F-833

IONOSPHERIC DATA IN JAPAN

FOR MAY 2018

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≪Real Time Ionograms on the Web ・・・・・・・・・・・・http://wdc.nict.go.jp/index_eng.html≫

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the National Institute of Information and Communications Technology , Japan.

Stations	Geographic(WGS84)		Geomagnetic (IGRF-10(2005))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
✳Wakkanai/Sarobetsu	45˚10'N	141˚45'E	36.4˚N	208.9˚	Vertical Sounding (I)
Kokubunji	35˚43'N	139˚29'E	26.8˚N	208.2˚	Vertical Sounding (I)
Yamagawa	31˚12'N	130˚37'E	21.7˚N	200.5˚	Vertical Sounding (I)
Okinawa	26˚41'N	128˚09'E	17.0˚N	198.6˚	Vertical Sounding (I)
Hiraiso	36˚22'N	140˚37'E	27.6˚N	209.1˚	Solar Radio Emission (S)

✳We moved the observation facilities at Wakkanai to Sarobetsu on February 2009. The new observatory is located at approximately 26km south from the old observatory. The observation at Sarobetsu commenced on March 6, 2009.

IONOSPHERE

Ionospheric observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes. The ionosonde produces ionograms, which are recorded digitally on a computer storage medium. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five characteristics of the ionospheric are listed below. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (*foF2, fEs*, *fmin*) and monthly medians of two factors (*h'Es* ,*h'F*), daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

foF2	Ordinary wave critical frequency for the ***F2*** layer
fEs	Highest frequency of the ***Es*** layer whether it may be ordinary or extraordinary
fmin	Lowest frequency which shows vertical iono-spheric reflections
h'Es ***h'F***	Minimum virtual height on the ordinary wave for the ***Es*** and ***F*** layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

A Impossible measurement because of the presence of a lower thin layer, for example *Es* (for *foF2*).

C Impossible measurement because of any failure in observation.

G Impossible automatic scaling because of very small ionization density of the layer (for *fEs*).

N Impossible automatic scaling because of complex echoes.

Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

c. Definitions of CNT, MED, UQ ,and LQ

Median count (**CNT**) is the number of numerical values from which the median has been computed. In addition to numerical values, the count may include a descriptive letter G.

Median (**MED**) is defined as the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

If CNT is less than 10, there are blank spaces left.

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of *foF2 , fEs* and *fmin* were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

Daily Summary Plots which are made from quarter-hourly digital ionograms are published to present general ionosphere conditions. The upper and middle parts of a Summary Plot show the diurnal variation of the frequency range of the echoes reflected from the *F* and *E* regions, respectively. The two solid arcing lines indicate the predicted values of *fxE* and *foE* calculated by the method described in the CCIR report 340. The lower part shows the diurnal variation of the virtual height where the echo traces become horizontal.

A2. Manual Scaling

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily *f*-plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Hand-book of Ionogram Interpretation and Reduction (Second Edition) 1972 " and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

fxI	Top frequency of spread ***F*** trace
foF2 ***foF1*** ***foE*** ***foEs***	Ordinary wave critical frequency for the ***F2***, ***F1***, ***E,*** and ***Es*** (including particle type ***E)*** layers, respectively
fbEs	Blanketing frequency of the ***Es*** layer, e.g. the lowest ordinary wave frequency visible through ***Es***
fmin	Lowest frequency that shows vertical ionospheric reflections
M(3000)F2 ***M(3000)F1***	Maximum usable frequency factor for a path of 3000 km for transmission by the ***F2*** and ***F1*** layers, respectively
h'F2 ***h'F*** ***h'E*** ***h'Es***	Minimum virtual height on the ordinary wave for the ***F2,*** whole ***F, E*** and ***Es*** layers, respectively
Types of ***Es***	See below b. (iii)

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replaced a numerical value on the monthly tabulation sheets, if necessary.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

K Presence of particle *E* layer.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets, if necessary.

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

When more than one type of *Es* trace are present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple trace is indicated after the type letter.

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.

l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.

r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.

a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.

s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.

d A weak diffuse trace at heights below 95 km as-sociated with high absorption and large *fmin.*

n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.

k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

c. Definitions of the CNT, MED, UQ and LQ

Median count (**CND**) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (**MED**) is the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

HOURLY VALUES OF foF2 AT Wakkanai

MAY 2018

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	44	40	40	38	34	A	50	A	A	A	A	A	53	54	64	86	57		111	51		A	50	42
2	32	34	36	34	35	41	42	51	50	61	54	54	54	52	127	103	56	51	54	52	54	54	51	23
3	42	42	40	34	34	47	43	A	47	A	54		58	50	52	A	56	54	A	46	48	48	50	40
4	40	40	40	40	40	42	47	A	A	57	50	A	54	46	52	52	55	108	89	A	54	52	52	A
5	40	37	38	32		48	51	51	53	A	55	51	55	55	57	59	54	54	50	54	54	54	51	42
6	40	40	34	34	29	34	41	A	55	A	A	A		51	54	50	51	A	44	47	53	53	50	19
7	48	50	48	43	42	43	40	110	A	62	A	79	46	A	51	53	53	56	51	58	54	55	47	44
8		38	43	42	36	A	A	A	71	73	A	A	A	A	33	A	54	A		55	A	A	A	A
9	A	A	38	40	A	44	A	A	89	88	80	A	A	A	48	50	46	51	51	51	51	43	42	39
10	42	44	40	34	30	31	36	A	A	A	A	A	55	49	54	54	50	51	55	58	57	53	51	47
11	43	42	40	34	32	26	A	49	46	A	A		89	A		47	45	A	57	68	65	50	31	30
12	A	34	28	35	34	37	A	A	A	A	42	A	A	A	A	54	50	47	54	A	51	51	48	42
13	42	42	50	45	42	40	A	50	65	55	54	65	49	54	55		51	51	58	70	62	52	51	50
14	49	48	42	36	35	37	44	A	86	A	51	A	55	A	A	A	69	A	54	63	66	53	44	38
15	40	40	38	35	31	34	54	48	52	52	57	53	51	54	52	55	53	54	52	58	64	63	53	51
16	48	41	42	38	38	45	52	A	A	52	50	48	A	A		52	51	50	51	55	51	54	54	43
17	38	36	42	42	44	49	54	51	55	62	106	90	A	55	82	A	56	A		64	A	52	54	A
18	A	50	48	42	44	44	51		83	N	A	A	A	51	54	A	A	A	89	77	A	52	53	52
19	51	50	51	50	50	50	44	A	89	A	57	A	A	A	45	A	111	107	52	57	65	51	52	48
20	48	48	48	50	51	42	A	A	55	A	A	A	A	A	A	A	A	A	56	129	A	52	52	A
21	A	48	A	A	42	48	49	A	107	68		145		A	A	A			152	A	A	52	54	A
22	A	44	42	38	A	40	52	55	52	A	44	A	A	A	51	57	91	110	109	105	A	A	49	50
23	A	A	42	47	43	40	A		A	A	A	A	A	A	51	54	51	60	63	65	67	66	59	50
24	54	48	A	46	40	43	A	89	86	50	A	A	A	N	A	A	45	42	48	51	54	A	52	49
25	A	40	40	40	40	47	54	A	A	A	A	A	A	A	52	N	A	A	55	55	58	51	50	53
26	54	49	48	52	49	45	A	67	A	88	A	A	A	50	A		A	50	A	A	A	58	A	A
27	42	42	42	43	44	50	52	A	A	55	A	54	A	49	45	A	78	A	211	A	A	A	A	A
28	A	48	51	48	48	46	48	55	57	A	A	A	A	49	43	A	A		145	A	71	68		A
29	A	A	42	42	45	42	50	A	55	58	100		A	A	159	112		130	84	63	71	67	51	38
30	47	47	50	52	50	50	A	109	A	A	A	51	A	A	A	N			47	49	54	54	54	51
31	40	37	38	34	A	42	A	86	A	A	A	A	A	A	A		A	85	139	A	A	126	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	28	29	30	27	29	20	13	19	14	14	10	11	14	21	15	22	18	27	24	21	26	26	22
MED	42	42	42	40	40	43	50	55	55	60	54	54	54	51	52	54	54	54	55	58	54	53	51	44
U Q	48	48	48	45	44	47	52	87	86	68	57	79	55	54	56	59	56	85	89	64	65	55	53	50
L Q	40	40	39	35	34	40	43	50	52	55	50	51	51	49	49	52	51	51	51	51	53	52	50	39

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HOURLY VALUES OF fEs AT Wakkanai

MAY 2018

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	24	28	28	38	G	36	48	55	56	73	79	66	48	43	58	103	50		178	87		71	G	G
2	G	G	G	G	G	27	108	43	41	48	48	40	42	36	85	125	48	34	36	28	G	30	28	29
3	34	45	24	G	27	34	45	61	45	57	50		47	41	41	103	96	34	49	G	G	G	G	G
4	27	26	G	G	G	30	36	45	111	59	45	64	45	46	89	109	71	75	75	61	26	70	25	59
5	29	G	G	G		30	180	48	47	50	43	48	46	40	37	45	44	41	35	34	G	G	G	G
6	G	G	G	G	G	28	55	46	57	108	54	32		40	46	42	44	74	G	G	29	25	38	26
7	29	G	G	32	27	35	114	94	82	64	56	55	34	50	46	50	40	34	G	29	38	G	G	29
8		G	G	48	29	44	54	60	85	76	129	56	38	76	38	59	66	124		126	81	67	74	82
9	58	46	57	34	49	39	39	60	65	78	70	97	86	46	32	106	40	G	G	G	32	G	24	26
10	G	26	G	G	G	G	83	40	49	51	49	33	35	59	33	38	54	37	50	40	38	38	41	30
11	26	G	G	G	G	G	40	49	61	103	40		81	149		148	96	60	50	64	55	52	25	28
12	36	G	32	G	28	29	45	52	57	56	44	54	52	46	41	36	26	46	53	57	45	34	41	31
13	29	115	29	G	G	G	39	58	60	43	50	146	55	56	71		34	24	23	32	33	32	92	40
14	38	G	G	G	G	110	37	46	62	62	44	84	49	59	106	75	72	60	36	38	34	31	28	G
15	32	26	G	G	25	36	41	93	54	56	40	96	48	N	40	44	45	43	39	41	32	26	28	G
16	29	G	G	G	G	33	44	76	84	54	52	48	41	34		29	46	40	41	38	31	45	44	28
17	G	G	G	G	G	28	33	47	55	68	78	76	65	48	73	64	84	72		69	92	41	41	60
18	55	G	33	43	27	33	112		70	77	83	65	60	73	50	62	91	61	73	73	56	58	93	G
19	G	32	26	G	G	32	111	90	59	62	41	117	45	40	47	74	76	46	40	48	46	32	34	28
20	60	34	39	40	11	59	71	62	54	93	52	129	60	68	58	63	65	71	61	84	92	54	45	92
21	59	48	60	49	125	45	44	61	70	61		82		98	132	56			106	92	151	48	40	114
22	84	40	31	56	92	34	61	60	56	60	64	68	90	113	44	48	66	73	96	134	60	91	81	71
23	116	72	32	28	33	29	59		80	82	69	102	68	71	47	34	43	45	46	47	57	34	30	28
24	32	40	36	84	34	44	62	112	92	49	50	49	72	73	50	49	48	56	39	32	75	60	41	39
25	59	35	28	35	31	117	56	111	150	82	67	69	41	60	38	76	81	63	55	G	G	38	34	31
26	48	40	33	G	G	34	91	89	84	52	122	114	84	44	31		54	60	116	36	84	69	83	59
27	34	32	30	34	40	29	40	61	74	43	59	49	101	54	35	60	110	135	106	150	116	136	104	69
28	69	40	43	26	41	43	48	56	52	94	107	76	64	52	54	59	60		132	104	69	74		73
29	69	73	33	40	32	39	51	55	84	70	76		124	48	81	152		70	80	87	45	G	38	G
30	G	G	G	G	G	35	64	85	60	127	104	50	46	48	53	71			50	28	G	34	48	38
31	33	32	G	11	41	45	59	91	91	70	90	126	64	98	60		114	90	126	92	113	164	151	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	30	31	31	29	31	31	30	28	29	30	29	28	28	27	29	31	30	31	30	31
MED	32	28	26	G	26	34	54	60	61	62	55	67	52	51	47	61	57	60	50	47	45	38	39	30
U Q	58	40	33	38	33	43	71	87	84	78	78	96	70	71	65	89	78	72	88	87	75	67	48	60
L Q	26	G	G	G	G	29	41	48	55	54	48	49	45	44	39	46	44	40	37	32	31	30	28	26

HOURLY VALUES OF fmin AT Wakkanai

MAY 2018

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

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

HOURLY VALUES OF foF2 AT Kokubunji

MAY 2018

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	38	32	32	32	37	43	A	54	49	51	A	A	68	77	85	68	51	49	55	53	A	A	A
2	49	42	A	A	34	37	47		49	A	A	A	A	A	73	67	62	55	A	62	51	51	48	A
3	A	A	39	31	28	35	45	48																
4																		51	54	50	51	52	44	A
5	A	A	A	A	28	39	A	79	A	A	A	A	A	169	N	137	184	147	A	50	51	48	A	42
6	39	38	A	34	30	39	36	A	A	A	A	A	A		A	A	79	110	49	55	51	A	48	A
7	40	39	42	41	37	42	63	A			N	A	A	A		59	65	58	71	72	55	A	46	A
8	42	37	34	36	37	44	49	45	A	A	A		89			51	49	A	58	62	50	58	42	42
9	A	A	32	31	36	46	48	36	A		A	A	A	58	66	73	69	75	A	57	51	A		36
10	37	37	35	31	28	30	50	46	49	51	A	A	66	73	69	76	71	66	51	54	59	A	A	A
11	A	A	A	A	A	38	51	52	A	A	A	A	A	51	57	A	189	168	186	A	A	A	A	A
12	A	A	A	A	A	36	129				139	A	A	48	A	A	48	49	100	A	54	51	A	A
13	41	39	44	42	36	44	A	A	A	62	56	A		55	59	66	72	65	63	A	A	51	49	47
14	47	42	42	42	39	44	45	A	A	48	A	A	A	129	A	A	71	71	67	77	71	50	47	42
15	42	43	38	36	32	A				58	56	A	48	55	A	A	74	111	77	108	54	54	47	A
16	A	A	A	A	A	A	59	A	118	A	142	A	A	A	A	57	128	138	111	189		159	A	A
17	A	A	A	A	32	41	54	51	A	109	A	A		64	69	78	86	81	99	48	52	48	51	A
18	A	A	A	37	36	45	52	58	54	A	A		145	A	A	143	69		A	147	A	A	A	A
19	A	A	A	50	37	A	A	54	99	68		131	A	180	N	51	58	67	74	73	A	A	A	A
20	A	A	A	A	A	37	50	A	109	126	A	146	164	A	58	60	55	56	A	57	59	54	54	52
21	46	A	39	A	A	38	46	A	101	A	A		189	A	N	80			119	A	46	49	A	42
22	44	39	A	A	31	31	51	A	A	A	A	109	A	80	A	62	75	70	53	54	A	A	A	50
23	A	A	A	35	31	39	45	A	A	A	A	A	54	A	A	50	N	129	75	80	54	A	A	54
24	51	47	40	A	36	38	47	A	A	56	A	A	99	A	109	A	A	54	75	52	53	49	42	42
25		37	34	31	A	38	47	51	50	A	A	A	A		52	58	55	58	55	58	54	54	52	46
26	39	A	36	34	31	36	A	109	50		A	A	A			56	A	59	A	A	A	47	A	A
27	A	A	A	A	38	50	49	52	54						52	52	A	51	62	67	58	A	A	A
28	A	A	A	A	36	A	51	A	56	A	A	A	A	139	103		148	122	86		54	55	51	A
29	A	A	A	A	36	42	51	86	85	A	A	A	A	A	95	132	119		118	141	64	52	67	A
30	37	A	36	A	34	A	51	A	64	54	A	A	198	A	A	A	84	179	189	108	52	A	A	A
31	A	38	A	A	31	37	54	A	A	64	51	A	A	102	109	126	108	111	74	72	A	54	129	
	00	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	13	14	15	24	25	25	13	14	11	6	3	9	14	14	21	24	26	24	24	22	18	15	11
MED	42	39	37	35	34	38	50	52	55	58	56	131	99	70	69	66	72	68	74	62	54	52	48	42
U Q	46	42	40	41	36	43	51	68	99	68	139	146	176	129	95	82	97	111	99	78	55	54	52	50
L Q	39	37	34	31	31	37	46	47	50	51	51	109	60	55	58	56	63	56	56	54	51	49	46	42

HOURLY VALUES OF fEs AT Kokubunji

MAY 2018

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	57	40	32	28	G	28	40	53	50	59	81	36	81	53	43	65	65	60	29	37	114	86	60	82
2	32	50	41	42	28	26	38		49	61	82	86	61	67	78	71	45	43	61	59	39	27	G	84
3	59	42	27	29	G	G	42	47																
4																		26	33	52	53	55	32	60
5	40	45	46	37	24	30	60	179	62	64	69	60	56	62	157	96	137	92	43	26	35	35	49	27
6	G	G	23	G	G	26	54	47	56	70	81	57	57		90	95	94	100	27	29	56	55	46	53
7	26	34	G	G	G	28	41	150			G	41	63	108		27	34	57	41	35	33	71	51	58
8	G	G	G	G	G	G	25	32	59	52	47		55			G	34	70	52	31	47	29	34	34
9	41	60	32	G	G	G	35	33	54		78	55	51	46	53	57	79	75	124	29	27	34		G
10	G	30	G	G	G	G	35	G	42	29	37	53	57	51	78	34	42	38	29	26	52	90	55	60
11	81	87	57	64	49	34	53	59	55	52	68	71	69	40	37	53	139	127	167	137	74	57	56	87
12	60	56	53	36	31	31	93				150	53	52	G	50	36	26	40	105	124	115	86	57	37
13	38	G	G	G	G	G	52	61	61	52	44	49		38	77	51	26	44	44	61	70	31	G	G
14	G	39	27	27	G	36	37	59	53	43	42	53	71	109	88	65	52	41	40	35	34	36	39	33
15	30	G	G	28	38	60				40	50	56	G	53	63	72	84	107	57	109	43	39	29	70
16	48	56	46	43	35	40	59	65	110	180	130	114	52	55	38	54	160	136	134	136		114	94	40
17	55	34	42	33	29	G	40	52	86	112	146	153		52	56	53	44	58	91	40	49	41	33	84
18	58	69	49	28	G	40	38	48	56	70	101		136	143	78	103	91		140	108	110	86	59	46
19	71	72	59	46	40	54	57	72	57	78		81	149	64	47	29	43	42	36	61	65	106	117	80
20	60	83	69	127	56	31	53	87	71	78	60	117	149	54	56	51	26	43	58	45	57	46	81	45
21	57	55	32	39	58	27	42	64	74	86	122		146	109	71	117			96	104	78	39	54	47
22	37	31	39	36	G	G	42	59	64	72	63	80	86	81	65	47	84	60	47	40	72	86	56	45
23	72	72	59	33	G	28	41	55	83	86	55	65	56	57	32	45	87	85	55	45	55	92	73	40
24	88	35	59	57	39	33	46	56	46	51	68	72	74	54	88	92	55	54	62	35	32	29	35	38
25		43	36	30	35	26	29	44	48	70	45	48	49		43	28	G	34	33	28	29	G	40	92
26	58	72	32	27	G	29	42	72	43		72	127	80			G	60	40	69	117	71	33	39	71
27	57	70	42	43	G	G	G	31	29						54	147	65	42	40	50	27	59	59	40
28	50	34	34	34	27	56	49	58	56	56	62	59	84	125	116		97	87	82		60	59	46	69
29	91	60	59	57	49	31	48	85	76	47	52	55	69	63	67	110	102		86	81	82	49	59	59
30	60	40	G	45	31	35	43	63	56	53	59	142	127	36	129	62	87	47	36	87	57	85	146	178
31	85	34	43	46	33	29	46	87	96	68	52	62	113	84	93	83	110	112	81	40	60	47	82	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	29	27	26	24	27	25	26	24	26	28	28	27	30	29	29	30	29	29
MED	57	42	38	34	26	28	42	59	56	62	63	60	69	56	66	56	65	57	56	45	56	52	54	53
U Q	60	60	49	43	35	34	52	72	71	75	81	83	86	82	88	87	92	87	86	95	71	86	59	75
L Q	34	34	27	27	G	G	38	47	50	52	50	53	56	51	50	40	42	42	40	35	37	35	37	39

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HOURLY VALUES OF fmin AT Kokubunji

MAY 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	13	15	17	14	13	14	14	15	22	31	28	26	29	24	18	15	13	13	13	14	14	13	14
2	14	13	13	13	14	15	15		18	20	30	21	23	21	20	21	23	15	14	14	14	14	14	13
3	14	14	13	14	13	20	14	14																
4																		14	14	14	17	13	14	13
5	14	14	14	13	14	18	14	14	18	18	31	22	29	28	28	18	18	15	14	14	15	14	13	14
6	14	14	14	14	14	17	14	13	18	17	23	22	30		31	29	20	18	17	14	13	14	13	13
7	13	13	17	14	18	14	15	13			43	23	39	31		31	26	13	13	17	13	13	14	14
8	13	14	13	14	14	17	20	20	17	20	29		23			40	18	21	13	14	17	14	14	13
9	13	13	13	14	14	13	20	14	14		23	29	36	25	21	20	20	15	14	13	14	13		17
10	14	14	13	13	13	18	21	18	20	17	21	30	20	23	23	22	20	15	14	15	14	14	13	14
11	14	13	13	13	14	14	14	17	15	31	29	23	31	33	22	30	20	14	15	14	14	14	13	14
12	14	13	13	13	13	13	14				22	34	34	44	37	22	17	14	14	14	14	14	13	14
13	14	14	13	18	17	18	14	18	20	22	30	33		21	18	14	18	14	13	14	13	13	17	13
14	17	14	13	15	14	14	13	14	18	21	31	36	23	30	26	15	14	13	15	14	20	14	14	15
15	13	14	14	14	13	13				21	33	29	23	20	22	20	28	15	13	14	13	13	14	13
16	13	13	13	14	14	14	14	13	18	20	24	24	31	22	22	17	20	18	14	14		15	14	14
17	14	14	13	14	17	18	17	14	21	20	22	21		21	21	20	14	18	14	13	13	13	14	14
18	14	14	13	13	13	14	18	14	20	21	30		28	26	24	15	17		15	14	13	13	13	14
19	13	13	13	14	14	13	14	13	15	20		24	30	35	31	22	15	14	14	13	14	13	13	14
20	13	13	13	14	14	14	17	17	18	21	25	25	28	28	21	20	15	17	14	14	13	13	13	13
21	14	14	14	13	14	15	13	14	20	22	30		36	35	31	29			14	18	13	14	14	20
22	14	14	13	13	14	18	14	18	15	18	20	24	34	20	22	20	24	14	14	13	17	13	13	13
23	14	13	13	13	14	20	14	17	22	22	23	31	31	25	23	22	20	14	13	13	14	13	13	13
24	14	13	13	13	13	14	14	14	17	25	31	35	34	34	23	21	15	17	14	14	13	13	14	13
25		13	14	13	14	13	14	14	17	23	24	34	33		36	20	18	14	15	14	13	20	14	17
26	14	13	13	14	13	14	14	22	20		29	31	31			44	21	15	15	14	17	14	13	15
27	18	15	14	14	14	18	26	44	23						46	47	22	20	15	14	15	14	14	17
28	14	14	14	14	15	14	17	23	30	22	22	29	66	44	34		18	14	15		13	14	14	15
29	14	14	14	15	13	14	14	17	21	22	29	29	29	38	34	21	18		14	17	13	13	13	14
30	18	13	14	18	13	14	13	14	18	22	20	29	22	28	33	30	18	13	14	13	13	13	14	13
31	14	13	13	13	13	13	14	14	20	22	30	26	26	33	36	22	15	14	15	13	13	13	13	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	29	27	26	24	27	25	26	24	26	28	28	27	30	29	29	30	29	29
MED	14	14	13	14	14	14	14	14	18	21	29	29	30	28	24	21	18	14	14	14	14	14	14	14
U Q	14	14	14	14	14	18	17	18	20	22	30	31	34	33	33	29	20	17	15	14	14	14	14	14
L Q	13	13	13	13	13	14	14	14	17	20	23	23	26	22	22	20	16	14	14	13	13	13	13	13

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Yamagawa

MAY 2018

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	38	37	30	B	37	48	51	60	56	56	A	77	A	91	86	A	A	52	A	A	45	42
2	A	A	A	32	A	A	40	50	A	100	79	A	A	77	81	80	72	60	55	A	53	52	47	43
3	44	43	40	34	N	B	40	52	52	61	A	A	A	69	82	80	77	76	58	52	53	A	A	A
4	A	A	A	A	A	A	40	41	A	A	85	58	A	A	80	76	72	58	A	50	33	42	A	A
5	34	36	34	32	31	28	44	A	A	A	A	55	56	66	78	90	87	60	52	53	A	49	36	42
6	A	A	A	34	34	23	40	40	A	A	A	A	A	61	60	64	57	52	51	54	A	A	A	A
7	40	A	38	A	A	40	50	47	A	A	55	56	58	58	62	78	76	76	81	84	A	A	A	A
8	A	36	34	A	37	31	43	45	A	A	A	A	60	62	57	58	59	66	76	78	52	40	43	40
9	A	A	A	34	34	31	40	A	51	A	A	A	A	71	78	86	75	65	58	A	52	A	42	42
10	43	43	42	29	29	28	42	54	54	A	A	A	72	81	86	86	90	78	A	72	54	A	A	41
11	A	A	A	A	A	34	54	51	55	A	A	A	A	63	A	70	70	62	89	A	A	A	A	A
12	37	34	34	32	A	32	42	A	55	A	42	A	A	A	A	51	49	51	46	A	49	A	A	A
13	A	A	38	42	40	38	47	51	A	A	55	A	A	58	66	78	85	71	A	A	54	A	47	A
14	43	A	42	42	40	A	47	47	A	A	A	A	62	62	67	70	77	84	82	78	64	A	38	A
15	A	36	A	32	26	A	A	A	52	A	58	A	A	A	70	81	86	85	86	A	A	A	A	A
16	42	40	A	A	28	32	54	52	103	A	A	A	A	A	A	70	82	82	73	71	A	A	A	A
17	A	A	A	A	29	32	43	64	A	A	85	A	58	A	A	90	98	A	43	A	A	A	A	A
18	A	A	A	34	34	32	52	111	A	47	A	A	101	A	A	72	75	66	57	50	A	A	A	A
19	A	A	A	A	A	A	43	52	54	110	A	A	A	A	A	64	75	A	80	54	A	A	A	A
20	A	A	A	A	A	34	48	48	52	A	A	56	55	54	60	68	68	60	51	52	51	54	59	A
21	47	42	A	34	A	32	43	47	52	A	A	A	82	105	85	A	A	A	64	52	52	42	A	42
22	38	A	A	32	29	32	52	50	A	A	89	A	A	A	104	64	77	A	A	A	A	72	A	A
23	A	A	34	A	A	A	44	A	A	A	106	A	A	83	A	A	80	72	107	A	76	72	47	44
24	43	A	39	38	A	A	39	A	66	A	A	A	A	A	A	A	85	A	A	A	34	28	A	43
25	A	32	36	A	A	A	39	45	A	A	A	A	A	A	A	A	70	59	54	54	53	46	53	54
26	43	42	38	40	A	A	A	52	44	54	A	A	150	A	56	68	A	129	44	52	53	54	A	A
27	A	32	A	29	29	29	39	48	51	52	A	A	A	A	A	A	60	A	64	A	52	52	A	A
28	A	A	36	A	A	38	51	A	109	A	A	48	A	53	56	64	63	A	71	51	A	54	51	A
29	A	A	A	A	A	32	A	A	54	A	A	A	A	55	A	A	154	104	119	A	A	53	54	A
30	A	A	A	A	34	34	A	A	A	A	A	A	A	55	56	A	A	A	A	A	A	A	48	A
31	A	A	A	A	A	32	49	A	A	A	A	A	A	A	A	A	57	67	77	78	49	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	11	14	17	15	20	27	21	16	7	10	6	10	18	18	23	28	22	24	18	17	14	13	10
MED	43	36	38	34	31	32	43	50	53	60	68	56	61	62	68	72	76	66	64	54	52	52	47	42
U Q	43	42	39	37	34	34	49	52	55	100	85	56	82	77	81	81	85	78	80	72	53	54	52	43
L Q	38	34	34	32	29	31	40	47	51	52	55	55	58	58	60	64	69	60	53	52	50	42	42	42

HOURLY VALUES OF fEs AT Yamagawa

MAY 2018

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	70	41	G	G	11	B	36	45	42	55	54	41	77	89	107	48	49	73	77	38	57	41	39	33
2	49	43	38	34	57	54	34	53	59	88	110	87	71	54	61	59	42	34	37	69	43	40	40	40
3	25	25	32	29	G	B	30	40	50	61	67	69	62	85	95	76	92	39	45	33	109	45	73	48
4	54	38	46	40	39	40	38	43	60	116	77	74	69	101	45	44	44	56	69	40	38	49	40	45
5	34	28	32	24	24	G	28	50	81	113	110	106	47	128	51	44	44	50	32	41	40	39	29	31
6	58	41	44	24	26	G	28	40	49	56	61	51	76	40	50	50	40	26	39	39	60	54	49	83
7	56	88	32	35	40	30	34	45	72	71	46	51	45	31	41	41	35	28	40	45	59	92	79	50
8	49	39	57	58	33	G	26	36	52	56	57	54	50	48	53	33	38	36	33	G	43	G	27	G
9	58	48	40	35	25	G	33	50	43	60	50	48	76	85	51	29	45	61	52	58	38	57	29	26
10	26	28	38	26	G	G	30	41	50	57	78	67	36	35	37	46	39	38	65	54	40	70	70	34
11	56	59	93	41	38	32	38	55	52	80	64	89	70	52	65	36	41	60	118	160	161	65	59	48
12	32	G	29	26	26	26	31	52	55	146	44	53	44	57	57	30	29	32	45	70	85	70	160	84
13	85	59	36	34	27	33	28	40	52	65	52	84	77	55	52	47	53	88	155	103	31	60	39	60
14	29	46	36	34	33	49	36	45	60	59	76	89	48	46	50	76	54	47	44	39	45	30	25	70
15	40	G	40	28	24	40	56	83	60	57	57	61	65	57	35	39	59	62	46	90	110	87	110	48
16	39	G	56	54	33	G	39	58	106	106	92	121	124	110	90	50	62	78	61	126	136	78	58	49
17	69	70	55	71	24	G	38	49	60	55	61	134	56	80	103	69	76	86	76	70	107	77	56	49
18	50	56	48	35	G	30	49	53	63	48	76	91	95	107	83	45	54	56	49	G	70	71	70	92
19	105	83	58	46	69	40	34	56	54	94	156	155	147	150	62	104	44	94	40	69	40	39	60	54
20	70	34	46	55	41	30	32	45	52	54	51	52	53	49	52	42	38	38	33	35	29	24	25	55
21	G	40	47	53	51	29	32	36	53	58	78	67	88	90	98	71	64	69	51	40	26	36	54	27
22	35	57	72	G	G	G	22	33	78	50	78	152	116	70	86	62	61	78	60	60	60	55	70	57
23	55	48	28	70	64	40	32	67	78	154	110	94	112	95	110	137	78	81	158	58	35	26	G	33
24	59	73	34	114	70	53	41	48	67	109	88	66	51	78	69	67	70	92	92	70	41	35	43	29
25	39	G	G	53	27	38	34	39	58	54	56	76	113	81	52	70	70	45	41	40	49	37	41	40
26	26	41	26	31	46	30	68	38	52	51	154	113	152	50	52	45	110	113	38	40	36	35	58	58
27	48	27	43	39	39	26	29	42	49	54	52	44	50	60	57	60	50	109	46	63	41	44	53	48
28	48	48	55	40	41	39	42	69	116	90	70	83	84	47	50	50	46	70	56	50	56	41	43	45
29	70	81	56	48	46	41	50	61	52	70	64	68	110	56	65	71	159	141	132	116	82	41	34	60
30	52	46	54	48	40	36	50	57	86	86	58	55	51	48	50	58	65	103	139	96	70	60	44	86
31	53	72	59	59	39	25	55	76	87	116	110	103	64	67	70	50	50	69	58	69	49	60	58	60
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	50	43	43	39	33	30	34	48	58	61	67	74	70	60	57	50	50	62	51	58	49	45	49	48
U Q	58	59	55	53	41	40	41	56	72	94	88	94	95	89	83	69	65	86	76	70	70	65	60	60
L Q	35	28	32	29	24	G	30	40	52	55	56	54	51	49	50	44	42	39	40	40	40	37	39	34

HOURLY VALUES OF fmin AT Yamagawa

MAY 2018

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	14	14	17	15	16	B	15	15	15	18	20	22	29	23	22	18	18	20	14	14	15	14	14	15
2	14	14	14	14	14	14	15	15	15	17	20	20	20	33	20	21	27	18	14	14	17	15	14	15
3	15	14	14	16	15	B	16	15	15	21	20	21	24	22	21	18	21	15	17	15	20	14	14	15
4	14	14	14	14	14	14	14	15	16	20	20	21	22	23	18	15	18	17	15	14	14	15	14	15
5	14	15	14	14	15	14	15	14	15	18	22	34	23	18	35	22	17	18	15	14	14	14	15	14
6	15	14	14	14	14	15	15	14	15	18	20	21	24	21	21	21	18	16	15	15	15	14	14	15
7	14	16	15	14	15	14	15	14	15	21	22	22	22	21	21	18	18	15	14	15	14	14	15	14
8	15	18	14	14	18	17	17	14	15	21	21	21	23	20	22	43	20	16	14	18	15	18	14	14
9	14	14	14	14	14	15	15	14	16	18	21	26	23	22	22	22	21	16	15	14	14	14	15	15
10	15	15	15	16	16	15	15	15	16	16	21	21	23	23	20	22	17	18	15	15	14	15	14	15
11	14	14	14	14	14	15	14	15	16	20	22	23	23	22	27	21	20	16	14	15	14	14	14	14
12	14	15	15	14	14	15	14	14	15	17	20	20	21	22	22	20	20	17	15	14	14	14	14	14
13	15	14	14	14	15	15	15	16	15	22	20	22	27	21	26	20	18	15	14	15	14	14	15	14
14	15	14	15	14	15	16	15	15	15	18	20	21	23	22	21	18	20	15	14	15	14	14	14	14
15	14	14	14	15	15	15	14	15	17	20	18	23	23	22	21	21	20	18	14	15	14	14	14	14
16	14	15	15	14	14	14	15	14	16	21	18	22	24	22	21	20	16	15	14	16	14	14	18	15
17	14	14	14	14	15	15	15	14	14	18	18	21	22	22	21	22	15	17	14	15	14	15	15	15
18	14	14	15	15	14	14	15	15	16	21	18	22	22	22	22	21	20	15	14	15	15	14	14	20
19	14	20	14	14	15	14	15	14	17	18	21	23	21	21	20	20	20	14	14	14	14	14	14	15
20	14	14	15	14	15	14	15	14	15	18	20	22	21	22	26	18	18	15	14	14	14	14	15	14
21	14	14	14	14	15	14	14	14	14	18	22	20	21	22	20	18	17	15	14	14	14	14	14	14
22	14	14	14	15	15	15	21	14	18	18	23	20	20	22	21	20	21	15	15	14	14	14	14	15
23	15	15	15	14	14	14	14	14	15	20	20	21	23	22	21	18	17	15	14	15	14	14	17	14
24	15	14	14	14	14	14	14	14	15	16	23	21	26	23	23	21	18	17	15	14	14	14	15	15
25	14	15	15	14	14	14	14	14	15	17	18	22	22	28	21	18	18	15	14	15	15	14	15	15
26	18	14	14	14	14	14	14	14	15	20	20	22	23	33	22	18	18	15	14	14	14	14	14	14
27	14	14	14	15	14	14	14	15	17	15	20	22	34	24	21	20	15	14	15	14	14	14	14	15
28	14	14	14	14	14	14	15	14	15	18	21	24	23	24	26	21	20	18	14	15	17	14	14	14
29	15	14	15	15	14	14	14	14	18	18	22	29	23	21	34	23	18	16	14	14	14	14	15	14
30	14	14	14	14	15	14	14	14	16	18	21	21	22	21	20	21	18	18	16	15	14	14	15	15
31	14	14	15	14	14	15	14	14	16	18	21	22	22	22	21	21	17	15	15	14	14	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	15	14	15	18	20	22	23	22	21	20	18	16	14	15	14	14	14	15
U Q	15	15	15	15	15	15	15	15	16	20	21	22	23	23	22	21	20	17	15	15	15	14	15	15
L Q	14	14	14	14	14	14	14	14	15	18	20	21	22	21	21	18	17	15	14	14	14	14	14	14

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF foF2 AT Okinawa

MAY 2018

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	38	34	35	36	B	B	37	52	49	55	56	A	72	86	97	102	100	84	78	A	A	54	A	42
2	42	A	35	27	28	A	A	42	40	A	A	58	77	88	149	91	91	82	59	53	A	54	47	47
3	50	42	42	34	A		38	34	64	A	90	A	139	A	96	A	107	107	77	75	52	A	A	A
4	A	31	32	A	A	59	37	A	A	55	A	64	78	97	107	111	106	90	72	70	54	A	37	34
5	34	35	34	36	34		36	50	50	51	54	58	64	78	94	106	104	77	72	66	51	42	32	37
6	A	A	A	A	N	N	44	A	A	A	55	49	73	73	72	81	85	83	71	77	A	A	40	A
7	A	A	A	A	31	34	44	44	A	A	89	51	60	70	71	80	86	90	94	85	72	54	A	A
8	51	A	A	A	A	25	39	47	51	A	A	A	67	80	A	78	81	72	86	96	77	A	A	40
9	35	35	34	32	31	28	42	66	A	A	A	A	A	77	91	82	81	85	62	63	72	54	A	35
10	40	42	40	A	24	B	41	59	169	A	56	60	71	90	97	94	105	91	90	101	A	A	A	A
11	A	42	A	A	31	35	52	65	A	111	152	A	A	A	A	94	97	90	189	91	A	A	A	A
12	A	A	37	39	B	N	40	54	A	50	46	A	A	A	57	59	60	58	52	54	52	A	A	A
13	A	A	34	34	B	32	42	45	55	A	47	55	A	A	A	99	106	71	63	71	61	51	46	A
14	A	A	A	41	34	A	A	A	A	A		A	A	139	78	82	90	97	106	99	A	44	40	44
15	41	A	42	39	26	39	41	52	A	64	55	71	77	82	86	95	103	104	101	90	74	A	A	A
16	A	A	A	31	30	31	58	66	A	A	A	A	A	68	73	82	91	90	86	91	64	A	A	A
17	A	A	A	26	28	30	44	71	50	A	A	55	61	72	85	100	110	84	64	A	A	54	A	A
18	A	A	A	32	32	A	64	A	48	109	A	A	189	74	90	94	91	86	77	64	67	52	49	A
19	A	A	36	A	A	A	42	54	54	52	A	A	A	71	77	81	87	91	81	65	53	49	47	42
20	A	A	34	A	A	29	44	46	54	A	A	A	A	60	69	82	81	71	60	59	64	54	48	43
21	40	40	38	36	A	31	36	54	54	47	42	57	110	A	A	65	A	76	80	77	66	54	52	A
22	A	A	A	A	A	28	44	50	42	54	51	56	A	A	56	70	82	87	81	78	86	A	A	A
23	A	A	A	A	A	A	A	54	52	A	A	A	A	N	71	78	78	72	77	80	77	A	A	51
24	48	42	A	A	31	A	A	51	60	56	56	50	57	56	62	A	80	84	163	A	A	A	A	A
25	44	40	36	36	A	26	37	48	52	52	A	A	A	A	A	61	75	70	55	54	54	54	52	51
26	51	48	47	37	29	A	33	48	159	54	A	52	49	56	74	75	74	77	62	70	73	N	34	A
27	A	A	A	A	A	A	44	51	64	A	52	A	51	52	55	58	A	A	A	A	A	A	A	A
28	A	A	A	A	31	32	47	A	A	52	A	A	58	67	78	A	78	78	81	A	A	54	48	48
29	42	42	42	38	32	N	34	43	A	A	A	A	58	A	67	75	84	90	A	89	A	A	A	48
30	51	A	A	36	34	A	38	A	A	A	A	A	108	A	109	189	189	87	86	75	52	54	47	42
31	A	42	40	31	A	A	72	A	A	A	A	A	A	64	61	65	72	84	91	90	A	A	A	42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	13	17	18	16	14	27	24	18	14	14	13	19	21	26	28	29	30	29	26	19	15	14	15
MED	42	42	36	36	31	31	42	51	53	54	55	56	71	73	78	82	87	84	78	76	64	54	47	42
U Q	50	42	41	37	32	34	44	54	60	56	56	59	78	84	94	94	103	90	88	90	73	54	48	48
L Q	40	35	34	32	28	28	37	46	50	52	51	51	58	65	69	75	80	77	63	65	53	51	40	40

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

MAY 2018

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	45	29	B	B	31	36	52	50	50	77	68	46	54	58	86	84	65	72	91	33	73	33
2	27	72	30	27	G	45	91	47	55	68	92	49	54	75	152	60	56	27	50	49	59	48	116	40
3	27	35	33	24	36		34	60	61	95	88	128	174	154	65	111	50	45	78	110	146	85	43	46
4	40	32	48	39	74	29	35	104	70	48	78	116	56	47	40	51	47	45	42	57	89	72	25	32
5	26	G	G	31	24	G	38	49	43	49	49	50	47	50	48	52	46	35	34	38	36	59	G	36
6	89	48	78	66	G	177	110	59	56	56	54	55	54	47	38	37	34	35	29	40	58	53	37	57
7	69	59	55	33	25	G	26	33	94	60	85	36	44	38	44	39	40	47	42	28	54	57	92	91
8	73	60	43	46	34	24	44	39	47	87	68	91	59	73	112	65	45	62	76	55	55	57	36	28
9	G	G	G	G	G	94	28	36	57	55	66	57	77	64	53	73	76	70	27	25	24	50	57	32
10	33	30	27	26	G	B	31	41	44	54	60	51	60	69	64	45	48	50	49	40	78	57	74	93
11	71	59	79	71	G	25	25	51	132	97	102	132	150	128	137	83	60	92	62	39	174	115	128	57
12	49	60	35	26	B	G	31	156	94	134	40	129	55	108	56	44	41	38	41	41	92	147	92	113
13	166	54	50	29	B	G	112	55	48	68	46	52	89	93	92	72	74	61	58	58	41	56	29	115
14	67	59	78	59	39	57	66	72	69	91		110	115	105	62	52	60	92	59	52	60	39	31	38
15	34	57	39	28	32	90	35	58	69	49	51	56	146	50	46	57	48	43	38	36	92	70	91	95
16	69	103	112	24	G	G	32	41	60	72	110	111	78	54	45	49	65	59	54	43	39	49	145	108
17	70	67	85	41	G	G	24	36	59	79	60	56	52	67	49	76	77	92	50	70	105	54	114	73
18	90	58	57	30	41	40	27	58	58	85	107	104	111	60	56	58	78	61	54	87	25	32	24	70
19	70	91	57	58	64	52	60	73	50	84	91	133	146	49	51	48	79	46	53	34	28	46	34	38
20	170	59	28	114	59	G	39	36	56	60	76	67	108	63	81	50	69	50	49	50	34	24	21	G
21	35	39	G	55	49	105	35	50	53	47	55	49	90	116	85	64	74	62	51	38	26	43	46	58
22	85	105	70	59	92	38	27	36	58	48	51	61	67	68	55	63	52	59	58	56	57	70	70	49
23	60	69	85	65	57	94	60	49	78	91	73	68	174	81	66	56	54	59	74	50	50	60	77	70
24	91	29	69	108	92	108	108	57	59	52	47	50	50	51	57	73	71	72	149	93	144	105	59	39
25	57	28	G	35	32	G	28	145	43	90	64	105	93	133	60	52	115	59	41	42	35	G	G	28
26	G	G	33	24	30	42	36	52	52	50	62	49	48	53	64	72	45	45	46	59	28	49	G	49
27	48	54	104	84	59	41	32	38	58	92	45	146	117	49	48	54	66	126	94	90	110	166	69	70
28	80	69	74	74	32	26	38	104	95	67	138	73	54	54	66	93	54	45	50	88	127	58	59	59
29	34	G	31	28	24	25	38	59	87	59	77	66	48	74	67	70	76	78	98	90	156	128	93	114
30	32	92	71	32	36	35	44	82	92	151	174	156	130	110	118	127	156	54	33	57	25	28	G	33
31	59	40	43	39	60	54	89	132	106	111	97	156	70	60	46	50	48	51	56	70	77	72	79	48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	28	28	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	59	57	48	35	33	36	35	52	58	68	67	68	70	64	57	58	60	59	51	52	58	57	59	49
U Q	73	67	74	59	58	55	60	72	78	91	91	116	115	93	67	72	76	70	62	70	92	72	91	73
L Q	33	30	31	28	12	G	31	39	52	52	51	52	54	50	48	50	48	45	42	40	35	46	29	36

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HOURLY VALUES OF fmin AT Okinawa

MAY 2018

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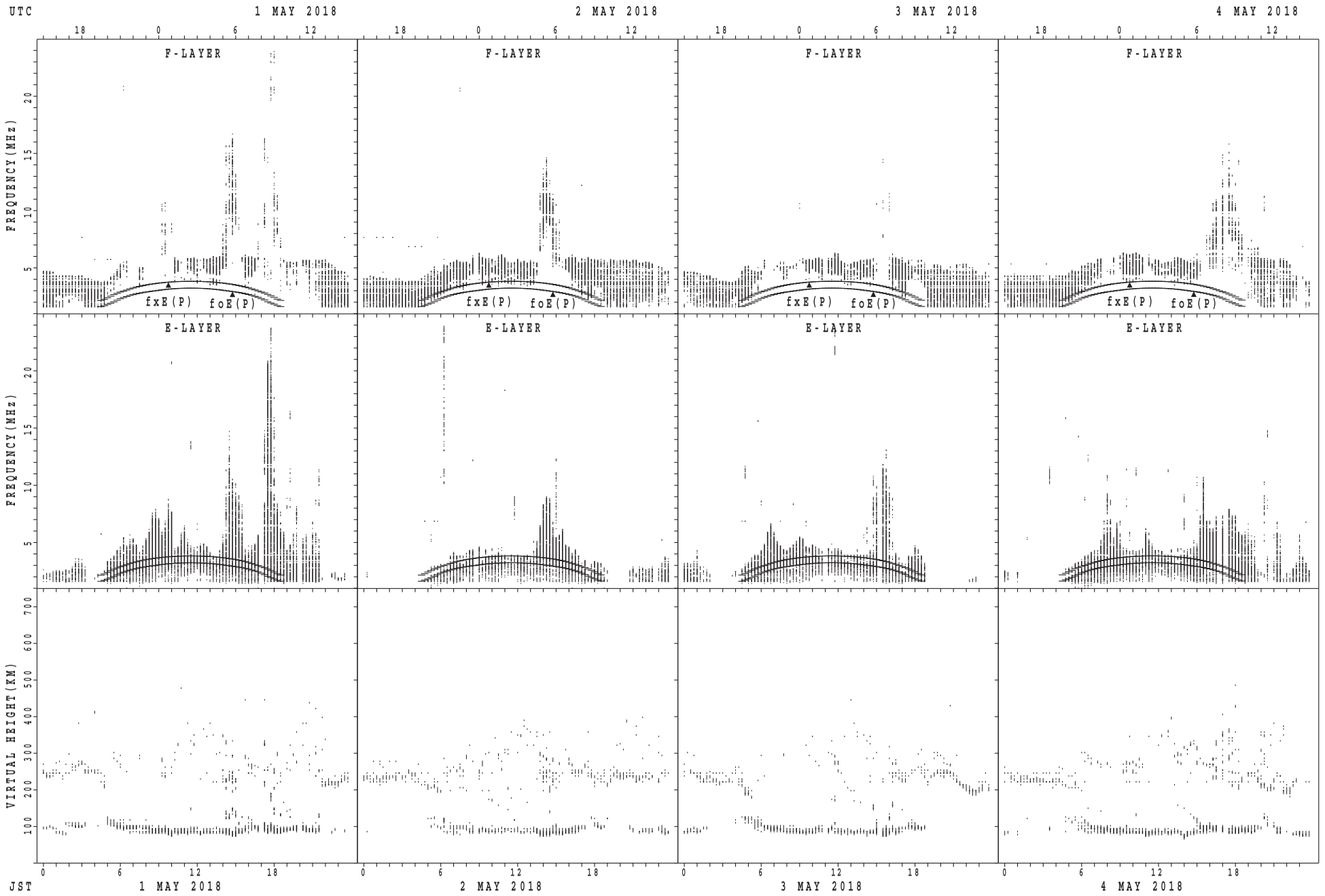
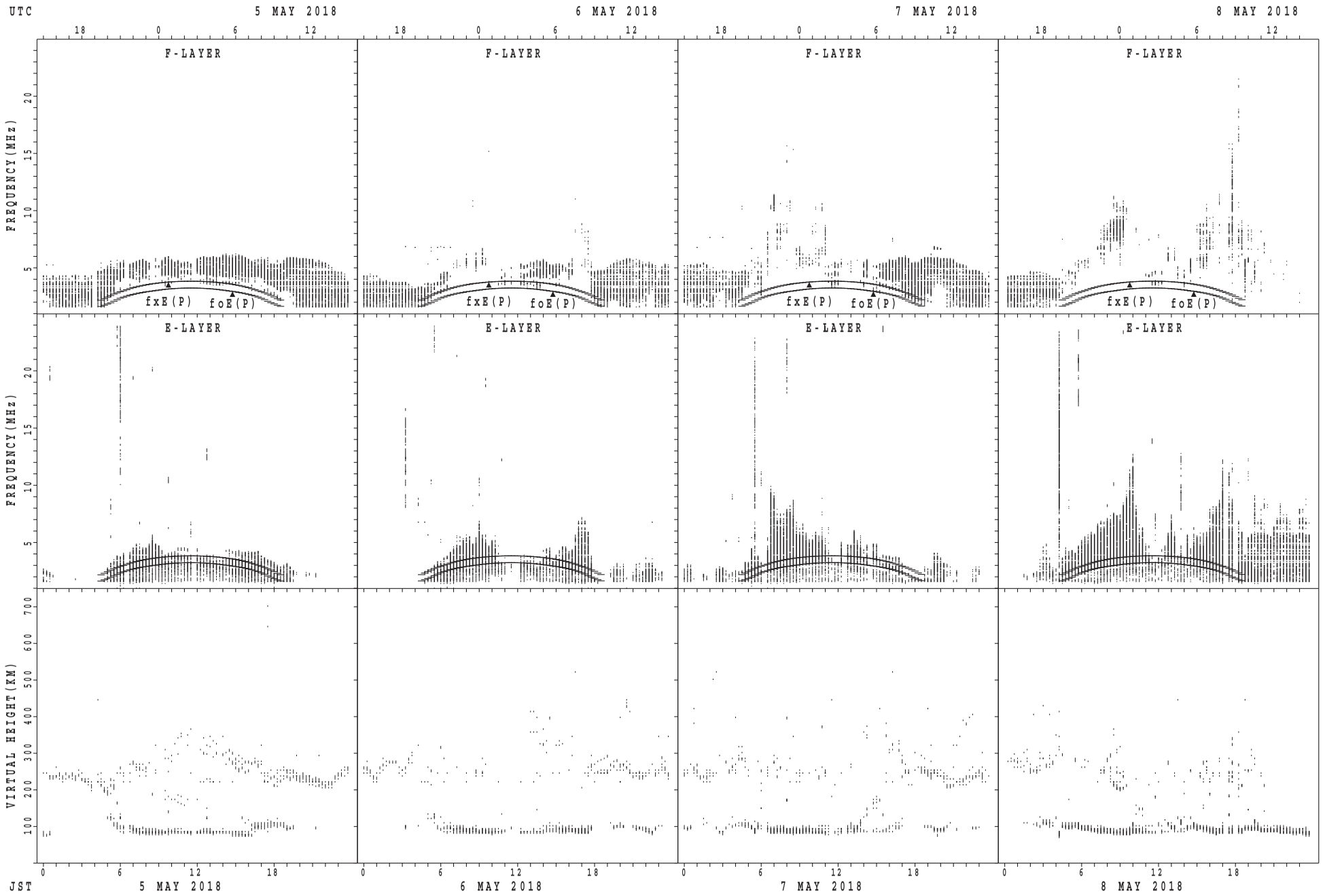
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	28	28	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	14	15	17	20	20	20	18	17	15	14	14	14	14	14	14	14
U Q	15	14	14	14	14	14	14	14	14	15	18	20	21	22	20	18	15	14	14	14	14	14	14	14
L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

SUMMARY PLOTS AT Wakkanai



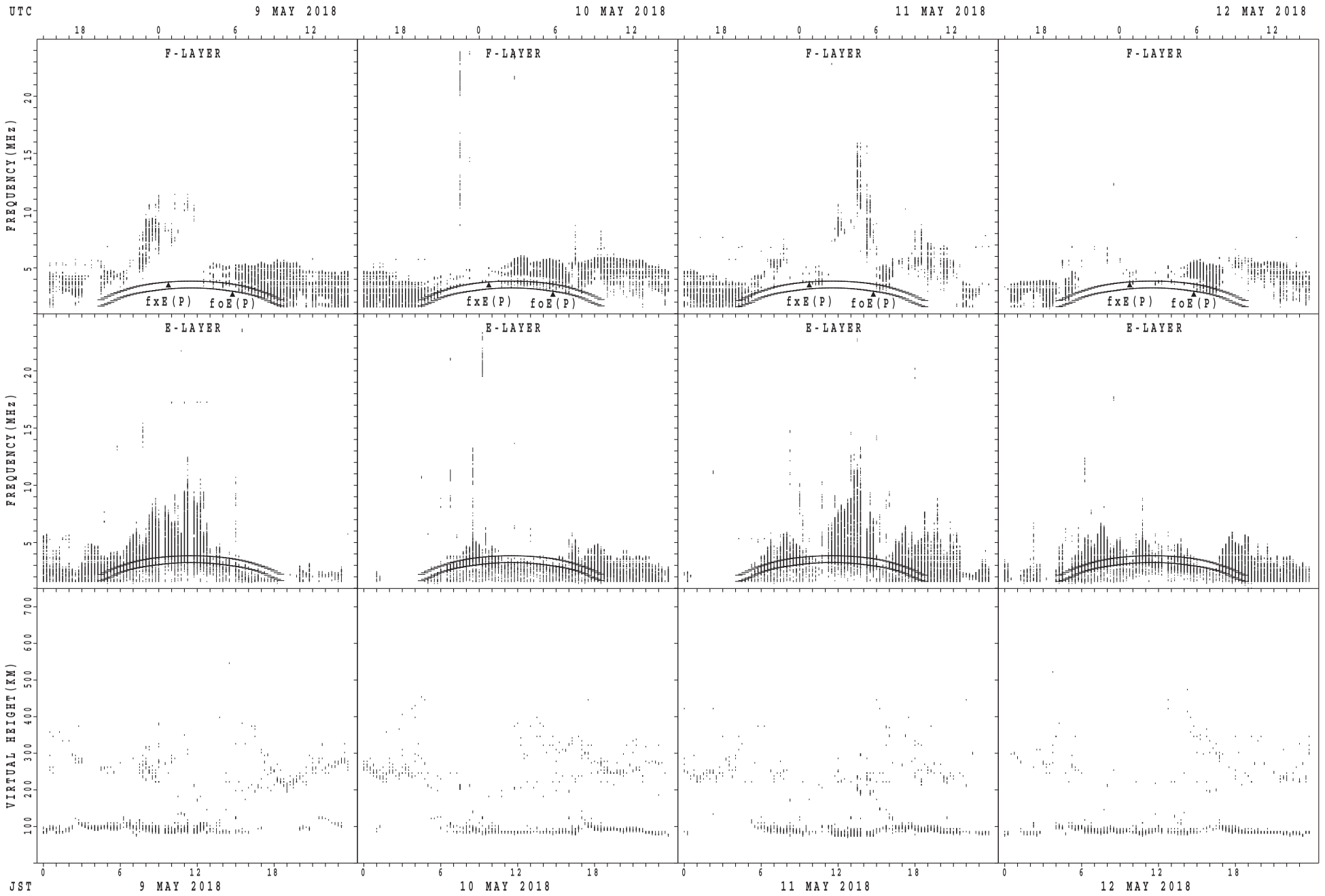
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



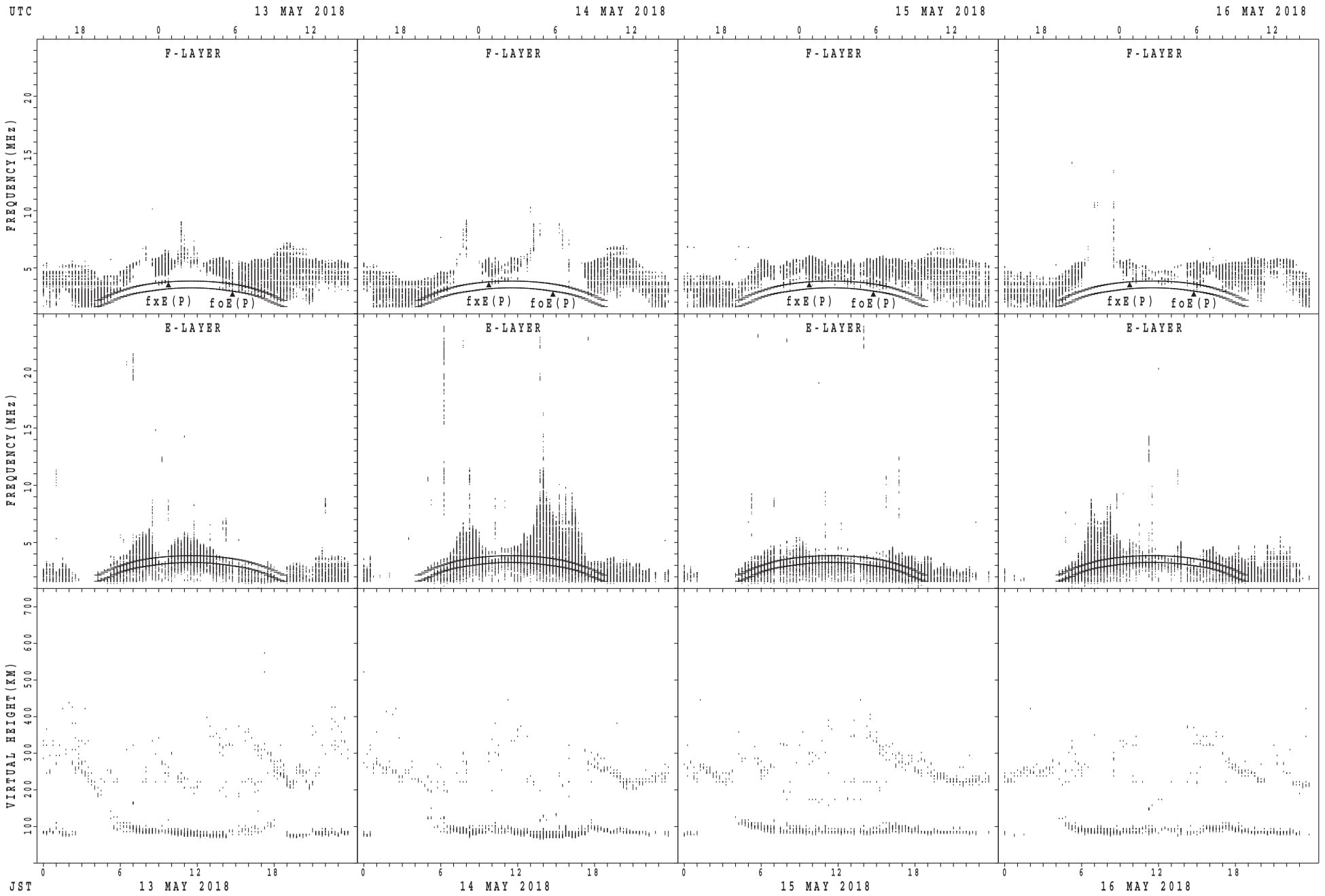
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



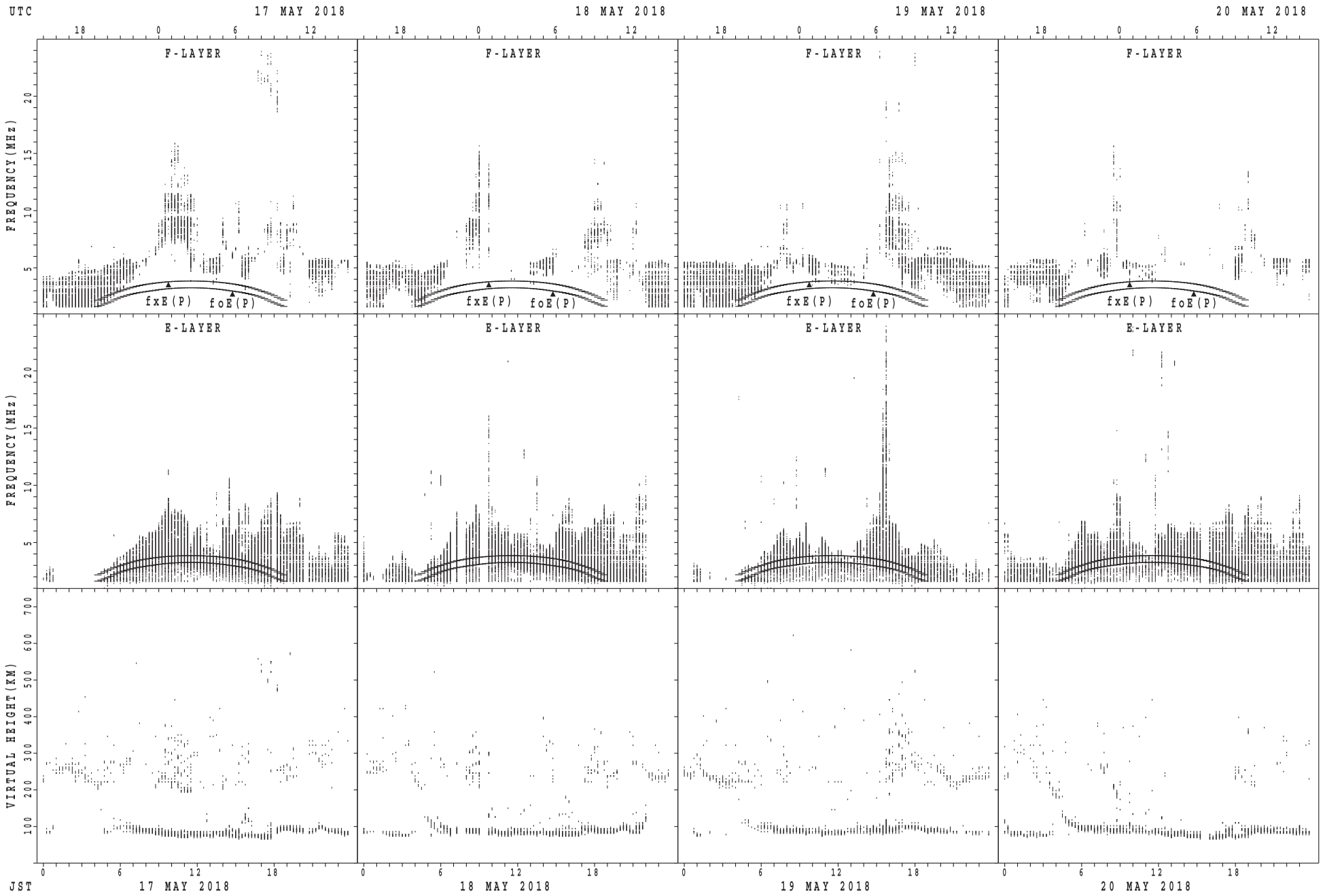
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



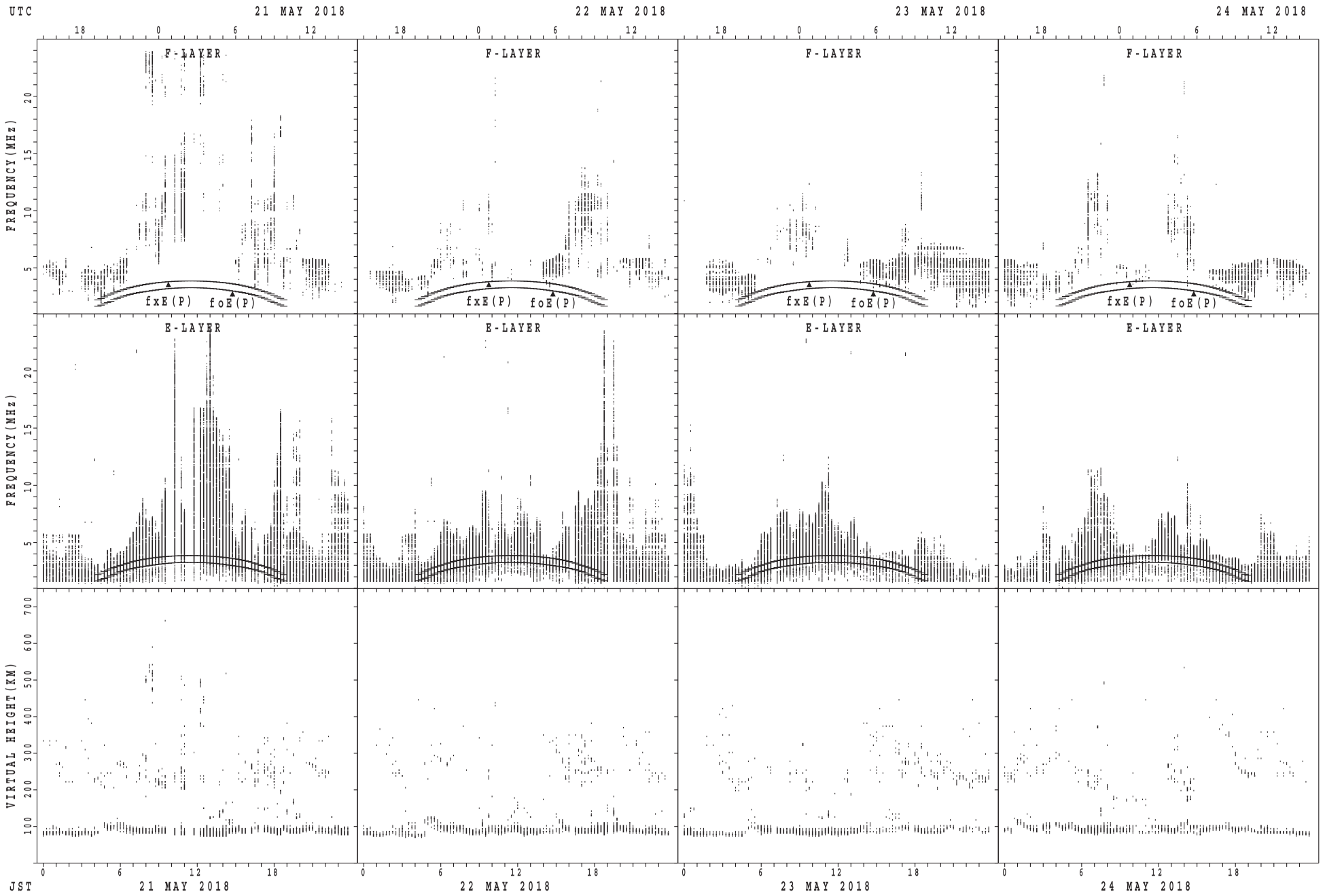
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

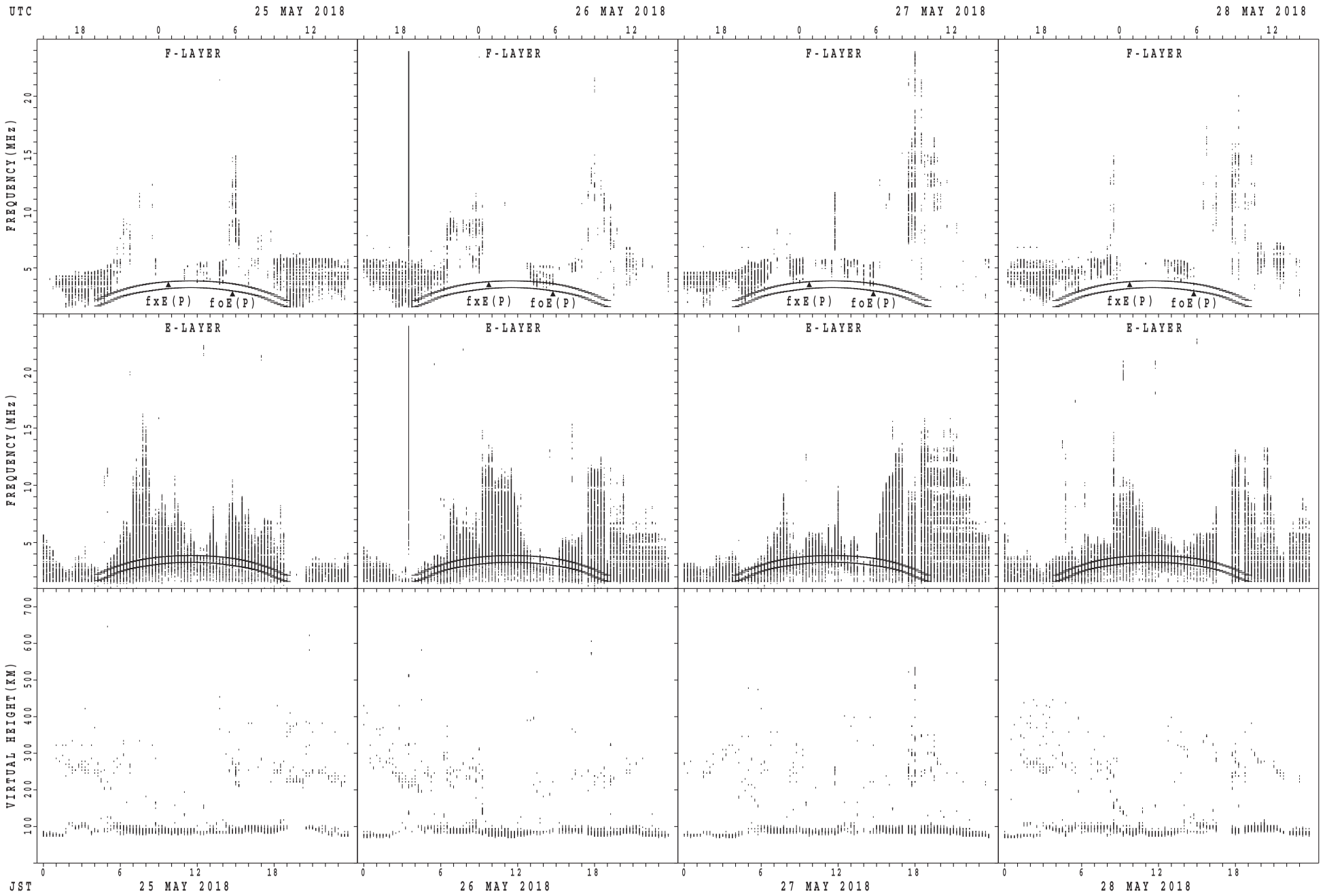


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

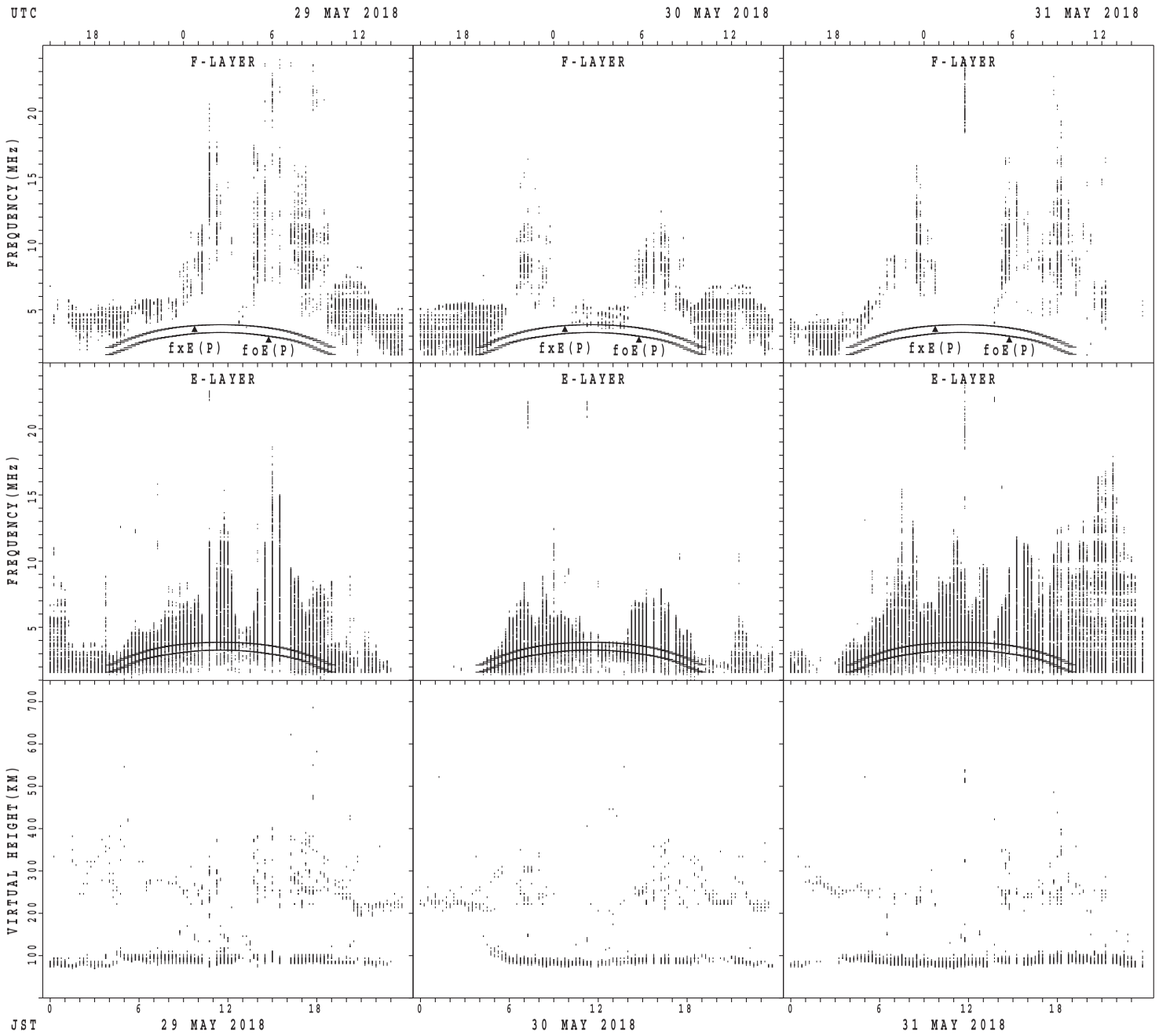
SUMMARY PLOTS AT Wakkanai



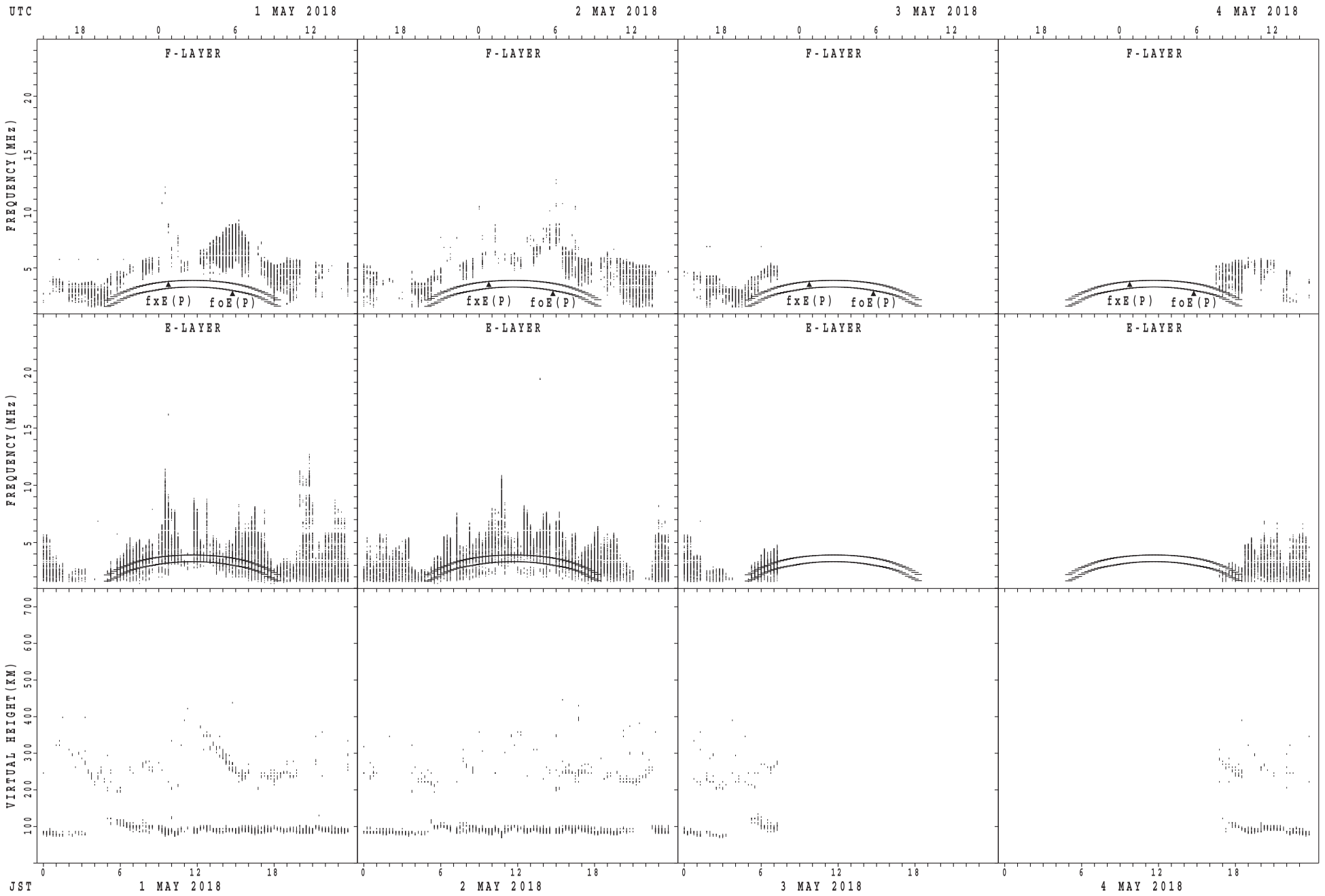
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

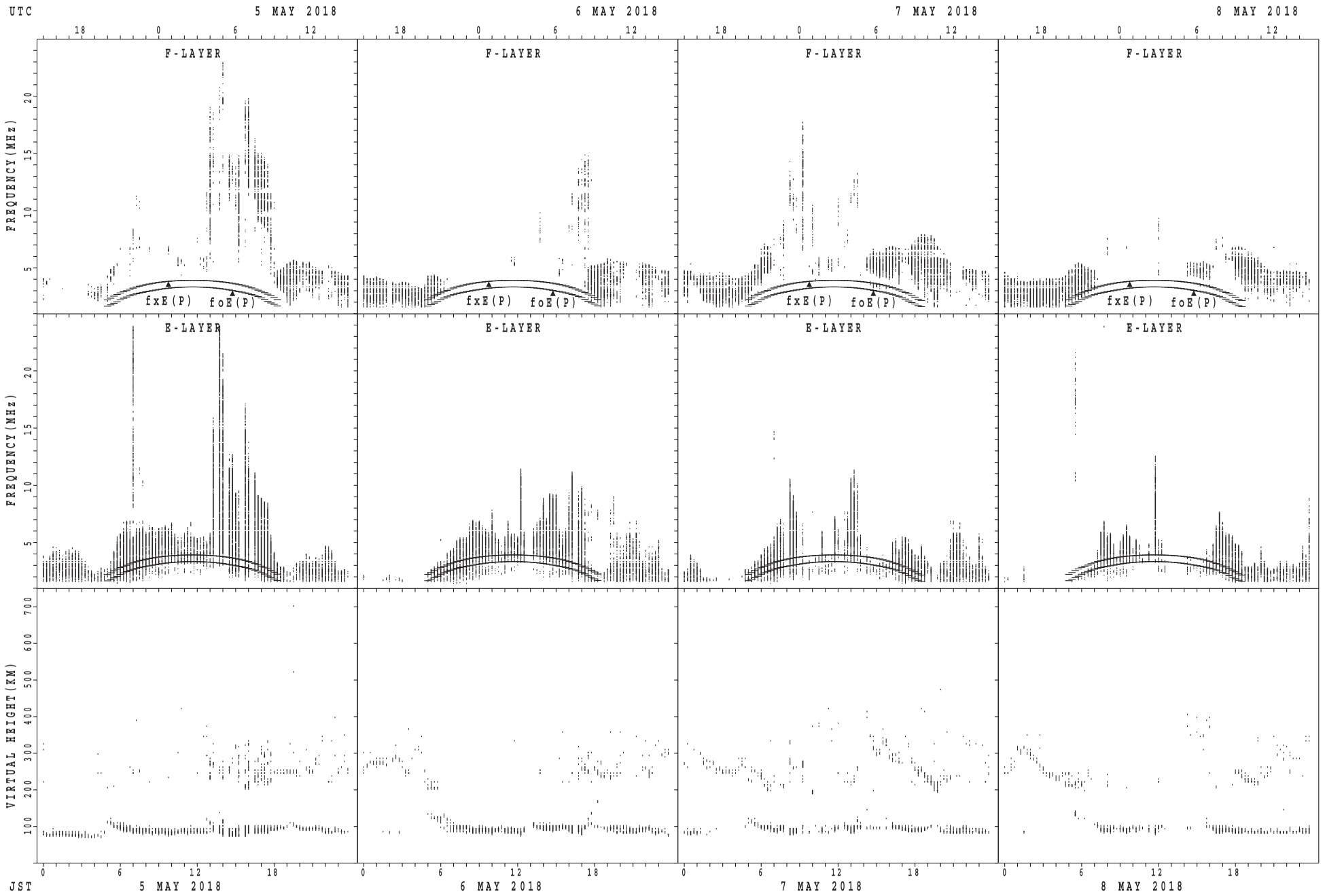

SUMMARY PLOTS AT Wakkanai
UTC
25 MAY 2018
26 MAY 2018
27 MAY 2018
28 MAY 2018
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

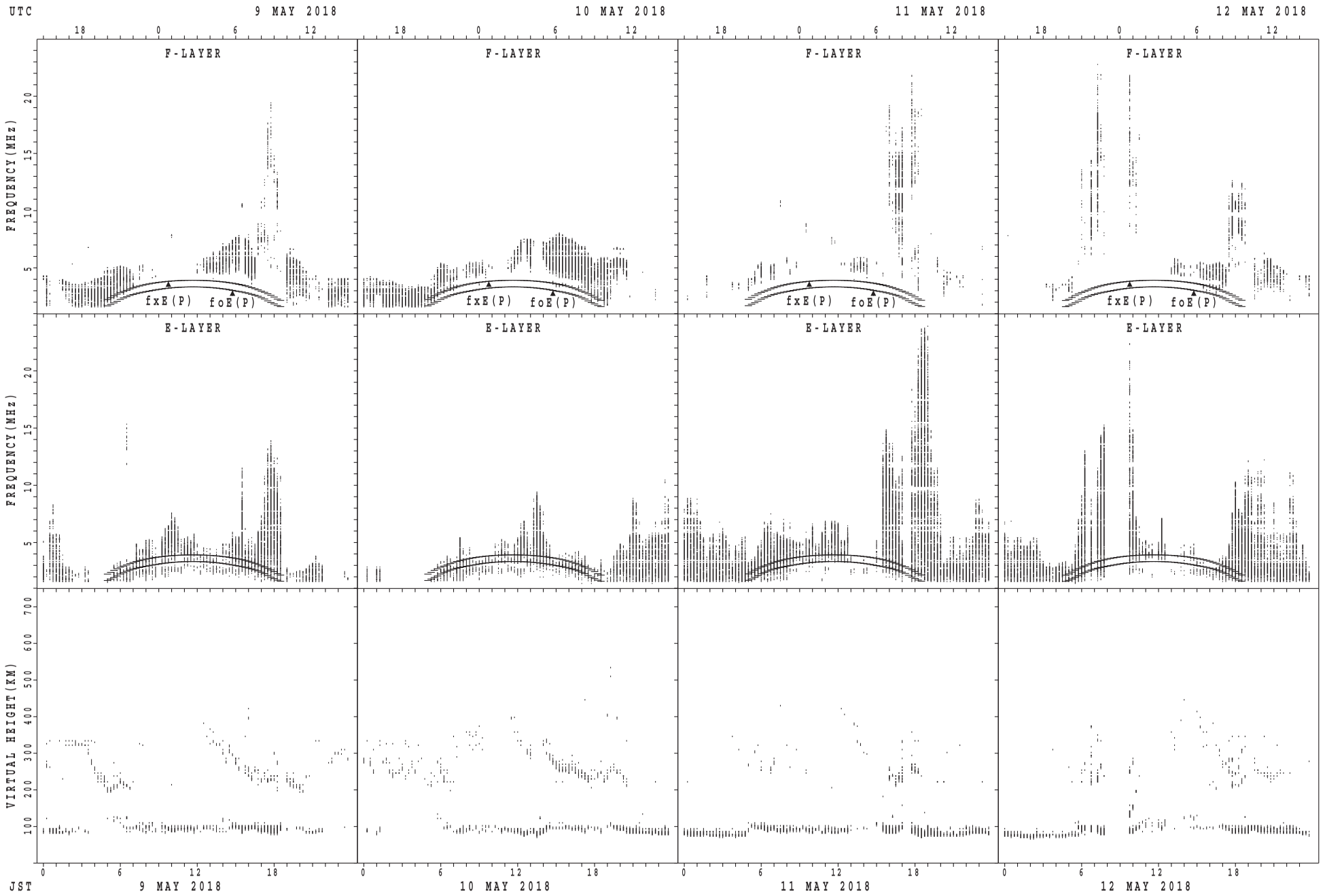


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
1 MAY 2018
2 MAY 2018
3 MAY 2018
4 MAY 2018
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

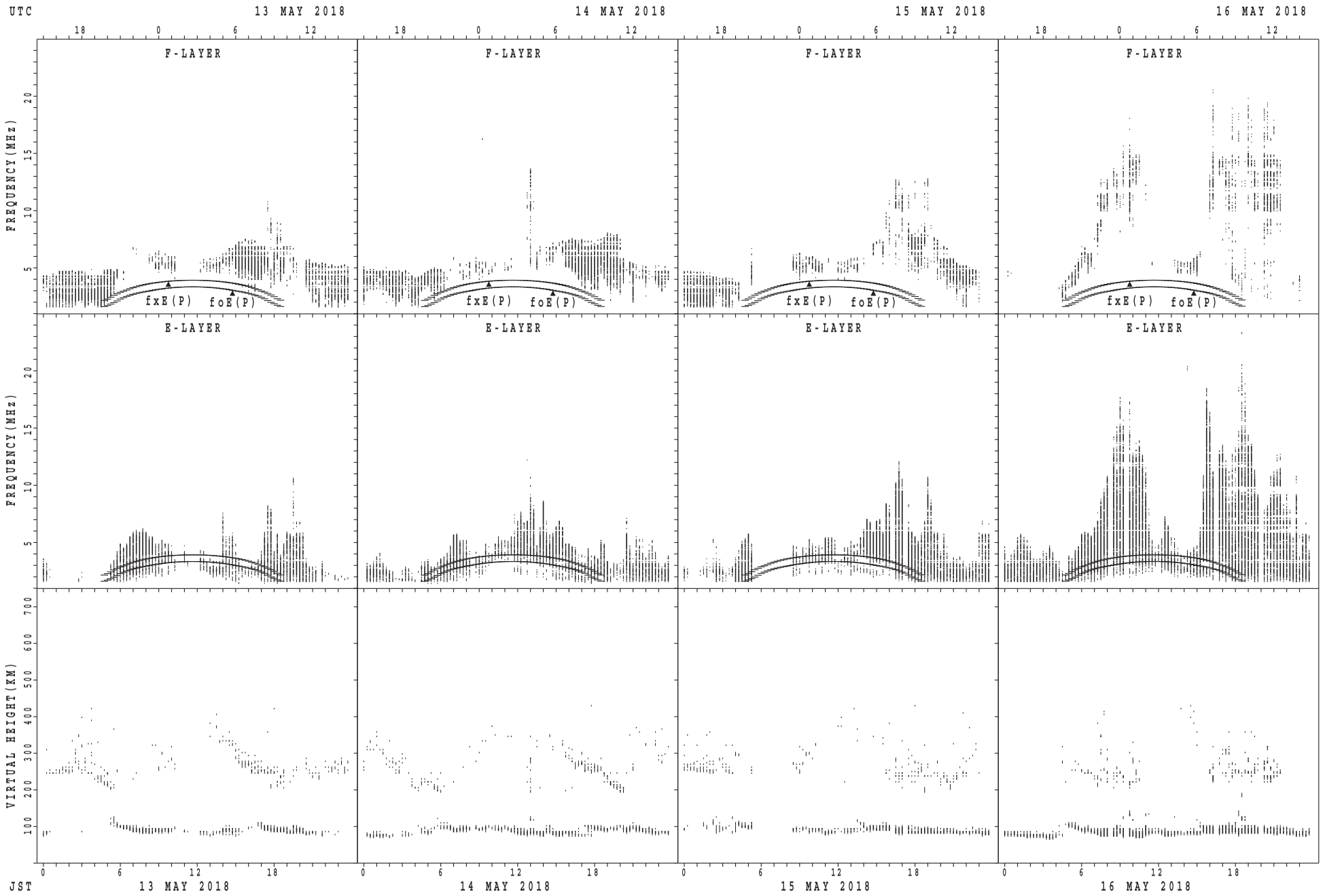

SUMMARY PLOTS AT Kokubunji
UTC
5 MAY 2018
6 MAY 2018
7 MAY 2018
8 MAY 2018
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



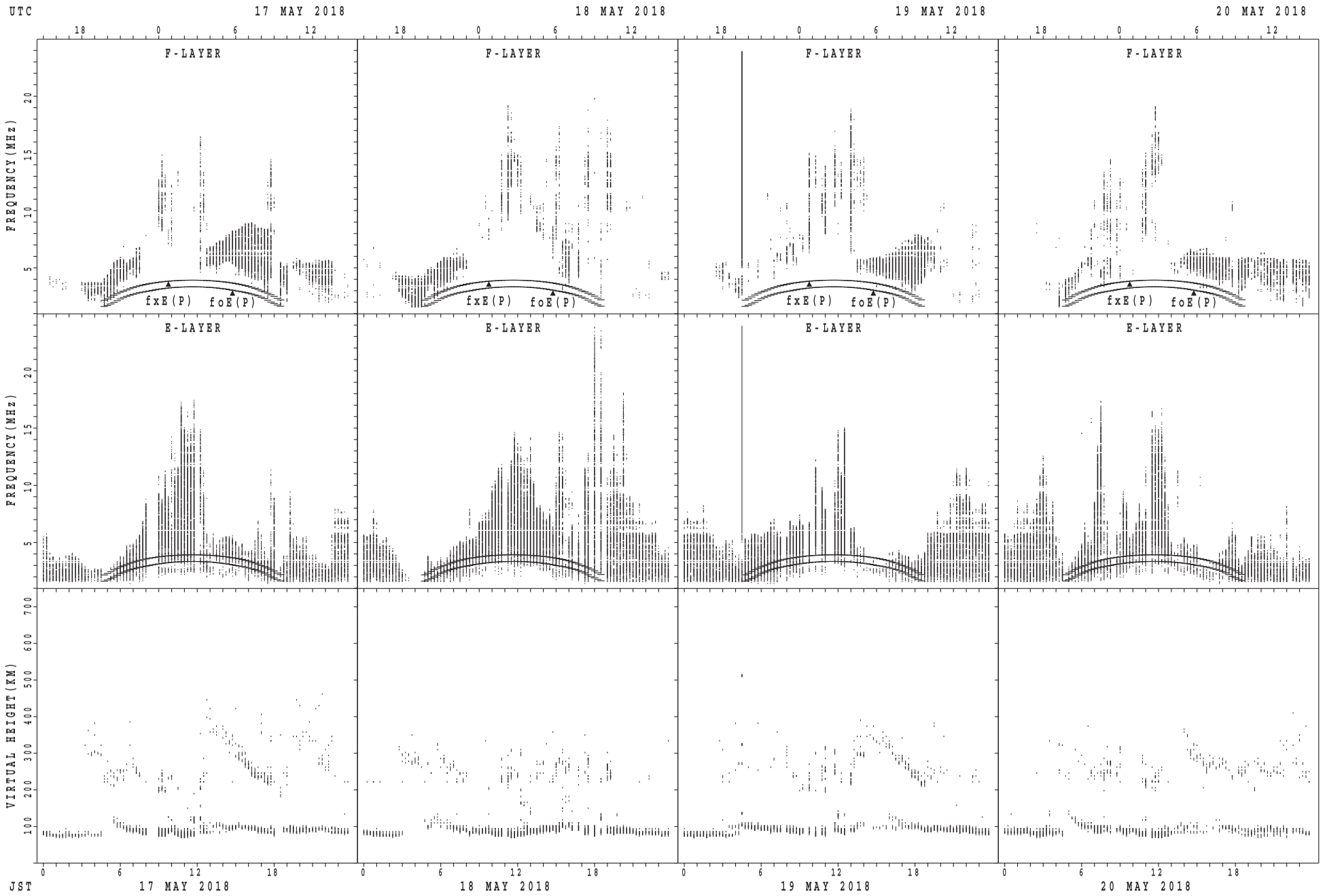
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



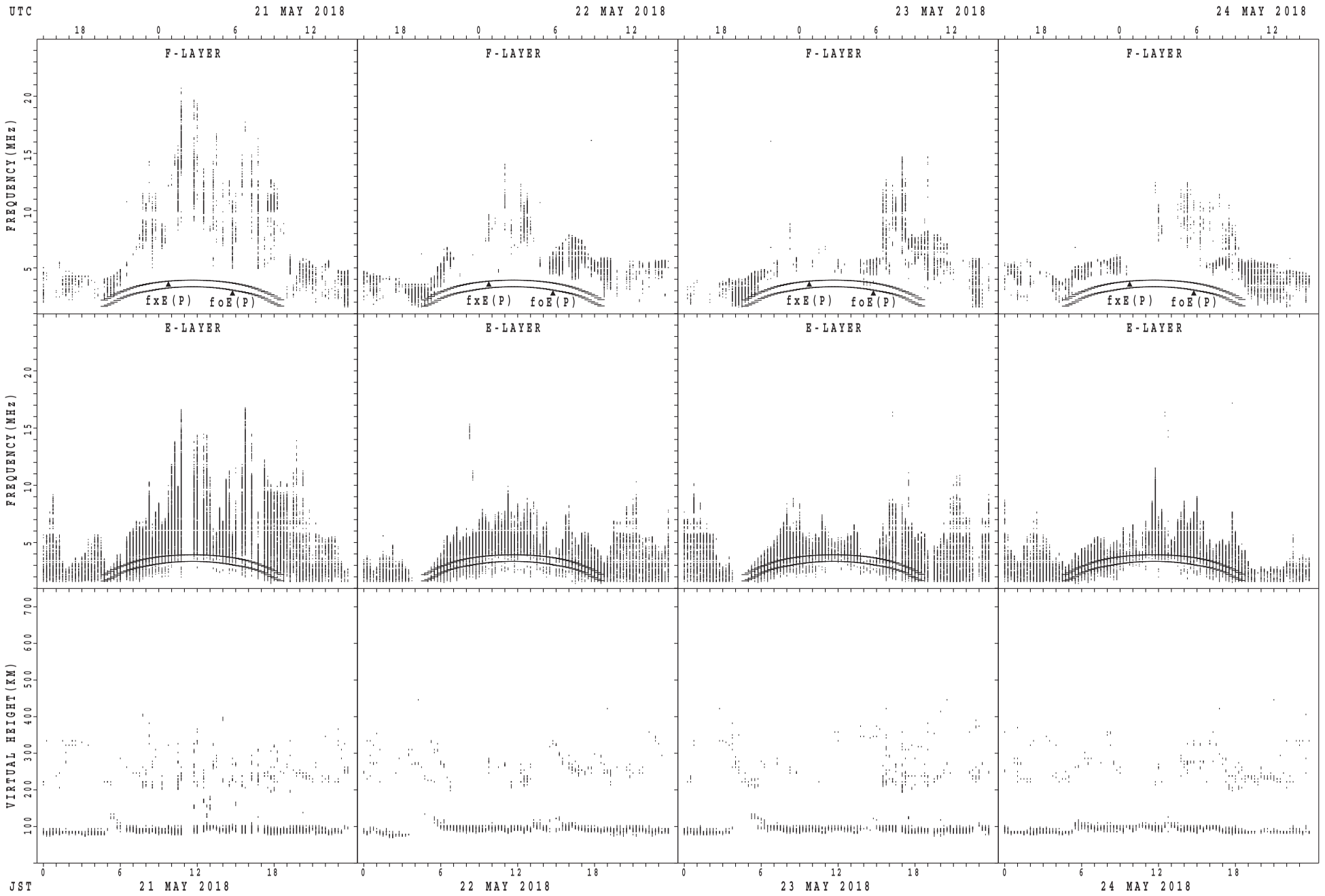
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



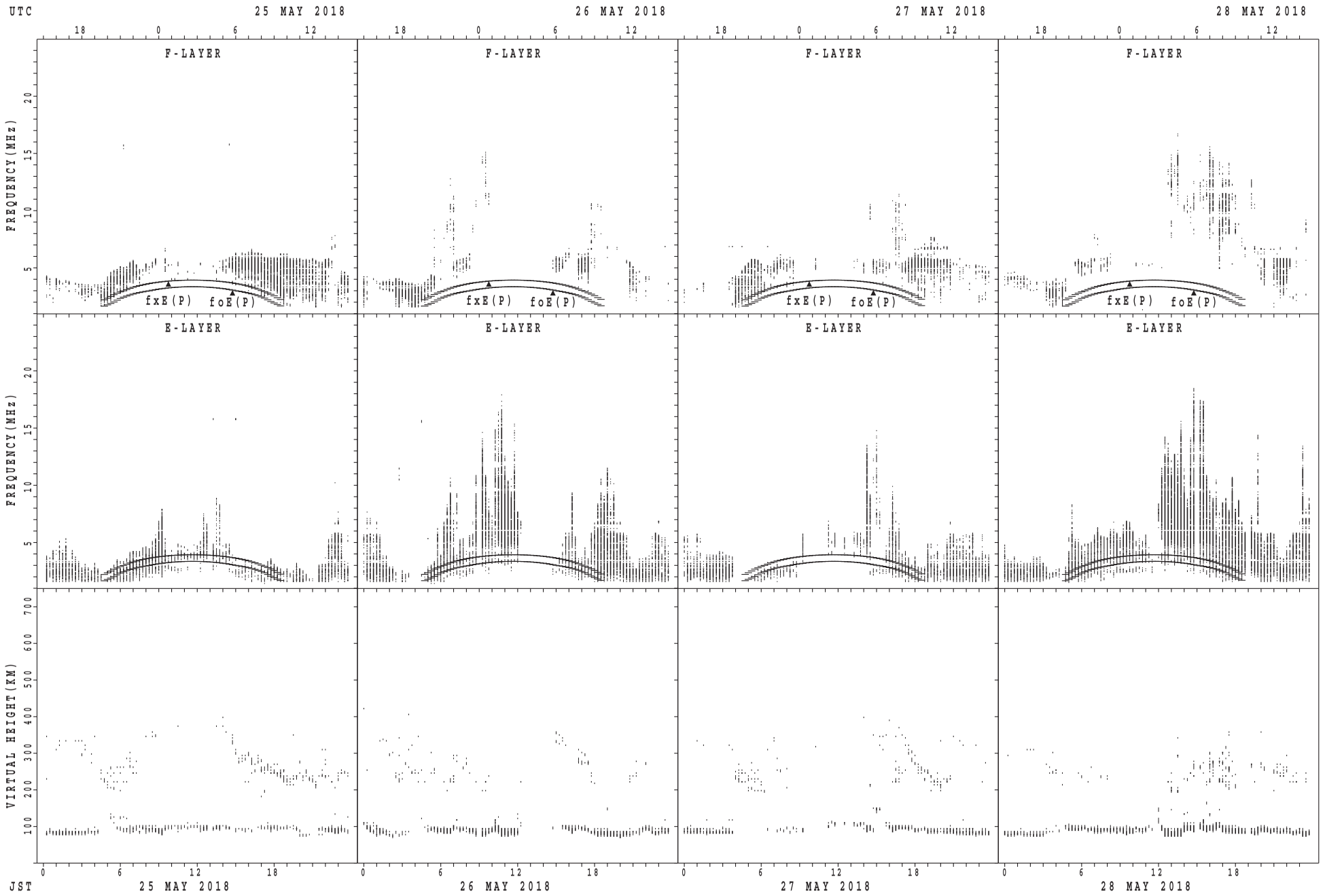
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



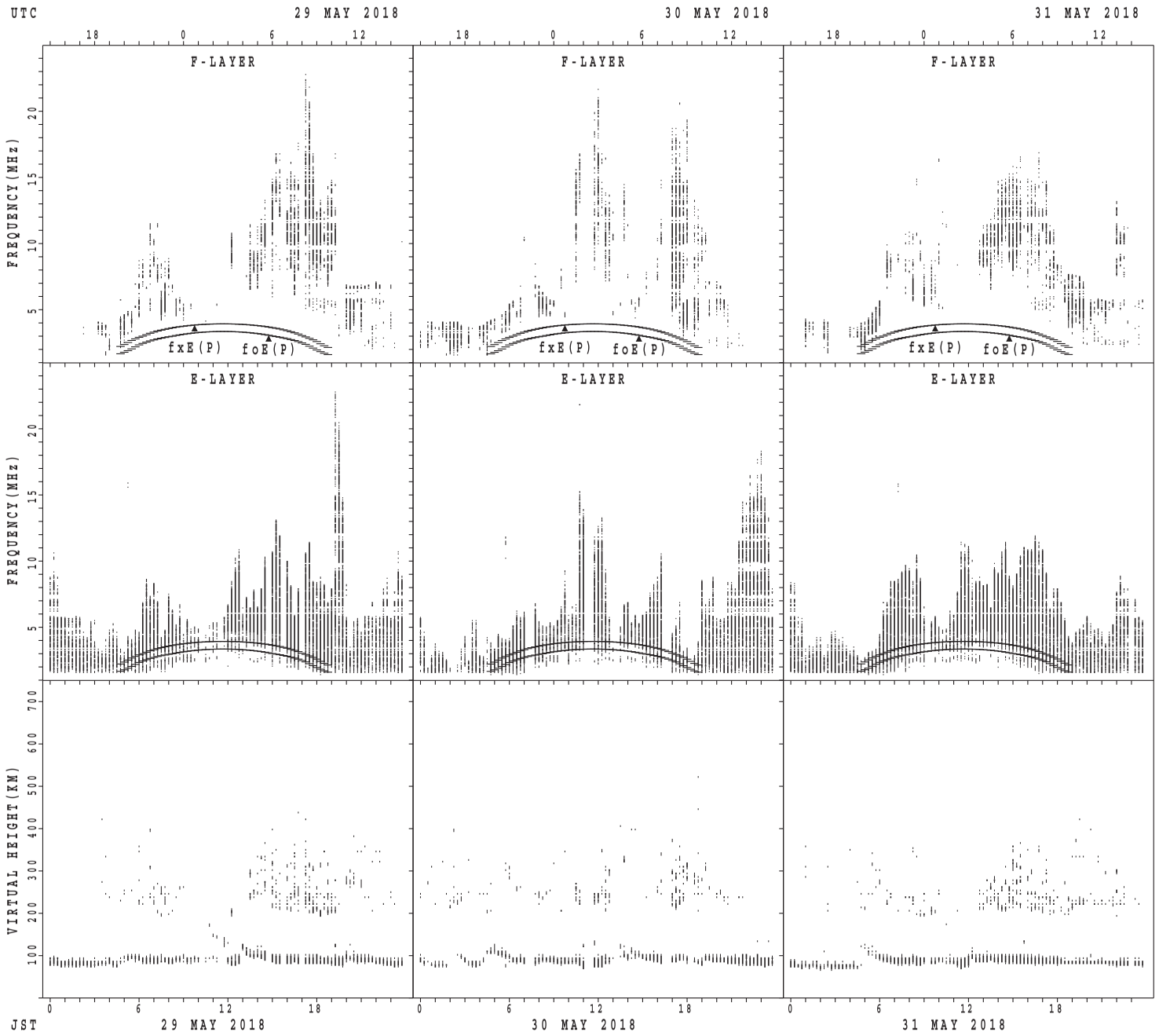
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



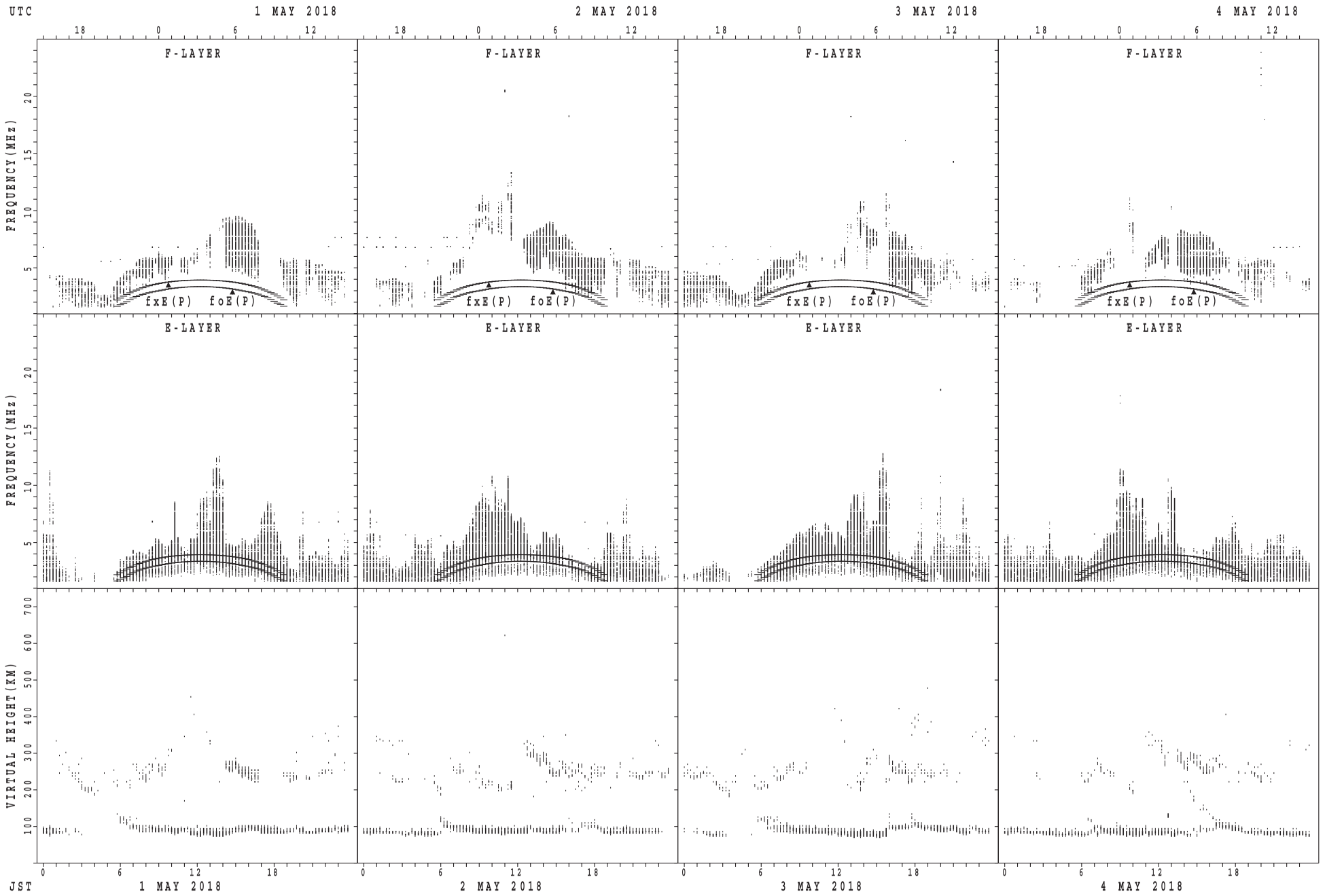
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



