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IONOSPHERIC DATA IN JAPAN

FOR May 2022

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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

MAY 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	65	56	55	53	52	64	89	93	81	78	79	91	88	92	93	84	90	82	82	90	85	84	73	67
2	66	62	64	57	56	66	79	75	79	79	75	75	79	86	90	83	75	83	85	79	80	81	74	75
3	67	65	61	59	60	71	78	74	81	79	81	83	83	79	79	82	85	81	78	85	86	87	82	69
4	66	65	63	61	60	57	65	67	67	79	89	85	78	79	80	81	79	86	86	91	87	76	71	70
5	71	64	63	57	57	57	60	67	67	66	A	71	72	76	71	77	81	71	75	88	77	76	61	62
6	59	58	59	59	55	67	55	65	77	75	75	73	81	80	81	77	78	77	71	78	78	79	73	71
7	71	64	64	60	59	61	58	56	59	66	63	66	69	72	73	76	74	75	77	79	79	76	68	65
8	65	65	65	64	63	69	A	71	73	67	68	75	78	78	74	77	71	73	69	72	80	83	71	70
9	71	65	65	59	59	55	69	69	72	64	71	76	74	75	79	77	77	77	82	80	78	77	66	64
10	67	66	64	60	58	62	75	75	73	71	72	66	65	70	72	75	77	79	81	87	80	75	73	69
11	69	64	61	62	64	57	64	74	76	69	67	69	70	75	74	74	76	78	81	87	86	82	75	65
12	63	59	58	57	52	55	60	64	60	59	62	A	65	65	72	73	76	79	73	78	73	71	71	69
13	68	66	67	63	60	67	70	75	74	71	70	71	75	A	74	76	78	73	79	86	88	A	73	66
14	66	65	61	57	52	60	64	70	70	55	74	66	63	63	65	68	69	70	69	A	79	80	68	60
15	A	58	58	55	53	62	67	73	63	A	A	73	65	66	62	70	68	70	66	69	74	71	65	63
16	62	61	59	62	58	61	61	50	A	A	56	A	53	63	66	61	73	65	66	67	75	75	75	75
17	72	57	59	54	58	57	A	71	59	A	49	A	63	65	66	68	71	69	71	79	88	83	71	73
18	68	71	65	63	55	65	A	A	62	59	A	A	A	53	55	55	56	60	63	66	75	73	71	60
19	69	63	63	67	65	71	79	74	74	76	74	74	A	79	74	72	75	69	66	77	87	88	81	77
20	72	68	66	70	73	81	92	92	70	66	71	65	72	68	68	67	72	74	65	71	82	88	77	71
21	68	69	67	58	58	63	69	71	68	64	N 66	69	67	79	69	71	71	72	61	68	73	72	71	68
22	66	61	61	65	65	78	75	A	61	A	59	A	68	51	71	A	74	69	69	69	A	A	A	A
23	63	65	67	64	59	A	66	66	65	A	53	C	51	A	65	54	61	63	72	72	75	74	73	69
24	62	63	61	65	63	70	73	70	63	A	A	A	A	A	N 65	62	64	65	A	77	87	74	76	69
25	71	67	73	67	65	76	81	78	82	73	75	73	A	71	74	76	77	80	79	79	80	85	84	74
26	67	68	64	57	60	81	94	86	73	A	61	A	A	A	62	66	66	71	75	A	82	79	81	71
27	80	79	35	70	59	64	77	85	82	71	62	68	68	71	71	73	70	71	75	85	93	92	79	75
28	70	67	67	69	70	70	65	64	A	52	A	64	70	A	51	57	62	67	65	A	70	62	71	68
29	66	63	63	59	63	56	59	54	49	65	60	61	63	59	61	58	63	69	71	A	91	75	74	75
30	74	68	58	55	52	51	59	A	A	A	77	71	69	71	70	71	72	73	76	84	93	92	86	80
31	73	68	67	70	65	62	68	65	69	66	N 50	61	56	65	66	64	71	65	78	87	A	76	66	83
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	28	28	28	23	26	23	26	26	31	30	31	31	30	27	29	29	30	30
MED	68	65	63	60	59	64	68	71	70	67	69	71	69	71	71	72	73	72	74	79	80	77	73	69
U Q	71	67	65	65	63	70	77	75	75	75	75	75	75	79	74	77	77	78	79	86	87	83	76	74
L Q	66	62	59	57	56	57	62	65	63	64	61	66	65	65	65	66	69	69	69	72	76	74	71	66

HOURLY VALUES OF fEs AT Wakkanai

MAY 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	28	59	G	35	48	37	43	36	38	51	46	48	47	39	38	39	50	34	34	G	G	G	30
2	G	G	G	G	G	G	28	48	53	50	46	48	52	44	41	40	38	33	58	40	60	34	G	G
3	G	G	G	G	G	G	30	41	48	48	40	51	44	41	35	43	29	27	34	35	26	G	G	G
4	G	G	G	G	G	G	32	83	47	52	35	52	G	38	41	35	30	26	G	33	G	30	32	G
5	G	G	G	G	G	30	39	34	46	65	60	45	57	58	46	38	38	57	84	48	41	G	G	G
6	G	35	G	G	G	131	32	44	39	55	52	47	38	37	34	33	30	36	38	G	33	30	G	G
7	G	G	G	G	G	24	34	50	48	153	50	43	42	35	34	94	38	46	33	34	30	G	28	28
8	148	G	G	G	G	G	28	38	33	60	48	48	38	38	44	40	37	33	G	G	G	G	G	33
9	G	G	G	G	G	33	39	44	40	39	41	41	37	36	40	92	G	33	58	28	39	G	G	G
10	G	G	35	35	33	137	32	156	38	48	52	62	46	37	34	30	32	48	50	39	35	G	26	29
11	25	29	G	G	G	40	38	50	49	41	33	35	36	43	40	39	38	35	69	37	34	G	G	G
12	G	G	G	23	G	32	28	45	55	55	60	71	65	42	51	70	62	55	40	32	39	G	54	G
13	G	27	G			30	40	50	110	48	146	52	42	81	56	38	36	43	44	45	41	65	24	G
14	G	G	G	G	G	31	40	48	53	54	56	41	54	48	57	39	65	80	90	96	40	33	28	29
15	70	55	31	G	28	40	49	65	85	83	78	84	51	48	38	56	52	54	46	40	42	26	25	27
16	33	38	32	45	33	43	54		126	95	51	41	45	49	60	54	47	76	71	58	71	115	72	40
17	G	G	71	49	G	46	70	60	78	136		101	64		56	49	52	50	58	109	66	71	60	60
18	48	34	30	G	G	35	71	64	91	126	95	65	45	46	44	33	36	40	36	37	29	G	G	41
19	28	28	G	27	27	33	92	67	70	50	43	51	76	39	37	34	33	36	63	38	37	26	G	26
20	G	30	24	G	G	37	122	66	57	40	42	42	46	54	50	45	36	34	37	39	53	G	G	G
21	G	G	G	G	G	38	42	52	65	54	56	59	53	51	56	50	56	54	92	46	108	40	27	28
22	G	G	32	27	G	31	60	72	107	152	91	106		91	150	92	32	38	61	41	145	92	70	56
23	33	43	60	34	38	70	60	59	63	74		C	65	65	45	41	48	50	74	70	29	28	28	G
24	28	29	26	G	G	34	42	48		151	136	111	106	62	143	55	61	48	106	60	59	57	44	26
25	G	G	G	G	43	49	54	55	72	58	42	N	74	54	72	46	42	41	35	69	58	29	29	25
26	48	38	38	32	G	33	47	57	89	95	78	83	84	66	54	45	49	47	59	132	26	32	48	G
27	32	31	24	35	G	40	49	64	70	56	51	51	46	50	35	40	46	50	65	50	29	G	26	32
28	G	G	G	G	27	32	50	60	60	54	95	92	54	80	54	40	59	70	65	60	43	28	40	29
29	39	32	G	35	33	34	48		98	62	56	50	43	49	97	33	29	52	56	110	74	46	32	G
30	G	G	G	G	G	34	44	91	107	110	75	53	52	62	43	44	42	40	34	40	32	40	59	32
31	27	G	28	32	21	52	55	52	64	83	96	112	50	53	33	50	30	59	53	48	60	60	38	47
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	31	31	29	30	31	29	29	30	30	31	31	31	31	31	31	31	31	31	31
MED	G	G	G	G	G	34	42	52	62	56	52	51	49	48	44	41	38	47	56	40	39	28	27	26
U Q	32	31	31	32	27	43	54	64	85	95	78	77	57	58	56	50	49	54	65	60	59	40	40	32
L Q	G	G	G	G	G	31	34	46	48	50	44	45	43	41	38	38	32	36	36	35	29	G	G	G

HOURLY VALUES OF fmin AT Wakkanai

MAY 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	17	15	16	14	16	15	17	15	17	17	18	18	20	20	17	14	15	14	16	17	14	14	14	16
2	14	14	14	14	14	17	16	14	15	15	21	19	17	20	17	15	15	15	14	14	15	15	15	14
3	16	15	15	15	17	15	16	15	14	16	16	23	16	17	18	15	16	14	16	15	16	18	14	14
4	14	14	15	17	14	16	16	14	16	17	21	17	39	18	17	26	16	16	15	16	15	15	16	17
5	14	14	14	14	14	15	15	16	16	15	15	19	15	18	19	17	15	14	14	15	15	19	15	15
6	14	16	14	14	14	81	17	15	14	17	15	17	18	19	18	17	17	14	13	15	16	16	16	14
7	14	14	14	14	16	15	14	14	15	17	15	19	17	17	16	17	15	14	16	14	15	14	15	16
8	16	17	15	14	14	15	16	13	16	14	15	17	16	20	19	14	13	15	12	15	15	16	17	18
9	15	15	17	15	15	16	16	15	15	15	15	18	15	16	17	17	16	15	15	15	15	16	15	15
10	14	17	16	14	16	15	15	14	15	16	15	13	15	15	15	16	15	15	15	15	16	14	16	15
11	16	16	16	16	14	16	15	13	14	16	16	16	17	20	16	17	15	16	14	16	15	15	14	14
12	14	17	15	16	15	15	17	15	15	16	14	19	17	20	21	14	14	14	14	16	15	14	14	14
13	17	16	15	16		16	15	14	14	15	16	16	17	19	16	16	16	14	14	15	14	16	15	16
14	15	17	14	15	15	15	13	14	14	16	15	16	18	19	15	15	13	11	15	15	15	15	15	15
15	16	15	16	16	15	15	13	13	14	13	14	15	15	18	16	17	14	13	14	15	15	16	16	15
16	17	15	16	15	17	15	14	15	14	14	19	16	17	21	14	15	14	16	13	15	15	16	15	16
17	15	15	16	14	15	14	14	13	12	17	20	21	20		18	20	14	15	15	17	14	15	16	15
18	16	15	16	16	15	16	13	13	15	16	16	19	21	20	21	17	17	15	16	14	16	16	14	14
19	15	16	15	15	15	16	16	17	17	19	19	19	18	17	16	18	17	15	15	15	15	15	16	16
20	14	15	16	15	15	15	14	14	14	15	18	20	21	19	17	17	15	17	16	15	15	16	16	14
21	16	15	14	14	16	17	15	15	14	15	20	19	15	21	21	17	16	14	15	14	15	15	15	15
22	15	16	16	17	15	15	13	16	17	13	15	22	19	17	13	9	16	15	14	14	14	14	15	15
23	16	15	15	15	15	15	13	13	14	16	16	C	21	16	15	14	15	17	14	15	15	14	15	16
24	15	15	13	22	15	15	15	14	14	14	17	24	18	22	19	19	14	13	14	14	15	15	15	16
25	16	16	14	15	15	15	15	16	17	17	22	18	17	19	19	15	15	15	17	15	15	16	15	15
26	15	15	15	16	15	14	15	14	17	11	17	19	12	21	19	15	16	15	14	19	15	16	15	14
27	16	16	16	16	15	15	14	14	14	14	20	23	19	16	15	16	16	14	13	15	15	15	15	15
28	17	15	14	14	14	16	13	14	15	15	16	20	19	17	15	17	15	14	14	15	13	15	15	15
29	15	15	16	15	15	15	15	16	13	16	15	21	15	15	17	15	15	13	13	13	15	15	17	14
30	14	14	14	14	17	17	14	15	13	17	14	17	17	14	15	16	17	14	15	14	15	15	15	15
31	15	16	15	15	15	14	14	15	14	13	19	19	21	19	18	15	17	14	14	15	14	17	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	31	31	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	14	14	16	16	19	17	19	17	16	15	14	14	15	15	15	15	15
U Q	16	16	16	16	15	16	16	15	16	17	19	20	19	20	19	17	16	15	15	15	15	16	16	16
L Q	14	15	14	14	15	15	14	14	14	14	15	17	16	17	15	15	15	14	14	14	15	15	15	14

HOURLY VALUES OF foF2 AT Kokubunji

MAY 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	66	64	59	57	59	67	96	105	97	86	86	94	116	124	119	112	106	108	106	102	93	88	74	72
2	75	A	75	68	64	69	86	89	92	83	81	A	99	107	113	113	106	95	106	103	91	76	69	73
3	74	70	66	61	61	68	90	86	82	85	81	91	82	90	104	109	107	103	102	111	106	70	71	71
4	73	73	76	65	60	66	75	82	87	88	85	89	96	97	96	96	98	108	110	101	67	A	74	77
5	72	73	66	61	59	69	83	88	73	67	91	92	95	99	99	93	94	98	97	104	87	60	65	A
6	67	67	63	55	53	60	77	83	81	71	69	85	86	A	105	97	93	89	78	82	77	79	73	76
7	75	74	60	57	62	75	87	70	70	69	46	77	84	87	91	100	92	87	89	93	91	A	65	64
8	66	63	65	60	55	68	78	73	76	65		80	93	A	85	88	85	78	81	89	91	81	75	77
9	75	78	68	69	65	72	91	78	81	78	78	86	85	92	92	93	92	84	90	96	104	63	61	69
10	70	69	70	51	52	58	71	92	102	93	89	83	88	91	92	103	108	106	111	90	70	68	69	71
11	69	70	68	58	63	76	80	73	71	64	68	83	85	91	101	112	113	109	111	106	91	77	75	81
12	82	76	67	67	60	67	69	68	67	69	77	77	71	79	89	93	92	99	95	90	88	71	77	79
13	77	72	71	71	61	67	75	78	79	72	78	84	85	83	91	100	100	86	90	101	97	79	75	72
14	69	68	67	59	59	60	89	94	88	81	75	81	79	85	87	84	87	A	91	100	102	61	66	64
15	66	65	61	56	58	69	84	82	81	86	87	101	100	93	94	95	99	96	92	89	A	69	73	73
16	69	68	63	59	59	71	93	77	A	85	87	88	85	87	93	94	84	79	77	85	82	83	69	A
17	84	86	74	67	62	70	87	81	A	N	120	140	81		112	81	A	86	95	100	89	A	78	85
18	76	72	79	63	59	58	73	72	64	66	66	73	102	66	71	71	74	71	92	79	A	68	65	73
19	71	73	69	64	69	78	82	84	81	79	80	90	85	A	87	86	87	81	84	90	97	101	92	81
20	75	75	71	76	91	81	90	94	A	121	91	98	99	91	N 84	82	86	85	92	92	81	A	85	90
21	83	81	79	69	66	64	A	82	109	A	A	130	89		98	102	92	A	110	A	A	A	A	A
22	77	67	64	63	67	75	81	71	73	71	106	81	139	142	100	105	96	91	78	78	78	79	73	73
23	77	77	78	70	64	67	84	87	87		A	A	A	65	74	71	72	71	104	105	A	A	61	63
24	68	66	67	61	63	70	91	79	82	70	82	79	81	A	81	84	81	83		93	77	81	78	76
25	75	71	A	67	63	68	89	89	A	A	90	100	N	83	87	89	193	94	97	99	87	A	81	81
26	A	83	65	69	64	75	95	A	83	80	79	75	81	85	91	101	103	108	117	106	A	91	91	83
27	78	87	90	73	75	69	88	102	76		108	A	83	80	84	100	184	204		88	99	84	105	95
28	87	81	80	89	101	97		69	A	72	A	A	87	86	83	69	67	A	85	70	57	69	A	A
29	A	64	59	59	54	56	57	65	64	66	71	71	73	81	106	78	82	87	99	93	69	75	75	77
30	75	76	71	64	62	64	64	69	75	88	85	87	A	N 82	87	A	91	A	85	93	A	36	A	81
31	82	A	A	67	68	70	80	76	89	A	A		A	92	101	102	106	102	101	95	95	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	31	31	31	29	30	26	25	26	26	27	25	31	30	30	27	29	30	25	23	27	26
MED	75	72	68	64	62	69	84	82	81	78	82	86	85	87	92	94	92	91	95	93	89	76	74	76
U Q	77	76	74	69	65	72	89	88	87	85	89	92	96	92	101	102	106	103	105	101	96	81	78	81
L Q	69	67	64	59	59	66	76	73	73	69	77	80	82	82	87	84	86	84	87	89	77	68	69	72

HOURLY VALUES OF fEs AT Kokubunji

MAY 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	G	G	G	G	G	39	42	69	59	49	38	106	47	58	34	62	59	34	33	36	60	92	90	48
2	87	80	35	39	G	G	37	42	48	102	70	175	53	53	49	47	48	43	38	47	106	90	70	53
3	34	34	G	G	G	G	35	46	54	54	51	49	49	49	57	38	33	32	G	58	G	40	53	53
4	43	G	25	G	G	G	29	42	50	51	55	44	40	57	50	36	48	45	45	60	34	78	35	34
5	G	G	G	G	G	G	59	35	47	55	44	46	57	51	42	37	37	48	49	33	G	39	60	84
6	G	G	26	G	G	G	32	53	65	60	72	54	41	110	40	35	31	33	G	G	G	35	G	G
7	G	G	G	G	G	G	30	42	39	43	52	45	G	44	34	N	32	46	40	26	31	71	49	G
8	G	G	G	G	G	G	34	45	59	83		44	55	99	50	40	38	34	34	34	29	G	G	G
9	G	G	G	G	G	G	31	33	41	52	53	49	45	40	37	33	34	33	G	26	G	11	G	G
10	G	G	G	20	G	29	40	47	53	50	52	53	56	33	G	G	31	60	44	35	40	37	57	40
11	39	46	34	33	35	G	38	50	55	54	50	42	40	39	53	63	37	28	31	45	G	56	47	41
12	G	G	G	G	G	G	30	45	48	43	55	53	45	48	52	65	65	108	55	51	60	59	33	G
13	G	G	G	26	G	G	29	37	40	39	39	46	39	35	35	39	54	69	45	41	29	35	32	53
14	56	30	26	G	G	G	34	70	62	62	76	79	57	G	G	48	53	126	51	160	70	28	27	35
15	50	29	25	G	G	G	36	37	52	62	41	38	40	41	110	34	56	90	147	149	150	G	50	39
16	49	60	40	39	G	31	41	71	95	77	57	94	58	51	40	48	31	32	54	48	70	59		85
17	43	55	46	34	45	40	47	62	57	117	112	134	75		92	77	32	39	45	40	126	115	60	39
18	32	57	40	46	33	31	47	55	78	55	70	69	83	64	69	37	69	95		96	84	61	60	58
19	31	G	34	G	G	32	42	52	55	71	56	89	100	114	69	58	50	61	71	80	43	29	40	29
20	70	47	51	71	36	33	58	69	98	141	84	72	79	60	83	52	54	72	43	29	58	105	60	71
21	33	29	28	114	38	50	79	84	95	73	97	75	92		81	136	42	95	91	139	179	126	180	107
22	36	G	36	59	48	21	42	60	81	55	53	G	137	92	53	34	41	57	64	37	34	34	60	71
23	72	28	29	26	G	G	61	63	92		145	77	104	63	40	62	57	65		132	166	129	58	31
24	32	31	57	33	35	35	35	51	75		136	63	49	136	55	G	57	61		71	107	50	58	58
25	60	71	113	56	35	35	57	78	89	70	89	90	92	63	60	63	127	61	42	29	92	110	90	92
26	116	27	39	48	48	G	43	84	63	60	66	60	62	66	68	37	94		65	53	112	91	114	40
27	59	73	60	48	29	46	40	67	77		114	153	55	112	78	100	143	139		73	77	82	60	36
28	49	47	48	33	G	31		78	98	92	97	95	70	64		49	70	156	140	163	57	70	90	147
29	106	48	50	45	55	44	40	46	53	70	92	69	96	81	73	71	37	39	71	62	90	60	69	43
30	53	37	28	G	G	29	52	62	93	77	96	62	136	161		103	72	105	122	114	114		132	52
31	61	128	72	34	109	35	52	72	105	94	74		166	89	55	55	65	56	43	127	92	110	90	113
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	28	30	30	31	29	29	30	31	30	27	31	31	30	30	31
MED	39	29	29	26	G	21	40	53	59	61	68	62	57	60	53	48	50	58	45	51	60	60	59	43
U Q	59	48	46	45	35	35	47	69	89	77	92	89	92	90	69	63	65	90	65	96	106	91	70	71
L Q	G	G	G	G	G	G	34	45	52	53	52	46	45	46	40	37	37	39	38	35	31	35	40	34

HOURLY VALUES OF fmin AT Kokubunji

MAY 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	14	15	13	13	14	14	15	17	18	21	19	21	23	19	22	20	19	17	16	14	15	15	15	14
2	14	14	15	15	13	20	16	15	20	20	17	13	19	23	21	17	14	15	14	14	14	15	14	15
3	15	15	16	15	13	18	17	15	17	18	20	21	21	21	21	22	14	15	14	16	15	15	15	15
4	15	15	15	15	15	18	15	15	14	21	18	35	19	17	22	21	21	15	14	13	16	15	14	15
5	15	14	13	14	17	18	14	15	18	20	28	21	21	21	34	15	17	15	14	16	14	15	15	15
6	13	13	15	13	13	15	16	14	15	23	17	16	21	17	21	16	16	15	21	14	14	14	14	13
7	14	13	14	13	13	18	15	15	16	21	22	17	44	51	25	17	18	15	14	13	15	15	14	15
8	15	15	13	16	14	20	17	15	17	17	17	22	18	25	23	17	15	15	16	14	15	15	14	13
9	14	15	14	13	13	20	15	13	16	21	19	18	19	22	39	24	14	15	15	14	14	13	13	15
10	15	15	15	16	14	14	17	15	15	17	35	19	22	28	46	16	15	13	13	16	15	14	15	15
11	15	16	16	14	14	21	17	13	17	18	18	33	21	16	23	19	18	15	15	14	16	15	15	14
12	15	13	13	15	16	14	15	16	17	21	17	21	18	18	29	22	17	14	14	14	15	15	16	13
13	15	13	14	16	15	18	15	15	23	21	21	46	31	26	48	17	14	13	15	15	15	15	15	16
14	15	16	16	15	14	16	16	15	14	14	14	16	20	42	48	15	14	9	15	15	15	15	16	16
15	14	16	16	15	15	15	17	15	16	15	16	17	19	21	23	17	14	13	15	7	17	15	15	15
16	15	16	15	15	16	15	15	13	12	19	17	31	21	21	41	15	16	16	14	14	14	15	14	15
17	15	15	15	15	15	15	14	15	15	16	23	29	13	20	28	17	22	15	14	14	10	8	15	15
18	15	15	15	15	17	15	15	15	17	28	18	18	25	20	23	26	17	15	20	14	14	14	16	14
19	16	15	15	15	21	16	15	19	15	20	21	16	29	20	18	19	17	17	14	13	15	15	15	16
20	17	15	15	15	15	15	14	16	15	12	18	17	17	17	19	13	17	20	15	15	15	14	17	14
21	15	16	15	15	15	15	16	16	16	19	18	16	27	27	19	5	19	10	16	140	15	5	13	14
22	15	15	15	15	15	15	15	14	16	15	36	53	19	28	17	17	15	14	15	14	15	16	15	15
23	16	15	15	16	15	15	17	17	16	20	15	18	13	16	19	19	17	15	17	11	23	14	15	16
24	15	16	15	16	16	15	16	14	16	16	17	50	40	30	15	49	14	15	12	15	14	15	15	15
25	15	14	17	14	15	15	14	15	20	19	17	20	20	15	20	15	12	15	15	15	13	13	14	13
26	5	15	15	15	15	15	15	17	19	17	15	21	15	11	19	16	11	15	15	15	11	14	6	15
27	15	15	14	14	16	17	14	13	17	19	23	24	31	18	19	17	131	30	7	14	15	15	15	15
28	16	16	15	16	15	15	16	15	16	17	19	19	17	19	18	17	16	62	43	9	15	15	15	13
29	14	15	16	15	15	14	15	15	14	16	15	18	22	14	13	13	17	16	14	16	14	16	16	15
30	15	15	16	15	17	15	13	14	16	19	18	16	20	18	16	17	17	14	13	19	5	5	15	16
31	15	5	16	15	16	16	14	13	15	17	16		40	18	17	15	16	15	13	14	15	6	14	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	16	19	18	20	21	20	21	17	16	15	15	14	15	15	15	15
U Q	15	15	16	15	16	18	16	15	17	21	21	24	25	25	28	19	17	15	15	15	15	15	15	15
L Q	14	14	14	14	14	15	15	14	15	17	17	17	19	17	19	15	14	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Yamagawa

MAY 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	74	71	65	64	61	60	73	98	104	99	87	104	116	130	139	132	133	129	113	99	100	98	81	76
2	A	90	89	84	61	63	72	85	95	85	80	98	A	115	116	116	117	116	117	115	99	A	75	74
3	67	91	87	74	66	70	88	73	85	92	90	76	94	103	116	114	121	117	119	107	102	80	71	75
4	68	65	68	67	60	61	73	88	96	82	81	90	96	99	101	101	110	115	117	106	A	A	76	79
5	73	76	67	63	61	63	83	85	75	80	94	109	109	105	116	108	112	117	112	115	98	71	72	70
6	74	92	92	80	63	63	83	95	73	70	76	81	100	107	113	111	101	97	95	95	94	94	77	80
7	76	77	71	60	60	62	76	80	76	74	67	80	97	103	99	106	109	92	92	98	94	64	62	64
8	64	68	72	67	59	64	69	69	64	68	70	75	95	100	99	91	93	97	93	96	92	76	80	83
9	77	82	74	64	65	69	75	84	82	79	84	86	94	95	96	100	96	98	95	101	94	55	65	60
10	66	76	71	54	53	52	63	85	78	81	91	90	91	96	101	118	122	118	109	96	77	74	70	74
11	50	65	63	58	59	67	86	71	A	73	87	95	103	115	A	129	132	131	121	111	97	98	93	84
12	82	64	75	99	78	85	76	68	67	70	79	88	79	89	104	108	96	96	99	112	97	73	71	77
13	75	71	64	72	60	60	66	73	76	77	81	83	87	95	98	111	111	99	93	99	100	91	71	82
14	82	69	74	67	70	64	69	98	90	77	81	81	93	93	97	98	100	109	A	N 109	96	59	68	69
15	69	71	71	63	63	63	67	68	76	98	98	103	112	115	115	115	129	118	117	98	81	72	A	79
16	81	77	73	65	68	67	77	85	85	84	96	100	103	117	118	115	100	96	94	97	92	81	A	79
17	77	91	77	83	A	72	83	82	A	72	85	90	95	91	A	A	A	103	A	A	92	A	85	95
18	94	96	93	92	75	66	71	83	87	90	89	85	93	88	87	91	91	85	87	A	84	A	77	72
19	82	82	74	73	75	77	75	70	82	83	75	87	91	97	92	93	95	91	89	A	97	95	95	79
20	84	88	81	76	77	76	79	81	81	89	96	99	101	A	109	102	A	107	102	91	A	A	A	A
21	A	A	84	72	65	69	86	80	A	71	A	A	95	100	103	106	100	89	A	95	A	A	A	A
22	A	65	A	A	61	A	77	79	87	78	76	88	95	A	101	107	103	A	87	88	87	A	87	88
23	63	88	94	77	72	69	77	94	87	86	A	A	82	A	A	79	83	85	35	A	A	A	A	77
24	A	65	53	61	68	69	83	83	80	73	A	79	87	95	95	92	93	94	97	98	93	79	80	93
25	90	83	86	77	65	65	85	88	A	A	A	87	84	90	94	95	103	107	38	A	103	86	79	69
26	81	A	49	84	69	69	86	97	83	A	107	A	A	A	104	107	117	125	113	97	89	88	91	88
27	83	90	83	63	64	66	81	81	A	35	A	82	86	A	A	37	95	94	A	93	96	94	A	A
28	48	93	59	96	85	85	64	A	79	A	89	96	101	104	A	48	A	A	92	A	A	64	65	66
29	45	A	60	55	A	A	A	59	75	A	71	79	91	97	102	107	101	96	102	99	86	87	79	A
30	92	91	76	55	59	58	79	82	A	A	A	78	87	85	92	98	94	94	92	93	93	A	A	A
31	A	A	59	64	59	61	81	73	A	38	47	A	91	99	115	118	118	123	46	99	107	93	88	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	30	30	29	29	30	30	24	26	25	27	29	26	26	30	28	29	27	25	26	22	24	25
MED	76	77	74	67	64	66	77	82	82	78	84	87	94	99	102	106	102	99	95	98	94	80	77	77
U Q	82	90	83	77	69	69	83	85	87	85	90	96	100	105	115	114	117	117	113	106	98	93	83	82
L Q	67	69	65	63	60	62	72	73	76	72	76	81	89	95	97	95	95	94	92	95	92	72	71	71

HOURLY VALUES OF fEs AT Yamagawa

MAY 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	36	52	40	38	36	G	34	41	42	45	111	110	63	56	55	36	33	28	36	38	G	27	25	60
2	92	59	50	G	G	G	G	40	61	76	70	113	133	70	56	50	55	36	52	67	66	72	82	71
3	60	28	G	G	29	G	35	54	59	66	61	57	57	87	47	52	39	40	38	40	60	60	91	60
4	29	G	G	G	G	G	32	46	50	60	59	55	55	52	36	36	56	60	76	77	80	61	40	40
5	54	41	32	40	G	G	34	43	43	54	62	49	106	73	42	51	69	76	72	54	35	G	31	39
6	G	59	57	59	36	36	34	43	50	60	56	71	55	46	49	45	34	G	G	32	27	G	G	G
7	G	G	G	G	G	G	G	35	37	50	47	48	49	50	43	54	50	45	45	43	46	50	40	44
8	G	G	G	G	G	G	34	39	44	80	59	50	40	40	60	50	37	36	30	35	53	38	38	G
9	G	G	G	G	G	G	31	41	50	51	47	42	46	44	44	42	40	36	44	60	56	30	G	G
10	G	G	G	G	G	G	G	43	51	56	51	44	51	35	50	41	44	36	46	64	32	G	41	40
11	40	36	48	48	43	36	40	59	71	56	55	66	66	88	109	60	70	48	53	57	36	32	46	59
12	59	47	57	32	41	48	49	40	52	54	62	57	62	57	66	47	46	40	37	36	39	40	G	36
13	32		G	G	G	G	32	36	40	43	43	N	39	44	38	36	47	54	58	43	60	38	42	56
14	54	31	G	G	G	G	23	40	50	42	54	38	46	60	60	37	76	66	113	60	83	32	G	G
15	G	G	G	G	G	G	31	44	55	62	80	89	71	78	55	36	38	37	37	34	40	39	93	92
16	32	41	39	43	36	G	35	55	84	72	86	84	80	95	47	42	34	43	52	42	112	59	91	59
17	40	40	60	60	72	46	36	48	71	60	54	74	64	107	118	136	150	58	115	91	59	144	78	60
18	58	33	33	31	G	53	59	56	66	63	52	106	67	63	40	43	46	60	80	110	50	44	45	36
19	G	G	G	G	G	G	34	36	50	59	78	66	62	50	40	66	54	67	64	115	38	50	35	G
20	G	G	G	35	32	G	35	47	58	57	90	74	71	107	116	97	108	90	88	90	153	115	93	114
21	84	85	55	56	35	G	40	60	97	66	107	93	55	55	73	63	52	64	116	171	125	115	87	59
22	73	48	58	114	60	72	46	61	63	63	54	72	62	101	45	43	49	93	59	42	48	71	71	60
23	52	37	40	G	G	50	57	71	67	72	116	152	115	108	124	83	41	61	104	116	129	114	85	60
24	93	43	48	55	36	G	34	43	50	73	110	63	56	64	39	54	69	62	59	50	60	53	60	47
25	54	49	59	46	50	G	36	77	114	91	93	72	85	66	72	90	66	60	102	94	31	59	69	49
26	71	88	69	54	44	37	60	86	80	115	110	118	118	107	51	83	45	48	56	66	45	60	60	58
27	41	34	33	55	G	G	34	40	124	156	152	76	70	103	150	115	48	55	115	58	80	73	108	127
28	73	43	33	G	G	G	40	93	94	91	82	60	50	70	88	101	106	97	46	93	90	69	84	91
29	57	55	105	54	126	128	70	52	70	75	73	60	62	70	59	40	45	42	74	34	G	41	70	84
30	60	43	40	31	41	G	49	92	92	92	109	70	77	70	74	63	60	56	70	62	93	111	124	92
31	91	80	39	34	56	35	53	72	120	101	94	115	73	84	78	72	84	66	98	84	57	54	92	109
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	52	40	39	32	29	G	35	46	59	63	70	70	62	70	55	51	49	55	59	60	56	53	60	59
U Q	60	49	55	54	41	36	46	60	80	76	94	89	73	88	74	72	69	64	88	90	80	71	87	71
L Q	G	G	G	G	G	G	32	40	50	56	54	57	55	52	44	42	41	40	45	42	38	38	38	39

HOURLY VALUES OF fmin AT Yamagawa

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

HOURLY VALUES OF foF2 AT Okinawa

MAY 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	92	97	97	74	71	65	68	97	107	109	111	129	142	170	175	182	185	178	179	174	153	67	125	115
2	121	125	135	126	79	68	80	99	91	85	95	115	124	127	132	149	138	149	161	147	125	97	84	90
3	94	105	103	96	76	90	80	83	78	102	A	90	A	127	140	156	158	129	175	166	148	117	118	123
4	116	130	123	99	82	74	79	85	92	88	A	92	A	110	115	120	131	138	139	117	A	81	91	99
5	96	95	89	70	63	60	70	82	78	83	91	110	122	135	149	153	173	136	165	165	161	79	129	124
6	126	141	137	99	83	81	95	98	75	78	A	95	113	125	139	126	120	121	125	139	128	127	105	102
7	97	97	99	84	67	68	86	87	83	73	73	89	110	123	111	118	122	117	117	121	107	70	72	A
8	75	77	83	77	73	64	72	77	69	69	74	86	97	111	110	107	113	119	113	112	98	75	N 83	83
9	89	85	78	68	67	62	71	81	79	91	96	94	104	117	117	121	125	117	114	129	112	69	79	81
10	83	89	91	67	57	53	58	70	72	83	92	94	105	114	124	137	132	124	137	116	97	96	93	94
11	89	72	76	63	63	75	76	58	66	79	91	105	121	131	162	168	171	179	169	152	144	127	134	141
12	132	133	131	122	107	83	79	65	77	67	A	89	97	103	114	119	112	118	125	130	114	81	77	71
13	75	N 74	76	75	73	53	63	73	79	91	95	95	107	115	125	131	125	110	112	124	119	77	84	A
14	88	87	93	77	69	66	69	96	88	67	A	84	107	106	112	116	114	117	136	151	83	68	74	63
15	83	86	82	71	69	59	60	69	85	102	97	119	132	149	153	150	158	157	135	125	107	104	105	107
16	106	110	95	92	73	71	78	86	A	87	102	111	123	133	141	133	116	116	118	119	103	84	95	A
17	91	100	92	78	64	65	87	77	A	81	91	111	119	129	126	125	A	121	126	134	A	98	96	97
18	107	115	115	107	82	53	64	95	94	A	A	100	105	113	114	112	108	100	101	110	105	79	83	89
19	93	97	91	79	87	81	75	66	86	84	81	96	103	A	106	111	107	107	111	104	95	A	73	92
20	97	103	105	97	95	85	72	79	82	88	98	A	105	100	106	A	117	121	119	128	99	93	96	93
21	91	77	76	71	61	67	88	72	A	50	47	89	98	113	119	126	125	115	110	119	A	85	75	81
22	A	79	A	66	63	63	75	79	88	A	A	93	141	100	105	112	112	101	A	101	A	93	94	89
23	97	95	92	80	69	67	74	87	83	91	93	80	85	95	99	93	99	107	A	100	90	A	A	A
24	A	A	A	A	A	72	80	95	81	78	85	89	97	102	103	100	105	109	114	111	91	85	88	89
25	97	105	89	89	81	77	78	90	81	76	82	90	103	103	115	124	130	156	155	160	125	89	A	93
26	97	94	89	84	73	73	78	93	45	A	A	A	102	114	127	131	148	146	128	121	107	97	97	104
27	105	105	93	79	77	75	81	73	73	80	85	95	100	109	109	110	109	105	113	104	A	97	98	96
28	100	97	91	89	89	72	62	60	83	A	50	A	117	119	117	109	96	103	109	107	A	A	A	66
29	A	A	A	53	A	A	54	71	60	A	A	77	97	104	114	119	113	139	49	119	89	91	85	85
30	87	95	81	63	65	64	74	78	A	A	A	A	A	103	113	A	117	108	102	99	92	90	68	65
31	A	63	72	67	71	68	75	A	A	A	A	93	112	127	150	161	175	177	165	154	146	123	103	101
	00	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	29	28	30	29	30	31	30	26	24	20	27	28	30	31	29	30	31	29	31	25	28	28	27
MED	96	97	92	78	73	68	75	80	81	83	91	94	106	114	117	124	121	119	125	121	107	90	92	93
U Q	105	105	101	92	81	75	80	90	86	89	95	105	120	127	139	143	138	139	147	147	126	97	100	102
L Q	89	85	82	70	66	64	69	72	75	77	81	89	101	104	111	112	112	109	112	111	96	79	81	83

HOURLY VALUES OF fEs AT Okinawa

MAY 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	41	25	39	54	59	42	52	56	53	47	45	48	40	45	38	38	34	28	27	31	26	25	29	72
2	39	152	70	69	59	33	28	40	52	73	57	53	55	58	52	55	46	36	30	34	32	53	48	40
3	59	71	49	48	29	34	29	44	60	85	102	90	175	47	35	34	49	34	35	30	29	28	28	37
4	92	58	G	G	G	G	G	39	56	75	94	76	146	52	65	94	56	60	69	74	132	58	60	40
5	37	32	36	29	32	28	G	39	57	51	62	56	44	37	46	43	38	33	54	128	59	45	40	G
6	G	G	G	G	31	40	G	38	53	52	91	85	115	92	77	62	71	48	33	G	G	G	G	G
7	G	G	G	G	G	G	G	45	45	44	47	57	54	55	60	61	48	52	53	38	43	34	33	89
8	28	38	G	G	G	G	G	38	47	48	47	38	40	53	66	53	35	35	36	60	52	60	35	30
9	G	G	G	G	G	G	27	48	52	59	56	55	49	47	44	38	44	31	40	34	58	60	48	57
10	38	25	G	G	G	G	28	36	52	54	47	46	53	53	52	53	56	54	38	94	38	70	49	38
11	48	34	34	41	46	33	36	53	64	54	72	47	53	97	63	80	83	80	73	56	109	59	46	34
12	59	48	40	35	G	11	G	48	44	85	87	67	68	57	73	74	60	67	51	28	41	31	57	G
13	29	29	26	27	28	G	26	34	38	50	42	45	52	54	G	49	45	47	92	44	32	41	32	55
14	67	60	G	24	G	G	G	35	45	56	109	54	G	45	38	66	91	60	47	43	48	49	32	28
15	G	G	G	26	G	G	29	43	50	67	63	65	100	G	G	G	36	62	105	33	38	G	29	G
16	91	60	50	34	34	31	43	60	109	60	76	56	52	47	49	35	37	38	40	46	28	26	G	107
17	71	79	48	44	37	38	43	51	85	73	87	74	71	66	112	90	127	74	116	130	110	48	84	G
18	48	59	33	28	39	32	43	52	64	95	182	69	73	70	74	52	57	60	38	87	59	39	29	31
19	24	G	G	G	G	26	28	43	55	64	78	76	74	123	95	52	36	34	41	57	72	113	55	40
20	34	26	24	25	33	G	G	42	59	49	62	156	179	88	86	113	59	49	70	92	105	55	40	35
21	59	39	34	24	23	G	35	59	95	116	115	68	116		131	50	49	57	71	103	92	47	47	54
22	115	72	86	36	40	30	36	74	115	158	115	91	128	74	100	83	88	89	100	89	91	60	41	44
23	48	33	41	25	G	41	53	56	82	78	109	76	70	102	107	55	42	61	115	78	66	113	108	91
24	106	109	88	94	79	28	22	46	72	49	52	52	49	57	57	64	67	69	68	58	90	40	23	60
25	60	48	37	23	24	G	30	39	72	110	76	78	105	101	46	40	38	46	41	40	93	54	92	59
26	46	G	28	G	G	G	35	49	92	82	132	124	92	57	92	65	52	107	42	G	G	48	46	60
27	71	47	40	28	25	G	G	32	36	43	46	54	57	48	49	81	57	78	48	G	94	59	60	46
28	34	40	38	G	G	22	30	51	62	84	146	145	111	66	56	95	84	49	62	49	62	132	91	45
29	112	115	78	65	88	70	45	61	70	90	92	66	78	86	53	56	96	140	162	144	45	24	28	54
30	78	53	45	40	40	44	60	66	93	115	166	115	132	90	64	144	57	55	46	69	70	48	24	145
31	90	56	49	65	58	54	49	133	167	108	115	84	108	115	83	88	75	104	78	71	47	34	32	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31
MED	48	40	36	27	28	26	29	46	59	67	78	67	71	57	60	56	56	55	51	56	58	48	40	40
U Q	71	60	48	41	40	34	43	56	82	85	109	84	111	88	83	81	71	69	73	87	91	59	55	59
L Q	34	25	G	G	G	G	G	39	52	51	56	54	52	48	46	49	42	38	40	34	38	34	29	30

HOURLY VALUES OF fmin AT Okinawa

MAY 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	15	16	15	16	15	15	15	14	16	21	20	21	21	33	19	28	19	17	15	15	15	17	15	15
2	15	13	17	15	16	15	15	15	16	17	21	20	21	20	20	19	15	15	15	16	16	15	14	15
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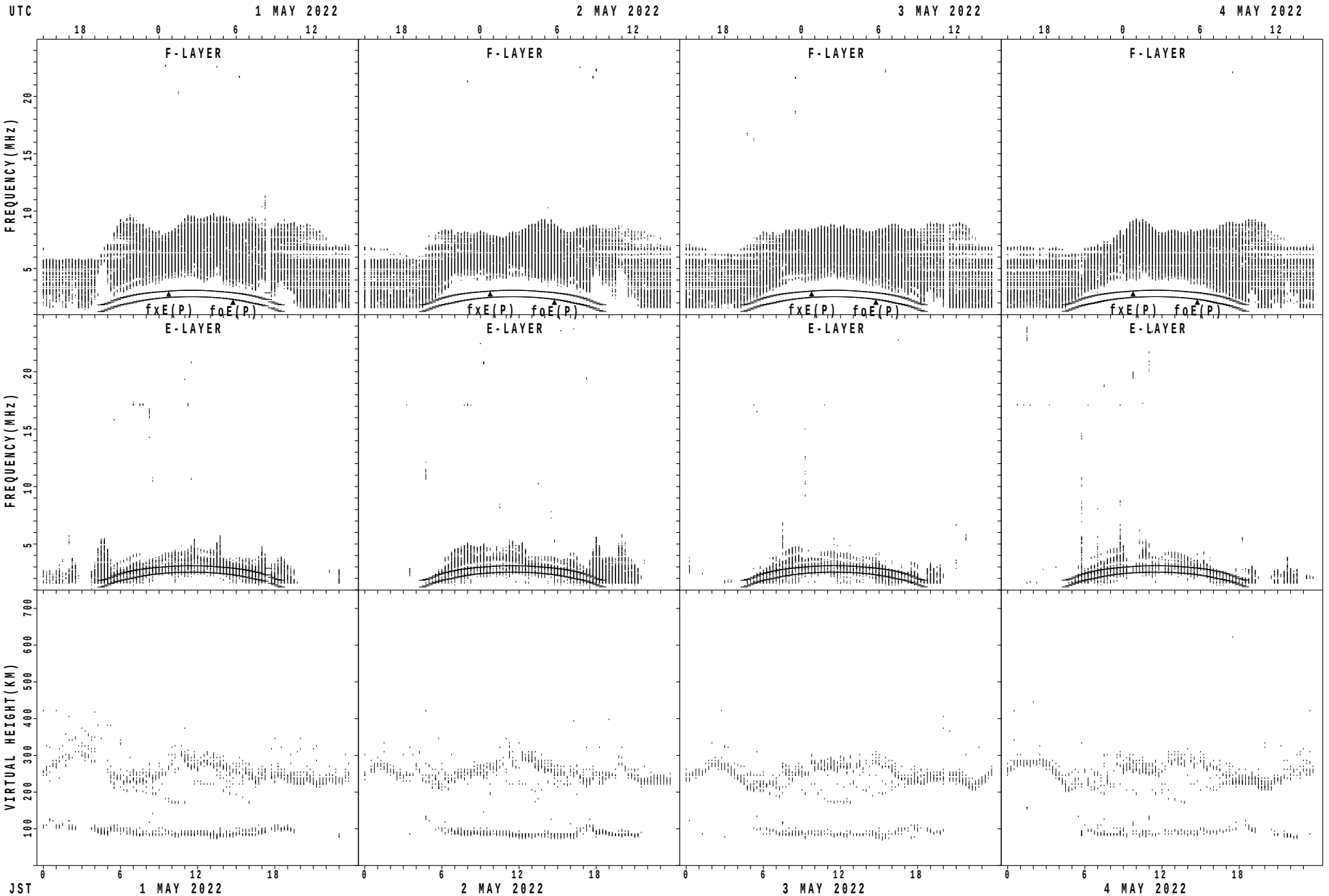
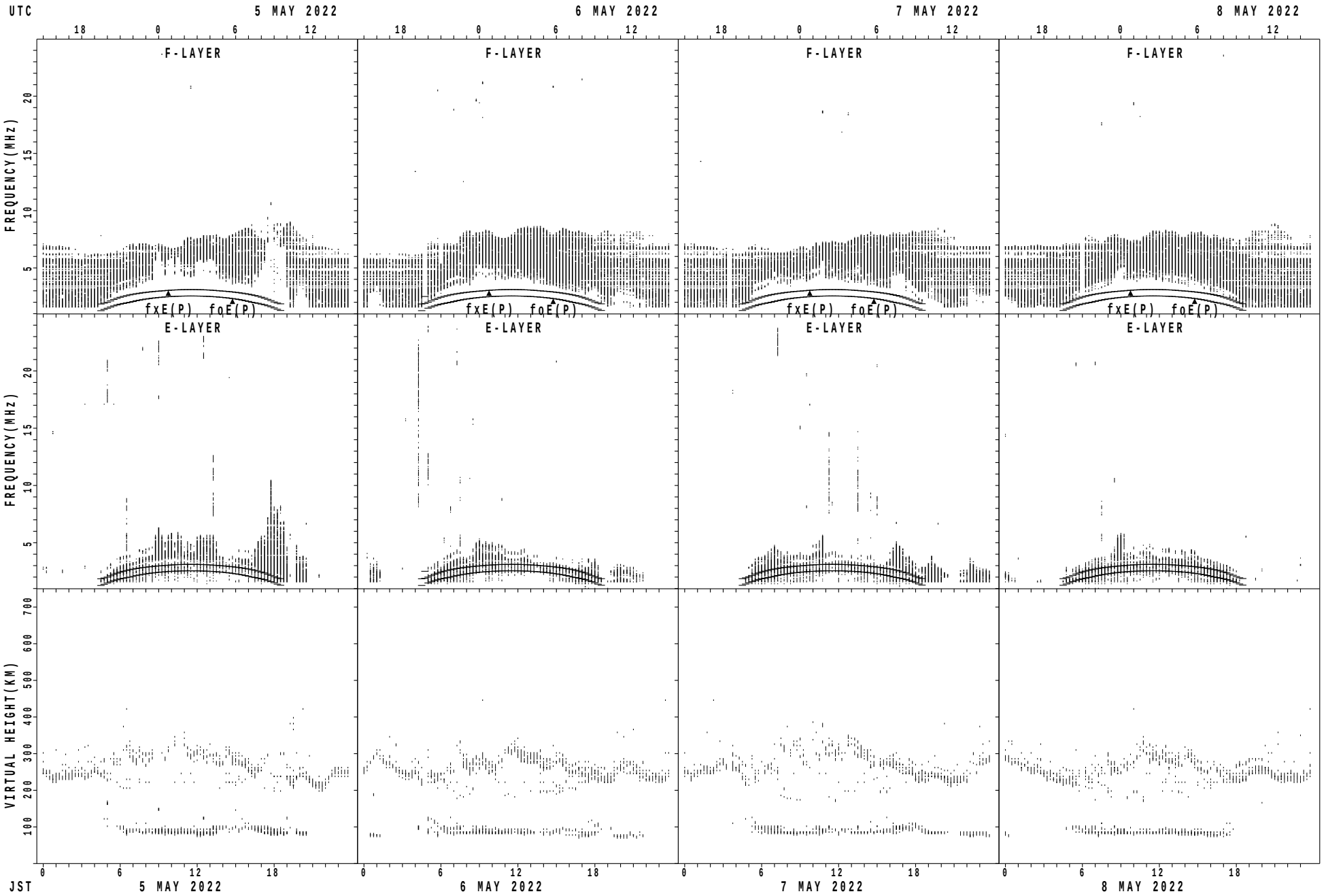
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	15	16	18	20	21	22	22	21	20	18	16	14	14	15	15	15	15
U Q	16	15	16	16	15	15	15	15	17	19	21	21	26	23	23	23	20	17	15	15	15	16	16	16
L Q	14	14	15	15	15	15	15	14	15	17	19	19	20	20	19	19	17	15	13	13	13	15	15	15

SUMMARY PLOTS AT Wakkanai



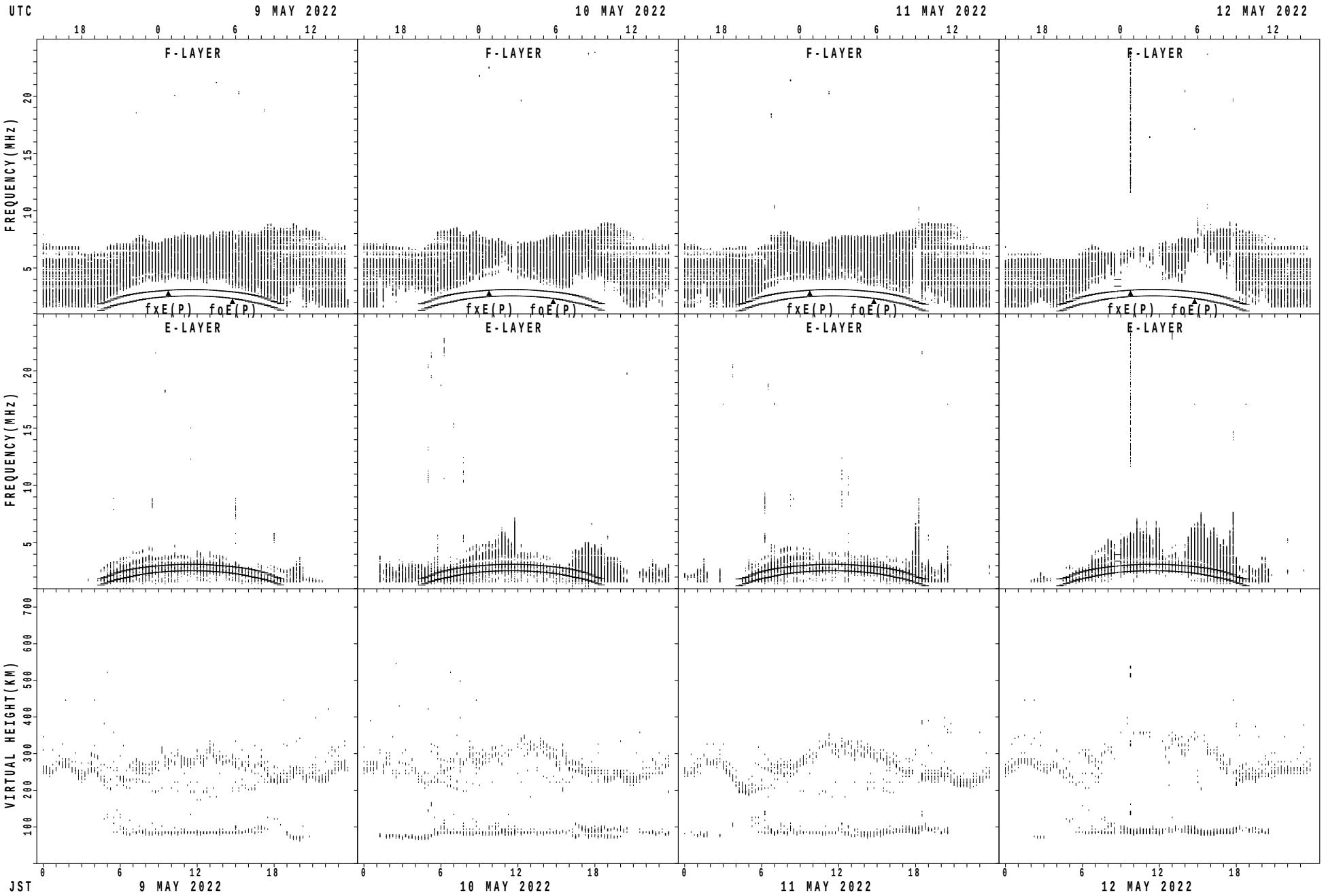
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



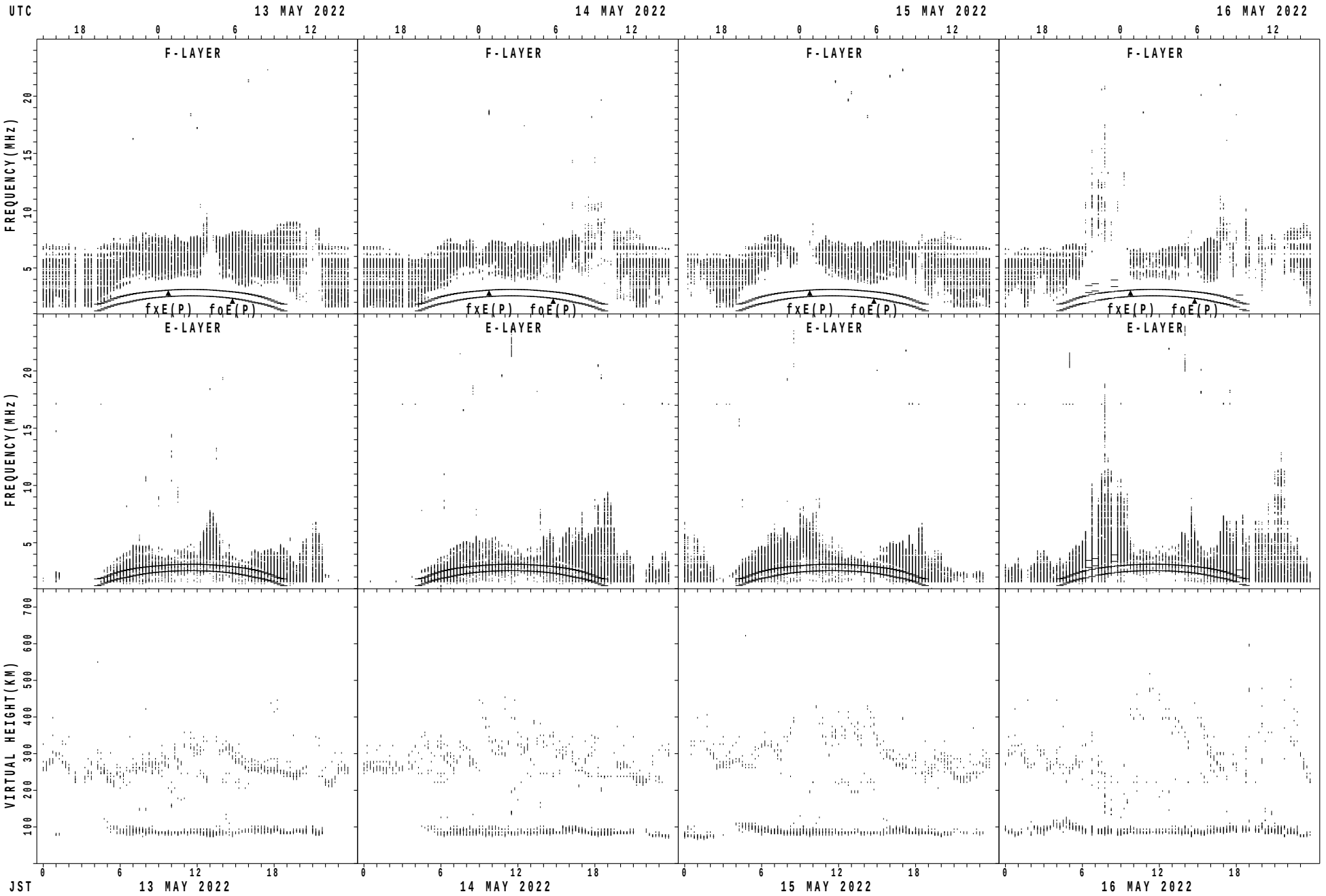
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



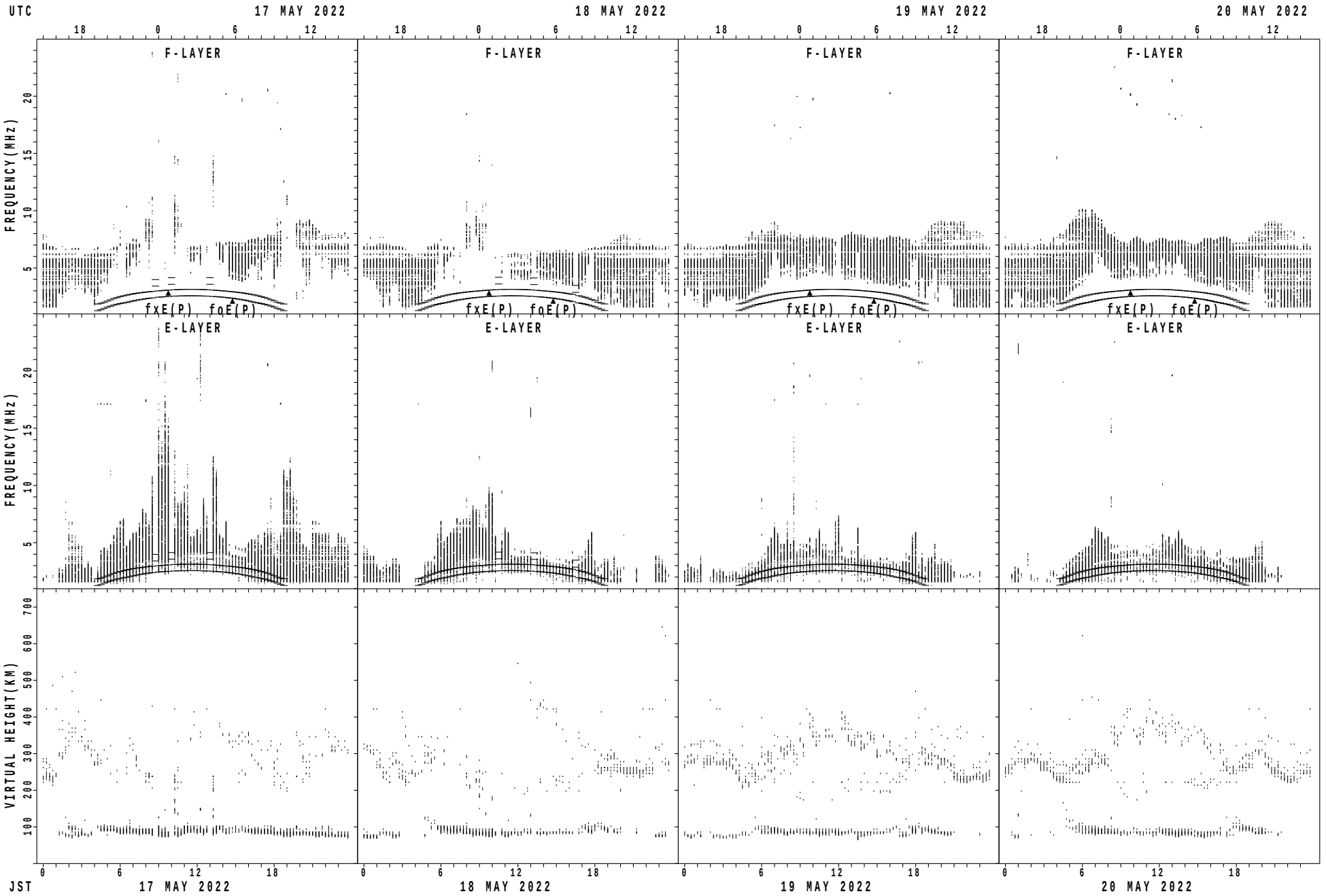
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



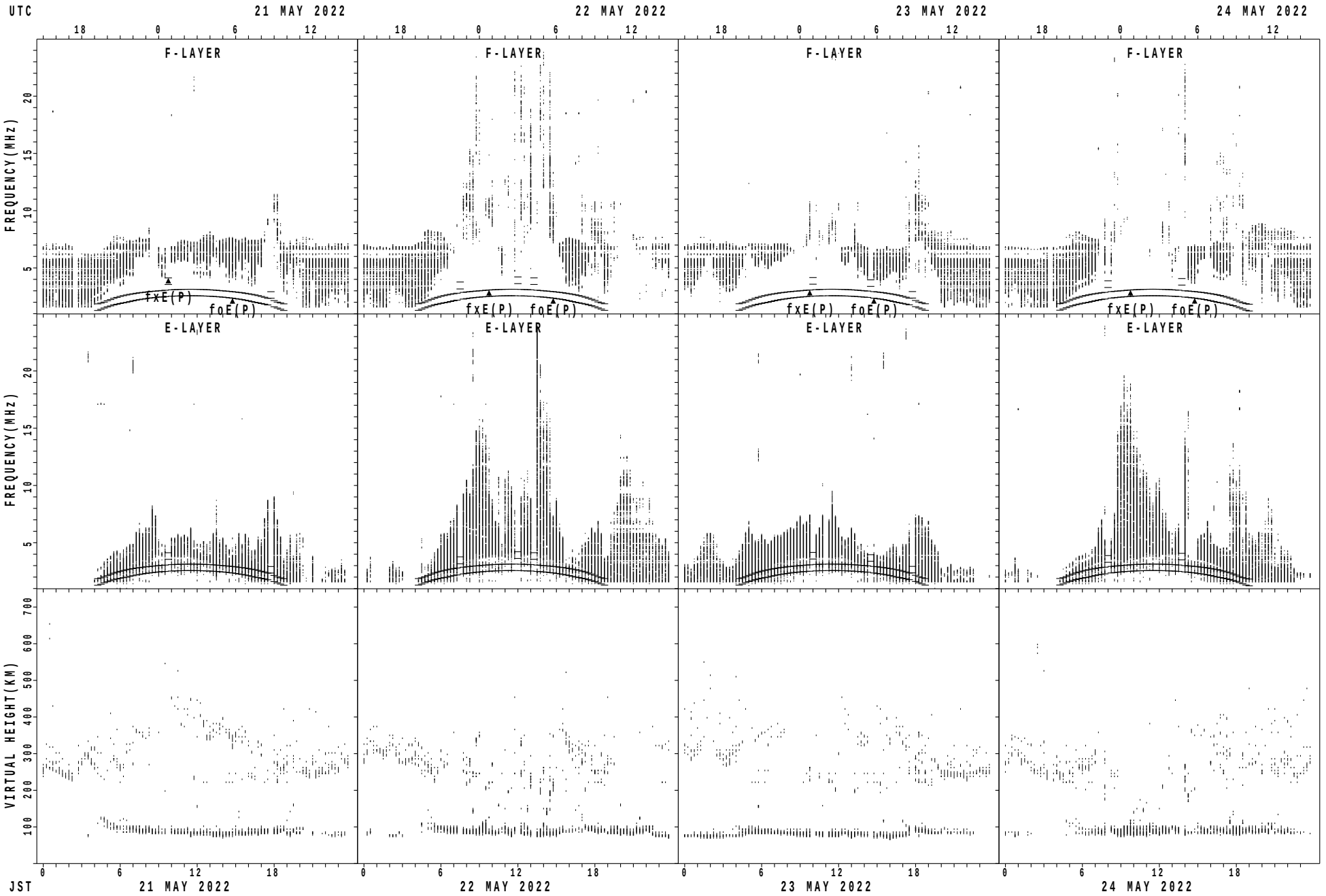
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



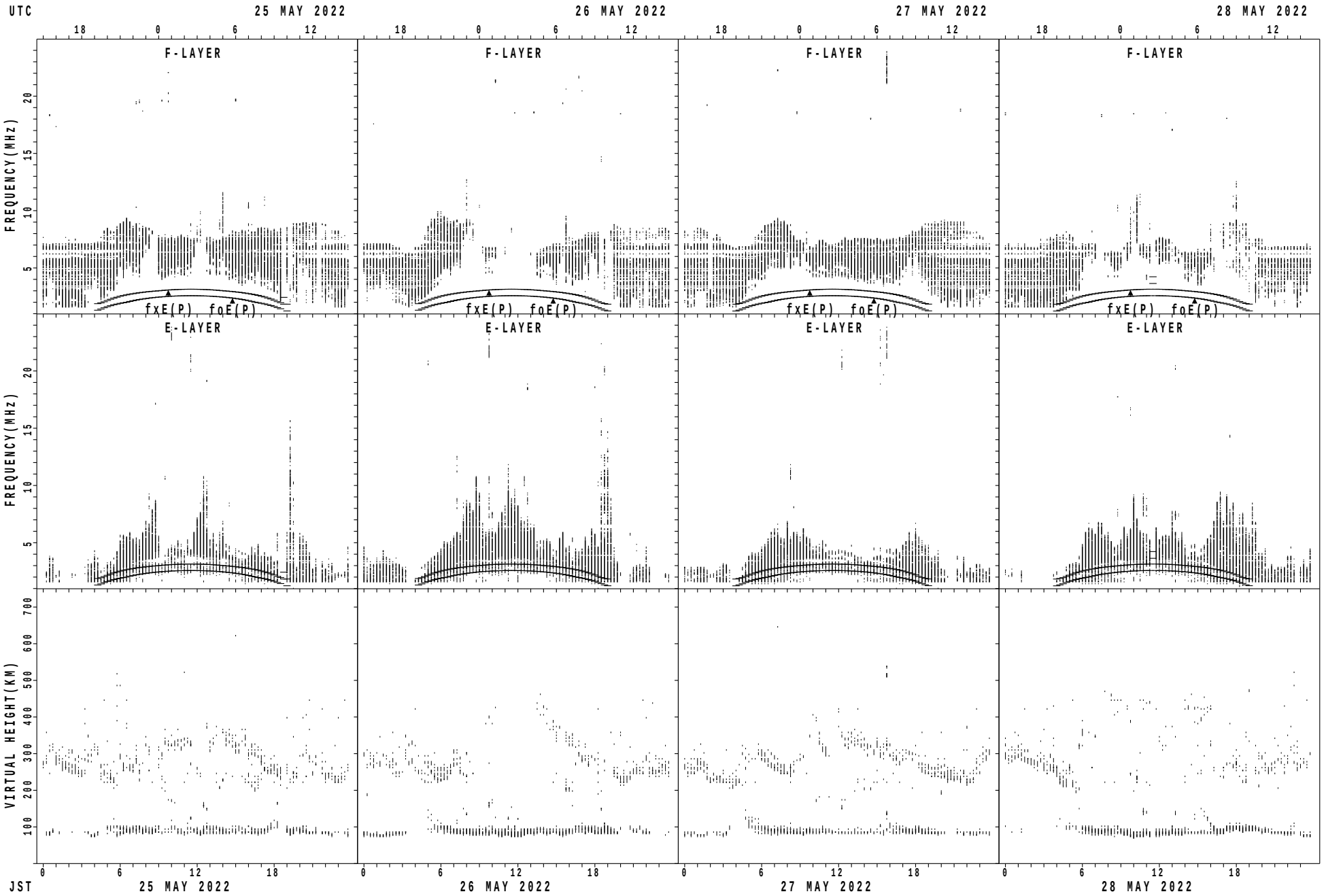
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



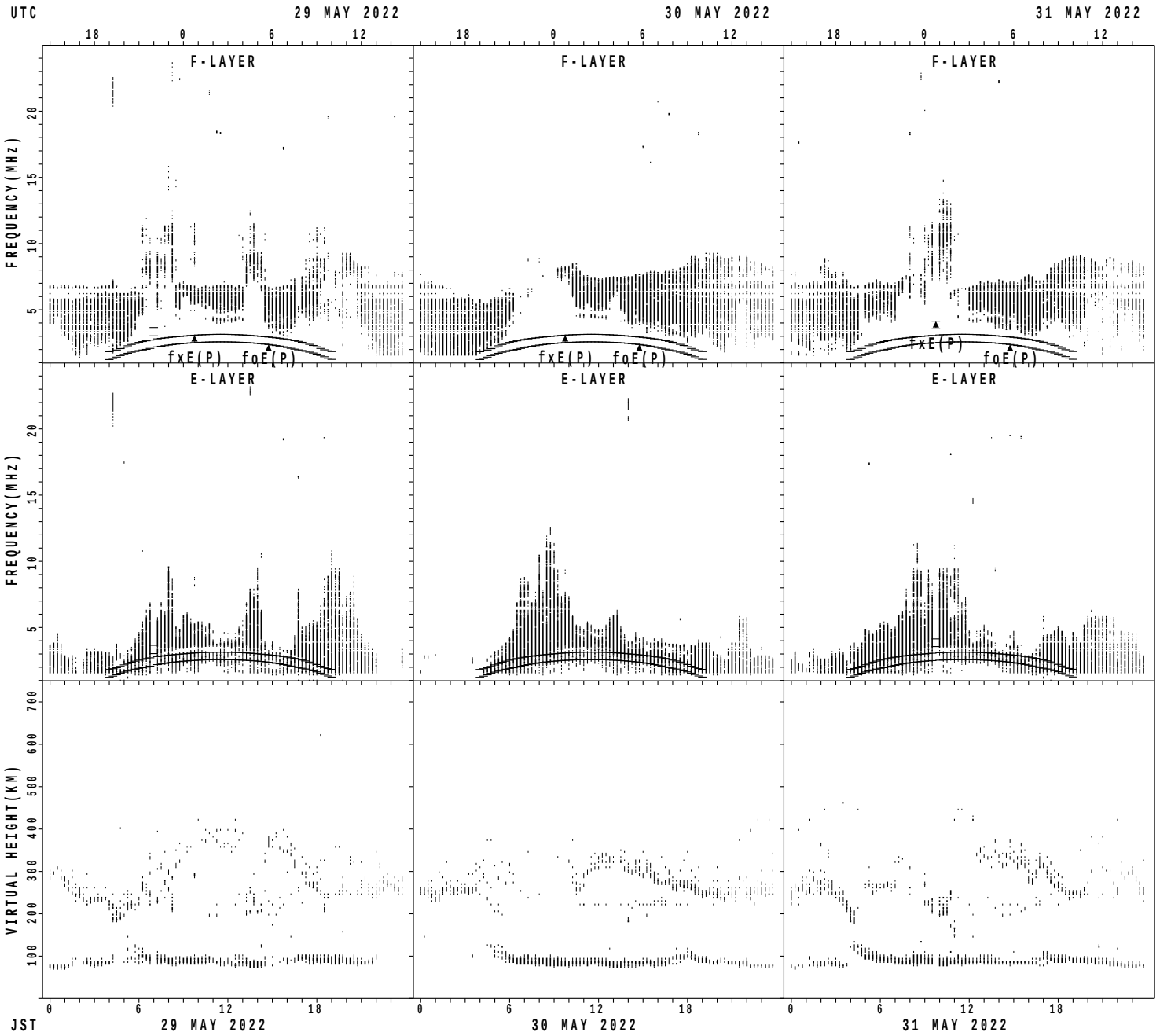
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



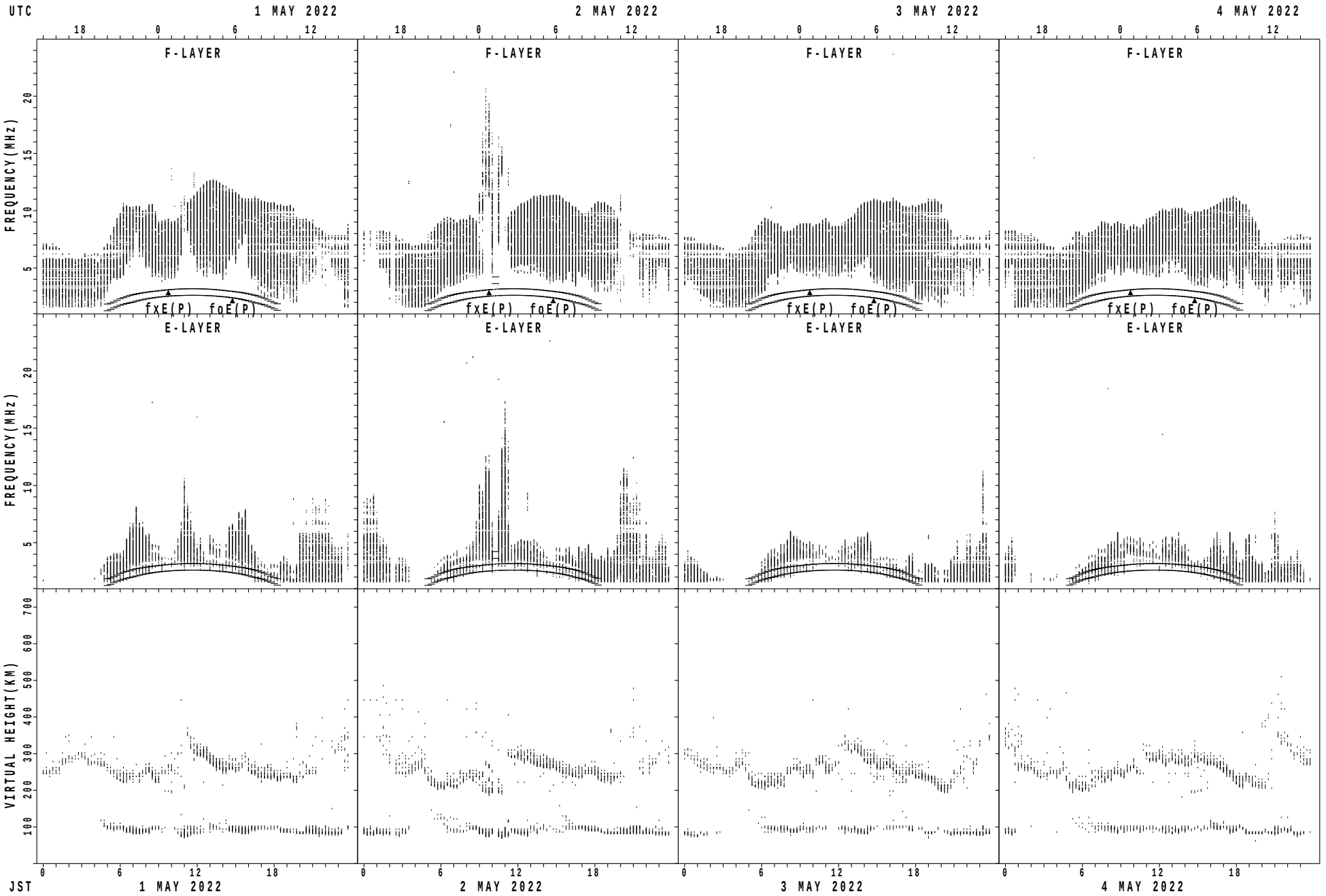
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



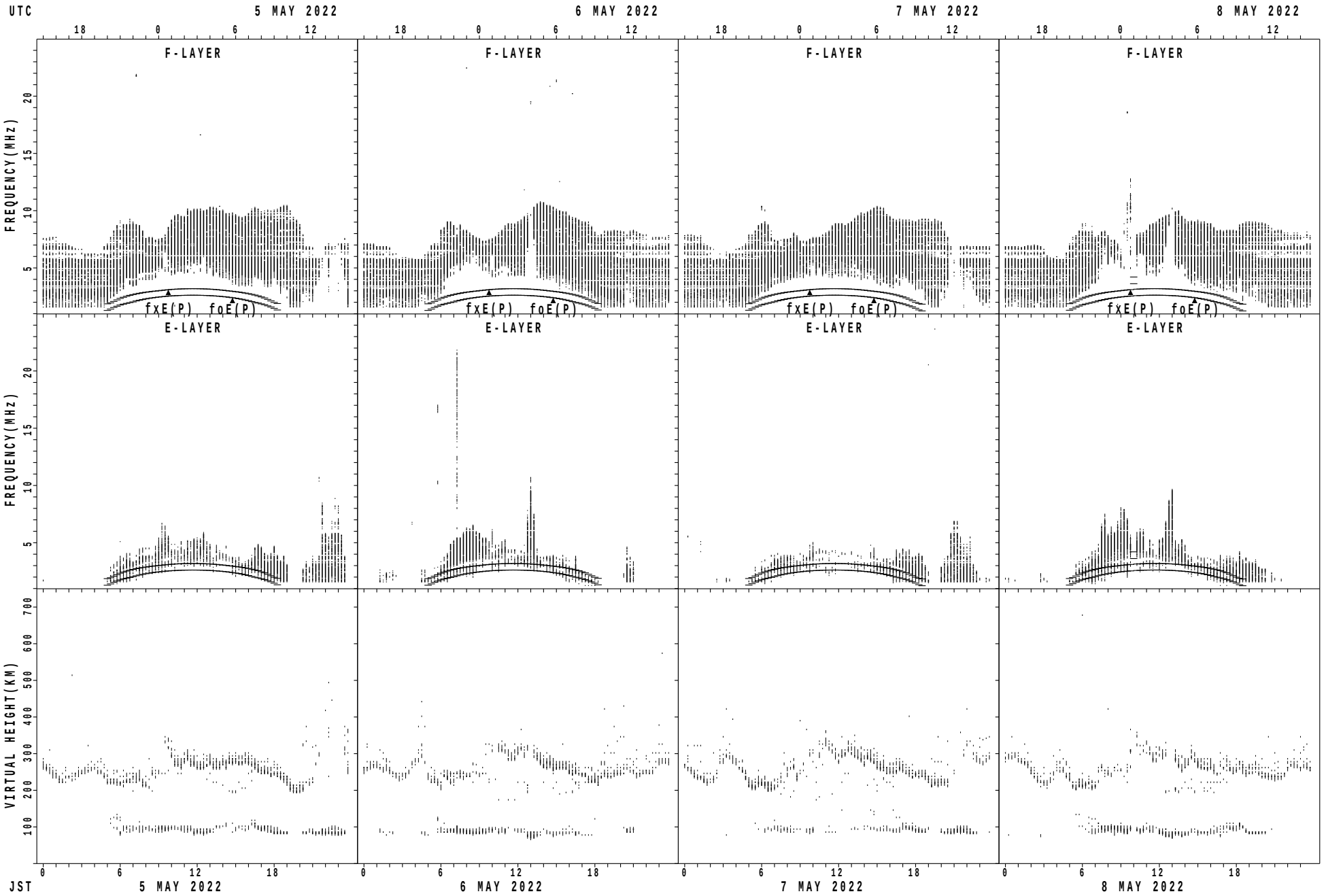
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



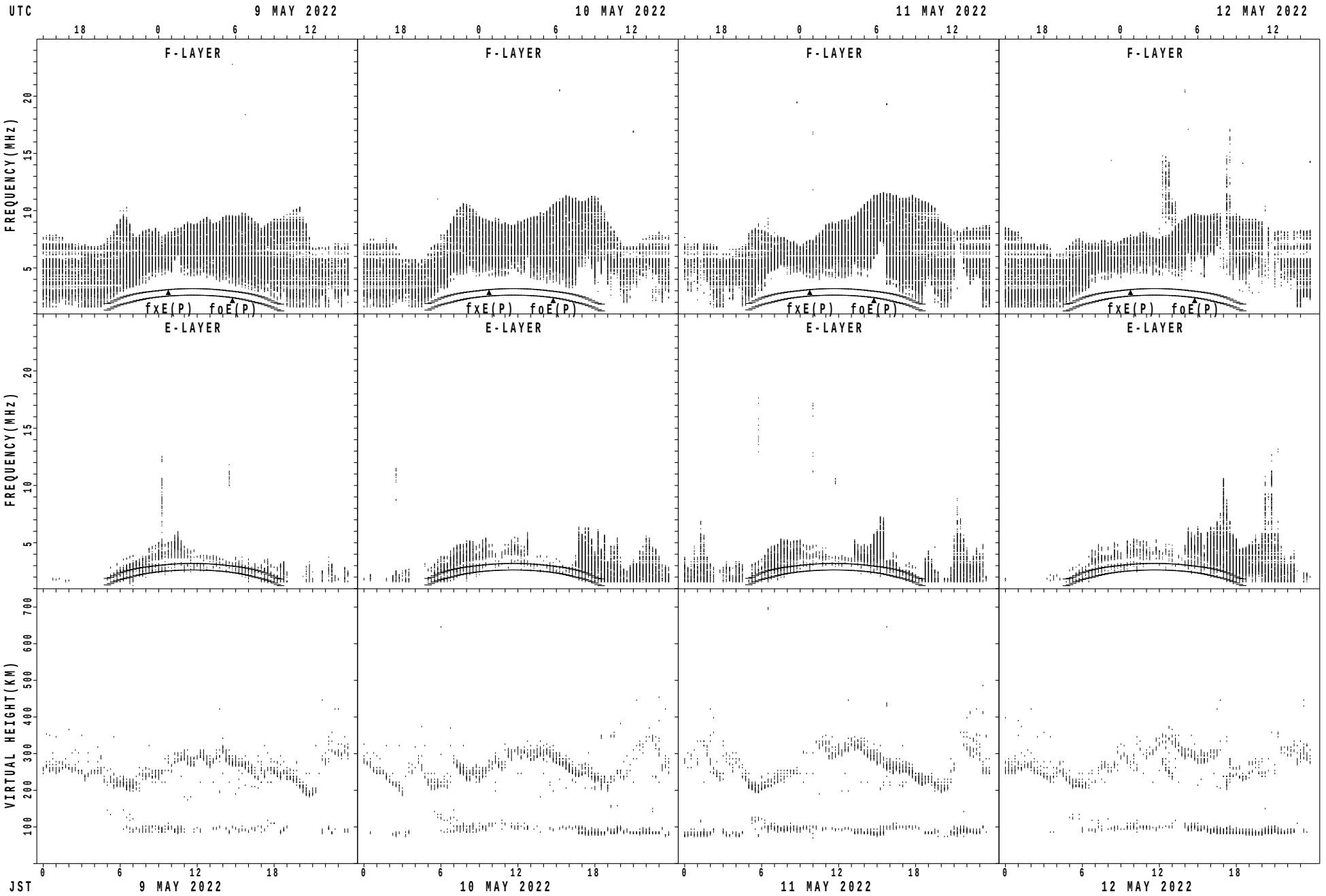
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



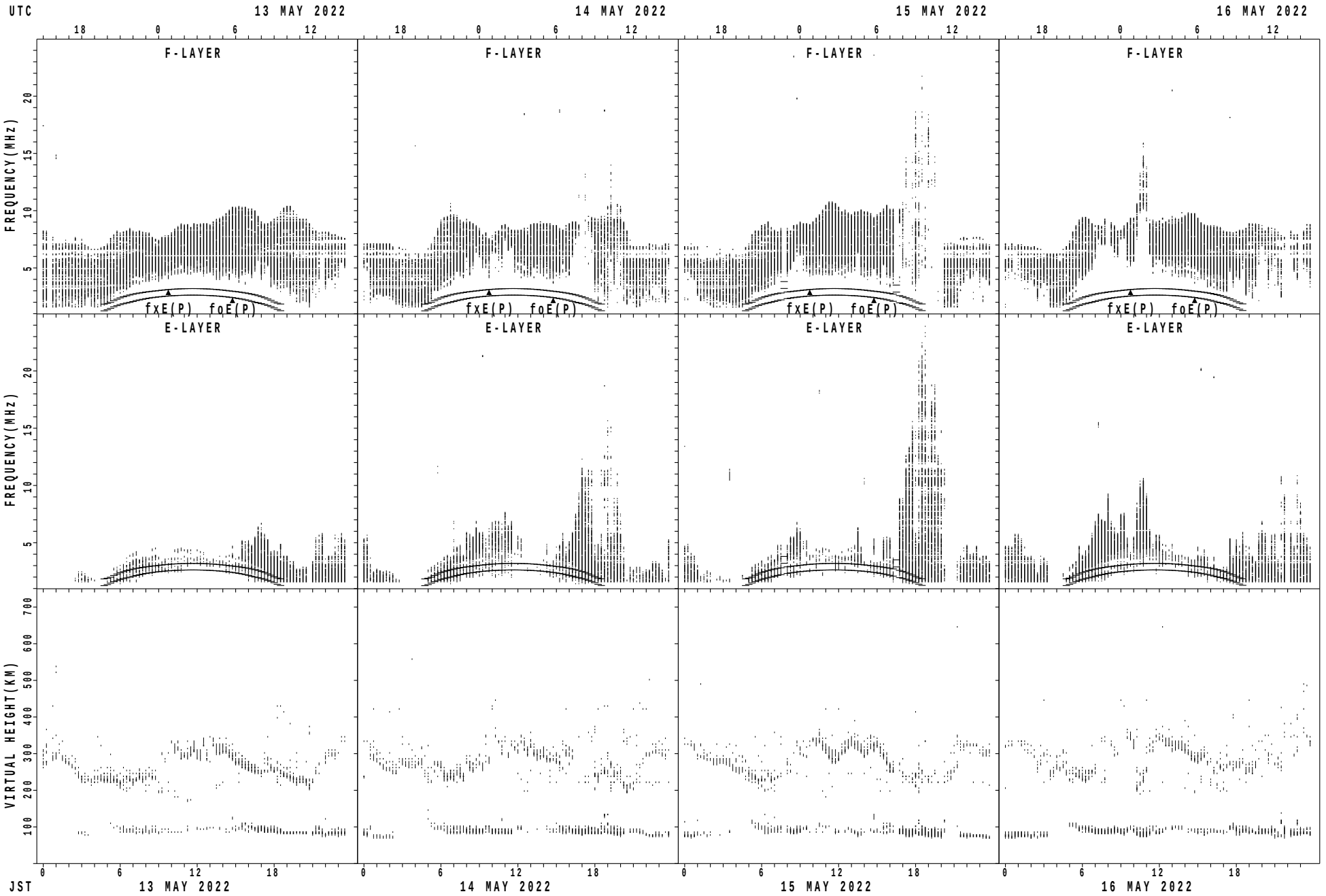
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



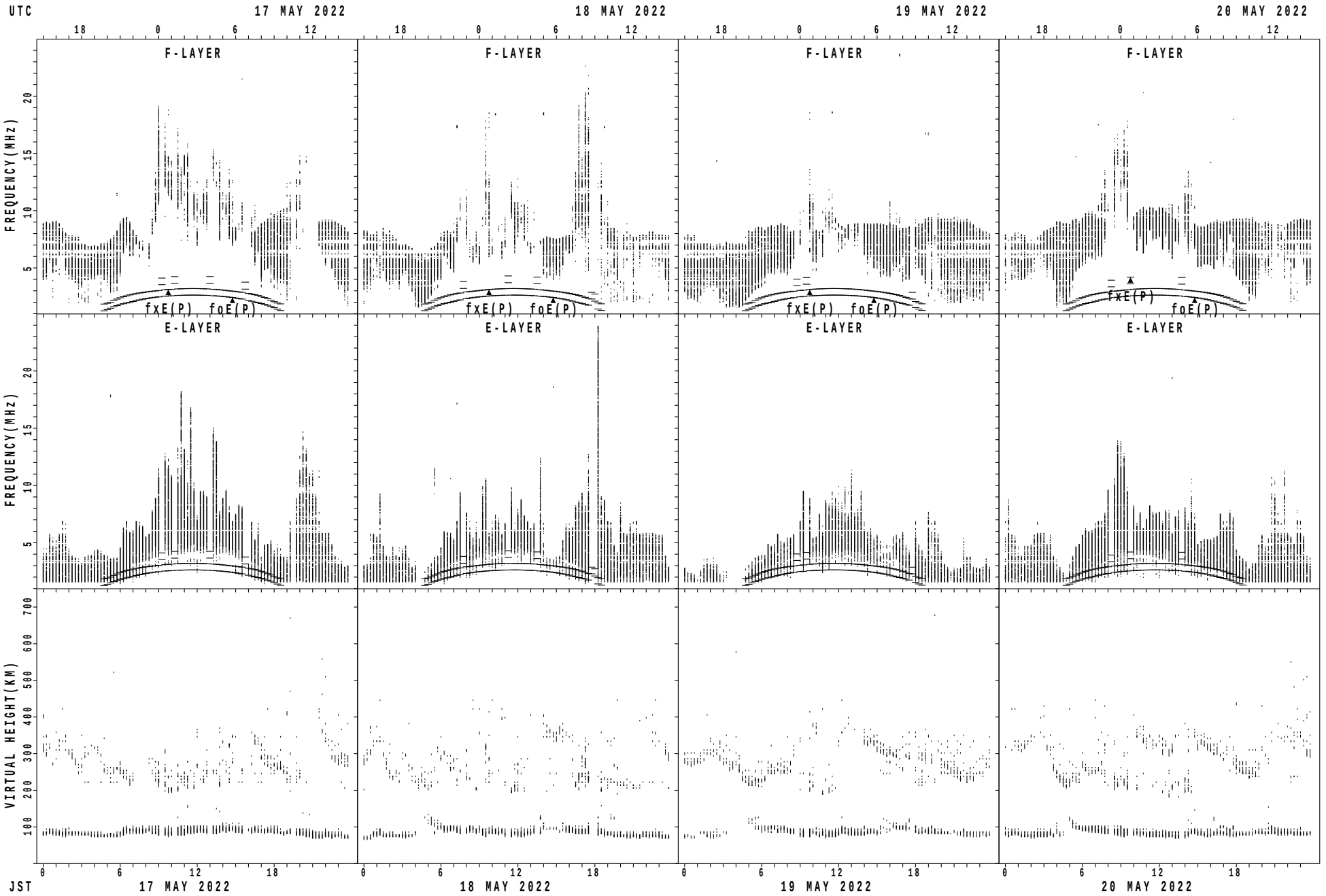
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



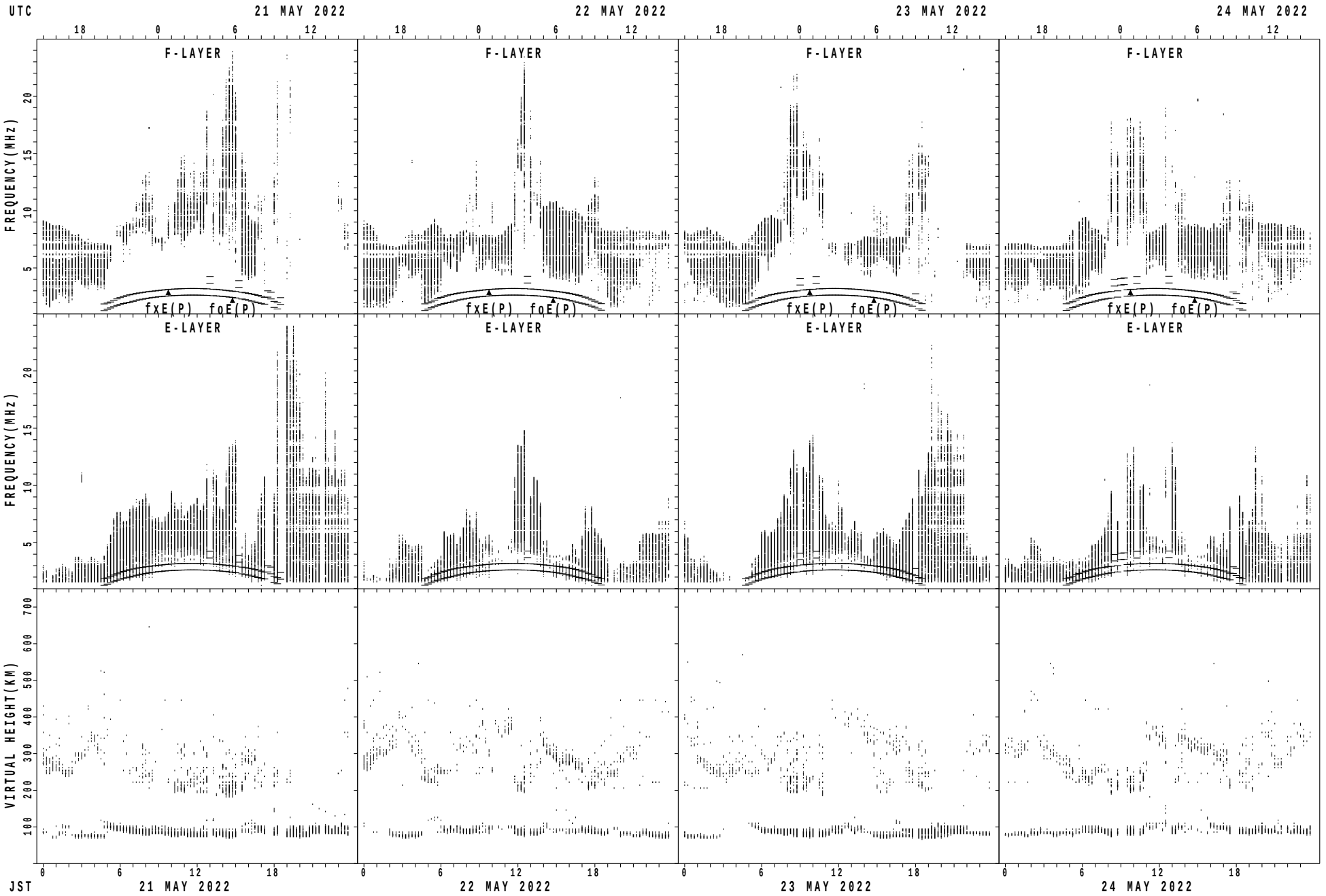
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



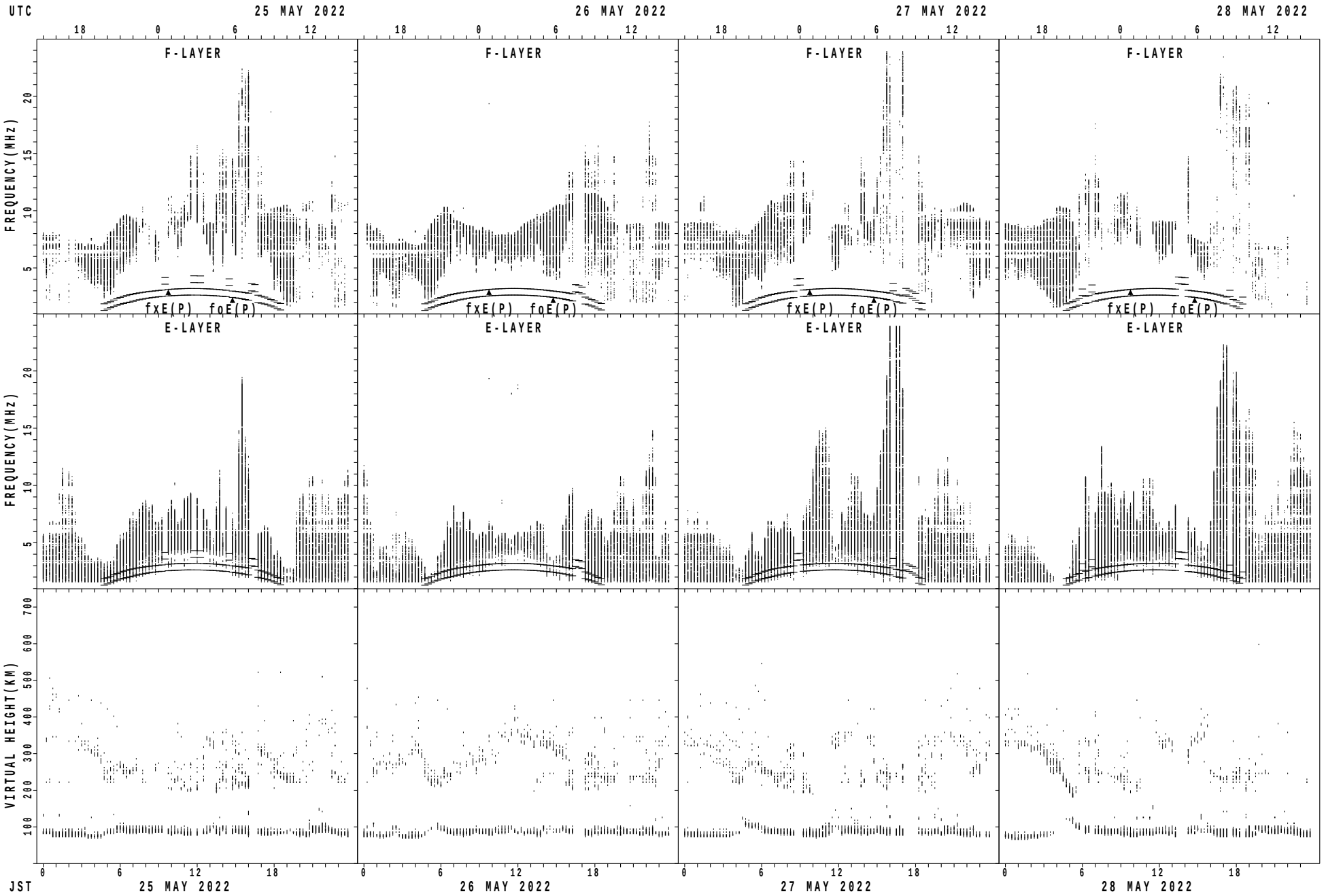
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



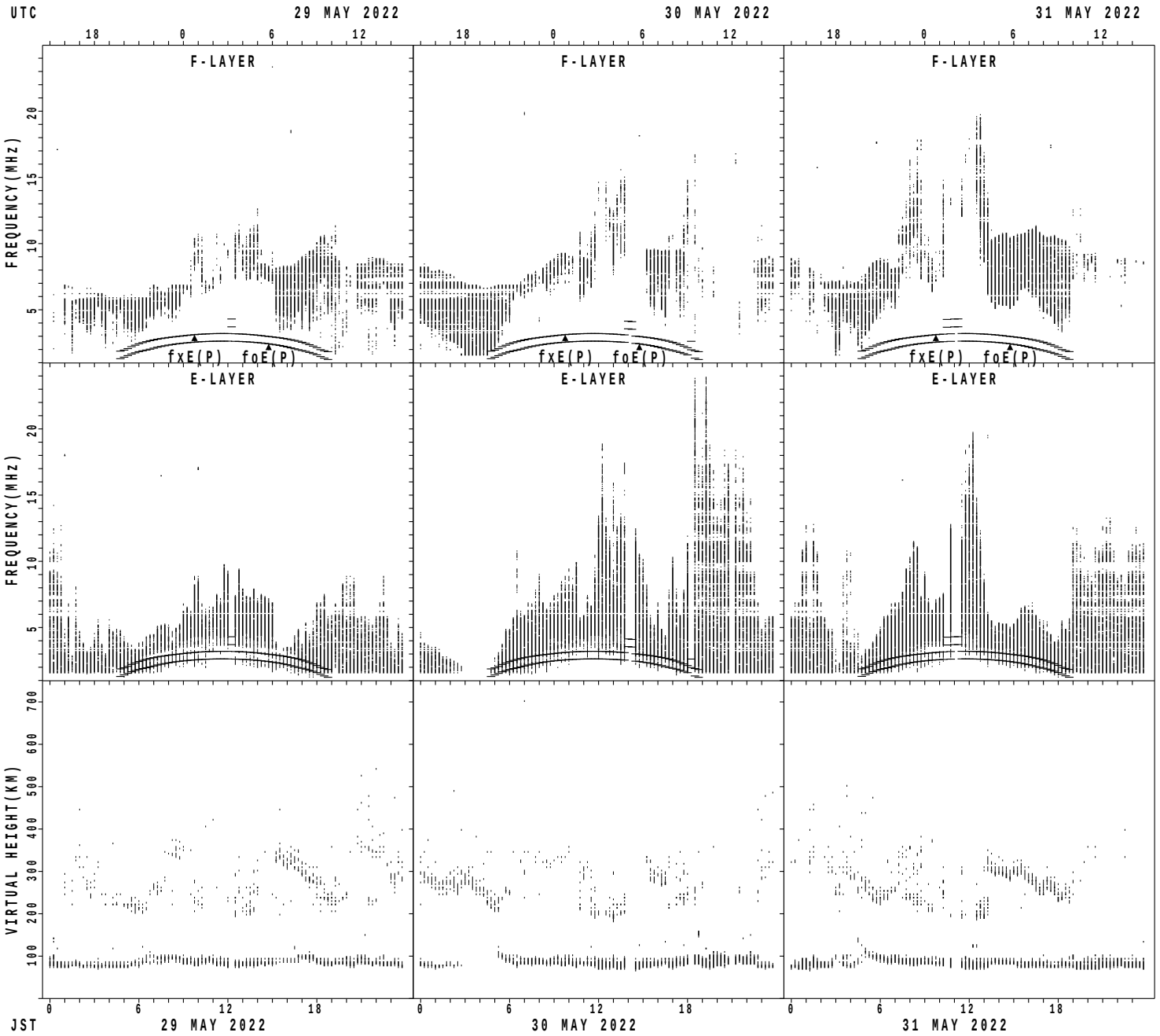
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



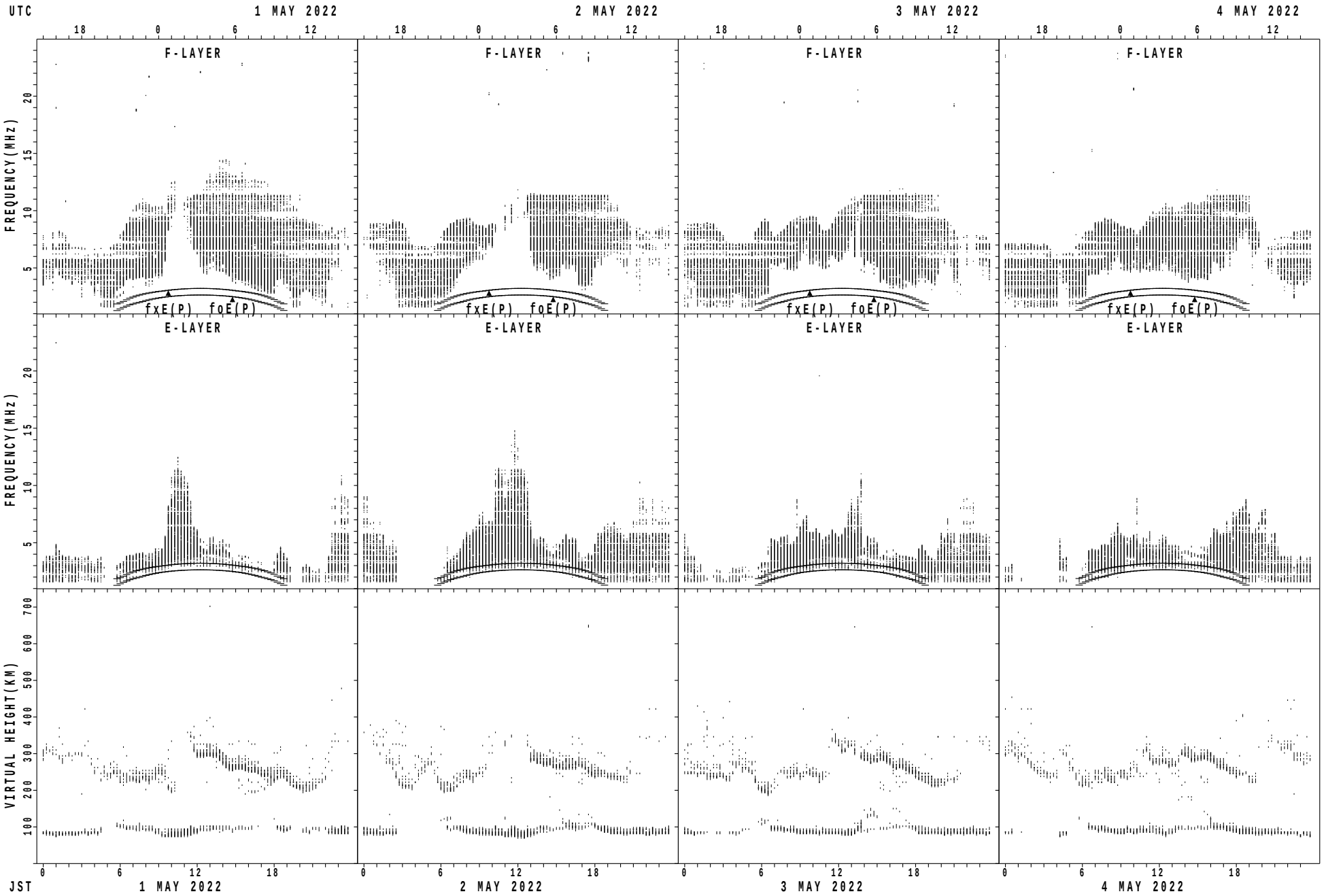
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



