F-882

IONOSPHERIC DATA IN JAPAN

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≪WDC for Ionosphere and Space Weather ･･･ https://wdc.nict.go.jp/IONO/wdc/index.html ≫

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere obtained at the following stations under the National Institute of Information and Communications Technology, Japan.

Stations	Geographic (WGS84)		Geomagnetic (IGRF-13 (2022))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
✳Wakkanai/Sarobetsu	45˚10'N	141˚45'E	37.1˚N	149.9˚W	Vertical Sounding
Kokubunji	35˚43'N	139˚29'E	27.5˚N	150.8˚W	Vertical Sounding
Yamagawa	31˚12'N	130˚37'E	22.4˚N	158.5˚W	Vertical Sounding
Okinawa	26˚41'N	128˚09'E	17.8˚N	160.5˚W	Vertical Sounding

✳We moved the observation facilities at Wakkanai to Sarobetsu in 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.

1. 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.

2. 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

JUN.2022

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	77	70	64	58	52	47	A	A	A	63	A	56	67	A	70	71	67	59	65	73	76	79	75	63
2	56	60	57	53	59	67	63	63	55	64	57	A	A	58	63	65	66	67	65	74	56	79	75	71
3	69	69	67	61	60	61	78	83	79	66	A	64	62	67	64	66	65	69	66	75	82	74	A	74
4	74	71	A	65	70	76	48	50	61	65	62	63	65	64	67	64	65	64	65	76	77	74	77	71
5	69	71	63	61	62	68	60	71	52	A	65	A	A	80	73	68	A	57	66	A	80	79	75	73
6	72	66	65	64	60	63	79	76	52	A	A	A	67	69	77	70	67	64	64	71	83	81	73	74
7	80	66	65	59	60	68	69	55	56	A	49	63	61	65	68	71	73	73	72	71	77	82	83	81
8	72	69	64	61	57	65	73	72	76	77	74	91	63	71	66	69	70	67	67	77	84	78	74	68
9	71	69	67	A	61	69	78	73	55	A	53	A	57	49	A	58	68	68	68	A	75	A	A	A
10	68	70	68	64	66	A	73	67	A	A	65	60	66	A	A	70	71	75	83	84	83	81	75	69
11	70	64	67	64	62	72	77	85	A	70	69	69	70	71	71	74	51	50	A	77	91	81	73	64
12	62	59	61	54	57	64	67	A	49	111	56	55	63	67	68	49	125	49	64	67	79	85	A	A
13	A	63	66	64	66	53	A	84	56	A	A	A	A	A	A	48	60	A	48	61	69	72	A	67
14	54	51	52	46	52	52	56	46	A	A	N 49	A	A	A	A	51	A	90	A	66	A	A	73	67
15	63	60	57	57	55	67	99	51	57	A	A	59	A	A	A	A	61	49	45	69	A	A	A	67
16	65	61	55	52	48	51	54	N 54	A	A	50	70	111	A	54	A	45	A	57	59	66	75	68	63
17	59	54	53	50	44	43	47	60	A	64	A	65	62	64	61	65	65	63	A	A	A	A	79	72
18	68	66	68	64	60	57	66	74	70	64	A	58	A	61	62	54	57	59	65	72	73	68	79	73
19	73	66	57	59	55	67	66	58	59	A	56	A	A	A	49	51	57	35	A	66	73	71	74	70
20	71	68	61	61	A	61	69	A	A	60	58	65	A	A	60	62	A	A	67	69	A	84	71	A
21	61	59	53	54	59	65	63	N 49	59	A	A	52	73	N 54	A	50	57	56	55	A	69	75	73	65
22	63	63	63	61	59	60	68	74	64	A	A	61	64	53	54	54	63	62	A	A	69	69	74	70
23	66	65	63	51	53	55	53	52	59	66	60	62	65	65	66	63	65	65	66	71	91	74	72	73
24	69	66	65	62	56	61	68	76	67	63	73	67	A	75	70	68	71	A	A	A	90	78	82	75
25	74	72	71	63	66	59	A	71	61	68	63	A	66	A	69	75	74	70	75	81	78	79	81	71
26	65	61	52	56	55	54	51	59	A	74	65	A	A	67	A	A	58	62	65	73	67	75	72	77
27	68	67	56	A	50	48	63	67	A	59	A	A	C	63	72	75	72	62	A	69	73	70	67	66
28	62	63	56	55	56	63	66	A	A	68	65	69	51	A	51	A	63	61	63	55	A	A	A	A
29	64	61	55	52	50	50	59	65	65	72	65	59	59	62	A	62	54	59	66	71	79	76	68	71
30	64	58	57	54	55	59	70	75	74	61	60	61	54	55	51	55	55	52	57	61	70	A	67	63
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	28	29	29	27	26	20	18	20	20	19	20	22	26	27	26	23	24	25	24	24	26
MED	68	66	63	59	57	61	66	67	59	66	61	62	64	64	66	64	65	62	65	71	77	77	74	70
U Q	71	69	65	62	60	67	73	74	66	70	65	66	67	68	70	70	70	67	67	74	82	80	76	73
L Q	63	61	56	54	54	53	59	55	55	63	56	59	61	59	60	54	57	57	63	66	69	74	72	67

HOURLY VALUES OF fEs AT Wakkanai

JUN.2022

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	32	32	28	30	G	35	64	127	83	70	69		95	95		74	52	40	39	61	52	53	48	35
2	G	24	G	G	G	32	46	57	54	48	45	80	97	44	43	52	48	59	37	37	28	25	G	G
3	G	G	G	G	G	35	51	60	65	63	85	59	57	37	42	42	56	32	40	38	36	52	69	70
4	41	54	71	49	58	57	43	64	94	142	84	51	43	57	65	58	37	48	42	53	71	38	54	60
5	55	26	G	G	G	40	64	72	92	73	61	70	112	98	92	81	106	43	52	152	72	60	35	28
6	92	49	33	24	26	40	47	73	103	92	84	70	65	59	55	35	40	52	39	54	39	48	27	28
7	G	G	G	G	G	31	48	44	52	64	98	93	113	104	37	36	32	34	37	29	25	G	26	G
8	24	G	G	G	G	36	46	59	52	67	62	84	90	34	56	39	49	58	45	G	45	45	56	G
9	35	G	G	29	33	40	93	94	122	92	65	75	46	160	127	92		151	127	124	60	71	128	126
10	47	72	48	35	38	70	54	95	173	116	53	92	133	96	126	64	51	80	72	71	93	48	72	38
11	G	44	38	41	60	56	56	58	88	65	57	65	51	44	N	60			146	91	65	45	30	39
12	33	26	28	27	G	39	49	92	125	113	48	50	112	126	55	133			128	105	60	41	69	90
13	59	32	48	49	176	51	60	103	92	64	149	61	80	50	57		55	124		30	26	G	70	26
14	38	35	27	G	40	46	45		73	53	85	59	80	92	96	88	40	106	120		109	104	59	G
15	G	G	G	G	G	58	102	144	89	66	115	76	60	59	42	115				180	83	109	109	
16	51	70	116	71	39	51	50	166	62	136	38	126	152	126	136	91	79	68	70	40	55	44	59	54
17	40	36	26	25	G	37	47	73	77	62	112	106	66	90	50	50	147	93	115	110	92	92	60	46
18	26	45	36	G	G	38	45	71	70	90	68	54	57	41	169	45	40	33	48	41	33	43	G	31
19	G	24	33	30	39	40	60	98	61	59	52	103	90	97	34	51	49	153	61	33	51	57	38	G
20	24	31	G	30	64	62	73	126	150	59	77	111	121	112	43	44	110	116	92	92	146	83	59	70
21	41	36	48	48	41	154	53	81		142	91	68		154	144	60	46	46	41	116	167	91	93	
22	36	32	29	G	G	36	44	50	64	74	80	60	57	47	53	44	50	46	95	78	111	40	G	G
23	G	G	G		G	32	40	69	71	41	40	58	38	39	38	33	38	34	39	41	34	G	25	24
24	G	G	G	G	G	37	38	51	93	59	54	61	114	52	47	32	94	95	94	90	36	34	33	25
25	G	28	31	36	34	34	72	76	52	51	56	70	60	132	45	42	41	45	35	40	59	50	G	28
26	G	G	G	G	G	43	44	50	58	92	105	102	92	112	110	71	57	53	49	63	G	G	G	G
27	G	G	G	58	G	35	141	114	83	72	66	123	C	52	59	54	109	31	81	74	60	60	60	147
28	47	39	49	40	70	35	46	83	72	116	109	91	139	158	125	74	56		39		70	107	91	84
29	60	54	39	59	41	40	44	46	56	64	84		94	63	104	53	44	37		41	41	35	35	60
30	46	32	40	27	G	31	58	128	47	40	62	40	50	42	35	38	29	34	40	36	36	71	60	56
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	30	30	30	29	29	30	30	28	28	30	28	29	26	26	27	28	30	30	30	28
MED	32	32	28	27	G	40	50	73	73	66	68	70	85	76	56	53	50	50	49	58	57	48	55	33
U Q	46	39	39	40	40	51	60	100	92	92	85	92	112	112	107	74	57	93	94	91	72	71	69	60
L Q	G	G	G	G	G	35	45	58	59	59	56	59	57	47	43	42	40	37	39	39	36	38	27	12

HOURLY VALUES OF fmin AT Wakkanai

JUN.2022

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	16	16	15	17	15	16	15	12	15	17	14	18	18	16	17	14	14	17	17	14	14	15	15	16
2	16	16	17	16	17	15	15	14	15	15	19	13	16	20	15	16	15	14	14	14	15	15	16	14
3	16	16	16	14	16	15	17	13	13	14	15	14	14	15	15	17	15	16	13	14	14	15	15	15
4	16	16	16	16	14	13	14	15	14	5	15	14	19	14	14	15	15	14	14	14	14	15	15	15
5	15	15	17	15	15	15	14	15	9	17	17	15	15	16	19	16	12	15	14	9	15	15	15	16
6	15	15	15	15	16	15	15	15	12	19	16	17	18	15	17	15	15	14	15	14	14	15	15	15
7	16	14	15	15	16	15	15	16	14	19	15	17	15	16	16	15	15	17	14	15	15	14	15	17
8	15	16	16	17	16	15	15	14	13	14	16	21	16	16	15	16	15	14	13	14	14	14	15	17
9	16	15	16	15	16	15	13	14	17	16	14	19	20	12	11	17	7	13	13	14	14	15	15	16
10	15	14	15	16	17	16	14	12	16	11	17	17	17	17	15	19	13	15	15	15	11	14	14	15
11	15	16	15	15	15	14	14	13	15	17	15	17	15	21	18	13	12	7	5	16	15	16	15	15
12	15	15	15	15	15	13	14	15	16	17	16	17	21	16	16	5	5	11	12	15	15	14	15	16
13	15	16	17	15	65	15	13	10	16	15	19	17	19	33	21	21	16	11	15	15	15	14	14	15
14	15	15	16	15	15	14	13	14	16	20	17	16	15	17	12	19	16	17	5	20	14	15	15	15
15	14	15	17	14	14	15	12	25	15	14	20	15	14	17	17	20	13	5	28	15	15	14	13	15
16	15	16	16	15	15	14	14	15	14	8	22	20	15	24	16	21	14	14	15	14	14	14	15	15
17	16	16	15	14	17	16	15	16	13	16	18	17	17	20	20	15	15	18	13	17	15	16	15	15
18	16	15	15	15	20	17	15	13	15	14	15	22	20	16	19	15	15	15	15	15	15	15	16	15
19	15	16	16	16	15	14	12	7	13	14	15	19	18	17	17	17	17	5	14	16	14	15	15	15
20	16	16	23	14	13	15	14	6	13	19	18	20	14	19	18	17	19	13	16	14	5	14	16	17
21	15	15	15	15	14	16	15	16	13	68	18	17	20	49	6	17	17	14	15	16	16	15	15	14
22	15	16	16	16	15	15	15	14	16	16	19	22	20	20	15	17	15	15	15	14	16	14	15	14
23	14	14	15	158	15	15	15	14	14	18	21	16	19	19	22	15	16	15	14	14	16	17	16	16
24	15	14	15	17	15	15	14	13	15	14	17	16	13	15	15	15	15	15	15	14	15	15	16	16
25	15	15	15	14	15	16	14	13	13	17	19	19	17	13	15	15	14	13	16	15	15	14	15	16
26	14	14	14	15	15	14	14	14	15	15	16	19	16	19	16	16	15	15	13	13	16	14	14	15
27	15	16	15	14	16	15	13	16	13	14	16	22	C	22	17	16	17	14	13	14	15	16	14	15
28	15	16	16	15	16	16	14	15	15	15	15	14	18	9	18	17	15	14	14	13	15	14	14	16
29	15	15	15	14	15	14	15	15	14	17	17	15	15	15	13	14	14	16	15	14	15	14	15	15
30	15	15	15	16	16	15	13	15	15	16	13	21	15	17	17	15	15	15	14	15	15	16	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	14	14	14	16	16	17	17	17	16	16	15	14	14	14	15	15	15	15
U Q	16	16	16	16	16	15	15	15	15	17	18	19	19	20	18	17	15	15	15	15	15	15	15	16
L Q	15	15	15	15	15	14	14	13	13	14	15	16	15	15	15	15	14	13	13	14	14	14	15	15

HOURLY VALUES OF foF2 AT Kokubunji

JUN.2022

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	76	A	67	A	64	57	70	77	68	111	A	106	71	85	86	93	94	83	80	87	86	88	A	A
2	A	A	A	56	A	64	73	71	69	74	69	63	70	100	84	81	81	91	96	95	A	86	A	A
3	67	70	53	52	51	63	76	A	78	68	106	63	A	A		208	N 88	88	89	89	A	A	69	A
4	67	67	69	A	57	66	67	76	71	79	A	A	109	127	72	71	85	87	88	46	A	A	67	A
5	A	A	A	A	59	53	57	75	139	A	A	A	81	139	A	90	88	86	128	93	89	A	A	A
6	68	A	60	58	59	60	70	74	73	67	121	N	109	A	A	88	82	74	74	82	A	A	80	69
7	71	A	71	59	57	55	71	78	70	65	N 72	166	A	67	82	90	102	104	83	A	84	91	97	92
8	94	81	75	62	70	81	87	66	74	75	68	63	65	70	75	83	A	80	96	80	59	79	79	76
9	74	73	72	65	58	59	67	81	67	A	A	68	76		75	77	82	89	89	83	82	85	68	83
10	76	77	73	76	65	69	74	93	83	65	A	66	A	A	85	A	89	77	92	92	86	72	77	A
11	A	66	66	67	66	66	79	A	80	A	74	79	85	95	90	A	158	N 111	A	95	99	66	70	65
12	67	67	66	61	67	64	66	A	A	84	80	A	66	75	87	82	77	84	80	86	88	74	70	74
13	74	75	73	70	71	65	69	61	A	A	N	A	A	A	A	66	A	A	A	61	67	A	A	A
14	A	54	A	A	60	67	A	A	52	A	154	A	A	A	A	139		60	45	73	79	A	A	A
15	61	A	A	56	54	65	77	79	189		61		102		65	69	67	78	78	60	A	76	71	66
16	70	65	A	65	60	61	65	64	A	A		A	A	A	A	A	A	60	64	67	72	A	A	68
17	64	61	63	55	55	59	69	81	79	65	139	75		110	178	N	85	81	76	78	79	72	A	A
18	69	67	64	67	62	57	61	70	78		134	121	120	A	69	72	71	74	79	85	87	73	67	78
19	73	67	61	58	60	66	A	77	76	70	104	A	104	67	65	62	67	66	67	67	65	A	A	A
20	69	64	64	A	62	61	68	85	A	75	64	71	71	69	73	75	75	A	67	73	A	73	82	76
21	A	A	68	62	60	57	A	62	54	A	99	A	A	64	A	A	A	61	A	61	75	71	71	69
22	68	67	67	57	58	61	68	89	88	71	N	A	73	102	71	112	72	77	77	88	86	81	83	90
23	78	84	78	72	70	66	84	79	71	63	74	129	107	A	83	81	85	83	79	84	86	72	75	80
24	68	65	65	63	61	66	75	58	66	78	68	76	A		81	73	72		77	91	73	69	63	72
25	76	73	72	65	55	A	71	A	N 80	N		134	A	A	81	95	A	A	A	A	76	80	70	79
26	78	78	A	A	72	55	56	52	N	65	A	A	75	81	81	76	A	77	78	81	68	77	75	81
27	80	80	65	A	36	49	56	44	A	189	90	A	59	A	72	75	83	83	83	A	A	A	A	A
28	A	A	A	59	A	59	A	A	76	77			183	A				79	72	85	76	68	63	A
29	A	A	A	A	49	51	62	64	85	73	70	68	A	67	108	71	N 80	69	76	85	85	63	67	A
30	A	65	66	58	55	58	66	73	A	189	N 75		68	66	A	51	64	73		69	A	A	68	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	21	22	22	28	29	26	24	23	20	19	15	19	16	21	24	22	26	25	27	22	20	21	16
MED	70	67	66	62	60	61	69	74	76	74	75	75	76	78	81	79	82	80	79	83	80	74	70	76
U Q	76	76	72	65	64	66	74	79	80	78	106	121	107	101	85	90	88	86	88	88	86	80	78	80
L Q	68	65	64	58	56	57	66	64	69	66	69	66	70	67	72	71	72	74	75	69	73	71	67	69

HOURLY VALUES OF fEs AT Kokubunji

JUN.2022

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	111	148	128	143	45	22	54	70	87	87	109	81	59	82	53	62	G	26	32	31	60	81	85	84
2	114	82	81	59	60	40	51	43	54	85	90	72	73	107	126	128	60	41	144	36	108	111	166	80
3	48	49	40	33	29	33	52	84	60	77	78	70	66	70		149	127	93	62	45	84	79	40	163
4	128	50	45	109	72	59	47	61	64	82	90	149	116	103	80	107	78	70	146	152	151	170	49	153
5	94	85	81	70	124	37	53	94	105	117	129	107	70	116	115		90	115	115	112	38	84	87	81
6	60	91	52	109	39	40	40	63	64	97	117	130	108	111	92	69	80		69	70	92	90	72	103
7	59	84	59	46	35	40	33	36	50	79	89	116	75	81		82	61	69	127	136	39	60	35	55
8	38	G	29	G	G	G	39	50	56	68	57	44	43	66	81	116	154	136	92	94	129	87	53	60
9	87	70	91	27	24	24	41	47	55	110	103	40	78		67	75	56	35	31	61	113	33	34	41
10	69	31	29	27	G	38	42	53	62	63	60	56	65	156	67	174	106	135	73	41	40	29	33	71
11	67	49	54	39	39	65	73	134		139	84	112	54	63	42	96	136	139	115	132	50	32	49	60
12	50	33	36	40	G	38	94	93	146	62	59	90		65	71		121	179	60	49	145	70	56	60
13	66	50	41	32	40	76	47	59	133	121	118	150	84	71	56	57	89	63	65	59	65	104	116	90
14	111	55	112	60	84	65	70	71	53	116	124	146	68	70	179	114		57	75	38	28	84	103	112
15		81	81	45	47	45	54	114	120		52		85		54	42	53	49	70	85	60	40	57	33
16	33	33	60	24	24	33	47	144	65	150		59	57	83	70	61	91	41	40	47	57	84	70	43
17	57	59	54	56	42	24	52	50	58	62	79	109		107	151	150	58	97	61	134		127	107	84
18	39	49	39	26	G	28	47	50	87		103	126	113	136	62	80	65	61	50	27	29	31	60	55
19	59	28	G		30	27	39	102	91	61		101	114	68	44	35		33	34	60	41	32	147	146	109
20	40	32	41	80	46	40	55	68	96	116	60	59	65	54	57	62	83	117		109	116	77	25	106
21	111	84	37	G	G		40	64	55	71	76	55	86	65	56	72	71	95	60	80	55	70	47	53	36
22	69	41	47	35	41	35	39	38	70		92	136		62	57	100	72	44	34	G	G	31	41	46
23	26	26	G	G	G	G	33	60	45	78	78	102	85	102	97	62	41	48	48	38	43	31	39	59
24	34	56	47	40	31	41	35	57	42	58	52	49	122		62	64			60	74		59	60	40
25	47	45		24	42	62	70	90	90	116		133	158	105	72	84	113	127	158	127	60	41	54	28
26	37	59	116	126	25	35	43	74	149		155	98	97	71	106	106	92	52	40	40	33	60	53	54
27	41	23	60	55	34	G	50	57	96	144		75	60	90	80	47	57	81	60	92	133	130	149	93
28	84	117	104	91	94	73	65	90	61	79			137	151				116	23	25	56	56	50	59
29	91	154	110	73	33	29	29	57	75	62	60	58	68	89	97		152	46	43	39	41	31	70	112
30	132	65	37	24	84	57	52	49	144	117	64		53	55	78	62	85	131		166	110	169		90
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	30	30	30	30	29	25	26	27	27	27	27	25	27	28	28	30	28	30	29	30
MED	60	52	52	40	37	38	50	60	65	85	86	98	70	82	72	80	83	66	62	57	60	74	56	66
U Q	92	82	81	70	46	45	55	90	96	116	103	126	97	107	97	110	106	116	86	109	109	90	86	93
L Q	40	33	38	27	24	29	41	50	57	72	60	59	65	65	57	62	58	47	45	39	39	40	45	54

HOURLY VALUES OF fmin AT Kokubunji

JUN.2022

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	12	13	15	27	16	16	14	15	15	14	18	17	19	18	21	19	15	16	15	16	15	15	15	14
2	12	14	14	14	15	15	15	14	14	14	15	13	15	15	19	16	14	15	11	15	14	13	25	15
3	15	15	15	15	16	16	14	15	16	16	22	15	18	14	11	12	13	13	14	15	14	16	15	13
4	15	15	15	14	16	14	14	14	14	15	16	14	13	17	19	11	13	13	14	35	17	22	16	21
5	11	13	15	17	15	16	15	14	17	13	17	20	17	29	25	19	15	14	5	14	15	14	15	16
6	15	13	15	16	14	15	15	15	14	19	21	21	16	19	23	17	16	12	14	14	15	13	15	16
7	15	15	15	15	15	15	16	14	16	19	20	18	21	20	21	17	13	14	15	5	15	15	15	15
8	15	15	15	16	16	14	17	14	14	20	17	20	34	25	15	13	52	5	13	17	15	14	15	16
9	16	14	15	15	15	14	14	15	14	21	17	14	17	17	17	17	14	15	15	13	17	14	16	15
10	15	17	15	15	13	15	15	15	15	17	34	39	16	26	18	89	13	9	14	14	15	15	15	15
11	16	15	15	17	15	16	16	24	17	15	14	21	20	16	19	17	14	9	12	9	15	15	15	15
12	16	15	15	15	15	15	14	11	11	16	24	18	23	18	20	7	17	14	15	15	14	14	15	14
13	15	15	15	16	14	14	14	14	13	24	19	30	26	35	38	14	15	16	15	14	15	7	5	13
14	13	15	14	14	15	15	15	14	15	12	29	26	18	25	39	21	16	15	15	16	15	14	14	8
15	12	15	15	15	14	14	15	15	13	12	19	17	23	24	37	16	14	14	13	13	16	15	15	15
16	14	16	15	16	15	16	15	15	16	19	18	39	39	29	17	15	14	15	13	13	16	15	15	15
17	15	15	15	14	15	16	14	14	15	16	17	20	22	16	17	12	15	14	14	19	5	16	18	15
18	17	14	15	14	15	14	15	14	14	12	17	18	21	18	16	17	15	13	15	14	16	15	15	15
19	15	15	15	16	16	14	11	15	13	15	14	13	19	52	25	17	16	17	15	15	16	18	5	14
20	14	16	16	14	17	15	15	15	15	15	16	21	20	17	18	18	17	12	13	13	11	15	17	15
21	6	15	15	17	13	14	17	16	20	20	23	26	21	29	21	18	16	15	14	14	14	15	15	15
22	16	15	15	16	15	15	15	15	15	18	19	21	28	22	19	16	17	15	15	17	15	15	15	15
23	15	16	15	15	13	15	15	13	14	15	17	17	22	19	15	15	16	14	15	15	16	16	15	15
24	15	15	15	15	15	15	14	13	20	19	20	33	30	26	15	18	17	8	14	15	14	15	15	16
25	13	15	16	15	14	15	15	10	14	19	37	23	17	16	18	17	17	15	23	5	15	15	15	16
26	15	15	14	9	14	14	15	12	5	15	21	19	18	18	16	16	15	15	14	14	15	15	15	15
27	15	15	16	16	16	14	15	16	16	21	15	21	19	19	19	20	18	16	15	12	8	13	12	8
28	15	10	15	15	14	14	15	15	17	19	17	12	21	15	17	15	14	11	15	15	14	15	15	16
29	17	9	6	16	16	15	16	14	17	15	18	15	13	19	12	16	12	15	14	13	15	16	15	5
30	5	16	15	16	15	15	15	14	106	14	15	11	20	17	19	17	15	5	12	15	16	15	5	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	15	14	15	16	18	20	20	19	19	17	15	14	14	14	15	15	15	15
U Q	15	15	15	16	16	15	15	15	16	19	21	21	22	25	21	18	16	15	15	15	16	15	15	15
L Q	13	14	15	15	14	14	14	14	14	15	17	15	17	17	17	15	14	12	13	13	14	14	15	14

HOURLY VALUES OF foF2 AT Yamagawa

JUN.2022

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	88	83	75	74	75	78	73	89	A	A	A	65	75	81	93	99	104	99	87	94	85	A	A	A
2	A	59	42	51	44	43	61	72	75	67	A	72	81	89	97	98	100	100	95	103	97	104	93	81
3	77	73	79	A	67	63	73	74	A	A	A	A	A	A	A	94	93	A	95	A	A	A	77	74
4	73	70	70	A	A	55	71	65	81	44	37	A	A	66	76	92	94	95	82	66	65	77	75	71
5	A	70	75	55	A	52	50	A	N 57	37	A	A	A	A	A	A	A	93	93	97	81	71	A	68
6	67	61	64	75	81	64	62	71	67	62	65	A	A	97	94	A	88	A	A	85	88	78	A	A
7	A	89	69	51	56	55	76	60	67	65	74	C	A	A	A	95	103	102	A	86	92	94	95	89
8	98	94	92	87	79	78	69	87	78	70	A	C	C	C	86	91	92	97	97	87	73	75	A	A
9	A	A	A	59	64	63	70	77	69	71	A	A	69	77	86	89	91	89	95	81	85	87	86	81
10	63	80	81	66	62	60	70	91	94	A	A	A	A	76	88	89	A	89	A	95	85	80	85	88
11	79	81	82	81	90	85	77	82	A	A	73	68	A	95	98	89	A	90	90	95	A	A	73	A
12	65	69	65	63	62	69	59	72	80	A	A	A	A	79	92	99	88	95	A	96	A	A	73	A
13	64	75	71	59	60	58	A	A	64	A	A	A	A	A	A	A	A	65	A	A	64	58	65	57
14	A	A	A	49	A	57	61	A	A	A	49	101	60	A	A	48	A	67	72	85	83	58	59	A
15	A	A	A	60	61	A	A	A	78	76	A	71	75	80	80	A	81	88	88	57	A	69	A	70
16	75	76	68	68	65	61	63	56	A	A	A	A	A	A	A	A	57	66	68	68	A	63	68	52
17	49	55	55	56	53	51	71	76	75	A	A	A	A	67	A	80	95	88	A	A	87	A	78	A
18	61	61	73	69	61	57	56	75	88	67	A	A	A	73	A	A	A	84	78	A	A	59	65	74
19	A	A	62	56	59	60	71	69	85	A	A	74	A	78	78	74	78	83	84	A	A	A	68	75
20	73	68	A	58	62	A	71	91	89	A	71	76	70	77	75	80	83	83	81	80	91	81	93	94
21	91	83	88	69	64	68	76	A	N 49	A	A	A	A	A	A	59	A	A	A	A	59	A	A	56
22	58	65	65	58	54	56	58	66	A	87	A	A	35	A	75	85	85	83	84	87	91	86	90	93
23	85	89	93	82	70	62	59	65	65	A	79	73	A	A	A	A	82	81	90	89	67	71	75	76
24	A	74	68	65	60	A	58	59	68	79	78	A	A	75	83	85	A	84	85	91	95	91	87	83
25	72	86	87	81	55	52	56	68	45	A	66	A	A	A	A	A	A	A	A	120	79	73	68	75
26	67	79	77	62	A	A	56	47	63	A	A	A	A	A	A	A	A	77	A	A	67	A	A	A
27	73	77	89	57	53	55	51	60	54	A	46	A	A	A	A	72	85	94	85	79	A	59	56	59
28	A	A	62	75	A	A	54	A	A	70	A	47	A	A	89	37	82	80	86	A	A	71	58	57
29	55	50	A	A	54	56	59	57	A	75	A	A	49	69	61	36	36	37	89	A	A	72	67	67
30	66	66	68	59	50	43	53	65	67	A	72	A	78	A	A	A	66	65	78	86	82	69	67	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	25	25	27	25	25	28	24	22	13	11	9	9	15	16	20	20	26	21	21	20	22	23	21
MED	72	74	71	62	61	58	62	70	68	70	71	72	70	77	86	87	86	86	86	87	84	72	73	74
U Q	78	82	81	74	66	63	71	76	80	75	74	75	76	81	92	93	93	94	91	95	89	81	86	82
L Q	63	65	65	57	54	55	57	62	64	63	49	66	54	73	77	73	81	80	81	80	70	69	67	63

HOURLY VALUES OF fEs AT Yamagawa

JUN.2022

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	43	29	G	34	32	G	56	82	74	63	75	56	100	56	48	47	40	42	49	85	88	92	106	83
2	90	44	G	G	35	34	36	45	59	50	92	54	57	42	62	83	44	44	59	64	60	G	33	70
3	69	59	48	61	41	35	39	60	107	73	92	89	96	85	135	69	80	110	80	128	92	84	53	G
4	24	54	28	56	52	G	47	48	70	110	146	160	169	52	51	41	38	41	41	35	G	40	35	40
5	72	65	69	54	57	34	45	73	86	106	115	116	114	152	164	157	153	60	32	36	39	43	92	55
6	56	41	53	G	39	30	34	57	61	73	80	121	130	92	58	95	77	113	113	60	60	71	92	81
7	114	50	32	32	38	36	39	39	59	58	62	C	136	94	85	79	58	92	110	60	37	32	46	49
8	G	56	50	G	G	G	33	45	73	76	81	C	C	C	51	45	62	60	82	49	105	49	80	92
9	73	70	70	92	40	54	38	48	55	59	103	106	43	45	36	49	57	84	109	42	83	44	42	35
10	49	48	39	G	G	G	40	49	60	109	85	97	114	69	80	80	106	89	92	56	34	33	32	41
11	54	50	51	45	50	45	41	56	115	165	96	102	88	75	45	69	107	115	147	105	150	115	57	73
12	58	41	65	84	60	48	49	69	91	152	156	150	81	64	75	91	70	70	136	49	91	90	50	73
13	40	43	50	56	40	33	61	60		93	56	90	61	98	100	113	87	61	112	60	33	28	34	33
14	73	124	104	71	108	G	42	111	73	76	90	127	57	56	69	157	113	50	45	78	59	48	48	93
15	60	73	72	56	43	92	91	115	95	100	96	67	52	44	62	84	62	58	61	50	71	49	74	49
16	47	48	56	45	40	31	49	46	97	98	91	59	60	61	65	86	70	51	53	36	73	53	G	52
17	53	49	46	38	40	G	36	44	53	84	85	106	97	55	54	74	54	69	96	91	53	70	46	58
18	58	49	G	30	49	G	35	43	54	66	67	66	78	115	150	114	85	80	113	108	94	40	33	32
19	93	109	39	34	34	G	39	44	56	87	80	63	90	78	56	45	59	34	72	152	93	94	G	G
20	56	G	70	49	32	126	59	41	66	150	50	56	54	44	46	38	40	48	54	72	47	24	41	59
21	48	57	57	G	33	G	44	90	83	107	85	86	57	91	95	52	65	57	60	64	91	60	83	54
22	48	50	42	49	33	31	G	60	117	93	90	117	108	96	61	76	83	80	79	54	72	76	44	G
23	G	40	G	G	G	G	G	40	57	77	73	57	108	105	117	128	59	60	56	63	58	38	37	41
24	72	G	G	G	41	58	38	34	48	55	60	116	104	66	70	57	88	60	52	35	60	46	53	40
25	34	G	42	G	G	G	45	55	111	95	90	112	106	111	147	108	144	132	158	74	48	41	28	G
26	G	G	34	46	112	70	45	44	106	135	102	92	95	80	116	170	92	71	116	149	49	92	91	58
27	G	38	G	38	41	41	38	52	59	94	101	147	116	116	106	90	84	40	36	69	70	36	48	45
28	60	69	46	48	71	57	43	72	93	77	106	96	109	84	78	167	107	37	92	116	109	48	41	45
29	50	41	69	58	51	40	46	54	116	112	88	111	72	136	101	124	126	132	58	91	60	56	40	46
30	G	49	45	35	34	G	33	59	90	81	92	127	83	115	78	71	40	45	48	38	40	41	G	70
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	29	30	30	28	29	29	30	30	30	30	30	30	30	30	30	30
MED	54	49	46	42	40	32	40	53	73	90	90	100	95	80	72	82	74	60	76	64	60	48	45	49
U Q	69	57	57	56	50	45	46	60	96	107	96	116	108	101	101	113	92	84	110	91	91	71	57	70
L Q	40	41	32	G	33	G	36	44	59	73	80	66	60	56	56	57	58	48	53	49	48	40	34	40

HOURLY VALUES OF fmin AT Yamagawa

JUN.2022

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	16	16	16	15	17	15	18	17	21	23	18	23	21	21	20	17	15	13	18	17	10	14
2	16	15	15	17	15	15	17	15	14	18	23	20	21	20	23	21	20	18	15	17	14	15	16	16
3	14	15	15	15	16	15	16	15	13	20	22	20	22	19	20	17	18	20	17	9	12	13	17	16
4	16	15	16	15	16	15	15	16	16	21	16	157	15	18	19	19	19	19	14	17	15	15	15	15
5	14	17	15	15	15	16	14	16	20	20	21	23	23	15	151	21	17	17	16	15	14	15	11	15
6	14	15	16	16	15	16	16	17	18	23	22	21	21	21	21	21	21	16	13	15	16	14	13	15
7	11	16	16	15	16	15	15	15	18	20	22	C	17	21	21	19	21	17	15	16	15	15	15	15
8	15	15	15	15	15	15	17	15	17	21	20	C	C	C	21	22	20	18	18	15	16	17	14	18
9	15	15	15	16	15	15	15	17	20	21	24	24	21	20	20	19	21	18	13	15	15	15	14	15
10	15	15	15	17	16	17	15	15	20	21	20	22	23	19	19	20	16	14	15	15	15	15	16	14
11	15	18	15	15	15	15	14	13	19	5	21	20	22	20	21	21	21	14	15	5	12	7	16	14
12	15	15	15	14	15	15	16	18	21	23	16	19	21	23	19	21	19	19	5	15	14	10	15	13
13	15	16	15	15	15	16	14	14	22	22	21	19	17	29	29	25	22	21	17	13	15	15	15	16
14	16	12	17	15	7	16	16	18	19	20	21	20	23	23	23	13	19	18	15	17	16	15	15	16
15	17	15	16	15	15	15	15	11	13	21	16	22	20	19	21	19	21	15	16	14	15	15	15	15
16	15	15	14	15	15	15	16	18	19	23	23	22	22	22	19	18	18	21	13	13	16	15	17	15
17	15	15	15	15	15	16	17	16	18	22	21	22	15	23	20	23	22	17	16	13	15	15	15	15
18	15	15	14	14	15	15	18	14	15	20	21	21	20	23	17	19	20	15	15	11	15	15	15	15
19	15	5	15	15	15	15	15	15	14	22	21	21	26	21	21	19	21	23	16	13	15	15	17	15
20	15	15	15	15	15	6	15	17	21	17	23	21	23	23	22	19	23	17	16	15	15	16	15	15
21	15	15	14	24	14	18	15	15	20	16	18	19	20	19	21	22	17	20	18	16	12	17	13	15
22	15	15	16	15	15	16	16	15	10	20	21	21	22	25	20	23	22	21	16	13	15	15	16	15
23	15	15	15	15	15	14	15	19	16	21	23	21	22	19	20	20	21	17	15	14	17	15	14	15
24	15	17	15	15	15	14	15	16	16	22	21	20	22	21	21	21	21	18	17	16	15	15	15	15
25	16	15	15	16	15	15	15	17	9	18	22	20	19	17	20	18	17	169	6	16	15	15	16	15
26	14	15	15	15	5	15	15	17	16	15	19	19	21	22	21	12	17	18	16	5	15	12	13	15
27	16	15	15	15	15	16	14	20	20	21	21	17	22	19	21	19	19	20	15	15	14	15	14	15
28	14	15	15	14	16	15	15	15	16	20	17	22	21	22	20	17	21	16	13	6	10	15	15	15
29	15	15	15	15	15	15	17	15	18	21	21	22	21	23	21	18	17	18	17	16	15	14	15	17
30	16	15	16	15	14	15	16	15	21	19	20	20	22	22	22	22	23	19	15	15	15	15	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	28	29	29	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	15	15	18	20	21	21	21	21	21	20	20	18	15	15	15	15	15	15
U Q	15	15	16	15	15	16	16	17	20	21	22	22	22	23	21	21	21	20	16	16	15	15	16	15
L Q	15	15	15	15	15	15	15	15	16	19	20	20	20	19	20	19	18	17	15	13	14	15	14	15

HOURLY VALUES OF foF2 AT Okinawa

JUN.2022

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	104	114	90	A	A	75	95	91	67	59	68	79	88	106	115	121	133	127	117	102	98	84	73	88
2	92	90	66	63	45	39	57	74	67	74	85	A	A	107	111	116	117	116	37	132	122	125	97	96
3	97	86	90	71	74	68	80	68	59	A	65	72	79	87	94	103	102	104	107	96	75	74	A	A
4	78	78	60	A	59	59	55	67	83	A	63	73	75	89	95	105	104	97	87	71	75	72	75	69
5	75	70	72	A	54	A	51	64	A	A	A	76	A	A	94	100	115	119	110	A	85	76	83	79
6	74	72	75	72	73	65	69	65	A	63	A	A	A	A	A	105	100	94	99	114	101	78	A	A
7	A	114	74	48	53	54	69	61	67	A	A	74	A	A	A	106	107	111	106	103	101	106	100	101
8	103	115	109	88	95	79	84	85	78	A	A	77	67	56	95	93	97	112	117	87	75	69	A	70
9	68	65	A	72	57	55	70	79	77	51	A	76	71	83	101	97	83	A	A	A	80	91	91	86
10	83	86	81	71	63	58	70	93	81	A	A	67	77	83	90	97	97	A	A	97	A	85	89	91
11	91	92	94	107	73	62	67	89	82	75	80	84	91	101	100	A	102	112	102	99	95	82	84	85
12	87	93	85	81	76	57	67	79	82	72	72	73	A	93	101	101	110	108	111	A	87	70	74	A
13	77	62	73	92	56	56	53	A	49	A	A	A	B 49	B 64	66	67	A	73	74	A	57	61	62	59
14	A	59	55	A	56	65	61	A	57	65	A	78	A	A	75	77	77	79	93	94	77	65	66	65
15	67	70	68	64	64	60	64	79	67	68	60	56	92	89	96	101	98	98	85	68	66	74	70	69
16	70	A	A	65	61	58	54	A	A	A	55	A	A	61	60	A	65	72	75	76	67	62	64	A
17	56	63	A	A	56	54	70	77	A	A	A	75	78	74	N 54	96	110	109	102	94	94	83	77	A
18	71	A	70	69	A	63	58	87	91	76	A	66	A	72	A	85	93	A	A	A	A	A	76	80
19	69	71	72	69	65	63	62	73	A	A	71	75	A	A	79	A	90	99	103	100	93	85	A	77
20	73	76	78	66	62	67	68	78	71	77	77	75	80	78	85	84	90	93	89	95	97	66	87	86
21	90	90	93	90	66	60	71	A	A	A	49	A	A	65	67	67	63	A	58	A	70	68	A	67
22	65	67	79	67	58	59	52	60	85	77	A	A	A	78	88	89	91	90	88	92	96	86	85	90
23	89	89	87	77	80	59	55	A	74	75	80	A	77	91	95	95	92	89	111	106	A	73	65	77
24	72	71	71	71	63	54	59	64	69	83	97	A	88	93	107	95	92	93	99	102	101	97	89	83
25	85	85	91	77	52	37	51	70	A	A	A	A	A	A	94	105	109	A	121	140	88	A	75	89
26	90	93	87	79	63	53	51	61	71	50	A	A	A	A	69	A	A	90	93	80	A	A	A	A
27	73	88	101	64	46	49	50	70	59	A	A	A	A	73	79	94	109	111	101	95	78	A	61	63
28	69	68	A	69	65	A	A	55	A	A	71	73	A	A	95	94	92	88	100	99	84	A	62	60
29	47	60	51	A	50	A	A	A	A	A	A	A	A	140	A	69	73	86	A	87	A	A	71	70
30	69	76	83	69	45	41	48	66	63	A	85	93	A	81	72	192	A	A	96	103	75	67	63	64
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	26	24	28	27	28	24	21	14	15	18	13	22	26	26	27	24	26	24	25	24	24	24
MED	74	77	78	71	62	59	62	72	71	73	71	75	78	83	94	96	97	98	100	96	85	75	75	78
U Q	89	90	90	78	65	63	69	79	81	76	80	77	88	93	96	105	109	111	107	102	96	85	86	87
L Q	69	69	71	66	55	54	53	64	65	63	63	73	73	73	75	89	90	89	88	89	75	68	65	68

HOURLY VALUES OF fEs AT Okinawa

JUN.2022

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	29	90	85	62	126	G	24	60	57	59	56	67	55	55	58	54	55	63	39	29	32	39	28	60
2	55	111	113	61	36	45	30	49	57	91	52	163	147	66	86	110	103	92	141	50	73	72	71	60
3	46	41	49	31	40	20	102	65	93	113	97	74	96	73	95	84	86	88	50	69	57	56	83	86
4	57	34	29	91	49	24	67	59	173	120	145	62	61	54	52	62	38	42	33	30	58	49	46	41
5	59	56	55	71	57	54	114	62	150	145	107		160	156	90	150	54	92	146	168	48	29	29	26
6	25	26	25	28	G	11	G	36	154	86	138	145	88	106	152	96	115	46	60		38	34	93	106
7	151	54	41	41	39	31	35	47	50	112	162	70	88	182	172	52	48	48	55	150	72	43	29	31
8	30	29	G	59	56	60	31	60	115	115	179	166	36	G	58	64	87	100	83	G	34	54	69	54
9	59	72	90	54	38	44	35	42	60	126	96	52	58	64	50	74	112	137	144	151	52	70	53	59
10	49	34	37	57	44	34	33	50	103	179	173	63	74	89	146	104	115	161	132	115	92	60	47	26
11	31	32	32	40	47	50	41	42	35	49	56	55	57	61	62	97	96	104	76	32	50	G	G	60
12	60	66	45	35	32	21	27	35	60	40	57	63	92	52	44	60	60	115	147	112	127	36	48	60
13	43	58	49	24	G	G	38	66	154	133	119	153	B	B	59	55	80	61	66	92	52	33	40	43
14	60	92	94	88	59	139	136	85	60	56	106	102	90	164	77	77	66	56	58	54	51	40	40	G
15	G	G	G	40	25	56	54	59	72	52	57	52	57	51	50	52	49	42	51	45	54	33	26	35
16	40	71	71	58	47	41	43	103	94	74	40	59	41	45	44	66	115	49	47	57	32	36	28	94
17	55	57	73	90	53	33	32	66	84	102	79	54	60	54	45	75	54	59	57	110	88	60	35	88
18	93	59	54	53	57	25	32	39	56	68	90	91	74	70	96	57	82	148	134	142	135	92	61	49
19	30	36	34	34	41	24	30	71	85	115	54	60	150	92	72	134	80	46	56	43	34	59	72	48
20	41	32	G	G	G	G	35	56	46	46	50	57	56	76	54	61	50	41	35	39	25	27	41	48
21	60	91	89	90	54	G	47	117	114	138		169	60	62	54	55	63	97	50	77	36	G	110	47
22	56	49	39	44	G	G	31	42	46	59	146	116	128	74	60	46	46	51	43	47	34	G	29	39
23	28	35	G	G	G	G	29	59	47	56	69	140	53	96	102	75	59	59	56	60	74	47	48	34
24	37	28	57	40	41	43	133	52	45	50	105	115	54	59	56	40	41	41	41	35	31	32	G	G
25	46	G	26	11	G	G	32	43	92	112	150	163	184	136	63	62	116	172	55	46	41	37	32	31
26	G	G	39	G	G	28	192	52	41	61	150	143	92	115	90	71	124	66	63	69	117	83	93	60
27	58	60	58	38	24	G	28	34	47	85	128	145	116	34	67	63	62	71	63	43	59	60	46	33
28	26	G	90	58	45	59	54	40	141	125	69	68	163	123	36	44	36	55	81	37	44	107	47	48
29	54	G	34	58	44	64	70	59	117	147	96	84	111	103	107	56	53	109	149	115	116	115	41	34
30	32	39	26	32	G	29	32	45	47	94	66	88	105	64	73	135	147	109	53	72	54	40	35	48
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	30	30	30	29	30	30	30	30
MED	46	40	43	42	40	28	35	54	66	92	96	84	88	70	62	64	64	64	58	57	52	42	44	48
U Q	58	60	71	59	49	45	54	62	114	120	141	144	113	104	90	84	103	104	83	111	73	60	61	60
L Q	30	29	29	32	G	G	31	42	47	59	57	61	57	54	54	55	53	49	50	41	36	33	29	34

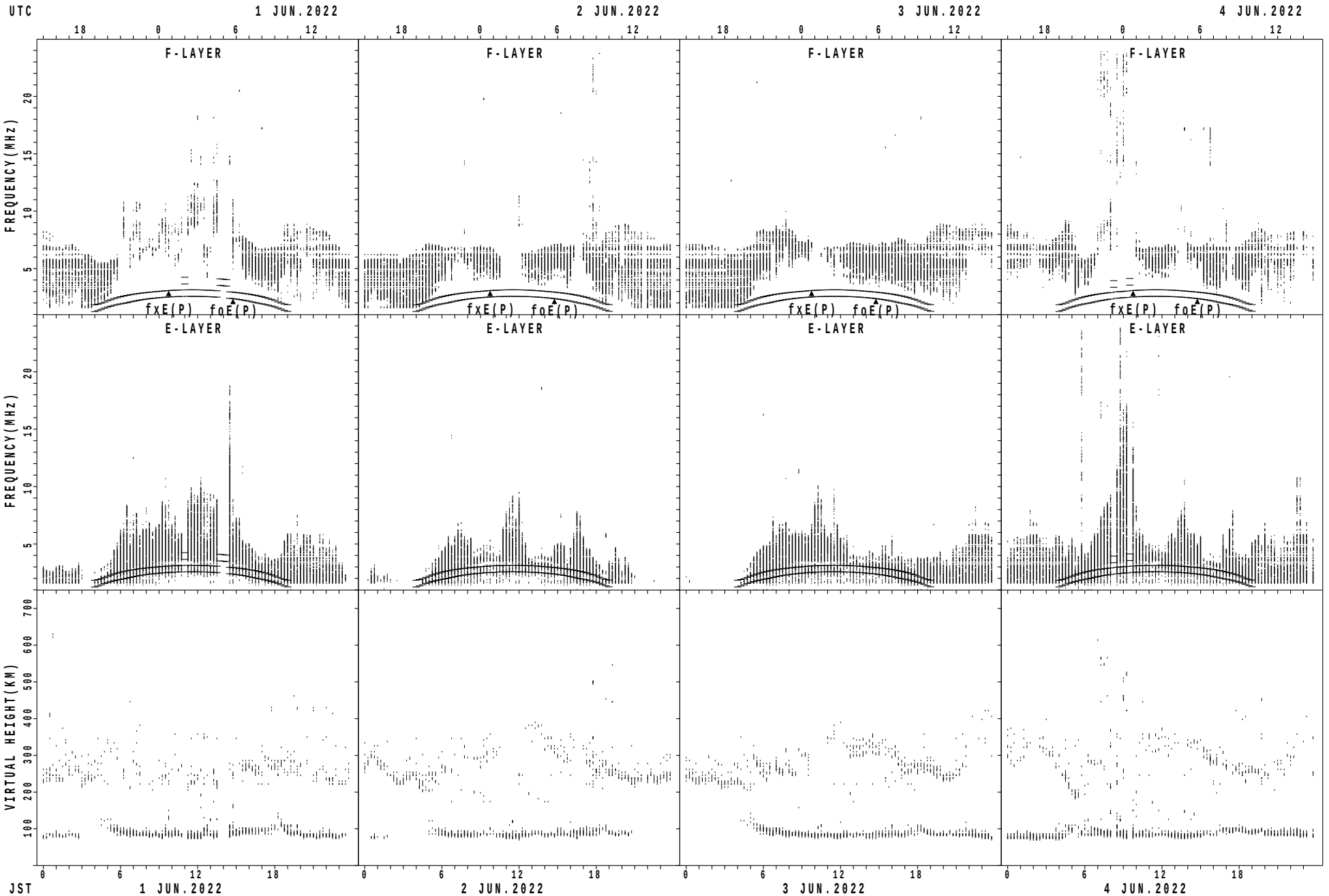
HOURLY VALUES OF fmin AT Okinawa

JUN.2022

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

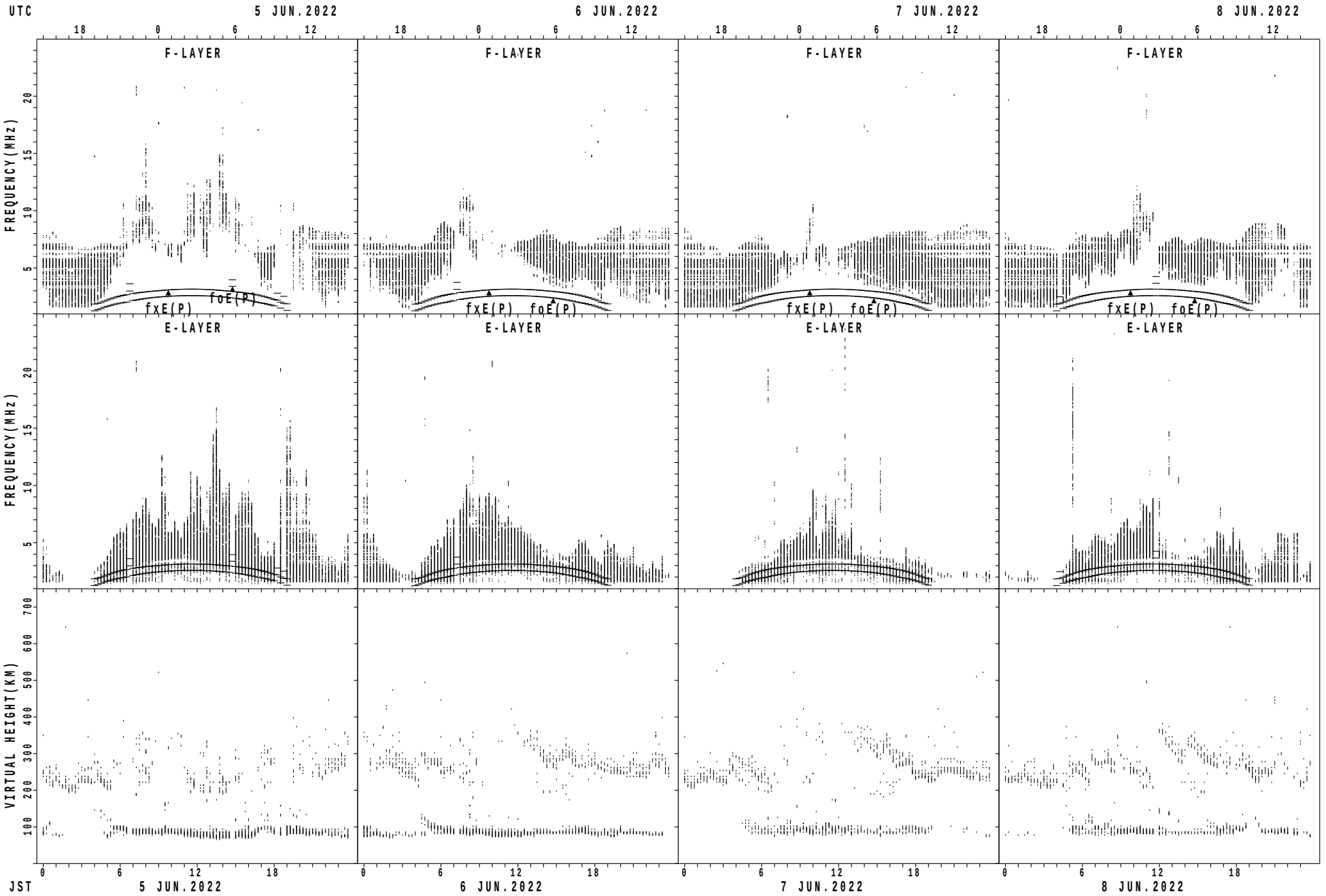
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	13	16	15	14	14	16	14	15	20	19	21	21	21	22	19	21	14	13	15	15	15	16	15
2	15	7	15	15	16	15	15	15	14	19	20	22	17	23	21	19	19	13	13	14	14	15	15	15
3	15	15	15	16	15	16	5	15	16	17	20	18	19	20	19	19	17	14	14	14	15	15	13	15
4	16	15	16	15	15	17	15	13	12	135	19	19	21	17	21	16	16	15	15	15	17	15	16	15
5	15	16	16	15	14	15	15	14	5	6	61	14	145	84	21	17	15	15	61	17	16	15	15	16
6	15	16	16	15	14	15	16	17	16	15	11	15	20	21	13	21	16	15	14	15	15	15	16	12
7	13	15	15	16	16	16	16	14	17	16	13	21	19	23	13	19	19	16	15	14	15	16	15	16
8	16	15	16	15	15	14	15	14	17	15	82	15	17	15	21	17	17	17	17	15	15	15	15	15
9	16	14	7	14	16	15	16	14	14	13	17	19	18	19	17	18	14	5	11	5	15	16	15	15
10	15	16	16	15	16	15	15	14	15	17	22	21	19	24	15	15	17	5	37	9	13	14	15	16
11	16	16	17	15	15	15	14	14	15	16	20	18	19	19	22	17	15	13	13	16	15	15	17	16
12	15	15	15	16	16	16	15	14	16	21	19	19	17	39	39	18	19	16	13	5	5	16	16	16
13	16	15	15	15	15	16	17	15	5	32	74	31	B	B	32	27	23	18	13	14	15	15	15	15
14	15	16	16	16	15	5	16	15	17	18	17	21	22	19	23	19	18	14	13	14	16	15	15	15
15	15	15	15	14	16	14	15	13	14	16	21	19	23	23	23	22	14	15	14	14	15	16	15	15
16	15	15	14	14	15	15	15	16	15	18	20	22	21	39	23	19	18	15	13	14	15	15	15	14
17	16	15	17	14	15	16	16	14	16	21	16	22	23	23	20	19	15	18	16	18	15	15	15	16
18	15	15	14	15	16	15	15	14	13	17	17	24	19	23	21	21	19	35	106	108	17	15	15	15
19	16	16	15	15	15	15	15	11	14	18	16	21	16	22	22	19	17	15	14	15	16	15	17	15
20	15	16	15	15	15	14	15	15	18	19	23	26	23	22	16	20	19	15	15	15	15	16	15	17
21	15	15	8	15	14	16	17	15	17	9	16	17	21	20	17	19	16	17	14	13	15	16	9	16
22	15	16	15	15	15	16	15	14	14	18	9	19	17	21	21	22	17	18	15	15	15	15	16	15
23	15	15	16	15	15	15	15	13	15	17	20	16	19	20	17	19	15	14	13	15	17	15	15	16
24	15	16	17	15	16	15	19	15	15	17	17	19	21	22	21	19	17	14	13	15	16	15	15	15
25	15	15	15	14	17	14	16	14	16	14	13	15	16	9	15	14	13	13	15	14	15	15	16	17
26	14	16	15	17	18	15	69	14	16	18	11	21	21	21	21	17	15	14	15	16	19	10	14	15
27	15	15	15	15	16	14	15	16	17	17	17	14	17	17	20	18	18	16	13	15	16	16	16	16
28	16	17	13	15	15	15	15	14	5	9	16	15	17	19	19	21	15	13	15	16	14	13	15	15
29	14	17	16	16	16	16	16	15	14	13	19	20	19	19	17	21	15	11	6	14	17	12	15	15
30	15	16	15	15	16	15	16	14	14	15	15	19	19	18	18	17	16	14	14	15	15	15	15	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	15	14	15	17	18	19	19	21	21	19	17	15	14	15	15	15	15	15
U Q	16	16	16	15	16	16	16	15	16	18	20	21	21	23	22	20	18	16	15	15	16	15	16	16
L Q	15	15	15	15	15	15	15	14	14	15	16	17	17	19	17	17	15	14	13	14	15	15	15	15

SUMMARY PLOTS AT Wakkanai



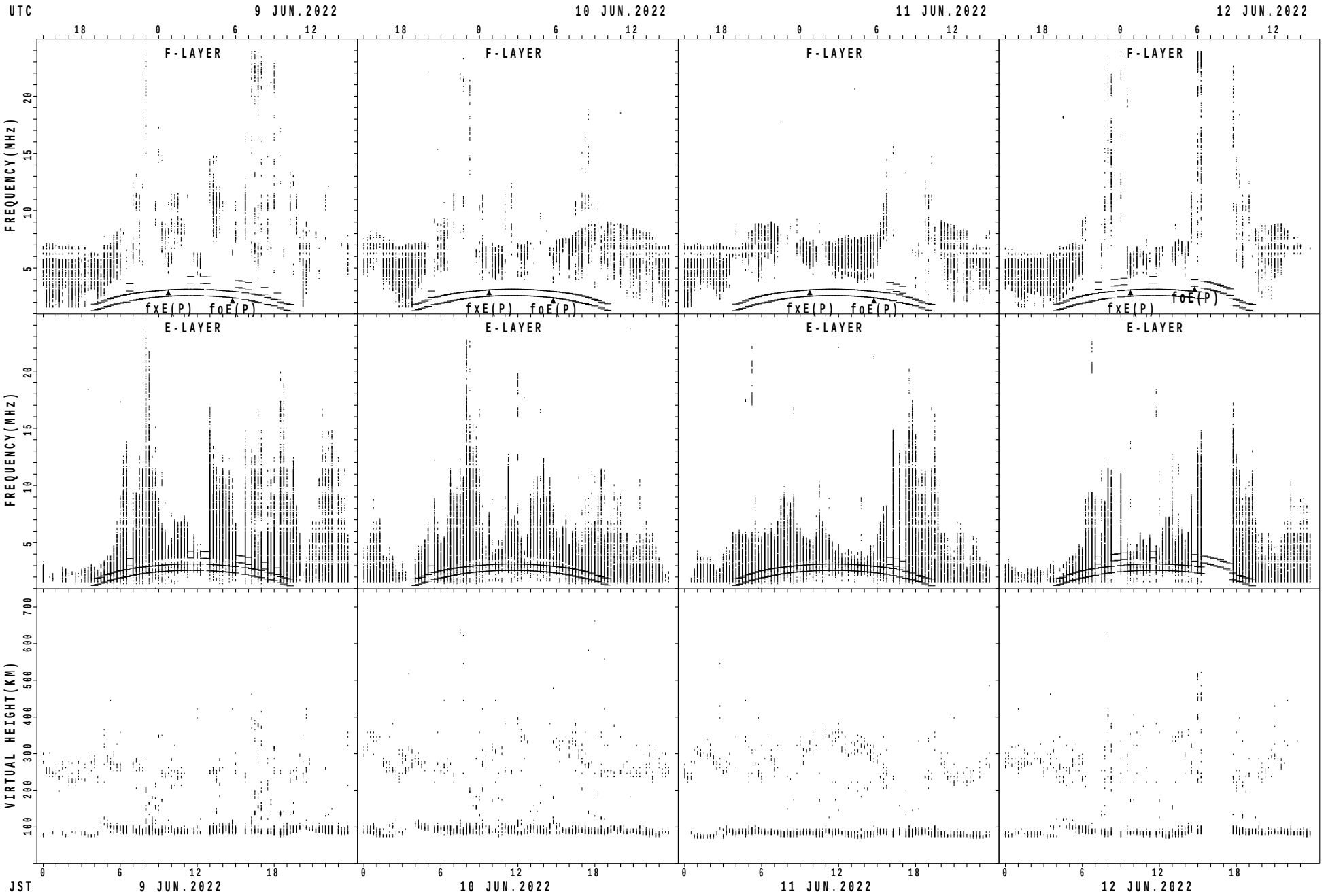
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



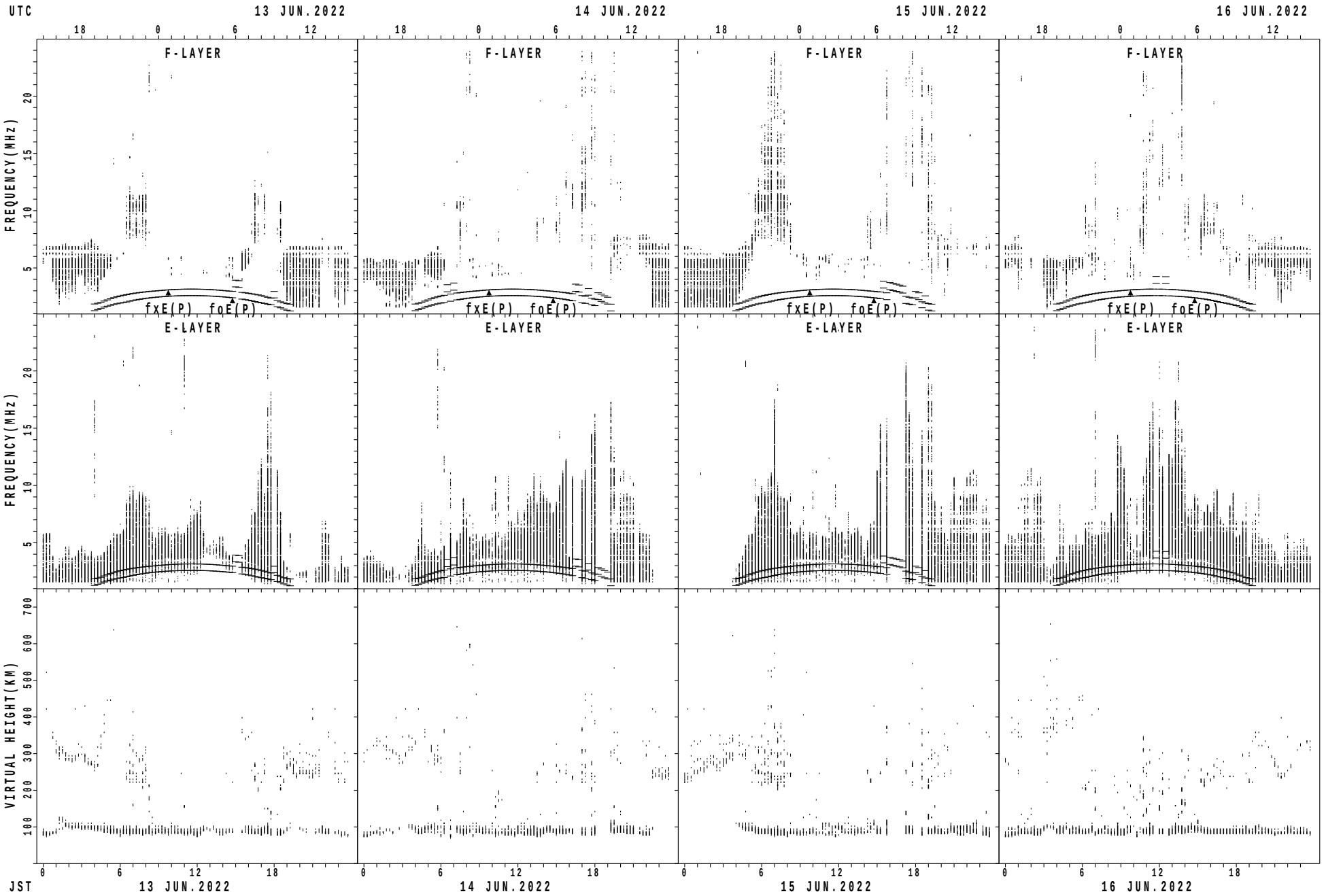
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



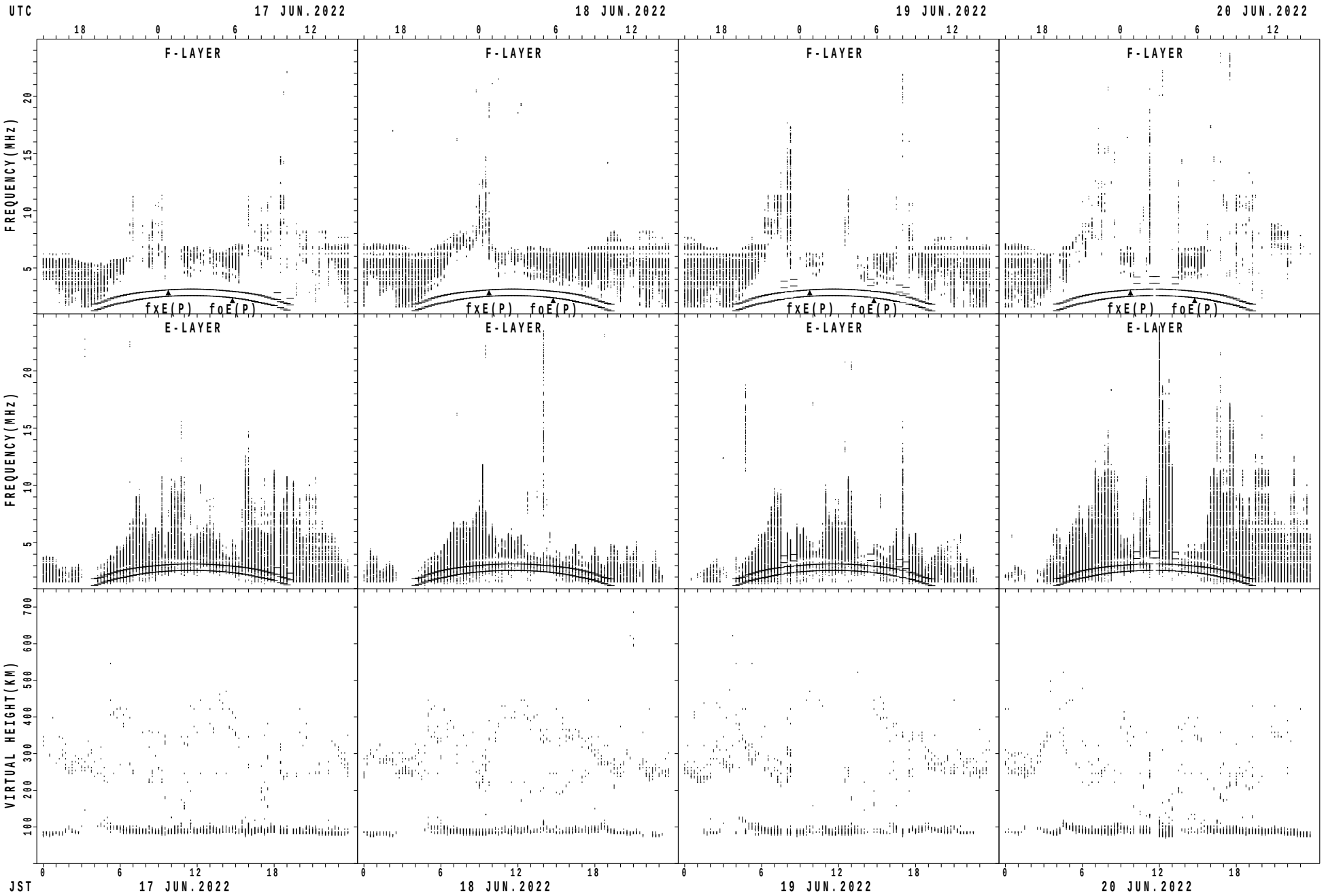
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

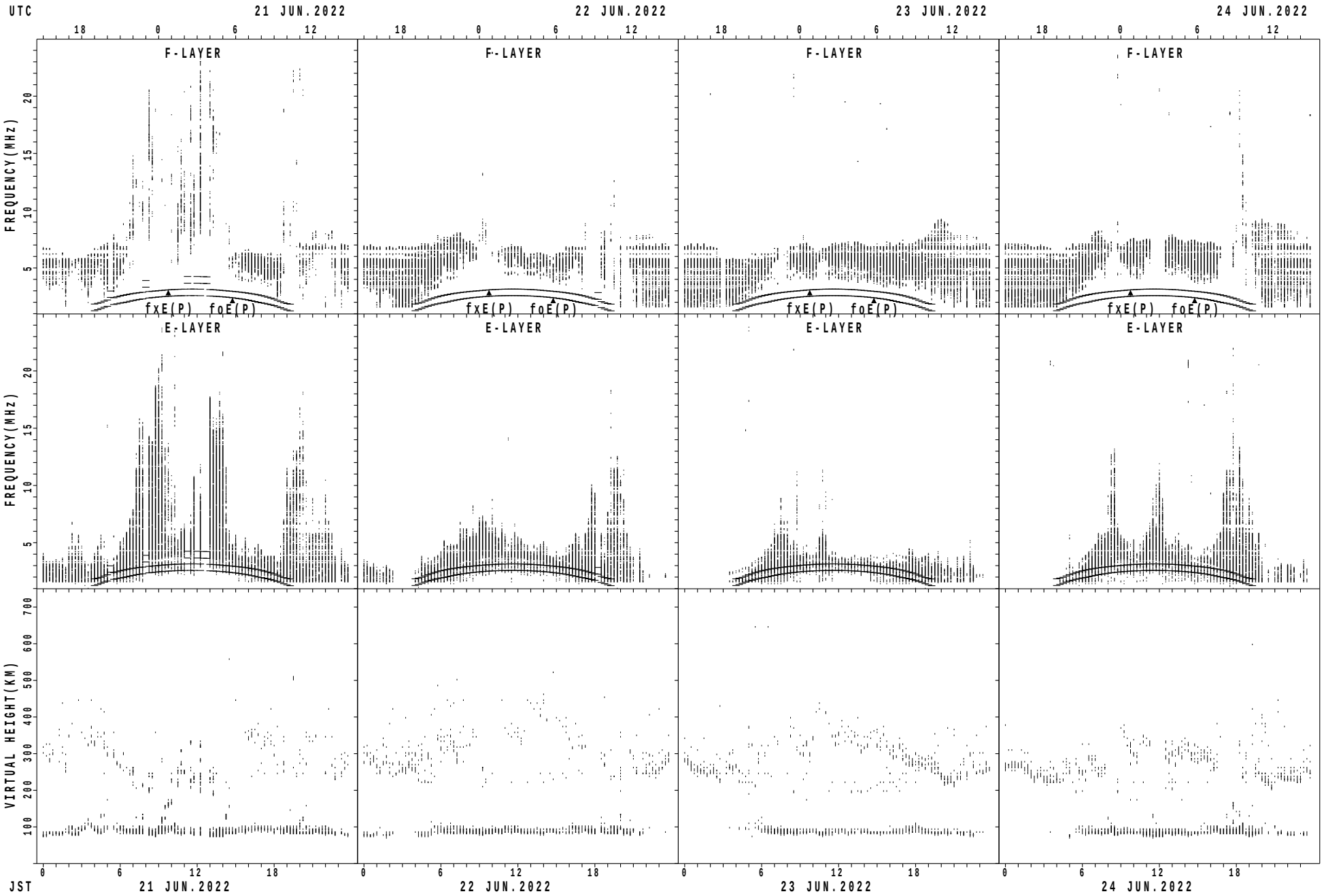


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

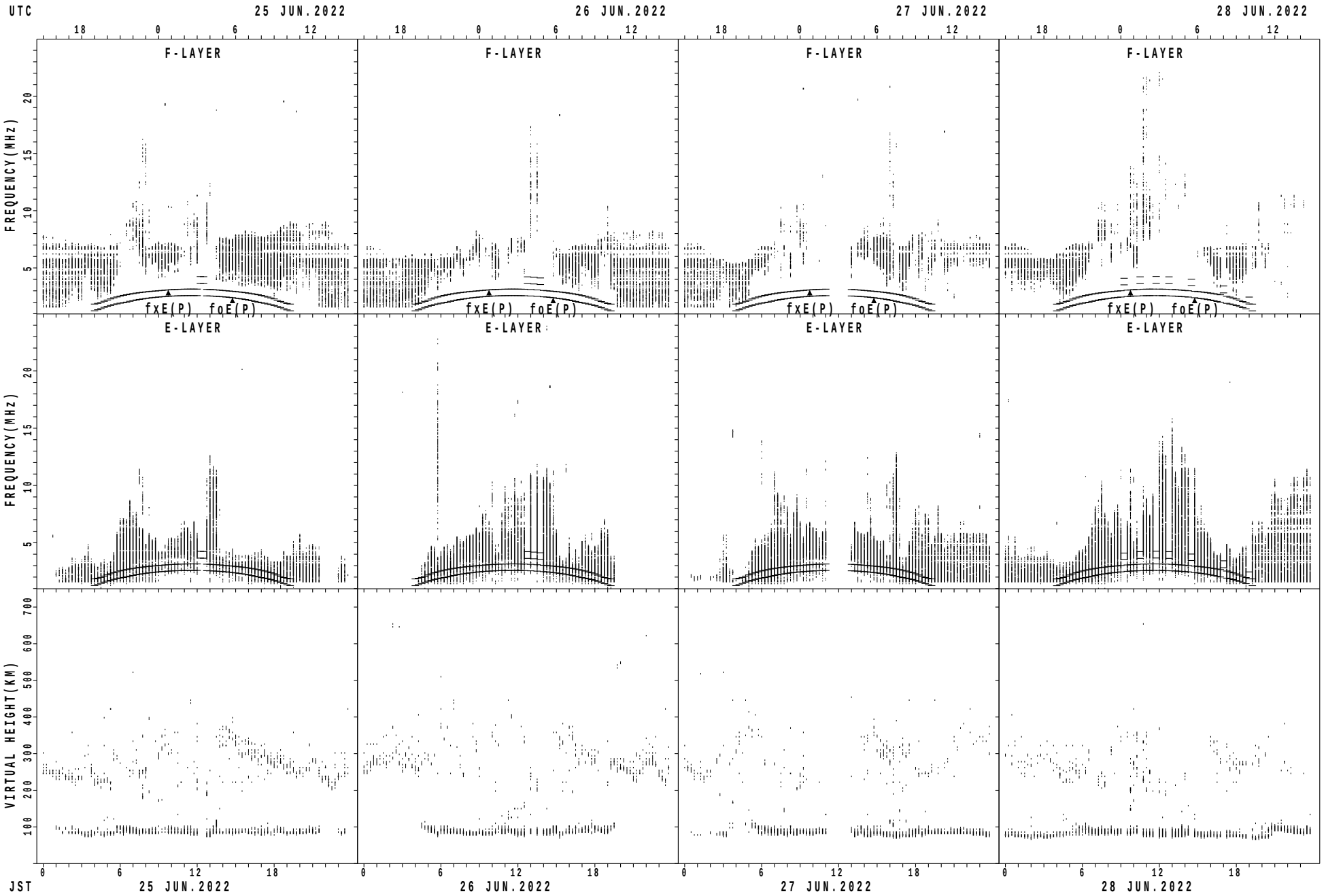


SUMMARY PLOTS AT Wakkanai



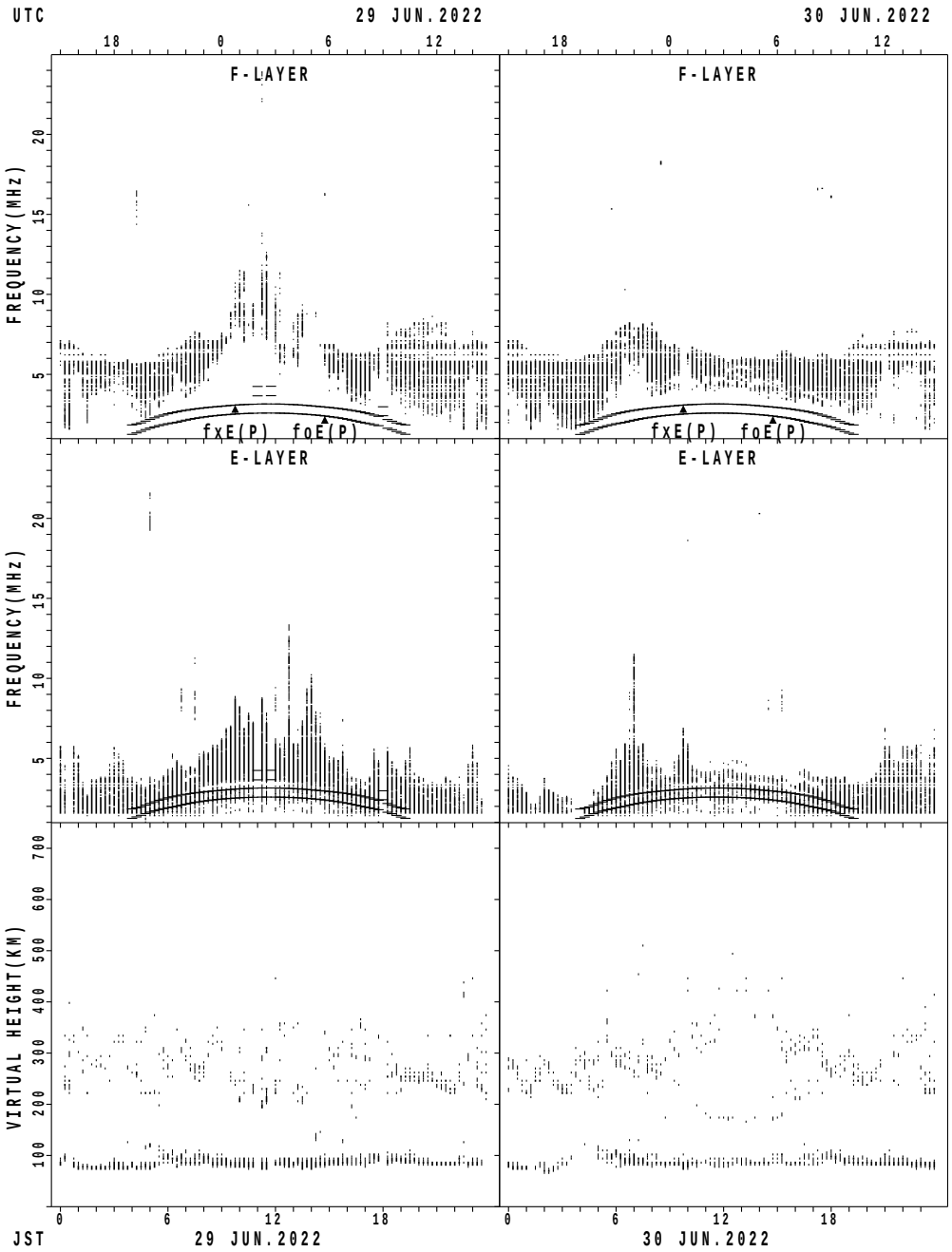
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



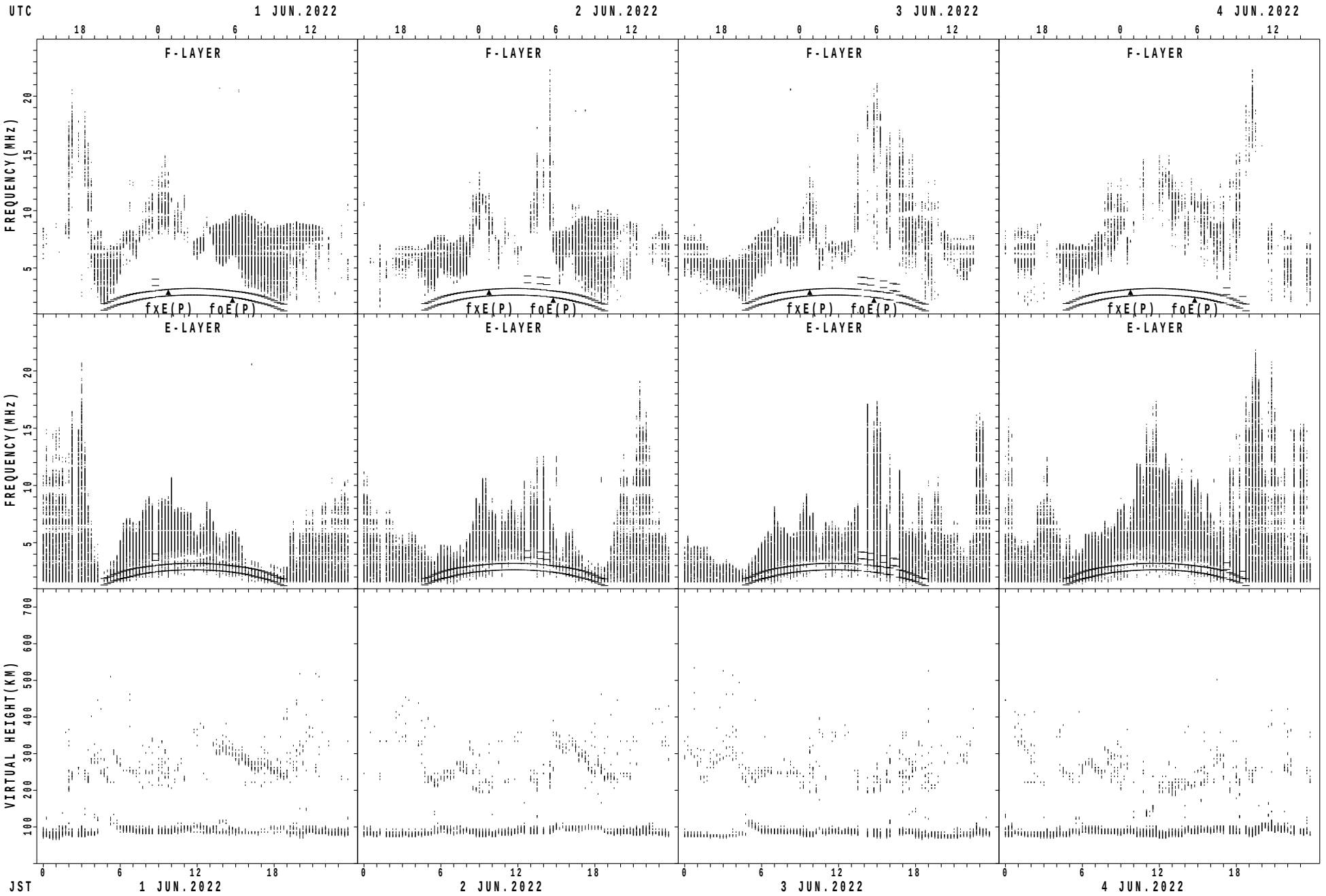
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



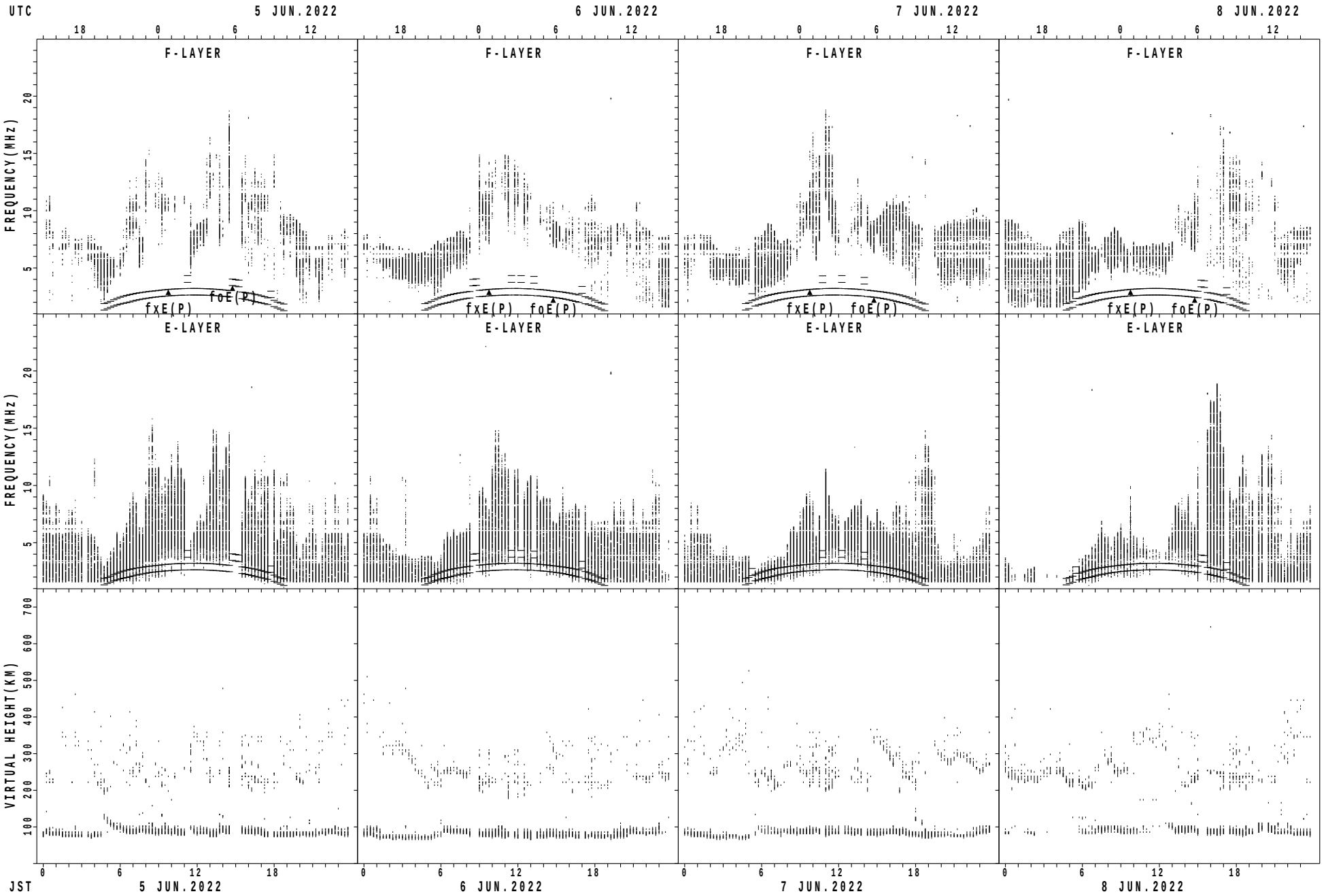
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



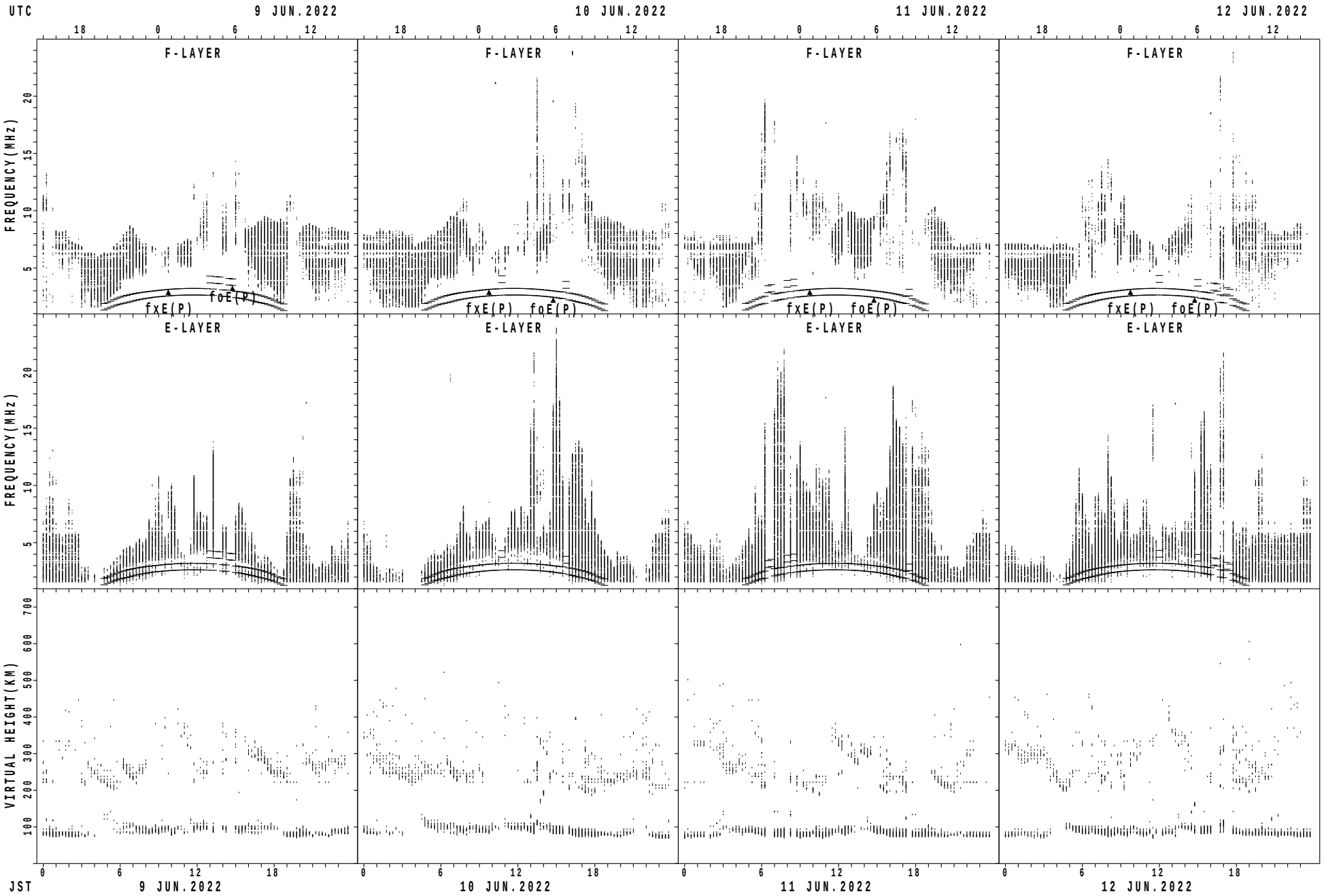
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



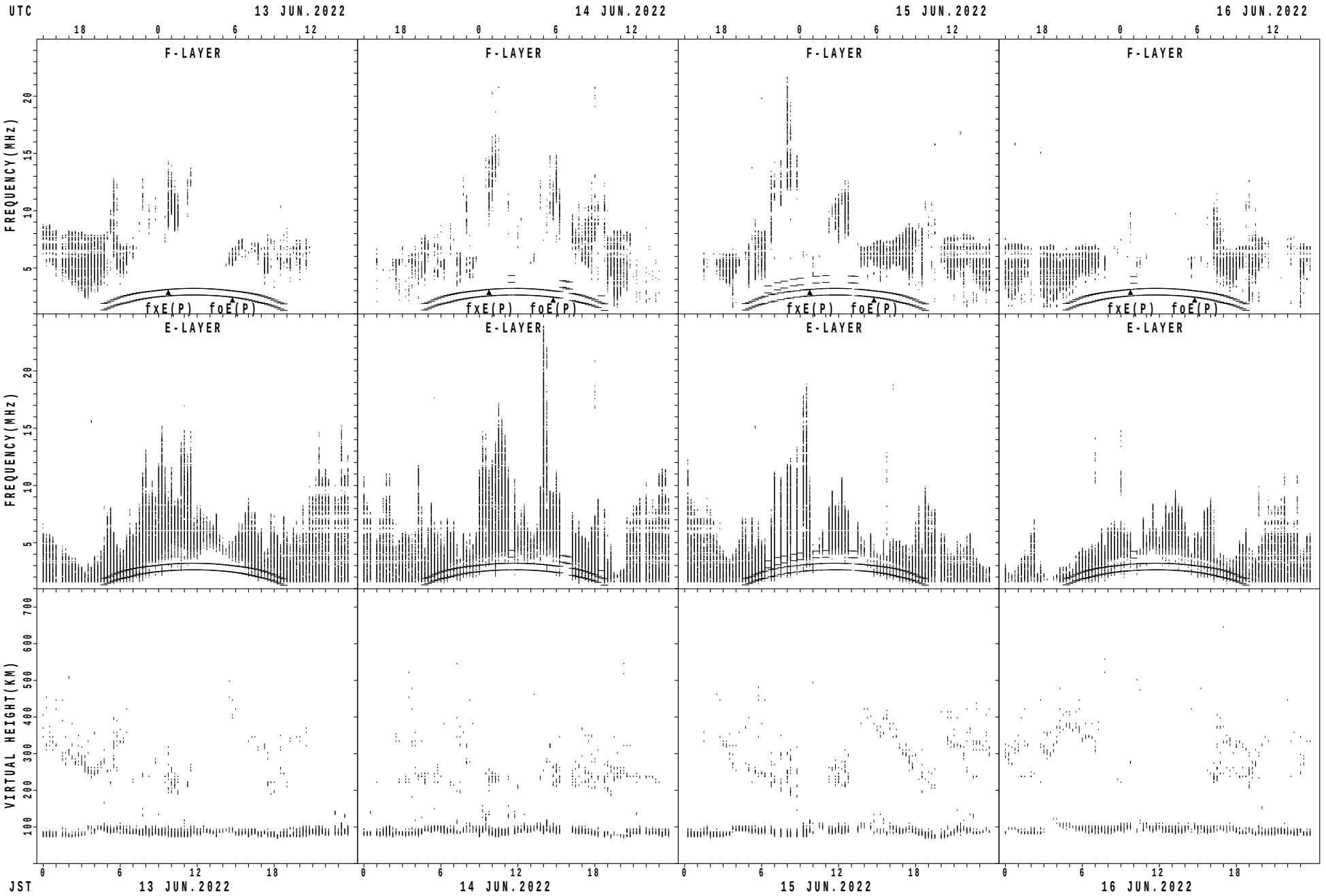
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



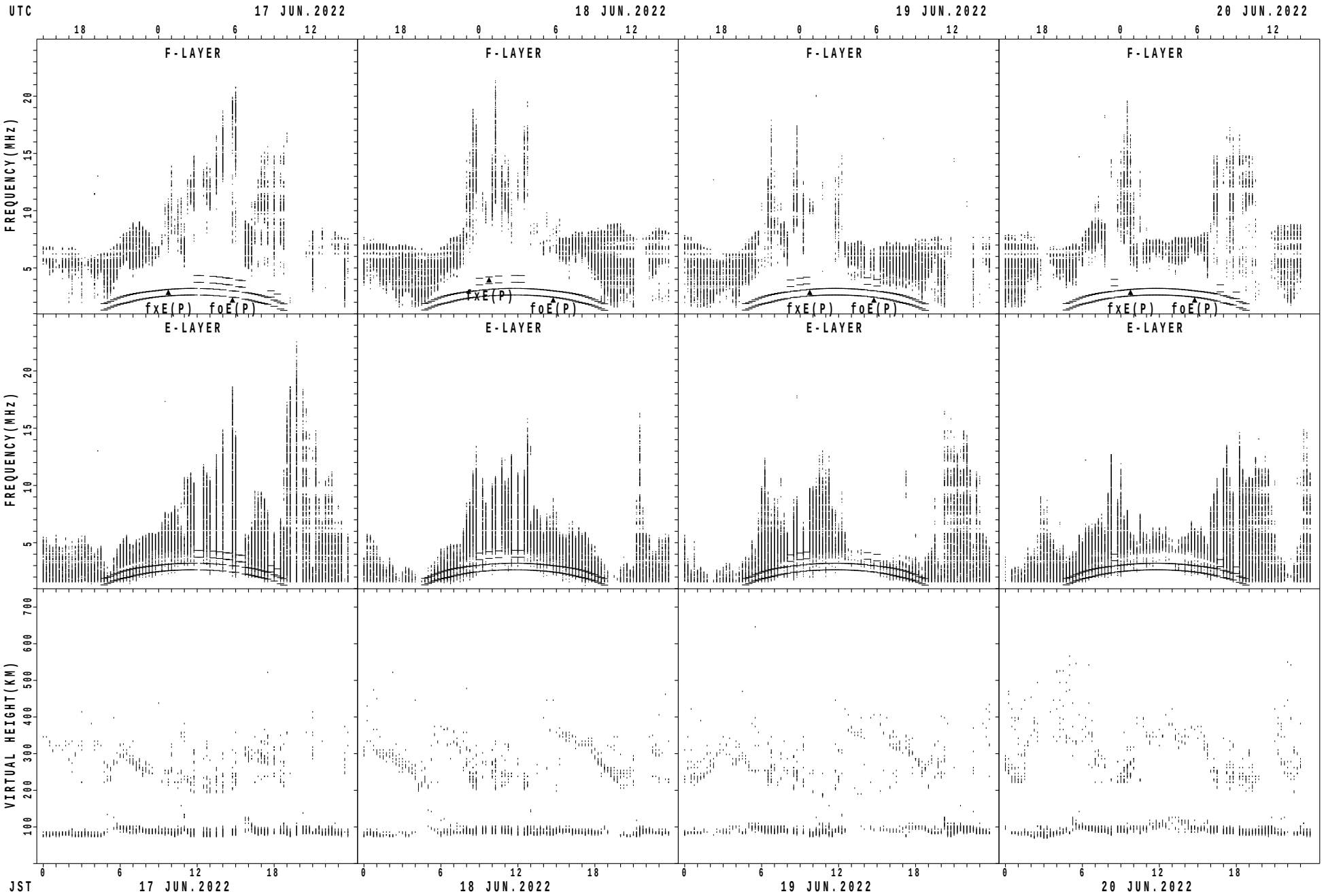
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



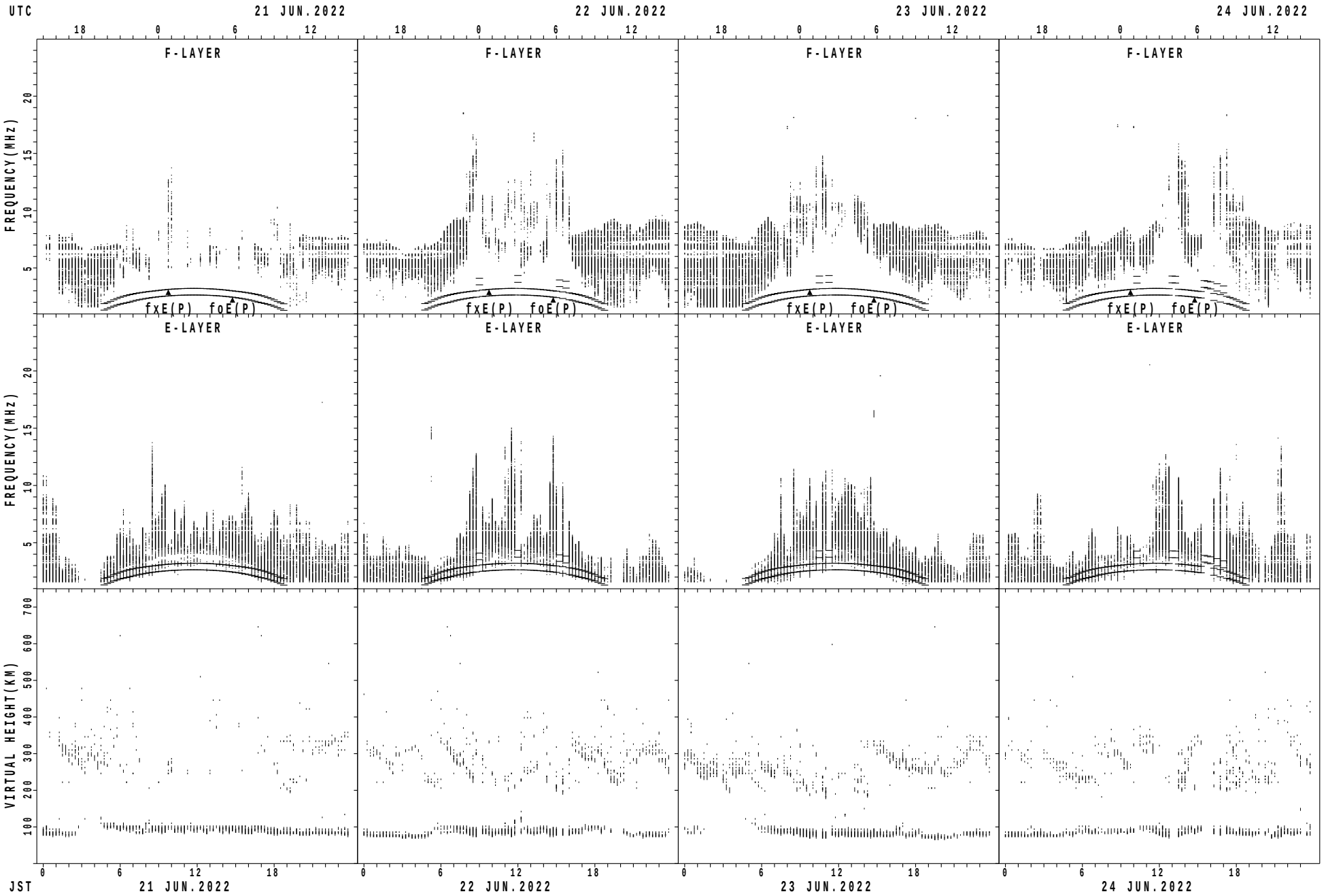
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



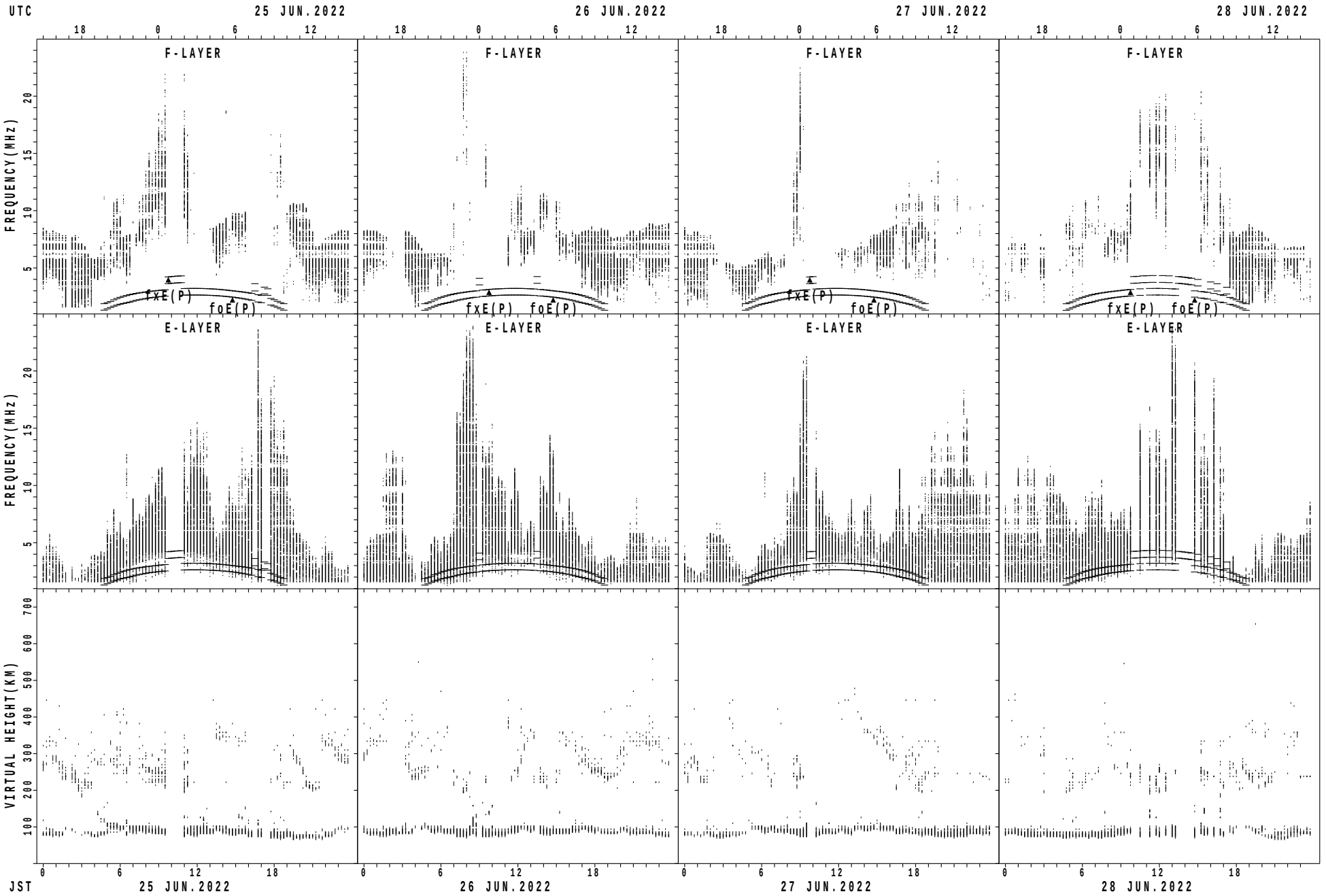
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