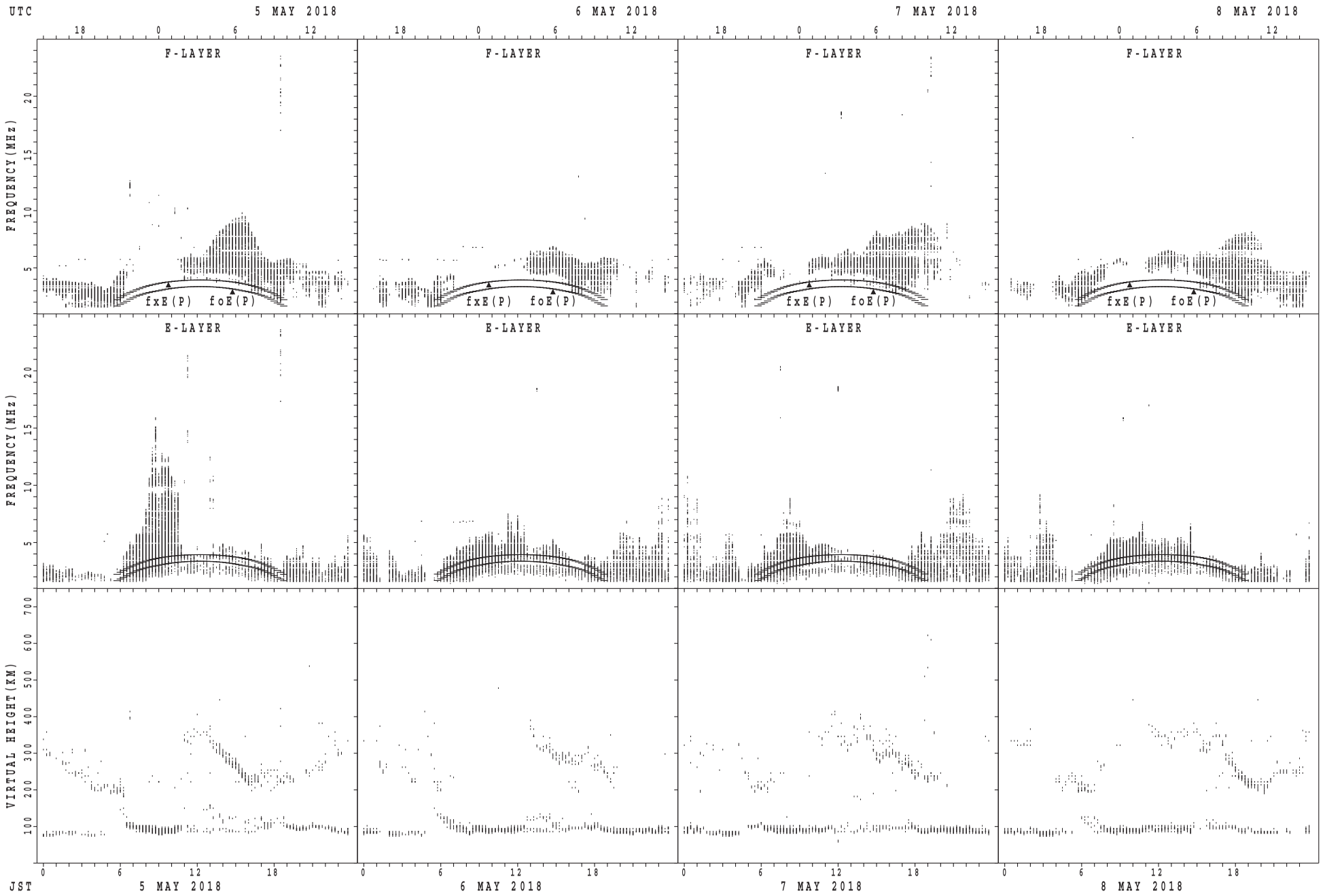
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



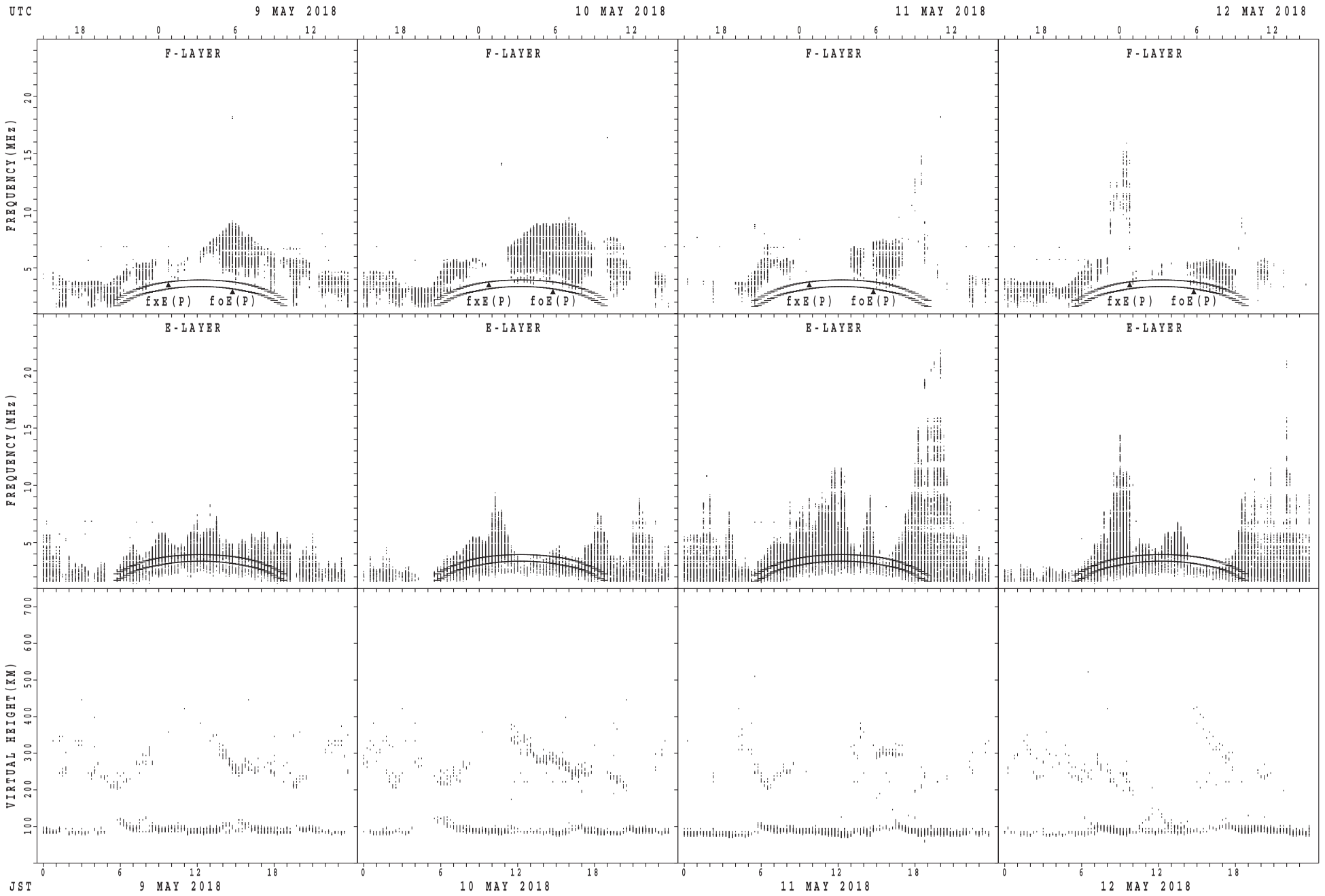
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



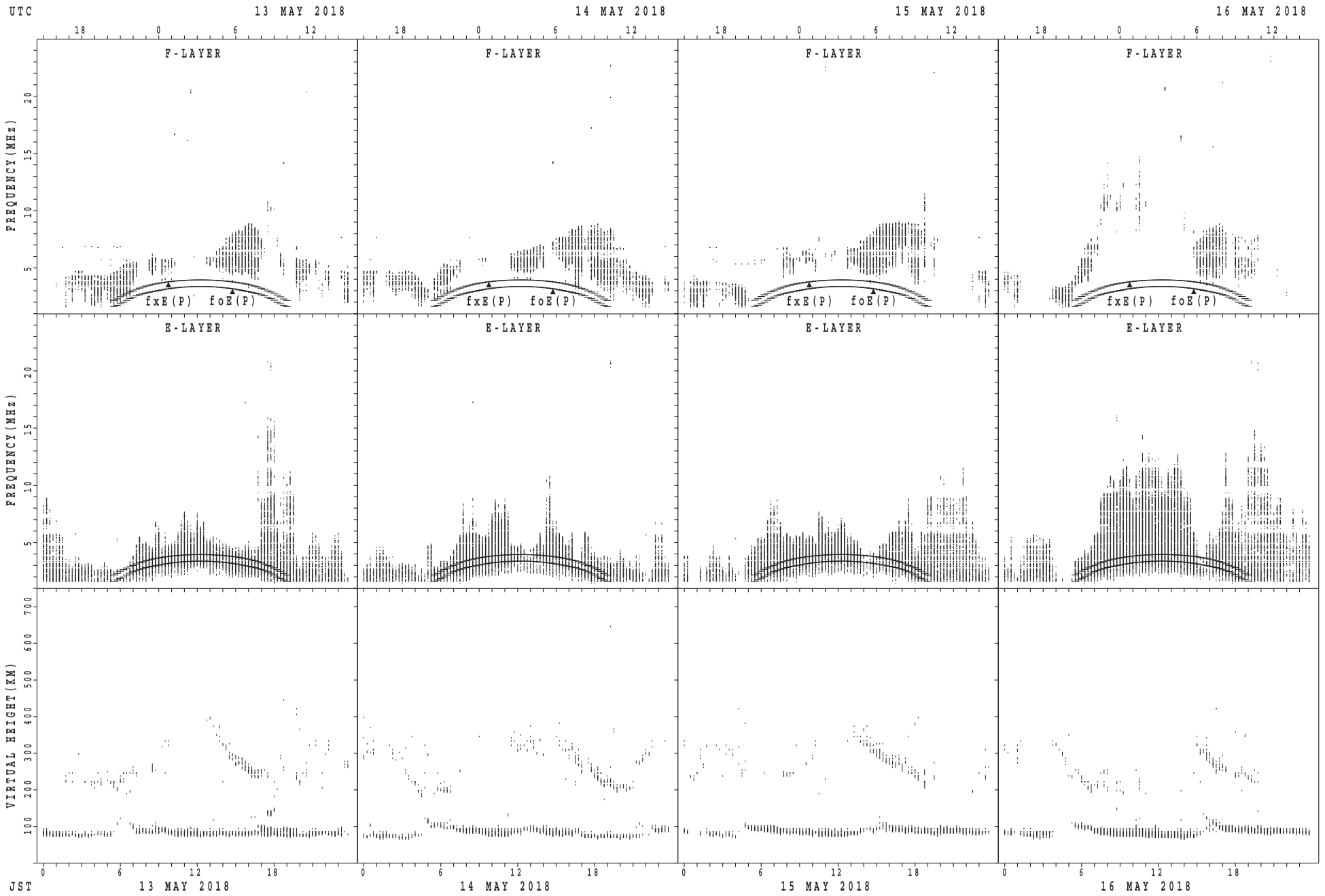
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

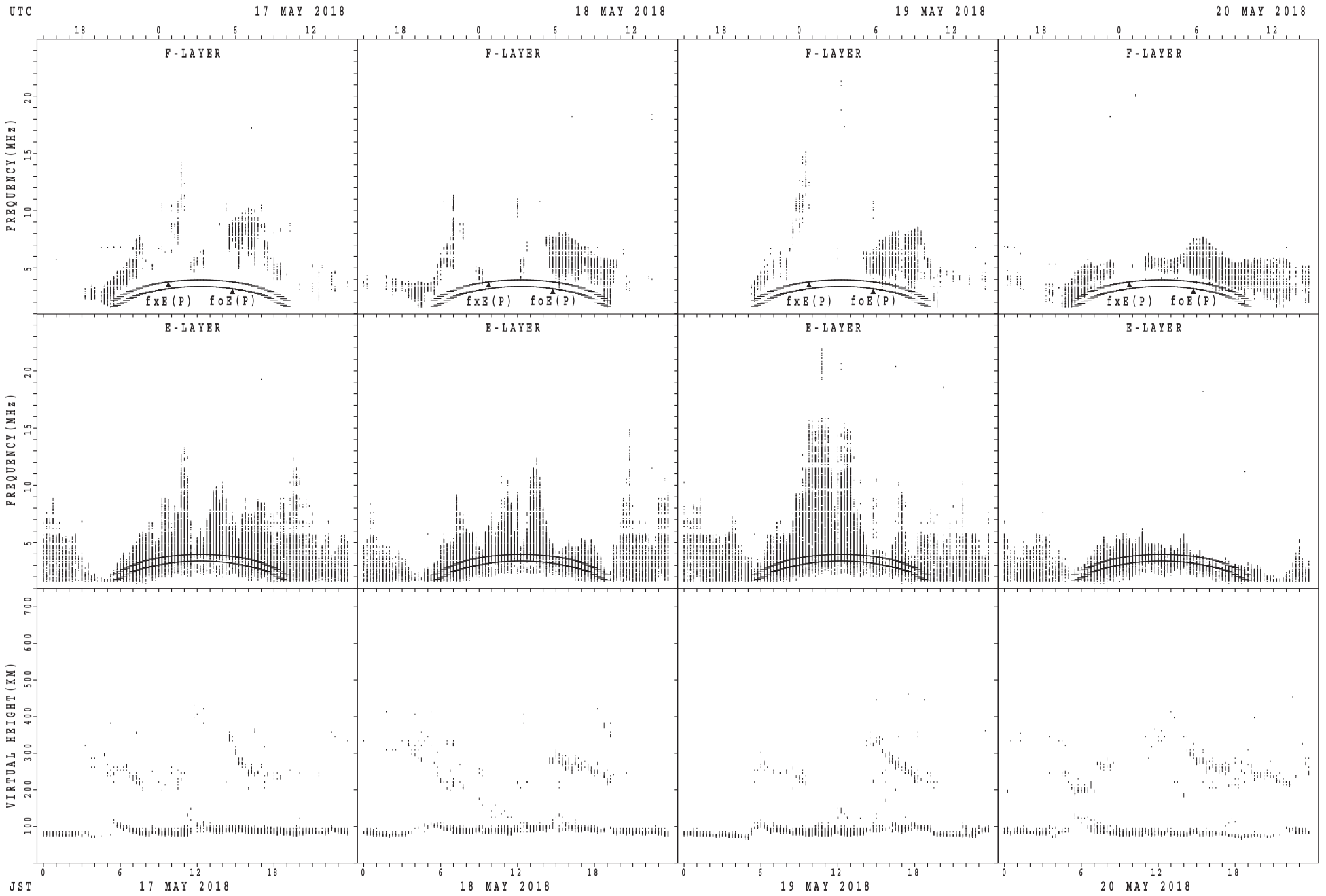


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

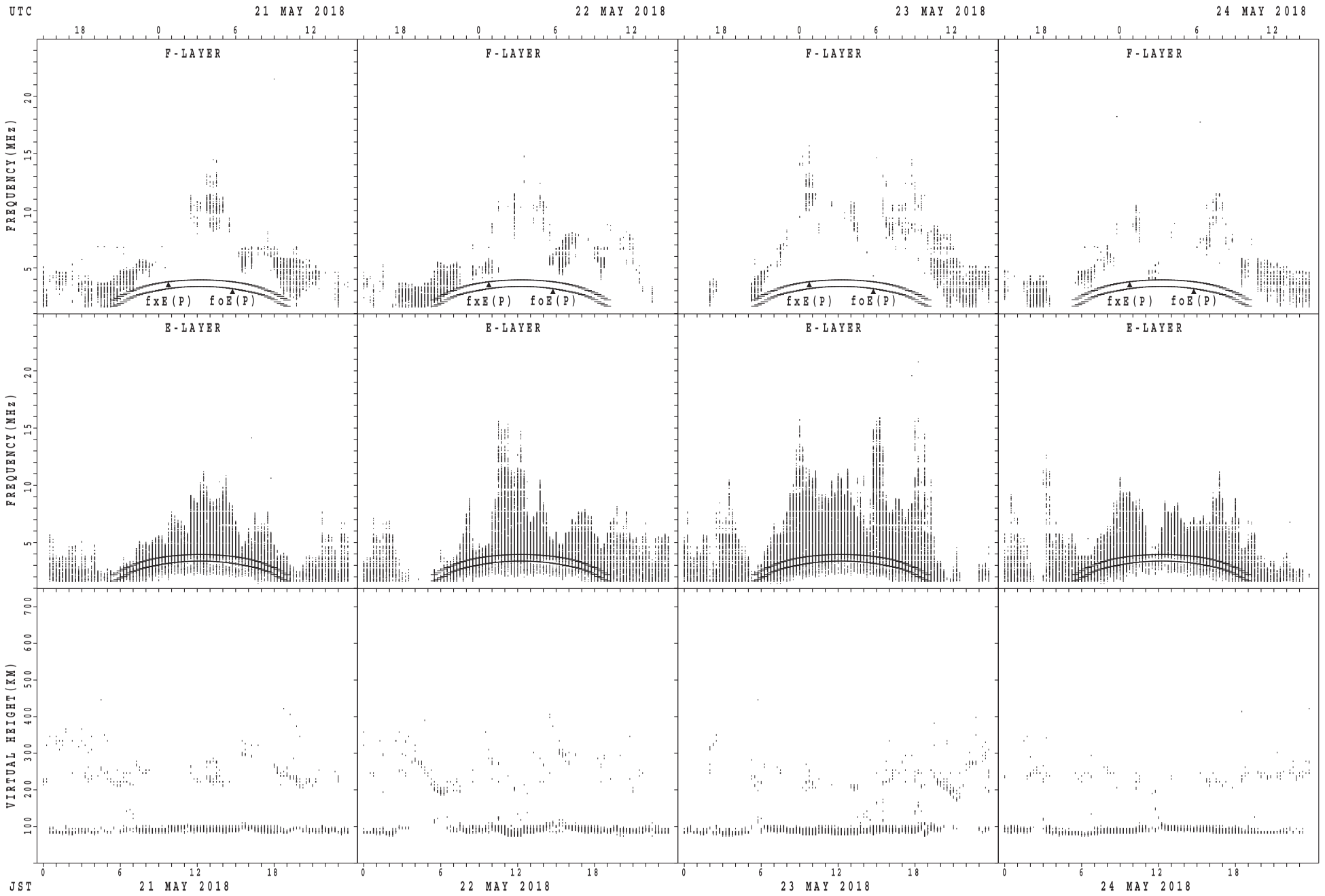
SUMMARY PLOTS AT Yamagawa



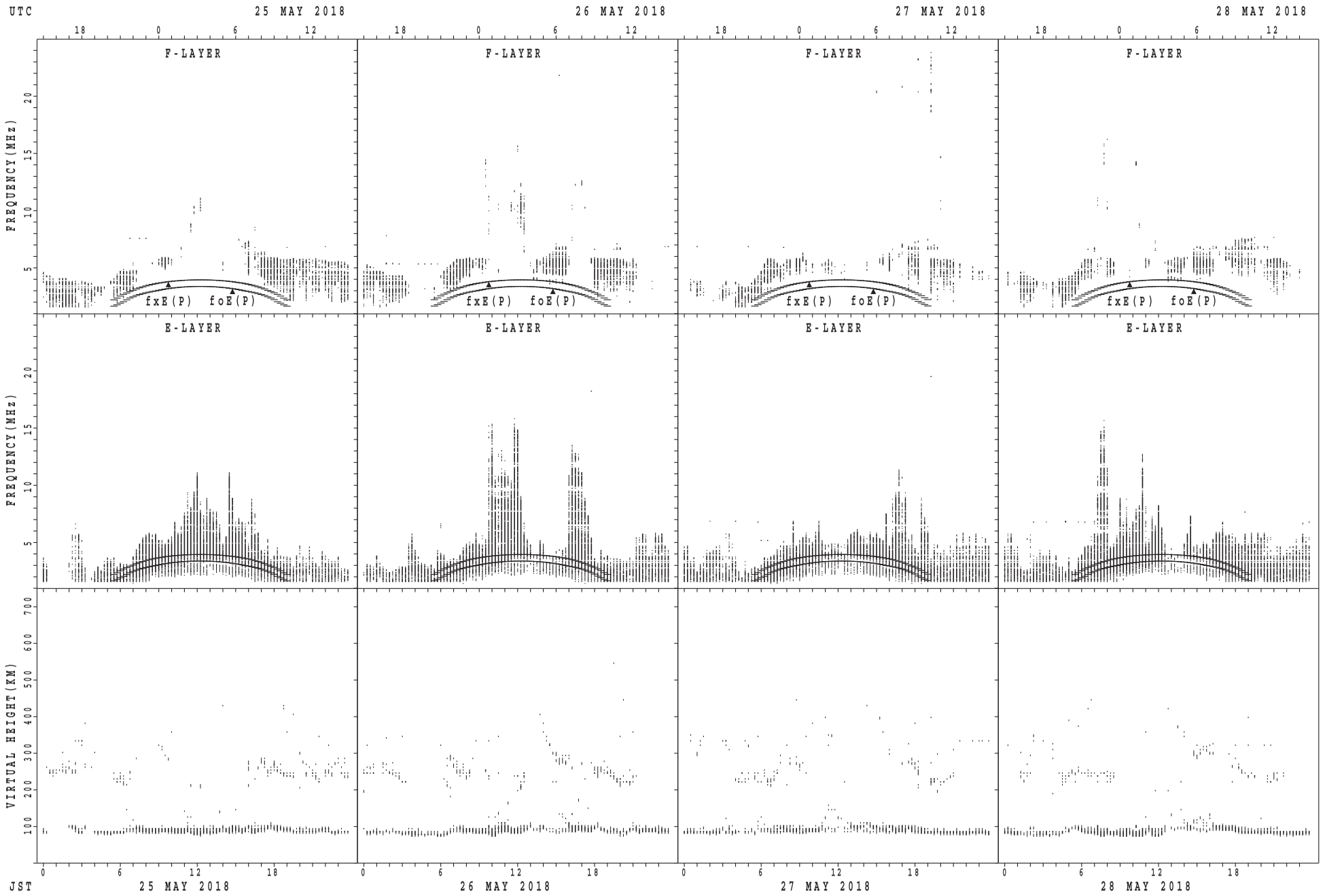
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

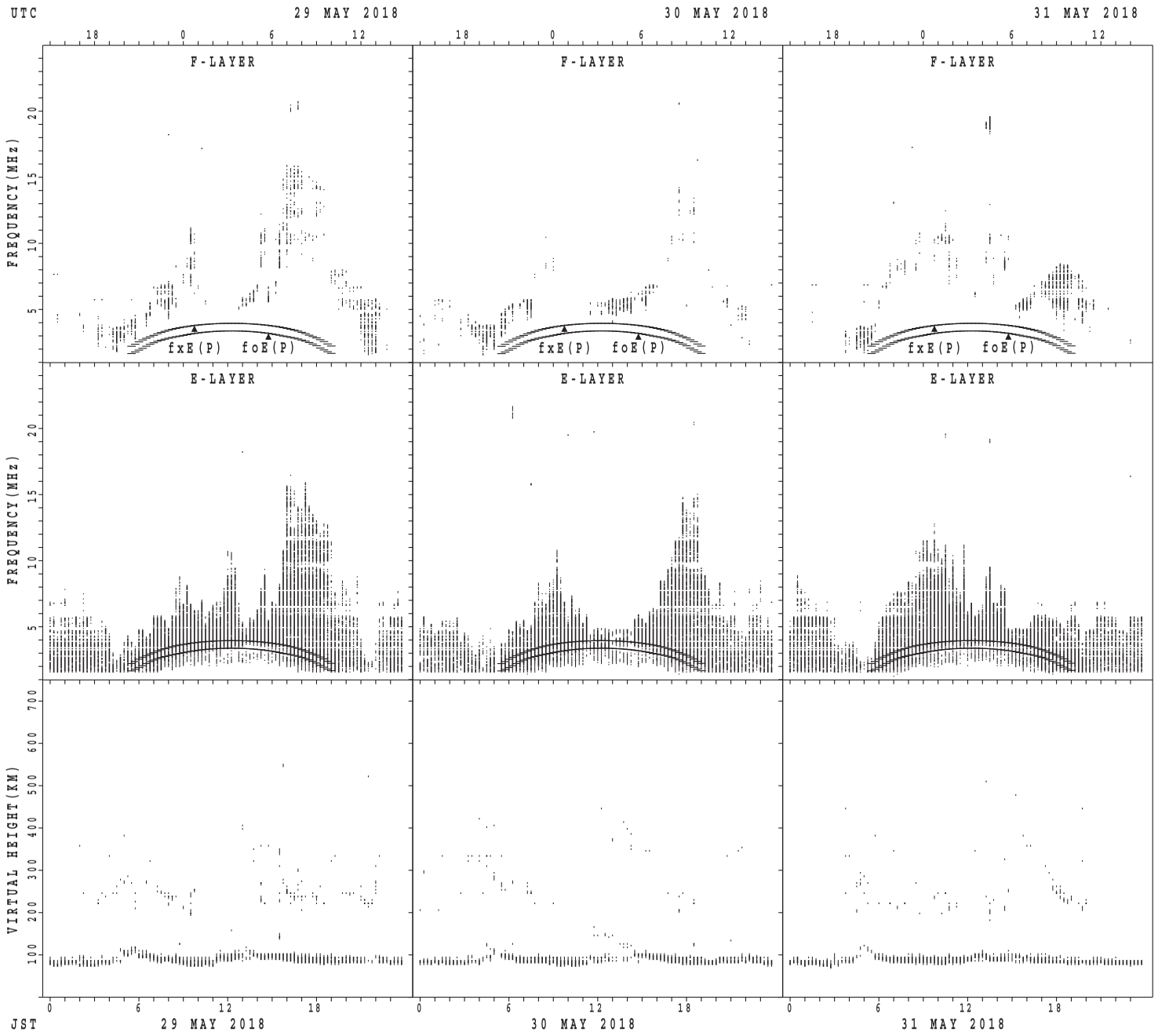

SUMMARY PLOTS AT Yamagawa
UTC
17 MAY 2018
18 MAY 2018
19 MAY 2018
20 MAY 2018
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

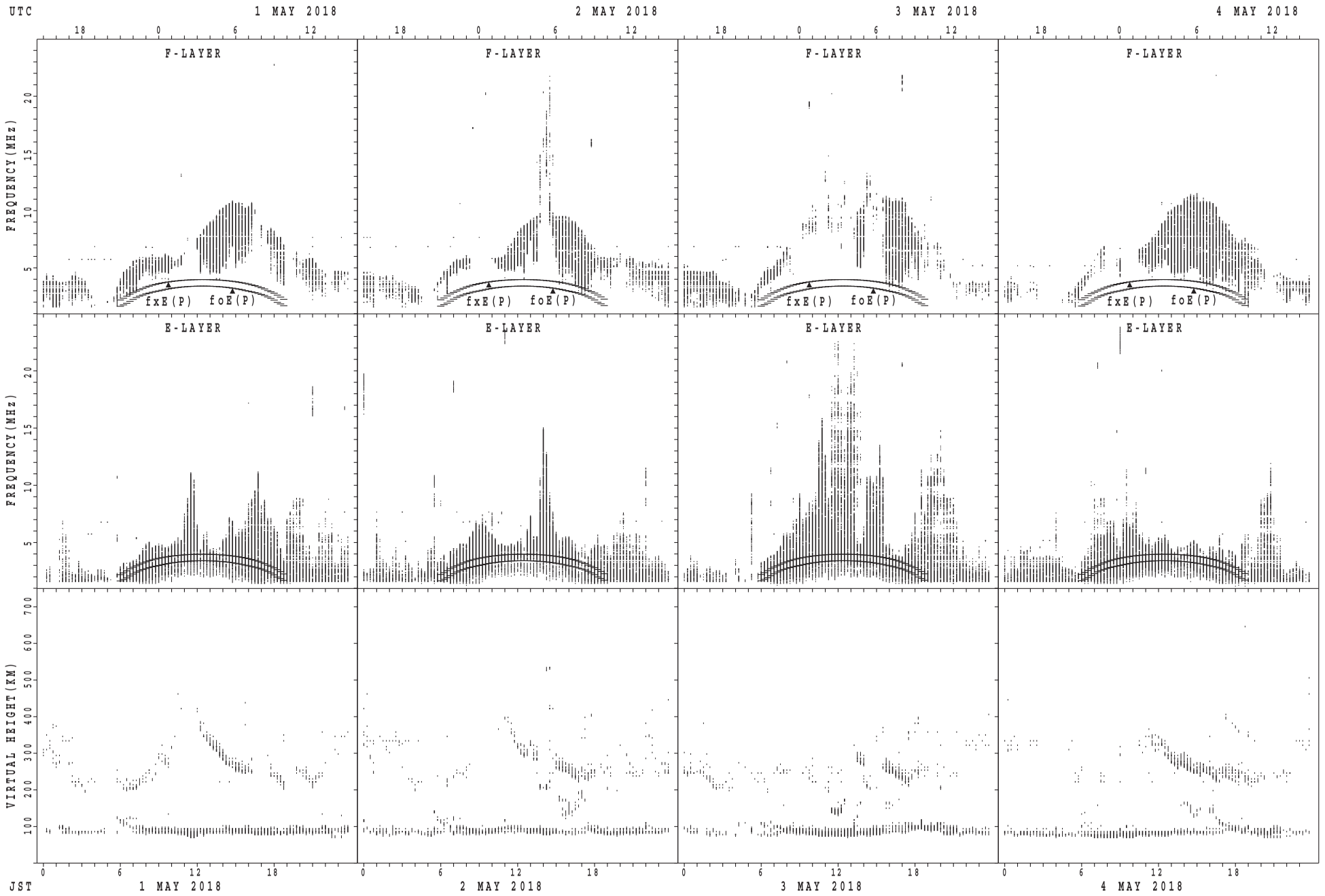


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Yamagawa
UTC
25 MAY 2018
26 MAY 2018
27 MAY 2018
28 MAY 2018
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

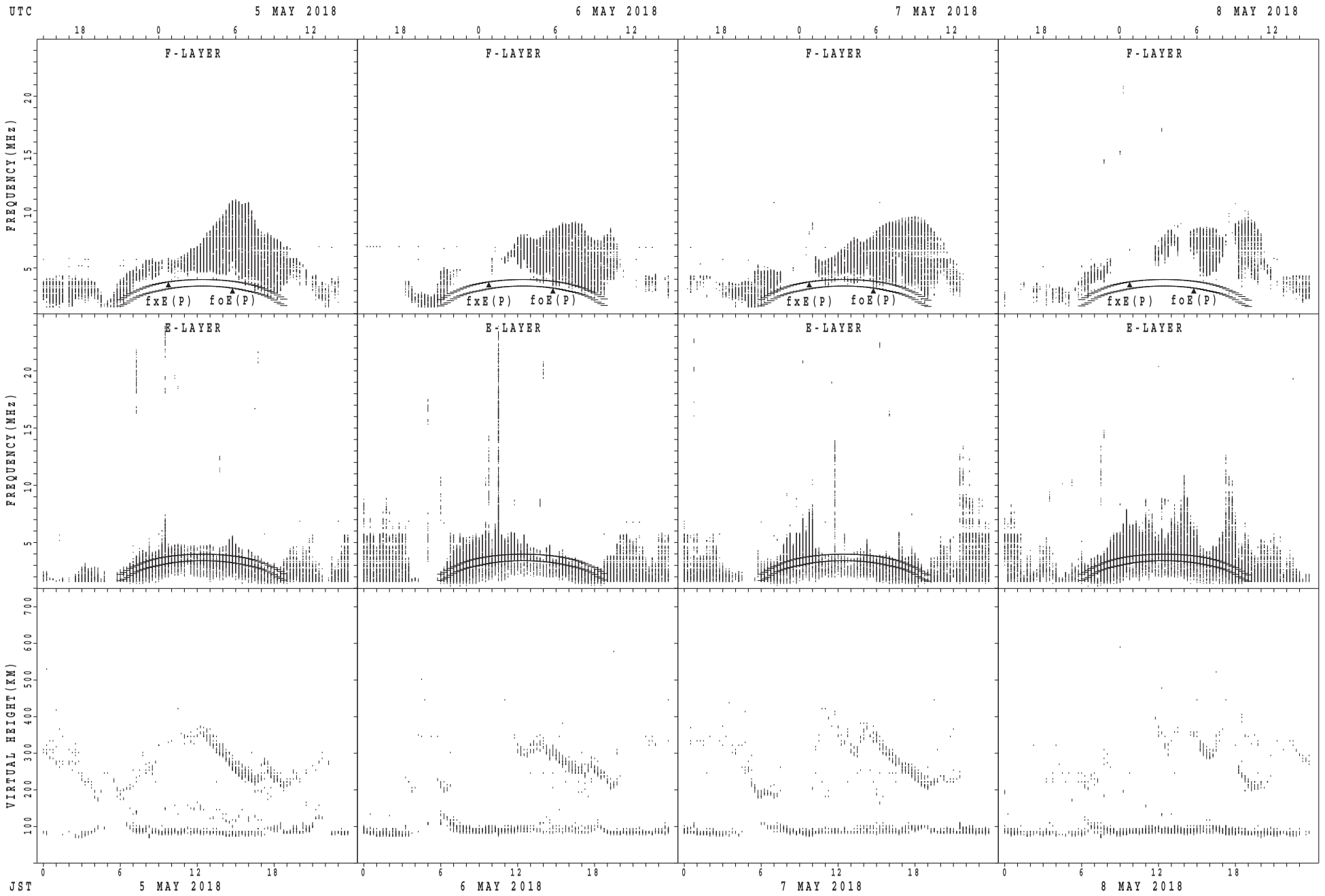

SUMMARY PLOTS AT Yamagawa
UTC
29 MAY 2018
30 MAY 2018
31 MAY 2018
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
29 MAY 2018
30 MAY 2018
31 MAY 2018
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



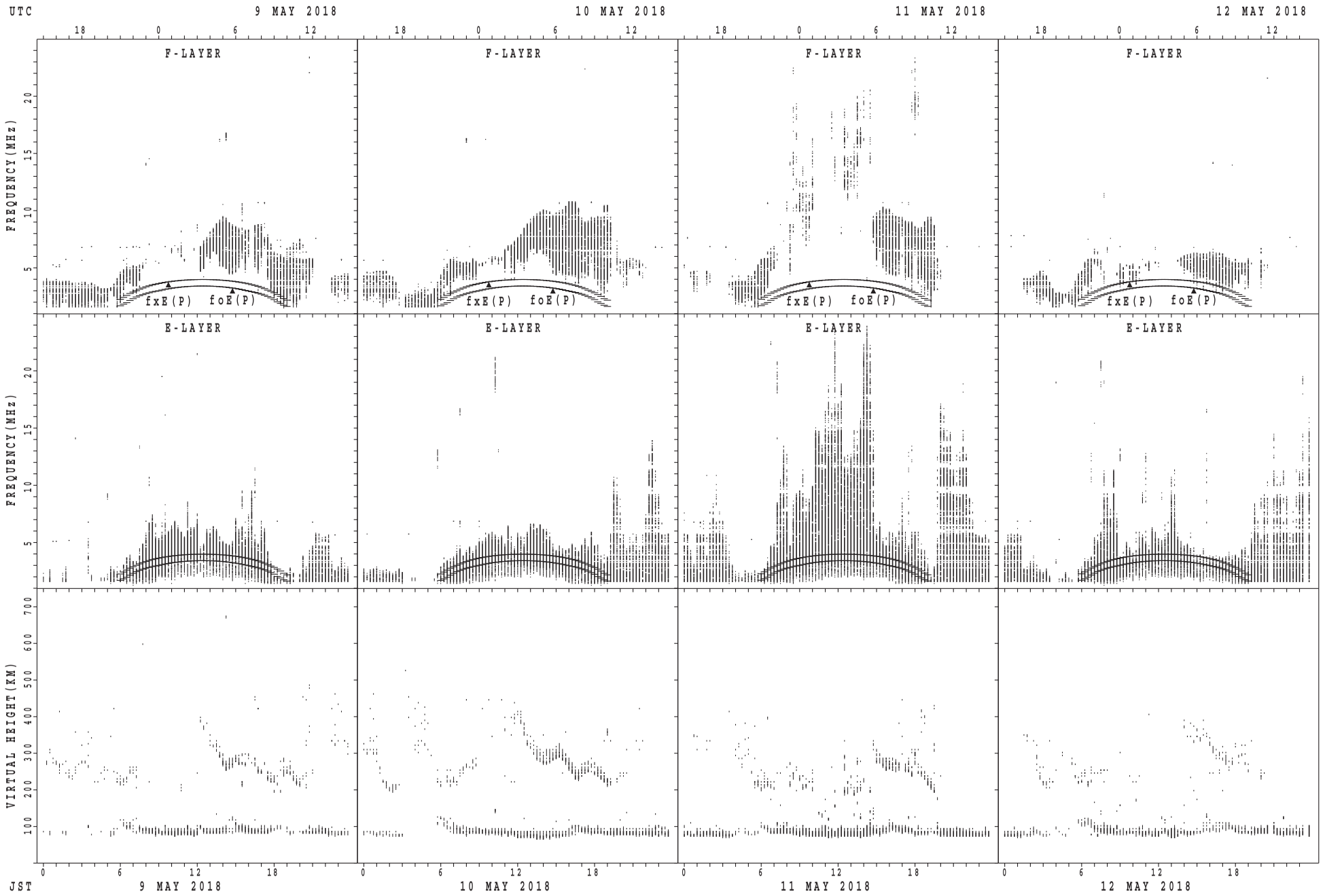
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



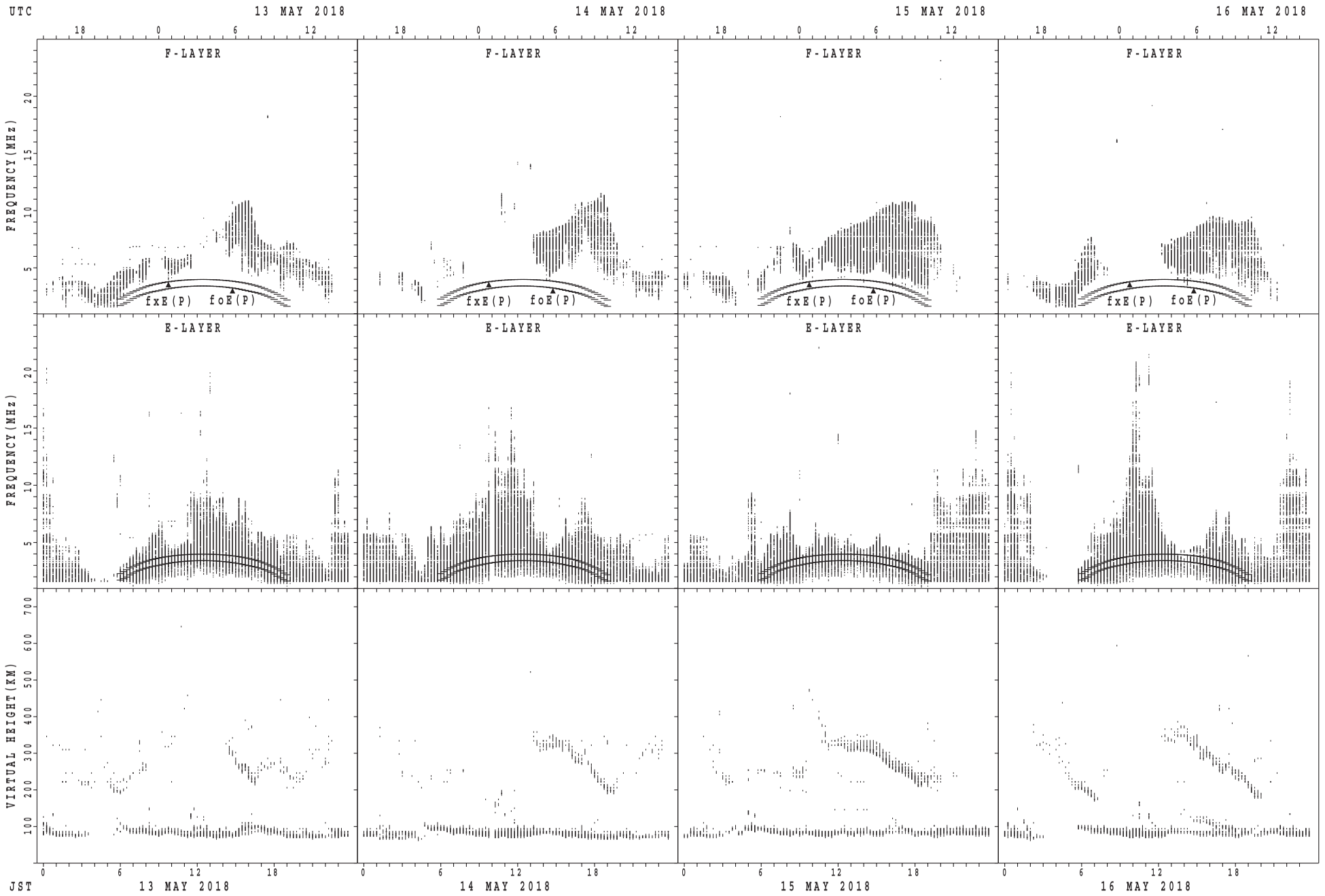
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



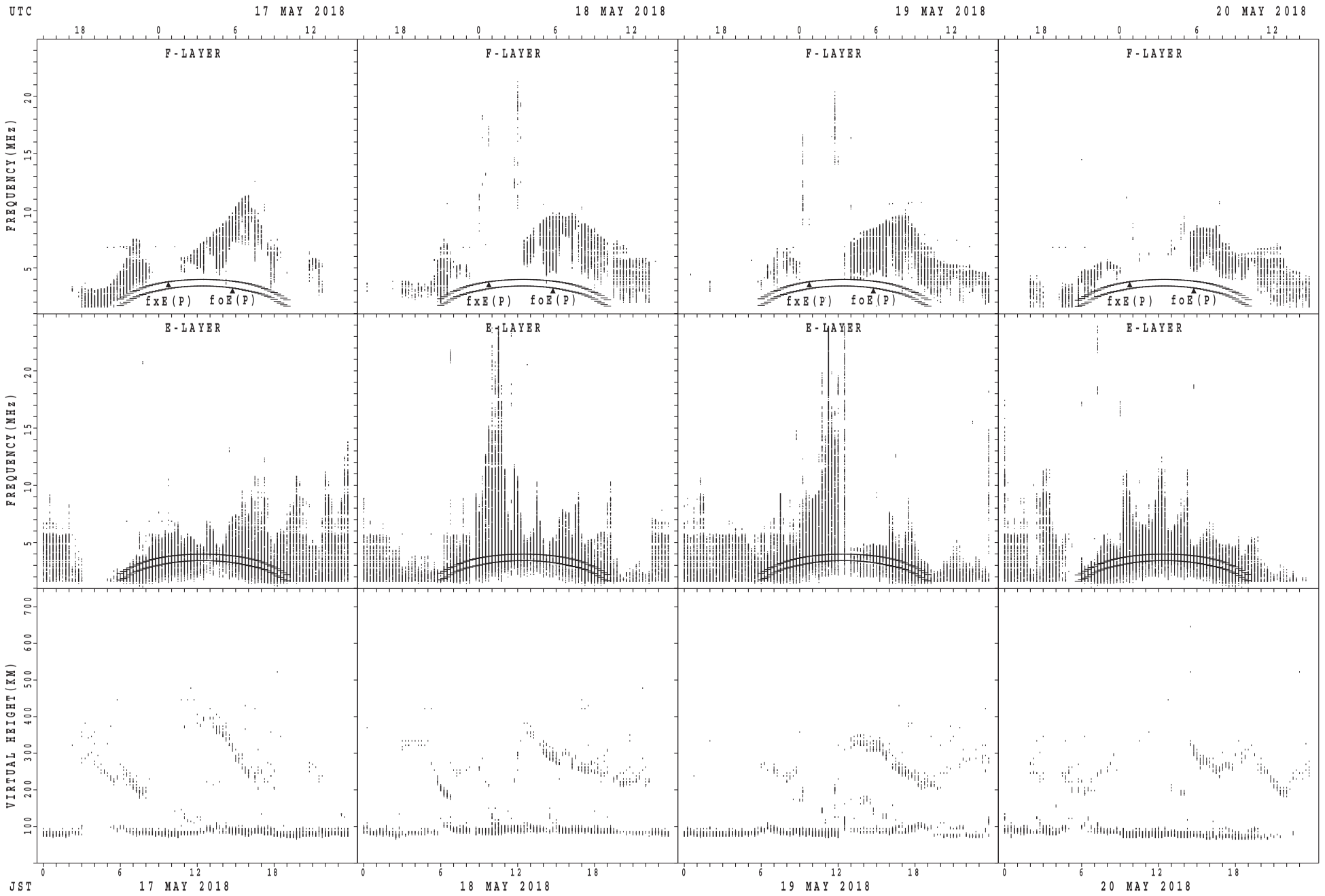
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



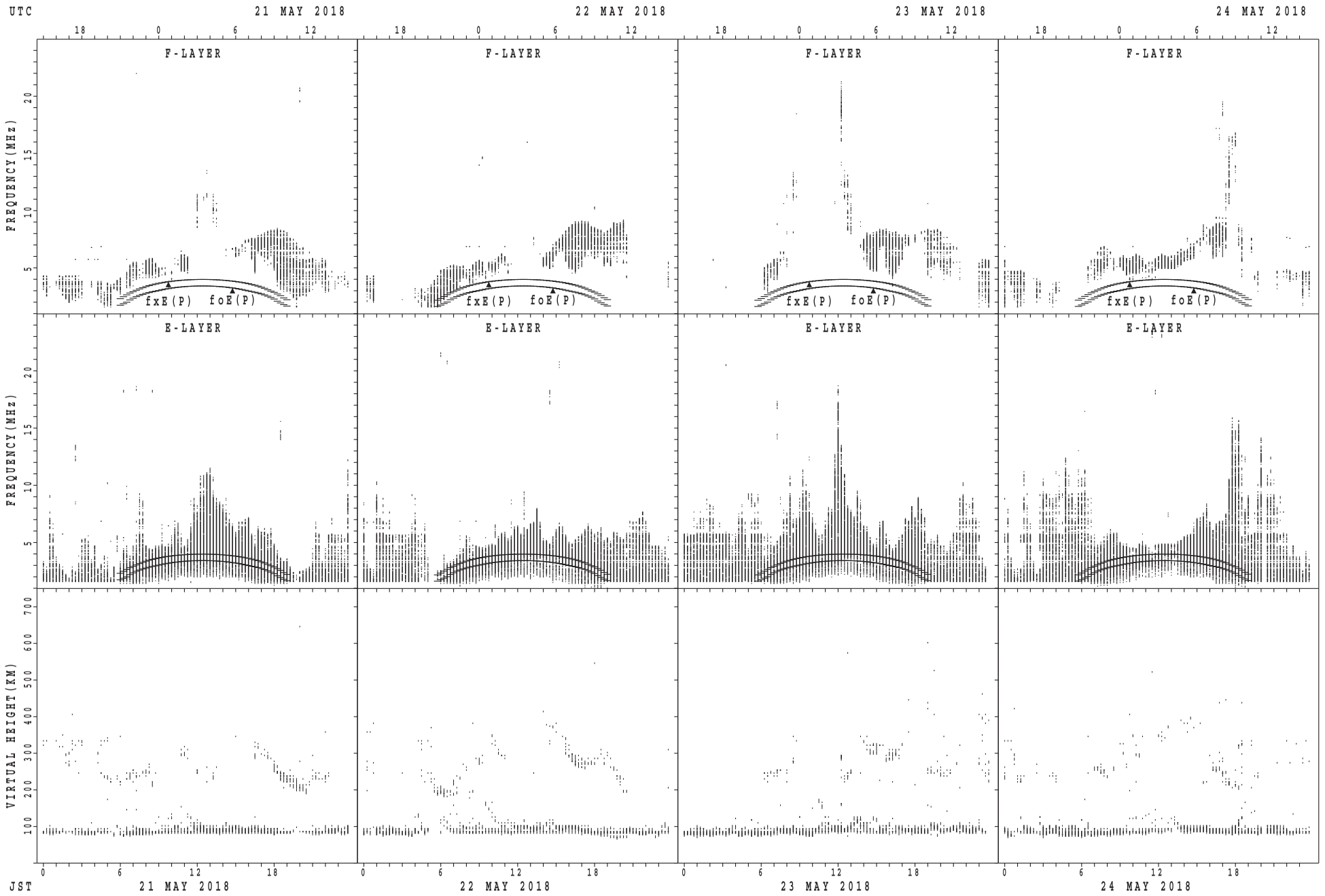
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



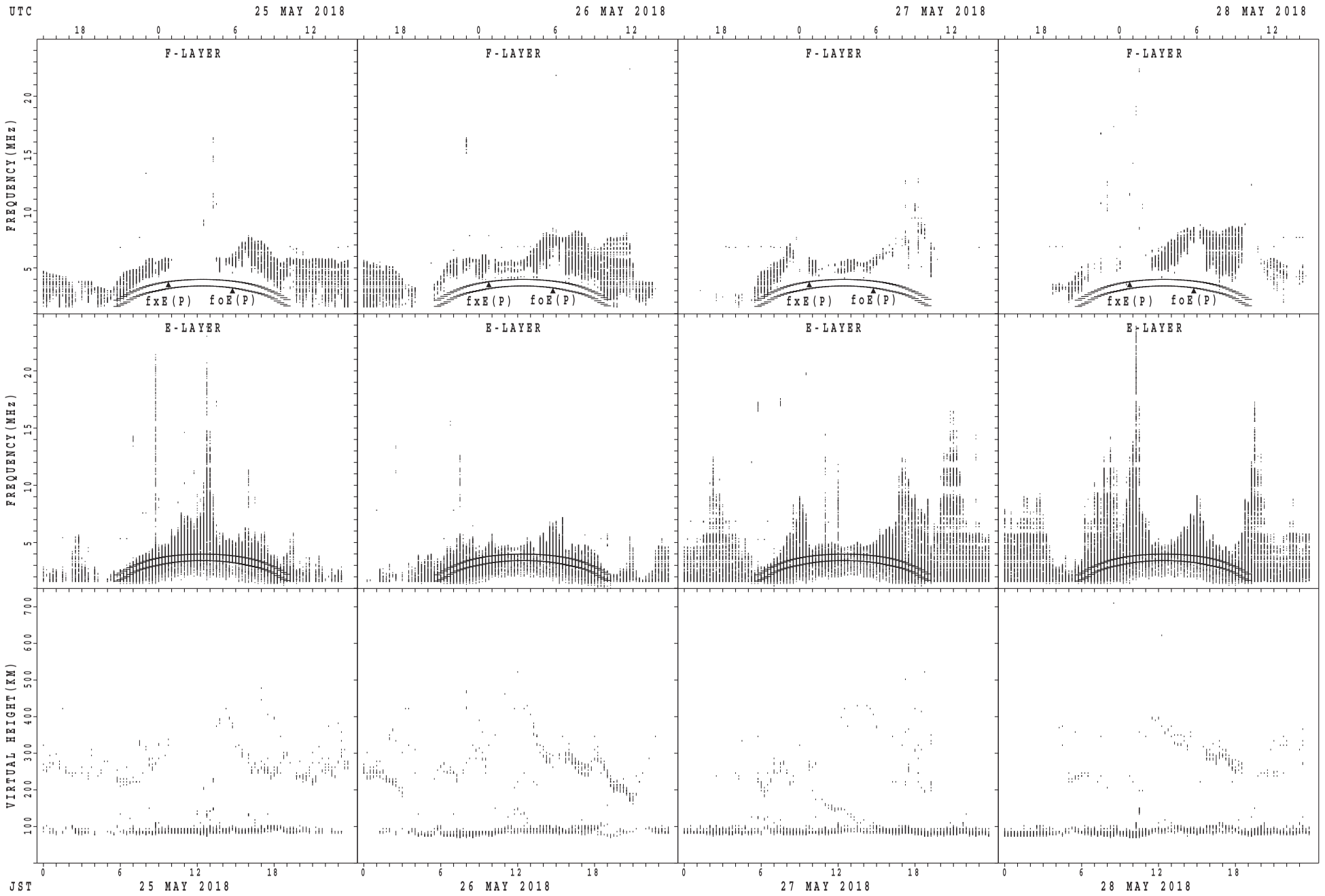
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



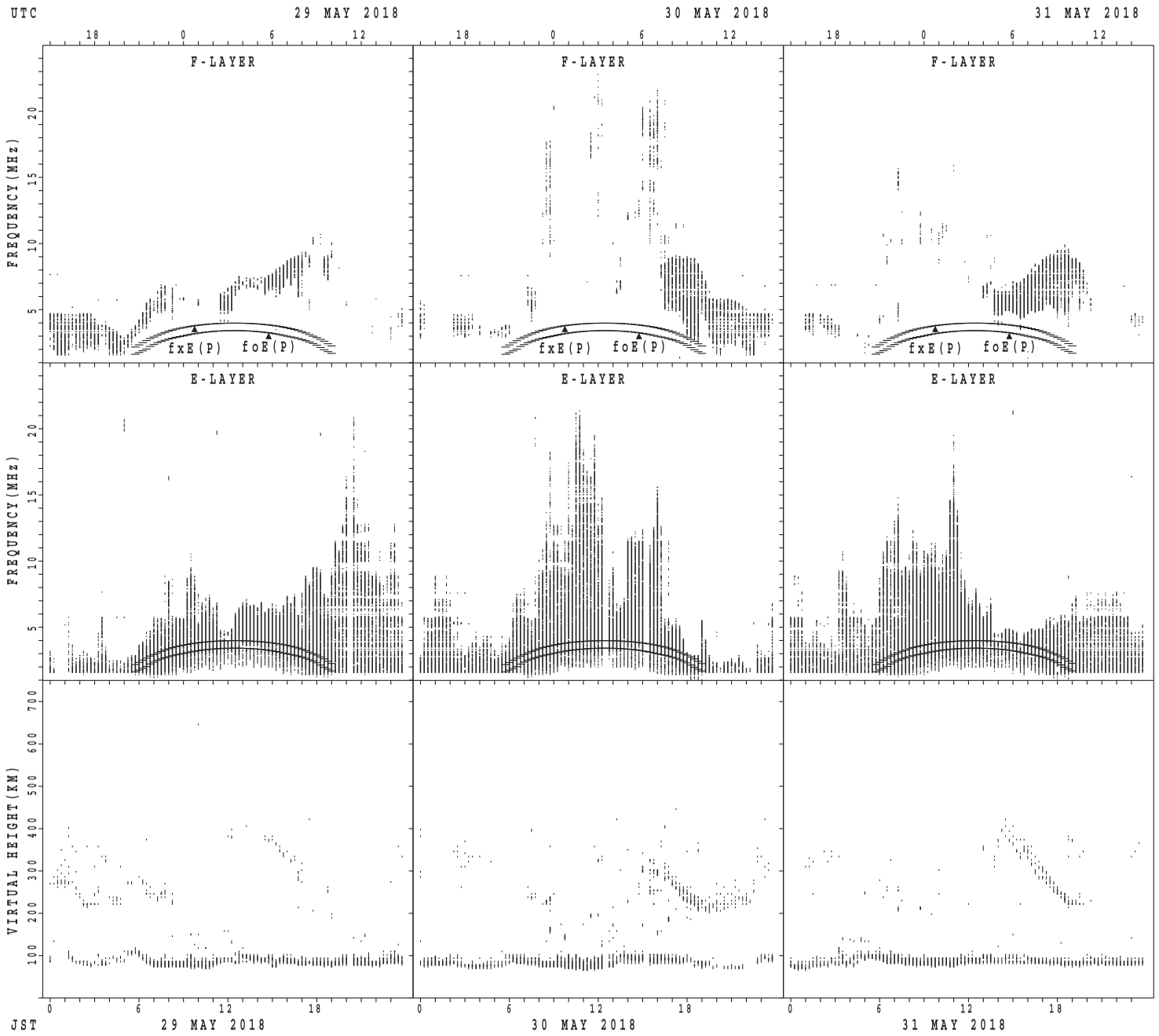
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

MAY 2018 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1			1	6	9	9	6	4	3	1	5	7	8	6	11	6	3	2		
MED				248			236	199	224	216	244	208	212	216	214	210	225	207	206	224	276	246		
U Q				124			118	202	249	261	300	228	282	108	290	288	284	244	212	250	282	278		
L Q				124			118	198	204	203	206	200	190	108	193	206	201	206	202	208	256	214		

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	24	19	17	15	16	28	31	29	31	31	30	25	29	30	29	28	28	25	26	27	25	26	26	24
MED	85	83	89	97	99	104	101	95	95	89	90	95	89	93	95	100	98	95	95	95	95	93	90	89
U Q	92	89	99	107	111	117	107	97	103	95	105	133	113	103	106	113	117	103	97	103	101	101	95	96
L Q	81	79	83	79	90	97	95	89	89	89	83	89	85	85	87	91	93	92	89	89	89	89	87	85

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							4	3	8	6	5	3	7	8	11	12	19	15	13	8	1	1	1	1
MED							242	228	232	237	204	196	220	226	216	214	224	222	208	200	228	194	190	210
U Q							254	248	268	290	229	208	264	284	294	286	272	254	240	234	114	97	95	105
L Q							224	202	203	198	192	190	190	213	212	210	206	198	199	197	114	97	95	105

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	24	24	16	22	28	26	26	24	26	25	25	23	25	26	27	27	30	29	29	29	27	27
MED	87	83	81	83	84	103	102	95	93	91	89	93	95	95	101	98	97	93	90	89	95	89	89	89
U Q	91	89	87	87	89	119	107	101	97	96	97	101	97	119	112	107	101	101	95	95	99	95	95	91
L Q	84	81	79	79	77	95	97	89	89	89	87	87	87	89	93	93	95	89	87	87	89	89	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								3	6	4	6		5	9	10	13	20	14	12	3	2	1		
MED								236	207	238	209		214	312	263	272	253	257	251	234	246	212		
U Q								242	246	275	234		365	338	290	293	283	274	268	242	252	106		
L Q								216	198	200	198		205	249	206	254	228	214	220	200	240	106		

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	30	27	29	28	26	21	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	30	30	30
MED	89	89	85	83	82	89	103	97	91	89	89	93	89	95	97	95	101	97	91	89	89	89	90	89
U Q	91	89	87	86	87	102	119	105	95	95	95	103	105	103	103	107	107	101	97	94	95	93	95	91
L Q	87	87	81	81	81	83	91	91	89	87	83	87	87	85	89	91	95	91	89	87	83	85	87	87

MONTHLY MEDIANS OF h'F AND h'Es

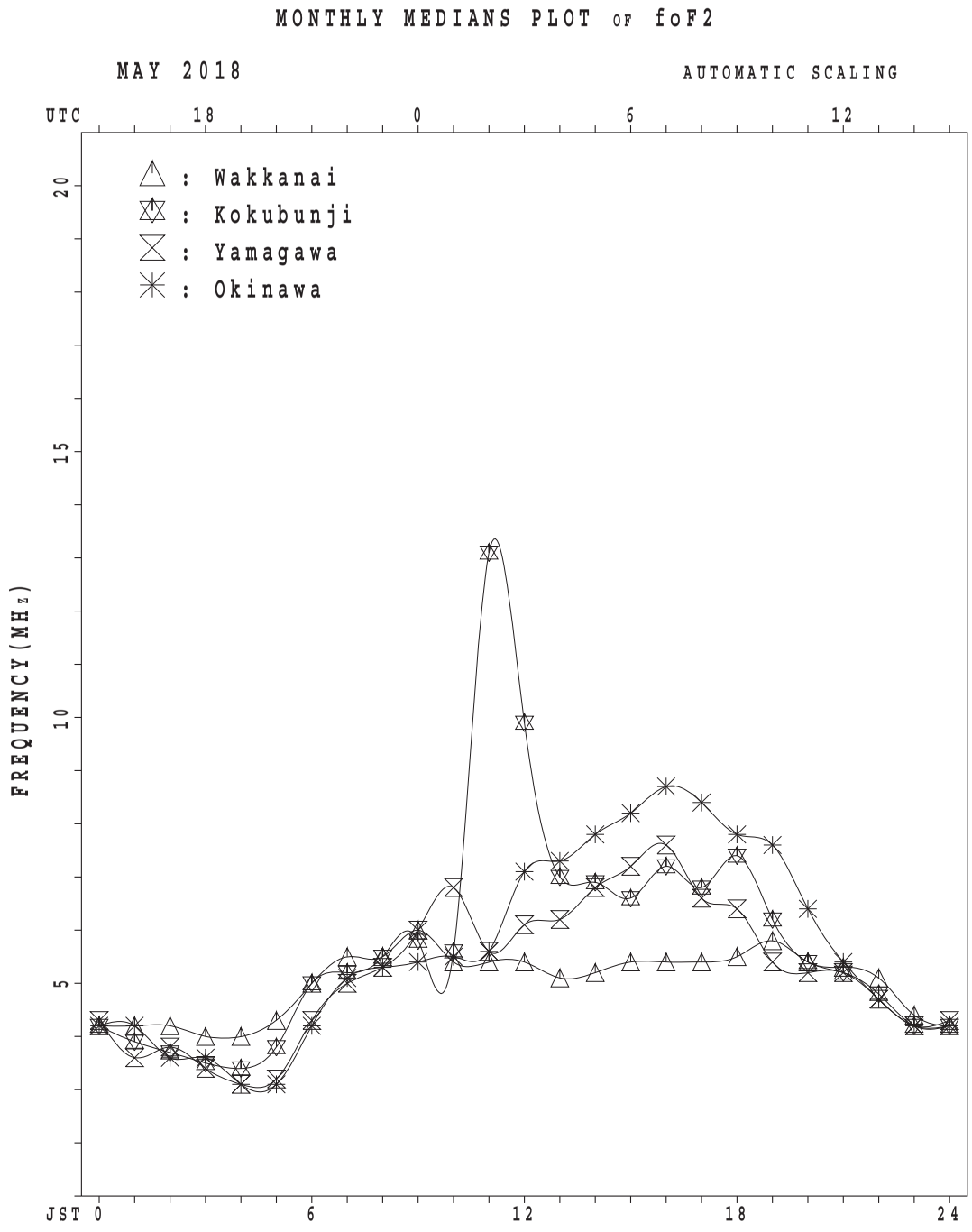
MAY 2018 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	3	4	2	4	1	12	15	21	22	27	26	17	16	6			
MED							217	224	239	198	197	336	321	308	286	271	260	257	240	225	234			
U Q							222	228	360	206	260	168	361	324	325	294	288	272	260	253	266			
L Q							212	192	228	190	193	168	215	226	228	236	230	232	227	216	226			

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	26	27	30	21	20	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	30	27	30
MED	89	89	89	84	87	90	101	97	95	90	88	89	95	95	95	95	101	95	89	87	89	89	89	88
U Q	102	91	95	87	96	97	113	109	97	107	101	107	107	103	107	107	107	101	95	89	95	101	99	97
L Q	86	83	83	81	83	87	95	89	87	89	83	83	85	83	89	89	89	89	85	83	83	85	87	87


MONTHLY MEDIANS PLOT OF foF2
MAY 2018
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

MAY 2018 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 48	X 45	X 45	X 41																	X 55	X 54	X 54	X 49
2	X 45	X 45	X 41	X 41																	X 58	X 58	X 55	X 51
3	X 48	X 46	X 42	X 38																	X 54	X 51	X 55	X 48
4	X 45	X 46	X 46	X 46																	X 66	X 63	X 55	X 45
5	X 45	X 45	X 45	X 47																	X 62	X 61	X 55	X 48
6	X 46	X 45	X 42	X 39																	X 61	X 62	X 56	X 52
7	X 52	X 55	X 53																			X 59	X 51	X 48
8	X 44	X 44	X 48	47																		A	A	A
9	X 45	X 45	X 42																			X 49	X 48	X 47
10	55	55	46	44	41																	X 58	X 55	X 51
11	X 49	50	X 44																			X 57	X 34	X 37
12	X 37	X 39	X 38																			X 54	X 53	X 46
13	40	56	58	57																		X 59	57	58
14	X 54	55	54																			X 66	X 51	X 46
15	X 47	X 45	X 45																			X 68	X 61	X 55
16	X 53	X 46	X 47																			X 59	X 59	X 48
17	X 44	X 44	X 44	53	50																	X 59	X 59	X 58
18	X 52	54	X 51	54	50																	X 57	X 56	X 55
19	X 55	X 55	X 54																			X 62	X 57	X 55
20	X 51	X 51	58	58	58																	X 65	X 60	X 58
21	X 54	X 52	X 45	52																		X 60	X 59	A
22	A	X 49	56	48																		X 57	X 58	X 55
23	X 44	A	57	58																		X 70	X 66	X 61
24	X 58	X 52	57	51																		X 58	X 58	X 52
25	X 45	X 45	47	47	49																	X 63	X 63	X 57
26	X 59	59	59	56	55																	X 62	X 58	X 51
27	X 45	X 48	X 49	48	51																	A	A	A
28	A	59	59	56																		X 75	X 67	A
29	A	X 49	52	57	57																	X 73	X 55	X 51
30	X 51	X 53	X 55																			X 67	X 66	X 54
31	X 44	X 41	X 39																			X 73	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	31	21	8																6	29	28	26
MED	X 48	X 48	X 47	48	50																X 60	X 60	X 56	X 51
U Q	X 52	54	55	56	56																X 62	X 66	X 59	X 55
L Q	X 45	X 45	X 44	X 45	50																X 55	X 58	X 55	X 48

MAY 2018 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	41	38	38	34	33	34	46	39	42	51	54	51	52	50	53	A	56	50	A	48	48	47	47	42
2	38	38	34	34	32	40	44	48	48	58	51	53	51	51	A	50	54	50	50	50	51	51	48	44
3	41	39	36	32	33	47	44	A	46	48	52	52	57	49	51	51	55	51	49	43	47	44	48	41
4	38	39	39	39	37	41	45	48	53	55	56	53	50	50	48	50	47	A	A	57	59	R 56	48	38
5	38	38	38	40	39	45	49	48	50	47	53	50	52	54	56	58	53	52	49	54	55	54	48	42
6	39	38	35	32	28	32	39	A	A	A	A	45	48	50	52	48	44	43	43	44	53	55	R 49	45
7	45	48	46	41	41	U R 41	39	A	A	A	45	47	48	R 49	50	47	52	54	50	58	61	52	44	41
8	37	37	41	F 35	32	42	A	A	A	A	A	50	U R 50	A	43	44	44	50	49	52	50	A	A	A
9	38	38	35	35	38	40	40	A	A	A	A	46	A	48	48	47	47	50	50	48	48	42	41	40
10	F 38	F 40	F 33	F 30	F 28	33	39	39	44	A	46	47	53	49	52	52	48	49	52	56	56	51	48	44
11	42	F 37	37	32	32	34	39	44	44	A	42	45	A	A	A	45	46	43	54	67	60	50	27	30
12	30	32	31	33	31	36	R 38	J R 42	A	A	R	A	44	44	47	52	48	46	A	A	48	47	46	39
13	F 36	F 40	F 36	F 40	38	37	41	47	A	52	51	A	48	51	54	48	48	49	56	68	58	52	F 44	F 46
14	47	F 41	F 38	34	32	34	41	44	A	A	50	48	52	52	A	54	52	50	52	62	67	59	44	39
15	40	38	38	35	32	38	51	46	48	52	54	51	49	51	50	50	52	51	51	58	64	61	54	48
16	46	39	40	38	37	44	50	A	A	51	48	47	45	45	49	49	49	48	50	53	57	52	52	41
17	37	37	37	F 37	F 37	44	52	49	53	59	A	A	A	53	A	56	54	A	A	57	59	52	52	51
18	45	F 41	44	F 36	F 37	42	48	A	A	A	44	44	46	49	52	54	51	49	A	A	51	50	49	48
19	48	48	47	47	38	48	42	46	51	51	54	48	47	50	48	A	A	44	50	57	64	55	50	48
20	44	44	F 41	F 42	F 38	39	A	A	54	52	48	48	48	51	49	48	47	51	54	60	55	58	53	51
21	47	45	38	F 38	39	45	47	A	A	A	A	A	A	A	A	50	51	45	41	48	53	53	52	A
22	A	42	F 38	F 37	37	36	A	46	50	A	49	45	47	50	50	54	A	A	50	59	50	50	49	48
23	37	A	F 36	F 36	37	39	A	A	A	A	A	53	49	49	49	52	49	58	60	63	65	63	59	54
24	51	45	F 40	F 39	36	41	A	A	A	48	A	R 50	A	A	A	A	44	44	46	48	51	51	51	45
25	38	38	F 34	F 31	F 38	43	43	A	50	50	A	47	50	48	51	47	47	48	54	52	58	56	56	50
26	52	F 44	F 43	F 38	F 42	42	44	A	57	51	A	55	48	48	48	44	48	55	A	C	A	55	51	44
27	38	38	42	F 36	F 38	45	50	50	58	52	50	50	A	50	47	49	A	A	A	A	A	A	A	A
28	A	F 44	F 46	F 38	44	44	46	52	54	54	49	50	52	51	51	44	48	A	A	A	68	68	60	A
29	A	42	F 38	F 32	F 35	41	47	50	54	55	A	A	A	49	A	A	A	A	A	59	70	66	48	44
30	44	46	48	48	48	48	46	A	51	47	47	50	46	48	46	46	A	A	46	55	64	60	59	47
31	37	34	32	32	38	44	A	40	A	56	56	A	49	A	A	A	A	A	61	55	A	66	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	31	31	31	31	25	17	18	19	20	25	24	26	23	26	25	23	22	26	28	29	28	26
MED	40	39	38	36	37	41	44	46	50	52	50	50	49	50	50	50	48	50	50	56	56	53	49	44
U Q	45	44	41	39	38	44	48	48	54	55	54	51	52	51	52	52	52	51	54	59	62	58	52	48
L Q	38	38	36	33	32	37	40	43	48	50	48	47	48	49	48	47	47	46	49	50	51	50	48	41

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	424	L	L	L	A	372	A	A					
2							L	388	L	L	L	L	L	L	A	A	A	348						
3							A	A	L	A	424	L	L	420	L	400	L	L	440					
4						L	L	L	404	L	L	L	L	L	L	L	A	A	A					
5							L	L	L	L	L	L	L	L	L	L	380	L						
6							L	A	A	A	A	392	L	L	L	L	L	A	L					
7				L			L	A	A	A	A	L	L	L	L	L	364	L	L					
8							A	A	A	A	A	L	L	A	404	A	L			L	A			
9						L	L	A	A	A	A	L	A	L	L	L	L	L	L					
10						L	336	L	A 164	A	412	336	L	L	416	400	388	356						
11						L	L	L	A	A	L	L	A	A	A	L	L	A	A					
12						L	340	A	A	392	L	A	L	420	L	L	L	A	A	A				
13						L	L	L	A	L	L	A	A	L	424	L	L	L	L					
14							L	L	A	A	L	L	L	A	A	A	392	L	L					
15							L	L	L	L	L	L	L	L	L	L	L	L	L					
16						L	L	A	A	L	L	L	L	L	L	L	L	L						
17						L	L	L	A		A	A	A	L	A	A	L	A	A	A	A			
18						L	L	A	A	A	A	L	L	L	L	A	L		A	A	A			
19					L			A	A	A	L	A	L	L	L	A	A	L	L					
20							A	A	L	L	L	L	L	A	L	L	L	L	L	A				
21				A	L		L	A	A	A	A	A	A	A	A	420	376	L	A					
22							A	U A 396	L	A	L	L	L	L	412	U A 392	A	A	A					
23						L	A	A	A	A	A	L	A	436	L	L	L	L	L					
24							A	A	A	L	L	L	A	A	A	A	L	L	328					
25						L	A 968	A	L	420	420	436	L	L	L	U R	412	L	320					
26					L	L	396	A	A	L	A	A	L	L	L	L	L		A	C	A			
27						L	L	A	L	L	L	L	A	L	L	A	A	A	A	A	A			
28					L		A	A	428	L	E A 436	L	L	L	L	6 143	L	A	A	A				
29						L	L	L	A	L	A	A	A	L	A	A	A	A	A					
30						L	A	A	A	A	A	L	L	L	L	A	A	A	A	L				
31							A	A	A	A	A	A	L	A	A	A	A	A	A	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	2	3	2	4	4		3	4	5	8	2	3					
MED							368	392	404	406	419	408		420	414	400	378	352	328					
U Q							682		428		430	430		436	420	410	390		440					
L Q							338		A 164		416	364		420	408	268	370		320					

MAY 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B	168	228	260	288	312	324	312	A	A	A	A	264	228	A	A				
2					B	192	256	256	292	292	352	356	344	316	316	288	256	228	B	B				
3					200	196	240	272	296	300	308	324	316	300	A	260	A	228	180	A				
4					A	212	240	264	288	304	304	316	A	A	316	304	276	224	A	A				
5					B	180	232	276	296	296	312	320	A	316	316	288	264	228	176	A				
6					B	192	244	272	292	308	308	A	320	320	308	284	264	212	204	B				
7				224	220	A	224	252	300	300	300	308	308	308	308	276	256	220	188	A	A			
8				B	A	A	228	252	276	304	316	344	316	316	316	296	276	232	A	A	A			
9				228	A	A	228	268	300	300	320	336	316	316	308	284	268	224	196	B	B			
10				B	B	192	232	264	288	312	332	336	336	320	308	296	284	240	192	A	A			
11				B	B	200	232	268	284	312	316	312	312	312	284	276	268	232	184	A	A			
12				B	A	180	228	252	280	292	304	296	296	324	316	268	256	232	204	A	A			
13				B	B	212	248	264	292	312	300	312	284	A	296	296	264	228	188	A	A			
14				B	B	184	228	276	292	320	308	312	320	300	A	A	280	A	212	A	A			
15				B	192	192	224	284	284	308	A	348	324	312	304	304	276	236	168	A	A			
16				B	B	184	248	272	272	296	A	A	340	288	308	308	272	232	180	A	A			
17				B	B	204	256	284	304	328	328	280	A	B	A	A	A	A	A	A	A			
18				B	A	216	240	264	304	308	332	A	A	A	324	324	360	260	A	A	A			
19				B	208	216	236	280	296	308	308	316	292	336	316	316	276	236	176	A	A			
20				A	A	200	256	280	300	300	324	320	296	292	332	A	A	A	A	A	A			
21				B	A	212	240	272	296	320	324	324	324	324	296	316	284	248	188	A	A			
22				B	A	188	248	280	300	300	328	320	320	320	344	304	272	252	188	A	A			
23				B	A	180	248	272	296	308	320	320	304	316	316	316	288	244	200	A	A			
24				A	A	200	252	288	308	320	336	328	336	336	312	296	284	252	208	A	A			
25				B	A	208	260	280	296	A	340	324	316	324	316	296	276	236	168	0 142	B			
26				B	A	A	240	276	292	316	316	316	A	364	328	300	280	236	184	A	A			
27				A	A	220	260	300	300	332	312	A	324	340	308	308	284	256	204	A	A			
28				B	A	208	252	288	312	332	320	320	280	292	332	300	292	248	A	A	A			
29				B	A	204	260	292	300	320	328	328	328	368	332	296	284	260	216	A	A			
30				B	B	212	264	276	312	312	320	312	284	316	320	320	284	232	200	A	B			
31				B	A	200	244	276	296	324	312	312	296	308	332	308	276	260	192	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				2	4	27	31	31	31	30	29	27	25	26	27	27	28	28	23	1				
MED				226	204	200	240	272	296	308	320	320	316	316	316	296	276	234	188	142				
U Q					214	212	252	280	300	320	328	328	324	324	324	308	284	248	204					
L Q					196	188	232	264	288	300	308	312	296	308	308	288	266	228	180					

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	J A 25	J A 25	28	J A 32	23	28	47	J A 48	52	72	74	J A 61	J A 61	35	J A 53	J A 97	J A 45	J A 88	J A 109	45	J A 45	J A 76	22	22
2	22	E B 16	E B 16	E B 16	E B 16	20	G	35	36	40	38	38	48	35	J A 81	J A 118	J A 41	26	28	J A 21	E B 16	E B 16	E B 16	J A 50
3	37	J A 39	33	E B 16	27	28	37	J A 52	38	57	J A 43	J A 37	38	34	J A 51	J A 97	37	27	J A 45	25	J A 31	38	E B 16	E B 16
4	27	25	E B 16	E B 16	J A 60	J A 23	30	36	J A 87	J A 62	J A 45	J A 57	J A 39	J A 39	J A 105	J A 104	J A 64	J A 67	J A 69	J A 61	59	J A 79	25	J A 53
5	28	E B 16	E B 16	22	E B 16	24	32	38	39	40	35	G	41	36	37	37	37	34	26	34	E B 16	E B 16	E B 16	E B 16
6	E B 16	E B 16	20	E B 16	E B 16	20	29	38	J A 52	J A 67	J A 47	39	40	36	38	38	36	73	22	E B 16	34	34	39	38
7	31	23	22	31	27	J A 31	J A 37	J A 88	J A 77	59	54	J A 51	G 35	J A 43	38	37	32	27	J A 20	J A 23	J A 31	30	26	33
8	E B 16	E B 16	27	J A 41	J A 24	J A 38	J A 46	59	72	82	J A 120	50	38	J A 70	G 37	J A 53	J A 59	J A 115	J A 88	J A 49	J A 61	J A 61	J A 66	J A 77
9	55	48	58	34	49	J A 32	32	J A 52	J A 59	J A 75	J A 61	96	J A 80	J A 41	36	J A 100	G	28	G	E B 15	31	23	24	28
10	E B 16	28	20	E B 16	E B 16	G	28	34	41	42	42	G	J A 53	J A 52	J A 35	J A 33	J A 47	32	J A 52	41	J A 32	J A 31	J A 36	34
11	J A 27	E B 16	E B 16	E B 16	E B 16	20	32	49	J A 52	J A 96	G	37	J A 77	J A 83	J A 67	J A 34	34	J A 56	J A 49	J A 61	J A 49	J A 53	25	J A 26
12	J A 30	20	J A 25	J A 22	J A 22	J A 25	J A 38	J A 45	59	J A 52	J A 37	J A 47	J A 47	38	J A 35	36	29	J A 40	J A 47	J A 50	J A 47	J A 28	J A 36	30
13	31	J A 24	34	21	E B 16	J A 21	31	J A 52	59	J A 35	J A 43	61	54	J A 63	J A 74	32	34	26	J A 24	J A 26	33	J A 25	J A 123	J A 34
14	39	E B 16	J A 23	E B 16	E B 16	22	28	J A 39	J A 55	J A 56	J A 37	J A 84	J A 42	J A 53	J A 125	J A 65	J A 69	J A 53	J A 29	J A 31	J A 27	J A 24	27	E B 16
15	32	26	E B 16	E B 16	25	J A 30	J A 35	J A 85	J A 52	J A 51	J A 39	J A 99	44	43	J A 37	J A 49	J A 39	J A 39	J A 33	J A 35	J A 26	J A 19	30	22
16	J A 21	19	21	E B 16	E B 16	J A 26	J A 37	J A 69	J A 78	J A 47	J A 51	J A 45	J A 54	37	J A 45	G	38	J A 33	J A 37	J A 34	J A 29	J A 41	J A 49	J A 24
17	J A 23	E B 16	E B 16	E B 16	E B 16	J A 21	32	J A 40	J A 51	J A 64	85	J A 67	J A 58	J A 44	J A 66	J A 63	J A 43	J A 65	J A 87	J A 64	J A 64	J A 39	J A 38	J A 56
18	J A 50	J A 19	J A 27	J A 39	J A 26	25	34	J A 63	J A 63	J A 83	J A 69	J A 61	J A 53	J A 44	J A 44	J A 54	J A 76	J A 52	J A 65	J A 69	J A 51	J A 40	J A 88	E B 16
19	E B 16	J A 26	26	E B 16	G	25	32	J A 43	J A 59	J A 57	37	J A 49	J A 37	G 40	40	J A 66	J A 69	J A 49	J A 35	J A 41	J A 42	J A 25	J A 25	J A 21
20	J A 19	J A 31	J A 32	J A 37	J A 18	J A 61	J A 63	J A 61	J A 49	J A 86	J A 44	38	J A 54	J A 57	J A 55	J A 55	J A 61	J A 64	J A 35	J A 81	J A 87	59	J A 50	J A 86
21	J A 51	J A 43	J A 52	J A 41	J A 25	J A 38	J A 37	J A 53	J A 66	J A 61	J A 156	J A 78	J A 161	J A 231	J A 139	J A 49	J A 87	J A 41	J A 106	58	82	J A 51	J A 40	J A 120
22	J A 79	J A 35	J A 83	J A 49	J A 86	26	J A 53	J A 53	J A 52	J A 52	40	J A 62	J A 85	J A 95	J A 39	41	J A 61	J A 71	J A 89	J A 126	J A 62	J A 105	J A 85	J A 86
23	J A 83	J A 67	J A 27	J A 23	J A 26	23	J A 51	J A 74	J A 76	J A 75	J A 63	J A 97	J A 62	J A 64	J A 40	J A 39	36	J A 41	J A 39	J A 45	J A 51	J A 31	J A 25	J A 26
24	J A 26	J A 40	J A 39	J A 83	J A 27	J A 39	J A 56	J A 107	J A 100	J A 43	J A 44	J A 43	J A 66	J A 67	43	43	43	32	J A 33	J A 26	J A 69	J A 59	J A 38	J A 38
25	J A 52	J A 28	J A 25	J A 31	J A 26	26	J A 49	J A 103	J A 145	J A 86	J A 59	62	J A 45	J A 52	38	J A 69	J A 75	J A 56	56	E B J A 27	E B 16	J A 31	38	J A 27
26	J A 50	J A 33	J A 29	J A 20	28	J A 31	J A 32	J A 85	J A 64	J A 60	J A 129	J A 105	J A 83	J A 118	G	35	J A 47	J A 57	J A 108	D C 36	J A 83	J A 76	J A 71	J A 52
27	33	J A 28	32	J A 31	J A 32	24	34	J A 61	J A 63	J A 42	J A 53	J A 53	J A 94	J A 46	35	J A 54	J A 103	J A 130	J A 108	J A 161	J A 138	J A 144	J A 104	J A 62
28	J A 62	J A 35	J A 40	J A 20	J A 36	J A 37	J A 44	J A 51	54	J A 58	J A 99	J A 56	J A 57	J A 45	J A 47	J A 52	J A 52	J A 97	J A 126	J A 98	J A 65	J A 73	J A 49	J A 65
29	J A 63	J A 77	J A 40	J A 35	J A 25	J A 31	J A 43	J A 48	J A 75	J A 60	J A 68	J A 120	J A 81	G	J A 81	J A 181	J A 119	70	J A 73	60	J A 37	33	J A 32	21
30	22	E B 16	E B 16	E B 16	E B 16	J A 32	J A 54	J A 77	J A 53	J A 131	J A 50	J A 41	J A 39	41	44	J A 64	J A 72	63	50	J A 21	24	J A 31	J A 47	39
31	J A 28	J A 27	J A 62	J A 22	J A 35	J A 37	J A 53	J A 86	J A 86	J A 62	J A 83	J A 83	J A 62	J A 89	J A 53	J A 121	J A 107	J A 85	J A 120	J A 88	J A 107	J A 185	J A 153	J A 108
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 30	J A 26	27	22	25	J A 26	J A 37	J A 52	J A 59	J A 60	J A 50	J A 56	J A 54	J A 44	J A 44	J A 53	J A 47	J A 53	J A 49	J A 43	J A 45	J A 38	J A 38	J A 34
U Q	J A 50	J A 35	J A 34	J A 34	J A 27	J A 32	J A 47	J A 74	J A 75	J A 75	J A 69	J A 78	J A 66	J A 64	J A 66	J A 69	J A 69	J A 70	J A 88	J A 61	J A 64	J A 61	J A 50	J A 56
L Q	22	E B 16	E B 20	E B 16	E B 16	23	32	43	52	J A 51	40	41	41	39	37	37	37	33	33	J A 26	31	J A 28	25	22

MAY 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 16	E B 16	20	E B 16	24	34	36	40	43	E A 46	36	36	34	34	A A 97	32	30	A A 109	22	24	20	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	G	33	33	A 36	37	G 36	38	33	A A 81	42	37	25	25	E B 17	E B 16	E B 16	E B 16	17
3	E B 16	E B 16	E B 16	E B 16	G 18	22	32	A A 52	35	43	39	36	36	32	32	30	31	24	31	E B 16	E B 16	E B 16	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	G 18	27	31	36	36	35	41	35	35	34	34	E A 43	A A 67	A A 69	23	E B 16	E B 16	E B 16	16
5	18	E B 16	E B 16	E B 16	E B 16	22	29	34	36	36	35	G	35	35	34	34	32	30	24	21	E B 16	E B 16	E B 16	E B 16
6	E B 16	E B 16	16	E B 16	E B 16	G 18	25	A A 38	A A 52	A A 67	A A 47	33	33	35	35	35	32	29	G 18	E B 16	16	16	E B 16	16
7	E B 17	16	E B 16	23	E B 16	24	24	A A 88	A A 77	A A 59	41	35	G 33	36	34	34	30	26	G 18	20	21	E B 16	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	20	36	A A 46	A A 59	A A 72	A A 82	A A 120	35	34	A A 70	G 34	40	36	42	26	26	27	A A 61	A A 66	A A 77
9	18	18	18	G 16	21	27	30	A A 52	A A 59	A A 75	A A 61	38	A A 80	34	33	33	G	24	G	E B 15	16	E B 16	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	G	26	31	40	A A 42	35	G	34	35	G 30	G 30	G 27	28	25	23	24	22	20	18
11	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	27	32	40	A A 96	G	35	A A 77	A A 83	A A 67	30	32	37	26	24	24	25	E B 16	18
12	E B 16	E B 16	E B 16	E B 16	E B 16	20	30	35	A A 59	36	34	A A 47	34	35	H 34	29	26	35	A A 47	A A 50	24	20	17	17
13	E B 16	E B 16	E B 16	E B 16	E B 16	G 19	30	36	A A 59	34	37	A A 48	A	35	32	32	28	24	21	21	22	19	23	20
14	17	E B 16	E B 16	E B 16	E B 16	19	27	35	A A 55	A A 56	37	36	37	45	A A 125	E A 37	G 28	27	25	22	17	18	17	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	34	32	35	34	35	35	35	G 30	31	29	26	26	22	22	E B 16	16	E B 16
16	16	E B 16	E B 16	E B 16	E B 16	21	31	A A 69	A A 78	37	35	35	G 34	34	35	G	34	27	23	23	19	20	20	16
17	16	E B 16	E B 16	E B 16	E B 16	G 20	G 25	36	42	45	A A 85	A A 67	A A 58	37	A A 66	40	33	A A 65	A A 87	45	45	19	23	26
18	22	16	16	22	E B 16	24	28	A A 63	A A 63	A A 83	E A 35	34	35	35	35	46	G 32	E A 37	A A 65	A A 69	26	24	E B 16	E B 16
19	E B 16	E B 16	E B 16	E B 16	G	G 22	29	37	E A 40	E A 43	36	A	36	G 34	35	A A 66	A A 69	27	24	24	24	E B 16	E B 16	E B 16
20	E B 16	18	19	19	E B 16	28	A A 63	A A 61	34	A 36	36	37	36	44	G 32	31	35	28	32	E A 47	E A 29	23	21	E A 40
21	E A 42	26	27	23	19	31	34	A A 53	A A 66	A A 61	A A 156	A A 78	A A 161	A A 231	A A 139	32	32	33	E A 36	E A 42	E A 45	21	18	A A 120
22	A A 79	22	17	17	20	22	A A 53	39	36	A A 52	34	36	38	37	G 34	36	A A 61	A A 71	E A 43	26	24	24	20	20
23	23	A A 67	E B 16	E B 16	20	21	A A 51	A A 74	A A 76	A A 75	A A 63	37	45	E A 39	37	G 31	33	31	24	21	29	19	16	16
24	18	17	18	16	21	G 18	A A 56	A A 107	A A 100	34	35	34	A A 66	A A 67	A A 43	A A 43	32	29	29	22	24	24	24	24
25	22	18	E B 16	E B 16	16	23	A A 34	A A 103	37	34	36	36	36	38	36	E A 42	32	28	24	G 22	E B 16	18	E B 18	E B 16
26	18	22	E B 17	E B 17	E B 17	19	30	A A 85	46	38	A A 129	45	39	G 35	G	32	35	30	A A 108	22	A A 83	22	22	18
27	17	17	E B 17	20	24	G 21	28	36	36	G 33	39	37	A A 94	37	35	35	A A 103	A A 130	A A 108	A A 161	A A 138	A A 144	A A 104	A A 62
28	A A 62	22	17	E B 16	24	27	E A	36	37	36	38	36	36	40	39	40	35	A A 97	A A 126	A A 98	24	24	24	A A 65
29	A A 63	21	E B 16	E B 22	20	21	33	34	46	46	A A 68	A A 120	A A 81	G	A A 81	A A 181	A A 119	A A 70	A A 73	21	21	24	16	20
30	20	E B 16	E B 16	E B 16	E B 16	24	E A 42	A A 77	E A 39	E A 42	E A 37	37	36	34	34	39	A A 72	A A 63	E A 40	16	E B 16	E B 16	22	16
31	18	18	E B 16	E B 16	22	25	A A 53	34	A A 86	E A 48	E A 48	A A 83	37	A A 89	A A 53	A A 121	A A 107	A A 85	E A 49	27	A A 107	16	A A 153	A A 108
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	16	E B 16	E B 16	E B 16	E B 16	G	30	37	42	A 42	37	36	36	35	35	34	32	30	27	22	23	19	17	16
U Q	20	18	17	17	20	24	A A 34	A A 63	A A 63	A A 59	A A 48	A A 41	A A 45	A A 40	A A 43	A A 42	A A 37	A A 63	A A 65	A 27	A 27	24	22	A A 24
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	G 20	27	34	36	36	35	35	35	35	G 34	31	32	27	24	21	E B 16	E B 16	E B 16	E B 16

MAY 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	16	16	16	16	16	12	16	13	14	15	14	17	16	16	16	16	14	15	16	15	16	15	15	15
2	16	16	16	16	16	16	15	15	15	15	16	16	16	16	16	13	15	15	15	15	16	16	16	16
3	16	16	16	16	16	15	15	16	16	15	16	16	16	18	16	16	16	15	15	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	16	16	19	20	18	16	16	16	15	15	15	16	16	16	16
5	16	16	16	16	16	15	15	16	16	16	16	16	16	16	16	16	15	13	14	16	16	16	16	16
6	16	16	16	16	16	16	14	15	15	15	20	17	17	17	15	15	16	13	15	16	16	16	16	16
7	16	16	16	16	16	16	14	16	16	16	14	16	16	18	15	15	16	14	15	15	16	16	16	16
8	16	16	16	16	16	17	14	15	15	15	15	16	16	16	16	16	15	15	16	16	16	16	16	16
9	16	16	16	15	16	17	16	16	17	16	22	17	20	20	17	17	16	15	15	15	16	16	15	15
10	16	16	16	16	16	14	16	15	16	16	15	16	16	15	15	16	16	16	16	16	16	16	16	16
11	16	16	16	16	16	16	16	14	15	17	16	17	16	17	16	16	16	16	15	16	16	16	16	16
12	16	16	16	16	16	16	15	16	14	16	18	18	16	16	16	16	16	16	16	16	16	16	17	16
13	16	16	16	16	16	15	16	15	17	18	16	16	16	23	16	17	16	15	15	16	16	16	16	16
14	16	16	15	16	16	16	16	14	15	17	16	16	16	16	16	15	17	15	16	16	16	16	16	16
15	16	16	16	16	15	16	14	16	16	16	16	16	16	16	16	15	15	15	11	16	16	16	16	16
16	16	16	16	16	16	16	15	16	16	16	16	26	16	15	15	16	15	15	11	16	16	16	16	16
17	16	16	16	16	16	12	12	14	16	16	15	16	19	17	18	16	15	15	16	16	16	16	16	16
18	16	16	16	16	16	12	13	16	16	16	16	16	16	16	23	16	16	14	18	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	14	16	16	16	16	16
20	16	16	16	16	16	16	16	15	16	16	24	16	18	16	16	18	14	15	16	16	16	16	16	16
21	16	16	16	16	16	15	16	16	16	15	16	17	16	16	18	16	15	14	12	15	17	16	16	16
22	16	17	16	16	16	14	15	16	14	16	16	16	21	18	17	16	16	13	13	13	16	16	16	16
23	16	16	16	16	16	11	11	16	18	16	21	21	17	24	18	14	14	15	14	15	16	16	16	16
24	16	16	16	15	16	14	14	14	16	16	16	16	17	17	16	15	16	10	14	16	16	16	16	16
25	16	15	16	16	14	16	15	15	15	15	16	15	16	16	17	16	16	16	12	16	16	16	16	16
26	16	16	16	16	16	16	16	15	14	16	16	16	16	16	16	16	16	16	11	16	16	16	16	16
27	16	16	16	16	16	15	16	17	21	22	16	16	16	19	15	15	15	14	11	15	15	15	15	15
28	15	15	16	16	16	16	15	15	16	16	17	15	16	20	16	17	18	14	14	16	16	16	16	16
29	16	16	16	16	16	15	15	15	15	15	16	16	18	18	18	15	16	14	15	15	15	16	16	16
30	16	16	16	16	16	16	15	15	15	15	15	16	17	16	17	17	16	14	12	14	16	16	16	16
31	16	16	16	16	16	15	15	15	15	15	16	16	19	17	17	17	17	14	13	15	15	15	15	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	15	15	16	16	16	16	16	16	16	16	16	15	15	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	16	16	17	17	18	17	16	16	15	16	16	16	16	16	16
L Q	16	16	16	16	16	15	14	15	15	15	16	16	16	16	16	15	15	14	13	15	16	16	16	16

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	299	297	332	308	323	347	355	261	296	312	342	303	321	310	309	A	342	346	A	324	310	316	313	311
2	333	322	325	326	334	358	312	357	320	364	321	339	323	323	A	328	335	332	356	317	324	324	307	330
3	323	328	331	329	321	379	333	A	330	323	323	328	361	278	325	325	347	363	237	316	302	335	358	324
4	318	338	339	323	340	332	328	324	342	338	359	356	321	313	323	335	274	A	A	315	339	R 309	352	316
5	316	316	316	336	339	363	363	347	364	283	338	312	296	315	332	334	352	351	355	323	316	321	342	324
6	304	310	296	317	300	317	345	A	A	A	A	264	278	302	301	310	311	328	322	312	281	315	R 311	294
7	301	313	324	297	295	U R 345	327	A	A	A	264	268	296	R 257	295	273	312	318	301	315	342	304	314	300
8	299	299	309	F 300	299	319	A	A	A	A	A	288	U R 296	A	308	265	191	210	322	310	320	A	A	A
9	322	321	299	294	319	346	318	A	A	A	A	269	A	258	301	312	318	325	326	339	332	307	299	293
10	F 303	F 290	F 296	F 280	F 291	272	278	323	287	A	289	266	300	295	317	328	312	318	323	310	312	299	309	298
11	293	F 329	310	306	316	265	289	285	315	A	394	273	A	A	A	273	309	212	301	321	343	376	344	310
12	308	285	308	307	290	322	R 262	R 329	A	A	R	A	263	273	275	319	323	331	A	A	304	310	326	318
13	F 282	F 267	F 279	F 282	364	366	288	331	A	319	349	A	305	316	324	312	303	321	324	334	314	321	F 300	F 279
14	291	F 286	F 285	314	312	356	355	330	A	A	314	253	310	328	A	322	312	322	308	306	334	349	327	330
15	309	326	314	334	295	310	373	345	305	323	337	331	300	325	311	318	321	332	330	316	319	334	324	314
16	331	315	321	306	312	314	361	A	A	350	340	312	295	263	285	319	328	338	331	327	328	292	317	328
17	316	310	310	F 283	F 339	337	343	331	335	359	A	A	A	295	A	331	328	A	A	315	304	271	304	269
18	320	F 298	311	F 315	F 323	300	351	A	A	A	301	368	265	302	305	324	321	259	A	A	323	295	315	334
19	315	307	329	326	332	330	365	323	345	336	349	315	303	222	306	A	A	324	331	315	315	343	317	305
20	328	291	F 303	F 301	F 377	320	A	A	352	361	319	294	293	327	305	303	302	332	330	226	316	298	290	315
21	325	311	300	F 303	359	367	335	A	A	A	A	A	A	A	A	313	345	326	242	308	316	293	298	A
22	A	293	F 284	F 366	316	348	A	332	362	A	318	306	261	342	316	324	A	A	226	334	303	301	357	335
23	325	A	F 284	F 284	385	352	A	A	A	A	A	319	306	312	305	306	290	309	306	304	307	317	330	323
24	321	326	F 296	F 317	322	344	A	A	A	335	A	R 288	A	A	A	A	294	301	320	323	306	308	306	323
25	350	302	F 304	F 328	F 283	349	347	A	319	327	A	296	300	269	320	218	301	333	333	326	321	303	314	329
26	319	F 305	F 288	F 331	F 345	365	293	A	310	322	A	344	280	306	296	254	303	325	A	C	A	325	304	352
27	319	305	305	F 299	F 314	322	349	314	373	336	298	305	A	310	280	288	A	A	A	A	A	A	A	A
28	A	F 290	F 248	F 290	305	336	312	325	366	366	302	295	310	283	342	284	281	A	A	A	321	321	357	A
29	A	316	F 292	F 299	F 312	313	344	324	361	365	A	A	A	286	A	A	A	A	A	301	310	334	325	324
30	343	326	317	329	321	310	306	A	337	325	320	309	264	279	288	313	A	A	311	302	311	318	318	318
31	295	325	290	290	343	316	A	329	A	340	354	A	295	A	A	A	A	A	326	234	A	330	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	31	31	31	31	25	17	18	19	20	25	24	26	23	26	25	23	22	26	28	29	28	26
MED	317	310	305	307	321	336	335	329	336	336	322	305	298	302	306	313	312	325	322	315	316	316	316	318
U Q	324	322	317	326	339	352	353	332	361	359	346	324	308	315	320	324	328	332	330	323	324	328	328	328
L Q	302	297	F 292	F 297	305	316	309	323	315	323	308	280	286	278	296	288	302	318	306	308	308	302	306	305

MAY 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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 387		L	L	L	A	384	A	A					
2							L	376	L	L	L	L	L	L	A	A	A	369						
3							A	A	L	A	403	L	L	407	L	379	L	L	343					
4						L	L	L	396	L	L	L	L	L	L	L	A	A	A					
5							L	L	L	L	L	L	L	L	L	L	367	L						
6							L	A	A	A	A	398	L	L	L	L	L	A	L					
7				L			L	A	A	A	A	L	L	L	L	L	382	L	L					
8							A	A	A	A	A	L	L	A	378	A	L			L	A			
9						L	L	A	A	A	A	L	A	L	L	L	L	L	L					
10						L	382	L	A	A	405	517	L	L	381	368	377	349						
11						L	L	L	A	A	L	L	A	A	A	L	L	A	A					
12						L	299	A	A	420	L	A	L	380	L	L	403	A	A	A				
13						L	L	L	A	L	L	A	A	L	373	L	L	L	L					
14							L	L	A	A	L	L	L	A	A	A	380	L	L					
15							L	L	L	L	L	L	L	L	L	L	L	L	L					
16						L	L	A	A	L	L	L	L	L	L	L	L	L						
17						L	L	L	A		A	A	A	L	A	A	L	A	A	A	A			
18						L	L	A	A	A	A	L	L	L	L	A	L		A	A	A			
19					L			A	A	A	L	A	L	L	L	A	A	L	L					
20							A	A	L	L	L	L	L	A	L	L	L	L	L	A				
21				A	L		L	A	A	A	A	A	A	A	A	375	393	L	A					
22							A	A	L	A	L	L	L	L	425	A	A	A	A					
23						L	A	A	A	A	A	L	A	373	L	L	L	L	L					
24							A	A	A	L	L	L	A	A	A	A	L	L	369					
25						L	A	A	L	409	366	408	L	L	L	U R	334	L	361					
26					L	L	355	A	A	L	A	A	L	L	L	L	L		A	C	A			
27						L	L	A	L	L	L	L	A	L	L	A	A	A	A	A	A			
28					L		A	A	366	L	A	L	L	L	L	A	L	A	A	A				
29						L	L	L	A	L	A	A	A	L	A	A	A	A	A					
30						L	A	A	A	A	A	L	L	L	L	A	A	A	A	L				
31							A	A	A	A	A	A	L	A	A	A	A	A	A	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	1	2	2	3	4		3	4	3	8	2	3					
MED							355	376	381	414	403	403		380	380	375	381	359	361					
U Q							382				405	462		407	403	379	388		369					
L Q							299				366	392		373	376	368	372		343					

MAY 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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										236	280	318	334	372	334	A	268	A 238	A					
2							306	280	304	248	318	304	350	336	A	306	278	278						
3							248	A	318	346	330	340	268	408	332	312	272	240	392					
4						292	320	320	286	296	268	268	336	380	330	308	A	A	A					
5							260	276	256	396	292	356	374	338	314	286	272	270						
6							316	A	A	A	A	450	414	384	350	344	334	274	260					
7				308			258	A	A	A	A	430	374	390	366	406	320	294	280					
8							A	A	A	A	A	372	328	A	308	A	A			270	E A 298			
9						254	334	A	A	A	A	446	A	468	344	334	320	286	274					
10						E A 390	420	318	372	A	342	454	342	368	342	300	326	302						
11						350	350	356	340	A	220	248	A	A	A	432	332	678	286					
12						316	434	A	A	A	A	A	308	A 392	430	328	318	266	A	A				
13						260	386	300	A	324	292	A	E A 336	344	308	348	344	304	272					
14							270	294	A	A	342	E A 468	348	300	A	308	316	286	286					
15							248	280	338	314	298	316	384	330	336	358	298	278	278					
16						328	250	A	A	292	304	354	358	450	386	338	316	298						
17						274	284	296	296		A	A	A	362	A	284	292	A	A	A	A			
18						340	280	A	A	A	252	270	E A 454	374	354	304	310		A	A	288			
19					246			E A 304	288	288	280	344	392	508	372	A	A	320	296					
20							A	A	260	276	342	402	374	322	346	366	350	296	280	A 560				
21				302	236		290	A	A	A	A	A	A	A	A	342	274	306	A 478		A 318			
22							A	314	272	A	332	320	422	334	368	324	A	A	A					
23						252	A	A	A	A	A	326	A	354	366	356	388	304	290					
24							A	A	A	320	A	362	A	A	A	A	380	374	298					
25						264	246	A	314	322	A	398	378	452	328	620	360	302	262					
26					238	264	374	A	A	328	A	268	410	382	382	512	370		A	C	A			
27						278	264	330	258	316	364	354	A	366	410	320	A	A	A	A	A			
28					304		A	296	278	260	370	404	328	384	302	A	250	A	A	A				
29						348	302	316	234	234	A	A	A	390	A	A	A	A	A					
30						306	A 340	A	308	334	334	358	500	418	418	340	A	A	318	280				
31							A	310	A	270	A 256	A	376	A	A	A	A	A	294	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				2	4	15	22	15	16	18	19	25	23	26	23	24	23	20	16	3	3			
MED				305	242	285	296	304	292	305	304	354	366	377	346	336	318	295	286	280	A 298			
U Q					275	340	340	318	316	324	342	403	392	392	372	357	344	304	297	A 560	A 318			
L Q					237	264	260	294	266	270	280	317	336	344	330	308	278	276	276	270	288			

MAY 2018 h'F2 (KM)

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IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	Q 250	Q 258	232	248	248	220	256	E A 256	A	A	A	200	194	192	204	A	A 222	A	A	238	258	256	222	222
2	Q 228	230	230	236	240	232	198	200	200	202	202	202	202	198	A	A	A	198	240	228	238	240	100	230
3	256	250	236	224	254	208	A	A	204	A	210	196	188	196	182	200	200	200	234	228	254	248	218	200
4	220	226	226	226	232	194	204	204	204	204	192	A	192	194	194	212	A	A	A	238	236	224	214	210
5	246	238	238	238	222	214	224	220	210	202	190	178	178	210	204	210	A	236	236	236	236	236	228	246
6	258	236	274	250	276	254	222	A	A	A	A	202	202	198	A 236	236	212	A	212	284	268	254	254	254
7	252	262	242	E A 274	276	230	198	A	A	A	A	214	202	224	200	194	196	202	202	258	230	224	Q 228	Q 246
8	252	Q 284	Q 260	248	278	A 284	A	A	A	A	A	244	182	A	182	A	A	A	220	236	A	A	A	A
9	230	272	286	264	246	220	230	A	A	A	A	194	A	194	202	194	202	200	204	218	234	270	256	284
10	Q 256	Q 252	Q 260	Q 258	264	206	200	226	A	A	182	200	198	198	198	198	198	212	260	240	244	250	230	254
11	260	232	Q 240	242	268	222	222	222	A	A	184	192	A	A	A	200	220	A	A	220	224	206	214	260
12	258	284	268	272	298	208	A	A	A	204	208	A	200	214	220	208	210	A	A	A	A 256	246	234	234
13	Q 264	Q 270	Q 276	Q 250	216	204	210	216	A	200	200	A	A	198	198	198	208	212	230	240	264	222	260	296
14	254	278	268	236	250	220	196	222	A	A	200	202	200	A	A	A	198	214	224	272	228	210	224	230
15	254	238	254	224	250	226	226	226	192	206	188	194	186	198	198	200	216	216	216	234	234	228	220	232
16	232	246	254	262	266	216	210	A	A	210	190	196	194	202	194	220	A	208	262	242	236	254	236	214
17	244	Q 244	Q 260	Q 248	214	206	206	222	A	262	A	A	A	200	A	A	200	A	A	A	A	Q 294	278	278
18	250	264	264	276	232	236	236	A	A	A	A	194	194	202	202	A	194	410	A	A	A	236	236	248
19	252	260	242	234	204	228	228	A	A	A	188	A	188	192	212	A	A	226	212	240	252	206	234	252
20	244	Q 262	Q 256	236	200	242	A	A	220	A 216	224	198	198	A	192	196	192	192	234	A	278	260	256	A
21	A	228	206	A	202	230	230	A	A	A	A	A	A	A	A	200	200	216	A	E A 334	A	248	226	A
22	A	266	252	204	242	228	A	A	216	A	198	198	186	202	190	A	A	A	A	242	242	264	210	210
23	198	A	Q 280	248	198	198	A	A	A	A	A	194	A	A	198	196	E A 240	230	216	230	244	244	218	232
24	230	234	260	236	260	260	A	A	A	200	184	184	A	A	A	A	222	206	222	242	252	244	252	252
25	204	260	Q 246	248	256	200	A	A	A	194	236	194	186	214	198	A	214	214	214	232	242	246	248	232
26	246	260	Q 274	220	208	208	208	A	A	A	A	A	200	188	188	194	230	224	A	C	A	246	250	230
27	248	260	260	Q 272	260	204	204	A	204	200	200	178	A	224	198	A	A	A	A	A	A	A	A	A
28	A	254	246	Q 246	246	258	A	A	226	198	A	216	180	E A 224	A	A	228	A	A	A	268	262	230	A
29	A	244	244	Q 250	Q 250	220	230	A	A	230	A	A	A	188	A	A	A	A	A	254	254	214	214	232
30	232	232	232	224	220	212	A	A	A	A	A	178	194	190	198	A	A	A	A	216	238	238	Q 226	200
31	230	256	Q 260	Q 246	246	242	A	A	A	A	A	A	192	A	A	A	A	A	A	A	A	216	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	30	31	30	31	31	20	10	9	14	17	22	22	23	22	16	20	18	17	23	24	29	28	25
MED	248	255	254	246	246	220	216	222	204	203	198	196	194	198	198	200	207	213	222	238	243	244	229	232
U Q	254	262	264	250	260	232	229	226	218	210	205	202	200	210	202	209	221	224	235	242	255	254	249	253
L Q	230	238	240	236	220	208	204	216	202	200	188	194	186	194	194	196	199	202	213	230	236	224	219	226

IONOSPHERIC DATA STATION Wakkanai

MAY 2018 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B	118	112	96	108	102	102	102	A	100	A	A	104	104	A	A				
2					B	112	112	112	106	106	108	108	108	108	108	108	108	112	B	B				
3					114	114	112	108	108	104	104	104	96	96	A	94	A	108	106	122				
4					A	120	116	112	112	104	104	104	A	A	104	104	104	104	A	A				
5					B	112	112	112	106	106	102	102	A	102	102	102	102	92	100	A				
6					B	120	102	102	102	102	102	A	102	106	106	106	106	106	104	B				
7				102	112	A	112	110	110	100	100	100	100	104	104	104	104	104	124	A	A			
8				B	A	A	102	102	102	102	102	102	102	102	102	102	102	102	A	A	A			
9				126	A	A	112	112	104	104	94	94	108	108	108	108	108	108	108	B	B			
10				B	B	130	120	110	100	100	100	100	104	104	104	104	114	114	124	A	A			
11				B	B	128	110	110	110	110	106	106	106	106	102	102	108	106	104	A	A			
12				B	A	104	106	106	106	106	106	106	106	106	106	106	104	114	104	A	A			
13				B	B	118	114	100	106	106	106	96	96	A	96	100	100	100	100	A	A			
14				B	B	120	114	106	106	96	96	96	96	96	A	A	100	A	110	A	A			
15				B	124	124	108	108	108	92	A	108	108	108	108	108	108	108	108	A	A			
16				B	B	108	108	108	108	104	A	A	104	104	104	104	108	108	108	A	A			
17				B	B	108	108	108	108	108	108	98	A	B	A	A	A	A	A	A	A			
18				B	A	118	110	110	110	110	110	A	A	A	104	104	110	110	A	A	A			
19				B	98	110	110	110	110	110	110	102	102	110	110	110	110	110	114	A	A			
20				A	B	110	100	100	102	102	98	102	102	96	104	A	A	A	A	A	A			
21				B	A	104	100	100	100	100	100	100	100	100	100	108	108	108	108	A	A			
22				B	A	104	114	114	110	98	98	106	106	106	106	106	106	106	106	A	A			
23				B	A	114	114	114	114	106	100	100	100	94	106	106	106	106	106	A	A			
24				A	A	120	120	102	102	102	102	102	102	102	102	102	102	102	102	A	A			
25				B	A	110	102	102	102	A	102	102	102	102	102	102	102	102	102	B	B			
26				B	A	A	102	102	102	102	102	102	A	102	110	110	110	110	106	A	A			
27				A	A	98	108	108	88	108	108	A	108	108	108	108	108	108	108	A	A			
28				B	A	118	118	108	96	102	102	102	102	102	102	102	102	102	A	A	A			
29				B	A	98	104	104	104	104	104	104	104	104	104	104	104	104	104	A	A			
30				B	B	112	112	112	112	112	110	110	94	94	94	112	112	112	112	A	B			
31				B	A	108	110	110	110	110	110	110	110	100	108	108	108	108	108	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				2	4	27	31	31	31	30	29	27	25	27	27	27	28	28	23	1				
MED				114	113	112	110	108	106	104	102	102	102	102	104	104	106	107	106	122				
U Q					119	120	114	110	110	106	107	106	106	106	108	108	108	109	108					
L Q					105	108	106	102	102	102	100	100	100	100	102	102	103	104	104					