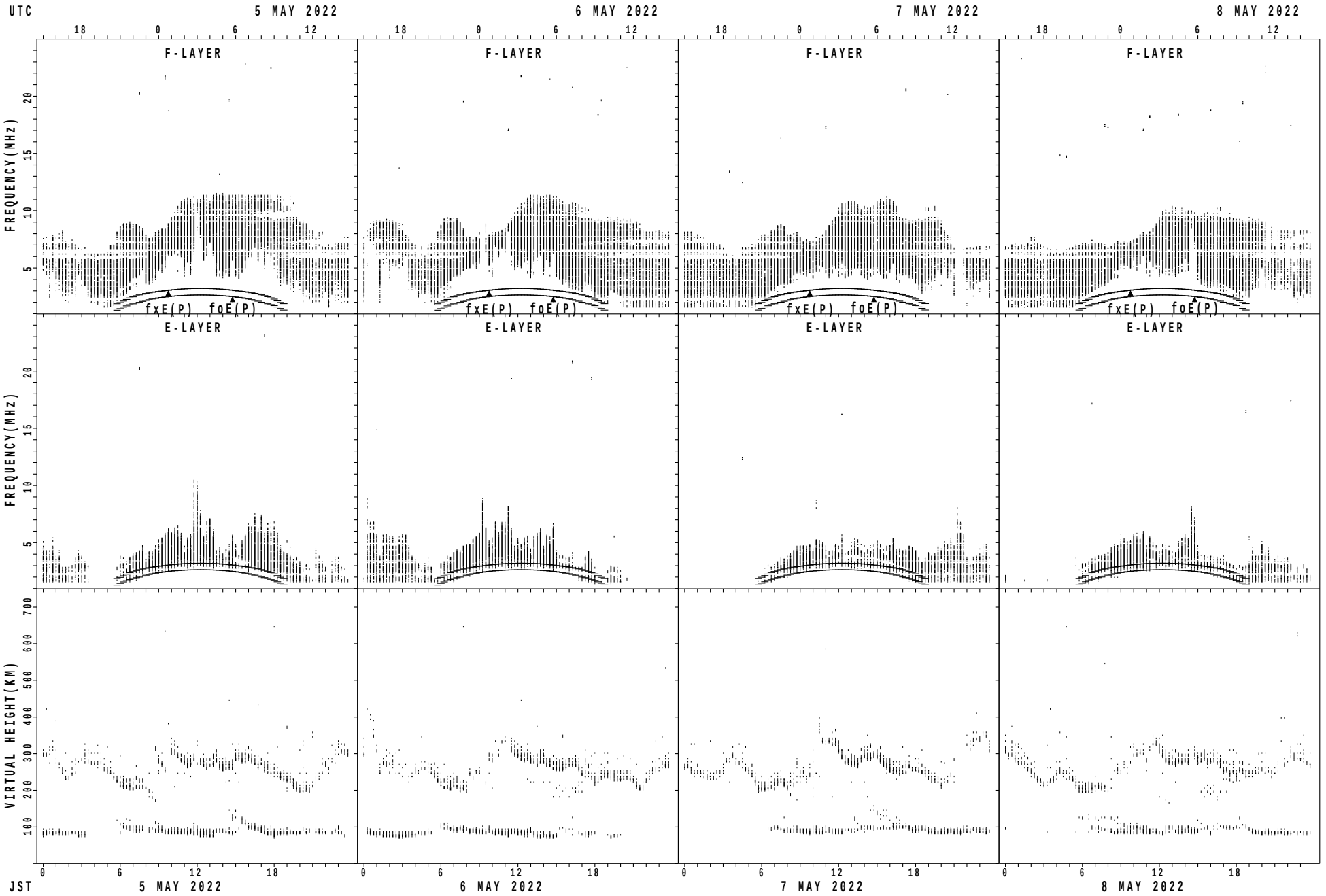
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



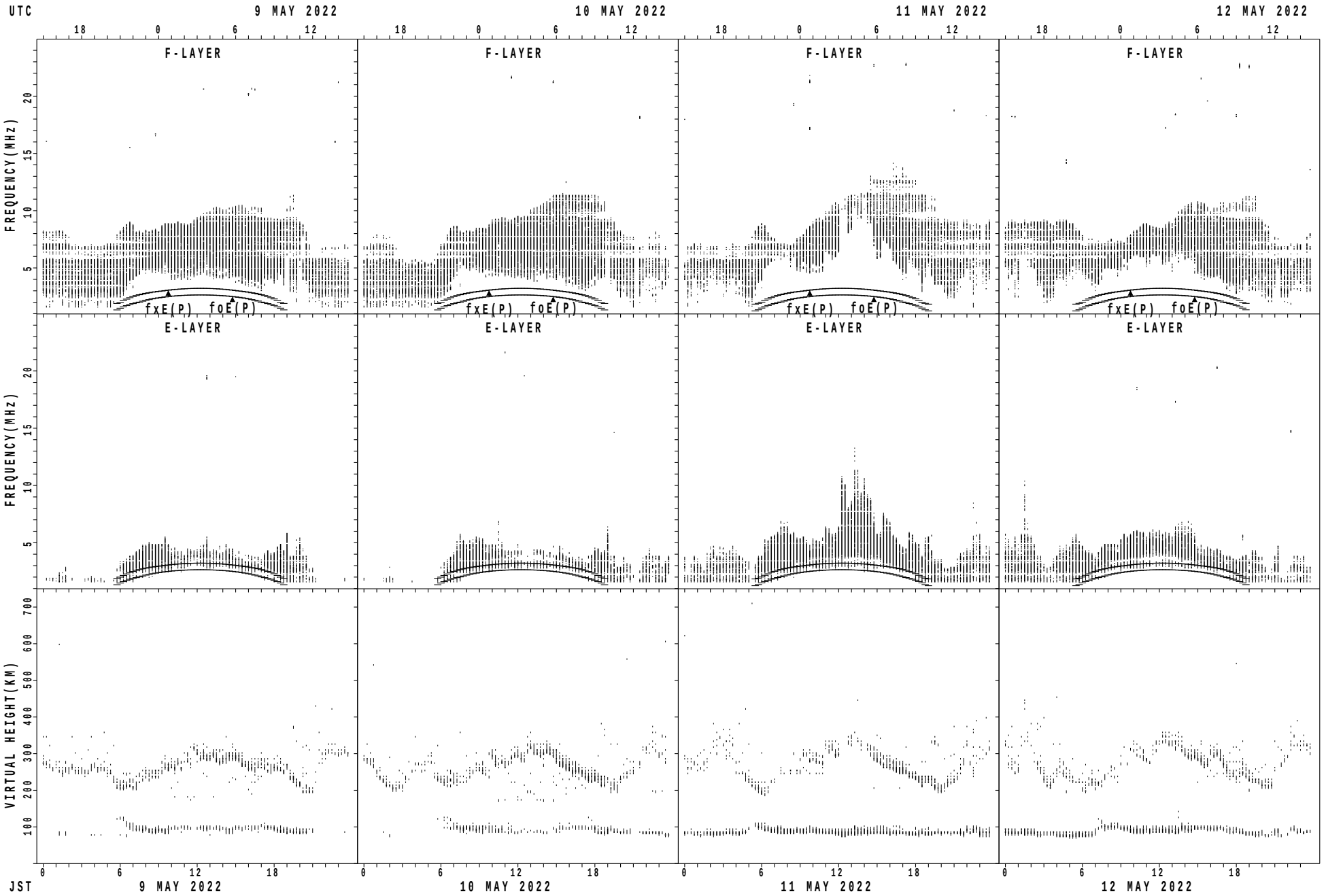
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



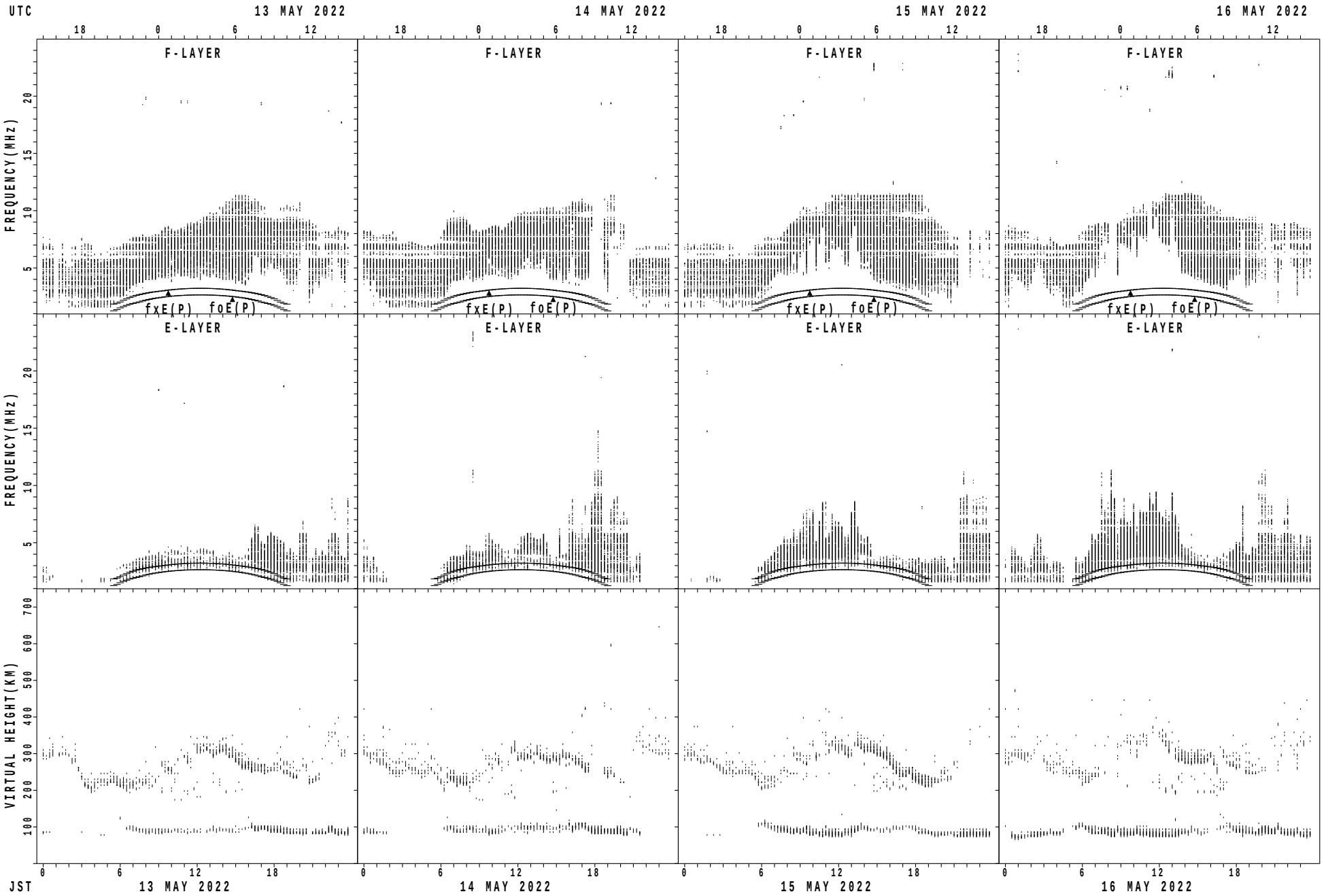
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



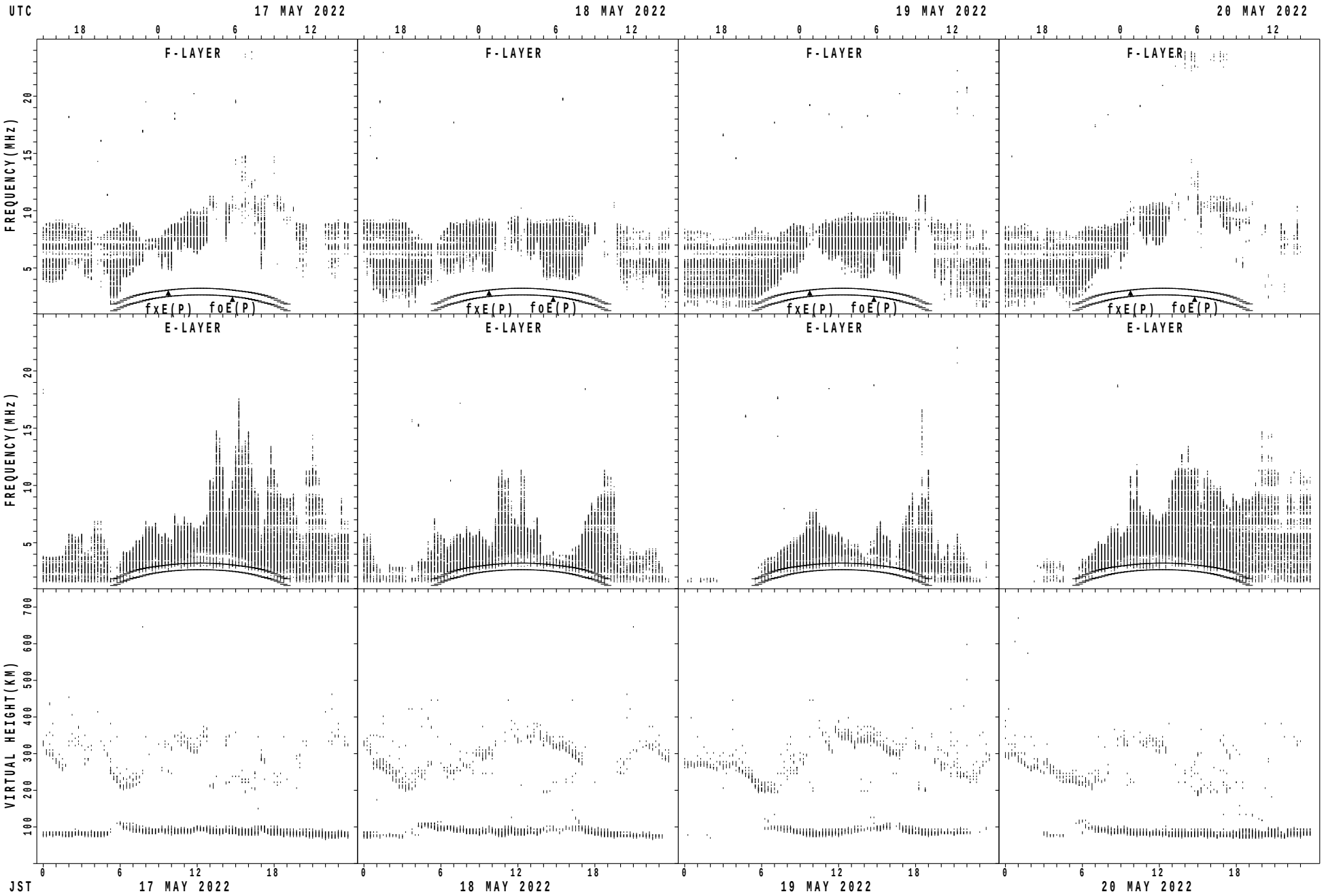
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



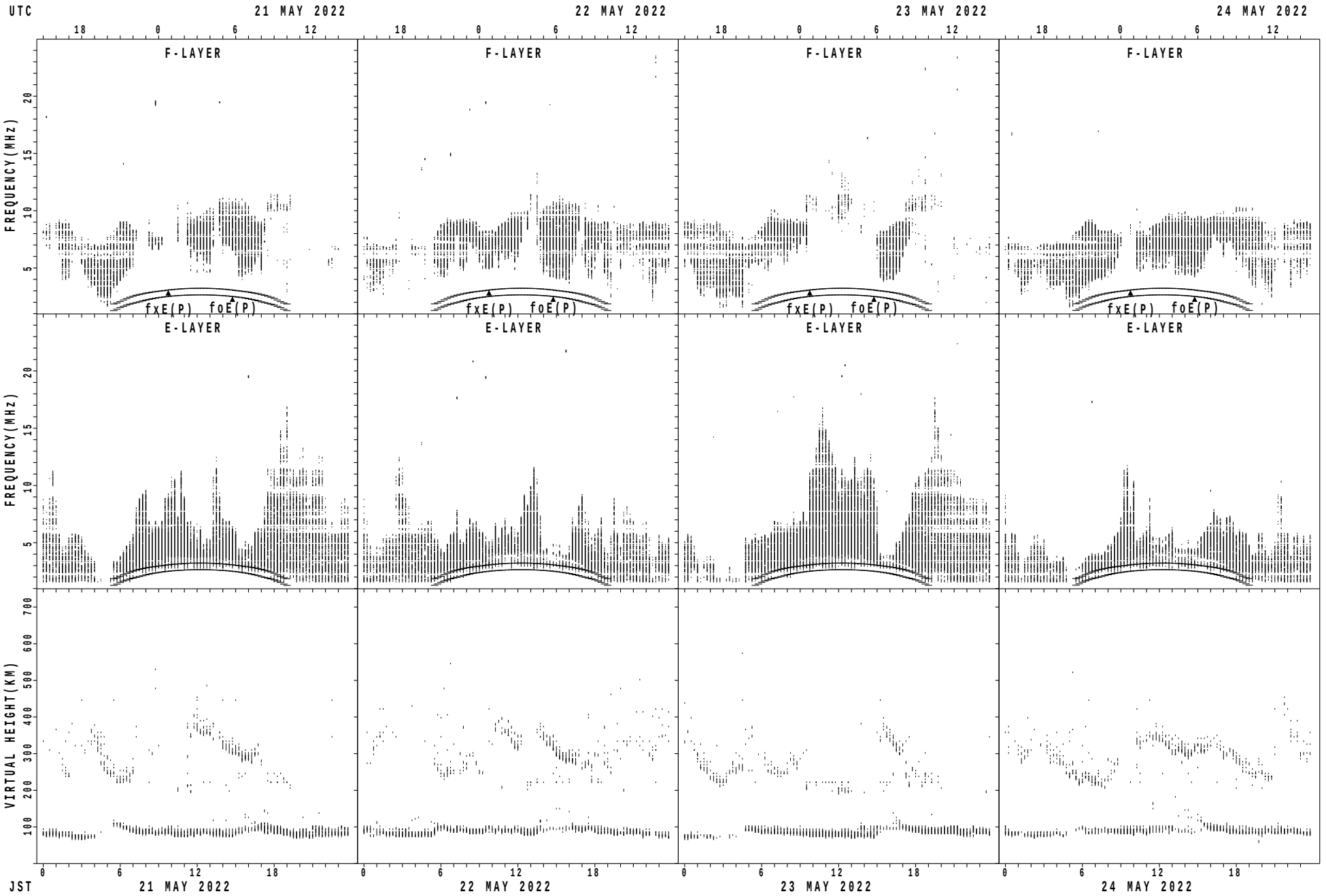
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



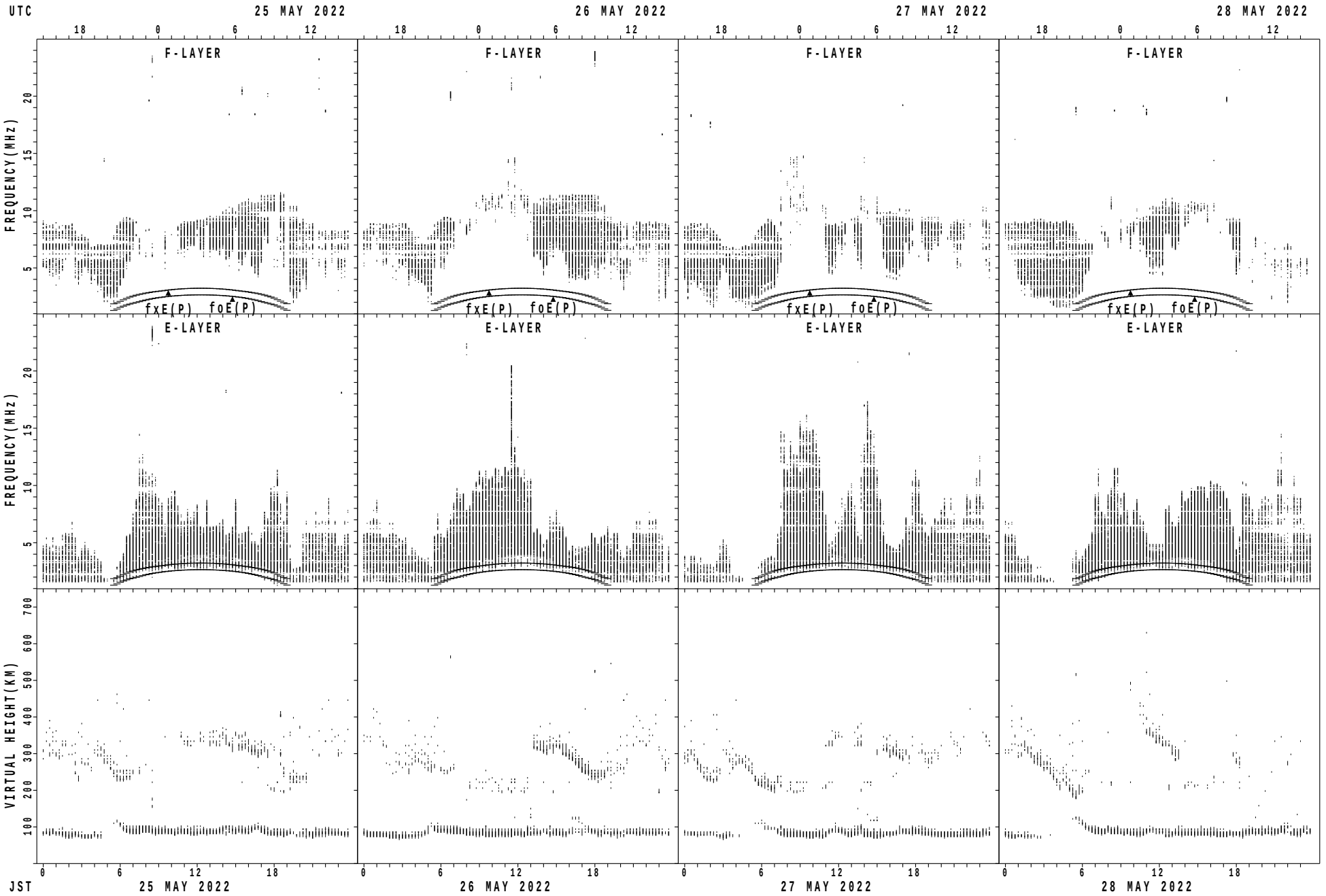
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



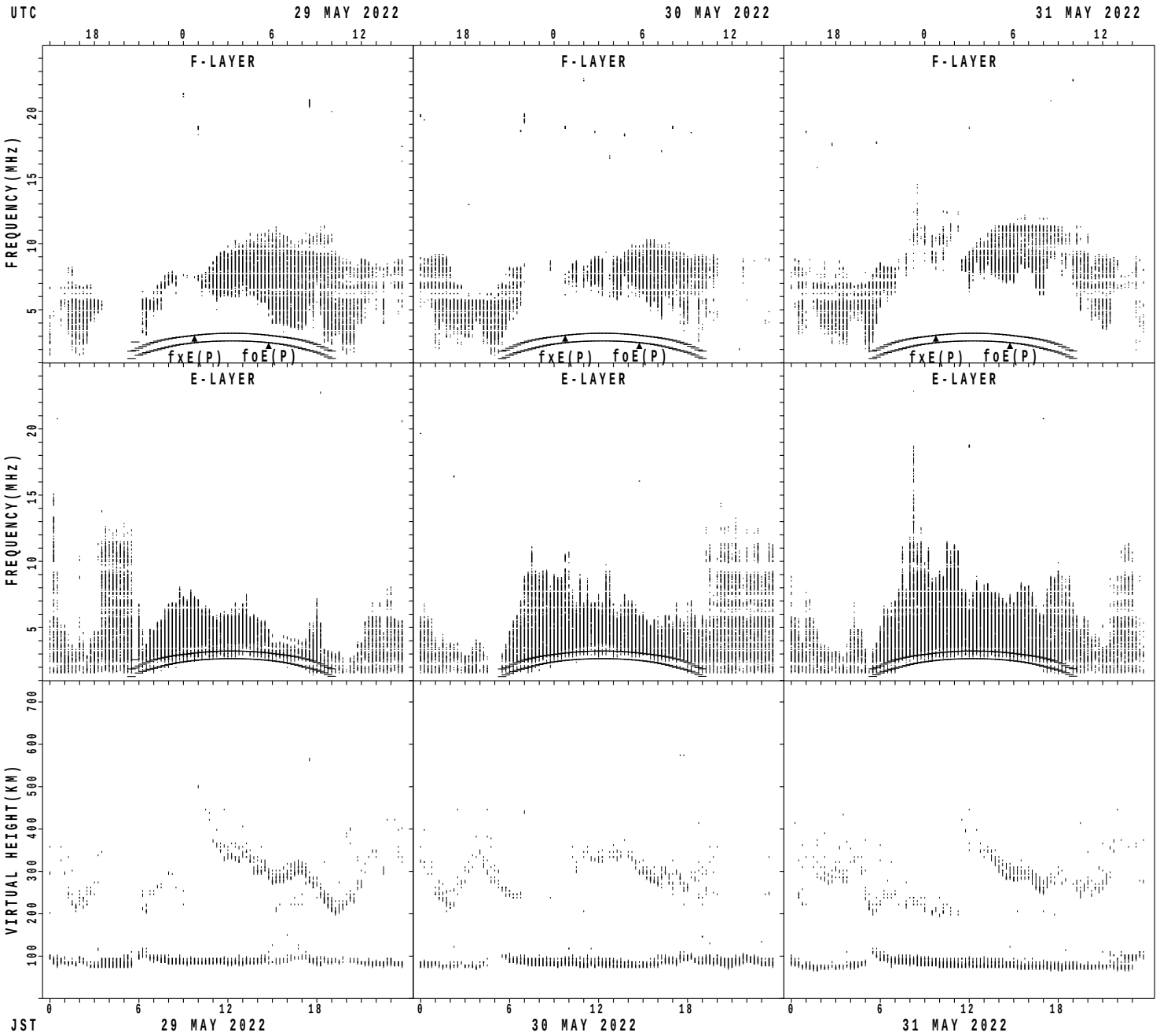
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



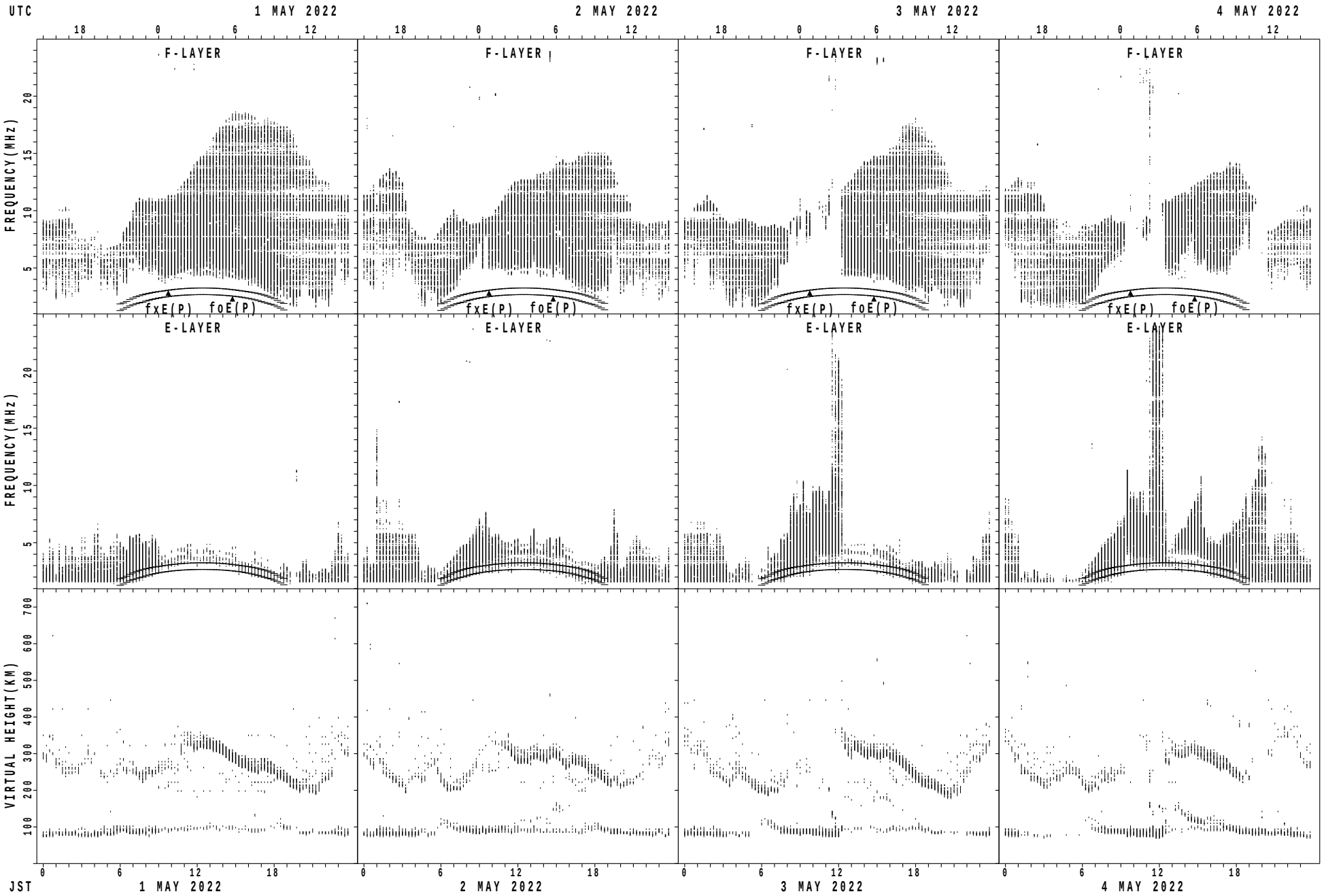
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



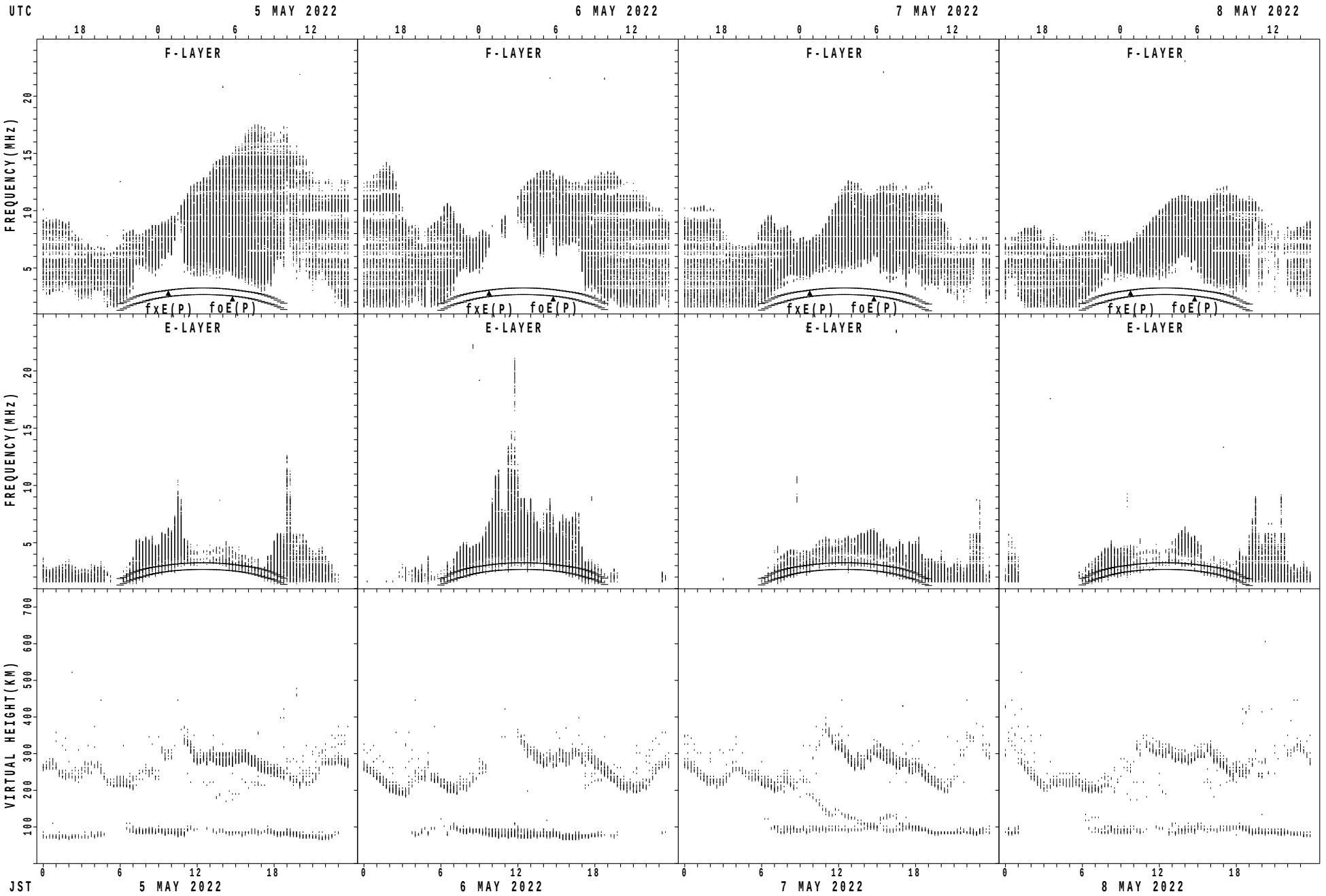
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



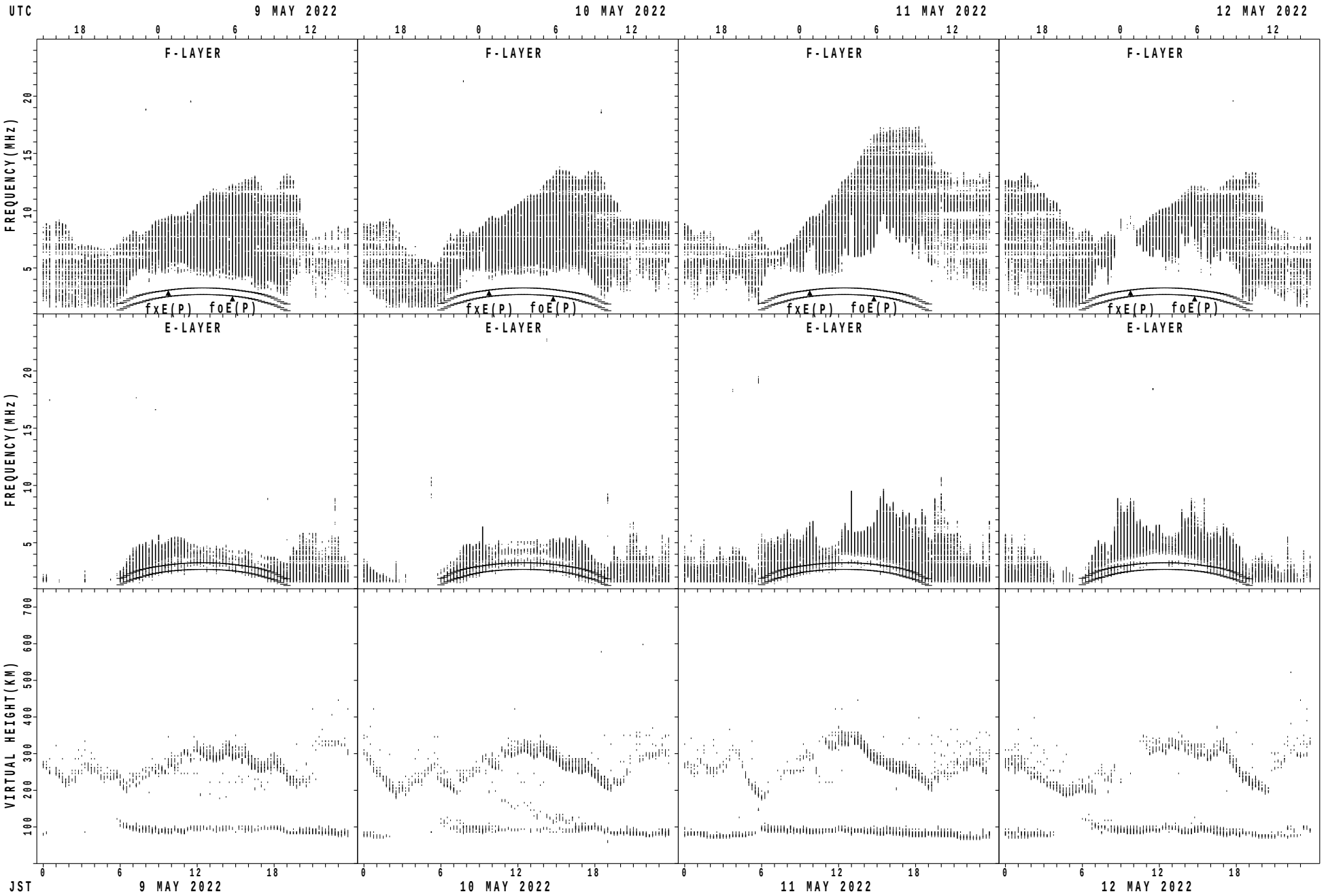
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



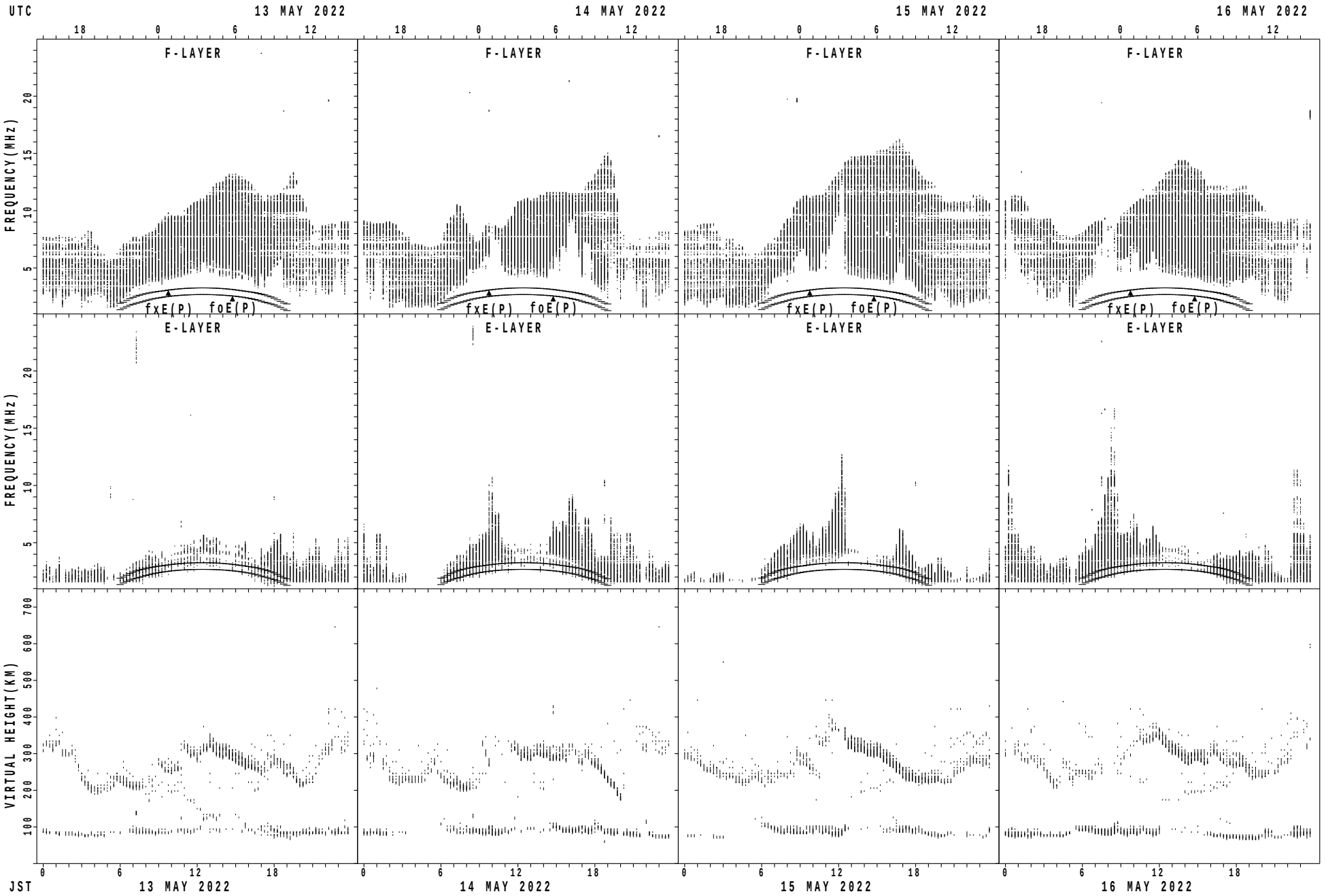
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



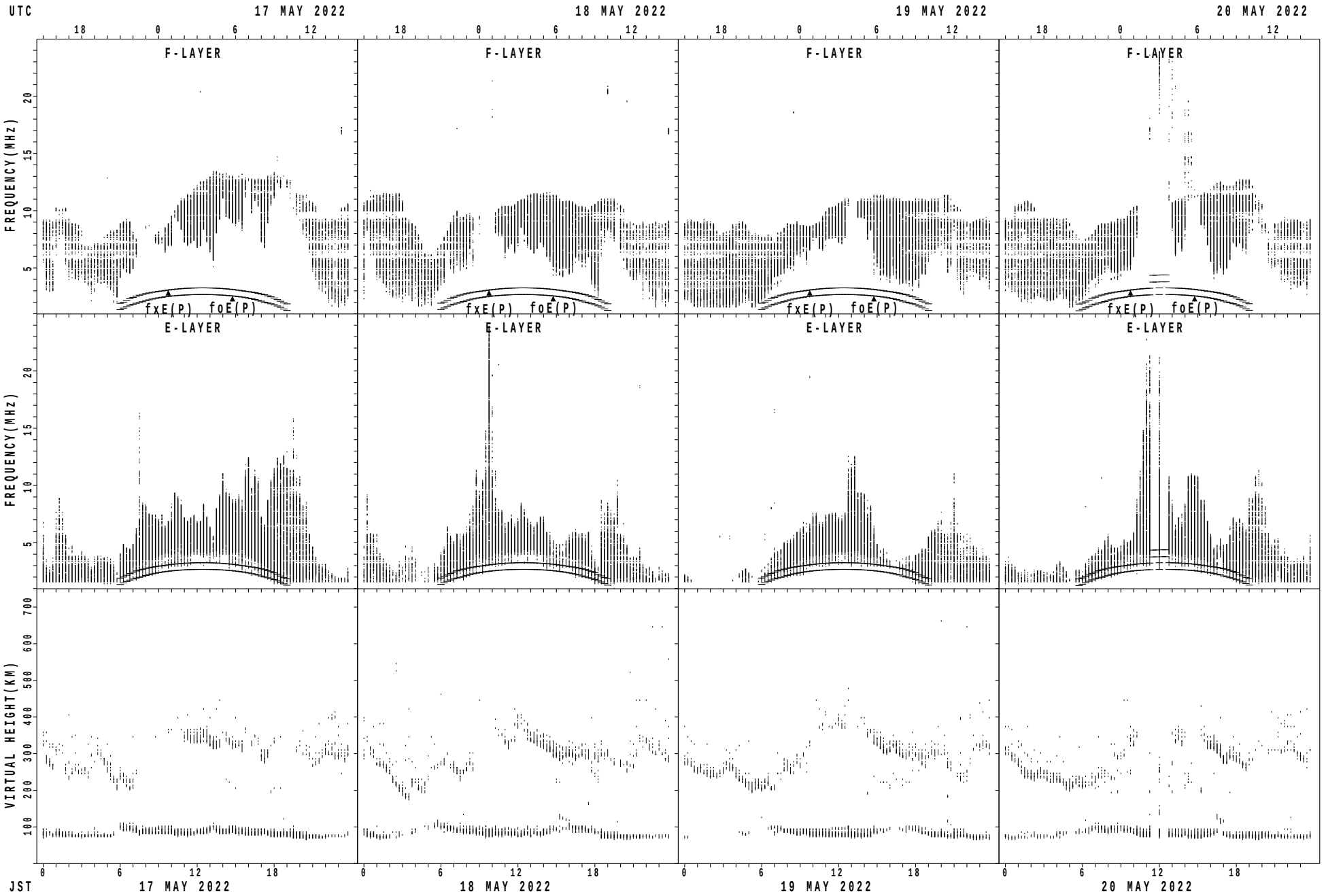
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



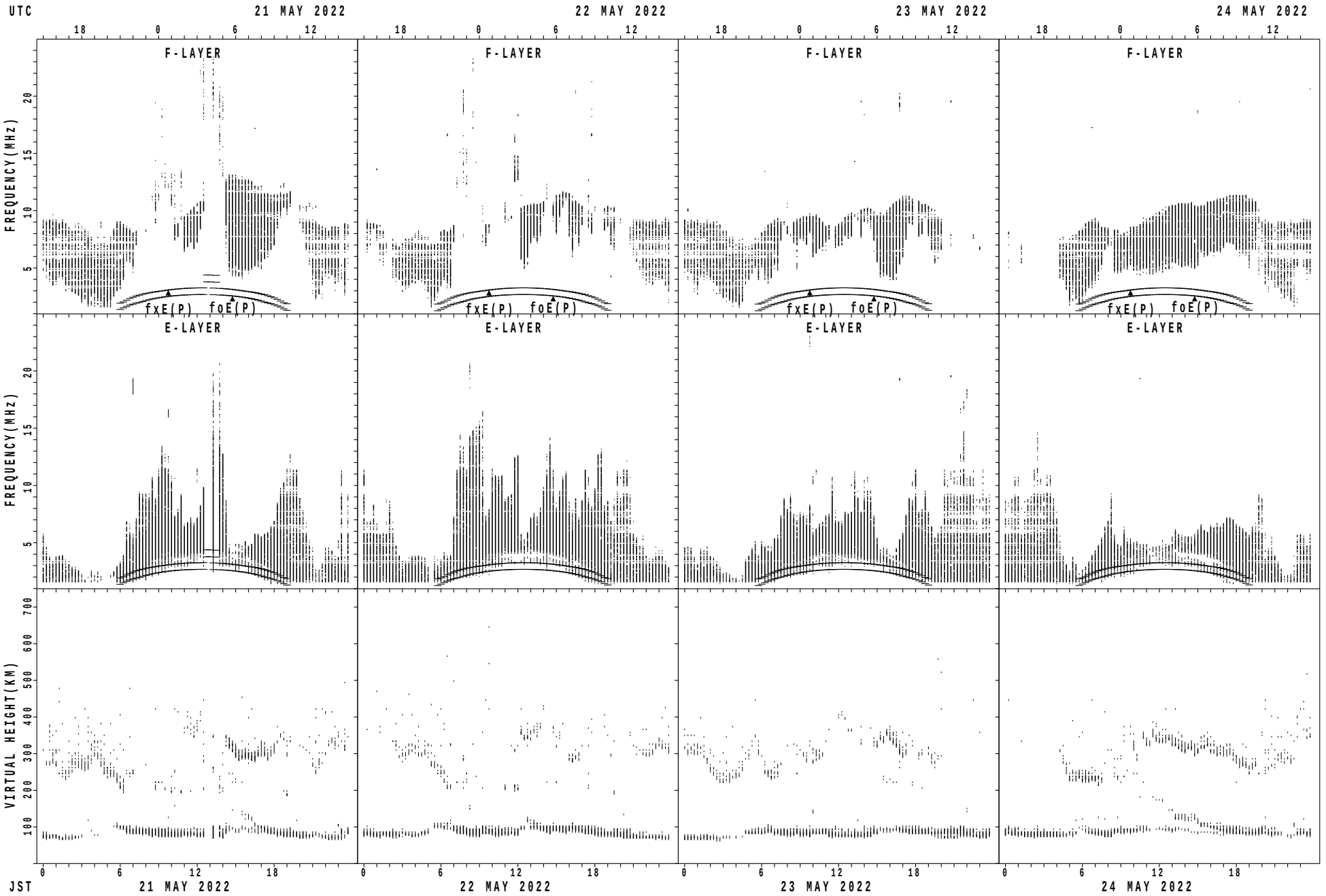
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



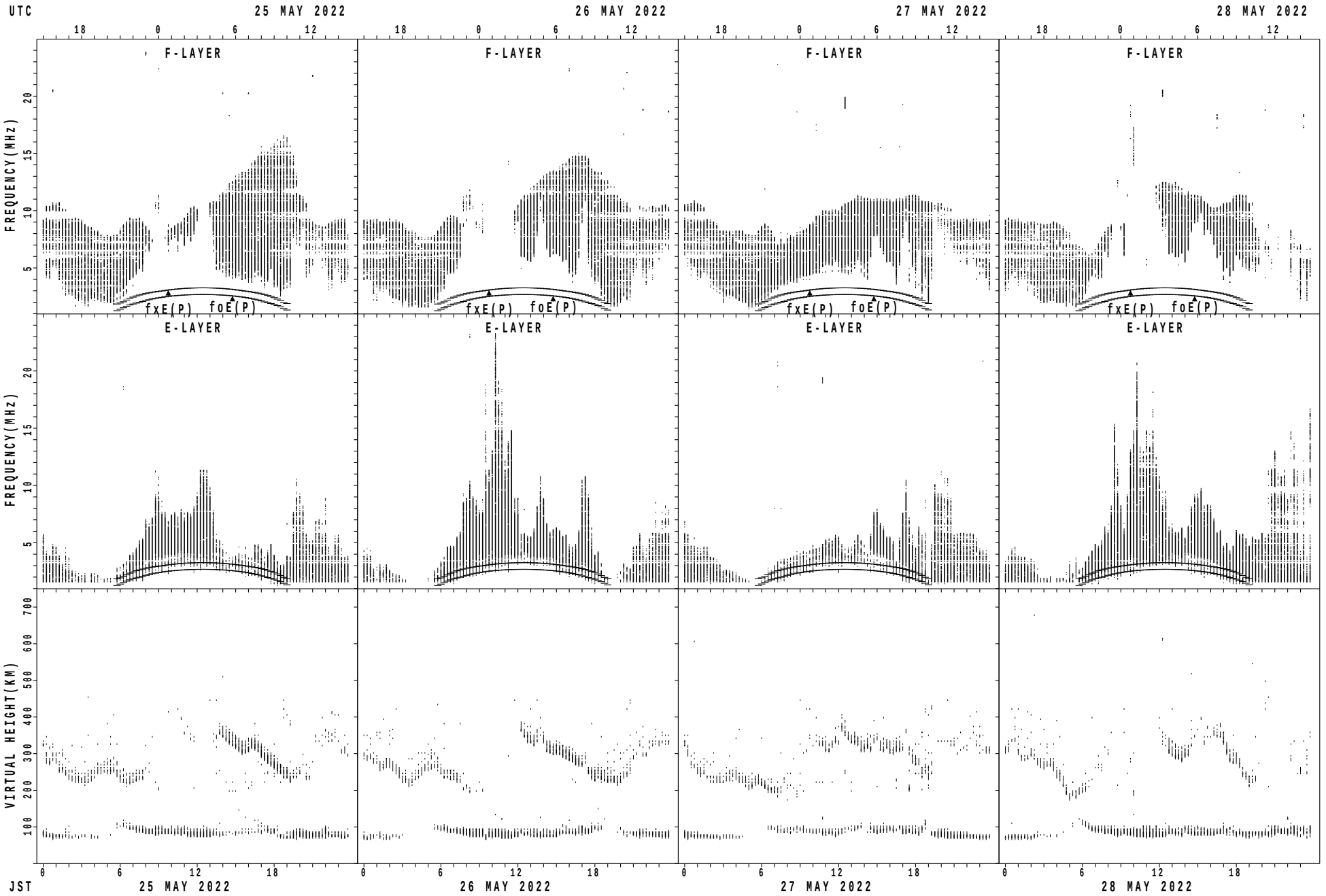
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



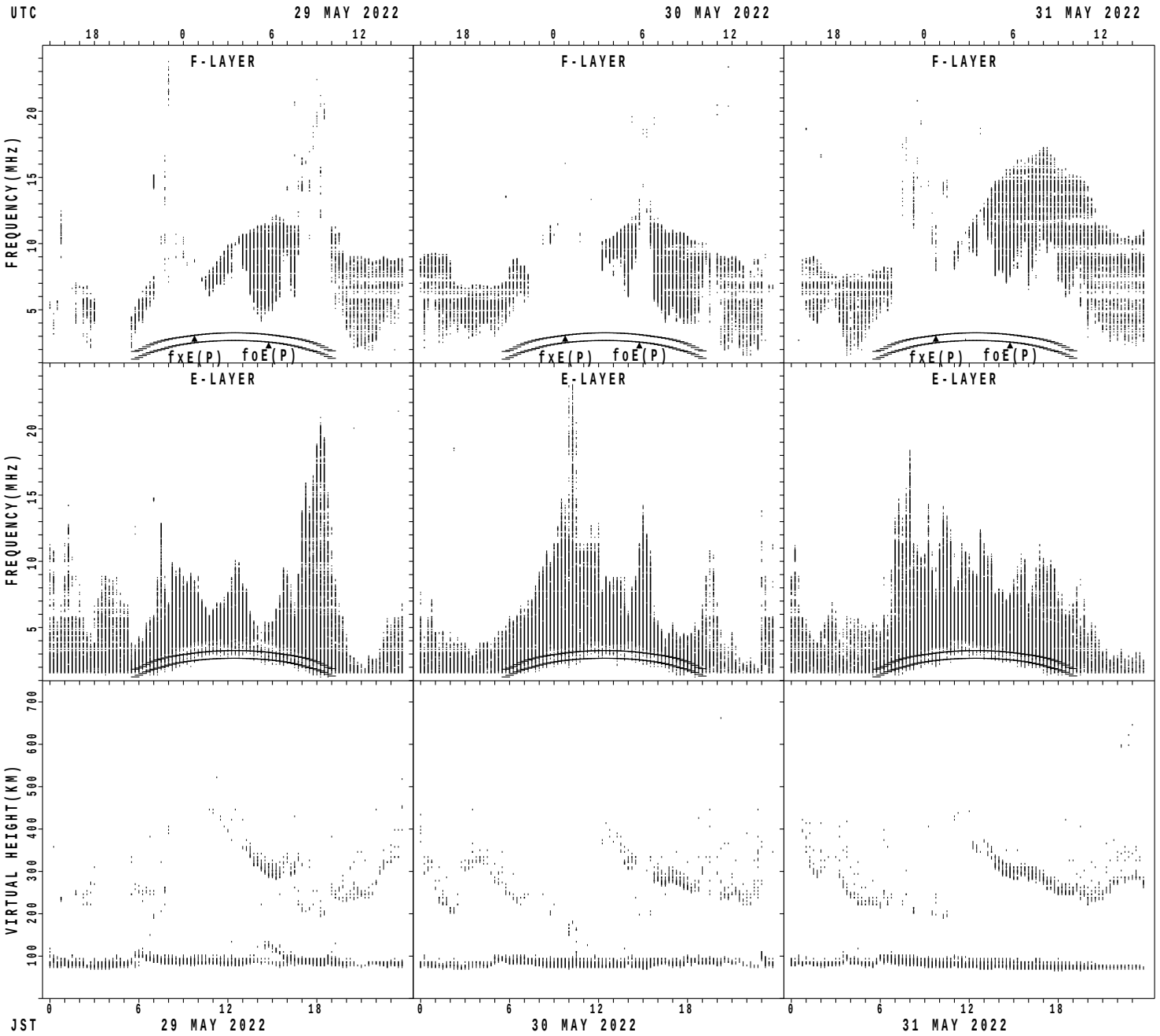
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

MAY 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	2	2	3	1	3	9	14	6									6	22	22	19	15	19	12	8
MED	309	334	314	322	300	282	287	270									257	272	251	258	264	286	283	302
U Q	312	338	330	161	444	314	296	288									272	282	272	272	272	290	298	320
L Q	306	330	300	161	278	264	252	234									256	258	220	256	264	272	273	294

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	21	21	18	31	31	31	31	31	31	30	30	30	31	31	31	31	31	30	30	26	27	22
MED	96	96	96	96	98	98	98	98	96	96	96	97	96	97	96	98	98	98	98	98	96	98	98	98
U Q	98	98	98	98	100	98	100	98	98	98	98	98	98	98	98	98	100	100	98	98	98	100	98	98
L Q	96	95	96	94	96	98	98	96	96	94	96	96	94	94	96	96	98	96	96	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	10	7	5	2	3	7	24	29									16	25	26	29	16	7	8	12
MED	357	314	304	314	290	280	246	230									259	252	256	244	247	286	318	316
U Q	396	354	395	322	442	308	265	255									270	281	280	265	286	388	340	328
L Q	314	300	282	306	274	232	233	217									252	243	222	203	221	280	289	305

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	29	25	25	26	21	21	31	31	31	31	31	29	30	30	29	30	31	31	30	30	29	30	28	28
MED	94	94	94	96	96	98	98	96	96	96	96	96	96	96	96	97	97	96	96	96	96	96	94	94
U Q	96	98	96	98	98	98	100	100	98	98	98	97	98	98	98	98	100	98	98	98	98	98	96	96
L Q	92	92	92	92	93	96	96	96	96	96	96	94	94	94	96	96	96	94	94	94	94	94	92	94

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	11	10	7	5	5	16	24	20									29	27	25	22	11	7	9
MED	325	310	288	262	338	306	236	232	232									262	264	256	264	280	308	324
U Q	340	340	304	306	351	335	252	247	255									278	280	280	282	308	338	336
L Q	312	306	272	240	282	244	231	211	213									245	230	238	226	260	276	305

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	27	27	26	23	15	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	29
MED	95	94	94	96	96	96	98	98	96	96	96	96	96	96	98	98	98	98	96	94	96	96	96	94
U Q	96	96	96	96	98	98	100	100	98	98	98	98	98	98	98	98	98	100	98	98	96	98	97	96
L Q	93	92	92	90	92	92	98	98	96	96	96	94	94	94	96	94	96	96	94	94	94	94	94	92

MONTHLY MEDIANS OF h'F AND h'Es

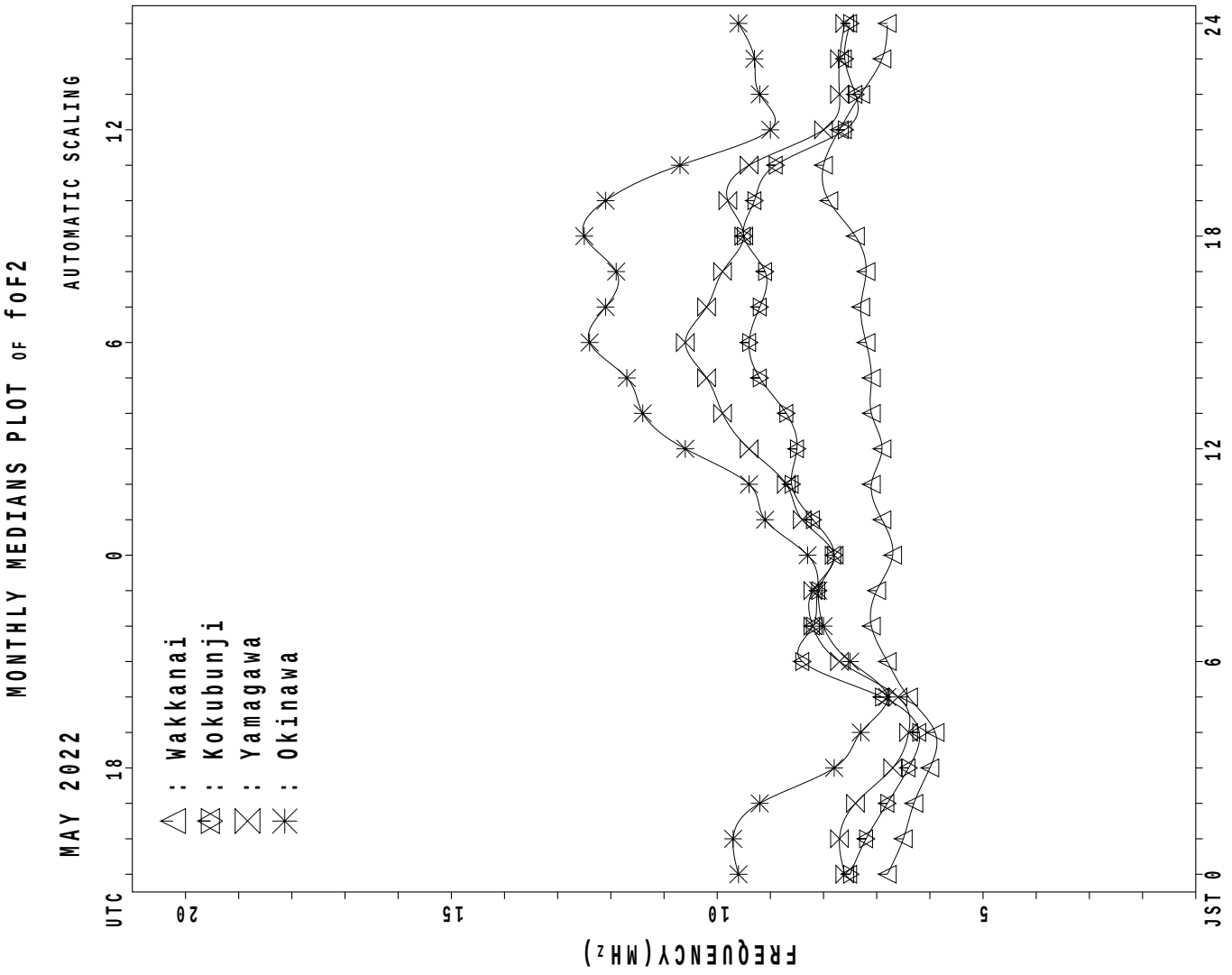
MAY 2022 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	22	24	20	15	12	9	16	21	23									31	29	31	22	15	17	16
MED	328	304	265	274	298	268	240	232	232									262	256	230	224	288	316	337
U Q	354	320	298	296	309	304	262	245	262									278	276	256	252	300	360	350
L Q	314	280	252	236	274	252	225	216	206									216	232	208	208	248	293	318

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	29	29	27	29	27	25	29	31	31	31	31	31	30	30	29	30	31	31	31	31	31	31	30	31
MED	94	94	94	96	96	98	98	98	96	96	96	96	96	96	96	96	98	96	96	94	94	94	94	94
U Q	96	95	96	98	96	98	98	98	98	98	98	96	98	98	98	96	98	98	98	98	96	96	96	96
L Q	92	91	92	94	92	96	98	96	94	96	94	94	94	94	96	94	94	94	94	92	92	92	90	92


MONTHLY MEDIANS PLOT OF foF2
MAY 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

MAY 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 70	X 64	X 62	X 58																	X 91	X 89	X 79	X 76
2	X 73	X 70	X 69	X 66																	X 89	X 87	X 84	X 80
3	X 75	X 72	X 66	X 66																	X 92	X 92	X 87	X 77
4	X 74	X 73	X 70	X 68																	X 91	X 83	X 79	X 77
5	X 77	X 75	X 70	X 65																	X 84	X 81	X 70	X 67
6	X 65	X 65	X 65	X 65																	X 83	X 85	X 83	X 79
7	X 77	X 72	X 70																			X 81	X 75	X 70
8	X 70	X 72	X 72																			X 90	X 83	X 77
9	X 76	X 72	X 70																			X 84	X 76	X 73
10	X 72	X 70	X 70																			X 83	X 79	X 77
11	X 74	X 70	X 66																			X 90	X 82	X 74
12	X 67	X 64	X 64																			X 78	X 79	X 77
13	X 74	X 73	X 74																			X 86	X 82	X 75
14	X 72	X 71	X 69																			X 87	X 78	X 70
15	X 67	X 65	X 65																			X 81	X 76	X 70
16	X 67	X 67	X 66																			X 83	85	90
17	83	X 66	X 66	67																		X 89	X 79	X 79
18	X 76	X 79	X 75																			X 79	X 79	X 74
19	X 76	X 72	X 71																			X 95	X 88	X 85
20	X 79	X 76	X 74																			X 93	X 87	X 79
21	X 77	X 76	X 75																			X 77	X 78	X 74
22	X 73	X 68	X 67																			X 79	X 76	X 79
23	X 71	X 76	X 71		73																	X 76	X 71	X 70
24	X 71	X 64	X 69																			X 83	X 83	X 78
25	X 78	X 73	X 76																			X 93	X 90	X 83
26	X 75	X 75	X 73																			X 87	X 86	X 89
27	X 85	X 87	O X 39																			X 97	X 90	X 83
28	X 78	X 76	X 74																			X 74	X 77	X 76
29	X 76	X 73	X 71																			X 83	X 78	X 79
30	X 79	X 75	X 66																			X 95	X 93	X 88
31	X 79	X 76	X 84																			X 91	X 90	X 88
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	7	1																6	31	31	31
MED	X 75	X 72	X 70	X 66	73																X 90	X 85	X 79	X 77
U Q	X 77	X 75	X 73	67																	X 91	X 90	X 86	X 80
L Q	X 71	X 68	X 66	X 65																	X 84	X 81	X 78	X 74

MAY 2022 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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	63	57	55	51	52	68	V 86	90	80	78	79	91	89	92	90	84	88	81	83	89	84	82	72	69
2	66	63	62	59	56	66	77	75	77	78	74	74	77	84	88	82	77	82	82	80	82	80	77	73
3	68	65	59	59	60	70	77	75	80	79	80	82	83	80	77	80	84	80	78	85	85	85	80	70
4	67	66	63	61	62	58	63	66	68	D C 80	88	84	76	79	78	79	79	84	84	89	84	76	72	70
5	70	68	63	58	57	59	60	67	66	66	62	70	70	73	70	75	80	70	73	84	77	74	63	60
6	58	58	58	58	57	67	D C 56	66	77	75	75	71	80	80	80	76	77	76	73	78	76	78	J R 76	72
7	70	65	63	60	59	62	60	59	H 59	63	65	68	67	70	74	74	74	75	76	78	80	74	68	63
8	63	65	65	63	62	70	C	70	72	69	68	74	77	77	72	76	70	70	68	72	81	83	76	70
9	69	65	63	59	58	60	69	69	69	66	70	74	73	75	77	76	76	78	81	80	80	77	69	66
10	65	63	63	59	58	64	75	76	70	72	70	68	66	68	71	75	77	77	80	84	81	76	72	70
11	67	63	59	59	63	58	63	72	75	69	67	69	71	74	72	73	75	78	80	85	84	83	75	67
12	60	57	57	56	52	55	60	65	60	60	63	60	67	66	71	72	77	81	75	78	74	71	72	70
13	67	66	67	62	59	69	69	74	73	72	72	68	74	74	73	76	76	74	80	85	85	79	U R 75	68
14	65	64	62	57	53	60	68	70	70	60	69	65	68	64	68	68	71	71	68	74	80	80	71	63
15	60	58	58	57	53	63	68	72	63	59	63	70	68	66	64	69	68	68	66	70	74	74	69	63
16	60	60	59	61	58	64	62	A	63	62	61	59	60	64	65	62	71	68	65	67	74	76	F 72	F 78
17	F 70	59	59	F 52	58	59	63	70	62	A	A	64	65	68	67	68	70	72	74	83	87	82	72	72
18	69	71	68	63	57	64	68	62	62	62	A	56	58	60	60	59	59	59	63	65	74	72	72	J R 67
19	69	65	64	63	66	74	77	76	74	73	73	73	70	76	73	72	72	70	69	77	86	88	81	78
20	72	69	67	70	74	83	94	92	74	69	72	68	71	69	70	66	72	72	68	71	83	86	80	72
21	70	69	68	60	58	66	72	70	70	64	66	70	69	76	70	70	70	70	A	68	74	70	71	67
22	66	61	60	63	65	78	76	68	A	A	R 60	62	68	A	71	67	72	68	69	69	70	72	69	72
23	64	69	64	66	F 60	64	67	67	65	A	A	C	R 60	64	64	61	62	63	A	73	77	J R 69	J R 64	J R 63
24	64	57	62	63	57	72	74	70	64	62	A	66	62	60	A	64	64	68	71	78	84	76	76	71
25	71	66	69	66	67	78	83	80	80	74	74	72	72	72	73	76	78	81	80	82	84	86	83	76
26	68	68	66	59	60	83	94	87	76	64	63	64	59	60	63	67	67	71	75	80	82	80	79	82
27	78	80	D C 32	70	60	65	78	86	82	70	64	68	68	70	72	71	71	72	79	85	90	90	83	R 76
28	71	69	68	72	71	71	65	63	59	61	A	67	72	67	59	60	63	69	69	69	72	67	70	69
29	69	66	64	60	63	58	59	A	A	67	62	64	64	63	63	61	64	70	74	70	90	76	71	72
30	72	68	59	55	52	54	60	60	72	76	76	70	69	70	70	71	74	75	80	D C 82	90	88	86	81
31	72	69	77	70	66	64	70	66	70	67	A	61	62	64	68	66	72	68	80	86	84	84	83	81
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	29	29	28	25	30	31	30	30	31	31	31	29	31	31	31	31	31
MED	68	65	63	60	59	64	68	70	70	68	69	68	69	70	71	71	72	72	75	78	82	78	72	70
U Q	70	68	66	63	63	70	77	76	76	74	74	72	73	76	73	76	77	78	80	84	84	83	79	73
L Q	64	61	59	58	57	60	63	66	64	62	63	64	65	64	67	66	70	69	69	71	76	74	71	67

IONOSPHERIC DATA STATION Wakkanai

MAY 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L 492	L 480	L 496	520	508	U L 524	524	L	U L 468	L						
2							L	L	L	500	L	L	L 496	520	476	476	L	388						
3							424	L 424	480	480	520	504	496	488	496	496	456	388	L					
4							420	L	L	L	492	508	520	H 536	H 532	512	468	392						
5						U L 348	412	452	468	A	A	500	500	500	476	468	448		A					
6						256	396	L 432	L 464	496	496	520	L 508	508	492	480	L 424	L 396						
7						L	U L 412	L	U L 456	464	500	524	504	L 504	492	492	444		L					
8						L	C	436	488	U L 500	L 492	524	500	500	L 488	476	L	L						
9							L	L 460	472	472	484	L 508	504	512	L 492	476	L 460	L	L					
10							L 432	L 468	468	L	492	A	512	500	504	L 460	L 432	L						
11							L	L 444	468	484	500	500	500	L 500	500	L	L 452	U L 424						
12							L 428	U L 444	U L 472	516	A	A	504	L 488	L 500	A	A	A						
13						L	U L 400	L 484	480	U L 488	H 592	540	520	A	528	L 476	U L 460	U L 416						
14						L 384	L 444	456	L 480	L	504	504	504	504	508	L	A	A	A	A				
15						L	L 432	A	A	A	504	504	508	516	516	492	U L 480	A	A					
16							A	A	472	A	500	L 520	520	508	E A 508	500	476	A	L	L				
17					L		A	A	A	A	A	A	A	A	536	536	484	L			A			
18						L	L	L	A	A	A	A	520	508	508	488	U L 480	U L 460	L					
19							U L 452	L 576	516	536	536	544	568	524	520	492	L 488	L						
20							L	L	A	532	520	532	536	L	536	L	L	L			L			
21						L 400	L	L 484	A	508	520	520	540	L	536	508	488	L	A					
22					L	U L 364	L 460	A 428	A	A	A	L	E A 520	A	A	A	L 492	L	L		A			
23						A	A	A	A	A	A	C	A	A	508	508	488	U L 448	A					
24						U L 384	L 436	472	L	A	A	524	520	520	A	520	L 464	U L 452	L					
25						L	L	472	540	L	516	536	A	L	L 516	504	476	440	L					
26					L	L	L	U L 476	A	U L 512	512	512	A	520	504	480	480	U L 432						
27						L	428	A		480	496	516	524	516	504	492	468	L 428	L					
28						L	L 424	A	464	476	A	492	L 492	A	480	468	A	A						
29						L 344	L	A	A	A	480	484	492	492	A	U L 456	H 444	A						
30					L	U L 380	428	U L 456	472	L 512	488	496	496	496	484	U L 484	452	L	U L 388					
31								L	A	A	A	500	484	484	488	444	L	428						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						8	16	17	17	17	21	24	27	23	28	25	24	13	1					
MED						L 372	L 428	L 456	472	496	500	514	506	508	504	488	468	L 428	U L 388					
U Q						L 384	L 434	L 474	484	512	518	524	520	520	518	502	480	U L 444						
L Q						L 346	416	L 440	468	480	492	502	500	500	492	476	452	394						

MAY 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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					212	204	252	296	316	356	356	360	340	312	368	328	292	252	212	A				
2					B	212	264	292	328	332	348	356	336	A	276	308	304	248	200	A				
3					B	212	256	300	328	340	356	376	360	360	336	256	292	268	192	A				
4					A	192	260	308	332	356	360	360	360	344	344	312	300	272	200	A				
5					B	200	268	296	336	348	352	364	348	348	356	336	312	268	A	A				
6					B	216	272	300	324	356	356	348	A	A	344	340	312	260	204	176				
7				B	A	200	252	300	316	352	352	352	364	356	340	332	300	268	204	A	A			
8				B	B	192	A	A	324	348	352	372	344	364	312	268	304	264	208	B	B			
9				B	A	212	260	300	336	336	356	356	372	372	A	328	304	232	204	252	A			
10				B	A	A	280	300	328	340	356	364	364	364	340	324	300	260	196	A	A			
11				B	B	232	272	312	328	356	340	356	368	368	332	344	300	280	A	A	A			
12				B	B	240	268	308	340	352	356	376	356	356	360	344	300	264	192	A	A			
13				B	B	236	284	316	348	352	352	368	368	360	360	348	320	280	200	A	A			
14				200	220	248	272	312	356	356	356	384	360	344	344	344	324	276	200	A	A			
15				B	204	220	280	336	352	352	372	A	A	372	A	340	316	288	212	A	A			
16				A	240	240	288	316	336	A	368	348	348	348	380	324	320	264	224	A	252			
17				240	216	200	264	316	340	340	352	396	404	380	380	364	328	288	208	A	A			
18				B	192	228	292	328	352	376	352	A	A	A	A	344	316	284	228	A	A			
19				B	A	224	288	336	344	364	364	364	A	368	368	348	328	304	236	B	A			
20				A	188	244	288	324	348	360	364	380	356	356	340	276	324	280	212	A	A			
21				B	240	220	288	336	356	368	388	376	364	324	292	344	276	324	236	A	A			
22				A	B	248	296	320	356	360	368	376	376	376	376	332	336	288	236	A	A			
23				B	232	196	276	316	348	376	364	C	364	348	360	336	A	336	236	A	A			
24				B	184	228	284	316	348	356	364	376	384	384	384	360	324	280	204	A	A			
25				B	196	260	288	332	344	368	380	368	380	380	364	332	300	256	232	224	A			
26				A	180	244	288	328	352	352	360	320	372	364	360	324	288	288	224	A	A			
27				B	192	232	284	308	348	356	356	356	356	368	364	344	308	272	216	A	A			
28				B	176	236	280	316	328	348	348	308	328	352	352	336	304	256	232	A	A			
29				A	A	216	272	308	336	336	356	356	352	352	324	324	308	264	208	A	A			
30				B	B	228	256	304	344	344	360	348	348	A	348	316	276	276	208	A	A			
31				A	180	232	284	304	320	336	352	352	356	356	356	332	308	276	216	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				2	15	30	30	30	31	30	31	28	27	27	28	31	30	31	29	3	1			
MED				220	196	226	278	312	340	352	356	362	360	360	354	332	306	272	208	224	252			
U Q					220	236	288	320	348	356	364	376	368	368	364	344	320	284	226	252				
L Q					184	212	264	300	328	344	352	354	348	348	340	324	300	264	202	176				

MAY 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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	33	30	30	25	J A 30	J A 40	J A 32	36	37	39	39	39	J A 42	J A 40	J A 75	J A 37	36	50	26	J A 26	E B 16	E B 16	E B 16	30
2	E B 16	E B 16	E B 16	E B 16	E B 16	G	J A 52	41	J A 47	42	J A 54	J A 49	J A 49	52	49	J A 33	37	J A 50	J A 51	40	J A 53	33	24	E B 15
3	32	E B 16	E B 16	20	20	J A 22	J A 51	J A 52	40	40	40	J A 141	G	41	G	J A 37	32	G	26	J A 27	26	E B 16	E B 16	E B 16
4	E B 16	E B 16	J A 24	E B 16	18	22	29	J A 53	40	46	49	44	42	38	39	G 35	G	G 32	22	J A 26	E B 16	J A 24	32	22
5	E B 16	E B 16	E B 16	E B 16	J A 25	24	31	35	G	66	J A 54	46	J A 49	J A 53	40	38	38	56	82	J A 57	J A 35	J A 39	J A 24	23
6	E B 16	33	E B 16	E B 16	E B 16	J A 128	32	36	38	J A 48	J A 48	53	G 37	37	G 38	G	G	J A 34	J A 31	J A 31	J A 39	J A 31	J A 30	E B 16
7	J A 21	E B 16	E B 16	E B 16	J A 23	23	32	42	37	G	43	43	G	40	38	J A 88	36	J A 39	26	J A 32	J A 25	E B 16	28	34
8	27	J A 22	J A 35	19	E B 16	22	D C 28	43	G	J A 53	41	41	38	38	J A 37	33	J A 31	J A 27	J A 38	E B 16	J A 19	E B 15	E B 15	20
9	19	E B 17	20	J A 18	21	25	32	37	40	40	41	41	G	G	41	J A 86	31	27	24	30	J A 34	J A 25	J A 25	E B 15
10	E B 16	J A 31	34	31	J A 26	J A 34	J A 47	J A 64	38	42	43	J A 57	J A 49	39	G	36	34	J A 41	J A 44	J A 32	J A 29	E B 16	26	J A 25
11	J A 25	28	23	26	E B 16	24	30	J A 48	J A 51	41	38	G	42	J A 52	40	39	32	J A 27	J A 63	37	34	E B 16	E B 16	E B 16
12	E B 16	J A 33	19	22	J A 47	J A 25	31	38	J A 49	J A 60	J A 53	J A 69	J A 62	42	45	69	J A 55	53	J A 41	32	J A 32	E B 16	E B 16	E B 16
13	22	J A 20	J A 26	J A 30	E B 16	J A 27	32	J A 42	40	J A 87	J A 61	42	42	J A 75	J A 60	39	36	36	J A 38	J A 38	42	J A 64	24	J A 26
14	J A 30	19	E B 16	G 21	25	G 25	34	40	44	J A 47	J A 49	51	43	41	J A 50	40	65	J A 76	67	J A 89	40	32	28	J A 29
15	J A 65	J A 49	28	21	29	J A 33	J A 42	J A 62	69	J A 78	78	J A 101	J A 57	J A 56	56	J A 49	J A 45	J A 48	J A 39	J A 33	J A 38	25	24	J A 22
16	J A 30	J A 32	J A 26	J A 39	34	J A 36	55	J A 82	J A 121	J A 94	J A 45	J A 51	J A 39	J A 42	J A 52	J A 46	J A 40	J A 68	J A 65	J A 53	J A 81	J A 109	72	39
17	24	J A 21	J A 86	J A 47	27	J A 46	J A 63	J A 52	J A 75	J A 151	J A 91	J A 95	J A 55	J A 59	J A 50	J A 42	J A 46	J A 48	J A 88	J A 107	J A 63	J A 65	J A 63	J A 53
18	J A 49	J A 31	J A 31	J A 24	J A 23	29	J A 63	J A 58	J A 84	J A 63	J A 88	J A 56	52	J A 55	J A 53	G	36	34	J A 31	J A 32	J A 28	22	E B 15	J A 39
19	J A 25	J A 26	J A 26	E B 16	J A 26	J A 31	J A 32	J A 64	J A 69	42	J A 52	J A 43	J A 67	G	40	G	36	36	63	J A 37	36	27	23	J A 25
20	E B 16	J A 23	23	24	J A 23	30	38	J A 61	J A 51	40	42	42	J A 49	J A 52	J A 42	J A 37	35	35	30	J A 32	J A 46	22	J A 22	E B 16
21	33	E B 16	E B 16	E B 16	28	31	36	43	J A 59	J A 51	J A 49	J A 52	J A 47	J A 53	J A 49	J A 43	J A 52	J A 50	J A 84	J A 38	J A 63	J A 32	J A 24	J A 21
22	24	J A 27	J A 29	J A 31	E B 16	25	J A 54	J A 70	J A 99	J A 151	J A 83	J A 105	74	J A 83	J A 169	J A 85	J A 35	41	62	J A 36	J A 107	J A 66	J A 62	J A 51
23	32	J A 43	J A 53	J A 33	J A 262	J A 67	J A 53	J A 53	J A 63	J A 68	J A 61	C	J A 58	J A 58	43	39	39	J A 52	J A 67	J A 64	J A 23	20	J A 19	E B 16
24	20	20	24	E B 16	G	26	35	J A 50	46	J A 177	J A 141	J A 109	J A 91	J A 53	148	48	J A 61	40	J A 95	J A 57	J A 52	23	J A 31	J A 18
25	18	19	E B 16	E B 16	J A 32	J A 44	52	J A 50	J A 63	J A 51	43	47	J A 65	47	J A 65	42	J A 35	35	32	J A 83	J A 43	J A 22	J A 23	17
26	J A 38	J A 30	J A 30	J A 28	J A 19	30	39	J A 48	J A 83	J A 88	J A 80	J A 77	J A 75	J A 57	J A 47	37	J A 42	J A 42	J A 52	J A 154	J A 21	J A 24	J A 41	E B 15
27	J A 25	J A 23	24	J A 25	20	33	J A 45	J A 61	J A 63	J A 51	44	44	41	G	G	42	39	J A 45	J A 61	J A 37	29	E B 16	24	J A 26
28	J A 23	E B 16	E B 16	E B 16	20	28	J A 43	J A 52	J A 49	J A 45	94	J A 55	J A 51	J A 77	J A 51	38	J A 53	J A 69	J A 62	J A 63	44	29	J A 32	32
29	J A 32	31	J A 24	J A 28	J A 26	27	40	J A 85	J A 90	J A 55	48	42	J A 43	J A 78	J A 89	G	36	J A 56	J A 53	J A 103	J A 69	J A 53	J A 39	E B 16
30	19	E B 16	E B 16	E B 16	E B 16	27	36	J A 85	J A 99	J A 103	J A 68	J A 51	J A 45	J A 59	J A 68	J A 38	J A 35	32	26	J A 33	31	J A 33	J A 64	J A 32
31	26	22	J A 25	32	J A 25	J A 45	J A 50	J A 46	J A 61	J A 75	J A 97	J A 54	J A 50	J A 46	G	44	36	37	J A 46	J A 41	J A 63	J A 65	J A 33	J A 43
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	24	22	24	21	23	28	38	J A 50	J A 51	J A 51	J A 49	J A 51	J A 49	J A 52	47	39	36	J A 41	J A 46	J A 37	J A 36	25	24	22
U Q	32	J A 31	J A 29	J A 28	27	J A 34	J A 51	J A 61	J A 69	J A 78	J A 78	J A 57	J A 57	J A 57	J A 56	J A 44	J A 42	J A 50	J A 63	J A 57	J A 52	J A 33	J A 32	J A 32
L Q	E B 18	E B 16	E B 16	E B 16	G	G	32	42	40	42	43	43	42	40	G 39	G 36	35	34	31	J A 32	J A 28	E B 16	E B 22	E B 16

MAY 2022 foEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

MAY 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	22	18	20	E B 16	G 21	28	28	34	35	36	36	38	42	38	G 36	34	34	26	24	E B 16	E B 16	E B 16	E B 16	17
2	E B 16	E B 16	E B 16	E B 16	E B 16	G	28	36	42	42	39	39	39	37	31	G 27	34	28	26	24	19	19	E B 16	E B 15
3	16	E B 16	E B 16	E B 16	E B 16	G 21	28	32	37	37	37	G 37	G	40	G	35	31	G	22	24	E B 17	E B 16	E B 16	E B 16
4	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	33	38	44	38	42	37	38	35	G 34	G	G 26	21	22	E B 16	20	18	E B 16
5	E B 16	E B 16	E B 16	E B 16	E B 16	22	29	33	G	A	E A 47	38	E A 41	44	38	36	36	35	25	22	22	E B 16	E B 16	E B 16
6	E B 16	21	E B 16	E B 16	E B 16	G 20	G 27	34	34	E A 44	41	36	G 36	37	G 35	G	G	G 24	22	G 16	18	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	37	36	G	40	38	G	39	36	34	34	36	G 20	23	19	E B 16	16	16
8	E B 16	E B 16	E B 16	E B 16	E B 16	G 19	20	31	G	45	38	39	36	G 36	35	31	G 29	G 25	G 20	E B 16	E B 16	E B 15	E B 15	E B 16
9	16	E B 17	E B 16	E B 16	E B 16	22	28	34	36	37	40	40	G	G	39	35	G 28	26	22	G 16	19	E B 16	E B 16	E B 15
10	E B 16	E B 16	E B 16	16	16	22	G 26	31	35	38	42	E A 52	42	37	G	35	32	32	24	22	22	E B 16	16	16
11	E B 16	E B 16	E B 16	E B 16	E B 16	G 23	28	34	38	38	36	G	40	38	37	35	31	G 26	29	26	26	E B 16	E B 16	E B 16
12	E B 16	16	E B 16	E B 16	E B 16	G 23	28	35	41	42	E A 51	E A 50	38	40	41	43	39	29	25	22	20	E B 16	E B 16	E B 16
13	E B 16	E B 16	16	E B 16	E B 16	G 23	30	40	38	38	38	41	42	A	38	37	34	28	28	21	21	21	16	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	G 23	29	36	41	42	41	41	39	38	41	37	40	E A 40	26	E A 40	22	20	16	18
15	22	18	17	E B 16	G 18	27	33	A	40	A	41	41	41	40	36	37	E A 40	A	E A 36	20	E A 30	E B 16	E B 16	E B 16
16	E B 16	E B 16	16	24	G 22	31	E A 43	A A 82	36	A	41	40	39	42	E A 48	E A 44	37	A	36	29	G 18	21	20	21
17	E B 16	E B 16	21	E B 16	G 17	27	34	A	A	A A 151	A A 91	55	E A 54	A	44	39	E A 42	36	25	22	A	22	18	21
18	22	18	E B 16	E B 16	E B 17	25	33	40	A	A	A A 88	A	38	40	40	G	32	30	25	21	17	E B 16	E B 15	22
19	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	44	41	40	41	42	E A 45	G	38	G	34	31	26	26	24	E B 16	E B 16	E B 17
20	E B 16	20	E B 16	E A 16	G 16	26	34	45	E A 49	38	40	40	40	42	42	36	G 32	32	25	22	22	16	E B 16	E B 16
21	E B 16	E B 16	E B 16	E B 16	G 18	28	32	39	A	42	46	46	43	38	E A 44	36	32	36	A A 84	22	18	29	E B 16	16
22	E B 16	E B 16	E B 16	E B 16	E B 16	G 22	38	E A 53	A A 99	A A 151	A	45	44	A A 83	A	E A 53	G 32	30	30	23	E A 30	E A 22	A	A
23	16	22	24	17	26	27	A	E A 46	E A 52	A A 68	A A 61	C	E A 56	A	41	37	35	35	A A 67	26	20	16	16	E B 16
24	16	16	15	E B 16	G	24	33	34	40	52	A A 141	45	44	41	A A 148	E A 44	E A 43	34	23	23	21	17	17	E B 16
25	E B 16	E B 16	E B 16	E B 16	G 19	G 24	36	42	47	43	41	40	E A 57	43	E A 45	37	32	31	27	24	20	18	17	E B 16
26	17	17	17	16	G 17	26	34	37	A	41	41	48	E A 55	E A 44	38	35	35	34	28	20	16	17	20	E B 15
27	17	17	E B 16	16	G 17	25	34	35	39	44	38	42	38	G	G	37	35	30	22	22	18	E B 16	16	E B 16
28	E B 16	E B 16	E B 16	E B 16	G 16	24	36	E A 46	E A 41	41	A A 94	40	A	E A 50	38	36	E A 44	33	35	24	22	17	22	16
29	28	20	E B 16	18	21	24	32	A A 85	A A 90	52	43	39	39	40	E A 54	G	32	36	31	A	18	19	E B 16	E B 16
30	E B 16	E B 16	E B 16	E B 16	E B 16	25	34	38	38	45	45	38	39	39	36	34	31	31	25	25	18	18	16	19
31	E B 16	E B 16	E B 16	16	20	34	33	39	A	41	A A 97	44	41	39	G	38	G 30	34	27	24	20	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	29	26	27	30	29	30	28	30	31	31	29	31	30	30	31	30	30
MED	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	36	38	42	41	40	39	38	37	36	33	31	25	22	20	16	16	E B 16
U Q	16	17	16	16	G 18	26	34	A 43	A 41	45	A A 47	44	E A 43	42	A 41	37	36	34	29	24	22	19	16	16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	34	36	38	39	38	38	38	G	G 34	G 32	G 27	23	21	18	E B 16	E B 16	E B 16

MAY 2022 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Wakkanai

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

IONOSPHERIC DATA STATION Wakkanai

MAY 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	289	279	270	256	261	290	304V	328	321	320	294	293	300	300	310	305	315	309	294	302	295	295	306	284
2	284	274	288	287	274	297	313	328	327	326	326	297	297	306	311	311	311	313	317	297	290	298	297	306
3	292	286	286	286	294	313	331	331	330	315	325	315	307	294	304	313	312	312	312	300	296	302	313	295
4	281	276	276	275	293	300	325	325	304	D 324	C 313	320	310	303	295	309	308	308	307	307	307	296	287	287
5	286	295	285	290	290	291	304	307	325	312	296	304	317	317	310	309	314	314	300	305	300	313	291	291
6	287	281	281	302	287	297	C	307	313	312	329	296	302	302	321	311	317	316	304	304	288	288	J R 294	293
7	292	292	291	275	287	297	297	316	H 298	324	297	311	306	296	301	300	314	313	313	307	302	302	291	280
8	279	279	286	285	295	308	C	328	322	340	303	295	330	318	301	315	315	315	306	283	282	294	288	293
9	287	279	275	294	294	283	331	315	333	323	302	312	312	298	307	307	306	305	305	288	288	288	279	265
10	278	278	278	292	298	288	307	307	303	317	312	316	291	302	302	311	310	314	309	314	305	296	296	287
11	294	288	288	288	315	340	311	332	331	317	317	285	290	308	308	307	305	305	297	304	294	300	301	293
12	293	285	285	282	290	318	292	323	297	298	298	293	292	296	303	288	302	302	301	298	290	280	283	283
13	283	267	282	295	289	312	326	320	320	318	288	288	307	306	299	312	311	310	295	295	311	302	U R 297	282
14	281	281	278	282	274	293	292	322	298	262	306	305	313	313	303	302	302	301	294	196	296	313	300	272
15	280	270	267	271	269	276	283	313	304	283	270	296	298	269	272	289	298	310	295	303	279	284	283	280
16	279	271	293	293	280	294	286	A	286	277	278	252	269	290	299	271	306	233	303	287	250	263	F 273	F 273
17	F 284	272	269	F 267	271	278	302	301	308	A	A	276	288	285	285	284	284	292	292	277	277	296	268	279
18	279	279	293	295	277	289	289	256	287	300	A	253	241	267	270	284	284	283	282	281	281	287	278	R
19	278	270	270	283	282	281	303	295	294	293	293	282	265	294	291	301	294	304	269	272	280	284	297	284
20	284	275	267	281	288	279	292	294	285	271	279	259	288	288	278	277	296	312	285	277	269	285	287	283
21	277	277	290	263	276	268	293	277	302	295	262	276	256	282	277	285	292	296	A	290	280	288	284	276
22	257	258	255	268	267	294	298	290	A	A	R 253	251	280	A	280	289	297	297	296	288	267	275	275	267
23	260	260	268	268	F 279	272	277	267	289	A	A	C	R	275	307	266	291	290	A	290	283	R	R	R
24	281	271	277	274	R	328	313	312	274	286	A	289	284	253	A	288	294	294	287	287	286	277	276	276
25	278	269	274	273	273	293	292	284	291	290	290	290	290	301	283	297	290	301	296	281	277	281	280	284
26	278	278	281	276	276	287	321	304	292	290	291	290	254	266	266	281	297	296	296	295	295	288	287	254
27	286	286	C	297	296	286	290	303	340	307	273	313	280	285	288	296	296	296	289	288	287	287	294	R 280
28	263	262	274	278	281	297	284	284	271	261	A	270	282	288	276	275	258	292	300	285	285	265	283	283
29	288	288	300	300	340	309	352	A	A	299	272	271	280	280	288	277	275	295	294	227	296	279	291	294
30	293	297	284	287	279	284	308	302	310	320	304	316	304	304	303	303	303	302	293	C	293	293	293	292
31	305	304	262	285	335	298	314	291	307	325	A	279	278	290	290	290	300	285	296	301	289	254	279	279
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	30	31	29	29	29	28	25	30	30	30	30	31	31	31	29	30	31	30	30	29
MED	283	278	280	283	284	293	303	307	304	310	296	292	290	295	299	297	302	302	296	290	288	288	288	283
U Q	288	286	286	292	294	300	314	322	322	320	309	305	306	303	304	309	311	312	304	302	296	296	296	292
L Q	278	271	270	274	276	284	292	292	292	290	278	276	280	285	283	284	294	295	294	283	280	281	280	278

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MAY 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								L	L 369	L 378	L 381	373	367	U L 355	345	L	U L 353	L						
2							L	L	L 352		L	L	L 373	351	370	366	L	382						
3							356	L 393	371	370	364	387	385	384	373	345	355	380	L					
4							358	L	L	L	383	383	379	H 358	H 344	345	346	339						
5						U L 357	354	350	350	A	A	374	368	370	377	350	355		A					
6						411	354	L 394	L 370	348	365	365	L 367	367	360	360	L 377	L 352						
7						L	U L 359	L	U L 379	390	370	354	361	L 347	363	347	364		L					
8						L	C	386	360	U L 360	L 385	360	359	L	L 361	361	L	L						
9							L	L 352	351	368	383	L 363	363	359	L 351	351	L 352	L	L					
10							L 337	L 347	361	L	385	A	370	363	352	L 359	L 354	L						
11							L	L 368	367	388	364	372	376	L 359	351	L	L 347	U L 345						
12							L 341	L 361	U L 360	333	A	A	346	L 367	L 333	L A	A	A						
13						L	U L 387	L 346	376	U L 374	H 334	359	344	A	341	L 354	U L 352	U L 364						
14						L 323	L 328	360	L 371	L	359	384	393	364	346	L	A	A	A	A				
15						L	L 343	A	A	A	371	376	376	361	340	340	U L 340	A	A					
16							A	A	350	A	371	L 365	369	366	A	A	336	A	L	L				
17					L		A	A	A	A	A	A	A	A	330	329	330	L			A			
18						L	L	L	A	A	A	A	363	373	355	355	U L 348	U L 339	L					
19							U L 355	L 373	365	372	360	365	335	375	338	361	L 349	L						
20						L	L	L	A	358	377	372	355	L	338	L	L	L			L			
21						L 348	L	L 347	A	370	344	369	353	L	335	344	330	L	A					
22					L	U L 358	L 334	A	A	A	A	L	A	A	A	A	L 333	L	L		A			
23						A	A	A	A	A	A	C	A	A	347	355	333	U L 323	A					
24						U L 357	L 353	353	L	A	A	358	377	378	A	331	L 344	U L 339	L					
25						L	L	348	347	L	402	345	A	L	L 362	336	337	337	L					
26					L	L	L	A	A	U L 354	361	A	A	351	346	346	340	U L 336						
27						L	333	A		390	397	360	372	358	351	350	353	L 339	L					
28						L	L 343	A	368	384	A	383	A	A	382	330	A	A						
29						L 388	L	A	A	A	369	390	371	372	A	U L 375	H 335	A						
30					L	U L 335	332	U L 359	350	L 336	370	370	372	371	352	U L 348	345	L	U L 326					
31								L	A	A	A	376	380	378	358	388	L	335						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						8	16	15	17	17	21	23	25	22	27	24	24	13	1					
MED						L 357	L 348	L 359	365	370	370	370	369	365	351	350	346	L 339	U L 326					
U Q						L 373	U L 356	L 373	370	381	383	376	376	372	361	360	353	358						
L Q						L 342	L 336	L 348	350	L 353	362	360	360	358	341	344	336	336						

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IONOSPHERIC DATA STATION Wakkanai

MAY 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								260	260	278	306	302	284	300	290	282	294	274						
2							288	264	282	282	286	286	274	306	282	278	278	268						
3							262	258	268	274	284	294	296	282	306	306	288	270	254					
4							292	270	260	284	296	278	290	312	324	314	296	278						
5						312	302	308	298	328	300	338	308	318	296	296	288		E A 322					
6						276	258	274	286	286	276	338	316	302	282	296	292	278						
7						288	294	310	300	320	368	320	320	344	310	310	300		270					
8						270	C	284	294	268	300	326	290	304	326	286	284	270						
9							270	278	278	278	300	300	308	328	306	292	294	294	276					
10							288	304	330	282	314	300	342	340	334	298	288	288						
11							276	264	270	298	306	350	314	318	318	300	300	294						
12							316	300	332	364	354	370	352	352	328	344	308	284						
13						268	268	284	276	284	346	334	318	342	334	298	284	298						
14						338	338	284	336	H 450	332	318	344	306	330	322	322	288	318	546				
15						332	348	316	324	390	444	358	352	398	374	350	312	296	266					
16							324	A	334	402	414	476	454	382	360	410	316	A	312	350				
17					308		A	316	E A 334	A	A	A	374	388	358	348	358	282			A			
18						316	342	410	370	342	A	A	530	468	432	400	350	350	318					
19							320	300	322	358	374	362	428	348	340	316	330	294						
20						280	280	302	290	378	386	404	372	392	358	388	326	302			340			
21						348	292	366	332	346	442	388	460	356	398	356	326	326	A					
22					334	294	308	344	A	A	E A 488	480	414	A	E A 368	358	324	314	314		328			
23						A	330	398	352	A	A	C	E A 526	394	344	390	340	340	A					
24						262	280	294	384	374	A	374	390	482	A	376	334	318	286					
25						276	314	268	326	326	342	346	354	332	374	322	324	294	282					
26					350	296	256	294	320	356	382	386	496	440	420	354	346	302						
27						304	314	280		312	310	310	386	354	336	338	326	316	290					
28						290	338	328	416	448	A	408	354	362	438	410	402	336						
29						262	250	A	A	332	414	400	392	380	376	382	366	324						
30					324	344	324	348	314	286	294	294	330	330	322	324	290	290	296					
31								314	300	290	A	412	400	350	354	338	306	340						
	00	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	18	27	29	28	28	25	28	31	30	30	31	31	28	13	2	2			
MED					329	292	294	300	312	323	323	342	352	346	334	324	312	294	288	448	334			
U Q					342	316	324	316	333	361	384	387	400	382	368	358	330	317	316					
L Q					316	276	276	276	284	284	300	306	314	318	318	298	292	283	273					

MAY 2022 h'F2 (KM)

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MAY 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	250	268	292	324	322	266	238	220	198	204	188	182	232	214	222	214	224	214	266	250	260	256	248	246
2	272	290	286	262	302	266	222	222	232	216	196	192	206	198	210	206	206	220	248	254	268	258	262	248
3	252	264	290	292	274	246	206	196	216	198	212	190	184	226	204	200	216	220	230	274	252	252	240	248
4	268	296	296	296	268	246	212	212	212	240	204	224	216	200	188	224	218	218	262	248	228	266	262	282
5	264	246	256	262	288	238	238	220	220	A	A	202	226	236	208	226	236	264	A	252	252	242	242	278
6	260	320	290	262	274	200	210	204	204	A	204	196	198	198	210	210	220	210	264	246	270	270	254	250
7	274	276	276	298	286	216	198	222	196	192	196	H 198	198	210	222	198	224	266	234	256	266	240	252	282
8	302	310	286	268	252	212	C	200	200	A	200	198	200	202	202	206	196	206	272	278	294	268	254	266
9	292	272	292	266	298	246	220	218	218	200	206	208	192	198	200	220	220	214	214	264	264	270	Q 270	Q 282
10	Q 264	278	288	256	252	236	224	234	216	214	208	A	208	196	198	208	230	236	248	252	252	246	262	274
11	274	274	294	294	246	216	204	214	214	200	200	200	202	192	202	206	206	222	250	266	272	252	242	248
12	262	314	308	276	296	274	232	232	A	A	A	A	210	222	212	A	A	A	250	258	258	258	272	272
13	284	298	272	264	290	232	218	236	196	202	208	198	218	A	222	222	226	234	270	258	258	252	232	284
14	278	278	286	300	316	248	238	226	240	218	196	196	196	212	218	220	A	A	A	A	278	264	248	272
15	272	294	312	300	326	228	228	A	A	A	228	194	206	200	206	224	A	A	A	242	260	272	244	286
16	304	326	282	276	306	250	A	A	210	A	214	196	204	204	A	A	234	A	A	234	280	328	A	264
17	256	256	316	Q 344	250	274	A	A	A	A	A	A	A	A	A	210	A	A	262	224	A	232	262	290
18	A	274	248	268	272	244	A	228	A	A	A	A	220	202	210	212	226	238	240	256	272	272	264	268
19	278	302	288	294	266	240	224	234	234	198	188	188	242	198	198	222	206	236	262	302	296	278	254	254
20	266	272	290	294	240	216	216	A	A	202	192	198	202	218	208	220	230	230	258	294	230	268	262	266
21	268	268	266	308	302	230	224	224	A	224	268	240	206	200	242	224	H 228	232	A	264	286	286	272	272
22	298	338	340	298	272	242	246	A	A	A	A	E A 262	212	A	A	A	216	228	228	246	A	A	A	A
23	288	288	282	Q 282	306	A	A	A	A	A	A	C	A	A	230	202	198	264	A	250	270	270	250	264
24	254	292	278	262	262	226	210	226	214	A	A	242	234	200	A	242	A	228	228	262	278	274	274	264
25	282	Q 290	Q 252	280	302	210	238	224	A	248	196	H 206	A	226	236	212	208	226	226	256	268	264	264	238
26	284	258	262	262	262	228	216	A	A	212	194	A	A	A	204	198	198	236	272	278	244	264	286	Q 278
27	288	278	244	244	222	232	238	A	242	200	190	198	192	184	202	226	214	214	228	240	276	256	240	288
28	322	290	290	290	262	222	232	A	A	A 228	A	198	A	A	224	246	A	A	258	258	278	278	270	270
29	270	292	264	242	228	206	230	A	A	A	248	220	208	208	A	194	212	A	256	A	248	258	280	294
30	276	256	274	286	244	230	230	220	214	A	A	202	196	202	202	214	200	210	224	266	274	266	264	274
31	258	270	270	270	210	260	244	244	A	A	A	276	194	198	214	214	212	268	268	254	256	284	242	288
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	26	21	18	17	21	25	26	25	26	28	25	24	25	29	29	30	29	30
MED	273	278	286	280	272	234	224	222	214	204	200	198	206	202	209	214	216	228	250	256	268	265	262	272
U Q	284	296	292	296	302	246	238	230	220	221	210	214	216	213	222	223	226	236	263	265	277	272	267	282
L Q	264	270	270	262	252	222	216	216	204	200	195	196	198	198	202	206	206	216	229	249	254	256	246	264

MAY 2022 h'F (KM)

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IONOSPHERIC DATA STATION Wakkanai

MAY 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					122	122	110	104	104	104	98	98	98	98	102	102	102	102	106	A				
2					B	124	100	100	100	100	100	100	100	A	102	102	102	102	102	A				
3					B	126	110	110	98	98	92	94	100	100	100	98	98	100	100	A				
4					A	100	108	104	104	104	104	104	96	100	100	100	102	108	108	A				
5					B	108	108	108	108	100	100	100	100	100	96	102	104	104	A	A				
6					B	100	100	108	98	98	98	98	A	A	102	102	104	104	104	104				
7				B	A	110	110	106	106	96	104	104	100	100	100	100	100	106	106	A	A			
8				B	B	106	A	A	106	96	96	100	94	100	100	100	100	102	102	B	B			
9				B	A	102	106	106	106	106	106	106	106	106	A	106	106	106	106	106	A			
10				B	A	A	106	102	102	102	102	94	94	104	104	104	94	94	88	A	A			
11				B	B	114	100	104	104	104	104	106	106	106	106	106	106	108	A	A	A			
12				B	B	120	104	104	104	104	102	102	102	102	102	98	98	98	104	A	A			
13				B	B	112	100	100	96	96	96	96	96	96	98	98	98	98	102	A	A			
14				106	106	120	102	106	106	106	96	100	100	100	100	100	100	100	100	A	A			
15				B	116	116	94	94	100	100	100	A	A	100	A 98	98	98	98	98	A	A			
16				A	122	108	108	98	98	A	98	98	92	100	100	100	100	100	104	A	132			
17				106	120	104	102	102	102	102	94	100	100	92	96	102	102	102	102	A	A			
18				B	102	102	98	98	102	102	102	A	A	A	A	102	94	104	104	A	A			
19				B	A	100	108	100	100	100	100	94	A	100	100	104	104	104	110	B	A			
20				A	106	106	106	96	100	100	100	100	100	100	100	100	100	100	100	A	A			
21				B	120	108	100	100	100	100	100	100	92	92	98	92	100	108	108	A	A			
22				A	B	108	98	98	102	96	102	96	96	96	96	96	108	98	102	A	A			
23				B	92	104	104	104	104	104	102	C	102	96	96	96	A	96	96	A	A 96			
24				B	E 120 B	90	96	96	96	96	96	96	96	96	96	100	100	100	100	A	A			
25				B	100	100	100	100	100	100	98	100	94	94	98	98	98	98	98	112	A			
26				A	126	96	104	94	96	96	96	96	96	96	96	96	96	102	102	A	A			
27				B	126	100	100	108	100	100	100	100	100	100	100	102	102	102	102	A	A			
28				B	110	110	106	92	94	94	94	96	96	96	96	104	104	104	104	A	A			
29				A	A	104	104	100	100	100	100	100	100	100	100	98	100	100	100	A	A			
30				B	B	104	104	104	104	104	104	104	92	A	92	104	100	100	100	A	A			
31				A	100	100	100	100	100	92	92	92	92	98	98	98	98	98	98	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				2	15	30	30	30	31	30	31	28	27	27	29	31	30	31	29	3	2			
MED				106	113	106	104	101	100	100	100	100	98	100	100	100	100	102	102	106	114			
U Q					122	112	106	104	104	104	102	100	100	100	100	102	102	104	104	112				
L Q					102	100	100	98	100	96	96	96	94	96	96	98	98	98	100	104				

