

IONOSPHERIC DATA IN JAPAN

FOR September 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 automatic 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

fxl	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 replace 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 atmospheric.
- 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-associated 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 (CNT) 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

SEP. 2022

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

$\begin{matrix} H \\ D \end{matrix}$	00	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	52	A	43	45	51	65	57	72	74	78	71	69	69	64	69	60	67	68	69	65	63	62	59	
2	45	49	49	49	49	46	60	62	62	69	69	65	70	67	65	66	63	57	62	73	73	67	59	55	
3	56	55	55	52	44	47	59	63	66	72	63	68	70	71	77	70	70	72	77	75	74	71	65	53	
4	52	48	50	53	35	36	39	51	51	50	A	A	A		52	57	51	64	58	56	62	58	53	56	54
5	43	37	35	31	A	A		40	37	49	A	A		A	A	A		43	44	45	51	58	55	49	41
6	40	38	A	37	40	35	C	C	C		45	53	54	57	60	63	63	59	61	58	63	61	57	49	43
7	45	41	39	39	37	41	52	53	65	63	58	64	60	62	61	61	65	64	66	79	75	63	47	42	
8	43	42	41	37	37	A	A		57	54	51	51	59	63	63	63	61	60	69	72	51	51	45	49	43
9	43	42	42	39	39	39	58	65	67	58	69	68	75	72	69	65	65	66	71	73	71	60	53	55	
10	57	51	50	42	41	42	55	55	59	60	63	65	67	67	65	65	63	59	64	73	69	67	55	43	
11	42	A	43	42	37	35	49	59	A		60	66	63	71	67	66	66	65	65	65	71	61	55	60	54
12	49	45	43	43	37	42	52	69	73	77	C	C	C	C	C	C	C		71	73	72	71	69	62	60
13	54	53	53	54	45	49	58	67	75	75	C	C	C	C	C	C	C		65	67	68	71	73	61	56
14	51	49	50	49	49	51	67	67	75	83	C	C	C	C	C	C	C	C		74	77	75	68	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		79	81	79	73	64	51	51
16	52	54	52	51	43	45	61	77	95	82	C	C	C	C		81	82	79	83	78	69	64	62	61	60
17	59	57	52	A	52	55	61	69	75	80	78	77	79	82	69	75	74	76	71	70	67	66	57	55	
18	56	53	52	51	45	49	65	75	81	84	81	85	81	78	75	72	72	82	86	81	83	72	57	52	
19	53	53	51	53	45	47	56	68	71	74	72	69	70	79	72	75	72	72	83	73	62	51	51	47	
20	46	48	48	45	38	39	53	60	65	65	72	74	78	74	77	73	67	71	79	75	65	54	51	50	
21	45	45	45	48	47	40	55	69	84	82	73	76	83	85	79	81	81	82	75	66	62	54	54	54	
22	52	51	51	50	48	48	61	65	75	89	78	80	86	78	77	76	75	85	81	78	66	59	48	45	
23	44	46	45	43	43	48	64	65	69	72	85	85	81	85	83	77	79	75	74	72	66	60	58	51	
24	50	41	45	44	46	45	61	64	69	81	80	90	81	76	75	78	85	71	71	59	64	59	51	51	
25	49	45	45	43	37	39	60	43	95	89	87	77	81	83	87	77	79	74	66	54	54	53	45	43	
26	43	45	43	A	42	43	63	72	80	93	99	87	85	86	80	76	73	85	81	75	63	53	48	45	
27	47	44	47	44	43	44	60	71	83	91	95	101	100	107	100	83	77	70	75	74	70	63	59	61	
28	62	51	A	41	40	41	51	68	A	84	94	95	95	89	91	86	82	83	76	70	64	59	56	55	
29	55	54	53	50	45	41	61	69	68	80	89		85	79	85	79	81	82	69	71	63	57	57	59	
30	55	55	55	53	51	49	65	81	89	89	97	87	84	79	80	82	80	81	78	83	65	64	61	50	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	28	26	27	28	27	27	28	26	28	24	22	24	24	25	25	26	29	30	30	30	30	29	29	
MED	50	48	48	44	43	44	60	65	72	76	76	75	78	77	75	75	72	71	72	72	65	60	56	52	
U Q	54	53	52	51	45	48	61	69	80	83	86	85	83	82	80	78	79	81	78	75	71	66	59	55	
L Q	44	44	43	42	38	40	53	58	65	64	64	65	69	67	65	65	64	65	66	68	62	55	50	45	

HOURLY VALUES OF fEs AT Wakkanai

SEP. 2022

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	91	38	48	38	28	G	32	39	44	46	44	65	49	47	41	41	40	34	39	34	54	33	32	27	
2	G	G	G	27	G	G	26	39	43	150	65	54	56	39	38	37	35	32	32	35	34	G	41	32	
3	30	40	28	32	G	G	32	40	85	40	42	43	36	43	39	39	40	38	57	G	G	G	G	G	
4	29	164	G	G	G		26	46	175	48	48	60	36	36	42		57	32	28	G	G	G	50	G	
5	G	24	11	31	30	32	33	91	66	56	140	41		40	39	56	38	G	34	29	G	G	G	G	
6	G	26	38	33	30	28	C	C	C	40		38		64	40	37	43	40	31	G	25	38	29	30	
7	33	30	G	G	32	36	29	55	39	82	33	111	41	39	47	44	40	43	G	G	G	26	30	27	
8	29	32	G	30	33	40	59	36	40	43	44	48	34	40	32	45	34	35	40	40	32	34	32	G	
9	G	G	G	G	G	G	24	40	53	102	54	50	116	34	52	34	44	39	48	34	G	G	28	40	
10	29	26	28	31	35	G	28	28	35	43	50	34	31	41	32	31	28	34	45	34	41	40	28	27	
11	32	39	G	G	24	G	34	49	72	56	34	36	45	35	34	33	28	G	G	30	G	40	38	31	
12	26	G	G	G	G	G	G	36	41	34	C	C	C	C	C	C	C	26	G	G	G	G	G	33	
13	31	G	G	G	G	G	33	56	40	40	C	C	C	C	C	C	C	36	G	28	G	G	G	G	
14	25	G	G	G	G	26	25	36	38	39	C	C	C	C	C	C	C	C	25	44	G	G	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	31	34	24	30	G	33	33	
16	31	G	28	G	G	28	40	46	50	45	C	C	C	C		42	39	34	32	40	G	G	28	26	
17	28	28	34	49	30	34	33	54	39	34	35	150	41	40	32	30	35	G	56	G	G	G	G	G	
18	G	G	92	G	29	32	32	34	53	34	51	54	48	43	34	34	34	25	G	G	27	24	54	26	
19	28	G	G	G	G	G	24	36	32	34	36	35	50	33	32	31	34	G	G	G	35	G	G	G	
20	G	33	G	24	G	28	35	36	41	47	45	45	36	36	98	34	35	32	25	G	46	38	G	30	
21	27	26	G	G	26	G		34	38	44	34	35	36	46	39	34	49	40	47	49	36	30	G	G	
22	G	G	24	G	G		30	34	48	36	36	51	40	34	34	100	41	G	41	40	40	35	41	32	
23	G	38	31	G	33	31	38	34	35	62	N	35	34	117	40	39	36	G	G	G	29	28	G	26	
24	G	28	G	G	G	G	32	38	43	36	44	37	36	36	41	35	32	31	26	55	31	G	33	32	
25	G	28	G	29	G	G	33	34	38	38	35	35	39	34	38	31	25	G	26	31	G	G	G	G	
26	G	G	G	41	37	G	28	32	36	44	36	44	41	35	34	29	32	30	70	50	48	38	36	34	
27	G	G	G	G	26	50	55	39	38	49	52	46	36	34	38	36	34	40	G	G	43	G	29	29	
28	36	35	48	34	G	G	21	42	78	126		46	51	59	74	38	30	32	35	34	31	33	35	G	
29	G	G	G	G	26	30	23	34	40	34	43	G	46	40	40	55	50	34	34	37	G	27	G	G	
30	G	G	G	G	G	G		35	40	41	34	35	62	35	36	36	40	46	G	G	G	39	35	G	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	28	28	28	28	29	22	25	23	25	26	25	26	29	30	30	30	30	29	29	
MED	25	26	G	G	G	G	31	37	40	43	44	44	41	39	39	36	35	32	32	28	24	14	28	26	
U Q	29	32	28	31	30	30	33	44	51	52	50	52	49	43	41	40	40	37	40	35	35	35	34	31	
L Q	G	G	G	G	G	G	24	34	38	37	35	35	36	35	34	33	34	13	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Wakkanai

SEP. 2022

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

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

HOURLY VALUES OF fof2 AT Kokubunji

SEP. 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	A	A	52	50	50	47	58	74	76	76	65	87	79	75	64	68	85	75	82	76	67	A	A	A	
2	54	49	39	43	41	43	62	68	78	86	59	68	67	73	79	73	66	65	A	85	74	63	58	59	
3	59	57	64	55	43	41	61	72	73	76	83	69	71	80	80	75	77	77	88	91	81	77	A	62	
4	59	57	52	55	59	49	57	75	72	59	47	74	A	67	69	82	74	67	67	76	73	56	61	61	
5	65	51	49	39	36	33	35	A	A	A	A						A		42	50	55	52	41	A	36
6	41	43	39	40	41	35	A	55	51	68	106	A	65	67	68	67	64	65	A	67	57	54	57	59	
7	53	53	51	53	39	42	57	71	73	75	62	68	72	73	68	C	C		79	88	89	86	44	40	39
8	39	41	38	36	38	37	55	67	62	A	A	69	67	72	73	72	80	73	84	63	A	A	26	A	
9	A	A	A	41	C	37	C	85	71	68	81	84	A	87	85	83	77	78	93	75	A	61	60	59	
10	63	C	53	49	46	45	63	63	81	80	72	76	78	75	75	68	70	69	81	90	93	62	41	39	
11	41	38	40	42	36	34	62	87	74	C	81	83	78	74	72	73	72	77	86	C	69	58	58	57	
12	56	53	52	49	45	43	72	C	87	79	83	91	86	87	80	83	77	79	84	83	72	68	65	63	
13	62	63	60	57	57	57	71	91	102	87	82	88	85	78	85	74	71	72	C	83	79	49	67	61	
14	55	51	46	47	49	C	73	91	84	87	78	71	81	83	81	80	82	90	99	97	85	C	61	57	
15	56	58	57	58	53	45	71	82	89	89	90	96	97	99	90	84	91	97	104	86	62	63	60	57	
16	56	58	57	53	47	51	70	80	75	87	85	89	95	C	87	88	95	95	96	81	63	60	62	61	
17	63	59	57	51	C	45	70	73	85	82	67	89	81	77	82	81	85	85	89	80	61	63	66	61	
18	58	59	53	53	49	49	65	82	82	89	87	69	77	82	77	82	85	91	100	88	81	73	49	49	
19	42	42	43	45	39	40	71	74	87	79	79	79	88	86	91	83	90	87	80	81	A	53	47	46	
20	49	48	47	45	39	40	71	87	76	77	83	92	91	88	85	75	83	89	97	97	57	53	54	C	
21	49	50	49	42	41	A	68	78	90	76	C	C	C	C	C	C	C		94	95	81	54	49	51	55
22	55	56	C	C	C	41	70	98	91	71	77	81	98	93	C	C	C	C		91	83	60	56	C	55
23	53	C	47	43	43	40	65	82	78	75	79	93	103	83	84	87	C		94	92	83	69	65	55	51
24	52	49	48	50	49	48	65	78	95	94	84	85	86	87	81	91	97	105	90	71	65	64	53	50	
25	50	49	45	46	44	41	66	102	87	83	86	90	95	85	85	93	92	95	83	72	61	57	51	49	
26	49	50	49	44	44	50	69	92	98	89	C	C	C	C	C	C	C		101	98	92	67	50	41	43
27	45	43	43	41	39	41	65	70	87	98	C	C	C	C	C	C	C	C		88	80	71	64	60	A
28	71	55	47	51	51	50	68	82	87	87	94	C	C	C	C	C	C	C		100	66	57	56	57	56
29	54	51	45	45	38	38	59	82	91	81	85	86	91	93	81	88	91	95	89	63	65	59	55	55	
30	53	49	52	50	40	43	68	81	94	99	90	94	89	88	79	83	90	97	102	84	85	60	59	60	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	26	28	29	27	28	28	28	29	27	25	24	23	24	24	23	22	27	27	29	27	27	26	26	
MED	54	51	49	47	43	42	66	80	84	81	82	84	85	82	80	82	82	85	89	81	67	59	57	56	
U Q	58	57	52	52	49	47	70	86	89	87	85	89	91	87	85	84	90	95	97	87	79	63	60	60	
L Q	49	49	45	42	39	40	61	72	74	76	74	72	77	74	74	73	74	73	84	73	61	53	51	49	

HOURLY VALUES OF fEs AT Kokubunji

SEP. 2022

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

$\frac{H}{D}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	60	84	48	32	40	33	33	65	36	131	43	44	101	40	53	59	87	41	49	71	52	116	92	71		
2	26	G	G	G	G	G	G	32	46	58	53	50	58	81	59	56	42	95	132	56	38	29	55	36		
3	G	G	G	G	24	25	31	42	45	50	50	41	56	43	G	40	48	40	38	52	33	60	84	56		
4	56	40	40	33	29	33	G	55	38	37	47	72	71	52	46	50	69		33	34	33	26	27	G		
5	26	G	G	28	G	31		41	45	55	73						65	49	32	26	38	25	29	25		
6	31	G	G	G	33	59	53	107	70	53	84	97	60	53	49	43	70	57	57	55	40	37	33	G		
7	G	G	G	G	G	G	G	47	50	65	40	49	57	64	42	C	C		38		33	11		27	G	
8	G	G	G	G	G	31	35	53	49	66	75	60	47	G	34	70	52	51	38	40	60	57	92	79		
9	60	58	53	40	C	G	C	64	58	55	62	56	102	39	G	G	48	53	63	45	52	58	50	35	37	
10	31	C	36	G	G	G	36	40	46	108	40	38	37	35	G	G		31	34	26	28	G	29	29	G	
11	G	G	G	G	G	G	31	29	41	C	G	G	37	45	36	G		29	32		C	G	G	G	24	
12	G	G	G	G	G	G	32	C	39	49	33	34	37	36	G	35	46	53	53	27		G	G	G	G	
13	G	G	G	G	G	G	22	40	37	G	37	47	37	G	40	40	87	37	C	41	29	36		G	G	
14	G	G	G	G	G	C	33	26	48	40	46	G	45	124	40	37	45	37		G	G	G	C	G	G	
15	G	G	G	G	G	G	G	38	32	38	47	47	G	36	33	36	32	46	46	35		G	G	G	G	
16	G	G	G	G	G	G	G	26	31	G	G	48	42	C	36	60	32	40	32	39	34		24	G	G	
17	G	G	G	G	C	31	50	33	40	57	53	51	N	37	36	32	G	G	G	G		35	28		G	
18	G	G	G	G	G	27	G	32	40	37	39	G	44	40	33	33	33	49		G	G	G		31	24	G
19	G	G	G	G	G	G	31	29	36	37	43	41	G	36	31	32	36	43	59	74	77	41	G		26	
20	G	G	G	G	G	G	22	38	89	52	76	111	54	40	38	31	37	34	35	30	57	33		G	C	
21	59	48	G	23	22	52	33	40	33	52	C	C	C	C	C	C	C		25	79	33	G	G	40	28	
22	29	G	C	C	C	G	31	32	42	60	52	G	42	38		C	C	C	C	G	G	G	G	C	G	
23	G	C	G	G	G	G	32	34	54	41	53	G	G		35	34	29	C		G	G	G	G	G	G	
24	G	G	G	G	G		24	24	28	35	37	34	40	47	46	47	41	41	36	28		33		G	G	G
25	38	29	32	G	G	33	28	33	34	34	40	47	36	34	33	36	34	G	G	G	G	G		29	G	G
26	G	G	G	G	G	G	G	33	35	40	C	C	C	C	C	C	C		60	56	31	47	23	G	G	
27	G	G	G	G	G	G	23	31	48	54	C	C	C	C	C	C	C	C	G	G		26		27	60	
28	39	43	31	31	G	24	92		G	37	54	C	C	C	C	C	C	C	G		22	G	G	G	G	
29	G	G	G	G	G	G	G	26		G	G	G	G	37	G	36	33	36		G	G	G	G	G	G	G
30	G	G	G	G	G	G	50	28	39	59	G	G	51	G	145	29	31	34	31	25		G	G	G	G	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	28	29	29	27	29	28	28	30	29	27	25	24	24	24	23	23	26	28	29	30	29	29	29		
MED	G	G	G	G	G	G	31	34	40	50	46	44	44	38	36	36	41	39	32	30	28	23	24	G		
U Q	31	G	G	G	G	31	33	41	48	57	53	50	56	45	44	48	53	49	47	40	38	34	31	27		
L Q	G	G	G	G	G	G	G	30	35	37	37	G	37	35	33	32	32	34	G	G	G	G	G	G	G	

HOURLY VALUES OF fmin AT Kokubunji

SEP. 2022

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

$\begin{matrix} H \\ D \end{matrix}$	00	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	17	16	15	16	16	14	15	13	16	14	16	15	15	15	13	14	14	15	15	16	15	16	
2	16	15	17	13	15	14	23	15	14	14	13	17	18	18	15	15	14	13	5	15	15	16	16	15	
3	16	15	16	15	16	15	15	15	15	15	15	31	14	28	14	15	14	13	15	15	17	15	15	15	
4	16	15	15	15	16	15	16	14	14	23	15	19	10	15	37	25	15	14	16	16	16	16	16	16	
5	17	15	15	14	13	16	16	15	14	16	23					13	14	15	16	16	16	16	16	16	
6	16	15	14	14	15	15	15	14	14	17	15	11	12	16	17	14	15	15	16	15	15	16	16	16	
7	14	16	13	15	15	14	15	15	15	15	19	16	17	28	16	C	C	14	17	16	13	13	17	15	
8	17	13	15	14	15	15	15	14	14	17	15	16	14	14	15	13	14	15	15	16	16	15	13	17	
9	15	15	16	15	C	13	C	15	14	15	15	15	14	23	44	13	14	14	15	15	16	15	16	16	
10	16	C	15	15	15	14	15	15	18	15	26	24	48	22	13	43	14	14	16	16	C	13	16	16	14
11	17	13	14	13	15	14	16	15	14	C	49	40	15	15	25	33	20	13		C	13	14	15	17	
12	15	15	13	13	15	14	15	C	13	18	38	18	18	17	15	19	22	14	15	15	16	14	17	15	
13	14	14	13	14	13	13	14	14	13	39	25	47	30	47	22	13	14	16	C	15	15	15	14	13	
14	14	13	13	13	13	C	15	15	26	15	30	38	44	30	14	34	14	15	14	13	14	C	13	14	
15	15	13	14	13	14	14	15	14	24	17	14	31	44	39	25	29	13	14	15	15	13	14	14	15	
16	15	13	13	14	13	13	14	13	13	14	39	29	31	C	25	13	15	15	16	15	17	15	16	14	
17	17	13	13	13	C	15	15	16	15	16	25	26	29	26	28	23	14	14	17	15	16	16	15	15	
18	13	13	14	13	13	15	14	15	14	14	24	44	29	28	23	14	16	15	14	16	16	16	16	15	
19	15	15	15	15	13	14	14	14	14	13	43	43	42	25	14	14	15	15	15	16	15	17	13	16	
20	15	13	13	15	14	13	15	14	13	19	11	16	12	29	15	12	15	14	16	16	15	16	16	C	
21	16	15	16	16	16	15	16	16	13	15	C	C	C	C	C	C	C	14	15	16	16	16	15	16	
22	17	14	C	C	C	14	15	29	28	15	37	43	41	30	C	C	C	C	18	15	15	15	C	13	
23	14	C	13	13	13	13	15	16	15	17	17	17	17	17	17	15	C	14	15	16	17	13	16	13	
24	15	15	13	14	14	15	17	17	16	18	16	20	14	20	34	15	17	15	15	15	16	16	13	13	
25	15	14	16	34	16	15	15	15	16	15	17	18	16	22	16	15	17	15	13	16	13	14	15	15	
26	15	14	15	13	15	13	15	17	16	15	C	C	C	C	C	C	C	16	13	15	15	16	13	14	
27	13	13	13	13	13	13	14	17	16	21	C	C	C	C	C	C	C	C	15	15	15	14	16	14	
28	15	15	15	15	14	16	5	15	17	18	21	C	C	C	C	C	C	C	15	16	14	33	13	13	
29	13	15	13	14	13	14	25	16	15	38	42	42	29	40	26	19	16	15	15	14	15	15	14	13	
30	13	14	13	13	14	14	17	15	15	16	42	44	21	42	23	15	14	16	16	15	13	14	13	13	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	28	29	29	27	29	29	29	30	29	27	25	25	24	24	24	23	27	28	29	30	29	29	29	
MED	15	14	14	14	14	14	15	15	15	16	21	24	18	24	17	15	14	14	15	15	15	15	15	15	
U Q	16	15	15	15	15	15	16	16	16	18	37	41	30	29	25	21	16	15	16	16	16	16	16	16	
L Q	14	13	13	13	13	13	15	14	14	15	15	16	14	17	15	13	14	14	15	15	14	14	13	13	

HOURLY VALUES OF fof2 AT Yamagawa

SEP. 2022

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

$\frac{H}{D}$	00	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	55	59	52	39	45	67	84	61	74	85	86	78	72	70	84	87	86	85	87	81	53	49	
2	48	50	54	44	41	39	49	72	88	72	65	A	A	85	87	76	73	75	83	90	80	71	64	63	
3	65	63	59	55	47	39	48	67	69	70	71	73	80	84	81	78	49	83	94	100	96	57	A	A	
4	A	47	54	56	59	49	53	90	81	76	65	74	80	75	77	96	83	87	83	89	86	46	54	55	
5	57	60	41	40	45	53	58	67	48	49	A	A	51	49	A	A	A	53	56	60	55	A	48	47	
6	47	42	39	44	A	35	46	61	67	64	75	81	83	75	75	77	73	75	80	72	A	65	62	58	
7	53	55	55	51	39	41	51	93	71	79	69	56	83	77	78	79	81	91	94	98	77	51	A	49	
8	A	53	50	A	42	49	56	78	71	A	A	88	92	92	87	88	A	A	A	97	A	A	48	50	
9	43	50	49	51	48	41	43	76	71	87	93	81	80	89	99	97	82	88	97	77	66	68	69	67	
10	75	74	61	50	50	52	49	79	86	75	89	89	85	81	87	83	85	88	96	102	115	62	A	44	
11	41	42	45	51	43	B	48	69	67	73	88	93	103	100	101	98	95	95	95	99	88	62	56	59	
12	57	57	54	52	49	47	54	68	81	75	88	100	95	89	86	88	89	86	93	97	83	61	64	63	
13	66	64	60	59	58	51	57	85	106	91	83	94	100	103	93	85	80	85	97	102	93	63	63	59	
14	55	53	52	49	45	42	55	81	97	81	79	73	83	85	84	83	83	96	102	110	91	A	63	58	
15	58	56	57	54	46	49	55	82	83	92	96	73	87	94	92	99	101	105	113	101	63	61	62	61	
16	60	58	59	57	48	47	54	81	78	77	89	93	103	98	101	93	97	109	108	97	85	64	61	60	
17	65	65	67	62	53	55	55	68	80	76	84	88	88	92	88	89	91	100	100	85	71	60	63	67	
18	60	58	59	55	53	48	54	72	86	99	79	84	84	85	83	88	89	90	98	96	91	60	57	49	
19	48	43	49	49	43	42	56	69	82	78	71	83	93	105	95	92	95	105	90	90	82	53	48	49	
20	46	49	50	49	42	41	53	84	75	79	87	91	100	97	81	88	92	108	105	97	92	53	54	54	
21	54	51	50	49	45	41	51	72	84	82	79	89	104	105	118	117	115	121	130	121	90	63	59	58	
22	57	58	58	50	44	41	48	78	87	67	79	87	105	114	110	102	96	102	100	99	82	63	62	63	
23	58	56	50	43	40	37	44	79	71	82	76	89	104	99	93	91	91	101	106	102	84	77	61	55	
24	55	56	52	53	48	40	51	77	95	91	87	77	90	99	96	106	111	101	99	101	82	63	55	55	
25	54	53	51	51	49	42	48	88	90	90	79	94	101	103	100	91	93	100	99	99	77	47	45	44	
26	45	44	46	43	41	41	52	83	97	89	80	91	105	101	93	91	102	111	118	N	102	91	59	53	51
27	53	55	51	44	42	37	45	69	91	104	89	93	93	100	103	102	116	112	97	97	79	61	57	56	
28	63	64	43	45	45	43	53	81	85	87	84	86	98	110	106	114	120	117	120	94	57	74	82	90	
29	83	85	59	63	50	37	42	70	95	91	81	85	92	97	89	95	102	99	92	74	75	69	65	59	
30	64	57	55	50	48	45	55	72	93	101	97	92	89	93	96	94	95	98	110	96	89	63	62	55	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	29	30	29	29	30	30	30	30	29	28	28	29	30	29	29	28	29	29	30	28	27	27	29	
MED	57	56	53	51	46	42	52	76	84	79	80	88	92	94	92	91	92	98	97	97	84	62	61	56	
U Q	63	59	58	55	49	48	55	81	90	90	88	91	100	100	99	97	99	105	105	101	90	65	63	60	
L Q	48	50	50	47	42	39	48	69	71	74	75	81	83	85	83	84	83	87	92	90	77	59	54	49	

HOURLY VALUES OF fEs AT Yamagawa

SEP. 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	59	90	54	40	29	23	32	35	50	58	49	83	65	61	58	56	58	35	42	50	50	40	32
2	39	46	38	30	26	G	38	33	47	72	146	92	103	61	58	95	58	71	116	51	38	48	23	32
3	43	G	G	G	G	G	30	56	44	46	55	57	48	49	43	47	84	95	95	57	59	70	90	71
4	70	31	G	G	G	G	G	33	45	49	43	50	48	G	41	34	41	41	38	26	26	G	29	G
5	G	G	G	G	G	G	29	39	59	80	112	69	39	36	59	78	52	40	46	34	28	46	34	G
6	23	G	G	29	41	32	30	50	46	52	83	71	48	64	46	N	39	35	35	26	60	49	41	35
7	41	28	24	69	G	G	G	163	42	38	41	48	43	44	51	58	50	51	59	65	33	42	43	26
8	45	54	44	70	46	30	38	36	39	80	108	48	52	48	50	56	91	84	88	90	83	108	29	45
9	25	25	24	G	G	24	32	33	46	42	54	60	57	58	50	40	45	71	92	66	41	G	31	G
10	G	G	G	G	G	G	G	36	44	49	41	50	61	47	36	41	75	41	30	27	48	32	39	38
11	29	26	G	G	G	B	25	32	40	61	40	61	51	50	50	43	48	41	49	36	26	G	G	G
12	G	G	G	G	G	G	G	37	36	40	37	38	39	46	38	40	43	34	31	G	G	G	G	G
13	G	G	G	G	G	31	G	32	40	42	45	54	47	G	35	40	39	34	34	32	26	G	G	26
14	G	G	G	G	G	G	G	38	44	47	33	55	40	39	47	66	50	63	66	41	31	84	28	G
15	G	28	G	G	G	G	25	34	46	43	52	56	59	46	48	47	33	41	36	92	28	G	G	G
16	G	G	G	G	G	G	G	31	33	47	40	49	47	38	43	49	32	34	G	G	G	28	G	G
17	G	G	G	G	G	G	G	34	36	60	53	45	54	N	G	34	38	G	G	G	G	G	G	32
18	30	G	G	G	G	G	G	34	40	41	58	43	46	56	49	64	36	42	47	40	33	49	G	G
19	G	G	G	G	G	G	G	35	38	40	33	44	40	42	40	47	52	45	28	36	44	G	G	G
20	G	96	G	G	G	G	G	32	42	45	51	48	49	71	92	90	64	57	61	39	32	35	G	G
21	G	G	G	G	G	G	G	52	35	45	64	38	48	52	51	48	44	41	66	33	48	32	27	G
22	G	G	G	G	G	G	G	33	38	34	58	51	44	42	46	47	40	39	35	40	44	40	40	33
23	G	G	G	G	G	G	G	36	42	74	60	48	60	45	41	34	30	32	G	G	30	30	31	G
24	G	G	G	G	G	G	G	149	41	48	49	51	51	48	46	43	31	39	29	33	G	G	G	27
25	26	G	G	G	G	G	33	45	40	45	48	49	52	49	49	41	37	37	30	G	11	G	G	G
26	G	25	G	G	G	G	G	34	36	61	44	44	58	50	46	47	39	54	56	38	33	26	24	G
27	G	G	G	G	G	G	G	34	41	46	50	48	48	45	47	41	34	45	36	30	50	G	29	G
28	G	G	G	G	G	G	G	33	41	45	48	47	53	46	56	47	50	29	39	41	28	27	G	G
29	25	G	G	G	G	G	G	33	37	46	40	37	45	39	44	34	42	32	50	39	54	29	26	G
30	G	G	G	G	G	G	G	52	41	44	36	37	45	G	41	33	44	43	33	38	G	33	27	G
31																								
CNT	30	30	30	30	29	29	30	30	30	30	30	30	30	29	30	29	30	30	30	30	30	30	30	30
MED	G	G	G	G	G	G	G	34	41	46	49	49	48	46	46	47	44	41	38	37	32	30	26	G
U Q	29	26	G	G	G	G	29	39	44	58	58	56	54	51	50	56	52	51	59	41	48	42	31	32
L Q	G	G	G	G	G	G	G	33	38	43	41	45	45	40	41	40	38	35	31	27	26	G	G	G

HOURLY VALUES OF fmin AT Yamagawa

SEP. 2022

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	17	14	16	17	15	16	16	16	14	15	18	20	19	21	15	15	13	14	14	15	15	15	15	16
2	15	16	15	15	15	15	16	15	15	17	18	18	18	21	21	20	16	16	13	15	15	15	15	16
3	16	16	15	15	15	16	15	16	15	15	17	19	17	17	19	18	17	15	13	15	15	16	15	15
4	15	16	16	15	14	14	16	14	13	18	19	18	23	39	38	18	17	15	15	16	16	16	15	15
5	16	16	15	15	15	14	15	17	19	18	22	19	17	21	17	17	14	15	15	17	16	15	16	15
6	16	15	14	15	15	16	15	15	15	17	21	22	17	19	16	17	17	16	14	15	15	15	16	15
7	15	16	16	15	15	14	15	15	15	17	19	23	21	21	21	18	15	14	13	16	16	16	15	16
8	15	15	15	16	15	16	15	16	16	15	17	19	20	17	18	17	14	15	15	16	14	14	16	15
9	16	16	16	16	15	16	15	17	15	17	19	21	20	17	19	18	16	13	15	15	15	16	15	15
10	16	17	15	17	15	16	15	15	15	17	18	17	17	19	19	17	17	15	15	15	15	16	15	16
11	16	15	15	16	16	^B 17	15	17	17	20	20	19	22	19	19	17	15	15	15	15	15	15	15	15
12	15	14	14	15	17	14	15	17	17	16	18	18	20	19	16	18	15	16	15	15	15	14	15	15
13	15	14	14	15	15	16	15	14	15	19	20	20	23	40	17	20	17	16	14	16	16	15	14	15
14	16	16	14	15	16	15	15	15	15	15	17	20	45	19	17	15	15	13	16	15	15	14	15	16
15	15	15	15	15	15	15	16	16	15	17	17	19	18	45	20	19	17	14	16	13	15	16	14	15
16	15	15	16	16		14	15	15	17	19	20	21	23	19	23	18	17	16	15	17	16	15	15	14
17	14	16	16	14	15	14	16	16	15	18	18	19	21	20	16	21	16	15	18	14	14	14	15	16
18	16	14	15	15	14	15	16	16	15	16	16	20	17	18	18	17	16	15	14	15	15	15	14	14
19	14	14	14	14	14	14	14	15	14	16	21	19	17	19	17	16	15	14	15	16	15	15	14	15
20	14	14	14	14	15	15	15	17	15	16	16	19	21	21	20	21	18	15	15	15	15	16	15	14
21	15	15	14	15	15	16	16	15	16	17	19	17	18	16	16	19	17	15	15	16	16	15	15	15
22	14	14	15	15	15	16	15	16	14	16	18	29	20	20	19	16	15	16	16	15	16	15	15	15
23	14	14	14	14	14	14	15	16	15	17	18	18	15	19	26	23	16	17	18	14	15	15	16	21
24	16	15	14	15	14	14	15	16	15	15	20	22	19	22	21	15	16	15	15	16	15	16	16	15
25	16	15	16	15	14	15	16	14	14	15	15	17	20	18	19	17	17	16	15	17	15	15	14	15
26	16	16	15	16	14	15	15	15	15	15	17	18	20	17	17	19	14	14	15	15	16	15	16	15
27	14	14	14	14	14	16	15	16	14	15	19	16	18	18	18	15	17	14	16	15	15	16	16	15
28	14	15	14	15	14	15	14	16	15	16	16	18	17	19	18	20	17	16	15	15	16	16	16	15
29	15	15	14	14	14	16	16	16	15	17	17	21	19	19	18	19	16	16	14	15	16	16	16	15
30	15	14	14	16	15	16	15	16	14	15	19	17	20	42	18	16	14	15	16	15	15	16	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	15	15	15	16	15	16	18	19	20	19	18	18	16	15	15	15	15	15	15	15
U Q	16	16	15	16	15	16	16	16	15	17	19	20	21	21	20	19	17	16	15	16	16	16	16	15
L Q	15	14	14	15	14	14	15	15	15	15	17	18	17	18	17	17	15	14	14	15	15	15	15	15

HOURLY VALUES OF fof2 AT Okinawa

SEP. 2022

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

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	53	54	51	49	A	A	44	68	65	70	75	C	C	C	C	83	106	113	100	100	94	79	52	A	
2	A	44	44	42	43	39	44	68	86	A	A	77	A	104	104	97	93	A	109	110	83	A	63	60	
3	54	56	54	57	41	35	43	66	71	78	72	84	87	81	86	85	81	94	116	127	97	52	54	54	
4	54	A	52	53	60	52	53	81	91	74	76	87	103	93	102	133	116	108	123	119	121	85	66	68	
5	69	82	49	43	41	64	78	55	78	A	A	A	A	A	A	A	64	65	69	67	59	57	55	47	
6	51	A	41	39	37	39	40	66	67	54	C	C	C	C	C	C	C	C	109	108	95	78	75	75	
7	81	81	90	78	54	53	57	79	73	C	C	C	C	C	C	C	90	103	114	112	67	64	59	A	
8	A	62	55	44	43	48	63	75	72	75	C	C	C	C	C	C	C	C	94	118	A	A	A	55	
9	64	65	57	55	50	40	43	71	91	92	C	C	97	113	127	115	116	119	114	111	A	80	85	85	
10	89	88	77	57	51	45	52	69	86	88	89	101	102	96	107	105	103	120	129	140	130	62	65	69	
11	61	59	64	85	48	A	38	71	76	85	96	123	132	161	179	172	155	155	155	161	145	99	85	89	
12	85	80	82	78	65	50	61	77	85	90	92	112	115	109	119	110	105	97	108	110	89	65	64	66	
13	67	61	63	59	56	47	53	85	101	113	99	108	129	148	124	116	111	117	120	142	97	97	74	71	
14	61	57	52	49	42	42	52	97	92	95	76	79	87	97	90	94	97	109	133	121	99	67	64	64	
15	61	58	57	51	46	43	50	87	86	95	93	81	92	97	101	113	120	122	120	98	71	78	83	33	
16	63	72	67	62	53	43	49	81	77	77	91	106	117	121	121	129	132	145	134	133	122	107	83	71	
17	71	73	75	63	57	55	56	71	83	87	84	95	104	113	111	109	117	123	137	108	95	82	83	94	
18	82	70	62	65	51	45	43	71	91	106	82	106	101	101	106	113	113	107	110	108	95	82	60	56	
19	53	51	55	56	43	41	49	75	85	78	74	90	102	116	112	110	117	119	128	110	125	96	67	57	
20	56	55	56	48	43	40	52	80	71	84	87	93	107	111	97	106	119	131	124	118	109	65	58	63	
21	59	56	53	51	47	42	39	64	89	88	83	96	119	121	127	149	172	179	193	183	127	112	106	93	
22	82	84	93	81	44	33	38	73	88	83	81	93	119	152	153	159	154	147	149	145	115	105	97	92	
23	65	85	75	68	38	35	42	79	78	80	81	89	110	117	109	111	114	115	131	129	102	83	64	57	
24	59	58	56	56	57	39	49	88	83	94	88	83	93	117	121	127	139	123	131	134	120	73	65	62	
25	64	65	65	59	53	43	41	81	87	91	93	113	114	115	109	105	113	114	123	118	115	63	57	52	
26	52	51	56	54	42	39	49	78	93	109	92	89	103	114	120	117	125	135	143	122	96	106	98	53	
27	82	67	N 66	69	66	44	40	77	95	95	97	94	101	111	119	135	153	156	144	130	113	87	73	62	
28	73	85	51	45	45	44	52	83	83	93	90	91	105	119	128	148	151	158	147	143	159	156	45	105	
29	61	122	98	103	85	59	60	93	89	93	92	89	106	111	114	121	131	125	119	105	110	113	106	92	
30	82	76	62	61	61	54	53	82	93	101	111	102	99	113	125	127	125	139	146	116	97	87	66	61	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	28	30	30	29	28	30	30	30	27	24	24	24	25	25	26	28	27	30	30	28	28	29	28	
MED	64	65	57	56	48	43	49	77	86	88	88	93	104	113	114	114	116	120	124	118	100	82	66	64	
U Q	77	80	67	65	56	49	53	81	91	95	92	104	114	118	124	129	131	139	137	133	120	98	83	80	
L Q	57	56	53	49	43	39	43	71	77	78	81	88	100	102	105	106	105	109	114	110	95	66	59	56	

HOURLY VALUES OF fEs AT Okinawa

SEP. 2022

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

H D	00	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	32	58	35	G	38	55	59	57	C	C	C	C	64	47	36	28	71	64	70	G	115
2	50	G	38	28	132	26	25	40	62	91	90	100	164	86	56	66	80	116	34	49	47	84	59	30
3	G	G	G	G	94	G	G	35	40	48	46	46	57	54	53	50	49	56	40	62	28	23	40	49
4	50	58	G	G	G	G	G	30	37	50	44	70	38	40	52	44	49	35	G	72	G	22	G	G
5	43	38	27	27	28	G	27	40	42	92	105	66	83	55	62	61	58	41	32	35	35	G	G	32
6	47	70	G	G	G	G	25	36	35	53	C	C	C	C	C	C	C	C	46	56	33	32	G	33
7	28	G	G	G	G	G	116	34	38	C	C	C	C	C	C	C	46	40	42	34	48	32	25	49
8	82	G	G	G	G	25	29	64	59	50	C	C	C	C	C	C	C	C	71	60	129	153	60	26
9	26	28	G	G	G	G	G	60	60	61	C	C	72	52	48	54	60	49	92	84	60	58	40	30
10	G	G	G	24	G	29	25	34	44	50	55	52	54	55	49	41	55	34	34	33	33	35	G	G
11	28	44	36	31	35	40	28	33	39	41	53	44	54	52	53	47	56	47	43	29	24	48	G	G
12	G	G	G	G	G	G	G	32	37	58	53	53	53	46	45	47	47	50	45	41	25	G	G	G
13	G	G	G	G	G	G	G	31	34	44	47	50	51	50	59	50	38	49	49	60	28	11	27	G
14	G	G	G	G	G	G	G	35	44	53	46	92	53	54	74	54	70	74	42	48	34	30	48	G
15	G	G	G	G	G	G	G	34	48	46	46	60	49	51	52	51	57	40	49	31	49	39	32	G
16	G	G	G	24	G	G	G	36	33	46	46	48	48	49	G	36	38	27	28	G	11	G	G	G
17	G	G	G	G	G	G	G	28	36	34	42	44	49	44	38	43	40	34	33	11	11	G	G	G
18	G	24	25	G	G	G	G	180	38	41	54	36	45	43	56	48	34	45	41	57	46	33	26	G
19	G	G	G	G	G	G	G	50	38	41	93	48	55	38	56	42	40	34	32	G	25	48	G	G
20	G	G	G	G	G	G	G	50	38	53	50	41	53	78	48	50	66	47	G	34	19	28	G	31
21	G	G	G	G	G	G	G	41	35	40	38	51	49	66	39	36	44	36	31	29	58	29	29	29
22	G	G	G	G	G	G	G	30	40	44	46	50	50	46	47	55	42	36	32	31	48	33	G	G
23	28	31	G	G	11	G	G	48	58	35	100	46	53	37	37	36	36	32	29	G	G	29	32	32
24	G	G	G	G	G	G	G	31	40	49	50	96	50	37	N	43	44	47	81	38	22	11	G	G
25	G	G	G	G	G	G	G	175	116	51	51	56	55	54	48	48	53	46	46	36	39	56	G	G
26	G	27	26	G	G	G	G	33	36	40	44	45	47	48	48	49	66	60	56	37	35	11	G	G
27	G	G	G	G	G	G	G	30	40	46	50	57	50	53	43	47	42	37	50	33	11	35	30	27
28	G	G	G	G	G	G	G	32	38	59	52	67	47	47	52	46	41	35	G	24	26	G	G	G
29	G	G	G	G	11	G	G	30	38	38	50	48	51	52	48	47	37	75	43	33	27	38	G	G
30	G	G	G	G	G	G	G	35	38	34	49	44	97	46	49	51	56	44	38	42	32	23	24	24
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	26	25	26	26	25	27	28	28	30	30	30	30	29	30
MED	G	G	G	G	G	G	G	35	38	48	50	50	52	50	49	48	47	42	40	36	32	31	G	G
U Q	28	24	G	G	G	G	G	41	44	53	54	63	55	54	54	51	56	49	46	56	47	39	31	30
L Q	G	G	G	G	G	G	G	32	37	41	46	45	49	46	46	43	40	35	32	31	24	11	G	G

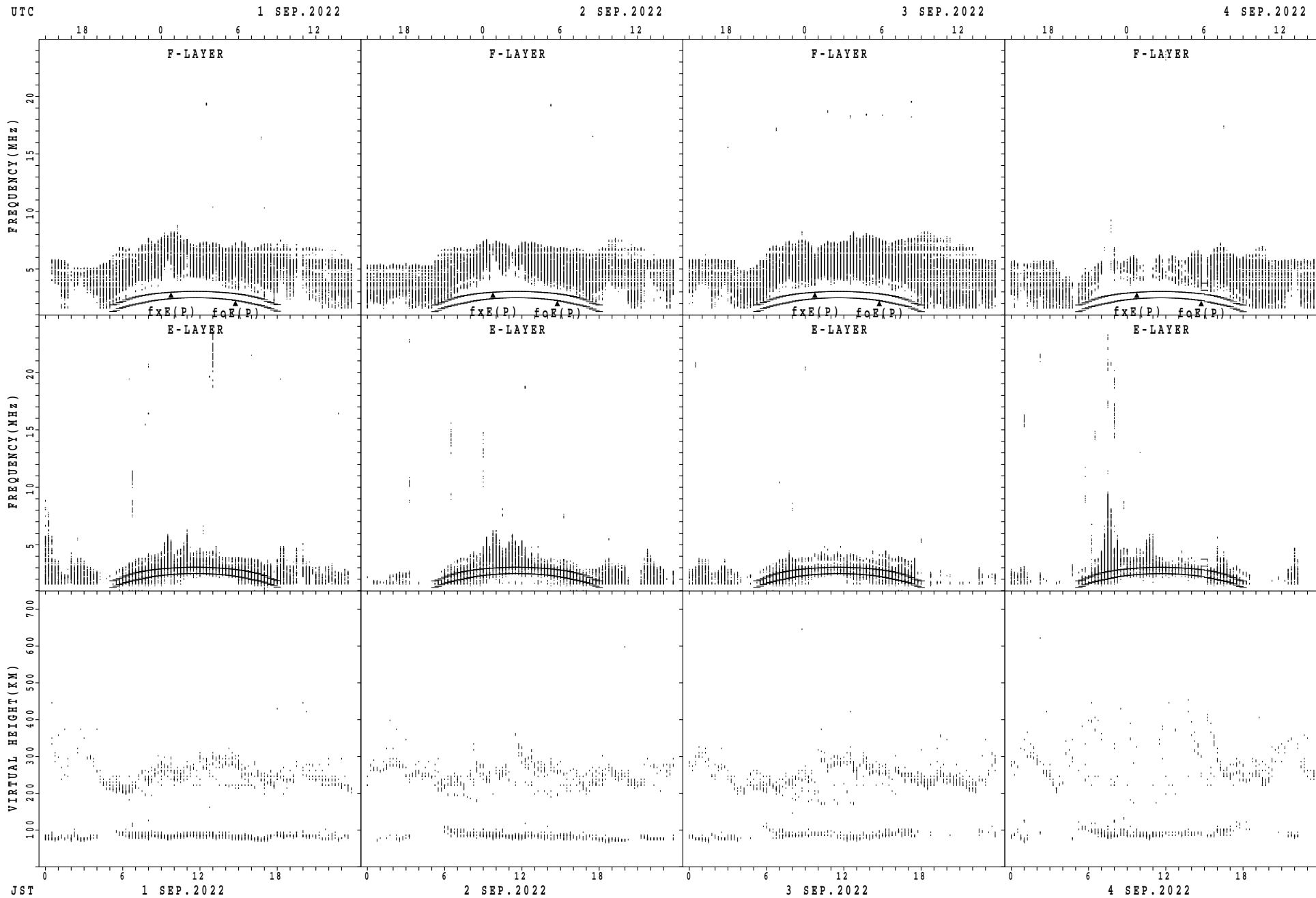
HOURLY VALUES OF fmin AT Okinawa

SEP. 2022

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

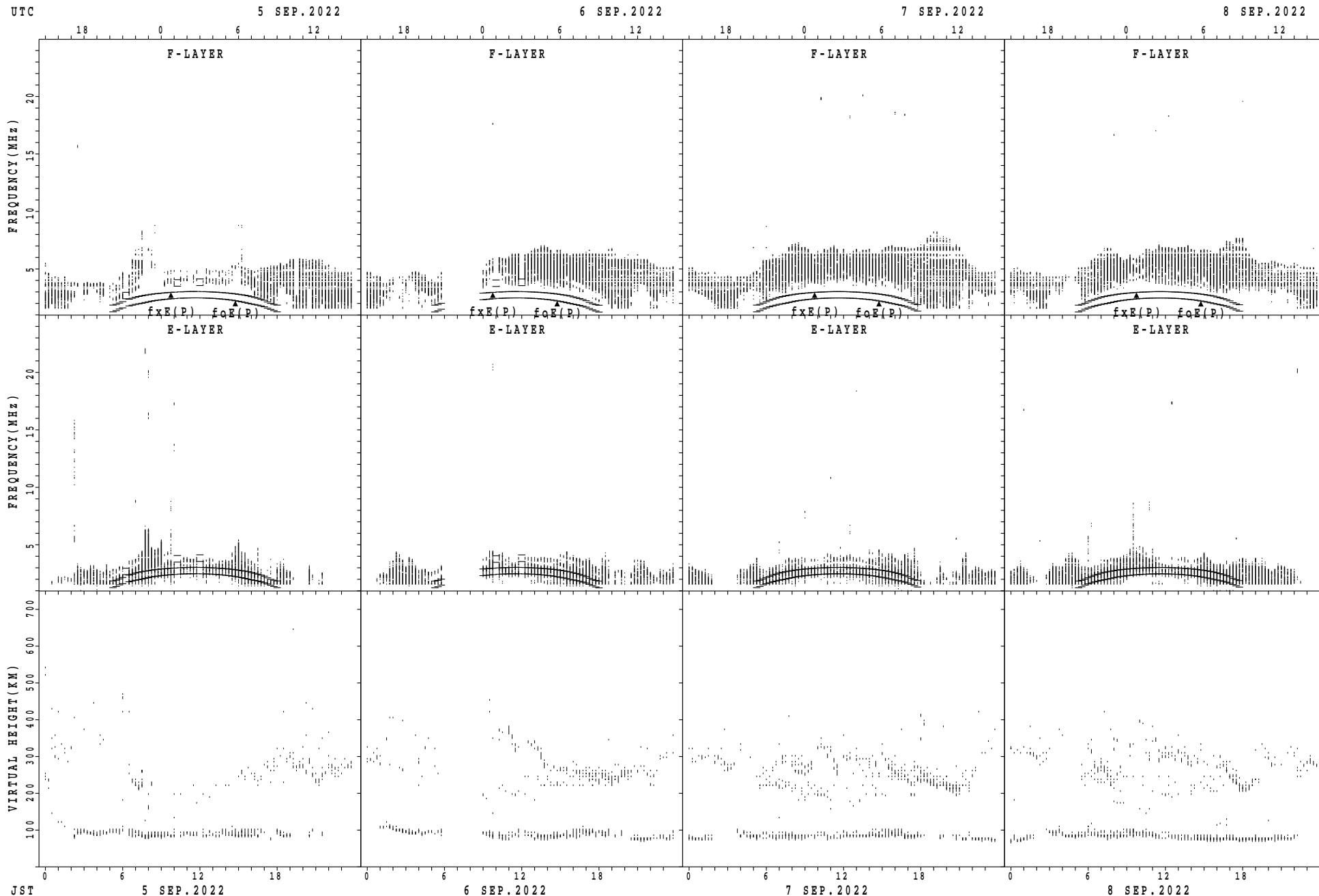
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	18	16	18	15	16	15	15	16	14	15	18	C	C	C	C	15	14	13	15	15	15	15	16	16
2	15	15	17	15	92	15	15	15	14	15	18	22	21	16	19	19	16	12	13	15	16	14	15	16
3	15	14	14	14	15	15	14	15	14	15	17	19	20	20	20	18	17	15	15	14	16	16	16	16
4	15	16	17	14	15	15	15	15	15	19	22	21	21	21	24	18	16	15	14	14	15	15	15	16
5	16	15	15	15	15	14	15	15	17	17	20	22	20	23	22	21	16	15	14	16	14	15	15	16
6	15	15	14	14	15	15	16	16	15	17	C	C	C	C	C	C	C	C	15	14	16	16	15	15
7	17	15	15	14	14	18	15	17	16	C	C	C	C	C	C	C	18	14	13	16	15	15	15	15
8	14	14	16	16	15	16	15	16	14	16	C	C	C	C	C	C	C	C	14	15	9	13	16	15
9	16	15	16	16	15	15	14	15	15	18	C	C	17	21	17	17	15	13	14	14	17	15	15	17
10	15	15	15	16	17	16	15	16	15	17	20	17	17	15	16	15	13	14	14	16	15	15	15	15
11	16	16	16	16	16	15	15	15	16	17	21	21	20	19	19	17	16	14	13	15	15	16	15	14
12	17	14	14	14	14	15	14	14	16	16	16	18	22	39	17	17	21	15	14	15	15	15	15	16
13	14	14	14	14	14	15	14	15	15	17	20	18	21	21	19	19	15	15	16	13	15	14	16	14
14	15	15	16	16	14	15	14	14	19	16	35	38	30	39	20	17	13	15	13	15	16	16	15	16
15	15	15	15	14	15	14	14	15	15	19	16	19	19	19	19	18	17	15	15	15	15	15	16	15
16	17	14	15	15	15	14	15	14	15	16	21	21	17	21	38	16	14	15	14	14	15	14	14	14
17	14	14	14	14	14	14	16	15	17	17	18	18	23	23	18	19	15	15	14	14	14	14	15	15
18	15	16	16	15	14	15	14	15	16	16	23	18	20	21	19	19	16	14	14	15	15	17	16	15
19	14	15	14	14	14	14	14	15	15	17	37	19	16	17	15	15	15	14	15	14	15	14	15	14
20	15	17	15	14	14	18	14	14	14	15	16	17	16	18	22	22	19	15	15	16	15	15	15	16
21	17	16	15	14	14	15	14	15	14	15	17	20	17	19	17	14	20	15	15	16	16	15	15	15
22	15	15	15	15	15	14	14	15	14	17	18	19	23	20	18	14	16	16	15	15	15	15	14	14
23	16	16	15	15	14	15	14	15	16	15	14	22	38	18	17	19	15	17	15	15	15	15	16	16
24	14	14	15	15	16	15	14	15	16	15	19	13	19	18	17	19	14	15	15	15	15	15	16	15
25	15	15	14	14	14	15	14	14	13	14	15	15	15	17	20	18	15	15	17	15	15	16	15	15
26	15	16	15	15	14	16	14	15	16	15	17	18	21	22	19	17	15	14	15	15	15	15	15	15
27	14	15	14	15	15	14	15	15	14	15	15	19	23	21	20	16	17	14	14	16	14	15	16	16
28	16	15	15	15	14	15	14	15	17	19	20	21	18	22	16	19	15	16	13	15	15	15		15
29	15	14	14	14	14	15	14	15	14	14	16	21	19	21	20	21	15	16	15	14	15	15	16	15
30	14	14	14	15	15	15	14	16	14	15	18	22	21	45	21	17	17	14	16	14	15	15	16	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	26	25	26	26	26	27	28	28	30	30	30	30	29	30
MED	15	15	15	15	15	15	14	15	15	16	18	19	20	21	19	18	16	15	14	15	15	15	15	15
U Q	16	16	16	15	15	15	15	15	16	17	20	21	21	22	20	19	17	15	15	15	15	15	16	16
L Q	15	14	14	14	14	15	14	15	14	15	16	18	17	18	17	16	15	14	14	14	15	15	15	15

SUMMARY PLOTS AT Wakkanai



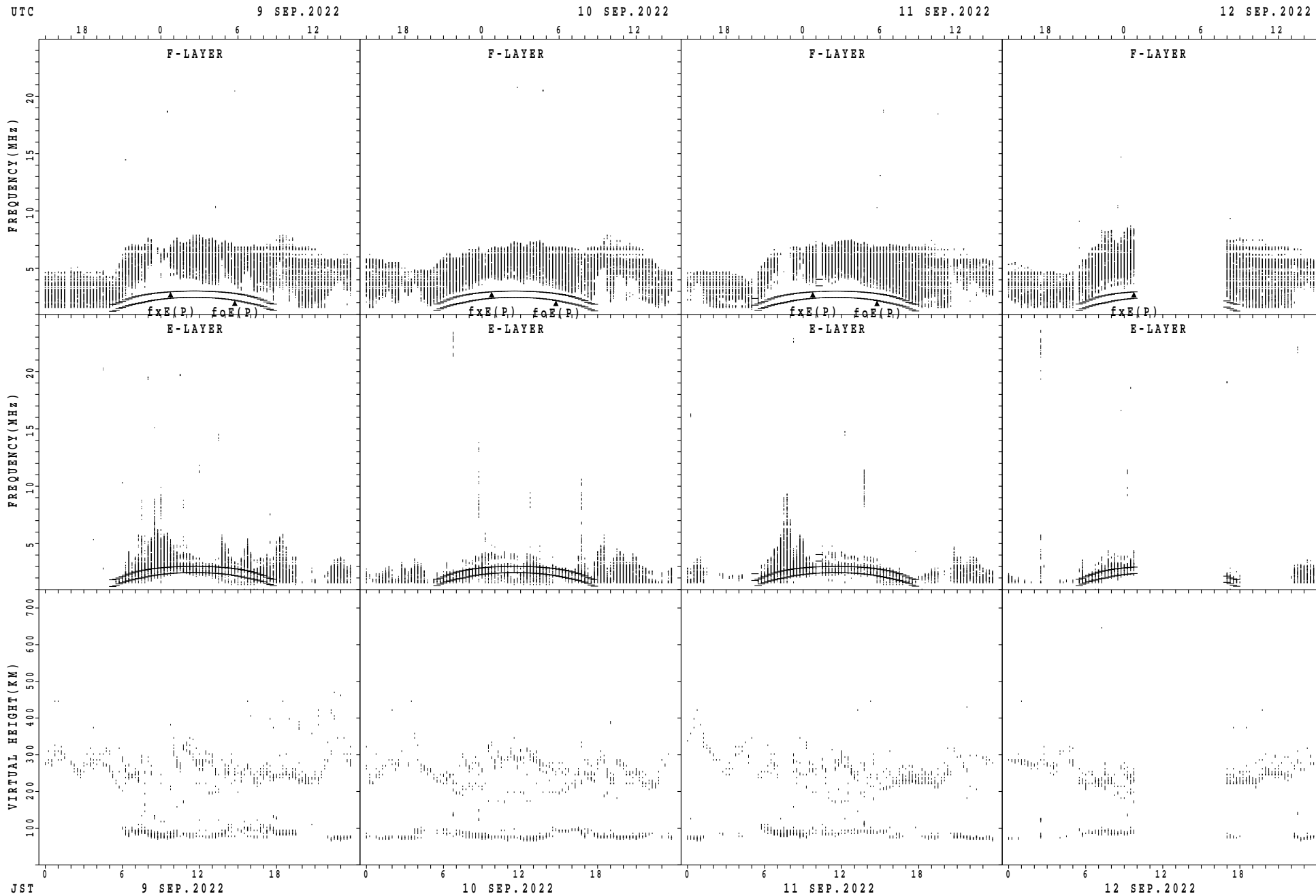
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



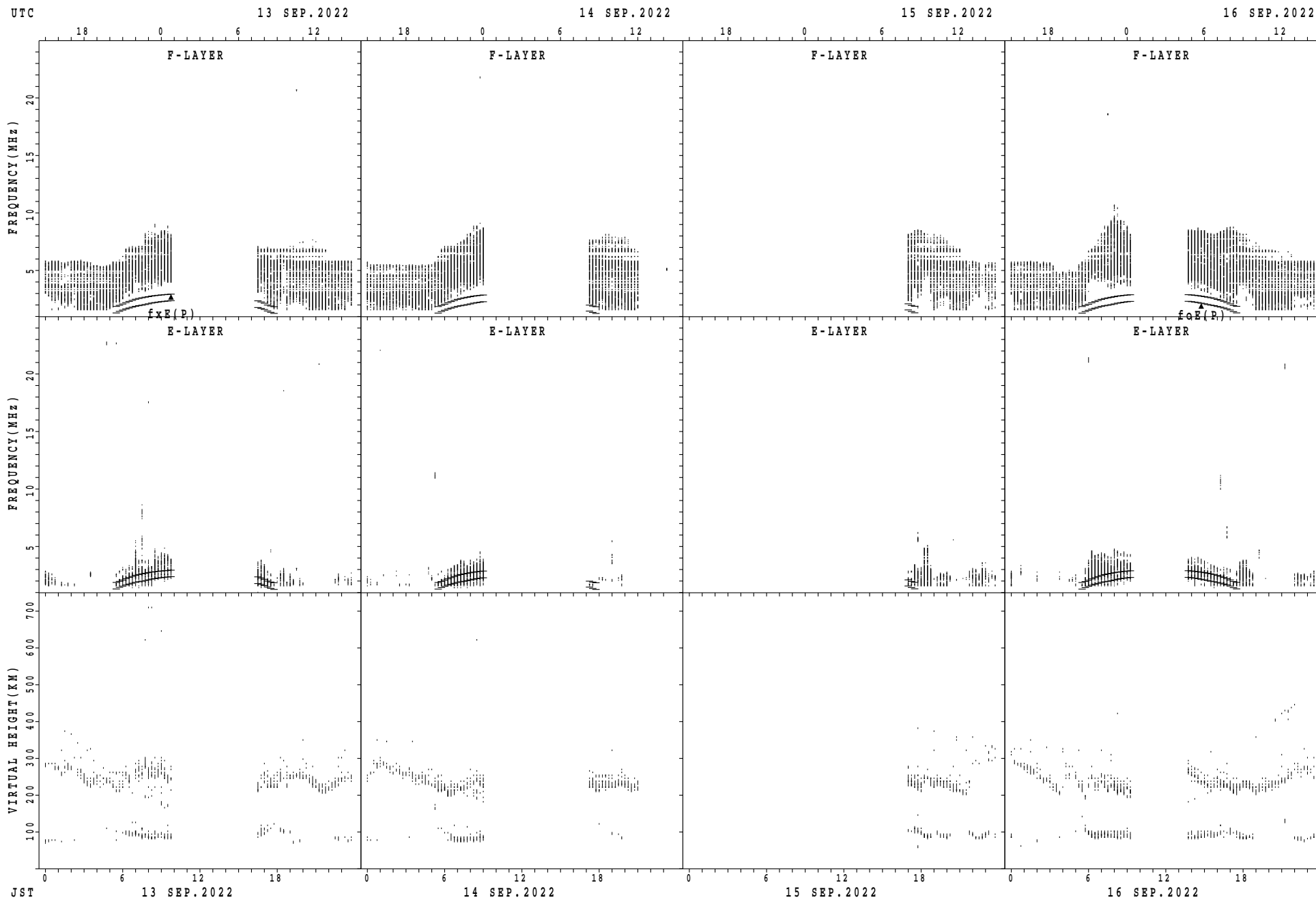
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



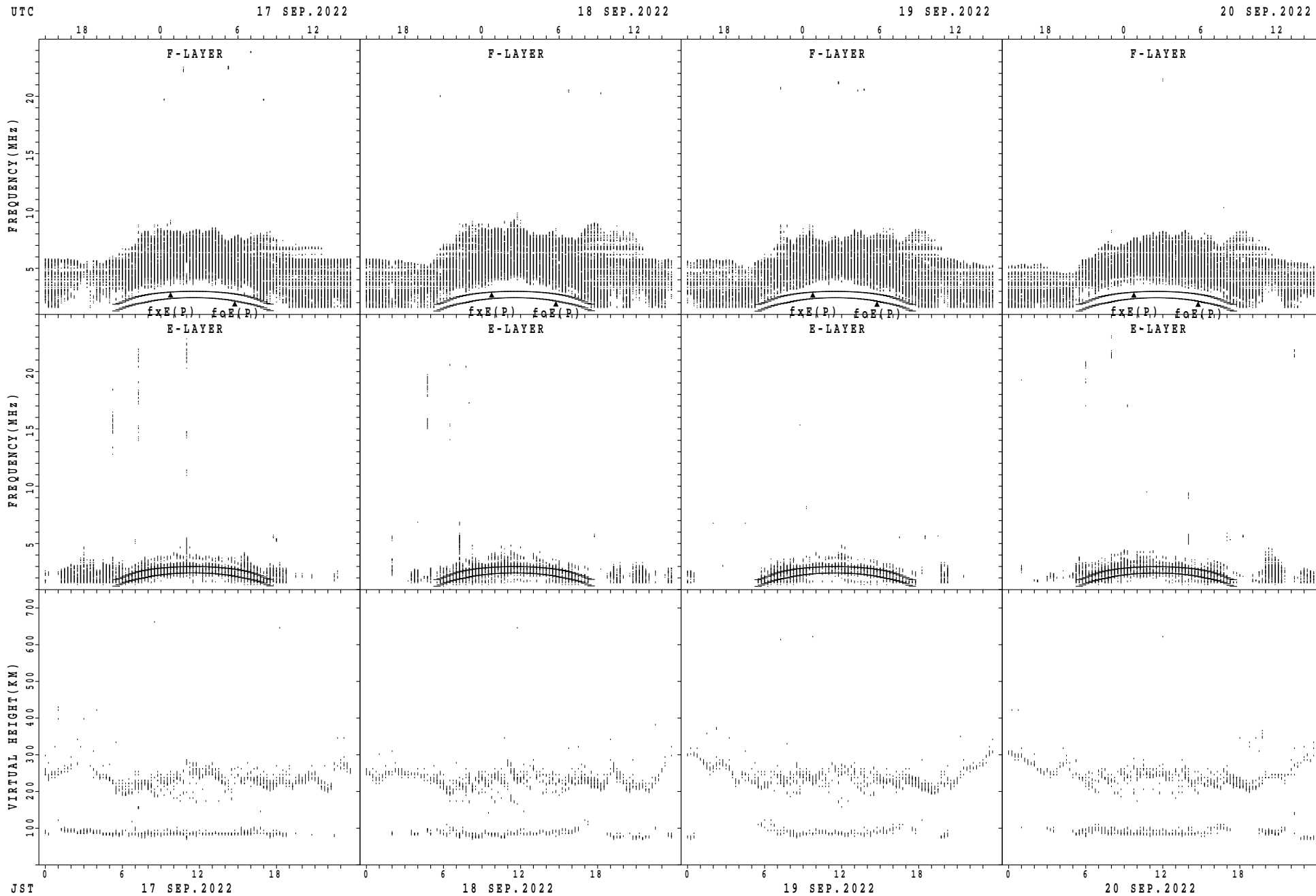
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



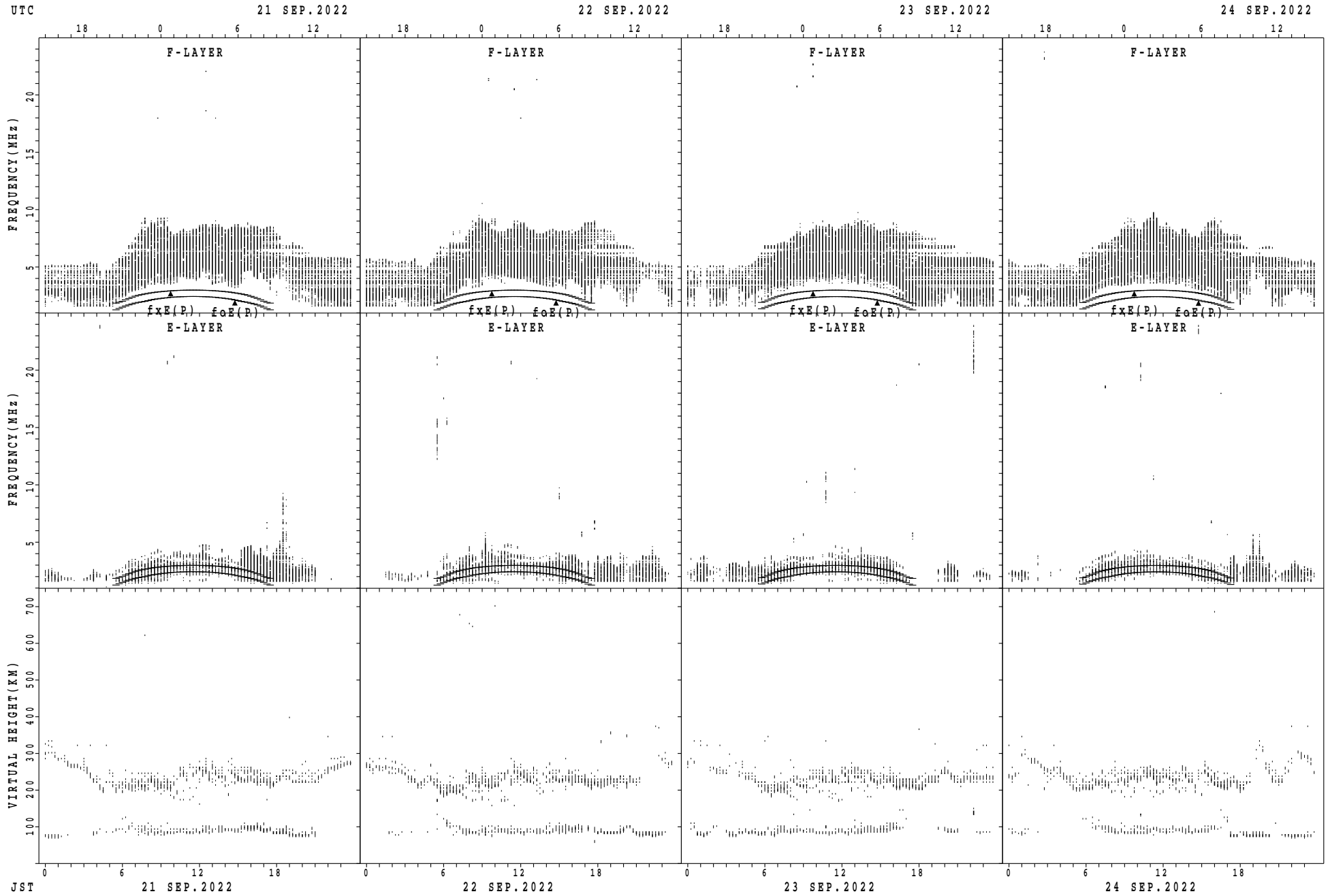
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



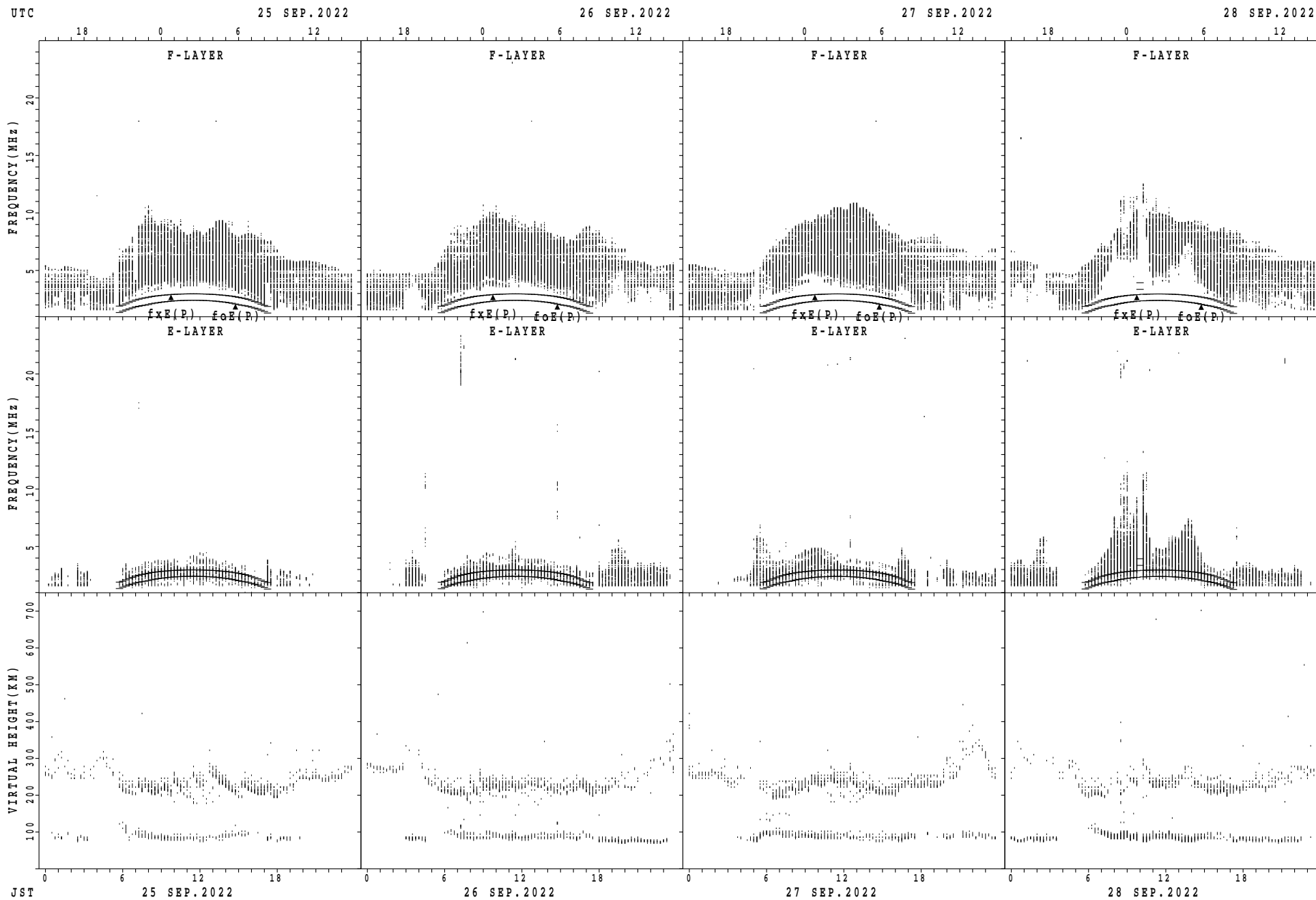
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



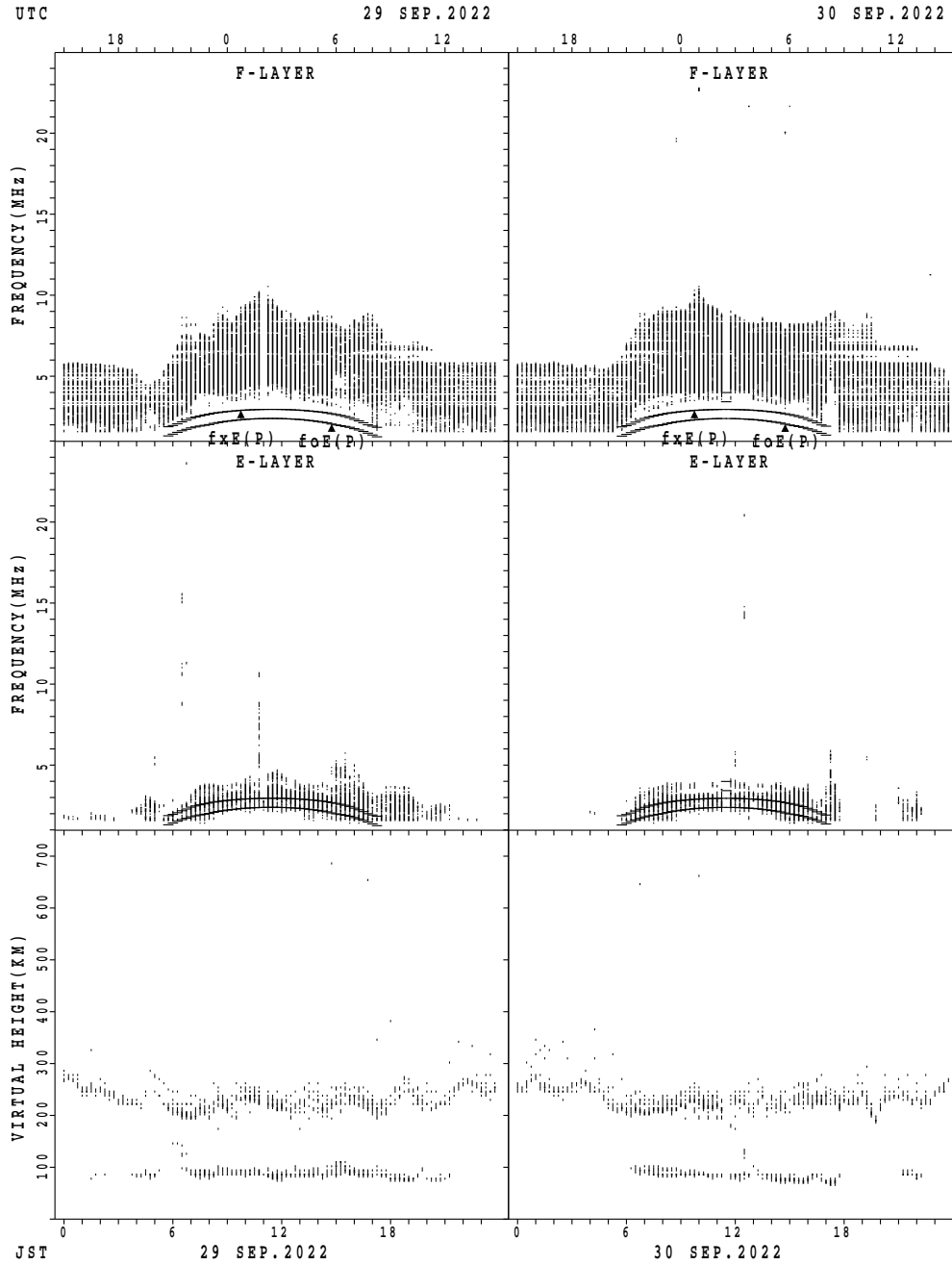
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



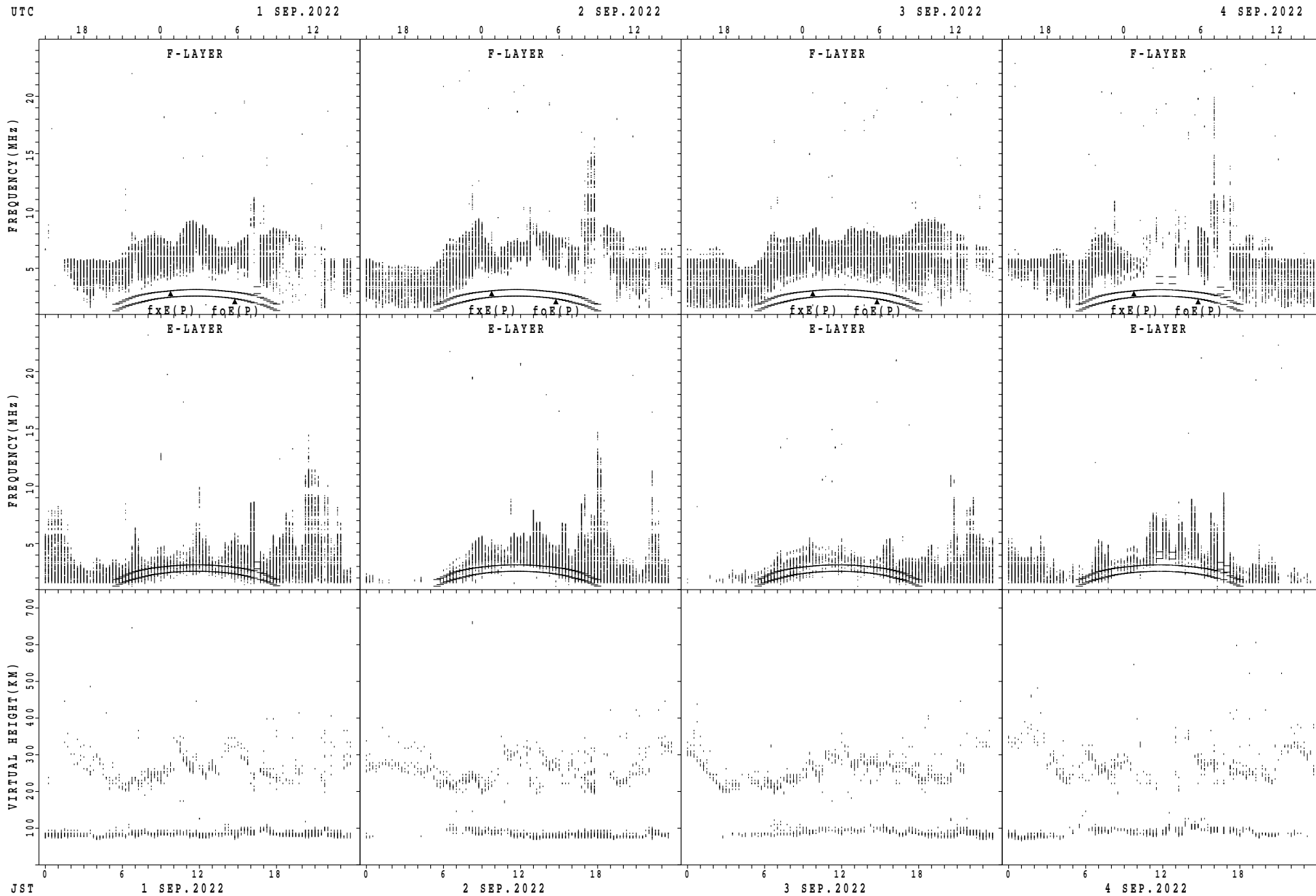
$fxE(P)$; PREDICTED VALUE FOR fxE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



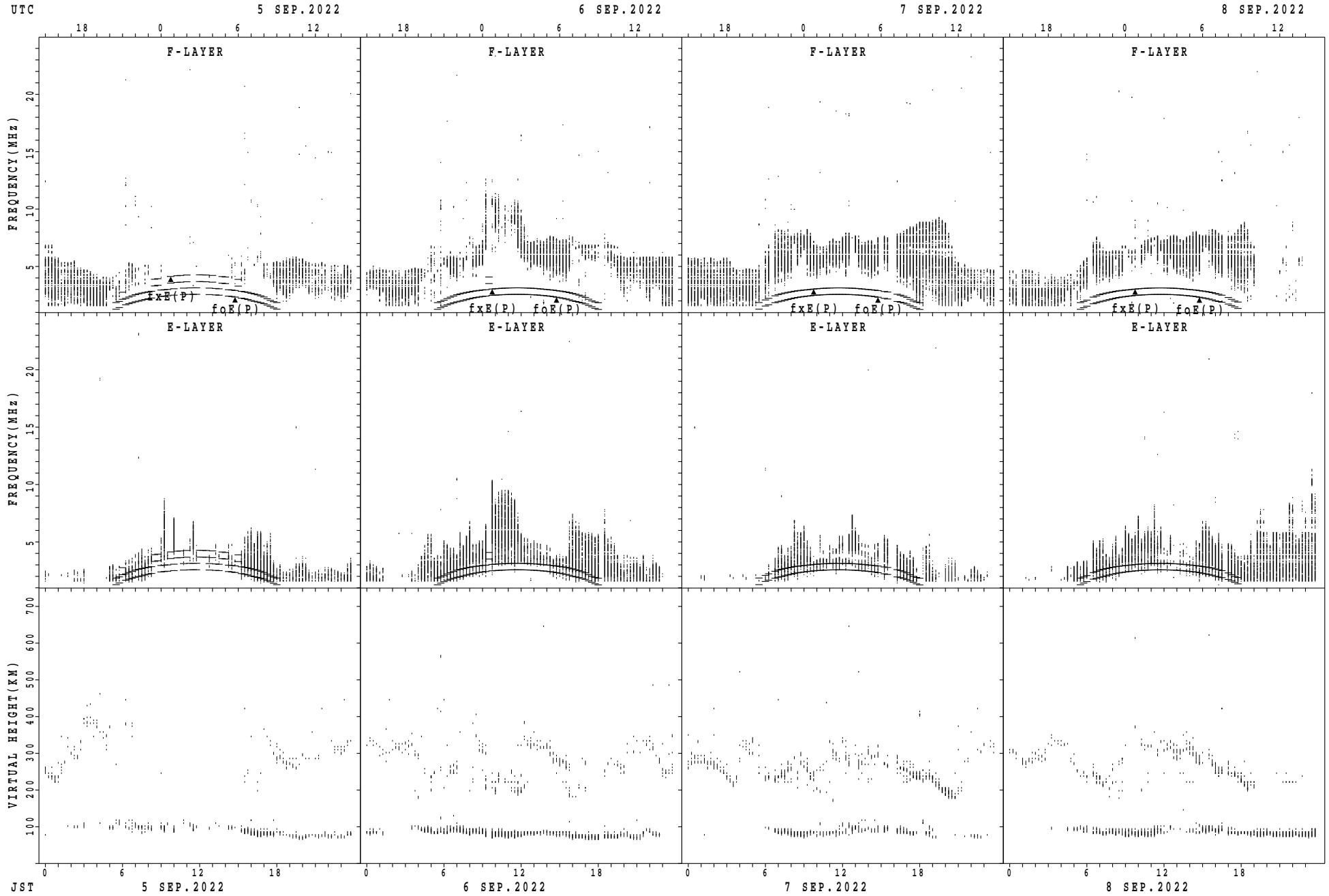
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



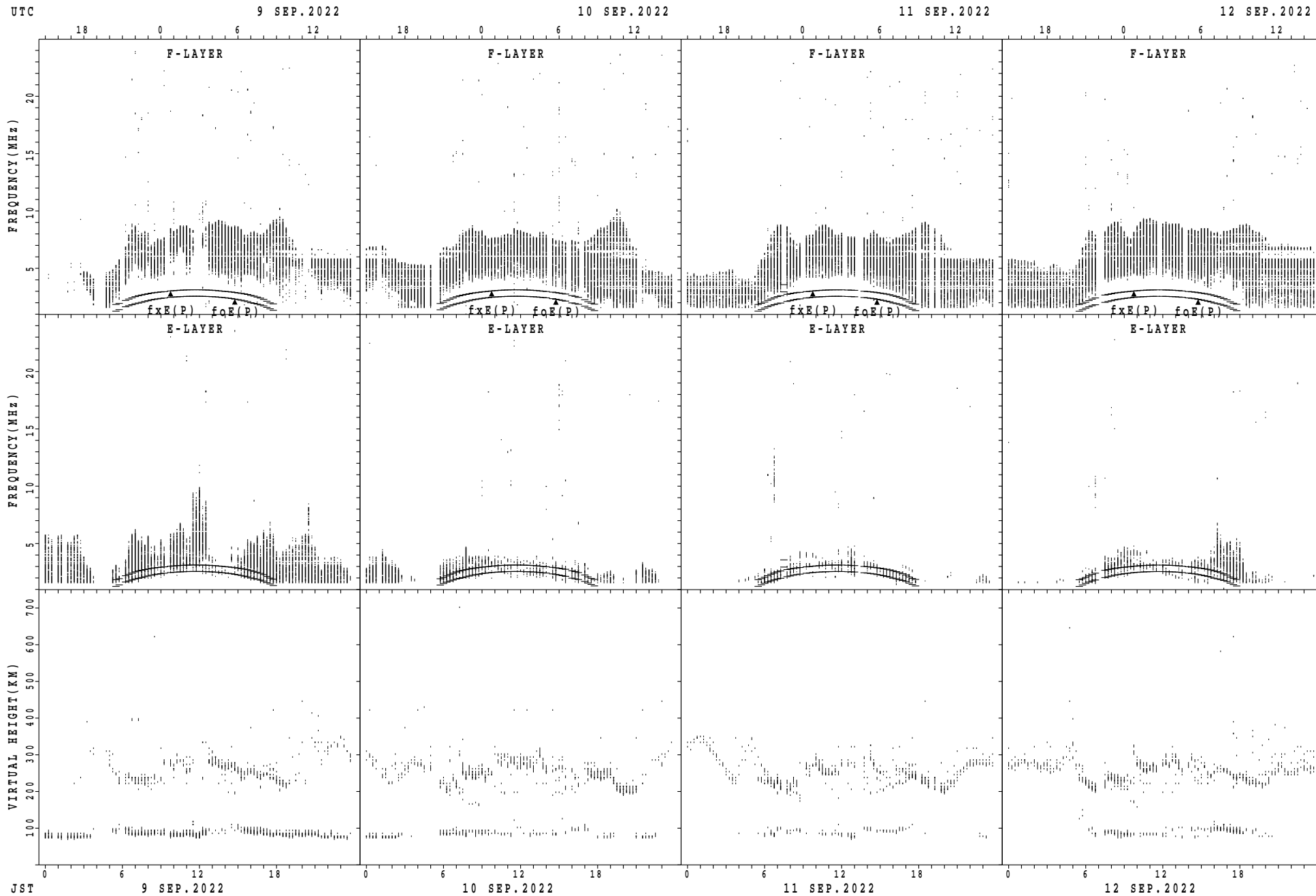
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



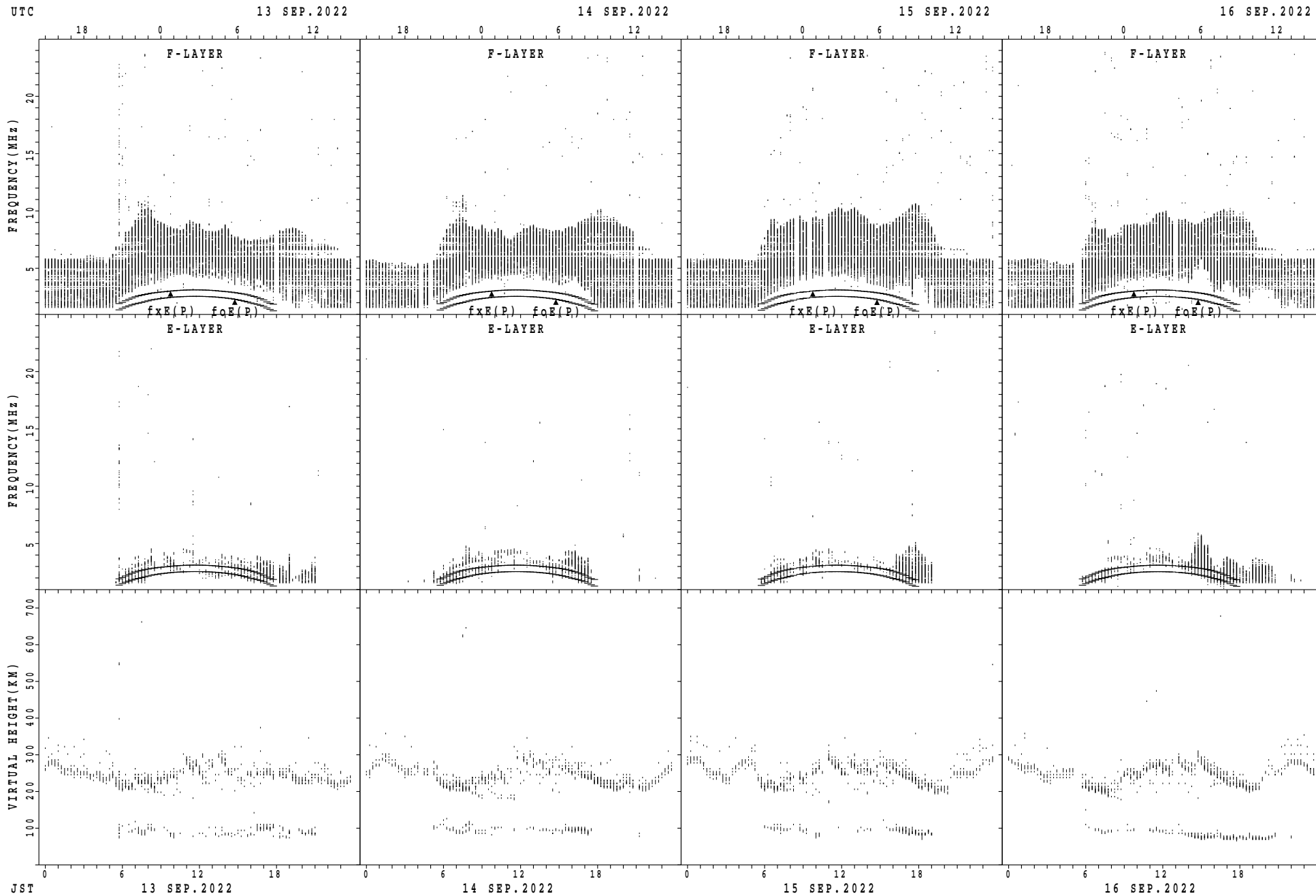
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



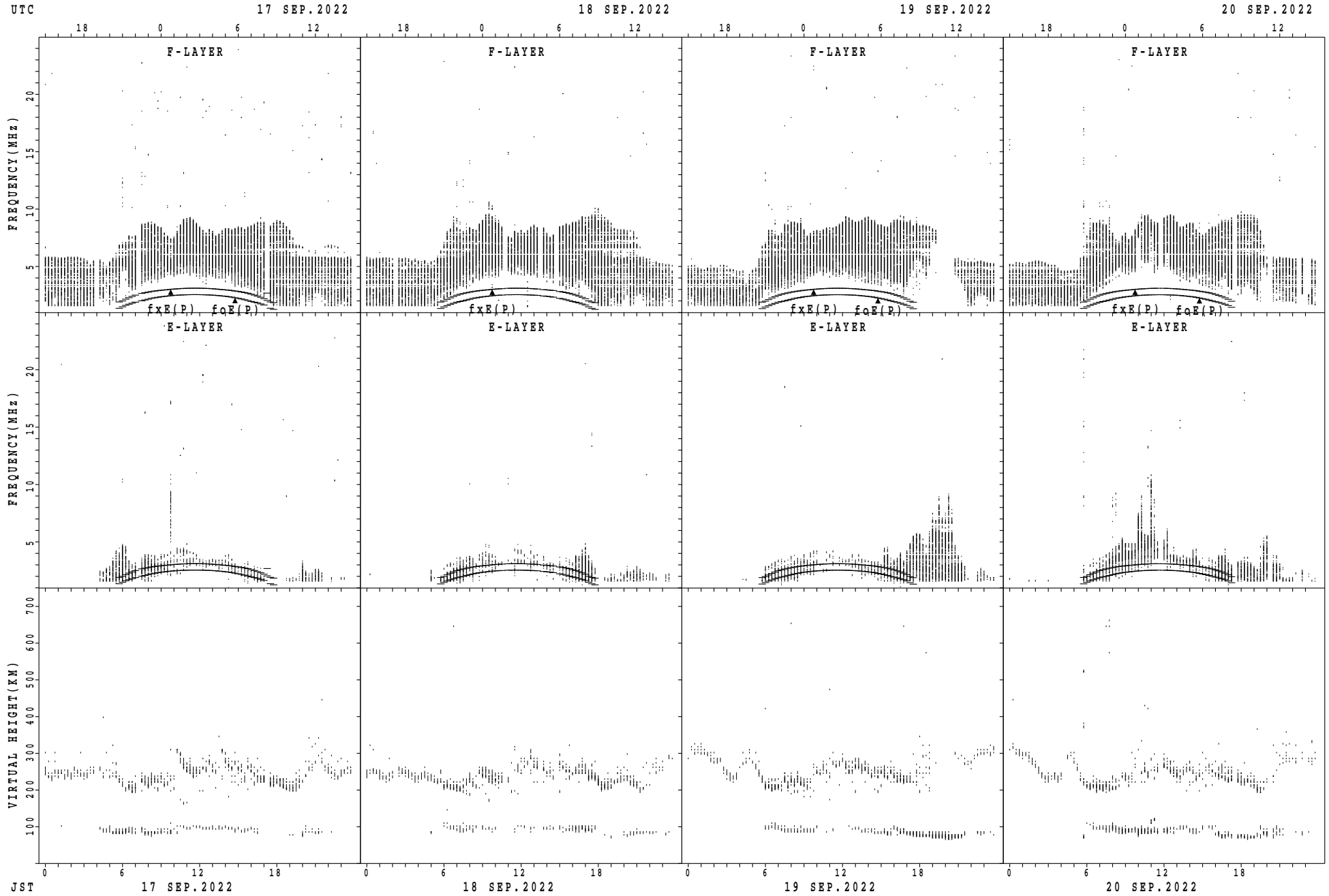
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



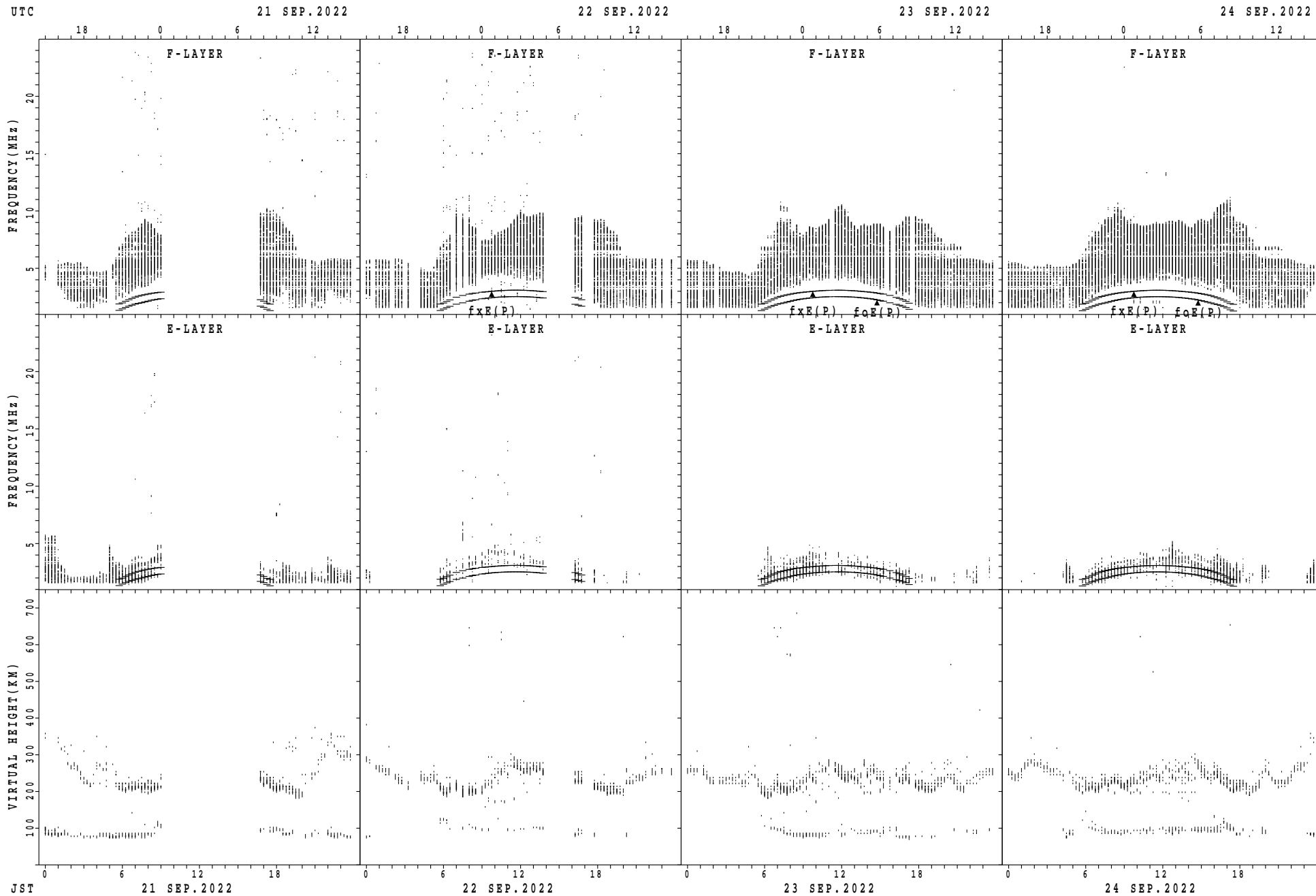
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



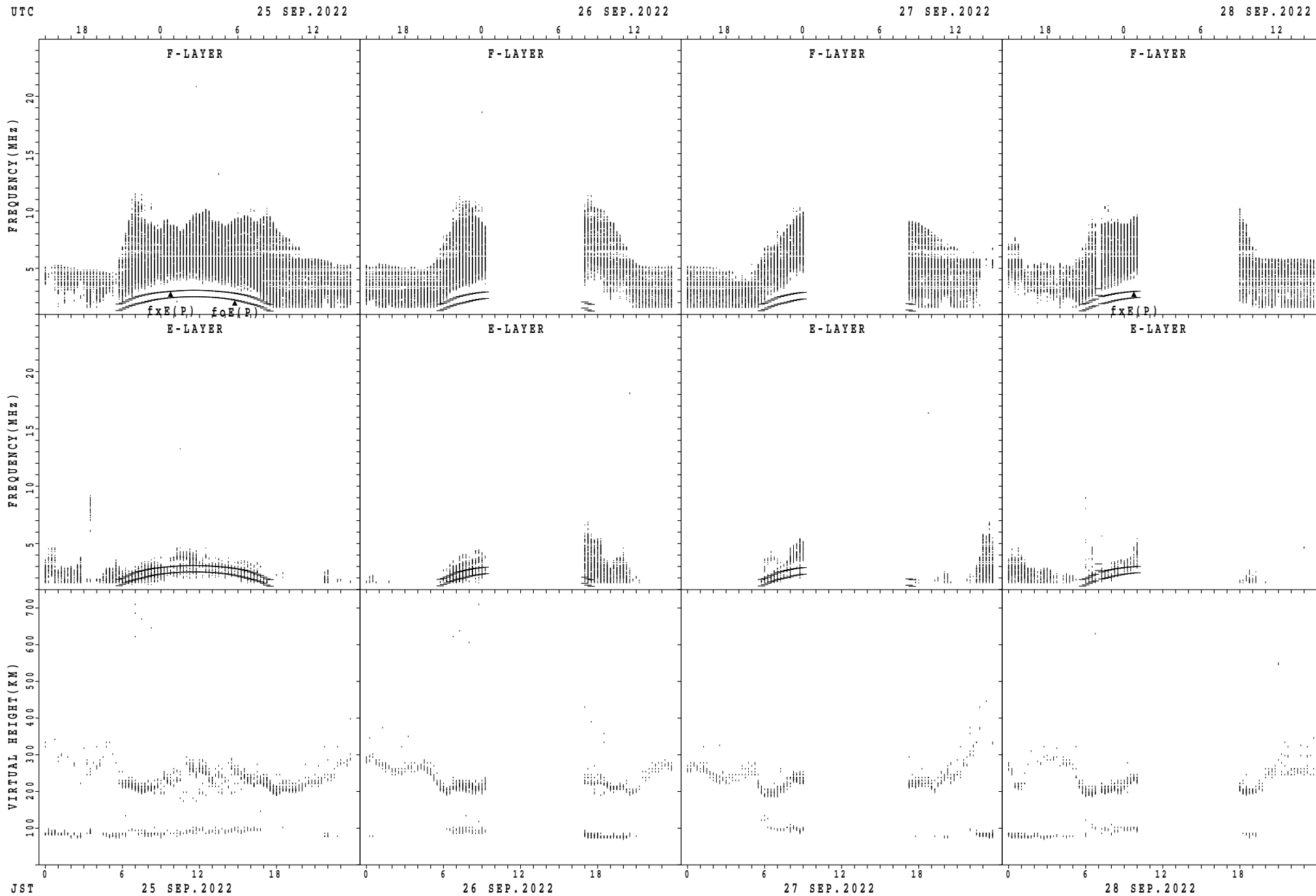
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



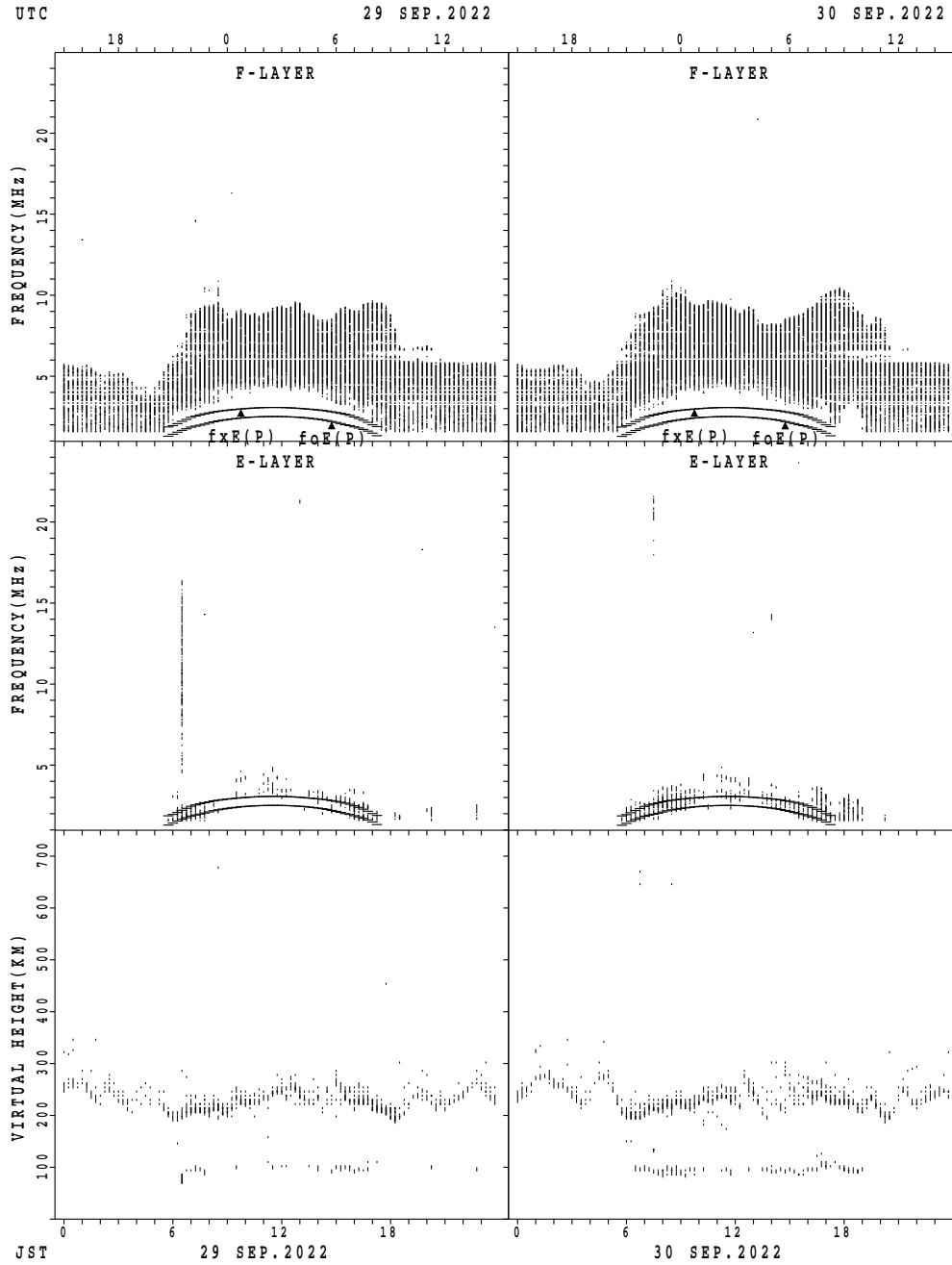
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