MAY 2018 h'E (KM)

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IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	102	102	118	118	110	128	118	112	112	104	96	102	96	96	100	96	122	112	110	110	108	108	98	98
2	96	B	B	B	B	114	G	104	110	98	140	140	138	106	96	102	102	108	118	122	B	B	B	122
3	102	102	102	B	122	130	126	112	112	104	104	104	104	94	104	114	102	132	112	112	154	122	B	B
4	96	96	B	B	94	130	118	108	108	106	100	100	98	98	82	124	116	112	108	108	108	118	96	96
5	96	B	B	108	B	128	110	108	100	100	102	G	96	146	146	120	120	112	120	108	B	B	B	B
6	B	B	92	B	B	132	112	108	108	102	102	102	102	150	112	112	110	110	140	B	108	108	104	120
7	102	122	122	98	116	116	116	102	102	102	110	98	98	114	138	146	114	114	140	108	106	98	98	104
8	B	B	124	126	126	110	110	110	104	104	114	102	112	112	134	118	106	106	106	110	106	110	102	102
9	98	98	110	118	110	110	114	114	114	114	102	110	110	104	136	130	G	110	G	B	106	110	124	124
10	B	100	116	B	B	G	114	114	112	108	108	G	94	94	96	98	118	132	106	106	106	100	100	94
11	94	B	B	B	B	114	114	114	108	120	G	100	100	96	96	100	118	118	112	112	100	100	100	100
12	96	96	96	100	112	112	112	108	106	106	104	102	102	118	94	96	200	112	108	102	102	102	98	98
13	98	102	94	94	B	134	116	108	104	104	96	96	100	88	88	154	94	134	118	90	90	90	98	98
14	98	B	88	B	B	124	112	110	102	104	104	98	98	98	98	96	96	98	106	106	106	100	100	B
15	94	94	B	B	128	120	112	112	118	108	102	102	102	98	98	98	116	106	106	100	100	100	100	94
16	94	94	100	B	B	112	112	104	104	102	102	102	102	104	110	G	110	110	110	106	98	98	Q 98	98
17	92	B	B	B	B	92	120	114	110	104	104	94	92	92	92	104	88	88	104	108	108	106	106	106
18	100	100	88	94	102	114	102	102	102	102	102	102	102	102	118	100	128	112	108	96	112	104	128	B
19	B	88	88	B	G	114	114	114	110	110	102	102	96	102	106	106	106	122	108	108	102	108	102	98
20	96	100	92	92	92	94	110	110	110	110	110	96	96	96	100	90	90	90	82	102	102	102	102	104
21	98	104	104	100	100	110	118	106	106	106	96	98	98	104	104	104	106	110	108	108	98	116	104	106
22	106	98	98	100	104	118	108	120	104	104	104	102	114	104	104	122	108	106	106	106	106	106	106	106
23	98	98	98	98	98	112	108	108	108	104	104	104	104	104	104	104	124	110	110	110	106	106	106	106
24	106	128	112	112	118	118	106	104	104	104	110	110	116	108	108	108	110	110	110	110	104	104	102	96
25	96	96	116	116	108	124	116	104	104	104	104	118	106	106	106	106	106	106	106	106	B	106	106	106
26	84	90	92	98	98	106	106	102	104	104	104	104	104	104	G	134	110	110	94	94	100	108	100	100
27	92	92	92	92	98	110	106	106	100	100	100	96	104	114	188	112	112	112	112	112	102	102	102	92
28	92	92	100	106	106	104	114	114	110	110	98	110	98	98	116	122	114	114	102	112	112	112	98	98
29	98	98	110	94	88	114	114	114	114	108	108	102	112	G	112	112	106	106	106	106	106	106	90	90
30	90	B	B	B	B	128	110	102	102	98	98	98	88	100	120	106	106	106	108	114	108	108	92	92
31	92	92	92	100	102	102	102	102	102	102	102	94	102	102	104	104	104	104	110	110	110	110	110	110
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	23	24	19	20	30	30	31	31	31	30	29	31	30	30	30	30	31	30	29	28	29	28	27
MED	96	98	99	100	105	114	112	108	106	104	103	102	102	103	104	106	110	110	108	108	106	106	101	100
U Q	98	102	111	112	114	124	116	114	110	108	104	104	104	106	116	120	116	112	112	110	108	109	105	106
L Q	94	94	92	94	98	110	110	104	104	102	102	98	98	98	98	100	106	106	106	106	102	101	98	96

MAY 2018 h'Es (KM)

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IONOSPHERIC DATA STATION Wakkanai

MAY 2018 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	F2	F1	F4	L1	C3	C4	C3	C3	C5	C3	C2	L2	L2	L2	L2	C2	C5	L6	L8	F5	F5	F1	F1
2	F1					C1		C2	C2	C4	H2	H1	H1	C1	C6	C3	C3	C1	C2	C1				CC22
3	L2	L3	L1		C2	C2	C3	C4	C2	C3	C2	C1	C1	C2	L2	C3	C3	CL21	CL41	L1	F1	F1		
4	F2	F1			L1	C2	C3	C3	C2	C2	C2	C2	L2	L2	L2	C1	C4	C5	C7	C4	FF11	F1	F1	F5
5	F2			F1		C2	C3	C3	C3	C3	C2		L2	CL11	CL21	CL21	CL21	CL41	C3	L3				
6			F1			C1	C2	C3	C3	C4	C2	L1	C2	C1	C2	C2	C3	C4	H1		F2	F2	FQ21	FF11
7	F2	F1	F1	L2	C1	C2	C2	C6	C6	C3	C3	C2	C1	C2	C1	C1	C1	C2	C1	L2	L4	F1	F1	F1
8			F1	L3	L1	L3	C3	C5	C3	C6	LC22	C1	C1	C3	C1	C3	C5	C6	L6	L8	L3	F8	F8	F9
9	F4	F4	F4	L5	L3	C3	C4	C5	C3	C4	C4	C2	C2	C1	C1	C1		C1			L4	F1	F1	F2
10		F2	F1				C2	C2	C2	C2	C2		C1	C1	C1	C1	C1	C2	C4	L4	L5	F4	F4	F3
11	F2					C2	C2	C2	C4	CL21		C1	C4	C5	C5	C2	C2	C4	C6	L4	L5	F6	F2	F3
12	F5	F1	F2	L2	L1	C2	C3	C3	C3	C2	C2	L2	L1	C1	L2	C1	C1	C2	C5	L7	L7	F5	F4	F3
13	F2	F2	F2	L1		C2	C2	C2	C3	C2	C2	C3	L2	L2	L2	H1	L1	L1	C2	C2	L2	L2	F3	F3
14	F2		F1			C2	C2	C3	C4	C3	C2	C2	C2	C3	L3	L3	L4	L3	C3	L4	L5	F3	F3	
15	F5	F2			C1	C3	C4	C2	C1	C1	L1	C1	C1	C1	C1	C1	C1	C3	C3	L4	L3	F2	F2	F1
16	F2	F2	F1			C3	C4	C6	C4	C3	L1	L1	C1	C1	C1		C3	C3	C5	L5	L2	F4	F5	F3
17	F1					L2	C2	C4	C3	C3	C4	C5	C3	C2	L2	LL22	L3	L4	L7	L7	L8	F2	F4	F7
18	F7	F2	F3	L6	L1	C2	C5	C5	C3	C4	C3	L2	L2	L2	CL11	C5	C3	C3	L7	L7	L7	F6	F1	
19		F3	F2			C2	C2	C3	C4	C4	C2	C2	L2	C1	C2	C2	C5	C5	C2	L5	L4	F3	F2	F2
20	F2	FQ31	FQ31	LQ21	L1	LC12	C5	C5	C3	C2	C1	C1	C2	C3	C2	L3	C3	L2	LL22	L5	L5	F7	F7	F5
21	F5	F5	F5	L6	L4	C3	C3	C5	C6	C3	C3	C5	C4	CQ42	CQ41	C2	CQ41	CQ31	CQ51	LQ61	LQ41	FQ41	FQ41	FQ41
22	FQ61	FQ41	FQ31	LQ21	LQ21	C2	C4	C5	C3	C3	C2	C2	C1	C3	C1	C2	C4	C6	C6	C5	L7	F5	F7	F5
23	F8	F8	F3	L2	L3	C2	C3	C7	C3	C4	C4	C2	C3	C2	C2	C2	C2	C3	C4	L5	L8	F3	F3	F5
24	F3	F2	F4	L3	L2	C5	C7	C7	C4	C3	C2	C1	C4	C3	C3	C2	C3	C3	C3	C3	C8	F5	F5	F5
25	F8	F6	F1	L2	L2	C3	C3	C5	C2	L2	C2	C1	C1	C2	C1	C4	C2	C4	C3	C2		F3	F2	F2
26	F5	F3	F2	LL11	L1	L2	C2	C5	C3	C3	C4	C2	C2	C1		C1	C4	C6	C7	L5	L5	F4	F4	F4
27	F2	F2	F2	F2	L2	L2	C2	C3	C3	C1	C2	L1	C3	C2	C1	C2	C4	C7	C8	L8	L8	F9	F9	F9
28	F9	F3	FF22	LL11	L3	C4	C3	C3	CL21	C2	C2	C2	C2	C2	C2	C2	C2	C7	L7	L7	L7	F8	F6	F8
29	F8	F7	FF11	LL21	LL21	C5	C4	C4	C3	C2	C3	C4	C2		C4	C6	C8	C7	C8	L5	L4	F2	F3	F1
30	F2					C4	C4	C4	C3	C3	C2	C2	C2	C1	C1	C3	C6	C8	C6	L1	L1	F2	F4	F3
31	F3	F2	F1	L1	L6	C5	C5	C3	C4	C4	C4	C4	C2	C3	C3	C5	C6	C5	C6	C7	C8	F5	F5	F5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

MAY 2018 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2018 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	38	36	34	32	32	36	42	47	53	54	56	52	58	68	77	84	68	58	48	53	53	48	F	F
2	F	F	36	36	33	35	46	A	53	55	60	58	56	A	A	67	61	56	52	61	57	51	47	F
3	F	F	F	31	26	35	44	48	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	50	52	55	56	54	43	A
5	37	35	34	32	30	39	A	48	51	A	A	54	53	60	A	73	A	A	43	49	52	48	43	42
6	39	38	C	33	29	38	36	A	A	A	A	52	53	50	60	A	A	46	48	54	52	49	48	44
7	43	39	41	41	36	41	62	50	A	A	50	53	55	A	52	62	63	60	69	74	61	48	45	44
8	38	35	34	35	35	44	49	43	A	A	R 52	A	50	42	50	50	50	A	62	62	51	43	42	41
9	F	36	F	F	34	43	47	43	A	46	A	A	50	56	66	71	69	54	A	63	53	38	37	36
10	39	F	33	29	27	34	50	44	49	52	53	A	64	70	68	74	71	65	52	60	62	A	F	A
11	A	A	40	35	35	38	52	51	54	49	A	A	A	52	57	52	A	55	64	77	A	40	40	A
12	A	A	A	31	30	35	A	A	A	A	A	A	A	52	48	50	49	49	A	50	59	50	41	41
13	40	41	42	F	F	40	43	A	57	60	58	55	52	54	60	66	70	66	62	66	56	51	48	47
14	46	43	43	41	37	42	42	A	48	53	51	53	55	60	A	65	70	69	67	76	69	F	F	F
15	F	41	F	F	F	A	C	C	C	59	55	54	52	54	56	68	72	A	74	78	67	F	46	45
16	F	A	F	A	27	38	58	58	A	A	A	52	A	52	50	57	66	A	59	68	62	A	A	F
17	F	F	F	31	32	40	54	56	60	A	A	A	A	63	70	77	85	81	A	48	50	F	F	A
18	46	F	F	F	F	43	50	57	53	A	A	A	A	A	A	66	68	60	A	53	52	A	41	41
19	37	A	F	F	F	36	44	51	61	A	A	A	A	A	53	55	58	66	72	73	53	A	47	A
20	42	F	36	35	F	34	48	A	54	48	50	A	A	51	56	59	57	54	54	58	59	54	52	F
21	43	42	F	F	F	36	45	51	59	A	A	A	A	A	A	64	A	A	A	53	55	49	45	44
22	42	F	36	31	30	34	50	54	A	A	53	A	A	A	A	62	74	71	53	59	56	56	F	F
23	A	33	A	F	F	38	44	49	A	A	52	A	53	54	52	54	61	68	73	78	75	60	F	53
24	50	F	41	F	35	38	46	52	51	56	A	A	A	A	A	A	49	54	A	53	52	49	45	40
25	37	36	34	31	30	37	46	52	49	58	54	49	51	45	52	58	61	59	56	60	56	55	F	48
26	39	38	34	34	F	36	42	54	56	A	A	A	A	C	C	C	60	59	A	66	58	45	F	35
27	F	35	28	F	F	F	50	50	C	C	C	C	C	C	52	C	52	52	60	69	69	52	48	F
28	42	42	36	35	34	39	50	54	60	50	A	50	C	A	56	A	A	53	A	64	64	61	F	A
29	A	42	A	F	34	40	48	A	64	50	55	50	A	A	A	A	A	A	A	A	F	61	F	A
30	37	36	35	32	32	39	49	55	64	53	55	A	A	50	A	56	A	48	54	61	66	50	A	F
31	A	37	37	F	31	37	51	A	70	63	50	50	52	A	A	A	A	A	A	73	61	52	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	18	18	18	21	28	27	21	19	15	15	13	14	17	18	22	21	23	20	29	28	23	17	14
MED	40	38	36	32	32	38	48	51	54	53	53	52	53	54	56	63	63	58	58	61	56	50	45	43
U Q	43	41	40	35	34	40	50	54	60	58	55	54	55	60	60	68	70	66	66	71	62	54	48	45
L Q	38	36	34	31	30	36	44	48	51	50	51	50	52	50	52	56	58	53	52	54	53	48	42	41

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 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	U L 448	A	U L 444	U L 436	A	A	A						
2								A	A	A	A	A	A	A	A	A	A	A	A					
3							A	A	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	L	L					
5							A	A	A	A	A	436	A	A	A	A	A	A						
6								A	A	A	A	A	A	U L 408	A	A	A	A	L					
7								A	A	A	U L 436	U L 432	A	A	U L 424	U L 408	U L 392	A	A					
8							L	L	A	A	U L 428	A	U L 436	U L 336	U L 416	U L 408	392	A	A					
9									A	U L 452	A	A	A	428	A	A	A	A	A					
10							L	U L 400	408	424	U L 452	A	A	U L 444	A	408	U L 384	A						
11	A						A	A	A	A	A	A	A	U L 428	A	A	A	352	A					
12							A	A	A	A	A	A	A	U L 440	A	A	404	A	A					
13							A	A	A	A	A	U L 448	U L 444	U L 452	A	A	U L 392	L	A					
14								A	A	428	A	U L 432	A	A	A	A	A	A	A					
15						A	C	C	C	436	432	A	440	432	A	A	A	A	A					
16							A		A	A	A	A	A	U L 440	U L 416	A	A	A	A					
17							L	A	A	A	A	A	A	U L 440	A	A	A	A	A					
18							L	A		A	A	A	A	A	A	A	U L 388	A	A					
19						A	A	A	A	A	A	A	A	A	A	404	A	A						
20							A	A	A	U L 428	432	A	A	A	A	A	U L 392	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						
23								A	A	A	A	A	432	A	424	416	A	A	A					
24							A	A	412	416	A	A	A	A	A	A	A	A	A					
25							L	A	A	A	U L 432	U L 452	U L 444	U L 424	U L 416	U L 420	400	364	L					
26							A	A	A	A	A	A	A	C	C	C	A	372	A					
27						L	268	U L 404	C	C	C	C	C	C	A	C	A	U L 380	U L 316					
28						A	A	A		A	A	A	C	A	A	A	A	A	A					
29							A	A	A	U L 440	U L 488	A	A	A	A	A	A	A	A					
30							A	A	A	A	U L 484	A	A	U L 460	A	A	A	A	A					
31							A	A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	2	2	7	8	6	5	13	6	6	8	4	1					
MED							268	U L 402	410	428	U L 434	U L 442	U L 440	U L 440	U L 420	408	U L 392	368	U L 316					
U Q										U L 440	U L 468	U L 448	U L 444	U L 444	U L 424	416	396	376						
L Q										424	432	U L 432	434	U L 426	U L 416	408	U L 390	358						

MAY 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
2						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
3						B	A	A	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	UA 220	B					
5						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
6						B	A	A	A	A	A	A	A	R	A	A	A	A	B					
7						B	A	A	A	A	A	A	A	A	A	R	UA 272	A	B					
8						B	UA 216	A	A	A	A	A	A	R	R	UR 336	A	A	B					
9						B	A	UA 260	A	A	A	A	A	A	A	A	A	A	B					
10						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
11	A					B	A	A	A	A	A	A	A	A	UA 332	A	A	A	B					
12						B	A	A	A	A	A	A	A	R	A	UA 304	UR 276	A	B					
13						B	A	A	A	A	A	A	R	328	A	A	UR 284	A	A					
14						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
15						B	C	C	C	A	A	A	A	A	A	A	A	A	B					
16						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
18						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
19						B	A	A	A	A	A	A	A	A	A	UR 340	280	A	B					
20						UA 192	A	A	A	A	A	A	A	A	A	A	280	A	B					
21						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
22						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
23						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
24						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
25						B	UA 228	A	A	A	A	A	A	A	A	R	UR 288	A	A					
26						B	A	A	A	A	A	A	A	C	C	C	A	A	B					
27						B	A	A	C	C	C	C	C	C	A	C	A	A	B					
28						B	A	A	A	A	A	A	C	A	A	A	A	A	B					
29						B	A	A	A	A	A	UA 408	A	UA 372	A	A	A	A	B					
30						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
31						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	2	1				1		2	1	3	6	1						
MED						UA 192	UA 222	UA 260				UA 408		350	UA 332	UR 336	U 280	UA 220						
U Q																UR 340	UR 284							
L Q																UA 304	U 276							

MAY 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 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 52	J A 41	J A 30	J A 25	23	21	J A 34	J A 51	J A 50	J A 56	J A 62	J A 42	J A 78	J A 60	J A 42	J A 62	J A 64	J A 56	J A 23	J A 33	J A 45	J A 110	J A 56	J A 80
2	J A 48	J A 51	J A 48	J A 44	J A 22	J A 23	J A 35	J A 68	J A 46	J A 56	J A 78	J A 82	J A 55	J A 62	J A 71	J A 66	J A 45	J A 39	J A 57	J A 53	J A 45	J A 24	20	J A 82
3	J A 53	J A 40	J A 24	J A 24	E B 16	20	J A 38	J A 43	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	28	J A 28	J A 47	J A 53	J A 53	J A 30	J A 63
5	J A 37	J A 43	J A 44	J A 37	J A 25	J A 27	J A 56	J A 52	J A 57	J A 59	J A 64	J A 64	J A 50	J A 62	J A 210	J A 90	J A 147	J A 86	J A 37	J A 21	J A 33	J A 37	J A 42	J A 26
6	23	E B 15	C	20	E B 16	19	29	J A 43	J A 54	J A 66	J A 82	J A 54	J A 51	G	J A 84	J A 89	J A 90	J A 95	20	J A 26	J A 51	J A 49	J A 43	J A 46
7	J A 24	J A 31	21	J A 20	21	J A 23	J A 39	J A 50	J A 83	J A 76	36	J A 45	J A 58	J A 102	38	G	34	J A 53	J A 37	J A 34	J A 28	J A 66	J A 50	J A 53
8	23	E B 16	22	E B 16	E B 16	E B 15	26	32	J A 57	J A 49	J A 48	J A 47	J A 52	G	G	38	34	J A 64	J A 48	J A 27	J A 43	J A 24	J A 44	J A 29
9	J A 53	J A 54	J A 28	J A 28	22	20	29	34	J A 49	39	J A 73	J A 52	J A 52	J A 47	J A 49	58	J A 79	J A 70	J A 123	J A 26	J A 23	30	25	22
10	J A 30	J A 29	22	E B 15	E B 15	E B 16	29	31	J A 38	36	42	J A 50	J A 55	J A 50	J A 62	34	J A 38	J A 36	J A 27	J A 24	J A 46	88	J A 53	J A 65
11	J A 84	J A 83	J A 61	J A 65	J A 43	J A 29	J A 49	J A 57	J A 49	J A 47	J A 64	J A 67	J A 64	J A 43	37	J A 47	J A 134	J A 122	J A 146	J A 249	J A 75	J A 54	J A 53	J A 87
12	J A 65	J A 63	J A 48	J A 32	J A 27	J A 26	J A 90	J A 115	J A 182	J A 243	J A 94	J A 50	J A 47	G	44	42	G	J A 38	J A 100	J A 124	J A 112	J A 89	J A 62	J A 39
13	J A 32	E B 16	20	24	22	22	J A 47	J A 54	J A 55	J A 47	J A 45	J A 46	G	39	J A 71	J A 49	G	J A 38	J A 42	J A 54	J A 76	J A 26	28	21
14	J A 32	J A 36	J A 25	J A 28	J A 22	J A 32	29	J A 54	J A 50	J A 40	J A 45	J A 50	J A 66	J A 65	J A 83	J A 62	J A 46	J A 37	J A 34	J A 31	J A 31	J A 42	J A 34	J A 31
15	J A 32	J A 25	J A 34	J A 32	J A 32	J A 54	C	C	C	42	J A 45	J A 51	40	J A 49	J A 59	J A 66	J A 79	J A 104	J A 53	J A 102	J A 53	J A 38	25	J A 65
16	J A 48	J A 53	J A 53	J A 48	J A 32	J A 34	J A 56	J A 60	J A 103	J A 172	J A 126	J A 120	J A 51	J A 56	39	J A 50	J A 161	J A 133	J A 129	J A 143	J A 85	J A 109	J A 100	J A 53
17	J A 52	J A 37	J A 40	J A 36	J A 26	20	J A 36	J A 48	J A 84	J A 110	J A 165	J A 159	J A 184	J A 54	J A 54	J A 49	J A 40	J A 55	J A 84	J A 50	52	36	29	J A 84
18	J A 54	J A 67	J A 50	J A 25	E B 16	J A 36	32	J A 43	J A 55	J A 67	J A 96	J A 118	J A 136	J A 106	J A 74	J A 102	J A 54	J A 95	J A 235	J A 110	88	80	79	J A 48
19	J A 81	J A 66	J A 63	J A 50	J A 38	J A 48	J A 52	J A 65	J A 52	J A 75	J A 94	J A 81	J A 77	J A 61	J A 43	G	36	36	J A 32	J A 57	J A 64	J A 70	J A 115	J A 84
20	J A 54	J A 82	J A 65	J A 134	J A 55	25	J A 48	J A 81	J A 66	J A 74	J A 56	J A 78	J A 169	J A 52	J A 52	J A 47	34	J A 41	J A 52	J A 38	J A 54	J A 51	J A 84	J A 51
21	J A 52	J A 52	J A 27	J A 33	J A 58	J A 25	J A 37	J A 58	J A 72	J A 80	J A 116	J A 160	J A 141	J A 68	J A 66	J A 74	J A 140	J A 103	J A 91	J A 98	J A 90	J A 43	J A 51	J A 45
22	J A 31	J A 31	J A 43	J A 33	J A 22	19	J A 40	J A 53	J A 59	J A 66	J A 65	J A 78	J A 80	J A 74	J A 60	40	J A 78	J A 54	J A 42	J A 34	J A 67	J A 103	J A 52	J A 43
23	J A 72	J A 66	J A 64	J A 33	E B 16	21	34	J A 51	J A 81	J A 82	J A 53	J A 63	J A 54	J A 53	38	39	J A 82	J A 89	J A 52	J A 46	J A 52	J A 102	J A 66	J A 52
24	J A 86	J A 35	J A 53	J A 55	J A 38	J A 26	J A 42	J A 52	J A 40	J A 54	J A 62	J A 68	J A 75	J A 50	J A 82	J A 87	J A 50	J A 52	J A 57	J A 29	J A 26	J A 25	J A 33	J A 33
25	J A 34	J A 44	J A 43	J A 29	J A 30	20	30	38	J A 42	J A 64	J A 44	43	J A 45	40	J A 50	G	G	29	J A 29	J A 24	J A 24	22	J A 50	J A 73
26	J A 54	J A 66	J A 30	J A 25	22	29	J A 38	J A 72	J A 49	J A 110	J A 74	J A 127	J A 78	C	C	C	J A 56	J A 39	J A 63	J A 110	J A 68	J A 32	J A 34	J A 75
27	J A 54	J A 63	J A 43	J A 47	J A 30	21	25	34	C	C	C	C	C	C	J A 50	C	J A 71	J A 37	J A 34	J A 50	J A 23	J A 65	J A 54	J A 48
28	J A 46	J A 34	J A 35	J A 37	23	J A 40	J A 48	J A 54	J A 50	J A 51	J A 59	J A 53	C	J A 110	J A 97	J A 136	J A 88	J A 82	J A 80	J A 50	J A 70	J A 53	J A 43	J A 65
29	J A 88	J A 52	J A 54	J A 53	J A 49	J A 27	J A 44	J A 79	J A 73	J A 46	J A 50	49	J A 63	J A 65	J A 63	J A 107	J A 95	J A 80	J A 85	J A 76	J A 88	J A 49	J A 53	J A 66
30	J A 52	J A 36	22	J A 39	J A 26	J A 32	J A 38	J A 59	J A 52	J A 47	J A 54	J A 143	J A 123	40	J A 72	J A 56	J A 84	48	J A 31	J A 81	J A 76	80	J A 144	J A 193
31	J A 89	J A 38	J A 46	J A 50	J A 35	22	J A 44	J A 82	J A 93	J A 72	J A 46	J A 58	J A 110	J A 80	J A 86	J A 80	J A 104	J A 106	J A 74	J A 38	J A 65	J A 44	J A 85	J A 65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	30	30	29	29	27	28	28	28	27	27	28	27	29	30	30	30	30	30	30	30
MED	J A 52	J A 42	J A 43	J A 33	J A 24	24	J A 38	J A 53	J A 55	J A 62	J A 62	J A 60	J A 63	J A 54	J A 60	J A 56	J A 64	J A 54	J A 52	J A 48	J A 53	J A 50	J A 50	J A 53
U Q	J A 54	J A 63	J A 52	J A 47	J A 32	J A 29	J A 48	J A 62	J A 73	J A 76	J A 80	J A 82	J A 80	J A 65	J A 73	J A 80	J A 89	J A 89	J A 84	J A 81	J A 75	J A 80	J A 62	J A 73
L Q	J A 32	J A 34	26	25	E B 22	20	31	43	J A 49	J A 47	J A 47	J A 50	J A 51	43	44	40	37	J A 38	J A 34	J A 31	J A 43	J A 36	J A 34	J A 43

MAY 2018 foEs (0.1MHz)

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MAY 2018 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	20	18	E B 16	E B 16	18	30	38	42	39	45	37	53	38	37	49	40	44	19	21	24	E B 16	21	22
2	E B 16	E B 16	20	22	E B 16	18	29	A A 68	39	48	55	45	48	A A 62	A A 71	59	38	33	46	24	24	E B 16	E B 15	22
3	28	23	E B 16	20	E B 16	18	30	38	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	27	24	44	27	36	19	A A 63
5	23	23	21	24	E B 16	21	A A 56	42	46	A A 59	A A 64	39	44	46	A A 210	48	A A 147	A A 86	33	18	22	22	23	E B 16
6	E B 16	E B 15	C	E B 16	E B 16	17	27	A A 43	A A 54	A A 66	A A 82	41	44	G	50	A A 89	A A 90	37	18	22	18	39	20	22
7	E B 16	E B 16	E B 16	E B 16	E B 16	19	32	40	A A 83	A A 76	34	38	44	A A 102	35	G	32	43	32	25	21	30	23	19
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	25	31	A A 57	A A 49	38	A A 47	38	G	G	36	32	A A 64	39	21	23	18	20	18
9	22	19	E B 16	E B 15	E B 16	18	28	33	A A 49	36	A A 73	A A 52	40	39	42	42	40	44	A A 123	19	18	24	21	E B 16
10	E B 16	E B 16	E B 16	E B 15	E B 15	E B 16	26	28	33	35	38	A A 50	44	39	46	32	32	30	21	16	37	A A 88	25	A A 65
11	A A 84	A A 83	34	22	21	22	36	38	43	40	A A 64	A A 67	A A 64	38	36	44	A A 134	28	26	28	A A 75	26	21	A A 87
12	A A 65	A A 63	A A 48	23	21	23	A A 90	A A 115	A A 182	A A 243	A A 94	A A 50	A A 47	G	41	38	G	30	A A 100	22	20	21	20	E B 16
13	18	E B 16	E B 16	16	E B 16	17	40	A A 54	50	41	42	40	G	37	44	43	G	30	34	48	44	20	19	E B 15
14	16	21	19	19	E B 16	20	28	A A 54	39	36	40	40	51	47	A A 83	56	41	31	30	26	25	16	21	20
15	E B 16	E B 16	E B 15	E B 16	16	A A 54	C	C	C	39	40	44	38	40	52	61	50	A A 104	45	73	32	20	E B 16	18
16	19	A A 53	22	A A 48	19	21	44	46	A A 103	A A 172	A A 126	47	A A 51	39	38	41	50	A A 133	33	47	45	A A 109	A A 100	20
17	28	18	24	20	19	18	30	41	49	A A 110	A A 165	A A 159	A A 184	39	48	44	37	35	A A 84	20	23	23	20	A A 84
18	46	28	32	E B 16	E B 16	23	30	39	42	A A 67	A A 96	A A 118	A A 136	A A 106	A A 74	44	32	49	A A 235	40	40	A A 80	31	26
19	22	A A 66	20	21	19	30	38	39	46	A A 75	A A 94	A A 81	A A 77	A A 61	40	G	33	30	26	35	42	A A 70	37	A A 84
20	35	22	24	24	20	22	43	A A 81	39	38	40	A A 78	A A 169	42	45	40	33	34	30	37	23	20	E B 16	22
21	19	28	E B 16	22	22	20	32	48	52	A A 80	A A 116	A A 160	A A 141	A A 68	A A 66	54	A A 140	A A 103	A A 91	21	22	E B 16	34	28
22	24	18	22	20	E B 16	18	33	40	A A 59	A A 66	50	A A 78	A A 80	A A 74	A A 60	38	42	47	40	27	22	26	24	28
23	A A 72	16	A A 64	20	E B 16	18	33	41	A A 81	A A 82	40	A A 63	40	47	36	37	41	51	47	24	37	22	24	E B 16
24	23	19	20	23	18	21	38	46	36	38	A A 62	A A 68	A A 75	A A 50	A A 82	A A 87	42	45	A A 57	22	23	20	23	20
25	23	20	17	19	18	18	27	36	38	50	38	40	41	38	34	G	G	26	24	18	17	E B 16	21	21
26	E B 15	22	20	E B 16	E B 16	24	32	40	43	A A 110	A A 74	A A 127	A A 78	C	C	C	44	32	A A 63	40	25	21	21	24
27	22	19	18	21	E B 16	18	23	32	C	C	C	C	C	C	45	C	40	31	24	44	E B 16	35	25	22
28	20	22	25	18	E B 16	35	41	48	46	46	A A 59	44	C	A A 110	50	A A 136	A A 88	48	A A 80	46	23	38	23	A A 65
29	A A 88	20	A A 54	20	16	20	41	A A 79	56	37	41	46	A A 63	A A 65	A A 63	A A 107	A A 95	A A 80	A A 85	A A 76	24	24	41	A A 66
30	E B 16	27	E B 15	19	E B 16	28	34	49	42	44	42	A A 143	A A 123	38	A A 72	50	A A 84	44	28	50	32	46	A A 144	20
31	A A 89	17	24	20	20	18	37	A A 82	65	51	41	46	47	A A 80	A A 86	A A 80	A A 104	A A 106	A A 74	22	45	36	A A 85	A A 65
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	30	30	29	29	27	28	28	28	27	27	28	27	29	30	30	30	30	30	30	30
MED	22	20	20	20	E B 16	20	32	41	46	50	52	A A 48	51	42	47	44	41	44	36	26	24	24	22	22
U Q	A A 28	23	24	22	19	22	39	A A 52	A A 57	A A 76	A A 78	A A 78	A A 78	A A 65	A A 68	A A 59	A A 86	A A 51	A A 74	44	37	36	25	A A 63
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	38	42	39	40	42	44	38	39	38	32	31	26	21	22	20	20	E B 19

MAY 2018 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2018 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	16	16	16	14	14	16	15	19	19	20	17	17	17	16	14	13	14	15	16	16	15
2	16	16	16	15	16	15	14	16	16	18	17	17	20	18	15	17	14	14	15	16	16	16	15	15
3	16	16	16	16	16	16	15	16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	15	14	16	15	15	16	16
5	16	15	16	16	16	16	15	16	16	17	17	18	19	19	21	18	17	16	15	15	15	15	15	16
6	16	15	C	16	16	14	14	13	14	16	18	19	18	17	18	17	15	15	13	16	16	16	16	15
7	16	16	16	16	16	16	14	14	16	20	16	20	20	20	18	16	14	14	14	15	16	16	16	15
8	16	16	16	16	16	15	14	16	16	19	19	22	22	18	21	19	17	16	15	14	15	15	15	16
9	16	15	16	15	16	14	15	15	15	18	24	22	20	21	18	14	16	14	16	15	15	16	16	16
10	16	16	16	15	15	16	15	16	18	16	21	22	21	21	16	15	17	13	15	14	16	16	16	16
11	16	16	16	16	16	16	14	16	17	22	21	16	20	21	23	18	16	14	16	15	16	16	16	16
12	15	16	16	15	15	13	14	15	17	18	18	22	21	19	14	15	15	15	16	16	16	16	15	16
13	16	16	16	13	16	15	15	16	17	16	19	18	18	18	15	14	16	15	14	15	16	15	15	16
14	16	15	15	16	16	15	14	15	14	14	18	22	18	19	18	15	16	14	13	15	15	15	16	15
15	16	16	15	16	16	14	C	C	C	16	18	17	22	18	20	18	16	16	15	14	16	16	16	16
16	16	15	14	15	15	15	16	15	17	19	21	21	23	22	18	16	17	16	16	16	16	16	16	16
17	16	16	16	16	16	14	15	15	14	18	22	22	22	22	21	19	16	15	14	16	16	16	15	16
18	16	16	16	16	16	15	14	14	16	18	22	18	17	23	25	16	18	14	16	16	16	15	15	15
19	16	16	16	15	15	15	15	12	15	16	20	22	22	24	19	19	15	13	14	14	15	14	16	15
20	16	16	16	16	15	14	14	15	18	16	20	20	22	19	20	19	16	14	17	16	17	16	16	16
21	16	15	16	15	15	14	14	14	16	16	18	22	18	18	16	18	16	14	15	15	16	16	15	16
22	15	16	16	16	16	14	15	15	16	17	18	22	19	19	20	18	16	14	16	15	16	16	16	16
23	16	16	16	15	16	13	15	15	15	20	22	20	21	23	19	17	17	15	14	15	16	16	16	16
24	16	15	16	16	16	16	15	15	15	16	18	22	20	20	20	18	14	13	16	14	15	15	15	15
25	16	16	15	15	15	14	16	15	15	20	18	17	20	20	22	16	16	14	14	15	16	16	16	14
26	15	16	16	16	16	16	15	19	19	19	22	24	23	C	C	C	18	16	16	16	16	16	16	16
27	16	16	16	16	16	15	16	17	C	C	C	C	C	C	23	C	20	14	14	14	16	16	16	16
28	15	16	16	15	16	15	15	14	20	18	21	22	C	23	22	22	18	16	16	15	16	15	15	16
29	14	16	15	16	15	16	14	17	18	21	22	19	19	22	19	19	17	15	16	15	16	15	16	16
30	16	16	16	16	16	15	14	14	17	20	18	23	21	22	17	22	18	16	15	15	16	16	15	16
31	15	15	15	15	15	15	14	16	17	16	20	22	22	23	19	18	16	15	15	13	14	15	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	30	30	29	29	27	28	28	28	27	27	28	27	29	30	30	30	30	30	30	30
MED	16	16	16	16	16	15	15	15	16	18	19	22	20	20	19	18	16	14	15	15	16	16	16	16
U Q	16	16	16	16	16	16	15	16	17	19	21	22	22	22	21	19	17	15	16	16	16	16	16	16
L Q	16	15	16	15	15	14	14	14	15	16	18	18	19	18	18	16	16	14	14	14	15	15	15	15

MAY 2018 fmin (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 2018 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	329	302	302	306	338	356	400	378	346	355	347	309	305	308	313	335	336	354	354	309	317	310	F	F
2	F	F	320	312	314	369	355	A	353	321	327	342	312	A	A	345	350	345	328	331	332	327	316	F
3	F	F	F	353	346	353	363	364	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	347	345	320	319	383	309	A
5	307	327	326	336	334	377	A	385	350	A	A	345	308	310	A	326	A	A	354	312	327	322	283	311
6	313	306	C	329	295	371	377	A	A	A	A	298	305	257	324	A	A	328	329	323	305	308	312	299
7	311	300	311	319	308	334	359	398	A	A	310	316	310	A	273	319	317	320	317	344	347	314	301	268
8	305	274	288	315	327	357	397	354	A	A	R 277	A	311	268	303	305	287	A	333	340	337	308	305	309
9	F	310	F	F	316	401	394	375	A	292	A	A	275	308	316	331	348	328	A	342	363	315	293	292
10	296	F	309	336	331	339	366	317	319	323	280	A	316	317	304	319	349	346	314	312	341	A	F	A
11	A	A	318	313	278	340	355	342	338	335	A	A	A	295	328	313	A	298	308	330	A	309	304	A
12	A	A	A	335	341	373	A	A	A	A	A	A	A	312	293	295	301	339	A	304	323	347	320	286
13	309	308	314	F	F	386	380	A	353	354	345	288	264	315	319	329	321	326	328	334	325	312	306	309
14	302	292	301	298	352	385	396	A	333	349	295	308	318	317	A	327	314	318	310	327	368	F	F	F
15	F	306	F	F	F	A	C	C	C	371	353	320	314	323	307	321	316	A	322	341	339	F	305	313
16	F	A	F	A	278	361	385	375	A	A	A	319	A	304	291	321	318	A	333	327	344	A	A	F
17	F	F	F	302	291	342	353	354	355	A	A	A	A	292	289	309	331	342	A	334	310	F	F	A
18	321	F	F	F	F	317	337	346	397	A	A	A	A	A	A	315	318	352	A	357	328	A	301	301
19	302	A	F	F	F	294	318	341	337	A	A	A	A	A	312	308	312	306	323	350	365	A	310	A
20	288	F	314	352	F	375	353	A	349	372	334	A	A	309	320	341	339	341	319	325	325	313	308	F
21	312	298	F	F	F	369	340	384	349	A	A	A	A	A	A	335	A	A	A	316	328	328	321	317
22	326	F	335	313	313	316	356	353	A	A	376	A	A	A	A	305	340	335	319	321	327	335	F	F
23	A	326	A	F	F	367	356	348	A	A	349	A	329	304	313	303	323	317	301	332	332	315	F	298
24	316	F	314	F	338	348	356	344	303	375	A	A	A	A	A	A	316	348	A	334	316	328	315	304
25	303	312	308	311	323	370	362	386	326	332	260	302	331	289	308	323	317	345	329	330	318	324	F	328
26	321	321	318	317	F	318	321	332	367	A	A	A	A	C	C	C	331	333	A	320	358	335	F	302
27	F	306	304	F	F	F	384	332	C	C	C	C	C	C	302	C	288	305	322	328	355	308	314	F
28	314	314	309	320	320	339	375	370	371	364	A	310	C	A	326	A	A	312	A	334	295	326	F	A
29	A	284	A	F	309	358	326	A	396	379	293	289	A	A	A	A	A	A	A	A	F	297	F	A
30	330	314	323	313	335	354	338	356	339	357	322	A	A	301	A	331	A	305	330	323	342	355	A	F
31	A	312	325	F	327	336	351	A	366	385	388	294	312	A	A	A	A	A	A	351	320	302	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	18	18	18	21	28	27	21	19	15	15	13	14	17	18	22	21	23	20	29	28	23	17	14
MED	312	307	314	316	323	356	356	354	349	355	327	309	312	308	310	321	318	333	326	330	328	315	308	303
U Q	321	314	320	335	336	370	380	376	366	372	349	320	316	314	319	331	338	345	332	337	343	328	314	311
L Q	303	300	308	312	308	339	351	343	337	332	293	296	305	294	302	309	315	317	318	320	320	309	302	298

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 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	UL 415	A	UL 400	UL 372	A	A	A						
2								A	A	A	A	A	A	A	A	A	A	A	A					
3							A	A	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	L	L					
5							A	A	A	A	A	413	A	A	A	A	A	A						
6								A	A	A	A	A	A	UL 268	A	A	A	A	L					
7								A	A	A	UL 411	UL 346	A	A	UL 358	UL 398	UL 367	A	A					
8							L	L	A	A	UL 404	A	UL 373	UL 482	UL 352	UL 381	356	A	A					
9									A	UL 382	A	A	A	413	A	A	A	A	A					
10							L	UL 386	391	393	UL 378	A	A	UL 386	A	394	UL 400	A						
11	A						A	A	A	A	A	A	A	UL 354	A	A	A	398	A					
12							A	A	A	A	A	A	A	UL 392	A	A	355	A	A					
13							A	A	A	A	A	UL 402	UL 411	UL 390	A	A	UL 377	L	A					
14								A	A	403	A	UL 428	A	A	A	A	A	A	A					
15						A	C	C	C	394	431	A	423	413	A	A	A	A	A					
16							A		A	A	A	A	A	UL 388	UL 411	A	A	A	A					
17							L	A	A	A	A	A	A	UL 388	A	A	A	A	A					
18							L	A		A	A	A	A	A	A	A	UL 380	A	A					
19						A	A	A	A	A	A	A	A	A	A	388	A	A						
20							A	A	A	UL 418	415	A	A	A	A	A	UL 387	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						
23								A	A	A	A	A	411	A	397	397	A	A	A					
24							A	A	388	391	A	A	A	A	A	A	A	A	A					
25							L	A	A	A	UL 427	UL 402	UL 401	UL 419	UL 431	UL 402	383	390	L					
26							A	A	A	A	A	A	A	C	C	C	A	379	A					
27						L	481	UL 395	C	C	C	C	C	C	A	C	A	UL 378	UL 366					
28						A	A	A		A	A	A	C	A	A	A	A	A	A					
29							A	A	A	UL 418	UL 371	A	A	A	A	A	A	A	A					
30							A	A	A	A	UL 409	A	A	UL 422	A	A	A	A	A					
31							A	A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	2	2	7	8	6	5	13	6	6	8	4	1					
MED							481	UL 390	390	394	UL 410	UL 408	UL 411	UL 392	UL 384	396	UL 378	384	UL 366					
U Q										UL 418	421	UL 415	417	UL 416	UL 411	UL 398	UL 385	394						
L Q										391	UL 391	UL 402	UL 387	UL 387	UL 358	388	362	378						

MAY 2018 M(3000)F1 (0.01)

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MAY 2018 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								228	EA274	274	278	354	EA374	314	302	258	238	236						
2								A 266	EA310	EA308	280	EA332	A	A	EA282	252	248	EA308						
3							246	246	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	280	262					
5							A	EA260	EA278	A	A	292	360	322	A	272	A	A						
6								A	A	A	A	378	338	468	EA308	A	A	EA290	286					
7								216	A	A	366	340	338	A	434	304	296	EA278	258					
8							234	280	A	A	428	A	358	476	368	352	366	A	EA256					
9									A	422	A	A	438	326	302	274	248	EA280	A					
10							276	340	352	334	434	A	316	292	308	272	264	248						
11	A						248	276	EA286	EA310	A	A	A	374	304	326	A	334	268					
12							A	A	A	A	A	A	A	364	388	406	356	264	A					
13							EA294	A	EA272	258	276	400	432	348	320	290	270	260	EA240					
14								A	300	280	358	366	EA352	328	A	EA306	292	272	258					
15						A	C	C	C	254	288	318	358	338	EA372	EA332	274	A	EA244					
16							EA236		A	A	A	EA352	A	368	382	318	EA310	A	250					
17							264	268	EA248	A	A	A	A	352	330	304	262	240	A					
18							276	270		A	A	A	A	A	A	302	260	EA252	A					
19						EA328	EA330	278	268	A	A	A	A	A	334	336	318	288						
20							EA290	A	276	262	326	A	A	362	330	288	266	272	EA252					
21							284	EA272	EA284	A	A	A	A	A	A	EA282	A	A	A					
22							262		A	A	EA282	A	A	A	A	322	268	252						
23								EA294	A	A	296	A	320	EA356	346	348	288	EA300	EA278					
24							252	EA296	338	256	A	A	A	A	A	A	EA338	EA270	A					
25							256	244	324	EA320	414	380	338	428	364	302	290	258	272					
26							EA292	280	268	A	A	A	A	C	C	C	278	286	A					
27						248	236	308	C	C	C	C	C	C	EA350	C	360	326	278					
28						EA314	226	EA254		EA274	A	362	C	A	EA330	A	A	EA348	A					
29							EA304	A	EA234	256	386	EA400	A	A	A	A	A	A	A					
30							292	EA288	238	268	342	A	A	388	A	EA316	A	EA352	280					
31							274	A	EA292	246	274	EA406	EA362	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	20	18	17	15	15	13	14	17	18	22	21	23	15					
MED						EA314	U258	269	272	266	326	357	346	356	331	300	274	262	260					
U Q						EA328	EA291	EA288	296	310	386	390	362	381	368	326	314	EA290	278					
L Q						248	247	254	267	256	282	329	338	327	308	282	263	252	EA252					

MAY 2018 h'F2 (KM)

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MAY 2018 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	234	E A 284	E A 278	E B 260	220	200	202	A	A	A	A	202	A	212	E A 248	A	A	A	220	232	E A 238	E B 238	E A 258	E A 236
2	E B 246	E B 236	E A 264	E A 302	E B 236	212	208	A	A	A	A	A	A	A	A	A	A	A	A	226	226	216	226	E A 298
3	E A 298	E A 292	214	206	E B 206	216	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	220	218	E A 290	E A 244	230	E A 238	A
5	E A 292	E A 292	E B 274	E A 270	226	206	A	A	A	A	A	216	A	A	A	A	A	A	226	232	E A 238	E A 236	E A 316	E B 244
6	E B 246	E B 258	C	E B 244	E B 300	206	208	A	A	A	A	A	A	276	A	A	A	A	214	232	232	E A 310	E A 254	E A 282
7	E B 260	E B 256	E B 254	E B 242	E B 240	224	234	A	A	A	204	E A 272	A	A	242	198	222	A	A	222	204	220	E A 270	E A 294
8	E B 234	E B 270	E B 286	E B 240	226	210	200	202	A	A	224	A	222	204	204	E A 248	234	A	A	222	216	E A 258	E A 282	E A 278
9	E A 280	E A 258	E B 296	E B 308	E B 248	208	222	208	A	208	A	A	A	190	A	A	A	A	A	224	204	E A 252	E A 280	E B 290
10	E B 268	E B 246	E B 246	E B 248	E B 246	212	224	206	212	226	214	A	A	214	A	212	204	A	210	228	232	A	E A 310	A
11	A	A	E A 296	E A 282	E A 278	E A 236	A	A	A	A	A	A	A	E A 252	A	A	A	194	A	218	A	E A 272	E A 292	A
12	A	A	A	E A 254	E A 236	E A 240	A	A	A	A	A	A	A	204	A	A	214	A	A	E A 246	E A 238	214	220	E B 254
13	E A 262	E B 242	E B 242	E A 232	226	216	A	A	A	A	A	222	192	206	A	A	202	226	A	E A 250	E A 274	234	E A 258	E B 248
14	E B 248	E A 310	E A 252	E A 260	204	202	200	A	A	196	A	204	A	A	A	A	A	A	A	226	210	E A 256	E A 296	E A 252
15	E B 252	E B 252	E B 250	E B 256	E A 248	A	C	C	C	216	194	A	196	208	A	A	A	A	A	E A 296	208	206	234	E A 244
16	E A 294	A	E A 278	A	E A 330	220	A	214	A	A	A	A	A	218	218	A	A	A	A	E A 260	E A 238	A	A	E A 244
17	E A 288	E A 278	E A 272	E A 288	E A 276	222	222	A	A	A	A	A	A	224	A	A	A	A	A	226	E A 260	E A 266	E A 256	A
18	E A 356	E A 326	E A 322	E B 260	E B 260	E A 236	216	A	216	A	A	A	A	A	A	A	210	A	A	E A 244	E A 292	A	E A 312	E A 310
19	E A 324	A	E A 276	210	216	A	A	A	A	A	A	A	A	A	A	204	A	A	234	216	228	A	E A 298	A
20	E A 366	E A 302	E A 274	230	E A 250	222	A	A	A	204	216	A	A	A	A	A	208	A	A	E A 254	E A 244	218	E B 242	E A 258
21	216	E A 300	252	E A 270	E A 240	216	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 266	222	208	E A 286	E A 306
22	E A 254	E A 266	226	E A 270	E B 260	220	A	228	A	A	A	A	A	A	A	A	A	A	E A 270	E A 236	226	232	228	E A 280
23	A	240	A	E A 300	E B 256	218	228	A	A	A	A	A	208	A	200	206	A	A	A	230	228	224	E A 238	224
24	E A 240	E A 242	E A 276	E A 256	224	220	A	A	226	214	A	A	A	A	A	A	A	A	A	E A 234	230	224	E A 240	E A 272
25	E A 264	E A 268	E A 254	E A 268	E A 250	212	202	A	A	A	200	212	228	192	188	194	214	188	206	212	222	216	222	212
26	E B 232	E A 276	E A 268	224	E B 238	232	A	A	A	A	A	A	A	C	C	C	A	212	A	E A 244	208	214	E A 256	E A 294
27	E A 276	E A 264	E A 290	E A 304	E B 234	202	166	204	C	C	C	C	C	C	A	C	A	212	212	E A 238	200	E A 254	E A 274	E A 284
28	E A 254	E A 258	E A 274	E A 270	E B 244	A	A	A	230	A	A	A	C	A	A	A	A	A	A	E A 252	E A 238	E A 244	230	A
29	A	E A 304	A	E A 280	222	212	A	A	A	200	206	A	A	A	A	A	A	A	A	A	E A 254	246	E A 286	A
30	228	E A 300	212	E A 240	E B 238	214	A	A	A	A	196	A	A	196	A	A	A	A	A	E A 296	228	E A 282	A	228
31	A	E A 252	E A 256	E A 246	E A 256	216	A	A	A	A	A	A	A	A	A	A	A	A	A	206	E A 244	E A 270	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	26	29	30	27	13	6	4	7	8	6	5	13	6	6	8	6	9	29	29	26	27	22
MED	E A 260	E A 267	E A 270	E A 260	E 240	214	208	207	221	208	205	211	208	207	206	203	212	212	216	U 219	U 217	U 221	E A 258	E A 265
U Q	E A 290	E A 292	E A 278	E A 275	256	222	223	214	228	216	215	222	225	221	242	212	218	220	230	E A 251	E A 241	E A 256	E A 286	E A 290
L Q	E 243	E B 252	E 252	241	226	210	201	204	214	200	198	204	194	200	200	198	206	194	211	225	219	218	238	244

MAY 2018 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	112	A	A	A	A	A	A	A	A	A	A	A	B					
2						B	A	A	112	A	A	A	A	A	A	A	A	A	B					
3						B	112	110	C	C	C	C	C	C	C	C	C	C	C					
4						C	C	C	C	C	C	C	C	C	C	C	C	112	B					
5						B	A	A	A	A	A	A	A	112	A	A	A	A	B					
6						B	124	114	A	A	A	A	A	110	A	A	A	A	B					
7						B	A	A	A	A	110	A	A	A	110	110	112	A	B					
8						B	112	112	A	A	A	A	A	110	112	112	112	A	B					
9						B	112	108	A	108	A	A	A	A	108	A	A	A	B					
10						B	112	112	A	A	A	A	A	A	A	A	A	A	B					
11	A					B	A	A	A	A	A	A	A	A	110	A	A	A	B					
12						B	A	A	A	A	A	112	112	110	110	110	110	112	B					
13						B	A	A	A	A	A	A	110	100	A	A	106	110	A					
14						B	110	A	A	A	A	A	A	A	A	A	A	116	A					
15						B	C	C	C	A	A	A	A	A	114	A	A	A	B					
16						B	A	A	A	A	A	A	A	A	114	114	A	A	B					
17						B	114	A	A	A	A	A	A	A	A	A	A	A	B					
18						B	112	A	A	A	A	A	A	A	A	A	A	A	B					
19						B	A	A	A	A	A	A	A	A	A	110	110	110	B					
20						122	108	A	A	A	A	A	A	A	A	A	108	A	B					
21						B	118	A	A	A	A	A	A	A	A	A	A	A	B					
22						B	114	A	A	A	A	A	A	A	A	112	A	A	B					
23						B	114	A	A	A	A	A	A	A	108	108	A	A	B					
24						B	118	A	A	A	A	A	A	A	A	A	A	A	B					
25						B	108	108	A	A	108	A	A	A	A	110	106	108	A					
26						B	A	A	A	A	A	A	A	C	C	C	A	A	B					
27						B	108	118	C	C	C	C	C	C	A	C	A	A	B					
28						B	A	A	A	A	A	A	C	A	A	A	A	102	B					
29						B	A	A	A	A	A	112	A	112	A	A	A	A	B					
30						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
31						B	A	A	A	A	A	A	A	A	A	A	A	A	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	16	7	1	1	2	2	2	6	8	8	7	7						
MED						122	112	112	112	108	109	112	111	110	110	110	110	110						
U Q							114	114						112	113	112	112	112						
L Q							111	108						110	109	110	106	108						

MAY 2018 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	88	88	88	88	88	114	120	104	104	102	96	92	92	96	94	96	100	98	98	98	98	98	104	98
2	96	96	96	92	90	90	100	104	114	100	100	104	102	98	98	96	100	96	92	92	92	98	98	98
3	94	90	86	86	B	120	120	114	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	128	116	94	94	104	102	94
5	90	88	88	88	84	116	100	100	98	96	96	94	92	122	102	92	98	98	98	106	108	104	92	96
6	86	B	C	90	B	128	128	118	100	96	94	94	94	G	100	102	102	92	116	100	100	94	96	92
7	92	92	92	94	100	116	104	104	94	94	120	100	102	102	112	G	116	104	104	96	96	96	96	96
8	96	B	94	B	B	B	122	122	98	98	98	98	100	G	G	142	116	96	96	96	94	94	94	94
9	94	92	92	92	98	112	120	122	106	114	100	100	98	98	118	104	102	102	94	100	98	98	96	96
10	106	94	112	B	B	B	114	120	106	100	100	98	98	92	92	104	102	98	98	98	104	98	96	96
11	88	86	86	84	86	96	104	100	100	98	98	98	98	98	132	108	100	102	92	88	88	88	92	92
12	82	86	76	84	84	84	100	98	92	84	94	114	116	G	122	128	G	120	100	96	100	100	98	92
13	92	B	88	88	94	120	106	104	98	98	98	96	G	138	94	94	G	118	102	98	92	90	90	88
14	86	86	86	86	84	96	112	98	98	98	98	100	96	92	92	90	90	110	102	94	98	104	94	90
15	96	122	102	102	102	100	C	C	C	98	96	92	90	92	112	100	100	90	94	94	94	94	94	94
16	86	84	84	84	80	108	104	96	88	92	84	92	90	94	124	120	100	92	96	96	96	96	94	88
17	88	88	86	86	86	120	110	98	96	92	96	86	90	106	100	100	102	98	92	100	98	96	100	94
18	86	86	86	84	B	110	114	100	98	98	94	92	88	94	94	100	106	102	92	90	94	94	90	90
19	88	88	82	86	104	104	104	100	94	94	94	94	94	90	106	G	134	116	100	100	100	100	100	92
20	92	92	92	92	92	126	112	102	102	102	96	88	84	86	102	102	132	106	102	96	94	88	94	94
21	94	90	88	86	90	92	118	102	96	96	96	96	96	100	102	100	98	98	98	92	94	94	94	94
22	92	94	94	86	86	122	118	104	102	102	102	102	102	102	104	118	102	104	102	102	96	96	96	96
23	92	92	92	94	B	126	120	102	98	96	98	96	98	98	114	116	100	98	96	96	96	96	96	106
24	100	96	92	92	92	94	116	102	102	100	100	106	104	104	104	100	100	98	96	92	90	90	90	92
25	92	92	92	92	92	116	116	114	102	96	110	102	98	98	98	G	G	116	102	100	100	82	92	92
26	102	100	94	88	88	94	96	96	96	92	92	90	92	C	C	C	100	100	92	92	84	86	96	88
27	92	92	92	92	108	108	116	120	C	C	C	C	C	C	108	C	102	102	100	96	94	94	94	94
28	92	90	90	90	96	104	102	96	98	96	94	94	C	88	96	102	100	100	98	92	94	98	98	92
29	88	86	86	88	90	98	100	98	96	96	96	140	100	122	104	98	98	94	94	92	102	102	96	96
30	92	88	88	100	90	116	104	100	96	96	94	86	92	94	100	106	98	98	100	94	94	94	94	92
31	88	86	82	82	80	118	104	94	94	94	94	94	92	100	98	98	98	96	94	94	94	92	92	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	27	29	28	24	28	29	29	27	28	28	28	26	24	27	24	26	30	30	30	30	30	30	30
MED	92	90	88	88	90	111	112	102	98	96	96	96	96	98	102	101	100	99	98	96	95	96	95	94
U Q	94	92	92	92	95	119	118	109	102	99	99	100	100	102	112	107	102	104	102	98	98	98	96	96
L Q	88	86	86	86	86	97	104	98	96	95	94	92	92	93	98	98	100	98	94	92	94	94	94	92

MAY 2018 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2018 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	F2	F2	F2	F1	C2	C4	L3	L3	L2	L2	L2	L2	L2	L2	L3	L3	L4	L2	F5	F5	F3	F7	F6
2	F3	F4	F6	F8	F4	L2	L2	L5	C2	L2	L3	L2	L2	L2	L3	L3	L3	L4	L7	F4	F5	F3	F1	F4
3	F7	F7	F2	F3		C1	C4	C2																
4																		C1	C3	F6	F3	F4	F5	F5
5	F5	F5	F3	F2	F2	C2	L5	L4	L3	L3	L4	L2	L2	CL22	L4	L3	L6	L5	L4	F2	F6	F6	F7	F3
6	F2			F2		C2	C3	C2	L3	L3	L3	L2	L2		L4	L3	L3	L5	C1	F2	F4	F7	F3	F5
7	F5	F3	F2	F1	F1	C3	L3	L3	L3	L3	C1	L2	L2	L3	C2		C2	L3	L5	F4	F3	F7	F6	F4
8	F3		F2				C2	C1	L4	L2	L1	L2	L2			H1	C1	L4	L6	F5	F4	F3	F5	F5
9	F4	F5	F3	F2	F1	C2	C2	C2	L2	C1	L3	L2	L2	L1	C1	L2	L2	L4	L5	F4	F3	F4	F3	F1
10	F2	F3	F1				C2	C2	L2	L1	L1	L2	L2	L2	L2	L1	L2	L2	L1	F3	F6	F6	F5	F8
11	F5	F7	F8	F6	F4	L2	L4	L2	L2	L2	L2	L3	L3	L2	H1	L2	L3	L2	L3	F4	F5	F4	F4	F6
12	F5	F4	F6	F3	F4	L2	LL42	L4	L6	L5	L3	C2	C1		C1	C1		C2	L6	F5	F5	F4	F4	F3
13	F3		F2	F1	F1	C1	L3	L4	L3	L2	L2	L2		H1	L2	L2		C3	L4	F7	F7	F4	F2	F2
14	F2	F4	F2	F2	F1	L2	C2	L4	L2	L1	L1	L2	L2	L3	L3	L3	L3	CL13	L3	F4	F3	F5	F5	F6
15	F2	F1	F1	F2	F4	L7				L2	L1	L2	L1	LC21	C2	L4	L3	L5	L5	F5	F4	F3	F3	F4
16	F2	F5	F4	F3	F3	L3	L4	L4	L5	L4	L4	L2	L2	LL22	CL22	CL22	L4	L5	L5	F6	F7	F7	F6	F4
17	F3	F4	F3	F2	F3	C1	C2	L3	L3	L5	L3	L3	L3	L1	L2	L3	L2	L2	L4	F3	F3	F4	F3	F6
18	F7	F6	F5	F2		L6	C3	L2	L3	L3	L3	L4	L3	L3	L2	L2	L2	L4	L4	F4	F8	F7	F6	F5
19	F4	F5	F5	F6	FF23	L5	L3	L3	L3	L4	L5	L4	L3	L3	L2		H1	C3	L4	F4	F6	F8	F6	F6
20	F5	F5	F5	FF42	F4	C2	C3	L4	L2	L2	L1	L2	L5	L2	L2	L2	H1	L2	L3	FF42	F4	F4	F3	F3
21	F4	F7	F4	F6	F7	L2	C4	L4	L3	L5	L4	L5	L5	L3	L3	L3	L4	L5	L5	F4	F5	F3	F6	F5
22	F3	F3	F4	F5	F1	C1	C3	L3	L3	L3	L3	L3	L2	L3	L3	C1	L3	L4	L4	F6	F4	F3	F6	F8
23	F8	F5	F6	F3		C2	C3	L3	L4	L3	L2	L3	L2	L2	C1	C1	L3	L5	L5	F8	F6	F5	F5	F2
24	F7	F5	F4	F4	F6	L3	C3	L3	L2	L2	L2	L2	L3	L2	L3	L3	L2	L4	L5	F5	F4	F3	F6	F5
25	F6	F5	F6	F5	F4	C2	C3	C3	L2	L3	C1	L1	L1	L1	L2			C1	L4	F3	F3	F2	F3	F4
26	F2	FF24	F2	F2	F1	L2	L4	L2	L2	L3	L2	L2	L2				L2	L2	L3	F3	F4	F3	F3	F4
27	F5	F5	F5	F5	F2	L1	C1	C1							L2		L2	L2	L2	F3	F1	F4	F4	F6
28	F2	F4	F4	F4	F2	L4	L4	L2	L2	L2	L3	L2		L4	L4	L3	L3	L4	L7	F6	F3	F5	F5	F8
29	F5	F6	F6	F4	F3	L2	L3	L4	L3	L2	L2	HL11	L3	CL22	L3	L5	L5	L6	L6	F7	F4	F8	F8	F6
30	F3	F8	F2	F2	F3	C3	L3	L4	L3	L2	L2	L3	L3	L2	L3	L2	L3	L3	L3	F4	F6	F7	F6	F5
31	F6	F3	F3	F4	F3	C2	L3	L5	L4	L3	L2	L2	L3	L4	L3	L5	L4	L4	L5	F6	F7	F8	F8	F8
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2018 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

MAY 2018 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	40	38	38	37	F	F	37	47	57	59	56	56	63	77	90	93	87	64	A	54	55	52	46	F
2	42	38	36	31	28	A	40	50	53	A	A	A	68	75	81	80	72	59	54	58	60	58	47	47
3	44	42	38	34	23	23	38	53	53	60	59	62	56	A	81	79	76	70	60	54	59	57	A	F
4	F	F	F	F	26	A	38	46	62	A	A	58	69	A	78	75	70	60	A	50	58	50	42	36
5	F	F	32	29	29	27	44	44	A	A	A	56	57	65	81	91	88	60	50	56	A	46	43	40
6	40	38	34	32	35	F	38	42	43	A	A	A	A	59	60	64	58	52	50	60	A	44	44	A
7	38	39	38	36	34	39	50	48	47	47	54	56	58	58	62	78	73	76	81	86	71	A	A	A
8	37	36	32	A	F	F	44	46	46	54	A	52	59	60	57	59	60	66	75	78	67	48	44	41
9	41	38	F	32	F	30	40	45	51	56	51	52	58	70	78	86	74	64	59	R 62	64	42	40	38
10	42	42	F	F	F	27	45	53	53	53	A	60	71	80	84	85	90	78	67	71	71	A	A	41
11	38	37	A	F	F	32	57	A	54	52	48	A	58	62	63	70	69	69	A	76	A	42	40	38
12	37	34	32	32	30	30	42	48	57	A	44	45	47	52	52	51	52	52	46	A	58	A	A	35
13	A	36	38	42	37	37	46	49	47	A	52	51	56	58	66	79	84	76	A	60	64	A	47	A
14	F	41	41	40	38	28	46	47	53	53	A	58	62	62	65	67	76	83	84	80	68	44	38	F
15	F	37	F	F	29	F	48	A	62	58	57	59	A	63	70	82	87	88	85	A	A	A	A	44
16	42	38	A	F	F	29	55	67	A	A	A	A	A	A	A	69	82	82	74	71	A	A	A	A
17	A	A	A	F	F	F	44	61	59	45	A	A	57	A	A	91	98	85	58	48	54	49	48	F
18	F	38	37	33	31	F	A	A	A	46	A	50	A	A	A	72	76	65	59	59	A	51	A	A
19	A	A	A	F	A	26	42	54	54	A	A	A	50	58	61	64	76	76	80	57	48	47	A	37
20	A	F	F	F	29	30	47	47	50	48	49	54	54	54	60	68	64	60	52	56	59	59	58	47
21	46	42	F	F	F	F	44	47	51	A	52	52	A	A	A	63	62	63	66	62	63	53	41	F
22	F	F	F	31	F	F	51	49	A	47	54	A	A	A	A	63	76	74	66	66	74	73	A	32
23	A	A	F	A	A	F	42	A	A	A	A	A	A	A	A	A	A	A	A	76	77	72	47	44
24	44	42	F	F	F	F	43	49	64	A	A	A	51	A	A	A	66	A	A	54	54	50	48	46
25	42	38	35	32	31	A	45	45	A	54	52	A	A	52	52	58	69	60	56	56	58	60	53	52
26	49	42	38	38	A	24	39	50	61	55	A	A	A	50	55	64	64	62	62	59	63	53	A	A
27	F	F	A	F	F	F	43	55	50	57	50	52	48	A	50	52	61	66	66	69	A	53	48	F
28	42	F	F	F	F	36	48	58	59	A	52	53	A	54	57	62	62	62	71	72	67	60	50	46
29	F	F	39	F	F	31	A	58	68	A	A	A	A	56	64	A	A	A	A	75	74	62	53	F
30	A	F	F	F	F	F	47	54	A	A	A	A	51	54	56	61	63	A	A	A	A	A	F	A
31	A	A	A	F	F	F	A	A	A	A	A	A	56	59	A	48	57	67	78	79	61	53	46	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	19	14	14	13	15	28	26	23	16	14	17	20	21	23	28	29	27	23	28	23	24	20	16
MED	42	38	38	32	30	30	44	49	53	54	52	54	57	59	63	68	72	66	66	61	63	52	46	41
U Q	43	42	38	37	34	32	47	54	59	56	54	58	60	64	78	80	79	76	75	74	68	58	48	46
L Q	39	37	34	32	28	27	41	47	50	48	50	52	52	54	57	62	62	60	56	56	58	48	42	38

MAY 2018 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	UL 448	A	452	A	432	UL 400	A	A					
2								A	A	A	A	A	A	UL 448	A	A	400	UL 376		A				
3								A	A	A	A	A	A	A	A	A	UL 400	L						
4									A	A	A	UL 444	A	A	420	408	408	A	A	A				
5								A	A	A	A	444	440	UL 440	A	420	392	L	L					
6								UL 416	UL 408	A	A	A	A	432	424	A	UL 400	UL 356	L					
7									UL 432	420	432	A	432	424	428	416	396	388	A					
8								L	A	A	A	UL 436	436	432	428	412	408	372	L					
9								A	UL 412	A	A	432	432	A	432	420	400	A	A	A				
10									A	A	A	A	452	440	440	412	408	384	A	A				
11								A	A	UL 456	UL 460	A	A	440	440	420	396	A	A	A				
12								A	A	A	UL 412	UL 420	UL 428	A	A	408	400	376	A	A				
13							L		A	A	428	UL 456	A	440	UL 436	404	392		A					
14									A	A	A	A	444	432	A	A	A	380						
15							A	A	A	A	A	A	A	UL 452	436	420	424		A	A				
16									A	A	A	A	A	A	A	UL 436	A	A	A					
17								A		UL 392	A		A	A	A	A	A	A	A	A				
18							A	A	A	A	A	A	A	A	A	420	A	A	A					A
19							L	UL 380	A	A	A	A	A	A	A	424	408	A	L					
20								A	UL 436	A	UL 424	UL 432	UL 440	448	A	424	404	388	L					
21										A	432	A	A	A	A	A	A	A	A	A				
22								L	A	UL 420	420	A	A	A	A	A	A	A	A	A				
23								A	A	A	A	A	A	A	A	A	A	A	A	A				
24								A	A	A	A	A	A	A	A	A	A	A	A	A				
25							L		A	A	A	A	A	UL 452	UL 436	A	A	388	UL 356					
26							A	UL 368	A	A	A	A	A	A	436	424	A	A	L					
27									A	A	UL 448	448	UL 440	A	UL 436	A	400	A	A	A				
28								A	L	A	A	UL 444	A	460	A	420	400	A	A					
29							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
30							A	A	A	A	A	A	UL 448	UL 444	A	A	A	A	A	A				
31							A	A	A	A	A	A	A	A	A	UL 428	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	4	4	8	10	10	15	12	18	18	9	1					
MED								UL 380	UL 422	UL 420	430	UL 444	440	440	436	420	400	380	UL 356					
U Q								UL 416	UL 434	UL 438	UL 440	UL 448	444	452	436	424	408	388						
L Q								UL 368	UL 410	406	UL 422	UL 432	432	432	428	412	400	374						

MAY 2018 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	UA 244	A	A	A	A	A	A	A	A	A	A	A	B				
2							B	A	A	A	A	A	A	A	A	A	UA 292	UR 276	A	B				
3							B	A	A	A	A	A	A	A	A	A	A	A	A	B				
4							B	UA 240	A	A	A	A	A	A	A	328	UA 304	A	A	B				
5							B	A	A	A	A	UR 352	UA 352	352	A	A	UA 296	A	A	B				
6							B	A	A	A	A	A	A	A	UA 328	A	A	UR 252	A	B				
7							B	A	A	A	A	A	A	A	A	A	UR 308	UA 256	A	B				
8		A					B	A	A	A	A	A	A	A	A	UR 332	A	A	B	B				
9							B	A	UA 288	A	A	A	A	A	A	UA 324	A	A	B	B				
10							A	UA 236	A	A	A	A	UR 360	UR 352	A	A	A	A	B	B				
11							B	A	A	A	A	A	A	A	A	A	UA 308	A	B	B				
12							B	A	A	A	A	A	A	A	A	UR 324	UR 288	A	A	B				
13							B	A	A	A	A	A	A	A	A	A	A	A	B	B				
14							B	A	A	A	A	A	A	A	A	A	A	A	B	B				
15							B	A	A	A	A	A	A	A	A	UA 332	A	A	B	B				
16							B	A	A	A	A	A	A	A	A	UA 324	UA 300	A	A	B				
17							B	A	A	A	A		A	A	A	A	A	A	B	B				
18							A	A	A	A	A	A	A	A	A	A	A	A	A	B				A
19							A	A	A	A	A	A	A	A	A	A	A	A	UA 212	B				
20							A	A	A	A	A	A	A	A	A	A	UA 284	UR 252	B	B				
21							UR 216	UA 240	A	A	A	A	A	A	A	A	A	A	A	B				
22							A 184	A	A	A	A	A	A	A	A	A	A	A	A	B				
23							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
24							A	A	A	A	A	A	UA 360	A	A	A	A	A	A	B			A	
25							B	UA 248	A	A	A	A	A	A	A	A	A	A	A	B				
26							B	A	A	A	A	A	A	A	A	UA 320	A	A	A	B				
27							B	A	A	A	A	A	A	A	A	A	A	A	A	B				
28							A	A	A	A	A	A	A	A	A	A	UA 304	A	A	B				
29							B	A	A	A	A	A	A	A	A	A	A	A	A	B				
30							A	A	A	A	A	A	A	UR 352	A	A	A	A	A	B				
31							A	A	A	A	A	A	A	A	A	A	A	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	5	1			1	3	3	1	7	9	4	1					
MED							200	UA 240	UA 288			UR 352	UA 360	UR 352	UA 328	UA 324	UA 300	UR 254	UA 212					
U Q								UA 246					UR 360	UR 352		U 332	UA 306	U 266						
L Q								UA 238					UA 352	352		UA 324	UA 290	UR 252						

MAY 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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 66	J A 50	23	22	20	E B 16	J A 32	J A 40	36	J A 50	J A 51	37	J A 59	J A 82	J A 110	J A 44	J A 53	68	J A 66	J A 34	J A 51	40	E B 16	J A 35
2	J A 49	J A 43	J A 36	J A 36	J A 52	J A 52	J A 30	J A 47	J A 56	J A 82	J A 77	J A 82	J A 66	J A 43	J A 56	J A 54	36	G	J A 33	J A 62	J A 54	J A 44	J A 38	J A 38
3	24	J A 22	J A 30	J A 30	E B 16	25	25	34	J A 45	J A 56	J A 61	J A 65	J A 61	J A 82	J A 102	J A 71	J A 40	J A 38	J A 38	J A 34	J A 110	J A 53	J A 66	J A 49
4	J A 52	J A 35	J A 44	J A 44	J A 35	J A 34	J A 32	J A 38	J A 59	J A 135	J A 78	J A 73	J A 64	J A 100	J A 44	39	39	J A 51	J A 63	J A 37	J A 34	J A 51	J A 39	J A 39
5	J A 34	J A 30	J A 33	24	23	E B 16	22	J A 47	J A 75	J A 110	J A 104	G	40	42	J A 48	38	38	J A 47	J A 34	J A 35	J A 35	J A 37	J A 30	J A 28
6	J A 53	J A 42	J A 41	22	J A 22	E B 16	J A 24	J A 38	J A 45	J A 54	J A 58	J A 49	J A 70	40	43	J A 47	41	32	J A 34	J A 34	J A 67	J A 70	J A 50	J A 77
7	J A 103	J A 97	E B 16	J A 44	J A 54	J A 28	J A 34	J A 40	J A 66	J A 68	J A 44	J A 46	38	38	J A 40	J A 38	G	G	J A 40	J A 40	J A 54	J A 88	J A 89	J A 50
8	J A 44	J A 43	J A 62	J A 55	J A 52	25	20	30	J A 49	J A 50	J A 52	J A 52	J A 46	J A 45	J A 50	G	36	J A 34	J A 31	J A 26	J A 41	J A 32	J A 26	E B 16
9	J A 66	J A 44	J A 33	J A 29	J A 22	J A 22	26	J A 46	35	J A 55	J A 46	J A 46	J A 72	J A 79	J A 48	40	J A 43	J A 61	J A 48	J A 55	J A 34	J A 52	J A 28	J A 26
10	J A 22	J A 22	J A 38	J A 24	J A 26	E B 16	26	J A 39	J A 45	J A 52	J A 81	J A 65	G	G	38	J A 42	J A 38	J A 40	J A 63	J A 51	J A 35	J A 72	J A 68	J A 32
11	J A 68	J A 53	J A 88	J A 39	J A 34	J A 32	J A 32	J A 53	J A 48	J A 76	J A 59	J A 86	J A 67	J A 46	J A 67	37	36	J A 56	J A 117	J A 154	J A 212	J A 79	J A 62	J A 52
12	J A 33	E B 16	J A 26	J A 27	J A 24	J A 22	J A 28	J A 48	J A 50	J A 140	37	J A 50	43	J A 52	J A 52	G	G	30	J A 43	J A 65	J A 83	J A 75	J A 207	J A 85
13	J A 86	J A 53	J A 34	J A 34	J A 23	J A 30	22	J A 34	J A 48	J A 61	J A 48	J A 79	J A 73	J A 51	J A 50	J A 44	J A 49	J A 84	J A 89	J A 99	J A 35	J A 72	J A 35	J A 64
14	J A 30	J A 41	J A 34	J A 32	J A 29	J A 45	J A 30	J A 43	J A 54	J A 54	J A 71	J A 81	J A 45	J A 42	J A 50	J A 73	J A 52	J A 42	J A 39	J A 37	J A 40	J A 29	22	J A 65
15	J A 40	J A 25	J A 36	J A 33	J A 30	J A 34	J A 51	J A 76	J A 55	J A 53	J A 54	J A 64	J A 62	J A 60	40	38	J A 56	J A 59	J A 42	J A 89	J A 110	J A 83	J A 109	J A 64
16	J A 40	J A 26	J A 52	J A 50	J A 33	E B 16	J A 35	J A 54	J A 106	J A 101	J A 91	J A 125	J A 130	J A 110	J A 86	37	J A 57	J A 80	J A 64	J A 124	J A 148	J A 75	J A 52	J A 49
17	J A 84	J A 85	J A 53	J A 44	J A 24	J A 22	J A 34	J A 49	J A 54	J A 52	J A 56	J A 136	J A 52	J A 77	J A 101	J A 73	J A 76	J A 81	J A 72	J A 64	J A 56	J A 79	J A 54	J A 54
18	J A 46	J A 53	J A 52	J A 34	J A 28	J A 28	J A 45	J A 54	J A 58	J A 47	J A 64	J A 77	J A 97	J A 105	J A 78	40	J A 50	J A 50	J A 46	E B 15	J A 64	J A 79	J A 76	J A 88
19	J A 106	J A 89	J A 53	J A 53	J A 67	J A 40	J A 30	J A 52	J A 51	J A 89	J A 155	J A 153	J A 55	J A 147	J A 59	39	37	J A 90	J A 42	J A 53	J A 53	J A 53	J A 64	J A 54
20	J A 67	J A 37	J A 41	J A 52	J A 37	J A 28	J A 25	J A 38	J A 46	J A 48	J A 50	J A 50	J A 48	J A 43	J A 50	J A 37	33	32	26	J A 33	J A 27	23	22	J A 51
21	24	J A 39	J A 43	J A 52	J A 49	J A 28	J A 28	J A 30	J A 49	J A 53	J A 77	J A 61	J A 85	J A 86	J A 101	J A 66	J A 59	J A 64	J A 47	J A 36	J A 23	J A 40	J A 49	J A 29
22	J A 33	J A 52	J A 81	J A 28	E B 16	E B 16	24	37	J A 74	J A 50	J A 72	J A 155	J A 111	J A 66	J A 86	J A 58	J A 60	J A 74	J A 54	J A 56	J A 57	J A 50	J A 75	J A 55
23	J A 55	J A 45	J A 50	J A 66	J A 65	J A 34	27	J A 62	J A 73	J A 154	J A 106	J A 88	J A 108	J A 87	J A 71	J A 153	J A 72	J A 75	J A 102	J A 84	J A 29	J A 24	J A 21	J A 34
24	J A 64	J A 80	J A 34	J A 23	J A 64	J A 50	J A 38	36	J A 63	J A 102	J A 82	J A 62	J A 50	J A 74	J A 64	J A 63	J A 64	J A 85	J A 85	J A 55	J A 36	J A 36	J A 43	J A 25
25	J A 40	24	J A 48	J A 53	J A 24	J A 32	J A 27	J A 34	J A 52	J A 49	J A 54	J A 76	J A 106	J A 74	J A 50	J A 60	J A 65	J A 39	J A 37	J A 38	J A 49	J A 34	J A 50	J A 35
26	J A 27	J A 37	24	J A 30	J A 44	J A 30	J A 40	J A 32	J A 50	J A 48	J A 155	J A 113	J A 145	J A 45	J A 49	38	J A 103	J A 108	J A 34	J A 37	J A 32	J A 53	J A 54	J A 54
27	J A 48	J A 25	J A 43	J A 52	J A 34	J A 26	J A 26	J A 34	J A 51	J A 50	J A 50	J A 43	J A 44	J A 54	J A 53	J A 58	J A 51	J A 85	J A 45	J A 59	J A 38	J A 42	J A 54	J A 52
28	J A 44	J A 44	J A 52	J A 40	J A 42	J A 34	J A 37	J A 53	J A 110	J A 85	J A 65	J A 53	J A 78	J A 42	J A 46	J A 46	J A 41	J A 64	J A 53	J A 48	J A 52	J A 50	J A 48	J A 43
29	J A 73	J A 78	J A 54	J A 43	J A 42	J A 37	J A 50	J A 54	J A 50	J A 64	J A 58	J A 63	J A 104	J A 53	J A 60	J A 65	J A 153	J A 137	J A 127	J A 110	J A 78	J A 46	J A 51	J A 53
30	J A 53	J A 47	J A 53	J A 43	J A 45	J A 38	J A 44	J A 52	J A 84	J A 83	J A 60	J A 52	44	42	44	J A 54	J A 60	J A 103	J A 135	J A 94	J A 68	J A 61	J A 39	J A 86
31	J A 52	J A 88	J A 62	J A 63	J A 34	J A 22	J A 52	J A 72	J A 84	J A 111	J A 108	J A 102	J A 62	J A 65	J A 65	J A 49	J A 48	J A 67	J A 52	J A 64	J A 46	J A 53	J A 53	J A 56
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 49	J A 43	J A 43	J A 39	J A 34	J A 28	J A 30	J A 43	J A 52	J A 56	J A 61	J A 65	J A 62	J A 54	J A 52	J A 44	J A 49	J A 61	J A 47	J A 53	J A 51	J A 52	J A 50	J A 51
U Q	J A 66	J A 53	J A 53	J A 52	J A 45	J A 34	J A 37	J A 53	J A 66	J A 89	J A 81	J A 86	J A 85	J A 82	J A 71	J A 60	J A 60	J A 81	J A 66	J A 65	J A 67	J A 72	J A 64	J A 56
L Q	J A 34	J A 30	J A 34	J A 29	24	E B 22	26	36	J A 48	J A 50	J A 52	J A 50	46	43	48	38	38	39	J A 38	J A 36	J A 35	J A 40	35	J A 35

MAY 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	36	34	43	43	37	45	39	52	38	34	54	A A 66	28	E B 16	23	E B 16	21
2	E B 16	19	20	18	18	A A 52	24	40	50	A A 82	A A 77	A A 82	62	40	50	50	34	G	26	50	31	23	22	18
3	E B 16	E B 16	20	20	E B 16	E B 16	22	31	37	50	54	56	50	A A 82	46	55	34	30	22	27	27	40	A A 66	22
4	E B 16	16	20	20	20	A A 34	22	33	52	A A 135	A A 78	39	47	A A 100	36	36	36	36	A A 63	29	E B 16	33	24	26
5	19	E B 16	E B 16	E B 16	E B 16	E B 16	21	35	A A 75	A A 110	A A 104	G	38	39	41	36	35	30	24	27	A A 35	24	E B 16	21
6	28	22	18	E B 16	E B 16	E B 16	20	30	36	A A 54	A A 58	A A 49	A A 70	39	39	41	32	29	26	31	A A 67	40	30	A A 77
7	E B 16	18	E B 16	18	21	E B 16	21	34	33	35	37	41	36	36	36	32	G	G	31	27	44	A A 88	A A 89	A A 50
8	25	E B 20	18	A A 55	22	E B 16	19	27	41	44	A A 52	38	39	37	38	G	32	27	22	19	33	26	E B 16	E B 16
9	21	E B 16	E B 16	21	E B 16	E B 16	24	42	32	51	41	39	37	46	35	35	35	47	28	50	32	35	E B 16	E B 16
10	E B 16	E B 15	E B 15	17	E B 16	E B 16	22	31	41	49	A A 81	43	G	G	36	35	31	28	53	45	20	A A 72	A A 68	20
11	E B 16	21	A A 88	20	20	18	26	A A 53	40	37	38	A A 86	45	37	37	34	34	41	A A 117	65	A A 212	24	20	27
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	42	41	A A 140	35	40	41	45	47	G	G	28	27	A A 65	25	A A 75	A A 207	27
13	A A 86	23	20	20	E B 16	E B 16	20	29	40	A A 61	36	41	44	40	38	34	34	28	A A 89	26	19	A A 72	27	A A 64
14	16	18	23	24	21	19	26	34	45	47	A A 71	44	38	36	44	43	40	32	29	23	34	20	E B 16	E B 16
15	17	E B 16	20	18	16	22	45	A A 76	48	46	44	49	A A 62	38	40	38	37	53	34	A A 89	A A 110	A A 83	A A 109	16
16	E B 16	E B 16	A A 52	23	19	E B 16	20	48	A A 106	A A 101	A A 91	A A 125	A A 130	A A 110	A A 86	36	41	43	38	42	A A 148	A A 75	A A 52	A A 49
17	A A 84	A A 85	A A 53	E B 16	E B 16	E B 15	25	39	46	36	A A 56	A A 136	45	A A 77	A A 101	58	58	75	35	42	24	20	26	32
18	16	20	E B 16	22	E B 16	E B 16	A A 45	A A 54	A A 58	38	A A 64	45	A A 97	A A 105	A A 78	37	39	42	31	E B 15	A A 64	42	A A 76	A A 88
19	A A 106	A A 89	A A 53	22	A A 67	22	22	32	40	A A 89	A A 155	A A 153	43	43	52	39	35	37	26	27	20	29	A A 64	25
20	A A 67	21	23	18	18	E B 16	23	29	34	41	38	37	41	38	45	34	31	30	24	18	22	19	18	38
21	E B 16	24	26	E B 16	21	E B 16	G 17	28	38	A A 53	38	39	A A 85	A A 86	A A 101	58	46	50	41	25	E B 16	29	18	E B 16
22	21	22	E B 16	E B 15	E B 16	E B 16	20	28	A A 74	38	37	A A 155	A A 111	A A 66	A A 86	52	53	69	50	54	53	44	A A 75	E B 16
23	A A 55	A A 45	E B 16	A A 66	A A 65	18	24	A A 62	A A 73	A A 154	A A 106	A A 88	A A 108	A A 87	A A 71	A A 153	A A 72	A A 75	A A 102	64	20	E B 16	E B 16	20
24	21	E B 16	E B 16	E B 16	22	22	21	35	52	A A 102	A A 82	A A 62	43	A A 74	A A 64	A A 63	57	A A 85	A A 85	41	28	28	21	E B 16
25	17	E B 16	E B 16	E B 16	18	A A 32	22	31	A A 52	43	42	A A 76	A A 106	40	39	55	41	32	26	24	45	22	28	24
26	E B 16	20	E B 16	20	A A 44	21	32	29	40	40	A A 155	A A 113	A A 145	41	38	37	52	57	28	28	21	E B 16	A A 54	A A 54
27	23	E B 16	A A 43	E B 16	15	17	24	31	40	42	40	40	41	A A 54	42	45	36	39	36	56	A A 38	21	28	30
28	32	21	E B 16	19	19	19	29	34	32	A A 85	44	40	A A 78	40	42	35	37	56	46	43	46	23	24	32
29	26	24	22	26	18	22	A A 50	50	39	A A 64	A A 58	A A 63	A A 104	43	55	A A 65	A A 153	A A 137	A A 127	62	48	21	E B 16	38
30	A A 53	28	28	20	18	E B 16	37	45	A A 84	A A 83	A A 60	A A 52	42	42	43	48	56	A A 103	A A 135	A A 94	A A 68	A A 61	29	A A 86
31	A A 52	A A 88	A A 62	19	E B 16	E B 16	A A 52	A A 72	A A 84	A A 111	A A 108	A A 102	52	52	A A 65	38	40	48	40	59	38	43	40	A A 56
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	19	20	20	19	18	E B 16	23	34	41	51	A A 56	49	45	42	44	38	36	41	35	41	33	29	27	26
U Q	A A 32	23	A A 26	21	21	21	28	A A 45	A A 52	A A 89	A A 81	A A 86	A A 85	A A 74	A A 64	52	46	56	A A 63	56	A A 48	A A 44	A A 64	A A 49
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	31	38	42	40	40	41	39	38	35	34	30	26	27	21	22	E B 18	E B 18

MAY 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	15	16	18	19	19	24	22	22	18	18	18	16	16	16	16	16	16
2	16	16	16	16	16	16	16	17	16	16	16	19	20	24	20	18	22	15	15	15	15	15	16	16
3	16	16	16	16	16	16	18	16	16	19	20	18	18	19	19	19	21	15	18	16	16	16	16	16
4	16	16	16	16	15	16	15	16	16	20	17	19	20	20	15	15	15	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	15	15	17	21	24	22	20	20	21	17	17	15	16	16	16	16	16
6	16	16	16	16	16	16	15	16	15	16	18	18	18	18	18	21	16	16	16	16	16	16	16	16
7	16	16	16	16	16	16	16	13	15	19	22	22	22	22	20	16	16	16	15	15	16	16	16	16
8	16	20	16	16	16	16	16	13	13	16	18	18	20	20	21	21	17	16	16	14	16	15	16	16
9	16	16	16	16	16	16	16	13	15	17	20	20	22	24	18	21	20	15	15	15	16	16	16	16
10	16	15	16	16	16	16	15	16	16	16	19	20	22	21	20	19	19	17	14	14	16	16	16	16
11	16	16	16	16	15	16	14	14	14	14	22	21	21	21	23	20	15	15	15	15	15	15	15	15
12	16	16	16	16	16	16	15	15	17	17	18	18	18	22	20	19	19	17	16	16	15	15	15	16
13	16	16	15	16	16	16	15	16	16	20	18	19	20	20	27	19	19	16	13	16	16	16	16	16
14	16	15	14	14	16	15	14	14	16	16	15	17	21	21	21	17	15	15	14	15	16	16	16	15
15	16	16	16	16	16	15	16	16	16	19	19	20	22	22	18	18	18	18	14	16	16	16	16	16
16	16	16	15	15	15	16	16	13	16	16	18	22	18	19	21	18	16	16	15	15	15	16	15	15
17	16	15	16	16	16	15	15	13	13	15	17	19	20	20	19	19	16	16	14	15	16	16	16	16
18	16	15	16	16	16	16	15	14	14	17	16	20	20	21	21	21	18	15	15	15	14	15	16	14
19	16	16	15	14	16	15	15	16	16	15	22	22	21	21	19	17	15	12	12	14	16	15	16	16
20	16	16	16	16	16	16	16	14	14	14	16	21	21	20	16	15	15	14	14	16	15	15	16	15
21	16	16	16	16	15	15	14	14	14	14	20	19	19	19	19	17	16	16	16	16	16	15	15	16
22	16	16	16	15	16	16	16	15	15	16	18	18	20	21	20	20	16	16	15	15	14	15	14	16
23	16	16	16	16	16	16	16	15	15	16	21	21	23	21	21	18	19	17	16	15	16	16	16	16
24	16	16	16	16	16	15	16	15	15	16	21	20	22	20	21	21	16	16	16	15	15	15	16	16
25	16	16	16	16	16	15	16	14	14	14	17	17	20	15	18	18	16	15	15	15	16	15	15	16
26	16	16	16	16	16	16	16	15	16	17	20	21	22	19	19	18	17	15	15	15	15	16	16	16
27	16	16	16	16	15	16	16	16	16	16	17	20	22	21	21	19	16	16	14	16	15	16	16	16
28	16	16	16	16	16	16	16	16	15	14	17	18	22	22	21	20	19	16	15	15	16	16	16	15
29	16	16	16	16	15	16	15	15	14	16	18	22	20	18	21	21	18	16	14	15	15	15	16	16
30	16	15	15	16	16	16	15	15	15	15	18	18	18	18	19	19	17	17	16	16	16	17	16	15
31	16	16	16	16	16	16	15	15	15	18	19	20	20	20	20	20	18	15	15	16	15	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	15	15	16	18	20	20	20	20	19	17	16	15	15	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	17	20	21	22	21	21	20	19	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	15	14	14	15	17	18	20	19	19	18	16	15	14	15	15	15	16	16

MAY 2018 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	310	317	317	344	F	F	375	356	379	365	345	303	280	296	321	324	345	352	A	328	318	334	312	F
2	315	320	318	367	311	A	379	375	341	A	A	A	286	311	314	337	346	340	342	318	337	322	325	307
3	321	325	350	377	358	331	351	355	366	373	370	325	295	A	331	321	312	341	337	336	333	370	A	F
4	F	F	F	F	325	A	356	342	376	A	A	298	316	A	335	326	331	352	A	325	342	347	340	306
5	F	F	332	323	353	374	376	377	A	A	A	324	300	294	306	334	369	358	343	344	A	322	294	289
6	310	297	320	332	354	F	384	339	330	A	A	A	A	287	324	328	328	324	328	345	A	320	299	A
7	307	313	302	319	296	341	373	388	310	279	314	309	310	310	282	306	302	308	335	347	351	A	A	A
8	309	303	309	A	F	F	377	330	337	343	A	285	299	319	312	298	307	298	324	329	342	315	295	303
9	317	318	F	303	F	329	353	328	343	342	330	284	299	310	314	337	340	341	334	R 331	347	344	292	293
10	309	310	F	F	F	296	358	357	339	345	A	297	289	304	313	323	330	322	320	323	357	A	A	301
11	314	312	A	F	F	290	375	A	379	337	327	A	317	321	308	308	303	307	A	349	A	294	306	322
12	308	292	307	344	320	318	353	331	345	A	300	290	266	300	301	288	319	326	320	A	341	A	A	307
13	A	311	329	334	343	344	357	348	331	A	332	270	309	301	304	310	347	354	A	325	345	A	315	A
14	F	289	310	316	360	345	394	380	358	351	A	325	326	306	313	307	309	327	334	338	370	313	291	F
15	F	295	F	F	313	F	367	A	356	339	367	312	A	297	305	305	323	320	339	A	A	A	A	316
16	295	296	A	F	F	338	363	387	A	A	A	A	A	A	A	295	314	335	340	350	A	A	A	A
17	A	A	A	F	F	F	342	366	402	370	A	A	297	A	A	310	343	369	358	307	317	323	313	F
18	F	312	285	307	314	F	A	A	A	370	A	301	A	A	A	314	326	331	351	328	A	319	A	A
19	A	A	A	F	A	331	348	365	376	A	A	A	278	321	305	291	310	327	354	374	314	305	A	325
20	A	F	F	F	337	340	374	387	368	333	297	312	328	282	297	332	335	358	322	316	322	323	344	307
21	330	313	F	F	F	F	367	349	386	A	323	319	A	A	A	304	319	323	328	327	336	362	343	F
22	F	F	F	278	F	F	408	385	A	295	352	A	A	A	A	307	327	329	322	308	332	383	A	281
23	A	A	F	A	A	F	358	A	A	A	A	A	A	A	A	A	A	A	A	309	342	367	308	310
24	337	285	F	F	F	F	383	321	368	A	A	A	299	A	A	A	342	A	A	347	327	321	312	304
25	329	308	327	302	322	A	368	354	A	333	323	A	A	301	299	309	319	341	345	309	319	318	339	288
26	330	316	336	354	A	342	343	354	367	343	A	A	A	288	307	336	332	337	349	327	356	347	A	A
27	F	F	A	F	F	F	350	379	316	366	311	294	275	A	286	293	322	333	325	337	A	307	316	F
28	295	F	F	F	F	328	351	353	371	A	318	326	A	288	308	325	317	318	296	340	323	335	330	309
29	F	F	330	F	F	341	A	361	384	A	A	A	A	296	310	A	A	A	A	326	338	330	303	F
30	A	F	F	F	F	F	342	348	A	A	A	A	289	301	304	309	312	A	A	A	A	A	F	A
31	A	A	A	F	F	F	A	A	A	A	A	A	325	326	A	268	314	311	331	359	369	324	303	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	19	14	14	13	15	28	26	23	16	14	17	20	21	23	28	29	27	23	28	23	24	20	16
MED	312	311	319	328	325	338	365	356	366	343	325	303	299	301	308	310	323	331	334	328	338	323	312	306
U Q	325	316	330	344	354	342	376	377	376	366	345	322	313	310	314	326	338	341	343	344	347	346	328	310
L Q	308	296	309	307	314	328	352	348	339	335	314	292	288	295	304	304	313	322	324	324	323	318	301	297

MAY 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	UL 418	A	395	A	387	UL 399	A	A					
2								A	A	A	A	A	A	UL 387	A	A	396	UL 379		A				
3								A	A	A	A	A	A	A	A	A	UL 394	L						
4									A	A	A	UL 425	A	A	420	433	392	A	A	A				
5								A	A	A	A	435	410	UL 388	A	400	420	L	L					
6								UL 348	UL 398	A	A	A	A	358	373	A	UL 389	UL 399	L					
7									UL 364	391	402	A	412	421	386	397	396	363	A					
8								L	A	A	A	UL 422	421	396	400	398	368	364	L					
9								A	UL 377	A	A	423	424	A	415	415	403	A	A	A				
10									A	A	A	A	383	391	392	418	375	386	A	A				
11								A	A	UL 374	UL 401	A	A	388	389	411	394	A	A	A				
12								A	A	A	UL 436	UL 410	UL 402	A	A	410	370	369	A	A				
13							L		A	A	437	UL 411	A	426	UL 403	419	399		A					
14									A	A	A	A	416	409	A	A	A	364						
15							A	A	A	A	A	A	A	UL 402	407	404	373		A	A				
16									A	A	A	A	A	A	A	UL 401	A	A	A					
17								A		UL 452	A		A	A	A	A	A	A	A	A				
18							A	A	A	A	A	A	A	A	A	379	A	A	A					A
19							L	UL 399	A	A	A	A	A	A	A	355	404	A	L					
20								A	UL 390	A	UL 441	UL 428	UL 353	395	A	393	394	380	L					
21										A	408	A	A	A	A	A	A	A	A	A				
22								L	A	UL 431	432	A	A	A	A	A	A	A	A	A				
23								A	A	A	A	A	A	A	A	A	A	A	A	A				
24								A	A	A	A	A	A	A	A	A	A	A	A	A				
25							L		A	A	A	A	A	UL 392	UL 407	A	A	392	UL 388					
26							A	UL 407	A	A	A	A	A	A	414	390	A	A	L					
27									A	A	UL 440	448	UL 396	A	UL 351	A	383	A	A	A				
28								A	L	A	A	UL 419	A	405	A	407	403	A	A					
29							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
30							A	A	A	A	A	A	UL 382	UL 438	A	A	A	A	A	A				
31							A	A	A	A	A	A	A	A	A	UL 403	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	4	4	8	10	10	15	12	18	18	9	1					
MED								UL 399	UL 384	UL 411	434	UL 422	406	395	402	402	394	379	UL 388					
U Q								UL 407	UL 394	UL 442	UL 438	428	416	409	410	411	399	389						
L Q								UL 348	UL 370	382	405	UL 418	UL 383	388	388	393	383	364						

MAY 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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							208	E A 234	234	250	274	338	364	324	276	268	246	E A 276	A					
2								250	E A 334	A	A	A	E A 394	298	272	246	246	250		E A 316				
3								250	236	236	E A 272	E A 308	E A 364	A	262	262	272	262						
4									248	A	A	330	292	A	274	274	260	256	A	256				
5								240	A	A	A	332	350	336	302	274	232	238	262					
6								328	328	A	A	A	A	362	320	292	290	290	276					
7									356	418	338	338	346	328	370	300	300	274	244					
8								282	E A 284	E A 284	A	404	344	322	322	346	310	320	268					
9								E A 338	288	E A 294	306	416	360	310	292	260	260	260	254	E A 274				
10									256	E A 290	A	358	338	318	288	284	266	264	E A 282	E A 250				
11								A	242	294	334	A	328	328	328	300	296	292	A	250				
12								E A 292	248	A	428	404	492	E A 374	E A 372	378	338	300	292	A				
13							234		E A 280	A	304	430	340	346	334	278	252		A					
14									E A 260	E A 306	A	324	312	332	304	304	294	258						
15							E A 296	A	E A 246	262	262	E A 326	A	346	328	308	282	262	246	A				
16									A	A	A	A	A	A	A	324	286	258	250					
17								238		278	A		374	A	A	E A 300	252	E A 260	234	E A 322				
18							A	A	A	254	A	E A 390	A	A	A	306	270	258	238					A
19							282	260	244	A	A	A	E A 420	320	E A 346	330	280	264	256					
20								222	260	E A 298	384	346	334	388	338	280	270	270	278					
21										A	326	334	A	A	A	E A 360	E A 294	E A 292	262	238				
22								238	A	400	266	A	A	A	A	E A 322	E A 278	E A 336	E A 276	E A 294				
23								A	A	A	A	A	A	A	A	A	A	A	A	E A 306				
24								284	264	A	A	A	386	A	A	A	E A 290	A	A	E A 252				
25							252		A	294	306	A	A	378	378	E A 378	260	280	278					
26							E A 294	272	240	272	A	A	A	430	352	294	E A 290	E A 302	260					
27									E A 312	254	372	372	460	A	400	376	308	272	260	E A 260				
28								260	242	A	354	348	A	386	344	296	302	E A 340	E A 284					
29							A	E A 268	232	A	A	A	A	368	E A 324	A	A	A	A	E A 290				
30							E A 258	E A 270	A	A	A	A	400	368	362	E A 322	E A 324	A	A	A				
31							A	A	A	A	A	A	E A 334	E A 312	A	468	330	E A 302	256	238				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	17	21	16	14	17	20	21	23	28	29	26	20	13				
MED							U 246	250	249	U 272	316	342	348	334	325	296	276	266	258	E A 260				
U Q							E A 294	283	286	296	354	397	390	371	352	327	298	E A 292	277	E A 300				
L Q							234	239	242	258	274	331	336	321	292	279	260	260	252	250				

MAY 2018 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	E B 250	E B 250	E B 246	208	196	224	A	A	A	A	A	184	A	192	A	204	204	A	A	220	E B 242	218	E B 232	E A 280
2	E B 266	E A 268	E A 248	204	E A 268	A	196	A	A	A	A	A	A	214	A	A	210	194	220	A	E A 242	230	228	E A 236
3	E B 236	E B 236	230	200	204	E B 238	208	A	A	A	A	A	A	A	A	A	208	214	224	230	230	222	A	E A 294
4	E B 252	E A 252	E A 260	E A 244	E A 294	A	208	206	A	A	A	196	A	A	182	194	224	A	A	A	220	232	232	E A 302
5	E A 290	E B 268	E B 248	E B 236	194	204	204	A	A	A	A	170	196	232	A	206	206	200	200	214	A	234	E B 270	E A 270
6	E A 294	E A 286	E A 282	E B 242	208	E B 310	208	214	214	A	A	A	A	E A 244	E A 236	A	220	200	210	226	A	E A 324	E A 324	A
7	E B 288	E A 258	E B 260	E A 258	E A 306	218	214	214	204	200	200	A	196	196	196	196	196	220	A	216	230	A	A	A
8	E A 320	E A 284	E A 292	A	218	E B 218	204	204	A	A	A	190	206	206	208	208	208	208	208	210	206	E A 236	E B 236	E B 236
9	E A 278	E B 244	E B 248	E A 298	E B 240	224	206	A	206	A	A	206	188	A	188	192	204	A	A	A	216	E A 264	E B 274	E B 286
10	E B 258	E B 258	212	234	E B 258	E B 264	224	224	A	A	A	A	188	192	192	198	198	198	A	A	208	A	A	E A 258
11	E B 288	E A 310	A	E A 310	E A 284	E A 284	234	A	A	186	202	A	A	206	202	196	204	A	A	A	A	E A 306	E A 260	E A 296
12	E B 258	E B 272	E B 270	224	224	E B 250	208	A	A	A	188	212	218	A	A	212	210	200	A	A	210	A	A	E A 292
13	A	E A 292	232	218	208	224	202	208	A	A	190	186	A	198	198	182	200	218	A	228	218	A	E A 266	A
14	E B 270	E A 280	E A 280	E A 272	206	214	210	210	A	A	A	A	180	192	A	A	A	E A 238	238	218	202	202	E B 286	E B 270
15	E A 300	E B 232	E A 292	E A 220	E A 234	E A 268	A	A	A	A	A	A	A	202	202	226	228	A 258	A	A	A	A	A	E A 238
16	E B 248	E B 262	A	E A 282	E A 282	E B 232	222	220	A	A	A	A	A	A	A	220	A	A	A	224	A	A	A	A
17	A	A	A	E A 290	222	E B 234	230	A	212	202	A	A	A	A	A	A	A	A	A	A	E A 238	228	E A 254	E A 336
18	E B 258	E A 258	E B 276	E A 292	E B 280	E B 300	A	A	A	A	A	A	A	A	A	214	A	A	A	222	A	E A 304	A	A
19	A	A	A	E A 250	A	E A 322	222	208	A	A	A	A	A	A	A	E A 280	204	A	204	204	204	E A 266	A	E A 300
20	A	E A 278	E A 310	E A 244	E A 250	220	206	A	256	A	190	184	E A 276	216	A	190	190	190	200	228	228	226	208	E A 286
21	216	E A 306	E A 262	E B 276	222	232	210	204	226	A	220	A	A	A	A	A	A	A	A	A	212	208	226	226
22	E A 280	E A 254	E B 248	E B 242	E B 260	E B 226	190	202	A	202	202	A	A	A	A	A	A	A	A	A	E A 260	200	A	E A 284
23	A	A	232	A	A	E A 262	208	A	A	A	A	A	A	A	A	A	A	A	A	A	206	194	E B 242	E A 274
24	222	E B 260	232	216	E A 272	E A 258	206	A	A	A	A	A	A	A	A	A	A	A	A	A	228	E A 238	244	230
25	E A 246	E B 240	E B 250	E B 272	E A 252	A	210	204	A	A	A	A	A	218	218	A	A	198	198	222	E A 310	212	E A 242	E A 254
26	E B 242	E A 248	232	208	A	E A 300	A	180	A	A	A	A	A	A	194	202	A	A	212	236	210	210	A	A
27	E A 316	E B 274	A	E B 274	222	222	214	218	A	A	192	192	212	A	E A 324	A	222	A	A	A	A	228	E A 266	E A 290
28	E A 308	E A 254	E B 238	E A 276	E A 252	232	232	A	196	A	A	196	A	194	A	192	232	A	A	230	E A 250	222	224	E A 296
29	E A 276	E A 292	E A 246	E A 236	E A 254	E A 250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 238	226	226	E A 298
30	A	E A 272	E A 256	E A 242	E A 276	E B 238	A	A	A	A	A	A	E A 244	188	A	A	A	A	A	A	A	A	E A 292	A
31	A	A	A	E A 242	E B 246	E B 242	A	A	A	A	A	A	A	A	A	220	A	A	A	A	220	E A 286	E A 344	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	27	25	29	28	28	24	14	7	4	8	10	10	15	12	18	18	13	10	15	23	24	21	23
MED	E 268	E A 262	E 248	E A 242	E 248	E 236	208	208	212	201	196	191	196	200	198	202	207	200	209	222	214	218	E 244	E A 284
U Q	E A 289	E A 280	E A 273	E A 275	E A 270	E A 263	218	214	226	202	202	196	E A 218	216	213	214	220	219	220	228	E A 238	E A 251	E 272	E A 296
L Q	E B 249	E B 252	235	222	220	224	206	204	204	193	190	184	188	192	193	194	204	198	200	216	210	215	230	E 254

MAY 2018 h'F (KM)

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IONOSPHERIC DATA STATION Yamagawa