MAY 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

MAY 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	120	120	120	136	116	110	112	112	108	108	108	100	100	96	96	104	184	110	124	118	B	B	B	94
2	B	B	B	B	B	G	104	108	110	110	108	108	96	202	214	96	114	102	112	108	102	100	100	B
3	100	B	B	90	90	132	124	116	106	106	106	128	G	158	G	106	194	G	108	108	108	B	B	B
4	B	B	92	B	92	146	146	118	118	118	212	112	106	106	110	112	G	112	120	116	B	100	100	100
5	B	B	B	B	118	130	128	120	G	106	106	106	98	98	106	144	124	110	106	126	100	100	102	98
6	B	98	B	B	B	98	108	108	108	100	106	208	96	96	96	G	G	102	114	100	90	90	90	B
7	90	B	B	B	96	134	120	106	106	G	106	112	G	176	168	112	136	124	124	106	104	B	94	100
8	100	100	100	94	B	122	102	204	G	108	118	106	106	98	98	96	108	118	90	B	98	B	B	98
9	98	B	98	98	92	140	122	122	122	122	122	112	G	G	96	108	108	164	130	94	94	86	86	B
10	B	112	94	94	94	94	138	96	124	124	120	112	114	114	G	180	138	118	116	116	108	B	104	104
11	98	98	98	98	B	144	126	100	98	108	114	G	182	92	94	94	108	108	108	108	106	B	B	B
12	B	98	94	88	98	130	140	124	120	112	106	102	102	112	122	106	106	106	112	106	106	B	B	B
13	98	98	98	94	B	124	120	110	110	90	90	104	104	104	96	132	130	118	112	106	106	106	98	122
14	94	94	B	98	112	126	126	114	108	110	118	110	106	106	106	136	120	112	100	100	100	100	100	100
15	96	94	94	92	122	114	114	106	106	106	106	94	94	88	96	96	112	112	106	106	98	98	98	98
16	104	102	94	112	122	116	110	110	110	102	108	104	104	104	104	104	116	114	114	114	114	112	110	98
17	98	100	106	100	140	110	110	114	106	106	104	108	108	108	114	114	108	108	108	102	102	102	102	102
18	102	94	94	106	106	134	118	112	110	100	100	100	212	100	100	G	128	118	114	108	108	108	B	92
19	94	94	94	B	92	92	132	110	94	106	96	102	96	G	94	G	138	120	112	112	98	98	98	100
20	B	88	88	90	98	132	116	116	112	112	112	112	106	102	102	96	132	122	120	114	104	104	88	B
21	88	B	B	B	138	116	116	114	108	106	106	106	102	100	96	108	104	114	108	94	104	104	94	94
22	100	100	100	96	B	138	114	114	112	104	104	108	108	102	108	108	120	132	112	102	102	102	110	96
23	96	96	96	96	116	104	104	104	104	104	104	C	100	96	136	136	88	124	112	106	106	104	94	B
24	94	92	98	B	G	110	114	110	110	104	110	108	106	106	106	114	114	106	106	112	112	102	106	96
25	102	102	B	B	96	104	104	114	106	112	112	116	106	106	106	104	110	102	132	110	106	98	98	98
26	98	98	98	98	98	142	116	106	106	106	118	108	100	100	100	110	100	112	110	110	110	102	102	B
27	94	94	96	100	102	116	116	114	106	106	106	106	106	G	G	126	126	110	110	110	104	B	104	104
28	104	B	B	B	108	130	112	110	110	102	102	102	102	104	112	166	124	112	116	112	112	102	102	102
29	92	92	106	96	102	152	122	118	104	108	108	108	108	94	94	G	120	120	118	106	106	106	120	B
30	84	B	B	B	B	116	110	110	100	100	100	100	100	96	92	104	104	108	114	100	100	100	100	92
31	92	92	92	96	98	118	114	114	106	110	110	108	104	104	G	120	110	118	108	108	108	108	102	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	22	21	20	23	30	31	31	29	30	31	29	28	28	27	27	29	30	31	30	29	23	25	21
MED	98	98	96	96	102	123	116	112	108	106	106	108	104	103	102	108	116	112	112	108	104	102	100	98
U Q	100	100	99	99	116	134	124	116	110	110	112	112	106	106	110	126	129	118	116	112	108	104	103	101
L Q	94	94	94	94	96	110	110	108	106	104	104	103	100	97	96	104	108	108	108	106	100	100	96	96

IONOSPHERIC DATA STATION Wakkanai

MAY 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	F3	F3	F4	F1	C3	C5	C2	C2	C1	C1	C1	C1	C2	C2	C1	C1	HL11	C1	HL22	L6				F4
2							LC11	C2	C2	C1	C1	C1	C2	L2	C2	C2	CL21	LC11	CL52	L4	F8	F6	F1	
3	F1			F1	L1	LC11	C2	C2	C2	C2	C1	C1		H1		C1	HL11		C1	L4	F2			
4			F1		L1	C1	C1	C1	C2	C1	C1	C1	C2	C2	C2	C1		C1	C1	L5		F3	F4	F1
5					L1	C1	C2	C2		C3	C2	C1	C2	C3	C2	C2	C2	C5	C4	LL32	F5	F1	F1	F1
6		F4				C1	C2	C2	C2	C2	C2	C1	L1	C1	LC21			C2	CL21	C1	F1	F2	F1	
7	F1				L1	C2	C2	C4	C1		C1	C1		H1	H1	C1	C2	C3	C3	L3	L4		F4	FQ21
8	F2	F1	F1	L1		C2	C2	L2		C2	C1	C2	C1	C1	C2	C2	C3	C2	LC11		L1			F1
9	F1		F1	L1	L1	CL21	CL21	C2	C2	C1	C2	C1			L1	C2	C1	H2	H2	LC11	L5	F1	F1	
10		F2	F4	L4	L4	L2	CL11	C2	C2	C1	C2	C2	C1	C2		C1	H1	C3	CL72	LL51	LL61		F3	F4
11	F2	F5	F2	L1		H2	C2	LC11	LC12	C2	C1		H1	LC21	C2	LC21	C1	LC21	L5	L5	L4			
12		F1	F1	L2	LL11	CL11	C1	C2	C2	C2	C3	C2	C2	C1	C1	C4	C4	C3	C3	L3	L6			
13	F2	F2	F1	L1		C2	C2	C2	C2	C2	C1	C2	C1	C4	C2	C1	C2	C2	C3	L7	L8	F8	F1	F1
14	F1	F1		CL11	C1	C2	C2	C2	C2	C2	C1	C1	C1	C1	C2	C2	C3	C6	C5	L7	L8	F4	F2	F5
15	F6	F5	F3	L1	C2	C3	C3	C3	C3	C3	C2	L1	L1	LC11	L1	LC11	C2	C4	C5	L1	L8	F2	F2	F2
16	F1	F4	FF42	L7	C3	C5	C3	C4	C2	LQ21	C2	C1	C1	C2	C2	C2	C2	C5	C5	L7	C7	F4	F8	F6
17	F2	F1	F3	LC32	C2	C5	C4	C4	C3	CQ41	CQ51	CQ31	C2	C2	C2	C2	C3	C2	C4	L5	L8	F6	FQ52	FQ62
18	FQ51	FQ31	F4	F4	L1	C2	C4	C2	C4	C4	C3	C3	L2	L1	L1		C1	C2	C2	L4	L3	F1		F6
19	F4	F2	F1		L1	LC11	H2	C3	C2	C2	C2	C2	L2		LC21		C1	CL22	C5	C4	L4	F2	F1	F2
20		F3	F1	L1	LC11	C2	C2	C4	C3	C1	C2	C1	C1	C2	C2	C2	CL12	C1	C3	L4	L8	F1	F1	
21	F1				C1	C3	C3	C2	C4	C1	C2	C2	C2	C2	C2	C1	C3	C4	C5	LC31	L4	F4	F2	F2
22	F1	F2	F3	L2		HL11	C3	C5	C5	C4	C4	C2	C2	C3	CQ41	CQ31	C1	C1	C5	L5	L6	FQ51	F8	F7
23	F3	F7	F9	LQ31	CL22	C6	C4	C3	C3	C3	C3		C3	C5	H2	H2	L3	C2	C4	L7	L3	F4	F4	
24	F4	F4	F1			C2	C2	C2	C1	C4	C3	C2	C2	C2	C2	C2	C3	C3	C4	L7	L3	FF31	F6	F1
25	F1	F1			L3	C2	C3	C3	C2	C2	C1	C1	C5	C2	C3	C2	C2	C4	C2	L3	L6	F7	F6	F2
26	F5	F4	F4	LQ41	LC21	CL21	C3	C4	C4	C2	C2	C2	C3	C2	C2	C2	C2	C3	C4	LQ31	L1	F4	F3	
27	F3	F5	F2	L4	L4	C3	C3	C3	C5	C3	C1	C2	C1			C2	C3	C3	C7	L4	L4		F3	F2
28	F1				LQ21	C2	C4	C5	C2	C2	C4	C2	C2	C2	C1	H1	C3	CQ21	C5	L5	L7	F5	F5	F3
29	F6	F4	F2	L5	L4	H2	C4	C5	C4	C4	C3	C1	C1	LC11	C3		C1	C3	C6	L7	L6	FQ31	FQ21	
30	F1					C3	C3	C3	C3	C4	C3	C2	C2	L2	C2	C2	C3	C2	C2	L4	L4	F9	F4	F4
31	F4	F2	F2	L3	LC11	C4	C3	C2	C3	C3	C3	C2	C2	C2		C1	C1	C3	C7	L4	L8	F4	F6	F4
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

MAY 2022 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

MAY 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	69	66	60	59	59	69	95	97	97	88	86	96	112	122	119	113	107	105	103	100	94	89	78	72
2	F	F	F	F	F	70	84	86	88	83	80	91	99	106	109	109	104	95	102	100	88	74	72	72
3	72	69	66	62	61	69	86	85	80	84	83	89	82	90	104	105	105	100	99	106	101	76	75	71
4	F	F	72	65	61	65	73	80	85	85	84	88	95	96	96	95	98	106	106	96	70	66	71	72
5	71	71	65	60	59	68	81	85	73	70	88	90	97	98	96	93	93	95	97	100	84	64	F	64
6	F	64	62	56	54	60	78	82	80	72	72	83	85	95	104	97	92	87	77	80	78	79	73	73
7	73	73	64	59	62	75	84	71	70	70	72	77	85	87	93	99	91	88	88	91	87	65	65	66
8	66	65	65	62	56	67	78	71	73	67	69	80	88	94	88	88	84	78	81	88	86	80	78	76
9	74	75	70	70	65	72	88	77	80	77	77	83	84	88	90	91	91	82	89	93	99	67	67	69
10	70	69	69	56	53	60	72	92	101	94	87	84	86	90	94	103	108	104	108	89	71	70	70	F
11	72	69	64	59	62	74	77	74	71	64	71	84	86	90	102	110	112	108	108	103	88	78	79	82
12	81	F	67	67	61	66	70	68	69	69	74	76	72	79	90	93	92	A	93	90	86	76	78	79
13	78	72	70	70	62	67	75	78	77	70	76	83	83	83	90	98	96	84	88	98	93	81	76	72
14	70	69	67	63	60	63	88	94	86	81	74	82	79	84	84	84	85	91	91	99	97	70	68	68
15	69	66	62	61	60	71	83	80	81	85	88	101	99	94	95	93	97	97	90	86	74	70	72	72
16	70	66	63	60	58	70	91	81	A	81	90	89	86	89	94	90	82	79	77	84	83	81	78	F
17	84	83	71	68	62	69	84	79	A	A	A	A	80	A	A	81	C	85	94	98	87	84	F	83
18	76	72	74	65	61	60	73	72	63	68	66	71	A	67	71	71	74	70	A	80	78	72	74	74
19	76	72	70	69	69	77	81	81	82	80	79	83	86	86	85	84	84	81	83	91	94	94	90	82
20	76	76	73	76	83	83	90	94	A	89	91	97	99	91	84	82	85	86	91	91	85	83	83	F
21	F	82	77	70	68	64	78	83	A	72	A	80	89	A	100	101	92	82	79	A	74	76	76	F
22	F	F	63	F	F	F	81	72	76	74	73	79	A	91	99	104	96	91	82	80	80	78	79	75
23	75	77	77	71	F	69	86	88	89	A	A	66	66	66	72	72	73	73	A	78	F	76	64	64
24	66	66	F	F	63	70	F	78	68	70	74	76	81	A	82	83	81	84	A	94	84	84	80	79
25	73	F	F	F	62	68	88	88	79	71	A	A	A	84	87	90	A	94	97	97	88	83	F	F
26	F	78	65	68	63	F	93	87	84	79	78	77	80	88	93	100	104	109	111	98	84	84	84	84
27	F	F	F	72	72	72	88	101	77	A	A	77	84	82	84	88	A	A	87	92	96	F	F	91
28	85	F	F	F	94	94	A	A	64	A	A	82	86	88	80	70	68	A	85	72	67	70	71	68
29	70	63	58	58	55	57	57	65	64	67	A	70	74	77	78	78	80	87	96	94	80	F	F	F
30	F	72	70	64	62	63	65	69	76	85	86	85	A	77	81	90	90	A	89	93	F	A	F	F
31	77	72	F	F	F	70	81	76	85	A	71	C	A	95	101	102	107	102	100	94	90	85	84	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	25	25	27	29	29	30	27	26	24	28	26	28	30	31	28	27	28	30	29	28	25	23
MED	73	72	67	64	62	69	81	80	79	76	78	83	86	88	92	93	92	88	91	93	86	77	76	72
U Q	76	74	70	70	63	72	88	87	85	84	86	88	89	94	99	101	101	100	100	98	92	83	79	79
L Q	70	66	64	60	59	64	76	74	71	70	72	77	81	84	84	84	84	82	86	88	79	70	71	69

IONOSPHERIC DATA STATION Kokubunji

MAY 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	L	A	540	A	L	A	A	L						
2									L	A	A	A	UL 560	536	520	A	A		A		A			
3									A	A	L	520	520	UL 560	A	L	L	L						
4								L	A	L	A	L	UL 580	A	UL 496	UL 516	L	L						
5								L	A	L	528	528	508	524	L	528	UL 468	A						
6									A	A	UL 528	528	528	A	504	L	L	L						
7								L	UL 476	UL 484	A	544	508	516	488	460	L	A	A					
8							L	L	A	A	A	548	L	A	UL 512	448	L	L	A					
9									L	L	UL 512	528	UL 528	516	L	L	L	L						
10								L	A	A	512	L	520	512	508	UL 496	L	A						
11								A	A	A	L	536	552	552	516	A	L	L						
12									460	492	540	540	528	512	A	A	A	A						
13							L	L	L		L	528	528	L	532	500	A	L	A					
14							L		544	A	UL 620	524	548	548	524	484	L	A	L					
15							L	L	L	556	556	540	540	556	532	524	476	A	A					
16							L	A	A	A	524	A	556	532	524	504	L	L	A					
17							L		A	A	A	A	A	A	A	A		L	L					
18							L	A	A	504	536	A	A	A	524	508	A	A	A					
19							L	L	A	A	UL 592	A	A	A	548	524	524	A	A					
20							A	A	A	A	A	A	A	A	A	500	A	A	A					
21						A	A	A	A	A	A	A	A	A	A	UL 516	L	A	A					
22							L	A	A		L	544	A	A	544	516	476	A						
23							A	A	A	A	A	A	A	520	524	504	496	A	A					
24						L	L	A	A	A	A	552	516	A	556	524	A	L	A					
25							A	A	A	A	A	A	A	A	540	A	A	A	L					
26								A	A	A	A	560	A	544	524	508	A	A						
27						A	L	A	A	A	A	A	532	A	A	A	A	A	A					
28							A	A	A	A	A	504	A	A	A	500	A	A	A					
29								L	UL 504	A	A	L	A	A	A	A	452	UL 444	A					
30								A	L	496	508	A	A	A	A	A	A	A	A					
31								A	A	A	A	C	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	5	11	15	17	13	18	18	6	1						
MED									490	496	528	536	528	532	524	506	476	UL 444						
U Q									524	530	UL 556	544	550	550	532	516	496							
L Q									468	488	512	528	520	516	512	500	468							

MAY 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	A	A	A	R	A	A	A	U R 360	A	A	U R 280	B					
2							U A 256	U A 292	A	A	A	A	A	A	A	344	304	A	A		A			
3						B	U A 244	A	A	A	A	A	A	A	A	U R 344	U R 320	U A 268						
4							U A 252	A	A	A	A	A	A	A	A	U R 360	U A 312	A						
5						U R 188	A	U A 288	A	A	A	A	A	A	A	U R 348	A	A						
6							U A 268	A	A	A	A	A	U R 400	A	A	A	U R 316	U R 264	U R 208					
7						U R 184	U A 248	A	A	U R 364	A	U R 388	U R 408	U A 388	U R 376	U A 344	U A 312	U A 264	B					
8						U R 188	U A 244	A	A	A	A	A	A	A	A	U R 344	U R 316	A	U A 244					
9						B	256	U A 292	A	A	A	A	A	A	A	332	U R 308	U R 248	B					
10						172	252	U A 296	A	A	A	A	A	A	U R 360	R	U R 324	A	B					
11						U R 196	U A 252	A	A	A	A	A	A	A	A	A	A	U R 268						
12						U R 212	U R 276	308	A	U A 344	A	A	A	A	A	A	A	A						
13						184	U R 264	A	A	A	R	U R 420	A	R	R	A	A	A	A					
14						U R 208	U R 276	A	A	A	A	A	A	R	R	A	A	A	B					
15						U R 184	U R 272	A	A	A	A	U R 400	A	U R 440	U R 416	U R 380	U A 332	A	B					
16						B	A	A	A	A	A	A	A	A	U R 404	A	U R 328	U R 284	A					
17						B	A	A	A	A	A	A	A	A	A	A		A	A					
18						U A 196	A	A	A	A	A	A	A	A	A	U A 360	A	A	B					
19						A	U A 284	A	A	A	A	A	A	A	A	A	A	A	A					
20						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						U A 192	A	A	A	A	A	A	A	A	A	A	A	A	B					
22						U R 212	U A 268	A	A	A	A	R	A	A	A	U A 356	U A 336	A	B					
23						U R 228	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						A	U R 276	A	A	A	A	A	A	A	A	U R 368	U A 336	A	B					
25						A	A	A	A	A	A	A	A	A	A	A	A	A	B					
26						U R 224	A	A	A	A	A	A	A	A	A	U A 356	A	A	B					
27						A	A	A	A	A	A	A	U A 408	A	A	A	A	A	B					
28						U A 192	A	A	A	A	A	A	A	A	A	A	A	A	B					
29						B	U A 268	A	A	A	A	A	A	A	A	A	U R 308	A	A					
30						U R 192	A	A	A	A	A	A	A	A	A	A	A	A	A					
31						A	A	A	A	A	A	C	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						16	17	5		2		3	3	2	5	12	13	7	2					
MED						U R 192	U A 264	U A 292		U 354		U R 400	U R 408	U 414	U R 376	U 352	U R 316	U R 268	U 226					
U Q						U R 210	U R 274	302				U R 420	U R 408		U R 410	U R 360	U A 330	U R 280						
L Q						U R 186	U A 252	U A 290				U R 388	U R 400		U R 360	344	U 310	U 264						

MAY 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	19	E B 16	E B 16	19	20	J A 34	35	J A 64	J A 55	42	G	J A 100	46	J A 53	G	J A 61	J A 54	G	26	J A 35	J A 64	J A 85	J A 106	J A 55
2	J A 86	J A 76	J A 44	J A 34	E B 16	E B 16	31	36	42	J A 97	J A 87	J A 174	J A 47	46	46	41	43	J A 38	J A 33	47	J A 102	J A 102	J A 63	J A 53
3	J A 32	J A 32	24	22	E B 16	18	29	39	J A 50	J A 48	45	42	J A 48	44	J A 53	G	G	32	22	J A 28	21	J A 36	J A 54	J A 47
4	J A 39	J A 30	23	20	22	E B 15	29	36	42	J A 50	J A 51	44	41	J A 54	J A 48	G	40	J A 39	J A 39	J A 54	J A 30	J A 78	J A 32	J A 40
5	22	E B 16	E B 16	E B 16	E B 16	G	31	35	40	J A 54	45	47	J A 57	J A 48	42	G	38	J A 44	J A 44	J A 30	E B 16	J A 36	J A 54	J A 82
6	E B 16	J A 23	J A 24	E B 16	E B 16	20	30	J A 49	J A 60	J A 56	J A 71	J A 55	G	J A 103	41	37	G	G	G	E B 14	E B 14	B J 31	A E 16	B E 16
7	E B 16	E B 16	E B 16	E B 15	E B 15	G	31	36	39	G	J A 51	G	G	44	G	37	35	39	J A 34	19	J A 25	J A 76	J A 48	24
8	21	21	E B 16	21	E B 16	G	29	38	J A 54	J A 76	J A 76	45	J A 50	J A 93	J A 46	G	G	30	27	J A 32	J A 27	22	E B 16	E B 16
9	21	21	21	E B 15	E B 16	21	28	34	38	J A 45	J A 48	44	41	42	40	G	G	32	24	J A 24	E B 15	E B 16	20	20
10	22	22	22	22	E B 15	22	33	39	45	44	45	46	J A 51	42	G	G	G	J A 54	J A 40	J A 31	J A 40	J A 33	J A 54	J A 37
11	J A 34	J A 51	J A 30	J A 33	J A 33	G	31	J A 46	J A 49	J A 52	44	44	G	41	J A 48	J A 58	37	G	25	J A 40	20	J A 52	J A 43	J A 40
12	23	22	E B 15	24	24	G	G	38	40	38	J A 50	J A 48	44	J A 50	J A 52	J A 62	J A 65	J A 103	J A 50	J A 48	J A 53	J A 65	J A 29	E B 15
13	24	E B 16	E B 16	J A 22	19	G	G	35	40	39	G	G	47	G	G	39	J A 48	J A 64	J A 40	J A 38	J A 23	J A 30	J A 30	J A 48
14	J A 52	J A 24	J A 26	21	E B 16	G	G	41	J A 57	J A 57	70	J A 72	J A 58	G	G	43	J A 48	J A 111	J A 61	J A 85	J A 85	J A 26	J A 25	J A 29
15	J A 50	J A 28	24	23	23	G	G	38	43	J A 60	45	G	42	G	G	G	J A 50	J A 86	J A 74	J A 111	J A 128	22	J A 50	J A 37
16	J A 50	J A 54	J A 42	J A 37	22	22	33	J A 68	J A 89	J A 72	J A 51	J A 91	J A 53	45	G	41	G	G	J A 51	J A 43	J A 78	J A 54	J A 88	J A 105
17	J A 46	J A 52	J A 40	J A 30	J A 41	J A 34	J A 41	J A 57	J A 52	J A 114	J A 108	J A 128	J A 74	J A 112	J A 86	J A 73	C	33	J A 41	J A 34	J A 121	J A 111	J A 54	J A 45
18	J A 28	J A 53	J A 34	J A 43	J A 29	24	J A 40	J A 50	J A 71	48	J A 68	65	J A 80	J A 61	46	41	J A 64	J A 91	J A 246	65	J A 89	65	65	J A 55
19	J A 28	23	J A 33	J A E 26	E B 16	26	35	J A 48	J A 51	J A 68	J A 53	J A 84	J A 79	J A 110	J A 67	J A 56	44	J A 57	J A 68	J A 78	J A 44	28	37	29
20	J A 82	J A 49	J A 53	J A 65	J A 36	28	J A 54	J A 66	J A 92	J A 139	J A 82	J A 68	J A 74	J A 56	J A 74	J A 48	J A 49	J A 71	J A 48	J A 27	J A 55	J A 102	J A 54	J A 66
21	J A 32	24	J A 26	J A 34	J A 34	J A 44	J A 74	J A 81	J A 89	J A 70	J A 90	J A 73	J A 86	J A 142	J A 78	J A 131	J A 49	J A 93	J A 86	J A 279	J A 213	J A 122	J A 196	J A 102
22	J A 54	24	J A 37	J A 52	J A 51	G	36	J A 55	J A 76	J A 50	J A 50	G	J A 132	J A 87	J A 53	44	40	J A 54	J A 60	J A 33	J A 30	J A 31	J A 65	J A 66
23	J A 71	J A 25	J A 25	28	25	G	J A 56	J A 60	J A 88	J A 164	J A 141	J A 74	J A 79	J A 59	47	J A 56	J A 50	J A 60	J A 111	J A 126	J A 174	J A 128	J A 52	J A 27
24	J A 36	J A 31	J A 52	J A 31	J A 31	J A 30	G	J A 53	J A 73	J A 72	J A 130	J A 74	49	J A 135	J A 52	G	J A 56	J A 58	J A 97	J A 75	J A 127	J A 54	J A 55	J A 64
25	J A 52	J A 78	J A 120	J A 53	J A 33	J A 31	J A 55	J A 73	J A 88	J A 65	J A 85	J A 86	J A 88	J A 59	J A 58	J A 60	J A 125	J A 58	J A 37	J A 26	J A 104	J A 107	J A 87	J A 87
26	J A 124	J A 33	J A 46	J A 43	J A 52	J A 31	J A 39	J A 82	J A 61	J A 54	J A 62	J A 55	J A 57	62	J A 68	42	J A 88	J A 80	J A 58	J A 50	J A 106	J A 85	J A 110	J A 34
27	J A 64	J A 81	J A 64	J A 49	J A 30	J A 41	35	J A 62	J A 71	J A 72	J A 110	J A 151	50	J A 83	J A 77	J A 95	J A 289	J A 181	J A 130	J A 68	J A 73	J A 90	J A 65	J A 35
28	J A 43	J A 52	J A 48	J A 32	22	24	J A 90	J A 73	J A 99	J A 88	J A 91	J A 89	J A 66	J A 67	J A 78	J A 54	J A 65	J A 221	J A 195	J A 169	J A 63	78	J A 67	J A 145
29	J A 109	J A 52	J A 52	J A 49	J A 53	J A 44	34	38	J A 48	J A 65	J A 89	J A 64	J A 91	J A 75	J A 71	J A 67	38	36	J A 70	J A 77	J A 86	J A 64	J A 64	J A 42
30	J A 52	J A 34	27	21	J A 31	G	J A 46	J A 58	J A 88	J A 72	J A 90	J A 56	J A 131	J A 157	J A 132	J A 99	J A 72	J A 100	J A 119	J A 162	J A 140	J A 159	J A 166	J A 53
31	J A 62	J A 143	J A 75	J A 54	J A 38	J A 38	J A 49	J A 70	J A 98	J A 91	J A 73	C	J A 188	J A 84	J A 51	J A 48	J A 64	J A 52	J A 41	73	J A 88	J A 132	J A 87	J A 110
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31
MED	J A 39	J A 30	J A 27	J A 28	23	21	33	J A 49	J A 55	J A 60	J A 68	J A 60	J A 53	J A 59	J A 48	43	J A 48	J A 54	J A 48	J A 47	J A 64	J A 65	J A 54	J A 45
U Q	J A 54	J A 52	J A 46	J A 43	J A 33	J A 31	J A 41	J A 64	J A 88	J A 72	J A 89	J A 84	J A 79	J A 87	J A 68	J A 60	J A 64	J A 86	J A 74	J A 77	J A 104	J A 102	J A 67	J A 66
L Q	23	22	E B 22	21	E B 16	G	G 29	38	43	48	48	44	46	44	G 40	G	G 37	33	J A 34	J A 31	27	J A 31	J A 37	29

MAY 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	E B 16	E B 16	E B 16	E B 16	24	27	44	49	42	G	63	44	49	G	53	48	G	24	24	24	24	19	22
2	E B 16	23	22	E B 16	E B 16	E B 16	28	34	38	42	44	48	44	42	41	40	40	32	29	36	74	30	25	22
3	E B 16	E B 16	E B 16	E B 16	E B 16	18	27	38	44	45	42	41	40	40	46	G	G	29	22	20	E B 16	22	36	23
4	23	E B 16	E B 16	E B 15	E B 15	E B 15	27	34	40	42	46	43	40	47	39	G	36	29	36	35	24	23	23	23
5	E B 15	E B 16	E B 16	E B 16	E B 16	G	28	34	38	41	43	43	43	41	41	G	36	40	40	24	E B 16	20	24	41
6	E B 16	E B 15	E B 16	E B 16	E B 16	16	28	44	52	50	43	42	G	74	37	34	G	G	G	E B 14	E B 14	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 15	E B 15	G	29	34	36	G	44	G	G	43	G	36	34	36	29	18	20	52	E B 16	E B 16
8	E B 16	E B 15	E B 16	E B 16	E B 16	G	27	35	48	48	56	44	46	88	41	G	G	29	G 24	24	19	E B 16	E B 16	E B 16
9	E B 15	E B 16	E B 15	E B 15	E B 16	20	28	33	36	42	43	42	40	40	37	G	G	30	23	E B 16	E B 15	E B 16	E B 15	E B 15
10	E B 15	E B 15	E B 15	E B 15	E B 15	20	32	38	43	43	43	42	42	40	G	G	G	50	36	26	E B 16	28	24	26
11	22	20	E B 16	E B 15	21	G	29	37	44	44	41	40	G	39	43	54	33	G	22	32	E B 16	24	23	23
12	E B 16	E B 16	E B 15	E B 15	E B 16	G	G	36	38	38	44	43	43	43	44	52	56	A A 103	46	42	34	E B 16	23	E B 15
13	E B 16	E B 16	E B 16	E B 16	E B 16	G	G	34	38	38	G	G	44	G	G	37	43	35	35	32	18	24	24	21
14	38	E B 16	E B 16	E B 16	E B 16	G	G	38	40	52	52	45	48	G	G	40	43	66	26	E B 16	28	E B 16	18	23
15	22	E B 16	E B 16	E B 16	E B 16	G	G	35	40	42	42	G	40	G	G	G	35	38	30	24	44	E B 16	E B 16	18
16	22	23	24	27	16	19	33	51	A A 89	66	46	64	46	42	G	40	G	G	42	24	17	17	34	23
17	21	21	23	23	23	28	33	47	A A 52	A A 114	A A 108	A A 128	60	A A 112	A A 86	65	C	31	31	25	66	45	37	20
18	20	20	24	34	E B 16	23	35	45	54	47	46	62	A A 80	55	43	39	46	65	A A 246	60	55	52	40	40
19	E B 16	E B 16	E B 16	E B 16	E B 16	23	33	40	43	62	47	76	56	58	47	42	40	38	44	41	20	E B 16	17	17
20	20	E B 16	29	29	E B 15	23	46	49	A A 92	80	71	61	71	51	65	42	45	47	36	20	25	20	42	46
21	E B 15	E B 15	E B 15	19	22	38	66	71	A A 89	60	A A 90	65	80	A A 142	69	43	35	41	48	A A 279	52	48	24	44
22	E B 15	E B 16	E B 16	28	26	G	33	48	61	43	45	G	A A 132	82	44	40	38	43	44	22	26	22	43	46
23	27	E B 16	18	15	E B 15	G	50	50	80	A A 164	A A 141	57	52	44	42	45	44	55	A A 111	63	43	44	18	21
24	16	20	22	E B 16	E B 16	21	G	39	54	56	65	43	47	A A 135	41	G	51	36	A A 97	48	22	19	20	E B 16
25	30	38	19	33	22	22	42	44	64	52	A A 85	A A 86	A A 88	53	45	53	A A 125	50	24	18	63	43	43	64
26	38	E B 16	20	27	25	G 20	32	73	52	50	56	51	52	46	44	39	78	65	47	42	44	63	50	27
27	34	37	29	22	16	32	31	45	52	A A 72	A A 110	58	46	49	63	83	A A 289	A A 181	52	52	36	35	20	20
28	22	27	30	19	E B 15	22	A A 90	A A 73	53	A A 88	A A 91	44	50	54	67	40	60	A A 221	71	52	36	39	16	42
29	20	E B 16	E B 16	20	26	30	30	37	42	54	A A 89	56	61	61	65	62	36	33	41	41	20	26	26	E B 16
30	17	18	E B 16	E B 16	E B 15	G	33	48	40	44	42	50	A A 131	64	50	47	52	A A 100	72	42	42	A A 159	41	34
31	26	E B 16	E B 16	E B 15	18	20	28	50	76	A A 91	63	C	A A 188	78	48	46	47	40	32	63	50	62	74	58
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31
MED	17	E B 16	E B 16	E B 16	E B 16	G	29	40	48	48	46	44	46	49	43	40	40	38	36	32	25	24	24	23
U Q	22	20	22	22	18	23	33	48	54	A A 62	A A 71	61	A A 61	64	48	47	48	55	47	42	44	44	37	40
L Q	E B 16	E B 16	E B 16	E B 15	E B 16	G	G 27	35	40	42	43	42	42	41	G 37	G	G 34	30	26	22	E B 18	E B 17	E B 18	E B 17

MAY 2022 fbEs (0.1MHz)

IONOSPHERIC DATA STATION Kokubunji

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

IONOSPHERIC DATA STATION Kokubunji

MAY 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	296	285	280	282	282	291	324	327	313	326	305	273	292	306	303	296	297	307	313	294	322	298	281	286
2	F	F	F	F	F	287	340	336	328	334	296	294	293	300	308	313	313	301	308	323	328	290	279	291
3	283	296	293	298	282	297	340	345	333	330	318	319	297	287	298	307	300	306	309	318	345	302	283	284
4	F	F	294	293	287	304	343	326	342	346	328	302	303	304	310	302	294	306	332	332	322	260	277	290
5	292	320	302	299	298	314	339	335	337	320	313	304	310	309	311	304	305	312	305	327	335	292	F	274
6	F	288	296	288	271	309	303	351	347	339	311	306	297	296	311	317	320	311	320	299	289	294	294	282
7	294	310	299	285	280	342	349	358	350	318	314	294	310	304	309	303	317	311	311	322	332	306	282	276
8	278	276	300	317	295	324	353	343	343	339	296	284	296	293	311	314	325	316	304	299	297	295	287	283
9	292	296	285	295	287	295	330	352	338	351	326	311	306	317	298	309	310	308	305	304	335	299	275	267
10	284	296	318	298	284	320	320	299	329	317	297	290	298	298	288	300	313	321	339	342	296	284	278	F
11	295	278	261	283	304	337	352	356	337	316	311	290	294	282	291	303	304	302	326	321	318	298	256	259
12	294	F	286	301	289	322	337	322	323	314	318	317	297	298	299	303	290	A	303	293	314	276	280	267
13	281	270	275	301	305	310	340	355	335	305	284	311	316	284	297	311	316	322	299	314	320	303	284	277
14	283	288	296	281	282	277	315	307	317	319	266	313	303	299	312	314	306	303	304	297	331	271	276	277
15	275	274	280	284	291	318	320	307	305	297	272	283	288	274	288	280	316	317	317	311	286	273	270	286
16	276	273	285	275	279	308	325	304	A	258	285	286	277	293	294	307	298	301	298	285	286	286	281	F
17	257	285	274	287	275	304	332	356	A	A	A	A	297	A	A	300	C	295	291	312	279	279	F	267
18	274	276	294	275	304	289	305	324	259	295	281	287	A	284	287	288	305	305	A	286	292	268	262	274
19	282	277	272	285	288	314	319	319	306	295	269	276	296	282	288	291	300	280	282	280	285	293	293	287
20	265	274	267	255	317	305	294	315	A	278	268	284	278	290	287	294	281	291	292	293	282	268	262	F
21	F	284	300	279	251	266	292	318	A	295	A	262	279	A	279	289	296	295	247	A	272	277	270	F
22	F	F	254	F	F	F	330	303	310	287	290	268	A	272	283	307	300	317	303	284	277	263	287	261
23	261	243	282	284	F	260	286	289	298	A	A	281	267	273	291	290	294	294	A	274	F	280	258	260
24	281	277	F	F	264	308	F	315	313	282	307	283	298	A	294	291	292	292	A	303	270	270	262	265
25	259	F	F	F	270	280	309	319	313	338	A	A	A	294	286	287	A	290	284	301	293	267	F	F
26	F	297	281	305	265	F	309	314	316	317	314	283	280	281	269	288	288	303	323	329	272	272	272	284
27	F	F	F	288	297	269	315	346	331	A	A	285	290	280	285	288	A	A	212	288	291	F	F	279
28	263	F	F	F	284	348	A	A	303	A	A	260	280	285	300	295	279	A	319	302	280	260	268	286
29	293	297	264	307	326	353	367	336	283	307	A	284	285	278	283	284	295	291	306	317	280	F	F	F
30	F	279	275	273	273	314	315	326	307	305	301	305	A	301	284	284	300	A	298	318	F	A	F	F
31	276	281	F	F	F	295	336	324	323	A	277	C	A	281	285	283	298	298	310	308	281	295	268	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	25	25	27	29	29	30	27	26	24	28	26	28	30	31	28	27	28	30	29	28	25	23
MED	281	282	285	287	284	308	325	325	323	316	299	286	296	292	292	300	300	303	305	304	292	282	277	277
U Q	292	296	296	298	297	319	340	345	337	330	314	304	298	300	303	307	312	311	315	318	322	295	282	286
L Q	274	276	274	282	275	290	312	315	307	295	282	283	285	282	286	288	294	295	298	293	280	270	268	267

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MAY 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	L	A	383	A	L	A	A	L						
2									L	A	A	A	U L 365	383	368	A	A		A		A			
3									A	A	L	391	393	U L 365	A	L	L	L						
4								L	A	L	A	L	U L 348	A	U L 382	U L 347	L	L						
5								L	A	L	388	385	414	379	L	356	U L 355	A						
6									A	A	U L 382	364	386	A	375	L	L	L						
7								L	U L 396	U L 408	A	373	395	389	386	382	L	A	A					
8							L	L	A	A	A	370	L	A	U L 370	408	L	L	A					
9									L	L	U L 383	400	U L 381	373	L	L	L	L						
10								L	A	A	392	L	387	393	371	U L 357	L	A						
11								A	A	A	L	382	365	355	352	A	L	L						
12									414	389	354	354	374	363	A	A	A	A						
13							L	L	L		L	402	360	L	358	351	A	L	A					
14							L		365	A	U L 348	380	376	350	366	396	L	A	L					
15							L	L	L	358	374	386	386	353	365	364	362	A	A					
16							L	A	A	A	375	A	382	384	390	374	L	L	A					
17							L		A	A	A	A	A	A	A	A		L	L					
18							L	A	A	357	360	A	A	A	368	369	A	A	A					
19							L	L	A	A	U L 337	A	A	A	346	345	345	A	A					
20							A	A	A	A	A	A	A	A	A	359	A	A	A					
21						A	A	A	A	A	A	A	A	A	A	U L 346	L	A	A					
22							L	A	A		L	388	A	A	372	388	376	A						
23							A	A	A	A	A	A	A	396	365	350	351	A	A					
24						L	L	A	A	A	A	381	408	A	354	359	A	L	A					
25							A	A	A	A	A	A	A	A	348	A	A	A	L					
26								A	A	A	A	351	A	360	374	383	A	A						
27						A	L	A	A	A	A	A	355	A	A	A	A	A	A					
28							A	A	A	A	A	366	A	A	A	369	A	A	A					
29								L	U L 349	A	A	L	A	A	A	A	346	U L 319	A					
30								A	L	373	379	A	A	A	A	A	A	A	A					
31								A	A	A	A	C	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	5	11	15	17	13	18	18	6	1						
MED									380	373	375	381	382	373	368	362	353	U L 319						
U Q									405	398	383	388	390	386	374	382	362							
L Q									357	358	U L 354	366	365	358	358	351	346							

MAY 2022 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Kokubunji

MAY 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									254	236	272	E A 314	298	282	262	262	246	262						
2									256	238	242	290	290	288	278	268	252		252		E A 290			
3									260	260	260	260	290	320	288	270	270	264						
4								264	238	250	268	310	300	292	274	284	284	276						
5								254	220	266	290	290	272	272	272	288	286	248						
6									250	248	294	314	314	E A 328	270	270	262	262						
7								234	256	258	276	326	284	304	282	276	256	260	252					
8							238	246	246	E A 256	E A 346	346	328	E A 408	270	270	270	270	260					
9									252	252	286	286	300	266	304	280	262	268						
10								304	236	236	266	318	318	296	296	278	260	250						
11								226	240	E A 240	322	322	312	328	308	274	274	274						
12									258	290	282	294	328	328	288	278	E A 292	A						
13							246	236	248		332	304	294	302	316	284	268	250	254					
14							276		276	276	412	272	300	324	296	296	310	300	256					
15							256	256	296	308	346	318	298	330	298	324	256	256	244					
16							262	E A 244	A	E A 416	320	E A 314	342	320	320	292	304	288	E A 264					
17							264		A	A	A	A	336	A	A	E A 326		302	284					
18							292	262	E A 450	360	408	E A 388	A	390	372	342	310	E A 354	A					
19							258	270	270	E A 322	378	E A 418	304	336	336	316	308	296	288					
20							260	252	A	E A 364	E A 364	316	E A 328	310	E A 334	320	320	280	258					
21						E A 304	E A 354	E A 296	A	E A 334	A	E A 410	E A 404	A	E A 326	302	282	290	E A 340					
22							264	E A 294	E A 296		280	362	A	E A 406	330	290	280	254						
23							E A 284	266	E A 352	A	A	E A 394	428	382	358	342	340	E A 310	A					
24						288	260	242	E A 288	E A 328	E A 350	350	330	A	344	318	318	306	A					
25							274	248	E A 294	254	A	A	A	326	334	308	A	290	288					
26								E A 270	270	284	284	350	362	344	320	304	E A 328	282						
27						258	258	226	248	A	A	E A 340	326	326	E A 336	E A 428	A	A	E A 448					
28							A	A	E A 318	A	A	368	328	310	E A 330	334	E A 408	A	E A 294					
29								272	354	E A 322	A	394	E A 350	E A 380	E A 348	E A 342	312	298	266					
30								276	290	290	278	290	A	E A 318	320	288	272	A	E A 324					
31								260	E A 322	A	E A 416	C	A	E A 364	308	300	282	260	242					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	15	22	27	24	24	28	26	28	30	31	28	26	17		1			
MED						U 273	261	254	254	261	286	315	309	318	304	290	278	272	259		E A 290			
U Q						E A 304	276	270	E A 296	E A 322	348	356	330	340	334	320	310	296	E A 291					
L Q						258	258	244	248	251	277	299	298	303	288	278	265	260	253					

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MAY 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	E B 230	E B 246	E B 274	E B 274	E B 262	E A 256	212	230	A	A	194	A	194	A	202	A	A	202	238	234	224	224	222	E A 262
2	E B 254	E A 300	E A 254	E B 244	E B 246	E B 224	210	210	206	A	A	A	206	200	200	A	A	242	A	228	A	E A 244	E A 242	E A 258
3	E B 258	E B 250	E B 250	E B 250	E B 254	230	210	220	A	A	196	190	190	190	A	220	204	204	228	228	206	206	E A 272	E A 296
4	E A 310	E B 252	E B 254	E B 230	E B 236	212	200	206	A	206	A	206	204	A	188	192	204	220	220	218	212	E A 296	E A 312	E B 270
5	E B 266	E B 226	E B 226	E B 234	E B 238	222	216	200	A	194	182	182	182	190	196	196	196	A	E A 234	E B 208	E B 206	206	E A 310	E A 334
6	E B 252	E B 260	E B 242	E B 228	E B 262	E B 240	210	216	A	A	192	192	192	A	192	192	192	202	228	E B 246	E B 242	E B 242	E B 242	E B 256
7	E B 256	E B 226	E B 214	E B 264	E B 264	218	218	202	188	188	A	188	196	196	196	196	206	A	A	218	214	E A 314	E B 264	E B 264
8	E B 280	E B 280	E B 248	E B 218	E B 242	226	200	200	A	A	A	200	222	A	206	200	200	200	A	E A 232	232	E B 232	E B 248	E B 248
9	E B 248	E B 248	E B 248	E B 248	E B 248	210	210	210	210	210	202	190	190	190	190	190	200	216	E A 236	E B 236	E B 208	E B 194	E B 266	E B 284
10	E B 276	E B 244	E B 218	192	E B 234	218	218	218	A	A	198	198	198	198	198	192	208	A	222	198	210	E A 272	E A 310	E A 284
11	E A 258	E A 258	E B 248	E B 222	E A 262	214	208	A	A	A	198	192	210	200	E A 244	A	208	210	232	214	198	E A 222	E A 286	E A 286
12	E B 248	E B 248	E B 252	E B 236	E B 236	216	216	206	196	196	E A 228	202	198	210	A	A	A	A	E A 244	E A 244	224	E B 222	E B 264	E B 270
13	E B 264	E B 276	E B 262	E B 230	E B 216	226	212	210	208	200	200	200	224	204	204	204	A	218	A	226	218	218	E A 268	E A 268
14	E A 300	E B 270	E B 248	E B 256	E B 256	220	220	220	204	A	E A 254	212	212	210	224	214	214	A	A	E B 224	210	210	E A 264	E A 280
15	E A 298	E B 272	E B 272	E B 272	E B 250	226	214	206	208	208	202	198	198	210	210	228	194	A	A	236	E A 282	250	E B 280	E A 280
16	E A 280	E A 304	E A 282	E A 270	E A 254	222	212	A	A	A	E A 236	A	196	196	202	202	210	210	A	E A 248	E A 248	E A 248	E A 266	E A 310
17	E A 288	E A 252	E A 278	E A 240	E A 290	226	208	218	A	A	A	A	A	A	A	A	C	218	230	230	E A 330	E A 282	E A 314	E A 248
18	E A 266	E A 290	228	E A 262	E B 220	214	216	A	A	E A 274	E A 264	A	A	A	212	212	A	A	A	E A 318	E A 310	E A 348	E A 314	E A 300
19	E B 264	E B 264	E B 264	E B 264	E B 256	218	204	208	A	A	230	A	A	A	E A 230	E A 230	E A 230	A	A	E A 282	E A 246	E B 246	E A 230	E A 230
20	E A 278	E B 278	E B 318	E A 318	E A 232	222	A	A	A	A	A	A	A	A	A	E A 252	A	A	A	232	E A 254	E A 246	E A 306	E A 306
21	E B 262	E B 250	E B 222	E A 268	E A 300	A	A	A	A	A	A	A	A	A	A	E A 236	206	A	A	A	E A 314	E A 330	E A 330	E A 330
22	E B 256	E B 282	E B 282	E A 288	E A 264	222	222	A	A	212	244	212	A	A	212	208	202	A	218	228	E A 264	E A 268	E A 300	E A 354
23	E A 290	E B 264	E A 234	E B 234	E B 234	E B 244	A	A	A	A	A	A	A	204	204	E A 274	E A 272	A	A	E A 346	E A 248	E A 288	210	E A 270
24	E A 292	E A 276	E A 308	E B 260	E B 248	210	204	A	A	A	A	204	204	A	204	204	A	214	A	E A 226	226	226	E A 254	E B 274
25	E A 328	E A 318	E A 262	E A 288	E A 282	216	A	A	A	A	A	A	A	A	E A 238	A	A	A	228	222	E A 288	E A 310	E A 320	E A 336
26	E A 336	242	E A 240	E A 266	E A 286	232	210	A	A	A	A	E A 278	A	226	222	212	A	A	220	216	E A 244	E A 352	E A 328	E A 248
27	E A 278	E A 266	E A 264	E A 248	E B 216	A	216	A	A	A	A	A	E A 260	A	A	A	A	A	A	E A 276	E A 264	E A 276	E A 256	E A 240
28	E A 298	E A 296	E A 306	E A 284	E B 262	202	A	A	A	A	A	E A 238	A	A	A	218	A	A	A	E A 298	E A 288	E A 332	E A 280	E A 308
29	E A 230	E B 218	E B 266	E B 210	E B 228	206	206	208	E A 248	A	A	88	A	A	A	A	220	220	A	220	220	E A 314	E A 314	E B 246
30	E A 246	E A 246	E B 246	E B 256	E B 246	212	214	A	E A 234	E A 248	210	A	A	A	A	A	A	A	A	E A 242	E A 242	A	E A 276	E A 256
31	E A 296	E B 266	E B 256	E B 238	E B 262	E A 230	222	A	A	A	A	C	A	A	A	A	A	A	A	E A 262	E A 272	E A 296	E A 316	E A 316
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	26	17	9	10	16	18	18	14	21	21	17	13	13	30	30	30	31	31
MED	E A 266	E B 264	E B 254	E B 250	E B 250	219	212	210	206	202	200	197	198	200	203	204	205	214	225	223	E 242	E A 249	E A 276	E A 274
U Q	E A 292	E A 278	E A 272	E A 268	E A 262	226	216	218	E A 222	E A 212	E A 233	206	210	210	217	E A 224	212	219	E A 235	E A 246	E A 264	E A 296	E A 312	E A 306
L Q	E B 256	E B 248	E B 242	E B 234	E B 236	214	208	206	200	196	197	190	194	196	197	196	200	203	221	222	214	224	E 256	E A 256

MAY 2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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							110	A	A	110	110	A	110	110	110	A	A	110	B					
2							112	108	108	A	A	A	A	108	108	108	106	A	A		A			
3						B	108	A	A	A	A	A	A	A	A	108	110	110						
4							112	112	112	A	A	A	A	A	A	112	112	A 112						
5						112	112	110	110	A	A	A	A	A	A	110	110	A						
6							112	A	A	A	A	A	112	A	112	A	106	108	108					
7						124	114	116	A	112	A	108	108	108	108	108	108	108	B					
8						116	116	116	A	A	A	A	A	A	A	116	114	116	116					
9						B	116	116	116	A	A	A	108	A	A	108	108	108	B					
10						118	110	110	110	110	A	110	A	110	110	110	110	A	B					
11						112	112	112	A	A	A	112	112	A	A	A	114	114						
12						118	112	112	112	112	114	A	A	A	A	A	A	A						
13						114	110	110	110	A	106	114	114	114	114	106	106	A	A					
14						114	114	116	A	A	A	A	A	110	110	110	A	A	B					
15						110	110	A	A	A	A	110	A	110	110	108	108	A	B					
16						B	110	A	A	A	A	A	A	A	110	A	110	110	A					
17						B	A	A	A	A	A	A	A	A	A	A		110	A					
18						120	120	A	A	A	A	A	A	A	A	108	A	A	B					
19						124	114	A	A	A	A	A	A	A	A	A	114	A	A					
20						128	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						128	110	A	A	A	A	A	A	A	A	A	110	A	B					
22						122	112	A	A	A	A	112	A	A	A	110	110	A	B					
23						110	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						A	112	A	A	A	A	112	112	A	112	112	112	A	B					
25						A	A	A	A	A	A	A	A	A	A	A	A	A	B					
26						118	A	A	A	A	A	A	A	A	A	108	A	A	B					
27						A	108	A	A	A	A	A	110	A	A	A	A	A	B					
28						124	A	A	A	A	A	A	A	A	A	A	A	A	B					
29						B	108	108	108	A	A	A	A	A	A	A	108	108	A					
30						108	A	A	A	A	A	A	A	A	A	A	A	A	A					
31						A	112	A	A	A	A	C	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						18	24	12	8	4	3	7	8	7	10	15	18	11	2					
MED						118	112	112	110	111	110	112	111	110	110	108	110	110	112					
U Q						124	113	116	112	112	114	112	112	110	112	110	112	112						
L Q						112	110	110	109	110	106	110	109	108	110	108	108	108						

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	78	B	B	104	104	104	114	96	96	106	G	84	114	112	G	100	100	G	100	100	96	96	94	94
2	90	90	90	90	B	B	110	110	108	88	88	88	88	112	120	140	124	104	104	92	92	92	92	92
3	92	90	90	90	B	128	118	104	104	104	102	102	102	100	92	G	G	120	118	94	94	94	94	94
4	94	110	110	96	96	B	120	118	110	104	100	100	100	98	98	G	118	106	104	90	90	90	90	90
5	90	B	B	B	B	G	116	116	114	102	102	102	96	96	96	G	110	102	94	94	B	94	94	94
6	B	98	98	B	B	98	120	100	100	100	100	100	G	82	100	100	G	G	G	B	B	100	B	B
7	B	B	B	B	B	G	118	116	106	G	98	G	G	130	G	138	138	126	102	102	102	102	102	100
8	84	84	B	84	B	G	126	120	98	98	98	98	94	86	86	G	G	126	128	96	96	96	B	B
9	96	96	90	B	B	136	136	126	126	94	94	94	112	104	104	G	G	120	120	106	B	B	106	100
10	100	100	100	100	B	140	120	120	110	110	100	110	106	122	G	G	G	90	90	96	96	96	96	94
11	88	88	88	86	86	G	112	110	96	96	96	112	G	98	98	88	110	G	106	90	90	90	90	90
12	90	90	B	90	90	G	G	110	112	112	114	100	100	106	106	102	96	96	96	90	90	90	90	B
13	88	B	B	88	88	G	G	110	110	100	G	G	142	G	G	134	110	94	94	94	94	88	88	94
14	84	84	82	82	B	G	G	108	100	100	92	92	92	G	G	118	96	88	88	90	90	90	90	90
15	88	86	86	86	86	G	G	100	100	100	100	G	96	G	G	G	116	92	92	88	82	82	82	82
16	82	82	82	82	82	100	108	96	96	96	96	86	86	96	G	96	G	G	96	96	96	94	92	92
17	92	92	92	92	86	86	86	98	98	94	94	94	100	98	98	98	C	108	98	92	92	88	88	88
18	80	88	88	88	88	124	116	98	98	98	98	92	92	92	104	140	98	88	88	88	84	84	84	84
19	84	84	84	84	B	120	114	104	100	90	92	82	82	90	90	88	110	106	102	94	94	94	94	94
20	96	88	86	86	94	118	106	102	98	94	94	94	88	88	88	88	88	104	110	94	94	94	94	90
21	90	90	100	86	86	110	110	92	92	92	92	92	88	88	88	88	110	102	94	88	88	94	94	94
22	108	98	94	84	84	G	108	100	92	92	94	G	94	94	98	124	120	96	96	96	94	88	88	88
23	88	88	84	84	84	G	98	98	94	88	88	88	98	98	96	86	84	92	92	86	88	92	92	92
24	92	92	92	92	92	92	G	100	90	90	92	114	112	92	114	G	116	100	92	92	96	96	96	96
25	96	90	90	88	88	88	100	98	98	98	88	86	86	96	94	94	90	90	90	90	88	90	90	90
26	88	90	94	86	86	94	94	94	94	94	94	94	94	94	94	116	96	92	90	90	90	90	90	90
27	90	90	86	80	92	104	114	98	92	92	92	92	130	98	98	98	88	88	88	88	88	96	96	90
28	90	84	84	84	86	134	92	92	92	92	86	86	90	90	92	96	96	84	86	88	90	90	90	90
29	90	90	90	86	86	86	120	110	110	88	88	88	92	90	90	90	130	120	94	94	94	94	94	94
30	94	84	84	84	84	G	96	96	96	90	90	90	82	82	82	82	82	82	94	94	94	96	96	86
31	86	86	86	92	86	108	116	100	90	92	92	C	86	86	86	86	86	84	84	84	84	84	88	88
	00	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	27	25	27	21	18	26	31	31	30	29	26	28	28	24	23	24	27	30	30	28	30	29	28
MED	90	90	90	86	86	106	114	100	98	95	94	93	94	96	96	98	105	96	94	92	92	93	92	91
U Q	93	92	93	90	91	124	118	110	108	100	99	100	101	99	99	118	116	106	102	94	94	96	94	94
L Q	87	86	85	84	86	94	106	98	94	92	92	88	88	90	90	88	93	90	90	90	89	90	90	90

IONOSPHERIC DATA STATION Kokubunji

MAY 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			F1	F1	F4	C3	L4	L3	C1		L3	C1	C2		L3	L3		L2	F4	F5	F6	F5	F5
2	F2	F4	F4	F3			C2	C2	C1	L3	L2	L2	L1	C2	C1	H1	C2	L2	L4	F7	F6	F5	F3	F3
3	F3	F4	F2	F2		C1	C1	L2	L2	L2	L1	L1	L1	L1	L2			C2	F1	F5	F1	F4	F5	F7
4	F4	F2	F2	F1	F1		C2	C2	C2	L2	L2	L1	L1	L2	L1		C2	L1	F3	F6	F5	F7	F2	F5
5	F1						C2	C1	C2	L1	L1	L1	L1	L1	L1		C1	L3	F3	F7		F4	F6	F7
6		F2	F2			F2	C1	L2	L3	L2	L1	L1		L3	L1	L1						F3		
7							C2	C2	L1		L1			H1		H1	H1	C2	L6	F3	F7	F7	F4	F2
8	F1	F1		F2			C2	C2	L3	L2	L3	L1	L1	L3	L2			C2	C2	F6	F3	F2		
9	F1	F1	F2			H2	H2	C1	C1	L2	L1	L1	C1	L1	L1			C2	C2	F3			F1	F2
10	F2	F1	F2	F1		H1	C2	C3	C2	C2	L2	C1	L1	C1				L4	L4	F6	F4	F6	F6	F6
11	F4	F7	F4	F3	F6		C2	C2	L2	L2	L1	C1		L1	L2	L3	C2		F1	F6	F1	F6	F5	F5
12	F2	F2		F2	F2			C2	C1	C1	C2	L1	L1	L1	L1	L2	L4	L5	F5	F5	F6	F4	F5	
13	F2			F1	F1			C2	C2	L1			H1			C1	C2	L2	L3	F5	F3	F4	F3	F4
14	F4	F2	F2	F1				C1	L1	L2	L2	L2	L1			C1	L2	L3	L4	F3	F4	F2	F2	F4
15	F5	F2	F2	F1	F1			L1	L1	L1	L1		L1				C2	L3	L2	F7	F6	F2	F3	F4
16	F4	F4	F2	F4	F2	L1	C1	L4	L4	L3	L2	L3	L1	L1		L1			L3	F4	F4	F3	F4	F3
17	F3	F2	F3	F7	F7	L6	L4	L3	L3	L5	L4	L4	L4	L3	L3	L3		C1	L3	F3	F6	F7	F5	F2
18	F4	F2	F5	F5	F4	C2	C2	L2	L3	L1	L2	L2	L3	L2	L1	H1	L2	L5	L6	F7	F7	F7	F4	F6
19	F2	F2	F2	F1		C2	C2	L2	L2	L3	L2	L3	L2	L2	L2	L2	C1	L2	L4	F5	F4	F3	F3	F3
20	F2	F2	F5	F3	F3	C2	L4	L4	L4	L4	L3	L3	L3	L3	L3	L2	L4	LL23	LL23	F5	F5	F4	F5	F6
21	F2	F2	F1	F2	F3	C4	C5	L4	L5	L3	L4	L3	L3	L3	L4	L4	C1	L3	L5	F5	F7	F4	F4	F7
22	F2	F1	F2	F5	F4		C2	L3	L3	L1	L1		L4	L3	L1	C1	C2	L4	L4	F7	F3	F3	F7	F7
23	F7	F2	F4	F2	F1		L3	L3	L4	L4	L4	L3	L2	L1	L1	L2	L3	LL43	L7	F6	F5	F4	F5	F8
24	F2	F2	F6	F2	F2	L3		L3	L3	L3	L3	C1	C1	L4	C1		C2	L2	L5	F6	F3	F3	F3	F4
25	F7	F8	F5	F6	F3	L2	L3	L3	L3	L3	L3	L3	L3	L2	L2	L3	L4	L3	L3	F3	F7	F6	F6	F7
26	F6	F3	F3	F4	F3	L1	L2	L5	L3	L3	L3	L2	L3	L2	L2	C1	L5	L3	L6	F8	F6	F7	F8	F7
27	F8	F7	F6	F4	F2	L6	C3	L3	L4	L3	L4	L3	C1	L2	L3	L4	L6	L6	L6	F6	F4	F3	F4	F3
28	F4	F6	F3	F2	F1	C2	L6	L4	L3	L3	L3	L2	L2	L2	L3	L2	L4	L4	L4	L5	F7	F5	F5	F7
29	F6	F3	F3	F4	F4	L5	CL23	C2	C2	L3	L4	L3	L3	L3	L4	L3	H1	C2	L6	F5	F6	F4	F7	F4
30	F2	F2	F2	F1	F1		L3	L3	L3	L2	L2	L2	L4	L4	L3	L2	L2	L5	L5	F5	F6	F7	F4	F4
31	F4	F3	F2	F2	F4	L2	C3	L3	L4	L3	L3		L5	L3	L2	L2	L3	L3	L4	F6	F4	F3	F5	F5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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 81	X 81	X 75	X 72	X 68															O X 126	X 122	X 98	X 88	X 84
2	X 88	X 88	94	94	72	72														X 121	X O 112	X 92	X 85	90
3	94	93	93	X 81	X 73	X 74														116	X 114	X 88	X 80	X 80
4	X 74	X 74	X 73	X 72	X 65	X 65														X 118		X 78	X 81	X 86
5	X 80	X 80	X 78	X 70	X 65	X 67														O X 122	X 103	X 86	X 80	X 76
6	X 80	X 91	98	90	X 75	X 74														X 102	O X 101	X 101	X 86	X 86
7	X 83	X 82	X 77	X 72	X 68	X 71														X 109	X 98	X 74	X 70	X 71
8	74	X 76	X 76	X 72	X 66	X 69														X 99	X 97	X 90	X 85	X 86
9	X 85	X 86	X 79	X 74	X 72	X 73														X 116	X 111	X 70	X 71	X 73
10	X 76	X 82	X 78	X 62	X 59	X 57														O X 117	X 85	X 80	X 80	X 81
11	A	X 73	X 70	71	72	X 75														O X 124	X 102	X 99	X 98	X 90
12	X 89	93	94	107	94	92														X 118	X 102	X 82	X 79	X 80
13	X 80	X 78	X 74	X 78	X 68	X 66														X 111	X 111	X 96	X 83	X 86
14		X 78	X 81	X 75	X 75	X 71														O X 123	X 112	X 68	X 75	X 78
15	X 78	X 78	X 76	X 74	X 70	X 68														X 103	X 90	X 82	A	X 84
16	X 87	X 85	X 78	X 76	X 74	X 72														X 105	X 90	X 89	X 91	X 89
17	92	94	94	96	83	84														X 112	X 100	A	X 90	X 98
18	106	X 90	96	X 96	84	74														A	X 92	X 86	X 85	X 87
19	X 90	X 87	X 82	X 79	X 79	X 85														A	X 105	X 104	O X 99	X 89
20	X 90	X 91	X 89	X 86	X 86	X 82														X 110	A	X 93	X 94	X 89
21	94	93	95	X 79	80	X 77														X 98	A	X 81	X 79	X 78
22	X 77	X 77	82	90	82	79	90	92												X 94	X 96	X 92	X 92	94
23	93	95	X 97	X 89	X 81	X 77									A					A	A	X 84	X 74	X 77
24	X 79	84	X 71	79	77	X 76														X 105	X 98	X 88	94	X 90
25	95	X 89	94	X 80	X 71	X 69														A	X 108	X 92	X 84	86
26	X 86	X 89	X 87	X 89	X 77	84	96													X 105	X 94	X 95	X 97	X 90
27	X 89	94	X 88	X 72	X 69	74														X 103	X 100	X 100	A	104
28	X 111	95	93	96	X 94	X 92														X 91	X 78	X 77	X 74	X 70
29	80	84	72	68		A														X 110	X 94	X 93	X 87	91
30	93	95	87	59	64	X 68														X 97	94	X 90	93	X 88
31	91	85	92	92	82	78	88													X 116	X 112	X 93	X 89	X 90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	31	31	30	29	3	1												27	27	30	29	31
MED	X 87	X 86	X 82	X 79	X 74	X 74	90	92												X 110	X 100	X 90	X 85	X 86
U Q	92	93	94	90	81	78	96													O X 118	X 111	X 93	X 92	X 90
L Q	X 80	X 80	X 76	X 72	X 68	X 69	88													X 103	X 94	X 82	X 80	X 80

IONOSPHERIC DATA STATION Yamagawa

MAY 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	75	75	69	66	62	62	78	98	105	100	94	106	R 119	131	141	137	137	134	119	R 120	114	92	82	78
2	82	83	F	F	F	F	72	83	91	82	85	102	110	116	118	118	117	119	120	122	106	86	79	F
3	F	F	F	73	67	68	86	73	83	92	91	79	96	108	117	117	123	124	124	R	108	82	74	74
4	68	68	66	66	59	59	72	84	93	82	80	88	98	102	102	103	112	117	118	112	A	72	74	80
5	74	74	72	64	59	61	82	85	75	80	91	109	111	113	116	111	116	119	116	116	97	80	74	70
6	74	85	F	F	69	68	82	94	72	71	76	82	100	110	113	111	105	100	94	96	95	95	80	80
7	77	76	71	66	62	65	76	80	76	73	70	79	100	105	100	106	108	93	93	103	92	68	64	65
8	F	70	70	66	60	63	70	70	64	68	70	76	91	100	100	93	94	97	92	93	91	84	79	80
9	79	80	73	68	66	67	79	84	80	78	86	84	91	95	97	100	97	98	94	110	105	64	65	67
10	70	76	72	56	53	51	66	83	80	82	88	92	92	97	102	117	124	120	114	111	79	74	74	75
11	A	67	64	F	F	69	83	72	66	73	86	95	106	116	A	133	134	137	R 130	R 118	96	93	92	84
12	83	F	F	F	F	F	76	69	69	70	77	86	82	89	102	109	99	102	104	112	96	76	73	74
13	74	72	68	72	62	60	66	73	75	76	80	82	87	96	100	110	112	103	95	105	105	90	76	82
14	78	72	75	69	69	65	75	98	89	78	82	82	93	95	99	99	101	108	103	117	106	62	69	72
15	72	72	70	68	64	62	69	72	83	98	97	105	112	115	116	116	130	121	120	97	84	76	A	78
16	81	79	72	70	68	66	76	84	84	89	100	102	106	R 118	121	115	100	98	96	99	84	83	85	83
17	F	F	F	F	F	F	83	82	71	74	84	94	96	A	A	A	A	108	A	106	94	A	84	92
18	F	84	F	90	F	F	76	84	87	90	90	88	94	89	88	90	89	85	87	A	86	80	79	81
19	84	81	76	73	73	79	79	72	80	82	77	88	92	95	91	94	96	94	91	A	R 98	98	93	83
20	83	85	83	80	80	76	80	82	82	91	100	102	104	A	A	101	A	109	104	104	A	87	88	83
21	F	F	F	73	F	71	83	82	A	74	75	85	94	100	110	108	102	90	A	92	A	75	73	72
22	71	71	F	F	F	F	F	F	88	81	79	90	96	A	100	109	106	97	88	88	90	86	86	F
23	F	F	91	83	75	71	82	96	90	88	A	A	80	A	A	79	83	88	A	A	A	78	68	71
24	73	F	65	F	F	70	80	82	79	76	A	80	87	95	95	92	92	98	99	99	92	82	F	84
25	F	83	F	74	65	63	84	89	80	75	79	87	88	92	96	102	106	112	A	A	R 102	86	78	F
26	80	83	81	83	71	F	F	94	84	A	A	A	A	101	108	108	120	127	115	99	88	89	90	84
27	83	F	82	66	63	F	80	82	A	A	A	83	87	91	95	A	96	96	A	97	94	94	A	F
28	105	F	F	F	88	86	70	A	79	82	89	95	102	108	95	A	A	A	92	85	72	71	68	64
29	F	F	F	F	A	A	A	62	76	70	73	81	95	99	104	110	104	100	R	104	88	87	81	F
30	F	F	F	F	F	58	78	82	76	76	78	81	87	86	93	100	96	94	93	91	F	84	F	82
31	F	F	F	F	F	F	F	76	A	A	A	A	91	102	118	124	124	126	118	110	106	87	83	84
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	18	20	20	22	27	29	28	28	26	28	30	27	27	28	28	30	25	26	26	30	27	26
MED	78	76	72	70	66	66	78	82	80	79	83	88	94	100	102	108	106	102	103	104	94	84	79	80
U Q	82	83	76	74	70	70	82	84	86	85	90	95	102	110	116	116	118	119	118	112	105	87	84	83
L Q	74	72	69	66	62	62	72	73	76	74	77	82	91	95	96	100	96	97	93	97	88	76	73	72

MAY 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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								L	L	L	A	L	A	536	A	L	L	L						
2									A	A	A	A	A	556	528	A	A	L						
3										A	A	A	576	A	A	L	496	L	L					
4								L	L	A	A	UL 568	548	520	528	UL 528	A	A	A		A			
5										L	560	UL 532	532	A	UL 540	L	A	A						
6										A	UL 520	544	532	540	540	504	L	L						
7								L		L		UL 536	516	512	524	A	A	L	A					
8								L		L	A	UL 524	528	508	520	520	UL 528	L						
9									L	L	UL 508	L	UL 564	552	480	UL 512	L	L	L					
10										A	528	528	552	552	UL 552	480	468	L	A					
11									A	A	A	A	A	A	A	A	A	A	A					
12										A	A	A	UL 544	516	532	516	L	L						
13								L	L	L	L	556	564	564	564	496	L	A	A					
14								L	L	L	L	L	544	544	A	528	L	L	L					
15										L	A	L	A	A	556	528	520	L						
16								A	A	A	A	A	A	A	532	524	L	L	A					
17									A	A	L	A	A	A	A	A	A	A	A					
18							A	A	A	A	L	592	A	A	556	544	508	A	A					
19									L	L	UL 628	A	568	580	UL 556	A	UL 528	A	A					
20									A	L	A	A	A	A	A	A	A	A	A					
21								A	A	A	A	A	564	552	A	548	520	L	A					
22								A	A	A	UL 544	A	556	A	576	524	496	A	A					
23							A	A	A	A	A	A	A	A		A	516	A	A					
24								L		A	A	A	568	A	544	584	A	A	A					
25								A	L	A	A	536	A	A	A	A	A	A	A					
26							A	A	A	A	A	A	A	A	528	A	496	A	A					
27								L	A	A	A	A	528	A	A	A	468	A	A					
28								A	A	A	A	512	508	A	A	A	A	A	A					
29					A		A	A	A	A	A	A	A	A	A	480	476	456	A					
30							A	A	A	A	A	A	512	516	A	A	A	A	L					
31								A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											6	10	18	14	17	15	12	1						
MED											UL 536	536	546	542	540	524	502	456						
U Q											560	556	564	552	556	528	520							
L Q											UL 520	528	528	516	528	504	486							

MAY 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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						B	A	A	A	A	A	A	A	A	A	R 360	324	R 288	A					
2							R 224	A 304	A	A	A	A	A	A	A	A 356	A	A 292	A 248					
3							A	A	A	A	A	A	A	A	380	A 360	A 332	A	A					
4							B	A	A	A	A	A	A	A	R 384	A 376	336	296	A		A			
5							A	A	A	A	A	A	A	A	A	A 360	332	A	B					
6							A	A	A	A	A	A	A	R 396	A	A	R 332	R 288	R 244					
7							B	R 272	A 296	A	R 404	A	444	A 380	A	A 352	A 332	A	A					
8							A	A	A	A 348	A	A	R 404	R 416	A	A 360	R 332	R 300	R 244					
9							R 232	A	A	A	A	A	A	A	A	A	A	R 296	A					
10							R 228	A	A	A	A	A	R 380	R 392	372	A	A	A	A					
11							A	A	A	A	A	A	A	A	A	A	A	A	A					
12							A	R 312	A 340	A 352	A	A	A	A	A	A	R 376	R 312	A					
13							A 196	R 288	R 328	360	R 388	R 400	R	384	372	R 356	A 340	A	A					
14	A						A 192	A	A	R 360	A	R 404	A	A	A	360	A	A	A					
15							R 204	A	A	A	A	A	A	A	A	R 376	R 340	R 308	A					
16							A	A	A	A	A	A	A	A	A	R 372	R 348	300	A					
17							A	A	A	A	B	A	A	A	A	A	A	A	A					
18							A	A	A	A	A	A	A	A	R 412	380	A 352	A	A					
19							A	A 316	A	A	A	A	A	A	R 396	A	A	A	A					
20							A	A	A	A	A	A	A	A	A	A	A	A	A					
21							A	A	A	A	A	A	A	A	A	A	A	A	A					
22							A	A	A	A	A	A	A	A	A 396	A 376	R 352	A	A					
23							A	A	A	A	A	A	A	A		A	A 356	A	A					
24							A	A	A	A	A	A	A	A	A 416	372	A 348	A	A					
25							A	A	A	A	A	A	A	A	A	A	A	A	A					
26						A	A	A	A	A	A	A	A	A	A	A	R 376	A	A					
27							A	A	A	A	A	A	A	A	A	A	A	A	A					
28							A	A	A	A	A	A	A	A	A	A	A	A	A					
29					A		A	A	A	A	A	A	A	A	A	A 348	A 320	A 288	A					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31							A	A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	5	3	4	2	2	3	5	8	15	17	10	3					
MED							R 214	R 304	A 328	A 356	R 396	R 402	R 404	R 392	390	A 360	340	R 296	R 244					
U Q							R 228	R 314	A 340	360			444	R 406	R 404	R 376	R 352	R 300	A 248					
L Q							A 196	R 280	A 296	A 350			R 380	382	376	A 356	A 332	R 288	R 244					

MAY 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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 34	J A 47	J A 41	J A 37	J A 34	E B 16	J A 31	34	36	J A 44	J A 109	J A 105	J A 58	J A 52	48	G	35	G	39	J A 33	22	28	26	J A 84
2	J A 104	J A 68	J A 52	21	E B 16	E B 16	G	38	J A 59	J A 71	J A 71	J A 86	J A 112	J A 60	48	45	J A 50	34	J A 48	J A 66	J A 67	J A 68	J A 86	J A 87
3	J A 55	J A 28	24	24	J A 27	J A 27	28	J A 50	J A 53	J A 62	J A 56	J A 55	J A 51	J A 84	46	49	40	38	33	J A 34	J A 55	J A 55	J A 85	J A 85
4	J A 29	24	E B 16	E B 16	E B 16	E B 16	25	J A 41	J A 46	J A 55	J A 54	J A 52	J A 53	J A 48	G	41	J A 52	J A 59	J A 76	J A 72	J A 74	J A 64	J A 43	J A 35
5	J A 51	J A 38	J A 28	J A 36	J A 30	E B 16	26	36	37	45	J A 57	J A 51	J A 105	J A 72	41	46	J A 66	J A 70	J A 66	J A 57	J A 32	J A 25	J A 28	J A 38
6	J A 31	J A 53	J A 54	J A 60	J A 31	J A 33	27	J A 39	J A 47	J A 54	43	J A 71	J A 50	G	J A 46	J A 41	G	G	G	J A 27	J A 23	E B 16	E B 15	E B 16
7	E B 16	E B 15	E B 16	E B 17	E B 16	E B 16	E B 23	G	36	J A 45	G	42	G 44	46	42	46	44	38	J A 40	J A 39	J A 40	J A 52	J A 45	J A 46
8	25	E B 16	E B 16	20	E B 16	E B 16	26	31	38	46	J A 56	46	G	G	J A 53	43	G	34	G	J A 31	J A 54	J A 36	J A 34	J A 20
9	E B 16	24	23	E B 16	23	21	G	34	J A 45	J A 46	41	42	42	43	42	40	35	G	J A 40	59	J A 53	J A 24	E B 16	E B 16
10	23	21	J A 31	E B 15	23	E B 15	G	J A 41	J A 48	J A 51	J A 44	42	G	G	45	40	38	33	J A 42	J A 63	J A 28	24	J A 38	J A 44
11	J A 38	J A 34	J A 49	J A 42	J A 41	J A 30	J A 36	J A 54	J A 66	J A 52	J A 55	J A 62	J A 62	J A 83	J A 106	J A 54	J A 68	J A 46	J A 50	J A 53	J A 32	J A 28	J A 41	J A 52
12	J A 52	J A 63	J A 65	J A 32	J A 39	J A 44	J A 46	G	45	48	J A 60	J A 52	J A 56	J A 54	J A 65	J A 48	G	G	J A 32	J A 40	J A 37	J A 37	J A 24	J A 42
13	J A 30	23	E B 16	22	E B 16	E B 16	25	G	G	39	G	G	G	44	40	G	41	J A 52	J A 55	J A 38	J A 57	J A 34	J A 38	J A 59
14	J A 53	J A 25	19	E B 16	E B 16	E B 15	23	J A 41	J A 46	G	J A 51	G	45	J A 56	J A 54	40	J A 74	J A 64	J A 117	J A 55	J A 85	J A 36	21	21
15	21	E B 16	21	20	E B 16	E B 16	G	J A 41	J A 50	J A 66	J A 75	J A 51	J A 66	J A 72	49	G	G	G	31	J A 29	J A 35	J A 34	J A 88	J A 105
16	J A 41	J A 41	J A 41	J A 38	J A 32	E B 16	26	J A 49	J A 84	J A 74	J A 80	J A 83	J A 80	J A 90	G	G	G	36	53	J A 38	J A 110	J A 86	J A 87	J A 64
17	J A 50	J A 39	J A 54	J A 54	J A 67	J A 44	G	J A 42	J A 68	J A 53	J A 50	J A 70	J A 60	J A 104	J A 111	J A 131	J A 147	J A 54	J A 110	J A 86	J A 56	J A 147	J A 79	J A 54
18	J A 62	J A 34	J A 30	J A 30	J A 30	J A 46	54	J A 50	J A 63	J A 58	J A 51	J A 106	J A 62	J A 58	G	44	40	J A 56	J A 76	J A 108	J A 52	J A 41	J A 41	J A 40
19	E B 16	E B 16	23	23	E B 16	E B 16	27	35	41	J A 54	J A 78	J A 61	J A 59	46	G	J A 62	47	68	64	J A 111	J A 34	J A 50	J A 34	J A 32
20	E B 16	E B 16	J A 26	J A 30	J A 32	E B 16	J A 32	J A 41	J A 55	J A 52	J A 85	J A 78	J A 70	J A 101	J A 110	J A 106	J A 103	77	J A 82	J A 85	J A 90	J A 118	J A 87	J A 120
21	J A 86	J A 87	J A 59	J A 55	J A 41	E B 15	J A 42	J A 55	J A 92	J A 63	J A 105	J A 90	J A 51	J A 54	J A 68	J A 63	46	J A 61	J A 111	J A 168	J A 126	J A 112	J A 88	J A 82
22	J A 85	J A 54	J A 54	J A 130	J A 58	J A 66	J A 44	J A 56	J A 61	J A 61	J A 50	J A 72	J A 59	J A 96	45	44	44	J A 89	J A 54	J A 40	J A 46	J A 85	J A 74	J A 55
23	J A 51	J A 37	J A 38	J A 27	23	J A 48	J A 57	J A 67	J A 64	J A 68	J A 112	J A 147	J A 110	J A 104	J A 91	J A 86	41	J A 58	J A 99	J A 111	J A 130	J A 130	J A 100	J A 66
24	J A 105	J A 51	J A 47	J A 52	J A 34	24	34	J A 38	J A 44	J A 71	J A 106	J A 58	49	J A 59	46	48	J A 63	J A 58	J A 55	J A 46	J A 59	J A 50	J A 54	J A 51
25	J A 48	J A 50	J A 81	J A 49	J A 49	J A 37	35	J A 74	J A 108	J A 90	J A 92	J A 68	J A 79	J A 64	J A 67	J A 86	J A 61	J A 56	J A 97	J A 90	J A 27	J A 55	J A 89	J A 45
26	J A 64	J A 84	J A 80	J A 54	J A 44	J A 36	54	J A 81	J A 75	J A 109	J A 104	J A 115	J A 112	J A 84	45	J A 80	G	41	J A 53	J A 60	J A 50	J A 58	J A 56	J A 55
27	J A 42	J A 29	J A 34	J A 58	22	E B 15	28	34	J A 120	J A 155	J A 152	J A 84	J A 70	J A 86	J A 150	J A 90	J A 44	J A 54	J A 110	J A 52	J A 74	J A 99	J A 109	J A 147
28	J A 78	J A 52	J A 31	26	J A 26	E B 16	33	J A 88	J A 89	J A 71	J A 77	J A 56	J A 46	J A 65	J A 86	J A 98	J A 100	J A 91	J A 41	J A 93	J A 88	J A 84	J A 86	J A 96
29	J A 54	J A 63	J A 109	J A 48	J A 126	J A 127	J A 65	J A 50	J A 64	J A 69	J A 68	J A 56	J A 58	J A 67	J A 57	39	38	36	J A 70	J A 30	J A 30	J A 43	J A 65	J A 82
30	J A 66	J A 39	J A 37	J A 28	J A 37	E B 16	J A 44	J A 87	J A 88	J A 86	J A 78	J A 68	J A 70	J A 66	J A 68	J A 58	J A 57	J A 55	J A 76	J A 59	J A 108	J A 109	J A 124	J A 102
31	J A 107	J A 79	J A 44	J A 30	J A 77	J A 33	J A 50	J A 67	J A 117	J A 104	J A 90	J A 109	J A 67	J A 80	J A 76	J A 74	J A 78	J A 66	J A 98	J A 83	J A 54	J A 34	J A 86	J A 108
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 50	J A 38	J A 37	J A 30	J A 30	E B 16	28	J A 41	J A 55	J A 58	J A 68	J A 62	J A 59	J A 64	48	46	44	J A 54	J A 55	J A 57	J A 54	J A 50	J A 56	J A 55
U Q	J A 64	J A 53	J A 54	J A 49	J A 41	J A 36	J A 44	J A 55	75	J A 71	J A 90	J A 84	J A 70	J A 84	J A 68	J A 74	J A 63	J A 61	J A 82	J A 85	J A 74	J A 85	J A 87	J A 85
L Q	29	E B 24	23	E B 21	E B 16	E B 16	G 25	35	45	48	51	51	49	48	42	40	G 35	G 34	40	J A 38	J A 34	J A 34	34	J A 40

MAY 2022 foEs (0.1MHz)

IONOSPHERIC DATA STATION Yamagawa

MAY 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	28	38	28	28	22	E B 16	22	31	34	36	45	46	52	45	47	G	34	G	29	24	E B 16	23	18	18
2	27	28	E B 16	E B 16	E B 16	E B 16	G	G 30	39	53	56	51	65	46	45	43	45	33	36	57	54	40	26	27
3	E B 16	E B 16	E B 16	E B 16	18	E B 16	25	45	36	55	50	48	48	54	45	43	36	33	27	31	51	24	26	25
4	20	E B 16	E B 16	E B 16	E B 16	E B 16	23	36	36	47	49	42	40	42	G	40	44	48	65	66	A A 74	26	26	28
5	28	18	18	25	19	E B 16	24	34	34	40	49	41	42	62	38	43	58	60	46	27	24	E B 16	E B 16	E B 16
6	E B 16	27	27	27	22	24	24	28	32	52	41	44	44	G	41	38	G	G	G	17	19	E B 16	E B 15	E B 16
7	E B 16	E B 15	E B 16	E B 17	E B 16	E B 16	E B 23	G	31	38	G	40	G 41	44	41	44	41	37	36	34	34	22	E B 16	E B 15
8	E B 15	E B 16	E B 16	E B 16	E B 16	E B 16	24	30	36	42	49	43	G	G	44	40	G	32	G	23	42	24	24	E B 16
9	E B 16	E B 16	E B 17	E B 16	E B 17	E B 16	G	30	39	39	39	40	41	39	38	38	33	G	33	56	27	23	E B 16	E B 16
10	16	E B 15	E B 15	E B 15	E B 16	E B 15	G	32	40	44	41	40	G	G	45	38	36	32	34	56	22	E B 16	23	28
11	A A 38	27	24	18	26	E B 16	31	50	57	47	46	56	56	74	A A 106	50	61	40	43	47	24	23	33	25
12	27	E B 16	E B 16	18	25	E B 26	25	G	40	46	52	47	46	46	42	38	G	G	29	25	24	28	18	E B 16
13	19	E B 16	E B 16	E B 16	E B 16	E B 16	24	G	G	38	G	G	G	42	40	G	40	42	48	32	50	26	24	25
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 15	22	30	35	G	41	G	43	46	49	38	36	34	30	27	27	16	E B 16	E B 18
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	33	35	40	70	47	59	67	46	G	G	G	27	25	31	30	A A 88	28
16	E B 16	27	27	25	25	E B 16	24	38	44	52	69	61	70	86	G	G	G	33	42	34	26	28	47	25
17	25	24	40	34	42	24	G	35	58	48	45	59	54	A A 104	A A 111	A A 131	A A 147	43	A A 110	82	44	A A 147	44	28
18	27	24	21	22	19	35	44	42	55	51	41	54	57	52	G	41	38	51	71	A A 108	27	36	33	25
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	32	39	44	55	56	52	44	G	58	45	63	60	A A 111	28	28	18	E B 16
20	E B 16	E B 16	E B 16	22	23	E B 16	24	31	47	48	80	63	59	A A 101	A A 110	86	A A 103	76	79	80	A A 90	50	42	27
21	65	63	26	28	24	E B 15	28	45	A A 92	56	53	79	45	45	53	47	44	39	A A 111	77	A A 126	50	46	38
22	18	22	26	41	32	28	38	48	52	53	43	53	49	A A 96	43	41	38	52	40	30	38	32	51	32
23	40	25	24	23	E B 16	40	46	61	52	60	A A 112	A A 147	70	A A 104	A A 91	46	40	48	A A 99	A A 111	A A 130	34	32	41
24	42	E B 16	25	28	23	E B 15	26	28	36	58	A A 106	51	47	51	44	44	60	53	51	41	36	28	28	24
25	24	27	26	33	26	24	25	63	38	51	62	46	56	56	56	79	54	45	A A 97	A A 90	23	46	24	40
26	50	42	41	38	26	20	47	64	68	A A 109	A A 104	A A 115	A A 112	78	40	49	G	40	44	50	35	51	50	50
27	18	23	22	34	E B 15	E B 15	24	30	A A 120	A A 155	A A 152	54	44	63	82	A A 90	40	44	A A 110	49	63	24	A A 109	46
28	37	27	24	24	E B 16	E B 16	28	A A 88	44	62	62	43	41	57	77	A A 98	A A 100	A A 91	35	74	50	27	E B 16	30
29	E B 16	26	24	27	A A 126	A A 127	A A 65	41	54	61	62	51	51	60	49	38	37	33	52	24	E B 17	28	46	42
30	27	E B 16	26	23	23	E B 16	28	60	66	66	47	52	45	42	55	44	42	42	28	52	26	52	74	74
31	27	25	26	23	24	22	46	57	A A 117	A A 104	A A 90	A A 109	56	63	66	62	74	50	86	66	35	26	26	23
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	20	22	22	23	19	E B 16	24	34	40	51	50	51	48	52	45	43	40	40	43	49	34	28	26	25
U Q	28	27	26	28	25	24	28	48	55	58	A A 69	56	56	67	56	50	54	50	A A 71	74	50	36	46	32
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G 23	30	36	42	43	43	42	44	40	38	G 34	G 33	30	27	24	23	E B 18	E B 18

MAY 2022 fbEs (0.1MHz)

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IONOSPHERIC DATA STATION Yamagawa

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

IONOSPHERIC DATA STATION Yamagawa

MAY 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	284	293	294	283	296	302	302	326	344	317	285	271	R 281	293	296	303	308	311	328	R 320	335	318	290	268
2	289	285	F	F	F	F	321	335	349	326	292	293	290	301	311	309	307	308	322	327	330	309	294	F
3	F	F	F	295	278	301	351	354	338	355	338	294	286	283	302	296	306	305	319	R	351	310	280	280
4	271	271	284	307	289	290	332	342	351	334	314	295	305	302	299	296	300	309	330	349	A	271	282	291
5	297	294	302	292	298	298	346	353	340	310	298	308	310	307	319	289	294	311	314	324	340	292	280	281
6	274	297	F	F	291	296	338	358	368	354	321	283	303	304	306	312	303	301	300	302	312	326	290	290
7	291	309	306	293	283	301	346	354	359	350	305	285	297	312	298	304	318	306	293	326	334	301	272	266
8	F	286	290	334	301	310	352	360	361	315	310	300	299	310	309	300	297	317	303	308	299	291	282	278
9	287	295	295	295	292	303	330	352	345	324	314	304	305	303	308	300	305	302	298	321	349	288	276	275
10	287	305	323	311	294	285	335	348	324	322	313	310	296	291	291	309	319	R 320	333	331	305	291	289	292
11	A	303	303	F	F	320	370	368	362	313	304	281	285	292	A	303	310	315	R 333	R 337	320	300	288	300
12	296	F	F	F	F	F	360	S 336	330	327	312	311	289	288	303	305	284	292	297	313	321	289	276	270
13	281	276	275	321	327	328	345	356	346	316	330	304	292	296	294	308	317	313	300	306	307	313	262	282
14	289	286	287	287	295	291	292	341	357	317	306	289	308	309	304	304	297	309	288	331	353	S 262	271	274
15	282	284	287	294	313	297	315	321	279	291	289	273	281	287	290	295	305	318	331	331	304	272	A	269
16	278	286	290	292	285	294	318	319	308	281	274	282	275	R 302	293	306	296	290	290	301	315	279	282	267
17	F	F	F	F	F	F	322	347	319	300	296	279	288	A	A	A	A	296	A	311	290	A	283	276
18	F	303	F	317	F	F	296	322	312	296	298	282	282	278	286	293	300	308	303	A	291	273	269	274
19	285	290	289	278	293	316	330	322	301	305	269	291	279	283	276	281	295	290	278	A	R 300	294	309	275
20	273	272	279	279	311	319	315	312	302	273	288	282	276	A	A	276	A	288	293	315	A	275	272	290
21	F	F	F	278	F	271	322	313	A	308	270	259	262	267	280	286	297	282	A	288	A	271	280	266
22	280	280	F	F	F	F	F	F	301	323	278	269	278	A	283	295	297	309	295	279	289	272	264	F
23	F	F	311	281	287	272	286	328	300	308	A	A	292	A	A	286	289	287	A	A	A	288	265	271
24	279	F	273	F	F	286	322	337	308	297	A	284	280	295	296	281	287	296	304	304	302	272	F	286
25	F	283	F	298	293	288	335	335	315	293	276	289	287	282	272	276	284	283	A	A	R 303	285	266	F
26	281	281	286	294	280	F	F	332	346	A	A	A	A	275	286	281	298	315	322	308	294	280	282	278
27	278	F	313	300	281	F	342	351	A	A	A	295	290	272	282	A	290	303	A	301	301	284	A	F
28	298	F	F	F	286	313	304	A	283	259	252	277	275	288	301	A	A	A	294	341	278	270	281	279
29	F	F	F	F	A	A	A	334	323	303	287	265	269	276	293	303	296	289	R	336	286	287	280	F
30	F	F	F	F	F	276	330	336	319	318	308	300	296	278	278	299	303	308	298	299	F	288	F	323
31	F	F	F	F	F	F	F	364	A	A	A	A	272	282	293	305	308	319	315	306	297	292	276	272
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	20	18	20	20	22	27	29	28	28	26	28	30	27	27	28	28	30	25	26	26	30	27	26
MED	283	286	290	294	292	298	330	337	327	314	298	287	288	291	294	300	299	307	303	314	304	288	280	277
U Q	289	296	303	304	297	310	345	354	348	324	312	298	296	302	303	304	306	311	322	331	330	294	283	286
L Q	278	282	286	285	286	288	315	327	308	298	285	280	279	282	286	288	296	292	294	304	297	273	272	271

MAY 2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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								L	L	L	A	L	A	383	A	L	L	L						
2									A	A	A	A	A	359	373	A	A	L						
3										A	A	A	351	A	A	L	348	L	L					
4								L	L	A	A	U L 370	376	382	377	U L 365	A	A	A		A			
5										L	361	U L 388	389	A	U L 362	L	A	A						
6										A	U L 384	367	375	367	365	378	L	L						
7								L		L		U L 373	388	386	373	A	A	L	A					
8								L		L	A	U L 379	370	387	379	368	U L 338	L						
9									L	L	U L 401	L	U L 370	361	418	U L 361	L	L	L					
10										A	386	387	369	349	U L 357	396	382	L	A					
11									A	A	A	A	A	A	A	A	A	A	A					
12										A	A	A	U L 356	382	370	370	L	L						
13								L	L	L	L	380	373	361	351	377	L	A	A					
14								L	L	L	L	L	370	378	A	375	L	L	L					
15										L	A	L	A	A	356	354	358	L						
16								A	A	A	A	A	A	A	378	384	L	L	A					
17									A	A	L	A	A	A	A	A	A	A	A					
18							A	A	A	A	L	341	A	A	363	365	370	A	A					
19									L	L	U L 328	A	363	368	U L 368	A	U L 347	A	A					
20									A	L	A	A	A	A	A	A	A	A	A					
21								A	A	A	A	A	357	371	A	342	352	L	A					
22								A	A	A	U L 389	A	354	A	343	358	360	A	A					
23							A	A	A	A	A	A	A	A		A	346	A	A					
24								L		A	A	A	364	A	361	336	A	A	A					
25								A	L	A	A	387	A	A	A	A	A	A	A					
26							A	A	A	A	A	A	A	A	369	A	366	A	A					
27								L	A	A	A	A	383	A	A	A	391	A	A					
28								A	A	A	A	377	393	A	A	A	A	A	A					
29					A		A	A	A	A	A	A	A	A	A	389	375	347	A					
30							A	A	A	A	A	A	369	366	A	A	A	A	L					
31								A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											6	10	18	14	17	15	12	1						
MED											U L 385	378	370	370	368	368	359	347						
U Q											U L 389	387	376	382	375	378	372							
L Q											361	370	363	361	359	358	348							

MAY 2022 M(3000)F1 (0.01)

IONOSPHERIC DATA STATION Yamagawa

MAY 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								262	244	256	244	322	296	296	282	282	260	260						
2									240	246	260	280	284	284	284	264	264	276						
3										238	252	252	330	302	288	286	280	272	264					
4								262	260	238	244	334	278	278	304	290	290	262	244		A			
5										290	312	280	268	262	262	290	296	272						
6										248	290	320	296	282	282	262	278	260						
7								236		256		338	316	274	300	304	262	272	262					
8								242		256	300	300	308	282	282	282	296	264						
9									264	264	274	286	302	292	286	286	264	284	288					
10										268	292	274	294	316	306	288	266	252	234					
11									E A 256	E A 242	292	E A 306	294	E A 316	A	286	270	258	244					
12										260	298	286	328	328	310	294	312	282						
13								240	240	292	256	308	308	308	308	280	262	252	E A 264					
14								238	238	262	262	302	294	294	286	286	302	282	294					
15										296	E A 304	330	312	292	306	304	282	252						
16								236	250	E A 280	E A 312	308	E A 336	E A 320	282	282	302	302	E A 258					
17									E A 292	258	320	320	304	A	A	A	A	292	A					
18							E A 264	246	256	300	312	340	334	334	324	324	306	282	E A 306					
19									314	294	386	334	350	344	344	324	310	E A 300	E A 310					
20									E A 242	336	E A 336	314	298	A	A	E A 390	A	E A 308	E A 308					
21								244	A	E A 284	398	E A 494	370	360	316	306	288	308	A					
22								244	256	252	332	356	312	A	340	300	286	266	266					
23							E A 278	252	244	260	A	A	E A 366	A		326	346	314	A					
24								232		E A 274	A	336	336	312	298	330	322	286	274					
25								E A 248	276	E A 254	E A 386	324	324	324	330	E A 340	322	308	A					
26							248	E A 254	E A 262	A	A	A	A	E A 352	318	308	294	256	240					
27								218	A	A	A	308	334	342	E A 382	A	300	284	A					
28								A	316	E A 340	E A 424	362	342	302	E A 318	A	A	A	262					
29					A		A	E A 242	E A 256	E A 344	E A 358	378	324	334	302	278	296	296	266					
30							236	252	E A 318	E A 318	286	E A 296	310	338	338	300	276	262	280					
31								E A 242	A	A	A	A	346	320	300	282	E A 282	256	E A 282					
	00	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	18	19	28	25	28	30	27	27	28	28	30	19					
MED							256	242	253	260	U 287	314	310	307	302	288	289	273	264					
U Q							E A 271	252	276	293	E A 334	335	334	334	318	307	302	292	E A 288					
L Q							242	238	244	255	268	298	296	292	286	282	273	260	258					

MAY 2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	E A 278	E A 292	E A 280	E A 280	E A 248	232	222	216	210	202	A	228	A	222	A	216	198	198	214	228	E B 208	208	224	E A 288
2	E A 274	E A 274	E B 260	206	E B 206	E B 262	218	204	A	A	A	A	A	226	208	A	A	208	232	232	228	228	E A 248	E A 302
3	E B 242	E B 238	E B 238	E B 238	E A 254	E B 254	202	200	216	A	A	A	242	A	A	222	204	204	206	208	210	208	E A 282	E A 302
4	E A 290	E B 276	E B 254	E B 236	E B 236	E B 246	212	212	212	A	A	190	190	190	190	192	A	A	A	230	A	E A 290	E A 300	E A 268
5	E A 268	E A 260	222	E A 256	E A 266	E B 246	214	208	208	194	E A 254	192	196	A	182	212	A	A	236	222	198	E B 200	E B 238	E B 282
6	E B 284	E A 264	E A 232	220	E A 234	E A 252	216	216	208	A	190	220	200	200	200	198	190	190	218	E B 238	224	E B 224	216	E B 252
7	E B 252	E B 230	E B 232	E B 244	E B 274	E B 244	206	204	204	198	200	196	196	212	202	A	A	220	A	228	214	214	E B 266	E B 302
8	E B 302	E B 264	E B 236	208	E B 222	E B 222	204	204	202	196	A	196	196	196	218	206	188	232	220	E A 238	E A 250	230	E A 264	E B 264
9	E B 264	E B 250	E B 250	E B 244	E B 244	E B 244	210	210	218	218	192	192	192	192	192	192	208	208	238	E A 256	220	206	E B 284	E B 284
10	E B 280	E B 232	212	E B 194	E B 240	E B 252	222	206	206	A	190	182	182	186	E A 214	204	202	192	A	E A 224	220	E B 232	E A 300	E A 282
11	A	E A 256	E A 258	E A 258	E A 258	220	202	208	A	A	A	A	A	A	A	A	A	A	A	216	192	212	E A 280	E A 266
12	E A 294	E B 252	E B 256	228	226	224	194	212	222	A	A	A	E A 240	234	212	204	204	204	212	210	204	224	E A 280	E B 280
13	E A 280	E B 280	E B 280	E B 236	E B 202	E B 216	216	202	190	190	184	202	200	200	200	192	216	A	A	E A 246	E A 244	214	E A 296	E A 284
14	E B 282	E B 258	258	E B 234	E B 240	E B 240	214	212	204	182	182	184	184	210	A	194	194	222	222	236	210	208	E B 288	E B 288
15	E B 280	E B 274	E B 274	E B 250	E B 238	E B 246	208	208	208	208	A	208	A	A	216	200	200	210	228	218	218	E A 250	A	E A 290
16	E B 268	E B 270	E A 270	E A 236	E A 242	E B 238	216	A	A	A	A	A	A	A	206	192	192	202	A	E A 238	E A 236	E A 258	E A 304	E A 278
17	E A 300	E A 264	E A 288	E A 266	E A 310	E A	216	216	A	A	212	A	A	A	A	A	A	A	A	E A 280	E A 256	A	E A 328	E A 306
18	E A 298	E A 264	E A 242	210	210	E A 256	A	A	A	A	184	E A 264	A	A	192	208	208	A	A	A	E A 230	E A 284	E A 308	E A 290
19	E B 256	E B 256	E B 256	E B 256	E B 256	238	208	194	200	204	232	A	E A 284	182	200	A	E A 264	A	A	A	E A 260	E A 244	E A 220	E B 234
20	E B 280	E B 274	E B 250	E A 250	E A 232	E B 230	218	218	A	224	A	A	A	A	A	A	A	A	A	E A 284	A	E A 302	E A 304	E A 280
21	E A 296	E A 298	E A 230	E A 282	E A 318	E B 240	220	A	A	A	A	A	214	216	A	E A 268	226	236	A	E A 342	A	E A 342	E A 348	E A 364
22	E A 272	E A 298	E A 298	E A 364	E A 310	E A 292	E A 248	A	A	A	200	A	E A 278	A	212	212	214	A	A	E A 252	E A 276	E A 262	E A 308	E A 318
23	E A 322	E A 274	E A 226	226	E B 244	E A 316	A	A	A	A	A	A	A	A	A	A	208	A	A	A	A	E A 242	E A 304	E A 344
24	E A 284	E B 272	E A 272	E A 292	E A 274	230	218	198	208	A	A	A	220	A	220	236	A	A	A	E A 236	E A 236	E A 238	E A 350	E A 270
25	E A 270	E A 270	E A 270	E A 248	E A 262	E A 278	E B 236	A	196	A	A	196	A	A	A	A	A	A	A	A	210	E A 272	E A 296	E A 310
26	E A 334	E A 296	E A 258	E A 248	E A 256	E A 256	A	A	A	A	A	A	A	A	208	A	204	A	A	E A 242	E A 242	E A 302	E A 306	E A 306
27	E A 270	E A 256	E A 238	E A 246	E B 252	E B 258	220	200	A	A	A	A	200	A	A	A	214	A	A	E A 260	E A 290	E A 274	A	E A 328
28	E A 272	E A 272	E A 290	E A 262	E B 218	E B 204	204	A	A	A	A	204	204	A	A	A	A	A	A	E A 276	E A 318	E A 284	E B 264	E A 308
29	E B 272	E A 264	E B 220	220	A	A	A	A	A	A	A	A	A	A	A	194	202	210	A	210	210	E A 246	E A 320	E A 354
30	E A 306	E B 242	E A 220	E A 262	E A 304	E B 276	A	A	A	A	A	A	E A 246	212	A	A	A	A	214	E A 276	226	E A 308	E A 332	E A 334
31	E A 334	206	E A 262	E A 272	E A 254	E A 226	210	A	A	A	A	A	A	A	A	A	A	A	A	E A 258	E A 240	E A 248	E A 256	E A 282
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	30	29	26	20	16	10	11	14	18	14	17	18	19	14	11	27	27	30	29	31
MED	E A 280	E A 264	E A 256	E A 246	E A 246	E B 244	214	208	208	200	191	196	198	205	204	203	204	208	220	E A 238	U 212	E A 243	E A 296	E A 288
U Q	E A 296	E A 274	E A 270	E A 262	E A 262	E A 256	218	212	211	208	212	208	E A 240	216	213	212	214	220	232	E A 258	E A 244	E A 274	E A 307	E A 308
L Q	E B 270	E B 256	E A 232	228	E A 234	E A 230	208	203	203	194	184	192	196	192	196	194	198	202	214	224	210	214	E A 264	E A 280

MAY 2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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						B	A	A	A	A	A	A	A	A	A	116	114	114	122					
2							116	112	A	A	A	A	A	A	A	110	110	110	106					
3							114	114	A	A	A	A	A	A	110	110	110	110	A					
4							B	116	A	A	A	A	A	A	116	114	114	114	A		A			
5							114	108	108	110	A	A	A	A	A	112	112	A	B					
6							104	A	A	A	A	A	A	112	A	A	112	112	108					
7							B	122	116	A	114	A	100	110	110	112	112	116	A					
8							118	120	122	118	112	116	116	116	A	114	114	114	114					
9							114	116	116	116	118	120	116	116	A	A	A	116	A					
10							120	118	114	110	110	112	112	112	110	110	116	116	A					
11							A	A	A	A	A	A	A	A	A	A	A	A	A					
12							A	116	116	110	A	A	A	A	A	A	112	112	A					
13							112	112	112	112	112	112	112	112	112	110	110	A	A					
14	A						110	110	110	110	A	110	110	A	A	110	A	A	A					
15							114	114	A	A	A	A	A	A	114	112	112	112	A					
16							A	A	A	A	A	A	A	A	A	112	112	110	A					
17							120	A	A	A	A	A	A	A	A	A	A	A	A					
18							A	A	A	A	A	A	A	A	110	110	110	A	A					
19							110	112	112	A	A	A	A	A	112	114	118	A	A					
20							118	A	A	A	A	A	A	A	A	A	A	A	A					
21							118	A	A	A	A	A	A	A	A	A	114	A	A					
22							A	A	A	A	A	A	A	A	108	108	108	A	A					
23							A	A	A	A	A	A	A	A		A	104	A	A					
24							122	A	A	A	A	A	A	A	110	110	110	A	A					
25							112	A	A	A	A	A	A	A	A	A	A	A	A					
26						A	A	A	A	A	A	A	A	A	A	A	112	114	A					
27							120	112	A	A	A	A	A	A	A	A	A	A	A					
28							112	A	A	A	A	A	A	A	A	A	A	A	A					
29					A		A	A	A	A	A	A	A	A	A	116	116	116	A					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31							A	A	A	A	A	A	A	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							18	14	9	7	5	5	6	6	10	17	21	14	4					
MED							114	114	114	110	112	112	112	112	110	112	112	114	111					
U Q							118	116	116	116	116	118	116	116	112	114	114	116	118					
L Q							112	112	111	110	111	111	110	112	110	110	110	112	107					