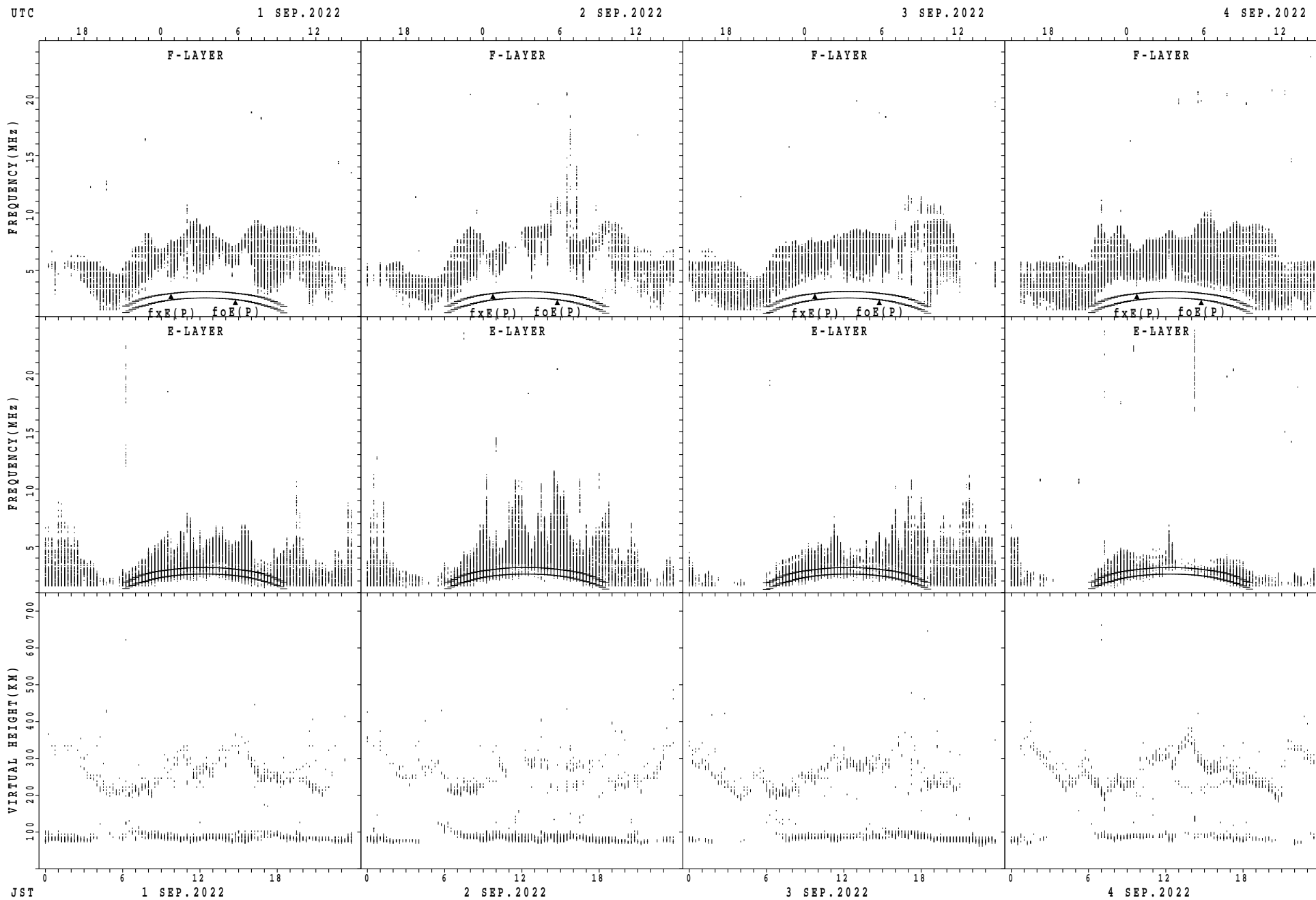
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



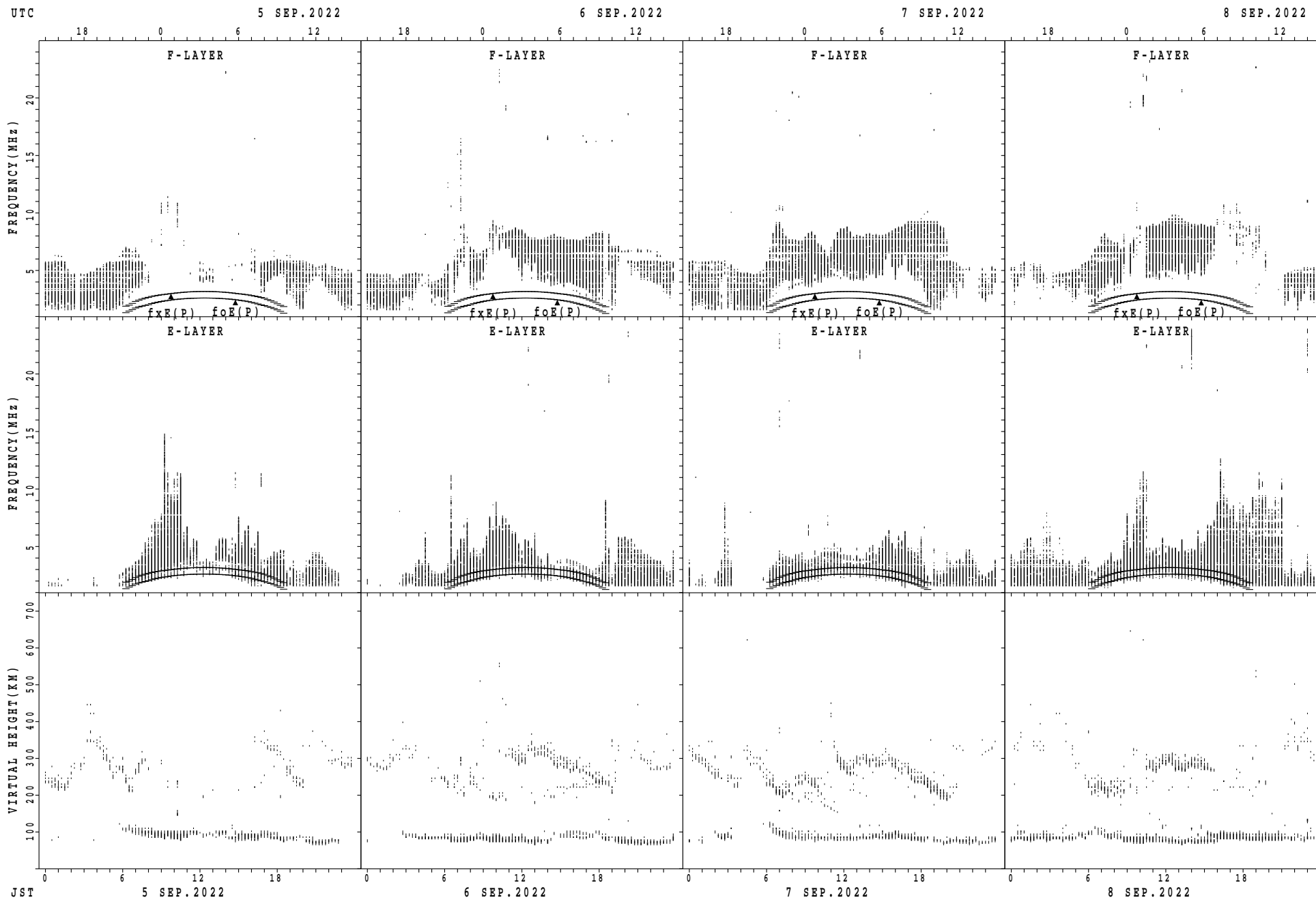
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



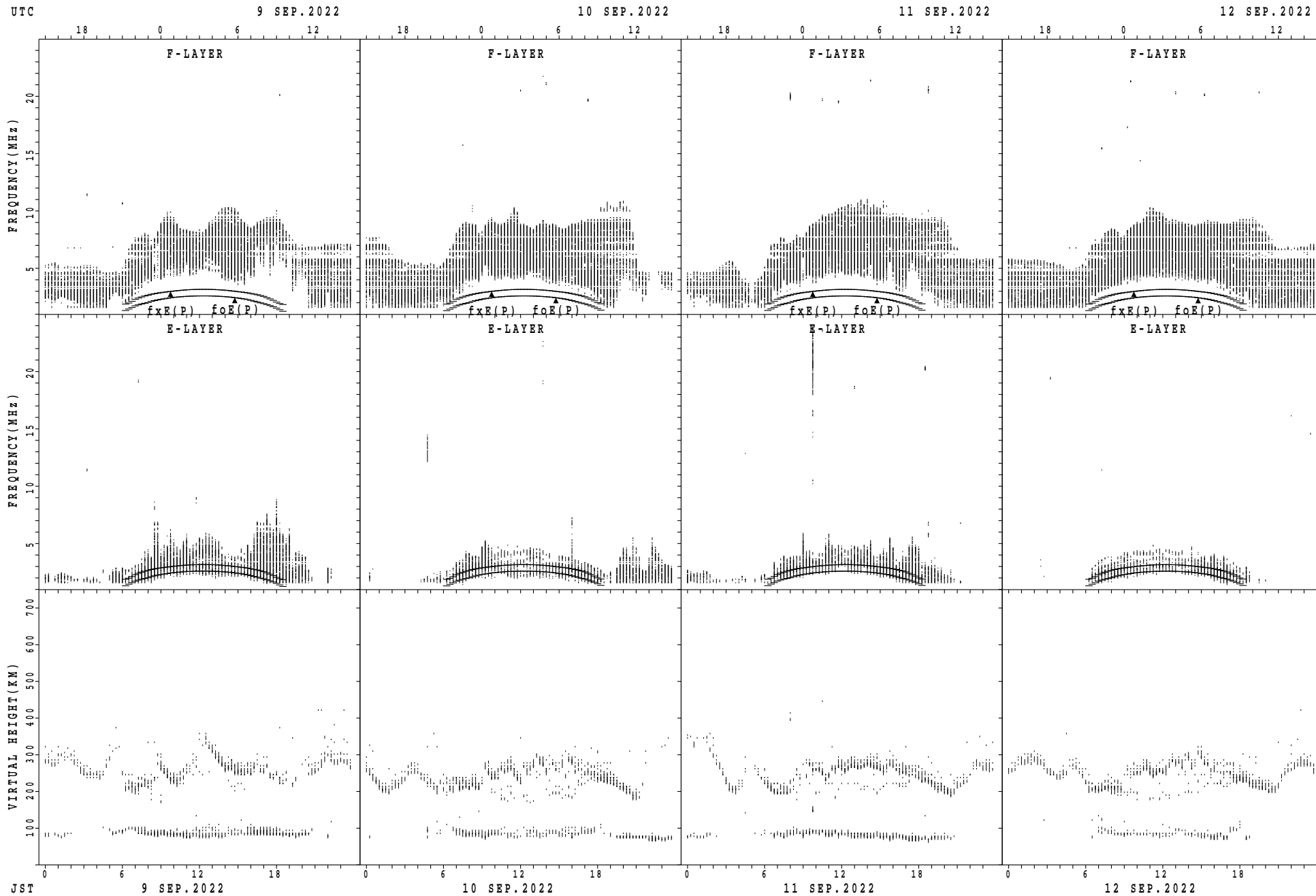
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



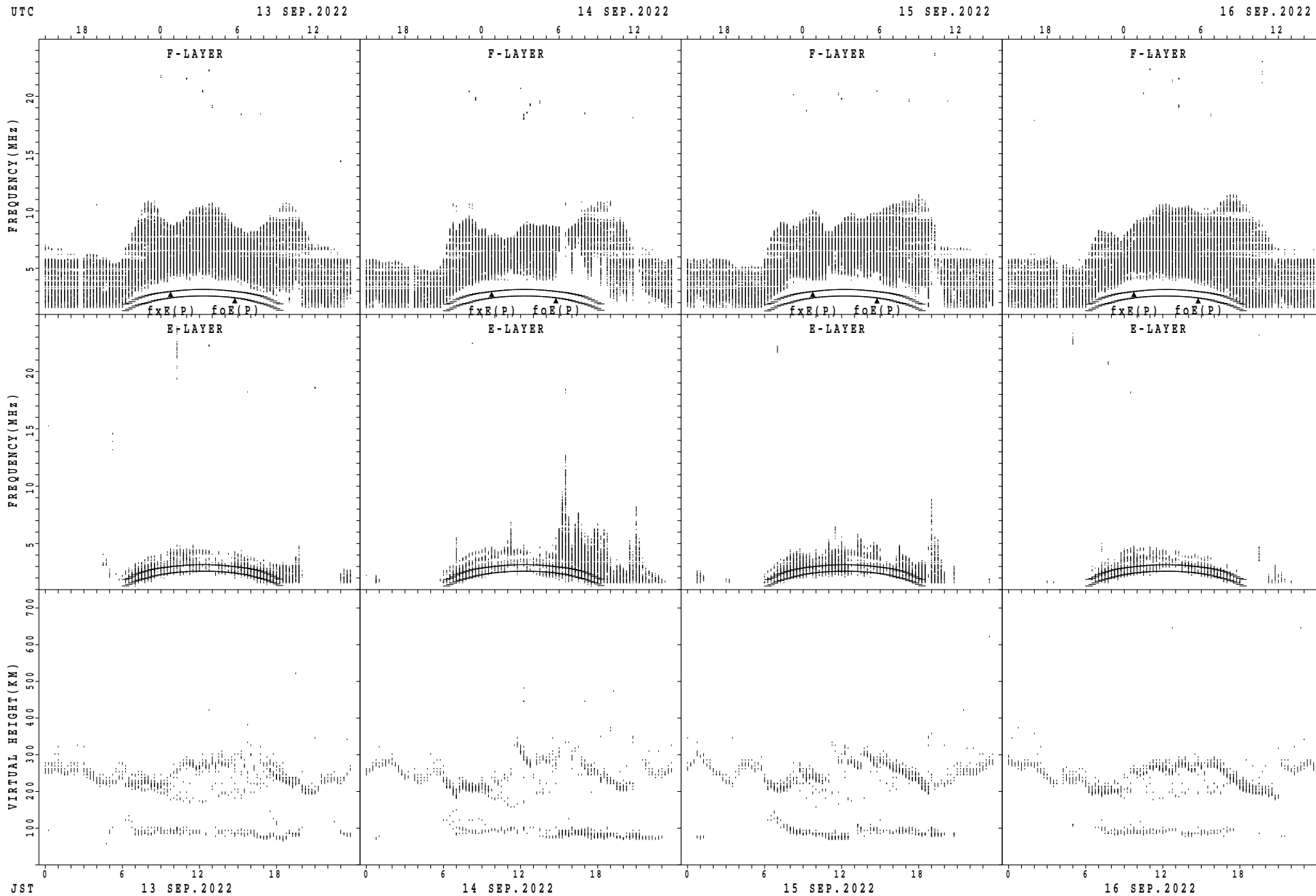
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



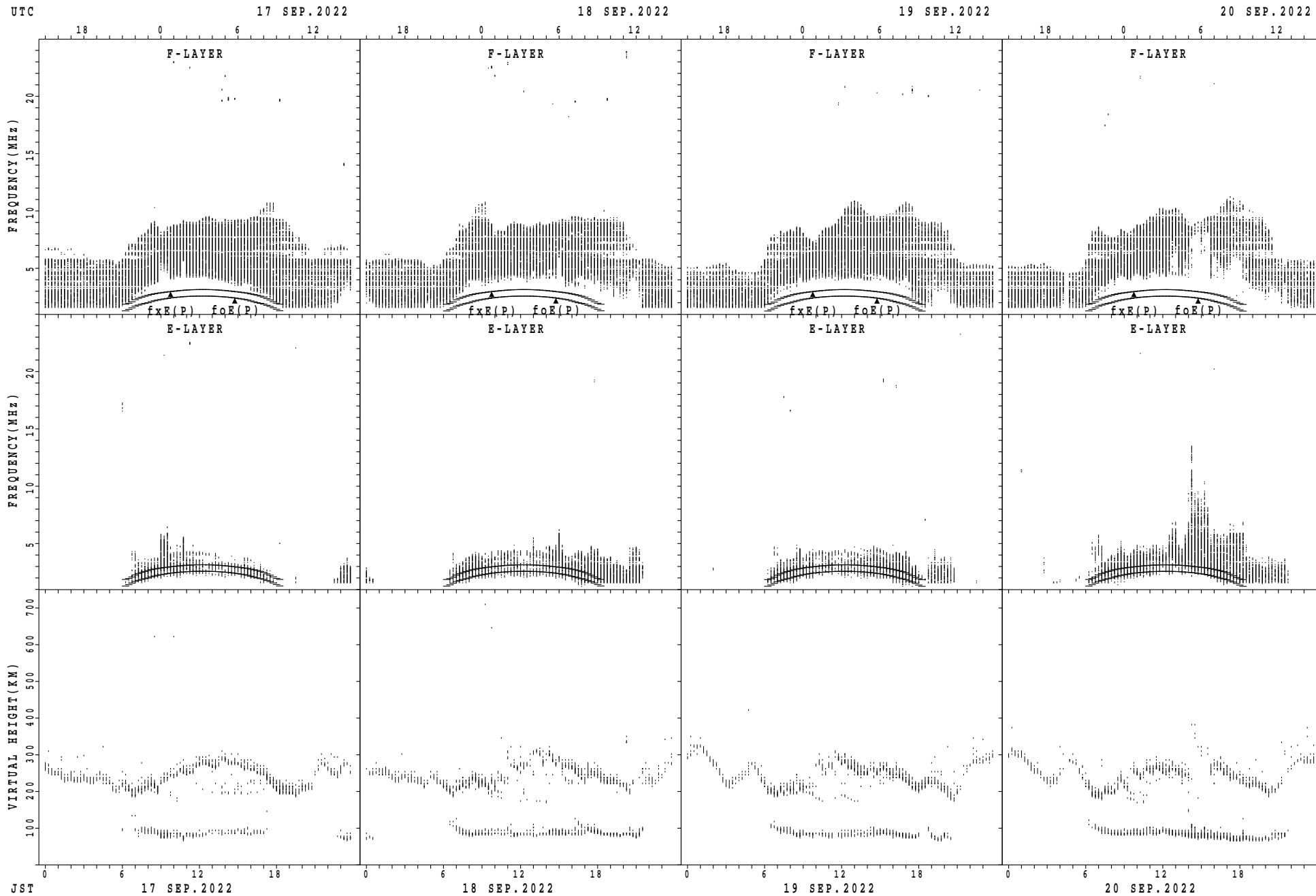
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



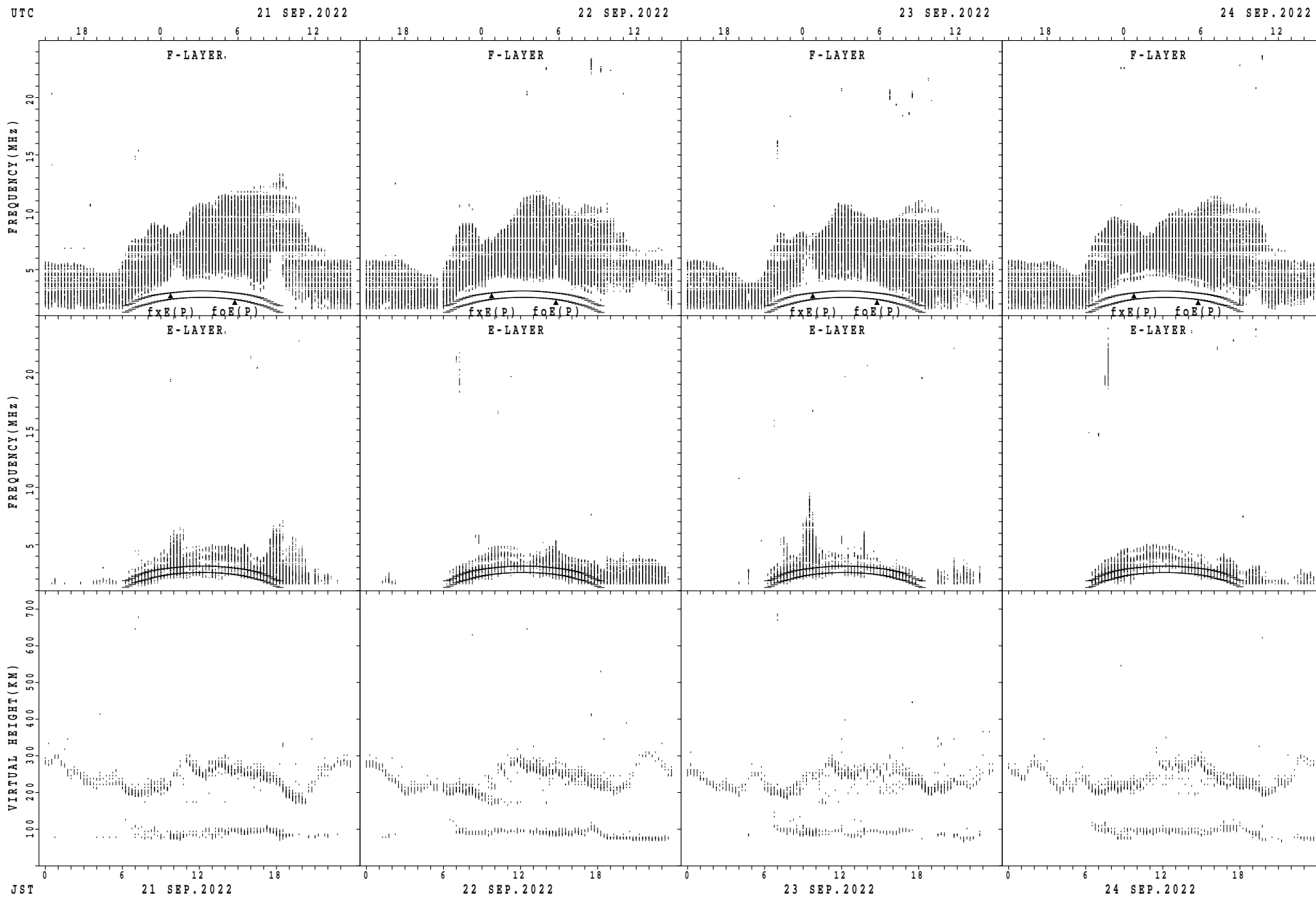
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



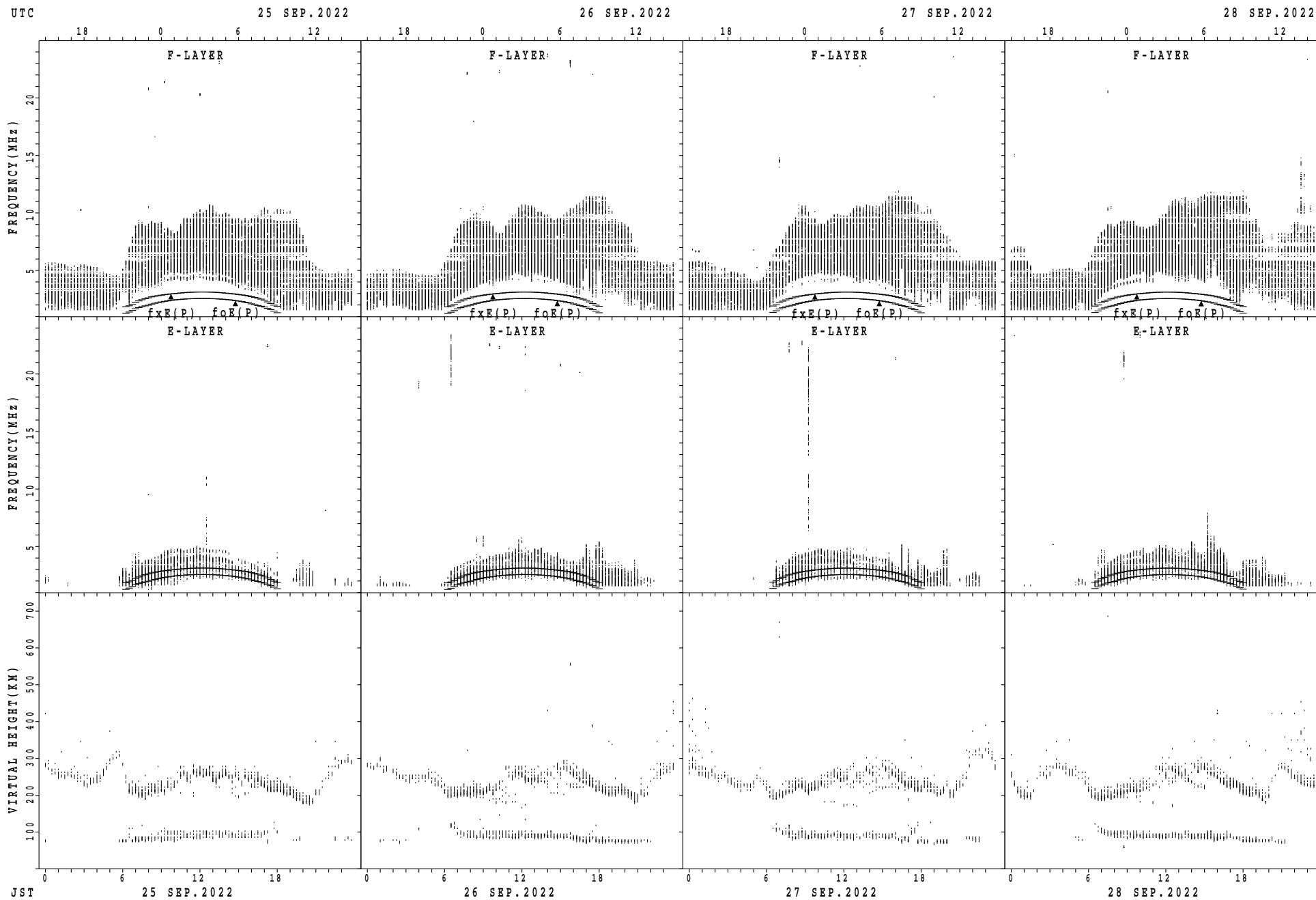
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



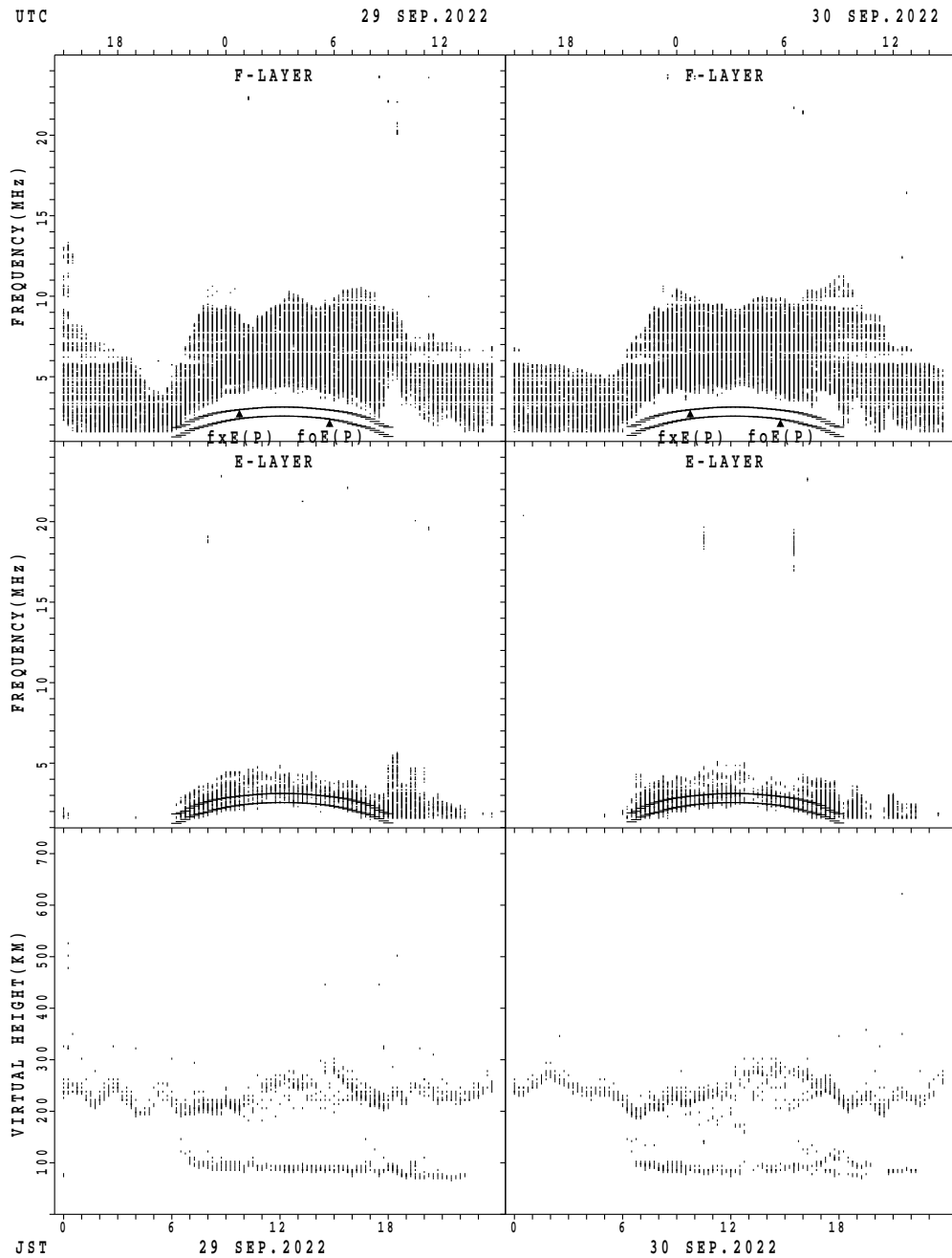
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



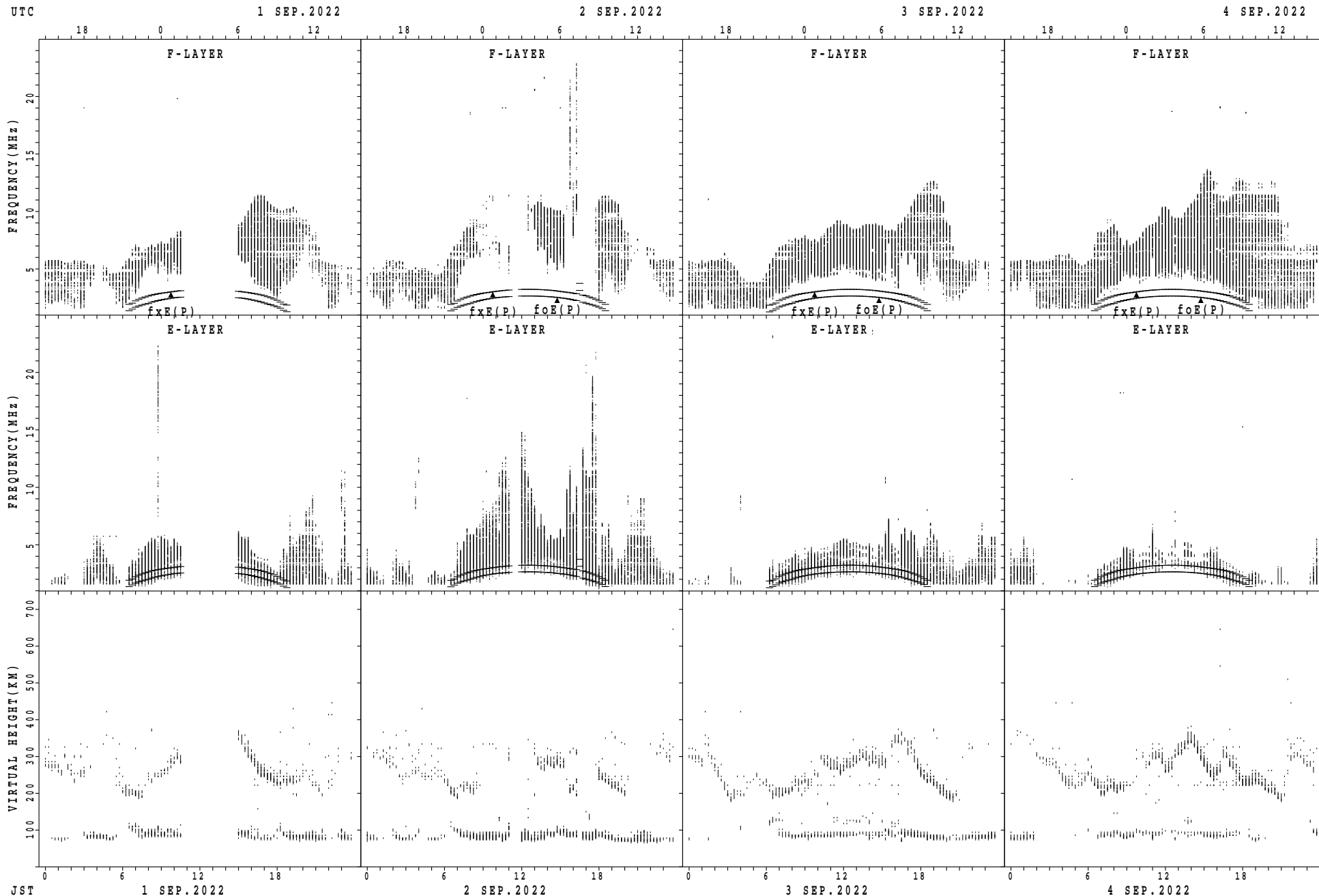
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Yamagawa



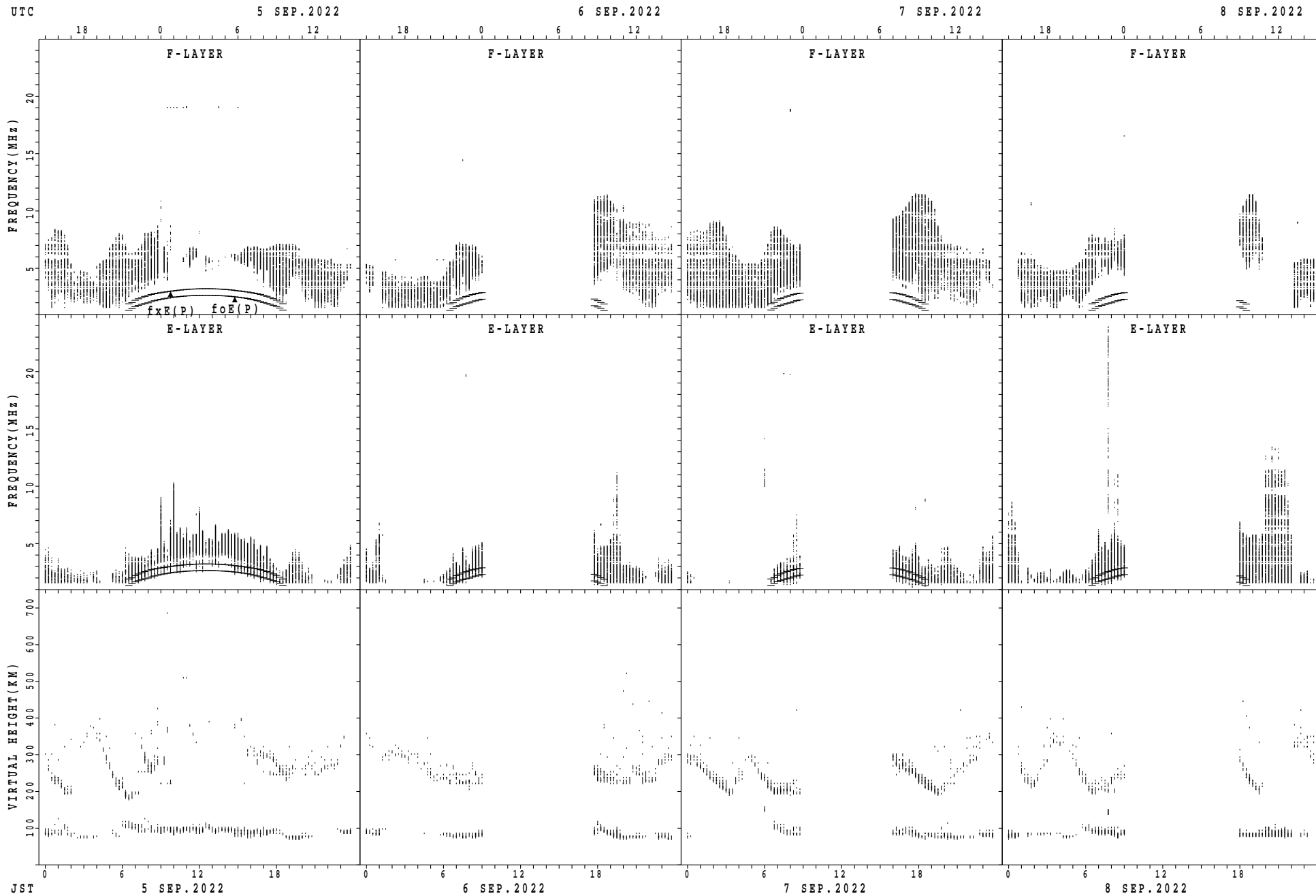
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



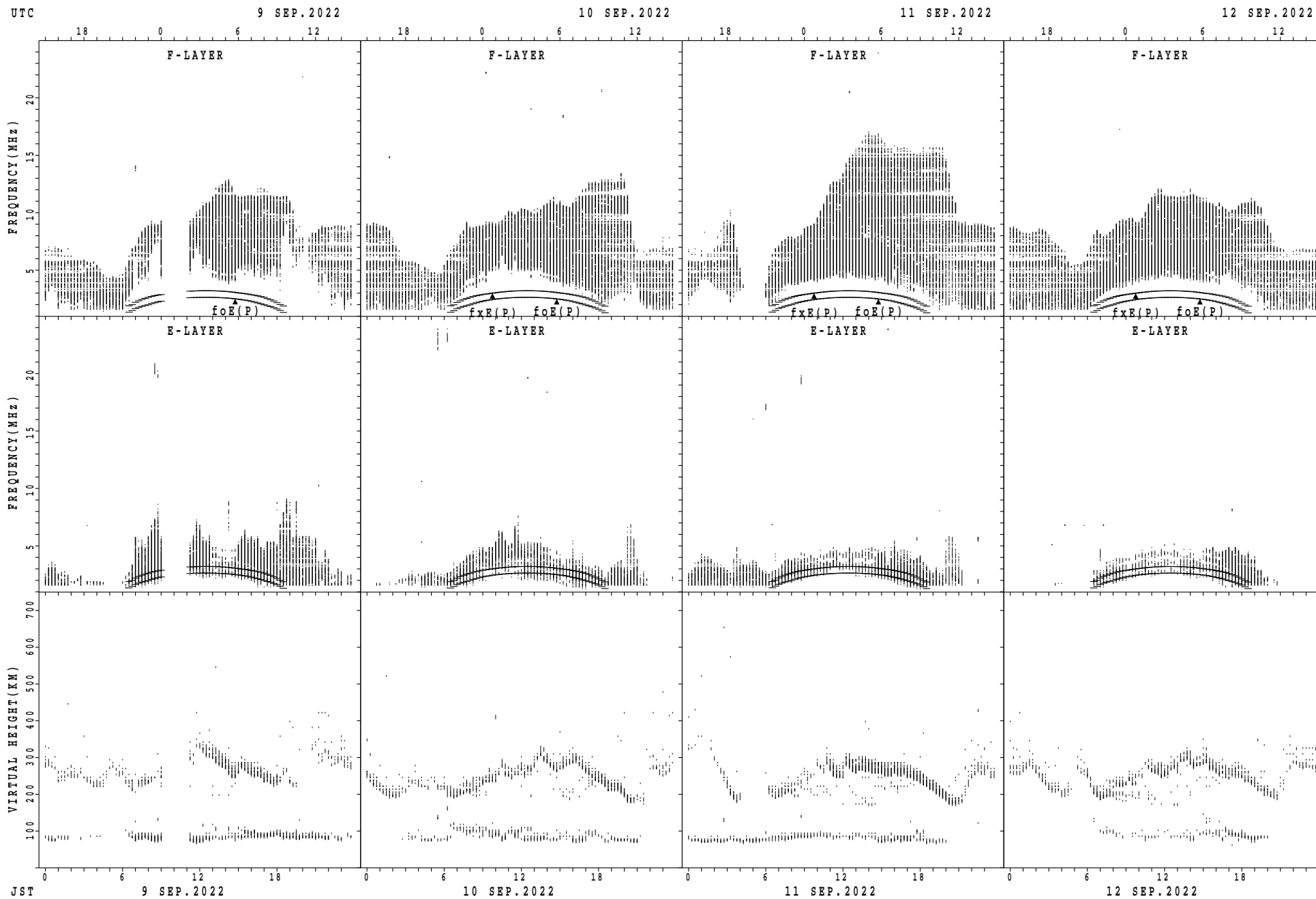
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



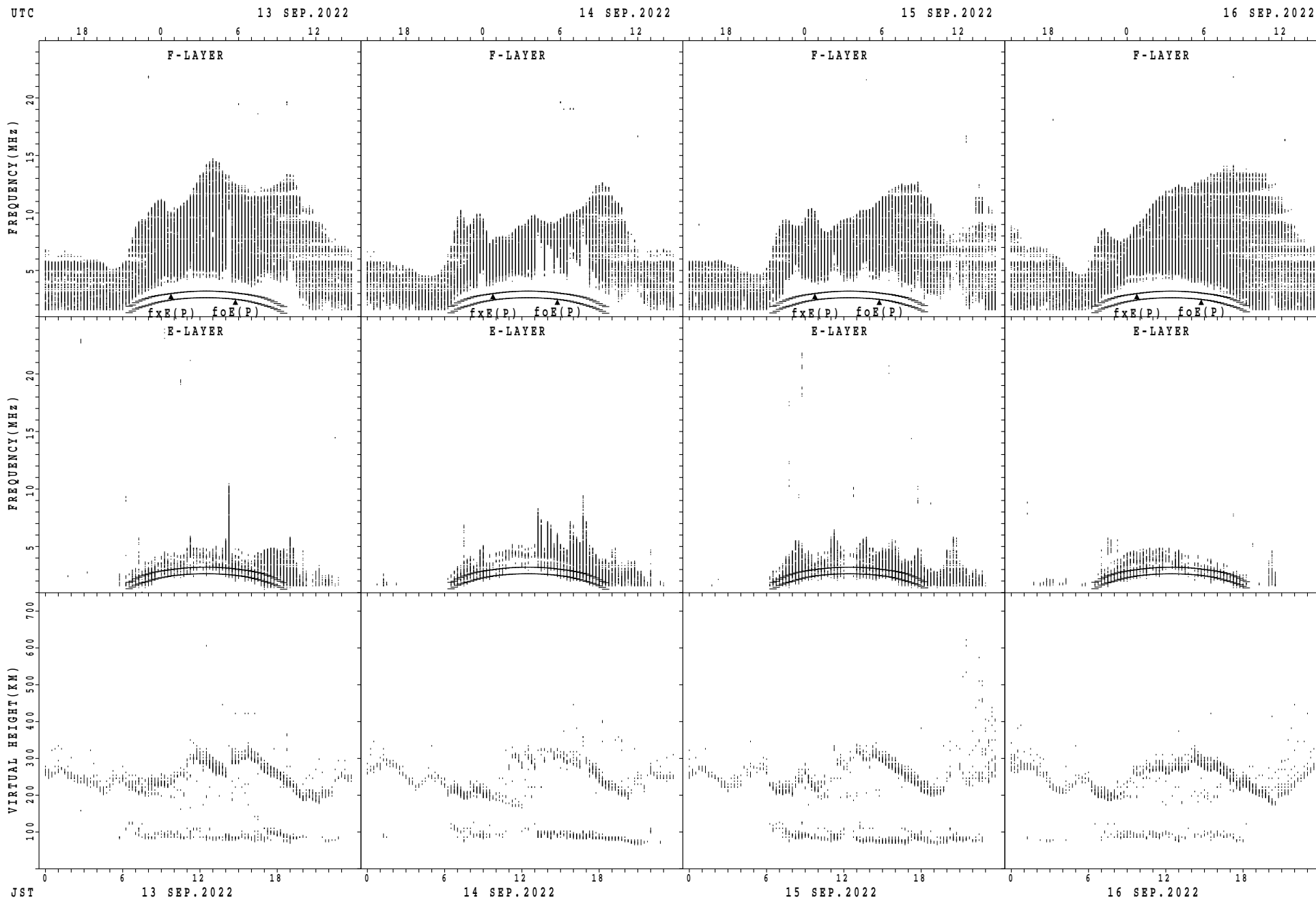
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



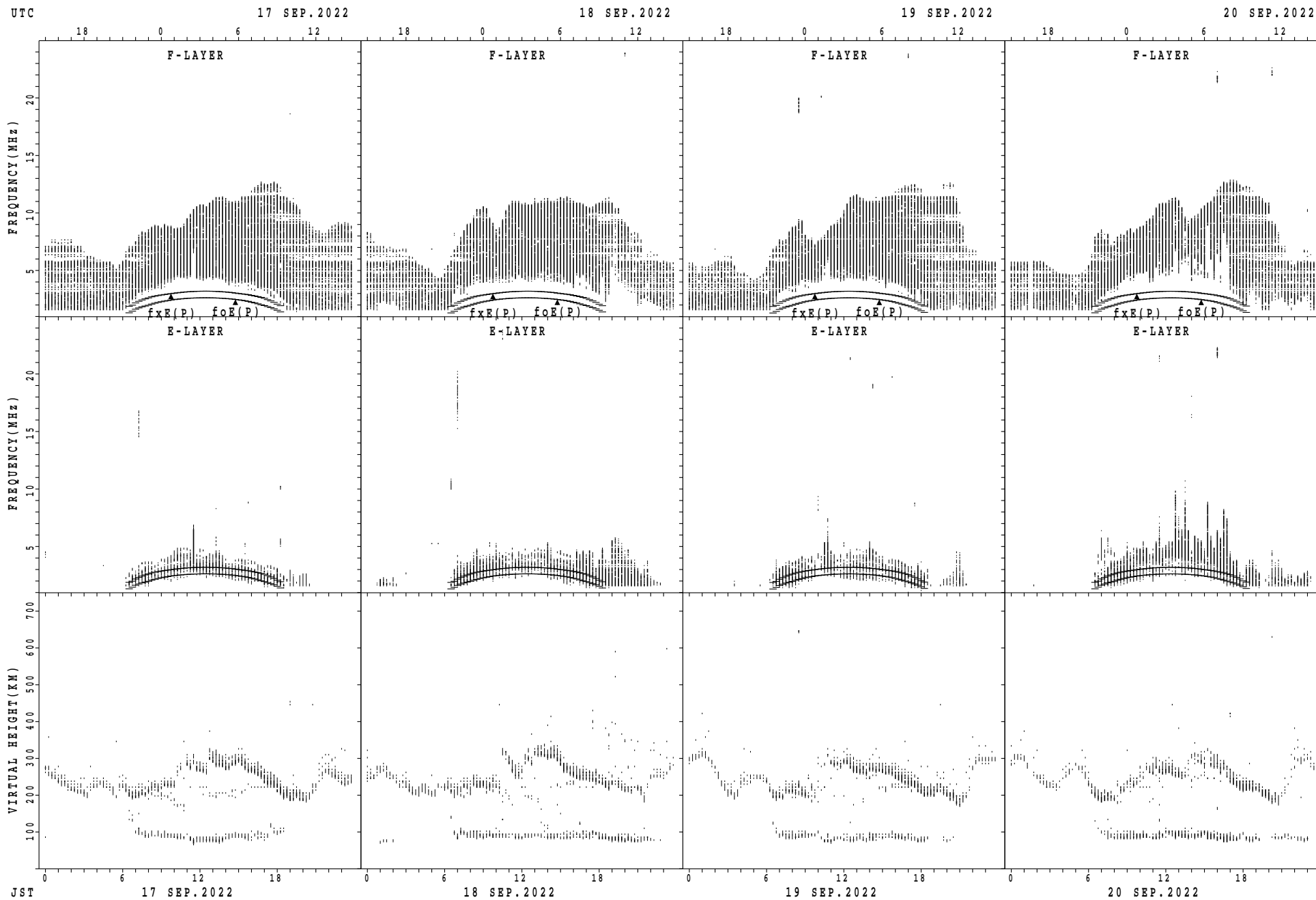
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



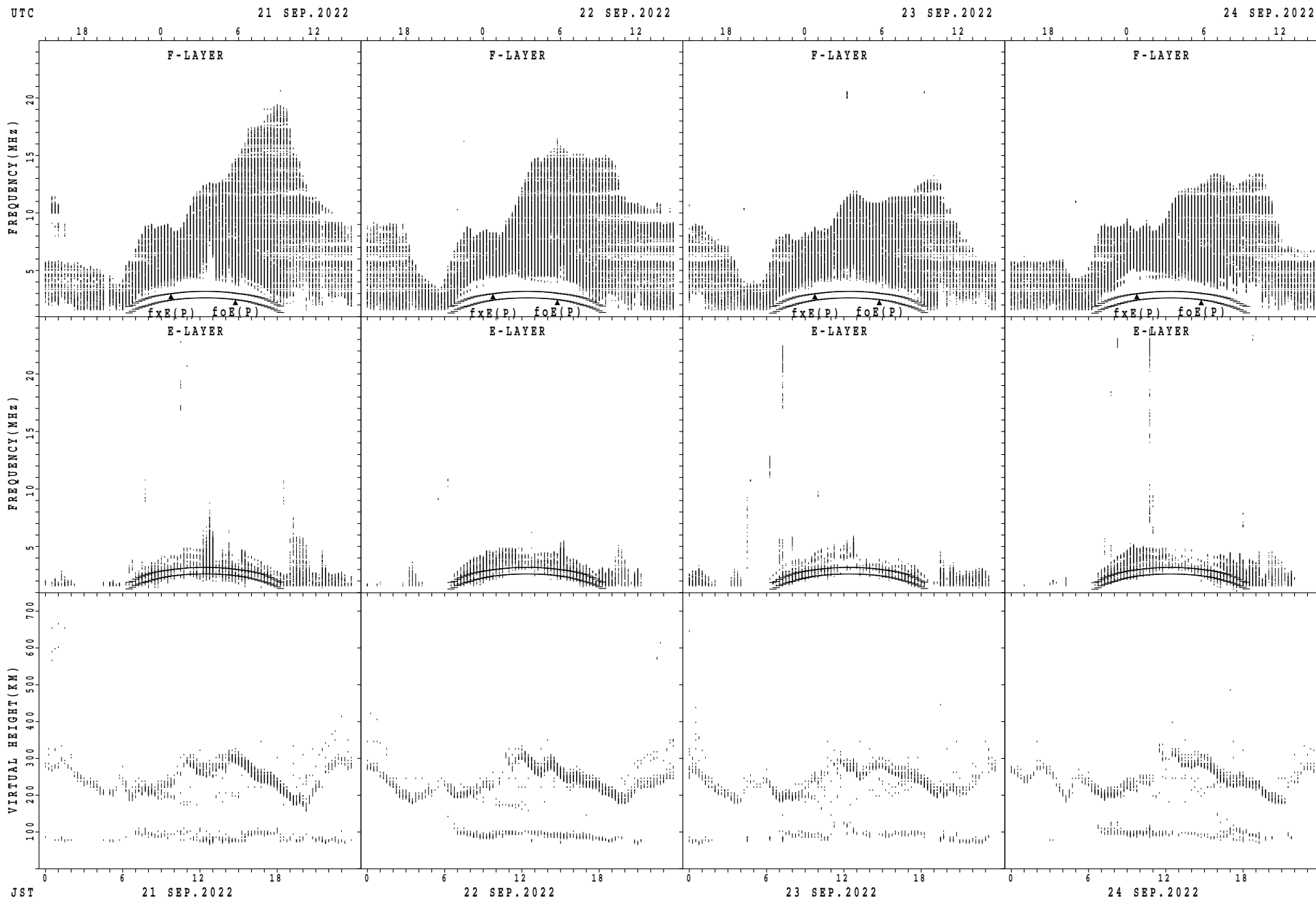
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



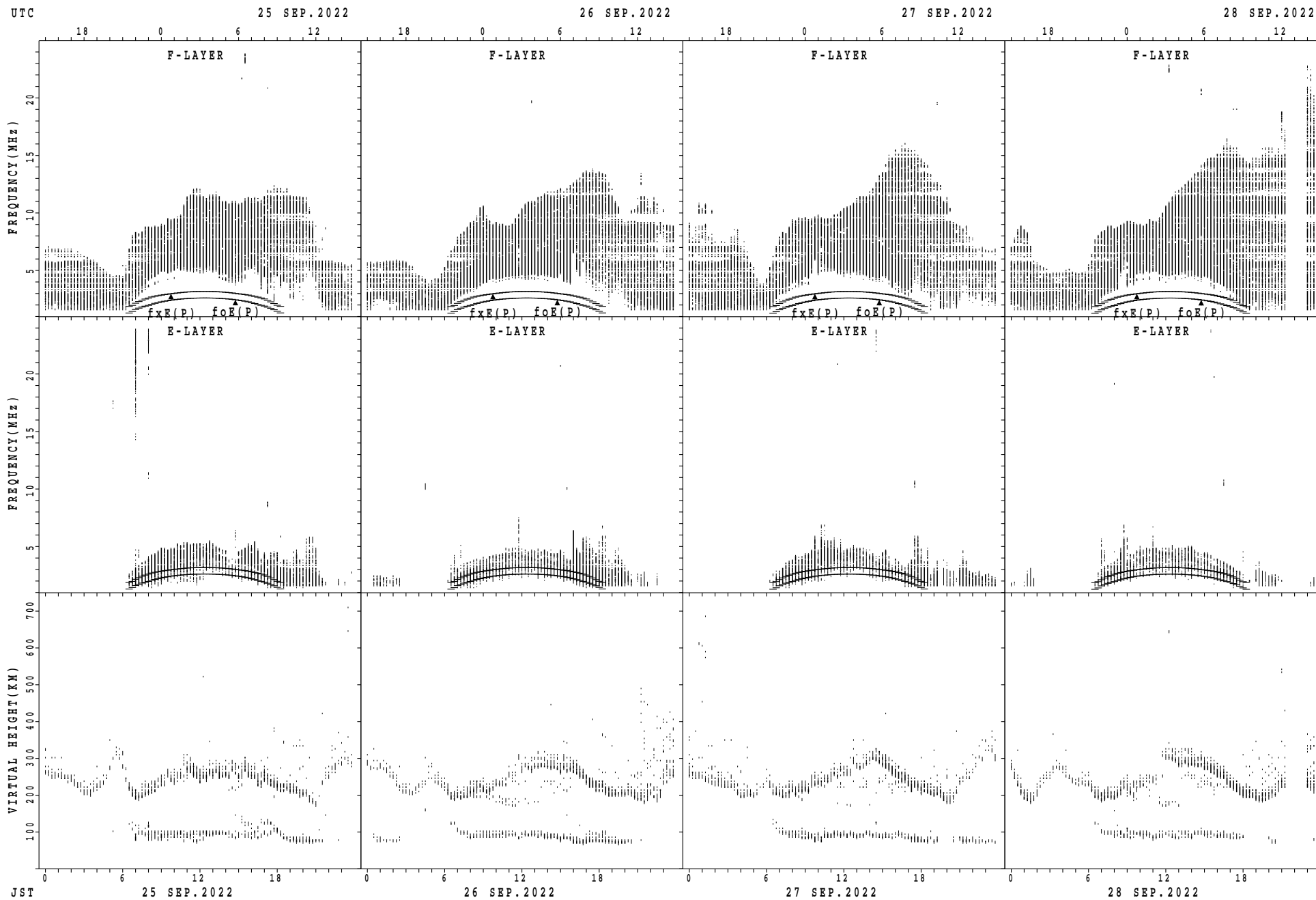
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



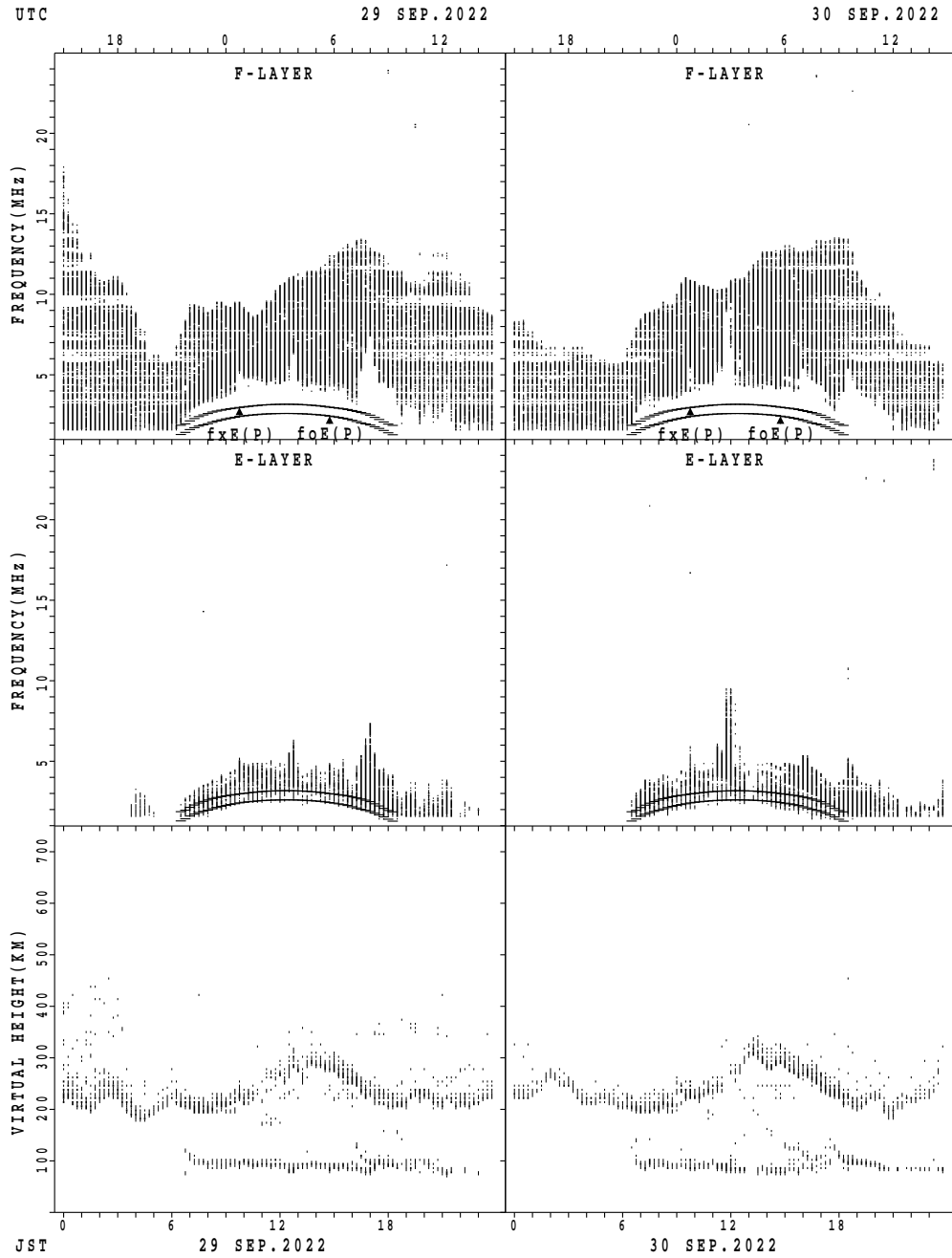
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $foE(P)$; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



$f_{xE}(P)$; PREDICTED VALUE FOR f_{xE}
 $f_{oE}(P)$; PREDICTED VALUE FOR f_{oE}

MONTHLY MEDIANS OF h'F AND h'Es
 SEP. 2022 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	17	14							13	16	20	14	11	6	1	1	
MED							232	242	228							242	241	251	240	258	262	264	292	
U Q							242	268	250							253	250	262	242	272	306	132	146	
L Q							224	225	218							232	235	232	234	248	256	132	146	

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	20	22	23	24	24	21	28	28	28	29	25	24	25	25	26	26	26	28	27	22	27	24	23	25
MED	96	96	96	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	96	96	96	98	96	96
U Q	98	98	98	98	98	99	98	100	100	100	100	100	100	100	100	100	100	98	98	98	98	98	98	98
L Q	94	96	96	96	97	96	98	98	97	94	98	97	95	98	96	96	98	97	94	94	94	96	96	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						1	9	23	23							5	20	22	24	21	8	2	1	1
MED						236	244	220	218							260	256	248	240	240	248	280	218	348
U Q						118	257	234	224							271	270	274	250	256	270	290	109	174
L Q						118	218	210	208							243	251	232	230	225	229	270	109	174

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	14	12	11	13	14	26	29	29	27	23	19	22	21	23	22	23	27	22	27	21	20	19	17
MED	94	96	96	98	98	98	94	94	96	94	94	96	96	96	96	94	96	96	96	94	96	94	96	94
U Q	97	98	98	98	98	98	98	98	98	98	103	100	98	100	101	98	98	96	98	96	98	97	98	94
L Q	92	92	94	96	96	98	94	92	92	90	90	94	92	90	90	92	92	92	94	92	92	92	94	90

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	1					1	23	28								24	27	28	28	21	1	1	1
MED	298	282					314	216	215								261	244	232	232	232	264	294	256
U Q	149	141					157	222	224								271	262	248	248	247	132	147	128
L Q	149	141					157	210	206								247	232	216	222	216	132	147	128

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	20	20	14	16	16	17	17	30	30	30	30	30	30	27	29	30	30	30	28	28	29	25	23	20
MED	96	96	96	96	97	96	98	98	99	98	98	98	96	96	98	98	98	98	96	94	96	96	96	96
U Q	96	96	98	98	98	98	98	100	100	98	98	98	98	98	98	98	100	100	98	98	98	97	96	96
L Q	94	94	94	94	96	95	98	96	98	96	94	96	96	94	94	96	94	94	92	93	92	92	94	92

MONTHLY MEDIANS OF h'F AND h'Es
 SEP. 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	6	7	7	4	2		1	25	29	9							21	27	29	29	25	16	8	9
MED	296	306	264	238	233		226	210	216	222							256	244	230	222	216	249	287	296
U Q	342	324	304	251	240		113	215	237	228							269	252	240	236	241	264	304	324
L Q	282	240	248	232	226		113	200	207	215							252	232	216	214	204	229	268	271

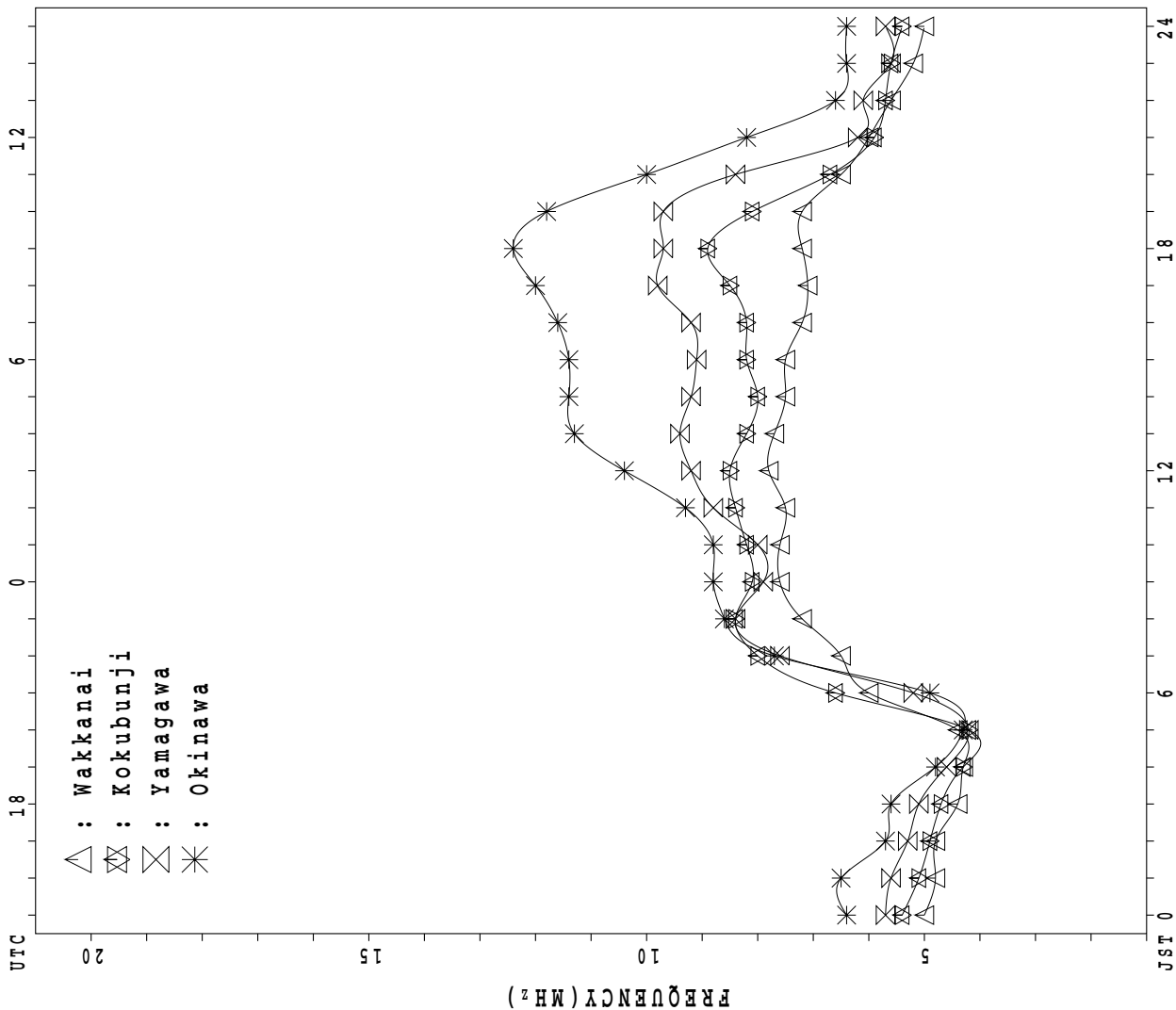
h'Es

	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	20	19	13	14	12	12	11	30	30	29	26	25	26	26	25	27	28	28	30	27	27	26	20	22
MED	96	96	96	97	96	96	98	98	98	98	98	96	96	96	96	98	98	96	96	94	96	96	96	96
U Q	97	98	98	98	98	97	98	98	100	98	98	98	98	98	98	98	99	98	98	98	98	98	96	98
L Q	95	94	94	96	94	96	96	96	96	96	96	95	94	94	94	96	94	95	92	94	92	94	94	94

MONTHLY MEDIANS PLOT OF fOF2

SEP. 2022

AUTOMATIC SCALING



- △ : Wakkanai
- : Kokubunji
- ◇ : Yamagawa
- * : Okinawa

IONOSPHERIC DATA STATION Wakkanai

SEP. 2022 f_{XI} (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

H D	00	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 58	X 57	X 51	X 51																	X 74	X 71	X 68	X 65		
2	X 55	X 55	X 55	X 56																		X 79	X 75	X 65	X 63	
3	X 63	X 63	X 62	X 60																		X 81	X 78	X 74	X 60	
4	X 60	X 55	X 58	X 59																		X 66	X 61	X 63	X 62	
5	X 54	X 45	X 43	X 39																		X 65	X 63	X 56	X 52	
6	X 50	X 46	X 45	X 46																		X 68	X 65	X 59	X 53	
7	X 54	X 49	X 47	X 46																		X 79	X 71	X 55	X 51	
8	X 52	X 51	X 49	X 46																		X 59	X 57	X 55	X 51	
9	X 51	X 50	X 51	X 47																		X 77	X 66	X 63	X 63	
10	X 66	X 59	X 57	X 53																	X 74	X 77	X 74	X 62	X 51	
11	X 51	X 51	X 51	X 51																		X 76	X 68	X 59	X 66	X 62
12	X 57	X 55	X 51	X 51	X 47																	X 77	X 77	X 75	X 71	X 67
13	X 62	X 61	X 60	X 63	X 57					86												X 76	X 78	X 72	X 67	X 63
14	X 58	X 57	X 58	X 57	X 56																	X 83	X 82	X 68	C C	
15	C	C	C	C	C																	X 84	X 79	X 72	X 60	X 59
16	X 59	X 61	X 61	X 59	X 54																	X 76	X 65	X 66	X 66	X 66
17	X 66	X 64	X 60	X 55	X 58																	X 76	X 75	X 73	X 66	X 62
18	X 63	X 61	X 59	X 59	X 56																	X 85	X 88	X 79	X 66	X 59
19	X 59	X 60	X 59	X 60	X 55																	X 79	X 69	X 59	X 57	X 55
20	X 55	X 55	X 55	X 53	X 48																	X 79	X 71	X 62	X 59	X 56
21	X 54	X 55	X 54	X 54	X 54																	X 75	X 66	X 64	X 61	X 61
22	X 58	X 59	X 57	X 58	X 56																	X 83	X 73	X 65	X 55	X 55
23	X 54	X 54	X 54	X 53	X 53																	X 78	X 75	X 67	X 65	X 60
24	X 58	X 53	X 53	X 55	X 55																	X 67	X 70	X 67	X 59	X 59
25	X 57	X 54	X 54	X 51	X 47																	X 62	X 61	X 60	X 55	X 53
26	X 51	X 53	X 52	X 51	X 51																	X 81	X 71	X 62	X 57	X 56
27	X 56	X 55	X 54	X 53	X 52																	X 83	X 77	X 70	X 66	X 66
28	X 66	X 61	X 57	X 50	X 48																	X 77	X 73	X 67	X 65	X 62
29	X 61	X 61	X 60	X 57	X 52																	X 77	X 71	X 65	X 64	X 65
30	X 62	X 62	X 62	X 60	X 58																	X 85	X 74	X 71	X 70	X 58
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	29	29	29	29	18					1											21	30	30	29	29	
MED	X 58	X 55	X 55	X 53	X 54					86											X 77	X 74	X 67	X 63	X 60	
U Q	X 62	X 61	X 59	X 58	X 56																X 83	X 77	X 72	X 66	X 63	
L Q	X 54	X 53	X 51	X 51	X 51																X 76	X 68	X 63	X 58	X 55	

SEP. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	51	50	44	44	46	51	64	58	70	73	77	70	68	68	64	70	61	66	68	68	67	64	61	58	
2	48	48	48	49	45	48	60	63	61	68	68	65	68	68	64	64	62	58	63	72	72	68	58	56	
3	56	56	55	53	46	46	58	64	68	70	65	68	69	72	74	70	69	72	76	75	74	71	67	54	
4	53	48	51	52	38	38	44	51	53	53	49	51 ^R	52	52	59	55	64	59	56	62	59	54	56	55	
5	47	38	36	32	32	32	42	38 ^R	A	A	44	46 ^R	47 ^R	44	46 ^R	47	45	46	47	51	58	56	49	45	
6	43	39	38	39	41	36	C	C	C	E	G	44 ^R	55	56	58	62	64	61	58	63	61	58	52	46	
7	47	42	40	39	39	42	53	56	66	63	59	64	62	62	62	62	65	64	67	71 ^J	72	64	48	44	
8	45	44	42	39	40	40	48	59	58	48	55	60	64	64	62	62	60	69	72	52	52	50	48	44	
9	44	43	44	40	41	40	58	66	70 ^Z	60	70	68	74	72	69	64	64	65	70	71	70	59	56	56	
10	59	52	50	46	43	42	55	55	61	60	63	65	66	68	65	64	62	60	65	67	70	67	55	44	
11	44	44	44	44	39	37	48	59	64	59	64	64	70	68	66	64	66	65	67	69	61	52	59	55	
12	50	48	44	44	40	44	55	69	72	78 ^H	C	C	C	C	C	C	C	70	70	70	70	68	64	60	
13	55	54	53	56	50	50	58	67	73	72 ^F	C	C	C	C	C	C	C	66	65	69	71 ^X	65 ^R	60	56	
14	52	51	51	50	49	50	69	68	74	82	C	C	C	C	C	C	C	C	74	76 ^R	75 ^R	61 ^J	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	77	80	77	72	65	53	52	
16	52	54	54	52	47	47	58	76	92	83	C	C	C	C	80	80	78	82	77	69	58	59	59	59	
17	59 ^X	57 ^R	53	48	51	56	60	69	77	80	78	76	77	81	70	74	73	75	70	69	68	66	59	55	
18	56	54	52	52	49	50	65	75	82	80	80	82	82	76	74	73	72	81	83	77	81	72	59	52	
19	52	54	52	53	48	47	56	68	68	74	72	69	69	79	72	76	72	72	80	72	62	52	50	48	
20	48	48	48	46	41	39	54	60	64	66	71	75	78	73	76	71	70	70	78	72	64	55	52	49	
21	47	48 ^R	47	47	47	42	56	70	82	82	74	76	82	82	77	82	81	79	76	68	59	57	54	54	
22	52	52	51	51	49	48	61	64	75	86	77	77	84	77	75	75	74	83	81	76	66 ^R	58 ^R	48	48	
23	47	47	47	46	46	47	64	66	70	73	82	82	80	84	82	76	78	76	74	71	68	60	58	53	
24	51	46	46	48	48	47	60	65 ^D	69	81	79	88	80	75	74	77	83	74	72	60	63	60	52	52	
25	50	47	47	45	40	40	60	42 ^C	94	86	83	76	78	83	87	76	77	72	65	55	54	53	48	46	
26	44	46	45	44	44	44	63	71	78	93	95	87	82	84	79	74	72	83	81	74	64	55	50	49	
27	49	48	47	46	45	45	59	70	82	87	92	97	98	104	95	82	77	70	76	76	70	63	59	59	
28	59	54	50	42	41	42	52	68	76	82	88	95	93	87	87	84	80	80	74	70	66	60	58	55	
29	54	54	53	50	45	42	59	70	70	80	89	C	85	79	82	78	78	80	69	70	64	58	57	58	
30	55	55	55	53	51	51	64	80	84	86	94	87	83	78	78	78	77	82	79	79	67 ^J	64 ^R	60	51	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	29	28	28	27	28	25	24	25	25	26	26	26	29	30	30	30	30	29	29	
MED	51	48	48	46	45	44	58	66	70	76	74	72	77	75	74	74	72	72	72	70	66	60	56	53	
U Q	54	54	52	52	48	48	60	70	78	82	82	82	82	82	79	77	77	80	77	74	70	65	59	56	
L Q	47	46	44	44	40	40	54	59	66	64	64	64	67	68	64	64	64	65	67	68	61	56	51	48	

SEP. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	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	U L	L	L	L	L	L	L	L	L					
2							L	L	L	L	L	L	L	L	L	L	L	L	L					
3								L	L	L	L	L	L	L	L	L	L	L	L					
4				L	L		348	400	432	452	452	456	468	468	456			416						
5							L	L	A	A	420	432	444		428	444		L	U L					
6							C	C	C	440	456	480	444	480	476	440		L	U L					
7								L	L	L	L	H	L	U L	L			L						
8				A	A	L	L	L	L	400	472	500	480	480	464	460		L	L					
9						U L	L	L	A	L	L	L	L	L	L	L	L	L	L					
10						L	L	L	L	H	L	L	L	L	L	L	L	L	L					
11						L	U L	L	L	L	L	L	L	L	L	L	L	L	L					
12									L		C	C	C	C	C	C	C	C						
13									L	L	C	C	C	C	C	C	C	C						
14									L	L	L	C	C	C	C	C	C	C	C					
15						C	C	C	C	C	C	C	C	C	C	C	C	C						
16								L	U L	L	L	C	C	C	C	L	L	L						
17								L	L	L	U L	L	L	U L	L	L	L							
18							240	L	L	L	U L	H	L	U L	L	L	U L							
19							240	L	L	L	L	L	H	L	L	L	L							
20								L	L	432	468	L	L	L	440	424								
21								360	L	L	L	L	L	L	U L	U L								
22								216	L	L	L	L	L	L	L	L	L							
23									L	L	L	L	L	L	L	L	L							
24								L	L	L	L	U L	L	L	L	L	L	L						
25									L	U L	L	L	L	L	L	L	L	U L						
26									L	424	496	468	456		L	L	L							
27									L	U L	L	L	L	L	L	L								
28									L	428	484	492	508	484	460									
29									L	L	L	C	L	L	L			L						
30									L	416	456	508	L	L	L			L						
31									L	492	492	L	L	L	400									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	4	14	20	19	16	20	17	16	9	3	1						
MED							300	398	436	458	480	480	474	480	462	444	404	336						
U Q							U L	L	L	L	L	L	L	L	L	U L	U L							
L Q							240	378	432	446	468	470	462	468	438	426	364							

SEP. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	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	232	244	244	272	288	288	372	368	316	344		A	A		A	A				
2					A	B	208	264	292	324	288	A	A	284	344	240	280	228	224		A				
3					A	A	240	288	312	336	356	360	360	356	356	316	280	224	200		A				
4					B	B	220	280	292	316	308	312	380	364	344	324	284	228	196		B				
5					B	A	204	252	296	316	316	360	360	356	360	312	260	212		A	A				
6					A		C	C	C	328	336	360	356	356	332	308	280	220		A	B				
7					A	A	220	292	304	340	344	360	360	344	332	312	268		A	A	B				
8					A	A	232	276	312	324	340	356	352	340	344		272	224	232		A				
9					B	B	220	228	292	252		A	356	356	356	324	312	268	208		A	A			
10					A		252	232	260	316	344	348	364	356	360		A	A		A	A				
11						B	264	228	260	A	A	360	372	364	364	340	320	280	220	172					
12						B	224	212	276		280	C	C	C	C	C	C	C		A					
13						B	216	308	320	356		C	C	C	C	C	C	C		B					
14						A	196	200	324	344		C	C	C	C	C	C	C		B					
15						C	C	C	C	C	C	C	C	C	C	C	C		204		A				
16							216	212	276	316	332		C	C	C		304	292	252	196					
17						A	A	280	304	336	368	360	U	A	364	352	320	304	280	216	216				
18						A	228	264	308	336	360	360	360	360	320	312	252	196		B					
19						B	220	272	308	328	372	352	360	360	332	304	256	224		A					
20						B	188	264	300	320	328	328	328	352	336	292	260	200		B					
21						B	208	264	300	332	344	344	344	316	316	296	264	188		A					
22						B	204	264	308	312	312	312	280	340	328	304	252		A	A					
23						A	244	268	292	332	332	340	328	332	332	308	268	208		B					
24						B	192	276	304	316	336	324	324	336	296	296	236	256		A					
25						B	204	260	312	332	344	344	344	340	316	292	248	184		A					
26						B	200	276	304	320	320	312	292	320	312	300	252	188		A					
27						A	252	260	300	332	332	336		A	336	320	296	256		A	B				
28						B	212	264	312	312	352	352	352	300	332	304	236		A	A					
29							252	188	260	280	336	348		A	A	352	336	296	264	240	292				
30						B	188	284	300	344	348	356	356	356	316	300		A	A	A					
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT					1	6	27	28	26	28	24	23	22	25	25	23	24	23	7						
MED					264	228	212	264	304	330	342	356	356	352	332	304	264	220	216						
U Q					252	228	276	312	336	350	360	360	356	342	312	280	224	232							
L Q					224	204	260	296	316	324	336	344	334	318	296	252	200	196							

SEP. 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	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	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
2	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
3	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
4	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
5	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
6	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
7	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
8	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
9	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
10	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
11	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
12	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
13	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
14	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
15	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
16	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
17	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
18	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
19	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
20	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
21	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
22	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
23	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
24	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
25	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
26	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
27	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
28	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
29	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
30	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J A
31	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A		J A	J A	J A	J A	J A	J A	J A	J A	J 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	29	29	29	28	28	28	29	25	25	25	25	26	26	26	29	30	30	30	30	29	29
MED	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
U Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
L Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A

SEP. 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	18	24	22	16	E B E B	16	16	33	30	36	36	40	37	G	38	38	38	33	28	24	28	22	23	18	16	16	
2	16	E B E B	E B E B	E B E B	E B E B	E B E B	15	17	24	29	34	40	40	42	38	36	36	31	29	24	21	24	20	E B	16	22	18
3	16	20	E B	17	19	16	17	G	29	32	31	38	37	39	39	36	36	30	26	18	16	E B E B	E B E B	E B E B	E B E B	E B E B	
4	E B	16	20	E B E B	E B E B	E B E B	16	16	24	36	38	38	38	37	G	39	33	G	30	22	G	E B E B	E B E B	E B E B	E B E B	E B E B	
5	E B E B	E B E B	E B E B	E B E B	16	16	20	24	30	A A A	62	49	34	37	G	G	G	34	26	23	23	17	E B E B	E B E B	E B E B	E B E B	
6	E B E B	E B E B	E B E B	E A E A	25	18	20	G	C	C	C	G	37	G	G	39	G	34	32	26	21	E B	16	16	16	E B	
7	E B E B	E B E B	E B E B	E B E B	E B E B	15	16	23	G	32	G	30	36	36	G	36	35	30	24	20	16	E B E B	E B E B	E B E B	E B E B		
8	18	16	E B	16	18	22	26	G	G	G	E A	41	36	G	G	33	33	34	28	24	22	19	E B	19	19	E B E B	
9	E B E B	E B E B	E B E B	E B E B	E B E B	15	16	G	22	26	33	40	35	G	38	34	37	31	34	25	25	20	E B	16	16	16	21
10	E B E B	E B E B	E B E B	E B E B	17	16	G	24	27	30	35	G	G	G	G	35	31	31	G	23	22	19	23	E B E B	E B E B	E B E B	
11	E B	21	24	16	16	17	14	24	35	35	41	G	G	G	40	G	30	28	24	17	17	16	17	21	19		
12	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	22	27	34	34	C	C	C	C	C	C	C	C	G E	E B E B	E B E B	E B E B	E B E B	E B E B	24	
13	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	25	30	33	38	C	C	C	C	C	C	C	25	16	18	E B E B	E B E B	E B E B	E B E B	E B E B	
14	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	16	16	G	19	25	30	34	C	C	C	C	C	C	E B E B	E B E B	E B E B	E B E B	E B E B	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	23	20	E B	16	20	16	23	16
16	22	E B E B	E B E B	E B E B	E B E B	E B E B	16	16	26	30	33	37	C	C	C	C	G	34	29	28	22	27	16	E B E B	E B E B	E B E B	E B E B
17	E B E B	E B E B	24	17	21	18	21	27	G	30	34	34	34	G	G	34	30	G	G	20	16	16	E B E B	E B E B	E B E B	E B E B	E B E B
18	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	G	G	G	G	G	G	G	G	G	G	G	G	E B	E B	E B	E B	E B	E B	E B	E B
19	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	G	G	G	G	G	G	G	G	G	G	G	G	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
20	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	G	G	G	G	G	G	G	G	G	G	G	G	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B
21	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	22	28	30	36	G	38	35	34	34	33	37	25	21	21	16	E B E B	E B E B	E B E B	E B E B	E B E B	
22	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	G	G	G	G	G	G	C	36	34	33	24	20	20	23	16	22	22	16	16	
23	E B	E B E B	E B E B	E B E B	16	16	G	23	27	32	G	35	36	36	36	G	G	G	G	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	
24	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	22	30	34	34	34	34	34	35	34	33	29	27	20	16	27	22	17	21	21		
25	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B	G	G	G	G	38	37	G	34	29	25	20	18	20	16	16	16	16	16	16	
26	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	22	26	31	36	35	35	34	36	33	30	G	26	20	22	22	22	22	23	21		
27	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	23	31	33	38	38	36	33	32	34	28	G	24	24	16	16	16	16	16	18	
28	18	21	24	16	E B E B	16	16	G	20	33	46	36	46	36	40	42	36	34	24	21	19	18	17	20	16	E B	16
29	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	22	26	30	35	39	C	38	34	36	31	26	20	17	18	17	16	16	16	16	
30	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	21	28	32	34	G	G	G	G	G	G	G	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	29	29	29	29	29	29	28	28	28	29	25	24	25	25	26	26	26	26	29	30	30	30	30	29	29		
MED	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	23	28	32	35	34	G	35	G	34	31	28	23	18	16	E B E B	E B E B	E B E B	E B E B	E B E B		
U Q	17	16	16	16	16	16	24	30	34	38	38	37	38	37	36	33	29	24	21	20	19	18	21	18			
L Q	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B	G	G	G	G	G	G	G	G	G	G	G	G	G	E B E B	E B E B	E B E B	E B E B	E B E B	E B E B		

SEP. 2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

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

SEP. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	263	263	270	290	290	341	363	327	357	319	337	326	309	322	314	332	315	326	326	312	297	300	304	303	
2	295	292	290	315	312	304	334	334	343	338	346	365	321	336	320	332	323	323	310	309	309	309	299	289	
3	289	289	297	306	313	317	342	361	346	348	313	312	311	331	327	316	316	315	314	302	295	296	302	278	
4	288	274	281	313	270	269	269	294	319	281	294	290	R	243	274	289	277	304	315	298	290	289	258	270	283
5	282	276	276	256	255	254	264	280	R	A	A	372	R	R	360	R	299	303	300	287	267	281	286	279	278
6	269	269	259	258	282	281	C	C	C	G	R	311	297	305	310	315	328	321	321	315	300	291	296	293	282
7	281	292	291	299	279	308	318	295	319	353	298	298	324	324	323	310	336	323	308	R	321	321	298	273	
8	272	281	280	269	269	295	295	320	332	R	302	298	310	310	320	310	300	330	342	310	273	281	280	277	
9	286	270	284	284	281	293	307	337	294	Z	342	312	297	326	316	329	319	319	313	312	313	305	305	274	261
10	283	297	278	295	295	312	325	324	332	332	331	301	325	310	326	318	318	308	293	300	299	318	308	281	
11	268	256	277	293	275	274	308	331	316	312	325	313	321	336	324	317	325	313	311	310	295	307	307	280	
12	278	275	275	289	265	294	310	334	348	H	291	C	C	C	C	C	C	C	317	317	298	294	290	289	289
13	277	283	281	299	296	308	308	308	336	F	315	C	C	C	C	C	C	C	316	315	287	286	R	300	299
14	297	274	290	287	284	321	349	340	339	350	C	C	C	C	C	C	C	C	308	R	R	R	C	C	
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	306	319	304	314	314	285	273
16	278	287	292	305	282	291	327	341	361	319	C	C	C	C	319	328	319	332	327	306	301	301	300	287	
17	X R	301	300	295	277	308	317	343	342	353	349	320	320	342	334	334	333	321	332	324	311	299	299	291	285
18	282	296	293	290	287	311	352	333	357	338	338	312	340	328	324	324	324	314	313	289	322	322	303	282	
19	279	275	285	283	304	301	346	335	345	339	340	311	324	325	315	334	334	323	322	334	327	294	292	276	
20	270	270	287	286	286	317	335	337	355	332	351	342	333	332	331	331	330	330	320	320	319	297	284	286	
21	276	R	297	295	322	319	346	319	338	344	344	316	333	326	326	325	330	330	330	313	319	297	288	286	
22	283	280	295	308	317	314	350	351	350	355	336	335	335	344	322	330	330	329	329	329	325	332	295	291	
23	288	285	284	304	300	314	345	355	355	341	330	330	330	329	311	331	331	330	323	303	297	311	296	293	
24	308	277	291	288	296	321	350	349	315	331	221	324	329	334	333	293	338	329	328	291	300	304	280	277	
25	284	267	295	295	272	290	338	C	358	338	349	324	335	319	340	320	337	339	338	309	296	294	301	288	
26	277	286	285	285	285	319	338	351	360	361	353	333	333	332	332	319	318	332	331	329	323	300	297	294	
27	292	289	298	302	301	298	361	349	348	347	340	318	307	321	322	321	330	322	306	306	287	267	264	277	
28	312	275	297	287	287	298	340	366	346	326	352	334	331	324	338	337	326	327	327	310	310	309	283	281	
29	278	295	293	314	324	292	352	360	333	350	335	C	350	325	333	334	329	334	314	311	310	297	279	297	
30	297	280	294	292	298	297	332	351	354	346	346	345	334	313	327	316	322	313	297	297	J R	300	299	323	290
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	29	28	27	27	27	25	23	24	25	25	26	26	29	30	29	30	28	29	29	
MED	282	280	290	292	287	304	338	337	346	338	336	318	328	325	324	322	324	323	316	307	300	300	293	283	
U Q	290	289	294	303	302	317	348	351	355	348	346	333	334	333	332	331	330	330	327	312	314	309	300	290	
L Q	277	274	280	286	280	292	314	324	332	319	312	301	316	318	320	316	318	314	310	299	295	295	282	278	

SEP. 2022 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	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		U L			L	L	L	L	L					
2							L	L	U L	L	367	366	373	362	369	352	351	L	L					
3							384	L	L	L	402	373	396	397	382	369	U L	L	L					
4					L	L			L	L	382	337	371	373	432	366	353	U L	L	L				
5							352	358	373	369	389	389	367	339	356		L	343	L	U L				
6							L	L	A	A		396	407	368		376	313	L	U L	L				
7							C	C	C		396	383	363	403	369	355	383	L	L					
8					A	A	L	L	L	L		369	376		376	386	357	357	364	L				
9							340	L	L	L	451	397	365	378	377	378	347	U L	U L	L	L			
10							U L	L	L	L	A		L	L	L	L	L	L	L	L				
11							364	L	L	L	361	377	391	373	361	365	365							
12							L	L	L	L	361	385		351	351			L	L	L	L			
13							U L	L	L	L		L	L	L	L	L	L	L	L	L				
14							340	375						389	379									
15									L			C	C	C	C	C	C	C	C					
16									L	L	374													
17									L	L	380	380		C	C	C	C	C	C					
18									L	L	379			C	C	C	C	C	C	C				
19							C	C	C	C	C	C	C	C	C	C	C	C	C					
20									L	L	375	396		C	C	C	L	L	L					
21									L	L	375	396		C	C	C	359	L	L	L				
22							417	L	L	L	416	388	396	L	391	390	L	L	L					
23								L	L	L	377	384	416	348	372	372		L	U L	L	U L			
24							404	L	L	L	372	386		L	H	L	L	L	L	L				
25								L	L	L	391	385		L	L	L	385	375	U L	L				
26									L	L	391	385		L	L	L	385	375	U L	L				
27							402		L	L	402			L	L	L	389	364	U L	U L				
28							377		L	L	378			L	L	L	L	L	L					
29									L	L	L	L	L	L	L	L	L	L	L					
30									L	L	L	L	L	L	L	L	L	L	L					
31									L	L	L	L	L	L	L	L	L	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							7	4	14	19	20	16	20	17	16	9	3	1						
MED							377	366	376	384	384	374	386	376	368	364	360	355	U L	U L	U L			
U Q							404	388	380	396	393	388	394	384	382	379	391							
L Q							352	349	372	376	373	370	370	367	358	349	343							

SEP. 2022 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								240	250	290	262	280	320	308	306	300	274	260	274					
2							242	268	258	280	274	260	320	276	298	300	292							
3								244	254	264	310	300	308	268	278	290	292	272						
4					340	372	404	362	330	436	366	360	458	416	380	390	308	272						
5							444	404		A	A	272	340	362	266	400	388	280	342					
6							C	C	C	G		348	368	300	326	288	288	290	290					
7								362	302	276	344	336	336	318	296	322	274							
8					330	308	344	286	236	230	384	366	322	344	292	306	314	270						
9							314	276	312	E	A	280	330	338	290	300	280	282	302	274				
10							288	266	282	272	292	326	318	308	286	292	274	282						
11					356	320	282	300	286	292	268	314	276	264	284	278								
12									250	292		C	C	C	C	C	C							
13							286	272	286			C	C	C	C	C	C							
14							262	262	248			C	C	C	C	C	C	C						
15						C	C	C	C	C		C	C	C	C	C	C							
16								260	242	244		C	C	C	C	278	262	272						
17							226	252	236	262	264	312	266	284	256	270	290							
18								254	244	254	270	294	260	290	276	270	262							
19							244	268	258	268	252	304		274	264	254	254							
20								264	258	258	258	266	266	282	258	272								
21								258	256	260	250	260	302	304	278	264								
22							220		242	250	242	270	282	268	276	254								
23									254	236	264	266	274	262	270	270								
24								250	298	264	254	284	264	264	264	296	244							
25									244	252	262	244	268	280	250	266	252							
26									248	234	242	248	254	266	258	272								
27									242	258	258	274	274	260	270									
28											236	248	252	272	266									
29									226	242	266		C	238	252	268		258						
30										248	246	244	246	266	266	260								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	3	10	19	25	27	25	24	24	25	26	23	18	8	1					
MED					335	356	301	266	254	261	264	282	286	276	276	282	276	273	274					
U Q					372	344	286	277	280	301	331	319	306	288	300	292	286							
L Q					308	242	254	243	248	253	263	265	266	264	266	262	271							

SEP. 2022 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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	A	272	282	280	264	234	226	200	210	202	210	200	192	196	222	208	198	212	240	262	262	254	238	248
2	234	276	290	270	284	274	202	218	204	204	214	208	190	202	202	204	204	240	264	274	258	242	266	286
3	286	300	254	254	244	250	246	202	208	196	202	210	208	198	214	230	220	220	266	252	268	250	240	264
4	296	318	300	272	222	292	252	284	232	218	190	206	206	234	220	216	232	232	276	278	260	316	300	278
5	250	312	324	356	336	298	294	238	A	A	210	192	226	186	232	A	204	244	308	308	298	244	280	292
6	304	312	A	A	314	308	C	C	C	200	200	200	200	208	202	202	202	222	256	258	288	262	262	294
7	282	280	296	276	302	266	268	208	202	198	192	192	200	194	194	202	208	260	260	242	240	220	246	318
8	314	318	312	318	A	A	204	202	190	176	194	200	206	206	216	204	222	234	230	230	294	278	292	312
9	290	312	288	282	306	296	228	202	202	A	188	184	224	214	204	204	216	216	248	256	252	252	300	324
10	266	250	288	272	282	276	224	200	204	200	180	176	206	188	202	196	196	216	256	244	254	262	232	290
11	340	332	308	278	312	254	254	222	212	236	202	192	184	234	192	202	220	256	244	250	256	278	264	296
12	292	298	286	280	316	306	236	254	208	194	C	C	C	C	C	C	C	254	254	242	272	274	252	278
13	280	280	278	260	256	268	248	210	210	206	C	C	C	C	C	C	C	262	242	254	260	238	250	264
14	270	316	270	266	260	240	236	200	188	188	C	C	C	C	C	C	C	C	246	246	246	234	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	264	236	250	238	234	290	304
16	314	298	278	244	204	280	238	208	220	200	C	C	C	C	188	224	202	228	252	226	250	252	272	260
17	268	284	288	318	268	246	196	190	182	196	196	198	200	200	198	196	204	246	246	246	256	264	228	290
18	276	266	276	250	262	262	242	192	198	206	196	196	222	198	196	202	208	262	246	268	248	220	220	268
19	304	298	280	286	94	266	198	218	200	200	200	192	272	212	198	214	214	256	244	218	242	240	270	274
20	320	302	276	276	256	274	238	198	212	198	192	192	192	198	204	204	236	268	240	226	250	280	268	292
21	314	284	274	284	234	230	228	196	218	198	176	192	180	200	204	208	250	250	222	252	252	252	274	282
22	288	286	300	262	236	262	222	226	186	182	176	166	194	196	196	208	252	250	228	246	232	232	272	276
23	286	286	284	272	264	258	212	226	198	192	202	192	192	192	192	192	242	242	232	256	256	238	240	252
24	252	308	288	276	274	244	228	216	200	190	204	194	200	200	200	186	220	242	230	296	282	256	296	304
25	284	302	280	276	294	320	248	218	218	202	202	202	194	194	210	200	216	230	224	250	256	272	252	262
26	290	282	276	276	288	258	224	222	190	198	204	188	188	188	188	214	246	238	242	242	242	242	268	294
27	282	282	276	252	254	268	216	232	198	206	218	198	208	208	200	226	238	250	250	248	274	288	340	334
28	256	304	A	260	280	274	226	222	232	242	208	192	204	210	190	248	232	240	240	254	254	258	254	272
29	288	272	272	252	232	282	232	220	184	200	200	C	200	190	200	242	208	232	234	254	236	238	288	264
30	262	286	270	270	272	244	234	220	224	198	210	204	184	186	192	192	252	242	256	272	244	278	252	258
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	27	28	28	28	28	28	27	27	25	24	25	25	26	25	26	29	30	30	30	30	29	29
MED	286	298	282	274	266	267	230	217	204	200	200	193	200	198	200	204	218	242	245	251	255	252	266	282
U Q	300	310	290	280	291	281	244	222	212	204	206	200	207	208	204	215	236	255	256	258	262	272	284	295
L Q	269	281	276	261	249	252	223	201	198	196	192	192	192	193	194	201	204	231	236	244	246	238	248	264

SEP. 2022 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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SEP. 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

H D	00	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	112	112	106	98	98	98	98	98	98	104	A	A		A	A				
2					A	B	102	102	102	102	102	A	A		92	104	100	88	100	94	A			
3					A	A	106	106	98	104	102	102	102	90	214	104	104	104	120	A				
4					B	B	104	104	104	104	90	90	100	100	100	108	108	108	108	B				
5					B	A	108	100	100	100	98	98	98	98	98	98	98	98	A	A				
6					A	C	C	C		102	102	102	102	98	92	102	102	102	A	B				
7					A	A	102	102	102	102	102	102	102	102	102	102	102	A	A	B				
8					A	A	102	102	102	102	102	96	100	100	100		100	100	118	A				
9					B	B	120	108	104	98	A		98	98	98	98	108	88	A	A				
10					A	104	104	104	104	98	98	98	98		A	A	108	A	A					
11					B	106	116	100	A	A	96	102	102	102	112	100	100	114	106					
12					90	106	106		A	96	C	C	C	C	C	C	C	C	96	A				
13					B	116	106	106	102		C	C	C	C	C	C	C	C	106	B				
14					A	94	94	94	104		C	C	C	C	C	C	C	C	B					
15					C	C	C	C	C	C	C	C	C	C	C	C	C	C	118	A				
16					118	104	104	104	104		C	C	C	C	104	104	104	106	A					
17					A	A	110	104	104	104	104	104	104	104	104	104	104	110	110	B				
18					A	110	102	102	102	108	108	108	108	104	104	106	106		A					
19					B	114	102	102	102	102	102	102	102	102	106	118	118		A					
20					B	118	104	104	104	104	104	104	104	104	104	104	104		B					
21					B	120	110	102	102	102	102	102	102	102	102	102	102	100	A					
22					B	120	108	108	106	98	98	98	112	112	112	112		A	A					
23					A	104	104	104	104	104	104	104	104	104	106	106	114		B					
24					B	108	108	108	108	96	102	102	102	102	106	106	134		A					
25					B	128	106	106	108	108	108	108	106	106	100	100	90		A					
26					B	118	118	118	108	108	102	102	102	108	104	104	104		A	B				
27					A	126	118	118	112	108	108	A	108	98	98	98		A	A					
28					B	130	110	110	110	110	106	106	106	106	106	106		A	A					
29					108	126	108	102	110	110	110	A	A	108	108	108	100	100	100					
30					B	100	110	110	110	110	106	106	106	106	102		A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	6	27	28	26	28	24	23	22	25	25	23	24	23	7					
MED					106	106	110	106	104	104	102	102	102	102	104	104	104	104	108					
U Q					112	120	108	106	107	108	106	104	106	106	106	106	106	110	118					
L Q					102	104	102	102	102	98	98	100	98	101	100	100	100	100						

SEP. 2022 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	98	98	98	92	92	108	102	102	100	98	104	104	100	98	98	92	92	84	104	100	100	98	88	86		
2	96	86	92	94	86	B	112	112	112	104	104	92	100	100	100	96	110	118	86	86	86	96	90	90		
3	102	94	94	94	90	90	G	100	100	208	104	166	172	90	214	114	114	106	130	88	88	84	B	104		
4	92	90	B	94	B	B	126	108	108	108	104	104	G	184	108	108	114	114	126	B	112	102	102	102		
5	98	96	96	104	104	106	106	106	100	100	100	100	G	G	G	100	100	158	104	104	126	B	B	102		
6	B	118	118	114	106	104	C	C	C	G	94	G	G	90	G	116	102	96	96	B	114	86	86	96		
7	100	88	B	B	98	98	98	G	98	G	96	116	106	G	106	106	106	102	102	B	B	B	88	94		
8	82	88	106	112	112	102	108	100	100	100	204	104	G	198	96	92	156	92	92	96	92	92	92	98		
9	B	B	90	B	98	B	106	106	100	94	94	G	154	88	106	140	118	108	104	106	108	98	90	90		
10	90	84	84	84	88	94	100	100	92	92	G	G	G	84	90	96	G	92	92	98	92	92	98	90		
11	84	84	84	106	94	B	106	100	102	102	C	C	C	160	C	C	C	104	104	154	90	90	B	90	90	84
12	84	84	B	B	86	86	138	96	100	102	C	C	C	C	C	C	C	114	88	B	B	B	96	92		
13	92	90	90	B	B	B	126	112	102	124	C	C	C	C	C	C	C	108	B	108	B	B	B	C	C	
14	96	B	98	B	B	118	118	92	100	196	C	C	C	C	C	C	C	C	B	B	B	B	C	C		
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	116	110	120	102	B	102	102		
16	100	100	88	94	B	110	114	106	110	102	C	C	C	C	C	102	102	136	110	100	B	B	92	B		
17	102	128	106	106	106	96	96	104	100	194	102	90	G	G	G	118	108	108	102	102	B	102	B	94		
18	B	B	94	84	98	98	102	104	114	G	122	90	170	G	124	118	170	134	B	92	92	92	92	92		
19	92	92	96	B	B	B	152	122	132	G	G	G	158	170	G	114	114	148	98	102	B	B	B	B		
20	B	B	B	116	B	104	102	108	98	98	98	98	108	108	108	138	122	108	B	B	104	104	B	84		
21	96	96	B	B	96	B	104	128	128	116	G	168	118	126	116	144	108	108	104	94	94	94	B	94		
22	B	B	94	B	B	G	132	100	100	100	G	92	92	142	124	114	100	106	102	102	102	102	102	102		
23	116	96	112	94	94	106	92	104	118	G	144	128	194	104	104	104	104	132	B	B	106	100	B	100		
24	B	100	B	100	94	126	126	110	110	96	98	200	112	106	106	142	128	B	96	96	96	96	96	96		
25	88	104	96	96	106	96	122	B	108	98	98	98	116	G	104	118	118	100	86	96	84	84	B	100		
26	B	B	86	98	98	B	152	140	112	114	108	96	96	110	174	90	98	98	92	98	94	94	90	92		
27	B	B	B	100	100	94	110	108	122	106	106	106	204	108	98	98	130	98	B	B	98	108	98			
28	98	96	96	256	98	B	140	104	104	106	98	102	102	94	94	100	150	100	94	94	94	94	94	94		
29	94	94	94	98	98	92	154	100	98	96	106	92	96	106	100	114	106	98	98	94	94	88	88	92		
30	B	B	B	B	100	B	168	108	166	114	G	176	96	G	96	92	86	92	108	B	B	108	98	B		
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	20	21	21	20	21	18	26	26	28	24	20	21	18	18	23	26	25	29	23	18	23	20	20	25		
MED	96	94	94	98	98	98	111	106	102	103	103	102	112	107	106	106	110	106	102	96	96	94	92	94		
U Q	99	99	98	106	102	106	126	112	112	114	106	122	170	126	116	114	133	115	104	102	104	99	98	100		
L Q	91	88	90	94	93	94	102	100	100	99	98	94	100	94	98	98	103	98	92	94	92	91	90	91		