MAY 2018 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	112	112	A	A	A	A	A	A	A	A	A	A	B				
2							B	A	A	A	A	A	A	A	A	A	112	112	112	B				
3							B	112	112	A	A	A	A	A	A	A	112	A	116	B				
4							B	110	A	A	A	A	A	A	A	110	110	110	A	B				
5							B	A	A	A	A	110	108	108	108	108	108	108	112	B				
6							B	112	106	A	A	A	A	112	112	112	112	112	A	B				
7							B	A	A	A	A	A	A	A	A	A	112	112	A	B				
8		A					B	112	108	A	A	A	A	A	A	108	108	A	B	B				
9							B	A	110	A	A	A	A	A	A	110	110	A	B	B				
10							118	114	A	A	A	A	112	108	108	A	108	A	B	B				
11							B	A	A	A	A	A	A	A	A	108	108	A	B	B				
12							B	A	A	A	108	108	112	112	112	112	112	112	A	B				
13							B	108	A	A	A	A	A	A	A	A	A	A	B	B				
14							B	108	A	A	A	A	A	A	A	A	A	A	B	B				
15							B	A	A	A	A	A	A	A	108	108	108	A	B	B				
16							B	A	A	A	A	A	A	A	A	110	110	A	A	B				
17							B	A	A	A	A		110	A	A	A	A	A	B	B				
18							A	A	A	A	A	A	A	A	A	110	A	A	A	B				A
19							118	118	A	A	A	A	A	A	A	114	114	A	118	B				
20							118	118	A	A	A	A	A	A	A	A	114	114	B	B				
21							114	114	A	A	A	A	A	A	A	A	A	A	A	B				
22							114	114	A	A	A	A	A	A	A	A	A	A	A	B				
23							114	A	A	A	A	A	A	A	A	A	A	A	A	A				
24							A	114	A	A	A	A	116	A	A	A	A	A	A	B			A	
25							B	116	A	A	A	A	A	A	A	A	A	A	A	B				
26							B	112	A	A	A	A	A	A	A	112	A	A	A	B				
27							B	112	A	A	A	114	114	114	114	114	110	A	A	B				
28							A	A	A	A	A	A	A	110	110	110	110	A	A	B				
29							B	A	A	A	A	A	A	A	A	A	A	A	A	B				
30							A	A	A	A	A	A	A	110	110	110	A	A	A	B				
31							A	A	A	A	A	A	A	A	A	A	110	A	A	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	16	5		1	3	6	7	8	15	18	7	4					
MED							116	112	110		108	110	112	110	110	110	110	112	114					
U Q							118	114	112			114	114	112	112	112	112	112	117					
L Q							114	112	107			108	110	108	108	108	108	110	112					

MAY 2018 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	96	96	92	92	92	B	114	114	114	104	104	98	98	92	92	98	100	100	94	94	94	94	B	94
2	94	94	94	94	94	94	118	104	104	98	98	98	98	98	98	98	116	G	120	98	98	98	98	96
3	96	96	96	92	B	92	118	118	118	106	102	96	96	92	92	88	112	112	134	102	100	100	100	100
4	100	100	96	96	92	92	92	110	98	98	92	92	90	90	90	152	142	118	104	98	98	98	98	94
5	88	88	86	86	86	B	126	104	98	98	98	G	132	130	120	120	120	116	116	112	108	108	108	100
6	96	96	90	90	90	B	128	126	116	106	96	96	96	120	120	120	120	120	116	104	98	98	98	98
7	98	98	B	98	98	108	110	106	94	94	94	94	98	102	106	106	G	G	104	96	96	96	96	96
8	96	96	96	86	92	92	112	112	110	102	102	102	102	102	102	G	110	110	110	102	100	100	100	B
9	96	96	86	86	86	92	112	106	118	102	102	102	94	96	98	110	116	94	94	94	94	100	100	100
10	94	94	94	94	94	B	122	122	104	98	98	98	G	G	110	92	110	110	98	98	94	94	94	94
11	94	94	86	92	90	88	106	98	96	96	96	96	96	90	90	102	140	110	100	94	94	94	94	90
12	90	B	90	90	90	90	90	98	98	94	114	114	134	116	114	G	G	114	102	100	100	100	94	94
13	86	86	86	86	86	86	112	112	94	94	94	94	94	92	92	92	92	92	92	90	90	90	90	90
14	84	84	84	84	84	118	112	118	104	98	94	94	94	98	98	98	98	94	90	90	86	86	86	88
15	88	88	88	88	88	96	100	100	100	96	96	96	92	92	116	116	112	104	104	96	96	96	96	98
16	98	96	92	92	92	B	102	98	98	94	94	94	90	90	86	128	116	100	100	100	96	96	96	96
17	94	94	94	94	88	88	106	100	94	94	94	94	108	104	102	102	102	96	96	96	96	96	96	96
18	98	98	88	88	92	100	100	100	98	102	102	100	100	100	100	116	100	100	100	B	100	98	98	90
19	90	90	90	90	90	90	116	116	98	98	98	98	98	94	94	108	126	96	114	104	96	92	92	92
20	92	92	92	92	88	88	122	122	104	98	98	98	98	96	88	88	124	124	124	82	82	82	82	92
21	102	98	98	98	98	98	98	120	104	104	104	104	104	104	98	98	102	102	102	102	102	102	102	96
22	96	96	96	96	B	B	128	126	98	98	98	98	92	92	98	106	106	98	98	98	98	96	100	100
23	94	94	98	92	92	94	120	98	98	96	96	96	96	96	98	98	100	100	100	100	100	100	100	100
24	100	100	98	98	98	98	94	124	102	96	96	102	124	100	100	100	100	100	96	96	96	96	96	96
25	96	96	100	96	96	96	96	118	100	100	100	100	94	94	98	98	96	100	98	98	98	98	98	94
26	94	94	94	94	94	94	94	110	104	102	92	100	90	98	98	114	102	102	102	102	94	102	102	102
27	88	92	92	94	94	94	124	120	106	98	98	116	116	116	114	114	114	100	100	100	96	96	96	96
28	96	96	96	94	94	94	102	102	102	94	94	94	94	114	124	118	124	102	102	102	96	96	96	96
29	92	92	92	88	88	110	110	102	102	94	94	94	96	106	106	106	102	96	96	96	96	96	96	96
30	96	96	96	96	94	106	106	98	98	96	96	94	134	134	120	120	100	100	98	98	98	98	98	94
31	94	92	92	98	98	118	104	102	102	96	96	96	96	104	98	98	98	98	98	98	96	96	96	90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	31	29	25	31	31	31	31	31	30	30	30	31	29	29	29	31	30	31	31	30	30
MED	94	95	92	92	92	94	110	110	102	98	96	97	96	98	98	106	110	100	100	98	96	96	96	96
U Q	96	96	96	96	94	99	118	118	104	102	100	100	102	104	110	116	118	110	104	102	98	100	100	98
L Q	92	92	90	88	88	91	100	100	98	96	94	94	94	92	94	98	100	98	98	96	94	96	96	94

MAY 2018 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 2018 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	F3	F3	F2	F2	F1		C6	C3	C2	L3	L3	L2	L4	L2	L3	L2	L3	L6	L8	L7	F5	F8		F5
2	F5	F4	F5	F5	F6	F9	L4	L4	L4	L7	L4	L4	L3	L1	L4	L3	C1		C2	L9	F8	F4	F3	F5
3	F3	F4	F3	F3		F2	C3	C2	C4	L5	L4	L3	L3	L6	L4	L5	C2	L2	CL12	L4	F5	F4	F5	F4
4	F2	F2	F5	F8	F9	F7	F5	C4	L6	L6	L3	L3	L2	L4	L2	H1	H1	C4	L5	L5	F3	F7	F5	F7
5	F6	F2	F2	F2	F1		C2	L3	L5	L5	L4		H1	H1	C2	C1	C2	C2	C2	C3	F8	F5	F3	F8
6	F9	F7	F5	F2	F5		C2	C2	C5	L3	L3	L2	L3	C1	C1	C2	C1	C1	C1	L8	F7	F7	F7	F9
7	F3	F4		F5	F6	F2	L2	L8	L4	L2	L3	L2	L2	L1	L1	L1			L3	L3	F6	F6	F6	F9
8	F5	F3	F2	F6	F3	F2	C2	C2	C4	L3	L3	L2	L2	L2	L2		L1	L1	L2	L3	F5	F5	F1	
9	F4	F5	F5	F5	F4	F2	C4	L4	C1	L4	L3	L2	L2	L2	L2	C1	C1	L4	L4	L5	F4	F8	F2	F2
10	F2	F2	F4	F3	F2		C3	C3	L3	L5	L2	L2			C1	L3	C2	L2	L4	L4	F6	F8	F5	F8
11	F4	F7	F6	F7	F4	F2	L3	L6	L4	L3	L3	L3	L3	L3	L3	L2	H1	L3	L9	L9	F5	F5	F5	F5
12	F2		F2	F3	F3	F2	L2	L3	L5	L6	C1	C2	C1	C2	C2			C1	L3	L6	F5	F7	F7	F5
13	F6	F7	F5	F3	F2	F2	L2	C3	L2	L3	L2	L2	L3	L2	L3	L2	L2	L3	L8	L4	F2	F6	F6	F7
14	F2	F4	F4	F4	F3	F7	C5	C5	L5	L5	L5	L3	L3	L3	L2	L3	L3	L3	L4	L4	F4	F4	F2	F5
15	F6	F2	F4	F2	F1	F3	L8	L5	L5	L4	L4	L5	L3	L2	C1	C2	C3	L6	L5	L8	F9	F6	F6	F4
16	F2	F2	F3	F3	F2		L3	L6	L6	L7	L6	L5	L4	L5	L6	CL12	C2	L4	L5	L5	F5	F8	F7	F7
17	F6	F5	F4	F2	F2	F2	L5	L4	L5	L3	L3	L3	C2	L3	L3	L3	L4	L6	L5	L5	F4	F5	F7	F9
18	F7	F7	F5	F7	F2	F3	L8	L8	L8	L3	L4	L3	L3	L4	L4	C1	L3	L4	L5		F9	F6	F5	F8
19	F6	F8	F8	F6	F5	F3	C3	C5	L5	L4	L4	L3	L3	L3	L3	C2	C1	L3	C3	L6	F6	F9	F4	F4
20	F9	F9	F7	F4	FF22	F2	C4	C2	L2	L3	L3	L2	L3	L2	L3	L3	CL11	CL22	CL22	L4	F4	F3	F3	F7
21	F2	F3	F9	F9	F5	F5	L3	C2	L3	L3	L2	L2	L4	L5	L8	L5	L4	L6	L7	L8	F2	F3	F4	F4
22	F8	F8	F4	F3			C2	C2	L4	L3	L2	L4	L5	L4	L4	L3	L6	L5	L5	L4	F8	F9	F7	F4
23	F8	F9	F6	F5	F7	F5	CL34	L7	L7	L7	L5	L4	L6	L5	L4	L6	L7	L8	L8	L5	F3	F1	F1	F8
24	F9	F6	F3	F2	F6	F5	L5	C5	L5	L5	L5	L3	C2	L4	L3	L4	L7	L8	L8	L4	F7	F9	F4	F2
25	F4	F1	F2	F2	F6	F6	L6	C3	L5	L3	L3	L3	L4	L3	L2	L3	L4	L2	L4	L4	F9	F9	F7	F5
26	F2	F5	F5	F7	F6	F8	L5	C2	L3	L2	L4	L2	L6	L2	L2	C2	L5	L6	L5	L8	F3	F2	F8	F8
27	F8	F6	F9	F2	F6	F4	C2	C3	L4	L3	L3	C1	C2	C3	C3	C3	C3	L3	L7	L9	F9	F6	F5	F8
28	F8	F5	F3	F4	F4	F3	L7	L6	L3	L3	L3	L2	L4	C2	C2	C2	C1	L4	L7	L9	F9	F6	F8	F7
29	F5	F5	F4	F4	F7	F7	L3	L8	L4	L5	L4	L5	L3	L2	L3	L3	L5	L6	L9	L9	F7	F3	F3	F7
30	F9	F9	F9	F8	F2	F2	L6	L6	L6	L5	L3	L3	CL22	H1	C2	C3	L5	L6	L8	L9	F9	F9	F9	F9
31	F8	F8	F8	F3	F2	F2	L6	L5	L5	L4	L4	L5	L4	L3	L3	L2	L2	L7	L7	L9	F9	F9	F9	F9
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2018 TYPES OF Es

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MAY 2018 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	48	47	45	44	X27	X22															X60	X61	X49	55
2	58	55	48	41	35	X23															X64	X63	57	57
3	58	51	49	X38	X32	X30															X71	X47	X38	X37
4	54	41	44	33	37	31															X66	X51	X44	X39
5	46	48	47	X41	X40	X24														X71	X58	X48	X44	44
6	46	44	X39	X44	X27	28															X64	A	X44	X46
7	X38	X44	X44	X38	38	43															X78	X60	X46	A
8	A	A	X38	X38	34	X31															X82	X50	X45	X45
9	X43	X41	X41	X38	X36	X33															X77	X61	X42	47
10	48	49	46	28	38	33															X70	X62	X54	A
11	58	58	49	52	45	52	58														X55	A	A	A
12	X44	A	45	53	32	X30															X68	A	A	A
13	44	44	43	45	34	40															X65	59	57	A
14	A	49	46	51	41	A															X64	X53	X46	X48
15	48	55	49	49	34	A															X83	X60	X54	A
16	X50	53	50	48	40	40															X69	X39	X38	A
17	A	A	36	37	36	38															X66	X64	X53	X47
18	47	49	44	44	40	39															X74	X62	X62	56
19	58	53	44	A	A	A															X57	X54	54	X47
20	46	44	47	42	40	37															X69	X72	X54	X48
21	X44	44	47	44	45	41															X72	X66	X58	X45
22	48	48	44	39	38	36															X92	A	A	A
23	A	A	A	A	A	35															X82	X71	X57	59
24	60	55	X44	X38	X40	A															X58	A	X51	X48
25	X48	X45	X42	X42	X36	X32															X66	X63	X60	X56
26	58	56	54	X42	X34	X32															X78	X56	X39	X37
27	A	A	X34	X32	X30	A															A	A	A	59
28	A	A	A	32	37	X38															X71	X59	X54	X54
29	X49	57	49	47	38	32															X77	A	A	59
30	62	X52	X44	58	44	38	X42						A								X64	X60	X54	X51
31	56	53	55	46	39	X37															X72	X53	X53	X50
	00	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	25	29	29	29	26	2													1	30	24	26	23
MED	48	49	45	42	37	34	50													X71	X69	X60	X53	X48
U Q	58	54	48	46	40	38															X77	X62	X54	56
L Q	X46	44	X44	38	34	X31															X64	X53	X44	X45

MAY 2018 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Okinawa

MAY 2018 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 33	F 32	F 32	35	21	J B 16	36	51	56	54	55	58	72	86	98	102	99	83	77	A	R 56	55	43	F 42
2	F 38	F	F	F	F 26	17	36	51	57	A	54	58	77	87	A	90	90	80	61	58	58	57	F 48	F 46
3	F 47	F 38	F 40	32	27	24	37	47	63	A	A	A	66	83	J R 98	101	107	105	77	75	65	41	32	31
4	F 30	F 27	F 28	F 26	F 25	F 23	36	52	60	54	56	66	78	96	106	110	107	88	70	70	60	45	38	33
5	F 33	F 33	F 32	34	34	18	34	45	52	51	51	58	66	78	93	106	102	77	74	65	52	R 42	38	F 35
6	F 34	F 31	33	R 38	21	F 20	42	44	42	46	54	56	72	72	76	81	84	84	71	76	58	A	38	40
7	32	38	38	32	F 30	F	42	43	A	J R 50	A	52	60	70	70	79	87	90	94	84	72	54	40	A
8	A	A	32	32	F 26	25	38	48	51	A	A	56	68	79	72	80	82	75	85	95	76	44	39	39
9	37	35	35	32	30	27	41	48	51	52	A	54	A	77	90	82	80	84	62	62	71	55	36	F
10	F 39	F 40	38	F 19	F 21	F 19	40	58	50	50	56	63	73	89	96	94	104	90	90	100	64	56	48	A
11	F 49	F 41	F 41	F 38	F 34	F 33	48	64	A	A	A	52	59	A	A	94	97	90	82	89	49	A	A	A
12	38	A	F 34	F 38	F 24	24	43	J R 62	52	48	48	49	50	52	57	59	60	58	51	55	62	A	A	A
13	F 34	F 33	F 32	F 34	F 23	F 31	J R 42	44	53	53	54	54	62	74	84	100	105	71	63	69	59	F 51	F 48	A
14	A	F 38	F 36	F 41	F 32	A	A	48	51	A	A	59	62	73	77	81	88	97	105	99	58	47	40	42
15	F 38	F 40	38	F 38	F 24	A	40	58	60	63	56	70	76	82	87	95	100	102	100	90	77	54	48	A
16	44	F	F	F 30	F 29	F 30	58	65	47	A	A	58	65	69	74	82	90	90	85	90	63	33	32	A
17	A	A	F 28	F 25	F 26	28	43	70	49	46	47	55	64	74	84	99	109	84	63	60	60	V 58	47	41
18	F 38	F 37	F 35	F 33	F 32	F 30	63	52	48	A	A	50	59	76	90	92	92	86	78	70	68	56	56	F 45
19	F	F 39	F 35	A	A	A	40	56	64	52	A	A	A	70	77	82	88	92	80	66	51	V 48	F 47	41
20	F 38	F 32	F 35	F 31	F 33	F 28	42	46	52	46	A	57	A	60	A	82	81	70	59	60	63	66	48	43
21	38	F 37	F 39	F 33	F 31	F 30	38	50	52	46	48	56	A	A	A	63	70	75	79	77	66	60	52	39
22	F 38	F 37	F 32	F 28	F 28	F 26	44	47	48	51	51	55	A	A	56	69	81	86	81	78	86	A	A	A
23	A	A	A	A	A	F 22	38	53	54	52	A	47	A	A	71	77	77	74	76	79	76	65	51	F 48
24	F	F 44	38	32	34	A	37	55	61	56	56	48	56	56	63	68	80	82	A	53	52	A	45	42
25	42	39	36	36	30	26	38	45	51	52	54	A	54	56	55	61	74	68	57	54	60	57	54	50
26	F 50	F 46	F 44	36	28	26	38	54	56	53	50	51	51	59	74	74	74	76	62	71	72	50	33	31
27	A	A	28	26	24	A	43	50	64	A	52	48	51	53	50	58	64	75	81	A	A	A	A	F 50
28	A	A	A	F 25	30	32	45	54	A	50	A	58	60	71	77	A	79	78	80	A	J R 65	53	48	48
29	43	F 45	F 41	F 39	F 30	F 25	38	58	64	56	52	54	60	67	66	74	82	90	A	86	71	A	A	F 52
30	F	46	38	F	F 31	F 28	37	A	A	58	A	A	A	66	A	A	A	86	86	76	58	54	48	45
31	F 46	F 42	F	F 36	30	31	43	A	A	57	A	A	A	64	60	65	73	84	91	90	66	47	47	44
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	26	27	29	25	30	29	26	23	17	26	23	27	26	29	30	31	29	28	30	24	26	22
MED	F 38	F 38	F 35	F 33	F 29	F 26	40	51	52	52	54	56	62	72	76	82	86	84	78	76	63	54	47	42
U Q	F 43	F 41	F 38	F 36	F 31	F 30	43	57	60	54	56	58	72	79	90	94	99	90	85	88	71	56	48	F 46
L Q	F 34	F 33	F 32	F 30	F 24	F 22	38	47	51	50	50	52	59	64	66	72	79	75	63	64	58	47	38	39

MAY 2018 foF2 (0.1MHz)

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MAY 2018 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 392	L 420	432	U A 440	A	428	A	A	A	A		A				
2								A	A	A	A	440	A	A	A	A	L 496	L 388						
3									A	A	A	A	A	A	A	A	400	376						
4								A	A 404		A	436	432	440	428	A	392	384	A					
5							L		L 392	L 420	432	428	436	436	420	A	408	384	U L 288					
6										A 424		A	U A 440	428	440	420	392	380	L 336					
7									A	A	A	432	428	440	424	424	404	384						
8								L	A	A	A	A	A	A	A	A	400	A						
9								L	A	A	A	A	A	432	A	A	A	A	L					
10								L	L	A	A	440	A	A	A	420	416	L 396						
11									A	A	A	L 448	A	A	A	420	408	380	A					
12									L 432	404	428	424	436	A	424	404	396	L 372	U L 384					
13									L 396	A	432	436	A	U A 440	A	A	A	A						
14							A		A	A	A	A	A	A	436	424	404	A	A					
15								A	A	420	440	A	452	440	432	U A 428	U A 400	396						
16										A	A	A	A	U A 432	436	424	A	376						
17								L	L 388		424	436	436	A	420	A	A	A	A					
18										A	A	A	A	A	A	A	A	A						
19								L 372	L 396	L 424	A	A	A	444	A	416	A	A						
20								L	A	U L 416	A	A	A	A	A	420	A	U A 384						
21								L	U L 400	U L 416	424	428	A	A	A	A	A	A						
22								U L 348	U L 396	404	A	A	A	A	A	A	A	A						
23								A	A	U L 428	A	436	A	A	A	420	U A 404	A	A					
24								L	L 404	444	436	444	U A 436	U A 432	A	A	A	A	A					
25								L	L 396	420	A	A	A	A	A	A	404	A	L					
26								L 376	U L 404	U L 432	448	444	448	A	A	A	400	392	U L 376	L				
27								L	A	A	440	A	432	436	436	A	A		A	A				
28								A	A	U L 436	A	A	448	448	A	A	A	384	A	A				
29								A	L 412	436	A	452	440	A	A	A	A	A	A					
30								A	A	A	A	A		A	A	A	A	A	352					
31								A	A	A	A	A	A	A	436	A	U A 408	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	11	15	11	15	12	13	11	11	16	14	5					
MED								L 372	L 396	L 420	432	436	436	436	432	420	404	384	U L 352					
U Q								L 376	L 404	432	440	444	444	440	436	424	408	388	U L 380					
L Q								U L 348	L 396	416	424	432	434	432	424	420	400	380	L 312					

MAY 2018 foF1 (0.01MHz)

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MAY 2018 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	204	276	U A 308	312	A	A	A	A	324	U A 300	U A 268	A	A				
2							A	A	280	A	320	340	344	344	328	312	300	256	200	A				
3							A	216	A	A	A	A	A	A	A	A	304	A	A	A				
4							A	A	A	A	A	A	A	A	A	320	296	280	224	B				
5							B	240	A	A	A	A	A	356	332	A	A	268	A					
6							184	U A 228	U A 288	304	A	336	344	336	336	320	300	256	212	A				
7							A	A	276	292	312	340	A	332	A	332	300	A	208	A				
8							A	A	272	A	A	A	A	A	A	U A 320	308	A	A	A				
9							A	224	272	296	A	A	A	U A 336	332	324	296	256	A	A				
10							A	220	276	A	A	A	A	A	A	A	300	276	A	A				
11							180	A	A	A	A	A	A	A	A	A	A	A	A	A				
12							A	216	280	296	A	A	A	A	A	328	304	272	A	A				
13							A	A	A	A	A	A	A	A	A	A	308	268	196	A				
14							A	A	U A 280	A	A	A	A	A	A	A	A	A	A	A				
15							A	A	A	A	A	A	A	A	A	A	296	268	A	A				
16							A	A	A	A	A	A	A	A	352	328	304	276	A	B				
17							A	A	A	A	A	A	348	352	A	A	A	A	A	A				
18							184	220	A	A	A	A	364	344	344	324	292	288	A	A				
19							A	232	A	A	A	A	A	340	336	320	A	U A 248	208	A				
20							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
21							A	A	A	A	328	340	A	A	336	324	304	264	A	A				
22							A	A	A	316	340	344	344	344	344	324	304	272	A	A				
23							A	A	A	A	A	356	A	344	348	328	304	264	216	A				
24							A	A	A	U A 316	340	A	360	352	348	328	308	264	A	A				
25							204	A	A	A	A	A	A	A	332	320	308	264	A	A				
26							A	A	A	A	A	348	356	356	344	A	296	268	220	A				
27							176	A	A	A	A	A	A	360	352	332	300	268	A	A				
28							A	A	A	A	A	A	368	360	344	320	308	280	220	A				
29							A	A	A	A	A	A	352	364	356	A	312	A	A	A				
30								A	A	A	A	A		A	344	328	308	272	A	A				
31							A	A	U A 280	A	A	A	352	352	340	328	300	268	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	9	10	7	6	7	10	16	18	20	25	23	9					
MED							184	220	278	304	324	340	352	348	344	324	304	268	212					
U Q							194	230	U A 280	316	340	348	360	356	348	328	308	272	220					
L Q							178	216	276	296	312	340	344	342	336	320	300	264	204					

MAY 2018 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 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	20	E B 16	J A 51	J A 23	J A 22	J A 17	J A 24	30	J A 45	J A 59	J A 44	78	J A 60	J A 41	J A 50	J A 53	J A 80	J A 82	J A 60	J A 66	J A 85	J A 34	J A 78	J A 53
2	J A 20	J A 65	J A 31	J A 22	J A 21	J A 43	J A 32	J A 40	J A 50	J A 61	J A 88	43	46	J A 69	J A 146	J A 56	40	28	J A 44	J A 43	J A 55	J A 53	J A 142	J A 50
3	J A 26	J A 28	J A 28	J A 22	J A 32	J A 19	J A 28	J A 36	J A 60	J A 88	J A 82	J A 122	J A 83	J A 196	J A 66	J A 106	J A 38	32	J A 72	J A 103	J A 144	J A 88	J A 42	J A 30
4	J A 38	J A 26	J A 41	J A 33	J A 95	J A 22	J A 29	J A 60	J A 63	J A 44	J A 62	J A 49	J A 55	J A 40	34	45	42	J A 39	J A 41	J A 54	J A 84	J A 88	J A 21	J A 26
5	J A 22	J A 15	J A 14	J A 29	J A 18	J A 36	E B 16	J A 42	J A 38	J A 44	J A 42	J A 52	41	42	42	J A 45	38	32	J A 27	J A 32	J A 30	J A 53	J A 25	J A 30
6	J A 87	J A 49	J A 53	J A 62	J A 16	E B 16	G	J A 52	J A 46	J A 49	J A 48	J A 51	J A 48	40	37	36	G	G	G	J A 34	J A 52	J A 50	J A 33	J A 53
7	J A 66	J A 53	J A 52	J A 35	J A 19	E B 16	19	27	J A 50	J A 53	J A 79	G	J A 45	37	38	G	35	J A 44	J A 35	J A 21	J A 52	J A 30	J A 118	J A 86
8	J A 66	J A 64	J A 39	J A 49	J A 28	J A 20	J A 38	32	J A 41	J A 52	J A 61	J A 68	J A 52	J A 66	J A 106	J A 60	J A 42	J A 63	J A 86	J A 52	J A 52	J A 52	J A 35	J A 21
9	J A 20	J A 19	J A 22	E B 16	21	J A 124	20	30	J A 52	J A 48	J A 60	J A 51	J A 72	J A 60	J A 46	J A 66	J A 73	J A 66	23	J A 21	J A 17	J A 46	J A 52	J A 26
10	J A 26	J A 26	J A 21	J A 20	20	E B 16	24	J A 36	36	J A 52	J A 54	J A 48	J A 55	J A 65	J A 57	J A 38	J A 44	J A 43	J A 43	J A 32	J A 84	J A 61	J A 70	J A 88
11	J A 65	J A 57	J A 86	J A 66	J A 20	J A 21	G	J A 45	J A 128	J A 90	J A 96	J A 168	J A 170	J A 122	J A 242	J A 57	J A 56	J A 89	J A 56	J A 35	J A 173	J A 118	J A 128	J A 52
12	J A 52	J A 63	J A 38	J A 21	J A 44	J A 20	25	J A 52	J A 96	38	37	J A 45	J A 49	J A 102	J A 52	G 26	36	32	J A 34	J A 36	J A 105	J A 144	J A 98	J A 207
13	J A 188	J A 48	J A 47	J A 27	J A 22	J A 18	24	J A 39	J A 39	J A 62	J A 42	J A 46	J A 84	J A 107	J A 86	J A 66	J A 83	J A 54	J A 52	J A 53	J A 42	J A 53	J A 30	J A 118
14	J A 62	J A 52	J A 76	J A 36	J A 38	J A 51	J A 60	J A 66	J A 63	J A 69	J A 210	J A 108	J A 109	J A 84	J A 57	J A 48	J A 62	94	J A 54	J A 50	J A 53	J A 33	J A 25	J A 33
15	J A 29	J A 52	J A 33	J A 26	J A 29	J A 85	J A 30	J A 52	J A 62	J A 42	J A 48	J A 49	J A 49	J A 45	39	J A 51	J A 43	36	J A 32	J A 31	J A 88	J A 72	J A 102	J A 107
16	J A 66	J A 84	J A 110	J A 27	E B 16	E B 16	J A 27	J A 42	J A 56	J A 65	J A 177	J A 95	J A 71	J A 47	39	40	J A 60	J A 54	J A 50	J A 36	J A 38	J A 49	J A 166	J A 105
17	J A 75	J A 64	J A 83	J A 50	18	20	20	29	J A 52	J A 52	J A 55	J A 49	J A 53	J A 60	J A 43	J A 71	J A 76	J A 88	J A 45	J A 65	J A 101	J A 50	J A 110	J A 86
18	J A 101	J A 61	J A 53	J A 28	J A 36	J A 34	G	J A 52	J A 42	J A 80	J A 260	J A 109	J A 107	J A 56	J A 50	J A 56	J A 72	J A 66	J A 52	J A 81	J A 19	J A 28	J A 22	J A 66
19	J A 67	J A 52	J A 53	J A 52	J A 61	J A 48	J A 57	J A 66	J A 47	J A 66	J A 84	J A 138	J A 143	38	44	41	J A 73	J A 46	J A 46	J A 27	J A 19	J A 49	29	J A 33
20	J A 190	J A 52	J A 25	J A 113	J A 57	J A 27	J A 32	28	J A 48	J A 36	J A 69	J A 60	J A 109	J A 56	J A 75	J A 45	69	J A 44	J A 42	J A 46	J A 29	J A 18	18	E B 16
21	J A 36	J A 39	20	J A 53	J A 52	J A 35	J A 33	J A 46	J A 49	J A 42	40	J A 44	J A 84	J A 110	J A 78	J A 62	J A 67	J A 56	J A 44	J A 31	J A 20	J A 53	J A 43	J A 65
22	J A 84	J A 106	J A 86	J A 53	J A 72	J A 32	20	J A 29	J A 49	J A 43	44	J A 54	J A 60	J A 62	J A 49	J A 56	J A 46	J A 54	J A 53	J A 50	J A 50	J A 64	J A 64	J A 43
23	J A 53	J A 63	J A 79	J A 59	J A 65	J A 43	J A 62	J A 42	J A 71	J A 69	J A 66	J A 58	J A 183	J A 76	J A 61	J A 53	J A 50	J A 52	J A 67	J A 45	J A 46	J A 60	J A 80	J A 66
24	J A 87	J A 24	J A 79	J A 109	J A 117	J A 118	J A 87	J A 51	J A 52	J A 46	42	J A 45	44	44	J A 50	J A 67	J A 67	J A 70	J A 159	J A 88	J A 142	J A 101	J A 53	J A 33
25	J A 26	J A 22	E B 16	J A 38	J A 26	21	G 18	J A 34	J A 40	J A 44	J A 56	J A 70	J A 66	J A 145	J A 53	J A 46	J A 108	J A 54	J A 39	J A 36	J A 31	J A 16	J A 15	J A 22
26	E B 16	J A 15	J A 27	J A 18	J A 26	J A 36	J A 32	J A 39	J A 46	J A 36	J A 53	44	41	46	J A 61	J A 69	J A 38	36	J A 40	J A 22	J A 24	J A 18	J A 18	J A 46
27	J A 49	J A 51	J A 101	J A 86	J A 60	J A 36	J A 26	J A 33	J A 53	J A 85	J A 40	J A 140	J A 114	J A 43	42	J A 48	J A 59	J A 120	J A 88	J A 83	J A 121	J A 168	J A 63	J A 65
28	J A 75	J A 63	J A 77	J A 80	J A 28	J A 33	J A 34	J A 97	J A 96	J A 48	J A 135	J A 66	J A 49	J A 48	J A 59	J A 86	J A 48	J A 40	J A 44	J A 82	J A 122	J A 66	J A 53	J A 63
29	J A 30	18	J A 29	J A 21	J A 24	J A 20	J A 32	J A 52	J A 80	J A 54	J A 50	J A 59	J A 39	J A 67	J A 61	J A 64	J A 71	J A 74	J A 90	J A 86	J A 158	J A 124	J A 87	J A 109
30	J A 30	J A 85	J A 84	J A 25	J A 38	J A 29	J A 38	J A 76	J A 96	J A 145	J A 180	J A 182	J A 126	J A 103	J A 118	J A 121	J A 152	J A 51	28	J A 50	J A 18	J A 22	J A 16	J A 33
31	J A 52	J A 38	J A 39	J A 36	J A 66	J A 48	J A 82	J A 126	J A 99	J A 105	J A 84	J A 168	J A 64	J A 54	40	J A 44	J A 43	J A 46	J A 52	J A 63	J A 72	J A 70	J A 84	J A 50
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 52	J A 52	J A 47	J A 35	J A 28	J A 29	J A 28	J A 42	J A 52	J A 52	J A 60	J A 58	J A 60	J A 60	J A 52	J A 53	J A 56	J A 52	J A 45	J A 46	J A 52	J A 53	J A 53	J A 52
U Q	J A 75	J A 63	J A 79	J A 53	J A 57	J A 43	J A 34	J A 52	J A 63	J A 69	J A 84	J A 108	J A 107	J A 84	J A 66	J A 66	J A 72	J A 66	J A 56	J A 65	J A 101	J A 72	J A 87	J A 86
L Q	J A 26	J A 26	J A 28	J A 23	21	20	20	33	J A 46	J A 44	44	J A 48	49	44	42	45	42	39	J A 39	J A 32	J A 30	J A 34	J A 25	J A 33

MAY 2018 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 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	20	E B 16	E B 16	24	28	39	G 22	41	44	47	37	45	46	50	58	47	A A 66	45	E B 16	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	35	42	A A 61	G 28	41	45	66	A A 146	48	37	28	32	32	40	E B 16	E B 16	E B 16
3	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	31	44	A A 88	A A 82	A A 122	54	53	50	73	37	31	38	52	20	18	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	18	E B 16	22	40	48	36	49	36	40	38	34	G 26	36	37	33	E B 14	E B 16	23	E B 16	18
5	E B 16	E B 16	E B 16	22	E B 15	E B 16	E B 16	G 20	34	34	37	36	41	G 28	G 25	43	38	G 20	25	30	28	26	E B 16	E B 16
6	E B 16	E B 16	E B 16	26	E B 16	E B 16	G	35	40	42	35	46	44	38	36	34	G	G	G	32	50	A A 50	20	E B 16
7	E B 16	20	21	E B 16	E B 16	E B 16	17	24	A A 50	44	A A 79	G	37	36	36	G	32	30	28	18	42	24	27	A A 86
8	A A 66	A A 64	E B 16	23	E B 16	E B 16	22	30	38	A A 52	A A 61	52	47	47	64	43	35	44	42	30	E B 16	32	20	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	17	28	47	45	A A 60	46	A A 72	40	46	45	48	49	22	16	E B 16	40	E B 16	19
10	E B 16	19	E B 16	E B 16	E B 16	E B 16	20	31	35	42	44	38	51	47	52	37	38	36	31	29	43	36	36	A A 88
11	29	E B 16	E B 16	18	E B 16	E B 16	G	28	A A 128	A A 90	A A 96	40	54	A A 122	A A 242	40	32	36	52	22	30	A A 118	A A 128	A A 52
12	20	A A 63	20	E B 16	E B 16	E B 16	20	42	38	31	36	41	40	46	39	G 21	32	29	32	25	19	A A 144	A A 98	A A 207
13	E B 16	22	E B 16	E B 16	E B 16	E B 16	20	30	34	49	36	40	47	44	45	56	41	46	46	36	28	22	E B 16	A A 118
14	A A 62	23	E B 16	21	20	A A 51	A A 60	42	46	A A 69	A A 210	51	57	46	36	39	35	45	46	33	35	23	19	E B 16
15	E B 16	20	19	E B 16	E B 16	A A 85	24	42	52	38	34	46	39	39	38	43	40	34	30	26	20	42	E B 16	A A 107
16	E B 16	31	19	E B 16	E B 16	E B 16	25	32	38	A A 65	A A 177	52	45	43	37	39	41	35	38	E B 14	21	23	E B 16	A A 105
17	A A 75	A A 64	20	E B 16	E B 16	E B 16	18	28	30	38	40	42	G 30	51	38	58	66	53	34	48	42	34	30	34
18	20	E B 16	E B 16	20	E B 16	E B 16	G	37	32	A A 80	A A 260	44	53	45	46	45	45	42	32	43	E B 16	E B 16	E B 16	36
19	20	26	21	A A 52	A A 61	A A 48	22	28	36	37	A A 84	A A 138	A A 143	36	43	40	45	38	37	24	E B 16	30	E B 16	23
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	26	40	34	A A 69	54	A A 109	54	A A 75	39	48	38	38	41	20	E B 16	E B 16	E B 16
21	E B 16	21	E B 16	E B 16	E B 16	E B 16	21	27	33	35	38	38	A A 84	A A 110	A A 78	44	62	50	41	29	E B 16	19	E B 16	E B 16
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	26	31	38	42	45	A A 60	A A 62	44	52	44	50	50	42	48	A A 64	A A 64	A A 43
23	A A 53	A A 63	A A 79	A A 59	A A 65	E B 16	24	35	40	40	A A 66	41	A A 183	A A 76	54	39	40	47	66	42	26	54	44	E B 16
24	E B 16	E B 16	E B 16	E B 16	E B 15	A A 118	26	28	36	38	40	40	44	43	45	56	60	60	A A 159	47	22	A A 101	24	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 16	26	34	37	50	A A 70	48	52	46	43	36	40	26	33	17	E B 16	E B 16	18
26	E B 16	E B 16	E B 16	E B 17	E B 16	18	26	32	37	33	38	40	39	44	50	61	36	32	32	19	18	E B 17	E B 16	25
27	A A 49	A A 51	E B 16	E B 16	E B 16	A A 36	20	30	42	A A 85	37	44	40	41	41	45	58	53	75	A A 83	A A 121	A A 168	A A 63	26
28	A A 75	A A 63	A A 77	18	18	E B 16	27	36	A A 96	38	A A 135	44	41	41	56	A A 86	46	36	38	A A 82	44	E B 16	24	E B 16
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	29	36	37	40	46	39	38	61	59	52	65	48	A A 90	82	46	A A 124	A A 87	E B 16
30	E B 16	E B 16	E B 16	E B 16	20	E B 16	28	A A 76	A A 96	42	A A 180	A A 182	A A 126	51	A A 118	A A 121	A A 152	42	28	45	E B 16	20	E B 16	E B 16
31	19	20	24	E B 16	E B 16	18	31	A A 126	A A 99	49	A A 84	A A 168	A A 64	47	38	42	41	44	40	53	62	41	22	25
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	31	39	40	49	44	47	46	45	43	41	40	38	33	26	26	E B 16	18
U Q	A A 20	A A 26	19	20	16	A A 16	26	36	A A 47	A A 52	A A 84	A A 52	A A 60	53	A A 56	52	48	48	46	47	43	A A 50	A A 30	A A 43
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	35	37	38	40	40	40	38	39	36	34	31	25	E B 17	E B 18	E B 16	E B 16

MAY 2018 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 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	16	16	16	14	15	16	19	19	20	20	18	15	14	14	14	16	16	16	16
2	16	16	16	16	16	16	16	15	13	14	17	20	23	23	23	18	15	14	14	14	16	16	16	16
3	16	16	16	16	16	16	16	14	14	16	16	22	19	20	21	20	15	14	14	15	15	16	16	16
4	16	16	16	16	16	16	16	14	14	17	16	21	22	22	20	20	16	14	12	14	16	16	16	16
5	16	16	16	16	15	16	16	16	15	15	23	20	19	16	18	17	15	14	15	16	16	16	16	16
6	16	16	16	16	16	16	16	14	13	16	18	16	22	21	20	21	16	14	14	16	16	16	16	16
7	16	16	16	16	16	16	16	14	14	17	20	19	21	21	20	16	14	13	14	15	16	17	16	16
8	16	16	16	16	16	16	16	15	15	15	18	21	21	19	16	15	15	14	14	16	16	16	16	16
9	16	16	16	16	16	16	16	13	15	17	17	22	23	20	18	20	16	15	14	12	16	16	16	16
10	16	16	16	16	16	16	16	15	16	16	20	21	21	23	21	18	15	16	12	10	16	16	16	16
11	16	16	16	16	16	16	16	15	16	16	15	19	20	20	18	17	14	14	14	14	16	16	16	16
12	16	16	16	16	16	16	16	15	14	17	16	18	20	20	18	20	16	15	15	14	16	16	16	16
13	16	16	16	16	16	16	16	15	15	15	19	21	27	24	20	19	19	15	14	12	14	16	16	16
14	16	16	16	16	16	16	16	14	13	14	18	18	19	21	19	16	16	15	14	14	16	16	16	16
15	16	16	16	16	16	16	14	14	16	15	16	19	20	22	20	18	15	15	13	12	16	16	16	16
16	16	16	16	16	16	16	16	14	16	16	16	20	20	20	20	18	16	14	12	14	14	16	16	16
17	16	16	16	16	16	16	16	13	14	14	16	17	17	23	20	19	15	15	12	14	16	14	16	16
18	16	16	16	16	16	16	14	15	15	16	20	24	22	20	20	18	16	14	12	16	16	16	16	16
19	16	16	16	16	16	16	16	14	16	16	20	21	19	18	20	20	15	14	14	14	16	16	16	16
20	16	16	16	16	16	16	16	14	13	15	15	21	18	22	17	17	17	13	12	10	14	16	16	16
21	16	16	16	16	16	16	14	14	13	13	18	20	20	20	18	20	16	14	13	14	16	16	16	16
22	16	16	16	16	16	16	16	15	14	16	19	18	19	16	18	15	14	14	12	10	16	16	16	16
23	16	16	16	16	16	16	16	14	16	16	17	20	19	20	19	18	14	13	12	15	16	16	16	16
24	16	16	16	16	15	16	14	14	13	16	20	18	23	21	21	19	17	14	12	16	16	16	16	16
25	16	16	16	16	16	16	14	14	15	16	17	18	21	20	20	18	15	15	14	16	16	16	16	16
26	16	16	16	17	16	16	15	14	15	15	17	20	21	20	18	19	15	14	14	11	16	17	16	16
27	16	16	16	16	16	16	15	12	15	15	15	18	20	20	18	16	15	15	14	14	16	16	16	16
28	16	16	16	16	14	16	16	14	14	16	16	17	21	22	19	16	15	15	14	14	16	16	16	16
29	16	16	16	16	16	16	16	12	14	16	18	18	22	21	23	18	16	15	13	14	16	16	16	16
30	16	16	16	16	16	16	16	14	14	16	17	18	20	20	16	20	15	14	13	10	16	16	16	16
31	16	16	16	16	16	16	15	14	15	14	17	20	19	17	19	15	17	16	12	12	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	14	14	16	17	20	20	20	20	18	15	14	14	14	16	16	16	16
U Q	16	16	16	16	16	16	16	15	15	16	19	21	22	22	20	20	16	15	14	15	16	16	16	16
L Q	16	16	16	16	16	16	15	14	14	15	16	18	19	20	18	17	15	14	12	12	16	16	16	16

MAY 2018 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 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 308	F 319	F 343	379	374	B	371	387	389	345	337	293	279	298	317	329	333	343	348	A	R 362	362	304	F 308
2	F 293	F	F	F	F 399	388	360	381	376	A	308	275	299	307	A	325	332	303	349	323	328	352	F 305	F 319
3	F 319	F 337	F 352	336	337	320	371	355	375	A	A	A	287	301	J R 319	311	326	330	347	336	373	356	310	316
4	F 303	F 327	F 325	F 329	F 330	F 340	357	355	395	337	309	289	297	318	320	321	318	322	326	333	352	363	332	313
5	F 307	F 303	F 295	348	396	376	393	375	369	339	324	313	283	283	308	338	355	305	328	367	360	R 316	307	F 289
6	F 313	F 318	311	333	403	F 289	366	384	A 355	274	306	269	297	305	279	307	321	325	324	355	377	A	299	301
7	287	301	326	309	F 305	F	395	394	A	J R 298	A	279	299	310	287	287	305	320	336	342	344	344	336	A
8	A	A	295	323	F 316	335	380	374	343	A	A	288	286	311	283	277	291	276	313	363	372	309	294	313
9	309	311	342	298	307	336	356	361	352	350	A	285	A	293	322	320	310	340	337	306	330	349	298	F
10	F 299	F 319	357	F 304	F 314	F 347	373	377	355	333	318	288	262	301	320	307	330	334	320	357	318	313	313	A
11	F 309	F 306	F 326	F 316	F 278	F 305	377	389	A	A	A	293	299	A	A	315	325	317	320	357	359	A	A	A
12	311	A	F 301	F 356	F 313	319	366	J R 378	349	339	295	282	294	278	292	294	309	315	305	321	349	A	A	A
13	F 344	F 327	F 352	F 365	F 355	F 331	J R 381	363	357	313	312	290	277	295	285	315	354	321	323	333	345	F 313	F 293	A
14	A	F 301	F 302	F 330	F 347	A	A	377	373	A	A	308	278	302	302	290	300	323	348	375	357	331	311	294
15	F 303	F 307	313	F 341	F 316	A	338	367	352	358	284	293	285	295	299	307	324	335	354	334	360	365	312	A
16	305	F	F	F 300	F 297	F 346	388	425	379	A	A	297	315	280	276	291	316	336	339	353	394	349	302	A
17	A	A	F 329	F 317	F 321	325	354	383	410	353	257	297	273	273	284	321	355	345	315	302	316	V 328	317	310
18	F 295	F 290	F 308	F 302	F 306	F 311	395	404	355	A	A	271	272	282	295	316	311	323	314	327	332	330	345	F 299
19	F	F 332	F 323	A	A	A	352	357	387	342	A	A	A	286	289	292	321	343	354	330	329	V 301	F 293	327
20	F 287	F 308	F 321	F 312	F 306	F 362	382	362	370	310	A	320	A	299	A	310	326	324	310	306	314	346	349	318
21	308	F 301	F 292	F 324	F 300	F 329	376	383	368	361	269	335	A	A	A	304	300	312	323	337	338	325	336	323
22	F 330	F 307	F 304	F 333	F 315	F 348	387	400	365	357	333	357	A	A	286	289	307	321	315	308	366	A	A	A
23	A	A	A	A	A	F 320	350	369	389	343	A	261	A	A	305	306	307	296	303	316	339	332	306	F 309
24	F	F 330	341	329	371	A	350	351	365	321	300	307	308	300	283	294	323	353	A	344	319	A	311	306
25	318	317	330	337	343	314	352	357	337	335	330	A	318	310	297	310	334	319	339	308	332	319	299	303
26	F 307	F 322	F 354	365	333	329	353	366	349	313	262	261	249	279	300	322	312	338	308	322	361	397	311	312
27	A	A	369	339	358	A	390	364	375	A	355	243	294	300	269	302	298	322	350	A	A	A	A	F 298
28	A	A	A	F 363	314	346	354	368	A	354	A	328	271	269	289	A	306	301	324	A	J R 357	333	300	317
29	322	F 296	F 340	F 333	F 342	F 307	341	366	370	320	317	277	274	303	288	287	304	321	A	A 347	330	A	A	F 305
30	F	362	314	F	F 305	F 343	339	A	A	361	A	A	A	261	A	A	A	319	328	349	330	339	321	313
31	F 325	F 301	F	F 313	299	315	350	A	A	361	A	A	A	304	284	272	277	302	336	361	368	312	302	303
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	26	27	29	24	30	29	26	23	17	26	23	27	26	29	30	31	29	28	30	24	26	22
MED	F 308	F 311	F 326	F 330	F 316	F 330	366	374	368	339	309	290	286	299	290	307	317	322	326	335	347	332	308	310
U Q	F 318	F 327	F 342	F 341	351	F 346	381	384	376	354	327	307	299	304	305	318	326	335	343	354	361	350	317	316
L Q	F 303	F 301	F 308	F 313	F 306	F 317	352	362	355	320	290	277	274	282	284	292	306	315	315	322	330	318	300	303

MAY 2018 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	A	A	A		A	A	A	A		A				
										414				427										
2								A	A	A	A	A	A	A	A	A	L	L						
												382					467	380						
3									A	A	A	A	A	A	A	A	A							
																		396						
4								A	A		A		405	427	458	A		A	A					
										426		420					409							
5							L		L	L				A	A	A	A		U L					
									391	417	426	452	419		399			390	408					
6										A		A	A						L					
											417			405	364	390	410	361	362					
7									A	A	A													
												422	430	399	425	404	381	374						
8								L	A	A	A	A	A	A	A	A		A						
																	394							
9								L	A	A	A	A	A		A	A	A	A	L					
														405										
10								L	L	A	A		A	A	A		A	A						
												406				402	371	376						
11									A	A	A	L	A	A	A		A	A						
												392				401	377	367						
12												A		A				L	U L					
									365	426	403	418	395		397	419	386	387	339					
13									L	A			A	A	A	A	A	A						
									399		410	418												
14							A		A	A	A	A	A	A					A	A				
															419	397	403							
15								A	A			A				A	A							
										406	426		387	417	397			381						
16										A	A	A	A	A			A							
															403	384		395						
17								L	L			A	A	A		A	A	A	A					
									427		394	387	386		412									
18										A	A	A	A	A	A	A	A	A						
19								L	L	L	A	A	A		A		A	A						
								383	378	417				421		371								
20								L	A	U L	A	A	A	A	A	A	A	A						
										411						415								
21								L	U L	U L	439	437		A	A	A	A	A						
									394	415														
22								U L	U L		A	A	A	A	A	A	A	A						
								427	400	448														
23								A	A	A	A		A	A	A		A	A	A					
										396		426				388								
24								L	L				A	A	A	A	A	A	A					
									393	400	420	412												
25								L	L		A	A	A	A	A	A		A	L					
									377	415							395							
26								L	U L	U L	422	416	414	A	A	A			U L	L				
								396	402	407							444	377	358					
27								L	A	A		A				A	A		A	A				
											426		455	418	391									
28								A	A	U L	A	A			A	A	A	A	A	A				
										407			362	397										
29								A	L		A			A	A	A	A	A	A					
									380	400		411	460											
30								A	A	A	A	A		A	A	A	A	A						
																			386					
31								A	A	A	A	A	A	A		A	A	A	A					
															398									
	00	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	11	15	10	14	10	9	11	10	11	11	5					
MED								L	L										U L					
								396	393	414	421	417	410	417	399	399	395	380	362					
U Q								U L	U L															
								427	400	417	426	422	430	424	419	404	410	390	397					
L Q								L	L										U L					
								383	378	406	410	406	387	402	397	388	381	374	348					

MAY 2018 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 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									226	278	296	372	378	332	294	266	258	252		A				
2								238	234	A	EA 382	396	326	A 312	A	272	258	248						
3									234	A	A	A	356	324	278	300	258	240						
4								256	228	302	A 338	302	320	286	274	256	256	246	234		220			
5							194		256	304	332	336	354	334	302	254	238	240	234					
6										448	346	458	316	312	328	296	264	252	258					
7									A	364	A	426	358	314	348	346	298	264						
8								226	286	A	A	EA 404	350	294	A 398	324	298	326						
9								262	EA 286	280	A	404	A	328	282	274	296	248	236					
10								238	258	306	330	370	410	316	284	298	268	250						
11									A	A	A	404	382	A	A	288	268	270	264					
12									288	318	392	432	396	434	368	352	332	294	L 316					
13									258	A 358	336	396	372	332	322	280	246	256						
14							A		A 254	A	A	352	EA 424	314	316	330	310	272	244					
15								250	A 264	242	394	342	330	318	320	308	274	258						
16										A	A	362	322	348	358	330	288	254						
17								216	202		516	372	392	386	358	288	246	246	260					
18										A	A	460	422	344	312	282	288	260						
19								258	236	292	A	A	A	326	334	320	284	252						
20								236	252	L 330	A	A 342	A	A 362	A	296	268	270						
21								228	242	L 270	474	308	A	A	A	320	EA 346	290						
22								228	252	276	318	272	A	A	392	346	304	272						
23								244	230	306	A	506	A	A	320	312	294	304	A 332					
24								266	240	326	362	364	360	372	356	342	280	246	A					
25								238	304	298	EA 320	A	350	358	372	326	288	274	244					
26								252	264	326	490	478	524	390	306	298	296	254	298	248				
27								262	238	A	278	568	406	374	470	354	A 368		284	A				
28								246	A	266	A	316	402	354	316	A	296	306	258	A				
29								248	252	312	344	408	392	EA 368	A 376	334	324	278	A					
30								A	A	262	A	A		392	A	A	A	280	242					
31								A	A	264	A	A	A	342	368	378	346	298	254					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	18	23	22	17	26	23	27	26	29	30	30	15	1	1			
MED							194	245	252	303	341	378	366	333	325	308	287	259	258	248	220			
U Q								256	264	326	393	426	402	368	368	332	298	278	284					
L Q								236	234	276	325	342	350	316	306	285	264	250	242					

MAY 2018 h'F2 (KM)

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MAY 2018 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	272	Q 268	260	208	206	B	226	214	218	A 216	E A 268	A	A	188	A	A	A	A	242	A	A 254	202	214	Q 270
2	Q 304	254	Q 264	Q 236	188	256	224	A	A	A	A	E A 258	A	A	A	A	172	H 194	236	242	A 270	224	252	Q 244
3	246	252	224	192	220	250	222	212	A	A	A	A	A	A	A	A	A	222	236	A 236	196	220	260	254
4	276	284	Q 250	258	A 254	246	224	A	A	194	A	H 182	226	192	174	A	220	A	A	222	214	216	222	280
5	280	Q 272	Q 272	222	184	260	180	206	224	188	182	172	214	E A 282	A 256	A	A	200	A 204	214	214	A 234	260	Q 294
6	290	288	284	E A 252	202	Q 362	216	216	E A 312	A	H 188	A	A	A 218	250	214	192	194	H 214	224	A 232	A	A 296	278
7	336	286	A 230	246	Q 284	Q 254	190	188	A	A	A	190	188	206	186	194	216	228	238	216	234	218	A 262	A
8	A	A	288	E A 288	254	226	214	216	A	A	A	A	A	A	A	A	210	A	272	218	204	E A 268	A 284	270
9	268	268	234	268	222	232	224	210	A	A	A	A	A	232	A	A	A	A	202	250	216	244	280	Q 320
10	Q 284	Q 274	192	Q 330	Q 306	Q 308	220	232	222	A	A	210	A	A	A	H 192	E A 258	A	252	222	A 240	A 256	E A 276	A
11	Q 288	Q 288	Q 242	262	Q 270	Q 254	210	210	A	A	A	A 228	A	A	A	A 240	208	A	A	228	A 210	A	A	A
12	A 256	A	296	212	226	272	218	232	A 242	184	214	A 230	234	A	232	182	220	206	E A 262	262	Q 220	A	A	A
13	248	A 254	234	200	218	220	204	212	210	A	204	212	A	A	A	A	A	A	260	252	216	244	Q 246	A
14	A	Q 308	280	E A 224	192	A	A	E A 234	A	A	A	A	A	A	172	A 228	212	A	A	200	212	220	262	282
15	264	300	248	228	Q 246	A	230	A	A	A 216	178	A	222	214	210	A	A	E A 236	230	224	202	A 228	256	A
16	292	Q 334	A 286	Q 276	Q 276	Q 234	212	184	212	A	A	A	A	A	218	242	A	236	240	208	186	216	264	A
17	A	A	284	Q 276	Q 258	Q 236	208	204	188	238	244	A 266	A 264	A	214	A	A	A	A	E A 326	A 282	252	A 248	E A 324
18	318	Q 294	284	Q 278	276	272	208	202	188	A	A	A	A	A	A	A	A	A	252	246	214	214	214	A 340
19	A 308	A 240	262	A	A	A	230	202	A 232	194	A	A	A	182	A	286	A	A	236	218	202	A 300	254	264
20	Q 296	Q 256	Q 250	Q 266	286	210	214	184	A	184	A	A	A	A	A	A 226	A	A	280	286	244	214	186	224
21	262	302	Q 266	254	Q 280	Q 226	206	204	190	190	180	202	A	A	A	A	A	A	262	232	202	216	208	236
22	274	248	244	232	254	232	202	186	196	192	A	A	A	A	A	A	A	A	272	276	212	A	A	A
23	A	A	A	A	A	276	A 216	A	A	E A 242	A	214	A	A	A	244	A	A	A	254	232	A 280	E A 338	268
24	Q 240	226	242	242	198	A	A 246	232	A 216	204	200	208	A	A	A	A	A	A	A	A 278	262	A	272	246
25	248	260	236	232	226	262	216	212	A 226	196	A	A	A	A	A	A	230	A	208	280	234	220	246	258
26	Q 258	Q 244	218	190	234	A 264	238	A 222	A 218	180	180	210	200	A	A	A	196	212	A 256	240	200	176	246	E A 312
27	A	A	212	236	230	A	206	222	A	A	190	A	178	208	E A 244	A	A	284	A	A	A	A	A	Q 294
28	A	A	A	228	262	212	226	A	A	204	A	A	A 268	232	A	A	A	E A 282	A	A	206	214	262	250
29	254	Q 268	226	200	Q 234	Q 250	E A 264	A	E A 238	A 232	A	196	160	A	A	A	A	A	A	E A 314	A 230	A	A	252
30	Q 256	242	306	Q 250	Q 256	228	A 238	A	A	A	A	A	A	A	A	A	A	A	204	216	214	224	222	284
31	276	260	230	244	252	254	254	A	A	A	A	A	A	A	210	A	A	A	A	218	E A 266	E A 338	256	A 310
	00	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	25	29	29	29	25	30	23	16	16	11	14	10	10	11	10	11	11	21	28	30	24	26	23
MED	274	268	250	239	246	250	216	211	216	194	189	210	218	209	212	227	211	214	239	230	214	221	254	269
U Q	291	Q 288	282	Q 264	Q 266	263	226	222	A 229	A 216	214	A 228	A 234	232	A 244	242	220	236	261	258	A 234	A 248	A 264	A 294
L Q	256	253	232	223	219	230	208	202	203	189	180	196	188	192	186	194	196	200	222	218	206	216	246	252

MAY 2018 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	102	102	102	102	A	A	A	A	102	104	104	A	A				
2							A	A	104	A	106	104	100	100	100	100	102	102	106	A				
3							A	104	A	A	A	A	A	A	A	A	108	A	A	A				
4							A	A	A	A	A	A	A	A	A	104	104	102	104	B				
5							B	108	A	A	A	A	A	106	104	A	A	112	A					
6							130	100	100	100	A	100	100	100	100	100	100	100	102	A				
7							A	A	102	102	100	102	A	100	A	100	102	A	106	A				
8							A	A	100	A	A	A	A	A	A	100	100	A	A	A				
9							A	100	100	100	A	A	A	100	100	100	100	100	A	A				
10							A	100	104	A	A	A	A	A	A	A	104	104	A	A				
11							110	A	A	A	A	A	A	A	A	A	A	A	A	A				
12							A	102	102	100	A	A	A	A	A	110	106	106	A	A				
13							A	A	A	A	A	A	A	A	A	A	106	106	100	A				
14							A	A	100	A	A	A	A	A	A	A	A	A	A	A				
15							A	A	A	A	A	A	A	A	A	A	100	100	A	A				
16							A	A	A	A	A	A	A	A	100	100	114	110	A	B				
17							A	A	A	A	A	A	106	106	A	A	A	A	A	A				
18							116	104	A	A	A	A	104	104	104	104	106	106	A	A				
19							A	106	A	A	A	A	A	106	102	102	A	102	102	A				
20							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
21							A	A	A	A	102	102	A	A	102	102	102	102	A	A				
22							A	A	A	102	102	102	102	102	102	102	102	102	A	A				
23							A	A	A	A	A	104	A	102	102	102	100	100	100	A				
24							A	A	A	100	104	A	104	104	104	102	102	102	A	A				
25							124	A	A	A	A	A	A	A	100	102	102	102	A	A				
26							A	A	A	A	A	104	104	104	104	A	102	100	104	A				
27							116	A	A	A	A	A	A	104	100	100	100	102	A	A				
28							A	A	A	A	A	A	104	104	104	102	102	106	104	A				
29							A	A	A	A	A	A	104	104	104	A	104	A	A	A				
30								A	A	A	A	A		A	100	100	102	102	A	A				
31							A	A	100	A	A	A	102	102	102	102	100	100	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	9	10	7	6	7	10	16	18	20	25	23	9					
MED							116	102	101	100	102	102	104	104	102	102	102	102	104					
U Q							127	105	102	102	104	104	104	104	104	102	104	106	105					
L Q							113	100	100	100	102	102	102	101	100	100	100	100	101					

IONOSPHERIC DATA STATION Okinawa

MAY 2018 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	100	B	98	94	94	98	120	118	108	88	100	94	94	98	120	104	100	98	98	98	98	88	98	98
2	98	92	92	94	94	94	124	114	108	100	90	106	102	100	96	102	150	146	104	98	96	100	116	94
3	96	96	90	86	82	88	118	112	104	100	96	92	92	92	96	96	158	140	108	106	112	102	94	92
4	92	88	90	90	90	90	112	90	90	90	90	94	94	94	94	136	146	116	108	100	92	96	96	94
5	90	90	90	90	98	110	B	110	122	96	96	96	150	130	134	118	124	120	102	94	94	110	122	96
6	100	90	90	90	94	B	G	116	112	108	104	110	110	112	162	138	G	G	G	98	96	94	94	94
7	94	94	94	90	90	B	122	108	104	100	96	G	96	108	106	G	112	100	106	106	98	96	96	96
8	96	94	90	90	88	88	88	108	104	100	98	100	100	98	94	102	112	100	100	96	94	94	94	88
9	88	88	106	B	90	124	124	116	102	102	100	100	100	100	102	120	104	102	104	96	96	98	98	92
10	92	88	92	88	88	B	128	112	106	102	98	98	88	88	86	86	122	104	98	94	92	92	92	106
11	102	92	92	92	92	92	G	98	114	98	94	102	92	92	92	102	120	100	96	96	94	94	94	90
12	90	90	92	92	98	98	116	112	102	122	180	94	94	94	118	90	134	124	100	98	98	104	98	132
13	122	86	88	88	96	88	112	102	98	94	102	90	92	92	92	92	112	108	102	98	98	82	86	94
14	92	92	106	92	90	108	108	88	100	98	148	94	94	94	96	96	92	92	86	86	88	84	80	94
15	84	90	88	88	100	144	104	102	96	100	92	88	90	90	140	94	112	104	90	94	94	90	94	94
16	94	102	94	80	B	B	110	104	102	98	94	92	92	108	140	120	120	112	102	98	94	94	106	88
17	88	90	86	106	86	104	100	162	98	96	92	136	88	108	100	104	102	102	102	90	94	94	94	94
18	98	94	92	92	94	94	G	106	108	102	132	110	106	110	110	118	100	104	104	98	98	94	94	96
19	90	90	90	90	92	92	98	102	94	102	92	94	92	128	166	110	96	116	114	106	88	102	92	86
20	132	102	96	98	94	94	110	110	102	96	92	92	92	92	92	88	88	108	106	106	104	80	82	B
21	92	94	94	94	94	94	94	110	96	126	126	120	112	106	106	112	100	104	100	96	102	100	100	100
22	98	98	98	94	96	96	116	118	106	114	134	118	116	110	112	110	110	104	100	100	96	96	96	94
23	96	100	92	94	126	96	94	98	102	98	96	140	124	110	120	122	112	106	102	100	100	104	102	112
24	96	94	98	98	110	104	94	96	92	106	128	94	132	120	112	106	104	100	102	98	100	102	96	96
25	98	94	B	96	90	94	94	98	110	112	106	102	102	146	102	108	140	104	108	100	98	100	100	94
26	B	100	96	104	94	92	112	94	94	90	96	122	148	114	114	110	120	114	108	108	98	98	98	98
27	98	98	110	100	114	96	94	120	102	102	120	98	110	132	118	108	104	104	98	96	102	98	98	98
28	94	92	94	96	94	100	98	100	94	96	92	96	114	114	108	96	114	116	108	96	100	98	96	102
29	98	98	98	94	94	94	116	92	92	92	92	96	122	118	108	114	102	102	98	94	98	100	94	114
30	94	94	94	92	90	88	108	102	100	92	94	92	92	114	114	110	104	108	102	94	86	84	84	100
31	100	88	98	94	112	104	112	104	102	100	98	98	102	112	118	106	110	102	100	96	96	96	96	96
	00	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	30	27	27	31	31	31	31	30	31	31	31	30	30	30	30	31	31	31	31	30
MED	96	93	93	92	94	94	110	106	102	100	96	97	100	108	108	107	112	104	102	98	96	96	96	95
U Q	98	96	98	94	96	104	116	112	106	102	106	106	112	114	118	114	120	114	106	100	98	100	98	98
L Q	92	90	90	90	90	92	98	98	96	96	92	94	92	94	96	96	102	102	100	96	94	94	94	94

MAY 2018 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 2018 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F1		F4	F3	F2	FF21	C3	C2	C5	LCQ12	C2	L3	L3	L1	C2	C2	C4	L6	L5	L9	FQ71	FQ31	FQ21	FQ21
2	FQ11	F2	F2	F2	F1	F6	CL52	CL51	C2	C5	LC13	C1	C2	C4	L6	C2	H2	H1	C5	L4	FQ31	FQ41	FFQ13	F3
3	FQ21	F3	FQ21	F1	F1	F1	CL42	CL31	CQ41	CQ51	CQ41	L7	L5	LQ41	LQ41	L6	HC11	HCQ11	C3	C6	FQ31	FFQ26	FQQ31	FQ31
4	F4	FQ31	FQ41	FQ61	FQ31	F2	CL22	LQ51	LQ71	L3	LQ31	LQ11	LQ21	L1	L1	HL11	HC11	C4	C3	LQ31	F3	FFQ51	FFQ11	F4
5	F2	F1	F1	FQ31	F2	F1		CH12	CL11	L2	L2	LH21	HL11	HL11	HL11	CL22	CL11	CL11	C2	L7	F4	FQ41	F2	F6
6	FQ21	FFQ41	FQ31	FQ61	F1			CQ31	CQ41	CQ41	CQ11	C2	C2	C1	H1	H1				L8	F9	F7	FQ51	FQ41
7	FQ31	FQ31	F4	FQ31	F2		C1	C2	CQ41	C4	L3		L1	C1	C1		C1	CQ21	CQ31	C3	F7	F4	FQ31	FQ41
8	FQ31	FQ31	F3	F2	FF31	F1	L4	C1	C2	C5	L4	LQ41	C2	L3	L5	C2	C1	CQ41	CQ51	LQ41	F2	FQ41	FQ51	F2
9	F1	F1	F1		F1	FF11	C1	C2	C6	C4	C4	C2	C4	C2	C2	C3	C4	C5	C1	L1	FF12	FQ81	FQ31	F4
10	F2	FQ41	F3	F2	F1		C3	C3	C1	C2	C2	L1	L4	L3	L3	L2	CL31	C3	L4	L7	FQ61	FQ41	FQ81	FFQ16
11	FFQ14	FQ31	FQ31	FQ31	FQ11	FQ21		LQ31	CLQ25	L8	L8	CLQ13	LQ51	L8	LQ71	CQ21	CQ21	CQ31	LQ31	LC41	FQ51	FQ61	FQ41	FQ41
12	FQ51	FQ31	FQ31	FQ21	F1	F2	C3	C4	C3	C2	HL11	L2	L2	L4	CHL11	L1	HC11	CQ11	C7	L2	FQ21	FQ51	FQ41	FFQ13
13	FFQ14	FQ31	FQ31	FQ21	FQ11	F1	C3	CQ31	CQ31	LQ51	CQ11	L3	L3	LQ31	LQ21	LQ51	C3	C2	C6	LL24	FFQ26	FQ51	FQ21	FQ61
14	FQ41	FQ71	FFQ26	FFQ34	FFQ22	FF81	C8	LCQ15	CQQ51	LQ41	HCL11	LHQ51	LQ51	L3	LQ11	L3	LQ31	LQ41	LQ71	LQ71	FQ51	FQ51	FQ21	FF22
15	FQ21	FQ31	FQ31	FQ11	F2	FF18	CF58	CQ61	LQ71	CQ21	L2	L3	LH11	LH11	HL11	L2	C2	C2	L4	L8	F4	F5	FQ41	FQ41
16	FQ41	FFQ23	FFQ33	FQ11			C4	CQ31	CQ31	CQ51	LQ51	LQ41	LQ31	C2	H1	CL11	CL21	CL31	CL62	L6	F4	F4	FFQ16	FQ51
17	FQ41	FQ41	FQ21	FF11	F1	F1	C1	HCQ11	LQ11	LHQ31	LHQ11	HL11	LC11	C3	C1	C8	CLQ54	CQ61	CL32	LQ81	FF26	F6	FQ61	FQ51
18	FQ41	FQ21	FQ21	FQ21	FQ31	F2		C5	CQ21	CQ51	HCQ14	CQ21	C6	C3	C2	C2	C4	C4	CQ41	L9	F2	F3	F2	F3
19	FQ51	FQ41	FQ31	FQ81	FQ41	FQ71	LC23	C3	L2	CQ21	L5	LQ61	LQ61	C1	H1	C1	L3	CL21	C4	C8	FQ11	FF14	FQ21	FQ41
20	FFQ12	FQ21	FQ21	FQ51	F3	F1	C2	CQ21	CQ41	LQ21	LQ81	L4	LQ41	LQ31	L4	L2	L8	CL34	CL34	CLQ75	FFQ14	F2	F1	
21	F2	FQ71	F2	F3	F2	F2	F2	CL12	LCQ22	CQ21	CQ11	CH11	CQ41	C6	C4	CQ31	CQ61	CQ41	C5	L3	FF13	FQ61	FQ21	FQ21
22	F5	F4	FQ51	FQ31	FQ21	F1	C2	CQ11	CQ21	CQ11	HQ11	CQ21	C3	C4	C2	C3	C3	C6	C8	C8	FF92	F9	F9	FF91
23	FQ51	FQ31	FQ41	FQ71	FFQ17	FQ31	LQ51	LQ41	CQ41	LQ31	LQ41	HCQ11	CQ41	C2	C2	C2	C2	C6	C8	CH61	FQ51	FQ81	FQ61	FQ31
24	F2	FQ11	FQ21	FQ41	FF12	FQ51	LQ51	LQ21	LQ31	C2	C1	LC11	CL11	C1	C3	C3	C6	C8	C9	L9	FQ51	FQ71	FQ31	FQ31
25	FQ21	FQ21		FQ21	FQ31	F2	L1	LC21	CLQ22	CL21	C4	C4	C3	HCQ13	C2	C2	HC12	C2	C2	C9	F2	F1	F1	F2
26		F1	F2	F1	F3	F3	CL33	L5	L4	L1	L2	CL11	H1	C1	C3	C5	C2	C2	C3	CL21	FF51	F1	F1	F5
27	F9	F9	FFQ14	FQ31	FFQ23	F3	LH21	CQ21	CQ41	CQ41	CL11	L1	CH11	H1	H1	C2	C5	C8	C8	L9	FF18	FQ51	FQ81	FQ31
28	FQ71	FQ61	FQ51	FQ31	FQ61	FQ31	L4	C7	LQ61	LQ41	LQ61	L3	C1	C1	C3	L7	C2	C2	C8	L9	FQ31	FQ31	FQ61	FQ41
29	FQ21	F1	F4	F5	F2	F2	C5	LQ41	LQ31	LQ31	LQ31	L2	C1	C2	C3	CL22	C5	CL82	L8	L9	FQ71	FQ81	F9	FFQ12
30	FQ21	FQ41	FQ31	FQ51	FQ21	FQ21	CLQ32	CQ81	CQ81	LQ31	LQ61	LQ71	LQ51	CLQ23	C7	CH81	C4	CH31	C3	L7	F2	F2	F1	FQ21
31	FFQ53	FQ41	FQ41	FQ41	FFQ15	FQ41	C7	C5	C8	CQ41	LQ61	LQ51	CQ41	C2	C1	C1	C2	C4	CQ71	L9	FQ91	FQ71	FQ61	FQ81
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2018 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

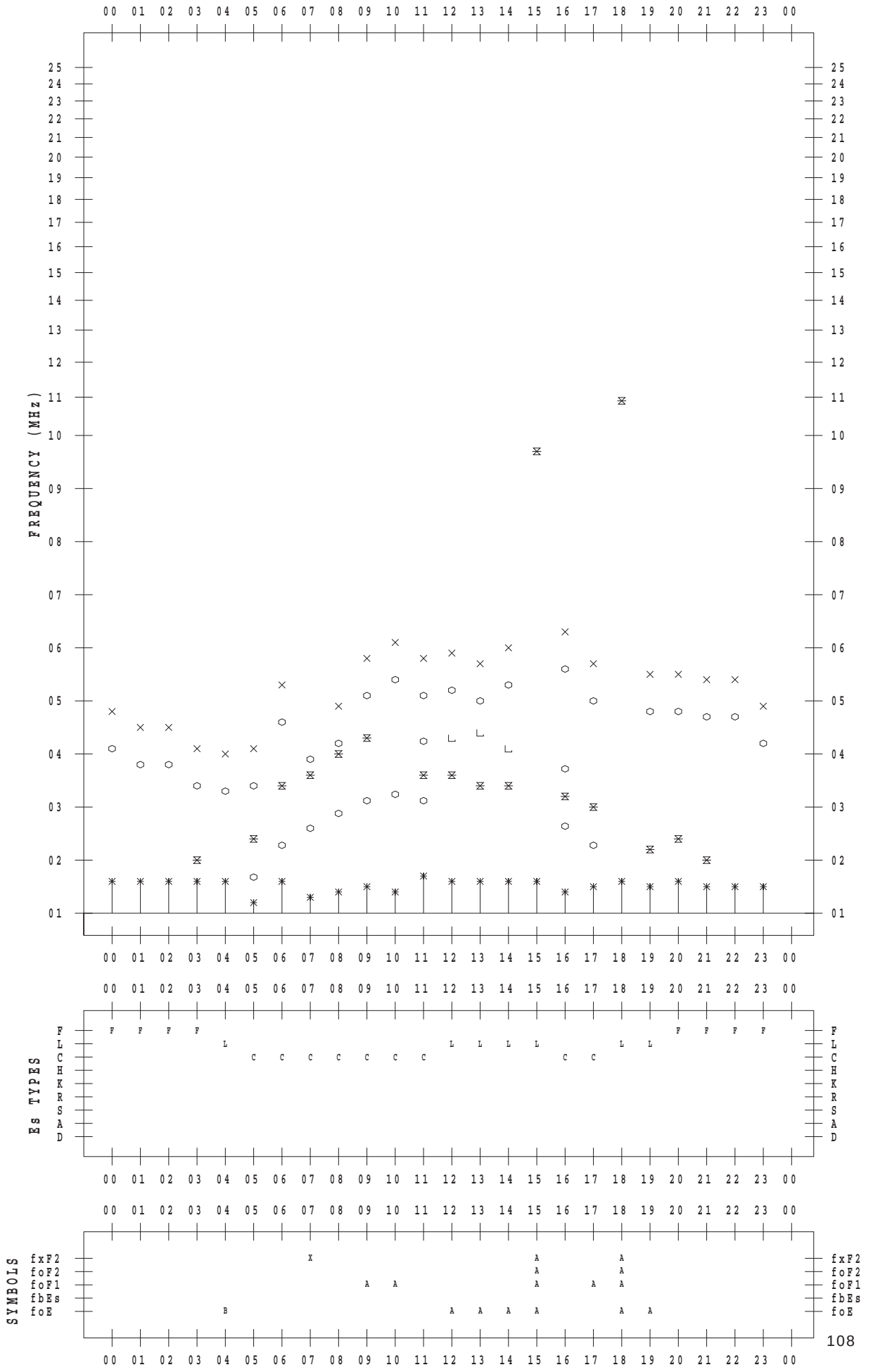
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 1

135 °E MEAN TIME



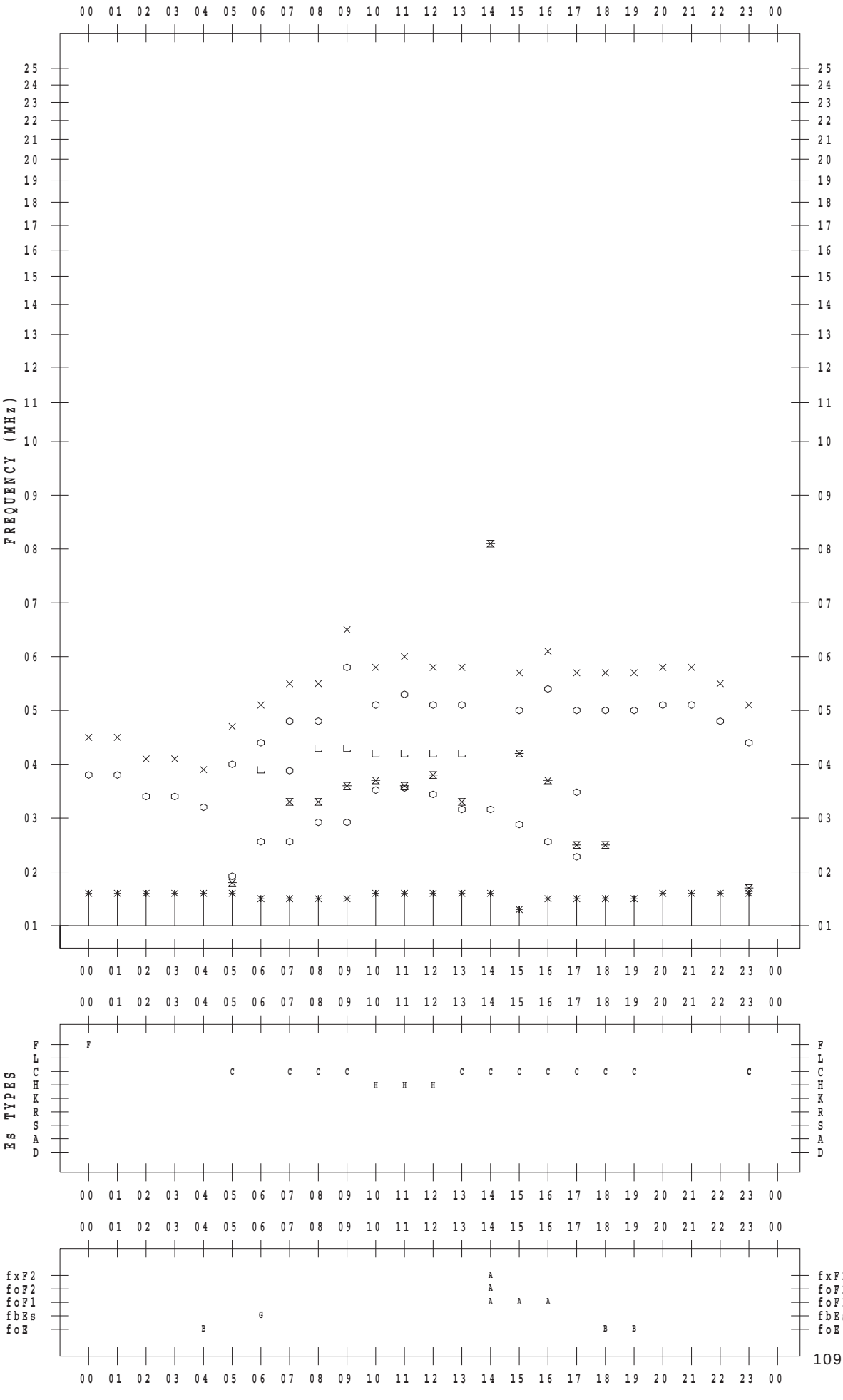
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 2

135 °E MEAN TIME



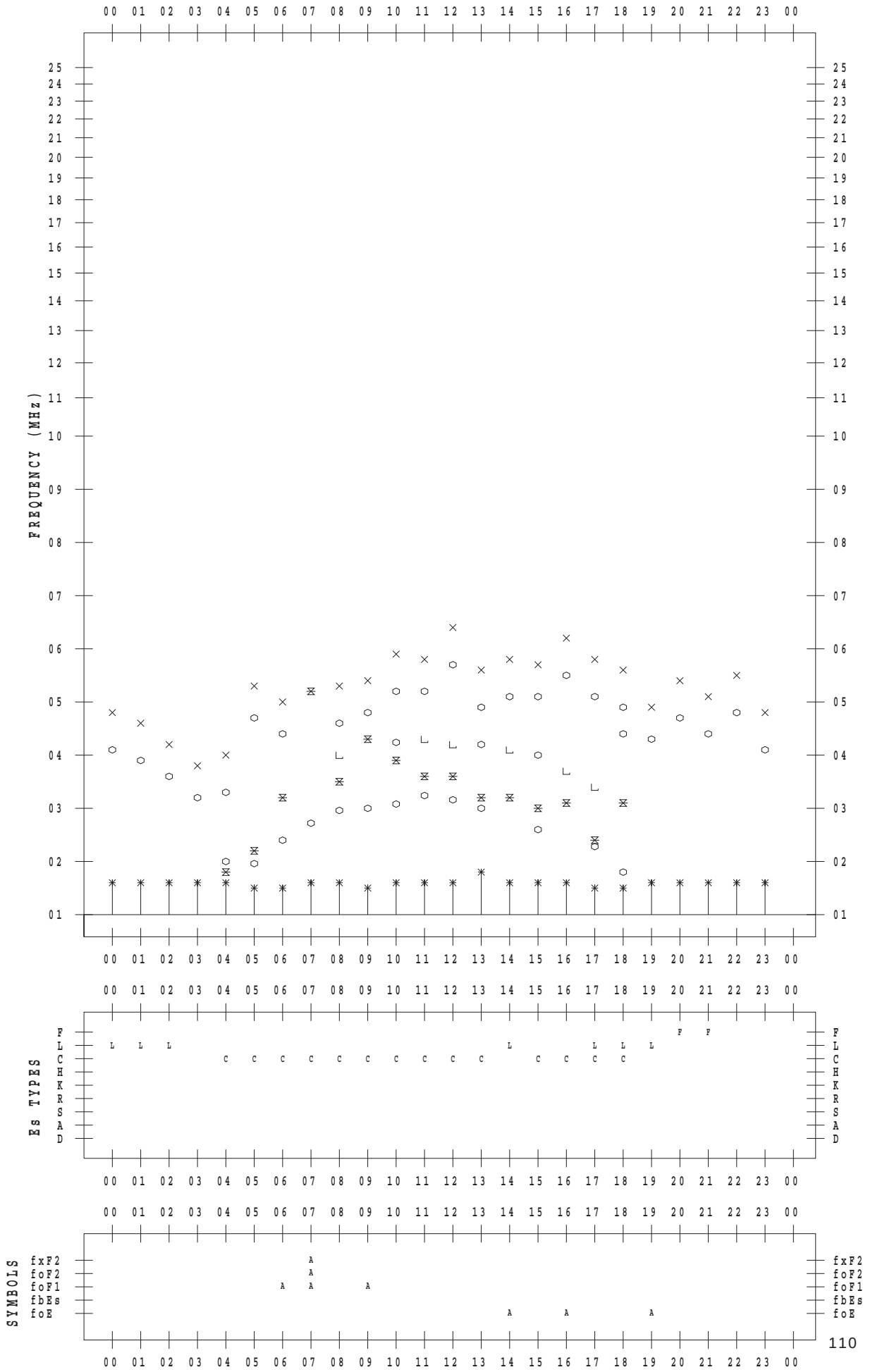
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 3

135 °E MEAN TIME



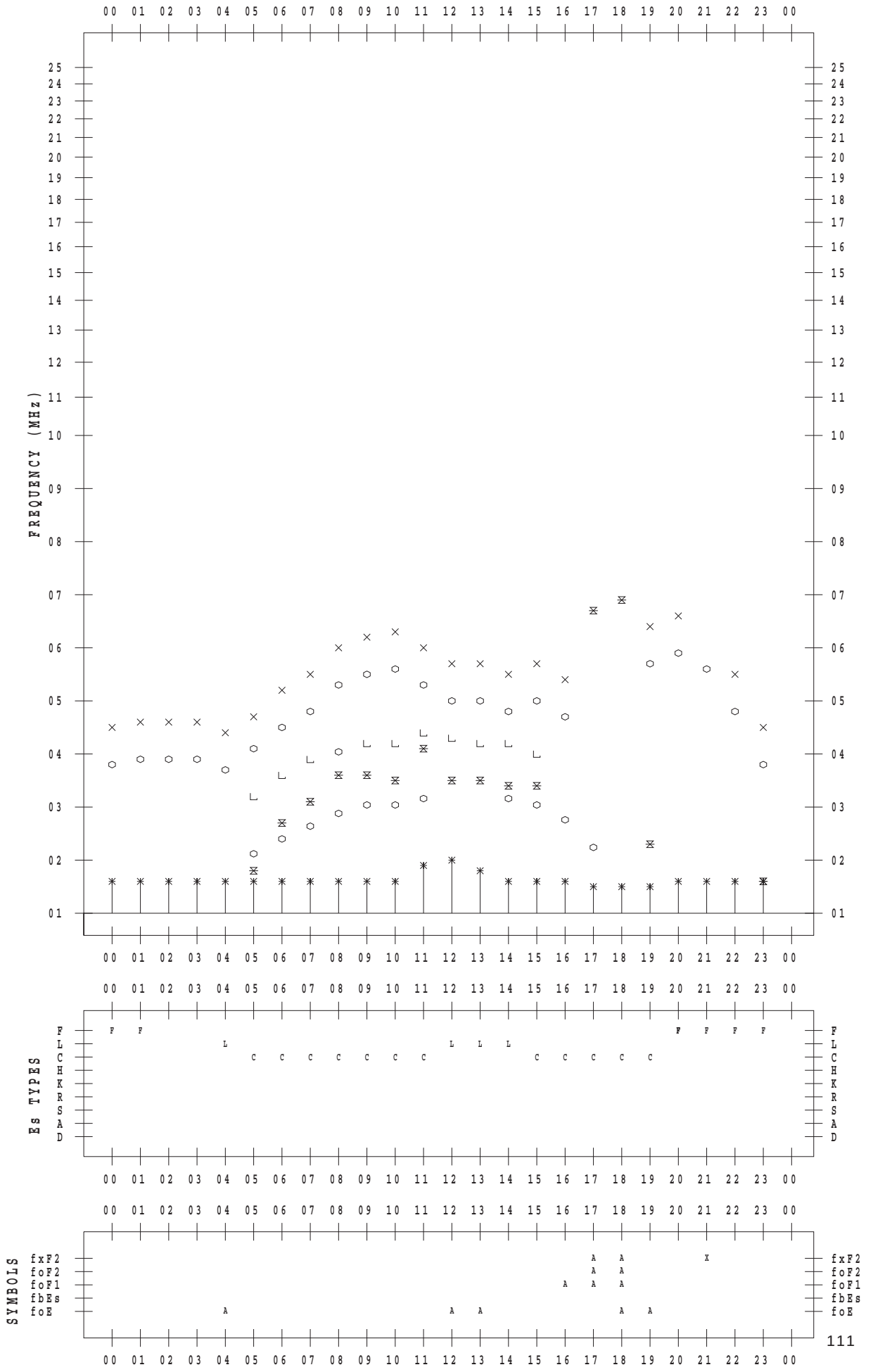
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 4

135 °E MEAN TIME



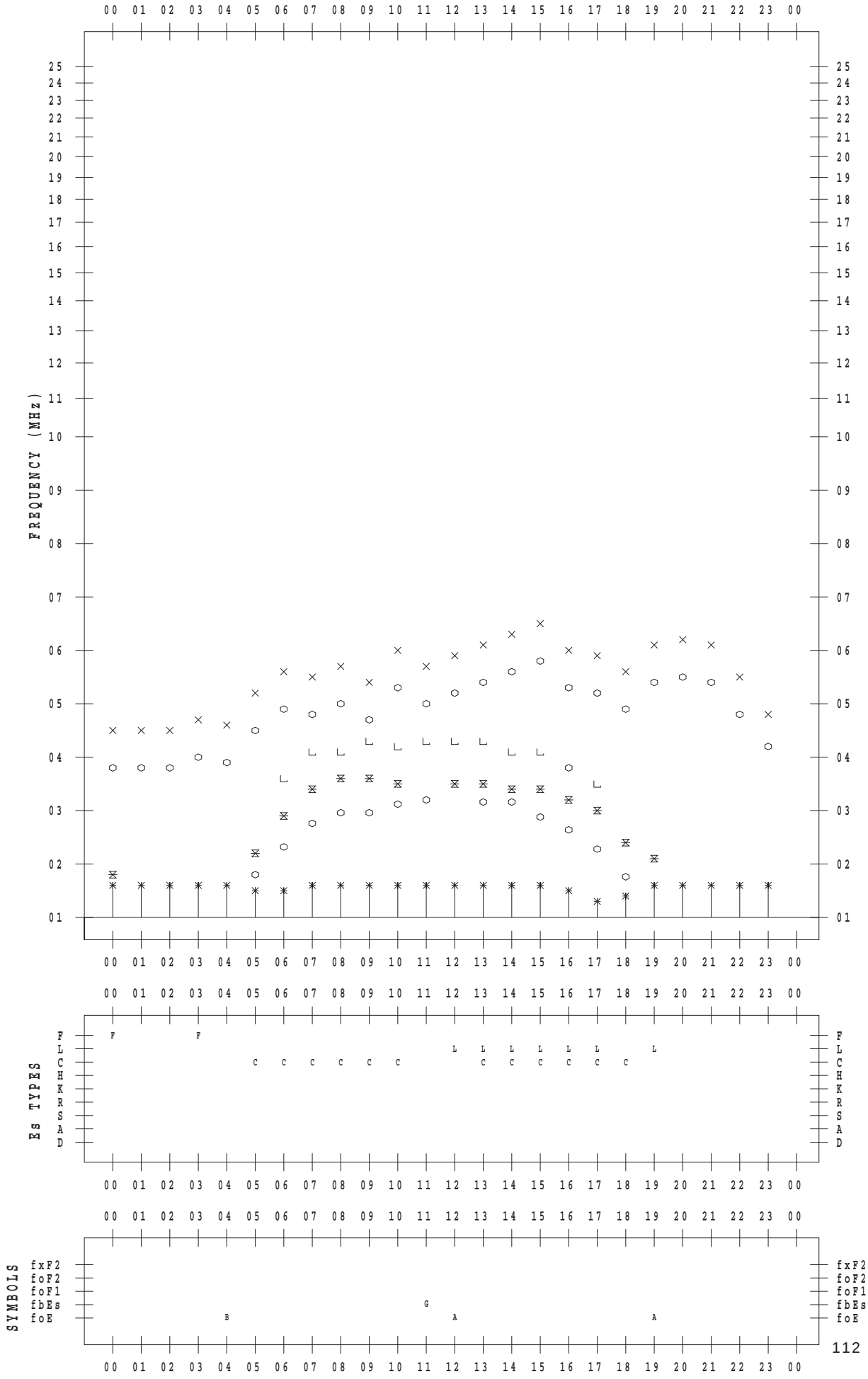
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 5

135 °E MEAN TIME



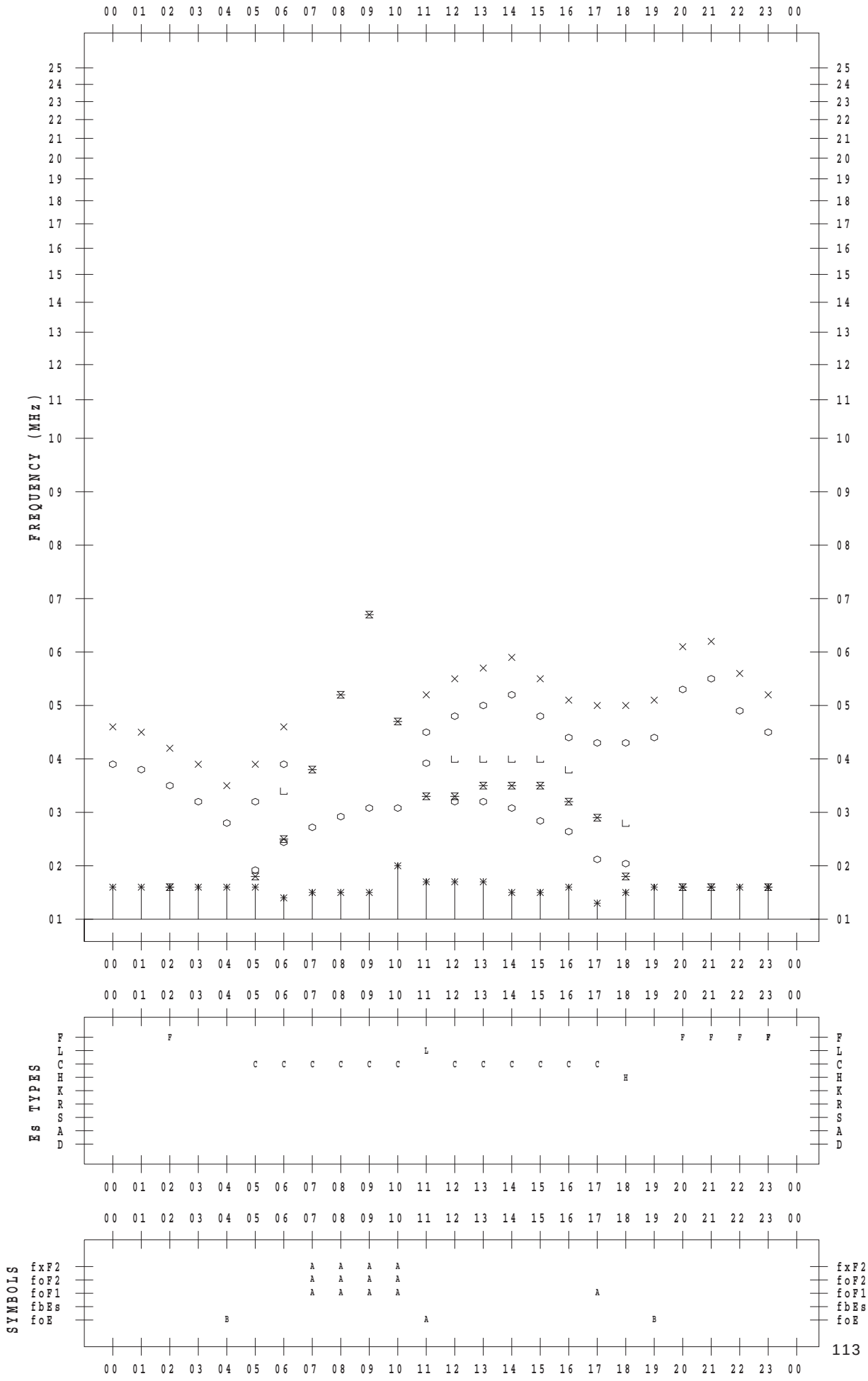
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 6

135 °E MEAN TIME



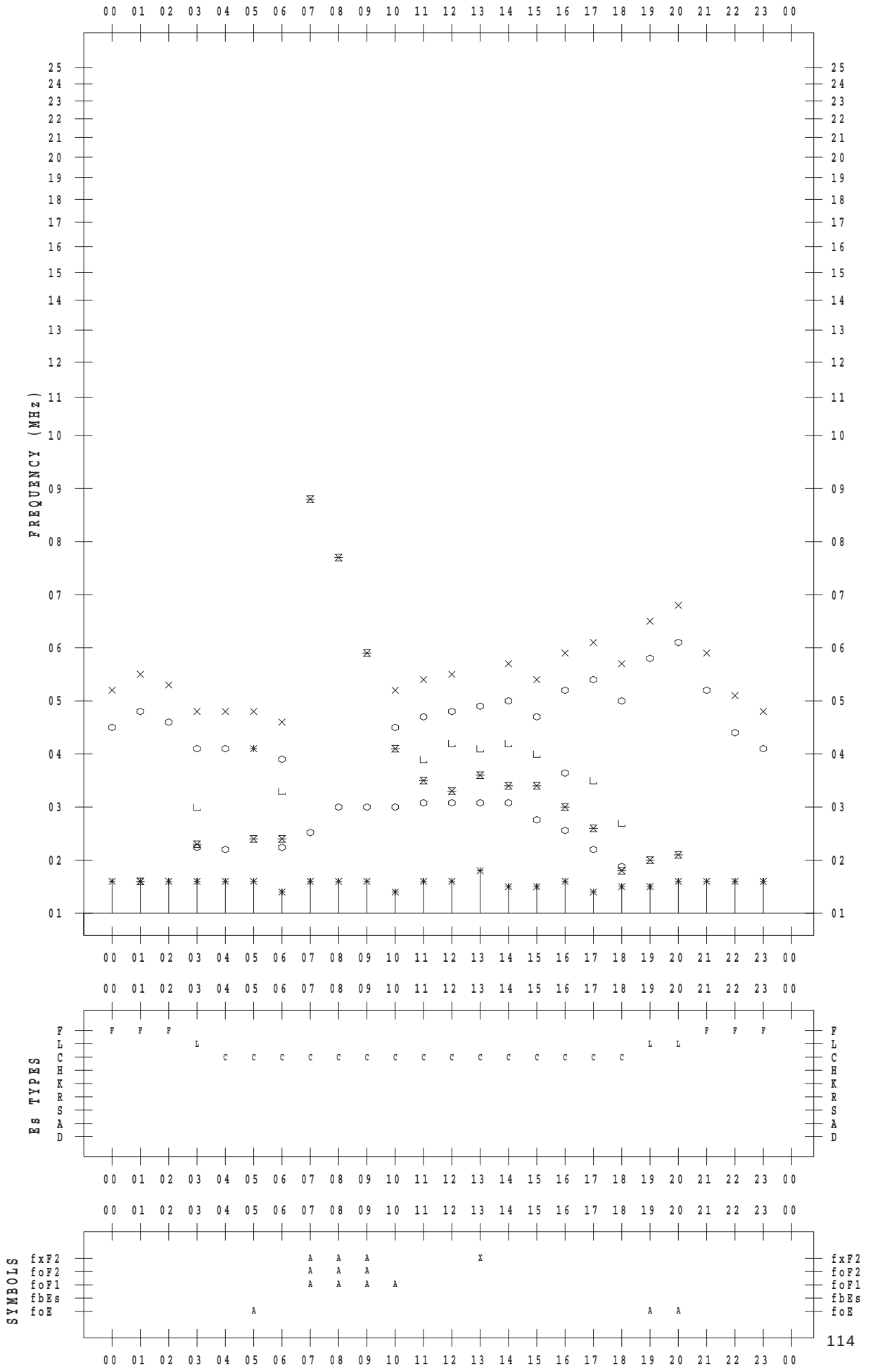
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 7

135 °E MEAN TIME



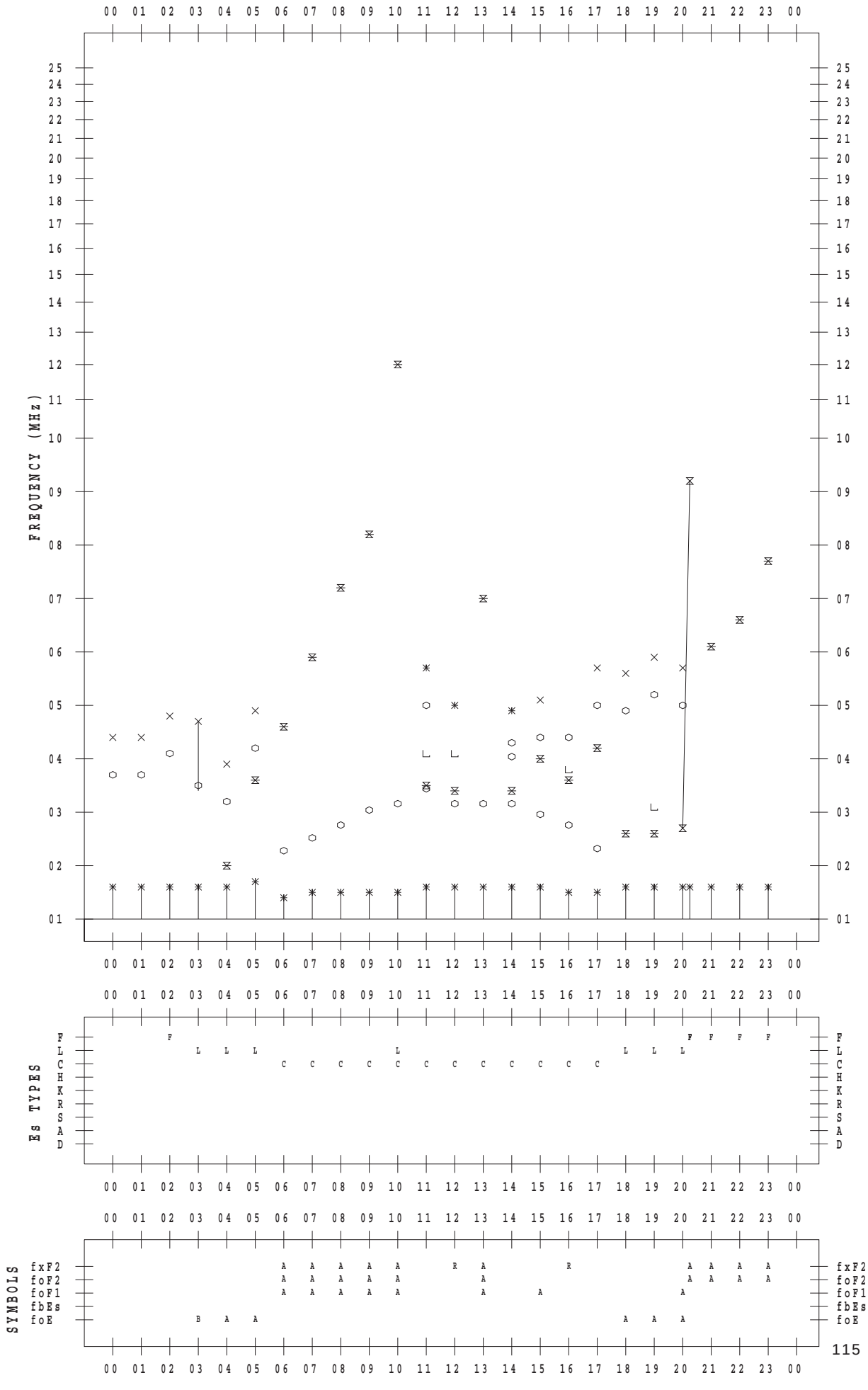
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 8

135 °E MEAN TIME



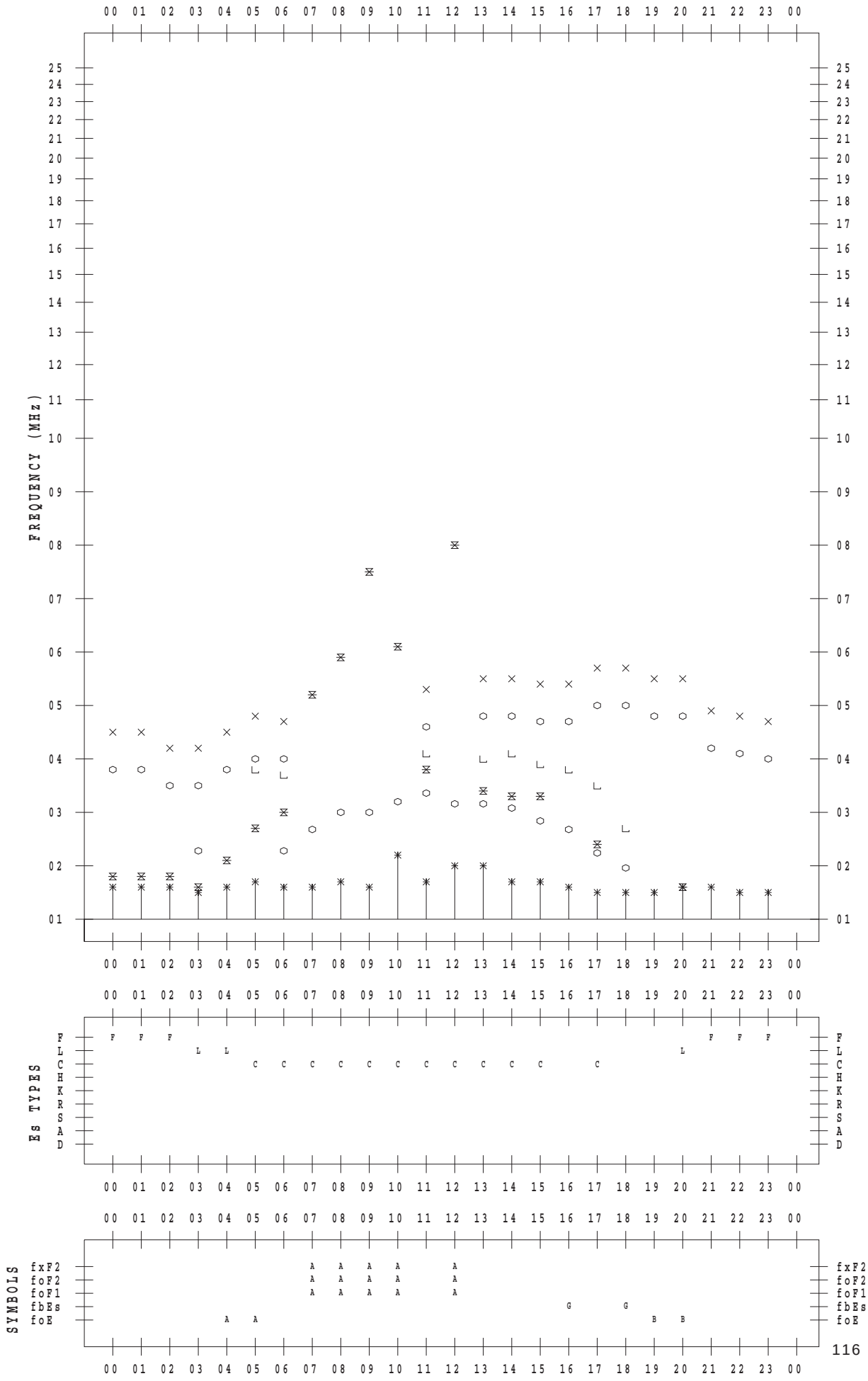
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/ 9

135 °E MEAN TIME



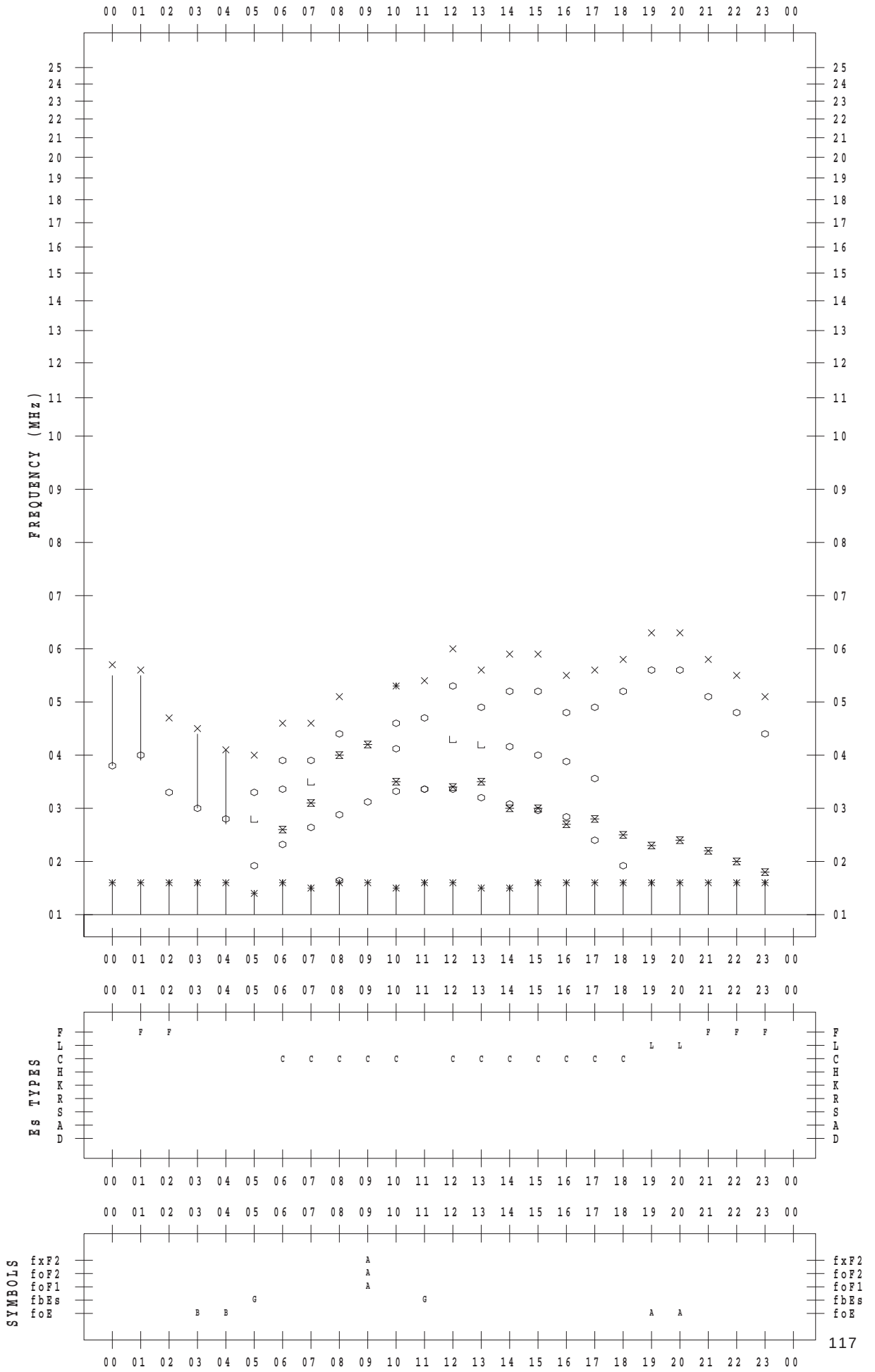
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/10