MAY 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	88	88	90	90	90	B	104	104	104	104	90	90	94	98	98	G	140	G	128	102	104	104	104	98
2	88	88	88	88	B	B	G	112	102	92	90	90	84	84	100	136	116	138	110	100	98	96	96	96
3	96	96	96	96	96	96	114	112	96	96	96	88	88	84	146	136	136	136	98	98	90	90	90	90
4	90	88	B	B	B	B	120	110	98	98	98	98	98	98	G	140	122	116	102	90	90	90	90	90
5	92	92	92	92	92	B	112	112	114	114	92	98	96	90	90	136	114	98	96	96	96	96	94	94
6	94	88	90	84	86	86	108	100	100	100	100	94	94	G	96	94	G	G	G	94	84	B	B	B
7	B	B	B	B	B	B	B	G	112	98	G	98	98	128	128	128	128	120	106	104	104	98	98	98
8	98	B	B	98	B	B	126	126	126	112	114	112	G	G	102	116	G	168	G	94	94	94	94	94
9	B	94	94	B	94	94	G	114	114	116	116	114	114	114	108	100	100	G	102	102	94	94	B	B
10	88	82	84	B	86	B	G	112	112	112	112	110	G	G	160	114	116	112	98	98	98	98	98	88
11	88	88	88	88	86	94	108	96	96	98	100	96	94	94	94	94	96	96	96	88	88	88	90	90
12	90	94	94	94	94	86	86	G	108	108	100	100	100	100	100	100	G	G	100	92	92	92	86	94
13	90	90	B	90	B	B	122	G	G	158	G	G	G	146	146	G	124	106	92	92	92	92	92	92
14	98	90	90	B	B	B	120	120	120	G	92	G	110	98	98	148	108	108	90	90	90	90	96	96
15	98	B	80	82	B	B	G	110	104	94	94	94	88	92	112	G	G	G	102	96	88	88	88	88
16	88	78	78	86	86	B	102	96	92	92	88	88	88	88	G	G	G	130	90	90	90	92	92	92
17	92	92	90	90	90	90	G	102	96	96	94	94	94	94	94	94	86	94	90	88	88	88	88	88
18	88	88	88	72	82	108	98	98	92	92	92	92	92	94	G	152	144	94	92	84	84	84	84	84
19	B	B	84	84	B	B	122	122	112	96	92	92	92	94	G	108	114	98	96	86	86	90	90	90
20	B	B	90	90	90	B	122	96	96	96	90	90	90	90	86	86	86	86	88	88	88	88	88	88
21	88	88	78	80	80	B	118	94	94	94	94	94	96	98	88	92	118	104	92	92	84	84	84	86
22	88	88	88	84	84	84	102	102	102	98	98	98	98	88	128	138	134	96	96	96	96	96	94	84
23	84	84	84	84	84	98	98	98	98	90	90	90	90	86	86	86	136	104	102	92	92	92	92	92
24	92	92	88	88	88	88	130	100	100	100	90	92	100	100	142	126	110	100	100	100	100	102	100	94
25	92	92	84	86	86	86	118	94	94	94	94	94	86	92	94	94	94	94	94	94	94	94	94	94
26	90	90	90	84	84	90	90	98	100	88	88	88	88	88	102	96	G	122	96	96	96	90	90	90
27	92	86	86	84	84	B	116	118	90	84	84	84	100	88	90	82	88	94	94	94	88	88	88	88
28	88	88	84	84	84	B	122	96	98	92	92	92	92	92	92	92	92	94	94	92	92	92	102	92
29	92	92	96	84	84	84	96	96	96	96	96	96	90	90	90	114	146	132	90	90	100	100	88	88
30	88	88	88	88	88	B	96	96	90	90	92	86	88	88	90	90	90	90	96	96	96	90	94	94
31	94	82	82	82	82	90	98	92	92	94	86	86	86	86	86	86	82	82	82	82	82	84	84	98
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	27	26	23	14	25	28	30	30	29	29	28	28	27	27	25	26	29	31	31	30	29	29
MED	90	88	88	86	86	90	112	101	99	96	92	94	93	92	98	100	114	102	96	94	92	92	92	92
U Q	92	92	90	90	90	94	121	112	108	100	98	98	98	98	112	136	131	120	101	96	96	96	95	94
L Q	88	88	84	84	84	86	98	96	96	92	90	90	88	88	90	92	93	94	92	90	88	88	88	88

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

MAY 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	F7	F8	F6	F4		L2	L3	L1	L2	L3	L3	L2	L2	L2		H1		C1	F3	F1	F4	F2	F2
2	F6	F6	F2	F1				C2	L3	L4	L4	L2	L4	L3	L2	H1	C3	H1	C5	F8	F9	F9	F6	F9
3	F3	F2	F1	F2	F4	F2	C2	L4	L3	L3	L4	L2	L2	L2	H1	H2	H1	H1	L2	F8	F8	F3	F3	F3
4	F4	F1					C2	C3	L3	L3	L2	L1	L1	L2		H1	C2	C3	L5	F9	F9	F4	F3	F8
5	F5	F4	F3	F2	F1		C2	C3	C1	C2	L3	L1	L3	L5	L2	H1	C3	L5	L5	F8	F3	F1	F3	F2
6	F2	F7	F4	F8	F3	F4	C1	L3	L1	L3	L2	L2	L2		L2	L2				F2	F3			
7									C2	L2		L1	L1	C1	C1	C2	C2	C3	L4	F6	F8	F4	F2	F2
8	F2			F1			C2	C3	C2	C2	C2	C2			L2	C1		H1		F4	F9	F3	F5	F2
9		F2	F2		F2	F1		C2	C3	C3	C1	C1	C1	C1	L1	L1	L1		L4	F5	F4	F3		
10	F1	F1	F1		F2			C1	C2	C3	C1	C1			H1	C1	C1	C2	L6	F9	F8	F2	F9	F7
11	F3	F5	F5	F4	F3	F3	L3	L4	L4	L3	L2	L3	L2	L5	L4	L4	L4	L3	L7	F8	F3	F4	F3	F3
12	F2	F2	F2	F2	F3	F4	L5		C2	C2	L2	L2	L2	L2	L1	L1			L2	F3	F2	F3	F2	F2
13	F3	F2		F1			C2			H1				H1	H1		C2	L3	L7	F6	F9	F6	F5	F5
14	L2	L2	F1				C1	C1	C1		L2		C1	L2	L2	H1	C2	L2	L5	F3	F3	F2	F2	F1
15	F1		F2	F1				C2	L2	L2	L3	L3	L3	L2	C2				L3	F3	F9	F6	F8	F6
16	F2	F3	F4	F7	F3		L2	L5	L4	L3	L3	L4	L4	L3				H2	L3	F7	F3	F2	F5	F2
17	F2	F2	F8	F9	F9	F4		L3	L4	L3	L1	L3	L2	L4	L6	L6	L6	L4	L5	F9	F9	F7	F9	F6
18	F5	F5	F4	F2	F1	F6	L7	L4	L4	L3	L2	L3	L2	L2		H1	H1	L3	L9	F9	F9	F9	F5	F4
19			F2	F1			C1	C1	C1	L2	L3	L2	L2	L1		C3	C2	L3	L8	F9	F4	F4	F4	F2
20			F1	F1	F1		C1	L1	L4	L2	L5	L3	L2	L4	L5	L5	L6	L5	L6	F9	F9	F9	F9	F4
21	F8	F7	F3	F6	F1		C1	L5	L6	L4	L3	L4	L1	L2	L3	L2	C2	L5	L8	F4	F9	F9	F6	F9
22	F2	F2	F4	F6	F6	F4	L6	L5	L5	L4	L1	L2	L2	L6	C1	H1	H2	L4	L6	F3	F9	F5	F9	F5
23	F9	F4	F4	F2	F2	F8	L5	L6	L5	L3	L5	L5	L3	L6	L5	L2	H1	L3	L8	F9	F9	F4	F6	F9
24	F5	F2	F3	F3	F2	F2	C1	L3	L1	L4	L4	L2	L1	L2	H1	C2	C3	L7	L8	F9	F4	F3	F5	F5
25	F5	F4	F3	F5	F2	F2	C1	L7	L2	L3	L3	L2	L3	L2	L2	L3	L3	L3	L6	F7	F4	F6	F4	F9
26	F9	F7	F4	F5	F2	F4	L6	L4	L5	L4	L4	L5	L4	L3	L1	L2		CL22	L7	F8	F5	F8	F9	F9
27	F2	F4	F3	F3	F2		C1	C2	L8	L5	L6	L3	L2	L3	L4	L4	L3	L4	L9	F9	F8	F6	F8	F6
28	F3	F2	F5	F3	F1		C3	L4	L4	L4	L3	L2	L2	L4	L3	L7	L7	L7	L4	F7	F6	F4	F3	F8
29	F2	F9	F3	F4	F7	F7	L8	L3	L4	L4	L3	L2	L2	L3	L2	C1	H2	C2	L7	F2	F1	F5	F9	F9
30	F8	F3	F3	F5	F3		L7	L8	L5	L5	L3	L3	L2	L3	L3	L2	L4	L4	L3	F8	F6	F7	F8	F8
31	F4	F3	F2	F2	F5	F3	L7	L7	L7	L5	L5	L6	L3	L4	L4	L4	L5	L6	L8	F9	F8	F6	F7	F5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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	X 96	X 98	X 107	X 85	X 82	X 76															X 156	X 142	X 128	X 119
2	X 119	X 126	X 140	X 126	X 83	X 77															X 126	X 104	X 92	X 92
3	X 100	X 112	114	X 98	X 96	93	87														X 156	X 126	X 127	X 126
4	X 128	X 132	X 132	X 110	X 94	X 89															A	X 88	X 94	X 105
5	X 101	X 101	X 95	X 76	X 68	X 65															X 157	X 140	X 135	X 139
6	X 133	X 148	X 146	X 106	X 91	X 86															X 132	X 128	X 119	X 105
7	X 106	X 106	X 110	X 87	X 73	X 75															X 109	X 79	X 77	X 78
8	X 79	X 79	X 86	X 80	X 78	X 70															X 104	X 91	X 87	X 88
9	X 91	X 93	X 84	X 74	X 72	X 68															X 114	X 80	X 85	X 87
10	X 89	X 91	X 97	X 75	X 65	X 58															X 106	X 100	X 96	X 95
11	X 91	X 82	X 82	X 71	X 69	X 78															X 142	X 134	X 134	X 135
12	X 134	X 132	X 129	X 120	X 108	X 88															X 115	X 88	X 83	X 80
13	X 79	X 80	X 79	X 80	X 78	X 60															X 123	X 91	X 89	X 90
14	X 92	X 90	X 92	X 81	X 75	X 70															X 87	X 76	X 80	X 85
15	X 86	X 90	X 90	X 79	X 76	X 64															X 117	X 114	X 115	X 115
16	X 113	X 117	X 100	X 94	X 84	79															X 107	X 92	X 97	X 95
17	X 96	X 104	X 97	X 88	X 74	83															X 125	X 111	X 98	X 107
18	X 114	X 120	X 118	X 112	91	63															X 108	X 91	X 91	X 94
19	X 95	X 97	X 94	X 84	X 91	X 85															X 112	X 108	X 95	X 96
20	X 102	X 113	X 109	X 102	X 100	X 92															X 108	X 96	X 96	X 97
21	X 95	102	90	94	84	X 77	92														X 110	X 107	X 87	X 88
22	93	X 88	X 84	X 77	86	81															X 101	X 97	X 96	X 96
23	X 102	X 94	X 97	X 87	X 78																X 96	X 84	X 88	92
24	89	A	X 71	72	79	83	86														X 98	X 92	X 95	X 92
25	X 106	X 106	X 99	X 92	X 83																X 131	X 95	X 89	X 95
26	X 96	X 95	95	X 90	82		89														X 116	X 110	X 104	X 105
27	X 107	X 108	X 96	X 86	X 83		88														X 109	X 102	X 99	X 102
28	X 104	X 99	X 94	X 92	X 93																X 76	A	X 86	X 84
29	70	X 69	X 71	63	A																X 97	X 95	X 91	X 90
30	X 92	98	X 88	X 69	X 70																X 97	X 93	X 84	X 75
31	105	93	93	82	80	83															X 146	X 121	X 110	X 105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	30	24	5														30	30	31	31
MED	X 96	X 98	X 95	X 86	X 82	X 78	88														X 111	X 96	X 95	X 95
U Q	X 106	X 112	X 109	X 94	X 91	X 84	90														X 126	X 111	X 104	X 105
L Q	X 91	X 91	X 88	X 77	X 75	X 69	86														X 104	X 91	X 87	X 88

IONOSPHERIC DATA STATION Okinawa

MAY 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	90	92	101	79	76	70	70	96	105	106	110	122	140	158	174	184	181	176	178	170	150	136	122	113
2	113	120	134	120	77	71	79	96	87	86	93	110	122	125	130	136	138	144	151	146	120	98	86	86
3	94	106	F 104	92	F 88	F 86	F 81	82	80	93	A	92	U R 115	126	139	144	150	170	177	167	150	120	121	120
4	122	126	126	104	88	83	80	83	90	86	80	93	107	107	113	120	128	132	137	120	A	82	88	99
5	95	95	89	70	62	58	69	80	78	83	92	106	120	131	143	154	167	173	167	169	151	134	R 129	133
6	127	142	140	100	85	80	95	95	74	76	79	92	109	124	131	126	122	120	128	132	126	122	113	99
7	100	100	104	81	67	69	84	86	82	72	74	86	108	122	113	116	119	116	114	120	103	73	71	72
8	73	73	80	73	72	65	73	76	68	67	72	84	97	107	108	104	111	116	110	108	98	85	81	82
9	85	87	78	68	66	62	70	79	77	88	92	93	102	114	113	119	125	119	111	127	108	74	79	82
10	83	85	91	69	59	52	58	72	75	81	92	92	101	110	119	131	130	125	131	115	100	94	90	89
11	85	76	76	65	63	72	73	61	66	78	92	101	118	130	151	164	169	170	169	149	136	128	128	129
12	128	126	123	114	102	82	77	68	76	A	78	88	96	102	113	116	114	119	125	128	109	82	77	74
13	73	74	73	74	72	54	62	72	75	85	94	94	106	114	122	128	122	109	111	120	117	85	83	84
14	86	84	86	75	69	65	70	94	85	71	84	84	104	106	109	113	113	115	128	146	81	70	74	79
15	80	84	84	73	70	58	61	72	90	107	108	116	130	144	148	150	153	158	136	121	111	108	109	109
16	107	111	94	88	78	F 71	75	86	89	93	101	110	121	133	141	133	119	116	117	117	101	86	91	R 89
17	90	98	91	82	68	F 72	84	78	A	78	92	107	120	128	127	124	125	124	128	124	119	104	92	101
18	108	114	112	106	80	F 54	66	92	93	91	91	102	104	111	113	110	107	100	102	108	102	85	85	88
19	89	91	88	78	85	79	74	71	85	84	84	96	103	111	107	110	108	106	108	106	106	102	89	90
20	96	R 107	103	96	94	86	74	81	85	90	99	101	106	104	106	111	115	118	122	124	102	90	90	91
21	89	F 87	F 82	F 82	F 71	71	F 84	76	81	A	A	91	102	111	123	127	125	116	111	124	105	101	81	82
22	F 83	82	78	71	F 75	F 72	74	82	86	A	85	87	A	101	105	110	111	100	95	100	95	91	90	90
23	96	88	91	81	72	68	78	89	83	90	93	84	85	95	98	94	99	109	107	100	90	78	82	F 81
24	F	A	R 65	F	F 67	F 71	F 77	88	81	76	82	90	95	100	102	100	104	108	112	108	92	86	89	86
25	100	99	93	86	77	74	78	89	82	75	82	91	101	103	114	127	132	148	160	164	125	89	83	89
26	90	89	F 88	84	F 75	72	F 82	92	A	77	A	A	101	115	128	131	142	146	130	126	110	104	98	99
27	101	102	90	80	77	75	F 80	72	72	78	87	96	98	105	108	107	106	108	111	105	103	96	93	96
28	R 98	93	88	86	87	77	66	64	83	84	A	103	117	119	116	108	102	103	109	103	70	A	80	78
29	F 59	63	65	F 56	A	34	54	71	64	A	72	79	95	103	110	116	112	A	A	113	91	89	85	84
30	86	F 91	82	63	64	63	75	77	A	A	A	88	94	102	112	A	115	108	102	98	90	87	78	69
31	U F 81	F	F 78	F	F 72	F 71	74	77	A	A	A	94	110	126	148	159	162	169	158	151	140	115	104	99
	00	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	31	29	30	31	31	31	27	25	25	30	30	31	31	30	31	30	30	31	30	30	31	31
MED	90	92	89	81	74	71	74	80	82	84	91	93	105	111	114	122	122	118	124	121	106	90	89	89
U Q	100	106	103	90	80	75	80	89	86	90	93	102	117	126	131	133	138	146	137	146	120	104	98	99
L Q	85	84	80	72	68	63	70	72	75	76	81	88	101	104	109	110	111	109	111	108	98	85	81	82

IONOSPHERIC DATA STATION Okinawa

MAY 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									L	U L 520	U L 520	U L 536	L 592	L 564	L 548	548	L 492	L	L					
2										A	U L 528	L 592	L 540	L 572	L 536	L	L	L 480	L					
3										A	A	A	A	L 524	552	L 516	L 536	L	L					
4										A	A	A	A	U L 648	A	576	L 500	L						
5											A	604	L 524	L 548	512	528	L 508	L	A					
6										U L 516	A	A	A	A	A	L 504	A	L 484	L					
7									L 428	U L 468	U L 516	544	516	512	A	A	L 504	L						
8									L	480	U L 528	L 552	536	L 528	A	L 532	516	L 460	L					
9										L	L 524	564	540	L 548	L 508	L 516	500	L	L					
10										U L 588	508	L 524	548	L 528	528	496	A	L	L					
11									A	U L 552	A	568	U L 580	A	A	A	A	A						
12									L	A	A	A	A	536	544	508	L 496	A						
13									L	L	L 520	L 584	U L 540	572	516	528	L 500	L 456						
14								L	L	476	528	U L 644	560	L 544	L 524	L 540	A	L	L					
15										A	L 544	U L 628	U L 604	584	568	552	L 512	A	L					
16									A	U L 464	L	576	L 568	536	536	552	L	L 492	L					
17									A	A	A	A	A	584	A	A	A	A						
18									L	A	U L 668	572	A	A	A	564	L 552	A	L					
19									L	L	U L 588	596	A	A	A	552	L 536	L 516	L					
20										U L 548	556	A	A	A	L 572	A	L 536	L 496						
21								L	A	A	A	A	A	A	A	516	L 540	L 536						
22									A	A	A	A	A	A	A	A	L 512	A	A					
23									A	A	L	A	A	A	A	556	516	A						
24								L		U L 564	548	560	564	556	548	L 596	A	A						
25								L	A	A	A	A	A	L 556	560	540	L 532	504	L					
26									A	A	A	A	A	560	A	A	512	A						
27								L		U L 540	U L 540	548	524	524	536	A	500	A	L					
28									A	A	A	A	A	524	540	A	A	480	A	A				
29									A	A	A	A	A	A	L 520	520	A	A	A					
30									A	A	A	A	A	A	A	A	480	L	L					
31									A	A	A	A	A	A	A	A	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	11	14	16	14	20	17	20	20	10						
MED									L 428	U L 520	L 528	570	544	548	536	536	L 512	L 488						
U Q										U L 552	548	L 594	L 568	568	550	552	L 534	L 504						
L Q										U L 476	L 520	L 550	536	528	L 522	516	500	L 480						

MAY 2022 foF1 (0.01MHz)

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IONOSPHERIC DATA STATION Okinawa

MAY 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							A 236	292		A	A	A	A	388	376	360	324	284	236	A				
2							A 236	300	348	368	376	384		A 376	360		328	292	244	A				
3							A 248	304	344	356	380	380	384	380	364		332	304	244	A				
4							184	256	304	344	A	A	A	R 392	372	360	336	292	A	A				
5							172	248	300	A	344	A	392	388	A	A	344	296	A	A				
6							A 248	304	344	368	A	A	A	A	A	A	A	A	A	B				
7							176	244	304	344	A	A	408	400	380	356	328	296	236	A				
8							A 244	300	340	A	384	376	400	376	360		336	296	236	A				
9							A 252	304	344	352	364	A	A	A	A		A	296	228	A				
10							A 236	296	332	352	384	A	R 392	380	356		340	284	212	A				
11							A 252	304	348	A	A	A	380	364	352		324	280	A	A				
12							A 268	312	336	356	376	376	380	360	348		A	A	A	A				
13							A 264	312	336	A	R 400	396	412	R 380	368		344	304	240	A				
14							A 256	316	344	A	396	388	384	380	360		340	300	256	A				
15							A	A 320	348	364	380	A	396	R 376	372		348	308	A	A				
16							A 264	312	340	368	372	372	392	364	360		348	304	A	A				
17							A 268	320	360	372	A	A	A	A 372	A		352	304	212	A				
18							A 276	324	360	A	A	A	A	A	A	A	368	316	248	A				
19							A 280	340	360	376	A	396	A	A	A		364	324	252	A				
20							A 264	320	364	384	A	A	380	A	A		A	A	A	A				
21							A 268	320	360	364	368	A	384	A	368		348	304	248	A				
22							176	264	320	360	376	392	A	400	396	372	348	312	252	A				
23						A	A 264	320	352	372	392	A	344	A	A		A	308	256	A				
24							A	A U 280	A U 340	A	A	404	A	A	372		352	316	256	A				
25						B	A 244	320	348	372	A	A	A	A	A		348	308	236	A				
26						B	A 272	316	340	360	A	A	A	A	A		A	300	244	A				
27						B	B 248	312	A	A	A	A	A	384	364		344	308	228	A				
28						B	188	252	308	340	352	A	A	A	A	352	328	284	248	A				
29						A	A 240	292	324	356	368	A	372	A	356		328	288	232	A				
30						A	A 252	296	324	340	340	356	340	328	A		A	A	A	A				
31						B	A 248	300	324	332	352	A	A	A	A		A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	29	31	28	21	16	12	19	17	19	23	26	21					
MED							176	252	308	344	364	378	386	388	376	360	344	302	244					
U Q							186	264	320	350	372	388	396	396	380	368	348	308	250					
L Q							174	246	300	340	352	368	376	380	368	356	328	292	234					

MAY 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

MAY 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 40	J A 21	J A 38	J A 52	J A 60	J A 36	J A 46	J A 52	J A 47	J A 43	40	42	42	44	G	42	G	32	26	24	J A 21	J A 19	J A 23	J A 80
2	J A 38	J A 148	J A 102	J A 70	J A 62	J A 28	21	32	J A 44	J A 68	J A 52	J A 48	48	J A 53	46	48	40	G	G	J A 31	J A 26	J A 53	J A 47	J A 40
3	J A 97	J A 86	J A 52	J A 53	J A 27	J A 32	23	36	J A 62	J A 81	J A 99	J A 88	J A 208	G	44	46	41	34	28	24	J A 23	J A 22	J A 26	J A 31
4	J A 108	J A 84	J A 16	20	20	J A 21	G	32	J A 49	J A 63	J A 89	J A 72	J A 263	47	J A 59	J A 92	J A 54	J A 53	J A 63	J A 70	J A 141	J A 53	J A 87	J A 42
5	J A 32	J A 26	J A 36	J A 26	J A 26	J A 23	G	32	J A 51	J A 49	J A 58	J A 50	44	44	J A 42	42	G 30	G 27	J A 48	J A 143	J A 53	J A 38	J A 41	J A 21
6	E B 16	J A 18	19	E B 16	J A 25	J A 33	20	32	J A 50	45	J A 84	J A 83	J A 114	J A 86	J A 70	J A 62	J A 67	J A 42	J A 28	J A 17	J A 17	19	18	19
7	E B 16	E B 16	E B 16	J A 18	19	E B 16	G	28	38	G	J A 42	50	48	48	53	J A 56	42	J A 48	J A 46	J A 32	J A 39	J A 29	J A 53	J A 84
8	J A 29	J A 37	E B 16	E B 16	E B 16	21	19	31	40	40	J A 45	G	40	47	J A 63	J A 47	G	G	29	J A 54	J A 52	J A 64	J A 35	J A 28
9	J A 18	18	E B 16	19	20	E B 16	21	J A 41	J A 46	J A 53	J A 50	J A 49	J A 44	J A 42	42	38	J A 40	33	32	J A 27	J A 61	J A 82	J A 44	J A 53
10	J A 35	J A 28	J A 19	J A 18	E B 16	E B 16	21	30	J A 45	J A 49	42	G	46	46	45	46	48	J A 47	J A 33	J A 27	J A 33	J A 79	J A 42	J A 38
11	J A 50	J A 31	J A 32	J A 39	J A 48	J A 27	28	J A 47	J A 57	J A 48	J A 65	41	46	J A 92	J A 56	J A 74	J A 77	J A 74	J A 67	J A 50	J A 103	J A 63	J A 40	J A 26
12	J A 53	J A 46	J A 34	J A 31	J A 20	E B 16	20	41	37	J A 81	J A 82	J A 61	J A 61	J A 50	J A 68	J A 77	J A 49	J A 62	J A 49	J A 23	J A 35	J A 23	J A 50	J A 18
13	J A 26	J A 24	J A 23	J A 25	J A 22	J A 20	20	G	G 37	40	44	42	48	44	42	39	40	J A 47	J A 37	J A 26	J A 38	J A 27	J A 50
14	J A 64	J A 64	J A 17	J A 21	E B 16	E B 16	20	30	38	J A 51	J A 105	47	G	G	G	J A 60	J A 85	J A 57	J A 48	J A 43	J A 19	J A 49	J A 30	J A 22
15	J A 16	22	20	J A 20	19	19	22	J A 36	J A 46	J A 66	J A 60	J A 62	J A 94	G	G	41	40	J A 58	28	J A 27	J A 32	18	J A 25	J A 16
16	J A 45	J A 65	J A 47	J A 27	J A 33	J A 26	J A 37	J A 58	J A 103	J A 54	J A 78	48	46	G	42	G	37	33	34	J A 38	J A 29	J A 19	J A 18	J A 117
17	J A 78	J A 86	J A 45	J A 39	J A 26	J A 33	J A 38	J A 44	J A 79	J A 66	J A 85	J A 68	J A 65	J A 61	J A 106	J A 88	J A 121	J A 70	J A 111	J A 118	J A 103	J A 45	J A 28	20
18	J A 54	J A 42	J A 26	J A 26	J A 42	J A 26	J A 39	J A 49	J A 64	J A 90	J A 119	J A 62	J A 68	J A 65	J A 68	44	J A 53	J A 54	30	J A 83	J A 55	J A 39	J A 24	J A 25
19	J A 19	E B 16	E B 16	20	J A 16	J A 19	22	36	J A 52	58	J A 71	J A 71	J A 68	J A 120	J A 88	J A 48	G	G	34	J A 50	J A 74	J A 125	J A 52	J A 40
20	J A 30	J A 24	J A 24	J A 21	J A 28	J A 18	J A 24	34	J A 52	44	J A 55	J A 179	J A 190	J A 84	J A 84	J A 109	J A 53	44	J A 63	J A 96	J A 121	J A 48	J A 30	J A 30
21	J A 74	J A 34	J A 28	J A 19	J A 24	J A 16	J A 29	J A 52	J A 88	J A 110	J A 108	J A 66	J A 111	J A 100	J A 126	44	46	J A 50	J A 64	J A 109	J A 99	J A 47	J A 46	J A 36
22	J A 130	J A 72	J A 82	J A 30	J A 42	J A 24	J A 32	J A 68	J A 119	J A 152	J A 110	J A 85	J A 123	J A 67	J A 96	J A 84	J A 83	J A 82	J A 93	J A 85	J A 88	J A 53	J A 28	J A 36
23	J A 46	J A 30	J A 36	J A 22	J A 16	J A 36	J A 46	J A 51	J A 76	J A 73	J A 58	J A 70	J A 64	J A 77	J A 99	J A 48	J A 38	J A 64	J A 110	J A 72	J A 62	J A 109	J A 121	J A 54
24	J A 101	J A 128	J A 84	J A 108	J A 78	J A 22	22	J A 38	J A 66	J A 44	J A 47	J A 47	43	50	51	J A 57	J A 61	J A 64	J A 62	J A 52	J A 87	J A 38	J A 18	J A 77
25	J A 66	J A 50	J A 36	J A 26	J A 19	J A 23	24	35	J A 66	J A 105	J A 72	J A 70	J A 88	J A 102	45	43	38	38	J A 34	J A 34	J A 100	J A 47	J A 105	J A 60
26	J A 42	J A 24	J A 24	J A 19	E B 16	J A 16	28	J A 42	J A 88	J A 77	J A 126	J A 119	J A 87	J A 52	J A 85	J A 59	J A 46	J A 100	J A 49	20	J A 21	J A 54	J A 44	J A 64
27	J A 85	J A 46	J A 39	J A 28	J A 32	19	18	29	36	38	40	J A 48	J A 52	J A 43	43	J A 76	J A 53	J A 71	J A 43	J A 47	J A 109	J A 54	J A 67	J A 42
28	J A 27	J A 38	J A 33	20	J A 16	J A 18	24	J A 45	J A 62	80	J A 148	J A 142	J A 110	J A 68	J A 50	J A 91	J A 79	J A 49	J A 57	J A 42	J A 57	J A 128	J A 87	J A 52
29	J A 63	J A 124	J A 104	J A 63	J A 84	J A 64	J A 38	J A 54	J A 64	J A 84	J A 72	J A 60	J A 72	J A 82	46	48	J A 95	J A 136	J A 184	J A 142	J A 43	J A 18	J A 25	J A 49
30	J A 87	J A 50	J A 46	J A 33	J A 36	J A 40	J A 54	J A 63	J A 88	J A 109	J A 122	J A 108	J A 125	J A 85	J A 65	J A 141	J A 49	J A 48	J A 39	J A 64	J A 81	J A 46	J A 20	J A 154
31	J A 84	J A 62	J A 43	J A 70	J A 64	J A 52	J A 49	J A 127	J A 180	J A 100	J A 109	J A 84	J A 103	J A 110	J A 79	J A 84	J A 70	J A 98	J A 73	J A 67	J A 53	J A 28	J A 26	J A 22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 46	J A 38	J A 33	J A 26	J A 25	J A 22	23	J A 38	J A 52	J A 63	J A 72	J A 62	J A 65	J A 52	J A 53	J A 48	J A 48	J A 49	J A 47	J A 47	J A 53	J A 47	J A 35	J A 40
U Q	J A 78	J A 65	J A 45	J A 39	J A 42	J A 32	J A 37	J A 51	J A 76	J A 81	J A 105	J A 83	J A 110	J A 84	J A 79	J A 77	J A 67	J A 64	J A 63	J A 72	J A 88	J A 54	J A 50	J A 54
L Q	J A 29	24	19	20	19	E B 18	20	32	45	45	50	48	46	44	44	44	39	34	32	J A 27	J A 29	J A 28	J A 25	J A 25

MAY 2022 foEs (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

MAY 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	27	E B 16	21	22	24	20	38	45	42	37	40	42	40	43	G	41	G	32	26	22	19	E B 16	18	43
2	24	19	20	21	21	19	20	30	38	48	42	44	46	45	43	46	40	G	G	23	19	32	E B 16	E B 16
3	19	20	E B 16	20	E B 16	24	22	34	42	76	A A 99	74	58	G	43	46	40	34	26	21	18	18	21	22
4	32	26	E B 16	E B 16	E B 16	E B 16	G	30	40	54	69	58	72	44	56	51	42	44	58	48	A A 141	20	E B 16	28
5	24	20	24	E B 16	22	E B 16	G	31	46	40	54	41	42	43	39	42	G 29	G 26	45	28	35	21	22	E B 16
6	E B 16	E B 16	E B 16	E B 16	18	22	19	28	37	43	72	64	65	74	52	40	59	37	24	E B 16	E B 16	E B 16	E B 16	E B 16
7	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	26	36	G	38	47	47	46	50	53	38	41	45	28	34	24	E B 16	42
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	30	38	38	40	G	40	45	51	44	G	G	27	41	21	E B 16	E B 16	E B 16
9	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	33	39	44	44	44	41	40	40	37	36	32	30	25	E B 16	E B 16	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	28	37	42	39	G	45	45	44	44	46	38	28	22	24	20	29	E B 16
11	20	E B 16	26	26	32	20	27	41	52	41	60	40	43	89	53	71	73	70	64	37	35	29	34	19
12	21	18	26	23	E B 16	E B 16	20	40	36	A A 81	74	56	59	46	49	44	38	51	34	18	33	19	20	E B 16
13	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	19	G	G	37	40	42	41	46	43	40	38	38	41	32	24	E B 16	17	42
14	32	22	E B 16	E B 16	E B 16	E B 16	20	29	36	42	40	42	G	G	G	50	53	37	27	22	E B 16	22	E B 16	19
15	E B 16	20	E B 16	E B 16	E B 16	E B 16	20	34	36	51	44	46	53	G	G	40	40	47	27	24	28	E B 16	E B 16	E B 16
16	E B 16	42	35	22	23	E B 16	33	50	50	41	50	44	44	G	42	G	37	33	32	33	18	E B 16	E B 16	27
17	22	E B 16	18	34	E B 16	30	34	41	A A 79	61	63	63	61	56	102	82	118	66	102	104	78	39	23	E B 16
18	E B 16	28	23	E B 16	E B 16	E B 16	31	43	42	49	51	52	62	56	57	44	43	47	29	64	41	30	24	20
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	35	38	42	56	54	61	81	84	39	G	G	33	47	45	64	20	21
20	17	E B 16	E B 16	E B 16	24	E B 16	22	31	42	40	51	75	67	60	48	99	47	42	60	52	53	36	20	24
21	35	26	24	E B 16	E B 16	E B 16	25	40	48	A A 110	A A 108	54	64	87	83	43	42	48	64	99	55	22	29	21
22	21	29	24	17	27	18	26	46	80	A A 152	80	76	A A 123	58	83	74	44	77	89	80	62	29	22	32
23	26	23	25	E B 16	E B 16	28	41	46	73	55	49	53	59	67	70	42	36	51	99	66	60	50	68	31
24	E B 16	A A 128	44	24	40	E B 16	21	34	41	40	42	42	42	48	49	50	56	60	57	46	17	20	E B 16	E B 16
25	18	28	18	E B 16	E B 16	E B 16	22	32	58	68	62	54	62	52	44	41	38	38	33	32	36	46	20	18
26	E B 16	18	18	E B 16	E B 16	E B 16	26	40	A A 88	67	A A 126	A A 119	68	49	73	52	42	87	34	20	18	23	E B 16	22
27	25	32	27	20	E B 16	E B 16	E B 16	28	35	37	40	45	43	42	42	68	48	65	32	18	44	43	33	34
28	22	28	25	E B 16	E B 16	E B 16	20	42	50	76	A A 148	80	64	50	48	71	70	38	50	40	53	A A 128	41	E B 16
29	E B 16	20	22	26	A A 84	28	32	49	59	A A 84	69	56	68	69	44	48	77	A A 136	A A 184	32	22	E B 16	E B 16	21
30	18	31	22	20	20	25	45	53	A A 88	A A 109	A A 122	79	59	64	50	A A 141	43	39	35	38	43	22	E B 16	E B 16
31	22	29	34	40	E B 16	E B 16	28	62	A A 180	A A 100	A A 109	71	73	100	69	71	58	86	64	56	25	20	20	19
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	18	20	20	E B 16	E B 16	E B 16	21	34	42	48	54	53	59	48	49	46	42	41	34	32	33	22	20	19
U Q	24	28	25	22	22	20	28	43	58	A A 76	A A 74	64	64	64	57	68	53	60	60	48	45	32	23	27
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	30	37	40	42	42	43	43	43	41	38	34	28	22	19	E B 16	E B 16	E B 16

IONOSPHERIC DATA STATION Okinawa

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

MAY 2022 fmin (0.1MHz)

IONOSPHERIC DATA STATION Okinawa

MAY 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	283	280	281	279	298	294	285	313	316	302	289	279	279	281	292	301	300	295	309	320	316	305	292	271
2	277	298	330	357	310	280	301	336	325	299	271	287	300	294	300	297	292	305	311	331	311	308	279	285
3	266	294	F 297	317	F 294	F 322	F 333	358	334	326	A	267	U R 268	282	295	296	295	299	315	323	322	297	275	273
4	273	297	305	289	282	271	332	345	347	333	305	291	298	286	295	298	304	301	322	330	A	260	268	282
5	291	288	289	298	290	336	333	343	312	302	290	279	301	297	310	295	296	299	303	309	313	295	R 275	261
6	280	286	330	331	287	288	332	373	352	326	283	277	289	302	313	297	295	293	289	307	326	304	277	277
7	273	299	288	318	291	300	336	366	346	324	277	267	285	316	294	296	303	301	297	326	341	279	266	276
8	286	286	306	324	318	302	339	369	359	326	291	294	289	303	306	290	296	313	315	306	319	287	278	271
9	294	304	314	285	293	307	327	341	330	330	315	290	287	302	292	295	303	302	303	330	347	274	265	270
10	278	310	304	338	309	291	327	349	324	309	313	293	289	292	299	311	314	308	329	329	296	279	281	276
11	297	294	317	302	286	335	388	361	327	309	302	278	278	284	294	300	312	314	321	328	299	291	287	292
12	297	294	316	315	325	321	328	344	333	A	294	296	292	284	289	299	285	285	310	325	337	275	273	270
13	271	265	278	320	355	318	339	347	333	318	314	288	285	286	298	307	307	298	296	297	336	288	273	278
14	291	282	308	301	296	290	294	336	365	307	322	278	297	294	296	299	298	292	305	342	359	256	261	275
15	273	282	286	296	310	295	310	303	283	291	271	263	274	285	281	285	305	327	326	302	290	264	262	268
16	273	274	279	295	285	F 303	304	313	315	277	263	269	277	288	294	296	269	289	288	311	303	272	277	R 268
17	285	297	313	297	277	F 298	325	351	A	304	269	272	267	284	279	283	287	290	302	308	280	275	262	254
18	285	277	300	340	309	F 302	282	322	315	289	264	268	258	272	278	292	286	287	282	300	295	261	264	271
19	277	295	295	275	304	333	328	318	321	313	275	259	256	273	264	275	276	281	278	279	298	304	280	265
20	268	R 275	307	287	302	304	315	298	289	285	275	264	276	268	272	274	279	293	291	316	289	273	263	271
21	288	F 278	F 300	F 285	F 272	309	F 335	323	324	A	A	255	257	263	276	289	283	275	283	291	289	248	257	261
22	F 266	280	256	271	F 272	F 262	309	304	307	A	266	274	A	268	268	285	302	292	265	281	282	278	267	264
23	279	266	294	298	288	289	280	311	322	304	306	285	263	274	282	277	271	283	291	298	303	278	267	F 275
24	F	A	R 290	F	F 291	F 319	F 325	345	320	318	300	280	270	281	289	282	287	288	302	307	293	270	268	248
25	298	304	296	319	300	296	307	329	322	278	275	267	273	270	267	280	276	287	294	306	310	272	260	272
26	290	294	F 288	305	F 303	284	F 297	335	A	308	A	A	256	271	284	289	296	312	303	288	285	262	268	274
27	275	319	322	296	303	315	F 337	343	301	290	265	279	260	275	282	281	284	288	302	296	293	296	280	285
28	R 272	280	268	276	289	298	308	293	294	243	A	250	282	290	281	270	259	276	294	334	288	A	280	283
29	F 279	287	334	F 320	A	301	335	353	315	A	A	243	264	276	285	302	295	A	A	324	299	287	275	277
30	281	F 307	348	275	282	288	322	341	A	A	A	285	277	272	284	A	297	298	301	292	298	305	298	282
31	U F 270	F	F 285	F	F 304	F 328	358	360	A	A	A	260	279	285	293	299	295	306	307	307	316	293	283	274
	00	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	31	29	30	31	31	31	27	25	24	30	30	31	31	30	31	30	30	31	30	30	31	31
MED	279	288	300	298	295	301	327	341	322	307	286	278	278	284	289	295	295	294	302	308	301	278	273	273
U Q	288	298	314	320	304	318	335	351	333	321	304	285	289	292	295	299	302	302	310	326	319	295	280	277
L Q	273	280	288	286	287	290	307	318	315	290	271	267	267	273	281	283	284	288	291	298	293	272	265	268

IONOSPHERIC DATA STATION Okinawa

MAY 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									L	U L 369	U L 377	U L 383	L 347	L 361	L 352	344	L 366	L	L					
2										A	U L 372	L 342	A 365	L 346	L 364	L	L	L 355	L					
3										A	A	A	A	L 390	349	L 342	L 336	L	L					
4										A	A	A	A	U L 320	A	U A 362	L 352	L						
5											A	332	L 371	L 365	406	349	L 353	L	A					
6										U L 369	A	A	A	A	A	L 379	A	L 366	L					
7									L 400	U L 402	U L 392	345	A	A	A	A	L 343	L						
8									L	407	U L 368	L 361	368	L 393	A	L 350	336	L 356	L					
9										L	L 364	345	371	L 364	L 388	L 362	352	L	L					
10										U L 367	382	L 399	348	L 355	371	A	A	L	L					
11									A	U L 365	A	358	U L 352	A	A	A	A	A						
12									L	A	A	A	A	366	A	366	L 353	A						
13									L	L	L 372	L 361	U L 409	356	380	356	L 360	L 381						
14								L	L	417	386	U L 335	367	L 379	L 381	A	A	L	L					
15										A	L 380	U L 331	U L 317	357	345	350	L 348	A	L					
16									A	U L 404	L	358	L 382	388	388	355	L	L 359	L					
17									A	A	A	A	A	A	A	A	A	A						
18									L	A	U L 321	A	A	A	A	351	L 336	A	L					
19									L	L	A	353	A	A	A	352	L 340	L 338	L					
20										U L 361	A	A	A	A	L 354	A	A	A						
21								L	A	A	A	A	A	A	A	375	L 344	A						
22									A	A	A	A	A	A	A	A	L 350	A	A					
23									A	A	L	A	A	A	A	358	352	A						
24								L		U L 362	376	366	381	355	A	L 329	A	A						
25								L	A	A	A	A	A	A	362	359	L 339	330	L					
26									A	A	A	A	A	A	A	A	346	A						
27								L		U L 353	U L 368	369	391	390	360	A	A	A	L					
28									A	A	A	A	A	A	A	A	A	321	A	A				
29									A	A	A	A	A	A	A	A	A	A	A					
30									A	A	A	A	A	A	A	A	356	L	L					
31									A	A	A	A	A	A	A	A	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	11	12	15	13	15	13	17	18	8						
MED									L 400	U L 369	L 374	358	368	L 364	364	355	L 349	L 356						
U Q										404	381	366	382	388	384	362	L 353	L 362						
L Q										U L 362	U L 368	L 342	L 350	L 355	353	350	L 340	334						

MAY 2022 M(3000)F1 (0.01)

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MAY 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									254	268	280	308	332	336	314	290	274	274	258					
2										258	278	334	294	304	300	306	288	284	260					
3										EA 278	A	EA 376	360	308	310	302	304	280	246					
4										256	EA 332	316	EA 302	328	312	304	296	278						
5											306	346	290	298	286	292	290	268	258					
6										274	EA 406	328	310	300	282	284	282	294	284					
7									236	250	298	374	328	284	276	310	294	288						
8									230	256	302	334	318	304	294	306	312	278	270					
9										260	286	318	324	306	302	302	290	268	292					
10										308	278	308	318	312	314	296	276	268	250					
11									EA 252	296	282	346	334	344	320	290	276	266						
12									238	A	EA 406	328	328	336	324	302	302	326						
13									250	284	262	330	300	336	308	294	278	260						
14								230	224	232	268	UL 350	314	298	310	302	298	292	282					
15										284	278	350	358	334	318	312	284	252	240					
16									252	250	330	346	358	316	294	300	314	290	292					
17									A	EA 296	EA 340	338	342	340	EA 352	322	EA 402	292						
18									274	262	384	342	388	350	334	308	312	308	312					
19									276	272	348	384	396	360	EA 366	340	324	306	312					
20										302	338	EA 358	342	342	338	EA 400	332	294						
21								250	254	A	A	336	374	EA 392	352	308	306	322						
22									EA 362	A	EA 466	EA 400	A	354	374	322	296	316	EA 472					
23									EA 304	286	294	286	392	356	EA 332	334	352	306						
24								246		296	330	338	348	342	320	320	322	306						
25								244	266	EA 418	EA 358	360	312	328	360	334	326	310	276					
26									A	EA 322	A	A	382	346	338	318	300	280						
27								212		322	330	324	342	346	324	330	320	314	282					
28									298	EA 502	A	EA 432	336	312	310	346	340	346	286	228				
29									EA 346	A	EA 438	416	386	352	336	304	EA 312	A	A					
30									A	A	A	EA 390	362	358	324	A	296	292	274					
31									A	A	A	EA 402	362	360	324	300	298	286						
	00	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	16	24	25	30	30	31	31	30	31	30	18	1				
MED								244	252	276	U 305	338	339	336	317	306	299	291	277	228				
U Q								248	EA 287	299	EA 353	EA 374	362	350	336	322	320	306	292					
L Q								221	244	259	281	328	318	308	308	300	290	278	258					

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MAY 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	290	272	248	254	250	202	E A 282	E A 250	E A 228	204	214	196	192	196	208	218	H 194	206	238	234	208	206	232	E A 306
2	288	268	238	206	224	250	240	220	226	A	206	214	E A 226	E A 222	214	E A 288	240	214	244	230	212	222	236	272
3	312	258	250	240	248	232	210	216	230	A	A	A	A	184	224	274	252	228	232	224	204	200	244	280
4	296	268	234	214	234	250	232	228	234	A	A	A	A	222	A	E A 256	E A 250	264	252	238	A	296	296	288
5	260	266	232	234	260	226	228	216	E A 236	220	A	200	208	216	182	230	216	216	A	242	214	220	264	280
6	268	240	210	196	234	254	224	210	214	E A 216	A	A	A	A	A	208	A	230	236	254	218	210	212	262
7	272	252	226	222	260	240	230	214	200	194	188	E A 260	E A 256	E A 248	A	A	234	262	268	238	218	224	298	E A 336
8	292	268	238	208	220	224	214	214	216	192	182	194	190	E A 200	A	E A 224	218	212	224	258	240	232	278	302
9	264	250	224	250	256	234	232	222	234	A	E A 234	E A 232	190	198	182	190	218	220	234	242	210	214	306	298
10	286	246	212	206	226	254	236	216	210	234	190	174	232	E A 244	228	E A 238	A	A	232	220	222	260	E A 282	280
11	254	246	248	246	E A 278	218	194	202	A	228	A	180	188	A	A	A	A	A	252	216	220	244	264	268
12	252	262	242	228	208	194	218	210	202	A	A	A	A	230	A	E A 234	214	A	266	232	210	250	284	300
13	300	308	290	232	194	202	234	216	202	210	198	198	164	E A 222	216	216	224	222	284	252	224	212	290	E A 308
14	E A 292	292	234	222	226	248	248	220	204	196	200	194	192	180	214	E A 284	A	242	238	234	188	E A 298	316	304
15	292	278	254	240	230	226	236	218	212	A	200	208	E A 314	188	200	214	238	A	232	234	228	240	268	276
16	270	294	278	262	216	242	246	250	A	E A 212	E A 254	210	188	182	200	194	210	214	234	258	236	238	274	294
17	296	256	220	242	254	256	244	222	A	A	A	A	A	A	A	A	A	A	310	E A 314	E A 286	E A 266	298	290
18	284	272	250	200	208	200	252	260	E A 238	A	262	E A 262	A	A	A	226	E A 236	A	232	E A 280	254	E A 254	314	304
19	274	258	246	254	244	206	216	218	226	226	E A 322	E A 276	A	A	A	204	212	228	240	282	E A 290	E A 270	230	298
20	290	272	240	238	236	214	222	222	218	194	E A 280	A	A	A	E A 242	A	E A 304	E A 256	284	258	E A 270	E A 294	290	282
21	292	Q 272	240	264	300	246	222	224	A	A	A	A	A	A	A	224	E A 254	E A 292	310	E A 326	264	256	282	316
22	342	316	332	270	292	278	246	248	A	A	A	A	A	A	A	A	E A 258	A	A	E A 348	E A 316	E A 282	E A 278	E A 320
23	300	302	252	226	236	280	278	242	A	A	E A 268	A	A	A	A	196	212	A	E A 382	292	E A 284	E A 274	E A 370	E A 298
24	320	A	E A 322	E A 310	E A 300	236	242	222	228	206	190	188	182	E A 248	E A 264	E A 284	A	A	284	254	230	254	278	360
25	288	272	234	226	236	258	238	218	A	A	A	A	A	E A 306	214	200	216	240	242	254	232	E A 270	E A 290	304
26	272	272	260	230	228	266	244	244	A	A	A	A	A	E A 280	A	A	248	A	242	238	234	268	282	298
27	304	252	230	226	234	218	232	204	206	194	184	204	202	194	216	A	A	A	242	236	266	E A 280	E A 294	300
28	306	302	290	268	242	188	208	E A 248	A	A	A	A	A	A	A	A	A	E A 270	A	A	E A 334	A	E A 312	246
29	294	304	222	E A 238	A	E A 328	240	234	A	A	A	A	A	A	E A 242	A	A	A	A	232	226	242	266	300
30	282	254	210	286	296	272	252	240	A	A	A	A	A	A	A	A	E A 268	260	A	262	264	248	226	250
31	238	E A 318	E A 298	E A 288	240	210	224	E A 244	A	A	A	A	A	A	A	A	A	A	256	250	230	240	266	286
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	30	31	31	31	19	14	16	16	14	18	15	20	21	18	26	30	30	30	31	31
MED	289	269	239	235	236	235	233	220	215	204	196	198	190	U 201	211	U 213	224	225	242	242	224	U 235	278	293
U Q	296	292	254	254	256	254	244	242	230	220	E A 258	E A 223	E A 226	E A 244	E A 228	E A 247	E A 251	260	268	258	E A 264	E A 270	296	304
L Q	272	256	230	222	226	214	222	216	206	194	190	194	188	194	200	206	215	216	234	234	218	224	264	280

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MAY 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							A 102	102		A	A	A	A	104	104	102	102	102	102	A				
2							A 102	104	102	102	102	102	A	102	102	102	102	106		A				
3							A 104	104	104	102	102	100	100	100	100	104	106	106		A				
4							116	106	104	100	A	A	A	102	102	102	102	106	A	A				
5							118	104	102	A	100	A	100	104	A	A	104	108	A	A				
6							A	104	104	100	100	A	A	A	A	A	A	A	A	B				
7							128	104	100	102	A	A	104	102	102	106	104	102	102	A				
8							A 104	104	102	A	100	102	100	102	102	104	104	104		A				
9							A 106	104	102	102	102	A	A	A	A	A	104	104		A				
10							A 108	102	102	102	102	A	102	102	102	102	102	104	104	A				
11							A 104	102	102	A	A	A	100	100	100	100	104	A	A					
12							A 104	104	104	104	104	104	100	98	98	A	A	A	A					
13							A 102	98	100	A	104	104	104	104	102	102	102	106		A				
14							A 104	104	102	A	102	102	102	102	102	102	102	102	102	A				
15							A	A 102	100	100	102	A	102	102	102	102	102	104	A	A				
16							A 104	98	100	100	100	102	102	102	102	102	102	102	A	A				
17							A 106	102	100	100	A	A	A	A	102	A	102	100	100	A				
18							A 106	102	100	A	A	A	A	A	A	A	104	102	102	A				
19							A 102	102	102	102	A	102	A	A	A	A	102	106	104	A				
20							A 102	102	102	102	A	A	A	100	A	A	A	A	A	A				
21							A 104	102	102	102	100	A	100	A	100	100	100	104		A				
22							100	104	104	102	104	104	A	104	104	102	102	102	110	A				
23						A	A 104	100	100	100	100	A	100	A	A	A	102	106		A				
24							A	A 100	100	A	A	104	A	A	104	104	104	104		A				
25						B	A 106	102	102	102	A	A	A	A	A	A	104	106	102	A				
26						B	A 104	104	104	100	A	A	A	A	A	A	100	108		A				
27						B	B 104	102	A	A	A	A	A	102	102	102	104	102		A				
28						B	118	104	104	102	102	A	A	A	A	102	102	102	102	A				
29						A	A 100	102	102	102	102	A	102		102	102	102	102		A				
30						A	A 102	102	102	102	100	100	100	100	A	A	A	A	A	A				
31						B	A 102	102	102	102	102	A	A	A	A	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							5	29	31	28	21	16	12	19	17	19	23	26	21					
MED							118	104	102	102	102	102	102	102	102	102	102	102	104					
U Q							123	104	104	102	102	102	104	102	102	102	104	104	106					
L Q							108	102	102	100	100	100	101	100	101	102	102	102	102					

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MAY 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	98	92	96	94	94	98	108	104	104	122	104	102	108	118	G	182	G	142	128	106	100	98	100	100
2	94	94	98	94	98	96	122	114	112	104	110	110	112	122	128	160	174	G	G	108	102	98	98	96
3	98	98	96	96	92	94	124	116	110	102	102	100	96	G	146	184	164	148	126	106	100	98	98	94
4	96	96	92	84	84	86	G	124	112	104	100	96	96	164	146	126	126	118	108	102	100	96	98	94
5	84	86	86	88	88	114	G	112	106	106	102	96	120	150	100	184	96	96	100	96	92	88	84	88
6	B	96	84	B	92	98	120	112	104	102	98	96	96	92	94	94	90	88	90	90	90	88	88	88
7	B	B	B	98	98	B	G	144	110	G	108	148	142	130	122	118	138	120	110	106	100	96	100	100
8	98	102	B	B	B	92	134	128	118	118	112	G	112	114	108	108	G	G	136	104	100	98	96	94
9	92	96	B	90	90	B	120	110	106	104	104	102	106	110	106	110	106	130	112	104	104	98	98	96
10	94	90	84	96	B	B	126	122	114	110	112	G	160	154	144	130	124	118	116	104	98	100	94	92
11	96	96	88	84	90	94	110	108	108	106	102	102	112	102	106	100	102	100	98	96	96	94	88	84
12	98	102	92	88	98	B	126	120	122	108	104	106	106	110	102	104	104	96	98	96	90	86	108	88
13	98	96	92	94	92	94	140	G	G	176	144	130	134	134	142	142	128	114	104	102	98	100	96	98
14	100	96	94	98	B	B	116	146	112	106	100	118	G	G	G	118	104	114	118	104	98	94	122	88
15	86	92	88	84	110	118	116	108	106	102	102	102	96	G	G	148	216	108	106	98	94	90	94	88
16	94	92	92	92	92	94	108	104	98	100	102	100	100	G	110	G	150	150	112	88	88	84	84	96
17	96	94	90	88	94	92	114	110	104	104	104	102	104	112	108	106	102	102	100	96	90	88	86	86
18	98	90	84	102	100	106	118	112	106	102	98	98	98	98	98	144	122	112	108	92	88	88	86	86
19	84	B	B	98	92	98	128	110	106	100	98	98	98	94	94	100	G	G	114	100	92	96	88	84
20	86	82	88	84	90	100	98	110	104	112	104	96	94	96	98	94	96	124	90	90	90	88	88	86
21	86	86	86	84	94	116	114	106	102	96	98	98	96	96	96	144	134	120	102	98	92	90	86	84
22	92	94	94	98	94	96	116	108	102	98	102	102	102	120	112	110	108	110	102	98	92	90	88	86
23	84	84	84	84	82	102	104	102	100	100	102	100	96	96	94	102	104	108	104	104	100	102	98	90
24	98	96	94	92	92	92	132	98	96	104	104	108	102	150	132	128	118	108	102	100	100	96	86	100
25	96	86	86	86	86	84	116	108	106	100	102	100	96	96	114	150	144	118	104	100	98	96	104	92
26	84	86	82	82	B	102	110	108	100	100	96	96	96	96	96	124	120	108	110	120	98	98	96	94
27	96	88	88	88	82	84	114	160	168	104	102	96	98	106	122	104	108	106	104	108	94	88	86	86
28	84	86	84	86	84	114	122	108	104	100	100	98	98	104	106	100	100	112	102	100	98	102	98	102
29	94	96	96	98	94	94	112	108	106	102	102	102	100	100	122	136	112	102	102	120	98	90	94	94
30	94	92	90	86	94	106	104	104	100	100	96	96	96	96	100	94	100	96	106	102	98	98	94	112
31	96	96	96	96	96	96	108	104	102	102	100	100	96	94	96	92	92	92	90	90	88	88	88	86
	00	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	27	29	27	26	28	30	30	30	31	29	30	27	28	30	28	28	30	31	31	31	31	31
MED	94	94	90	90	92	96	116	110	106	103	102	100	99	106	107	118	110	111	104	100	98	96	94	92
U Q	98	96	94	96	94	102	123	116	110	106	104	102	108	122	122	144	131	119	112	104	100	98	98	96
L Q	86	87	86	85	90	94	110	108	102	100	100	97	96	96	98	102	102	102	102	96	92	88	88	86

MAY 2022 h'Es (KM)

IONOSPHERIC DATA STATION Okinawa

MAY 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	FF 45	F 2	F 5	F 5	F 4	F 4	C 5	C 7	C 2	C 1	C 1	C 1	C 1	C 1		HC 11		H 1	C 1	C 2	F 5	F 3	F 5	F 4
2	F 6	F 4	F 5	F 4	F 3	F 3	C 2	C 2	C 2	C 3	C 1	C 1	C 1	C 1	C 1	H 1	H 1			C 3	F 5	F 7	F 3	F 4
3	FF 24	F 3	F 4	F 4	F 3	F 6	C 2	C 1	C 3	C 4	C 5	C 3	L 3		H 1	H 1	H 1	H 1	C 1	C 2	F 3	F 2	F 3	F 5
4	F 5	F 4	F 2	F 2	F 1	F 1		C 1	C 3	C 4	C 4	L 3	LQ 31	H 1	H 1	C 2	C 2	C 3	C 3	C 9	F 9	F 6	FF 23	F 4
5	F 3	F 2	F 2	F 1	F 3	F 1		C 1	C 3	C 1	C 2	L 1	C 1	H 1	L 1	HL 11	L 1	L 1	C 3	L 7	F 6	F 3	F 3	F 1
6		F 1	F 1		F 3	F 4	C 1	C 1	C 3	C 1	L 3	L 3	L 3	L 4	L 2	L 2	L 5	L 2	L 2	L 1	F 1	F 1	F 1	F 1
7				F 1	F 1			H 1	C 1		C 1	HC 11	H 1	H 1	C 2	C 2	H 1	C 2	C 7	C 4	F 9	F 8	F 3	F 5
8	F 2	F 2				F 1	H 1	C 1	C 2	C 1	C 1		C 1	C 1	C 2	C 1			H 1	C 5	F 6	F 3	F 3	F 2
9	F 2	F 1		F 1	F 1		C 1	C 2	C 2	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 1	H 1	C 1	C 3	F 3	F 3	F 2	F 3
10	F 2	F 2	F 2	F 1			C 1	C 1	C 2	C 1	C 1		H 1	H 1	H 1	C 1	C 2	C 2	C 1	C 2	F 3	F 3	F 6	F 3
11	F 3	F 2	F 4	F 3	F 5	F 8	C 2	C 7	C 2	C 1	L 3	C 1	C 1	C 2	C 2	C 4	C 3	C 6	L 8	L 9	F 6	F 3	F 5	F 4
12	F 3	FF 23	F 2	F 2	F 1		C 1	C 2	C 1	C 4	C 4	C 3	C 2	C 1	C 2	C 2	C 1	L 3	L 2	L 2	F 3	F 2	FF 34	F 1
13	F 2	F 3	F 2	F 4	F 5	F 1	HL 11			H 1	HL 11	H 1	HL 11	H 1	H 1	H 1	C 1	C 1	CL 62	CL 52	F 6	F 4	F 4	F 4
14	F 4	F 5	F 2	F 1			C 1	H 1	C 2	C 2	C 2	C 1				C 2	C 3	C 2	C 1	C 4	F 3	F 5	F 1	F 2
15	F 2	F 1	F 2	F 2	F 1	F 1	C 1	C 3	C 1	C 2	C 1	C 1	L 2			H 1	H 1	C 4	C 1	L 2	F 6	F 1	F 2	F 1
16	F 3	F 6	F 6	F 4	F 9	F 4	C 4	C 3	L 4	C 2	C 2	C 1	C 1		C 1		HL 11	HL 11	CL 13	L 3	F 2	F 1	F 1	F 3
17	FF 22	F 3	F 3	F 6	F 3	F 7	C 4	C 2	C 5	C 3	C 2	C 2	C 1	C 1	C 6	C 4	C 5	C 3	C 7	L 9	F 8	F 8	F 3	F 1
18	F 2	F 3	F 3	F 1	F 2	F 1	C 5	C 6	C 3	C 4	L 2	L 2	L 2	L 2	L 2	HC 11	C 2	C 2	C 1	L 9	F 6	F 5	F 4	F 3
19	F 4			F 1	F 1	F 3	C 1	C 2	C 2	C 3	L 3	L 2	L 4	L 4	L 4	L 1			C 3	C 9	F 7	FF 45	F 4	F 3
20	F 5	F 2	F 1	F 1	F 3	FF 11	LC 11	C 1	C 3	C 1	C 2	L 5	L 4	L 2	L 2	L 3	L 2	CL 11	L 5	L 9	F 5	F 6	F 5	F 4
21	F 5	F 4	F 6	F 1	F 1	F 1	C 2	C 4	C 4	L 7	L 4	L 3	L 4	L 6	L 7	H 1	H 1	C 2	C 4	L 9	F 5	F 3	F 6	F 3
22	F 4	F 4	F 8	FF 23	F 7	F 3	C 2	C 6	C 8	L 6	C 5	C 3	C 7	C 2	C 3	C 4	C 4	C 8	C 5	L 9	F 8	F 7	F 4	F 4
23	F 5	F 5	F 5	F 4	F 2	C 8	C 3	C 4	C 7	C 3	C 3	C 2	L 2	L 3	L 4	C 1	C 1	C 6	C 8	C 7	FF 94	FF 22	FF 42	FQ 51
24	F 3	F 5	F 5	F 5	F 9	F 3	HC 11	L 2	L 3	C 1	C 1	C 1	C 1	HC 11	H 1	C 2	C 2	C 4	C 5	C 6	F 3	F 3	F 2	F 3
25	F 5	F 4	F 3	F 3	F 3	L 1	C 1	C 1	C 6	C 4	C 3	C 3	L 3	L 2	CL 11	HL 11	H 1	C 1	C 2	CL 43	FF 76	FF 65	FF 23	F 4
26	F 3	F 2	F 2	F 2		C 1	C 2	C 2	C 9	C 3	L 9	L 6	L 2	L 2	L 3	CL 22	CL 21	C 8	C 2	C 1	F 1	F 4	F 3	F 4
27	FF 33	F 3	F 3	F 3	F 2	L 1	C 1	H 1	H 1	C 1	C 1	L 1	L 1	C 1	C 1	C 2	C 2	C 4	C 4	C 2	F 9	F 9	F 9	F 6
28	F 5	F 4	F 3	F 1	F 2	C 1	C 1	C 4	C 3	C 4	C 6	L 4	LQ 31	C 2	C 2	C 5	C 4	C 2	C 3	C 8	F 9	F 8	F 6	FF 22
29	F 2	F 3	F 4	FF 22	F 6	L 5	C 4	C 5	C 5	C 7	C 4	C 2	C 3	C 4	C 1	H 1	C 6	C 8	C 9	CL 35	F 4	F 1	F 3	F 4
30	F 4	F 4	F 3	F 3	F 2	C 5	C 8	C 8	C 7	C 6	L 7	L 4	L 3	L 3	L 3	L 7	L 3	L 4	C 3	C 7	F 2	F 3	F 2	FF 22
31	F 4	F 9	F 9	F 3	F 3	L 3	C 3	C 5	C 9	C 5	C 7	C 4	L 3	L 5	L 3	L 4	L 6	L 7	L 9	L 7	F 4	F 3	F 3	F 3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAY 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

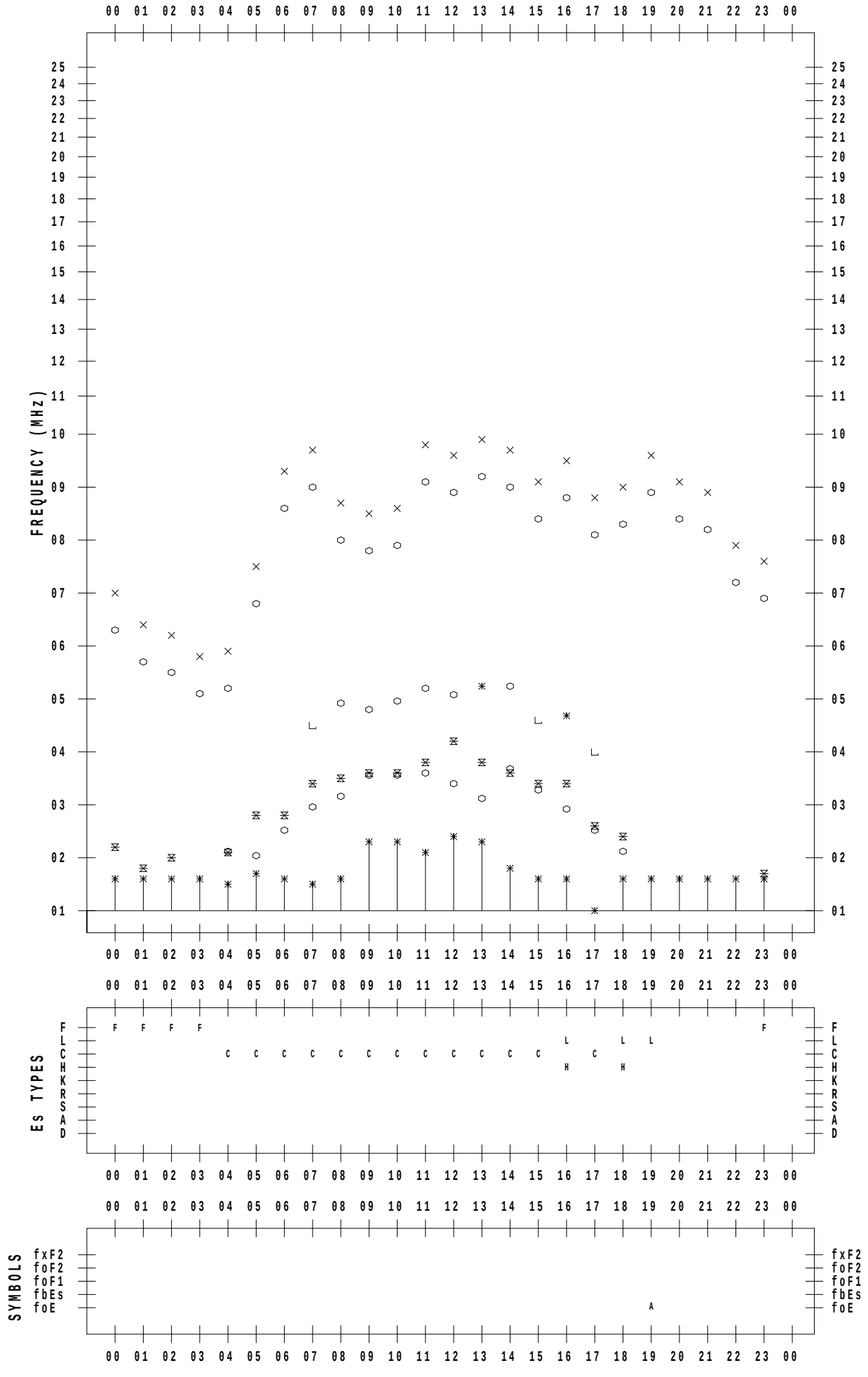
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 1

135 °E MEAN TIME



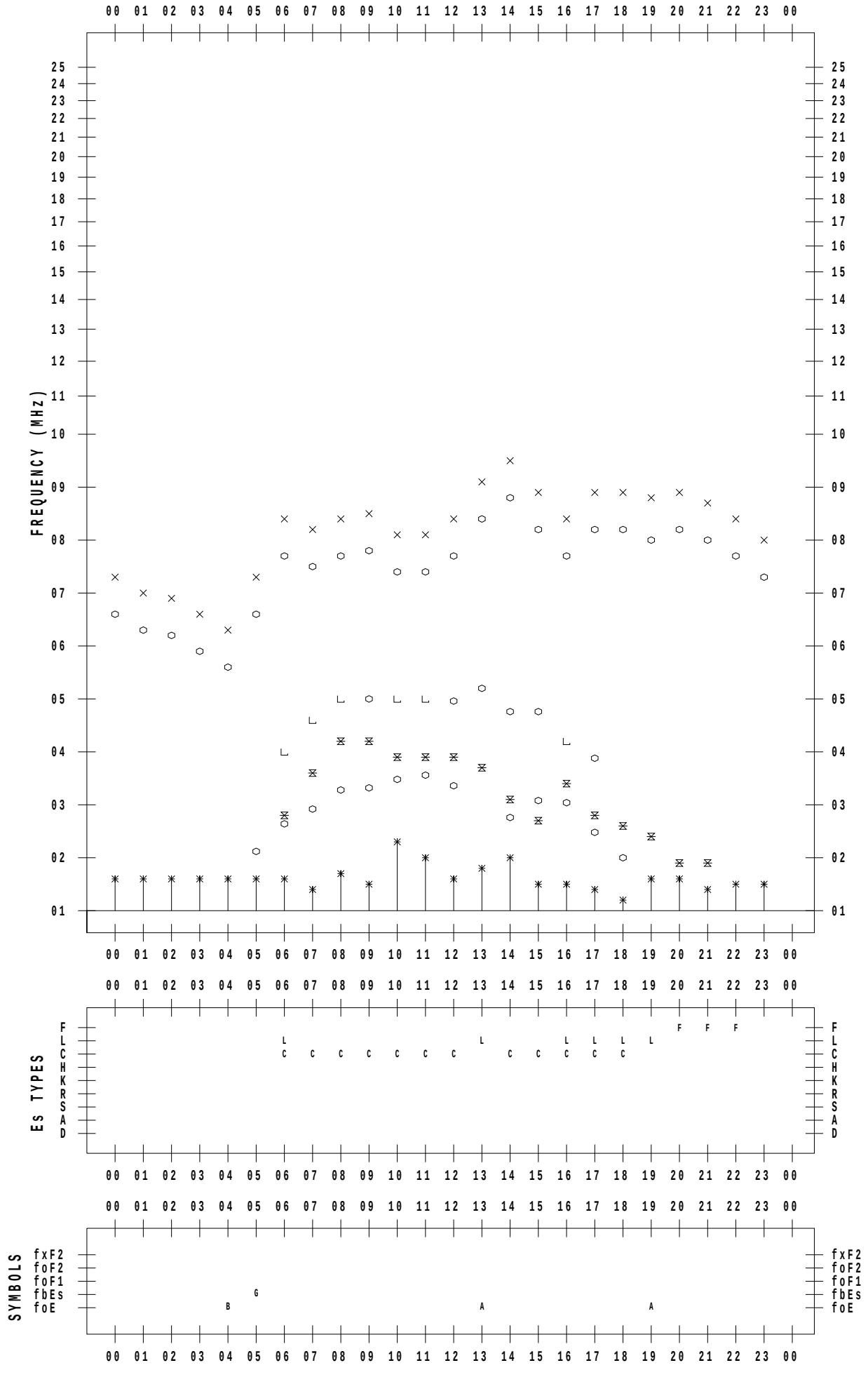
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 2

135 °E MEAN TIME



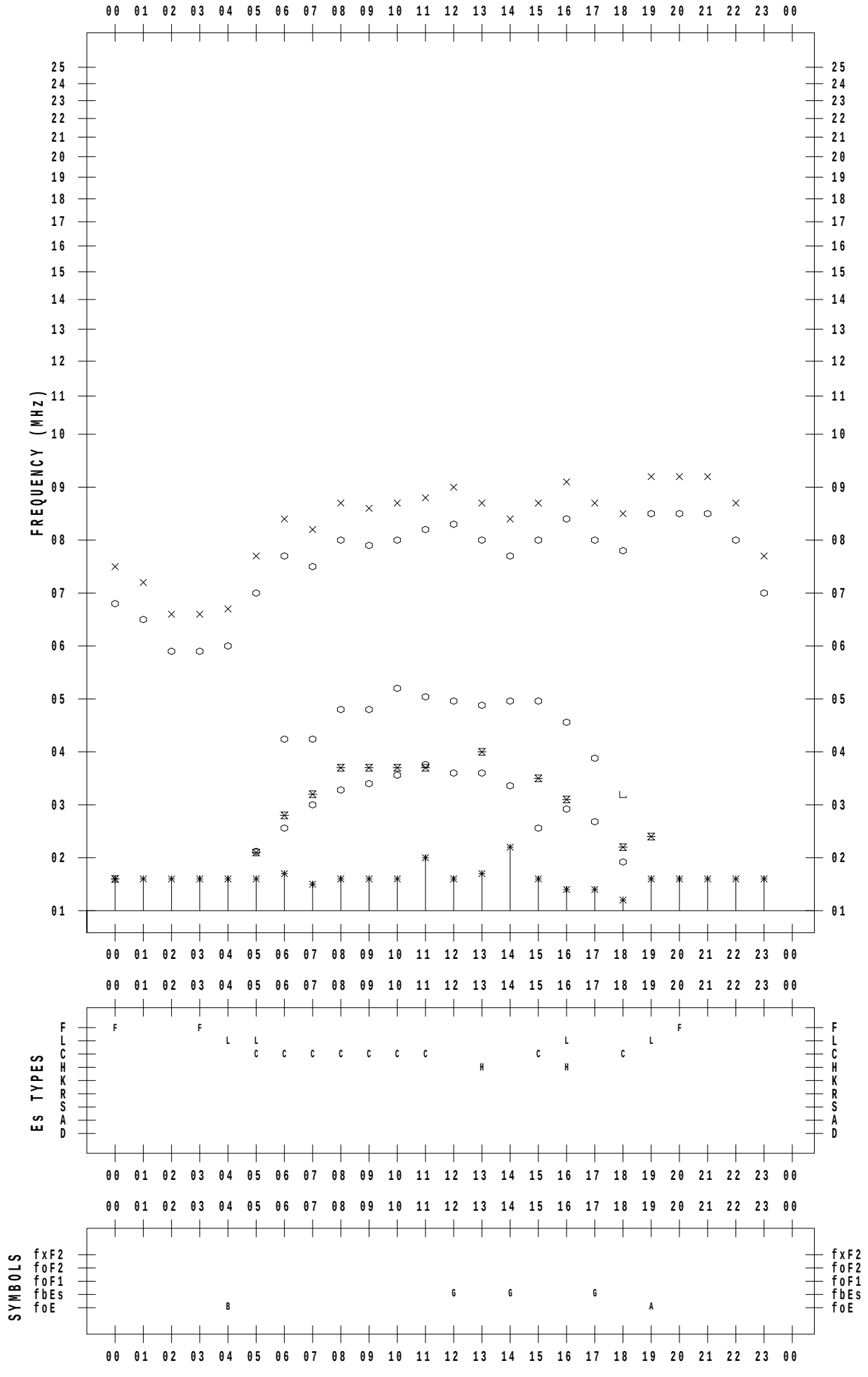
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 3

135 °E MEAN TIME



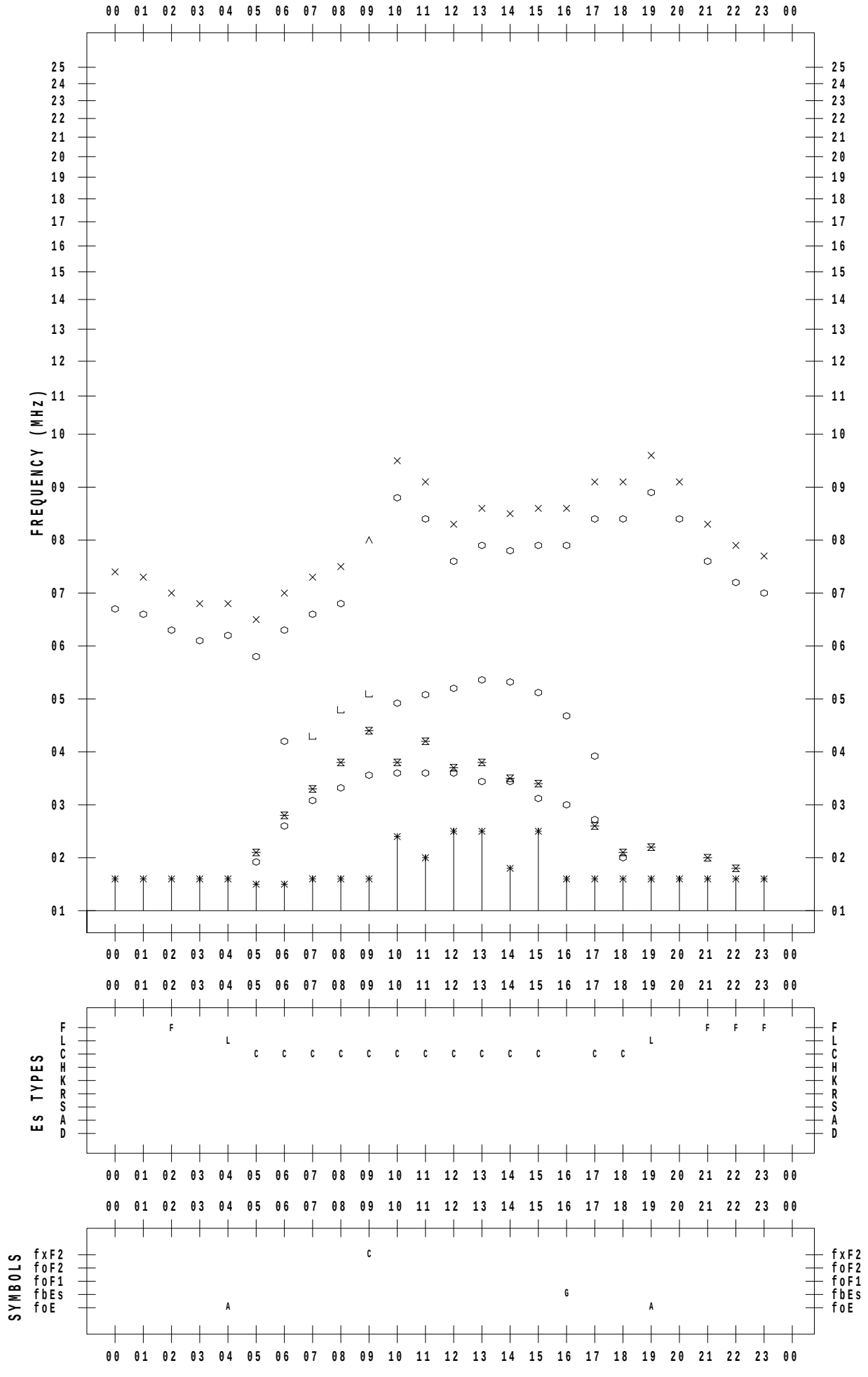
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 4

135 °E MEAN TIME



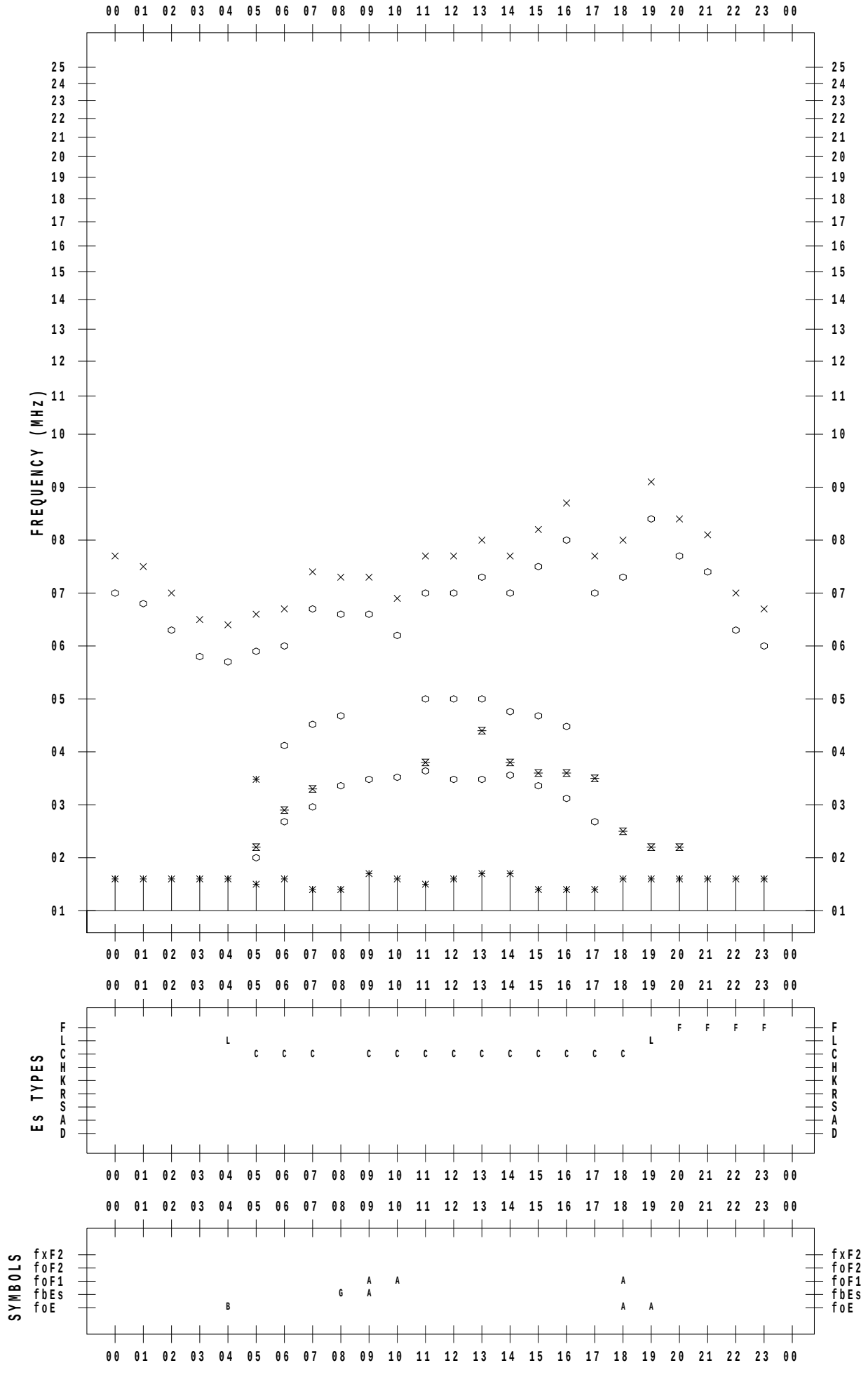
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 5

135 °E MEAN TIME



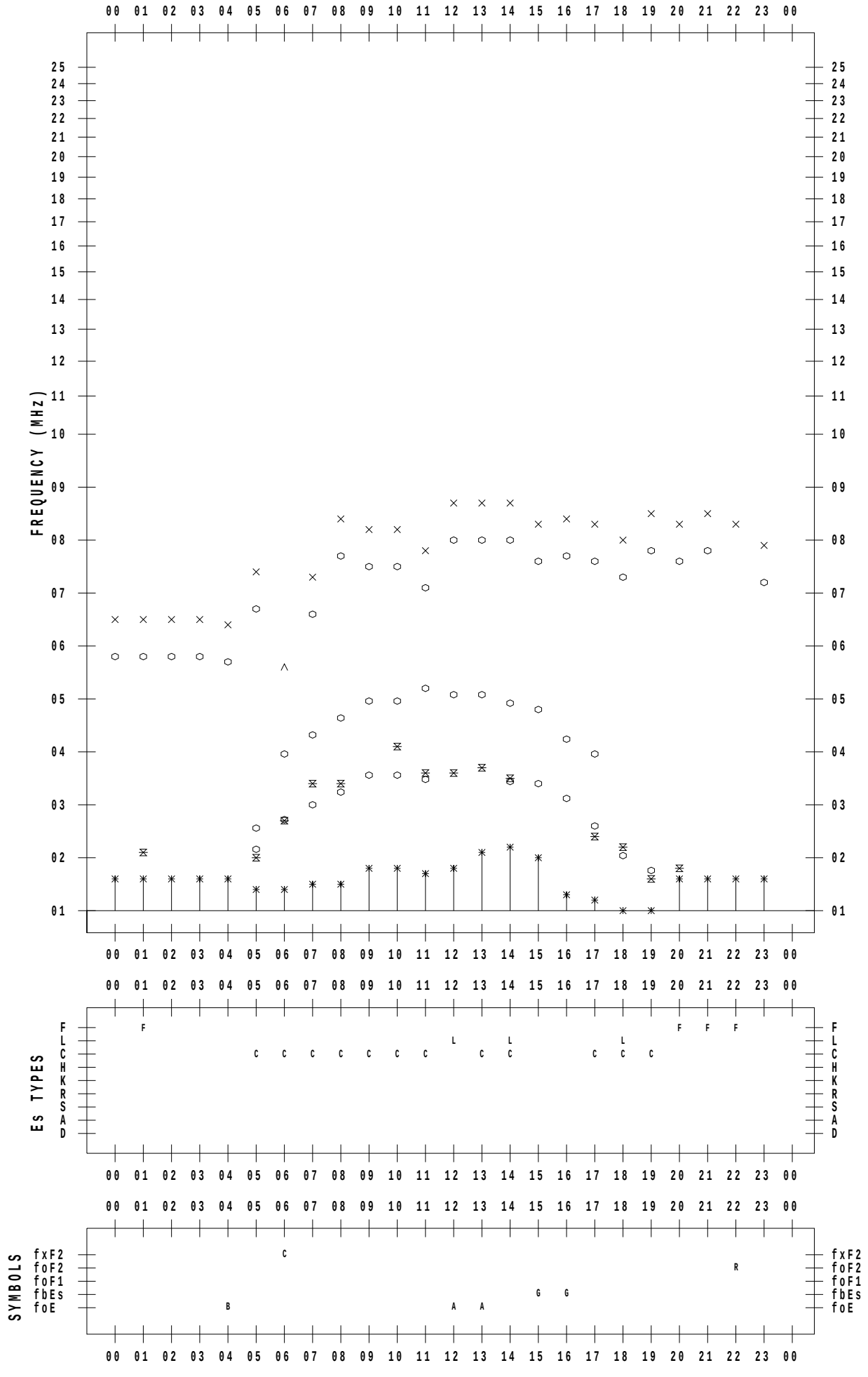
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 6

135 °E MEAN TIME



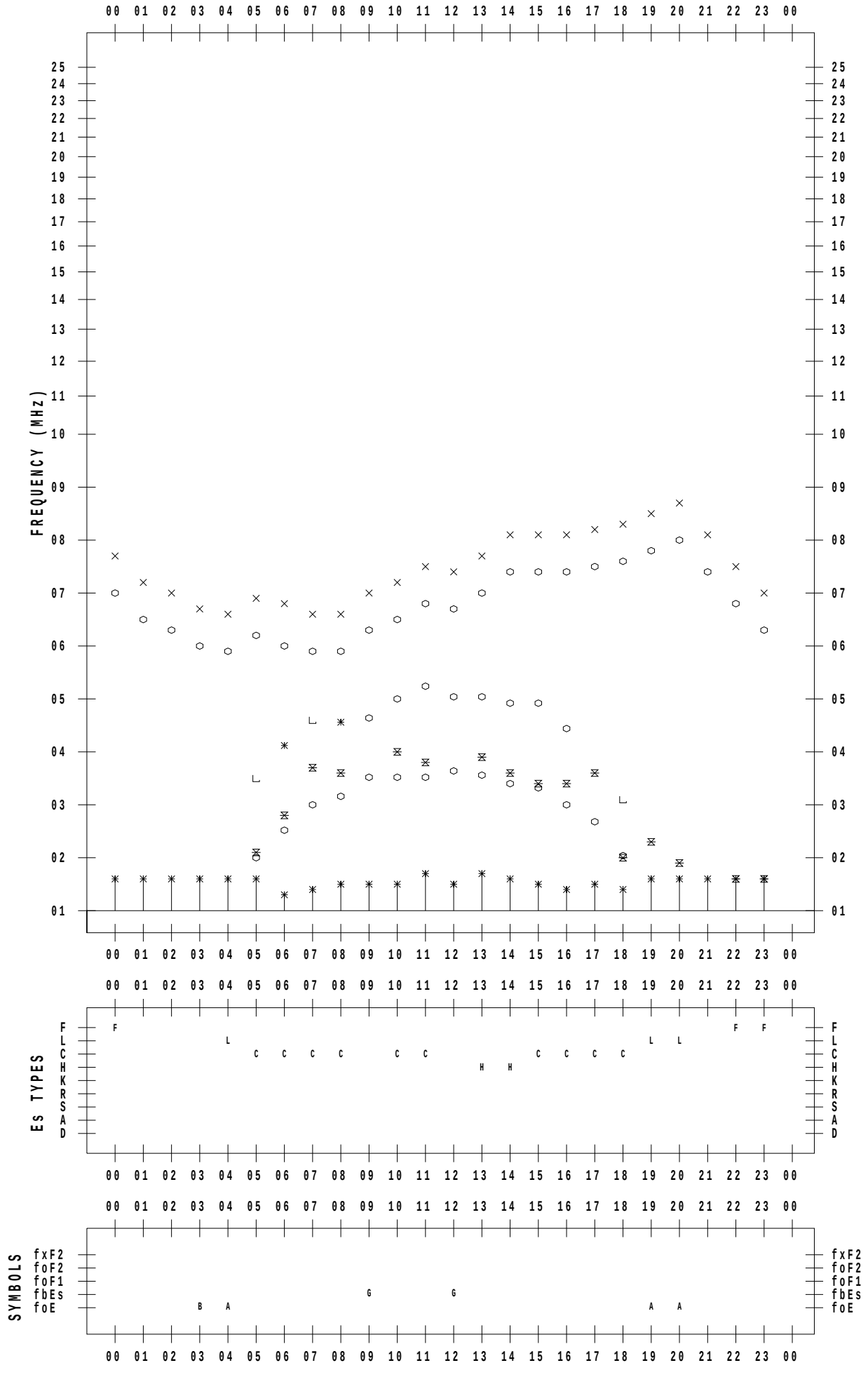
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 7

135 °E MEAN TIME



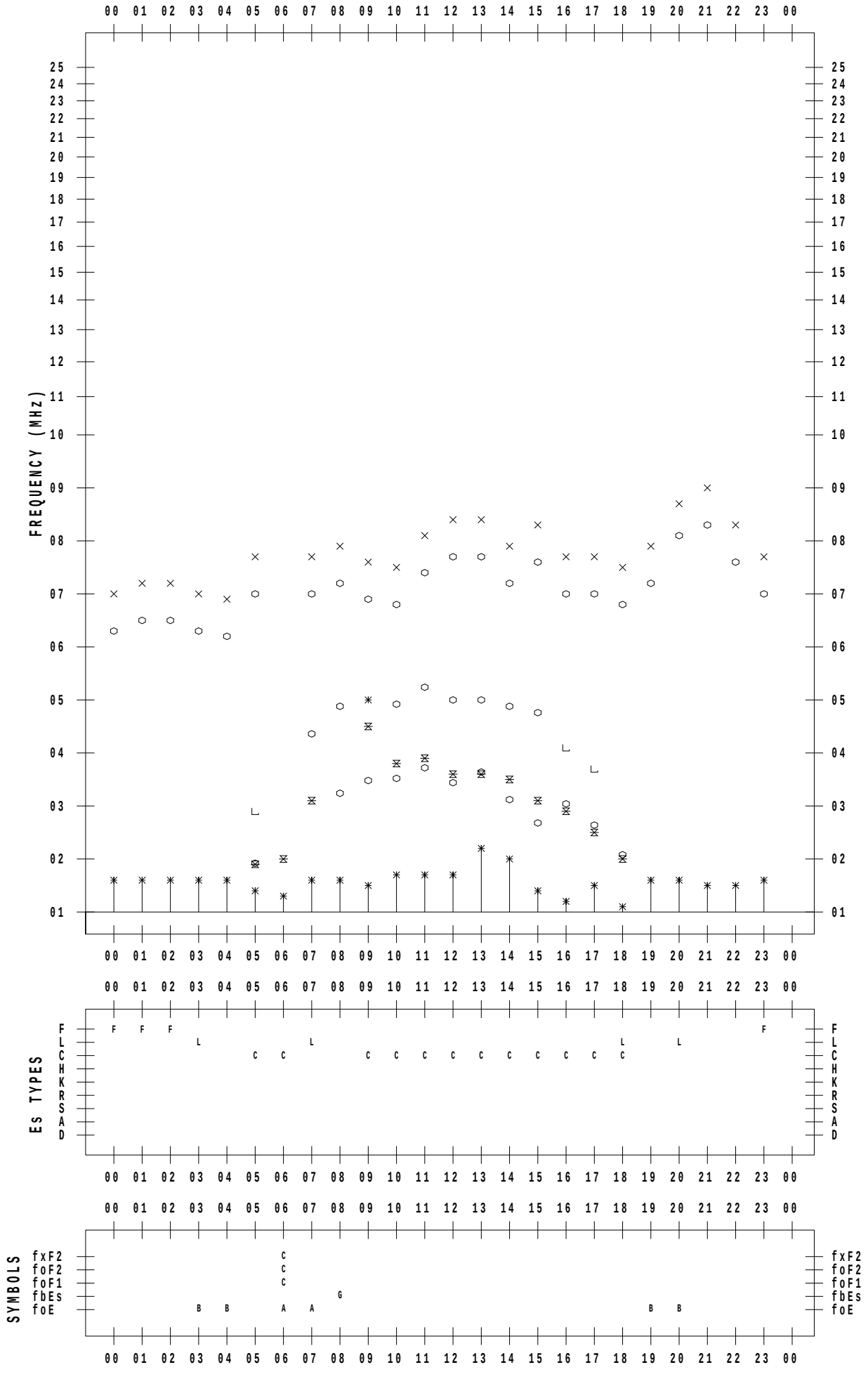
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 8

135 °E MEAN TIME



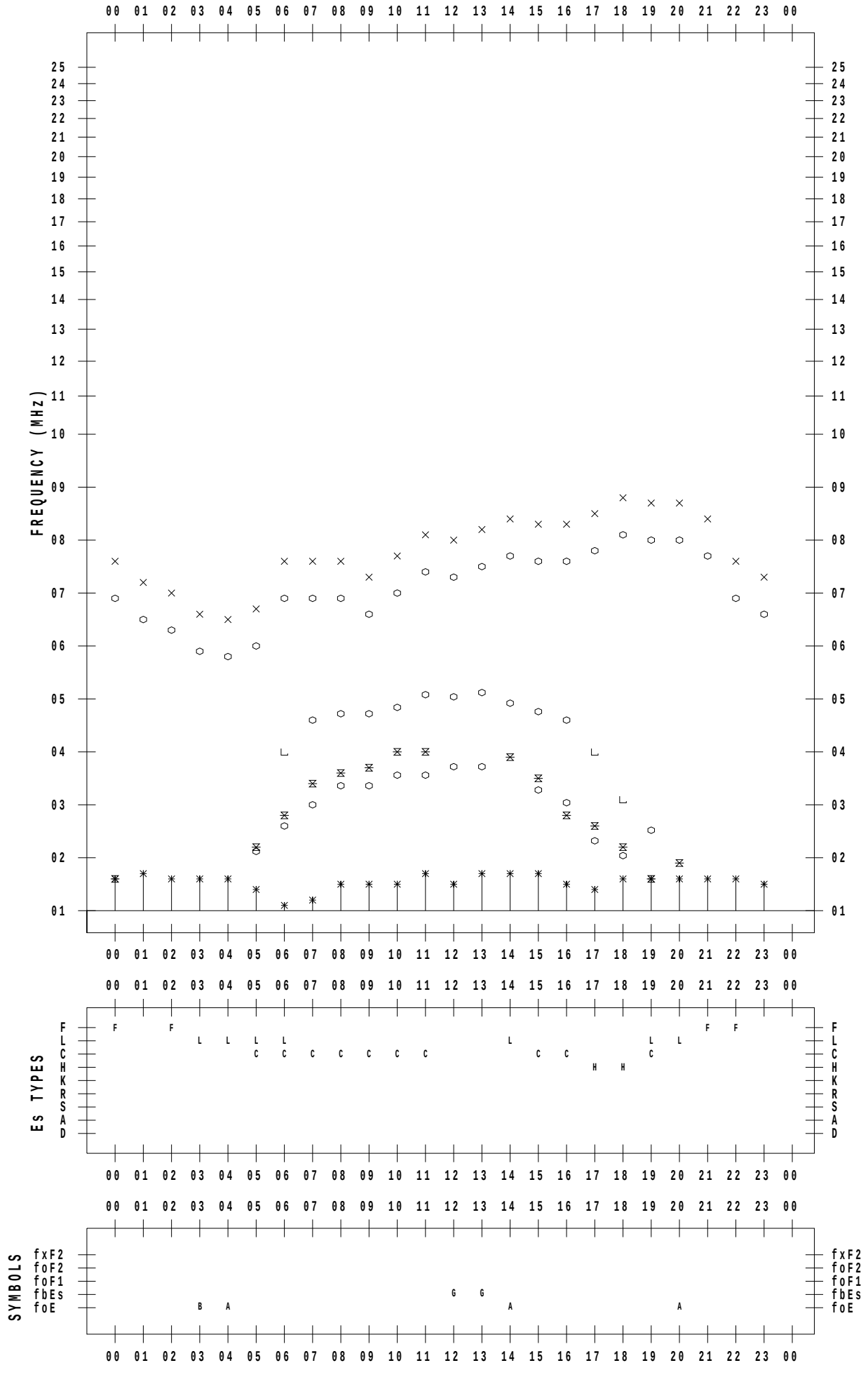
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/ 9

135 °E MEAN TIME



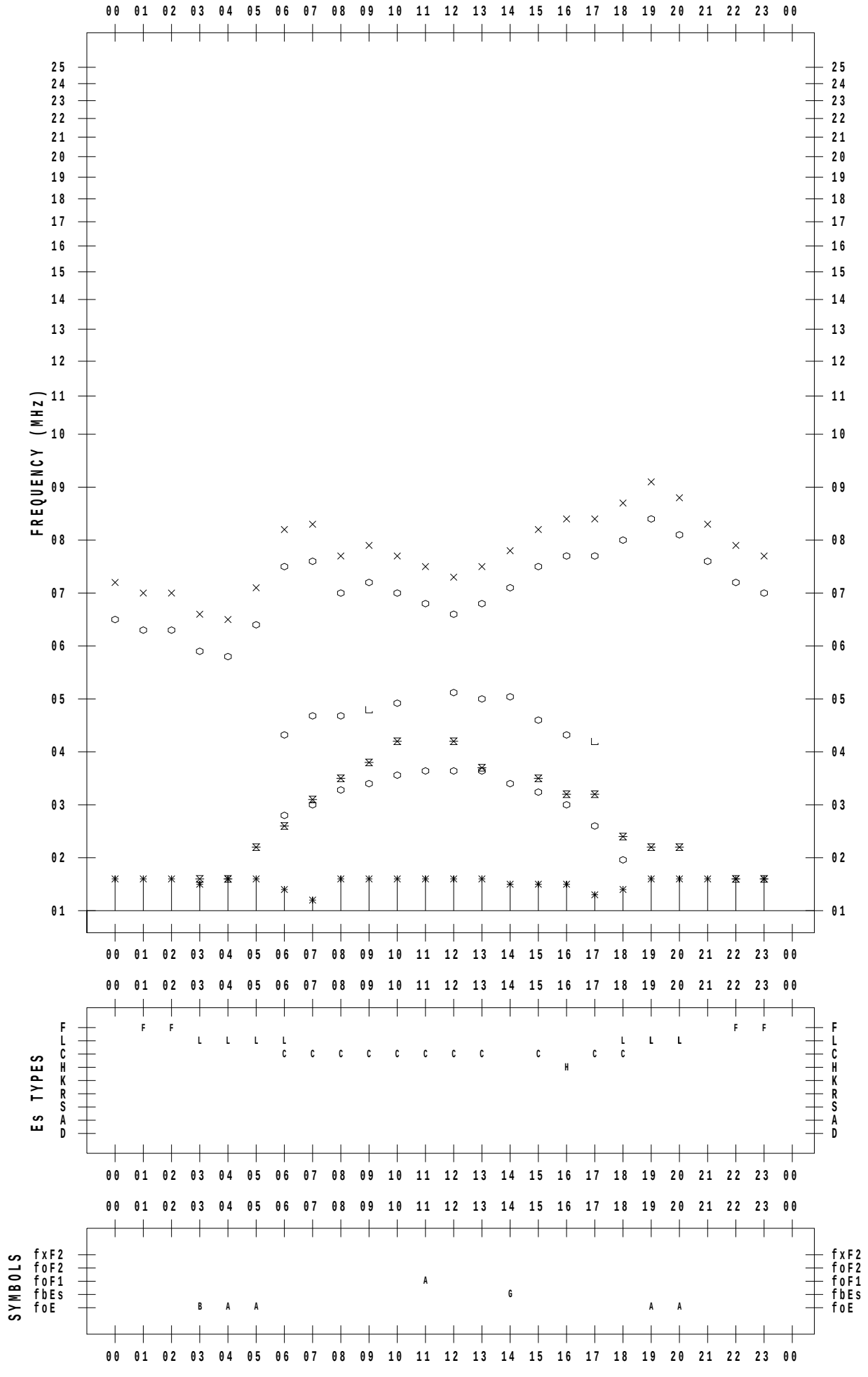
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/10

135 °E MEAN TIME



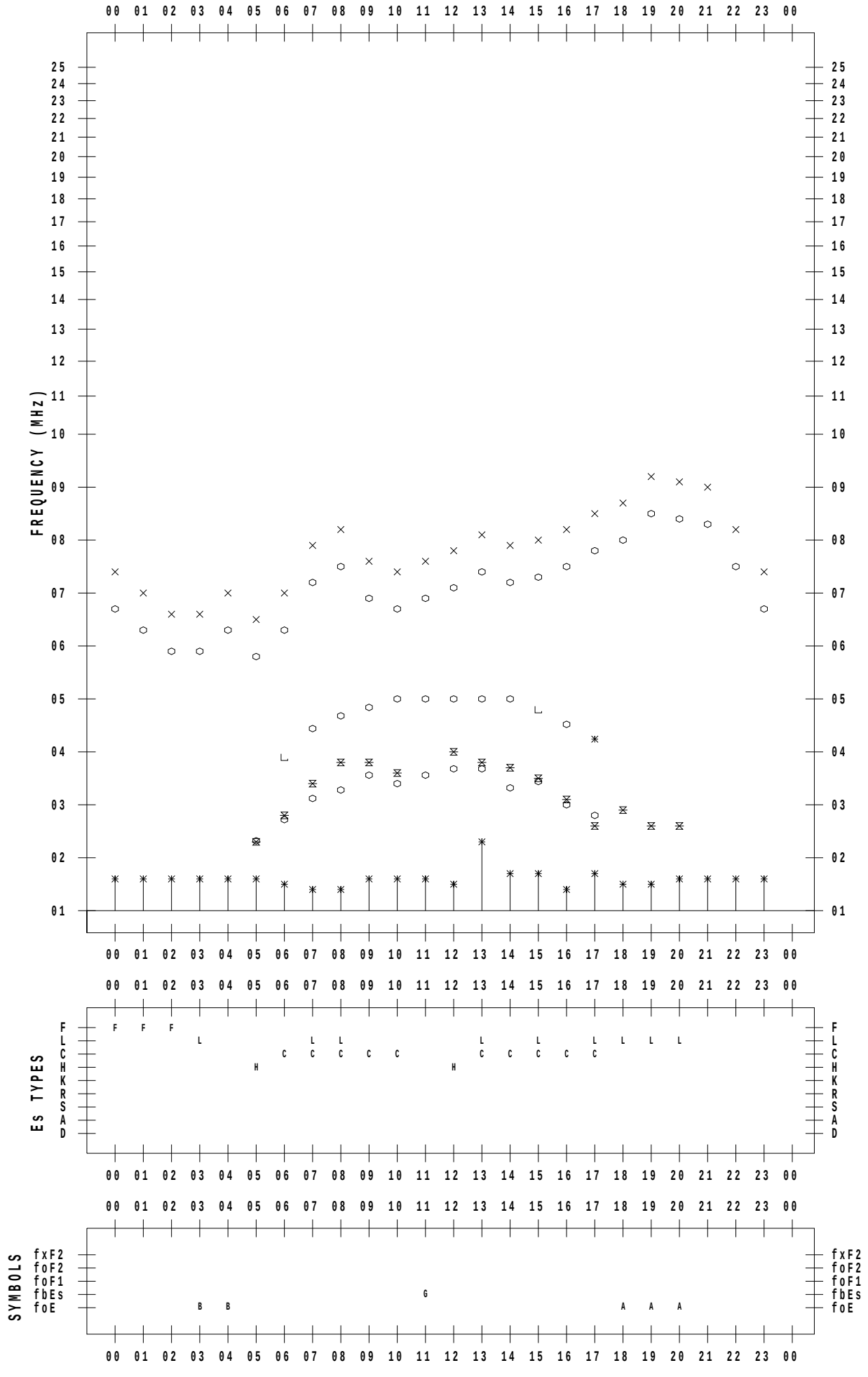
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/11