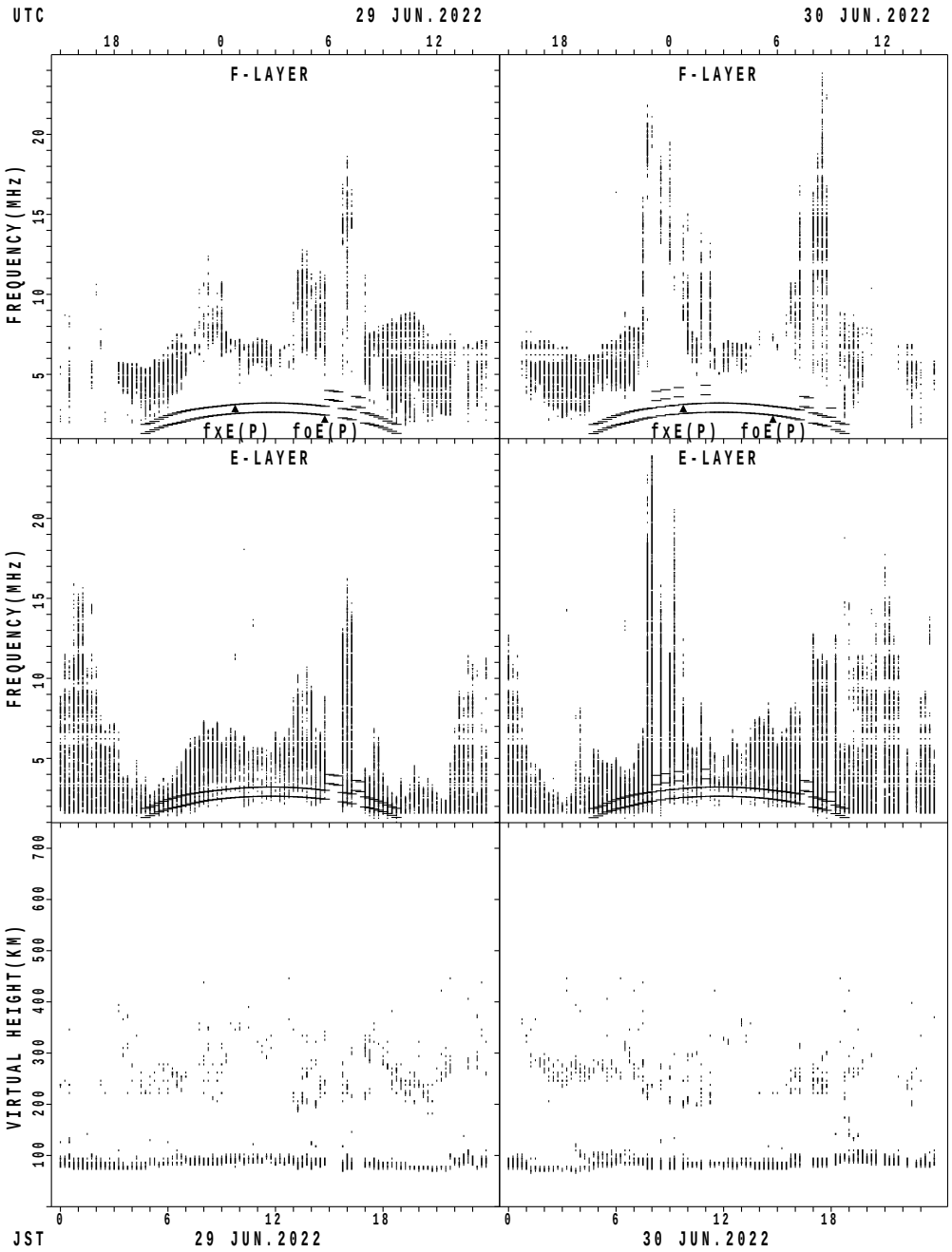
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



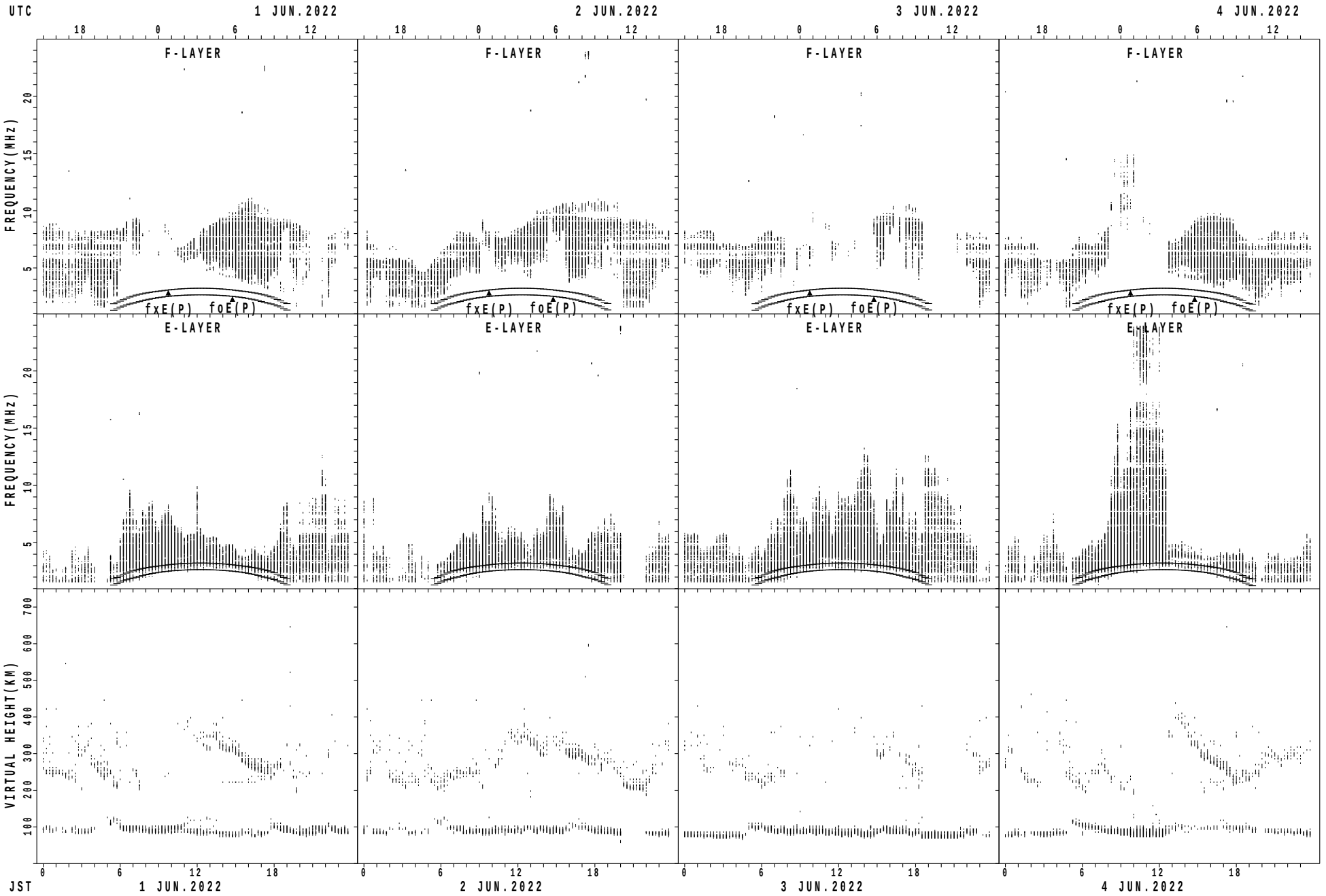
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



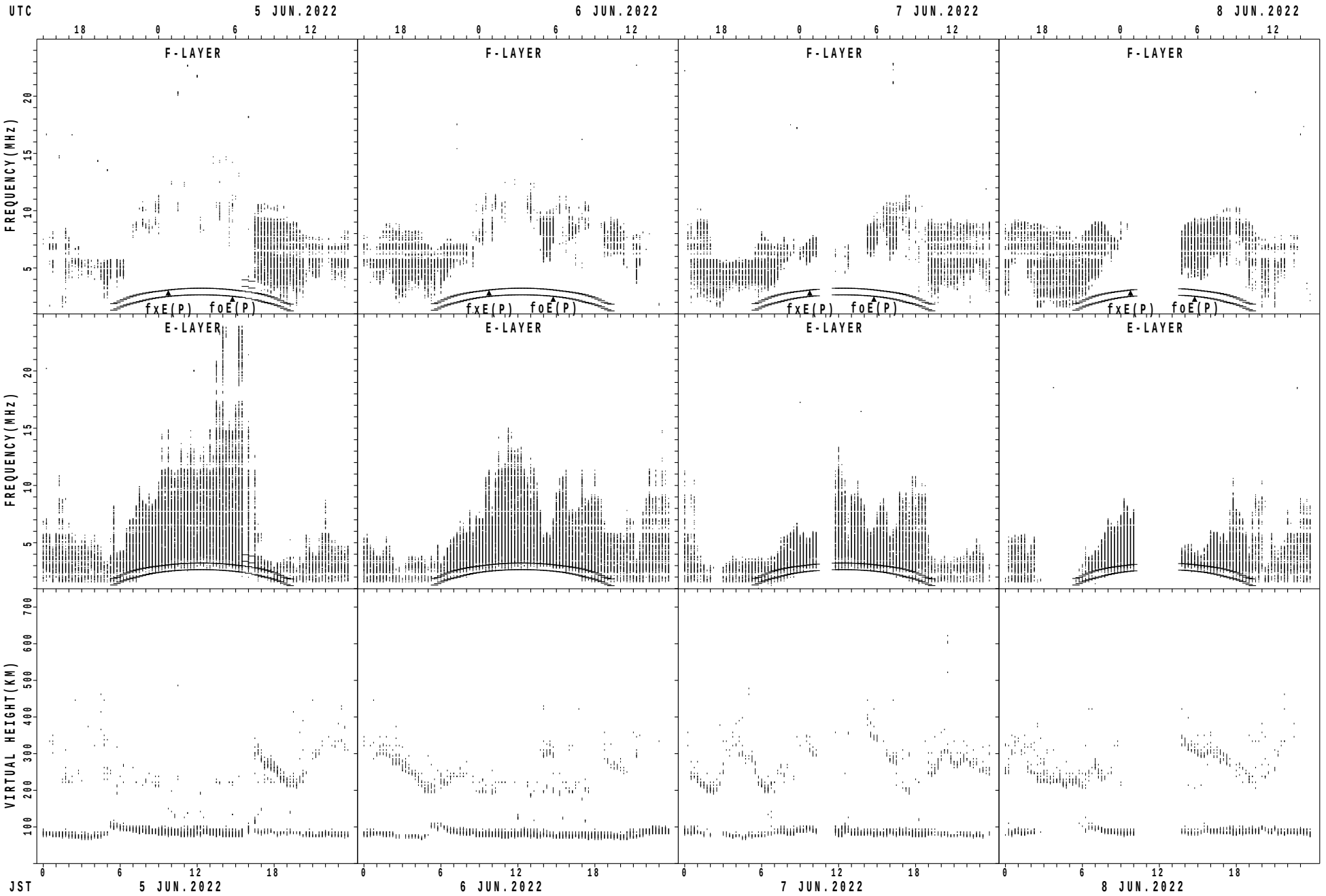
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



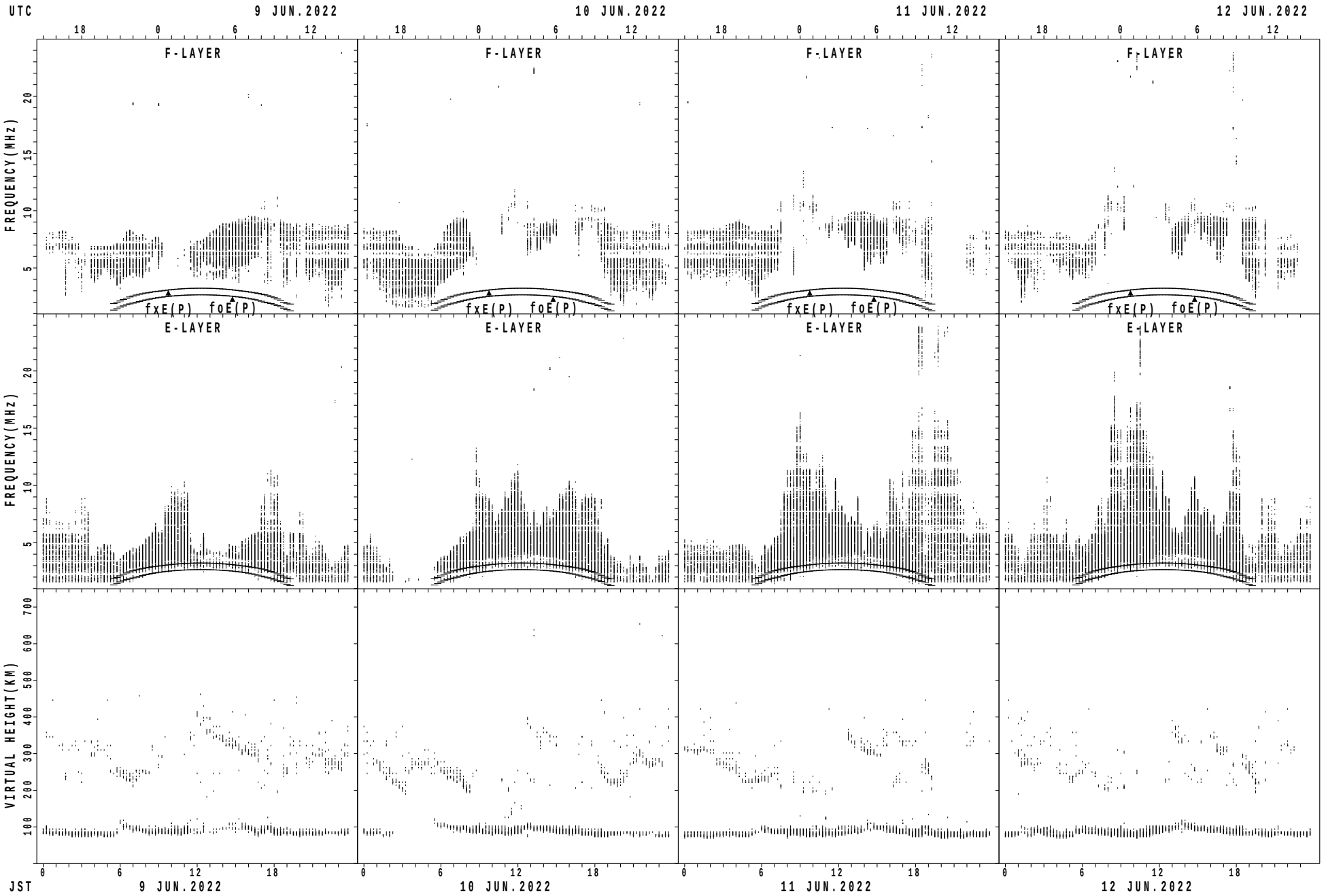
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



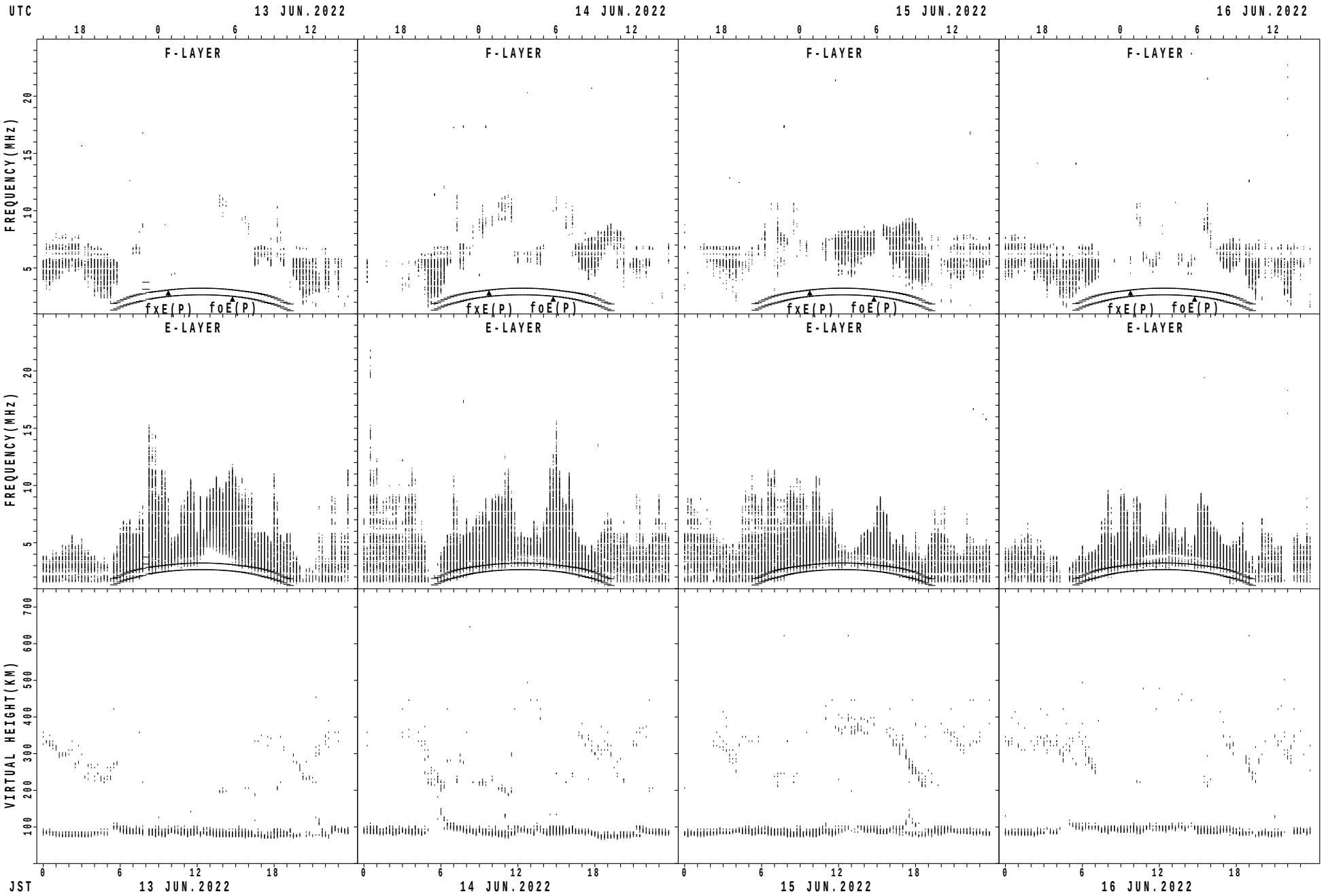
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



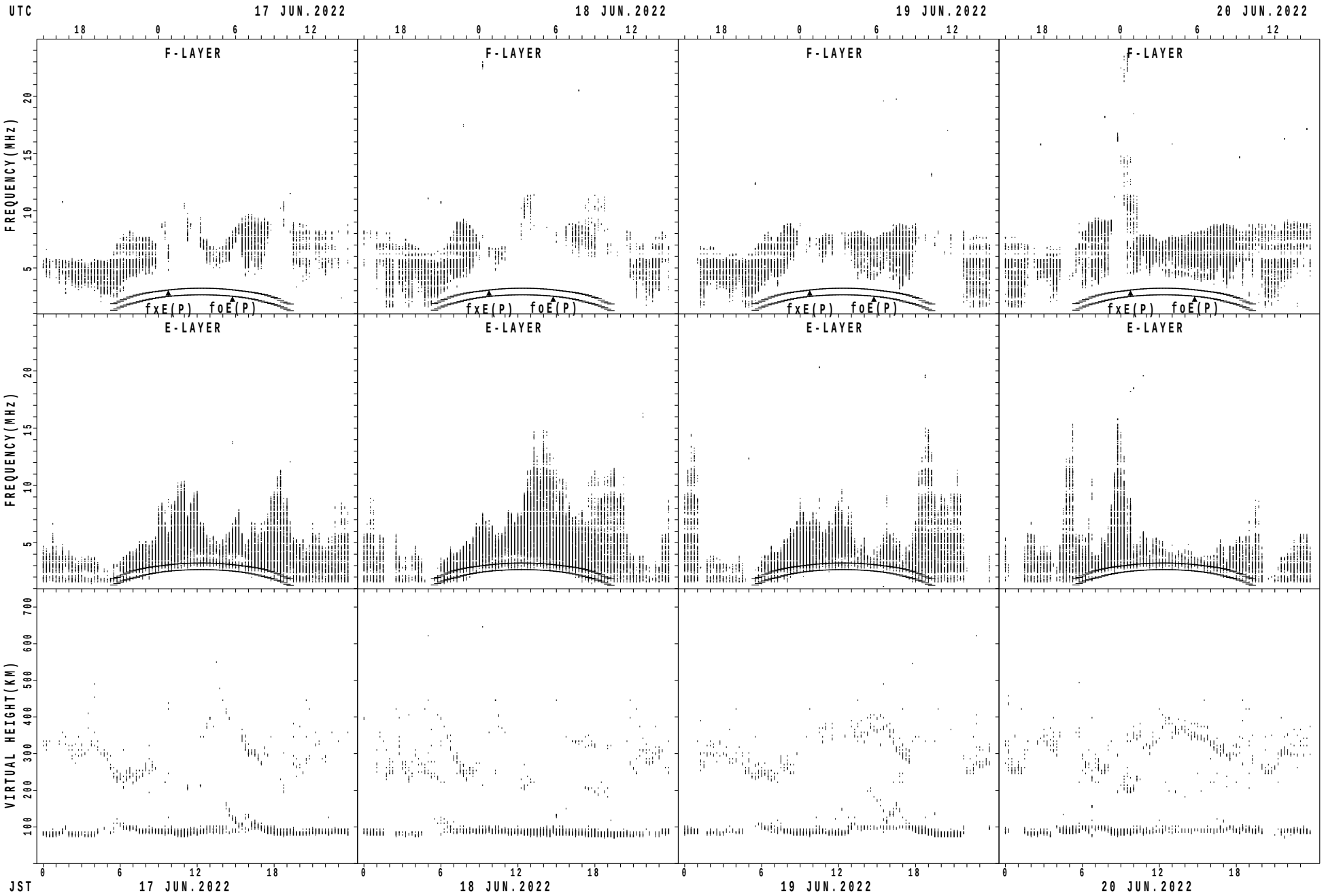
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



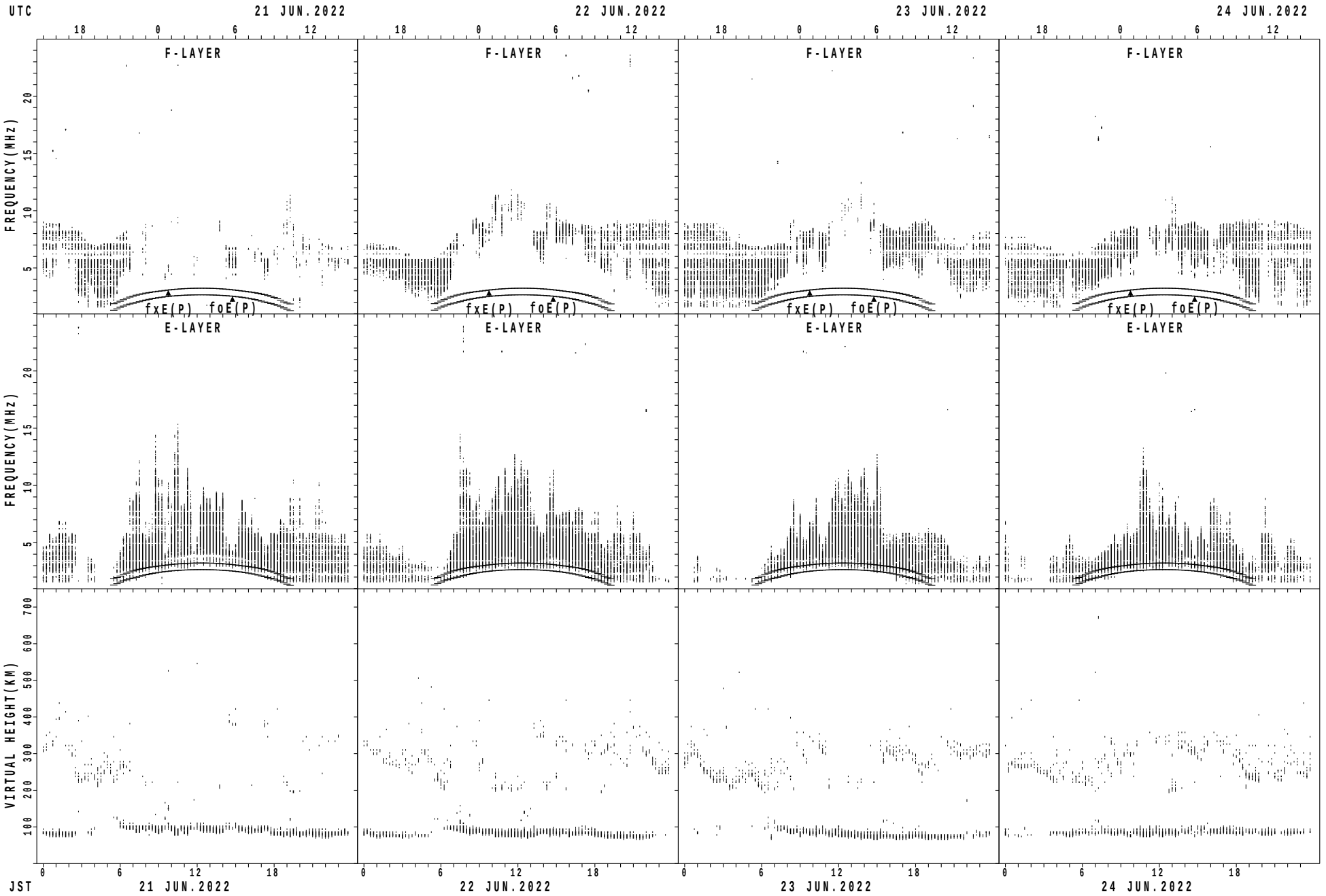
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



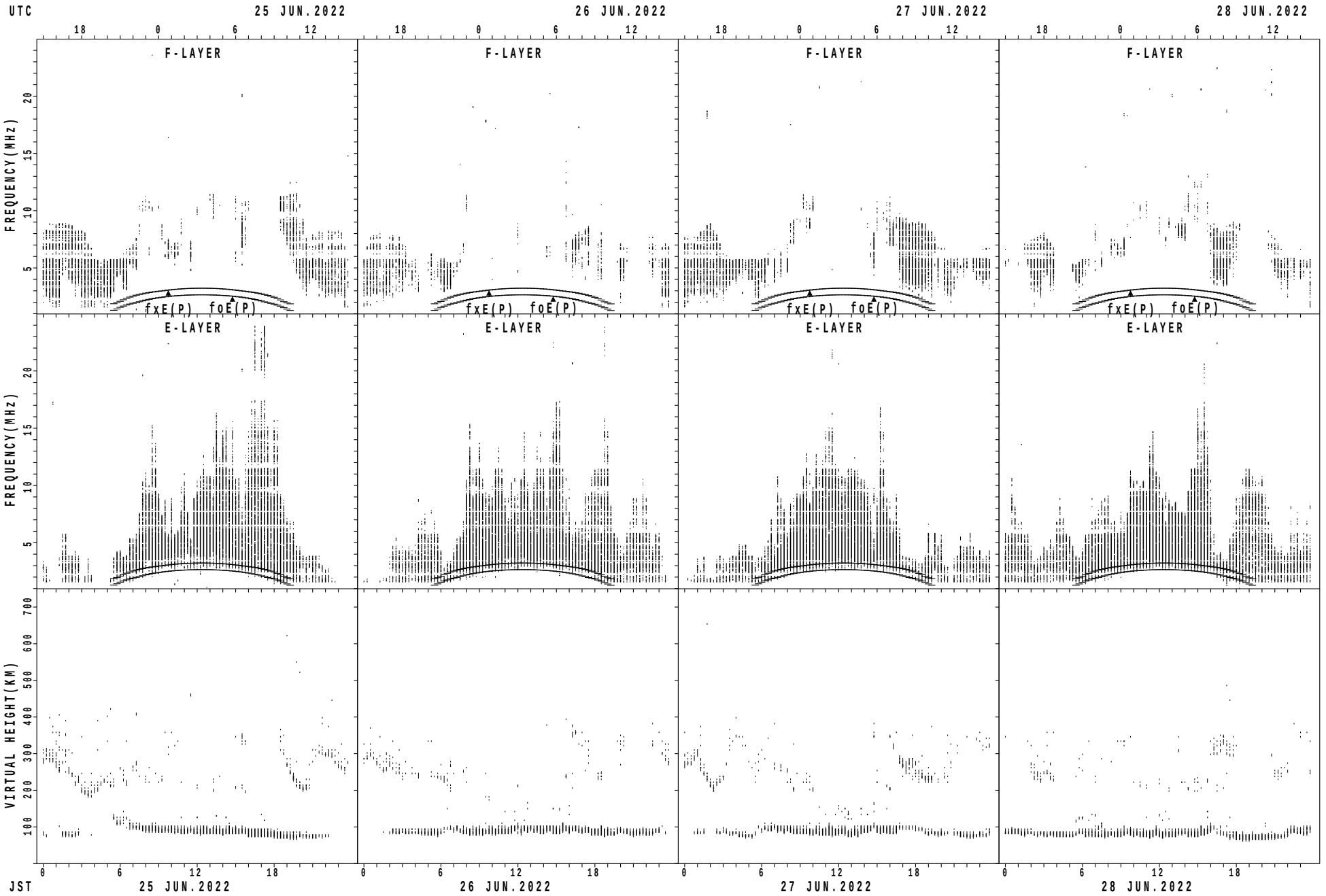
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



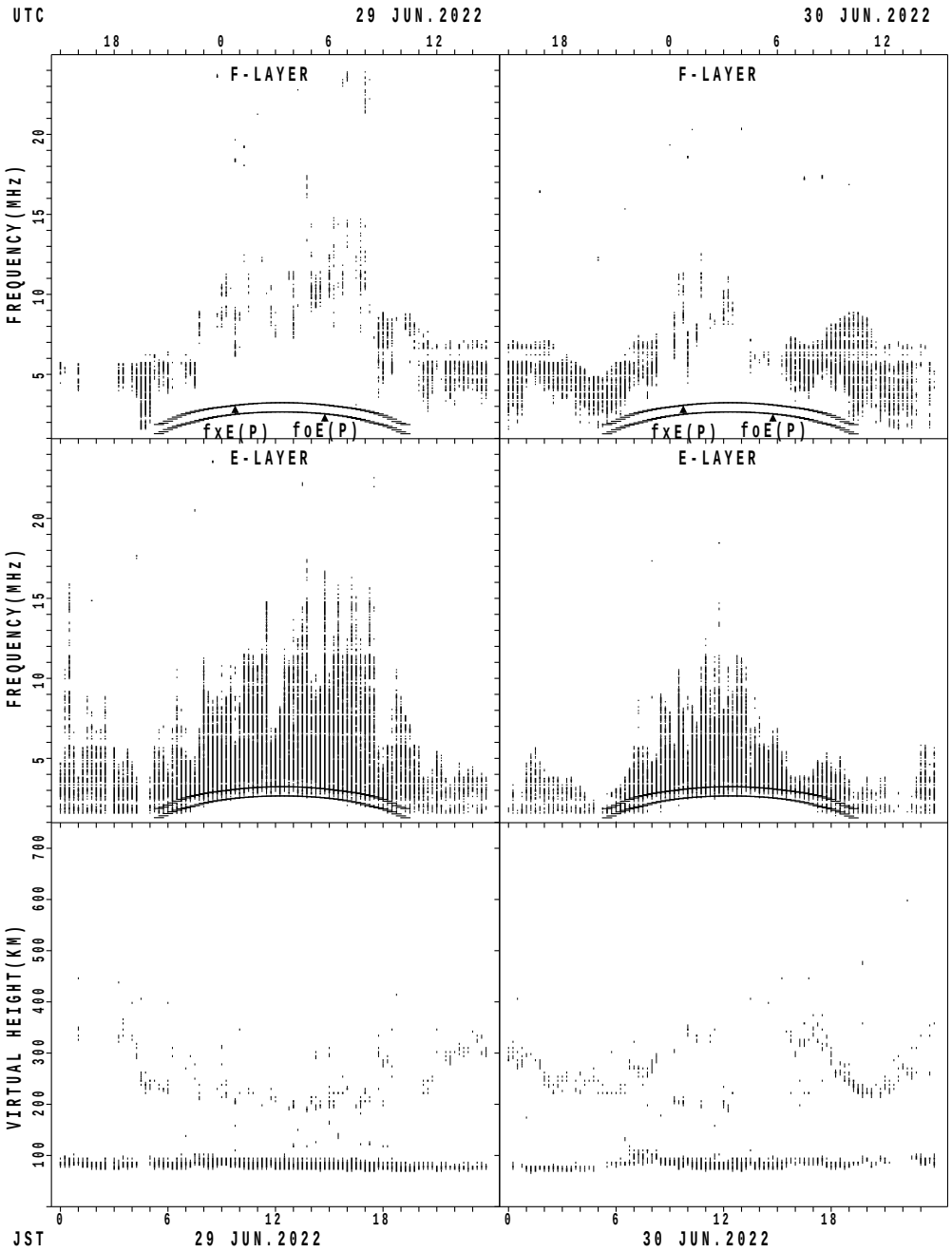
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



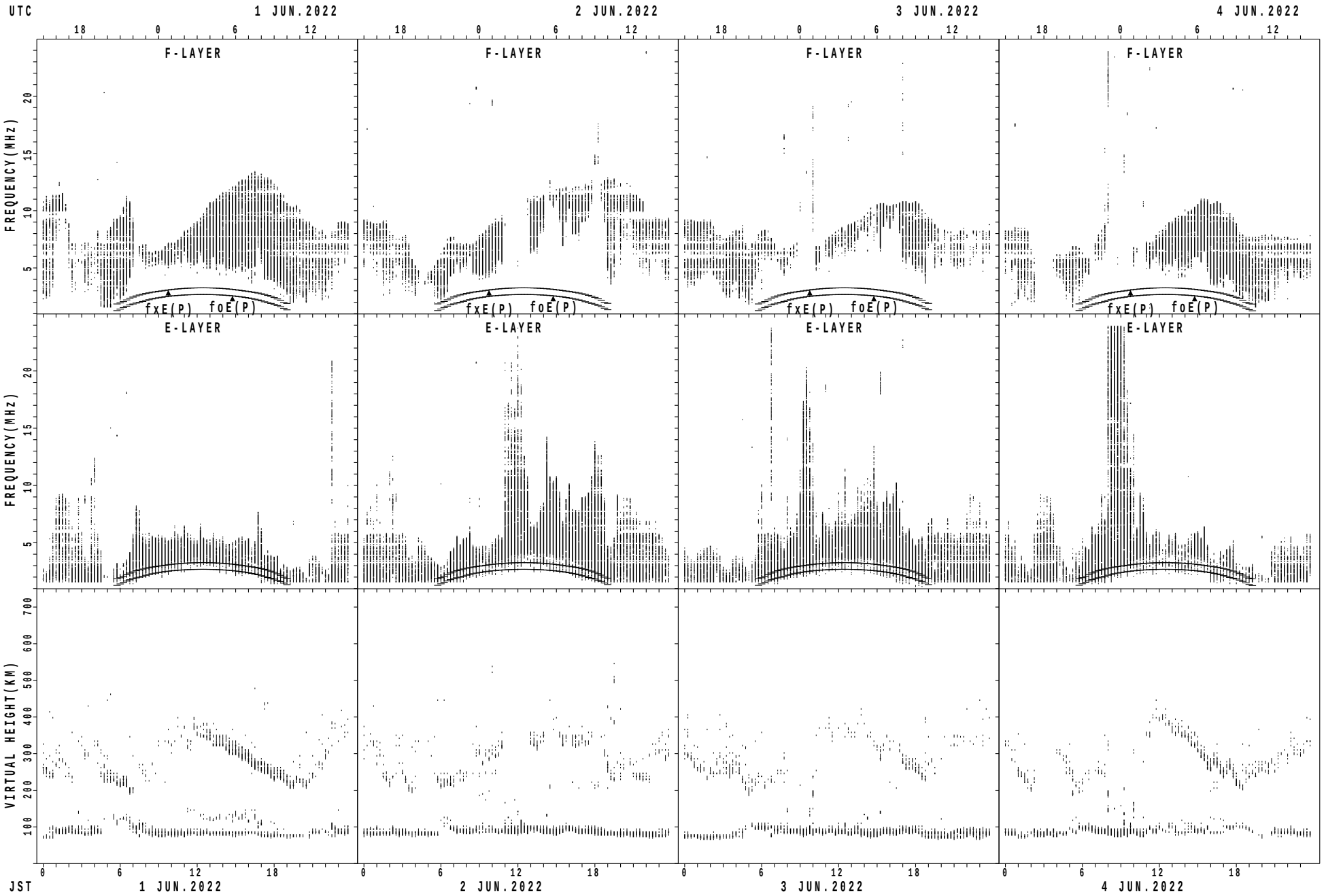
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



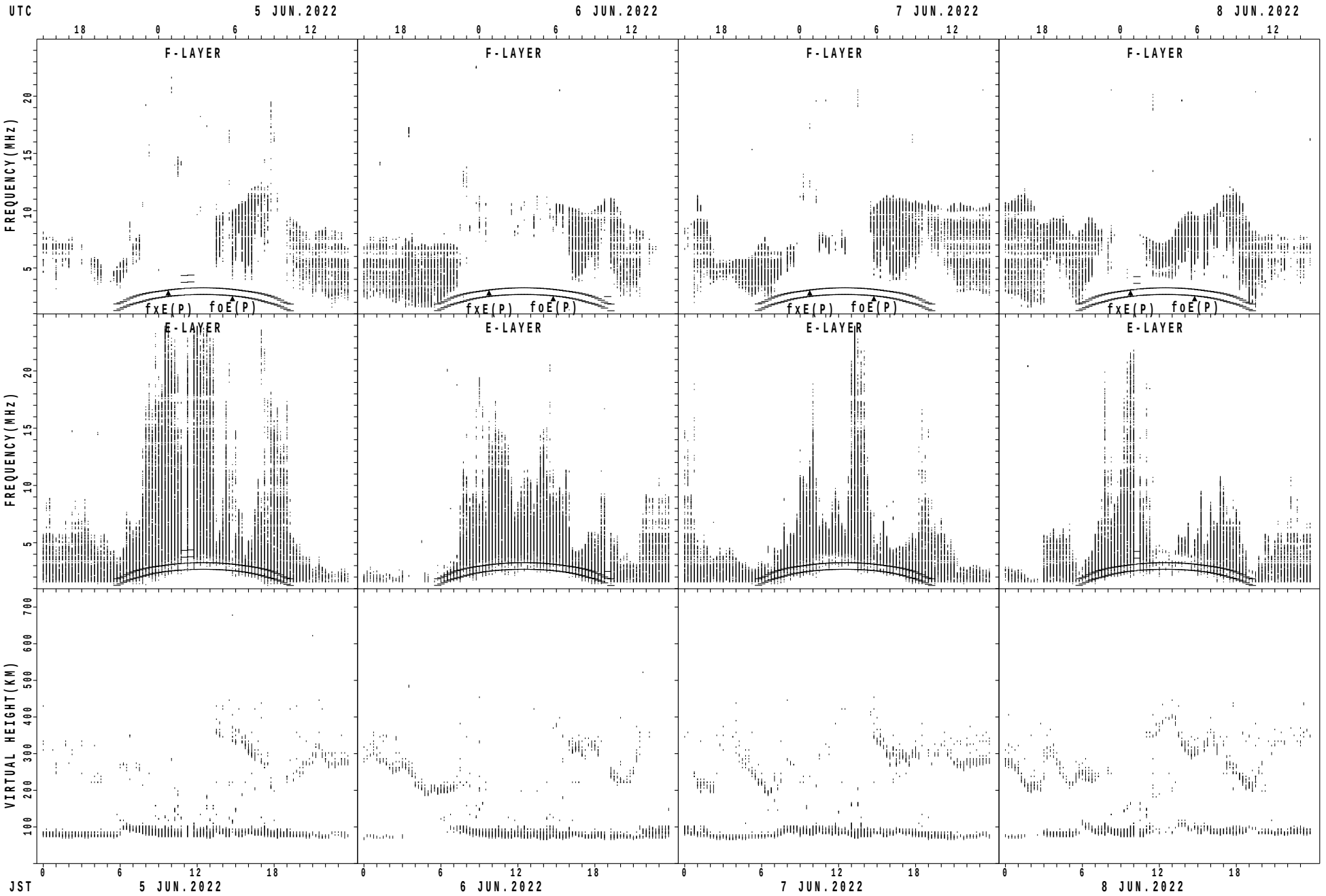
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



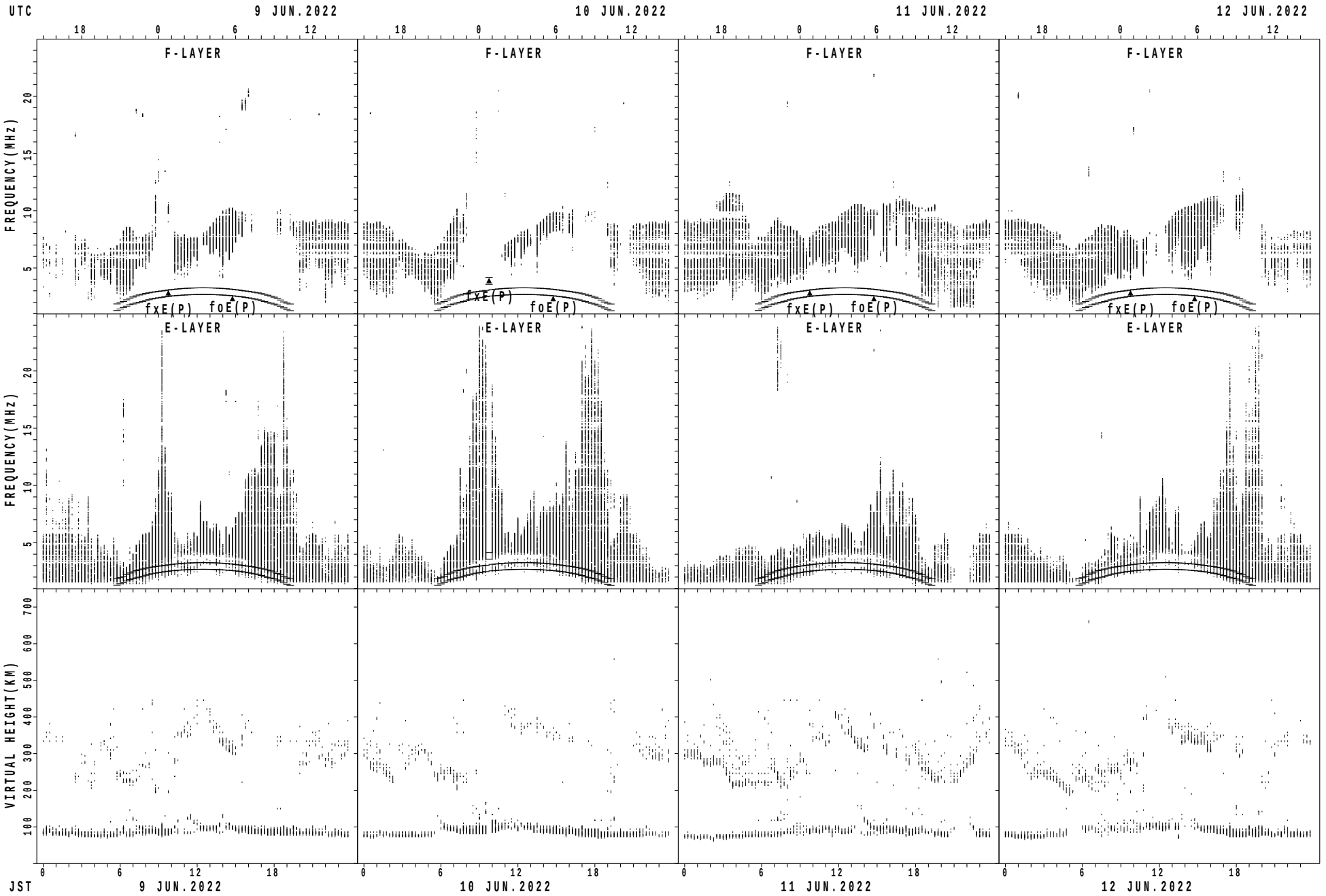
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



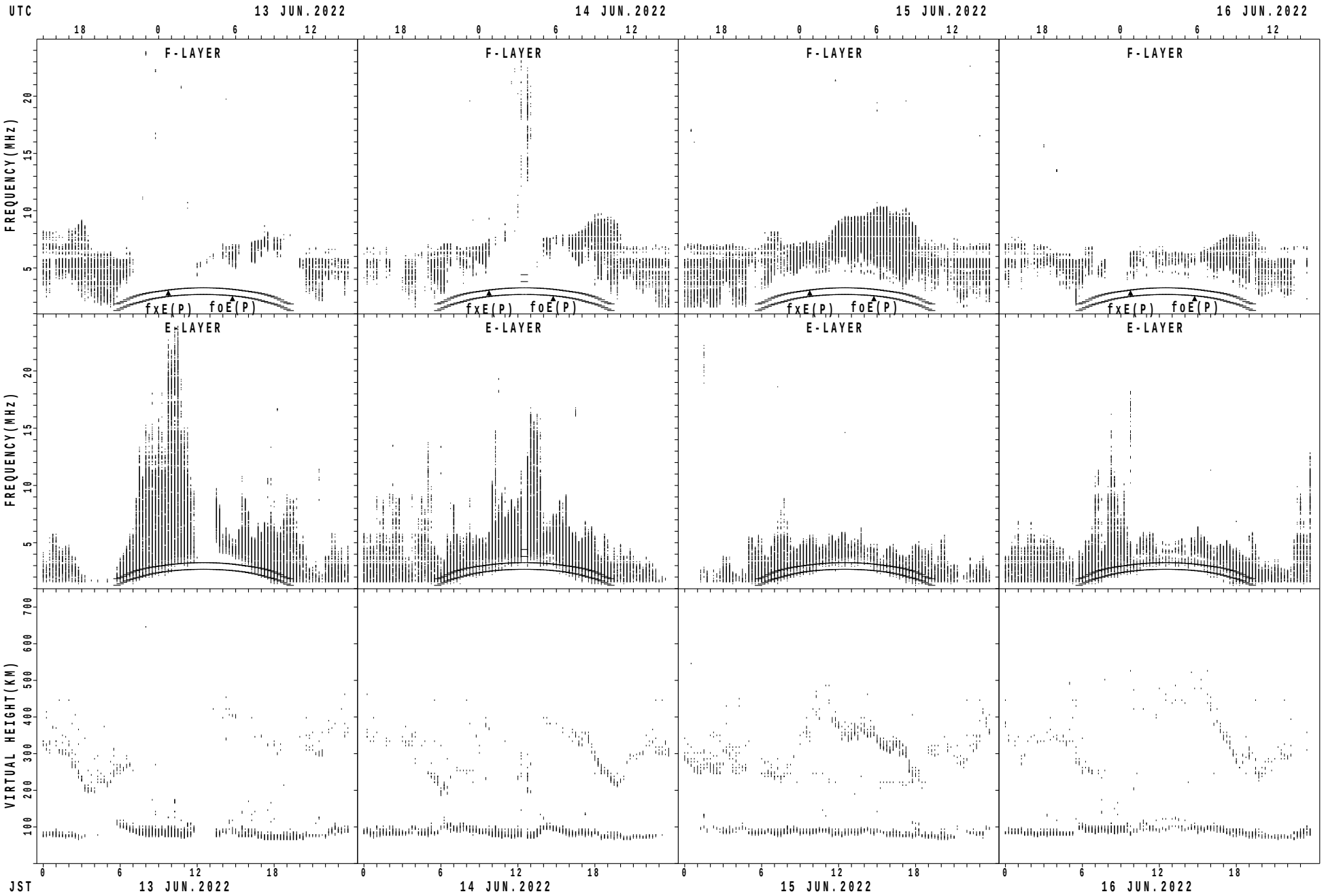
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



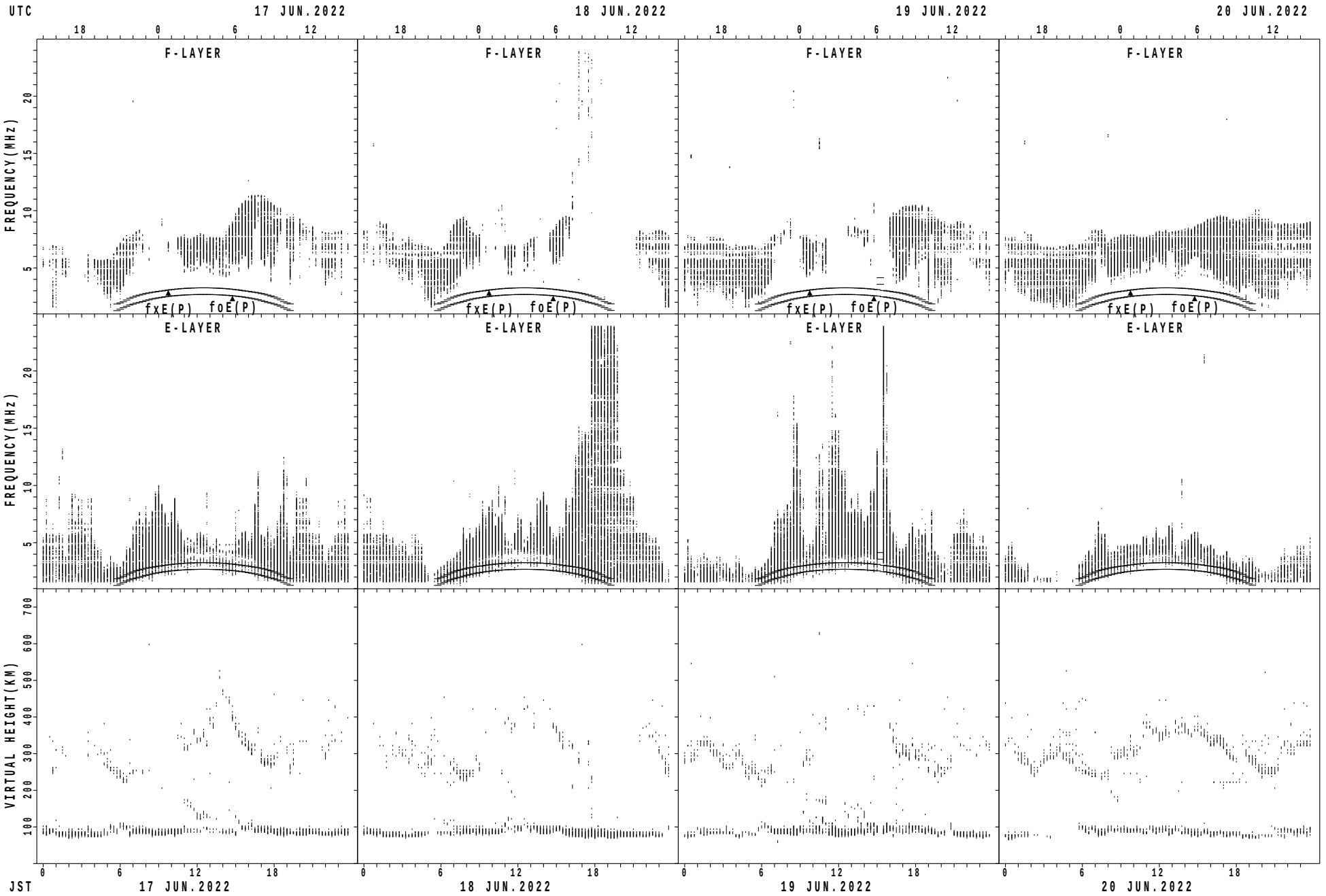
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



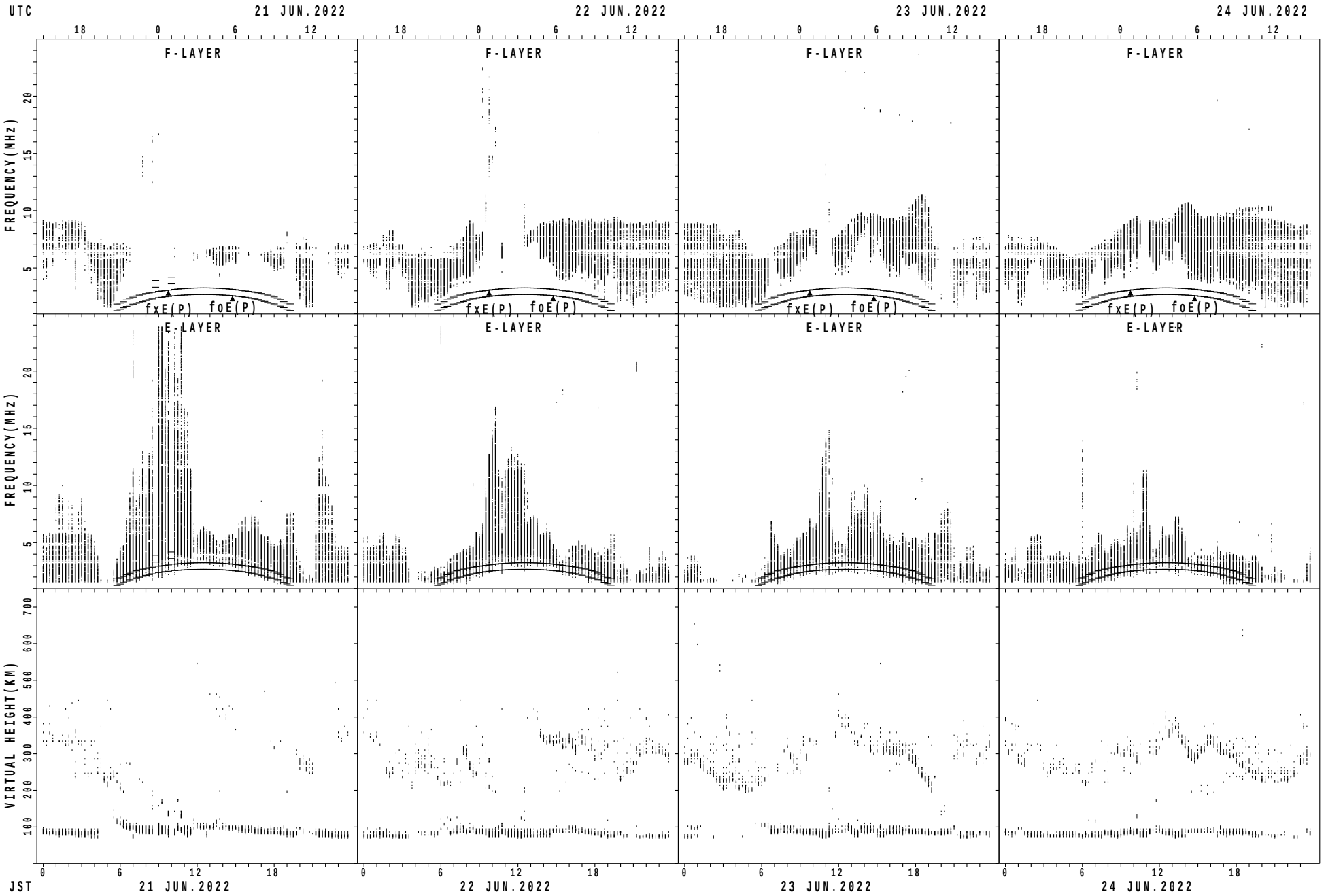
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



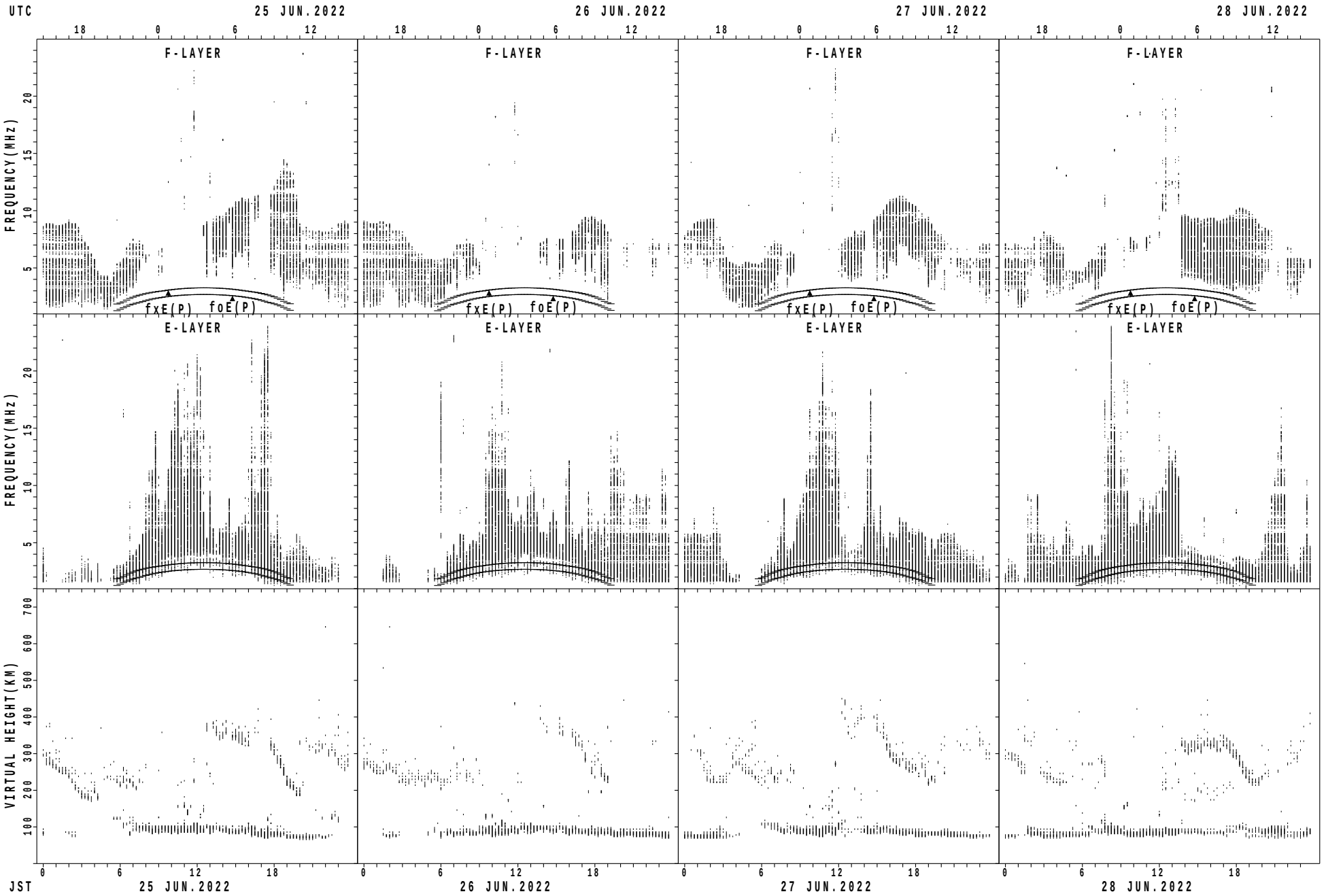
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



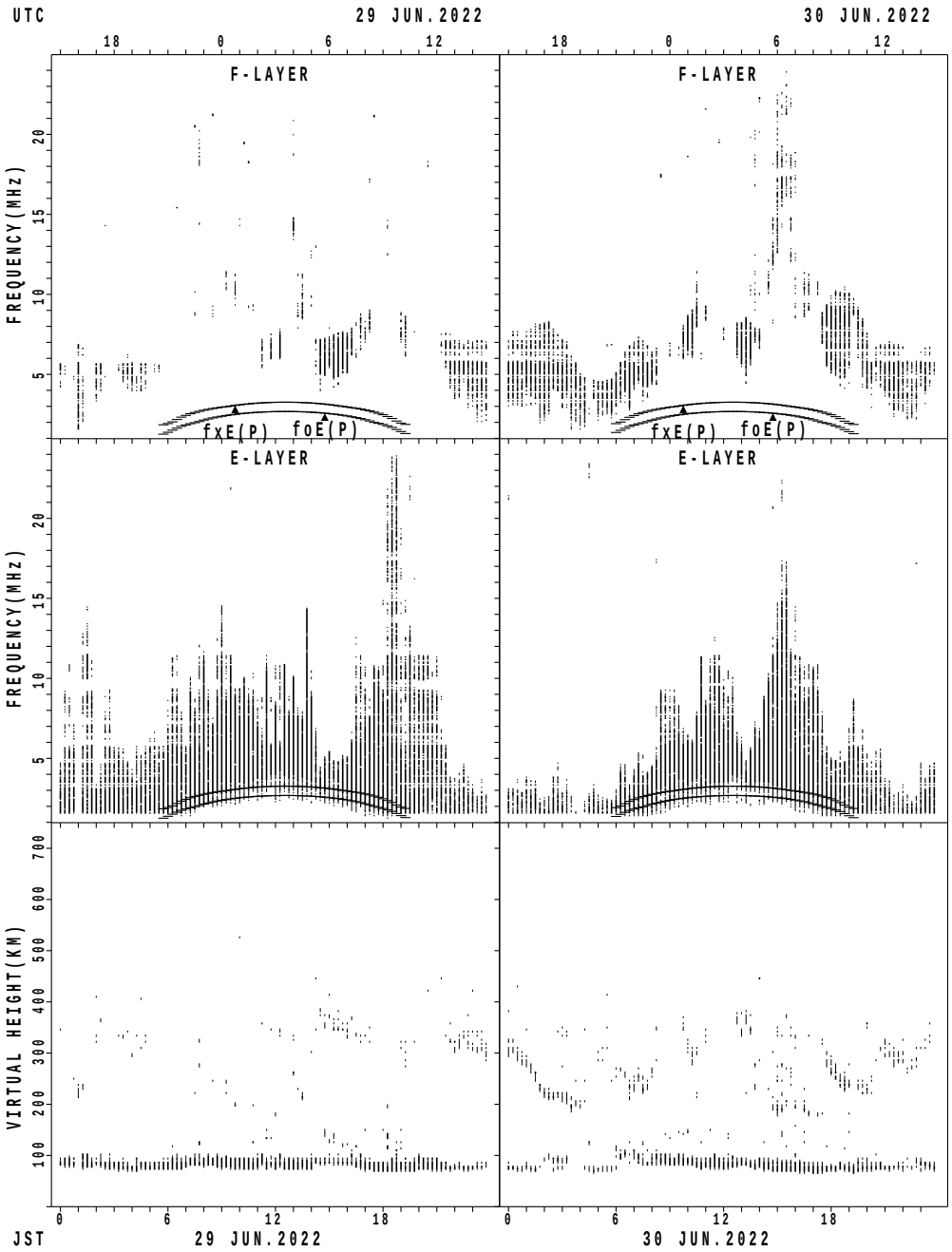
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

JUN.2022 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	3			2	5	15											8	11	17	11	11	9	3
MED	304	314			260	288	252											206	260	254	278	290	278	306
U Q	328	316			306	306	282											294	316	277	290	324	291	322
L Q	268	298			214	239	226											201	210	206	254	286	265	276

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	26	25	28	25	21	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	29	28	28	27
MED	96	98	95	98	96	98	96	96	98	96	96	96	96	98	98	97	98	98	98	97	96	96	96	96
U Q	98	98	98	98	98	100	98	98	98	98	98	98	98	98	98	100	98	100	100	98	98	98	98	98
L Q	92	95	93	93	95	96	96	96	96	96	94	94	94	96	94	94	96	96	94	94	94	94	94	94

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	6	4	4	3	2	5	12	17										21	18	23	12	13	9	6
MED	331	309	302	324	275	216	265	240										226	256	252	266	304	298	321
U Q	378	345	362	426	280	342	277	265										300	284	274	284	329	380	384
L Q	282	294	253	210	270	213	232	211										198	216	198	246	220	285	296

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	30	30	29	27	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	94	93	93	94	94	98	98	96	96	96	98	96	96	96	96	96	96	96	94	96	94	94	94	94
U Q	96	96	96	98	98	98	98	98	98	98	98	98	98	96	98	98	98	98	98	98	98	98	96	98
L Q	92	92	90	90	94	94	96	94	94	96	96	94	94	96	96	92	94	94	92	92	92	92	94	92

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	4	9	10	2	4	2	7	11	14									22	19	18	9	7	7	5
MED	343	314	284	262	288	261	270	232	223									284	256	268	268	304	312	316
U Q	367	349	322	274	305	290	314	274	266									310	292	280	293	306	334	326
L Q	319	284	258	250	273	232	232	226	200									206	220	250	254	260	292	285

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	29	29	28	29	23	30	30	30	30	30	28	29	29	30	30	30	30	30	30	30	29	30	29
MED	94	96	94	94	94	96	98	98	96	97	96	96	96	96	96	96	96	96	94	94	94	94	94	94
U Q	96	96	96	96	97	98	100	100	98	98	98	98	98	98	98	98	98	98	96	96	94	96	96	96
L Q	92	92	91	90	94	92	96	96	94	96	96	96	95	95	94	94	94	94	94	92	90	92	92	94

MONTHLY MEDIANS OF h'F AND h'Es

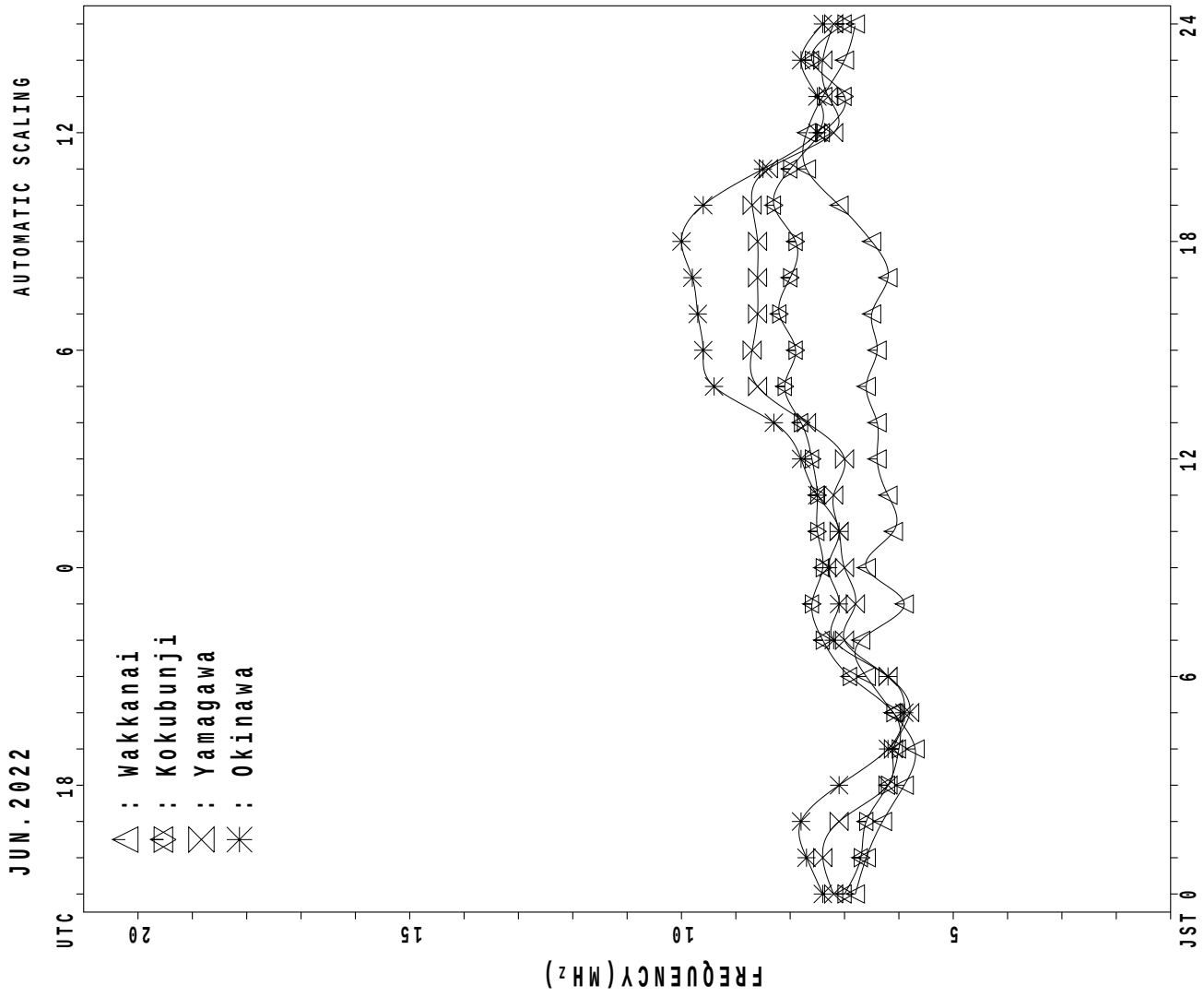
JUN.2022 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	13	13	14	9	7	2	6	15	14									23	23	19	15	12	8	8
MED	316	298	277	282	274	253	239	242	256									292	274	264	268	305	323	351
U Q	330	315	314	318	338	274	258	280	284									304	298	296	290	351	344	361
L Q	311	269	234	258	248	232	224	228	230									208	232	234	264	283	296	332

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	28	30	27	27	26	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	29	30
MED	94	94	93	94	94	96	98	96	96	96	96	96	96	96	95	96	98	96	95	94	93	94	94	93
U Q	96	94	96	94	96	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	96	96	96	94
L Q	92	90	90	90	92	92	96	94	96	94	94	94	94	94	94	94	96	94	92	92	92	92	92	92


MONTHLY MEDIANS PLOT OF foF2
JUN.2022
AUTOMATIC SCALING
: Wakkanai
: Kokubunji
: Yamagawa
: Okinawa
UTC
0
6
12
18
JST 0
6
12
18
24
5
10
15
20
FREQUENCY(MHz)

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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 86	X 76	X 73																			X 87	X 85	X 73
2	X 65	X 65	X 64																			X 87	X 83	X 79
3	X 78	X 76	X 72																			X 88	X 87	91
4	90	90	85	81	83																	X 83	X 81	X 83
5	X 85	83	X 73																			X 85	X 80	X 78
6	X 79	X 73	X 70		70																	X 87	X 84	X 85
7	X 87	X 75	X 72																			X 88	X 90	X 88
8	X 83	X 77	X 73																			X 89	X 83	X 79
9	X 77	X 76	X 74																			X 86	X 79	80
10	X 78	X 84	X 75																			X 86	X 81	X 76
11	X 76	X 73	X 71																			X 89	X 83	X 74
12	X 66	X 65	X 65																			X 88	X 83	X 78
13	X 66	X 70	X 72																			X 78	X 75	X 74
14	X 63	X 58	X 61																			X 81	X 79	X 75
15	X 71	X 67	X 65																			X 79	X 75	X 70
16	X 73	X 71	X 59																			X 80	X 75	X 68
17	X 65	X 63	X 62																			X 88	X 85	X 79
18	X 77	X 73	X 75																			X 77	X 86	X 79
19	X 79	X 74	X 70																			X 78	X 79	X 77
20	X 77	X 75	X 68																			X 89	X 89	X 71
21	X 68	X 66	X 61																			X 83	X 83	X 74
22	X 71	X 70	X 70		70	72																X 79	X 79	X 77
23	X 71	X 71	X 67																			X 83	X 79	X 79
24	X 77	X 73	X 73																			X 89	X 90	X 83
25	X 80	X 78	X 79																			X 90	X 93	X 79
26	X 75	X 67	X 60																			X 85	X 80	X 83
27	X 77	X 74	X 64																			X 75	X 72	X 73
28	72	X 70	X 60																			A	A	A
29	X 70	X 65	X 62																			X 85	X 77	X 78
30	X 71	X 66	X 65																			X 70	X 82	X 73
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	1	3	1																29	29	29
MED	X 76	X 73	X 70	81	70	72																X 85	X 82	X 78
U Q	X 79	X 76	X 73		83																	X 88	X 85	X 80
L Q	X 71	X 67	X 64		70																	X 80	X 79	X 74

JUN.2022 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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	79	69	66	59	54	51	55	56	63	63	60	61	69	66	72	73	69	62	64	70	82	80	78	66
2	58	58	57	54	59	68	64	65	59	66	62	60	60	60	64	66	66	68	68	78	C	80	76	72
3	71	69	65	61	61	65	78	80	78	68	68	64	64	68	66	66	67	70	68	77	84	81	80	F 76
4	F	F	F	F 69	F 67	75	52	55	63	A	63	63	64	65	68	66	65	67	67	76	77	76	74	76
5	78	F 70	66	60	62	69	63	72	A	66	66	68	A	78	J R 78	69	61	60	67	72	81	78	73	71
6	72	66	63	63	F 59	64	83	77	A	67	67	65	68	70	77	70	67	64	67	75	82	80	U R 77	78
7	80	68	65	59	59	68	70	57	57	57	A	64	62	66	68	73	76	74	76	73	78	81	83	81
8	76	70	66	64	60	66	72	72	75	77	75	A	64	70	67	70	70	67	70	81	85	82	76	72
9	70	69	67	63	62	70	80	74	59	59	57	A	59	A	A	62	68	70	69	72	76	79	72	F 67
10	71	77	68	64	64	68	72	69	74	69	67	61	66	68	68	69	71	77	86	85	83	79	75	69
11	69	66	64	65	63	74	81	82	76	70	69	68	70	70	72	75	A	62	69	80	86	82	76	67
12	59	58	58	57	58	65	69	70	A	A	62	58	64	69	69	A	A	A	66	70	84	81	76	71
13	59	63	65	62	67	54	57	A	A	50	53	53	A	R	52	55	61	A	54	60	70	71	68	67
14	56	51	54	48	52	55	57	51	50	52	R 52	51	A	R 52	54	A	C	A	A	68	75	74	72	68
15	64	60	58	58	57	69	A	A	A	59	52	57	54	55	54	A	59	A	A	70	72	J R 72	68	63
16	66	64	52	52	50	55	55	59	51	A	R	A	A	A	A	54	A	56	58	61	67	73	68	61
17	58	56	55	49	47	48	55	59	63	66	62	64	63	63	60	66	66	62	A	A	75	81	78	72
18	70	66	68	64	61	60	69	74	71	67	64	60	61	64	63	61	61	59	64	72	76	70	79	72
19	72	67	63	58	55	65	67	A	60	56	56	56	56	A	53	56	59	A	54	66	J R 66	71	73	70
20	70	68	61	58	54	61	72	64	66	62	59	66	A	63	61	63	65	63	70	71	79	82	82	64
21	J S 61	59	54	54	58	65	63	55	A	A	53	A	A	A	A	58	60	56	56	J R 50	70	76	76	67
22	64	63	63	63	F 58	F 62	68	71	68	A	58	63	65	57	57	58	62	63	66	82	64	72	72	70
23	64	64	60	53	53	55	56	61	60	66	61	62	67	65	64	64	67	67	68	75	89	76	72	72
24	70	66	66	64	59	62	66	75	68	63	71	71	71	75	69	69	68	64	69	79	88	82	83	76
25	73	71	72	64	67	62	70	79	64	67	69	60	68	A	72	74	75	72	75	83	83	83	86	72
26	68	60	53	57	55	54	55	58	58	74	68	61	70	76	62	62	60	66	66	72	76	78	73	76
27	70	67	57	52	48	52	63	68	59	60	A	60	C	64	73	73	71	65	75	70	72	68	65	66
28	F 59	63	53	55	57	63	66	A	64	68	63	A	A	62	A	60	63	62	62	60	67	A	A	A
29	63	58	56	52	52	51	60	64	65	71	68	62	60	61	60	64	58	59	64	72	76	78	70	71
30	64	59	58	56	54	60	68	76	72	61	56	59	55	56	55	58	56	55	57	60	70	63	U R 75	66
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	30	30	29	26	24	25	27	25	22	24	26	27	26	25	27	29	29	29	29	29
MED	69	66	63	58	58	62	66	68	64	66	62	61	64	65	65	66	66	64	67	72	76	78	75	71
U Q	72	68	66	63	61	68	71	74	70	68	68	64	68	70	69	70	68	68	69	78	83	81	78	72
L Q	62	60	56	54	54	55	57	59	59	60	57	60	60	62	60	60	61	61	64	69	71	72	72	67

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						356	E A 444	A	A	A	A	A	A	480	A	A	A	480	L	L				
2						U L 356	424	A	460	468	480	A	A	480	456	468	L 508	A	U L 356					
3						L	L 400	448	A	504	L	528	492	472	472	456	452	400	L					
4				276	A	A	L	A 496	A	A	476	480	488	504	L 496	L 472	U L 460	L	L					
5								L	A	L	A	A	A	A	A	A	448	424	A	A				
6					L	L	L 428	L 444	A	A	A	508	496	496	468	452	L	L	L					
7					L	L 352	388	424	460	A	A	484	476	L 472	484	468	460	416	L	200				
8						L	L	U L 504	476	A	A	A	512	504	L 488	H 480	456	A		L				
9					L	372	L 420	L 452	L	A	L 500	A	484	A	A	A	U L 400	A	A	A				
10					A	A	A	A	A	488	488	L	488	468	A	488	L 468	432	384					
11						A	A	464	A	492	508	496	508	508	468	A	A	L 456	U L 368					
12					L	L	424	A	A	A	508	512	488	496	496	A	A	A	L					
13						A	A	A	A	456	472	488	A	480	A	468	A	A	A					
14					A	384	400	A	A	464	480	472	476	480	L 484	A	C	A	A					
15					L	A	A	A	A	A	488	A	A	A	L 480	A	A	A	A					
16					L 260	L 360	A	416	452	A	468	A	A	A	A	A	A	A	A					
17					L 284	400	440	A	A	A	484	496	508	508	508	500	L	A	A	A				
18					L	384	420	A	A	600	A	508	512	492	504	504	472	424	L 388	L				
19					352	L 356	A	A	A	A	484	484	492	A	476	L	L 472	A	A	L				
20					280	L	L	A 552	A	504	H 496	500	A	A	500	L 472	A	A	A	U L 532					
21					L	356	L 412	A	A	A	A	A	A	A	A	468	L 460	420	L 376	A				
22					172	L	424	L	A	A	488	496	L 488	488	488	464	448	412	A					
23					L	L 392	420	444	464	L	480	496	496	496	L	472	464	L 416	L					
24					L	L	U L 400	L 460	L	H 468	416	500	U L 500	500	476	L 476	L	L	A					
25					L 216	268	U L 500	L	L	464	A	L 500	A	A	484	456	444	L U 412	L 388					
26					U L 252	L 356	392	420	A	480	480	500	A	A	L 484	U L 476	464	U L 424	L					
27					U L 268	340	A	428	L	A	A	A	C	492	492	A	L 448	L 412	A	A				
28						L	U L 424	A	A	A	468	A	A	A	A	A	460	U L 436	L 352	U L 516				
29						L	U L 408	432	A	A	A	A	496	A	A	460	L	L 408						
30					288	L	404	U L 424	460	460	492	468	480	464	464	440	U L 440	436	L 380	L				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	9	14	19	15	6	12	19	18	18	19	20	19	18	16	8	3				
MED				276	L 268	356	420	444	460	474	484	496	492	492	484	468	460	422	L 378	U L 516				
U Q					286	384	L 424	464	464	498	492	500	500	500	494	476	464	434	L 386	U L 532				
L Q					L 234	356	400	424	460	464	476	484	488	480	474	460	L 448	L 412	U L 362	200				

JUN.2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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 236	U R 240	224	252	296	324	332	364	356	340	368	348	328	308	260	216	A	A			
2				A 160	208	280	280	312	332	360	328	276	316	316	328	304	284	212	A	A				
3				B 4 102	228	272	312	336	340	344	344	336	328	320	292	304	292	220	A	A				
4				A	A 228	268	308	328	352	336	336	372	352	328	316	296	280	232	A	A				
5				B 180	240	292	312	328	352	352	352	344	296	268	A	A 272	224	A	A					
6				236	240	240	284	304	328	348	364	336	344	356	356	324	276	276	264	A	A			
7				B	B 224	280	308	324	356	356	360	360	356	356	332	304	276	220	196	B				
8				B	B 220	272	308	324	344	360	360	360	360	340	332	312	268	228	208	A				
9				B	A 228	272	300	336	356	372	372	364	360	332	336	296	276	216	A	A				
10				252	B 220	288	312	336	368	372	372	384	360	360	344	312	268	216	A	A				
11				A 212	212	272	304	332	328	340	360	320	364	352	348	324	252	A	A	A				
12				B 188	236	288	312	332	344	356	340	320	304	304	352	324	280	236	A	A				
13				A 236	228	276	324	340	360	360	364	364	B	364	372	340	280	236	236	A				
14				B	B 208	264	328	320	352	360	348	348	348	324	324	304	280	220	A	A				
15				B 188	216	288	324	324	352	352	336	384	352	372	352	324	288	240	A	A				
16				244	A 216	276	320	340	340	328	372	372	364	344	348	324	288	228	B	B				
17				B	B 240	288	328	340	360	368	368	360	368	368	356	324	340	240	A	A				
18				B 176	228	288	320	332	356	368	368	368	360	368	368	336	288	240	B	A				
19				B 196	220	280	328	328	356	368	368	368	392	352	352	324	296	248	B	B				
20				B 228	240	288	316	348	360	376	376	364	364	368	356	328	288	240	A	A				
21				A 172	248	288	316	340	368	368	368	368	368	332	332	332	284	232	A	A				
22				B 180	240	276	312	344	376	376	376	376	384	312	344	324	288	232	B	A				
23				B 180	244	284	304	312	328	372	384	328	340	336	336	324	288	252	A	A				
24				212	172	248	248	296	316	336	336	332	348	348	328	344	308	264	244	A	A			
25				212	208	240	284	316	328	332	360	372	372	352	336	288	332	280	244	A	A			
26				B 180	220	264	308	328	328	360	356	372	372	372	328	304	276	220	160	B				
27				A 196	212	280	292	324	340	348	348	C	348	340	332	316	288	232	188	A				
28				A 248	240	260	304	324	344	368	372	356	356	332	288	A	324	284	A	A				
29				A	A 240	264	296	324	340	352	356	364	352	332	320	304	268	224	296	A				
30				A 172	224	276	308	332	336	340	364	356	324	340	328	292	280	228	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				5	21	30	30	30	30	30	30	30	29	29	30	29	28	30	29	6				
MED				236	188	228	278	310	328	346	360	360	360	356	340	332	314	280	232	202				
U Q				248	220	240	288	316	336	356	368	372	370	364	356	350	324	288	240	236				
L Q				212	174	220	272	304	324	336	352	348	344	348	328	326	304	276	220	188				

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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	31	30	JA 23	JA 34	27	27	60	73	JA 56	JA 65	JA 63	JA 63	JA 89	75	JA 87	JA 67	51	JA 37	JA 31	JA 53	JA 48	JA 52	JA 52	36
2	JA 30	25	21	JA 22	22	24	JA 44	JA 52	60	JA 51	40	JA 73	JA 90	48	JA 36	JA 45	40	JA 53	JA 30	JA 30	JA 22	25	JA 23	EB 16
3	24	30	EB 15	EB 16	EB 17	28	JA 44	JA 57	JA 58	JA 57	JA 79	JA 74	JA 50	JA 37	JA 37	JA 54	JA 53	32	JA 33	JA 33	JA 32	JA 50	JA 85	JA 65
4	JA 39	JA 52	JA 84	JA 51	JA 55	JA 50	JA 36	62	JA 76	JA 161	JA 59	JA 51	GJ	JA 50	JA 63	JA 55	36	40	JA 36	JA 46	JA 65	JA 40	JA 52	JA 85
5	JA 51	26	20	EB 16	JA 29	JA 33	JA 56	JA 65	JA 86	JA 68	JA 56	JA 63	JA 104	JA 82	JA 97	JA 69	JA 88	JA 39	JA 46	JA 145	JA 87	68	JA 33	30
6	JA 86	55	JA 31	G	JA 27	JA 33	JA 41	JA 65	JA 97	JA 86	JA 79	JA 63	JA 58	JA 64	76	JA 34	34	JA 45	JA 35	JA 48	JA 32	JA 41	JA 21	JA 26
7	22	28	EB 16	EB 16	EB 17	BJ A 25	31	JA 117	42	JA 59	JA 94	63	JA 51	JA 61	39	36	32	JA 31	JA 31	JA 23	25	EB 16	JA 20	22
8	JA 19	21	JA 23	20	JA 26	JA 29	JA 49	JA 53	JA 46	JA 62	JA 62	JA 77	JA 62	40	38	40	JA 42	JA 53	JA 41	28	JA 27	JA 40	JA 50	24
9	JA 30	24	25	JA 23	JA 26	JA 35	JA 85	JA 72	JA 147	JA 73	49	JA 77	JA 44	JA 163	JA 119	JA 61	JA 139	62	JA 88	JA 76	JA 53	JA 63	JA 130	JA 128
10	JA 43	JA 66	JA 31	JA 31	JA 30	JA 62	JA 47	JA 97	JA 221	JA 90	JA 90	JA 63	70	JA 90	JA 118	JA 55	JA 43	JA 54	JA 64	JA 63	JA 107	JA 43	JA 65	JA 39
11	JA 24	JA 40	JA 33	JA 38	JA 64	JA 51	JA 53	JA 52	JA 70	JA 57	56	JA 64	JA 44	44	39	JA 53	JA 95	JA 119	JA 139	JA 88	JA 83	JA 41	34	JA 33
12	JA 34	JA 26	JA 23	JA 23	JA 30	32	JA 41	JA 86	JA 117	JA 113	50	JA 52	JA 91	JA 124	JA 55	JA 127	JA 133	JA 128	JA 121	JA 100	JA 52	JA 46	JA 64	JA 99
13	JA 61	JA 32	JA 44	JA 42	JA 31	JA 52	60	JA 96	JA 87	JA 63	57	JA 55	JA 73	50	JA 50	G	JA 49	JA 118	78	JA 23	25	21	JA 63	30
14	JA 33	JA 31	30	25	JA 33	JA 41	JA 63	JA 58	JA 71	JA 51	JA 61	JA 54	46	JA 85	JA 89	JA 83	DC 38	JA 100	163	JA 222	JA 81	JA 97	JA 52	EB 16
15	EB 16	EB 16	EB 16	EB 16	BJ A 23	JA 51	JA 101	JA 169	JA 83	JA 61	JA 120	JA 50	52	52	JA 50	JA 107	JA 64	JA 157	JA 169	JA 83	JA 81	JA 101	JA 102	JA 84
16	52	JA 83	JA 77	JA 76	JA 38	JA 45	JA 52	JA 117	JA 103	JA 131	G	JA 118	JA 110	JA 121	70	JA 56	JA 71	JA 61	JA 63	JA 37	JA 53	44	JA 60	JA 53
17	JA 43	JA 31	28	JA 25	EB 18	30	JA 43	JA 67	JA 69	JA 62	JA 102	JA 53	JA 64	JA 83	JA 43	JA 44	JA 144	JA 61	JA 108	JA 102	JA 86	JA 64	JA 63	JA 46
18	JA 28	JA 42	JA 31	26	G	31	38	JA 65	JA 64	JA 83	JA 62	JA 49	JA 49	40	JA 255	JA 38	JA 36	33	JA 41	JA 35	JA 29	JA 39	26	JA 25
19	21	25	32	JA 28	JA 41	35	JA 51	JA 95	JA 53	JA 51	46	JA 95	JA 86	JA 67	41	43	40	JA 155	JA 53	JA 25	JA 44	JA 50	JA 29	EB 16
20	24	JA 24	EB 16	JA 29	JA 58	JA 57	JA 75	JA 120	JA 155	JA 52	JA 56	JA 105	JA 121	DC 120	43	45	JA 102	JA 98	JA 94	96	JA 120	JA 83	JA 84	JA 86
21	JA 51	JA 32	JA 39	JA 39	JA 35	JA 31	JA 50	80	JA 129	JA 197	JA 57	JA 61	JA 98	JA 171	JA 176	JA 55	39	JA 39	JA 35	JA 109	JA 127	JA 63	JA 106	JA 64
22	JA 35	JA 29	JA 27	EB 16	BJ A 25	JA 31	JA 38	42	JA 57	JA 67	JA 83	JA 60	JA 52	JA 47	JA 47	JA 43	JA 44	JA 47	JA 89	JA 84	JA 106	JA 32	20	EB 16
23	EB 16	EB 16	18	G 22	GJ A 21	32	32	JA 63	JA 64	JA 50	40	JA 53	44	40	39	41	37	34	32	JA 35	JA 28	JA 29	JA 22	25
24	22	EB 16	21	JA 30	GJ A 17	63	30	JA 44	JA 60	JA 55	JA 48	JA 61	JA 119	JA 46	JA 41	39	39	JA 90	JA 74	JA 83	JA 43	JA 45	JA 26	26
25	EB 16	BJ A 25	JA 24	JA 38	JA 31	34	JA 65	JA 73	44	41	JA 49	JA 64	JA 61	JA 98	JA 38	JA 63	36	JA 39	27	JA 33	JA 51	51	32	JA 24
26	EB 16	EB 16	20	EB 15	BJ A 18	JA 37	JA 38	JA 43	JA 51	JA 56	JA 64	JA 80	JA 70	JA 106	JA 106	JA 67	JA 49	JA 49	JA 42	JA 63	EB 16	EB 16	EB 16	19
27	22	22	22	JA 51	28	28	JA 48	JA 108	JA 76	73	JA 59	JA 75	C	JA 47	JA 52	JA 52	JA 109	31	JA 74	JA 68	JA 54	JA 52	JA 62	JA 61
28	JA 37	JA 34	JA 51	JA 32	JA 25	29	JA 41	77	JA 65	65	JA 62	JA 83	JA 142	JA 154	JA 122	JA 66	JA 50	41	JA 32	JA 41	JA 38	JA 99	JA 85	JA 65
29	JA 53	JA 45	JA 30	JA 53	JA 34	32	JA 39	39	JA 50	57	JA 77	JA 61	JA 98	JA 56	JA 88	JA 43	JA 36	33	JA 54	JA 33	JA 33	JA 27	JA 29	JA 53
30	JA 38	JA 24	JA 32	JA 20	G 20	28	JA 51	JA 108	40	47	JA 55	41	40	G 36	G	G	35	34	JA 31	JA 30	JA 28	JA 63	JA 60	JA 52
31																								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	JA 30	JA 28	JA 26	JA 26	JA 27	JA 32	JA 48	JA 70	JA 67	JA 62	JA 59	JA 63	JA 64	JA 62	JA 51	JA 52	JA 45	JA 48	JA 50	JA 50	JA 50	JA 46	JA 52	JA 34
U Q	JA 43	JA 34	JA 32	JA 38	JA 33	JA 45	JA 56	JA 96	JA 87	JA 73	JA 77	JA 75	JA 94	JA 98	JA 89	JA 63	JA 71	JA 90	JA 88	JA 84	JA 81	JA 63	JA 64	JA 64
L Q	22	24	21	EB 20	21	29	39	JA 57	JA 56	JA 55	50	JA 54	50	47	39	41	37	37	JA 33	JA 33	JA 29	39	JA 26	24

JUN.2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	E B 16	G 18	25	34	E A 42	50	41	A	50	A	E A 41	A	38	E A 44	34	30	24	17	20	20	20
2	E B 16	E B 16	E B 16	E B 16	G 16	E A 24	34	34	A	38	36	48	47	36	35	42	36	A	24	23	18	E B 16	E B 16	E B 16
3	E B 16	E B 16	E B 15	E B 16	E B 17	25	29	35	49	42	46	43	45	36	32	30	G 29	G 28	23	25	22	22	18	22
4	24	24	18	16	17	34	35	39	A A 161	A	41	39	G	E A 43	39	41	34	38	28	25	22	21	17	21
5	17	16	E B 16	E B 16	G 18	G 23	32	33	A A 86	42	E A 47	E A 55	A A 104	54	A	40	30	30	26	24	23	21	E B 16	E B 16
6	24	21	17	G	G 17	28	37	E A 41	A A 97	E A 50	E A 51	E A 43	44	39	36	34	32	33	G 26	26	20	21	18	17
7	E B 16	E B 16	E B 16	E B 16	E B 17	G 22	29	35	40	E A 45	A A 94	38	A 44	38	36	35	G 30	29	26	G 19	E B 16	E B 16	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	44	40	A	51	A A 77	42	38	37	36	36	36	34	G 21	25	21	24	16
9	23	E B 16	E B 16	17	20	27	34	40	41	A	41	A A 77	38	A A 163	A A 119	A	35	A	43	28	24	24	25	A
10	23	22	18	E B 16	26	A	45	A	E A 51	39	40	42	42	38	A	45	39	34	28	26	18	21	26	20
11	E B 16	22	E B 20	24	25	26	38	37	46	44	39	40	42	40	38	A	A A 95	E A 39	26	24	24	19	E B 16	17
12	17	E B 16	E B 16	E B 16	G 17	28	35	51	A A 117	A A 113	40	42	39	45	42	A A 127	A A 133	A A 128	26	35	24	24	28	A
13	22	E B 16	18	19	30	E A 38	E A 49	A A 96	A A 87	40	41	42	A A 73	45	A	G	A	A A 118	A	G 20	16	E B 16	18	E B 16
14	E B 16	E B 16	E B 16	E B 15	17	26	36	A	46	42	42	40	42	41	E A 42	A A 83	C	A A 100	A A 163	24	24	22	23	E B 16
15	E B 16	E B 16	E B 16	E B 16	20	A 29	A A 101	A A 169	A A 83	55	40	A	A	A	39	A A 107	E A 48	A A 157	A A 169	24	25	A	22	21
16	24	18	22	G 18	21	24	A	33	40	A A 131	G	A A 118	A A 110	A A 121	A A 70	A	A A 71	A	28	28	23	25	19	19
17	23	20	E B 16	E B 16	E B 18	28	33	A	53	49	44	41	44	42	39	37	38	36	A A 108	A A 102	36	30	24	20
18	E B 16	20	16	E B 14	G	28	32	41	46	48	E A 55	44	45	40	38	G 36	G 32	30	30	E A 23	20	24	E B 17	E B 16
19	E B 16	E B 16	E B 16	E B 16	G 19	26	E A 45	A A 95	50	48	44	44	41	A A 67	36	43	39	A A 155	30	20	20	E B 16	25	E B 16
20	E B 16	E B 18	E B 16	E B 16	G 22	26	33	E B 52	E A 56	41	42	43	A A 121	56	42	40	44	39	E A 49	42	49	28	30	23
21	20	20	19	23	22	27	35	E A 51	A A 129	A A 197	E A 45	A A 61	A A 98	A A 171	A A 176	40	34	35	32	E A 27	24	34	17	16
22	22	E B 16	16	E B 16	G 18	26	36	39	48	A A 67	40	43	41	40	36	38	38	29	27	23	16	24	16	E B 16
23	E B 16	E B 16	E B 16	E B 16	G 18	G 23	29	34	37	38	38	42	40	38	38	38	34	29	27	27	16	E B 16	E B 16	E B 16
24	E B 16	E B 16	E B 16	E B 16	G 15	G 24	29	37	37	37	38	41	44	39	39	37	36	31	30	26	18	E B 16	19	E B 16
25	E B 16	E B 16	16	G 17	G 17	G 17	36	37	39	38	49	43	E A 48	A A 98	36	36	G 33	29	26	24	24	16	E B 16	16
26	E B 16	E B 16	E B 15	E B 15	G 17	G 18	31	E A 40	E A 47	44	G 36	44	48	59	39	45	34	G 27	28	23	E B 16	E B 16	E B 16	E B 16
27	E B 16	E B 16	E B 16	20	G 19	24	41	33	43	48	A A 59	52	C	40	37	44	G 31	29	26	28	24	24	23	24
28	22	17	17	23	G 20	25	32	A A 77	44	49	41	A A 83	A A 142	55	A A 122	45	35	G 28	G 23	26	25	A A 99	A A 85	A A 65
29	21	26	19	21	19	G 24	31	34	46	42	52	52	44	48	47	38	34	28	40	G 28	23	19	20	20
30	17	17	16	E B 16	G 16	24	29	35	37	36	43	38	36	G 34	G	G	33	30	28	24	19	22	21	22
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	29	29	27	28	28	29	29	27	29	26	27	28	27	29	30	30	29	30	28
MED	16	E B 16	E B 16	E B 16	G 18	25	34	37	46	43	42	43	44	41	38	38	34	32	28	24	22	21	19	16
U Q	22	20	17	18	20	28	36	A A 51	A A 54	A A 50	A 48	A A 52	A A 48	A A 56	A A 42	44	A 39	A A 39	33	27	24	24	24	20
L Q	E B 16	E B 16	E B 16	E B 16	G 17	G 24	31	35	40	40	40	42	41	38	36	36	G 33	29	26	23	18	E B 16	E B 16	E B 16

JUN.2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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	15	15	15	14	16	15	18	20	23	16	16	16	15	16	12	15	15	16	16	16
2	16	16	16	16	10	16	15	15	16	16	18	18	16	19	14	16	14	14	14	15	15	16	16	16
3	16	16	15	16	17	16	16	16	16	15	16	16	16	15	14	14	16	14	15	16	16	16	16	16
4	16	16	14	16	16	16	16	14	13	15	15	15	15	16	14	14	14	12	14	16	16	16	16	15
5	16	16	16	16	16	14	12	14	15	16	17	16	16	16	17	17	16	16	15	16	16	16	16	16
6	16	16	16	16	16	16	15	14	16	20	17	16	19	16	16	15	16	14	16	15	16	16	16	16
7	16	16	16	16	17	14	15	16	14	17	16	17	17	16	17	16	13	14	15	15	16	16	16	16
8	16	15	15	16	16	12	15	15	14	16	16	23	17	18	15	16	17	14	11	16	15	15	16	16
9	16	16	16	15	16	14	14	14	14	15	14	23	22	16	16	16	15	17	15	15	15	16	16	16
10	16	16	16	15	16	10	16	15	15	14	15	16	17	14	16	19	15	14	16	17	16	15	16	16
11	16	16	16	16	16	15	16	16	16	17	18	16	15	16	20	16	15	13	16	16	16	16	16	16
12	16	16	16	16	15	16	15	16	16	16	14	16	22	22	16	14	15	14	16	16	16	16	16	16
13	16	16	16	16	16	16	15	16	16	16	16	16	22	40	30	23	19	17	12	14	16	16	16	16
14	16	16	16	16	16	13	13	16	16	17	16	16	16	15	16	18	16	15	16	16	16	16	16	16
15	16	16	16	16	14	16	14	15	16	16	16	16	16	16	16	16	14	15	14	16	16	16	15	16
16	16	16	16	16	16	16	15	16	15	17	19	22	22	27	16	17	15	16	16	16	16	15	16	16
17	15	17	16	16	18	14	16	14	14	17	24	20	16	22	24	16	15	17	16	16	14	16	16	15
18	16	16	16	14	14	15	15	16	14	12	15	21	19	18	17	14	16	15	16	16	16	16	16	16
19	16	16	16	16	16	15	10	14	15	15	15	14	16	16	16	14	17	14	12	16	16	16	16	16
20	14	16	16	15	16	16	16	16	16	16	14	22	18	18	17	17	16	14	16	16	16	16	16	16
21	16	16	15	15	13	15	16	15	16	19	23	16	27	24	23	16	17	15	15	16	17	15	16	16
22	17	16	16	16	15	14	16	15	18	22	24	23	21	20	16	15	15	15	16	16	15	13	16	16
23	16	16	16	16	16	16	15	15	16	16	24	18	22	22	23	17	15	12	14	16	16	17	17	16
24	16	16	16	16	11	14	15	14	15	15	20	16	21	17	18	14	14	15	14	16	16	17	14	16
25	16	16	16	16	14	16	16	15	16	17	23	16	22	14	16	16	14	12	15	17	16	16	16	14
26	16	16	16	15	16	14	12	15	17	15	15	16	16	23	17	16	16	15	9	11	16	16	16	16
27	16	16	16	16	16	10	12	15	16	16	18	16	C	18	18	15	16	11	11	14	16	16	16	16
28	15	16	16	16	16	16	13	13	16	14	13	16	17	20	18	16	14	14	15	15	16	15	16	16
29	16	16	16	16	15	13	15	14	14	16	16	15	18	14	16	16	14	14	15	16	15	15	15	16
30	16	16	16	16	14	16	12	13	13	14	14	16	16	16	16	14	14	14	12	16	16	15	16	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	16	16	16	16	16	15	15	15	16	16	16	16	17	16	16	16	15	14	15	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	17	18	20	22	20	18	16	16	15	16	16	16	16	16	16
L Q	16	16	16	16	15	14	14	14	14	15	15	16	16	16	16	15	14	14	14	15	16	15	16	16

JUN.2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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	301	301	286	285	291	281	315	289	317	335	317	281	308	307	307	307	315	294	306	306	287	313	302	302
2	277	283	283	280	295	312	302	324	323	328	314	313	333	303	303	302	283	298	286	291	C	296	295	295
3	295	309	298	296	295	294	327	326	325	321	306	297	287	310	295	306	306	324	297	288	306	302	267	F 281
4	F	F	F	F 257	F 305	381	336	326	317	A	335	306	288	294	300	299	311	302	306	299	306	291	281	286
5	286	F 296	307	307	294	326	307	327	A	318	307	281	A	295	J R 321	320	320	299	303	302	300	295	295	285
6	265	288	287	272	F 262	292	299	345	A	315	306	296	294	294	311	319	304	304	289	288	293	289	U R 289	281
7	307	295	290	300	292	298	306	325	324	256	A	337	291	298	279	293	292	292	291	309	277	286	293	297
8	302	292	291	313	312	312	325	325	314	313	339	A	292	307	307	296	308	309	290	289	300	300	314	289
9	288	301	301	292	293	295	319	332	247	294	284	A	277	A	A	288	310	310	309	290	293	290	296	F
10	260	279	282	275	289	298	317	311	311	317	331	288	296	304	302	302	302	297	304	303	294	302	302	293
11	294	282	282	302	284	283	315	316	330	303	312	299	287	301	289	309	A	199	291	301	298	306	306	303
12	302	288	275	286	307	313	311	331	A	A	268	290	292	291	312	A	A	A	284	294	299	270	296	295
13	271	271	282	282	297	255	276	A	A	232	253	243	A	R	212	252	295	A	259	289	284	293	263	299
14	283	271	269	280	283	268	328	240	267	276	R	R 207	A	R 225	238	A	C	A	A	280	287	279	279	279
15	300	287	279	270	262	279	A	A	A	278	R	254	246	265	244	A	277	A	A	276	296	R	275	280
16	290	279	264	259	254	251	261	289	247	A	R	A	A	A	A	254	A	281	281	286	273	300	280	279
17	277	275	296	294	291	267	264	289	301	300	280	310	310	280	263	287	288	287	A	A	276	291	286	286
18	285	279	289	289	284	265	287	287	316	294	286	285	285	284	292	274	287	286	292	292	283	311	293	293
19	285	284	277	274	261	300	278	A	291	264	269	266	255	A	224	287	286	A	256	284	R	282	287	287
20	282	281	284	267	250	279	295	191	277	289	R	292	A	282	286	285	300	293	292	285	285	266	266	266
21	S	280	275	260	287	287	314	214	A	A	253	A	A	A	A	274	289	289	289	R	281	271	280	285
22	271	271	271	276	F 274	F 284	294	299	303	A	278	290	284	280	260	274	299	284	266	303	351	277	286	286
23	278	292	289	291	306	274	275	312	274	309	297	268	297	297	302	301	301	310	287	278	311	294	293	290
24	280	282	281	313	302	303	316	315	293	284	320	300	303	315	302	308	308	308	283	300	304	289	297	295
25	290	293	307	307	317	317	298	269	341	320	305	278	291	A	274	286	290	289	289	288	321	282	285	311
26	281	281	279	276	299	298	286	252	255	338	296	252	277	220	312	291	280	303	302	296	294	287	286	286
27	275	275	289	270	284	254	300	313	355	315	A	278	C	265	302	301	316	289	316	295	295	294	270	292
28	F 278	277	287	285	296	300	300	A	284	310	336	A	A	197	A	300	300	290	314	218	285	A	A	A
29	266	295	288	294	311	308	318	318	318	318	317	301	284	314	296	315	285	310	305	310	309	301	301	290
30	290	309	295	295	293	292	320	318	310	301	291	304	303	295	288	298	314	292	318	293	307	315	U R 273	282
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	30	30	30	29	26	24	25	24	25	22	24	26	27	26	25	27	28	28	28	29	28
MED	284	283	286	285	292	293	306	314	310	309	306	290	291	294	296	298	300	294	291	292	294	292	287	288
U Q	292	294	290	295	299	303	318	325	320	318	317	300	297	304	303	306	308	306	305	300	305	300	296	295
L Q	277	279	279	274	284	279	290	289	280	286	282	273	284	280	274	286	288	289	286	287	285	284	280	284

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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						334	A	A	A	A	A	A	A	373	A	A	A	339	L	L				
2						U L 387	361	A	343	395	366	A	A	389	394	343	L 325	A	U L 360					
3						L	L 350	355	A	373	L	339	A	387	363	367	340	359	L					
4				359	A	A	L	A	A	A	401	417	403	337	L 332	L 348	U L 344	L	L					
5								L	A	L	A	A	A	A	A	A	359	355	A	A				
6					L	L	L 358	L 382	A	A	A	344	415	347	391	377	L	L	L					
7					L	L 386	382	381	365	A	A	395	395	L 375	359	355	338	355	L	405				
8						L	L	U L 392	374	A	A	A	392	377	L 354	H 366	347	A		L				
9					L	347	L 363	L 363	L	A	L 362	A	376	A	A	A	U L 409	A	A	A				
10					A	A	A	A	A	368	394	L	393	387	A	329	L 331	339	347					
11						A	A	356	A	384	385	384	382	363	389	A	A	L 223	U L 359					
12					L	L	356	A	A	A	387	376	407	376	360	A	A	A	L					
13						A	A	A	A	391	373	376	A	410	A	365	A	A	A					
14					A	338	379	A	A	379	411	423	389	381	L 287	A	C	A	A					
15					L	A	A	A	A	A	403	A	A	A	L 363	A	A	A	A					
16					L 308	L 328	A	435	343	A	420	A	A	A	A	A	A	A	A					
17					L 357	331	328	A	A	A	391	391	385	385	355	346	L	A	A	A				
18					L	334	334	A	A	A	A	380	365	374	369	357	353	348	L 341	L				
19					295	L 357	A	A	A	A	385	372	386	A	386	L	348	A	A	L				
20					330	L	L	A	A	363	H 355	393	A	A	350	L 379	A	A	A	U L 364				
21					L	347	L 366	A	A	A	A	A	A	A	A	384	L 336	337	L 342	A				
22					434	L	333	L	A	A	406	370	L 369	390	382	381	344	356	A					
23					L	L 329	351	376	361	L	385	372	361	386	L	369	343	L 340	L					
24					L	L	U L 371	L 358	L	H 410	443	366	U L 311	360	389	L 371	L	L	A					
25					L 370	356	U L 332	L	L	413	A	L 393	A	A	351	368	345	L U 358	L 338					
26					U L 355	L 350	356	384	A	378	370	357	A	A	L 357	U L 329	348	U L 340	L					
27					U L 334	337	A	371	L	A	A	A	C	352	393	A	L 360	L 375	A	A				
28						L	U L 371	A	A	A	363	A	A	A	A	A	330	U L 347	L 346	U L 289				
29						L	U L 364	370	A	A	A	A	323	A	A	340	L	L 343						
30					333	L	339	U L 347	364	388	A	388	399	391	387	387	U L 352	344	L 368	L				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	9	14	18	13	6	11	18	18	17	19	20	19	18	16	8	3				
MED				359	L 334	342	357	371	362	384	386	378	386	377	363	366	344	346	L U 346	L 364				
U Q					L 364	L 356	L 366	383	365	395	403	393	397	387	388	377	L 352	356	U L 360	405				
L Q					319	334	339	357	343	373	370	370	367	363	354	346	L 338	340	L U 342	L 289				