SEP. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	FQ 41	F 4	F 5	F 3	LQ 21	C 1	C 3	C 3	C 3	C 2	C 2	C 2	L 2	L 2	C 2	L 3	L 3	C 3	L 3	L 4	F 3	F 2	F 2	F 2	
2	F 2	F 1	F 1	F 1	L 1		C 2	C 2	C 3	C 3	C 2	L 2	L 2	C 2	C 2	C 2	CL 21	CL 21	C 4	L 3	F 4	F 2	F 6	F 4	
3	F 4	F 3	FF 21	F 4	L 2	L 2		C 2	C 2	C 2	C 2	H 1	HL 11	LC 21	C 1	C 1	C 2	C 3	C 2	C 1	F 1	F 1		F 1	
4	F 2	F 4		F 1			C 1	C 3	C 3	C 2	C 2	C 2		H 1	C 1	C 2	C 2	C 2	C 3		F 1	F 1	F 4	F 1	
5	F 1	FF 11	FF 11	F 4	L 5	L 3	C 2	C 2	C 4	C 2	C 1	C 2			C 2	C 2	C 1	H 3	L 3	L 5	F 1			F 1	
6		F 1	F 7	F 5	L 4	C 2					L 2			LC 21		C 2	C 2	C 3	L 3		F 2	F 4	F 4	F 2	
7	FQ 21	FQ 11			L 2	LQ 31	LC 21		C 2		CL 11	C 1	C 2		C 2	C 2	C 3	L 3	L 3				F 4	F 2	
8	F 3	F 4	F 1	F 4	L 6	L 5	C 2	C 2	C 2	C 2	C 2	C 1		LC 21	LC 21	L 2	HL 12	LC 21	LQ 31	LQ 72	FQ 21	F 3	F 1	F 1	
9			F 1		L 1		C 1	C 3	C 2	C 3	L 2		H 1	LC 11	C 2	H 1	CL 21	CL 31	LL 42	L 5	FF 11	FF 21	F 2	F 3	
10	F 1	F 3	FQ 21	F 4	LL 42	LC 11	LC 11	LC 21	LC 21	LC 21				LC 21	LL 11	L 1		LL 11	L 5	F 4	F 4	F 5	F 2	F 1	
11	F 2	F 3	F 1	F 1	F 2		C 2	C 4	L 2	L 2				H 1		C 1	C 1	H 1	L 1	L 2		F 4	F 9	F 5	
12	F 3	F 1			F 1	C 1	H 1	C 2	C 2	C 1								CL 11	L 1				F 1	F 5	
13	FQ 21	F 1	F 1				C 2	LC 22	LC 21	C 1								C 3		F 2					
14	F 1		F 1			C 1	C 2	C 3	C 2	C 1															
15																		C 2	L 5	F 1	F 4		F 2	F 2	
16	F 2	F 1	F 1	F 1		C 1	C 3	C 3	C 2	C 2					C 2	C 2	C 2	C 2	L 5				L 2		
17	F 2	F 1	F 5	F 3	F 3	L 4	L 2	C 2	C 2	C 1	C 1	C 1			C 1	C 1	C 2	LH 11	CQ 11		F 1			F 1	
18			F 1	F 1	FQ 21	L 2	L 2	C 2	CL 11		CL 11	LC 11	H 1		C 1	C 1	H 2	H 2		FF 32	FF 11	F 4	F 2	F 1	
19	F 1	F 1	F 1				HL 21	CC 21	CL 21			H 1	H 1		C 1	C 2	H 2	LC 11	L 1		L 3				
20			F 1		L 2	C 4	C 2	C 2	C 2	C 2	C 2	C 1	C 1	LC 11	H 1	C 2	C 2	C 2			F 5	F 4		F 3	
21	F 2	F 1		F 1		LC 11	C 2	C 2	C 2		H 1	C 1	C 1	C 1	H 2	C 4	C 4	L 5	FF 41	F 3	F 2		F 1		
22			F 1					CL 21	CL 41	C 2	C 2	C 2	C 2	C 2	C 1	C 2	C 2	L 4	F 3	F 2	F 4	F 3	F 2		
23	F 2	F 4	F 2	F 2	F 2	L 3	L 2	C 2	C 2		H 1	C 1	H 1	C 2	C 2	C 2	C 2	C 1			F 3	F 1		F 1	
24		F 4		F 2		L 1	C 2	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 2	C 2	C 2		F 5	F 4	F 1	F 5	F 4		
25	F 1	F 2	F 1	F 3	F 1	L 1	C 2		C 2	C 2	C 2	C 2	C 1		C 1	C 1	C 1	LC 11	L 2	F 4	F 1	F 1		F 1	
26			F 1	F 2	F 3		CL 21	CL 11	CL 21	C 2	C 1	C 2	C 2	C 2	H 1	LC 11	L 2	LC 11	L 3	F 5	F 5	FQ 41	F 6	F 4	
27				F 1	F 2	L 2	LC 21	LC 22	CL 21	C 2	C 2	C 2	L 2	C 1	LH 21	CL 21	CL 21	L 4			F 2	F 2	F 2	F 4	
28	F 5	F 6	F 5	F 4	F 1		C 2	C 3	C 4	C 2	C 3	C 2	C 2	C 3	C 3	C 3	HL 21	L 2	L 3	F 4	F 2	F 3	F 3	F 1	
29	F 2	F 1	F 2	F 1	F 1	C 2	C 2	C 2	C 2	LC 11	C 2	C 1	L 2	C 1	C 2	C 2		C 1	C 3	F 2	F 2	F 2	F 1	F 1	
30				F 1		H 2	C 2	HL 21	CL 11		HL 11	C 1			C 2	C 2	L 2	L 6	L 1			L 2	F 5		
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

SEP. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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

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

SEP. 2022 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	58	58	54	50	51	49	58	73	74	74	65	86	80	74	64	68	A	75	81	76	70	66	57	54 ^R	
2	53 ^F	51	48	46	46	45	60	69	76	86	60	69	70	A	78	73	66	66	A	82	74	65	62 ^F	61 ^F	
3	60 ^F	57	64	55	44	46	60	72	73	74	81	71	70	81	78	74	74	76	87	89	84	76	68	63 ^F	
4	59	56 ^F	54	57	58	52	58	74	71	61	56	A	68	68	70	81	73	70	67	74	72	59	60	62	
5	66	54	51	43 ^F	38	35	43	46	47	50	A ^E G	45	51	48	E ^G	44	50	47	48	50	57	54	52	48	47
6	46	46	42	42	43	39	51	56 ^V	A	68	A	A	67	68	70	68	65	66	66	66	59	58	56	59	
7	53	53	53	53	41	43	57	76 ^H	72	76	64	68	72	73	68	C	C	78	84	85	83	50	45	44	
8	43	44	41	39	39	39	55	66	60	63	64	70	69	72	73	72	77	72	82	62	39	41	A	42	
9	44 ^{U R}	41	41	40	C	40	C	82	71	69	78	83	77	85	84	82	76	76	90	74	59	61	60	60	
10	62	C	54	51	48	48	63	66	80	78	72	76	79	74	74	69	70	69	80	88	87	65	46	42	
11	42	40	41	44	38	36	61	83	72	C	79	81	77	73	73	73	71	76	83	C	70	59	58	58	
12	56	53	52	48	48	46	71	C	84	78	83	89	86	85	79	80	76	78	83	79	74	69	66	65	
13	62	62	60	57	58	57	72	89	99	85	80	86	84	78	84	74	70	70	C	80	78	70	69	61	
14	55	52	51	51	50	C	73	90	82	83	78	72	77	83	80	79	82	89	96	92	82	C	63	58	
15	56	58	58	57	54	52	71	80	88	89	91	93	97	100	89	82	87	95	101	82	65	62	61	58	
16	57	58	57	54	50	51	70	80	74	84	85	86	94	C	87	86	92	94	94	79	64	61	63	62	
17	63	60	56	53	C	51	70	72	83	80	72	88	80	77	79	80	81	84	86	77	63	62	66	62	
18	59	58	54	54	51	51	67	80	80	86	85	72	76	82	75	80	84	89	96	83	79	72	53	49	
19	47	45	46	47	42	42	71	73	84	78	78	79	85	85	89	83	86	84	82	80	59	53	50	50	
20	49	49	51	48	42	43	73	86	74	75	82	88	88	84	84	73	80	86	94	91	59	53	53	C	
21	52	50	52	48	44	46	68	78	86	75	C	C	C	C	C	C	C	94	94	79	56	52	54	54	
22	55	56	C	C	C	45	70	93	92	70	76	81	94	92	C	C	C	C	89	79	60	57	C	56	
23	53	C	50	45	44	42	65	80	78	73	78	89	101	83	82	84	C	90	90	82	70	66	56	53	
24	52	50	48	50	48	48	63	77	90	91	84	83	84	87	82	89	95	102	85	72	64	64	53	50	
25	50	50	47	46	45	41	66	97	85	83	83	86	95	87	83	90	90	91	82	72	63	57	53	49	
26	49	50	49	46	46	48	71	88	97	86	C	C	C	C	C	C	C	96	96	88	70	51	48	48	
27	48	48	47	45	41	42	64	70	84	94	C	C	C	C	C	C	C	C	85	79	71	64	61	60	
28	70	56	51	51	50	50	68	80	84	84	92	C	C	C	C	C	C	C	98	67	58	57	57	56	
29	54	52	48	48	41	39	58	80	89	81	85	85	89	91	80	84	86	92	84	63	65	60	55	56	
30	54	50	52	52	44	47	68	79	93	96	89	92	87	86	78	82	87	96	98	84	82	61	60	59	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	28	29	29	27	29	29	29	29	29	25	24	26	24	25	24	22	27	28	29	30	29	28	29	
MED	54	52	51	48	45	46	66	79	82	78	79	83	80	82	79	80	78	84	86	79	68	61	57	56	
U Q	59	56	54	53	50	50	70	82	87	86	84	87	88	86	84	82	86	92	94	84	74	65	62	60	
L Q	49	50	48	46	42	42	59	72	74	74	72	72	72	74	73	73	71	72	82	73	59	55	53	50	

SEP. 2022 foF2 (0.1MHz)

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SEP. 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

H D	00	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	460	468	492	480	A	480	L	L	A	L							
2								L	448	A	468	508	A	A	496	480	444		A						
3									L	L	512	496	U L	532	480	496	480	L	L						
4							U L	364	404	432	460	504	A	A	492	500	456	432							
5							U L	376	392	412	436	A	452	452	448	444	432	432	U L	376					
6							A	L	400	A	476	A	U L	548	504	504	468	A	A						
7								L	456	A	496	516	540	A	512		C	C	L						
8									436	A	A	488	508	492	508		A	A	A						
9							C			A	504	500	A	512	512		R	A	A						
10								L	420	492	U L	504	524	504	500	500	476	L	L						
11							L	L	L	C	B	516	544	U L	508	488	480	L	L						
12								C	L	L	L	544	544	L	532	496		L	G	A					
13								L	476	492	492	560	L	532	516		396		C						
14						C		L	L	508	504	U L	492	U L	524	492	508	L	L						
15								L	L	L	U L	488	524	540	516	544	508	L	L						
16									L	L	L	492	500	532	516	C	512	A	L						
17									L	L	484	520	504	500	492	508	476	L	L						
18								L	L	L	444	484	500	492	L	500	500	L	L	L					
19								L	L	L	472	472	460	U L	L	524	496	L	L	A					
20								L	L	L	A	A	A	500	484	L	U L	L	L						
21									L	L	C	C	C	C	C	C	C	C	C						
22								L	L	L	476	480	448	524	516		C	C	C	C					
23								L	L	L	L	L	L	488	460	464		L	C						
24								L	472	472	492	492	L	476	428		L	L							
25									L	L	L	L	548	528	484	464	464	L	L						
26								L	472		C	C	C	C	C	C	C	C	C						
27										C	C	C	C	C	C	C	C	C	C						
28								L	L	L	L	C	C	C	C	C	C	C	C						
29								L	L	L	L	468	500	484	500	512	492	L	L						
30								L	L	L	L	440	460	520	512	496	476	476	L						
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							2	3	10	18	19	22	18	23	23	14	4	2							
MED							U L	370	400	446	476	500	506	514	500	500	476	432	372						
U Q								404	460	492	504	524	532	516	508	480	438								
L Q								392	432	468	480	488	500	484	488	464	414								

SEP. 2022 foF1 (0.01MHz)

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SEP. 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

H D	00	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		R	A	U	G	U	G	A	U	G	A							
2						B	A	236	328		348	388	A	A	A	A	A	A	A						
3						B	A	280	312	328	332	A	A	A	A				A	A					
4						B	A	272	308	336	336	A	A	A		368	340	292							
5						B		208	260	296	352	324	A	A	A		368	340	284	244					
6						A		192	256	296	312	A				360	368	352	308	A	A	A			
7						A	A	256	288	316		A	A	A	A	A	A	A	A	A	A				
8						B	A	A	A	A	A	A	A	A	A		C	C	A	B					
9						A	B	236		A	A	A	A	U	R	B									
10						B	C	240		A	A	A	A	A	B	B	R								
11						B	A	A		A	A	A	R	B	G	G	B								
12						B	A	248	296		C	B	U	R	G	U	G	G							
13						B	C	204		A	A	G	B	U	G	U	G	B							
14						B		228	284	324	340	A													
15						C	A	232	288	320	336	360	372	384	376	356	328	288	220						
16						B	A	216	316	336		A							A	A					
17						B		196	268	316	336	352	344	340		C	360		280						
18						B	A	280		A	348	360	380	380	376	352	320	276	224						
19						B		200	260	312		A	352	372	388	356	348	332	284						
20						B	A	284	296		A	380	A	380	360	352	304	284							
21						B		184	268	316	332	348	A	332	364	308	300	280							
22						A	A	264	312	336		C	C	C	C	C	C	C	A	A					
23						B		224	272	288	316	356	372	372	364										
24						B	A	268	312		A	356	360	368	368	348	308								
25						B		196	276	312	332	348	356	348	340	316		A							
26						B	A	268	300		A	332	352	360	356	348	312	268	196						
27						B		176	256	304	328	C	C	C	C	C	C	C	A	A					
28						B		216	272	316	332	C	C	C	C	C	C	C	C	B					
29						B	A	276	320	344	360	C	C	C	C	C	C	C	C	B					
30						A		264	312		B	364	384	400		B	368	328	276	204					
31								172	276		A	364	380	400	372	372	356	308	272	196					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							13	27	24	18	17	15	18	15	20	17	20	14							
MED							200	268	312	336	352	372	376	364	356	320	284	226							
U Q							220	276	316	340	360	384	388	376	362	336	292	240							
L Q							188	256	298	328	342	360	368	356	350	308	278	204							

SEP. 2022 foE (0.01MHz)

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SEP. 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

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

SEP. 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	44	E B	E B	E B	E B	25	19	23	53	G	41	28	29	52	28	43	37	A A	80	33	32	53	30	31	24	27	
2	E B	E B	E B	E B	E B	E B	E B	22	31	36	49	42	42	48	A A	76	46	37	36	35	126	20	E B	E B	E B	E B	
3	E B	E B	E B	E B	E B	E B	E B	24	36	37	41	41	40	41	38	G	37	34	28	25	44	E B	16	19	26	30	
4	28	27	E B	E B	E B	E B	E B	23	36	40	G	A A	40	68	61	46	44	41	39	45	20	24	E B	E B	E B	E B	
5	E B	E B	E B	E B	E B	E B	20	26	32	36	38	66	40	42	38	38	34	32	26	19	18	22	E B	E B	E B	E B	
6	E B	E B	E B	E B	E B	E B	29	41	31	65	44	80	91	49	44	42	36	56	48	43	32	18	18	E B	E B	E B	
7	E B	E B	E B	E B	E B	E B	E B	23	32	34	48	40	41	44	56	42	C	C	E B	E B	E B	E B	E B	E B	E B	E B	
8	E B	E B	E B	E B	E B	E B	20	26	34	30	57	56	44	G E	B	G	48	41	36	26	21	21	27	103	A A	26	
9	34	30	34	20	C E	B	16	48	46	45	45	44	72	47	46	39	44	38	32	23	20	23	E B	16	21		
10	E B	C E	E B	E B	E B	E B	E B	25	29	G U	G U	G	G E	B	U	G U	G E	B	G	27	19	18	E B	16	18	21	E B
11	E B	E B	E B	E B	E B	E B	E B	22	28	35	C E	B	E B	E B	G U	G	31	G U	G	G	E B	C E	B	E B	E B	E B	E B
12	E B	E B	E B	E B	E B	E B	E B	24	C U	G	35	38	G E	B	G	G E	B	U	G	39	46	40	17	E B	E B	E B	E B
13	E B	E B	E B	E B	E B	E B	E B	G	33	36	G	39	G E	B	G	23	39	38	32	30	C	31	E B	16	20	E B	E B
14	E B	E B	E B	E B	E B	E B	C	24	32	35	38	40	G	41	G	39	36	36	27	E B	E B	E B	E B	C E	B	E B	E B
15	E B	E B	E B	E B	E B	E B	E B	22	30	34	37	39	39	G	40	G	35	32	31	30	18	E B	E B	E B	E B	E B	E B
16	E B	E B	E B	E B	E B	E B	E B	22	G	G	41	40	42	41	C	G	51	24	32	24	23	20	E B	E B	E B	E B	E B
17	E B	E B	E B	E B	E B	C E	B	38	30	32	G	G	44	G	G	G	G	G	E B	E B	E B	E B	E B	E B	E B	E B	E B
18	E B	E B	E B	E B	E B	E B	E B	G	G	G	35	40	41	G	40	G	G	G	E B	E B	E B	E B	E B	E B	E B	E B	E B
19	E B	E B	E B	E B	E B	E B	E B	24	G	32	36	G	37	G	G	G	G	30	32	42	45	43	25	E B	E B	E B	E B
20	E B	E B	E B	E B	E B	E B	E B	22	30	35	37	66	50	47	G	36	G	30	25	21	18	30	E B	E B	E B	C	
21	24	24	E B	E B	E B	E B	28	24	33	34	42	C	C	C	C	C	C	C	24	19	21	E B	E B	E B	E B	E B	E B
22	E B	E B	C	C	C E	B	16	30	34	37	G	G	40	G	C	C	C	C	C E	B	E B	E B	E B	E B	C E	B	16
23	E B	C E	E B	E B	E B	E B	E B	24	32	G	36	30	40	39	G	G	G	C	21	E B	E B	E B	E B	E B	E B	E B	E B
24	E B	E B	E B	E B	E B	E B	E B	22	28	34	38	38	40	39	39	35	33	31	28	E B	E B	E B	E B	E B	E B	E B	E B
25	E B	E B	E B	E B	E B	E B	E B	G	32	36	39	39	G	G	G	G	30	22	E B	E B	E B	E B	E B	E B	E B	E B	E B
26	E B	E B	E B	E B	E B	E B	E B	22	30	34	37	C	C	C	C	C	C	C	31	41	18	21	E B	E B	E B	E B	E B
27	E B	E B	E B	E B	E B	E B	E B	G	30	40	46	C	C	C	C	C	C	C	C E	B	E B	E B	E B	E B	E B	E B	E B
28	E B	25	18	19	E B	E B	21	G	G	G	44	C	C	C	C	C	C	C E	B	E B	E B	E B	E B	E B	E B	E B	E B
29	E B	E B	E B	E B	E B	E B	E B	22	G E	B	E B	G	42	G E	B	G	G	G	E B	E B	E B	E B	E B	E B	E B	E B	E B
30	E B	E B	E B	E B	E B	E B	E B	G	32	G	G	G	G	G	G	40	G	30	26	23	16	E B	E B	E B	E B	E B	E B
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	28	29	29	27	29	29	29	30	29	27	26	26	25	25	24	23	27	29	29	30	29	29	29	29		
MED	E B	E B	E B	E B	E B	E B	E B	23	30	G	37	40	40	40	G E	G	35	35	36	28	19	18	E B	E B	E B	E B	E B
U Q	16	16	E B	E B	E B	E B	24	32	36	42	44	44	46	42	42	38	G	33	31	23	20	18	16	16	16	16	
L Q	E B	E B	E B	E B	E B	E B	E B	G	34	G	G	G	G	G	G	G	31	24	E B	E B	E B	E B	E B	E B	E B	E B	E B

SEP. 2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	15	16	17	18	20	26	26	22	24	20	19	17	16	16	16	20	16	16
2	16	16	16	16	16	16	16	16	16	18	24	30	29	29	28	19	18	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	17	17	20	29	24	18	19	19	19	16	16	16	16	16	16	16
4	16	16	16	16	16	16	16	15	16	19	23	28	33	27	26	20	19	16	16	16	16	16	16	16
5	16	16	16	16	16	16	16	16	19	28	36	31	31	28	30	21	16	15	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	17	21	29	30	32	29	30	20	18	17	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	17	20	25	26	24	26	23	C	C	16	16	16	16	16	16	16
8	16	16	16	16	16	16	16	16	17	24	23	31	31	44	21	21	16	16	16	16	16	16	16	16
9	16	16	16	16	C	16	C	17	21	20	26	28	35	47	46	28	17	16	16	16	16	16	16	16
10	16	C	16	16	16	16	16	20	21	28	28	26	46	22	20	40	20	16	15	16	C	16	16	16
11	16	16	16	16	16	16	16	18	23	C	52	44	25	21	24	26	21	16	16	C	16	16	16	16
12	16	16	16	16	16	16	16	C	16	24	23	47	24	20	44	29	21	17	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	20	20	22	24	23	20	22	20	18	16	C	16	16	16	16	16
14	16	16	16	16	16	C	16	16	17	23	25	31	31	31	25	24	20	16	16	16	16	C	16	16
15	16	16	16	16	16	16	16	16	22	22	22	29	27	25	21	23	17	16	16	16	16	16	16	16
16	16	16	16	16	16	16	16	16	17	18	29	24	26	C	25	18	16	16	16	16	16	16	16	16
17	16	16	16	16	C	16	16	16	16	20	24	28	27	26	25	24	19	16	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	17	22	21	27	24	27	24	18	16	16	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	16	18	20	25	25	24	19	15	15	16	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	18	21	21	22	27	28	24	18	16	16	16	16	16	16	16	C
21	16	16	16	16	16	16	16	16	15	21	C	C	C	C	C	C	C	16	16	16	16	16	16	16
22	16	16	C	C	C	16	16	16	16	23	28	29	29	26	C	C	C	C	18	16	16	16	C	16
23	16	C	16	16	16	16	16	17	18	18	22	24	22	20	20	16	C	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	17	21	20	26	25	21	24	18	16	16	16	16	16	16	16	16
25	16	16	16	20	16	16	16	16	14	17	21	22	21	22	18	16	17	14	16	16	16	16	16	16
26	16	16	16	16	16	16	16	16	16	16	C	C	C	C	C	C	C	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	18	23	C	C	C	C	C	C	C	C	16	16	16	16	16	16
28	16	16	16	16	16	16	16	16	16	22	24	C	C	C	C	C	C	C	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	36	32	34	28	39	27	22	17	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	18	20	25	23	23	28	24	18	17	16	16	16	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	29	29	27	29	29	29	30	29	27	26	26	25	25	24	23	27	29	29	30	29	29	29
MED	16	16	16	16	16	16	16	16	17	21	24	28	26	26	24	20	17	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	18	23	28	30	31	28	26	24	19	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	18	21	25	24	22	21	18	16	16	16	16	16	16	16	16

SEP. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	298	292	300	300	300	358	362	366	348	354	304	311	325	338	315	298	A	322	323	319	310	319	330	300 ^R	
2	303 ^F	293	297	299	303	305	325	354	347	376	365	323	329	A	324	326	324	319	A	317	331	300	290 ^F	286 ^F	
3	284 ^F	285	312	346	320	324	335	364	356	325	345	319	285	320	321	328	314	300	306	310	305	291	293	284 ^F	
4	285	280 ^F	287	284	313	299	289	330	342	338	284	A	328	303	290	323	307	322	299	310	304	261	266	266	
5	309	301	274	242 ^F	254	272	272	293	287	288	A	G	283	246	G	287	284	290	298	286	291	267	282	272	
6	271	284	268	270	284	289	296	335 ^V	A	315	A	A	299	305	305	323	330	334	332	316	291	277	257	298	
7	278	286	290	320	272	285	311	320 ^H	331	329	343	305	298	319	321	C	C	321	320	324	360	290	278	276	
8	282	295	286	267	273	305	323	376	332	335	305	314	314	321	309	311	336	323	338	347	299	274	A	290	
9	289 ^{U R}	278	285	328	C	280	C	363	358	305	325	333	298	318	323	329	322	323	330	334	282	286	277	266	
10	282	C	304	283	281	288	355	336	347	352	326	329	322	330	333	329	320	309	307	311	346	327	280	286	
11	267	256	282	303	290	281	340	361	369	C	329	327	322	316	288	331	312	319	314	C	330	288	279	290	
12	286	280	288	290	282	278	355	C	347	348	315	332	313	319	307	310	317	323	315	315	300	283	287	278	
13	280	285	293	290	298	298	329	332	344	344	345	315	327	317	324	316	312	315	C	301	320	296	313	313	
14	292	278	280	293	292	C	342	341	354	348	338	333	300	322	313	313	316	312	312	324	312	C	293	285	
15	278	280	293	302	286	276	331	338	329	334	304	297	314	301	317	307	310	317	343	338	298	288	295	284	
16	277	288	288	294	297	299	351	358	328	336	340	310	323	C	313	307	312	329	331	343	293	283	283	285	
17	304	300	298	301	C	305	365	343	358	351	319	332	330	324	321	321	324	335	328	330	301	282	297	295	
18	295	302	296	302	304	317	351	379	360	338	345	336	315	320	328	321	314	320	330	319	311	329	291	295	
19	277	273	290	311	296	289	358	365	357	362	338	315	310	323	334	323	336	338	327	328	329	301	285	279	
20	267	276	298	317	294	287	340	353	373	352	324	333	322	335	326	314	323	325	333	345	318	279	283	C	
21	280	280	293	305	300	307	352	362	351	352	C	C	C	C	C	C	C	329	327	345	297	281	275	282	
22	293	293	C	C	C	312	365	372	360	364	325	313	323	317	C	C	C	C	C	326	339	319	295	C	298
23	298	C	313	309	327	313	378	359	365	349	325	313	333	321	332	330	C	321	323	323	306	314	297	289	
24	291	298	283	297	307	315	348	351	347	356	339	334	314	314	309	317	308	337	327	320	300	321	291	282	
25	282	284	292	294	301	282	329	360	354	321	332	317	313	334	314	324	330	337	337	331	315	312	302	285	
26	281	284	291	289	295	304	362	356	364	365	C	C	C	C	C	C	C	334	333	351	345	310	289	293	
27	299	296	311	318	305	304	364	362	340	341	C	C	C	C	C	C	C	C	C	319	322	302	293	267	266
28	305	355	277	280	281	294	362	364	363	352	348	C	C	C	C	C	C	C	C	352	342	283	289	297	297
29	299	292	299	314	309	309	356	361	362	362	343	330	335	337	324	324	326	335	347	293	312	301	300	293	
30	312	287	298	308	286	295	359	358	357	360	341	335	327	333	316	315	320	320	322	306	330	285	307	309	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	28	29	29	27	29	29	29	29	29	25	24	26	24	25	24	22	27	28	29	30	29	28	29	
MED	286	286	292	300	296	299	351	358	354	348	332	321	318	320	317	321	318	322	327	323	308	290	290	286	
U Q	298	294	298	310	304	308	360	364	360	355	343	332	327	327	324	325	324	334	332	338	320	306	297	295	
L Q	280	280	286	290	284	286	329	340	343	334	322	313	310	316	309	312	312	319	317	313	299	282	280	280	

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SEP. 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

H D	00	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	C	A			A	G	A	L	A	A						
2								L		A	394	408		A	A	A			A					
3									L	L	383	363	378	U L	363	400	370	368		L	L			
4							U L		A		404	364	A	A	A	A	A							
5							U L		A		A		A	A	A	A								
6							A	L	A	A	A	A	A	A	A	A								
7								L		A					A		C	C	L					
8									412	A	A			B		A	A	A						
9							C			A	A			A	A	A	R	A	A					
10								L			U L		G		G	G	L	L	L					
11							L	L	L	C	B			U L	G	G	L	L						
12								C	A	L	L			L		G	L	G	A					
13								L						L	L				C					
14						C		L	L		U L	U L	U L	U L	U L	U L	L	L						
15								L	L	U L	U L	L	L	L	L	L	L	L						
16								L	L	L	L	L	L	C		A	L							
17								L		390	383	368	381	383	365	357		L	L	L				
18								L	L	405	391	391	397	L	381	372		L	L	L				
19								L	L	409	422	420	U L	L	L	368	368		L	L	A			
20								L	L	L	A	A	A	A		L	U L	L	L					
21									L	L	C	C	C	C	C	C	C	C						
22								L	L					L	C	C	C	C						
23								L	L	L	L	L		388	419	391		L	C					
24								L		387	405	390	L		396	427		L	L					
25								L	L	L	L	L	L	U L	U L	L	L	L						
26								L		405	C	C	C	C	C	C	C	C						
27									L	L	L	C	C	C	C	C	C	C						
28									L	L	L	C	C	C	C	C	C	C						
29								L	L	L	L	L	L	L	L	L	L	L						
30								L	L	405	389	421	395	375		369		L						
31								L	L	413	421	392	390	387	394	373		L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	3	7	16	18	21	16	17	16	12	4	1						
MED							U L																	
U Q								L																
L Q																								

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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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								240	254	246	276	288	272	276	324	328	A	262							
2								232	240	214	230	306	284	A	286	278	286		A						
3									240	274	256	304	336	278	278	270	282	280							
4							316	262	262	294	410	A	308	352	360	280	300								
5							442	374	416	400	A	G	440	570	G	394	430	358							
6							338	278	A	320	A	A	334	340	328	286	E	A	298	266					
7								248	268	264	254	346	346	310	314		C	C		274					
8									272	296	356	316	326	302	318	290	264	260							
9							C			256	280	270	E	A	380	288	278	270	264	258					
10								230	262	266	278	284	282	276	270	280	272	280							
11							266	242	226	C	288	258	290	284	266	268	296	266							
12								C	248	244	286	276	286	294	286	290	262	260							
13								254	238	234	254	302	266	282	288		258			C					
14						C		236	222	252	246	236	262	280	276	286	266	256							
15								222	248	236	272	302	262	280	270	292	282								
16									220	262	250	284	268		C	272	284	274							
17									224	238	246	266	260	268	292	272	268								
18								216	236	254	242	238	298	278	262	286	262	256							
19								226	236	224	260	248	296	278	260	262	250	238							
20								218	218	242	284	252	276	254	272	230	256								
21									226	232		C	C	C	C	C	C								
22									224	212	212	254	248	276	278		C	C	C	C					
23									236	218	244	246	284	250	248	258	252			C					
24									238	226	240	254	250	248	248	270	270								
25									222	244	256	288	272	240	248	262	238								
26									226	220		C	C	C	C	C	C								
27											C	C	C	C	C	C	C	C							
28												C	C	C	C	C	C	C							
29									228	222	220	238	248	260	250	252	278	246							
30									234	232	238	248	250	256	256	270	266								
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							4	17	27	28	25	24	26	24	25	23	22	13							
MED							327	236	236	244	254	280	278	278	276	278	266	262							
U Q							390	251	248	263	279	302	308	291	303	286	282	277							
L Q							291	225	222	230	245	250	262	262	261	270	262	257							

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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 A 350	256	248	254	E A 260	212	220		A	C E A 228	E A 198	E G 212	A	G E A 234	A	232	A	E A 242	E A 234	E A 260	E A 240	E A 244	E A 222	E A 274			
2	250	264	268	254	260	260	226	210	216		180	176	A	A	A		212	220	258	A	234	218	242	266	290		
3	302	278	236	210	214	234	218	222	218	202	222	194	202	178	206	210	H 250	232	258	248	218	244	260	276			
4	E A 298	322	292	254	234	252	240	E A 232	A		206	240	A	E A 240	E A 306	E A 256		222	E A 248	E A 258	242	238	268	312	300		
5	246	232	294	358	358	332	254	262	216	224		A	220	E A 264	210	232	226	224	240	278	264	E A 258	270	270	294		
6	298	274	310	310	E A 292	A 342		A	228	E A 276	A	A	E A 292	E A 238	E A 236	218		A	E A 258	E A 248	256	276	320	252			
7	266	270	264	240	254	308	238	222	204		214	186	232		A	234		C		C	220	246	222	198	196	268	302
8	302	278	290	310	318	276	232	228	196		A	A	220	226	E B 270	222		A	A	A	236	208	E A 232	E A 356	E A 322		
9	E A 348	E A 390	E A 382	E A 266	C	276		C	230	224		E A 236	E A 216	A	E A 248			R	A	A	238	216	228	294	282	316	
10	278	C	216	258	272	272	222	210	180	E G 232	E G 228	E G 226	E G 236	E G 236	G	E B 248		224	222	230	254	246	204	206	262	270	
11	312	348	308	256	254	296	230	212	198		C	B	214	E G 222	E G 218	E G 234		224	238	246	C	208	238	270	276		
12	270	280	276	272	262	296	236		C E G 230	196	166		E G 226	E G 224	E G 240	E G 224	E A 222		G	A	250	226	220	262	246	264	
13	268	272	256	248	244	242	222	216	208	202	194	182	180	204	260	214	210	242	C		260	224	240	226	218		
14	244	276	276	248	262		C	226	216	206	194	194	188	180	190	218	218	240	236	236	220	222	C	212	248		
15	278	284	242	230	268	284	220	216	218	214	194	178	178	210	200	212	228	252	228	210	206	248	248	248	276		
16	286	262	268	232	238	258	228	214	196	218	206	212	206		C	204		222	238	228	214	220	240	274	272		
17	248	242	236	240	C	230	216	212	206	188	184	252	176	206	198	226	218	234	230	206	222	270	256	244			
18	246	246	238	244	232	236	220	206	200	200	226	204	184	198	218	202	222	242	A	230	218	224	212	222	264		
19	292	308	282	242	240	282	218	216	204	192	184	180	230	194	212	222	218		A	E A 238	E A 240	E A 248	E A 252	266	288		
20	304	294	264	228	232	284	222	212	210	198		A	A		A	214	208	204	224	238	230	218	210	254	274		
21	E A 308	E A 308	258	228	238	272	212	222	206	218		C	C	C	C	C	C	C	C		234	214	212	194	246	286	284
22	274	262		C		240	208	212	200	184	172	166	210	216					C	C		218	204	198	236	258	
23	258		228	226	232	242	206	218	196	206	178	220	190	188	198	214			C	248	222	208	234	216	220	244	
24	250	246	278	258	240	222	218	216	210	210	204	202	200	198	182	212	238	230	216	206	258	220	240	262			
25	282	260	250	260	256	298	230	222	212	200	210	194	202	206	212	208	232	234	208	210	214	228	238	264			
26	282	272	256	262	266	254	218	222	212	198		C	C	C	C	C	C	C	C		236	234	212	212	198	244	260
27	262	262	240	232	236	254	202	206	220	238		C	C	C	C	C	C	C	C		228	216	240	248	284	E A 350	
28	248	194	274	280	270	260	206	212	210	198	E A 224		C	C	C	C	C	C	C		214	200	232	250	254	252	
29	258	258	228	236	208	234	206	218	206	204	190	196	216	218	230	208	224	226	204	222	242	226	244	256			
30	238	264	262	244	228	272	208	214	218	194	190	192	180	188	222	208	244	250	232	210	204	236	224	240			
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	28	29	29	27	29	28	28	27	25	22	23	21	20	23	20	18	22	28	29	30	29	28	29			
MED	272	268	263	248	249	260	220	216	207	201	193	197	195	202	214	213	224	237	232	216	220	242	256	267			
U Q	298	282	280	261	266	284	229	222	216	218	222	220	228	218	E 234	E 223	232	242	246	241	238	258	272	289			
L Q	250	259	241	234	234	241	214	212	200	197	184	186	182	196	206	209	222	234	225	210	210	227	239	254			

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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

H D	00	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	122	106	A			A		A						
2						B	A	100	100		102	102	A	A	A	A	A	A	A					
3						B	A	102	102	100	100		A	A	A				A	A				
4						B	104	104	100	100	100		A	A	A	104	104	104	104					
5						A	112	100	106	106		A	106	102	102	102	102		A	A	A			
6						A	A	102	102	102		A	A	A	A	A	A	A	A	A				
7						B	A	A	A	A	A	A	A	A			C	C	A	B				
8						A	A	102		A	A	A	A		B	100	100	100	100			A		
9						B	C		A	A	A	A	A	B	B		106	104	104			A		
10						B	A	A		A	A		B	G	G		B	104	110			A		
11						B	A			C	B	B		G		G		104	110			B		
12						B		C	A	A	G	B				B	108	108	108			A		
13						B	112	100	100	100		A	100	100	100	100	100	100	108			C		
14						C	124	104	104	100	104	104	104	100	100	100	100	100	100			B		
15						B	A	100	100	100		A	100	106	106	104	104	104			A	A		
16						B	112	102	100	100	104	104	102		C	100		112			A	A		
17						B	A	112		A	102	102	102	106	106	106	104	102	108			B		
18						B	108	102	102		A	100	100	104	104	104	104	104			A	B		
19						B	A	104	102		A	102	A	102	102	102	100	100			A	A		
20						B	120	106	104	104	102		A	102	102	102	102	102			A	A		
21						A	A	102	100	100		C	C	C	C	C	C	C	A	A				
22						B	132	104	100	100	108	108	108	108			C	C	C	C	B			
23						B	A	106	100		A	102	100	100	100	100	100			C	A	B		
24						B	114	102	102	100	100	100	100	100	100		A	104	120			B		
25						B	A	100	100		A	100	100	100	100	100	102	102	106			B		
26						B	120	104	104	104		C	C	C	C	C	C	C	A	A				
27							126	104	104	104		C	C	C	C	C	C	C	C	B				
28						B	A	104	102	102	102		C	C	C	C	C	C	C	B				
29							A	104	104		B	104	104	104		B	106	104	104	112			B	
30							122	104		A	102	102	102	102	104	104	104	104	114			A		
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							13	27	24	18	17	15	18	15	20	17	20	14						
MED							114	102	102	101	102	102	102	102	102	102	102	104	108					
U Q							123	104	104	102	104	104	104	104	104	104	104	104	110					
L Q							111	100	100	100	100	100	100	100	100	100	100	101	104					

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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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	94	94	102	100	88	96	116	98		100	96	98	94	94	114	96	102	112	102	96	96	98	98	96	
2	90	90	84	B	94	B	164	146	110	102	102	100	96	94	94	94	96	104	94	90	92	90	108	94	
3	100	86	90	90	94	94	90	118	112	106	102	102	102	104	G	126	112	98	102	98	92	100	100	92	
4	98	86	92	100	86	102	148	110	106	G	100	100	124	104	126	126	108	106	96	106	94	94	94	130	
5	86	118	112	114	B	110	118	110	108	110	110	118	116	120	114	106	98	96	100	88	84	86	84	84	
6	92	98	B	B	106	102	102	106	100	100	94	94	94	94	96	94	90	88	88	88	92	86	96	96	
7	B	90	B	90	106	B	102	96	96	94	92	92	112	112	116	C	C	100	B	106	B	B	100	B	
8	B	B	B	B	B	106	104	100	98	96	96	96	G	B	G	108	106	102	98	96	100	96	96	96	
9	96	92	92	94	C	B	100	100	98	98	96	96	B	B	112	106	104	100	96	96	98	92	88	B	
10	90	C	90	B	B	B	102	100	G	100	100	G	B	94	92	B	G	110	88	94	B	90	90	B	
11	B	B	B	B	B	B	92	110	110	C	B	B	G	92	G	106	G	G	B	C	B	B	B	90	
12	B	B	B	B	B	B	138	102	94	G	G	B	92	G	B	136	116	112	104	102	B	B	B	B	
13	B	B	B	B	B	B	G	120	112	G	94	G	B	G	132	132	134	114	C	106	100	102	B	B	
14	B	B	B	B	B	C	126	130	112	110	112	G	118	G	140	128	108	106	B	B	B	C	B	B	
15	B	B	B	B	B	B	116	110	144	116	96	112	G	164	G	120	122	106	102	96	B	B	B	96	
16	B	B	B	B	B	B	156	G	G	180	126	104	102	G	G	90	90	88	86	86	84	84	84	B	
17	B	B	B	114	C	102	98	148	98	G	G	166	G	G	G	G	G	G	B	88	92	96	B	90	
18	B	B	B	B	B	98	G	G	G	104	154	162	G	176	G	G	G	108	B	88	94	94	94	94	
19	B	90	86	84	110	118	110	G	106	102	G	98	G	G	G	G	114	98	92	90	88	86	B	92	
20	94	B	90	104	110	B	124	112	110	102	98	98	100	G	100	G	118	90	86	86	96	96	88	C	
21	102	98	92	92	92	94	94	124	124	116	C	C	C	C	C	C	C	118	102	96	100	96	98	94	
22	90	B	C	C	C	B	G	124	112	108	G	G	168	G	C	C	C	C	B	B	90	96	C	B	
23	B	C	B	B	B	B	136	150	G	114	92	162	168	G	G	G	C	86	88	86	B	B	98	B	
24	B	98	B	B	B	96	146	152	124	110	118	110	108	106	106	106	132	114	96	96	100	B	B	B	
25	96	98	94	B	98	94	94	G	140	102	116	114	G	G	G	G	148	160	B	86	B	B	90	94	
26	94	B	92	92	98	B	142	132	130	122	C	C	C	C	C	C	C	96	92	90	90	90	B	B	
27	B	B	B	B	B	B	G	130	112	106	C	C	C	C	C	C	C	C	90	90	90	B	100	96	
28	96	92	92	88	88	88	130	G	G	G	106	C	C	C	C	C	C	C	92	92	84	B	B	B	
29	B	B	B	B	B	B	168	G	B	B	G	G	G	B	G	G	G	G	B	98	114	108	B	B	
30	B	B	B	B	B	B	162	G	G	G	G	G	G	G	G	G	146	112	110	102	B	B	B	B	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	14	13	13	12	12	13	25	22	23	23	20	19	15	12	12	15	18	24	22	26	21	18	17	16	
MED	94	92	92	93	96	98	118	115	110	104	100	102	102	104	114	108	110	105	96	93	92	96	96	94	
U Q	96	98	93	102	106	104	144	130	112	110	111	116	118	116	129	126	122	112	102	96	98	98	99	96	
L Q	90	90	90	90	90	94	102	106	100	100	96	98	96	94	98	96	102	97	90	88	90	90	90	91	

SEP. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 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	F3	F2	F2	F2	F2	L1	CL11	L2		C1	L1	L1	L1	L1	C1	L1	C2	C2	C3	F2	F3	F2	F3	F3	
2	F2	F1	F1		F1		HC11	H1	C1	C2	C1	C1	L2	L3	L2	L3	L2	L2	CL33	L4	F3	F4	F2	F2	F4
3	F1	F1	F1	F1	F1	L2	L1	C1	C2	C1	C1	C1	C1	C1		C1	C1	LC11	C4	F4	F3	F3	F5	FF33	
4	FF32	F3	F2	F2	F3	C3	H1	C2	C2		C1	C2	CL22	C1	C1	C1	C2	C3	L2	F4	F3	F2	F2	FF11	
5	F1	F1	F1	F2		C4	C2	C2	C2	C1	C2	C1	C1	C1	C1	C1	L2	L2	L1	F2	F4	F2	F2	F2	F2
6	F2	F2			F2	C4	C5	C2	C3	C3	L3	L3	L2	L1	L2	L2	L3	L4	L3	F4	F2	F3	F2	F1	
7		F1		F1	F1		C1	L3	L2	L2	L2	L1	CL11	C2	C1			C3		F1			F1		
8						C3	C2	C1	L1	L2	L2	L1				C2	C3	C2	L2	F3	F2	F4	F3	F2	
9	F2	F4	F4	F3			C2	C2	L1	L1	L1	L2				C1	C2	C2	C3	F2	F3	F4	F2	F2	
10	F2		F3				C2	C1		C1	C1			L1	L1			C1	L1	F1		F1	F5		
11							L2	C1	C1					L1			C1							F1	
12							H1		C1	L1			L1			H1	C1	C2	C2	F2					
13								C1	C1		L1				H1	H1	H1	C2		F5	F3	F2			
14							C1	H1	C1	C1	C1		C1		H1	C1	C2	C3							
15							C1	C1	H1	C1	L1	C1		H1		C1	C1	C2	C2	F3				F1	
16							H1			H1	C1	C1	C1	C1		L2	L1	L2	L1	F3	L2		F1		
17			F1			C3	L3	HL11	L1			H1								F1	F3	F1		F1	
18					L2					C1	H1	H1		H1				C2		F2	F1	F1	F1	F1	
19		F1	F1	F1	F1	C1	C2		C1	C1		C1					C1	L3	L5	F4	F4	F2		F1	
20	F1		F1	F1	F1		C1	C1	C1	C1	L3	L2	C2		C1		C1	L2	L3	F2	F4	F1	F1		
21	F2	F5	F2	F2	F2	L5	L2	CL22	CL12	C1							C1	C3	F3	F1	F1	F1	F1	F2	
22	F1							C1	C1	C1			H1								F3	F1			
23							H2	H1		CL12	L1	H1	H1					L2	L1	F1			F1		
24		F1				L1	H1	H1	C1	C1	C1	C1	C1	C1	C1	C1	H1	C3	L3	F1	F1				
25	F3	F3	F5		F2	L3	LH11		H1	C1	C1	C1					H1	H1		F1			F3	F2	
26	F1		F1	F1	F1		H1	H1	H1	C1	C1							L3	L6	F5	F5	F1			
27							H1		C2	C2									L1	F1	F2		F1	F3	
28	F3	F4	F3	F4	F1	L2	H1				C1								L2	F2	F1	F1			
29							H1					C1							L1		F1	F1			
30							H2		C1						H1		H1	C1	C3	F1					
31																									
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																									
MED																									
U Q																									
L Q																									

SEP. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2022 f_{XI} (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

H D	00	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 61	X 72	X 69	X 64	X 61	X 51														X 91	X 88	X 83	X 59	X 55	
2	X 58	X 68	X 58	X 52	X 46	X 45														X 95	X 88	X 77	X 70	X 66	
3	X 72	X 69	X 63	X 61	X 54	X 44														X 111	X 100	X 68	X 64	X A	
4	X 58	X 62	X 60	X 62	X 65	X 56														X 94	X 89	X 60	X 62	X 62	
5	X 63	X 66	X 51	X 48	X 53	X 58														X 67	X 63	X 58	X 58	X 54	
6	X 51	X 50	X 48	X 49	X 50	X 44														X 77	X 70	X 71	X 70	X 64	
7	X 59	X 60	X 60	X 58	X 49	X 49														X 102	X 80	X 57	X 59	X 56	
8	X 54	X 57	X 54	X 48	X 48	X 52														X 101	X A	X A	X 52	X 55	
9	X 56	X 57	X 54	X 56	X 54	X 50														X 83	X 74	X 73	X 75	X 76	
10	X 80	X 81	X 67	X 58	X 56	X 57														X 109	X 118	X 68	X 51	X 52	
11	X 50	X 50	X 52	X 58	X 49	X 36														X 102	X 94	X 71	X 64	X 65	
12	X 64	X 63	X 60	X 58	X 56	X 51														X 99	X 87	X 70	X 71	X 72	
13	X 72	X 69	X 66	X 66	X 65	X 58														X 111	X 96	X 74	X 70	X 65	
14	X 60	X 58	X 58	X 56	X 54	X 50														X 113	X 93	X 70	X 68	X 65	
15	X 64	X 62	X 62	X 61	X 55	X 54														X 101	X 72	X 71	X 70	X 68	
16	X 66	X 64	X 64	X 64	X 55	X 54														X 104	X 89	X 72	X 68	X 67	
17	X 71	X 70	X 70	X 67	X 60	X 61														X 90	X 77	X 66	X 71	X 72	
18	X 66	X 64	X 64	X 62	X 60	X 54														X 100	X 94	X 69	X 63	X 56	
19	X 53	X 52	X 55	X 57	X 50	X 48														X 94	X 88	X 60	X 56	X 56	
20	X 54	X 54	X 56	X 55	X 50	X 48														X 102	X 96	X 64	X 60	X 60	
21	X 61	X 58	X 58	X 56	X 52	X 49														X 126	X 93	X 83	X 68	X 64	
22	X 62	X 64	X 66	X 57	X 52	X 47														X 107	X 84	X 70	X 66	X 70	
23	X 64	X 62	X 58	X 52	X 46	X 42														X 112	X 88	X 82	X 70	X 62	
24	X 61	X 61	X 59	X 60	X 55	X 48														X 109	X 86	X 70	X 62	X 62	
25	X 60	X 59	X 57	X 57	X 55	X 50														X 106	X 84	X 56	X 53	X 52	
26	X 53	X 52	X 54	X 52	X 49	X 48														X 107	X 94	X 72	X 60	X 58	
27	X 58	X 60	X 55	X 53	X 49	X 44														X 101	X 82	X 69	X 65	X 63	
28	X 71	X 71	X 53	X 53	X 54	X 53														X 100	X 85	X 93	X 91	X 112	
29	X 100	X 94	X 82	X 68	X 58	X 44														X 80	X 78	X 76	X 72	X 68	
30	X 71	X 64	X 60	X 58	X 55	X 53														X 102	X 92	X 72	X 70	X 61	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30														30	29	29	30	29	
MED	X 61	X 62	X 58	X 58	X 54	X 50														X 102	X 88	X 70	X 66	X 63	
U Q	X 66	X 68	X 64	X 61	X 56	X 54														X 107	X 94	X 74	X 70	X 68	
L Q	X 58	X 58	X 55	X 53	X 50	X 47														X 94	X 81	X 67	X 60	X 56	

SEP. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	55	F 58	F 58	58	F 51	F 38	46	66	79	64	71	82	86	77	71	70	86	84	84	84	82	77	53	49	
2	F 55	F 55	52	46	41	39	48	72	83	72	65	67	81	84	87	A	73	74	84	89	82	71	64	60	
3	F 62	63	57	55	48	38	49	67	70	70	70	73	78	82	80	77	U R 72	83	99	105	R 94	62	58	A	
4	52	56	54	56	59	50	53	85	78	74	65	73	78	74	77	97	84	85	84	88	83	54	56	56	
5	57	60	45	42	47	52	57	65	48	A	A	A	E G 54	47	50	A	53	52	56	61	57	52	52	48	
6	45	44	42	43	44	38	46	60	66	64	73	82	81	74	74	76	72	76	79	71	64	65	64	58	
7	53	54	54	52	43	43	52	87	72	76	68	66	82	76	78	77	82	90	92	96	74	51	R 53	50	
8	48	51	47	42	42	46	57	75	70	65	77	87	89	94	87	85	A	78	78	95	A	A	46	49	
9	50	51	48	50	48	44	45	72	74	86	90	80	78	89	102	96	84	88	97	77	68	67	69	70	
10	74	75	61	52	50	51	51	76	85	74	87	89	85	80	85	82	R 85	88	97	103	112	62	45	46	
11	44	44	46	52	43	30	47	70	67	74	87	92	100	105	108	102	94	95	93	96	88	65	58	59	
12	58	57	54	52	50	45	54	69	80	74	86	99	95	88	85	86	87	85	91	93	81	64	65	66	
13	66	63	60	60	59	52	56	83	106	91	83	92	100	103	93	81	79	84	97	105	90	68	64	59	
14	54	53	52	50	48	44	56	84	94	80	77	72	82	84	84	82	83	96	105	107	87	64	62	59	
15	58	56	56	55	49	48	55	81	80	91	95	79	87	94	92	95	102	106	112	95	66	65	64	62	
16	60	58	58	58	49	48	55	79	76	76	88	92	101	100	101	95	99	110	106	98	83	66	62	61	
17	65	64	64	61	54	55	55	70	80	76	83	88	88	90	89	88	90	100	102	83	71	60	65	66	
18	60	58	58	56	54	48	55	72	84	98	78	82	84	83	84	88	90	89	95	94	88	63	57	50	
19	47	46	49	50	44	42	56	71	80	76	72	82	92	105	94	91	94	103	90	88	82	54	50	50	
20	48	48	50	49	44	42	54	83	74	78	83	90	98	98	83	88	92	106	106	96	90	58	54	54	
21	55	52	52	50	46	43	52	73	80	81	78	87	104	104	116	115	118	122	128	120	87	R 77	62	58	
22	56	58	60	51	46	41	49	76	86	68	75	85	105	114	110	108	98	104	101	101	78	64	60	64	
23	58	56	52	46	40	36	46	77	72	79	76	88	102	99	93	90	90	101	106	105	82	76	64	56	
24	55	55	53	54	49	42	52	77	94	89	84	77	89	97	97	106	110	104	102	103	R 80	64	56	56	
25	54	53	51	51	49	44	48	84	87	88	78	92	98	102	96	91	92	101	100	100	78	50	47	46	
26	47	46	48	46	43	42	54	83	94	89	79	90	103	100	94	91	102	111	114	101	88	66	54	52	
27	52	54	49	47	43	38	46	69	87	102	87	92	94	102	103	108	115	113	100	95	76	63	59	57	
28	65	65	47	47	48	47	54	79	84	88	84	84	99	108	107	113	118	118	118	94	RJ R 79	R 87	RJ R 85	106	
29	RJ 94	R 87	76	62	52	38	46	71	94	90	80	84	90	97	90	95	102	100	90	74	72	70	66	62	
30	65	58	54	52	49	47	56	72	90	100	96	90	87	92	96	94	96	101	110	96	86	66	64	55	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	30	30	30	30	30	30	30	30	29	29	29	30	30	30	28	29	30	30	30	29	29	30	29	
MED	55	56	52	52	48	44	52	74	80	78	79	85	89	94	91	91	90	98	98	96	82	64	60	57	
U Q	61	58	58	55	50	48	55	81	87	89	86	90	99	102	97	96	100	104	106	101	88	68	64	62	
L Q	51	52	49	47	44	39	48	70	74	74	74	80	82	83	84	84	84	85	90	88	75	61	54	50	

SEP. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1								L	L	A	U	L	L		A		L	L								
2								L	L		U	L	A	A		A	A	A								
3									L			L					U	L	A							
4									L		U	L						L								
5								U	L	A	A	A				A		U	L	U	L					
6									L	U	L	A	A			L		U	L	U	L					
7									L	L		L						L								
8								L	L	A	A						A	A								
9									L		L	U	L	U	L	L	L	A								
10								L	L	L							L	L	L	L						
11									L	U	L	L	L					L								
12									L	L	L	L	L					L	L							
13									L	L		L	L			L	U	L	L							
14									L	L		L	L			L	A	L	A							
15									L	L		L	L			L	L	L								
16									L	U	L	L	L			L		L								
17									L	A	L					L		L								
18									L		516	504	516	532	532	524	504	476								
19									L	L	U	L	L			L	L	L								
20									L	L		L	L			L	L	L								
21									U	L	U	L	L	L		L	L	L								
22									L	L	U	L	L			L	L	L								
23									L								L	L								
24									L	L		L	L			L	L	L								
25									L	L		L	L			L	L	L								
26									L	L		L	L			L	L	A								
27									L	L		L	L			L	L	L								
28									L	L		L	L			L	L	L								
29									L	L		L	L			L	L	L								
30									L	L		L	L			L	L	L								
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT								2	3	13	25	27	29	29	27	23	16	3	1							
MED								334	408	472	504	520	528	504	504	474	420	360								
U Q								412	486	516	540	534	540	544	520	490	432									
L Q								U	L		L	L	L			L	L	L								
								404	458	492	504	508	506	500	488	466	392									

SEP. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							A	A			A	A	A	A			356	348	320	280	204				
2							A		A	288	308			A	A	A	A	A	A	A					
3							A	244		300		A	A	A											
4							B	A	A	A	A	A	A	A			372	372	344	320	280				
5							A										352	344		A	A	A			
6							A	224	288	324	356	372	380	384	368	348	320	264							
7							B	A	A	A	A	A	A	A			348	320	268						
8							A	228	292	324	344	364	376	380	368	344	308	276							
9							A	236	268		A	A	A	A					320	268					
10							A	208		A	A	A	A												
11							B	A	A				372	384	360	348	312	268							
12							B			324	368	A	A	A	A	A	A	A	A						
13							B	248	300	336	376	388	392	384	392	368		A	280	200					
14							B	236	284	324	348	364	388	372	376	364	324	276							
15							A	228	304	344	360	384	388	392	368	352	316	268							
16							A	252	284	296		A	A												
17							B	232	304	336	356	356		A	384	372	344	316	276	184					
18							B	212	300		A	356	368	376	368	348	340	304	248	184					
19							B	220		320	348	360	372	368	364			304	244		A				
20							B	228	272	320	332		A	372	388	360	344		A	200					
21							B	216	268			A	A	A	A	A	A	A	A	A					
22							B	240	300	336		A	372	372	360	352	340	324	260		A				
23							B	224	252	328			A	352		A	336	304	252						
24							B	236	304		A	348	364	376	376	364	340	304	260						
25							B	244	296	336	356	368	372	364	348	316	304	256							
26							A	232	296	328	352	364	368	360	356	336	300	244							
27							B	212	276	320	352	376		A	360	336		A	A	A					
28							B	248	280	320	348	352	356	364	352		300		A	A					
29							B	236	296	336	352	360	364		A	A	340		A	236					
30							B	248	296	336	364	384	376	364		A	348		A	244					
31							B	260	284		A	360	372		A	R	404	360	344	300	244				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								25	23	21	18	19	19	21	22	23	21	24	4						
MED								236	292	324	354	368	376	372	360	344	312	262	192						
U Q								244	300	336	360	372	380	384	368	348	320	272	202						
L Q								224	280	320	348	360	372	364	352	340	304	246	184						

SEP. 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

H D	00	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
2	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
3	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
4	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
5	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
6	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
7	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
8	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
9	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
10	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
11	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
12	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
13	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
14	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
15	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
16	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
17	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
18	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
19	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
20	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
21	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
22	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
23	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
24	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
25	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
26	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
27	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
28	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
29	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
30	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
31	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	20	17	E B	E B	E B	E B	16	18	28	34	40	42	42	42	40	38	37	34	J A	J A	J A	J A	J A	J A
U Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
L Q	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B

SEP. 2022 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	20	19	22	20	E 16	B 16	B 23	27	36	44	39	38	40	41	48	45	42	30	30	41	22	E 16	B 16	B 24	
2	E 16	B 16	B 19	17	E 14	B 16	27	G	32	50	38	54	50	48	46	A 89	46	46	62	23	20	18	E 16	B 16	
3	E 20	B 16	20	E 16	B 16	B 16	23	28	34	37	41	41	42	40	41	40	40	74	73	47	21	19	22	A 65	
4	43	18	E 16	B 16	B 16	B 16	B 16	27	36	40	38	39	40	41	40	G	32	28	21	16	E 16	B 16	B 16	B 16	
5	E 16	B 16	B 16	B 16	B 16	B 16	20	28	35	A 77	A 106	A 63	41	G	A 43	A 71	38	30	24	22	E 16	B 21	E 16	B 16	
6	E 16	B 16	B 16	B 16	B 16	E 27	B 16	18	36	32	34	66	53	39	48	38	37	G	G	23	E 16	38	29	28	19
7	E 16	B 16	B 16	B 16	B 16	B 16	B 16	32	33	34	37	40	40	42	41	46	35	36	28	16	E 16	B 16	26	30	E 16
8	33	34	E 16	B 21	E 16	B 16	21	27	31	61	54	42	45	40	42	42	A 90	A 52	51	52	A 82	A 105	A 16	E 16	B 16
9	E 16	B 16	B 16	B 16	B 16	B 16	20	25	31	33	36	44	45	42	G	36	37	51	68	52	21	E 16	B 16	B 16	
10	E 16	B 16	B 16	B 16	B 16	B 16	B 16	27	34	40	36	44	G	40	G	G	G	25	28	23	E 16	38	21	21	21
11	E 16	B 16	B 16	B 16	B 16	B 16	B 16	26	31	35	G	40	40	39	39	36	33	28	25	16	E 16	B 16	B 16	B 16	
12	E 16	B 16	B 16	B 16	B 16	B 16	B 16	28	33	36	G	G	42	G	G	G	31	35	30	22	16	E 16	B 16	B 16	
13	E 16	B 16	B 16	B 16	B 16	B 16	B 16	26	32	36	40	40	40	G	G	G	34	30	26	19	E 16	B 16	B 16	B 16	
14	E 16	B 16	B 16	B 16	B 16	B 16	19	28	35	39	40	40	42	G	39	53	42	44	48	18	21	28	E 16	B 16	
15	E 16	B 16	B 16	B 16	B 16	B 16	18	27	34	36	39	43	30	42	41	38	G	32	27	26	E 16	B 16	B 16	B 16	
16	E 16	B 16	B 16	B 16	B 16	B 16	B 16	26	G	37	42	41	40	G	34	G	G	G	G	E 16	B 16	B 16	B 16	B 16	
17	E 16	B 16	B 16	B 16	B 16	B 16	B 16	27	G	41	27	30	G	G	G	G	G	G	G	E 16	B 16	B 16	B 16	B 16	
18	E 16	B 16	B 16	B 16	B 16	B 16	B 16	26	32	36	G	G	39	G	G	G	43	34	30	36	31	21	24	E 16	B 16
19	E 16	B 16	B 16	B 16	B 16	B 16	B 16	26	31	29	G	G	38	30	38	38	33	33	19	16	E 16	B 17	E 16	B 16	
20	E 16	B 16	B 16	B 16	B 16	B 16	B 16	25	32	35	36	39	39	41	36	44	37	27	28	24	20	E 16	B 16	B 16	
21	E 16	B 16	B 16	B 16	B 16	B 16	B 16	16	G	35	39	G	40	43	42	40	36	32	55	24	E 16	B 19	E 16	B 16	
22	E 16	B 16	B 16	B 16	B 16	B 16	B 16	25	30	G	36	38	38	39	37	36	32	30	24	21	21	23	22	20	
23	E 16	B 16	B 16	B 16	B 16	B 16	B 16	27	34	39	39	G	43	44	41	36	32	G	18	16	E 16	B 16	B 16	E 16	
24	E 16	B 16	B 16	B 16	B 16	B 16	B 16	G	32	38	38	42	43	42	38	39	G	30	20	24	16	E 16	B 16	B 16	
25	E 16	B 16	B 16	B 16	B 16	B 16	18	18	32	36	41	41	42	40	39	G	33	29	20	16	E 16	B 16	B 16	B 16	
26	E 16	B 16	B 16	B 16	B 16	B 16	B 16	28	32	35	G	G	40	42	38	35	30	41	42	16	E 16	B 16	B 16	B 16	
27	E 16	B 16	B 16	B 16	B 16	B 16	B 16	G	32	35	41	39	40	G	39	35	G	28	19	16	E 16	B 34	E 16	B 16	
28	E 16	B 16	B 16	B 16	B 16	B 16	B 16	G	32	36	39	40	42	38	42	27	35	G	21	16	E 16	B 16	B 16	B 16	
29	E 16	B 16	B 16	B 16	B 16	B 16	B 16	G	32	36	38	G	G	38	37	G	32	27	25	19	E 16	B 18	E 16	B 16	
30	E 16	B 16	B 16	B 16	B 16	B 16	B 16	27	34	36	G	G	40	43	39	37	35	34	24	26	E 16	B 23	17	E 16	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	E 16	B 16	B 16	B 16	B 16	B 16	B 16	26	32	36	38	40	40	40	39	36	34	30	24	18	E 16	B 16	B 16	B 16	
U Q	16	16	16	16	16	16	18	27	34	39	40	42	42	42	41	42	37	34	36	24	21	21	16	16	
L Q	E 16	B 16	B 16	B 16	B 16	B 16	B 16	G	31	35	36	38	39	G	G	G	G	G	G	E 16	B 16	B 16	B 16	B 16	

SEP. 2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

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

SEP. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	305	284 ^F	307 ^F	306	315 ^F	350 ^F	354	360	377	341	316	311	327	331	323	297	309	314	323	327	319	329	296	289	
2		279 ^F	312 ^F	311	290	307	334	370	374	382	308	307	311	310	310		324 ^A	313	317	323	333	317	297	282	
3		291 ^F	290	314	329	332	304	347	369	360	352	326	309	308	328	323	315 ^U	312 ^R	290	306	325	343 ^R	298	308 ^A	
4	277	269	270	286	322	305	305	381	342	363	308	321	310	302	286	308	308	306	299	316	323	266	264	264	
5	304	317	276	265	253	291	314	306	335								293 ^A	292	303	313	295	266	291	282	
6	281	286	275	284	294	314	347	345	347	285	299	297	313	307	309	310	322	312	333	326	298	271	300	297	
7	275	283	298	310	284	274	307	377	331	340	376	276	324	309	325	311	315 ^A	320	316	335	365 ^A	284 ^A	286 ^R	261	
8	287	297	302	286	269	288	346	362	364	347	303	318	309	306	307	320		321	314	348			277	280	
9	289	285	283	308	307	285	305	343	356	328	358	319	281	298	308	326	315	332	343	331	291	280	275	276	
10	295	325	315	298	300	331	330	361	367	329	352	317	340	312	325	299	316 ^R	302	303	327	364	374	274	288	
11	267	262	284	332	356	331	336	371	353	316	320	312	318	298	285	300	310	310	316	331	333	311	280	286	
12	293	281	282	295	301	288	331	368	358	329	333	331	312	316	312	307	317	315	317	328	322	277	280	279	
13	289	289	289	294	310	307	306	340	356	353	312	303	304	300	307	303	303	301	311	329	336	302	302	305	
14	293	284	282	298	309	298	327	350	376	361	337	304	307	306	310	304	302	313	326	331	340	279	300	295	
15	284	283	295	310	282	294	309	356	353	331	341	300	293	313	300	303	319	314	340	353	280	281	292	284	
16	277	287	293	304	302	309	319	378	371	327	337	317	316	298	314	306	298	311	339	324	327	273	288	287	
17	288	303	309	309	295	329	333	355	355	334	334	327	314	319	308	311	309	320	329	340	323	288	291	303	
18	301	297	307	308	320	304	324	354	343	358	354	311	312	299	297	309	312	309	317	324	331	305	307	291	
19	279	269	289	327	311	295	340	358	370	375	314	318	306	321	324	315	320	337	324	319	350	317	273	285	
20	274	278	299	326	306	291	324	377	359	355	339	327	324	331	330	305	309	326	340	327	347	293	283	281	
21	284	278	284	308	308	321	336	377	348	351	331	308	318	307	315	306	303	319	334	359	338	243 ^R	273	284	
22	287	292	312	334	329	343	329	366	377	360	314	301	310	312	315	303	318	325	330	348	328	287	290	287	
23	298	314	330	324	331	313	332	363	375	353	324	310	318	319	311	315	307	321	324	321	327	321	318	298	
24	292	307	286	307	322	309	323	368	362	352	352	321	313	303	302	307	328	318	323	333	355 ^R	311	295	278	
25	286	292	288	314	313	279	297	369	356	353	331	329	323	330	322	325	323	325	330	349	338	309	288	283	
26	284	294	301	303	302	312	338	371	368	356	364	316	324	325	308	302	317	331	342	348	344	282	289	292	
27	292	301	307	310	318	315	328	365	350	365	346	318	308	307	303	286	310	322	314	344	332	289	267	261	
28	298	342	287	282	288	293	326	375	373	358	347	318	302	314	294	307	318	319	343	343	230 ^{RJ}	232 ^R	272 ^{RJ}	293 ^R	
29		279 ^{RJ}	268 ^R	232	308	352	319	321	352	363	363	359	330	314	322	306	307	325	328	338	321	307	318	300	302
30	310	294	287	299	306	314	326	359	360	355	345	336	313	303	299	302	301	309	328	330	322	306	319	306	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	30	30	30	30	30	30	30	30	29	29	29	30	30	30	28	29	30	30	30	29	29	30	29	
MED	288	288	291	308	308	307	328	364	360	353	334	317	312	310	308	307	312	316	324	330	331	289	290	286	
U Q	294	297	307	311	320	315	336	371	370	359	350	321	318	319	315	311	318	322	334	343	342	311	300	294	
L Q	280	281	284	298	295	293	319	355	353	332	315	308	308	303	302	303	308	310	316	324	320	278	277	280	

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SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	A	U	L	L			A	A	A	L					
2								L	L		U	L	A	A	A	A	A	A						
3									L		389	385	367	377	391	408	380	U	L	A				
4									L		U	L	382	371	350	368	356	356						
5								U	L		A	A	A				A		U	L	U	L		
6									L	U	L	A	A	379	A		L		U	L	U	L		
7									L	L			L				A		L					
8								L	L	A	A		364	360	381	368	355		A	A				
9									L		L	U	L	U	L	L	L	L	A					
10								L	L		L	L	L	L	L	L	L	L	L	L				
11									L	U	L	L	L	L	L	L	L	L	L	L				
12									L	L	L	L	L	L	L	L	L	L	L	L				
13									L	L		L	L	L	L	L	L	L	L	L				
14									L	L		L	L	L	L	L	L	L	L	L				
15									L	L		L	L	L	L	L	L	L	L	L				
16									L	U	L	L	L	L	L	L	L	L	L	L				
17									L	A	L	L	L	L	L	L	L	L	L	L				
18								413	L		L	L	L	L	L	L	L	L	L	L				
19									L	U	L	L	L	L	L	L	L	L	L	L				
20									L	L		L	L	L	L	L	L	L	L	L				
21									U	L	U	L	L	L	L	L	L	L	L	L				
22									L	L	U	L	L	L	L	L	L	L	L	L				
23									L			L	L	L	L	L	L	L	L	L				
24									L	L		L	L	L	L	L	L	L	L	L				
25									L	L		L	L	L	L	L	L	L	L	L				
26									L	L		L	L	L	L	L	L	L	L	L				
27									L	L		L	L	L	L	L	L	L	L	L				
28									L	L		L	L	L	L	L	L	L	L	L				
29									L	L		L	L	L	L	L	L	L	L	L				
30									L	L		L	L	L	L	L	L	L	L	L				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	3	13	25	27	29	27	26	21	15	3	1					
MED								388	403	389	395	384	385	374	373	362	359	367	340					
U Q								U	L	L	L	L	L	L	L	L	L	L	L					
L Q								367	382	382	367	372	363	360	352	353	331							

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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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								228	222	234	298	298	252	268	296	330	298	270							
2								226	220		288	^{E A} 288	312	296	286		^A 284	280							
3									232	254	266	302	312	282	276	286	316	^{E A} 368							
4									238	238	320	296	314	328	350	284	280	284							
5								272	290		^A	^A	^A 436	^G 524		^A 388	354	300							
6									266	362	^{E A} 358	304	308	324	322	300	284	274	248						
7									222	262	228	432	290	306	292	304	290	276							
8								232	238	^{E A} 300	274	284	298	286	294	286		^A 274							
9									230	276	240	262	356	322	274	266	268	262							
10								234	222	236	252	270	240	282	264	270	294	266	256						
11									236	254	274	256	280	284	290	274	284	270							
12									228	238	264	264	268	294	304	304	280	274							
13									234	224	254	290	276	290	290	302	314	288							
14									222	236	240	244	318	248	298	282	308	276							
15									232	258	242	242	284	282	316	298	272	256							
16									218	252	264	282	270	280	272	276	286	258							
17									234	228	260	260	290	282	300	292	280	262							
18								222	236	234	220	304	274	316	292	302	280	254							
19									220	222	284	284	290	272	262	274	258	244							
20									214	230	264	270	268	268	254	290	274	258							
21									226	230	250	298	262	274	280	280	262	254							
22									220	212	296	256	288	278	260	262	250	250							
23										230		294	252	254	256	266	272	262							
24									228	230	226	250	284	290	276	290	262	234							
25									224	232	242	264	276	254	274	260	266								
26									220	220	234	260	270	264	274	270	272	250							
27										228	236	256	258	268	282	296	270	238							
28										226	228	244	266	274	260	288	258	242							
29									220	232	230	254	266	262	254	294	262								
30										236	234	244	244	278	276	270	288								
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								6	26	28	28	29	30	30	30	28	29	27	3						
MED								230	227	234	252	267	278	282	281	286	280	262	256						
U Q								234	234	253	274	295	298	294	296	297	289	276	300						
L Q								226	220	229	235	256	266	268	272	272	267	254	248						

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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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	276	282	E A 244	E A 250	220	202	212	222	216	A	208	184	220	208	A	E A 298	E A 268	E A 226	252	242	238	212	204	E A 274
2	298	300	254	240	242	260	242	216	208	204	182	A	A	A	A	A	A	E A 280	232	224	216	238	290	
3	308	270	244	226	198	244	230	212	208	198	216	194	198	198	198	208	E A 244	E A 292	E A 238	214	194	E A 242	A	
4	E A 384	306	304	274	228	240	258	218	222	228	198	188	190	238	218	218	206	230	244	242	226	206	308	302
5	242	228	246	280	E A 334	278	276	242	E A 240	A	A	A	248	224	234	A	250	232	254	258	232	276	274	278
6	280	270	290	284	E A 300	226	252	248	222	194	A	A	204	E A 306	198	230	218	228	236	210	E A 272	E A 306	E A 262	244
7	284	282	256	240	232	284	242	216	206	206	198	180	172	210	180	E A 260	216	244	252	222	198	E A 264	E A 314	290
8	E A 330	E A 308	262	E A 304	320	266	228	222	208	A	A	222	242	198	224	E A 254	A	E A 260	224	A	A	A	322	304
9	272	270	276	252	250	274	244	210	200	188	182	196	230	194	186	212	242	A	244	244	246	260	292	286
10	260	220	208	236	258	226	216	216	220	208	182	222	180	188	190	204	194	210	238	238	216	190	284	312
11	324	330	294	230	210	256	234	212	200	194	198	202	188	176	202	196	210	228	250	228	208	218	240	260
12	256	284	286	258	242	266	234	218	208	196	192	192	204	184	214	206	210	230	248	230	218	218	264	278
13	258	262	258	258	230	222	254	222	222	202	190	184	182	218	202	200	220	232	252	232	212	202	234	222
14	250	266	282	236	232	244	246	200	216	206	192	178	168	182	198	A	246	A	244	226	214	E A 246	252	240
15	270	286	258	230	246	268	238	216	208	240	200	190	176	188	216	212	226	238	242	216	206	254	254	266
16	282	268	268	240	218	232	232	214	206	196	236	196	188	202	200	192	212	228	224	210	204	194	260	270
17	272	252	246	242	234	226	228	204	216	A	188	176	184	208	210	210	206	214	222	206	212	242	262	252
18	248	248	246	246	232	234	228	198	218	218	176	186	186	186	182	E A 256	228	228	254	232	220	196	234	238
19	288	312	276	228	236	266	230	204	204	196	190	184	194	188	198	218	218	236	218	218	204	196	270	284
20	294	294	260	230	242	286	230	202	208	198	186	194	178	204	204	E A 246	238	236	234	228	208	196	262	284
21	278	288	250	236	216	226	228	208	198	204	210	188	176	216	214	226	226	244	244	198	186	232	254	284
22	276	270	242	202	212	228	218	222	208	194	180	176	176	190	180	218	216	230	230	214	204	248	278	268
23	254	248	222	218	196	246	224	208	210	198	200	202	212	230	196	206	214	226	236	210	214	222	222	248
24	264	246	282	250	208	210	242	212	220	210	194	206	212	212	192	240	234	228	228	222	200	228	230	288
25	264	258	254	236	244	292	252	224	212	214	204	202	202	190	208	208	218	238	226	214	188	210	256	286
26	286	274	264	238	246	236	222	212	212	200	198	188	172	192	202	188	214	A	228	204	206	184	238	266
27	264	260	254	242	220	228	228	212	216	216	198	198	186	182	216	212	222	228	228	216	230	232	280	320
28	258	202	234	260	268	258	228	206	210	206	202	192	180	178	E A 222	194	218	220	222	204	200	264	254	240
29	236	240	230	250	206	212	230	210	210	204	202	194	182	194	194	206	228	224	214	214	232	222	222	236
30	244	254	274	248	234	236	226	204	216	210	192	198	198	234	226	226	232	248	232	220	214	226	228	230
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	26	27	27	29	29	28	27	28	24	30	30	29	29	30	29
MED	270	270	257	240	232	242	230	212	210	204	198	192	188	196	202	209	218	229	238	222	213	219	254	274
U Q	286	286	276	252	246	266	242	218	216	210	202	198	204	214	215	E A 230	233	236	252	232	225	247	274	287
L Q	258	252	246	236	218	226	228	208	208	196	188	184	179	188	195	206	214	227	228	214	204	199	238	246

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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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A			A	A	A	A										
2							A		102	102					102	102	102	102	102					
3							A	116	A	100	A	100		A	A	A	A	A	A					
4							A	102	100	100		A	A	A	100	100	100	98	104					
5							B	A	A	A	A	A	A	A	100	100		A	A	A				
6							A													A				
7							A	106	104	102	102	102	102	102	102	102	102	102	102					
8							A	A	A	A	A	A	A	A	A	A	100	100	100					
9							B													A				
10							A	100	100		A	A	A	A	A					A				
11							B	A	A											A				
12							B		104	104										A				
13							B	102	102	102	102	102	102	102	100	104	100	104						
14							A	104	104	104	104	104	104	104	102	102	102	98						
15							A	98	102	96		A	A	100	100	100	100	100	104					
16							B	108	102	100	100	100		102	102	102	102	104	116					
17							B	104	104		104	100	100	100	100	102	102	102	118					
18							B	102		102	102	102	102	102	100			102	102					
19							B	110	100	100	100		A	100	100	100	100		A					
20							B	100	100			A	A	A	A	A	A	A	A	A				
21							B	112	106	108		A	100	100	100	100	104	104	104					
22							B	104	104	104			A	104		A	102	102	102					
23							B	110	102		A	102	102	102	102	102	102	102	102					
24							B	106	106	106	106	102	102	102	102	102	102	102	106					
25							A	104	104	100	100	100	100	100	102	102	102	102						
26							B	108	102	102	102	102		A	102	102		A	A	A				
27							B	104	104	104	104	100	100	100	100			A	A	A				
28							B	108	102	102	102	102	102		A	A	102		A	102				
29							B	112	104	104	100	102	100	100		A	100		A	100				
30							B	108	100		A	100	100		A	100	100	100	104					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								25	23	21	18	19	19	21	22	23	21	24	4					
MED								104	102	102	102	102	102	100	100	102	102	102	114					
U Q								108	104	104	104	102	102	102	102	102	102	104	117					
L Q								102	102	100	100	100	100	100	100	100	100	101	107					

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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

H D	00	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	96	96	94	120	120	112	112	108	104	102	96	96	102	102	114	106	176	108	100	96	94	94	90	
2	92	96	88	88	88	96	122	G	106	98	102	98	98	96	96	96	102	98	92	92	88	106	88	90	
3	94	84	84	B	80	B	138	162	126	102	106	94	108	110	128	116	106	104	102	94	94	94	94	94	
4	94	90	90	92	B	B	B	158	98	100	102	140	100	130	148	G	98	104	90	94	94	86	86	90	
5	90	86	88	88	88	B	112	112	112	104	104	106	116	G	114	106	108	110	102	94	90	86	86	92	
6	88	86	B	100	98	98	102	94	96	102	94	94	94	90	90	178	G	G	114	100	92	88	88	88	
7	92	88	106	100	116	B	116	108	110	128	126	116	126	116	120	118	108	102	94	94	90	94	90	84	
8	94	98	100	96	106	98	108	114	104	94	94	166	132	90	126	118	108	104	100	96	96	96	98	102	
9	94	94	94	96	100	100	108	108	100	102	94	94	108	114	G	144	118	106	100	100	100	B	92	B	
10	98	B	B	B	92	92	100	102	102	96	98	178	G	108	G	G	86	118	136	98	92	92	86	86	
11	88	88	88	90	90	98	98	98	120	92	G	96	96	94	94	94	96	90	90	86	86	86	B	B	
12	B	B	B	B	B	B	B	B	138	140	132	G	G	G	G	94	88	134	118	84	86	B	B	B	
13	B	B	B	B	B	94	B	134	116	106	100	106	118	G	G	G	186	154	118	104	106	B	B	100	
14	98	86	B	B	84	128	132	140	120	120	124	132	120	G	126	100	112	102	94	94	90	94	86	90	
15	B	86	86	86	B	100	132	132	110	96	156	90	90	132	118	118	G	106	102	104	98	116	B	B	
16	B	86	B	90	B	B	B	142	G	114	180	108	104	G	98	G	G	G	G	96	B	96	86	B	
17	B	B	B	B	B	B	B	140	G	94	94	94	G	G	G	G	G	G	G	B	B	B	B	94	
18	88	B	B	B	B	B	B	126	158	132	G	114	114	G	G	104	136	122	106	100	94	94	B	B	
19	B	B	B	B	B	B	B	108	108	100	G	90	90	G	112	106	102	94	94	92	92	B	B	B	
20	B	B	B	B	92	B	B	110	100	100	100	110	104	102	96	94	100	90	86	86	84	94	88	B	
21	94	92	B	92	88	88	94	90	G	132	116	G	110	108	102	110	110	126	106	100	102	94	94	100	
22	B	B	92	B	92	98	B	142	142	G	108	102	G	116	106	106	106	150	126	110	92	92	90	90	
23	B	B	B	B	B	B	B	138	122	110	106	G	116	136	130	144	158	G	178	B	96	96	86	B	
24	B	B	B	B	B	B	B	G	122	112	112	110	108	108	108	192	G	128	118	106	84	84	88	84	
25	82	B	86	B	B	B	92	96	124	116	110	112	110	114	110	G	186	152	110	96	94	B	B	92	
26	B	92	90	88	B	B	88	134	132	148	G	G	106	102	102	100	98	92	88	88	90	86	86	B	
27	B	B	B	B	B	88	B	G	110	106	100	102	104	G	176	104	G	92	92	110	86	86	92	B	
28	B	B	B	B	B	90	B	G	114	110	106	102	102	104	100	100	96	G	90	92	92	86	86	86	
29	86	B	B	B	B	90	B	G	144	112	112	G	G	118	98	G	94	146	106	90	84	84	86	86	
30	82	B	B	B	B	104	112	150	106	106	G	G	92	164	168	176	138	114	124	110	106	98	98	B	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	17	15	13	13	14	16	16	25	27	29	24	24	26	22	24	23	24	25	28	28	28	24	22	18	
MED	92	88	90	92	92	98	110	126	112	106	105	104	107	108	109	106	107	106	102	95	92	94	88	90	
U Q	94	94	95	96	100	100	119	140	124	115	112	113	116	116	126	118	127	127	112	100	96	95	92	94	
L Q	88	86	87	88	88	91	99	108	106	100	100	95	98	102	99	100	98	100	93	92	89	86	86	86	

SEP. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 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

H D	00	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 22	F 4	F 5	F 3	FQ 11	FF 11	C 2	C 2	C 2	C 3	C 2	L 2	L 2	C 2	C 2	C 3	H 1	C 4	F 9	F 4	F 3	F 5	F 4		
2	F 3	F 2	F 3	F 2	F 2	F 1	C 3		C 1	L 5	C 2	L 3	L 3	L 2	L 2	L 5	C 3	L 3	L 6	F 6	F 8	FF 35	F 1	F 2	
3	FF 22	F 1	F 1		F 2		H 2	H 1	C 2	C 2	C 2	L 2	C 1	C 1	C 1	C 1	C 3	C 5	C 4	F 6	F 4	F 3	F 6	FF 64	
4	F 8	F 2	F 1	F 1			HC 11	L 3	L 2	L 1	C 1	H 1	C 1	H 1	H 1		L 2	C 2	L 2	F 1	F 1	F 1	F 2	F 1	
5	F 1	F 1	F 1	F 1	F 1		C 2	C 2	C 2	C 4	C 4	C 2	C 1		C 1	C 6	C 2	C 1	C 4	F 1	F 2	F 5	F 2	F 1	
6	F 1	F 1		F 5	F 6	F 7	C 2	L 5	L 2	C 1	L 4	L 2	L 1	L 2	L 2	H 1		C 1	F 4	F 6	F 4	F 3	F 3		
7	F 2	F 2	F 1	F 2	F 1		C 1	C 2	C 1	C 1	CL 11	C 1	CL 11	CL 11	CL 11	C 2	C 1	C 4	L 4	F 3	F 3	F 5	F 4	F 3	
8	F 7	F 6	F 4	F 6	FF 24	F 3	C 3	C 3	C 2	L 5	L 5	HL 11	HL 11	L 11	CL 12	CL 23	C 6	C 6	C 9	F 6	F 5	F 7	F 2	F 2	
9	F 2	F 2	F 1	F 1	F 1	F 2	C 5	C 3	C 2	C 1	L 2	L 2	CL 21	C 2		H 1	C 2	C 8	C 7	F 9	F 9		F 4		
10	F 1				F 1	F 3	C 1	C 3	C 2	L 2	L 1	H 1		C 1			L 1	C 1	HL 11	F 2	F 8	F 3	F 4	F 5	
11	F 3	F 2	F 1	F 1	F 1	F 1	L 11	CL 11	CL 11			L 1	L 1	L 2	L 1	L 2	L 2	L 2	L 4	F 3	F 2	F 1			
12							H 1	H 1	HL 11				HL 11			L 1	L 2	HL 12	C 1	F 1	F 1				
13					F 1		H 1	C 1	C 1	C 1	C 1	C 1					H 1	HL 11	CL 22	F 3	F 1			F 2	
14	F 1	F 1			F 1	F 1	H 2	H 1	C 1	C 1	C 1	H 1	C 1		C 1	C 2	C 2	C 5	L 5	F 4	F 5	F 3	F 2	F 1	
15		F 2	F 1	F 1		F 1	H 1	H 1	C 2	C 2	HL 11	L 3	L 1	H 1	C 1	C 1		C 3	C 3	F 5	F 2	F 1			
16		F 1		F 1			H 1		C 1	HC 11	C 1	C 1		L 1						F 1		F 1	F 1		
17							H 1		L 4	L 1	L 1													F 3	
18	F 3						C 1	LH 21	HL 11		C 1		C 1		C 3	H 1	C 2	C 5	F 8	F 4	F 4				
19							C 3	C 2	C 1		L 2	L 1		C 1	C 1	C 1	C 1	L 6	L 2	F 3	F 3				
20				F 1			C 2	C 2	C 1	C 1	C 1	C 1	C 2	L 2	L 3	CL 33	L 3	L 4	F 7	F 2	F 3	F 1			
21	F 1	F 1		F 1	F 1	F 3	L 1	L 1		HL 11	CL 12		C 1	C 1	C 2	C 1	C 1	C 3	C 8	F 4	F 1	F 3	F 2	F 1	
22			F 1		F 1	F 1		H 1	HC 11		C 1	C 1	C 1	C 1	C 1	C 1	H 1	C 3	C 3	F 5	F 5	F 3	FQ 41	FQ 41	
23							H 2	C 1	C 2	C 1		CH 11	H 1	H 1	H 1	H 1		H 1		F 3	F 3	F 2			
24								C 1	C 2	C 1	C 1	C 1	C 1	C 1	C 1	HC 11		C 2	C 1	F 4	F 1	F 1	F 1	F 2	
25	F 1		F 1				L 3	L 2	CL 21	C 1	C 2	C 1	C 1	C 1	C 1		H 1	H 2	C 1	F 1	F 1			F 1	
26		F 2	F 1	F 2			L 1	H 2	H 2	H 1			C 1	C 2	C 1	C 1	L 3	L 4	L 3	F 3	F 4	F 3	F 1		
27					F 1			C 1	C 1	C 2	C 1	C 1		H 1	C 1		L 3	L 2	FF 14	F 4	F 1	F 2			
28					F 1			C 1	C 1	C 2	C 1	C 2	C 1	C 2	C 1	L 1	L 3		L 2	F 3	F 2	F 2	F 1	F 1	
29	F 1				F 1			H 1	C 1	C 1			C 1	L 1	L 1	L 2	H 1	C 5	F 3	F 3	F 2	F 2	F 1	F 1	
30	F 1				F 1	C 1	H 1	C 2	C 2			L 1	H 1	H 1	H 1	H 1	C 3	C 1	CL 61	FF 11	F 4	F 3			
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

SEP. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2022 f_{XI} (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

H D	00	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 59	X 59	X 58	X 58	X 53	X 47						C	C	C	C						X 101	X 84	X 58	X 54	
2	X 54	X 53	X 56	X 52	X 51	X 48															X 89	X 77	X 71	X 69	
3	X 59	X 64	X 60	X 64	X 47	X 44															X 100	X 61	X 62	X 60	
4	X 59	X 60	X 58	X 60	X 65	X 59															X 135	X 110	X 74	X 77	
5	X 77	X 87	X 56	X 50	X 52	X 69															X 66	X 64	X 59	X 56	
6	X 55	X A	X 48	X 46	X 45	X 45					C	C	C	C	C	C	C	C			X 108	X 100	X 98	X 87	
7	X 92	X 92	X 94	X 82	X 62	X 59				C	C	C	C	C	C	C					X 76	X 74	X 66	X 65	
8	X 64	X 65	X 61	X 51	X 51	X 53					C	C	C	C	C	C	C	C			X 60	X A	X 55	X 60	
9	X 70	X 72	X 64	X 62	X 56	X 47					C	C									X 82	X 85	X 89	X 92	
10	X 93	X 92	X 82	X 63	X 57	X 52															X 134	X 84	X 91	X 84	
11	X 90	X 70	X 78	X 95	X 54	X A															X 149	X 102	X 93	X 93	
12	X 91	X 87	X 88	X 85	X 72	X 58															X 93	X 74	X 69	X 72	
13	X 71	X 66	X 69	X 65	X 63	X 55															X 113	X 107	X 84	X 79	
14	X 70	X 64	X 58	X 56	X 50	X 48															X 100	X 77	X 70	X 70	
15	X 69	X 64	X 63	X 58	X 52	X 50															X 86	X 90	X 94	X 114	
16	X 94	X 80	X 74	X 69	X 59	X 50															X 131	X 144	X 105	X 78	
17	X 76	X 78	X 80	X 70	X 62	X 60															X 99	X 91	X 91	X 98	
18	X 94	X 80	X 71	X 72	X 58	X 51															X 99	X 88	X 70	X 64	
19	X 59	X 58	X 60	X 67	X 51	X 48															X 133	X 111	X 94	X 65	
20	X 63	X 60	X 63	X 56	X 50	X 50															X 110	X 86	X 65	X 72	
21	X 67	X 65	X 59	X 57	X 54	X 47															X 136	X 116	X 109	X 108	
22	X 100	X 104	X 111	X 88	X 51	X 42															X 118	X 114	X 107	X 102	
23	X 95	X 94	X 84	X 75	X 46	X 42														X 134	X 107	X 89	X 72	X 64	
24	X 64	X 64	X 61	X 61	X 61	X 46															X 137	X 126	X 91	X 74	X 70
25	X 73	X 74	X 72	X 66	X 58	X 50															X 122	X 127	X 92	X 61	
26	X 58	X 59	X 63	X 61	X 48	X 45															X 123	X 104	X 113	X 122	X 114
27	X 101	X 75	X 90	X 72	X 84	X 50															X 136	X 117	X 97	X 91	X 72
28	X 77	X 88	X 59	X 52	X 52	X 51															X 158	X 164	X 164	X 286	X 266
29	X 192	X 146	X 115	X 114	X 91	X 66															X 116	X 127	X 135	X 127	X 108
30	X 92	X 81	X 69	X 71	X 68	X 61															X 121	X 103	X 100	X 74	X 72
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	29	30	30	30	29														8	30	29	30	30	
MED	X 72	X 72	X 64	X 64	X 54	X 50														X 128	X 108	X 91	X 79	X 72	
U Q	X 92	X 87	X 80	X 72	X 62	X 56														X 136	X 127	X 110	X 94	X 93	
L Q	X 63	X 64	X 59	X 57	X 51	X 47														X 122	X 99	X 84	X 70	X 65	

SEP. 2022 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	53	53	52	52	47	41	46	66	65	70	74		C	C	C	85	103	110	98	99	94	78	52	48		
2	48	47	50	46	45	42	45	69	82	63	70	76	88	102	99	97	93	A	106	107	83	71	65	63		
3	53	58	54	58	41	38	43	64	71	74	71	83	85	80	85	84	82	95	114	127	94	55	56	54		
4	53	54	52	54	59	53	52	80	84	70	73	84	100	90	104	129	116	112	U R	146	122	R	104	68	71	
5	71	81	50	44	46	63	76	55	76	A	A		A	54	57	56	64	64	68	68	60	58	53	50		
6	49	A	42	40	39	39	40	66	66	53	C	C	C	C	C	C	C	C		108	110	R	R	R		
7	86	R	86	88	76	56	53	60	82	H	C	C	C	C	C	C		90	99	112	105	70	68	60	59	
8	58	59	55	45	45	47	60	72	70	75	C	C	C	C	C	C	C	C		95	114	A	49	54		
9	64	66	58	56	50	41	44	70	85	89	C	C	102	110	126	112	114	122	113	108	76	79	83	86		
10	87	86	76	57	51	46	50	71	83	84	87	97	99	96	104	105	104	116	125	126	128	78	R	R		
11	R	64	72	H	A		37	69	76	83	93	121	131	154	166	164	157	153	156	159	143	96	87	87		
12	85	81	82	79	66	52	60	77	81	89	88	109	115	110	118	109	103	98	104	107	87	68	63	66		
13	65	60	63	59	57	49	52	83	97	108	100	H	108	129	143	132	121	R	123	121	121	131	H	101	78	73
14	64	58	52	50	44	42	53	92	87	90	75	76	85	94	87	91	96	105	122	113	94	71	64	64		
15	F	58	57	52	46	44	49	84	86	93	90	82	91	96	100	110	118	120	117	96	80	R	R	F		
16	85	74	68	63	53	44	49	80	73	74	88	104	115	121	119	129	132	137	136	135	J R	138	99	72		
17	70	72	74	64	56	54	56	72	82	82	83	92	105	108	109	108	115	123	122	H	115	93	84	85	92	
18	88	74	65	66	52	45	45	70	88	101	82	103	104	106	109	110	107	102	105	107	93	82	64	58		
19	53	52	54	H	45	41	48	72	83	76	71	85	98	112	108	109	115	120	119	116	127	105	R	58		
20	57	54	57	50	44	44	52	H	83	72	81	83	94	104	107	92	103	116	124	118	117	R	80	59	66	
21	61	59	53	51	48	41	40	65	85	85	80	96	116	123	127	149	172	178	190	J R	176	130	110	103	102	
22	R	R	R	82	45	36	39	71	82	81	82	92	119	144	147	161	152	146	151	143	112	108	101	96		
23	89	FJ	R	69	40	36	43	75	74	78	80	87	108	115	106	106	110	114	123	128	101	83	66	58		
24	58	58	55	55	55	40	49	84	83	91	83	82	92	114	119	123	130	123	123	131	120	85	68	64		
25	67	68	66	60	52	44	42	79	84	86	92	109	117	112	106	104	108	110	118	116	121	H	64	55		
26	52	53	57	55	42	39	48	76	88	102	87	85	100	108	115	118	122	133	134	117	98	F	F	F		
27	U	F	F	66	U	F	44	40	75	90	92	94	92	101	108	115	136	150	155	148	130	111	91	85	65	
28	71	82	53	46	46	45	52	80	82	89	86	89	102	116	128	141	149	157	144	J R	152	F	F	F		
29	F	F	F	F	F	60	60	91	85	89	88	87	102	108	111	121	128	127	121	110	U R	U R	121	102		
30	86	75	63	65	62	55	57	80	87	96	103	99	103	110	124	128	126	130	132	115	97	94	68	66		
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	29	29	30	30	29	30	30	30	28	25	25	25	26	26	27	28	27	30	30	30	29	29	27		
MED	66	66	57	58	48	44	49	75	82	84	83	92	102	109	110	110	116	121	121	116	102	85	68	66		
U Q	85	81	73	66	56	50	53	80	85	90	89	101	115	115	124	129	129	133	134	130	121	104	88	81		
L Q	57	58	53	51	45	41	43	70	74	76	78	84	98	102	104	104	104	110	112	108	93	78	64	58		

SEP. 2022 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	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	C	C	C	C	A	488	436	L	L					
2									A	A	L			A	A	L	A		A	L					
3									L	L	L		L	L	L	L			A	L					
4									L	L	L	A					L	L	L	L					
5									416	A	A	A	A	U	L	A	A	A		L					
6								L	L	L	C	C	C	C	C	C	C	C	C						
7									L	C	C	C	C	C	C	C		496	452	L					
8									A	L	C	C	C	C	C	C	C	C		A					
9									L	L	C	C					L	L							
10								L	L	L	L	L	L	L		L	L	L	L						
11									L	L	L	L	L	L	L	L	L	L	L						
12									396	L	L	L	L	L	L	L	L	L	L						
13									L	L	L	L	L	L	L	L	L	L	L		A				
14									L	L	L	L	L	L	L	L	L	L	L						
15									L	L	L	L	L	L	L	L	L	L	L						
16									L	L	L	L	L	L	L	L	L	L	L						
17									L	L	L	L	L	L	L	L	L	L	L						
18									L	L	L	L	L	L	L	L	L	L	L		L				
19									L	L	L	L	L	L	L	L	L	L	L						
20									L	L	L	L	L	L	L	L	L	L	L						
21									L	L	L	L	L	L	L	L	L	L	L						
22									L	L	L	L	L	L	L	L	L	L	L						
23									L	L	L	L	L	L	L	L	L	L	L						
24									L	L	L	L	L	L	L	L	L	L	L						
25									L	L	L	L	L	L	L	L	L	L	L						
26									L	L	L	L	L	L	L	L	L	L	L		A	L			
27									L	L	L	L	L	L	L	L	L	L	L						
28									L	L	L	L	L	L	L	L	L	L	L						
29									L	L	L	L	L	L	L	L	L	L	L						
30									L	L	L	L	L	L	L	L	L	L	L						
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									2	4	15	20	23	25	20	22	20	5							
MED									406	458	516	540	540	548	542	530	496	436							
U Q									488	520	554	580	558	554	544	504	452								
L Q									452	500	526	524	532	524	512	482	426								

SEP. 2022 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	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					C	C	C	C					A					
								204	276	320	352					356	328	280	208						
2							B					A	A	A	A					A	A				
								220	280							352	324	284							
3							B		A	A	A	A	A		A					A	A				
								212						388		360	328	284							
4							B	A	A	A	A	A	R	A				A		B					
												396		368				276	212						
5							A													A	A				
								216	280	328	356	368	376	372	364	356	324	284							
6							B	A		A	C	C	C	C	C	C	C	C							
									300												200				
7							B	A	A	C	C	C	C	C	C	C				A	A				
8							B			A	C	C	C	C	C	C				U	A				
								212	284													184			
9							B	A		A	C	C	A												
									256					372	372	348	320	272	192						
10							B													A					
								224	292	332	352	376	380	376	372	352	324	276	208						
11							A	A	A	A		A													
											348		388	380	372						284	204			
12							B																		
								232	308	348	380	396	404	392	388	364	340	296	208						
13							B																		
								228	292	324	348	384	396	392	380	368	332	280	208						
14							B	A																	
									296	328	352	372	392	400	392	364	328	280			A	A			
15							B			A															
								216	276		348	364	380	392	376							284			
16							B							A											
								224	276	324	348	368	364		376	360	324	276	188						
17							B																		
								212	276	332	360	376	372	372	368	360	320	272	176						
18							B	A	A		A			A											
										316		372		376	372	352	320	268							
19							B			A	B	A													
								196	256				368	384	368	352				A	A	A	B		
20							B			A															
								212	280		340	364	392	376	368	348									
21							B																		
								204	284		348	376	380		352	340	320	276							
22							B				U	A			A										
								200	268	304	324	352	356	344		336									
23							B																		
								208	284	332	360	372	380	384	368	348	316	268							
24							B																		
								244	300	332	364	380		376	372	352	312	268							
25							B																		
								216	284	332	356	368		372	368	348	316	264	180						
26							B			A															
								200	280	328		368	376	372	356										
27							B						A	A	A	A									
								208	292	328	348					348	292	256							
28							B	A																	
									284	332	356	368	364	352	352	340	296								
29							B	A					A		A	A									
									300	344	364		392								320	276			
30							B	A						B	A										
									300	340	364		372			348	316	260	180						
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								20	25	18	20	17	19	19	20	22	21	23	14						
MED								212	284	330	352	372	380	376	370	352	320	276	196						
U Q								222	294	332	360	376	392	388	374	360	326	284	208						
L Q								206	276	324	348	368	372	372	368	348	316	268	184						

SEP. 2022 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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

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

IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	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 16	E 16	E 16	E 16		39	23	E 16	28	41	46	47	C	C	C	C	54	38	32	25	39	59	22	E 16	25
2	E 19	E 16	E 16	E 17	E 17	E 16	E 16	28	50	52	48	40	71	65	45	54	40	A 11	A 11	22	38	30	34	32	21
3	E 16	E 16	E 16	E 16	E 16	E 16	E 16	28	34	36	38	40	48	44	42	38	37	44	27	46	E 16	E 16	24	30	
4	20	32	E 16	E 16	E 16	E 16	E 16	25	32	40	37	51	G	40	43	38	34	G	G	E 14	E 16	E 16	E 16	E 16	
5	22	E 16	E 16	E 16	E 16	E 16	20	30	33	A 89	A 98	52	A 78	47	52	50	49	32	24	22	E 16	E 16	E 16	21	
6	22	A 65	A 16	E 16	E 16	E 16	E 16	25	25	34		C	C	C	C	C	C	C		30	46	18	E 16	E 16	
7	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	32		C	C	C	C	C	C		38	30	26	24	E 16	19	E 16	
8	33	E 16	E 16	E 16	E 16	E 16	E 16	30	42	40		C	C	C	C	C	C	C		58	51	A 41	A 108	E 16	
9	E 16	E 16	E 16	E 16	E 16	E 16	E 16	37	34	38		C	C	43	43	40	42	40	40	43	69	E 16	E 16	E 16	
10	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	35	40	46	43	45	45	40	37	20	G	G		24	24	19	E 16	
11	E 16	29	24	22	A 24	A 34	19	24	32	34	38	39	G	G	45	39	34	20	G		32	17	E 16		
12	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	32		G	G	G	G	45	42	39	40	40	29	32	E 16	E 16		
13	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	32	37	38	42	43	42	51	41	36	38	42	50	E 16	E 16	E 16		
14	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	32	40	40	43	G	45	62	45	44	35	31	22	18	24	E 16		
15	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	33	35	40	42	41	43	44	40	35	30	30	20	29	20	E 16		
16	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	31	39	39	41	40	40	G	G	G	G		22	E 16	E 16	E 16		
17	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	32	G	G	G	G	32	39	G	G	G		29	23	E 16	E 16		
18	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	30	38	38	40	42	41	40	40	35	32	28	49	21	E 16	E 16		
19	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	30	34	E 38	40	41	G	42	G	32	26	22	E 16	E 16	E 16			
20	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	G	36	40	37	44	45	39	38	47	29	16	G	20	E 16	E 16		
21	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	G	36	37	40	41	41	38	G	35	28	22	20	18	18	E 16		
22	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	32	35	37	40	38	38	38	44	33	28	23	22	E 16	21	E 16		
23	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	32	G	G	40	43	41	G	G	34	30	21	16	E 16	18	E 16		
24	E 16	E 16	E 16	E 16	E 16	E 16	E 16	G	32	40	42	42	42	41	42	38	34	40	33	28	E 16	E 16			
25	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	34	41	41	44	44	42	41	39	40	39	35	24	E 16	19	E 16		
26	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	31	35	37	38	40	40	40	40	52	31	23	20	20	E 16	E 16		
27	E 16	E 16	E 16	E 16	E 16	E 16	E 16	23	31	35	40	40	40	41	38	38	34	23	22	18	E 16	E 16			
28	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	31	36	40	42	40	40	42	38	32	27	18	E 16	E 16	E 16			
29	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	G	35	39	39	44	40	42	35	33	51	31	16	E 16	E 16			
30	E 16	E 16	E 16	E 16	E 16	E 16	E 16	26	34	35	39	41	E 41	E 41	43	42	39	34	30	34	E 16	E 16			
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	29	26	25	26	26	26	27	28	28	30	30	30	30	30	30	
MED	E 16	E 16	E 16	E 16	E 16	E 16	E 16	25	32	36	39	40	41	41	42	39	35	30	26	22	E 16	E 16	E 16		
U Q	16	16	16	16	16	16	16	26	34	40	40	42	44	44	43	42	40	38	31	38	18	19	16		
L Q	E 16	E 16	E 16	E 16	E 16	E 16	E 16	24	31	35	37	40	G 40	G 40	39	37	34	28	22	17	E 16	E 16	E 16		