135 °E MEAN TIME



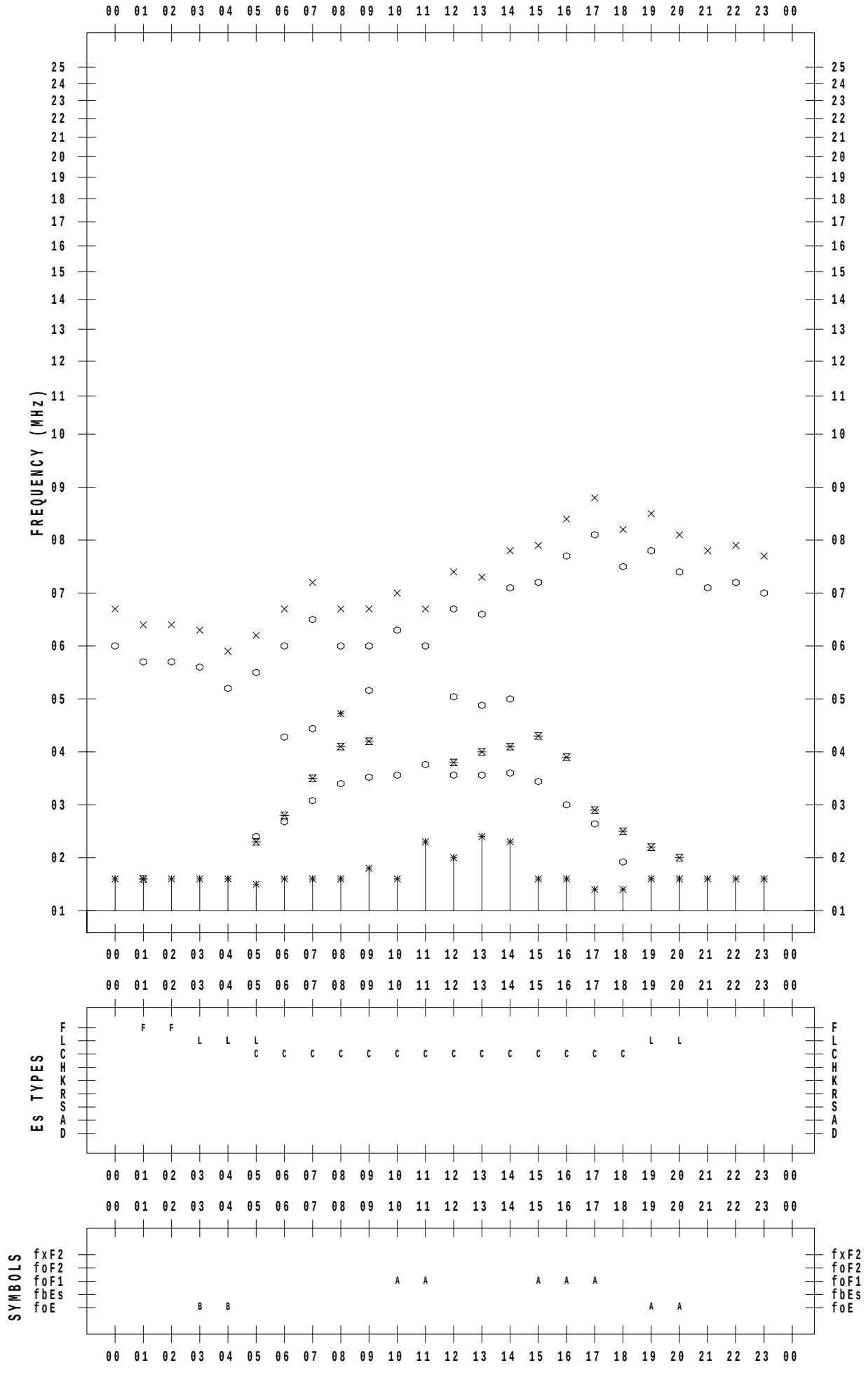
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/12

135 °E MEAN TIME



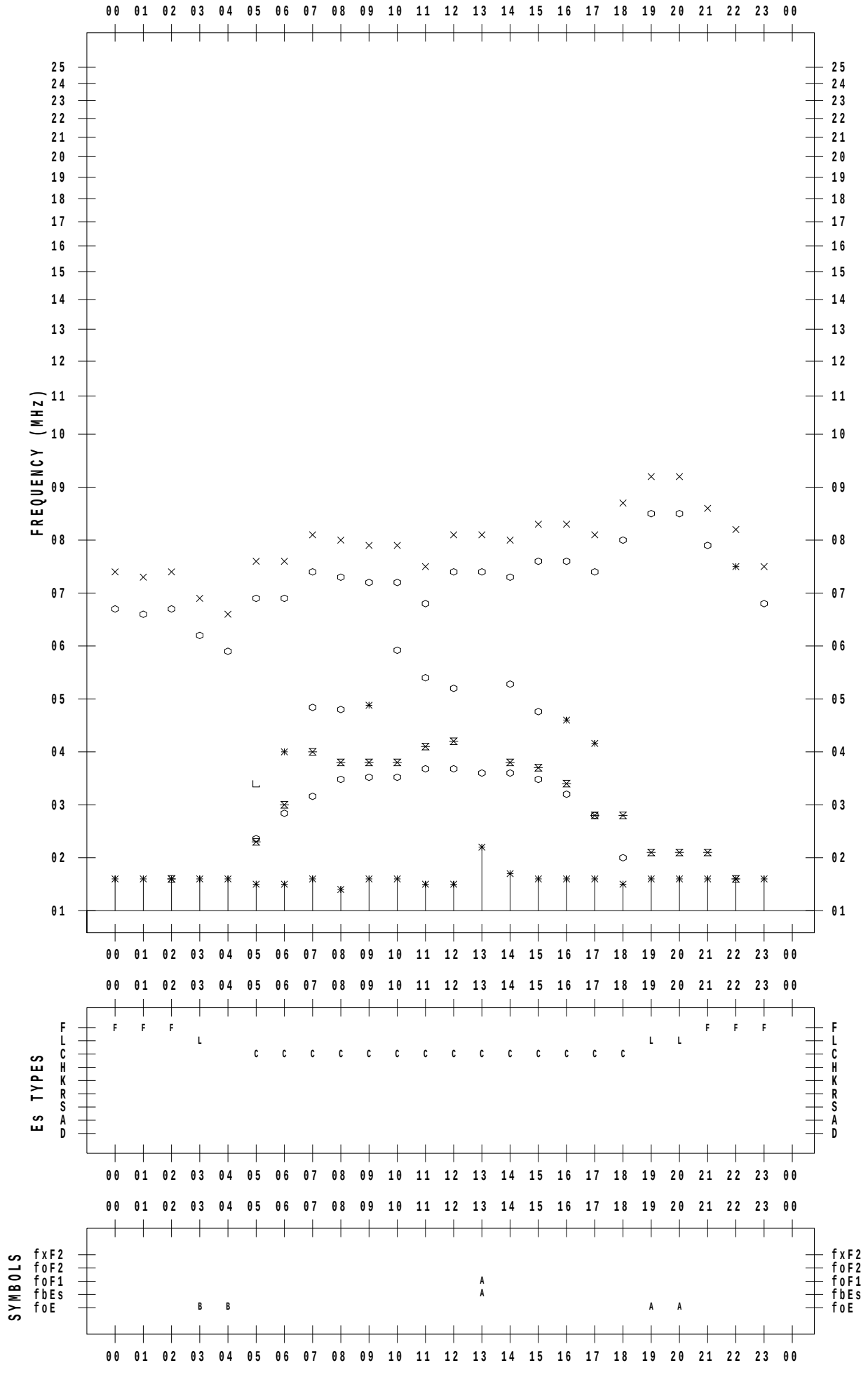
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/13

135 °E MEAN TIME



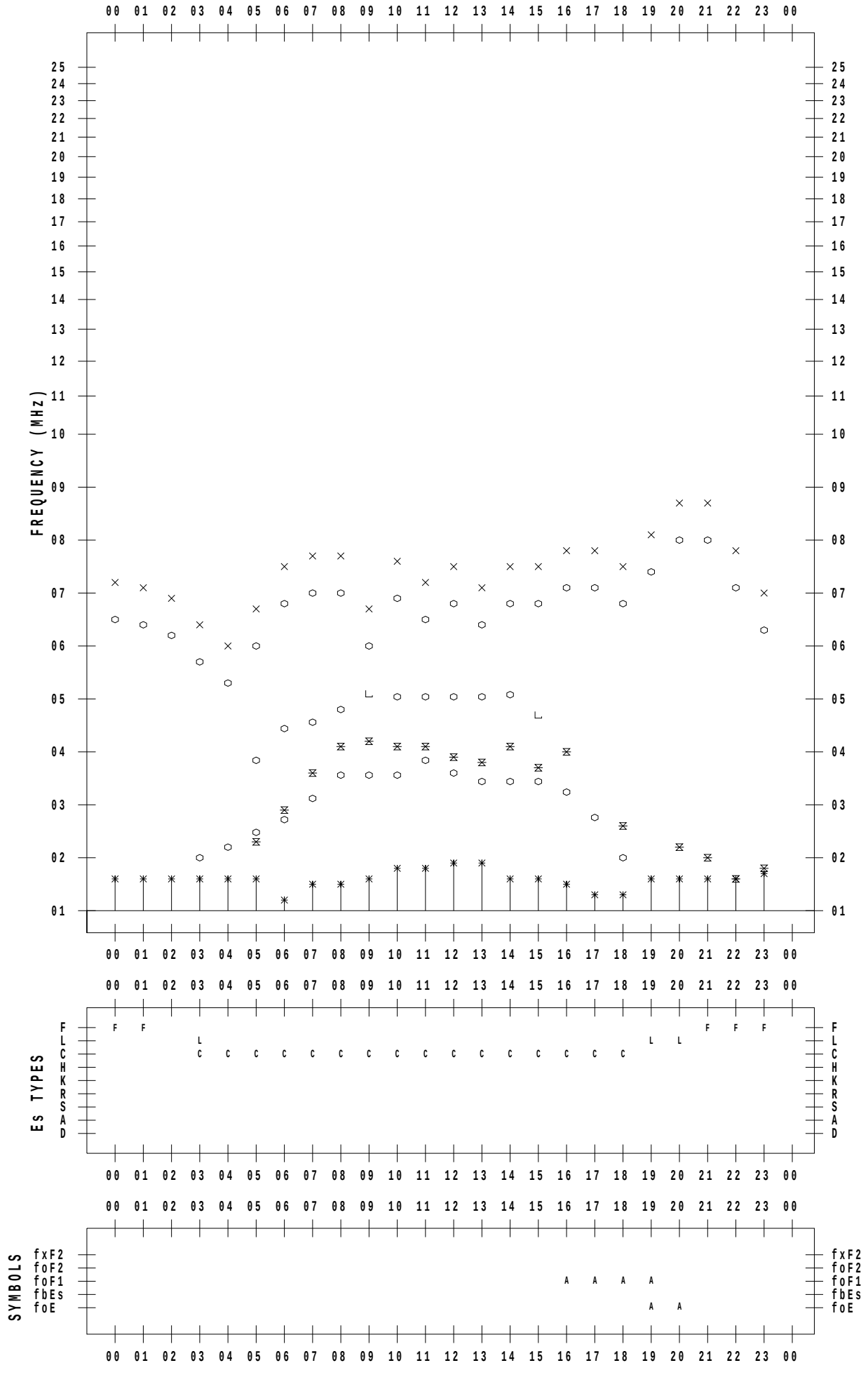
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/14

135 °E MEAN TIME



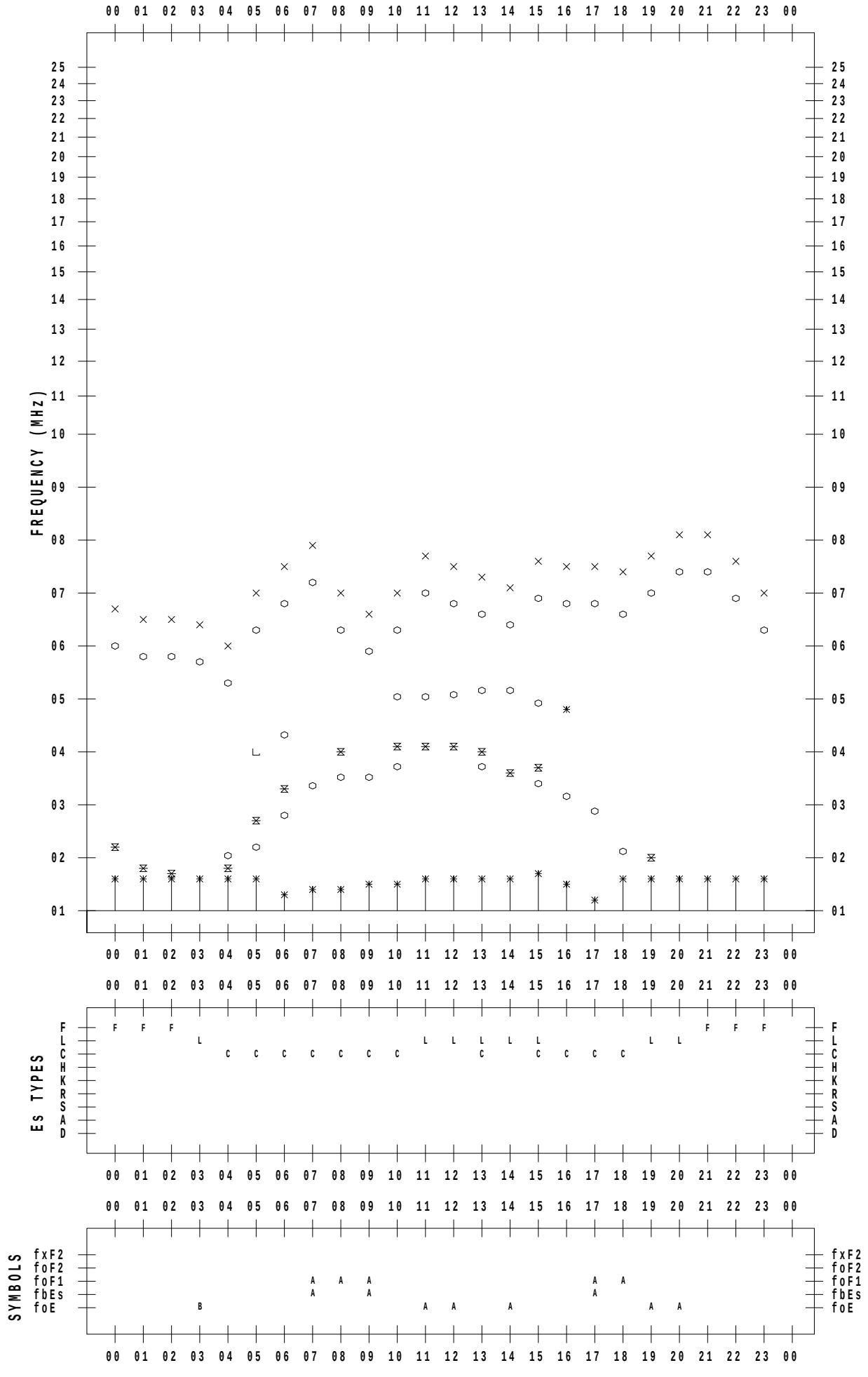
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/15

135 °E MEAN TIME



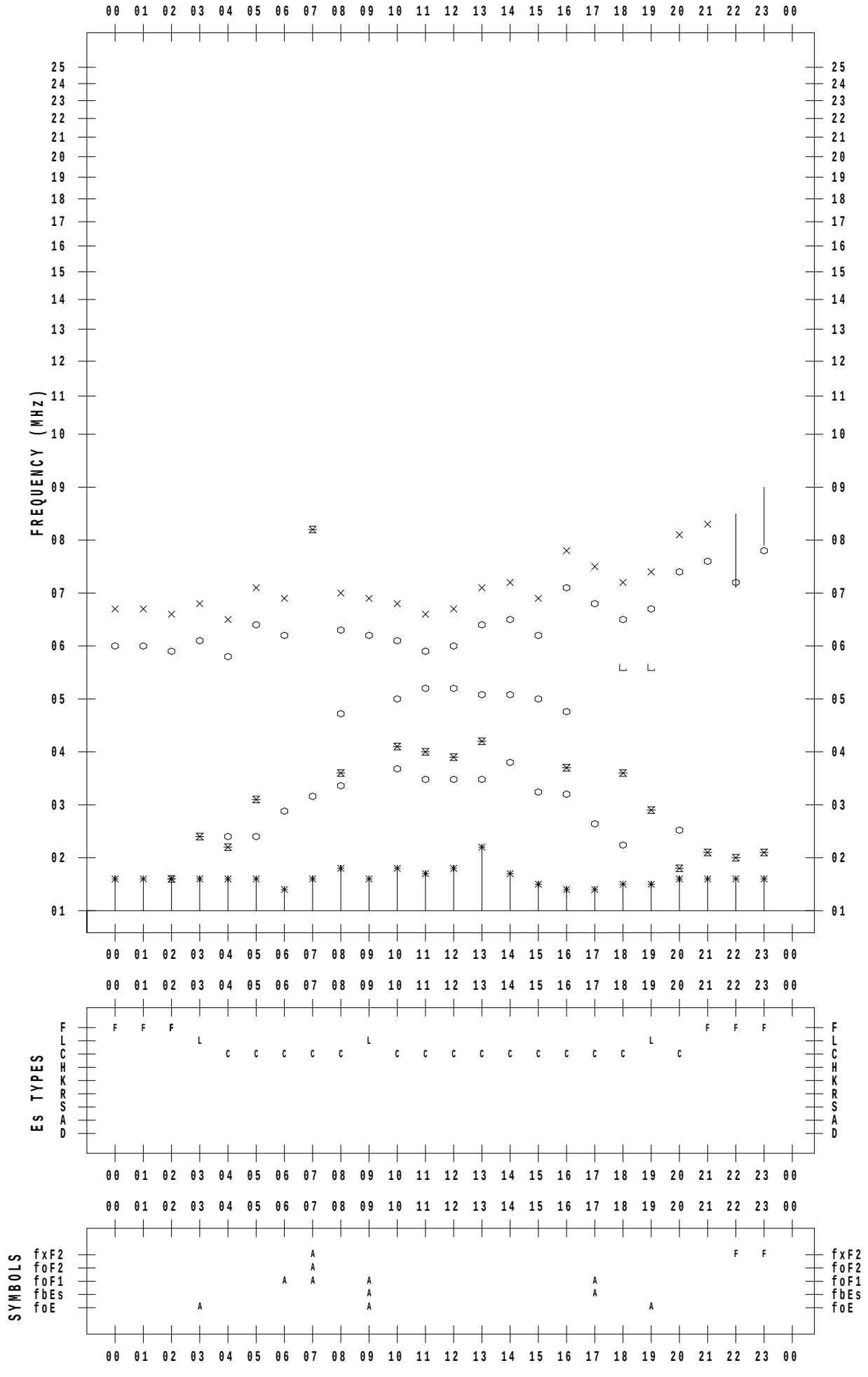
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/16

135 °E MEAN TIME



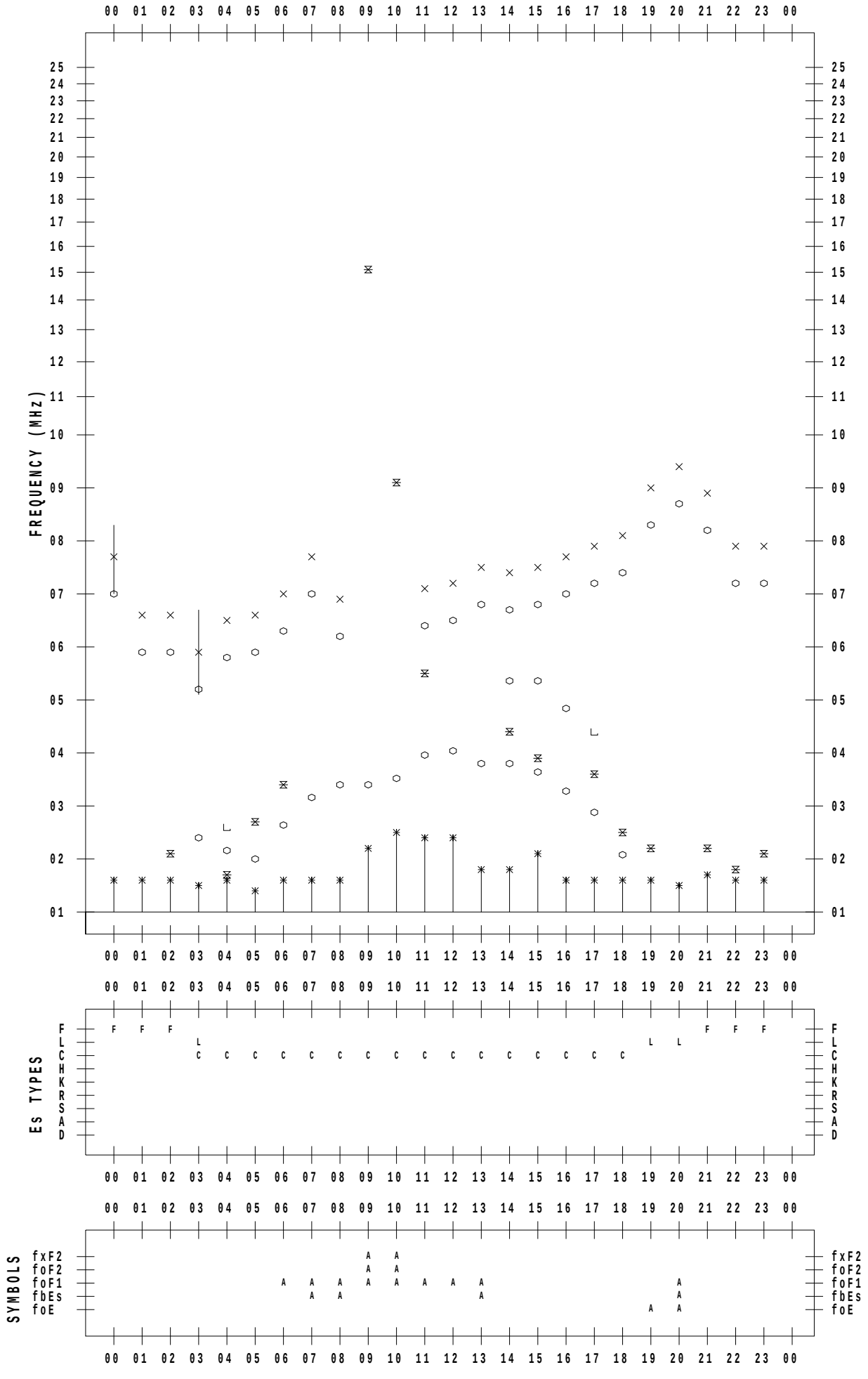
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/17

135 °E MEAN TIME



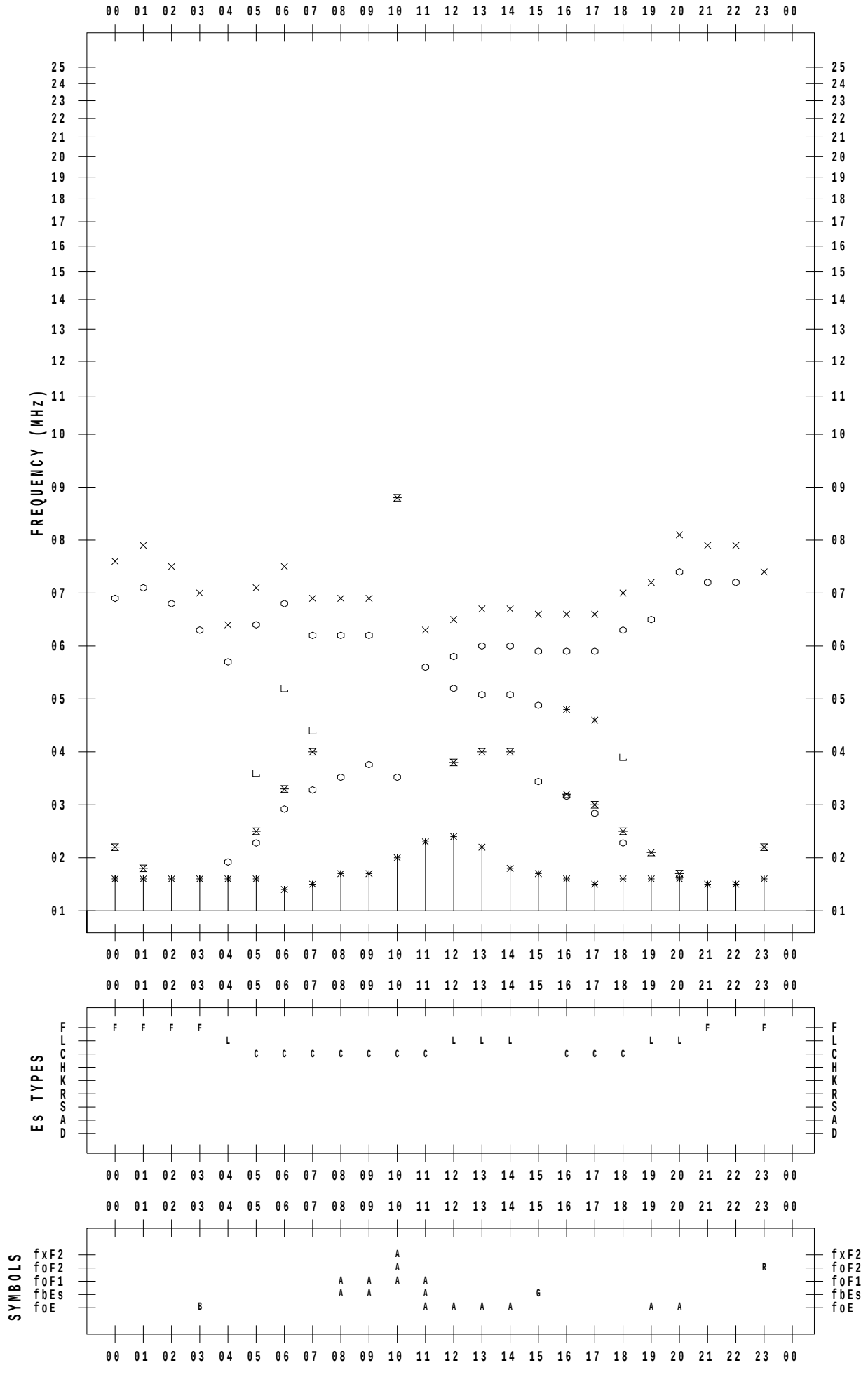
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/18

135 °E MEAN TIME



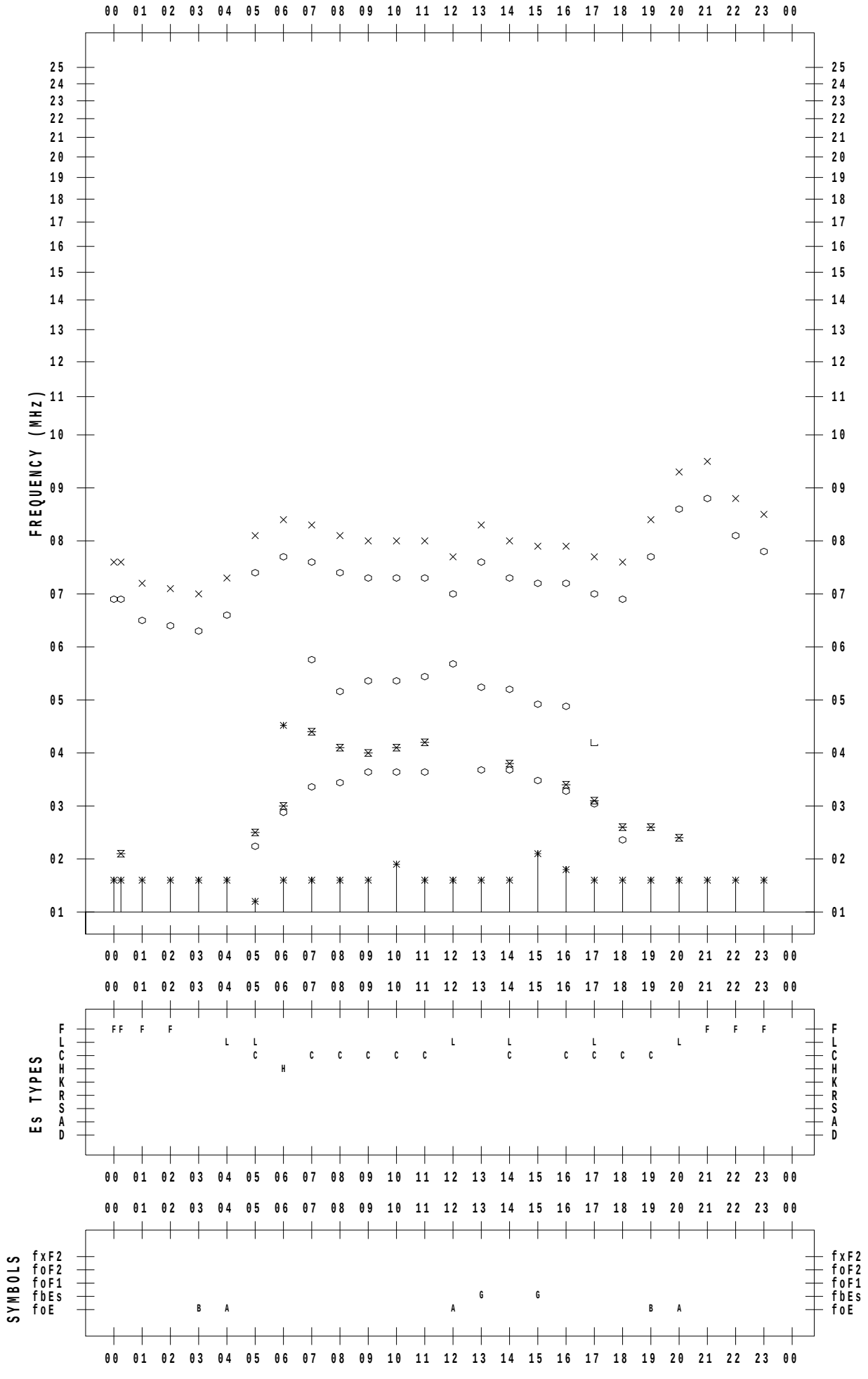
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/19

135 °E MEAN TIME



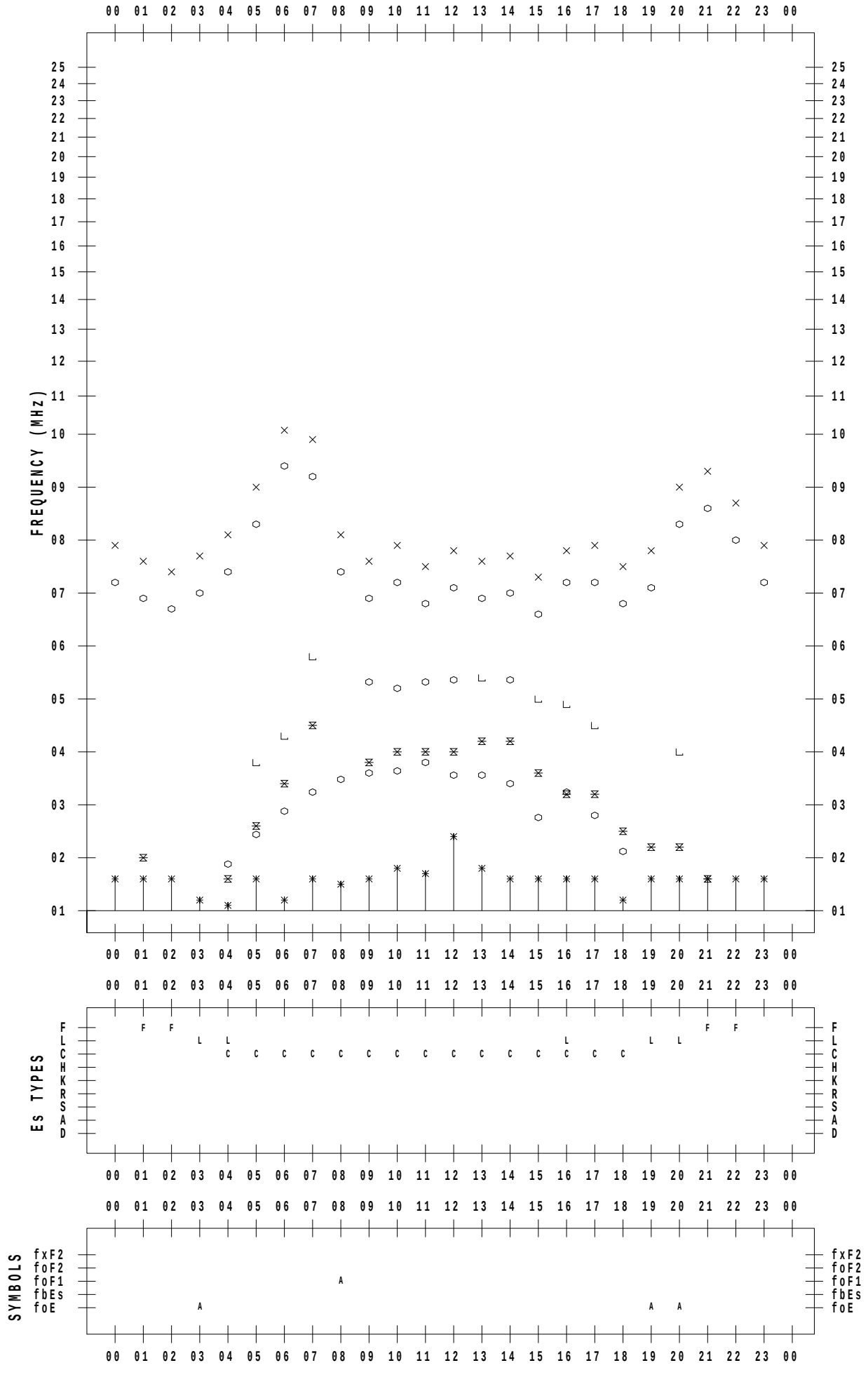
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/20

135 °E MEAN TIME



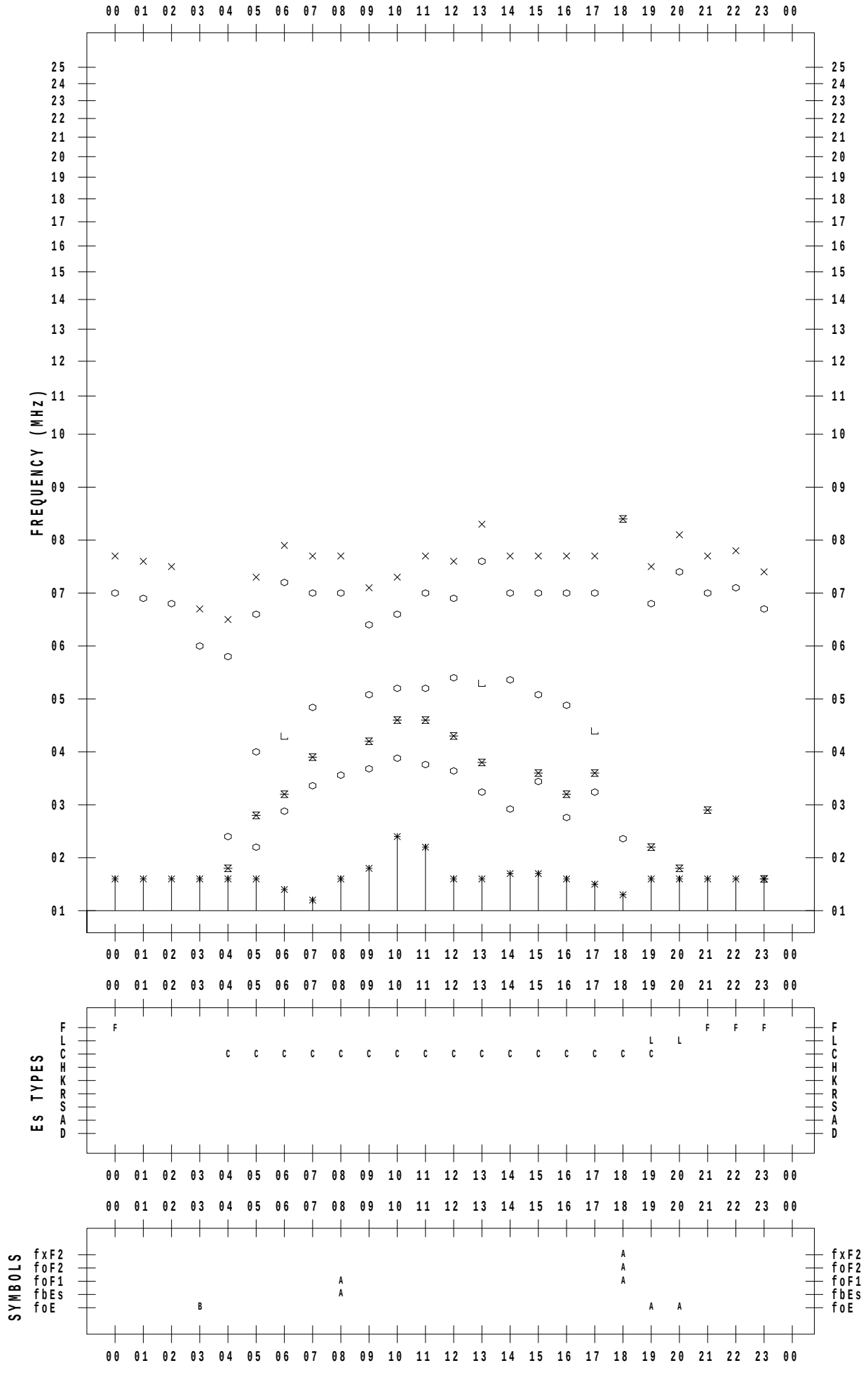
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/21

135 °E MEAN TIME



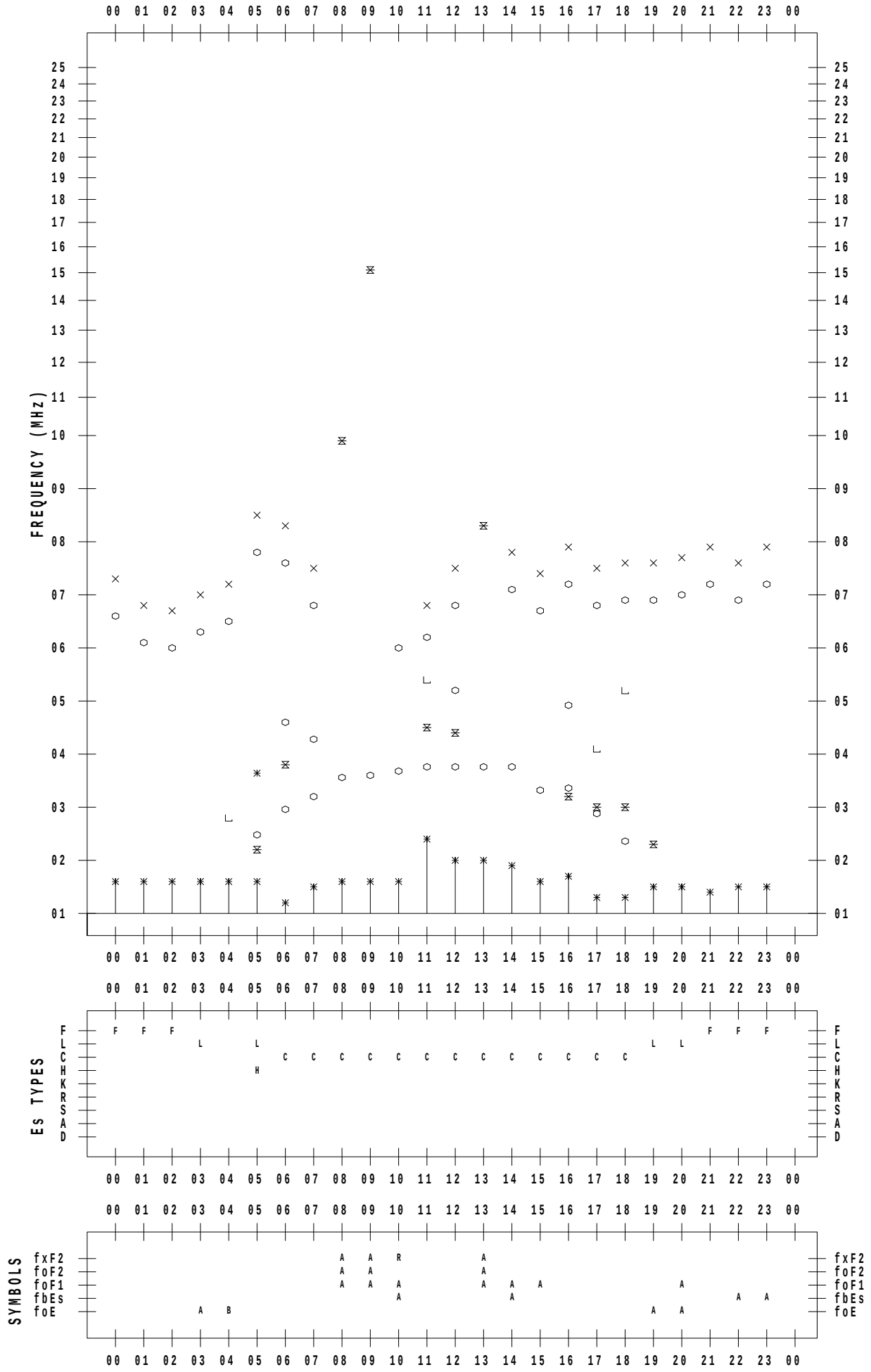
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/22

135 °E MEAN TIME



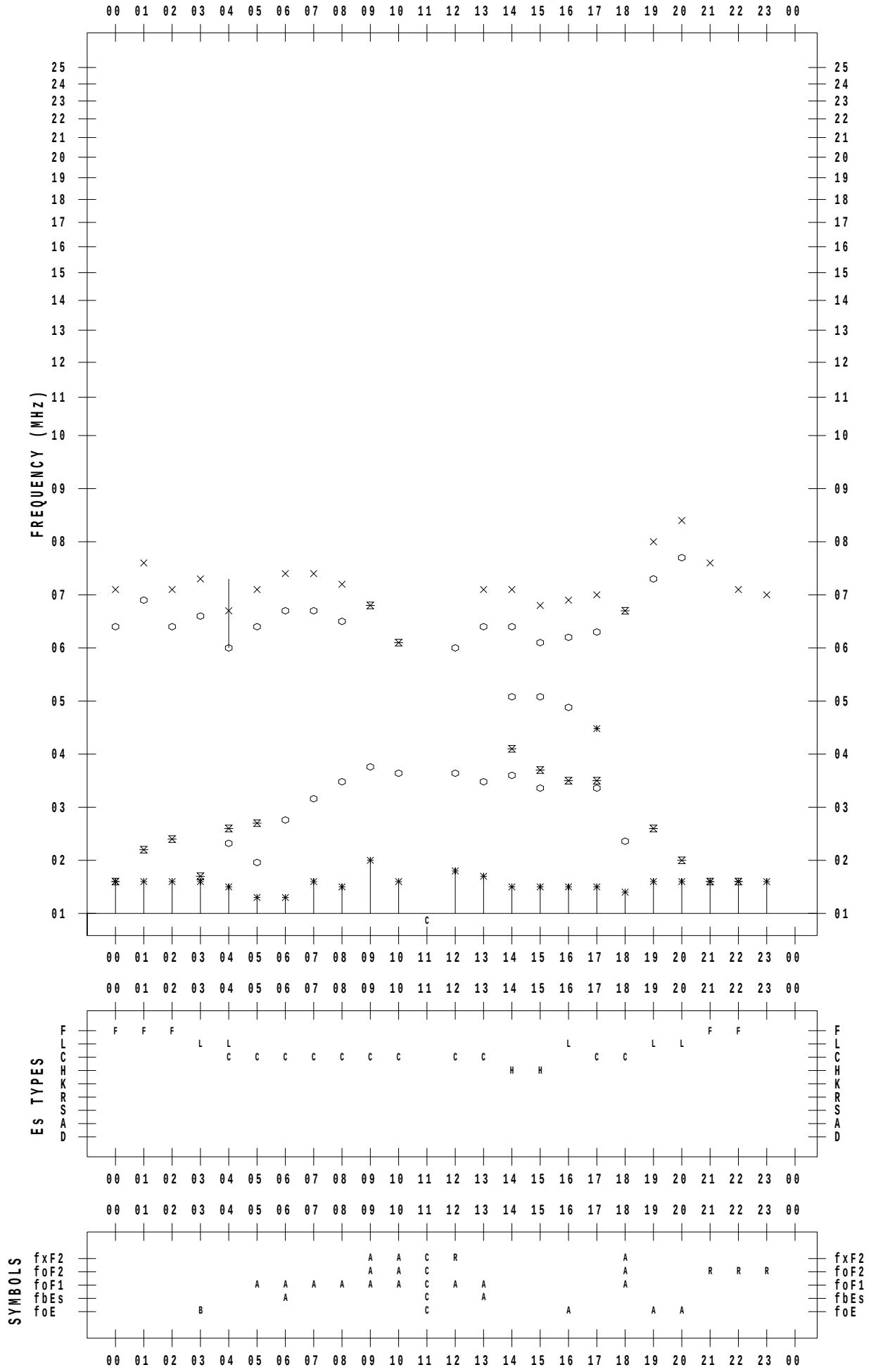
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/23

135 °E MEAN TIME



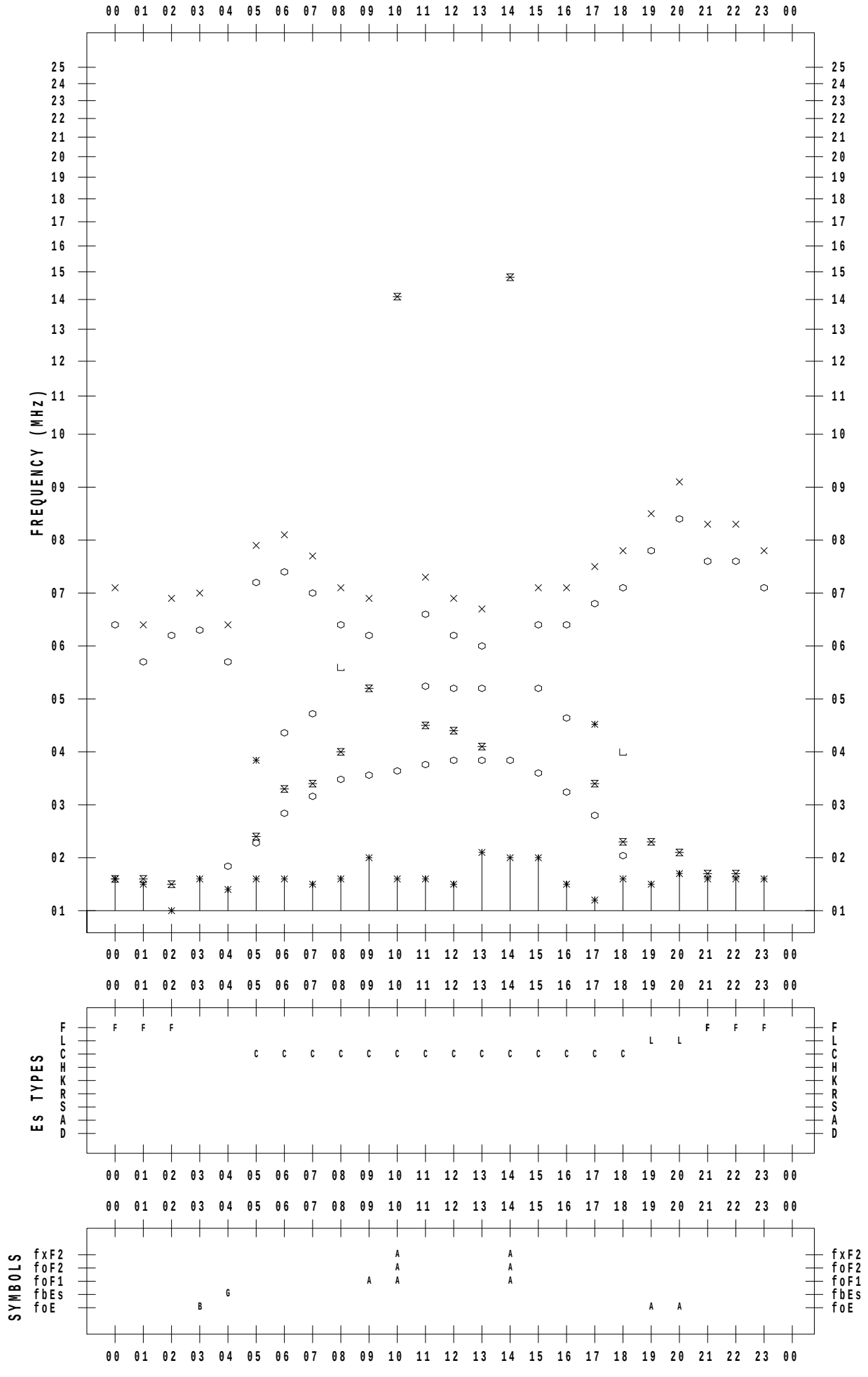
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/24

135 °E MEAN TIME



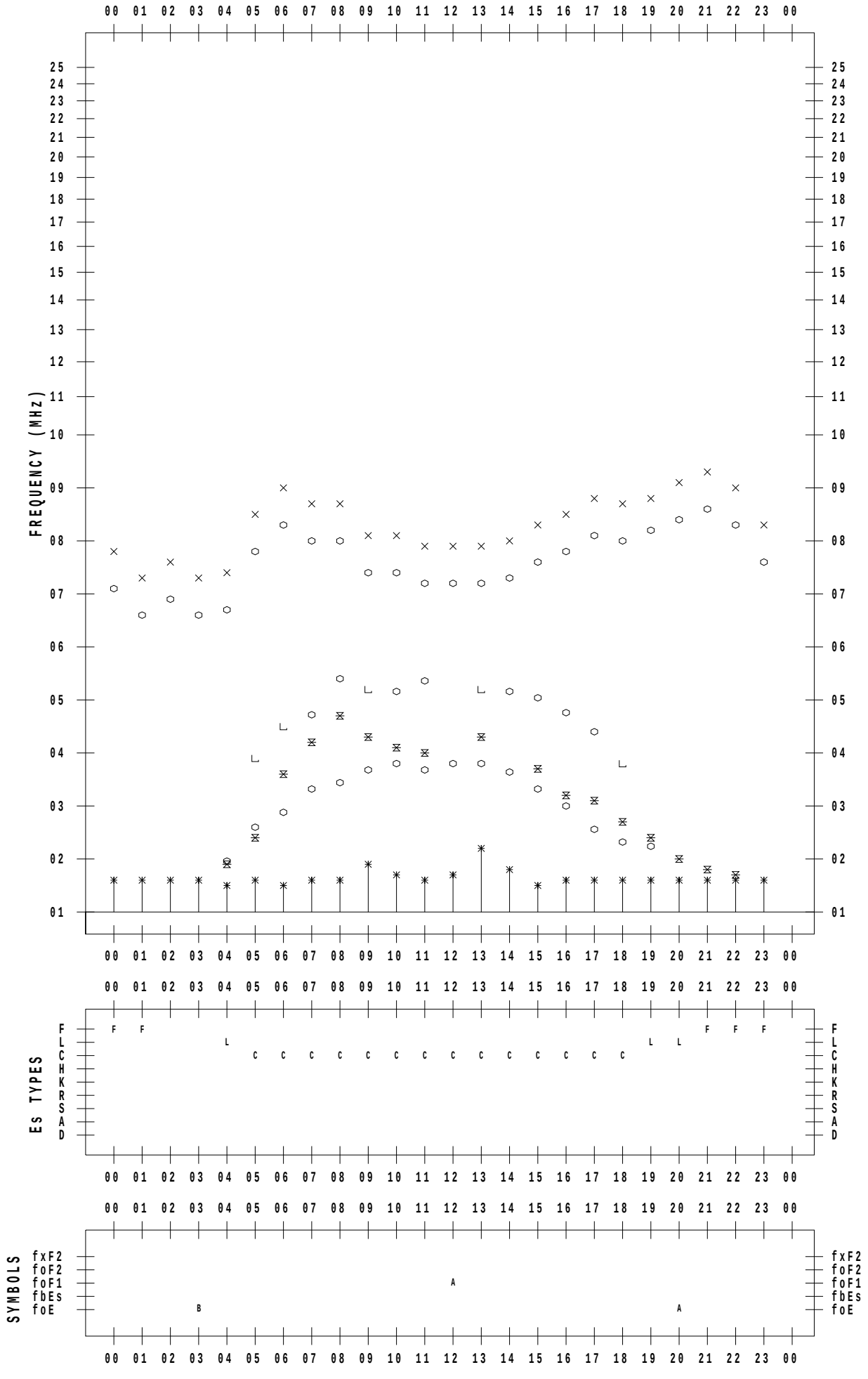
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/25

135 °E MEAN TIME



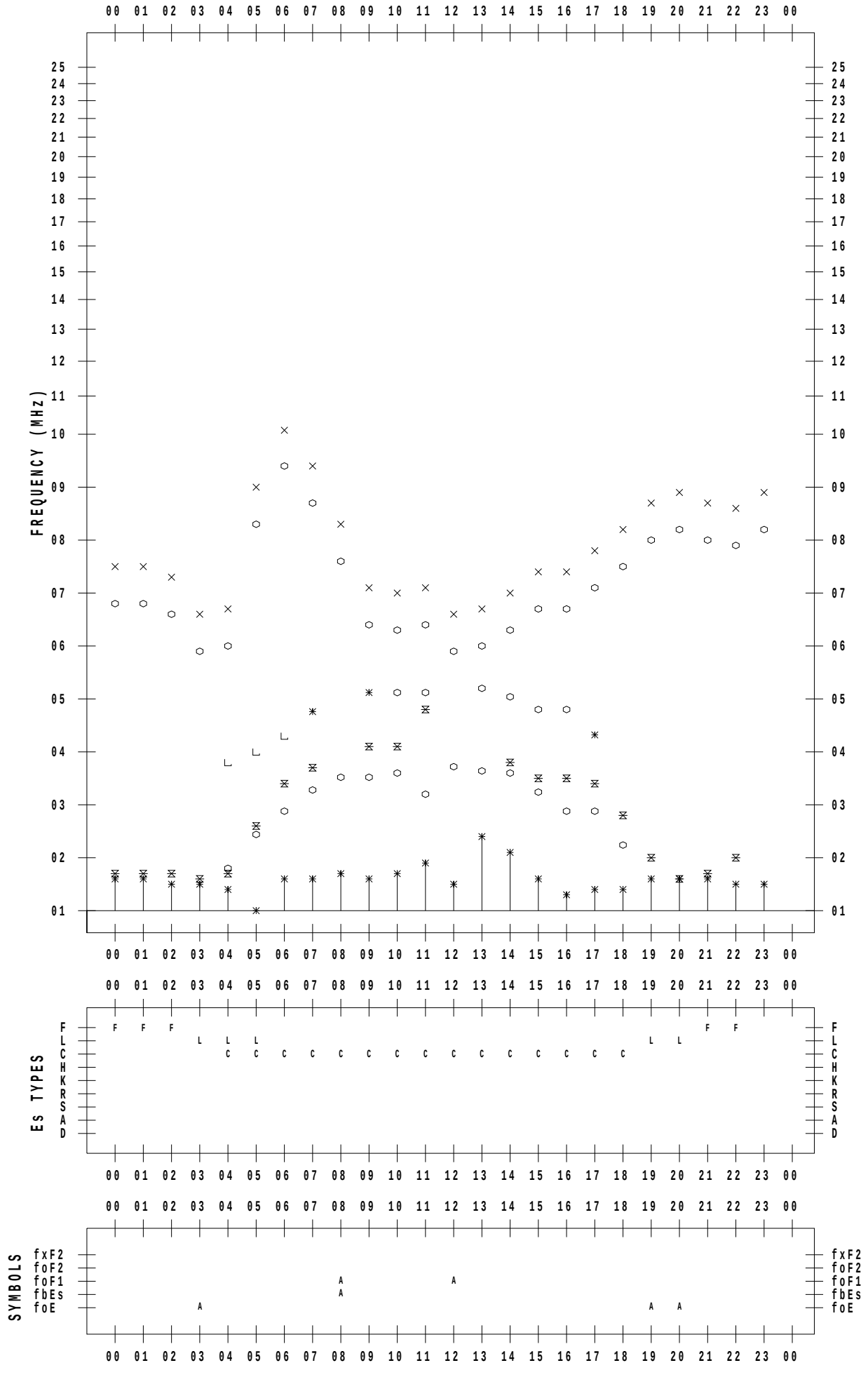
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/26

135 °E MEAN TIME



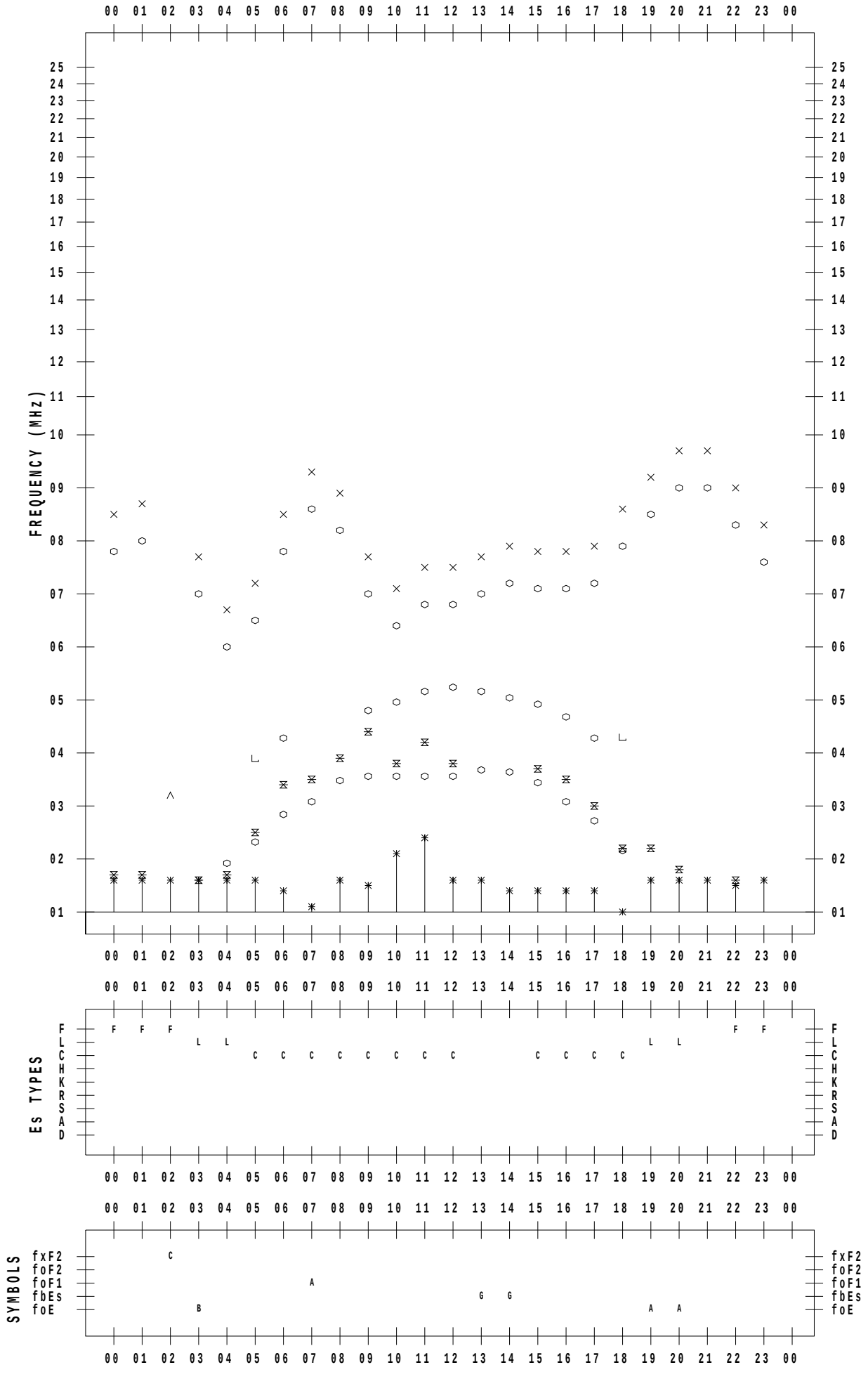
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/27

135 °E MEAN TIME



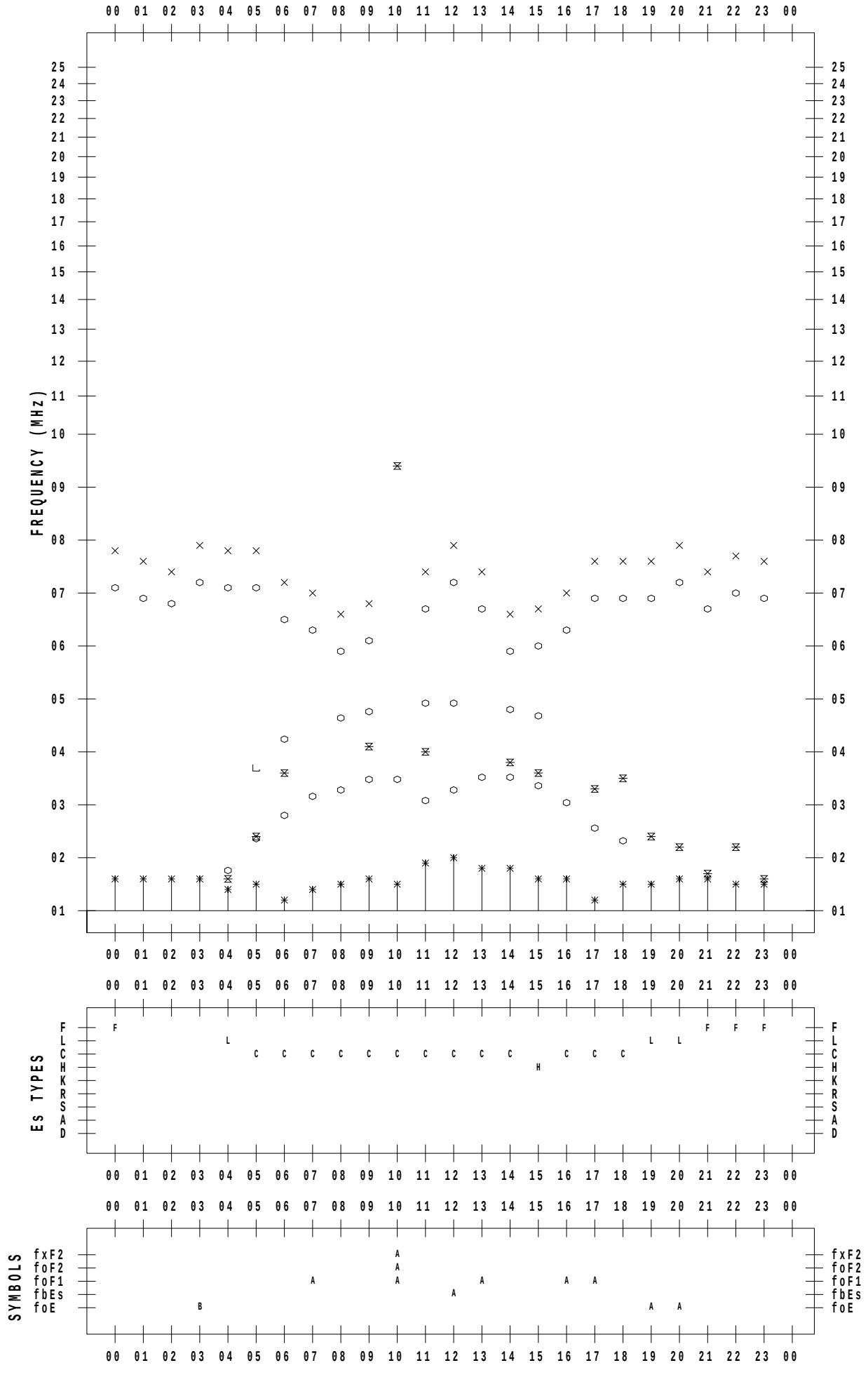
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/28

135 °E MEAN TIME



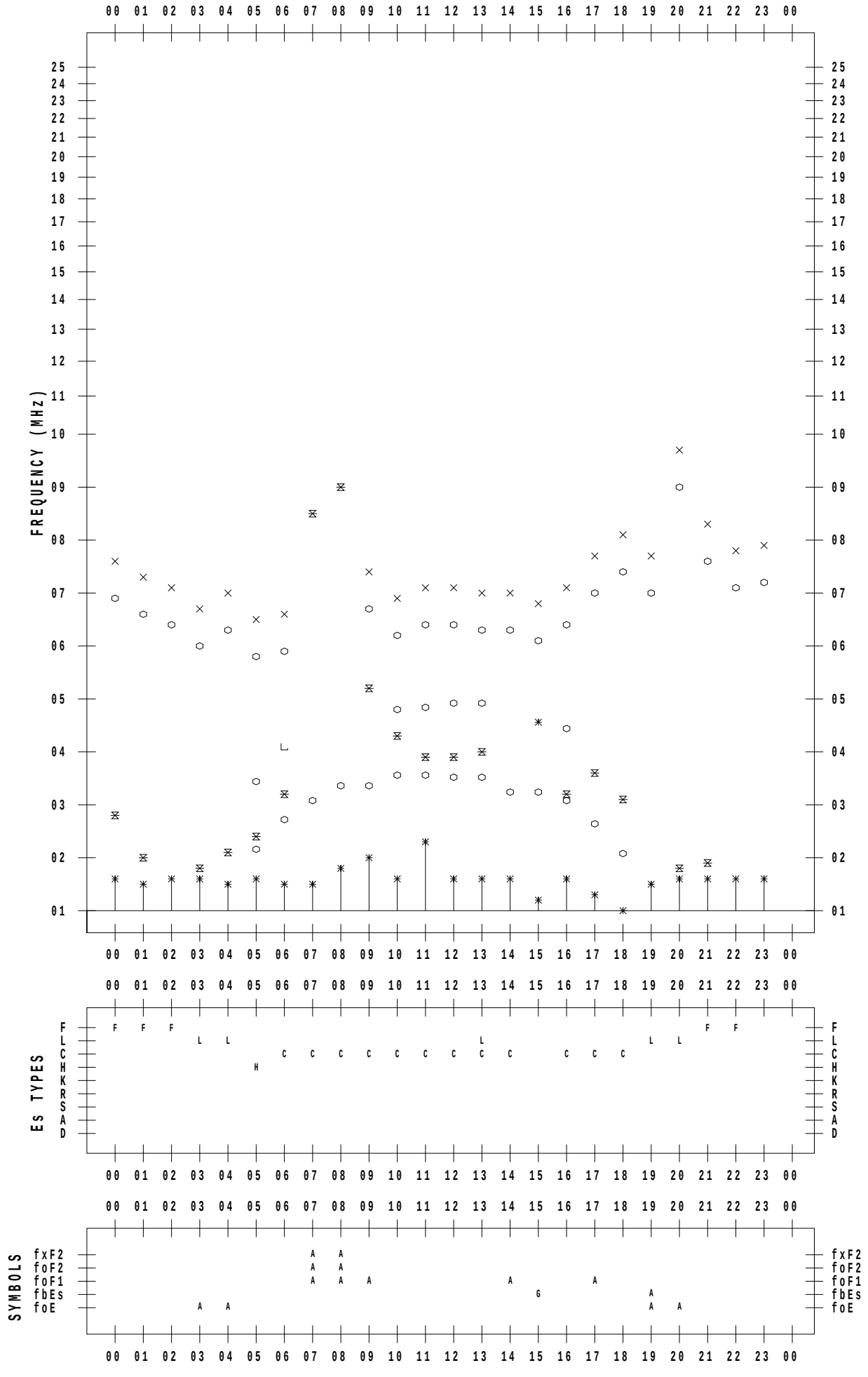
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/29

135 °E MEAN TIME



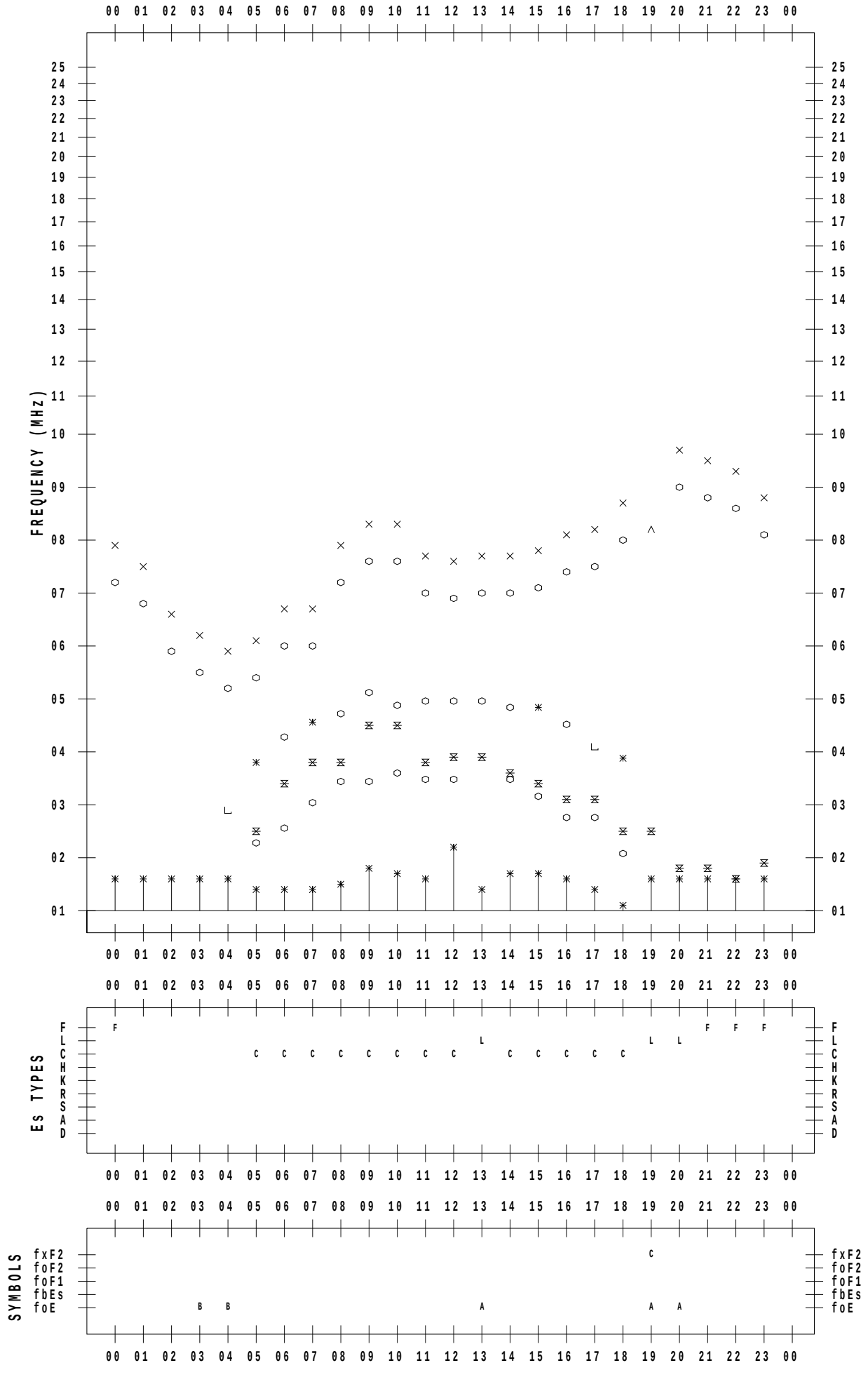
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/30

135 °E MEAN TIME



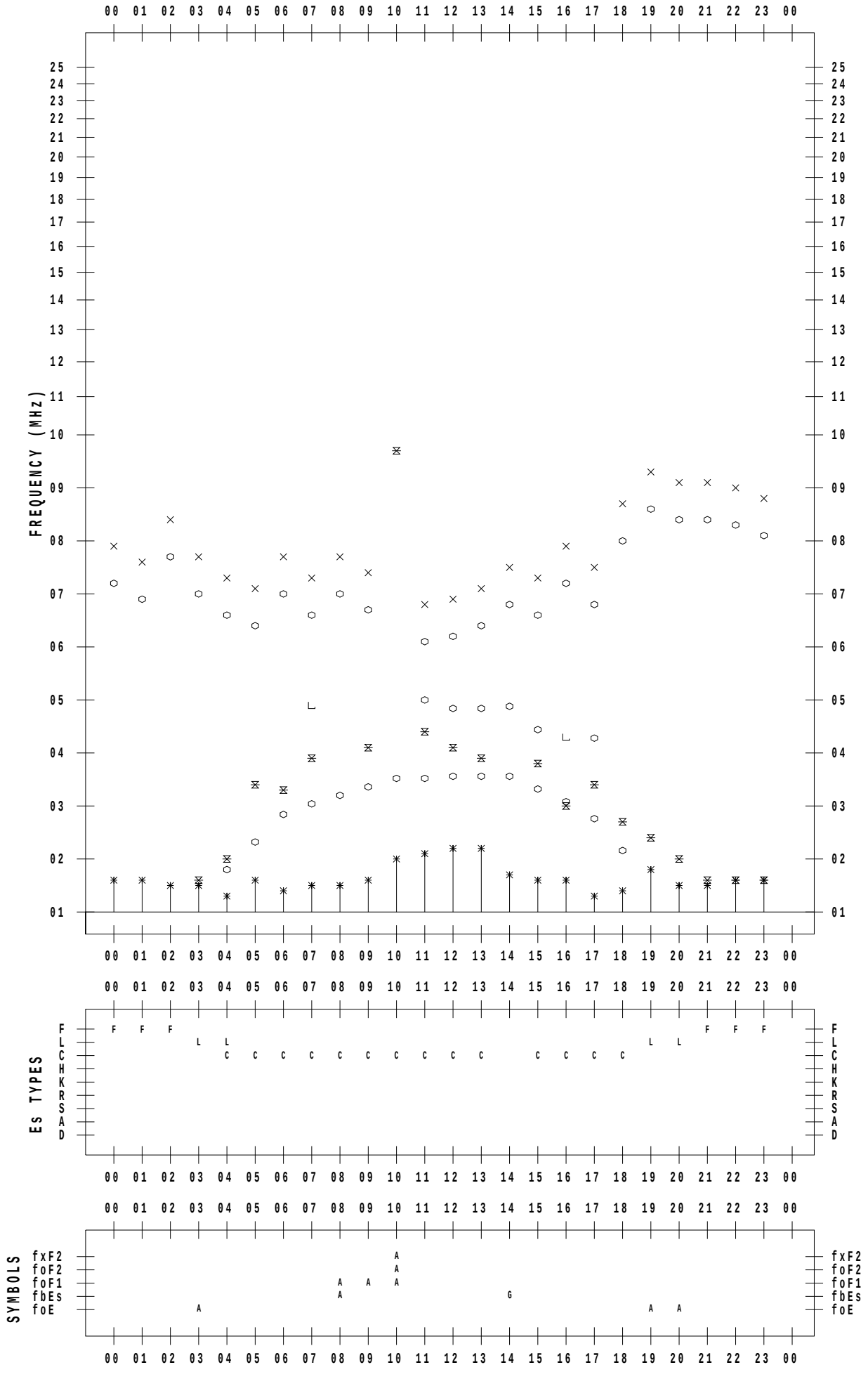
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022/ 5/31

135 °E MEAN TIME



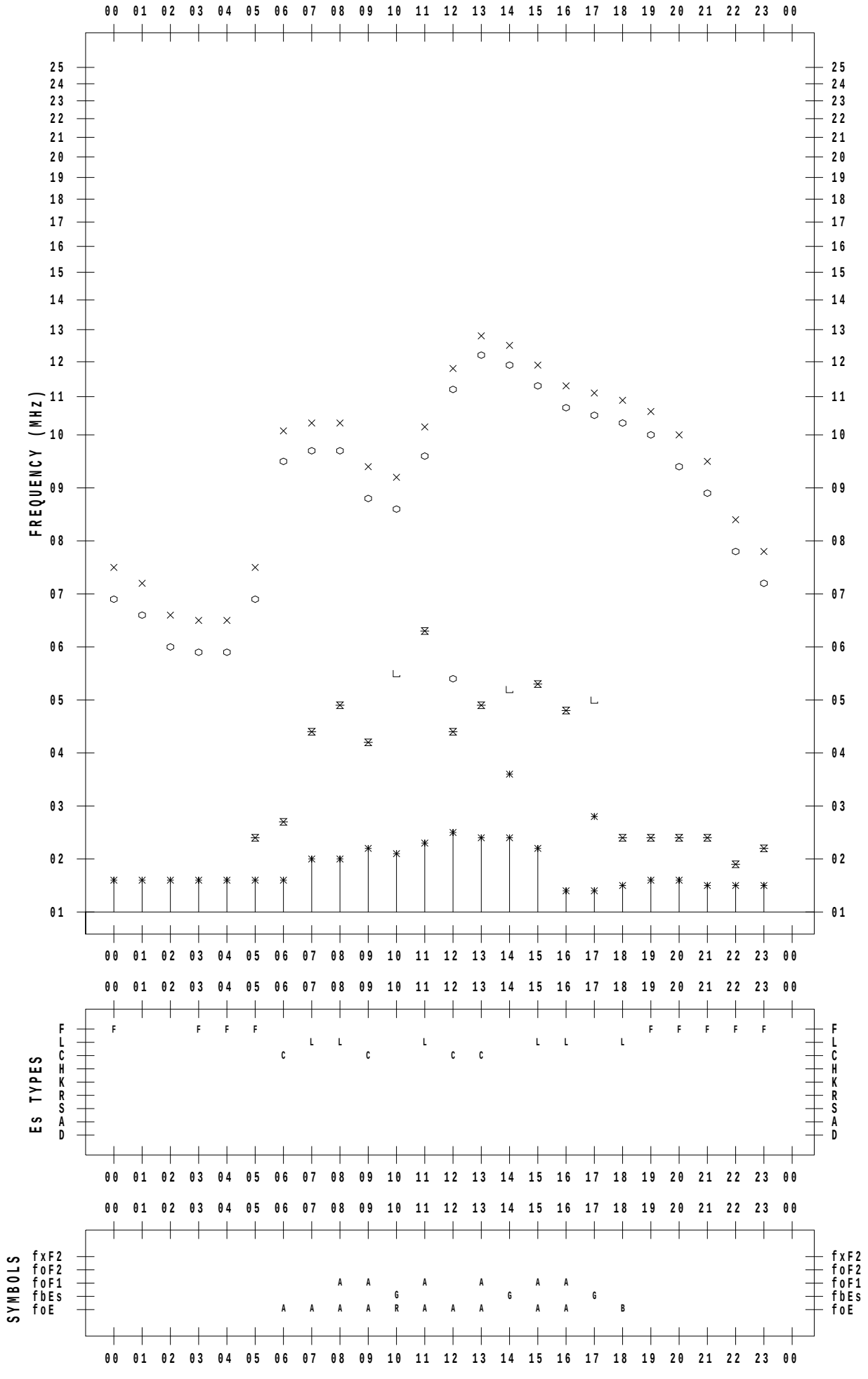
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 1

135 °E MEAN TIME



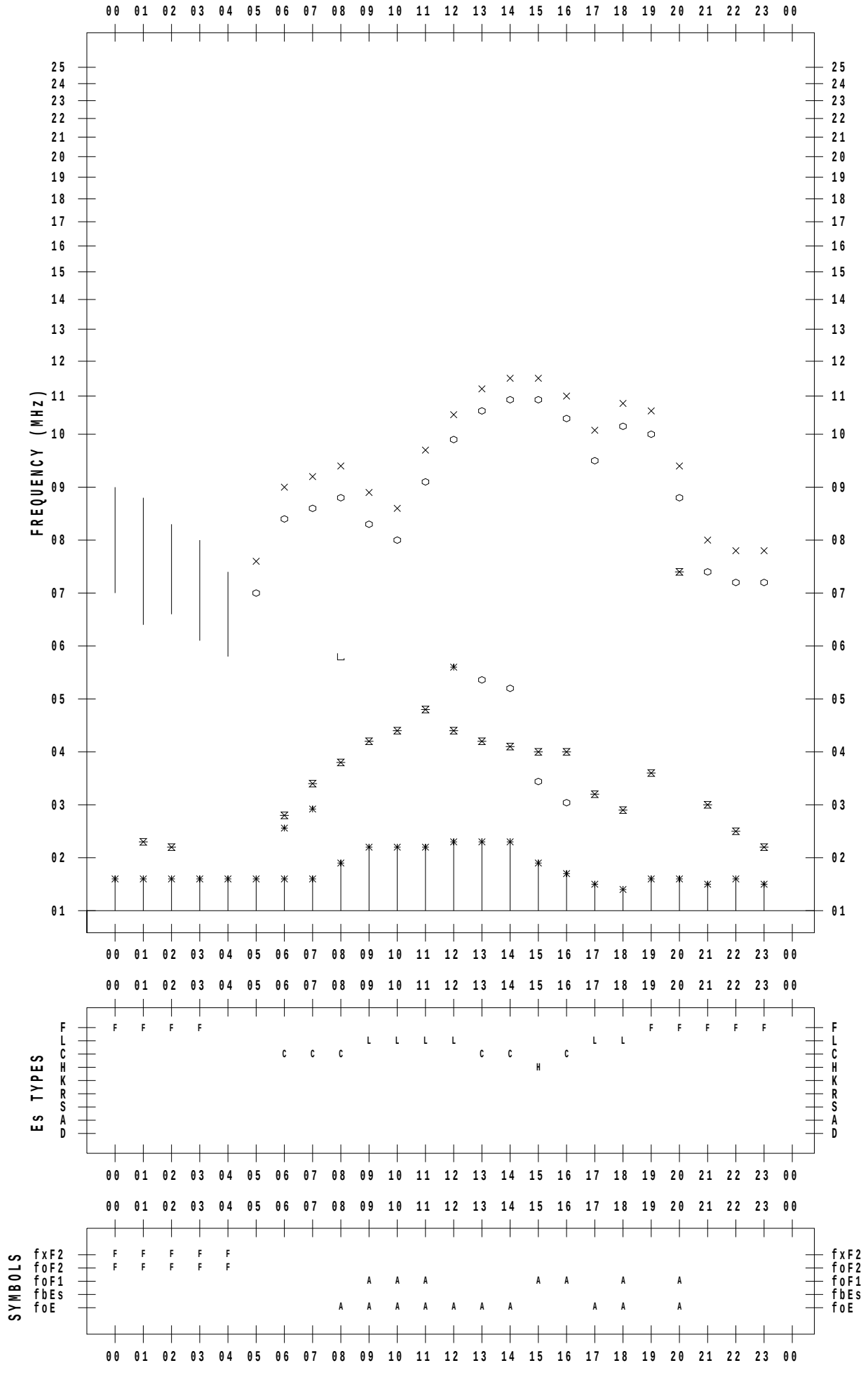
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 2

135 °E MEAN TIME



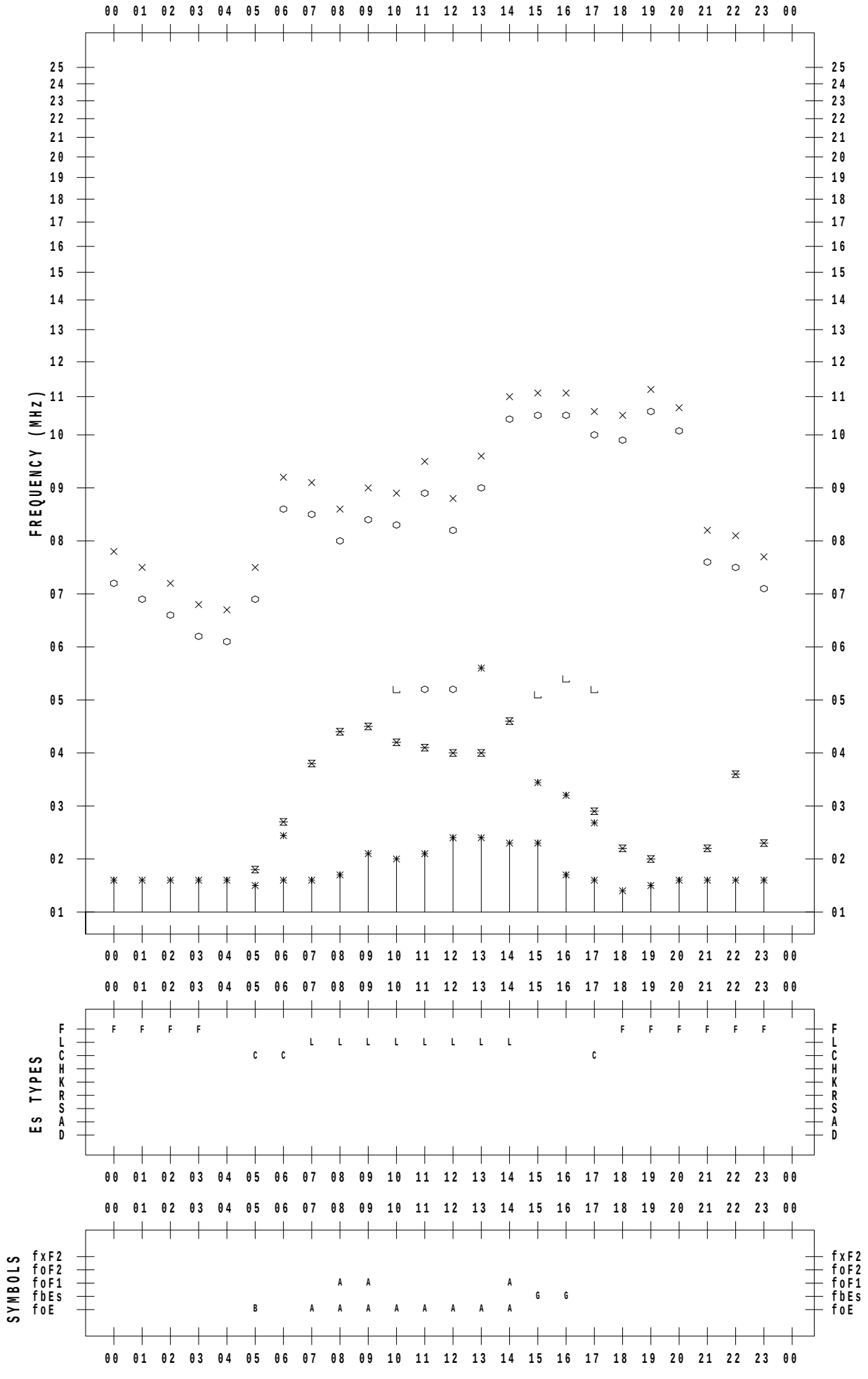
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 3

135 °E MEAN TIME



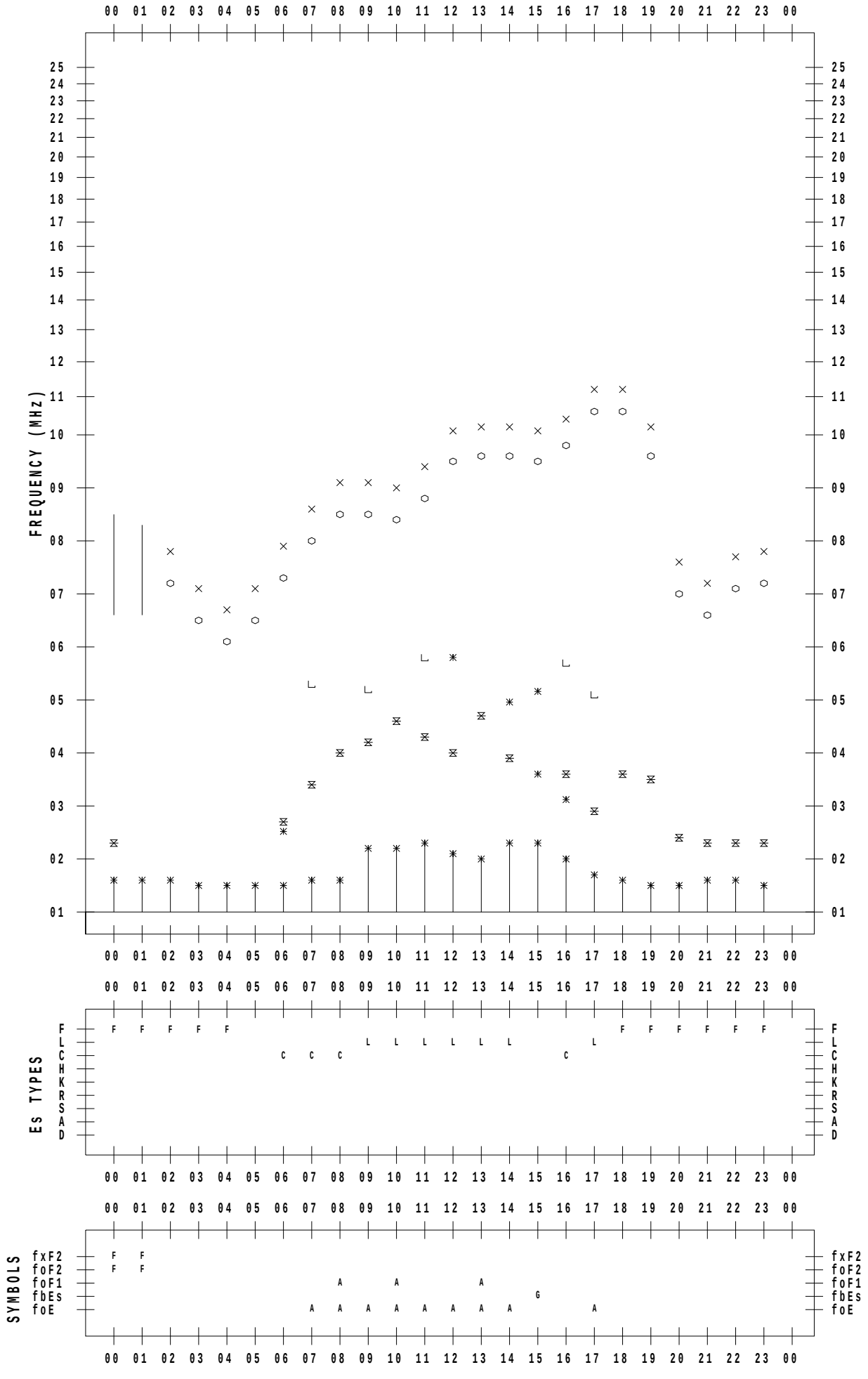
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 4

135 °E MEAN TIME



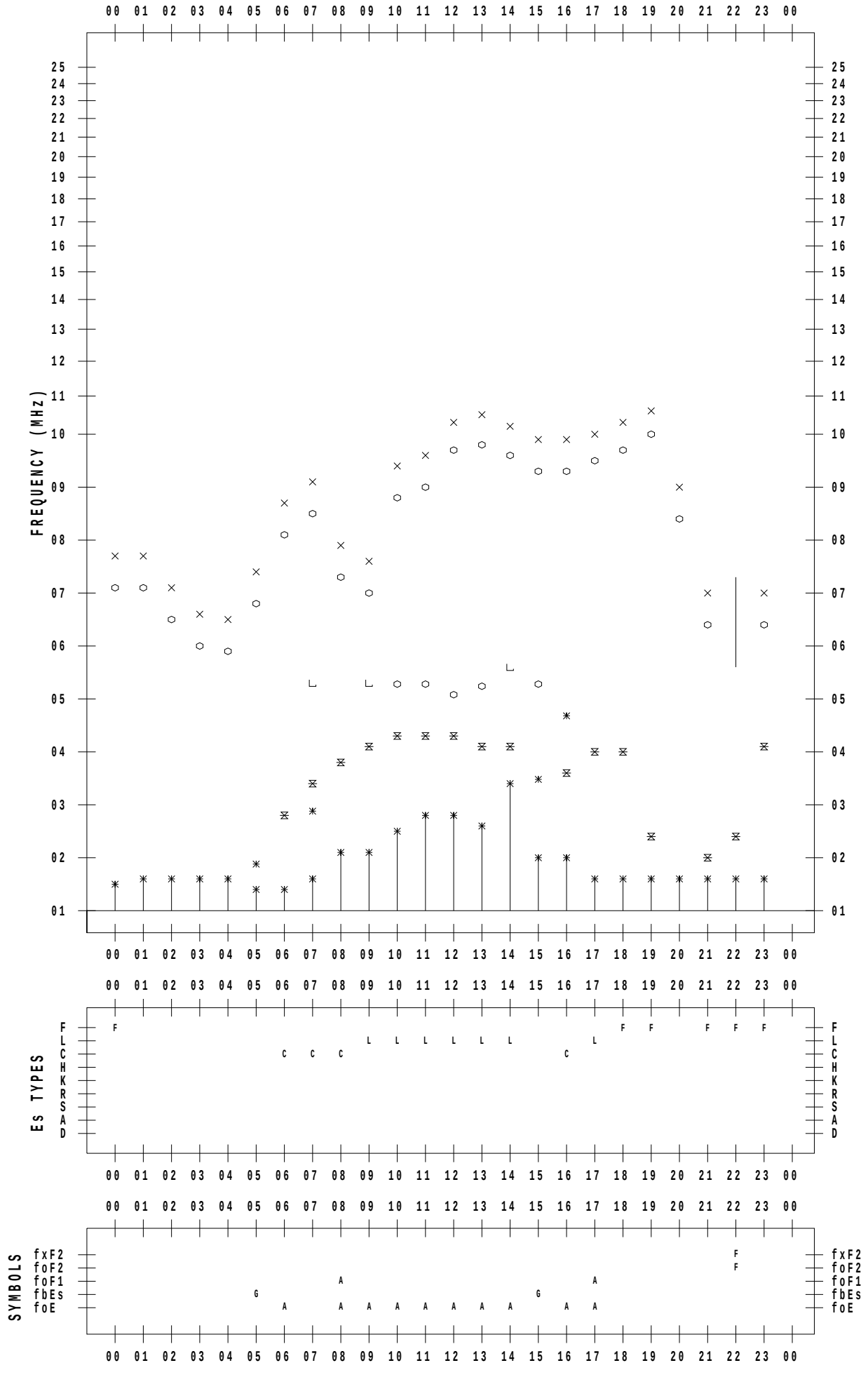
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 5

135 °E MEAN TIME



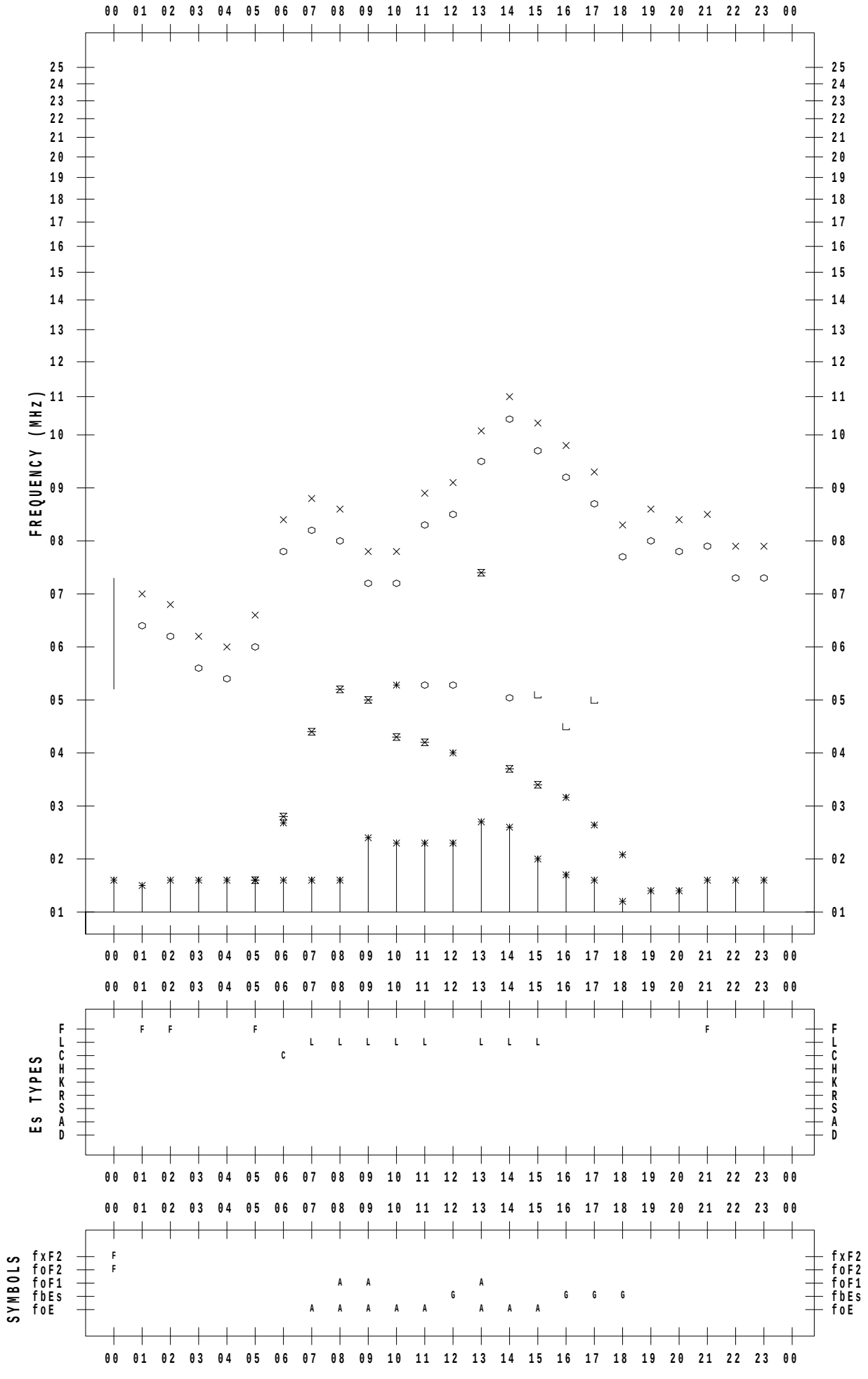
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 6

135 °E MEAN TIME



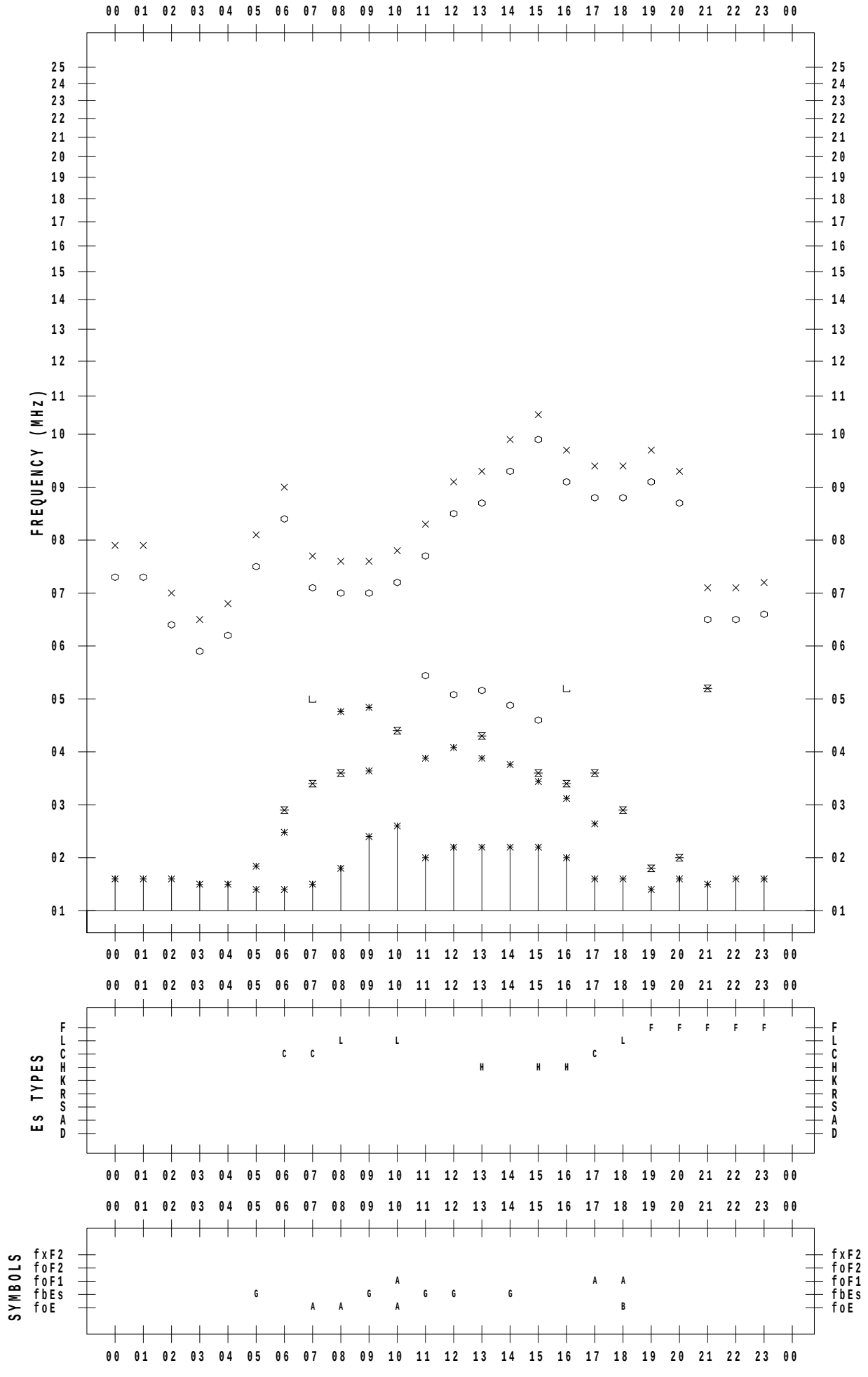
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 7

135 °E MEAN TIME



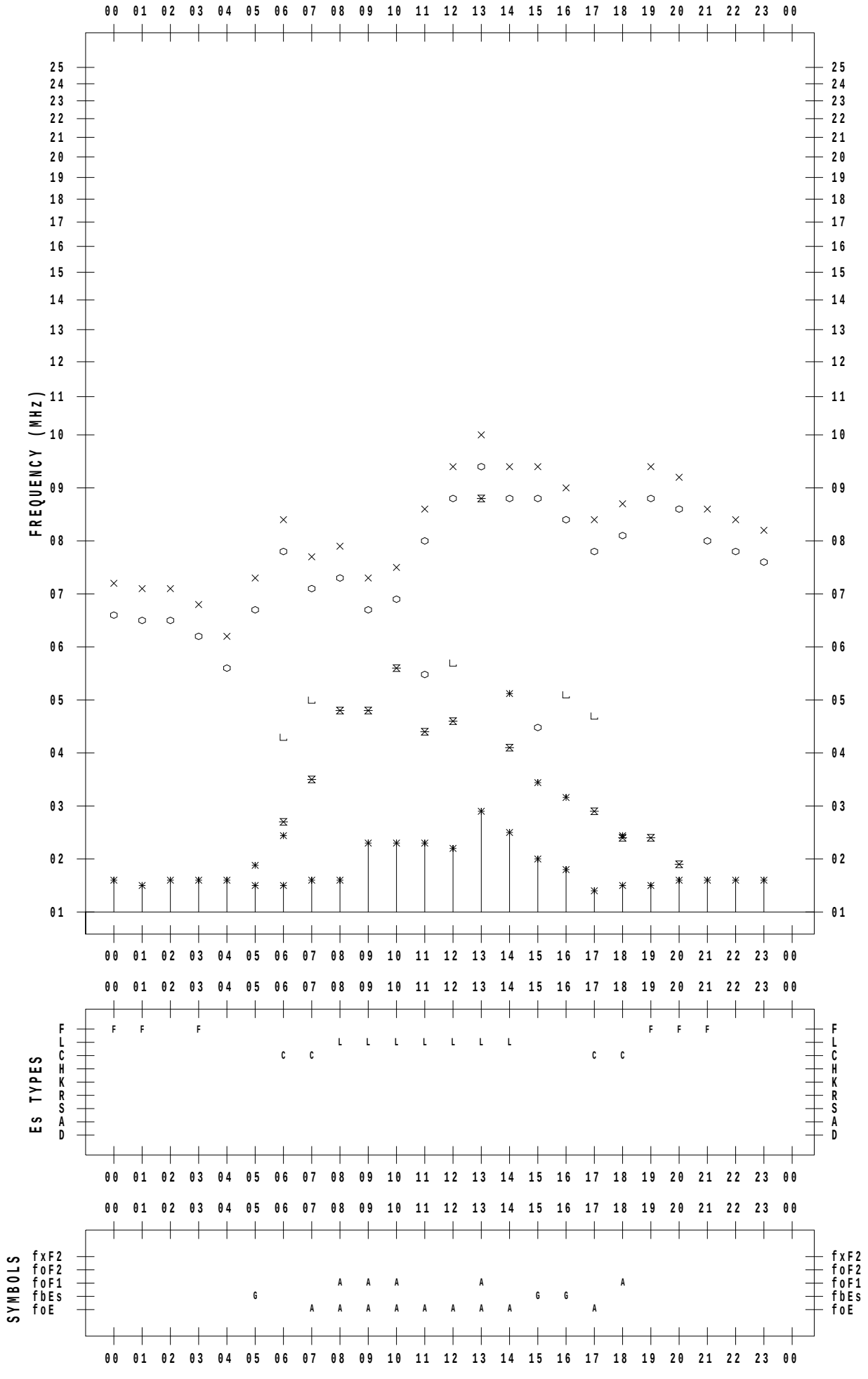
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 8