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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						360	310	372	304	308	308	394	312	346	320	318	300	334	306	310				
2						280	290	300	296	290	314	322	310	372	342	318	366	316	310					
3						266	278	284	278	298	284	342	388	324	336	328	324	280	278					
4				306	266	220	238	290	E A 338	A	298	348	368	360	346	346	314	304	288					
5								296	A	318	336	378	A	330	298	298	282	316	292	294				
6					274	294	280	258	A	290	346	362	360	340	306	278	314	292	304					
7					302	288	256	268	298	502	A	292	390	354	362	314	322	288	272	250				
8						300	266	280	298	308	282	A	366	326	320	334	306	294		298				
9					298	314	280	298	354	E A 368	374	A	392	A	A	384	320	308	330	294				
10					306	298	304	A	286	302	306	352	374	330	E A 330	342	316	304	268					
11						308	254	294	270	334	334	362	366	322	342	296	A	654	306					
12					290	270	302	294	A	A	398	360	388	362	324	A	A	A	324					
13						424	388	A	A	588	528	514	A	R	A	498	352	A	A					
14					318	354	290	512	460	448	438	A	A	A	A	A	C	A	A					
15					352	314	A	A	A	420	606	506	534	488	548	A	402	A	A					
16					368	424	430	368	520	A	R	A	A	A	A	500	A	364	344					
17					300	358	424	358	358	350	414	322	354	396	438	372	336	346	A	A				
18					332	384	320	332	310	356	380	426	402	384	348	404	368	350	332	312				
19					400	306	344	A	346	454	422	438	468	A	468	406	342	A	336	296				
20					400	388	330	A	384	368	354	380	A	382	408	382	340	358	328	312				
21					340	318	302	A	A	A	512	A	A	A	A	428	358	340	316	A				
22					282	314	334	334	308	A	444	374	362	416	432	416	366	338	350					
23					300	336	310	342	372	332	372	404	350	364	344	344	316	302	316					
24					252	280	270	304	288	368	326	340	330	312	334	298	300	308	332					
25					244	262	354	316	266	310	302	432	366	A	342	344	322	312	306					
26					300	316	360	412	476	264	340	496	354	540	322	358	372	306	304					
27					338	396	326	294	274	340	A	412	C	434	320	334	290	328	272	262				
28						274	316	A	358	320	288	A	A	A	A	360	328	328	278	E A 596				
29						288	292	308	268	312	312	314	398	322	346	320	316	312						
30					312	314	306	278	290	342	390	340	H 324	388	400	388	316	348	276	302				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	21	29	28	23	24	25	27	24	22	22	24	27	26	25	24	11				
MED				306	302	314	305	300	304	333	346	368	366	361	342	344	322	316	306	297				
U Q					339	356	332	342	358	368	414	419	390	388	381	388	352	343	329	312				
L Q					286	284	280	290	287	308	308	341	354	330	323	318	314	304	283	294				

JUN.2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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	246	260	280	250	286	258	244	A	A	A	A	A	A	216	A	A	A	250	256	234	270	242	246	246
2	304	302	272	256	276	230	216	A	A	200	200	A	A	200	200	A	H 234	A	234	276	254	246	282	264
3	268	250	254	248	268	210	230	216	A	214	208	208	A	194	194	196	210	202	230	284	258	256	292	328
4	Q 304	Q 286	284	A	A	A	200	A	A	A	186	186	186	A	210	210	230	258	232	272	256	276	288	310
5	252	276	224	254	276	228	268	222	A	216	A	A	A	A	A	A	202	H 216	A	A	264	258	268	Q 282
6	274	256	280	266	228	230	232	A	A	A	A	202	206	206	198	198	H 190	A	204	260	282	284	266	274
7	256	244	272	256	234	212	192	204	230	A	A	180	A	200	216	H 196	206	210	218	200	284	278	278	266
8	262	262	260	256	246	202	226	236	200	A	A	A	200	200	H 198	198	230	A	288	250	268	268	248	246
9	286	266	244	252	244	242	238	236	244	A	220	A	180	A	A	A	202	A	A	A	288	264	250	A
10	280	280	266	280	A	A	A	A	A	194	H 190	200	204	204	A	A	220	206	206	272	260	252	270	284
11	270	302	304	260	294	A	A	210	A	226	184	198	188	212	220	A	A	A	210	276	264	242	254	254
12	268	268	298	276	242	216	228	A	A	A	192	202	184	A	242	A	A	A	222	216	248	278	278	A
13	284	308	280	290	282	A	A	A	A	204	204	210	A	210	A	220	A	A	A	288	278	260	248	248
14	264	304	316	302	A	224	248	A	A	222	222	180	214	214	A	A	C	A	A	286	268	A	270	244
15	244	250	284	300	260	A	A	A	A	A	198	A	A	A	242	A	A	A	A	236	A	A	230	312
16	Q 272	264	320	334	A	218	A	214	298	A	206	A	A	A	A	A	A	A	A	270	294	276	242	282
17	306	272	260	292	236	256	226	A	A	A	224	206	214	194	196	210	222	A	A	A	306	282	282	282
18	270	288	288	280	248	260	240	A	A	A	A	210	A	210	202	208	226	226	230	A	272	284	268	268
19	290	236	Q 270	302	266	250	A	A	A	A	218	218	204	A	204	196	236	A	A	246	258	286	264	262
20	290	264	264	326	266	254	236	A	A	236	244	212	A	A	266	214	A	A	A	212	294	266	260	246
21	298	300	316	352	250	238	230	A	A	A	A	A	A	A	A	214	214	236	A	A	278	322	280	248
22	302	278	266	Q 272	198	232	232	242	A	A	198	214	210	198	212	204	244	212	A	270	258	286	284	284
23	300	280	274	252	236	242	222	202	190	192	194	204	206	206	198	224	220	234	224	290	250	234	254	260
24	294	270	264	258	224	220	204	228	204	188	182	200	A 258	204	194	216	234	214	A	260	236	238	256	256
25	270	262	252	252	200	200	286	240	206	192	A	204	A	A	202	208	206	H 206	228	272	254	272	256	256
26	270	280	290	274	246	238	238	E A 284	A	A	H 310	236	A	A	244	A	236	240	A 250	266	276	258	302	274
27	282	276	274	332	258	242	A	218	206	A	A	A	C	218	204	A	200	222	A	A	254	280	310	282
28	264	264	264	294	284	206	216	A	A	A	218	A	A	A	A	A	218	214	210	298	252	A	A	A
29	240	270	270	230	242	208	216	210	A	A	A	A	A	A	A	212	202	218	308	254	262	262	242	314
30	278	242	278	254	238	230	212	218	210	210	A	190	188	H 178	198	H 190	224	208	222	244	258	282	278	274
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	26	25	23	15	9	12	19	19	14	17	20	17	22	17	17	24	29	27	29	27
MED	273	270	273	272	247	230	230	218	206	207	204	204	204	204	203	208	220	216	228	268	264	268	268	268
U Q	290	280	284	297	268	242	238	236	237	219	220	210	210	211	218	214	230	235	242	276	278	282	281	282
L Q	264	262	264	254	236	214	216	210	202	193	192	198	188	199	198	197	206	209	214	245	255	256	252	254

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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 120	104	104	104	96	104	104	100	100	100	96	106	106	106	106	A	A				
2				A 102	102	102	102	96	96	96	96	96	96	96	96	96	100	98	A	A				
3				B	B 112	108	112	102	96	96	96	96	96	96	96	96	96	100	110	A	A			
4				A	A 114	104	96	96	96	96	96	96	96	96	96	96	96	96	106	A	A			
5				B 126	102	102	96	102	102	102	96	98	98	98	A	A	102	110	A	A				
6				96	104	114	100	100	102	102	102	100	100	100	100	100	102	110	100	A	A			
7				B	B 102	108	104	96	100	100	100	100	100	100	100	100	100	102	106	106	B			
8				B	B 106	100	100	100	100	100	100	100	100	100	100	100	100	110	110	118	A			
9				B	A 116	104	104	104	94	98	98	98	98	98	104	100	104	104	A	A				
10				110	B 102	104	102	96	96	96	106	106	102	102	102	102	102	102	102	A	A			
11				A	94	94	98	96	96	96	96	96	96	96	96	96	100	100	A	A	A			
12				B 102	104	104	104	104	108	100	100	100	100	100	100	100	106	106	106	A	A			
13				A 120	110	102	102	102	102	102	102	102	102	B	102	102	102	102	102	106	A			
14				B	B 100	100	100	100	100	96	96	96	96	100	100	100	104	104	A	A				
15				B 106	116	100	100	100	100	100	92	92	98	108	96	96	100	100	A	A				
16				112	A 112	104	104	102	102	102	106	106	100	100	100	100	100	100	108	B	B			
17				B	B 108	108	108	102	102	102	102	102	102	102	102	102	102	106	106	A	A			
18				B 112	92	110	102	102	102	102	102	102	102	102	102	102	102	108	104	B	A			
19				B 114	102	106	106	98	98	98	106	106	106	106	106	106	106	106	106	B	B			
20				B 116	116	104	100	98	98	110	108	98	98	102	102	102	102	102	102	A	A			
21				A 108	108	108	108	108	108	108	108	108	108	104	102	102	108	108	A	A				
22				B	98	102	106	106	100	100	102	102	102	106	106	106	106	106	106	B	A			
23				B 106	96	108	104	104	104	100	100	100	100	100	100	102	102	102	102	A	A			
24				102	108	106	106	104	104	100	100	96	96	96	98	98	98	98	98	A	A			
25				104	104	102	102	102	102	98	98	102	102	102	102	102	102	102	102	A	A			
26				B 106	106	106	106	102	102	96	96	96	104	104	104	104	110	100	100		B			
27				A 118	108	108	102	102	100	100	100	C	98	98	102	102	102	102	102		A			
28				A 102	106	106	106	106	106	94	100	100	100	100	98	A	98	100	A	A				
29				A	A 100	100	112	104	104	104	106	94	94	104	104	104	100	112	108		A			
30				A 118	114	98	98	98	98	98	98	98	98	96	100	100	100	110	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				5	20	30	30	30	30	30	30	30	29	29	30	29	28	30	29	6				
MED				104	107	106	104	103	102	100	100	100	100	100	100	102	102	102	104	106				
U Q				111	117	112	106	106	102	102	102	102	102	102	102	102	102	106	107	108				
L Q				99	103	102	102	100	98	98	96	96	96	97	98	99	100	100	102	102				

JUN.2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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	100	110	124	124	110	110	108	102	106	106	104	104	114	108	108	122	130	110	110	102	104	96
2	100	94	94	94	98	136	112	106	100	104	104	104	100	96	104	116	120	114	104	110	104	104	96	B
3	96	96	B	B	B	132	118	114	106	108	104	104	94	104	112	104	116	108	114	110	100	100	110	106
4	94	Q 102	102	98	96	114	122	120	106	106	106	106	G	106	100	98	128	118	118	114	108	108	108	108
5	108	90	90	B	90	120	112	106	106	106	106	100	94	94	98	94	104	134	106	106	106	106	106	96
6	102	102	88	G	90	128	118	106	102	104	104	96	96	96	108	102	146	112	100	100	108	104	98	98
7	98	88	B	B	B	118	130	86	122	108	104	106	106	110	114	102	152	108	104	104	108	B	108	94
8	94	94	94	90	90	134	116	116	114	104	110	104	110	126	140	120	120	112	112	116	106	106	106	104
9	96	96	96	96	96	118	112	112	112	108	108	108	108	108	108	108	110	104	102	110	116	110	106	108
10	108	100	92	92	124	114	114	108	108	108	94	114	114	114	104	122	116	112	104	110	102	104	104	102
11	100	92	92	108	108	108	102	104	100	92	100	110	92	92	166	112	92	98	96	102	98	88	92	90
12	92	92	92	86	86	112	110	104	94	94	196	98	98	96	92	100	100	100	100	100	100	102	98	96
13	96	104	114	114	114	104	104	98	98	104	104	98	98	104	98	G	104	96	96	102	102	102	102	102
14	94	96	98	104	104	112	88	114	102	102	98	98	92	98	100	102	104	96	96	112	112	104	100	B
15	B	B	B	B	120	106	104	102	96	102	102	112	112	112	104	104	104	100	100	100	100	102	102	112
16	102	102	104	108	108	106	106	88	98	100	G	102	102	102	108	112	98	98	100	102	102	102	108	104
17	94	98	106	110	B	116	116	106	100	100	100	104	104	108	108	108	108	108	108	102	102	102	96	96
18	96	96	96	102	G	124	114	100	100	96	102	106	104	104	110	110	130	134	106	106	98	98	100	92
19	102	102	100	110	96	118	110	100	104	102	102	102	102	102	140	150	114	92	98	112	104	104	98	B
20	98	98	B	102	102	108	108	100	104	110	104	104	106	106	154	120	104	100	102	102	102	102	96	96
21	98	98	104	102	106	118	108	108	104	104	104	100	96	96	96	98	108	110	104	108	110	100	98	98
22	94	94	94	B	94	94	104	106	106	98	98	102	102	102	102	102	114	114	100	100	110	100	110	B
23	B	B	92	92	102	112	112	104	104	104	112	100	100	100	100	100	122	122	98	98	98	106	102	96
24	96	B	96	96	96	86	110	104	110	104	98	96	96	92	104	108	114	100	106	104	100	106	98	98
25	B	110	98	98	98	142	114	104	108	108	102	102	102	94	100	88	114	106	106	100	100	114	112	104
26	B	B	104	B	100	110	112	108	96	96	96	100	100	100	100	106	106	106	108	108	B	B	B	96
27	92	92	94	94	120	132	108	102	96	100	98	104	C	104	96	104	114	116	96	102	98	98	100	102
28	92	94	94	94	94	112	112	100	100	100	100	94	94	94	98	102	94	94	94	88	88	108	108	102
29	106	92	92	94	92	92	106	112	106	100	94	94	94	100	100	100	100	108	108	108	98	92	94	100
30	92	92	92	90	100	118	110	110	108	206	96	96	104	98	G	G	120	114	116	102	102	102	102	96
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	26	23	26	30	30	30	30	30	29	30	28	30	29	28	30	30	30	30	29	28	29	26
MED	96	96	95	98	99	115	111	106	104	104	102	102	101	102	104	104	112	108	104	104	102	102	102	98
U Q	102	102	100	108	108	124	114	110	108	106	105	106	104	106	111	111	120	114	108	110	108	106	107	104
L Q	94	92	92	94	94	108	108	102	100	100	98	98	96	96	100	101	104	100	100	102	100	101	98	96

JUN.2022 h'Es (KM)

IONOSPHERIC DATA STATION Wakkanai

JUN.2022 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	F4	F4	F2	L1	C2	C2	C4	C3	C3	C4	C3	C3	C4	C2	C3	C2	C2	C2	C2	L5	L8	F9	F6	F3
2	F1	F2	F2	L1	C1	H2	C4	C4	C3	C2	C1	C3	C2	C1	C2	C2	C2	C5	C3	L4	L3	F1	F2	
3	F1	F1				C2	C4	C3	C4	C4	C3	C2	C2	C1	C2	C2	C2	C2	C5	L4	L4	F8	FQ52	FQ63
4	FQ53	FQ53	FQ52	LQ42	LQ31	C5	C2	C3	CQ51	CQ52	C2	C1		C2	C2	C2	C2	C3	C6	L4	L4	F4	F3	FQ73
5	FQ41	F3	F1		LC11	CL33	C3	C3	C5	C3	C3	C2	C4	C3	C4	L3	L3	C2	C5	L5	L6	F4	F3	FF22
6	FQ41	F3	F3		LC11	CL31	C5	C5	C4	C3	C4	C2	C2	C2	C1	C2	C2	C4	C3	L4	L4	F7	F3	F3
7	F1	F1				C2	CL21	LC11	C2	C3	C3	C1	C2	C1	C2	C2	H2	C1	C4	L3	C2		F2	F1
8	F2	F1	F2	L1	L1	C2	C2	C3	C2	C4	C3	C5	C2	C1	H1	C1	C2	C3	C5	C2	L4	F5	F9	FF21
9	F6	F1	F2	L2	L3	C4	C3	C3	C3	C3	C2	C3	C1	C3	C4	C3	C2	C4	C4	C4	L4	F8	F7	FQ52
10	FQ41	FQ41	FF41	LC11	C4	C3	C5	C3	C3	C1	LC11	C1	C1	C2	C3	C2	C2	C2	C3	L5	L5	F6	F4	F4
11	FF11	F5	FQ31	LL32	CC51	C7	C3	C2	C3	C2	C2	C1	C1	C2	HL11	C3	C5	C5	C4	L8	L8	F4	F4	F4
12	F4	F2	F2	L2	LC11	C4	C2	C3	C6	C5	C2	C2	C2	C2	LC21	C5	C8	C7	C5	C6	C6	FQ51	F7	FQ83
13	F5	F2	F5	L8	C4	C6	C3	C5	C4	C1	C2	C2	C2	L1	C1		C2	C5	C7	C2	L1	F1	F5	F2
14	F6	F3	F2	L1	C4	C3	LC13	C3	C3	C2	C2	C1	C2	C2	C2	C3	C2	C7	C6	L3	L8	F6	F6	
15					C1	C4	C4	C6	C4	C4	C1	C2	C2	C2	LH11	C4	C5	C8	C8	C9	L5	F7	F7	F5
16	F6	F4	F6	C3	C3	C3	C4	LC33	C3	C3		C4	C3	C3	C2	C3	C3	C4	C5	C3	L6	F6	F3	F4
17	F3	F4	FQ11	L1		C3	C3	C4	C2	C2	C2	C1	C2	C2	C2	C1	C2	C3	C8	C8	L6	F6	F4	FQ32
18	F3	F6	F3	L1		C3	C3	C5	C3	C4	C4	C1	C2	C1	C1	C1	H2	H2	C4	C3	L5	F5	FF31	FQ41
19	F1	FF11	FF21	L3	LC11	C4	C4	C6	C3	C3	C2	C2	C1	C3	H1	H1	CL21	C3	C4	C3	L8	F2	F2	
20	F1	F2		L4	L2	C4	C6	C3	C3	C2	C1	C2	C3	C3	H1	C2	C4	C4	C5	L4	L6	F7	F7	F5
21	FQ31	F3	F4	L4	C5	C2	C3	C5	C3	C3	C2	C2	C3	C6	C4	C2	C4	C4	C3	L5	L3	F4	F4	F4
22	F4	F2	F2		C1	LC21	C3	C2	C4	C4	C4	C4	C1	C1	C1	C2	C2	C2	C4	L6	LL41	FL31	F1	
23			F1	L1	C2	C1	C2	C2	C1	C1	C2	C1	C1	C1	C2	C2	C1	C2	C1	L4	L6	FF31	F2	F1
24	F1		F1	C1	C1	LC11	C2	C4	C2	C2	C2	C2	C2	C2	C1	C2	C2	C4	C5	L4	L4	F1	F4	F2
25		FF11	FF11	L6	C2	C2	C5	C4	C2	C2	C2	C2	C3	C3	C2	LC11	C2	C2	C2	L9	L7	F7	F1	F2
26			F1		LC11	C3	C2	C3	C3	C3	C1	C2	CQ21	C4	C2	C3	C2	C2	C4	C6				F1
27	F2	F2	F1	L3	C2	C2	C4	C3	C4	C3	C4	C2		C2	C2	CL22	CL22	CL22	C4	C8	L9	F8	F4	F5
28	F5	F3	F3	L5	C3	C2	C4	C6	C3	C3	C2	C5	C4	C4	CQ41	CQ41	L3	C4	LC31	LL42	LL86	F7	F8	F9
29	F7	F3	F4	L5	L5	LC21	C3	C2	C3	C4	C4	C3	C3	C3	C3	C3	C2	C2	C8	C7	L6	F8	F5	F4
30	F4	F3	F3	L1	C1	C2	C3	C3	C2	C1	C3	C1	C1	C2			C2	C2	C3	L4	L7	F7	F6	F4
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN.2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 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	92	101	96	A	85																X 90	X 89	X 86	X 70
2	X 67	X 70	X 68	82	72																X 97	X 98	X 85	91
3	82	87	68	70	66	72															X 87	X 79	X 78	X 77
4	90	93	83	A	72	73															A	89	89	A
5	86	94	92	94	84																X 92	X 78	X 76	90
6	90	89	72	72	X 64																X 90	X 80	88	X 78
7	X 78	83	X 77	X 64	72	70	80	85													X 89	X 94	X 98	X 97
8	X 95	X 88	X 80	X 72	X 74																A	X 84	X 83	X 82
9	88	85	X 78	X 70	X 64																X 90	X 89	X 87	X 86
10	X 81	X 86	X 78	X 78	X 70																X 91	X 85	X 87	X 80
11	X 79	82	83	88	78																X 99	X 77	X 76	X 75
12	X 74	X 73	X 72	72	78																X 93	X 81	83	90
13	91	X 84	X 82	X 82	81																X 75	X 78	X 68	X 64
14	X 68	70	X 62	64	73	76															X 85	X 77	A	A
15	A	X 65	X 65	X 63	X 62																X 75	X 80	X 78	X 73
16	X 77	X 73	X 71	X 72	X 69																X 78	X 75	X 76	X 74
17	X 70	X 69	X 69	X 63	X 62																X 85	X 83	X 84	83
18	X 77	X 74	X 71	X 71	X 68																X 90	X 80	X 78	X 87
19	X 81	X 74	X 67	X 64	X 66	76	89														X 76	X 78	X 75	84
20	85	82	93	77	71	70															X 89	X 88	X 89	X 90
21	84	84	X 78	X 68	71	72															X 80	X 79	X 78	X 77
22	X 77	X 76	X 73	X 65	X 64																X 90	X 89	X 90	X 98
23	X 90	92	X 89	X 79	X 76																X 90	X 80	X 82	X 83
24	X 77	X 75	X 70	X 68	X 68																X 86	93	94	92
25	89	82	81	72	X 60																X 110	X 88	X 77	X 83
26	X 84	X 83	X 77	X 79	X 78																X 78	X 84	X 88	X 88
27	X 87	X 82	X 79	X 53	X 54																X 70	X 68	X 66	88
28	80	80	78	83	X 64																X 82	X 73	X 70	72
29	A	69	A	X 59	60																X 88	X 74	X 73	X 70
30	76	85	79	71	66																88	89	X 77	X 65
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	29	28	30	7	2	1													28	30	29	28
MED	X 82	82	X 78	X 72	X 70	72	84	85													X 88	X 80	X 82	X 83
U Q	88	86	82	78	74	76															X 90	89	X 88	89
L Q	X 77	X 74	X 70	X 64	X 64	70															X 81	X 78	X 76	X 74

JUN.2022 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JUN.2022 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 82	F 84	F 84	A	F 75	62	70	76	A	A	A	66	71	83	85	92	93	84	81	85	84	83	80	64
2	61	64	62	F	F 58	64	71	68	72	77	A	64	67	71	76	78	82	90	93	95	91	92	79	F 80
3	F 70	F 71	F 57	F 53	F 53	F 62	76	80	77	68	A	65	66	71	A	A	88	89	92	89	81	73	72	71
4	F	F	F 72	A	F 59	F 66	64	74	72	77	67	A	A	A	71	A	85	85	90	A	A	F 79	F 72	A
5	F 70	F	F 72	F	F	F 56	58	72	75	75	77	79	84	A	88	88	90	87	92	91	87	72	70	F 68
6	F 72	F 70	F 60	F 58	58	60	F 66	73	71	66	A	A	A	A	88	87	79	74	77	82	J R 84	74	F 79	72
7	72	F 71	71	58	F	F 58	70	F 78	70	64	72	A	70	A	78	90	100	104	86	79	83	88	92	91
8	89	82	74	66	68	79	84	64	73	73	68	64	66	69	76	82	A	87	90	88	A	78	77	76
9	F 75	F 76	72	64	58	59	68	80	67	63	64	69	66	A	74	77	82	87	88	87	84	83	81	80
10	75	80	72	72	64	70	77	92	80	H 68	62	66	67	74	84	A	91	A	91	91	85	79	81	74
11	73	F 72	F 68	F	F	68	79	94	75	A	72	78	89	96	90	90	A	A	A	95	93	71	70	69
12	68	67	66	F 63	F 65	64	68	72	A	83	79	70	65	76	84	84	78	83	83	88	87	75	F 74	F 82
13	F 81	78	76	76	F 70	62	71	62	59	A	A	A	56	A	A	67	71	64	60	61	69	72	62	58
14	62	F 60	56	F 53	F 62	F 67	52	A	56	55	A	A	A	58	A	A	A	63	70	75	79	71	A	A
15	A	59	59	57	56	68	78	A	A	A	56	A	A	66	65	70	70	78	79	A	69	74	72	67
16	71	67	65	66	63	61	68	65	58	A	57	58	56	A	A	56	A	61	63	69	72	69	70	68
17	64	63	62	57	56	60	70	H 84	79	H 65	A	75	A	A	A	A	84	83	78	81	79	77	78	F 73
18	71	68	65	65	62	59	64	72	80	77	A	A	A	68	70	72	72	75	78	84	84	74	72	81
19	75	68	61	58	60	F 67	F 79	79	77	73	A	67	69	68	66	64	67	67	69	70	70	72	69	F 73
20	F 73	F	F	F	F 59	F 62	72	85	83	76	68	70	71	70	73	73	76	A	77	A	83	82	83	84
21	F 76	F 74	72	62	F 62	F 62	62	62	57	A	55	A	60	66	A	64	64	62	57	62	74	73	72	71
22	71	70	67	59	58	60	71	87	92	80	A	68	73	66	70	76	73	76	80	86	84	83	84	92
23	84	F 84	83	73	70	68	83	82	72	67	74	A	72	78	82	82	84	82	80	84	84	74	76	77
24	71	69	64	62	62	67	76	66	69	78	69	76	84	A	80	74	75	A	82	91	80	F 80	F	F 84
25	F	F 73	F 71	F 66	54	57	70	A	82	A	A	A	71	78	86	93	94	92	95	95	104	82	71	77
26	78	77	71	73	71	58	58	56	A	65	71	70	77	80	83	77	75	77	79	79	72	78	82	82
27	81	76	73	47	48	48	58	50	55	A	A	54	61	62	72	77	82	84	83	79	64	62	60	F
28	F 65	F 64	F	F 62	58	60	64	62	72	74	A	A	A	A	A	81	A	78	75	83	76	67	64	F 62
29	A	F 56	A	53	F 50	50	64	65	A	72	67	69	A	67	70	70	71	70	77	83	82	68	67	64
30	F 66	F 68	F 65	F 60	F 55	58	67	74	A	86	73	A	66	65	64	59	62	A	A	74	F 79	F 79	71	59
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	24	27	30	30	27	24	22	17	18	22	20	23	25	25	25	28	27	28	30	28	27
MED	72	70	68	62	59	62	70	73	72	73	68	68	68	70	76	77	79	82	80	84	82	74	72	73
U Q	76	76	72	66	64	67	76	80	78	77	72	70	72	77	84	86	86	87	89	89	84	80	80	81
L Q	70	67	62	58	56	59	64	65	68	66	63	65	66	66	70	70	72	72	77	79	75	72	70	68

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	496	A	464	408						
2								L 424	468	A	A	A	A	A	A	492	A	456						
3								A	A	A	A	A	A	A	A	A	A	A	A					
4								A	A	A	A	A	A	A	500	A	A	A		A				
5							A	A	A	A	A	A	A	A	A	A	A	A						
6							L	A	A	A	A	A	A	A	A	A	A	A	A					
7							L	420	L 492	A	480	A	A	A	A	A	456	424	L					
8							L	U L 488	A	A	536	524	504	508	A	A	A	A	A					
9								444	552	U L 500	500	504	A	A	A	A	460	456	L					
10							L	440	A	A	A	500	A	A	A	A	A	A						
11										A	532	A	R 480	A	496	A	A	A	A					
12								L 468	A	A	516	508	U L 548	R 500	A	A	504	456	380					
13							400	A	A	A	A	A	484	A	A	A	A	L 424						
14							416	A	448	484	A	A	A	A	A	A	A	A	A					
15								A	A	A	488	A	A	A	504	U R 460	452	A	A	A				
16						336	392	428	A	A	480	A	A	A	A	A	A	440	L 400					
17								460	A	A	A	532	A	A	A	A	A	A	A					
18							U L 440	492	A	A	A	A	A	A	508	A	472	460	L 400					
19							A	A	A	A	A	A	504	496	500	508	480	U L 444	L 392					
20						348	A	A	A	A	508	A	A	528	A	A	A	A	A	A				
21							A	A	460	A	480	A	492	A	A	A	A	432	A					
22							456	452	A	A	A	A	A	A	500	A	A	436	L 392					
23						L	408	L 436	440	A	A	A	A	A	A	A	452	448	A					
24							L	556	468	A	516	500	A	A	A	476	A	A	A					
25								A	A	A	A	A	548	A	484	504	A	A	L 372	A				
26							U L 372	U L 464	A	A	A	A	A	A	A	A	448	L	L 352					
27						U L 280	372	448	A	A	A	R 472	A	A	A	472	440	A	A					
28							428	A	A	A	A	A	A	A	A	A	A	A	L					
29							L 408	A	A	A	488	A	A	A	A	A	A	436	L 384					
30								424	A	A	A	A		R 472	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	10	15	7	2	11	7	7	5	8	6	10	13	8					
MED						336	408	448	468	492	500	504	504	500	500	484	458	440	L 388					
U Q						348	428	468	492		516	524	548	518	502	504	472	456	L 396					
L Q						U L 280	392	428	448		480	500	484	484	496	472	452	428	L 376					

JUN.2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A 240	292	324	344	364	372	372	376	356	336	R 312	272	180	A				
2						A 244	276	320	332	324	332	348	364	A	340	316	276	208	A				
3						180	236	288	320	332	B	348	348	A	A	A	A	268	A	A				
4						A	A 296	316	332	356	A	A	A	332	332	308	280	196	A				
5						196	232	292	332	356	360	356	356	A	A	336	308	A	A	A				
6						A	256	288	316	324	A	A	A	A	A	A	A	A	A	A				
7						B	A 304	A	A	A	A	A 368	A	A	A	A	A	A	A	A				
8						184	228	288	332	356	356	360	368	376	356	332	308	264	A	A				
9						176	256	300	324	340	356	376	384	376	360	344	308	272	A	A				
10						172	252	300	340	356	360	376	388	384	376	352	320	276	A	A				
11						A	248	280	A	320	A	A	360	384	368	356	312	256	A	A				
12						200	260	300	332	348	A	A	A	A	372	356	336	280	A	A				
13						180	240	292	320	A	360	A	A	A	A	A	A	A	A	A				
14						184	252	296	324	352	368	376	388	A	380	364	328	288	208	A				
15						188	264	304	332	344	384	388	392	392	380	360	328	276	A	A				
16						A	252	288	332	360	372	384	380	380	372	356	324	288	228	A				
17						A	272	308	348	360	372	376	380	372	360	352	340	284	A	A				
18						192	260	308	332	372	380	384	A	372	360	340	332	A	A	A				
19						180	260	300	328	344	360	A	A	372	384	360	332	284	232	A				
20						A	264	308	340	368	380	392	408	R 396	380	360	328	280	220	A				
21						A	260	304	332	364	376	388	396	388	364	352	332	288	A	A				
22						A	268	308	348	364	A	364	A	A	376	348	320	280	216	A				
23						A	256	300	312	352	352	A	A	A	A	A	A	280	A	A				
24						A	236	276	A	A	344	A	364	352	344	336	316	276	A	A				
25						A	256	300	332	356	360	360	368	356	A	A	A	A	A	A				
26						A	252	288	A	A	A	A	384	376	356	344	A	268	192	A				
27						A	236	280	316	328	328	A	A	A	A	332	312	264	200	A				
28						A	A	A	A	A	A	A	A	A	332	A	304	256	A	A				
29						A	200	288	320	340	348	356	344	356	332	A	A	A	A	A				
30						A	A	288	A	A	A	A	A	A	A	A	A	264	200	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						11	26	29	24	24	21	17	19	17	20	21	21	23	11					
MED						184	252	296	330	350	360	376	372	376	362	348	320	276	208					
U Q						192	260	302	332	358	372	384	388	384	376	356	330	280	220					
L Q						180	240	288	320	336	354	358	360	368	356	336	310	268	196					

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 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 106	J A 86	J A 77	J A 212	J A 32	22	J A 50	J A 64	J A 82	J A 82	J A 103	J A 76	J A 57	J A 76	47	J A 58	G	G	26	J A 26	J A 60	J A 81	J A 85	J A 88
2	J A 108	J A 79	J A 80	J A 60	J A 58	J A 42	J A 45	37	J A 49	J A 82	74	J A 68	J A 70	J A 102	J A 124	J A 54	J A 54	34	25	J A 33	J A 102	J A 107	J A 178	J A 86
3	J A 46	J A 51	J A 35	J A 33	J A 27	27	J A 47	J A 77	J A 54	J A 71	J A 72	J A 63	J A 63	J A 65	J A 160	J A 170	J A 62	J A 90	J A 58	J A 41	J A 80	J A 49	J A 40	J A 168
4	J A 86	J A 51	J A 38	J A 86	J A 66	J A 53	38	J A 55	J A 64	J A 76	J A 84	J A 123	J A 111	J A 100	J A 72	J A 101	J A 72	J A 71	J A 78	J A 170	J A 150	J A 166	J A 51	J A 164
5	J A 96	J A 86	J A 78	J A 66	J A 128	J A 33	J A 50	J A 88	J A 84	J A 114	J A 114	J A 101	J A 70	J A 109	J A 110	J A 78	J A 85	J A 106	J A 122	J A 74	J A 33	J A 78	J A 85	J A 65
6	J A 64	J A 86	J A 47	J A 37	J A 34	J A 35	J A 34	J A 58	J A 63	J A 90	J A 110	J A 111	J A 103	J A 104	J A 85	J A 63	J A 78	J A 80	J A 65	J A 63	J A 77	J A 84	J A 77	J A 104
7	J A 72	J A 84	J A 53	J A 42	J A 32	J A 34	28	34	43	J A 73	J A 89	J A 121	J A 70	J A 75	J A 78	J A 76	J A 59	J A 76	J A 44	J A 139	J A 34	J A 32	J A 32	J A 49
8	J A 32	J A 18	J A 24	J A 17	J A 22	22	31	40	J A 52	J A 63	J A 52	J A 44	42	J A 62	J A 79	J A 82	J A 171	J A 137	J A 86	J A 89	J A 128	J A 86	J A 53	J A 80
9	J A 65	J A 86	J A 87	J A 16	J A 18	23	34	41	J A 49	J A 103	J A 97	G	J A 74	J A 123	J A 62	J A 70	J A 54	35	25	J A 65	J A 109	J A 33	J A 29	J A 36
10	J A 80	J A 26	J A 24	J A 24	E B 16	31	36	42	J A 62	J A 57	J A 55	49	58	J A 123	J A 61	J A 236	J A 102	J A 128	J A 68	J A 36	J A 36	J A 25	J A 31	J A 72
11	J A 72	J A 46	J A 52	J A 26	J A 34	J A 62	J A 75	J A 162	J A 108	J A 133	J A 79	J A 107	J A 48	J A 60	42	J A 90	J A 131	J A 133	J A 110	J A 89	J A 48	J A 30	J A 43	J A 63
12	J A 41	J A 33	J A 33	J A 35	J A 17	J A 31	J A 88	88	J A 142	J A 58	J A 53	J A 86	J A 51	J A 62	J A 67	J A 142	J A 118	J A 212	J A 64	J A 46	J A 150	J A 64	J A 52	J A 58
13	J A 62	J A 51	J A 42	J A 27	J A 34	J A 71	J A 41	J A 54	J A 128	J A 116	J A 111	J A 110	J A 78	J A 70	J A 50	J A 53	J A 84	J A 58	J A 61	J A 64	J A 64	J A 110	J A 118	J A 85
14	J A 98	J A 50	J A 126	J A 54	J A 58	J A 60	J A 66	J A 64	J A 49	J A 114	J A 120	J A 150	J A 68	J A 64	J A 274	J A 108	J A 90	J A 54	J A 69	J A 35	J A 22	J A 78	J A 101	J A 108
15	J A 118	J A 72	J A 82	J A 42	J A 43	J A 42	J A 47	J A 108	J A 113	J A 108	J A 45	J A 71	J A 82	J A 71	47	41	46	J A 42	J A 68	J A 79	J A 54	J A 35	J A 54	J A 28
16	J A 28	J A 26	J A 64	J A 20	J A 23	26	40	J A 138	J A 59	J A 69	46	52	50	J A 78	J A 64	J A 54	J A 85	34	J A 34	J A 46	J A 64	J A 80	J A 65	J A 46
17	J A 52	J A 53	J A 51	J A 51	J A 43	23	J A 46	43	J A 53	J A 56	J A 72	J A 56	J A 100	J A 107	J A 146	J A 148	50	J A 90	J A 54	J A 190	J A 202	J A 25	J A 108	J A 82
18	J A 41	J A 44	J A 33	J A 25	J A 20	J A 22	J A 39	J A 42	J A 82	J A 120	J A 97	J A 102	J A 106	J A 66	J A 61	J A 72	J A 63	J A 59	J A 48	J A 20	J A 26	J A 24	J A 61	J A 52
19	J A 63	J A 22	J A 18	J A 24	J A 30	J A 35	J A 98	J A 85	J A 54	J A 66	J A 95	J A 94	J A 63	40	G	G	G	35	32	J A 57	J A 35	J A 144	J A 140	J A 120
20	J A 41	J A 30	J A 41	J A 74	J A 64	J A 33	J A 49	J A 63	J A 95	J A 116	J A 58	J A 53	J A 58	48	50	J A 57	J A 77	J A 112	J A 88	J A 102	J A 114	J A 77	J A 25	J A 53
21	J A 105	J A 85	J A 32	J A 18	E B 16	J A 34	J A 60	J A 49	J A 55	J A 74	J A 49	J A 82	J A 60	J A 58	J A 66	J A 66	J A 88	J A 53	J A 73	J A 52	J A 66	J A 42	J A 49	J A 35
22	J A 72	J A 42	J A 42	J A 52	J A 42	J A 30	J A 32	J A 37	J A 64	J A 87	J A 86	J A 74	J A 54	J A 55	J A 55	J A 95	J A 68	J A 38	J A 28	J A 28	J A 19	J A 26	J A 42	J A 43
23	J A J A 22	27	19	19	E B 16	23	29	J A 54	41	J A 73	J A 73	J A 102	J A 82	J A 96	J A 84	J A 58	J A 42	J A 43	J A 42	J A 33	J A 42	J A 26	J A 37	J A 57
24	J A 29	J A 52	J A 66	J A 66	J A 28	J A 38	J A 31	J A 54	36	J A 57	J A 46	J A 43	J A 83	J A 117	J A 56	J A 60	J A 73	J A 146	J A 72	J A 71	J A 52	J A 78	J A 64	J A 30
25	J A 42	J A 52	J A 31	J A 18	J A 36	J A 57	J A 64	J A 86	J A 86	J A 113	J A 201	J A 126	J A 156	J A 99	J A 68	J A 78	J A 110	J A 178	J A 193	J A 126	J A 53	J A 38	J A 52	J A 26
26	J A 37	J A 61	J A 124	J A 164	J A 28	J A 31	J A 49	J A 76	J A 232	J A 154	J A 148	J A 94	J A 91	J A 64	J A 100	J A 79	J A 85	J A 47	J A 34	J A 36	J A 29	J A 76	J A 50	J A 49
27	J A 48	J A 20	J A 66	J A 52	J A 29	J A 20	J A 44	J A 53	J A 82	J A 154	J A 124	J A 70	J A 56	J A 85	J A 74	J A 44	J A 53	J A 76	J A 62	J A 89	J A 103	J A 136	J A 164	J A 87
28	J A 84	J A 134	J A 108	J A 101	J A 90	J A 68	J A 66	J A 74	J A 64	J A 74	J A 122	J A 139	J A 146	J A 246	J A 111	J A 154	J A 94	J A 72	J A 27	J A 26	J A 51	J A 53	J A 47	J A 61
29	J A 84	J A 150	J A 117	J A 80	J A 27	J A 25	J A 29	J A 51	J A 72	J A 56	J A 58	J A 52	J A 62	J A 83	J A 90	J A 63	J A 158	J A 40	J A 47	J A 32	J A 36	J A 26	J A 65	J A 110
30	J A 129	J A 63	J A 33	J A 21	J A 81	J A 51	J A 46	J A 41	J A 290	J A 112	J A 62	J A 98	J A 52	J A 52	J A 73	J A 55	J A 80	J A 126	J A 138	J A 78	J A 109	J A 191	J A 108	J A 87
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A 64	J A 52	J A 49	J A 40	J A 32	J A 33	J A 46	J A 54	J A 64	J A 82	J A 82	J A 84	J A 69	J A 76	J A 70	J A 71	J A 78	J A 72	J A 62	J A 60	J A 57	J A 70	J A 54	J A 64
U Q	J A 86	J A 84	J A 78	J A 66	J A 43	J A 42	J A 50	J A 77	J A 86	J A 114	J A 110	J A 107	J A 83	J A 102	J A 90	J A 95	J A 90	J A 112	J A 73	J A 89	J A 103	J A 84	J A 85	J A 87
L Q	J A 41	J A 33	J A 33	J A 24	J A 23	J A 25	J A 34	J A 42	J A 53	J A 69	J A 58	J A 56	J A 57	J A 62	J A 56	J A 57	J A 54	J A 42	J A 34	J A 35	J A 36	J A 32	J A 43	J A 49

JUN.2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 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	21	37	A A 212	20	22	45	52	A A 82	A A 82	A A 103	62	50	72	44	52	G	G	26	21	23	E B 16	E B 16	33
2	18	E B 16	18	25	34	22	35	35	43	71	A A 74	51	52	55	64	45	49	33	24	20	34	19	E B 16	39
3	28	E B 16	E B 16	19	E B 16	24	35	64	51	59	A A 72	58	50	54	A A 160	A A 170	56	53	42	28	44	20	19	35
4	41	29	19	A A 86	E B 16	25	36	48	52	70	62	A A 123	A A 111	A A 100	48	A A 101	61	47	50	A A 170	A A 150	E B 16	E B 16	A A 164
5	E B 16	31	40	43	E B 16	28	43	61	56	54	62	64	52	A A 109	58	69	59	44	45	21	E B 16	E B 16	30	21
6	20	22	29	20	18	25	29	50	48	55	A A 110	A A 111	A A 103	A A 104	67	61	44	55	50	49	56	53	53	E B 16
7	24	50	E B 16	31	24	E B 16	28	33	40	52	44	A A 121	62	A A 75	67	64	34	35	22	44	E B 16	23	20	23
8	E B 16	E B 16	E B 16	E B 16	E B 16	21	31	39	47	53	42	40	40	48	62	70	A A 171	78	72	35	A A 128	47	E B 16	30
9	40	E B 16	E B 16	E B 16	E B 16	22	32	38	45	42	43	G	57	A A 123	50	49	35	30	24	22	34	20	20	20
10	26	E B 16	E B 16	E B 16	E B 16	24	33	38	52	54	50	48	58	62	54	A A 236	70	A A 128	63	22	18	E B 16	E B 16	35
11	48	31	20	E B 16	E B 16	28	62	60	50	A A 133	42	52	44	55	42	86	A A 131	A A 133	A A 110	47	18	19	22	28
12	22	E B 16	E B 16	E B 16	E B 16	28	42	36	A A 142	48	44	45	48	45	54	64	39	32	27	36	E B 16	18	30	36
13	41	27	21	18	E B 16	50	32	48	52	A A 116	A A 111	A A 110	44	A A 70	A A 50	49	52	34	56	40	19	21	E B 16	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	53	33	A A 64	39	44	A A 120	A A 150	A A 68	50	A A 274	A A 108	A A 90	45	66	28	E B 16	40	A A 101	A A 108
15	A A 118	32	26	20	28	30	38	A A 108	A A 113	A A 108	43	A A 71	A A 82	62	47	40	40	42	34	A A 79	34	E B 16	36	24
16	E B 16	17	39	E B 16	E B 16	24	34	36	50	A A 69	42	51	50	A A 78	A A 64	50	A A 85	33	32	18	18	20	38	E B 16
17	32	35	E B 16	E B 16	E B 16	22	42	41	48	52	A A 72	46	A A 100	A A 107	A A 146	A A 148	48	52	48	52	E B 16	E B 16	E B 16	30
18	24	E B 16	E B 16	E B 16	E B 16	22	35	41	65	74	A A 97	A A 102	A A 106	57	48	52	35	33	26	17	E B 16	E B 16	29	40
19	37	E B 16	E B 16	E B 16	E B 16	28	44	68	48	56	A A 95	53	46	40	G	G	G	33	30	22	E B 16	E B 16	19	E B 16
20	E B 16	E B 16	E B 16	32	27	26	46	55	52	53	47	52	54	46	50	53	70	A A 112	73	A A 102	E B 16	E B 16	E B 16	E B 16
21	33	21	20	E B 16	E B 16	30	45	46	39	A A 74	45	A A 82	46	50	A A 66	54	55	41	50	36	39	E B 16	31	E B 16
22	29	25	E B 16	E B 16	20	24	30	36	52	56	A A 86	53	53	53	46	65	64	36	25	17	E B 16	18	E B 16	24
23	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	33	37	58	52	A A 102	62	72	68	48	35	37	37	26	20	18	E B 16	E B 16
24	18	30	E B 16	22	E B 16	23	29	33	35	46	40	42	54	A A 117	51	43	56	A A 146	47	40	E B 16	23	22	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	43	53	A A 86	66	A A 113	A A 201	A A 126	46	50	42	46	48	44	28	78	42	E B 16	E B 16	E B 16
26	22	28	26	37	E B 16	20	31	38	A A 232	47	54	48	64	49	66	51	41	30	27	23	20	30	22	24
27	E B 16	E B 16	23	26	E B 16	20	33	35	50	A A 154	A A 124	43	48	50	51	43	42	41	51	36	29	24	24	42
28	28	E B 16	34	E B 16	21	44	35	43	43	49	A A 122	A A 139	A A 146	A A 246	A A 111	66	A A 94	55	24	18	E B 16	E B 16	28	24
29	A A 84	E B 16	A A 117	35	E B 16	21	28	46	A A 72	54	44	50	A A 62	52	52	53	57	34	28	22	32	18	E B 16	E B 16
30	E B 16	E B 16	19	E B 16	18	42	38	36	A A 290	77	49	A A 98	48	43	53	46	46	A A 126	A A 138	44	26	E B 16	42	E B 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	23	E B 16	17	E B 16	E B 16	24	35	42	50	56	58	56	54	56	54	53	50	42	40	32	20	18	20	24
U Q	33	28	26	26	18	28	42	55	A A 65	A A 74	A A 97	A A 102	A A 64	A A 78	A A 66	A A 69	A A 64	A A 55	51	44	34	21	30	35
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	22	31	36	45	52	44	48	48	50	48	48	40	33	27	22	E B 16	E B 16	E B 16	E B 16

JUN.2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 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	16	16	18	19	24	22	28	25	23	20	15	17	16	16	16	16	16	16
2	16	16	16	16	16	16	16	14	16	18	19	22	26	21	20	18	18	17	15	16	16	16	16	16
3	16	16	16	16	16	16	16	15	18	18	32	20	26	19	24	19	13	13	16	16	16	16	16	16
4	16	16	16	16	16	16	14	16	16	17	22	17	20	20	20	17	15	16	16	16	16	16	16	16
5	16	16	16	16	16	15	16	14	17	18	24	20	22	32	28	19	16	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	18	28	28	26	32	20	28	21	18	15	15	16	16	16	16	16
7	16	16	16	16	16	16	16	16	18	21	22	24	29	27	28	19	16	15	15	15	16	16	16	16
8	16	16	16	16	16	16	16	16	16	20	20	26	31	33	22	16	16	16	16	16	16	16	16	16
9	16	16	16	16	16	16	13	13	15	22	22	18	20	22	18	20	17	14	16	16	16	16	16	16
10	16	16	16	16	16	16	16	16	18	22	22	27	21	28	23	23	17	15	14	16	16	16	16	16
11	16	16	16	16	16	16	14	15	19	18	21	22	28	22	22	24	15	14	15	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	21	30	21	25	20	24	20	16	14	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	20	28	25	34	35	44	37	34	20	18	16	16	16	16	16	16
14	16	16	16	16	16	15	16	18	18	21	30	31	26	35	22	21	17	17	14	16	16	16	16	16
15	16	16	16	16	16	15	16	16	16	21	23	22	25	31	34	20	19	16	15	16	16	16	16	16
16	16	16	16	16	16	16	16	17	20	22	23	30	30	33	20	20	18	17	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	18	22	22	28	28	22	22	20	20	18	18	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	20	21	22	26	22	21	21	16	16	16	14	16	16	16	16
19	16	16	16	16	16	16	16	16	16	20	20	20	27	23	23	20	18	16	16	16	16	16	16	16
20	16	16	16	16	16	16	16	17	20	20	20	25	26	24	22	22	16	18	16	16	16	16	16	16
21	16	16	16	16	16	16	17	20	22	24	30	28	28	30	25	23	18	16	15	15	16	16	16	16
22	16	16	16	16	16	16	16	18	20	22	23	29	30	32	25	22	20	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	15	17	20	21	23	30	25	19	17	18	15	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	21	23	23	30	34	31	19	22	19	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	22	21	24	21	20	22	19	18	16	15	16	16	16	16	16
26	16	16	16	16	16	16	15	14	16	18	24	22	22	25	20	17	17	17	16	16	16	16	16	16
27	16	16	16	16	16	16	17	17	16	17	22	28	33	26	22	23	21	17	16	16	16	16	16	16
28	16	16	16	16	16	15	17	18	17	20	19	22	26	28	19	24	16	16	16	16	16	16	16	16
29	16	16	16	16	16	16	16	18	21	22	24	22	23	26	21	22	18	16	15	16	16	16	16	16
30	16	16	16	16	16	16	16	15	16	18	21	21	22	22	23	20	19	17	16	16	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	16	18	20	22	22	26	25	22	20	18	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	17	19	22	24	28	30	31	24	22	18	17	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	15	16	18	21	22	23	22	20	19	16	15	15	16	16	16	16	16

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 288	F 294	F 292	A	F 276	293	324	347	A	A	A	295	296	291	290	301	309	289	297	299	288	290	282	288
2	285	297	296	F	F 295	330	338	320	326	337	A	315	303	293	312	290	289	287	284	300	307	309	292	F 279
3	F 289	F 308	F 300	F 286	F 285	F 320	327	346	337	354	A	299	288	286	A	A	300	304	310	319	301	292	287	275
4	F	F	F 290	A	F 307	F 318	335	345	330	356	312	A	A	A	293	A	310	311	306	A	A	F 285	F 317	A
5	F 294	F	F 304	F	F	F 341	295	333	315	309	290	293	287	A	277	280	294	294	292	308	333	312	273	F 308
6	F 289	F 278	F 283	F 281	306	348	F 344	334	356	344	A	A	A	A	303	310	318	304	285	295	J R 296	298	F 285	298
7	309	F 302	322	295	F	F 298	325	F 371	323	290	329	A	321	A	277	286	301	315	295	281	277	275	281	303
8	292	294	302	291	299	313	346	321	324	354	304	290	295	287	295	290	A	303	313	292	A	289	285	279
9	F 282	F 304	318	322	303	313	305	350	330	306	305	293	284	A	290	295	300	291	298	295	293	289	288	296
10	289	272	291	307	282	298	301	332	351	H 324	290	292	288	277	293	A	296	A	308	312	302	286	294	286
11	277	F 268	F 276	F	F	314	299	324	291	A	277	287	289	294	294	301	A	A	A	306	327	286	294	296
12	287	282	278	F 289	F 319	334	310	306	A	310	304	308	267	283	293	304	286	287	297	291	310	292	F 273	F 271
13	F 274	274	274	291	F 309	291	277	259	270	A	A	A	244	A	A	275	304	310	280	276	278	303	277	247
14	261	F 273	265	F 282	F 318	F 356	288	A	308	254	A	A	A	269	A	A	A	288	292	300	305	303	A	A
15	A	280	290	281	287	306	307	A	A	A	261	A	A	276	262	283	274	291	312	A	271	266	281	268
16	276	271	272	261	243	256	278	299	250	A	256	265	268	A	A	254	A	286	287	286	299	272	281	289
17	279	291	281	287	276	303	304	H 294	325	H 297	A	282	A	A	A	A	299	307	301	290	300	272	272	F 282
18	278	293	285	291	296	289	255	276	293	A	A	A	A	282	280	291	288	285	291	289	307	288	269	289
19	297	303	286	274	285	F 297	F 303	310	329	299	A	287	291	286	296	266	299	286	296	289	274	274	270	F 261
20	F 300	F	F	F	F 279	F 271	272	314	315	300	307	297	309	283	294	294	295	A	269	A	301	272	292	289
21	F 281	F 264	299	292	F 265	F 279	331	285	247	A	240	A	253	275	A	273	289	294	277	271	273	283	274	277
22	282	280	311	306	281	318	278	301	303	279	A	269	314	285	285	301	289	298	277	285	289	275	277	287
23	275	F 300	287	296	293	283	311	302	325	297	316	A	285	286	289	294	303	308	299	294	302	275	277	278
24	278	293	290	297	296	324	331	284	303	303	296	294	316	A	319	300	311	A	288	312	302	F 304	F	F 281
25	F	F 290	F 300	F 307	309	328	334	A	A 340	A	A	A	260	284	274	279	289	291	291	296	299	328	273	273
26	281	278	286	299	300	288	285	266	A	279	301	280	281	284	294	292	287	292	313	315	274	278	262	278
27	300	302	293	277	279	286	306	330	345	A	A	240	280	272	286	274	294	303	308	322	289	283	279	F
28	F 268	F 290	F	F 296	318	317	347	302	309	290	A	A	A	A	A	293	A	295	295	305	323	297	286	F 279
29	A	F 311	A	304	F 288	312	310	330	A	306	305	310	A	295	295	304	308	301	288	307	318	294	289	298
30	F 286	F 272	F 298	F 303	F 305	314	314	313	A	332	327	A	301	295	299	312	304	A	A	302	F 289	F 324	328	289
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	24	27	30	30	27	24	21	17	18	22	20	23	25	25	25	28	27	28	30	28	27
MED	284	290	290	292	295	312	308	314	324	306	304	292	288	284	293	292	299	294	295	296	300	288	281	282
U Q	289	F 300	300	301	F 306	320	331	333	330	334	310	297	301	289	295	301	304	304	304	307	306	298	288	289
L Q	278	F 274	283	284	281	291	295	299	303	294	284	282	280	280	285	280	289	288	288	289	288	275	274	277

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	A	349	372						
2								L 404	A	A	A	A	A	A	A	A	A	342						
3								A	A	A	A	A	A	A	A	A	A	A	A					
4								A	A	A	A	A	A	A	A	A	A	A		A				
5							A	A	A	A	A	A	A	A	A	A	A	A						
6							L	A	A	A	A	A	A	A	A	A	A	A	A					
7							L	392	L 378	A	A	A	A	A	A	A	359	354	L					
8							L	U L 368	A	A	373	388	385	A	A	A	A	A	A					
9								381	358	U L 376	392	401	A	A	A	A	359	345	L					
10							L	368	A	A	A	A	A	A	A	A	A	A						
11										A	375	A	R 418	A	392	A	A	A	A					
12								L 369	A	A	385	392	U A 323	R 429	A	A	342	348	363					
13							360	A	A	A	A	A	401	A	A	A	A	L 372						
14							373	A	387	400	A	A	A	A	A	A	A	A	A					
15								A	A	A	406	A	A	A	A	U R 402	372	A	A	A				
16						316	385	388	A	A	412	A	A	A	A	A	A	342	L 336					
17								369	A	A	A	372	A	A	A	A	A	A	A					
18							U L 331	345	A	A	A	A	A	A	A	A	353	343	L 355					
19							A	A	A	A	A	A	409	403	390	348	357	U L 350	L 349					
20						356	A	A	A	A	373	A	A	362	A	A	A	A	A	A				
21							A	A	389	A	U A 376	A	402	A	A	A	A	A	A					
22							341	371	A	A	A	A	A	A	373	A	A	348	L 342					
23						L	372	L 380	410	A	A	A	A	A	A	A	369	348	A					
24							L	350	391	A	398	411	A	A	A	382	A	A	A					
25								A	A	A	A	A	356	A	365	A	A	A	L 356	A				
26							U L 375	U L 359	A	A	A	A	A	A	A	A	349	L	L 380					
27						U L 369	371	377	A	A	A	R 432	A	A	A	338	A	A	A					
28							361	A	A	A	A	A	A	A	A	A	A	A	L					
29							L 369	A	A	A	390	A	A	A	A	A	A	346	L 351					
30								371	A	A	A	A		R 404	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	10	15	6	2	10	6	7	4	4	4	9	12	8					
MED						356	370	371	388	388	388	396	401	404	382	365	357	348	L 353					
U Q						U L 369	373	381	391		398	411	409	R 416	391	392	364	352	L 360					
L Q						316	360	368	378		375	388	356	382	369	343	349	344	L 346					

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JUN.2022 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							282	252	A	A	A	E A 398	338	360	326	298	282	276						
2								254	256	E A 328	A	298	338	358	316	330	316	310						
3								272	254	248	A	E A 366	362	364	A	A	306	286	260					
4								262	286	276	E A 352	A	A	A	354	A	296	276		A				
5							294	E A 278	310	296	E A 336	E A 334	338	A	322	348	298	288						
6							242	270	242	274	A	A	A	A	310	286	276	306	314					
7							262	222	284	372	280	A	318	A	E A 380	320	298	266	238					
8							226	292	286	258	346	380	360	372	E A 336	E A 350	A	E A 352	E A 302					
9								248	308	306	348	372	368	A	352	310	312	300	260					
10							258	254	240	272	E A 322	368	368	378	330	A	326	A						
11										A	392	342	336	308	316	E A 396	A	A	A					
12								290	A	296	310	344	U L 420	374	332	310	350	322	286					
13							342	408	420	A	A	A	536	A	A	388	322	294						
14							354	A	352	488	A	A	A	460	A	A	A	360	E A 404					
15								A	A	A	486	A	A	E A 434	430	380	382	316	268	A				
16						386	348	324	490	A	496	454	464	A	A	E A 470	A	350	334					
17								288	272	E A 304	A	358	A	A	A	A	296	288	280					
18							372	362	322	E A 458	A	A	A	376	382	352	332	324	304					
19							270	E A 318	262	324	A	384	380	374	356	426	340	308	296					
20						334	332	292	280	310	300	360	334	392	344	340	E A 384	A	E A 462	A				
21							278	374	500	A	546	A	478	400	A	392	368	312	E A 394					
22							344	298	270	290	A	374	314	384	376	344	E A 358	308	294					
23						284	274	246	258	E A 336	304	A	390	406	338	302	294	296	272					
24							250	368	304	300	340	320	278	A	268	318	306	A	282					
25								A	264	A	A	A	438	348	342	334	306	306	264	E A 326				
26							308	400	A	380	312	354	E A 364	348	322	330	322	294	268					
27						294	296	322	288	A	A	552	408	410	356	342	302	288	264					
28							268	304	318	328	A	A	A	A	A	324	A	300	266					
29							280	254	A	308	336	328	A	354	342	314	314	316	290					
30								268	A	E A 306	280	A		366	338	310	330	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	20	26	23	22	17	18	21	20	23	25	25	25	22	1				
MED						314	281	286	286	302	336	360	364	374	338	329	310	303	276	E A 326				
U Q						360	337	322	318	328	372	380	414	396	356	366	336	316	304					
L Q						289	265	254	262	290	307	342	337	359	322	312	298	288	266					

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JUN.2022 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	276	240	E A 260	A	E A 244	240	A	A	A	A	A	A	A	A	E A 242	A	214	222	256	246	260	252	234	E A 262
2	268	258	238	E A 296	E A 302	230	232	212	A	A	A	A	A	A	A	E A 306	A	242	234	242	238	222	256	E A 304
3	E A 264	246	232	E A 264	278	252	246	A	A	A	A	A	A	A	A	A	A	A	A	236	E A 262	236	256	E A 314
4	E A 286	E A 302	248	A	224	230	260	A	A	A	A	A	A	A	A	A	A	A	262	A	A	234	226	A
5	224	E A 302	E A 248	E A 290	220	212	A	A	A	A	A	A	A	A	A	A	A	A	266	238	224	218	E A 324	E A 236
6	E A 262	E A 278	E A 306	282	242	216	226	A	A	A	A	A	A	A	A	A	A	A	A	E A 282	E A 280	E A 332	E A 308	244
7	254	E A 284	222	E A 292	E A 290	198	218	216	224	A	E A 226	A	A	A	A	A	206	254	224	314	274	280	280	258
8	248	238	230	240	254	230	216	218	A	A	194	184	190	E A 330	A	A	A	A	A	234	A	E A 280	268	E A 300
9	E A 288	252	228	226	244	224	214	226	E A 254	216	202	166	A	A	A	A	204	214	232	224	266	258	258	264
10	298	266	252	244	230	240	226	234	A	A	A	A	A	A	A	A	A	A	E A 280	226	232	244	244	288
11	E A 342	E A 306	E A 292	262	258	244	E A 306	E A 268	E A 250	A	194	A	200	A	214	A	A	A	A	266	220	188	262	266
12	298	276	278	272	240	232	258	194	A	A	208	222	E A 310	202	A	A	226	224	228	256	220	240	E A 290	E A 314
13	E A 310	E A 294	E A 268	268	238	E A 332	E A 222	A	A	A	A	A	218	A	A	A	A	218	E A 428	E A 292	278	240	222	332
14	338	310	308	296	218	E A 234	220	A	254	218	A	A	A	A	A	A	A	A	A	254	240	E A 258	A	A
15	A	E A 324	E A 282	288	E A 286	258	244	A	A	A	206	A	A	A	E A 284	204	E A 240	A	A	A	E A 324	266	E A 310	E A 302
16	276	288	E A 332	300	344	260	222	206	A	A	198	A	A	A	A	A	A	218	262	264	258	292	E A 308	246
17	E A 294	280	252	242	270	240	306	E A 248	A	A	A	E A 242	A	A	A	A	A	A	A	312	244	278	292	E A 302
18	270	266	274	258	240	222	E A 242	E A 250	A	A	A	A	A	A	E A 298	A	222	238	230	268	234	232	E A 312	E A 288
19	E A 274	232	260	298	280	250	A	A	A	A	A	A	208	188	194	198	222	E A 214	252	262	228	270	286	256
20	266	220	310	E A 338	E A 308	258	A	A	A	A	E A 256	A	A	248	A	A	A	A	A	A	242	260	244	248
21	E A 300	E A 314	276	262	298	280	A	A	206	A	E A 266	A	234	A	A	A	A	E A 294	A	330	E A 298	274	E A 300	282
22	E A 282	E A 274	242	238	286	236	214	222	A	A	A	A	A	A	E A 246	A	A	252	222	254	228	272	284	272
23	272	260	248	232	248	258	222	218	206	A	A	A	A	A	A	A	206	E A 256	A	256	236	232	278	268
24	276	276	250	268	248	250	220	200	188	A	204	180	A	A	A	240	A	A	A	252	204	226	294	268
25	238	254	230	186	254	E A 276	254	A	A	A	A	A	234	A	E A 236	A	A	A	E A 220	A	E A 256	200	298	288
26	278	302	262	284	236	244	218	218	A	A	A	A	A	A	A	A	E A 282	246	236	242	262	304	310	296
27	242	262	242	E A 296	290	214	E A 254	204	A	A	A	192	A	A	A	E A 302	A	A	A	230	E A 248	294	286	E A 328
28	E A 338	272	E A 288	246	222	E A 256	222	A	A	A	A	A	A	A	A	A	A	A	232	246	222	218	E A 266	E A 286
29	A	238	A	E A 270	252	224	226	A	A	A	E A 224	A	A	A	A	A	A	236	232	250	238	230	272	274
30	288	278	256	242	240	E A 282	280	214	A	A	A	A	342	214	A	A	A	A	A	E A 262	278	226	E A 238	242
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	29	28	30	30	25	16	7	2	11	6	8	5	7	5	9	14	17	26	28	30	29	28
MED	270	U 264	249	U 256	246	236	224	216	215	217	200	185	220	208	E A 242	U 219	214	230	233	251	238	243	U 268	U 265
U Q	E A 296	E A 294	E A 280	E A 291	286	258	254	E A 230	254		E A 226	222	272	289	E A 284	E A 304	E A 233	252	262	266	264	274	E A 299	E A 301
L Q	265	254	242	243	240	230	220	209	206		198	180	204	195	214	201	206	218	229	242	230	230	256	260

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JUN.2022 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JUN.2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	94	94	96	96	96	132	114	106	104	104	104	114	118	110	118	108	G	G	178	100	100	102	102	98
2	98	92	92	96	96	98	112	110	108	100	96	98	100	100	106	110	110	112	110	102	96	96	98	98
3	94	92	88	88	92	120	108	104	104	100	98	100	100	106	100	100	108	104	100	92	88	88	90	100
4	94	94	94	92	92	98	116	110	104	100	100	100	96	98	100	104	106	106	102	100	108	108	110	104
5	94	98	92	92	92	124	112	106	106	102	102	100	100	94	106	106	102	100	94	94	94	94	98	98
6	98	106	88	88	86	86	122	106	104	100	94	92	92	90	90	94	96	92	92	92	104	102	100	110
7	96	92	90	90	90	88	102	130	118	98	102	100	98	100	100	98	100	100	94	94	94	94	94	100
8	98	114	98	98	98	138	124	112	110	104	104	104	110	110	106	106	106	104	100	100	112	106	108	98
9	94	94	94	94	92	138	120	114	106	100	98	G	116	110	112	112	114	122	116	94	94	94	92	102
10	102	96	96	96	B	116	114	112	108	108	108	124	112	112	114	104	104	100	100	98	94	98	102	90
11	90	90	118	108	104	104	100	96	100	94	100	106	102	104	138	102	100	100	96	96	94	94	94	94
12	94	94	92	92	98	112	104	102	100	100	102	96	96	100	114	106	108	116	102	98	100	96	100	96
13	96	96	96	94	110	106	112	102	100	102	98	96	100	100	100	100	94	92	92	104	104	102	100	98
14	98	94	98	94	96	108	108	106	112	106	102	102	102	102	104	104	106	106	102	98	92	98	98	98
15	94	94	94	94	108	108	104	100	100	96	124	108	108	108	114	130	116	104	100	92	92	102	102	100
16	100	100	102	102	122	116	108	102	110	110	120	114	110	108	108	110	104	112	104	102	100	96	102	98
17	92	94	94	94	94	144	114	110	104	102	100	104	98	98	98	100	126	98	102	102	102	100	98	98
18	92	92	90	94	98	154	118	120	104	102	104	104	100	100	102	102	104	98	98	96	90	90	104	98
19	98	98	92	98	104	116	108	104	108	102	96	100	104	118	G	G	G	120	110	104	104	108	104	106
20	106	94	94	92	122	98	118	108	102	108	110	110	116	124	120	112	112	102	102	100	100	100	98	98
21	98	98	94	118	B	110	110	110	114	110	114	108	108	110	104	104	102	108	102	100	98	96	100	98
22	94	92	90	90	90	92	134	120	106	98	98	98	96	98	108	102	102	102	108	106	106	90	90	90
23	100	100	106	92	B	118	130	106	106	98	98	92	96	96	96	94	124	116	100	86	86	84	92	96
24	92	92	106	92	90	92	106	100	96	102	102	104	98	94	100	104	104	102	100	98	98	94	98	98
25	122	94	110	94	92	118	112	112	112	106	100	98	100	100	104	100	116	96	94	94	88	86	94	102
26	102	98	98	104	110	112	108	106	96	118	112	96	108	108	104	104	104	106	104	100	102	98	98	94
27	98	96	94	92	90	132	110	108	106	100	100	100	106	98	106	116	110	106	104	100	94	98	106	104
28	98	98	96	98	94	94	92	94	110	106	104	100	98	112	96	96	98	98	108	108	104	100	100	98
29	98	96	96	96	92	96	136	108	104	104	106	104	102	102	98	98	98	98	96	92	90	90	102	102
30	100	94	86	88	110	112	114	112	100	100	96	92	94	98	94	94	110	102	104	106	102	104	98	100
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	27	30	30	30	30	30	30	29	30	30	29	29	28	29	30	30	30	30	30	30
MED	98	94	94	94	96	112	112	107	105	102	102	100	100	101	104	104	105	102	102	99	98	97	99	98
U Q	98	98	98	96	104	120	118	112	108	106	104	105	108	110	110	107	110	107	104	102	102	102	102	100
L Q	94	94	92	92	92	98	108	104	102	100	98	98	98	98	100	100	102	99	98	94	94	94	98	98

IONOSPHERIC DATA STATION Kokubunji

JUN.2022 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2	F6	F6	F3	H1	C4	C3	C4	C5	C3	C2	C2	C3	C1	C2			HC23	C4	FF33	F5	F5	F5
2	F4	F3	F4	F4	F5	L4	C2	C2	C2	C4	C3	C2	C2	C2	C3	C2	C2	C2	C2	C3	F3	F4	F3	F4
3	F5	F5	F5	F4	FQ21	C3	C3	C3	C2	C2	L3	C2	C2	C2	C4	C4	C3	C3	CL53	L4	F5	F5	F2	F4
4	F2	F6	F6	F6	FQ31	L3	C2	C3	C3	C3	C3	C2	L3	L4	C2	C3	C3	C3	C5	C3	F3	F3	F2	F4
5	F3	F3	F5	F5	F3	C3	C3	C4	C2	C2	C3	C3	C2	L3	C2	C3	C3	C2	C2	C3	F7	F3	F3	FQ31
6	FQ31	FF24	F3	F3	F3	L3	CL11	C2	C2	C3	L3	L3	L2	L4	L3	L3	L2	L3	L4	L3	FF42	F5	F4	FF22
7	F3	F4	F3	F3	F4	L2	C1	H1	C1	L1	L1	C4	L3	L3	L3	L3	C1	C3	L3	L4	F3	F4	F3	F4
8	F4	F1	F3	F1	F1	H2	C2	C3	C1	C2	C1	C1	C1	C2	L3	L3	C3	C4	C4	C5	F7	F4	F3	F4
9	F7	F4	F4	F3	F2	H2	C2	C1	L2	C1	L2		C2	C2	C1	L2	C2	C1	C2	L3	F4	F6	F5	F4
10	F5	F4	F4	F3		C4	C2	C1	C2	C2	C2	C1	C2	C3	C2	C3	C3	C4	C5	L3	F4	F3	F2	F6
11	F8	F5	FF24	F2	F3	F5	C4	L3	C3	L3	L2	CL22	C1	C2	H1	C4	C4	C6	L4	L4	F3	F4	F7	F5
12	F5	F2	F3	F3	F1	C4	C5	C2	C3	C2	C1	L1	L1	C1	C2	C3	C3	C1	C3	L4	F3	F3	F3	FQ53
13	FQ32	FQ31	F3	F4	F2	C5	C2	C2	C2	C2	L4	L3	L1	C1	C1	C2	L2	L3	L6	CL44	FF22	F3	F4	F4
14	F5	F4	F4	F4	F3	C4	C3	C3	C1	C2	C2	C2	C2	C1	C3	C3	C4	C3	C6	L3	F3	F6	F5	F5
15	FQ53	FQ41	FQ31	F2	F4	C4	C3	C4	C4	L4	C1	C3	C3	C2	C1	H1	C2	C3	C3	L3	F4	F4	F4	F2
16	F5	F8	F6	F2	F1	C2	C2	C2	C2	C3	C1	C1	C2	C2	C2	C2	C3	C2	C2	C2	F6	F3	F6	F2
17	F7	F4	F3	F5	F4	HL11	C3	C2	C3	C2	C3	C2	L3	L3	L4	L5	C3	L3	C2	C4	F3	F3	F5	F3
18	F2	F4	F4	F2	F1	H2	CL22	CL21	C3	C4	C4	C4	C3	C2	C2	C3	C2	C2	L2	L1	F4	F3	F5	F5
19	F5	F3	F2	F4	F2	C3	C4	C4	C2	C3	L3	L2	C1	C1				C2	C2	C3	F2	F2	F4	F2
20	F2	F3	F2	F3	FF24	L3	C3	C2	C3	C3	C2	C2	C2	C1	C1	C2	C4	C5	C5	C6	F3	F3	F2	F2
21	F3	F3	F5	F1		C3	C2	C2	C1	C2	C1	C2	C2	C2	C2	C2	C3	C2	C2	C4	F5	F3	F4	F3
22	F3	F6	F4	F4	F4	L2	H1	C2	C3	L2	L3	L2	L2	L2	C2	C3	C3	C2	C2	C1	F1	F4	F2	F3
23	F1	F2	F1	F1		C1	C1	C1	C1	L3	L2	L3	L2	L3	L2	L2	CL12	CL32	CL32	L4	F4	F2	F3	F4
24	F4	F4	FF22	F4	F5	L2	C2	C2	L1	C2	C1	C1	L2	L3	C2	C2	C3	C3	C3	L3	F3	F4	F3	F4
25	FF24	F3	FF11	F1	F4	CL21	C3	C4	C3	C4	C4	C3	C2	C2	C1	C2	CL23	LQ31	LQ31	L4	F4	F4	F3	F2
26	F2	F2	F2	F2	F1	C2	C3	C3	L3	CQ21	CL12	L1	C3	C2	C3	C2	C2	C2	C3	C3	F4	F6	F4	F5
27	F2	F2	F3	FQ31	F3	H1	C2	C2	C2	C3	C3	C1	C1	L1	C2	C1	C1	C2	C4	C2	F4	F2	FF53	F6
28	F4	F2	F5	F3	F5	L4	L3	L3	CL22	CL22	C3	C4	L3	CL14	L5	L3	L4	L4	C1	C1	F2	FF24	FF23	F3
29	F5	F3	F4	F5	F4	L2	HC12	C2	C3	C2	C1	C1	C2	C2	L3	L2	L3	L2	L3	L4	F4	F5	F3	F2
30	F2	F3	F4	F2	FF22	CL32	CL42	C2	C3	C4	L2	L3	L2	L1	L2	L2	CL22	C4	C6	C3	F3	F2	F3	F2
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN.2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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 94	X 92	X 84	84	88																X 88	X 79	A	A
2	X 88	X 70	79	66	54																X 112	X 107	X 98	X 86
3	X 85	X 84	X 84	X 72	X 72																X 85	X 83	X 83	X 82
4	X 78	X 78	X 76	X 61	63	66															X 80	X 84	X 81	X 82
5	X 82	89	X 78	X 64	63	59															X 86	X 78	X 77	X 77
6	X 84	88	94	93	X 86																X 95	X 82	A	A
7	X 92	X 107	X 79	65	64	62						C									X 97	X 107	X 106	X 104
8	X 97	X 98	X 95	X 89	X 84							C	C	C							X 81	X 80	A	X 85
9	X 93	X 84	X 81	X 70	X 69																X 90	X 92	X 92	X 89
10	X 88	X 87	X 83	X 74	X 69																X 91	X 86	X 91	X 92
11	X 88	X 86	X 88	X 89	X 94																A	X 86	X 82	X 88
12	X 89	X 83	92	91	X 82																X 100	X 79	X 82	X 78
13	X 78	X 81	X 82	X 79	X 69																X 74	X 70	X 69	X 76
14	A	A	X 58	X 63	X 72																X 86	X 72	X 71	A
15	X 78	X 84	89	X 74	X 77																X 72	X 79	X 82	X 78
16	X 80	X 80	X 78	X 76	X 72																X 75	X 77	X 76	86
17	X 75	X 65	X 60	X 62	X 60																X 94	X 90	X 84	X 90
18	X 91	X 82	X 81	X 77	X 70																A	X 82	X 80	X 87
19	A	X 72	X 70	X 66	X 66																X 89	A	X 85	X 82
20	X 80	X 78	X 81	72	76		83														X 96	X 90	X 95	X 100
21	X 96	X 91	X 91	X 83	X 72																X 79	X 82	X 75	X 71
22	X 76	X 77	X 71	X 68	66	64															X 97	X 94	X 94	X 99
23	X 92	X 93	X 96	X 89	X 79																X 80	X 80	X 83	X 82
24	X 84	X 82	X 75	X 71	X 66																X 97	X 98	X 95	X 88
25	X 90	X 88	X 92	X 84	X 63																X 117	X 86	X 82	X 86
26	X 79	X 83	X 80	X 74	X 66																X 72	X 78	X 78	X 76
27	X 78	X 81	X 91	X 64	X 57																X 73	X 66	X 68	X 68
28	X 76	X 74	X 84	82	70																A	X 79	X 66	X 69
29	71	71	A	69	68																X 86	X 77	X 76	X 77
30	X 73	X 72	X 77	X 64	X 56																X 88	X 78	X 75	X 77
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	30	30	4	1														27	29	27	27
MED	X 84	X 83	X 81	X 73	X 69	63	83														X 88	X 82	X 82	X 82
U Q	X 90	X 88	X 90	X 83	X 76	65															X 96	X 88	X 91	X 88
L Q	X 78	X 78	X 78	X 66	64	60															X 80	X 78	X 76	X 77

JUN.2022 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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	88	86	78	73	F 80	77	76	88	A	61	62	66	75	84	93	99	107	101	90	91	82	73	A	A
2	82	64	F 69	F 56	F 47	45	60	72	76	70	80	73	79	88	98	100	103	105	106	106	106	101	92	80
3	79	78	78	66	66	64	72	74	A	64	63	66	72	79	A	92	95	95	100	89	79	77	77	76
4	72	72	70	55	F 52	F 57	71	67	81	A	A	A	68	70	76	91	92	95	82	70	74	78	75	76
5	76	F 74	72	58	F 48	F 50	52	A	A	A	A	A	84	85	A	A	98	105	103	97	80	72	71	72
6	78	F	F 84	F 78	80	R 65	64	70	68	67	68	A	A	91	96	94	90	A	A	89	89	76	A	A
7	R 86	101	73	F 53	F 54	F 54	76	62	66	64	74	C	A	A	80	J R 90	104	104	91	92	91	101	U R 100	U R 98
8	91	R 92	89	83	78	77	71	84	81	72	A	C	C	C	84	90	93	96	103	87	75	74	A	79
9	87	78	75	64	63	65	70	77	70	71	67	73	70	77	85	88	91	92	92	84	84	86	86	83
10	82	81	77	68	63	59	71	90	92	61	A	A	A	78	85	88	A	93	100	94	85	80	85	86
11	82	80	82	83	88	82	78	82	87	77	A	A	89	95	96	91	93	91	95	98	A	80	76	82
12	83	76	F 81	F	76	71	63	76	81	88	A	A	A	82	93	95	94	99	A	102	94	73	76	72
13	72	75	76	73	63	58	A	63	67	A	57	A	56	A	A	A	66	66	A	63	68	64	63	R 70
14	A	A	52	57	66	59	63	65	65	58	A	A	61	62	67	A	A	68	75	84	80	66	65	A
15	72	78	F	68	71	63	72	80	76	74	64	72	77	79	80	80	83	88	86	60	66	73	76	72
16	74	74	72	70	66	62	68	60	51	A	58	61	60	56	58	A	61	67	69	69	69	71	70	F
17	69	59	54	56	54	50	71	78	73	65	70	A	A	68	68	82	94	91	A	A	88	84	78	84
18	85	76	75	71	64	57	60	78	87	69	63	64	A	A	A	76	83	84	80	80	A	R 76	R 74	81
19	A	66	64	60	60	58	72	72	85	78	74	75	76	77	77	74	79	84	83	82	83	A	79	76
20	74	72	75	F 65	F 64	61	F 77	90	87	77	73	75	70	74	75	78	83	84	82	84	90	84	89	94
21	90	84	85	77	66	70	75	67	54	A	53	A	58	A	A	64	64	58	61	63	73	76	69	65
22	68	71	65	62	F 56	F 55	58	69	88	89	76	A	A	76	77	85	86	84	84	87	91	88	88	93
23	R 86	87	90	83	73	64	61	66	68	77	79	74	74	A	A	88	81	81	88	86	74	74	77	76
24	78	76	69	65	60	57	58	65	71	81	82	82	82	80	85	85	66	84	86	91	91	92	89	82
25	84	82	86	78	57	52	57	66	A	A	69	A	A	A	A	97	105	A	106	118	111	80	76	80
26	73	77	74	68	60	57	57	53	66	A	A	58	58	61	68	68	69	81	87	72	66	72	72	70
27	72	R 75	85	58	51	55	53	61	55	A	A	A	64	A	68	79	87	97	86	82	67	60	62	62
28	70	68	R 78	F 74	F 61	47	54	58	69	70	77	A	75	78	86	A	84	82	86	A	A	73	60	63
29	F	F	A	F	F 53	56	58	58	A	74	70	A	65	70	A	A	A	A	86	A	80	71	70	71
30	67	66	71	58	50	46	54	68	68	72	72	A	77	70	64	63	69	67	79	84	82	72	69	71
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	28	30	30	29	29	25	22	21	12	21	22	22	24	27	27	26	27	27	29	27	26
MED	78	76	75	67	63	58	64	69	71	72	70	72	72	78	80	88	87	88	86	86	82	76	76	76
U Q	85	81	82	74	66	64	72	78	83	77	75	74	77	82	86	92	94	96	95	92	90	82	85	82
L Q	72	72	70	58	F 54	55	58	64	66	65	63	65	62	70	68	78	79	81	82	80	74	72	70	71

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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	512	A	500	484	480	460	436						
2								L	A	480	528	536	508	512	A	A	488	456	A					
3									A	A	500	A	524	A	A	484	A	452						
4								L	A	A	A	A	A	504	504	496	468	440	L					
5								A	A	A	A	A	488	A	A	A	460	448	400					
6									A	A	A	A	A	A	484	A	A	A	A					
7									L	A	A	C	A	A	A	A	A	A						
8								432	A	A	A	C	C	C	496	484	A	A						
9							L	L	A	480	U L 508	A	532	500	512	480	464	456	L 424					
10							L	L	A	460	A	A	A	508	A	A	A	A	A					
11								A	A	A	A	A	A	A	508	A	A	A	492					
12								A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	476	A	A	A	A	A	460	A	A	A				
14								A	A	U L 496	A	A	516	504	A	A	A	472	408					
15							A	A	A	500	U L 500	500	524	516	A	A	A	A	400	A				
16							396	424	456	A	A	496	A	A	A	A	A	A	A	A				
17							L	L	472	A	536	A	A	536	512	A	480	464	A	A				
18							U L 452	444	448	A	A	A	A	A	A	A	A	A	A					
19								L	476	A	A	L 588	A	528	508	508	508	444	456					
20							U L 400	L	L 460	A	524	524	U L 528	512	512	504	484	464	A					
21								A	U L 448	A	476	A	A	A	A	480	A	472	A					
22								A	A	496	A	A	A	A	A	A	A	A	L 492	A				
23								L	L	A	A	500	A	A	A	A	480	436	424					
24							L 380	444	444	480	504	500	A	A	A	496	476	424	L	L				
25									A	A	A	A	A	A	A	480	A	A	A					
26							L	L 376	A	A	A	A	496	476	A	464	480	420	A					
27							U L 368	392	A	A	A	A	A	A	A	A	R 472	432	380					
28								A	476	A	A	A	A	A	A	A	444	452	392	A				
29									A	A	A	A	A	A	A	A	A	A	404	A				
30									444	A	496	A	A	A	472	452	444	428	392	308				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	6	9	7	10	8	8	11	10	12	15	17	12	1				
MED							U L 396	428	456	480	502	506	520	508	506	482	472	448	406	308				
U Q							U L 426	444	474	496	524	530	526	516	512	496	480	460	440					
L Q							L 374	392	446	480	496	500	502	500	484	480	460	434	396					

JUN.2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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						A	A	260	288	348	356	372	A	A	A	A	A	A	244	A				
2						A	200	264	296	312	340	348	372	372	360	348	332	296	248	A				
3						A	A	264	A	324	344	356	356	348	A	A	320	276	A	A				
4						B	A	264	300	320	336	A	A	364	352	348	324	288	244	A				
5						A	184	272	304	320	340	348	A	344	A	A	A	A	A	A				
6						A	A	276	300	316	324	A	A	A	A	A	A	A	A	A				
7						A	A	A	A	348	360	C	A	360	A	344	316	A	A	A				
8						B	A	264	316	332	348	C	C	C	A	348	332	292	A	A				
9						A	216	272	300	324	A	A	372	372	364	352	328	284	232	A				
10						B	204	260	308	336	352	364	364	380	380	364	336	300	228	A				
11						A	208	268	296	328	348	356	364	376	380	364	340	296	A	A				
12						A	216	272	312	324	324	A	376	396	388	364	340	304	244	A				
13						A	224	244	300	324	A	364	376	A	A	A	A	A	A	A				
14						B	232	276	312	340	356	A	388	388	368	336	A	A	A	A				
15						A	212	256	292	A	332	A	368	A	388	372	344	304	A	A				
16						A	208	280	320	344	360	372	396	396	380	364	344	316	240	A				
17						A	220	280	328	A	A	A	388	388	376	364	344	312	260	A				
18						B	236	272	308	356	372	380	384	372	A	360	A	292	228	A				
19						B	A	272	308	332	356	A	364	372	380	372	344	332	256	A				
20						A	228	A	332	352	356	384	384	372	376	368	348	312	252	A				
21						B	212	276	320	344	364	368	388	392	384	372	348	308	236	A				
22						A	A	284	332	332	368	372	372	A	A	352	320	A	A	A				
23						B	212	272	304	340	360	A	A	A	A	A	A	A	A	A				
24						A	A	A	304	A	340	A	A	A	356	356	332	304	A	A				
25						B	208	276	304	336	364	372	376	368	368	348	320	A	A	A				
26						A	A	264	A	A	336	360	364	A	368	348	316	292	A	A				
27						A	204	256	304	324	344	344	A	A	368	356	328	276	A	A				
28						A	A	A	A	A	A	344	A	A	A	A	324	292	A	A				
29						A	A	A	A	344	356	372	372	356	340	328	A	A	A	A				
30						B	A	A	A	332	348	A	A	A	A	A	332	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							17	24	24	25	26	17	19	18	18	22	22	19	12					
MED							212	272	304	332	350	364	372	372	372	356	332	296	244					
U Q							222	276	314	344	360	372	384	388	380	364	344	308	250					
L Q							206	264	300	324	340	352	364	364	364	348	324	292	234					

JUN.2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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 63	J A 24	J A 21	J A 26	J A 28	22	J A 54	J A 78	J A 70	J A 59	J A 70	49	J A 102	J A 50	J A 42	J A 41	J A 38	J A 43	J A 42	J A 80	J A 88	J A 87	J A 106	J A 86
2	J A 86	J A 39	J A 40	J A 25	J A 35	J A 30	28	J A 40	J A 52	J A 51	J A 90	J A 48	J A 50	42	J A 65	J A 79	40	40	J A 54	J A 54	J A 54	E B 16	J A 29	J A 78
3	J A 66	J A 65	J A 47	J A 66	J A 41	J A 33	J A 37	J A 58	J A 104	J A 67	J A 89	J A 84	J A 94	J A 78	J A 128	J A 64	J A 74	J A 109	J A 74	J A 129	J A 102	J A 85	J A 54	20
4	J A 24	J A 52	J A 21	J A 66	J A 50	E B 16	J A 41	J A 43	J A 69	J A 110	J A 125	J A 257	J A 144	46	44	40	38	35	34	J A 30	24	J A 36	J A 33	J A 35
5	J A 66	J A 64	J A 64	J A 49	J A 52	J A 31	J A 39	J A 67	J A 80	J A 102	J A 120	J A 109	J A 78	J A 146	J A 251	J A 210	J A 169	J A 34	32	J A 32	J A 34	J A 42	J A 85	J A 52
6	J A 52	J A 39	J A 52	J A 27	J A 40	J A 26	28	J A 52	J A 56	J A 78	J A 78	J A 116	J A 127	J A 86	J A 57	J A 90	J A 70	J A 111	J A 110	J A 56	J A 65	J A 65	J A 108	J A 85
7	J A 120	J A 48	J A 27	J A 31	J A 34	J A 33	J A 32	J A 36	J A 50	J A 53	J A 55	C	J A 134	J A 87	J A 76	J A 72	J A 50	J A 86	J A 110	J A 64	J A 36	J A 27	J A 39	J A 43
8	20	J A 52	J A 51	19	E B 16	E B 16	26	38	J A 67	J A 69	J A 75	C	C	C	J A 42	38	J A 56	J A 53	J A 73	J A 44	J A 107	J A 48	J A 74	J A 89
9	J A 67	J A 76	J A 64	J A 86	J A 36	J A 48	33	J A 42	J A 49	J A 53	J A 72	J A 108	44	G	42	42	J A 49	J A 77	J A 106	J A 38	J A 84	J A 43	J A 36	J A 30
10	J A 43	J A 41	J A 33	J A 19	J A 27	E B 16	J A 34	J A 43	J A 54	J A 106	J A 78	J A 90	J A 120	J A 64	J A 78	J A 74	J A 104	J A 83	J A 96	J A 49	J A 32	J A 38	J A 28	J A 37
11	J A 49	J A 48	J A 49	J A 40	J A 50	J A 40	J A 36	J A 51	J A 108	J A 168	J A 91	J A 82	J A 83	J A 68	44	J A 65	J A 101	J A 70	J A 147	J A 107	J A 159	J A 145	J A 59	J A 72
12	J A 65	J A 42	J A 66	J A 83	J A 62	J A 52	J A 48	J A 64	J A 87	J A 150	J A 151	J A 145	J A 74	J A 58	J A 68	J A 84	J A 64	J A 66	J A 143	J A 40	J A 100	J A 86	J A 48	J A 76
13	J A 36	J A 43	J A 50	J A 50	J A 42	J A 26	J A 58	J A 54	J A 108	J A 89	J A 54	J A 83	J A 55	J A 95	J A 98	J A 107	J A 84	J A 54	J A 105	J A 54	J A 28	J A 22	J A 40	J A 27
14	J A 108	J A 126	J A 114	J A 66	J A 109	J A 26	36	J A 108	J A 66	J A 73	J A 84	J A 89	50	49	J A 65	J A 152	J A 107	J A 44	J A 40	J A 83	J A 63	J A 50	J A 41	J A 88
15	J A 66	J A 84	J A 66	J A 50	J A 40	J A 86	J A 85	J A 110	J A 96	J A 96	J A 90	J A 53	45	43	J A 58	J A 78	J A 56	J A 52	J A 65	J A 45	J A 76	J A 43	J A 76	J A 43
16	J A 47	J A 47	J A 52	J A 38	J A 36	J A 25	J A 43	J A 41	J A 92	J A 92	J A 73	J A 53	J A 55	J A 54	J A 59	J A 79	J A 66	J A 44	J A 47	J A 32	J A 68	J A 49	J A 16	J A 51
17	J A 48	J A 48	J A 43	J A 34	J A 37	J A 22	30	37	J A 48	J A 77	J A 79	J A 101	J A 91	50	48	J A 68	47	J A 63	J A 91	J A 105	J A 46	J A 76	J A 44	J A 66
18	J A 64	J A 46	E B 16	J A 26	J A 45	E B 16	29	35	J A 47	J A 63	J A 61	J A 59	J A 72	J A 109	J A 148	J A 73	J A 83	J A 74	J A 109	J A 110	J A 100	J A 35	J A 32	J A 26
19	J A 86	J A 108	J A 34	J A 34	J A 29	E B 16	J A 37	36	J A 51	J A 84	J A 76	J A 58	J A 85	J A 82	J A 50	44	J A 54	J A 50	J A 76	J A 158	J A 88	J A 102	J A 30	E B 16
20	J A 52	E B 16	J A 80	J A 48	J A 32	J A 148	J A 62	J A 34	J A 64	J A 148	J A 51	48	47	44	G	39	G	42	J A 49	J A 67	J A 43	J A 17	J A 50	J A 64
21	J A 42	J A 53	J A 51	19	J A 32	E B 16	J A 42	J A 82	J A 77	J A 106	J A 89	J A 79	50	J A 84	J A 89	J A 51	J A 59	J A 51	J A 57	J A 60	J A 88	J A 72	J A 87	J A 51
22	J A 51	J A 48	J A 36	J A 50	J A 32	J A 29	J A 32	J A 53	J A 120	J A 75	J A 86	J A 113	J A 105	J A 83	J A 62	J A 76	J A 78	J A 73	J A 74	J A 52	J A 79	J A 77	J A 39	20
23	23	J A 34	J A 20	21	21	E B 16	G	33	J A 50	J A 71	J A 71	J A 50	J A 77	J A 98	J A 110	J A 122	J A 56	J A 57	J A 54	J A 63	J A 52	J A 33	J A 32	J A 36
24	J A 66	J A 28	21	E B 16	J A 46	J A 52	J A 32	32	J A 42	J A 49	J A 53	J A 109	J A 82	J A 60	J A 64	J A 53	J A 81	J A 53	J A 49	J A 29	J A 54	J A 48	J A 53	J A 39
25	J A 34	E B 16	J A 40	E B 16	E B 16	E B 16	J A 38	J A 49	J A 107	J A 89	J A 86	J A 98	J A 90	J A 107	J A 144	J A 106	J A 129	J A 236	J A 158	J A 78	J A 45	J A 36	J A 23	20
26	18	20	J A 42	J A 47	J A 109	J A 67	J A 42	J A 42	J A 101	J A 133	J A 97	J A 86	J A 94	J A 76	J A 110	J A 169	J A 76	J A 77	J A 110	J A 147	J A 44	J A 95	J A 88	J A 66
27	J A 16	J A 33	J A 23	J A 33	J A 50	J A 40	J A 33	J A 50	J A 60	J A 88	J A 96	J A 148	J A 119	J A 106	J A 86	J A 86	J A 86	33	J A 31	J A 64	J A 84	J A 33	J A 45	J A 39
28	J A 53	J A 78	J A 44	J A 42	J A 90	J A 53	J A 51	J A 67	J A 86	J A 73	J A 100	J A 93	J A 103	J A 77	J A 72	J A 163	J A 102	J A 29	J A 86	J A 110	J A 101	J A 50	J A 39	J A 44
29	J A 53	J A 48	J A 82	J A 65	J A 52	J A 37	J A 52	J A 46	J A 109	J A 87	J A 85	J A 108	J A 67	J A 68	J A 102	J A 116	J A 121	J A 126	J A 42	J A 85	J A 53	J A 52	J A 35	J A 42
30	J A 27	J A 47	J A 41	J A 33	J A 34	J A 15	J A 27	J A 58	J A 44	J A 74	J A 86	J A 125	J A 81	J A 113	J A 78	J A 66	G	38	J A 43	J A 32	J A 36	J A 36	J A 17	J A 78
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	28	29	29	30	30	30	30	30	30	30	30	30	30
MED	J A 52	J A 48	J A 44	J A 36	J A 38	J A 28	J A 36	J A 48	J A 68	J A 81	J A 84	J A 90	J A 82	J A 76	J A 66	J A 75	J A 68	J A 54	J A 74	J A 62	J A 64	J A 48	J A 40	J A 44
U Q	J A 66	J A 53	J A 52	J A 50	J A 50	J A 40	J A 43	J A 58	J A 96	J A 102	J A 90	J A 109	J A 102	J A 91	J A 98	J A 106	J A 86	J A 77	J A 106	J A 85	J A 88	J A 76	J A 59	J A 72
L Q	J A 36	J A 39	J A 33	26	J A 32	E B 16	32	38	J A 51	J A 69	J A 72	J A 58	55	50	50	53	50	43	J A 47	J A 44	J A 44	J A 36	J A 32	35

JUN.2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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	24	24	20	19	18	19	44	42	A A 70	53	52	45	51	47	40	37	36	30	35	78	35	27	A A 106	A A 86
2	29	27	E B 16	E B 16	E B 16	21	27	35	46	40	44	47	44	41	50	66	37	36	45	35	48	E B 16	24	28
3	41	29	28	37	28	24	28	47	A A 104	47	43	56	44	62	A A 128	40	73	35	67	55	66	30	24	E B 16
4	22	25	E B 16	22	26	E B 16	35	34	49	A A 110	A A 125	A A 257	55	42	41	37	37	32	32	25	24	24	24	20
5	26	35	27	25	26	24	35	A A 67	A A 80	A A 102	A A 120	A A 109	42	66	A A 251	A A 210	33	30	28	20	22	25	54	24
6	28	28	28	20	26	21	26	44	46	62	63	A A 116	A A 127	64	45	85	67	A A 111	A A 110	35	36	35	A A 108	A A 85
7	25	18	17	E B 16	25	23	27	31	38	48	52	C	A A 134	A A 87	53	56	48	68	61	25	23	20	28	27
8	E B 16	27	32	E B 16	E B 16	E B 16	25	35	62	66	A A 75	C	C	C	39	36	48	49	46	28	E B 16	E B 16	A A 74	66
9	E B 16	49	28	E B 16	27	36	28	39	45	38	44	50	42	G	40	40	43	40	36	34	28	24	E B 16	22
10	31	24	23	E B 16	E B 16	E B 16	27	38	48	42	A A 78	A A 90	A A 120	48	64	69	A A 104	63	87	28	21	22	20	28
11	28	28	28	28	28	27	28	46	71	50	A A 91	A A 82	71	63	43	59	84	43	36	28	A A 159	43	30	49
12	39	26	26	25	27	28	28	52	65	68	A A 151	A A 145	A A 74	54	65	80	61	53	A A 143	30	27	28	26	26
13	26	26	35	26	22	23	A A 58	50	60	A A 89	40	A A 83	50	A A 95	A A 98	A A 107	40	54	A A 105	51	24	18	E B 16	18
14	A A 108	A A 126	25	E B 16	25	E B 16	31	46	57	40	A A 84	A A 89	44	46	55	A A 152	A A 107	41	30	45	29	26	26	A A 88
15	45	29	26	26	E B 16	18	44	42	48	42	44	42	42	42	57	76	53	50	29	28	29	25	27	22
16	24	33	31	20	25	21	31	33	36	A A 92	48	45	50	52	54	A A 79	54	44	42	27	61	28	E B 16	28
17	28	28	28	23	26	21	28	34	44	54	50	A A 101	A A 91	45	45	66	42	39	A A 91	A A 105	28	44	24	27
18	29	E B 16	E B 16	E B 16	25	E B 16	26	33	40	54	54	56	A A 72	A A 109	A A 148	60	64	54	45	28	A A 100	28	E B 16	20
19	A A 86	E B 16	E B 16	20	E B 16	E B 16	25	33	45	65	52	47	63	46	44	43	46	35	36	45	25	A A 102	E B 16	E B 16
20	E B 16	E B 16	E B 16	21	E B 16	24	28	32	42	67	40	48	46	42	G	38	G	36	45	24	28	E B 16	23	31
21	28	28	46	E B 16	25	E B 16	33	50	41	A A 106	43	A A 79	50	A A 84	A A 89	41	52	44	44	54	28	27	27	E B 16
22	33	29	28	21	24	24	25	46	56	44	65	A A 113	A A 105	55	49	60	69	69	30	32	51	35	28	E B 16
23	E B 16	23	E B 16	E B 16	E B 16	E B 16	G	30	43	67	53	46	56	A A 98	A A 110	58	39	38	31	40	41	26	26	25
24	27	E B 16	E B 16	E B 16	E B 16	E B 16	28	25	30	35	36	40	40	51	55	59	48	42	33	28	24	49	20	25	18
25	E B 16	E B 16	22	E B 16	E B 16	E B 16	34	38	A A 107	A A 89	57	A A 98	A A 90	A A 107	A A 144	42	66	A A 236	78	36	28	22	18	E B 16
26	E B 16	E B 16	E B 16	E B 16	26	41	27	32	57	A A 133	A A 97	51	42	44	52	44	40	34	66	28	E B 16	27	29	E B 16
27	E B 16	E B 16	E B 16	E B 16	25	28	27	36	44	A A 88	A A 96	A A 148	51	A A 106	58	59	42	30	26	28	40	24	26	25
28	37	25	E B 16	28	28	38	27	44	33	46	72	A A 93	56	72	66	A A 163	40	G 24	30	A A 110	A A 101	28	24	28
29	29	28	A A 82	28	25	18	28	28	A A 109	64	57	A A 108	62	62	A A 102	A A 116	A A 121	A A 126	35	A A 85	25	40	26	28
30	E B 16	30	26	21	18	E B 16	25	36	40	67	40	A A 125	67	53	40	40	G	35	32	24	E B 16	19	E B 16	E B 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	28	29	29	30	30	30	30	30	30	30	30	30	30
MED	28	26	26	20	25	21	28	37	47	63	54	A A 82	55	55	54	59	47	40	39	31	28	26	26	25
U Q	31	29	28	25	26	24	31	46	A A 62	A A 88	A A 78	A A 108	A A 73	A A 78	A A 89	A A 79	66	54	66	45	48	28	28	28
L Q	E B 16	E B 18	E B 16	E B 16	E B 16	E B 16	26	33	42	46	44	48	45	46	44	41	40	35	31	28	24	22	E B 20	E B 18

JUN.2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	16	16	21	25	25	28	27	27	28	28	24	18	17	16	17	16	16	16
2	16	16	16	16	16	16	16	16	16	20	26	26	28	26	27	27	24	18	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	17	24	26	27	27	28	28	23	24	25	17	16	16	16	16	16
4	16	16	16	16	16	16	16	16	18	25	25	25	28	28	26	24	25	18	16	17	16	16	16	16
5	16	16	16	16	16	16	16	16	20	21	26	24	29	28	28	28	19	19	16	16	16	16	16	16
6	16	16	16	16	16	16	16	20	18	26	26	26	28	28	28	27	26	17	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	18	25	25	C	26	28	25	24	26	18	17	16	16	16	16	16
8	16	16	16	16	16	16	16	15	17	24	24	C	C	C	25	26	24	16	16	16	16	16	16	16
9	16	16	16	16	16	16	17	17	20	24	27	27	28	28	26	25	26	16	15	16	16	16	16	16
10	16	16	16	16	16	16	16	16	23	25	24	28	28	28	28	27	21	17	16	16	16	16	16	16
11	16	16	17	17	17	17	15	14	18	24	26	28	28	27	28	28	26	18	16	16	16	16	16	16
12	16	16	16	16	16	16	16	17	24	28	27	28	30	28	28	28	24	24	15	17	16	16	16	16
13	16	16	16	16	16	16	16	16	25	26	28	28	30	40	40	29	27	24	15	14	16	16	16	16
14	16	16	16	16	16	16	16	17	21	24	24	25	28	28	26	26	25	25	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	18	24	26	27	28	28	26	26	25	24	16	16	16	16	16	16
16	16	16	16	16	16	16	16	17	24	26	28	28	28	28	28	27	25	24	15	14	16	16	16	16
17	16	16	16	16	16	16	16	15	17	25	25	28	28	28	26	28	24	24	20	16	16	16	16	16
18	16	16	16	16	16	16	16	16	16	25	26	28	26	27	27	26	25	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	15	16	24	25	27	27	28	28	28	25	24	16	16	16	16	16	16
20	16	16	16	16	16	16	16	17	25	25	27	29	28	27	26	28	24	20	17	15	16	16	16	16
21	16	16	16	16	16	16	15	17	25	25	27	28	28	28	28	28	25	24	16	16	16	16	16	16
22	16	16	16	16	16	16	16	17	18	26	26	28	28	29	27	28	25	25	15	14	16	16	16	16
23	16	16	16	16	16	16	16	20	18	25	28	28	28	28	28	25	23	16	14	16	20	16	16	16
24	16	16	16	16	16	16	16	16	16	26	26	27	27	28	28	25	26	18	17	16	16	16	16	16
25	16	16	16	16	16	16	16	17	20	23	28	28	28	29	29	25	21	20	14	16	16	16	16	16
26	16	16	16	16	16	16	16	17	16	24	24	26	26	27	26	26	26	20	17	15	16	16	16	16
27	16	16	16	16	16	16	16	18	23	25	25	24	26	26	28	26	25	25	17	16	16	16	16	16
28	16	16	16	16	16	16	16	16	17	18	25	24	28	28	25	24	24	17	15	16	16	16	16	16
29	16	16	16	16	16	16	16	16	20	26	26	27	28	28	27	25	18	17	16	17	17	17	16	16
30	16	16	16	16	16	16	16	16	18	24	20	25	27	28	25	25	25	21	16	16	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	28	29	29	30	30	30	30	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	16	18	25	26	27	28	28	28	26	25	20	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	17	21	25	27	28	28	28	28	28	25	24	17	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	17	24	25	26	27	28	26	25	24	17	15	16	16	16	16	16

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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	302	308	306	280	F 285	305	318	328	A	322	305	290	289	273	284	292	314	310	301	312	301	307	A	A
2	312	296	F 307	F 319	F 312	311	349	343	326	308	310	294	281	283	293	290	292	290	289	299	317	308	307	297
3	285	284	307	311	307	321	348	358	A	319	330	276	276	293	A	299	303	300	322	309	303	279	285	300
4	297	289	318	278	F 314	F 320	366	337	353	A	A	A	292	284	272	294	306	320	339	305	287	291	290	284
5	273	F 298	354	355	F 299	F 312	331	A	A	A	A	A	289	275	A	A	291	302	310	328	303	288	300	281
6	290	F	F 303	F 299	304	R 348	347	365	340	325	315	A	A	282	288	296	296	A	A	303	312	288	A	A
7	R 285	324	363	F 296	F 292	F 300	361	343	349	313	316	C	A	A	253	J R 279	303	303	279	304	273	290	U R 296	U R 305
8	301	R 283	316	321	298	305	302	320	320	321	A	C	C	C	284	298	293	303	327	316	296	285	A	293
9	275	298	310	294	280	303	328	344	336	322	283	318	271	277	281	283	295	295	289	296	289	280	290	294
10	287	298	316	319	281	289	312	338	390	337	A	A	A	285	289	291	A	293	299	323	300	275	284	291
11	287	284	283	288	311	335	313	323	346	331	A	A	275	285	285	288	281	282	289	312	A	283	281	280
12	269	290	F 301	F	312	324	310	346	306	329	A	A	A	271	281	284	265	291	A	305	318	272	277	269
13	280	284	286	308	299	310	A	276	308	A	256	A	241	A	A	A	286	304	A	296	298	268	264	R 251
14	A	A	284	282	291	307	340	313	322	278	A	A	280	266	289	A	A	278	284	304	329	285	274	A
15	283	294	F	290	283	290	305	322	317	305	277	274	269	278	278	278	274	288	331	295	272	274	275	265
16	273	276	284	272	271	266	281	351	221	A	257	269	273	251	261	A	270	287	304	298	293	262	274	F
17	275	271	302	302	287	300	333	341	331	337	273	A	A	279	262	274	297	297	A	A	292	271	288	274
18	277	317	307	297	290	292	258	299	338	336	317	296	A	A	A	279	286	294	293	290	A	R 289	R 286	276
19	A	290	289	281	287	306	320	313	324	321	296	277	269	286	289	282	276	293	293	282	271	A	284	282
20	280	297	282	F 276	F 271	292	F 276	300	302	299	287	296	272	294	283	284	285	282	282	269	289	280	283	282
21	276	280	313	298	296	273	302	316	293	A	240	A	251	A	A	279	285	280	280	281	280	305	274	269
22	301	289	298	290	F 281	F 289	328	295	308	317	287	A	A	284	282	301	302	281	282	272	306	276	275	292
23	R 272	282	308	310	292	297	326	318	313	291	303	304	280	A	A	308	304	304	306	316	281	273	275	276
24	288	294	296	308	301	318	322	303	317	314	293	311	300	306	291	307	323	295	284	294	298	306	293	289
25	272	295	307	336	337	321	337	333	A	A	299	A	A	A	A	275	286	A	300	306	355	266	269	292
26	283	289	287	317	314	297	339	324	322	A	A	288	276	267	286	293	279	308	323	307	277	266	273	281
27	295	R 283	345	321	278	301	290	332	359	A	A	A	288	A	271	265	283	312	306	330	309	287	269	268
28	265	280	R 306	F 322	F 329	302	333	322	325	306	314	A	283	278	284	A	297	278	295	A	A	323	295	279
29	F	F	A	F	F 283	325	361	330	A	314	309	A	A	316	A	A	A	A	305	A	321	297	280	266
30	272	304	321	328	327	304	329	324	321	325	296	A	311	294	282	280	311	292	297	322	319	296	288	290
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	28	30	30	29	29	25	22	21	12	20	22	22	24	27	27	26	27	27	29	27	26
MED	283	290	306	300	294	304	328	324	322	320	296	292	278	282	284	286	292	294	298	304	298	285	283	282
U Q	290	298	314	319	311	318	340	342	339	325	312	300	288	286	288	295	303	303	306	312	312	294	290	292
L Q	273	283	292	289	283	297	308	314	310	308	280	276	272	275	278	279	283	287	289	295	287	274	274	274

