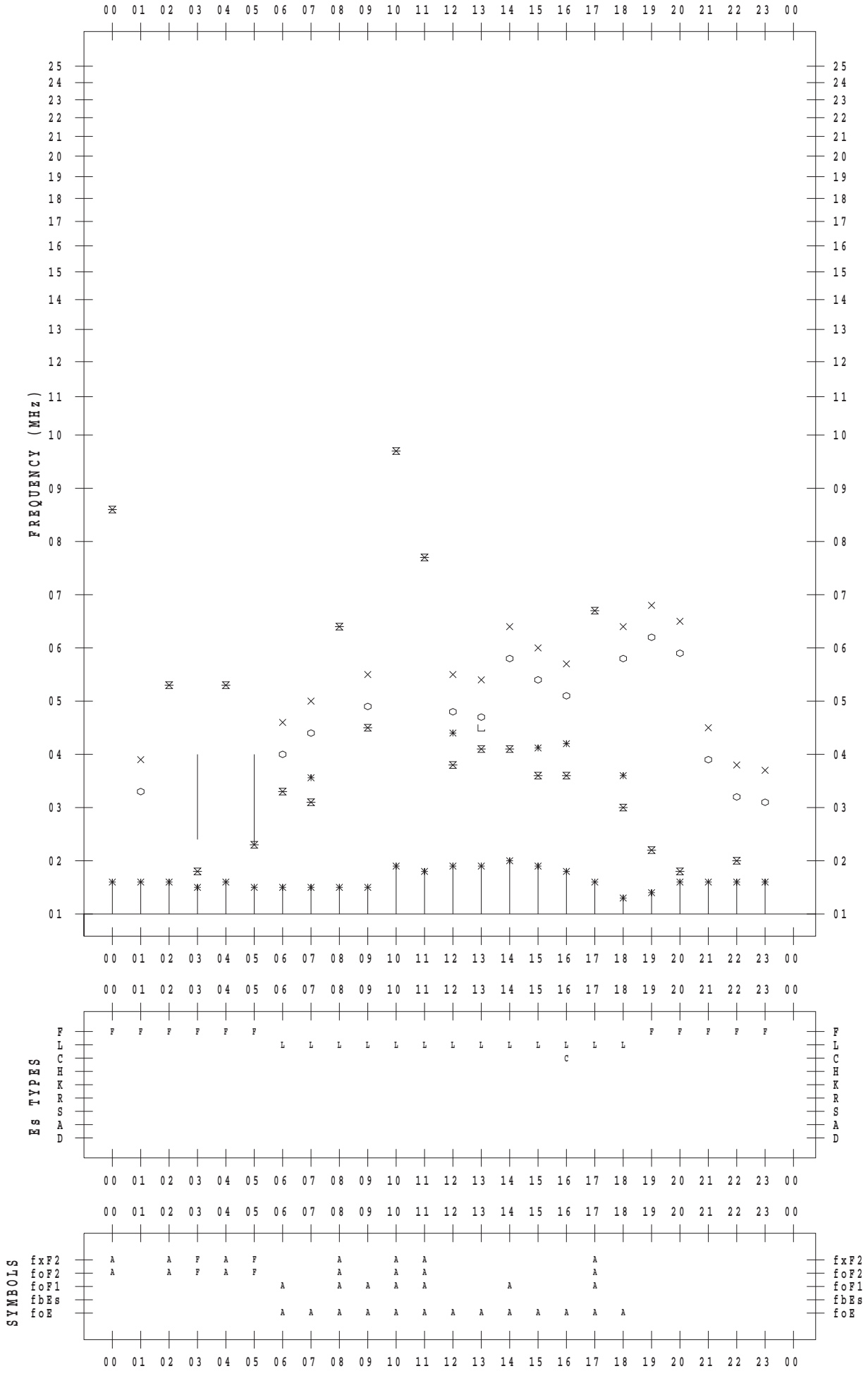
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/25

135 °E MEAN TIME



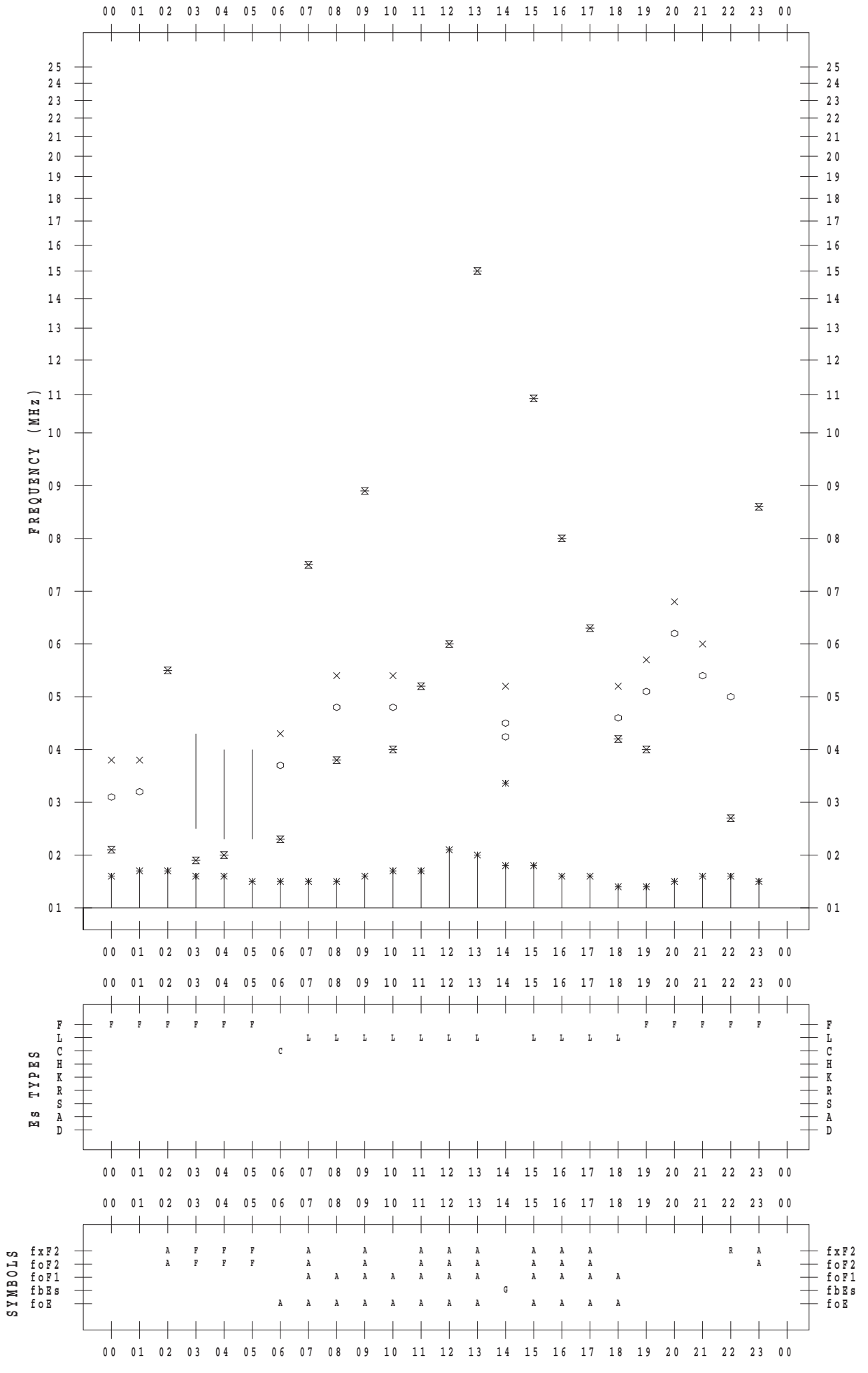
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/26

135 °E MEAN TIME



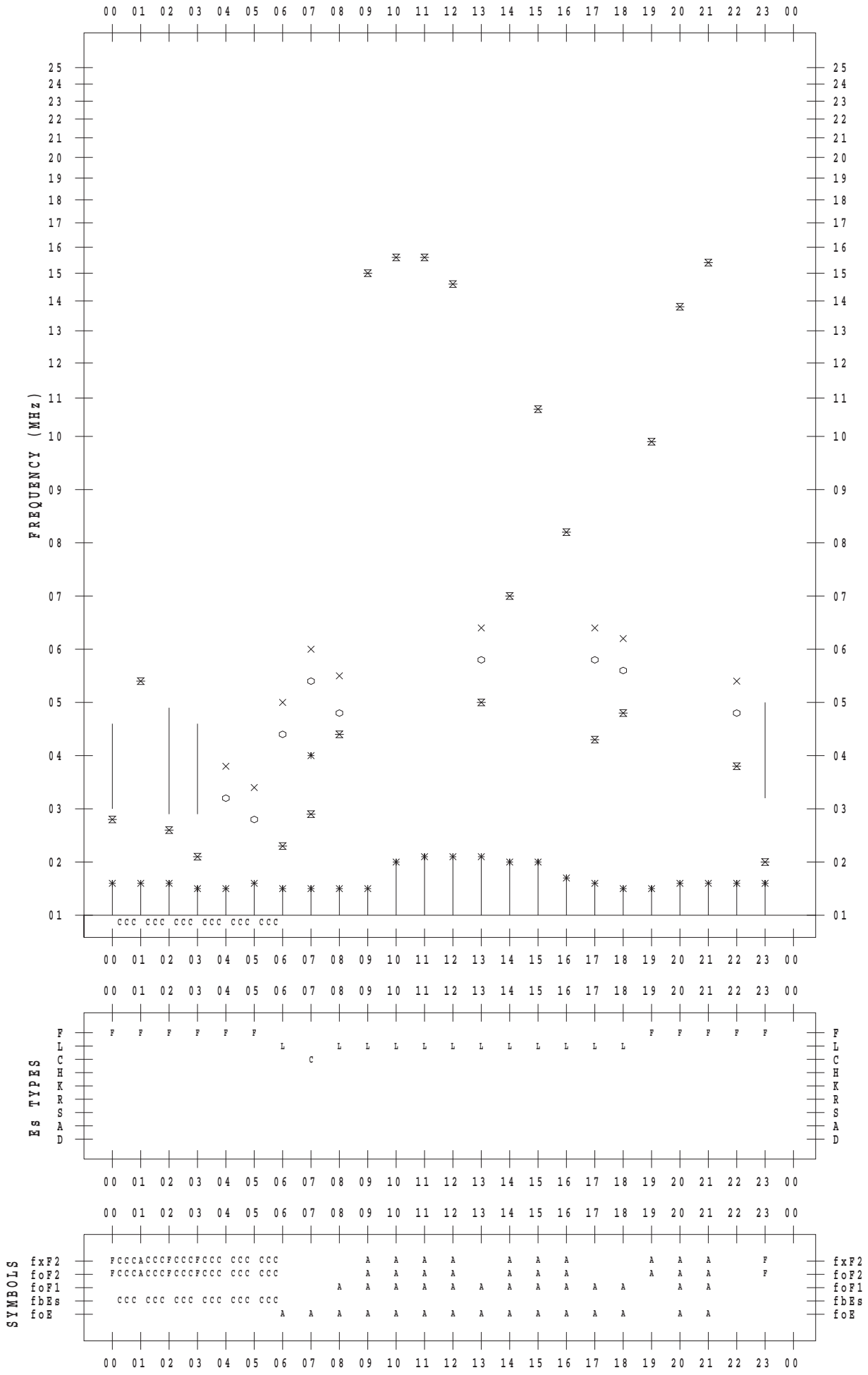
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/27

135 °E MEAN TIME



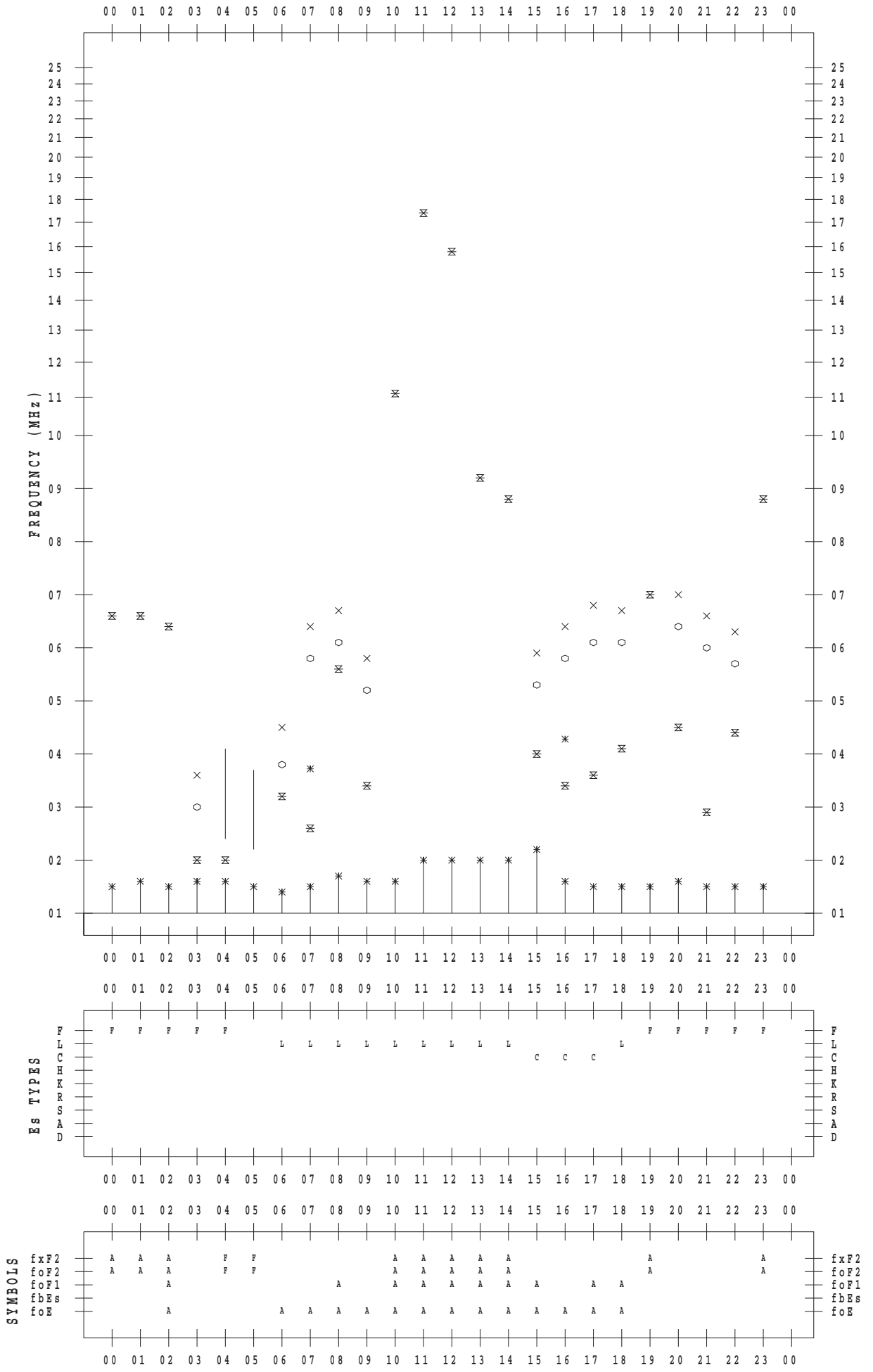
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/28