135 °E MEAN TIME



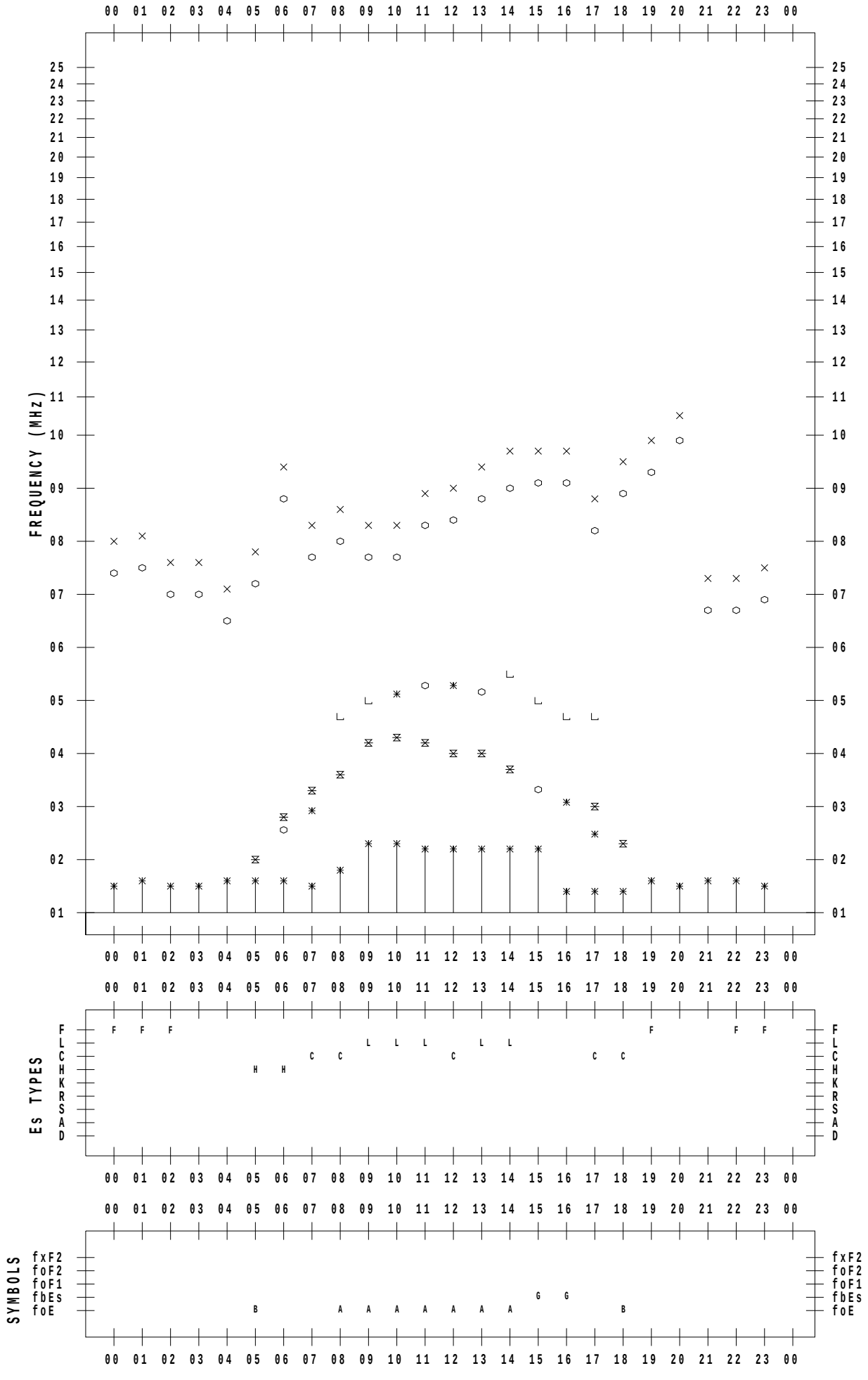
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/ 9

135 °E MEAN TIME



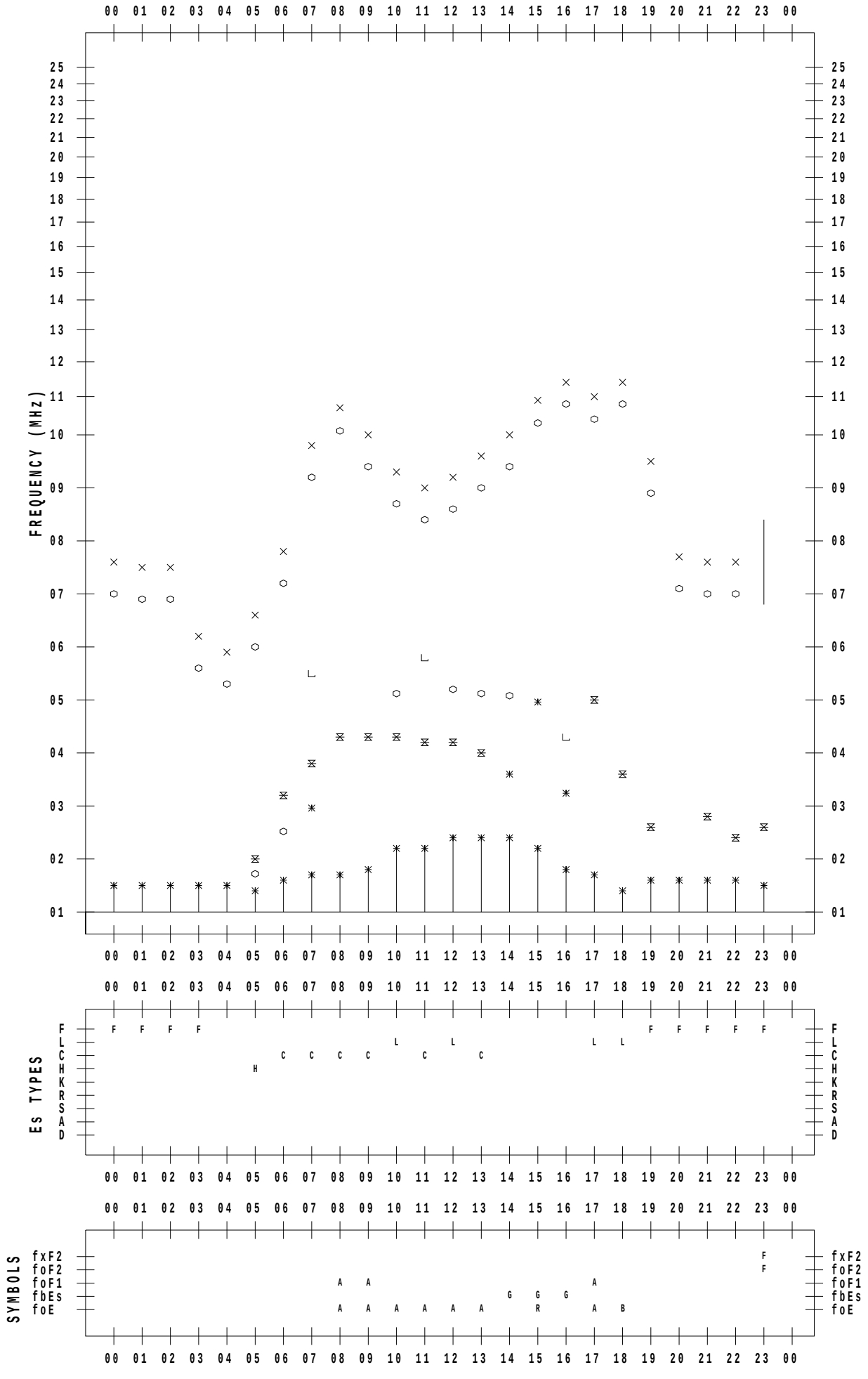
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/10

135 °E MEAN TIME



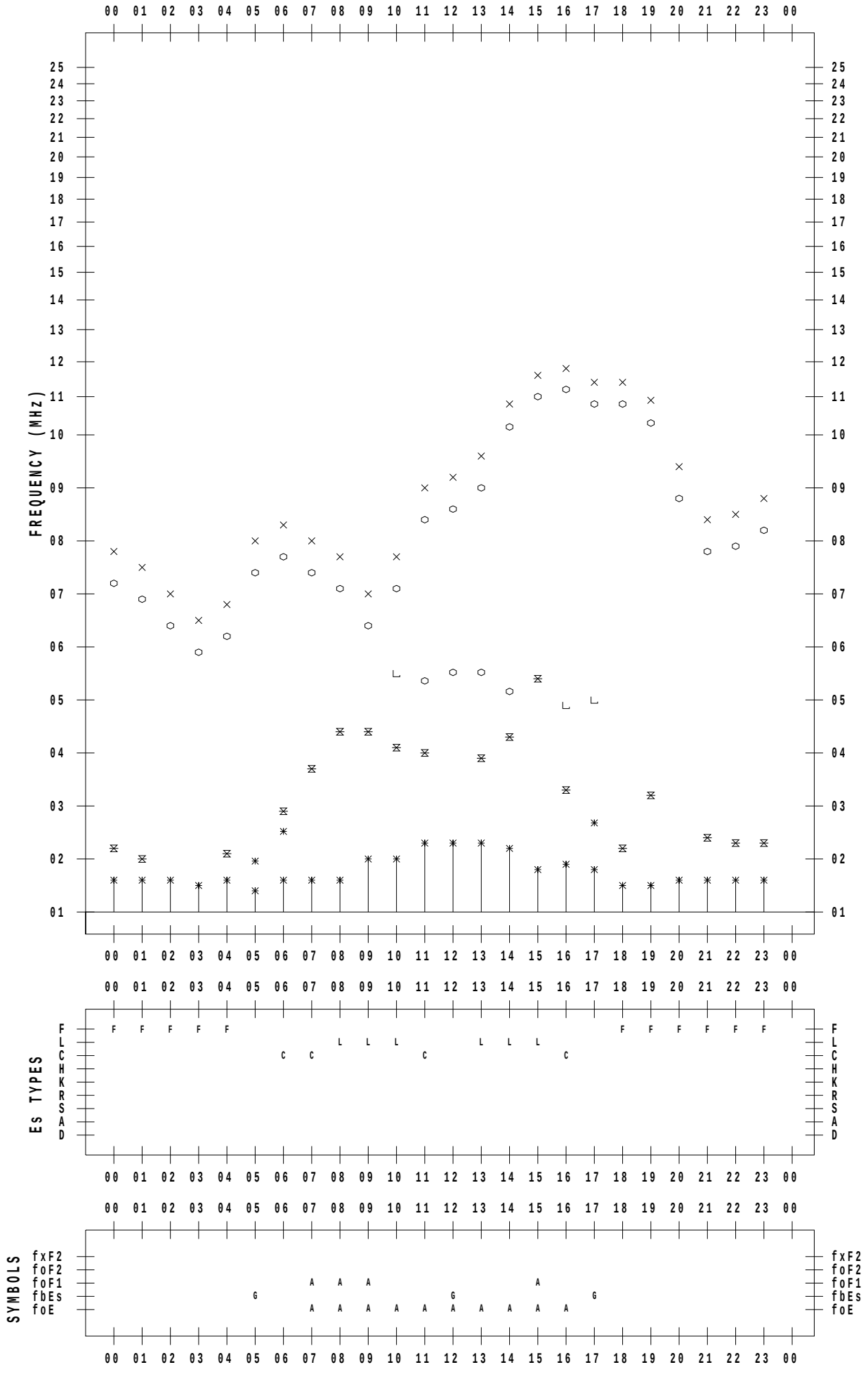
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/11

135 °E MEAN TIME



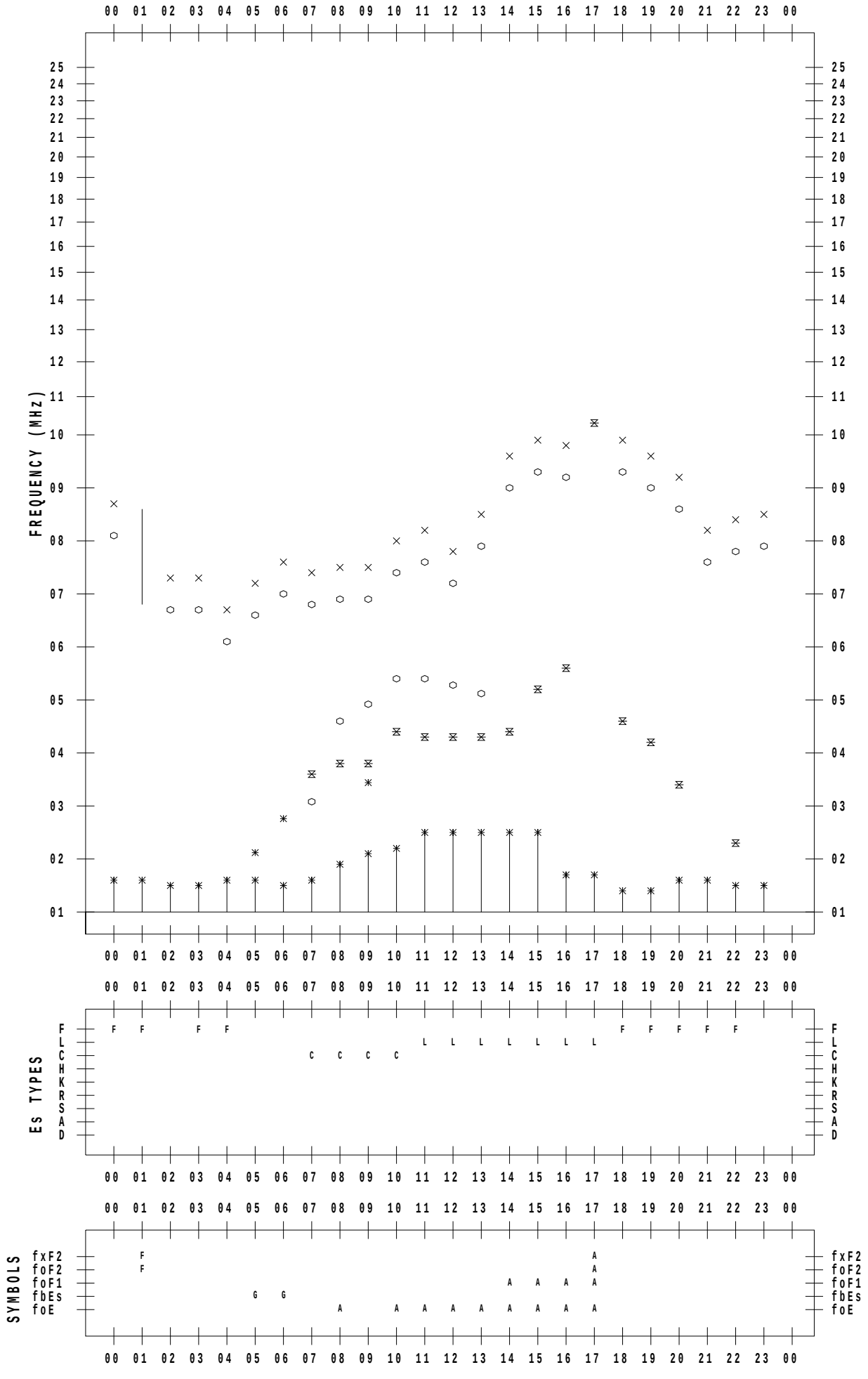
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/12

135 °E MEAN TIME



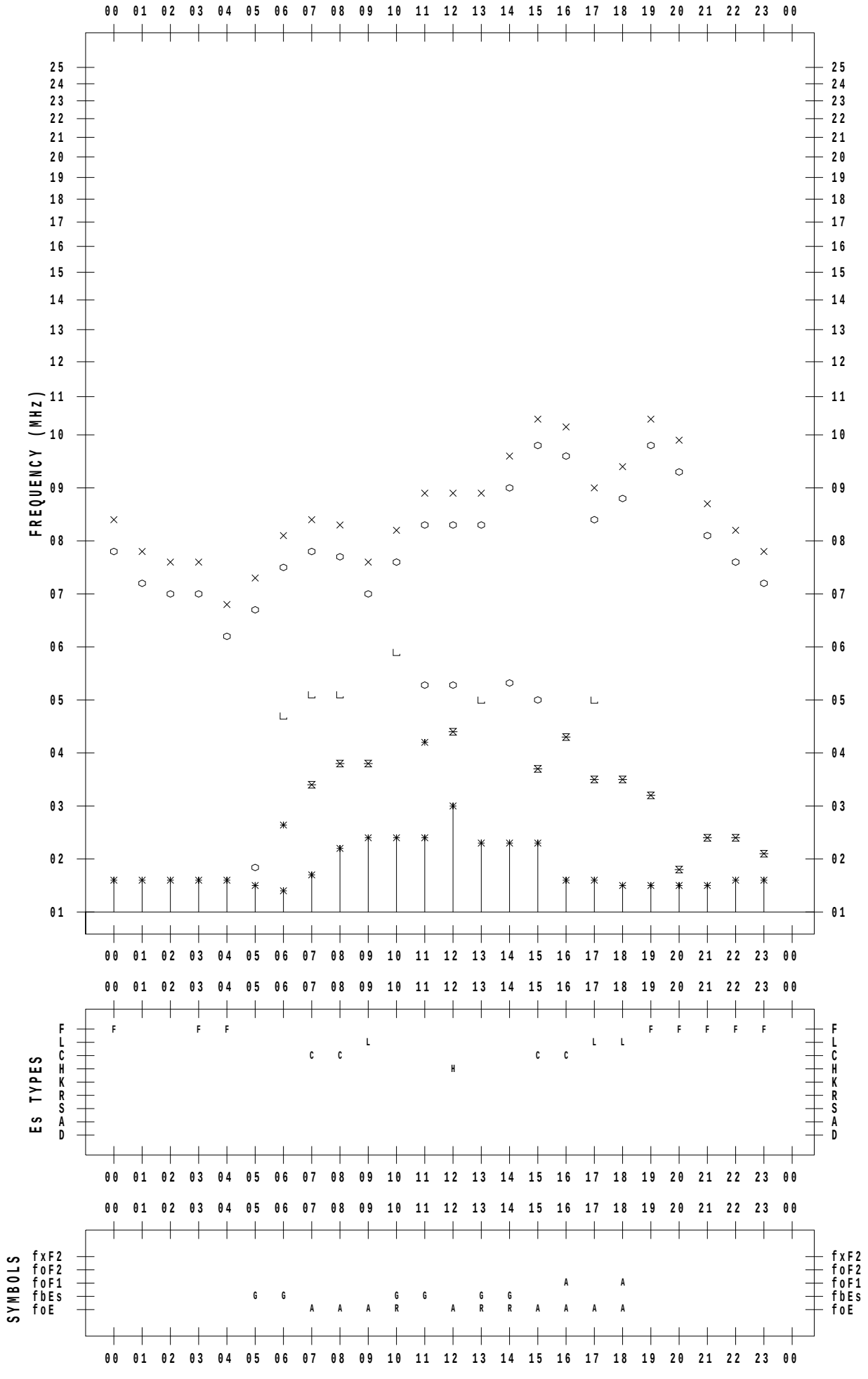
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/13

135 °E MEAN TIME



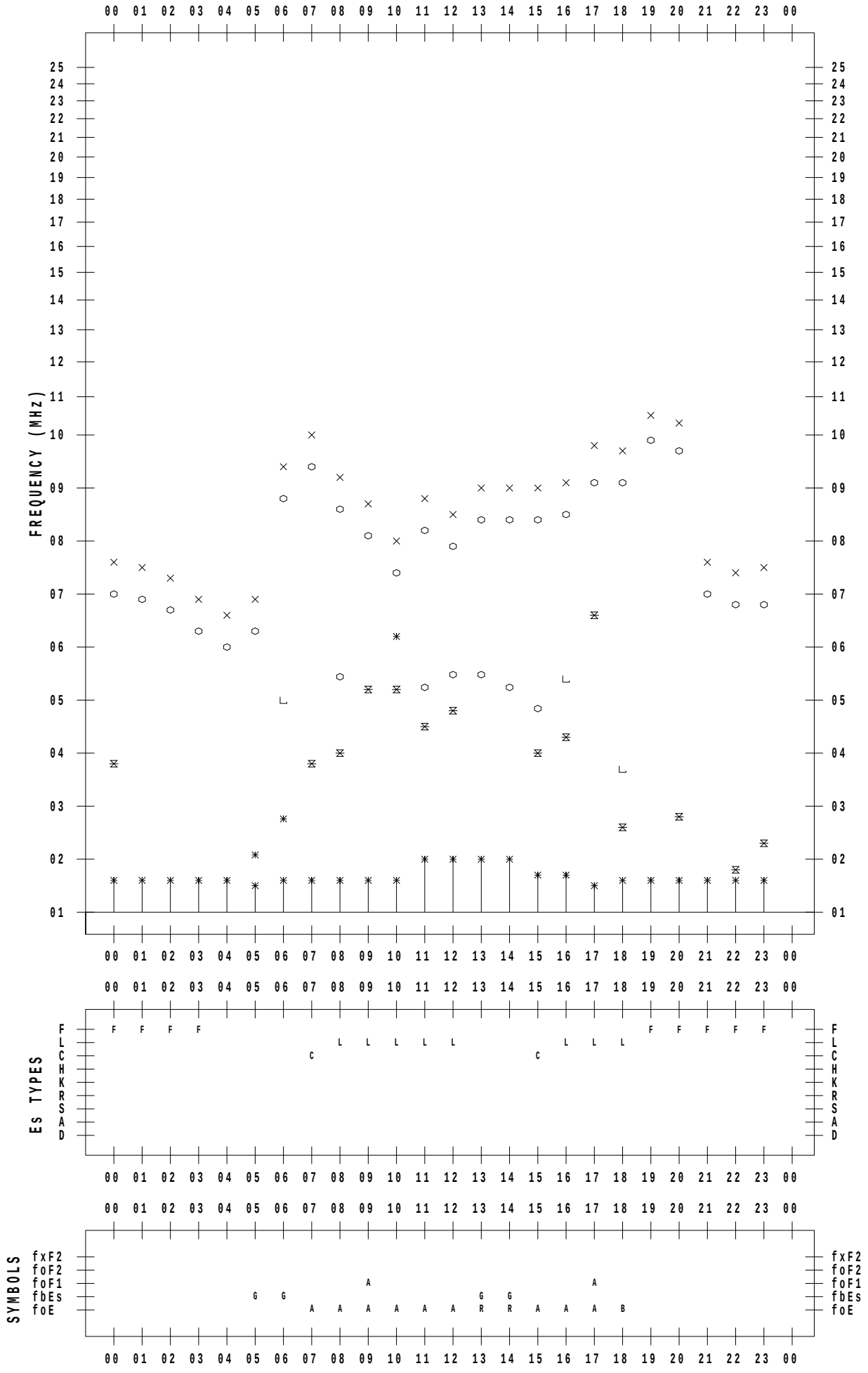
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/14

135 °E MEAN TIME



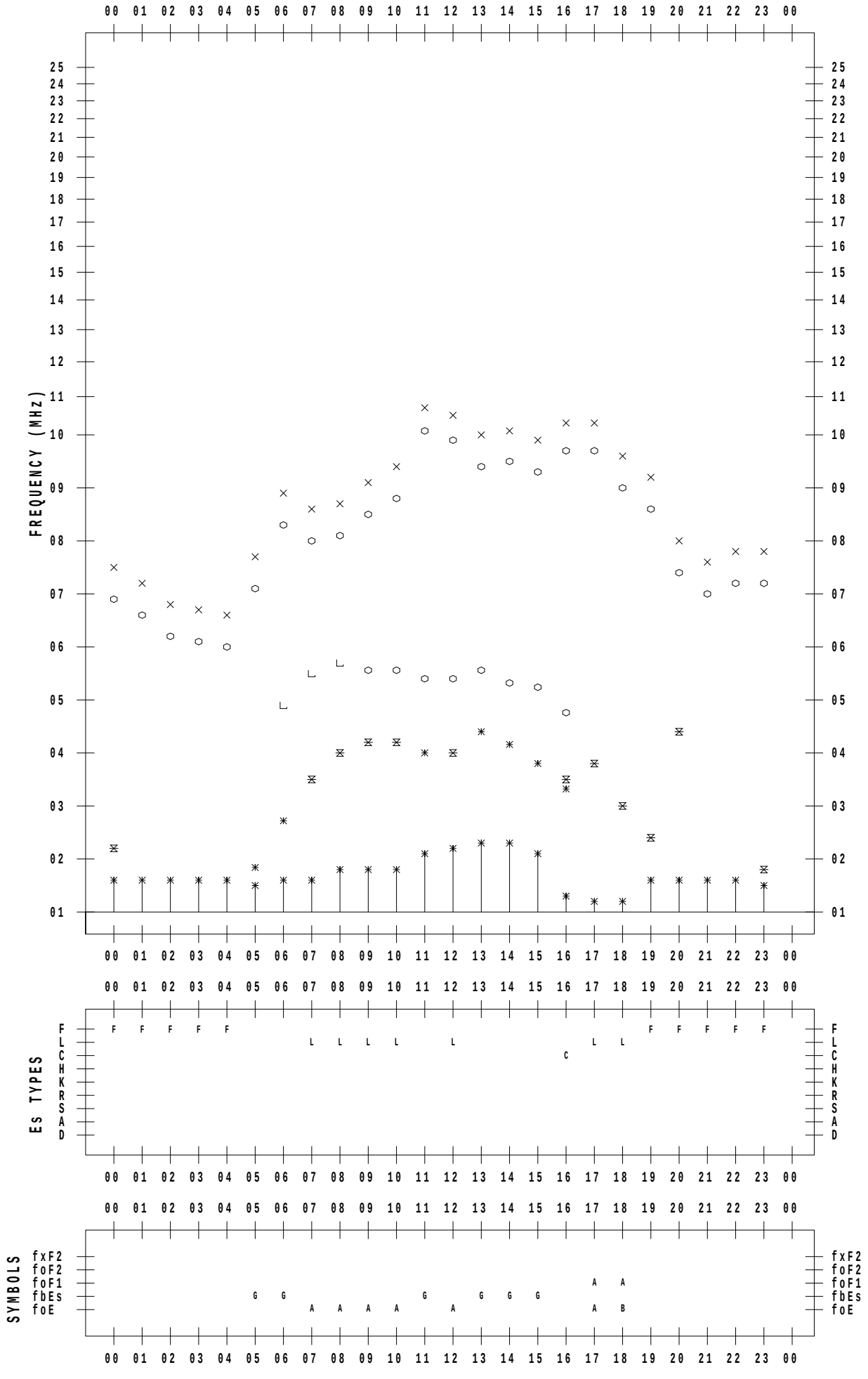
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/15

135 °E MEAN TIME



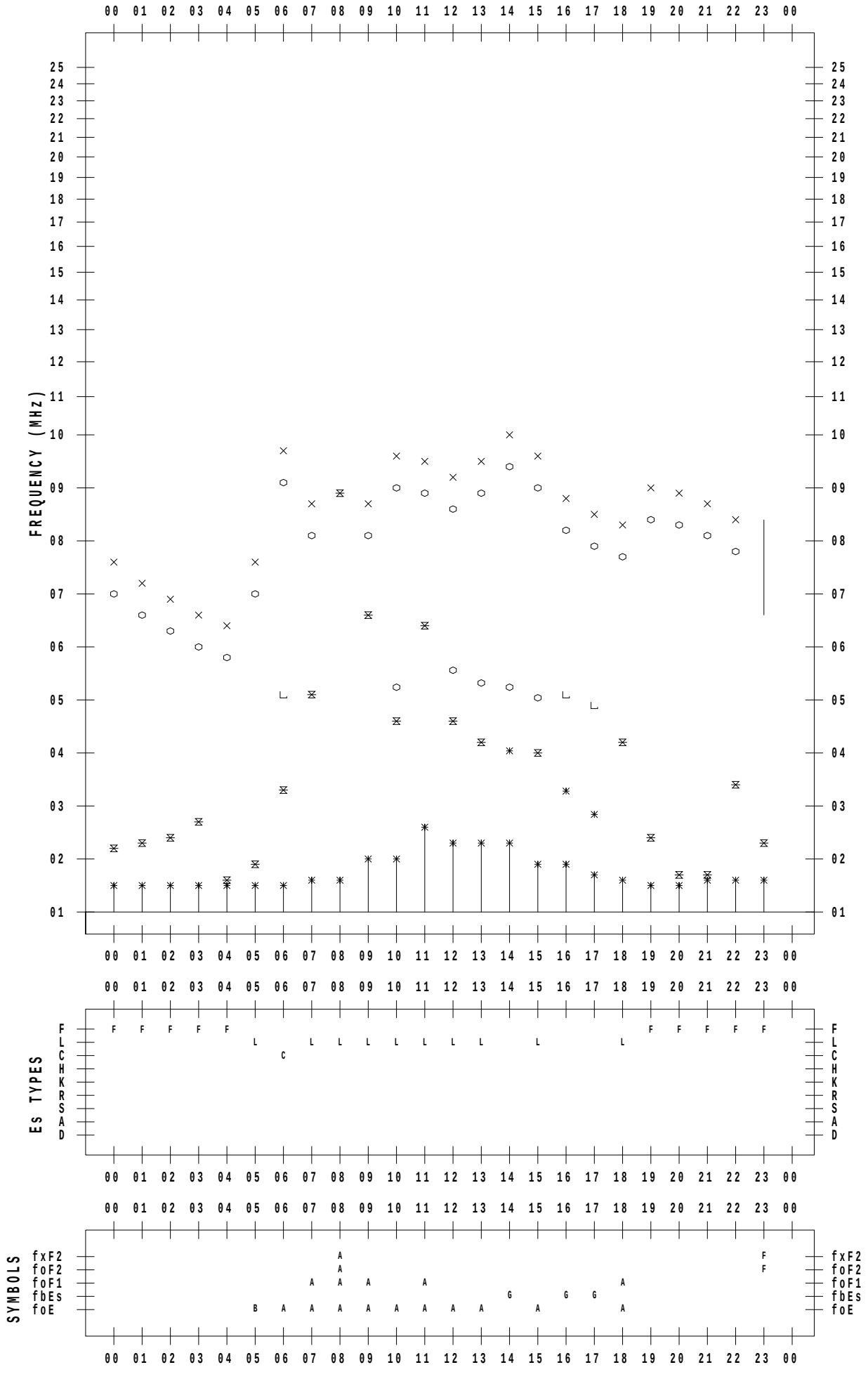
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/16

135 °E MEAN TIME



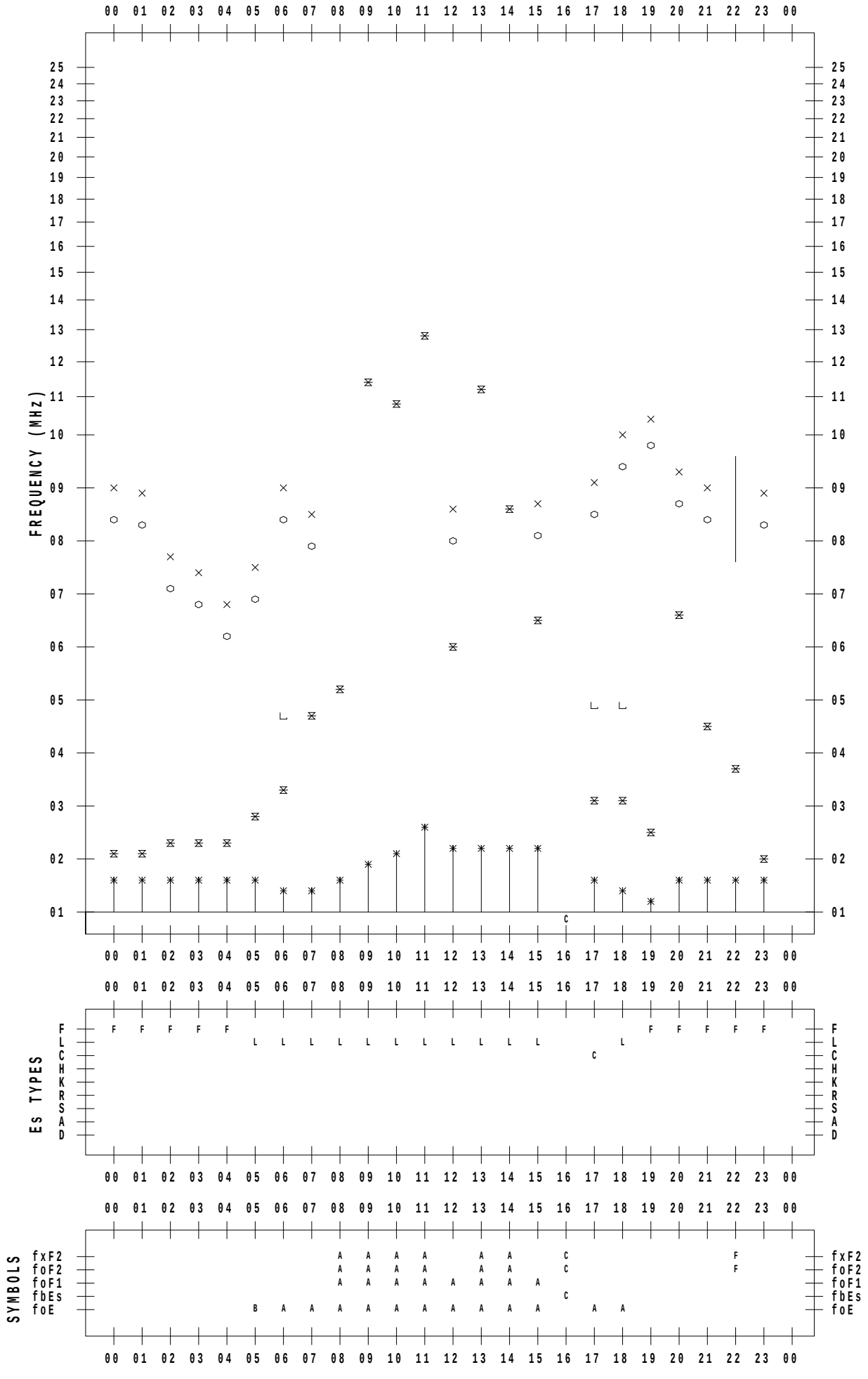
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/17

135 °E MEAN TIME



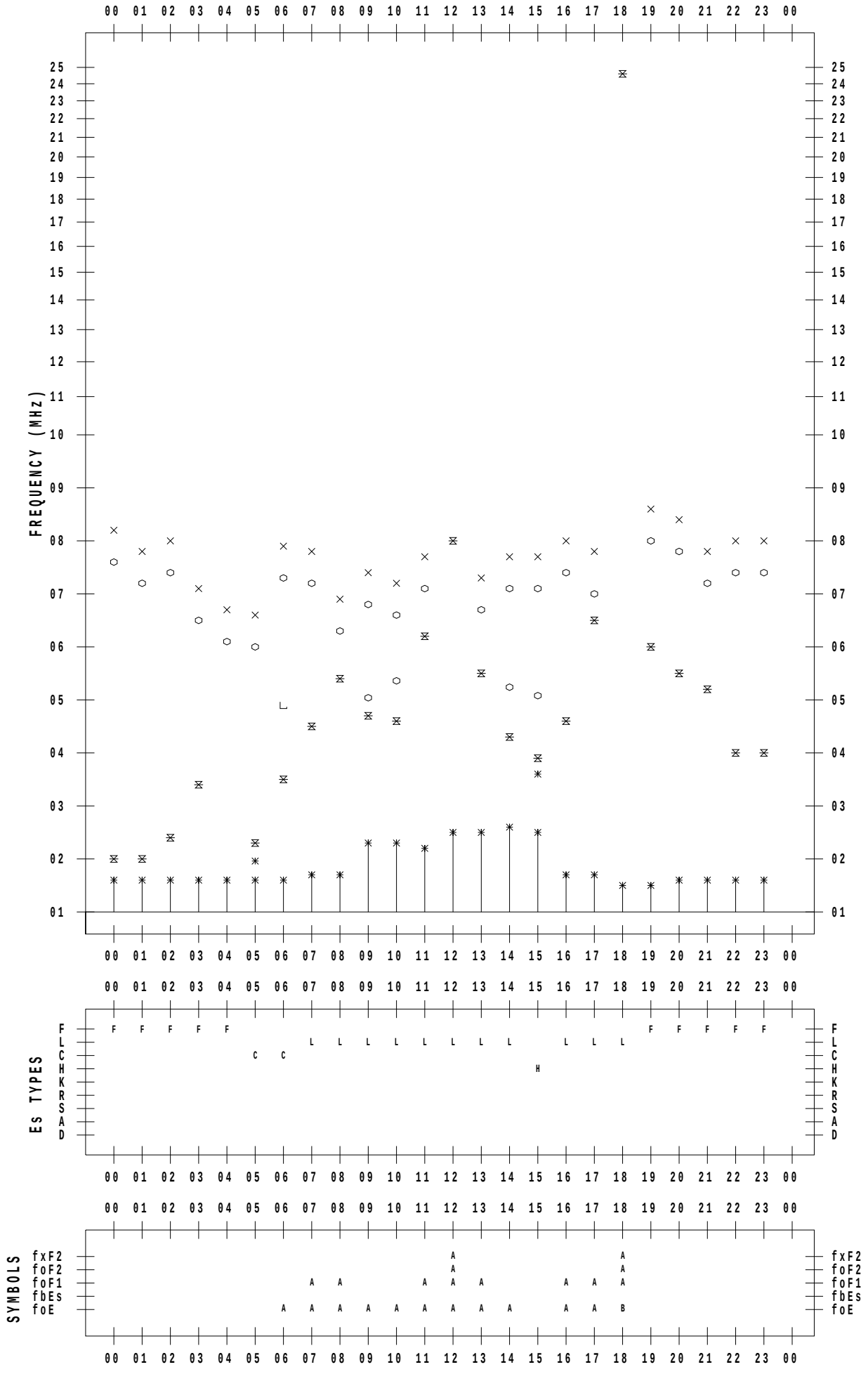
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/18

135 °E MEAN TIME



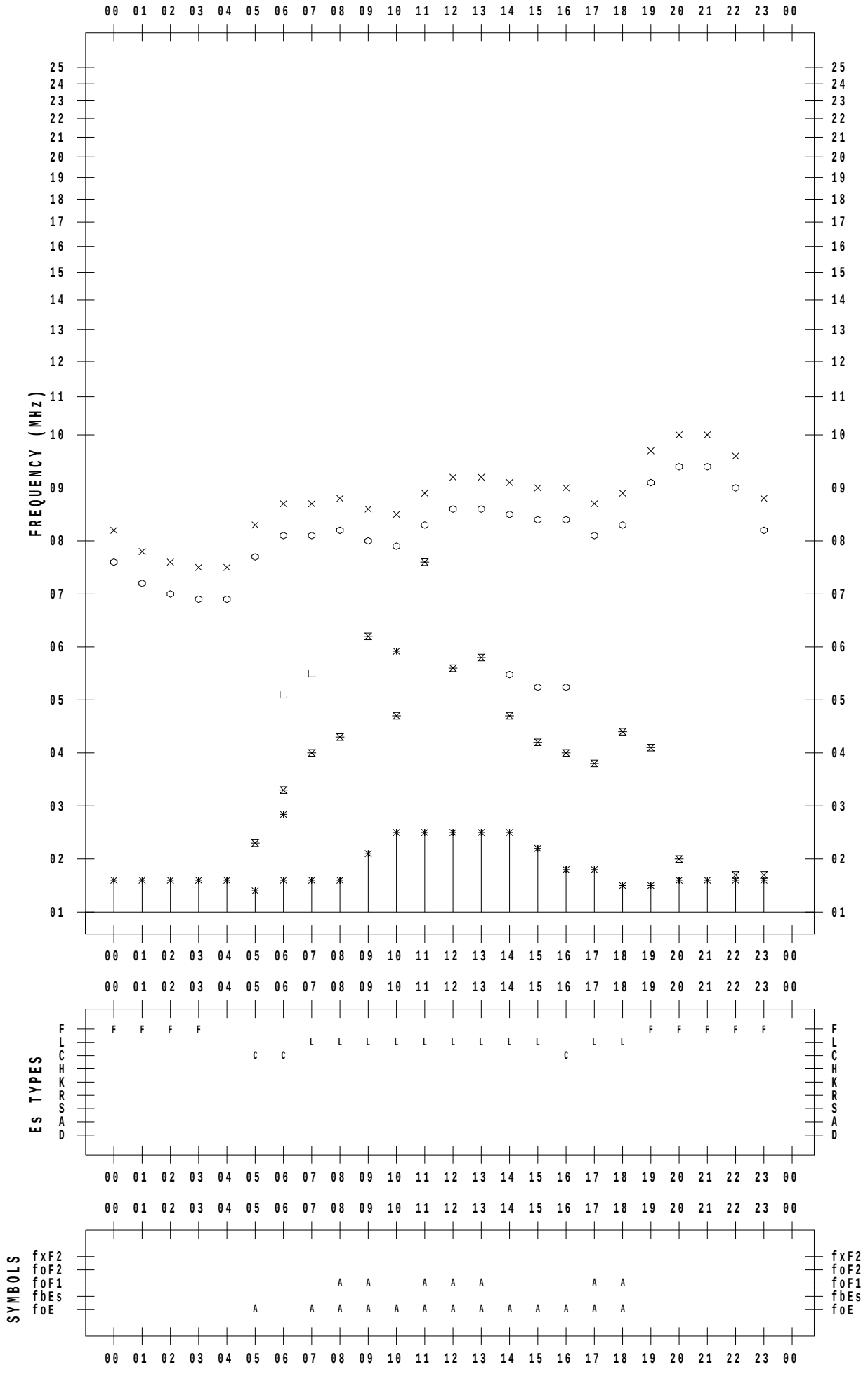
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/19

135 °E MEAN TIME



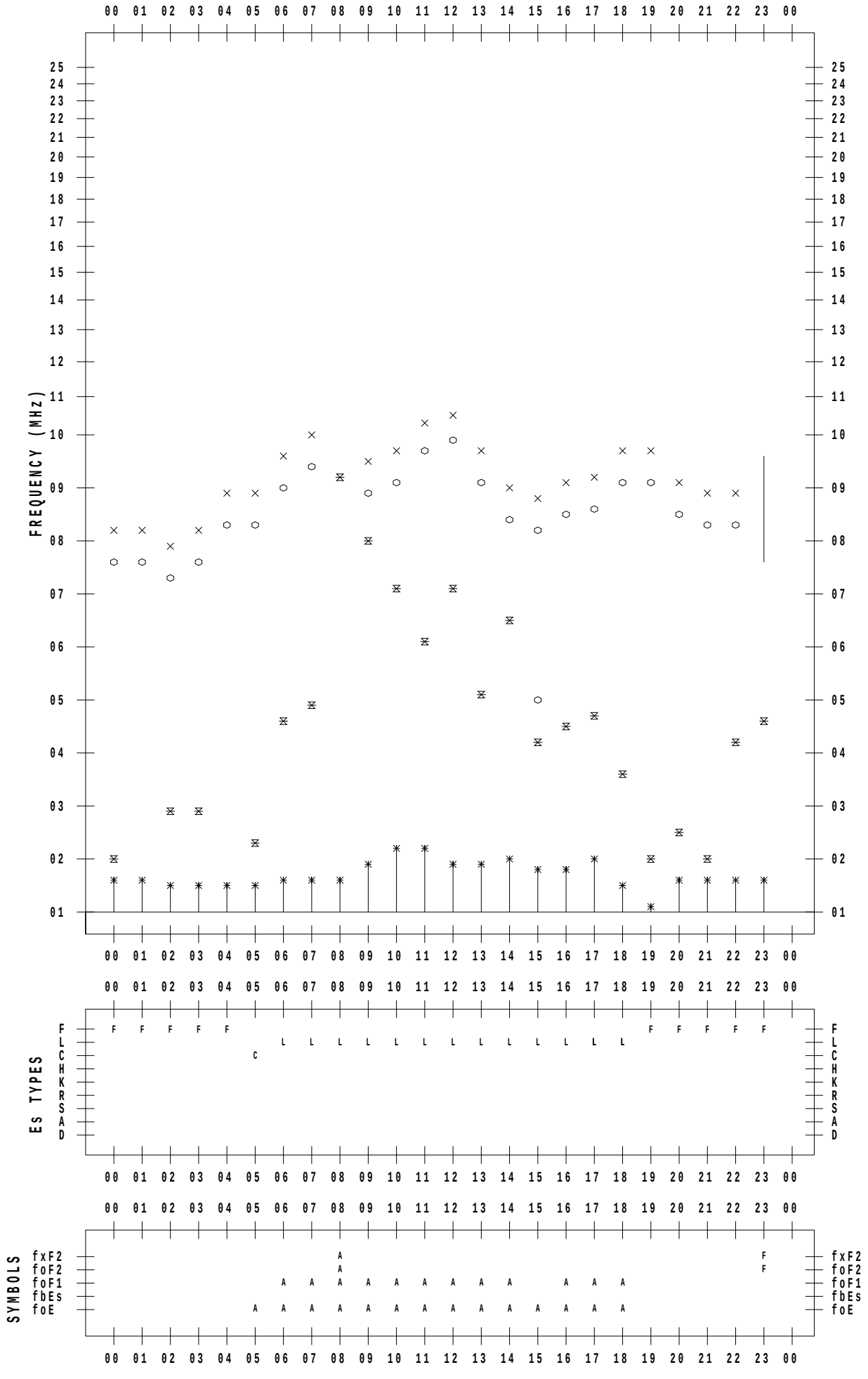
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/20

135 °E MEAN TIME



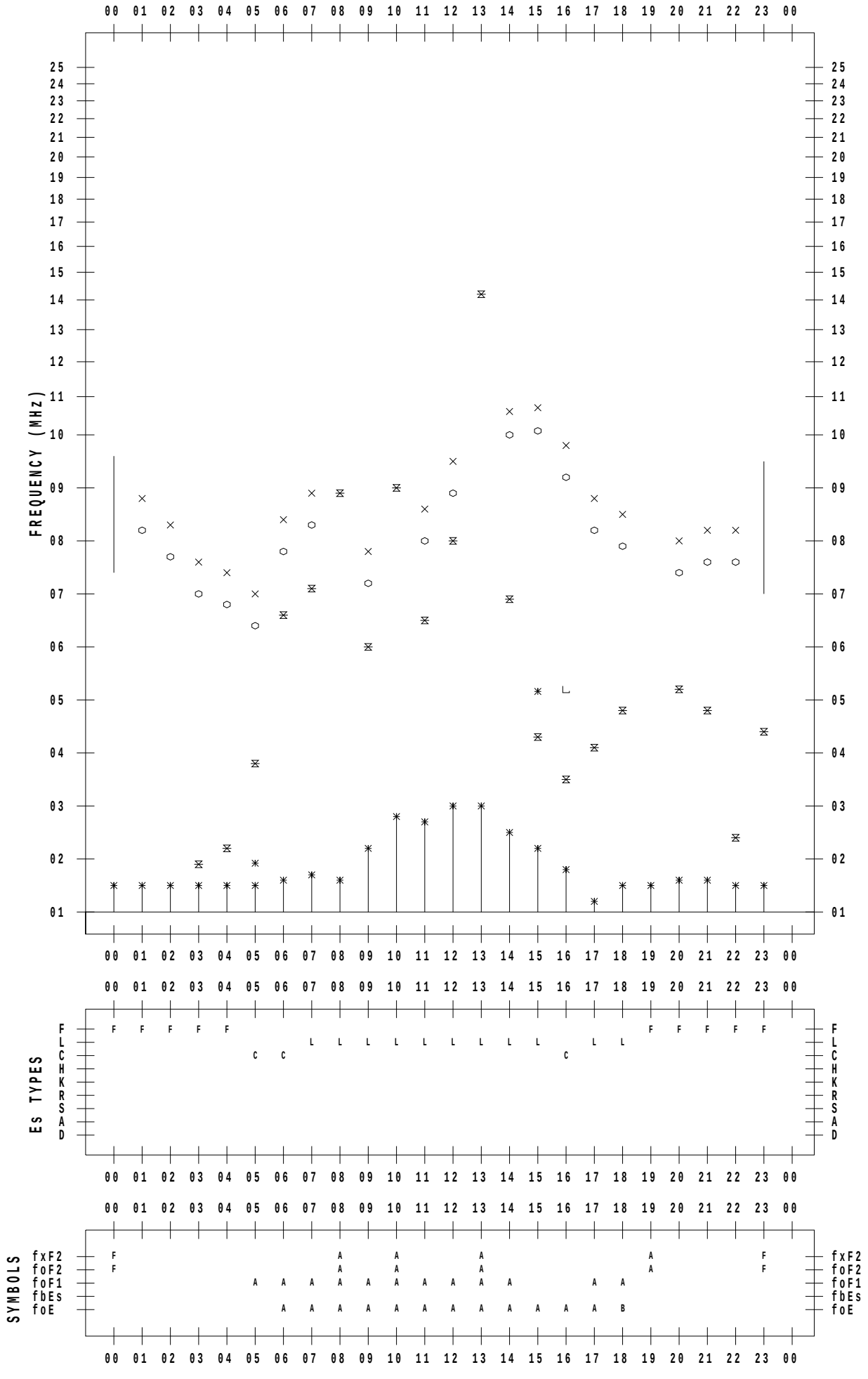
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/21

135 °E MEAN TIME



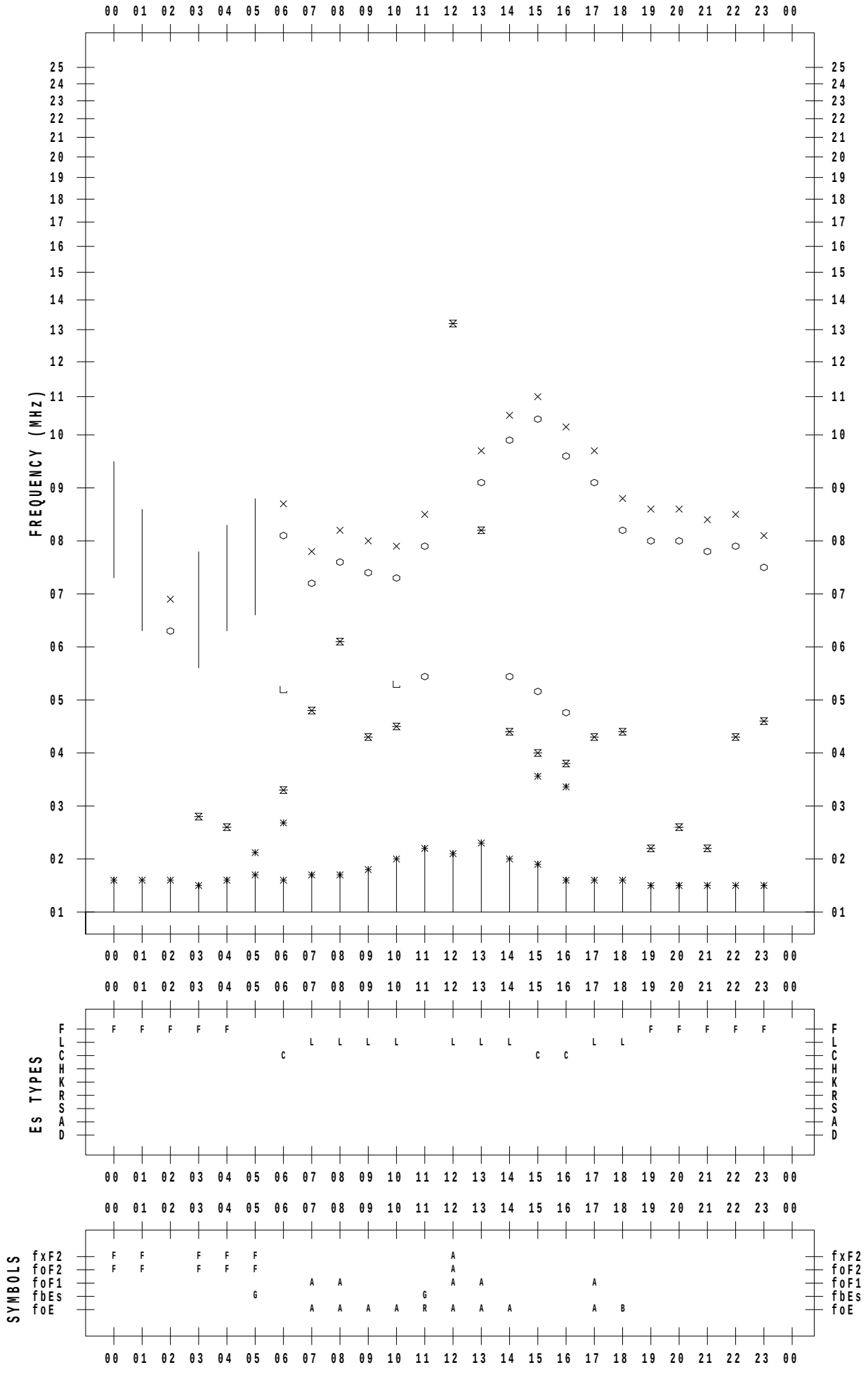
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/22

135 °E MEAN TIME



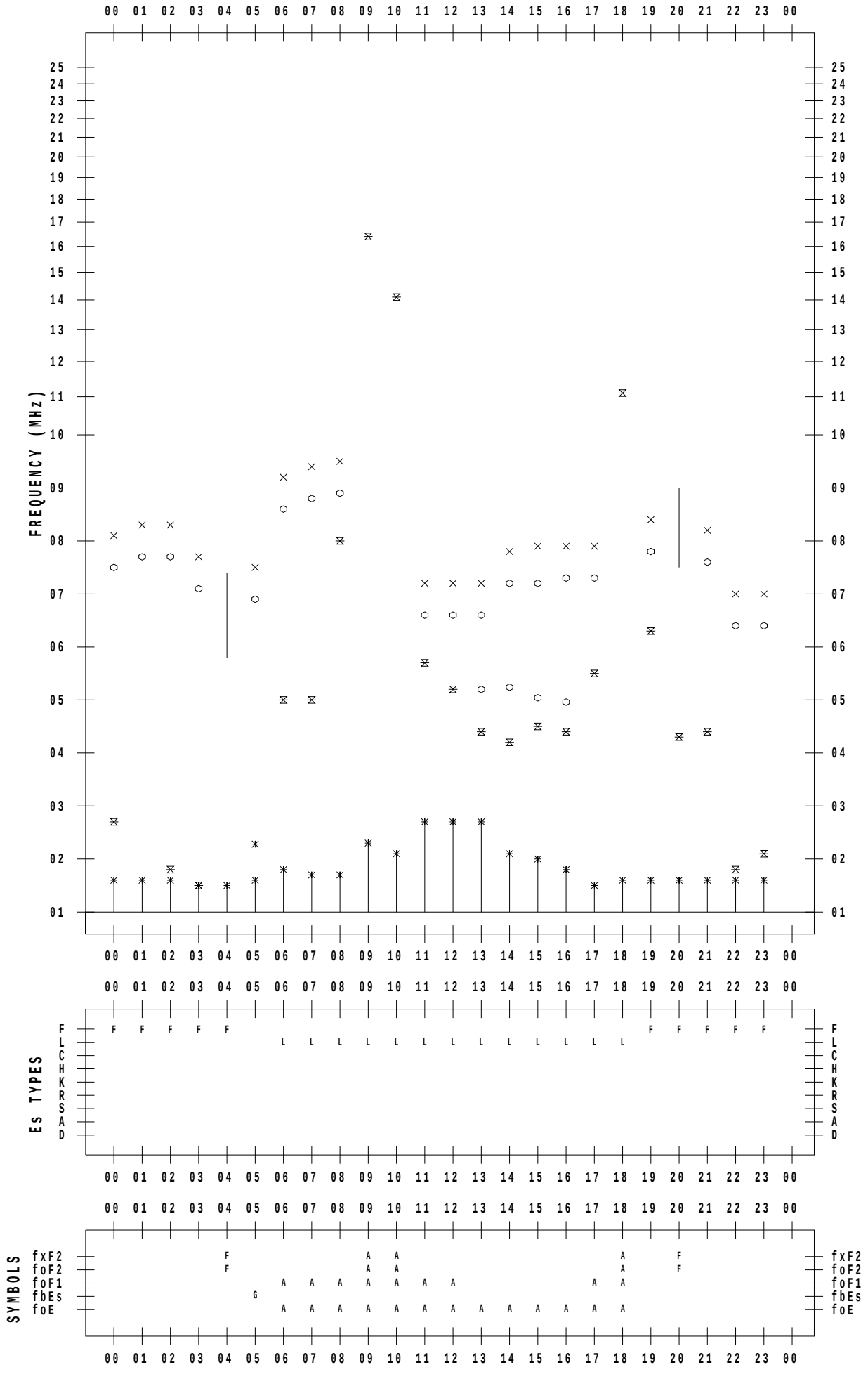
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/23

135 °E MEAN TIME



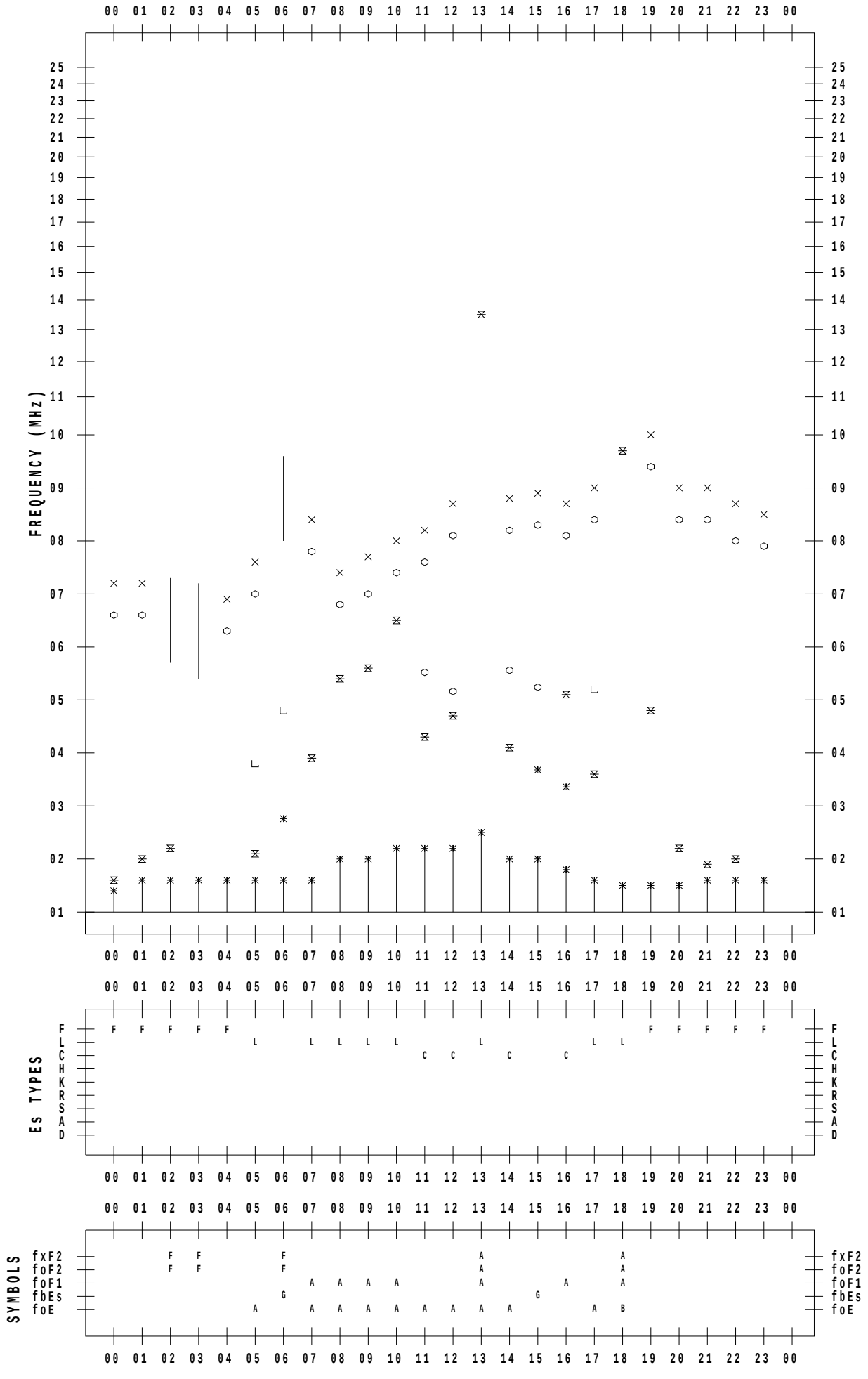
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/24

135 °E MEAN TIME



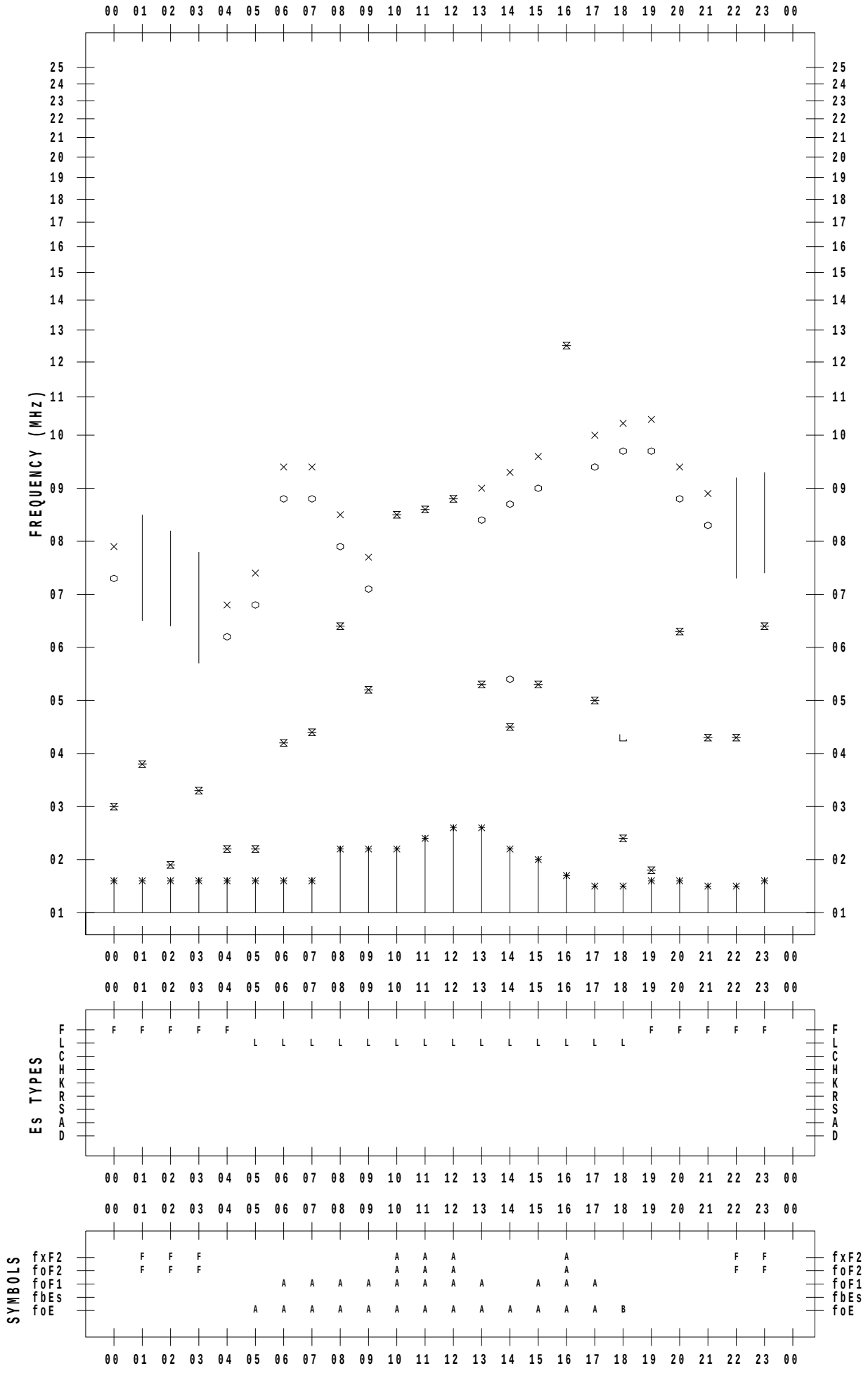
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/25

135 °E MEAN TIME



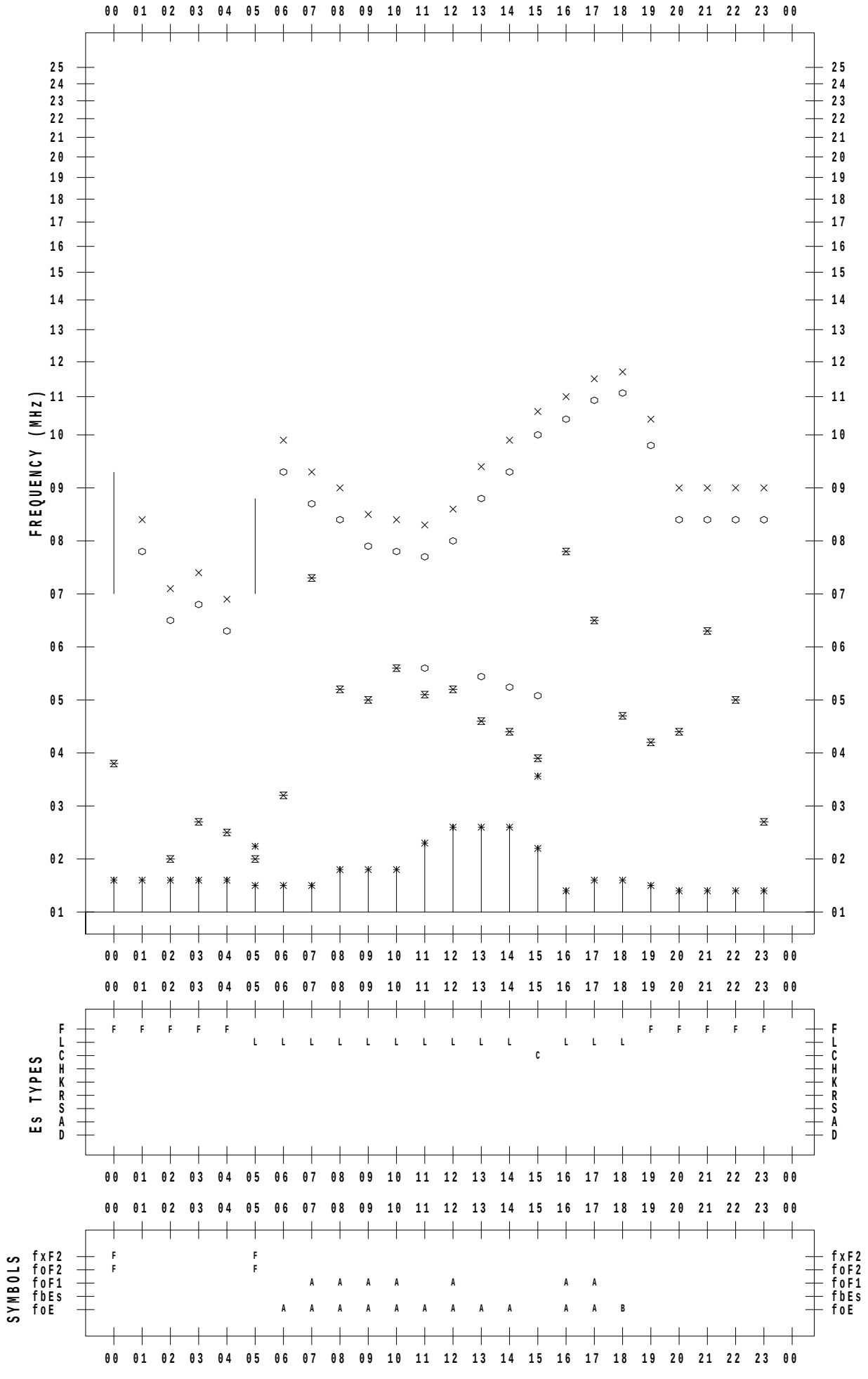
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/26

135 °E MEAN TIME



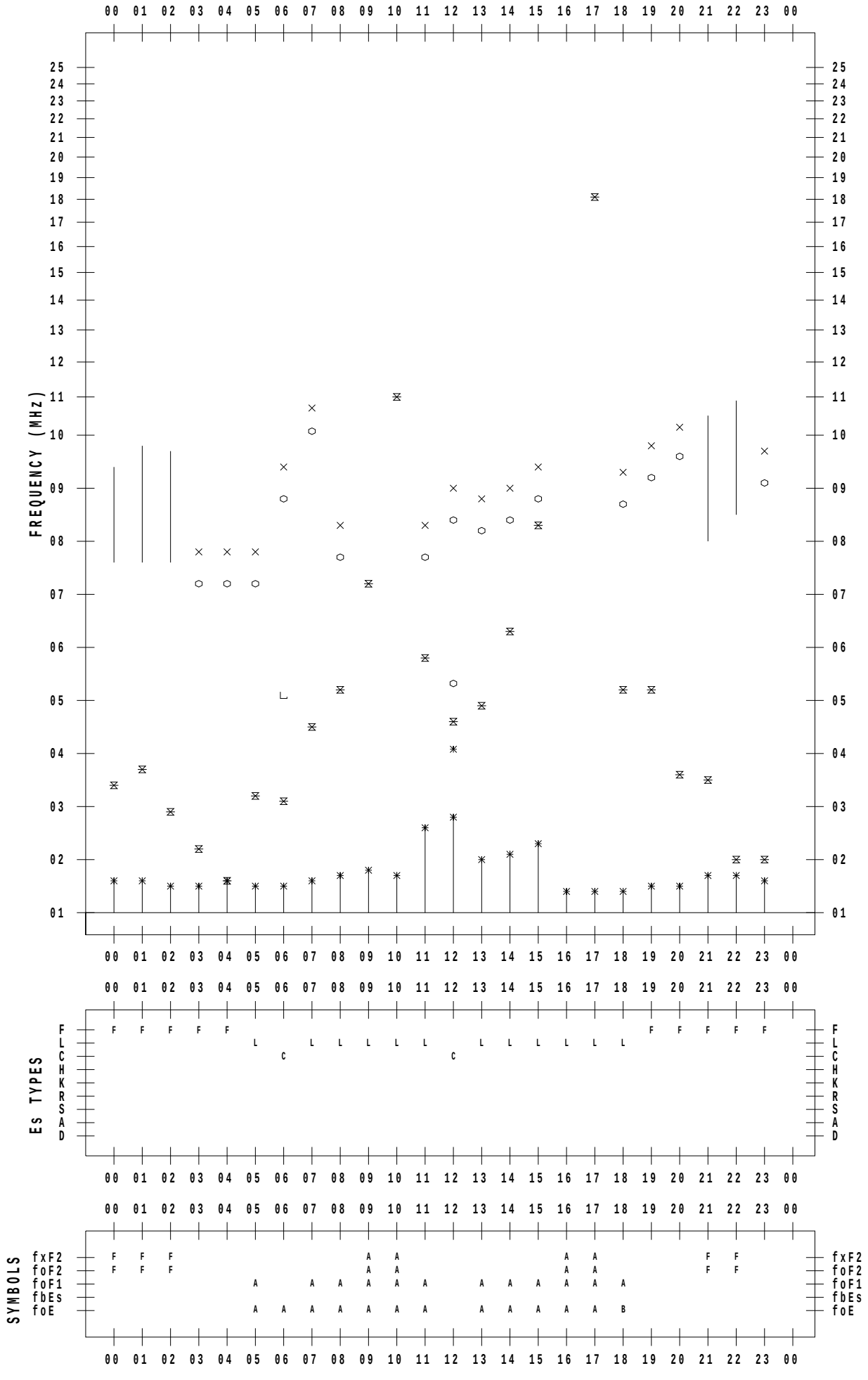
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/27

135 °E MEAN TIME



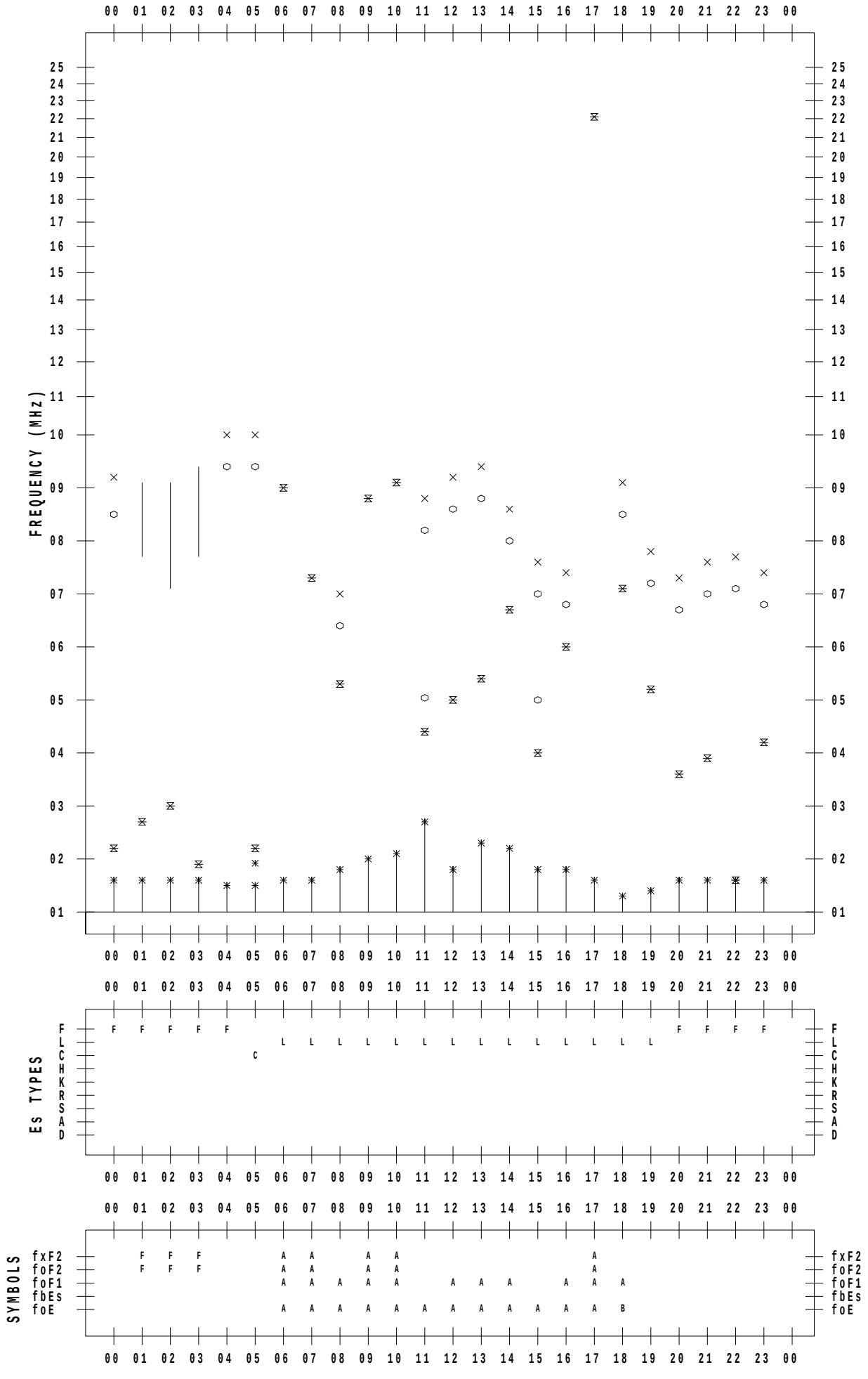
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/28

135 °E MEAN TIME



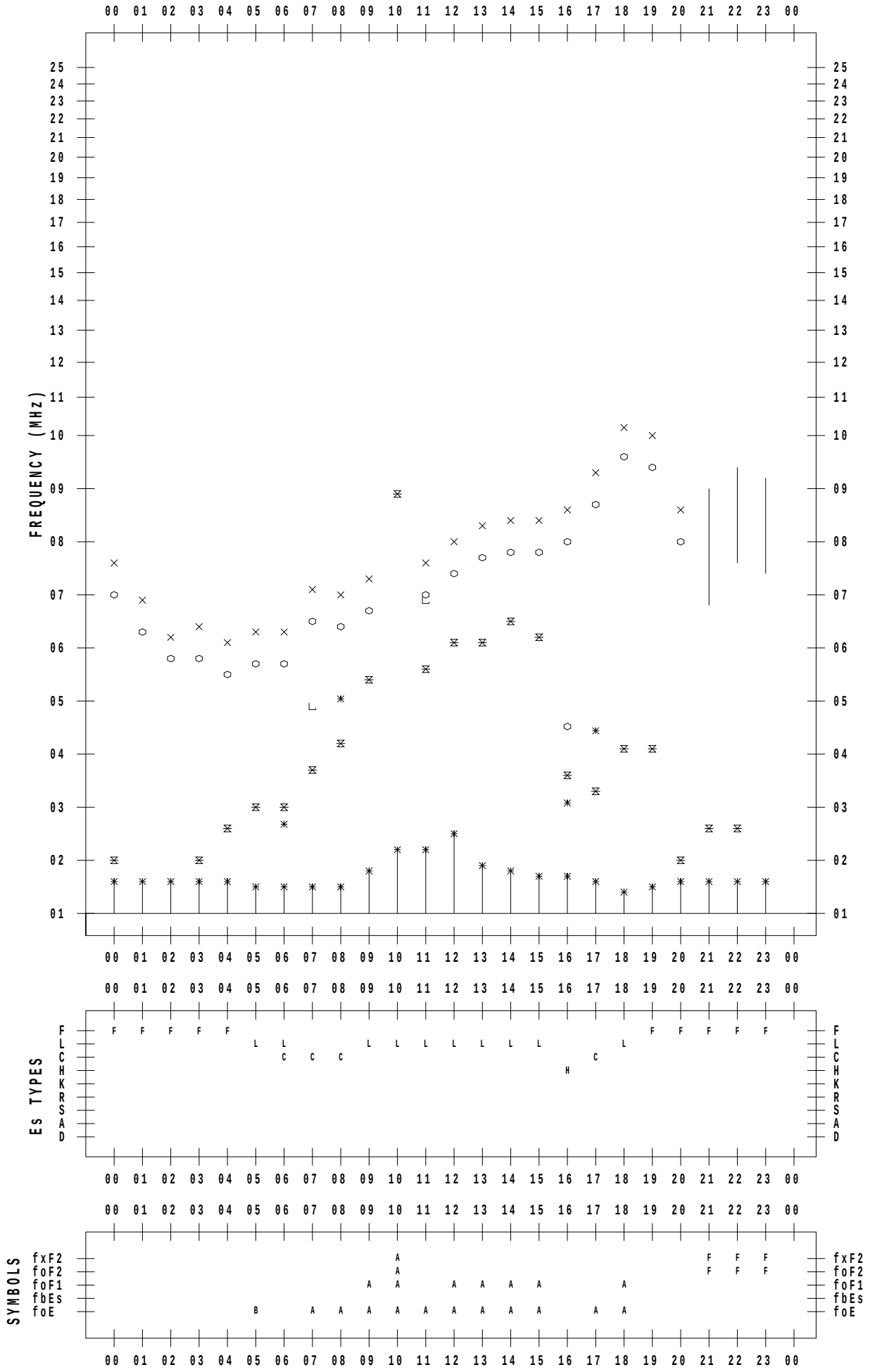
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/29

135 °E MEAN TIME



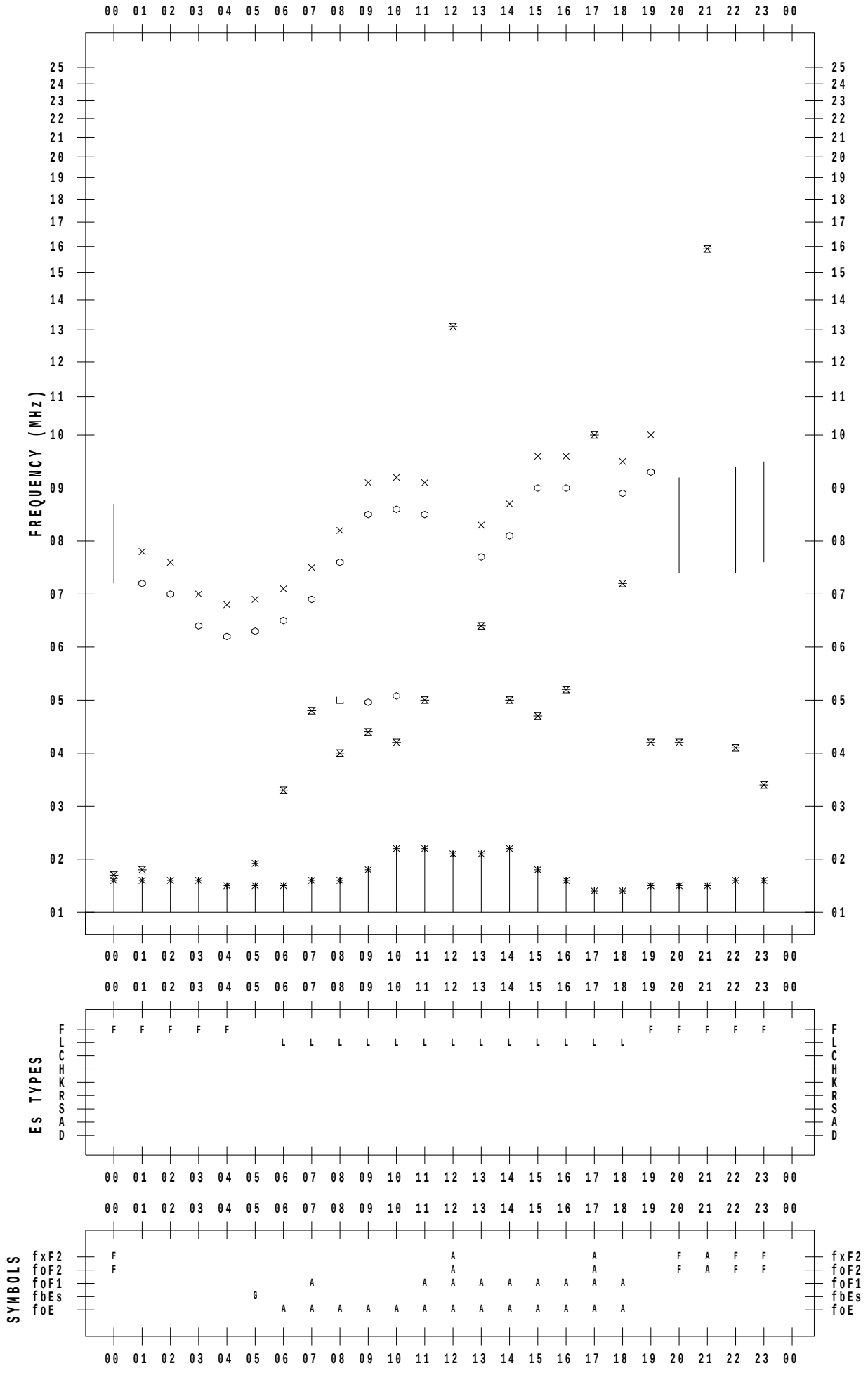
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/30

135 °E MEAN TIME



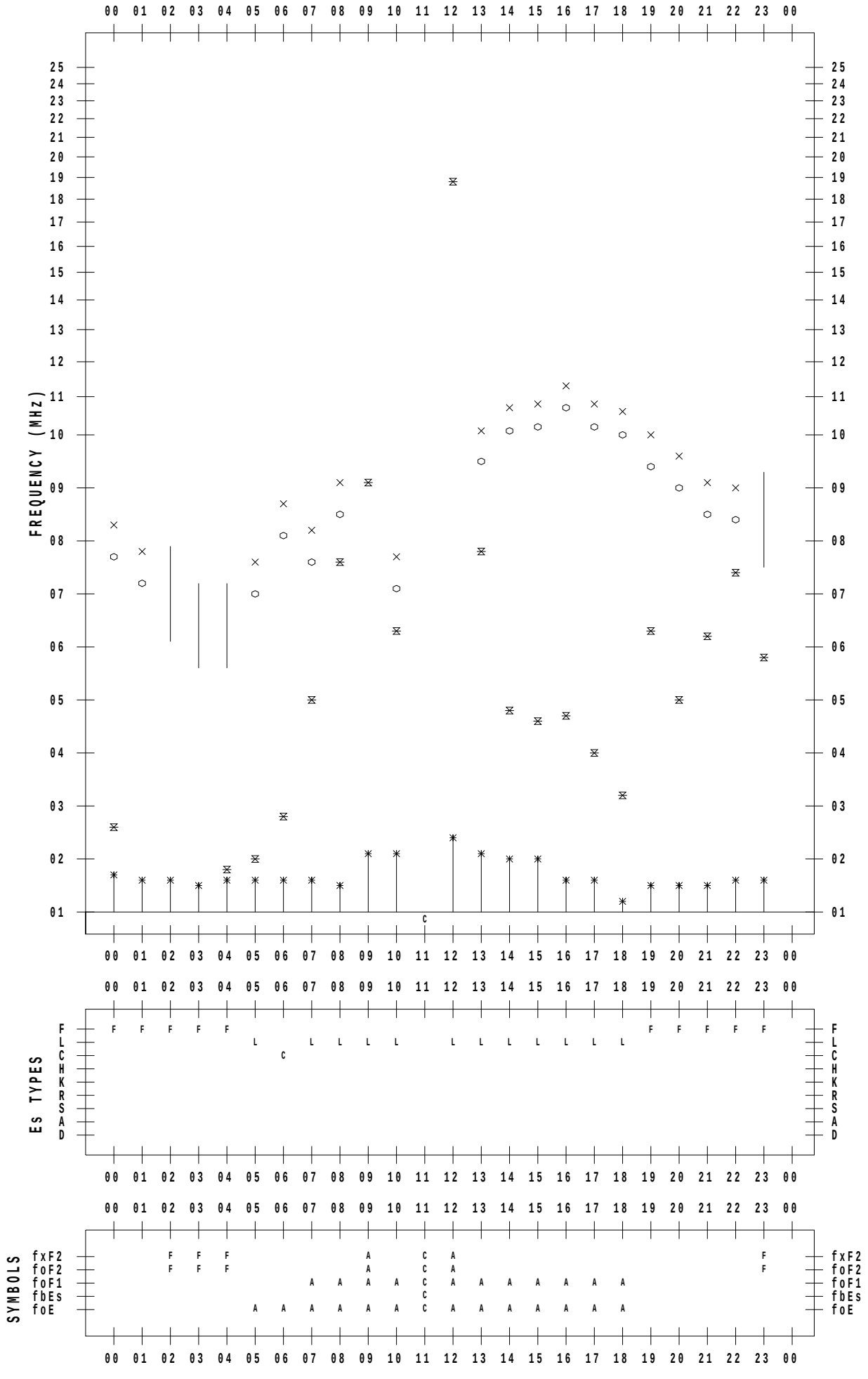
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2022/ 5/31

135 °E MEAN TIME



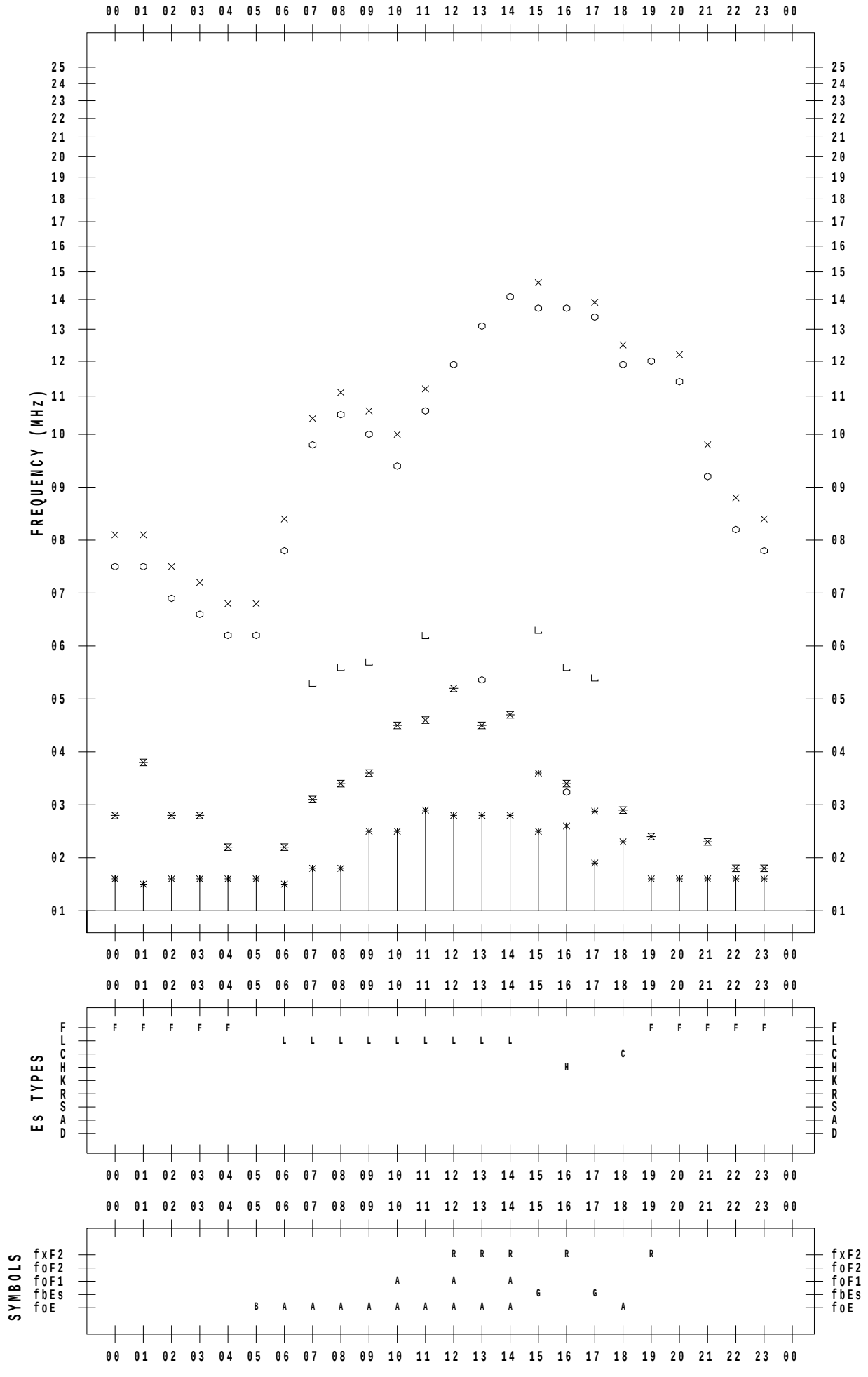
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 1

135 °E MEAN TIME



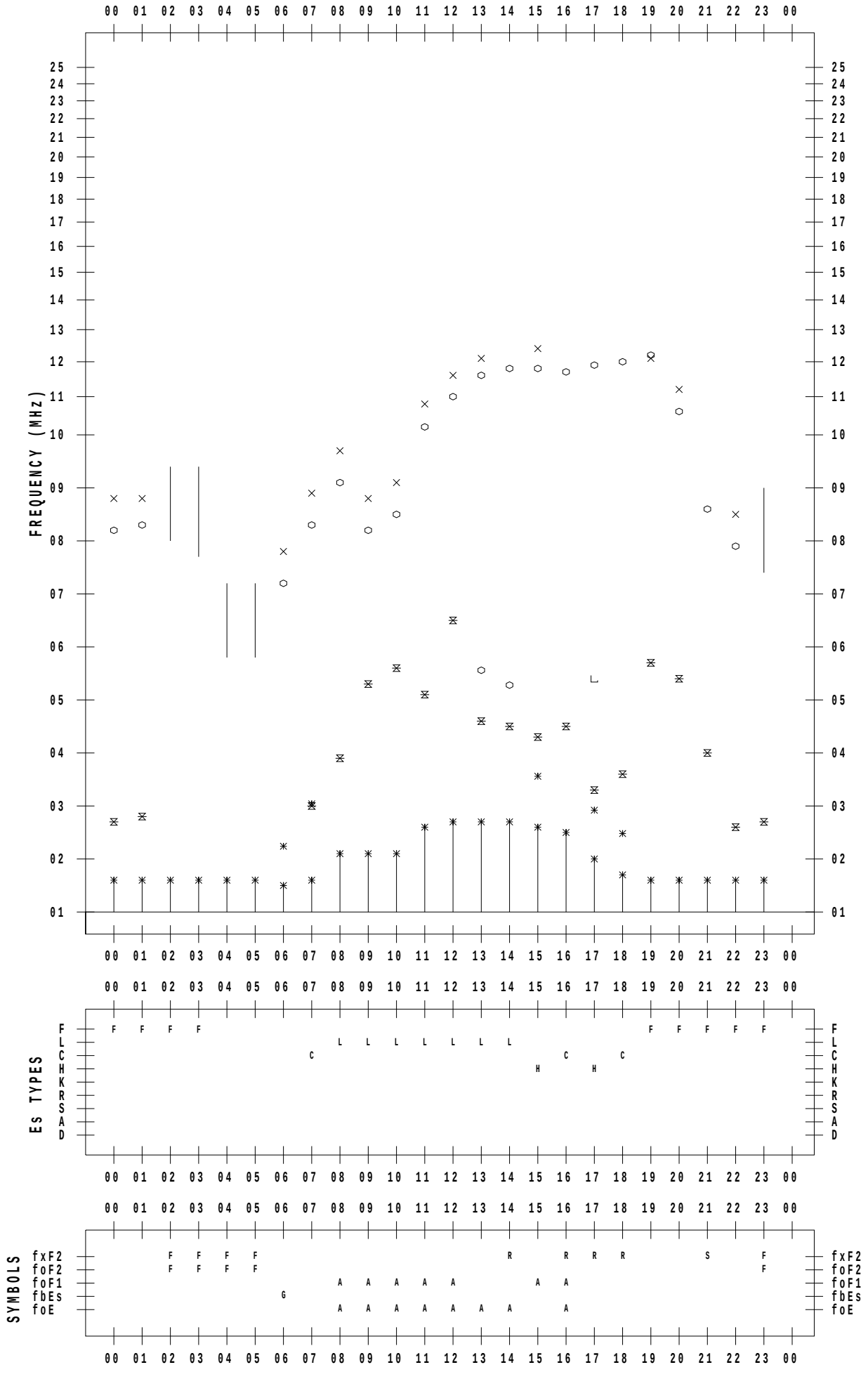
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 2

135 °E MEAN TIME



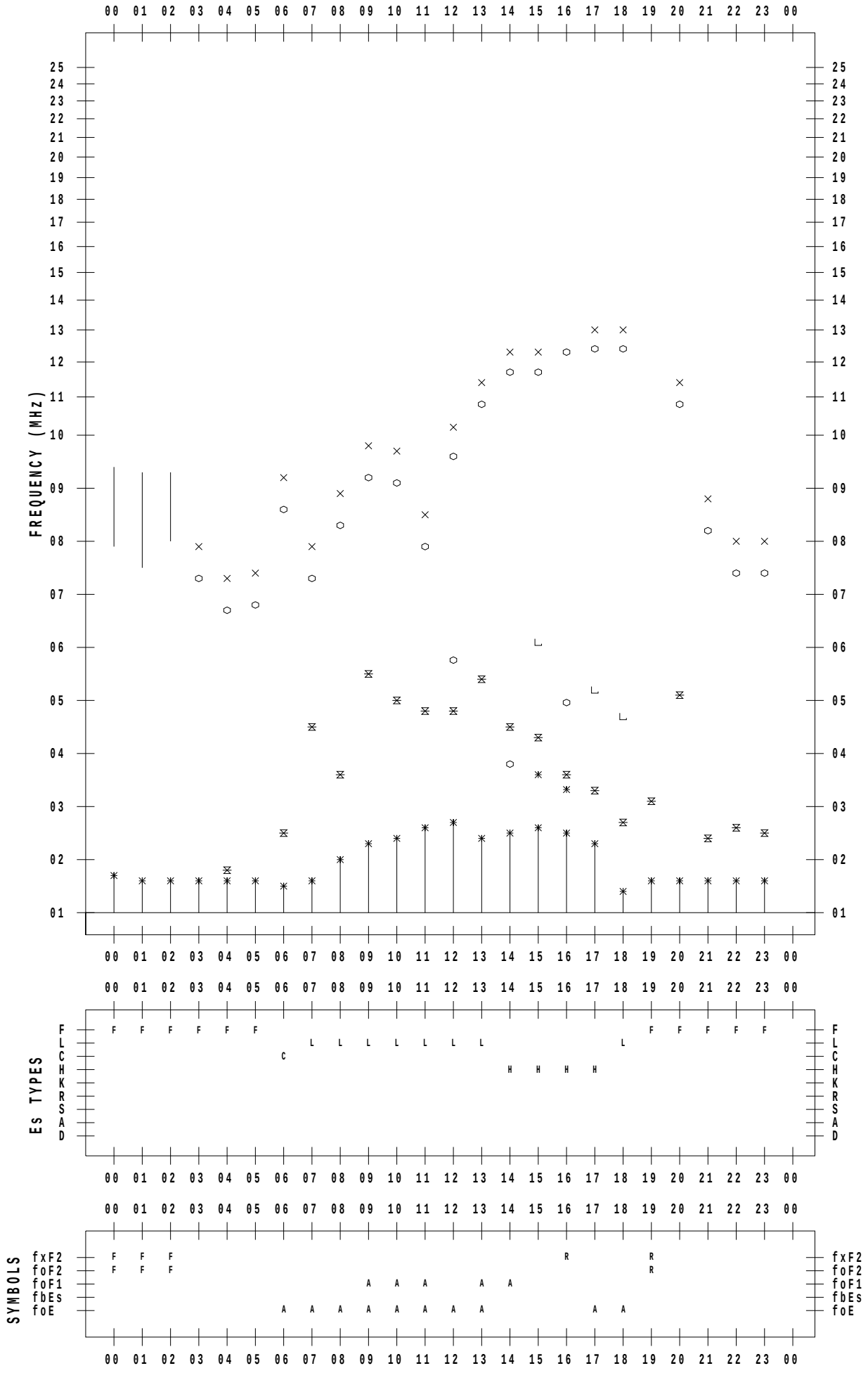
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 3

135 °E MEAN TIME



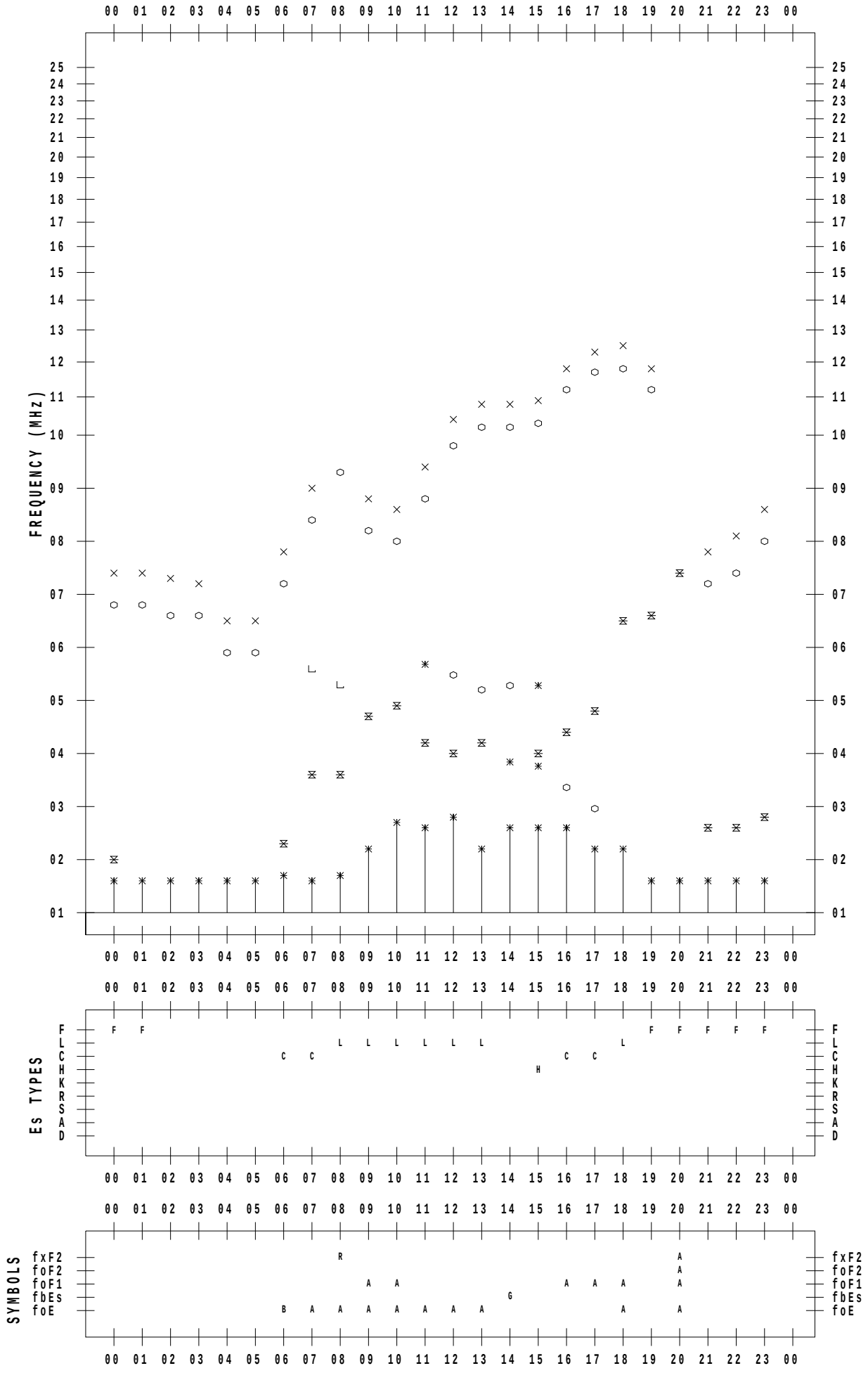
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 4

135 °E MEAN TIME



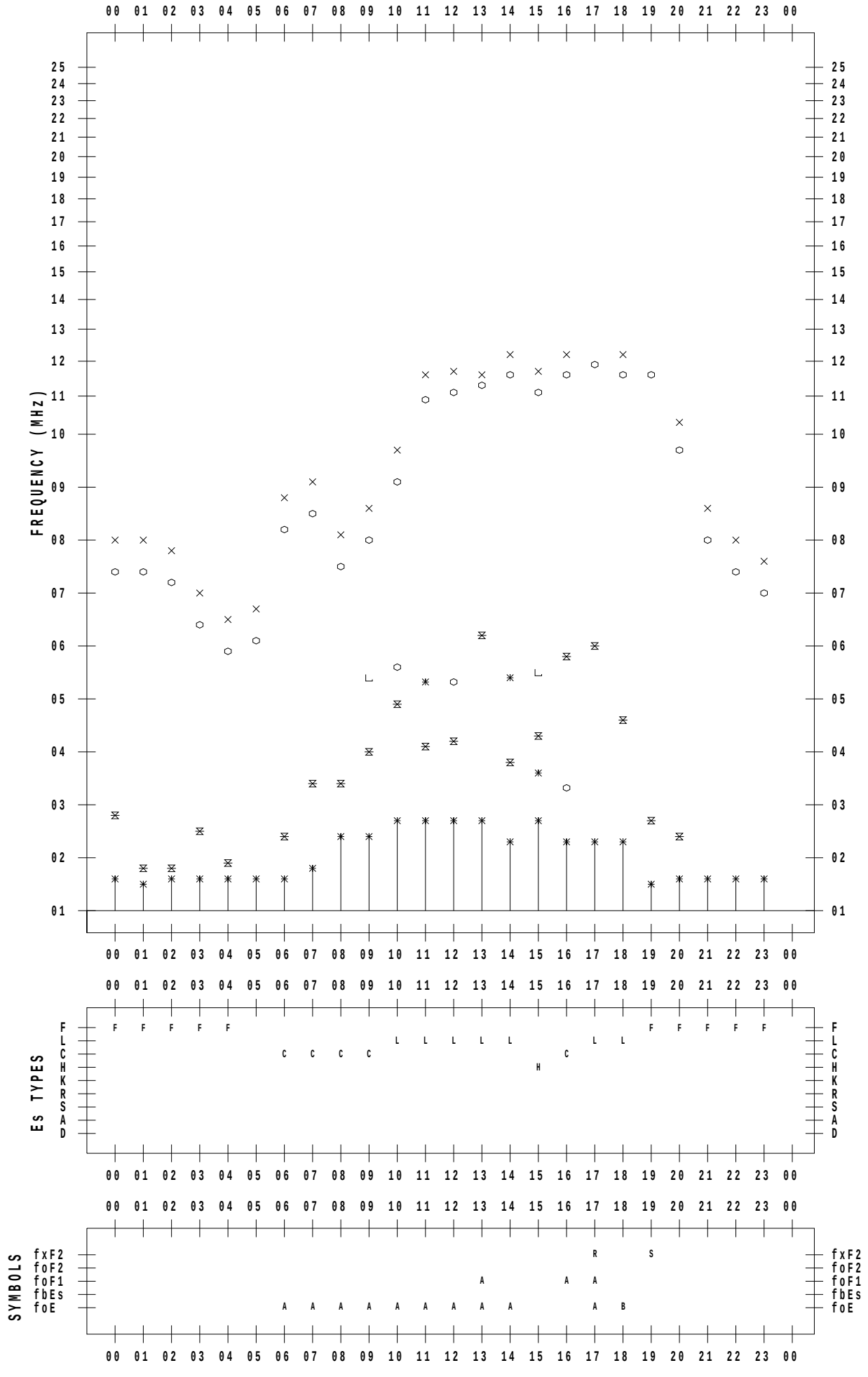
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 5