JUN.2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									A	A	A	A	A	A										
												366			396	377	368	360						
2								L	A										A					
										392	358	348	380	389		A	351	355		A				
3									A	A		A			A	A			A					
											375		375			364		361						
4								L	A	A	A	A	A							L				
														376	377	379	364	368						
5								A	A	A	A	A		A	A	A								
													423				378	349	361					
6									A	A	A	A	A	A		A	A	A	A					
															370									
7									L	A	A	C	A	A	A	A	A	A						
8									A	A	A	C	C	C			A	A						
								365							393	388								
9							L	L	A		U L	A					A	A	A					
										386	383		369	410	376	396								
10							L	L	A		A	A	A	A	A	A	A	A	A					
										429														
11								A	A	A	A	A	A	A		A	A	A						
															379				327					
12								A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A		A	A	A	A	A		A	A	A				
											393						360							
14								A	A	U L	A	A			A	A	A	A						
										374			389	398					342					
15							A	A	A		U L				A	A	A	A		A				
										372	381	420	389	389					375					
16										A	A		A	A	A	A	A	A	A	A				
							331	371	381			404												
17							L	L	A	A	A	A	A			A				A				
														389	396		381	353						
18							U L		A	A	A	A	A	A	A	A	A	A	A					
							311	354																
19								L	A	A	A	L	A				A		A					
												318		387	386	353		365						
20							U L	L	L	A		A	U L						A					
							345		393		389		392	396	395	366	366	347						
21								A	U L	A		A	A	A	A		A	A	A					
									373		386					372								
22								A	A		A	A	A	A	A	A	A	A	L	A				
										375									324					
23								L	L	A	A	A	A	A	A	A								
																	369	364	350					
24							L						A	A	A	A			L	L				
							363	368	372	372	379	414					359	383						
25									A	A	A	A	A	A	A	A	A	A	A					
26							L	L	A	A	A	A			A	A			A					
								405					401	400			344	366						
27							U L	A	A	A	A	A	A	A	A	A	R							
							345										352	362	357					
28								A		A	A	A	A	A	A	A				A				
									358								385	354	367					
29									A	A	A	A	A	A	A	A	A	A		A				
																			357					
30										A		A	A	A										
									379		399				403	420	393	382	347	371				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	5	6	7	9	6	8	9	10	9	13	14	10	1				
MED							U L																	
							345	368	376	375	383	385	389	389	390	377	366	362	354	371				
U Q							L																	
							354	388	381	392	391	414	396	399	396	392	380	366	361					
L Q							321	360	372	372	377	348	378	388	377	365	356	354	342					

JUN.2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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JUN.2022 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									A	E A 310	340	376	350	328	326	316	278	266						
2								246	252	262	296	340	342	340	310	312	306	300	274					
3									A	276	300	420	394	330	A	306	314	296						
4								252	254	A	A	A	364	358	380	330	288	272	240					
5								A	A	A	A	A	320	E A 356	A	A	320	294	270					
6									258	E A 330	E A 350	A	A	332	310	E A 366	E A 304	A	A					
7									246	308	304	C	A	A	410	336	296	278						
8								276	E A 254	E A 334	A	C	C	C	340	306	318	294						
9							258	226	258	274	334	308	412	372	346	328	312	290	286					
10							270	248	216	248	A	A	A	358	336	324	A	310	E A 346					
11								262	260	256	A	A	E A 344	322	322	306	E A 396	322	312					
12								254	E A 310	270	A	A	A	362	334	E A 354	336	302	A					
13							A	E A 368	E A 348	A	484	A	552	A	A	A	330	336	A	E A 324				
14								274	E A 304	400	A	A	416	452	378	A	A	358	312					
15							E A 262	242	280	322	330	402	382	372	368	E A 440	350	330	248	240				
16							332	262	686	A	476	440	440	526	E A 496	A	438	362	298	268				
17							248	236	274	276	410	A	A	398	454	374	306	286	A	A				
18							400	300	238	264	308	E A 348	A	A	A	370	338	312	308					
19								258	272	296	340	380	386	368	338	374	356	304	314					
20							306	292	278	E A 352	352	338	354	354	368	354	336	318	306					
21								270	348	A	566	A	498	A	A	392	362	412	348					
22								268	268	266	E A 350	A	A	370	354	324	312	364	322	320				
23								268	270	E A 354	320	310	388	A	A	304	310	298	292					
24							272	302	278	268	282	292	310	288	336	300	322	306	306	250				
25									A	A	E A 326	A	A	A	A	350	332	A	E A 298					
26							262	246	310	A	A	360	442	446	382	358	388	298	276					
27							322	274	260	A	A	A	388	A	420	360	338	278	260					
28								280	304	324	E A 346	A	362	E A 418	336	A	304	342	286	A				
29									A	E A 324	332	A	E A 448	322	A	A	A	A	284	A				
30									280	E A 330	352	A	E A 326	322	338	390	312	350	296	258				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							10	22	25	22	21	12	21	22	22	24	27	27	22	6				
MED							271	264	266	U 284	335	354	384	358	341	334	319	304	293	258				
U Q							322	276	304	E A 330	352	391	428	372	380	368	338	336	312	320				
L Q							262	248	256	268	314	324	347	330	336	314	306	294	276	250				

JUN.2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	264	246	234	290	266	246	220	256	A	A	A	E A 250	A	E A 290	208	214	230	222	252	E A 316	252	228	A	A
2	260	E A 290	230	216	222	242	224	E A 228	A	200	E A 240	E A 262	216	198	A	A	214	244	A	248	244	212	216	248
3	E A 302	302	250	E A 268	256	230	218	218	A	A	E A 226	A	212	A	A	228	A	230	268	E A 252	E A 320	296	280	256
4	264	286	214	244	E A 260	248	218	216	A	A	A	A	A	222	202	186	230	216	226	238	262	274	274	262
5	E A 306	E A 304	220	210	E A 270	240	214	A	A	A	A	A	198	A	A	A	202	190	204	224	212	254	E A 328	312
6	294	Q 294	280	258	242	208	210	234	A	A	A	A	A	A	E A 262	A	A	A	A	262	E A 234	E A 288	A	A
7	E A 318	232	208	242	E A 300	E A 272	224	206	230	A	A	C	A	A	A	A	A	A	E A 308	258	284	262	282	248
8	236	E A 252	E A 252	226	222	232	220	228	A	A	A	C	C	C	204	188	A	A	246	240	222	260	A	E A 338
9	288	E A 288	E A 246	206	E A 274	E A 266	238	A	A	186	214	A	206	186	206	196	E A 290	E A 268	E A 256	262	258	266	254	264
10	268	266	244	202	260	270	238	238	A	200	A	A	A	E A 316	A	A	A	A	A	240	224	260	266	272
11	304	292	290	264	248	230	244	A	A	A	A	A	A	A	216	A	A	A	274	262	A	E A 294	E A 284	E A 308
12	E A 308	284	268	276	E A 236	212	232	A	A	A	A	A	A	A	A	A	A	A	A	264	222	E A 206	E A 286	E A 326
13	E A 316	E A 300	E A 280	238	230	E A 230	A	A	A	A	200	A	A	A	A	A	E A 250	A	A	A	256	222	314	302
14	A	A	E A 310	274	E A 264	226	216	A	A	200	A	A	206	220	A	A	A	E A 282	248	E A 274	240	E A 236	E A 300	A
15	E A 360	E A 270	E A 294	E A 272	252	272	A	A	A	E A 212	216	190	204	194	A	A	A	A	220	A	E A 304	E A 312	E A 288	E A 296
16	E A 304	E A 298	E A 286	292	310	320	E A 244	224	204	A	A	210	A	A	A	A	A	A	A	A	E A 368	E A 290	270	E A 332
17	E A 248	E A 302	E A 274	276	E A 302	286	228	226	E A 258	A	E A 384	A	A	210	E A 220	A	E A 234	E A 258	A	A	252	E A 294	264	E A 310
18	E A 334	246	246	250	E A 260	256	232	234	A	A	A	A	A	A	A	A	A	A	A	268	A	252	284	286
19	A	264	270	282	268	262	230	220	A	A	A	E A 270	A	220	E A 224	246	E A 316	202	E A 294	264	286	A	248	268
20	266	258	264	E A 290	278	E A 292	234	220	E A 220	A	196	E A 322	208	202	192	212	212	230	A	254	266	256	292	286
21	304	320	E A 282	220	E A 234	270	266	A	E A 254	A	230	A	A	A	A	228	A	E A 358	A	E A 380	E A 296	256	E A 256	284
22	E A 302	E A 268	264	248	E A 254	282	224	A	A	E A 238	A	A	A	A	A	A	A	A	230	A	E A 256	E A 296	294	246
23	276	284	246	232	212	246	218	222	A	A	A	A	A	A	A	A	226	250	250	250	E A 266	302	E A 294	E A 290
24	274	264	254	240	232	236	210	196	196	196	230	176	A	A	A	A	E A 260	192	240	240	E A 230	240	258	248
25	270	266	248	198	198	218	236	244	A	A	A	A	A	A	A	E A 278	A	A	A	258	212	E A 222	296	262
26	280	272	274	218	242	E A 312	204	206	A	A	A	A	216	230	A	A	248	218	A	252	266	314	E A 320	284
27	272	284	216	228	E A 320	252	242	E A 248	A	A	A	A	A	A	A	A	E A 270	212	212	234	E A 272	E A 268	314	E A 306
28	E A 316	328	246	246	236	E A 322	256	A	218	A	A	A	A	A	A	A	238	198	208	A	A	234	242	E A 310
29	E A 256	E A 296	A	E A 286	E A 292	240	234	224	A	A	A	A	A	A	A	A	A	A	E A 252	A	234	E A 280	E A 276	E A 300
30	292	E A 282	240	222	222	228	228	262	E A 248	A	180	A	A	A	196	202	190	218	E A 248	232	222	232	254	272
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	30	30	30	28	20	8	7	10	7	8	11	10	10	15	17	18	23	27	29	27	27
MED	U 276	275	249	240	U 243	242	227	224	U 212	198	U 210	E A 250	207	211	203	210	U 223	217	238	252	U 245	U 247	U 270	U 267
U Q	E A 305	E A 297	E A 277	274	E A 270	272	237	236	E A 251	E A 212	E A 230	E A 270	214	E A 230	E A 220	228	E A 260	E A 254	E A 256	264	E A 272	E A 292	294	E A 308
L Q	267	265	242	222	234	230	218	219	211	196	200	190	205	198	202	196	214	207	226	240	230	235	258	262

JUN.2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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						A	A	102	102	102	102	102	A	A	A	A	A	A	106	A				
2						A	112	102	102	100	98	98	98	98	104	104	104	104	104	A				
3						A	A	104	A	102	102	102	102	102	A	A	106	100	A	A				
4						B	A	100	100	100	100	A	A	106	100	104	104	104	104	A				
5						A	104	100	100	100	100	100	A	100	A	A	A	A	A	A				
6						A	A	100	100	98	98	A	A	A	A	A	A	A	A	A				
7						A	A	A	A	104	104	C	A	102	A	102	102	A	A	A				
8						B	A	102	100	100	100	C	C	C	A	100	100	100	A	A				
9						A	108	104	102	102	A	A	102	102	102	102	102	102	102	A				
10						B	112	100	100	100	100	100	100	100	100	104	104	104	104	A				
11						A	104	100	102	102	102	102	102	102	102	102	102	102	A	A				
12						A	102	102	102	102	102	A	108	104	104	104	104	104	102	A				
13						A	112	100	100	100	A	100	100	A	A	A	A	A	A	A				
14						B	100	100	100	100	100	A	100	100	100	100	A	A	A	A				
15						A	106	102	102	A	102	A	102	A	102	102	102	100	A	A				
16						A	110	104	102	102	102	102	102	102	104	104	104	104	102	A				
17						A	104	104	100	A	A	A	100	100	100	100	104	104	104	A				
18						B	110	100	100	98	98	102	102	102	A	102	A	102	102	A				
19						B	A	102	102	100	98	A	98	102	102	102	102	110	104	A				
20						A	108	A	104	100	100	100	100	100	100	98	102	104	102	A				
21						B	106	102	102	102	102	102	102	104	104	104	104	104	104	A				
22						A	A	104	104	102	102	100	98	A	A	100	100	A	A	A				
23						B	108	100	100	100	100	A	A	A	A	A	A	A	A	A				
24						A	A	A	102	A	98	A	A	A	98	102	102	102	A	A				
25						B	114	106	106	106	102	102	102	102	102	102	102	A	A	A				
26						A	A	102	A	A	102	102	102	A	102	106	106	106	A	A				
27						A	106	104	104	104	104	102	A	A	102	102	102	102	A	A				
28						A	A	A	A	A	A	100	A	A	A	A	100	110	A	A				
29						A	A	A	A	100	100	100	100	100	100	100	A	A	A	A				
30						B	A	A	A	100	102	A	A	A	A	A	102	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							17	24	24	25	26	17	19	18	18	22	22	19	12					
MED							108	102	102	100	101	102	102	102	102	102	102	104	104					
U Q							111	104	102	102	102	102	102	102	102	104	104	104	104					
L Q							104	100	100	100	100	100	100	100	100	100	102	102	102					

JUN.2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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	98	98	98	98	100	138	112	106	110	112	112	120	96	120	92	92	170	96	118	102	104	102	102	102
2	102	98	98	98	96	96	120	112	102	106	100	104	104	112	108	104	124	124	104	100	98	B	96	94
3	94	94	92	90	90	112	116	110	100	100	102	100	100	96	94	100	104	104	102	92	90	90	100	88
4	86	92	92	92	92	B	118	116	106	100	96	96	96	110	114	122	158	116	108	106	100	100	100	96
5	96	94	94	88	88	90	110	108	102	100	100	98	98	98	94	94	106	98	98	96	94	92	92	92
6	94	94	92	86	88	88	112	106	100	98	94	94	94	94	94	88	92	92	92	90	88	100	100	100
7	98	98	88	94	90	90	90	130	98	110	104	C	94	96	98	98	98	98	94	94	94	90	90	90
8	90	98	98	98	B	B	122	110	102	100	100	C	C	C	108	138	100	100	100	100	106	102	98	98
9	98	96	96	96	94	94	118	106	106	104	102	96	130	G	140	120	110	104	100	100	96	96	96	96
10	100	98	90	92	96	B	118	112	106	106	102	102	108	114	110	106	100	100	96	96	94	94	94	92
11	88	90	96	96	92	92	110	102	98	98	98	98	98	104	144	112	104	102	94	106	92	92	92	92
12	92	92	104	100	100	108	108	102	100	100	94	98	102	108	122	108	106	104	102	96	94	96	96	94
13	96	92	92	90	90	94	108	104	100	100	104	98	102	98	96	94	92	92	102	102	94	88	92	102
14	102	102	102	102	102	102	142	112	104	104	100	94	108	100	100	106	102	106	96	88	100	90	100	98
15	96	96	96	98	104	100	100	96	96	96	100	100	100	126	112	104	106	116	116	106	104	100	100	100
16	94	94	94	94	98	122	108	114	104	104	110	110	116	112	110	106	106	106	102	100	96	96	86	102
17	92	92	92	92	92	96	116	112	104	104	102	96	100	114	110	132	138	112	100	98	98	98	96	98
18	98	96	B	92	92	B	122	124	108	106	104	104	102	98	98	102	98	100	94	94	90	90	92	92
19	100	100	98	94	94	B	110	112	106	100	100	102	102	112	104	176	148	148	106	102	92	92	106	B
20	98	B	92	98	106	102	108	114	108	98	102	174	120	104	G	134	G	118	104	104	100	92	106	100
21	98	94	94	102	102	B	116	114	112	106	104	102	114	108	106	118	106	106	102	98	92	98	98	98
22	98	90	90	86	86	86	90	110	106	102	102	100	94	94	104	100	100	100	100	92	88	88	88	88
23	96	96	96	106	106	B	G	120	106	100	100	100	96	94	90	90	120	110	104	88	88	86	86	92
24	96	88	88	B	94	90	96	124	108	102	102	100	100	98	100	114	106	102	102	100	96	96	96	96
25	94	B	90	B	B	B	124	116	106	106	106	104	104	100	100	102	96	96	96	94	92	86	86	86
26	86	86	106	100	104	98	98	96	100	102	102	102	114	114	104	104	104	104	100	100	98	98	96	104
27	102	98	102	102	100	90	120	110	110	102	102	102	102	98	106	106	102	100	100	96	94	94	88	96
28	96	98	94	94	94	94	96	110	94	94	98	98	96	96	98	98	110	94	86	84	86	86	92	98
29	96	100	96	96	96	96	96	96	102	102	102	98	98	96	96	96	94	94	94	90	90	90	88	88
30	92	88	84	84	84	86	94	116	116	102	102	94	94	94	96	96	G	104	110	94	98	98	96	102
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	28	28	22	29	30	30	30	30	28	29	28	29	30	28	30	30	30	30	29	30	29
MED	96	95	94	95	94	95	110	111	104	102	102	100	100	100	104	104	105	103	100	97	94	94	96	96
U Q	98	98	98	98	100	102	118	114	106	104	102	102	106	112	110	114	110	106	104	100	98	98	100	100
L Q	94	92	92	92	91	90	99	106	100	100	100	98	96	96	96	98	100	98	96	94	92	90	92	92

IONOSPHERIC DATA STATION Yamagawa

JUN.2022 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	F2	F1	F2	F3	H1	C8	C4	C4	C3	C3	C1	LC12	CL21	L2	L2	HL11	L2	C4	C6	F6	F3	F5	F8
2	F9	F9	F1	F1	F3	L2	C3	C5	C3	C2	C2	C2	C2	C1	C3	C5	C2	C2	C6	C5	F7		F4	F3
3	F6	F6	F3	F5	F2	C2	C2	C6	C4	C3	C3	C3	C2	L4	L4	C2	C4	C2	C4	L5	F6	F8	F2	F2
4	F3	F3	F3	F5	F2		C4	C3	C4	C5	L5	L3	LQ31	C1	C1	C1	H1	C3	C4	C1	F2	F3	F5	F3
5	F4	F9	F3	F3	F2	L2	C4	C8	C6	C6	C4	C4	L2	L4	L4	L6	C1	L2	L2	L2	F3	F3	FF43	F3
6	F4	F2	F5	F2	F2	L1	C2	C6	C3	L5	L4	L4	L3	L4	L3	L3	L6	L8	L7	L4	F5	FF23	F9	F8
7	F4	F3	F3	F2	F3	L2	L2	HL11	LQ21	C3	C3		L3	L3	L3	L4	L4	L5	L4	L5	F3	F2	F4	F4
8	F1	F7	F7	F1			C1	C3	C4	C3	C3				C1	H1	C2	C3	C7	C8	F3	F3	F9	F7
9	F8	F8	F4	F3	F7	L5	C2	C3	C4	C2	C2	LC22	H1		H1	C1	C2	C3	C3	C4	F4	F4	F4	F3
10	F8	F3	F3	F1	F2		C2	C4	C4	C3	C4	C4	CL53	C2	C4	C3	C5	C5	L5	L3	F4	F4	F5	F4
11	F4	F4	FF13	F5	F5	L7	C4	C4	C6	L4	L4	L3	L3	C2	HC11	C3	C3	C5	L4	CL22	F6	F5	F4	F4
12	F5	F4	FF34	FF23	FF23	CL13	C5	C5	C5	C7	L4	L3	C4	C2	C3	C5	C5	C5	C6	L3	F5	F4	F2	F4
13	F2	F3	F4	F2	F4	L3	C5	C5	C5	C5	C1	L3	C2	L2	L3	L3	L3	L3	CL85	CL44	F4	F2	F3	F3
14	F4	F5	F4	F6	F3	C3	H2	C3	C3	C3	C4	L6	C1	C1	C2	CL42	CL42	C3	L3	L8	FF53	F3	F3	F8
15	F8	F6	F4	F6	F3	L3	C6	L3	L4	L3	C2	C2	C2	C1	C2	C4	C4	C4	CL22	C4	FF52	F2	F3	F3
16	F4	F5	F4	F3	F4	C2	C8	C4	C3	C4	C2	C1	C2	C2	C2	C4	C3	C2	C6	C3	F9	FF23	F1	F7
17	F2	F3	F2	F2	F2	L3	C2	C2	C2	C3	C3	L4	C4	C1	C1	C2	C2	C2	C7	L9	F4	F6	F4	F5
18	F4	F2		F3	F3		C1	C2	C3	C3	C4	C2	C2	L3	L2	C3	L3	C5	L5	L6	F9	F4	F2	F3
19	F7	F3	F3	F3	F3		C1	C3	C3	C5	C4	C2	C2	C1	C1	H1	C2	H1	C4	C4	F8	F7	F1	
20	F2		F2	F2	F2	C3	C4	C1	C3	L4	C1	HC11	C1	C1		H1		C1	C5	C3	F3	F1	F2	F3
21	F8	F7	F9	F1	F2		C5	C5	C3	C2	C2	C2	C1	C3	C2	C1	C4	C3	C5	L9	F6	F4	FF23	F2
22	F8	F3	F3	F3	F2	L2	L1	C5	C4	C2	C4	C4	L3	L2	C2	C3	C4	C6	C4	L4	F8	F4	F6	F1
23	F1	F2	F1	F1	F1			C2	C4	C3	C3	C2	L4	L4	L4	L4	CL23	CL13	CL32	L5	F8	F4	F3	F2
24	F3	F2	F1		F2	L8	L2	CL11	CL21	C1	C2	C2	C2	L2	C3	C2	C2	C2	C5	L4	F5	F2	F3	F2
25	F1		F2				C3	C3	C3	C5	C3	C3	C3	C3	C4	C2	L4	L4	L5	L4	F2	F2	F3	F1
26	F1	F1	FF12	F2	FF13	L5	L3	LC12	C4	CQ21	CQ31	C2	C2	C1	C3	C3	C2	C2	C3	C2	F2	F3	F4	F4
27	F1	F2	F1	F2	F3	L2	C1	C4	C3	C4	C3	C2	C2	L3	C2	C4	C4	C1	C1	L3	F3	F3	F5	F4
28	F6	F5	F3	F3	F9	L9	LC22	CL33	L2	L3	L4	L5	L3	L2	L3	L3	C3	L1	L3	L6	F5	F3	F2	F3
29	F4	F4	F5	F3	F3	L2	L4	LQ21	CQ41	C4	C4	L4	L2	L3	L5	L5	L5	L7	L4	L9	F4	F8	F3	F6
30	F2	F5	F4	F3	F3	L1	L2	CL21	C3	C3	C2	L4	L4	L3	L3	L3		C2	CL32	L2	F2	F2	F1	F3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN.2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	X112	X128	X92	X77	X81																X104	X89	X83	97
2	106	94	X83	87	X55																X126	X122	X104	X102
3	X97	X91	X94	X80	88																X88	X84	X89	X85
4	X84	88	X72	X64	65																X82	X80	X80	X77
5	86	X79	83	75	62	44															X90	X84	X86	X83
6	X79	X80	X79	X78	X77																X103	X85	X83	86
7	X98	126	80	59	63	68	79														X105	X109	X107	X104
8	X108	X115	X110	X93	X98																X81	X82	X82	X80
9	80	77	93	X76	X63																X94	X94	X94	X90
10	93	93	X87	X76	X67																X87	X90	X90	X95
11	X95	X93	X92	X90	120	94	80														X100	X89	X88	X88
12	106	105	93	88	X82																X95	X80	X82	X85
13	X84	86	90	X93	X64	64															X65	X68	X69	X68
14	70	74	70	68	69	72															X84	X73	X72	X73
15	X74	X74	X71	X70	X70																X74	X80	X76	X76
16	X78	X81	X71	X70	X66																X76	X70	X70	X71
17	81	X72	X65	X63	63																X99	X88	X82	X82
18	88	92	84	82	83																X95	X82	X82	X85
19	X79	X76	82	X77	X70																X97	X91	X88	X82
20	X79	X79	X83	X71	X69																X100	X93	X91	X90
21	94	X94	94	93	X72																X78	X78	X77	X76
22	X74	X74	X84	X74	X64	68															X97	X93	X90	X92
23	X93	X90	X88	X82	X80	68															A	X78	X79	X81
24	X79	X79	X78	X76	X69																X107	X101	X94	X88
25	X92	X88	X92	X80	X59																X93	X87	X84	X93
26	X94	X96	X94	X86	X70																X72	X75	X78	X78
27	X80	X92	X99	X70	X54																X84	X76	X74	X72
28	X76	X78	X76	X83	X74																X89	A	X70	X65
29	75	77	83	68	67	61															X85	X78	X77	X77
30	X77	X80	X84	X75	X55																X80	X72	X72	X69
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	8	2														29	29	30	30
MED	X84	X87	X84	X76	X69	68	80														X90	X84	X82	X82
U Q	X94	X93	X92	X83	X77	70															X100	X90	X89	X90
L Q	X79	X78	X79	X70	X63	62															X82	X78	X77	X76

JUN.2022 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	Z 106	122	86	71	75	77	92	90	66	60	68	78	88	103	111	119	128	128	120	103	98	83	77	F 88
2	F 88	F 87	77	F 75	49	40	57	72	68	75	86	92	99	107	110	115	114	116	A	124	120	116	98	96
3	91	85	88	74	F 78	66	76	69	61	71	66	70	79	85	93	101	100	104	104	92	82	78	83	79
4	78	F 80	66	58	F 58	F 59	58	68	86	66	64	69	78	88	95	102	102	96	85	73	76	74	74	71
5	F 76	73	F 71	F 65	F 53	F 37	51	68	A	A	A	77	85	A	94	101	113	116	A	96	84	78	80	77
6	73	74	73	72	71	64	69	66	67	66	66	A	84	94	A	102	100	95	97	108	97	79	77	F
7	92	F	F 72	F 48	F 52	F 53	F 68	59	64	A	A	75	71	A	89	102	108	108	105	106	99	103	101	98
8	102	109	104	87	92	78	80	86	77	A	72	72	68	74	94	92	96	110	114	88	75	76	76	74
9	F 73	F 68	F	70	57	54	71	78	76	A	78	76	73	83	95	96	A	96	95	96	88	88	88	84
10	F 83	F 83	81	70	61	59	68	90	82	A	62	66	75	82	90	95	95	100	102	94	81	84	84	89
11	89	87	86	84	F 98	U F 78	F 72	87	81	74	76	84	91	100	100	98	100	106	99	97	94	83	82	82
12	F 92	F 93	F 84	F 78	76	59	67	78	82	74	71	75	81	91	100	102	108	108	111	115	89	74	76	79
13	78	U F 78	F 78	87	58	F 56	52	63	A	A	A	A	56	64	67	68	A	71	74	A	59	62	63	62
14	F 61	F 60	F 62	F 54	F 54	F 64	62	A	64	66	74	78	70	A	73	75	76	80	91	92	78	67	66	67
15	68	68	65	64	64	59	66	78	67	68	68	72	88	91	92	99	96	96	84	70	68	74	70	70
16	72	75	65	64	60	58	54	58	53	54	60	58	60	60	60	60	65	72	76	77	70	64	64	65
17	F 70	66	59	57	F 54	52	69	75	A	A	70	74	75	74	74	94	109	110	102	95	93	82	76	76
18	F 79	F	F 73	F 72	F 73	63	59	84	87	76	A	66	66	72	74	84	91	A	84	A	89	76	76	79
19	73	70	F 71	71	64	65	63	72	78	76	70	73	80	84	81	A	91	100	101	100	91	85	82	76
20	73	73	77	65	63	67	66	78	72	76	76	74	78	77	81	84	90	93	90	94	94	87	85	84
21	F 85	88	F 86	F 85	66	62	71	62	51	A	54	60	59	63	66	66	62	60	61	A	72	72	71	70
22	68	68	78	68	58	F 55	54	64	81	77	A	69	76	78	86	88	90	89	90	90	91	87	84	86
23	87	84	82	76	74	F 57	56	64	72	76	79	A	76	90	93	94	90	91	107	99	A	72	73	75
24	73	73	72	70	63	55	58	66	70	82	91	89	89	91	104	94	92	93	97	100	101	95	88	82
25	86	82	86	74	53	38	52	72	62	64	A	70	78	87	93	103	108	110	119	138	87	81	78	87
26	88	90	88	80	64	54	H 55	62	70	50	60	66	63	62	70	71	A	88	90	78	66	69	72	72
27	74	86	93	64	48	49	51	70	59	A	70	72	66	76	81	91	106	109	100	92	78	70	68	66
28	70	72	70	77	68	44	43	55	68	70	70	73	77	A	94	91	90	90	97	95	83	A	64	59
29	F 60	U F 64	F 56	F 57	F	F 51	A	54	A	A	71	69	A	A	A	70	73	86	90	86	79	72	71	71
30	71	74	78	69	49	41	47	66	61	66	83	89	76	78	76	A	A	A	95	97	74	66	66	63
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	30	29	30	29	29	26	20	24	27	29	25	28	28	26	28	28	27	29	29	30	29
MED	77	76	77	70	63	58	62	69	69	70	70	73	76	83	91	94	96	96	97	95	84	78	76	76
U Q	88	86	86	76	72	64	69	78	78	76	76	77	82	91	94	102	108	108	103	100	94	84	83	84
L Q	72	71	70	64	54	52	54	64	64	66	66	69	69	74	75	84	90	90	90	90	76	72	71	70

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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										U L 500	L 528	528	504	544	492	488	A	A	L					
2									A	524	L 540	504	A	A	A	A	A	A	A					
3									U L 404	A	L 480	L 516	512	A	480	A	A	A	A					
4									A	A	U L 500	520	504	504	488	A	448	L 440	L 372					
5								A	A	A	A	A	A	A	500	A	480	A	A	A				
6								L	A	A	A	A	A	A	A	A	A	444	A					
7									U L 460	A	A	A	A	A	A	472	448	L 512	440					
8							L		L	A	U L 524	520	516	500	500	492	A	468	A					
9							L	L	A	A	A	516	524	A	508	A	A	A						
10								A	A	A	A	520	A	A	A	A	484	A	A					
11								L 400	L	500	512	500	556	A	A	A	A	452	A	L				
12								L	L	L 476	L 528	536	A	504	512	A	492	A	A					
13								A	A	A	A	A	484	B	A	A	A	A	A	A				
14								A	U L 560	U L 520	A	A	A	A	508	A	A	A	424					
15								L		U L 536	L	540	496	516	508	488	476	456						
16							A	A	U L 456	452	488	U L 480	484	496	488	A	472	448	408	L				
17							L	A	A	A	A	520	508	544	512	492	488	A	428					
18								L	L	A	560	U L 544	A	A	A	508	A	A	A	A				
19								A	A	A	492	488	A	A	A	A	500	504	436					
20								L	U L 464	L 516	516	540	536	528	512	500	484	476	L	L				
21								A	A	A	488	496	A	A	484	A	A	A	A	A				
22									452	532	A	A	A	A	A	508	H 500	460	L 416	A				
23								L	L 496	U L 556	A	A	528	500	A	A	476	A	A					
24								L	U L 480	L 504	484	A	500	L 528	L 492	504	500	468	L 412					
25									A	U L 508	A	A	A	A	500	A	A	A	L					
26								L 440	L	L 436	A	A	A	A	472	A	A	436						
27								L	L 412	A	A	496	492	496	A	472	464	A	A					
28									A	A	A	L 508	A	A	480	488	464	444	420					
29							A		A	A	A	A	A	A	A	A	A	A						
30								L	L 464	484	A	A	A	496	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	10	14	13	18	14	12	17	11	15	13	9					
MED								L 420	U L 462	L 506	512	518	506	504	500	492	480	456	420					
U Q									U L 480	524	L 528	528	524	528	508	504	492	472	432					
L Q									L 452	484	488	500	496	498	486	488	464	444	L 410					

JUN.2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	192	240	308	A	A	A	A	A	A	A	A	A	A	A				
2						A	172	248	304	A	A	A	U A 372	368	368	352	336	292	248	A				
3						B	A	252	300	340	A	A	A	A	A	A	316	292	244	A				
4						A	A	240	292	A	328	A	376	372	364	352	316	296	252	A				
5						A	A	244	A	U A 332	A	A	A	A	336	A	A	A	A	A				
6						B	192	232	292	320	A	A	336	A	A	A	A	A	A	A				
7						B	A	A	A	352	360	376	A	372	A	A	A	A	A	A				
8						A	A	248	300	344	A	A	384	380	368	352	336	296	240	A				
9						A	A	A	300	324	344	380	392	376	372	360	332	296	236	A				
10						A	A	264	308	336	344	372	392	388	376	368	336	288	208	A				
11						A	A	A	A	A	356	372	384	376	A	364	344	304	240	A				
12						B	A	248	312	340	372	400	400	392	372	376	360	308	236	A				
13						A	A	256	292	A	A	A	404	B	A	A	A	A	A	A				
14						A	A	260	312	344	348	356	A	A	A	380	A	A	A	A				
15						A	A	A	A	A	A	A	A	A	A	A	A	A	256	A				
16						B	A	248	304	348	372	392	396	396	A	368	348	316	252	A				
17						B	A	264	312	A	A	A	A	A	A	380	348	312	260	A				
18						B	A	A	312	344	368	388	400	400	A	372	A	A	A	A				
19						B	204	248	308	344	A	A	A	A	A	A	352	316	260	A				
20						B	A	276	316	344	376	A	388	A	A	A	A	A	252	A				
21						B	188	272	312	348	368	A	400	396	384	372	348	312	248	A				
22						B	A	A	316	344	372	A	A	A	A	A	340	308	A	A				
23						B	A	256	308	340	364	A	388	A	A	A	340	300	240	A				
24						B	A	A	A	A	A	A	A	A	A	360	336	292	236	A				
25						B	A	264	304	344	364	380	384	388	372	356	A	A	A	A				
26						A	A	A	A	A	A	A	A	368	368	348	332	292	A	A				
27						B	A	248	292	332	A	A	368	372	360	344	324	284	A	A				
28						A	A	236	308	336	A	A	364	360	360	340	324	288	248	A				
29						A	A	A	A	328	352	368	372	360	360	348	332	A	A	A				
30						B	A	240	296	336	348	A	A	A	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	21	23	21	16	10	18	16	13	18	19	18	17					
MED							192	248	308	340	362	378	386	376	368	360	336	296	248					
U Q							198	262	312	344	370	388	396	390	372	372	348	308	252					
L Q							180	242	300	334	348	372	372	370	360	352	332	292	238					

IONOSPHERIC DATA STATION Okinawa

JUN.2022 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 22	J A 87	J A 85	J A 61	J A 119	J A 17	24	J A 64	J A 53	J A 53	J A 51	J A 64	J A 48	49	J A 51	43	J A 49	J A 57	32	24	J A 26	J A 36	J A 26	J A 82
2	J A 64	J A 121	J A 51	J A 62	J A 31	J A 42	23	J A 46	J A 51	J A 42	J A 47	J A 90	J A 140	J A 59	J A 81	J A 105	J A 97	J A 85	J A 138	J A 50	J A 84	J A 76	J A 66	J A 62
3	J A 43	J A 37	J A 48	J A 33	J A 36	J A 22	J A 96	J A 58	J A 53	J A 108	J A 74	J A 70	J A 76	J A 70	J A 81	J A 77	J A 79	J A 66	J A 45	J A 63	J A 51	J A 54	J A 78	J A 81
4	J A 66	J A 35	J A 22	J A 76	J A 44	J A 39	J A 65	J A 53	J A 188	J A 294	J A 51	J A 61	J A 63	46	J A 47	J A 56	36	34	28	J A 26	J A 22	J A 44	J A 43	J A 42
5	J A 63	J A 63	J A 52	J A 82	J A 51	J A 52	J A 42	J A 58	J A 168	J A 168	J A 224	J A 150	D D J A 300	J A 229	J A 86	J A 57	J A 48	J A 73	J A 162	J A 175	J A 52	J A 30	J A 22	J A 24
6	J A 21	J A 26	J A 22	J A 27	E B 16	E B 16	23	29	J A 105	J A 80	J A 134	J A 138	J A 81	J A 100	J A 148	J A 82	J A 109	J A 40	J A 54	J A 74	J A 46	J A 29	J A 87	J A 102
7	J A 162	J A 53	J A 42	J A 41	J A 40	J A 25	J A 29	40	J A 46	J A 106	J A 187	J A 65	J A 70	J A 87	J A 132	J A 50	J A 40	J A 46	J A 52	J A 85	J A 72	J A 47	J A 22	J A 27
8	J A J A 25	24	20	J A 53	J A 52	J A J A 67	24	J A 53	J A 119	J A 120	J A 214	J A 65	G	G	49	J A 62	J A 84	J A 95	J A 76	J A 23	J A 30	J A 48	J A 66	J A 52
9	J A 80	J A 74	J A 104	J A 62	J A 34	J A 38	J A 30	34	J A 54	J A 122	J A 94	48	52	J A 64	J A 46	J A 68	J A 105	J A 130	J A 144	J A 162	J A 49	J A 87	J A 54	J A 61
10	J A 44	J A 28	J A 32	J A 53	J A 42	J A 28	26	J A 48	J A 98	J A 252	J A 95	J A 59	J A 68	J A 82	J A 81	J A 98	D D J A 86	J A 146	J A 184	J A 76	J A 88	J A 53	J A 49	J A 25
11	J A 26	J A 26	J A 27	J A 33	J A 41	J A 44	J A 46	J A 37	37	42	J A 50	J A 49	J A 51	J A 54	56	J A 98	J A 90	J A 100	J A 70	J A 25	J A 50	J A 26	J A 21	J A 66
12	J A 53	J A 63	J A 38	J A 28	J A 38	J A 25	J A 25	30	39	39	J A 54	J A 62	J A 85	46	42	J A 56	J A 54	J A 110	J A 82	J A 203	J A 122	J A 34	J A 52	J A 62
13	J A 52	J A 52	J A 46	J A 28	18	J A 20	J A 32	J A 61	J A 150	J A 155	J A 223	J A 151	G	E B 56	J A 56	49	J A 73	J A 54	J A 60	J A 90	J A 44	J A 34	J A 41	J A 40
14	J A 57	J A 110	J A 48	J A 63	J A 78	J A 134	24	J A 79	J A 56	J A 49	J A 99	J A 83	J A 88	J A 158	J A 58	J A 73	J A 61	J A 50	J A 52	J A 36	J A 48	J A 35	J A 33	J A 16
15	E B 16	E B 16	J A 18	J A 44	J A 18	J A 51	J A 53	J A 60	J A 65	J A 47	J A 52	J A 49	J A 52	J A 45	J A 46	46	J A 43	J A 36	J A 44	J A 40	J A 49	J A 26	J A 21	J A 32
16	J A 34	J A 72	J A 66	J A 52	J A 41	J A 37	J A 38	J A 108	J A 95	J A 71	G	J A 55	44	45	44	J A 60	44	J A 44	J A 41	J A 33	J A 28	J A 32	J A 24	J A 97
17	J A 64	J A 61	J A 83	J A 89	J A 52	J A 35	J A 33	J A 61	J A 78	J A 95	J A 74	47	52	48	45	J A 97	J A 49	J A 58	J A 58	J A 105	J A 101	J A 62	J A 36	J A 97
18	J A 98	J A 61	J A 53	J A 49	J A 65	J A 19	J A 40	32	J A 50	J A 65	J A 85	J A 87	J A 70	J A 63	J A 89	J A 52	J A 78	J A 146	J A 261	J A 274	J A 142	J A 88	J A 63	J A 47
19	J A 24	J A 48	J A 35	J A 33	J A 36	J A 18	25	J A 68	J A 80	J A 109	48	J A 84	J A 144	J A 86	J A 71	J A 128	J A 80	41	J A 52	40	J A 32	J A 73	J A 66	J A 47
20	J A 39	J A 26	J A 20	J A 20	J A 23	18	J A 33	J A 52	J A 54	40	44	J A 52	J A 52	J A 73	J A 48	J A 54	J A 46	J A 35	J A 28	J A 35	J A 20	J A 23	J A 41	J A 52
21	J A 53	J A 88	J A 96	J A 87	J A 51	20	J A 41	J A 110	J A 107	J A 158	J A 186	J A 169	J A 56	J A 57	47	J A 50	J A 58	J A 54	J A 45	J A 70	J A 33	18	J A 109	J A 47
22	J A 53	J A 47	J A 42	J A 41	J A 18	J A 21	25	35	J A 42	J A 62	J A 142	J A 111	J A 127	J A 69	J A 54	42	39	J A 46	J A 36	J A 40	J A 43	20	J A 22	J A 34
23	J A 22	J A 34	J A 17	20	J A 20	20	22	J A 60	40	J A 51	J A 64	J A 135	48	J A 90	J A 97	J A 76	J A 52	54	J A 52	J A 55	J A 72	J A 51	J A 45	J A 32
24	J A 40	J A 37	J A 51	J A 40	J A 37	J A 42	J A 31	J A 48	J A 44	J A 44	J A 61	J A 108	J A 48	J A 52	J A 52	40	38	35	J A 34	J A 32	J A 25	J A 27	J A 18	E B 16
25	J A 52	22	J A 29	E B 16	E B 16	E B 16	27	36	J A 86	J A 68	J A 148	J A 106	J A 210	J A 138	J A 61	J A 60	J A 69	J A 196	J A 53	J A 45	J A 42	J A 33	J A 26	J A 27
26	E B 16	E B 16	J A 36	J A 18	E B 16	J A 23	22	J A 47	J A 38	J A 63	J A 145	J A 128	J A 66	J A 109	J A 56	J A 65	J A 117	J A 62	J A 68	J A 62	J A 122	J A 86	J A 102	J A 62
27	J A 66	J A 61	J A 58	J A 42	J A 30	E B 16	23	30	J A 44	J A 78	J A 109	J A 148	J A 109	41	J A 69	J A 66	J A 56	J A 68	J A 61	J A 38	J A 54	J A 62	J A 40	J A 30
28	J A 20	J A 18	J A 133	J A 59	J A 51	J A 66	J A 47	34	J A 138	J A 119	J A 67	J A 71	J A 72	J A 116	G	J A 40	G	J A 59	J A 32	J A 31	J A 38	J A 102	J A 53	J A 52
29	J A 52	J A 27	J A 31	J A 53	J A 40	J A 63	J A 75	J A 63	J A 114	J A 141	J A 90	J A 78	J A 81	J A 97	J A 102	49	J A 48	J A 96	J A 106	J A 85	J A 118	J A 120	J A 40	J A 36
30	J A 31	J A 42	J A 24	J A 42	J A 16	J A 33	26	J A 42	J A 42	J A 79	J A 60	J A 84	J A 73	J A 59	J A 69	J A 136	J A 86	J A 102	J A 48	J A 70	J A 50	J A 39	J A 31	J A 65
31																								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A 48	J A 44	J A 42	J A 43	J A 38	J A 26	J A 30	J A 50	J A 55	J A 78	J A 80	J A 80	J A 69	J A 64	J A 56	J A 60	J A 57	J A 58	J A 52	J A 52	J A 49	J A 42	J A 41	J A 47
U Q	J A 63	J A 63	J A 53	J A 61	J A 51	J A 42	J A 41	J A 61	J A 105	J A 120	J A 142	J A 111	J A 85	J A 90	J A 81	J A 77	J A 84	J A 96	J A 76	J A 85	J A 72	J A 62	J A 63	J A 62
L Q	J A 25	J A 26	J A 27	J A 33	J A 20	20	24	36	J A 44	J A 51	J A 52	J A 61	J A 52	J A 49	J A 47	J A 50	J A 46	J A 46	J A 44	J A 35	J A 33	J A 30	J A 26	J A 32

JUN.2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	20	64	25	32	25	E B 16	22	46	41	42	44	42	42	45	44	43	48	52	32	22	E B 16	21	E B 16	20
2	22	E B 16	E B 16	21	E B 16	27	22	36	44	36	40	44	54	55	72	76	94	82	A A 138	36	50	48	40	34
3	33	28	32	E B 16	22	E B 16	26	51	36	50	44	42	47	50	44	63	77	48	41	59	37	24	20	19
4	E B 16	E B 16	18	36	33	18	26	45	77	51	45	46	43	44	41	49	36	33	27	20	E B 16	20	E B 16	28
5	28	E B 16	28	20	21	27	22	51	A A 168	A A 168	A A 224	51	60	A A 229	42	48	44	62	A A 162	24	E B 16	E B 16	E B 16	E B 16
6	20	E B 16	20	17	E B 16	E B 16	22	29	52	60	51	A A 138	54	64	A A 148	70	50	37	40	50	26	26	35	34
7	34	E B 16	22	29	26	E B 16	22	39	37	A A 106	A A 187	62	68	A A 87	52	43	38	41	34	52	45	27	19	18
8	E B 16	19	E B 16	E B 16	41	23	20	48	36	A A 120	44	42	G	G	47	45	66	35	54	20	18	21	E B 16	E B 16
9	31	32	42	18	E B 16	26	22	33	47	A A 122	58	42	50	54	41	57	A A 105	91	55	46	21	35	E B 16	18
10	22	20	22	31	32	20	23	39	74	A A 252	52	49	66	59	68	71	38	53	88	36	18	40	21	E B 16
11	E B 16	18	22	29	26	23	22	33	36	38	42	46	47	54	55	54	69	36	60	23	30	E B 16	E B 16	E B 16
12	34	34	28	20	17	E B 16	20	28	37	37	44	45	56	45	41	51	38	70	64	35	21	E B 16	E B 16	34
13	21	30	27	23	18	17	29	41	A A 150	A A 155	A A 223	A A 151	G	E B 56	54	48	A A 73	52	43	A A 90	42	21	26	21
14	18	18	22	21	E B 16	21	21	A A 79	38	46	66	66	54	A A 158	48	57	51	44	32	27	29	26	25	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	18	21	31	33	39	41	44	43	42	42	44	37	34	28	36	40	18	E B 16	E B 16
16	30	27	26	28	32	E B 16	28	49	40	40	G	43	43	44	41	56	41	40	36	30	19	19	E B 16	31
17	32	E B 16	E B 16	32	30	E B 16	22	38	A A 78	A A 95	66	46	48	45	43	44	42	50	36	42	40	21	25	E B 16
18	20	24	36	28	37	E B 16	23	30	43	52	54	45	59	56	71	44	62	A A 146	60	A A 274	63	49	44	30
19	18	E B 16	18	E B 16	18	E B 16	22	35	51	47	41	45	64	64	54	A A 128	46	38	41	22	20	E B 16	57	36
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	32	35	40	41	42	47	43	41	44	41	33	G 18	22	E B 16	19	E B 16	22
21	E B 16	35	E B 16	26	18	E B 16	36	50	45	A A 158	44	42	50	50	45	48	54	46	38	A A 70	E B 16	E B 16	52	20
22	19	E B 16	19	31	E B 16	E B 16	23	34	35	49	A A 142	60	58	61	49	42	38	37	31	37	18	E B 16	18	20
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	35	33	44	52	A A 135	42	43	65	61	40	50	43	28	A A 72	E B 16	20	E B 16
24	20	E B 16	43	25	31	E B 16	22	37	34	38	42	52	44	42	43	39	37	34	30	23	22	E B 16	E B 16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	30	42	37	A A 148	56	51	71	44	47	44	54	28	21	20	21	E B 16	E B 16
26	E B 16	E B 16	26	E B 16	E B 16	19	22	34	34	36	52	51	58	53	43	51	A A 117	35	37	21	32	26	20	29
27	E B 16	22	22	E B 16	E B 16	E B 16	21	28	33	A A 78	49	42	45	39	54	37	43	56	48	33	25	43	20	22
28	E B 16	E B 16	E B 16	23	19	22	30	30	45	53	50	45	50	A A 116	G	37	G	G 20	31	26	35	A A 102	E B 16	23
29	31	E B 16	19	20	29	36	A A 75	40	A A 114	A A 141	61	58	A A 81	A A 97	A A 102	46	44	57	75	52	50	42	27	21
30	19	20	E B 16	22	E B 16	E B 16	22	31	35	36	52	66	54	44	54	A A 136	A A 86	A A 102	41	43	19	23	24	25
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	20	E B 16	21	21	18	E B 16	22	36	40	50	50	46	50	53	46	48	44	47	40	34	24	21	20	20
U Q	28	24	26	28	29	21	24	45	51	A A 106	A A 61	58	58	A A 64	54	57	66	56	55	46	40	27	25	28
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	31	35	39	44	43	44	44	42	44	38	36	32	23	E B 18	E B 16	E B 16	E B 16

JUN.2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	15	14	16	22	25	24	28	23	24	22	22	14	14	14	16	16	16	16
2	16	16	16	16	16	16	16	16	17	18	22	27	26	28	27	25	24	17	15	16	16	16	16	16
3	16	16	16	16	16	16	16	14	16	19	24	24	28	22	22	22	18	14	15	16	16	16	16	16
4	16	16	16	16	16	16	16	15	16	17	20	24	26	26	23	22	15	16	14	16	16	16	16	16
5	16	16	16	16	16	16	16	14	19	17	21	23	22	28	26	21	19	17	14	16	16	16	16	16
6	16	16	16	16	16	16	16	16	20	25	22	22	25	26	22	23	19	16	14	15	16	16	16	16
7	16	16	16	16	16	16	16	14	17	19	22	24	26	25	24	24	21	20	15	16	16	16	16	16
8	16	16	16	16	16	16	16	15	20	21	22	22	21	21	25	21	21	18	17	16	16	16	16	16
9	16	16	16	16	16	16	16	14	14	17	21	22	23	24	23	22	20	16	15	16	16	16	16	16
10	16	16	16	16	16	16	16	14	18	21	25	25	30	26	21	22	16	16	14	16	16	16	16	16
11	16	16	16	16	16	16	16	14	14	19	22	24	22	25	24	22	19	16	12	15	16	16	16	16
12	16	16	16	16	16	16	16	14	21	23	22	26	26	34	28	26	22	14	14	16	16	16	16	16
13	16	16	16	16	16	16	16	14	17	21	22	29	31	56	38	36	27	19	14	16	16	16	16	16
14	16	16	16	16	16	16	16	14	18	21	20	25	29	35	27	25	21	16	14	15	16	16	16	16
15	16	16	16	16	16	16	16	16	17	20	23	26	29	27	30	24	20	18	14	13	16	16	16	16
16	16	16	16	16	16	16	16	14	17	20	24	24	26	31	30	29	20	16	14	13	16	16	16	16
17	16	16	16	16	16	16	16	16	16	24	22	26	27	26	23	22	20	22	16	16	16	16	16	16
18	16	16	16	16	16	16	16	14	16	20	24	27	25	29	E S 36	24	22	15	13	16	16	16	16	16
19	16	16	16	16	16	16	16	14	14	20	18	26	26	24	30	25	22	15	14	15	16	16	16	16
20	16	16	16	16	16	16	16	16	20	22	25	28	32	29	26	25	22	18	14	16	16	16	16	16
21	16	16	16	16	16	16	16	18	17	19	22	25	28	29	26	26	22	19	16	14	16	16	16	16
22	16	16	16	16	16	16	16	16	14	20	24	26	27	29	28	27	21	24	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	17	19	22	22	22	24	23	22	18	16	14	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	19	20	23	26	24	25	22	19	14	15	16	16	16	16	16
25	16	16	16	16	16	16	16	16	17	21	20	25	26	24	25	20	28	17	13	15	16	16	16	16
26	16	16	16	16	16	16	16	16	16	21	21	22	23	23	25	21	20	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	17	22	21	23	24	22	23	20	18	18	14	16	16	16	16	16
28	16	16	16	16	16	16	14	15	14	16	18	16	20	22	23	23	20	14	14	15	16	16	16	16
29	16	16	16	16	16	16	16	16	15	20	22	23	23	24	22	22	18	14	15	16	16	16	16	16
30	16	16	16	16	16	16	16	15	14	18	19	23	22	22	22	22	17	15	14	16	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	15	17	20	22	24	26	26	24	22	20	16	14	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	17	21	23	26	28	29	27	25	22	18	15	16	16	16	16	16
L Q	16	16	16	16	16	16	16	14	16	19	21	23	23	24	23	22	19	15	14	15	16	16	16	16

JUN.2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	Z 295	298	333	292	271	316	347	346	364	308	313	285	268	278	286	295	308	313	307	323	306	298	286	F 262
2	F 292	F 293	345	F 325	287	320	348	368	321	311	295	287	277	280	291	288	286	293	A	309	300	338	326	289
3	281	310	322	305	F 294	333	352	385	344	333	317	287	282	286	279	303	303	305	314	313	287	278	272	282
4	288	F 306	349	297	F 302	F 321	349	338	351	357	318	292	250	263	264	291	308	321	339	288	297	293	289	288
5	F 288	305	F 303	F 341	F 340	F 277	323	337	A	A	A	288	276	A	273	280	295	314	A	314	303	281	286	287
6	287	295	305	294	320	331	364	381	352	332	278	A	265	273	A	281	288	284	281	315	319	299	263	F
7	286	F	F 365	F 309	F 293	F 316	F 359	353	326	A	A	304	A	A	259	274	288	295	289	300	285	287	278	281
8	286	308	338	303	306	335	317	337	326	A	298	307	285	265	291	291	277	305	333	323	282	280	275	276
9	F 291	F 296	F	310	310	295	334	347	317	A	306	272	261	262	288	297	A	291	291	292	290	277	280	288
10	F 302	F 306	316	309	304	293	317	340	400	A	280	267	276	276	279	292	293	301	318	300	289	283	276	269
11	285	284	291	304	F 342	F	F 310	328	315	328	288	275	258	272	287	278	282	304	297	294	314	292	277	273
12	F 284	F 292	F 317	F 316	325	327	323	320	321	326	318	267	260	268	271	277	286	289	295	316	314	272	257	266
13	270	U F 275	F 296	316	302	F 323	331	324	A	A	A	A	236	267	279	274	A	291	304	A	270	269	267	261
14	F 274	F 282	F 284	F 286	F 300	F 339	333	A	274	294	283	303	260	A	284	288	296	277	298	318	308	269	278	270
15	278	293	284	272	287	299	308	339	312	278	246	241	260	267	271	274	288	283	311	278	275	277	275	261
16	265	288	272	282	278	267	340	371	256	276	271	260	259	271	266	258	267	283	303	291	305	278	270	276
17	F 281	303	291	289	F 295	301	333	346	A	A	296	307	305	276	242	265	282	294	296	282	294	286	281	280
18	F 276	F	F 317	F 286	F 307	291	284	314	345	333	A	290	264	271	A	276	302	A	282	A	296	284	267	280
19	283	285	F 286	296	285	304	317	329	325	313	285	276	269	277	261	A	267	282	289	286	295	276	300	274
20	273	287	294	283	260	284	307	333	314	307	315	281	290	270	271	265	277	282	269	276	296	287	275	275
21	F 279	278	F 301	F 332	291	298	341	344	347	A	232	258	249	269	272	288	259	251	294	A	277	286	290	263
22	272	279	324	321	291	F 304	333	293	316	303	A	269	278	266	284	278	282	271	269	263	296	280	264	271
23	287	285	290	303	331	F 331	307	304	300	273	296	A	260	277	287	292	289	290	307	356	A	269	279	280
24	278	284	289	306	314	320	342	320	304	292	298	285	264	260	286	295	273	276	287	295	299	307	297	279
25	286	290	316	346	369	310	340	363	363	309	A	273	272	264	271	280	282	285	289	340	348	269	272	282
26	280	293	276	300	306	298	H 316	302	350	375	280	287	282	263	281	269	A	296	311	324	272	272	276	271
27	273	292	336	337	295	327	322	355	355	A	315	328	278	267	258	266	296	299	314	322	300	279	281	267
28	281	281	279	304	322	321	346	313	314	317	304	256	263	A	292	285	283	273	295	316	320	A	289	294
29	F 288	U F 330	F 305	F 322	F	F 333	A	315	A	A	315	282	A	A	A	271	284	294	303	308	314	288	285	274
30	280	301	333	354	302	298	309	345	330	300	309	323	279	282	255	A	A	A	317	341	329	280	286	289
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	30	29	29	29	29	26	20	24	27	28	25	27	28	26	28	28	27	29	29	30	29
MED	282	292	305	304	302	316	333	338	326	310	297	285	266	270	279	280	286	291	298	309	297	280	278	276
U Q	F 287	302	328	321	317	327	344	350	350	330	314	292	278	276	286	291	295	300	311	322	311	288	286	282
L Q	278	284	290	294	291	298	316	320	314	297	282	269	260	266	266	274	282	282	289	291	288	276	272	270

JUN.2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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										U L 377	L 347	370	395	346	383	372	A	A	L					
2									A	359	L 363	380	A	A	A	A	A	A	A					
3									U L 425	A	L 389	L 395	A	A	395	A	A	A	A					
4									A	A	U L 373	A 365	407	388	403	A	381	L 374	L 385					
5								A	A	A	A	A	A	A	402	A	A	A	A	A				
6								L	A	A	A	A	A	A	A	A	A	403	A					
7									U L 385	A	A	A	A	A	A	414	377	L 345	350					
8							L		L	A	U L 364	379	390	396	A	A	A	345	A					
9							L	L	A	A	A	411	A	A	377	A	A	A						
10								A	A	A	A	A	A	A	A	A	366	A	A					
11								A	L	386	397	412	367	A	A	A	A	368	A	L				
12								L	L	L 391	L 364	376	A	402	391	A	351	A	A					
13								A	A	A	A	A	408	B	A	A	A	A	A	A				
14								A	U L 352	A 353	A	A	A	A	A	A	A	A	354					
15								L		U L 361	L	366	436	420	418	394	372	357						
16							A	A	A	421	402	U L 415	422	377	386	A	384	A	359	L				
17							L	A	A	A	A	347	A	369	386	372	354	A	353					
18								L	L	A	A	U L 368	A	A	A	A	A	A	A	A				
19								A	A	A	413	423	A	A	A	A	A	340	A					
20								L	U L 394	L 354	370	368	A	379	391	373	U A 378	351	L	L				
21								A	A	A	U A 359	389	A	A	U A 387	A	A	A	A	A				
22									380	403	A	A	A	A	A	353	H 367	365	L 350	A				
23								L	L 339	U L 349	A	A	372	416	A	A	364	A	A					
24								L	U L 367	L 369	410	A	410	L 383	L 388	373	354	345	L 362					
25									A	U L 370	A	A	A	A	373	A	A	A	L					
26								L 361	L	L 405	A	A	A	A	405	A	A	364						
27								L	L 407	A	A	391	U A 396	398	A	383	A	A	A					
28									A	A	A	A	A	A	415	383	384	359	344					
29							A		A	A	A	A	A	A	A	A	A	A						
30								L	L 372	378	A	A	A	378	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	9	14	12	16	10	12	15	9	12	12	8					
MED								L 361	U L 380	L 374	372	380	402	386	391	373	370	358	354					
U Q									U L 400	391	400	403	410	400	403	388	380	366	L 360					
L Q									U L 360	359	L 364	368	390	378	386	372	359	345	350					

JUN.2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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										316	320	354	370	356	334	318	294	270	246					
2									240	316	314	320	354	338	334	340	E A 360	332	A					
3									224	282	276	366	342	344	350	298	314	288	270					
4									E A 268	240	296	366	400	378	360	324	270	252	230					
5								268	A	A	A	318	340	A	354	344	320	282	A	232				
6								218	E A 256	E A 308	E A 316	A	378	346	A	346	322	308	314					
7									288	A	A	E A 308	E A 492	A	388	344	286	304	304					
8							258		256	A	324	330	376	414	326	316	E A 342	292	254					
9							254	236	254	A	306	376	398	400	336	304	A	E A 406						
10								238	228	A	414	416	400	364	E A 348	328	320	310	310					
11								268	278	296	348	334	410	364	320	354	324	286	E A 278	262				
12								272	274	246	292	402	404	370	348	342	322	320	292					
13								270	A	A	A	A	582	442	406	412	A	344	308	A				
14								A	418	322	E A 374	328	440	A	380	366	334	334	294					
15								250		362	488	496	384	356	370	348	318	314						
16							252	E A 232	458	430	430	422	456	446	452	E A 492	430	356	290	302				
17							256	250	A	A	E A 398	324	342	400	478	382	328	296	286					
18								274	242	272	394	382	E A 452	416	E A 484	374	314	A	314	A				
19								250	264	282	312	372	396	362	402	A	358	316	302					
20								254	256	306	306	382	350	378	376	380	334	330	310	302				
21								266	280	A	596	494	512	440	416	378	450	464	304	A				
22									308	290	A	408	370	404	350	344	346	344	298	314				
23								296	334	336	314	A	418	354	316	310	314	314	288					
24								288	288	312	308	324	326	378	334	304	344	312	300					
25									234	316	A	402	368	E A 384	360	356	326	314	310					
26								324	250	262	E A 388	364	E A 418	458	374	380	A	316						
27								244	236	A	326	294	396	356	394	378	310	280	268					
28									266	302	310	412	388	A	322	330	330	338	304					
29							A		A	A	312	362	A	A	A	384	344	316						
30								242	278	348	316	280	372	352	388	A	A	A	276					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	19	24	20	25	27	29	25	28	28	26	28	24	5				
MED							255	254	262	306	315	366	387	374	358	344	324	314	296	302				
U Q							257	272	284	319	391	402	418	409	391	378	344	333	306	308				
L Q							253	242	246	282	309	324	369	356	335	326	314	294	277	247				

JUN.2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	256	268	222	286	E A 272	240	230	206	232	226	252	198	200	E A 236	E A 224	E A 234	A	A	228	230	220	232	282	294
2	268	262	208	236	184	E A 254	222	226	A	186	190	226	A	A	A	A	A	A	A	260	242	236	218	E A 278
3	E A 278	256	240	240	250	204	212	214	202	A	E A 238	188	E A 288	A	226	A	A	A	A	264	E A 260	298	308	296
4	268	246	210	E A 304	E A 276	242	202	262	A	A	E A 228	E A 252	198	218	186	A	202	218	220	238	264	256	276	280
5	E A 288	244	260	210	E A 212	E A 378	238	A	A	A	A	A	A	A	192	A	A	A	A	A	228	266	274	266
6	280	278	258	260	222	198	212	208	A	A	A	A	A	A	A	A	A	194	A	262	230	246	E A 338	E A 330
7	286	212	202	E A 278	E A 296	252	232	234	208	A	A	A	A	A	A	202	E A 224	E A 256	246	264	292	272	264	274
8	270	254	206	230	272	214	244	226	222	A	232	200	190	198	A	E A 268	A	E A 234	A	220	234	286	306	296
9	298	E A 294	E A 272	220	226	E A 294	232	214	A	A	A	178	A	A	214	A	A	A	294	254	242	E A 286	272	260
10	278	254	242	260	274	280	240	A	A	A	A	E A 336	A	A	A	A	206	A	A	240	230	E A 304	E A 278	284
11	282	288	266	266	218	220	218	E A 238	218	194	194	210	E A 222	A	A	A	A	216	A	246	230	228	276	290
12	288	280	238	236	224	194	234	194	220	182	240	222	A	204	186	A	248	A	A	246	196	246	302	E A 332
13	324	314	E A 278	236	190	224	252	A	A	A	A	A	188	B	A	A	A	A	A	A	E A 292	292	E A 306	338
14	312	288	E A 298	312	274	226	206	A	212	E A 274	A	A	A	A	E A 288	A	A	A	240	246	218	E A 254	304	300
15	286	254	258	258	246	264	234	224	182	196	212	220	188	184	178	E A 240	210	218	236	E A 302	E A 312	276	276	324
16	E A 350	290	E A 282	298	E A 326	316	A	A	E A 258	198	212	204	186	218	206	A	216	E A 296	E A 262	290	238	254	278	E A 298
17	E A 328	254	266	E A 310	E A 286	256	228	A	A	A	A	E A 276	E A 300	224	206	238	248	A	E A 250	270	E A 256	252	278	286
18	304	E A 292	244	E A 258	E A 282	258	258	228	A	A	A	212	A	A	A	E A 258	A	A	A	A	E A 304	E A 304	E A 336	290
19	268	268	294	264	270	244	226	A	A	A	206	208	A	A	A	A	E A 294	244	A	256	240	258	E A 294	296
20	298	274	258	280	300	278	244	228	204	228	210	212	E A 240	214	200	E A 232	E A 218	212	230	262	252	248	286	288
21	288	322	272	244	248	222	214	A	A	A	E A 270	216	A	A	E A 244	A	A	A	A	A	264	250	E A 320	316
22	308	288	234	228	254	250	230	222	204	E A 220	A	A	A	A	A	264	204	234	230	A	236	254	304	302
23	268	278	242	210	214	200	232	232	202	228	A	A	206	190	A	A	212	A	A	222	A	288	296	276
24	304	268	E A 280	252	E A 254	224	238	E A 244	206	198	210	A	200	208	238	204	198	204	234	266	240	228	230	280
25	276	266	242	186	204	242	226	232	A	190	A	A	A	A	226	A	A	A	226	230	194	294	304	268
26	266	256	256	228	214	238	218	234	216	210	A	A	A	A	218	A	A	224	254	234	E A 270	E A 316	322	E A 322
27	306	272	208	204	256	248	230	232	188	A	A	198	E A 234	202	A	206	E A 296	A	A	232	250	E A 310	280	310
28	274	268	282	222	206	194	230	218	A	A	A	E A 258	A	A	184	202	188	202	226	236	232	A	248	280
29	E A 336	218	E A 284	230	E A 278	E A 252	A	E A 264	A	A	A	A	A	A	A	A	A	A	E A 354	E A 250	E A 264	E A 302	E A 296	E A 294
30	300	272	222	212	194	274	238	230	208	190	A	A	A	238	A	A	A	A	A	238	212	E A 284	E A 276	E A 280
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	28	22	16	14	13	18	13	12	16	11	14	13	15	25	29	29	30	30
MED	283	268	248	238	U 233	238	230	226	208	196	211	207	194	208	203	U 219	208	215	233	246	235	258	280	287
U Q	304	288	E A 272	266	E A 274	258	238	234	219	226	239	E A 226	E A 237	221	226	E A 258	248	239	254	263	E A 264	E A 293	304	302
L Q	274	254	234	228	214	222	220	218	203	190	208	200	189	200	189	204	204	208	228	235	230	249	276	280

JUN.2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	114	104	104	A	A	A	A	A	A	A	A	A	A	A				
2						A	100	104	102	A	A	A	102	102	102	102	102	102	102	A				
3						B	A	102	102	102	A	A	A	A	A	A	100	100	106	A				
4						A	A	102	100	A	100	A	102	102	102	102	102	102	106	A				
5						A	A	104	A	102	A	A	A	A	102	A	A	A	A	A				
6						B	124	104	102	102	A	A	100	A	A	A	A	A	A	A				
7						B	A	A	A	102	102	102	A	100	A	A	A	A	A	A				
8						A	A	102	102	100	A	A	100	100	100	100	100	100	104	A				
9						A	A	A	100	100	100	100	100	100	100	102	102	102	102	A				
10						A	A	102	102	102	102	102	104	104	102	102	102	102	100	A				
11						A	A	A	A	A	102	100	98	96	A	96	102	102	102	A				
12						B	A	102	102	104	104	106	106	110	102	102	102	102	102	A				
13						A	A	104	102	A	A	A	102	B	A	A	A	A	A	A				
14						A	A	104	104	100	98	98	A	A	A	102	A	A	A	A				
15						A	A	A	A	A	A	A	A	A	A	A	A	A	100	A				
16						B	A	104	104	102	102	102	102	102	A	102	102	102	102	A				
17						B	A	100	100	A	A	A	A	A	A	100	100	100	104	A				
18						B	A	A	102	102	102	102	102	102	A	102	A	A	A	A				
19						B	114	102	100	100	A	A	A	A	A	A	104	104	108	A				
20						B	A	102	102	102	102	A	102	A	A	A	A	A	102	A				
21						B	122	106	104	102	102	A	106	106	102	102	102	102	102	A				
22						B	A	A	102	102	102	A	A	A	A	A	102	102	A	A				
23						B	A	102	102	102	102	A	102	A	A	A	102	104	104	A				
24						B	A	A	A	A	A	A	A	A	A	102	102	102	102	A				
25						B	A	110	104	104	104	104	104	104	104	100	A	A	A	A				
26						A	A	A	A	A	A	A	A	100	100	102	102	102	A	A				
27						B	A	106	102	102	A	A	102	102	102	102	102	102	A	A				
28						A	A	102	102	102	A	A	102	102	102	102	102	102	100	A				
29						A	A	A	A	100	102	102	102	102	102	100	100	A	A	A				
30						B	A	102	102	102	102	A	A	A	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	21	23	21	16	10	18	16	13	18	19	18	17					
MED							114	102	102	102	102	102	102	102	102	102	102	102	102					
U Q							123	104	102	102	102	102	102	103	102	102	102	102	104					
L Q							107	102	102	101	102	100	102	100	101	100	102	102	102					

JUN.2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	84	100	100	98	100	138	128	116	120	96	96	96	96	130	96	142	130	118	116	108	92	98	100	100
2	100	100	92	98	90	94	124	110	106	110	108	104	102	110	108	102	110	106	102	98	96	92	88	90
3	88	88	84	84	90	88	110	110	114	102	100	100	102	98	96	96	104	108	106	102	98	96	100	100
4	98	94	90	94	92	110	104	104	102	98	100	102	114	116	118	104	132	128	114	106	86	100	98	96
5	94	94	90	92	92	92	124	110	104	100	98	96	98	94	102	96	106	98	94	94	94	92	84	92
6	82	80	86	84	B	B	140	132	106	100	94	96	112	94	92	94	94	92	90	88	84	84	100	102
7	102	96	96	92	84	86	88	172	120	104	104	104	104	98	96	98	98	102	96	90	90	86	86	92
8	86	84	84	94	94	94	116	100	102	98	98	112	G	G	120	110	104	100	100	106	98	96	96	100
9	98	98	94	92	92	92	98	132	108	100	102	132	120	112	138	110	104	102	102	100	98	98	102	94
10	90	88	92	90	90	92	122	108	106	132	108	122	112	112	108	104	104	96	96	90	94	94	98	90
11	84	84	82	90	88	90	92	94	140	110	108	106	106	102	126	110	104	104	100	98	90	100	148	96
12	92	92	88	88	92	106	110	112	116	134	118	120	114	126	142	116	114	102	96	98	96	94	96	92
13	90	92	90	84	118	94	116	106	100	96	96	96	G	B	96	122	110	92	90	106	88	90	86	106
14	100	106	94	98	104	94	150	112	108	102	96	96	96	92	116	110	104	106	100	88	88	84	86	88
15	B	B	104	98	100	98	98	100	108	100	100	102	96	96	100	138	94	92	116	88	100	86	100	94
16	98	98	98	98	94	96	110	102	106	108	G	120	136	130	116	104	110	106	104	96	88	86	82	94
17	98	92	88	94	94	114	118	106	106	102	102	182	134	134	136	92	118	108	102	98	98	98	94	98
18	98	94	90	90	92	92	94	120	108	106	102	116	110	106	102	108	100	96	94	94	94	94	90	90
19	90	100	98	98	88	90	124	102	102	106	112	112	96	98	148	110	108	146	114	106	92	100	92	90
20	90	88	92	86	100	126	110	106	104	104	104	102	102	100	102	94	96	94	92	90	88	100	104	100
21	100	96	96	96	96	86	124	112	108	104	102	104	122	116	120	110	110	104	104	98	112	90	94	90
22	90	96	92	88	110	92	124	118	116	104	98	100	94	96	94	178	110	102	100	92	92	90	86	86
23	86	110	88	106	82	84	114	106	112	104	102	94	120	104	116	114	108	110	104	98	98	102	96	96
24	96	100	92	92	92	94	94	94	94	108	100	96	102	98	94	130	118	104	102	98	94	86	88	B
25	96	80	88	B	B	B	136	130	110	108	108	108	104	106	108	106	106	96	94	90	84	84	84	126
26	B	B	90	124	B	92	98	98	134	112	104	104	114	112	112	108	102	102	96	96	96	96	96	94
27	90	90	88	100	90	B	120	122	116	104	102	102	112	126	106	116	106	102	98	98	96	94	90	90
28	86	86	100	92	102	94	116	126	108	104	98	102	100	102	G	104	G	90	120	104	102	104	110	94
29	98	98	100	94	90	94	96	98	102	102	100	100	100	96	98	136	128	94	92	90	104	100	90	88
30	90	86	100	100	86	86	116	116	110	106	108	100	98	98	98	94	92	88	92	90	90	90	86	94
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	30	29	27	27	30	30	30	30	29	30	28	28	29	30	29	30	30	30	30	30	30	29
MED	91	94	92	94	92	94	116	110	108	104	102	102	104	103	108	109	106	102	100	98	94	94	94	94
U Q	98	98	96	98	100	96	124	118	114	108	106	112	114	114	119	116	110	106	104	100	98	98	100	99
L Q	89	88	88	90	90	90	98	102	104	100	98	100	99	98	97	102	103	96	94	90	90	90	86	90

JUN.2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUN.2022 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	F2	F7	F3	F9	F3	H1	C1	C4	C2	L3	LC21	L2	L1	HL11	LH11	HL11	HL11	CL22	CL22	CL12	F3	F2	F1	F3
2	F4	F4	F3	F4	F2	L5	C1	C3	C4	C1	C1	CQ21	CQ31	C2	C4	C4	C4	C6	C8	L8	F6	F6	F6	F6
3	F5	F6	F5	F2	F2	LC11	C3	C5	C2	C6	C2	C2	C2	L2	L2	L3	C6	C4	C3	CL94	FF33	FF23	FF33	FF44
4	F4	F2	F4	F6	F5	C2	C3	C5	C6	LQ31	C2	C2	C1	C1	CL11	C2	H1	C2	C1	C2	F1	F2	F3	F5
5	F4	F3	F6	F4	F4	LQ31	CL12	C8	C7	C7	LQ51	L4	LQ51	LQ41	C2	L2	C1	L6	L7	L3	F3	F2	F2	F2
6	F2	F2	F1	F1			H1	H1	C4	C4	L4	L5	CL13	L4	L6	L6	L4	L3	L5	LQ41	F3	F4	FF32	FF32
7	F3	F3	F4	F3	F4	L2	L2	HL21	C1	C6	C3	C3	C2	L6	L3	L1	L2	C3	L5	L6	F5	F5	F3	F3
8	F2	F5	F1	F3	F7	L5	C1	C3	C2	L5	L3	C1			C2	C2	C3	C3	C2	C2	F5	F3	F3	F2
9	F5	F9	F8	F5	F3	L7	L2	HL22	C3	C6	C5	H1	C1	C3	H1	C3	C4	C4	C5	C7	F3	F4	F2	F4
10	F3	F2	F3	F4	F6	L2	C2	C6	C6	HC14	C3	C2	C2	C2	C4	C4	C2	L4	L4	L6	F7	F6	F5	F2
11	F2	F3	F3	FF45	F4	L4	L3	L3	HL11	C1	C1	C1	C1	C1	C2	C3	C3	C2	C5	C1	F4	F1	F1	F3
12	F5	F3	F3	F3	F2	C2	C2	C1	C1	H1	C1	C1	C2	C1	H1	C2	C2	C6	L8	LQ51	F3	F4	F3	F3
13	F3	F4	F2	F1	F1	L1	C2	C4	C8	LQ41	LQ51	L4			L1	CL11	CL32	LC42	L6	CL59	F3	F4	F3	F5
14	F2	FF13	F3	F3	F1	L3	HL11	C4	C2	C2	L2	L2	L3	L6	C1	C3	C2	C2	C3	L4	F7	F3	F6	F1
15			F1	F2	F1	L4	L3	C3	C2	C2	C1	CH11	L1	L1	L1	HC11	L2	LH21	CL33	L2	FF34	F2	F2	F3
16	F8	F3	F2	F4	F7	L4	C5	C4	C3	C2		C1	H1	H1	C1	C2	C1	C3	C2	L4	F4	F3	F2	FF32
17	F5	F2	F2	F3	F3	CL11	C1	C3	C4	C5	C4	HC11	H1	HL11	H1	LH11	C2	C3	C3	L7	F6	F7	F4	F2
18	F3	F4	F3	F4	F3	L2	LC31	C1	C3	C4	C3	C1	C2	C2	C4	C1	C4	L8	LQ51	L8	F6	F9	F9	F5
19	F3	F1	F5	F2	F4	L1	C1	C6	C4	C2	C1	C1	L3	LC22	HL22	C3	C3	HC21	C4	C3	F4	F2	F5	F4
20	F3	F2	F1	F1	F1	C1	C3	C3	C1	C1	C1	C1	C2	C1	C1	L2	L2	L1	L1	L3	F4	F2	F2	F2
21	F3	F4	F3	F4	F5	L1	C6	C7	C4	C6	C3	C4	C1	C1	C1	C1	C3	C3	C2	L5	FQ11	F1	F4	F4
22	F3	F3	F3	F3	F1	L1	C1	CL22	C2	C2	L9	L3	L5	L2	L3	HC11	C1	C2	C2	L5	F4	F1	F4	F4
23	F2	FF21	F2	F1	F1	L1	C1	C3	C1	C2	C2	L6	C1	C2	CL41	CL51	CL11	C4	C5	C5	F9	F2	FF33	F3
24	F2	F1	F6	F5	F6	L4	L2	L5	L3	CL11	C2	L3	C1	L2	L2	H1	C1	C1	C2	L3	F4	F2	F1	
25	F3	F1	F1				H2	H2	C3	C1	C4	C3	C4	C2	C2	C2	C2	L4	L2	L2	F3	F4	F4	FF11
26			F3	F1		L1	L2	L4	HL11	CL11	C2	C2	CL31	C3	C2	C2	C3	C2	L4	L3	F4	F3	F3	F3
27	F4	F4	F3	FF13	F1		C2	C1	C1	C4	C3	C2	C2	C1	C2	C2	C2	C4	C5	L6	F7	F3	F4	F5
28	F2	F2	F3	F4	FF23	L3	CL26	C2	C3	C5	L3	C2	C4	C7		C1		L1	C2	CL41	FF32	FF52	FF22	F4
29	F5	F1	F2	F2	F4	L3	LQ51	LQ41	C6	C7	C3	C2	C3	L3	L5	H2	C2	L6	L7	L6	FF34	FF56	F3	F4
30	F3	F2	FF12	FF12	F1	L2	CL31	C2	C2	C2	CH31	L5	L3	L2	L2	L8	L5	L7	L5	LC75	F4	F4	F3	F3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUN.2022 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

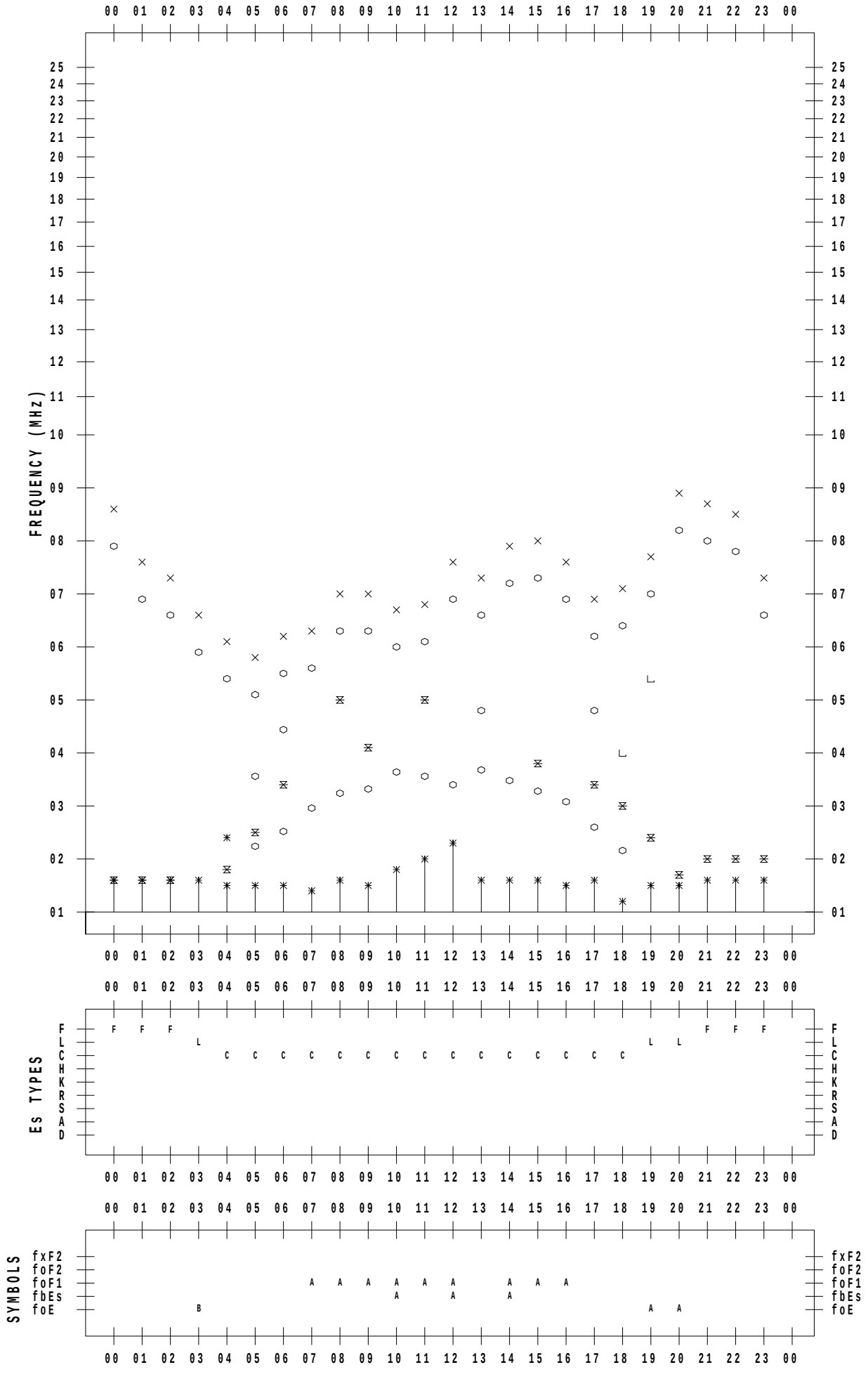
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 1

135 °E MEAN TIME



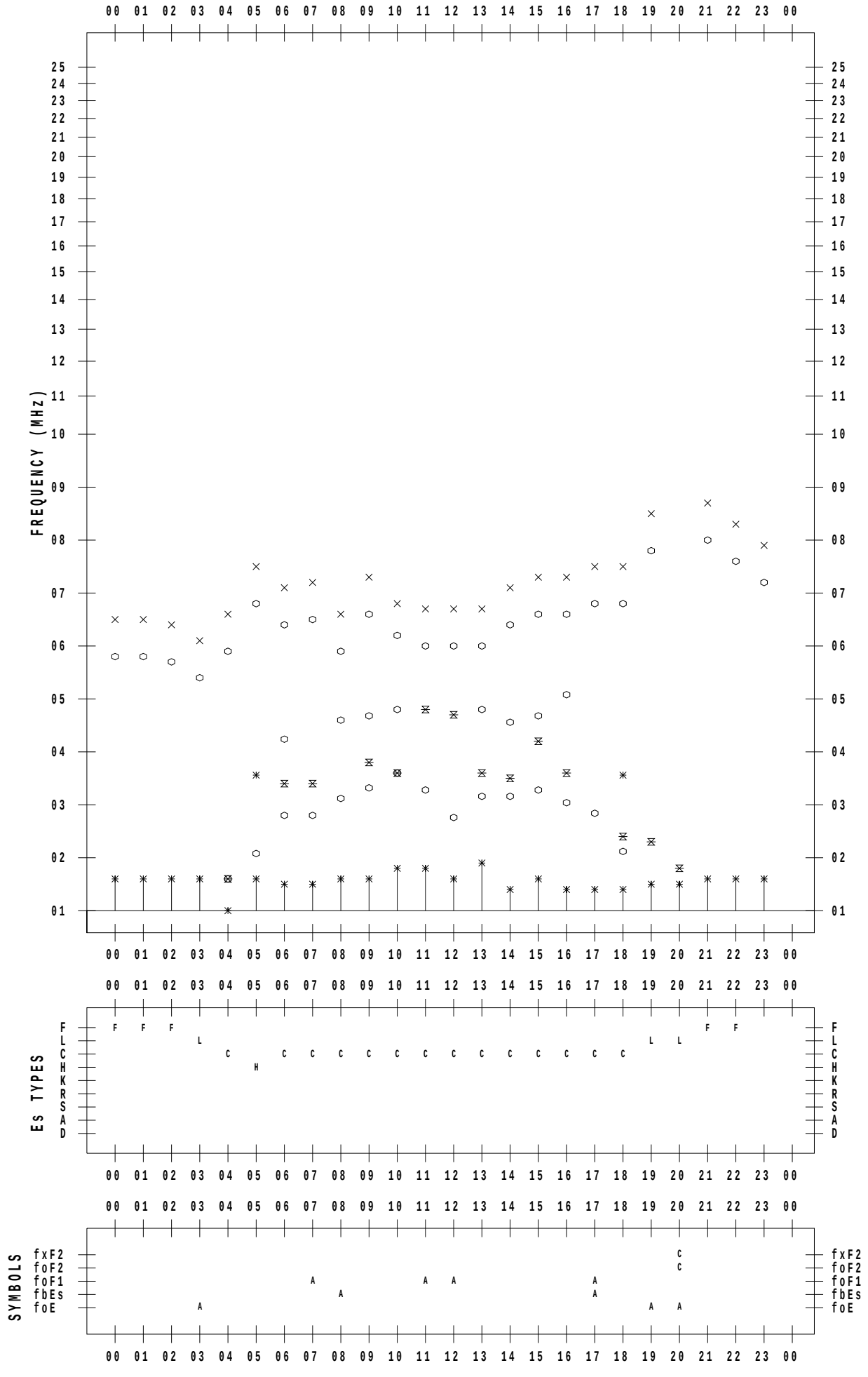
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 2

135 °E MEAN TIME



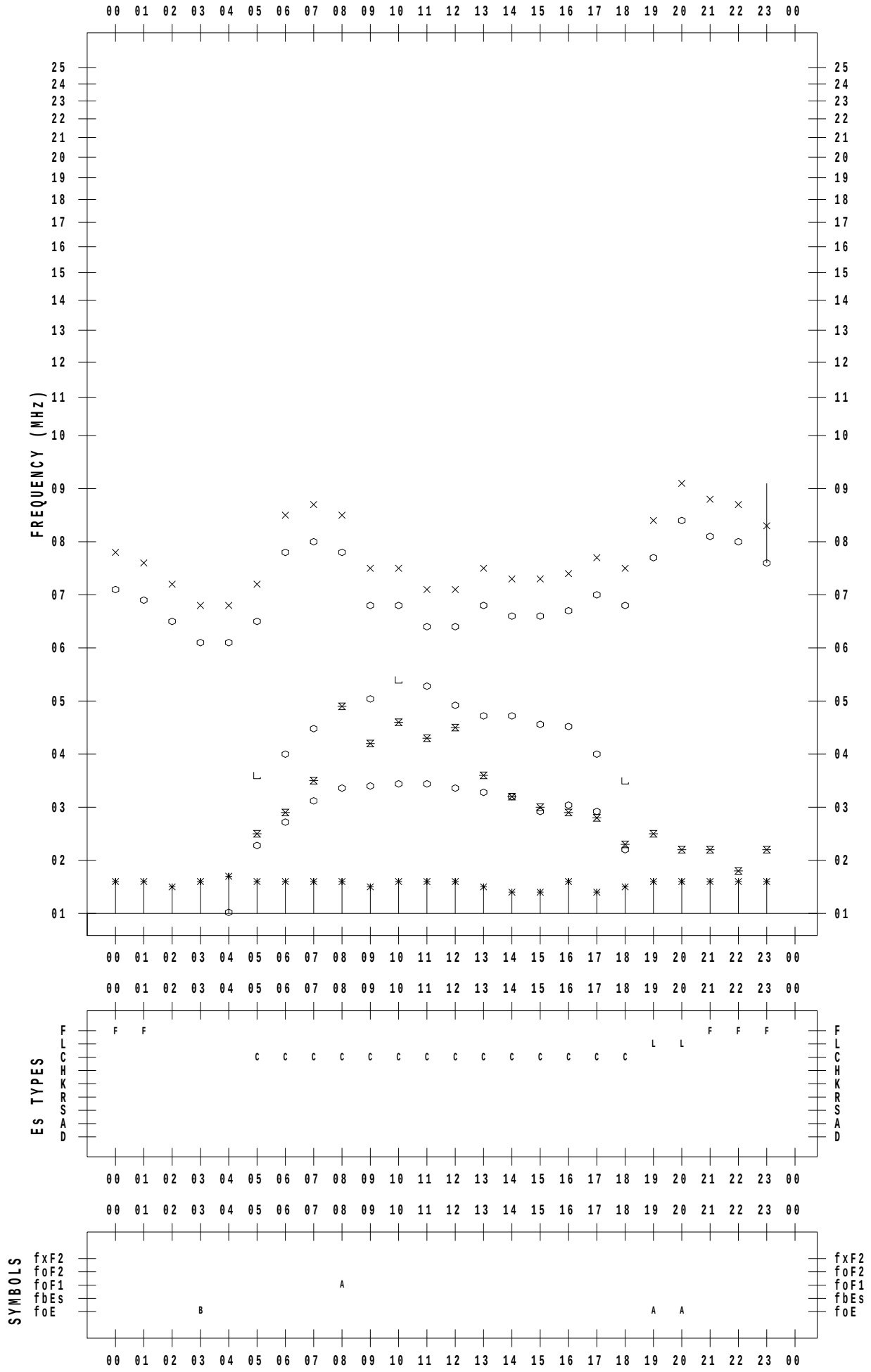
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 3

135 °E MEAN TIME



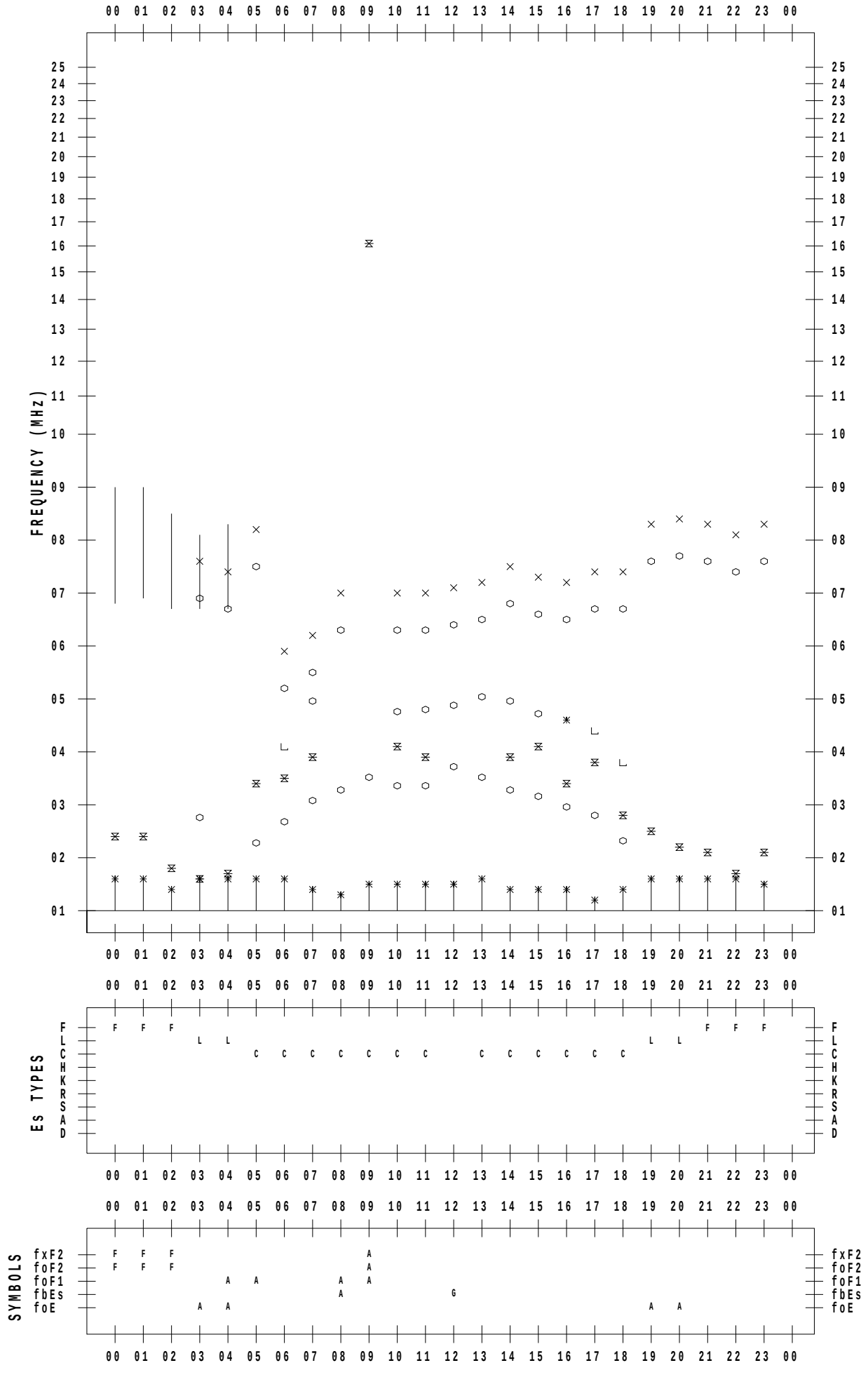
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 4

135 °E MEAN TIME



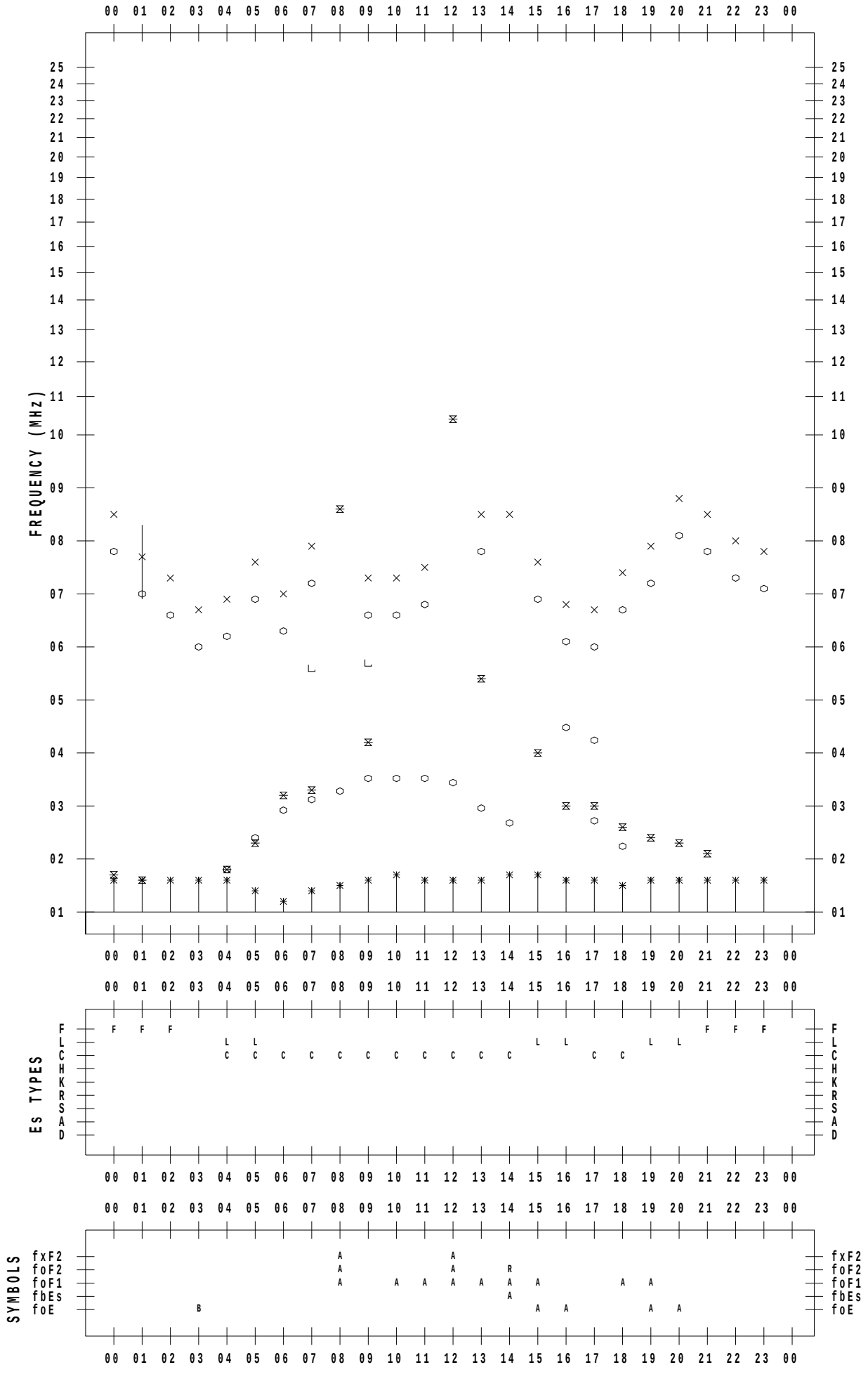
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 5

135 °E MEAN TIME



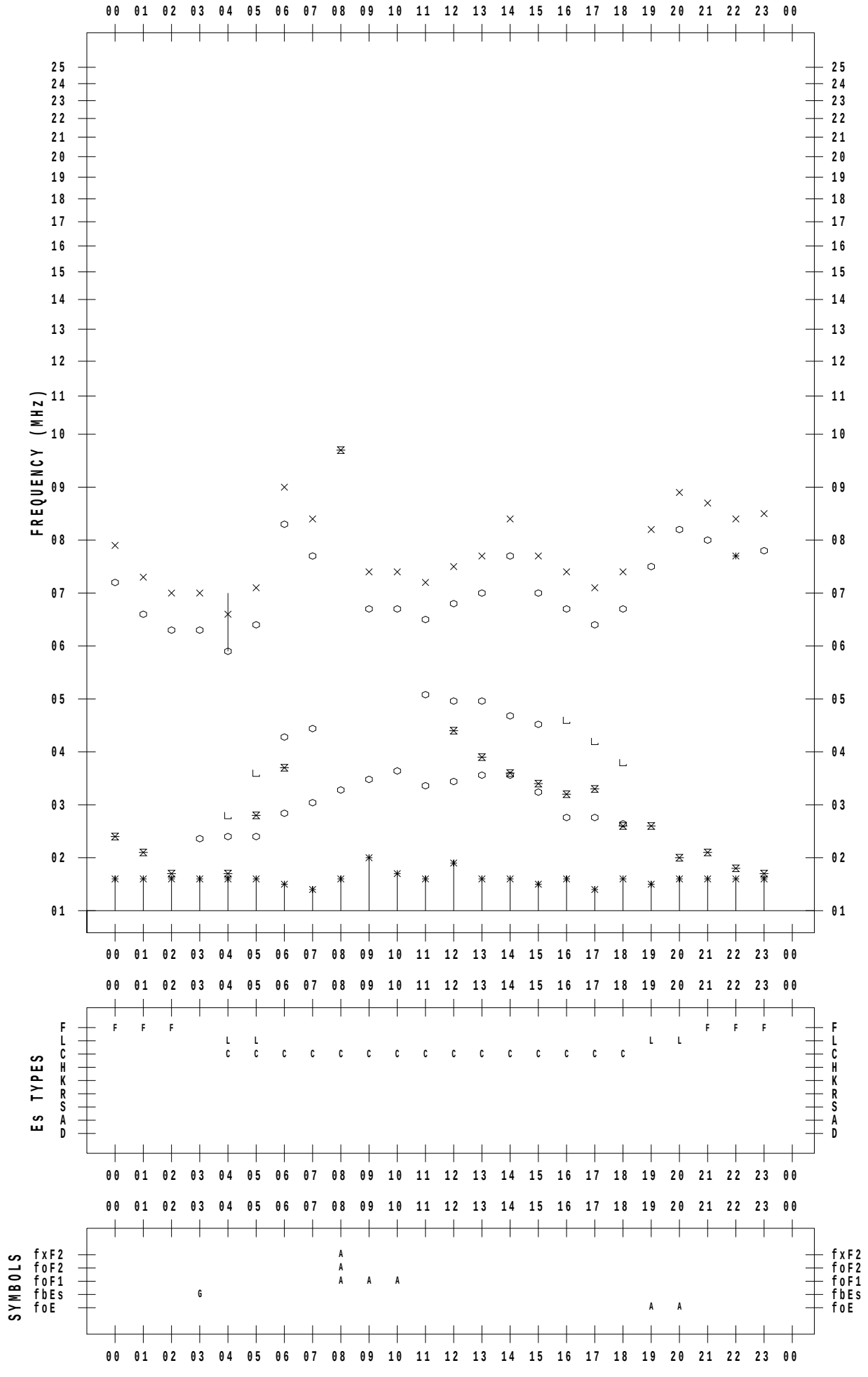
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 6

135 °E MEAN TIME



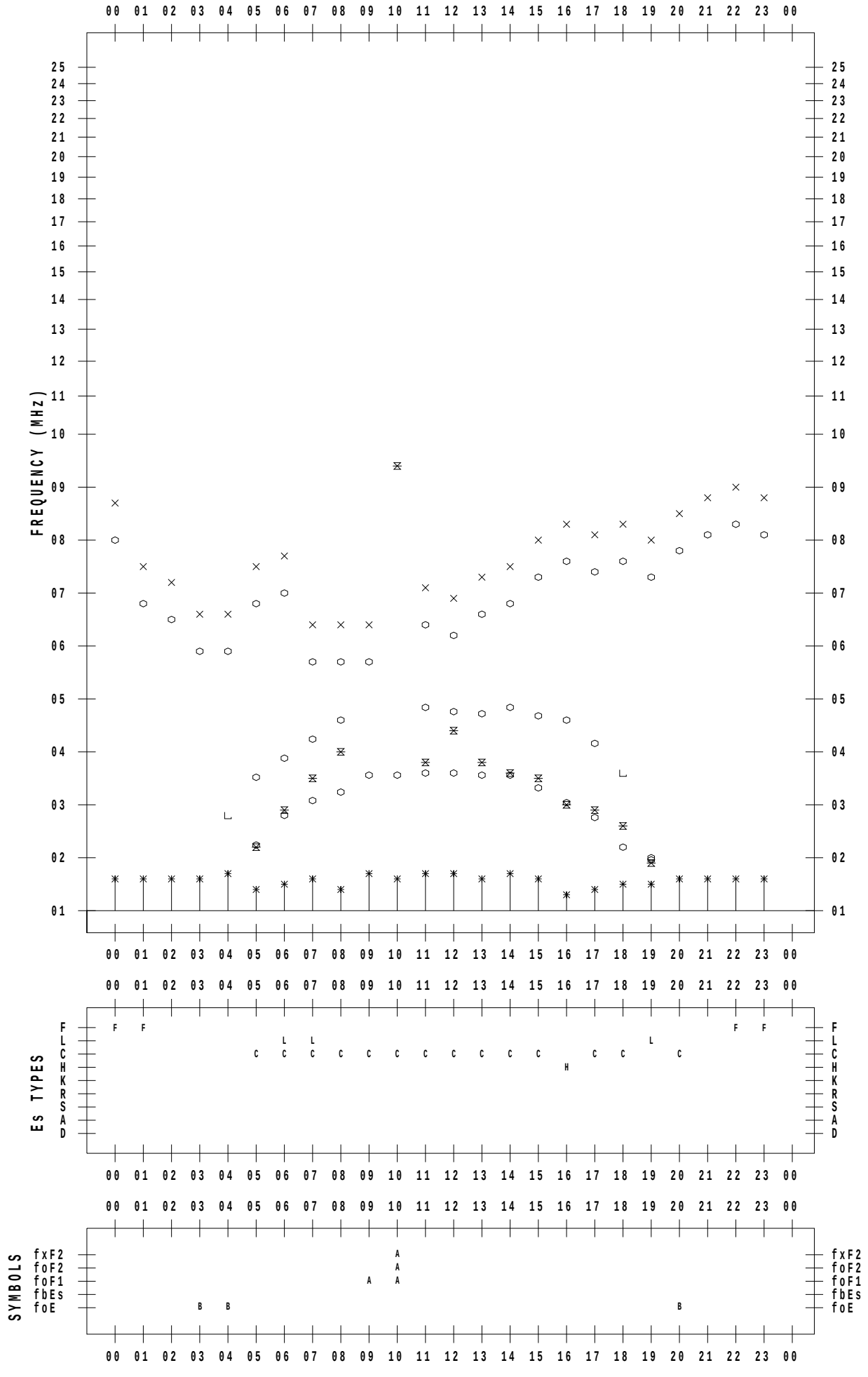
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 7

135 °E MEAN TIME



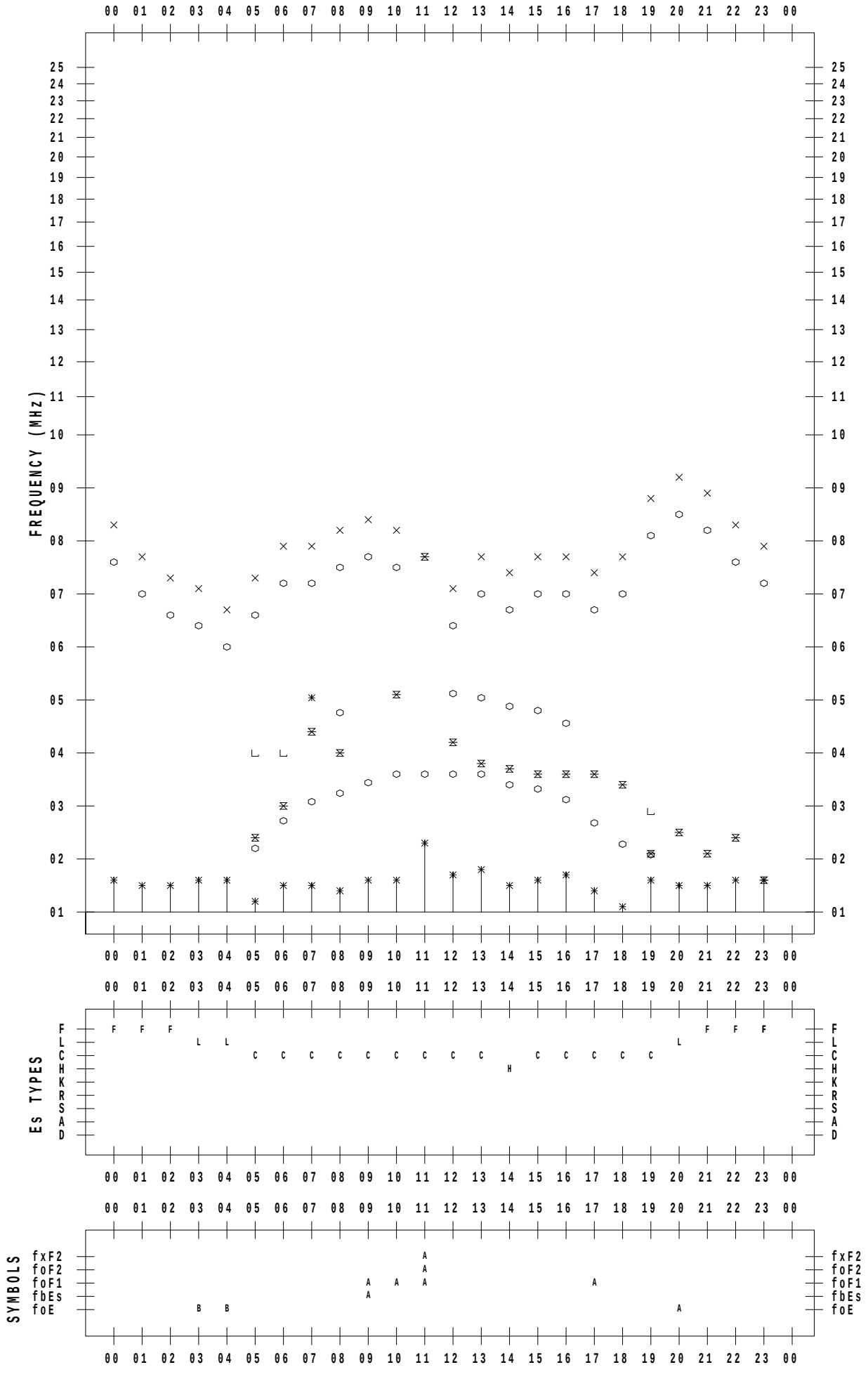
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 8