SEP. 2022 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	16	16	16	19	21	C	C	C	C	17	16	14	16	16	16	16	16	16
2	16	16	16	17	17	16	16	16	16	19	20	24	27	24	27	24	19	15	13	16	16	16	16	16
3	16	16	16	16	16	16	16	14	16	18	21	22	24	25	24	22	20	19	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	20	24	25	32	25	29	22	21	14	14	14	16	16	16	16
5	16	16	16	16	16	16	16	16	22	21	26	29	26	28	27	26	22	16	14	16	16	16	16	16
6	16	16	16	16	16	16	16	16	17	20	C	C	C	C	C	C	C	C	14	16	16	16	16	16
7	16	16	16	16	16	16	16	16	14	C	C	C	C	C	C	C	19	14	12	16	16	16	16	16
8	16	16	16	16	16	16	16	16	15	19	C	C	C	C	C	C	C	C	14	16	16	16	16	16
9	16	16	16	16	16	16	16	16	17	18	C	C	23	20	22	20	18	14	15	16	16	16	16	16
10	16	16	16	16	16	16	16	16	14	16	23	21	18	20	19	16	14	14	14	16	16	16	16	16
11	16	16	16	16	16	16	16	16	17	21	23	28	29	23	23	21	19	14	12	16	16	16	16	16
12	16	16	16	16	16	16	16	14	17	20	22	24	26	25	22	28	23	19	14	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	22	23	26	32	28	23	21	18	12	16	14	16	16	16	16
14	16	16	16	16	16	16	16	17	21	20	22	28	27	32	23	22	18	18	14	16	16	16	16	16
15	16	16	16	16	16	16	16	16	17	21	22	23	22	22	22	22	18	16	14	16	16	16	16	16
16	16	16	16	16	16	16	16	16	18	18	23	25	26	24	26	23	21	18	14	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	23	21	24	25	25	24	21	18	17	15	16	16	16	16	16
18	16	16	16	16	16	16	16	16	19	20	24	23	23	26	23	22	18	15	16	16	16	16	16	16
19	16	16	16	16	16	16	16	16	15	20	38	24	22	21	22	20	16	18	12	16	16	16	16	16
20	16	16	16	16	16	16	16	16	16	18	19	20	22	22	26	25	22	16	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	14	17	22	24	22	20	20	18	22	17	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	18	21	26	28	25	23	22	20	15	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	20	23	25	24	28	22	21	21	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	20	22	24	25	26	29	29	20	16	16	13	16	16	16	16	16
25	16	16	16	16	16	16	16	16	14	17	19	19	20	25	25	21	20	17	16	16	16	16	16	16
26	16	16	16	16	16	16	16	14	14	18	23	22	23	26	24	21	17	14	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	18	18	20	25	28	28	24	20	19	14	14	16	16	16	16	16
28	16	16	16	16	16	16	16	16	17	21	25	27	25	25	21	22	20	16	14	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	19	24	23	24	26	28	24	20	18	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	19	19	20	27	23	41	24	20	20	14	16	16	16	16	16	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	26	25	26	26	26	27	28	28	30	30	30	30	30	30
MED	16	16	16	16	16	16	16	16	16	19	22	24	24	25	24	21	19	16	14	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	17	20	24	26	27	28	26	22	20	17	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	18	21	23	23	23	22	20	18	14	14	16	16	16	16	16

SEP. 2022 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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	293	318	323	304	315	322	338	381	352	351	310		C	C	C		269	294	314	321	325	326	354	295	284			
2	292	281	290	307	308	326	328	377	384	346	332	305	290	303	304	300	296		A	308	333	336	298	294	278			
3	277	268	286	353	329	300	342	368	360	357	321	324	319	308	308	306	270	277	315	341	357	282	287	277				
4	271	265	273	278	309	319	306	352	369	328	299	312	322	299	264	306	298	275	U R	267	R	272	267	254	268			
5	288	331	355	266	256	287	361	301	343		A	255		A	273	277	281	307	303	311	304	292	279	281	275			
6	278		A	278	279	285	313	319	346	352	358	C	C	C	C	C	C	C		C	301	318	265	R	R			
7	255	259	R	297	333	281	273	312	343	364		C	C	C	C	C	C		C				R	R	R			
8	268	310	325	276	265	285	346	389	366	316		C	C	C	C	C	C		C				A	267	278			
9	282	295	290	302	319	286	305	336	347	332		C	C															
10	292	313	325	313	308	312	333	352	371	349	331	320	312	297	302	288	281	310	306	329	366	279	233	R	R			
11	224	244	254	314	396		328	365	354	317	299	312	290	300	299	305	301	315	310	330	353	306	275	284				
12	274	274	281	306	312	267	312	372	337	337	316	308	303	283	288	286	307	302	319	332	333	279	274	285				
13	292	288	300	304	311	296	312	352	339	343	300	H	286	288	301	279	273	249	R	284	310	336	315	313	286	280		
14	277	279	285	305	301	310	317	374	358	395	319	304	305	308	301	295	297	303	326	341	356	292	289	295				
15	280	280	301	305	297	286	303	363	357	330	356	288	295	287	284	296	312	323	339	330	273	R	271	F				
16	F	277	267	288	318	325	313	318	377	375	337	317	301	309	302	289	299	306	311	309	321	317	J R	241	R	286		
17	284	313	317	330	306	325	323	362	352	350	326	303	293	298	304	292	299	324	345	298	322	279	268	297				
18	270	268	312	316	327	342	322	350	345	346	334	296	281	268	274	302	318	317	324	335	333	304	273	284				
19	271	265	294	H	311	316	310	328	362	366	367	315	309	291	317	305	308	316	327	335	291	310	290	R	271			
20	273	280	297	307	293	287	319	367	336	330	328	304	312	325	294	288	305	324	329	315	J R	355	263	274	266			
21	282	261	293	313	330	355	320	346	371	348	336	296	314	292	291	293	314	310	335	343	330	293	269	235				
22	R	245	R	253	R	263	324	350	336	322	368	382	350	315	295	288	311	299	315	301	313	318	345	324	292	289	276	
23		F	J	R	290	307	304	326	327	330	331	394	390	356	343	292	305	318	302	301	308	304	319	331	331	315	306	283
24	291	306	293	298	347	311	326	378	368	357	324	313	283	296	294	302	320	318	326	329	332	288	279	277				
25	271	284	291	316	330	288	292	369	359	335	314	307	316	314	311	308	318	320	345	339	314	H	269	248	267			
26	290	291	307	334	319	310	339	368	362	372	349	321	300	302	300	292	315	334	339	353	290	304	F	287	F			
27	U	F		F	U	F	322	347	341	309	371	366	362	344	311	300	293	286	290	310	332	305	311	300	279	243	262	
28	284	356	320	293	291	308	322	387	365	356	337	324	284	294	291	300	313	337	333	302	J R	305	289	F	F			
29	F	F	F	F	F	329	334	302	318	335	320	297	356	371	363	360	305	308	307	296	300	320	320	316	302	U R	U R	258
30	282	291	283	290	310	318	326	362	354	336	346	325	289	284	292	292	285	316	335	329	304	284	302	288				
31																												
CNT	30	29	29	30	30	29	30	30	30	28	25	25	25	26	26	27	28	27	30	30	30	29	29	27				
MED	281	284	294	309	314	311	322	366	361	348	326	305	300	300	295	299	306	314	320	330	322	282	274	277				
U Q	290	308	310	318	329	324	328	374	369	357	340	312	310	308	302	302	314	323	335	339	333	296	287	284				
L Q	271	268	286	302	301	288	312	352	352	336	315	296	288	293	288	290	298	303	310	315	300	R	272	260	267			

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IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	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	C	C	C	C	A	346	370	L	L				
2									A	A	A	388	A	A	L	A	376	A	L					
3									L	L	L	395	397	A	A	L	388	364	350	A	L			
4									LU	LU	L	A	393	391	339	366	365	348	L	L				
5									A	A	A	A	A	A	A	A	A	A	L					
6								L	LU	L	C	C	C	C	C	C	C	C	C					
7									L	C	C	C	C	C	C	C	348	349	L					
8									A	L	C	C	C	C	C	C	C	C	A					
9									L	L	C	C				L	L							
10								L	L	L	A	L	L	L	L	L	L	L	L	L				
11									L	L	L	L	L	L	L	L	L	L	L	L				
12									427			377	372	361	352	356	353	L	L					
13									L	L	L	L	L	L	L	L	L	L	L	L				
14									L	L	L	L	L	L	L	L	L	L	L	L				
15									L	L	LU	L	L	L	L	L	L	L	L	L				
16									L	L	L	L	L	L	L	L	L	L	L	L				
17									L	L	L	L	L	L	L	L	L	L	L	L				
18									L	L	L	L	L	L	L	L	L	L	L	L				
19									L	L	H	L	L	L	L	L	L	L	L	L				
20									L	L	L	L	L	L	L	L	L	L	L	L				
21									L	L	L	L	L	L	L	L	L	L	L	L				
22									L	LU	L	L	L	L	L	L	L	L	L	L				
23									L	L	U	L	L	L	L	L	L	L	L	L				
24									L	L	L	L	L	L	L	L	L	L	L	L				
25									L	L	L	L	L	L	L	L	L	L	L	L				
26									L	L	LU	LU	L	L	L	L	L	L	L	L				
27									L	L	382	390	382	346	355	345	366	L	L					
28									L	L	L	L	L	L	L	L	L	L	L	L				
29									L	L	LU	L	L	L	L	L	L	L	L	L				
30									L	L	L	L	L	L	L	L	L	L	L	L				
31									L	L	L	L	L	L	L	L	L	L	L	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	4	13	20	22	22	20	22	19	5						
MED									388	406	386	384	371	366	360	353	356	355						
U Q									L	L	L	L	L	L	L	L	L	L	L					
L Q									408	399	392	388	378	368	364	365	374							
									L	L	L	L	L	L	L	L	L	L	L					
									393	376	372	355	361	351	348	350	348							

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SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									228	258	296	C	C	C	C	354	302	258	244					
2									216	^{E A} 252	282	308	354	304	296	290	304	^A	266					
3									228	250	264	284	280	300	292	296	358	326	266					
4									230	238	302	308	274	324	354	292	266	290	246					
5									272	^A	^{A E A} 444	^{A U L} 440	432	^{E A} 386	318	310	288							
6							256	242	256		C	C	C	C	C	C	C	C						
7								220		C	C	C	C	C	C	C	302	274						
8								226	238		C	C	C	C	C	C	C	^{E A} 274						
9								244	266		C	C	342	316	288	274	268							
10							212	222	242	254	266	284	292	302	288	304	276	250						
11								220	278	298	284	260	278	282	274	276	264							
12								246	270	280	268	276	300	302	280	262								
13								248	244	258	294	306	282	272	304	314	280	264						
14								214	230	290	292	292	314	320	300	288								
15								220	278	228	270	290	332	314	308	280	258							
16								230	274	288	278	286	310	286	280	256	240							
17								224	234	242	298	282	310	290	308	280	252							
18								222	244	238	304	288	328	318	298	270	262	250						
19								226	216	318	304	306	282	288	284	264	246							
20								268	274	280	268	318	302	292	260									
21								222	228	248	306	276	266	288	302	270	252							
22								222	238	248	302	316	276	286	262	256	244							
23								206	234	248	300	300	268	278	296	270	266							
24								220	236	248	254	298	308	292	296	262								
25								248	262	290	254	272	270	262	260	264								
26								224	224	248	254	278	294	298	280	282	248							
27								226	232	248	262	270	296	308	296	266	246							
28								232	244	254	318	302	302	292	270	236								
29								226	230	266	284	288	304	292	264									
30								220	250	238	246	282	328	300	298	276	256							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	23	27	25	25	25	26	26	27	28	24	10					
MED								234	224	238	248	286	284	293	299	296	278	261	254					
U Q								228	250	272	303	303	310	310	302	301	275	266						
L Q								220	232	243	266	277	278	288	286	267	252	246						

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SEP. 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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	278	268	254	256	E A E A	314	228	212	208	A	A	A	C	C	C	C	A	230	234	238	242	242	200	222	298				
2	274	282	258	224	250	230	244	202		A	E A	A		A	E A	A	A	224	A	228	228	204	E A E A	252	290				
3	300	286	270	202	194	236	234	210	210	218	202	170		E A	E A	A			A		E A	194	172	284	310				
4	E A	E A	E A	298	286	242	218	266	214	222	196	198		186	166	E A	252	212	220	212	236	240	214	192	310	286			
5	268	228	198	304	332	270	224	210	240		A	A	A	E A	A	A	A		A	226	258	244	236	252	260	E A	294		
6	300		A	294	290	280	246	248	236	220	204		C	C	C	C	C	C		C		248	236	214	242	236	260		
7	282	270	242	208	236	280	242	210	202		C		C	C	C	C			212	202	240	214	202	236	280	E A	300		
8	E A	342	258	224	276	318	288	232	208		A	210	C	C	C	C	C		C		C		A	224	208		352	308	
9	276	248	254	248	222	274	270	234	216	206		C	C				E A	254	254	242	240	236	272	288	288				
10	258	218	202	212	234	222	228	202	214	206	E A	216	196	210	202	186	208	194	218	236	224	206	192	270	262				
11	296	E A	E A	E A	280	230	198		252	210	196	188	188	190	182	184	228	214	212	228	250	228	194	184	254	266			
12	260	268	266	220	204	248	260	204	212	198	200	184	172	218	204	216		E A	246	248	260	236	208	202	292	278			
13	262	270	248	242	228	220	254	232	210	208	200	194	196	188		A	230	214	262		A	236	196	194	202	258			
14	254	274	278	246	212	242	238	224	212		A	202	190	178	212	E A	A	E A	E A	A	254	258	242	258	224	206	220	264	244
15	258	274	250	220	228	260	272	222	214	190	212	200	194	196	E A	220	218	220	222	230	208	E A	222	254	240	242			
16	270	276	264	230	212	232	252	212	208	196	190	200	176	200	208	204	208	226	228	218	194	202	234	266					
17	278	244	224	212	230	222	232	214	204	200	184	170	164	196	188	202	214	230	230	204	196	222	266	242					
18	250	268	242	224	208	208	230	214	196	220	200	200	230	194	188	228	226	222	242	236	208	216	246	254					
19	290	312	274	210	228	248	248	212	210	206	198	182	204	186	228	204	212	214	226	210	208	180	276	294					
20	288	294	248	228	248	274	242	200	206	204	190	184	194	E A	244	226	200	E A	278	224	230	224	202	184	278	296			
21	274	276	266	236	218	210	246	214	212	204	190	186	178	200	184	204	222	222	232	202	180	220	266	286					
22	276	260	228	202	196	204	238	210	204	196	186	182	178	190	192	E A	244	214	212	228	210	188	226	228	244				
23	248	248	216	204	188	228	244	202	200	196	184	196	198	194	210	198	210	226	248	212	208	208	222	254					
24	266	244	274	260	208	232	242	214	210	218	204	202	184	216	224	216	228	244	248	230	198	190	246	276					
25	264	256	242	214	218	270	278	208	216	224	218	212	208	196	220	220	244	250	232	214	202	182	256	284					
26	280	260	250	212	220	248	228	212	212	212	192	186	178	192	190	212		A	228	224	210	206	198	208	232				
27	264	254	240	230	204	206	242	216	214	206	200	190	192	174	182	230	230	236	222	208	188	228	252	302					
28	278	202	208	254	268	234	238	200	210	210	208	202	180	176	E A	216	216	210	228	214	200	194	232	236	228				
29	228	216	224	232	190	198	230	218	210	204	194	184	212	194	220	212	216	236	222	210	224	204	218	218					
30	238	240	270	246	218	226	212	212	214	200	196	188	174	182	242	240	238	246	238	212	220	194	222	232					
31																													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	30	29	30	30	30	29	30	30	27	25	24	23	23	25	23	24	26	26	28	30	30	29	30	30					
MED	272	264	250	230	220	232	242	212	210	204	198	190	186	194	207	214	217	228	236	222	206	203	253	265					
U Q	282	276	270	248	242	254	252	214	214	210	203	200	204	E A	207	226	229	230	242	248	236	214	230	276	294				
L Q	260	246	228	212	208	221	232	208	206	197	190	184	178	187	190	205	212	222	228	210	196	192	234	244					

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

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SEP. 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

H D	00	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	110	102	102	102	C	C	C	C	102	100	100	102	A					
2							B	102	102	A	A	A	A	A	A	102	102	102	A	A					
3							B	102	A	A	A	A	A	A	A	102	102	102	A	A					
4							B	A	A	A	A	A	108	A	104	A	A	102	102	B					
5							A	110	106	104	104	102	102	102	102	106	104	108	A	A					
6							B	A	112	A	C	C	C	C	C	C	C	C	102	A					
7							B	A	A	C	C	C	C	C	C	C	102	102	A	A					
8							B	102	102	A	C	C	C	C	C	C	C	C	102	A					
9							B	A	100	A	C	C	A	100	100	102	100	102	106	A					
10							B	114	104	102	102	102	102	104	100	100	102	100	106	A					
11							A	A	A	A	100	A	100	100	98	A	A	106	104	A					
12							B	114	104	102	102	108	102	102	102	102	102	102	102	A					
13							B	104	102	102	102	102	102	102	102	104	102	102	100	A					
14							B	A	106	104	100	104	104	104	104	104	102	102	A	A					
15							B	106	102	A	102	100	102	106	106	A	A	108	A	A					
16							B	110	100	102	102	102	102	A	104	102	102	100	108	B					
17							B	108	102	104	102	102	102	100	100	102	102	102	108	B					
18							B	A	A	102	A	100	A	100	102	102	102	102	A	A					
19							B	104	100	A	B	A	100	100	102	102	A	A	A	B					
20							B	106	100	A	100	102	102	102	102	102	A	A	104	A					
21							B	112	104	A	102	102	102	A	102	102	102	106	A	A					
22							B	106	104	102	102	102	104	102	A	102	A	A	A	A					
23							B	110	102	102	102	100	100	104	102	102	102	104	A						
24							B	114	108	104	104	104	A	102	102	100	100	104	A						
25							B	108	108	102	102	102	A	100	104	102	102	104	112						
26							B	112	104	102	A	102	100	102	102	A	A	A	A						
27							B	108	104	100	100	A	A	A	A	100	104	104	A						
28							B	A	104	102	102	102	102	104	102	102	102	A	A						
29							B	A	104	104	104	A	104	A	A	A	104	104	A						
30							B	A	102	102	102	A	100	B	A	100	102	102	E B						
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								20	25	18	20	17	19	19	20	22	21	23	14						
MED								108	104	102	102	102	102	102	102	102	102	102	104						
U Q								111	104	104	102	102	102	104	103	102	102	104	108						
L Q								105	102	102	102	102	100	100	102	102	102	102	102						

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NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	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	84	84	98	96	94	96	120	110	108	110	C	C	C	C	104	120	176	200	96	96	94	94	94	
2	94	90	106	88	B	88	98	114	100	96	96	116	92	94	108	116	106	100	100	92	86	100	100	88	
3	84	B	B	B	B	B	B	146	140	140	100	98	124	128	132	132	124	108	102	96	86	84	94	92	
4	92	96	102	B	96	96	104	150	146	96	106	100	G	102	128	100	96	G	G	88	88	B	B	152	
5	96	98	92	86	96	B	116	116	118	112	106	114	108	118	110	112	108	108	102	92	88	88	78	104	
6	102	102	B	106	98	104	98	94	96	96	C	C	C	C	C	C	C	C	126	102	88	90	94	92	
7	92	B	B	B	B	B	B	118	146	C	C	C	C	C	C	C	116	116	100	96	92	86	86	96	
8	92	90	94	100	98	94	116	102	104	104	C	C	C	C	C	C	C	C	102	96	98	98	98	104	
9	96	94	94	98	96	B	110	98	100	96	C	C	92	118	128	124	112	106	104	100	98	100	96	90	
10	B	86	B	B	104	88	92	130	112	112	112	112	108	112	114	122	88	G	132	96	90	86	B	B	
11	92	88	88	88	90	90	90	92	96	100	110	100	G	G	188	176	88	90	106	86	86	84	B	126	
12	B	B	B	B	114	B	B	138	124	G	G	94	G	178	156	148	132	112	104	94	96	B	B	B	
13	B	B	B	B	B	B	B	136	162	136	104	116	112	110	108	172	156	126	108	98	100	B	88	B	
14	B	112	92	B	B	B	B	118	112	106	120	116	G	120	108	114	108	102	100	96	92	86	110	84	
15	84	B	B	B	B	B	B	128	106	102	114	106	116	130	116	90	88	110	100	100	94	94	92	94	
16	B	92	92	88	90	92	92	146	128	114	114	110	104	94	G	G	G	G	144	B	B	B	B	B	
17	B	B	B	B	B	B	86	152	156	G	G	G	92	90	G	G	G	132	110	B	B	B	B	B	
18	B	88	86	B	B	B	B	106	150	176	104	158	168	132	122	156	138	122	102	96	94	90	88	90	
19	B	B	B	B	B	B	B	150	108	102	B	90	108	G	102	G	104	100	92	92	90	B	B	B	
20	90	B	B	B	B	B	B	134	G	104	104	102	108	104	114	110	98	98	100	96	84	94	98	92	
21	94	92	90	B	B	90	94	170	G	182	116	106	112	92	108	G	110	110	116	96	94	90	88	88	
22	86	92	B	90	88	B	B	138	106	104	104	106	108	106	104	102	102	148	96	92	94	86	B	B	
23	90	84	86	B	B	B	B	150	142	G	G	134	134	176	G	G	134	124	106	88	94	84	86	88	
24	B	86	86	86	B	B	B	G	122	110	108	110	110	172	170	166	156	122	114	106	98	96	96	B	
25	92	B	B	B	B	B	B	124	114	106	112	108	110	108	112	142	126	130	118	92	90	114	B	100	
26	90	90	88	84	B	B	B	136	124	146	108	108	106	108	102	96	92	92	92	88	88	86	B	B	
27	B	B	B	B	B	B	B	138	112	110	102	104	104	102	104	110	106	98	92	86	B	96	90	82	
28	88	B	B	B	B	B	B	124	124	114	108	106	106	108	104	108	102	102	96	96	90	86	B	B	
29	86	86	B	B	B	B	B	144	G	120	108	108	174	100	100	100	184	112	108	104	110	90	88	84	
30	B	B	B	B	B	B	B	142	136	158	120	110	104	B	172	136	124	122	126	112	104	100	96	96	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	18	18	14	11	11	9	12	29	27	26	22	24	22	23	23	22	26	25	29	28	27	24	19	20	
MED	92	90	91	88	96	92	97	134	118	109	108	108	108	108	112	115	109	110	104	96	92	90	94	92	
U Q	94	94	94	98	98	95	107	145	140	120	112	113	112	128	128	142	126	123	115	97	96	96	96	98	
L Q	88	86	86	86	90	89	92	117	106	102	104	103	104	102	104	104	102	101	100	92	88	86	88	88	

SEP. 2022 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 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

H D	00	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	F2	F9	F8	L1	C2	C4	C3	C2					C3	C1	H1	H1	L5	F9	F5	F1	F5	
2	F2	F1	F1	F3		F2	L1	C2	C5	L4	L3	C1	LQ51	L5	C1	C2	C3	C5	C2	L5	F7	FF46	FF23	F1	
3	F1							H1	HL11	HL11	LH11	L1	C1	C1	HL11	H1	C1	C3	C3	L7	F2	F1	F2	F5	
4	F4	F5	F1		F1	F1	C1	HC11	HL11	L2	C1	C2		C1	C1	C1	L1			L3	F1			F1	
5	F7	F2	F1	F2	F1		C3	C2	C1	C2	C3	C2	C4	C1	C2	C2	C2	C1	C2	L4	F2	F1	F1	F5	
6	F4	F9		F1	F1	F1	L3	L2	L1	L1									C5	C8	F3	FQ21	F1	F2	
7	F1							C1	HC11								C2	C2	C5	L3	F4	F2	F1	F5	
8	F5	F1	F1	F2	F2	F2	C3	C4	C5	C2									C8	L9	FQ41	FQ41	FQ61	F1	
9	F2	F2	F1	F1	F2		C1	L3	C3	L2			L2	C1	C1	C1	C3	C4	C6	C9	FQ41	FQ41	F3	F2	
10		F1			F1	F6	L2	C1	C2	C2	C1	C1	C1	CL11	C1	C1	L1		H2	L6	F7	F4			
11	F2	F5	F8	F6	F9	F5	L2	L1	L2	L1	L1	C1			H1	HL11	LH11	LH11	C4	L4	F2	F1		F1	
12					F1			H1	C1			L1		H1	H1	H1	H1	C2	C5	C5	F1				
13								H1	H1	HC11	C1	C1	C1	C1	CL11	HL11	H1	C2	C3	L9	F3		F2		
14		F1	F1					C1	C2	C1	C1	C1		C1	L3	C2	C3	C3	C3	L6	F3	F5	F1	F1	
15	F1							C1	C3	C1	C1	C1	C1	CL11	CL12	L2	L1	CL2	C4	CL23	F6	F3	F3	F1	
16		F1	F1	F2	F1	F1	L1	H1	C1	C1	C1	C1	C1	L1					HL11						
17							L1	HC11	H1				L1	L2				H1	C3						
18		F2	F1					C1	HC11	HC11	C1	H1	HL11	H1	C1	H1	H1	C2	C2	L6	F5	F2	F1	F1	
19								HC11	C1	C1		L1	C1		C1		C1	C2	L4	L1	F1				
20	F1							H1		C1	C2	C1	C1	C2	C1	C1	L2	L3	L1	L6	F1	F3	F1	F4	
21	F2	F2	F2			F2	L1	H1		HC11	C1	C1	C1	L1	C1		C1	C1	L1	L1	F3	F2	F2	F2	
22	F1	F1		F1	F1			HC11	C2	C1	C1	C1	C1	C1	C1	C2	C1	HL13	L1	L3	F1	F3			
23	F2	F2	F1					H1	H1			H1	H1	H1			H1	C1	C1	F1	F1	F2	F2	F2	
24		F1	F1	F1				C1	C1	C1	C1	C1	C1	C1	H1	H1	H1	C2	CL42	FF82	F3	F1	F1		
25	F1							C2	C2	C2	C1	C2	C1	C1	C1	C1	C3	C2	C4	F5	F5	F3		F1	
26	F1	F2	F2	F1				H1	C1	H1	C1	C1	C1	C1	C1	L1	L2	L4	L3	F7	F4	F1			
27								H1	C1	C1	C2	C1	C1	C1	C1	C1	C1	L1	LC31	F3		F2	F1	F1	
28	F1							C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	L1	F1	F1	F1			
29	F1	F1						H1		C1	C1	C1	H1	L1	LH11	C1	H1	CL51	C5	F3	FF11	F1	F1	F1	
30								HC13	H1	H1	C1	C1	C2		HL11	H1	C2	C3	C3	F8	F2	F1	F2	F1	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

SEP. 2022 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
◊	f _o F ₂ , f _o F ₁ , f _o E
×	f _x F ₂
*	DOUBTFUL f _o F ₂ , f _o F ₁ , f _o E
⊗	f _b E _s
└	ESTIMATED f _o F ₁
†, ‡	f _{min}
^	GREATER THAN
∨	LESS THAN

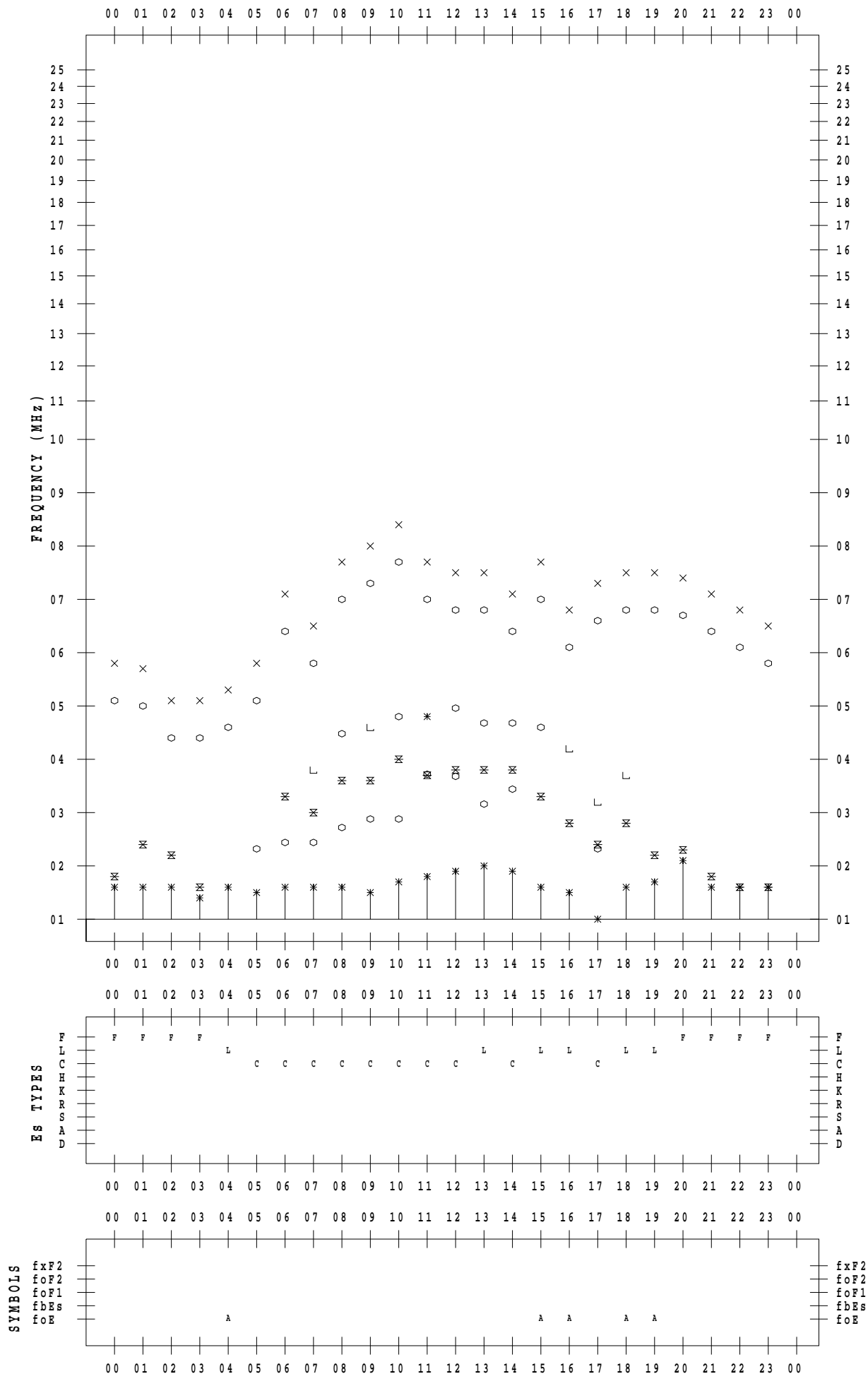
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 1

135 ° E MEAN TIME



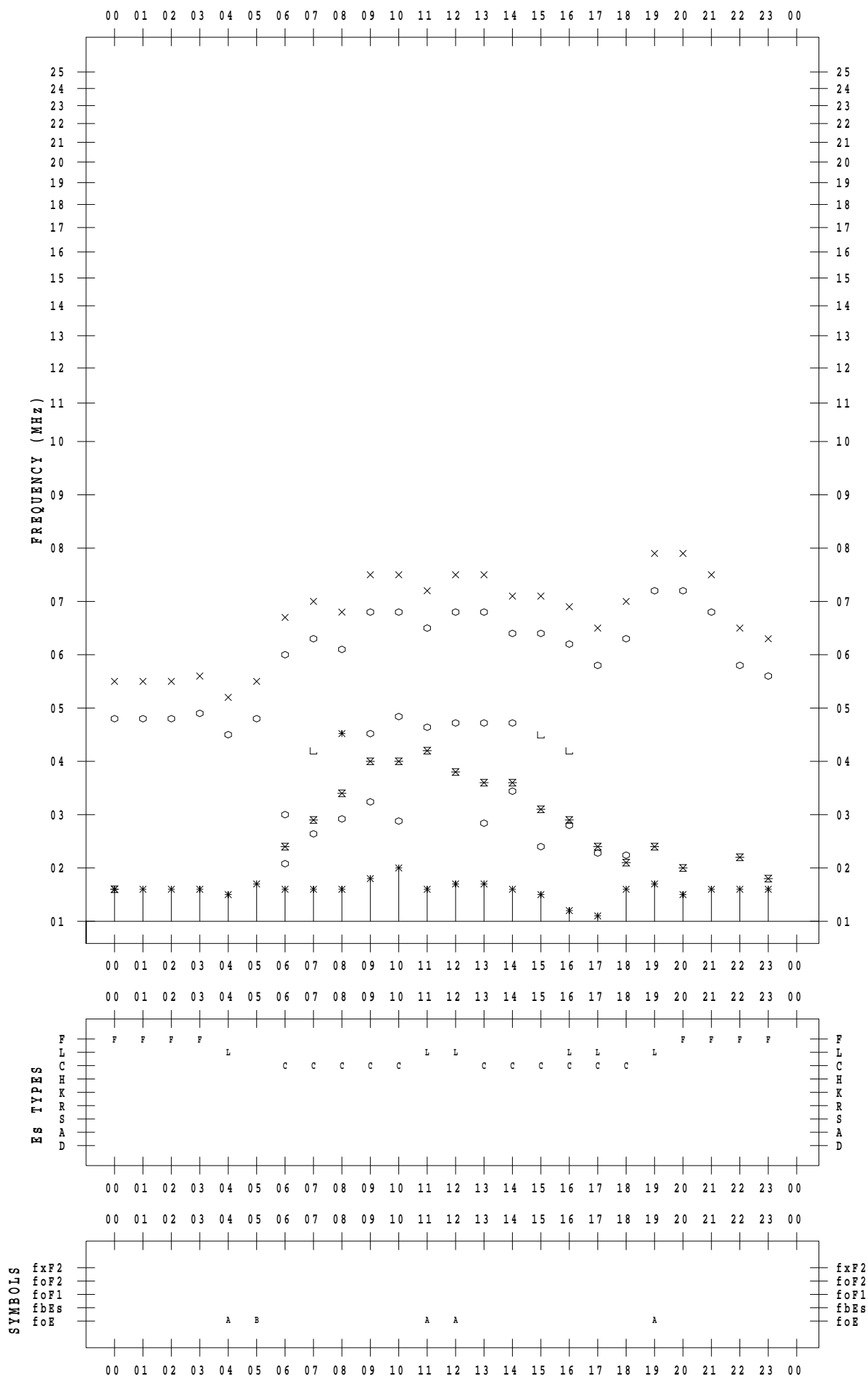
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 2

135 ° E MEAN TIME



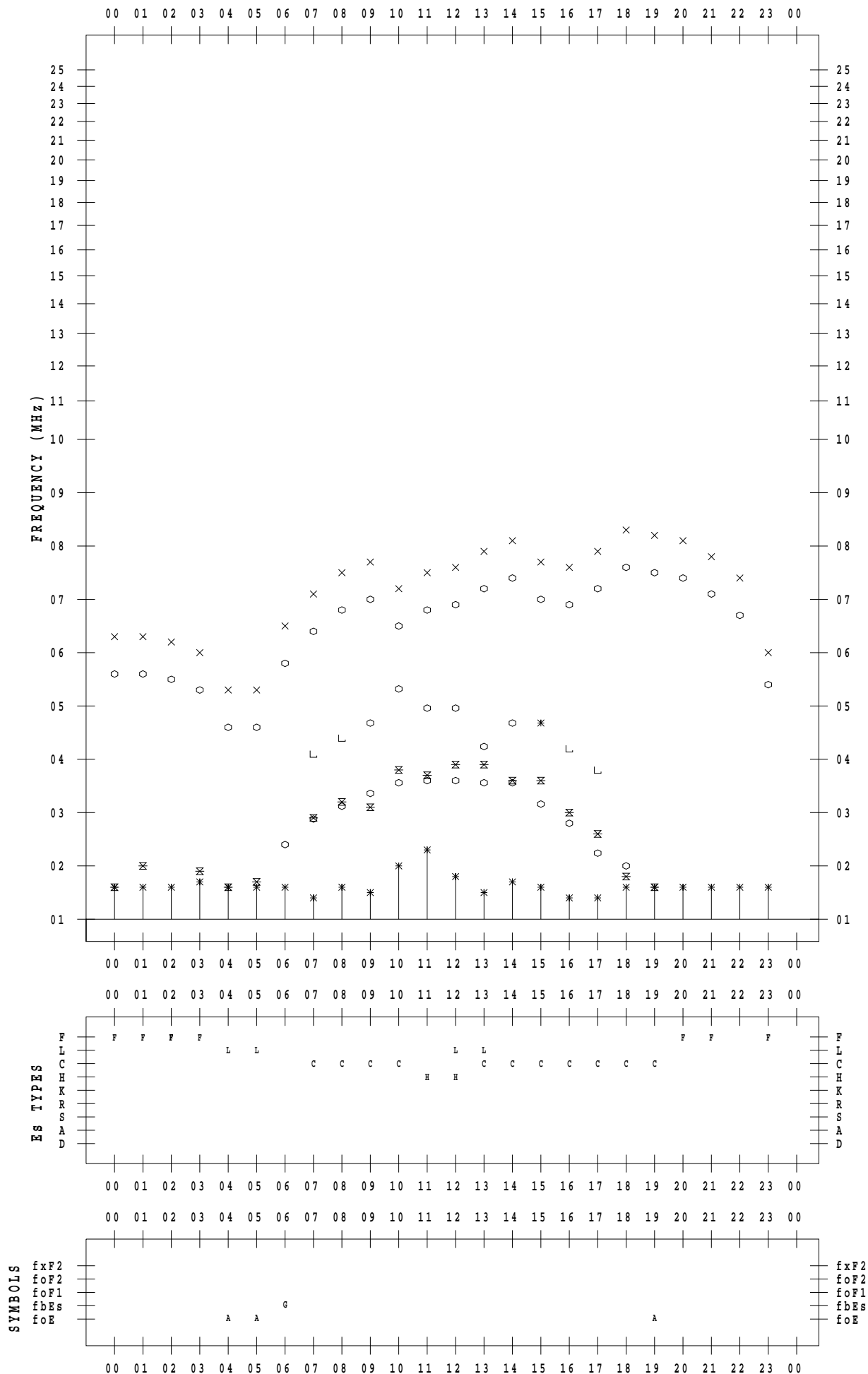
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 3

135 ° E MEAN TIME



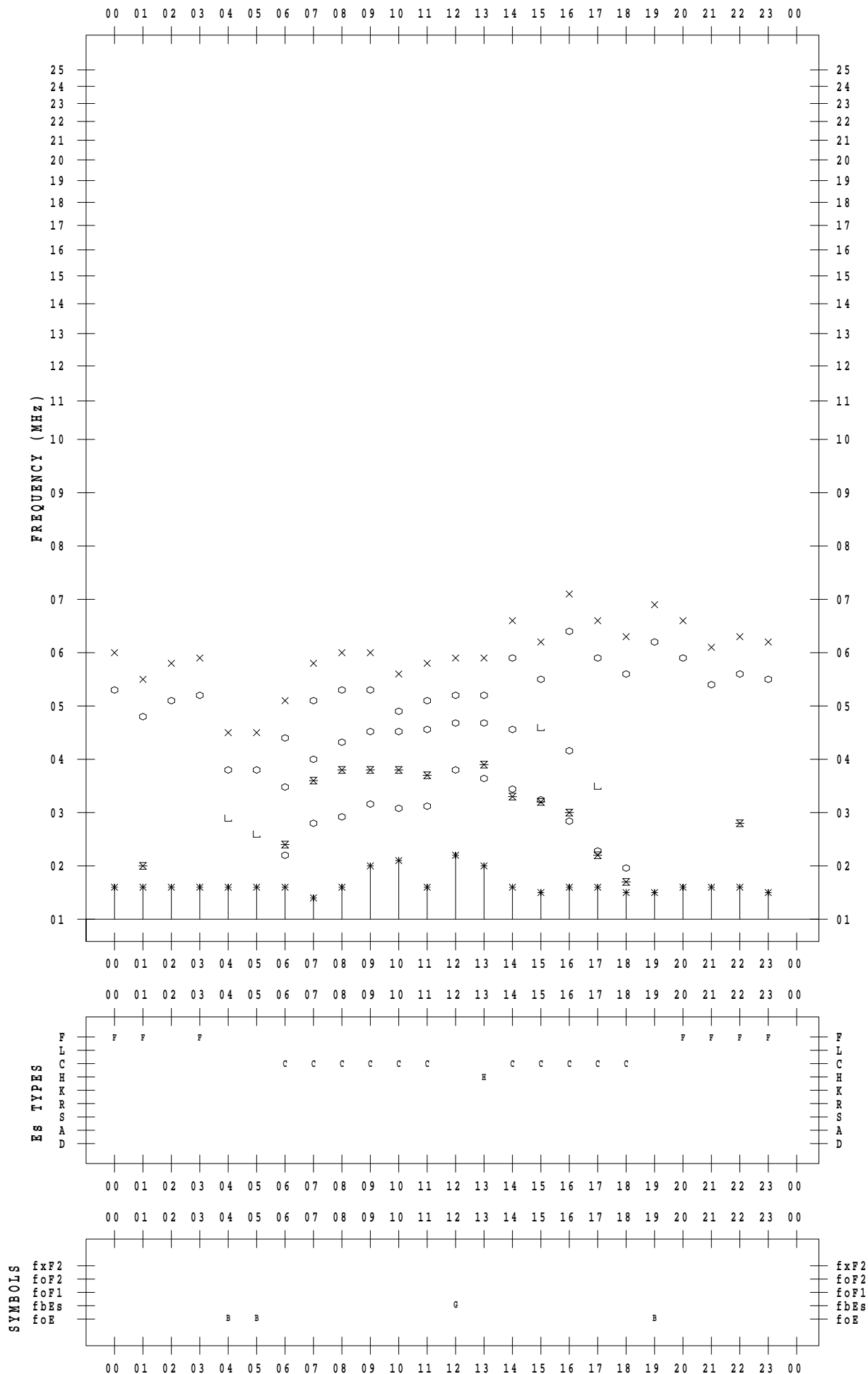
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 4

135 ° E MEAN TIME



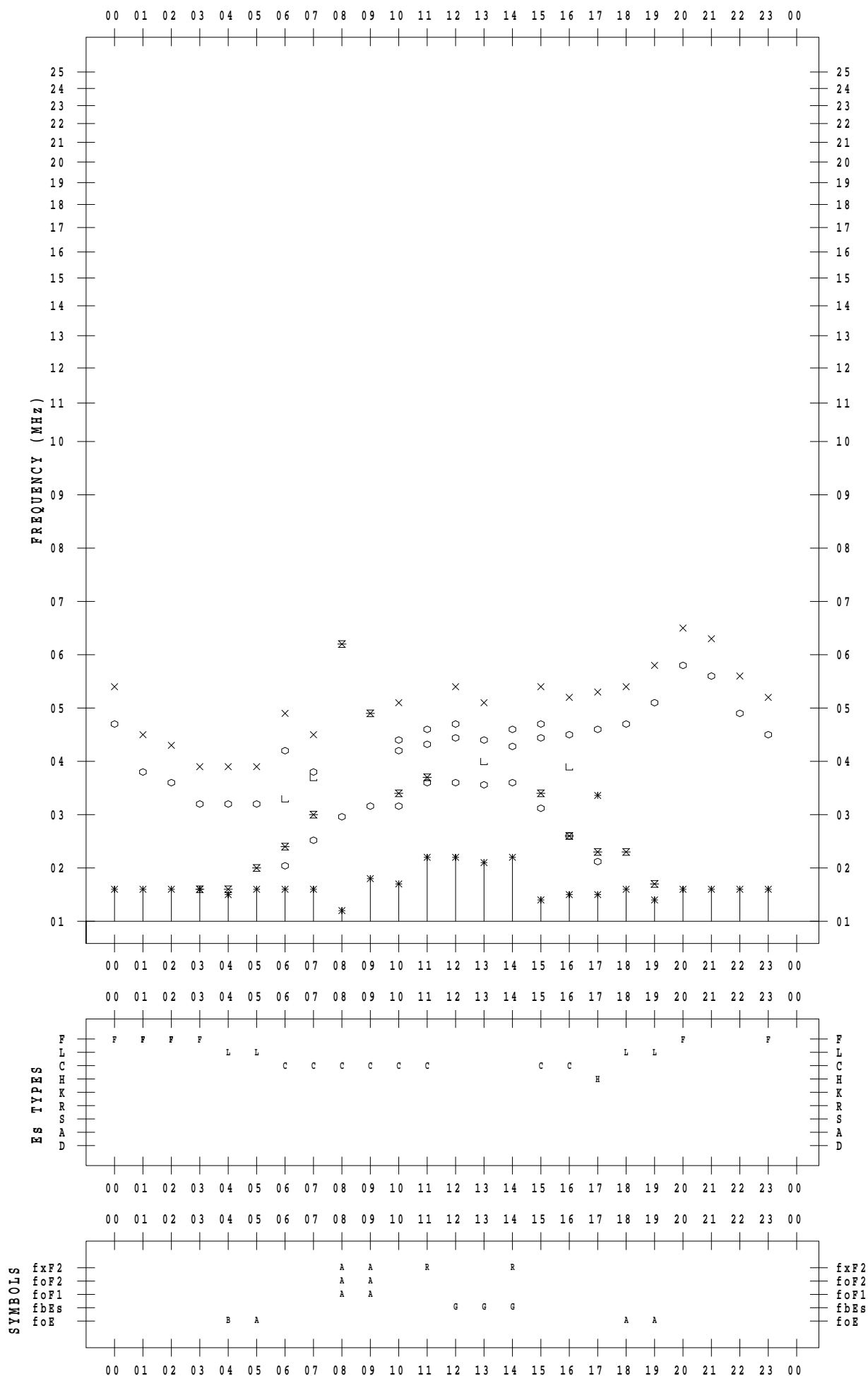
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 5

135 ° E MEAN TIME



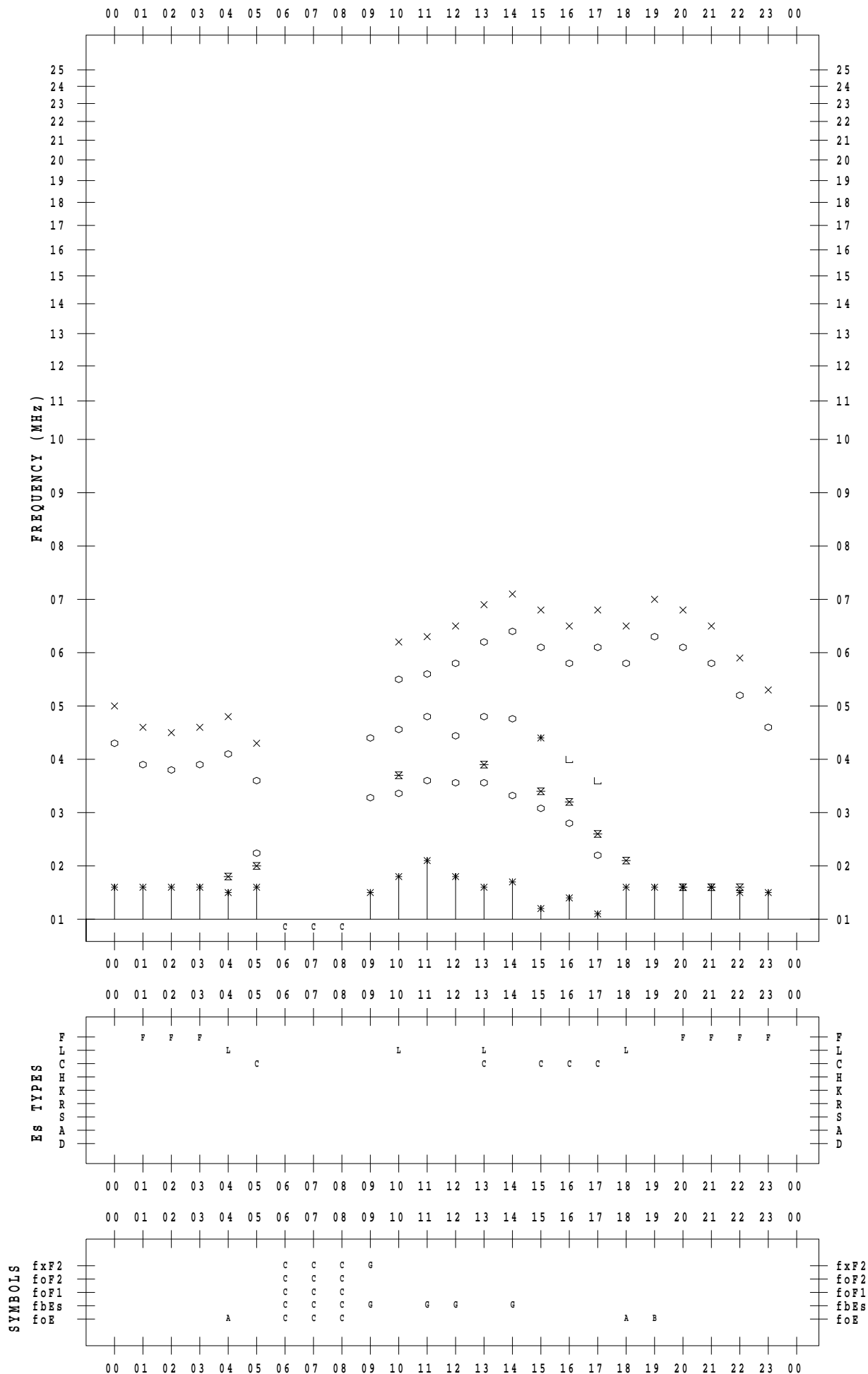
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 6

135 ° E MEAN TIME



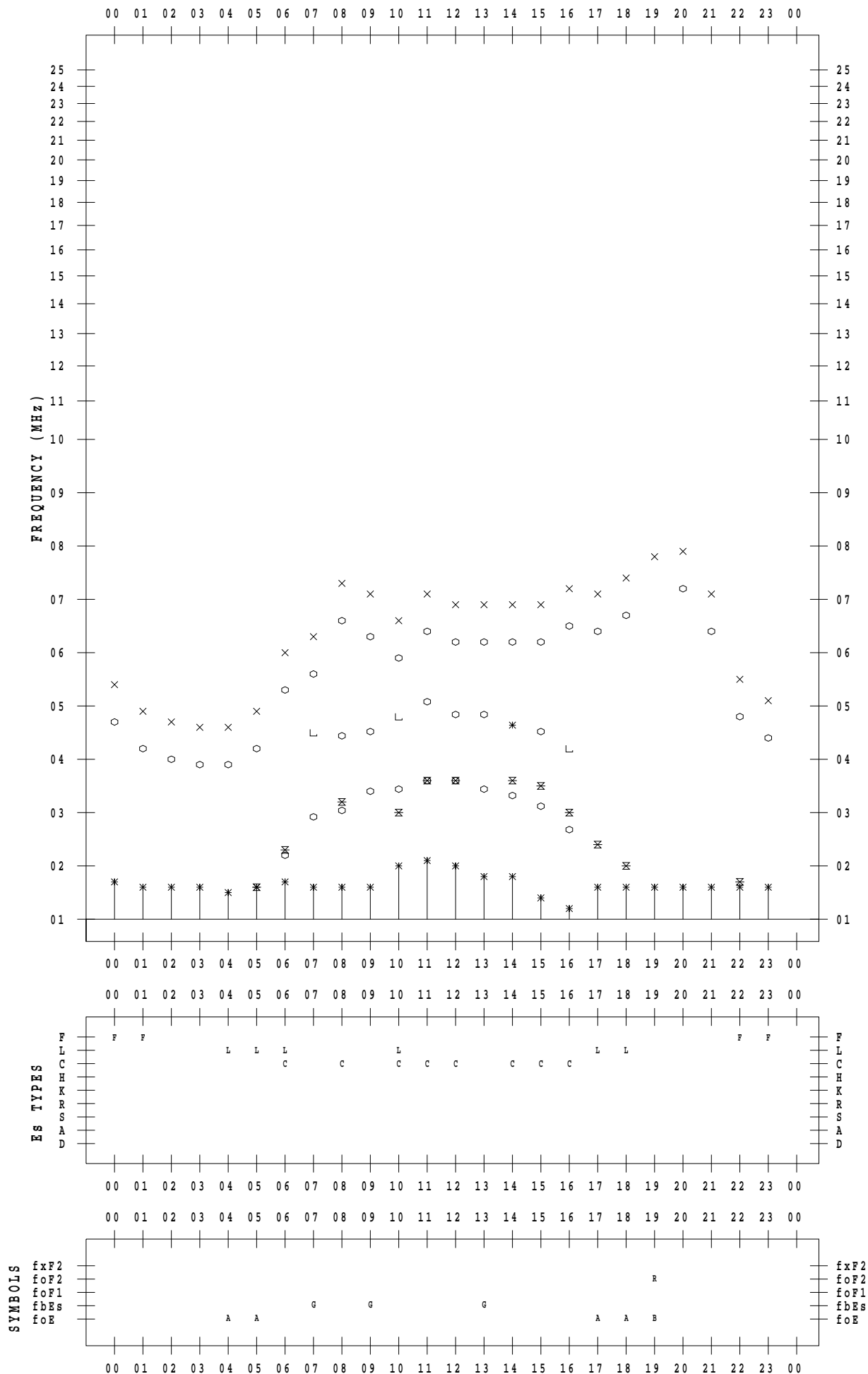
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 7

135 ° E MEAN TIME



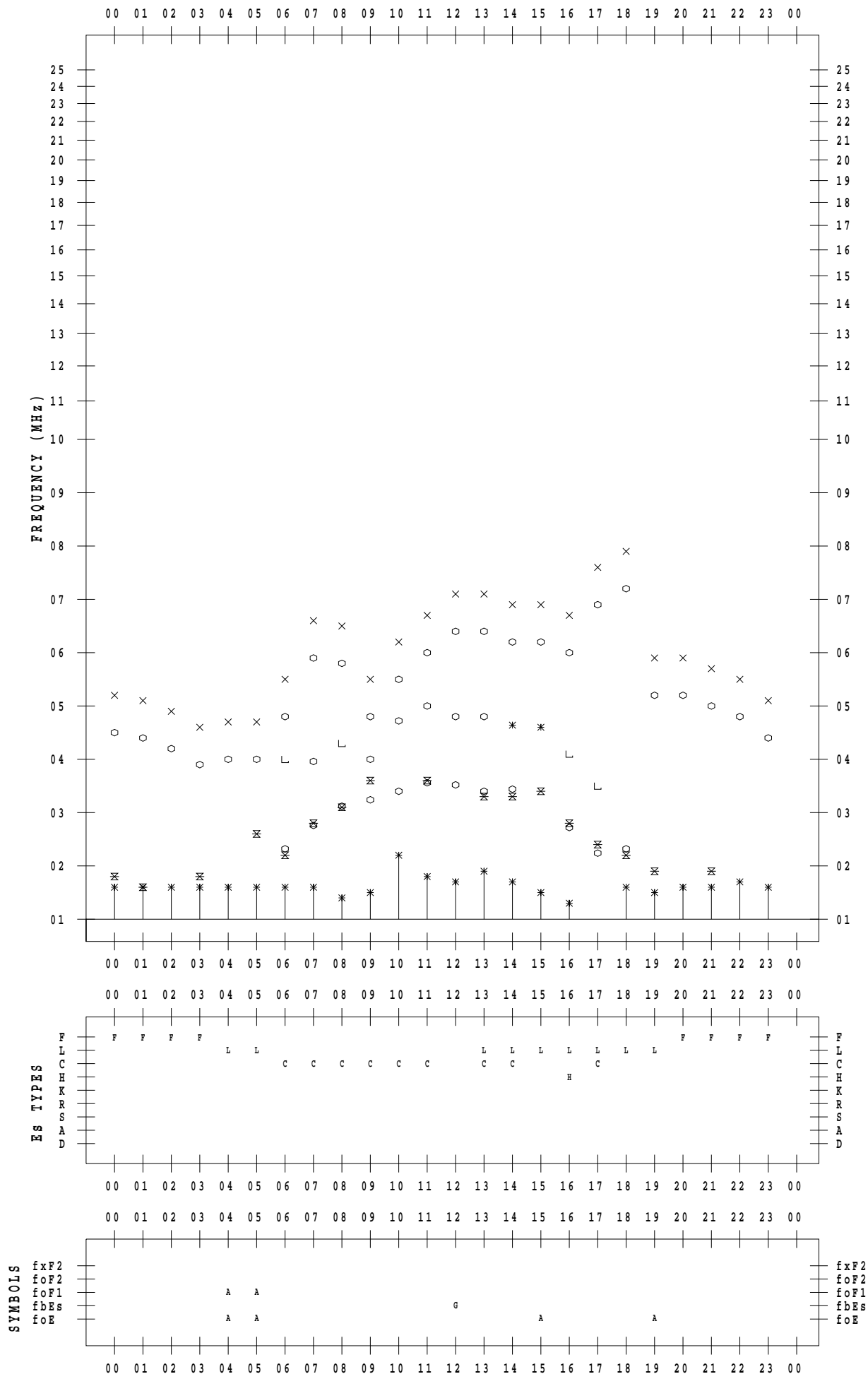
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 8

135 ° E MEAN TIME



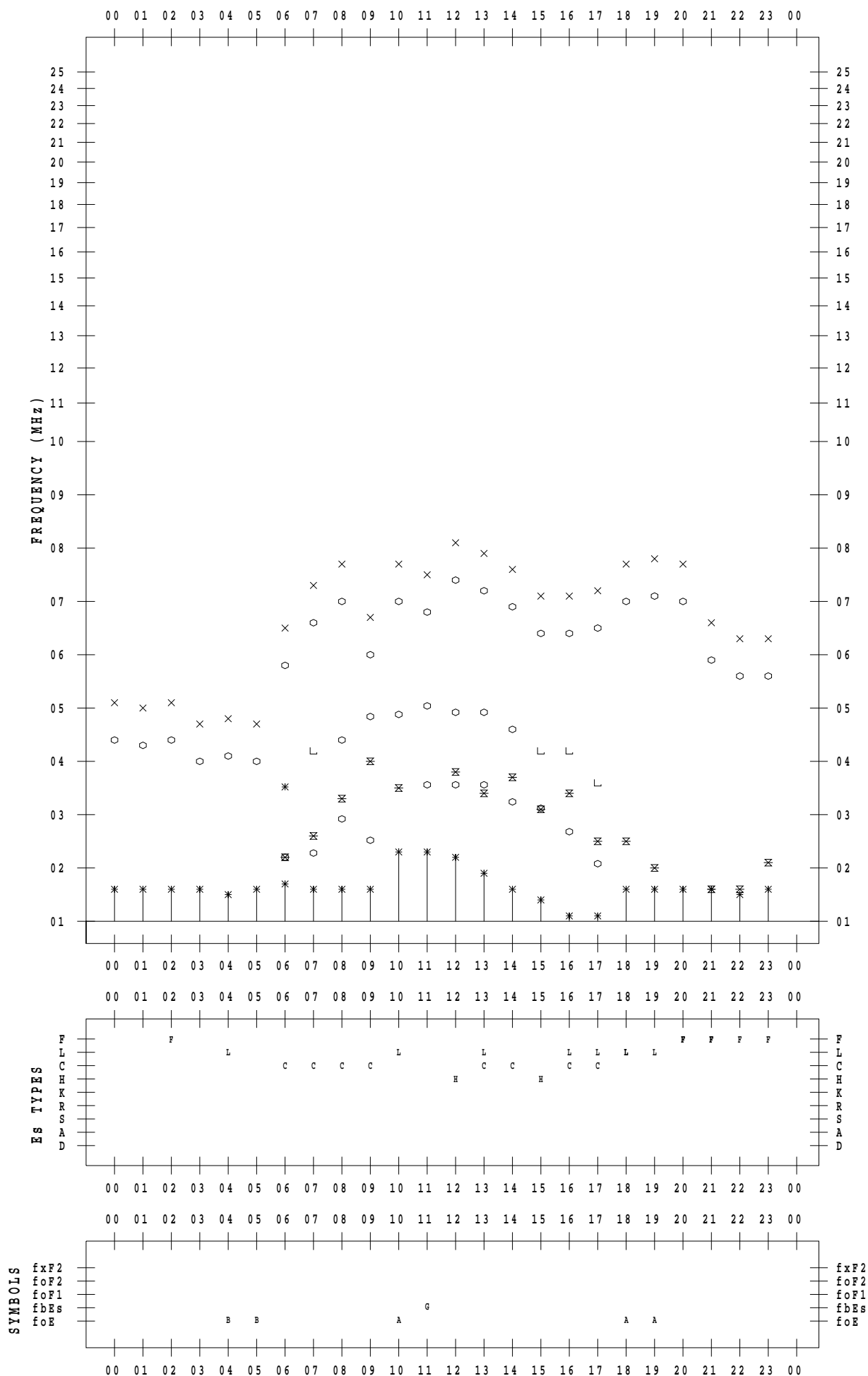
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 9

135 ° E MEAN TIME



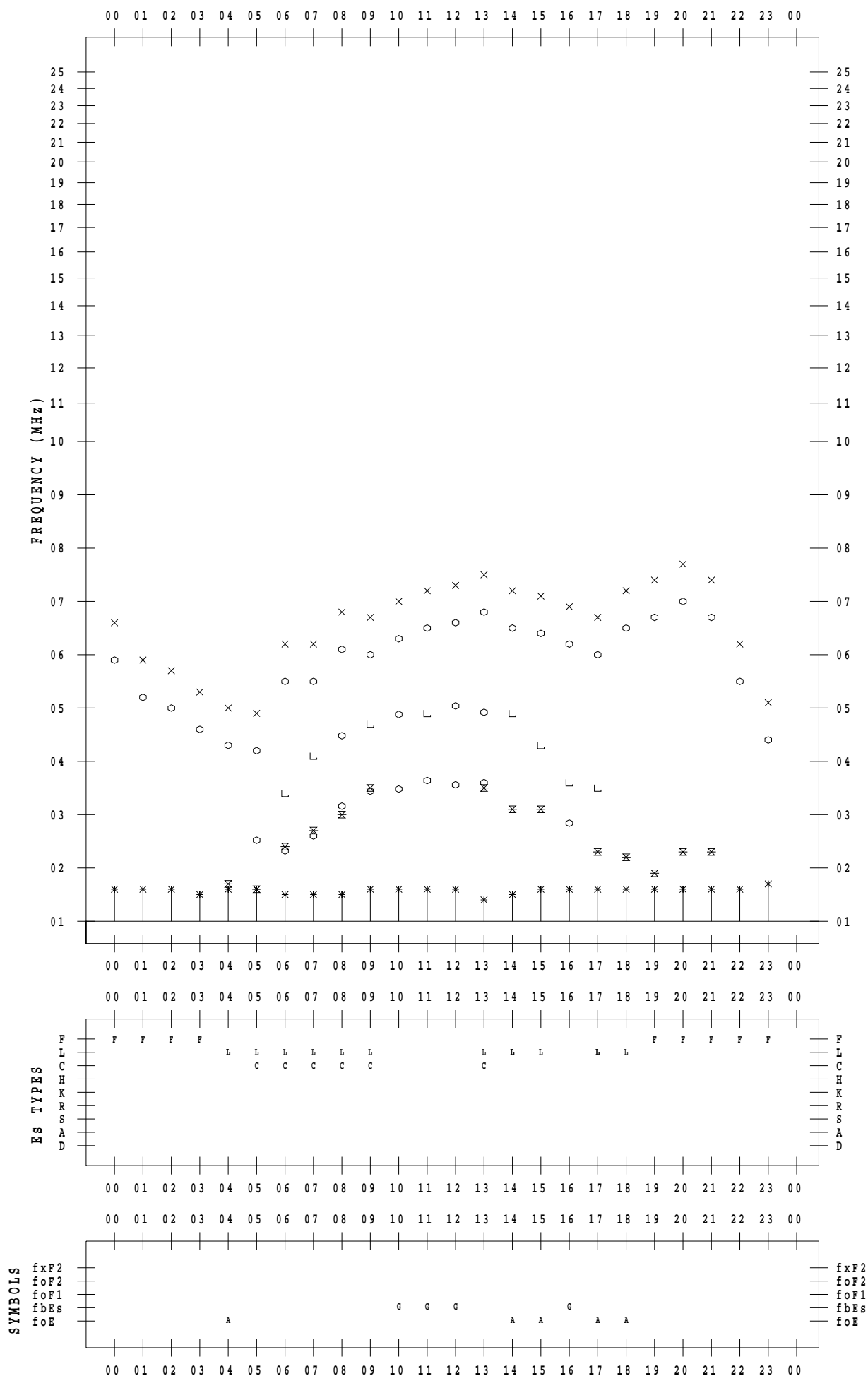
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 10

135 ° E MEAN TIME



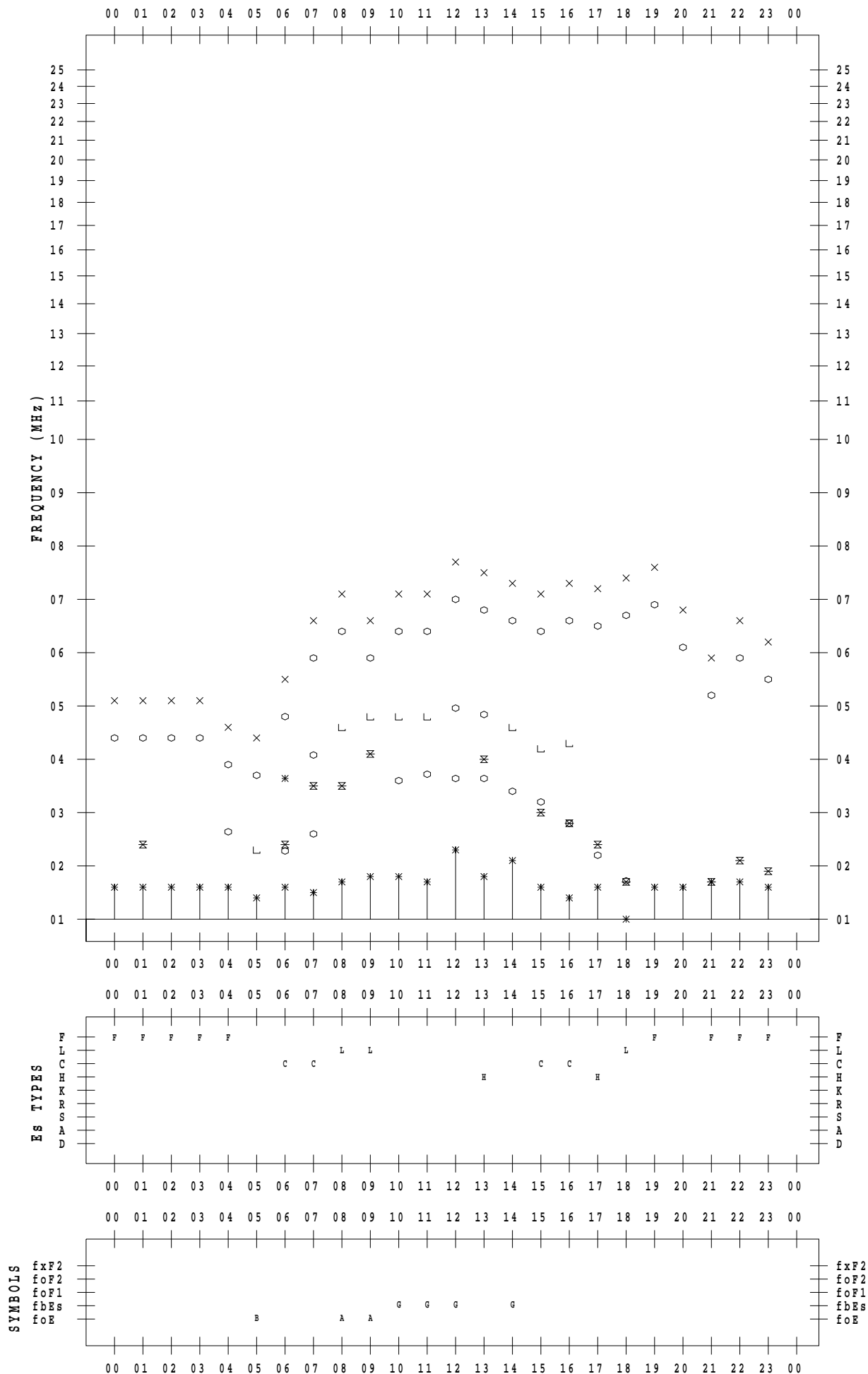
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 11

135 ° E MEAN TIME



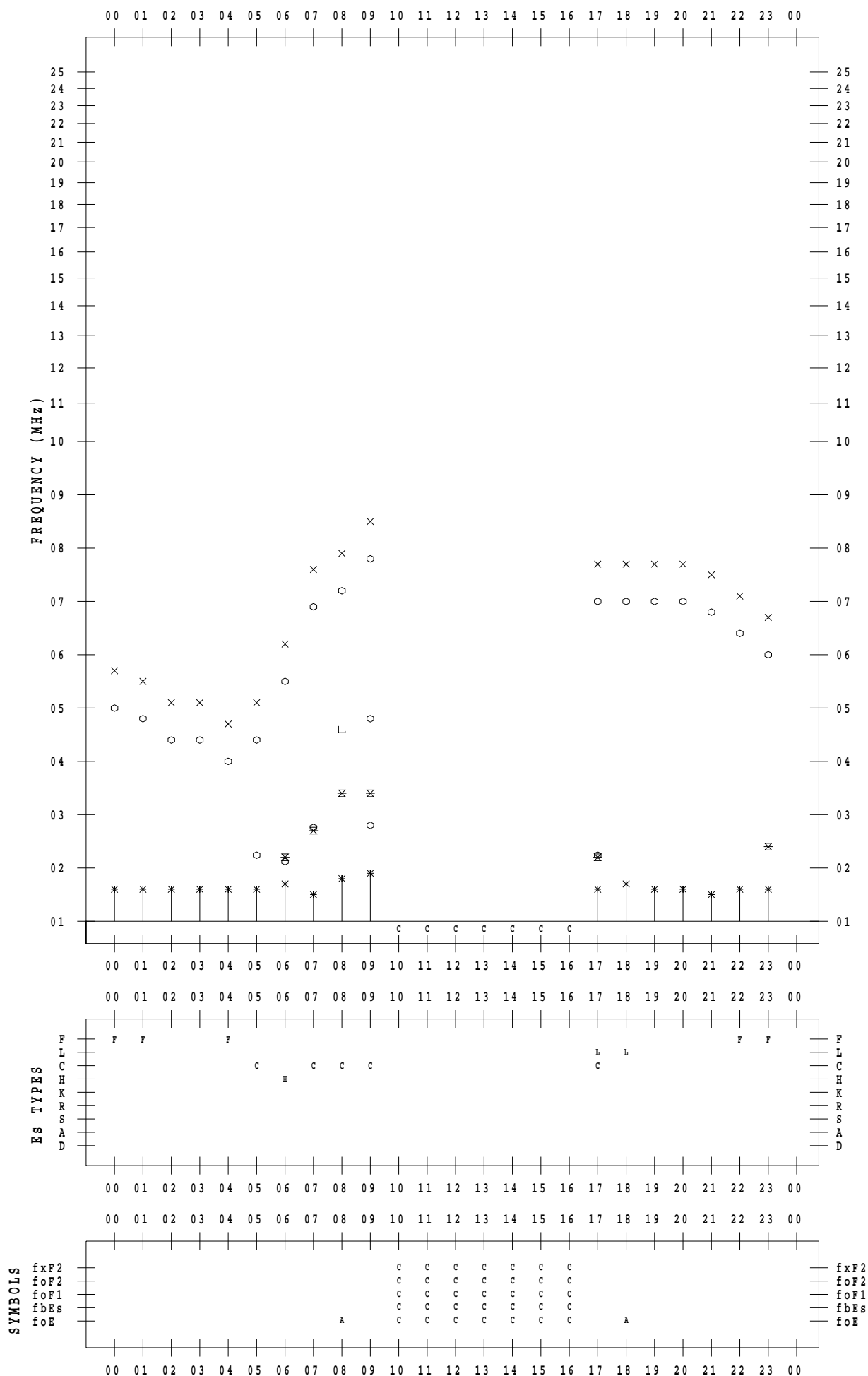
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 12

135 ° E MEAN TIME



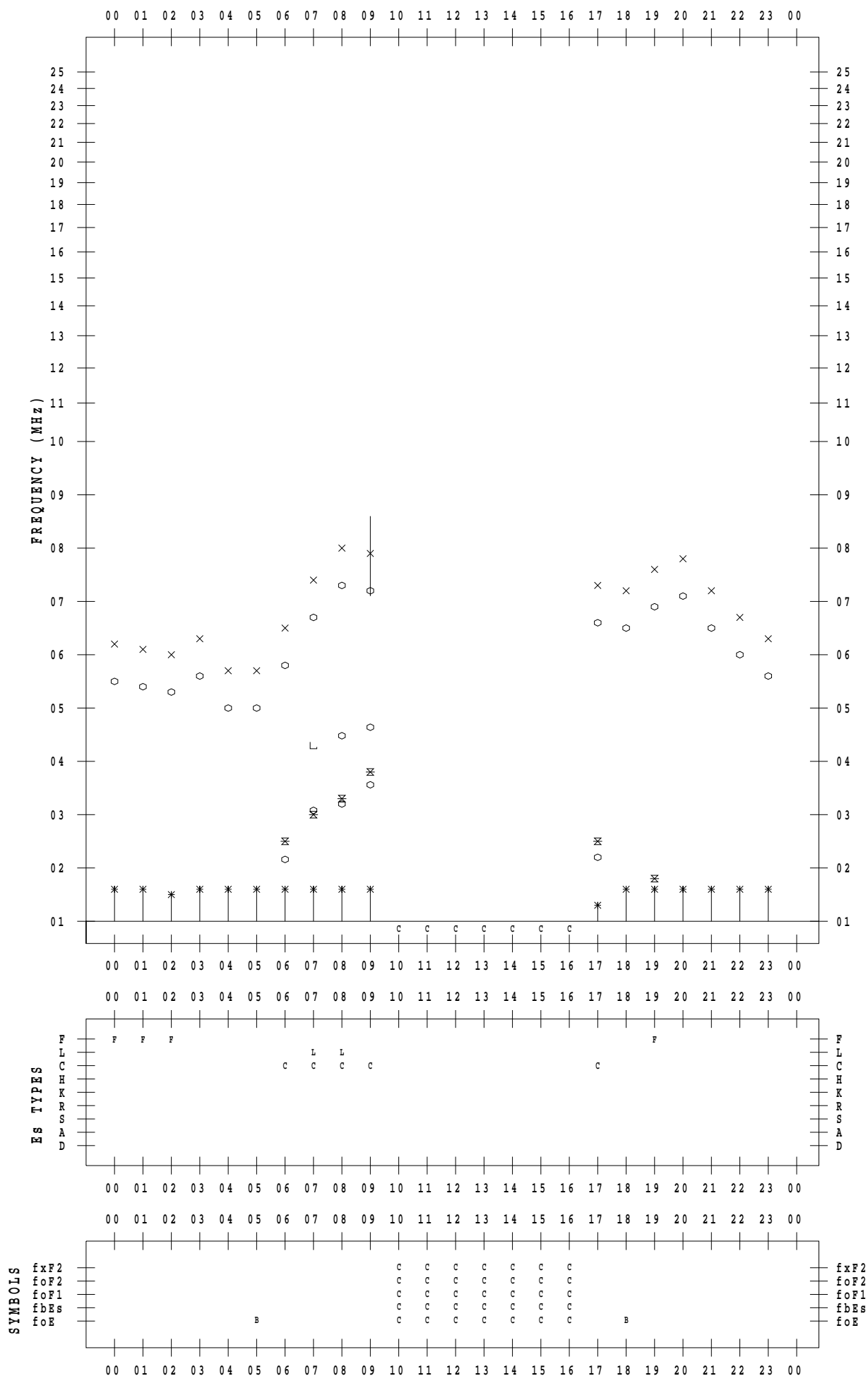
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 13

135 ° E MEAN TIME



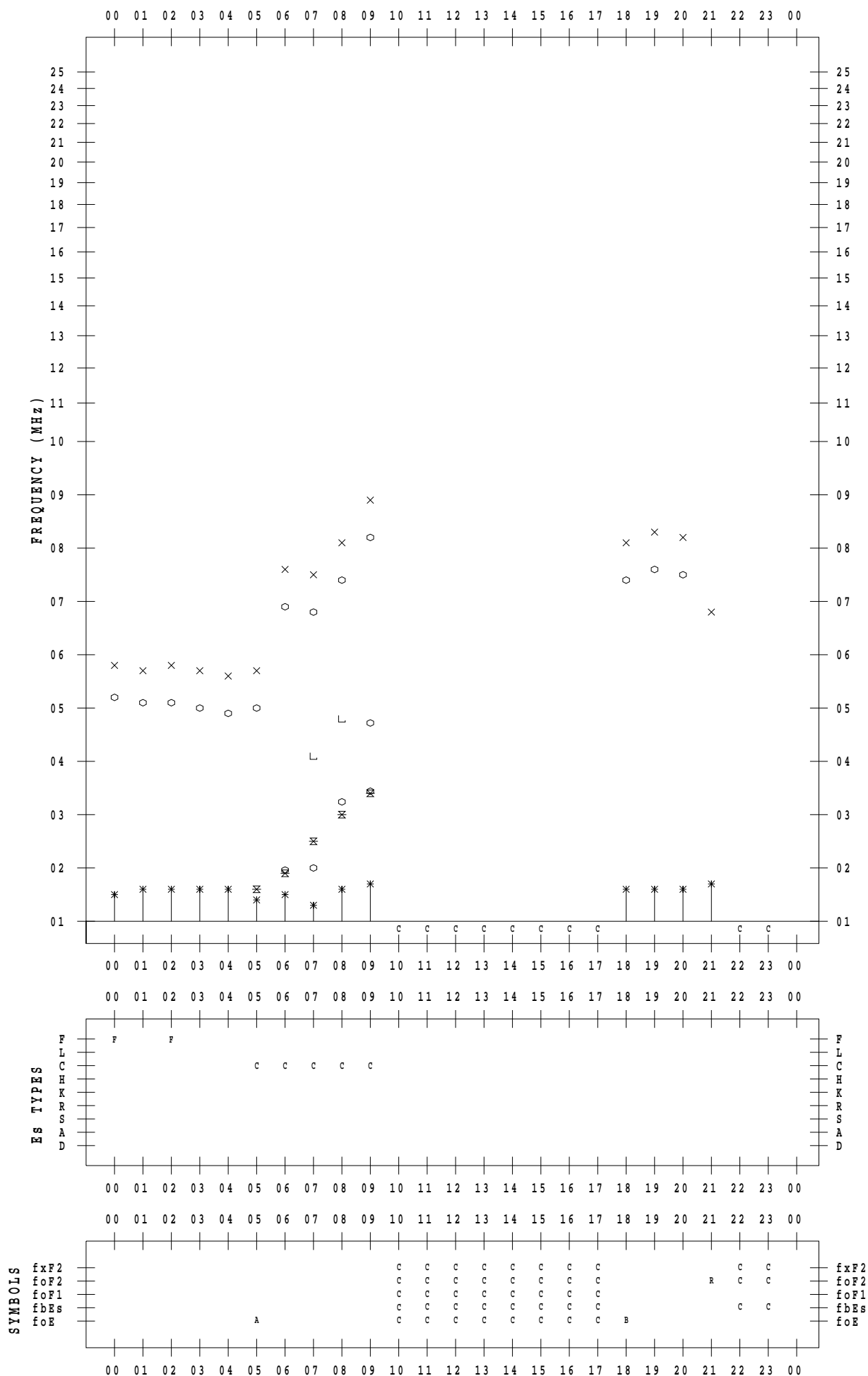
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 14

135 ° E MEAN TIME



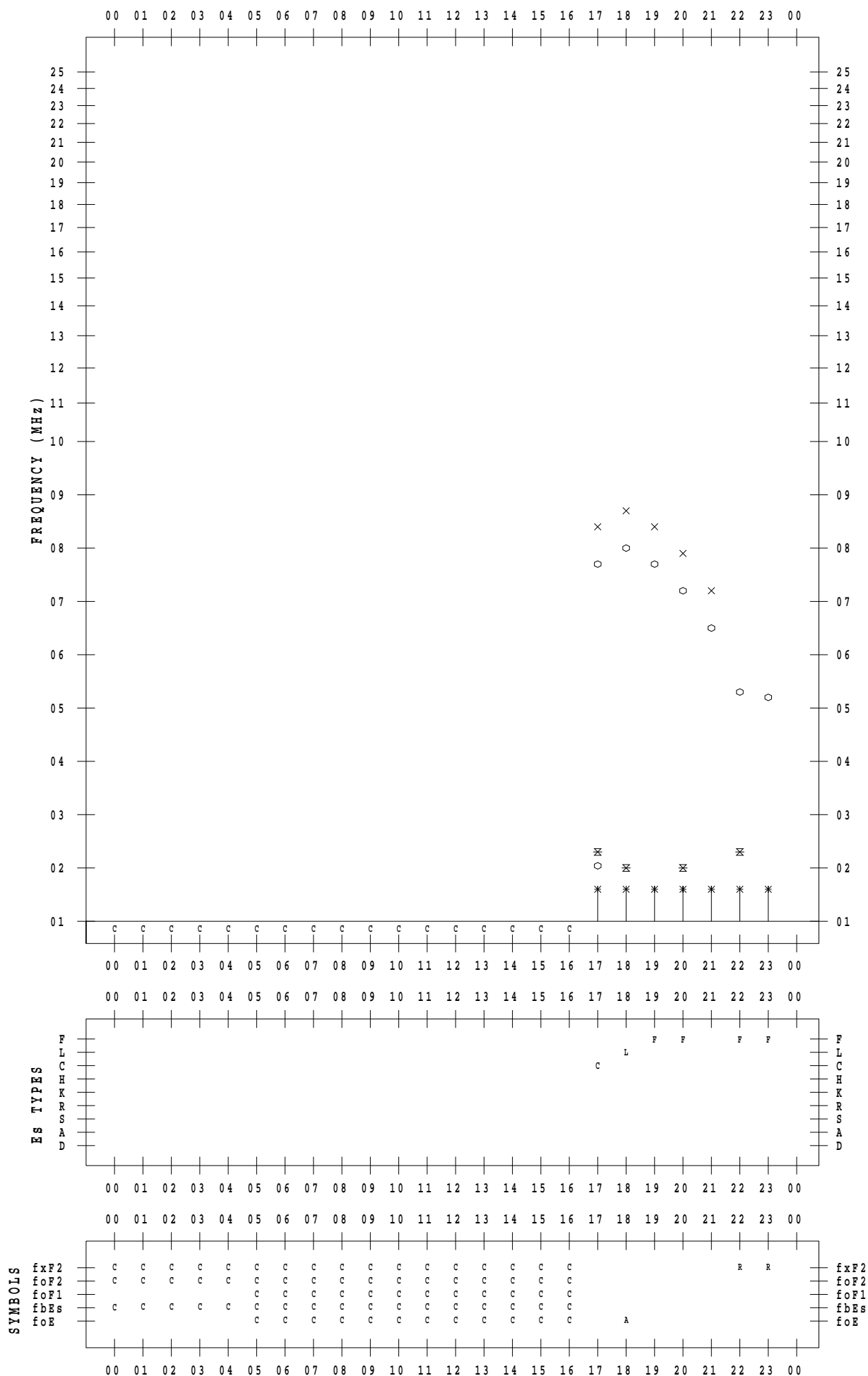
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 15

135 ° E MEAN TIME



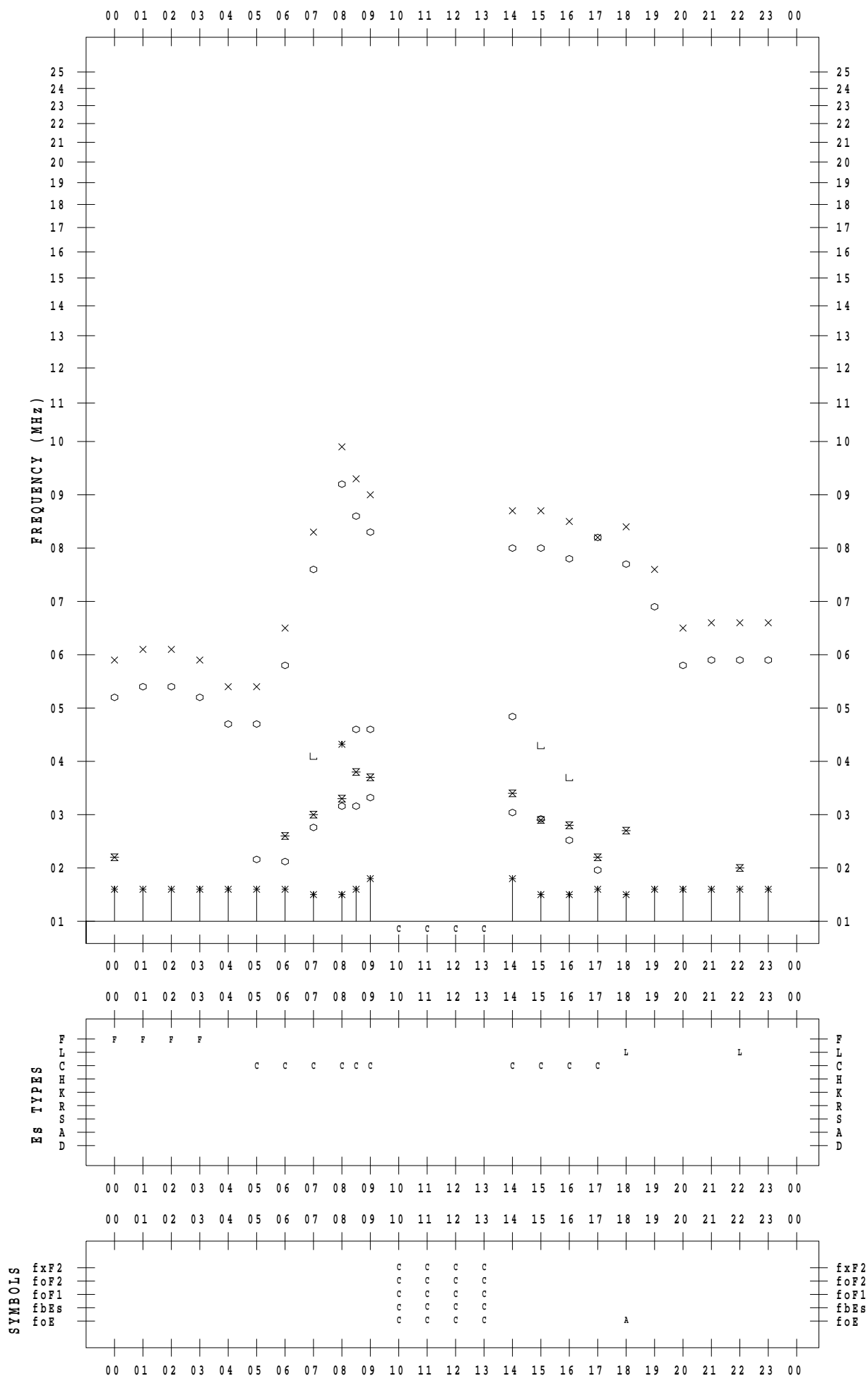
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 16

135 ° E MEAN TIME



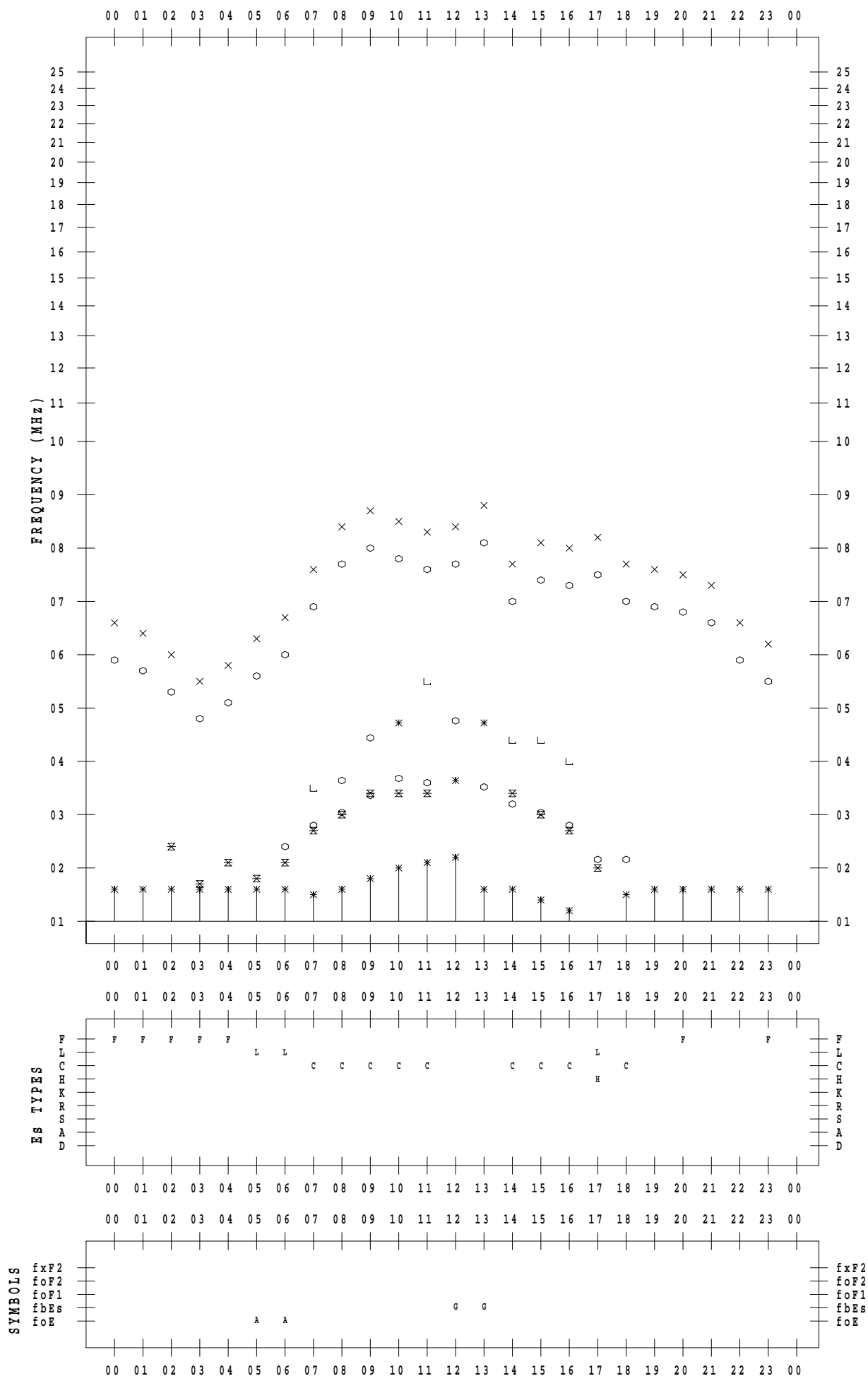
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 17

135 ° E MEAN TIME



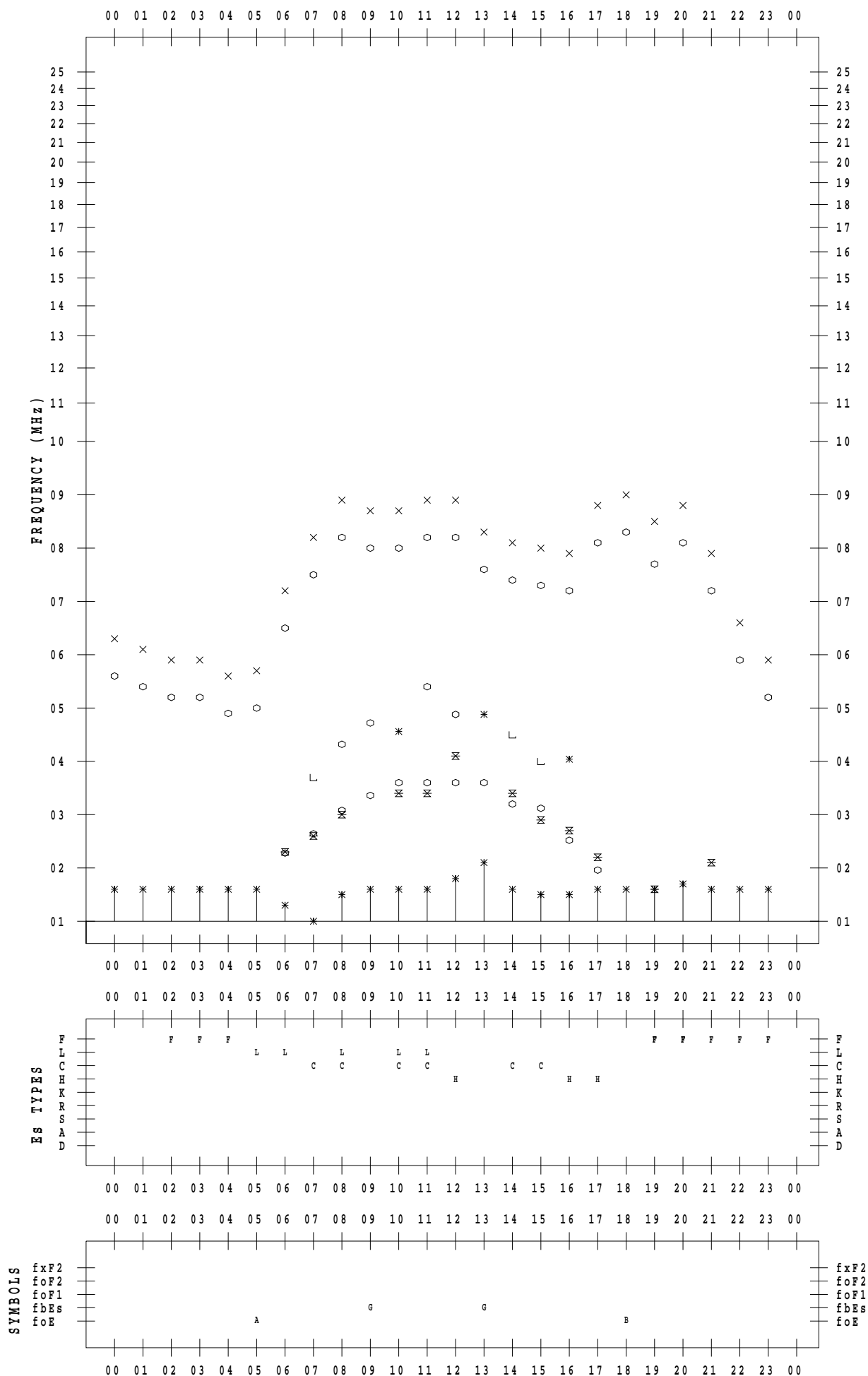
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 18

135 ° E MEAN TIME



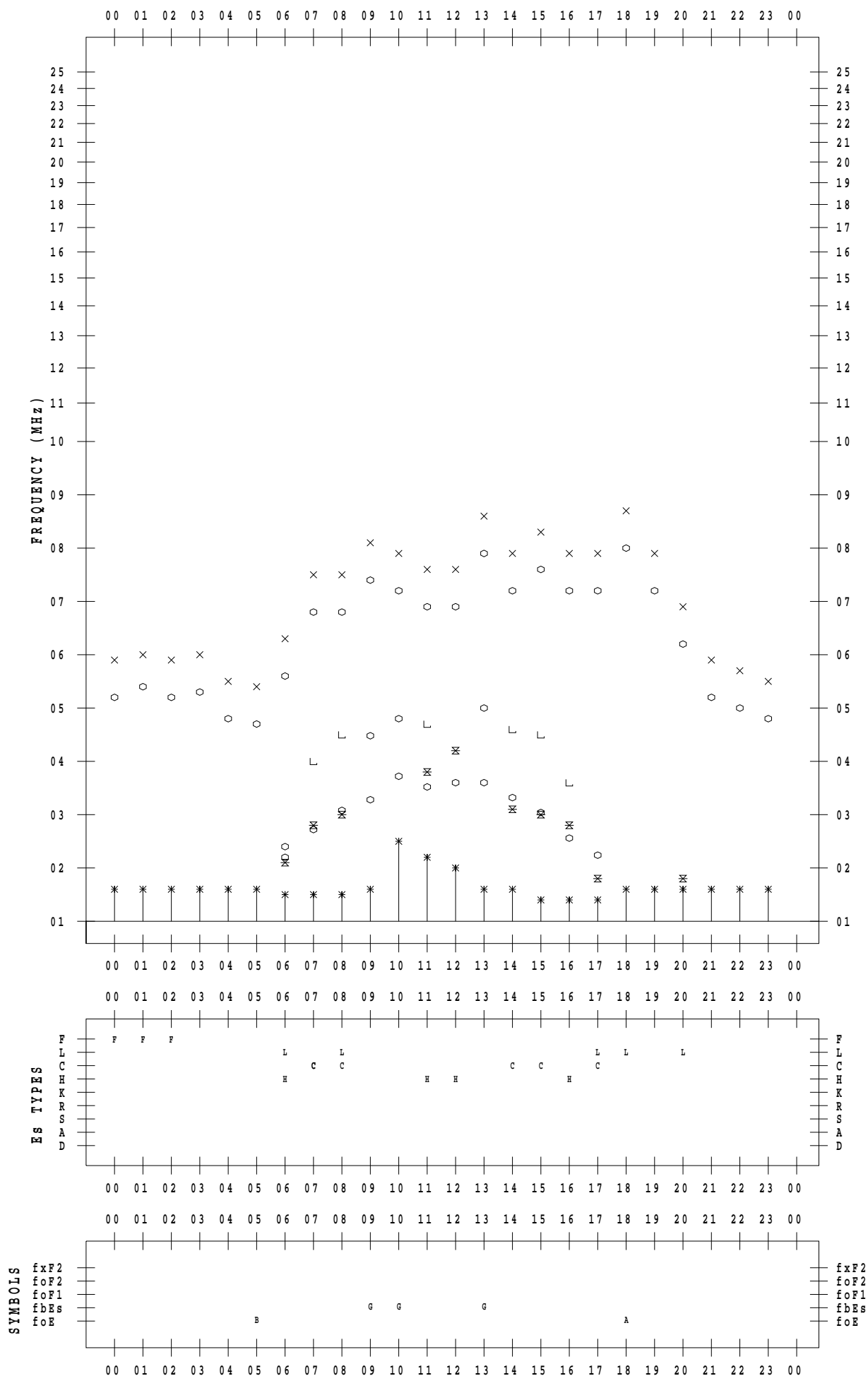
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 19

135 ° E MEAN TIME



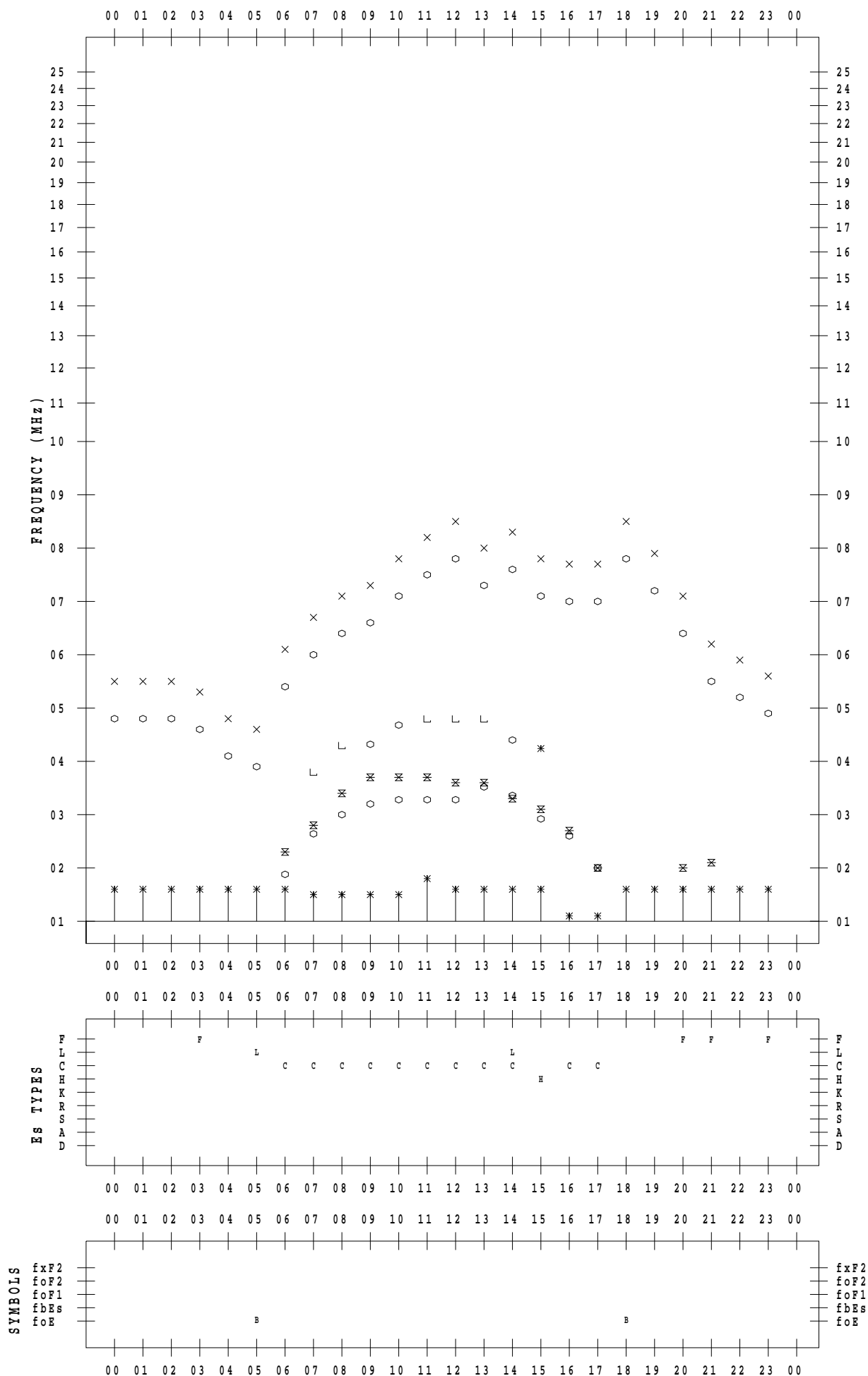
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 20