135 °E MEAN TIME



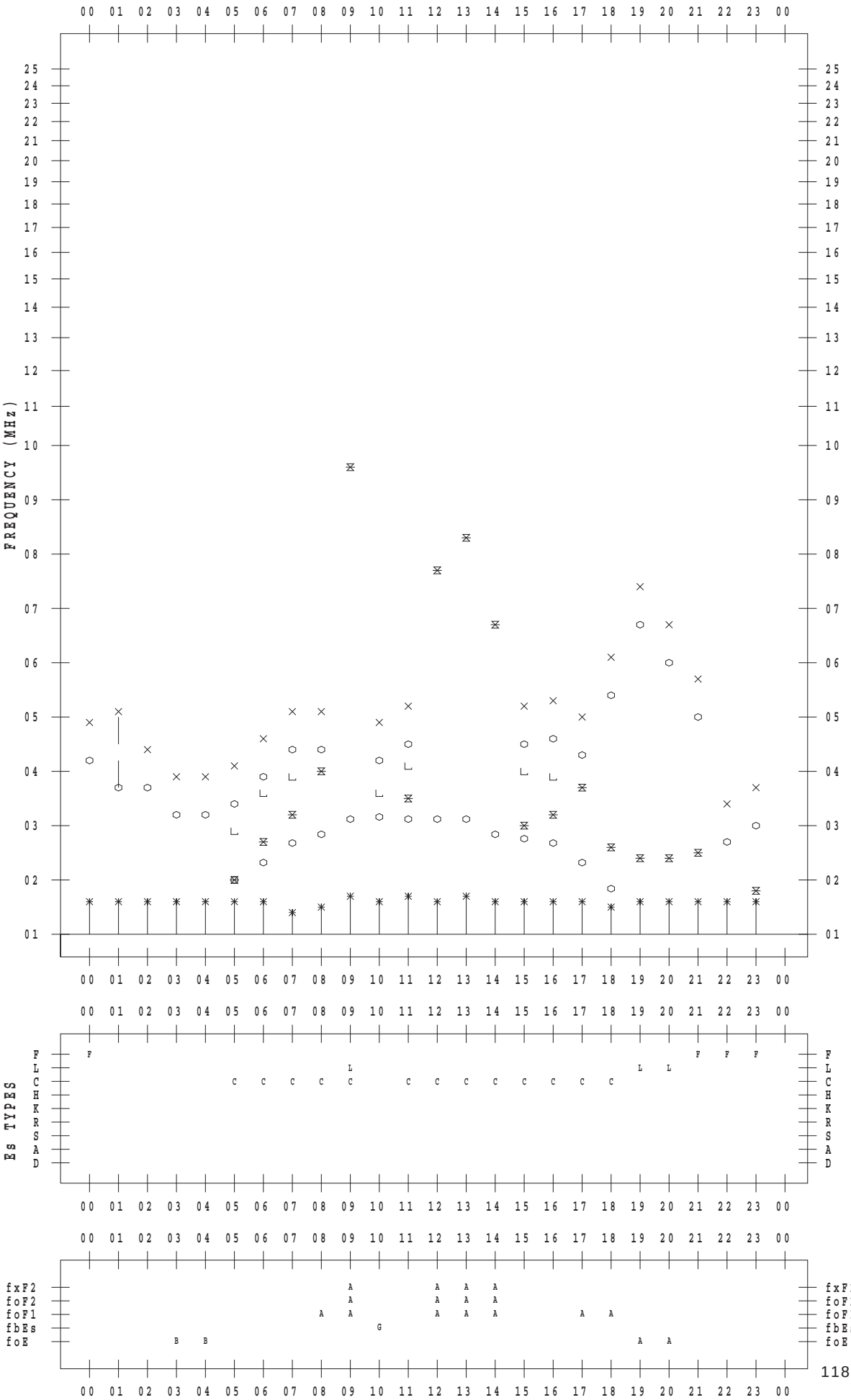
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/11

135 °E MEAN TIME



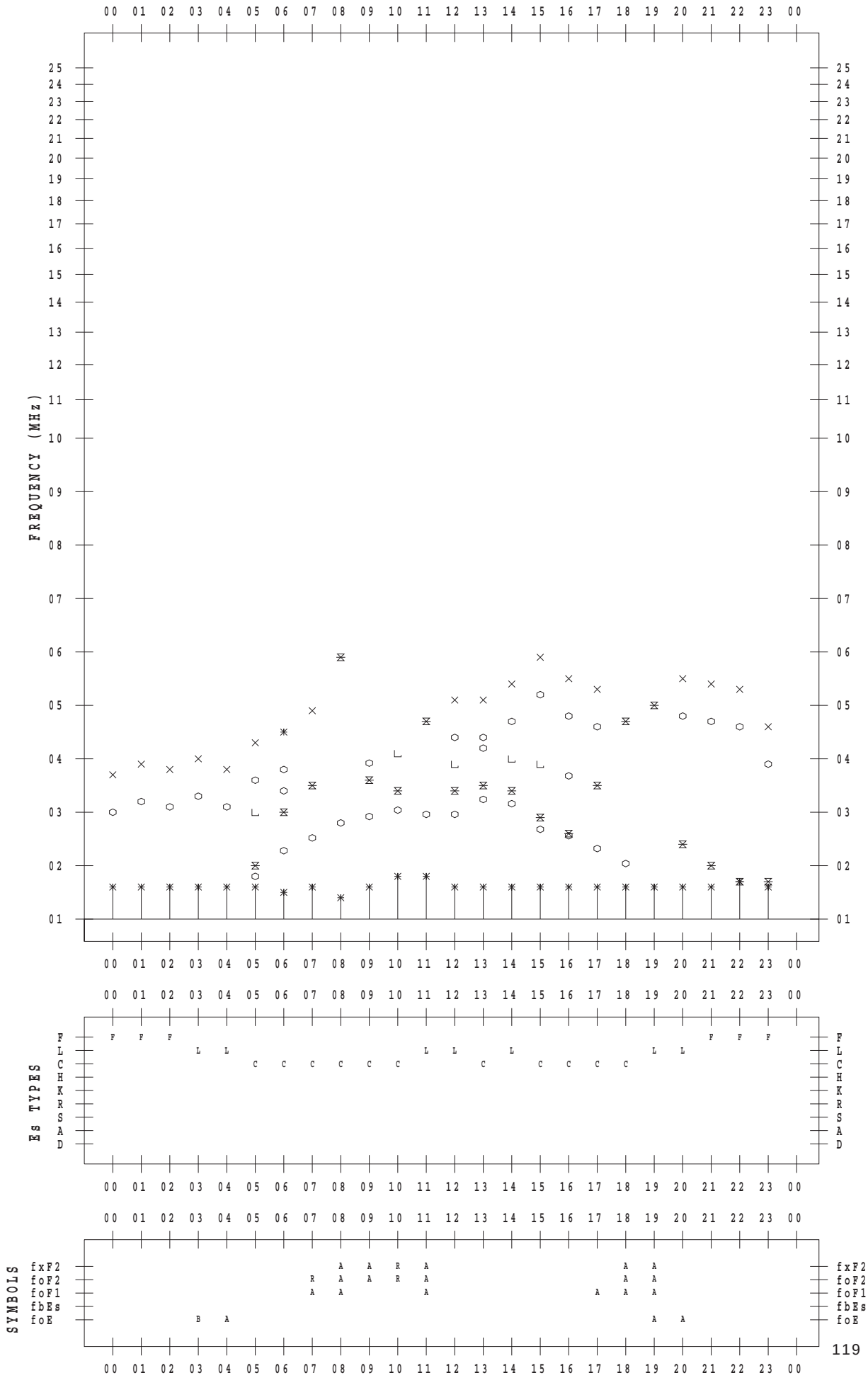
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/12

135 °E MEAN TIME



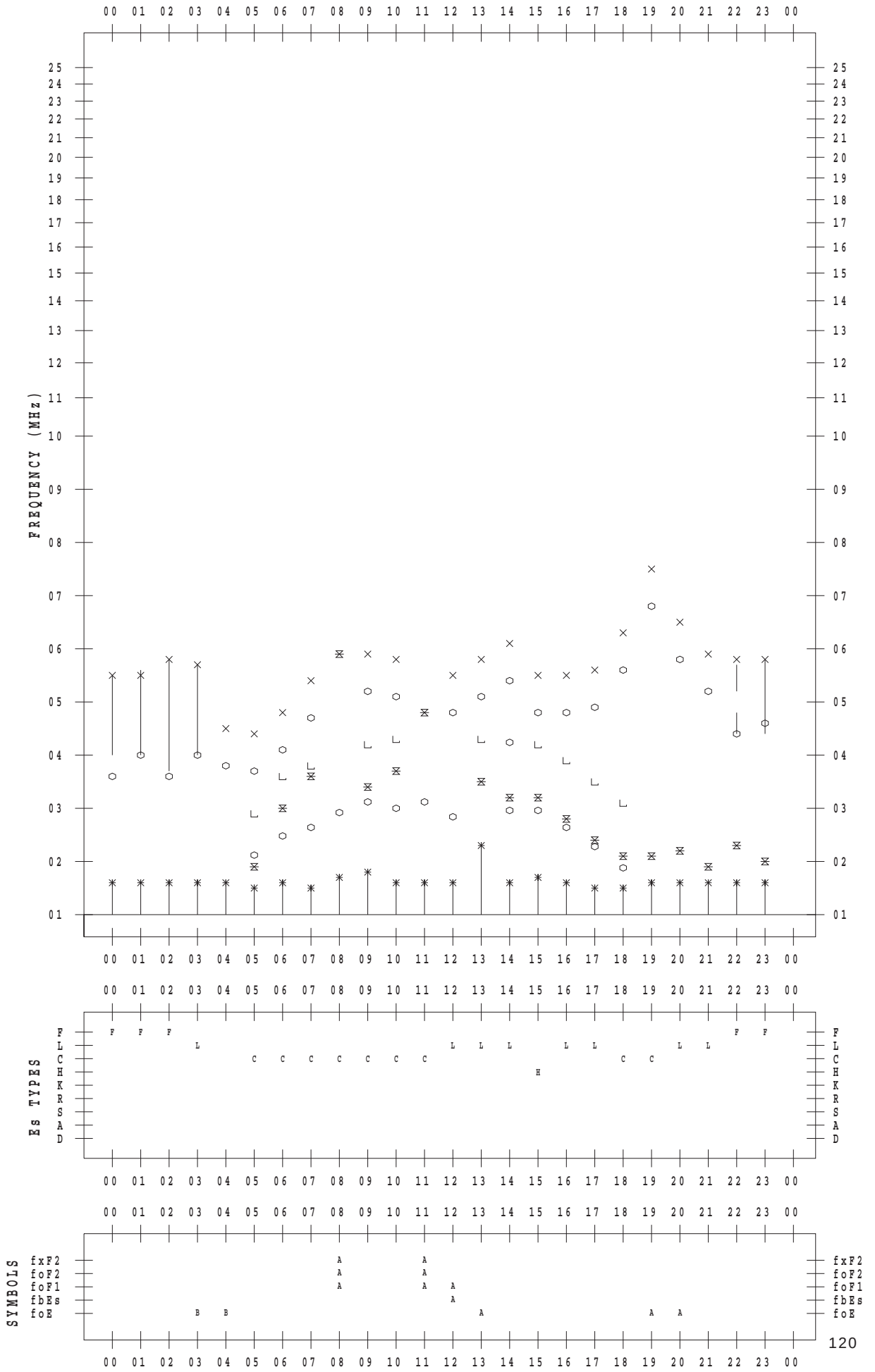
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/13

135 °E MEAN TIME



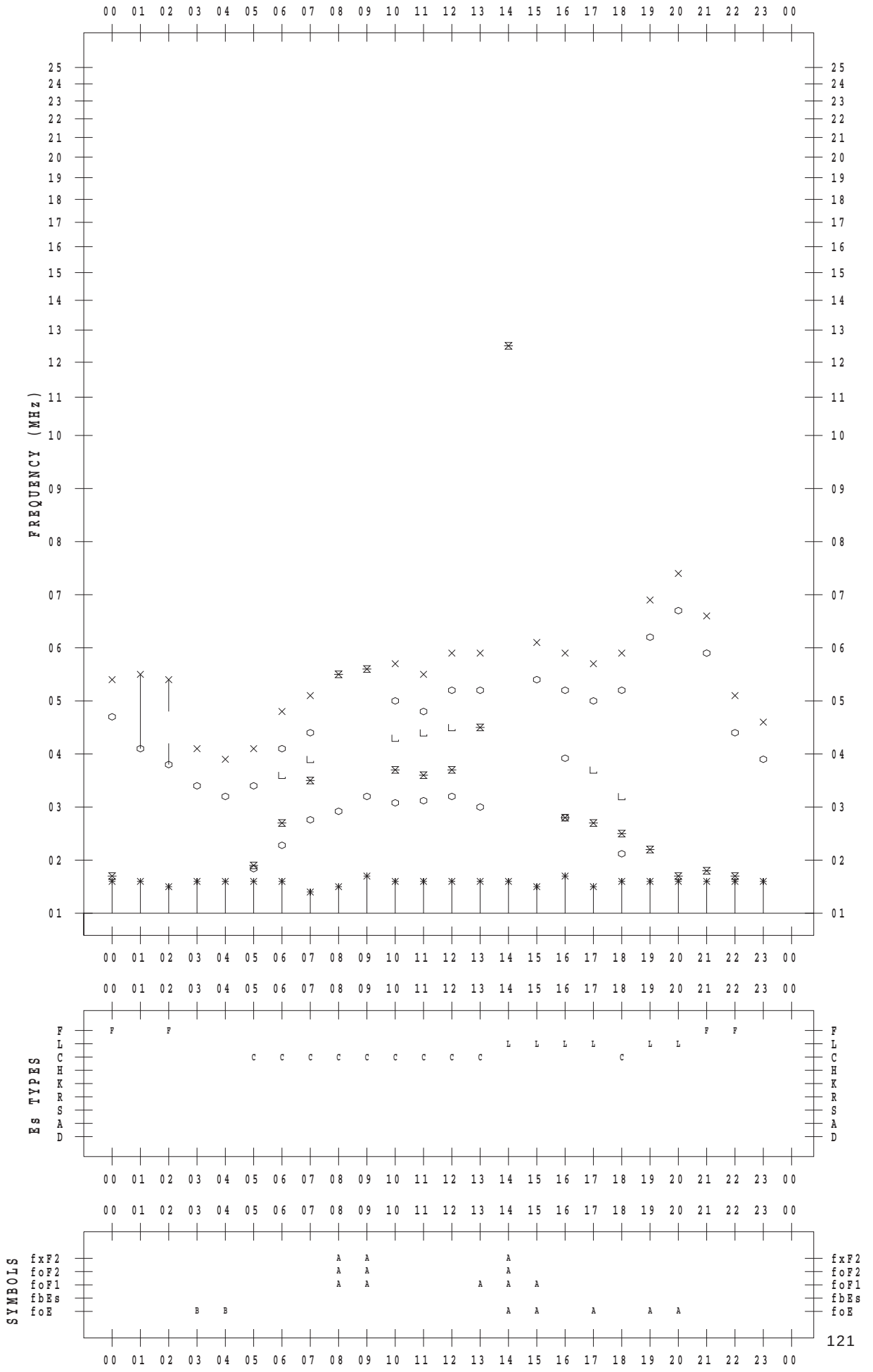
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/14

135 °E MEAN TIME



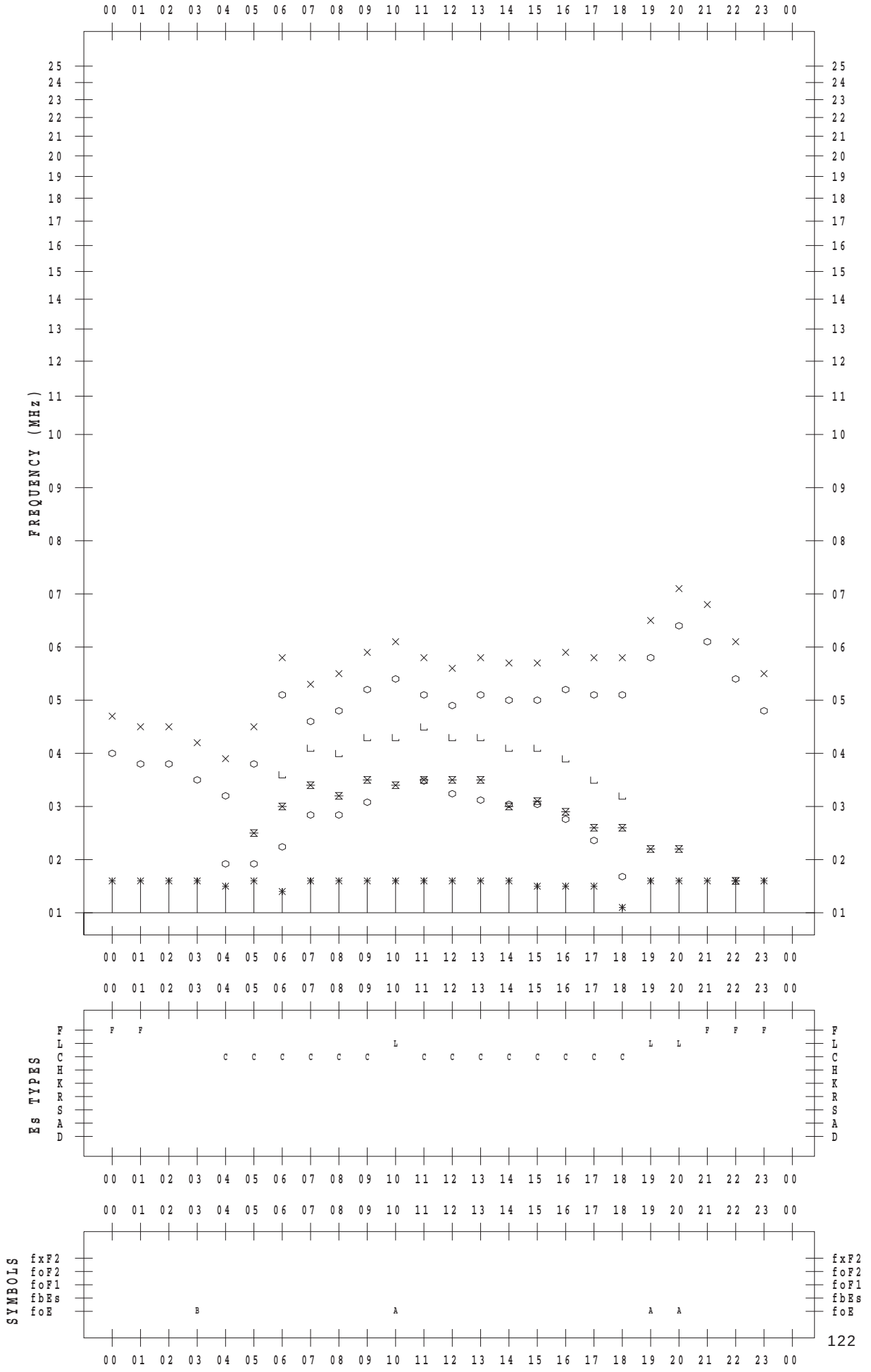
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/15

135 °E MEAN TIME



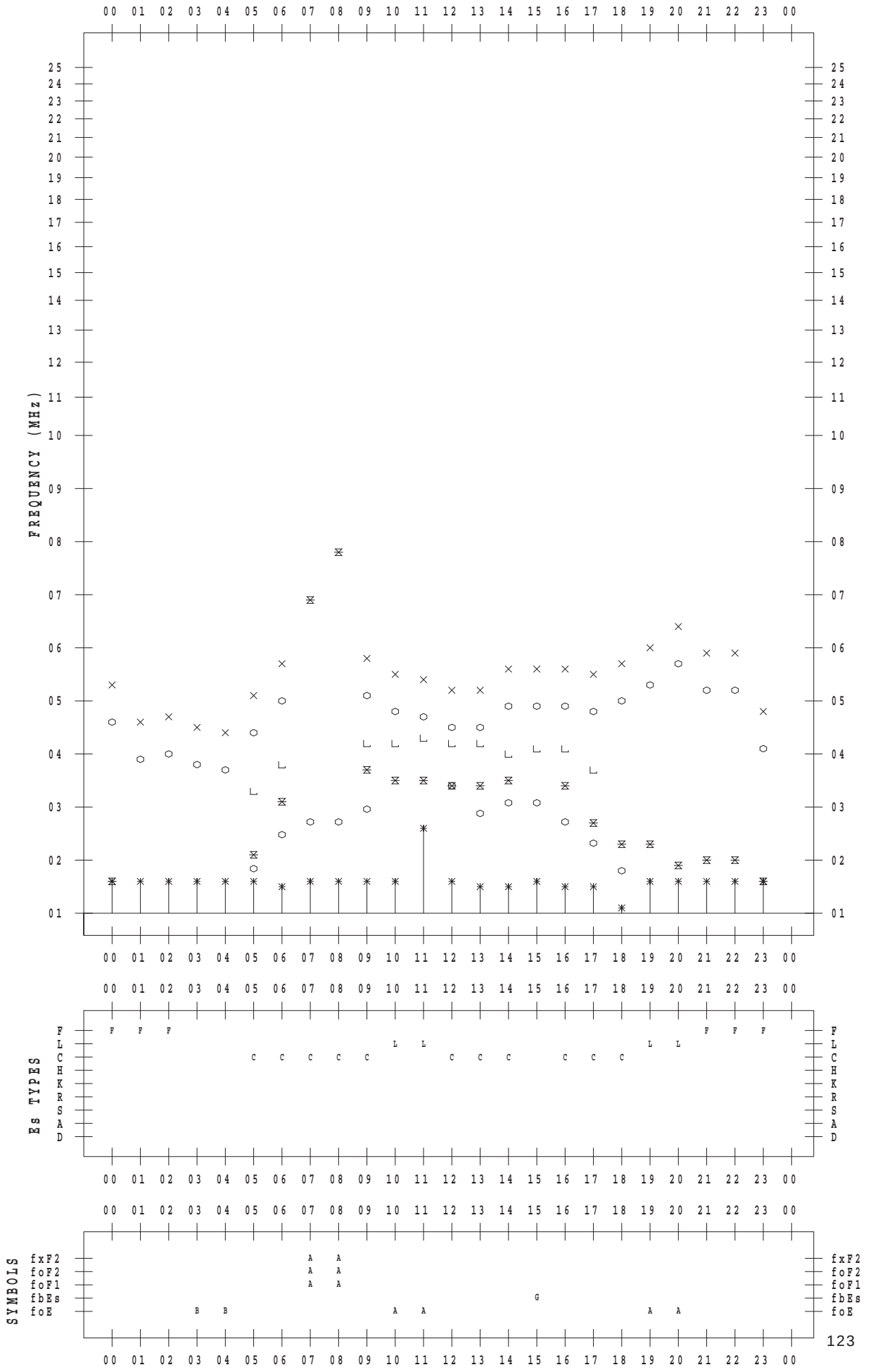
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/16

135 °E MEAN TIME



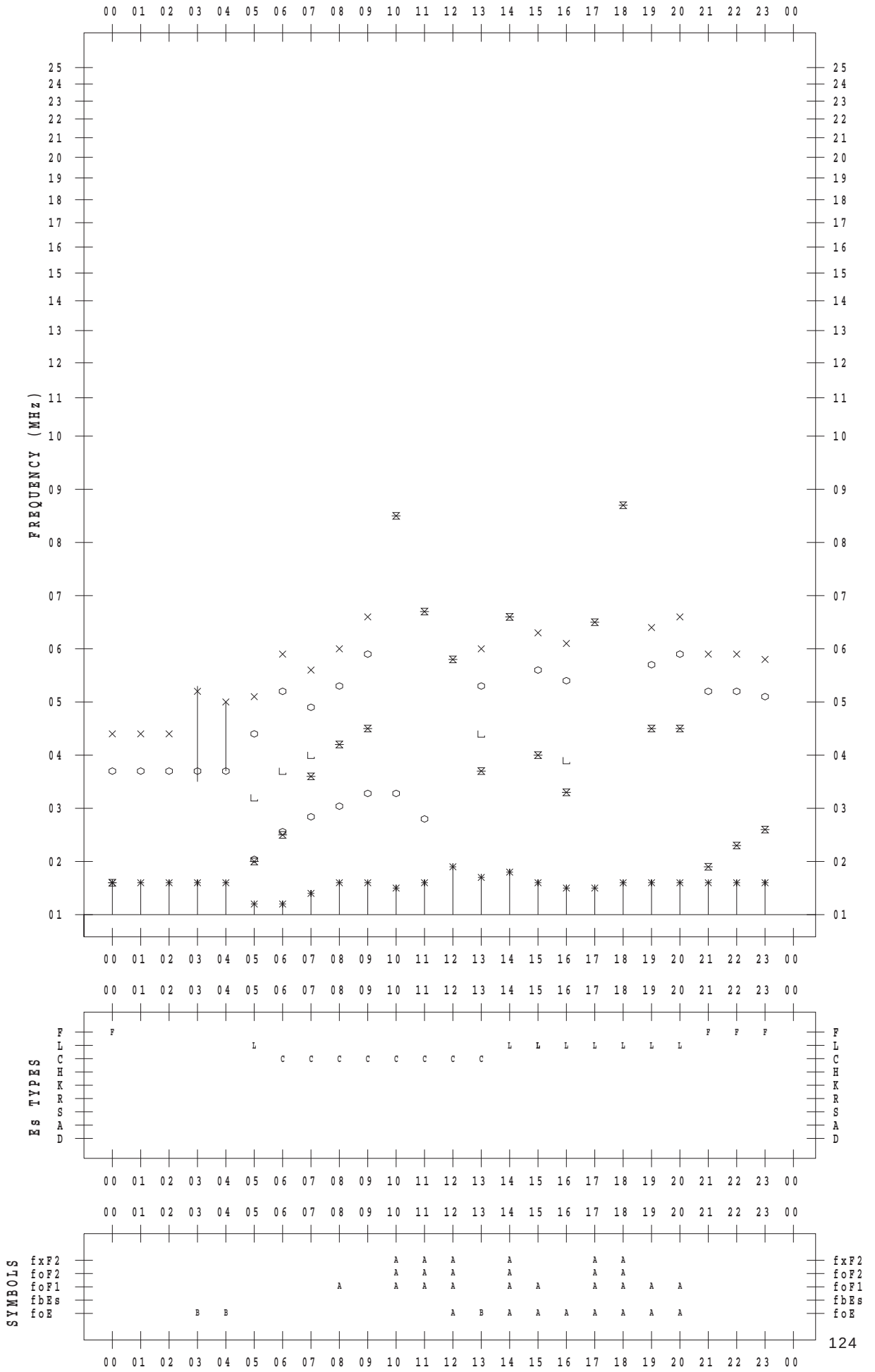
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/17

135 °E MEAN TIME



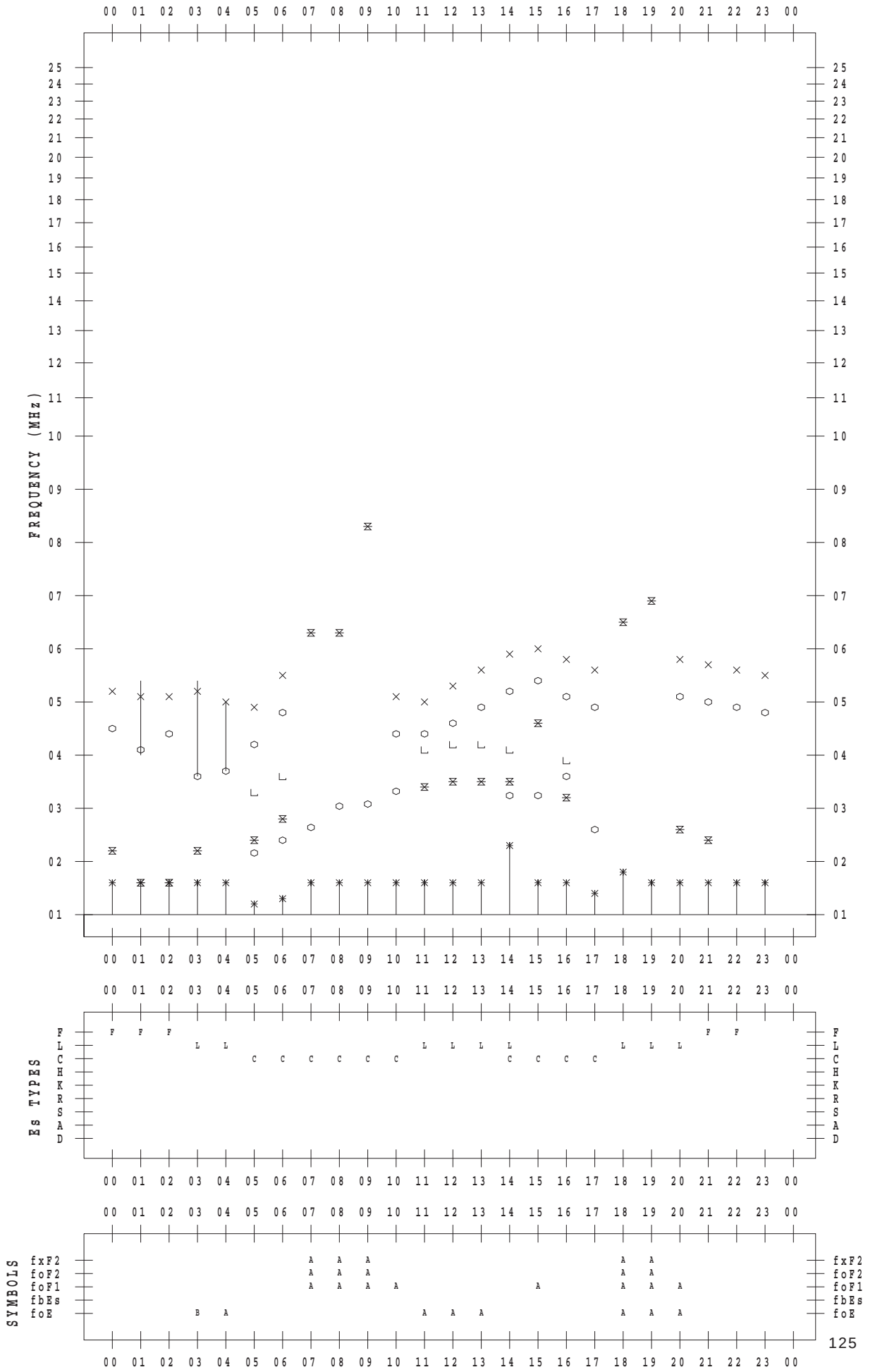
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/18

135 °E MEAN TIME



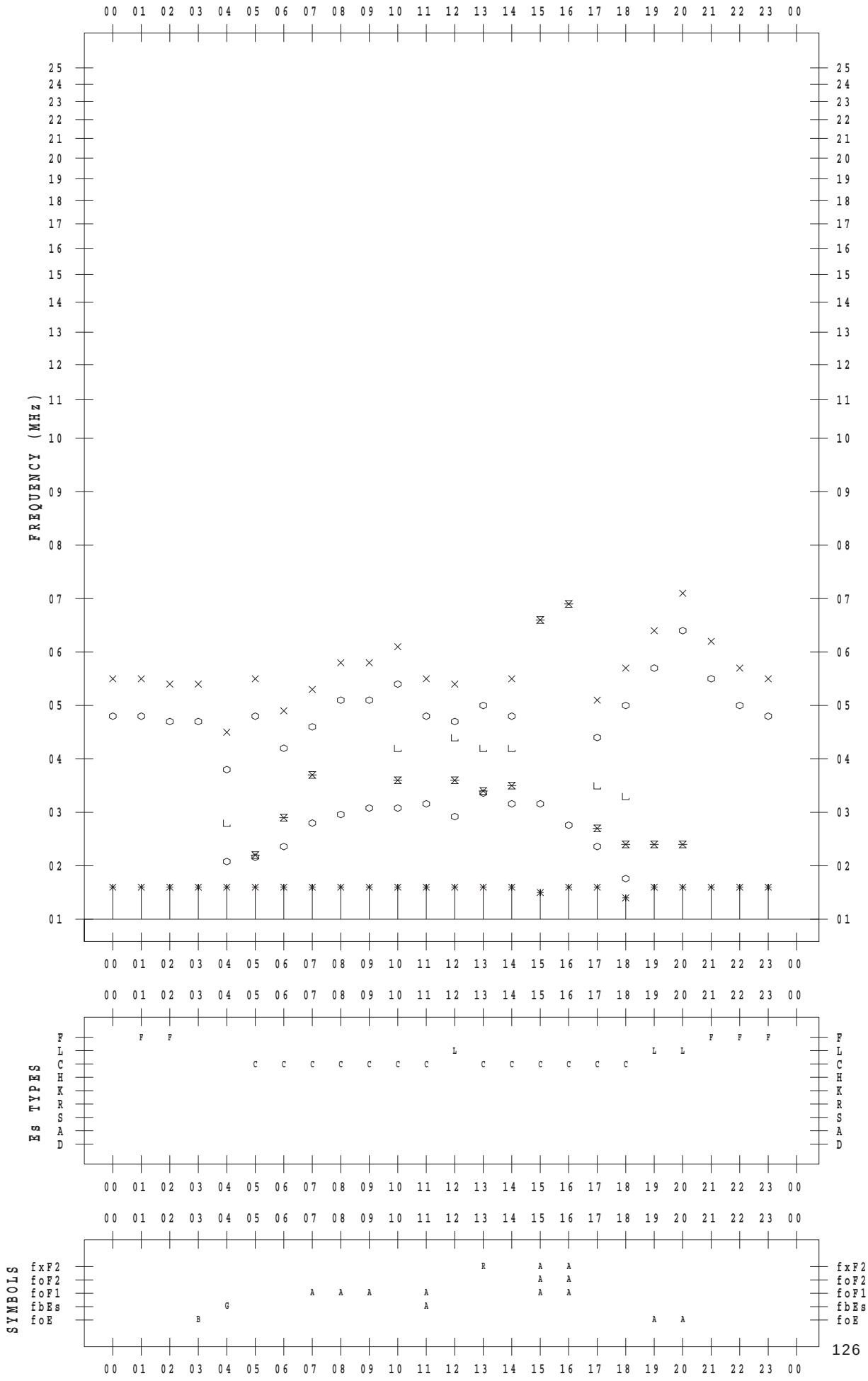
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/19

135 °E MEAN TIME



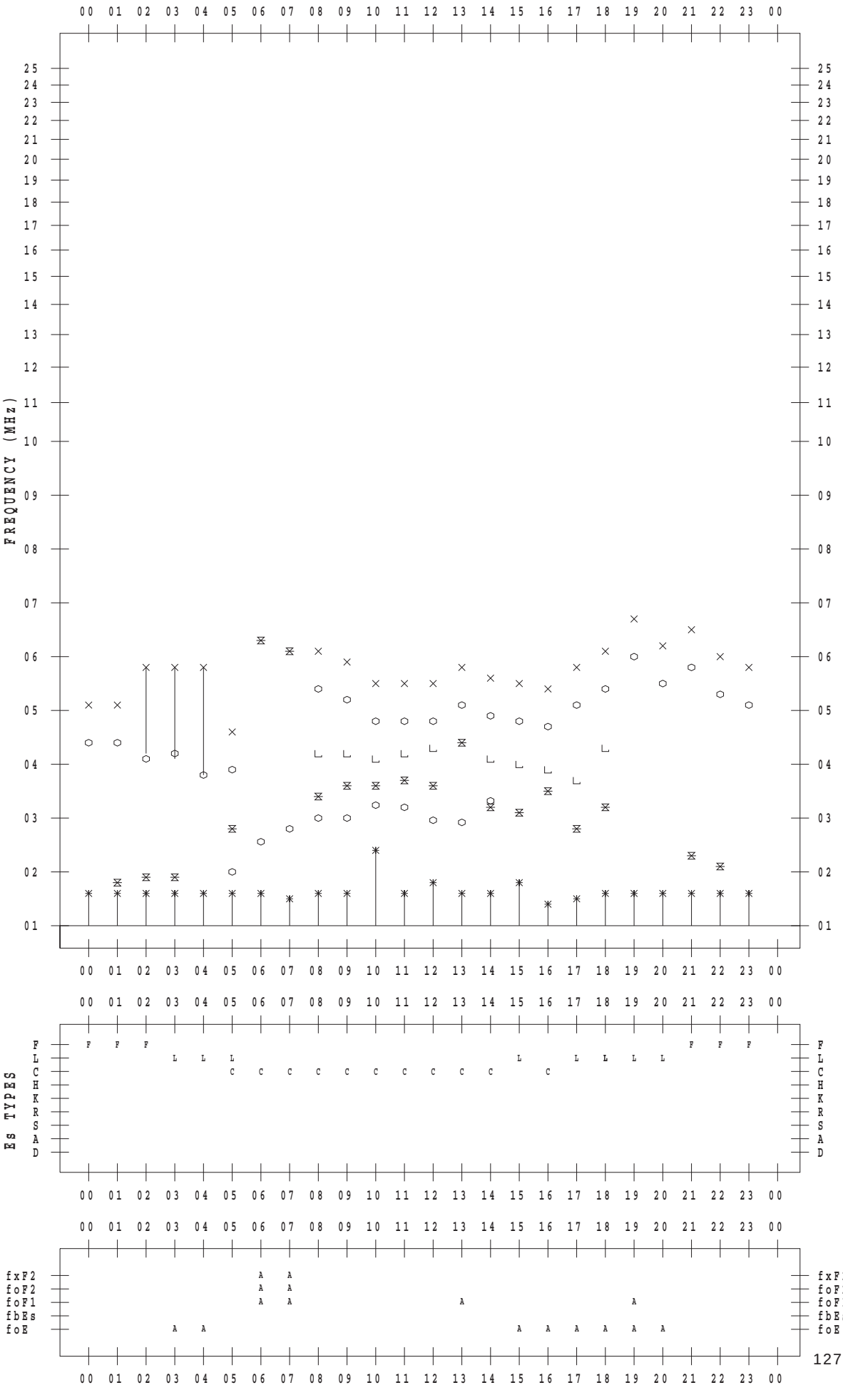
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/20

135 °E MEAN TIME



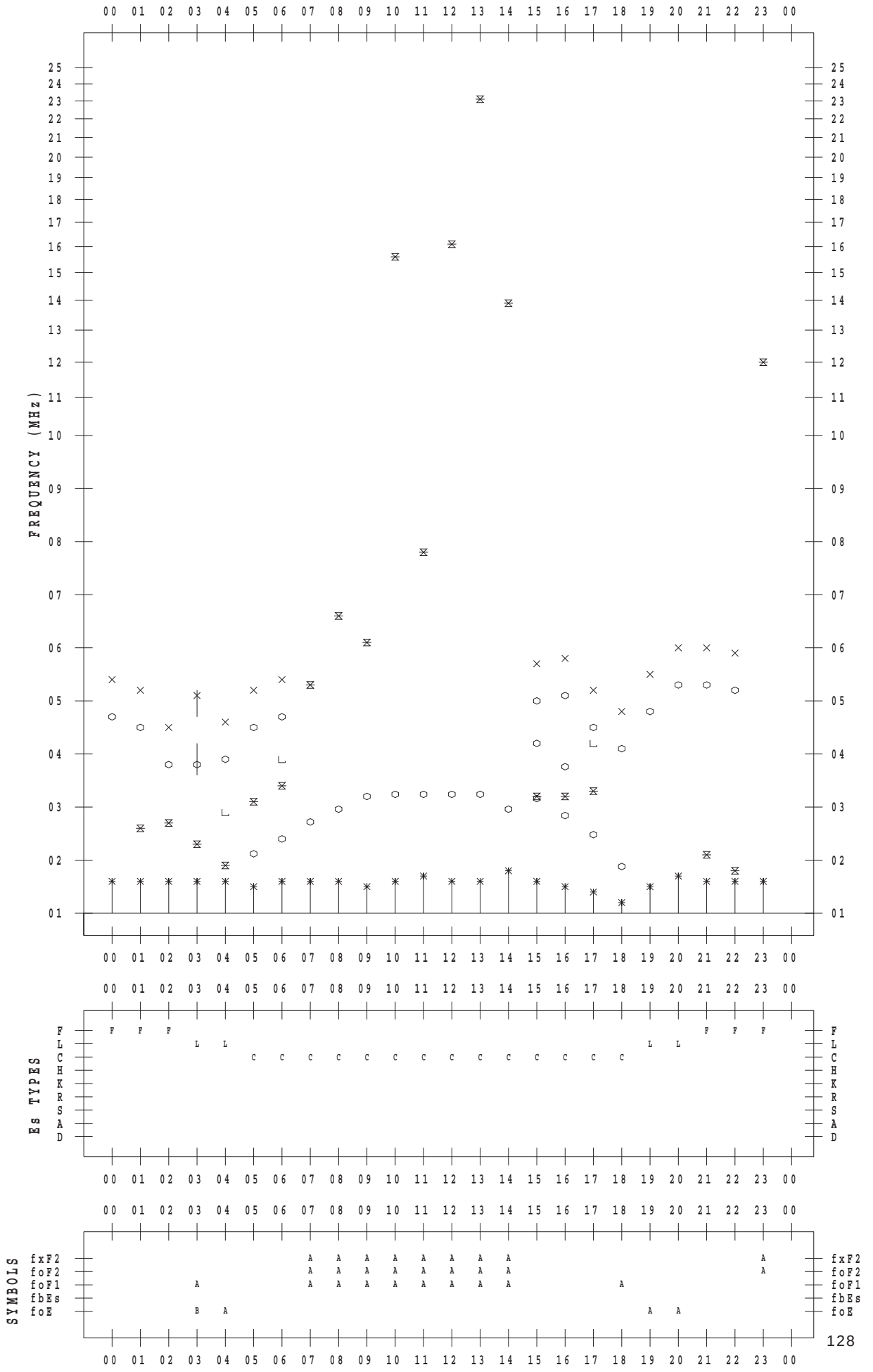
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/21

135 °E MEAN TIME



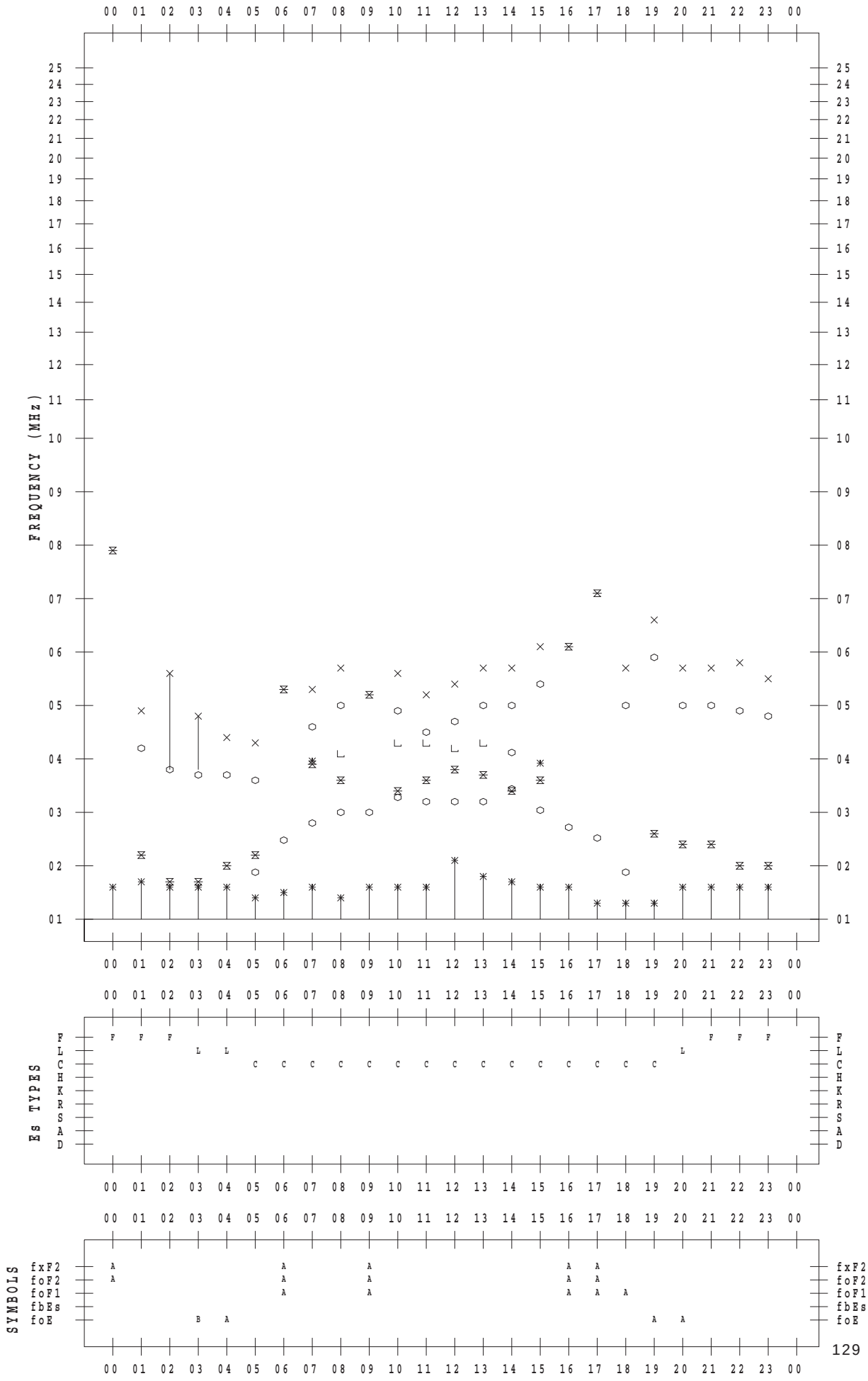
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/22

135 °E MEAN TIME



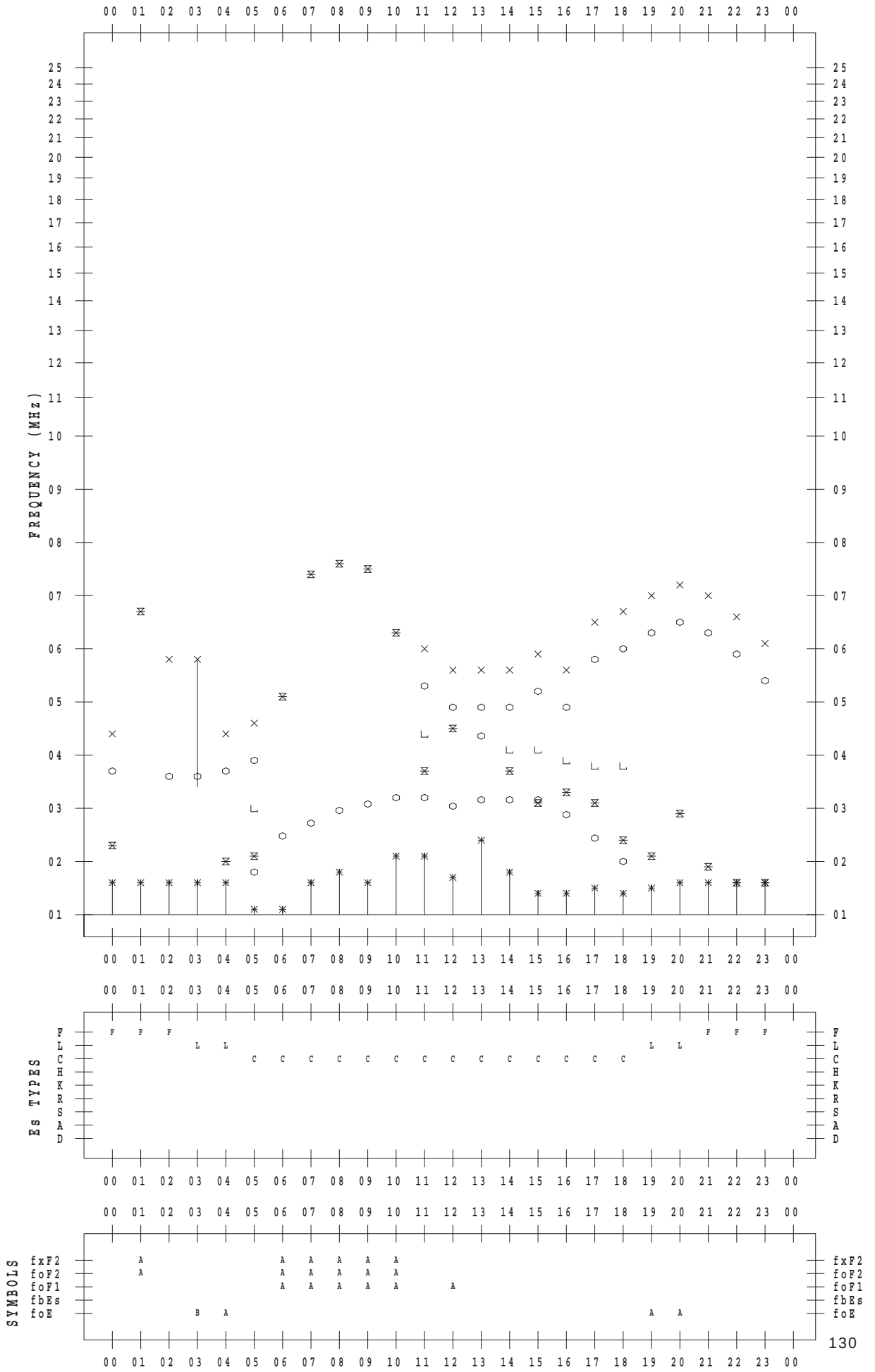
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/23

135 °E MEAN TIME



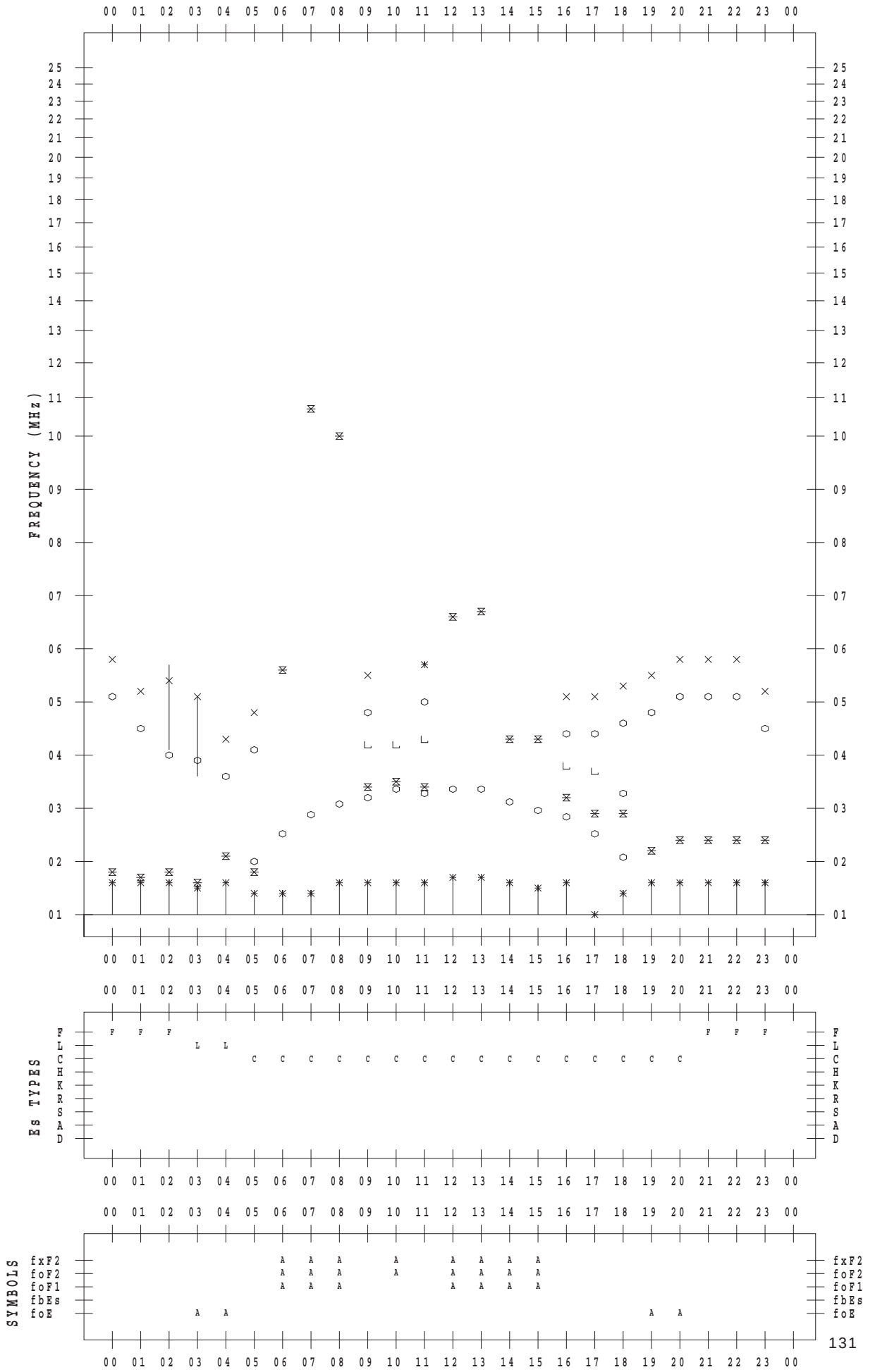
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/24

135 °E MEAN TIME



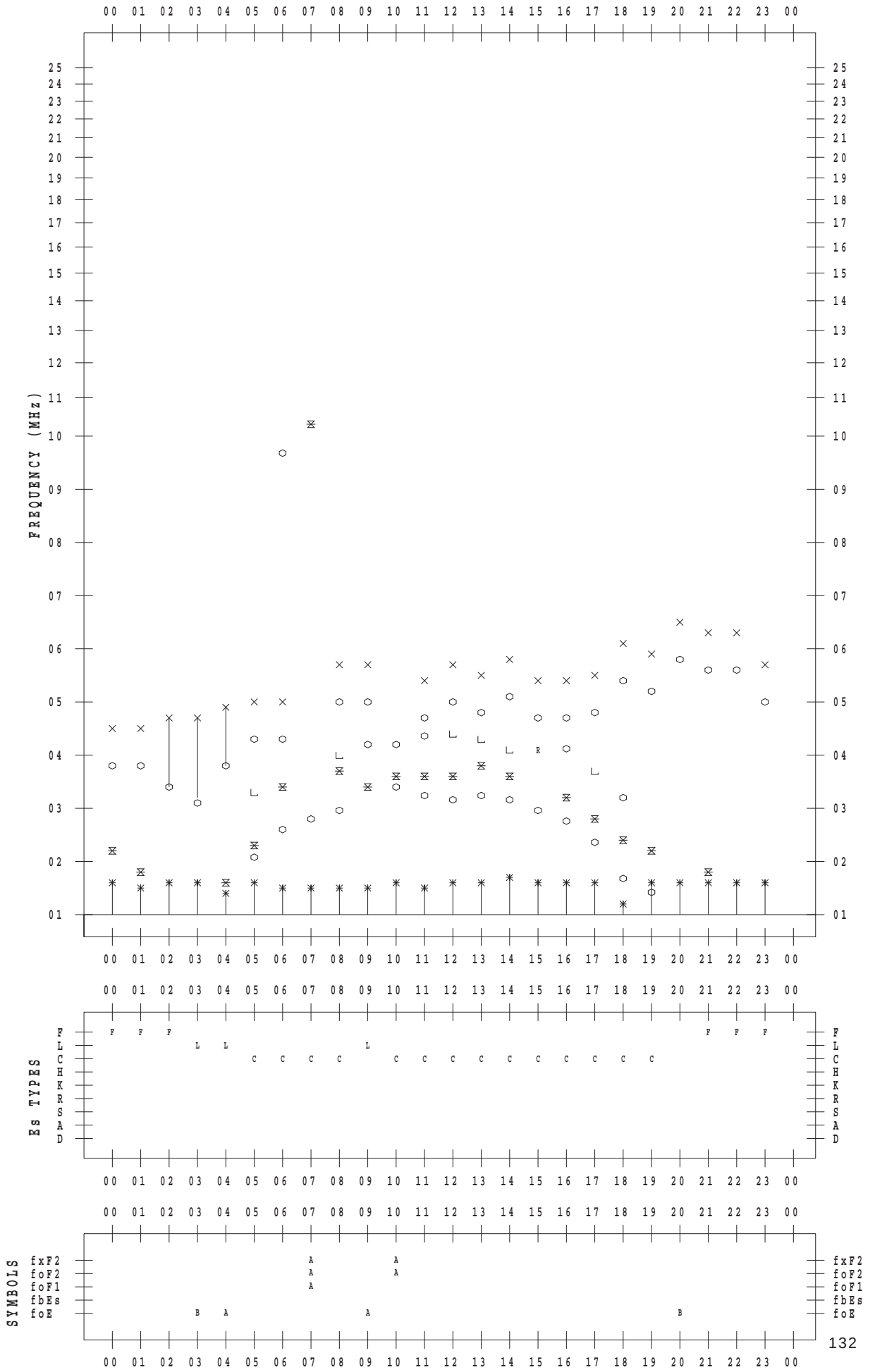
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/25

135 °E MEAN TIME



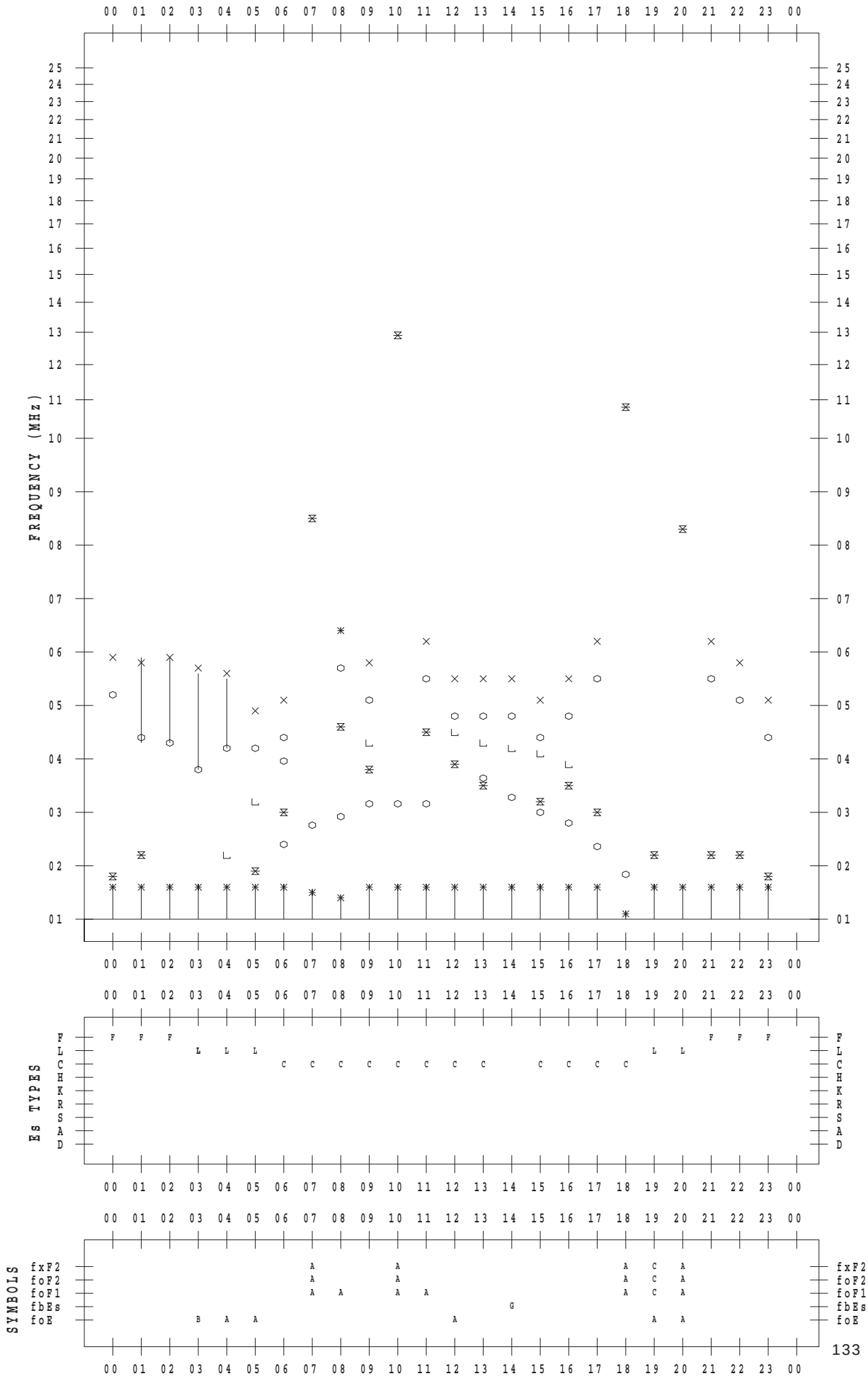
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/26

135 °E MEAN TIME



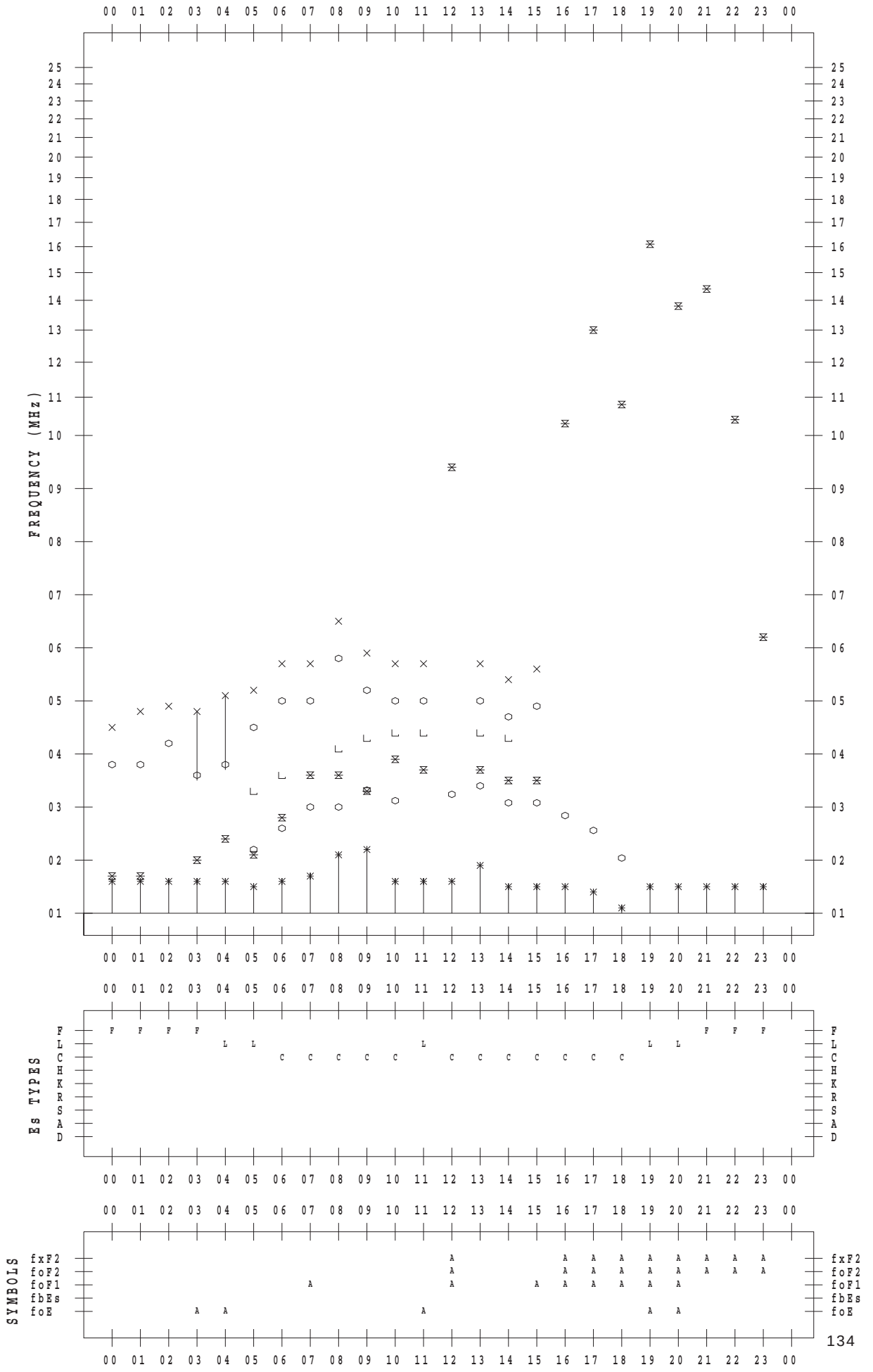
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/27

135 °E MEAN TIME



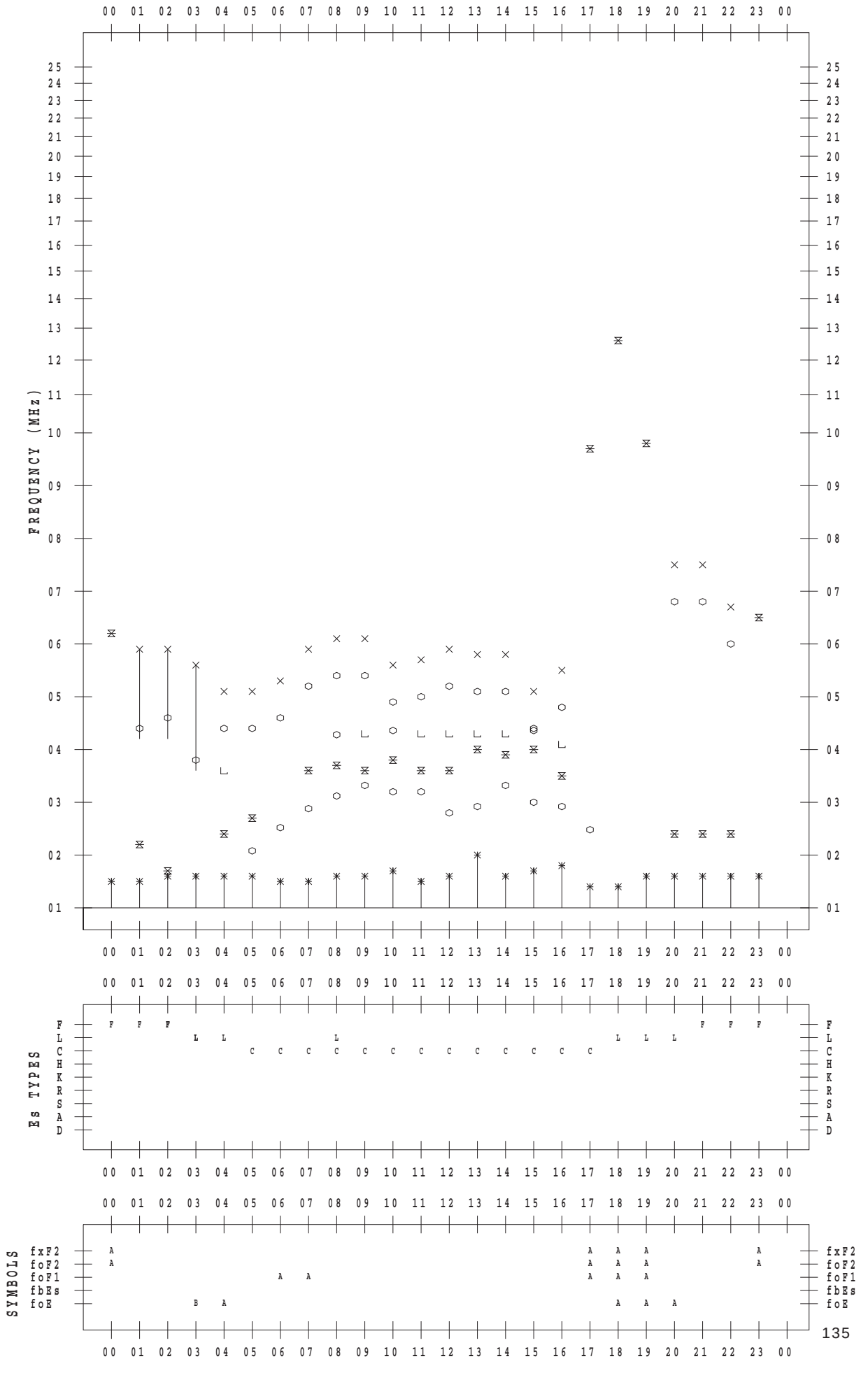
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/28

135 °E MEAN TIME



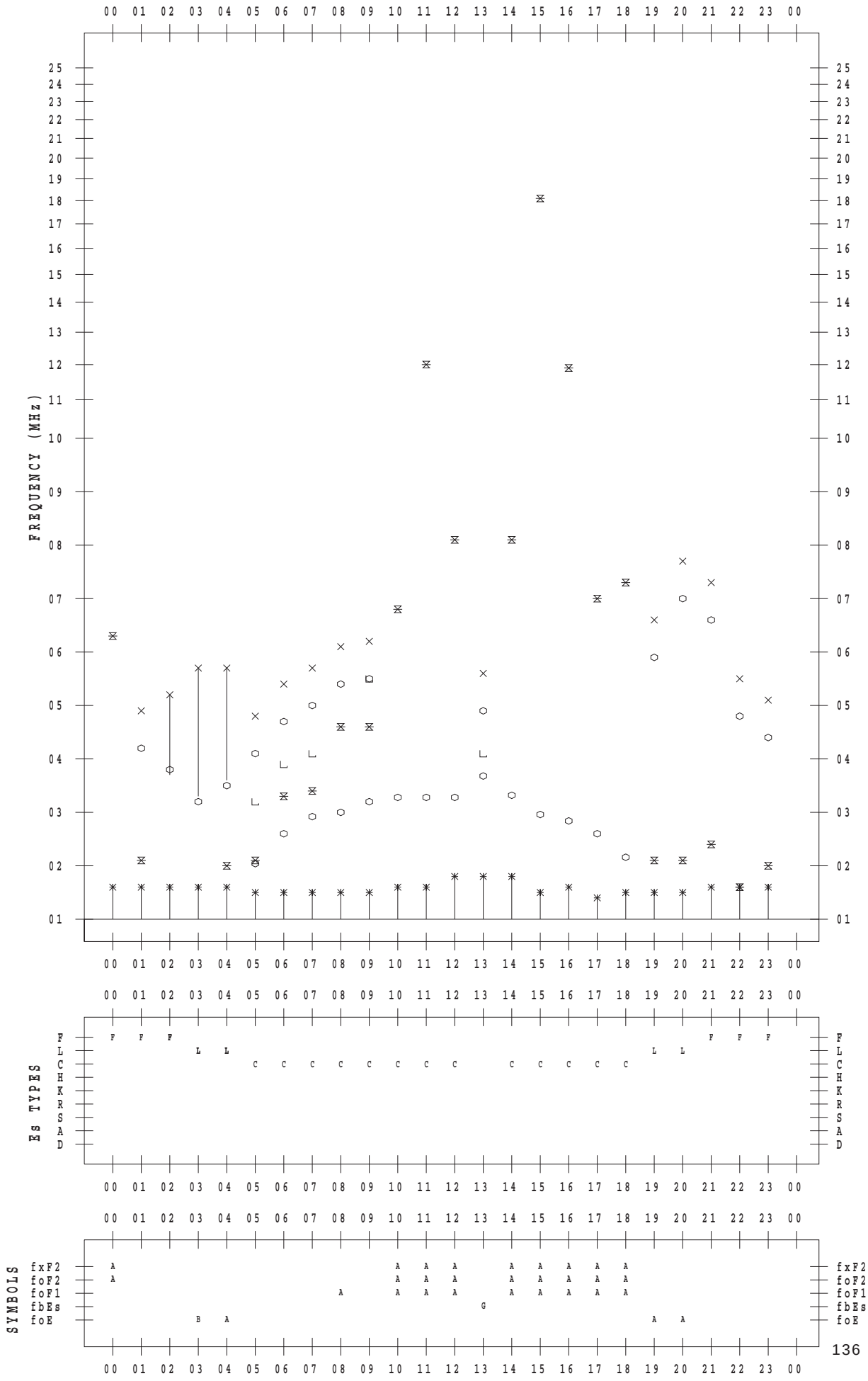
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/29

135 °E MEAN TIME



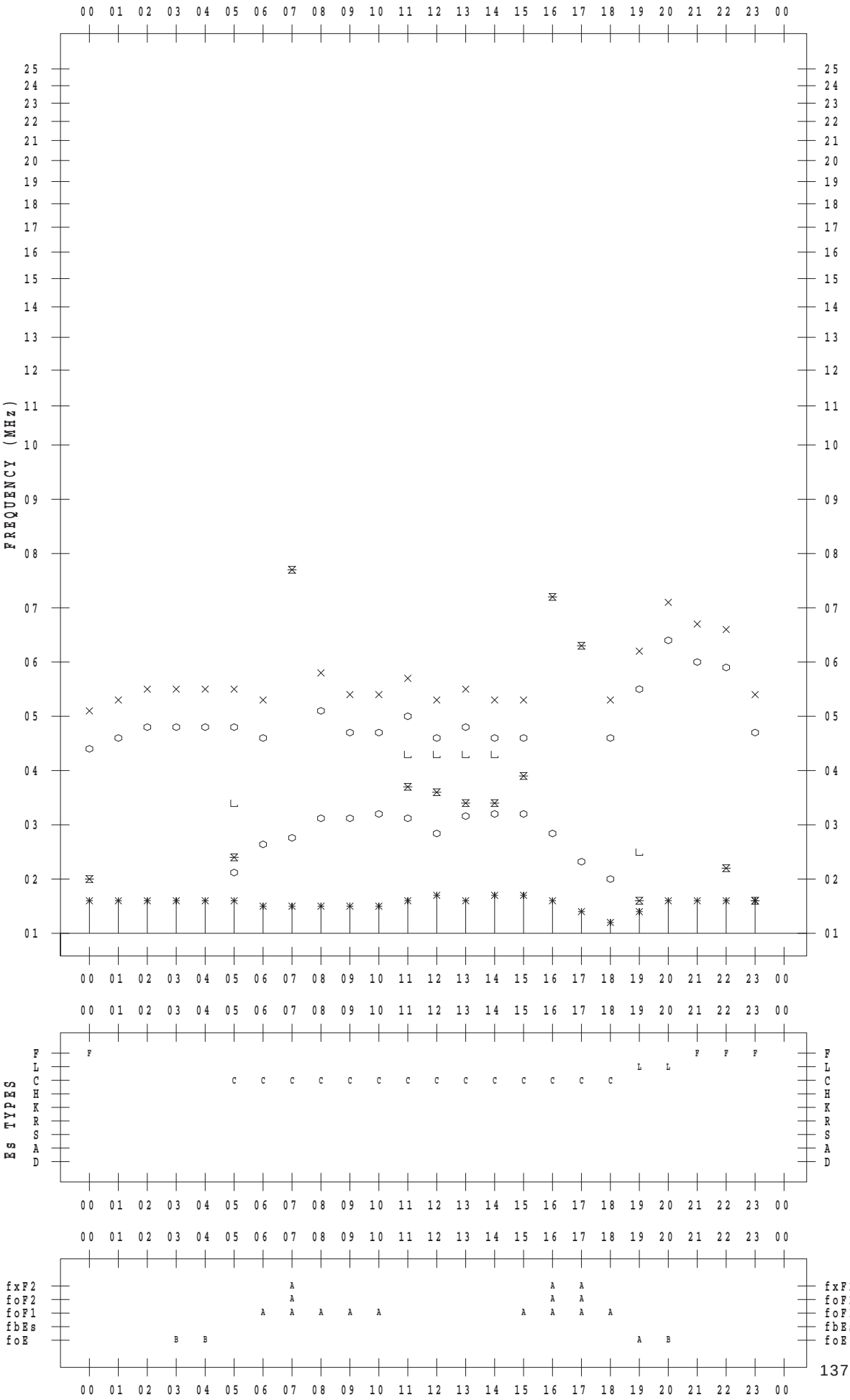
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/30

135 °E MEAN TIME



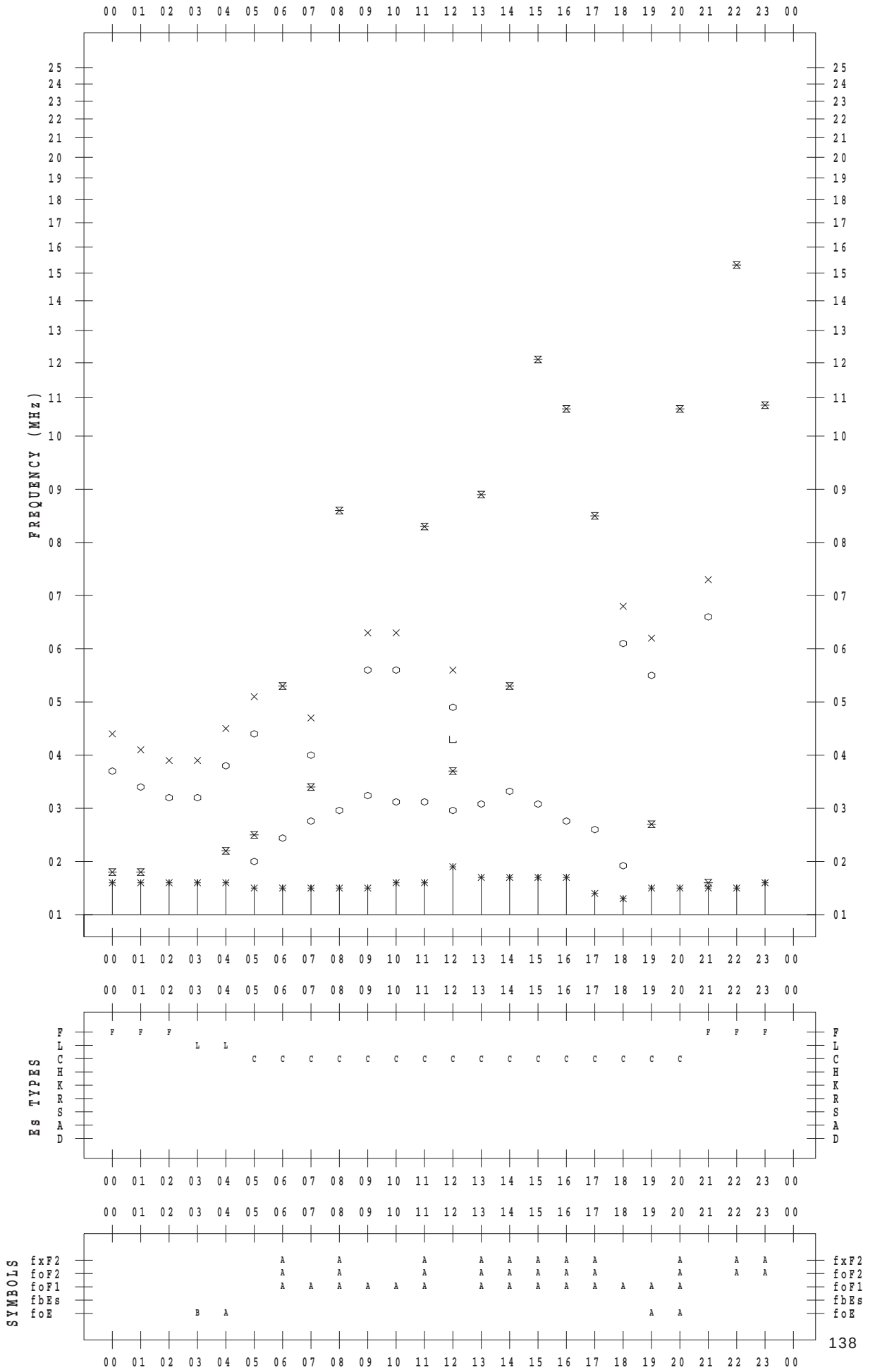
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2018/ 5/31

135 °E MEAN TIME



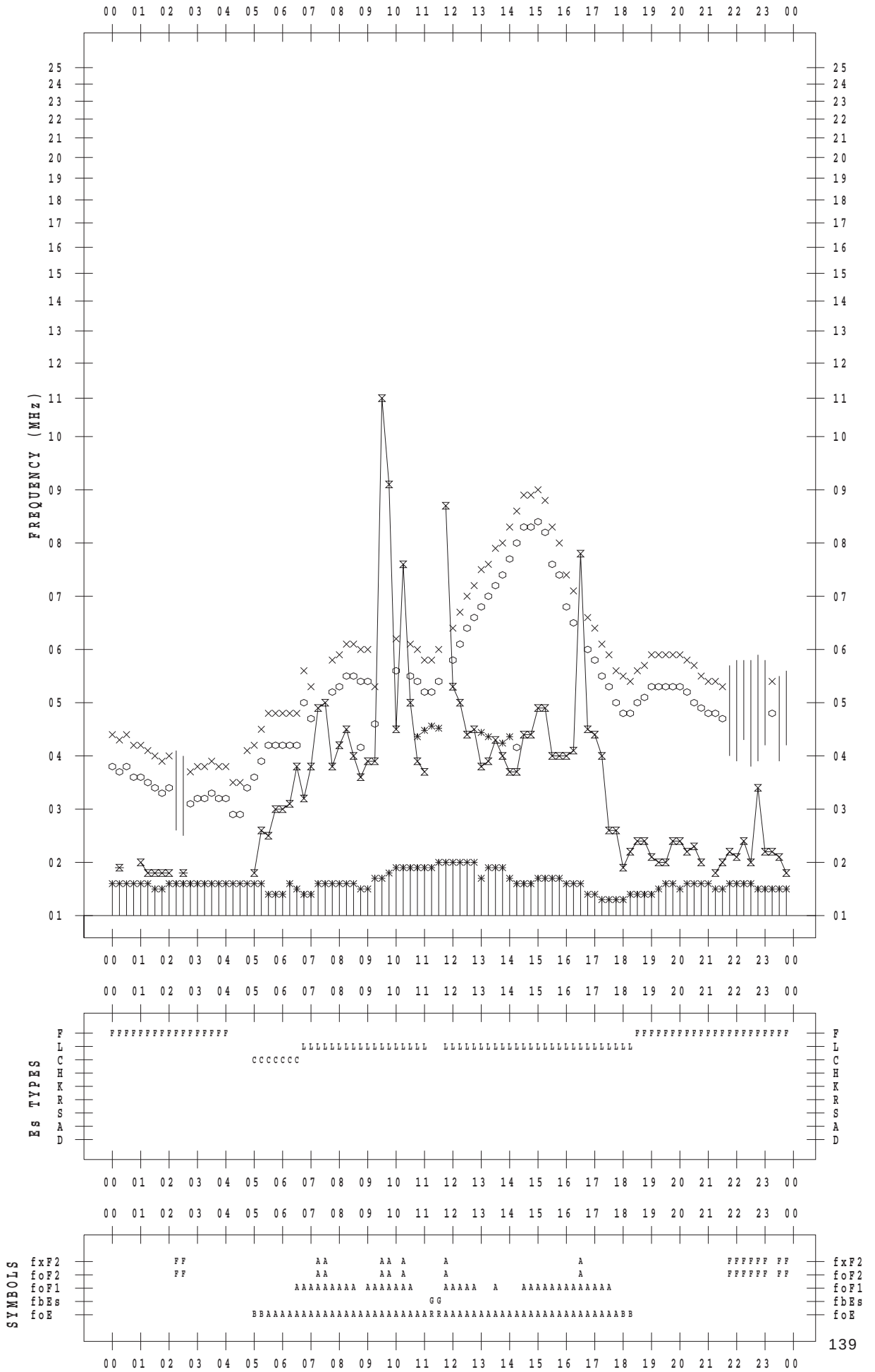
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 1

135 °E MEAN TIME



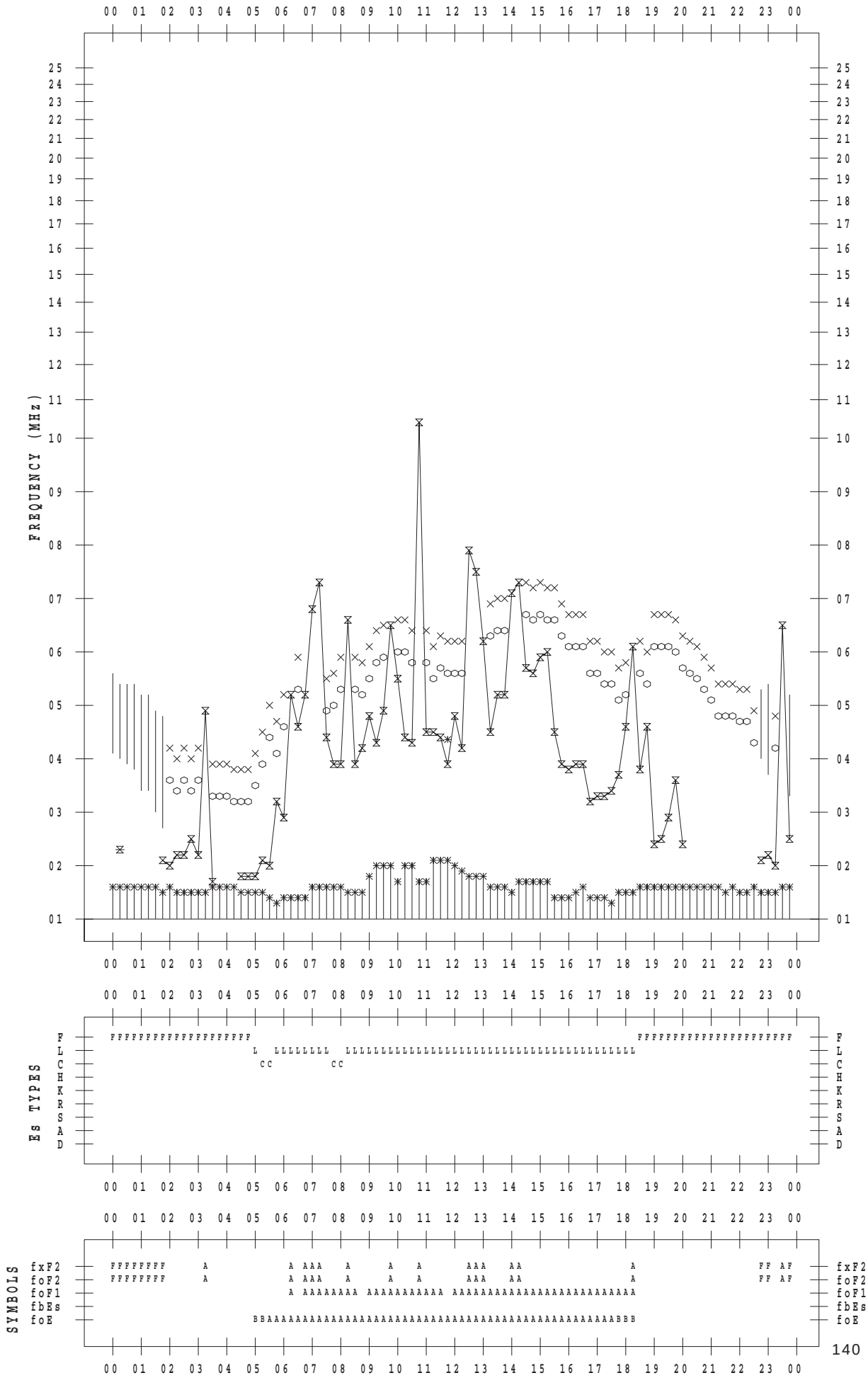
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 2

135 °E MEAN TIME



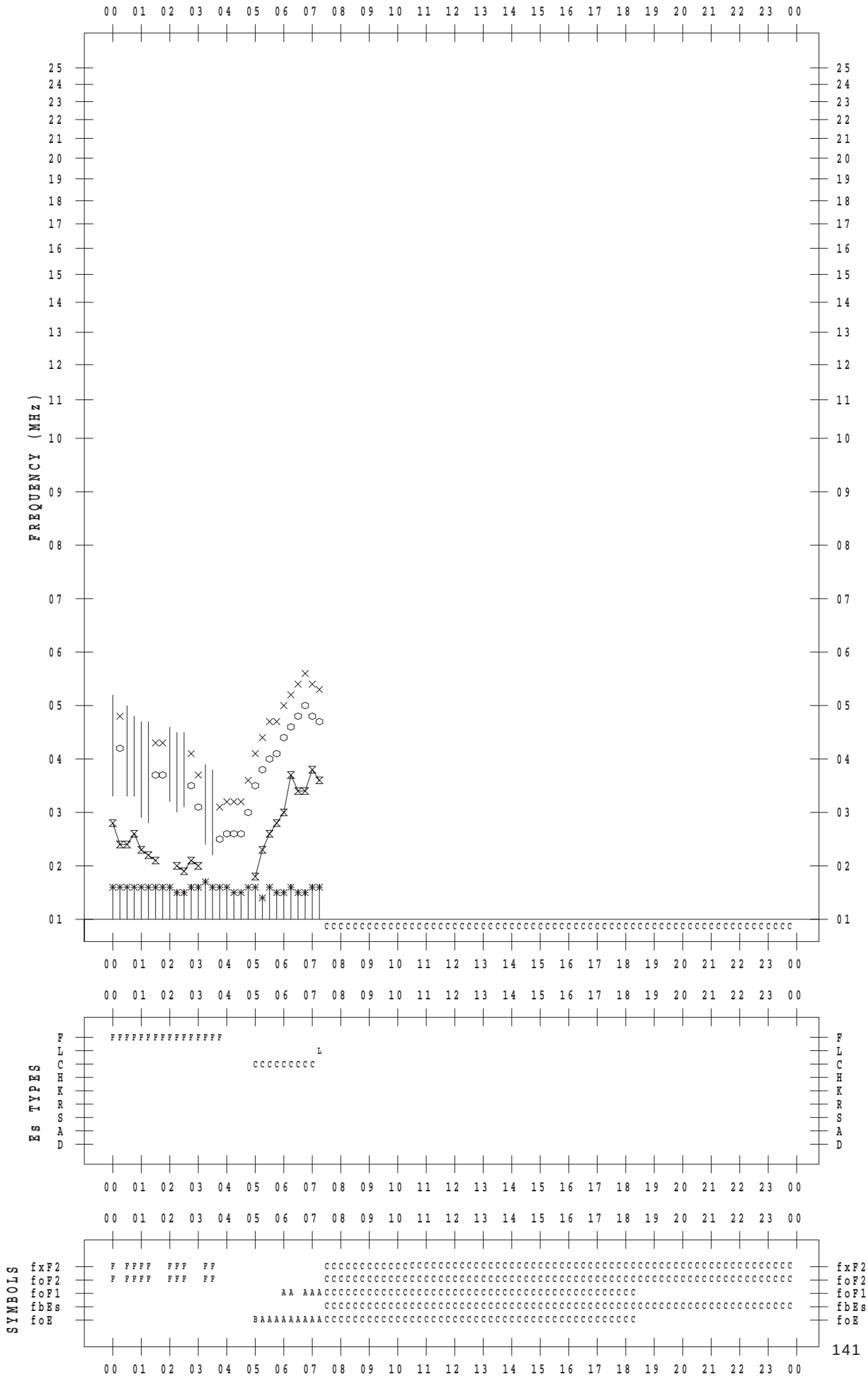
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 3

135 °E MEAN TIME



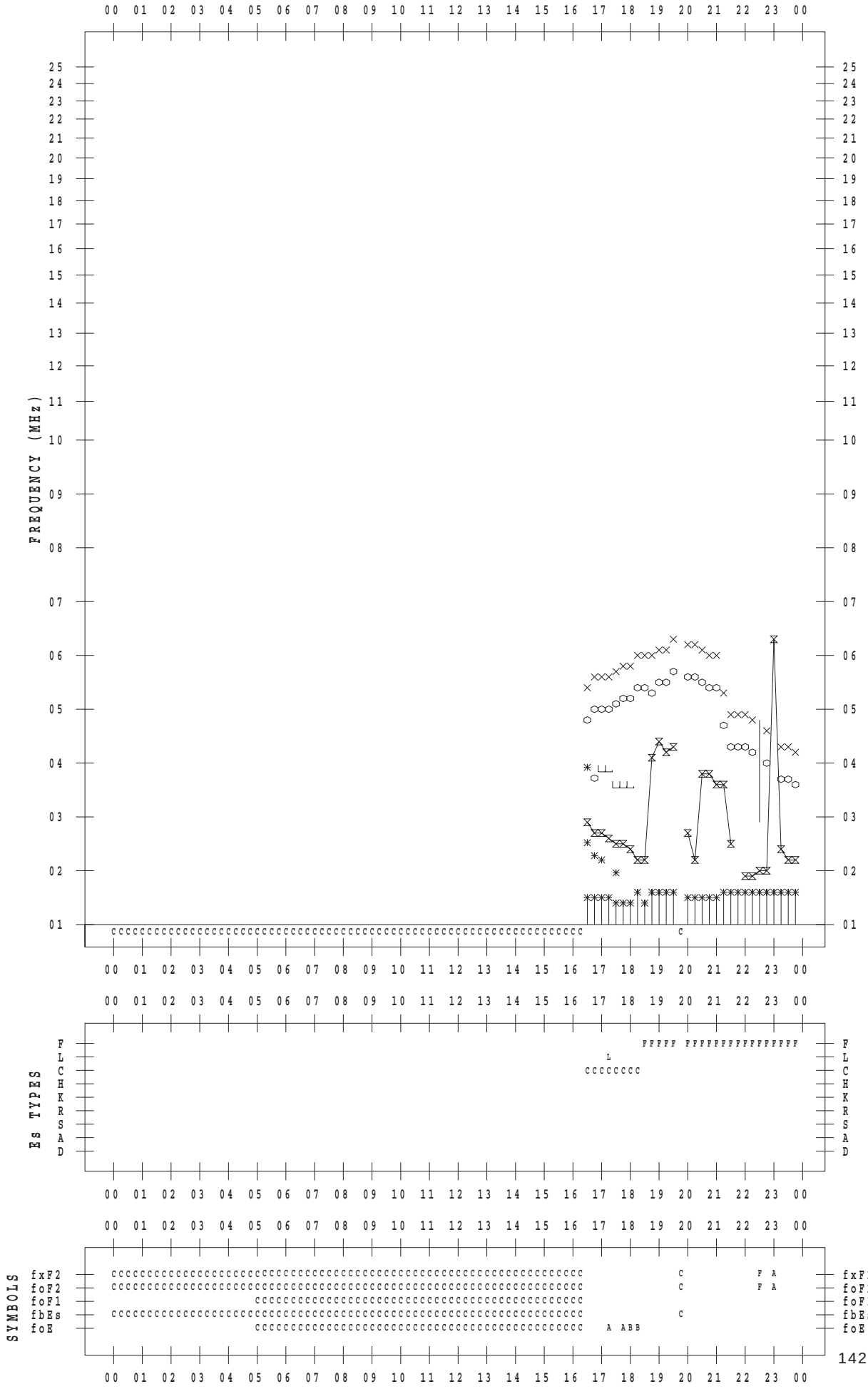
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 4

135 °E MEAN TIME

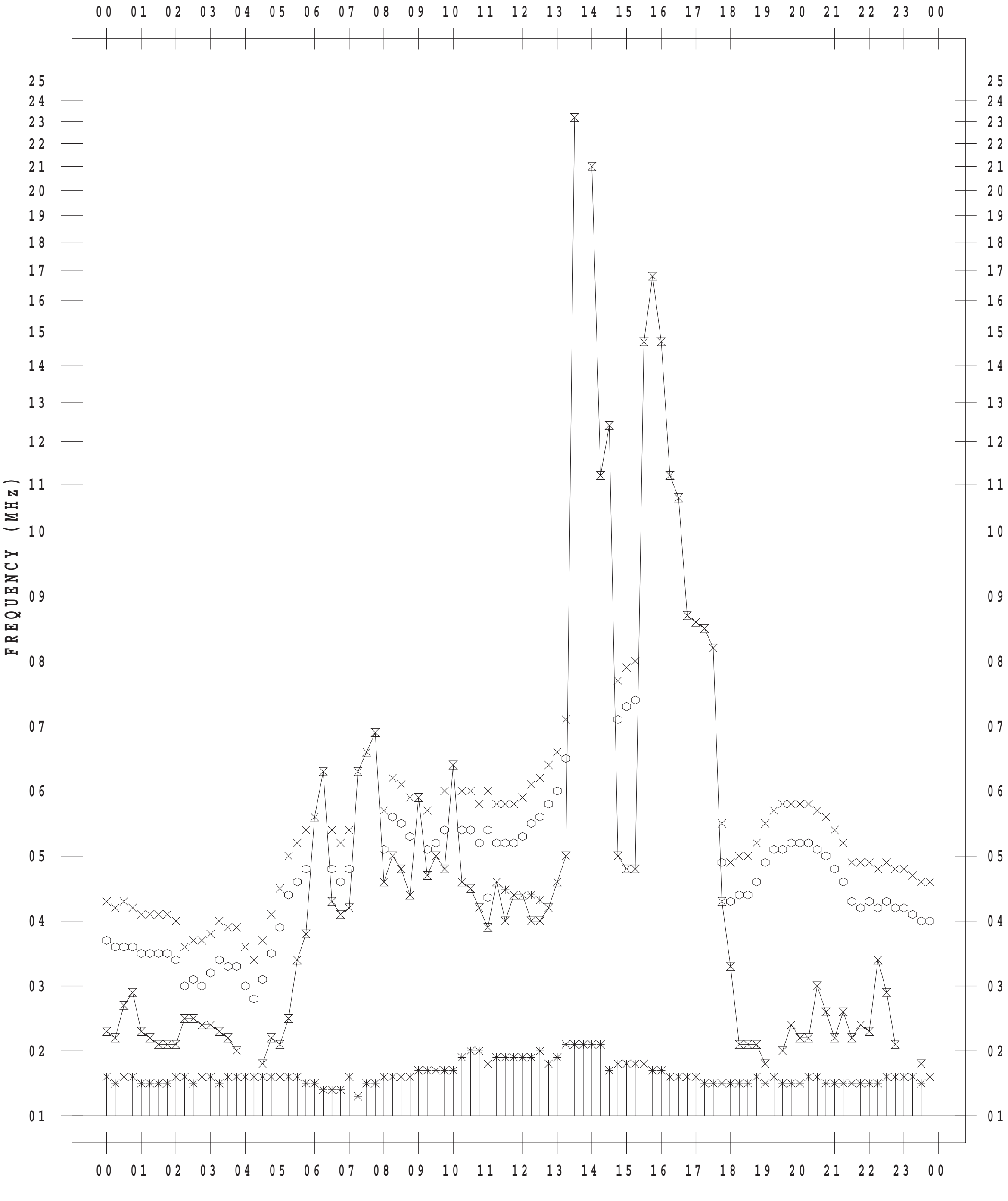


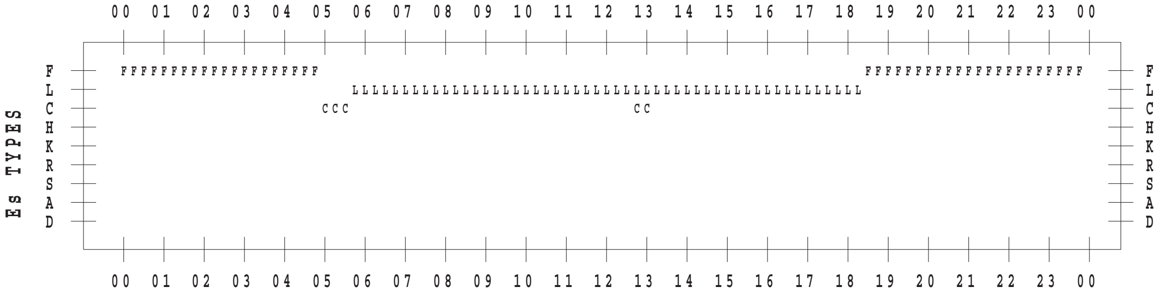
f-PLOT DATA

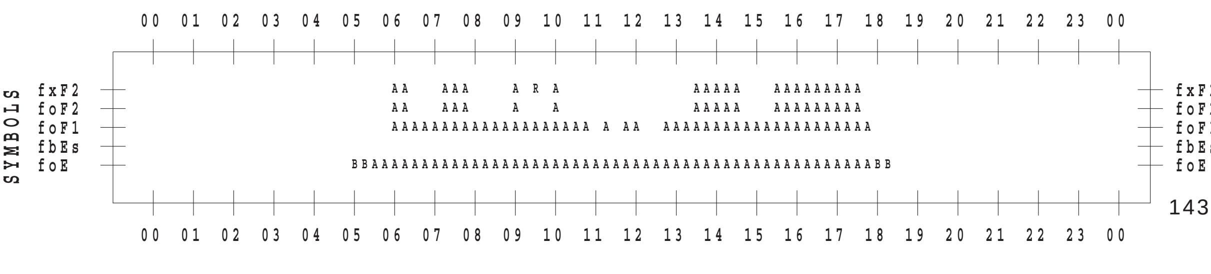
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2018/ 5/ 5

135 °E MEAN TIME







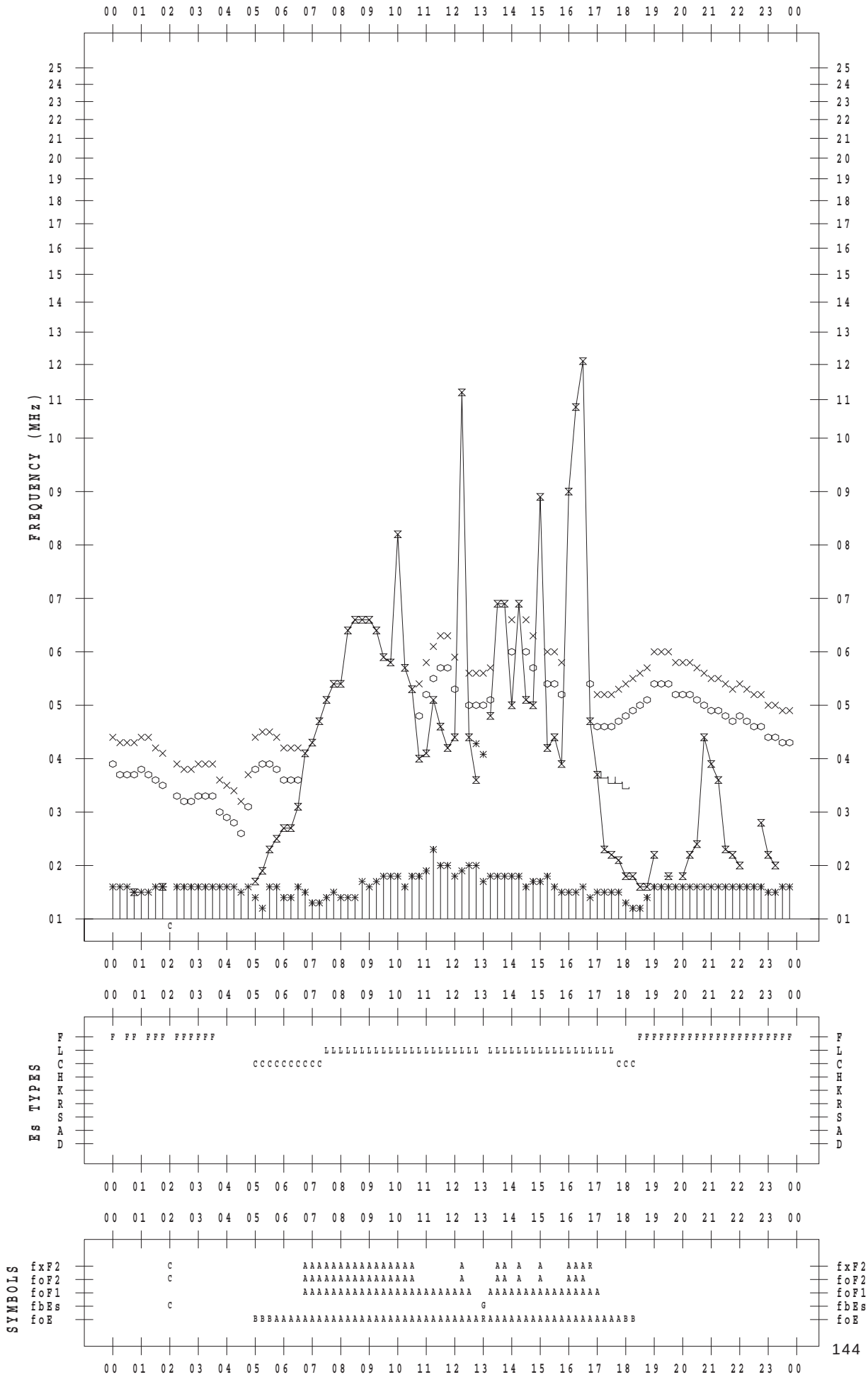
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 6

135 °E MEAN TIME



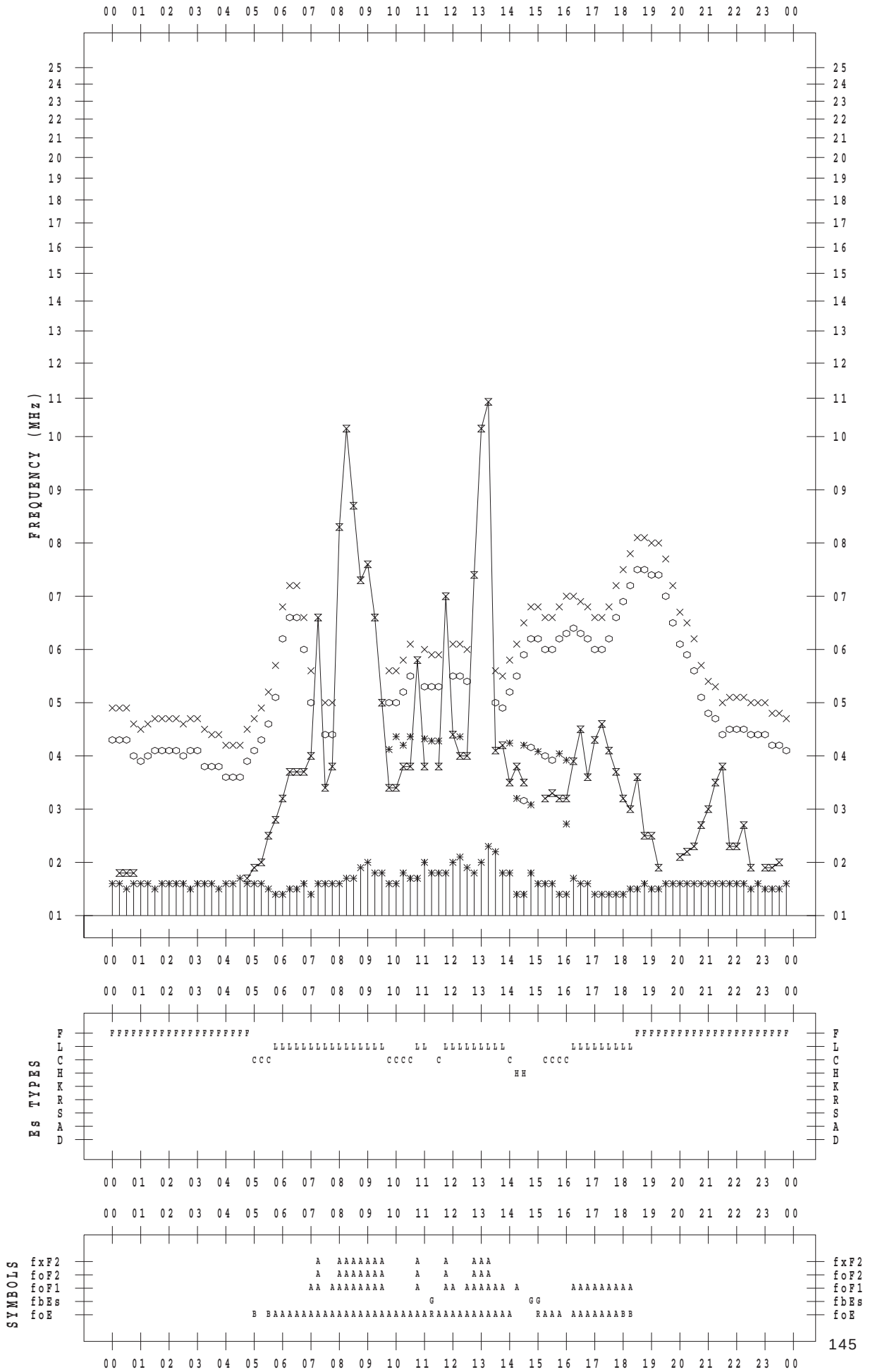
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 7