135 °E MEAN TIME



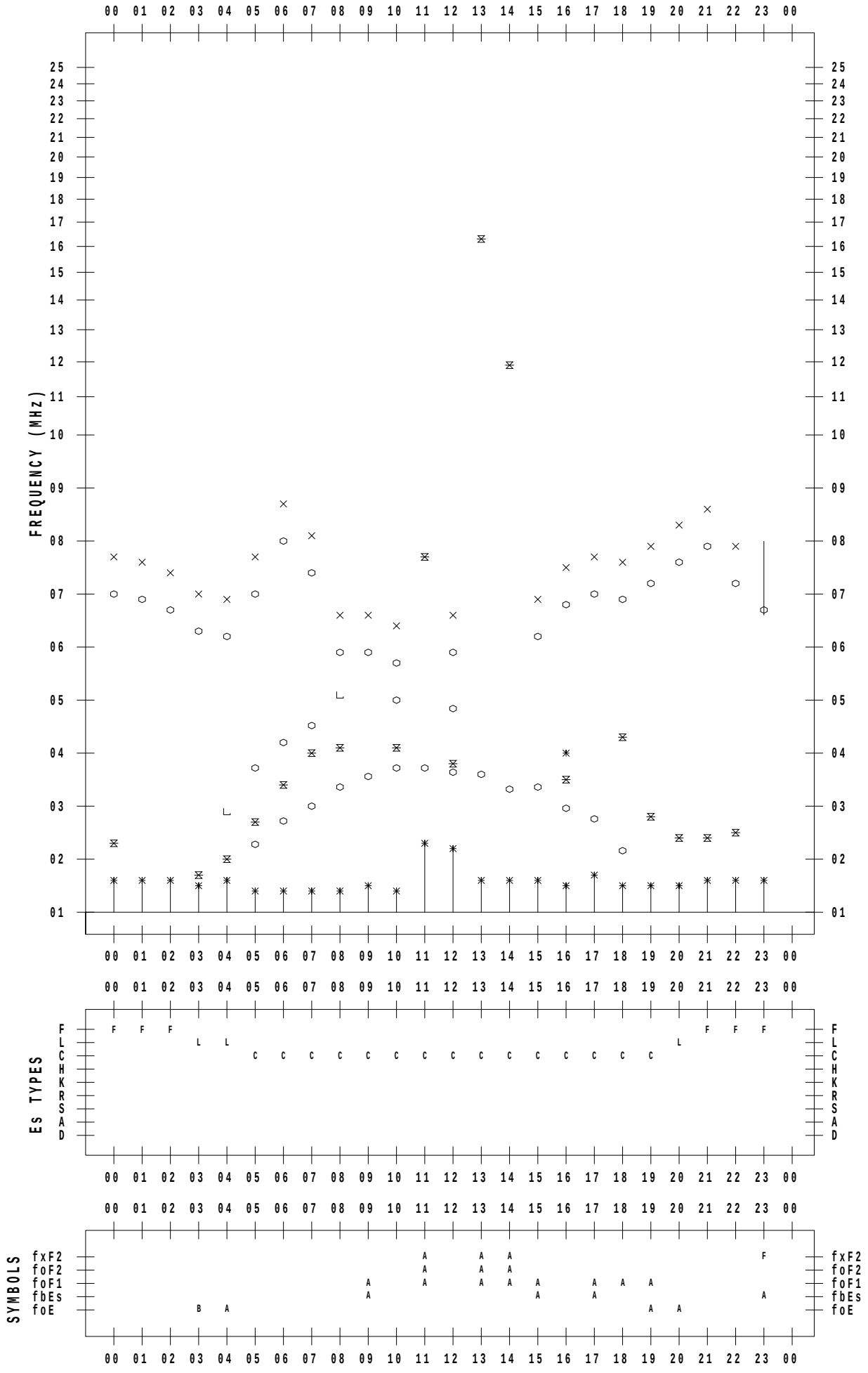
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/ 9

135 °E MEAN TIME



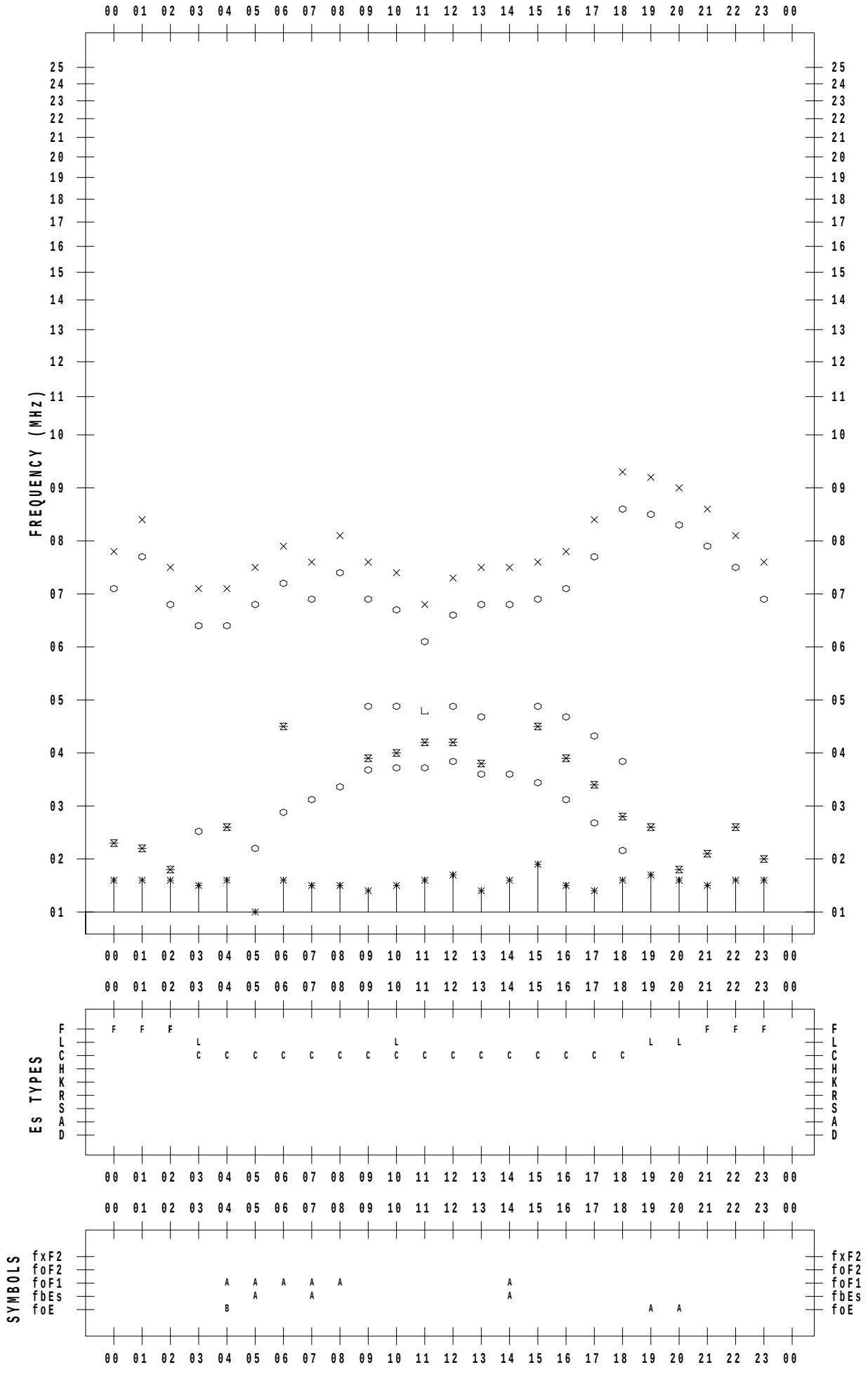
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/10

135 °E MEAN TIME



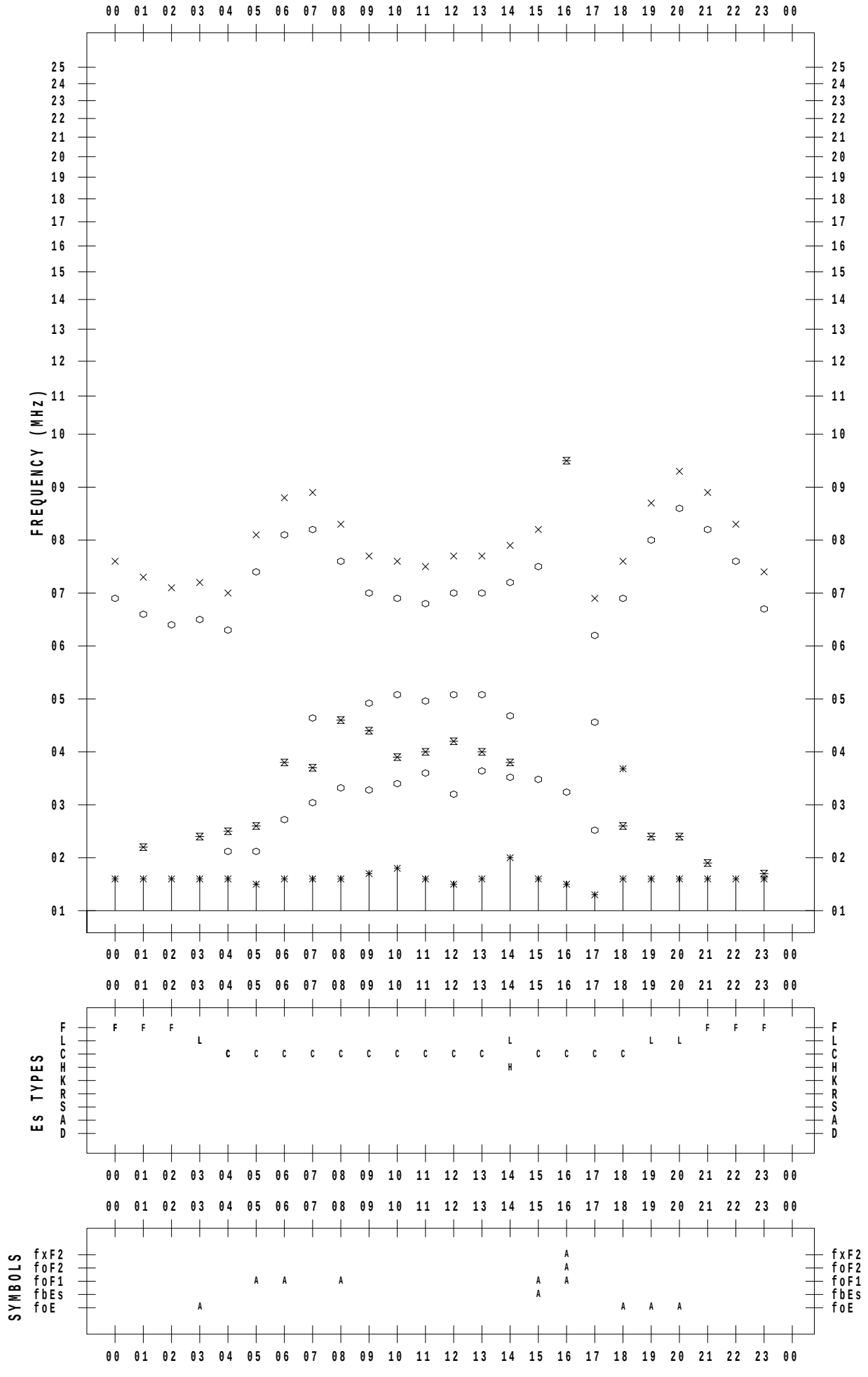
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/11

135 °E MEAN TIME



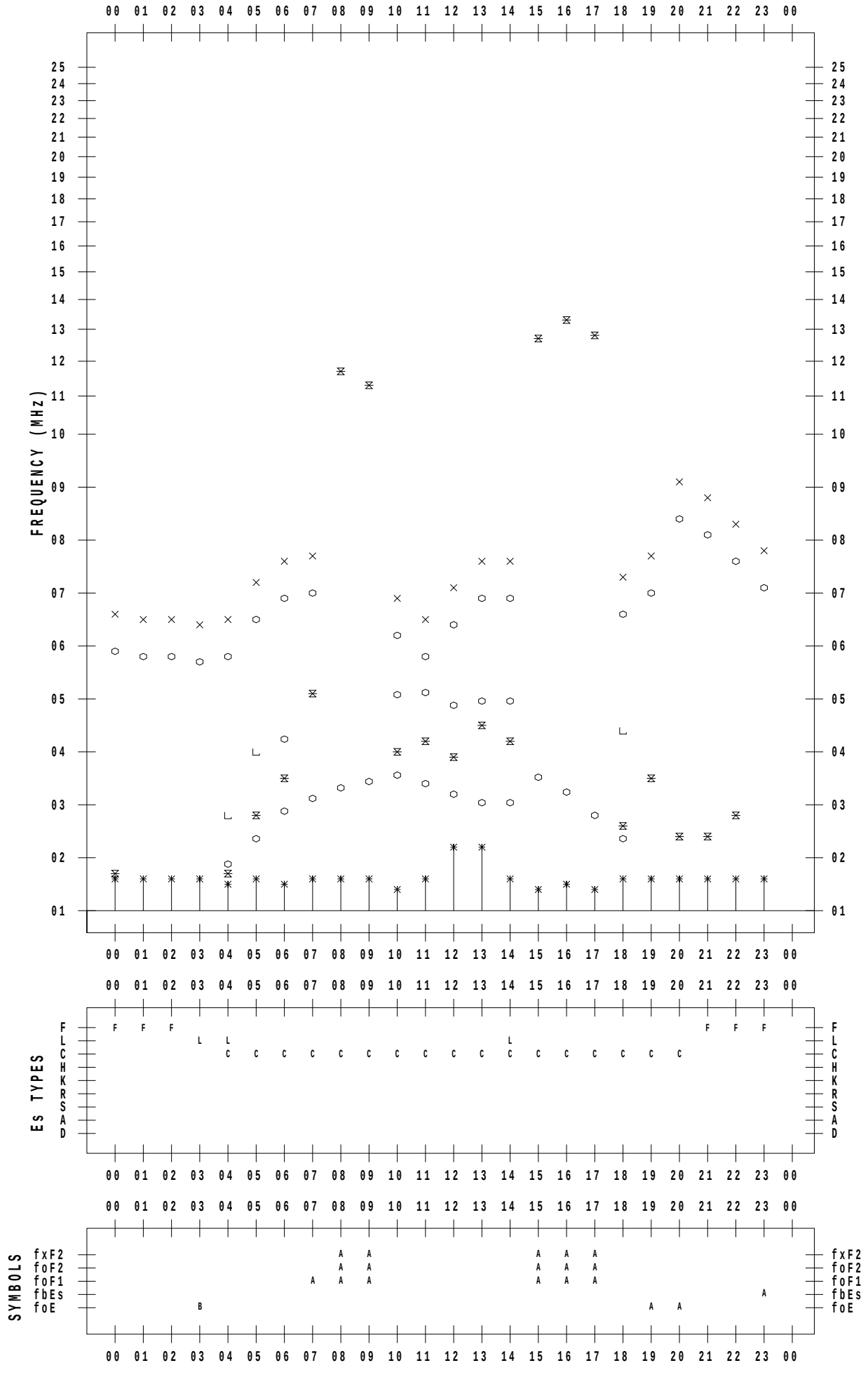
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/12

135 °E MEAN TIME



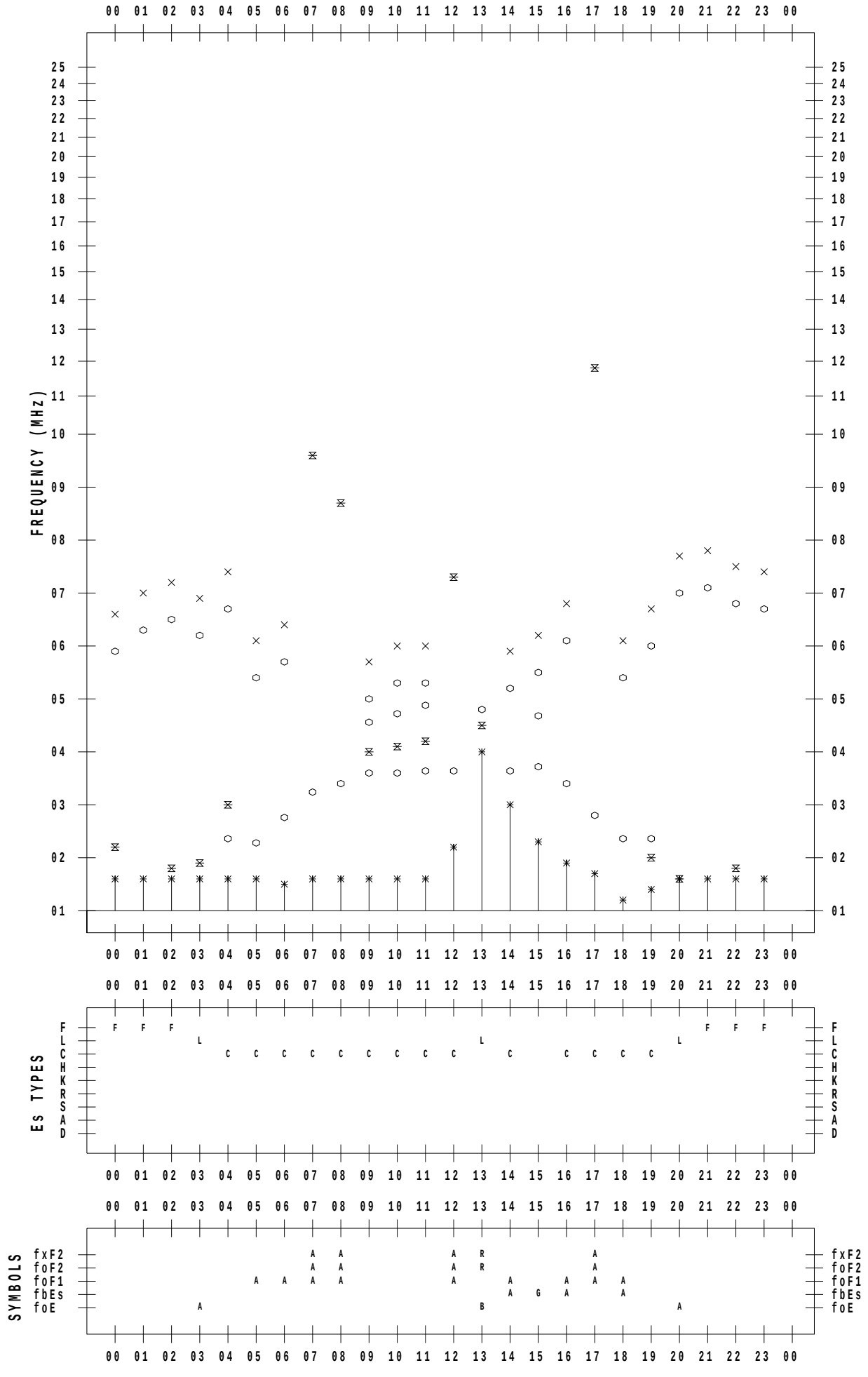
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/13

135 °E MEAN TIME



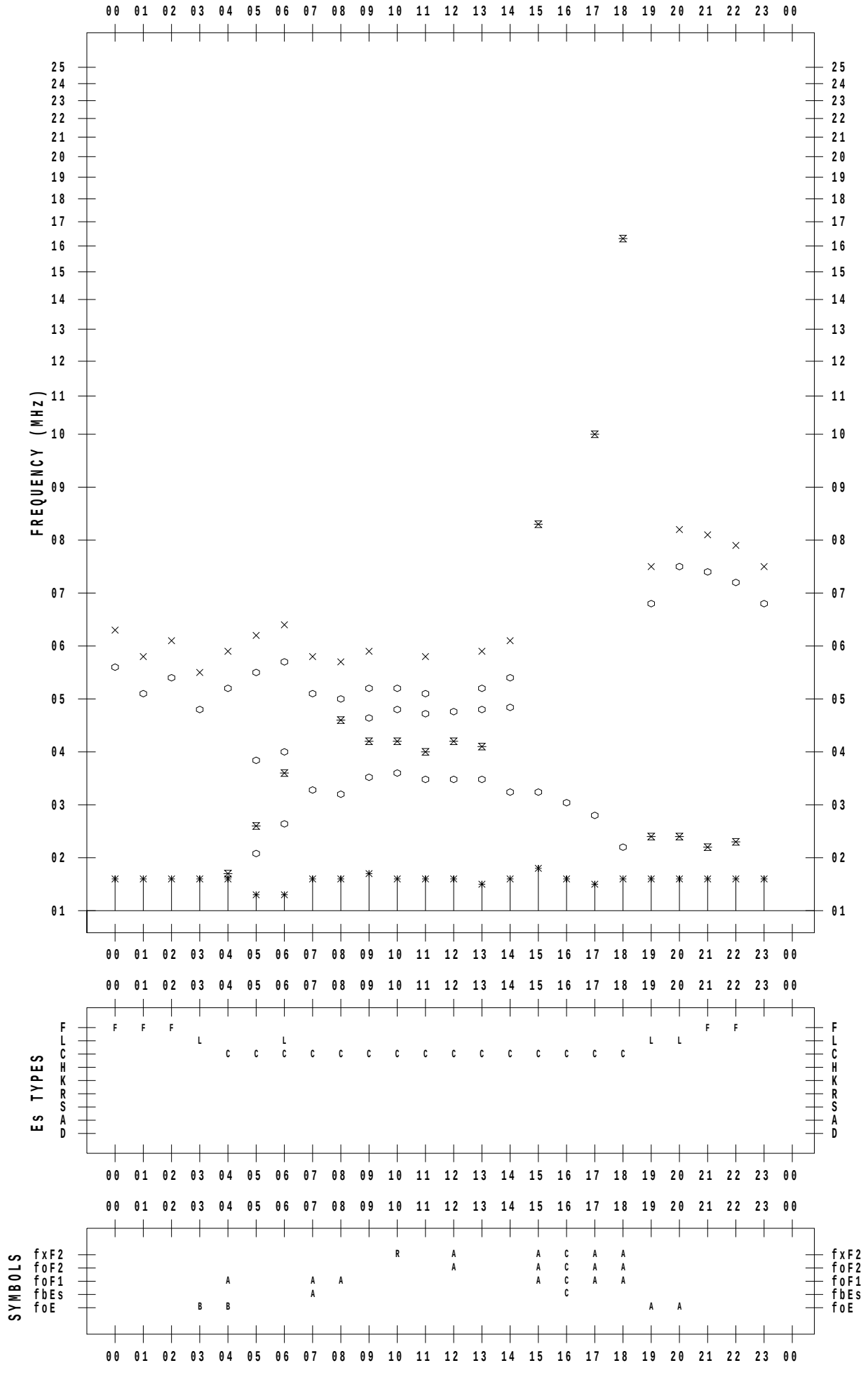
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/14

135 °E MEAN TIME



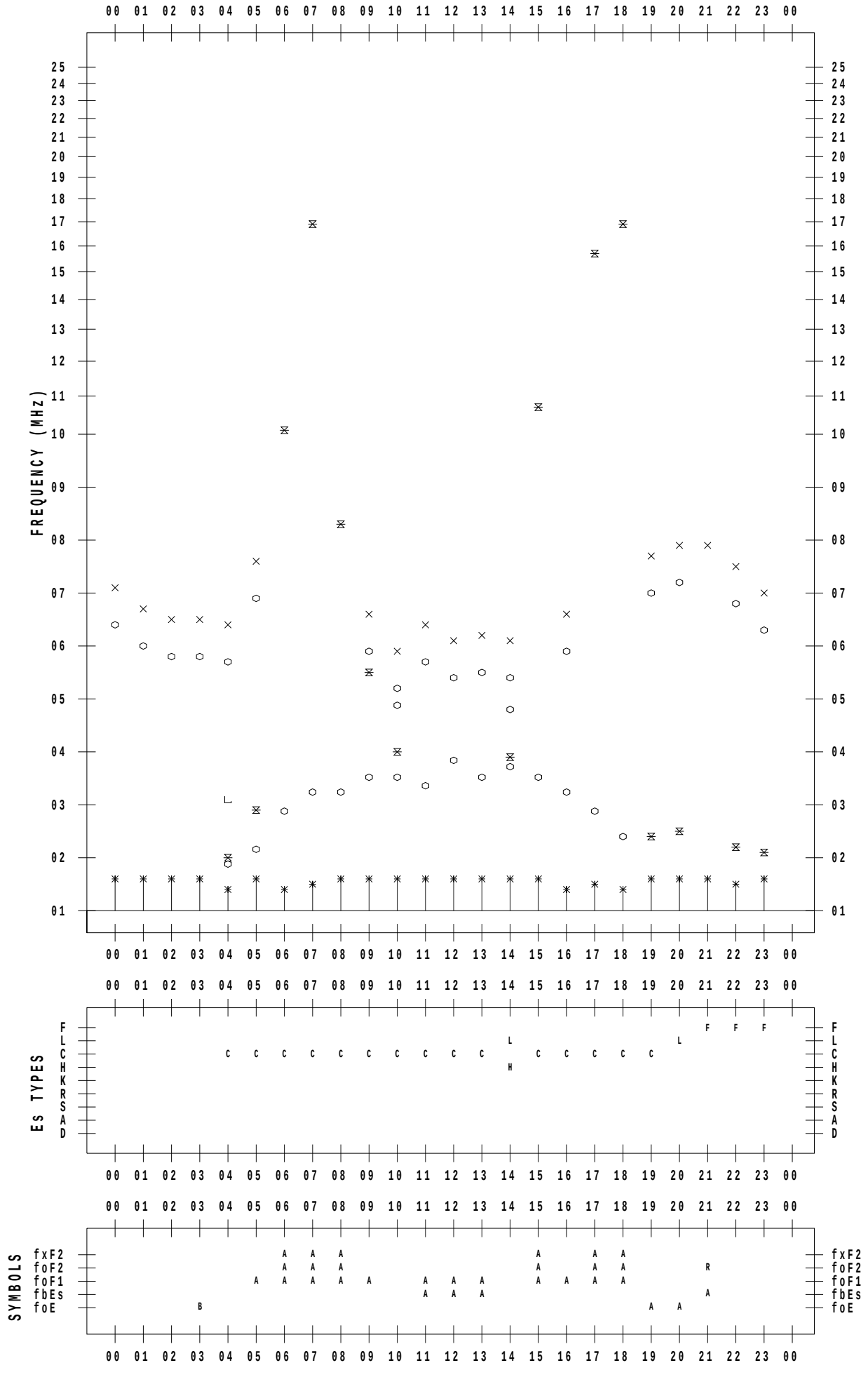
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/15

135 °E MEAN TIME



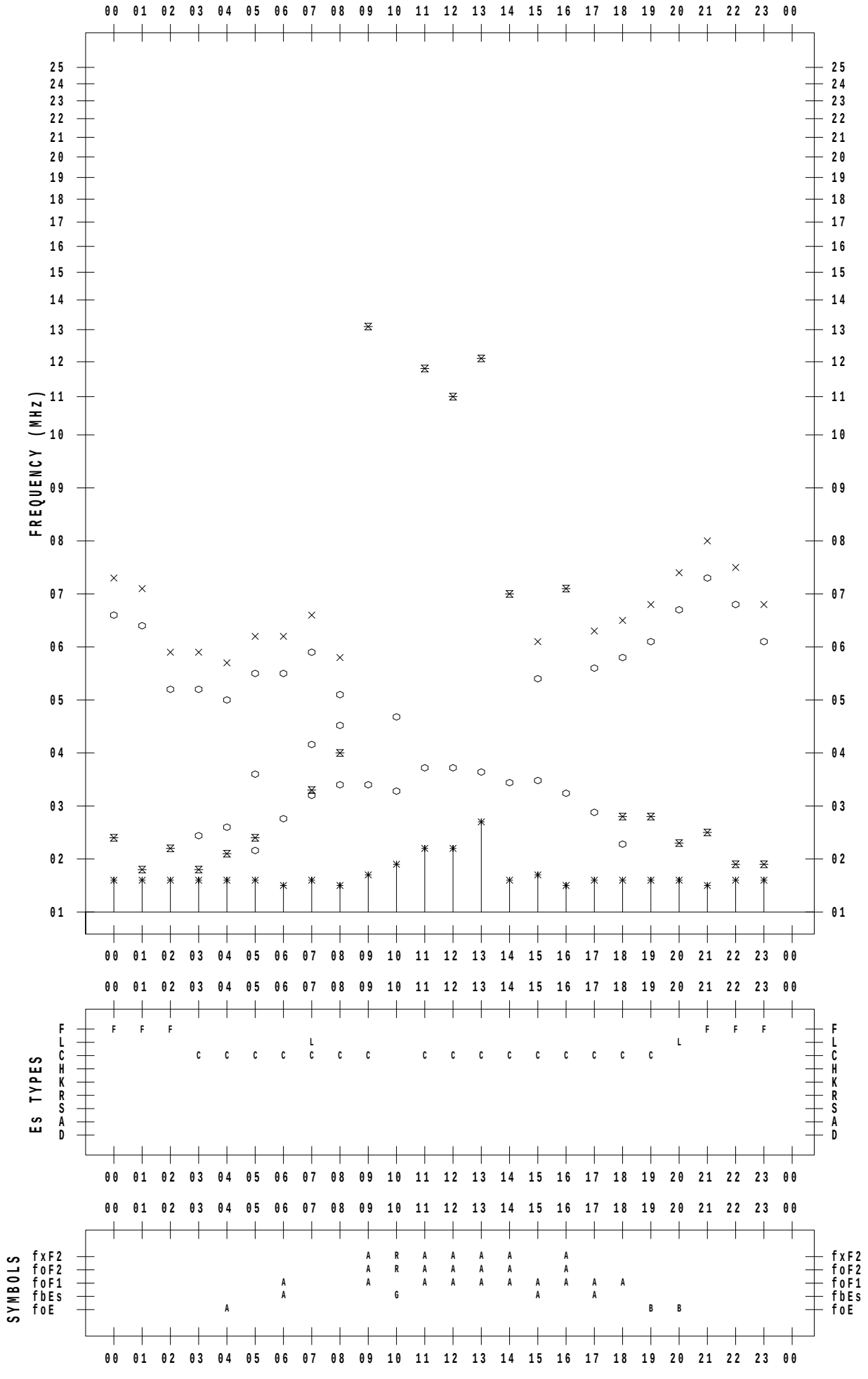
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/16

135 °E MEAN TIME



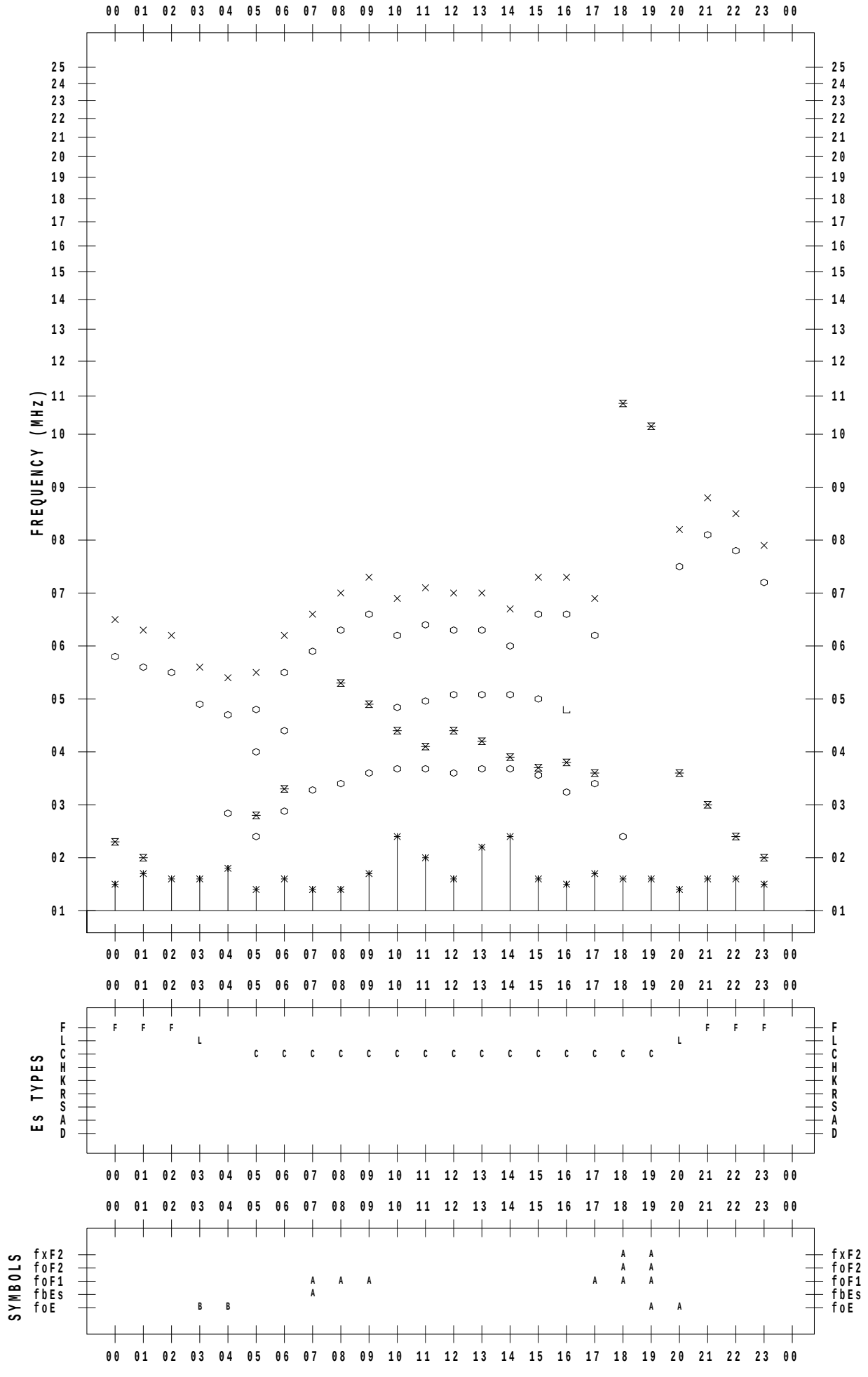
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/17

135 °E MEAN TIME



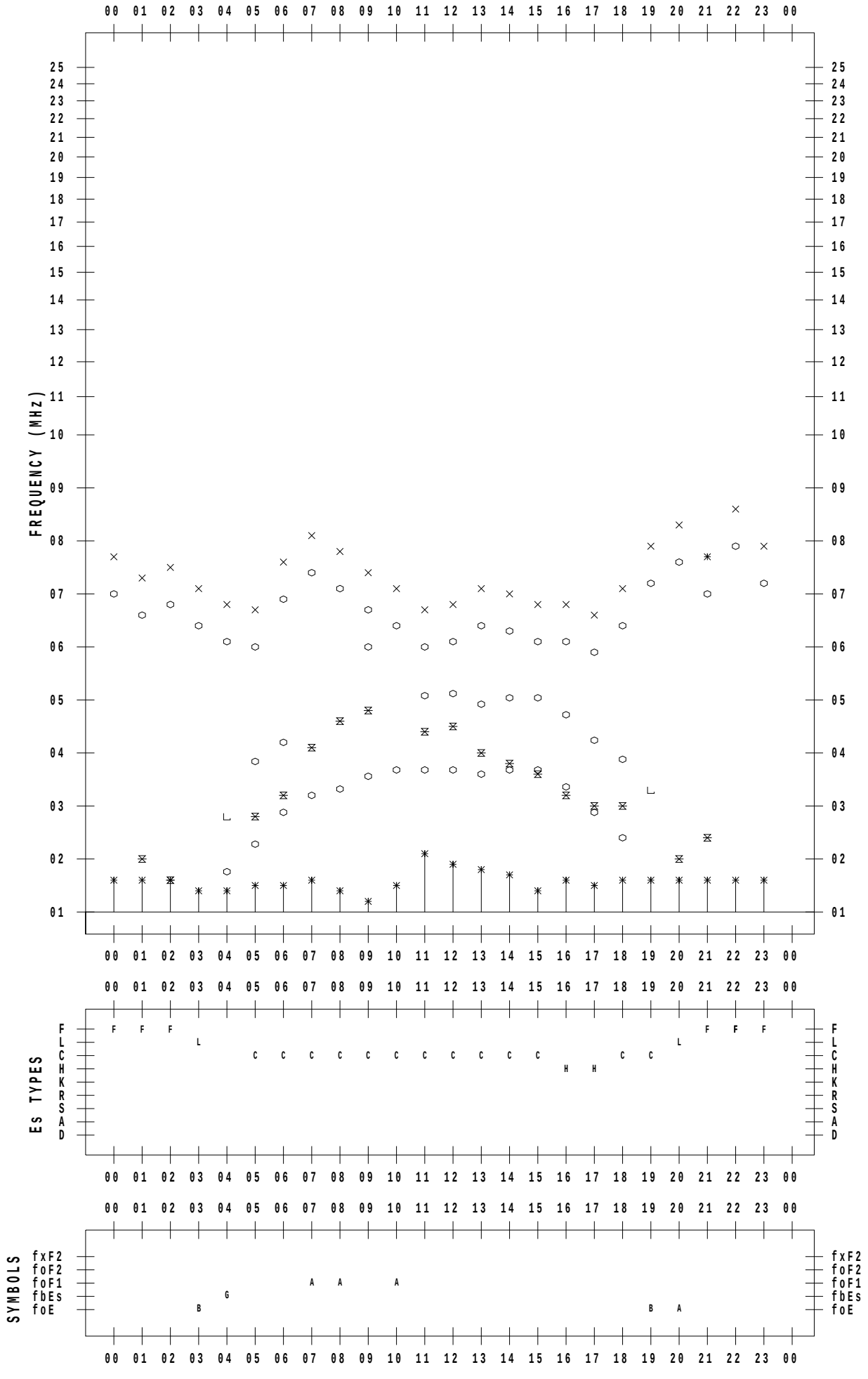
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/18

135 °E MEAN TIME



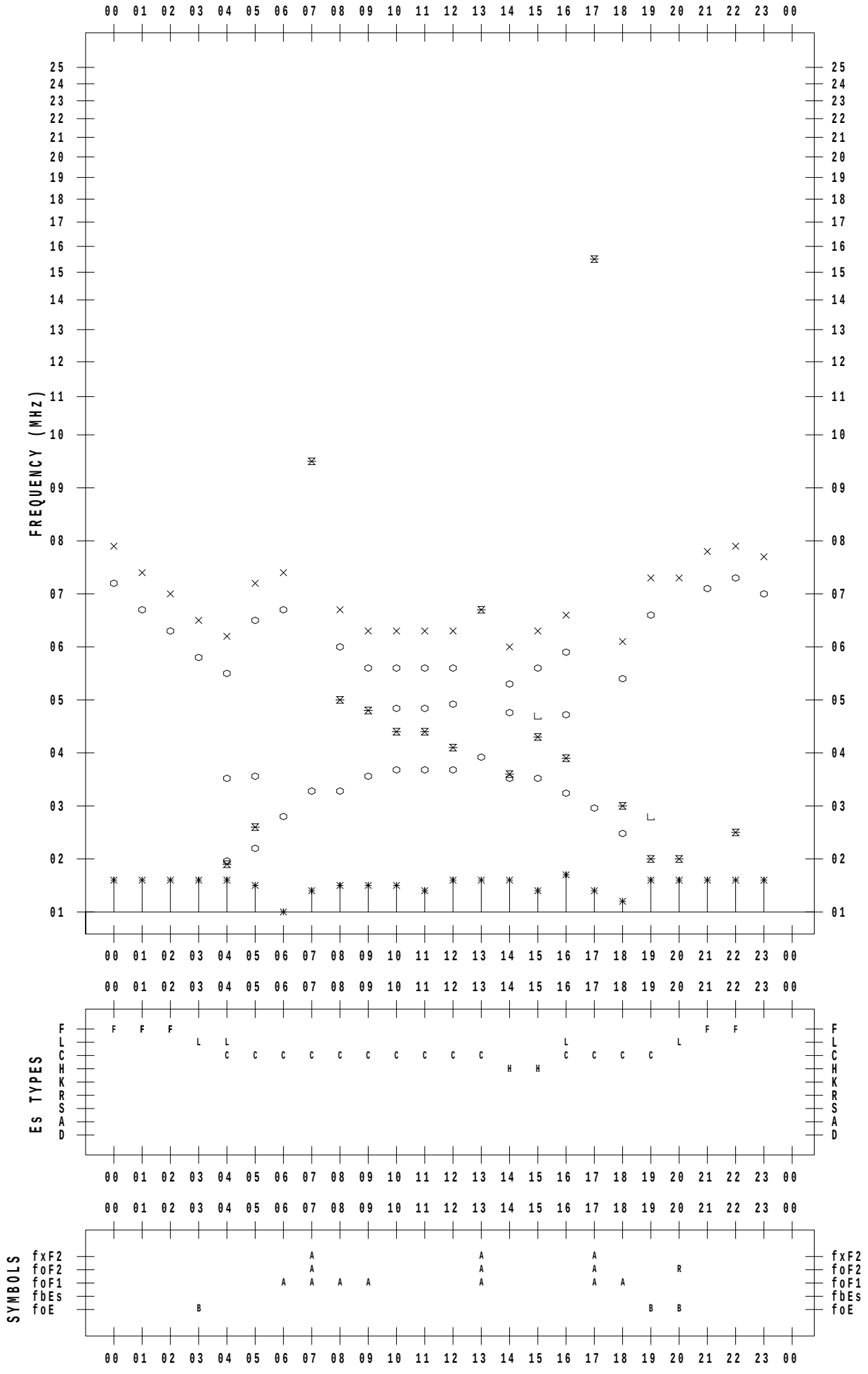
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/19

135 °E MEAN TIME



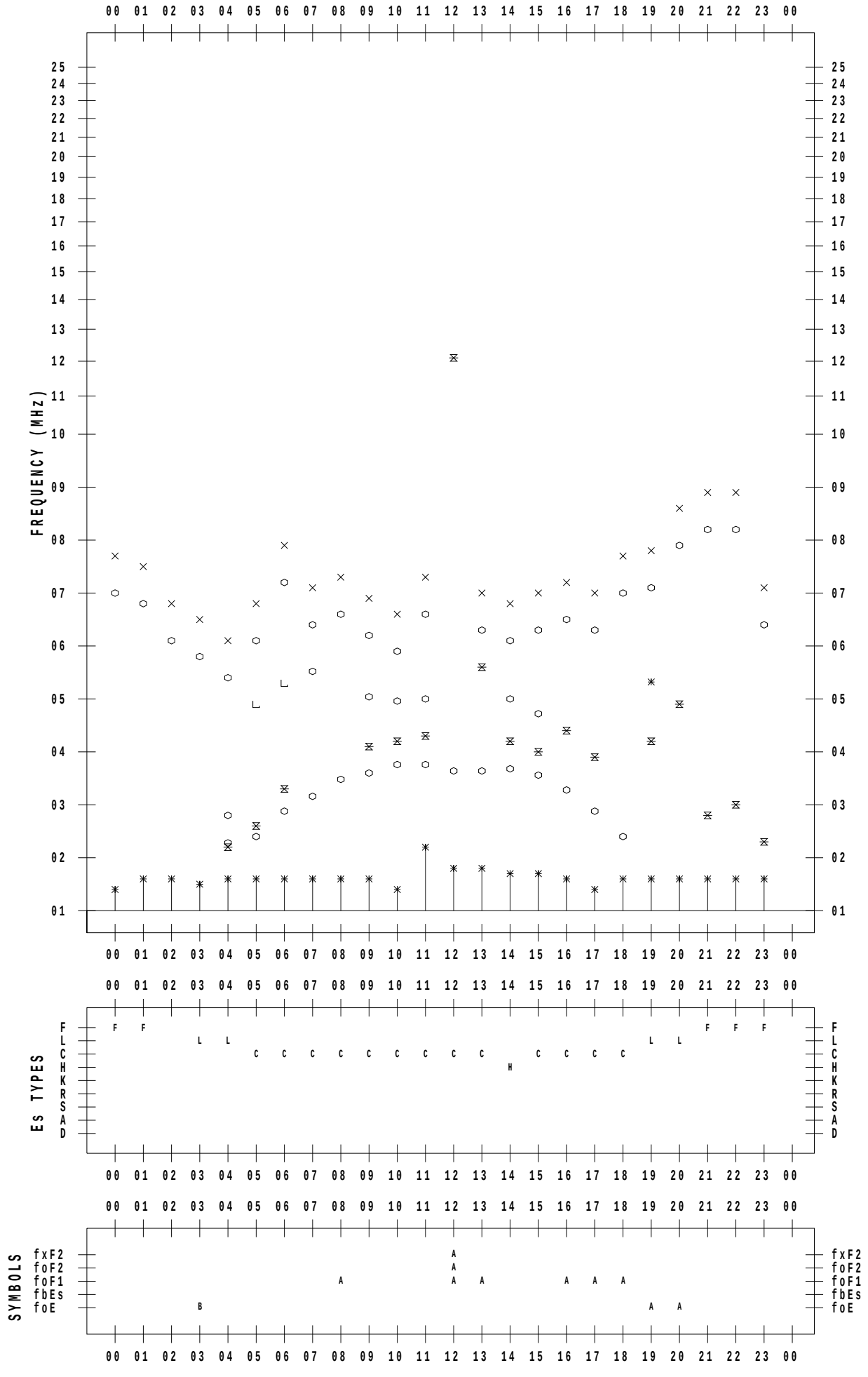
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/20

135 °E MEAN TIME



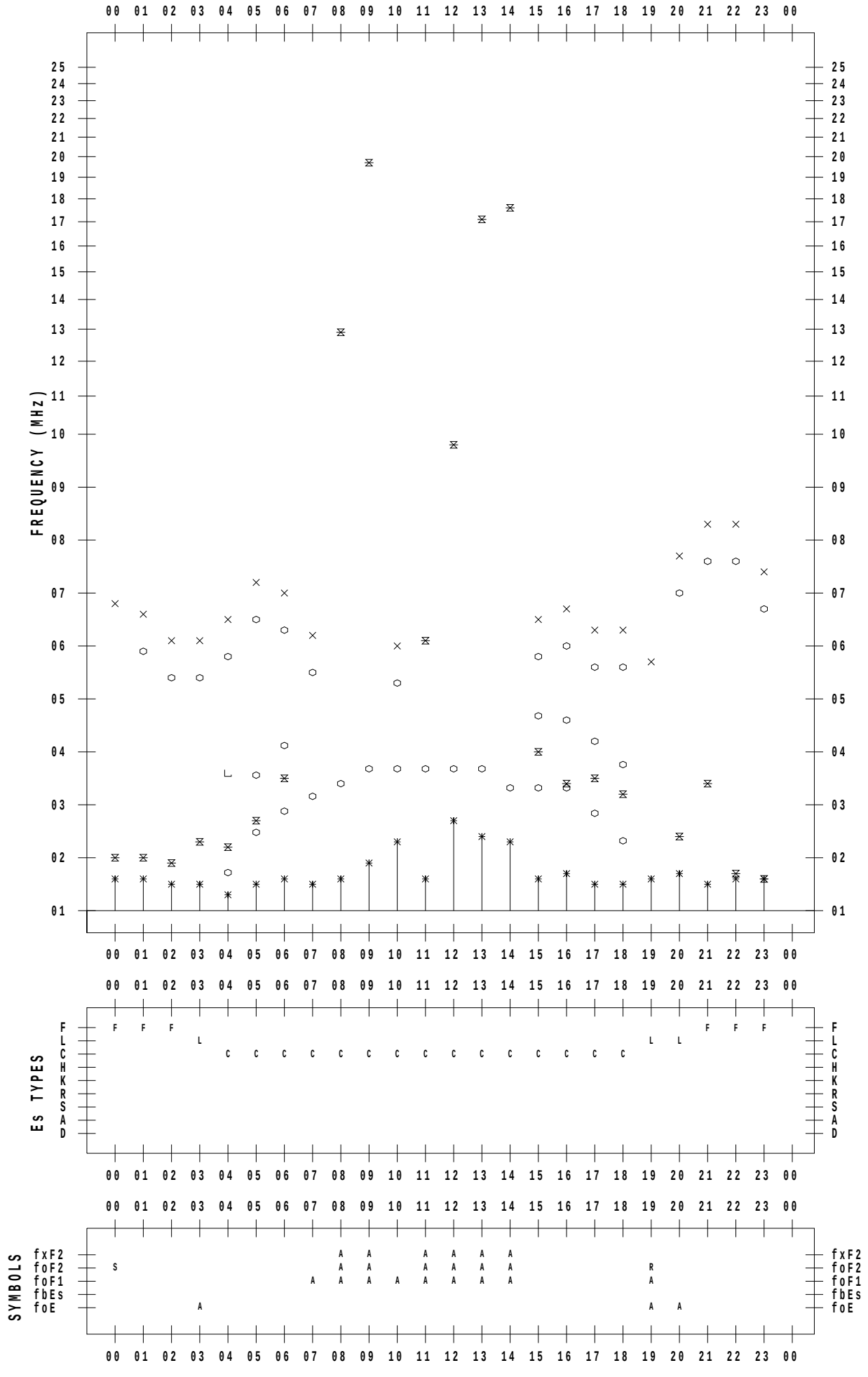
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/21

135 °E MEAN TIME



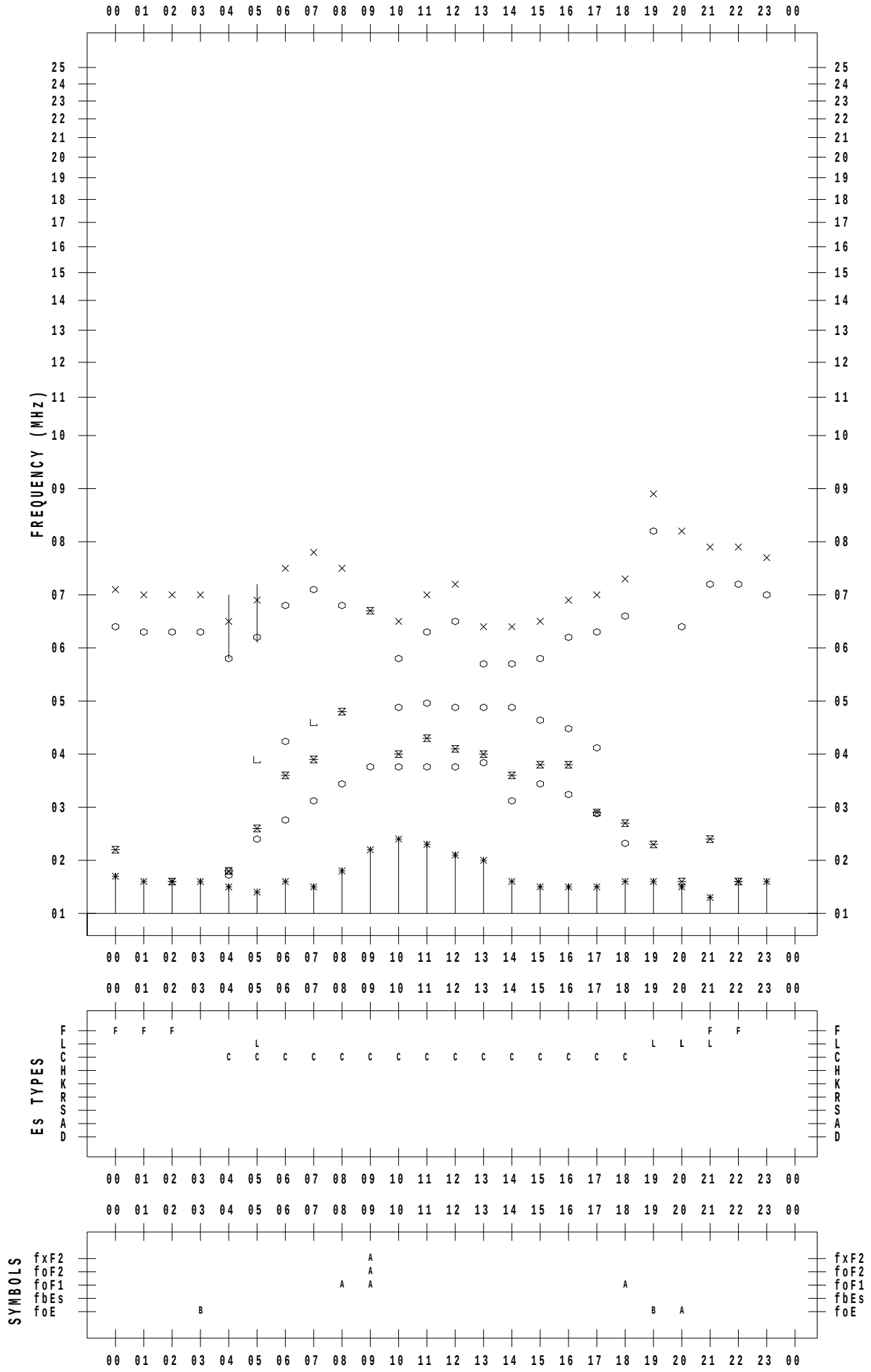
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/22

135 °E MEAN TIME



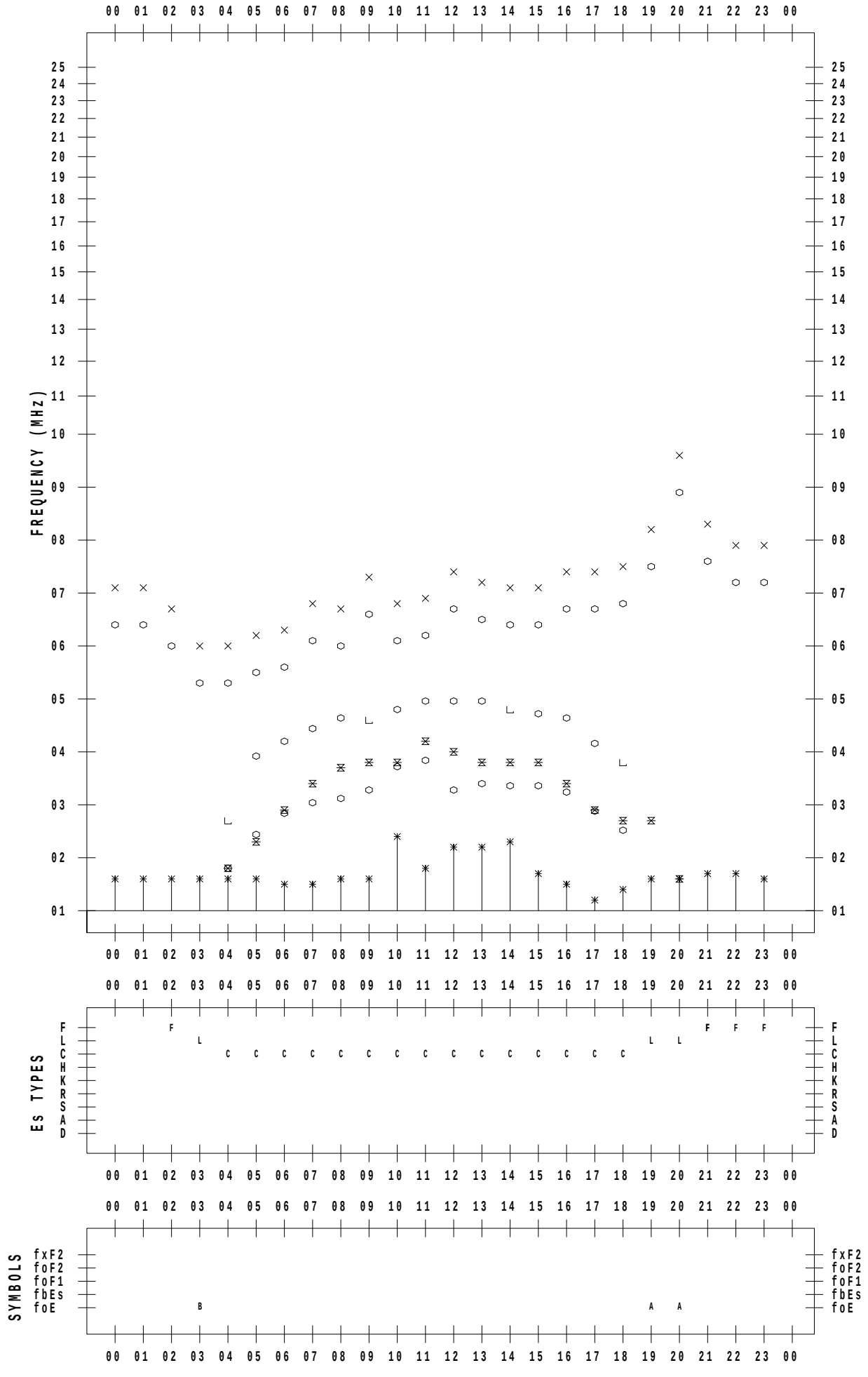
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/23

135 °E MEAN TIME



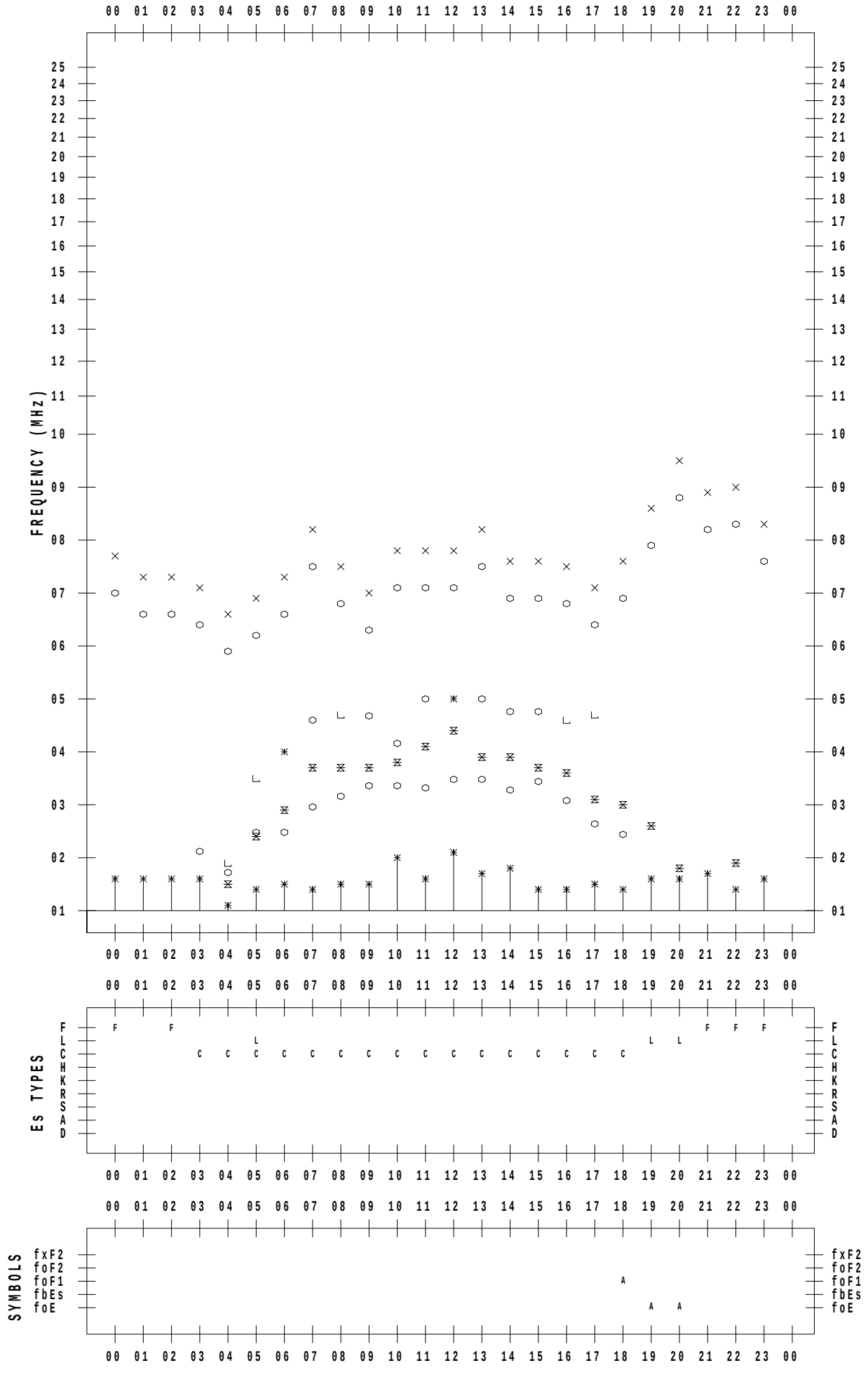
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/24

135 °E MEAN TIME



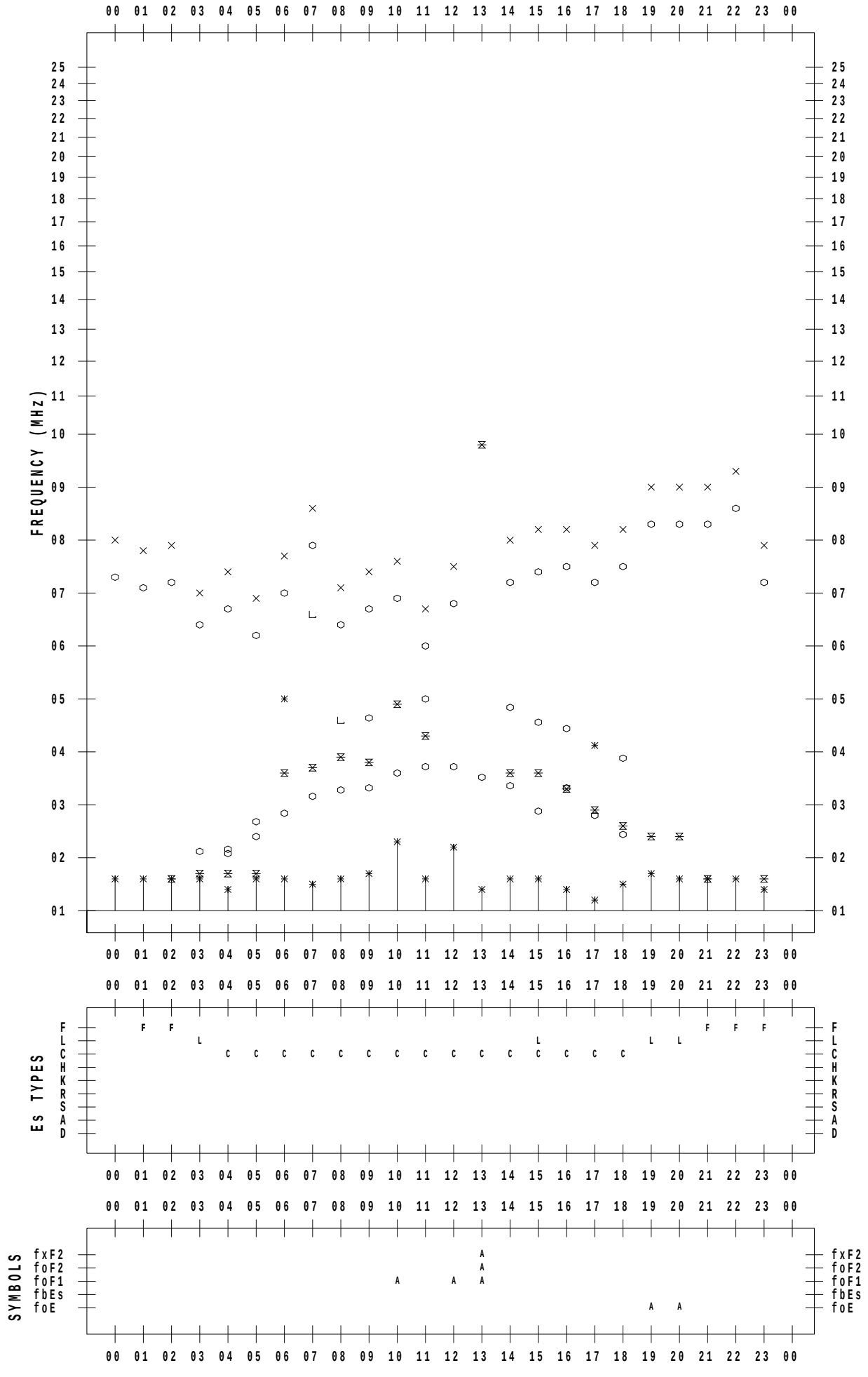
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/25

135 °E MEAN TIME



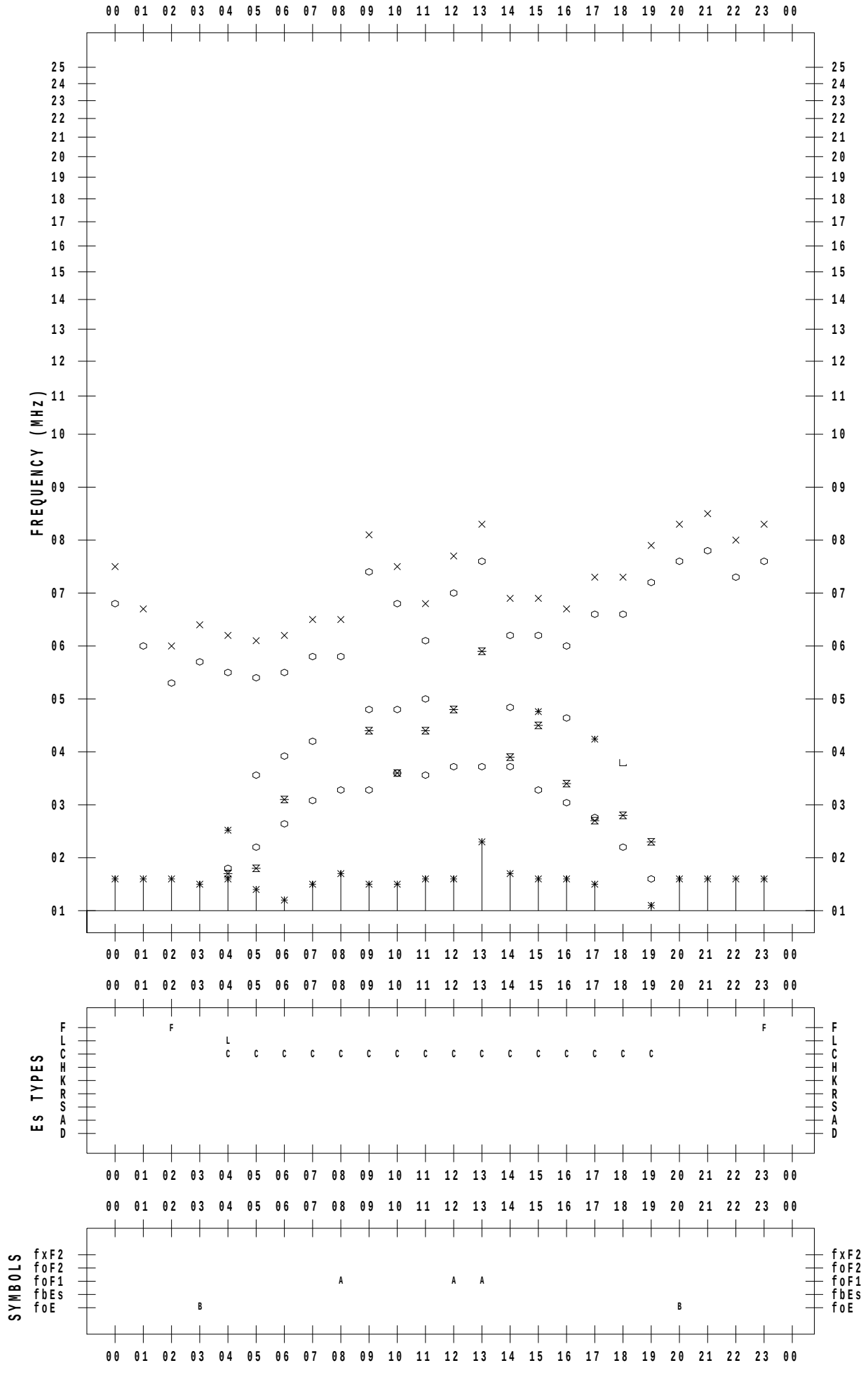
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/26

135 °E MEAN TIME



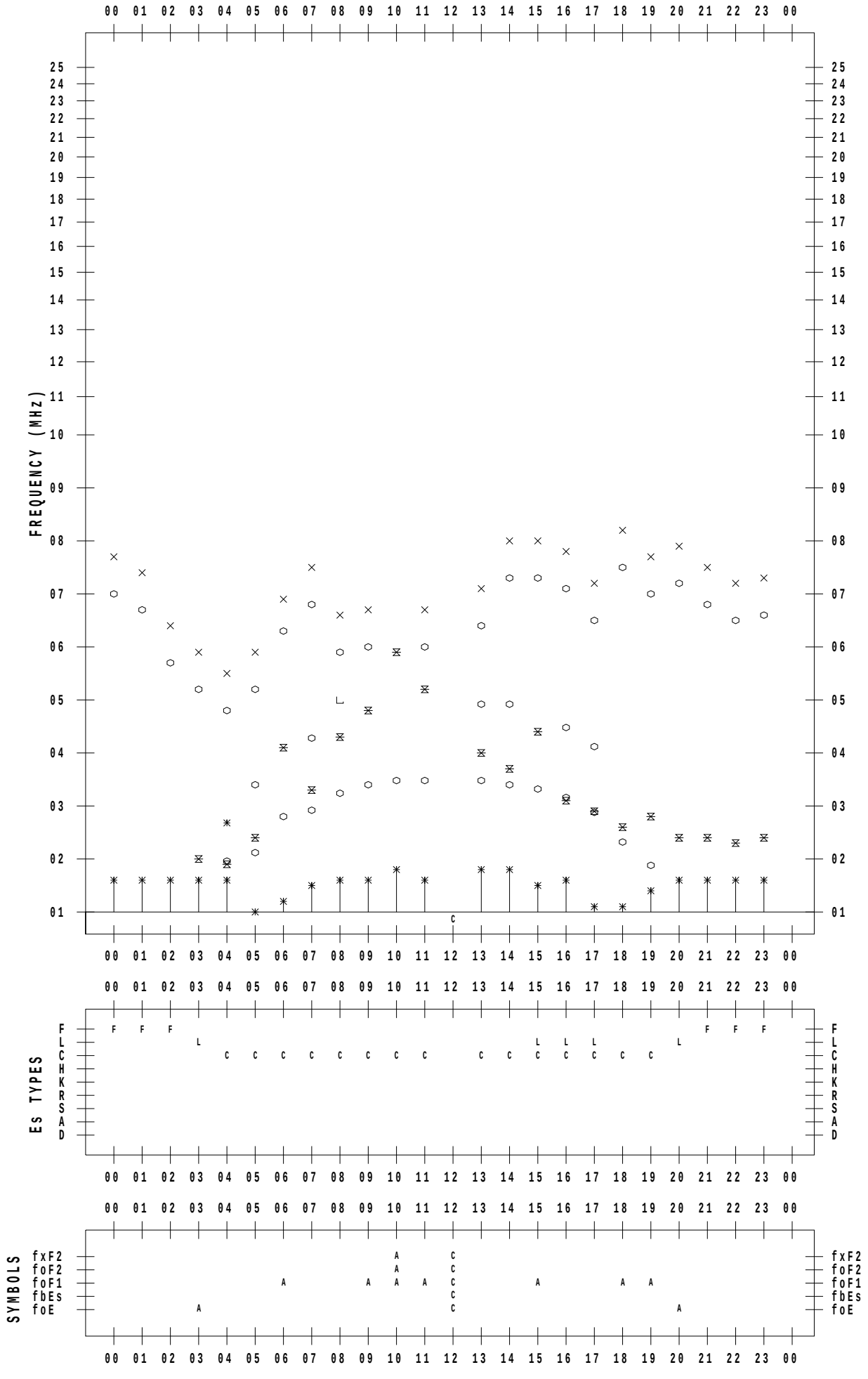
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/27

135 °E MEAN TIME



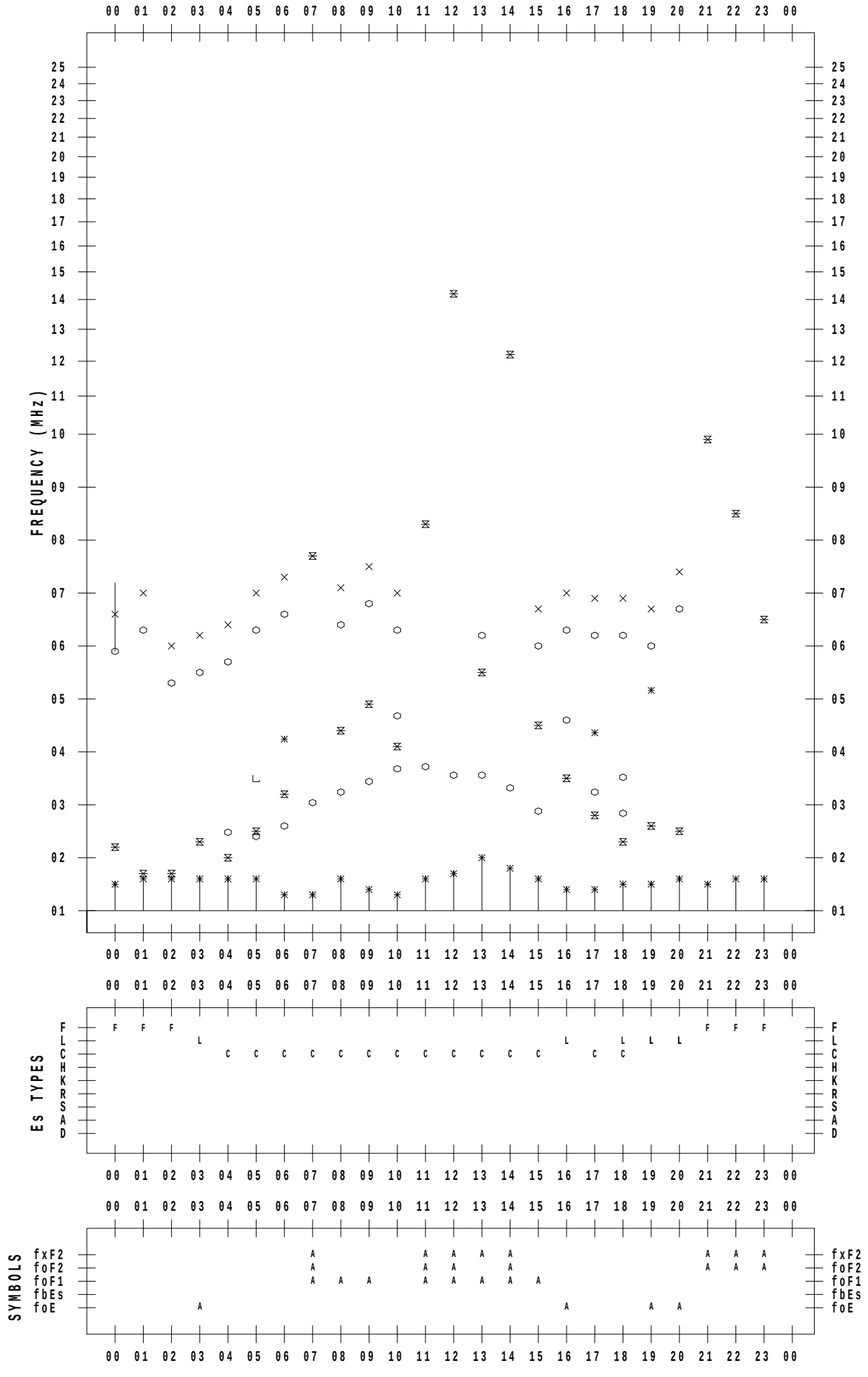
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/28

135 °E MEAN TIME



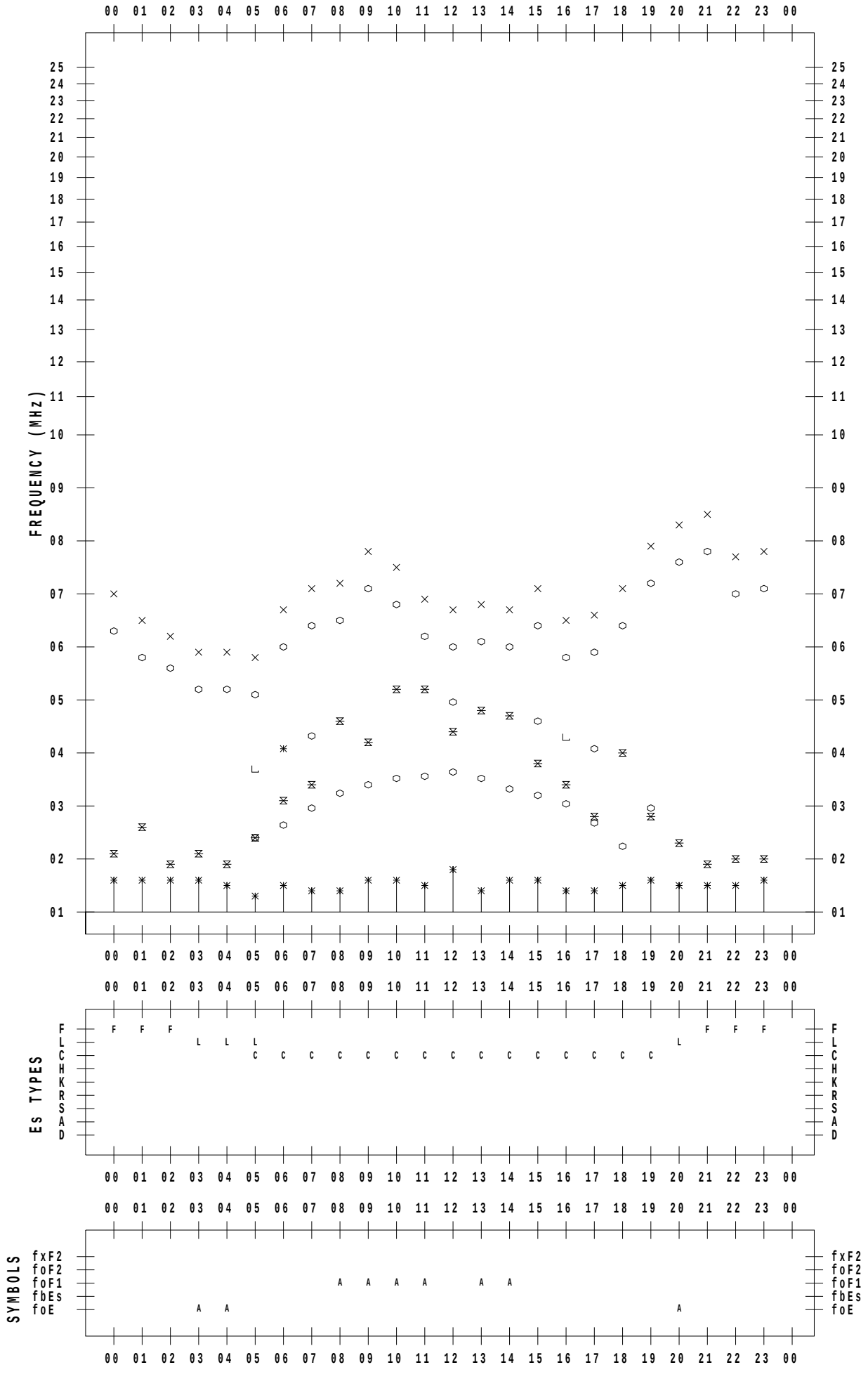
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/29

135 °E MEAN TIME



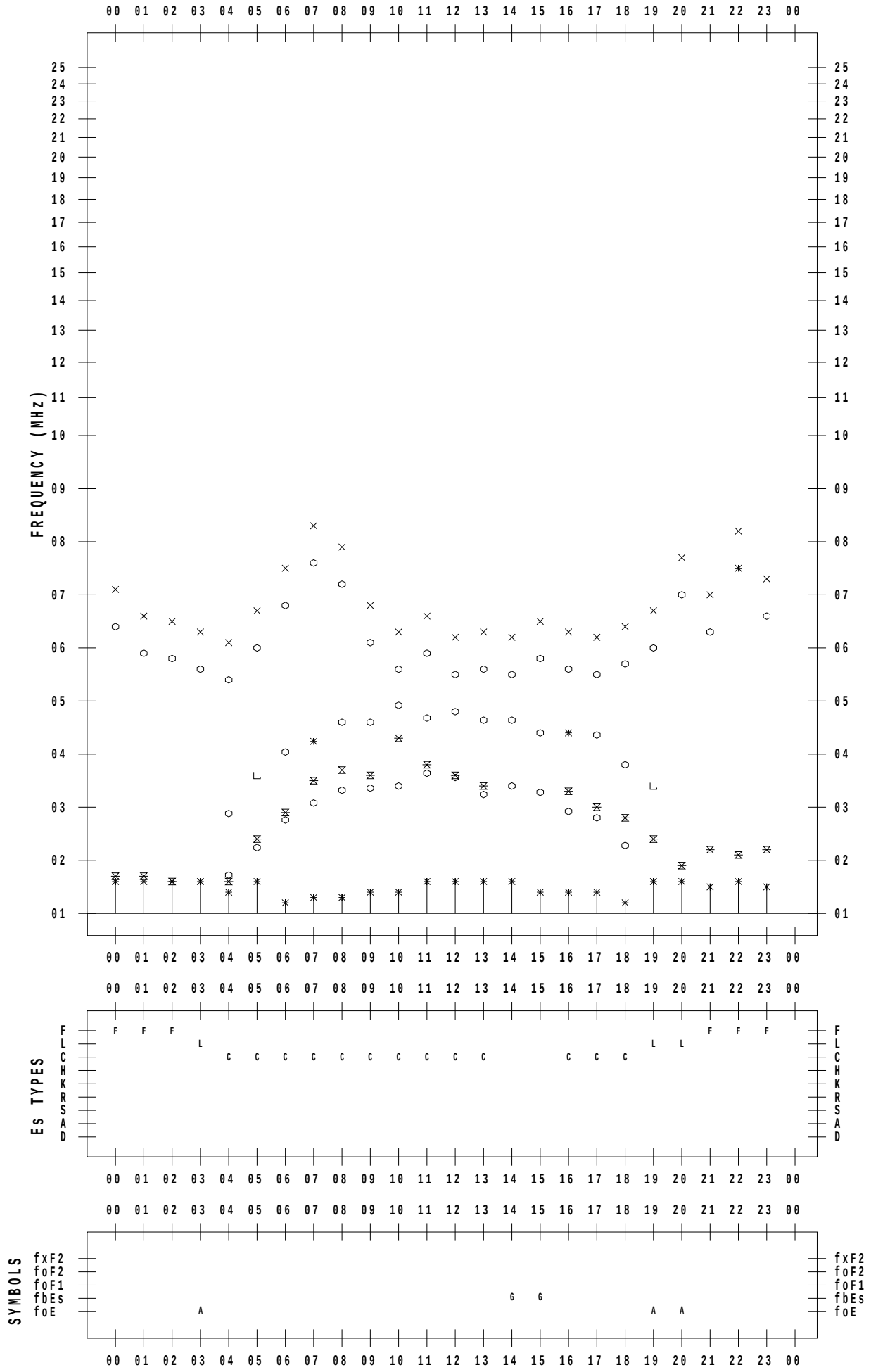
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 6/30

135 °E MEAN TIME



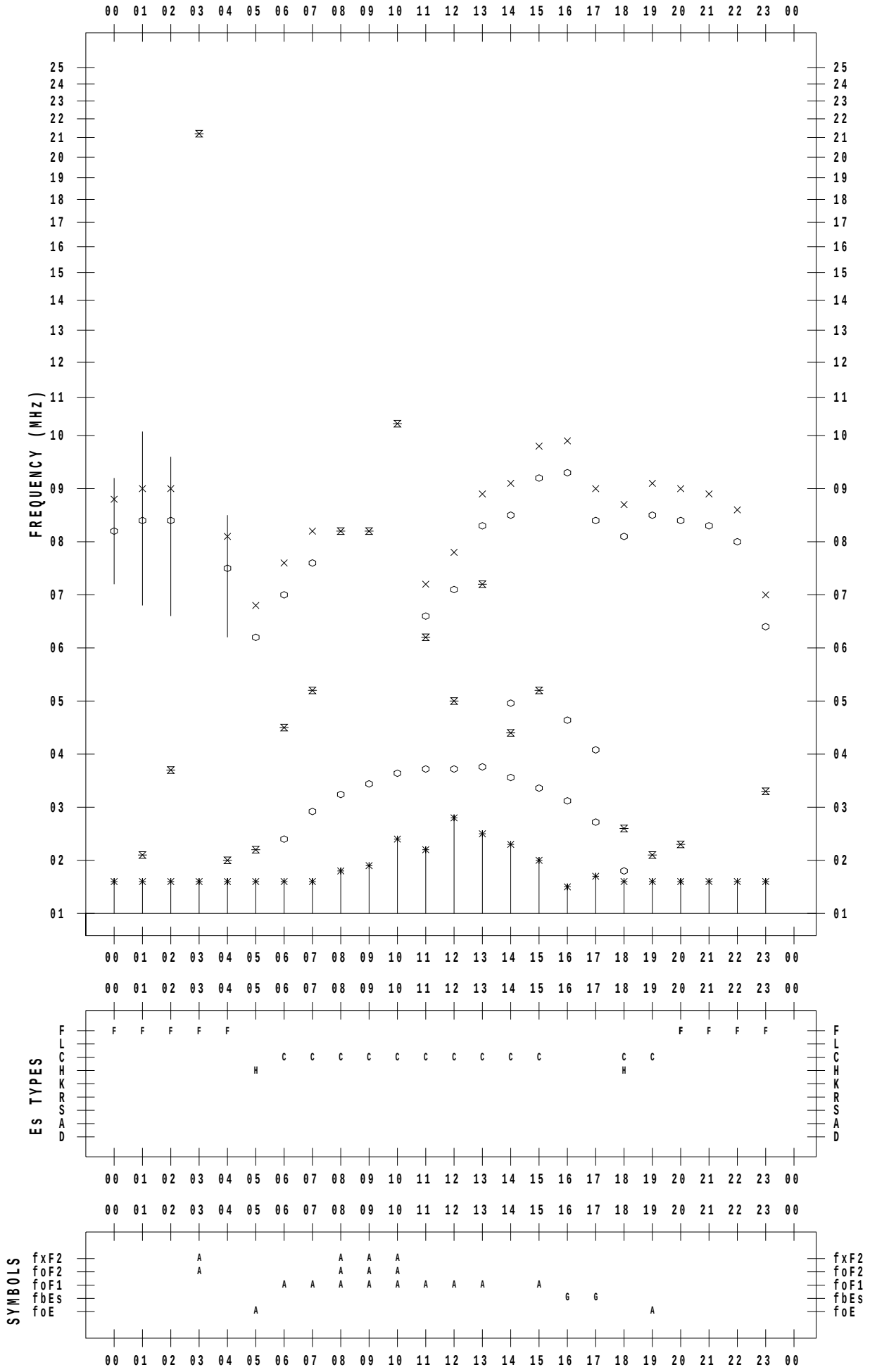
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 1

135 °E MEAN TIME



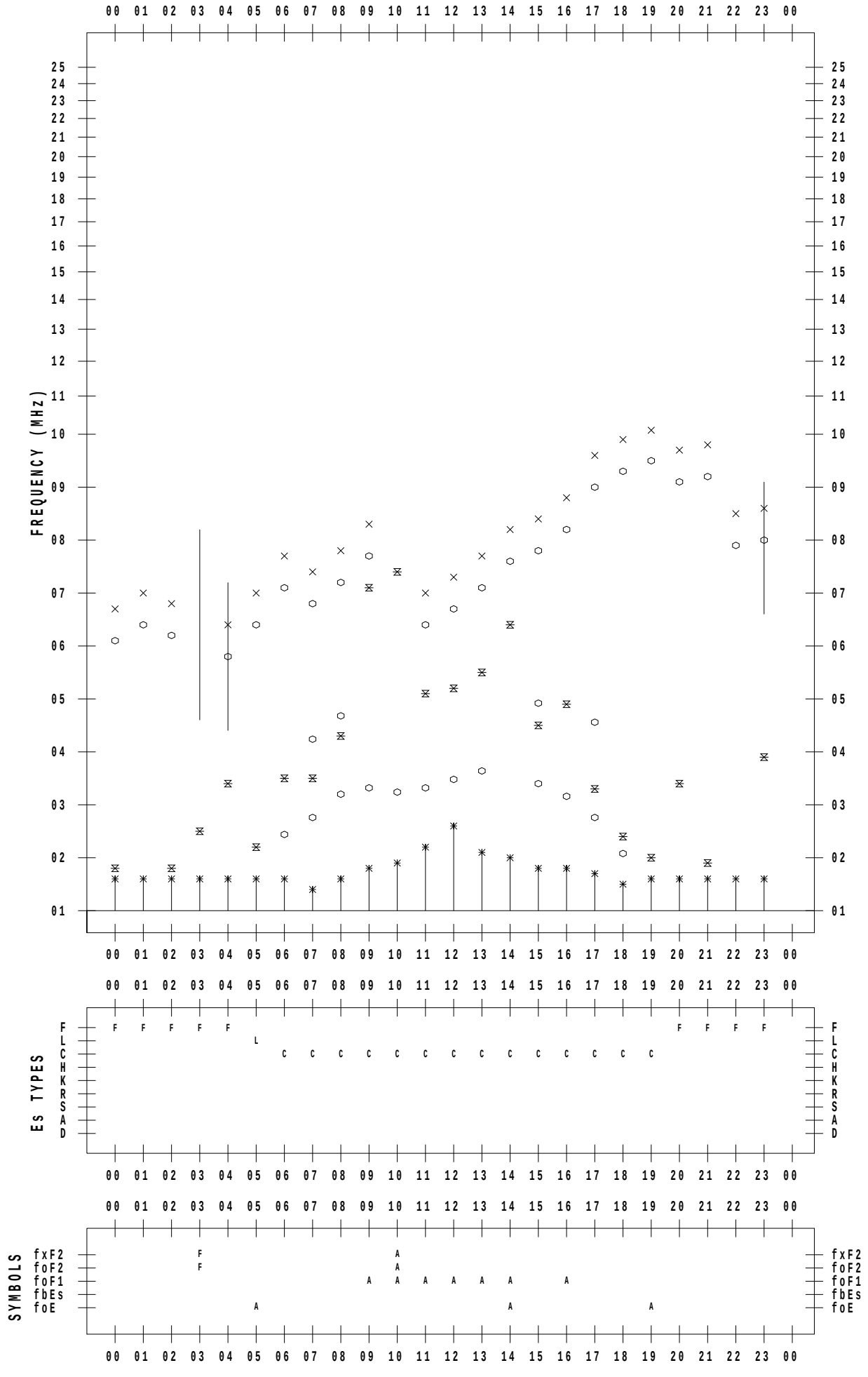
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 2

135 °E MEAN TIME



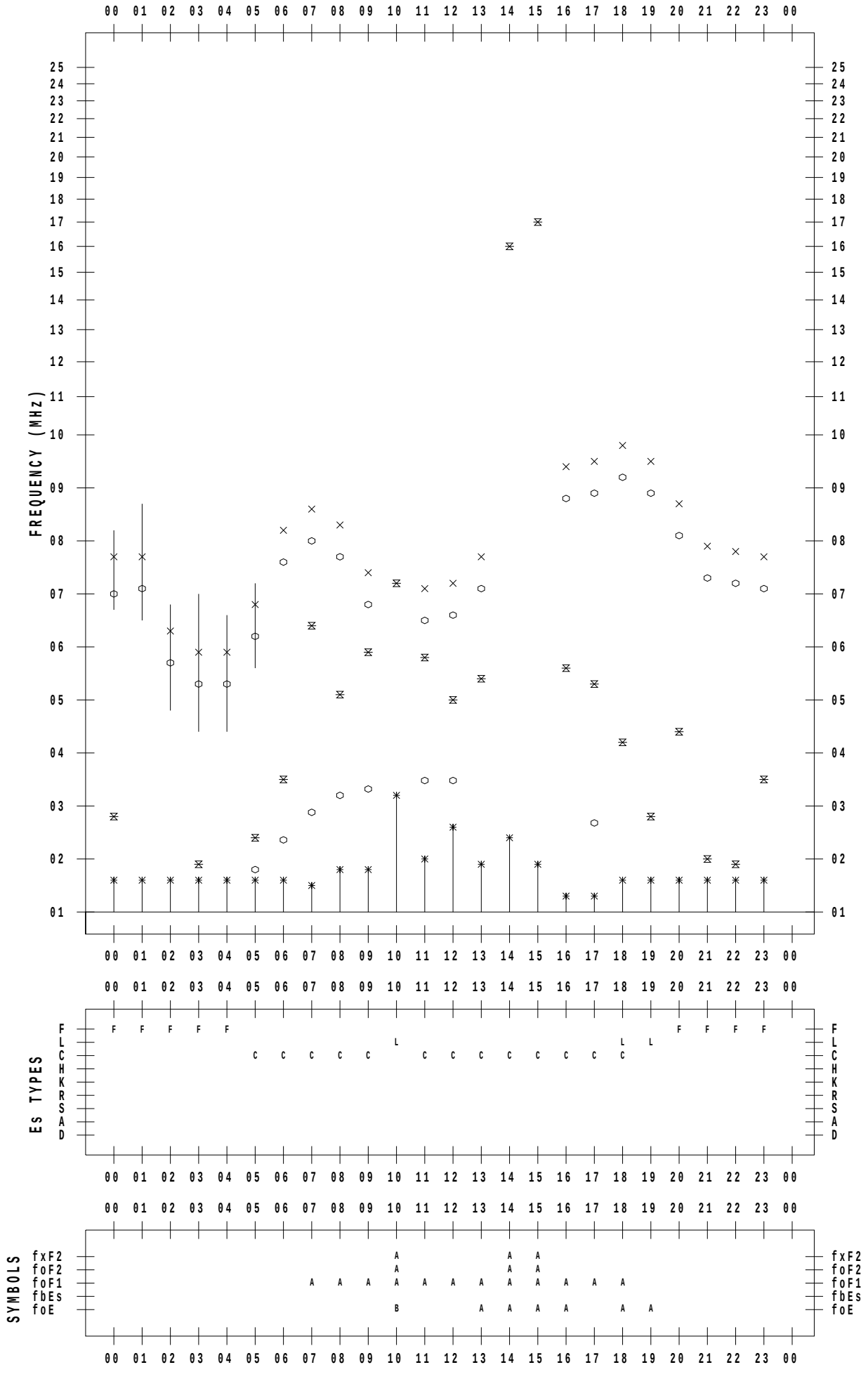
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 3

135 °E MEAN TIME



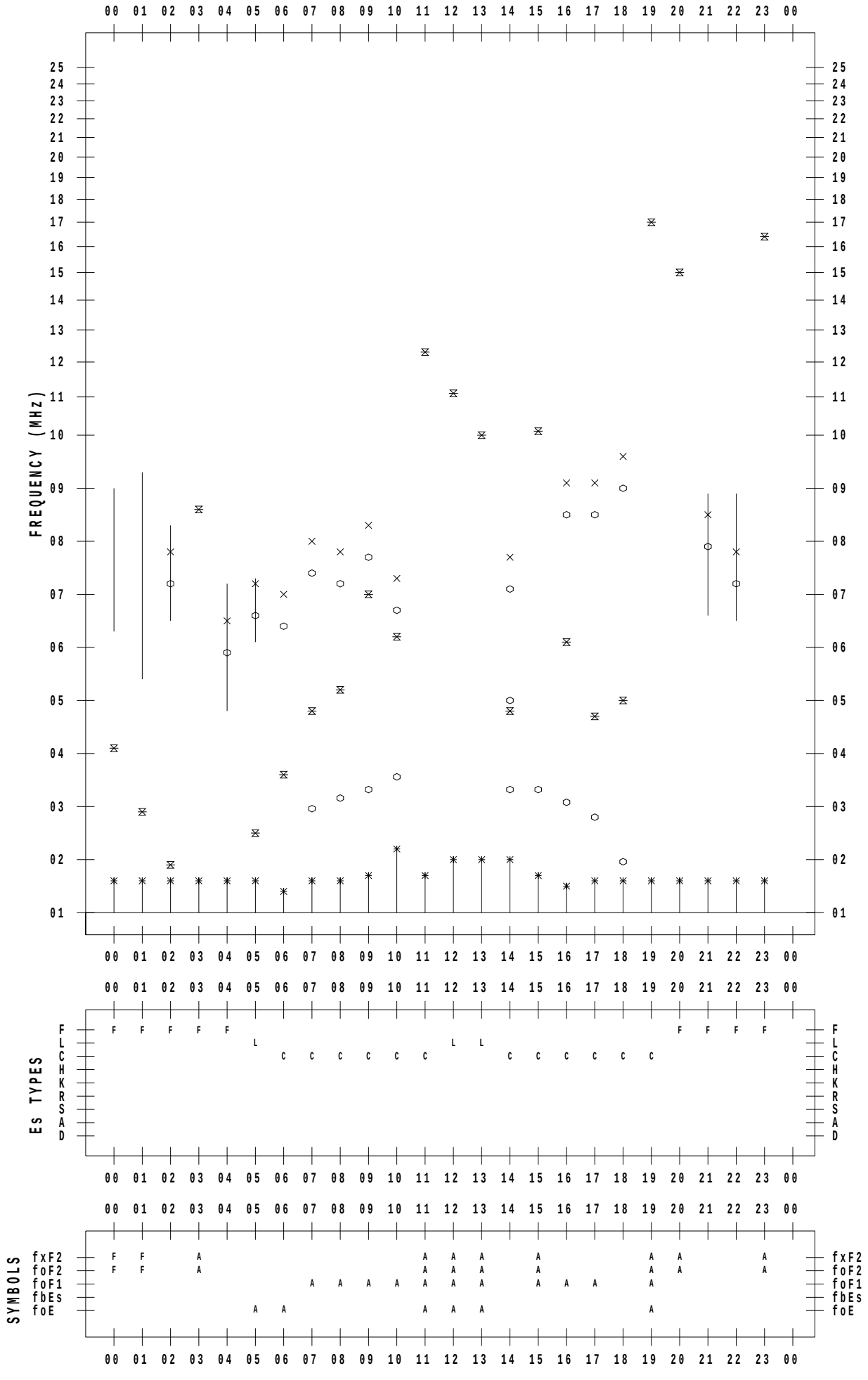
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 4

135 °E MEAN TIME



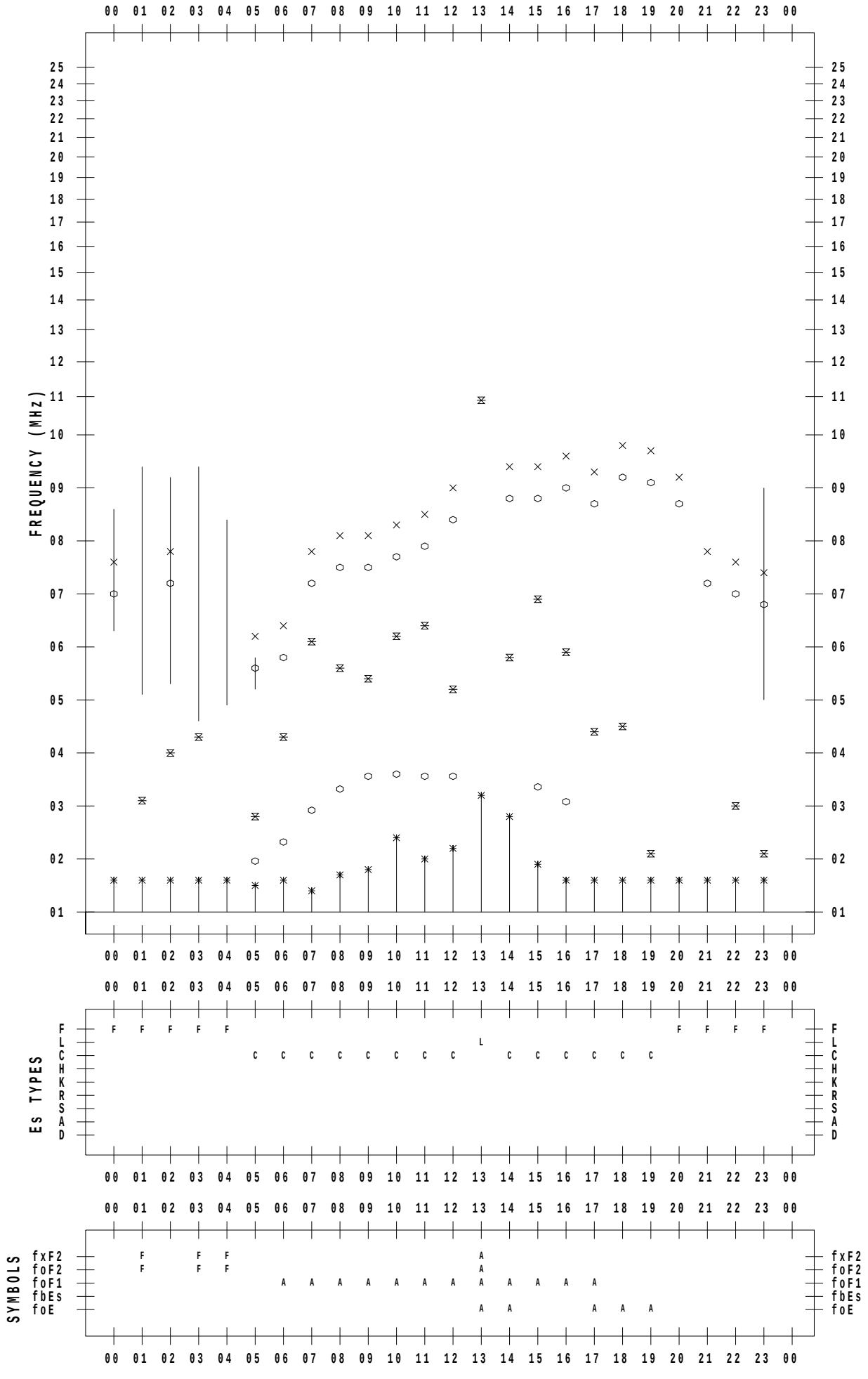
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 5

135 °E MEAN TIME



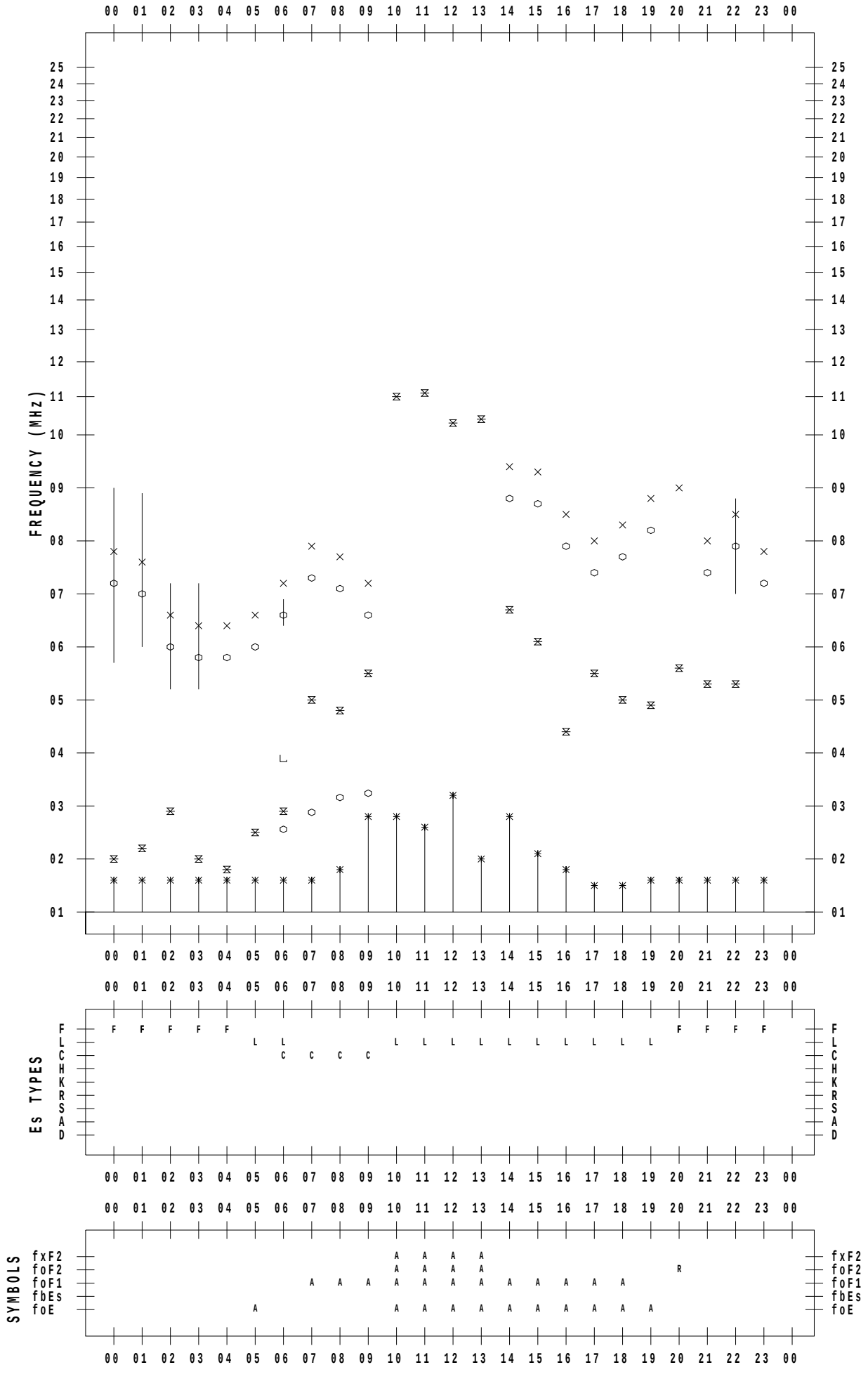
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 6