135 ° E MEAN TIME



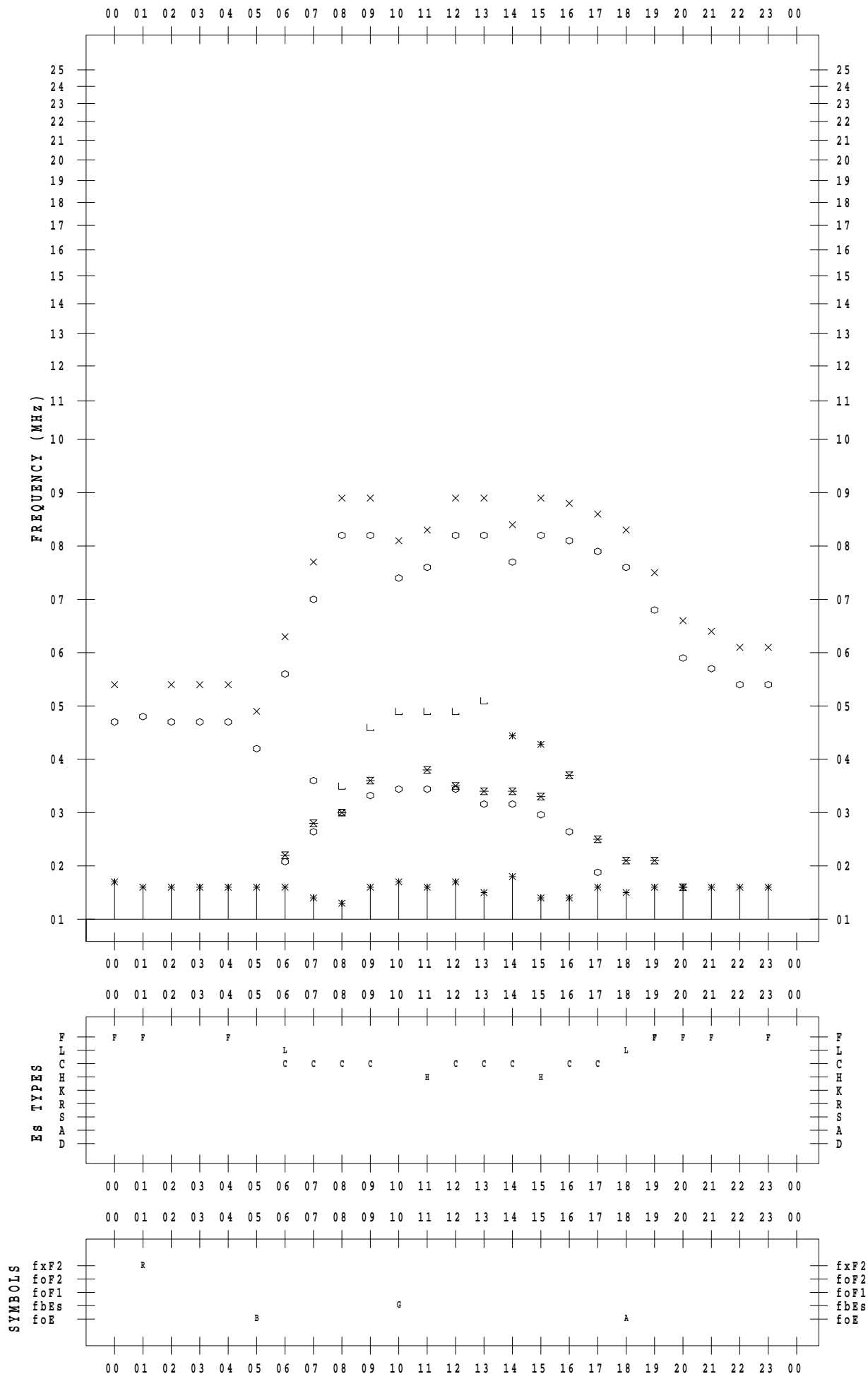
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 21

135 ° E MEAN TIME



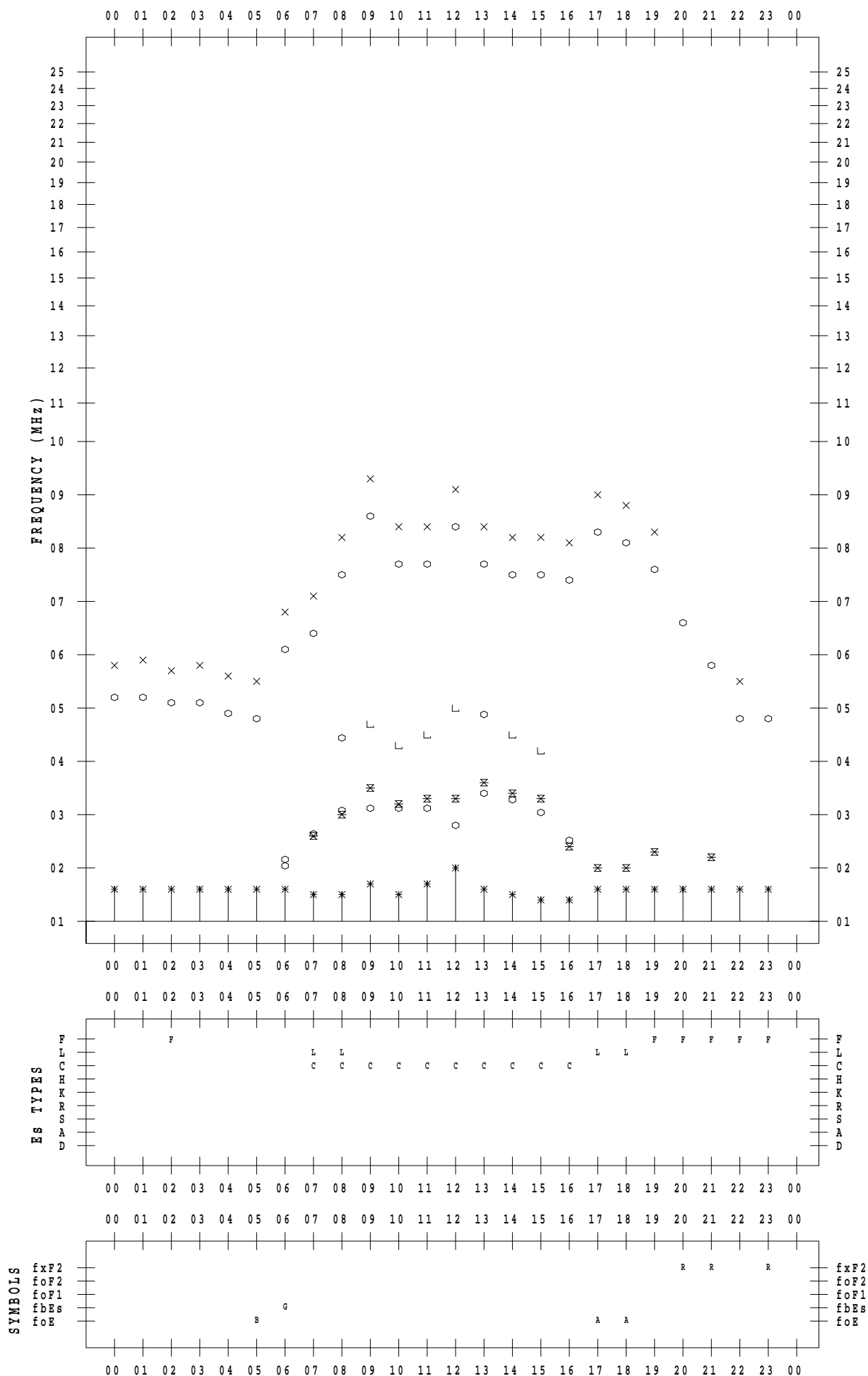
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SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 22

135 ° E MEAN TIME



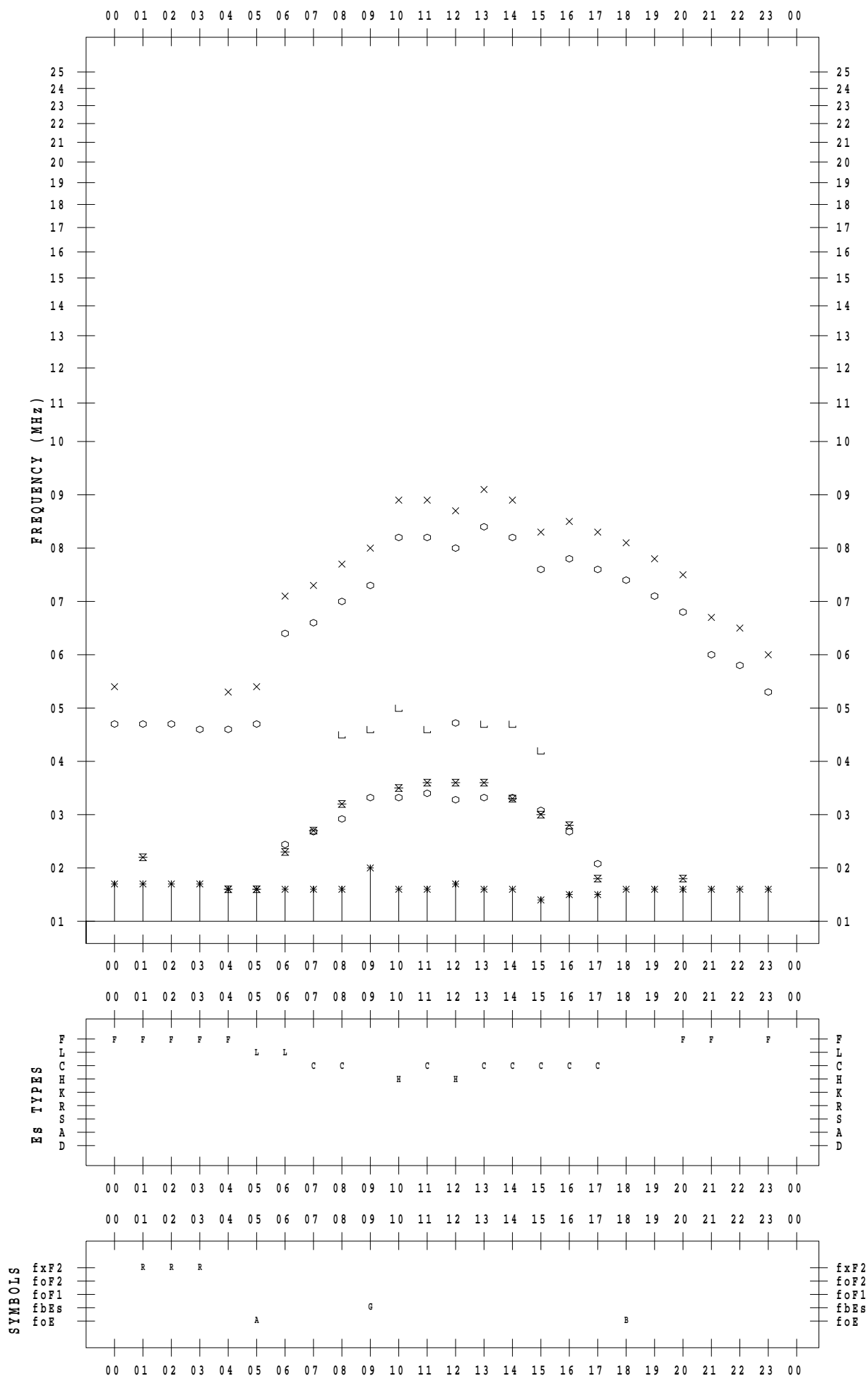
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 23

135 ° E MEAN TIME



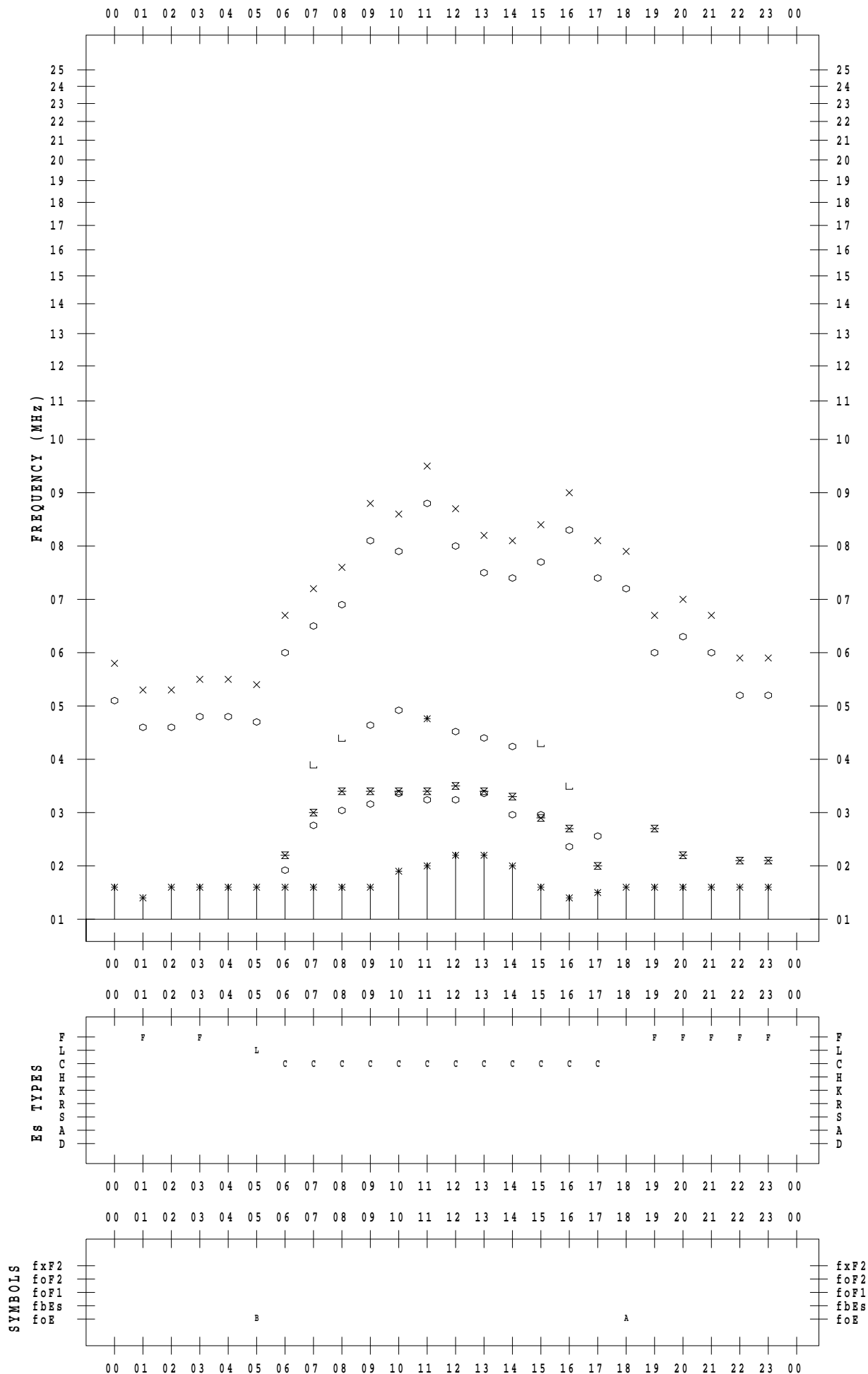
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 24

135 ° E MEAN TIME



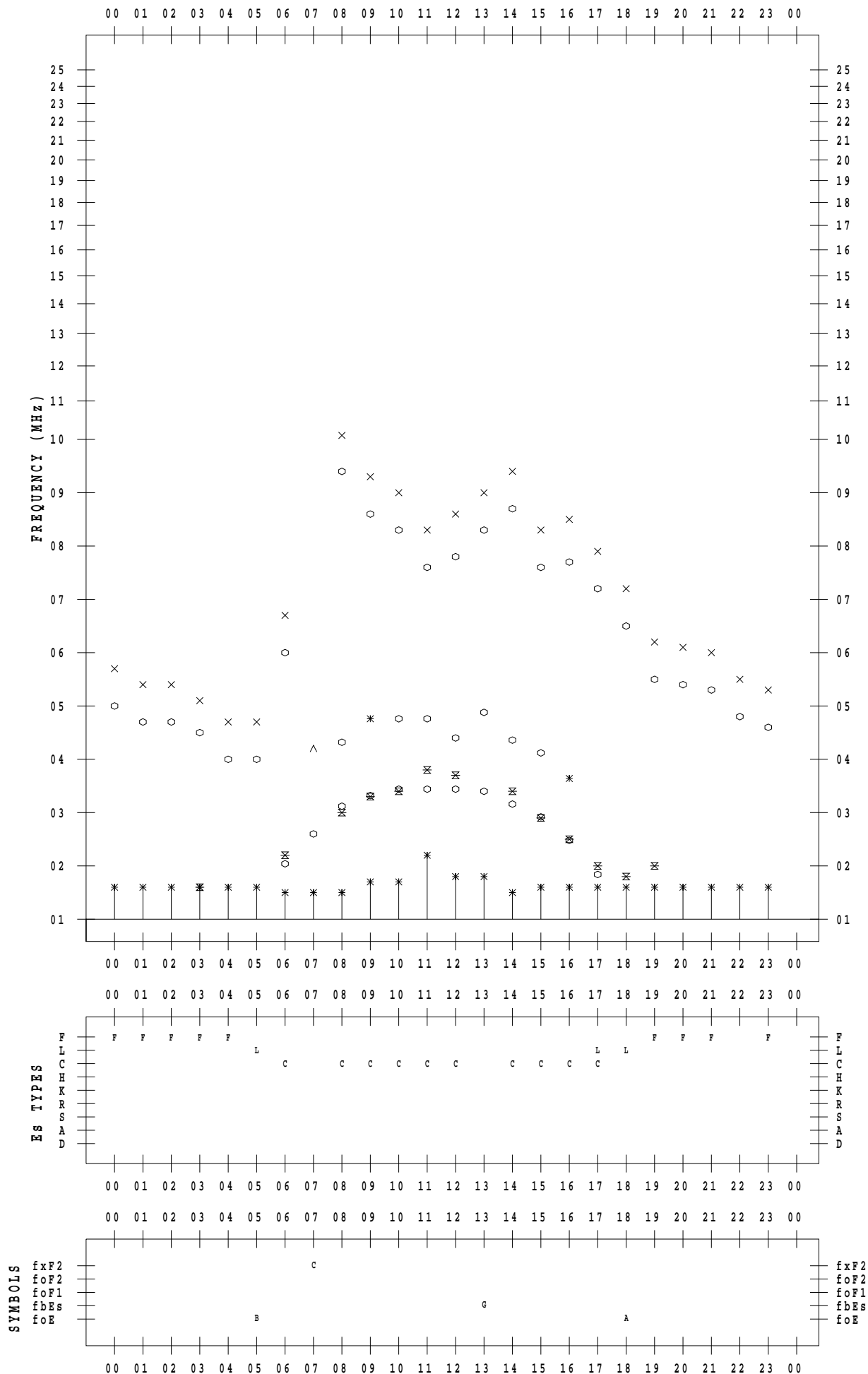
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 25

135 ° E MEAN TIME



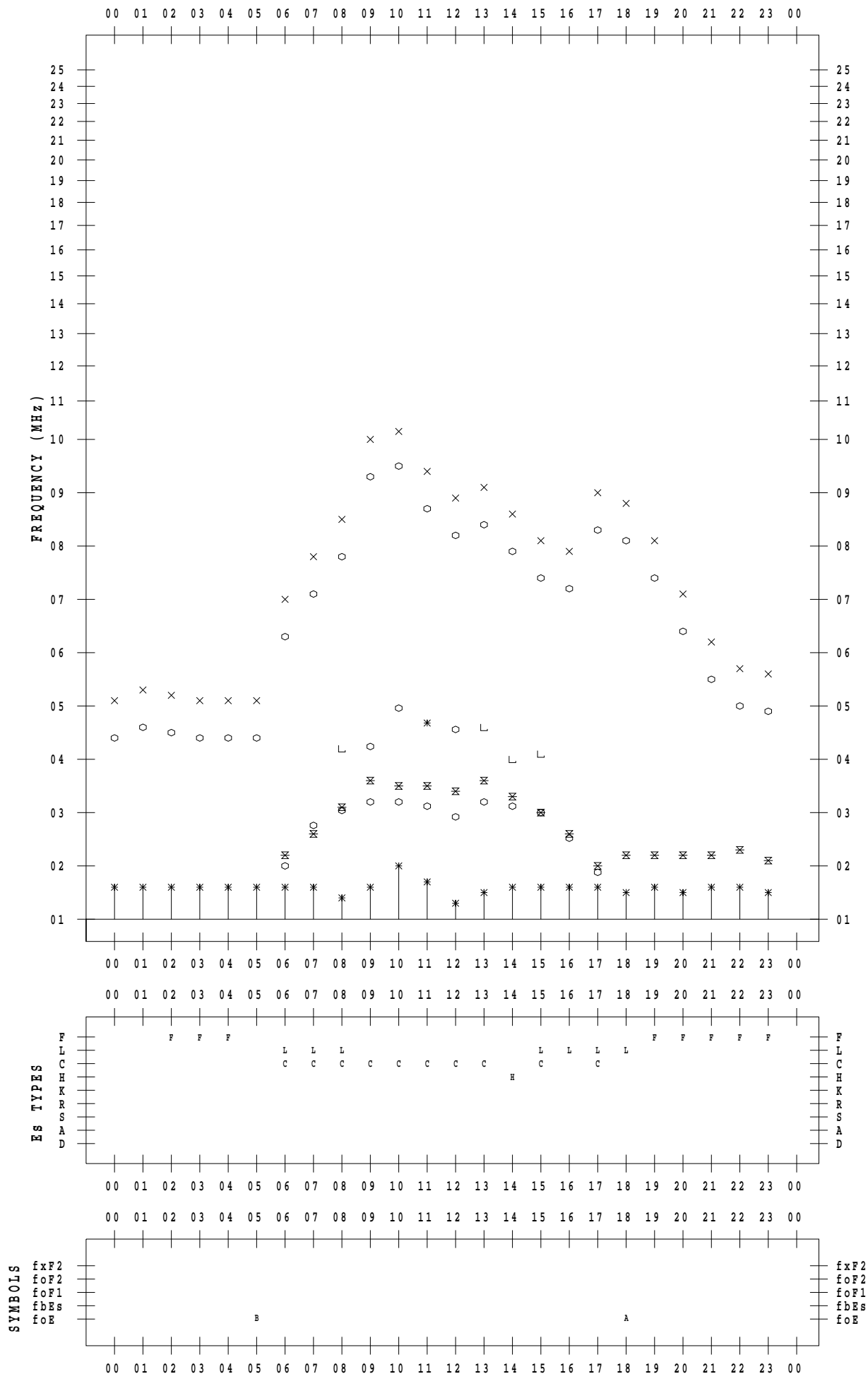
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 26

135 ° E MEAN TIME



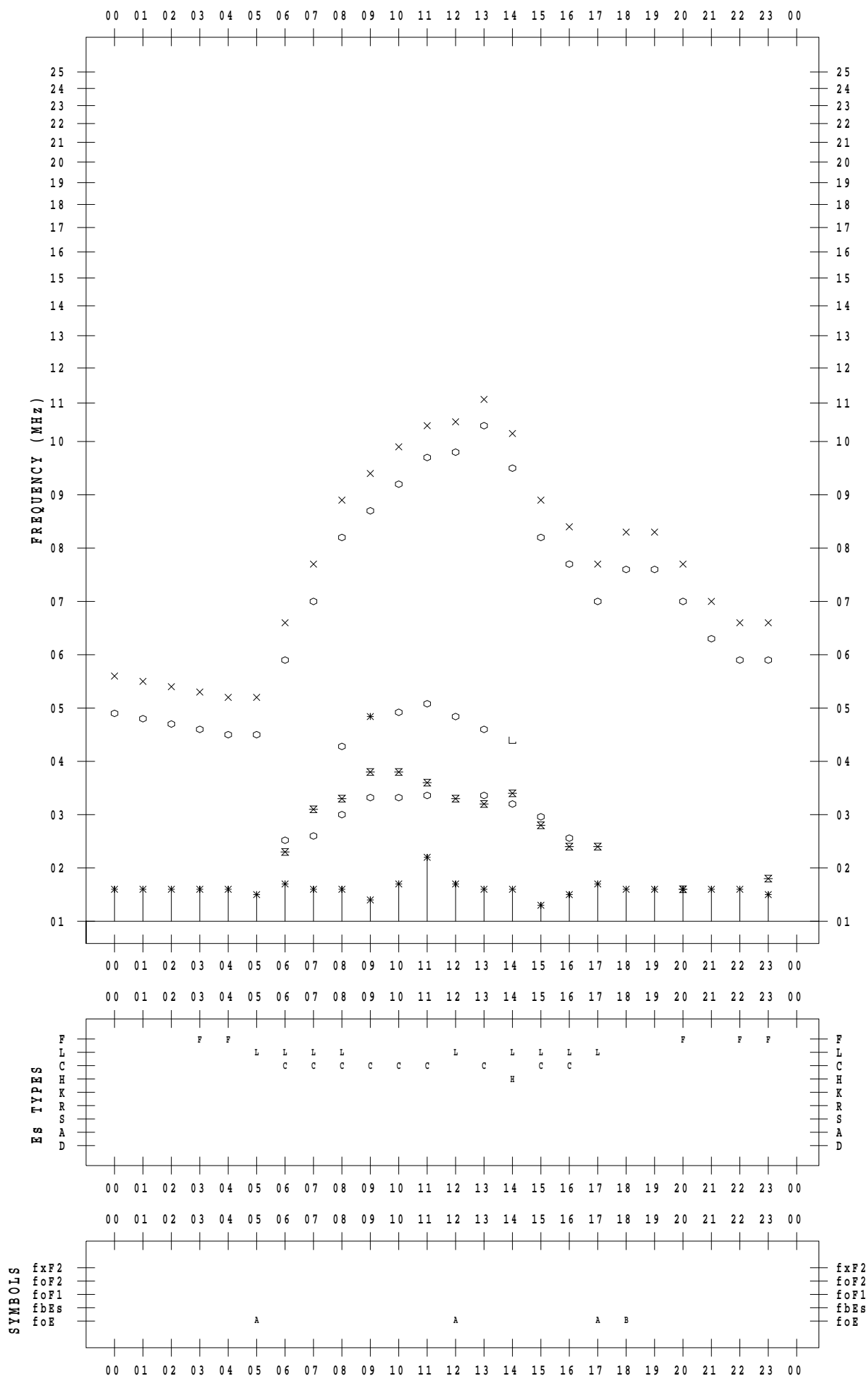
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 27

135 ° E MEAN TIME



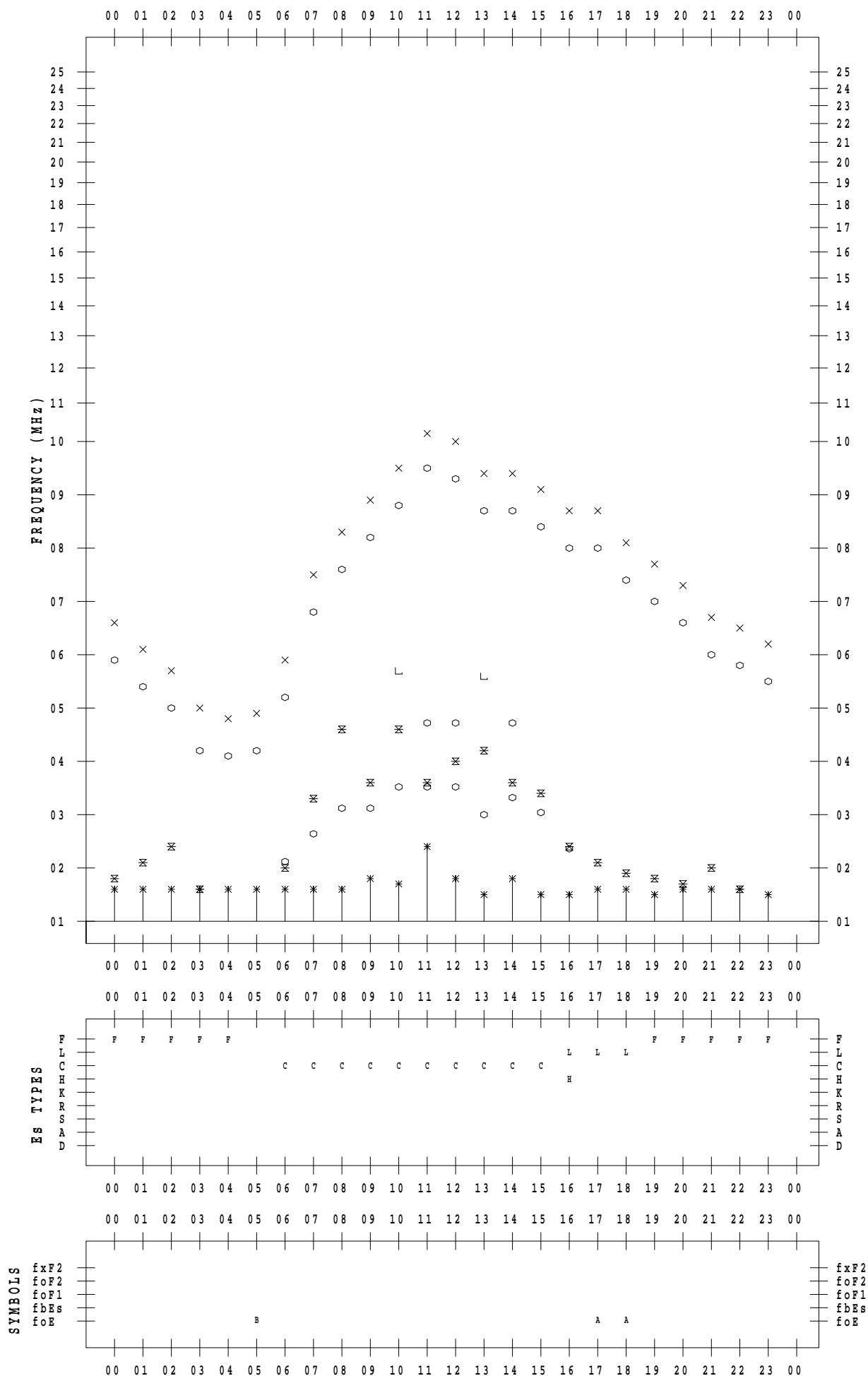
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 28

135 ° E MEAN TIME



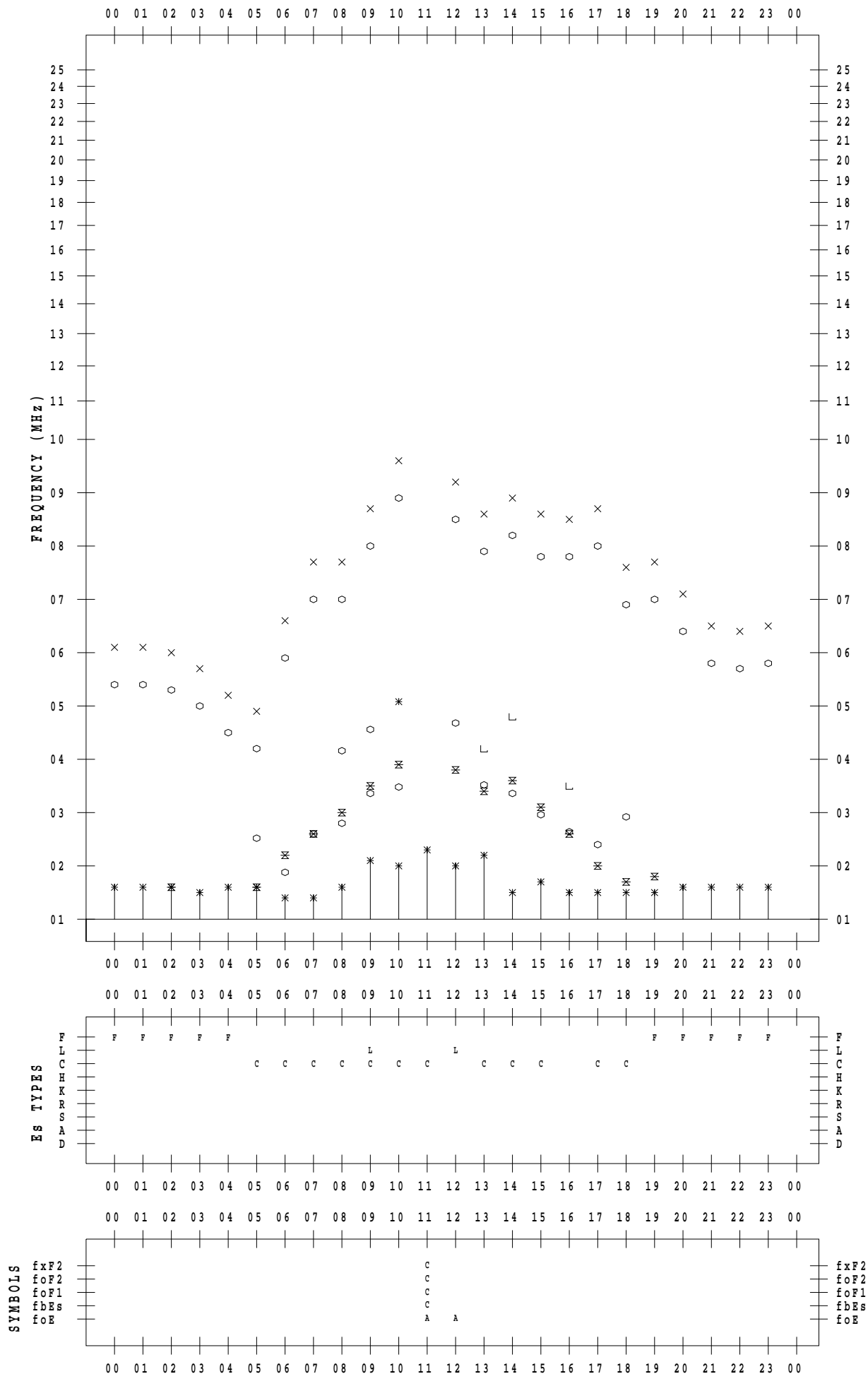
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 29

135 ° E MEAN TIME



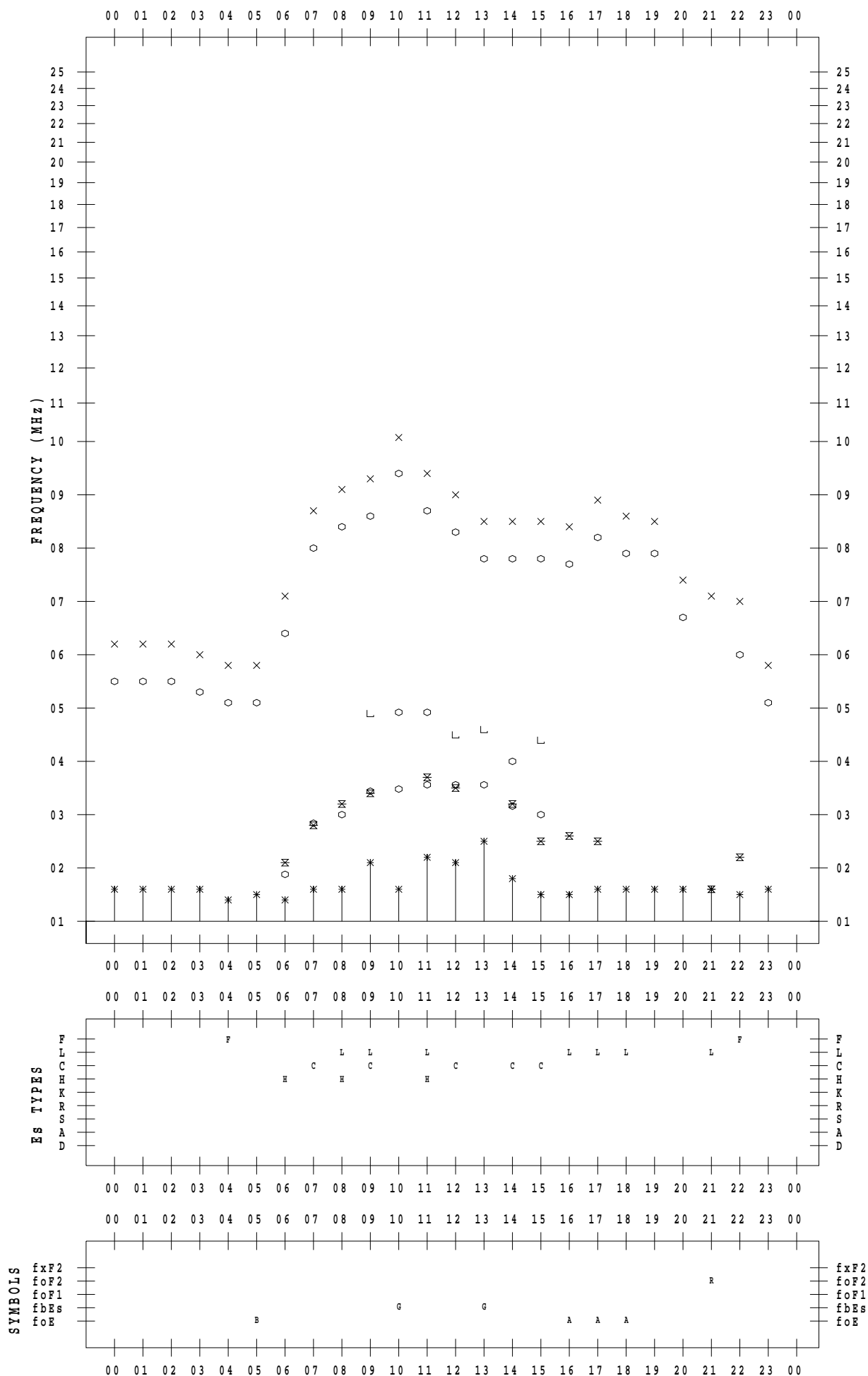
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2022 / 9 / 30

135 ° E MEAN TIME



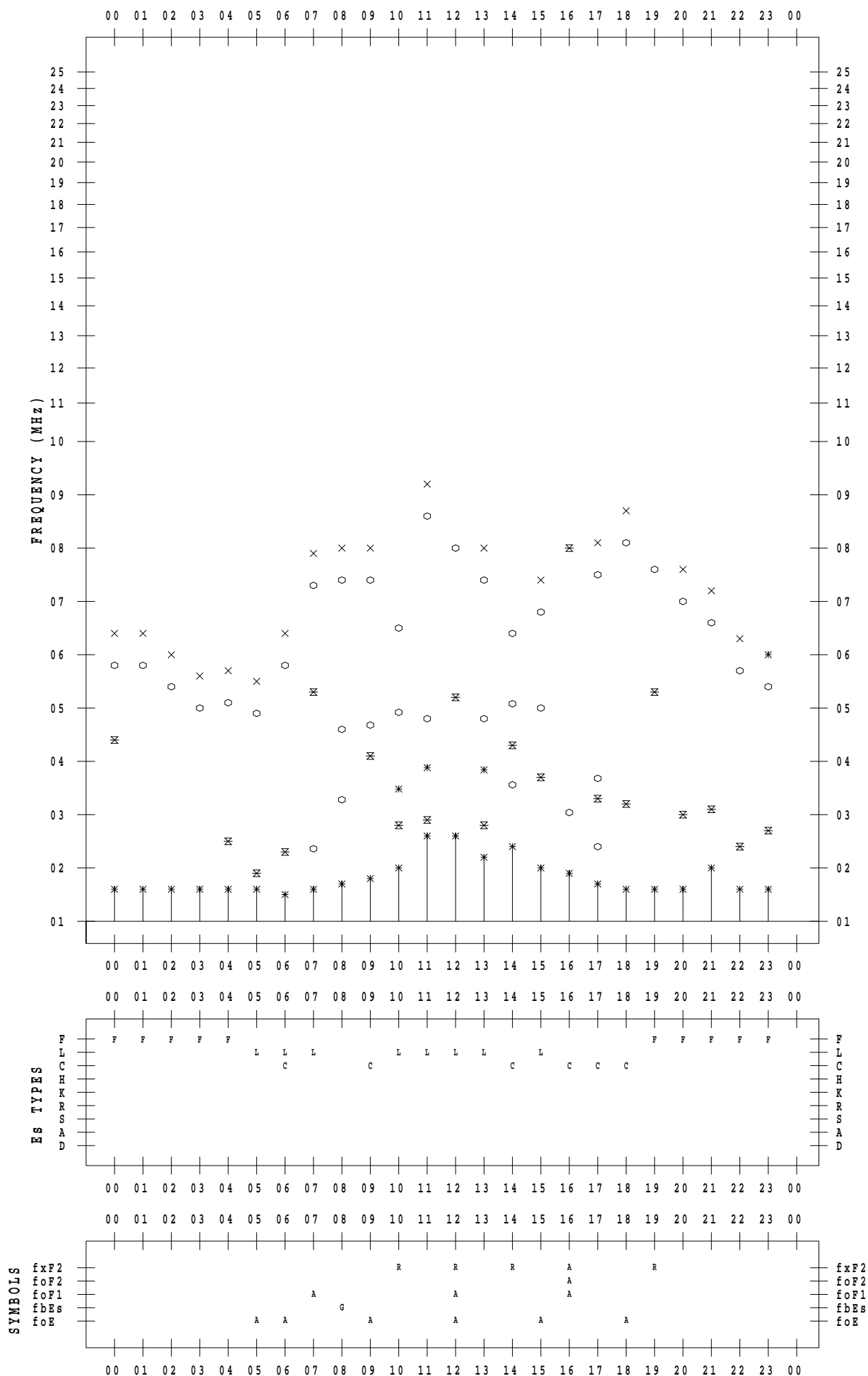
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 1

135 ° E MEAN TIME



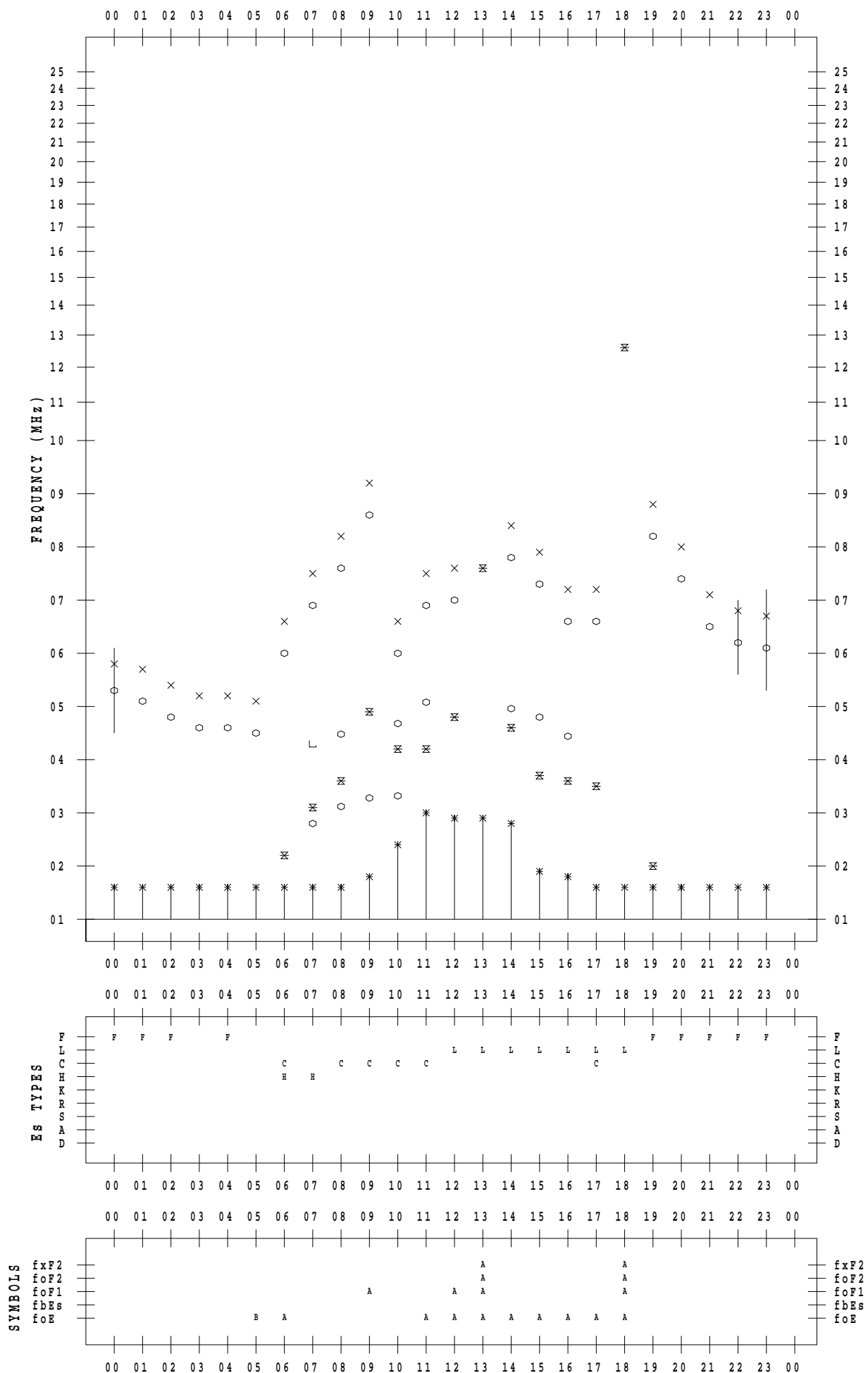
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 2

135 ° E MEAN TIME



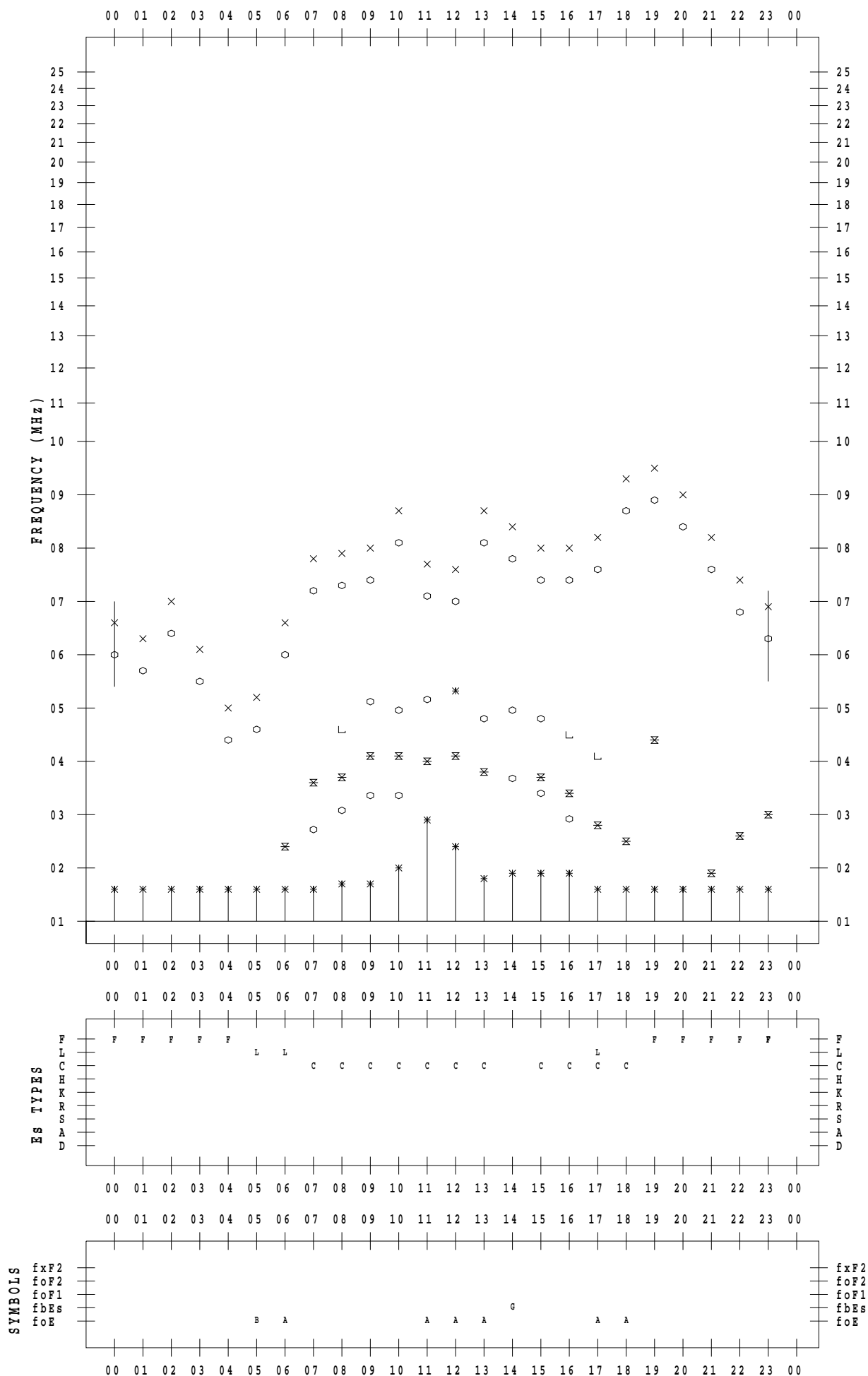
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 3

135 ° E MEAN TIME



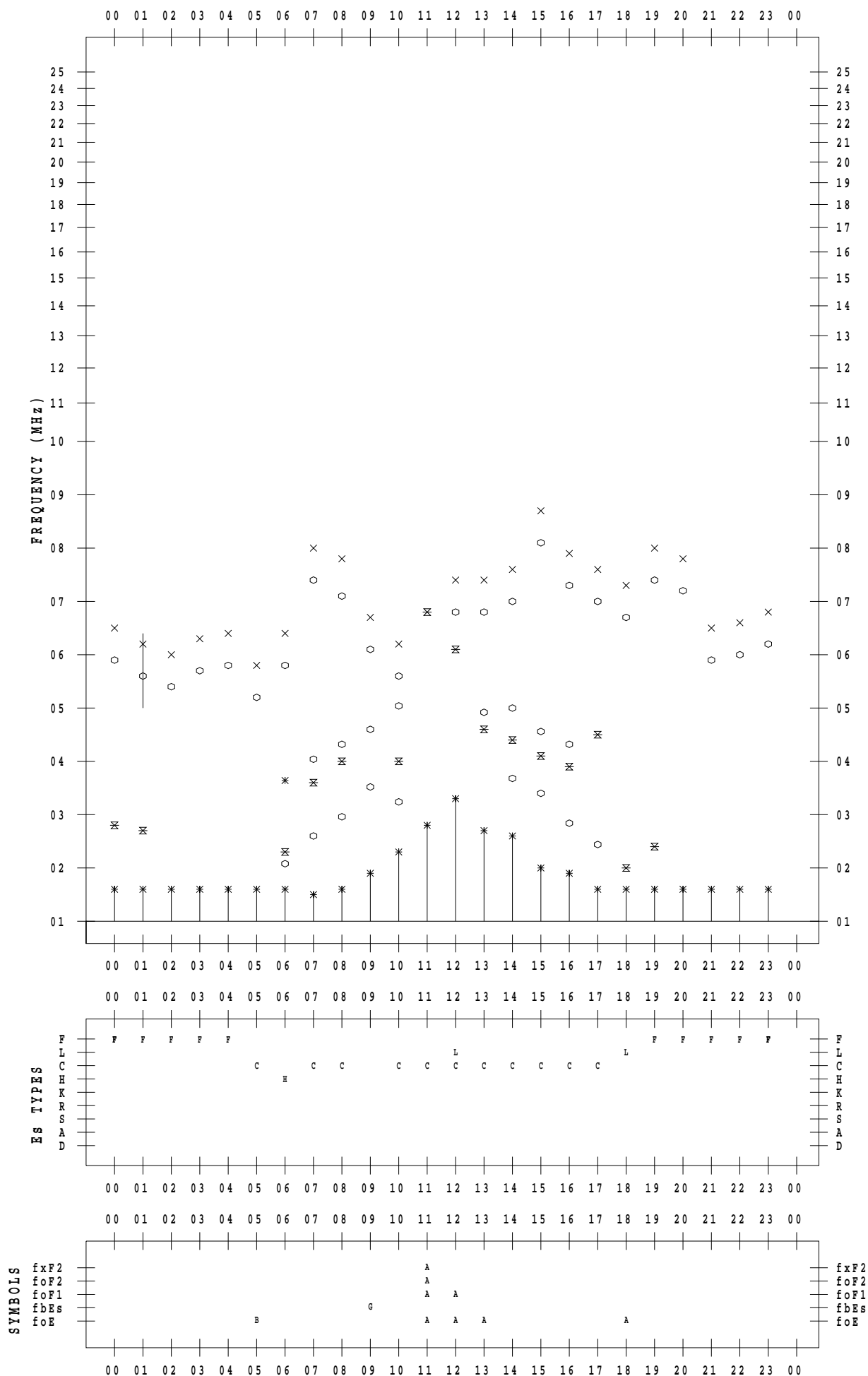
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 4

135 ° E MEAN TIME



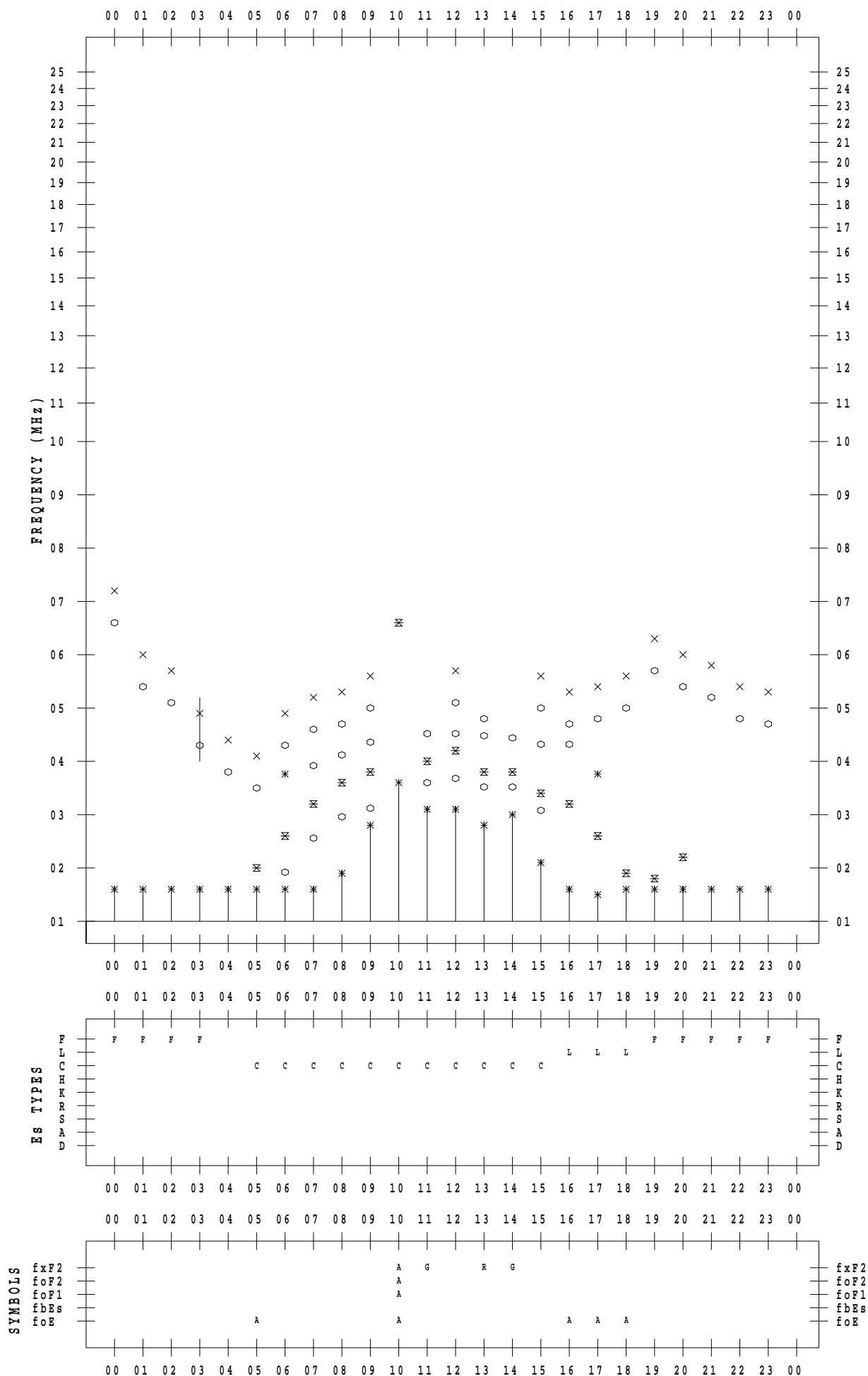
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 5

135 ° E MEAN TIME



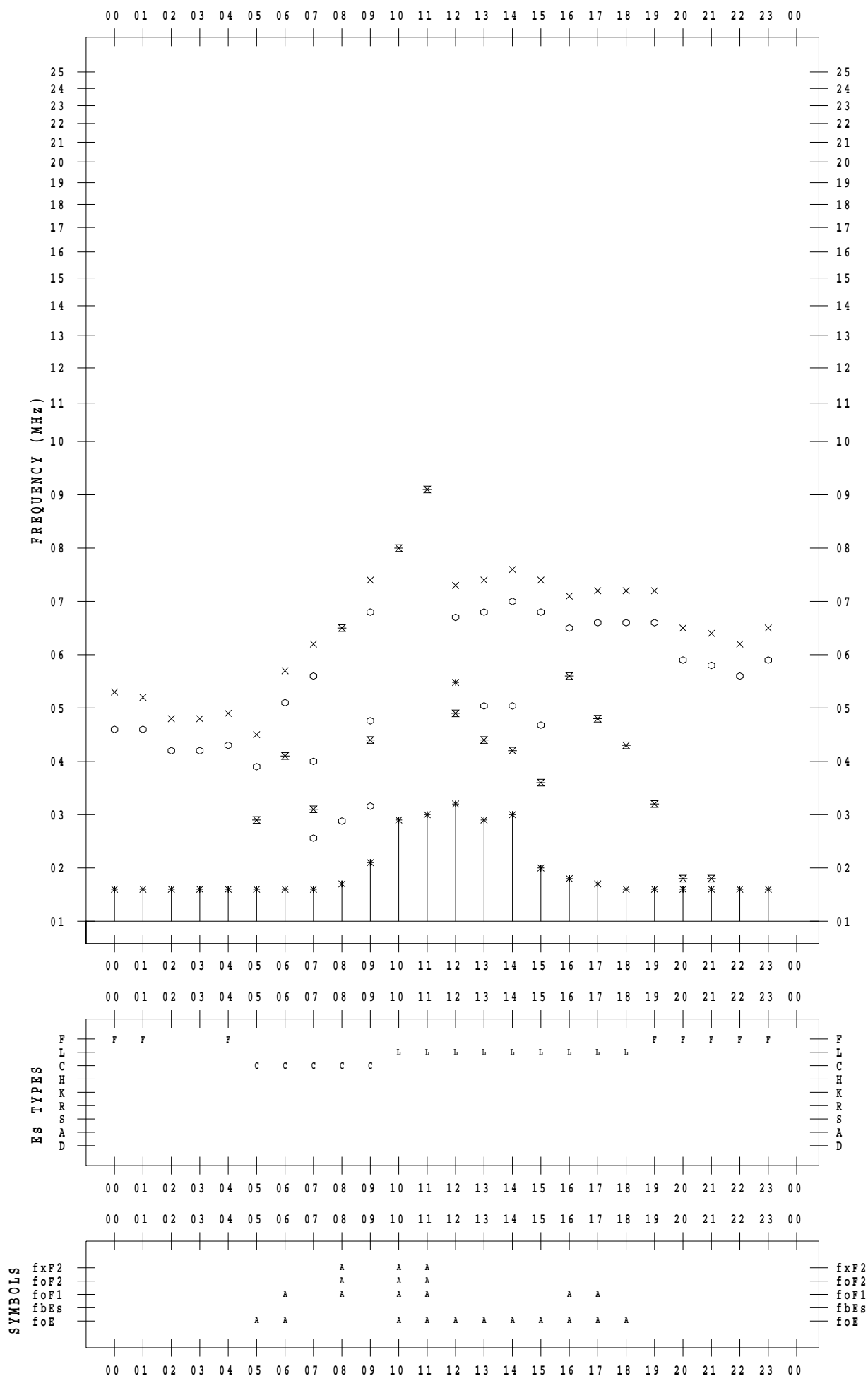
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 6

135 ° E MEAN TIME



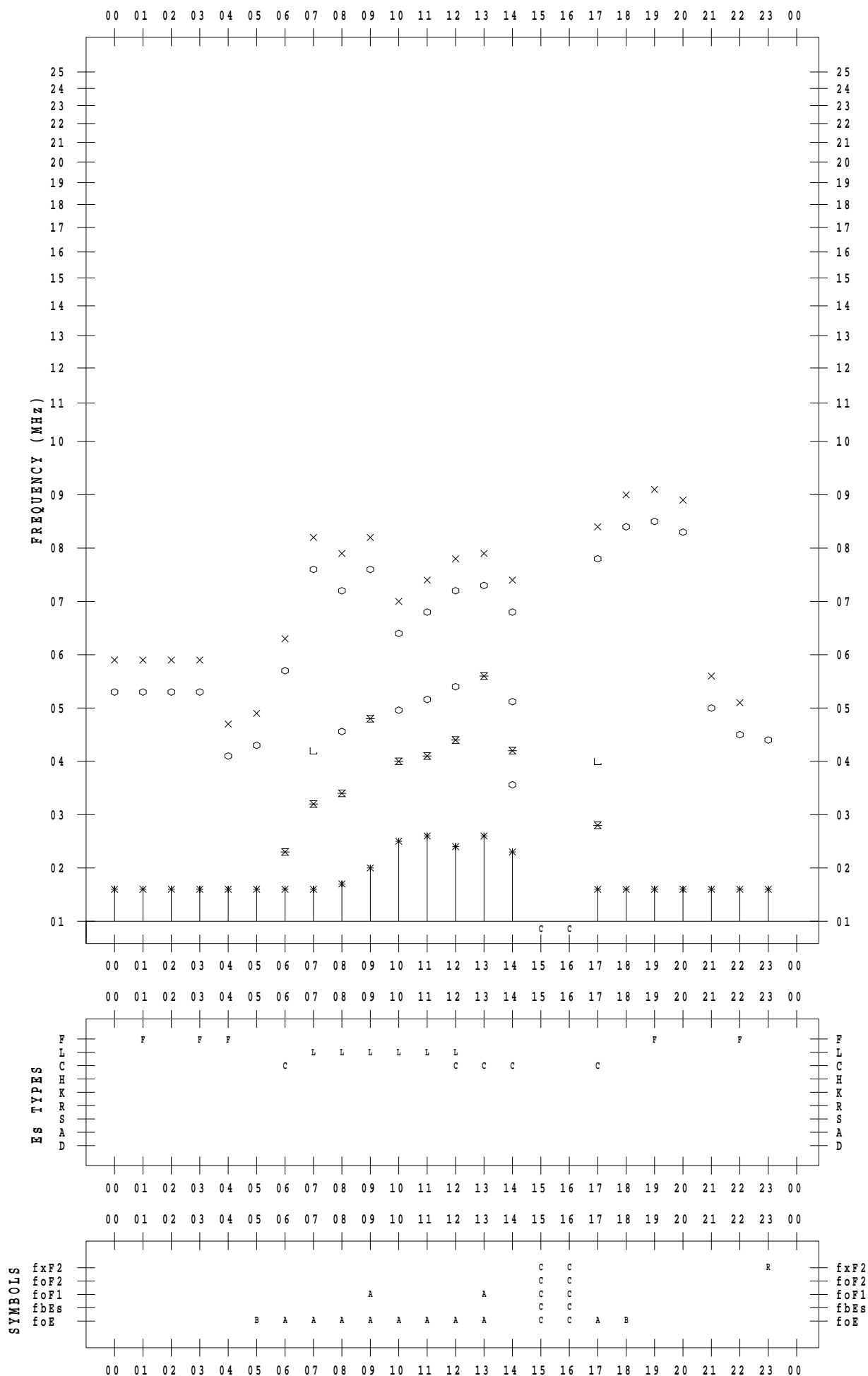
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 7

135 ° E MEAN TIME



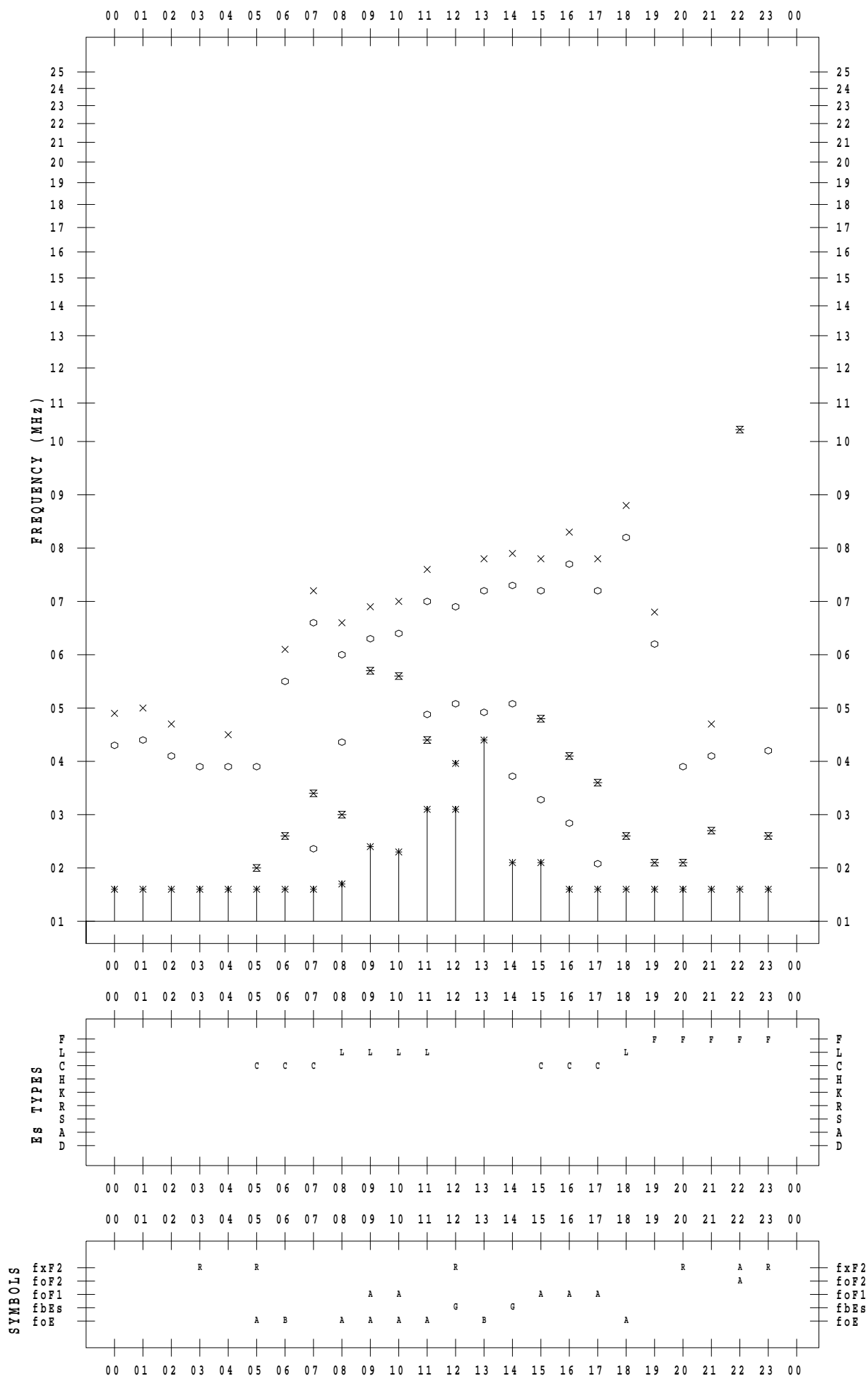
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 8

135 ° E MEAN TIME



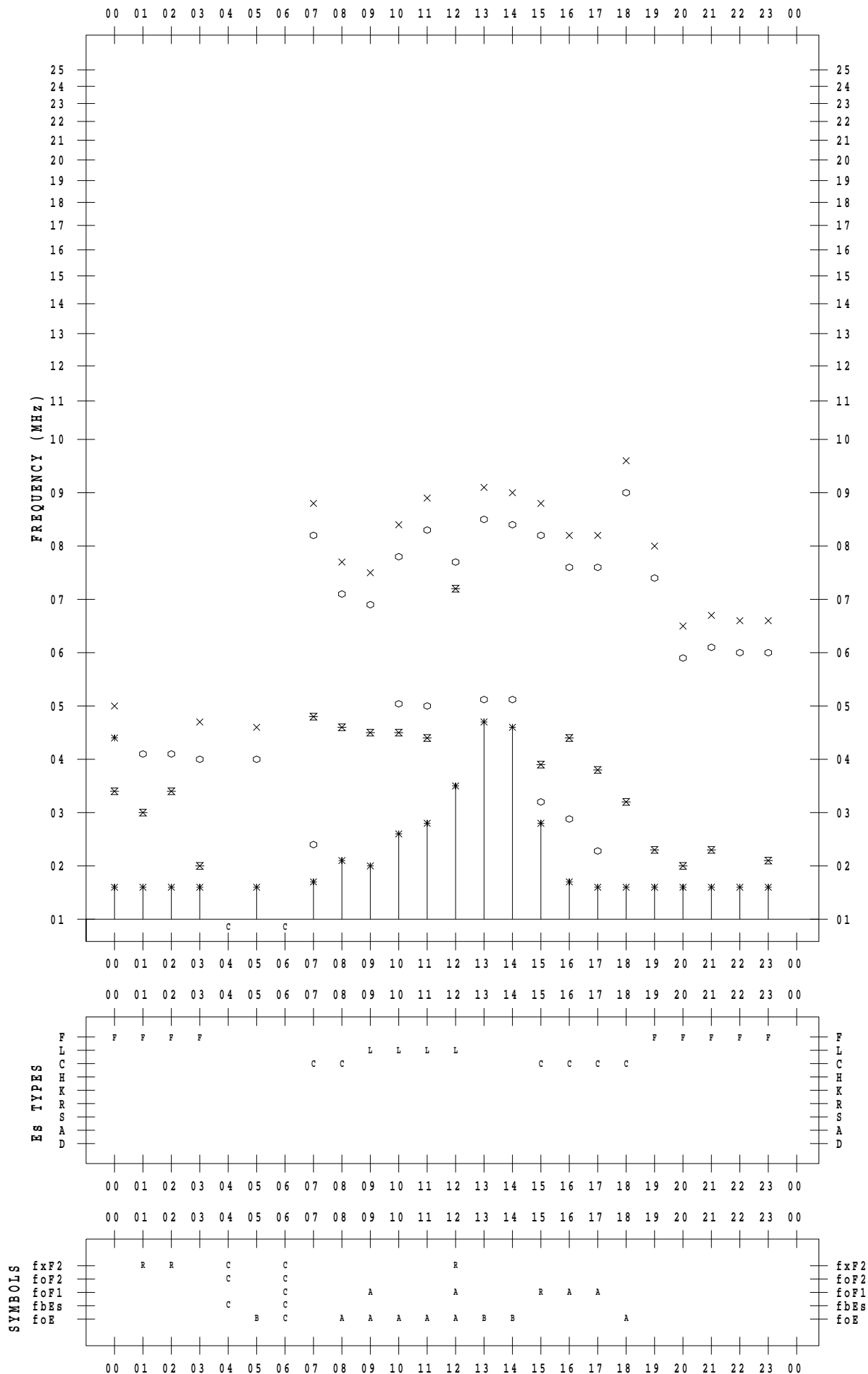
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 9

135 ° E MEAN TIME



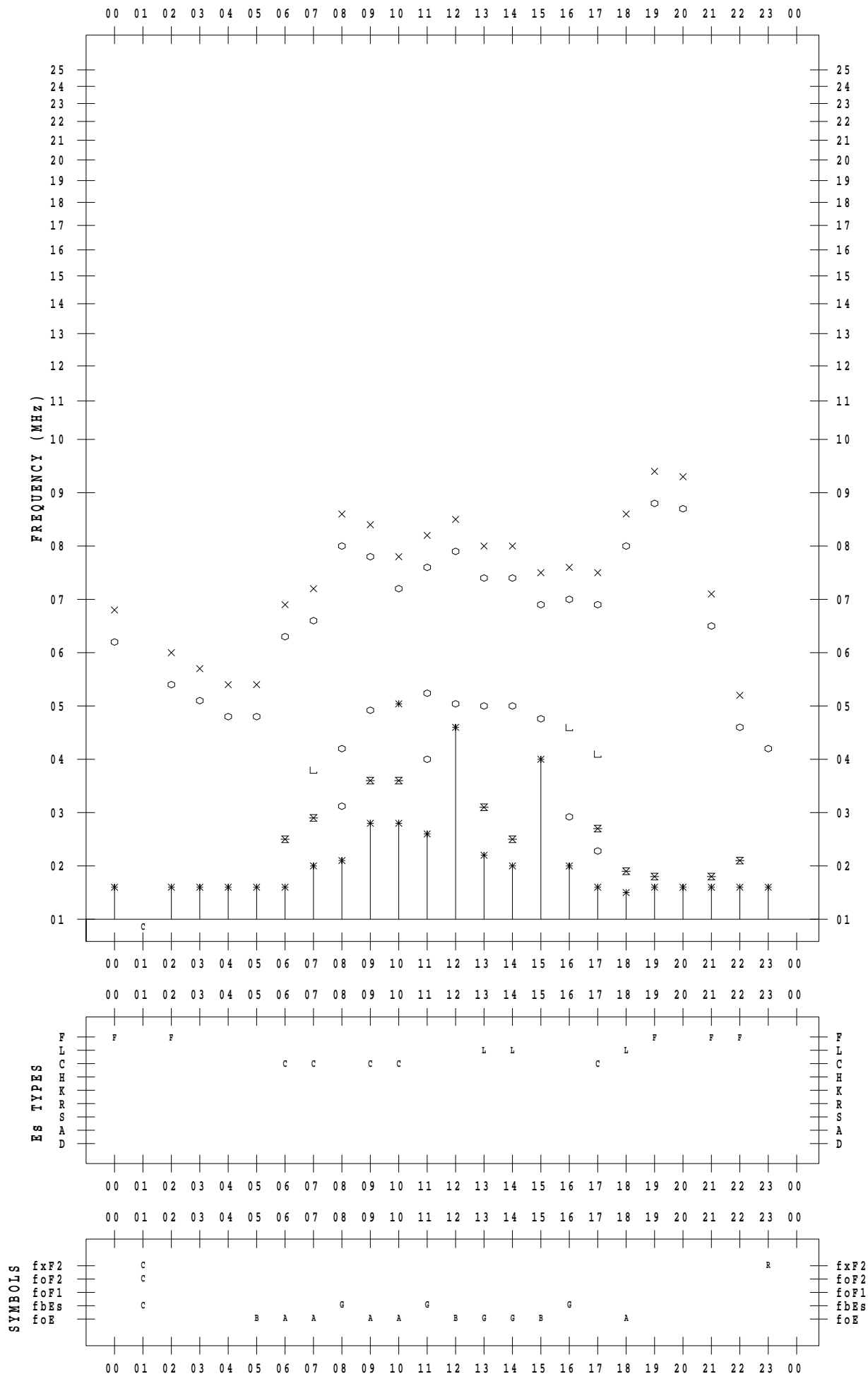
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 10

135 ° E MEAN TIME



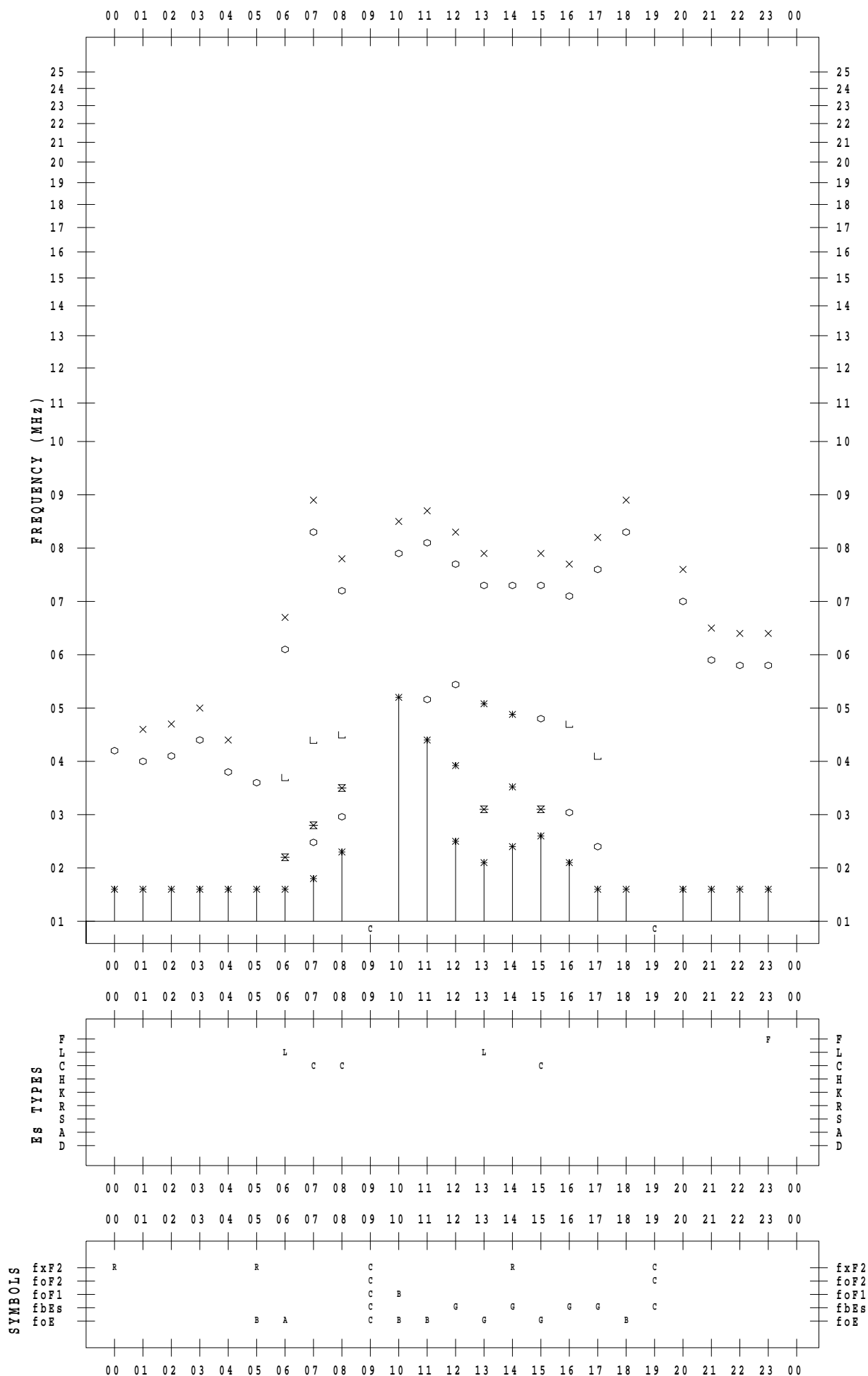
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 11

135 ° E MEAN TIME



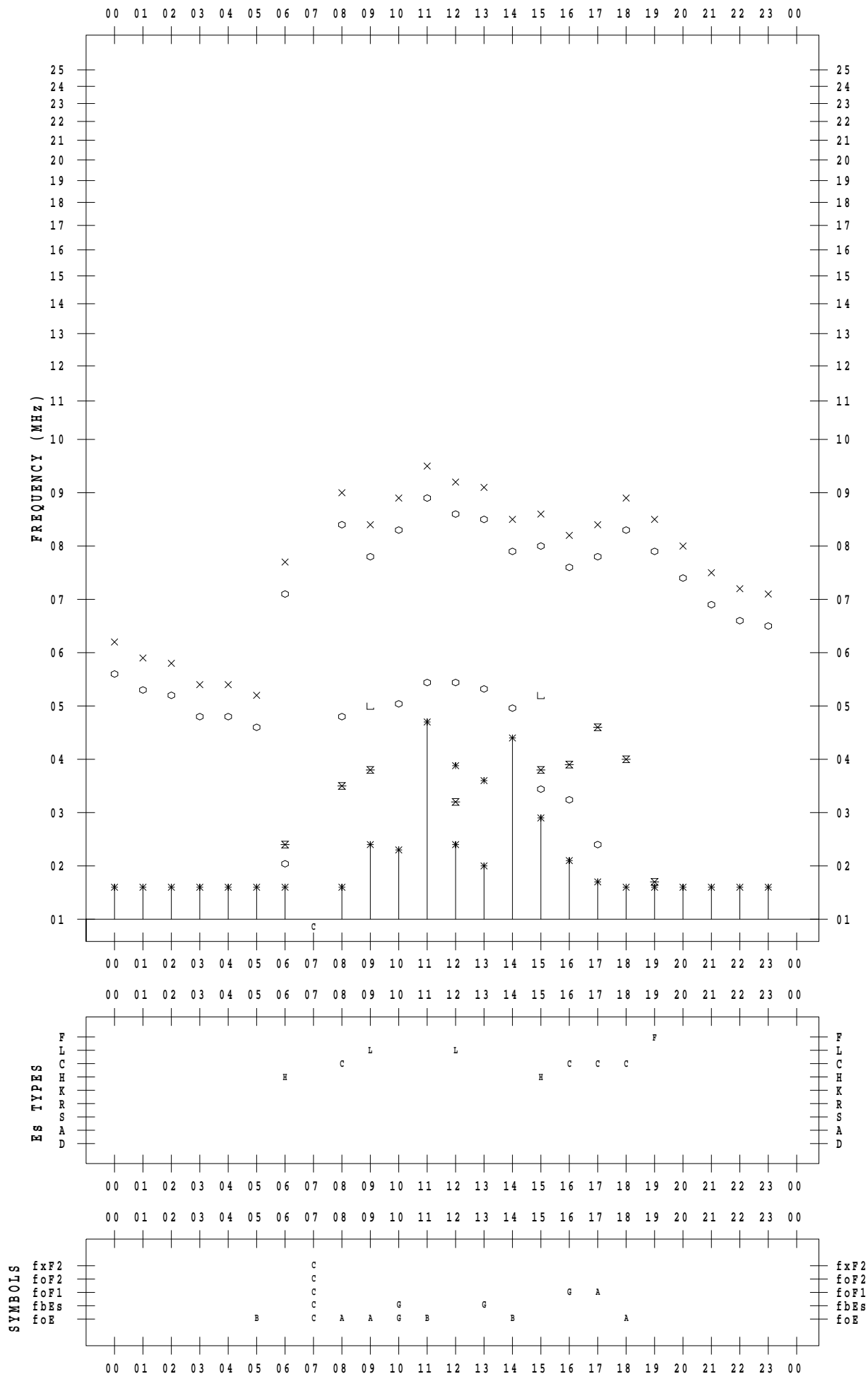
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 12

135 ° E MEAN TIME



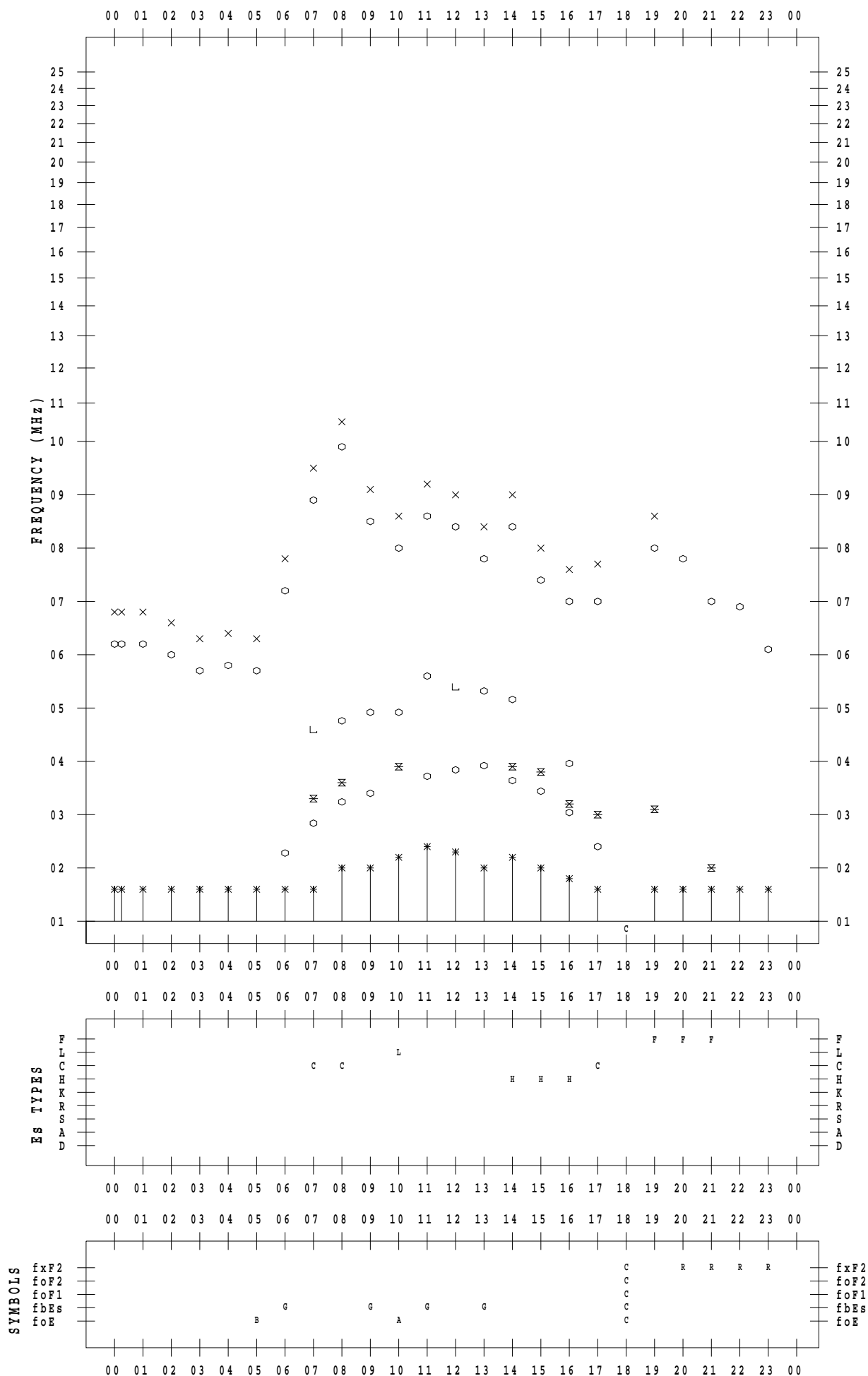
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 13

135 ° E MEAN TIME



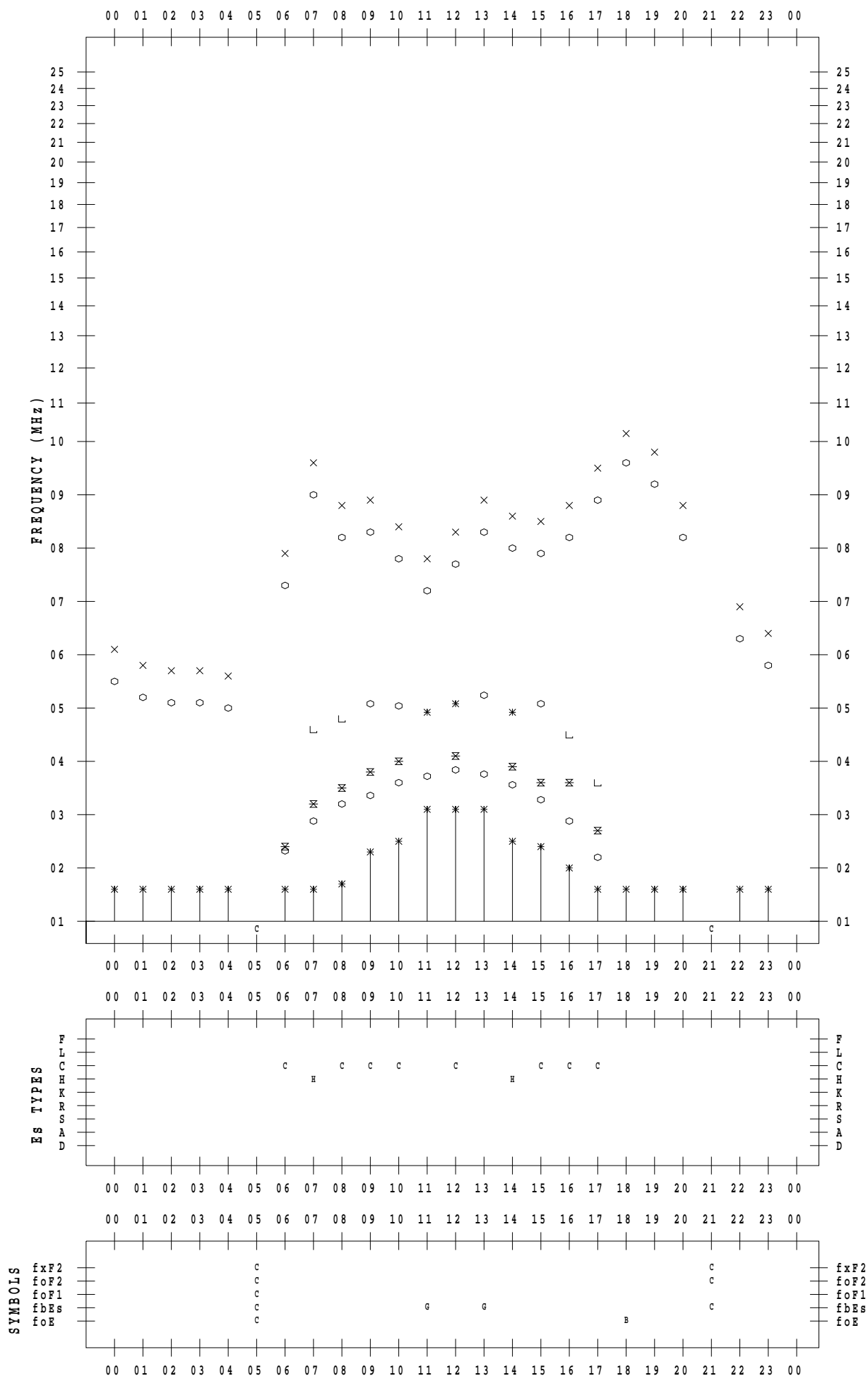
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 14

135 ° E MEAN TIME



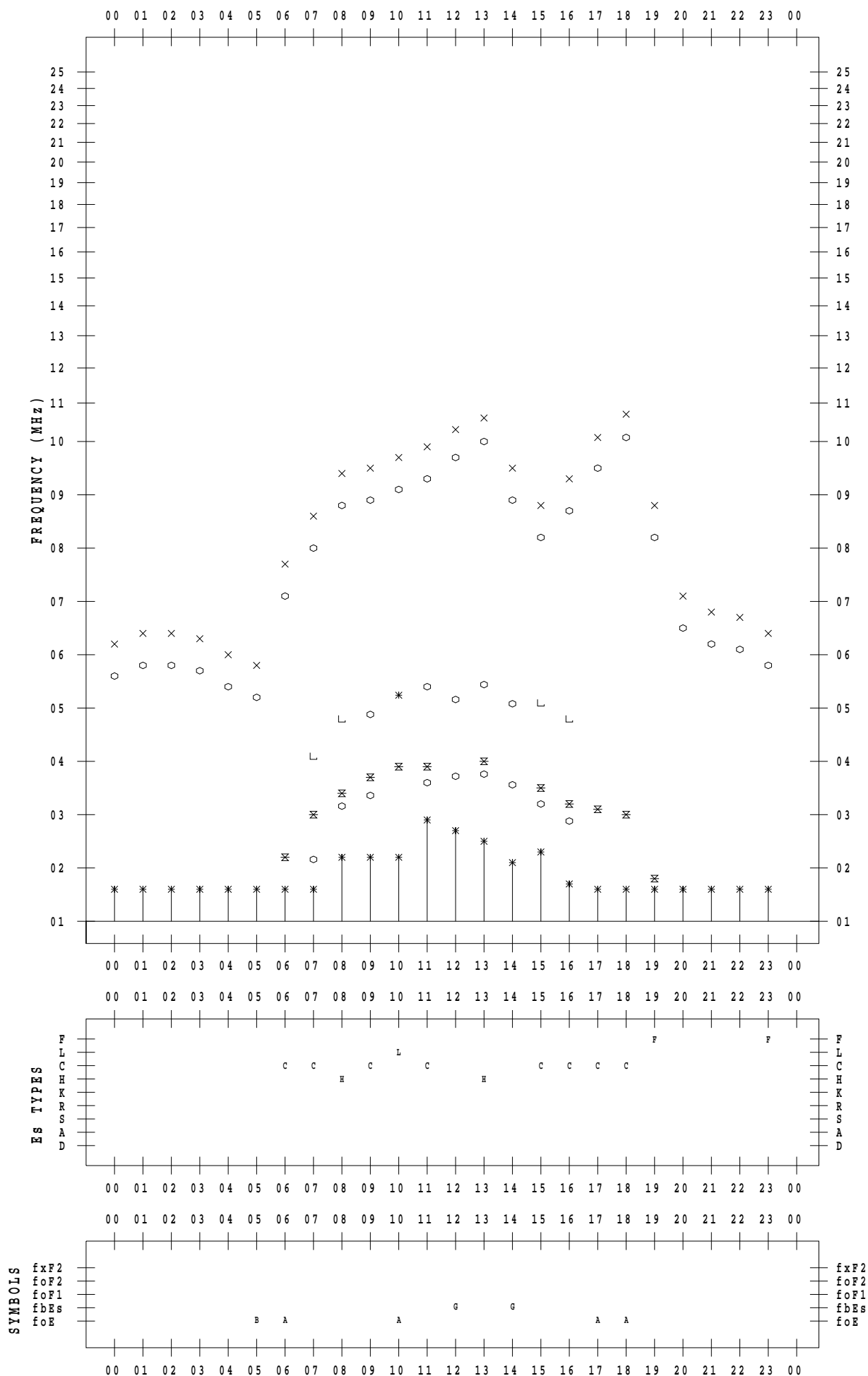
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 15

135 ° E MEAN TIME



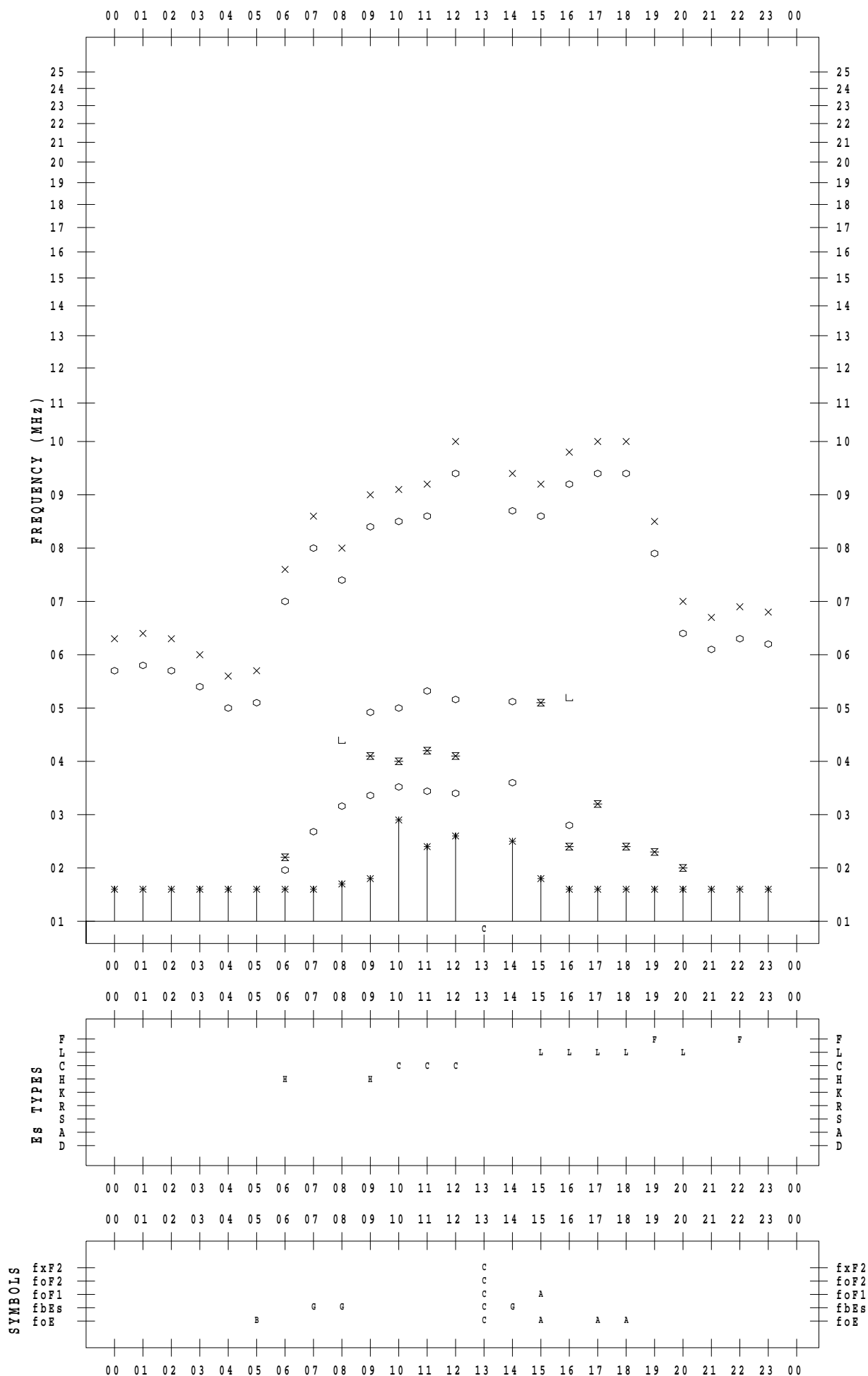
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 16

135 ° E MEAN TIME



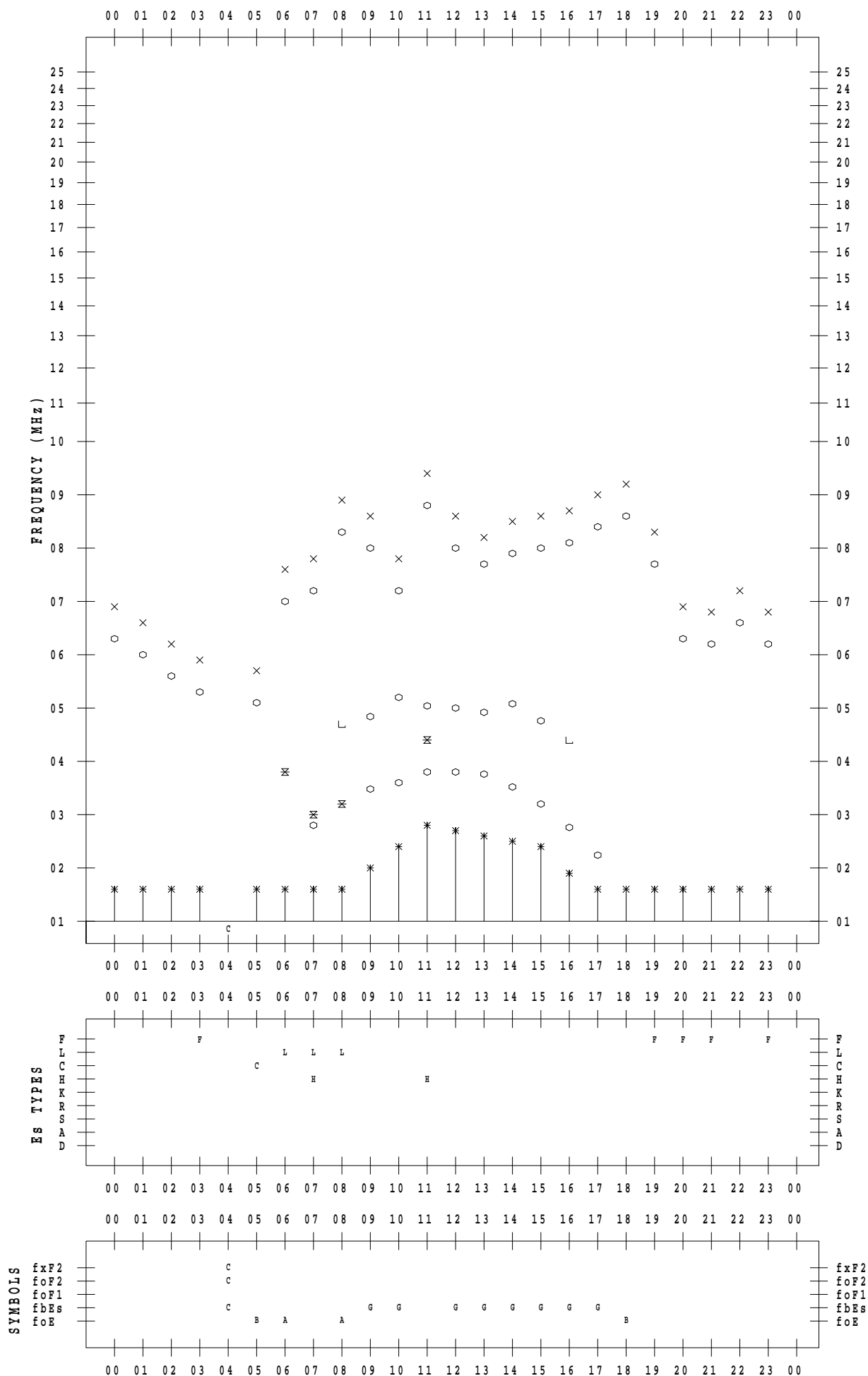
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 17

135 ° E MEAN TIME



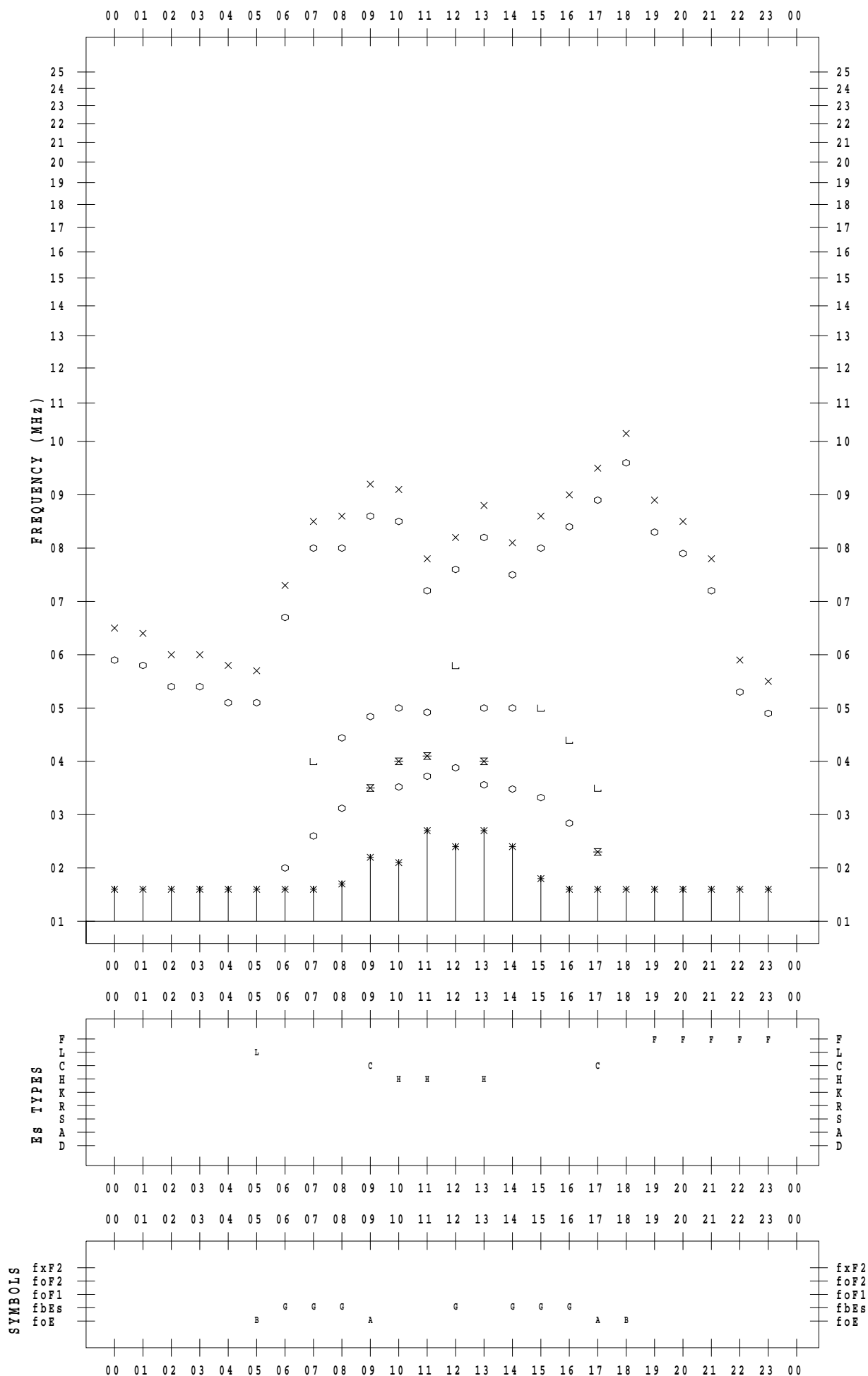
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 18