135 °E MEAN TIME



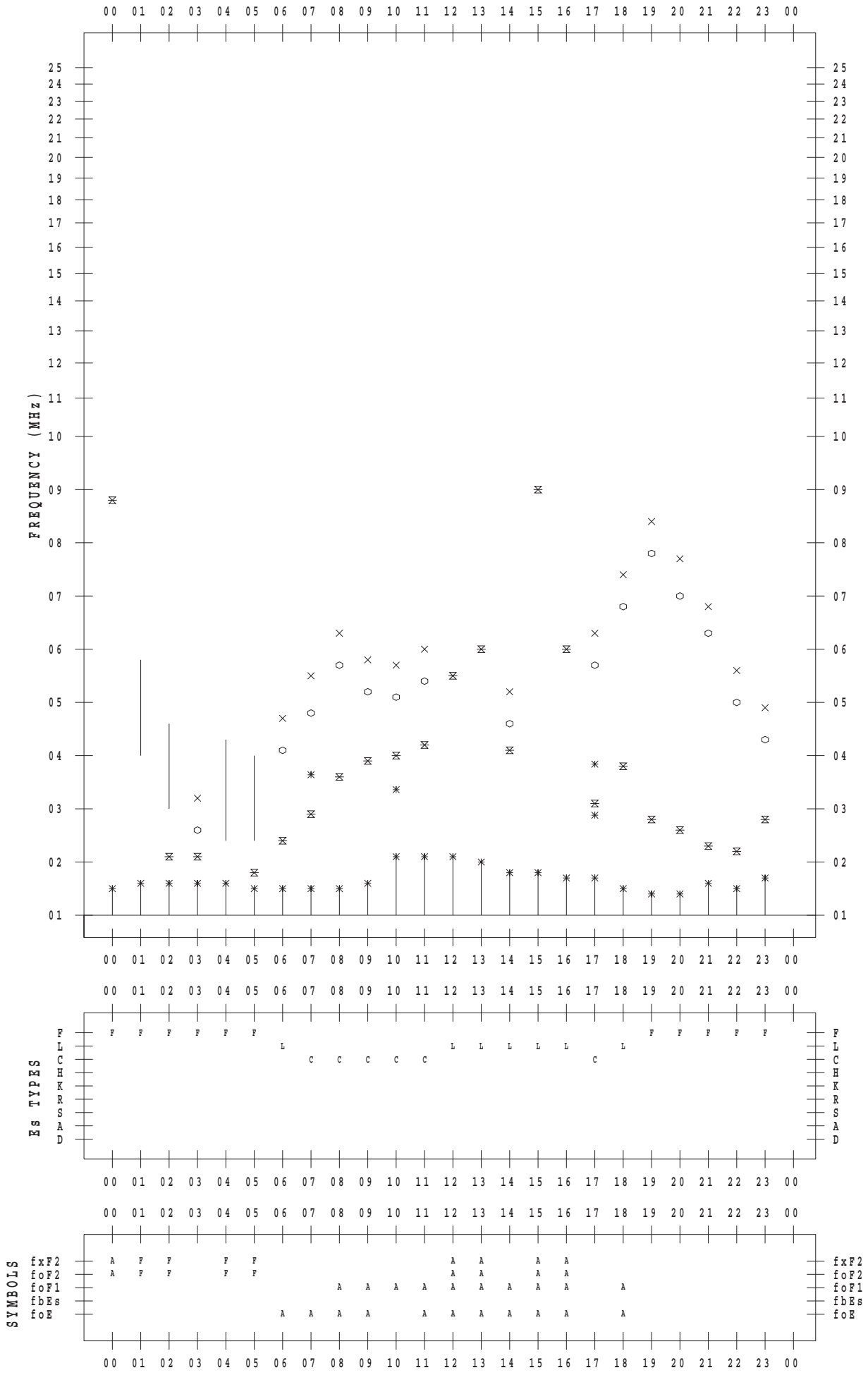
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/29

135 °E MEAN TIME



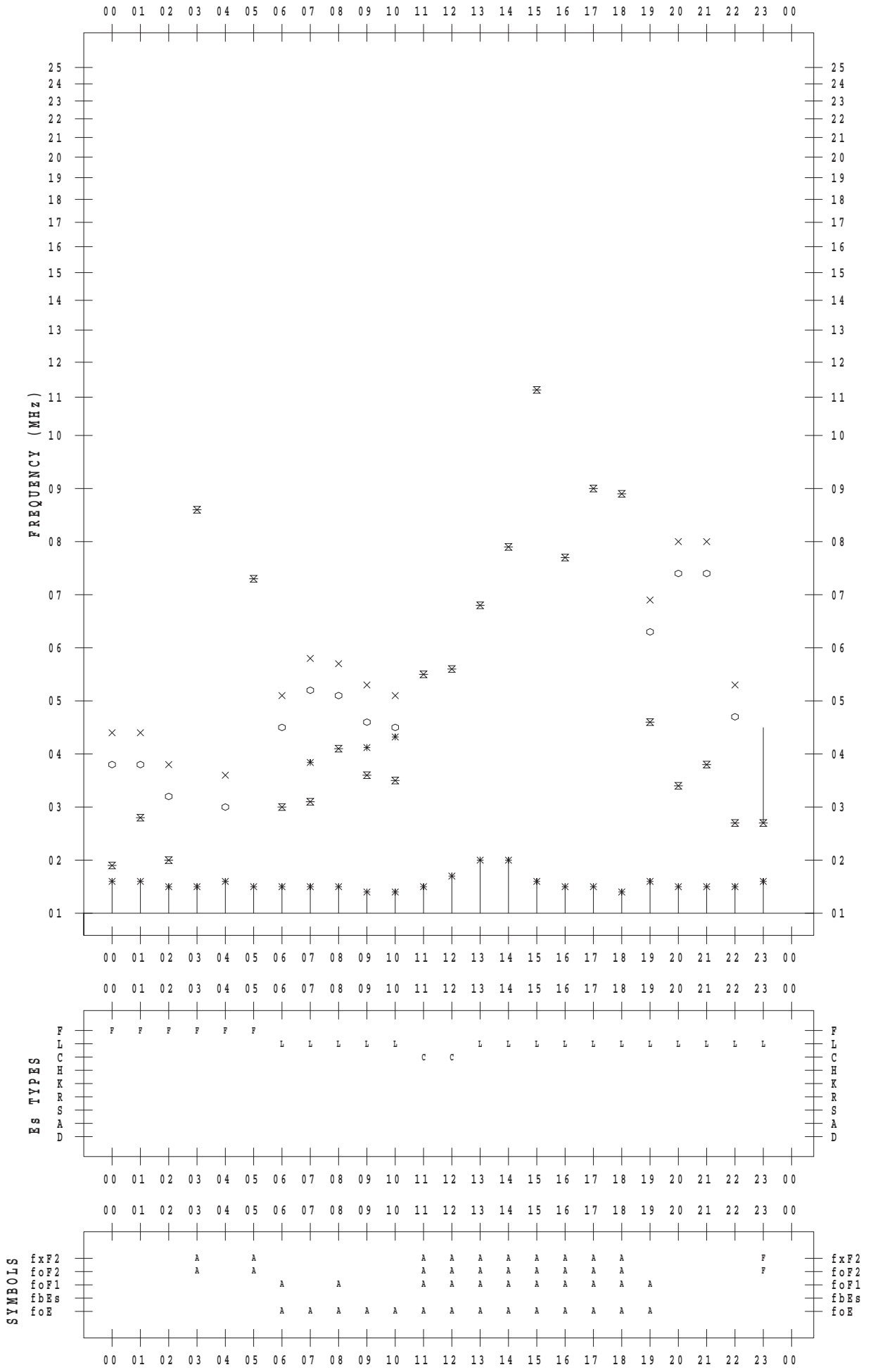
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2017/ 6/30

135 °E MEAN TIME



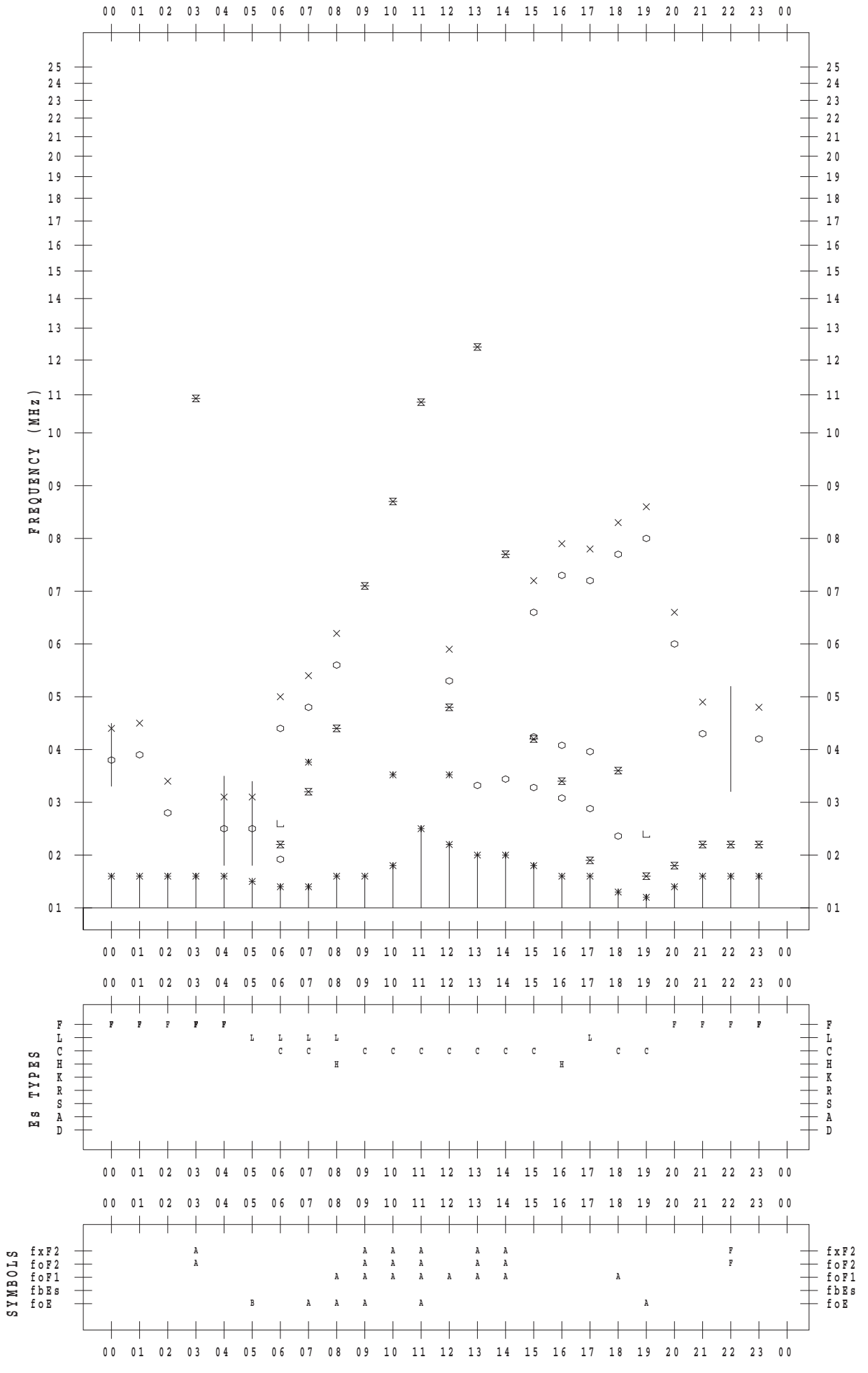
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 1

135 °E MEAN TIME



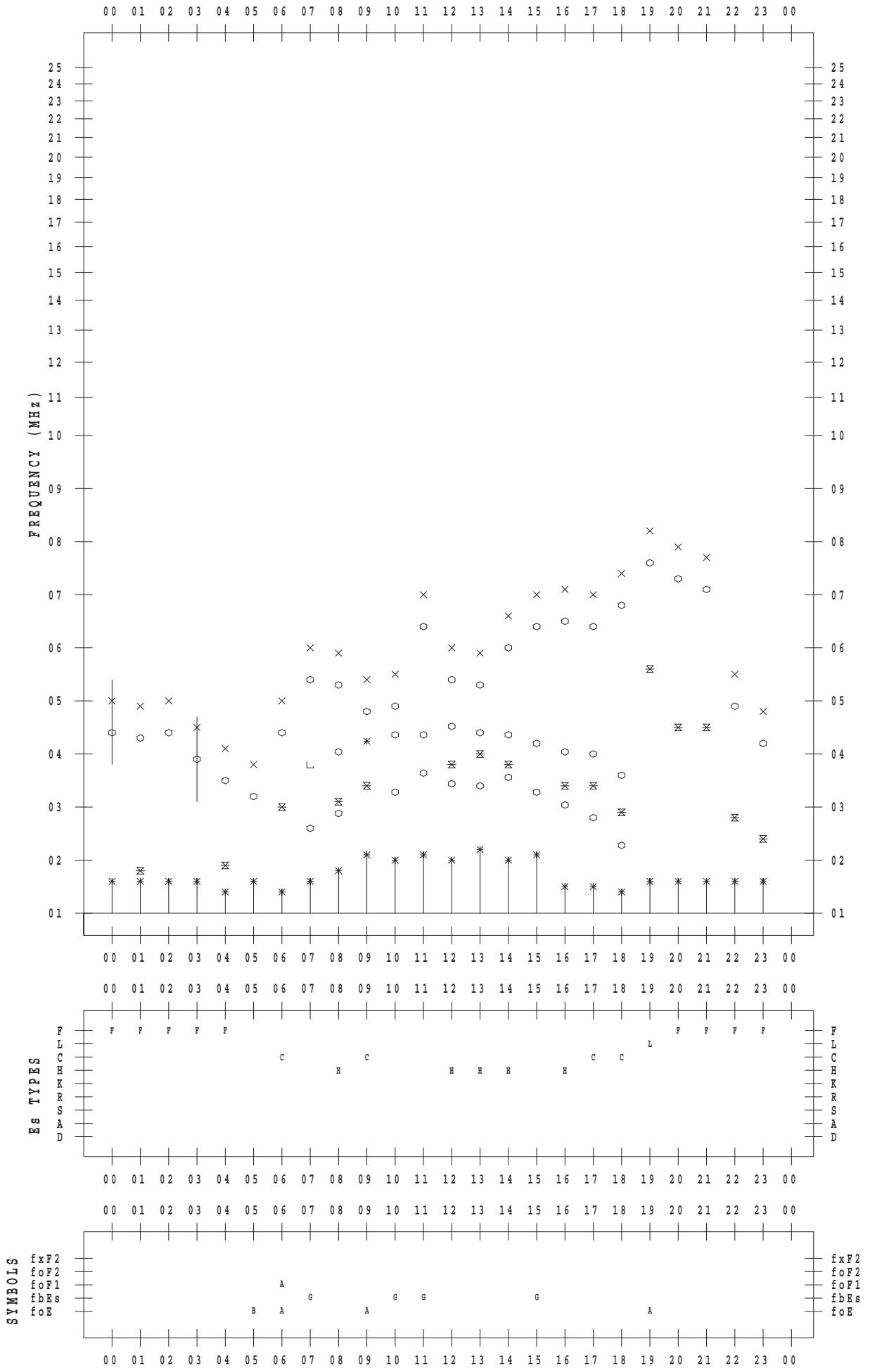
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 2

135 °E MEAN TIME



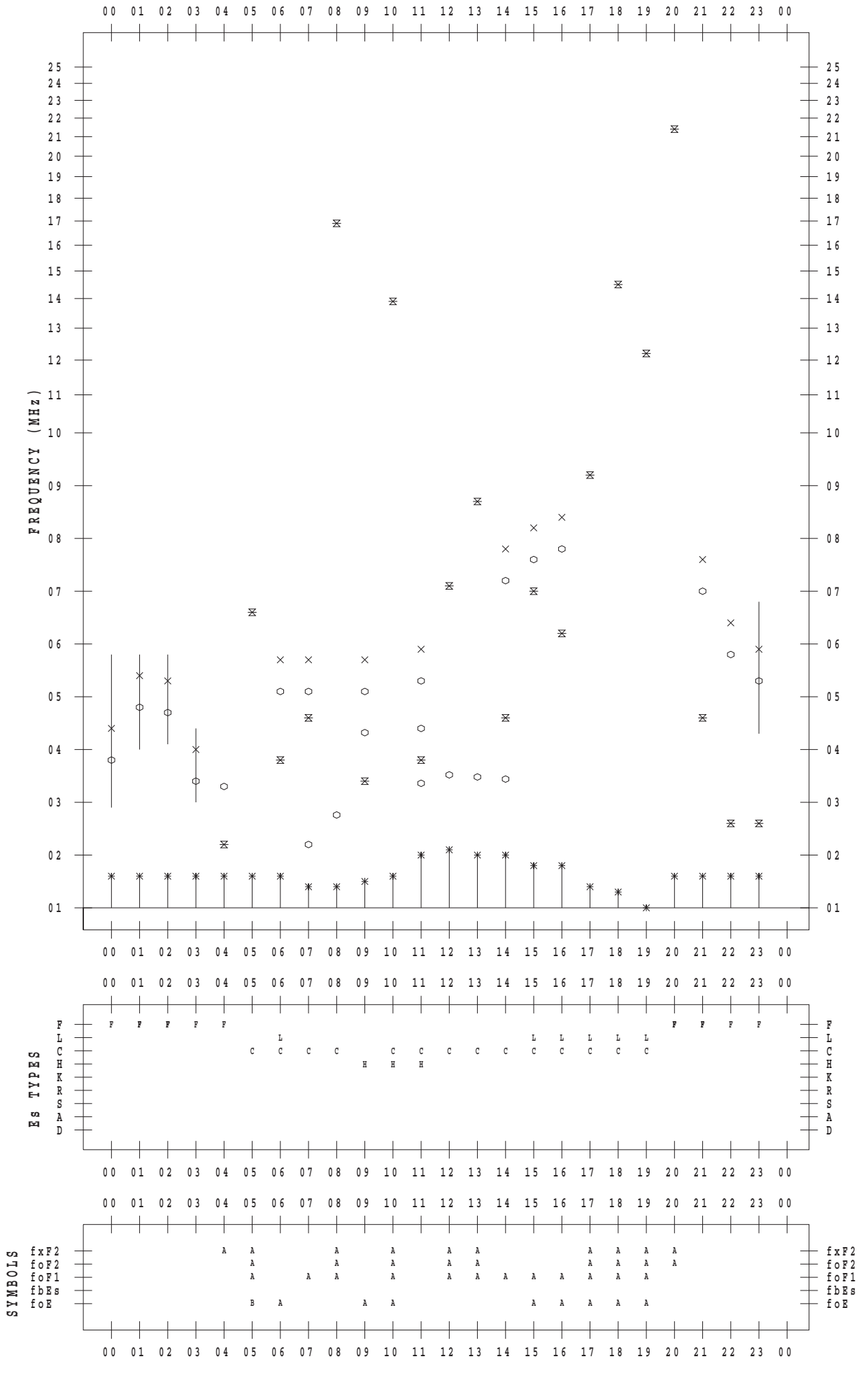
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 3