135 °E MEAN TIME



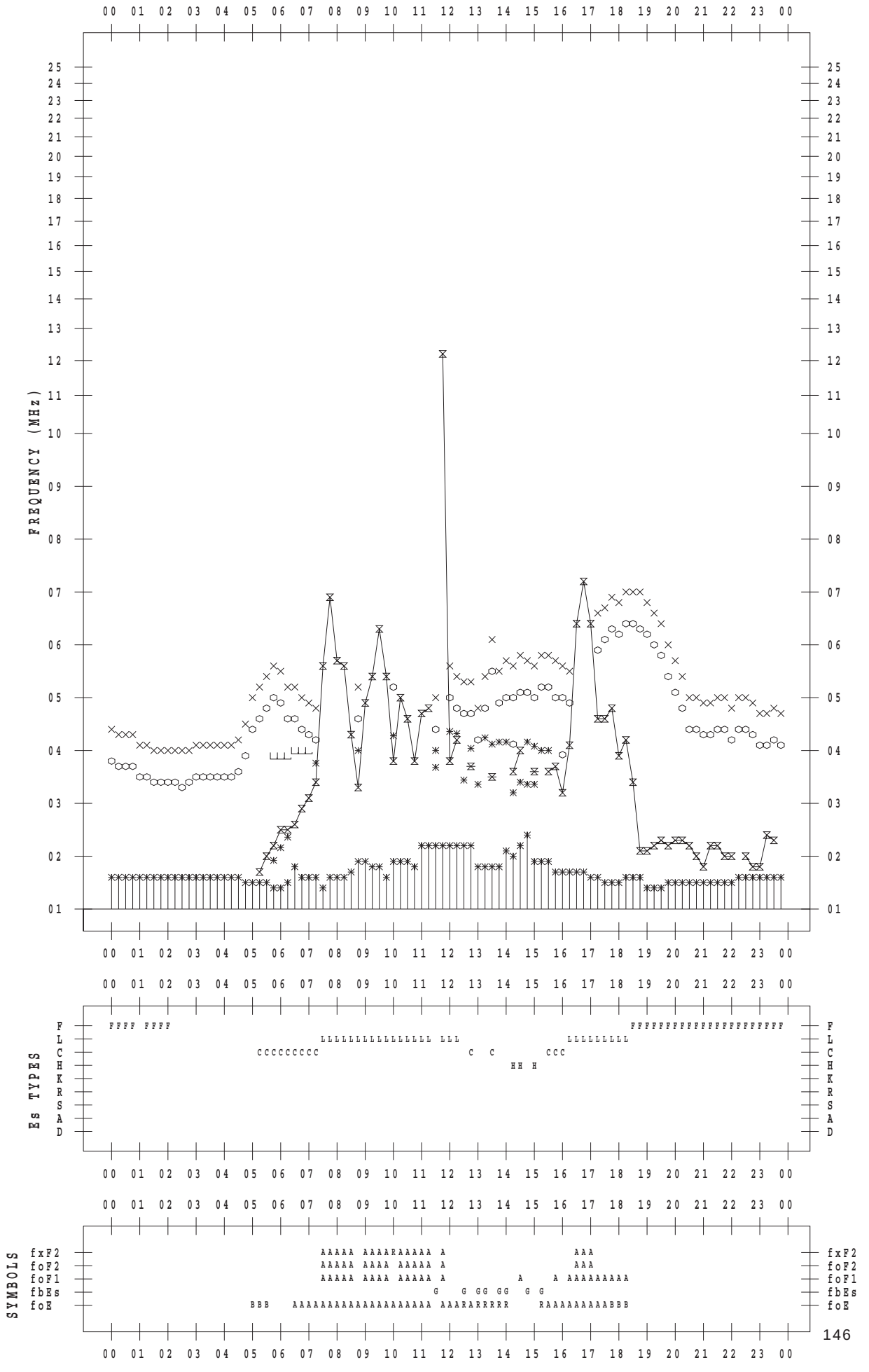
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 8

135 °E MEAN TIME



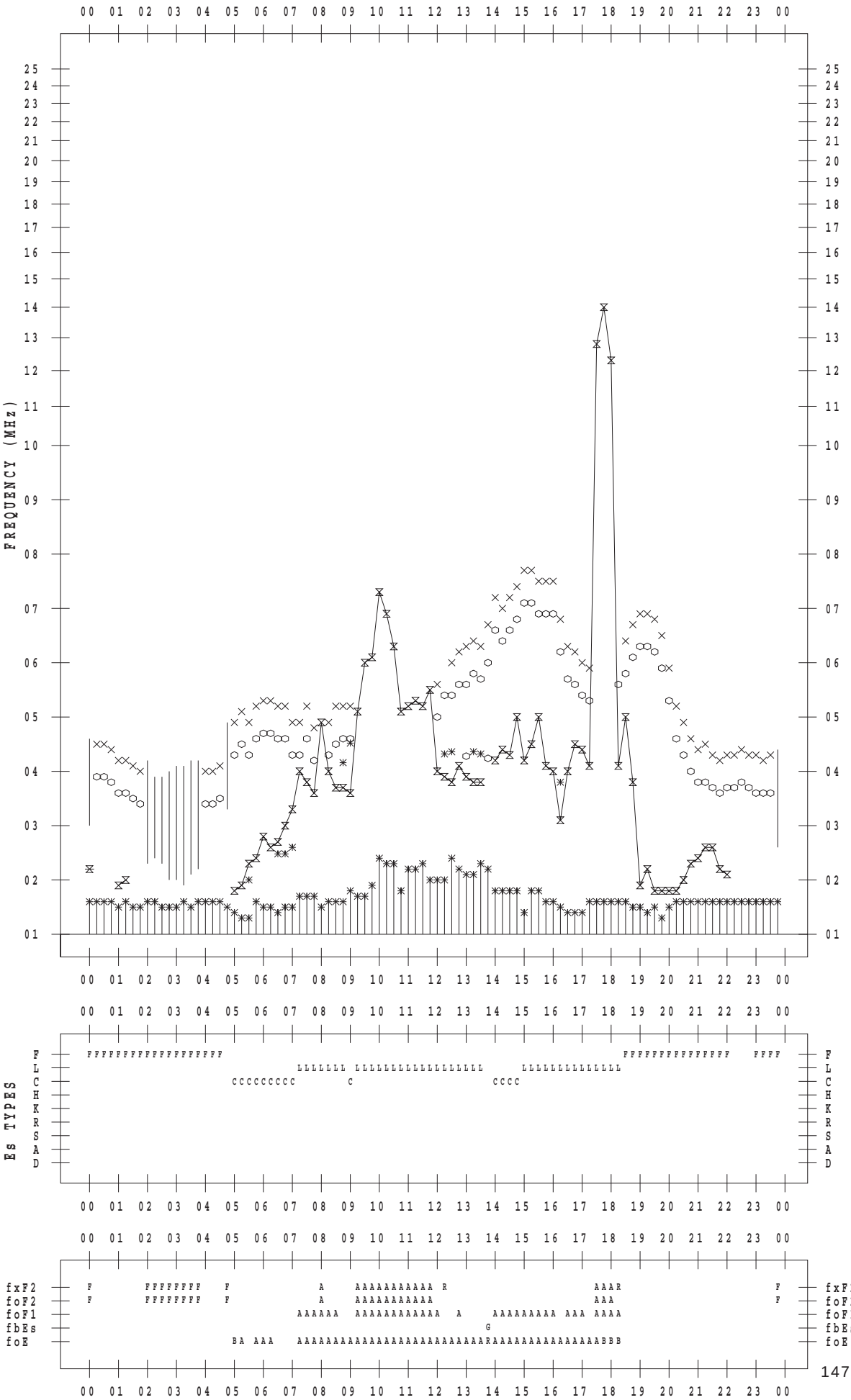
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/ 9

135 °E MEAN TIME



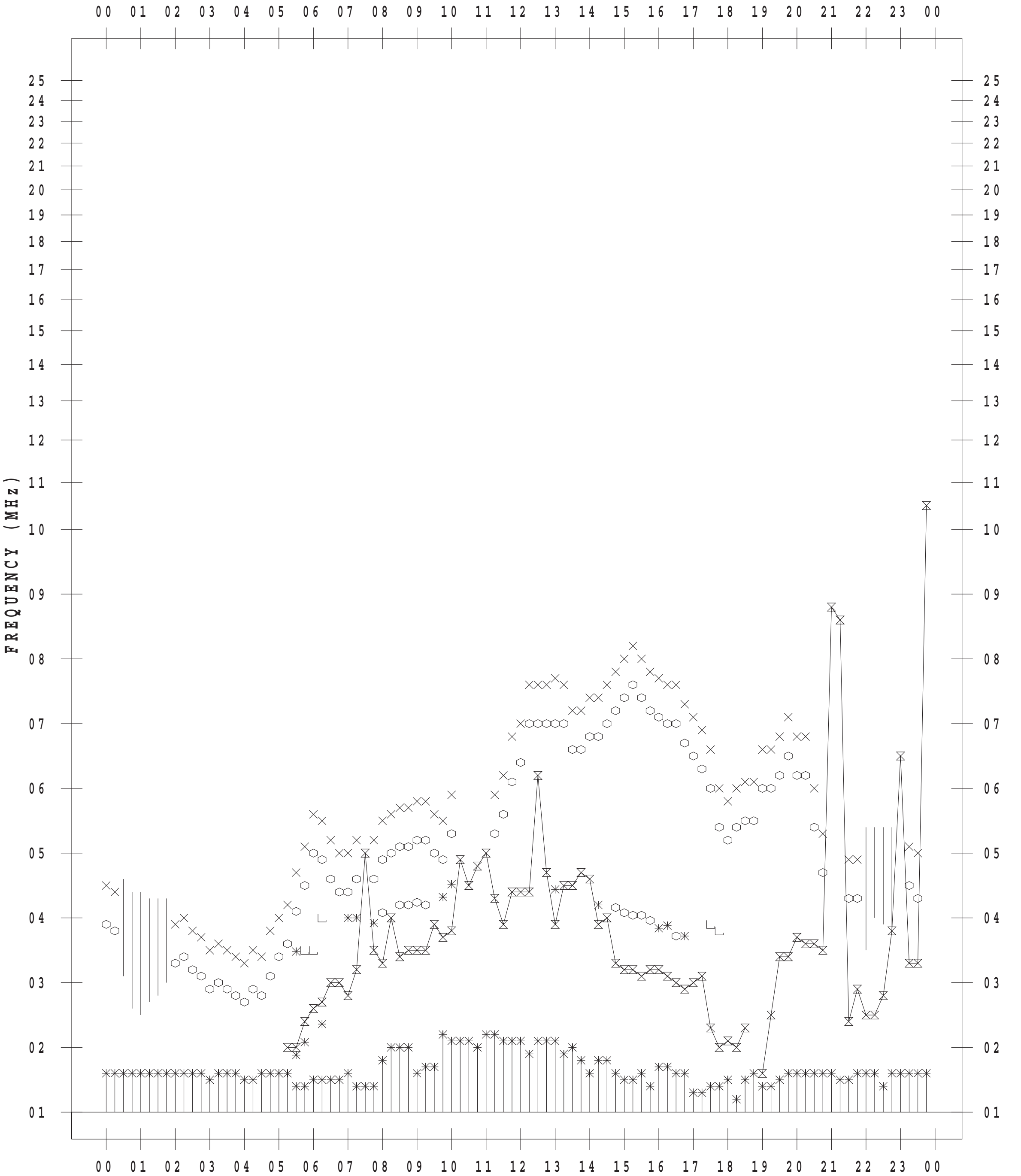
f-PLOT DATA

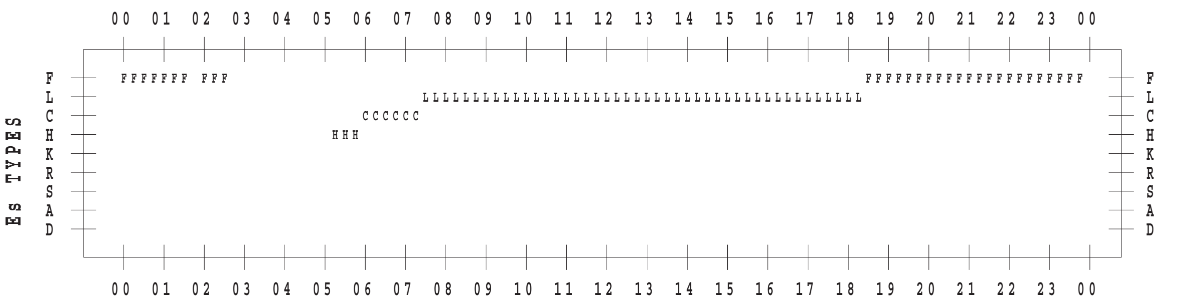
SCALER : I.NISHIMUTA

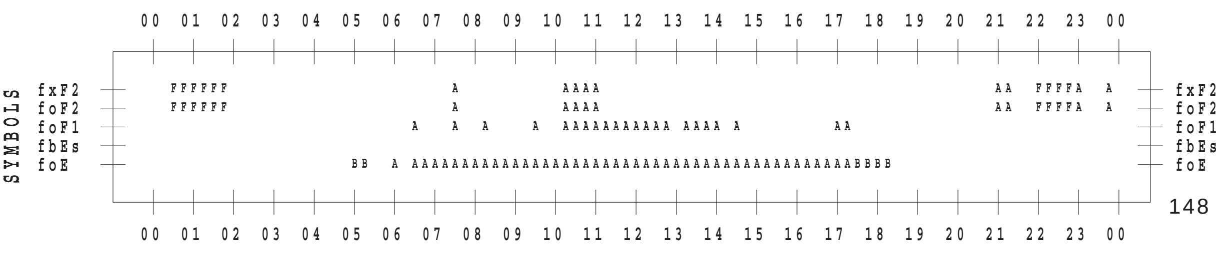
STATION : Kokubunji

DATE : 2018/ 5/10

135 °E MEAN TIME







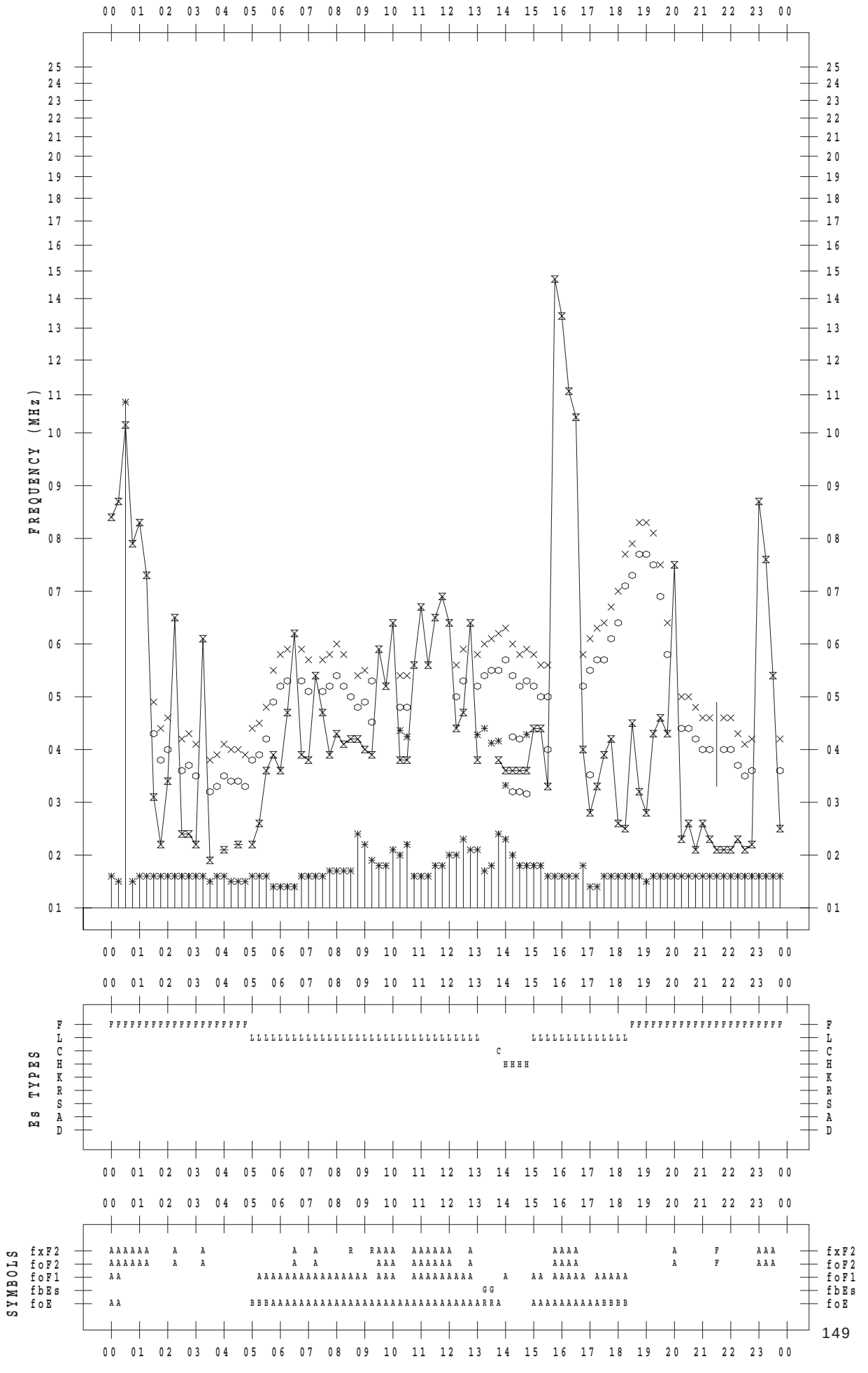
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/11

135 °E MEAN TIME



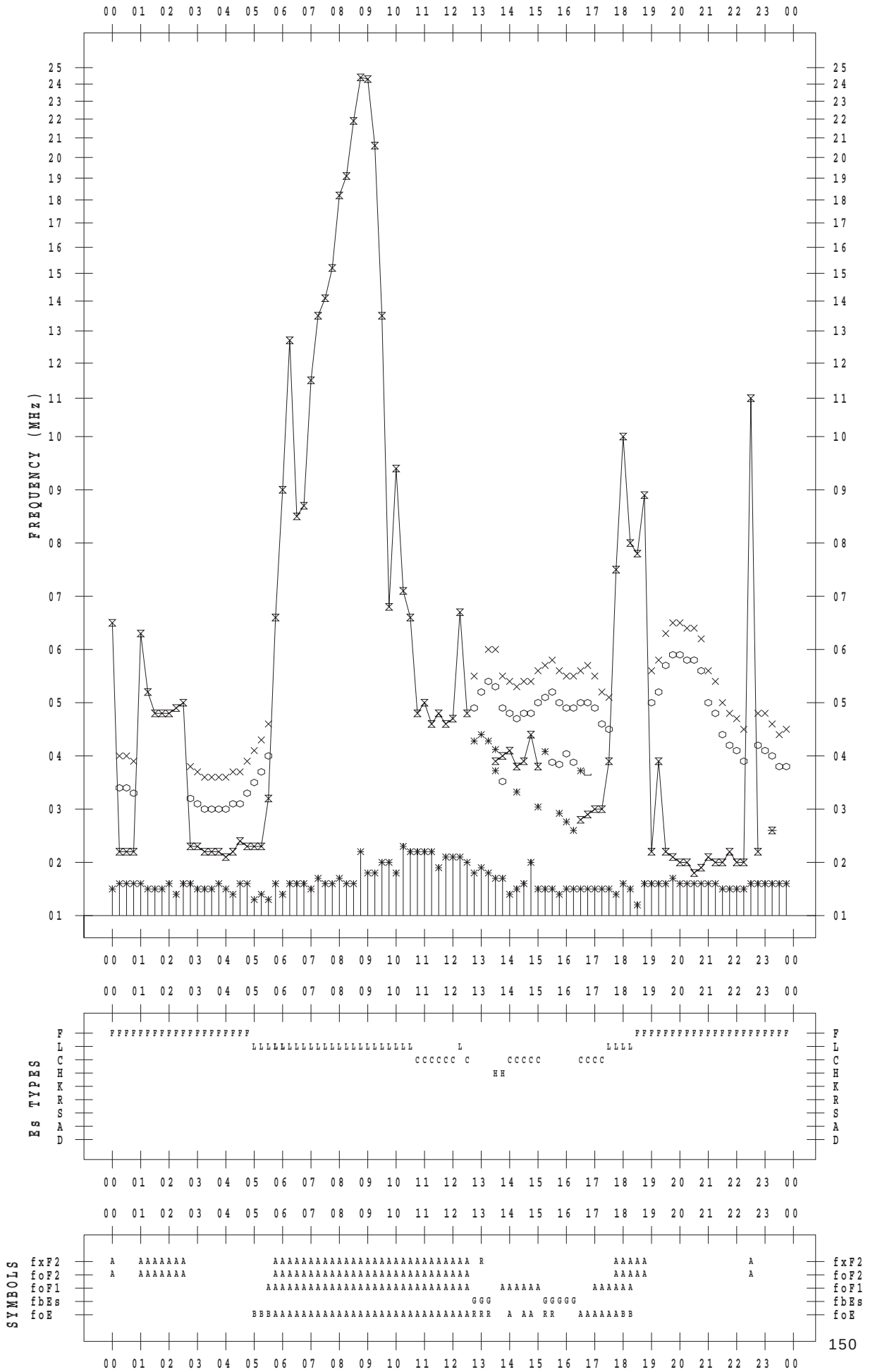
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/12

135 °E MEAN TIME



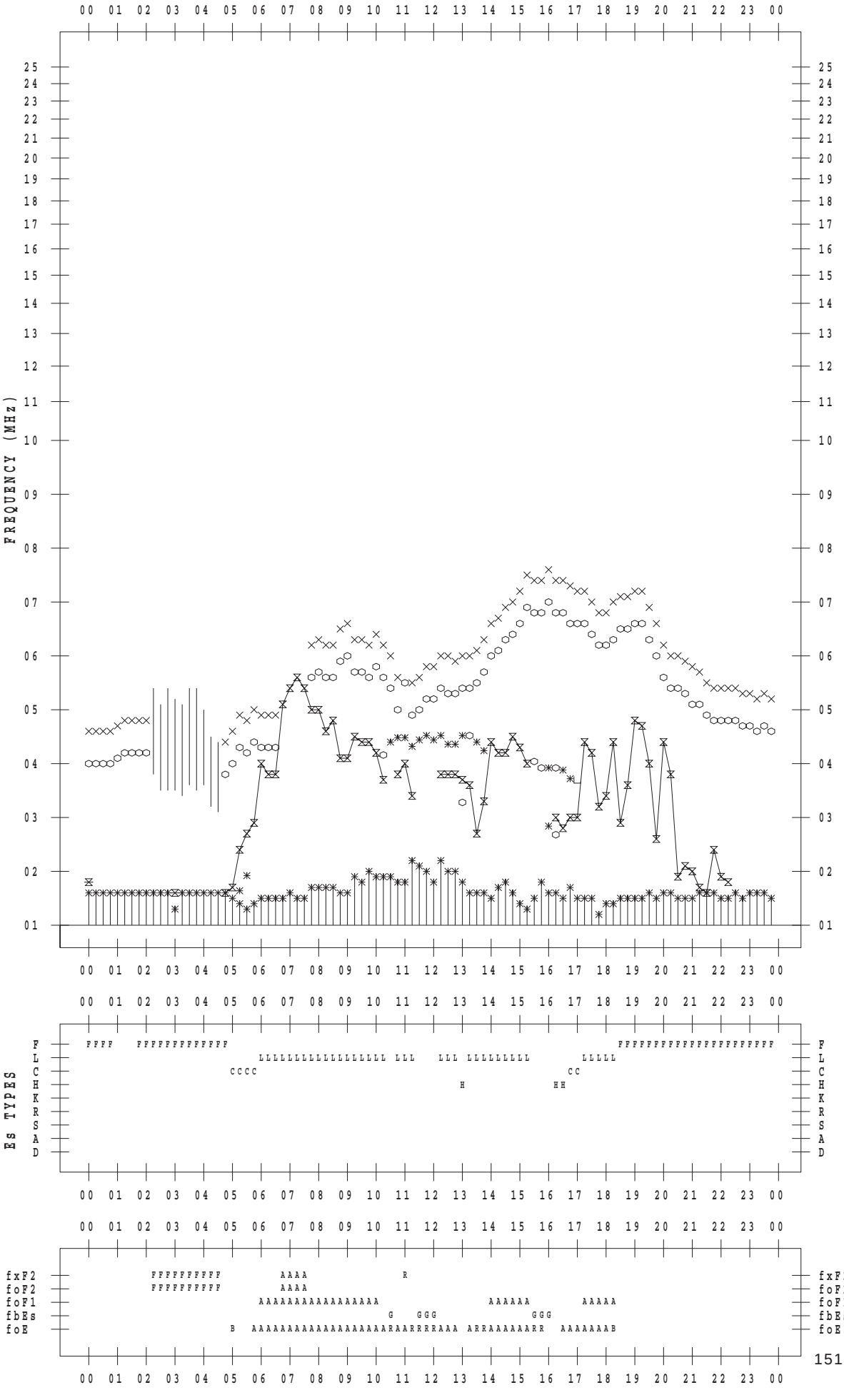
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/13

135 °E MEAN TIME



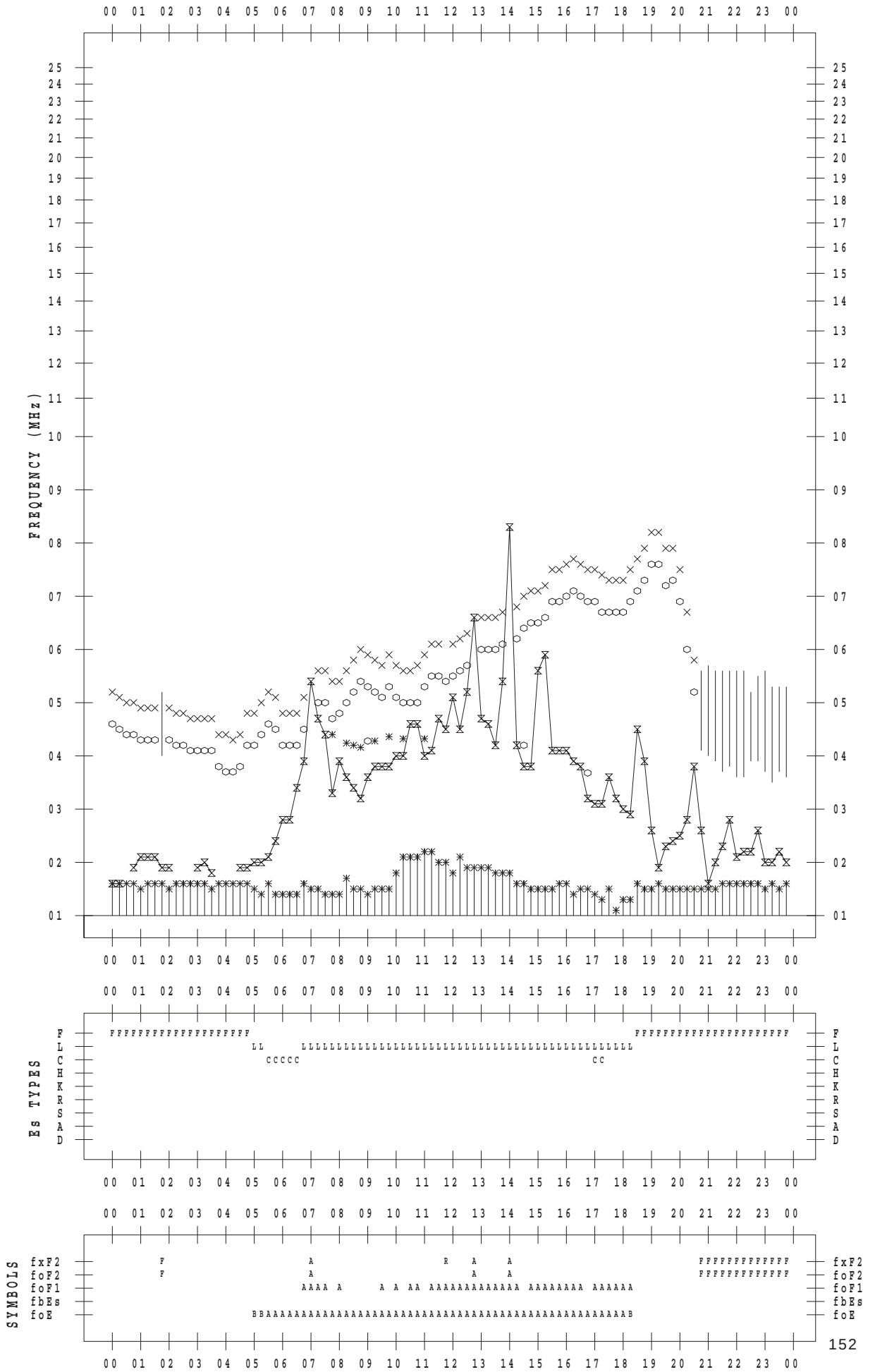
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/14

135 °E MEAN TIME



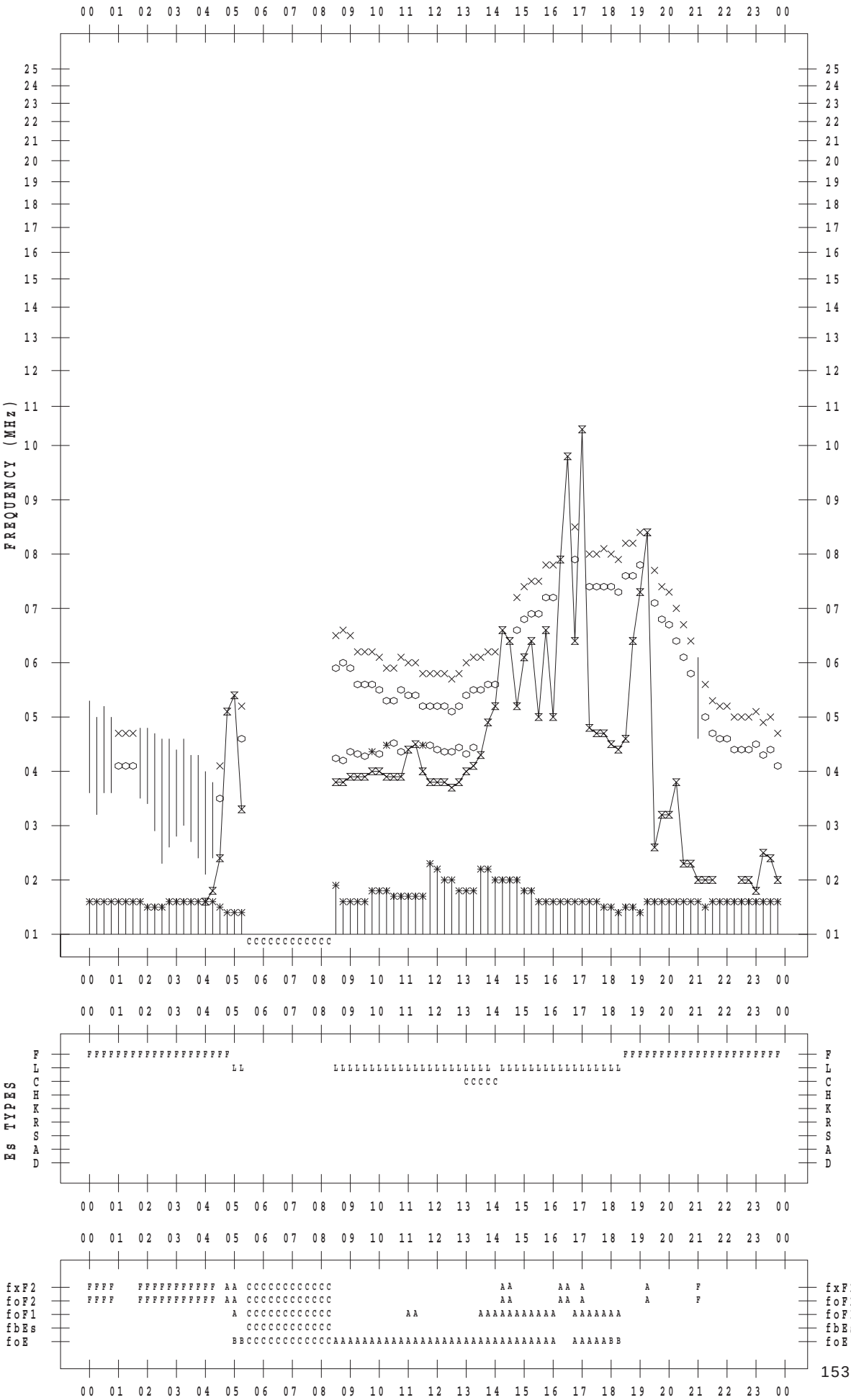
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/15

135 °E MEAN TIME



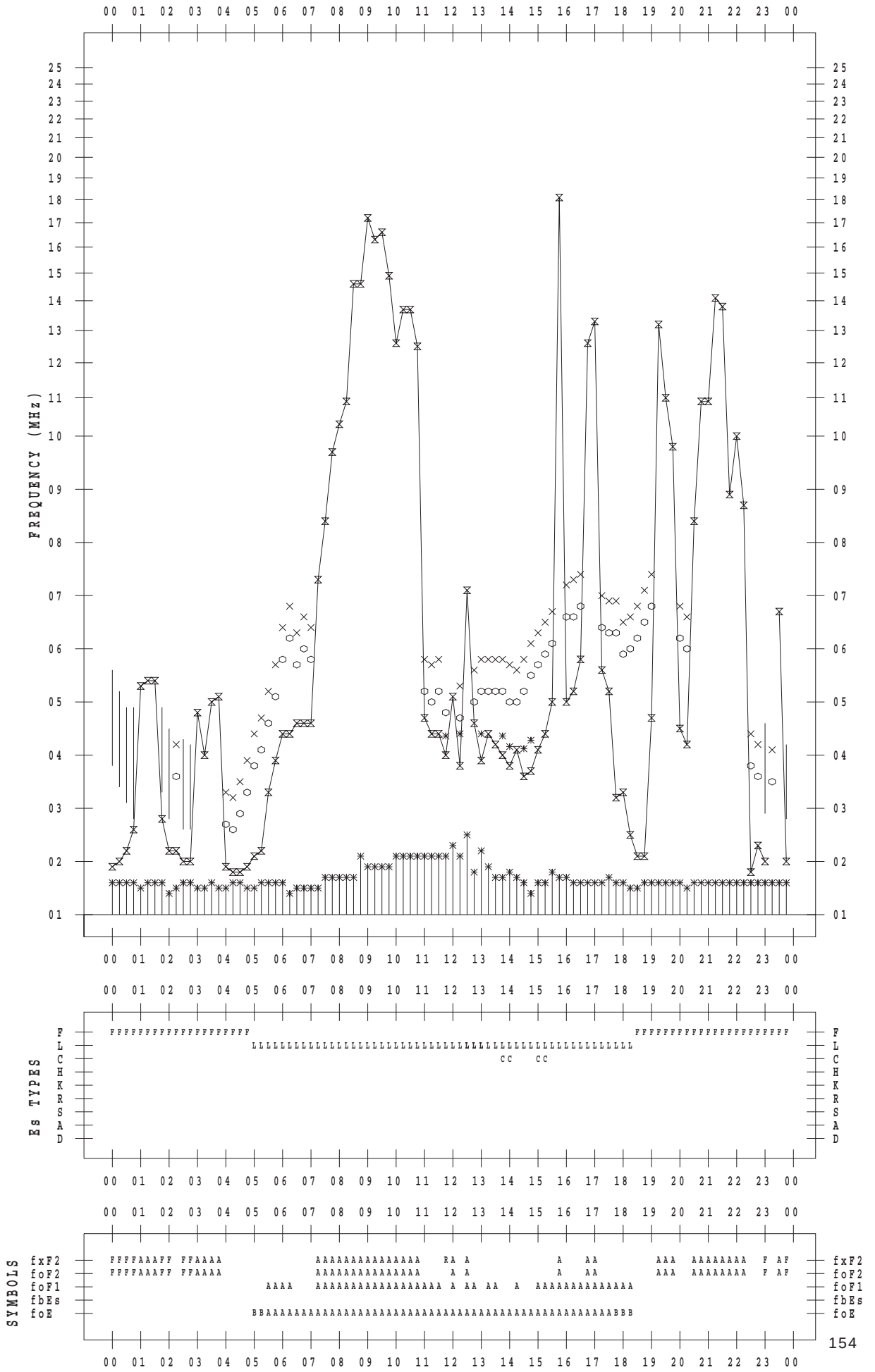
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/16

135 °E MEAN TIME



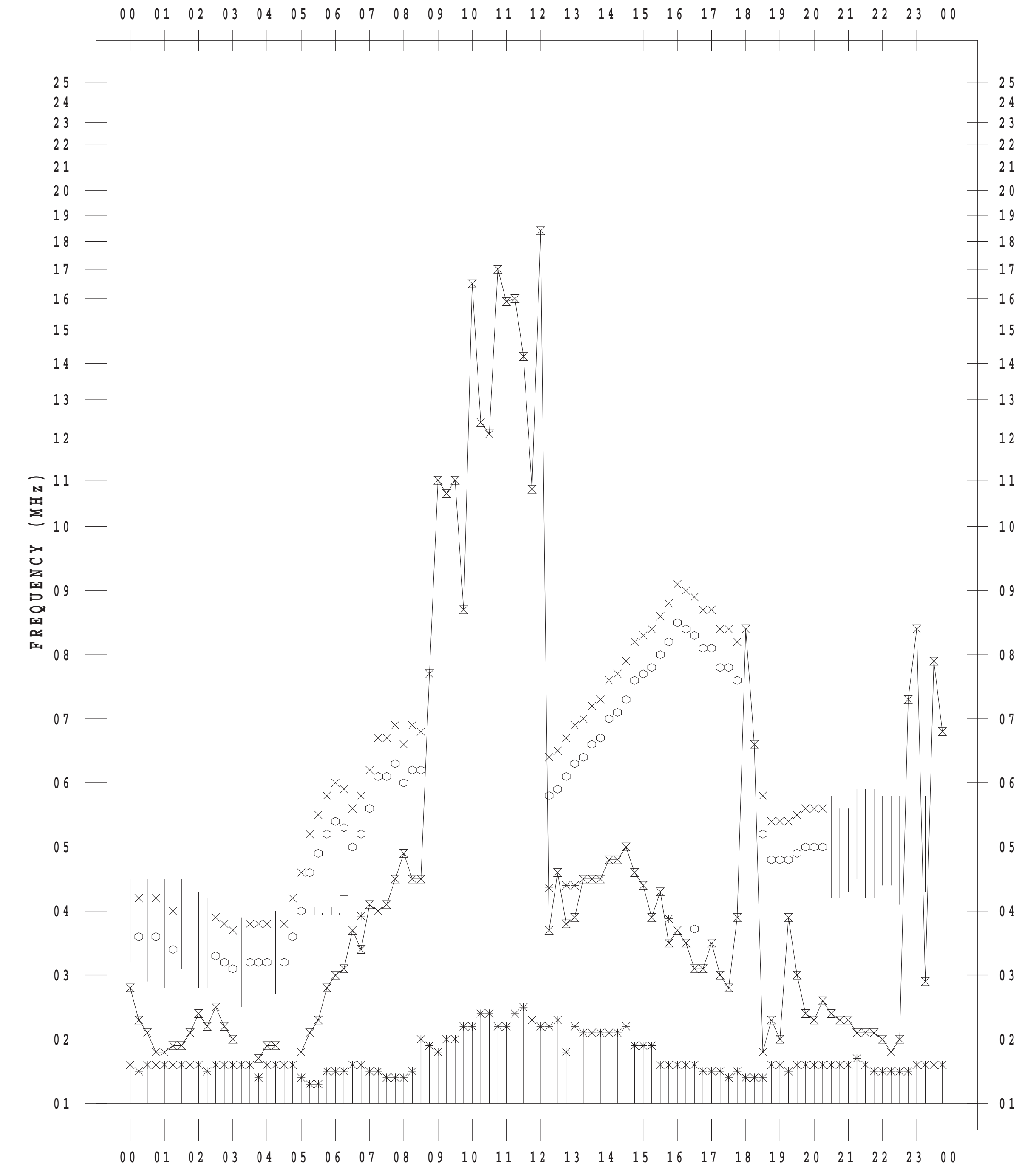
f-PLOT DATA

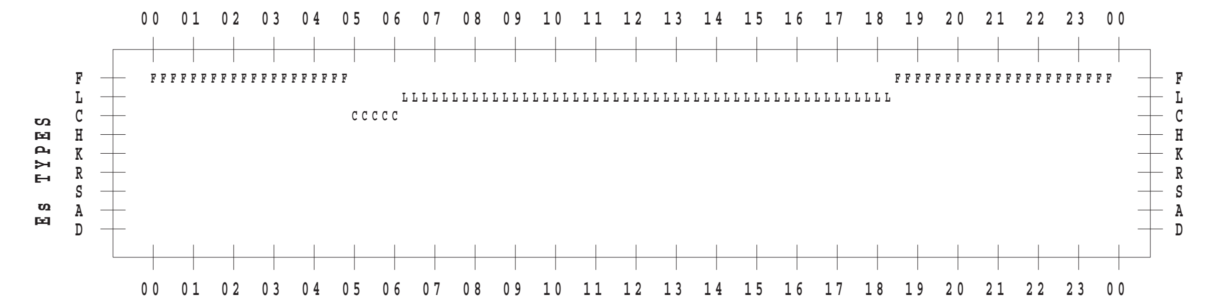
SCALER : I.NISHIMUTA

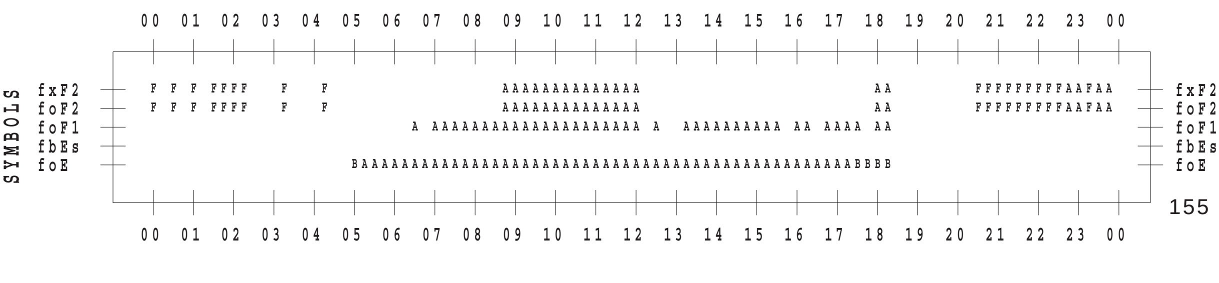
STATION : Kokubunji

DATE : 2018/ 5/17

135 °E MEAN TIME







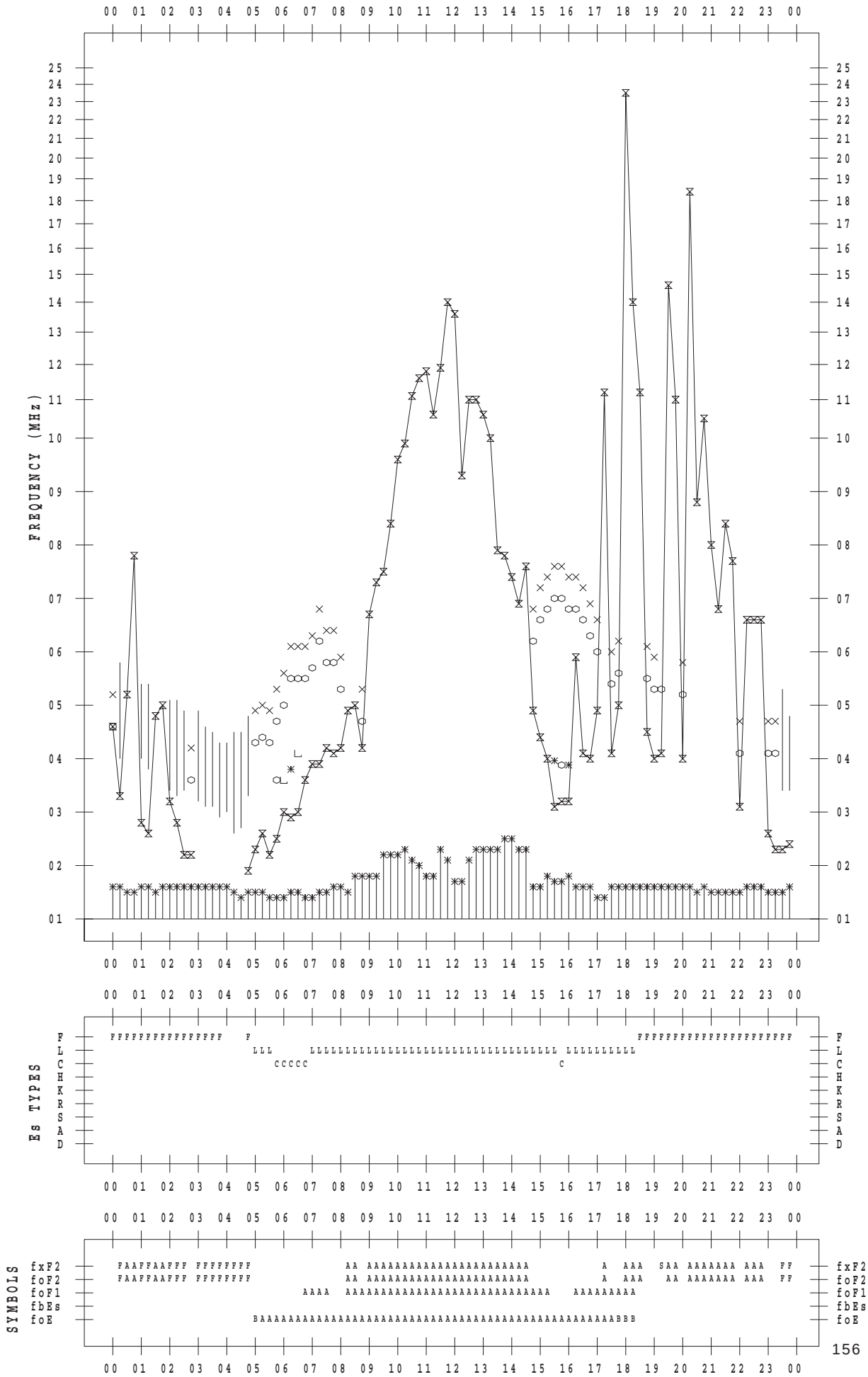
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/18

135 °E MEAN TIME



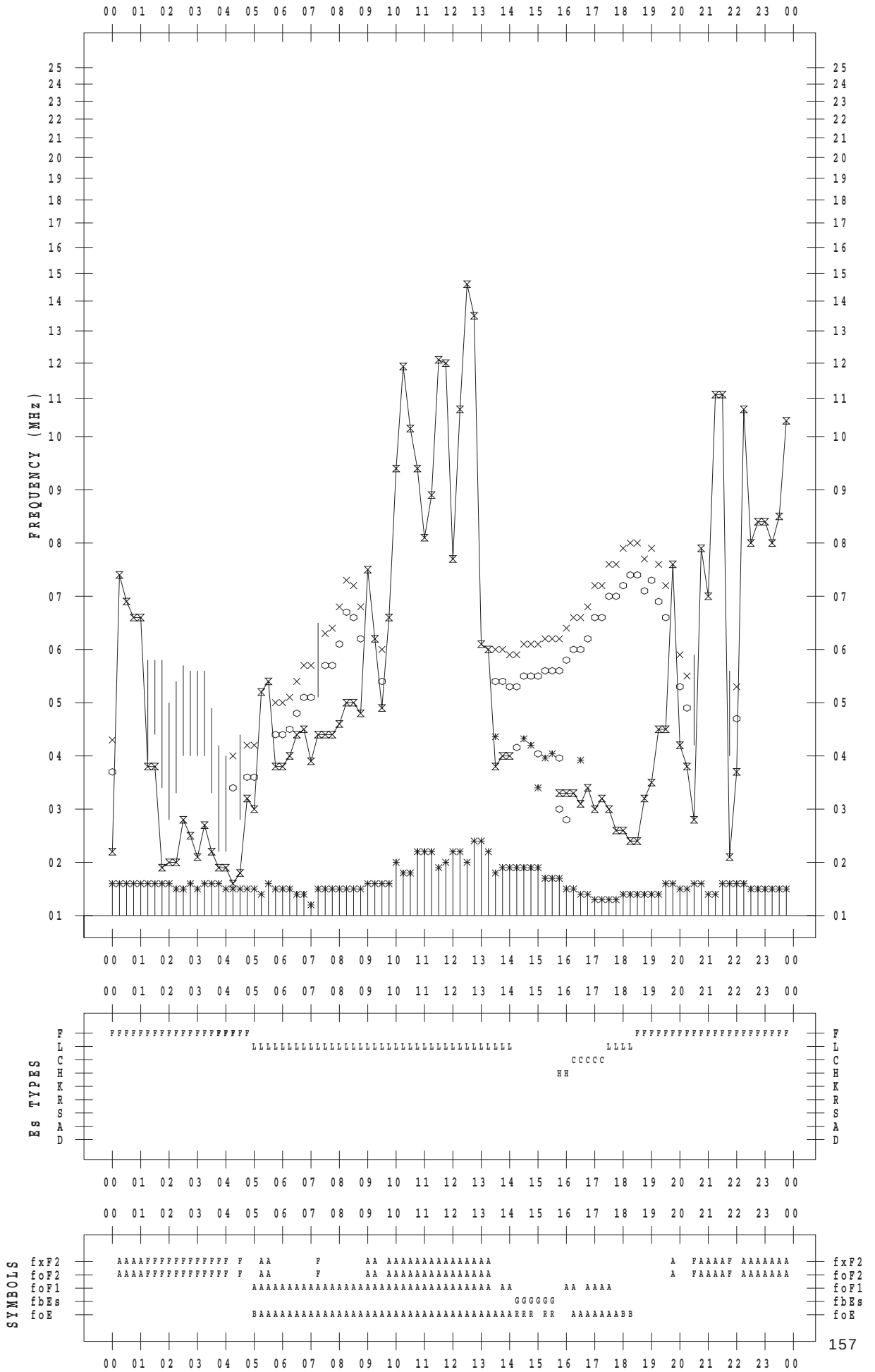
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/19

135 °E MEAN TIME



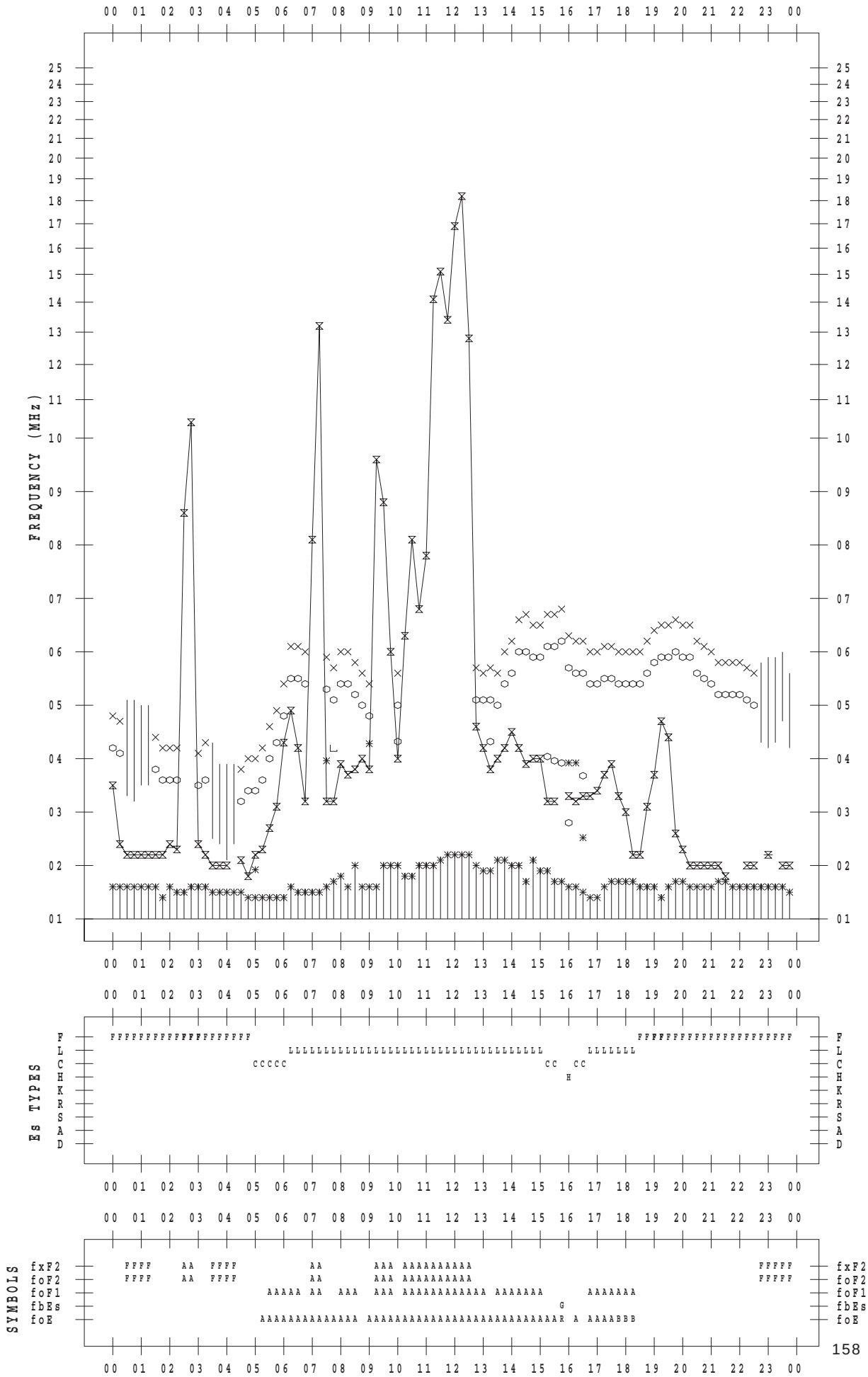
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/20

135 °E MEAN TIME

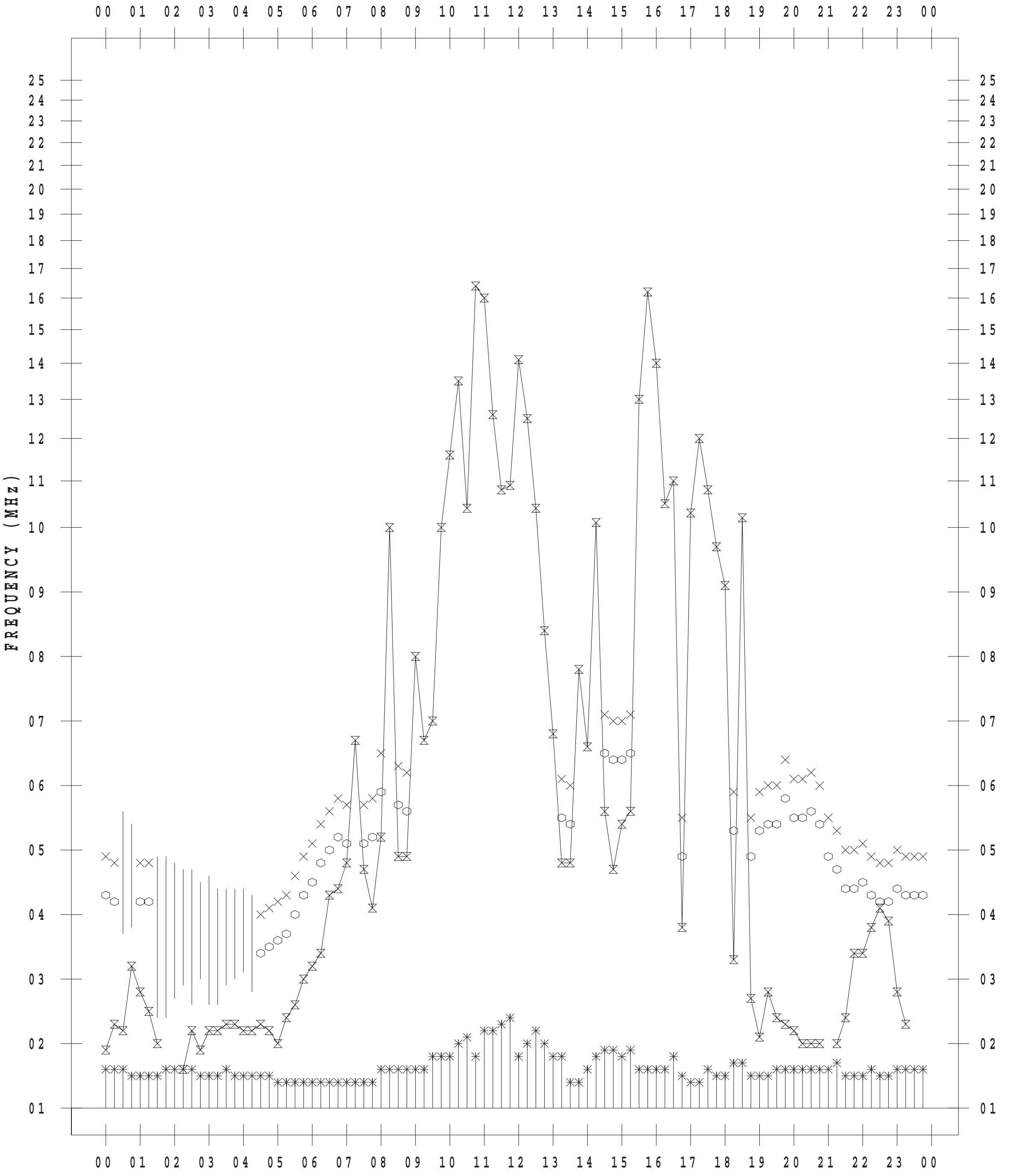


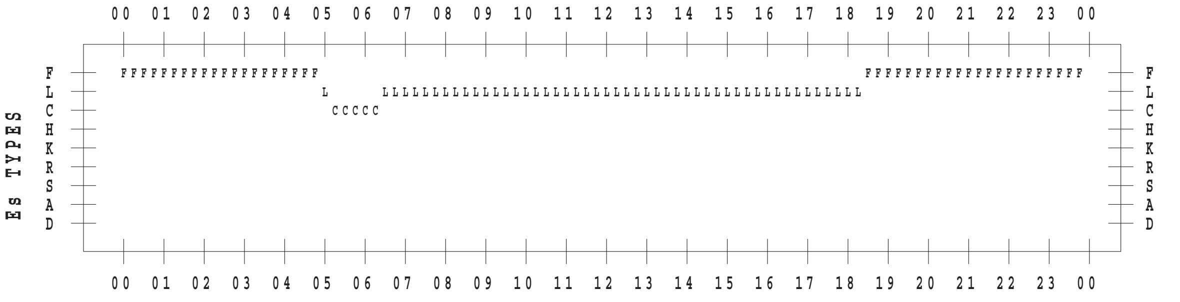
f-PLOT DATA

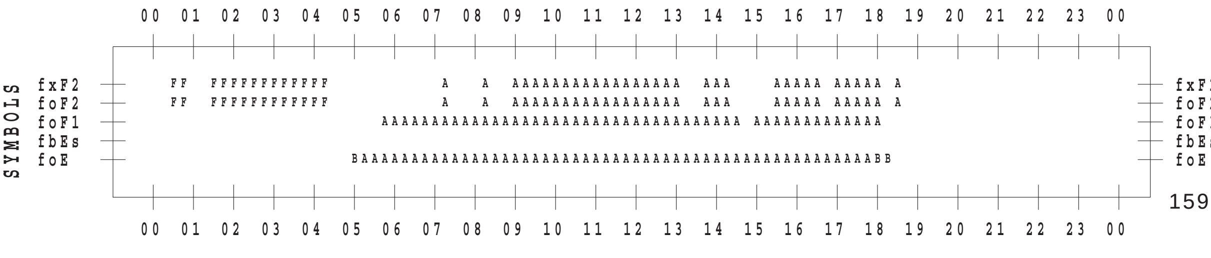
SCALER : I.NISHIMUTA

STATION : Kokubunji   DATE : 2018/ 5/21

135 °E MEAN TIME







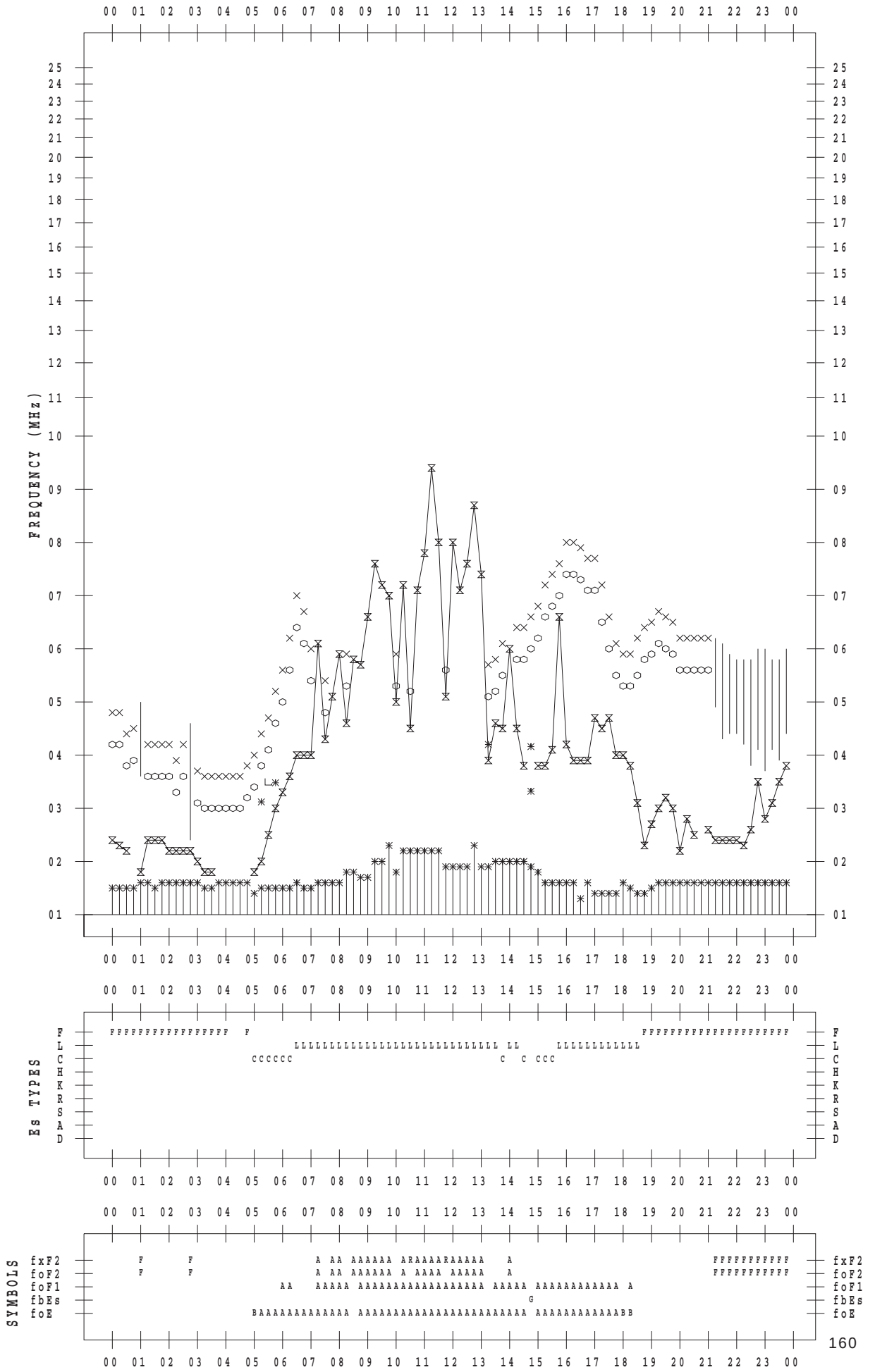
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/22

135 °E MEAN TIME



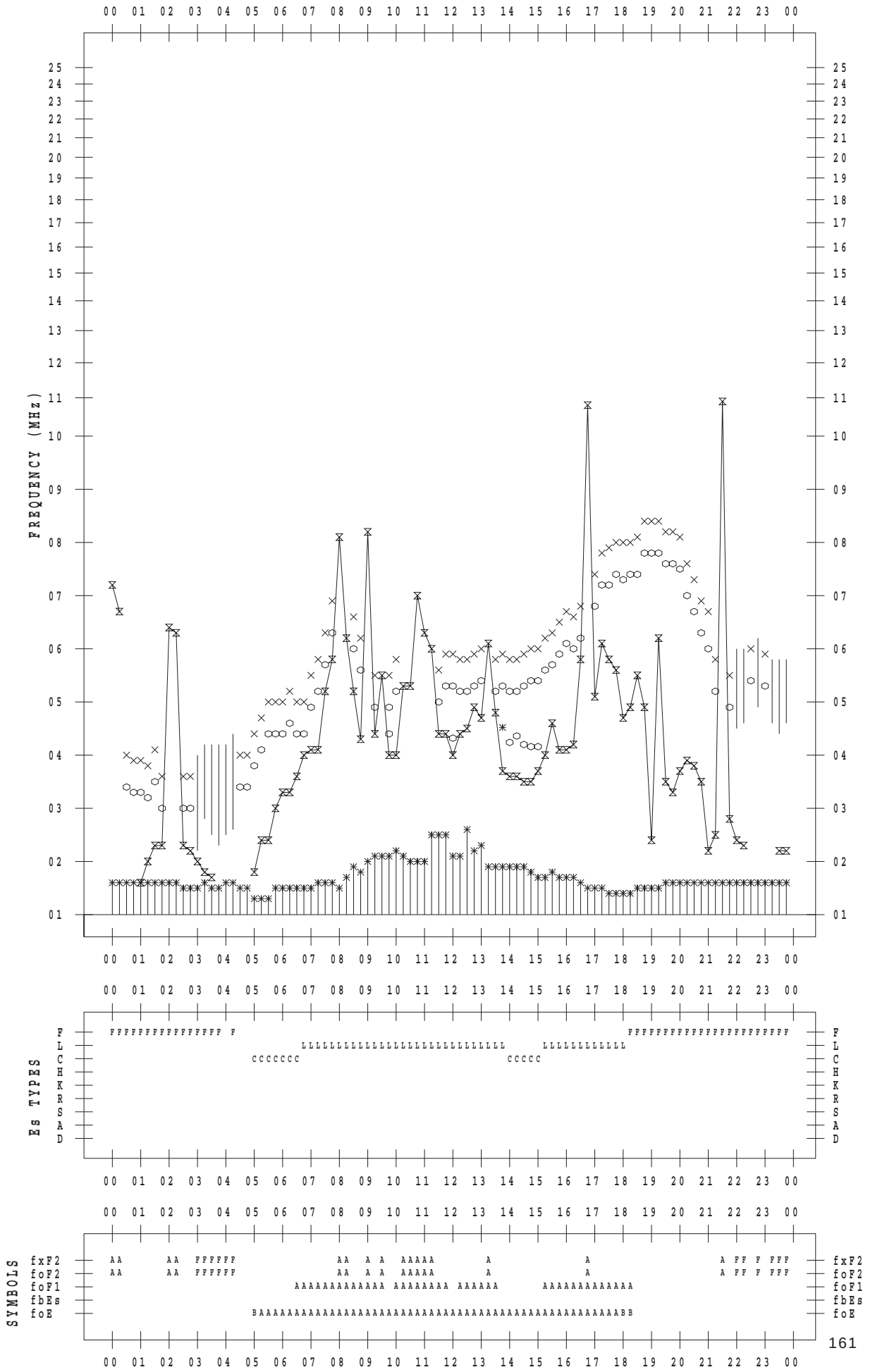
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/23

135 °E MEAN TIME

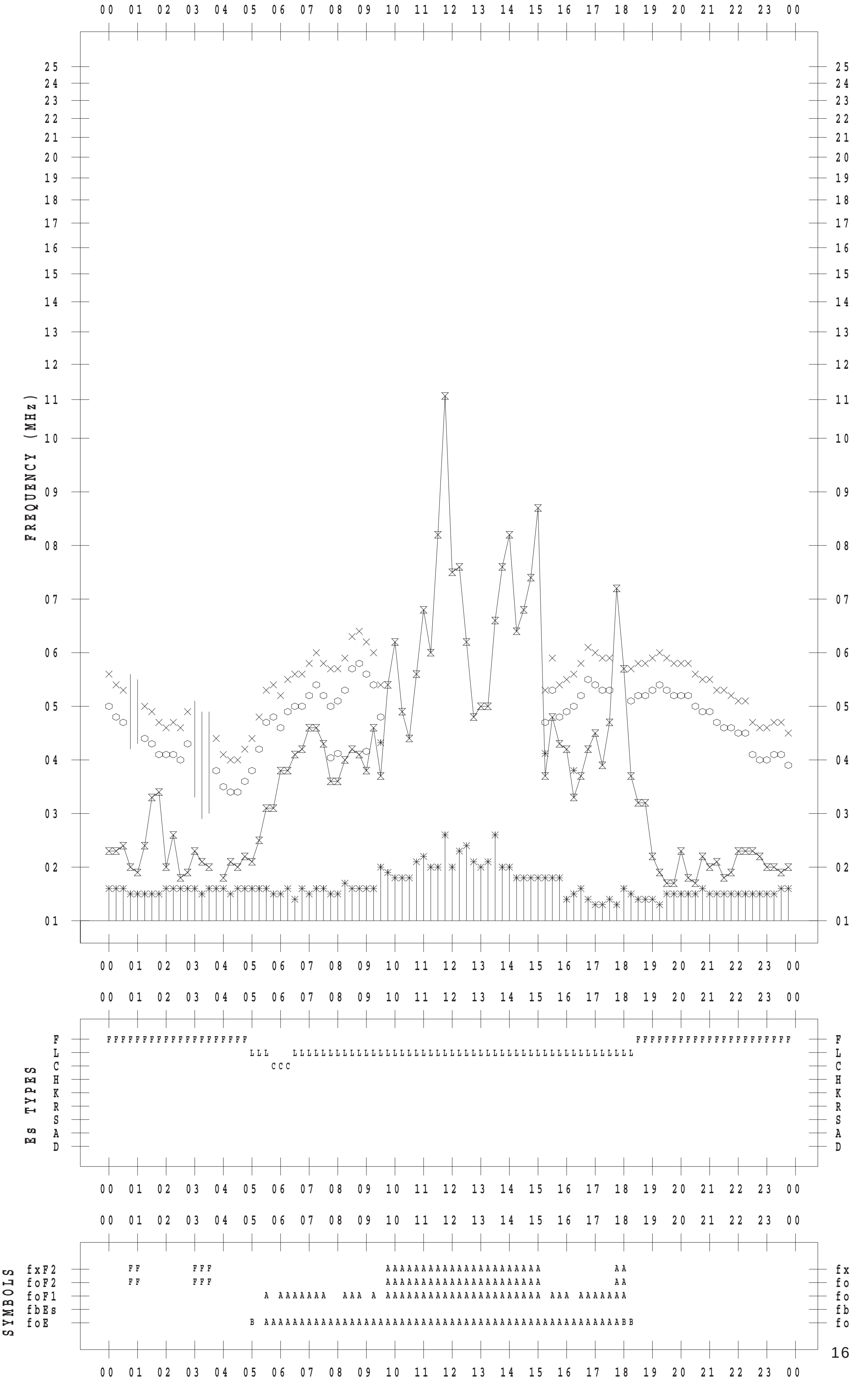


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2018/ 5/24

135 °E MEAN TIME



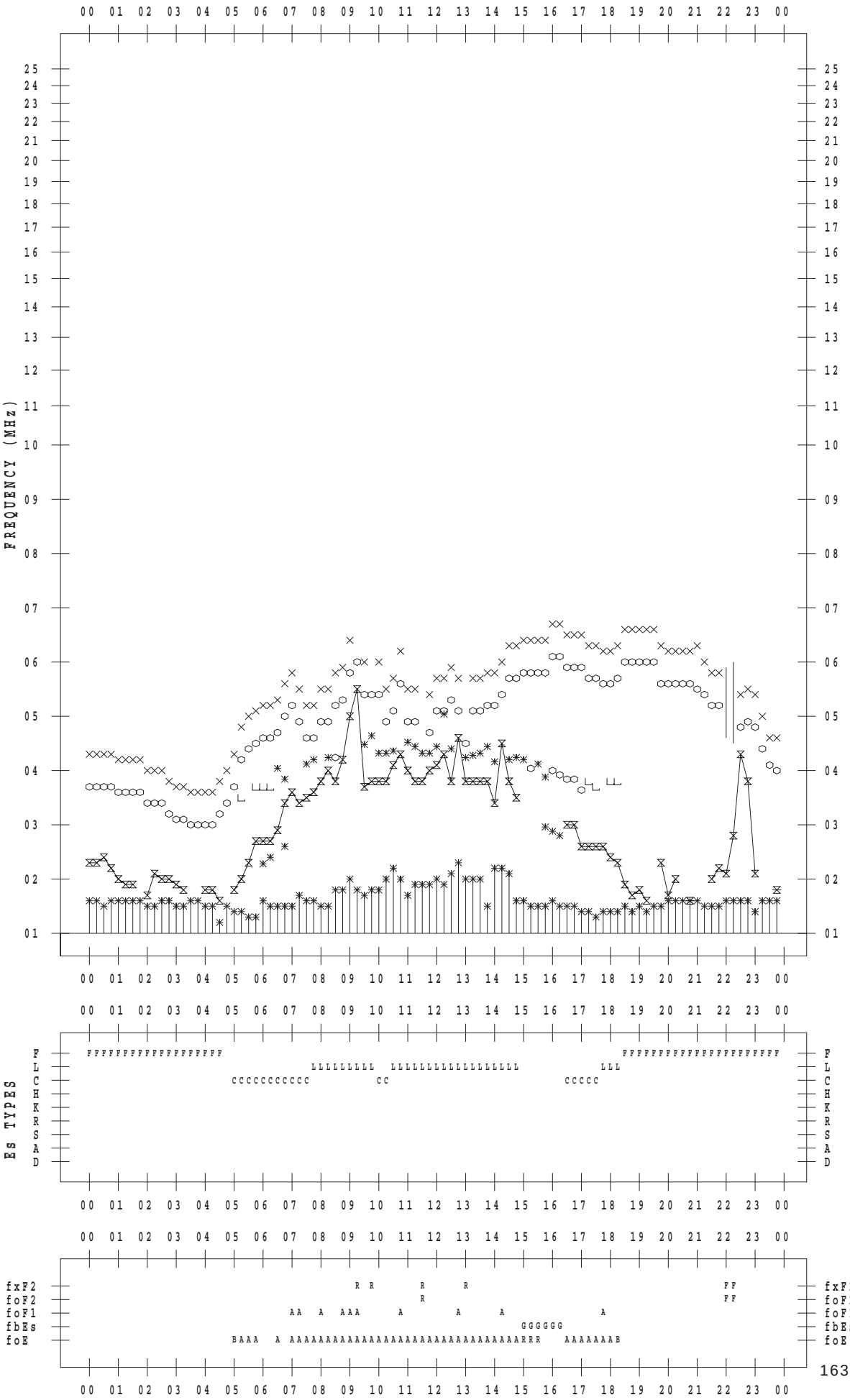
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/25

135 °E MEAN TIME



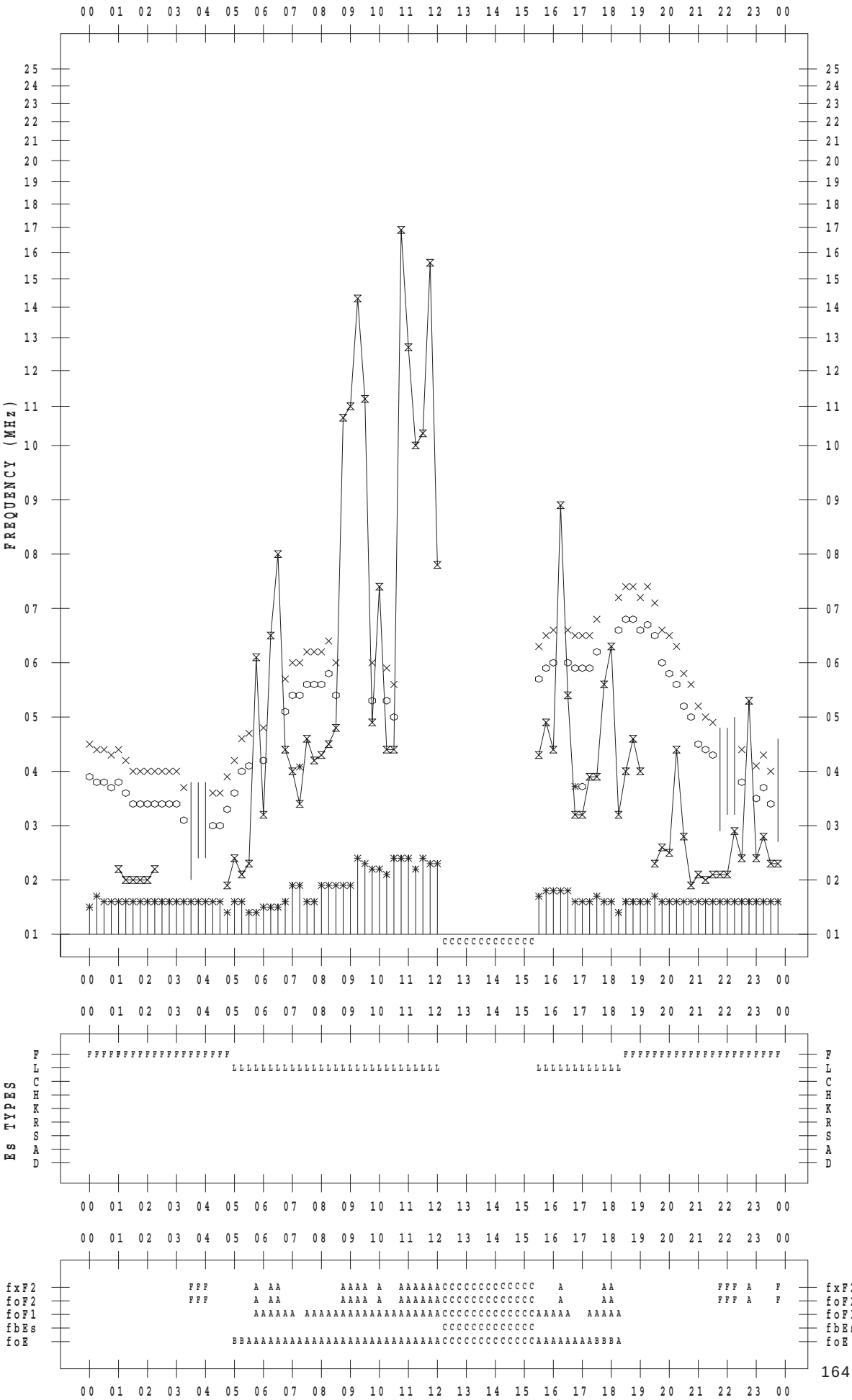
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/26

135 °E MEAN TIME



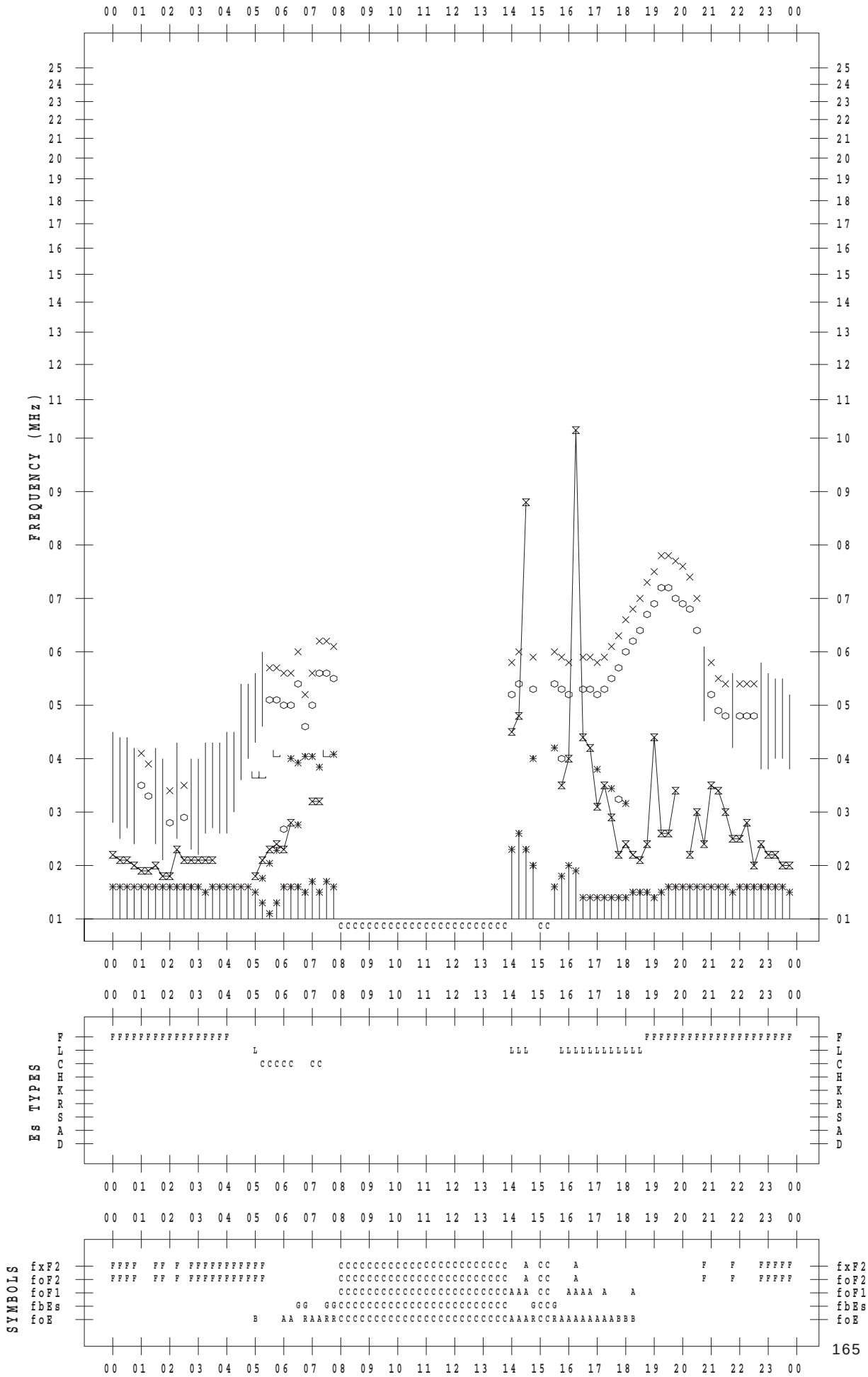
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/27

135 °E MEAN TIME



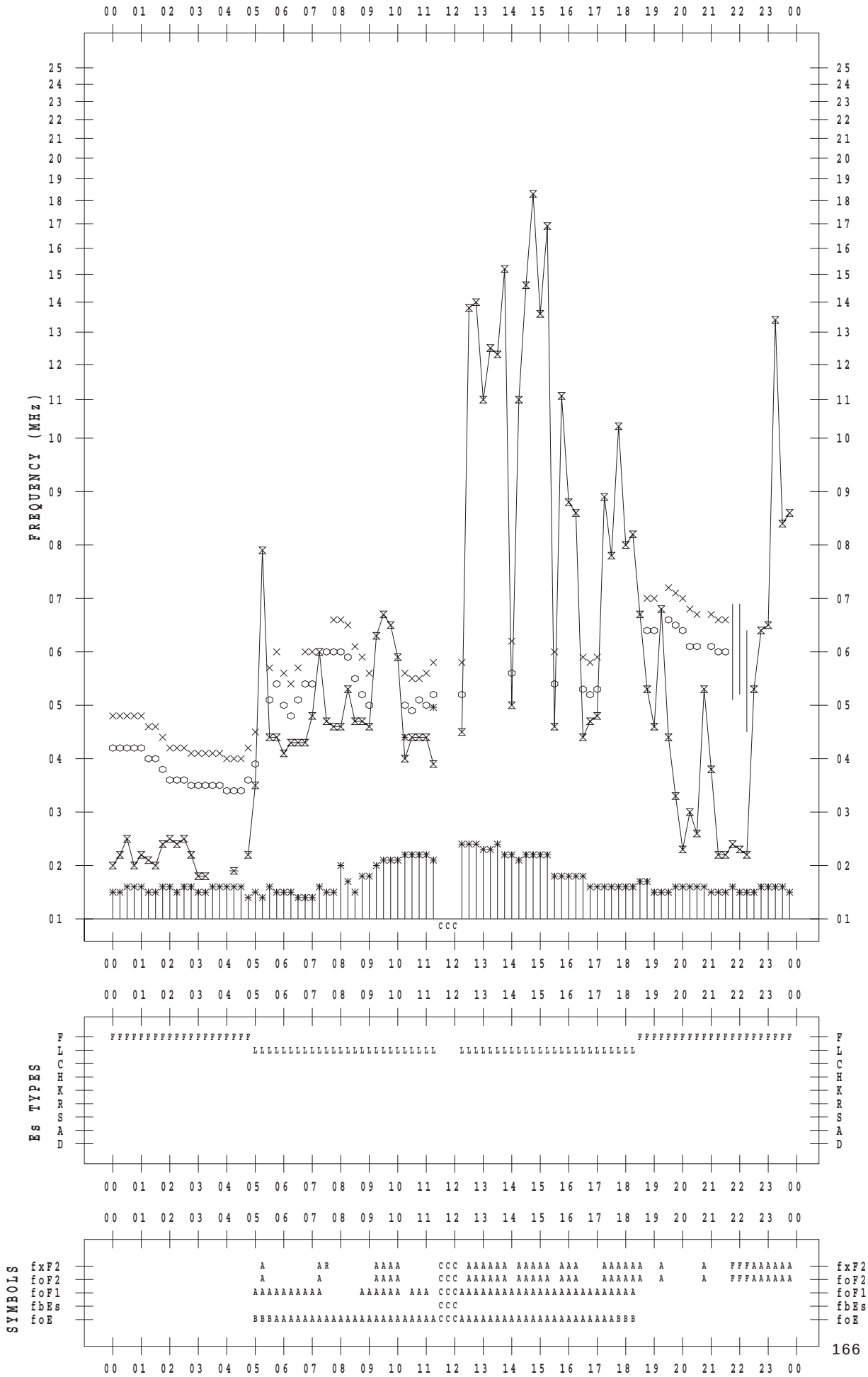
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/28

135 °E MEAN TIME



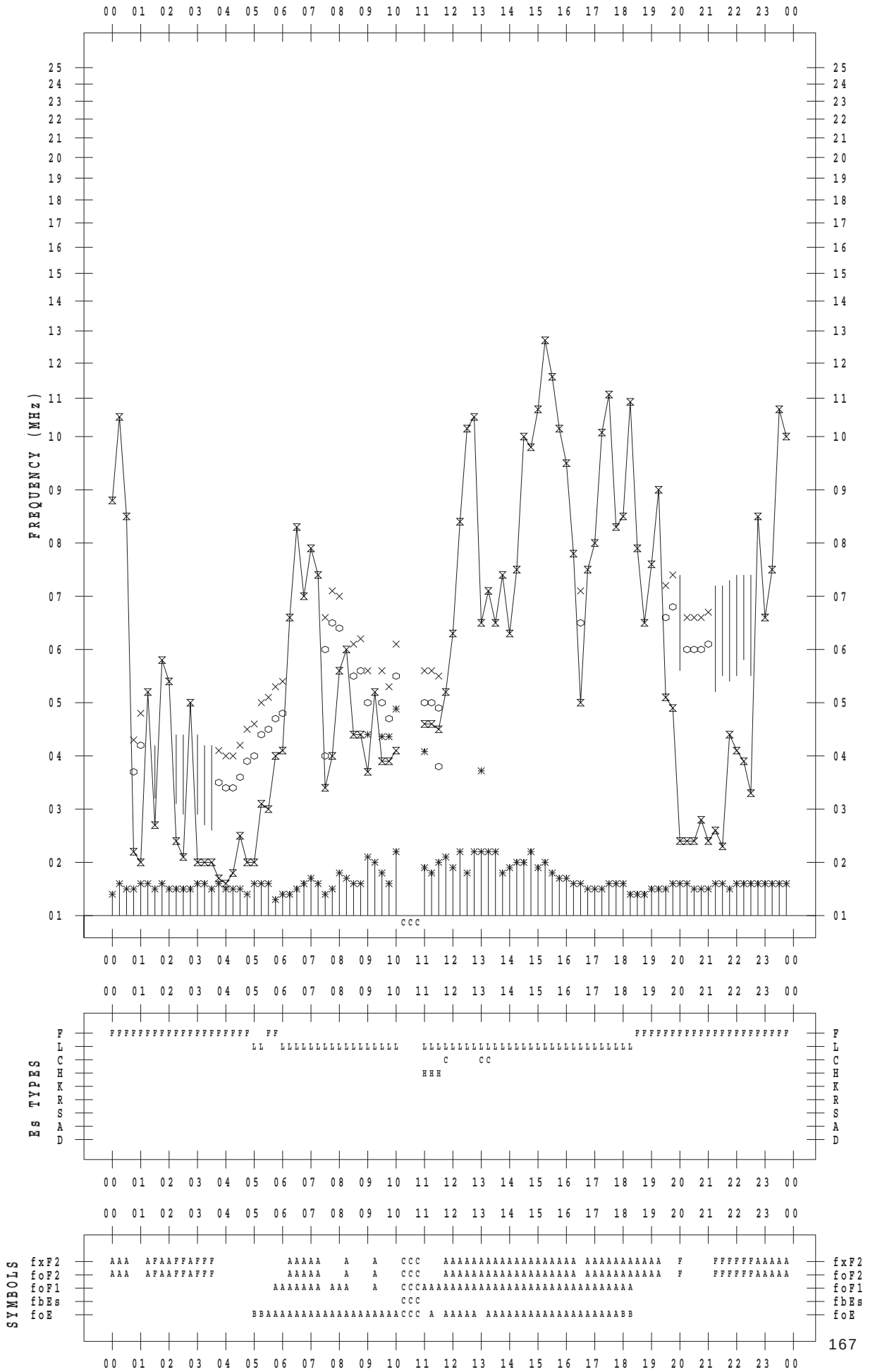
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/29

135 °E MEAN TIME



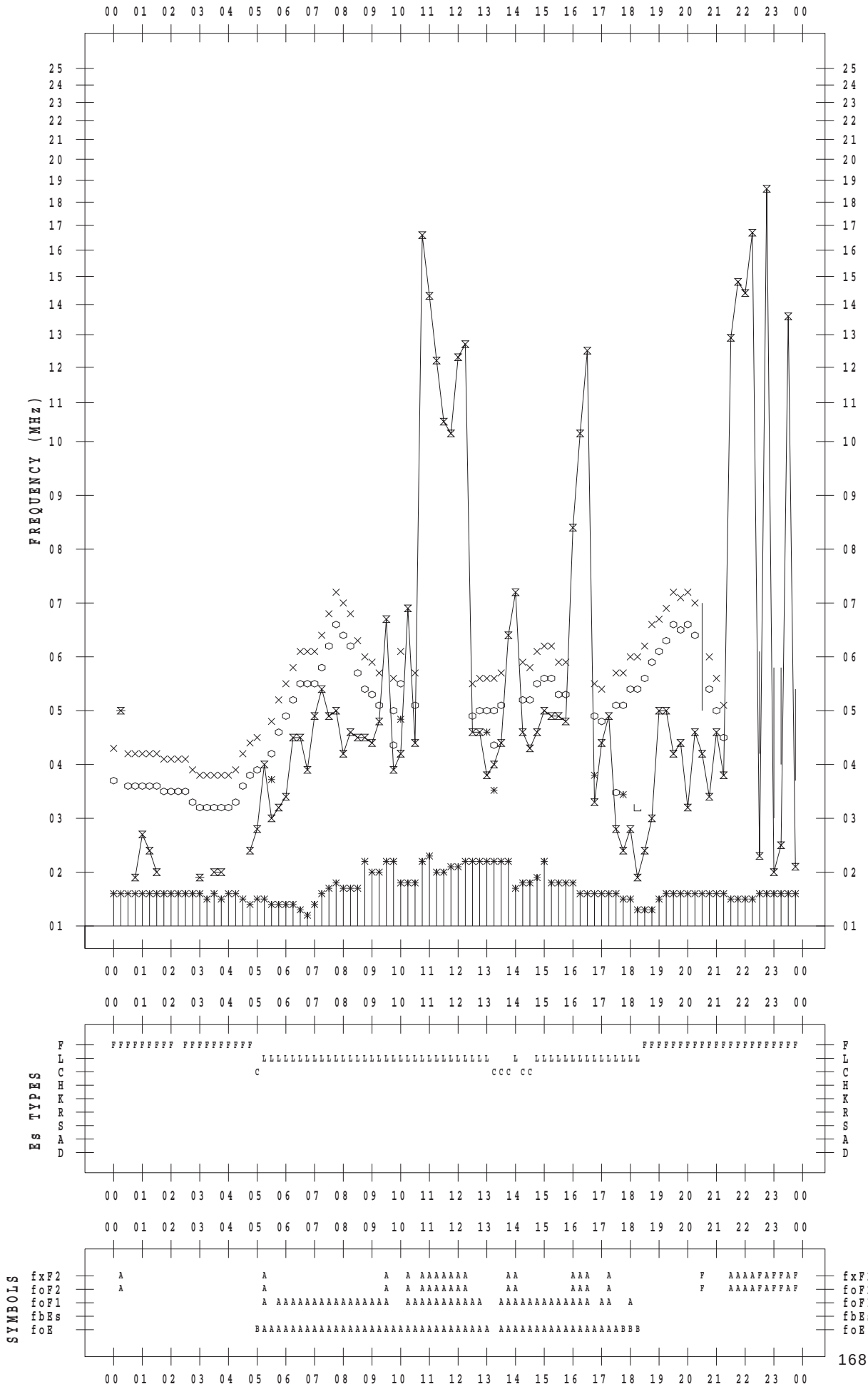
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/30

135 °E MEAN TIME



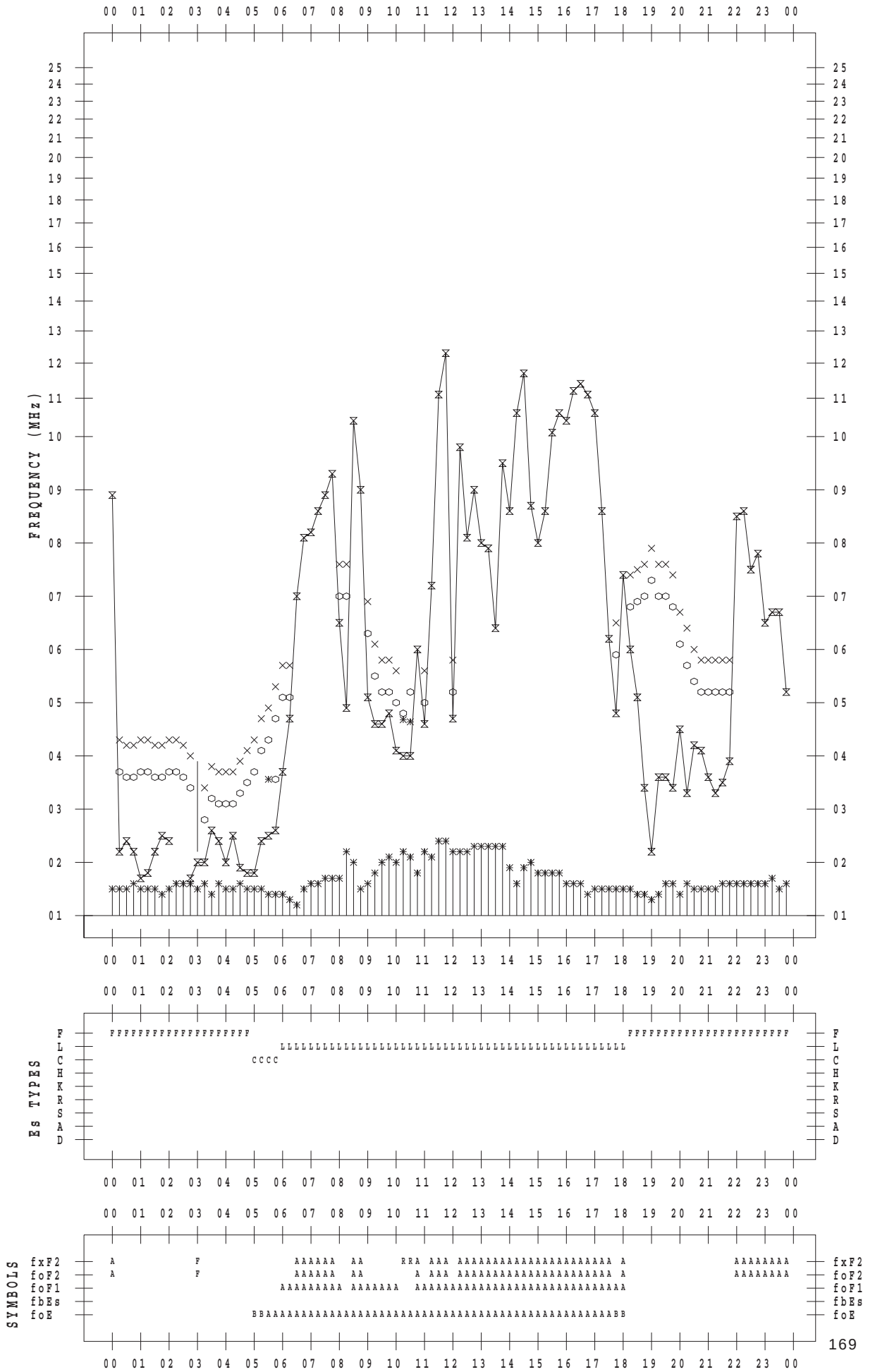
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2018/ 5/31

135 °E MEAN TIME



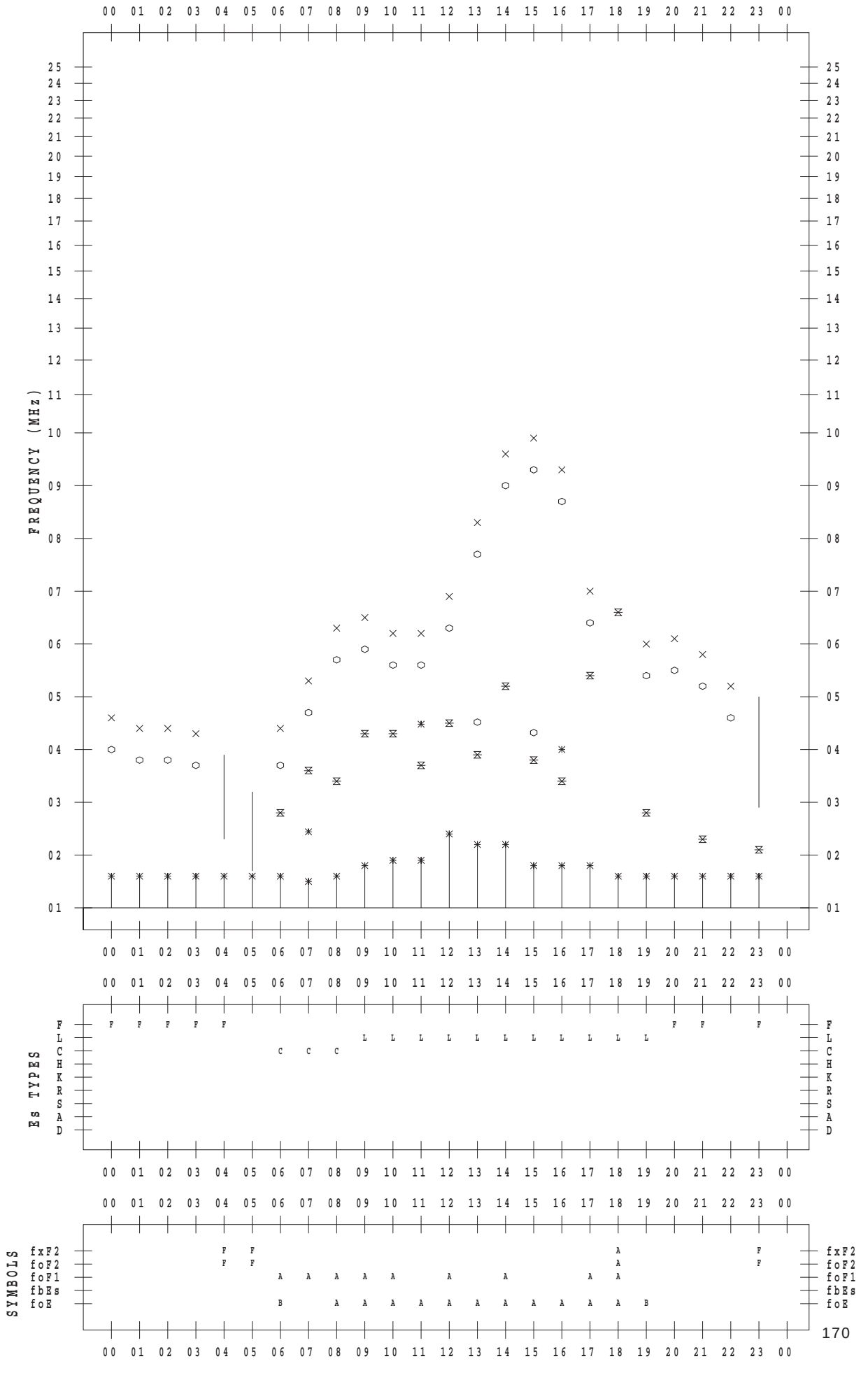
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 1

135 °E MEAN TIME



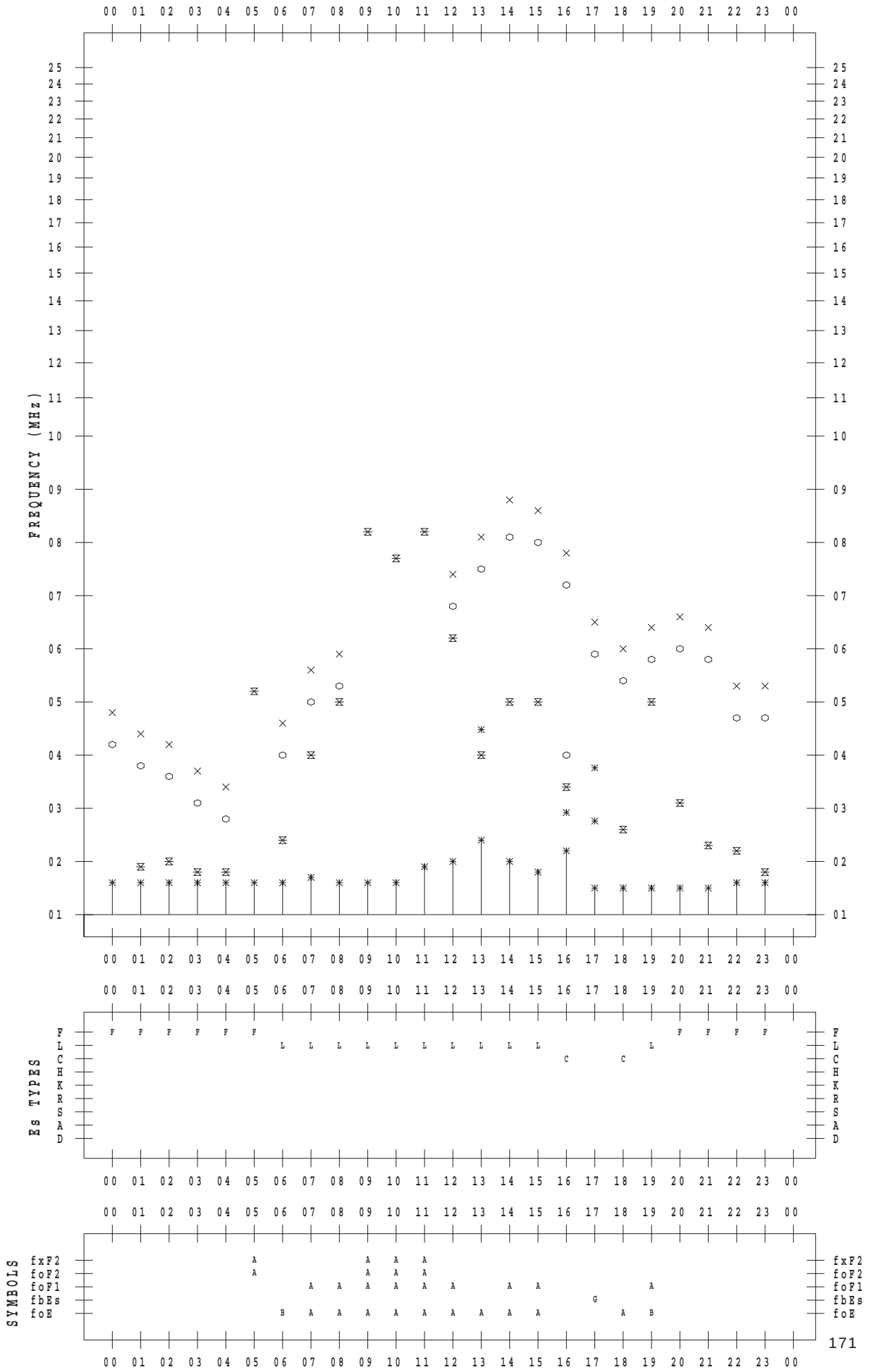
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 2

135 °E MEAN TIME



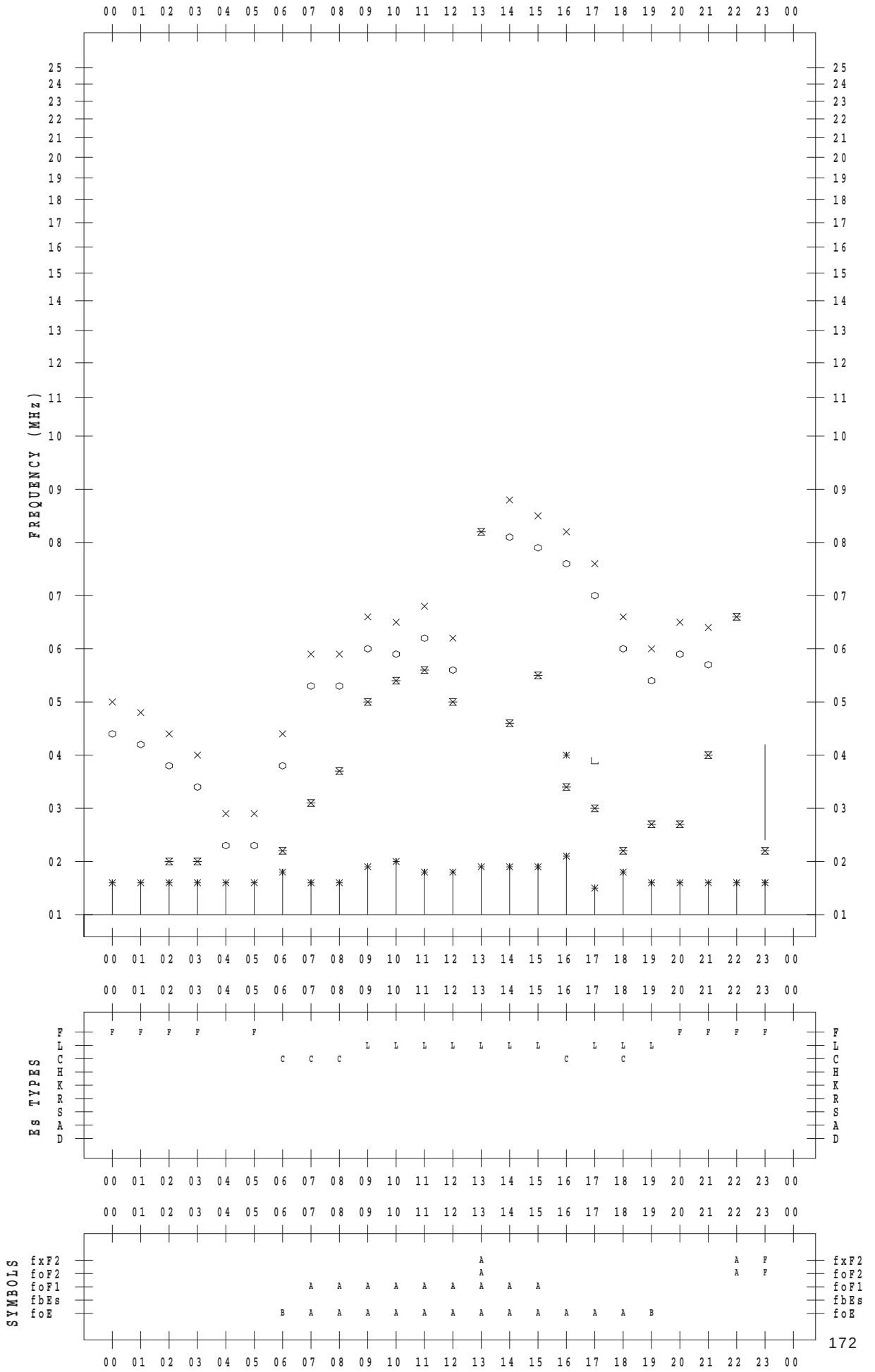
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 3