135 ° E MEAN TIME



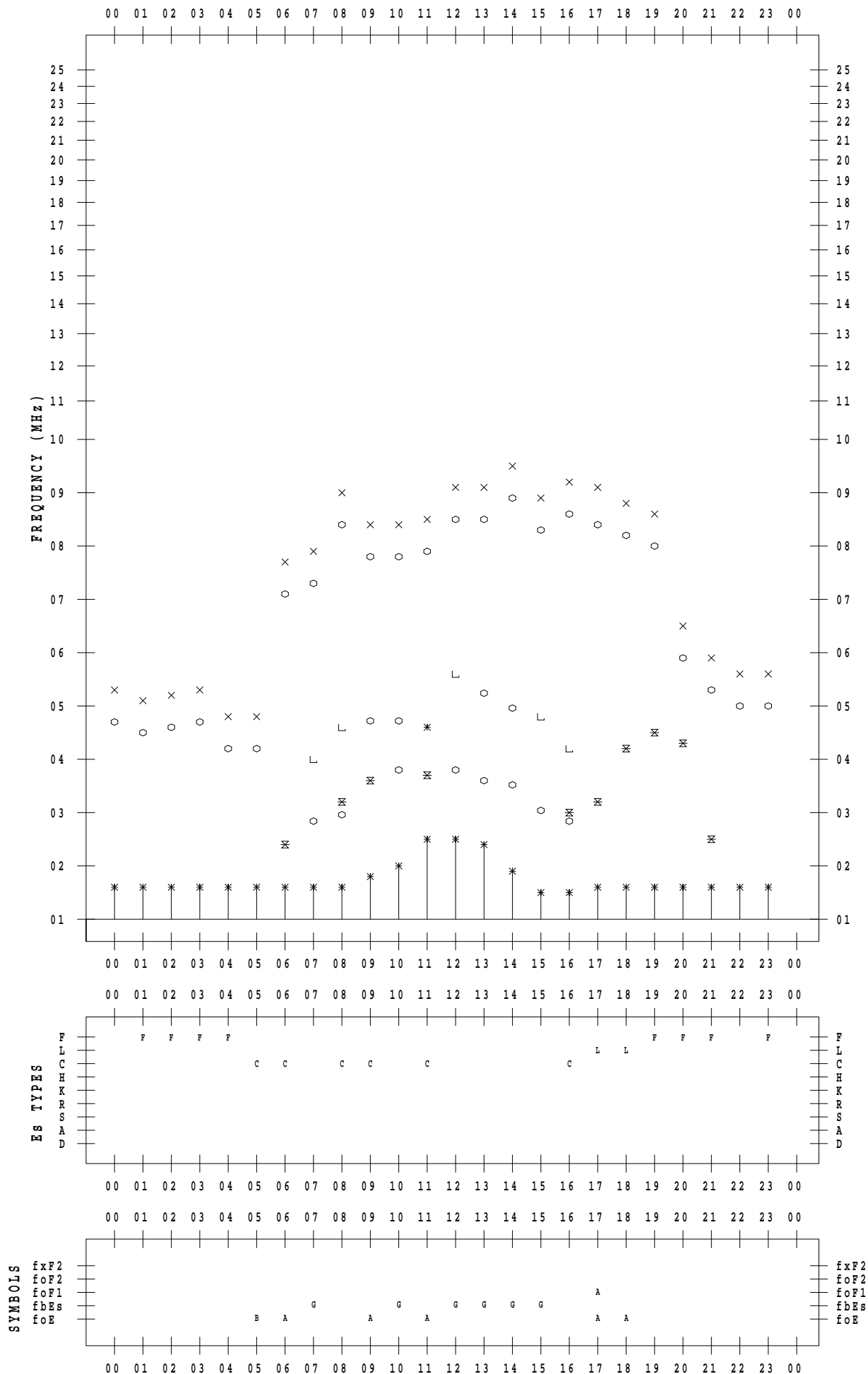
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 19

135 ° E MEAN TIME



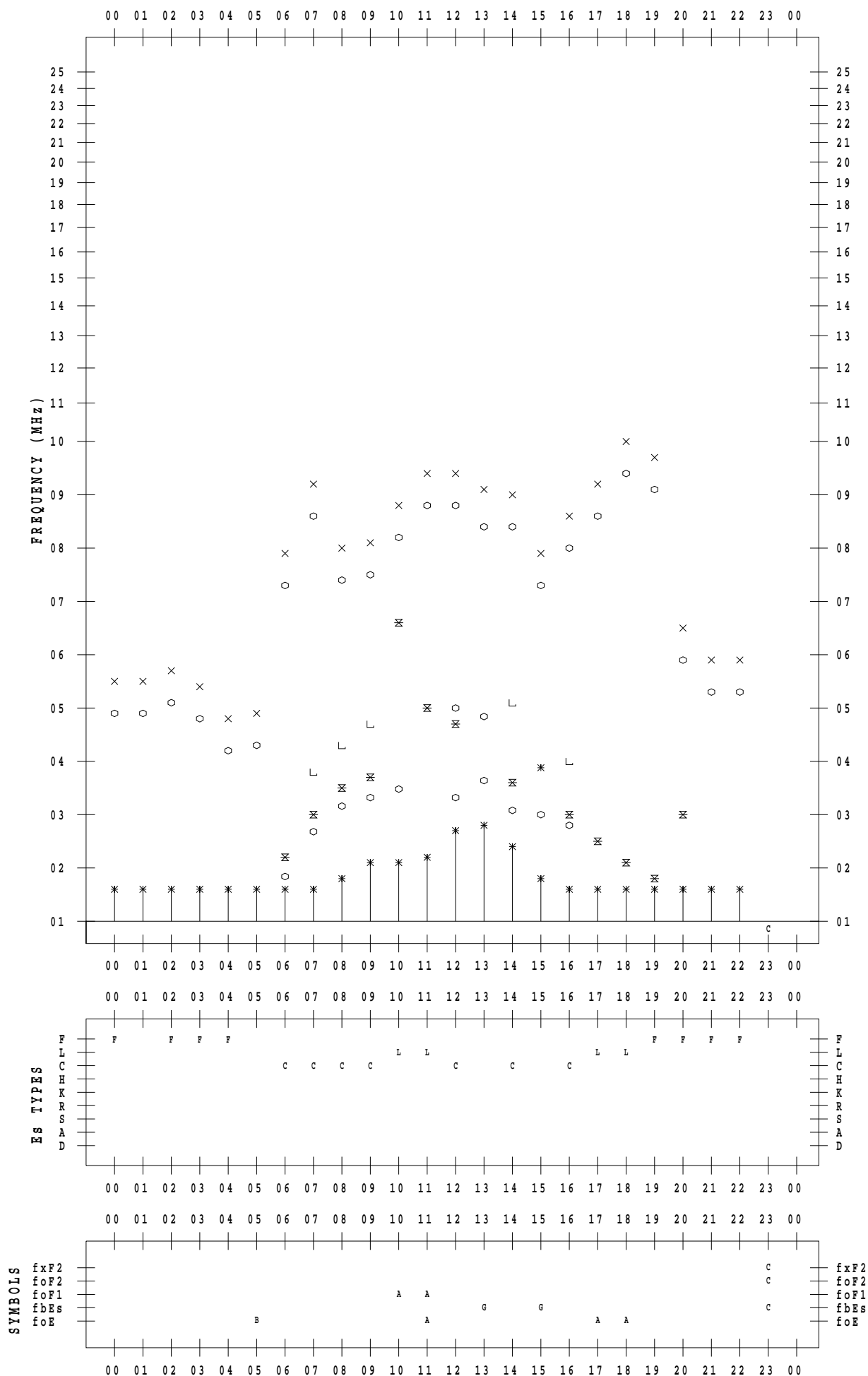
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 20

135 ° E MEAN TIME



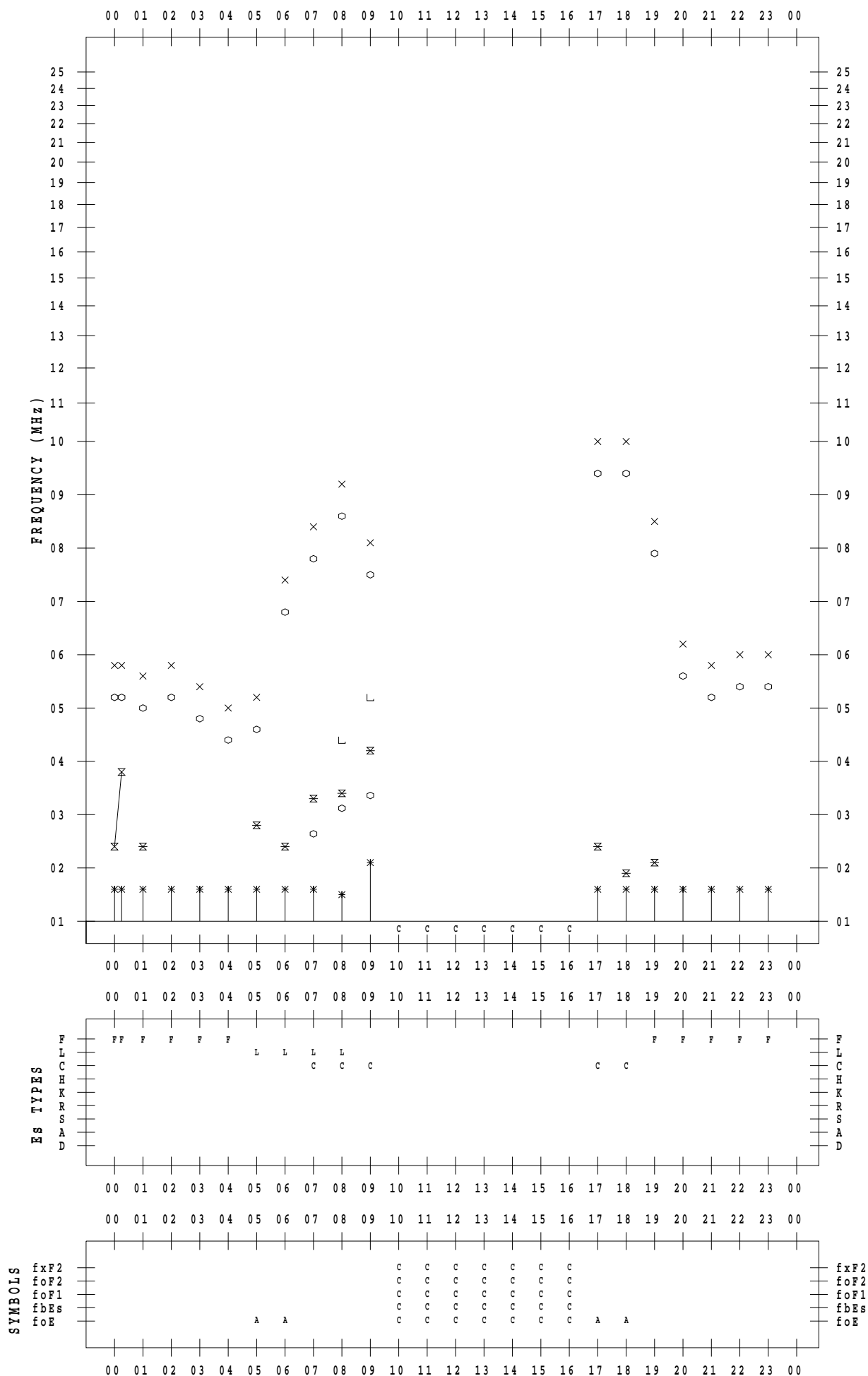
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 21

135 ° E MEAN TIME



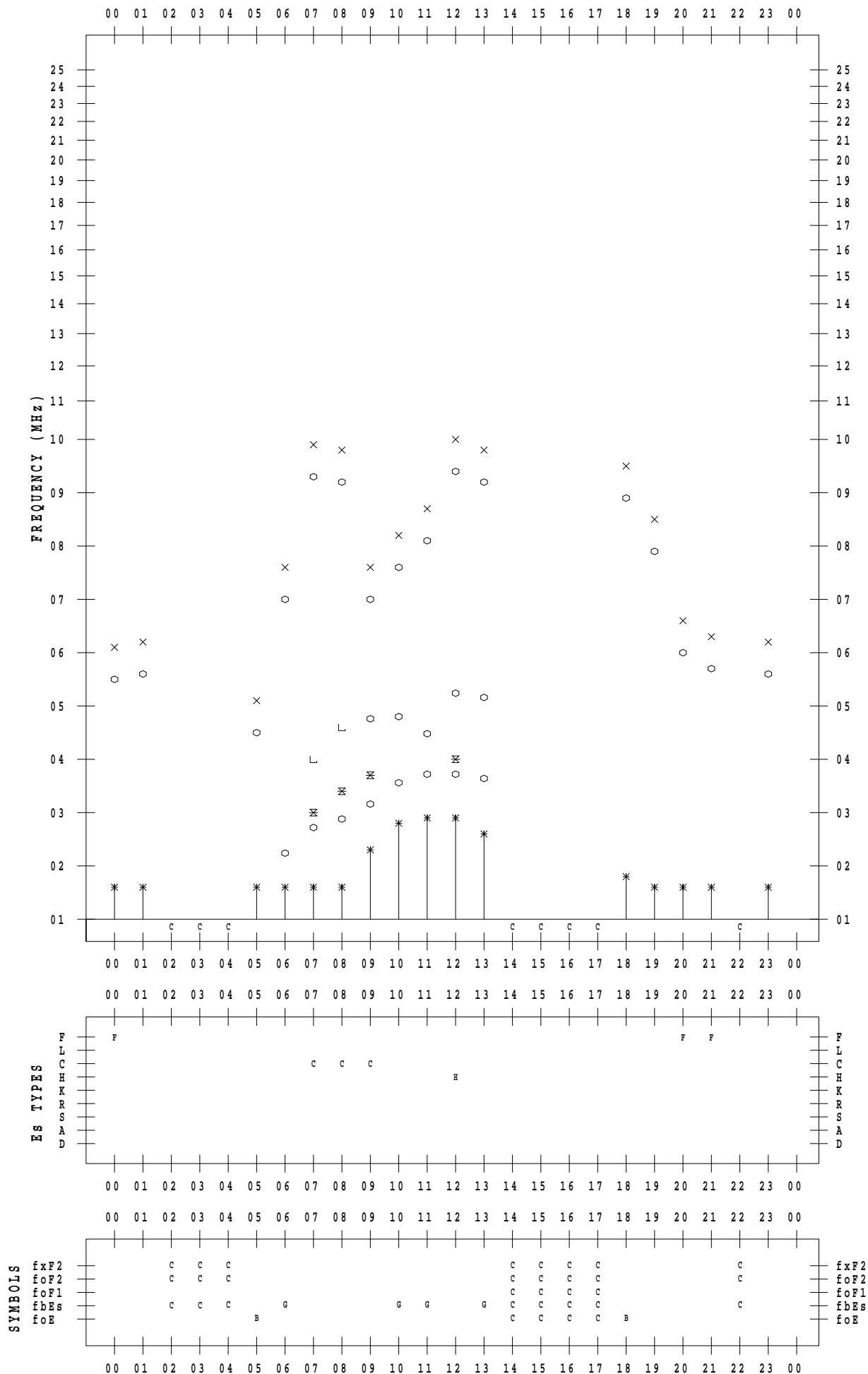
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 22

135 ° E MEAN TIME



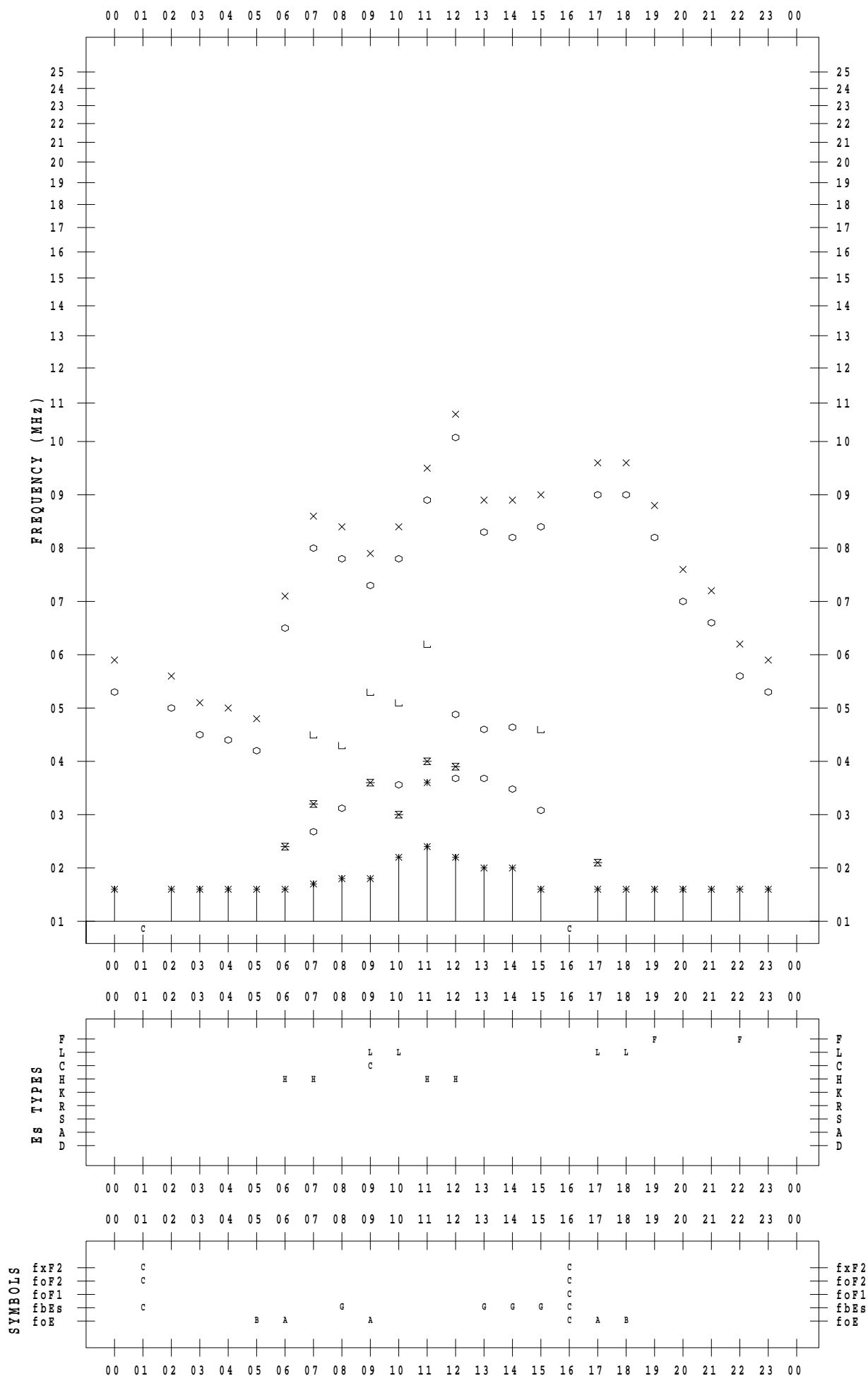
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 23

135 ° E MEAN TIME



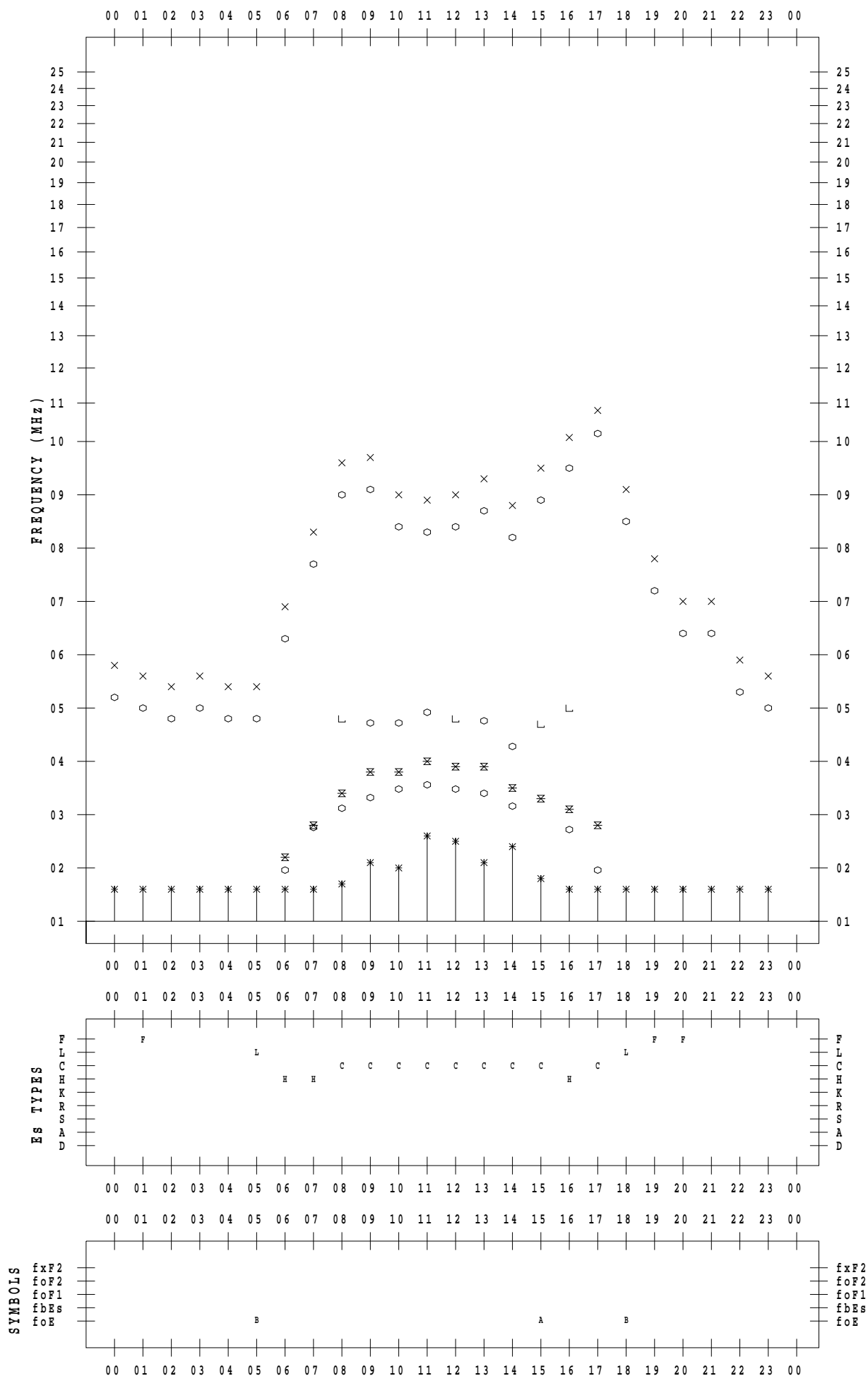
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 24

135 ° E MEAN TIME



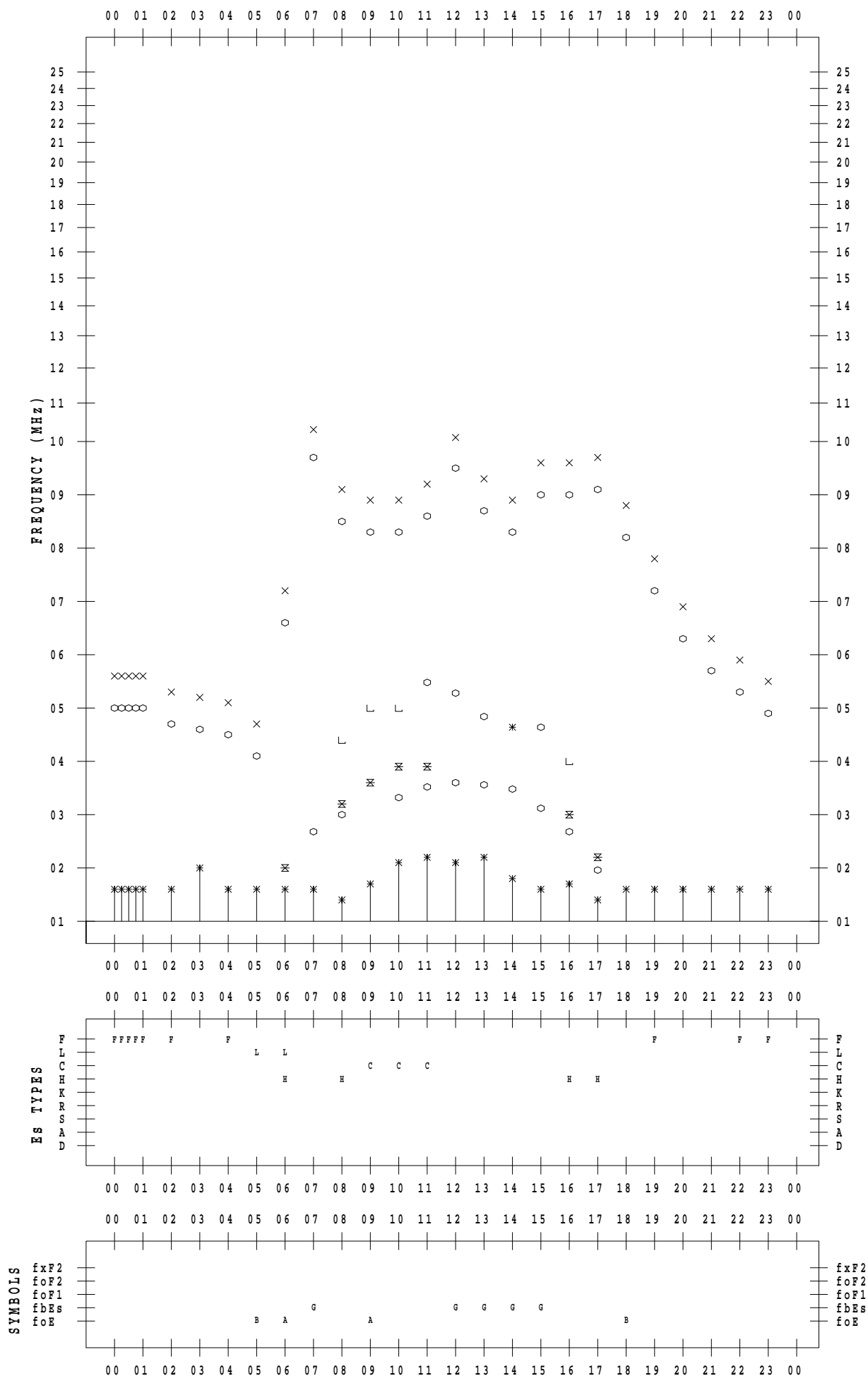
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 25

135 ° E MEAN TIME



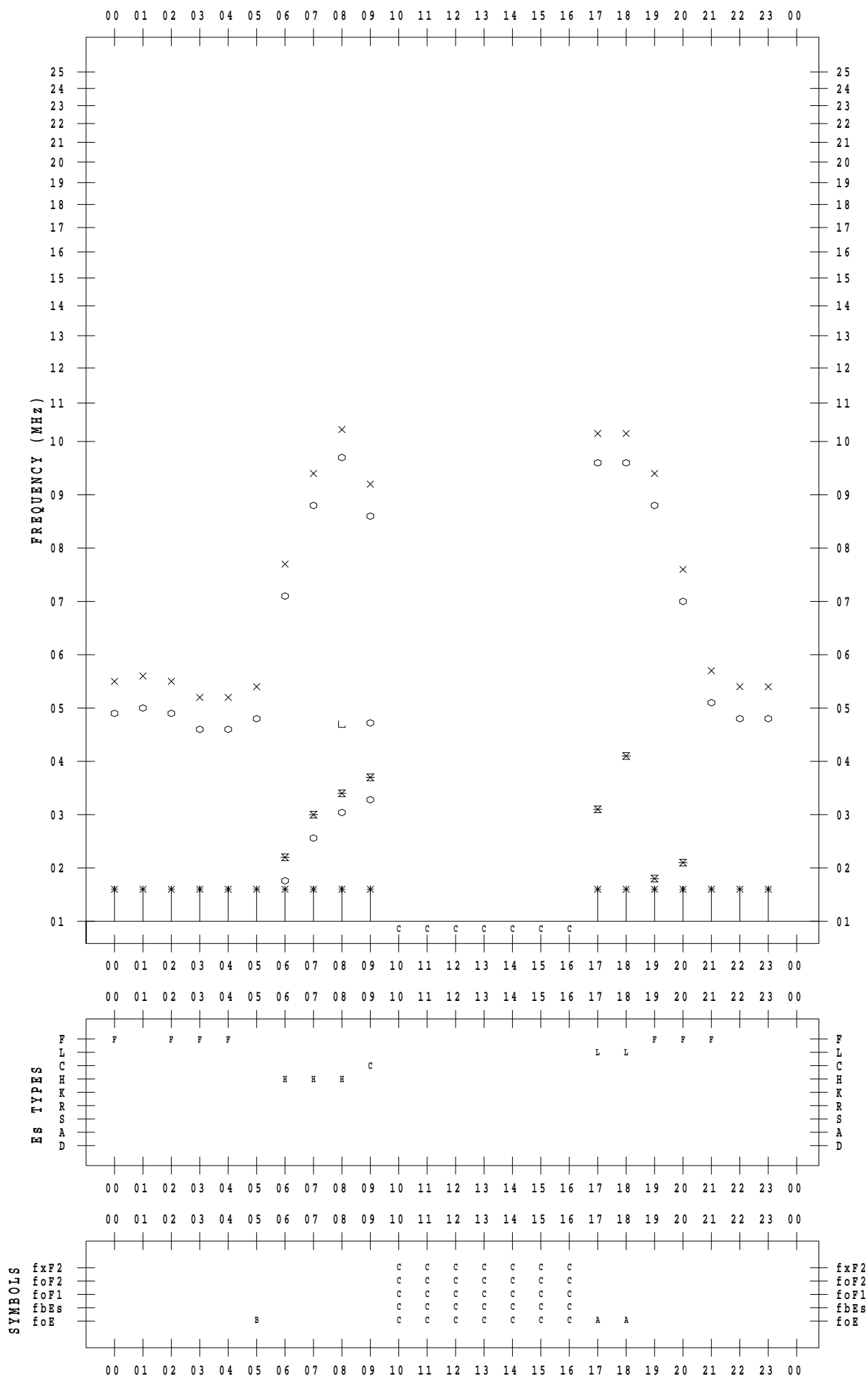
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022/ 9/26

135 ° E MEAN TIME



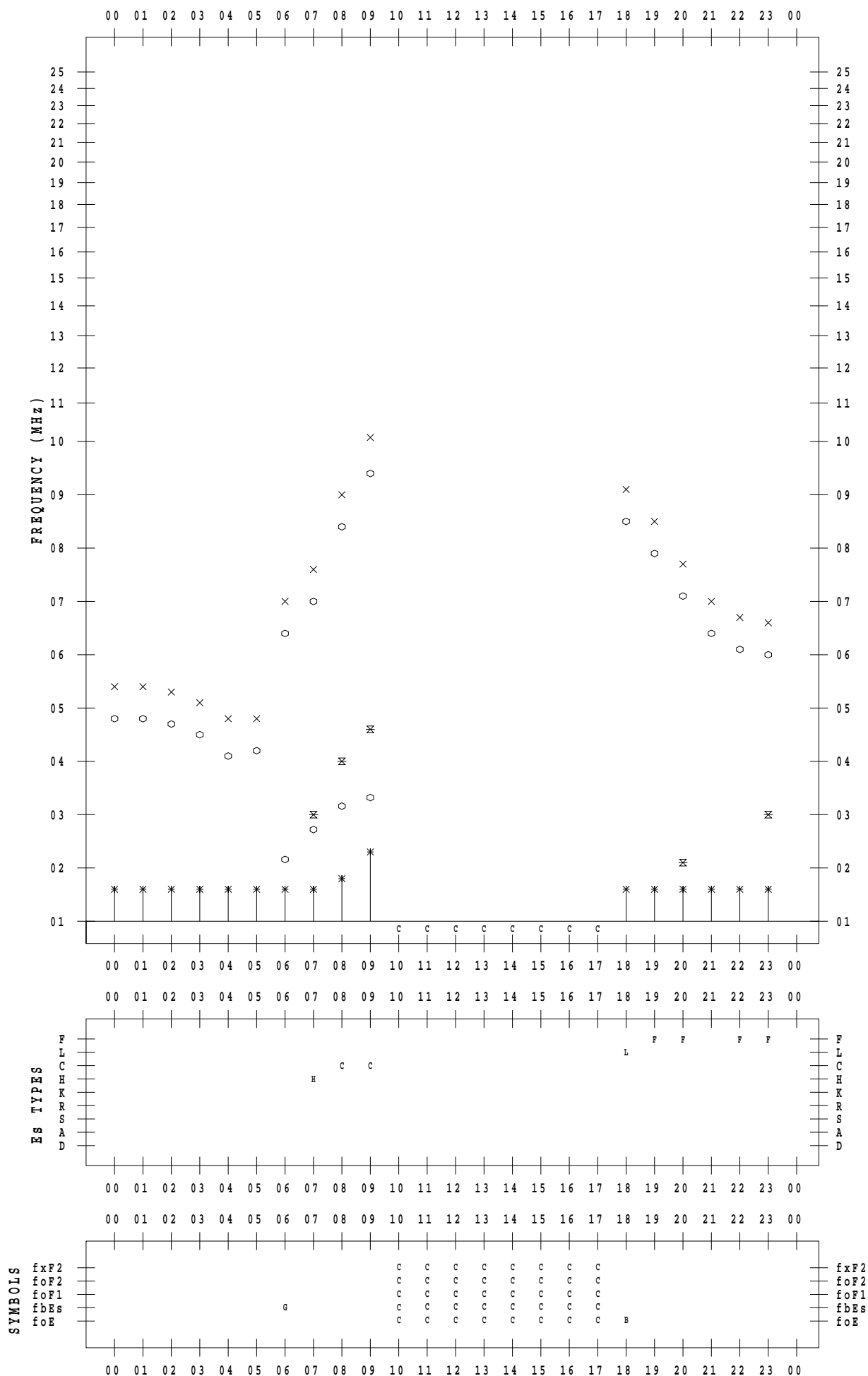
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 27

135 ° E MEAN TIME



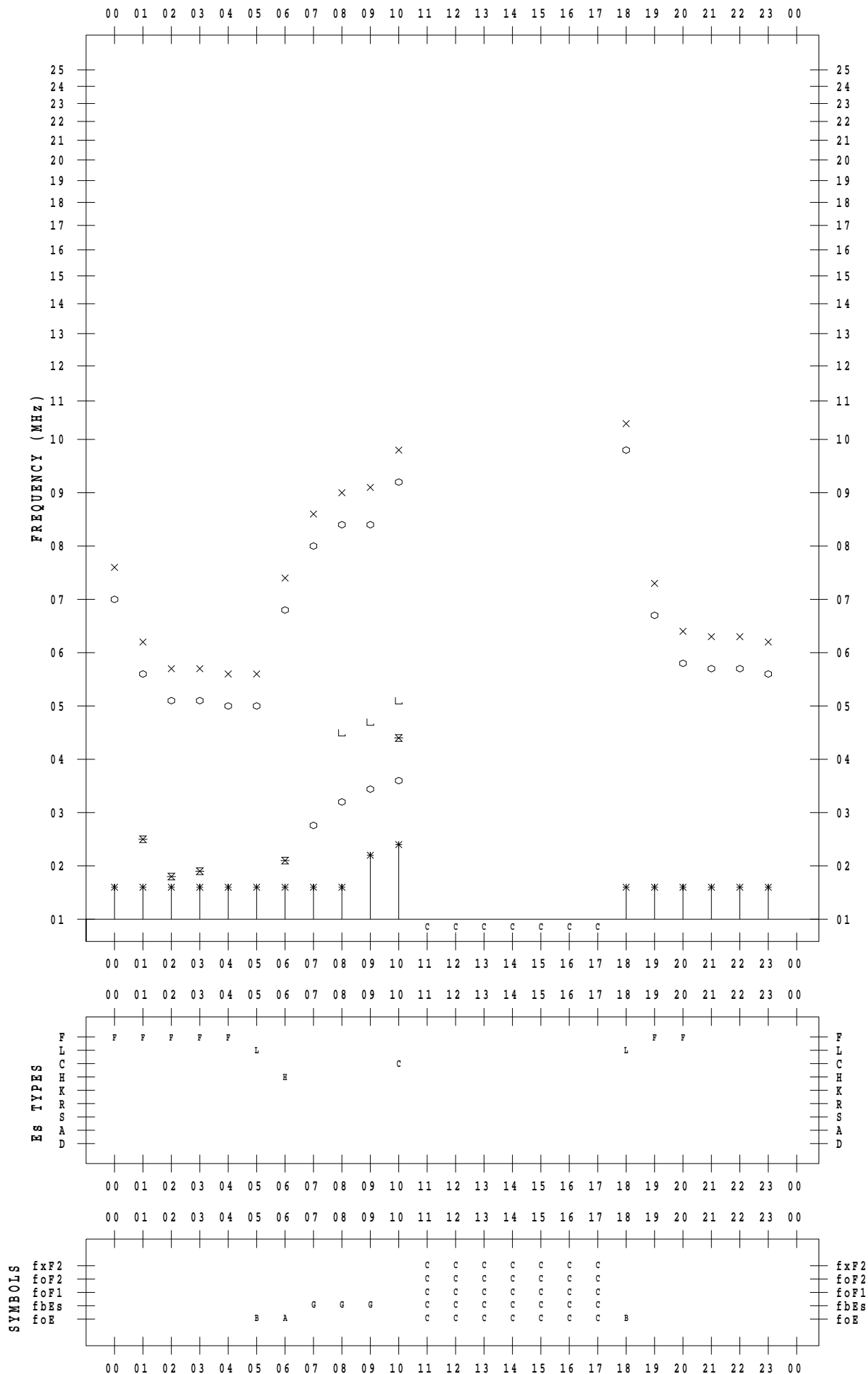
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 28

135 ° E MEAN TIME



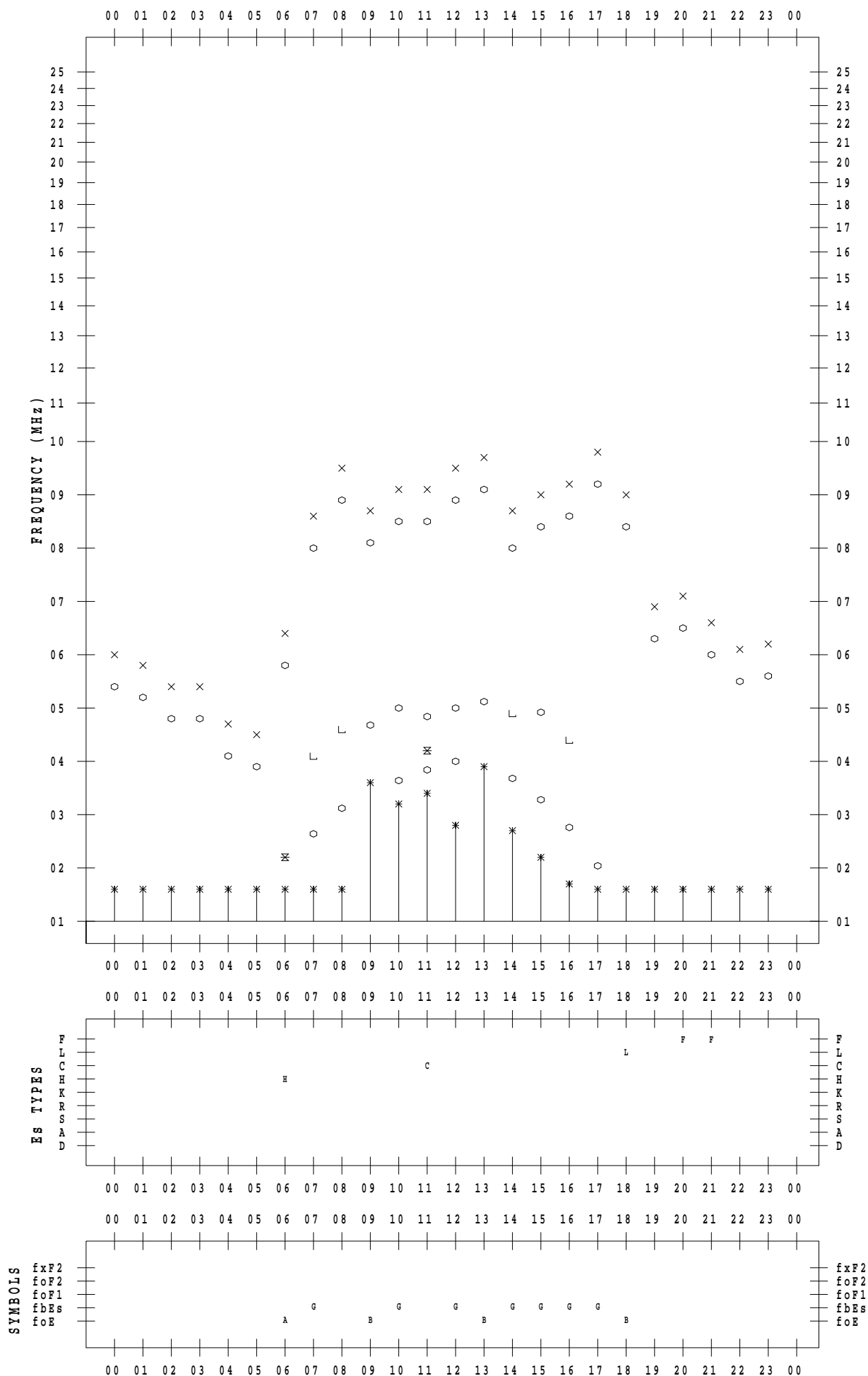
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 29

135 ° E MEAN TIME



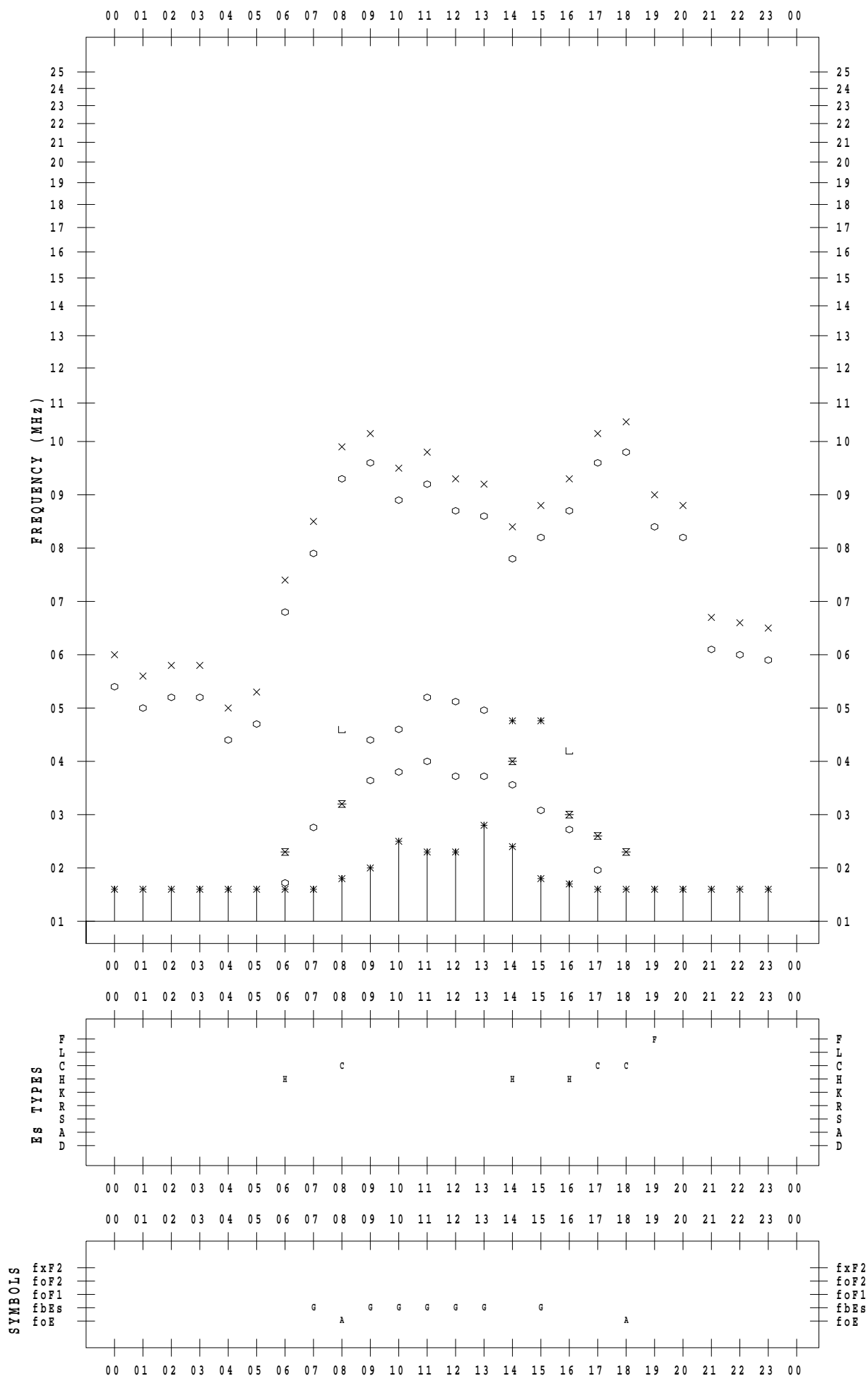
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SCALER : I.YAMAZAKI

STATION : Kokubunji

DATE : 2022 / 9 / 30

135 ° E MEAN TIME



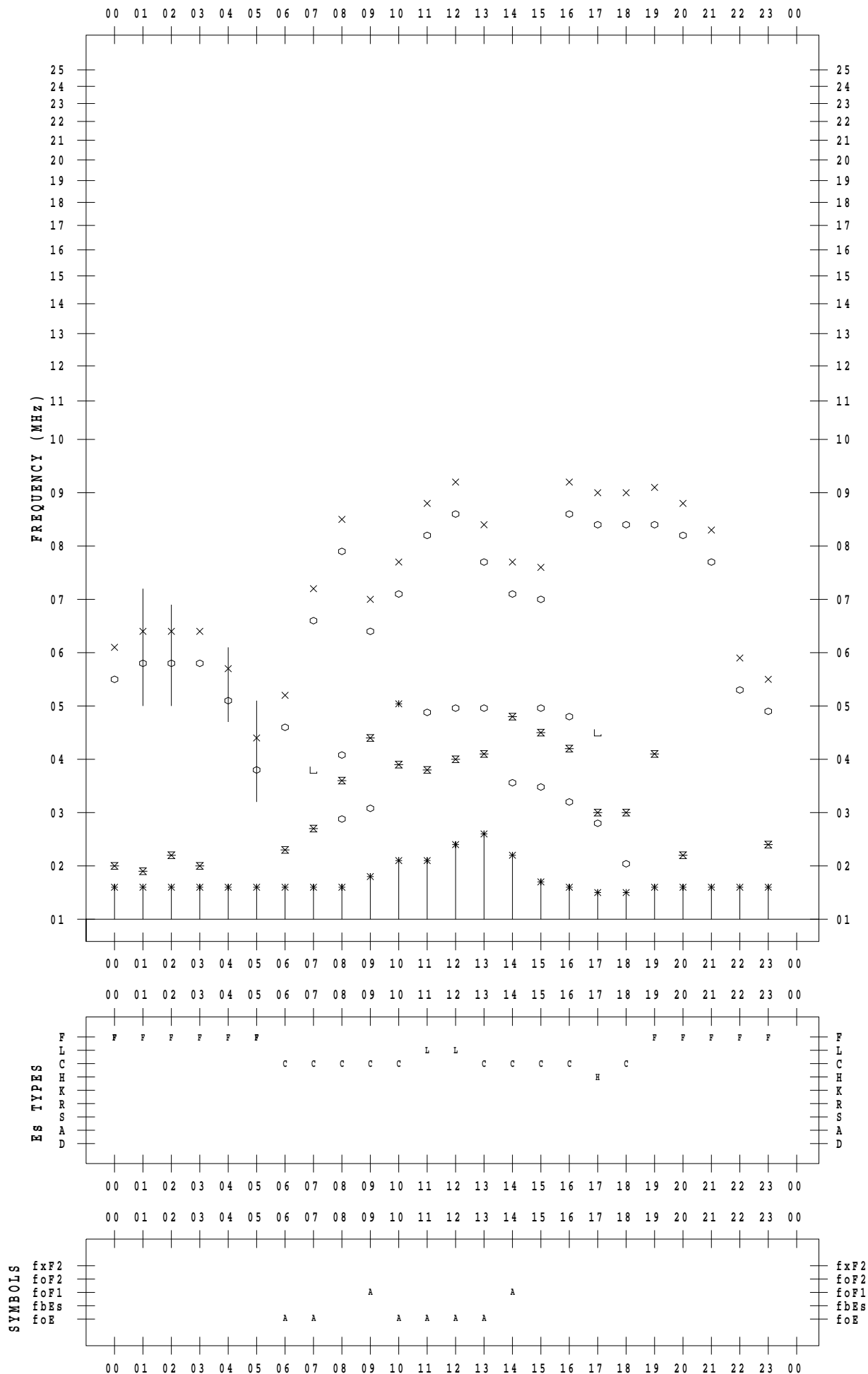
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 1

135 ° E MEAN TIME



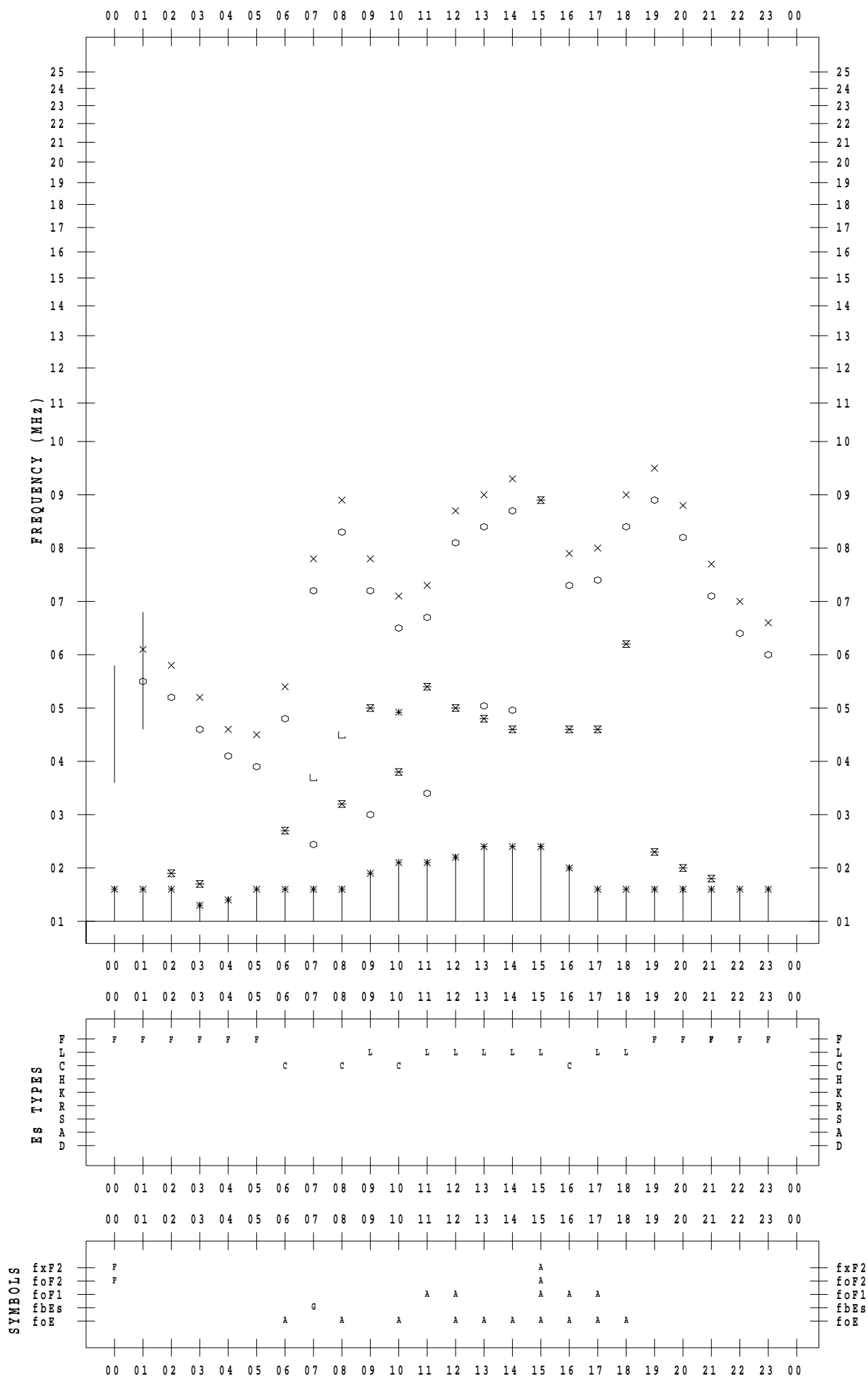
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 2

135 ° E MEAN TIME



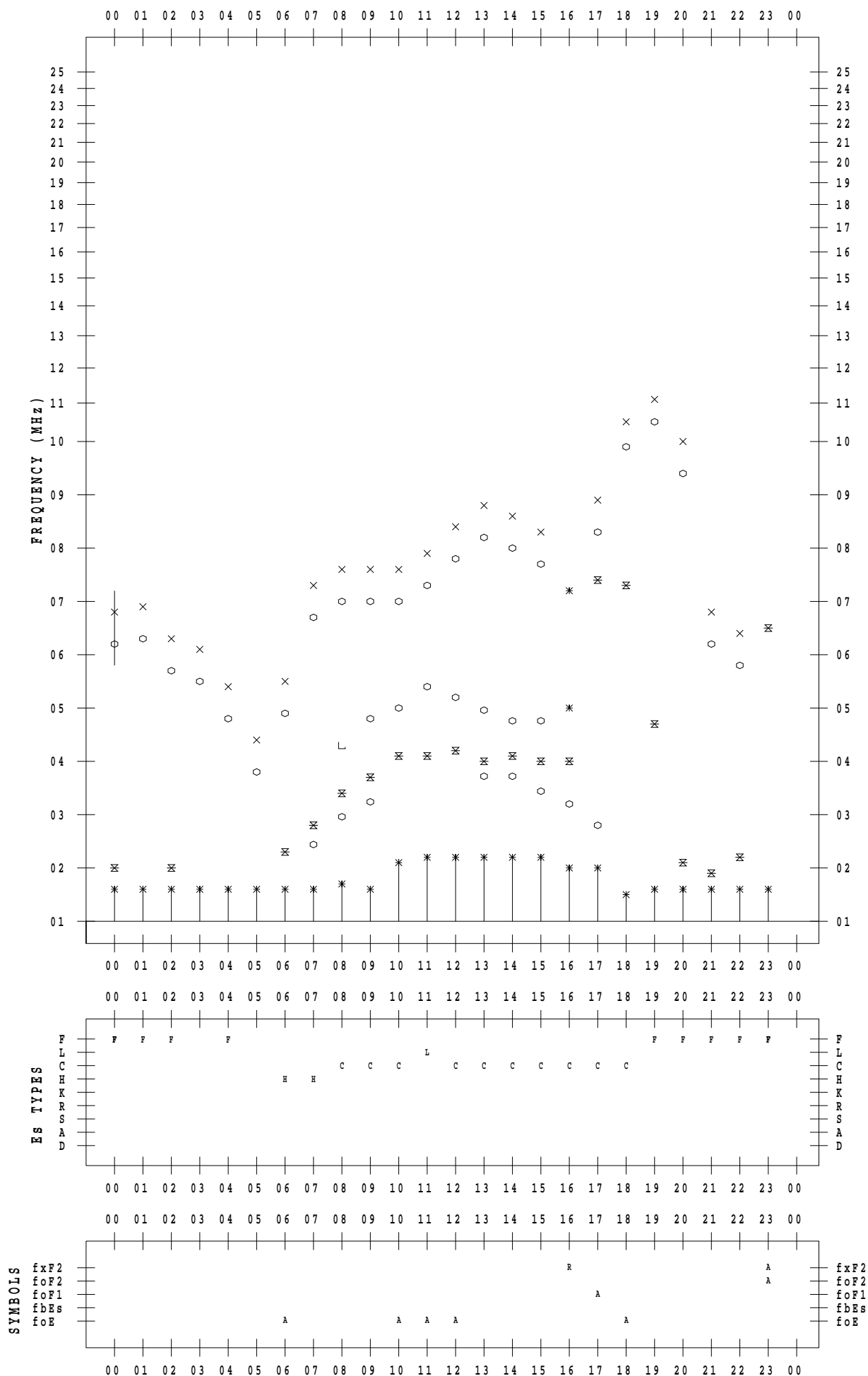
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 3

135 ° E MEAN TIME



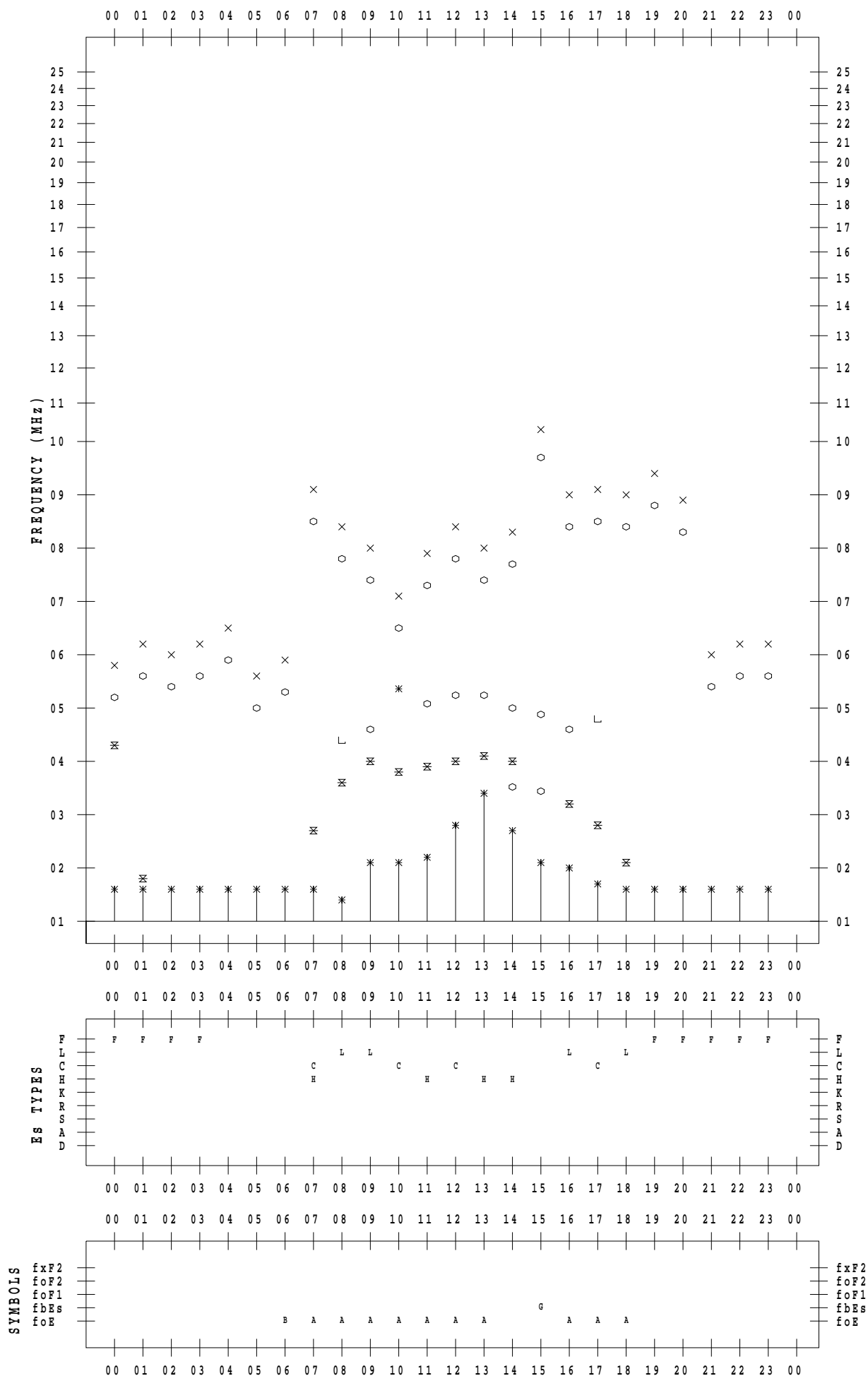
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 4

135 ° E MEAN TIME



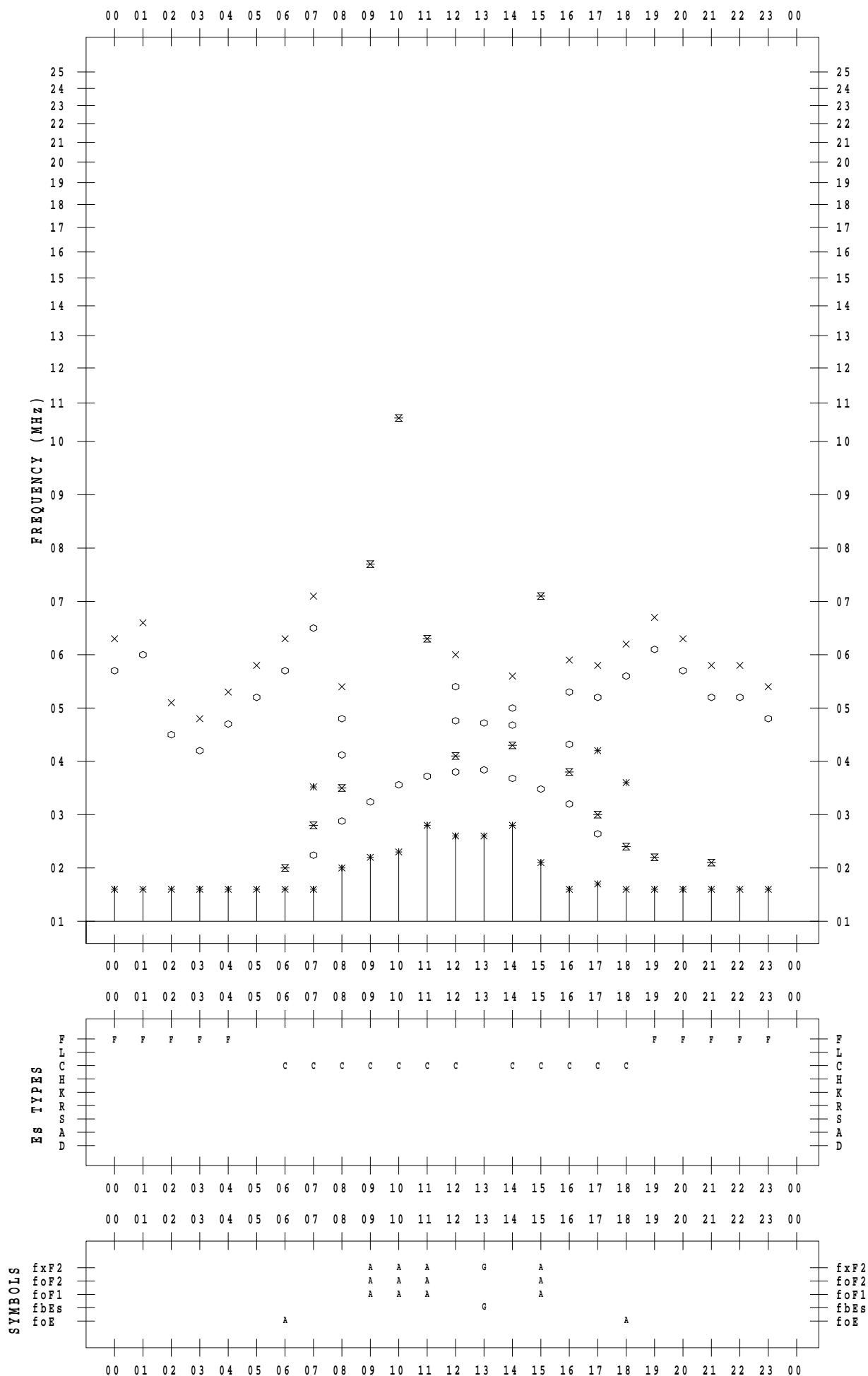
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 5

135 ° E MEAN TIME



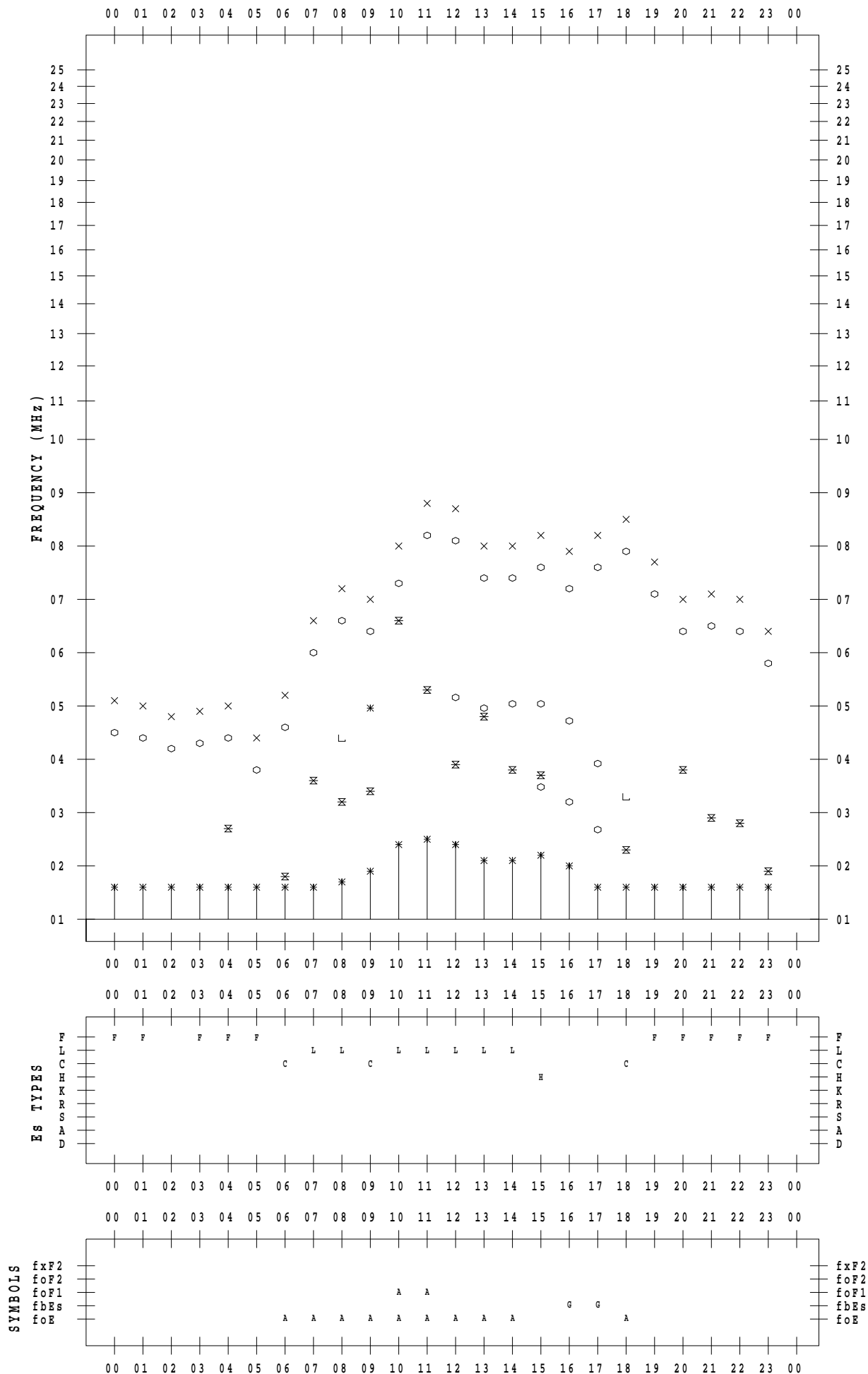
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 6

135 ° E MEAN TIME



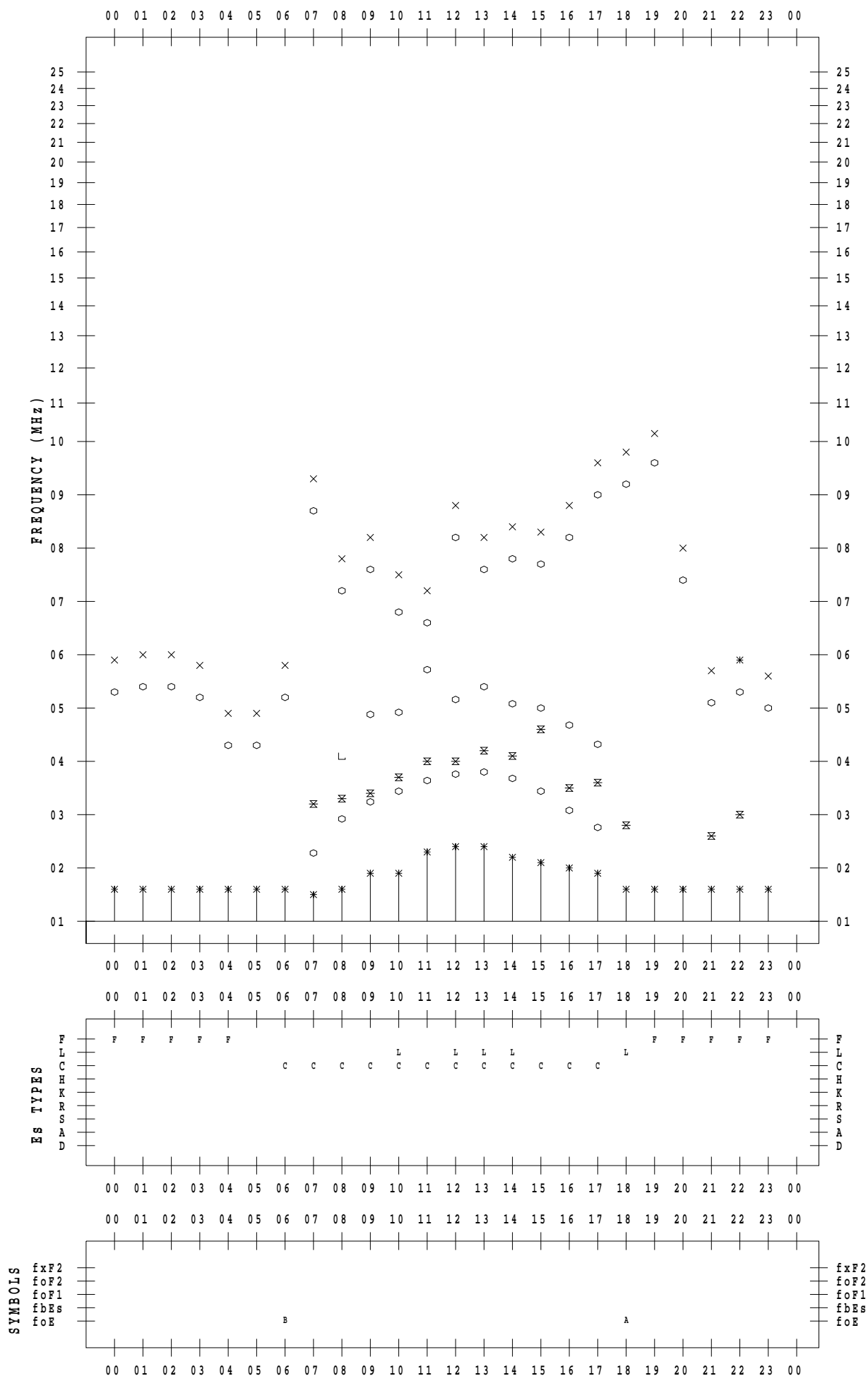
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 7

135 ° E MEAN TIME



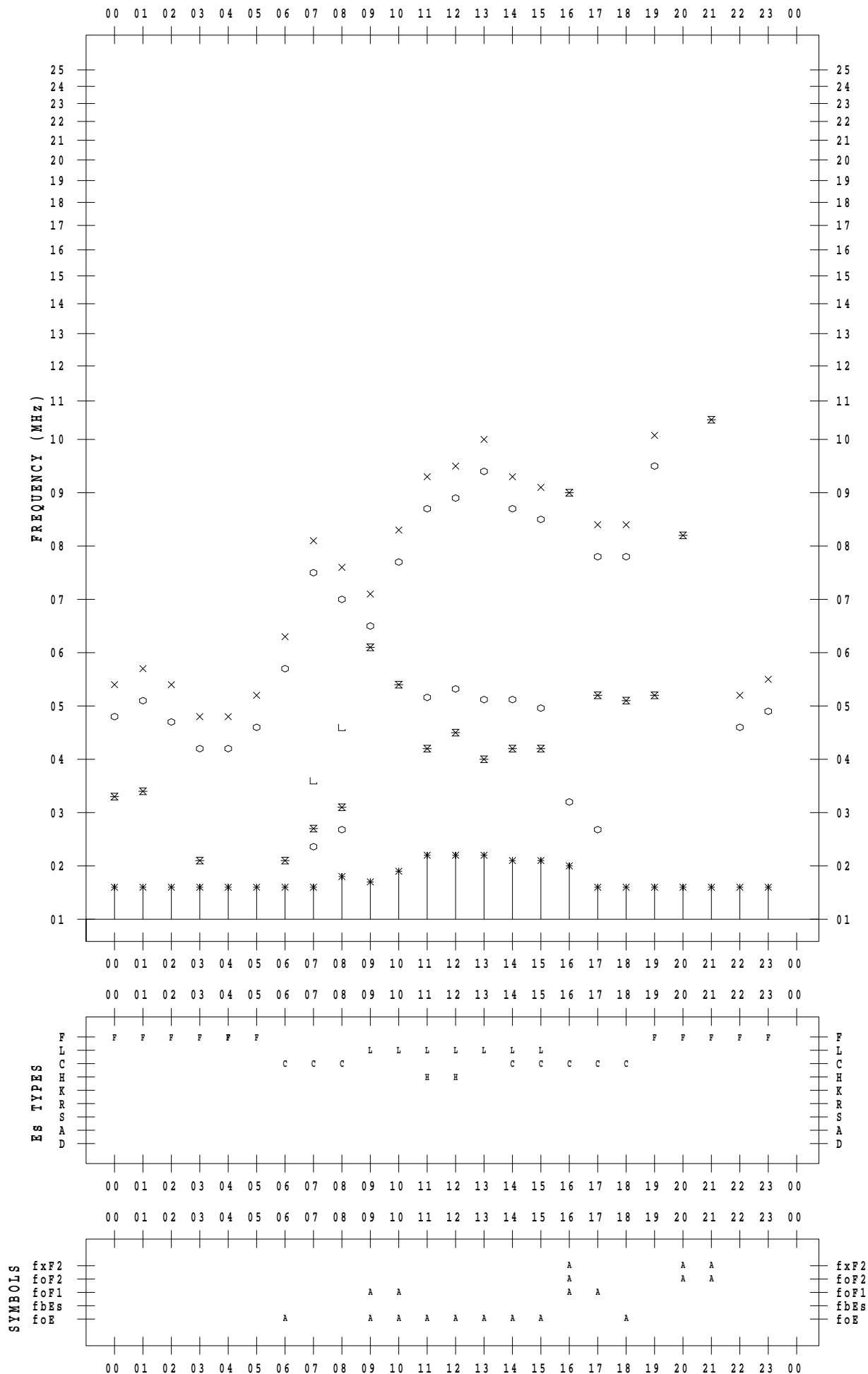
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 8

135 ° E MEAN TIME



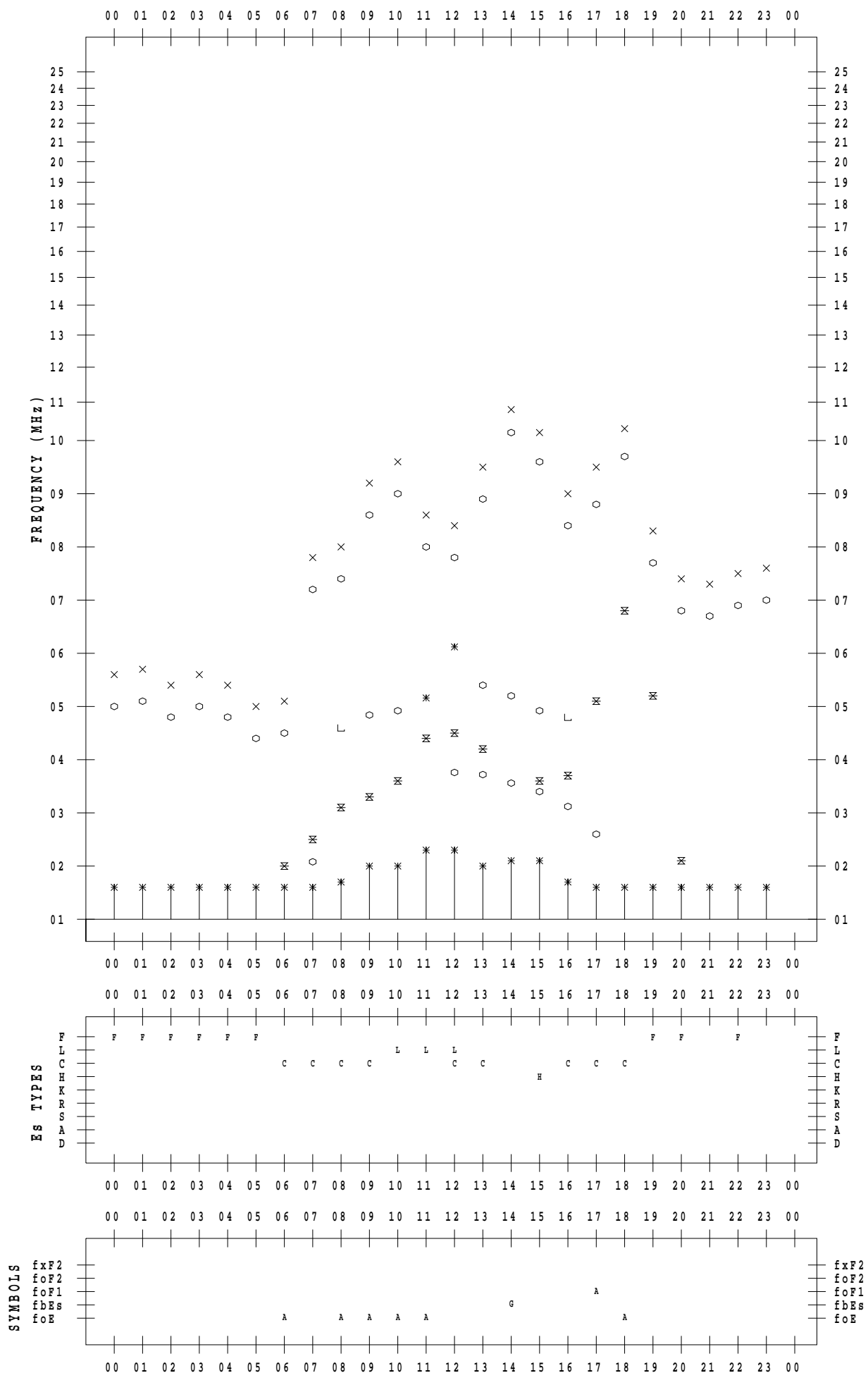
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 9

135 ° E MEAN TIME



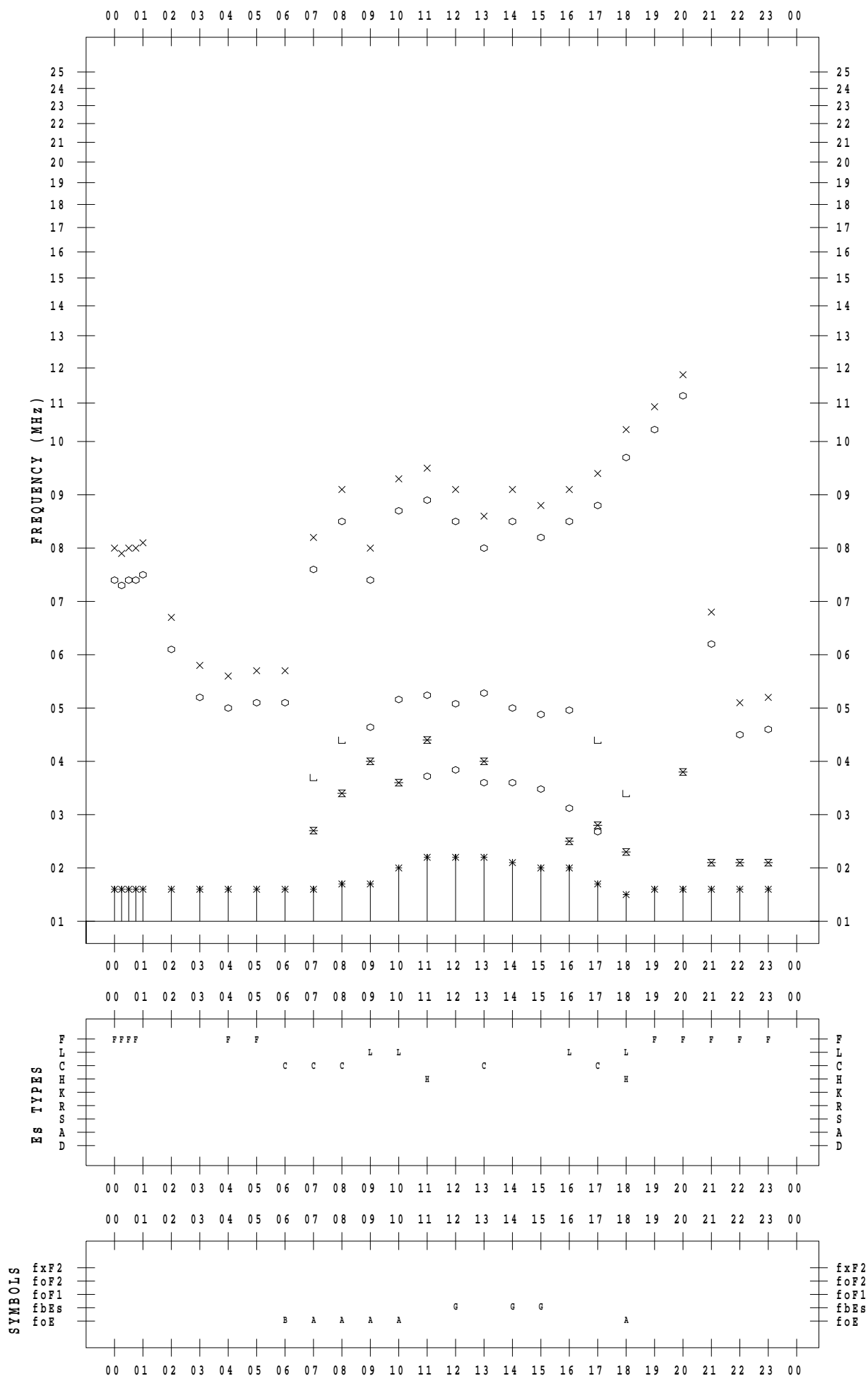
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 10

135 ° E MEAN TIME



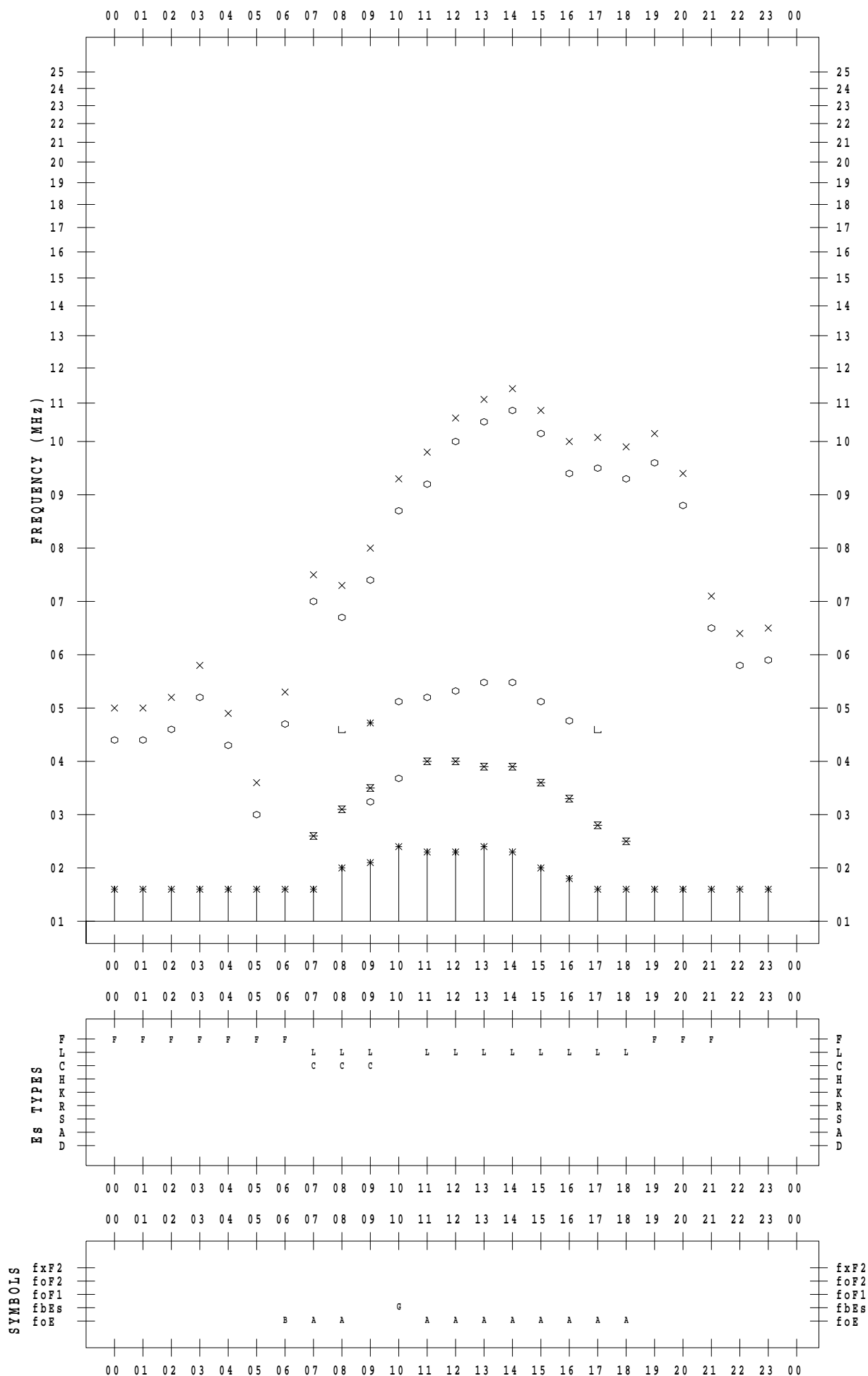
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 11

135 ° E MEAN TIME



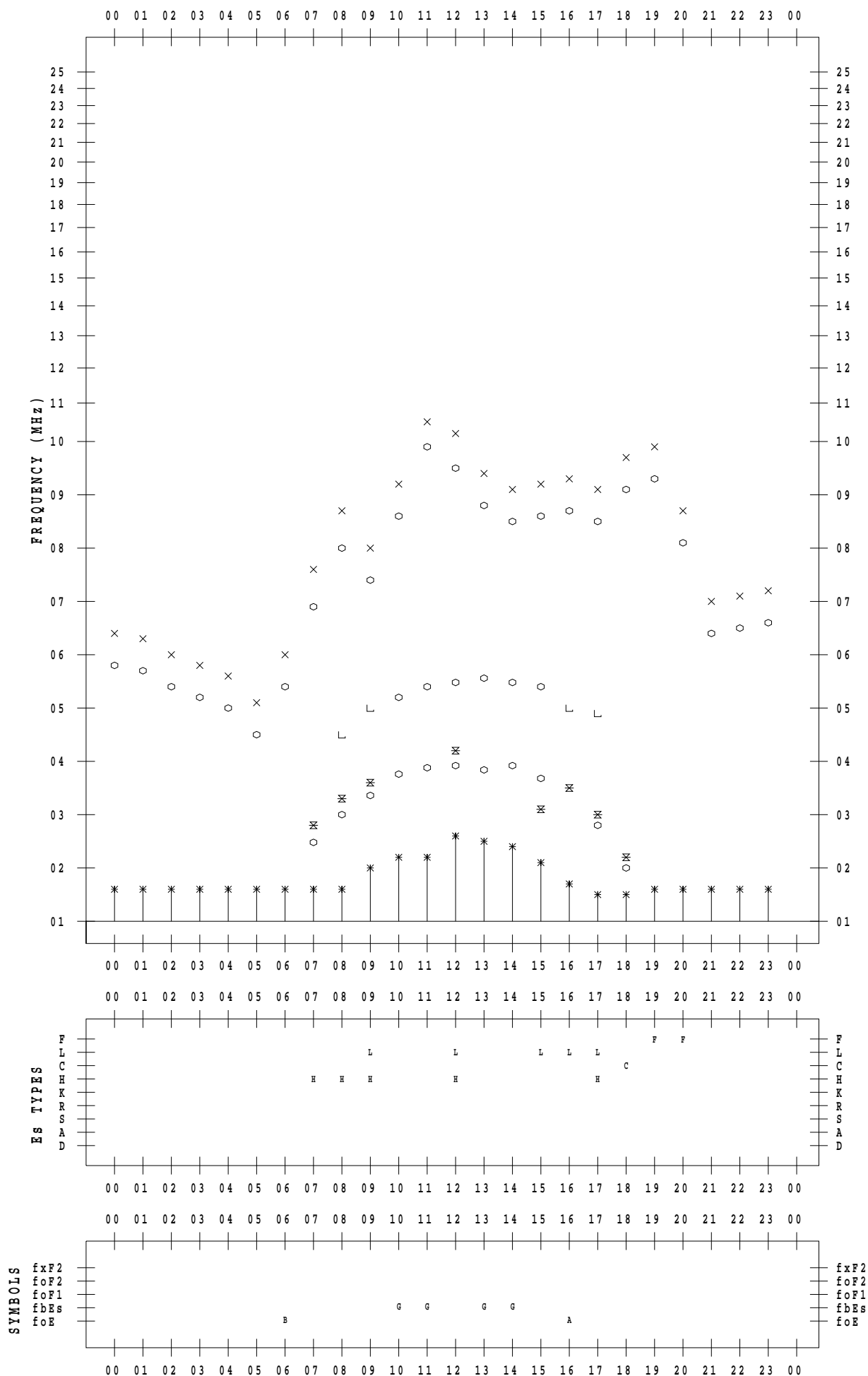
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 12

135 ° E MEAN TIME



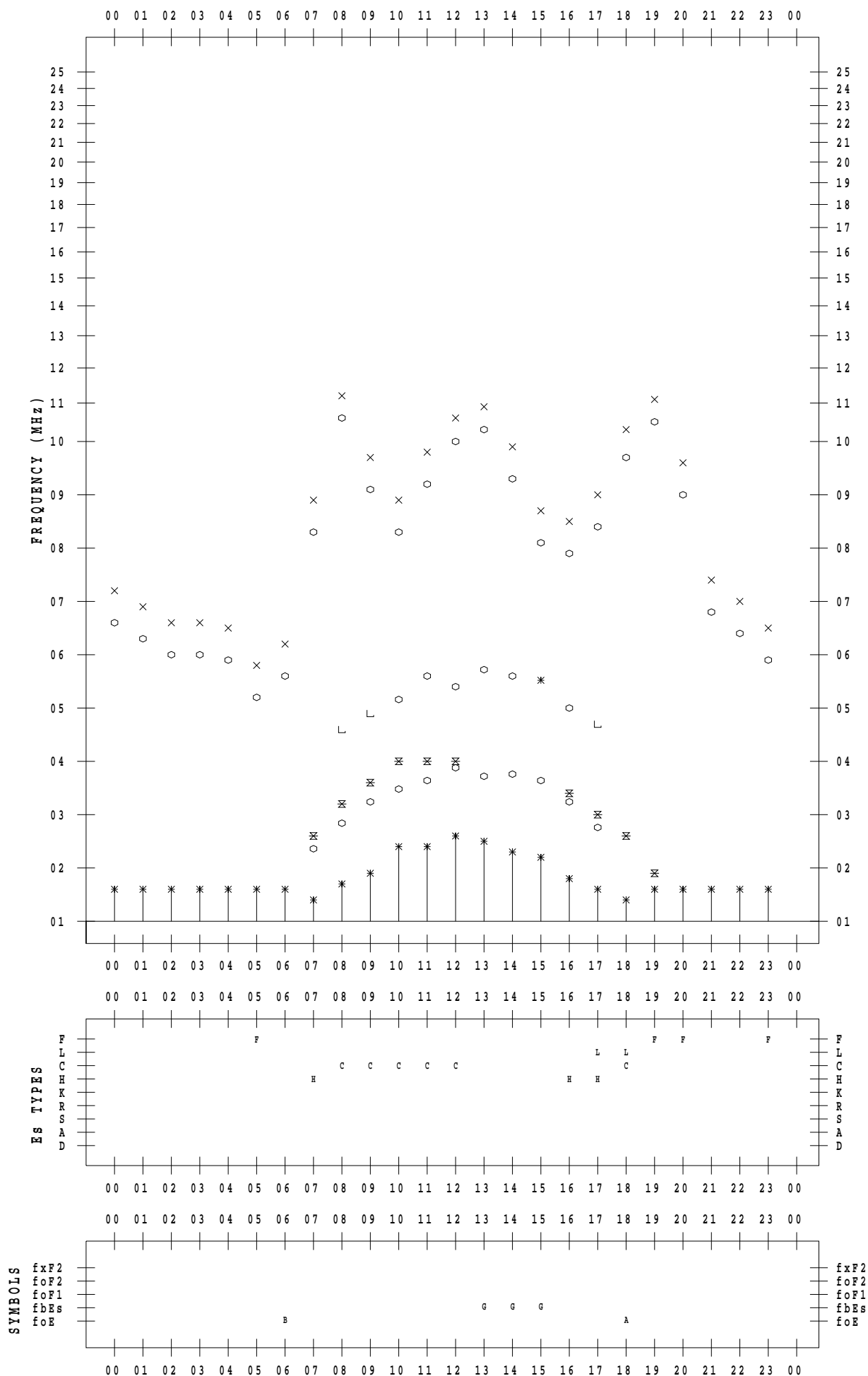
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 13

135 ° E MEAN TIME



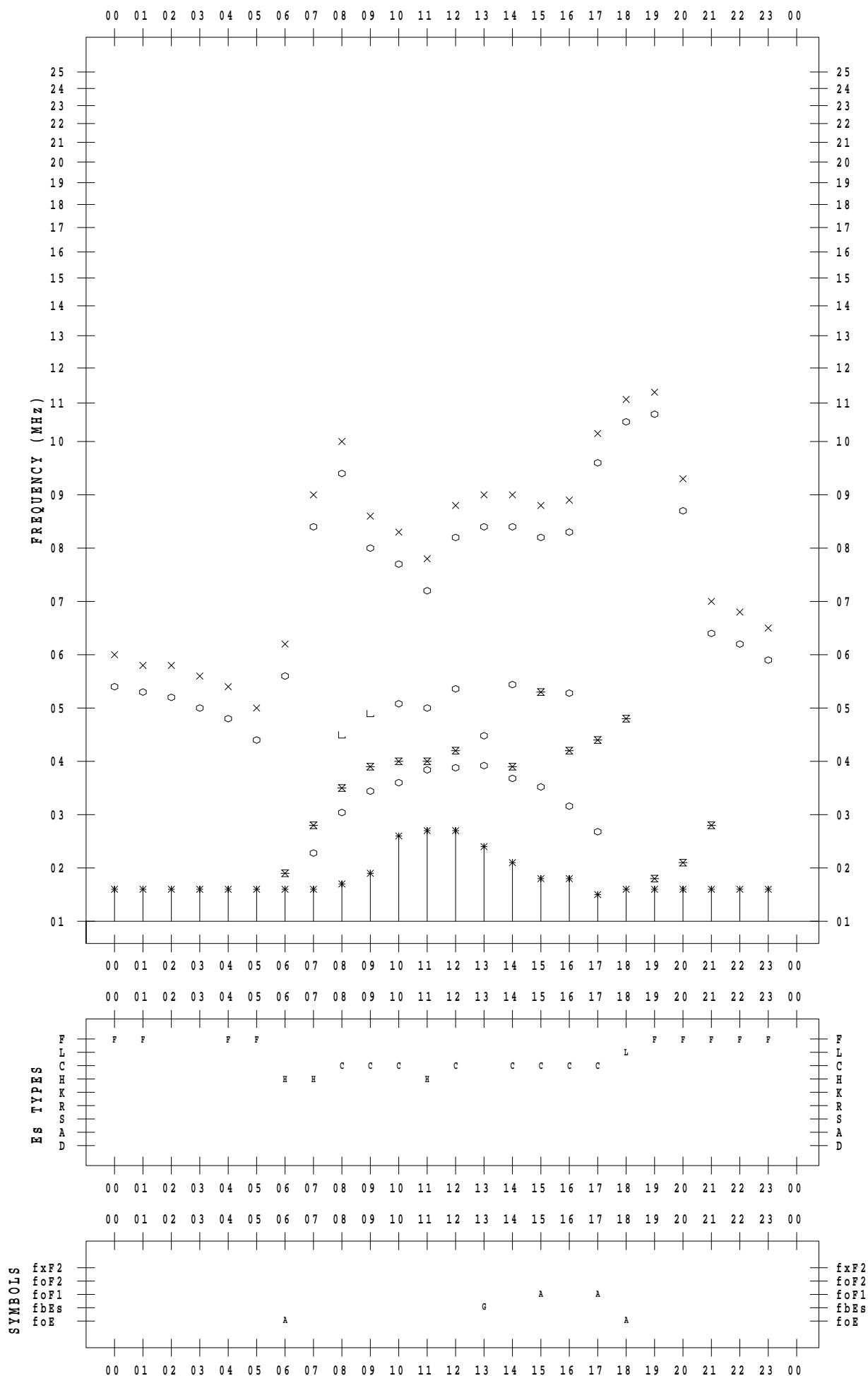
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 14

135 ° E MEAN TIME



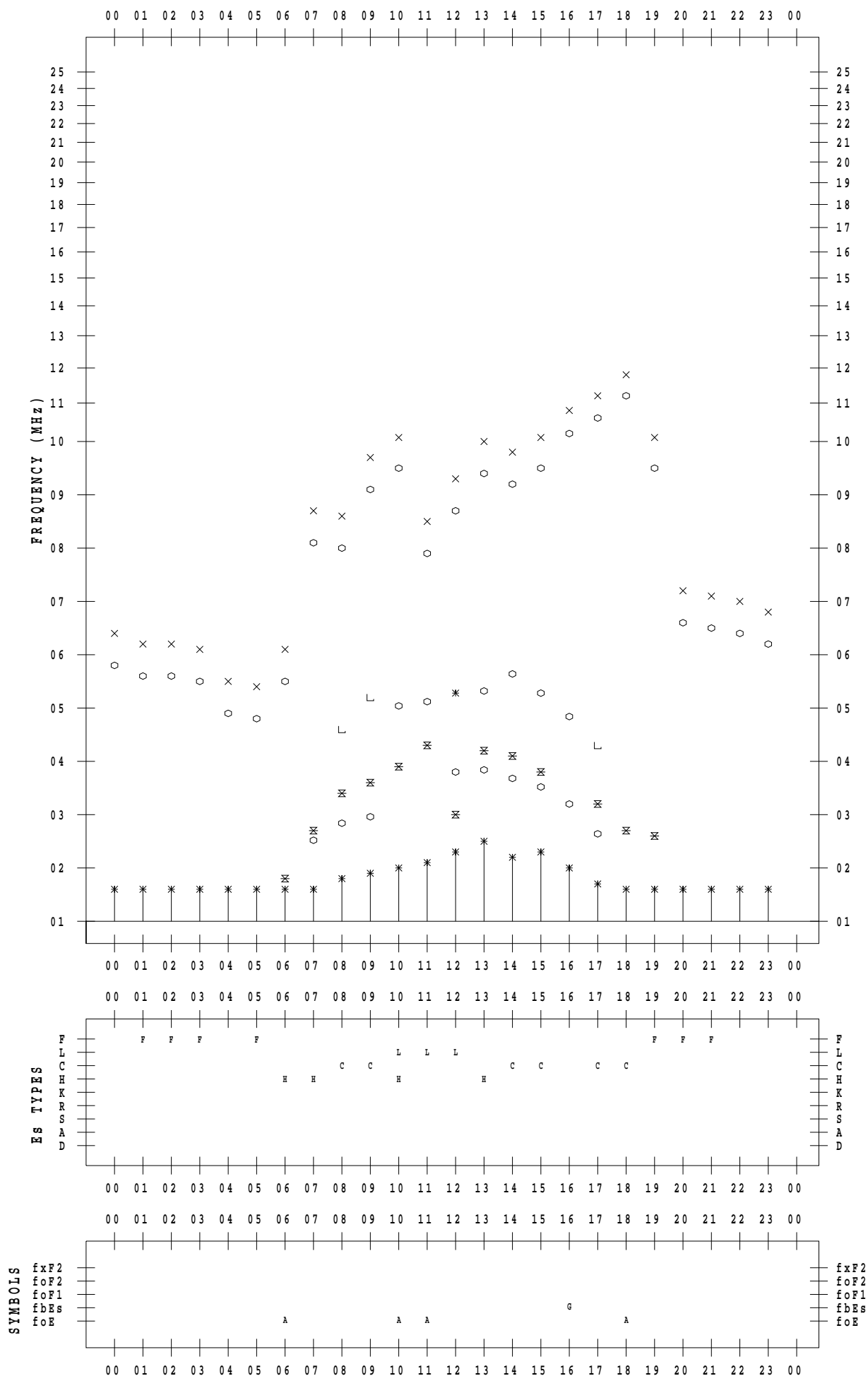
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 15