135 °E MEAN TIME



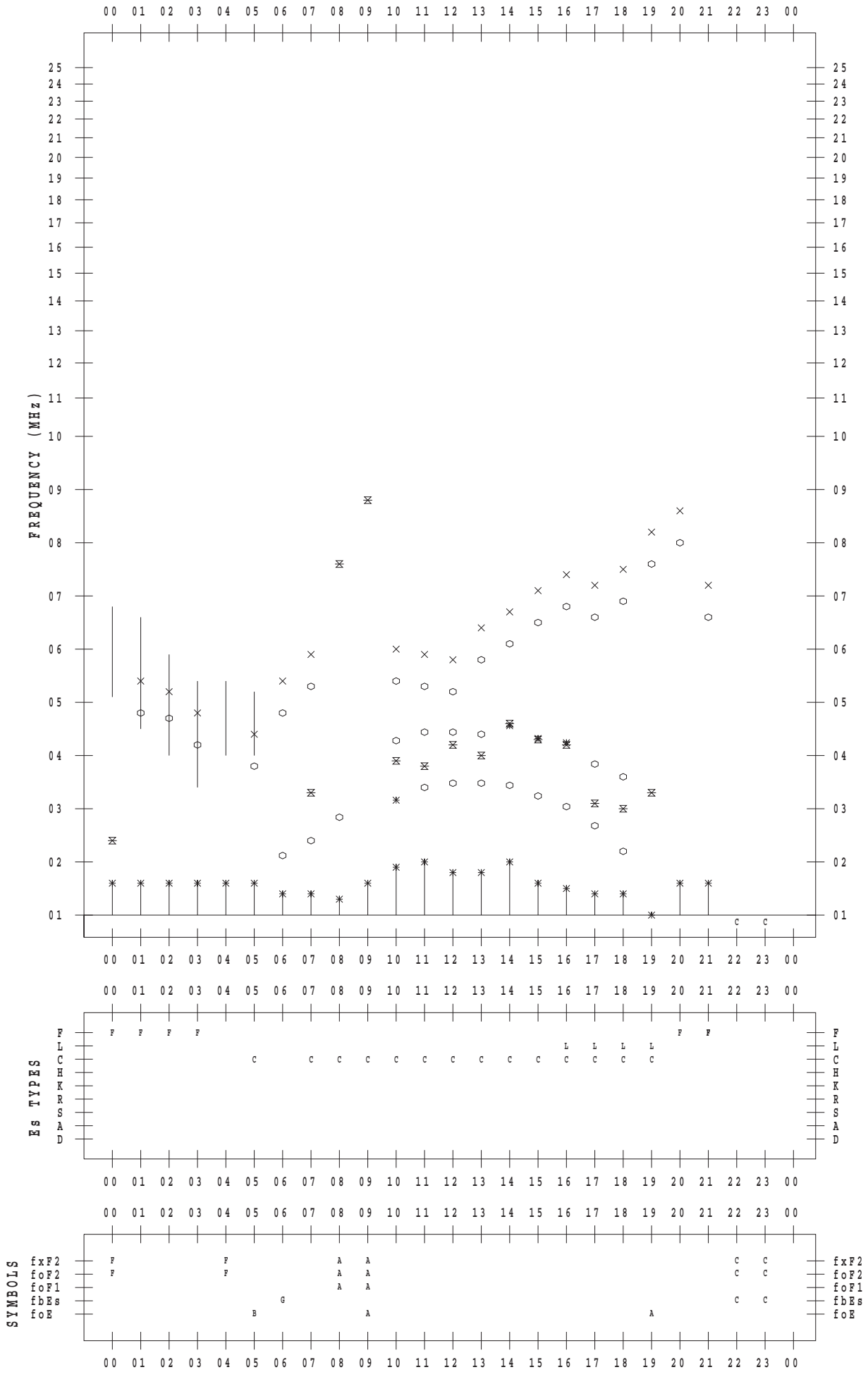
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 4

135 °E MEAN TIME



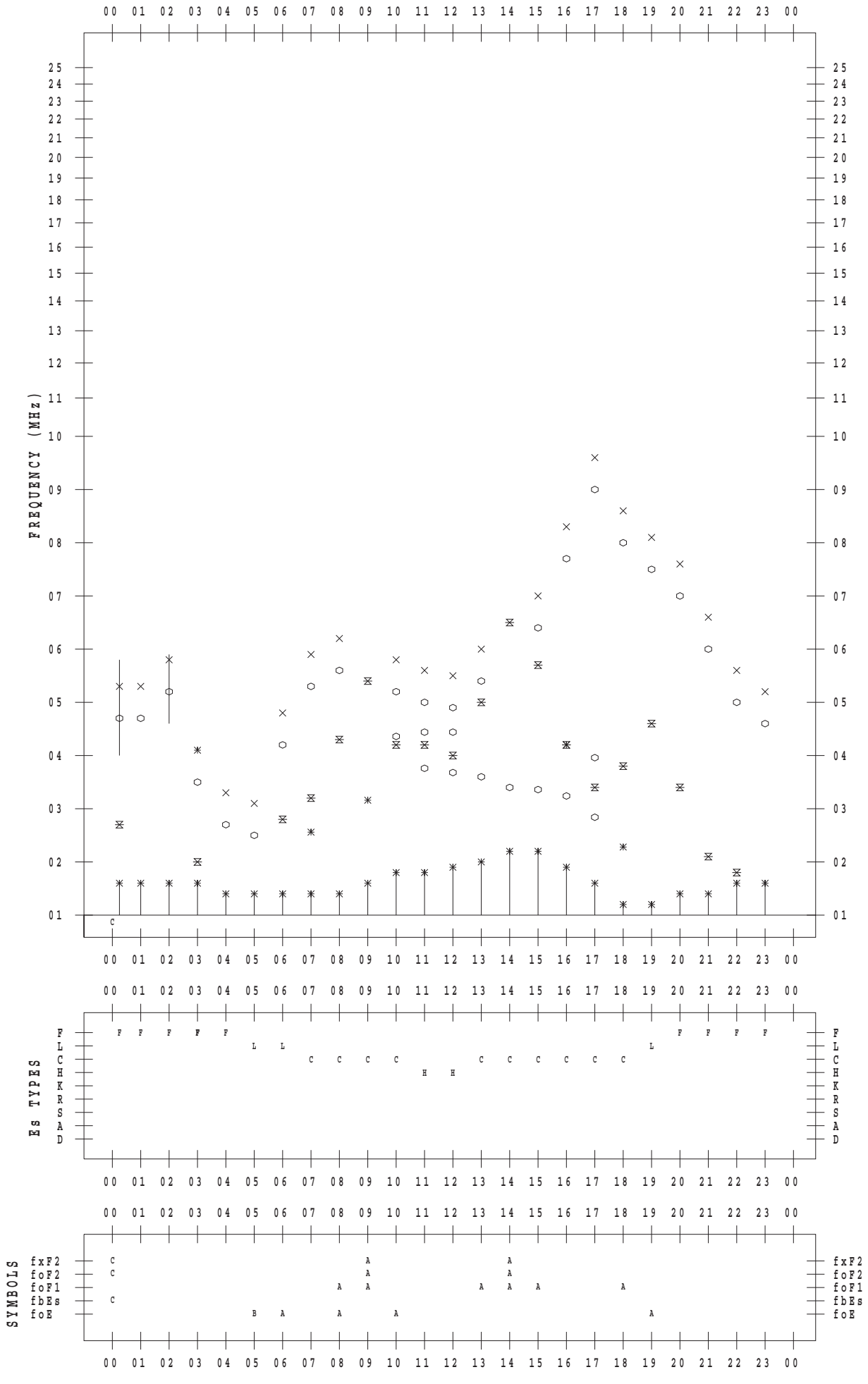
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 5

135 °E MEAN TIME



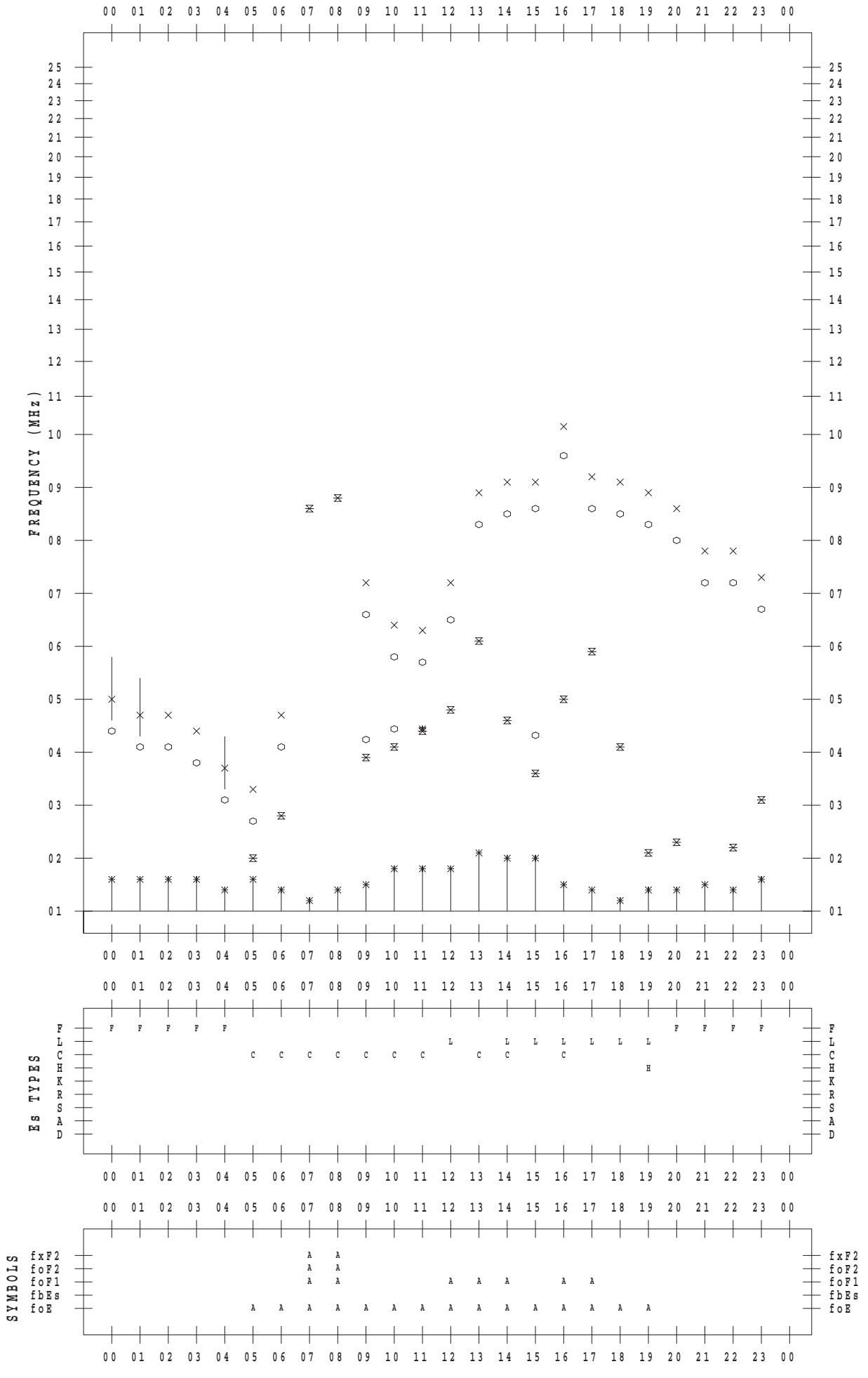
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 6

135 °E MEAN TIME



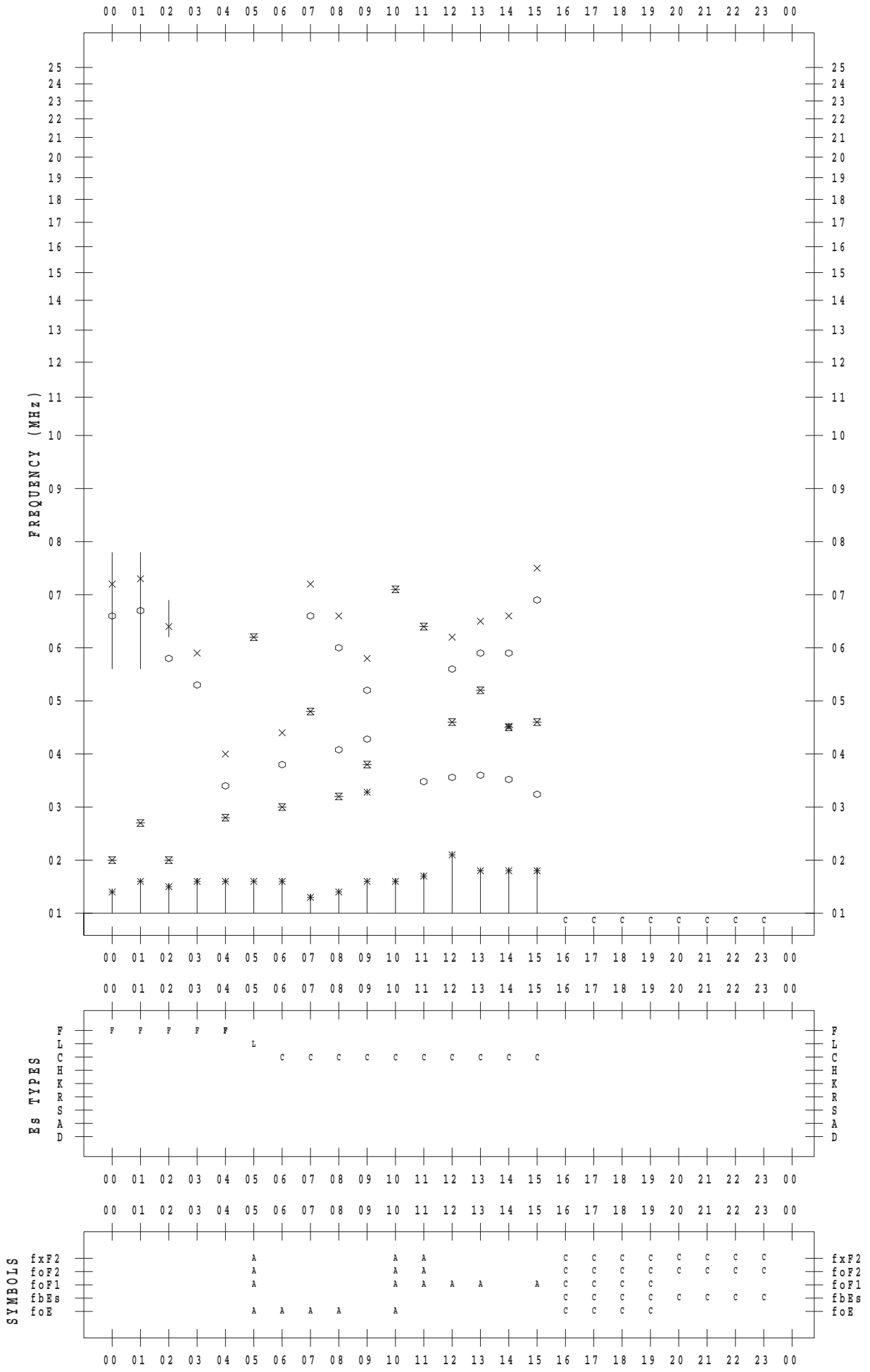
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 7