135 °E MEAN TIME



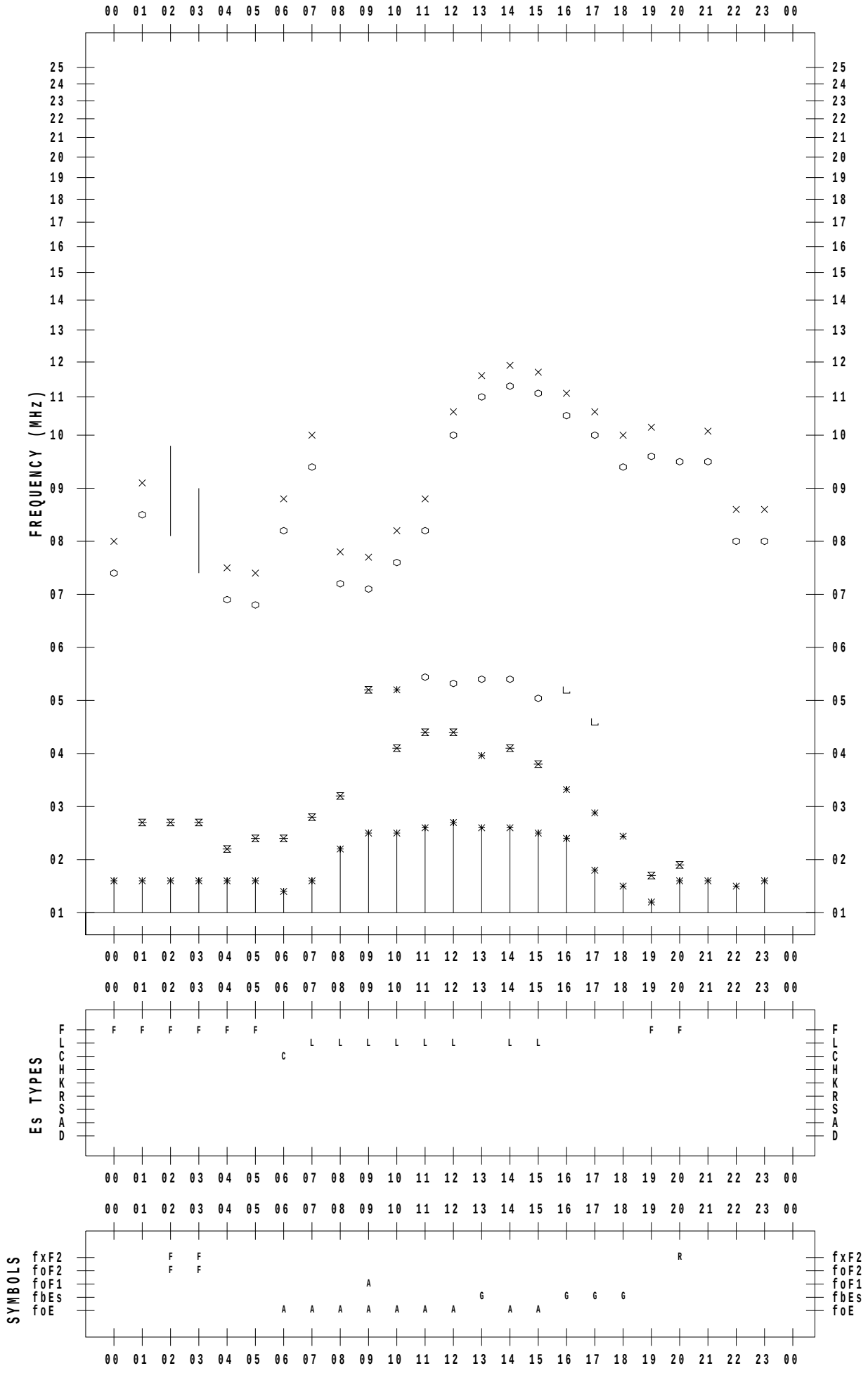
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 6

135 °E MEAN TIME



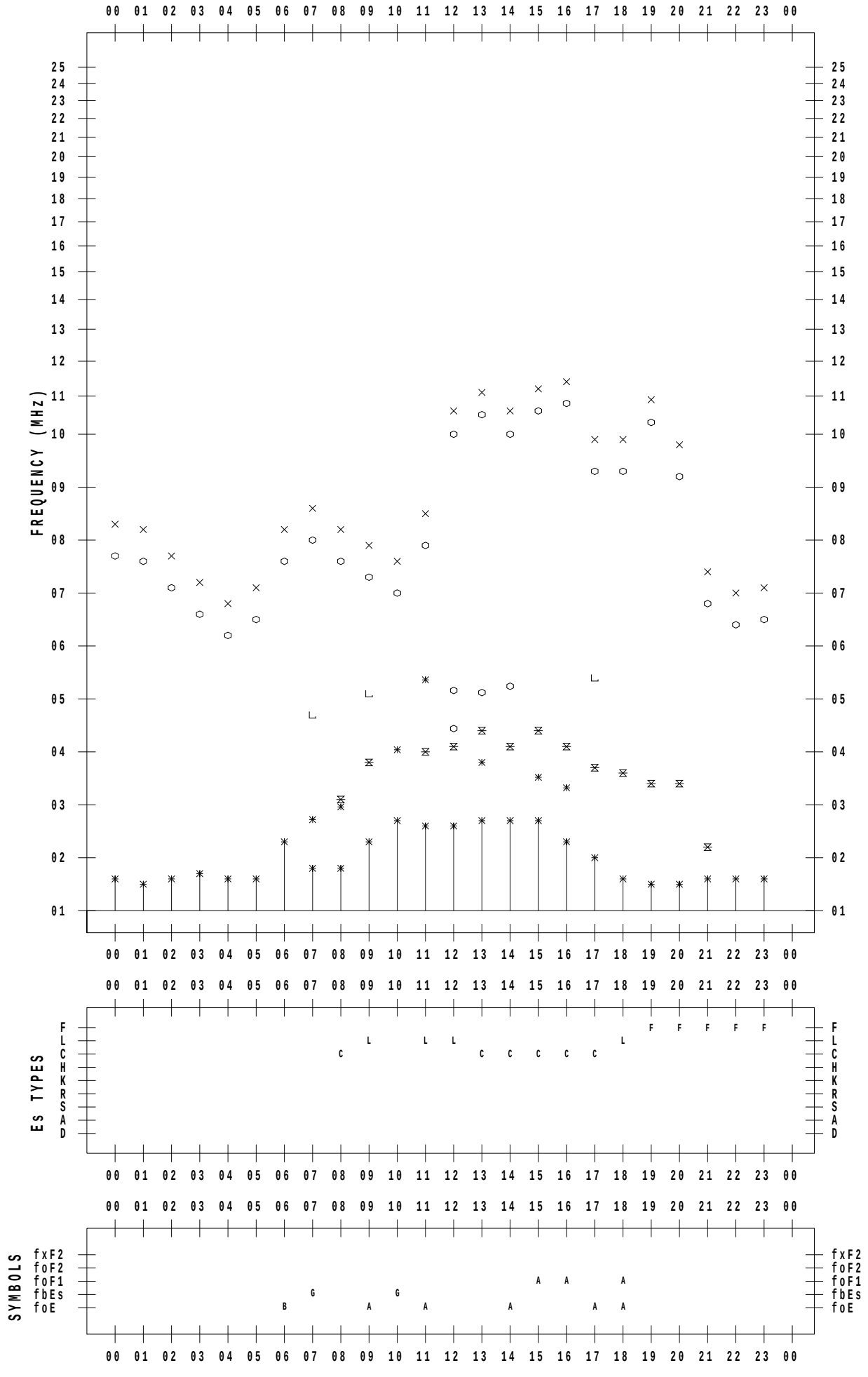
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 7

135 °E MEAN TIME



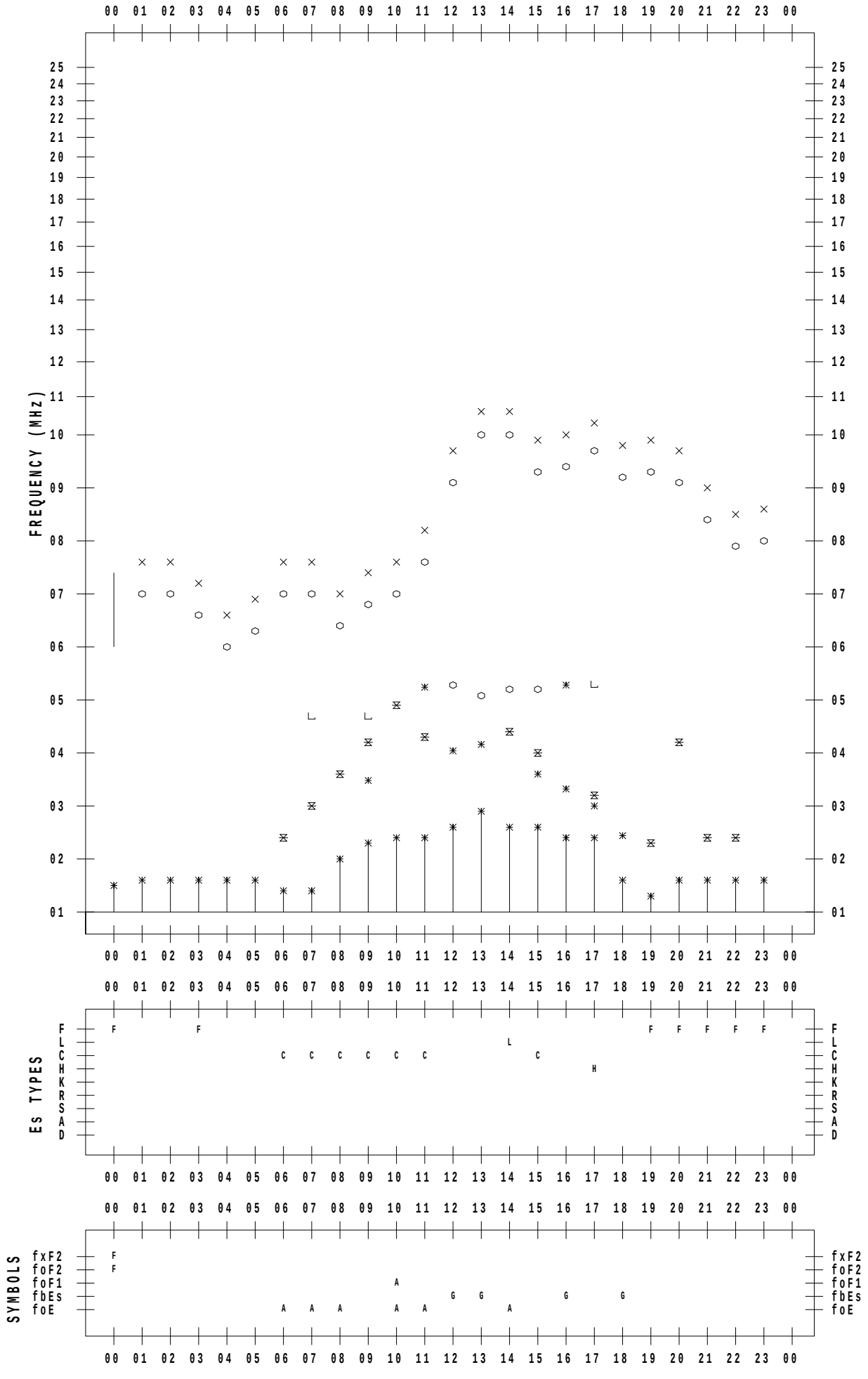
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 8

135 °E MEAN TIME



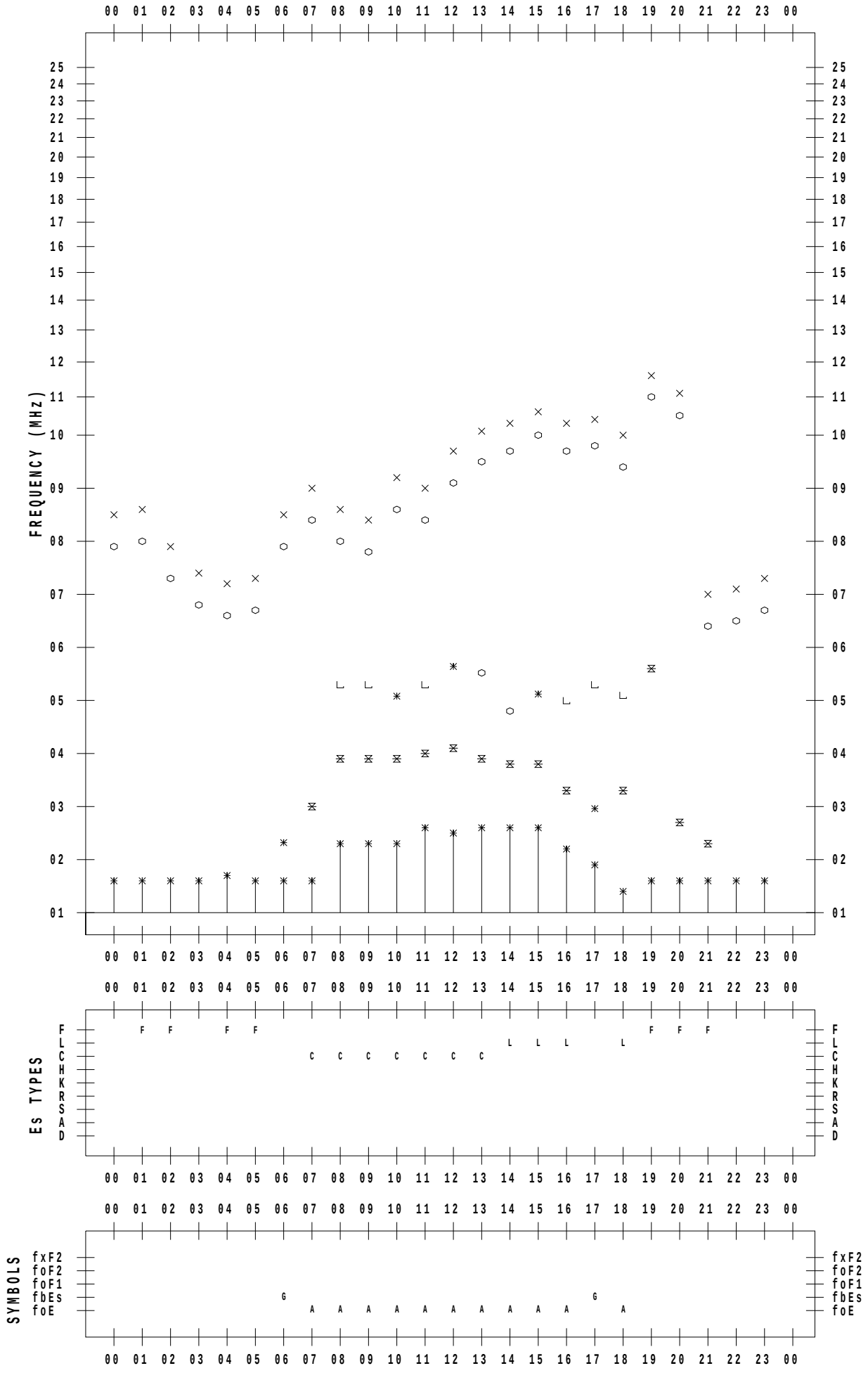
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/ 9

135 °E MEAN TIME



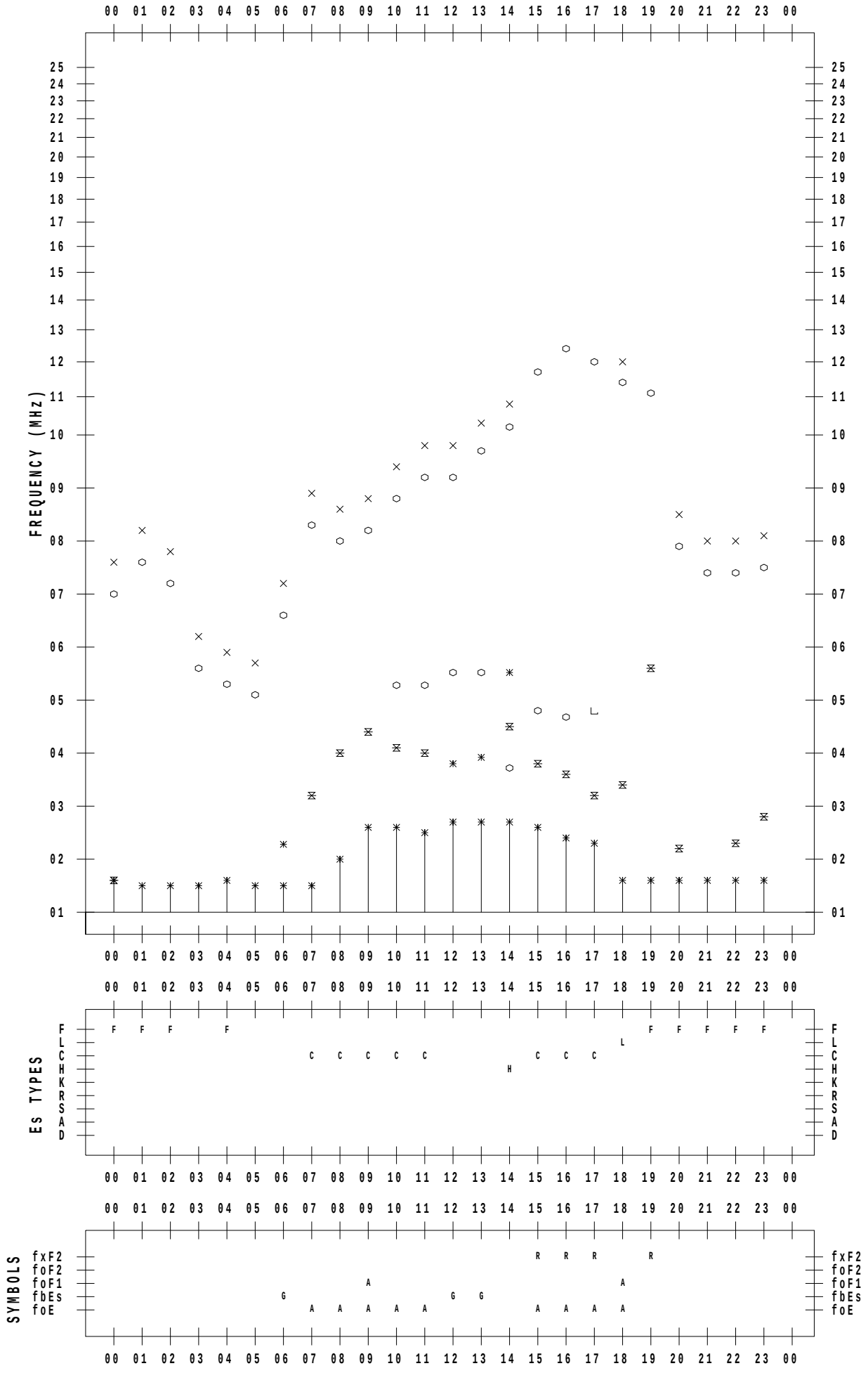
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/10

135 °E MEAN TIME



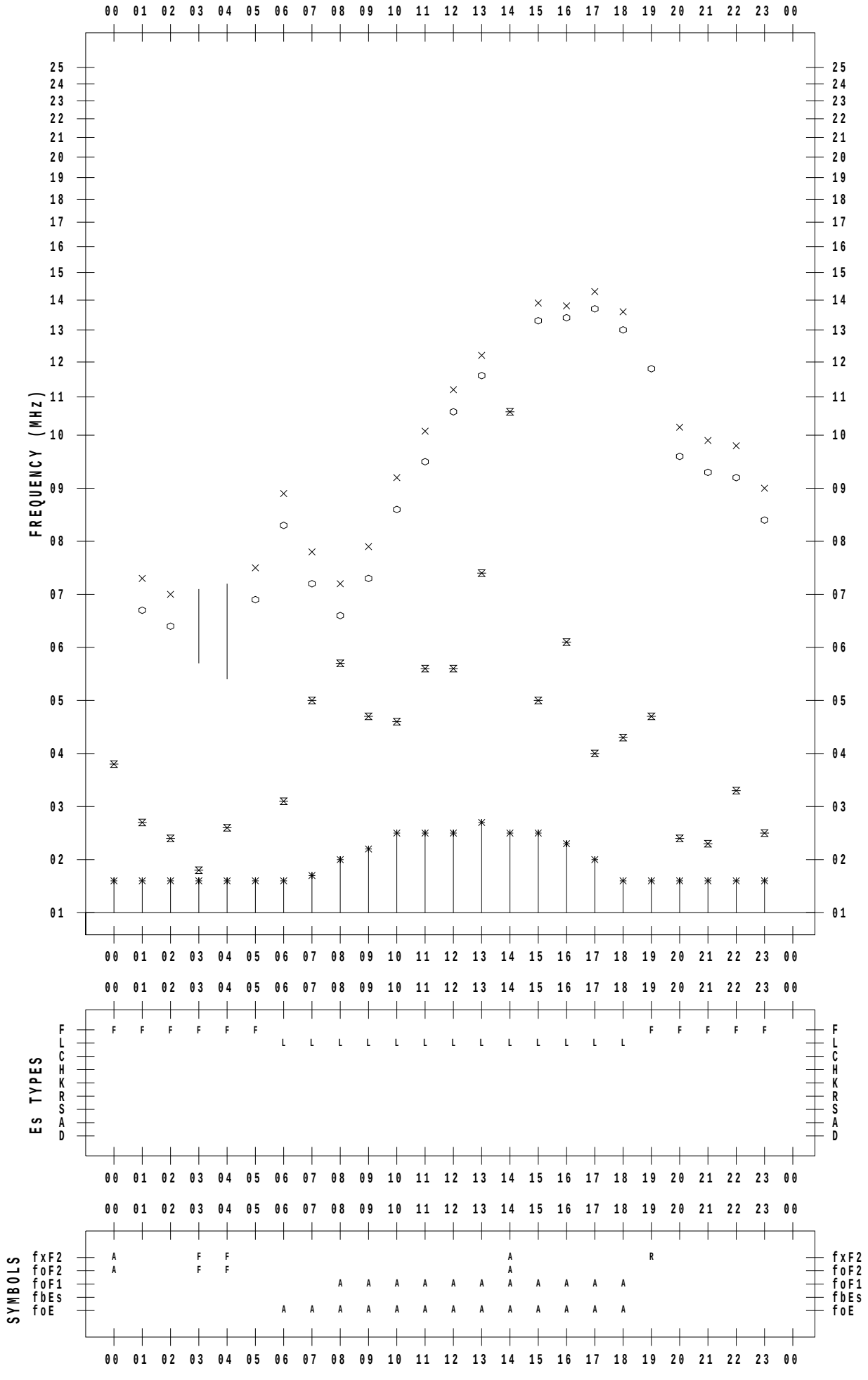
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/11

135 °E MEAN TIME



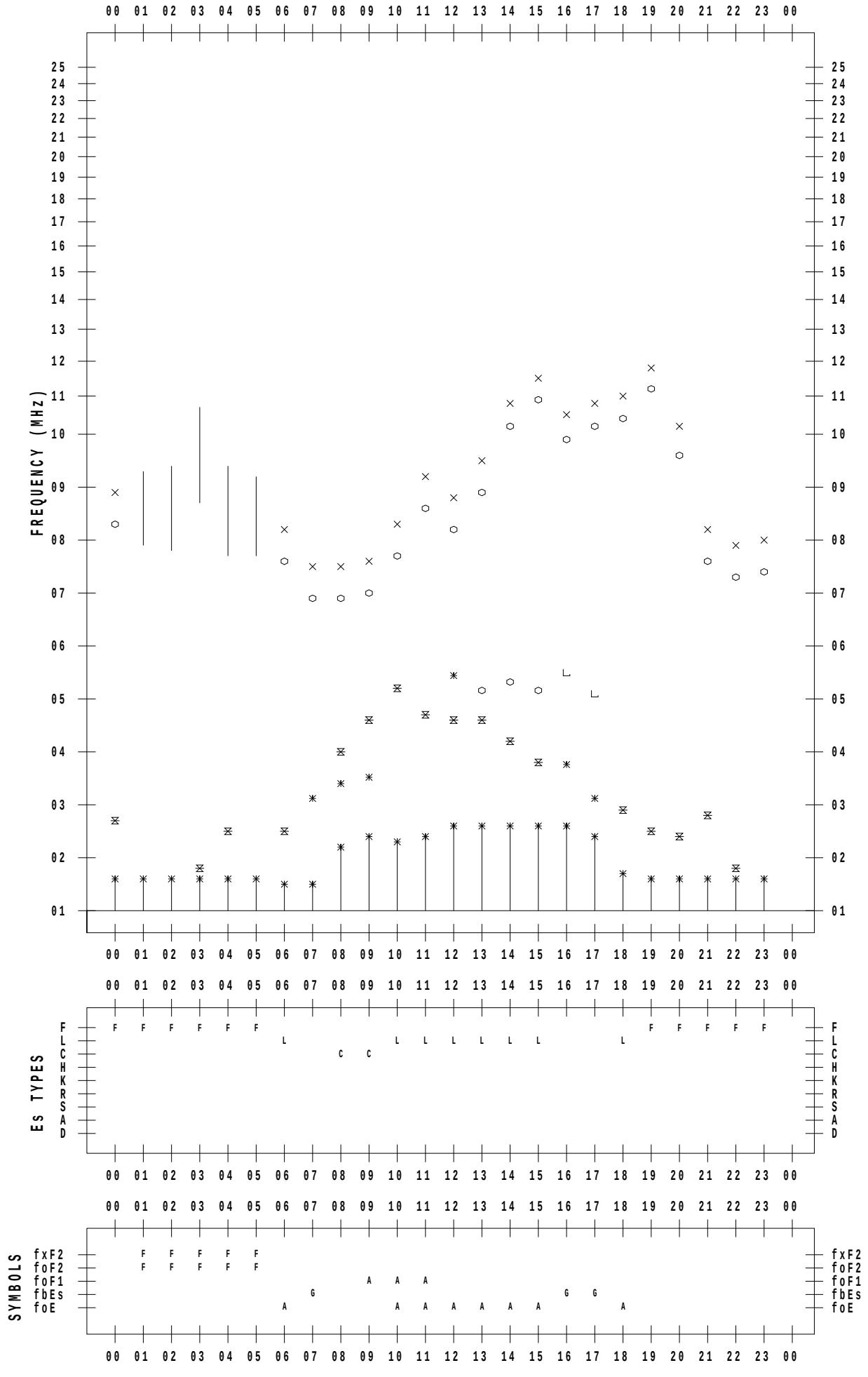
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/12

135 °E MEAN TIME



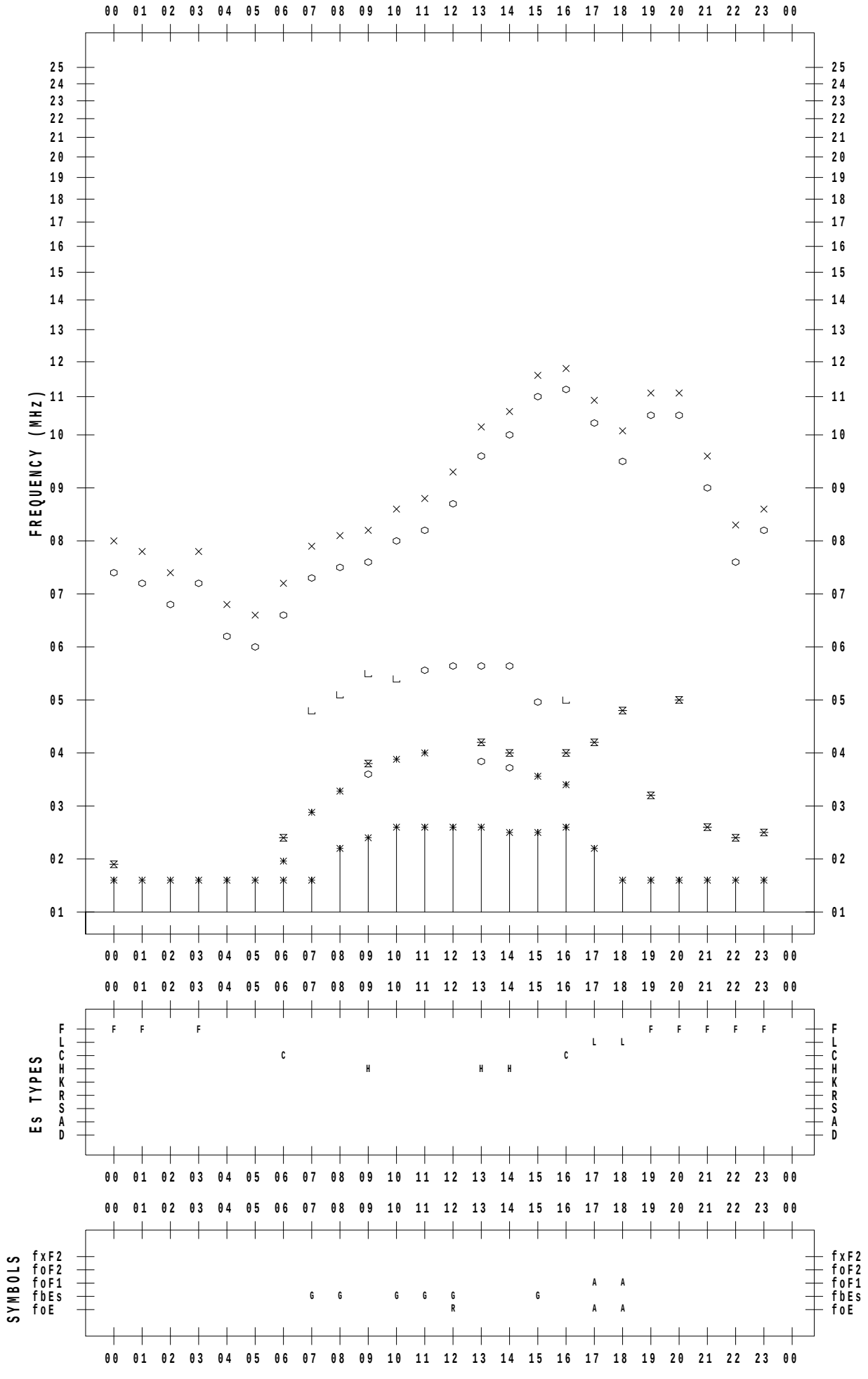
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/13

135 °E MEAN TIME



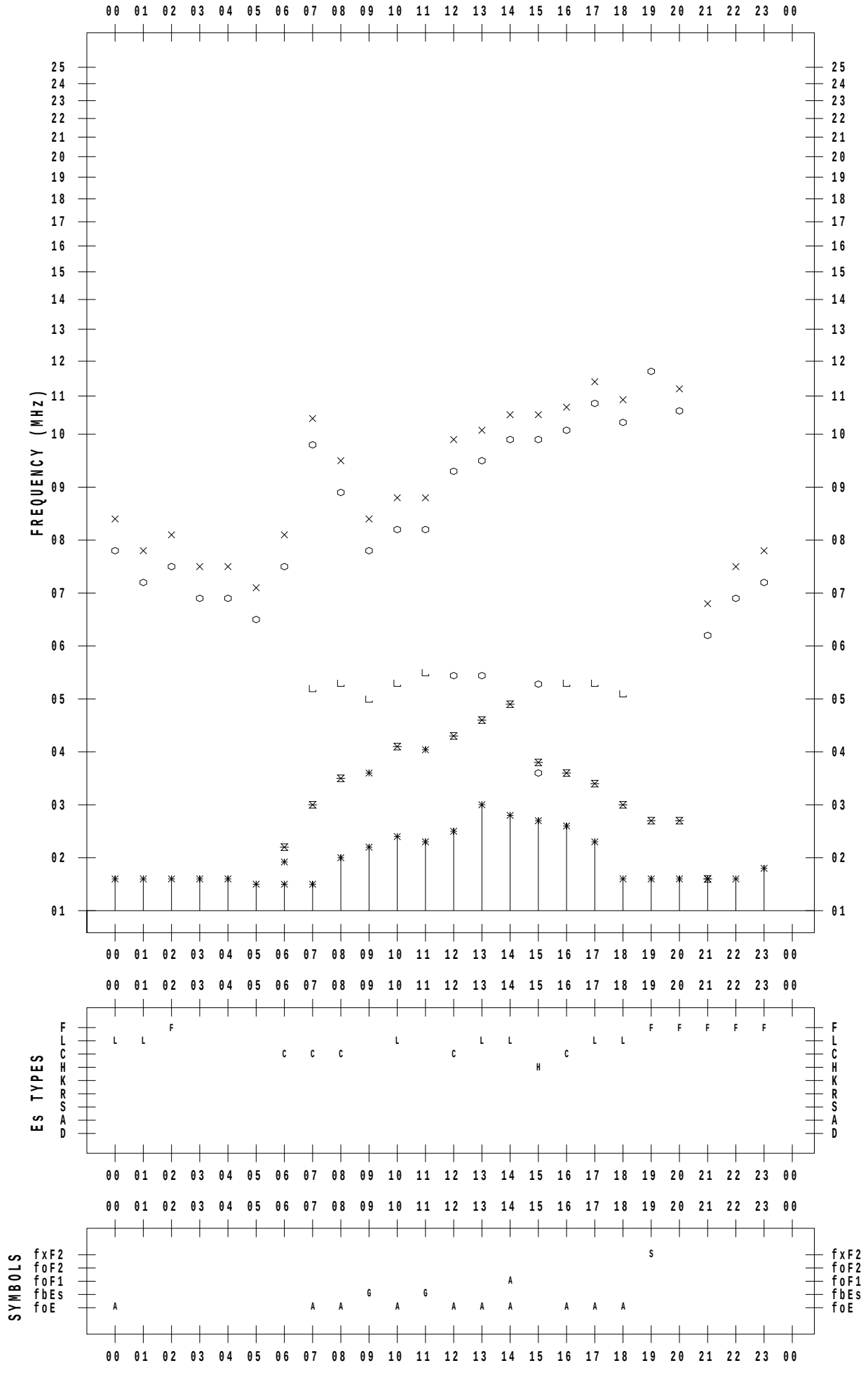
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/14

135 °E MEAN TIME



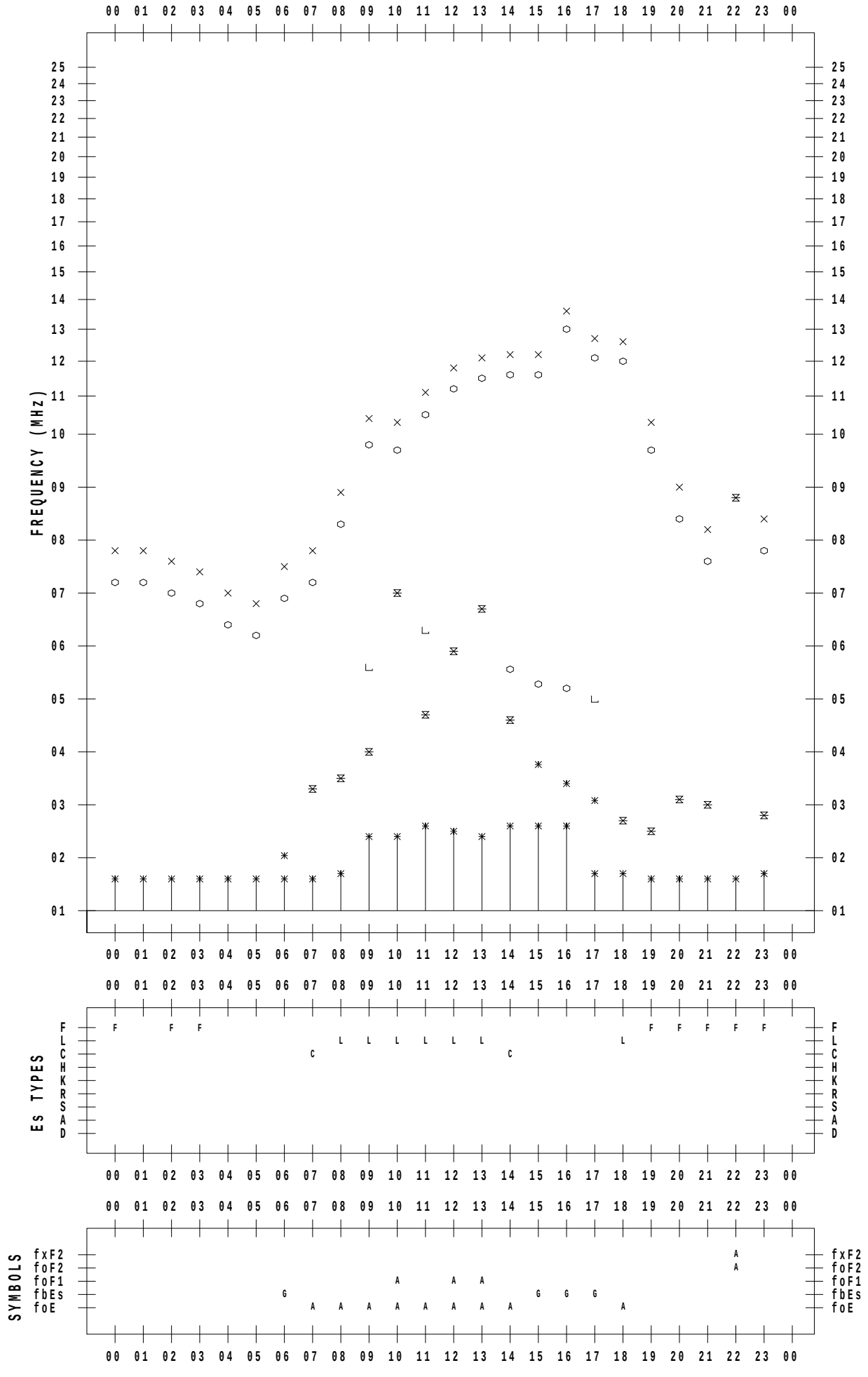
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/15

135 °E MEAN TIME



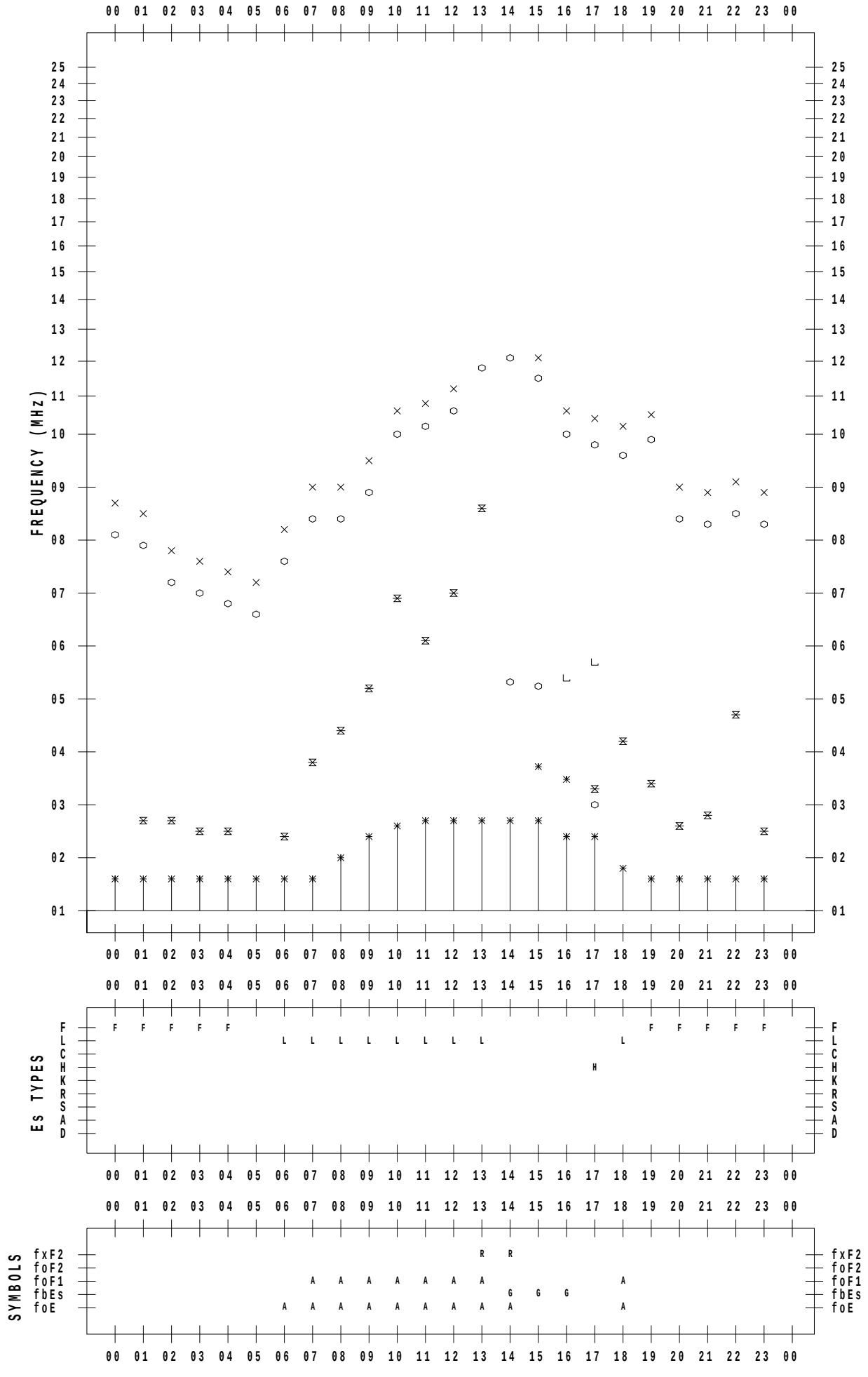
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/16

135 °E MEAN TIME



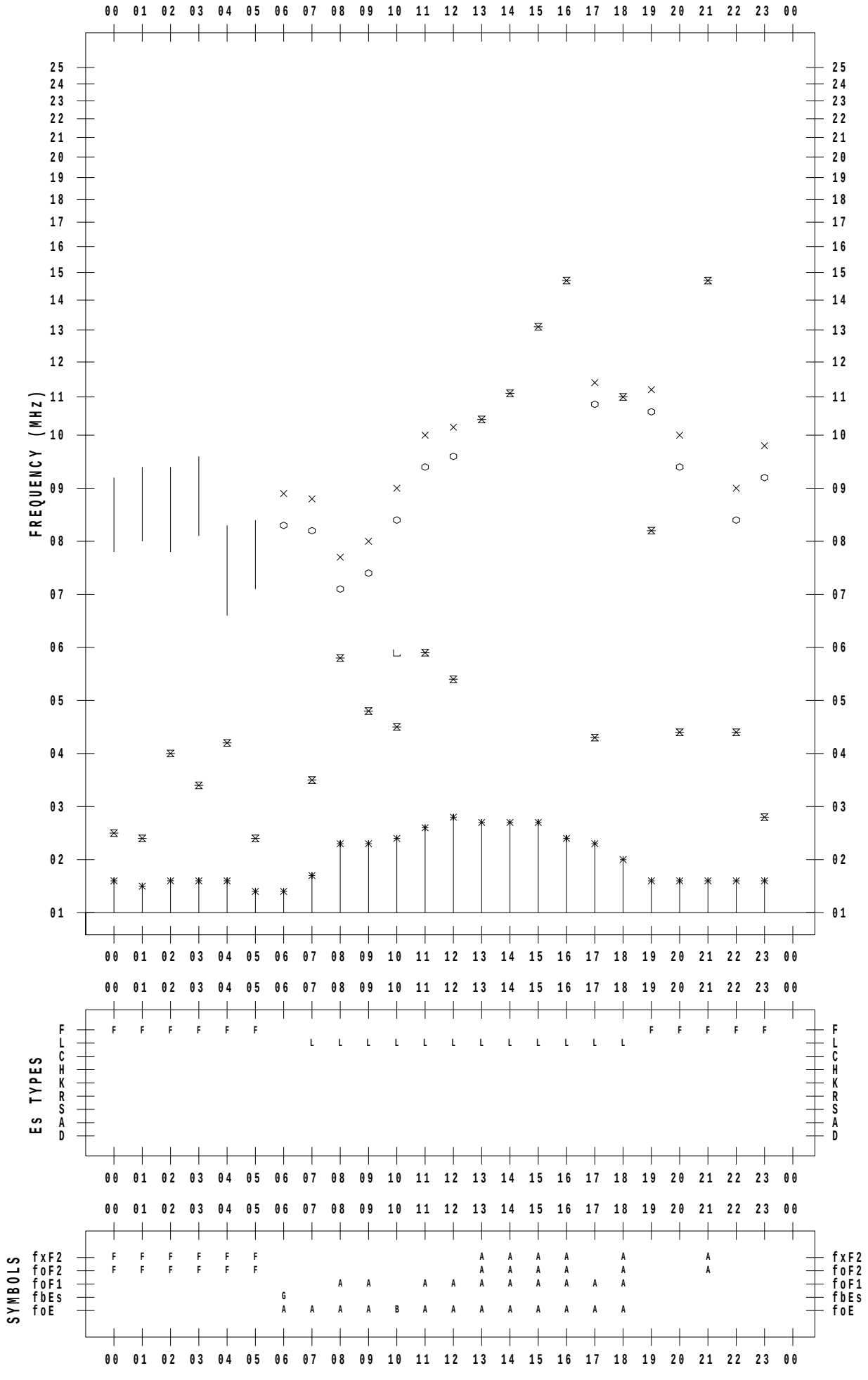
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/17

135 °E MEAN TIME



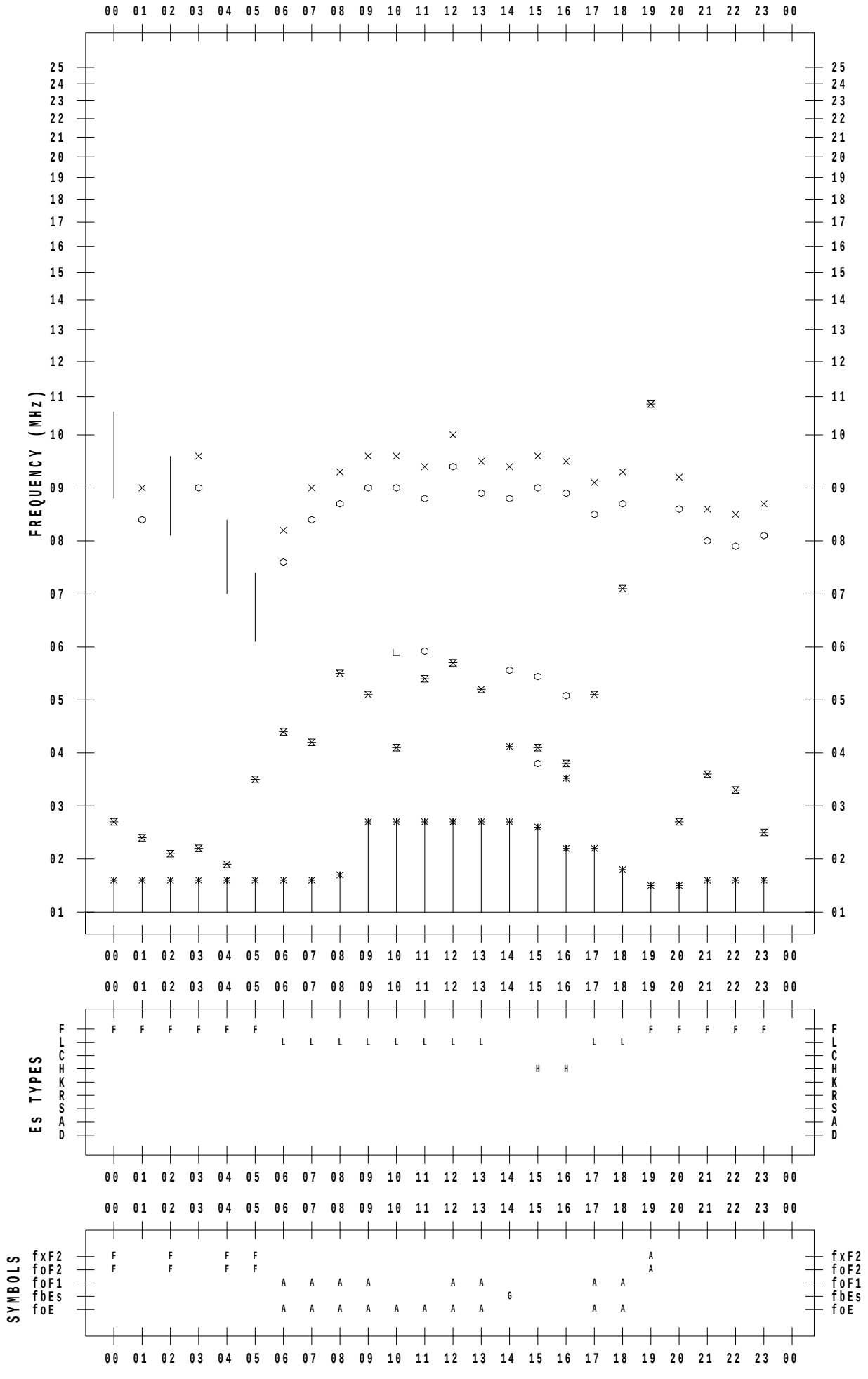
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/18

135 °E MEAN TIME



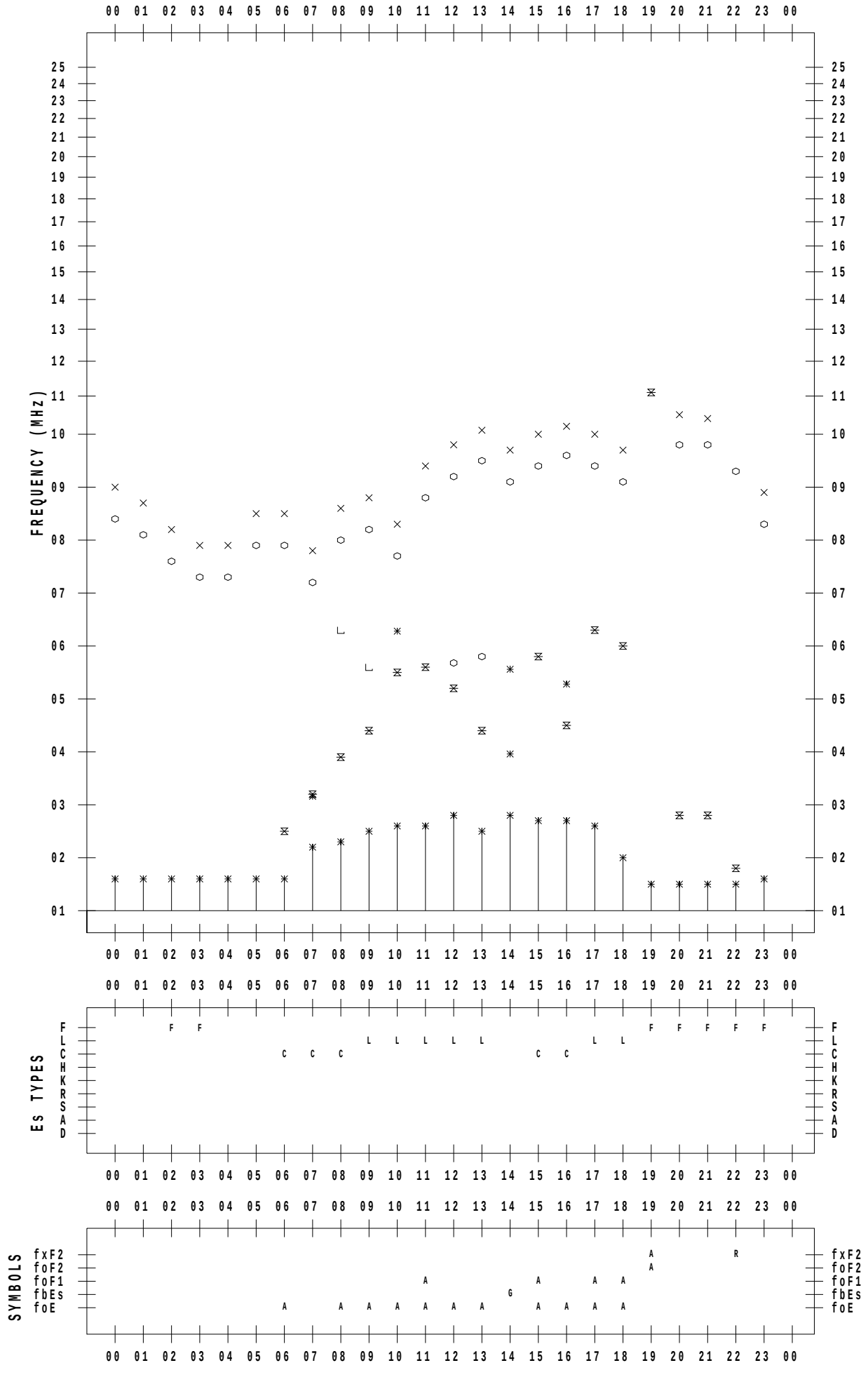
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/19

135 °E MEAN TIME



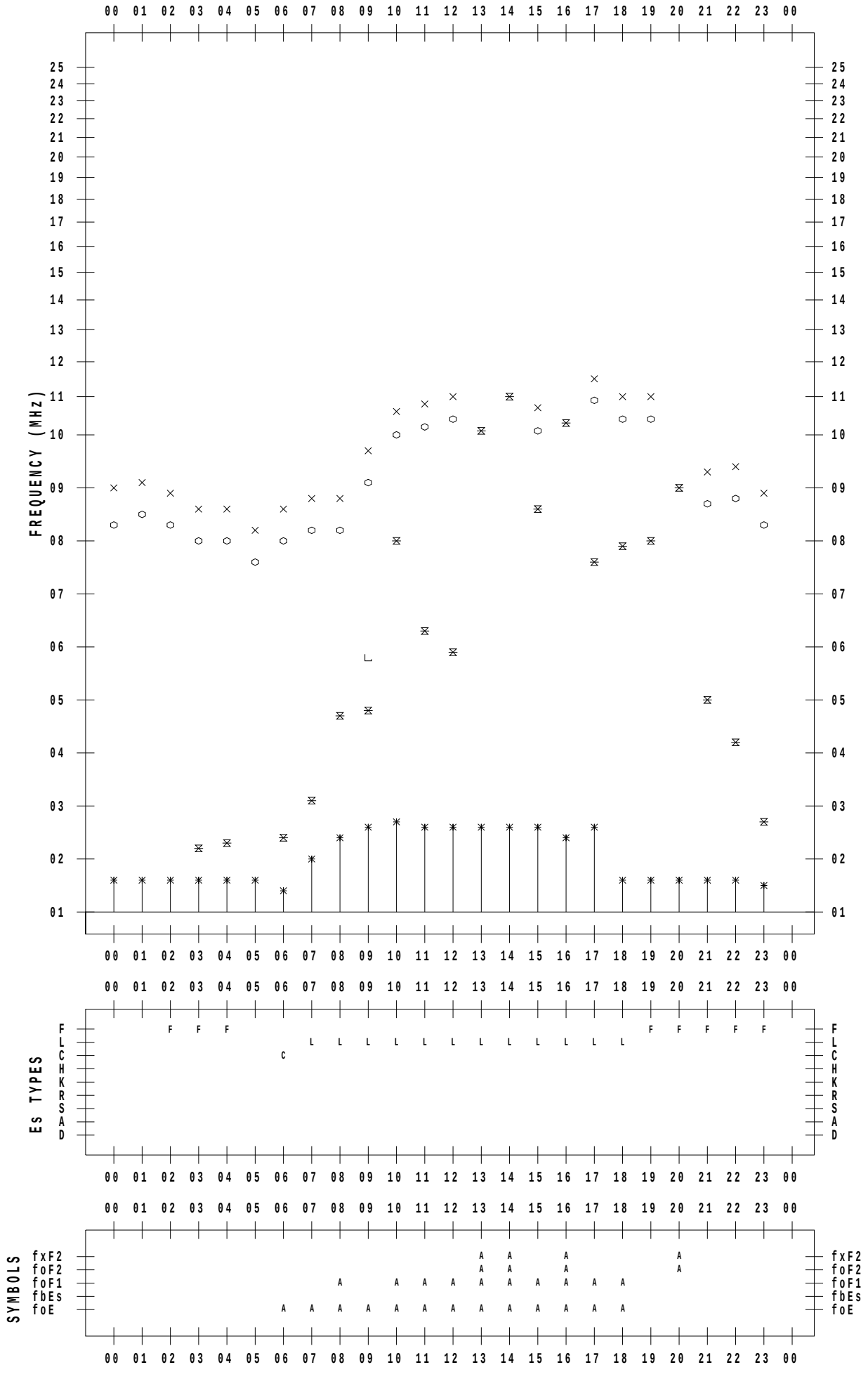
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/20

135 °E MEAN TIME



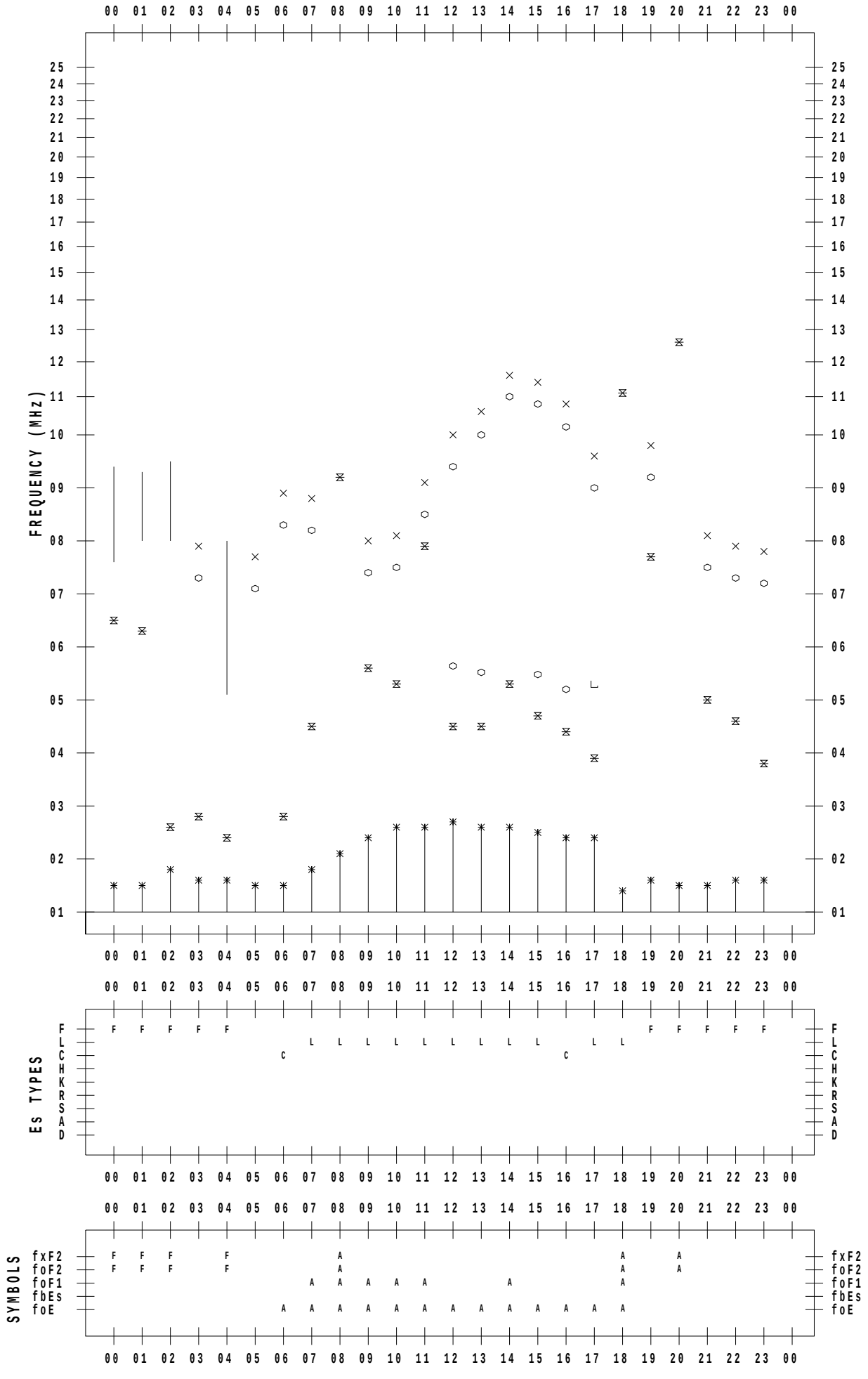
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/21

135 °E MEAN TIME



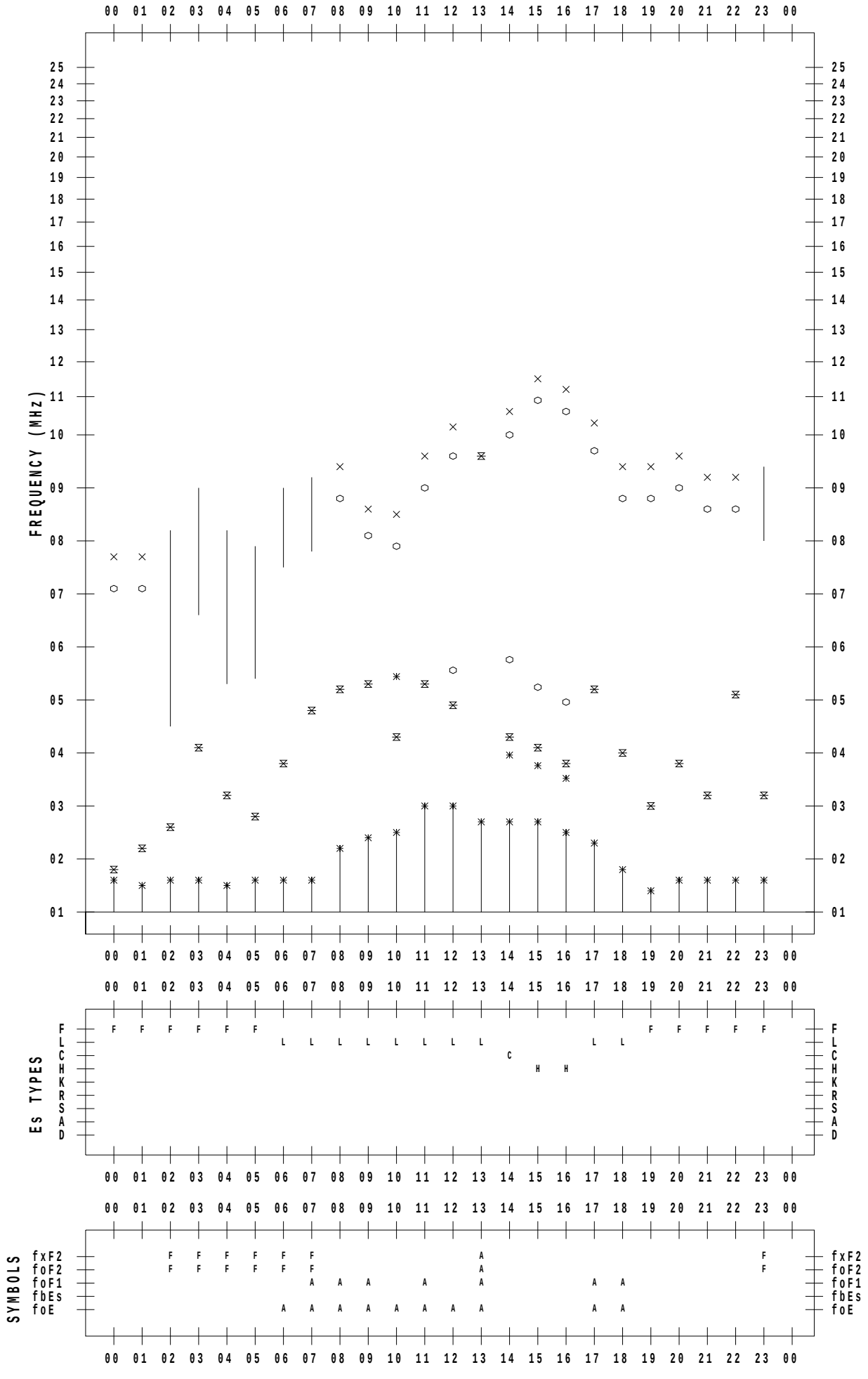
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/22

135 °E MEAN TIME



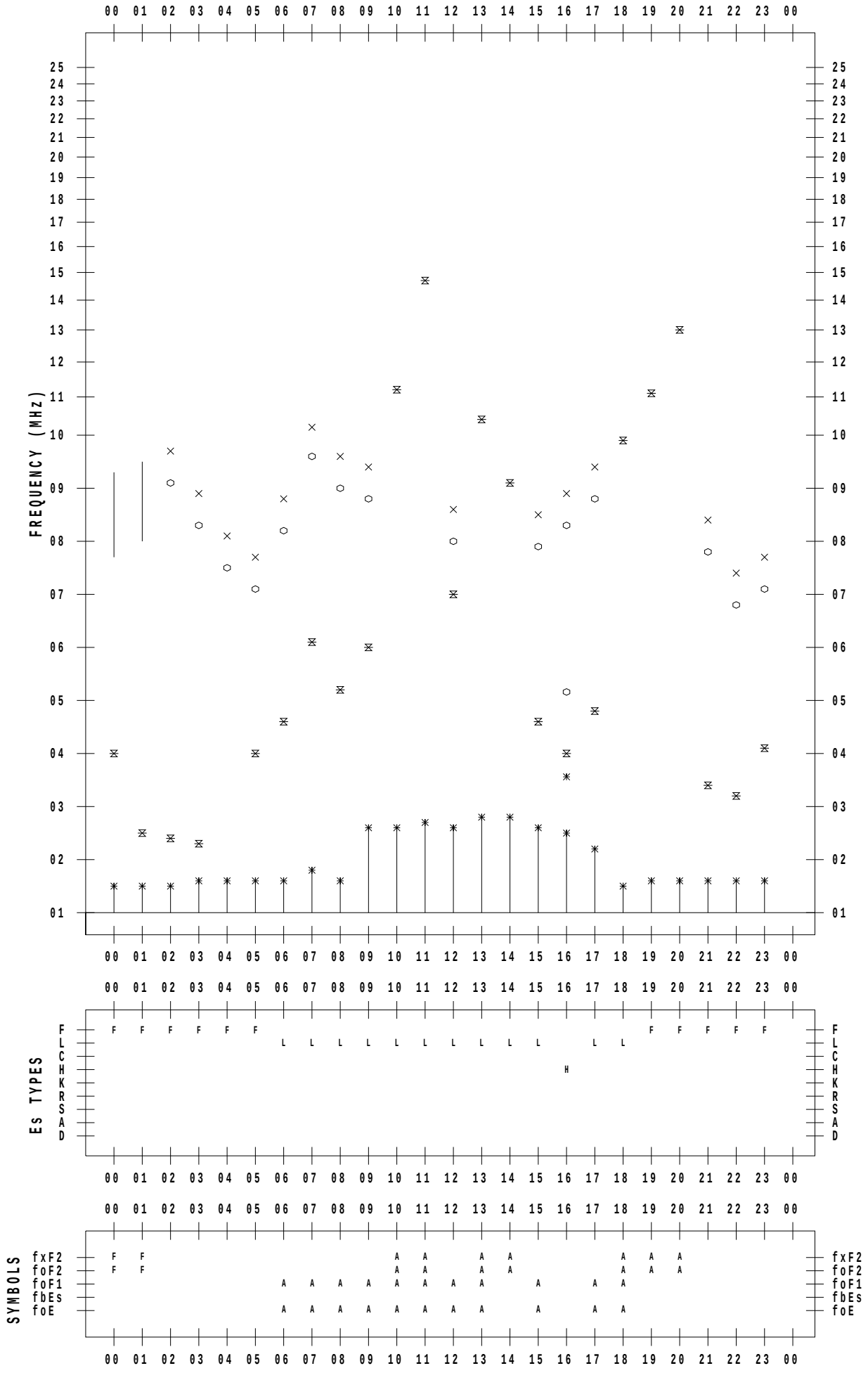
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/23

135 °E MEAN TIME



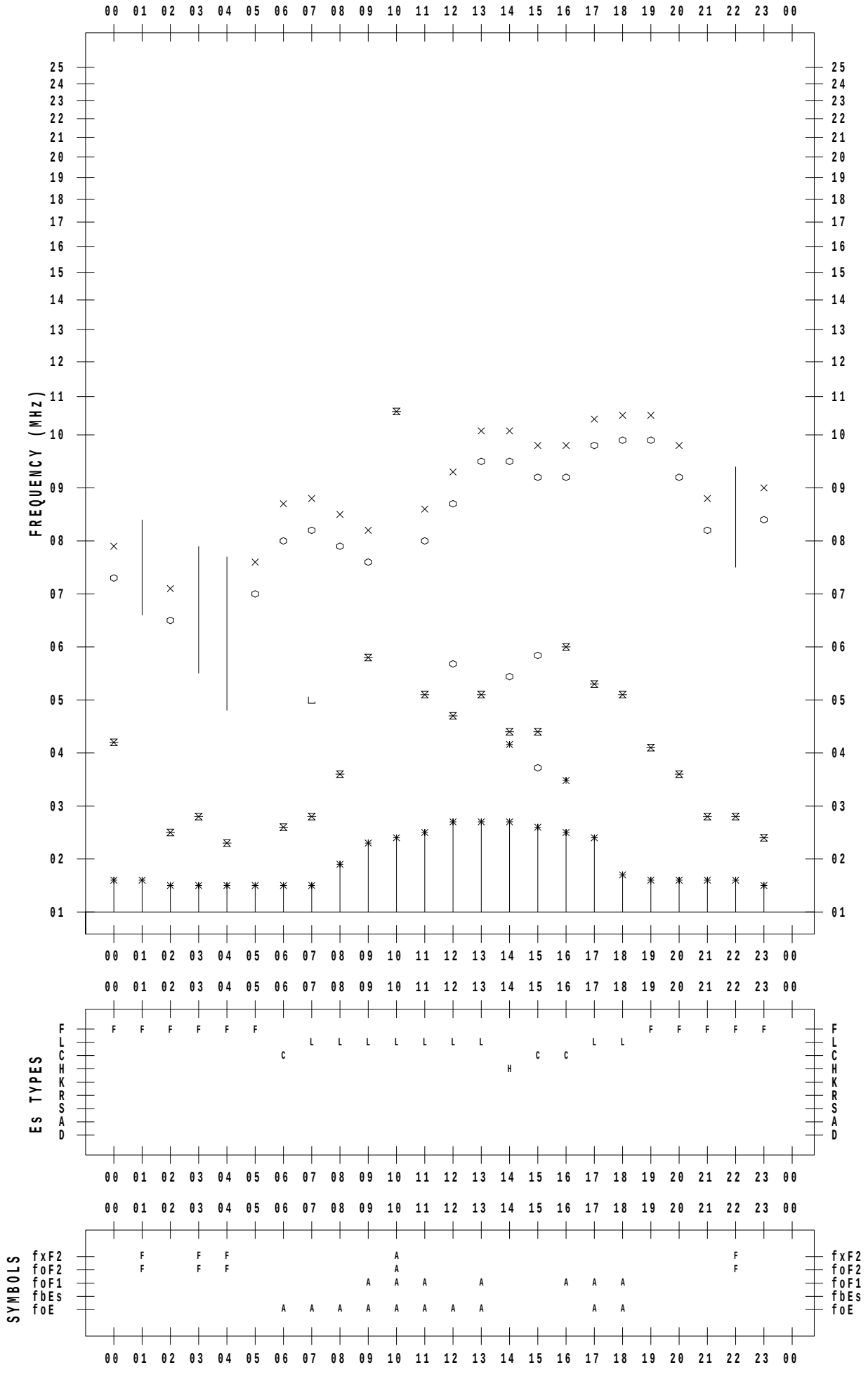
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/24

135 °E MEAN TIME



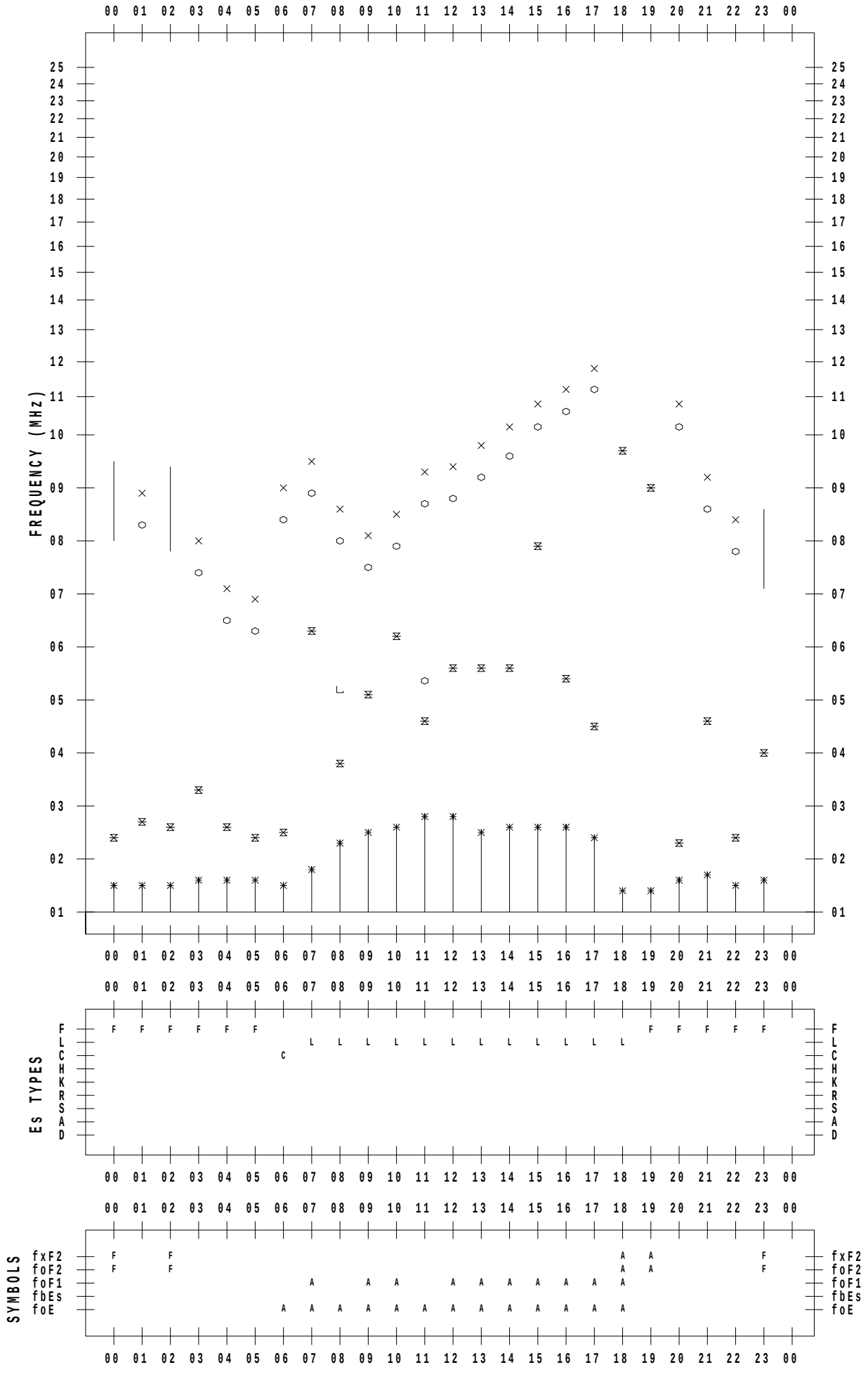
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/25

135 °E MEAN TIME



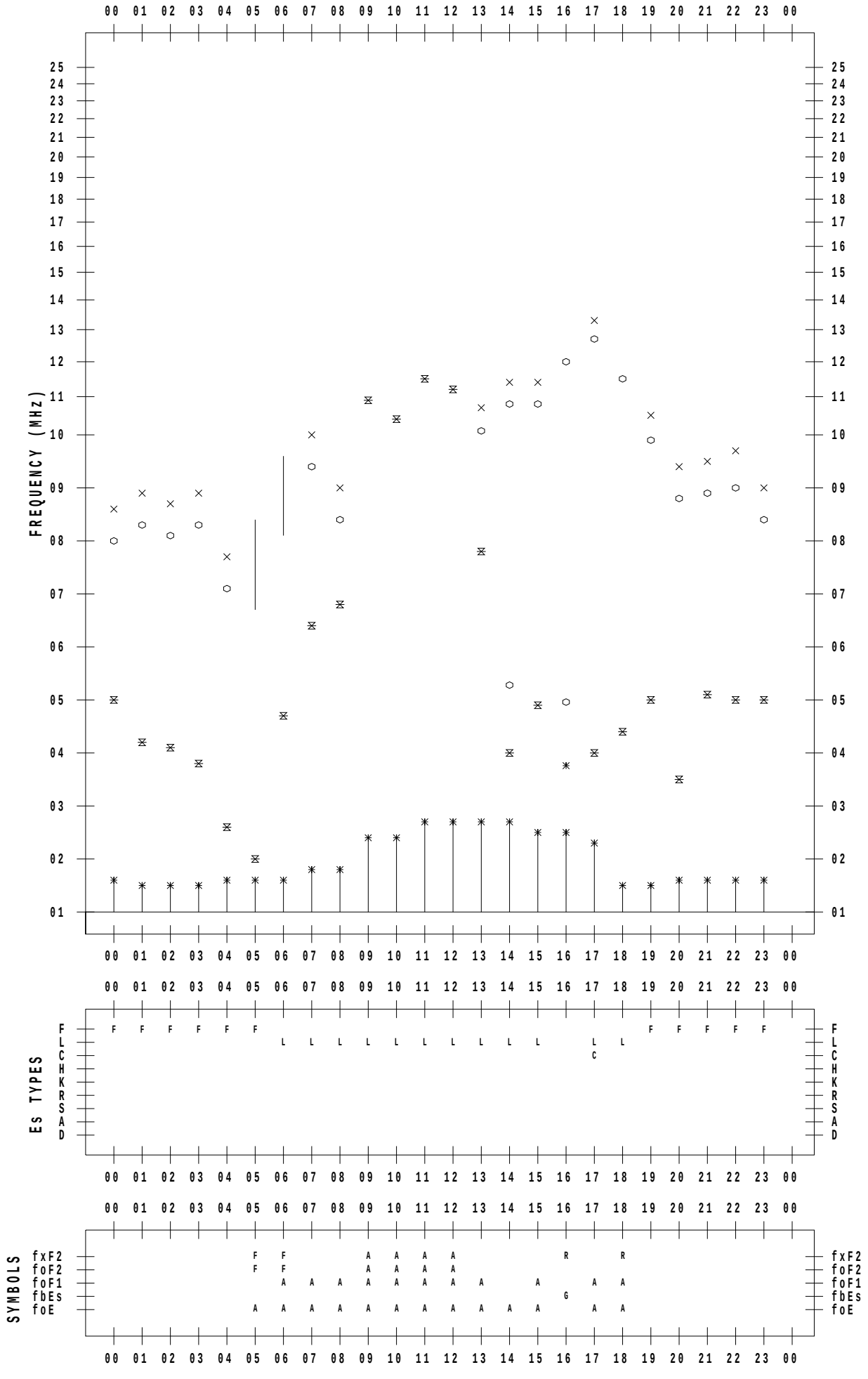
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/26

135 °E MEAN TIME



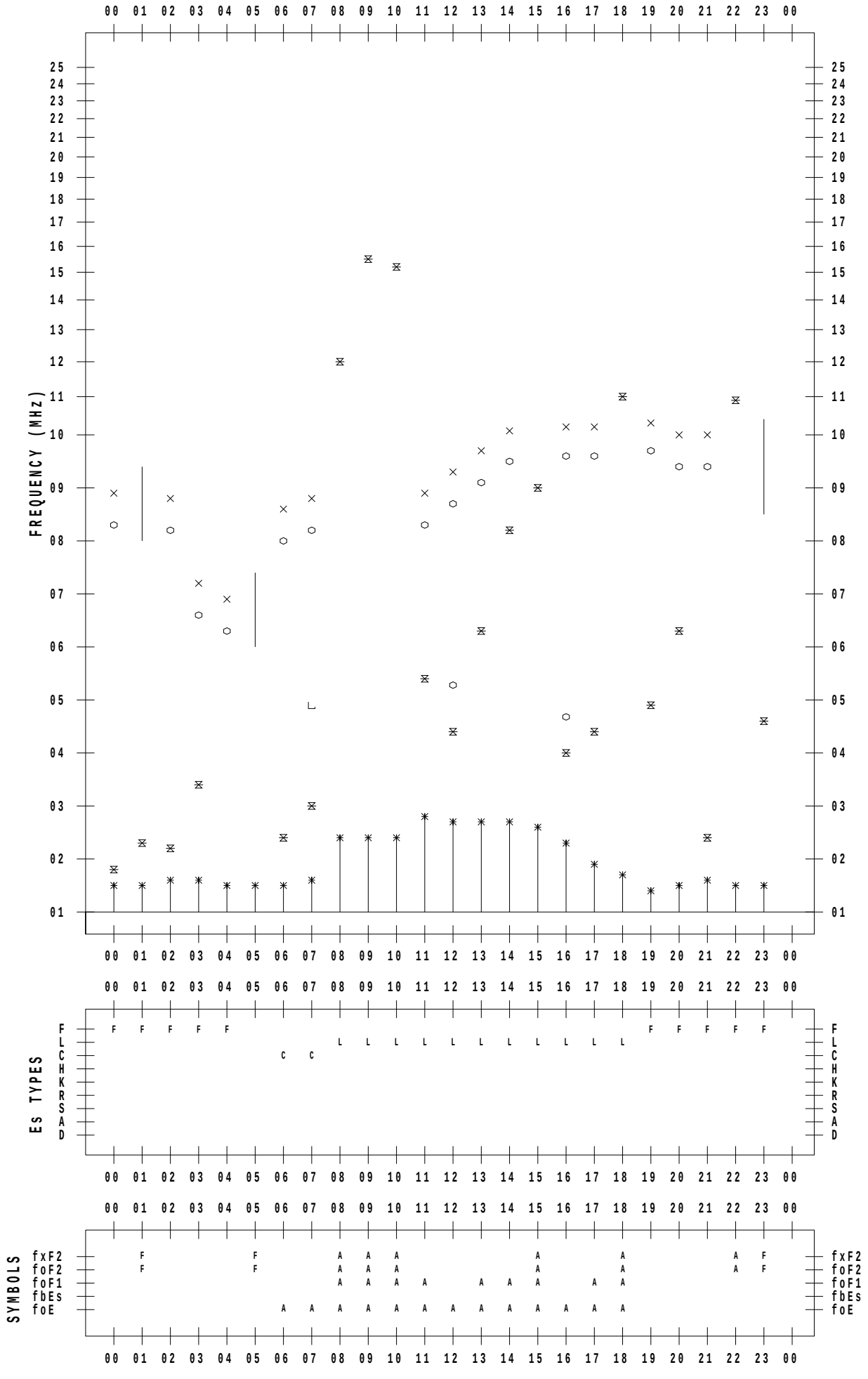
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/27

135 °E MEAN TIME



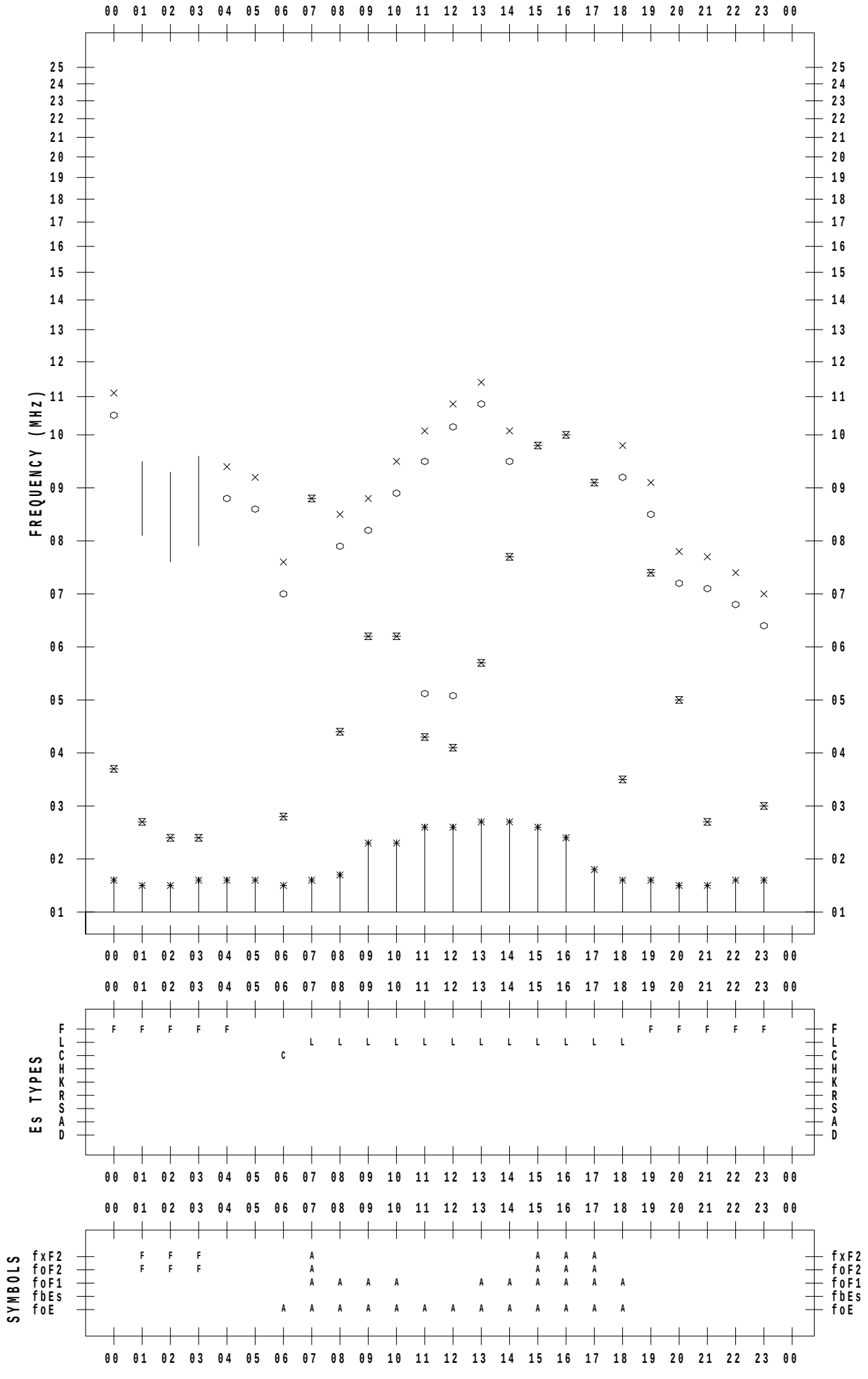
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/28

135 °E MEAN TIME



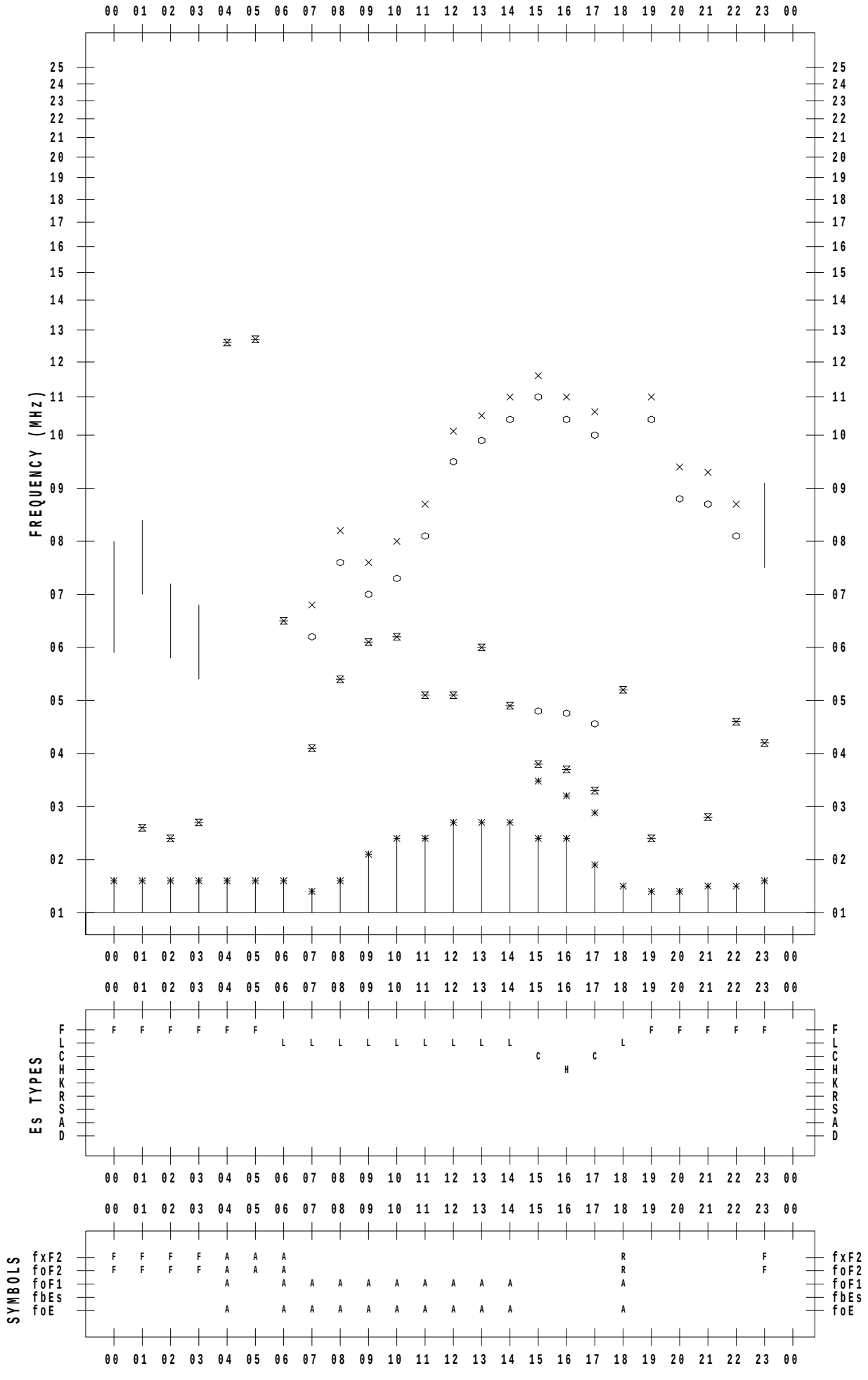
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/29

135 °E MEAN TIME



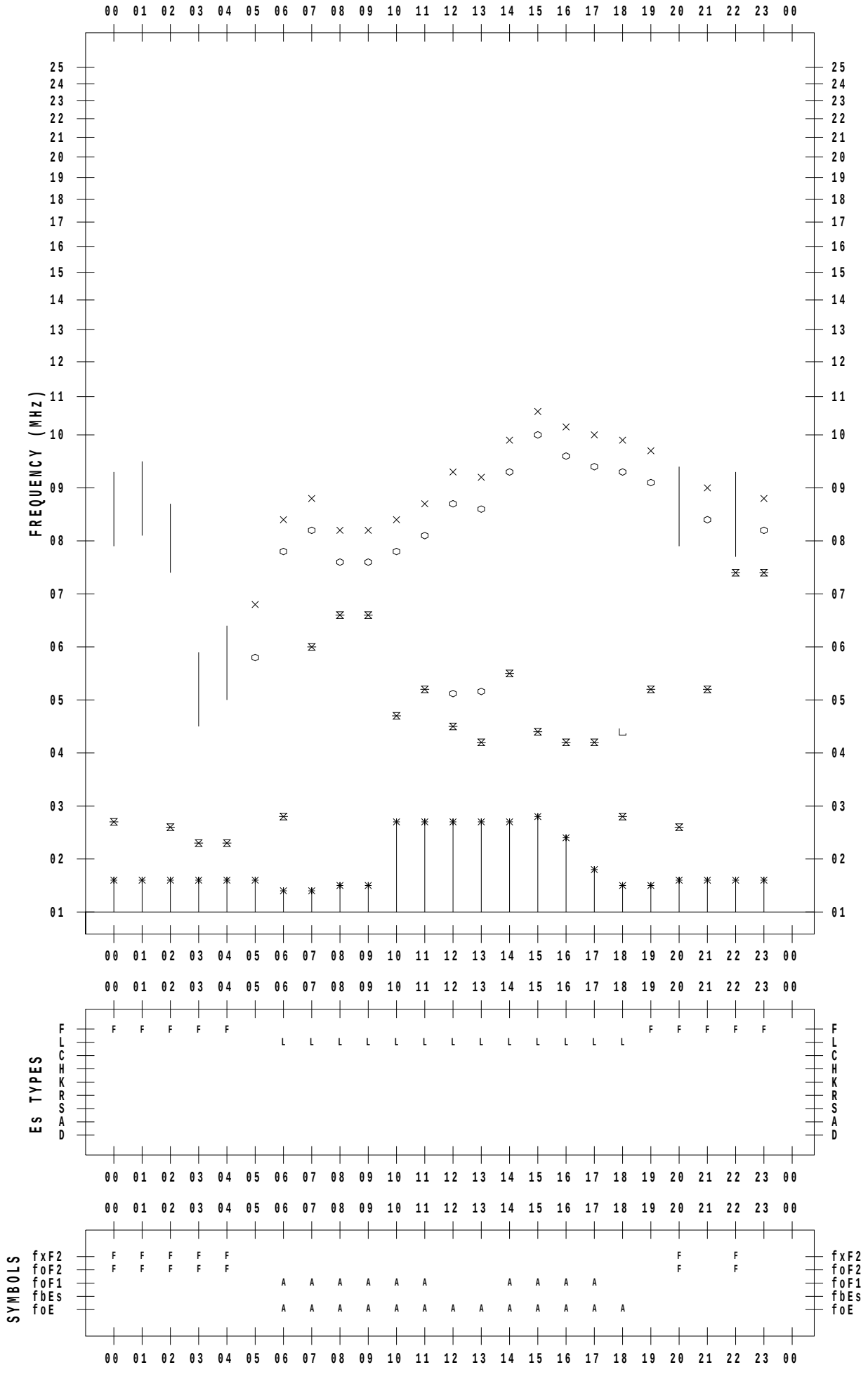
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/30

135 °E MEAN TIME



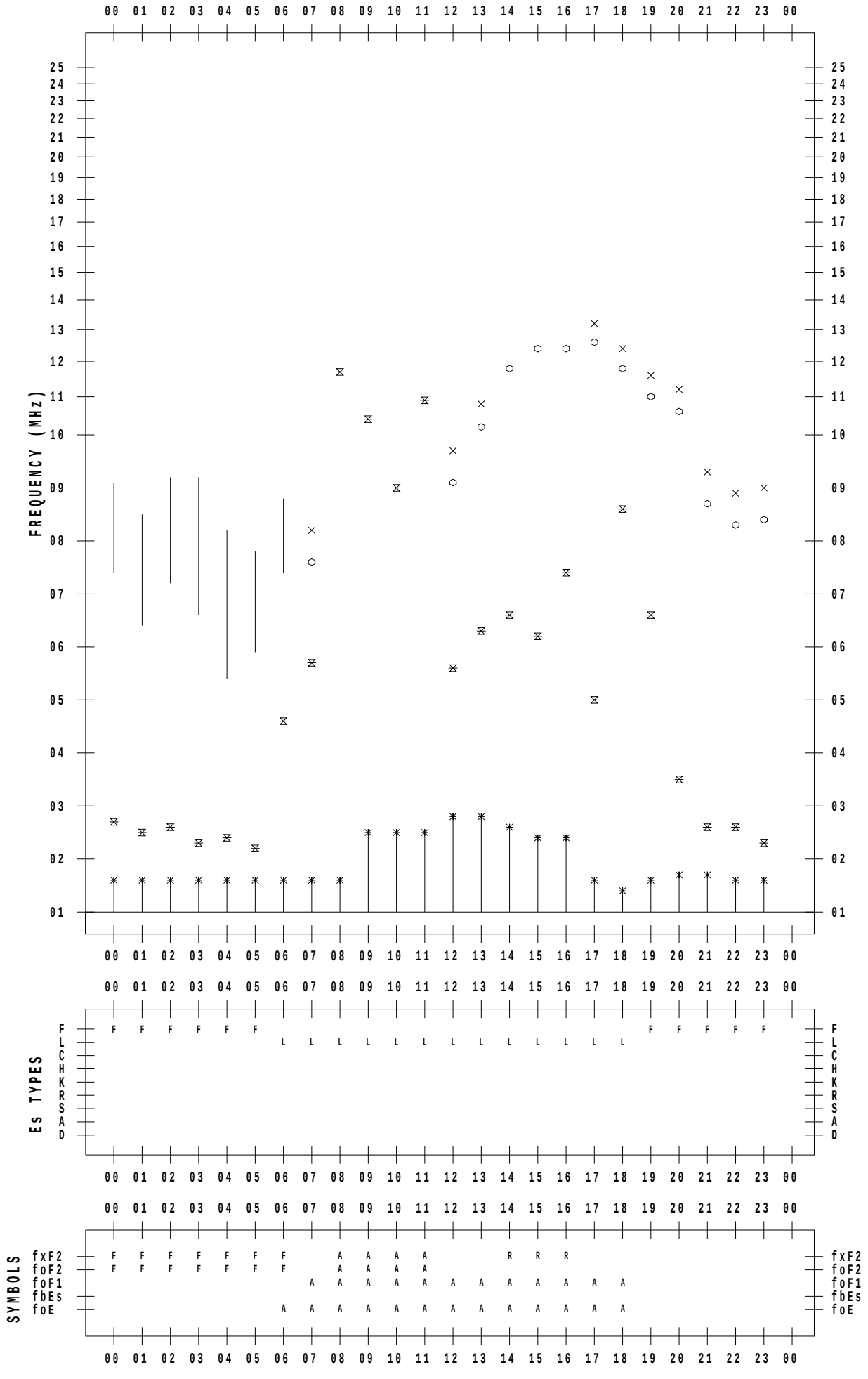
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2022/ 5/31

135 °E MEAN TIME



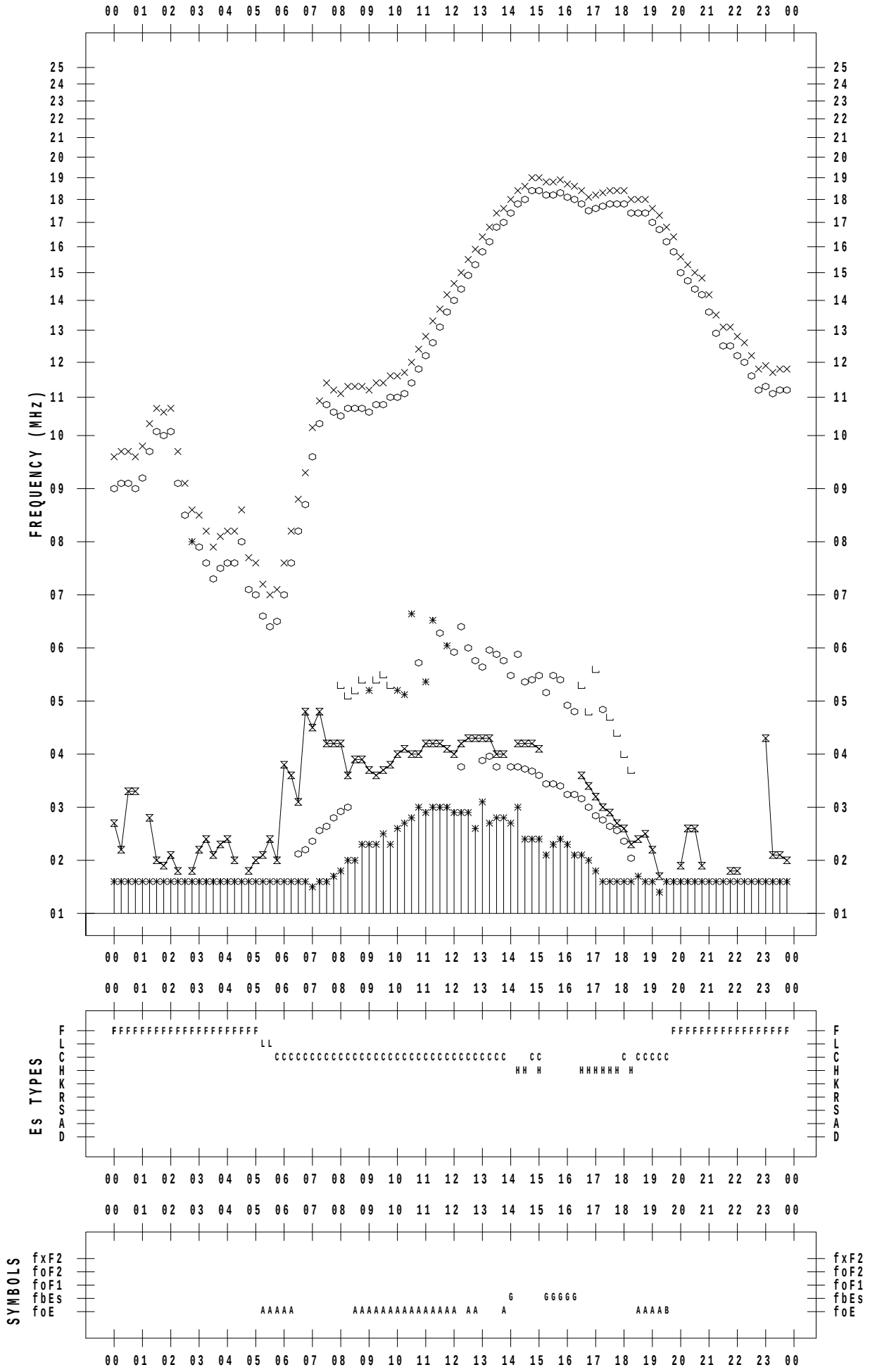
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 1

135 °E MEAN TIME



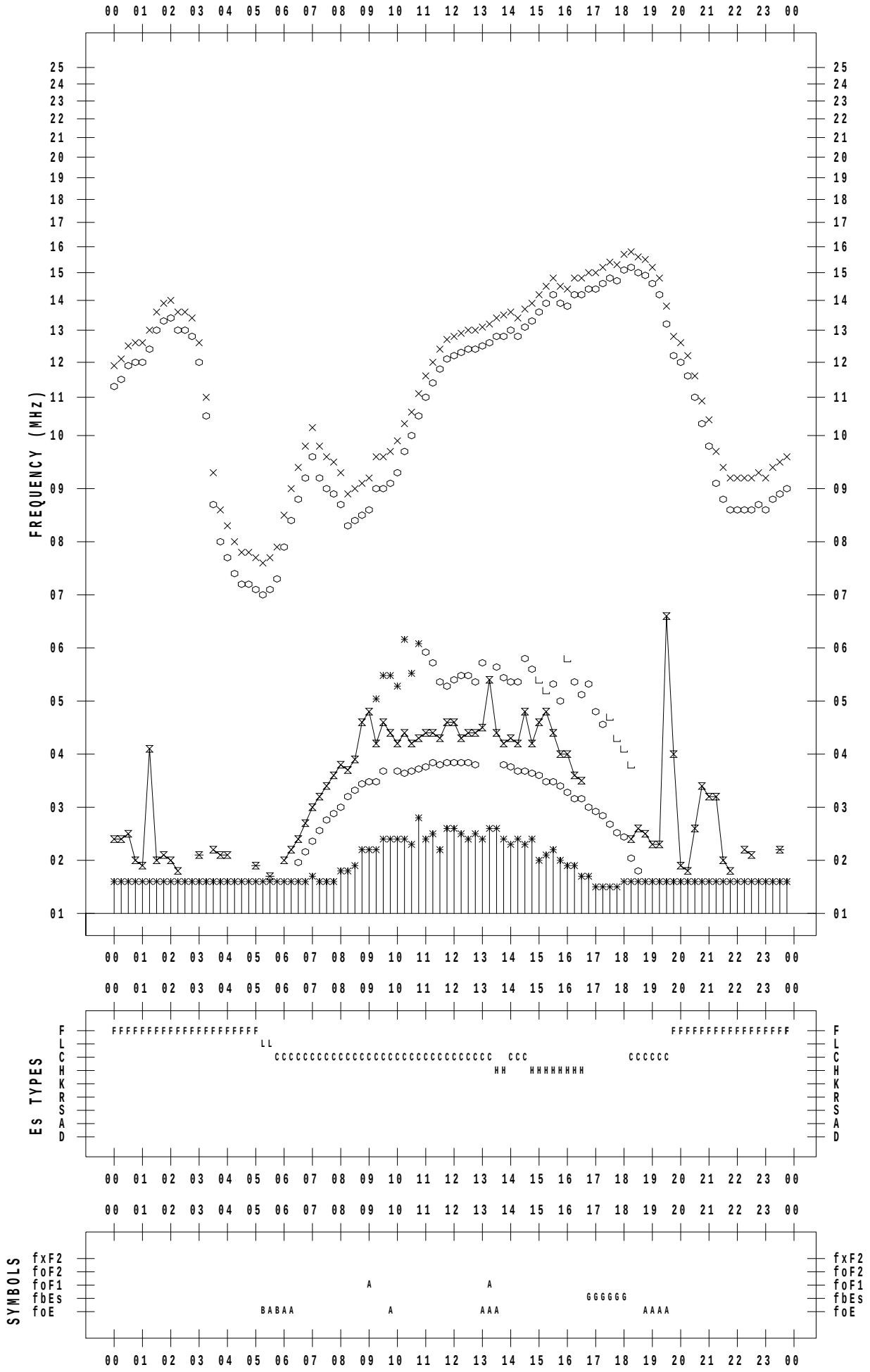
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 2