135 °E MEAN TIME



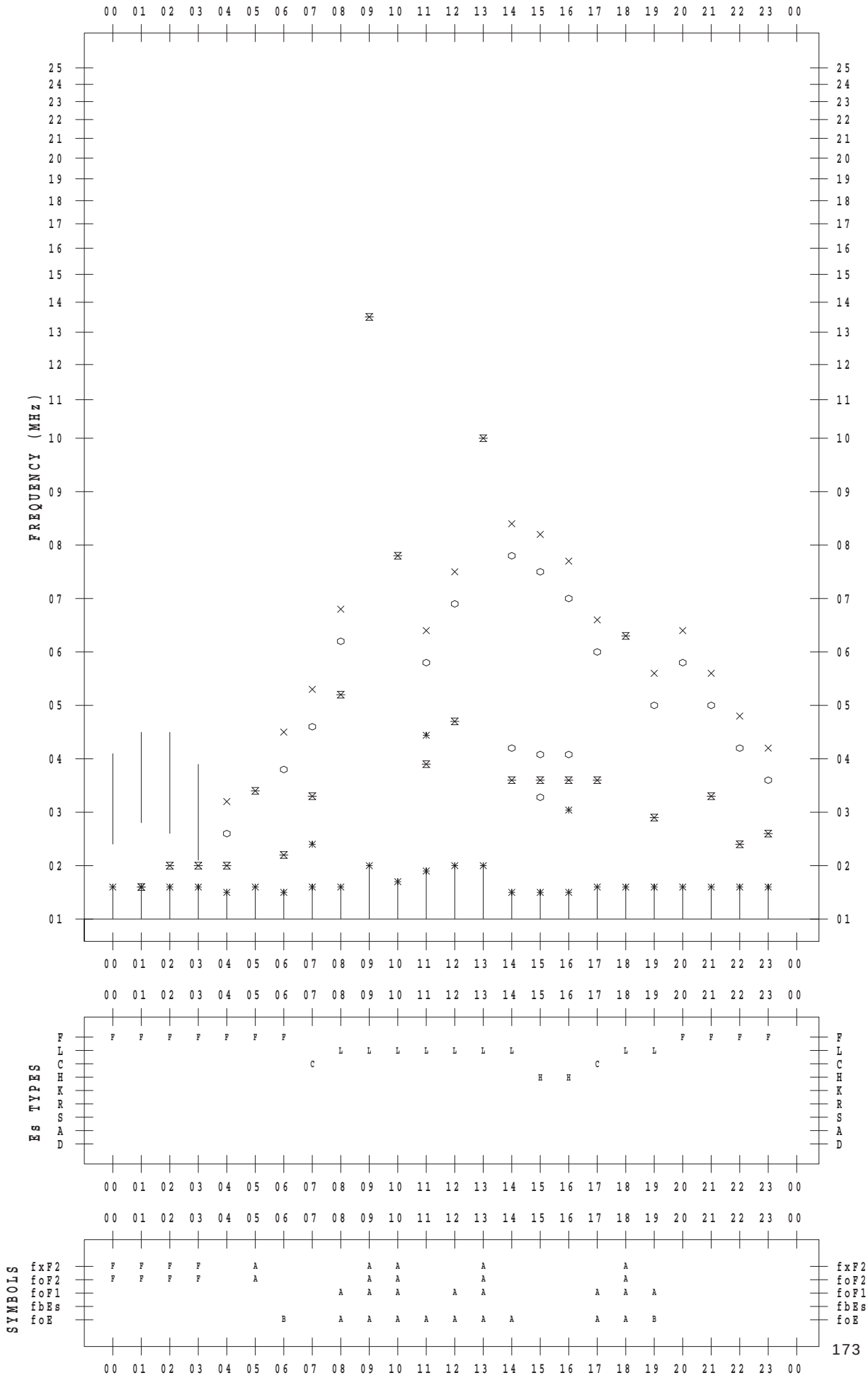
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 4

135 °E MEAN TIME



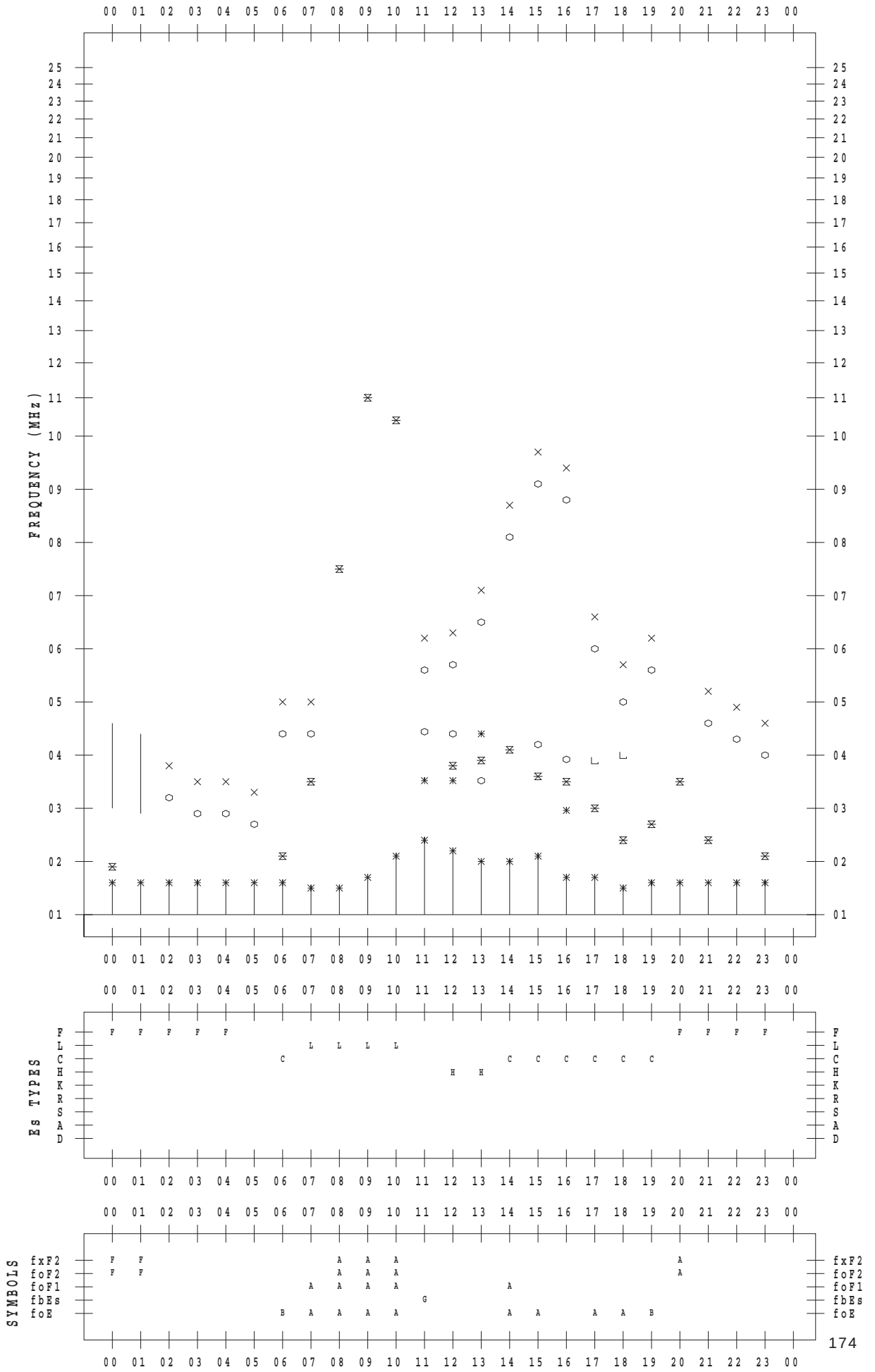
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 5

135 °E MEAN TIME



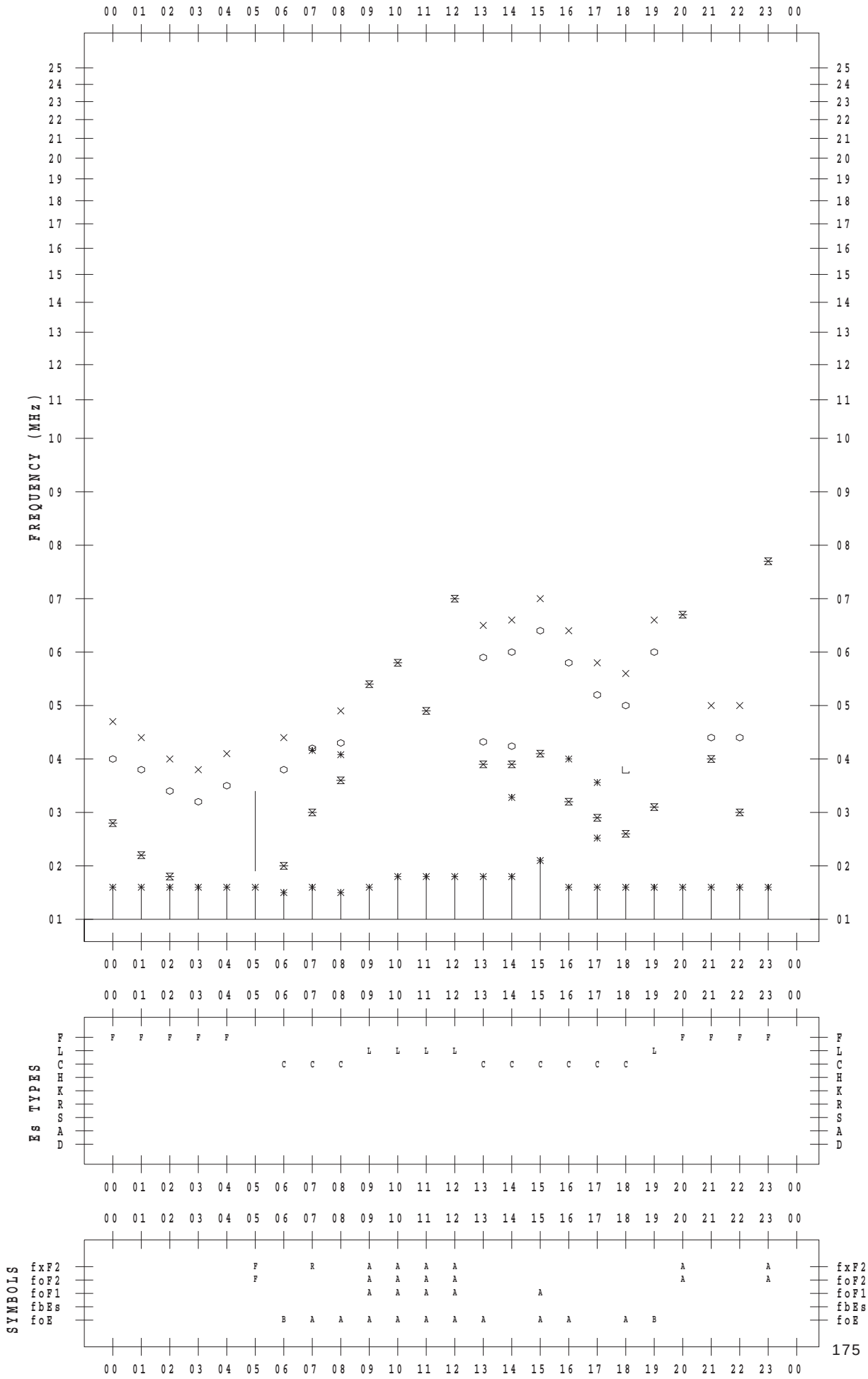
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 6

135 °E MEAN TIME



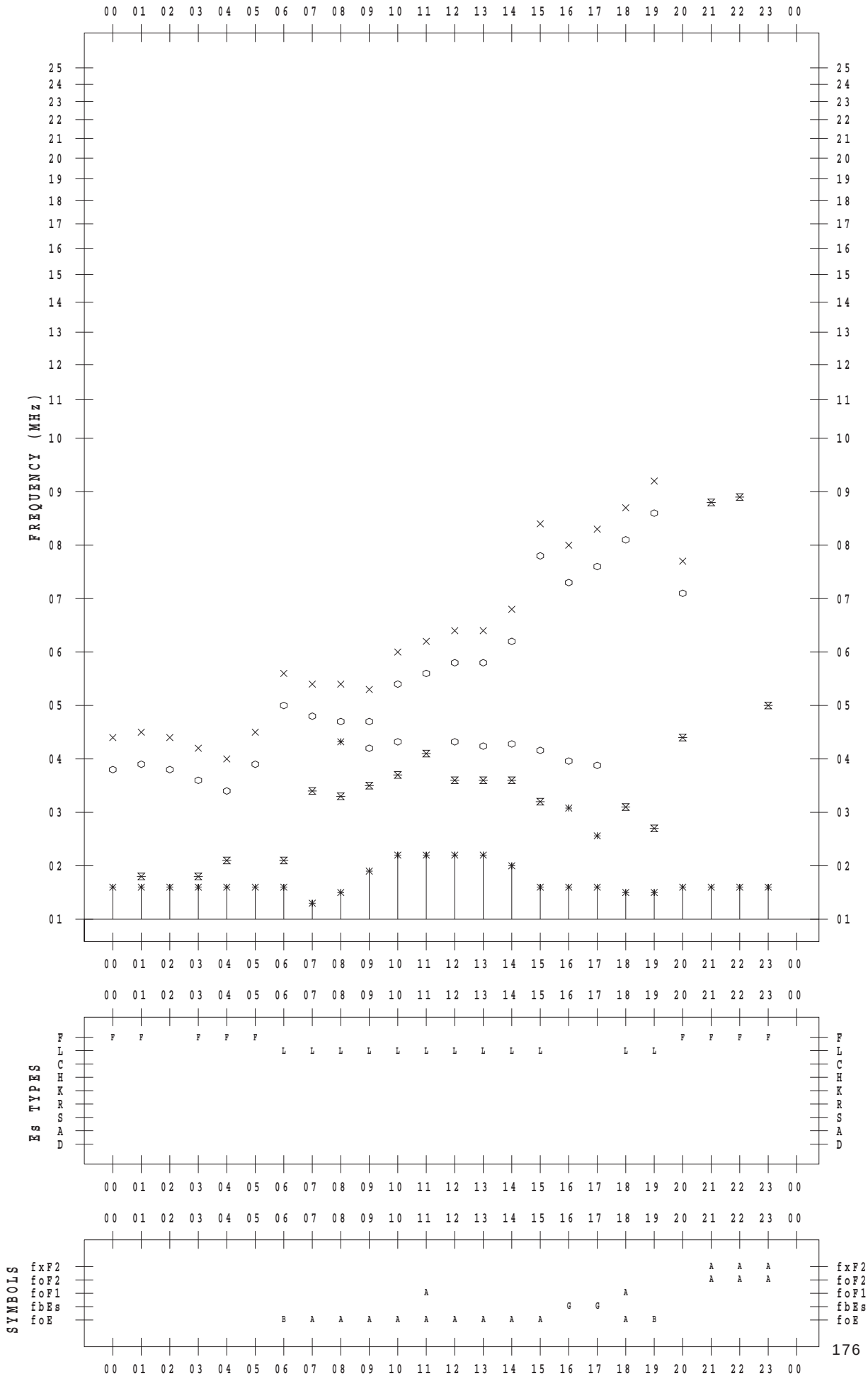
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 7

135 °E MEAN TIME



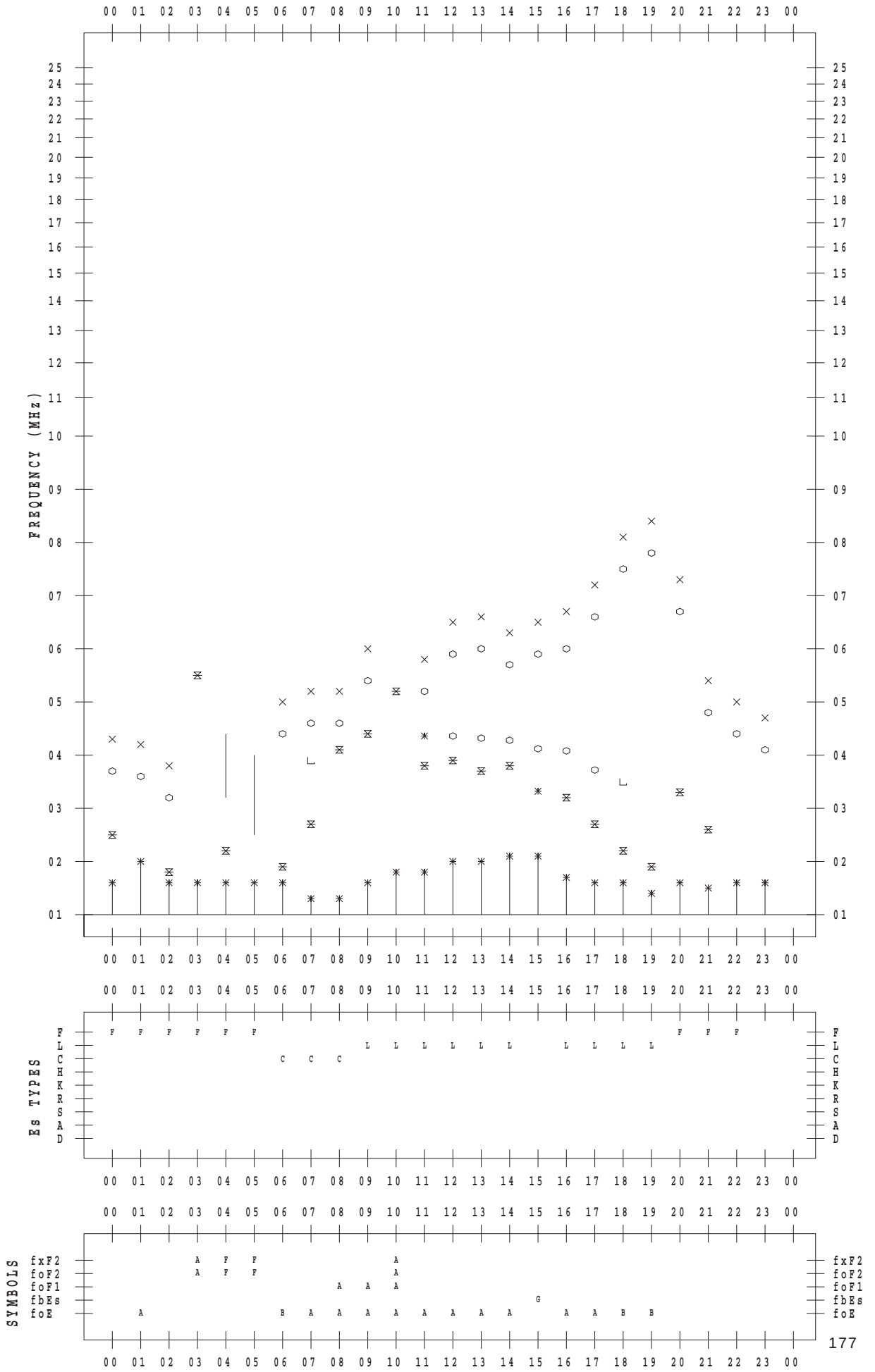
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 8

135 °E MEAN TIME



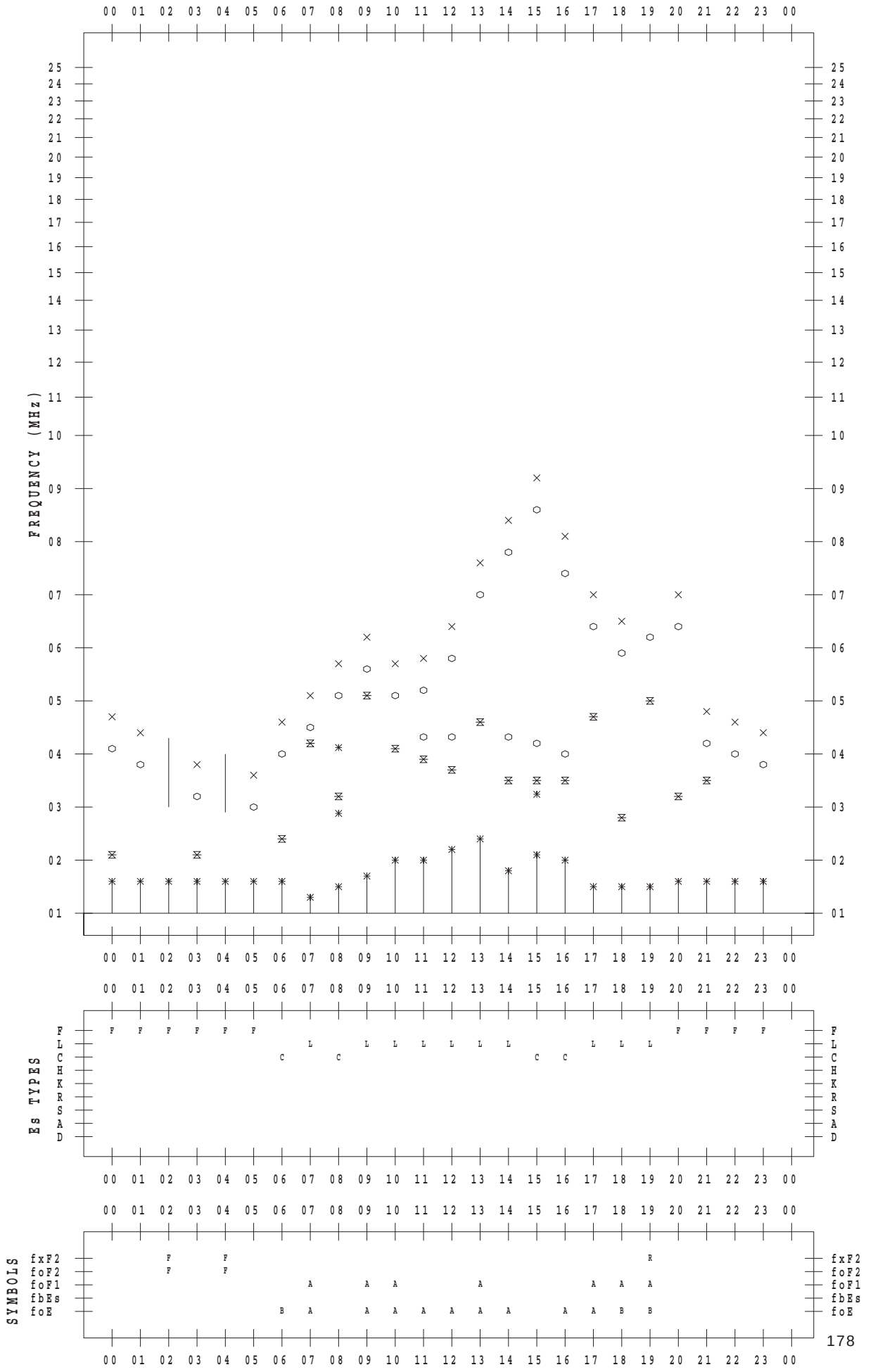
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/ 9

135 °E MEAN TIME



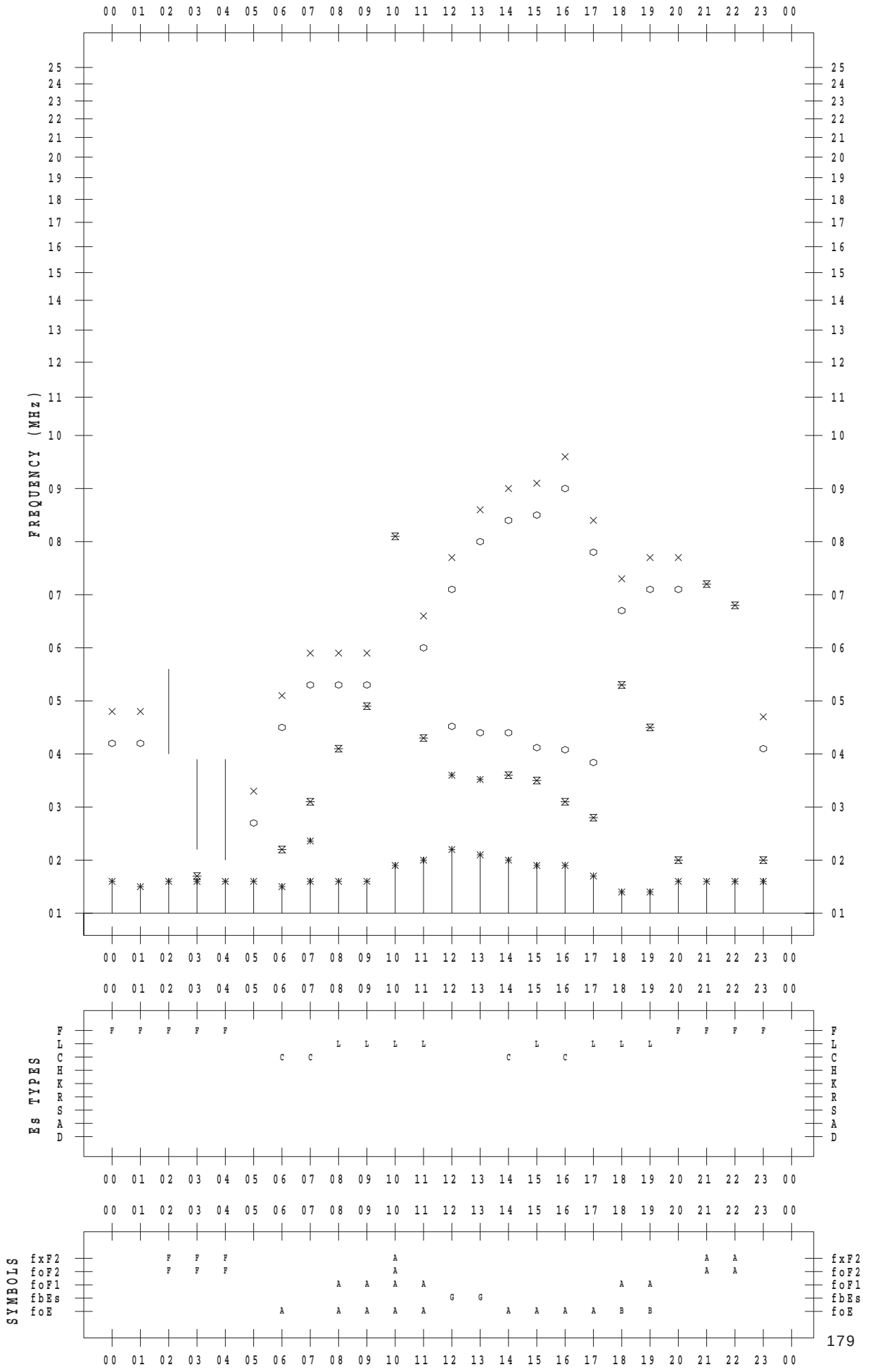
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/10

135 °E MEAN TIME



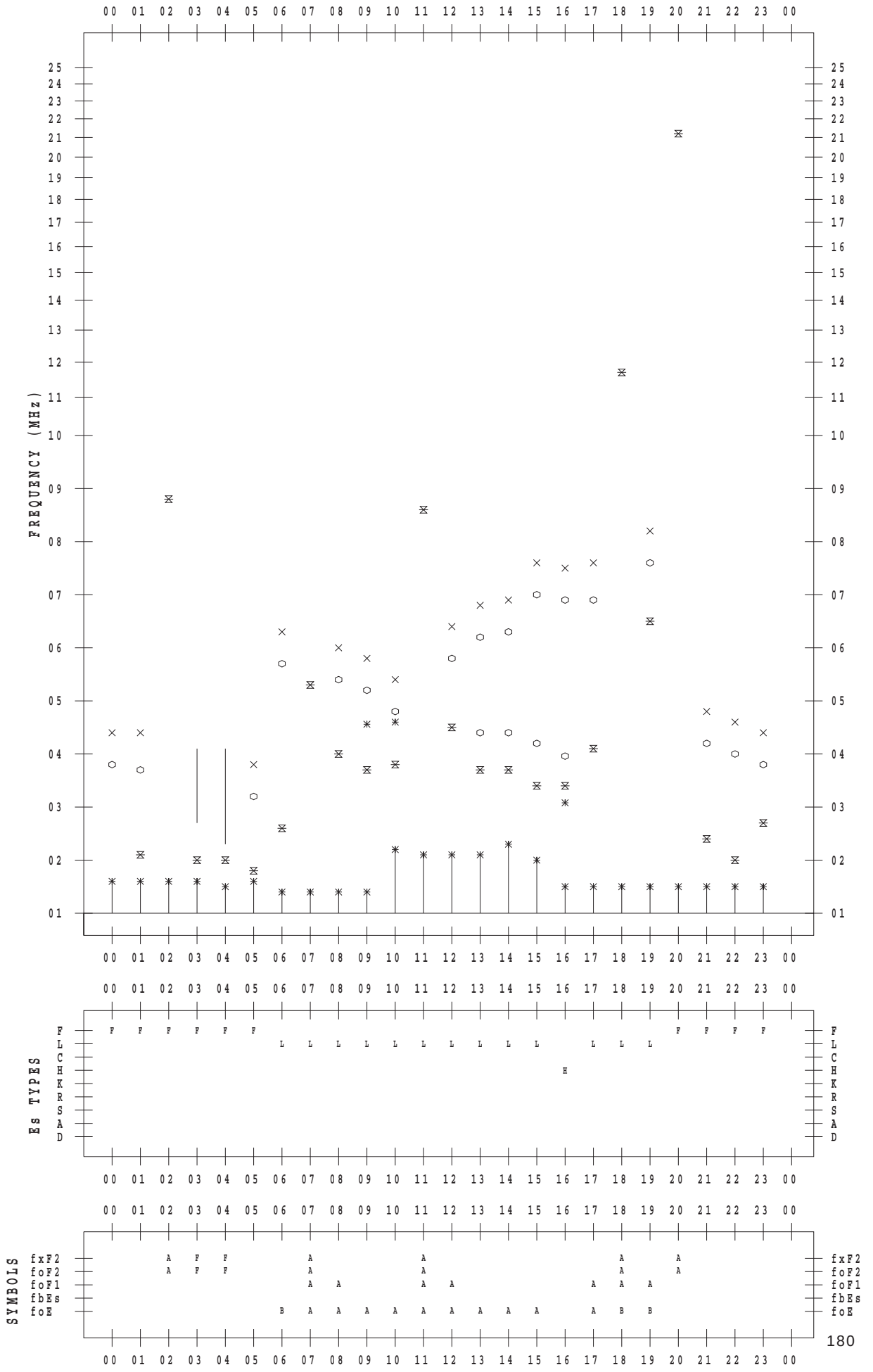
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/11

135 °E MEAN TIME



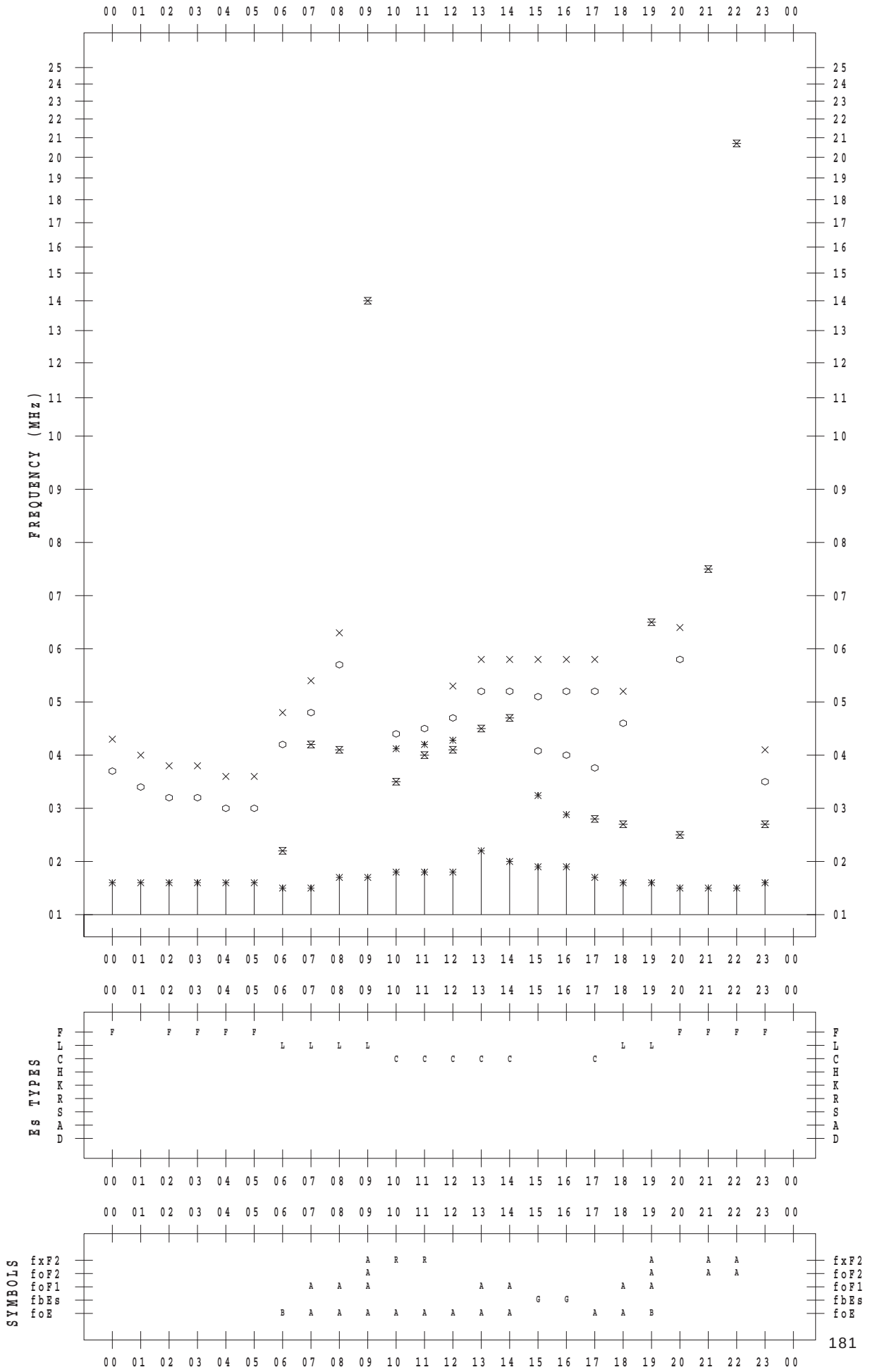
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/12

135 °E MEAN TIME



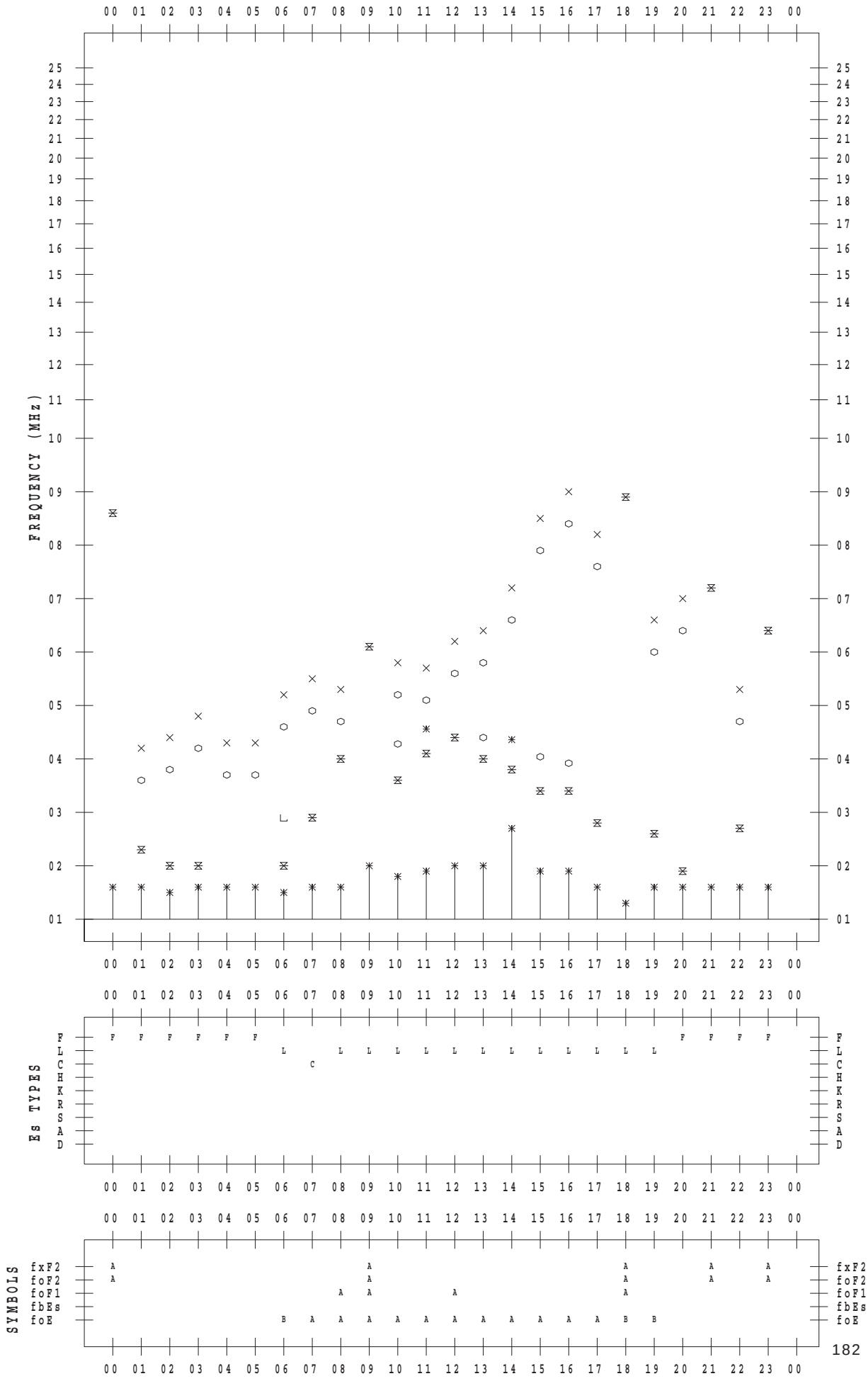
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/13

135 °E MEAN TIME



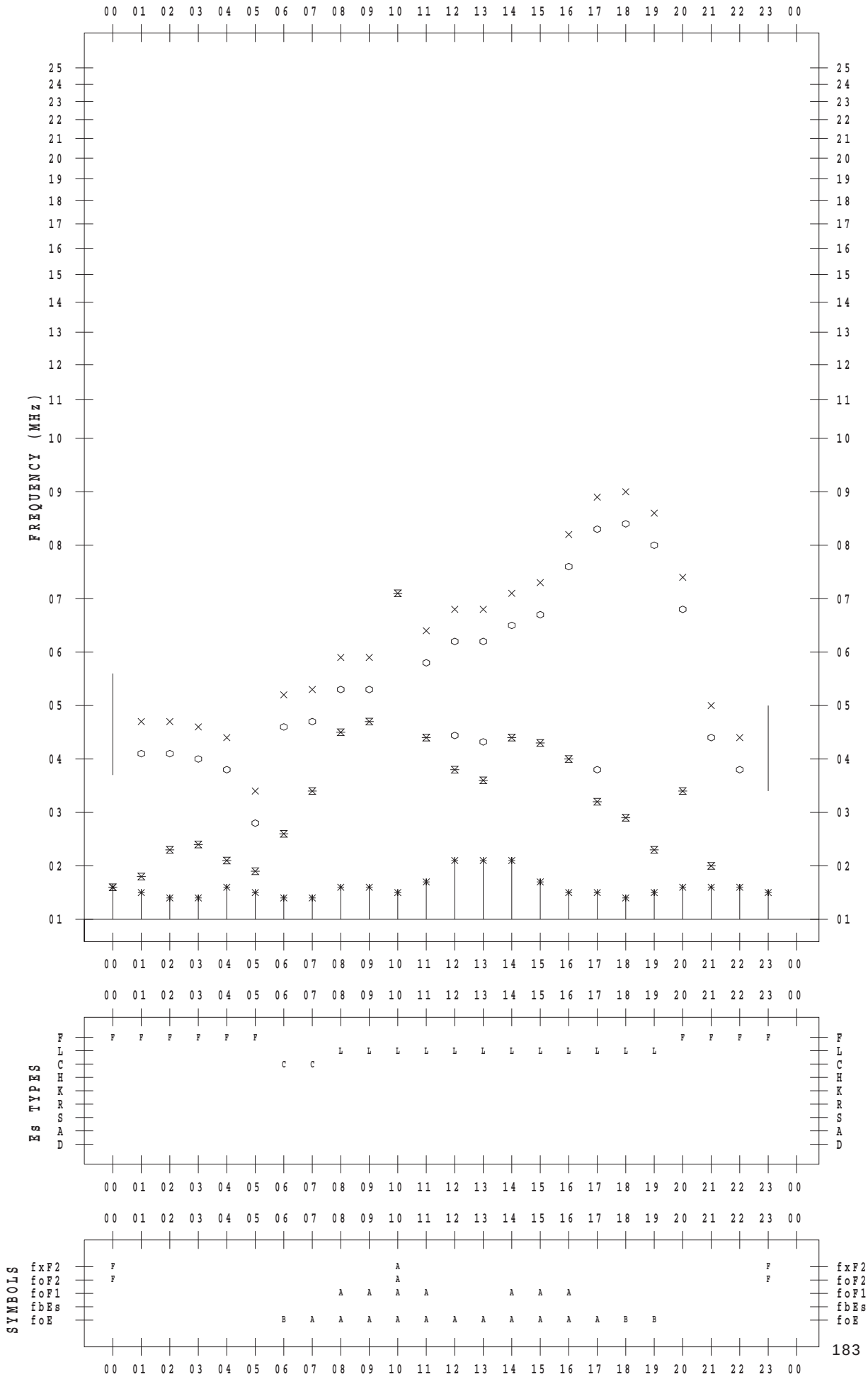
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/14

135 °E MEAN TIME



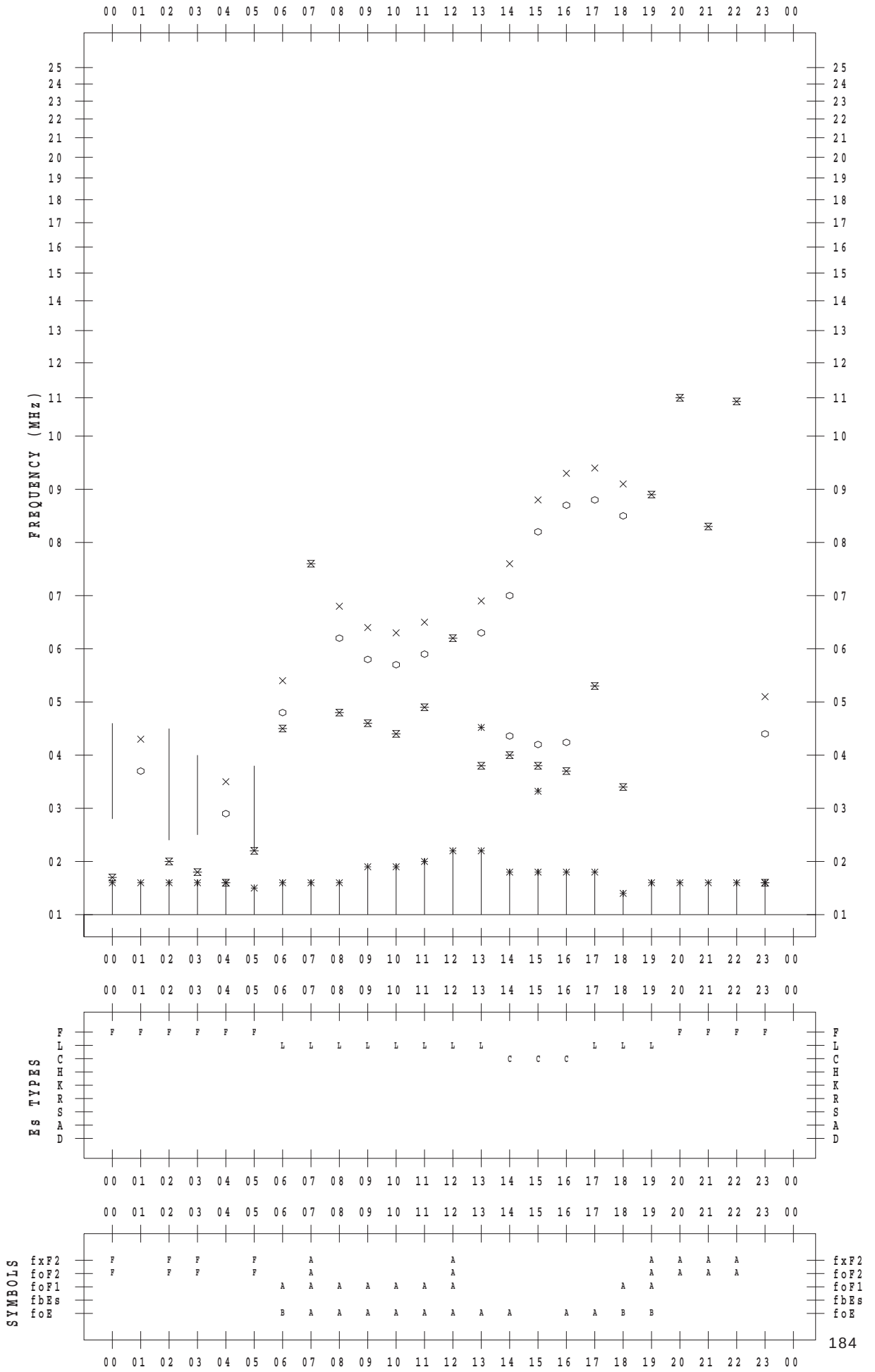
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/15

135 °E MEAN TIME



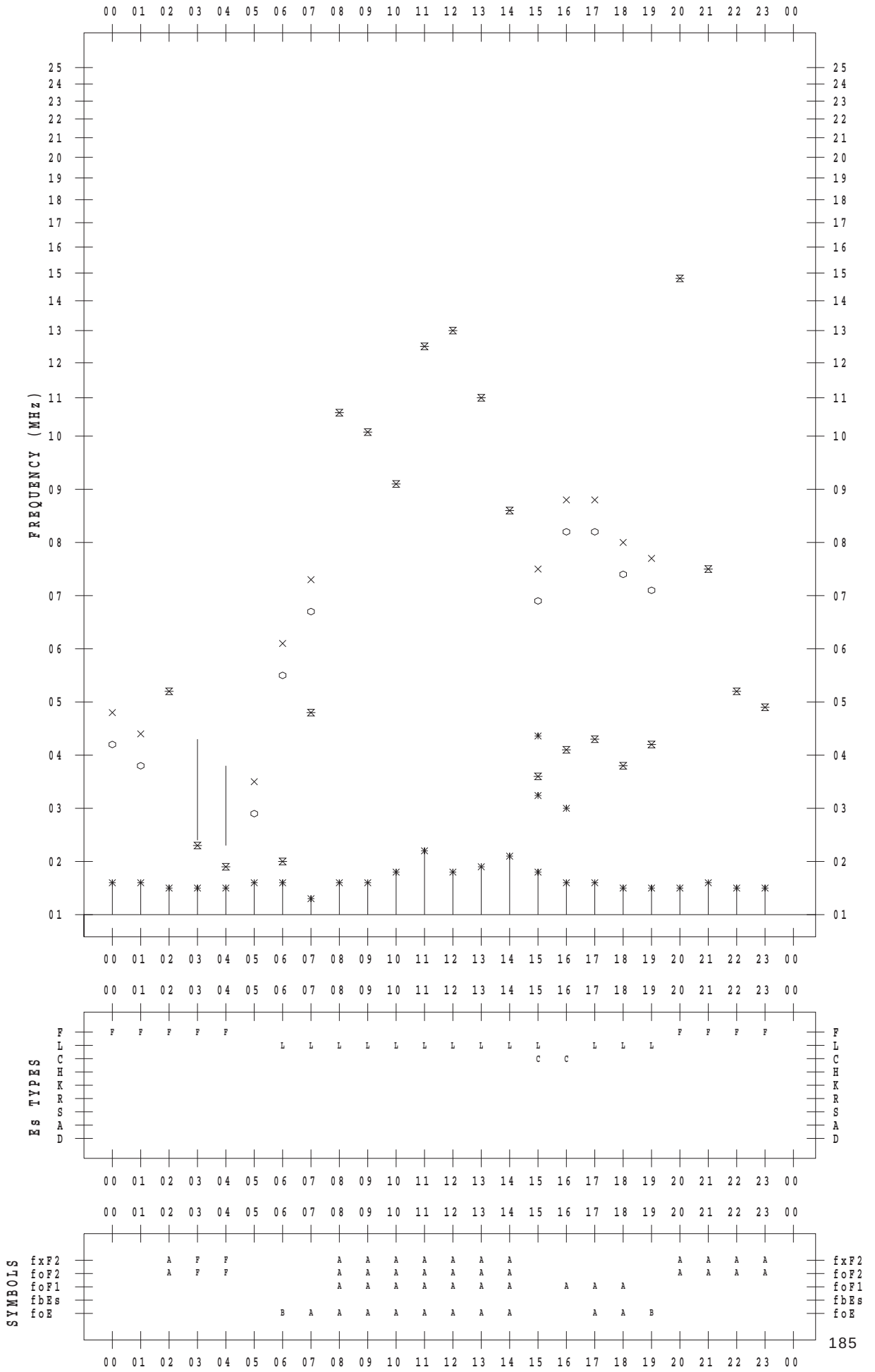
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/16

135 °E MEAN TIME



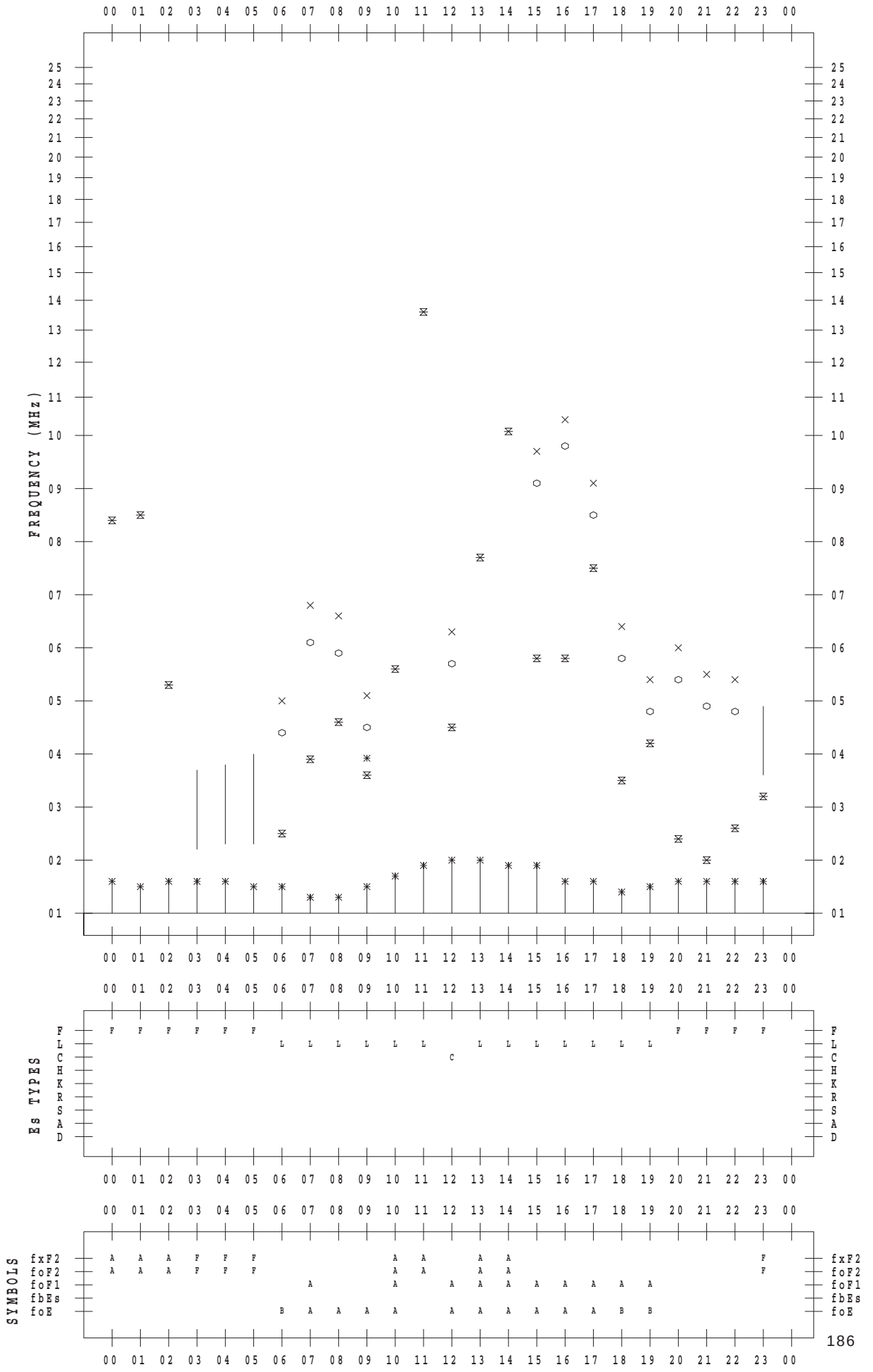
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/17

135 °E MEAN TIME



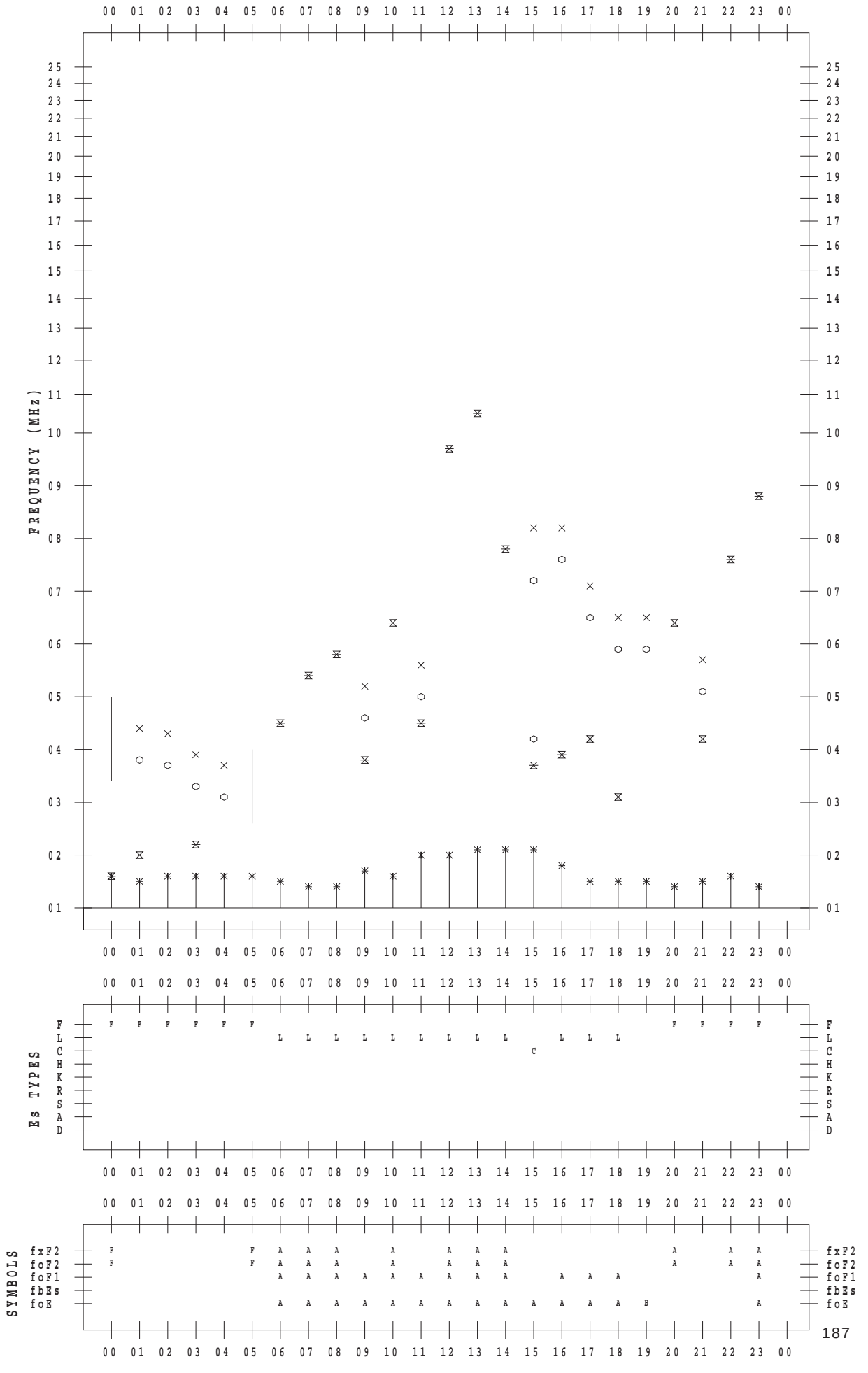
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/18

135 °E MEAN TIME



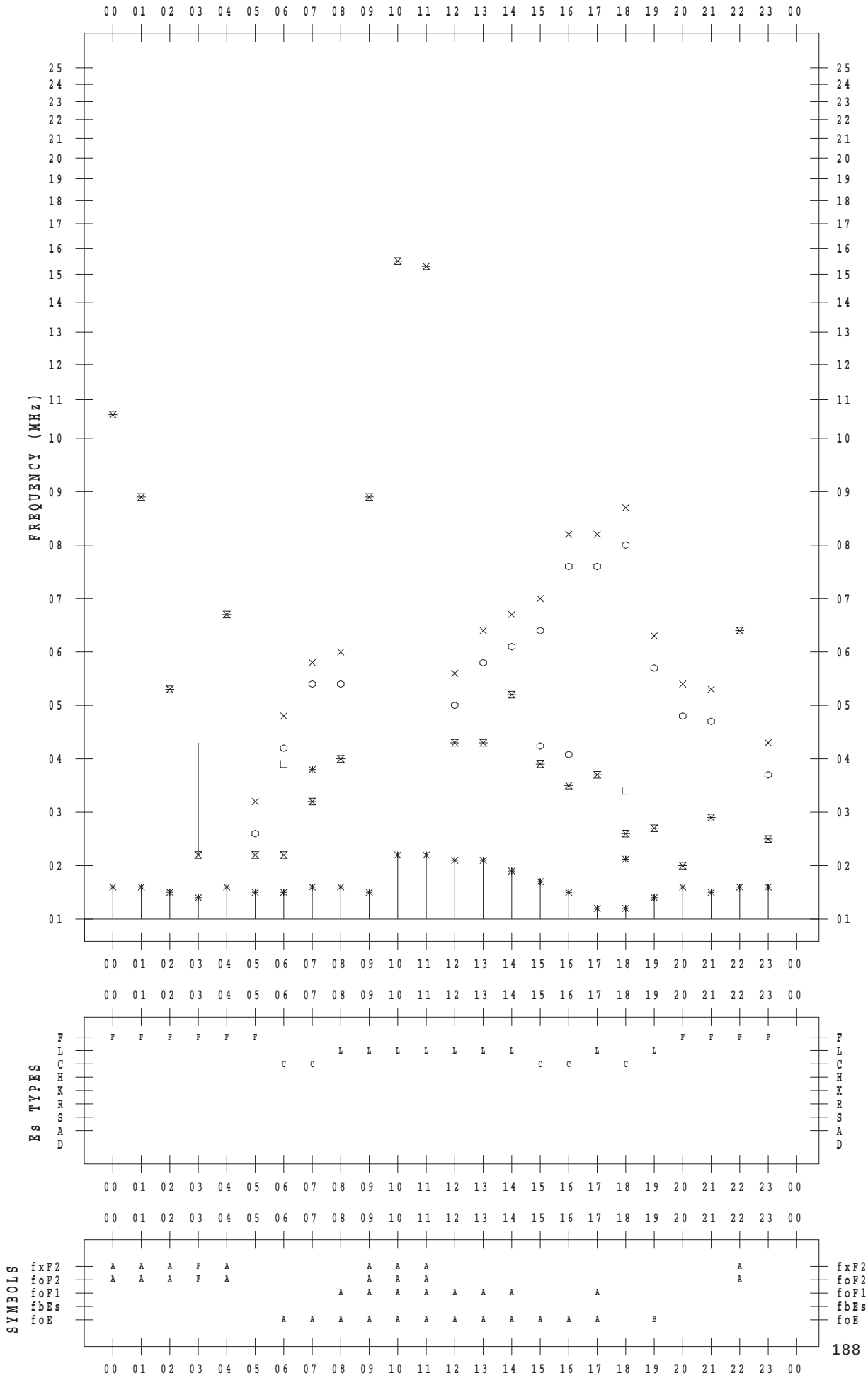
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/19

135 °E MEAN TIME



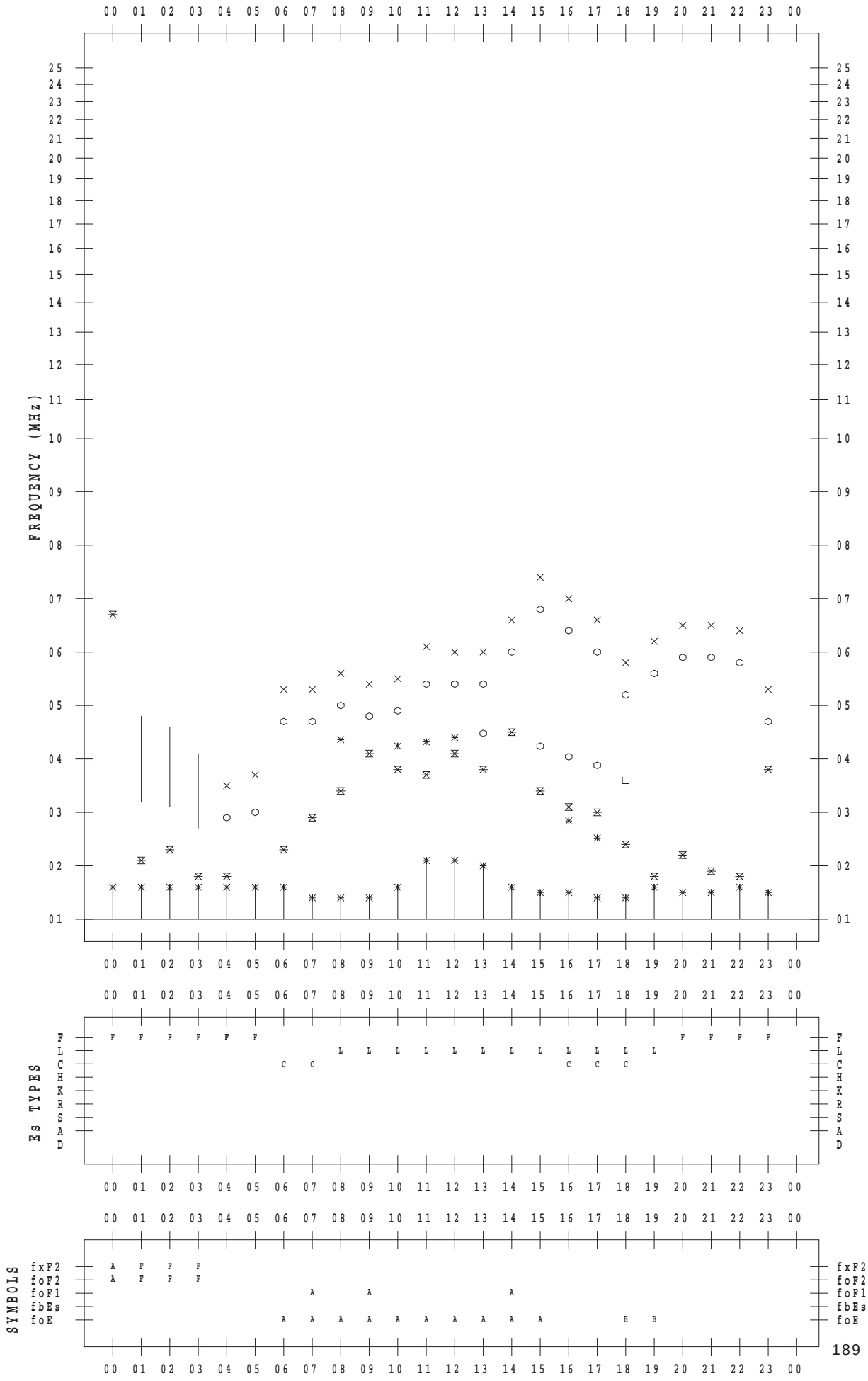
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/20

135 °E MEAN TIME



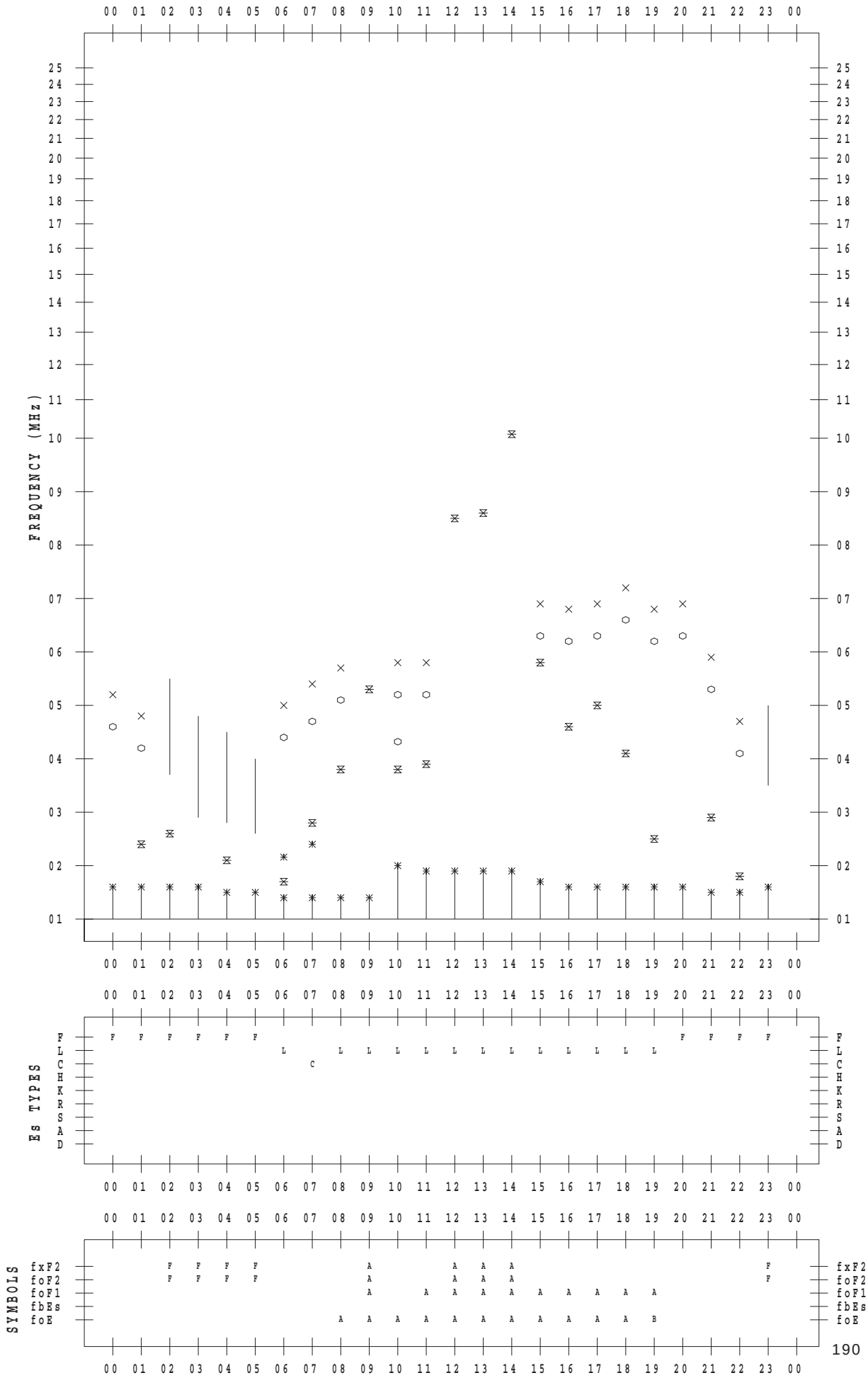
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/21

135 °E MEAN TIME



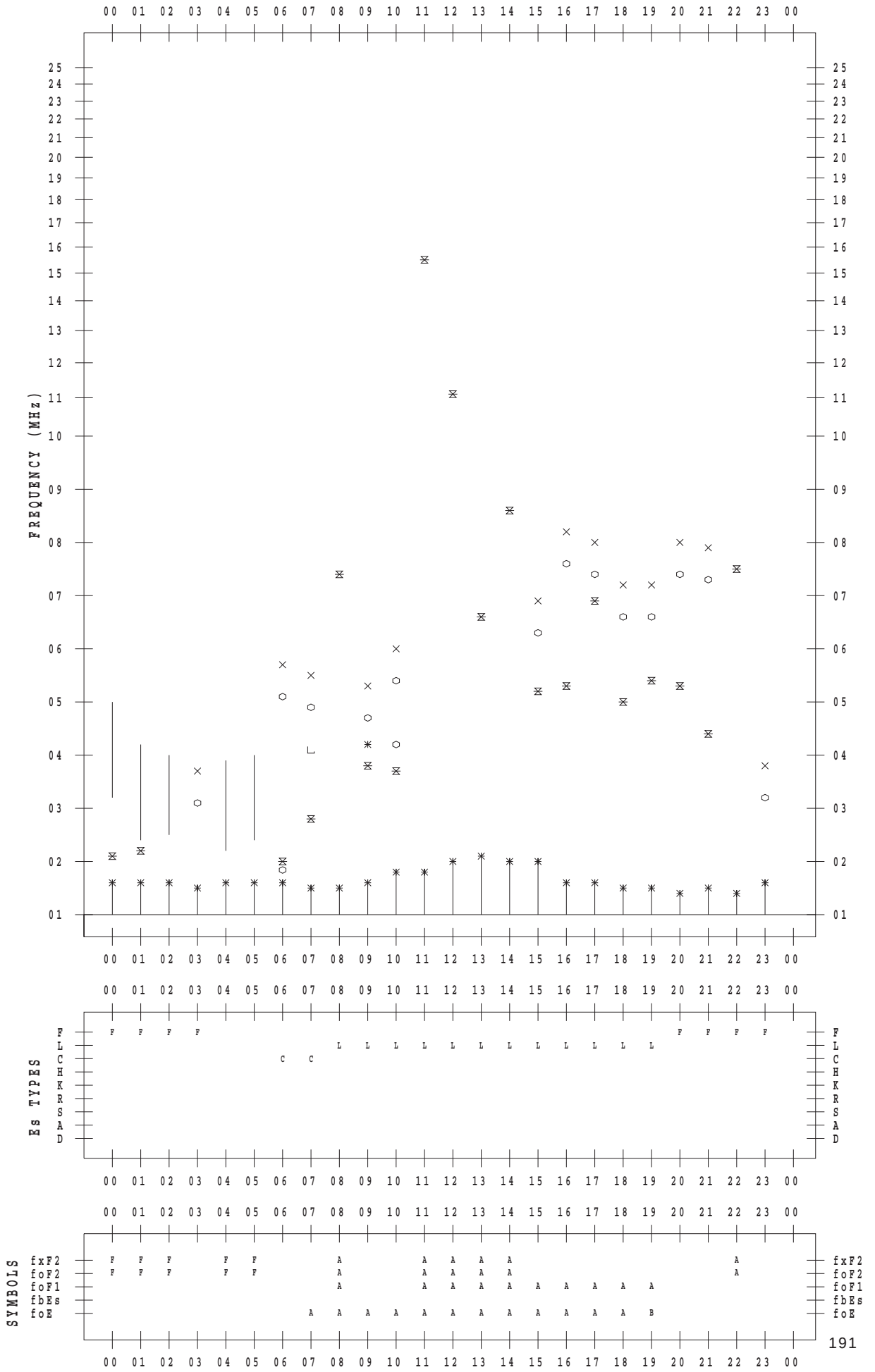
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/22

135 °E MEAN TIME



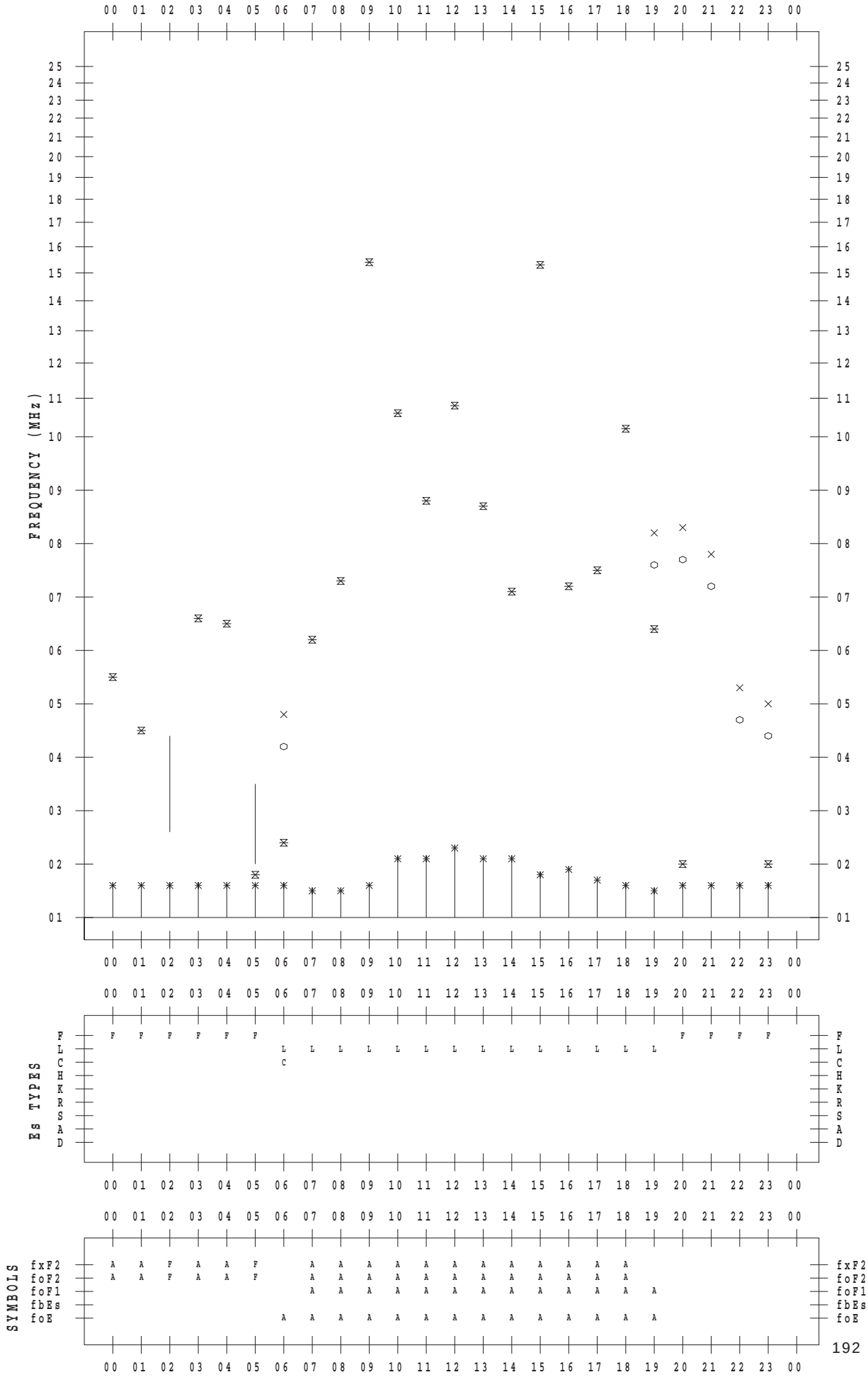
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/23

135 °E MEAN TIME



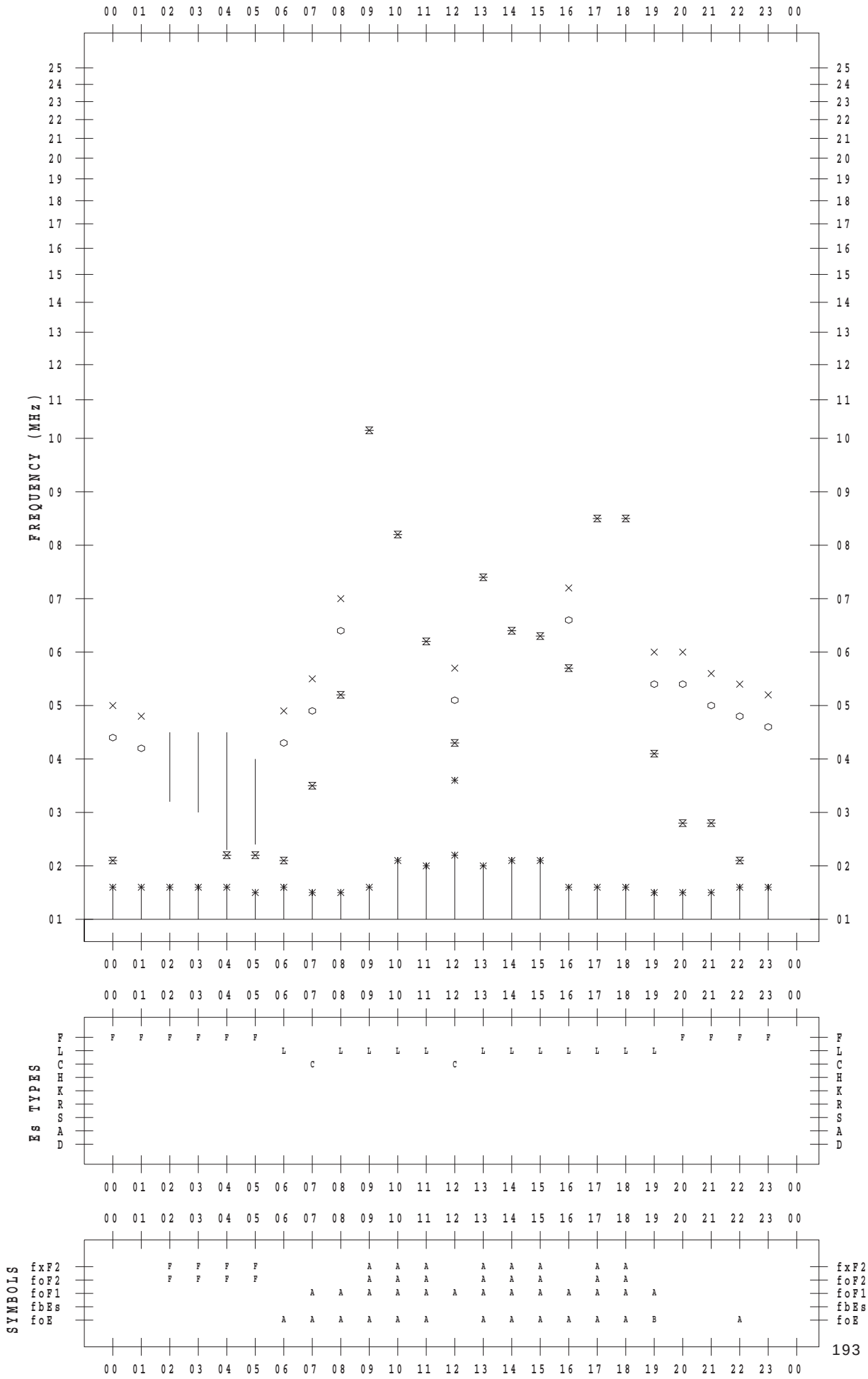
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/24

135 °E MEAN TIME



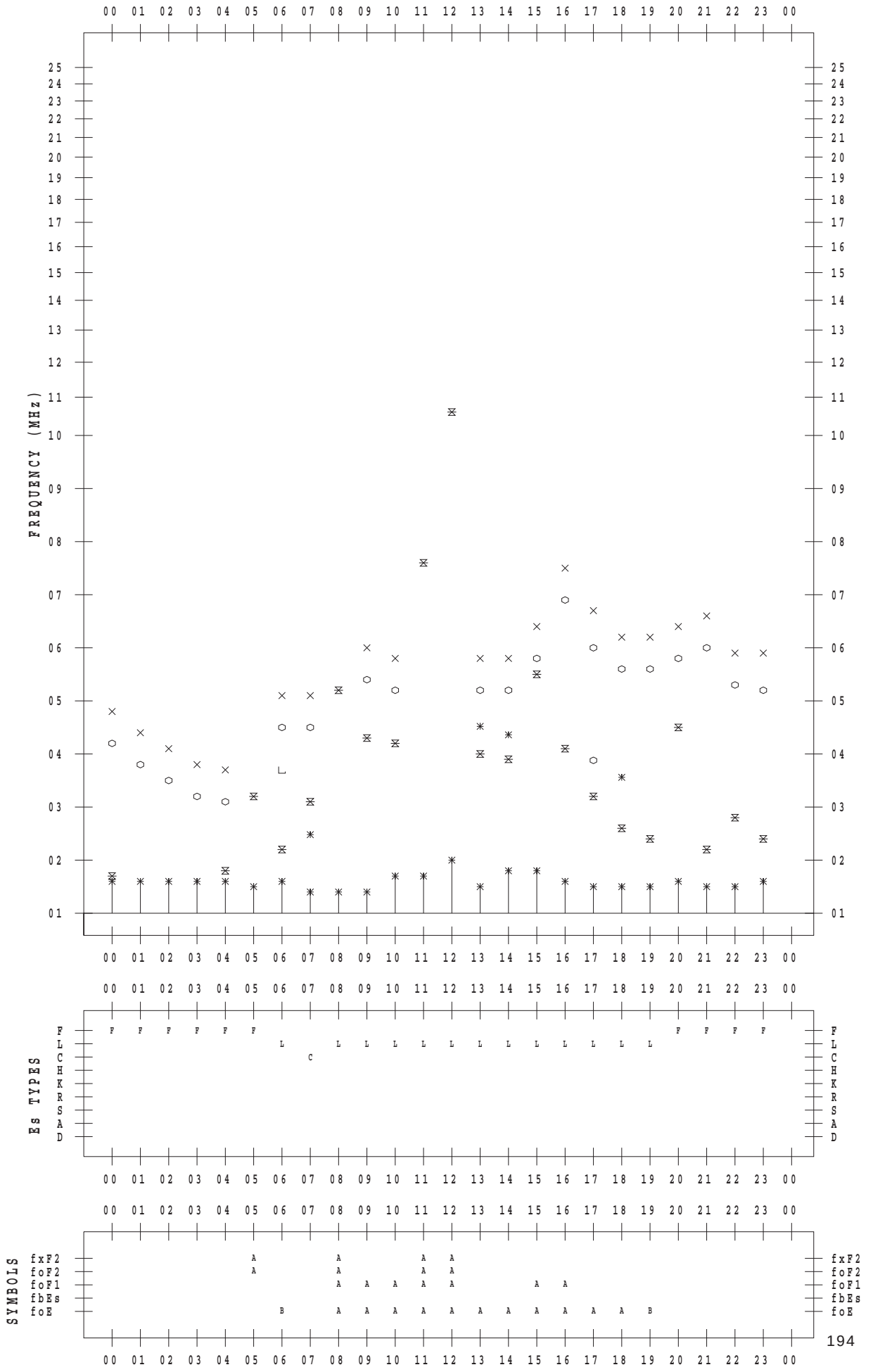
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/25

135 °E MEAN TIME



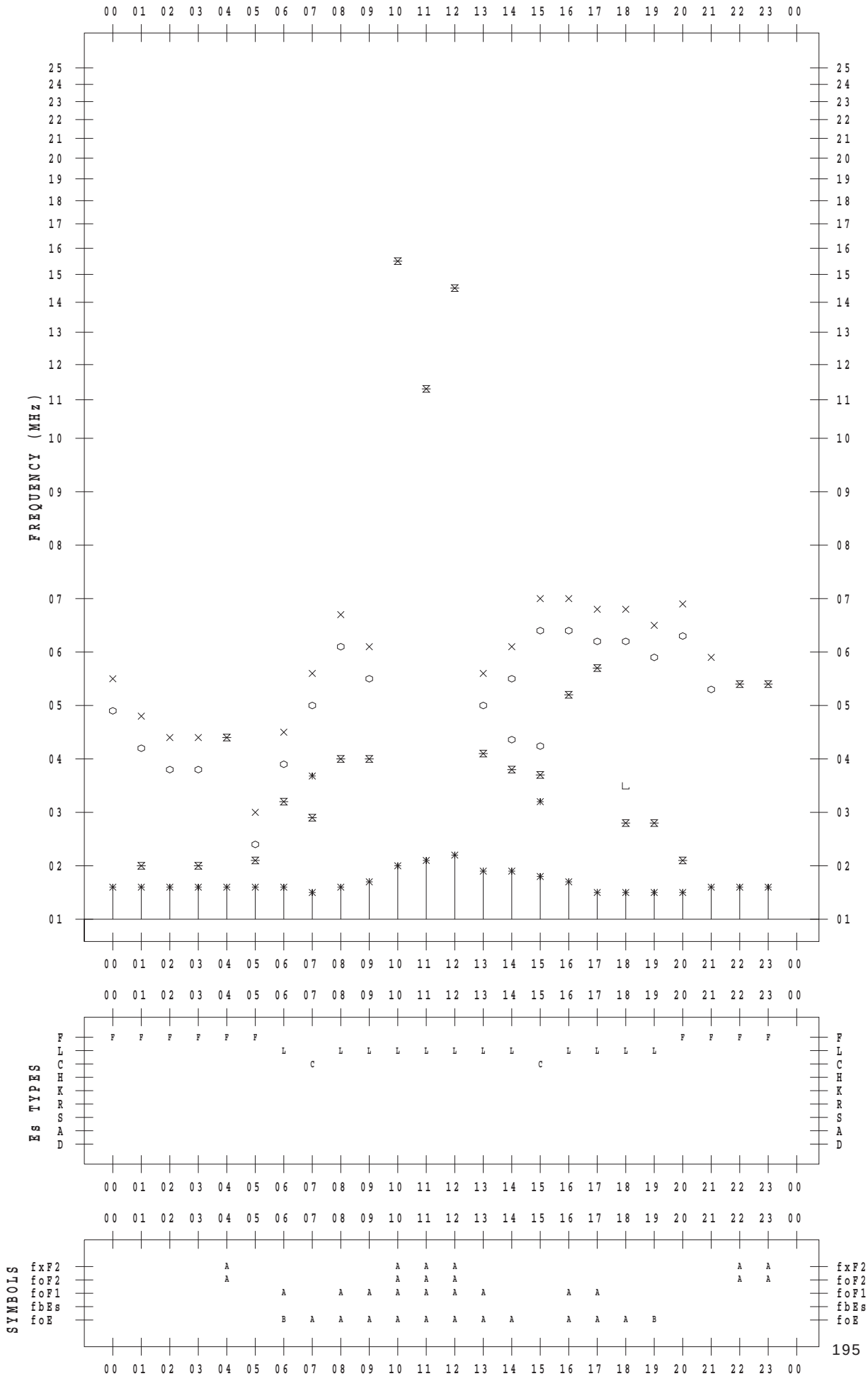
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/26

135 °E MEAN TIME



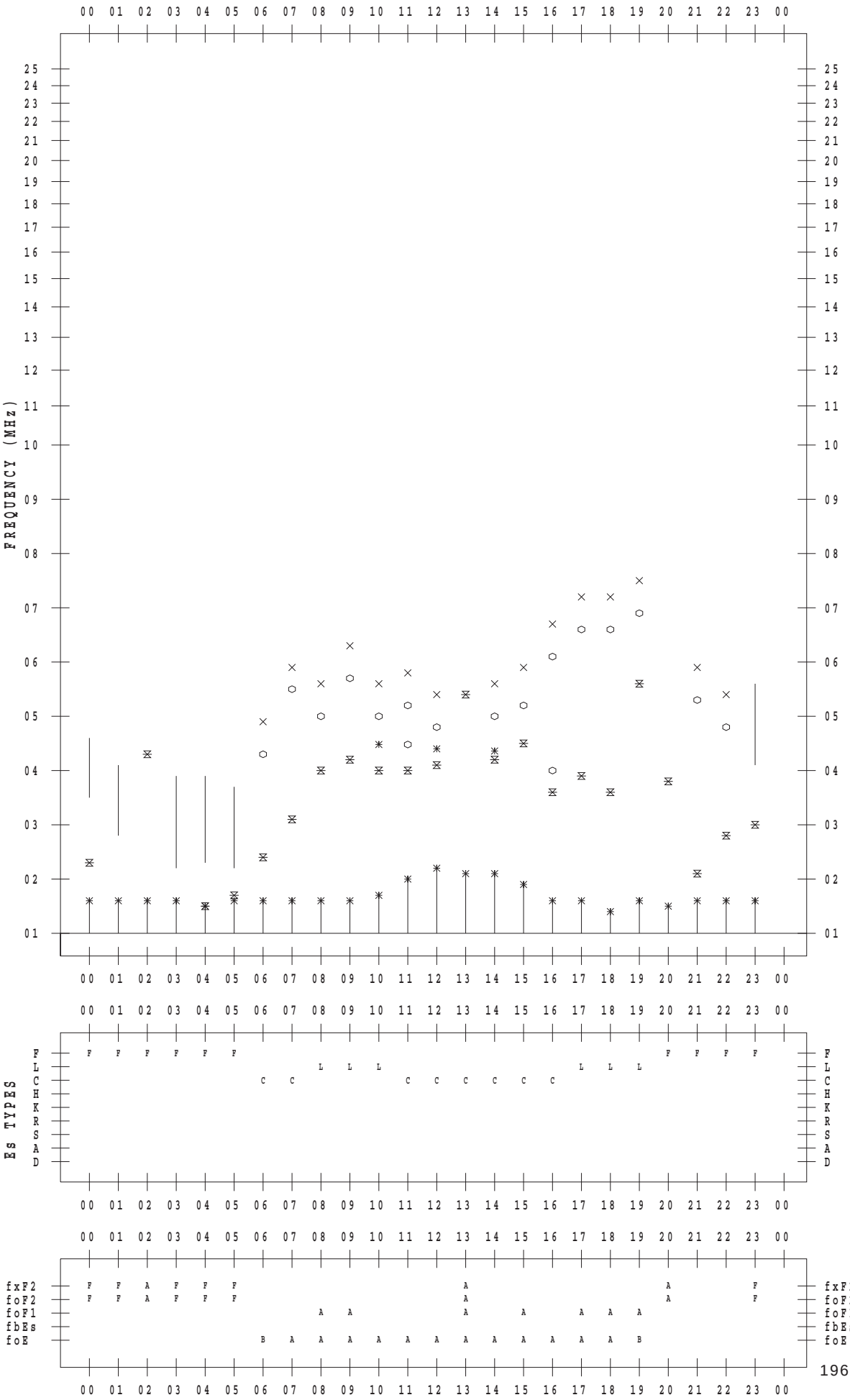
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/27

135 °E MEAN TIME



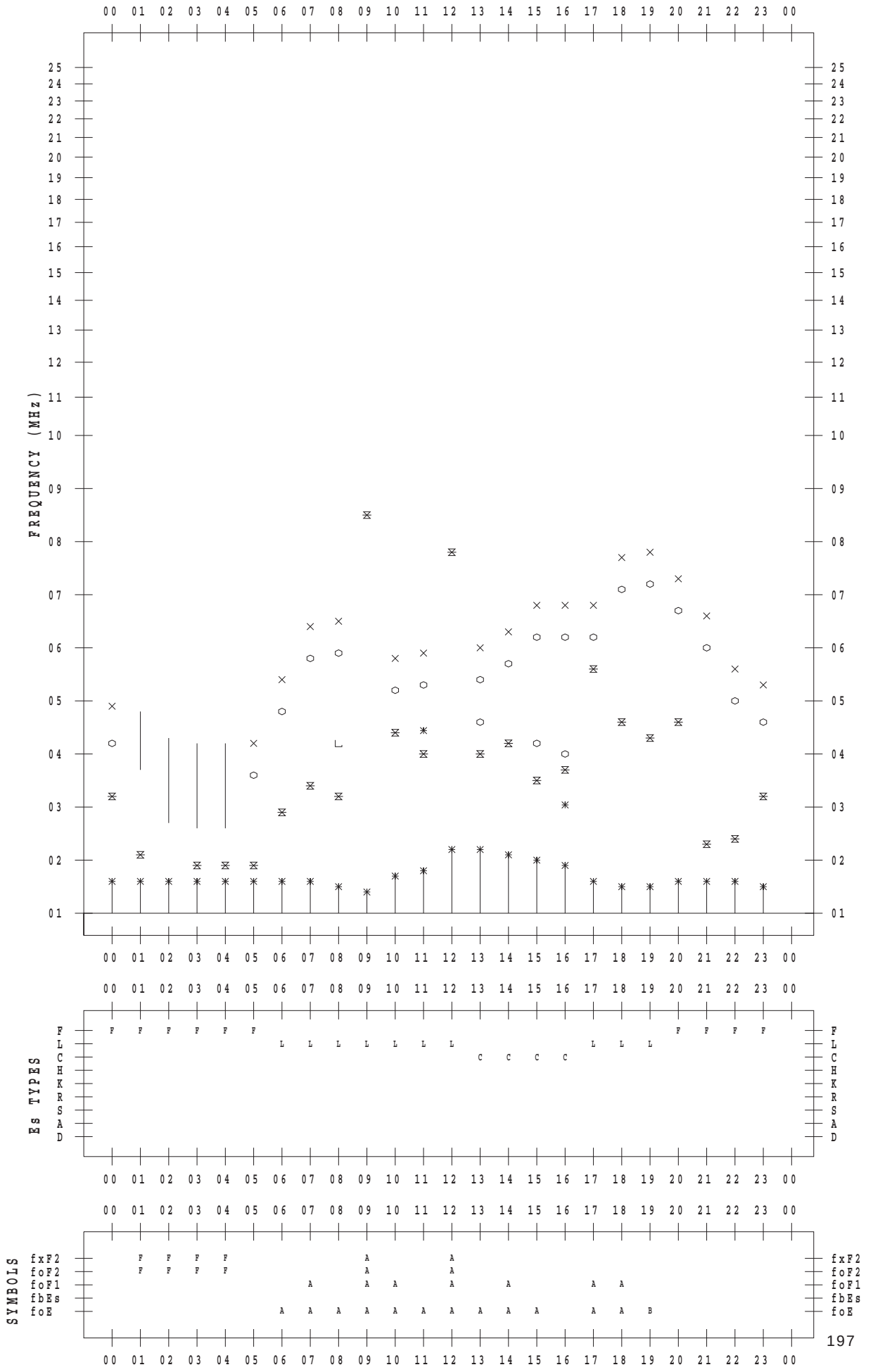
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/28

135 °E MEAN TIME



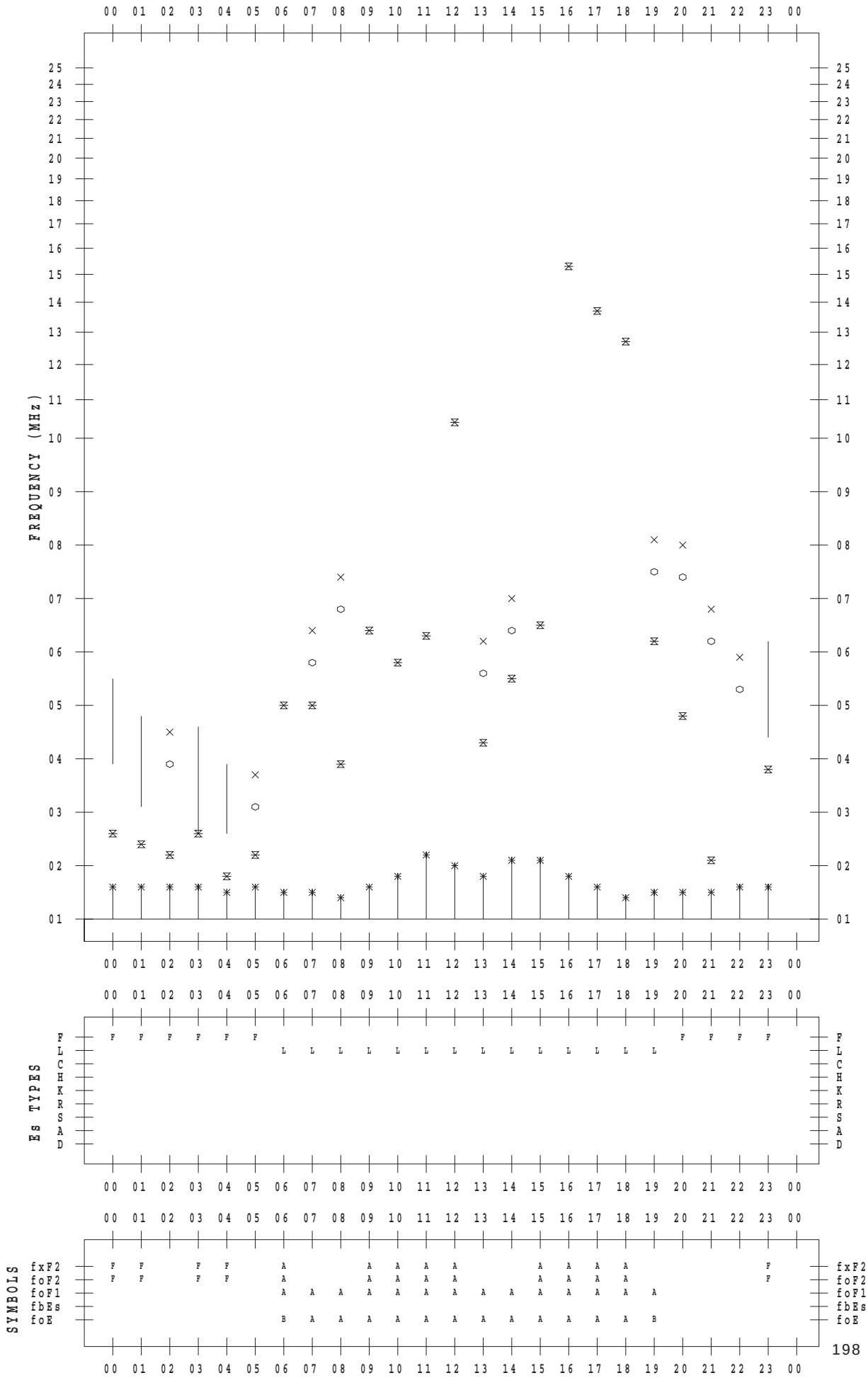
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/29

135 °E MEAN TIME



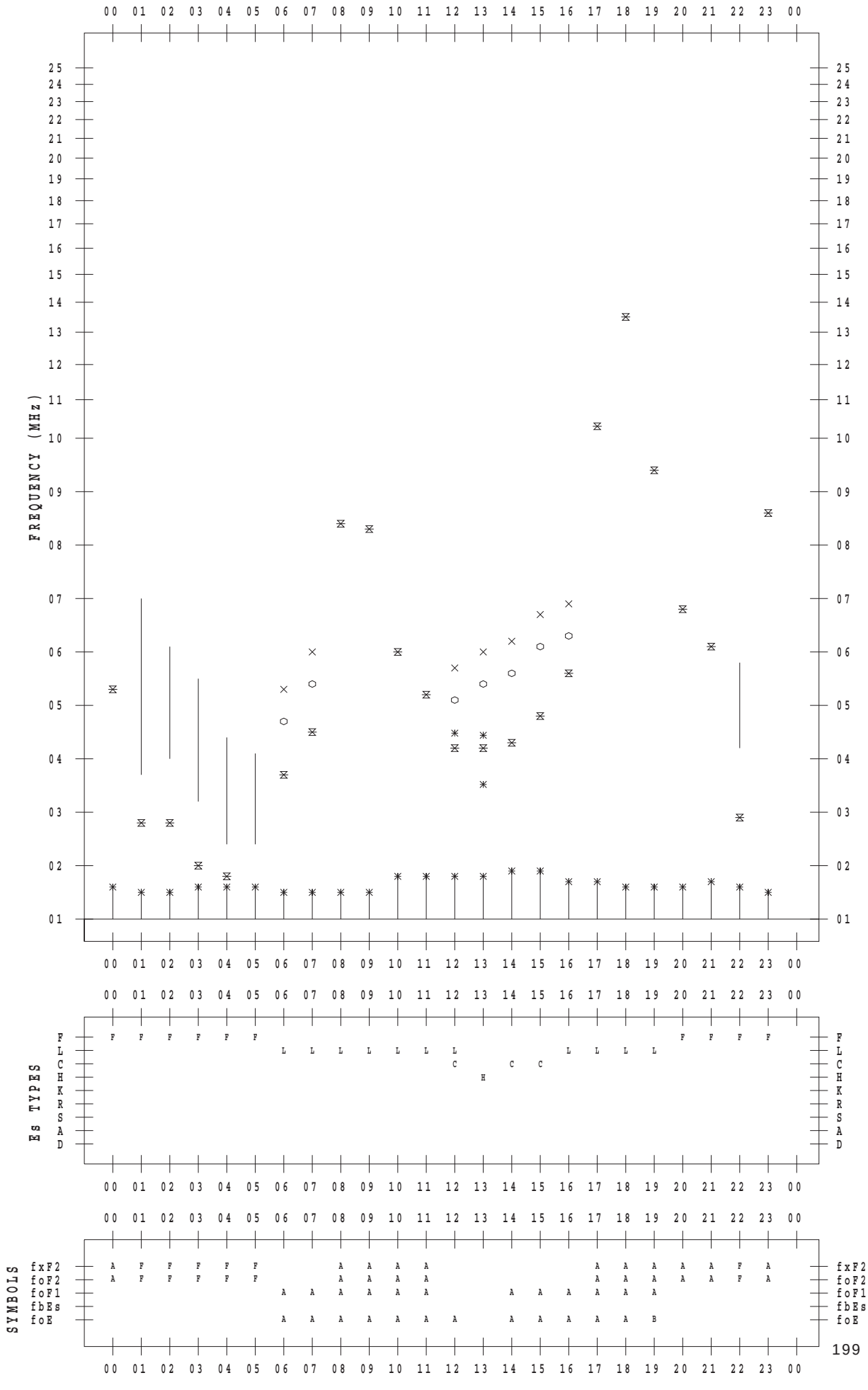
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/30

135 °E MEAN TIME



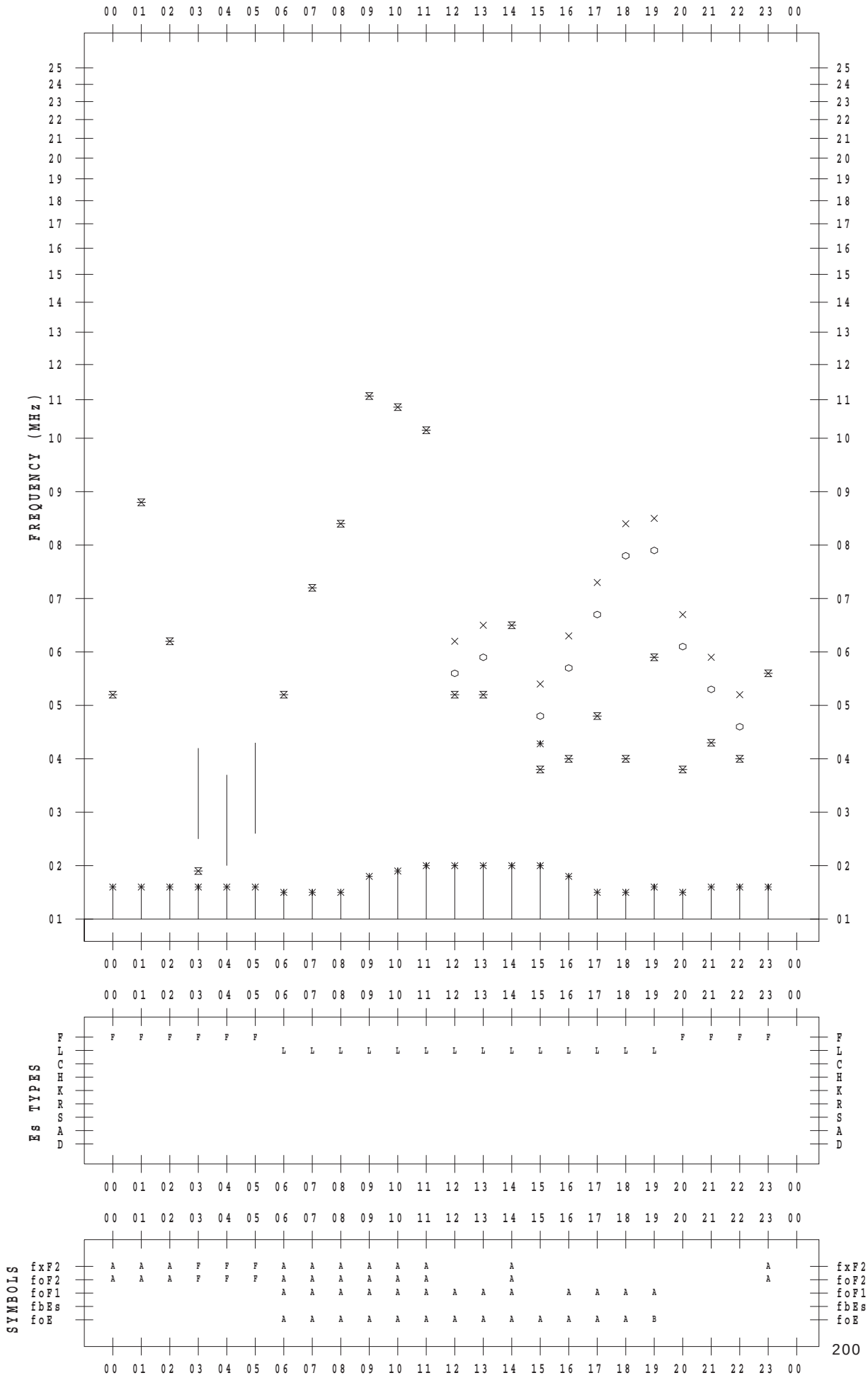
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2018/ 5/31

135 °E MEAN TIME



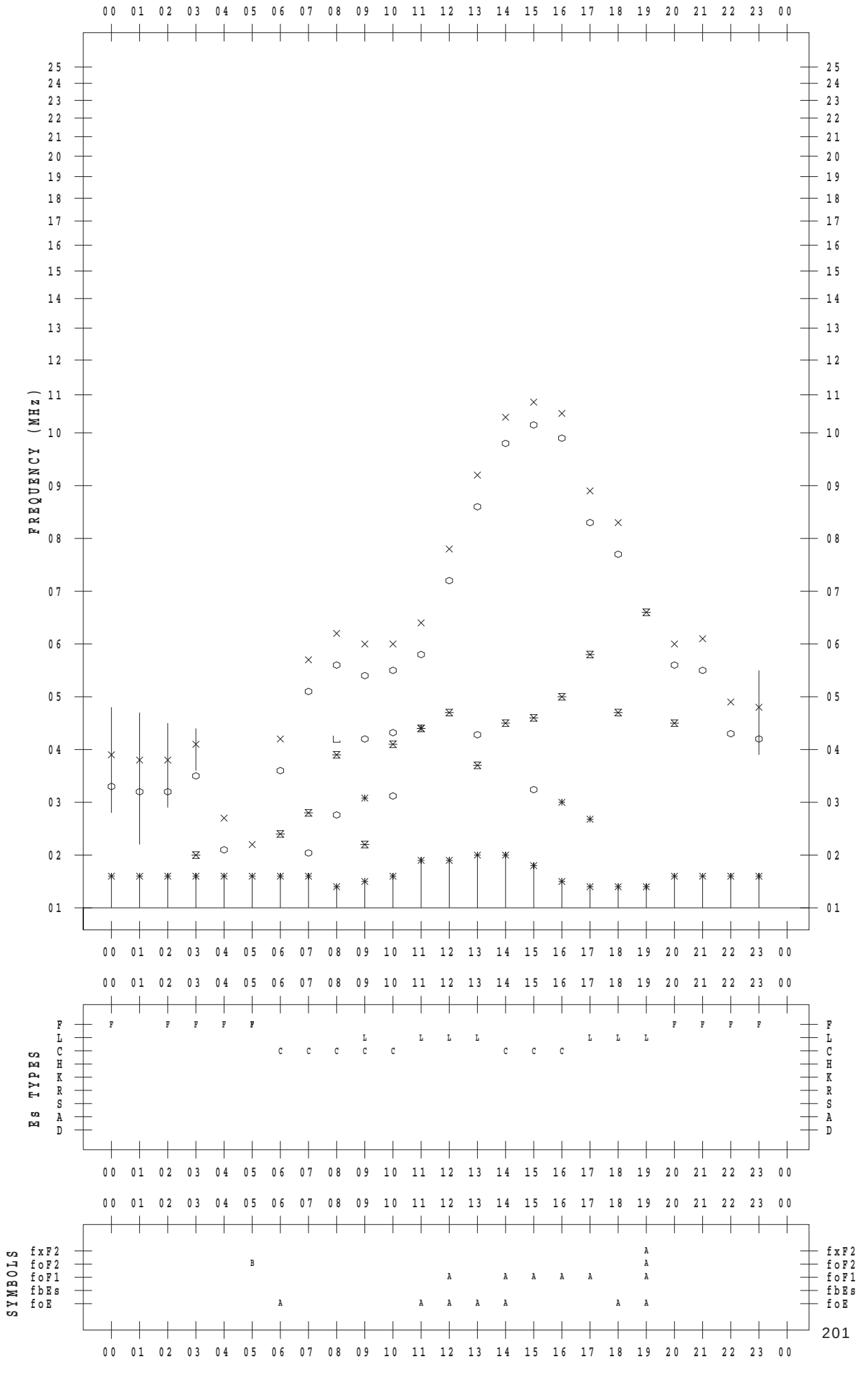
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 1