135 °E MEAN TIME



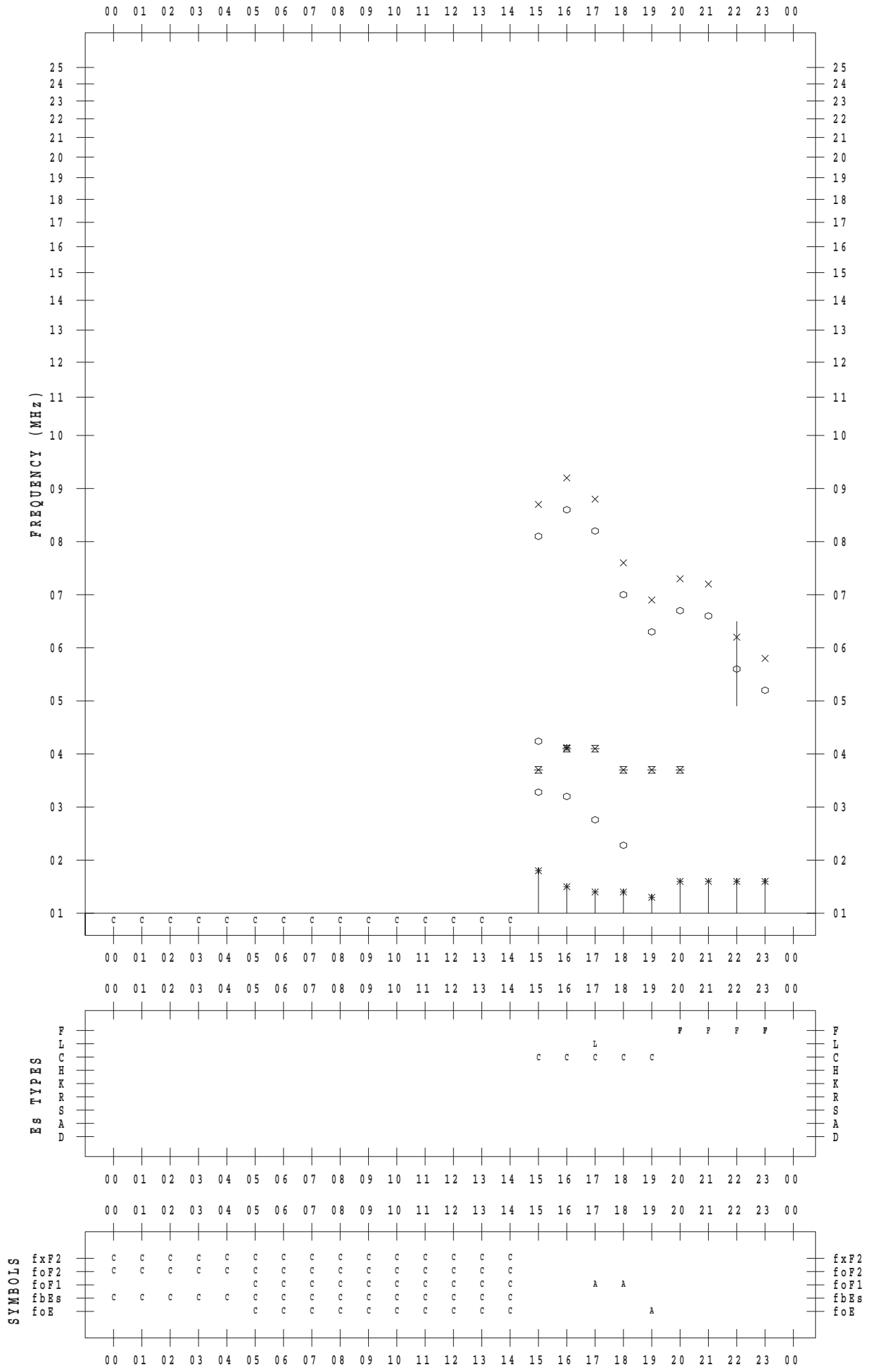
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 8

135 °E MEAN TIME



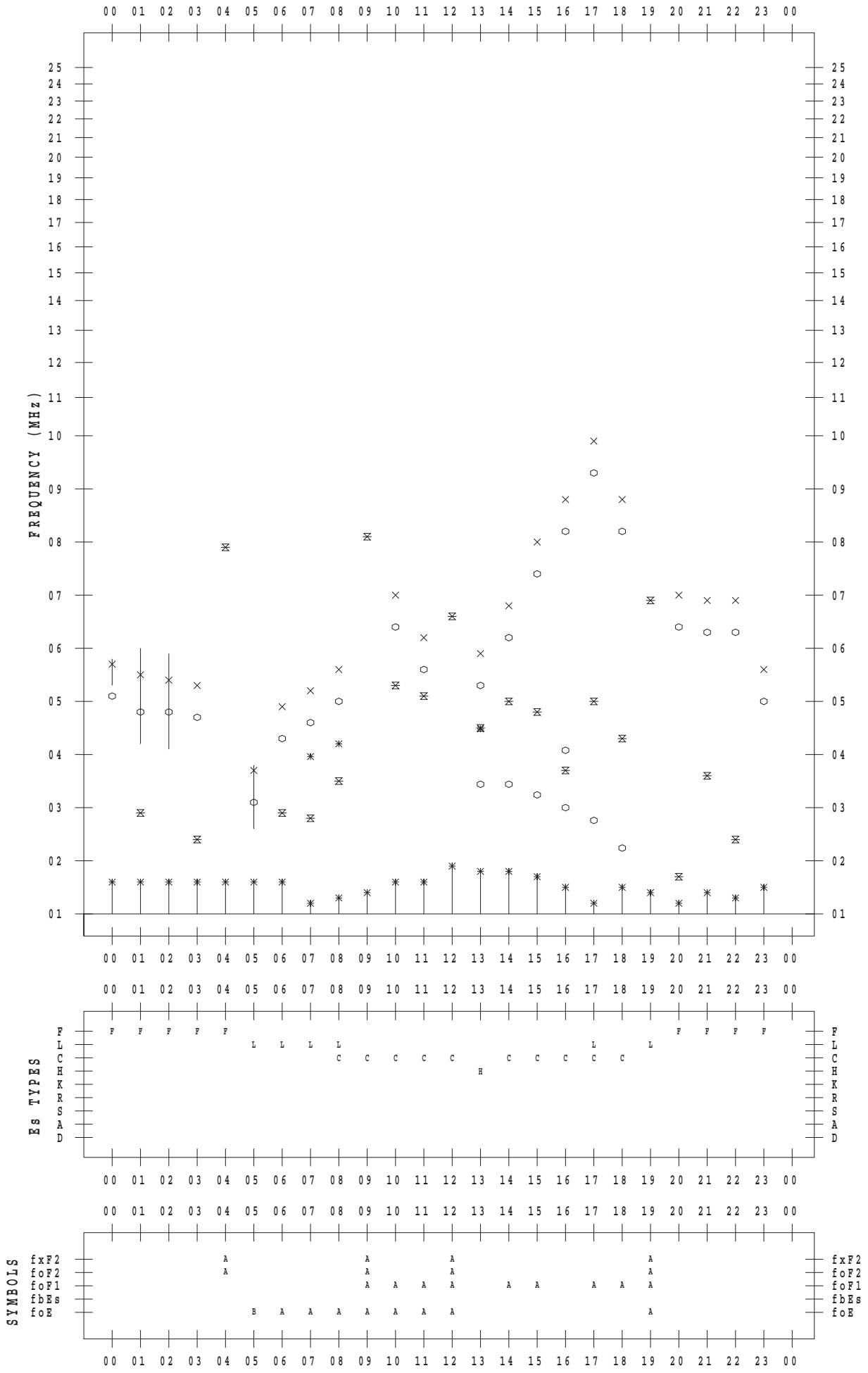
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/ 9

135 °E MEAN TIME



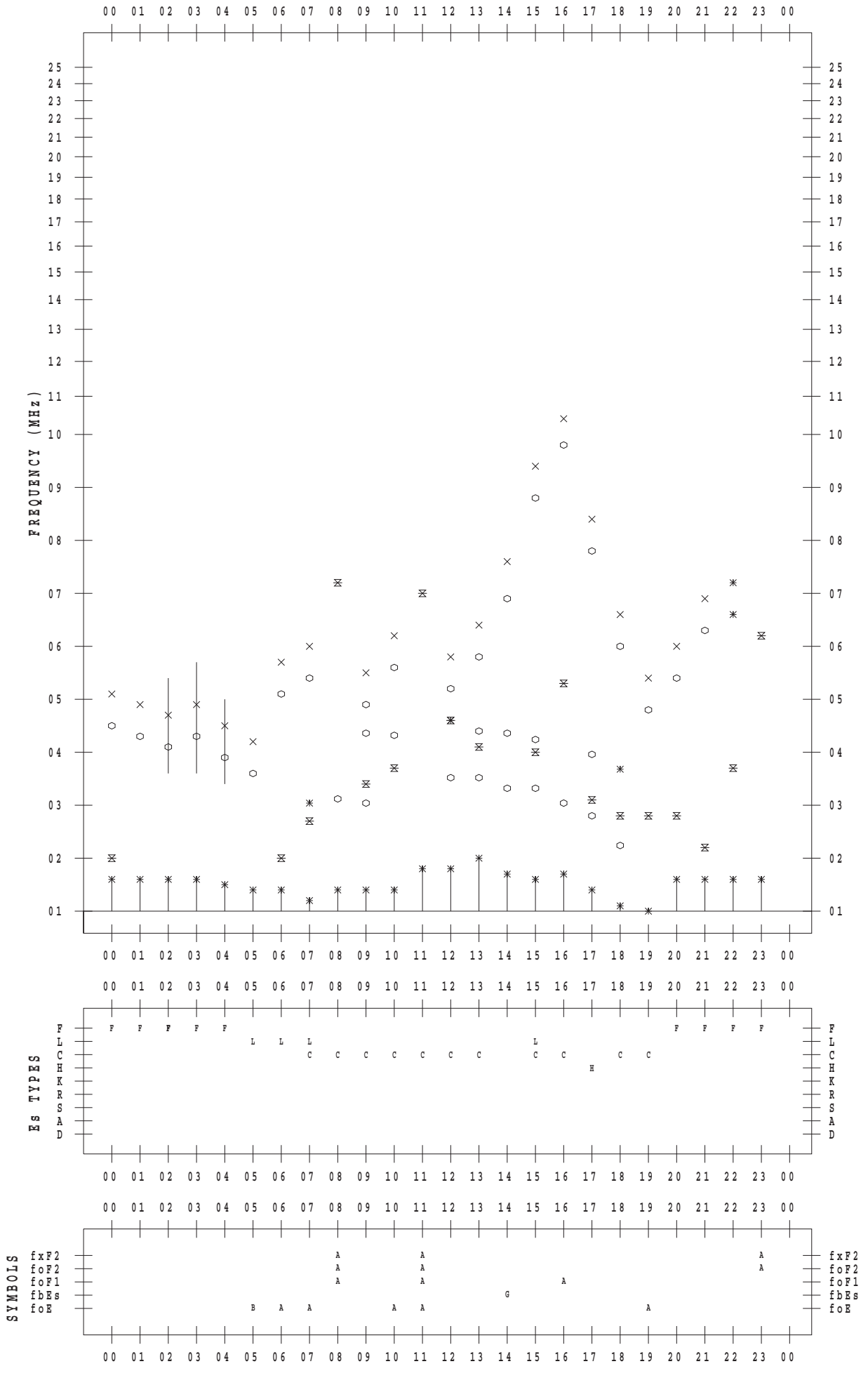
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/10

135 °E MEAN TIME



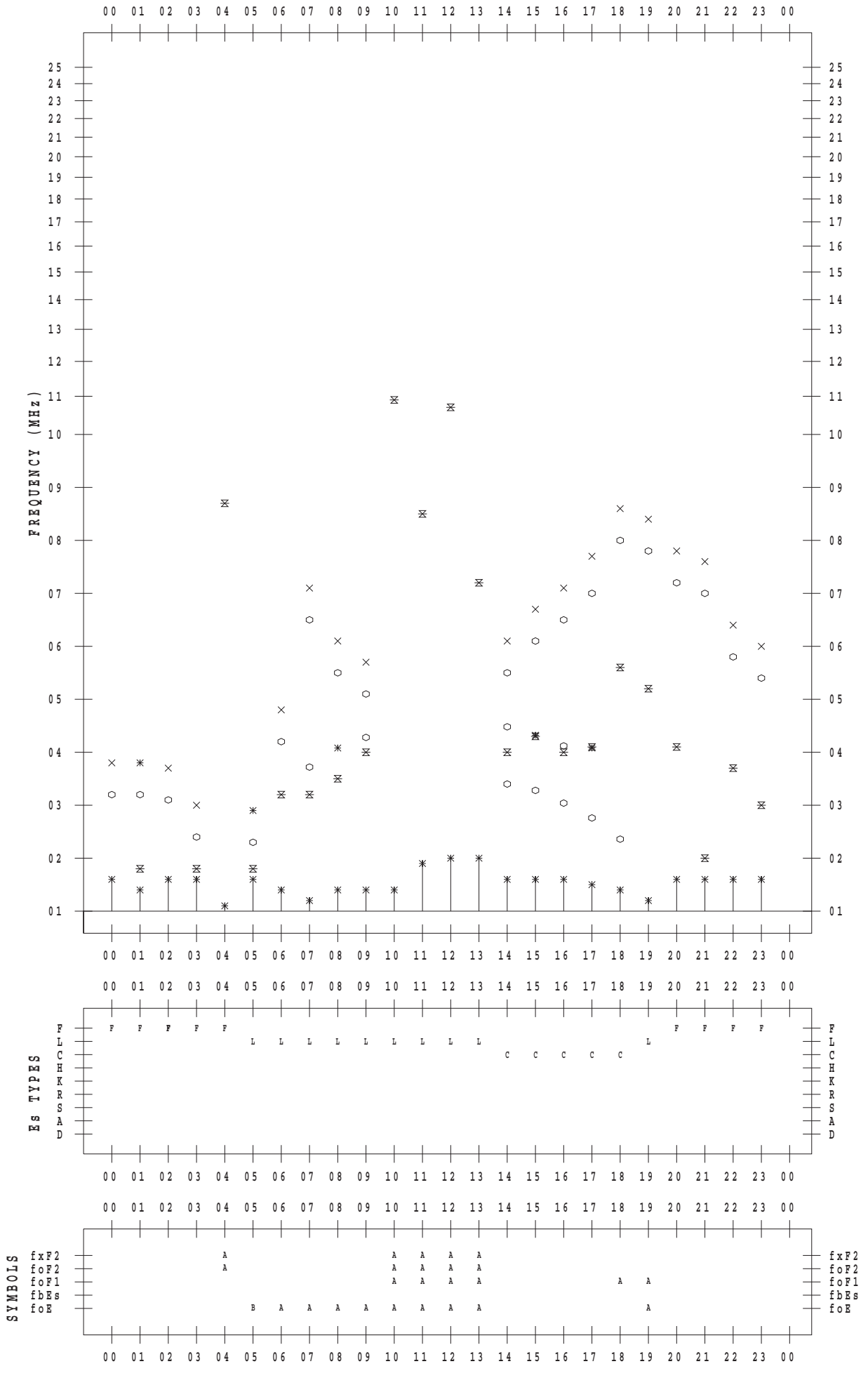
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/11

135 °E MEAN TIME



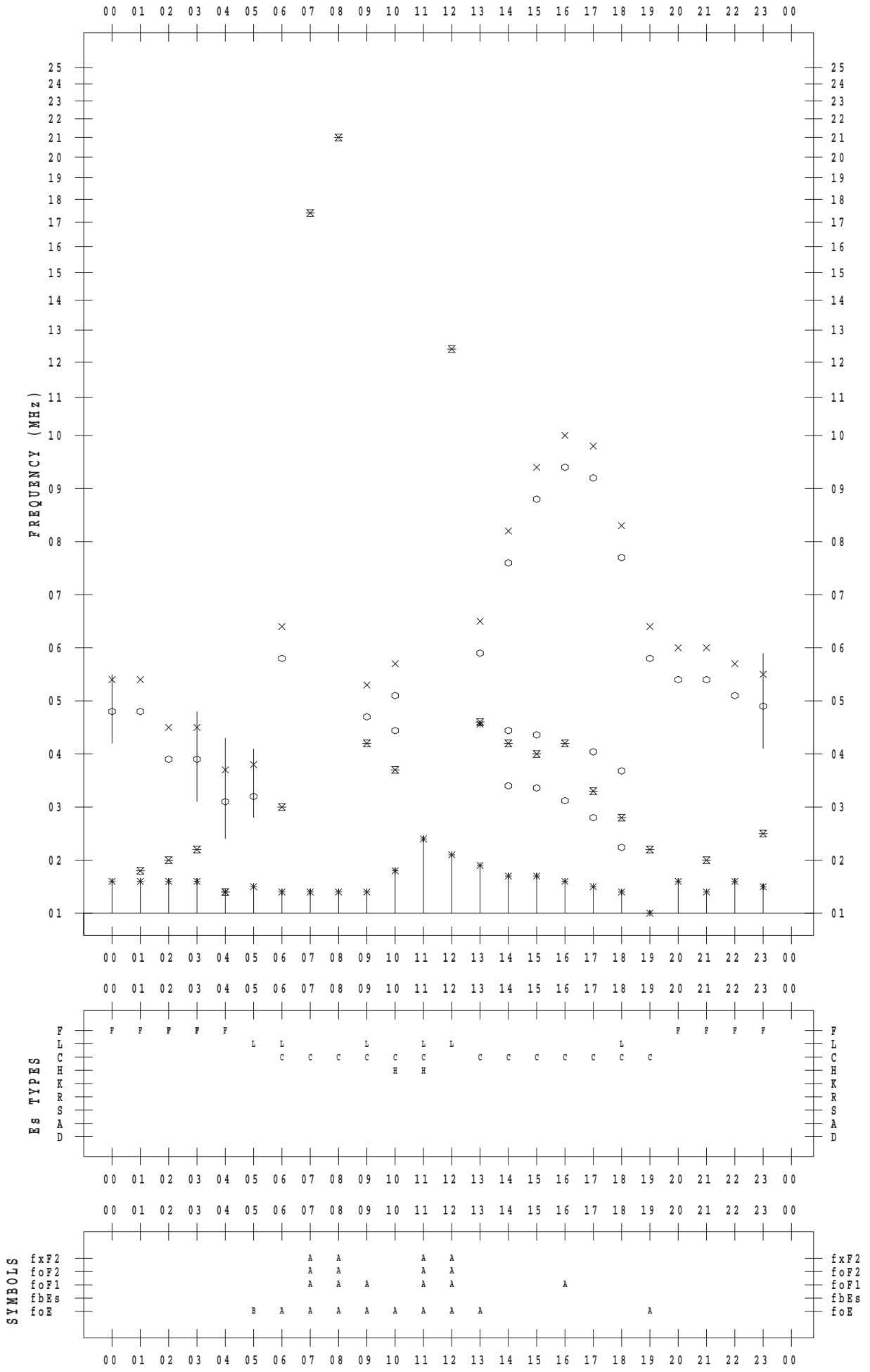
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/12