135 °E MEAN TIME



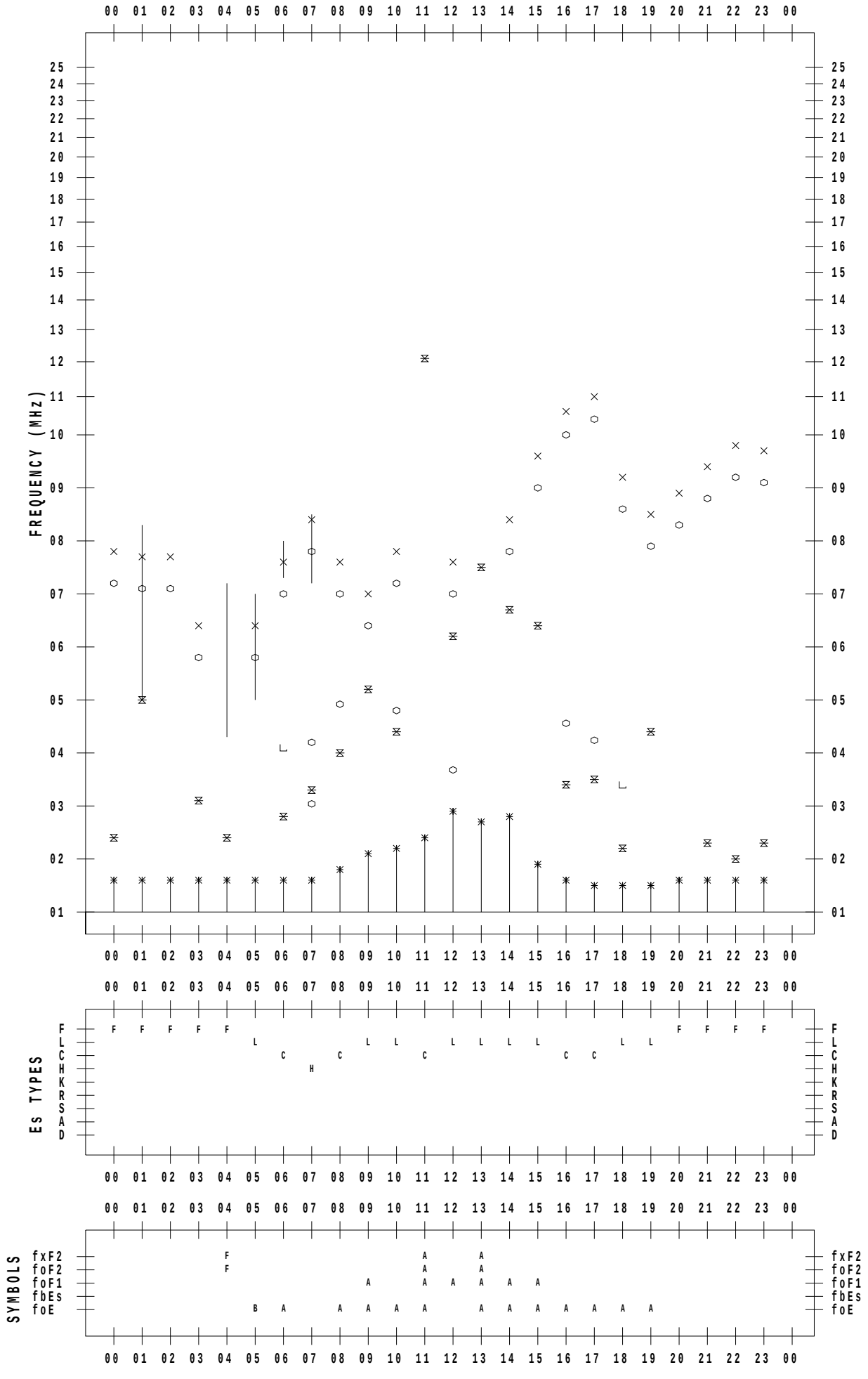
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 7

135 °E MEAN TIME



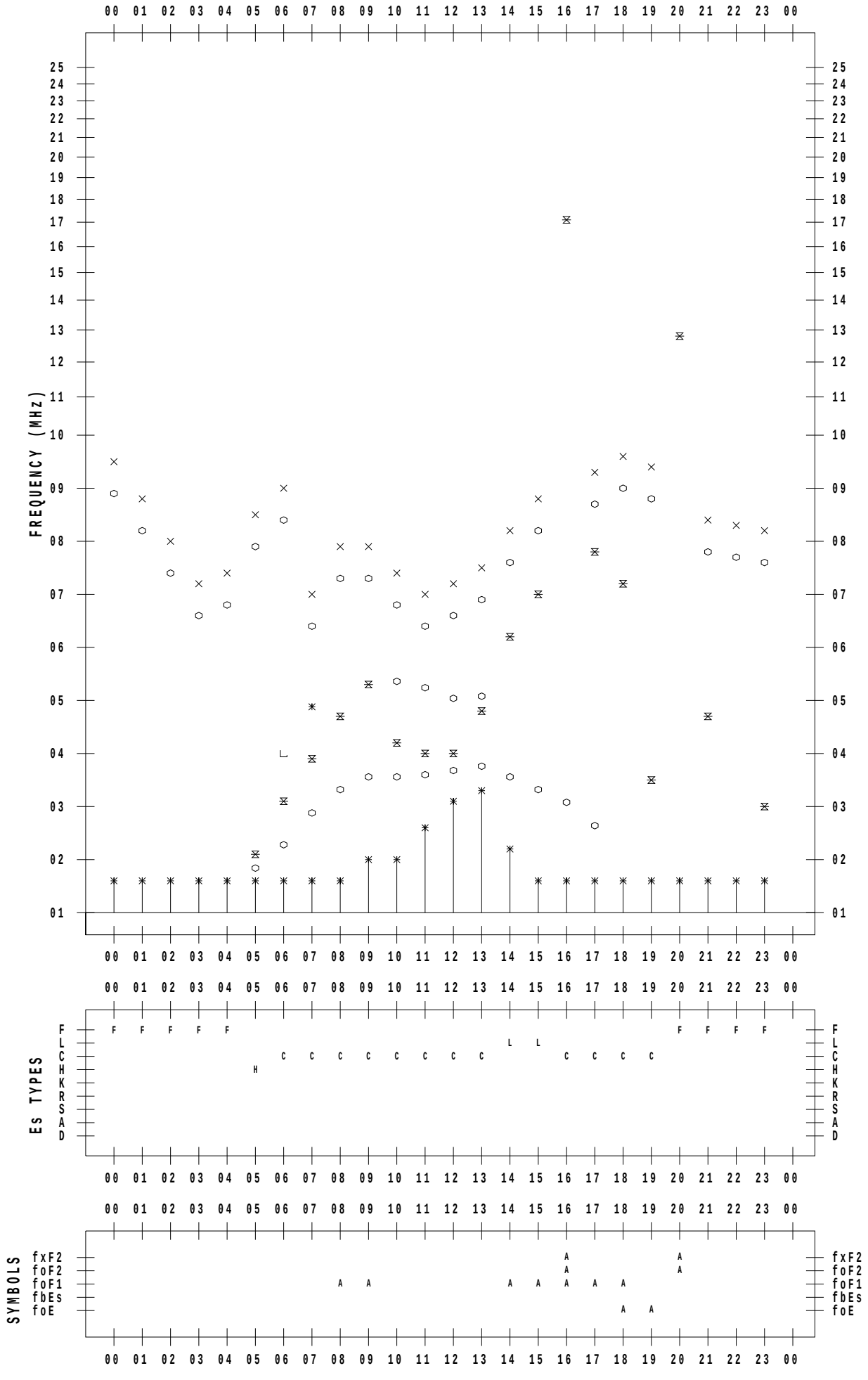
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 8

135 °E MEAN TIME



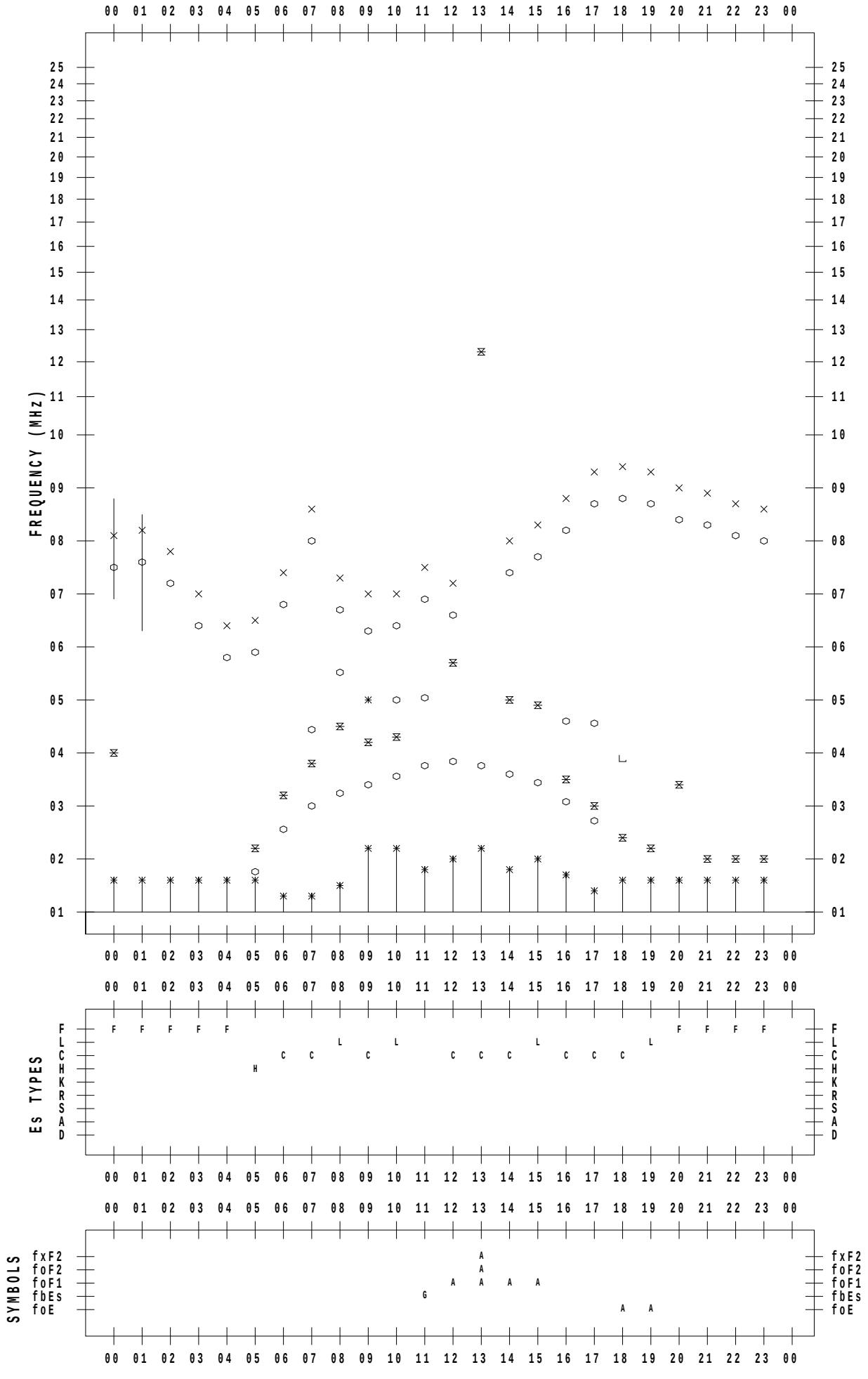
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/ 9

135 °E MEAN TIME



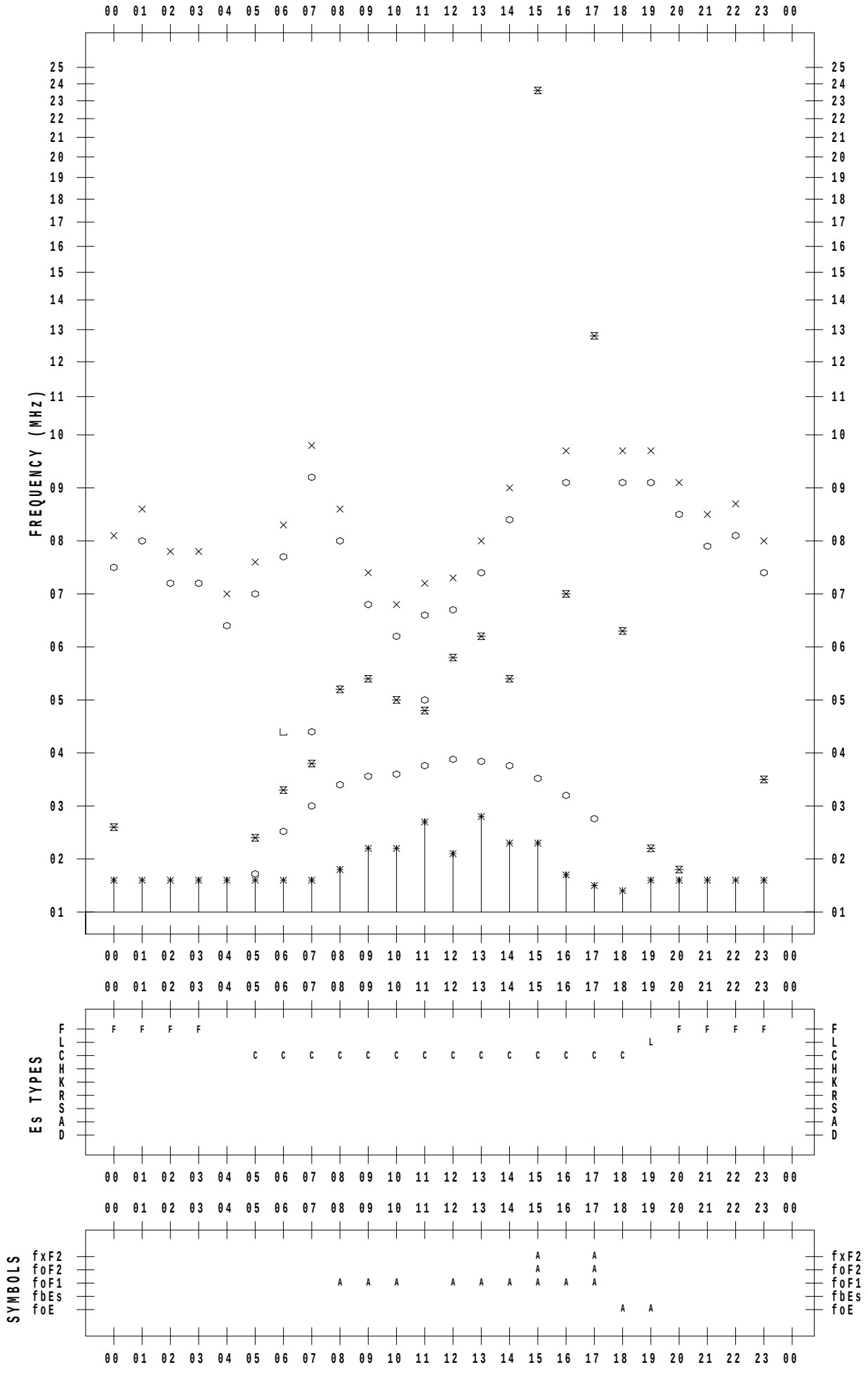
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/10

135 °E MEAN TIME



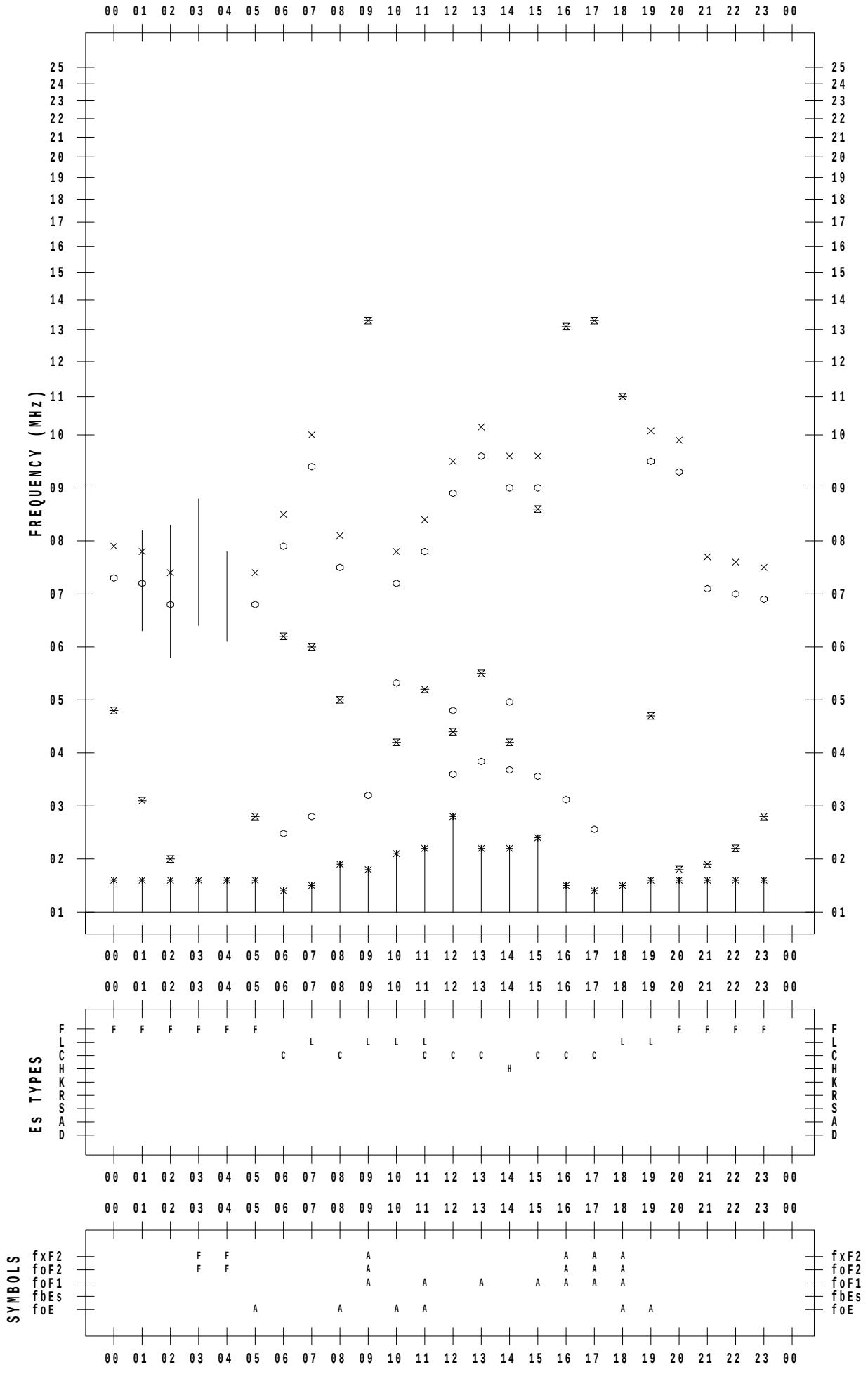
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/11

135 °E MEAN TIME



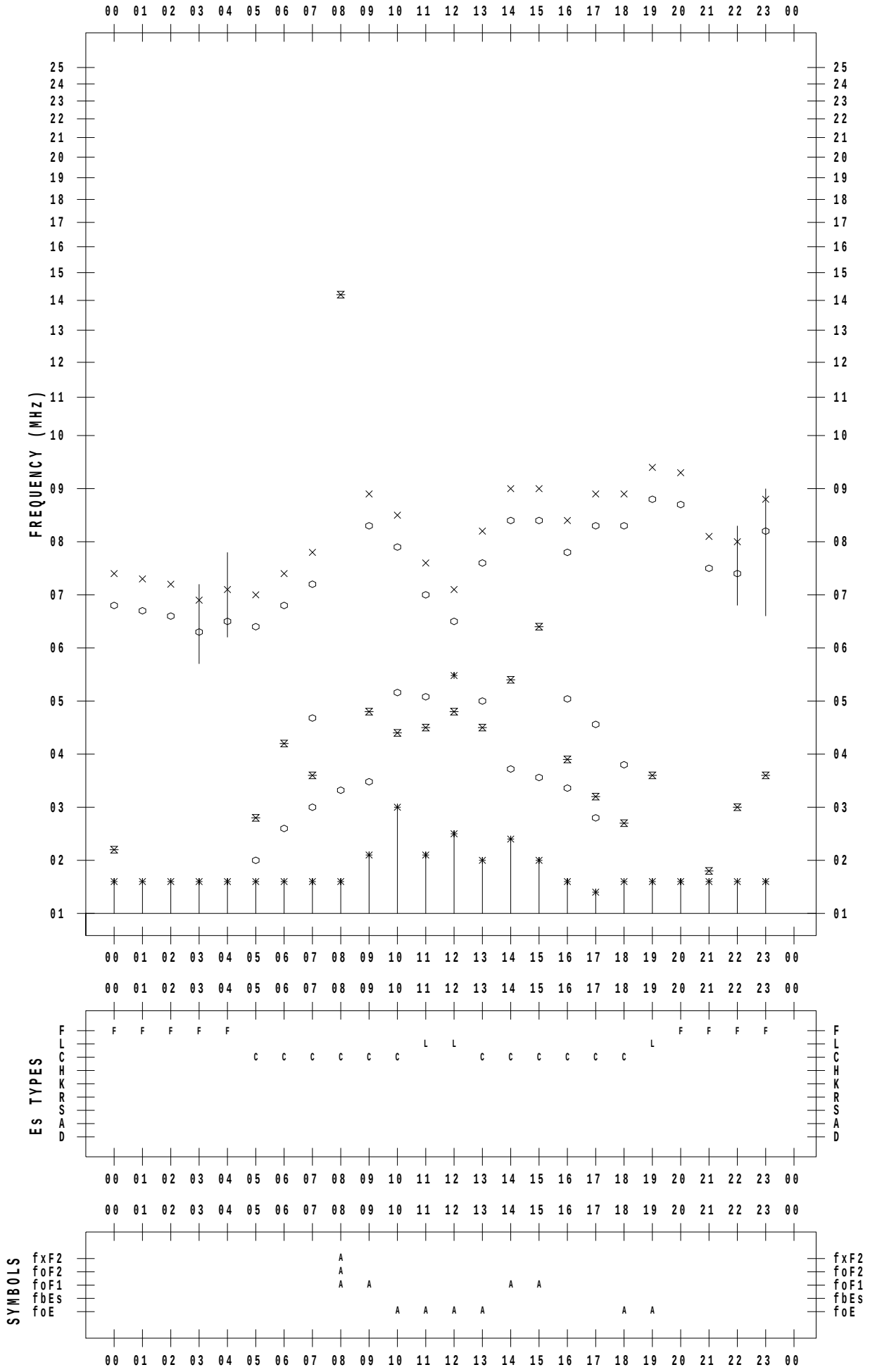
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/12

135 °E MEAN TIME



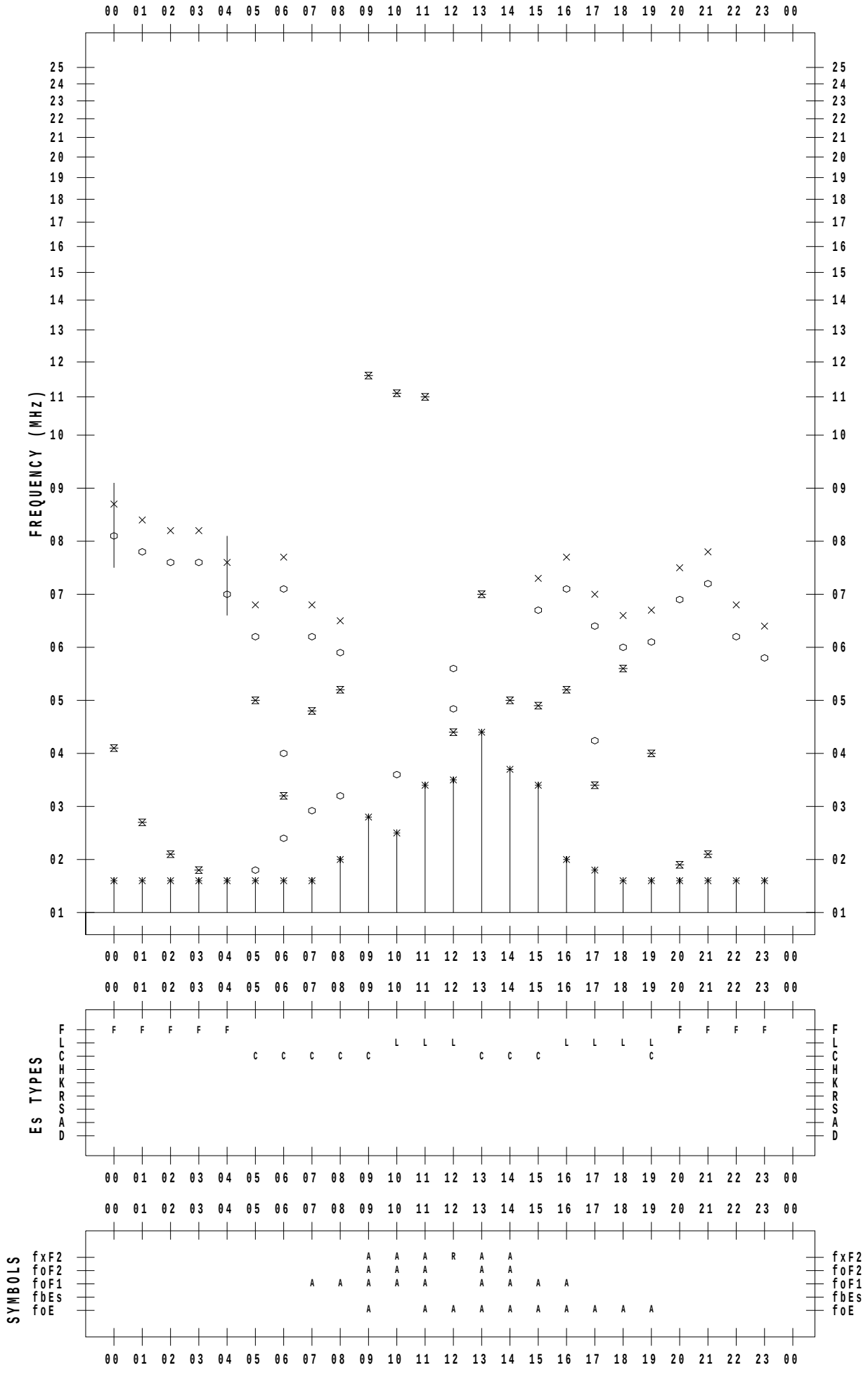
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/13

135 °E MEAN TIME



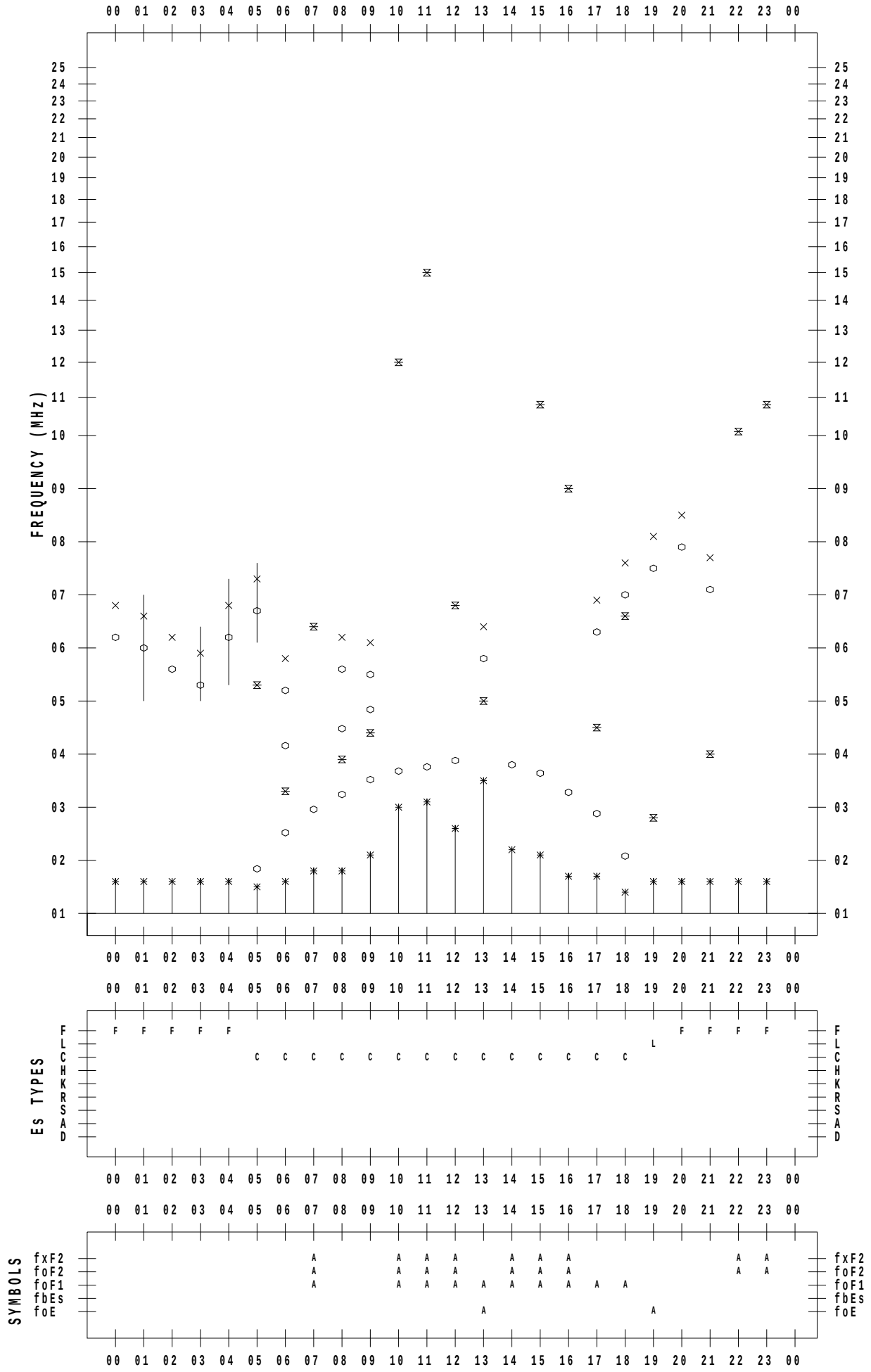
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/14

135 °E MEAN TIME



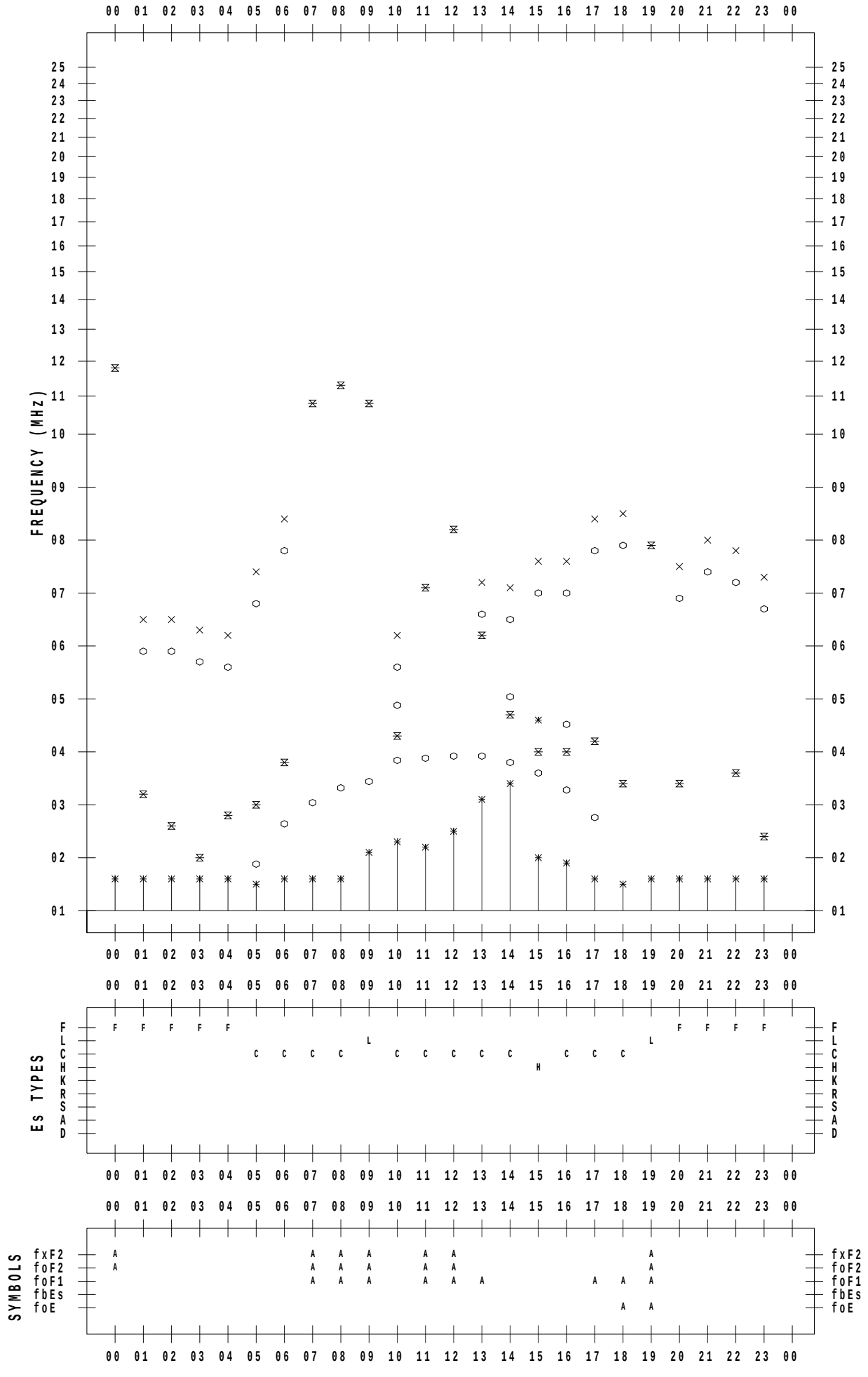
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/15

135 °E MEAN TIME



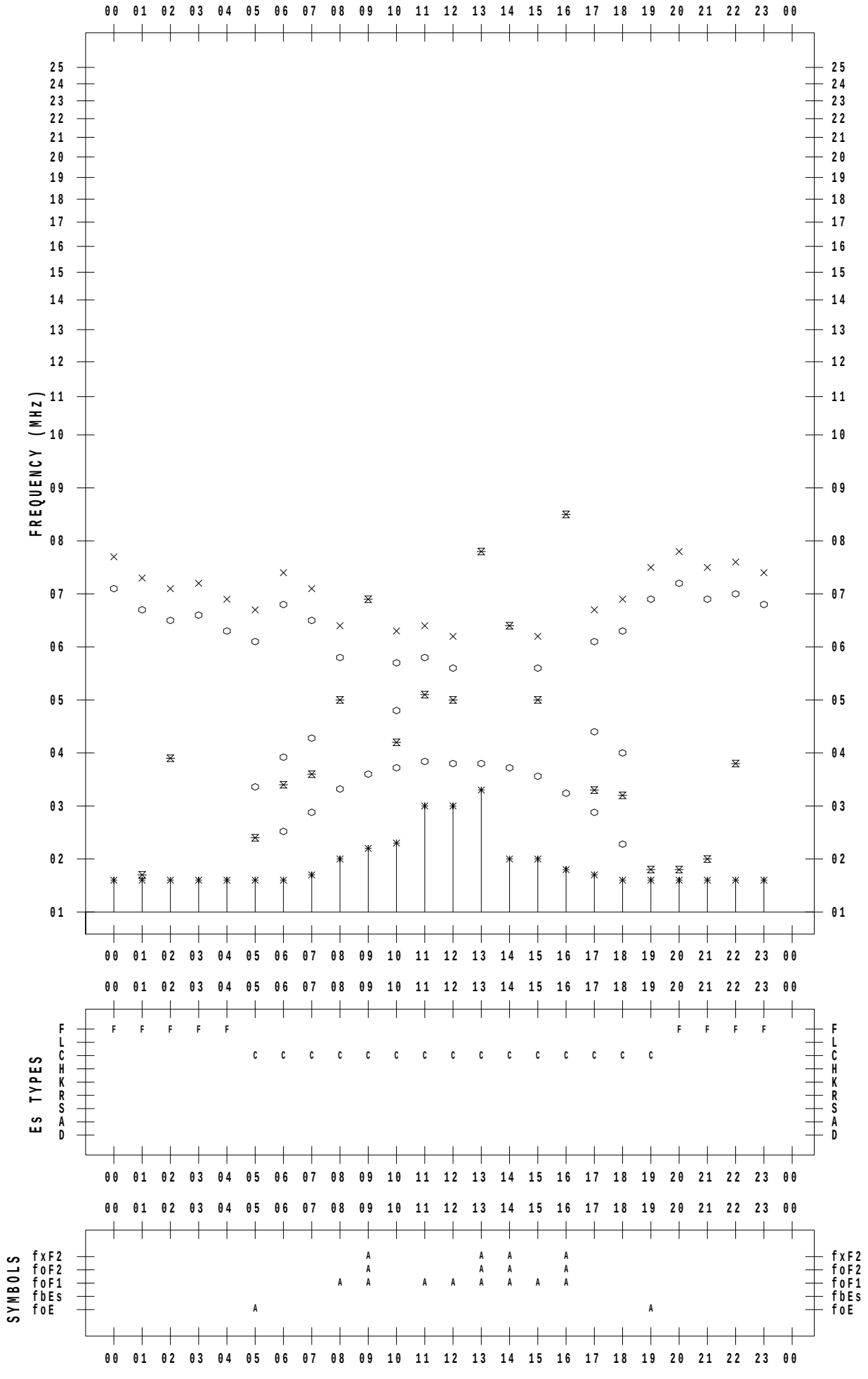
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/16

135 °E MEAN TIME



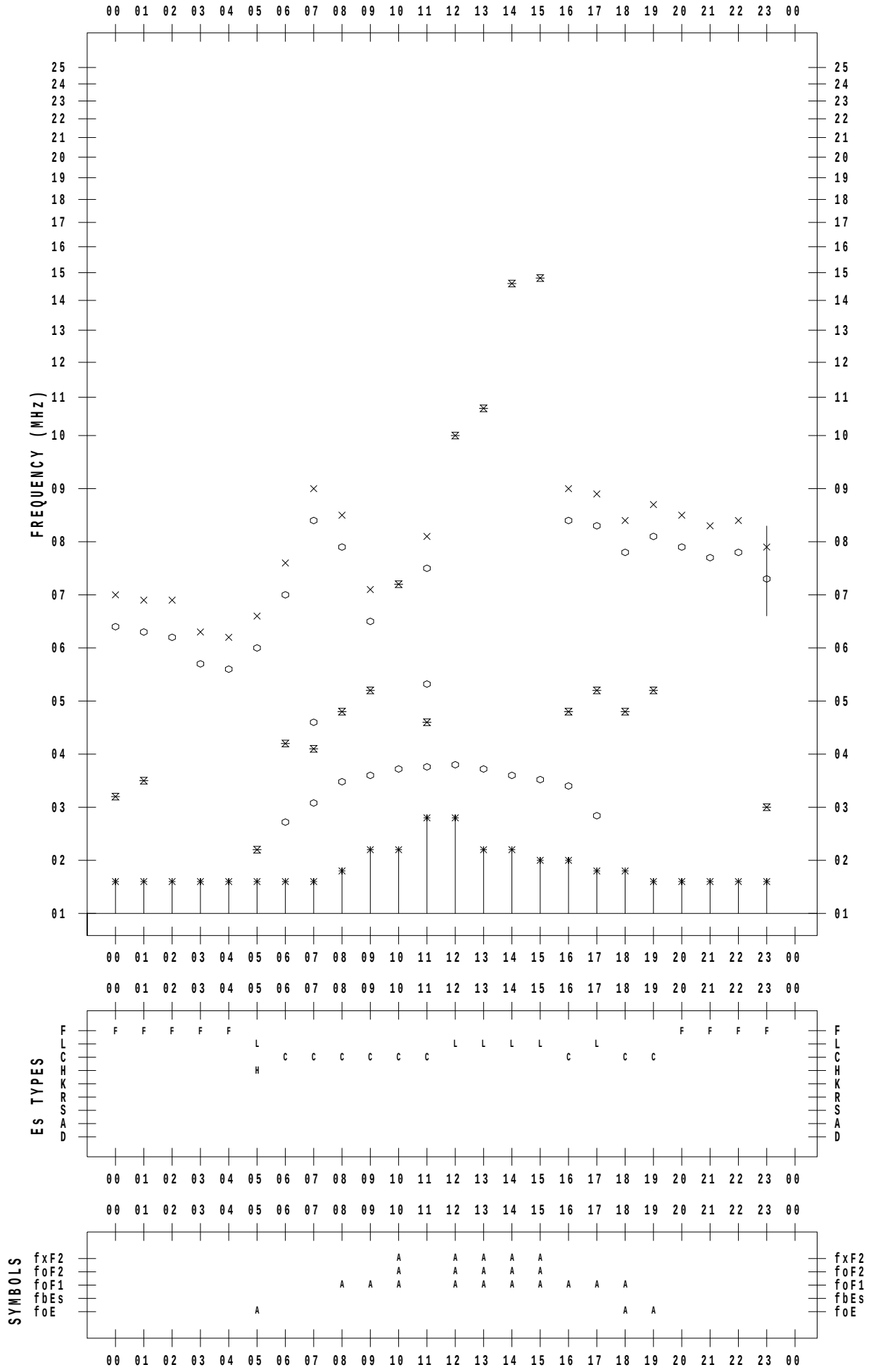
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/17

135 °E MEAN TIME



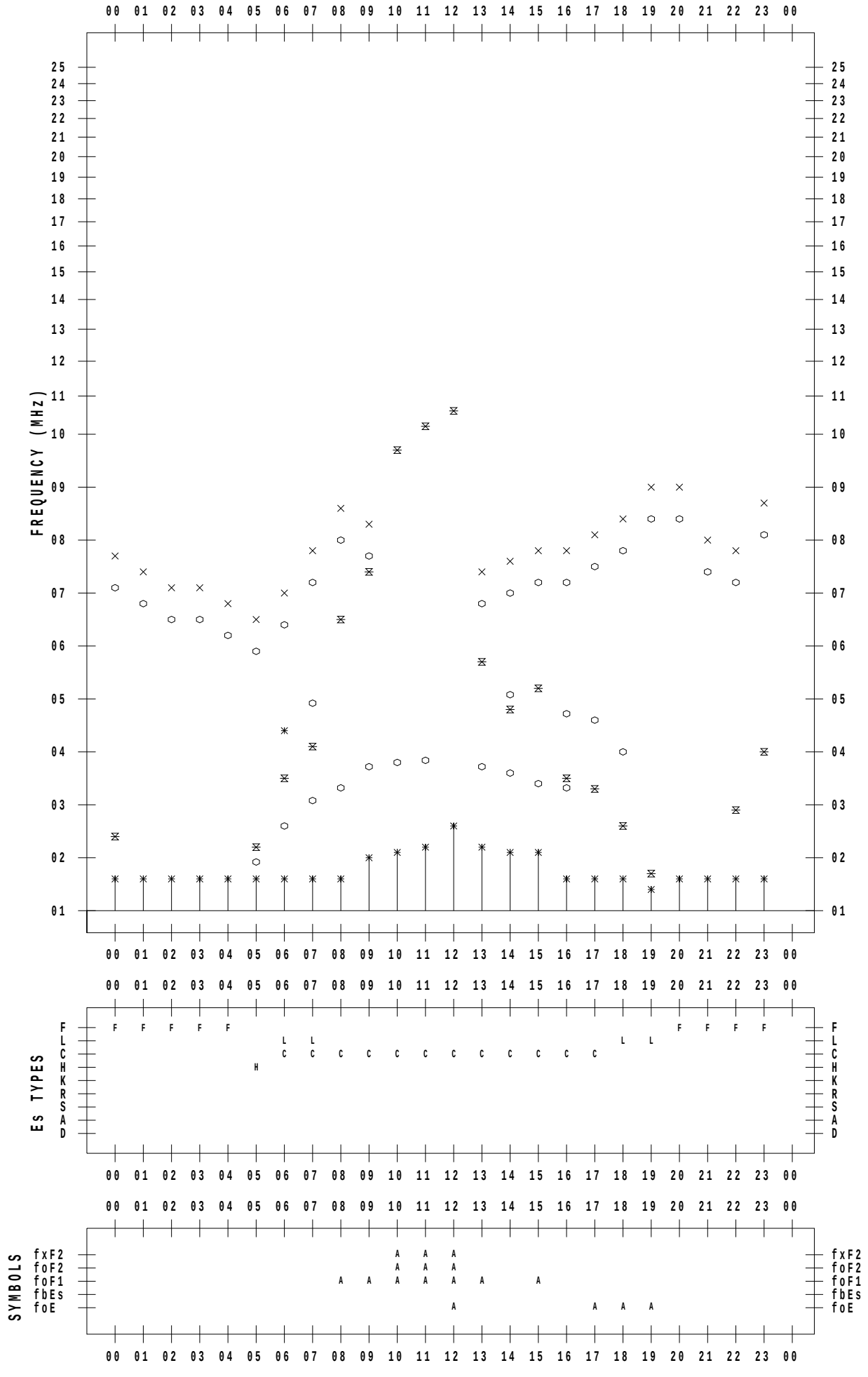
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/18

135 °E MEAN TIME



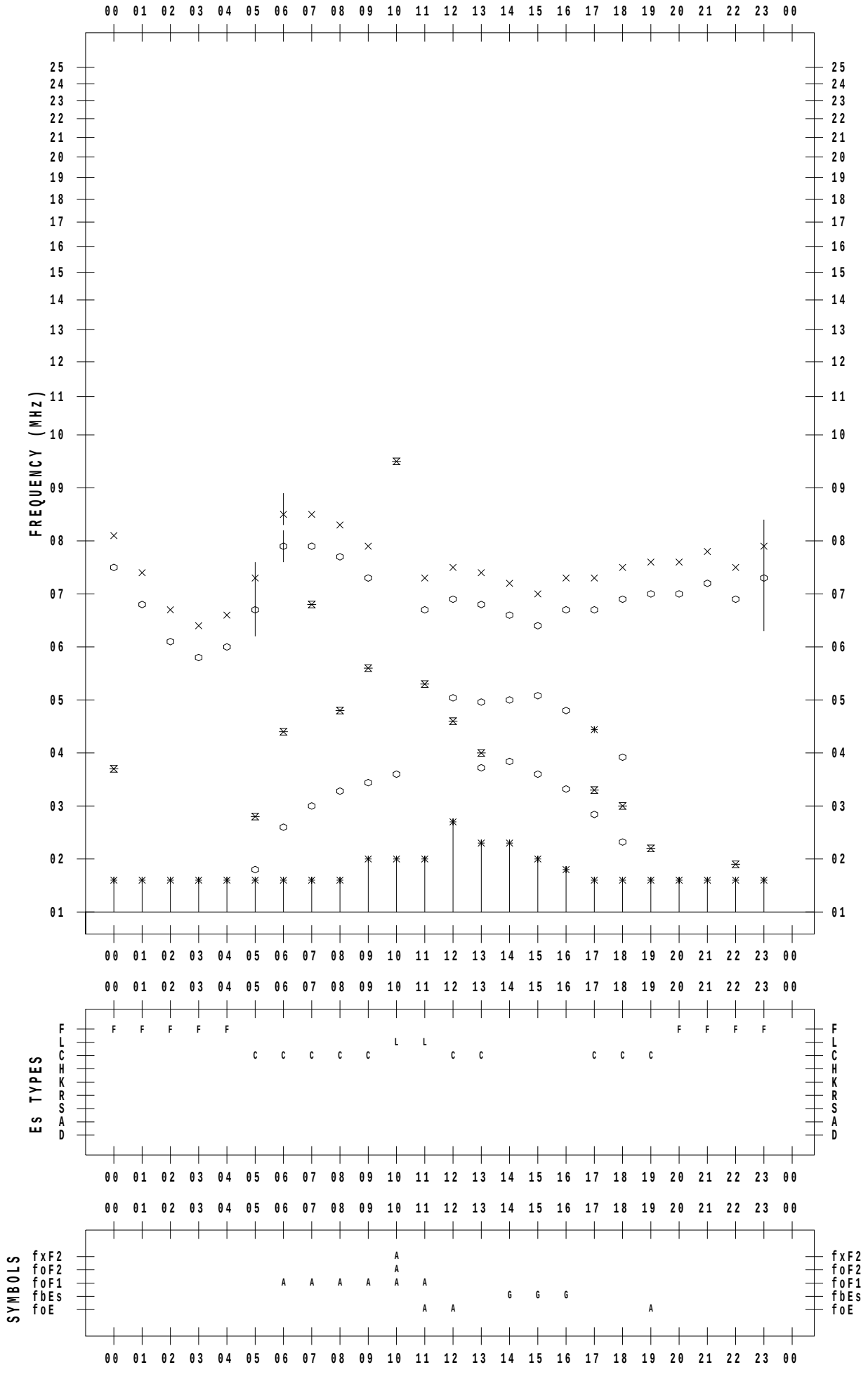
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/19

135 °E MEAN TIME



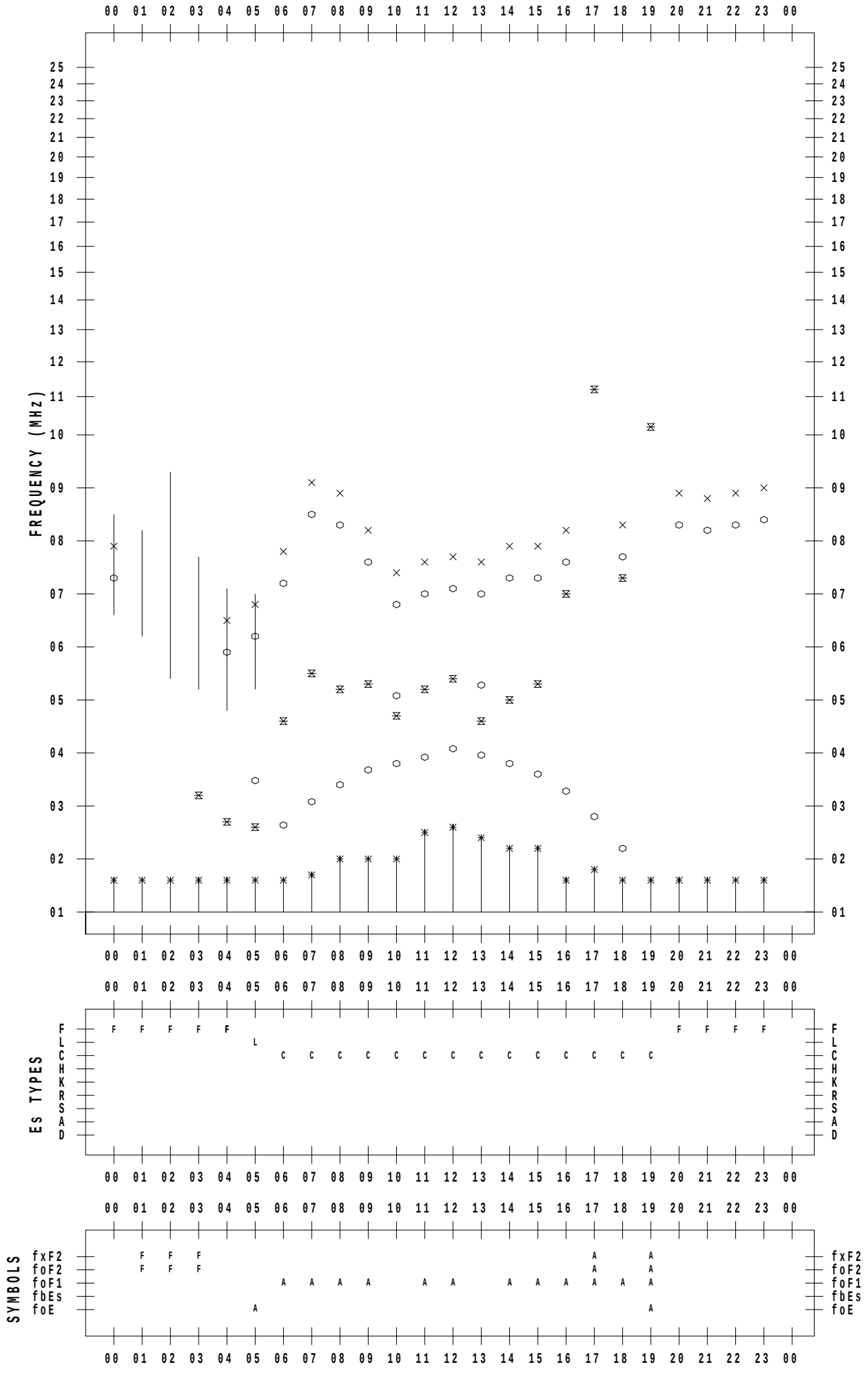
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/20

135 °E MEAN TIME



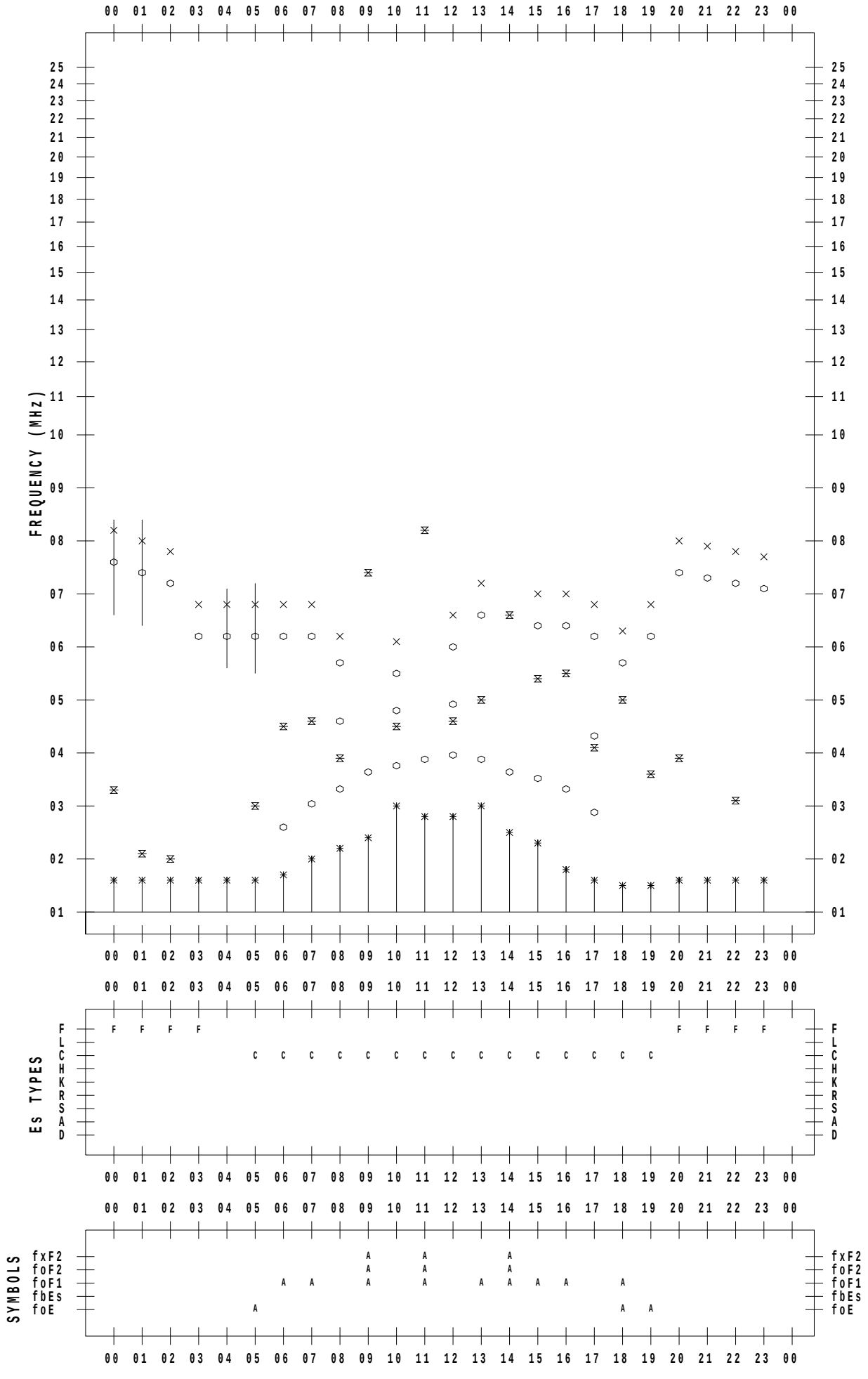
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/21

135 °E MEAN TIME



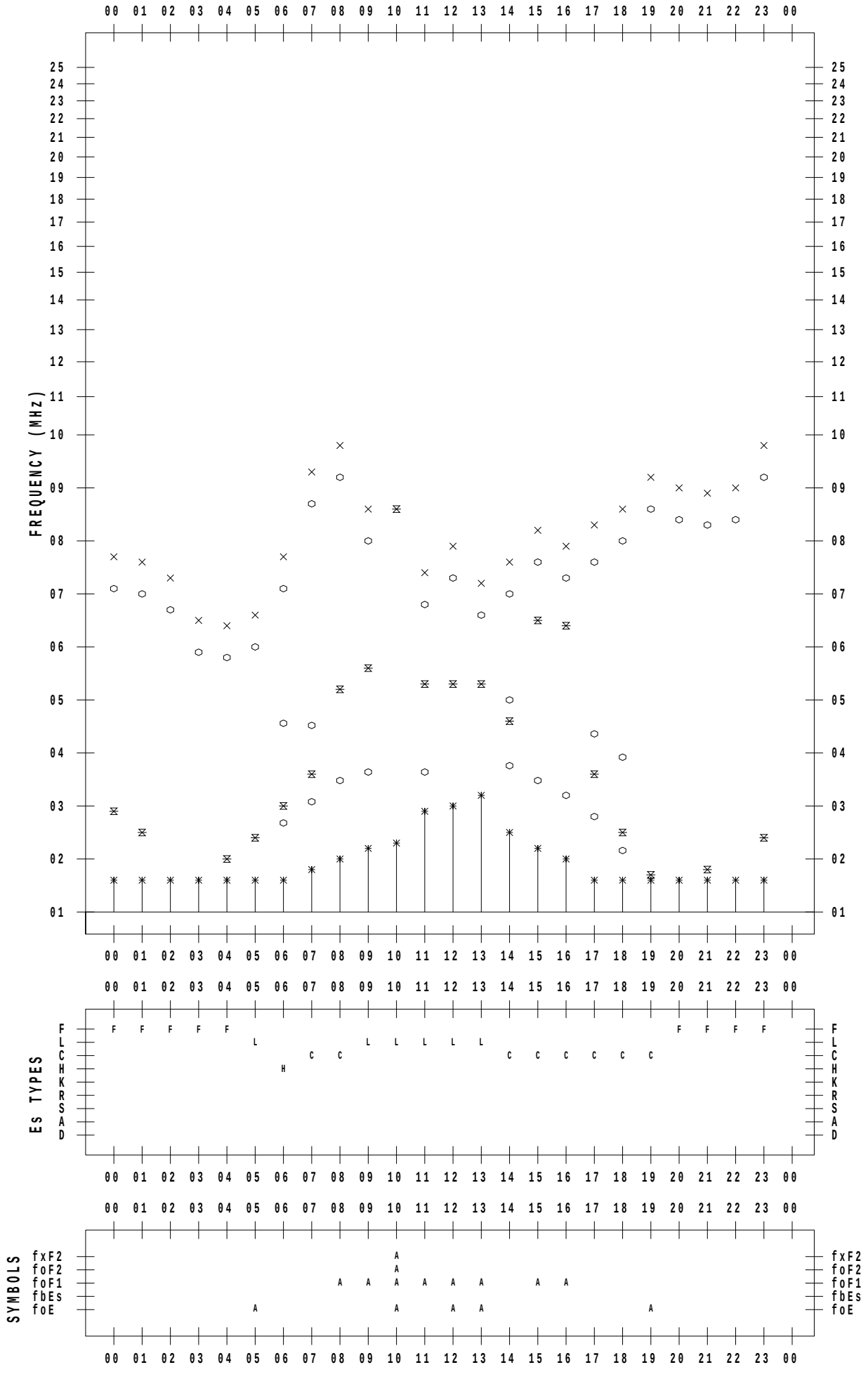
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/22

135 °E MEAN TIME



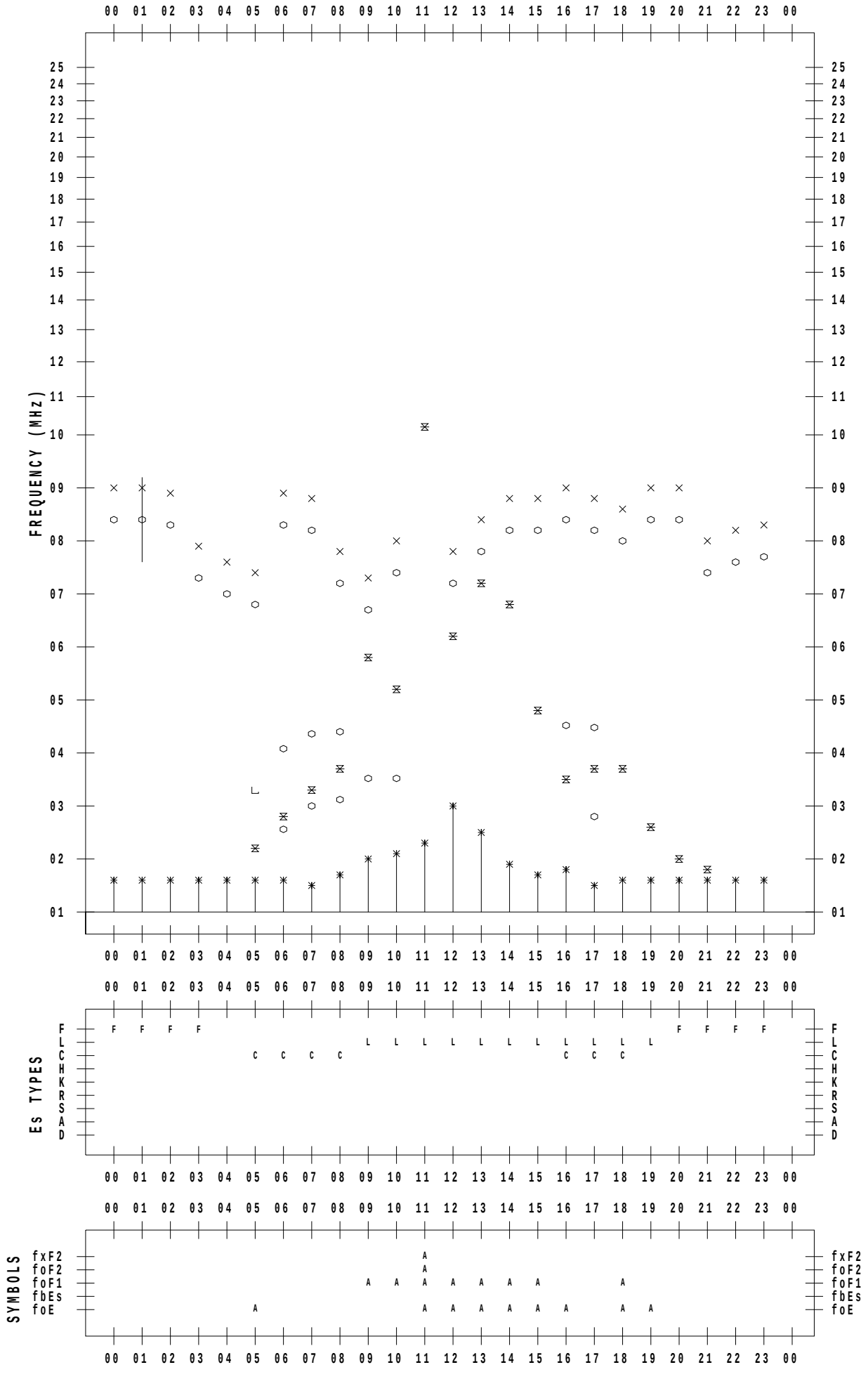
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/23

135 °E MEAN TIME



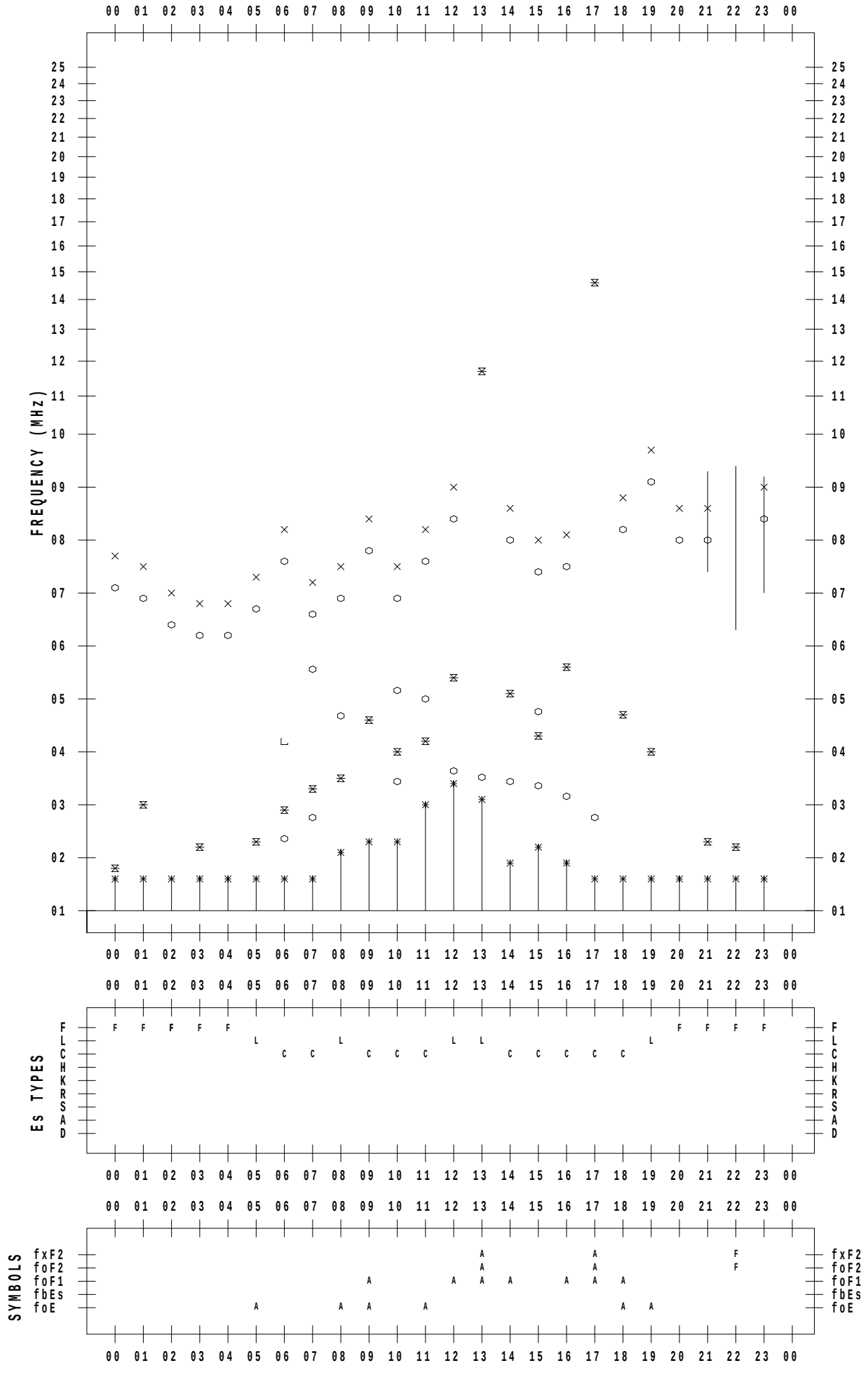
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/24

135 °E MEAN TIME



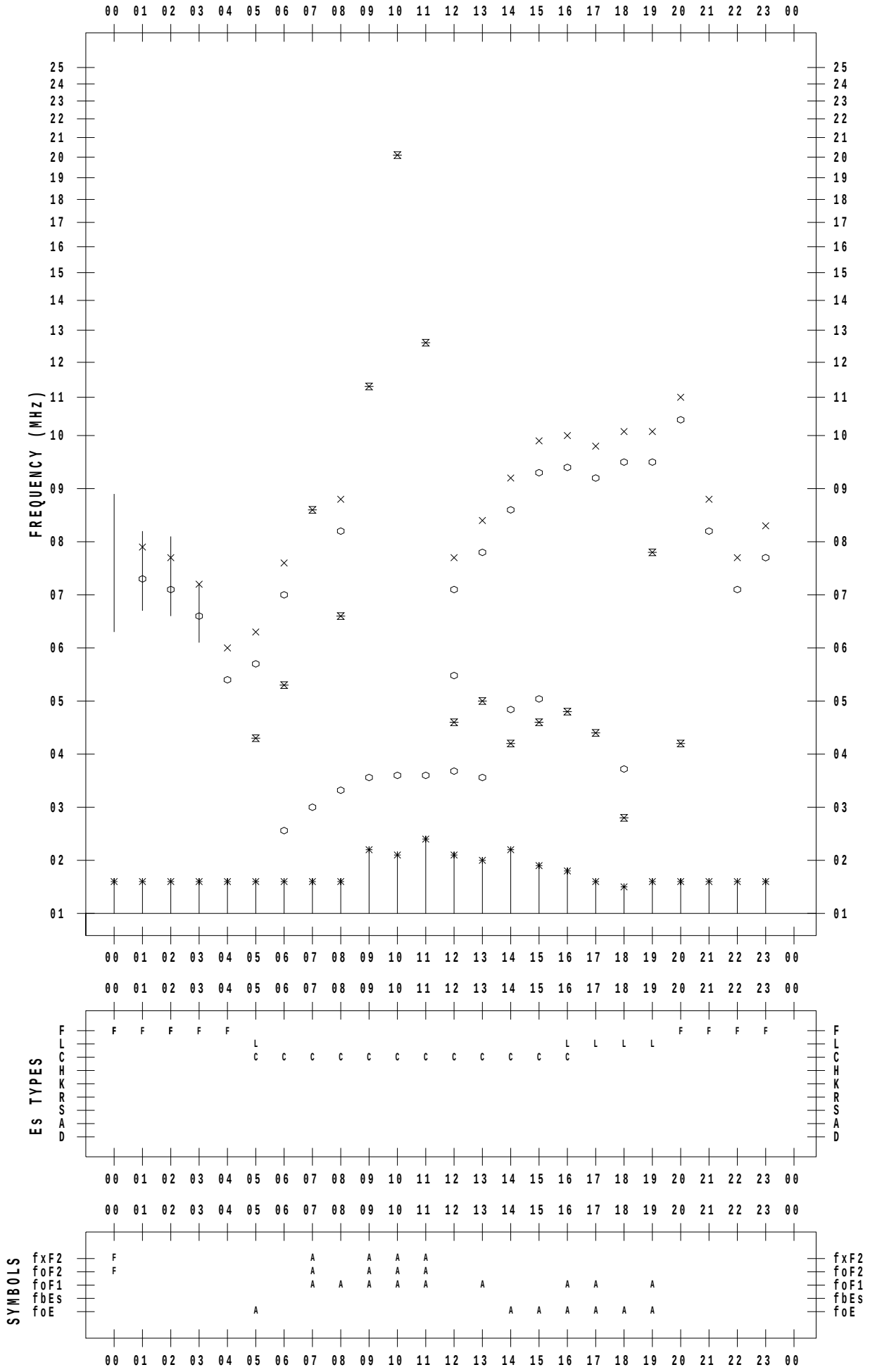
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/25

135 °E MEAN TIME



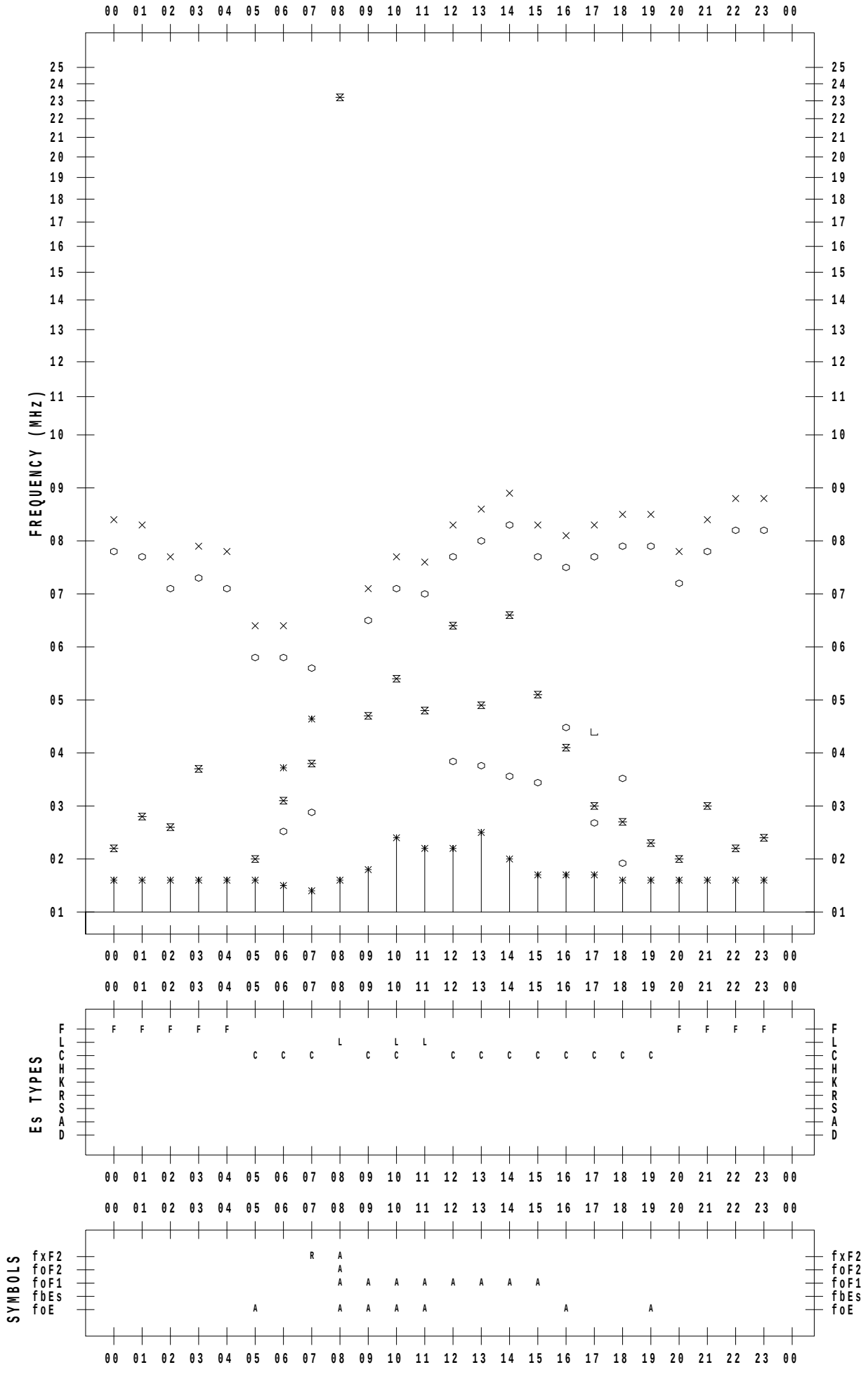
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/26

135 °E MEAN TIME



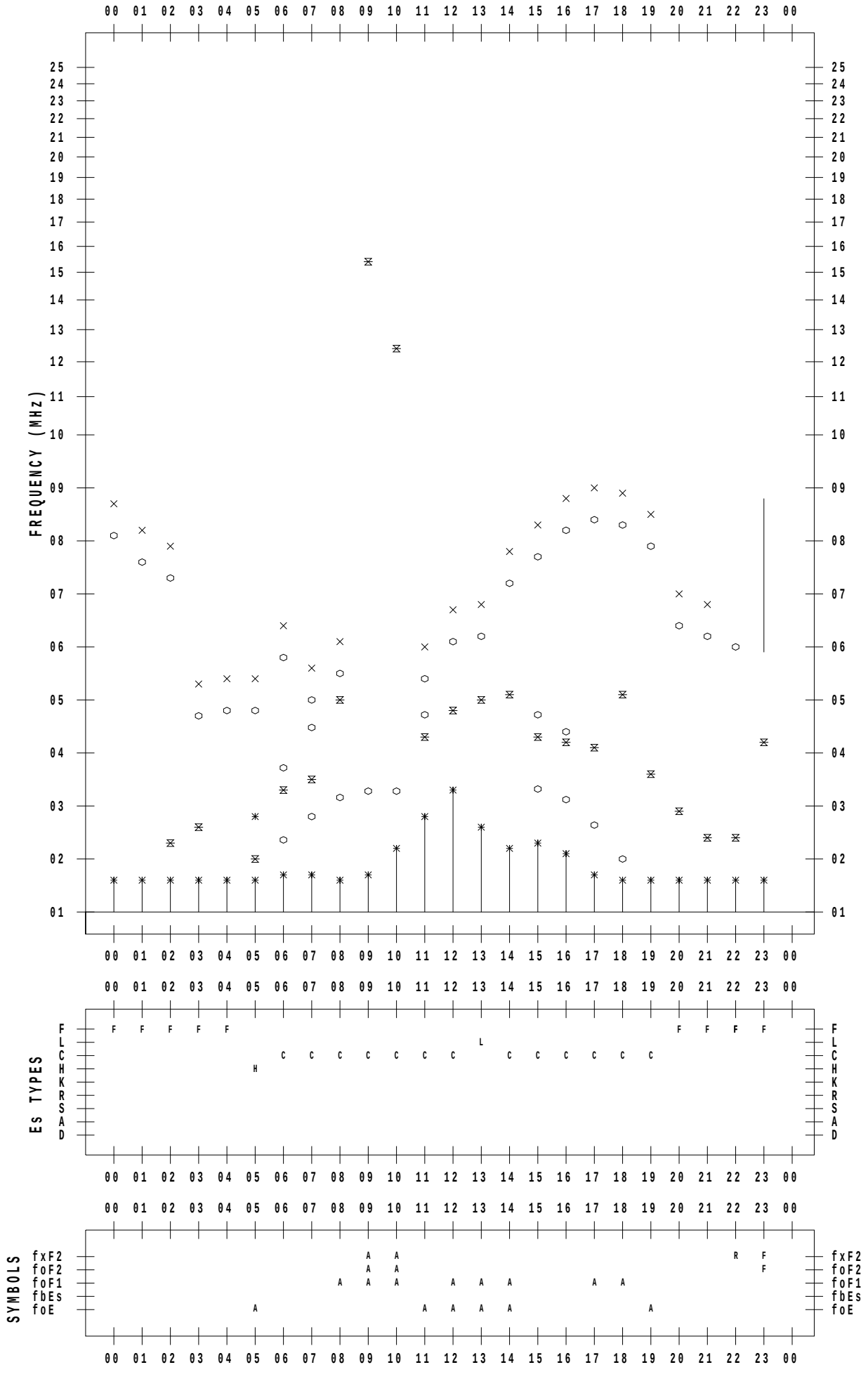
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/27

135 °E MEAN TIME



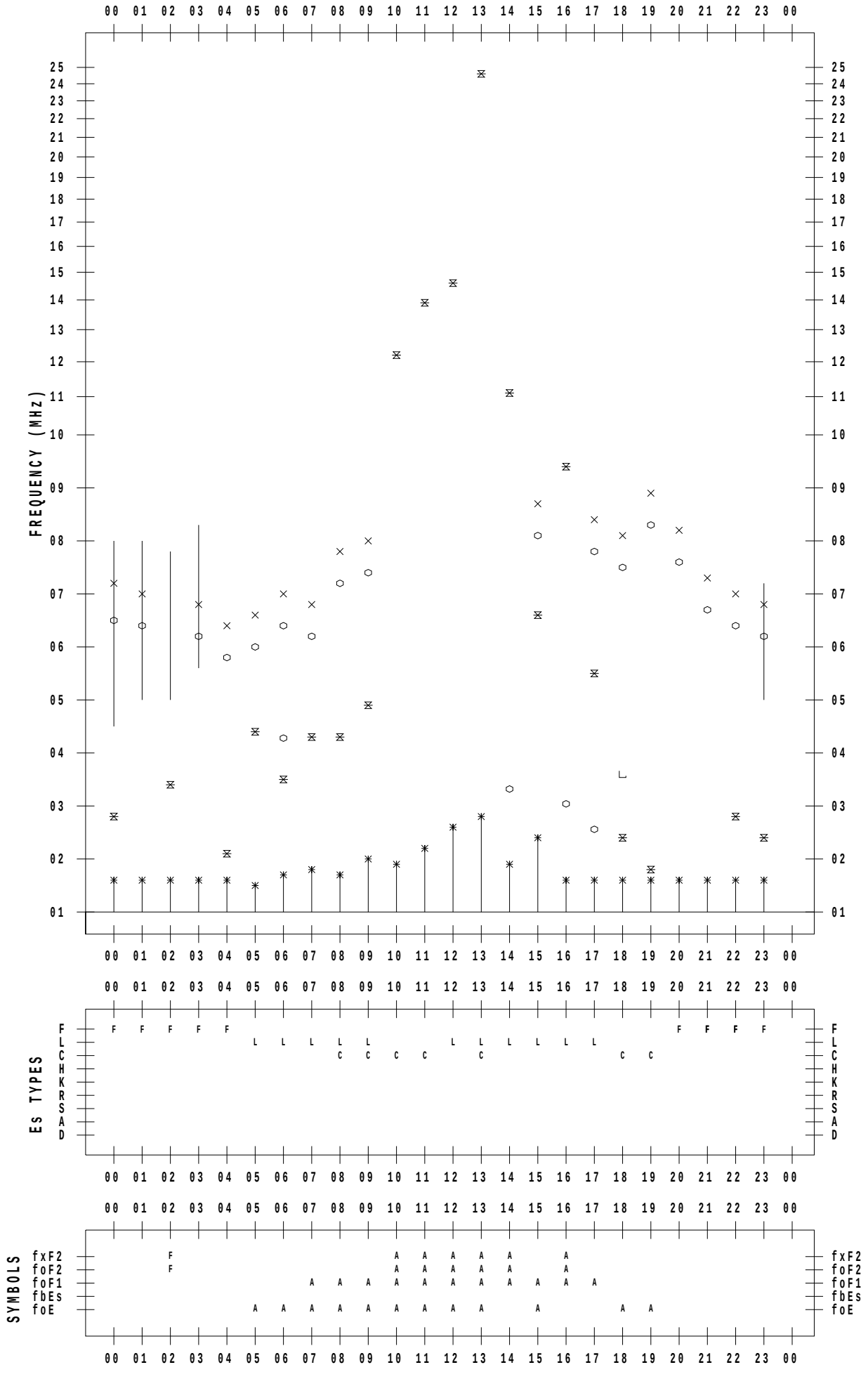
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/28

135 °E MEAN TIME



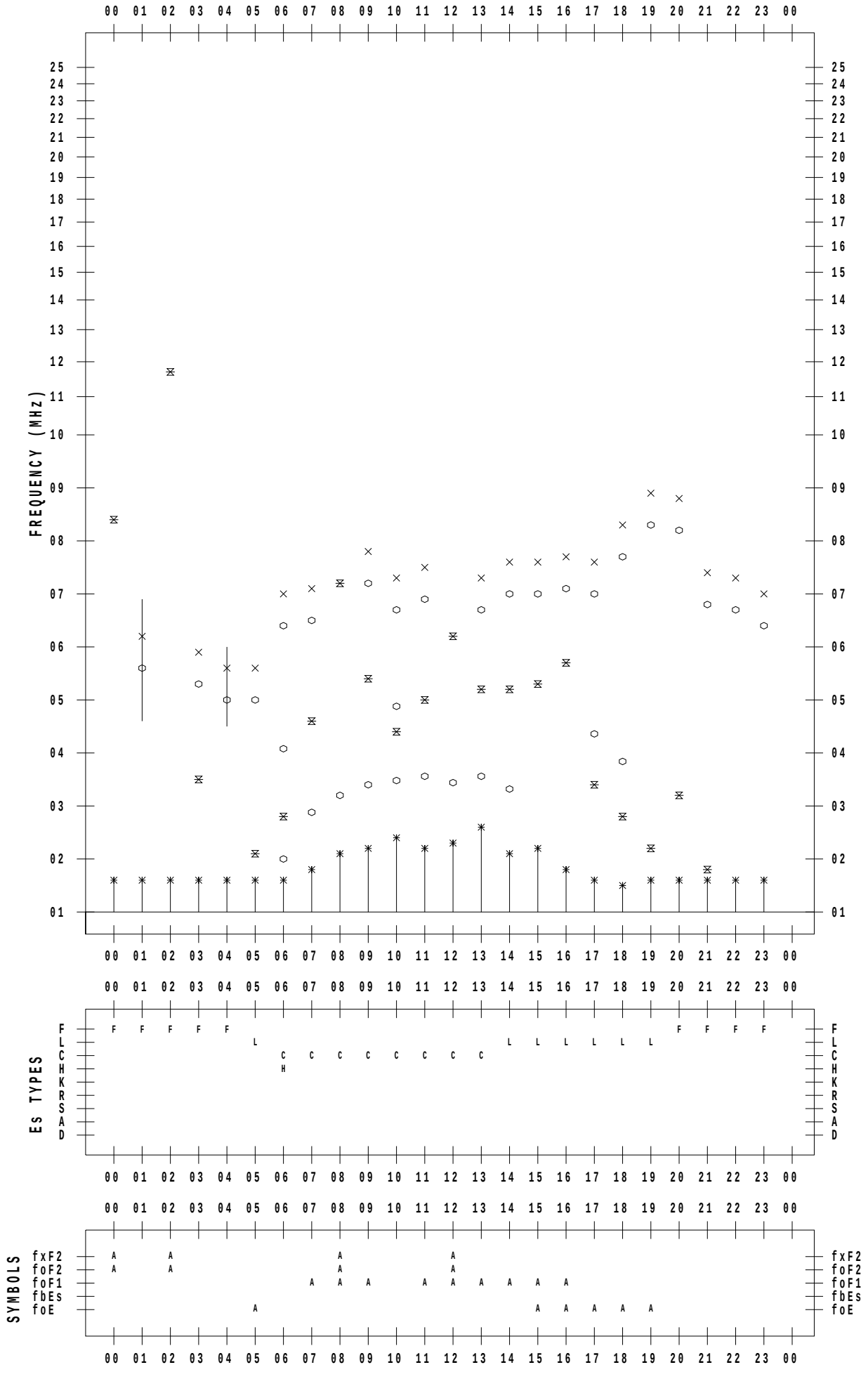
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/29

135 °E MEAN TIME



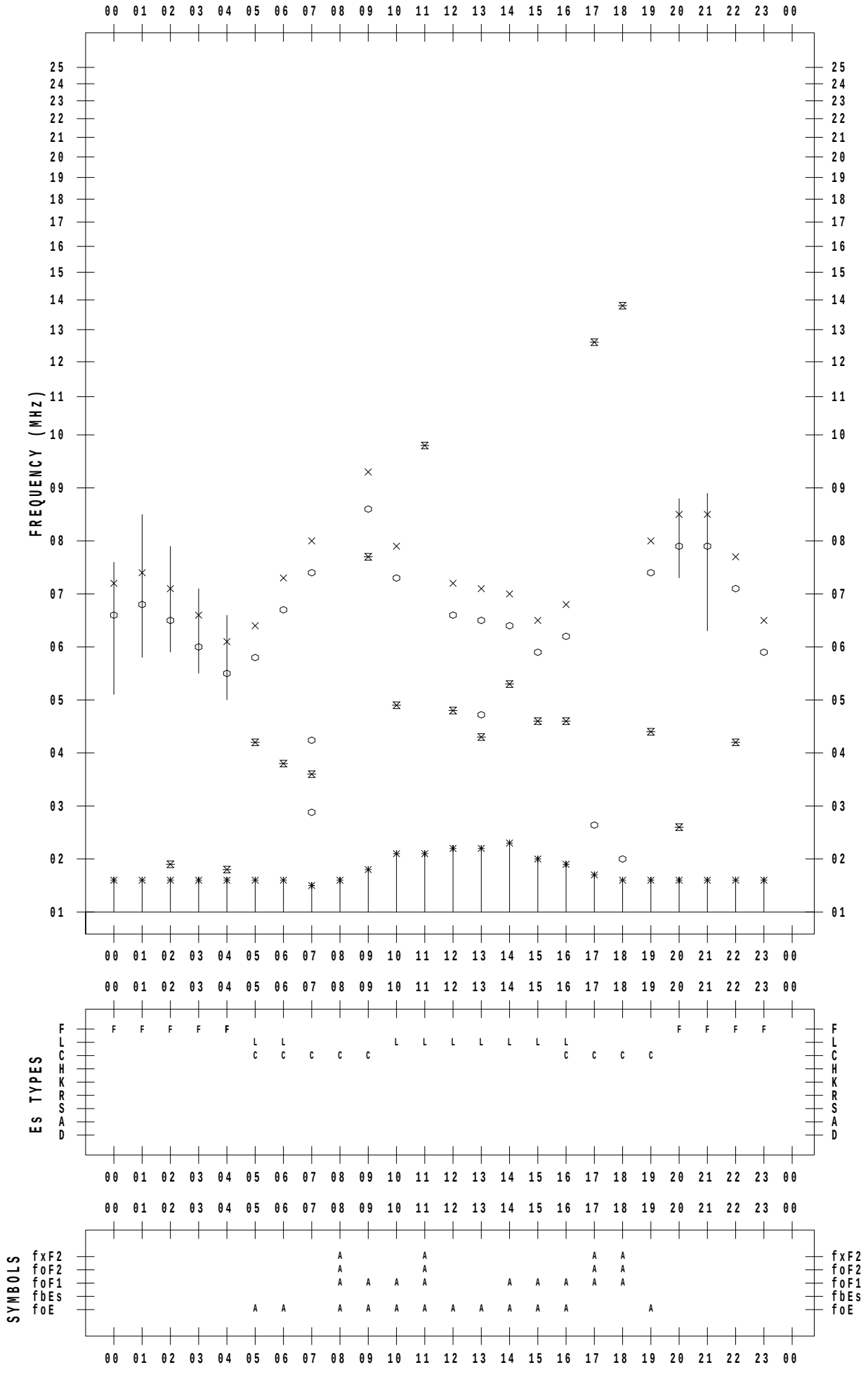
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 6/30

135 °E MEAN TIME



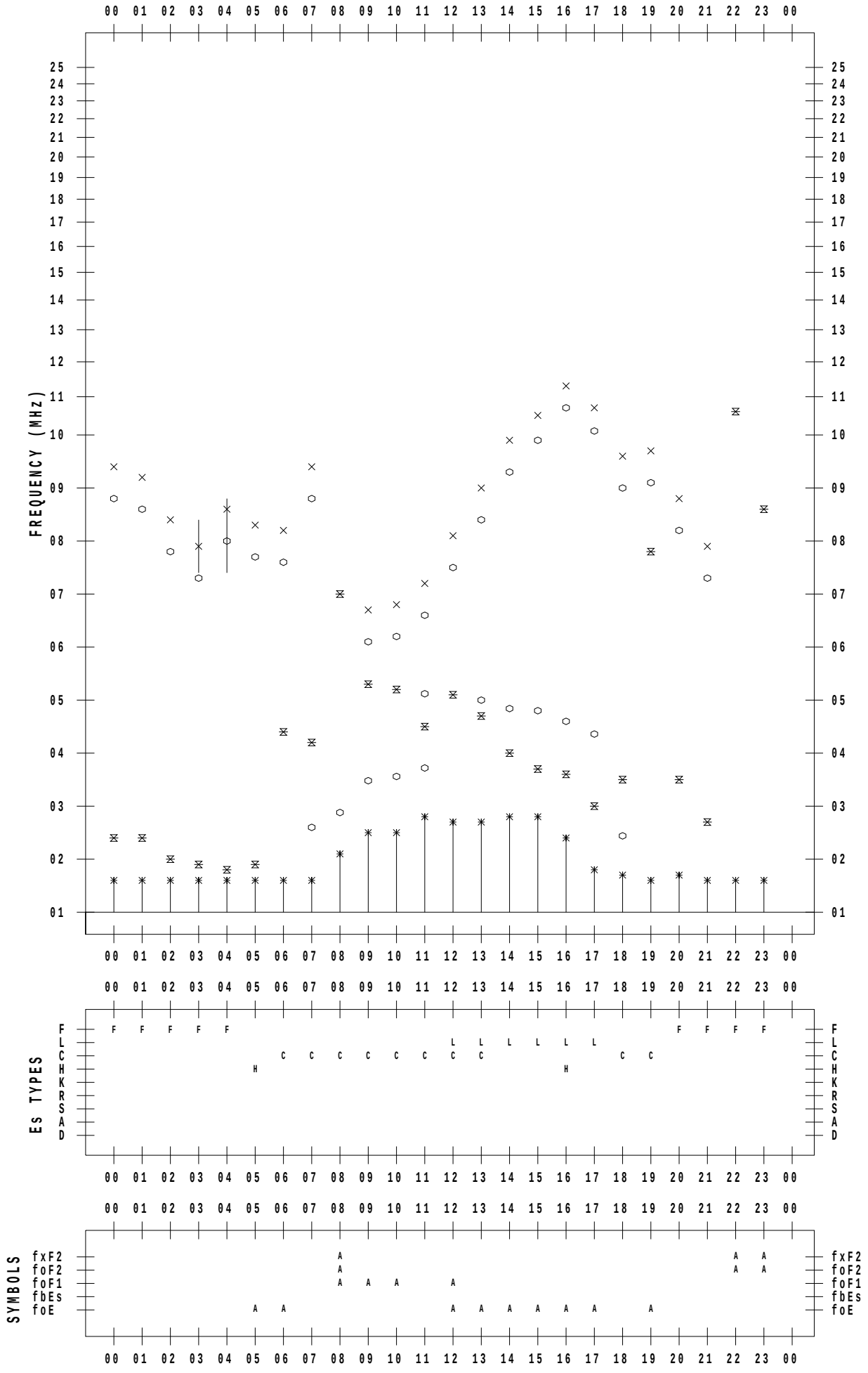
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 1

135 °E MEAN TIME



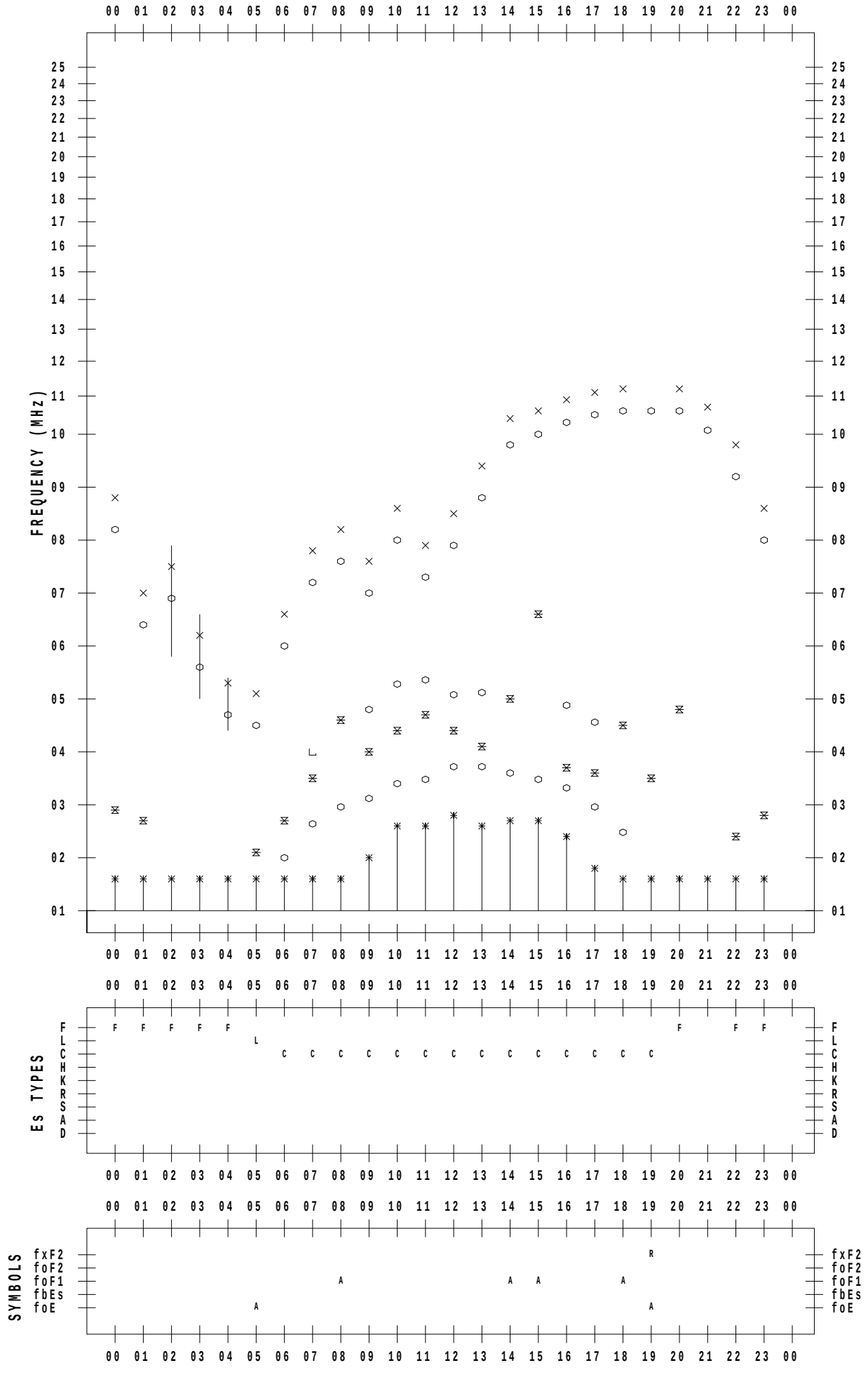
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 2

135 °E MEAN TIME



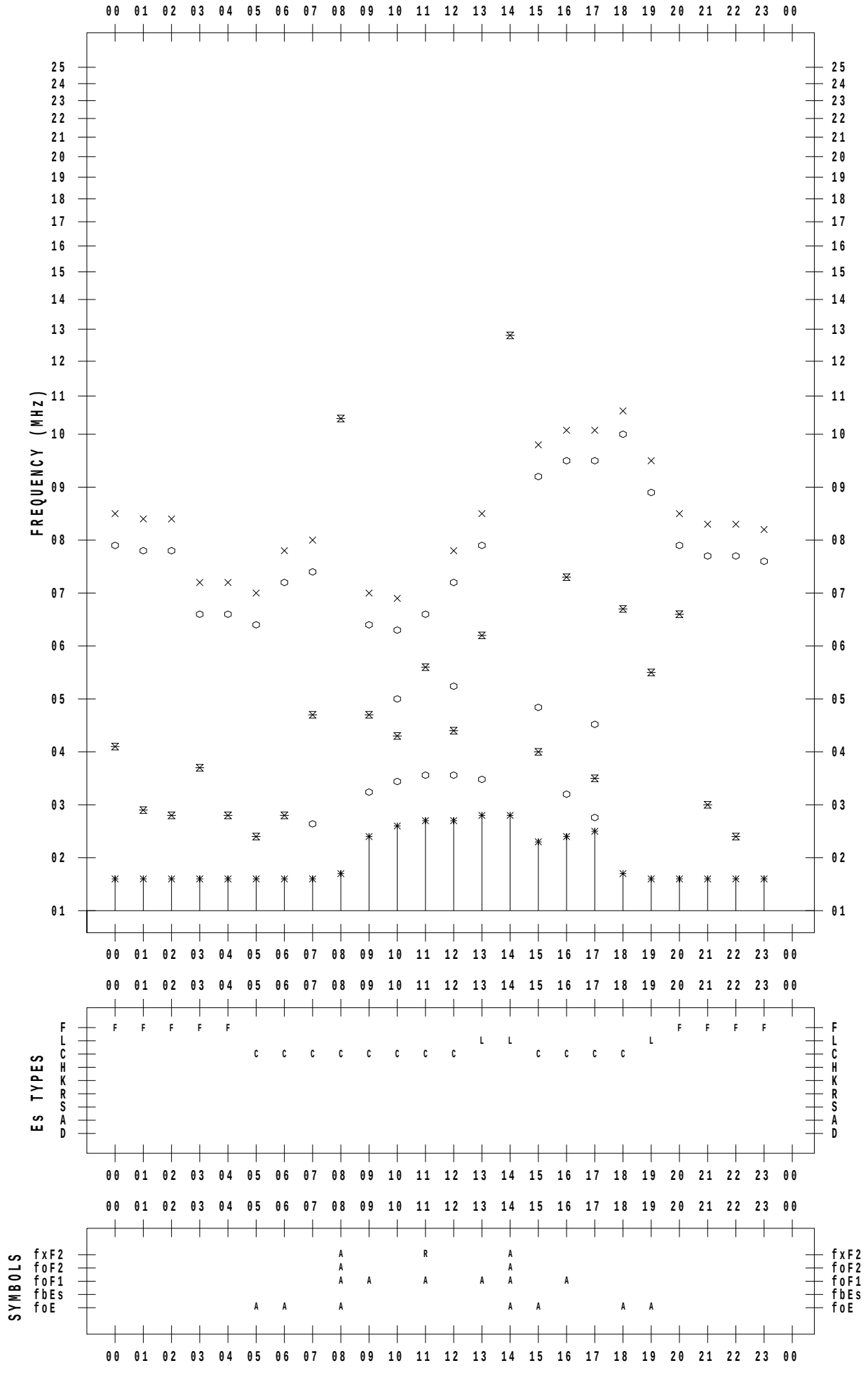
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 3

135 °E MEAN TIME



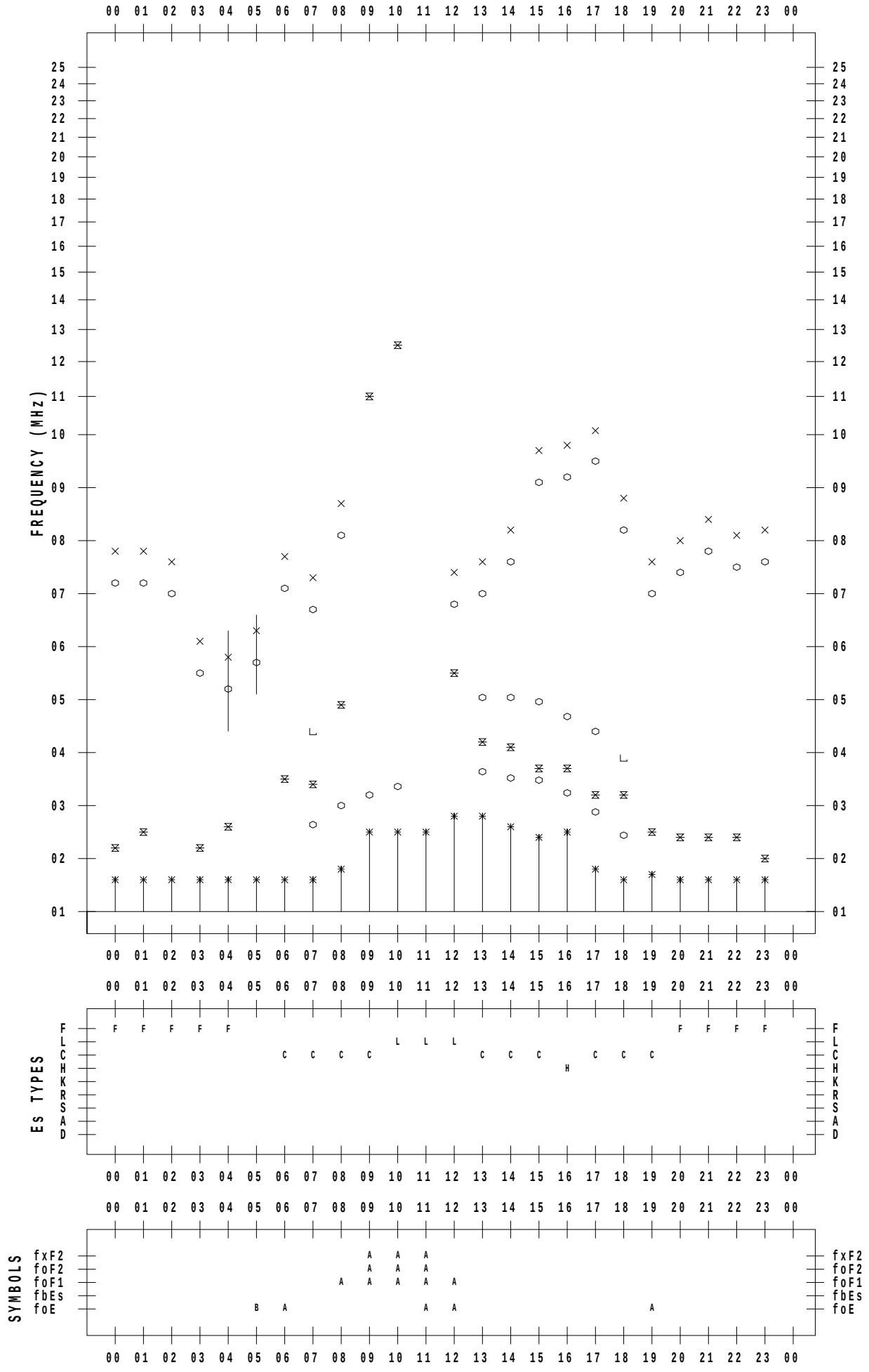
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 4