135 °E MEAN TIME



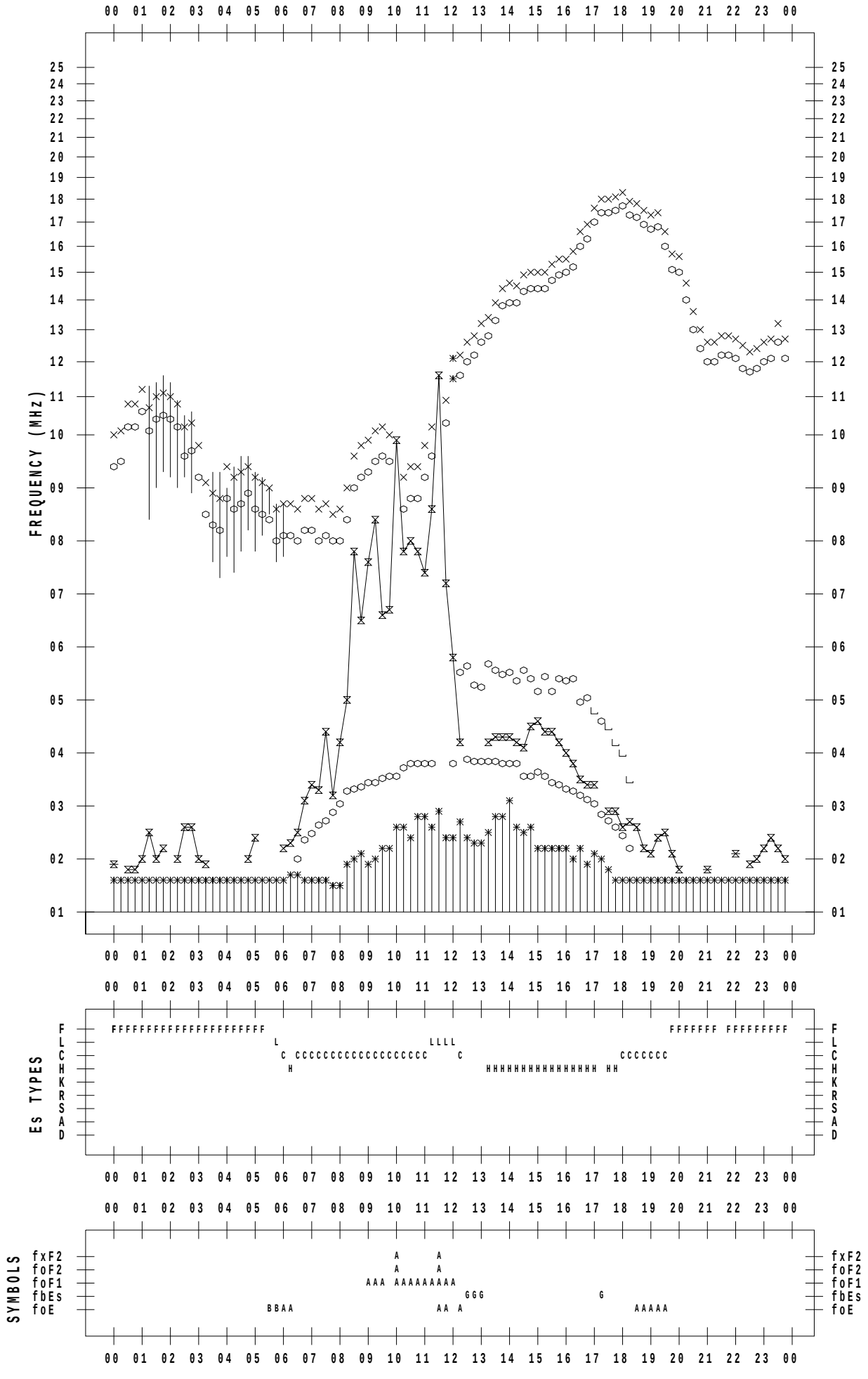
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 3

135 °E MEAN TIME



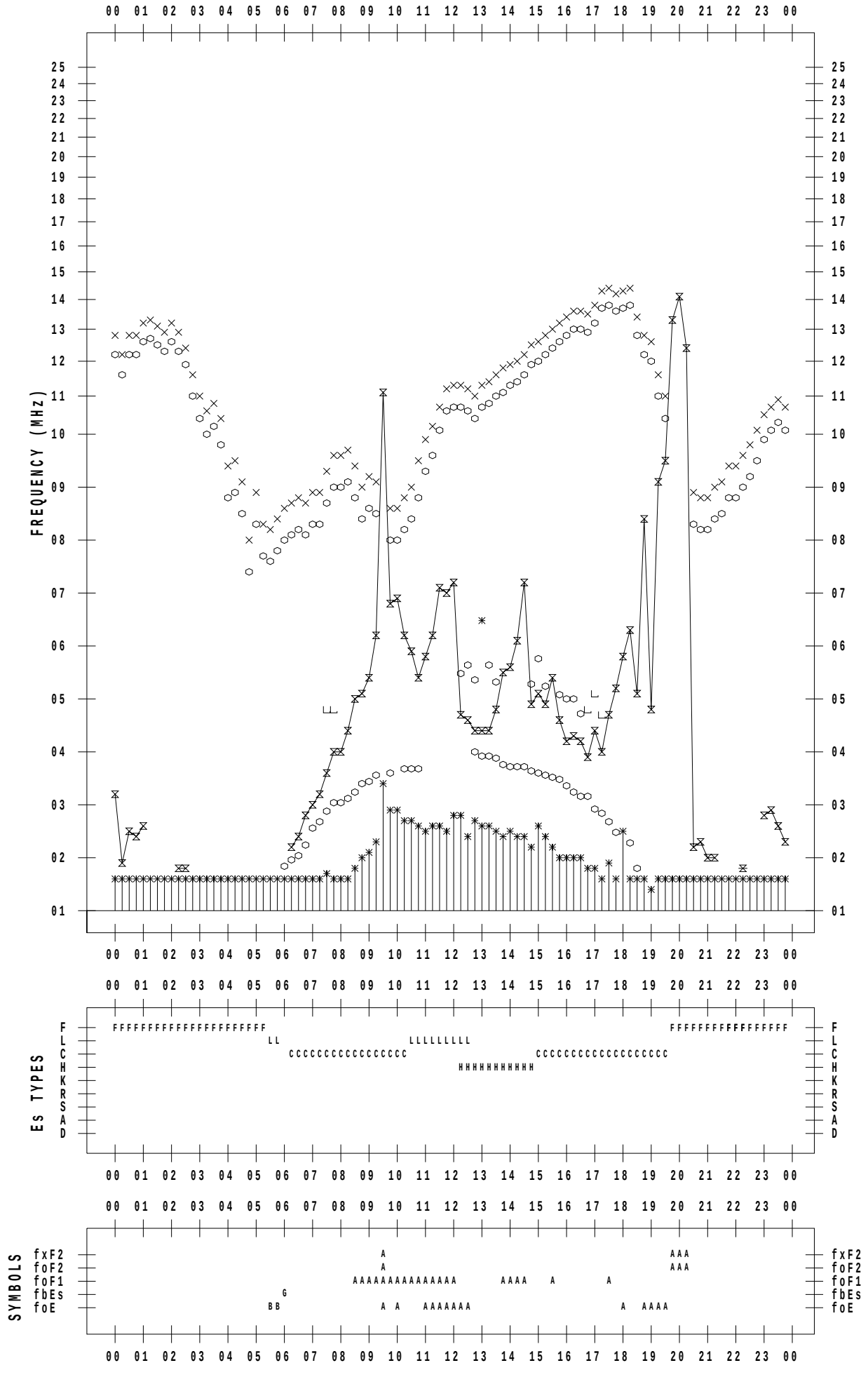
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 4

135 °E MEAN TIME



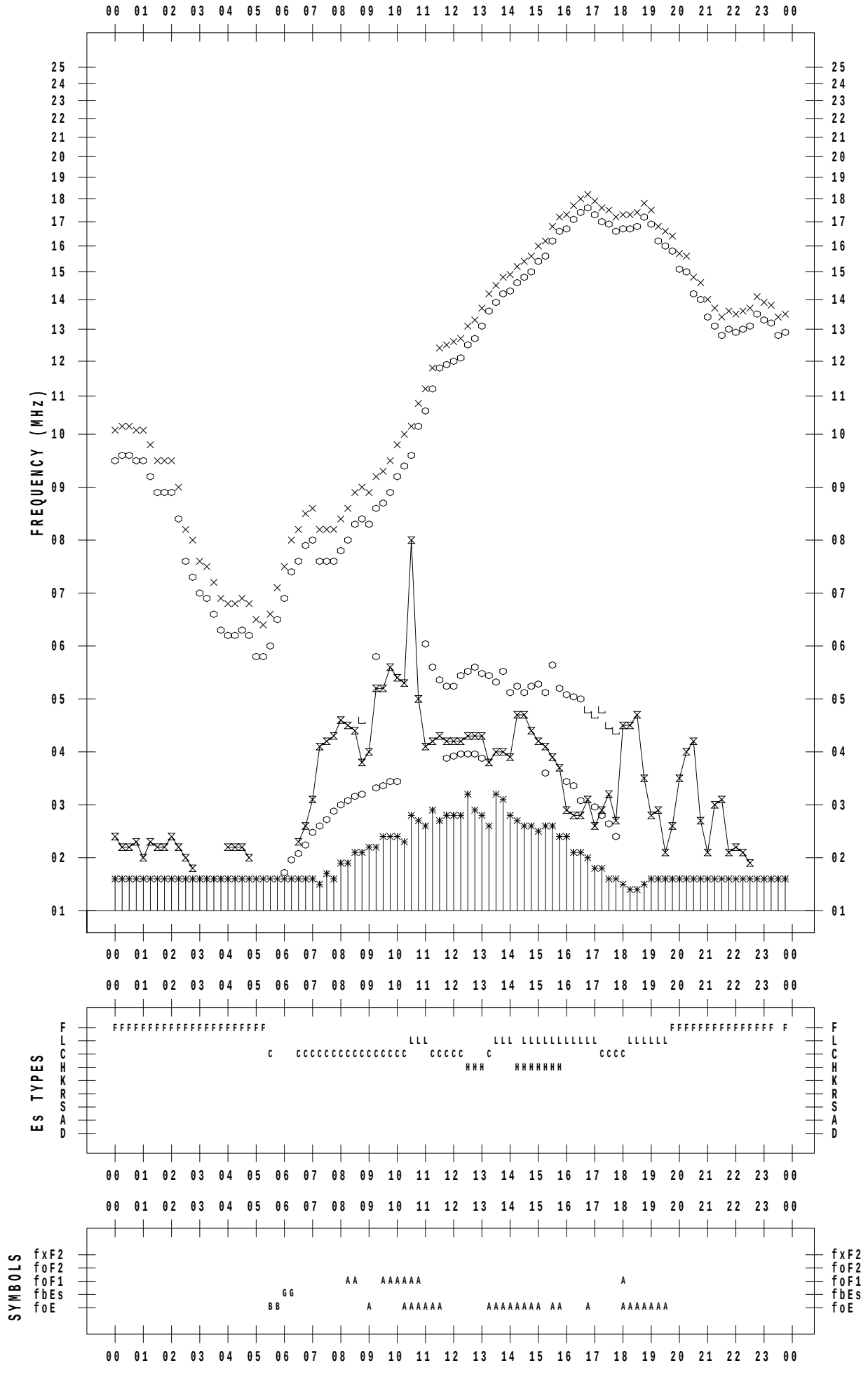
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 5

135 °E MEAN TIME



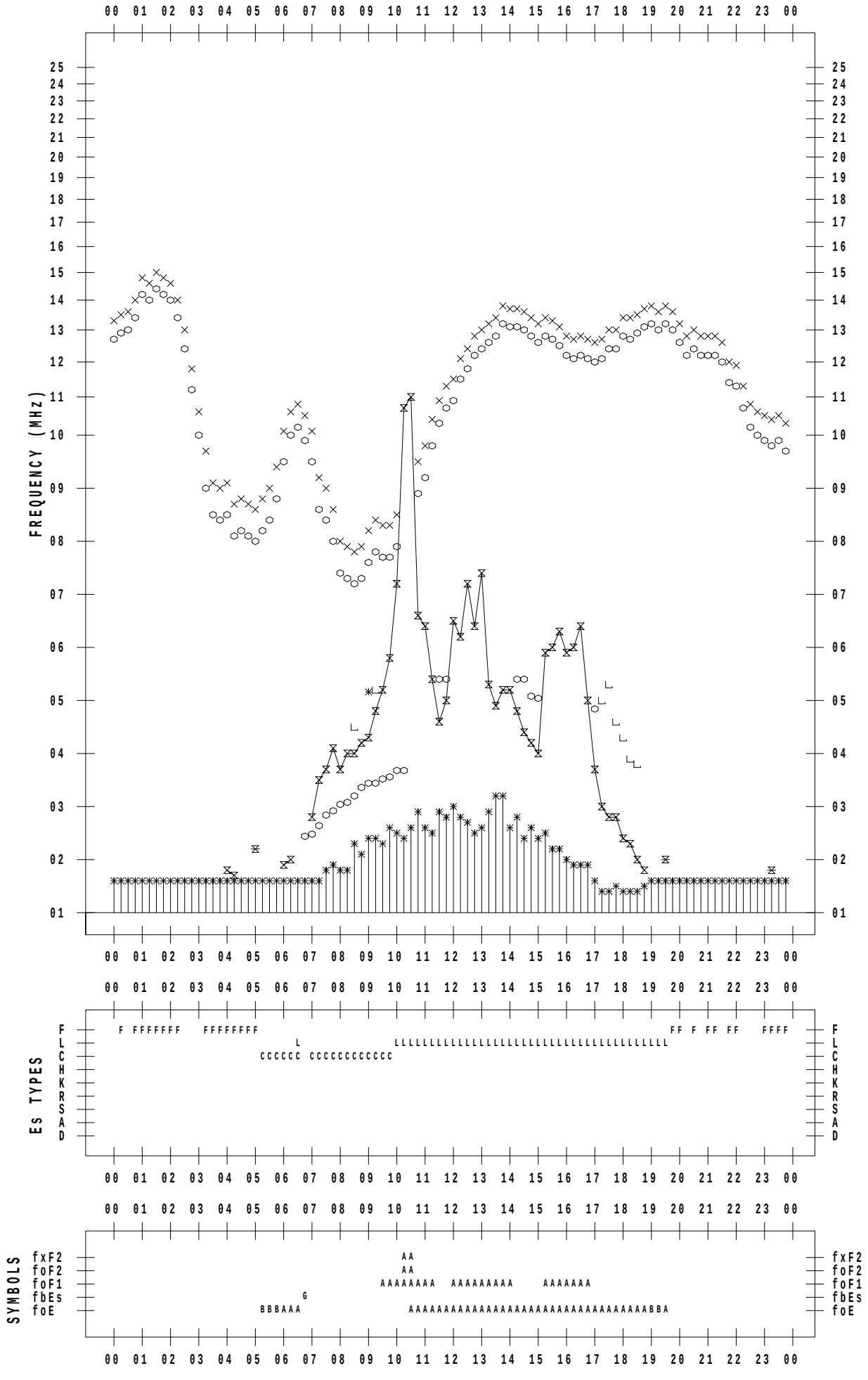
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 6

135 °E MEAN TIME



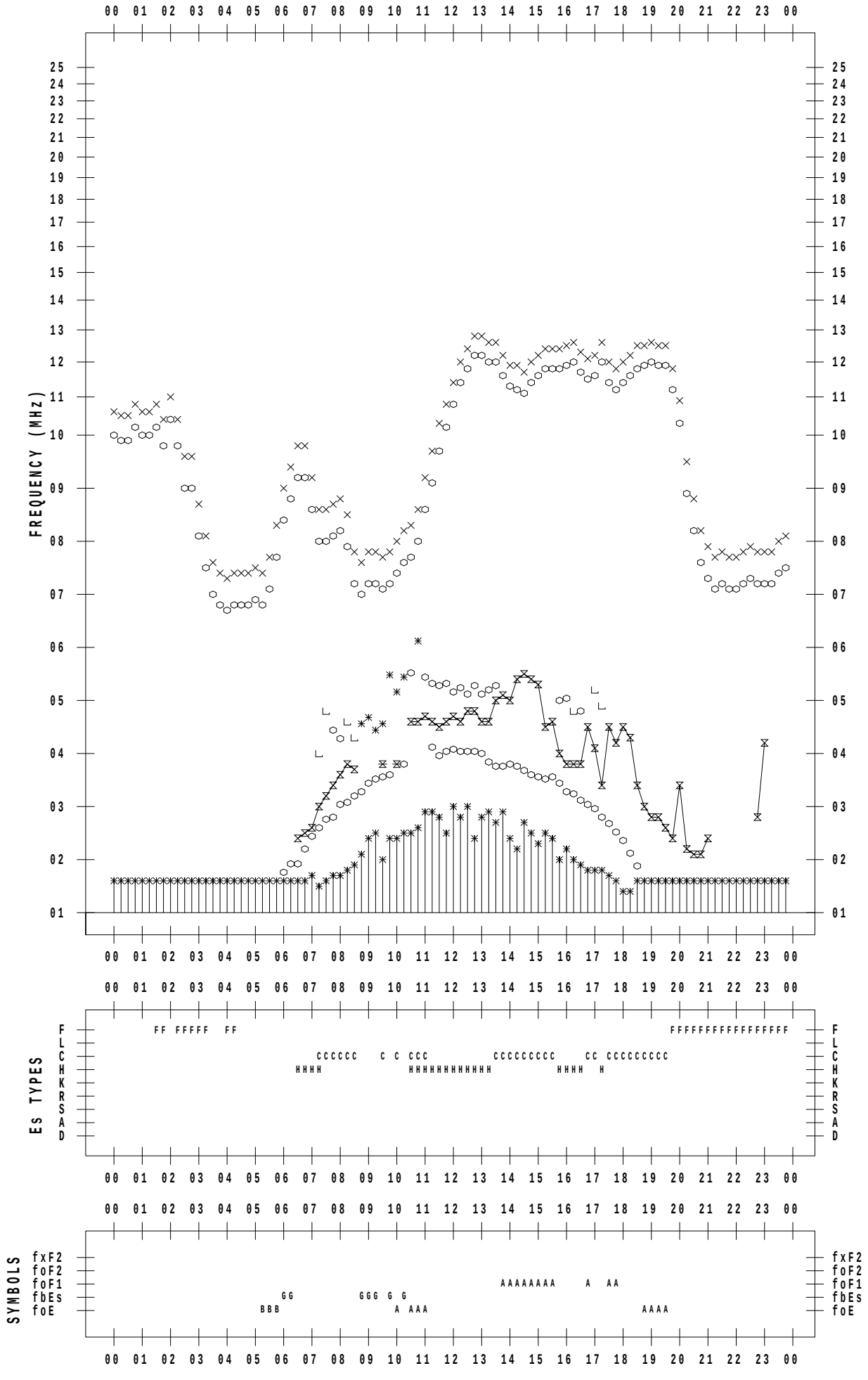
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 7

135 °E MEAN TIME



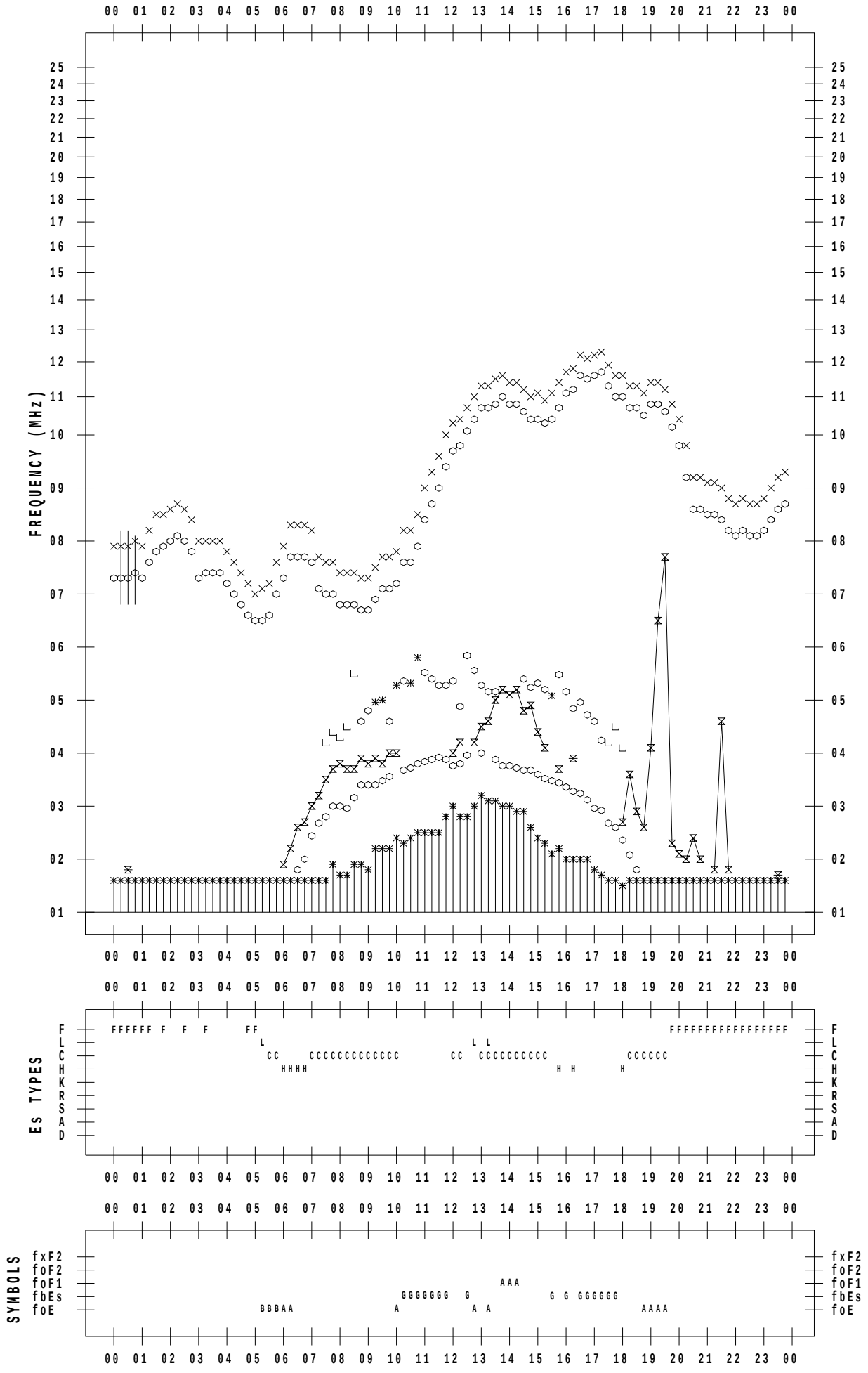
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 8

135 °E MEAN TIME



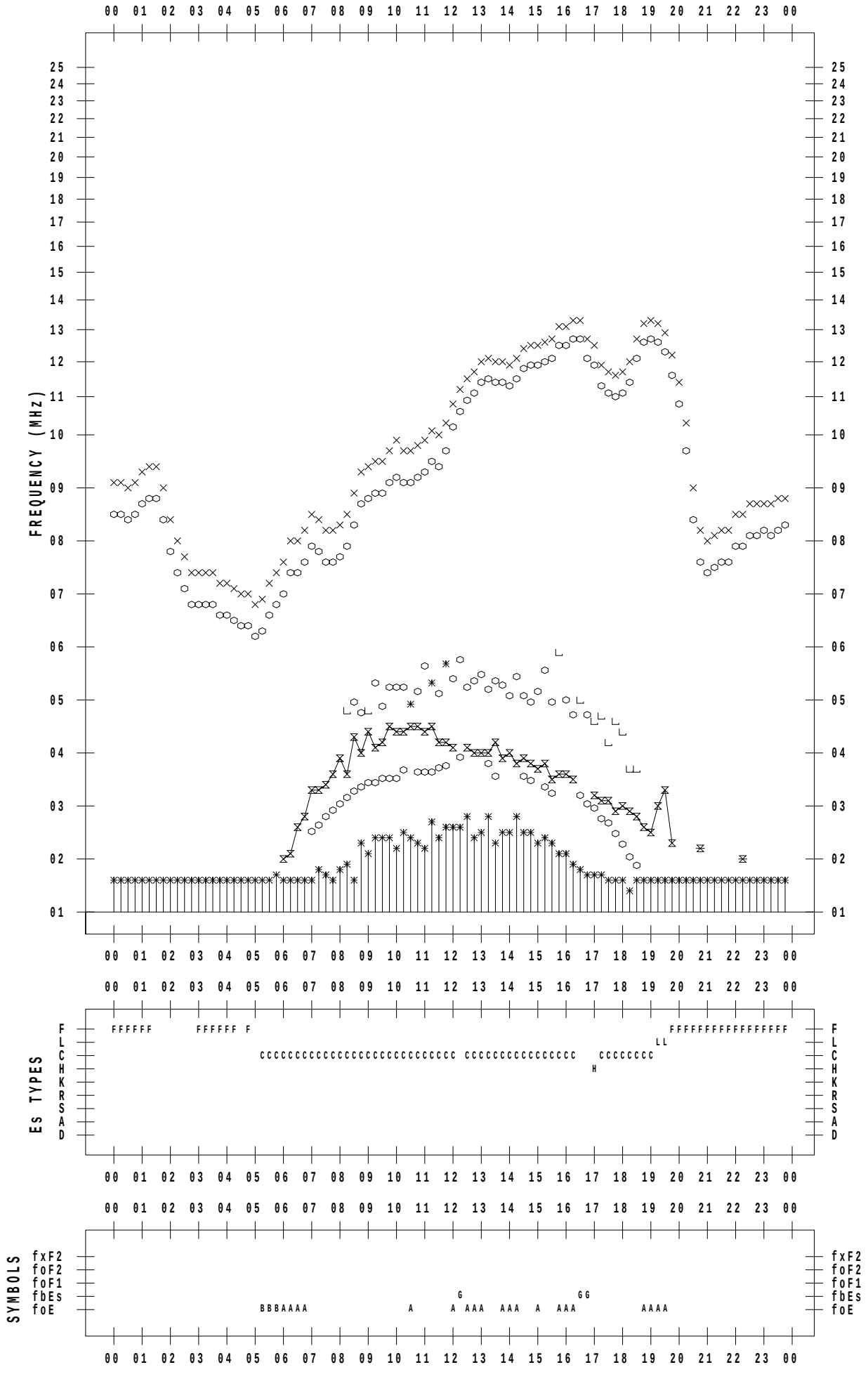
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/ 9

135 °E MEAN TIME



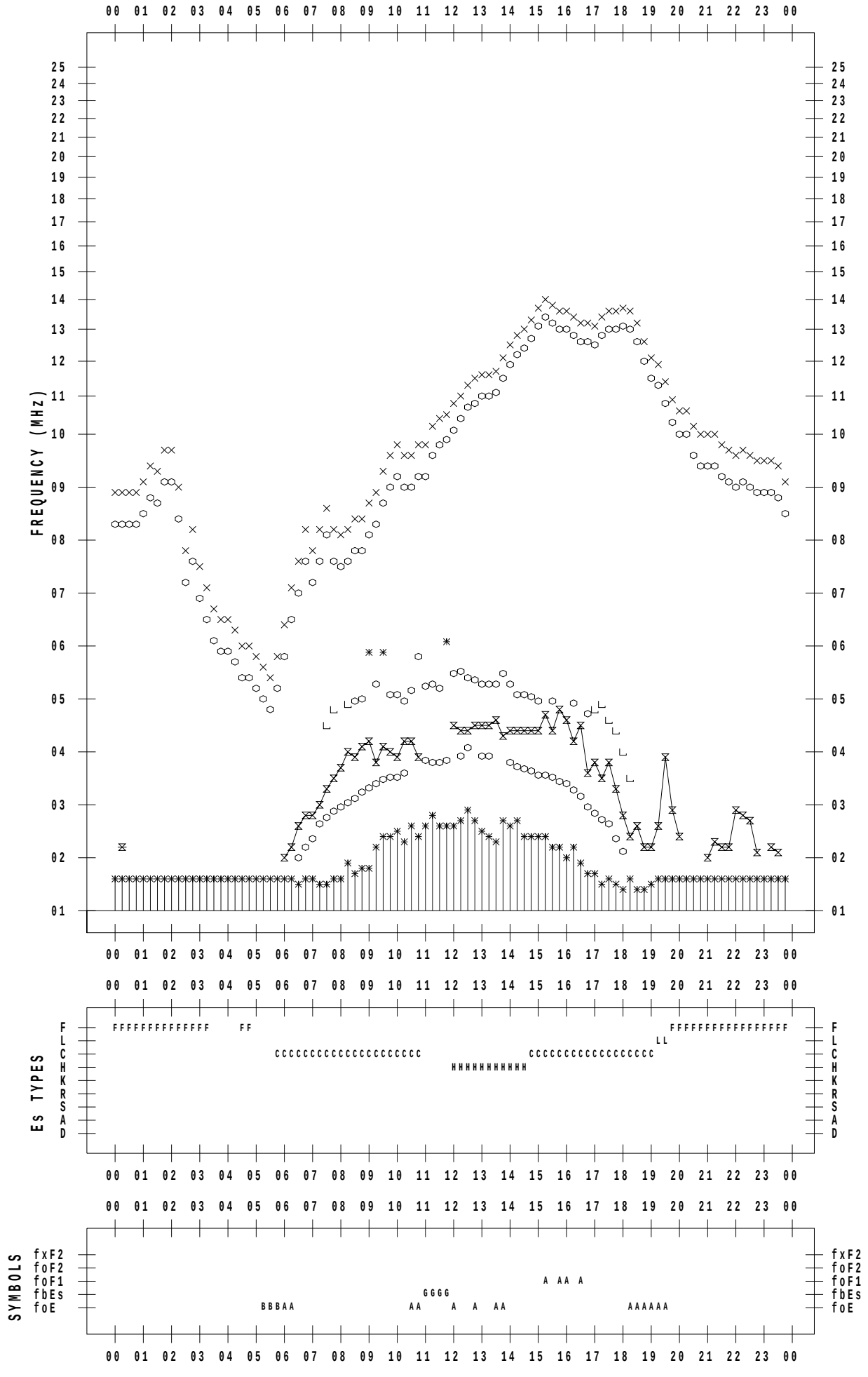
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/10

135 °E MEAN TIME



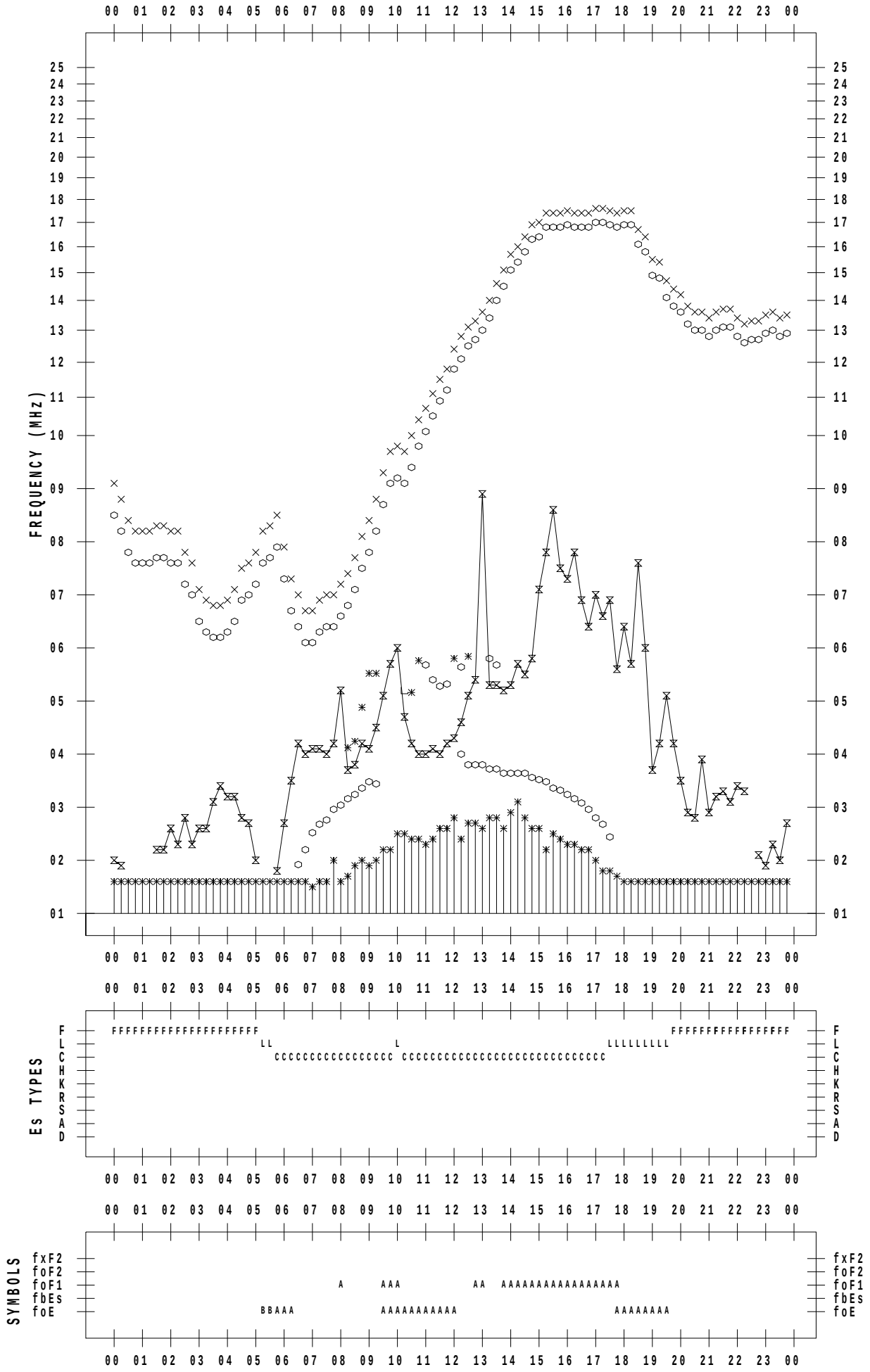
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/11

135 °E MEAN TIME



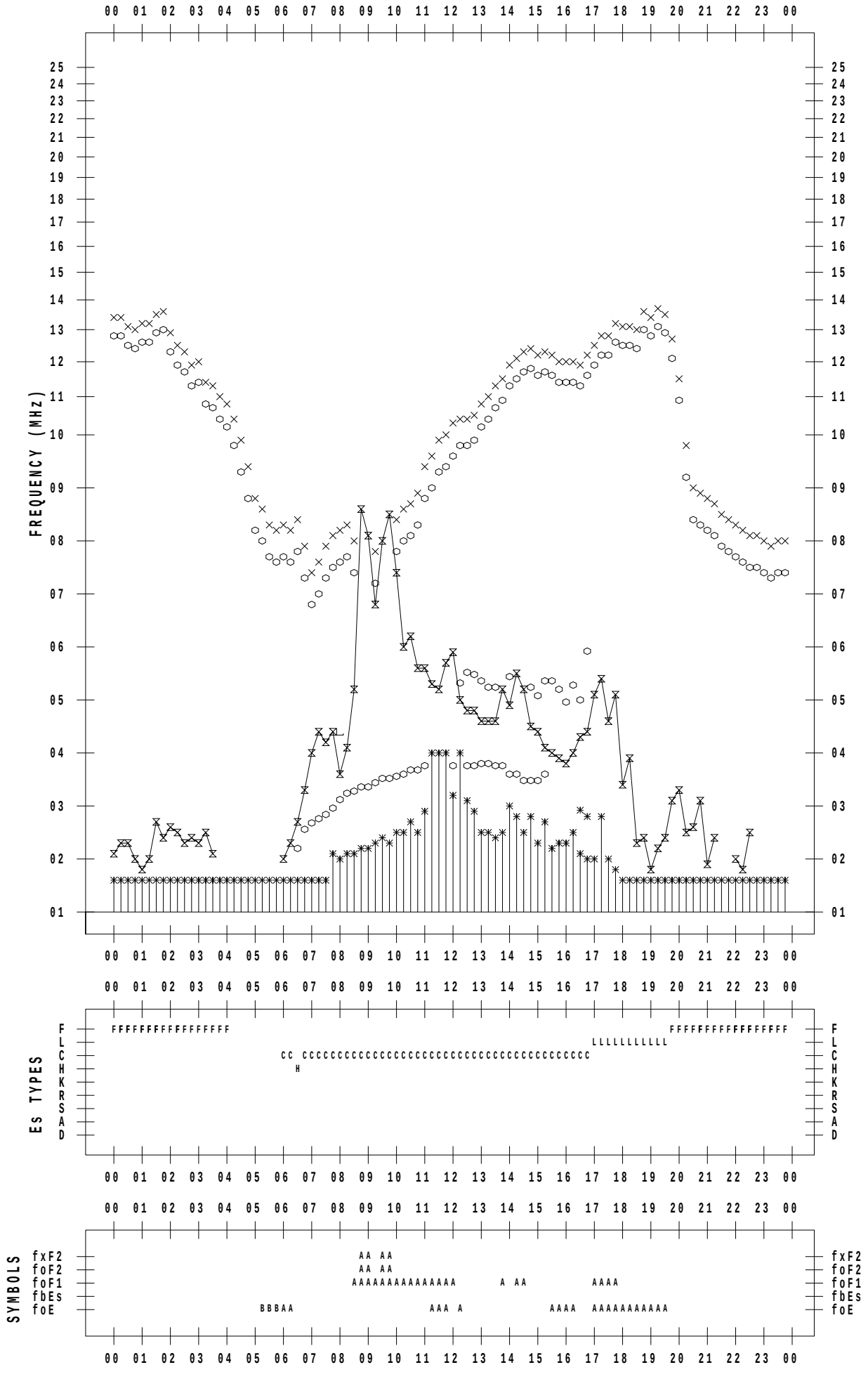
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/12

135 °E MEAN TIME



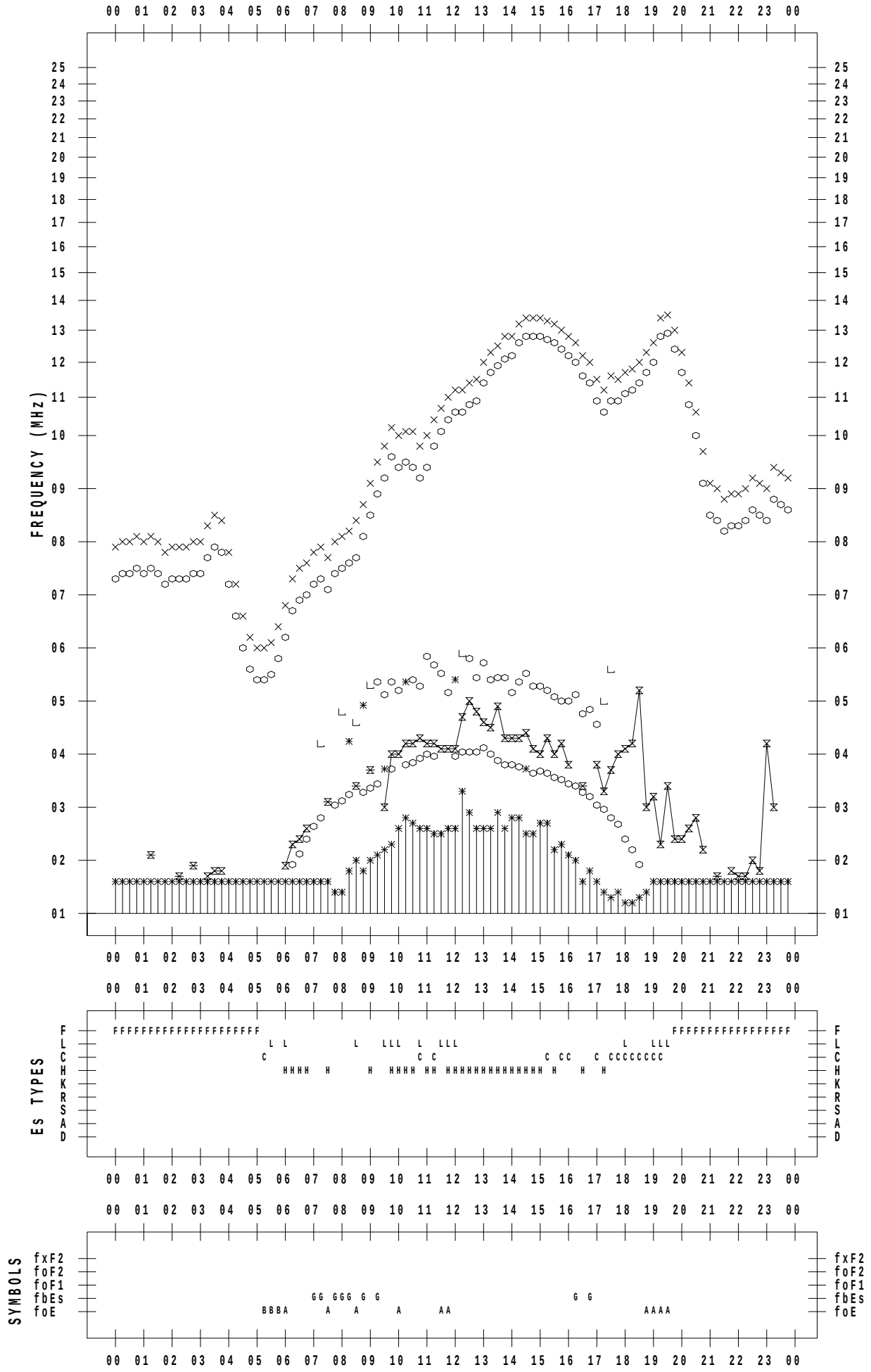
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/13

135 °E MEAN TIME



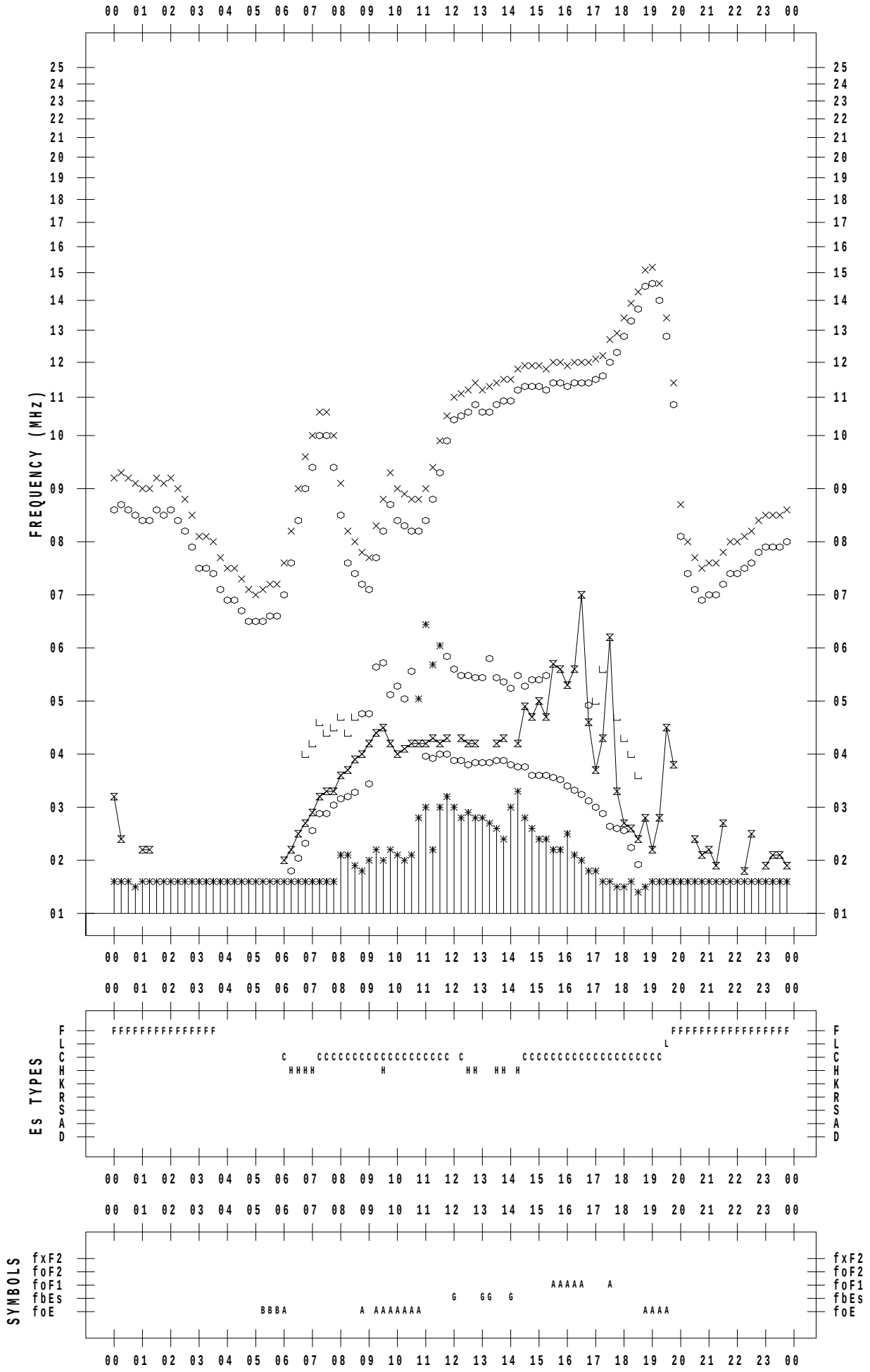
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/14

135 °E MEAN TIME



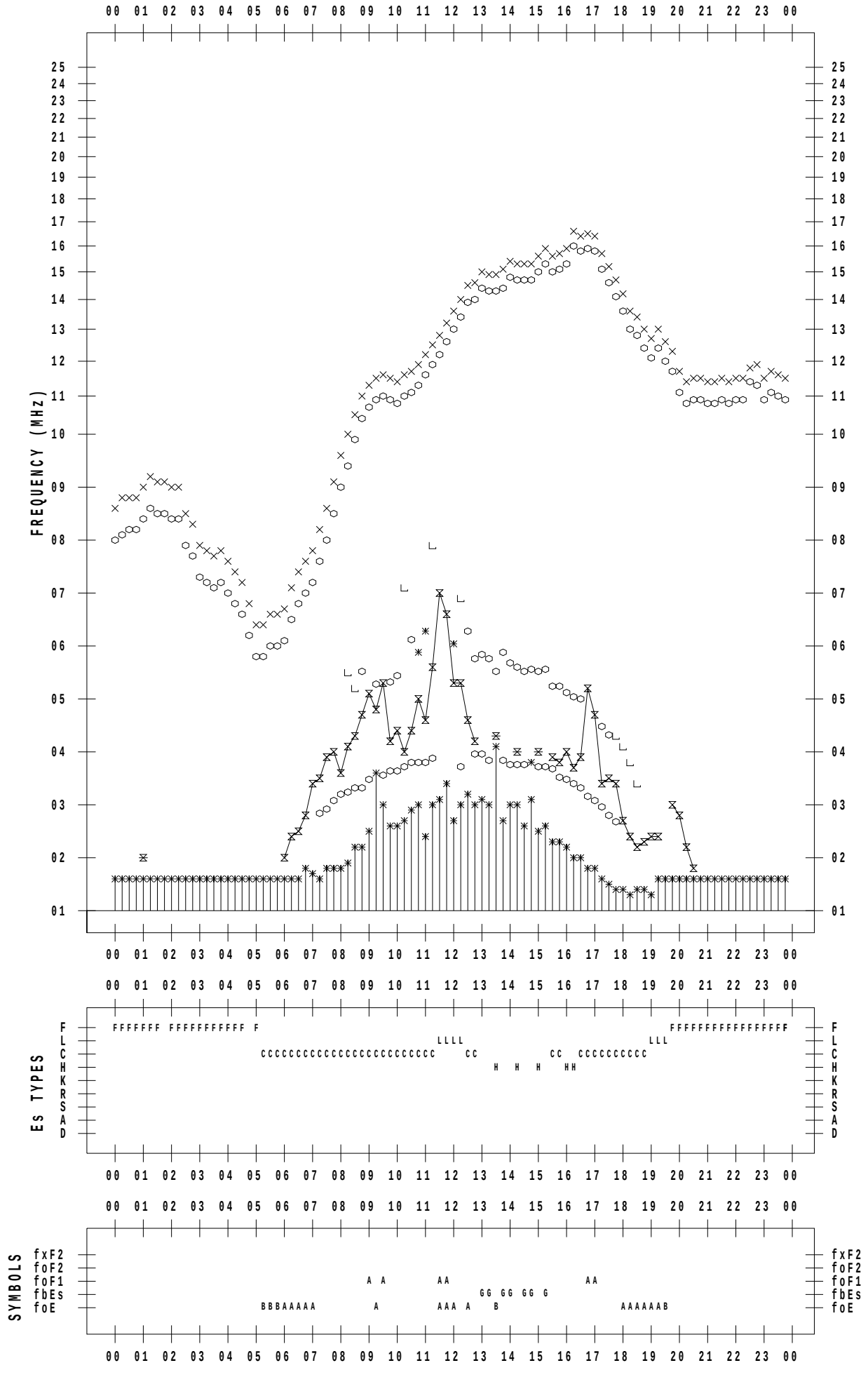
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/15

135 °E MEAN TIME



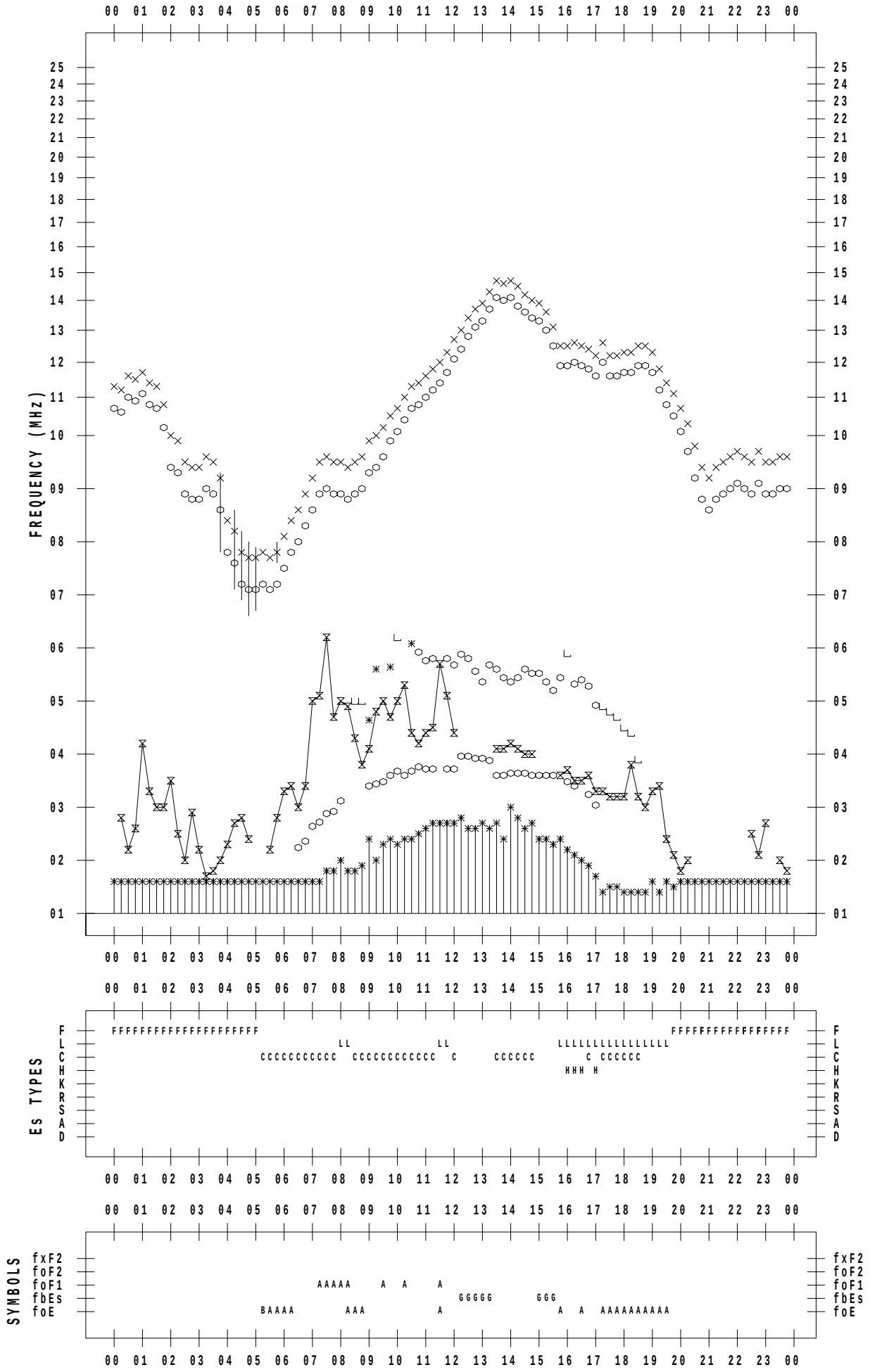
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/16

135 °E MEAN TIME



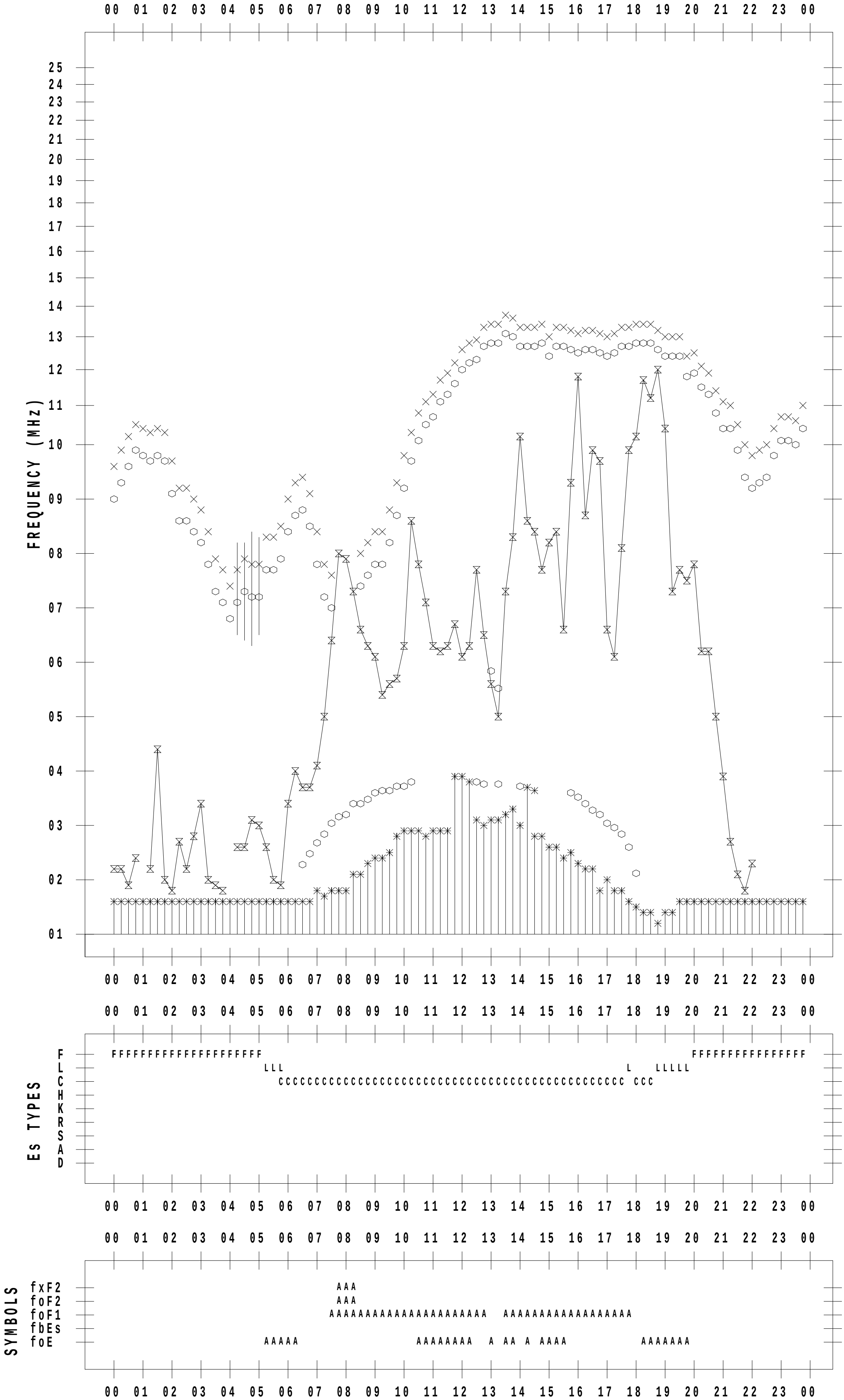
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/17

135 °E MEAN TIME



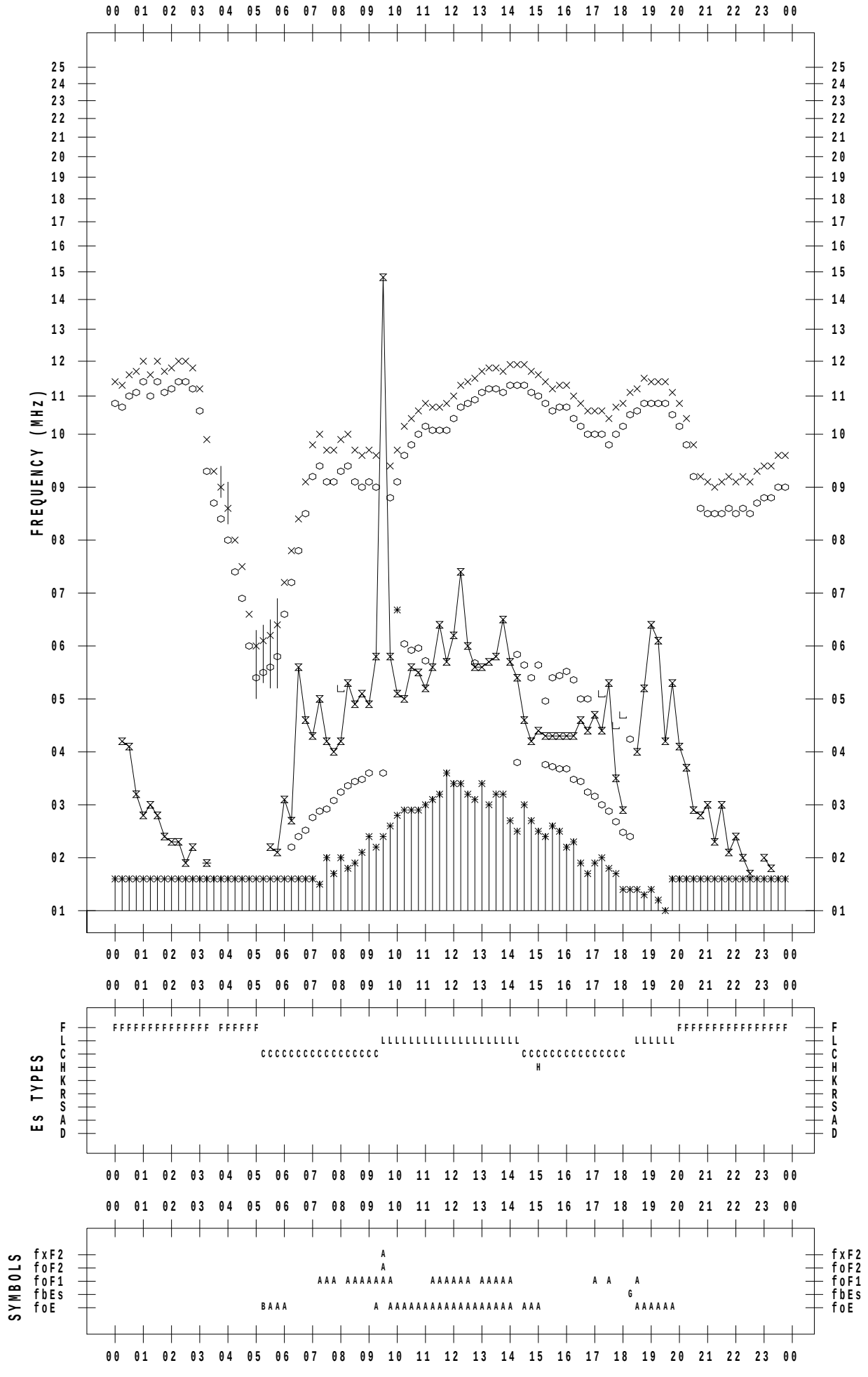
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/18

135 °E MEAN TIME



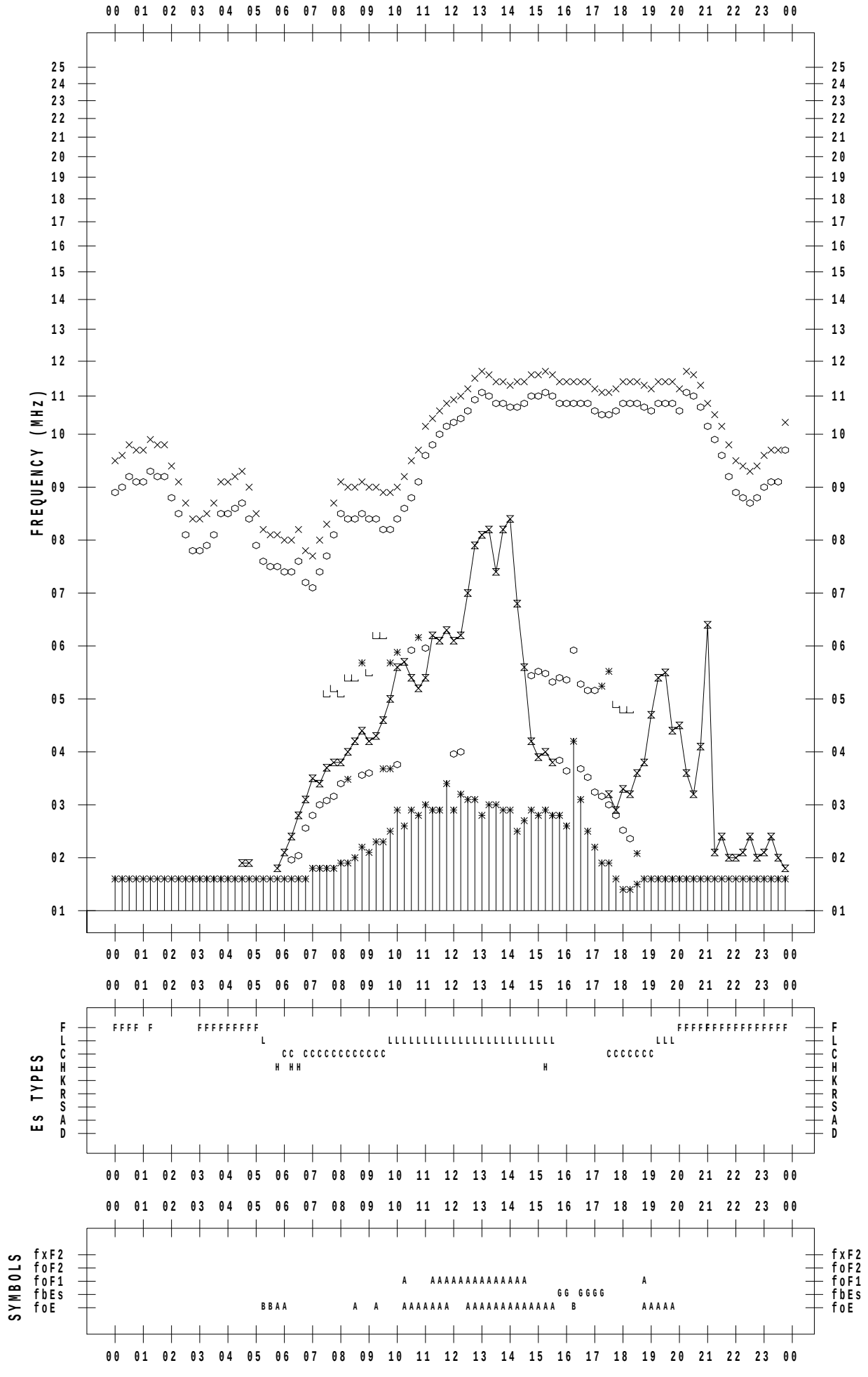
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/19

135 °E MEAN TIME



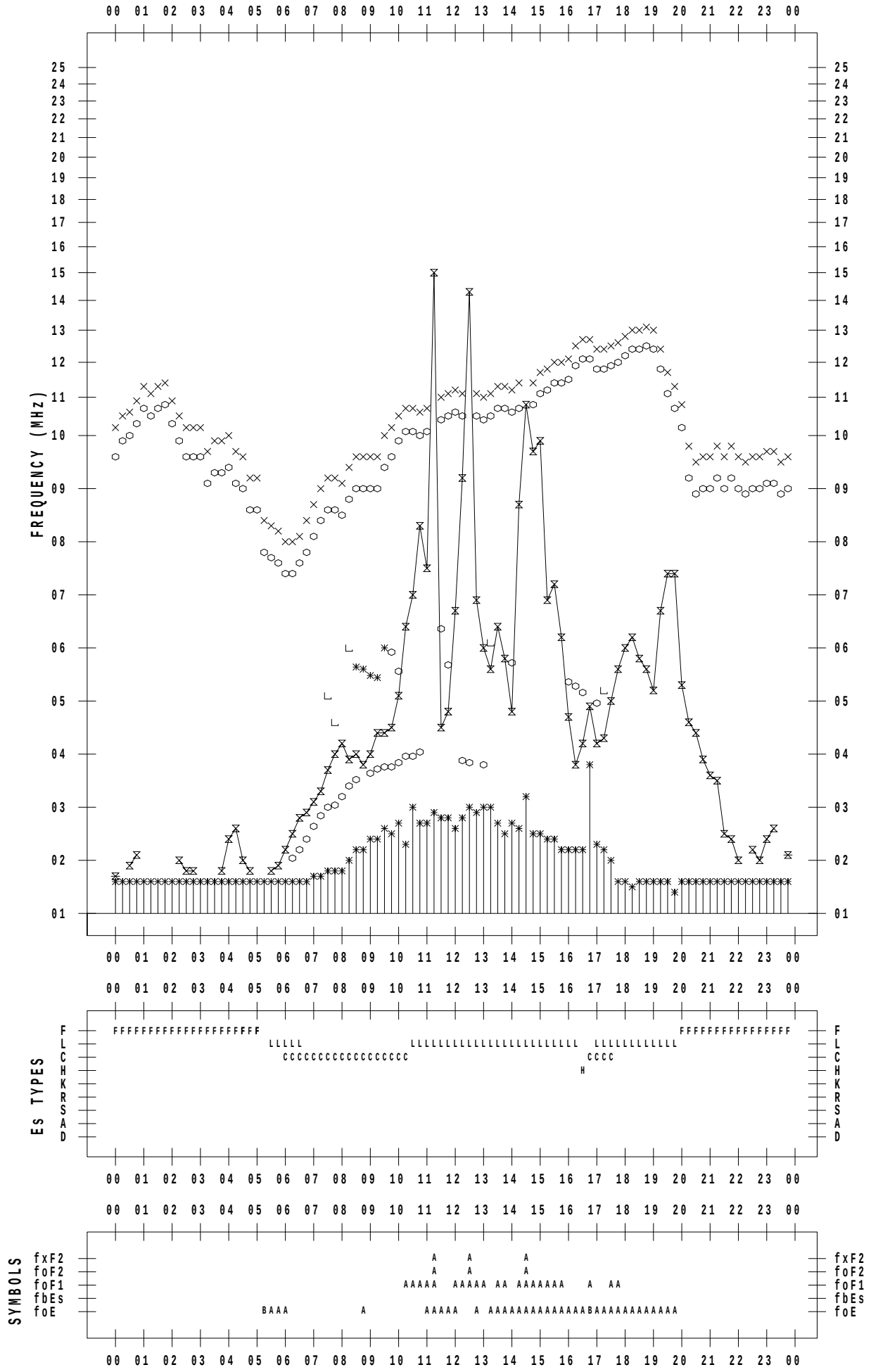
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/20

135 °E MEAN TIME



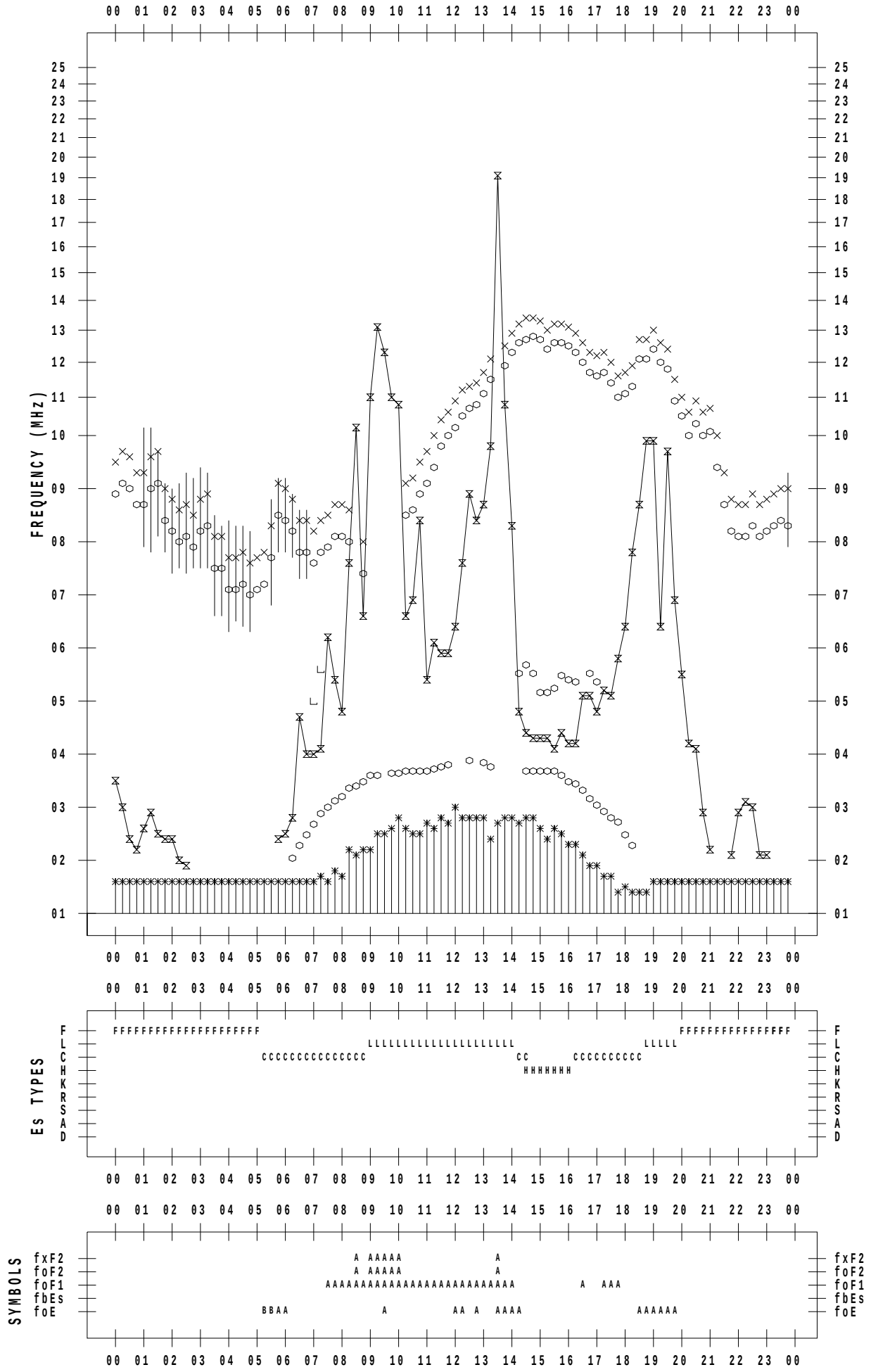
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/21

135 °E MEAN TIME



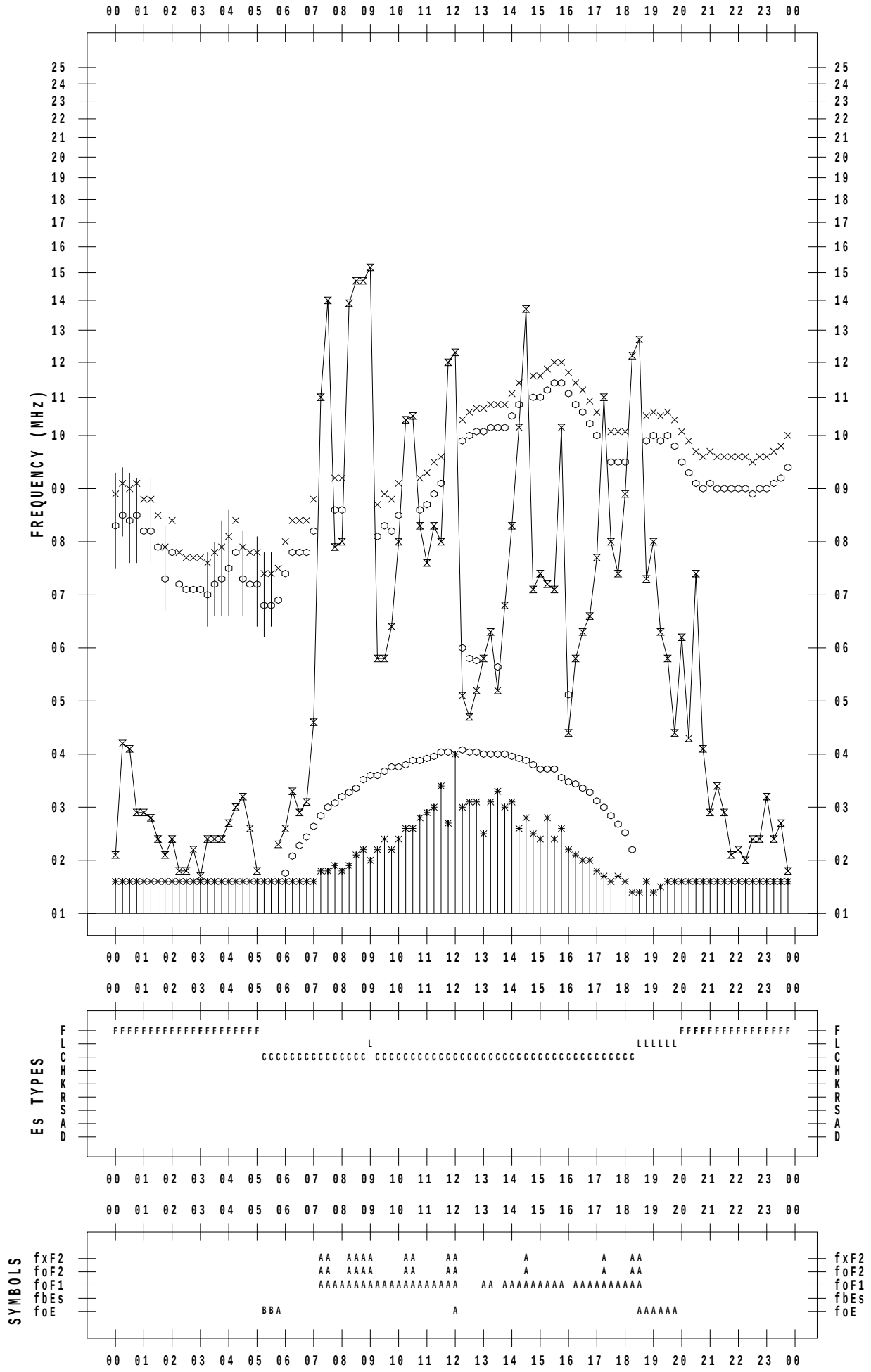
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/22

135 °E MEAN TIME



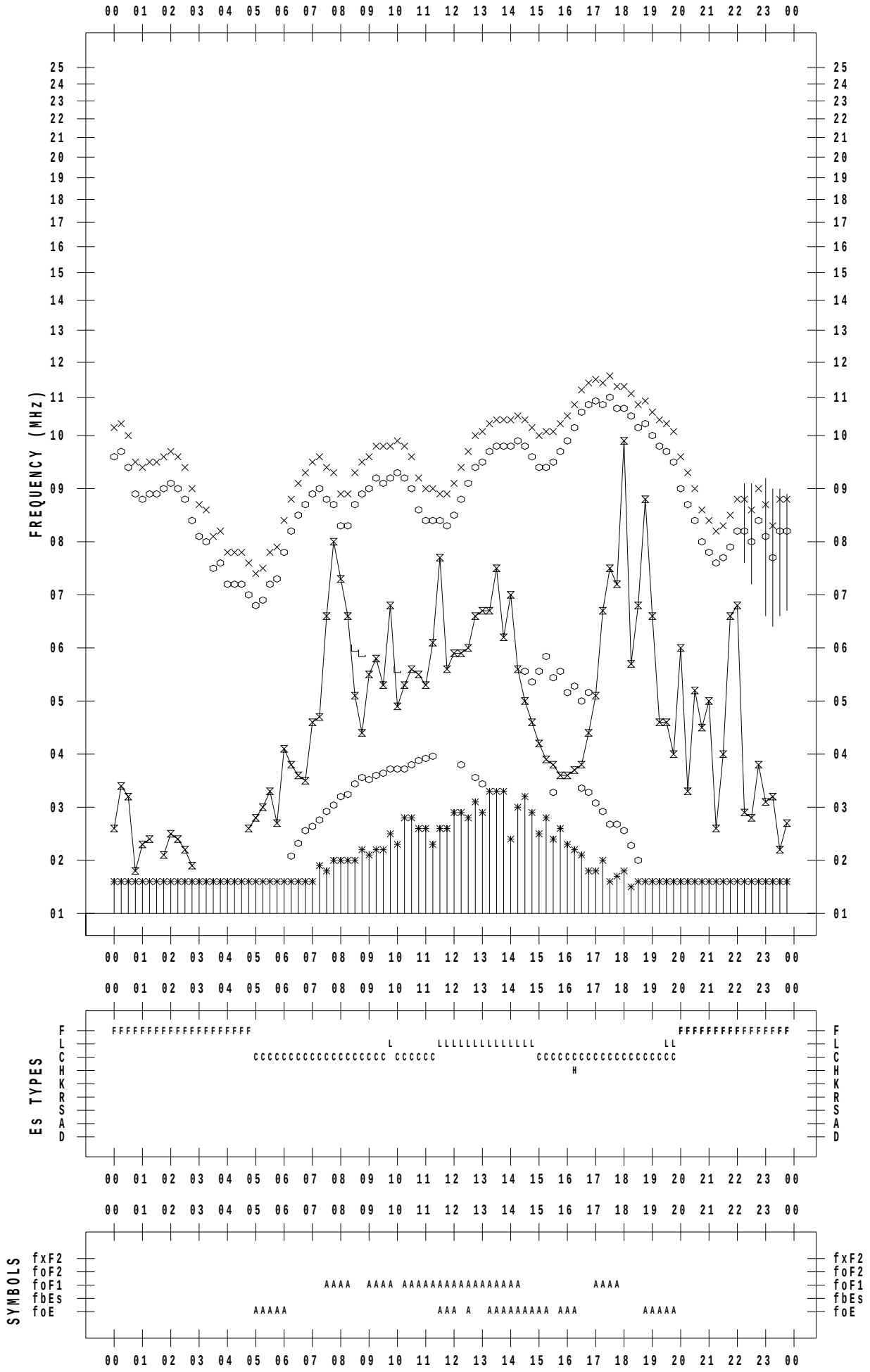
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/23

135 °E MEAN TIME



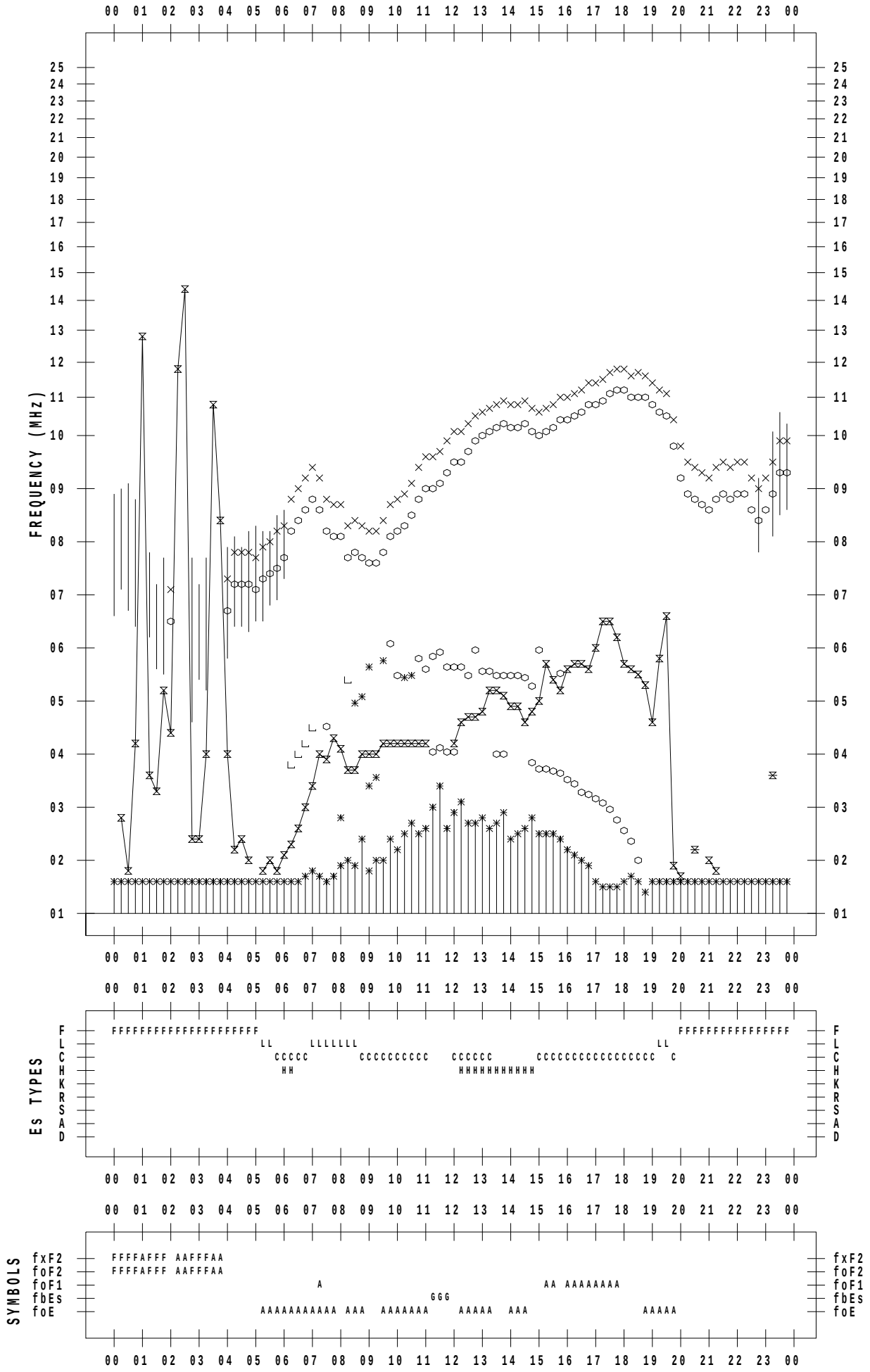
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/24

135 °E MEAN TIME



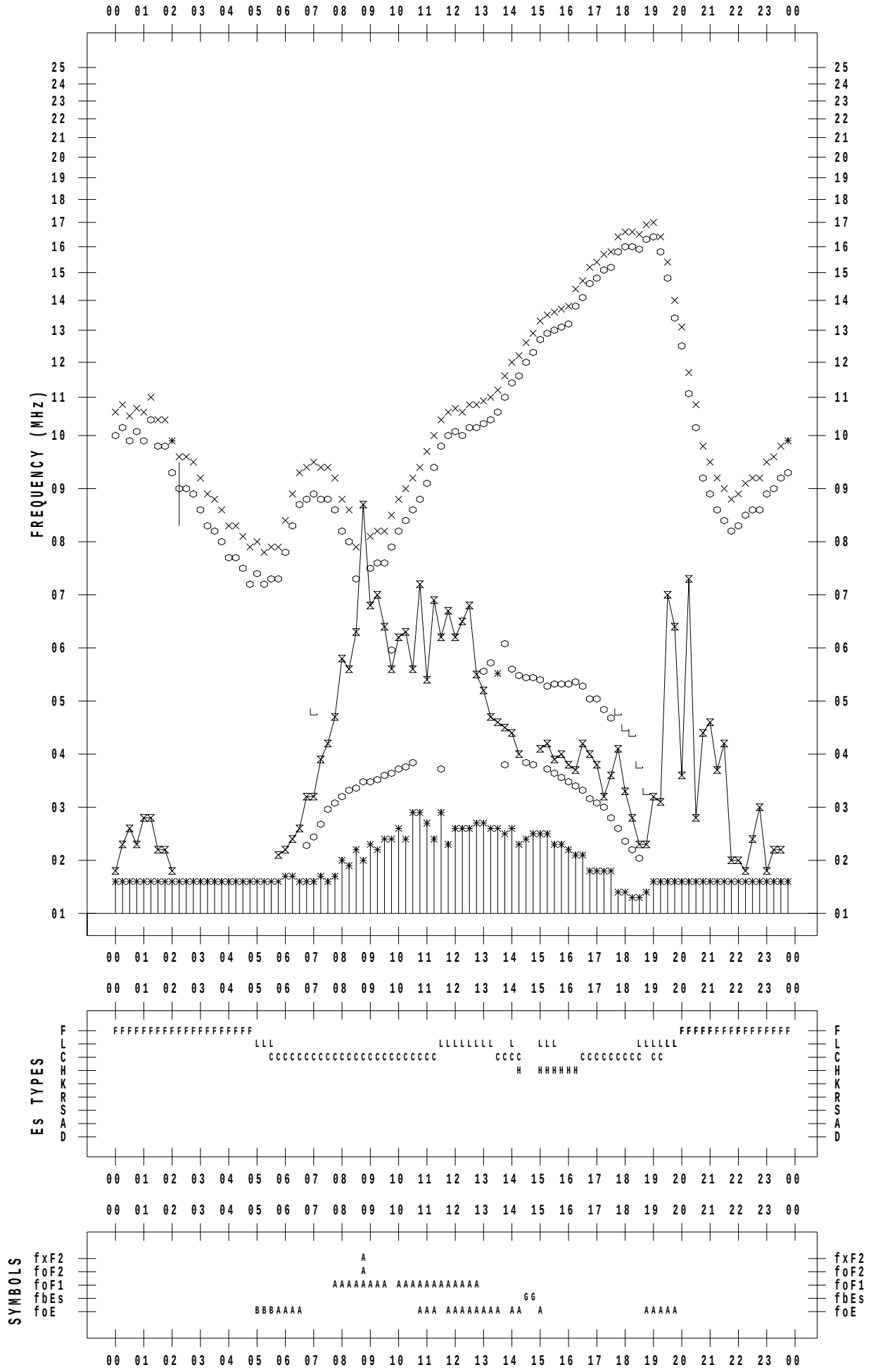
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/25

135 °E MEAN TIME



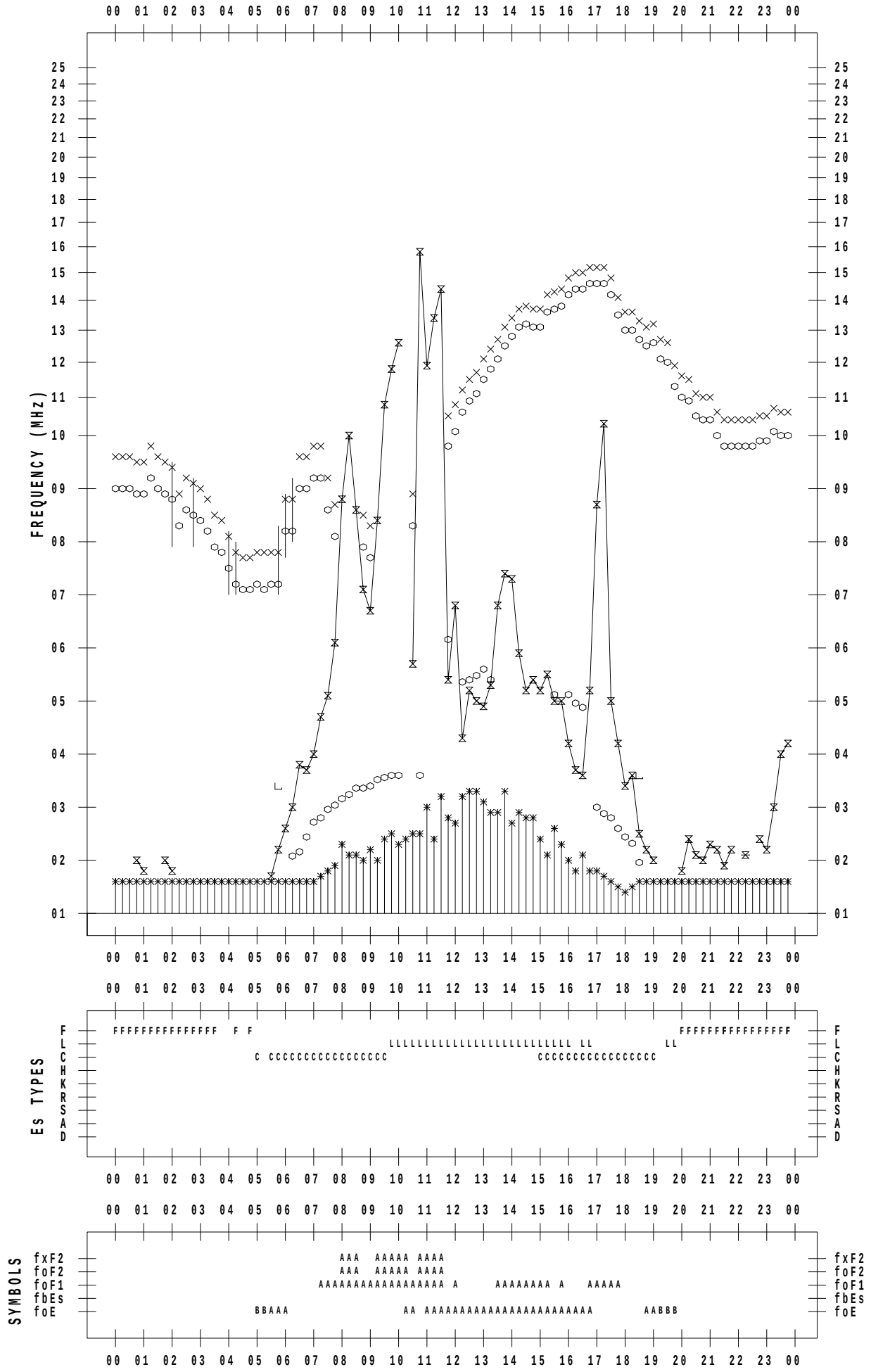
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/26

135 °E MEAN TIME



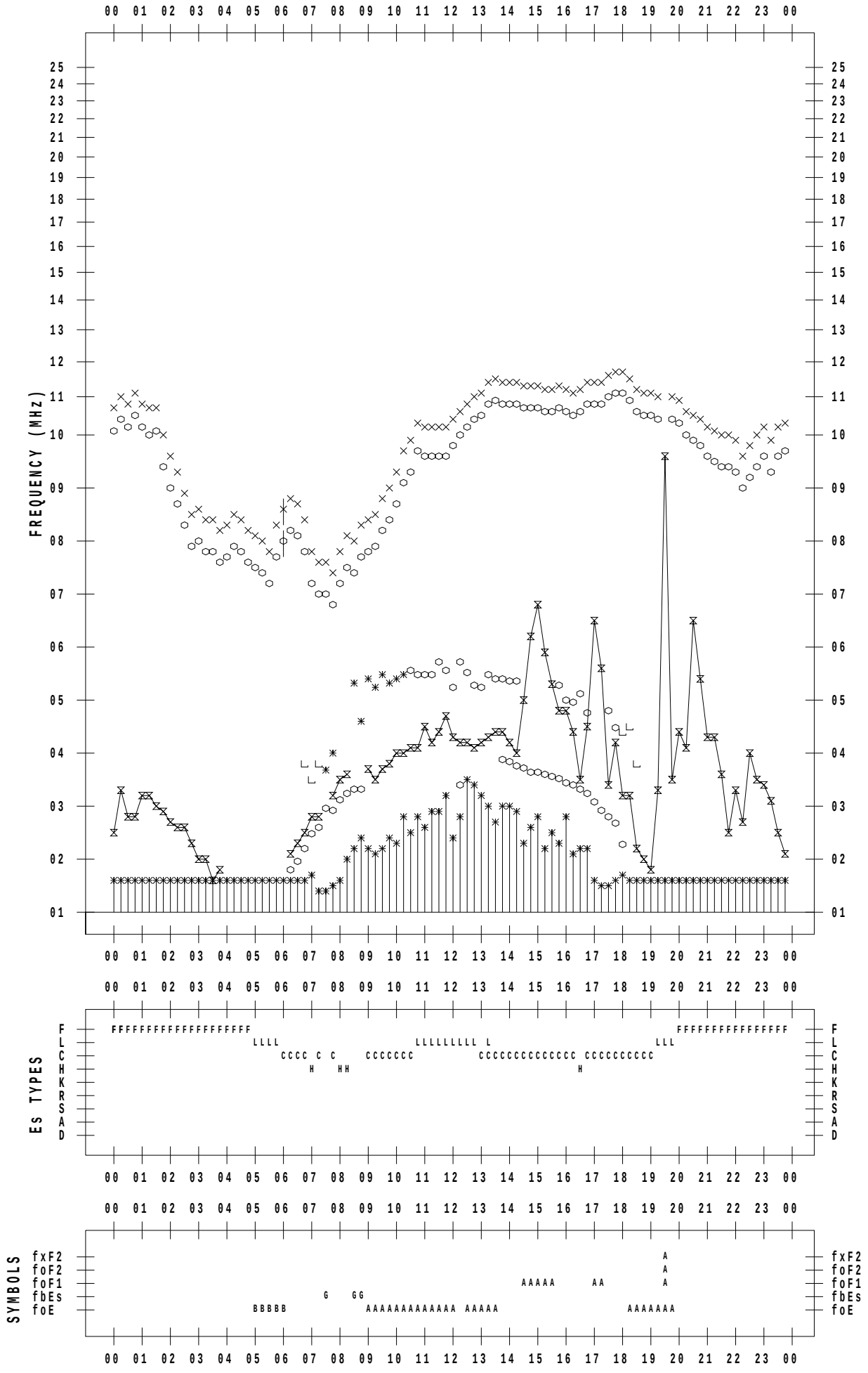
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/27

135 °E MEAN TIME



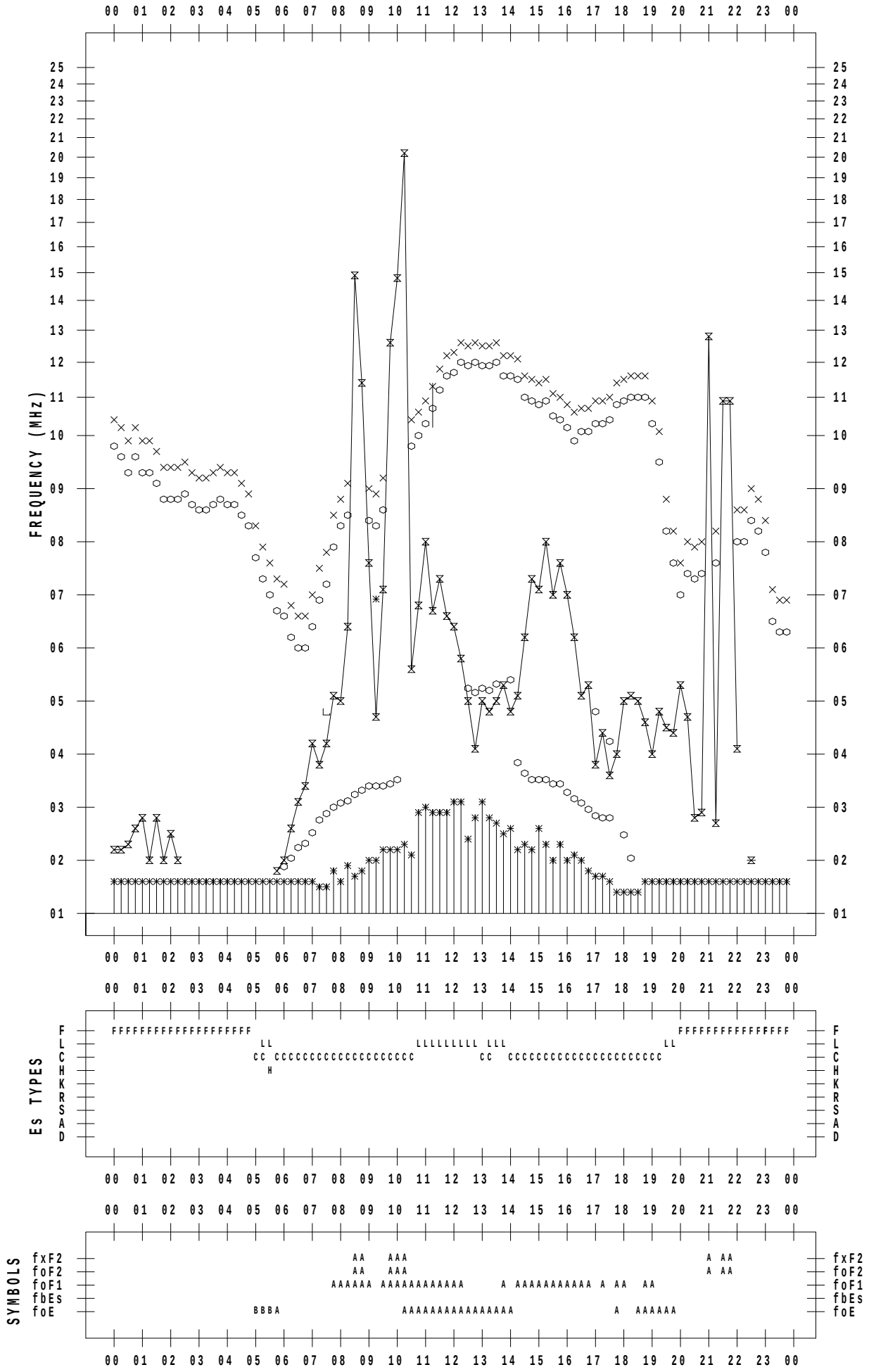
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/28

135 °E MEAN TIME



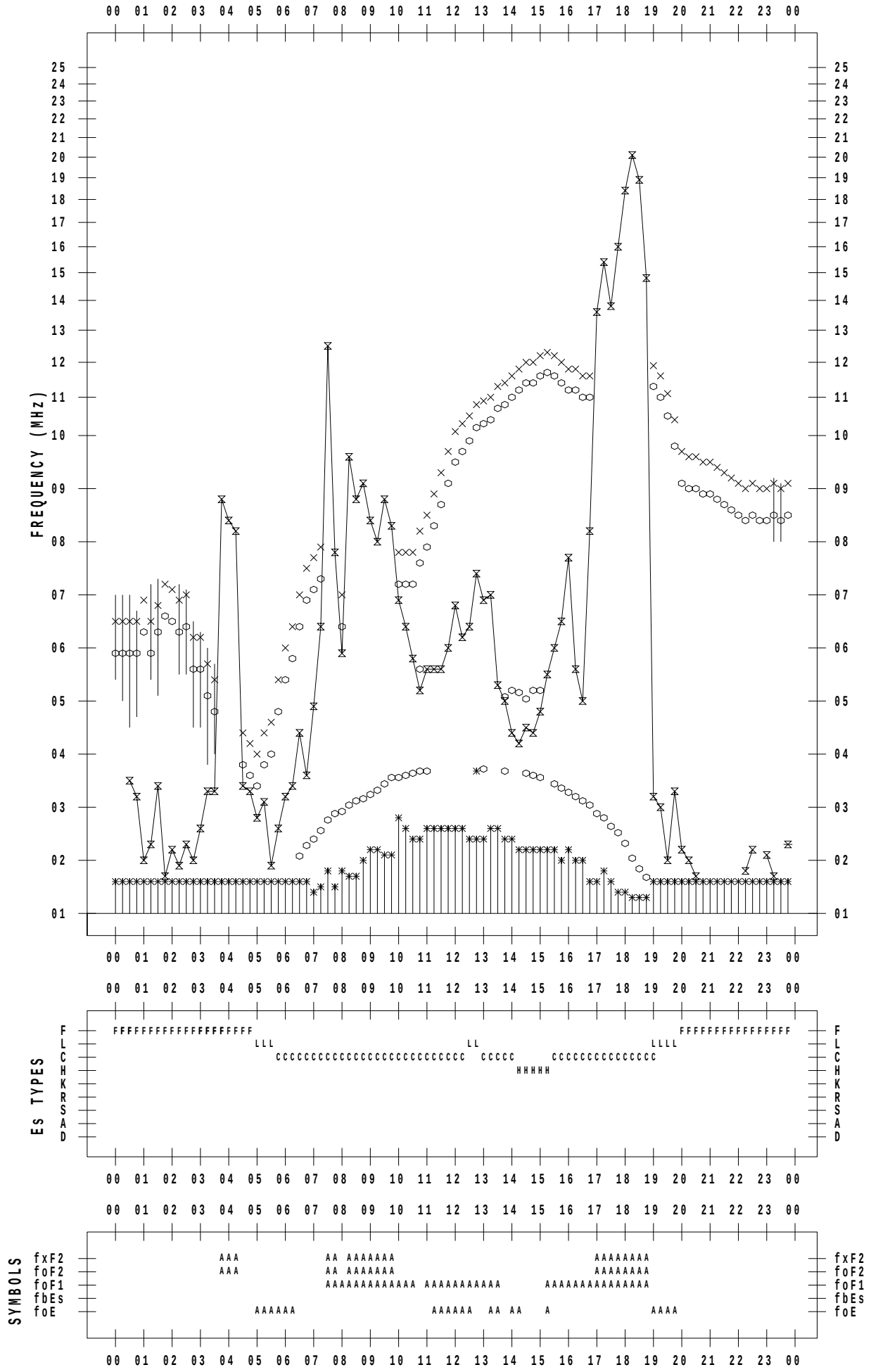
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/29

135 °E MEAN TIME



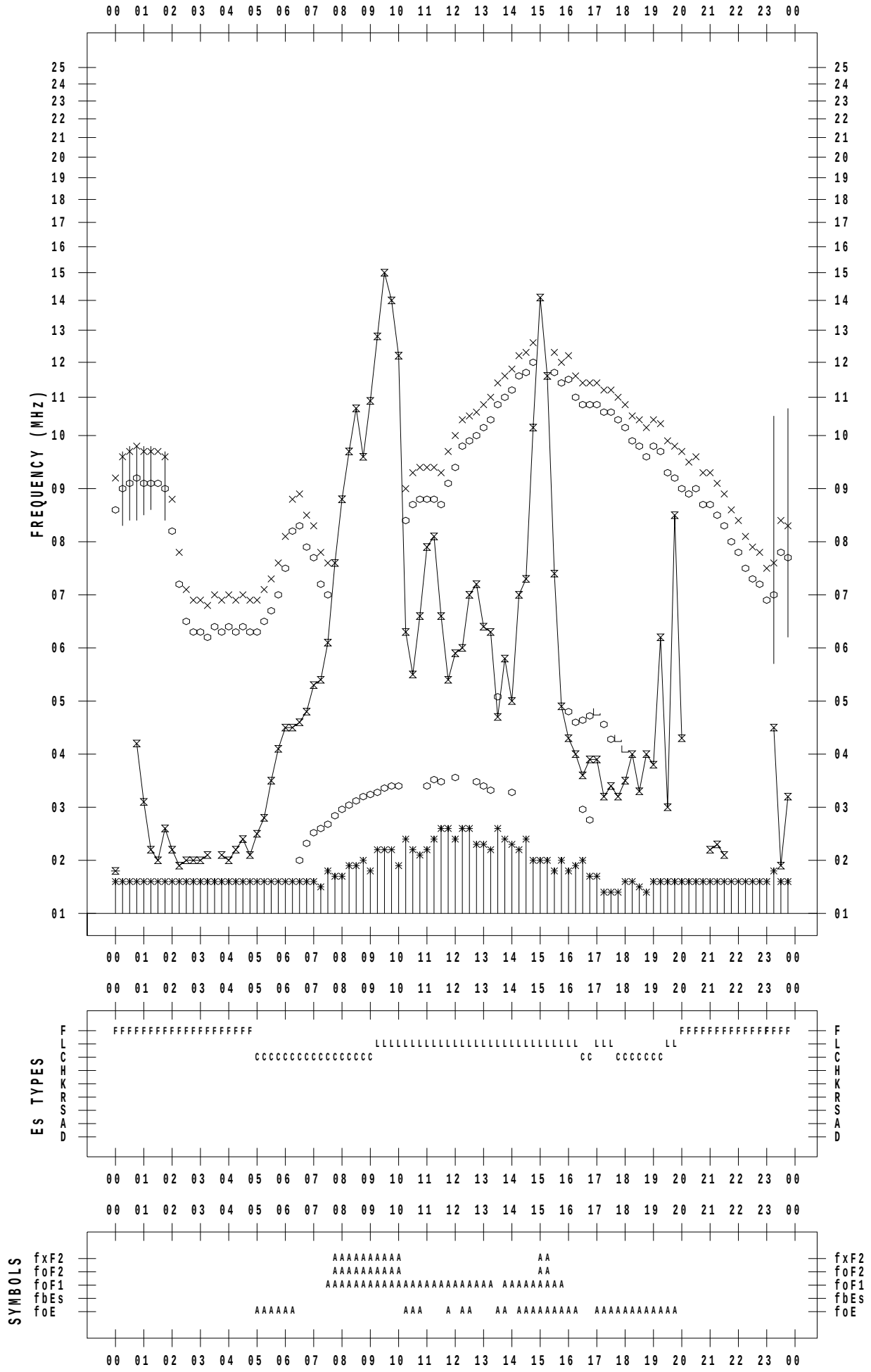
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 5/31

135 °E MEAN TIME