135 °E MEAN TIME



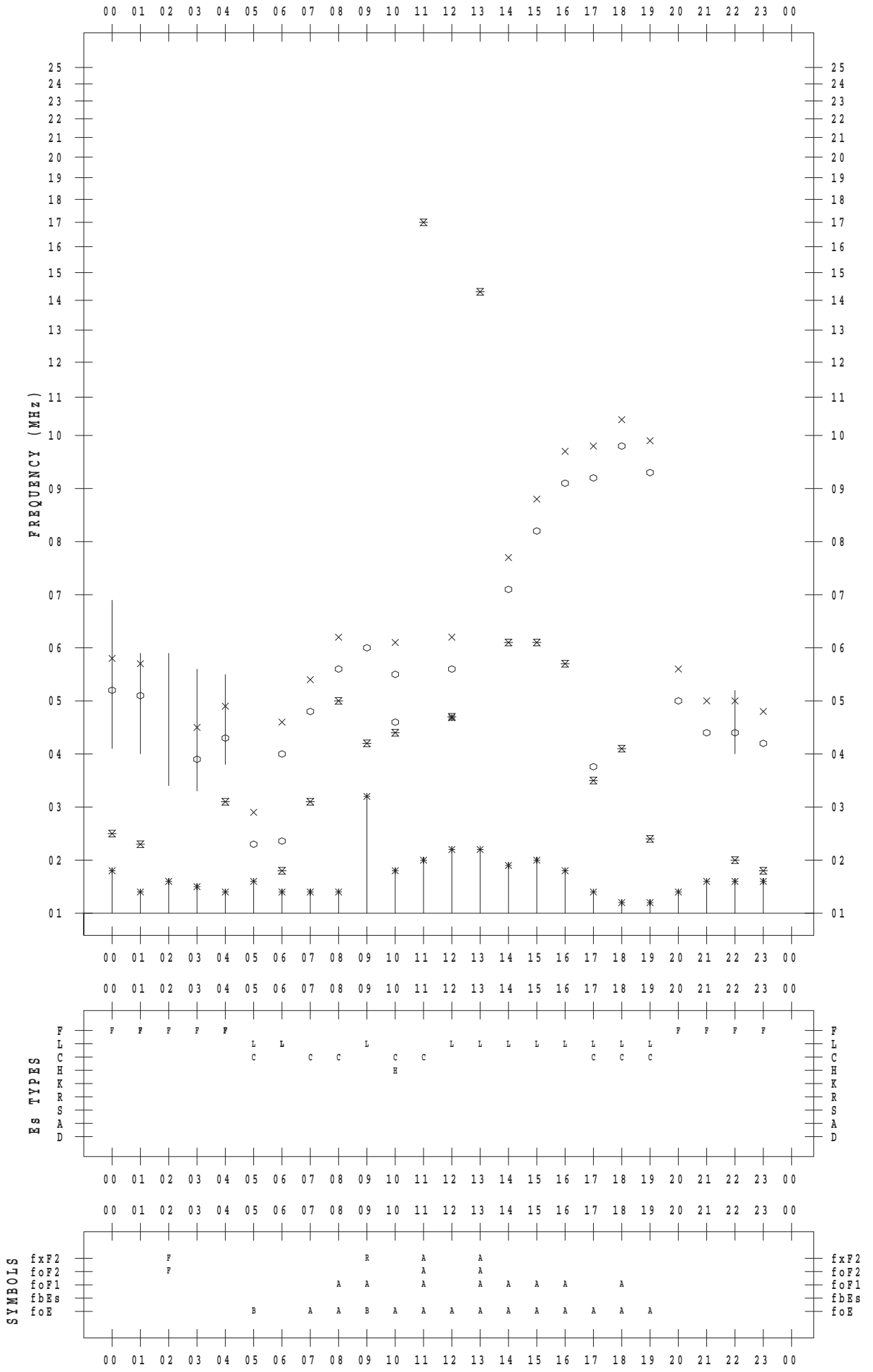
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/13

135 °E MEAN TIME



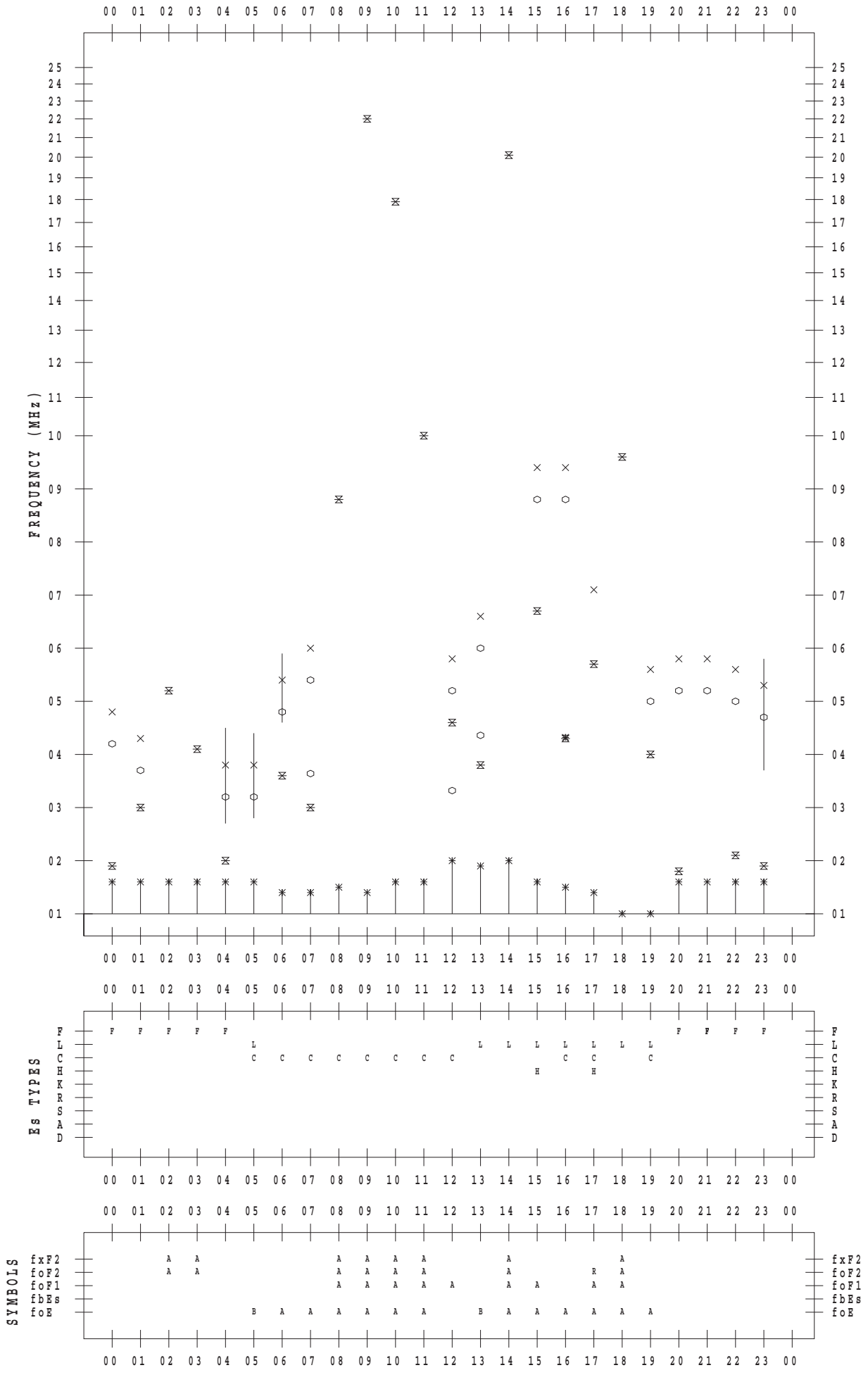
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/14

135 °E MEAN TIME



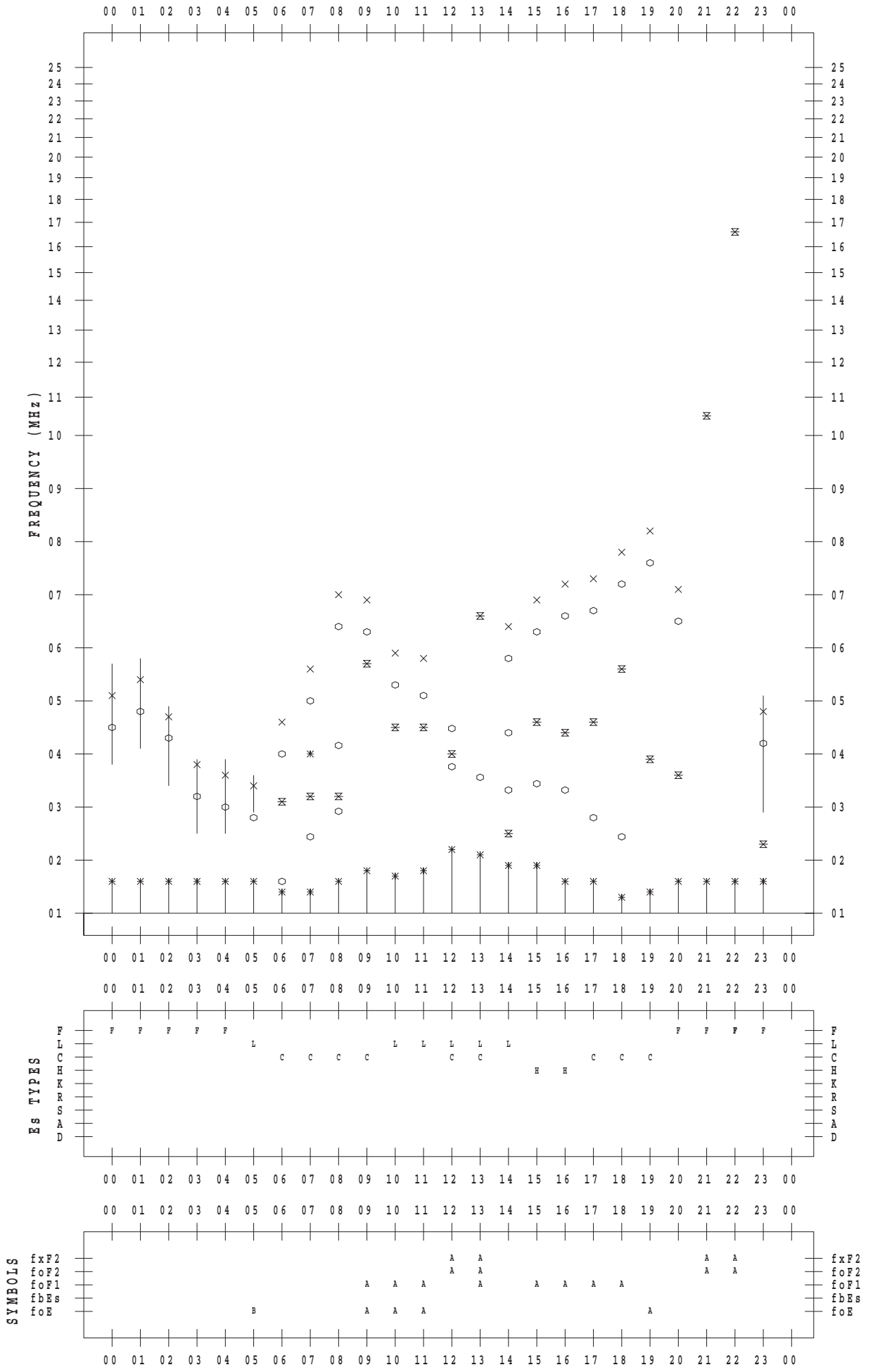
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/15

135 °E MEAN TIME



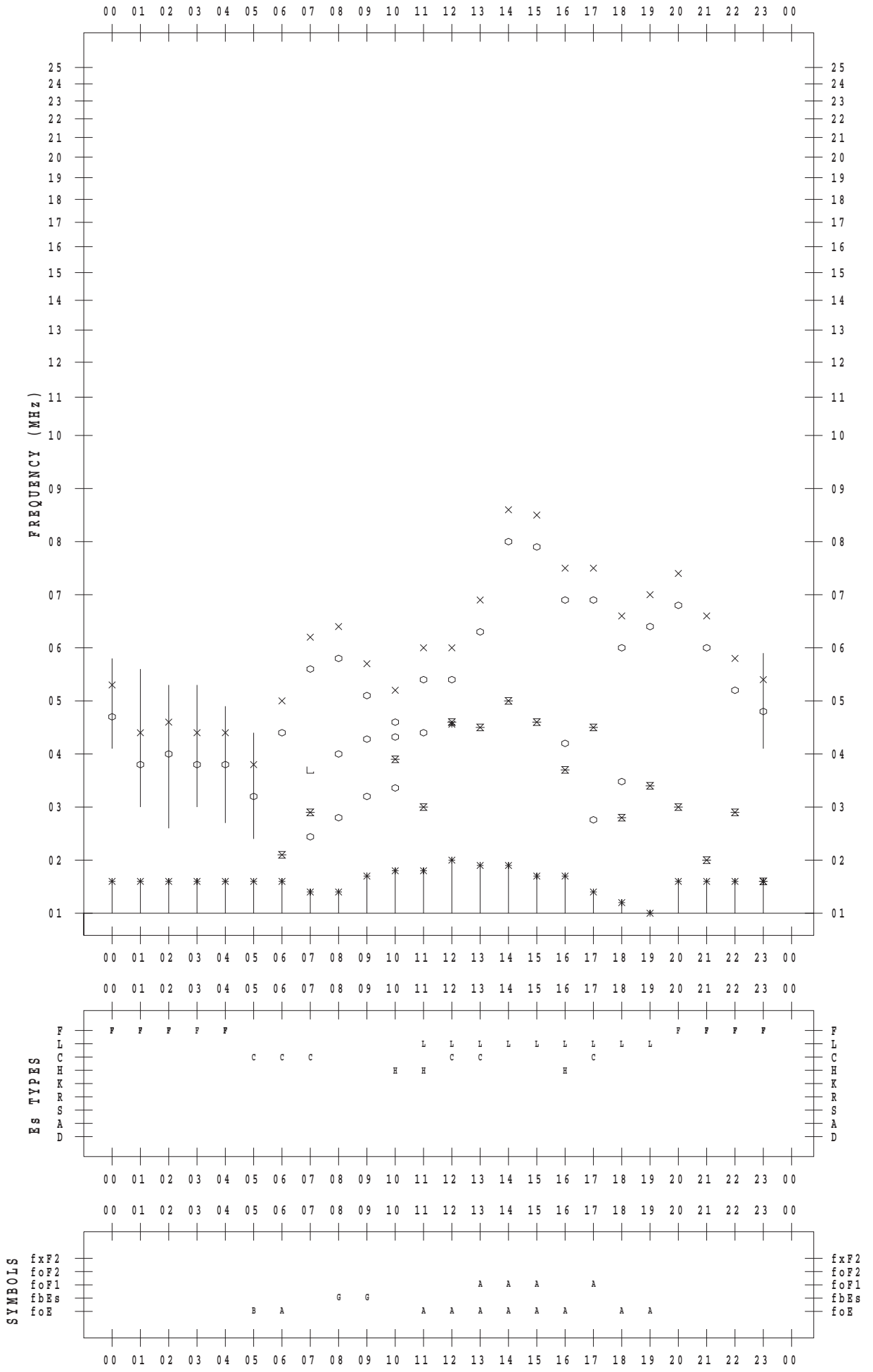
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/16