135 °E MEAN TIME



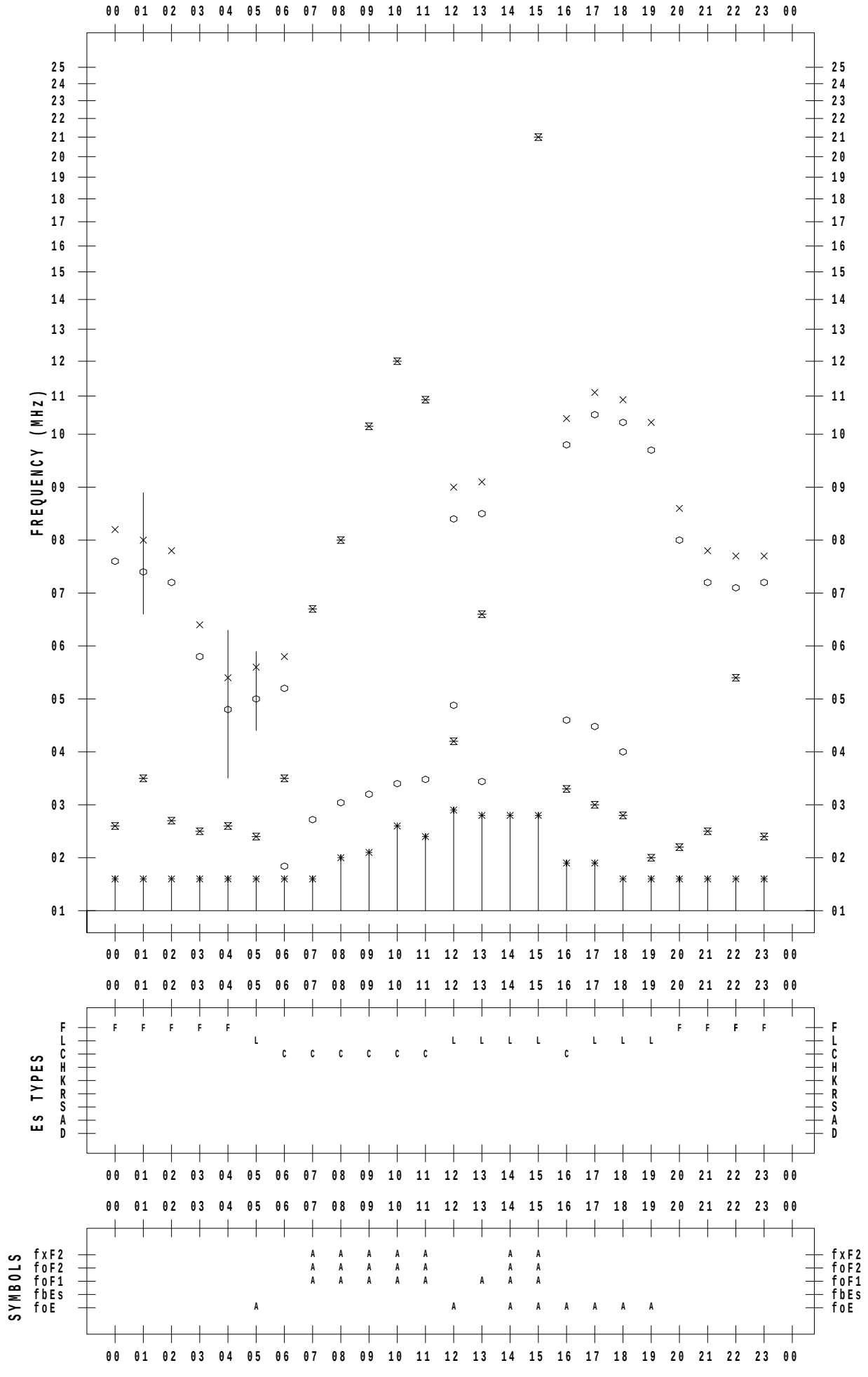
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 5

135 °E MEAN TIME



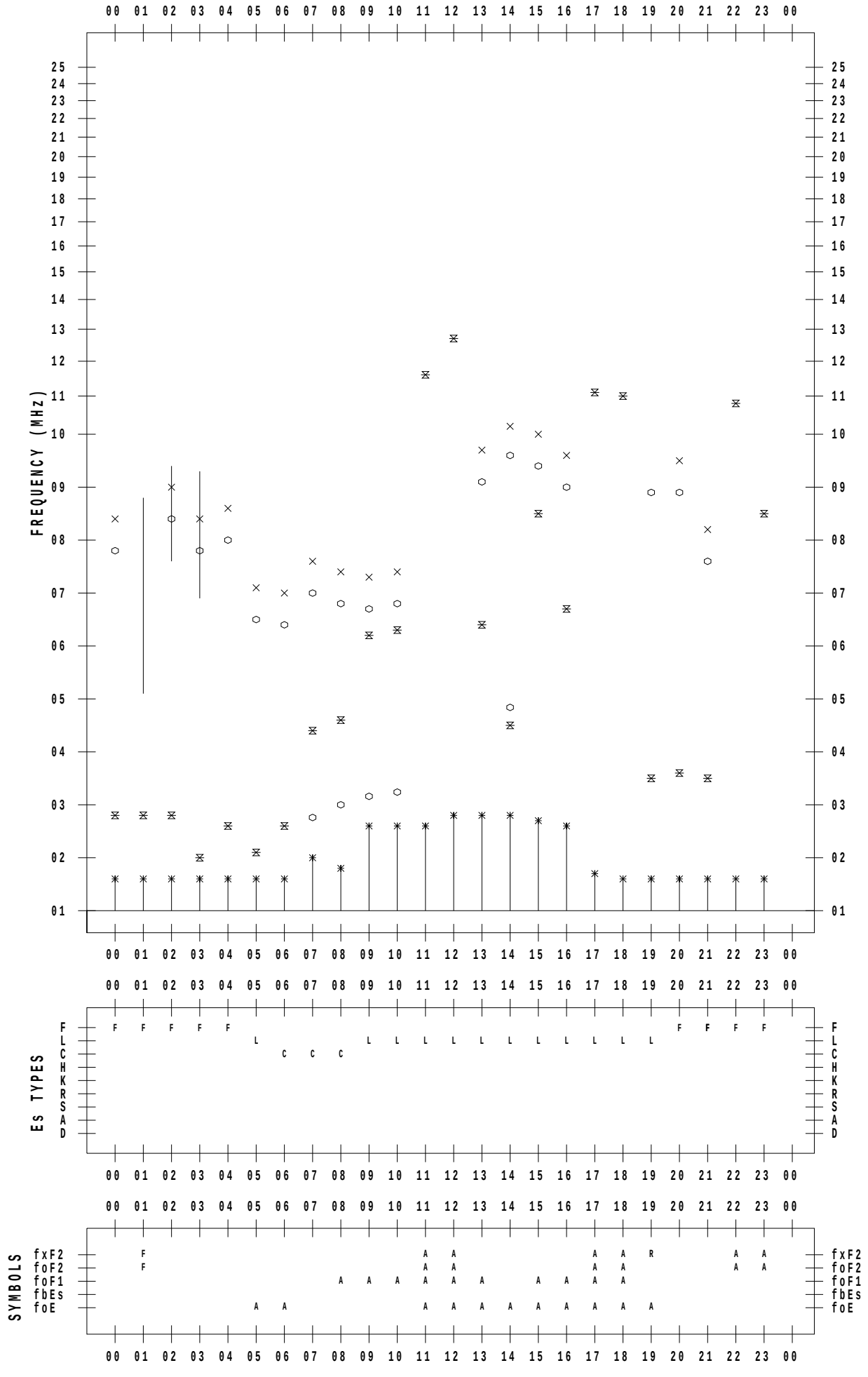
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 6

135 °E MEAN TIME



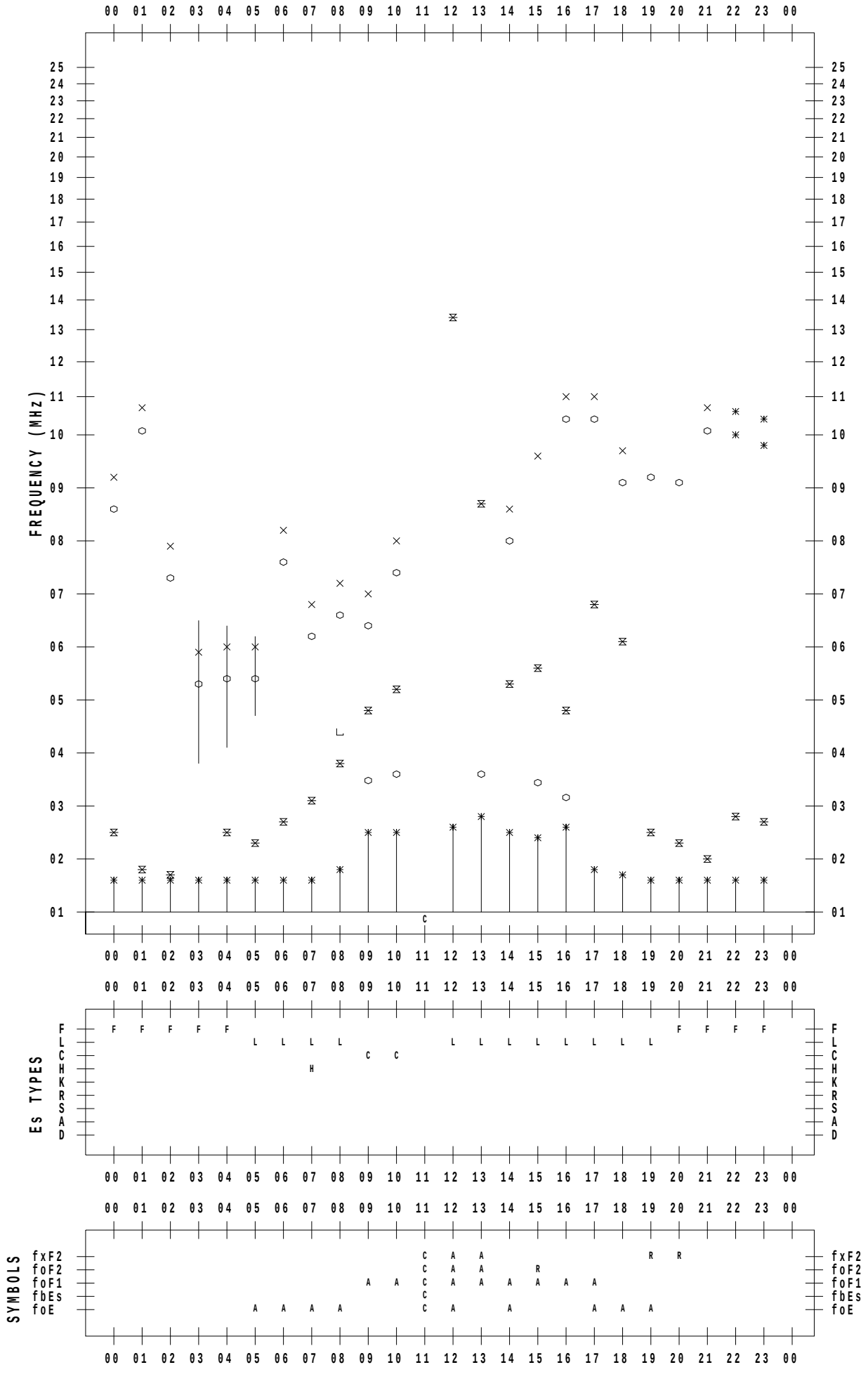
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 7

135 °E MEAN TIME



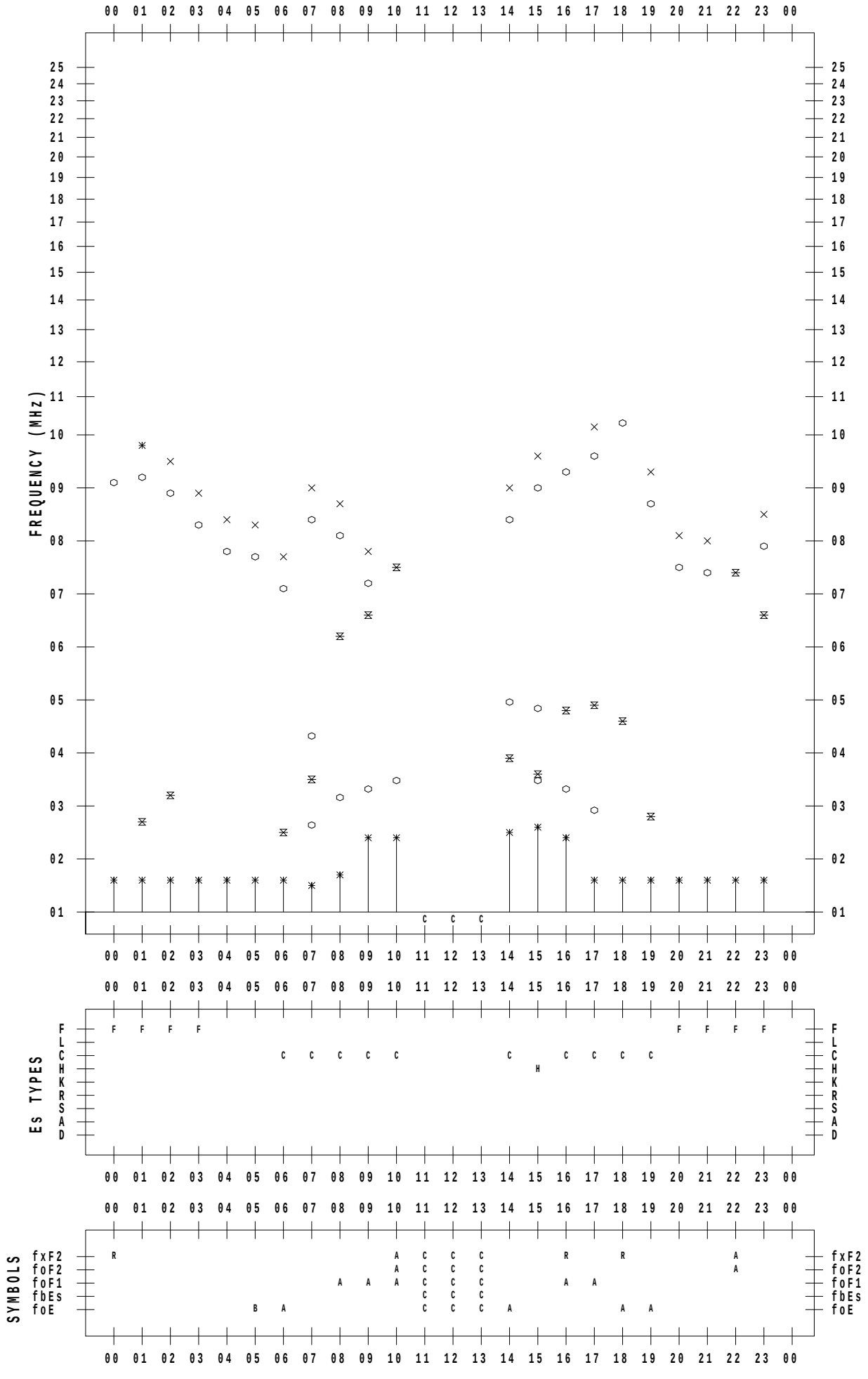
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 8

135 °E MEAN TIME



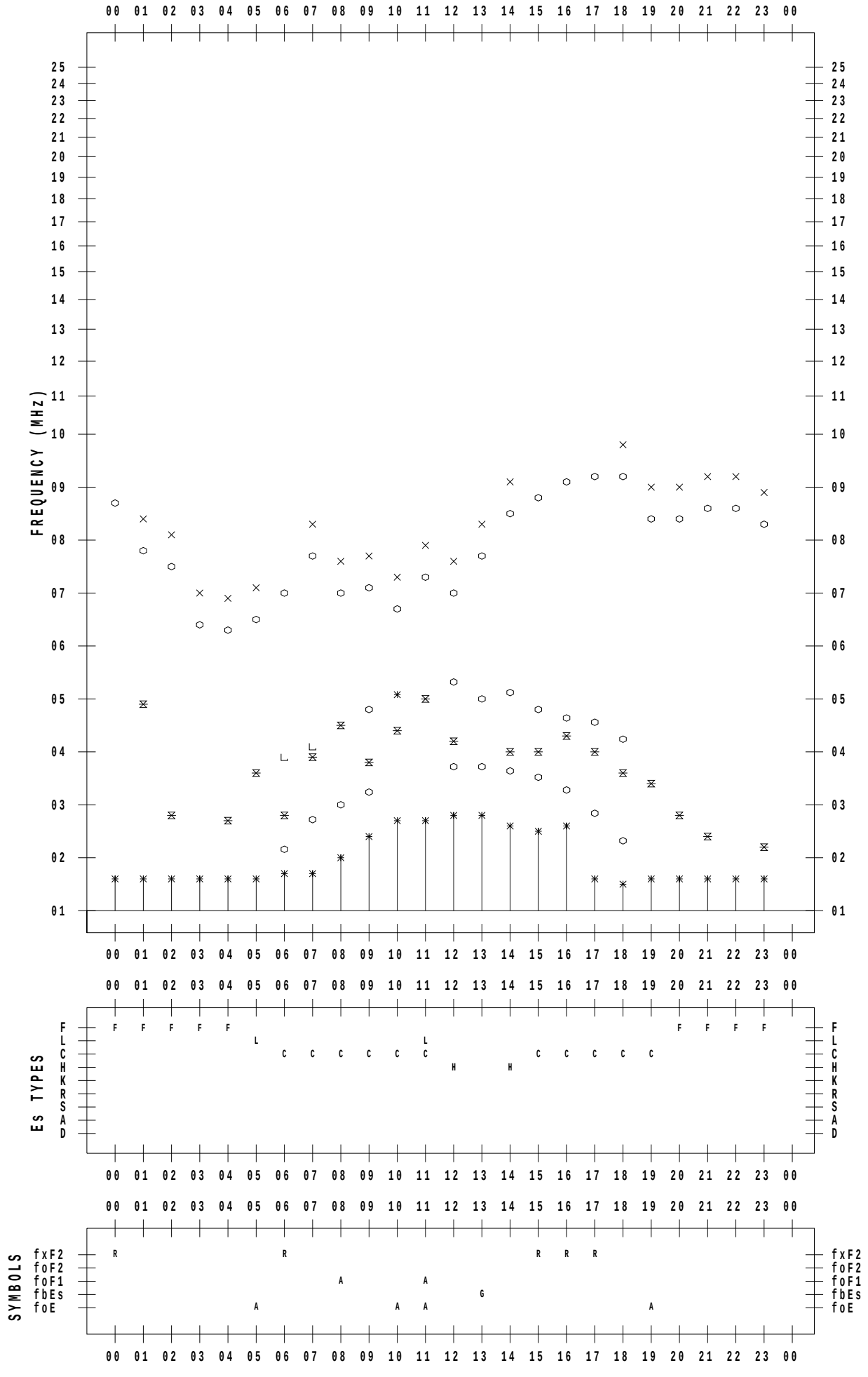
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/ 9

135 °E MEAN TIME



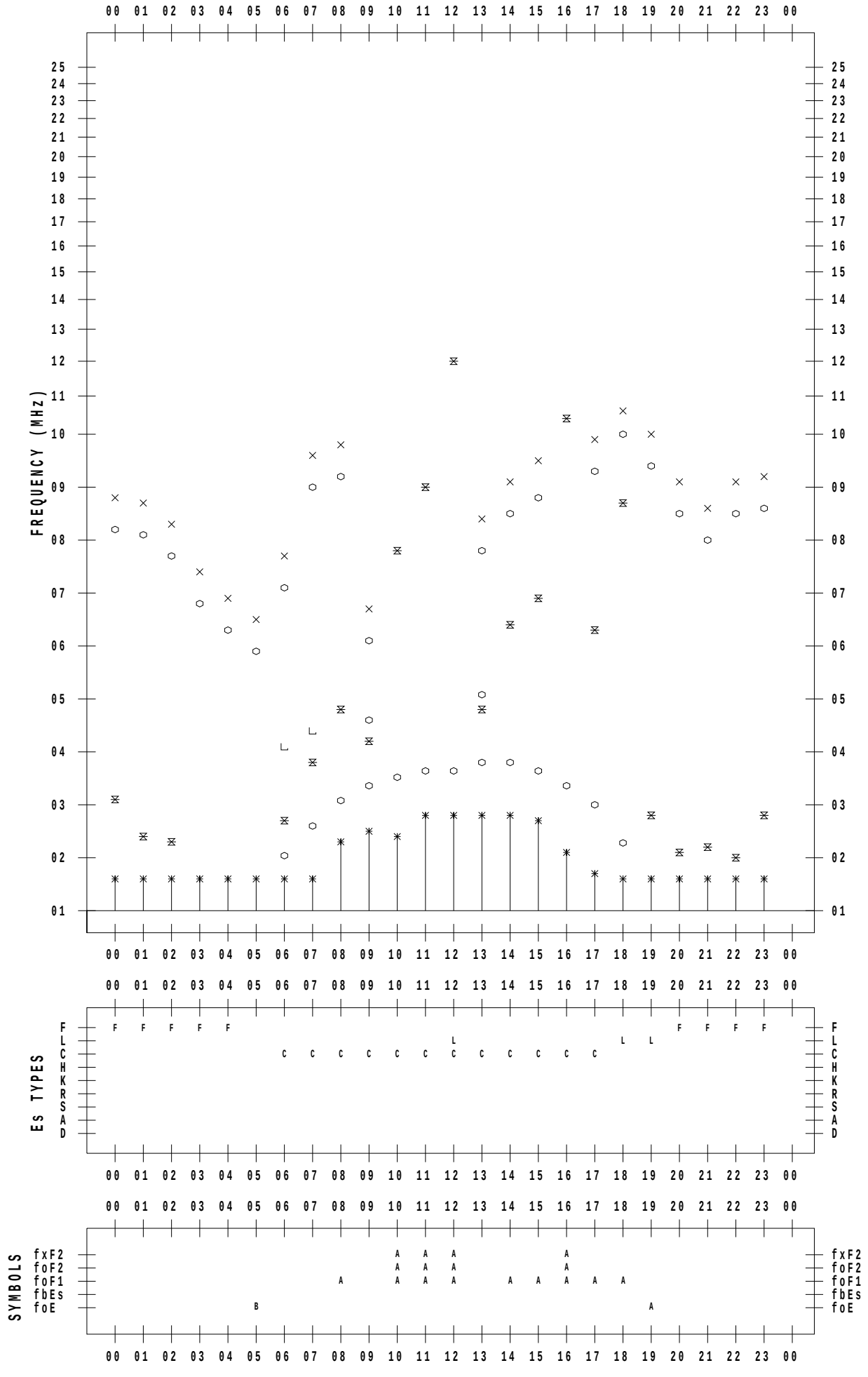
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/10

135 °E MEAN TIME



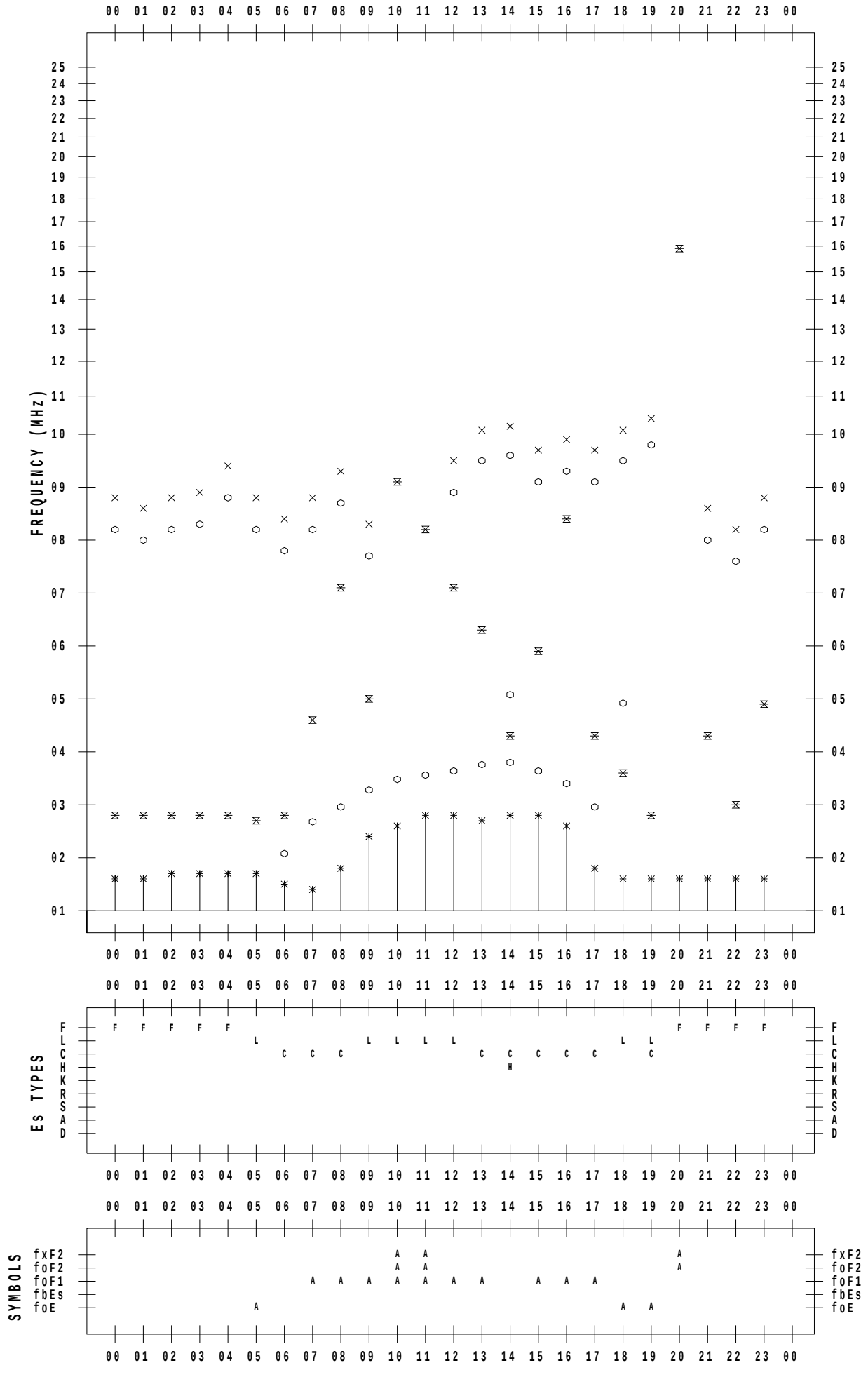
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/11

135 °E MEAN TIME



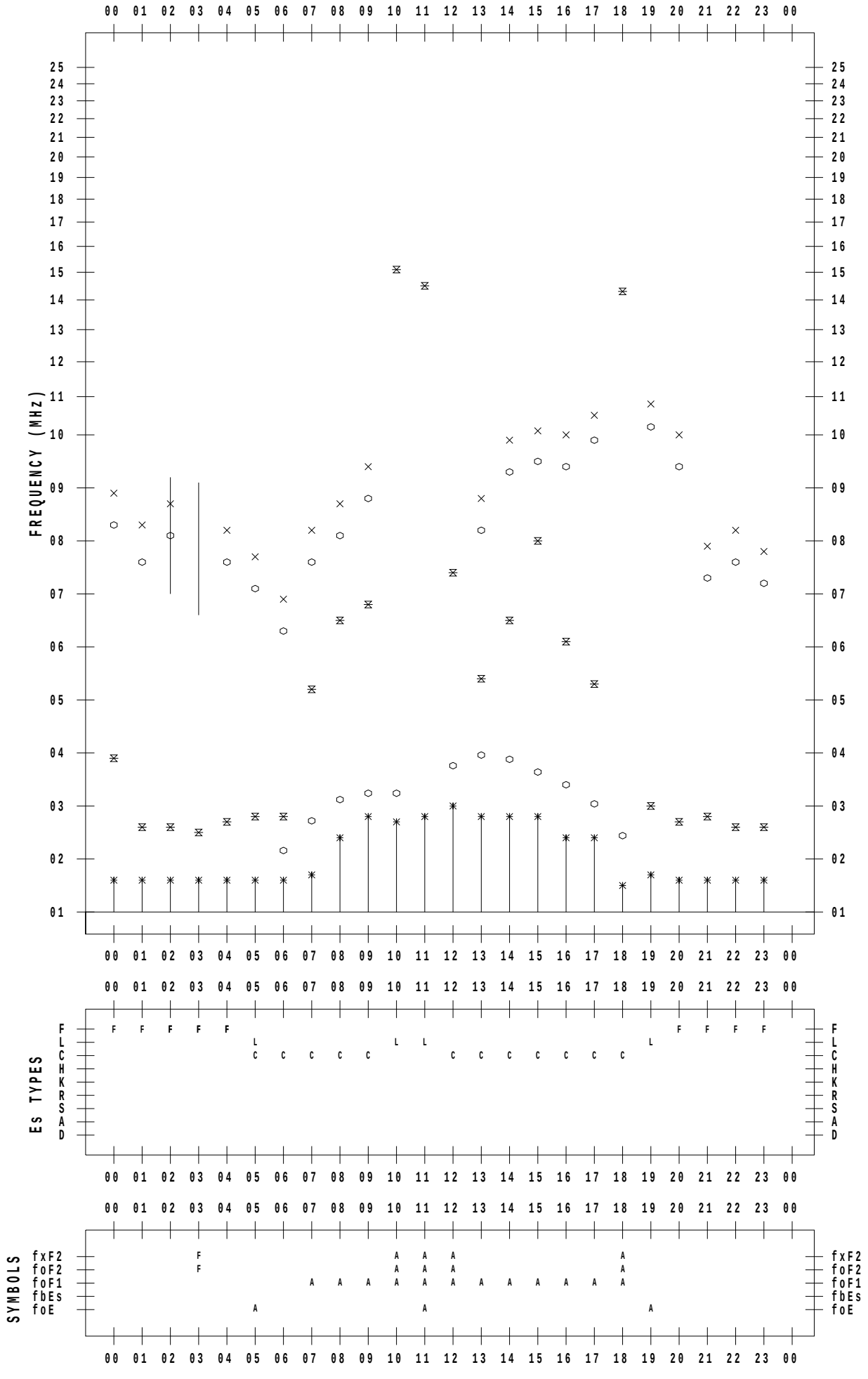
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/12

135 °E MEAN TIME



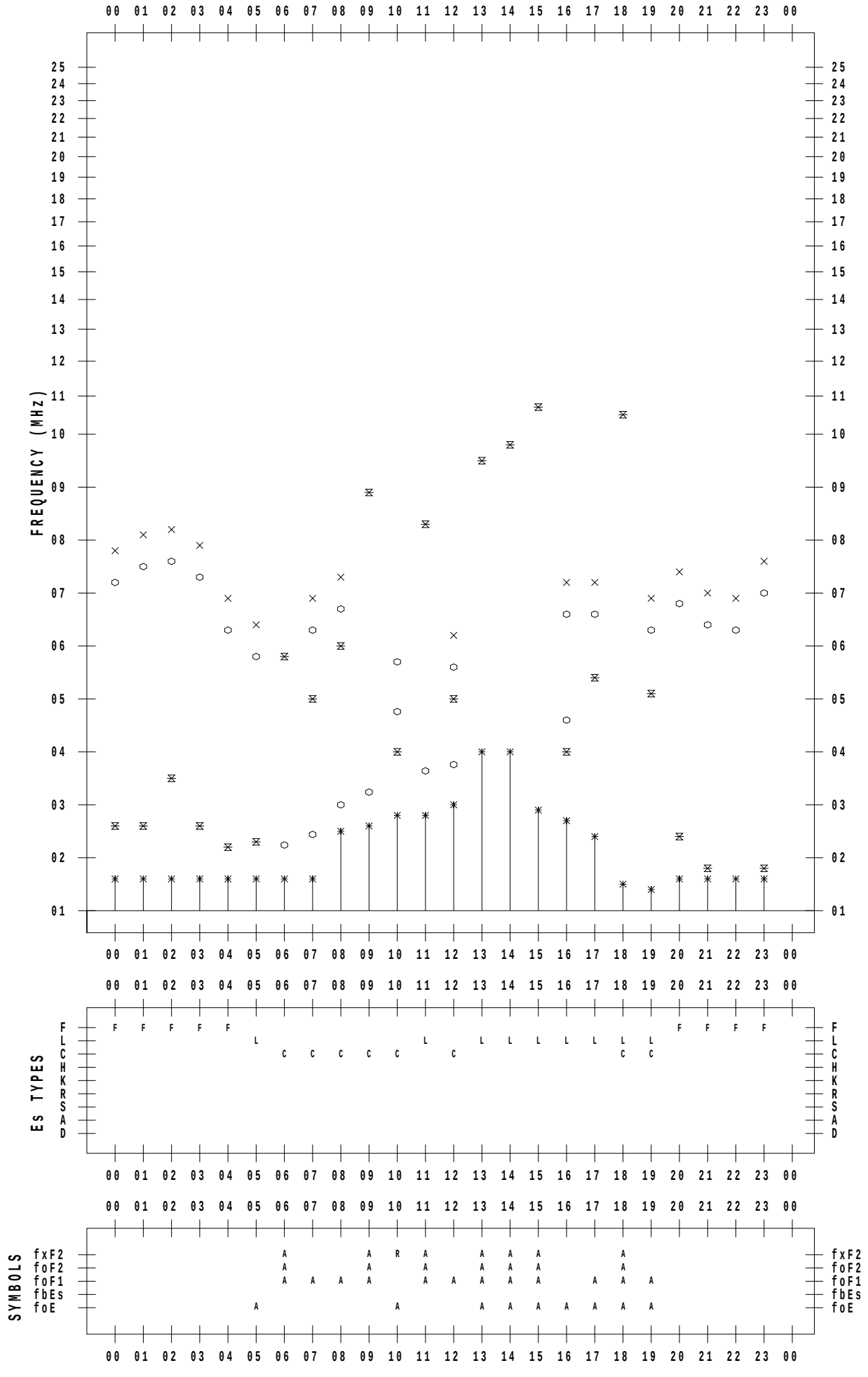
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/13

135 °E MEAN TIME



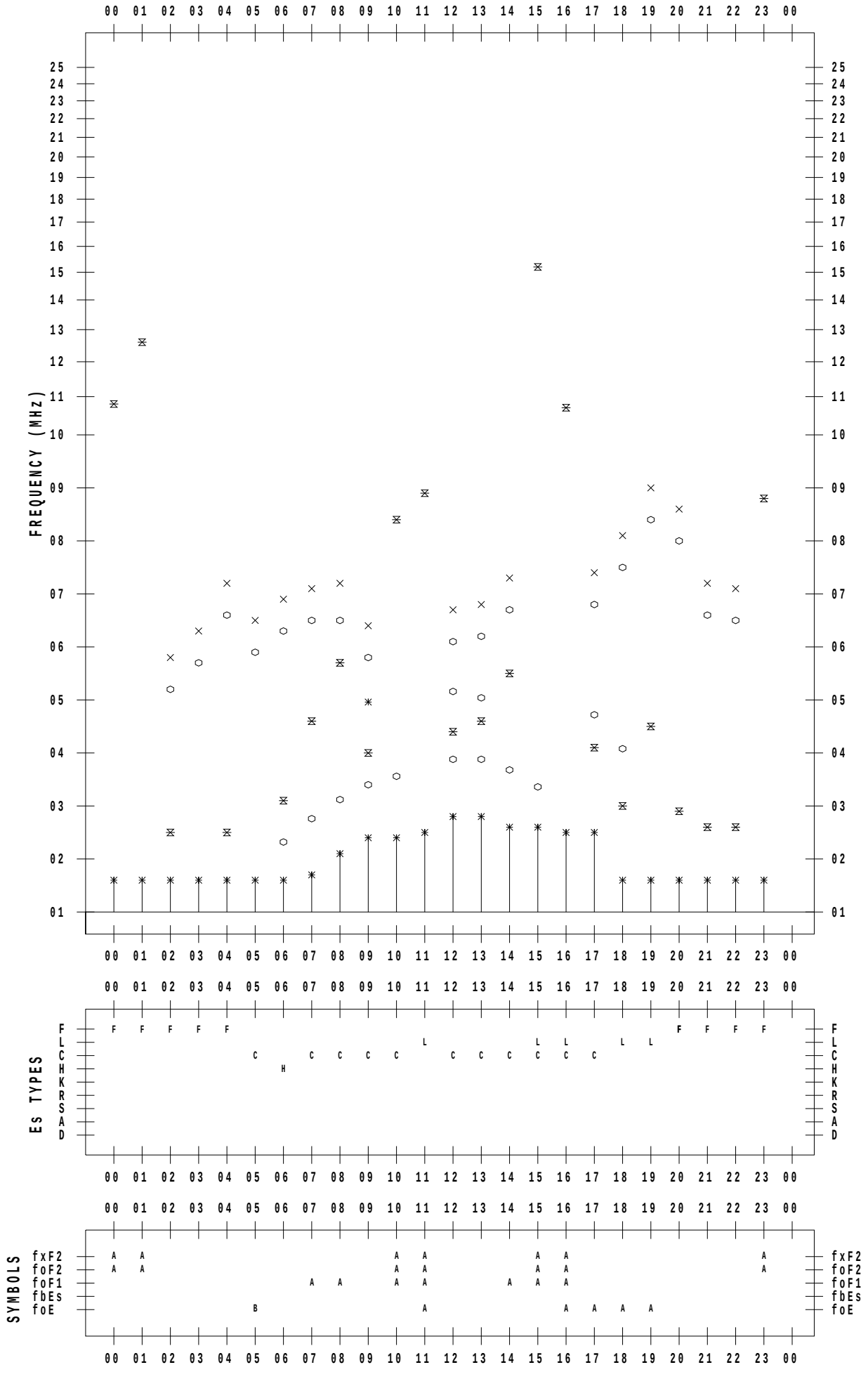
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/14

135 °E MEAN TIME



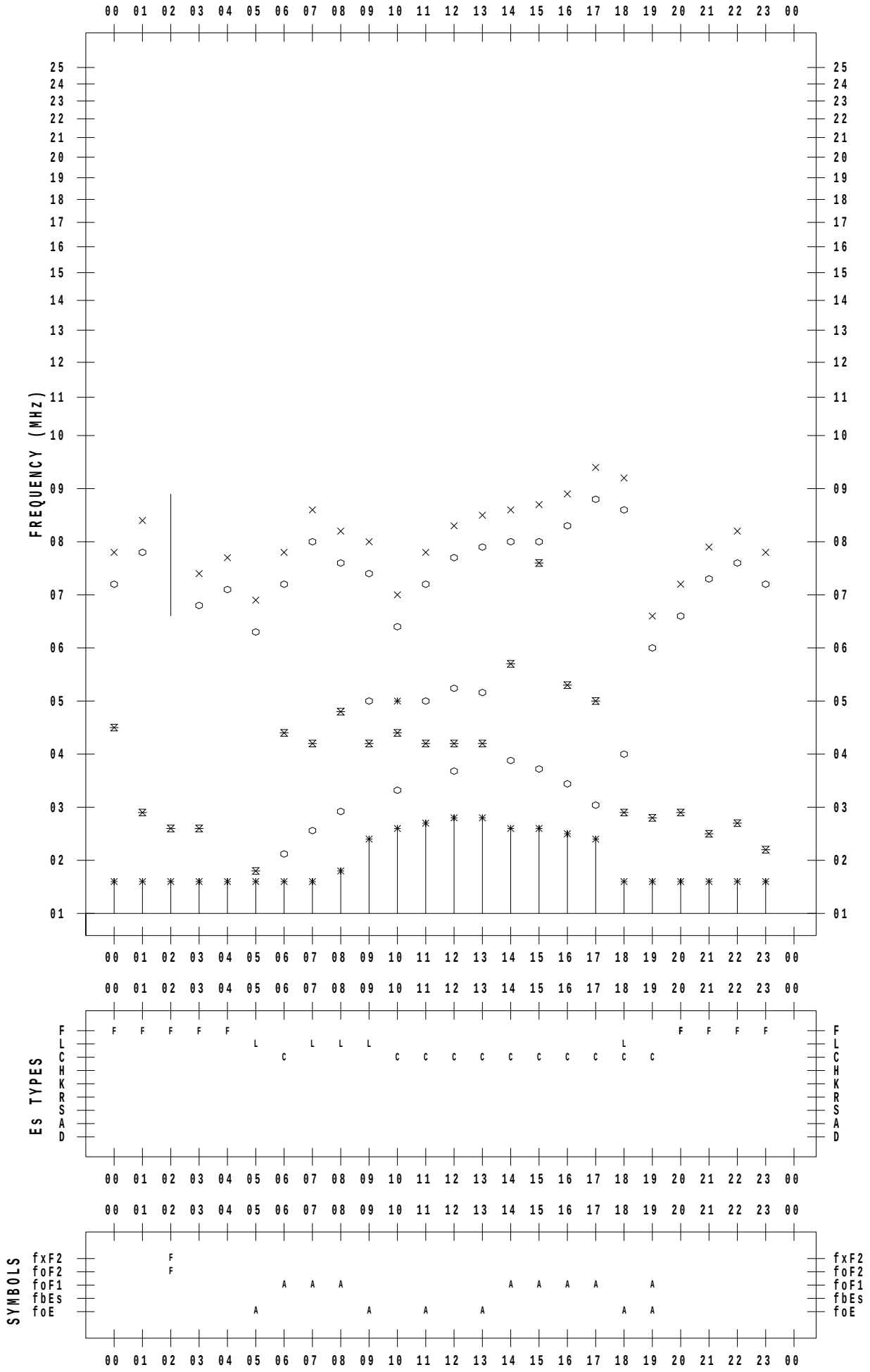
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/15

135 °E MEAN TIME



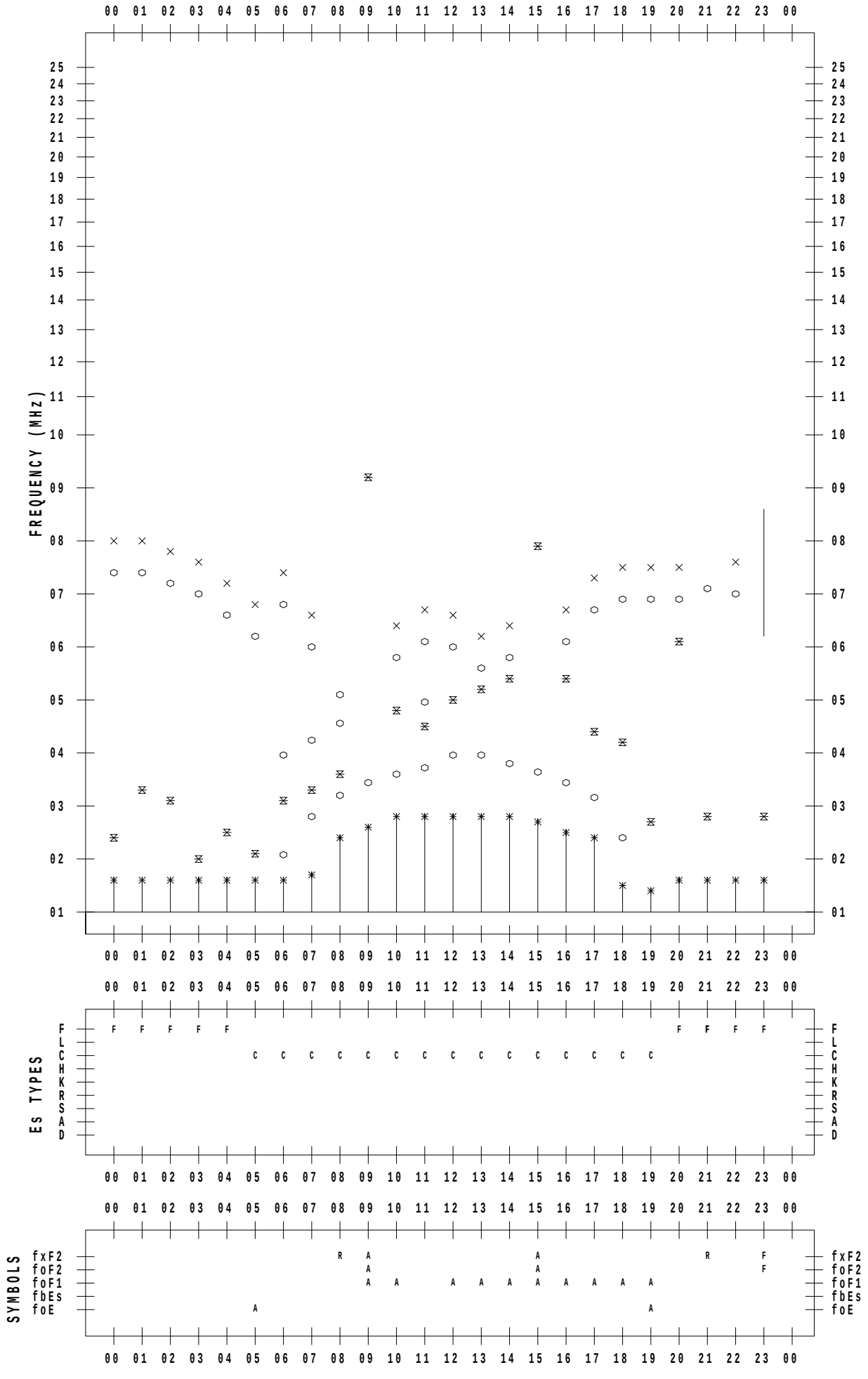
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/16

135 °E MEAN TIME



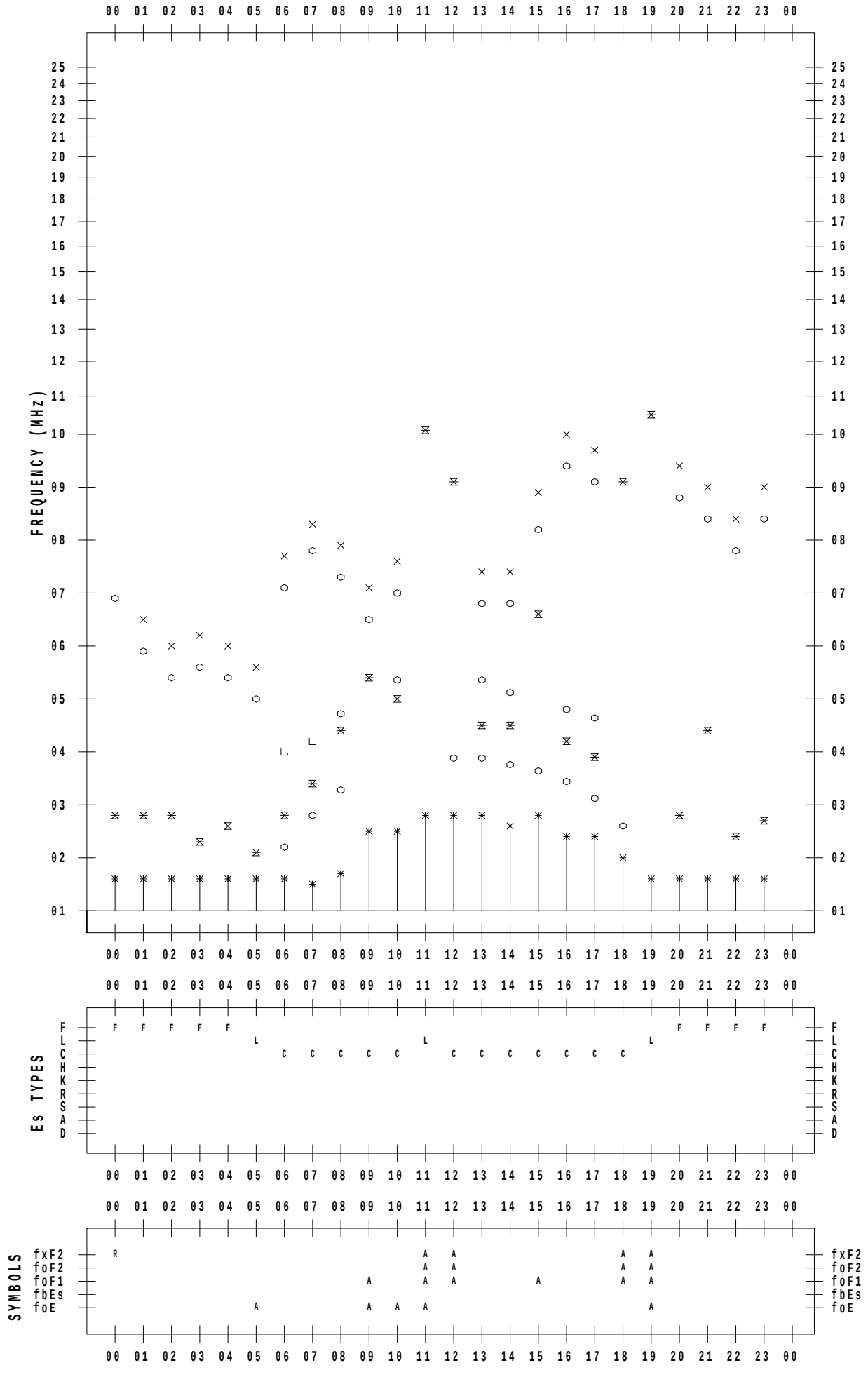
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/17

135 °E MEAN TIME



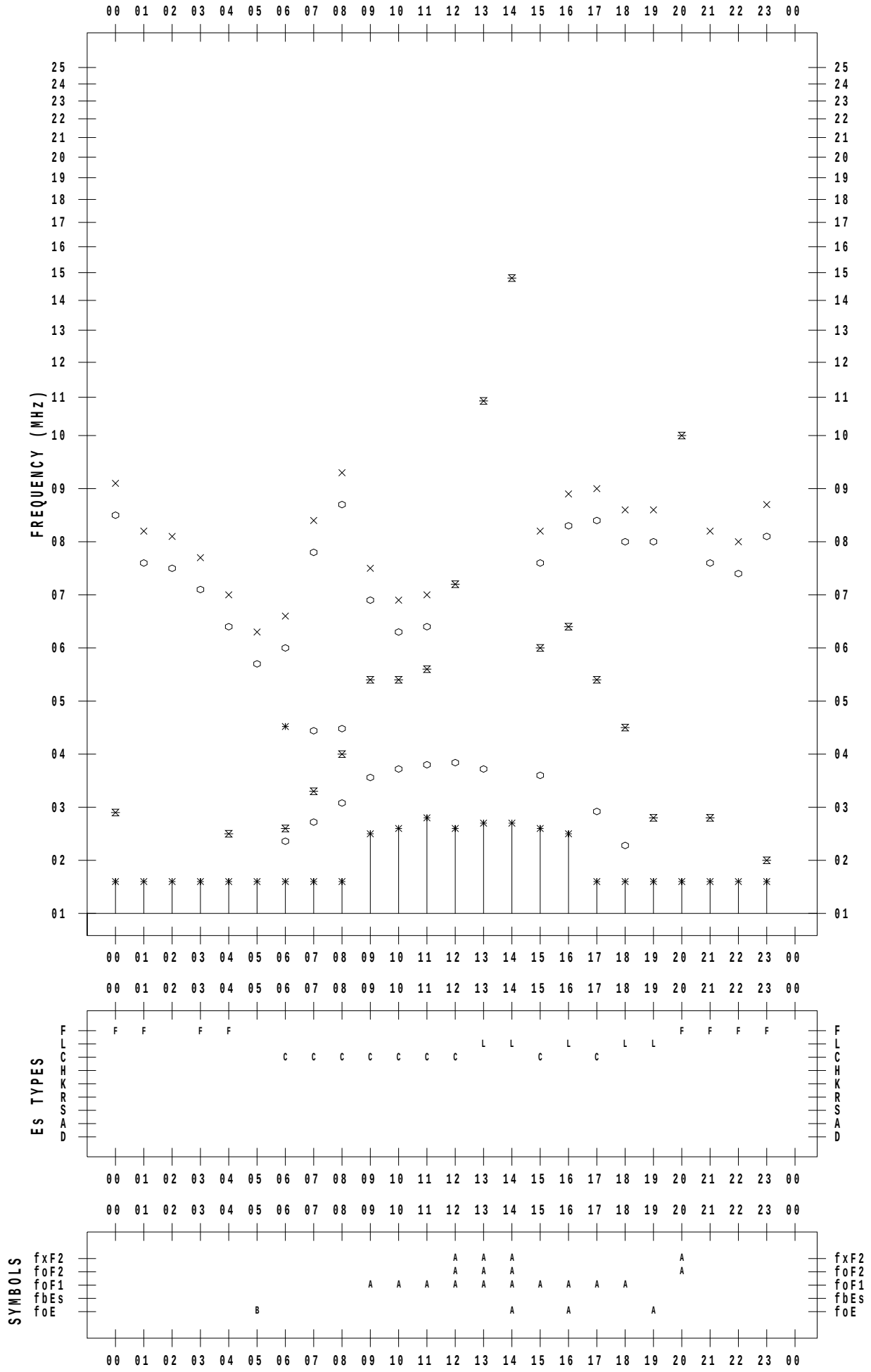
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/18

135 °E MEAN TIME



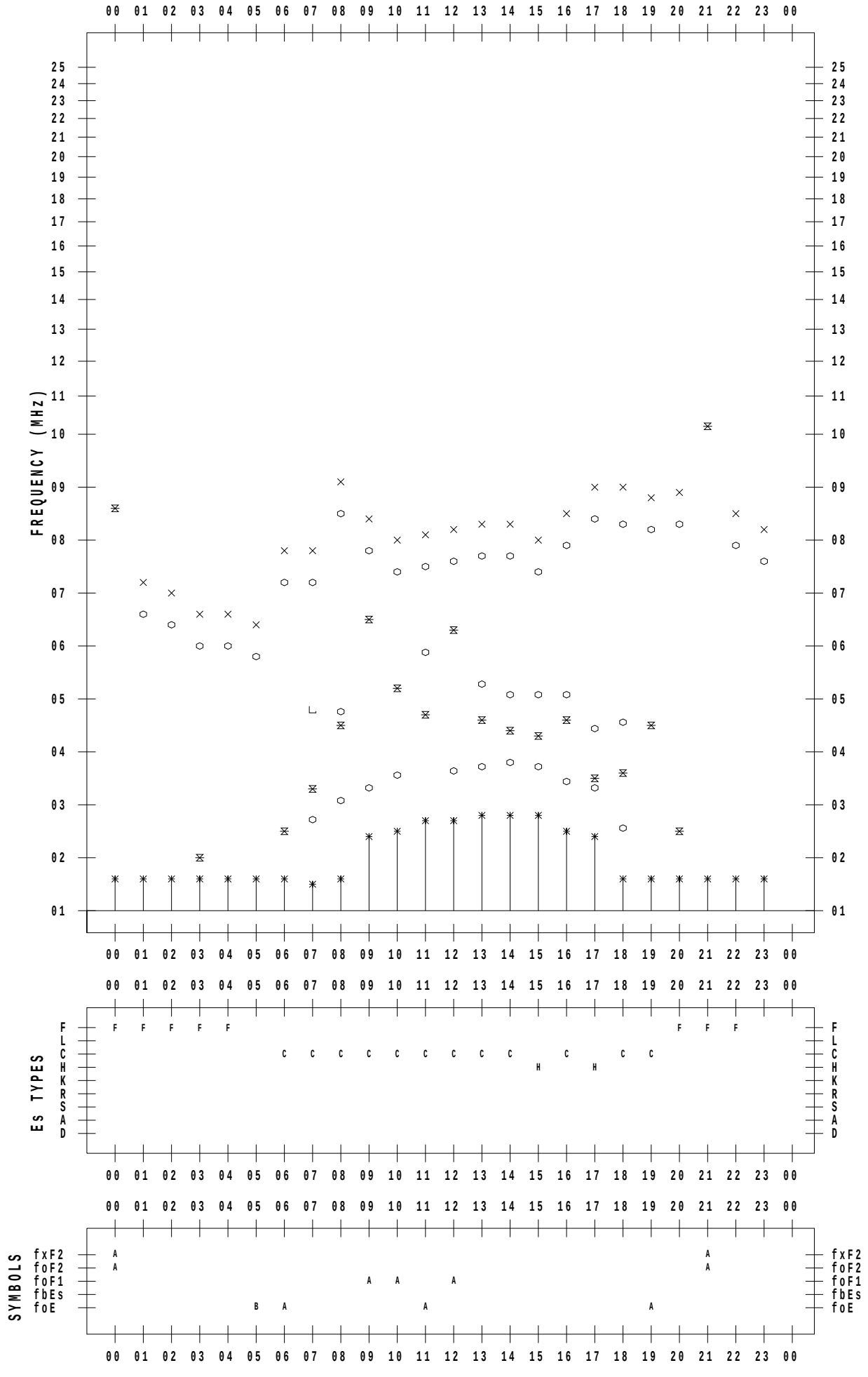
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/19

135 °E MEAN TIME



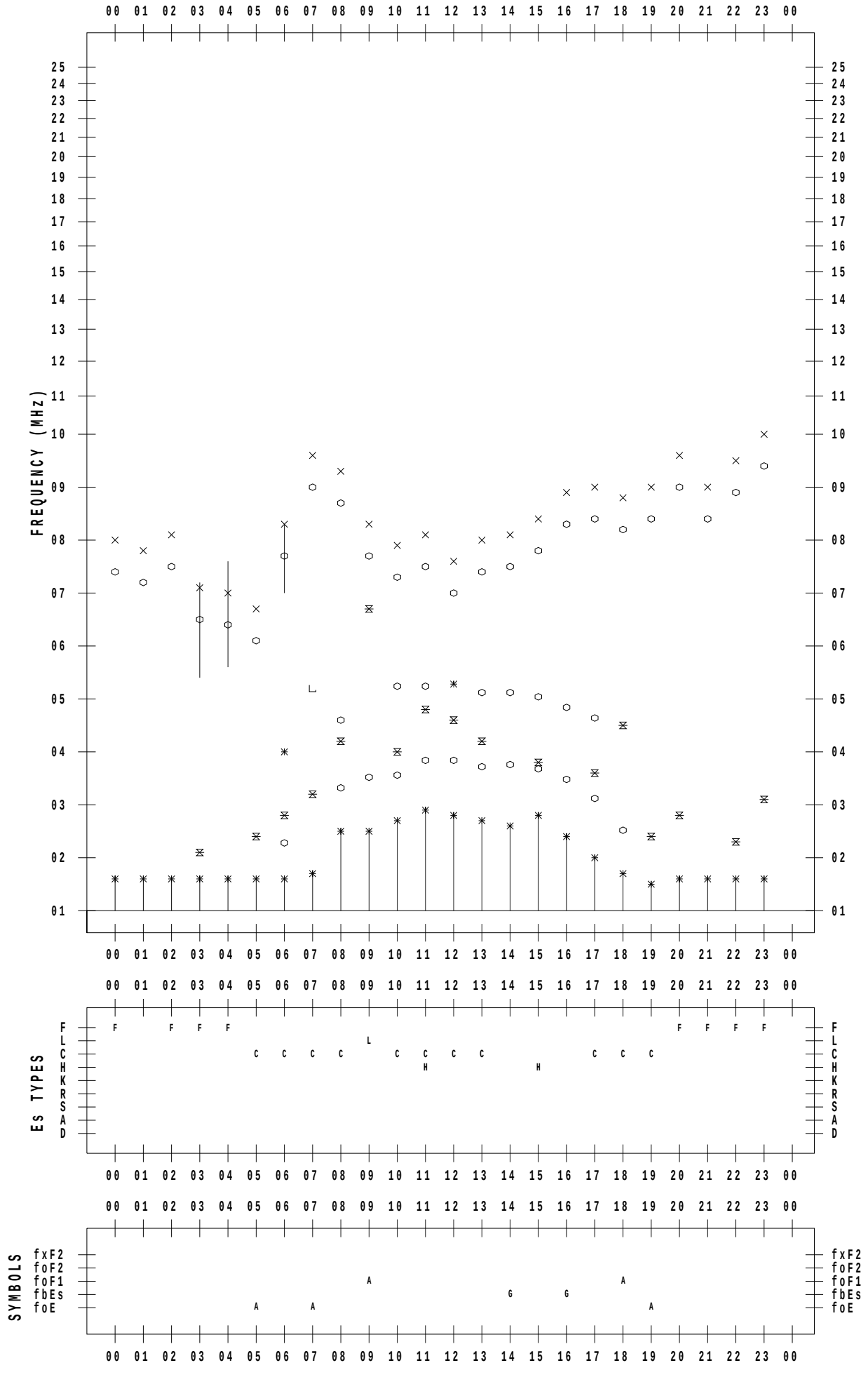
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/20

135 °E MEAN TIME



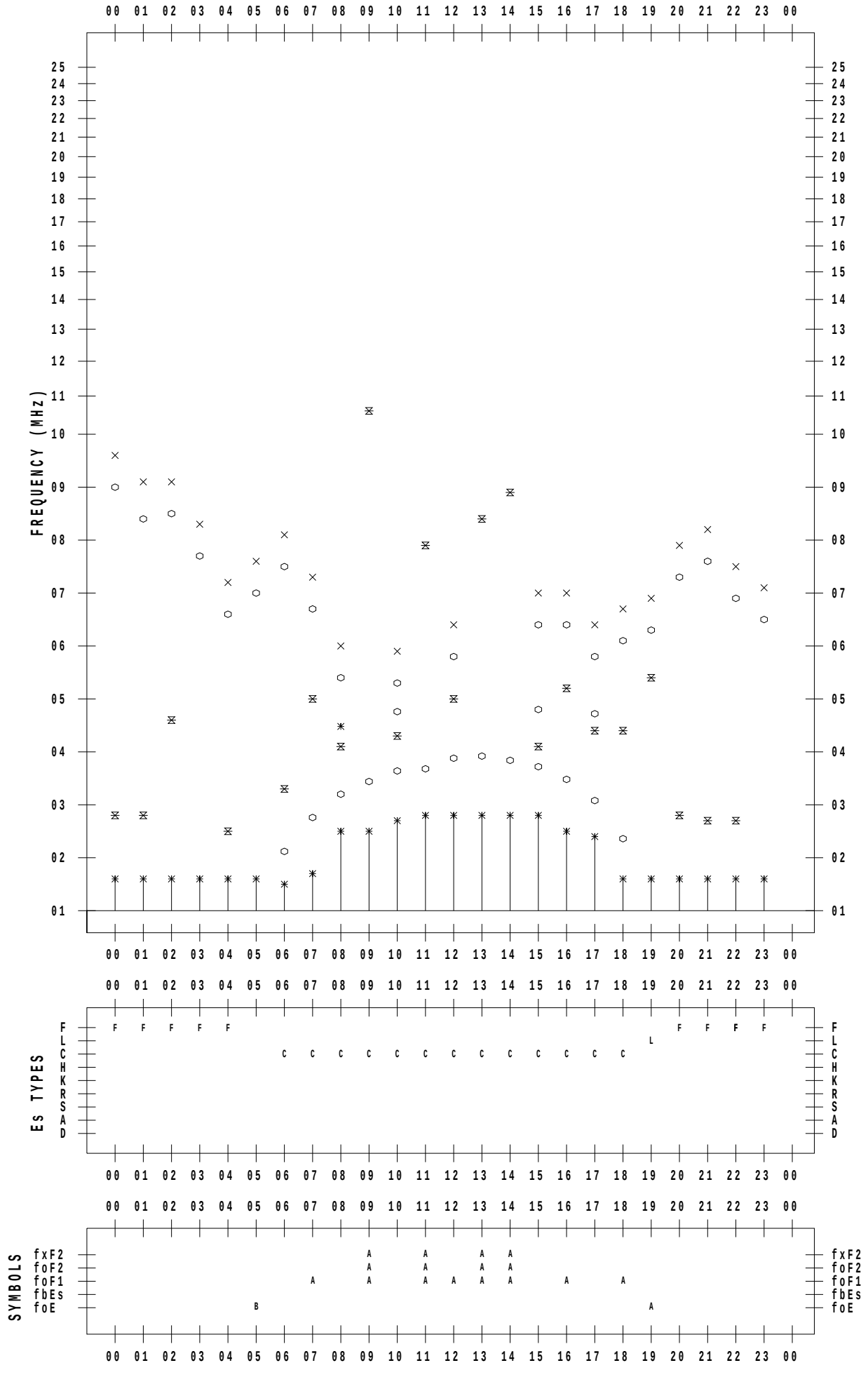
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/21

135 °E MEAN TIME



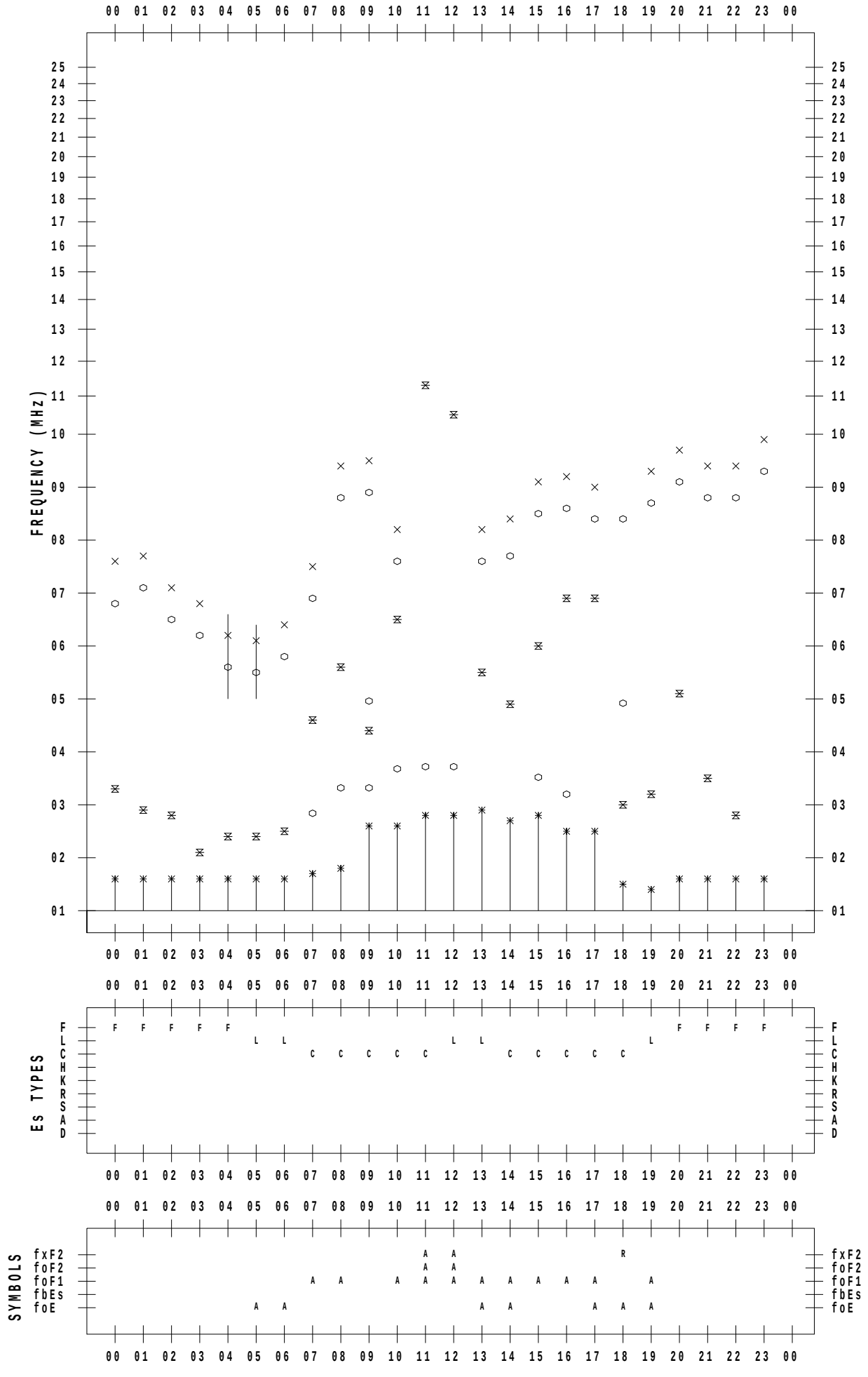
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/22

135 °E MEAN TIME



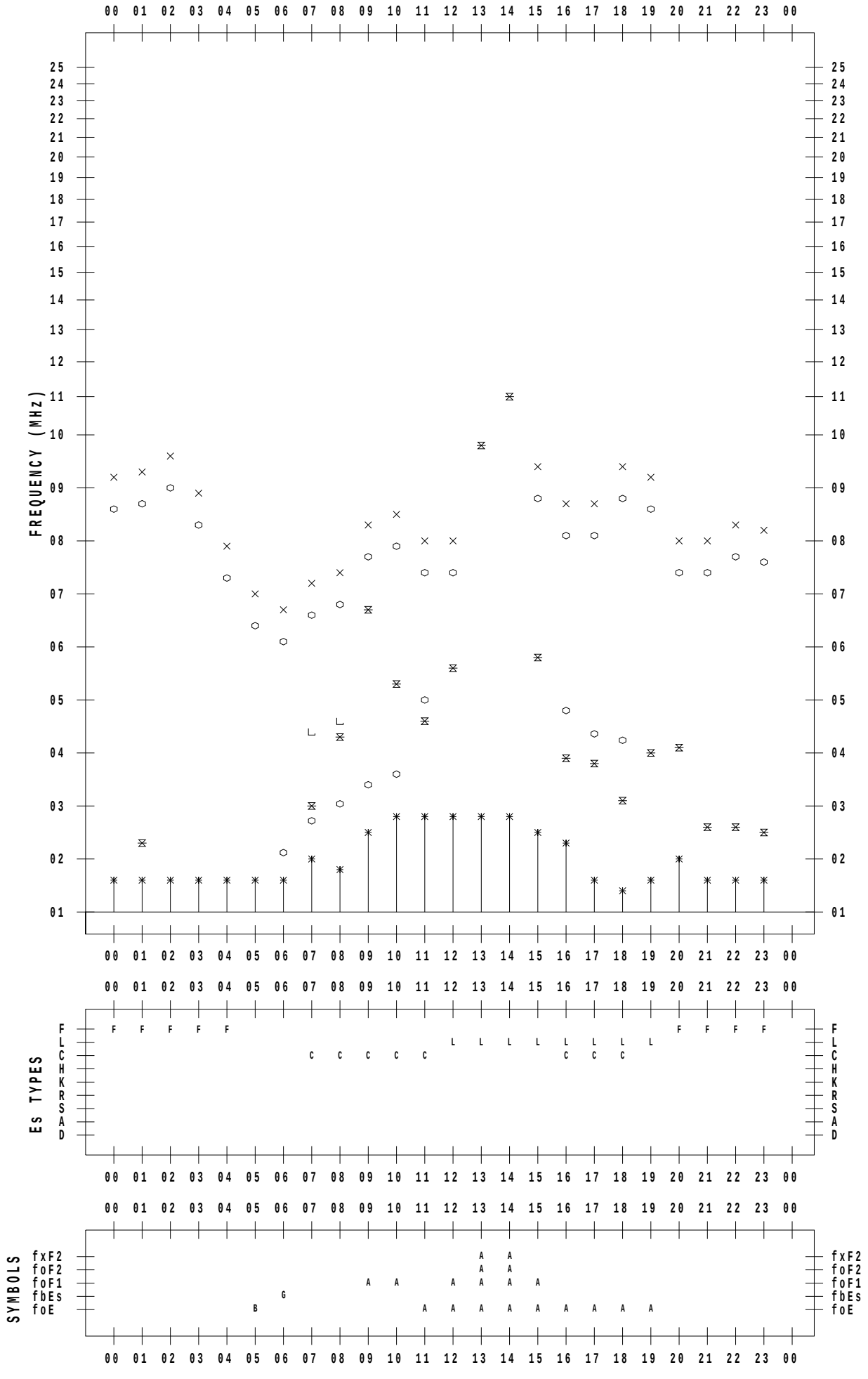
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/23

135 °E MEAN TIME



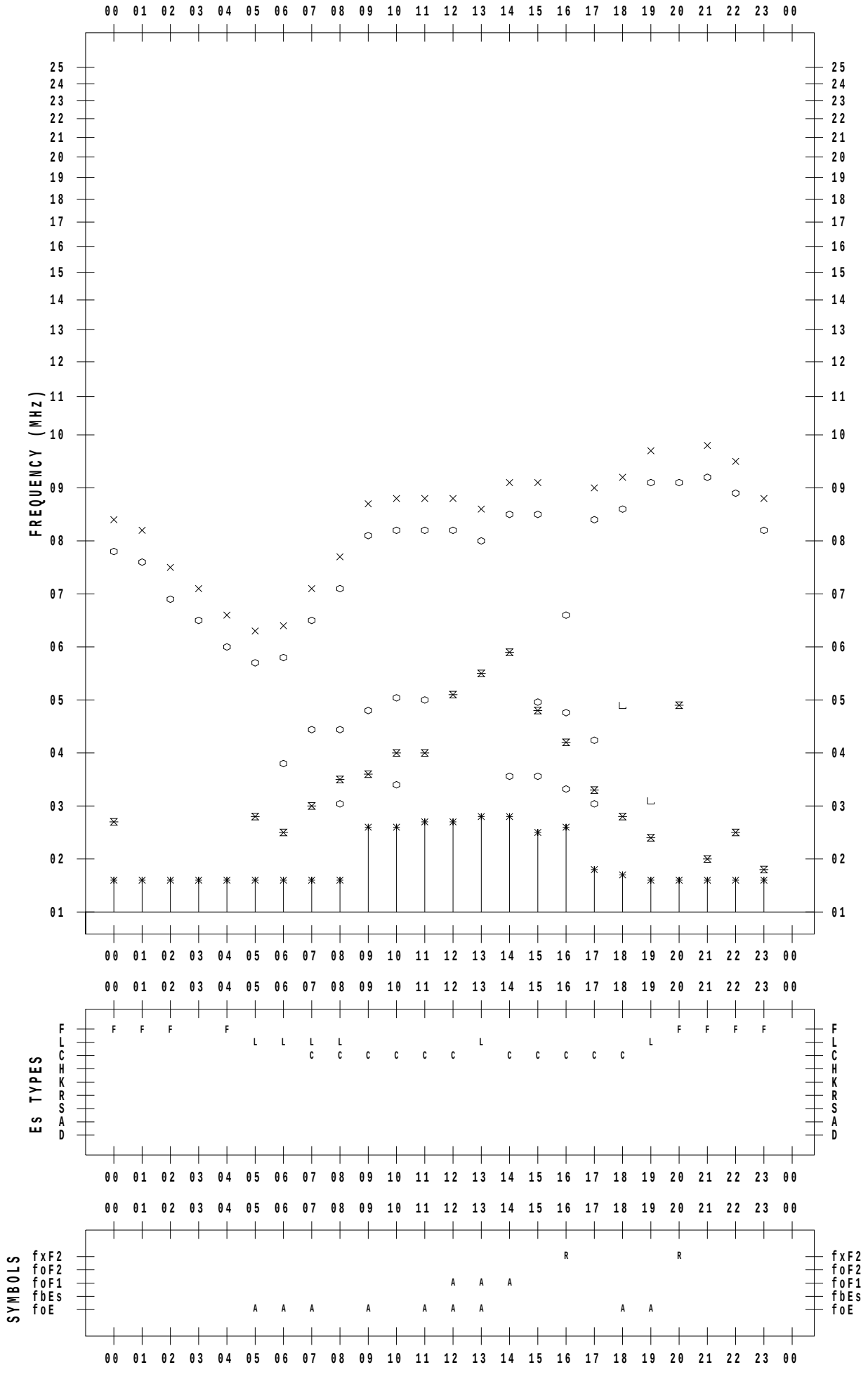
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/24

135 °E MEAN TIME



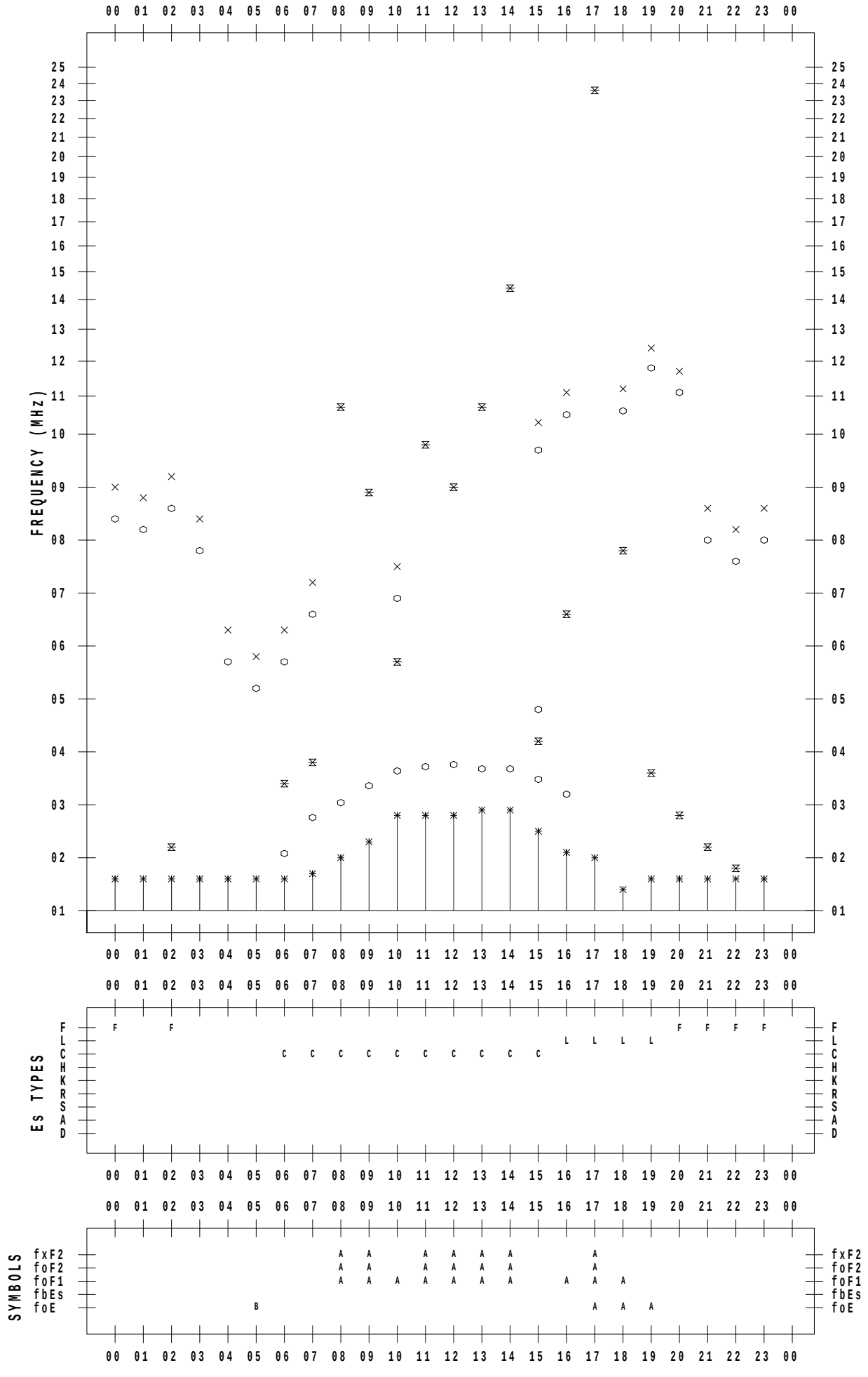
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/25

135 °E MEAN TIME



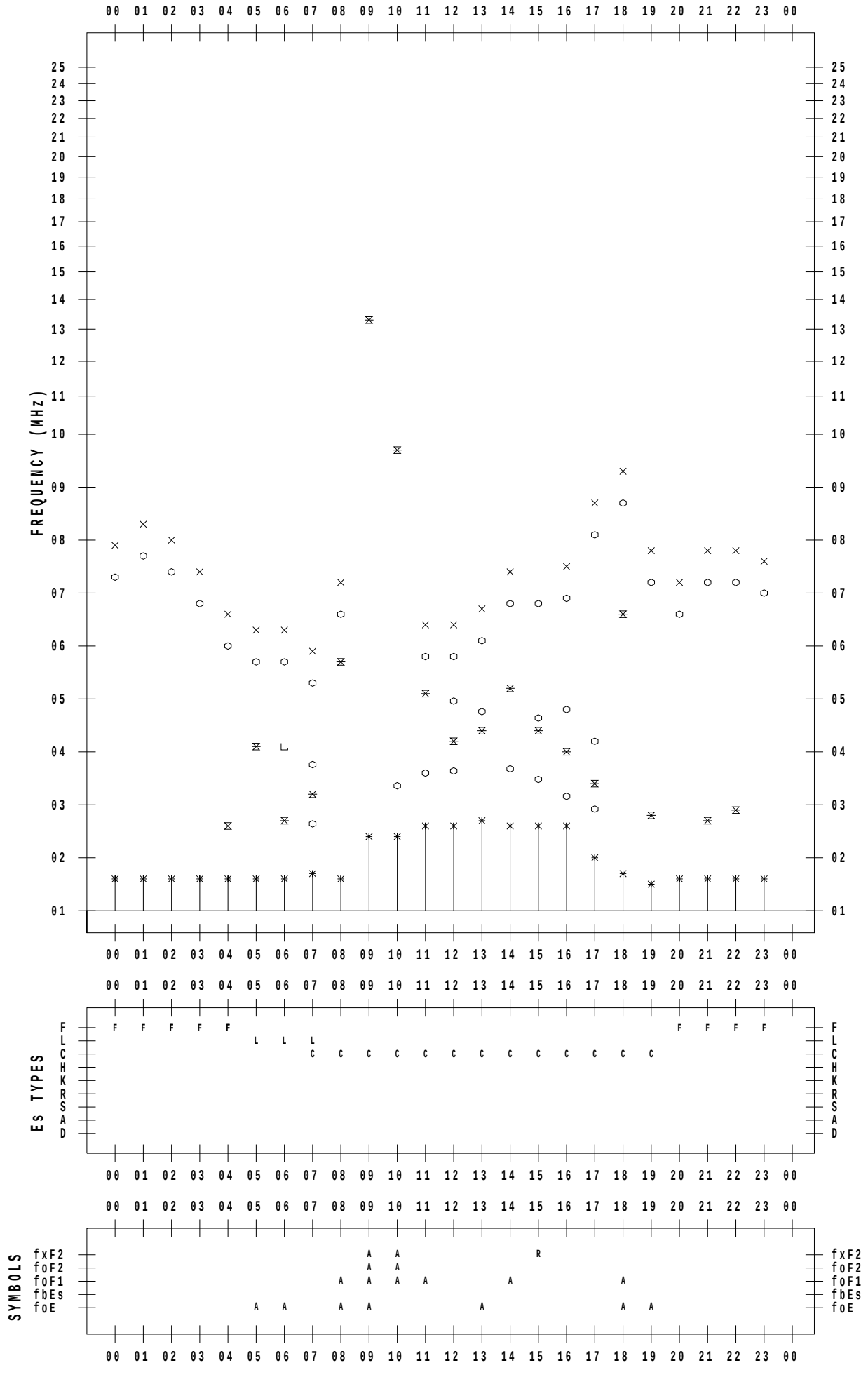
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/26

135 °E MEAN TIME



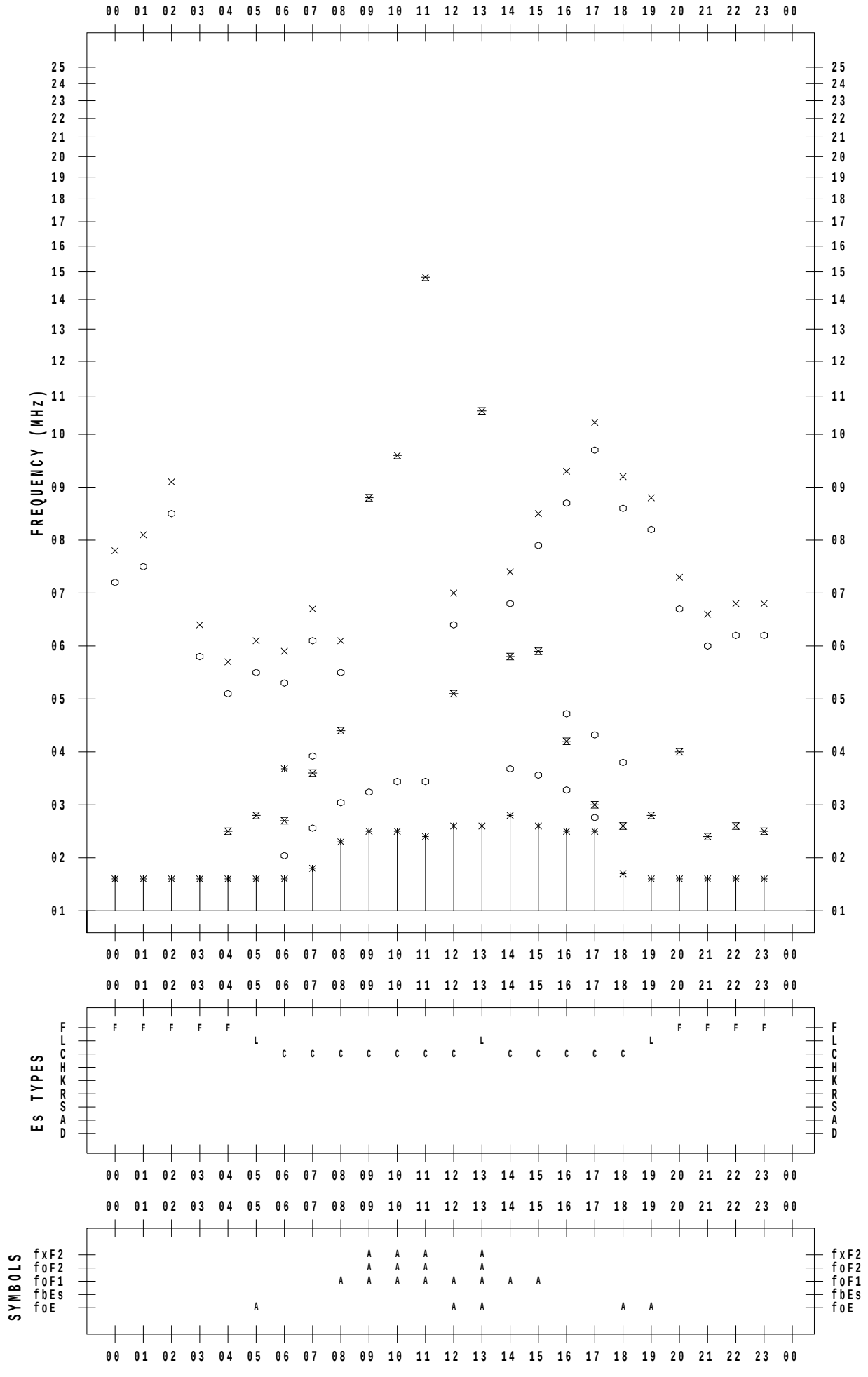
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/27

135 °E MEAN TIME



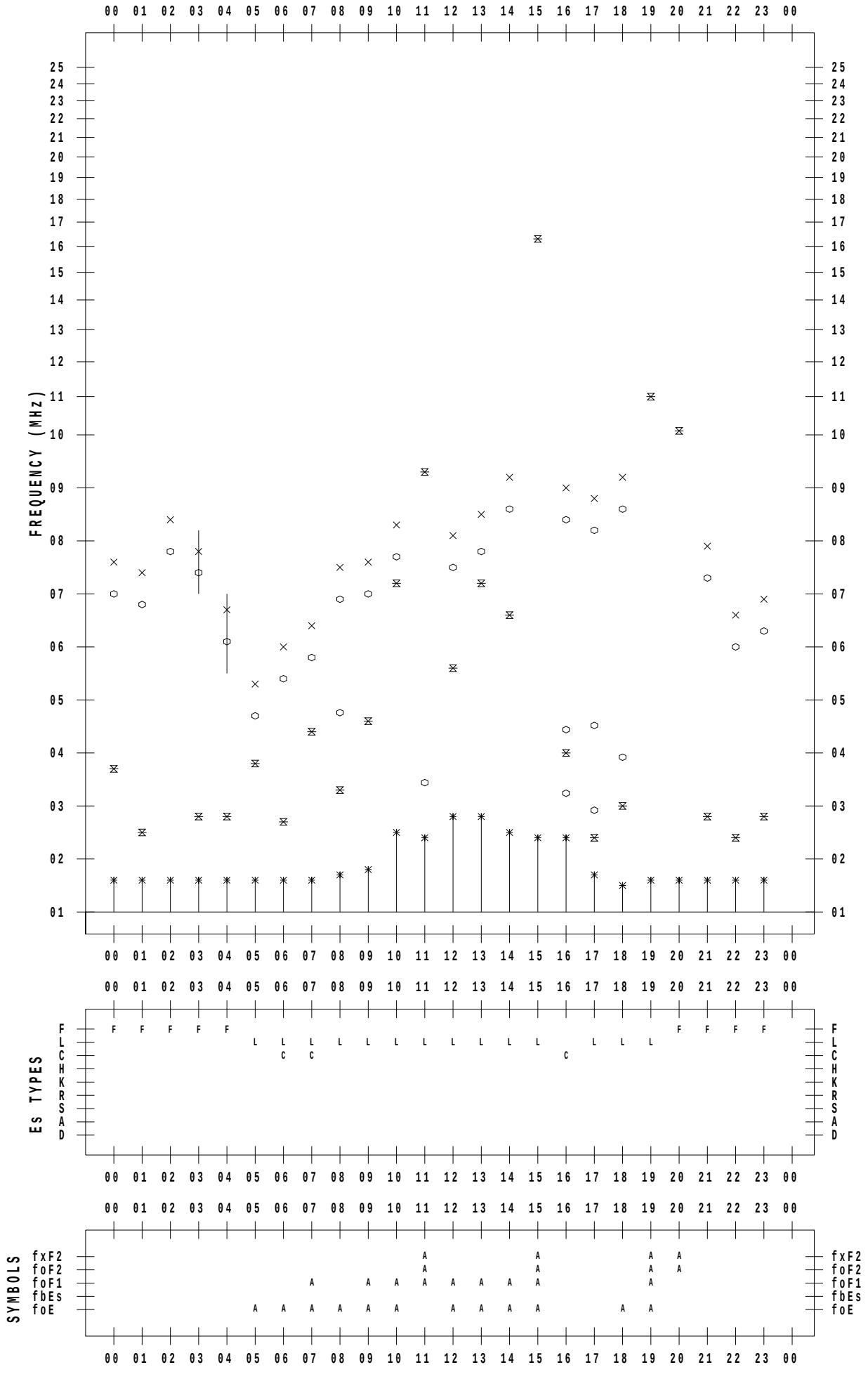
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/28

135 °E MEAN TIME



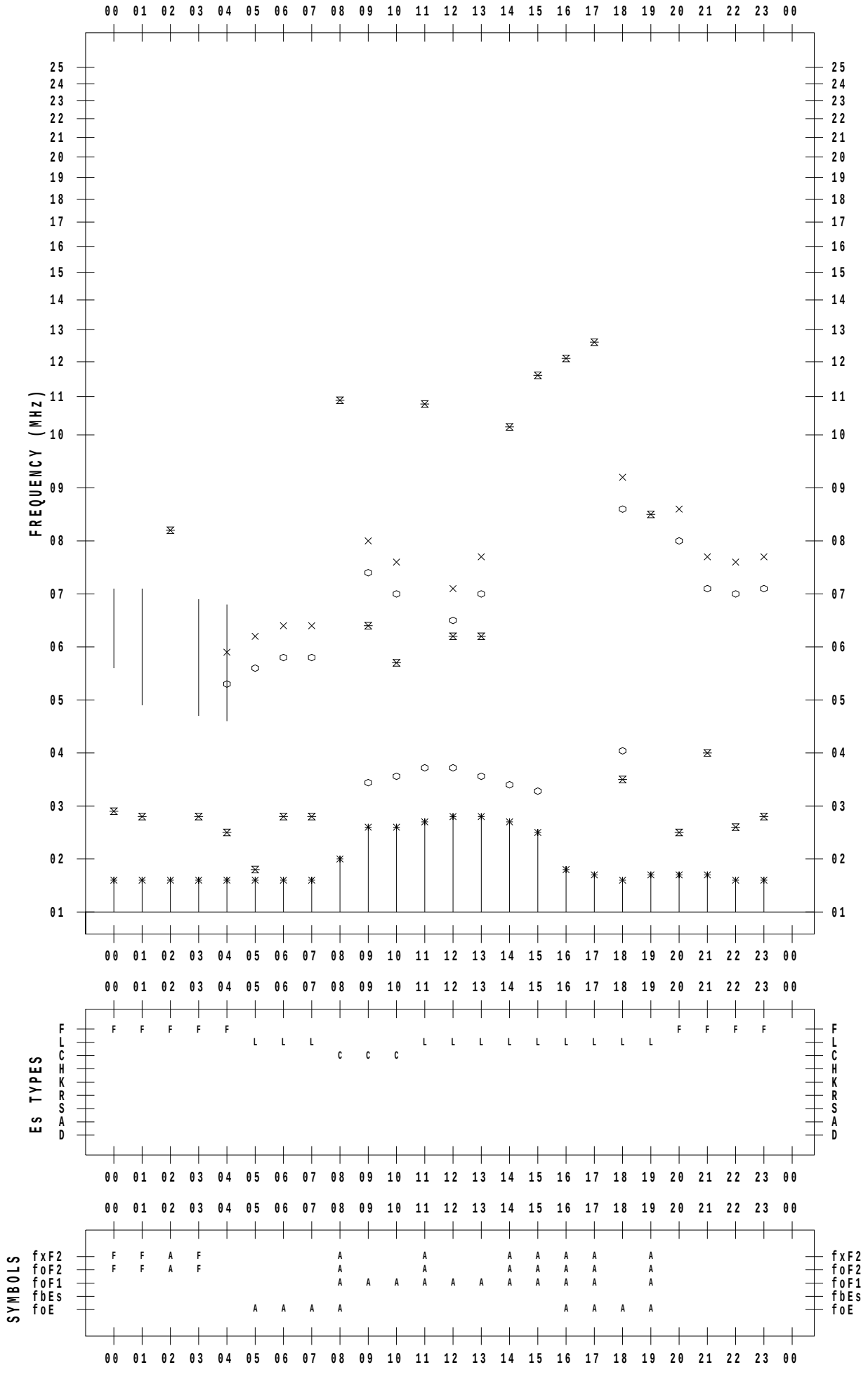
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/29

135 °E MEAN TIME



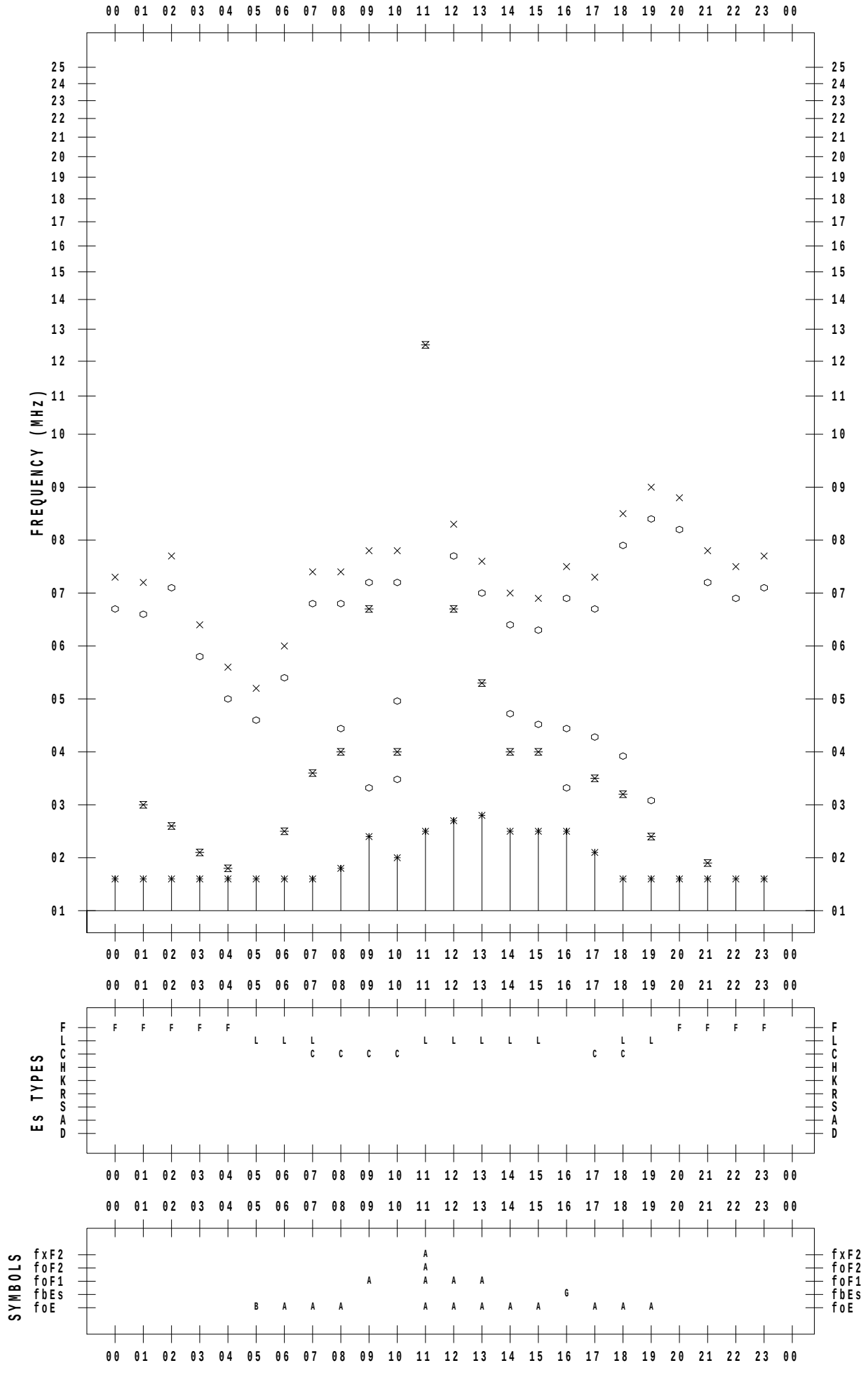
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022/ 6/30

135 °E MEAN TIME



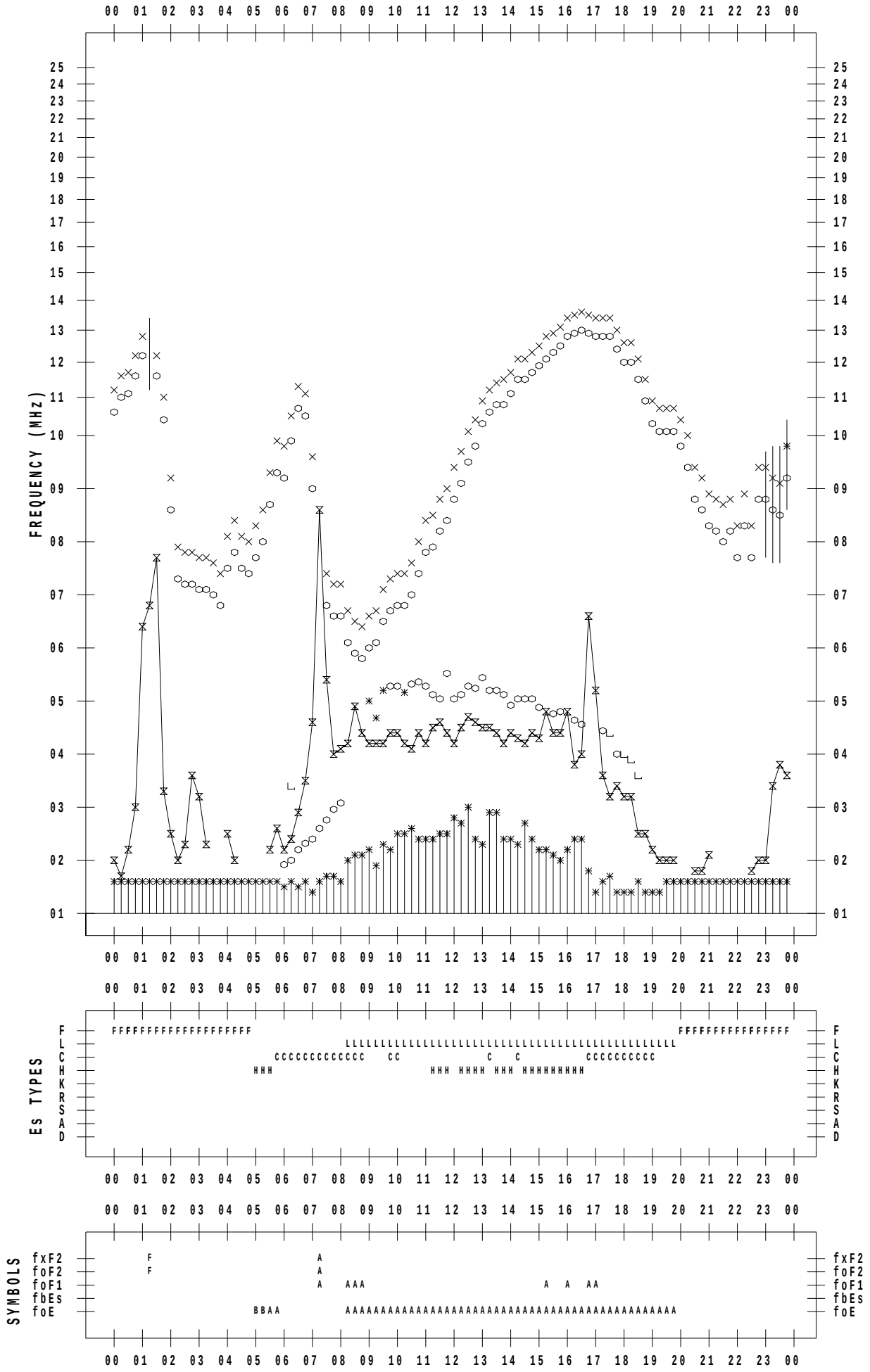
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 1

135 °E MEAN TIME



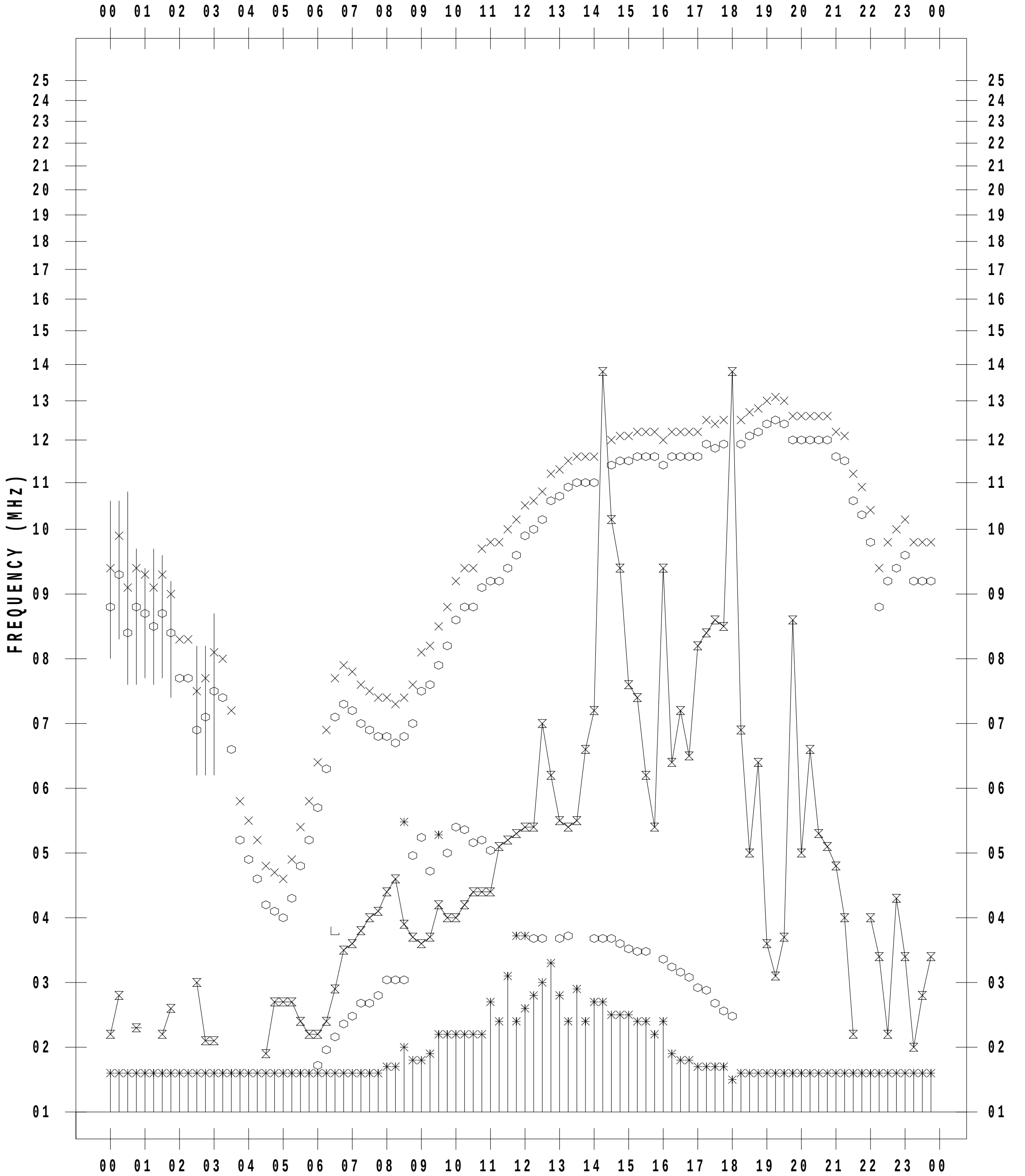
f-PLOT DATA

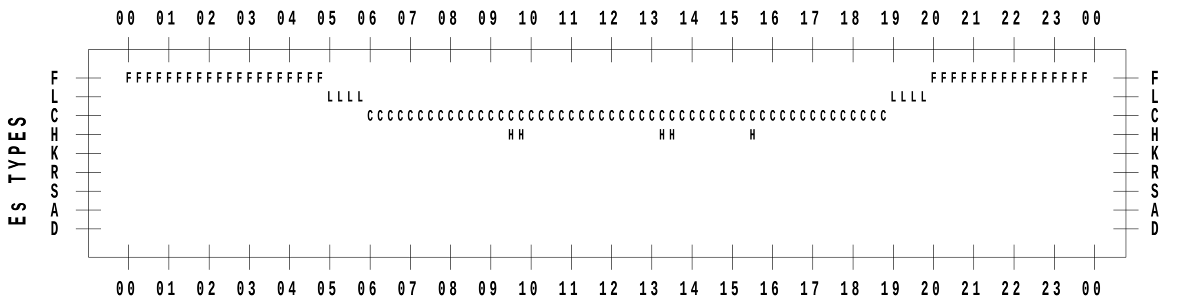
SCALER : I.YAMAZAKI

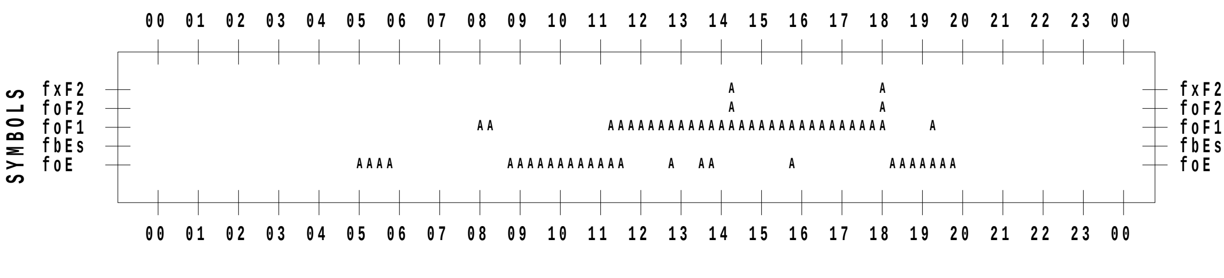
STATION : Okinawa

DATE : 2022/ 6/ 2

135 °E MEAN TIME







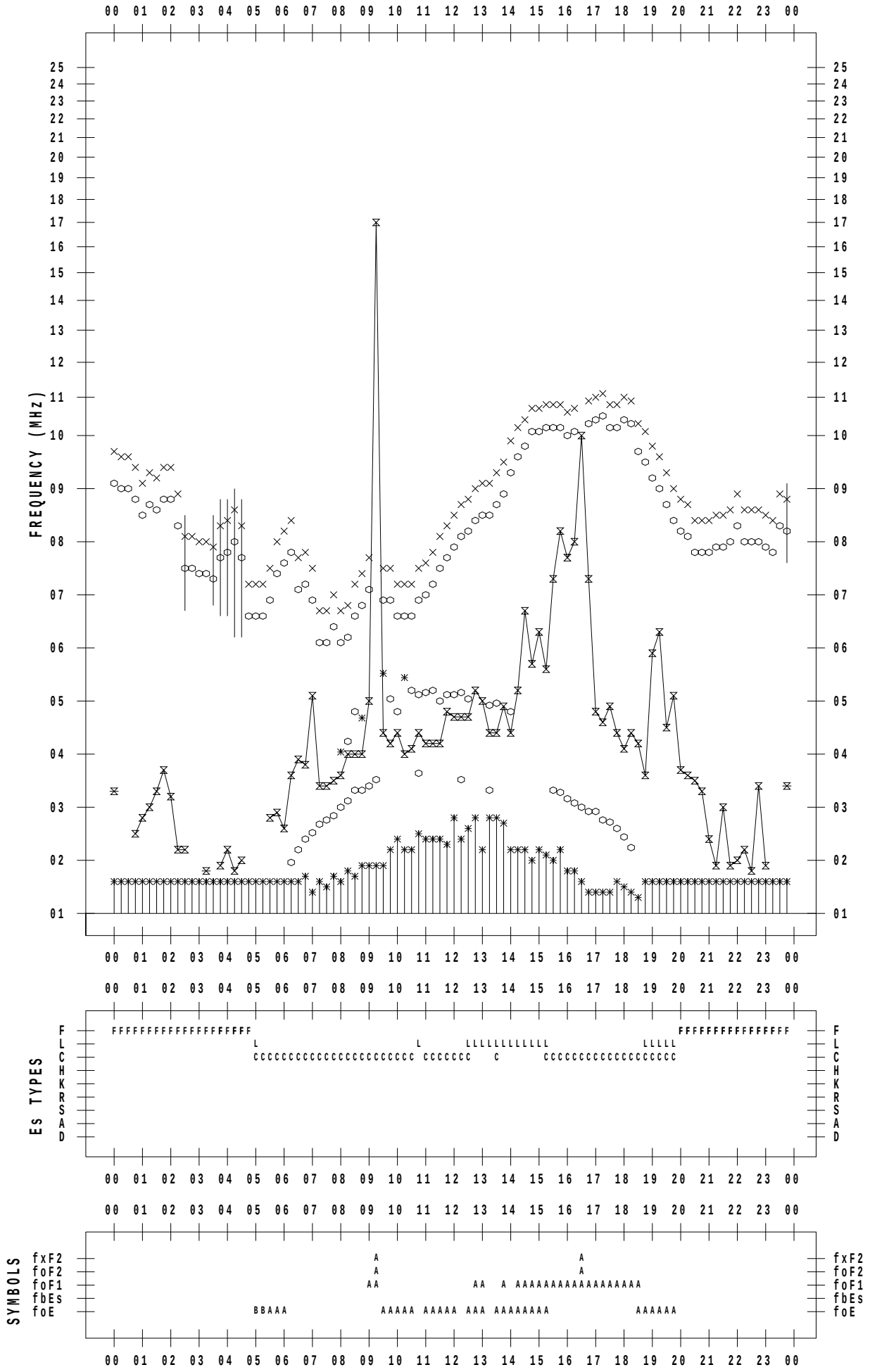
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 3