135 ° E MEAN TIME



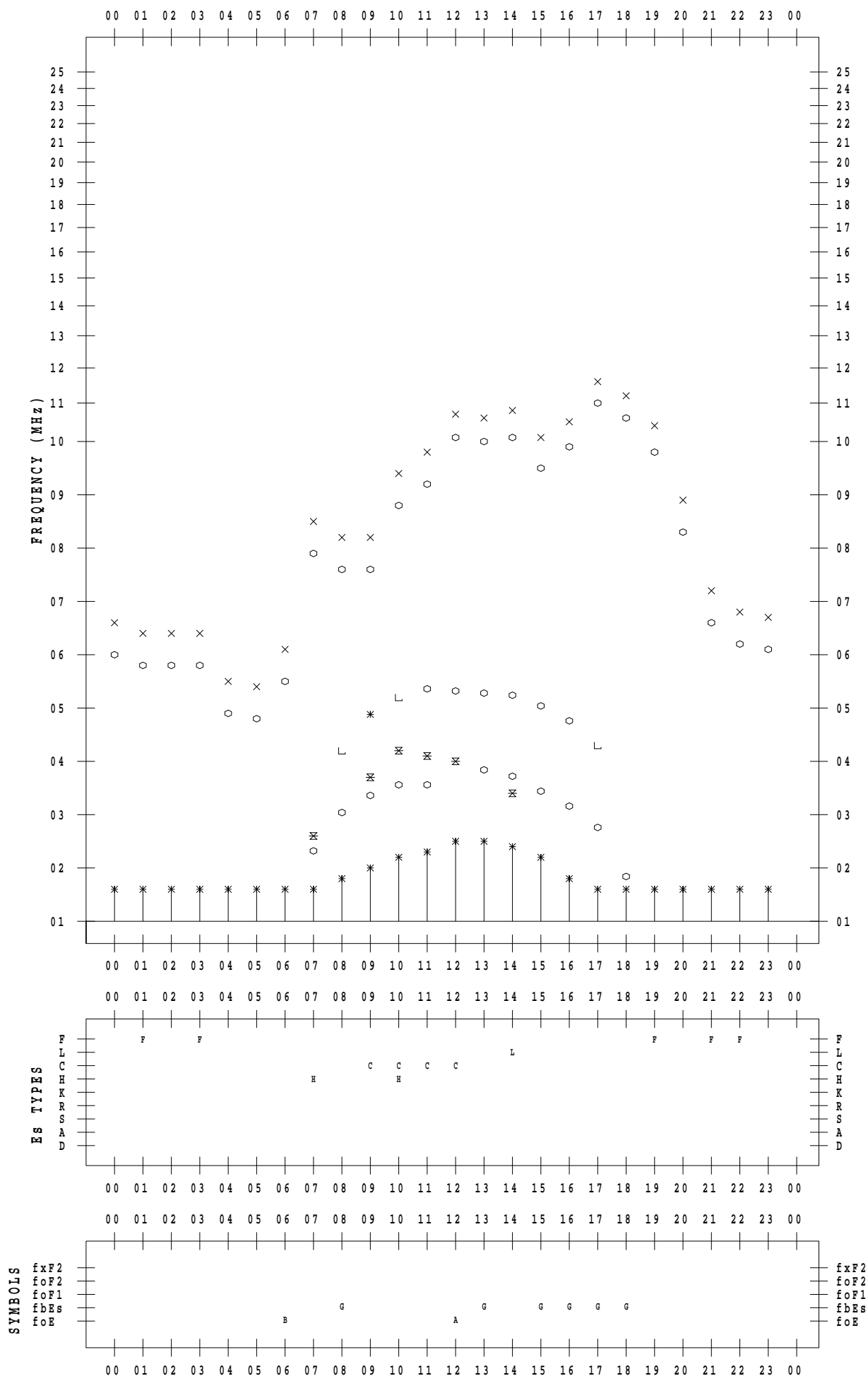
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 16

135 ° E MEAN TIME



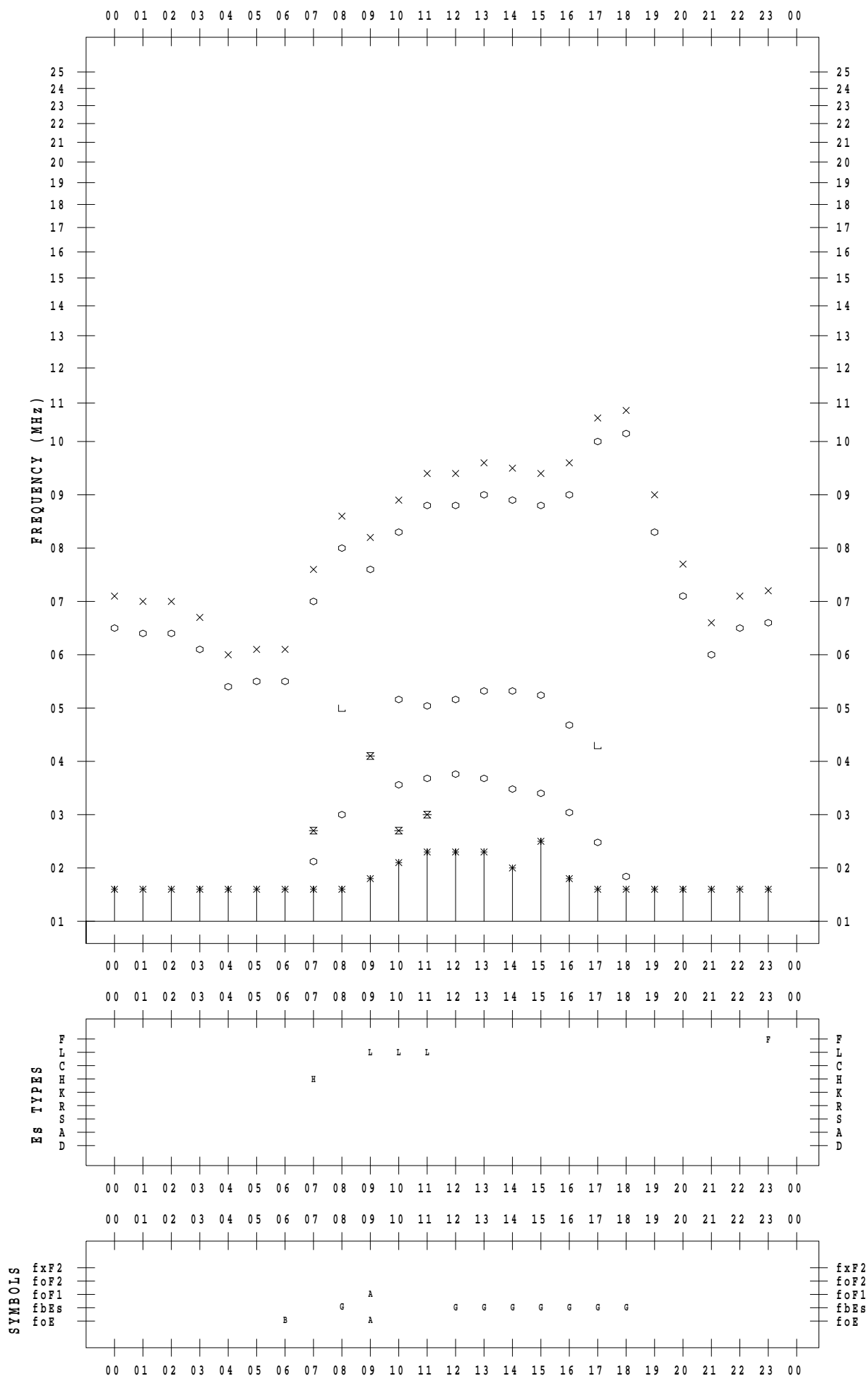
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 17

135 ° E MEAN TIME



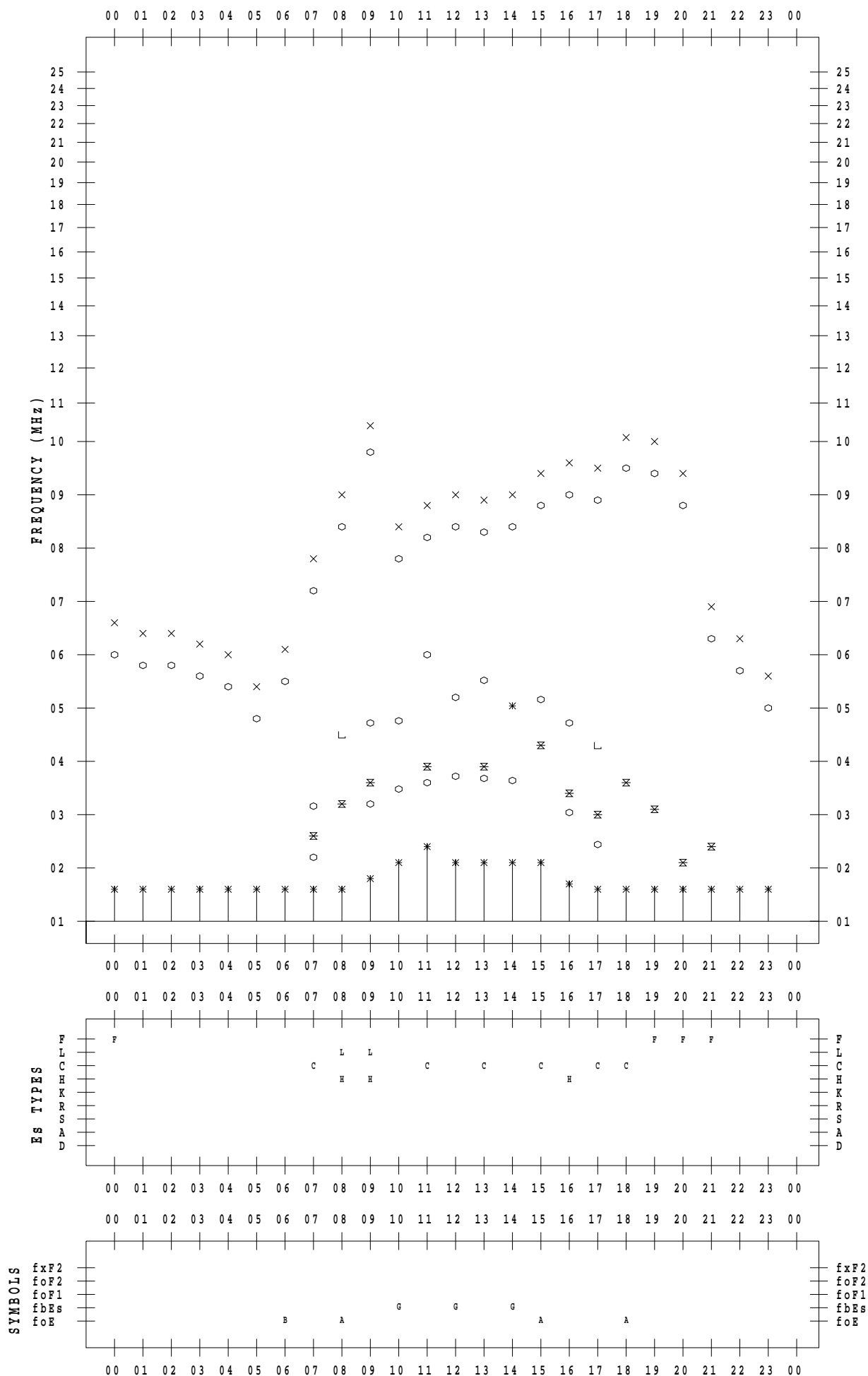
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 18

135 ° E MEAN TIME



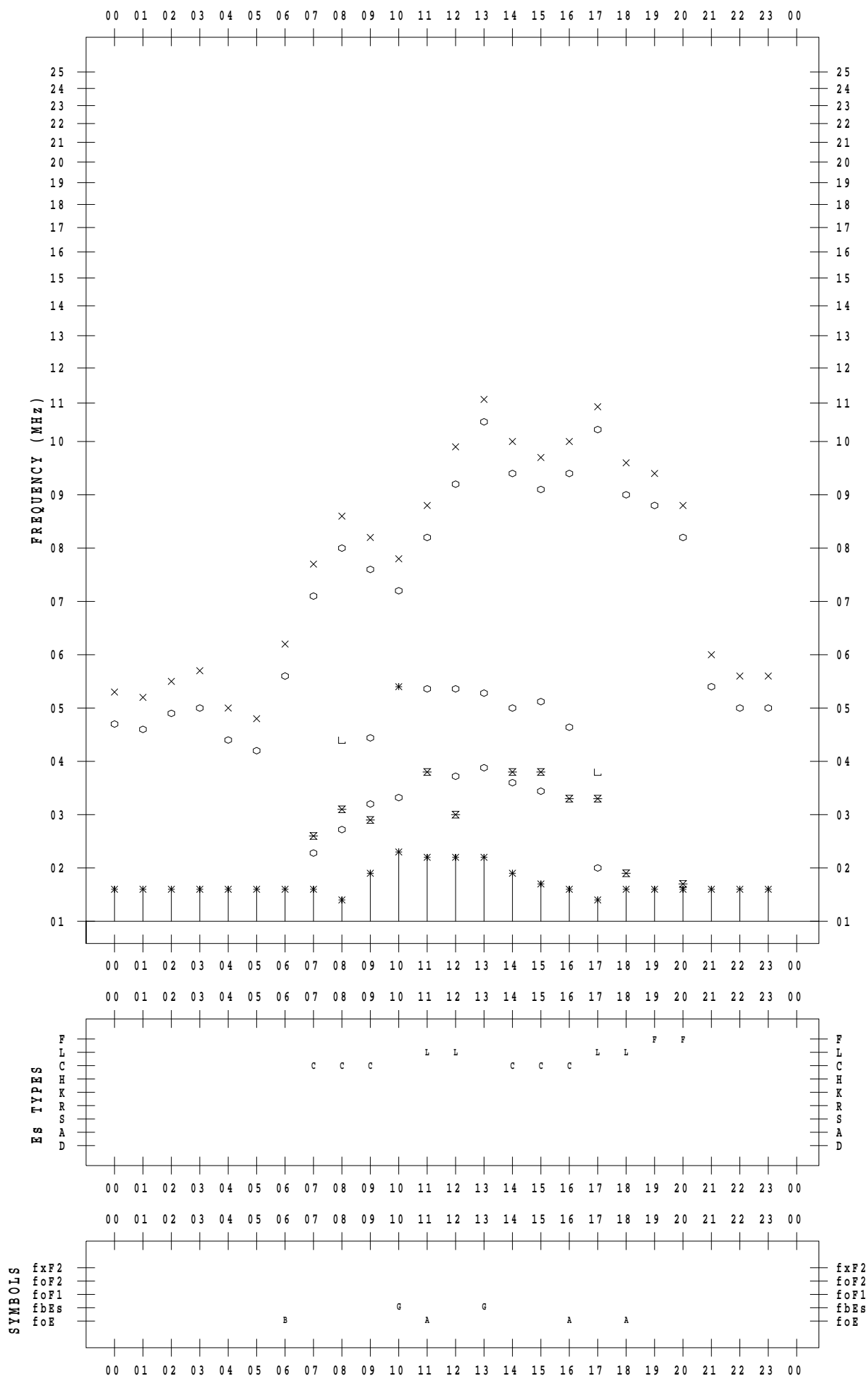
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 19

135 ° E MEAN TIME



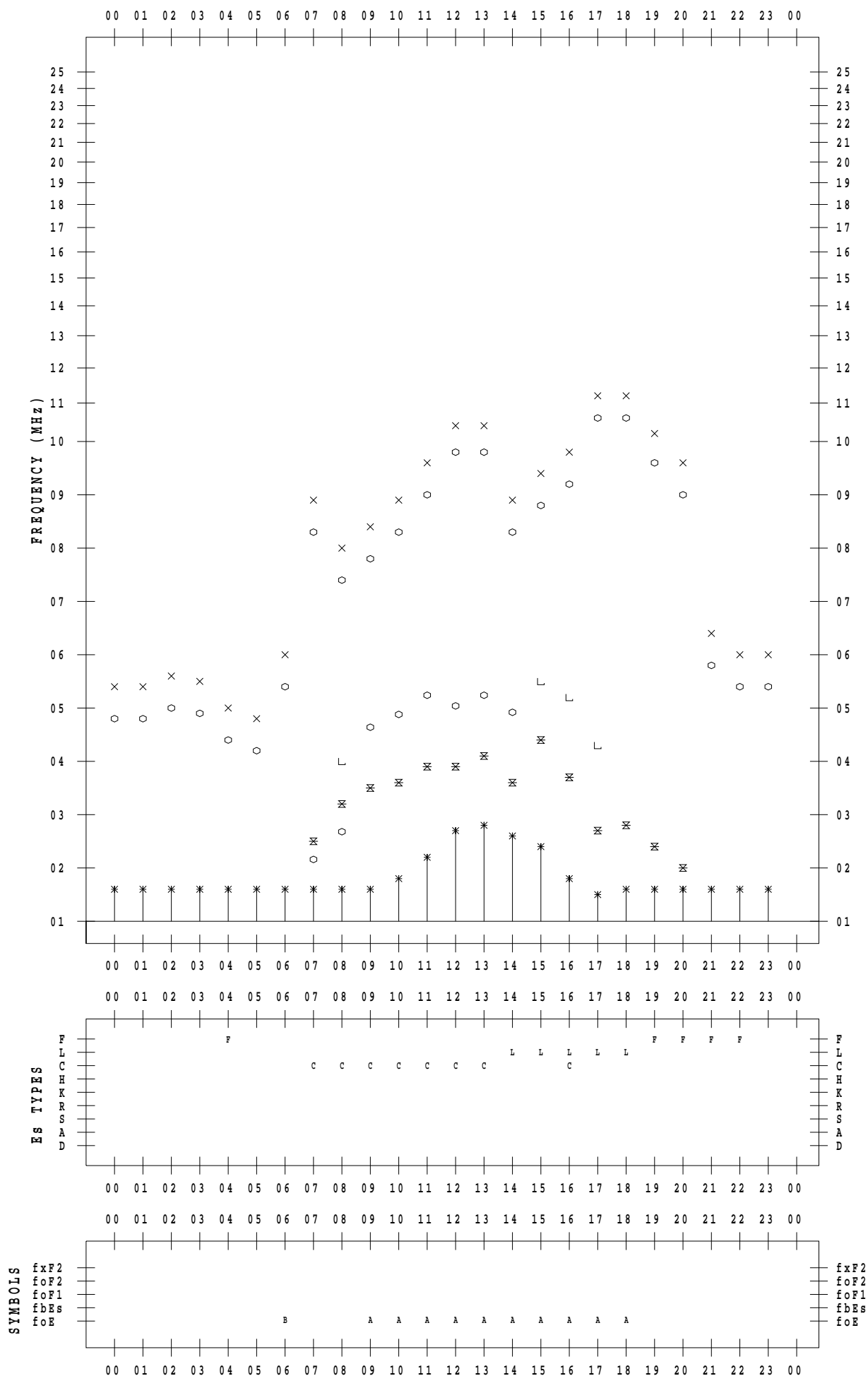
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 20

135 ° E MEAN TIME



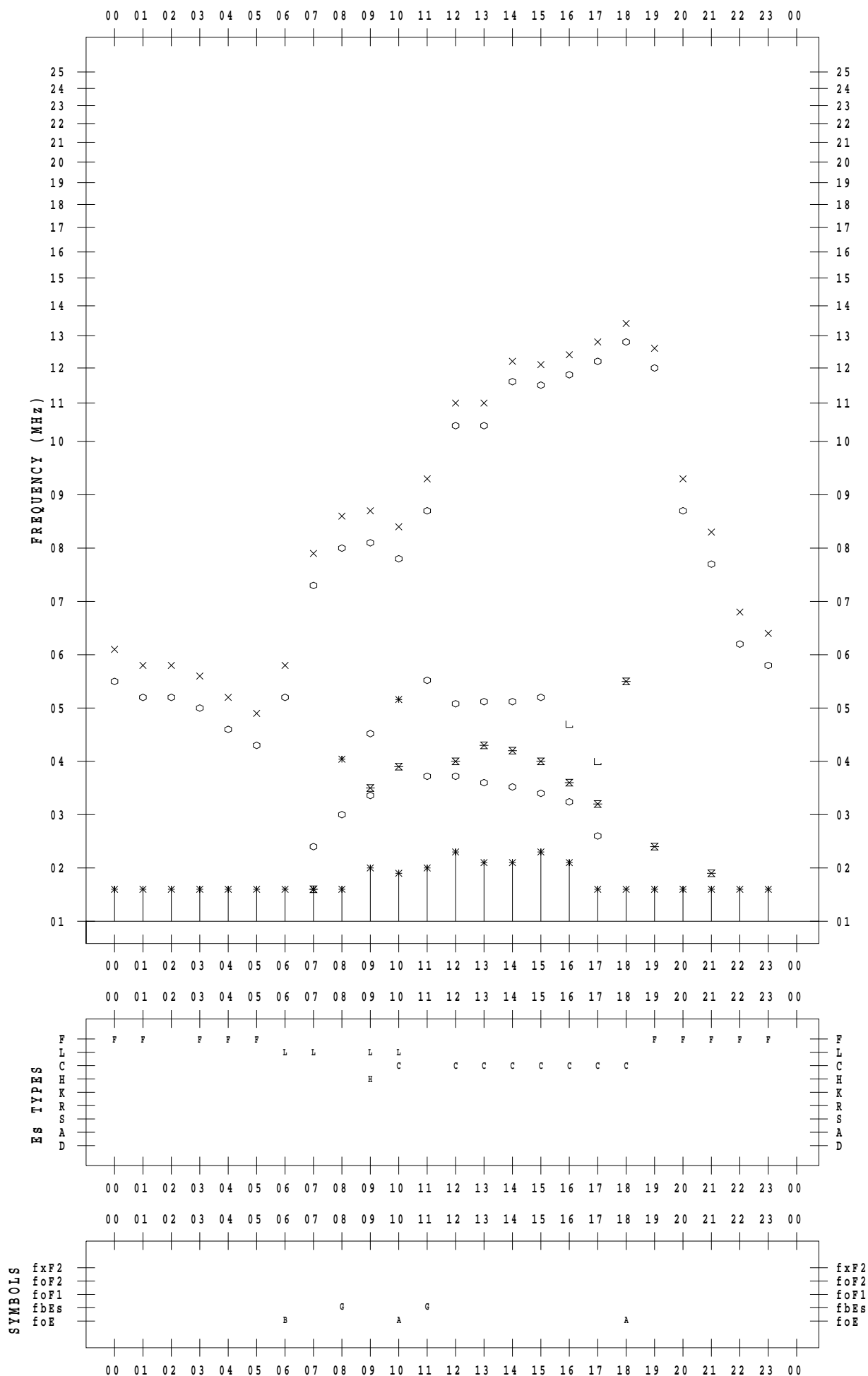
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 21

135 ° E MEAN TIME



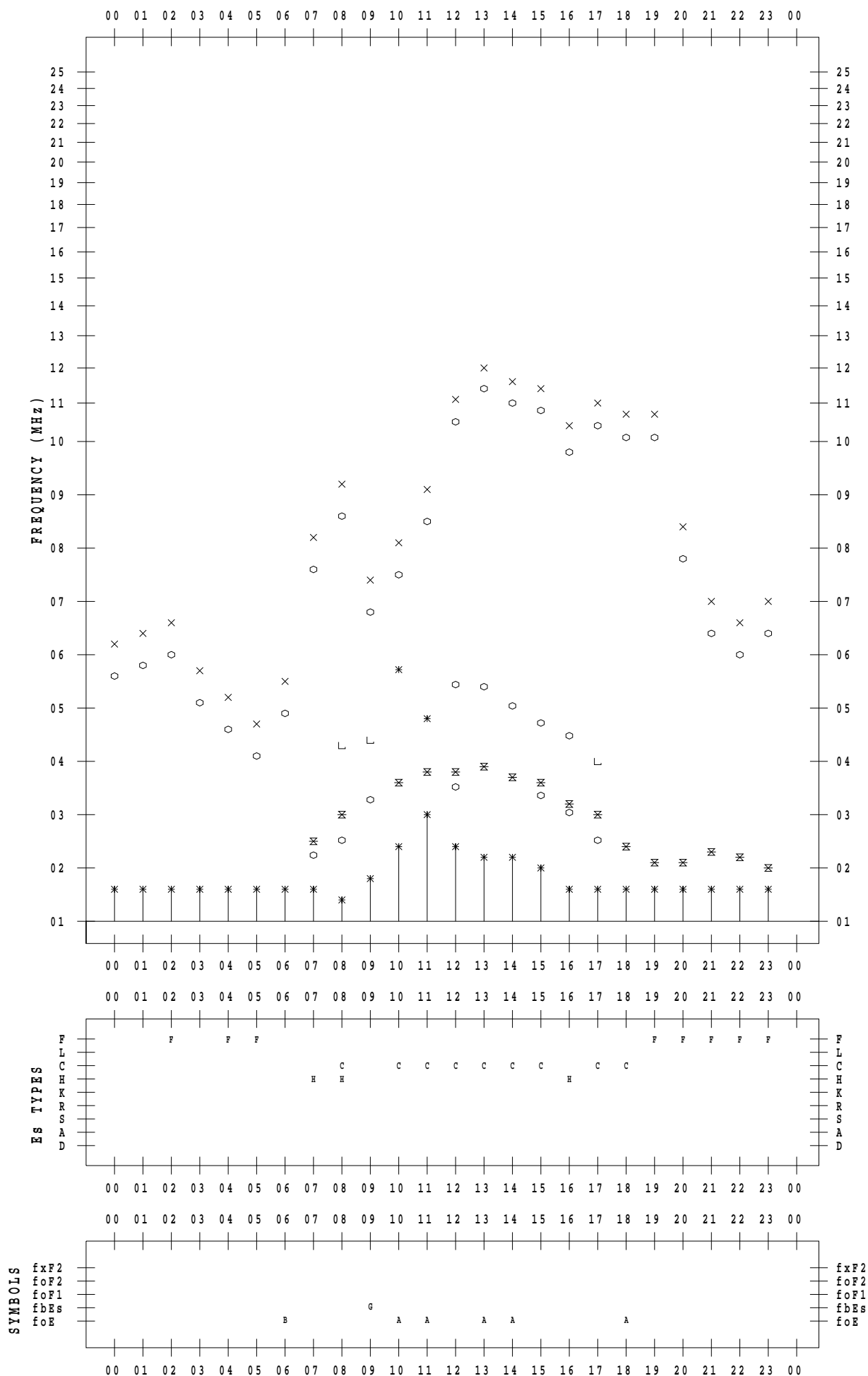
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 22

135 ° E MEAN TIME



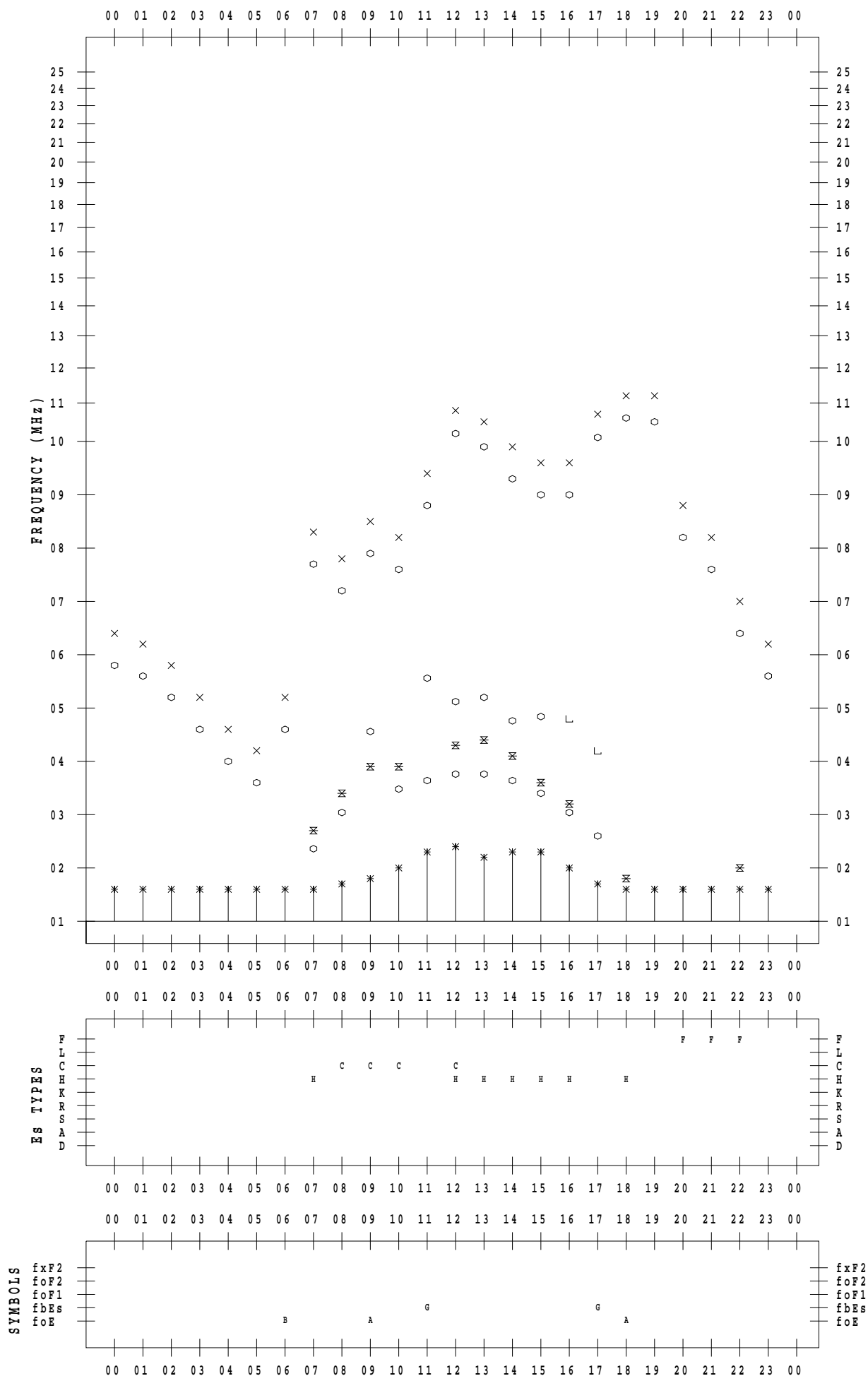
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 23

135 ° E MEAN TIME



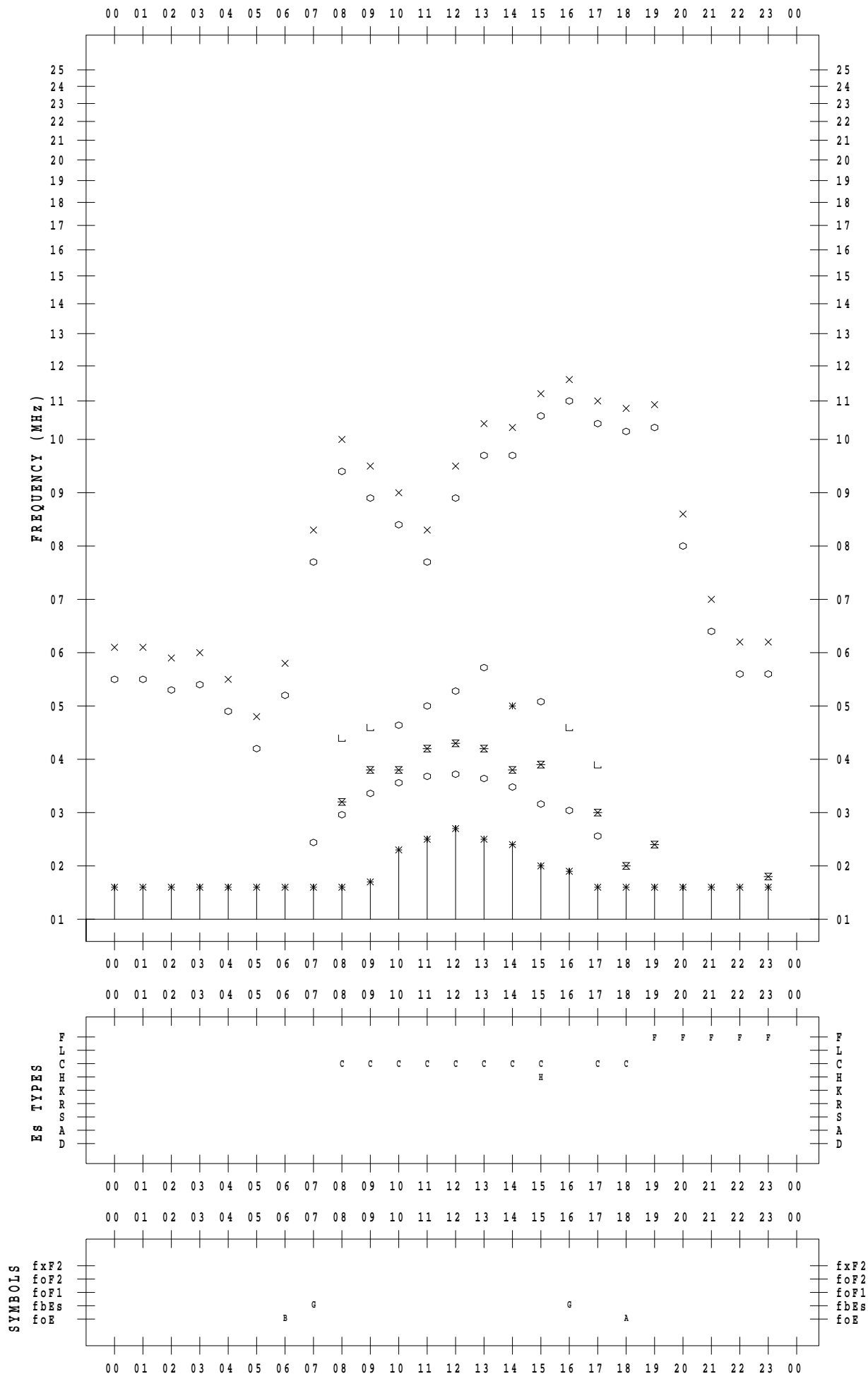
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 24

135 ° E MEAN TIME



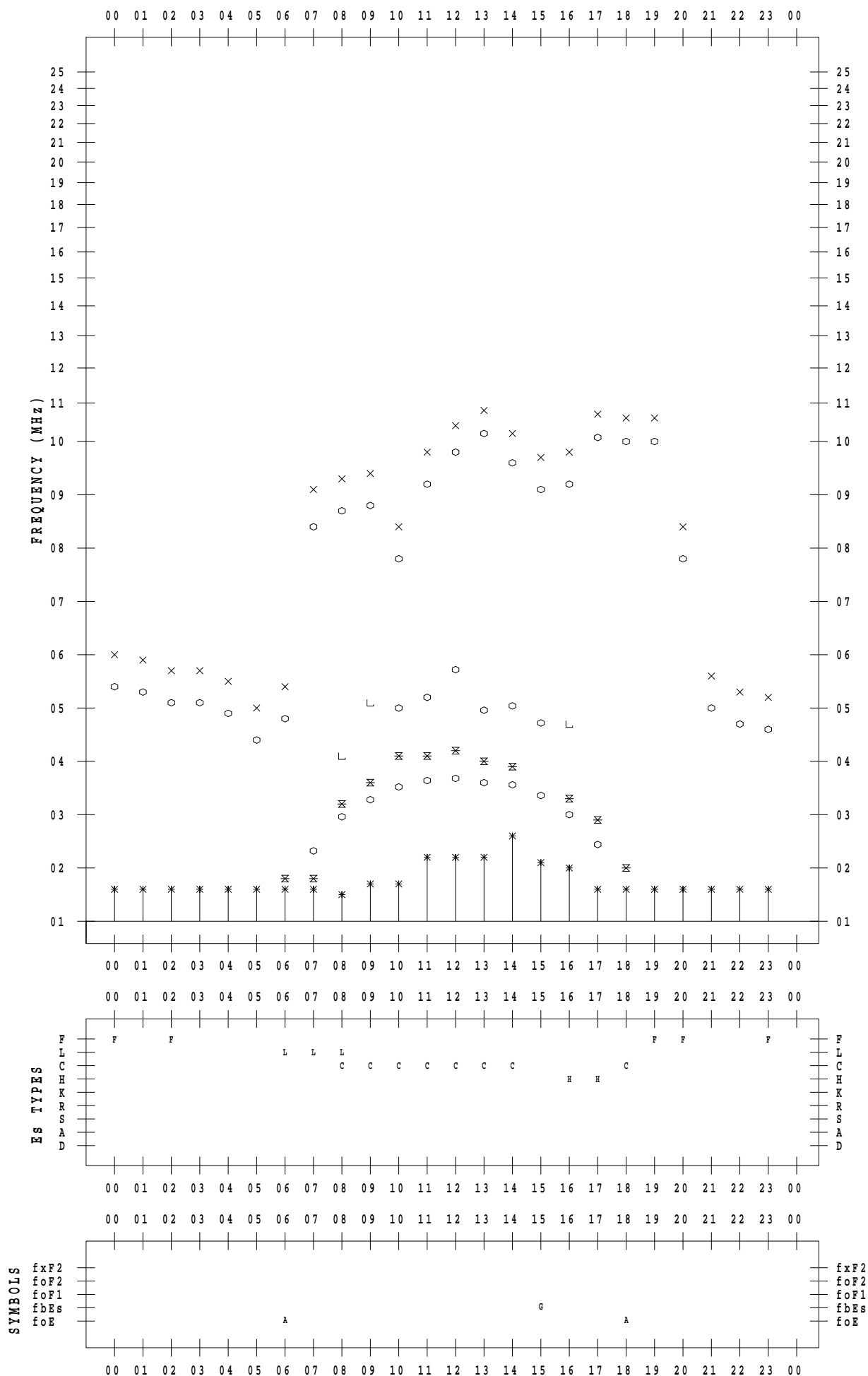
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 25

135 ° E MEAN TIME



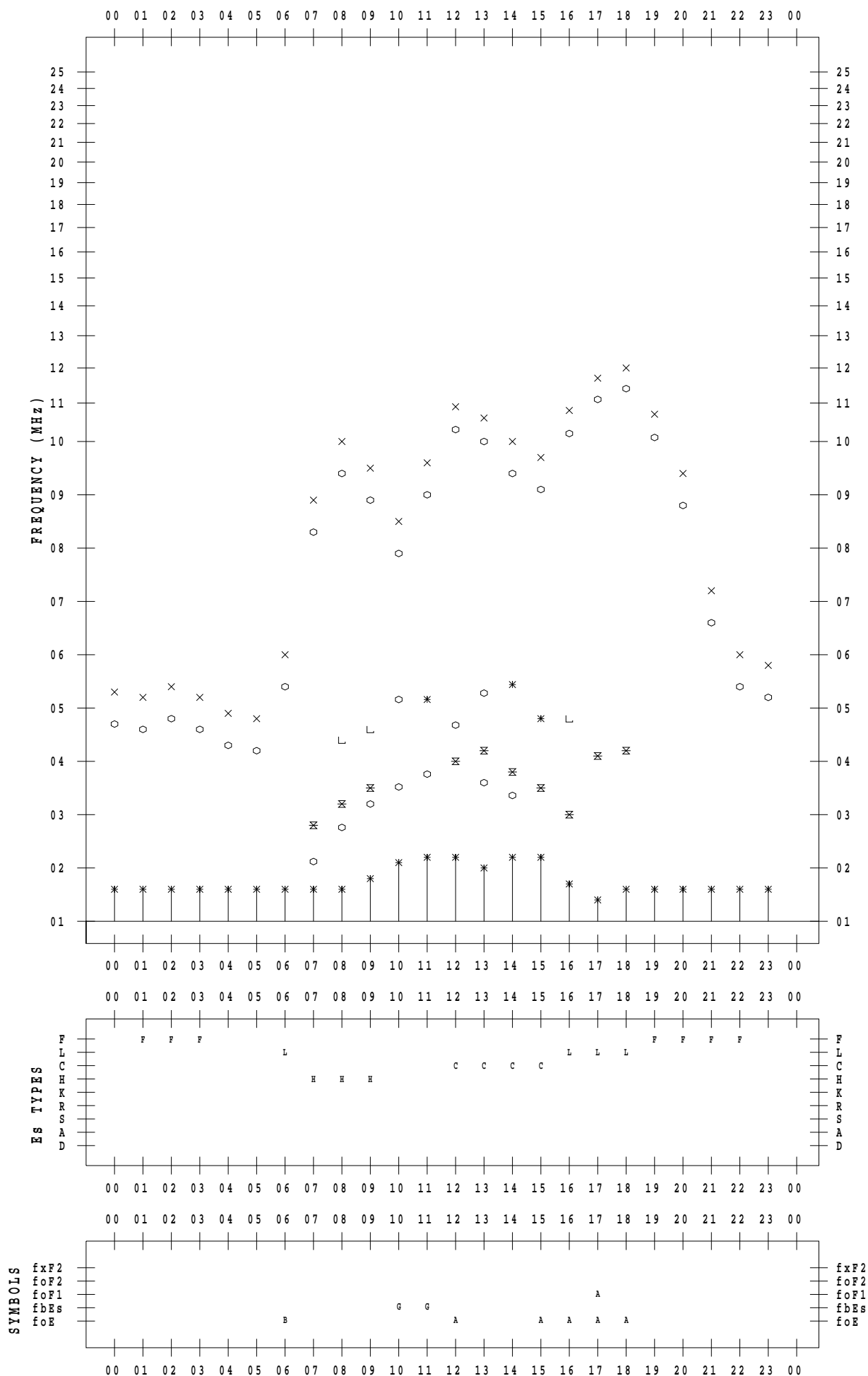
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 26

135 ° E MEAN TIME



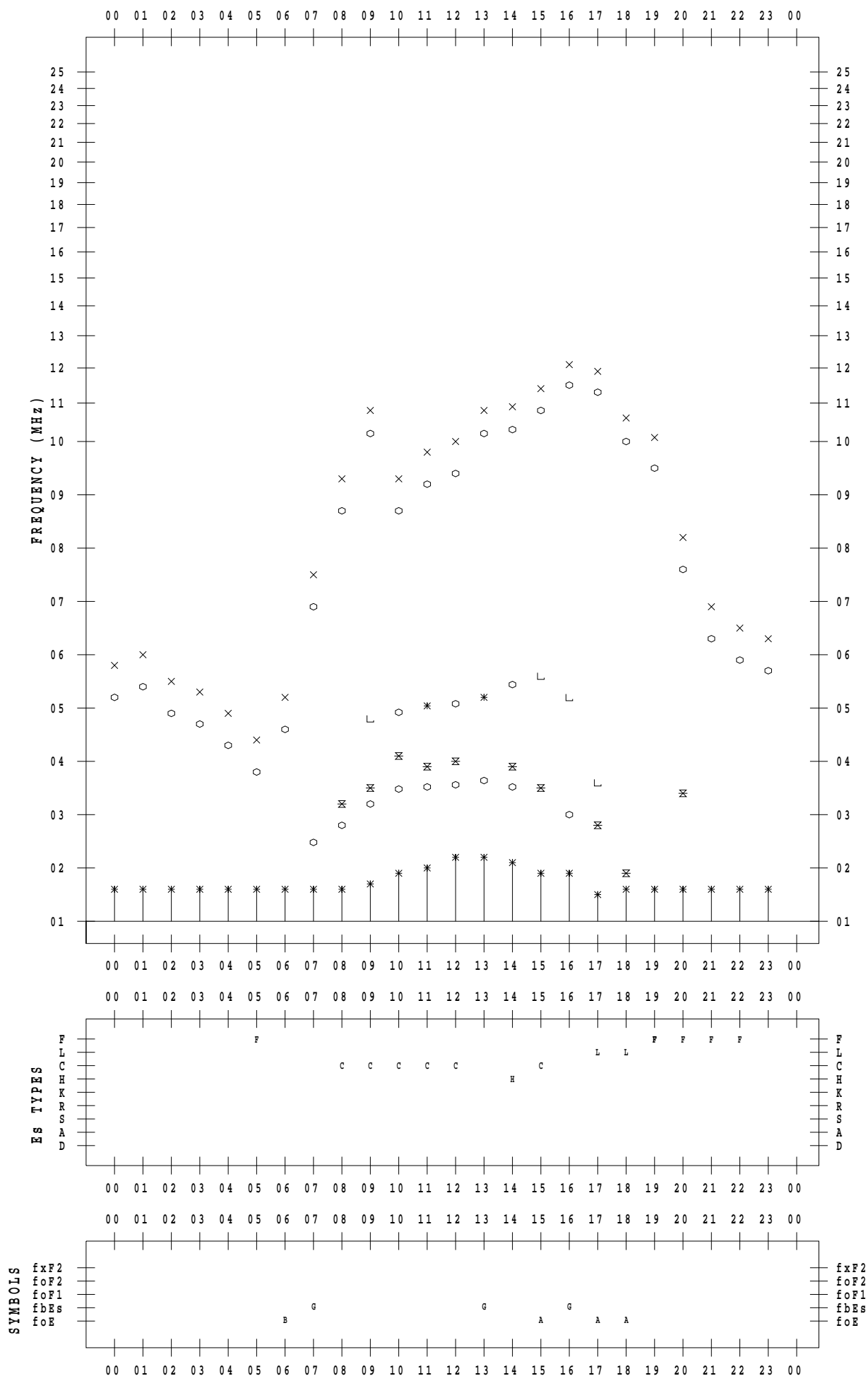
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 27

135 ° E MEAN TIME



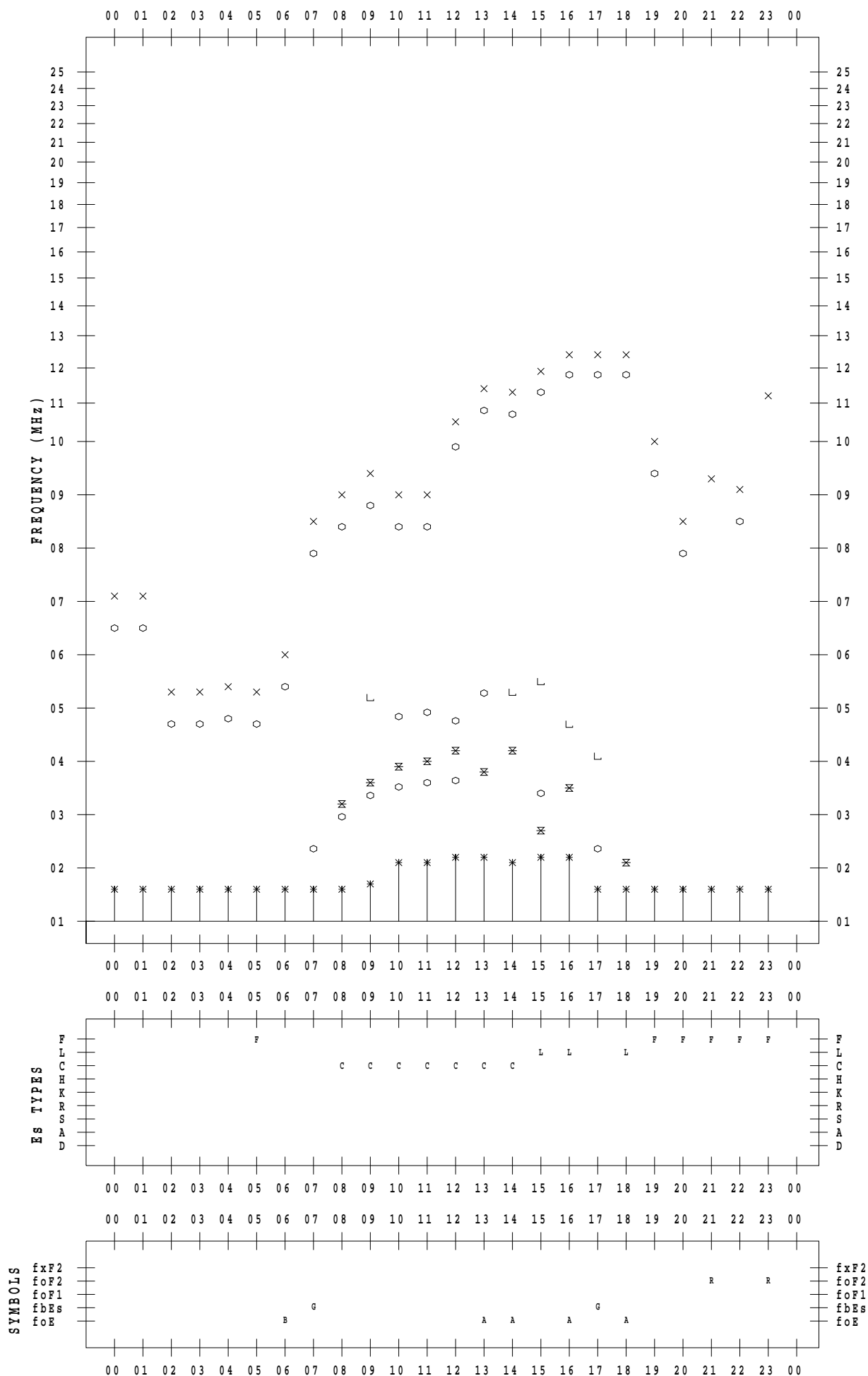
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 28

135 ° E MEAN TIME



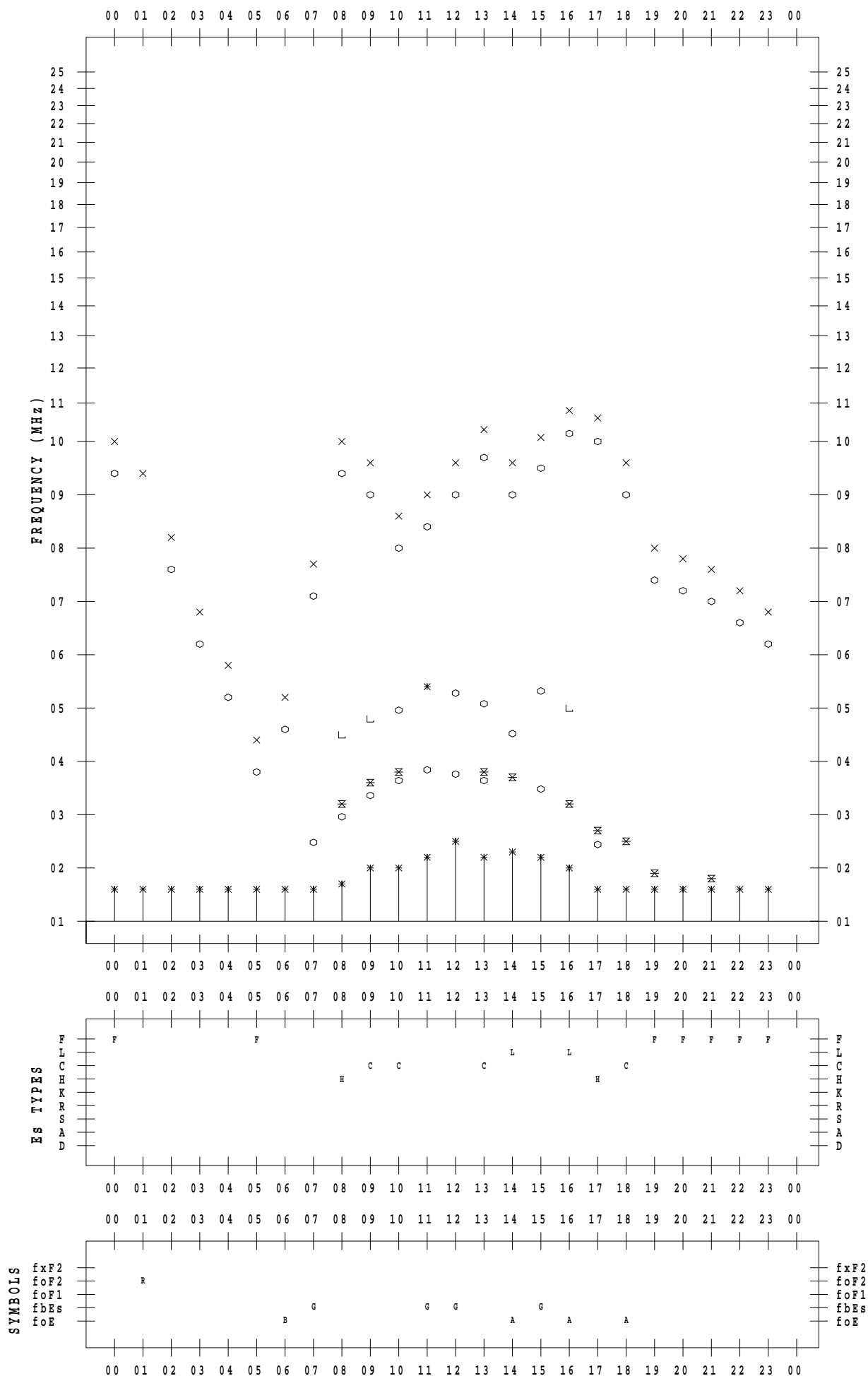
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 29

135 ° E MEAN TIME



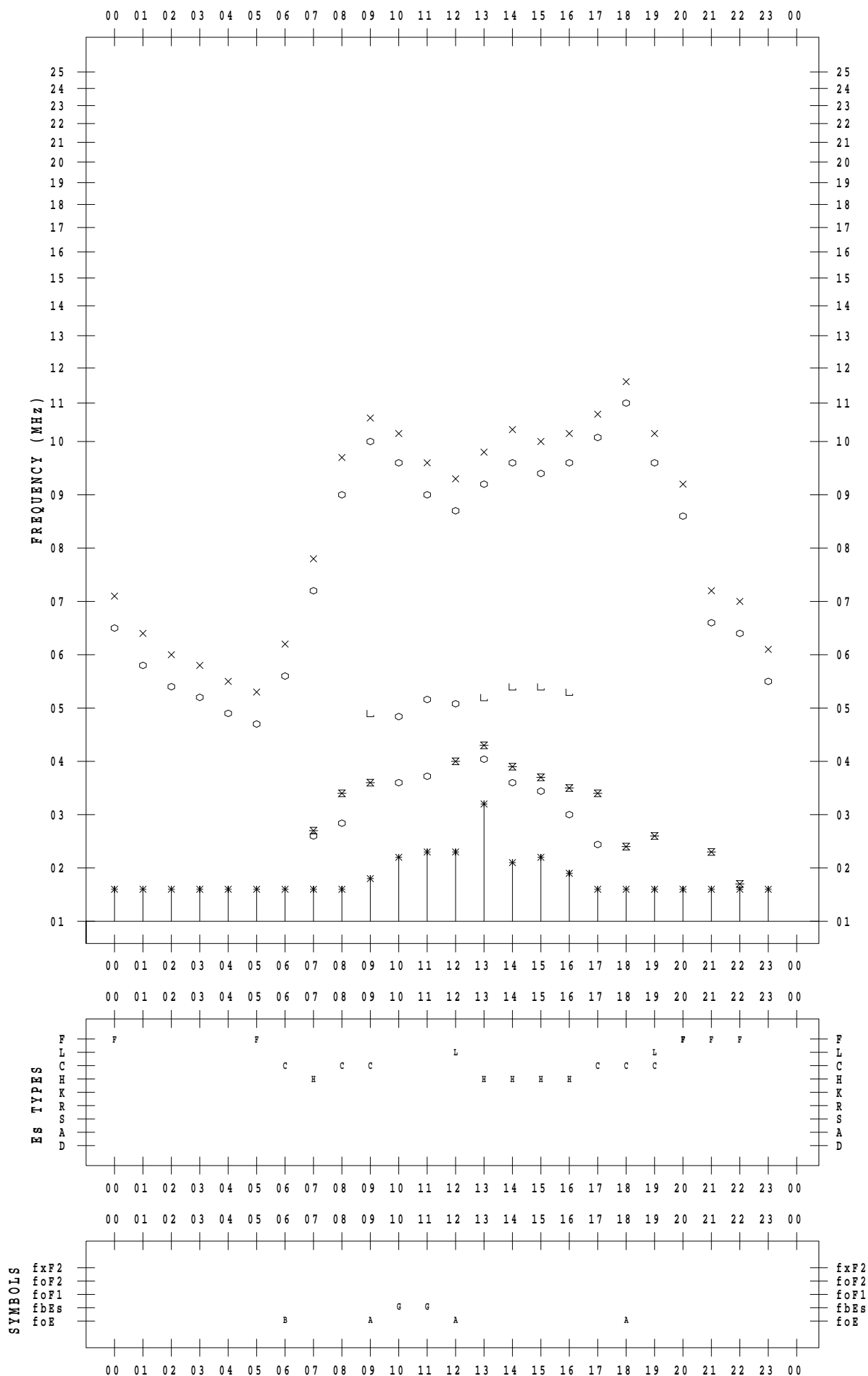
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SCALER : I.YAMAZAKI

STATION : Yamagawa

DATE : 2022 / 9 / 30

135 ° E MEAN TIME



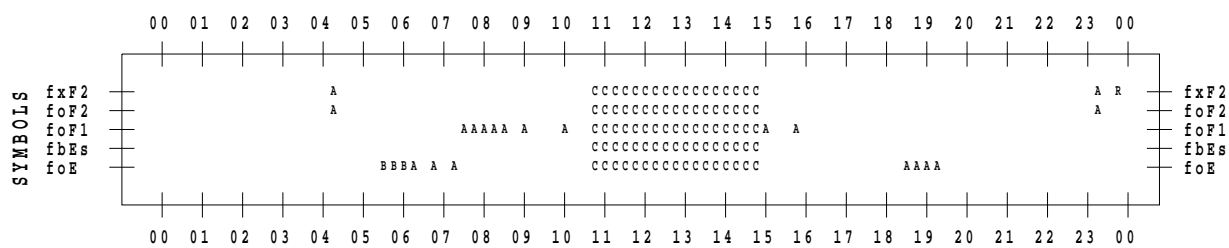
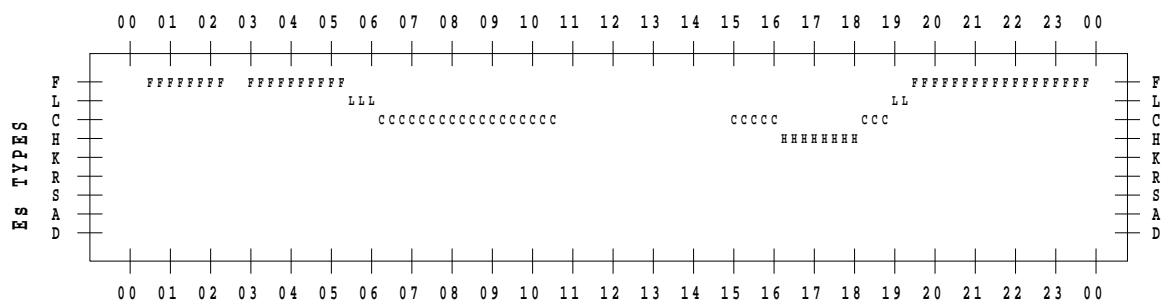
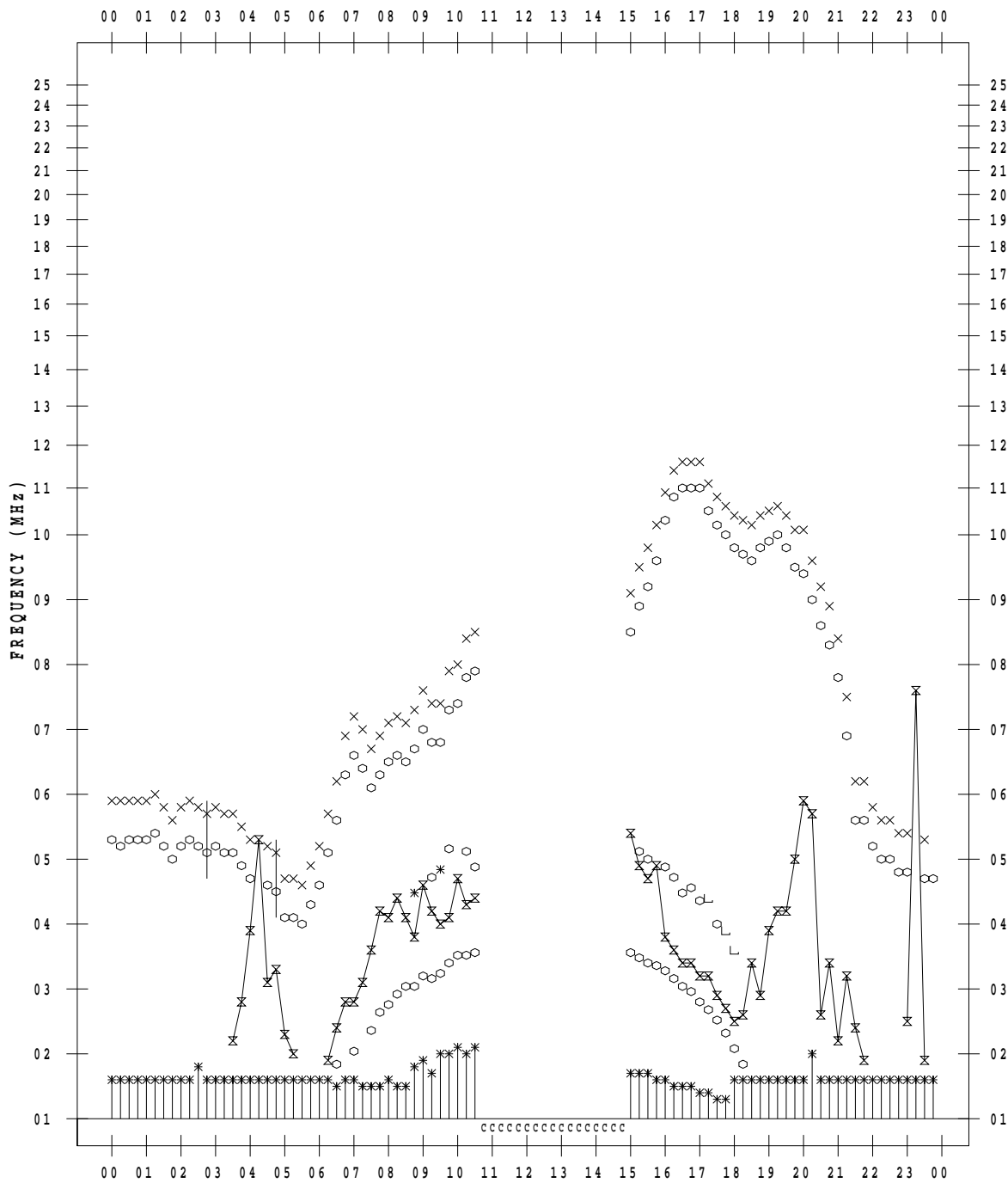
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 1

135 ° E MEAN TIME



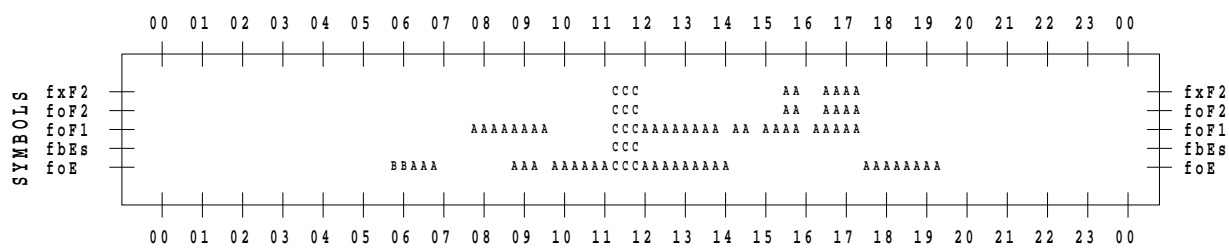
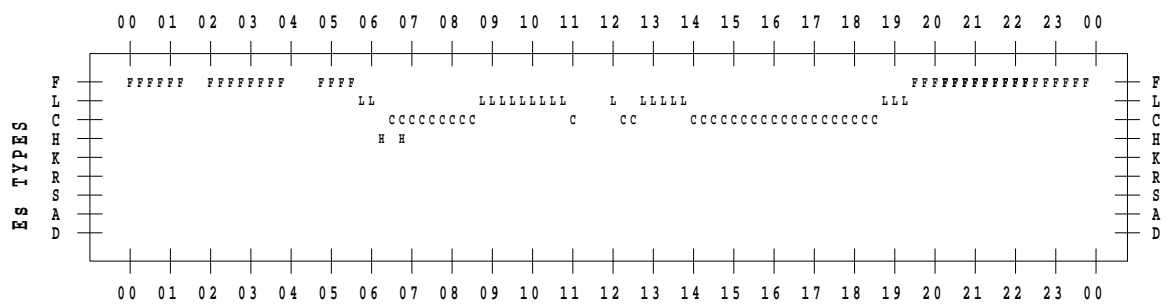
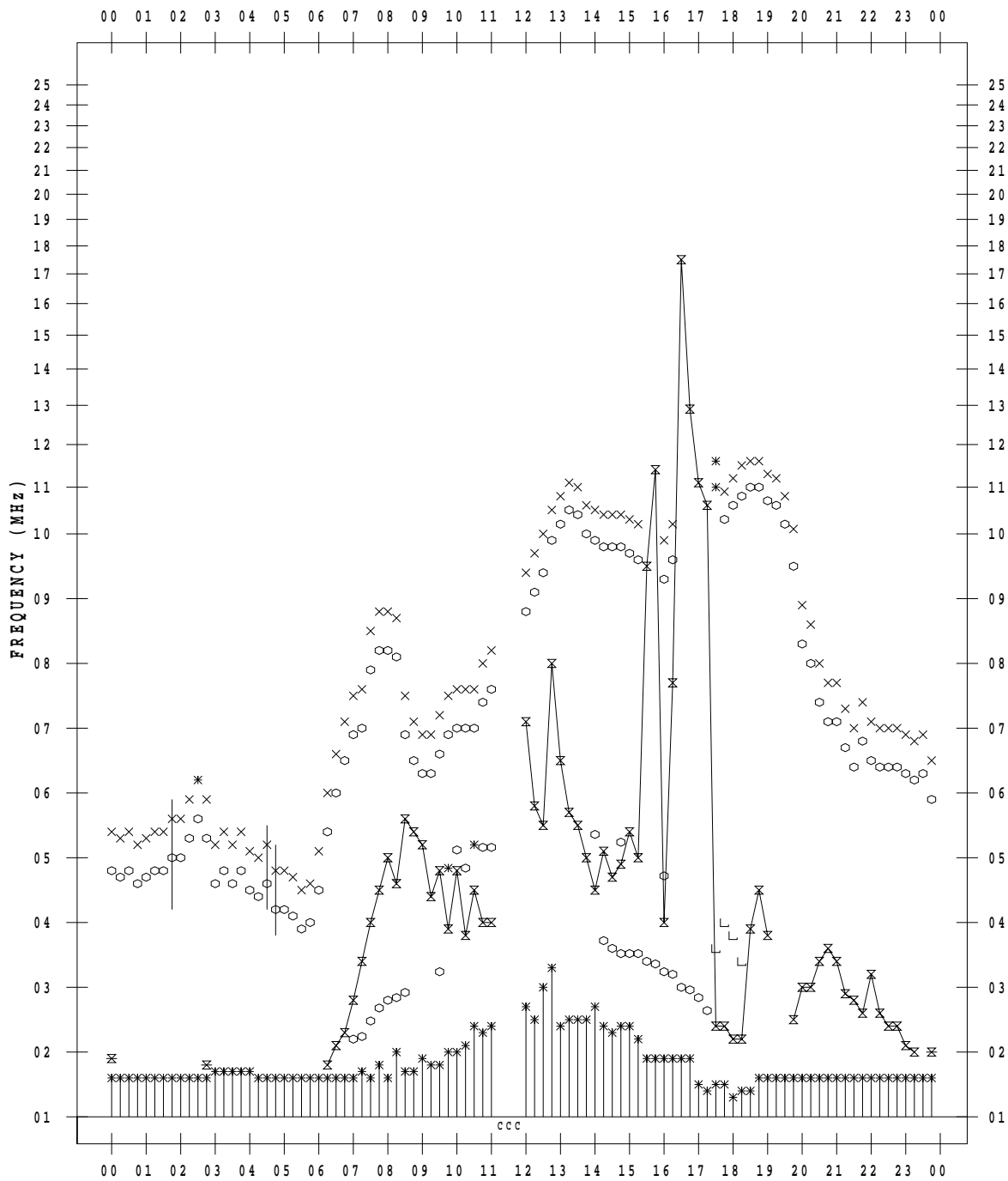
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 2

135 ° E MEAN TIME



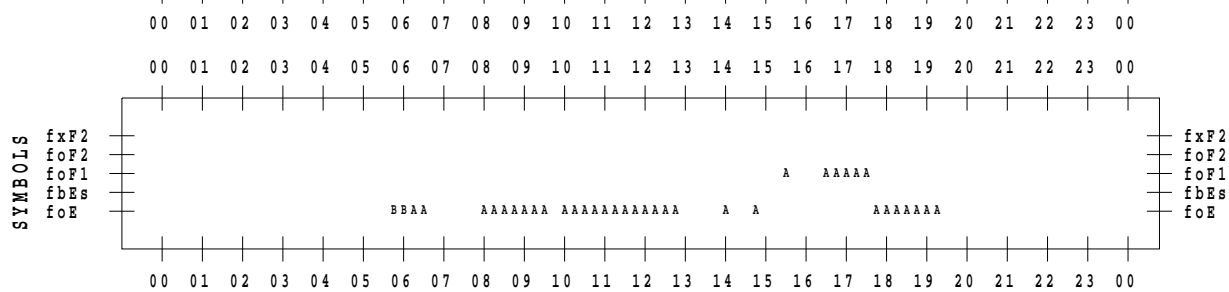
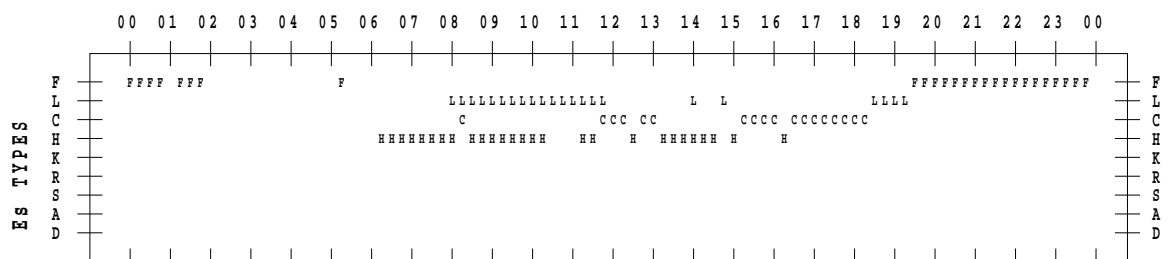
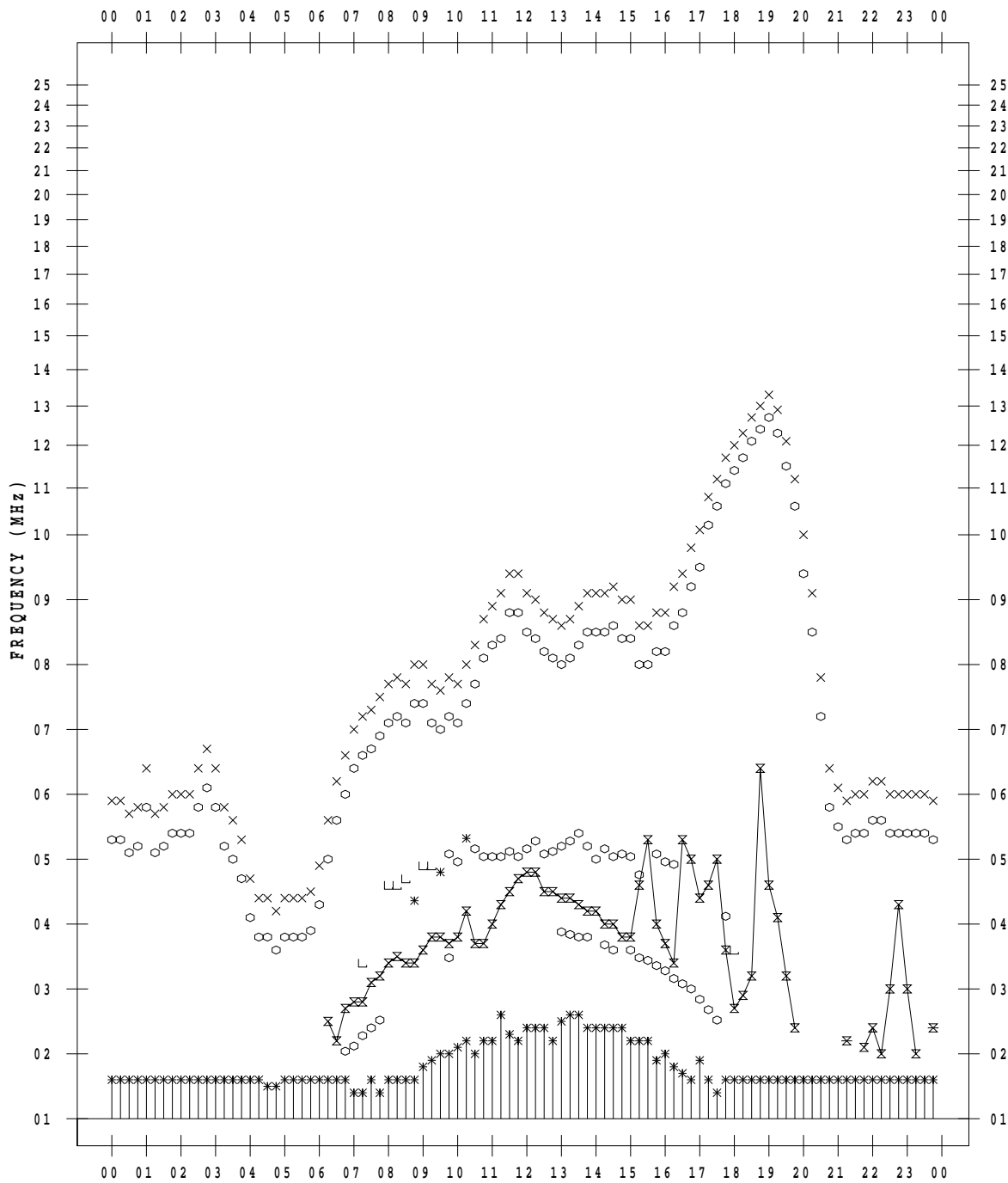
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 3

135 ° E MEAN TIME



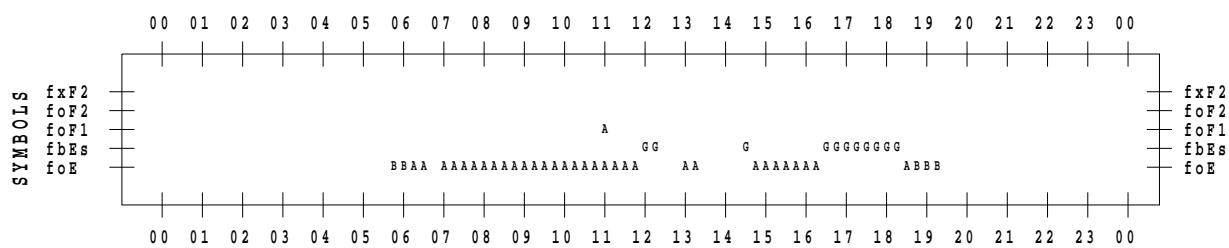
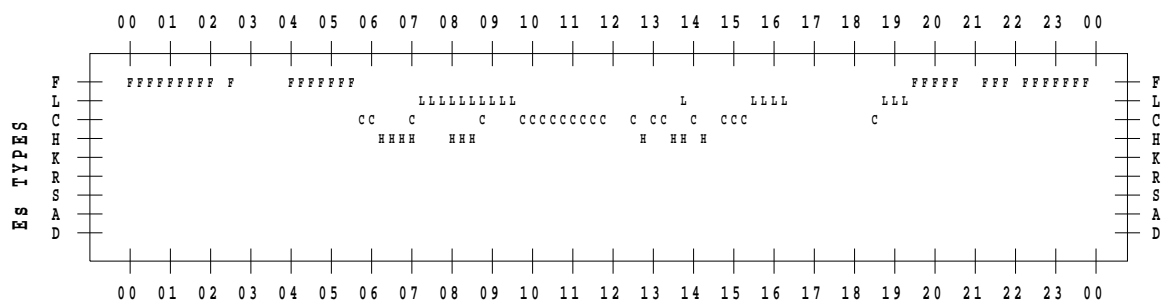
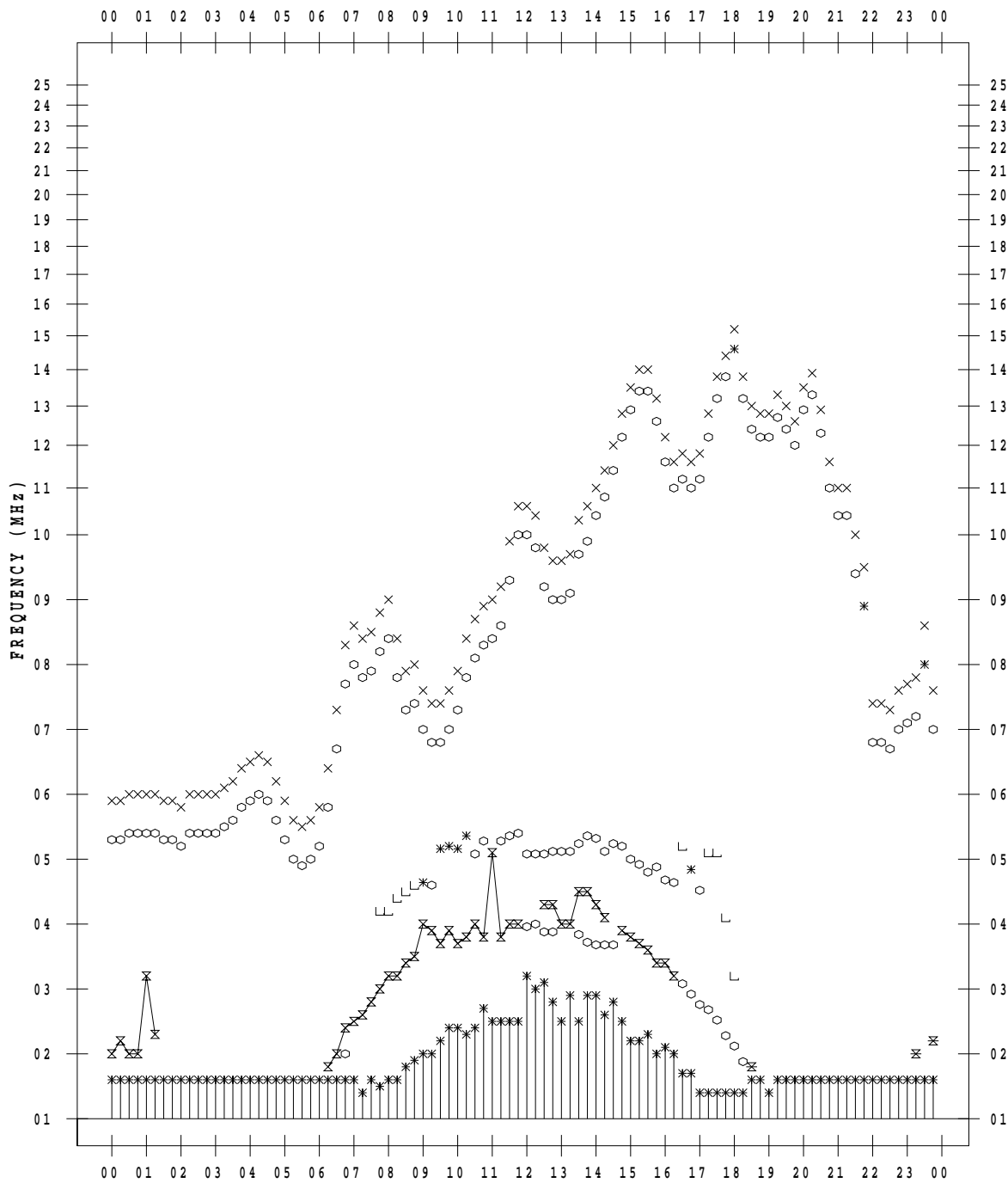
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 4

135 ° E MEAN TIME



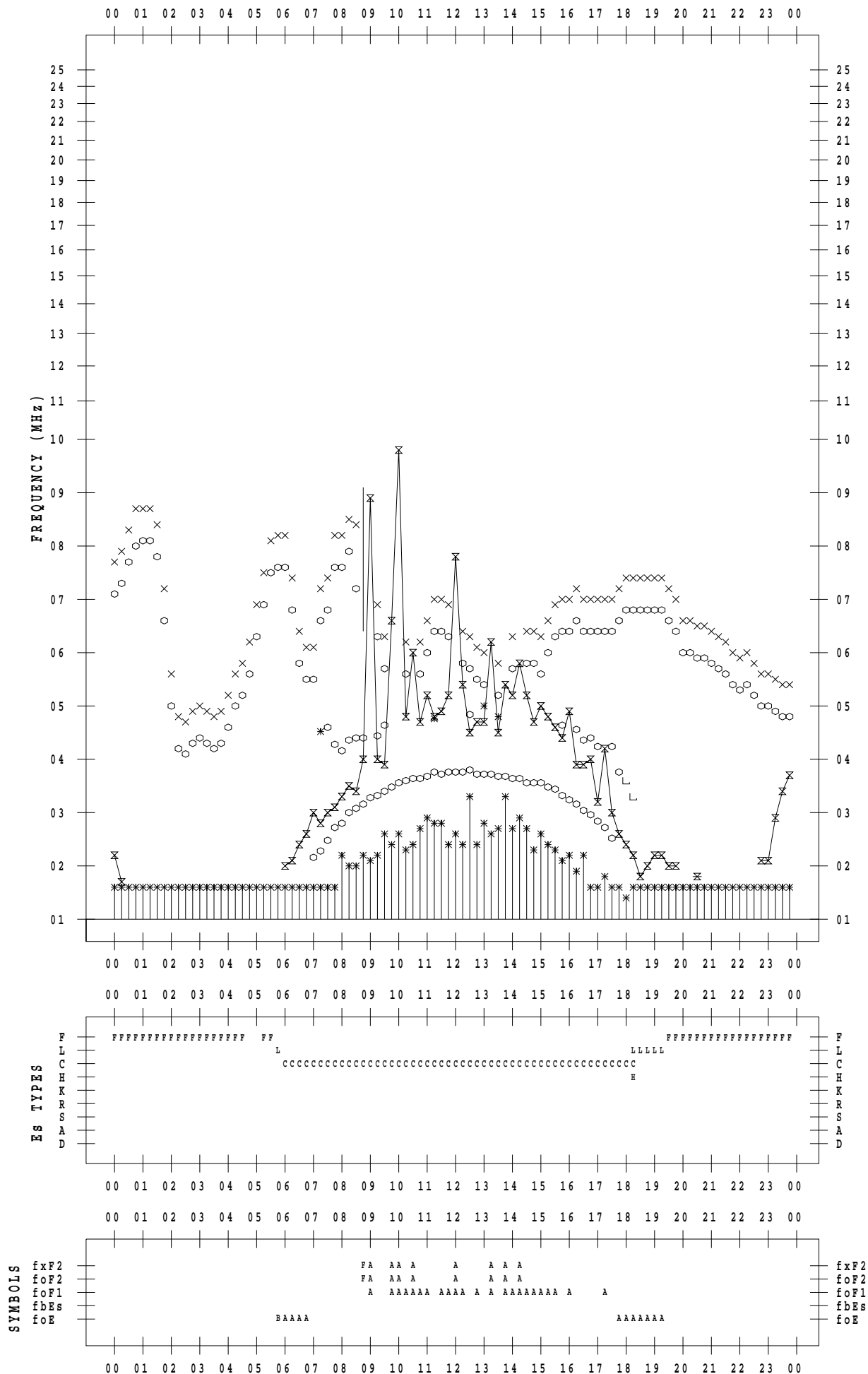
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 5

135 ° E MEAN TIME



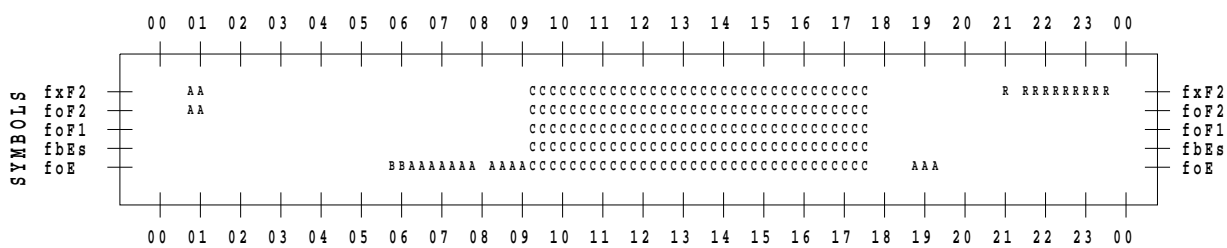
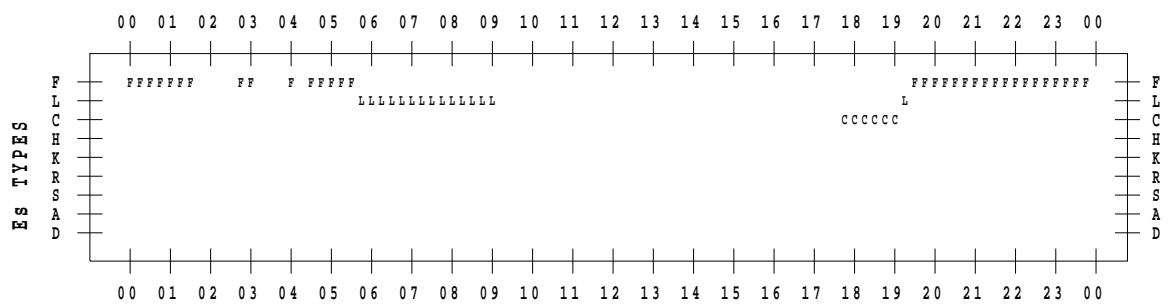
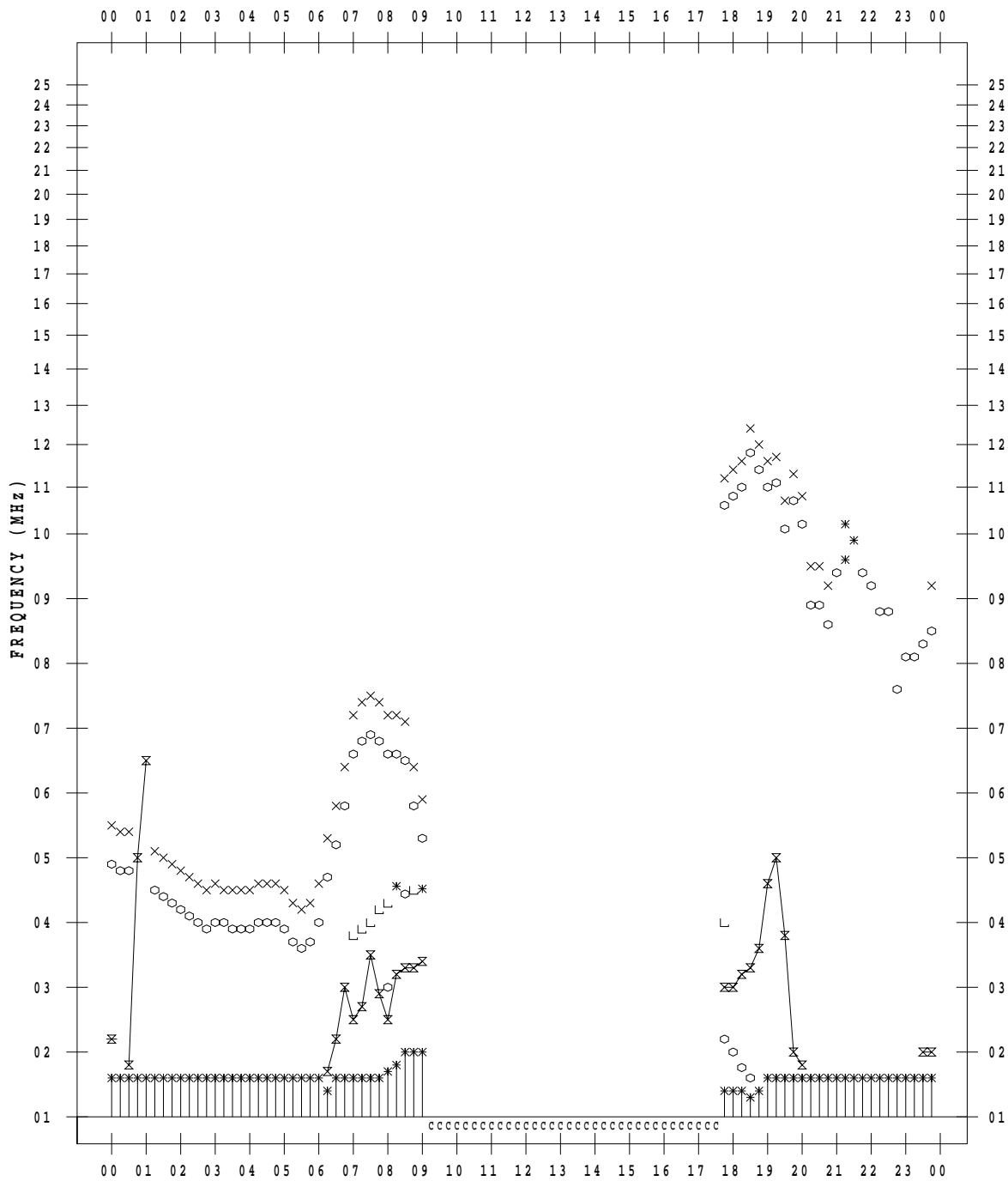
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 6

135 ° E MEAN TIME



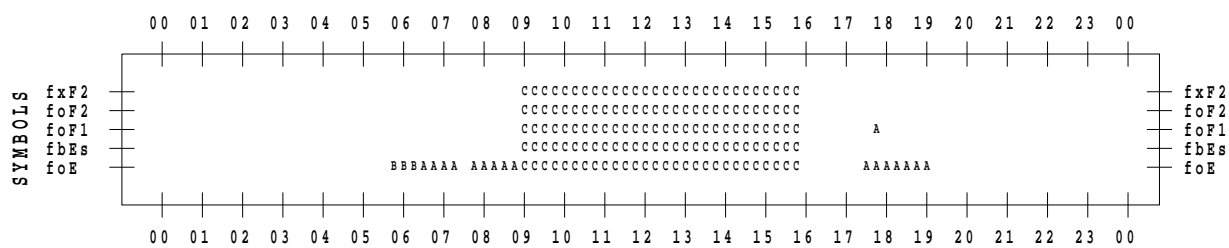
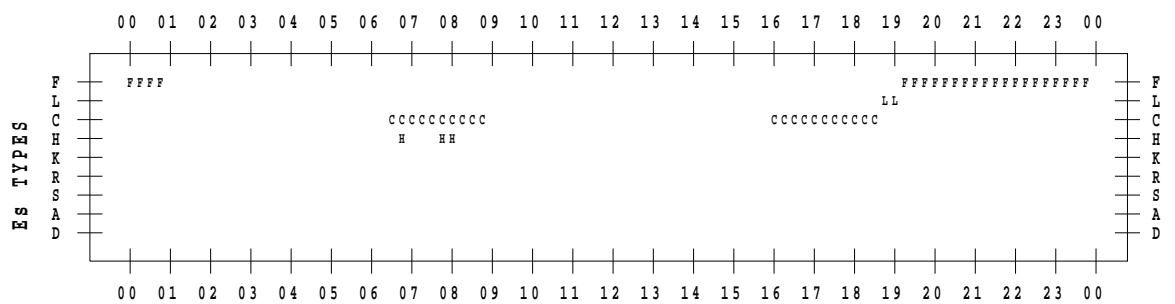
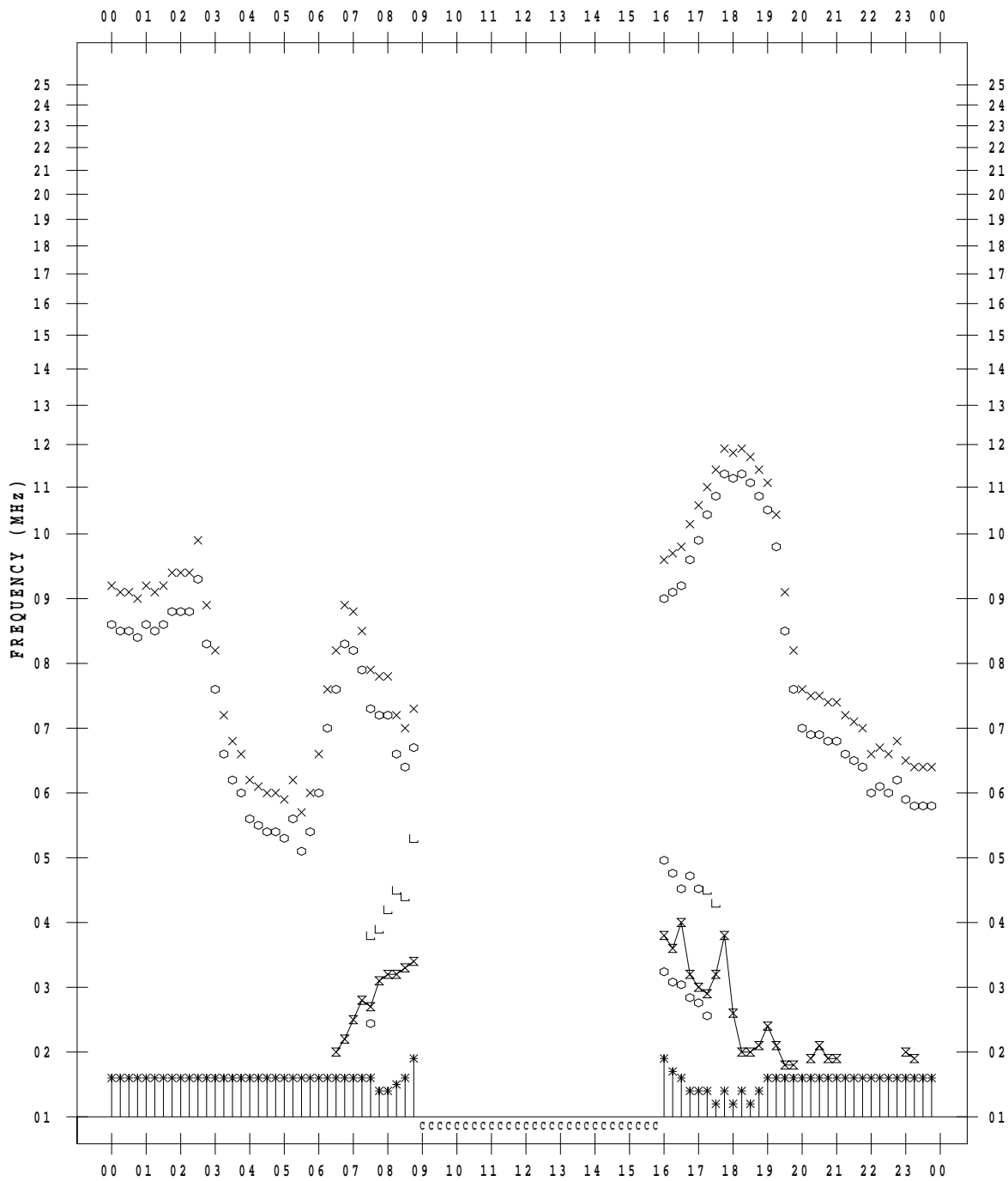
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 7

135 ° E MEAN TIME



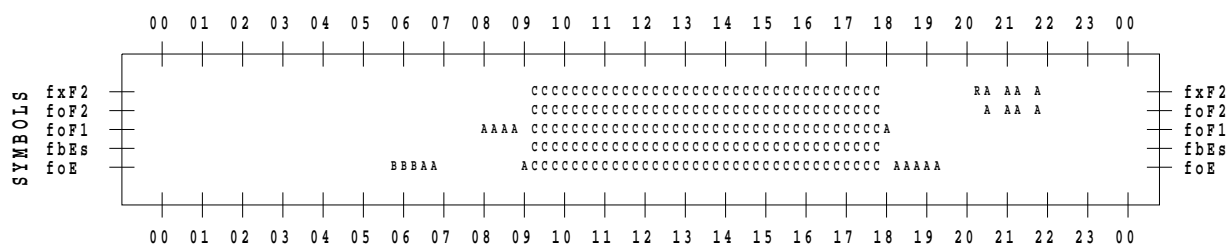
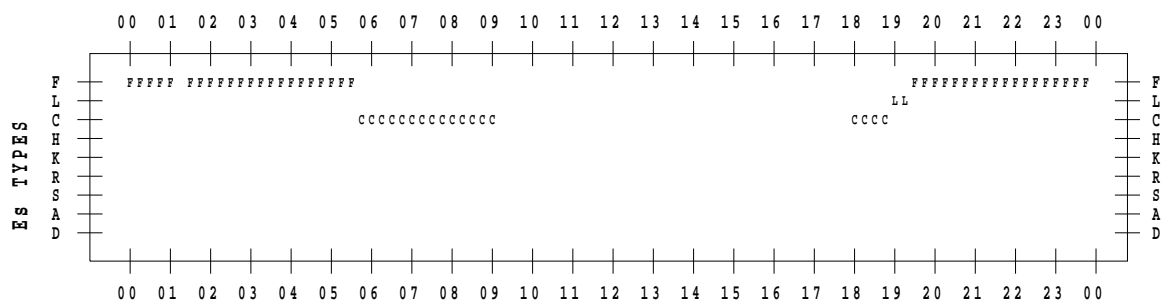
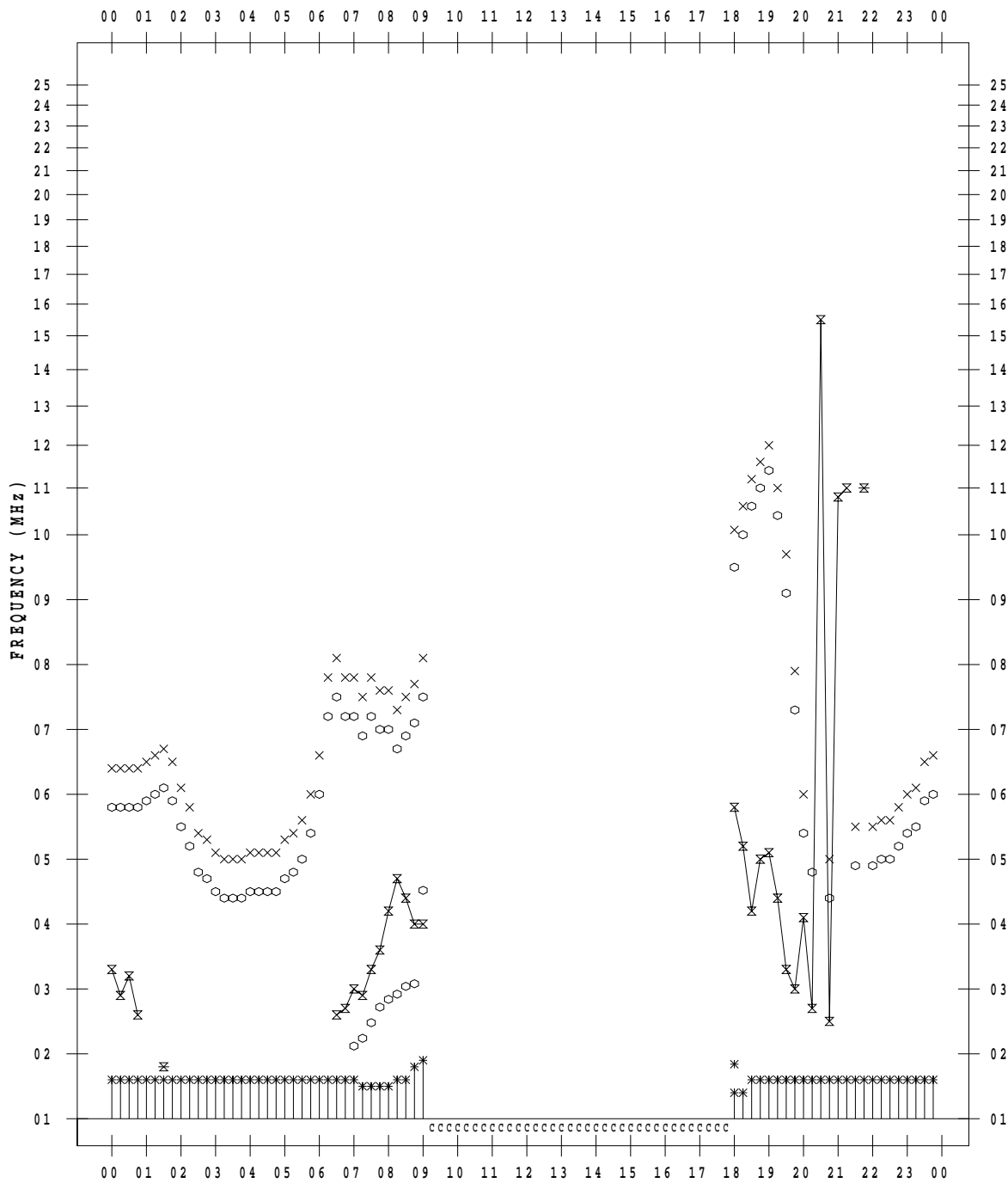
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 8

135 ° E MEAN TIME



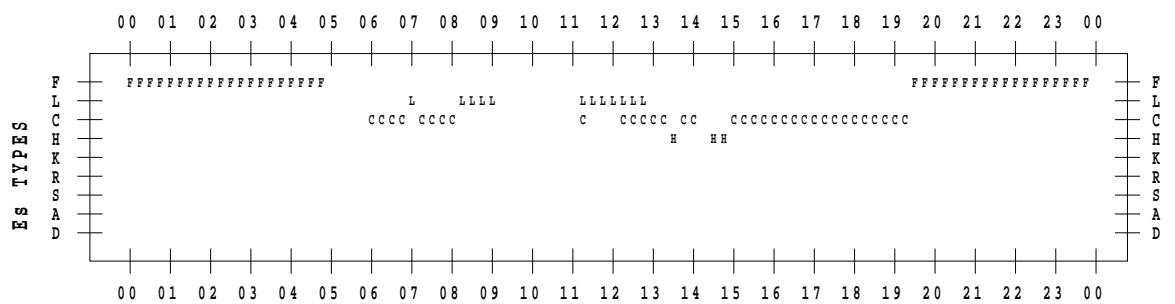
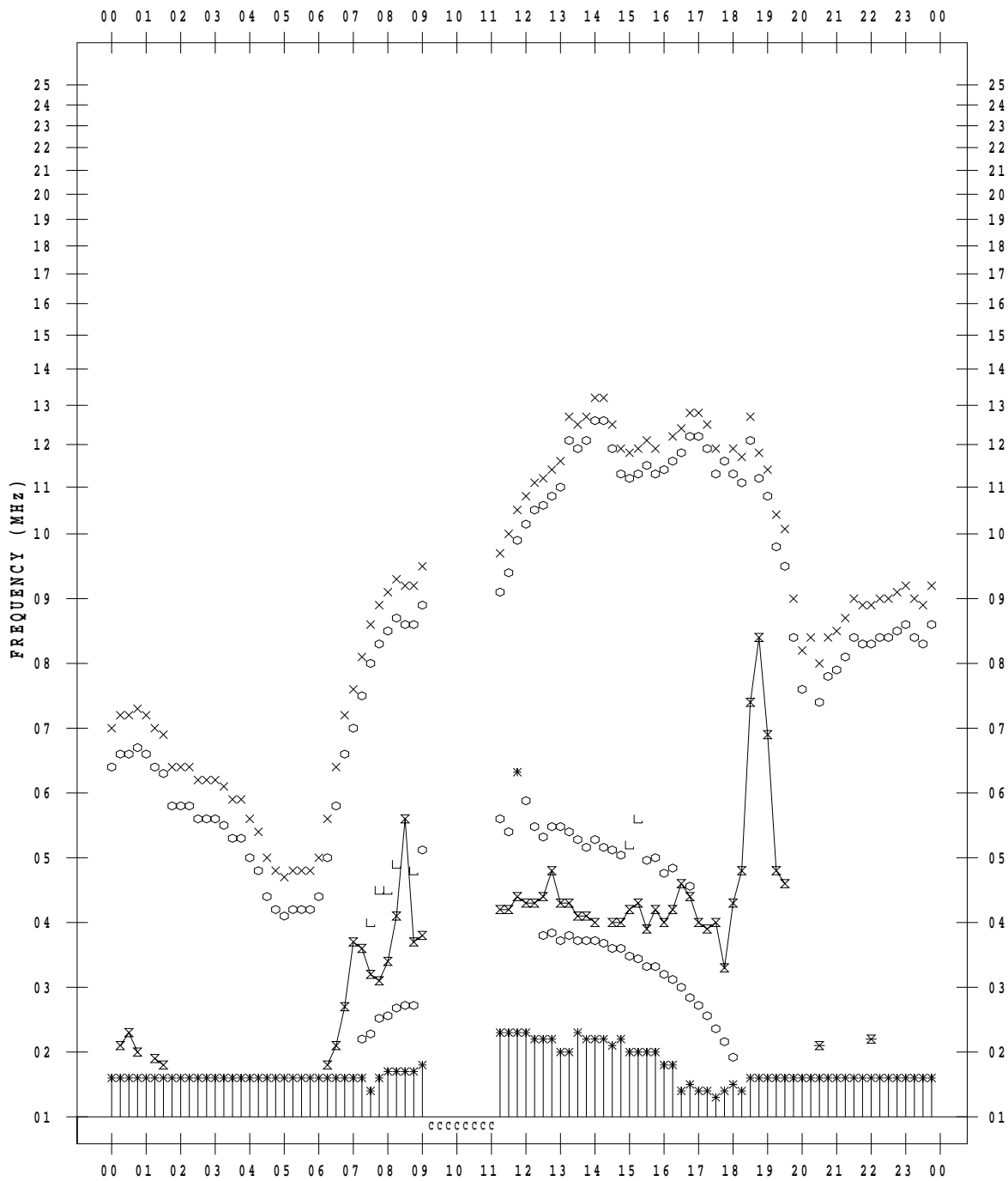
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 9