135 °E MEAN TIME



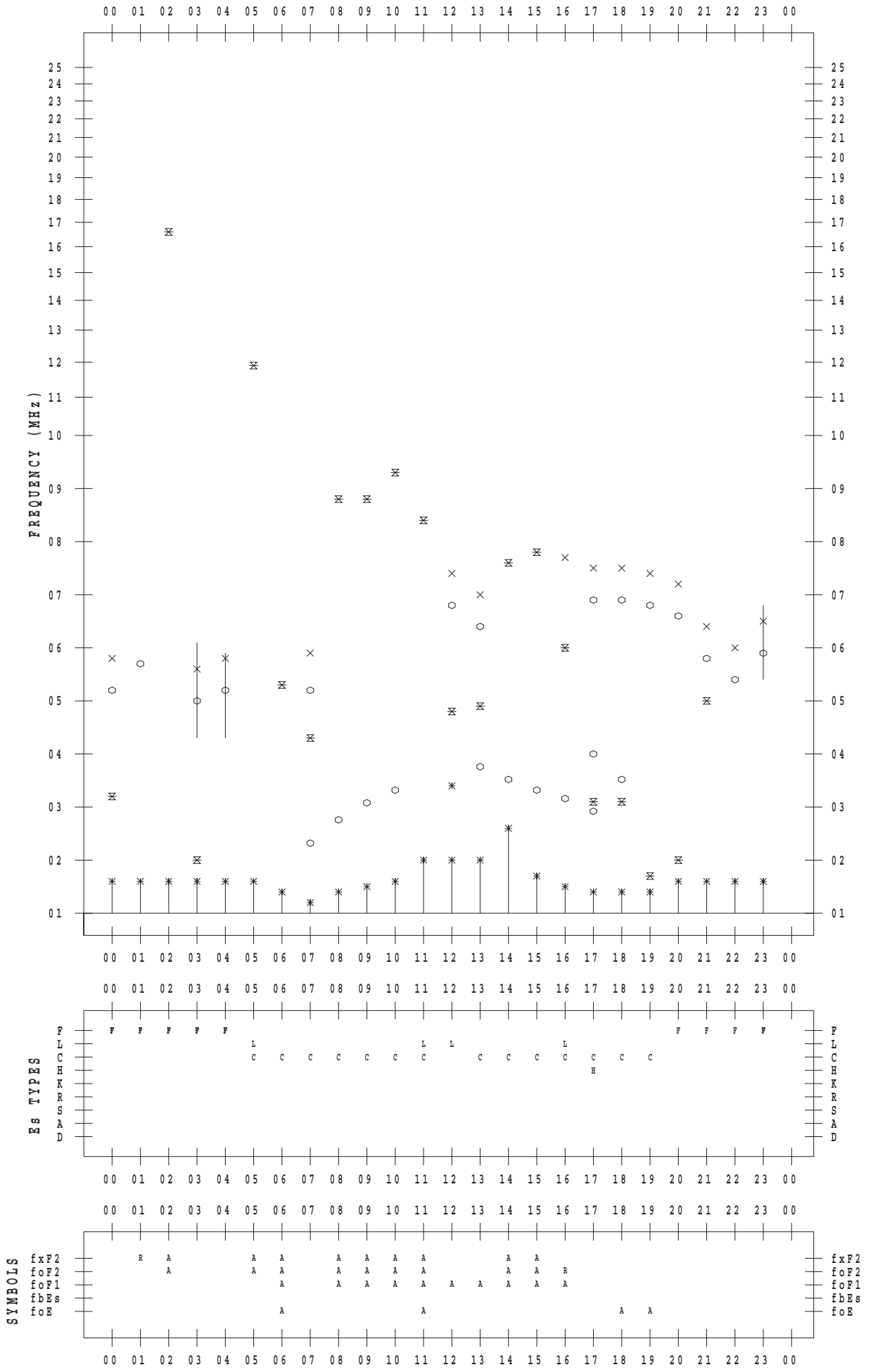
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/17

135 °E MEAN TIME



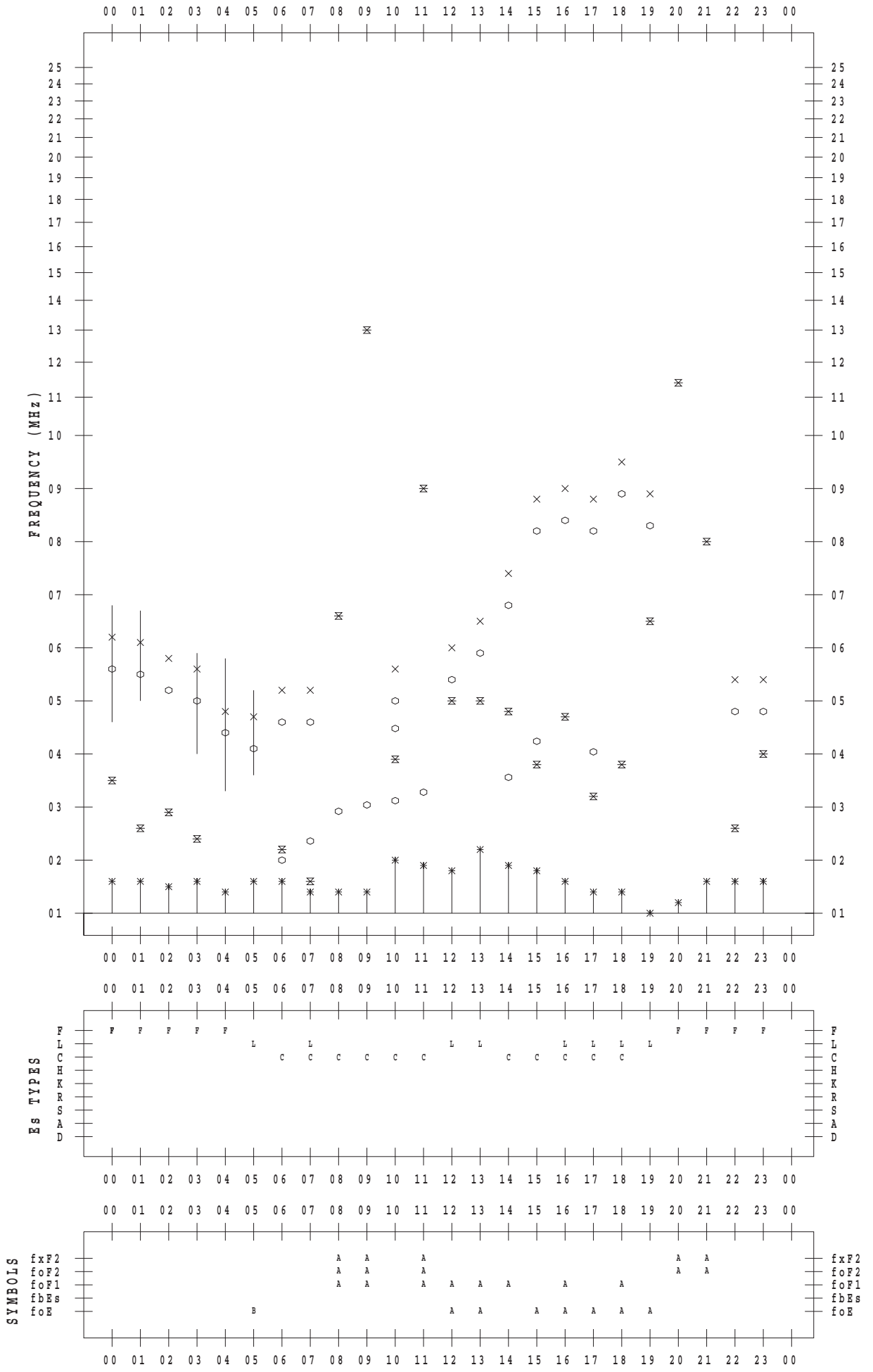
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/18

135 °E MEAN TIME



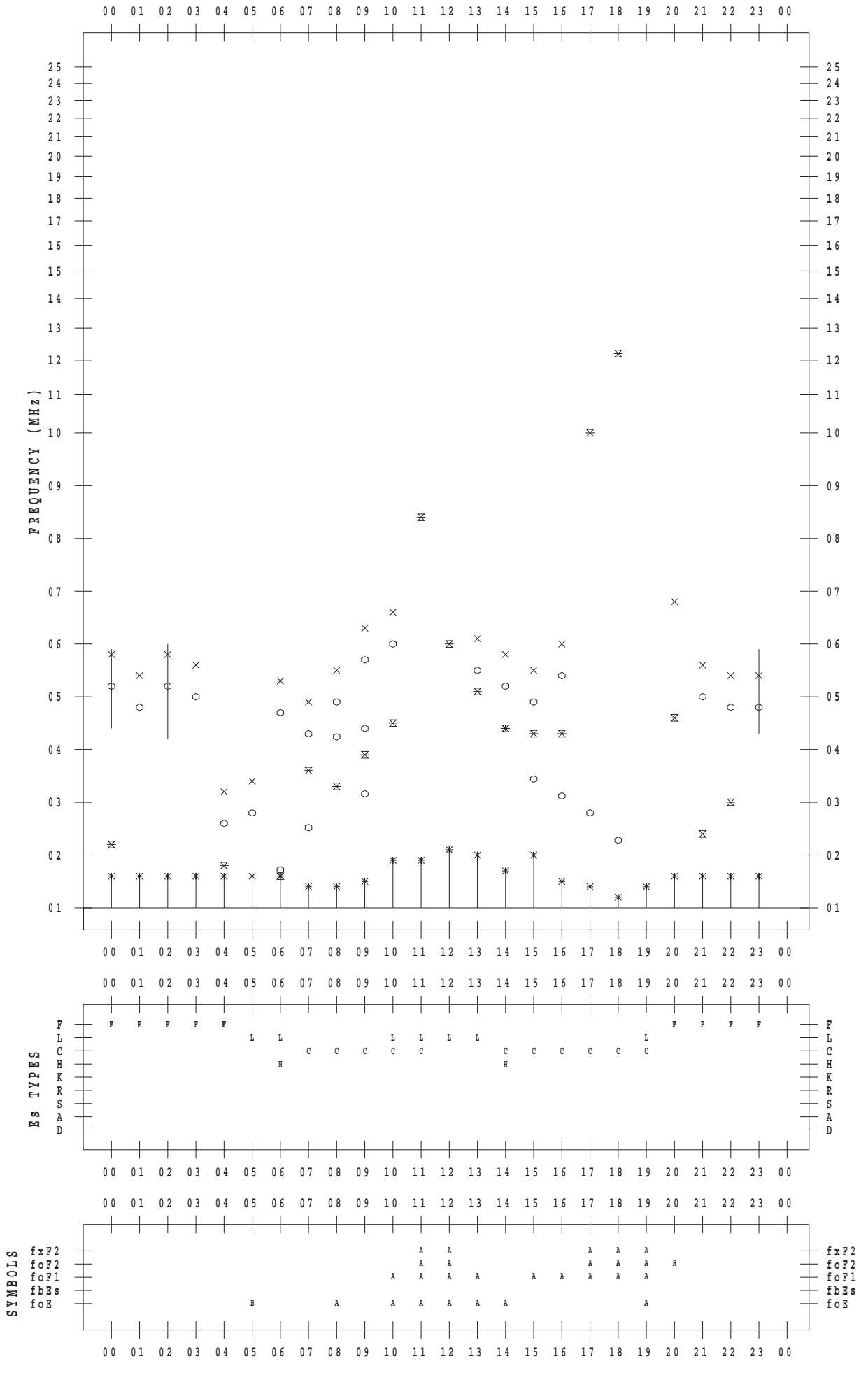
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/19

135 °E MEAN TIME



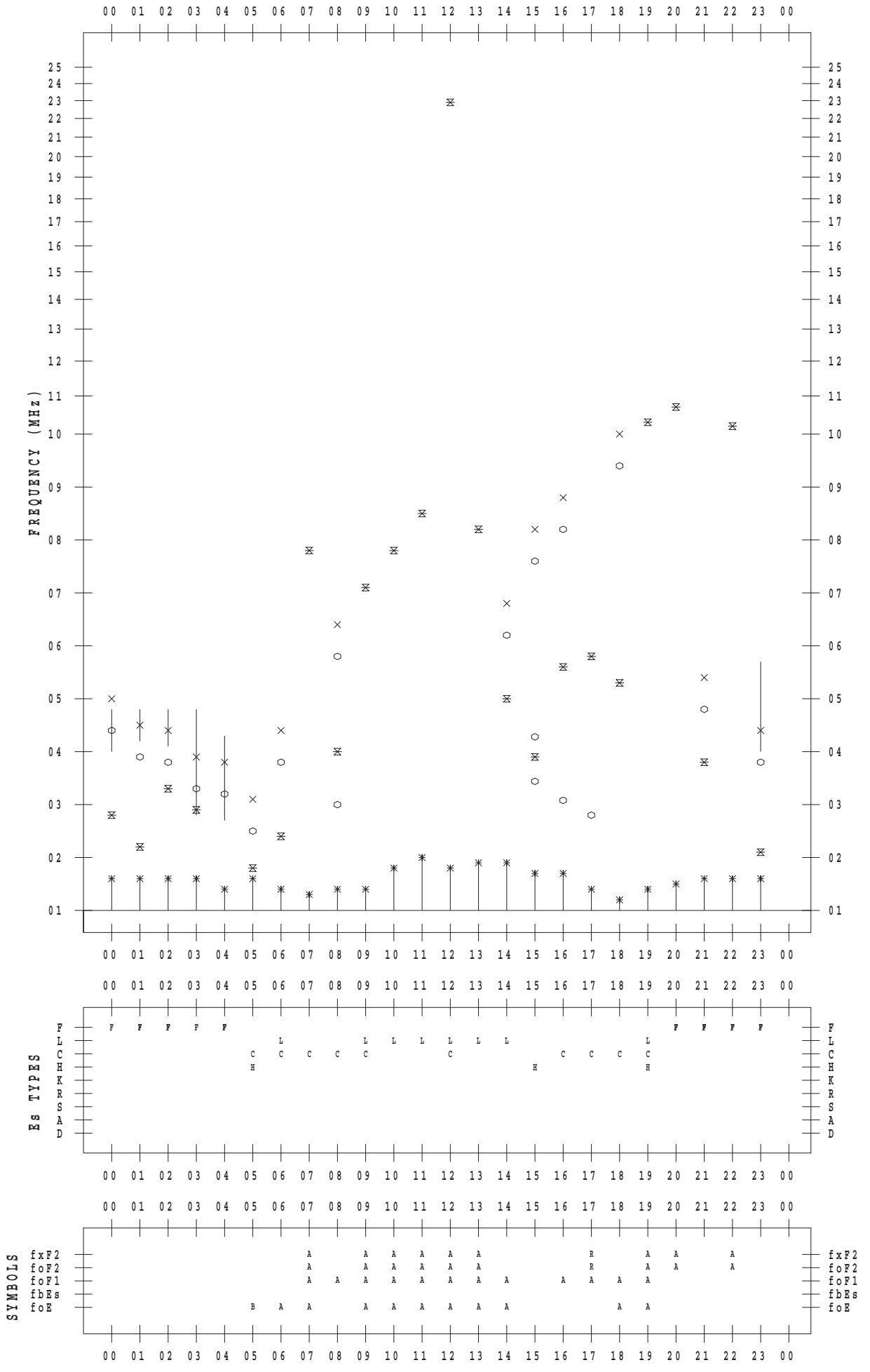
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/20