135 °E MEAN TIME



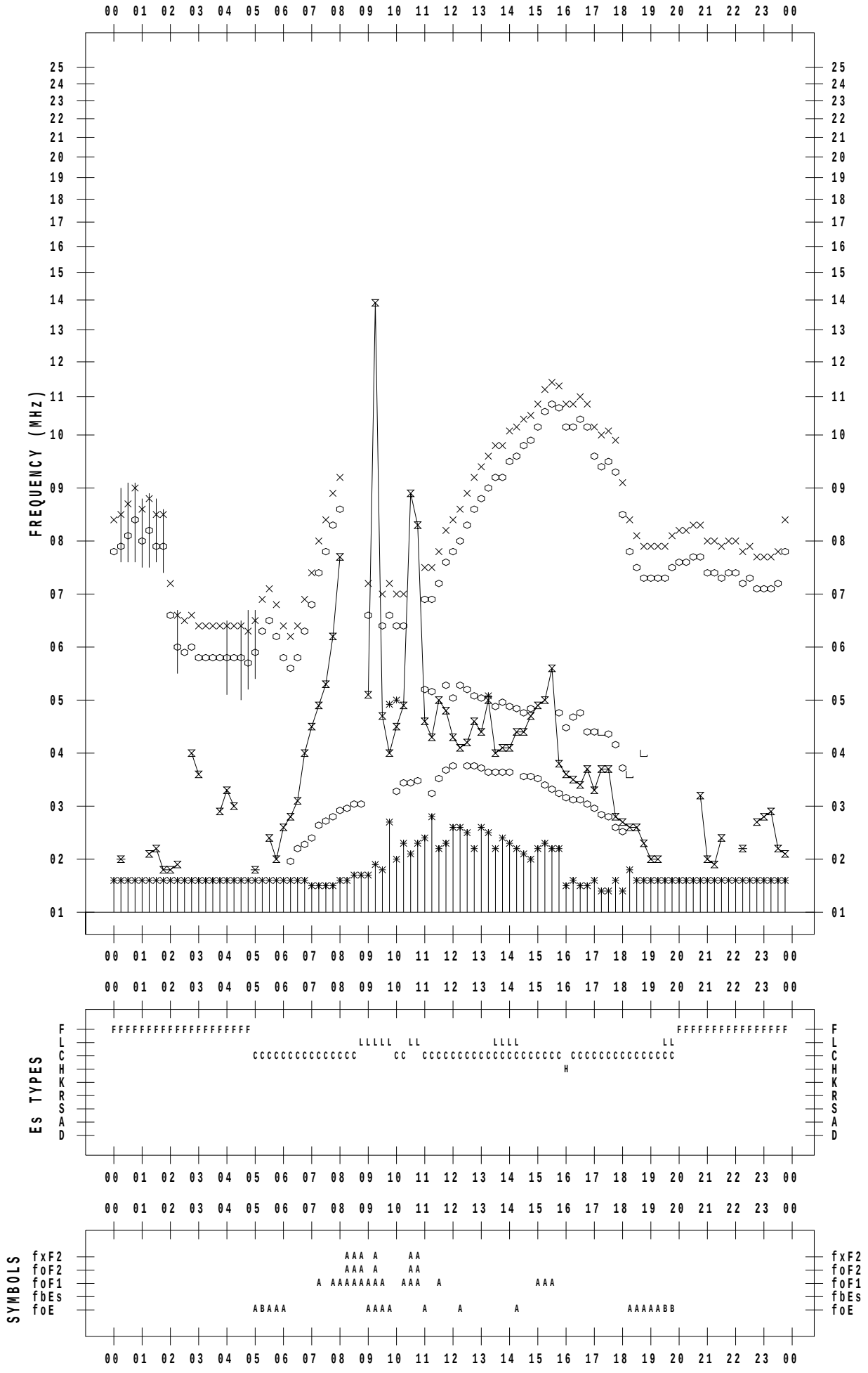
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 4

135 °E MEAN TIME



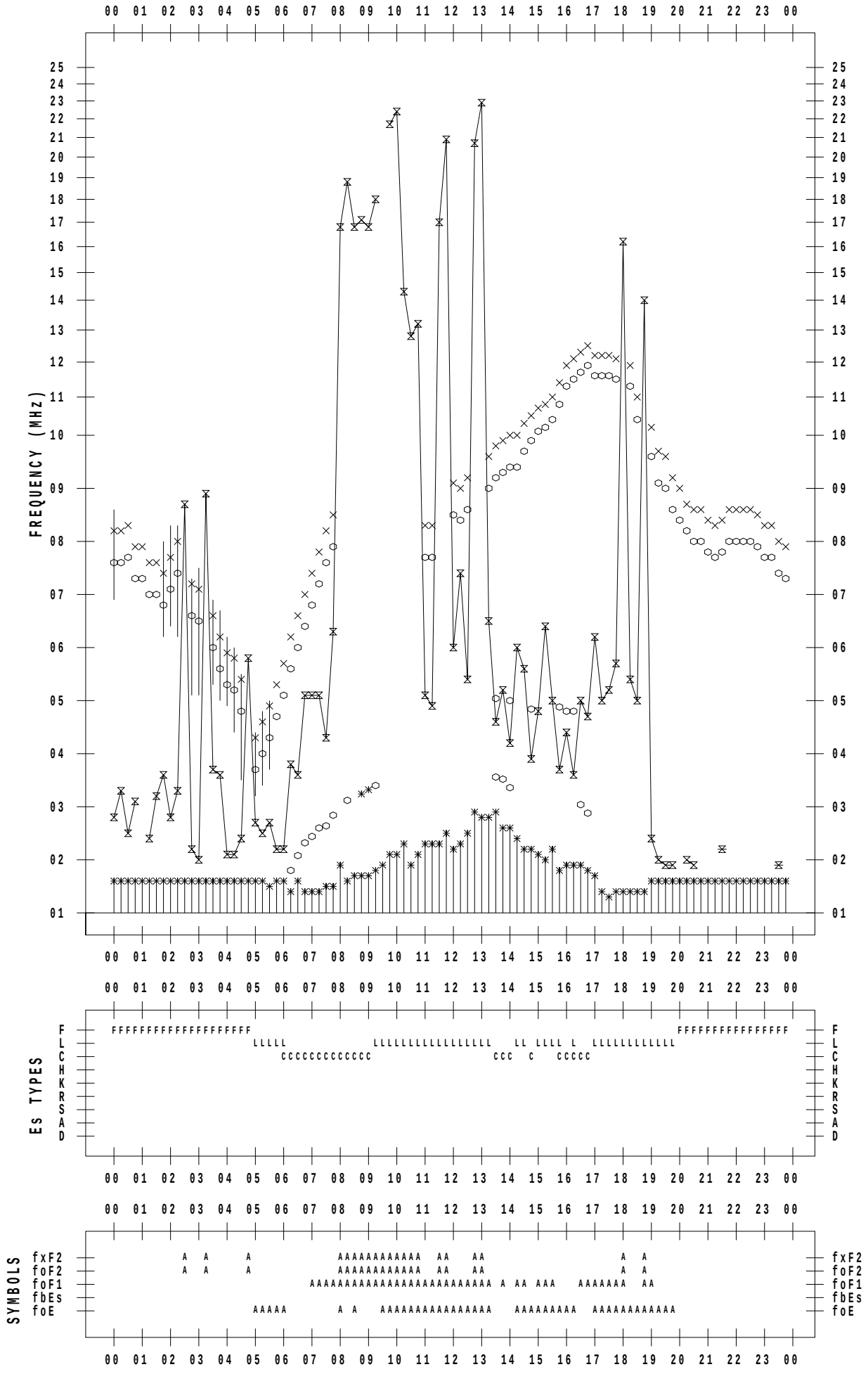
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 5

135 °E MEAN TIME



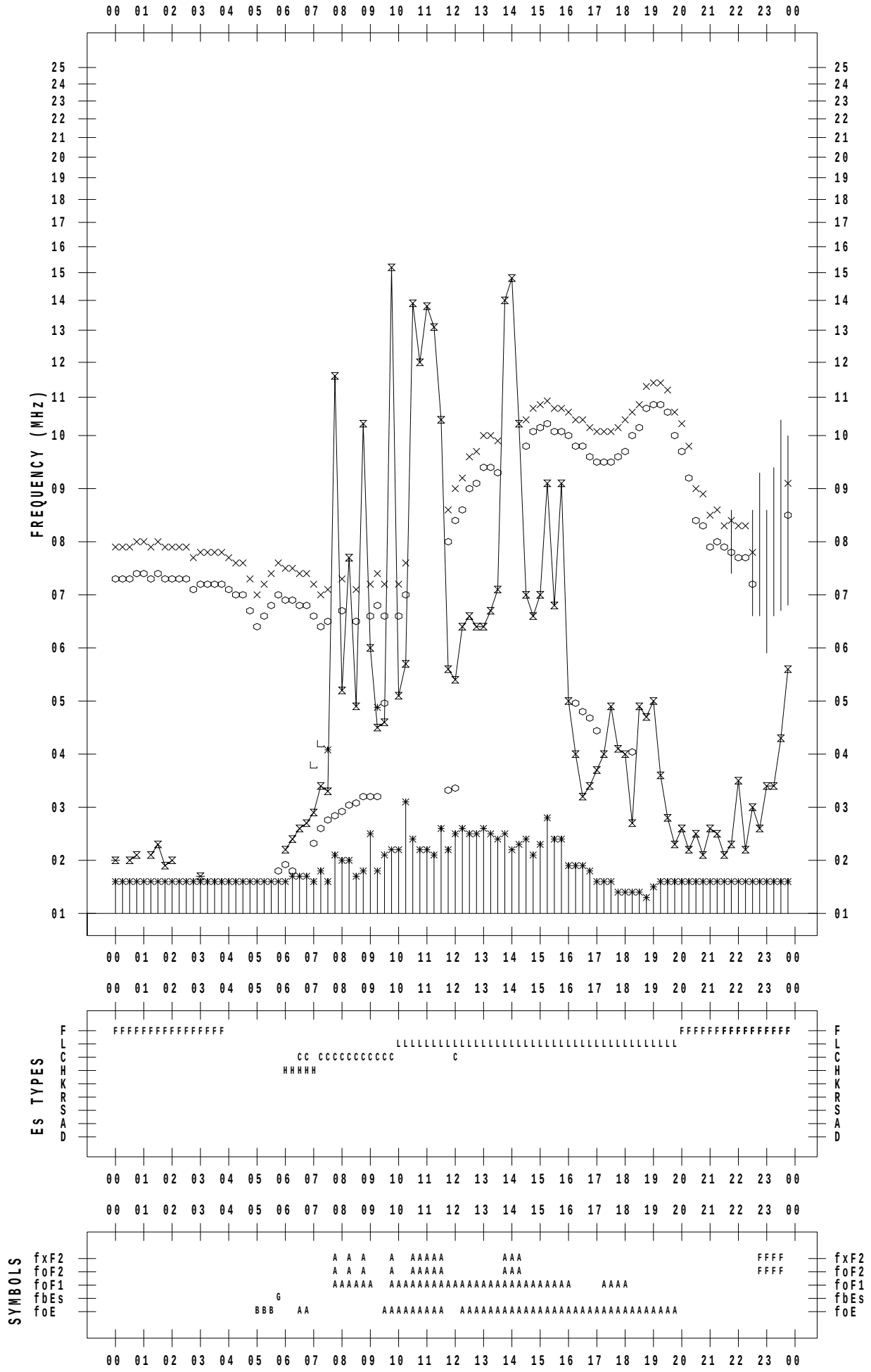
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 6

135 °E MEAN TIME



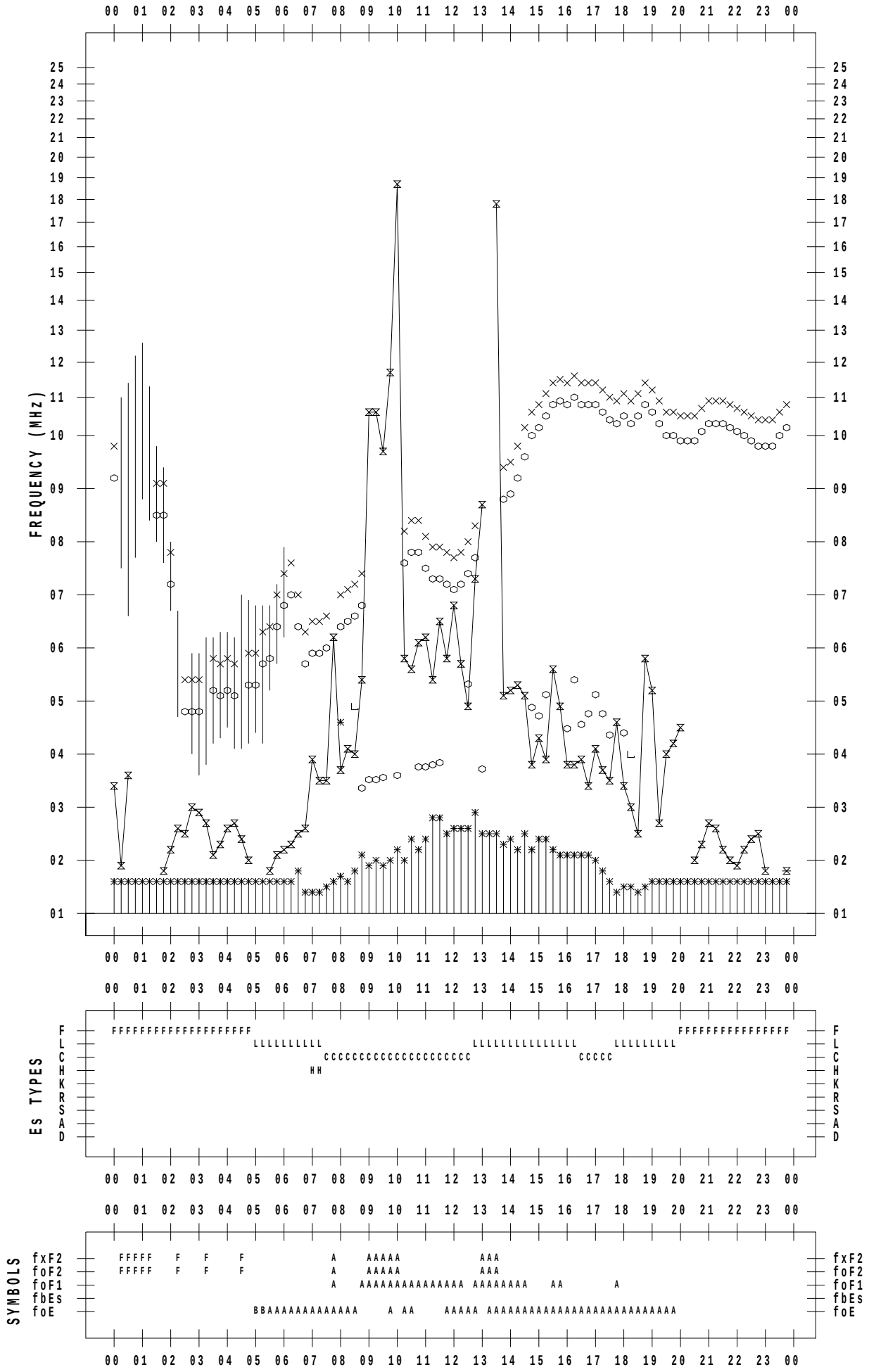
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 7

135 °E MEAN TIME



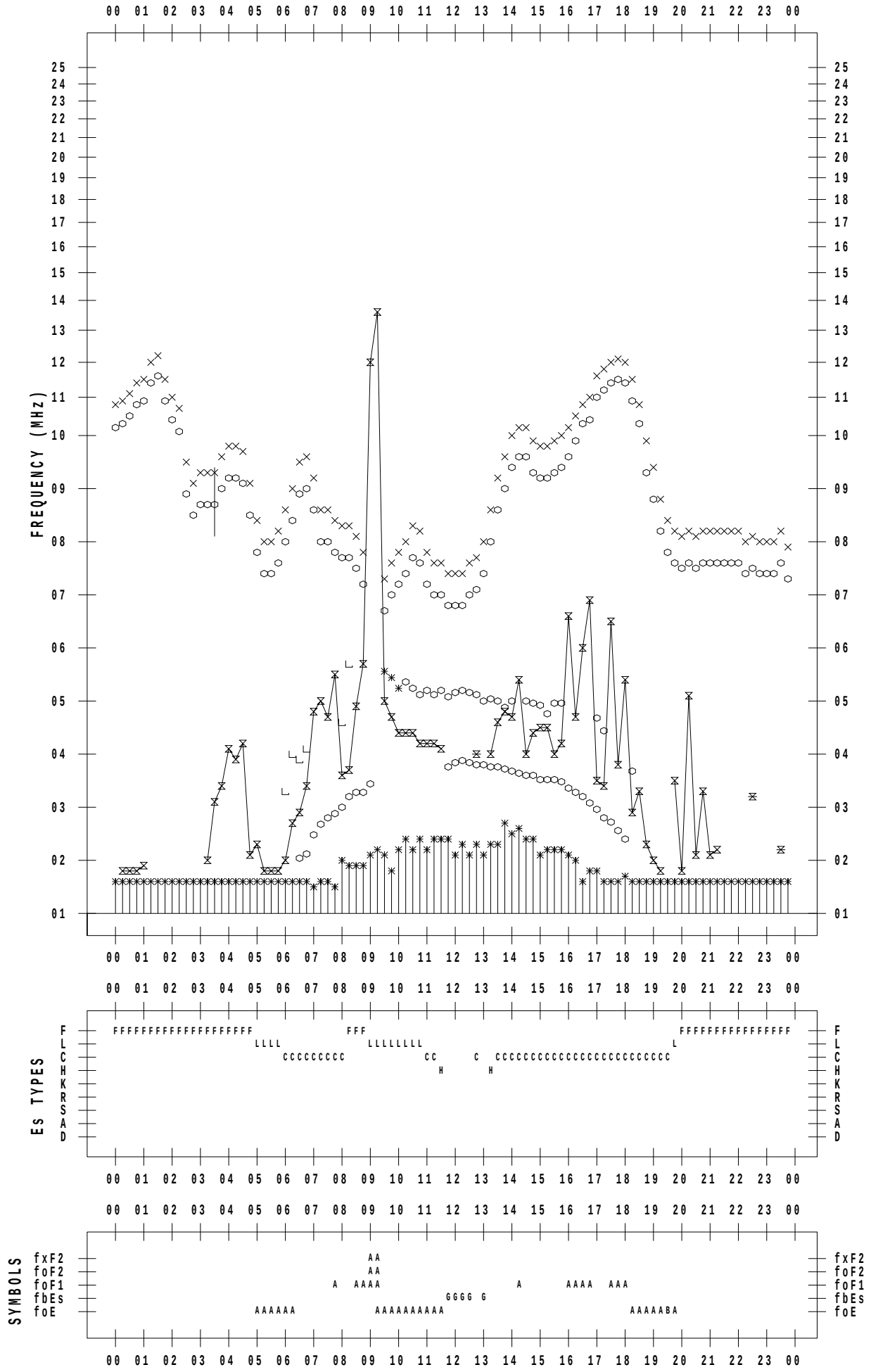
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 8

135 °E MEAN TIME



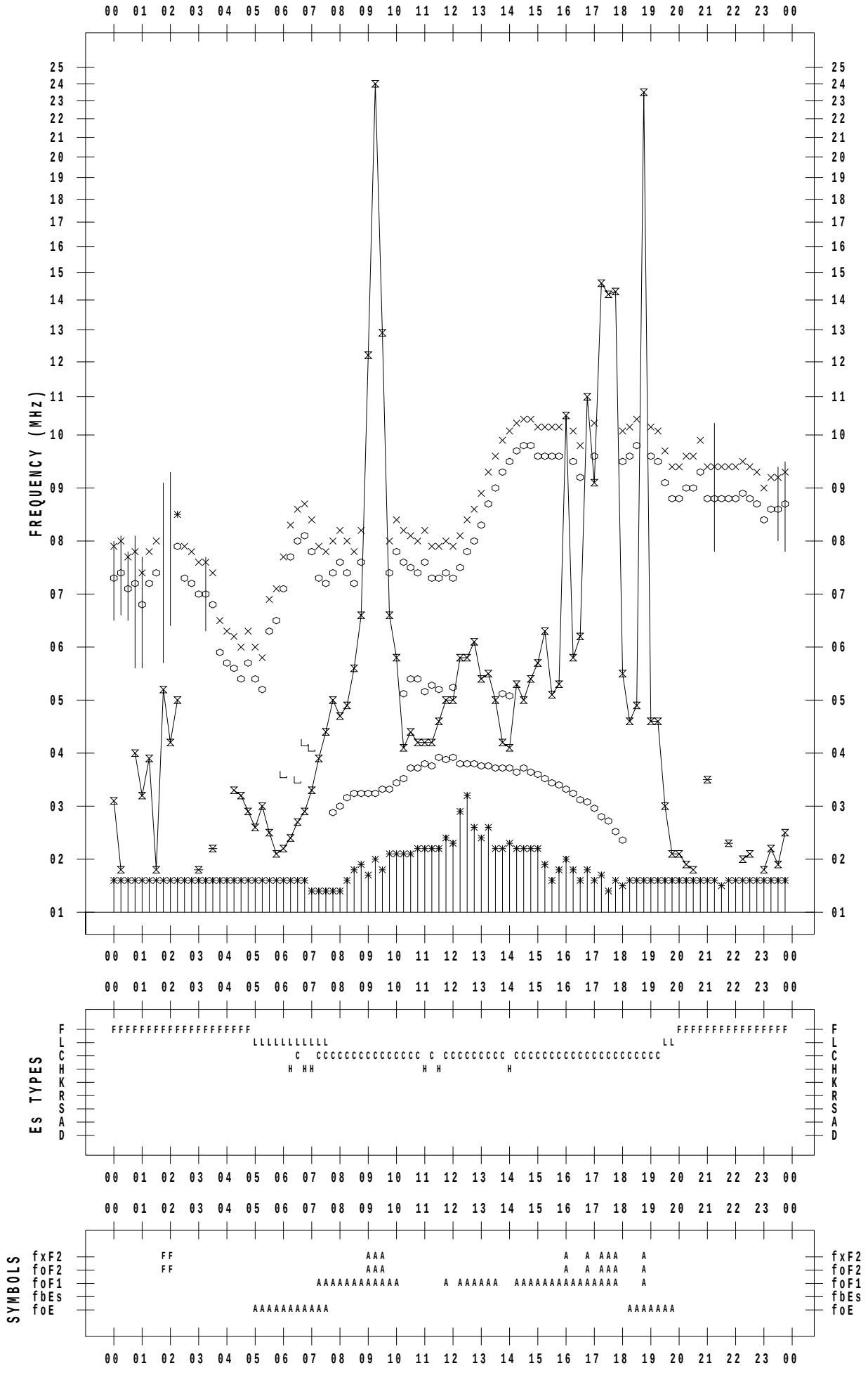
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/ 9

135 °E MEAN TIME



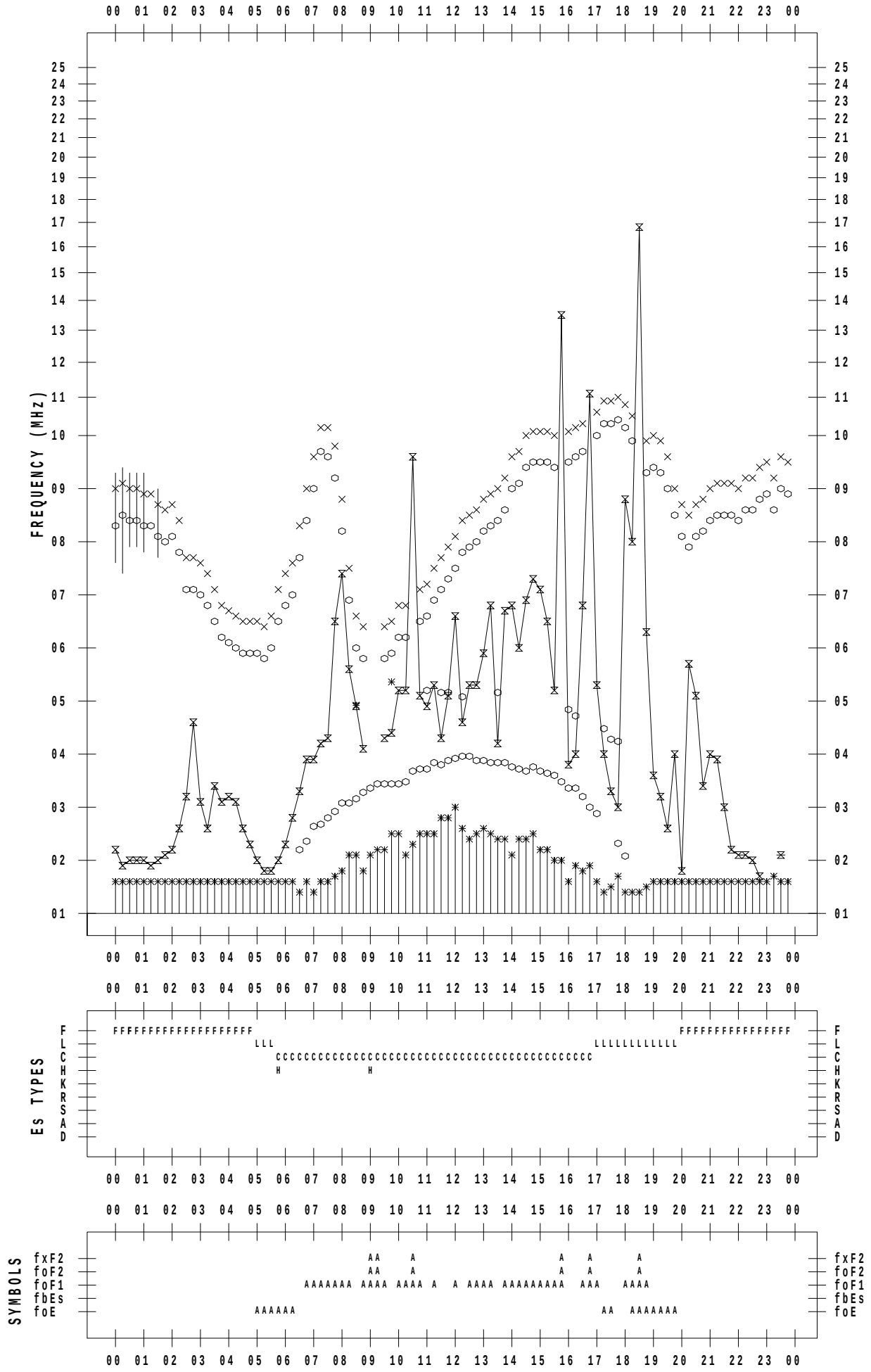
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/10

135 °E MEAN TIME



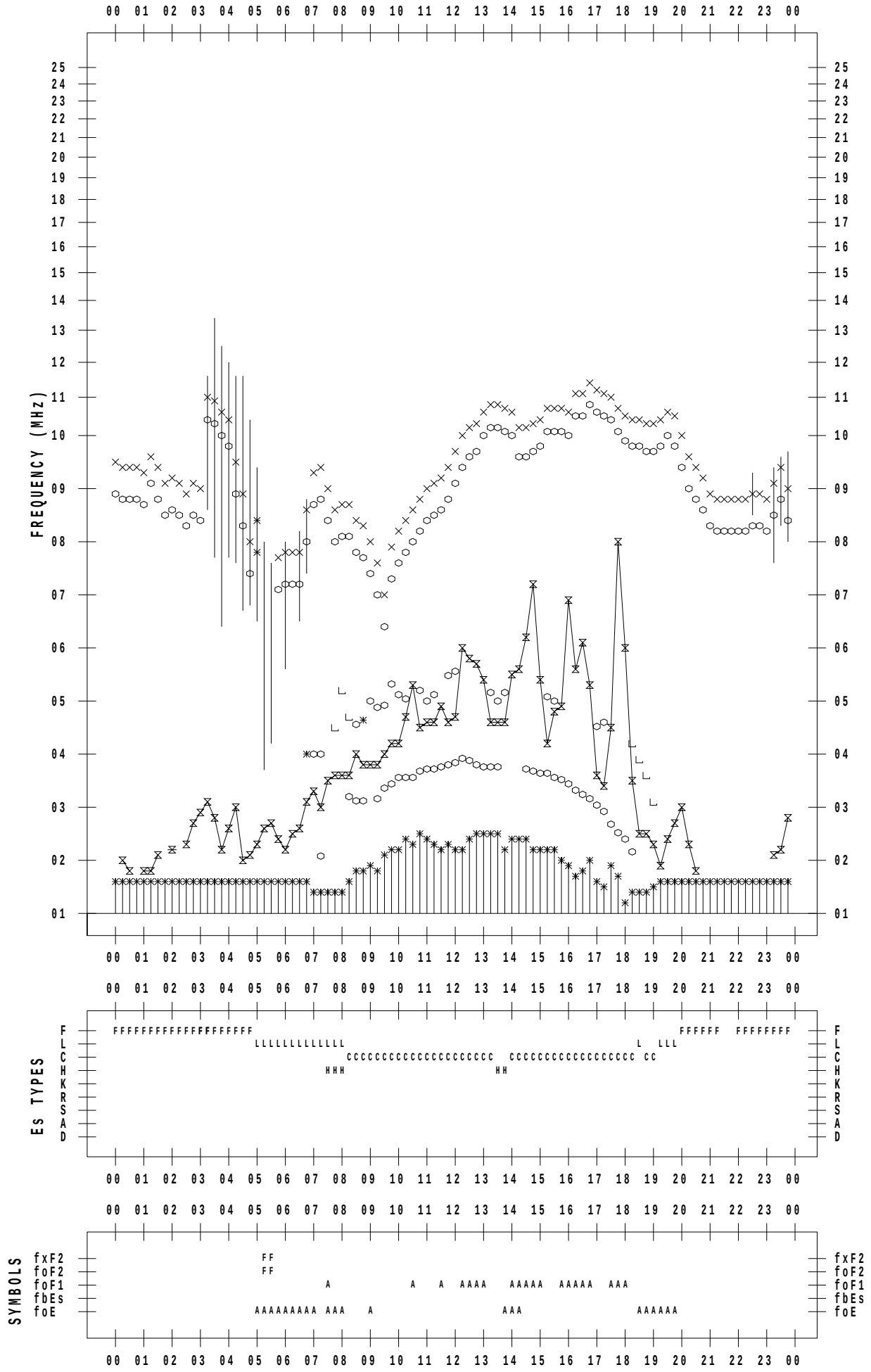
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/11

135 °E MEAN TIME



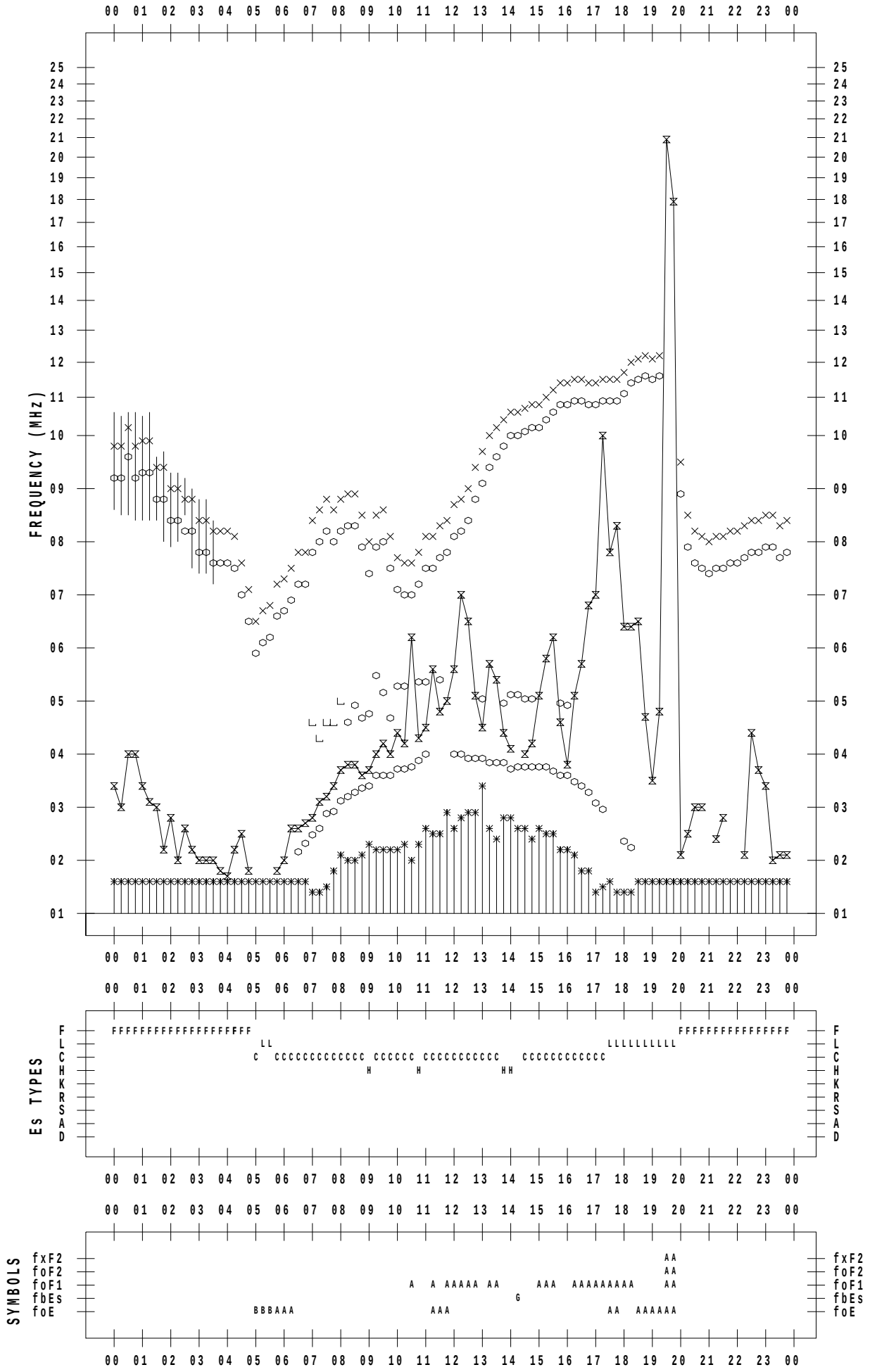
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/12

135 °E MEAN TIME



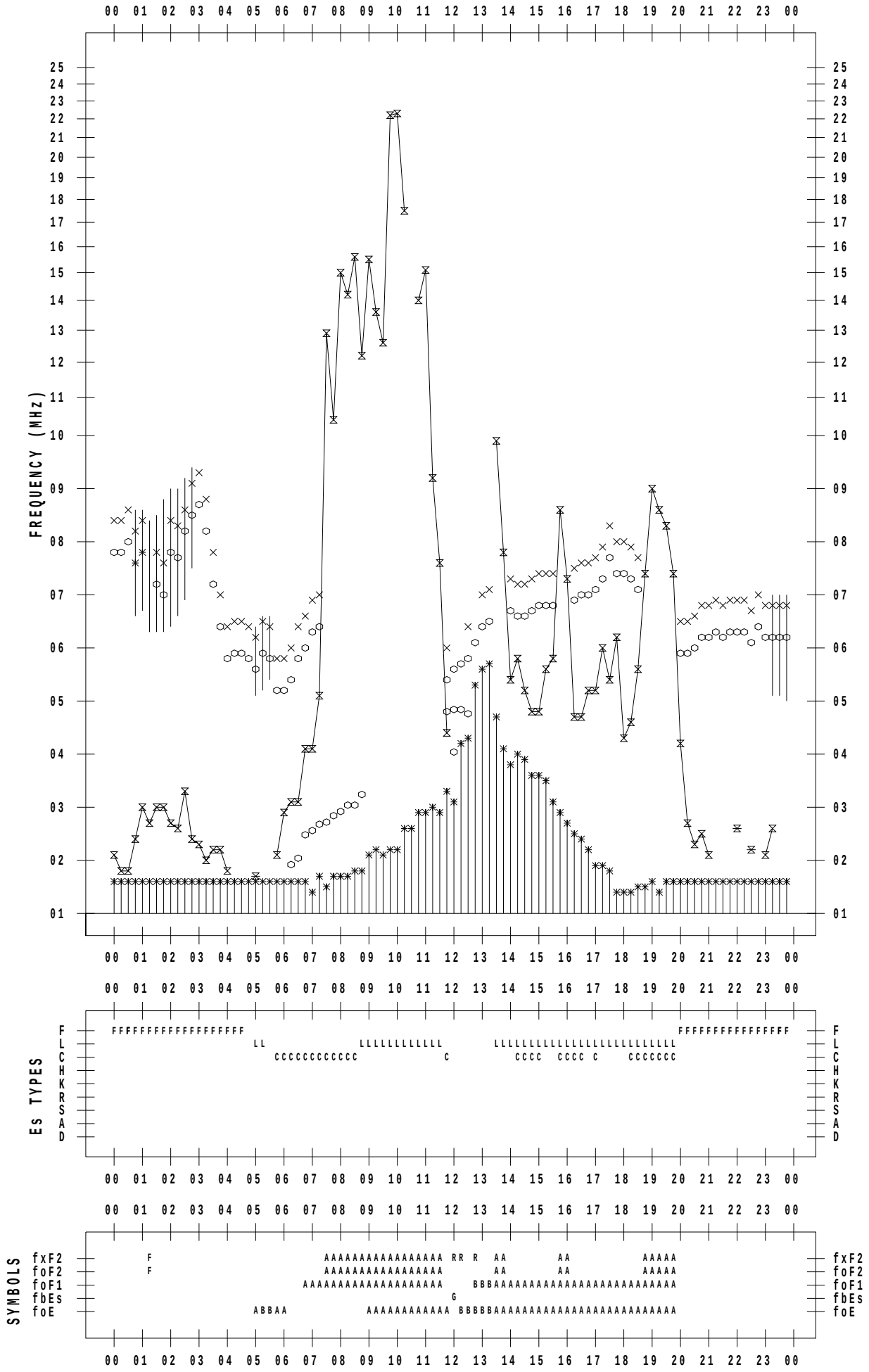
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/13

135 °E MEAN TIME



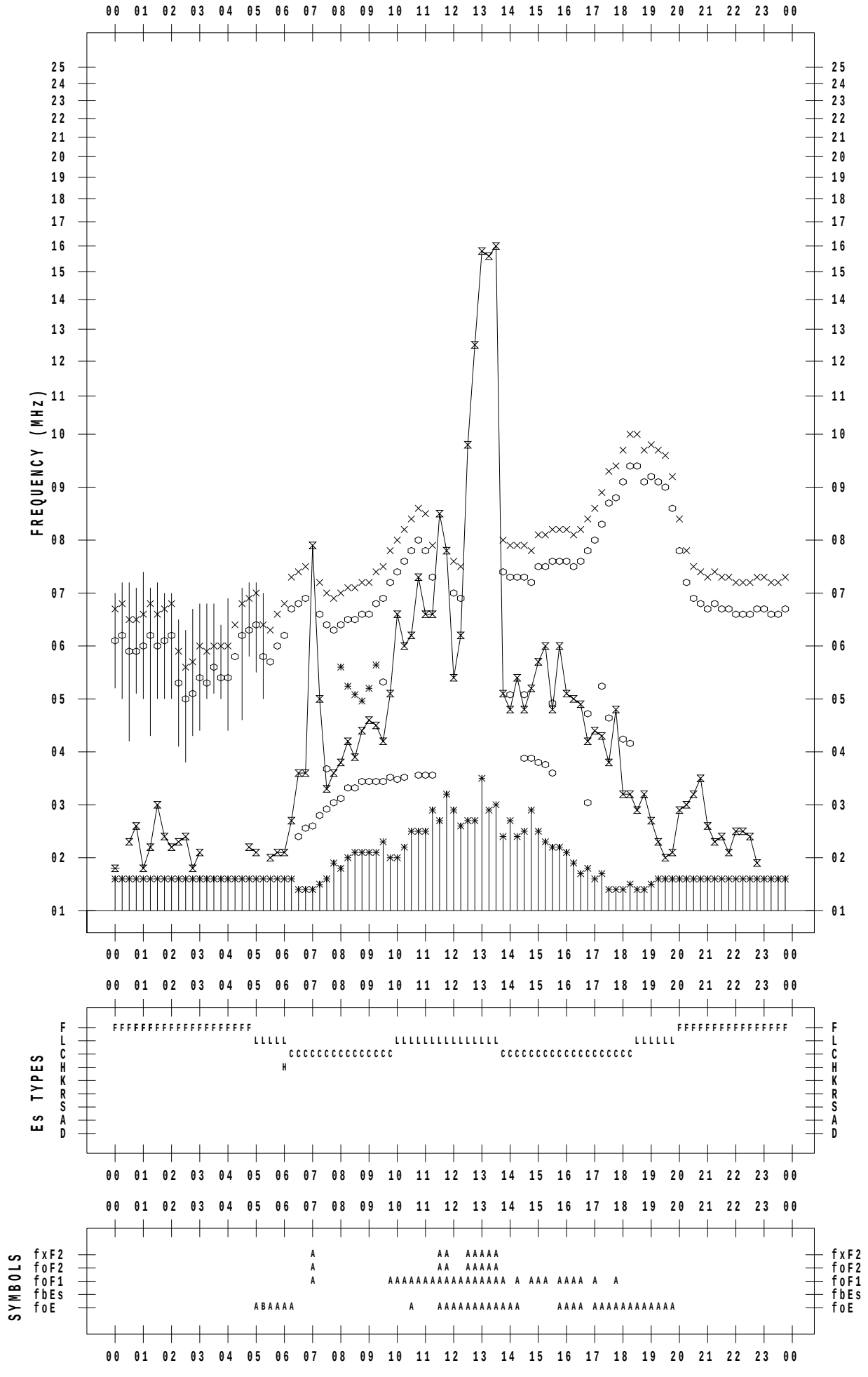
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/14

135 °E MEAN TIME



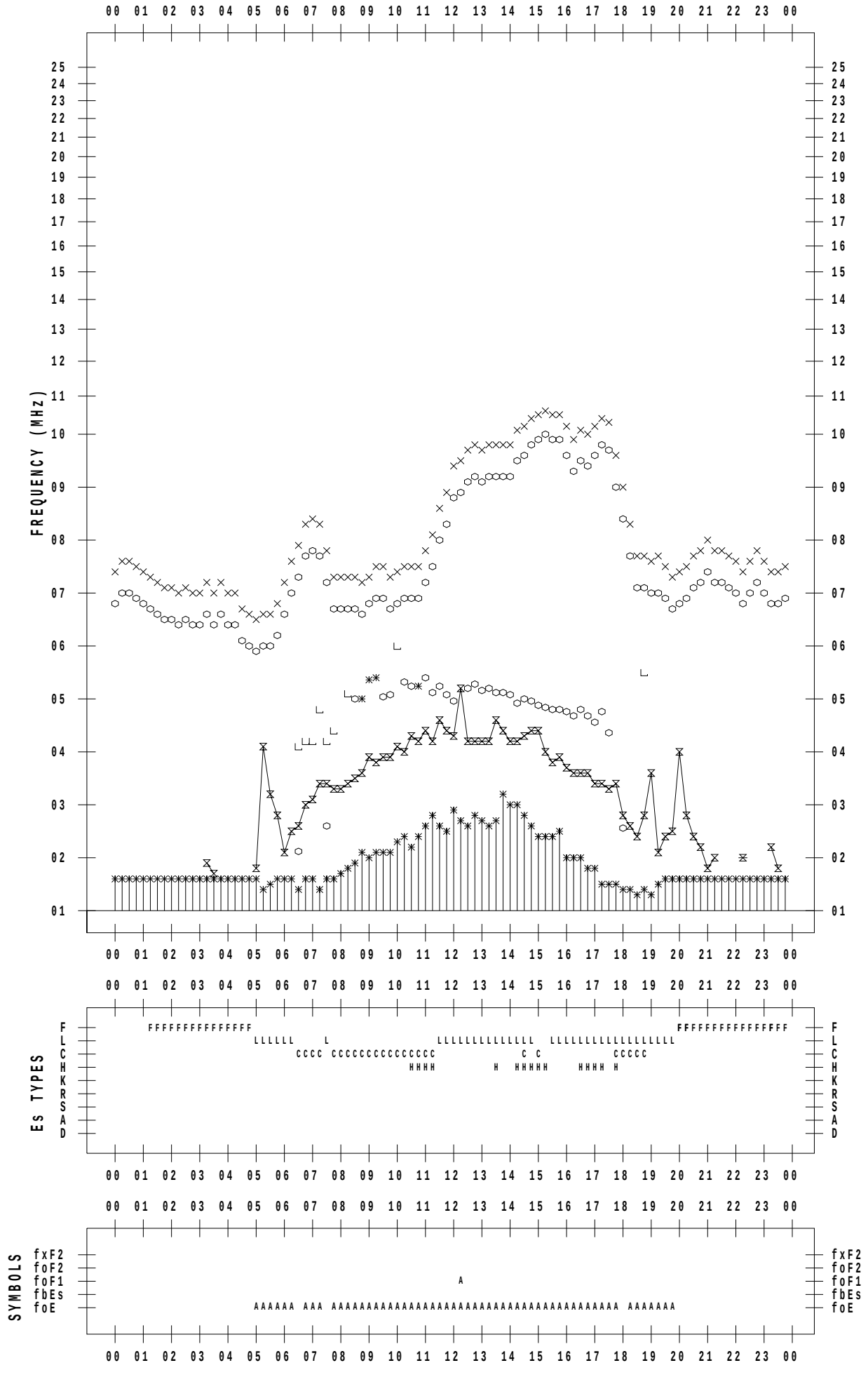
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/15

135 °E MEAN TIME



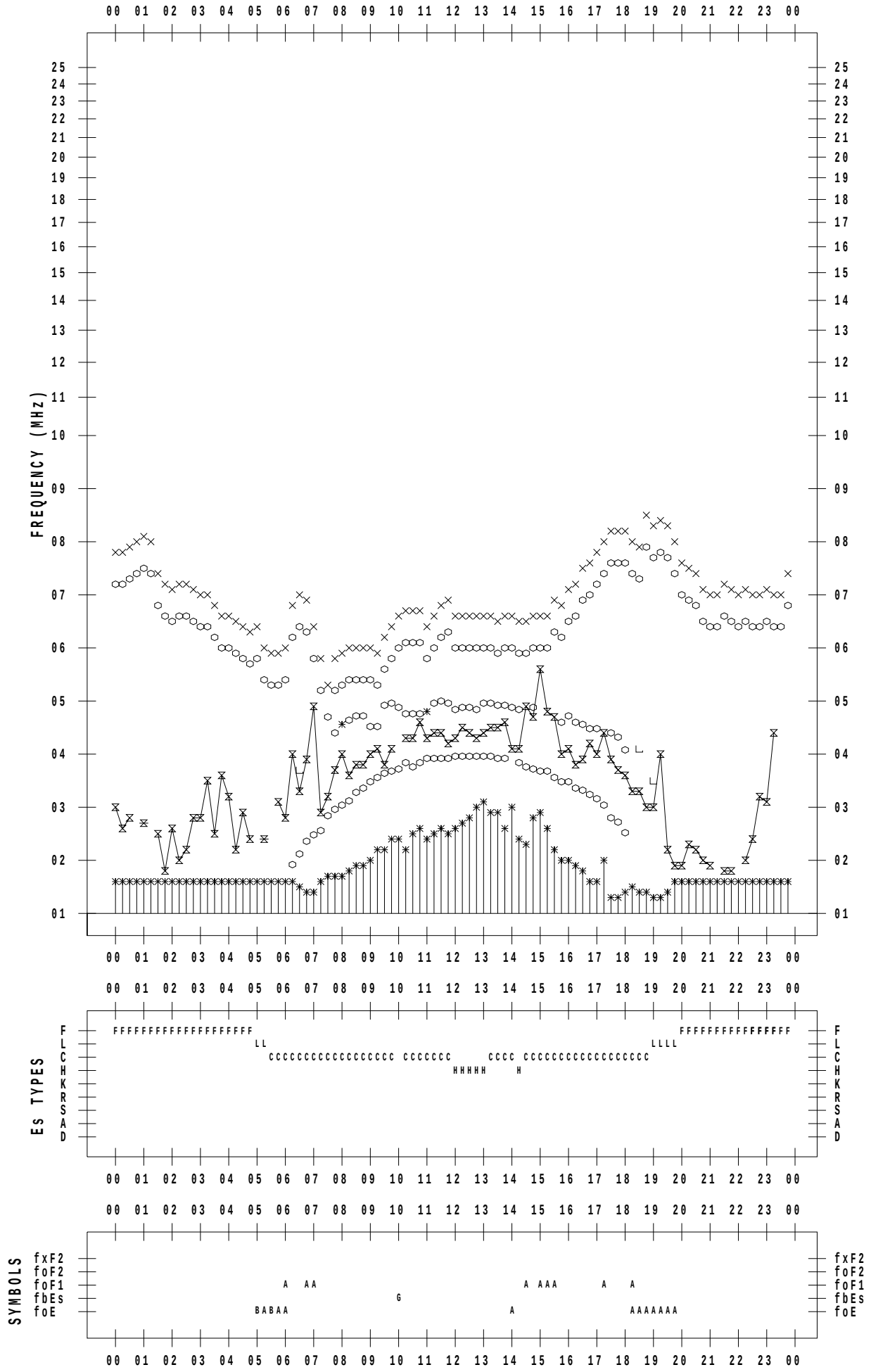
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/16

135 °E MEAN TIME



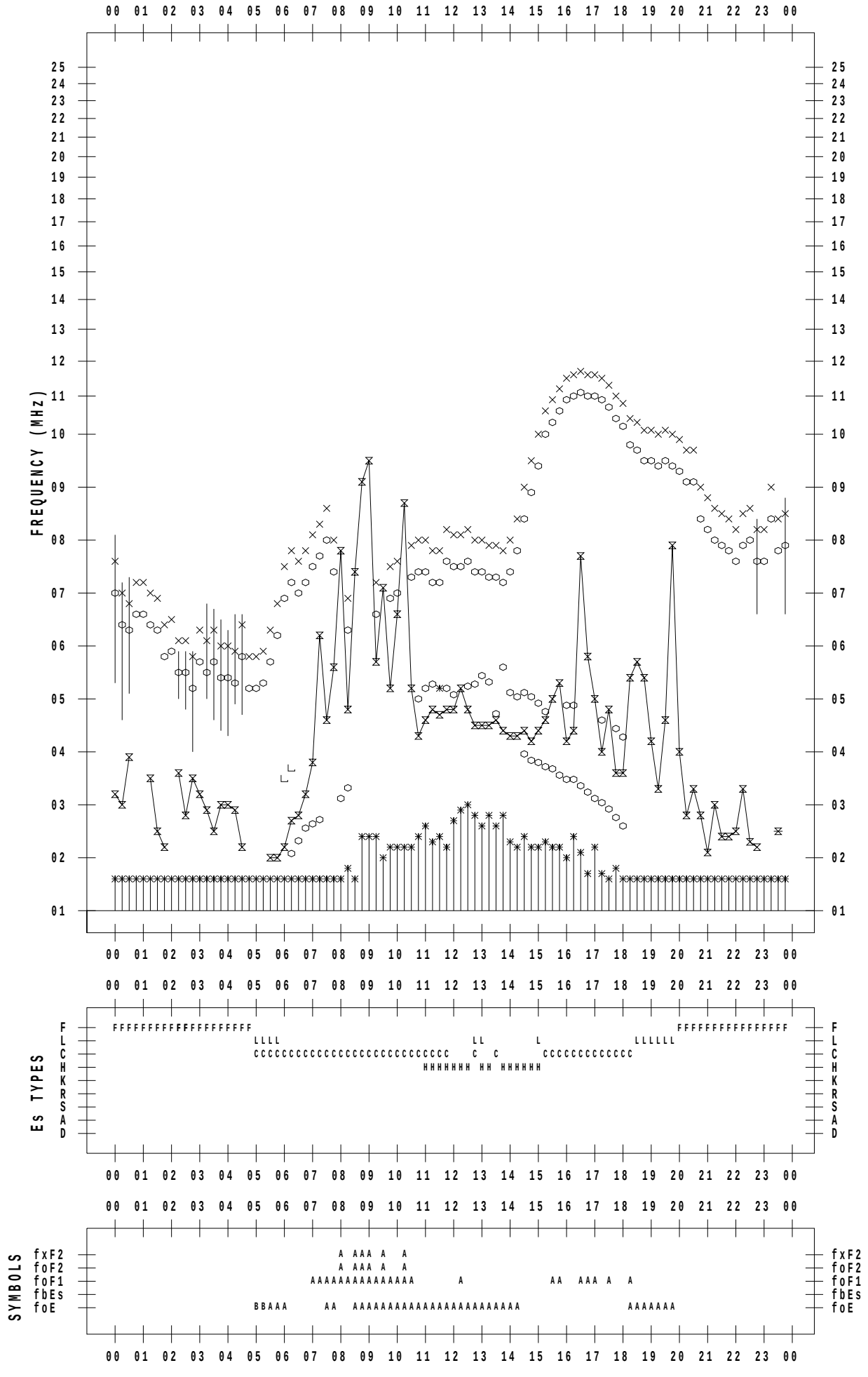
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/17

135 °E MEAN TIME



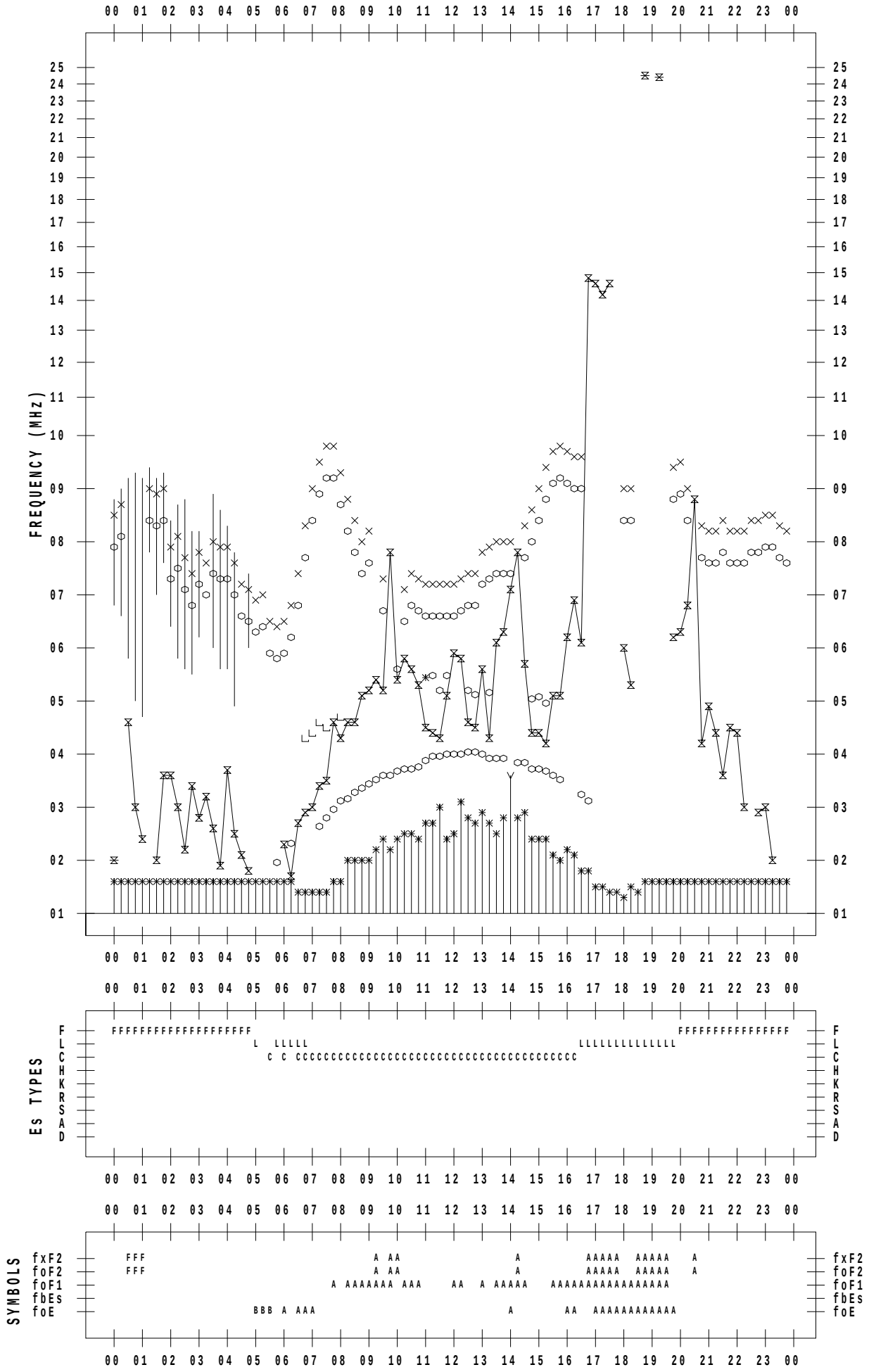
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/18

135 °E MEAN TIME



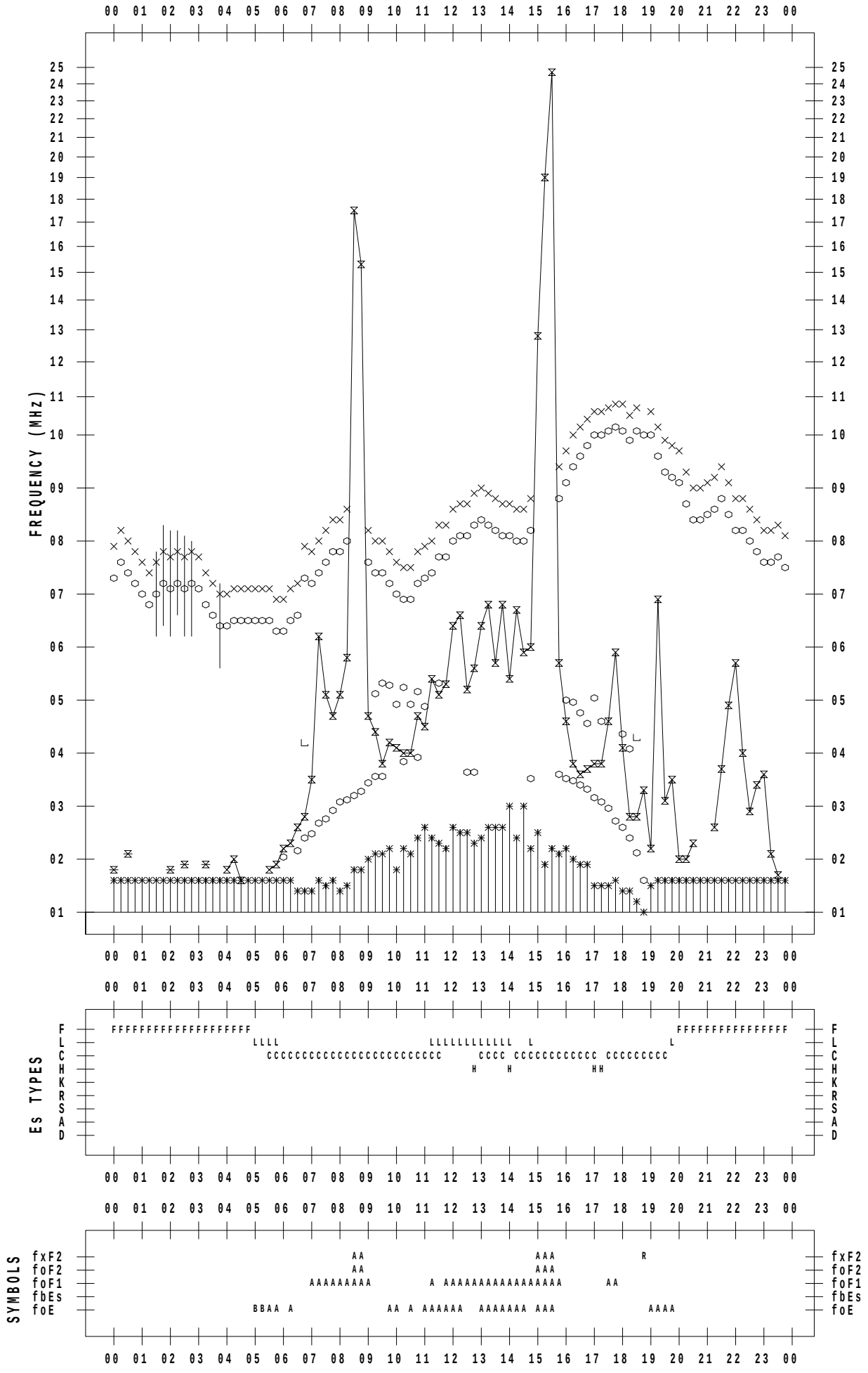
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/19

135 °E MEAN TIME



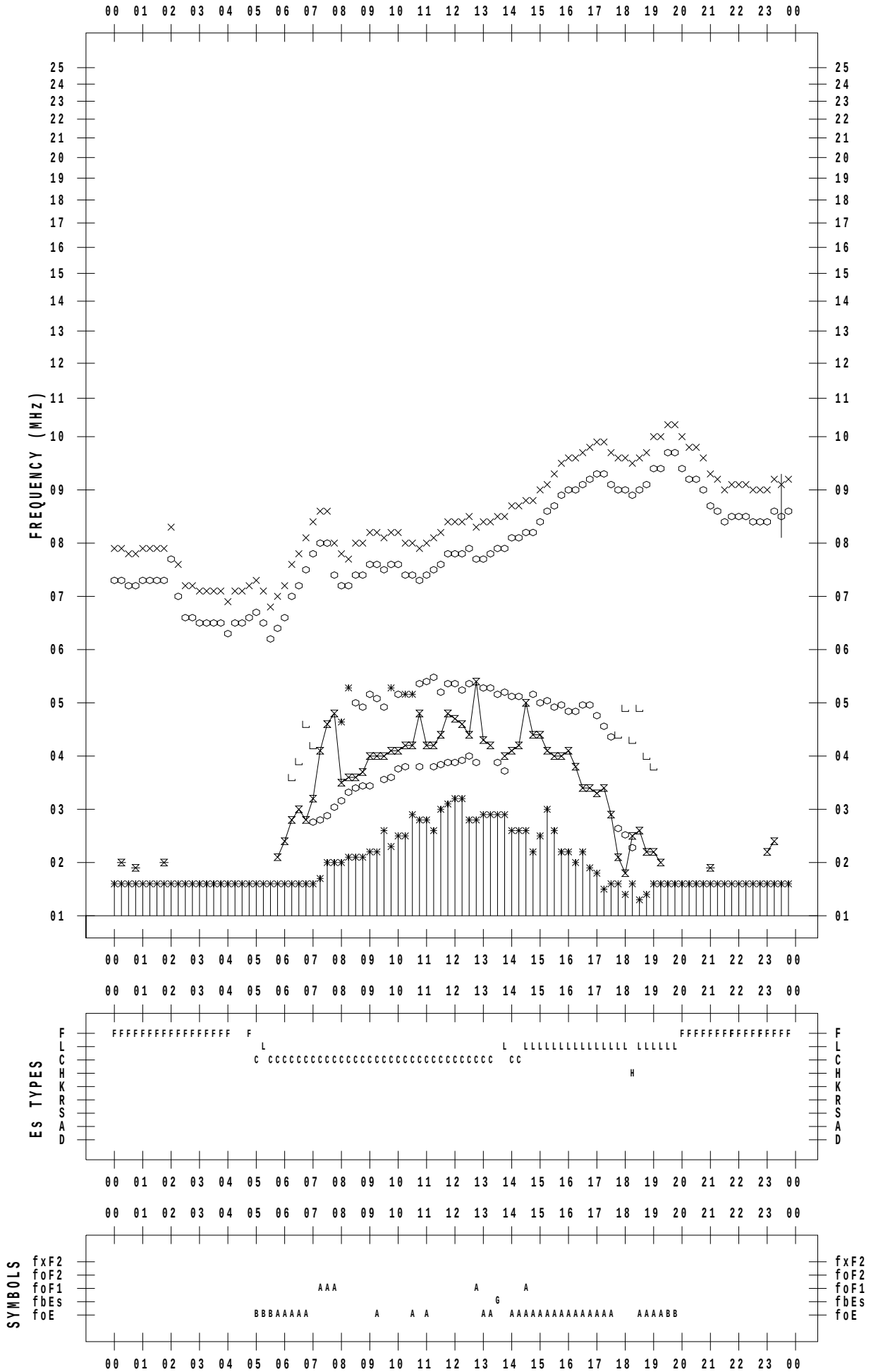
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/20

135 °E MEAN TIME

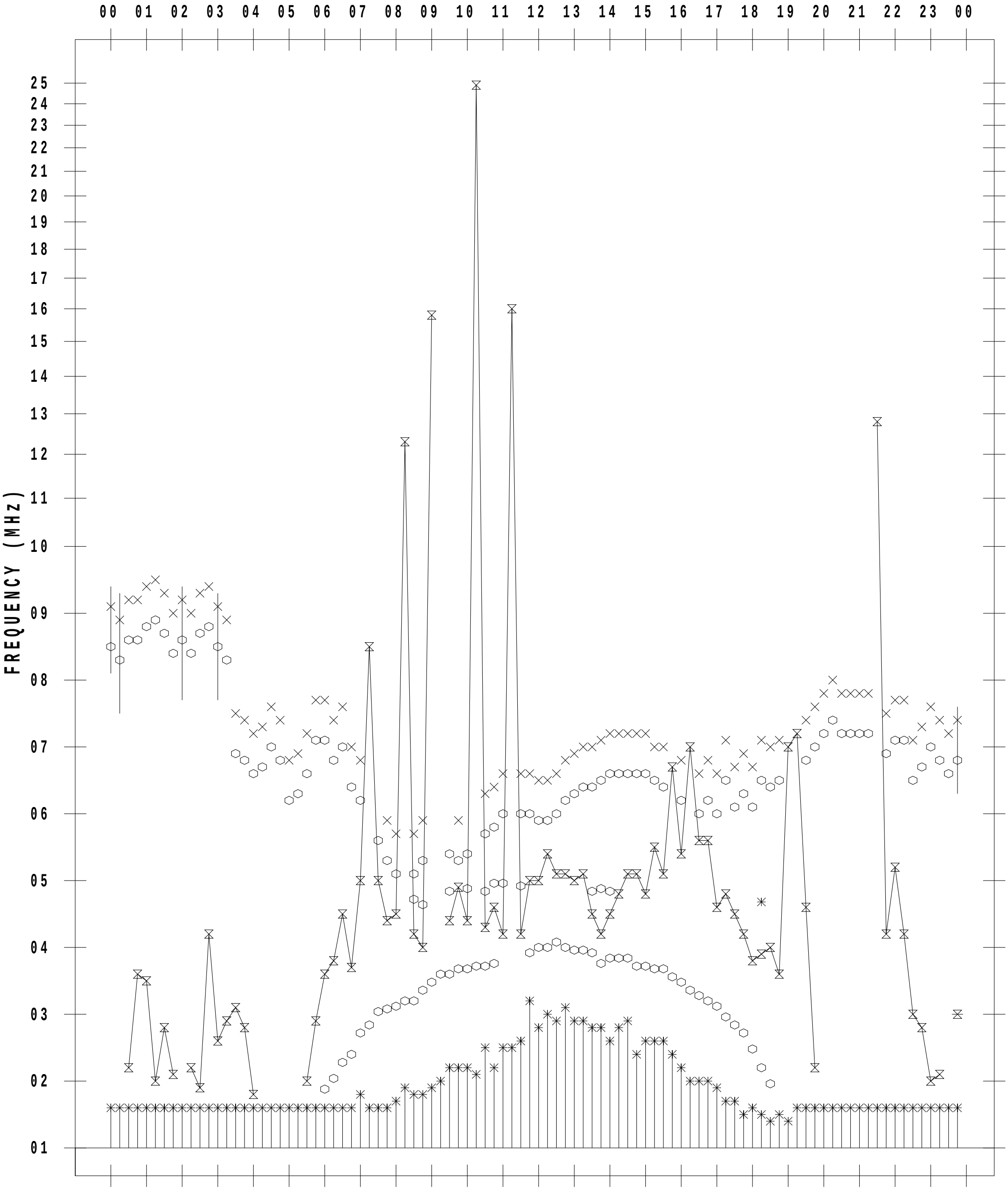


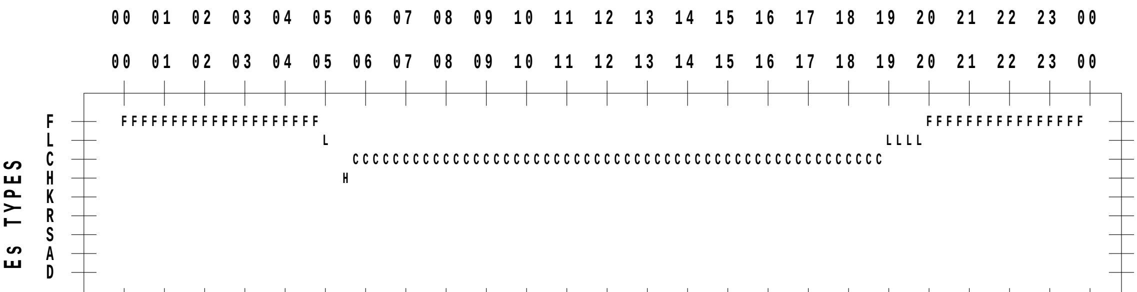
f-PLOT DATA

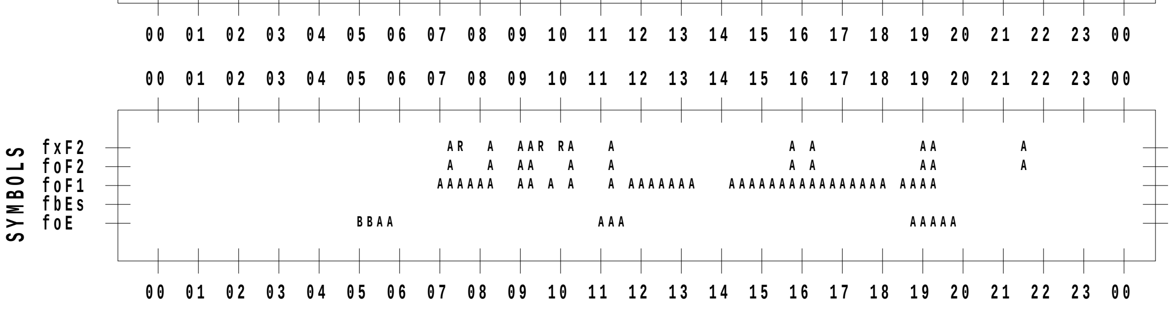
SCALER : I.YAMAZAKI

STATION : Okinawa DATE : 2022/ 6/21

135 °E MEAN TIME







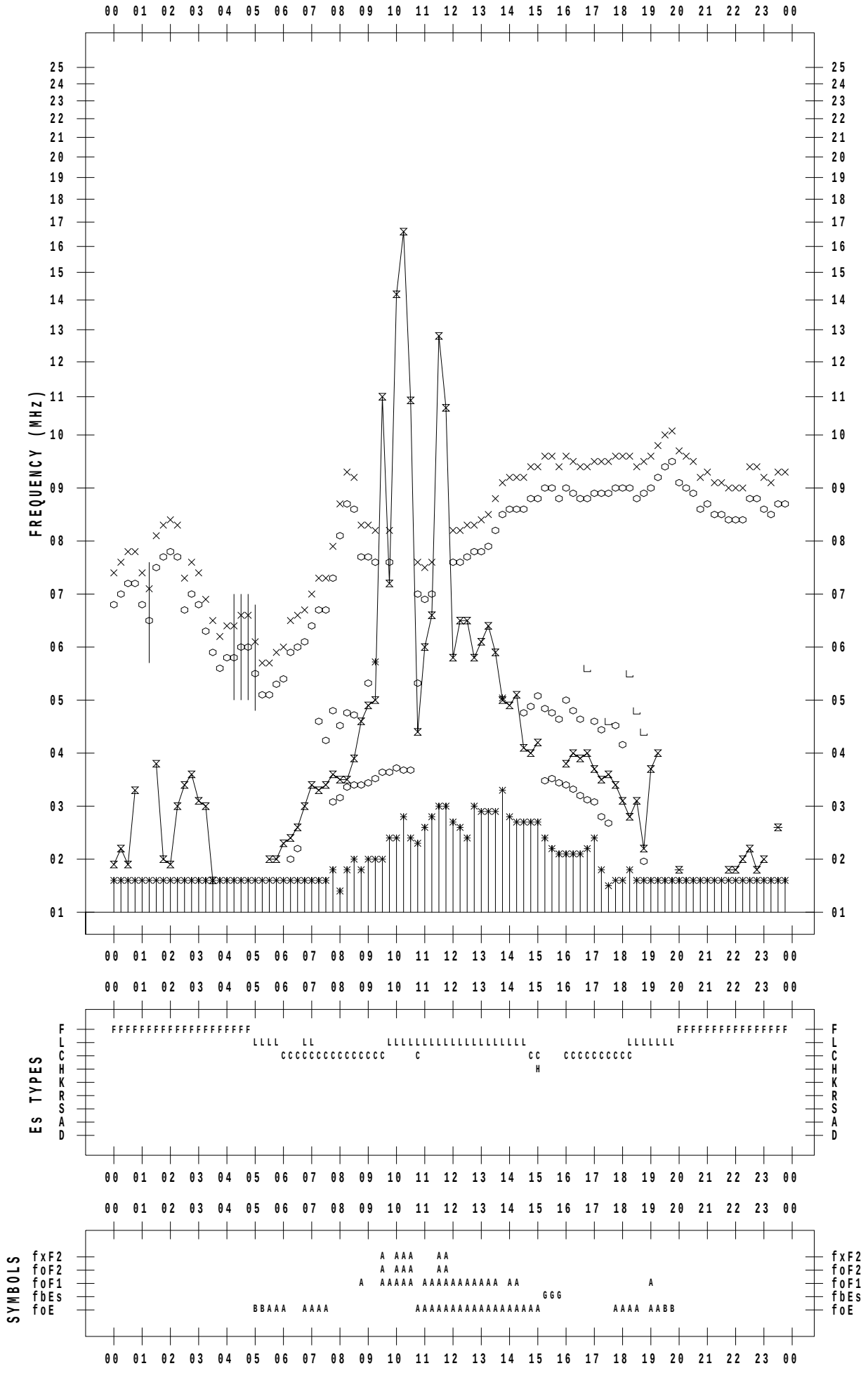
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/22

135 °E MEAN TIME



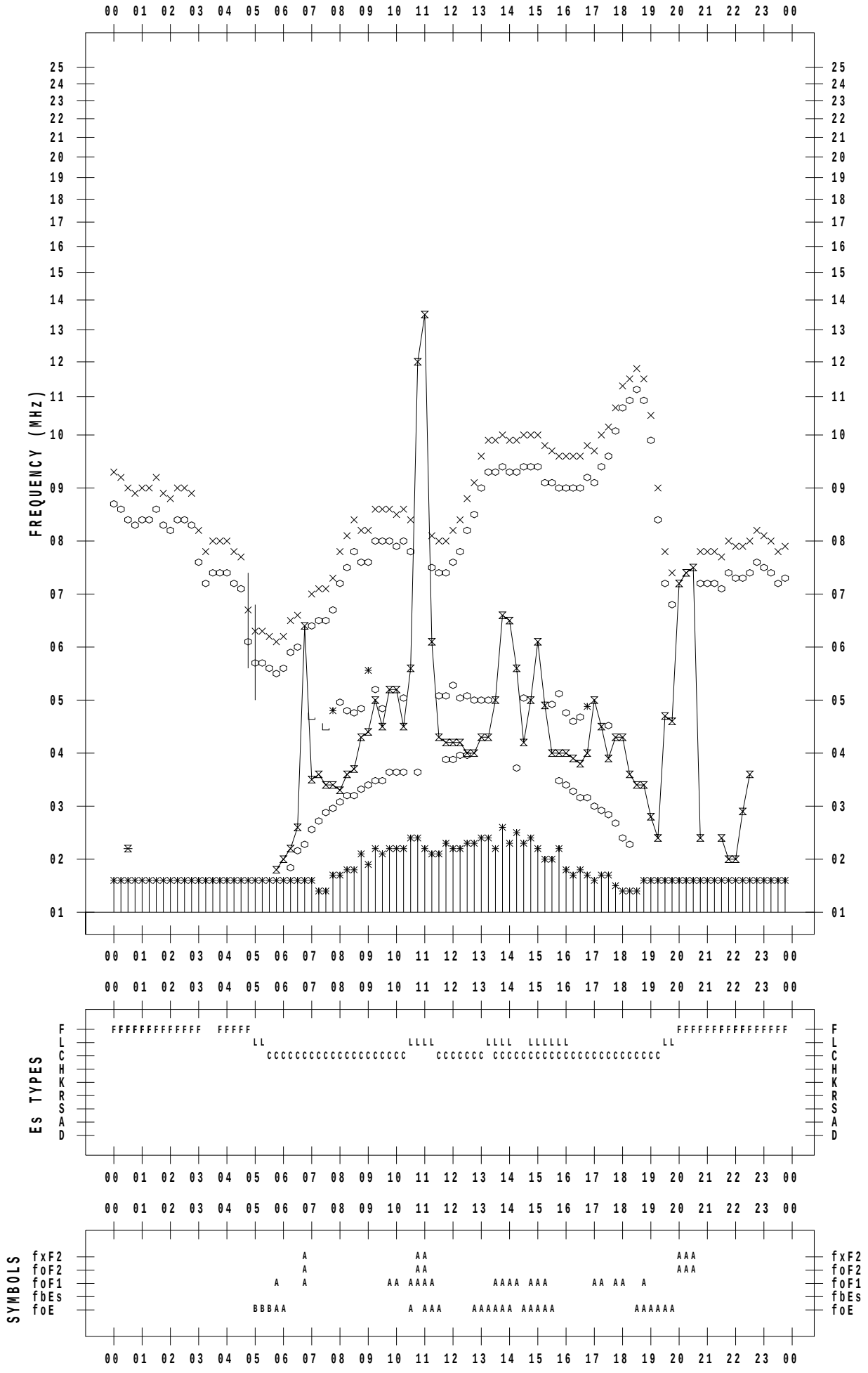
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/23

135 °E MEAN TIME



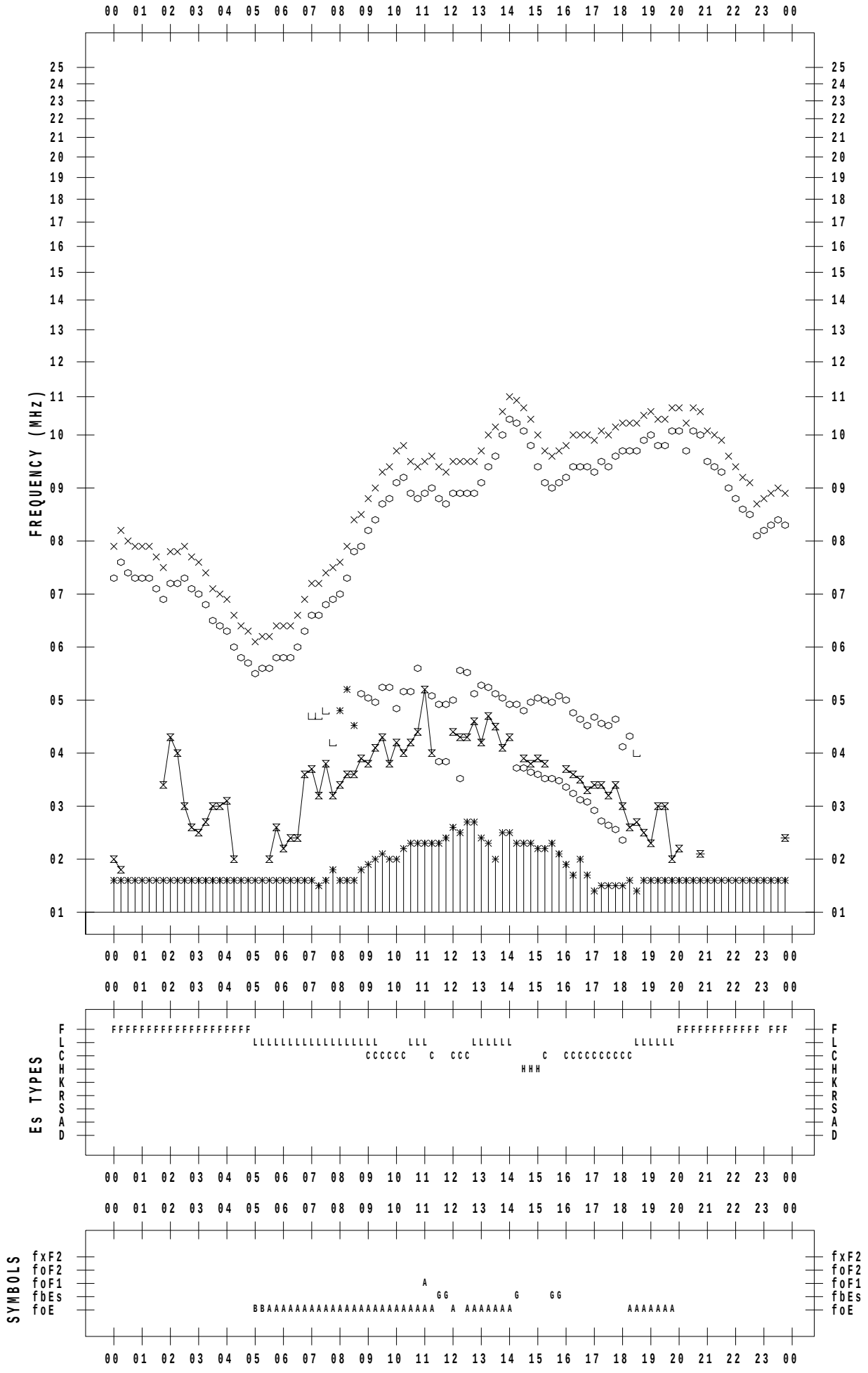
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/24

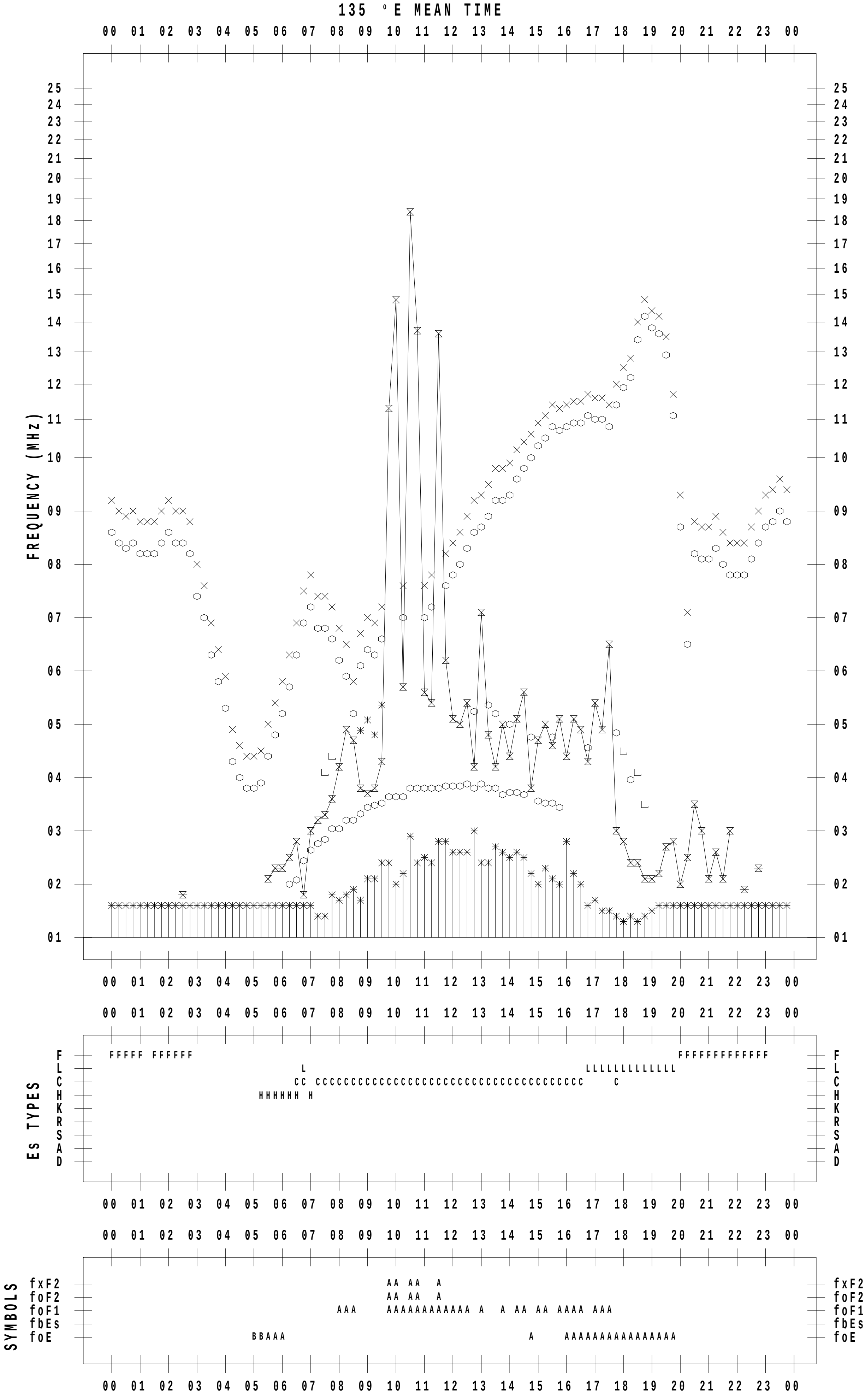
135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa DATE : 2022/ 6/25

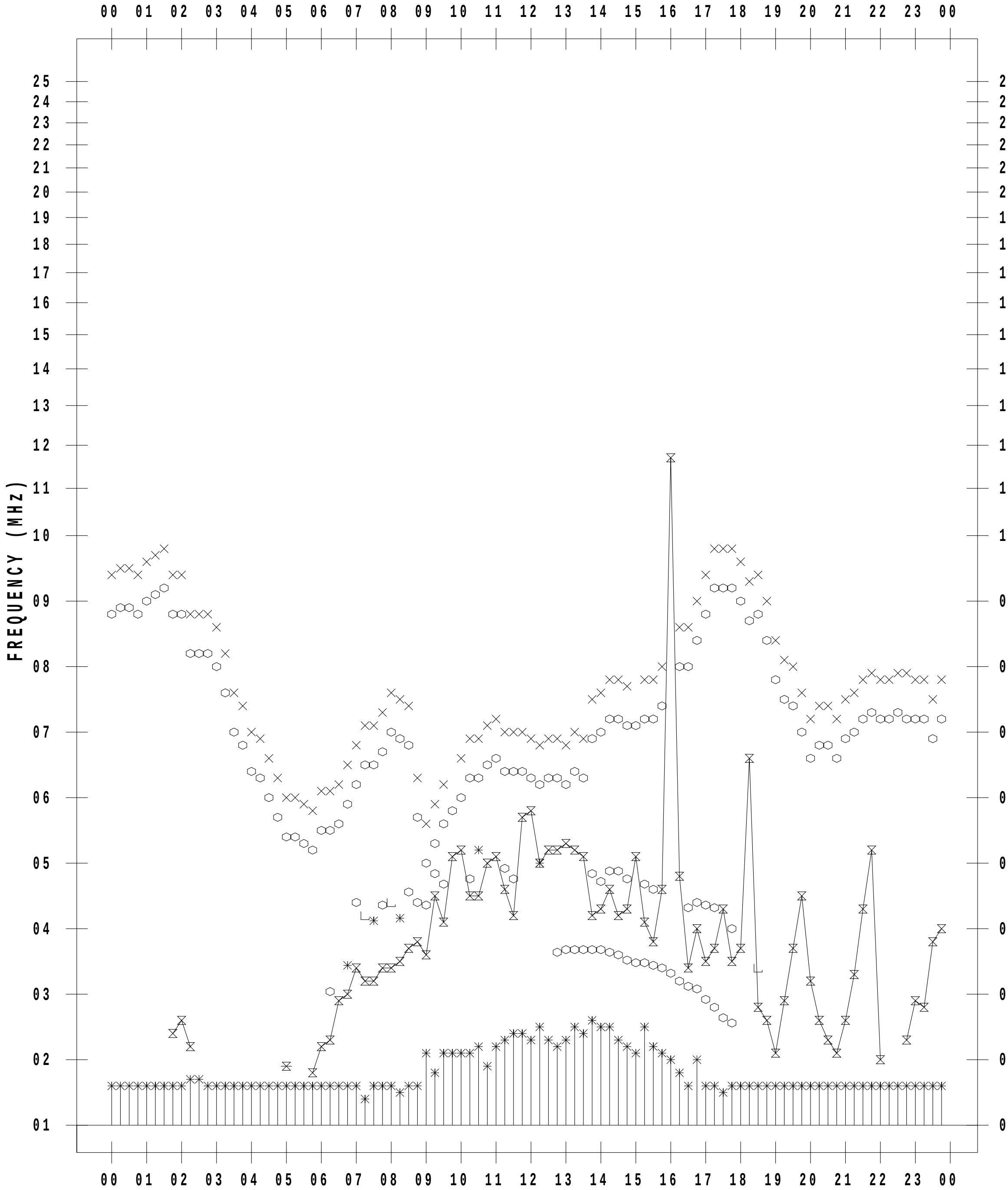


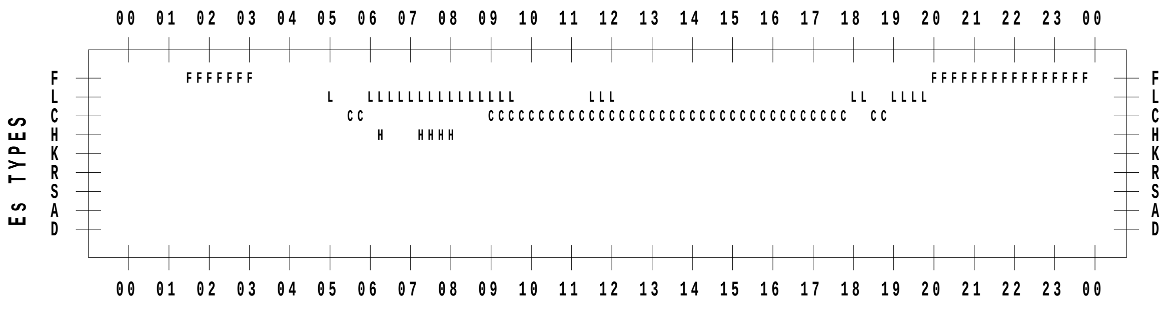
f-PLOT DATA

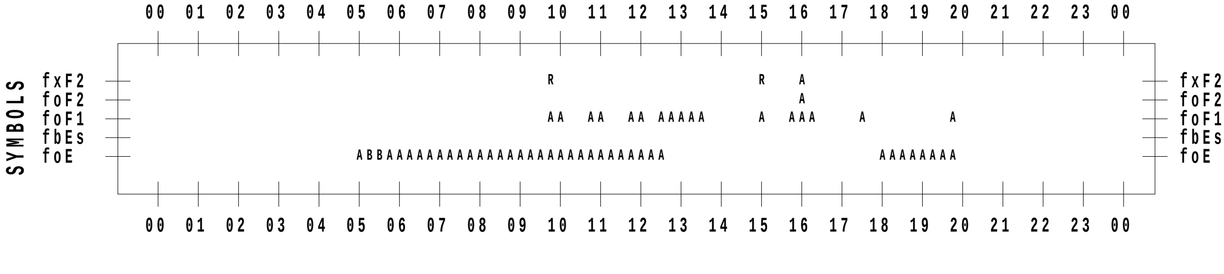
SCALER : I.YAMAZAKI

STATION : Okinawa DATE : 2022/ 6/26

135 °E MEAN TIME





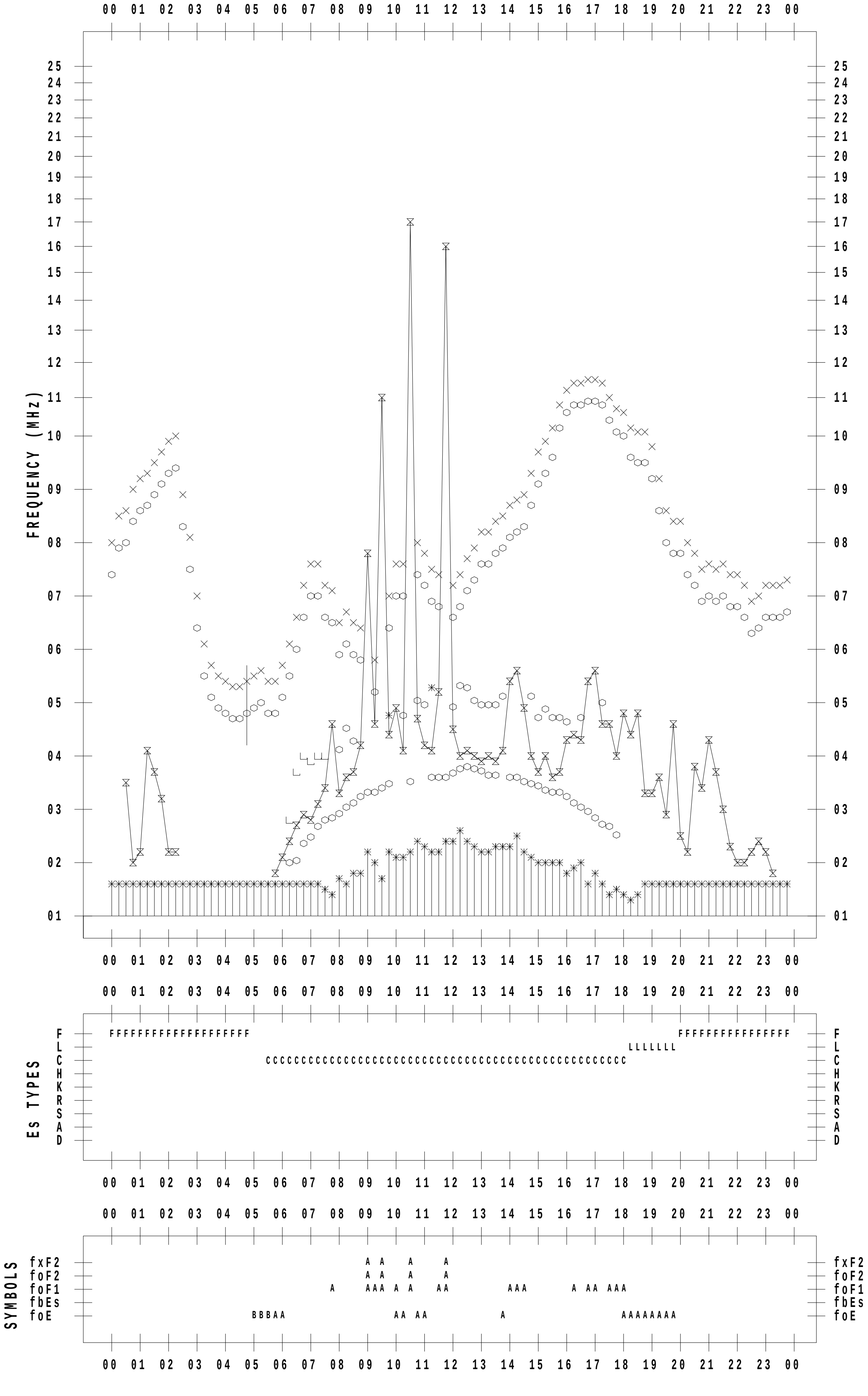


f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa DATE : 2022/ 6/27

135 °E MEAN TIME



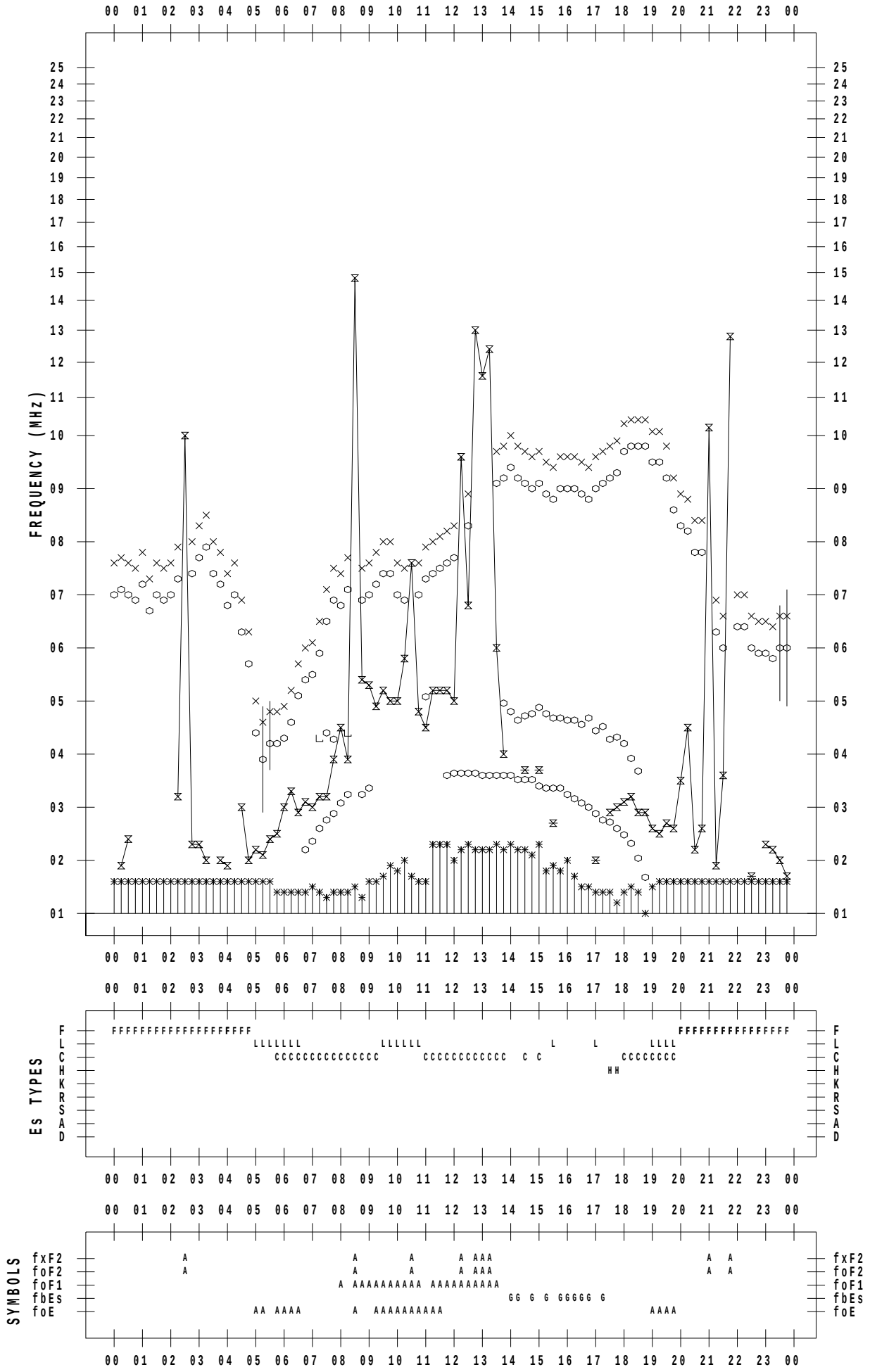
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/28

135 °E MEAN TIME



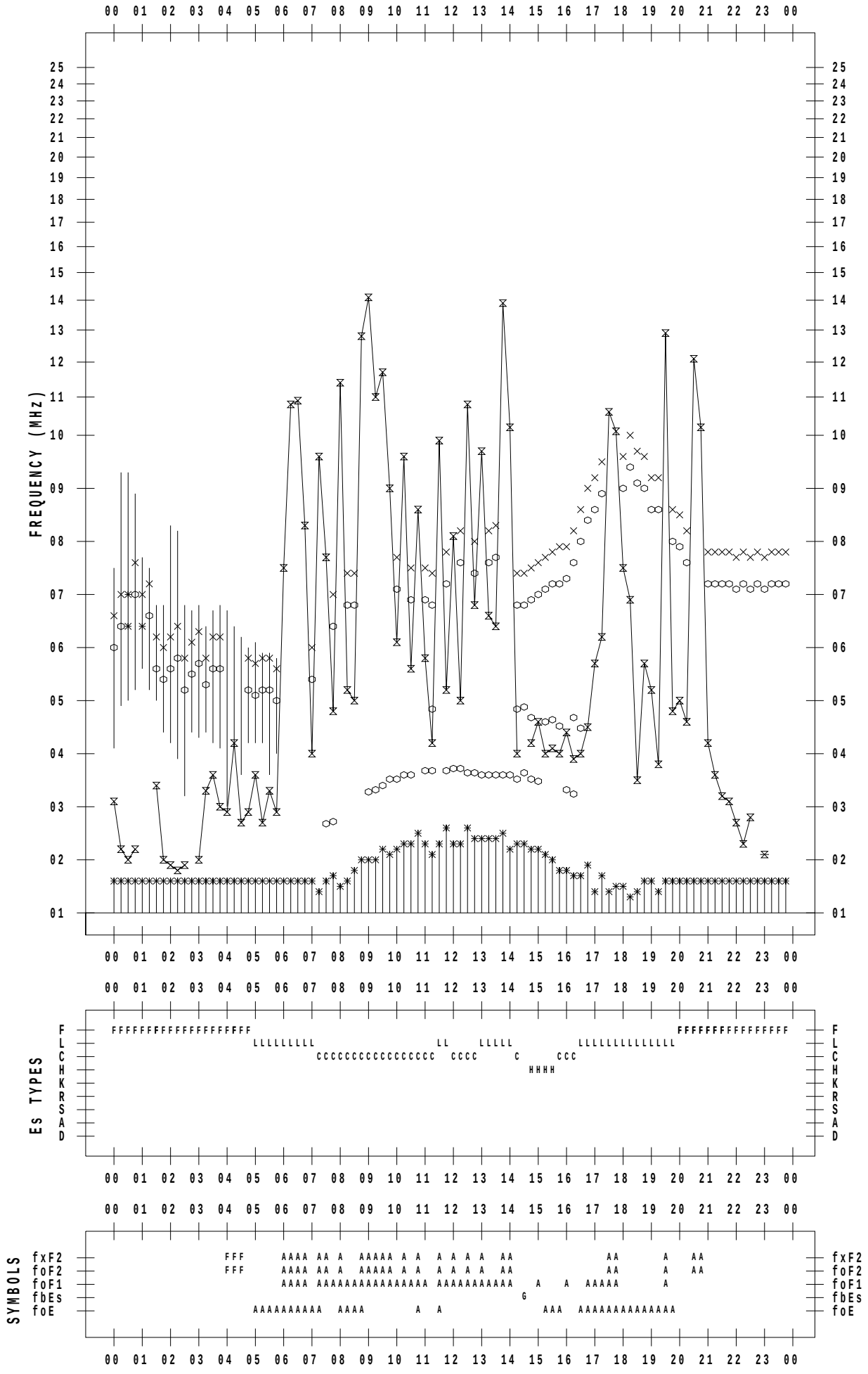
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/29

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 6/30

135 °E MEAN TIME