135 °E MEAN TIME



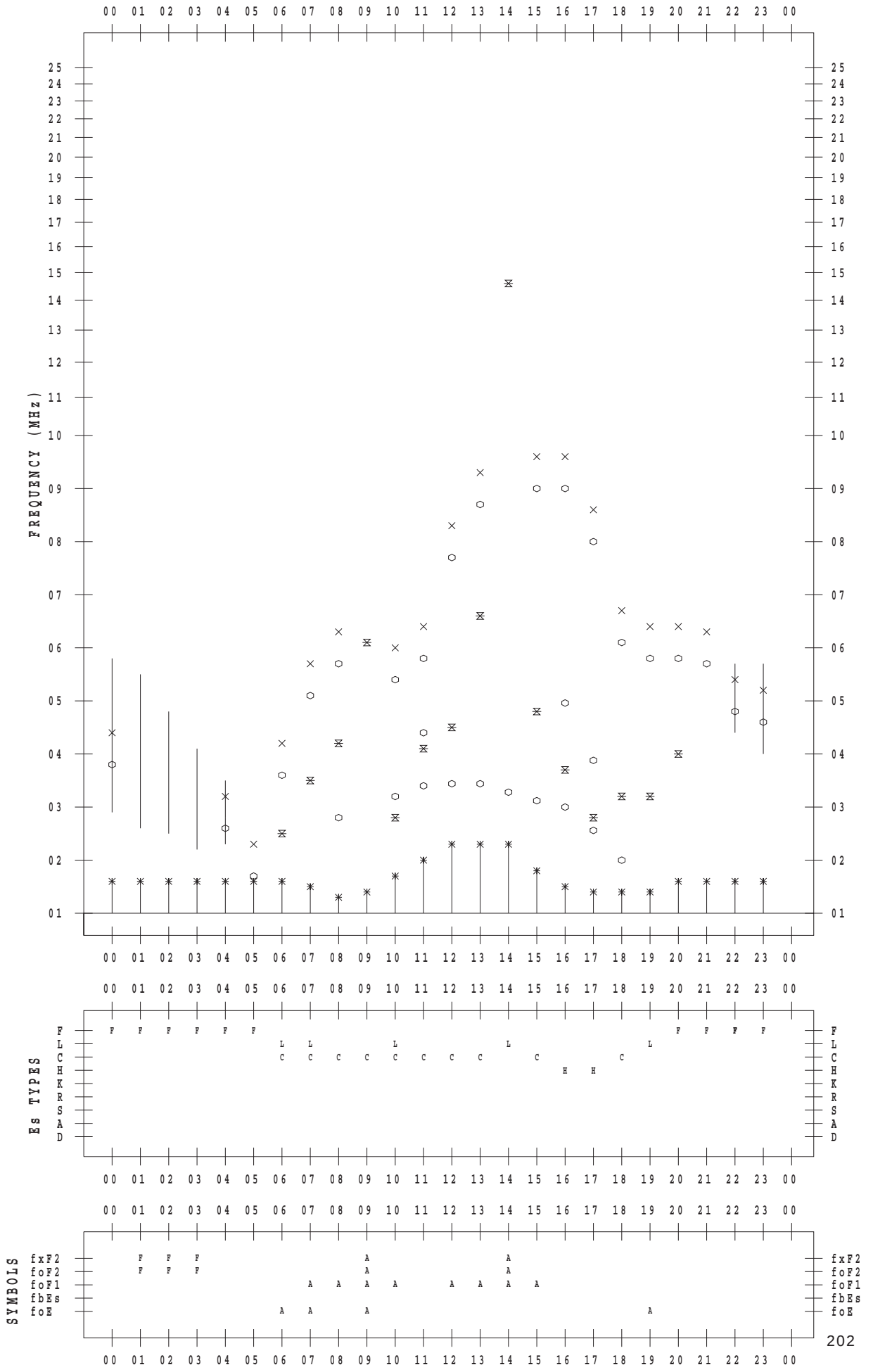
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 2

135 °E MEAN TIME



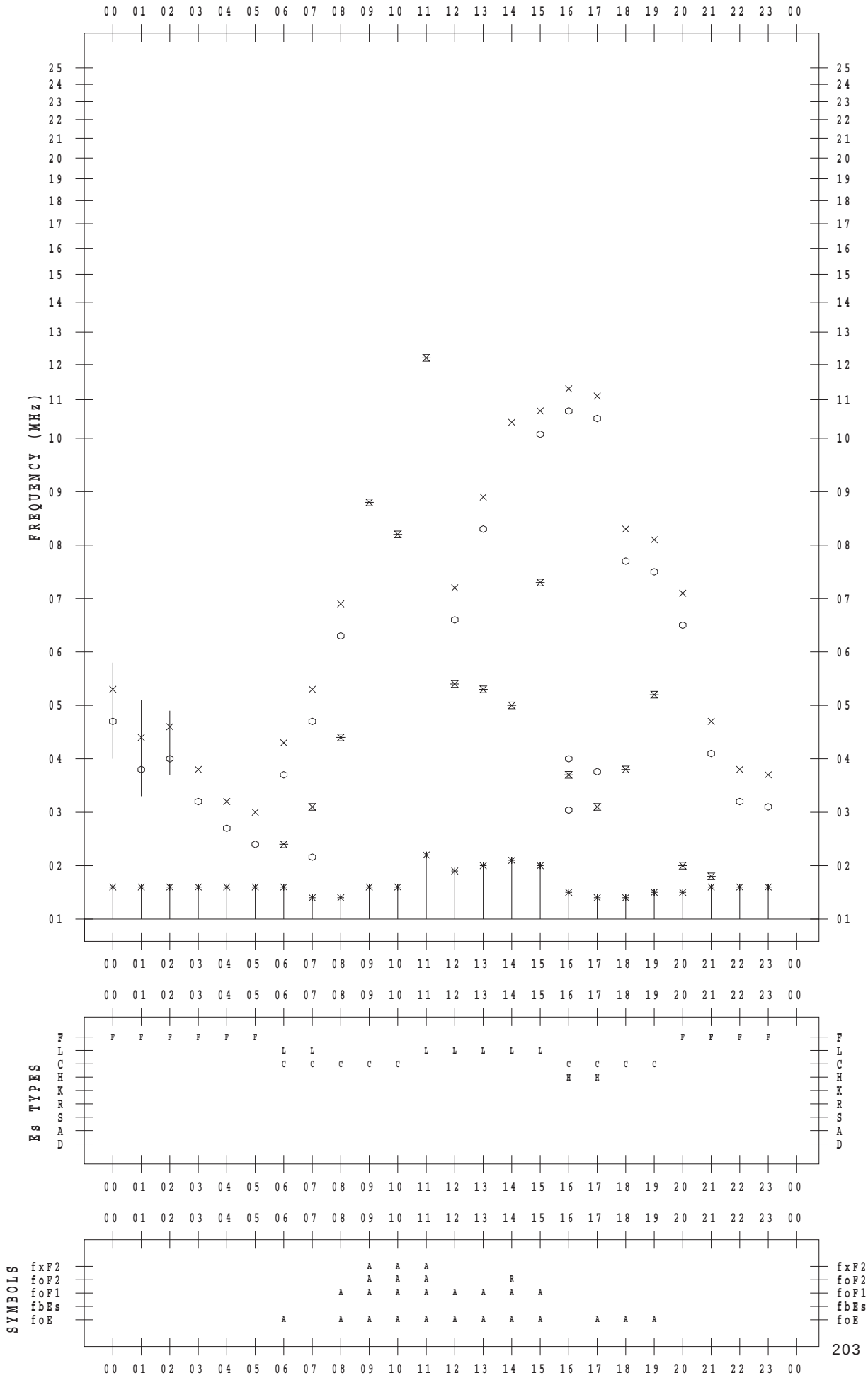
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 3

135 °E MEAN TIME



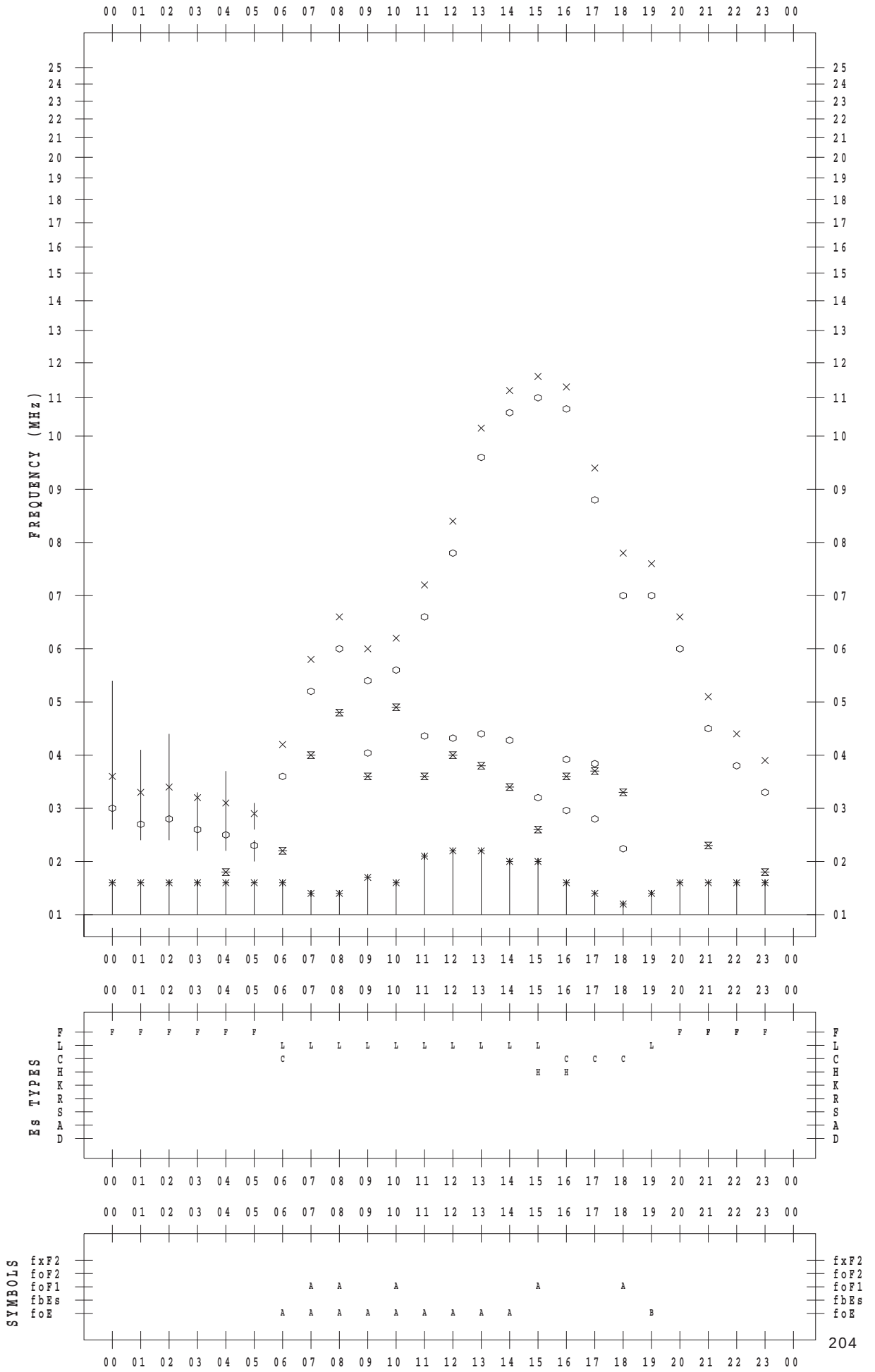
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 4

135 °E MEAN TIME



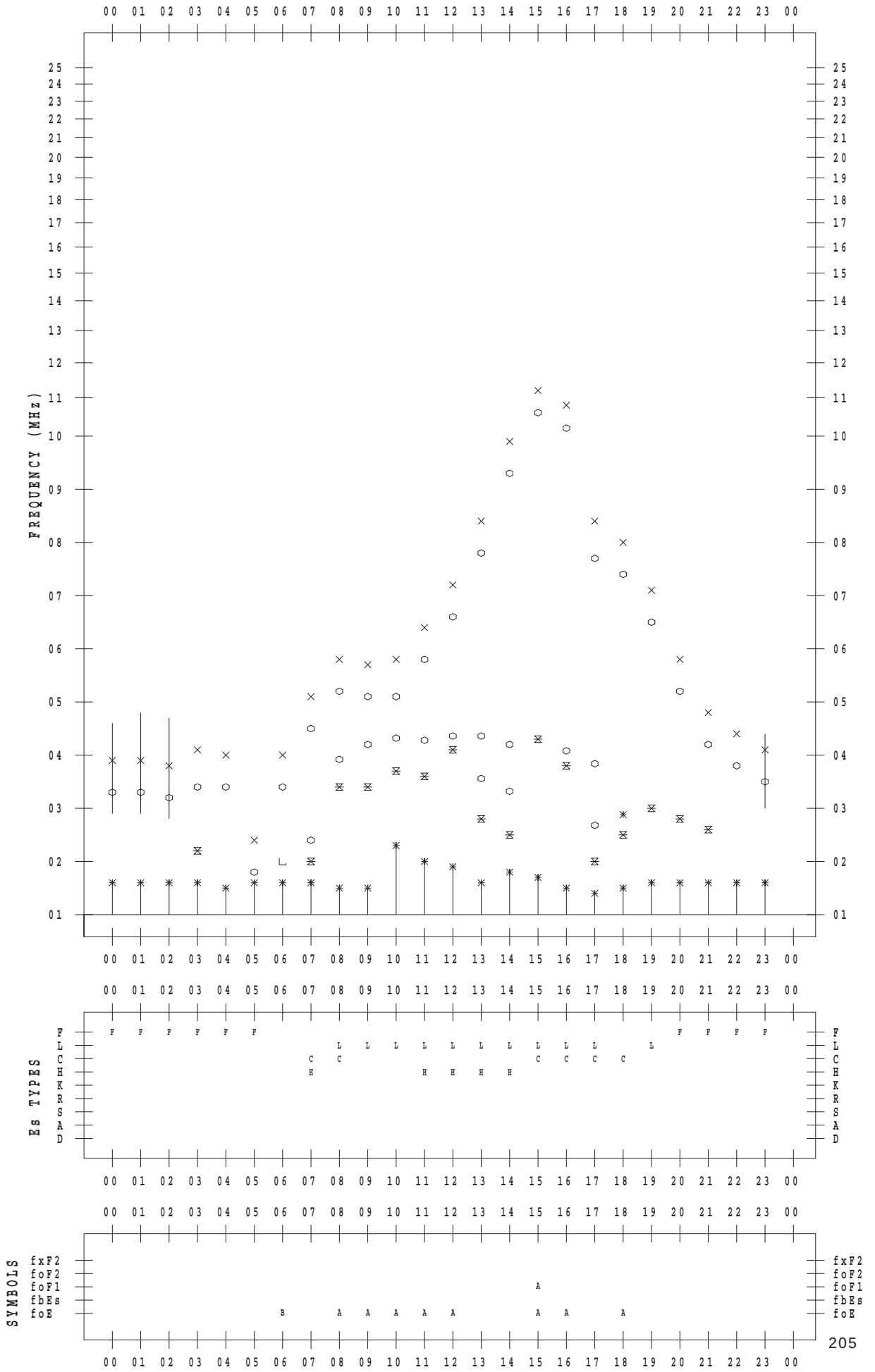
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 5

135 °E MEAN TIME



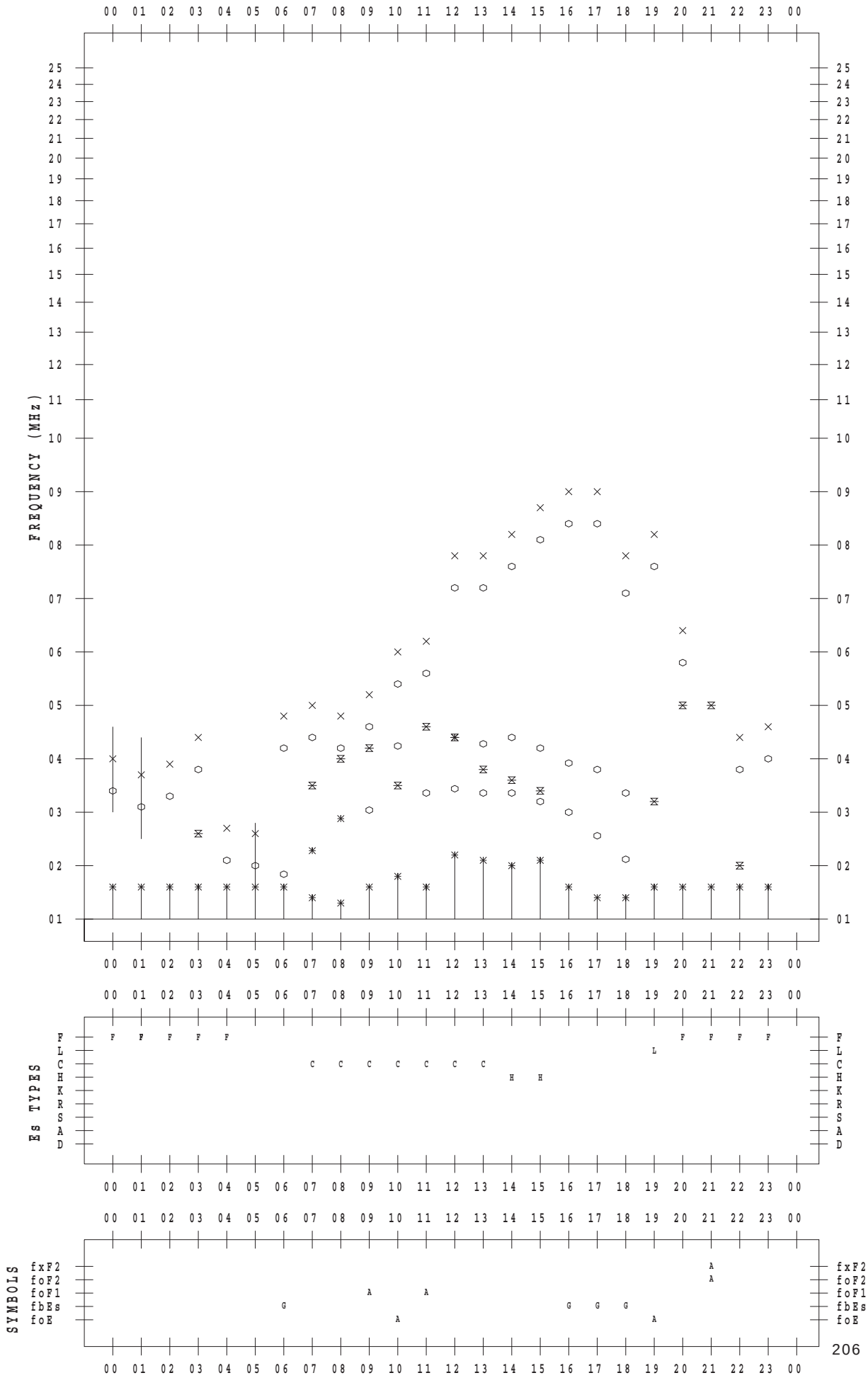
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 6

135 °E MEAN TIME



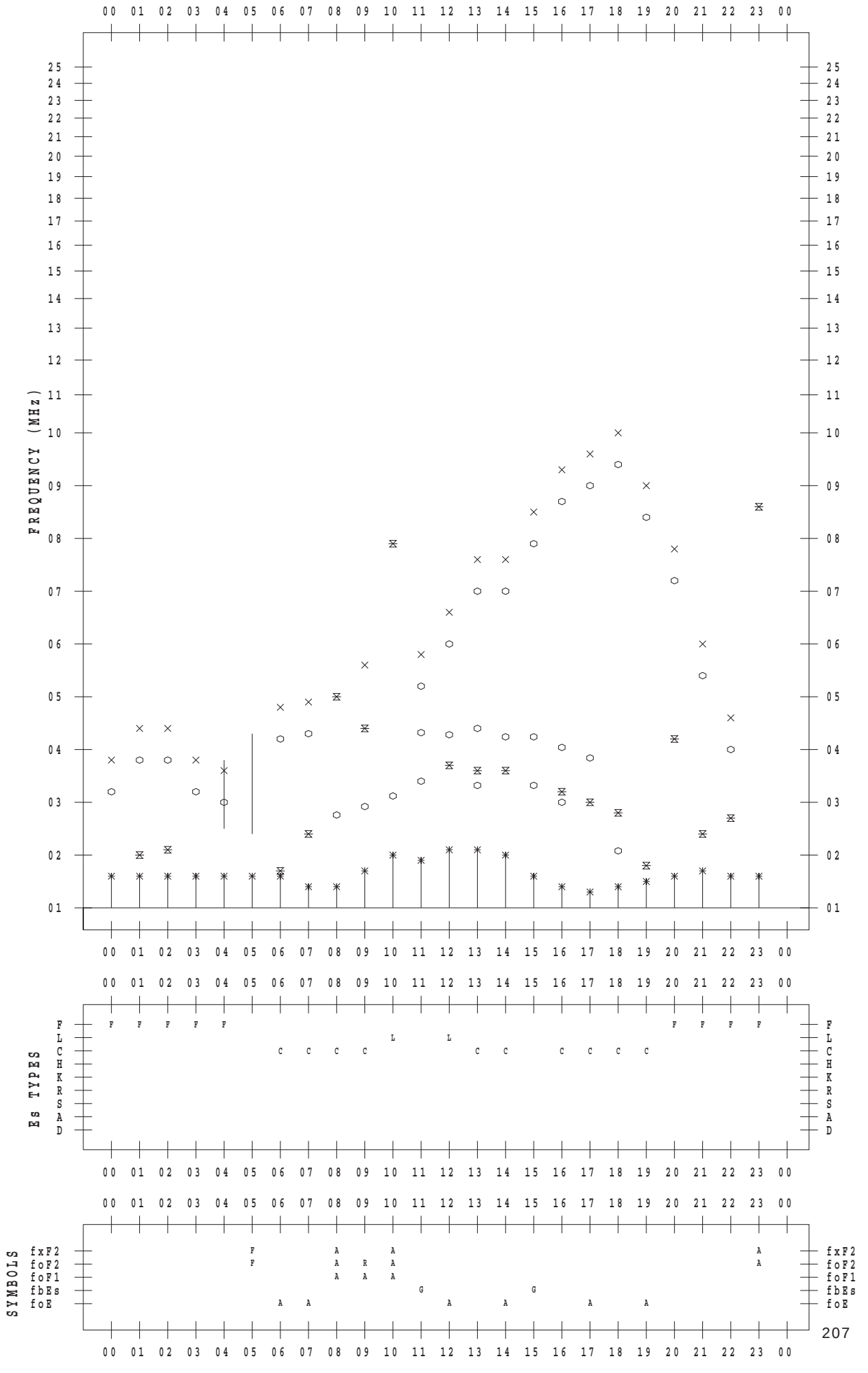
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 7

135 °E MEAN TIME



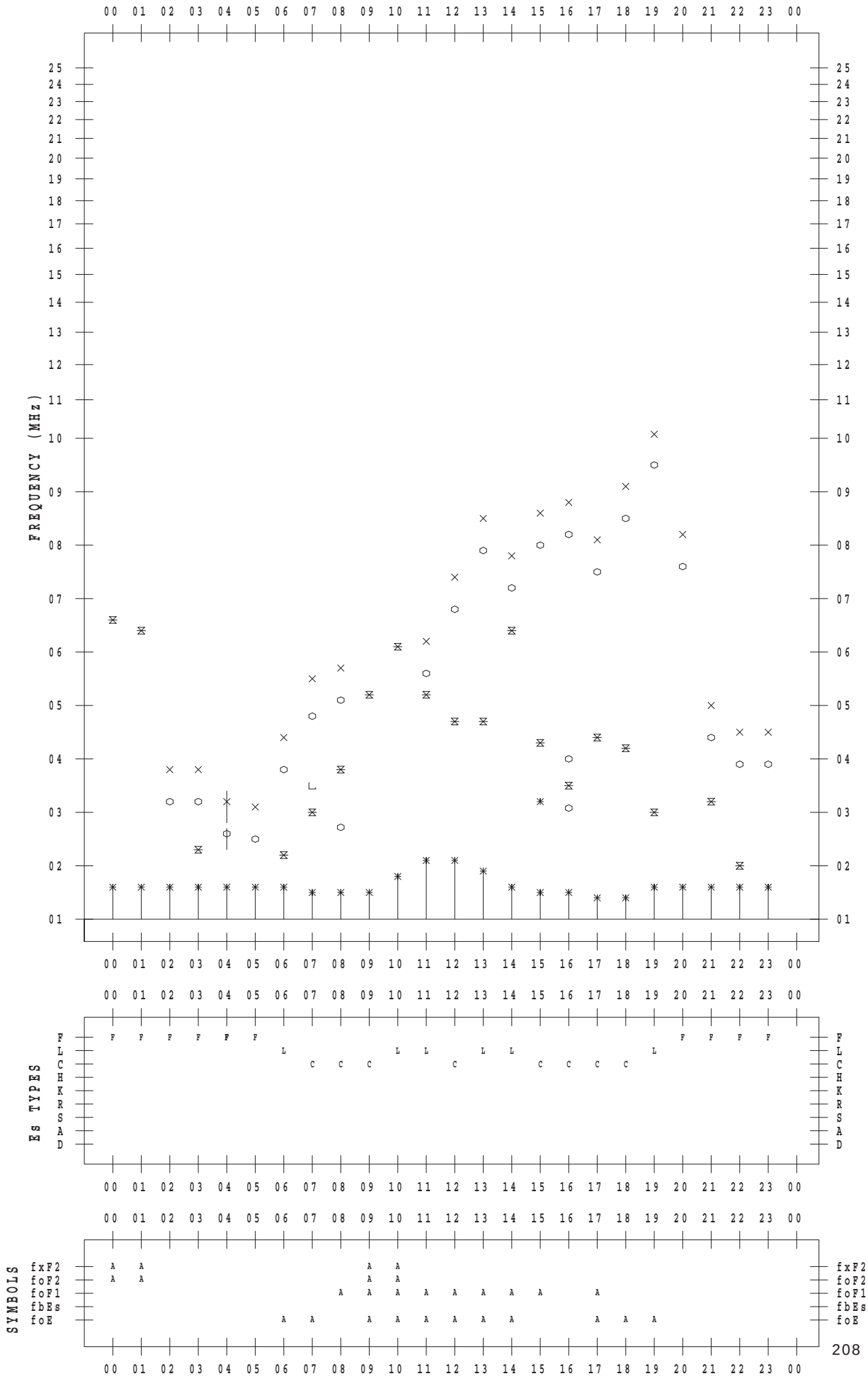
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 8

135 °E MEAN TIME



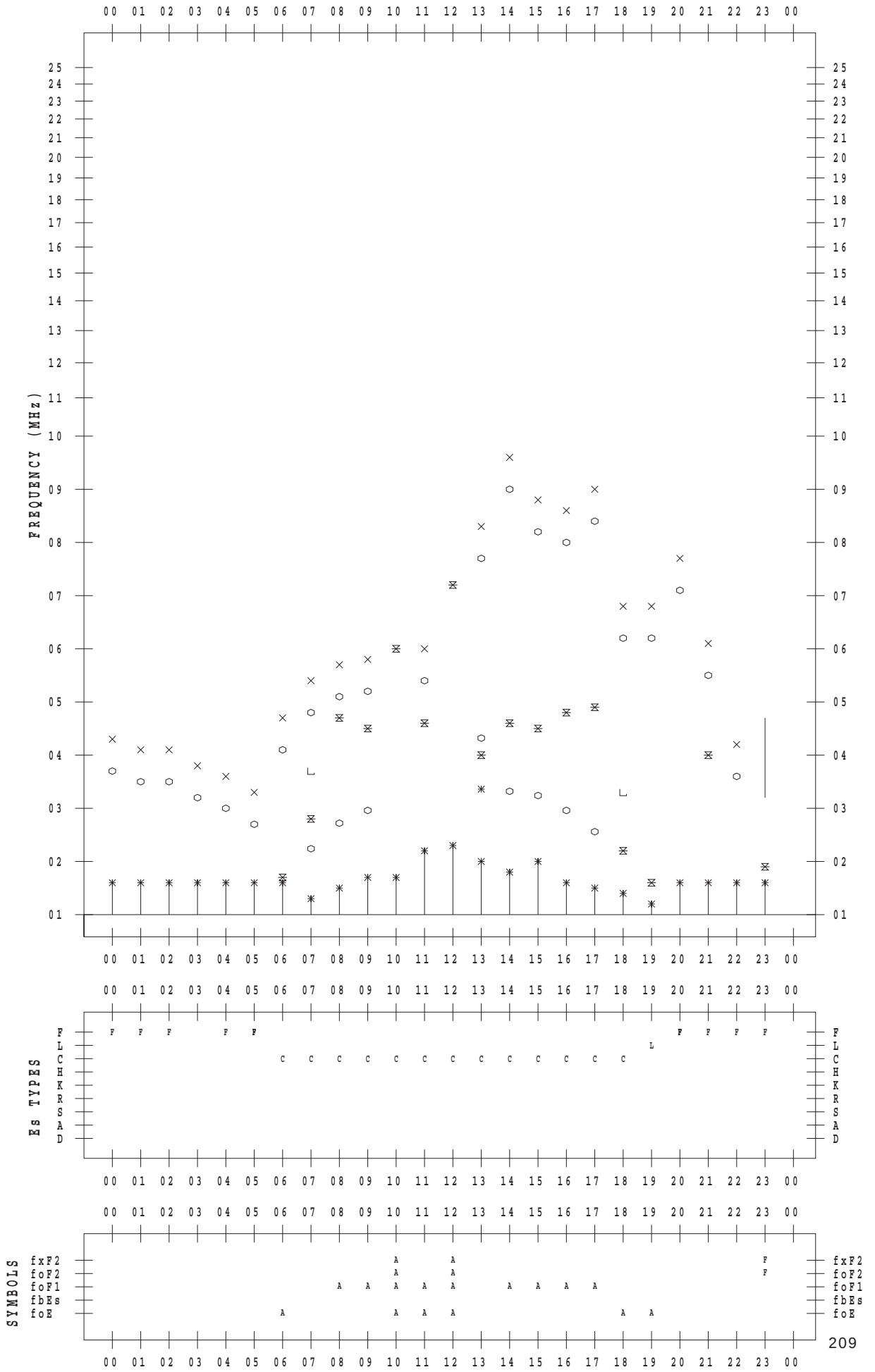
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/ 9

135 °E MEAN TIME



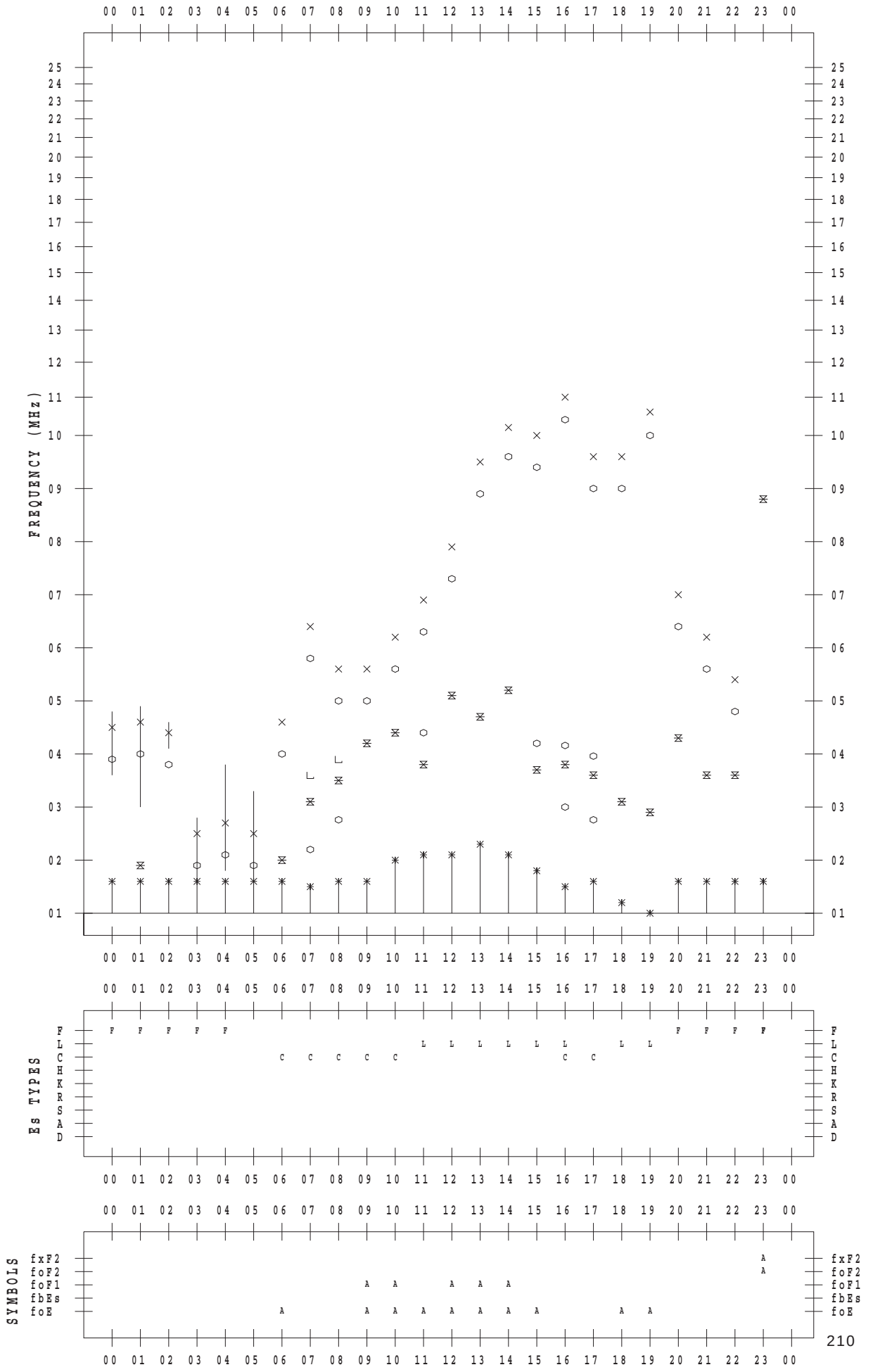
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/10

135 °E MEAN TIME



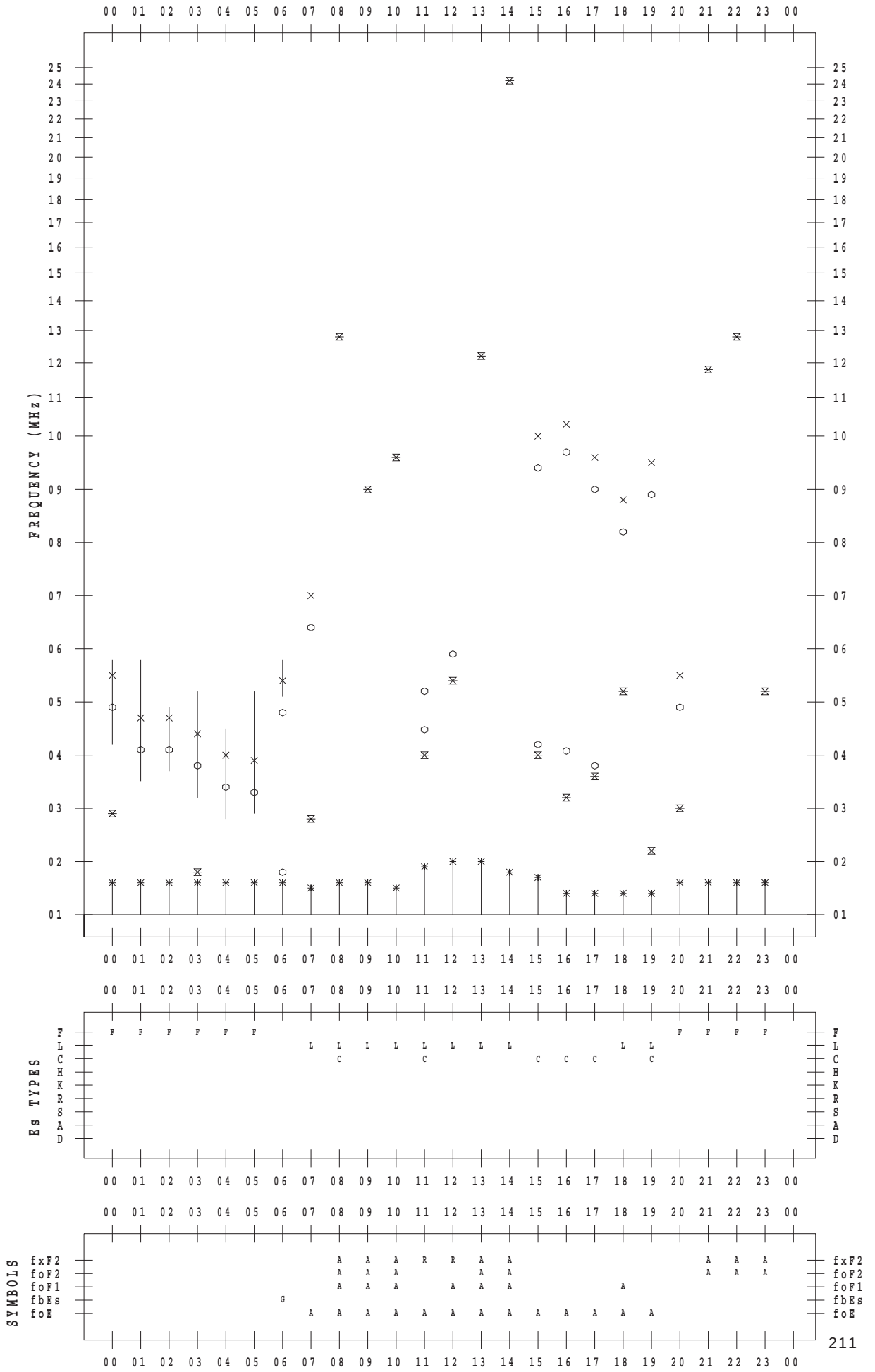
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/11

135 °E MEAN TIME



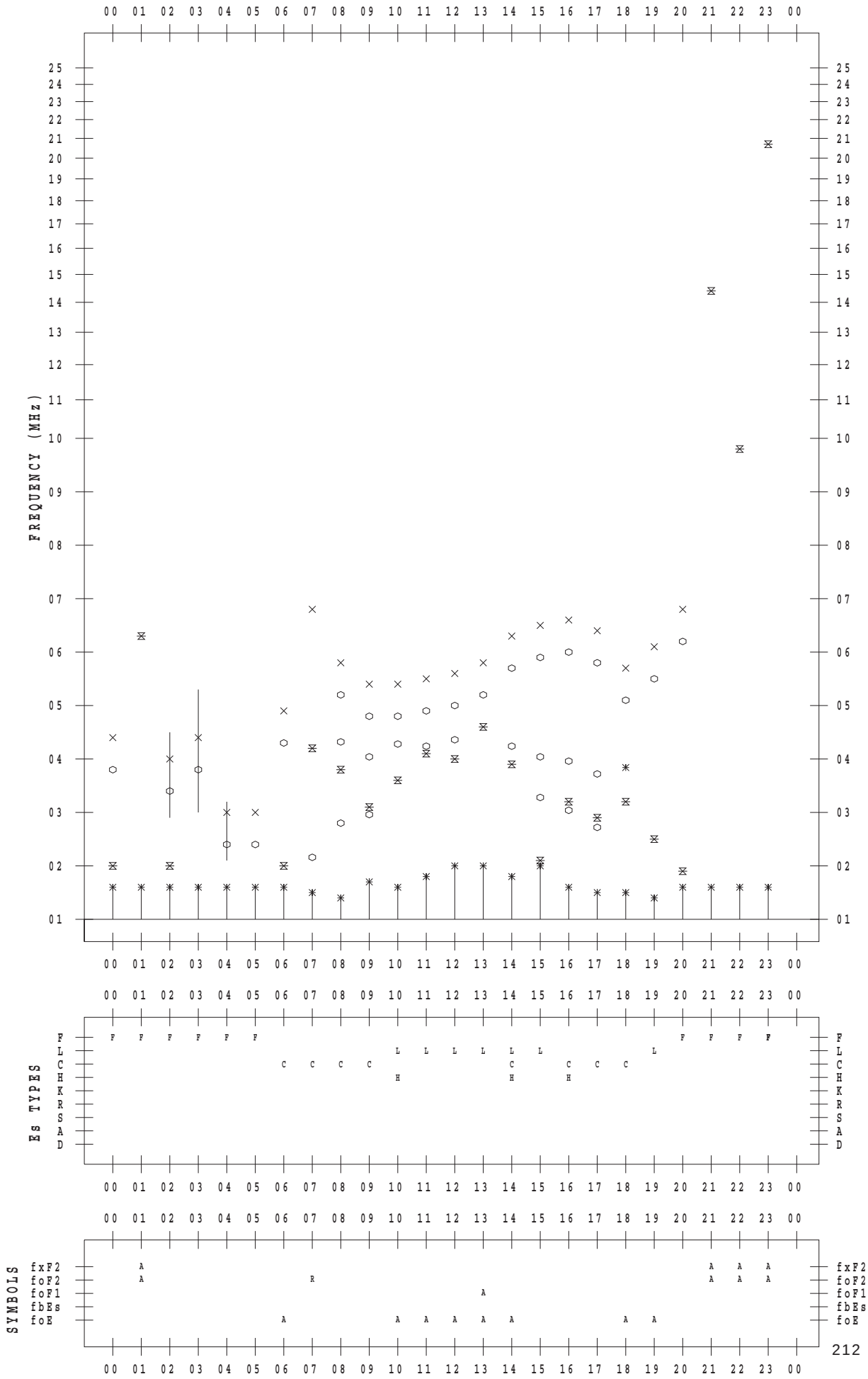
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/12

135 °E MEAN TIME



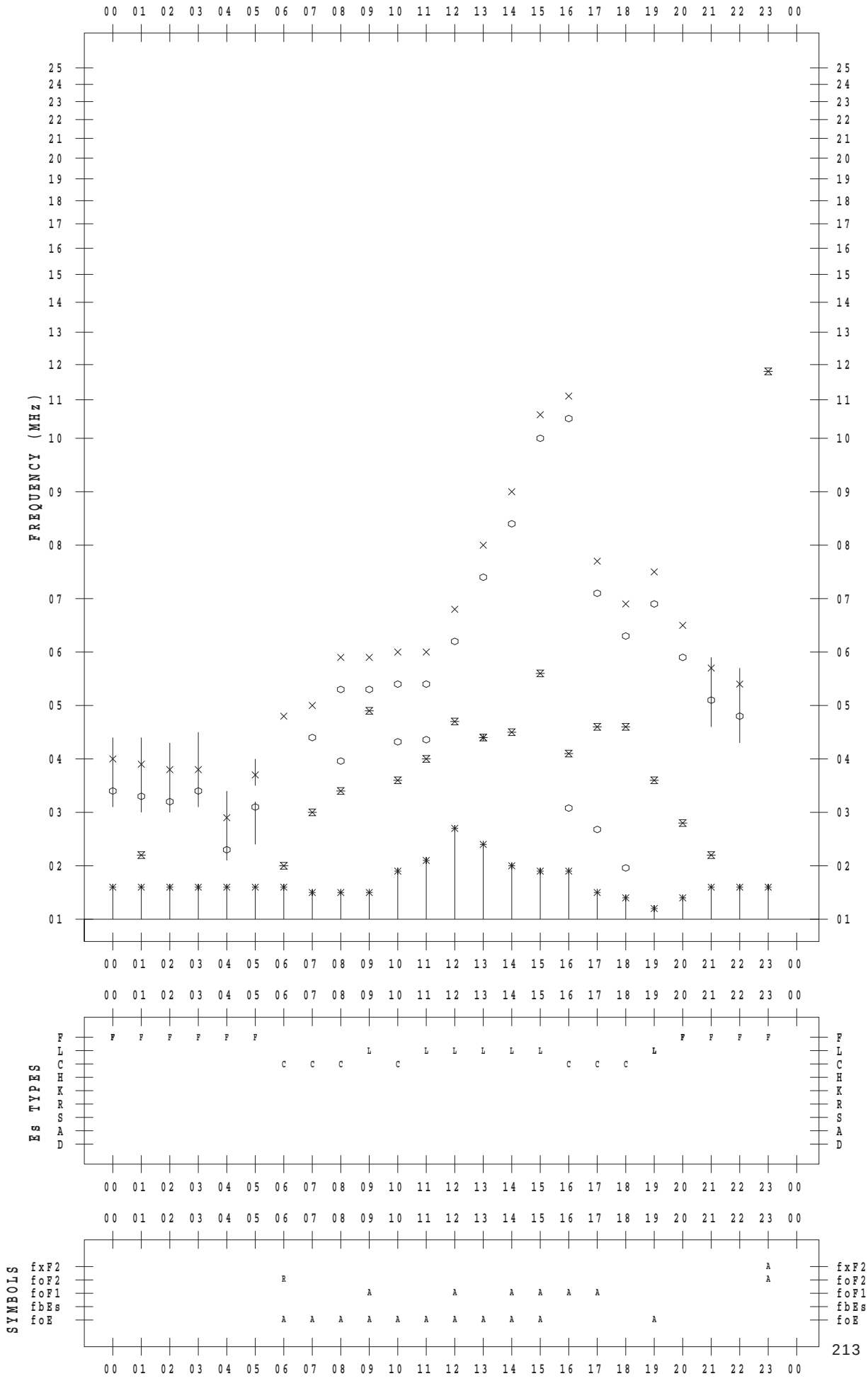
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/13

135 °E MEAN TIME



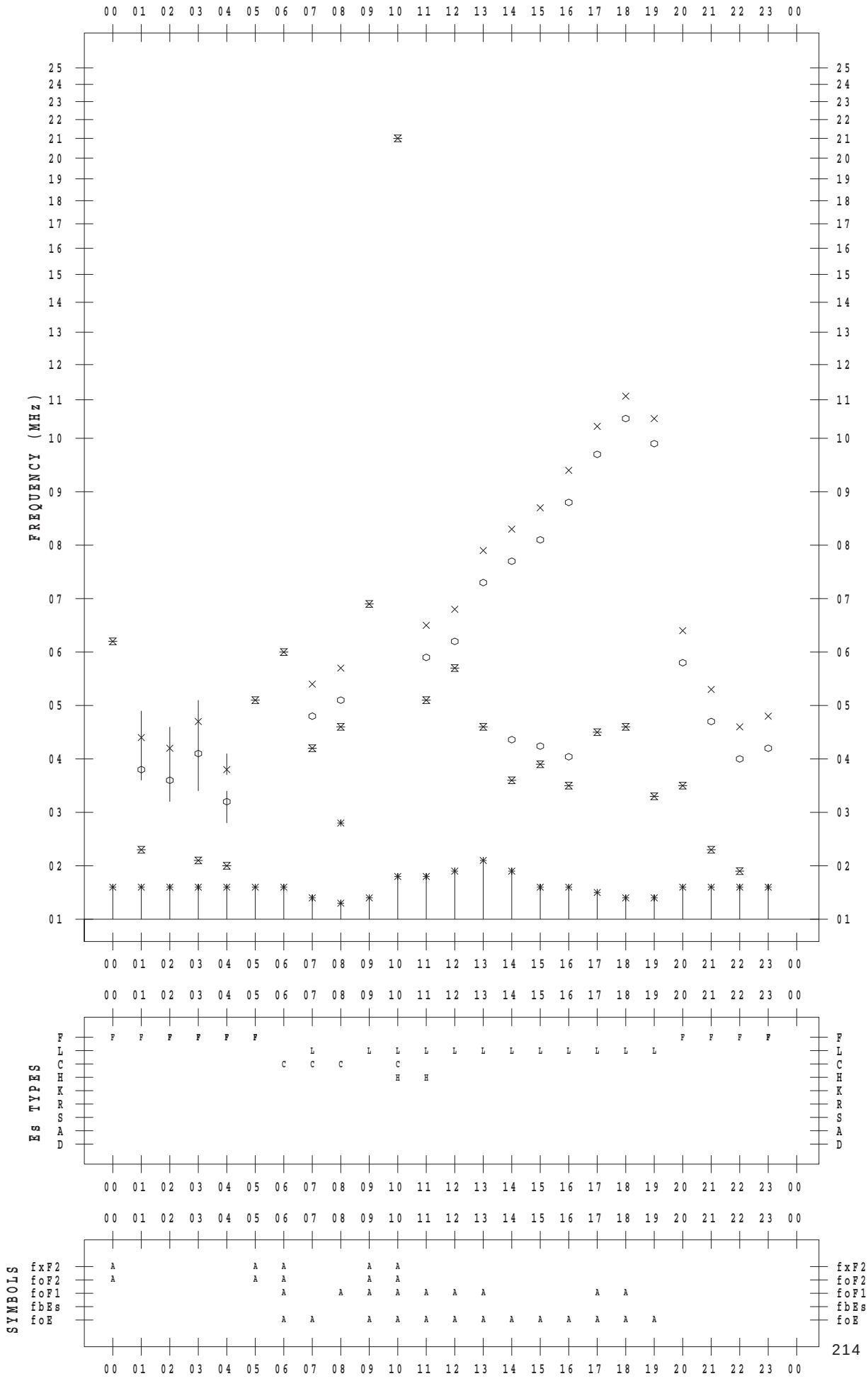
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/14

135 °E MEAN TIME



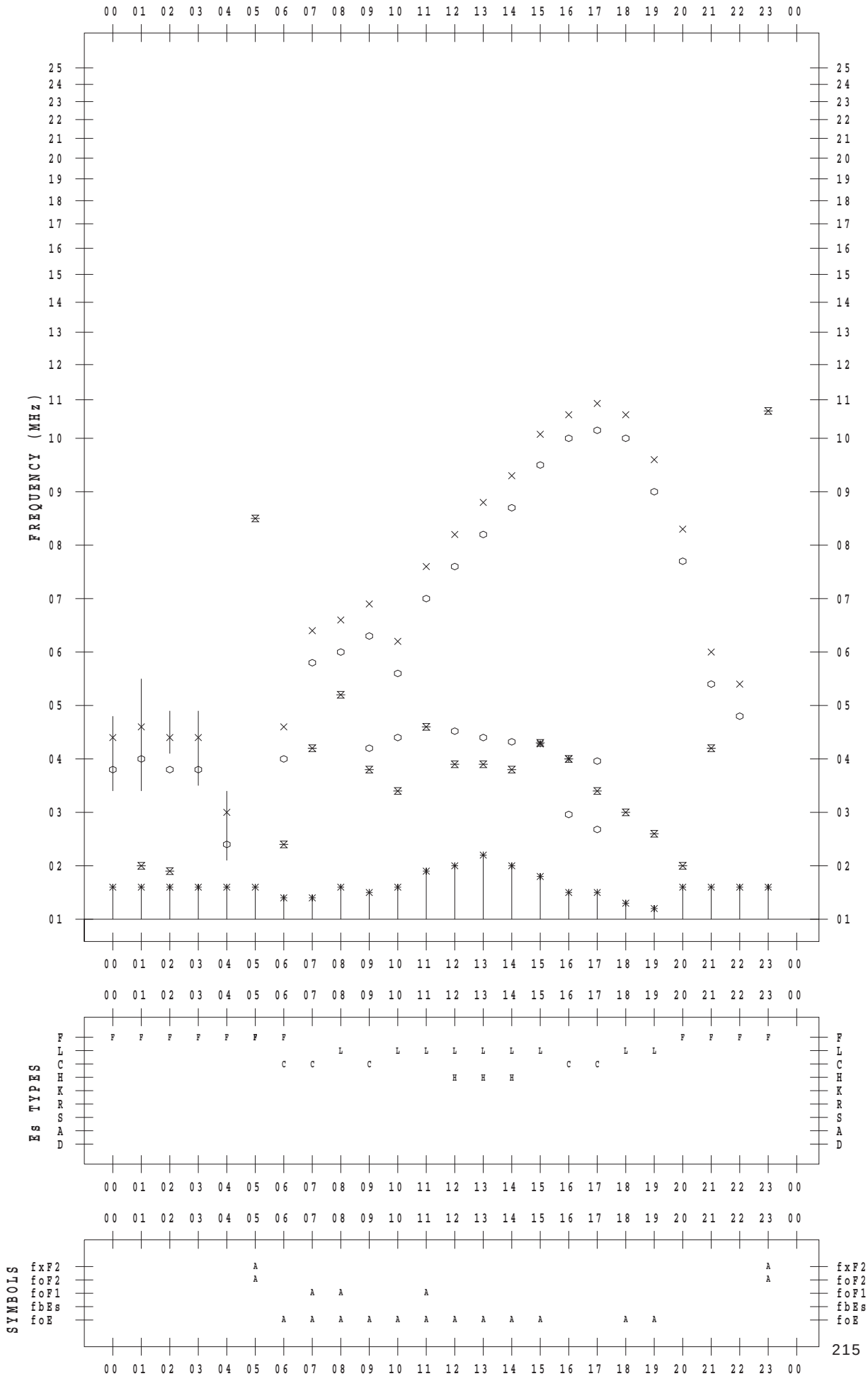
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/15

135 °E MEAN TIME



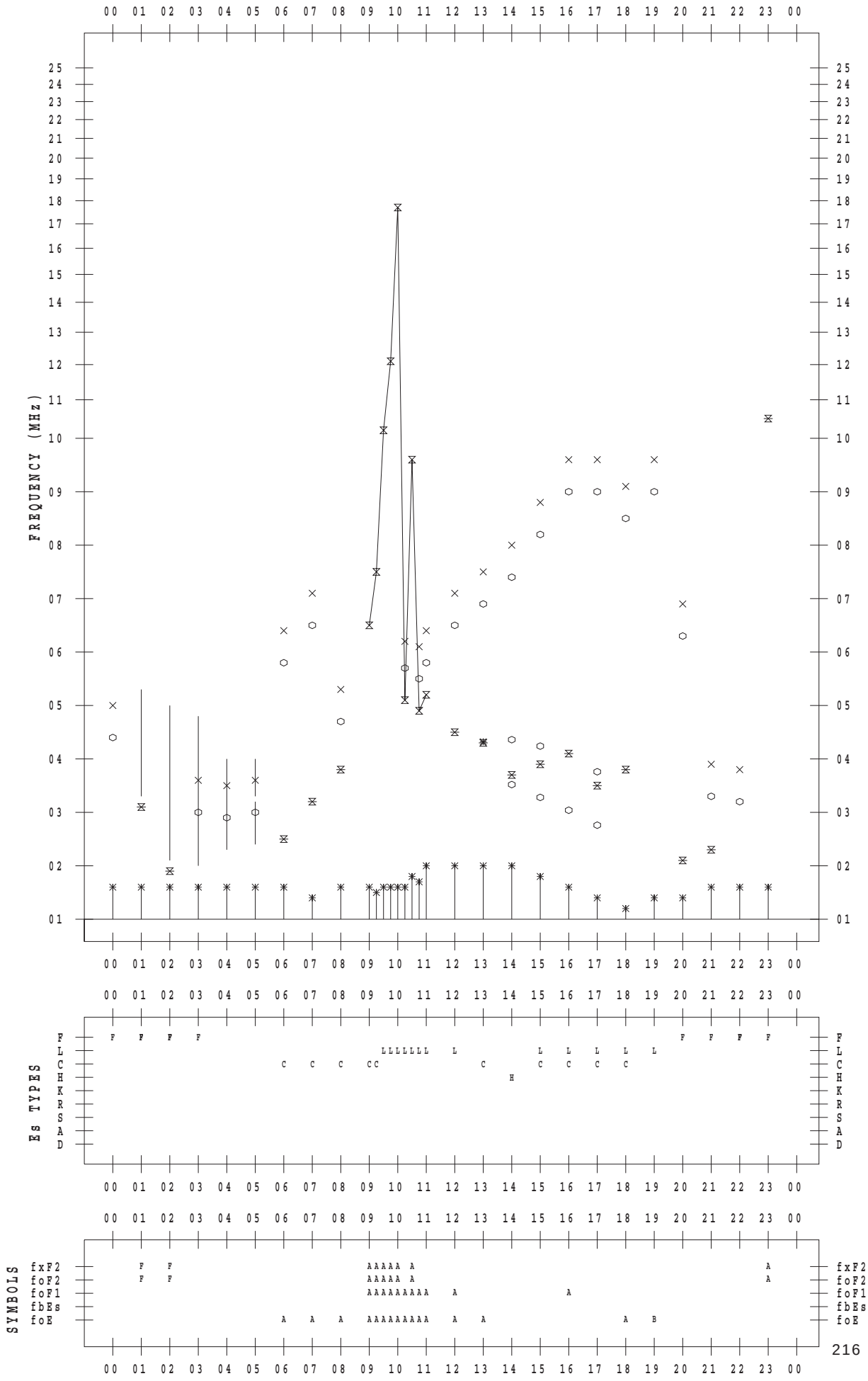
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/16

135 °E MEAN TIME



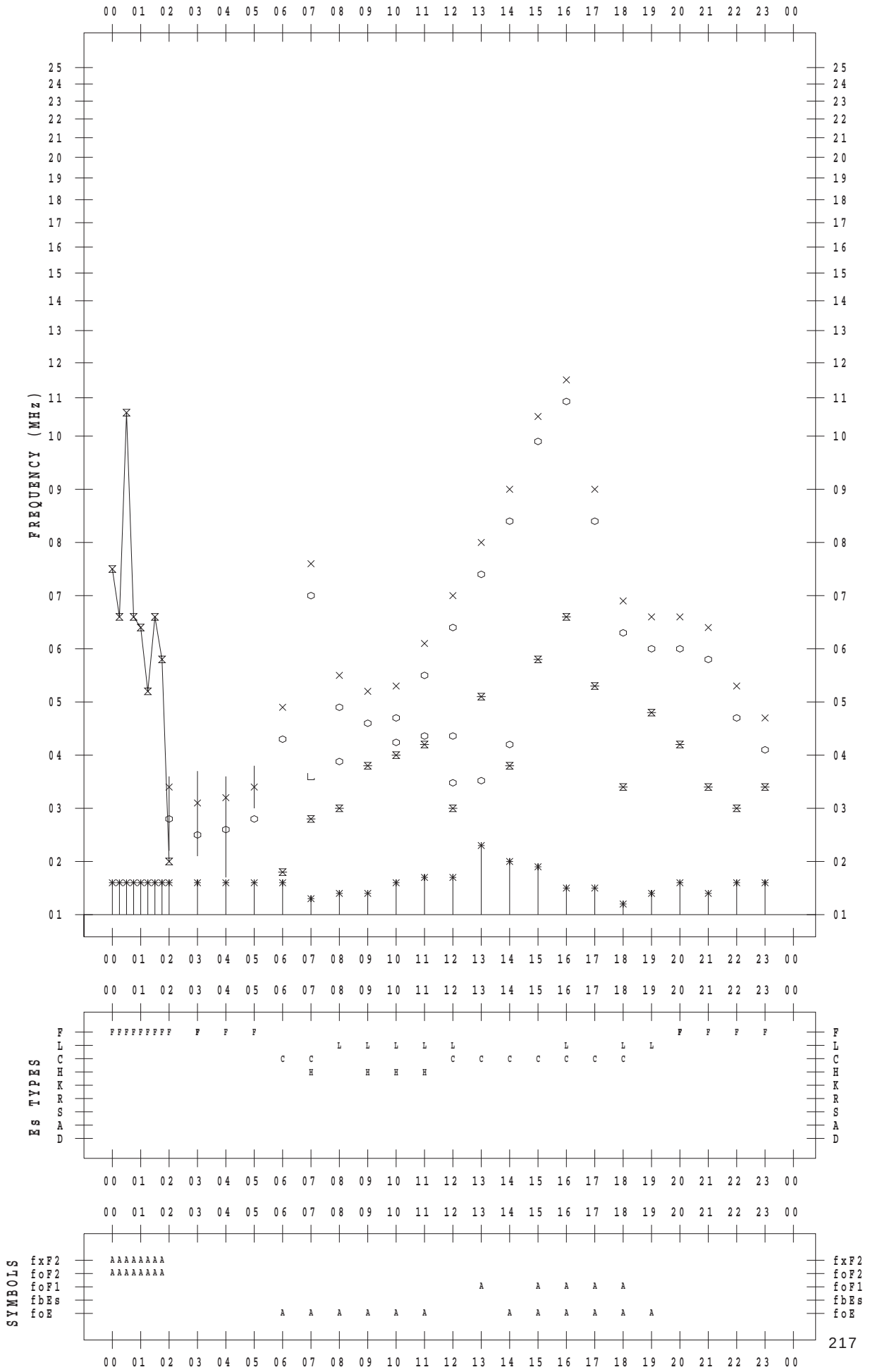
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/17

135 °E MEAN TIME



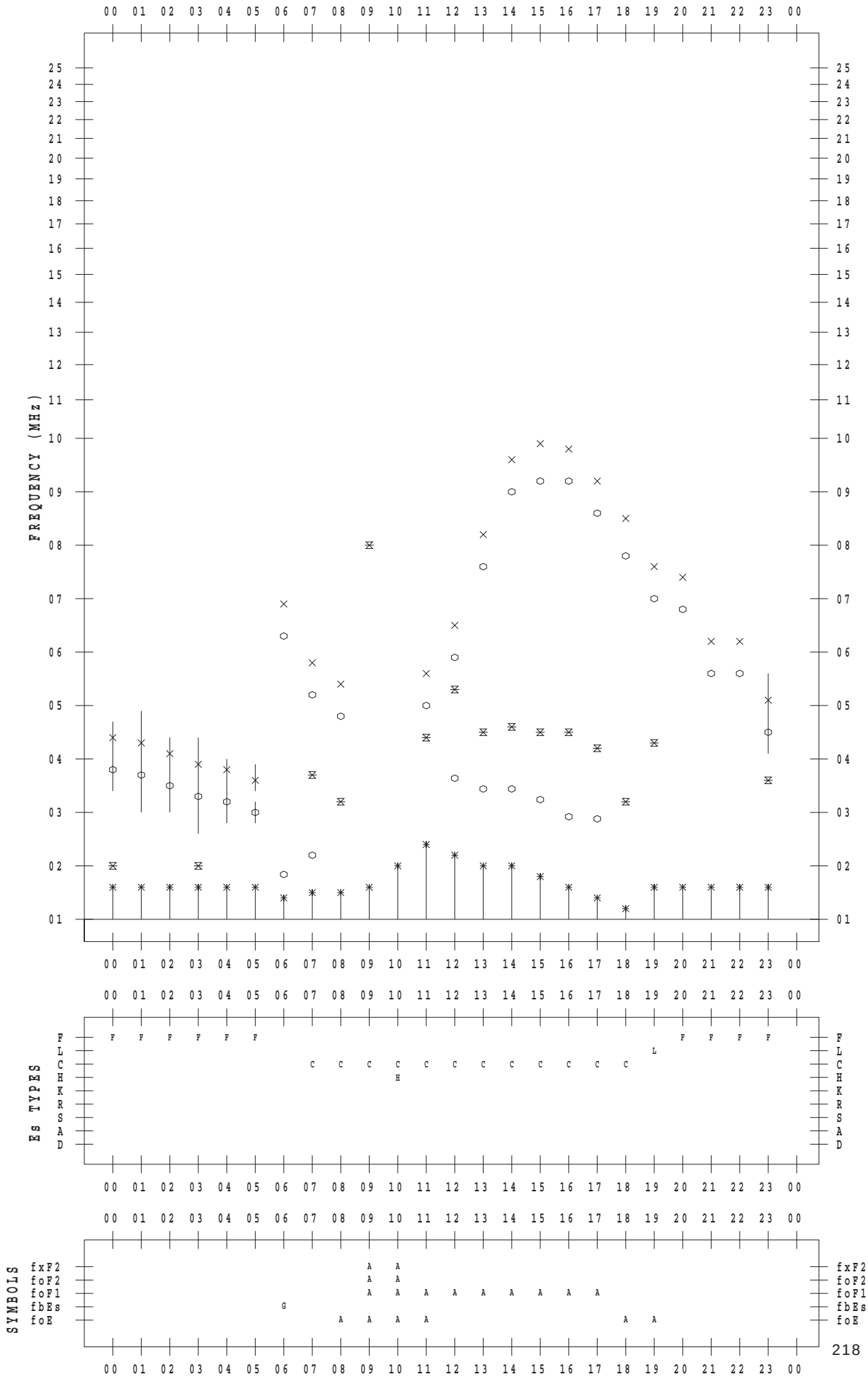
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/18

135 °E MEAN TIME



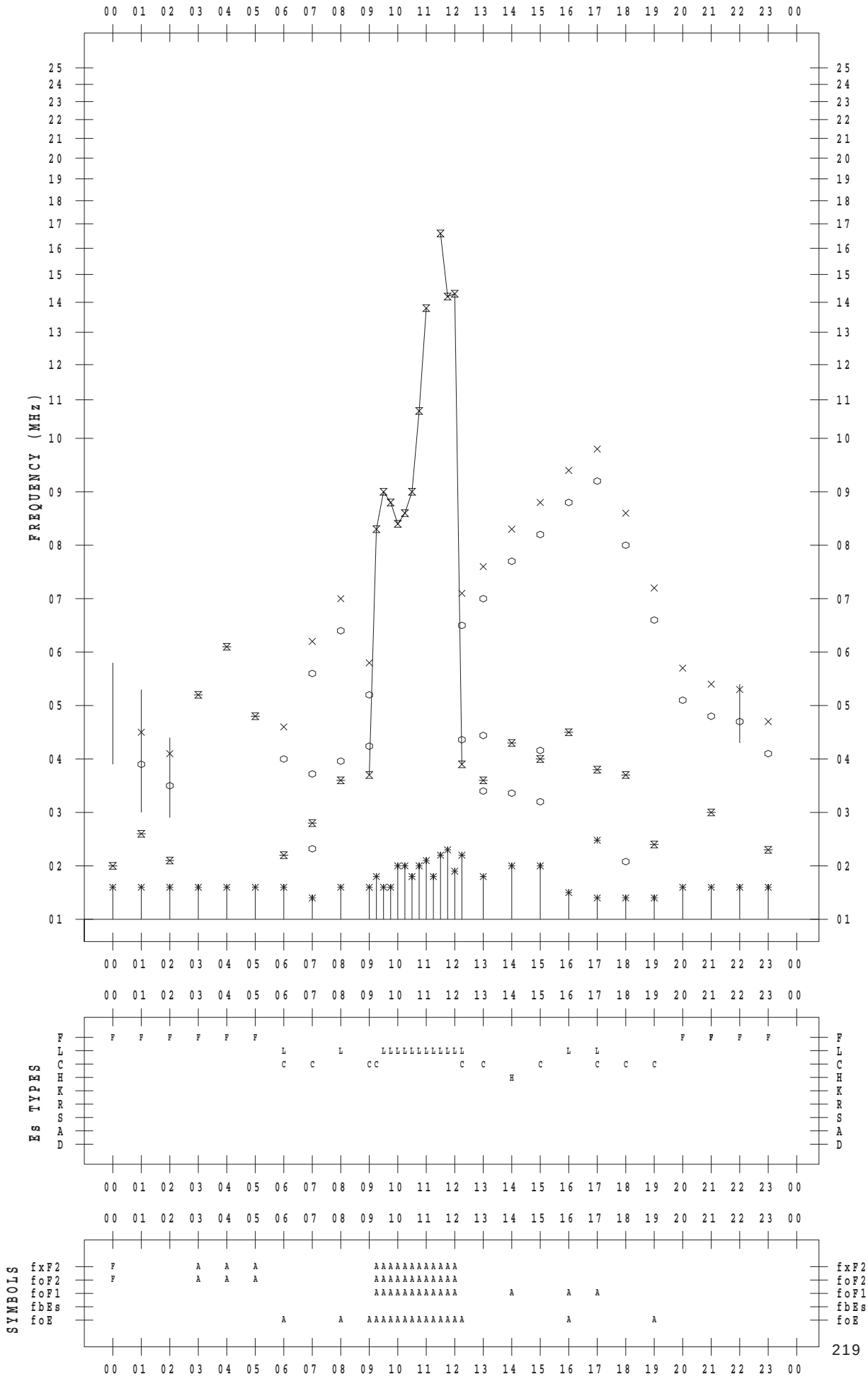
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/19

135 °E MEAN TIME



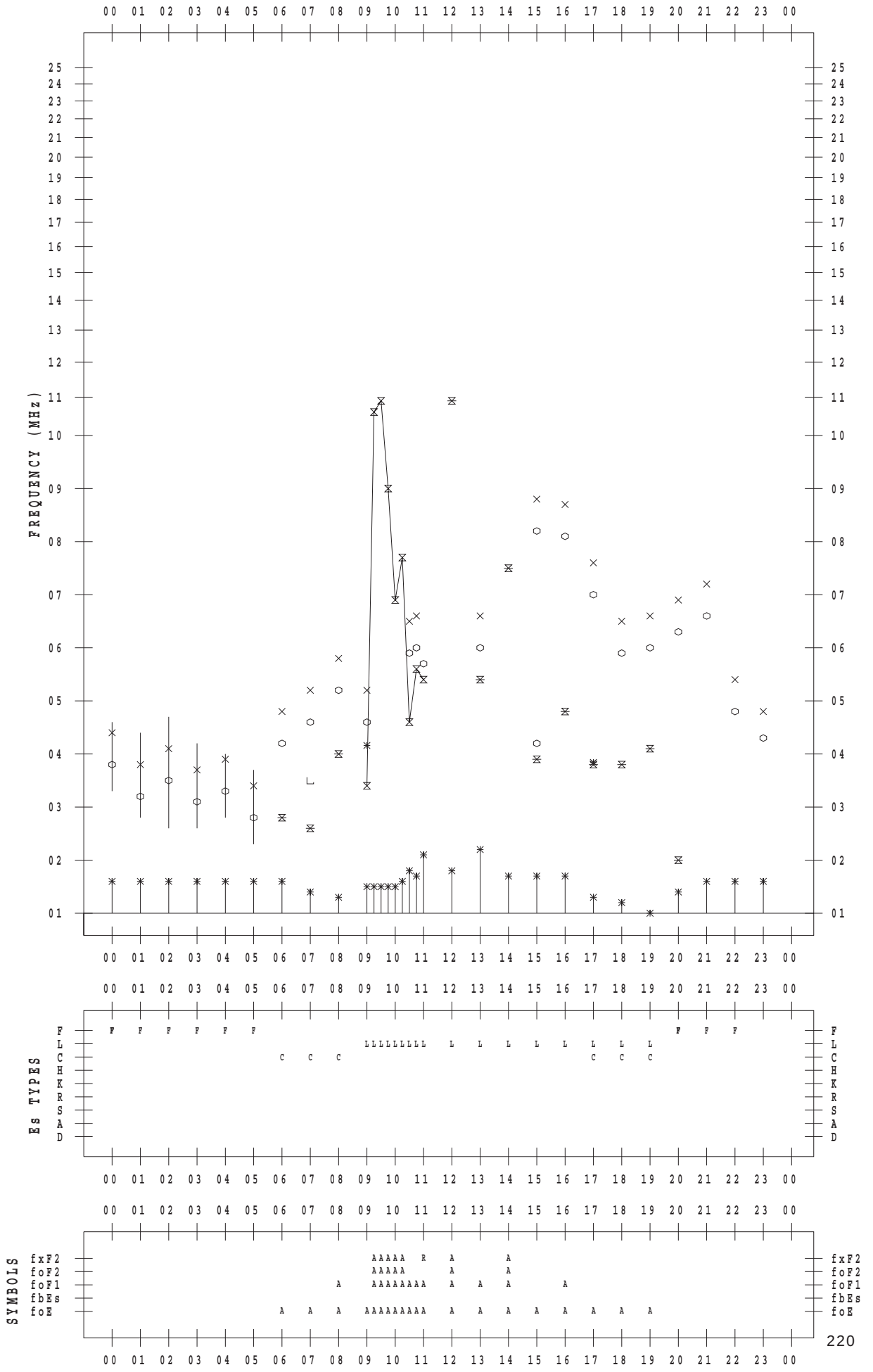
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/20

135 °E MEAN TIME



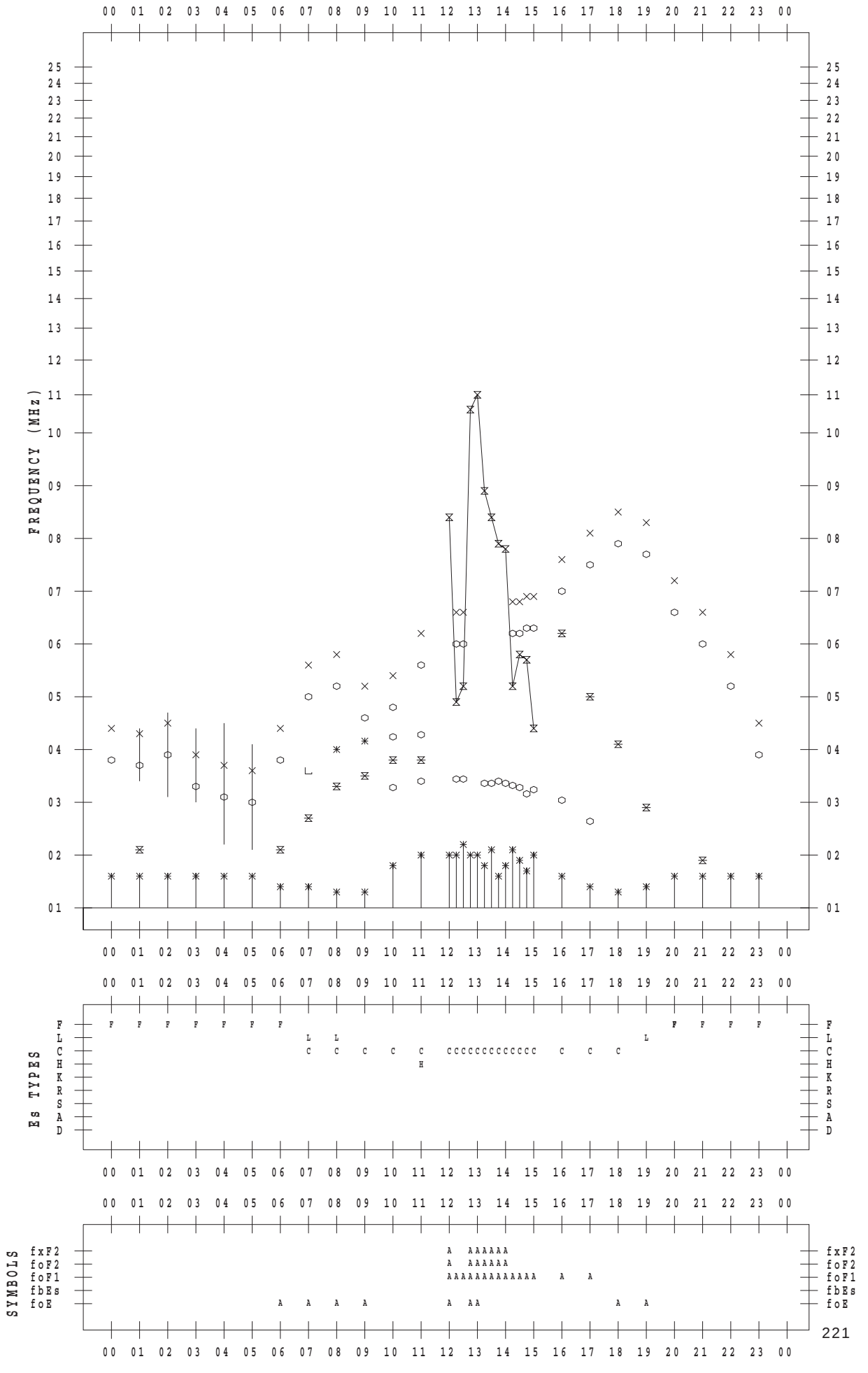
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/21

135 °E MEAN TIME



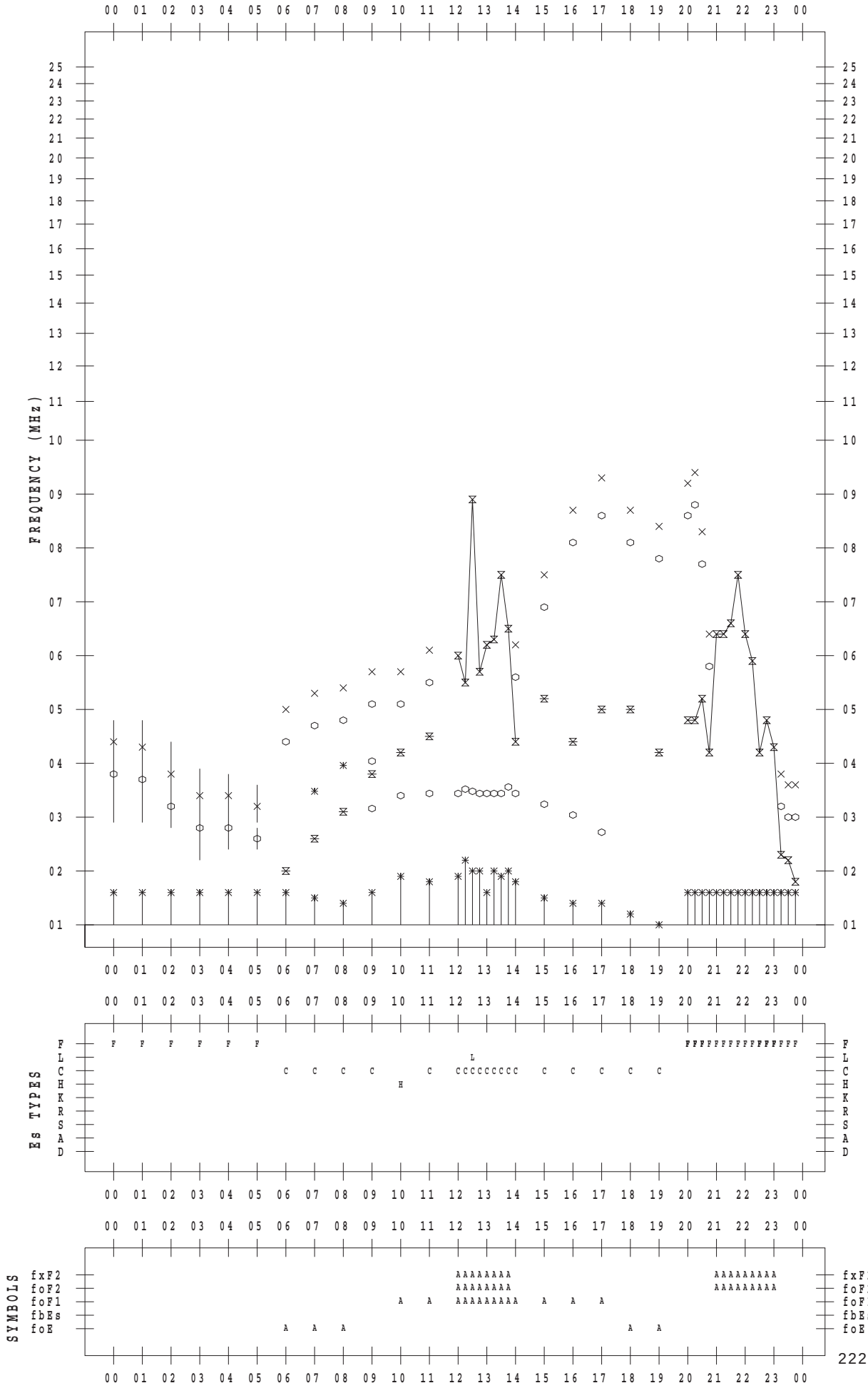
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/22

135 °E MEAN TIME



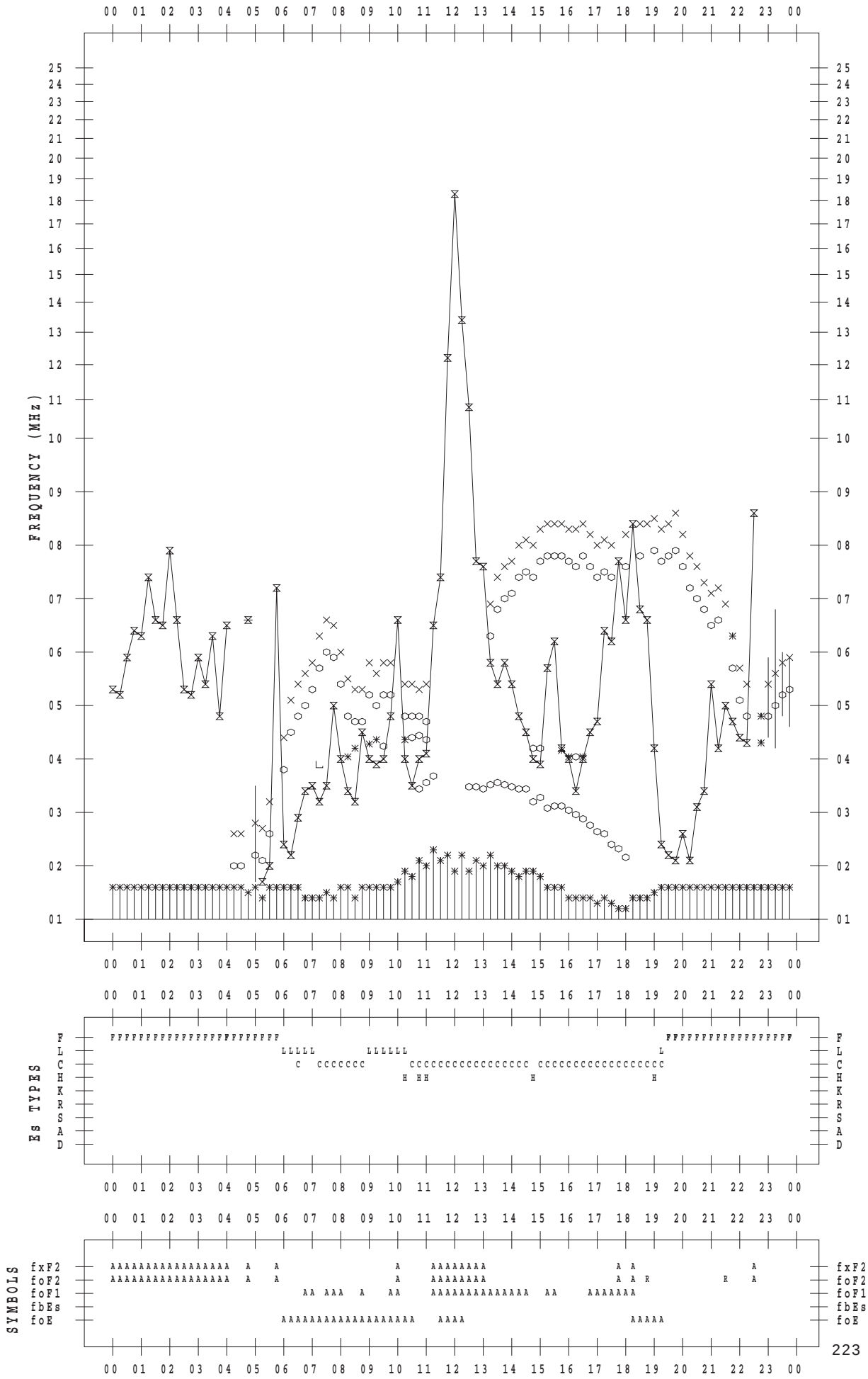
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/23

135 °E MEAN TIME



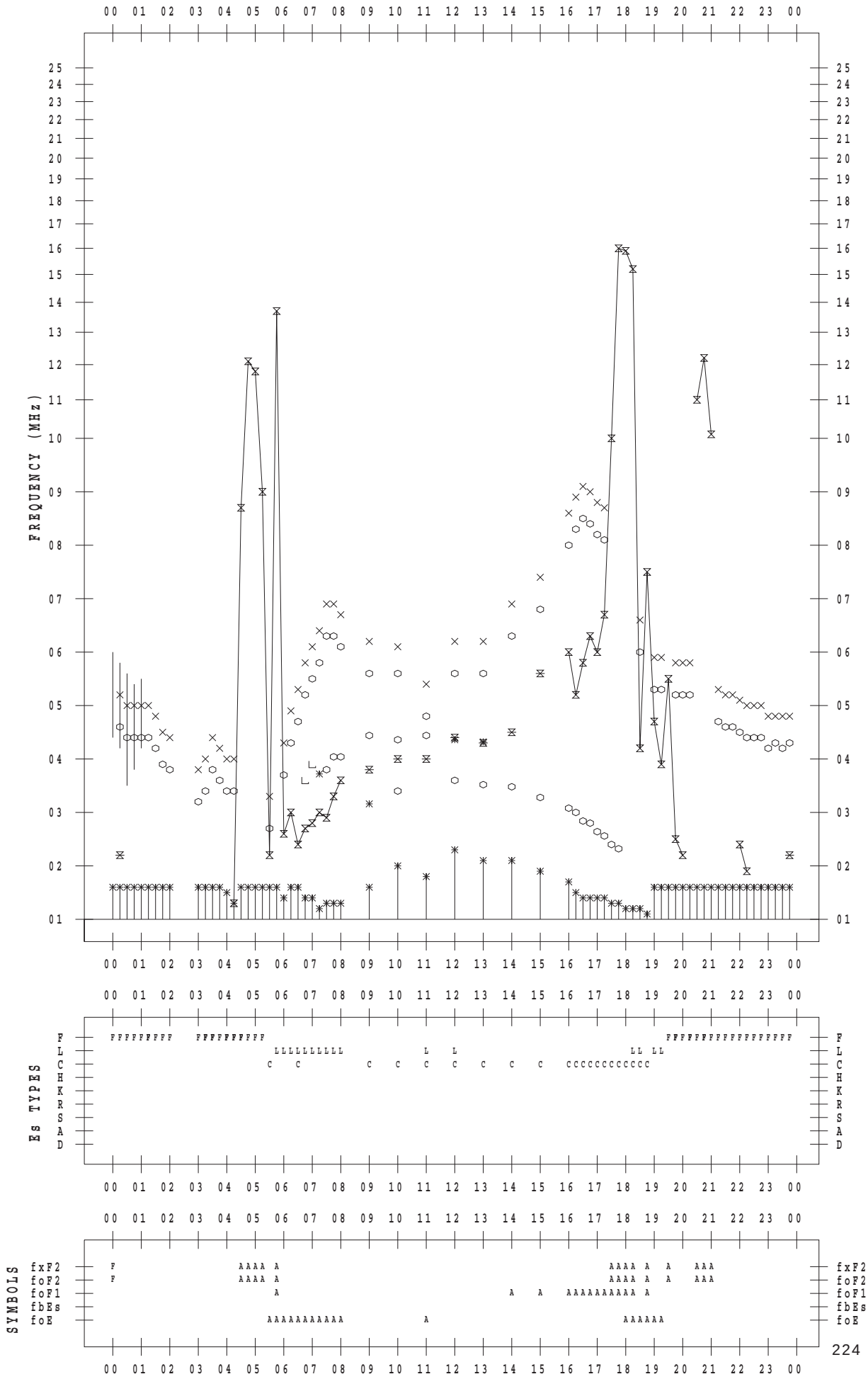
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/24

135 °E MEAN TIME



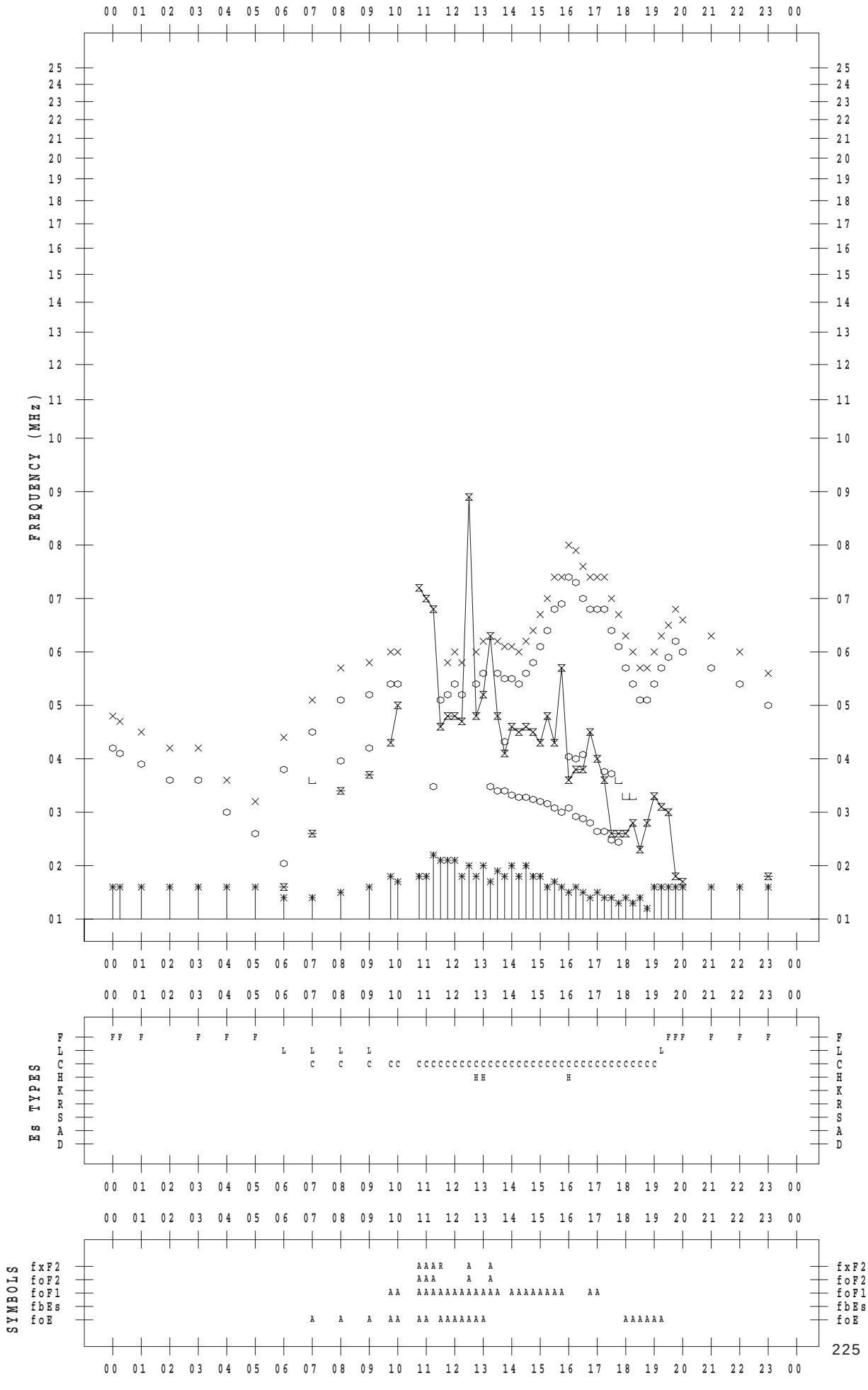
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/25

135 °E MEAN TIME



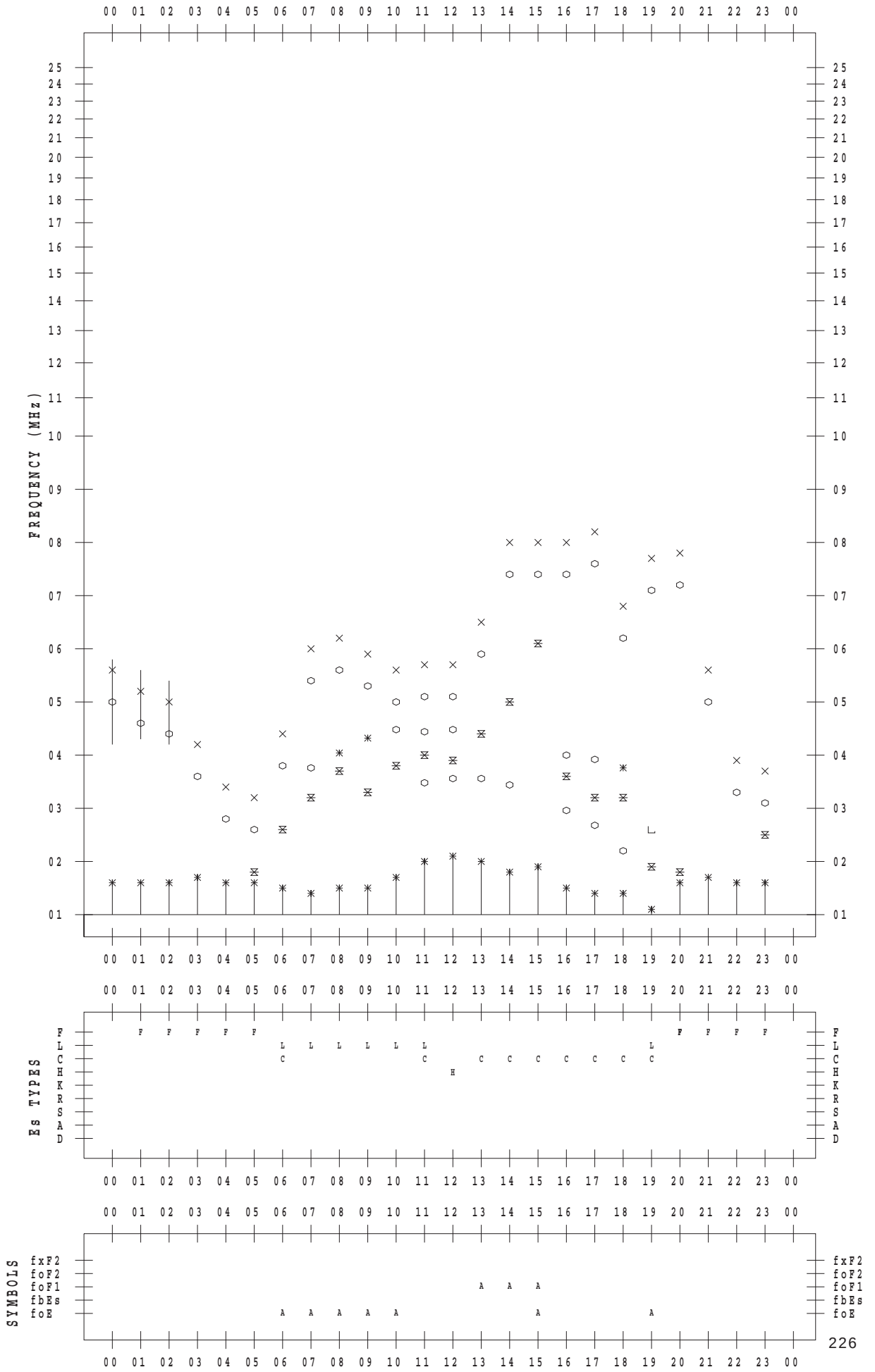
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/26

135 °E MEAN TIME



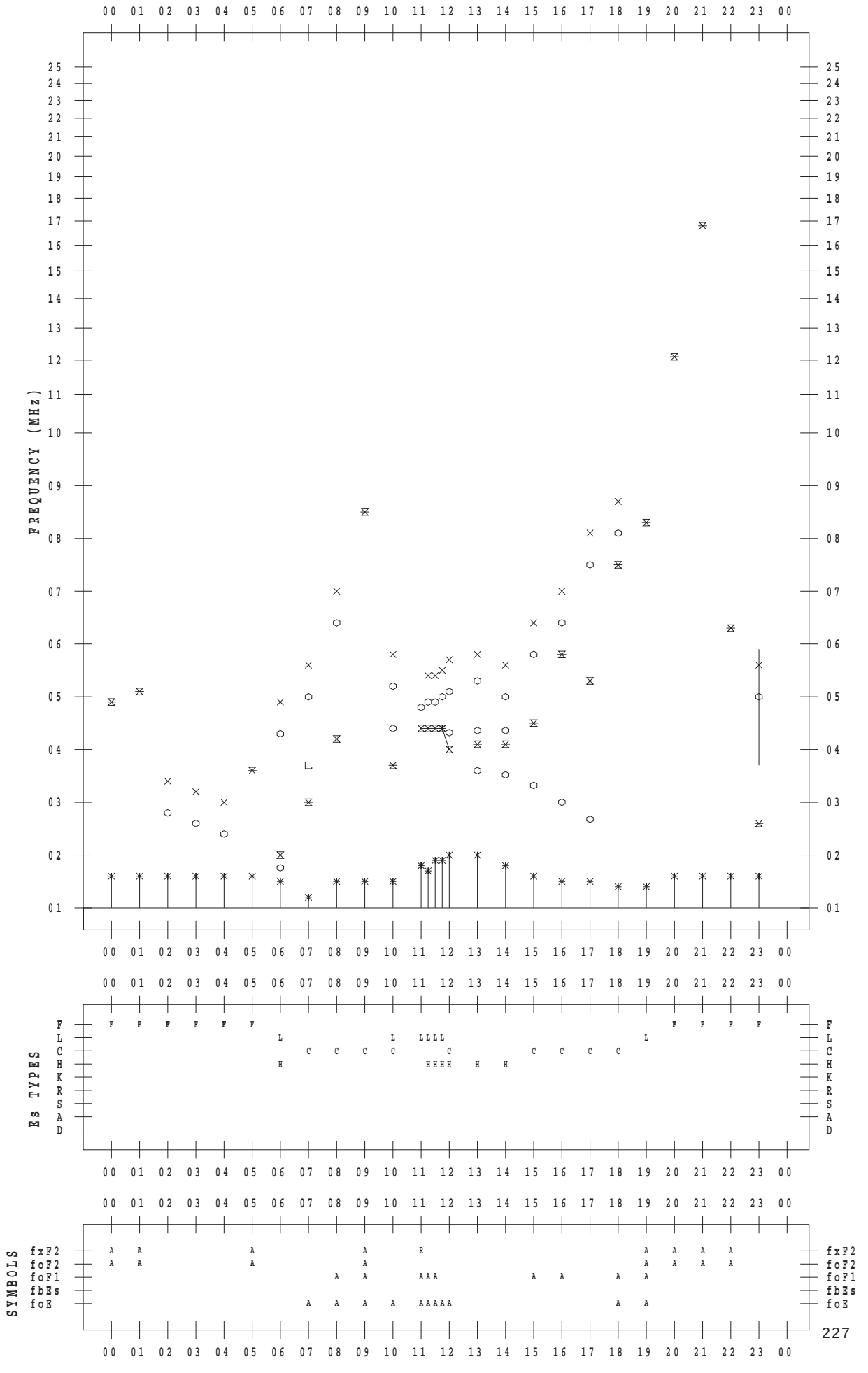
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/27

135 °E MEAN TIME



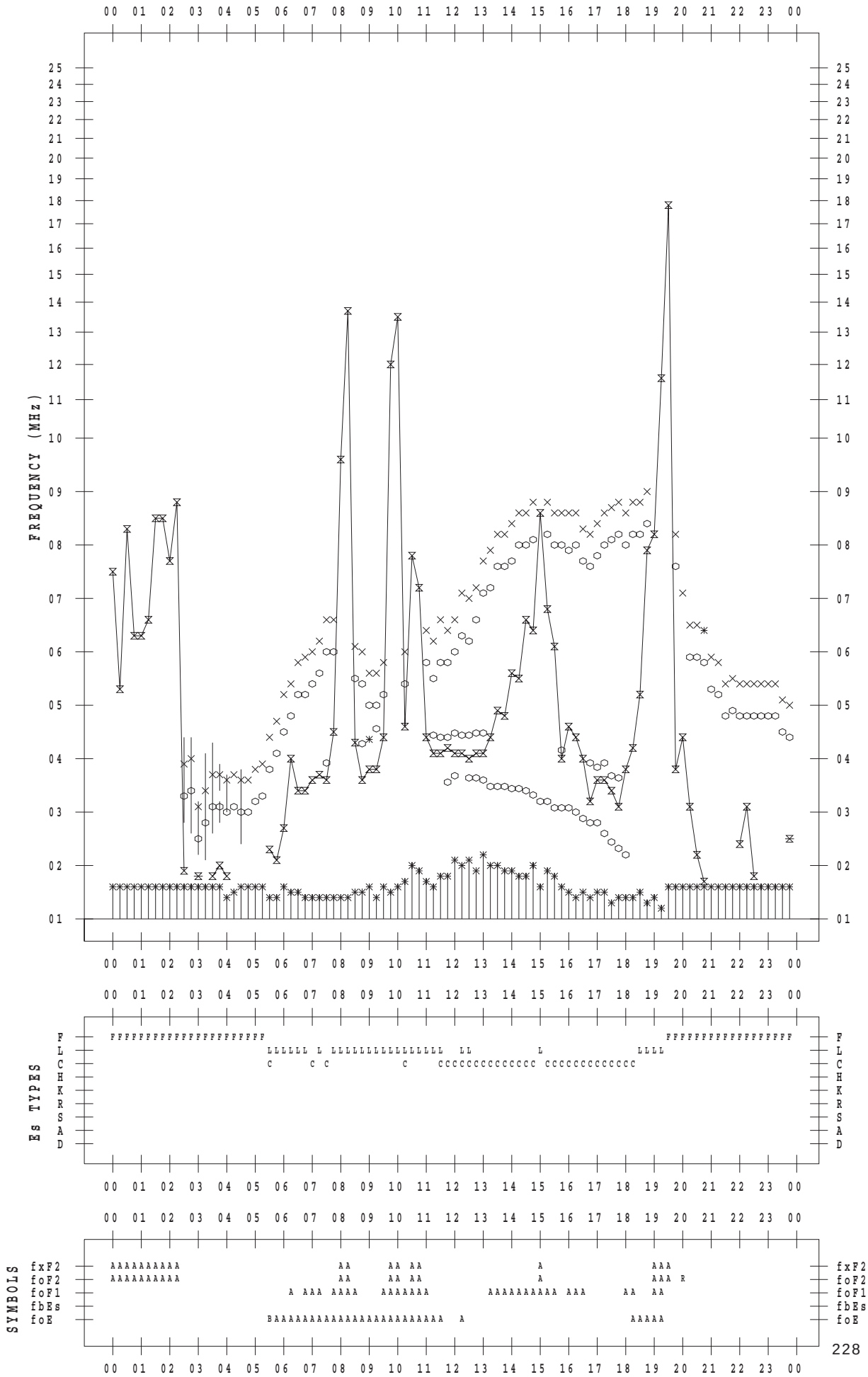
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/28

135 °E MEAN TIME



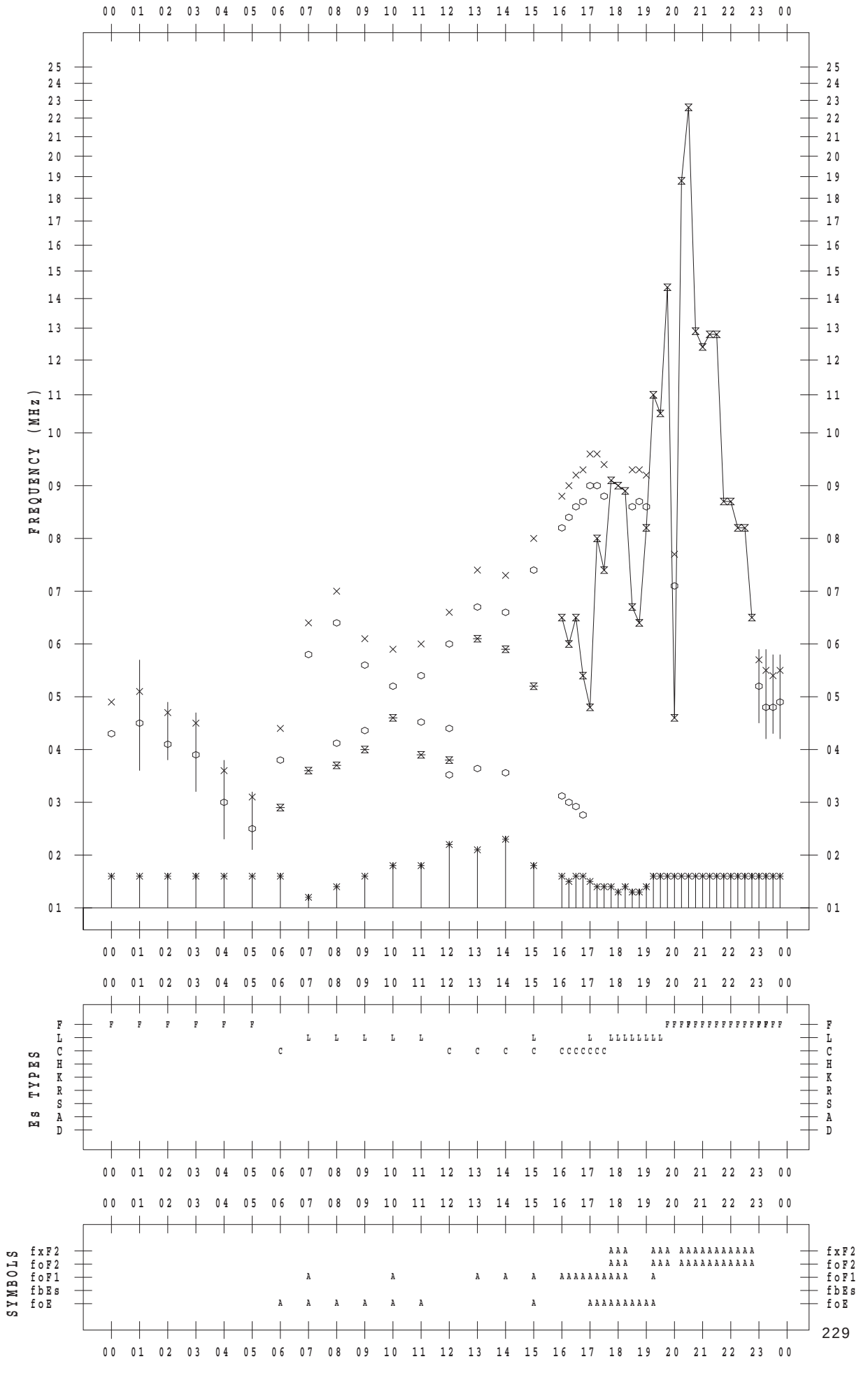
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/29

135 °E MEAN TIME



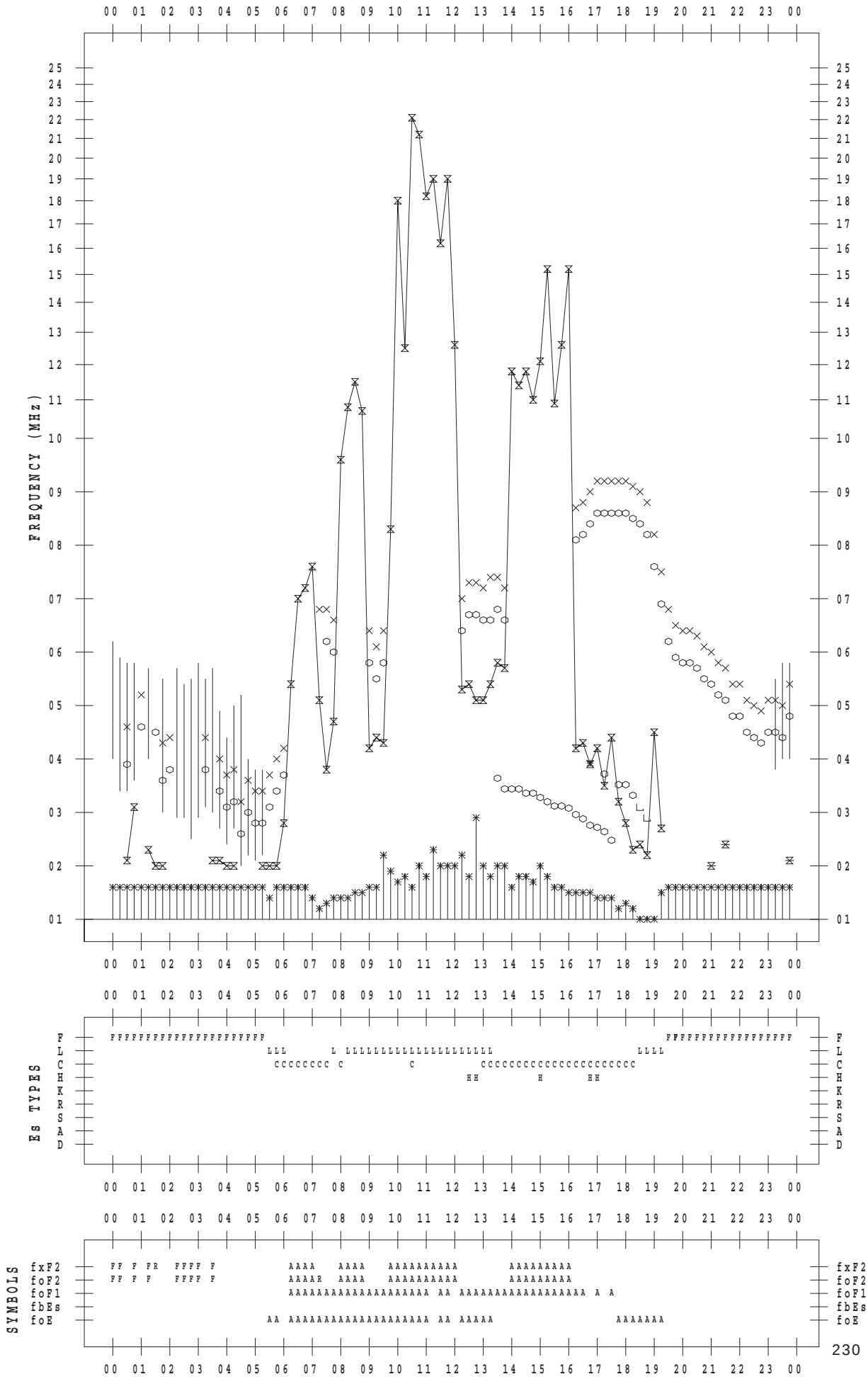
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2018/ 5/31

135 °E MEAN TIME