135 °E MEAN TIME



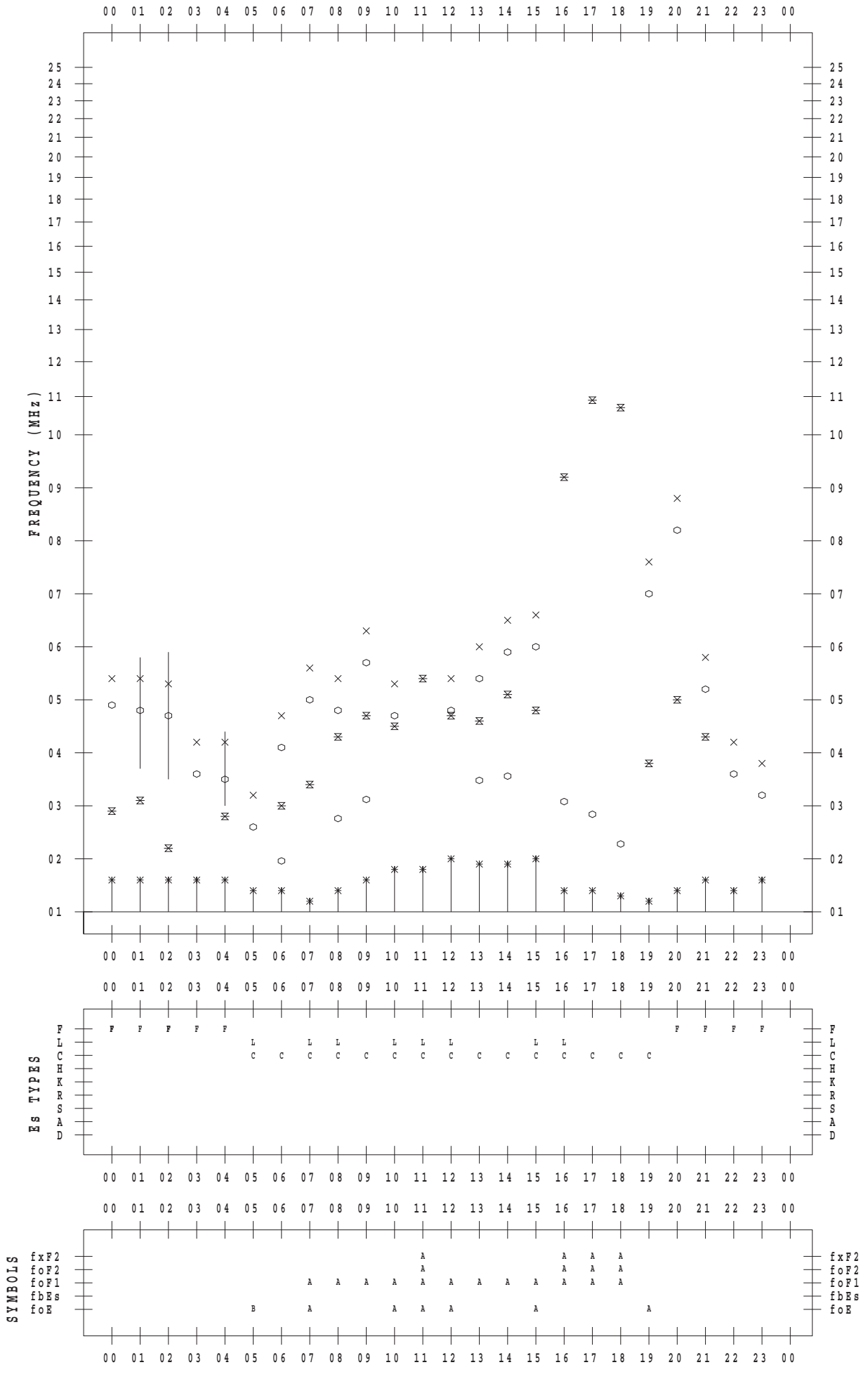
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/21

135 °E MEAN TIME



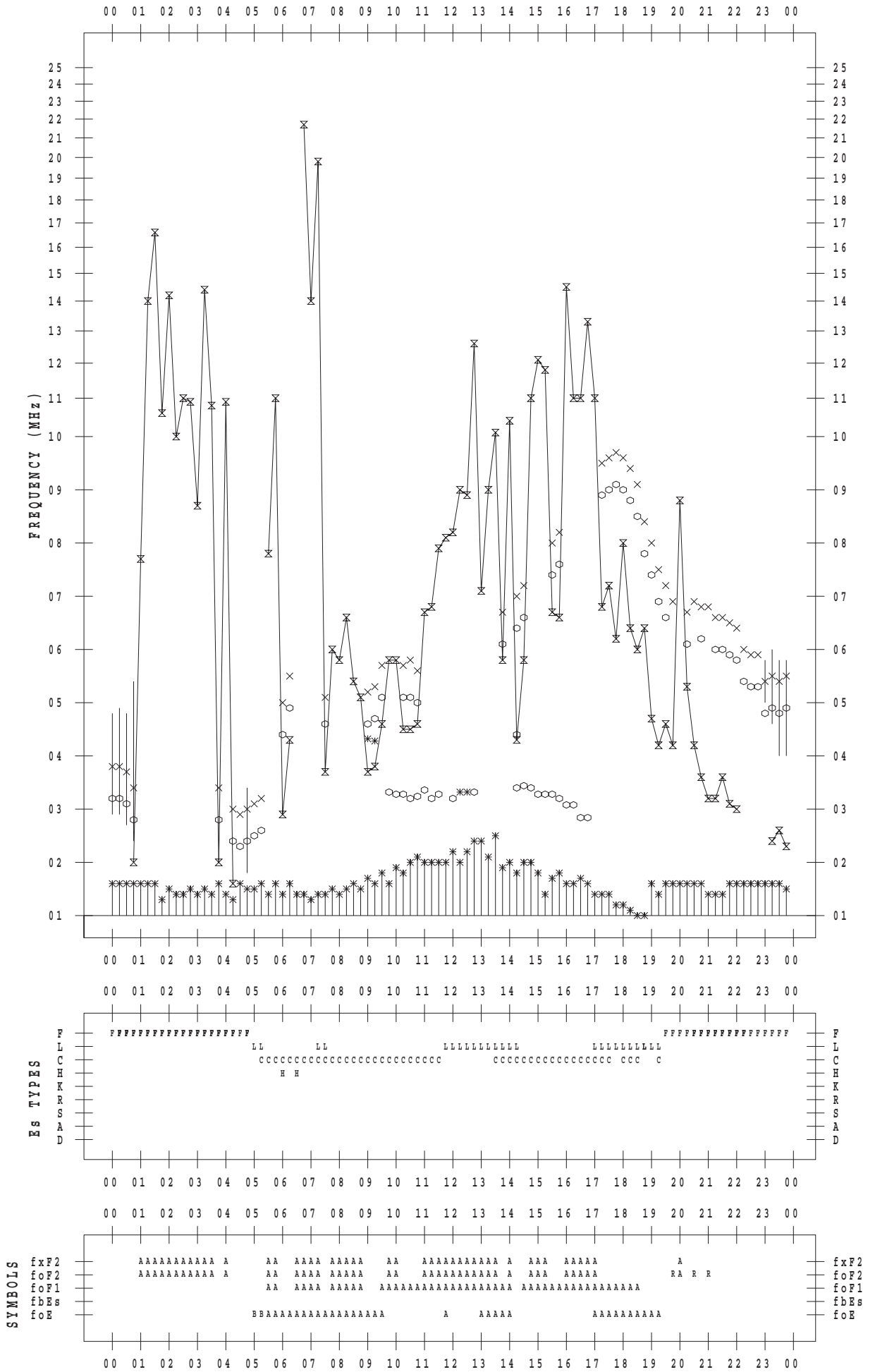
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/22

135 °E MEAN TIME



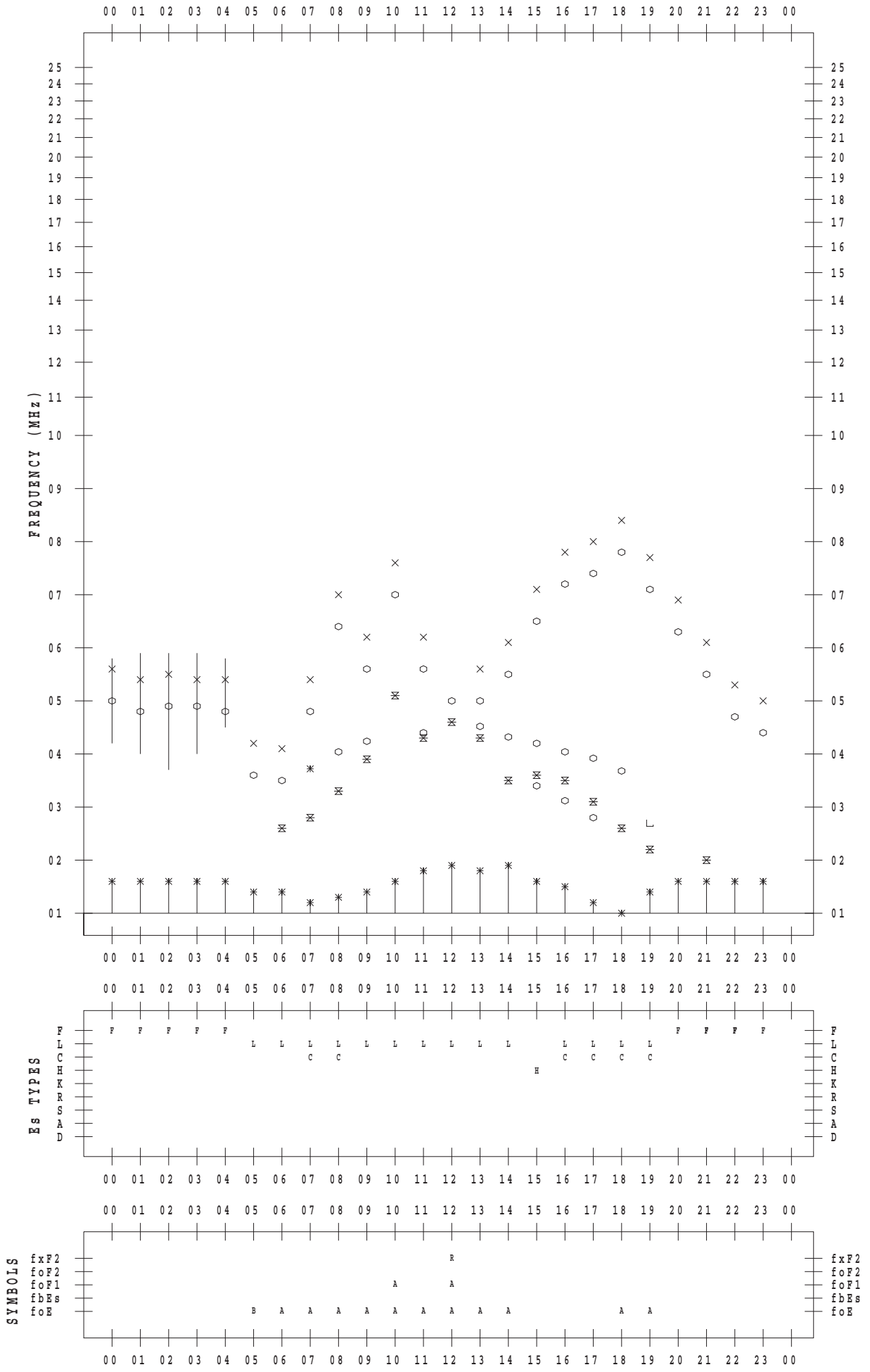
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/23

135 °E MEAN TIME



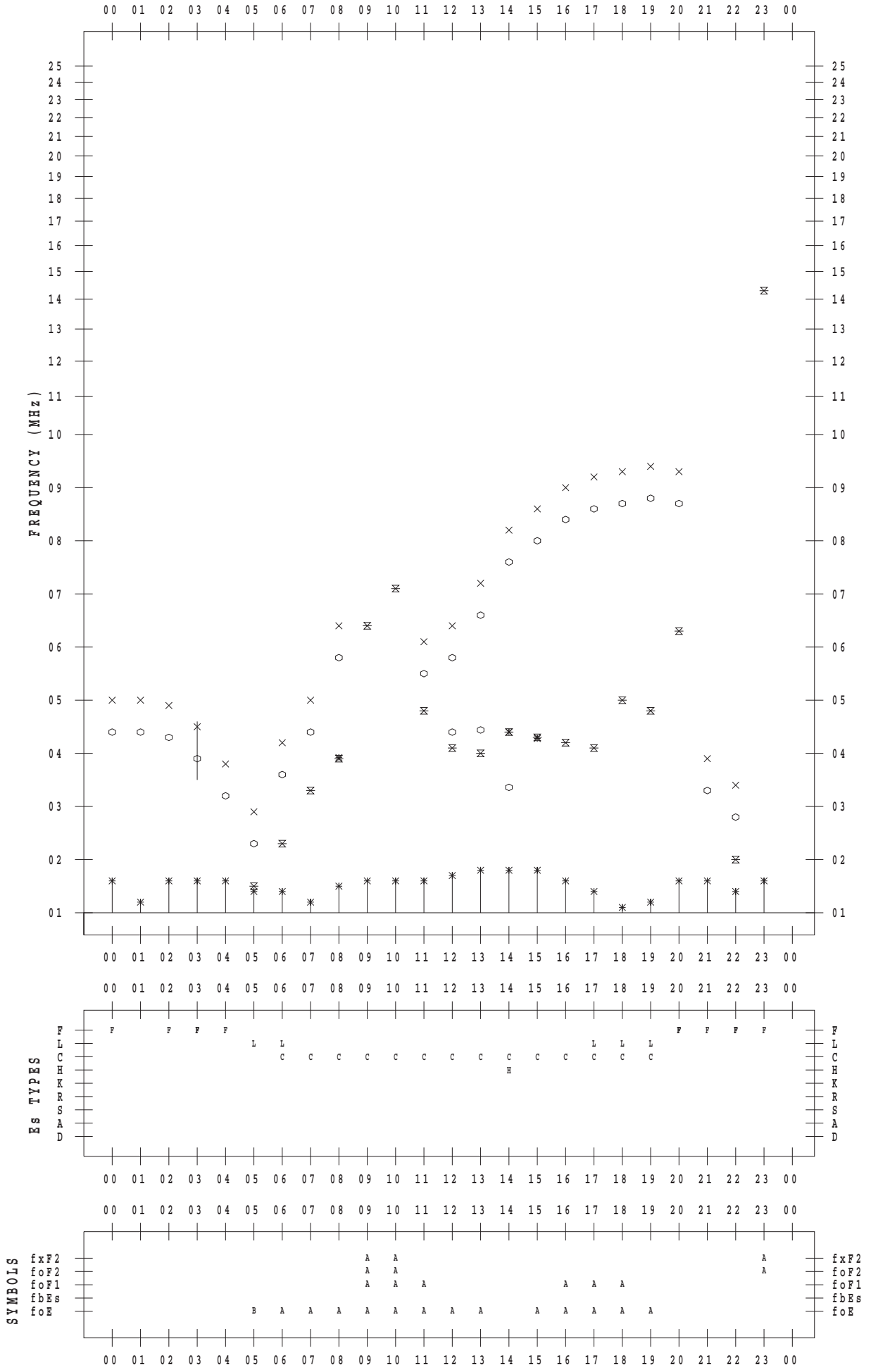
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/24

135 °E MEAN TIME



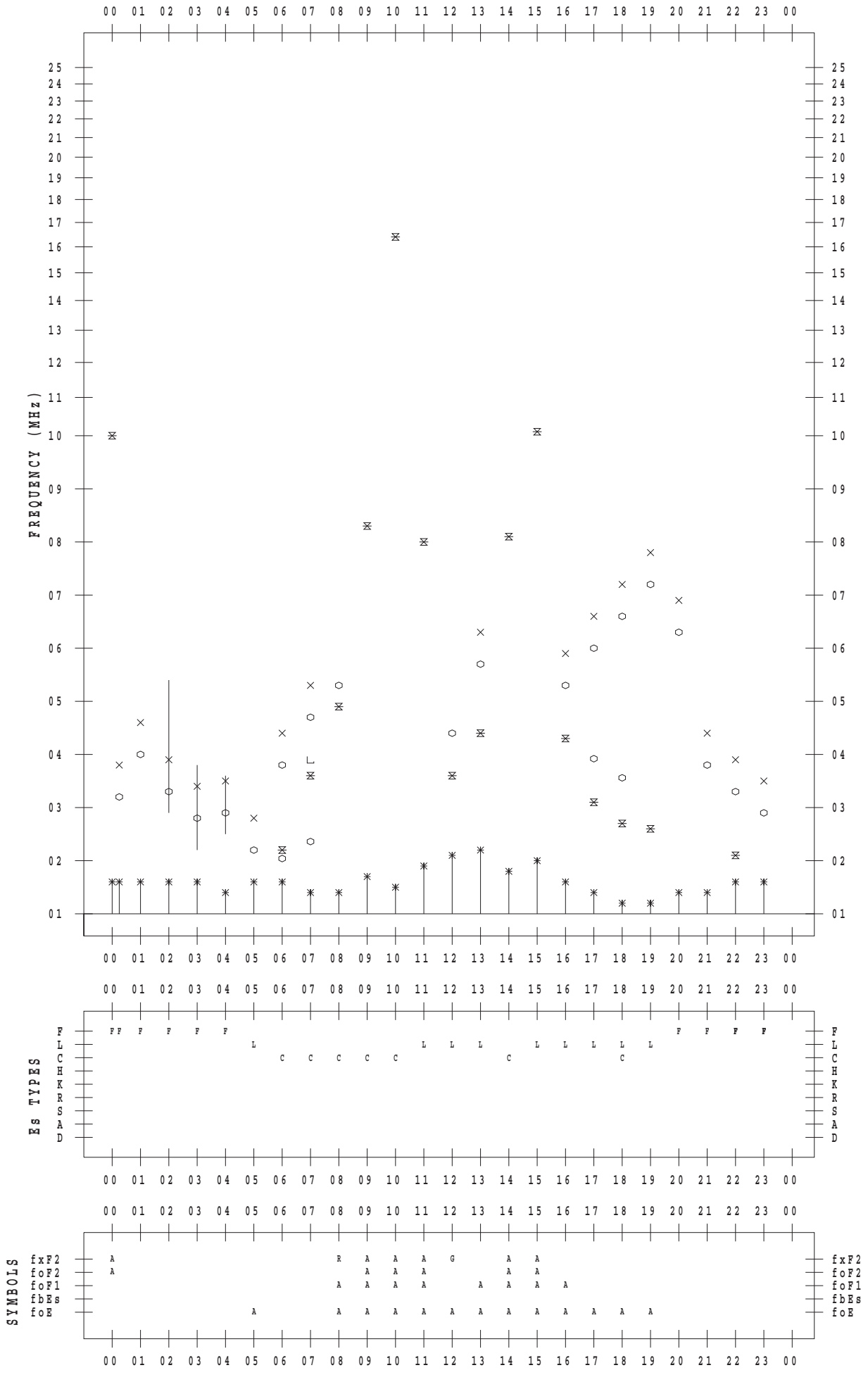
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/25

135 °E MEAN TIME



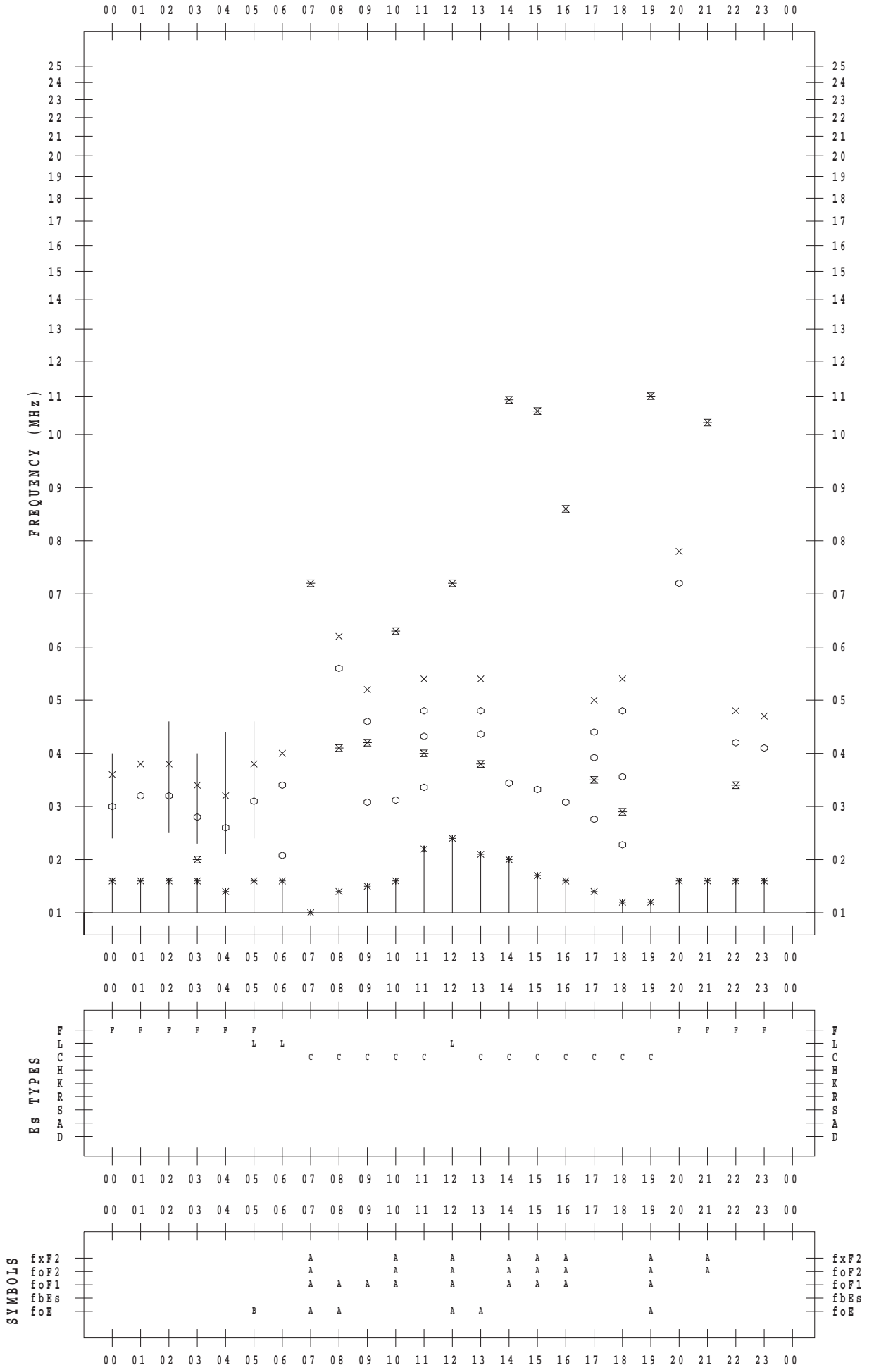
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/26

135 °E MEAN TIME



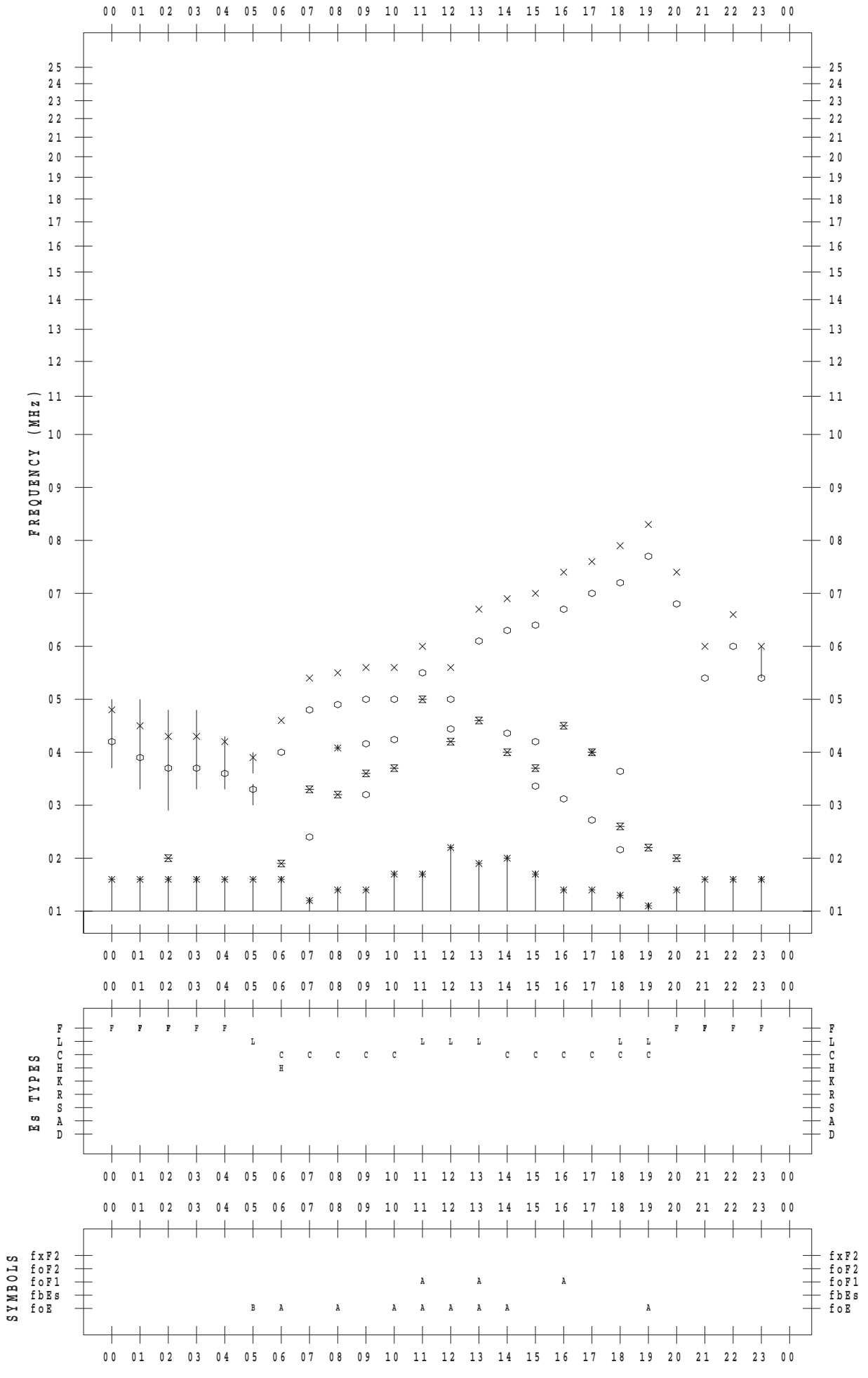
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/27

135 °E MEAN TIME



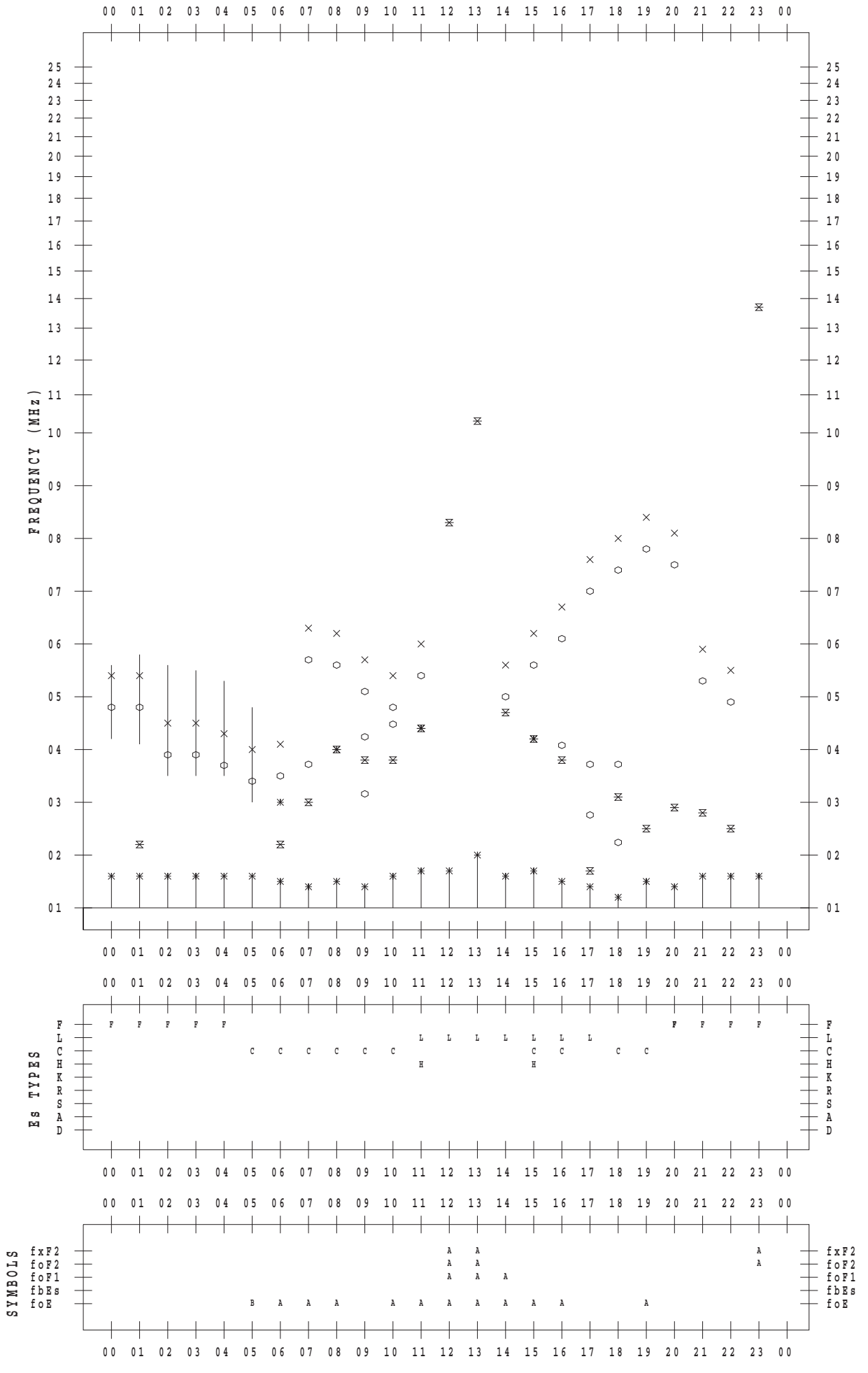
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/28

135 °E MEAN TIME



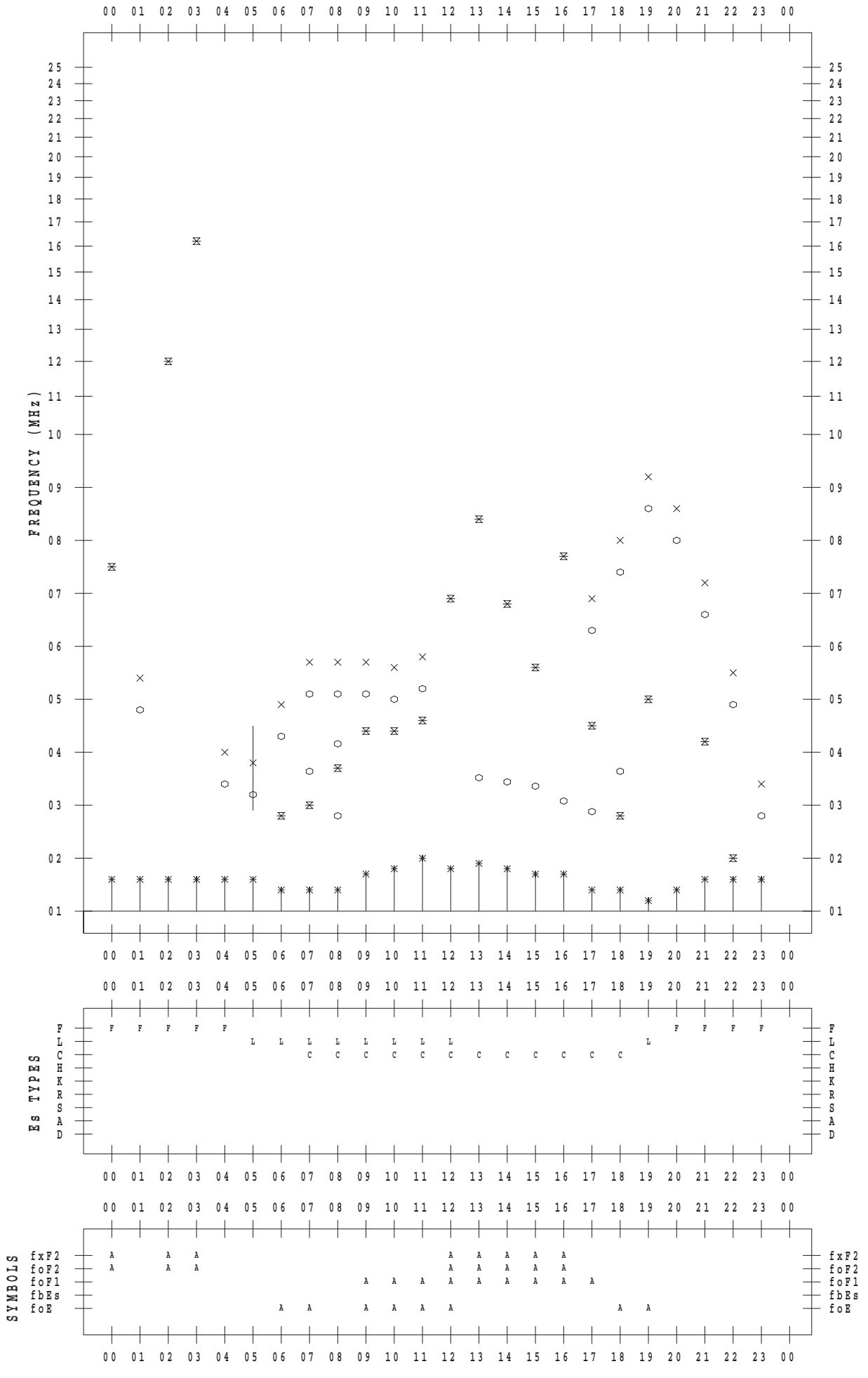
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/29

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2017/ 6/30

135 °E MEAN TIME