135 ° E MEAN TIME



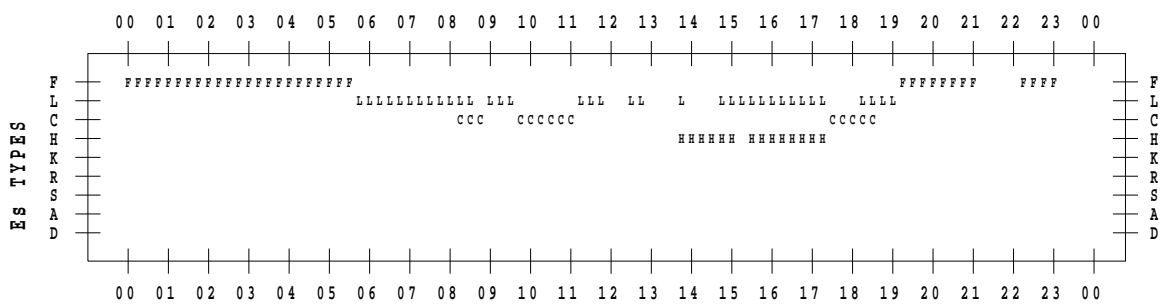
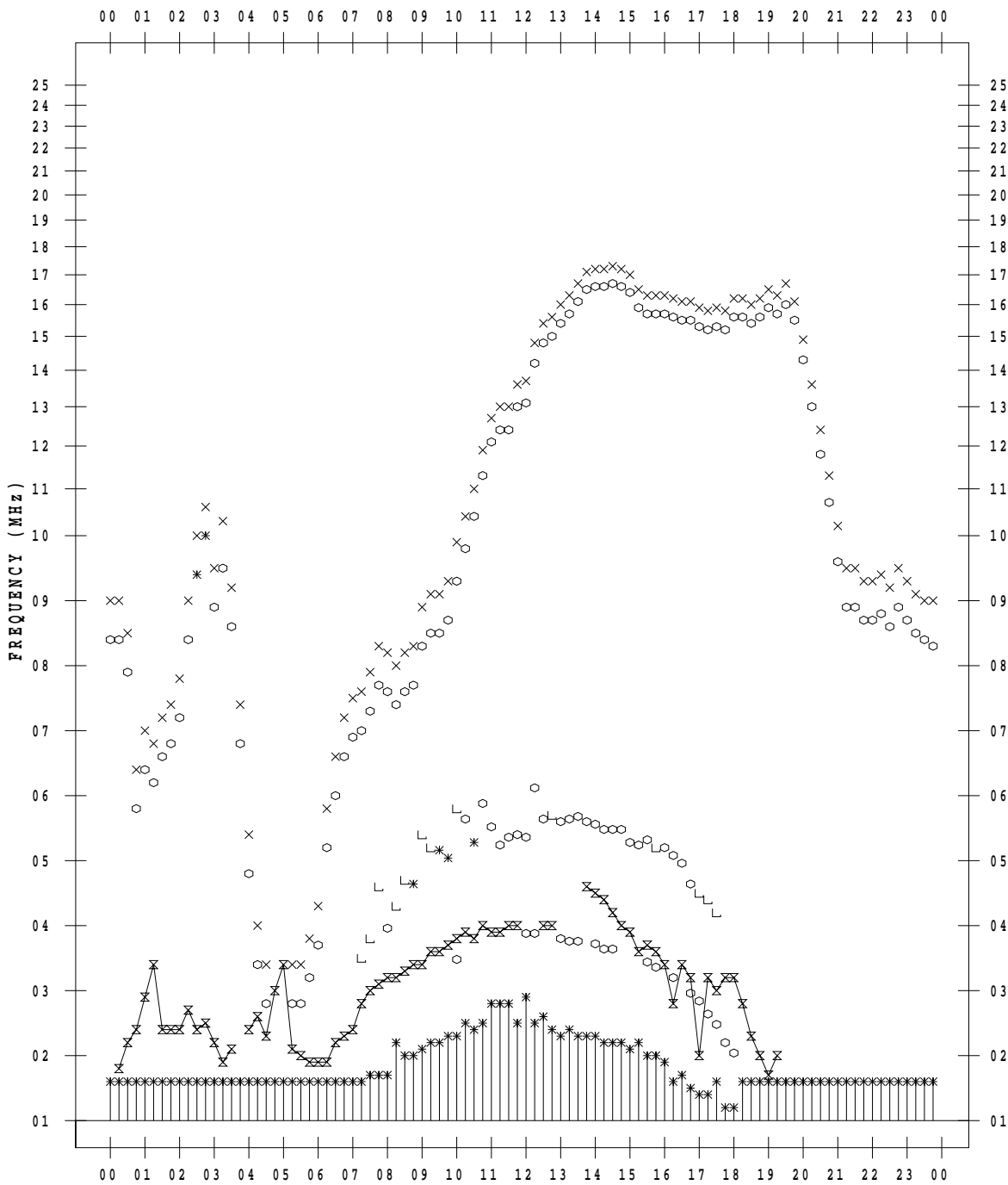
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 11

135 ° E MEAN TIME



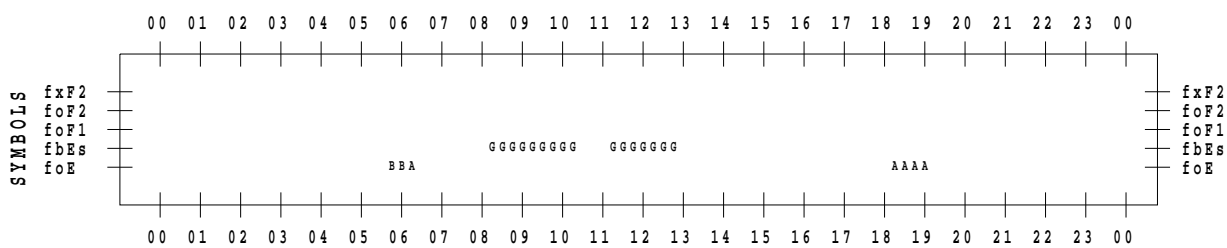
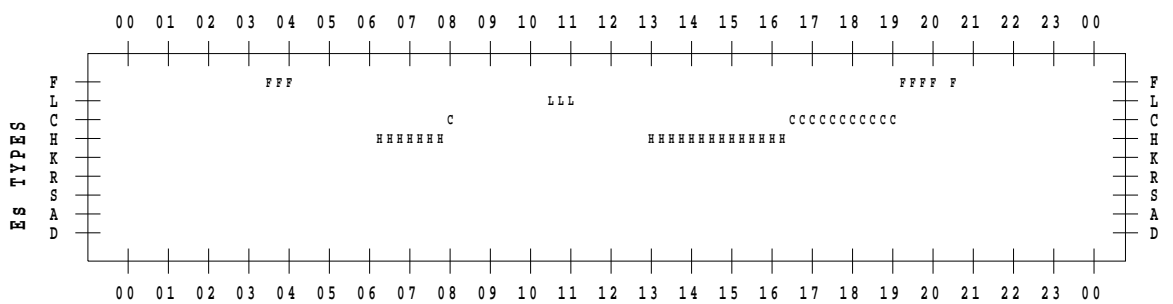
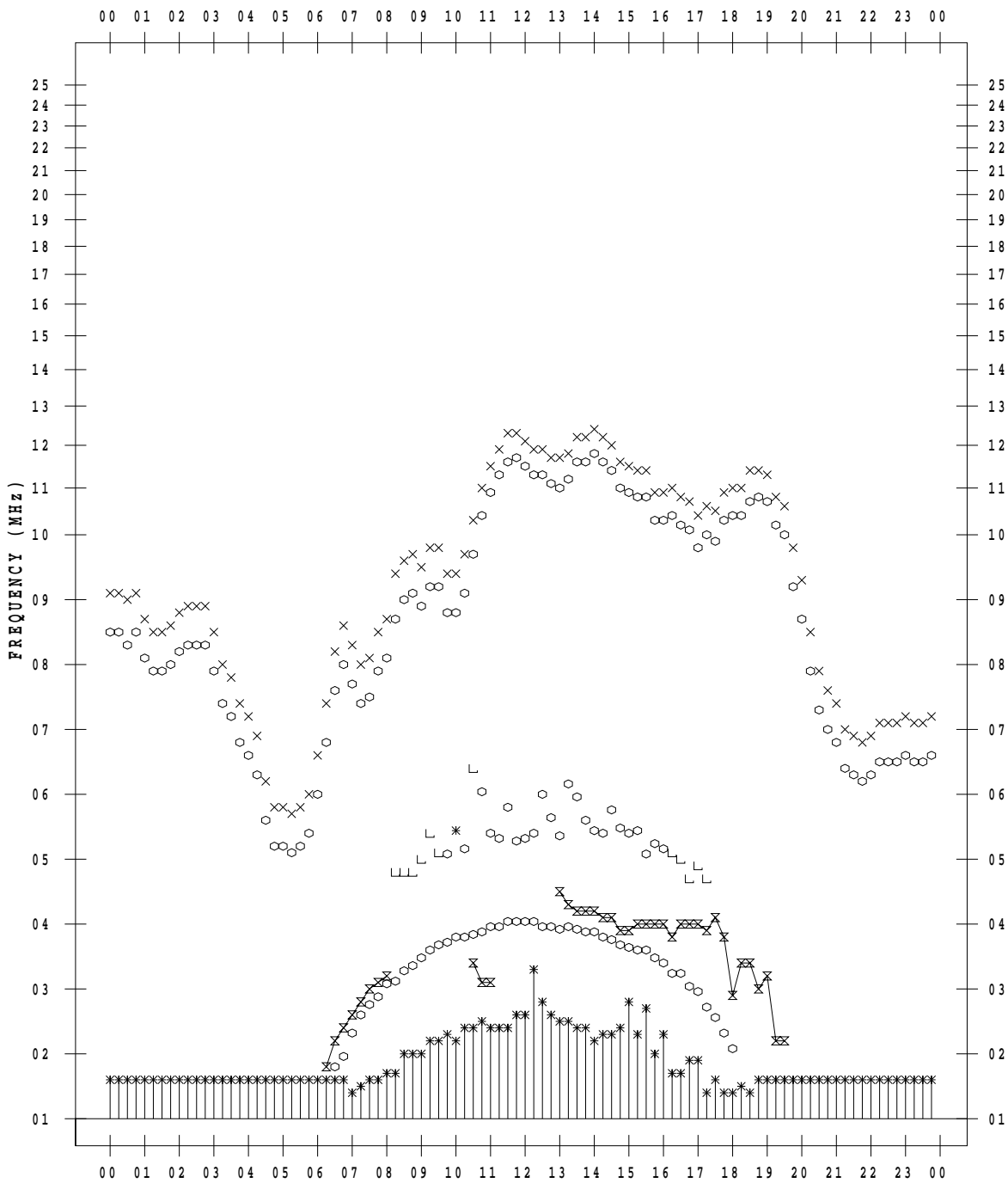
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 12

135 ° E MEAN TIME



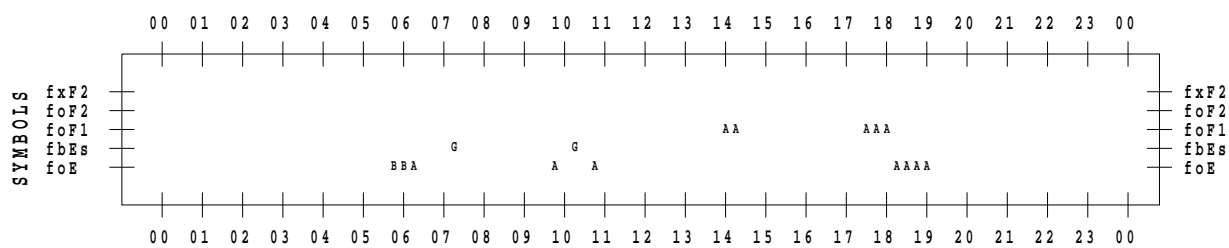
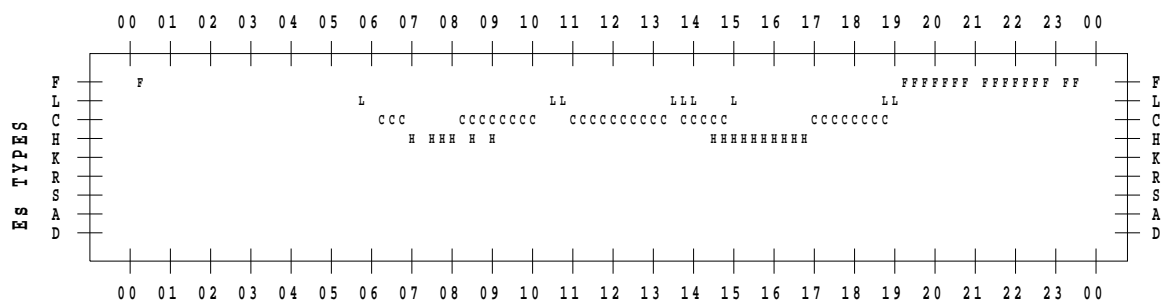
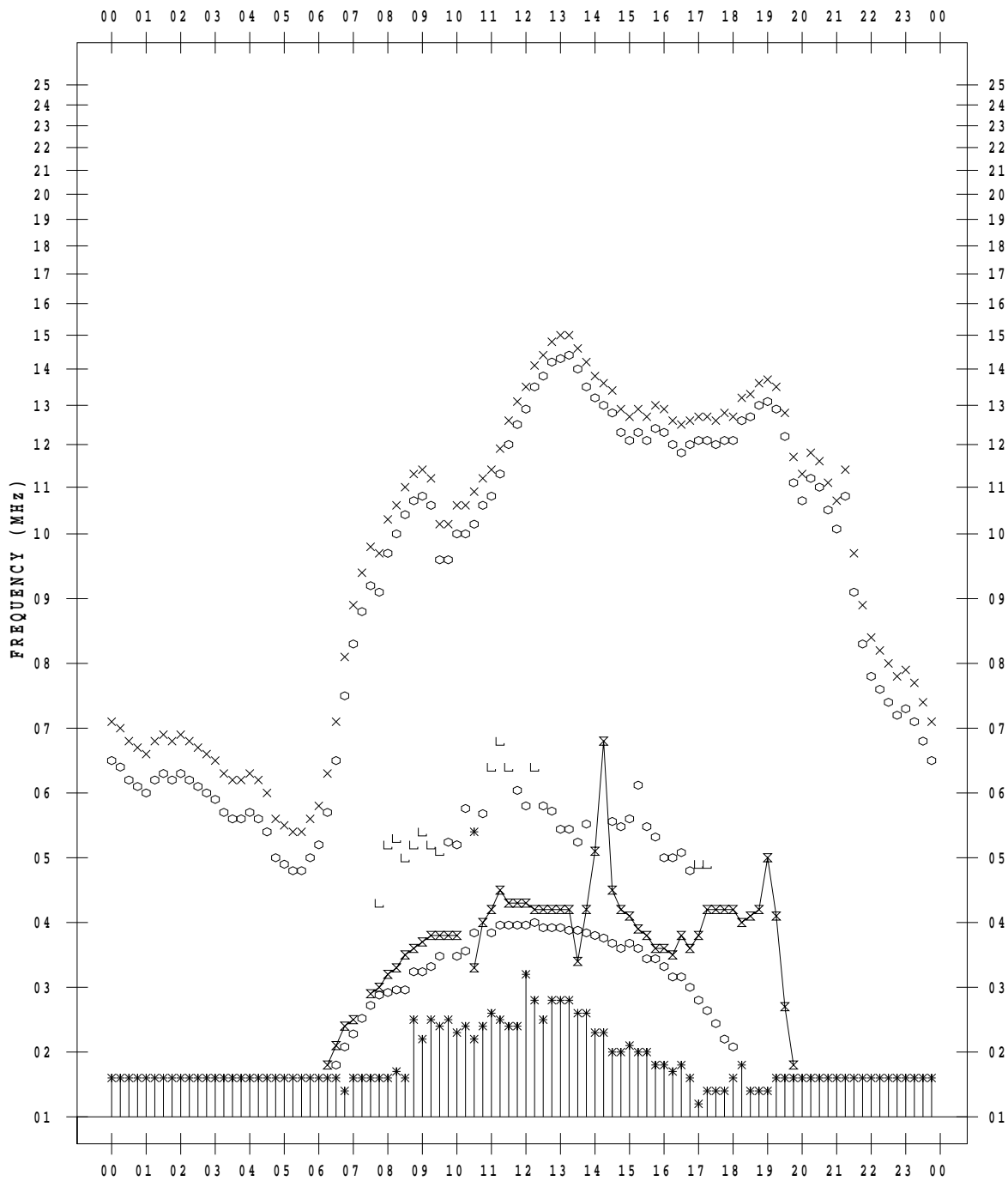
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 13

135 ° E MEAN TIME



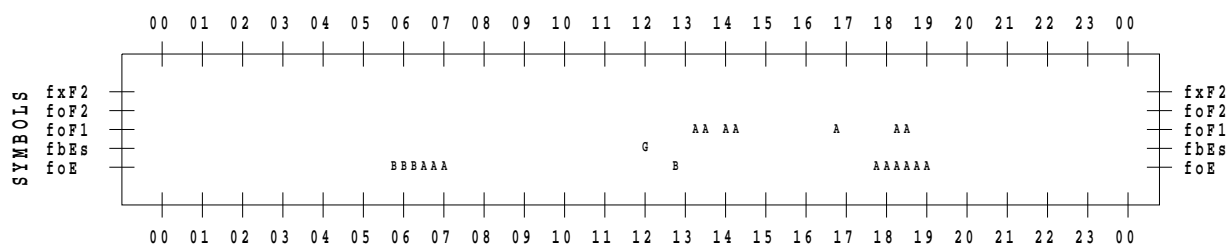
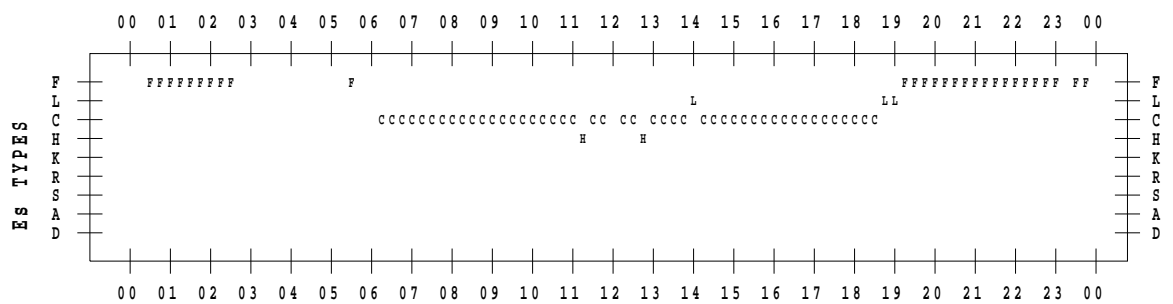
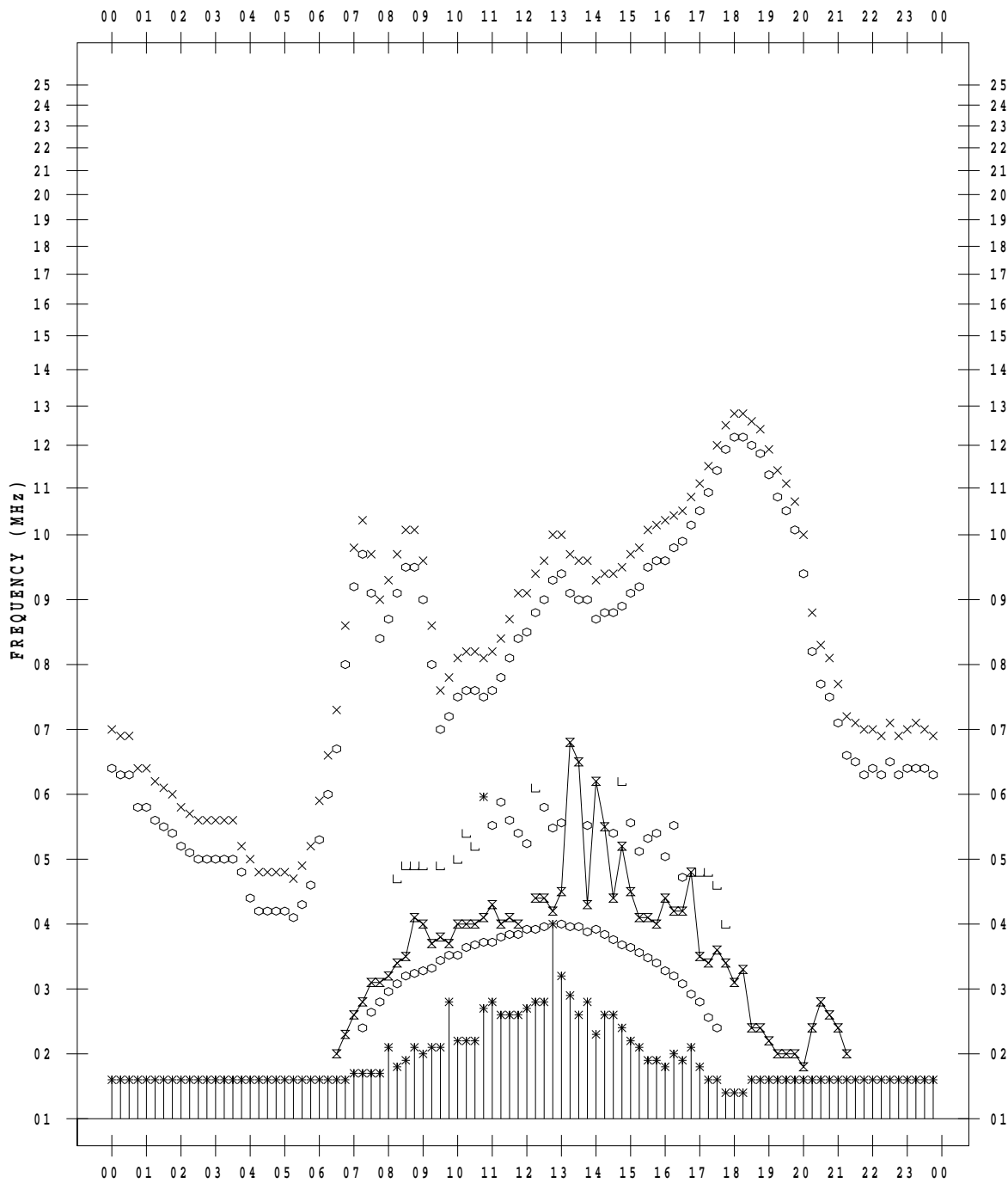
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 14

135 ° E MEAN TIME



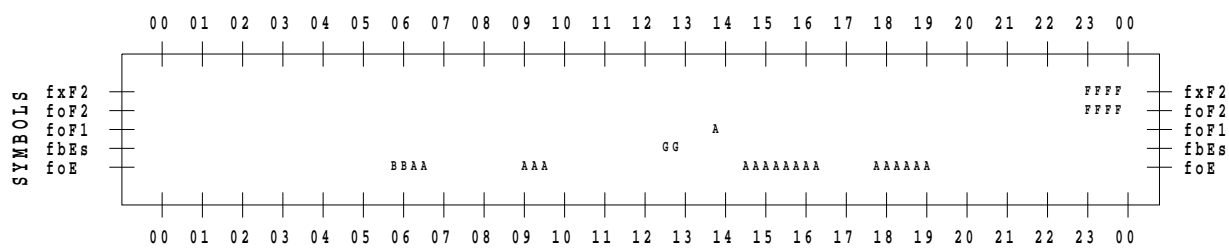
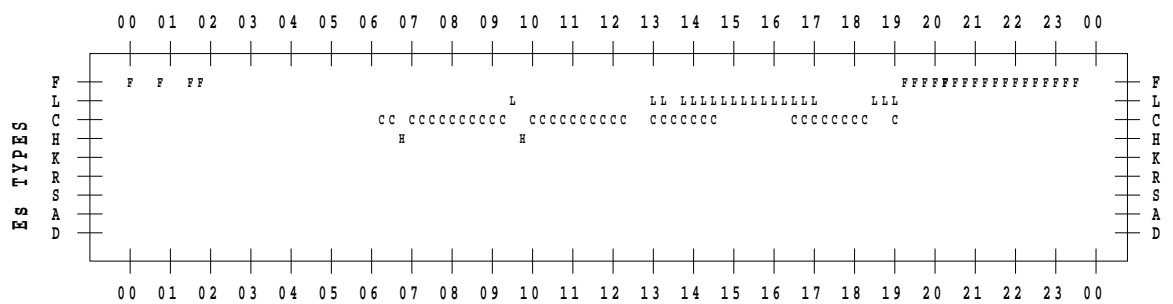
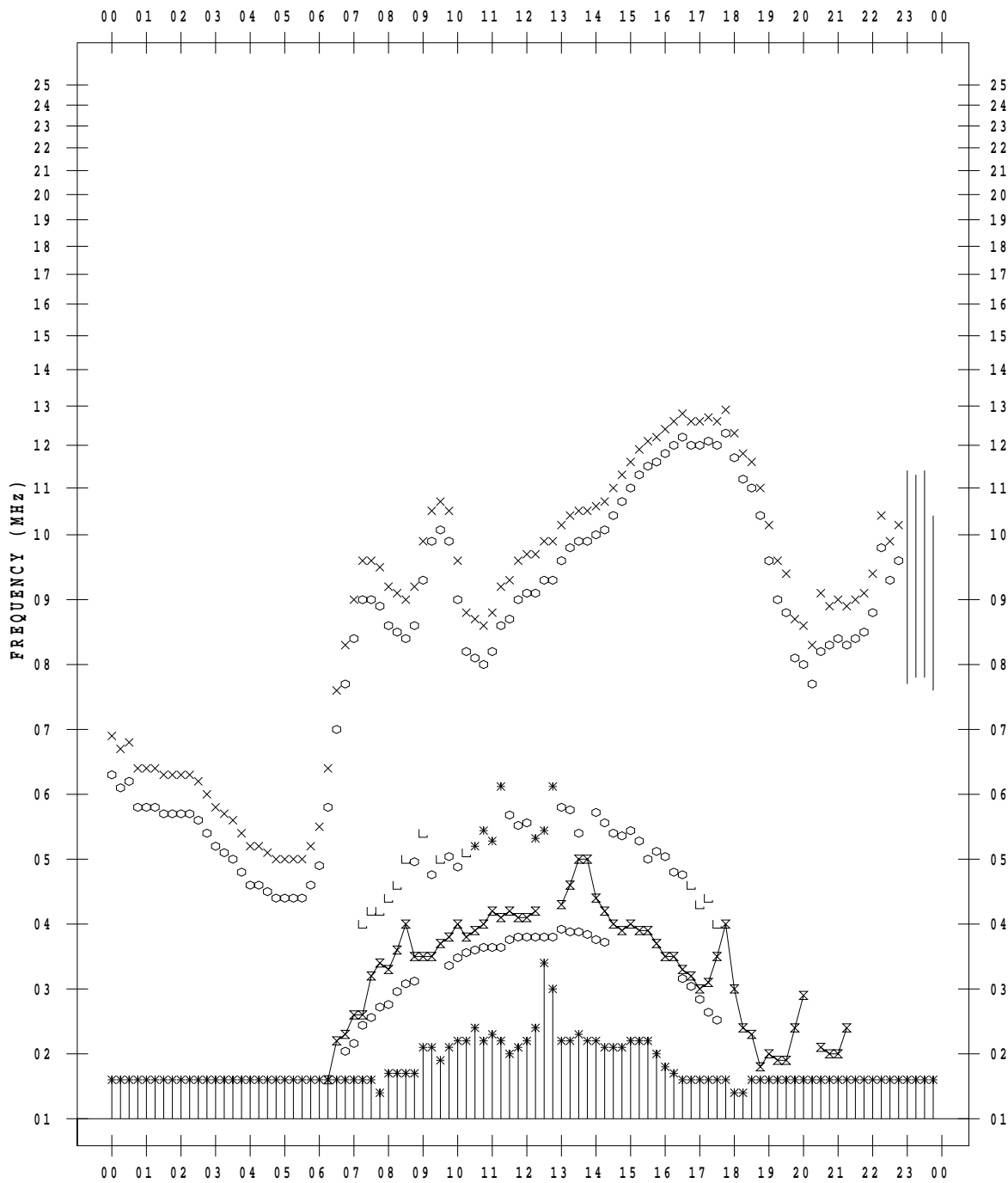
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 15

135 ° E MEAN TIME



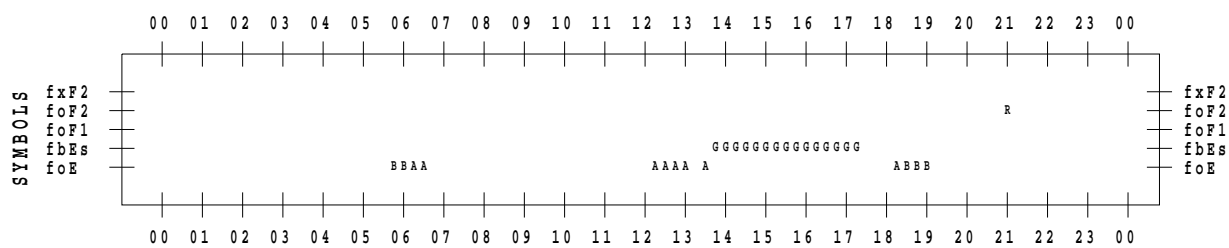
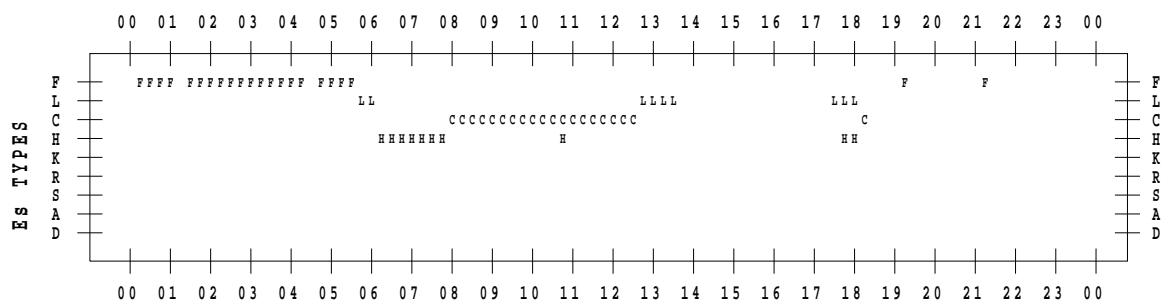
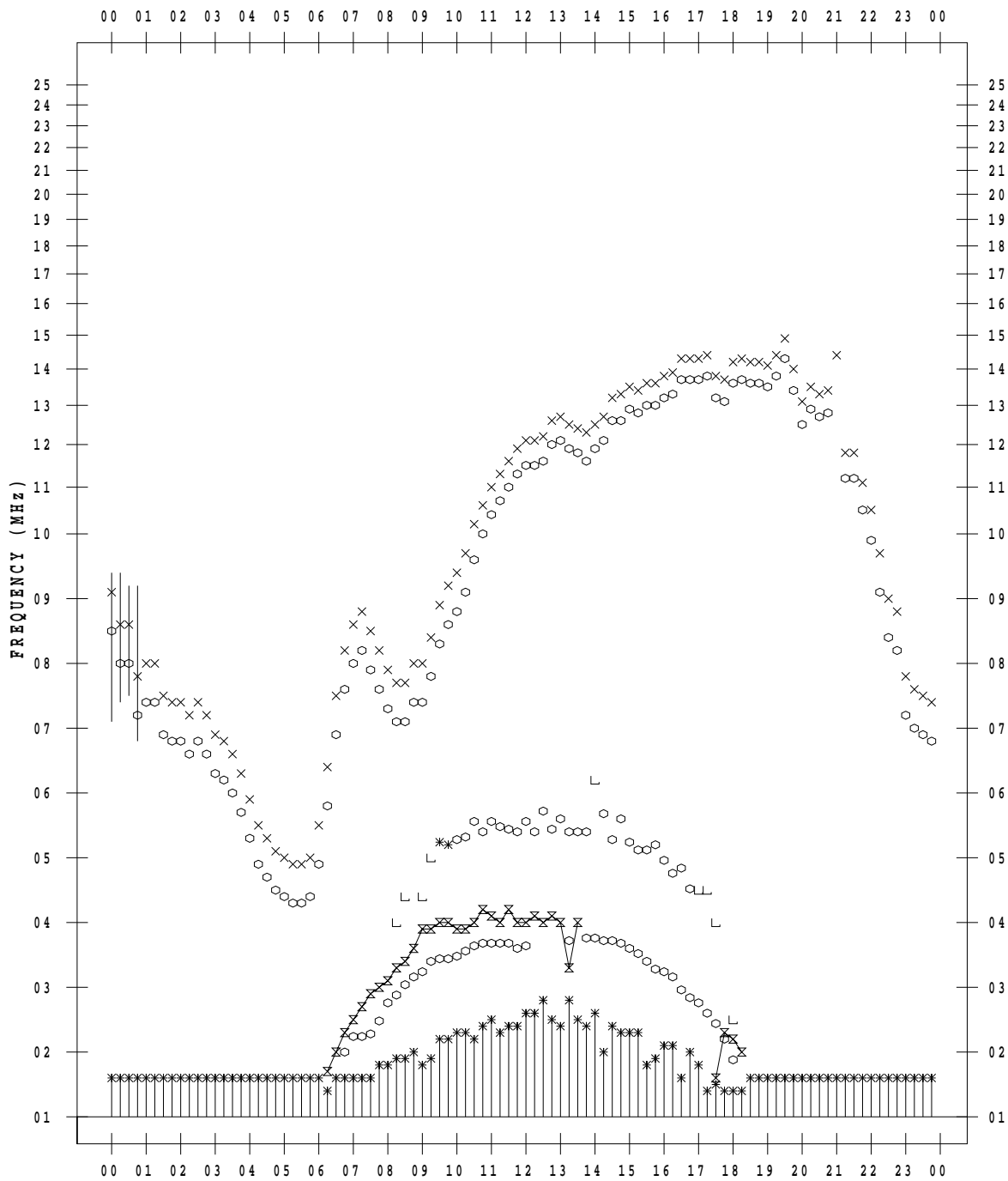
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022/ 9/16

135 ° E MEAN TIME



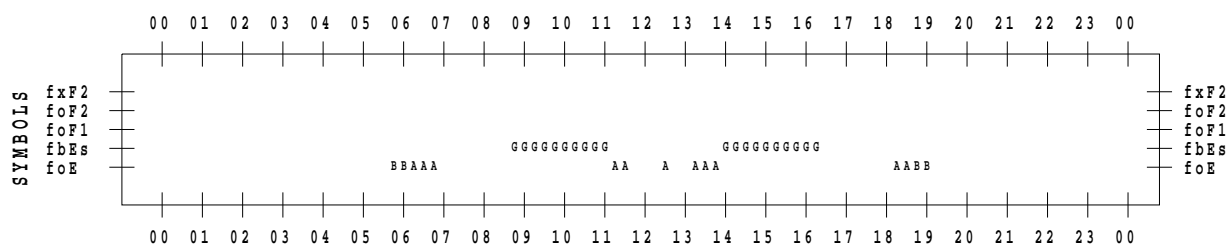
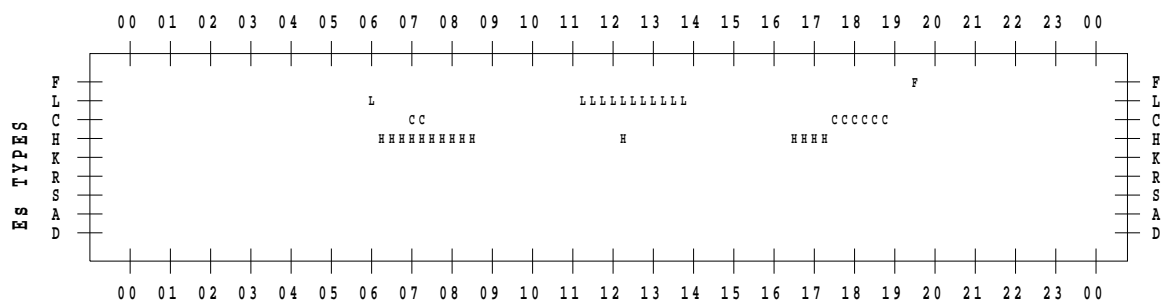
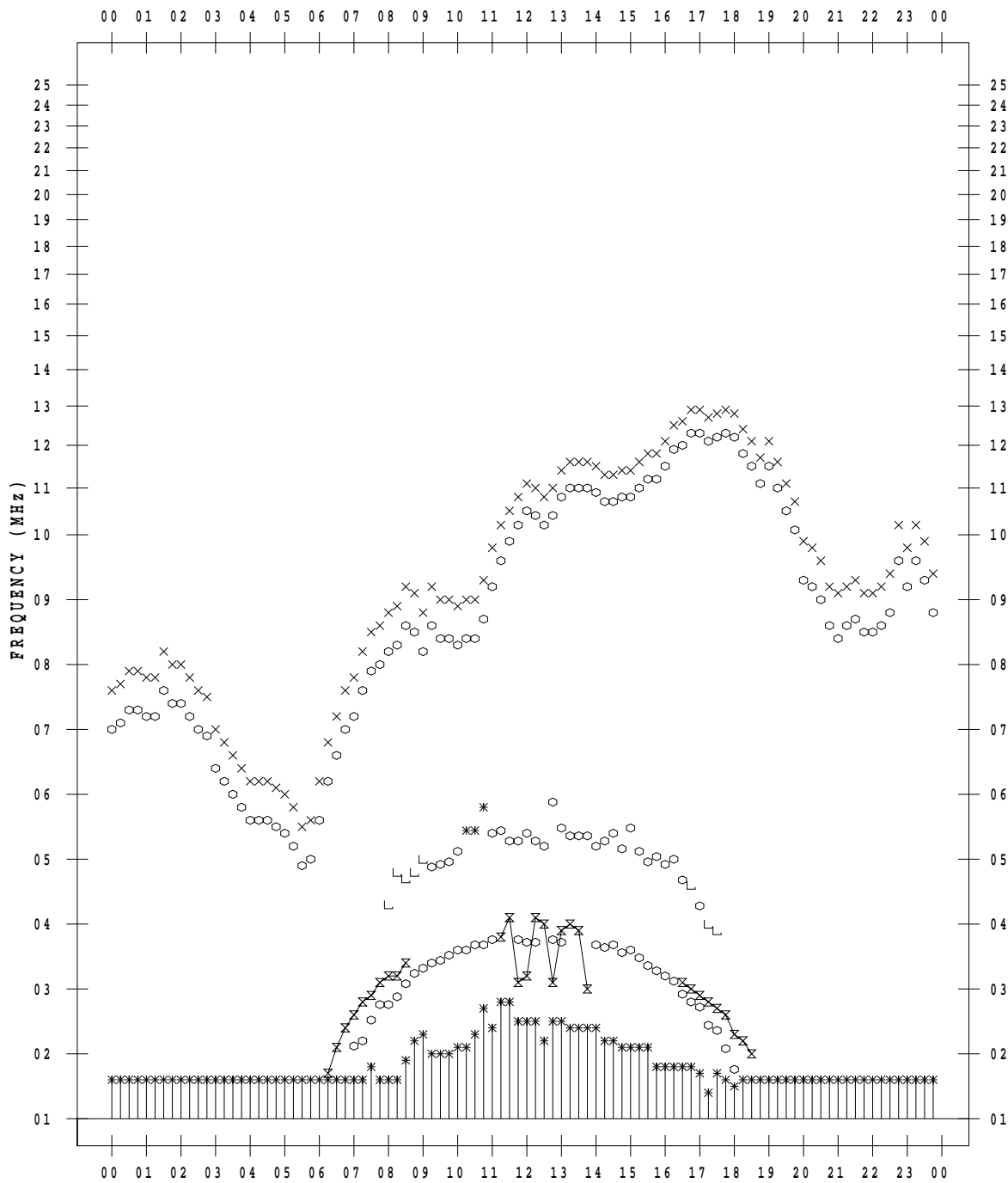
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 17

135 ° E MEAN TIME



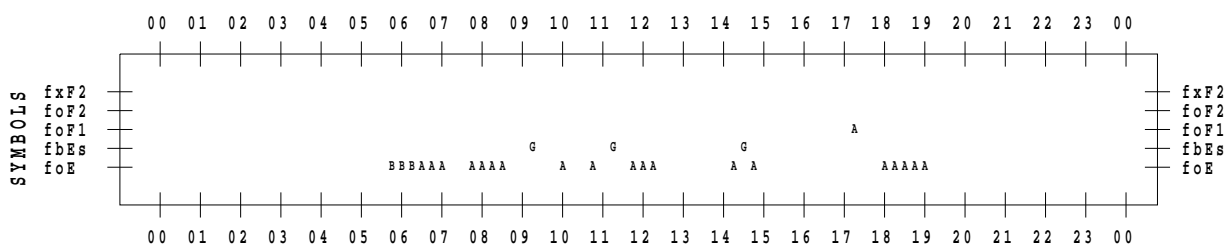
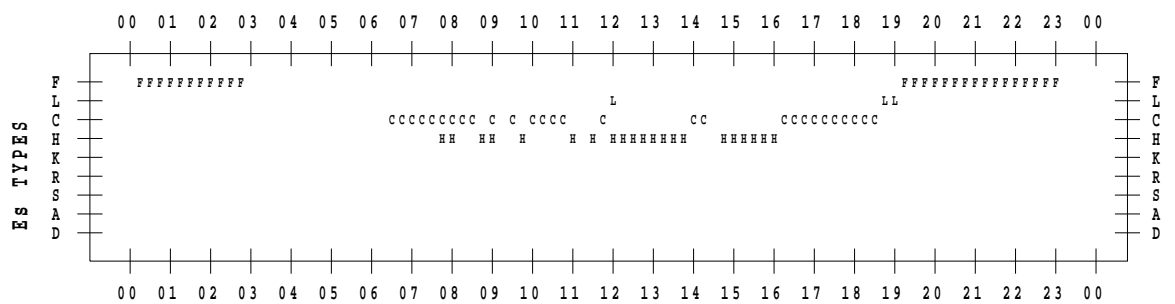
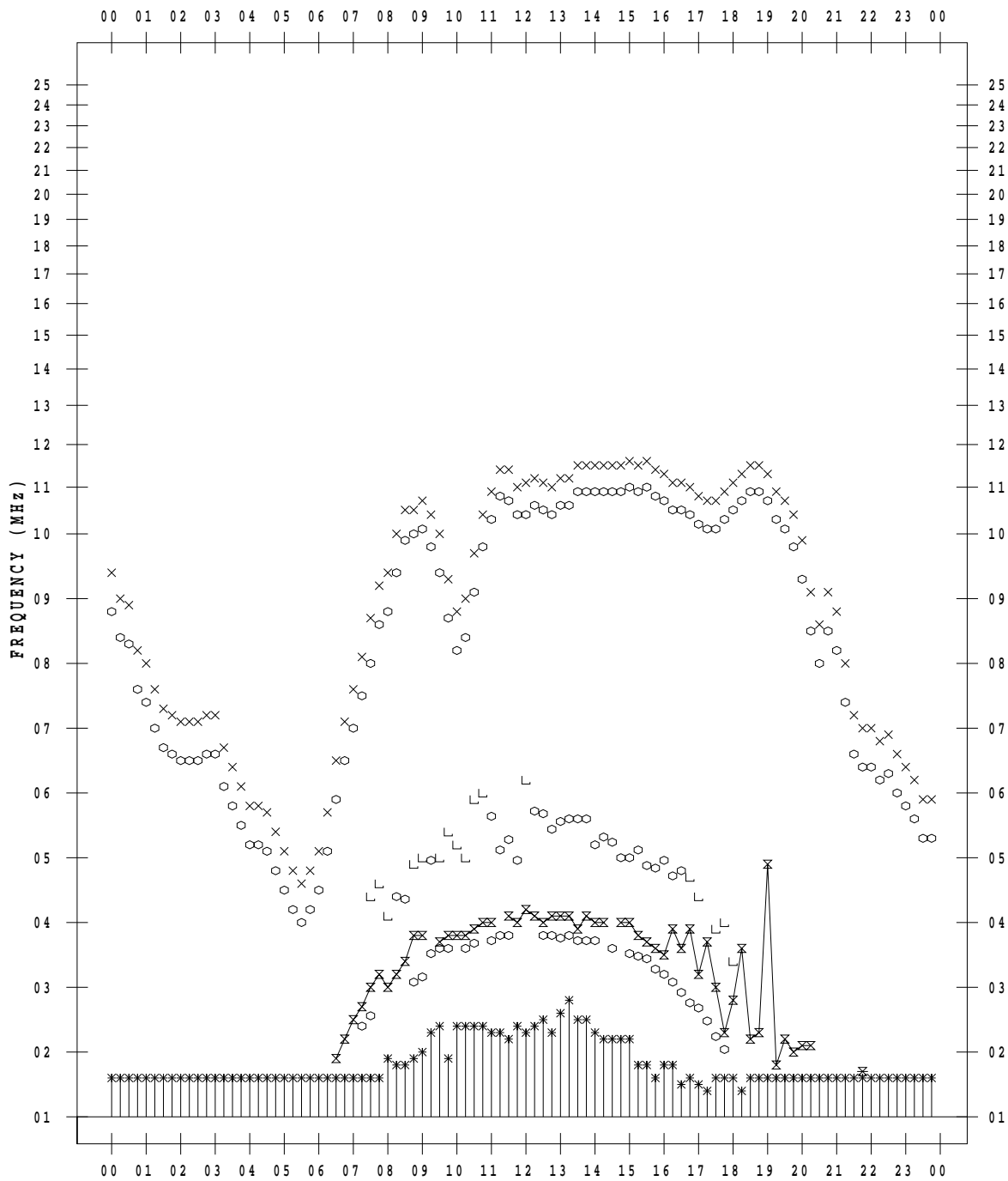
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 18

135 ° E MEAN TIME



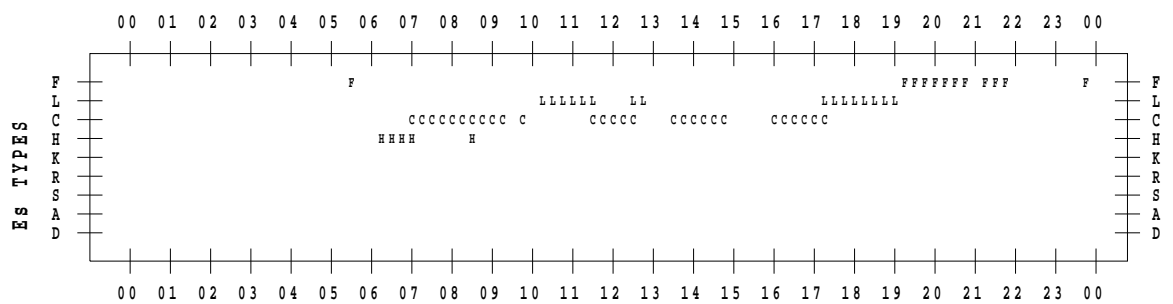
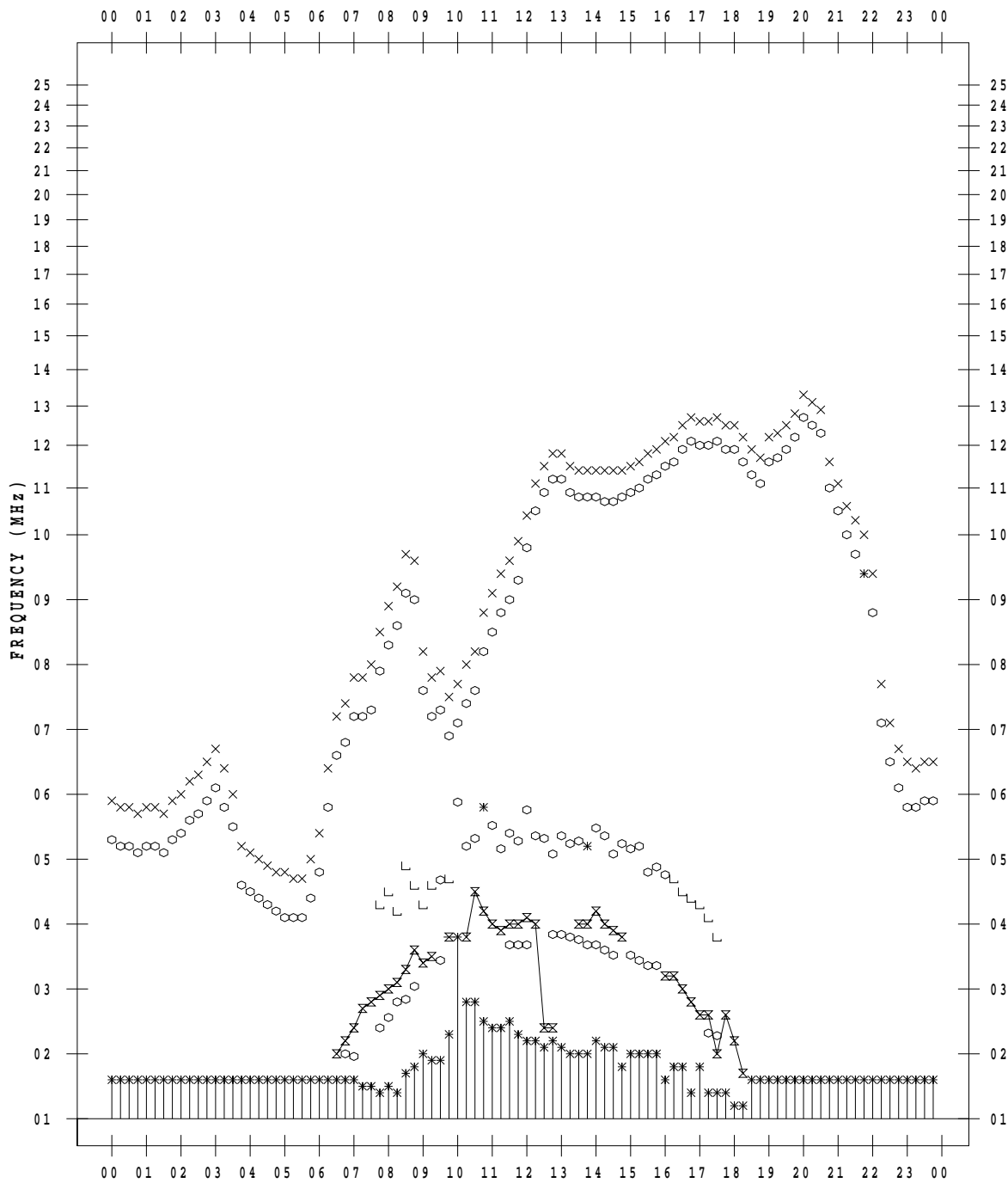
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 19

135 ° E MEAN TIME



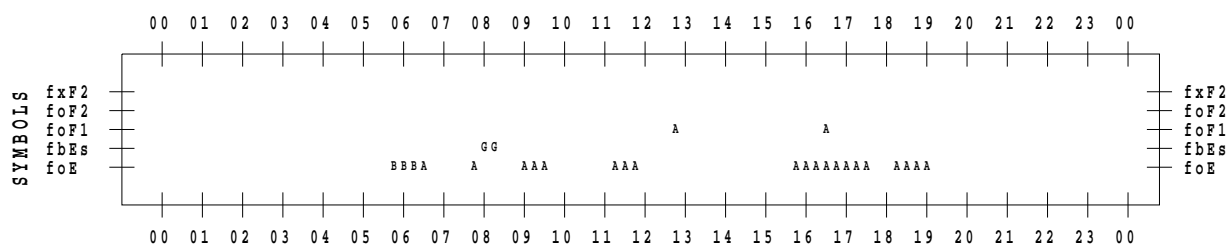
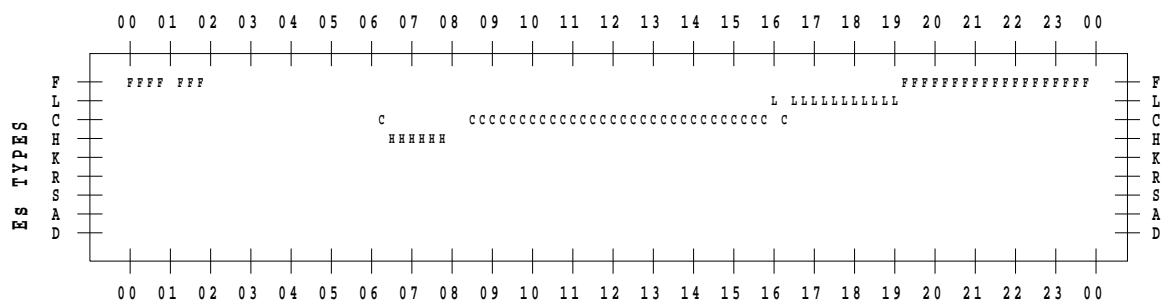
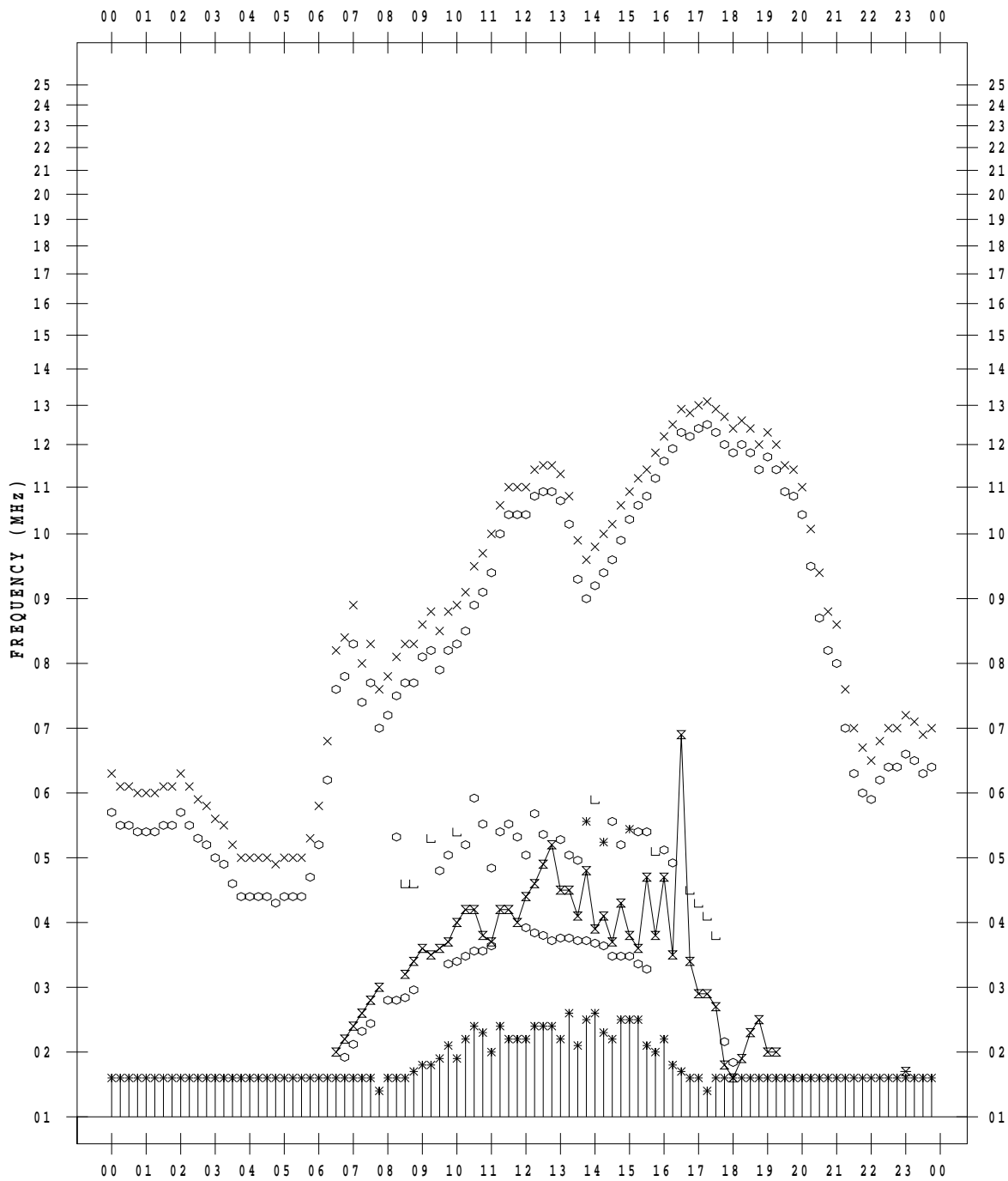
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 20

135 ° E MEAN TIME



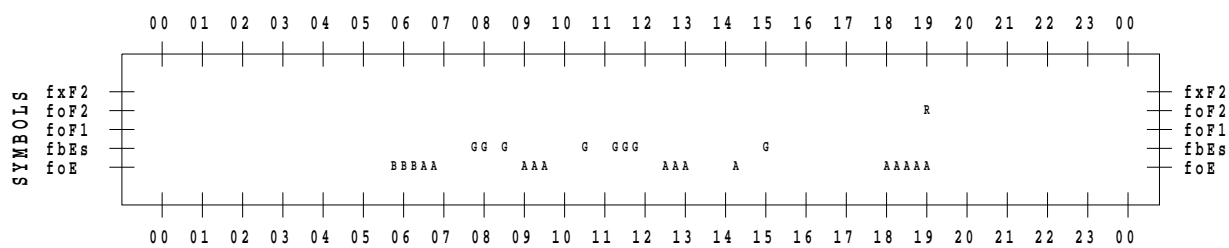
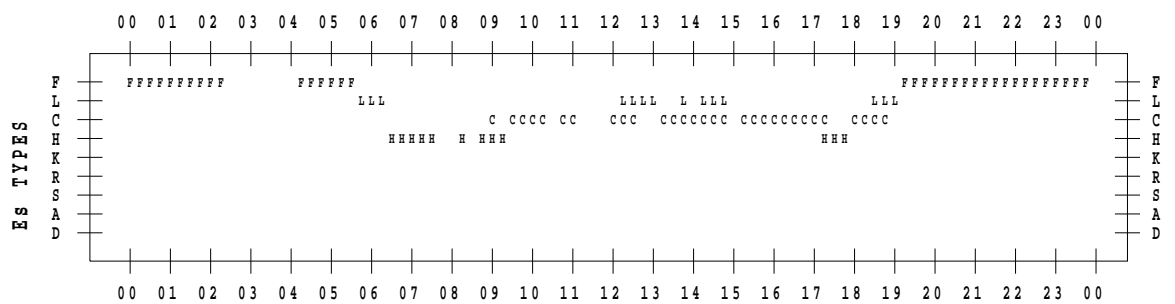
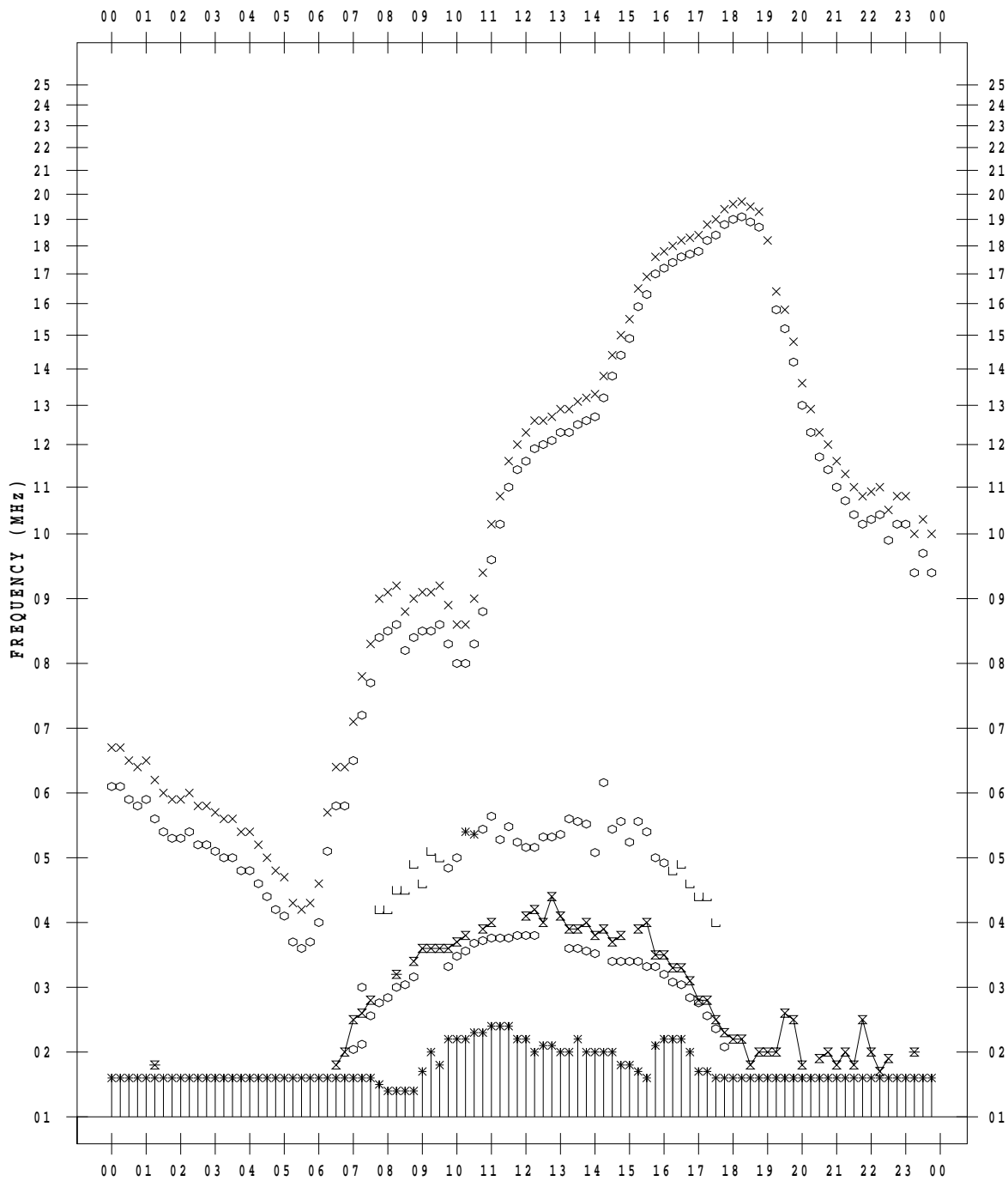
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 21

135 ° E MEAN TIME



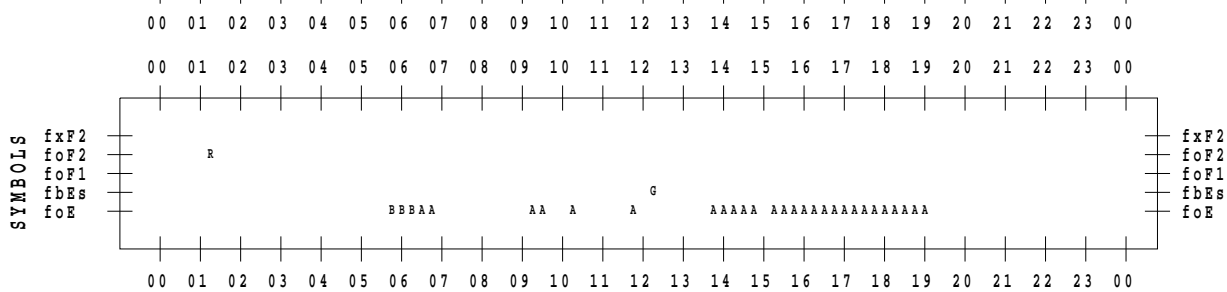
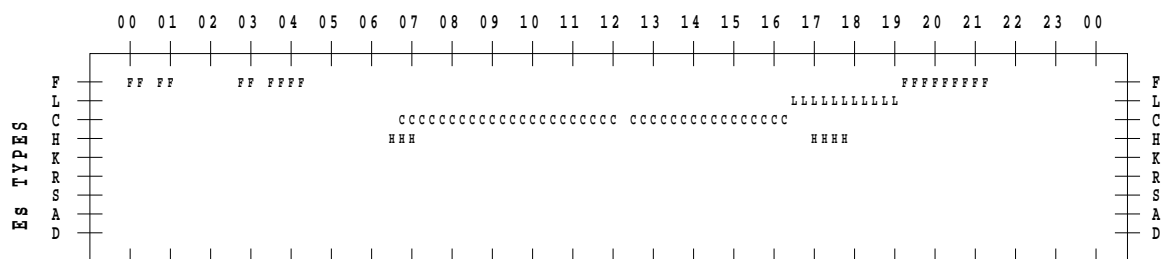
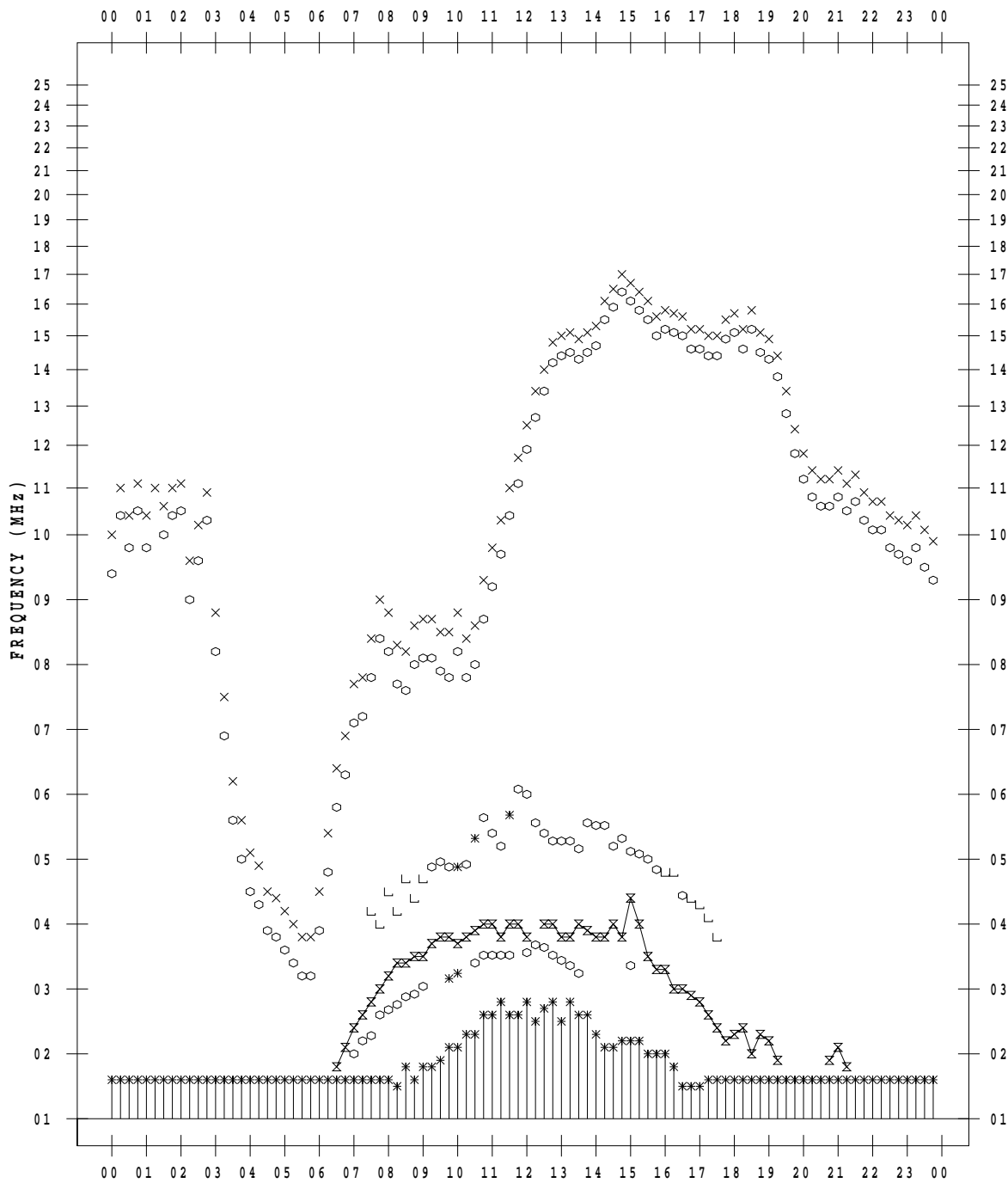
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 22

135 ° E MEAN TIME



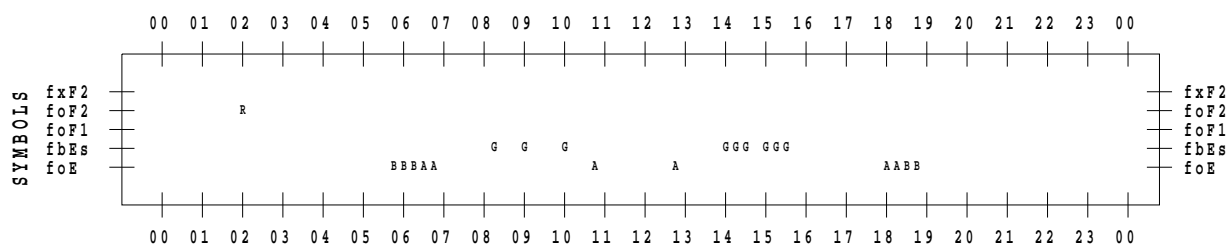
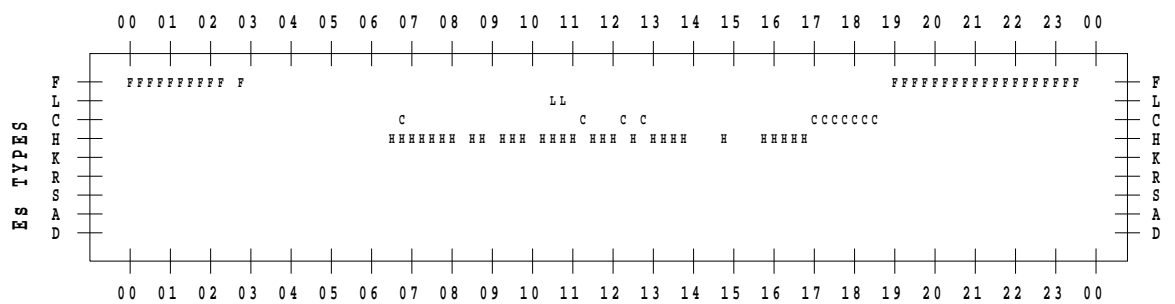
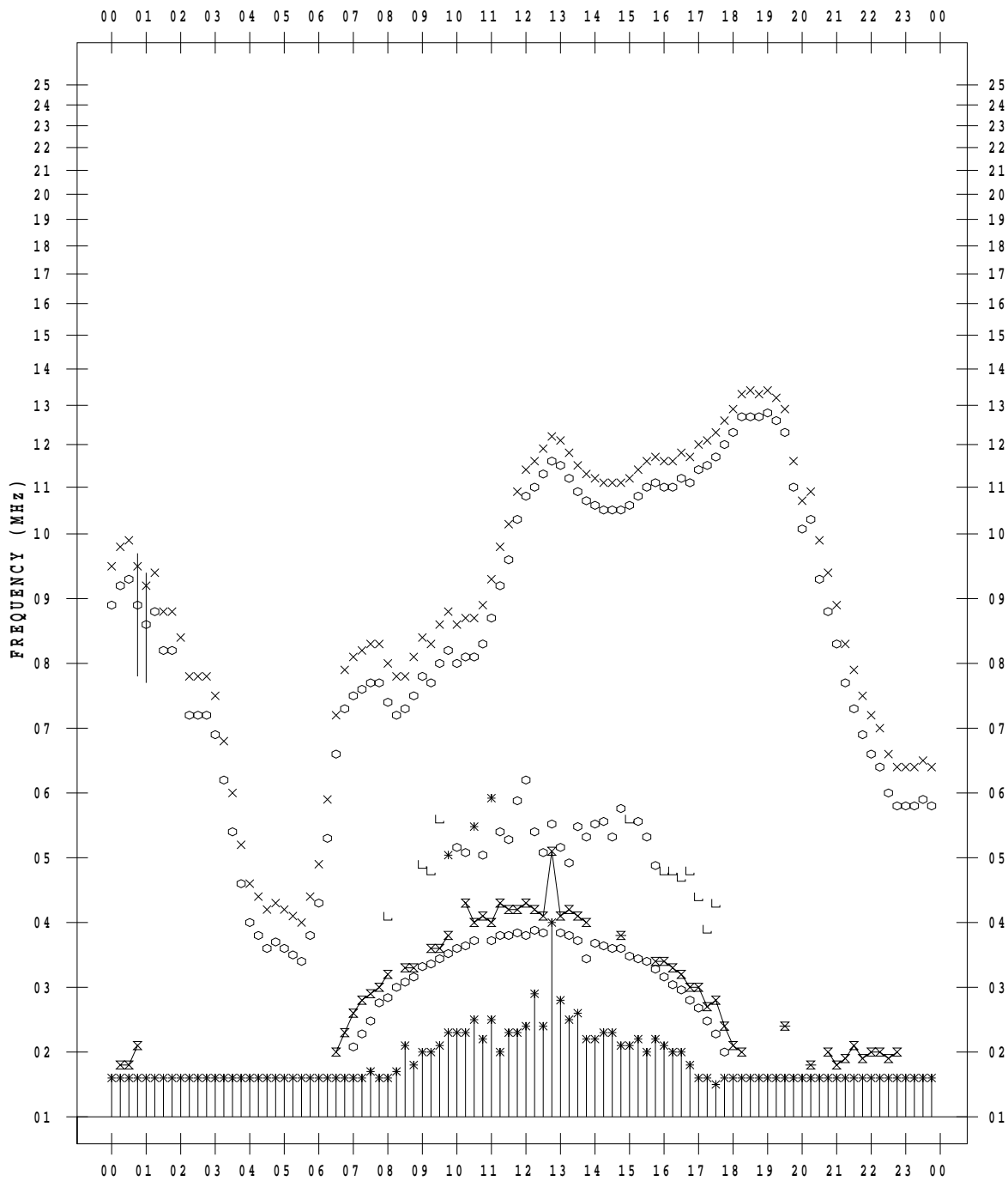
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 23

135 ° E MEAN TIME



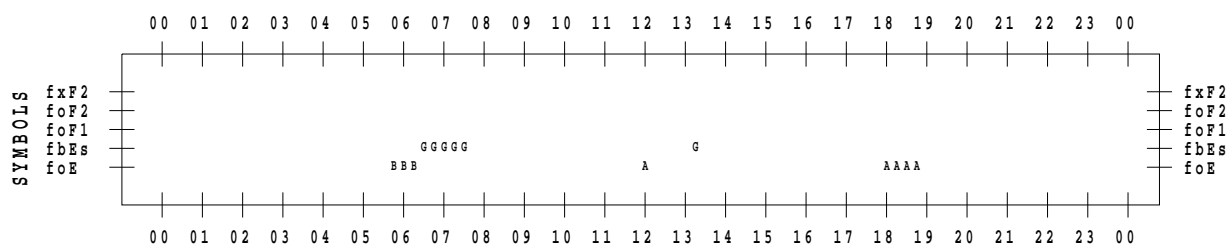
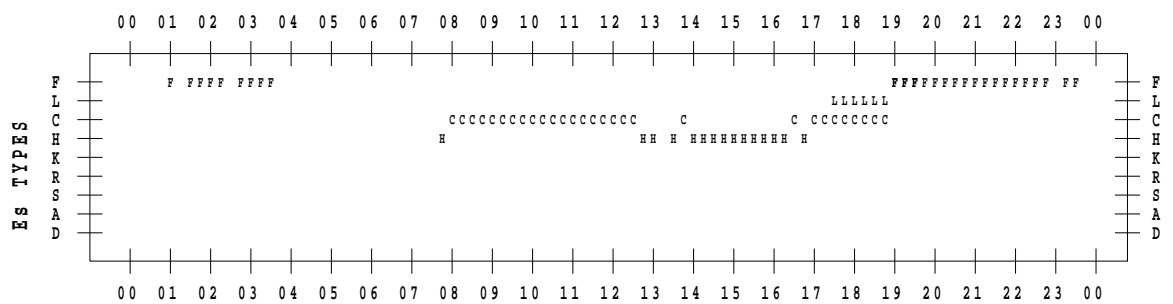
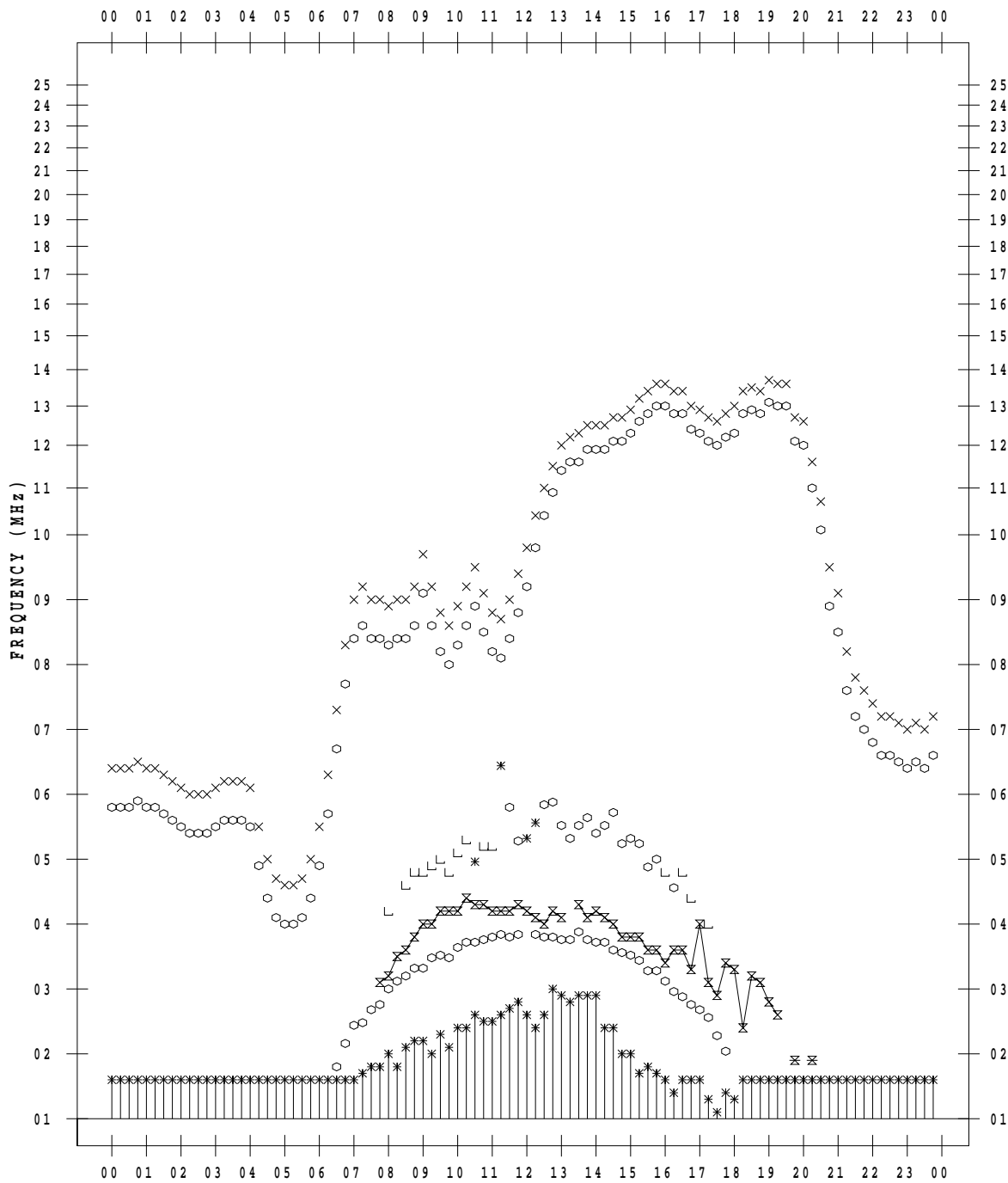
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 24

135 ° E MEAN TIME



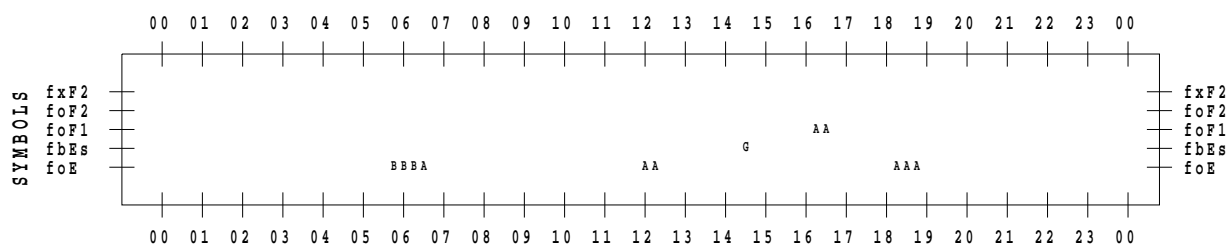
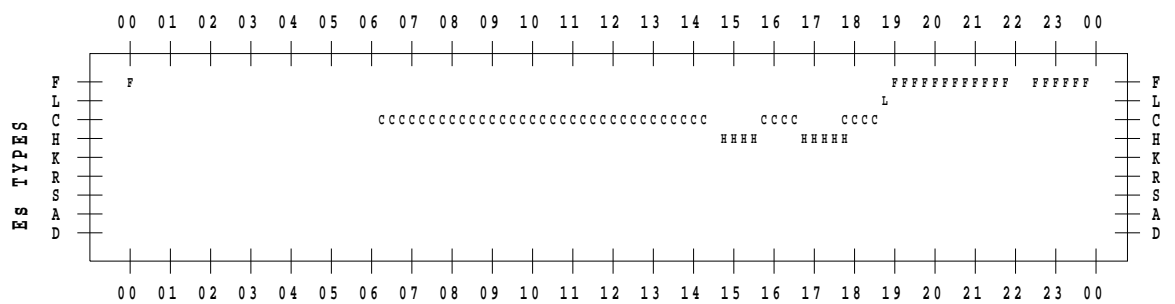
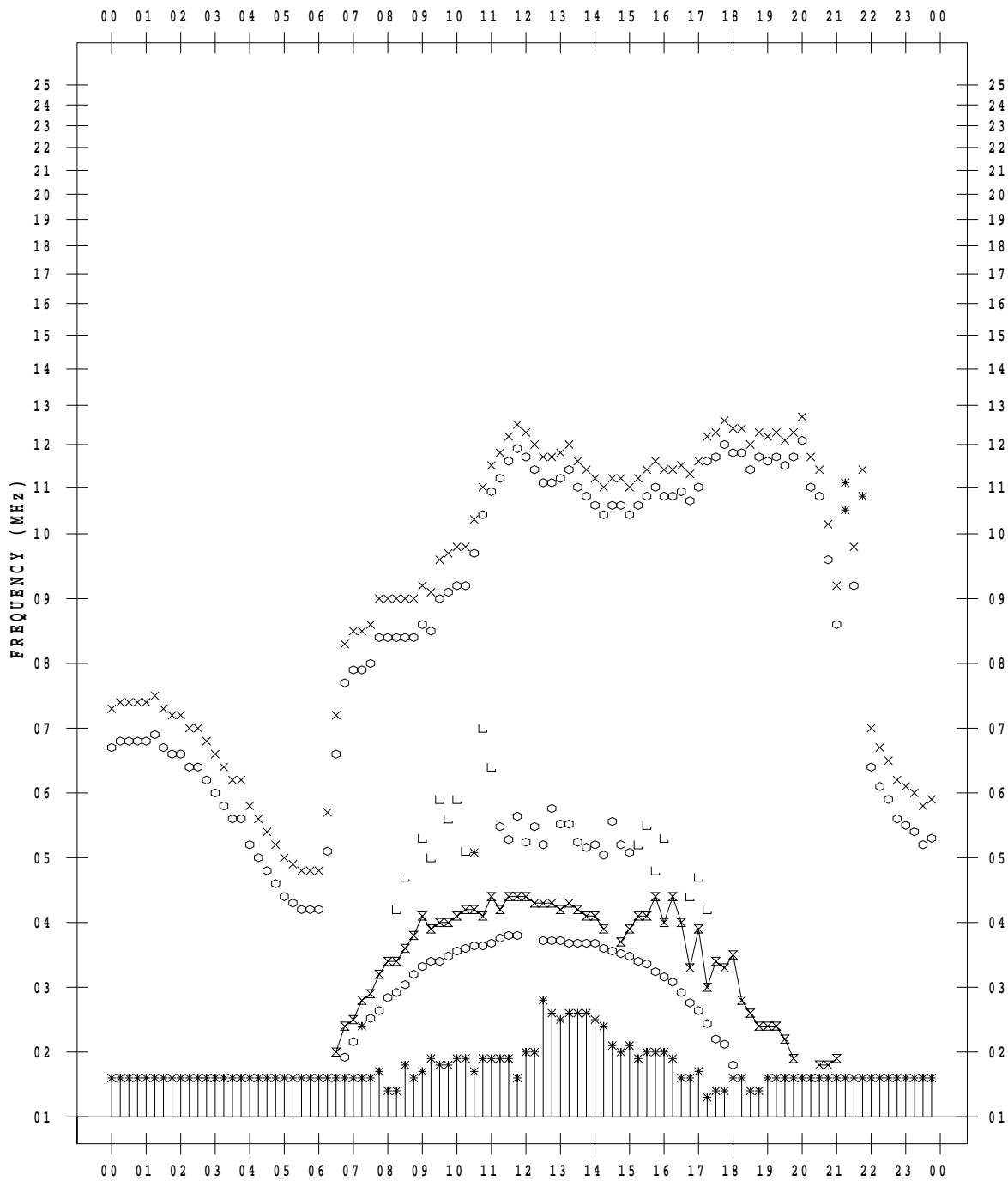
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SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 25

135 ° E MEAN TIME



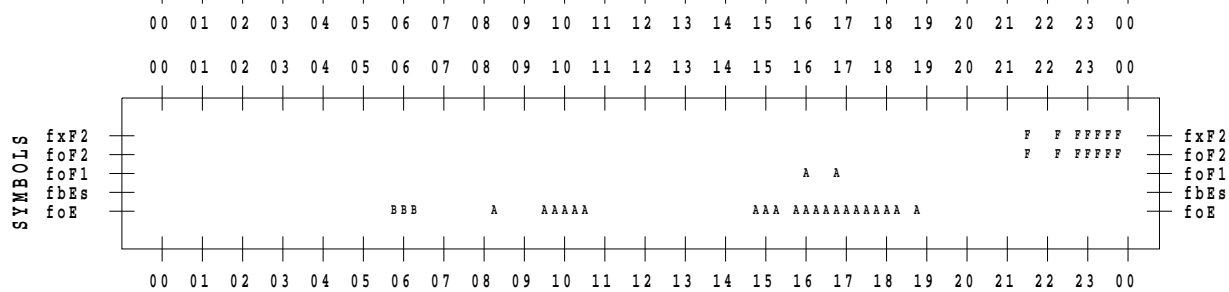
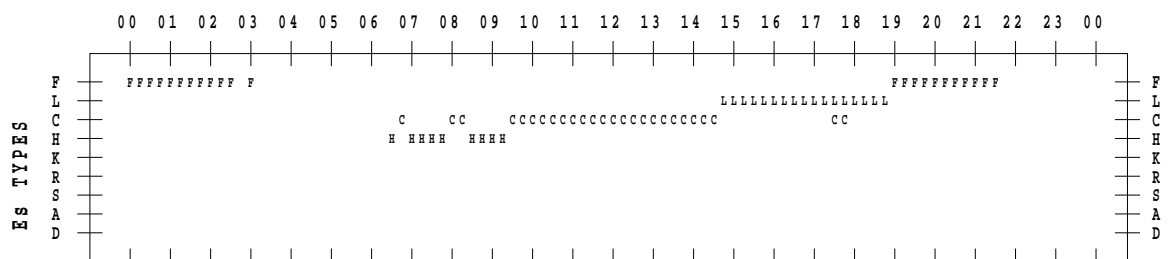
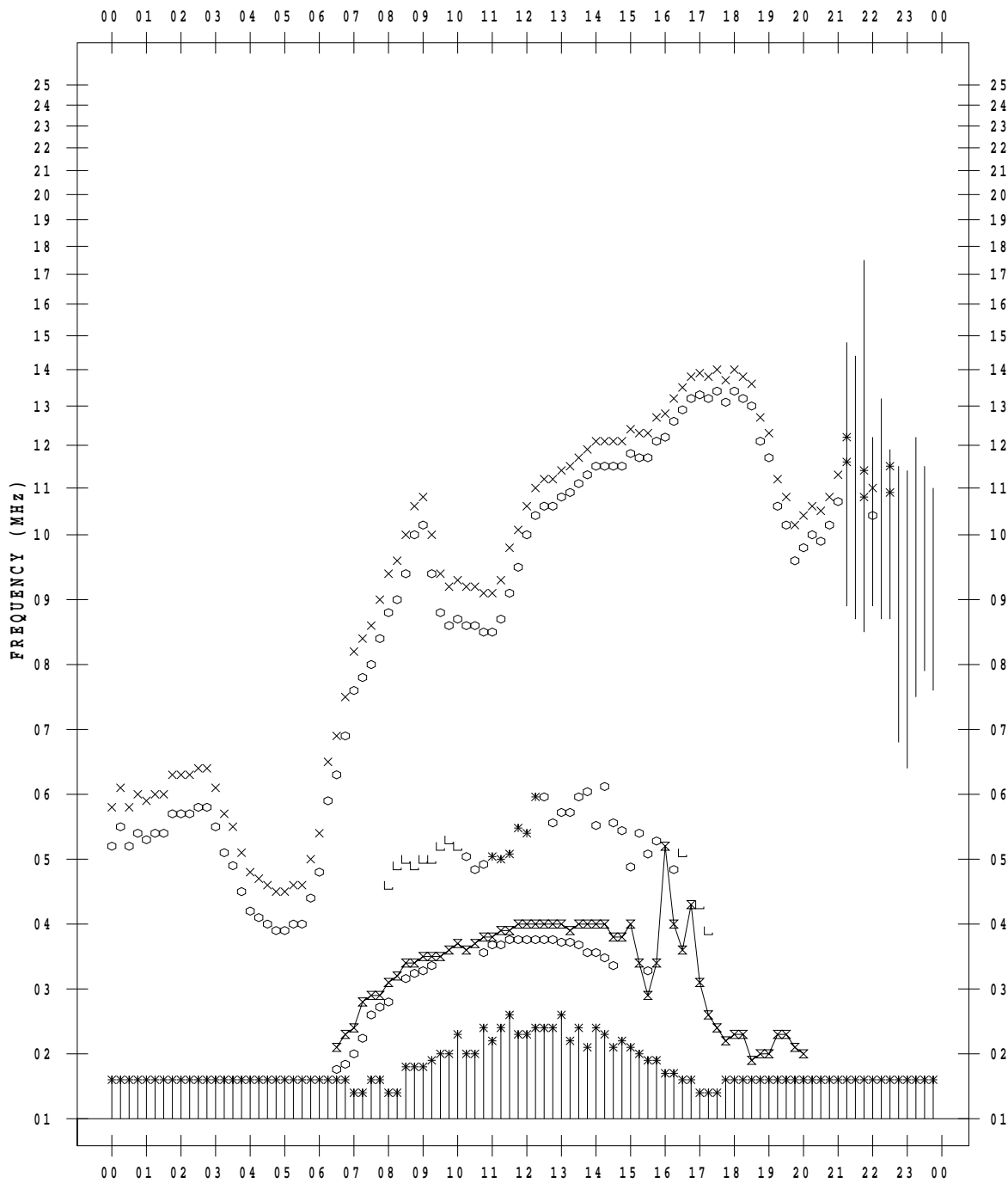
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 26

135 ° E MEAN TIME



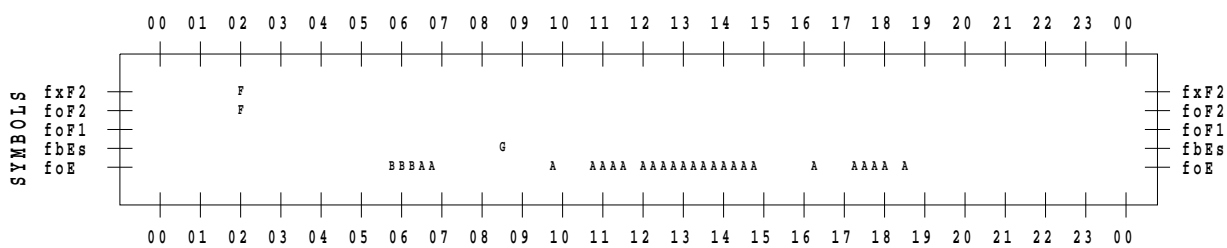
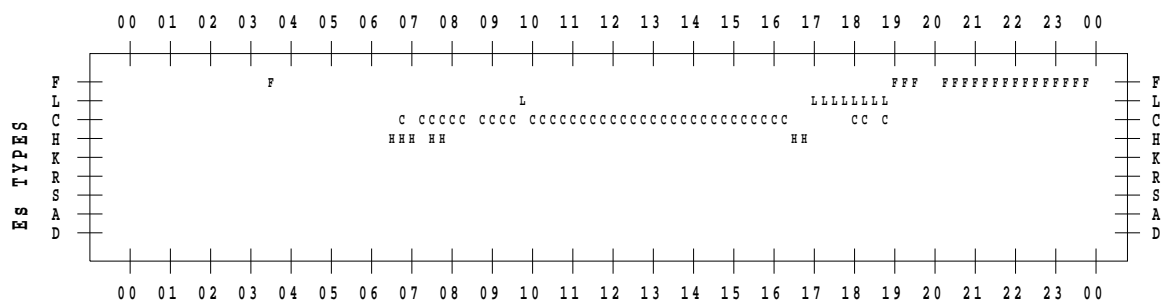
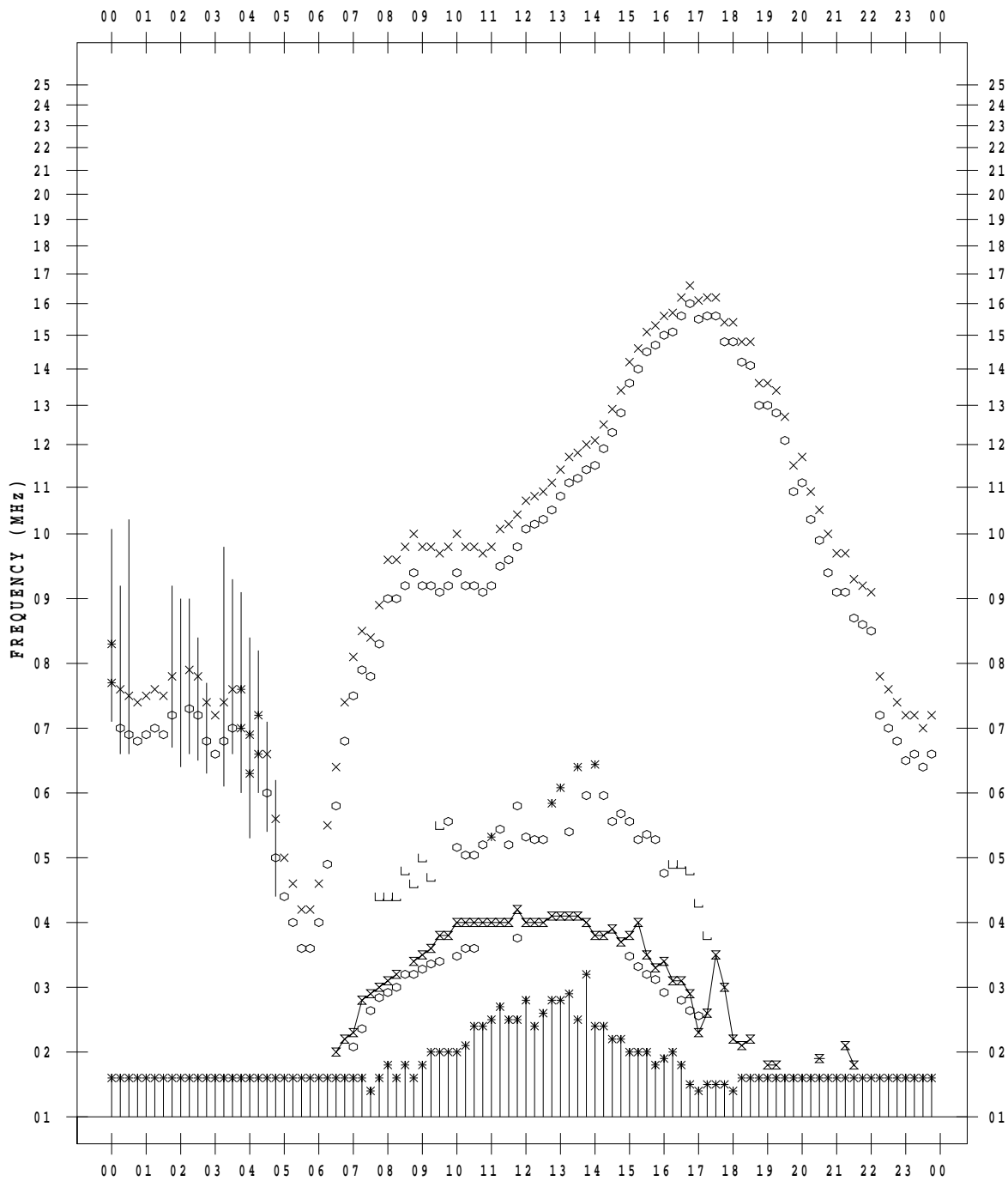
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 27

135 ° E MEAN TIME



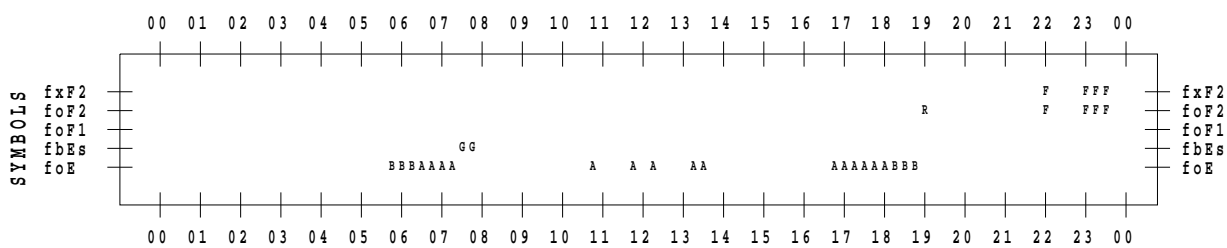
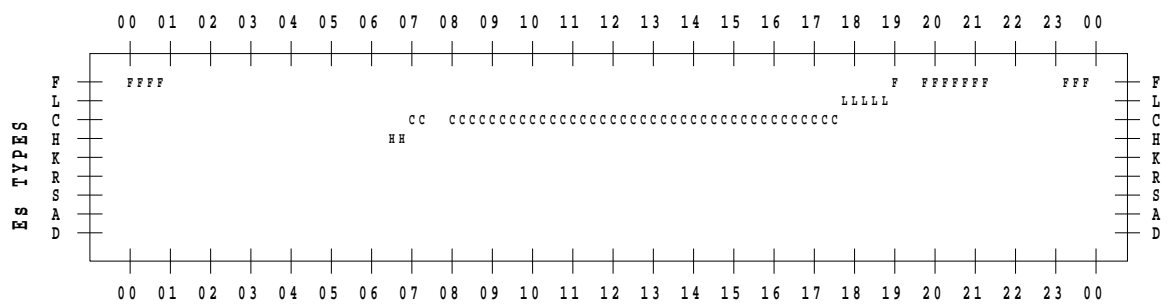
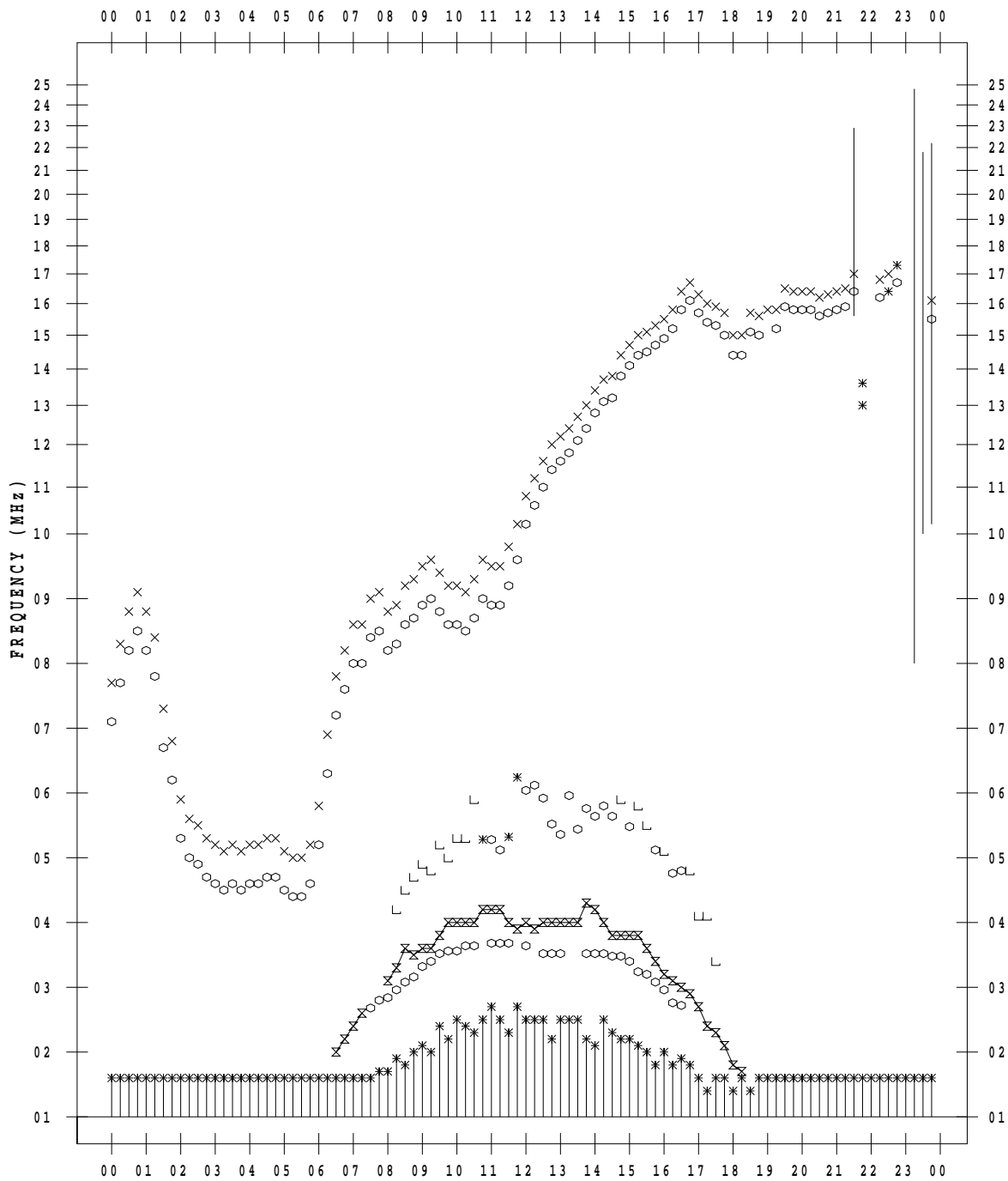
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 28

135 ° E MEAN TIME



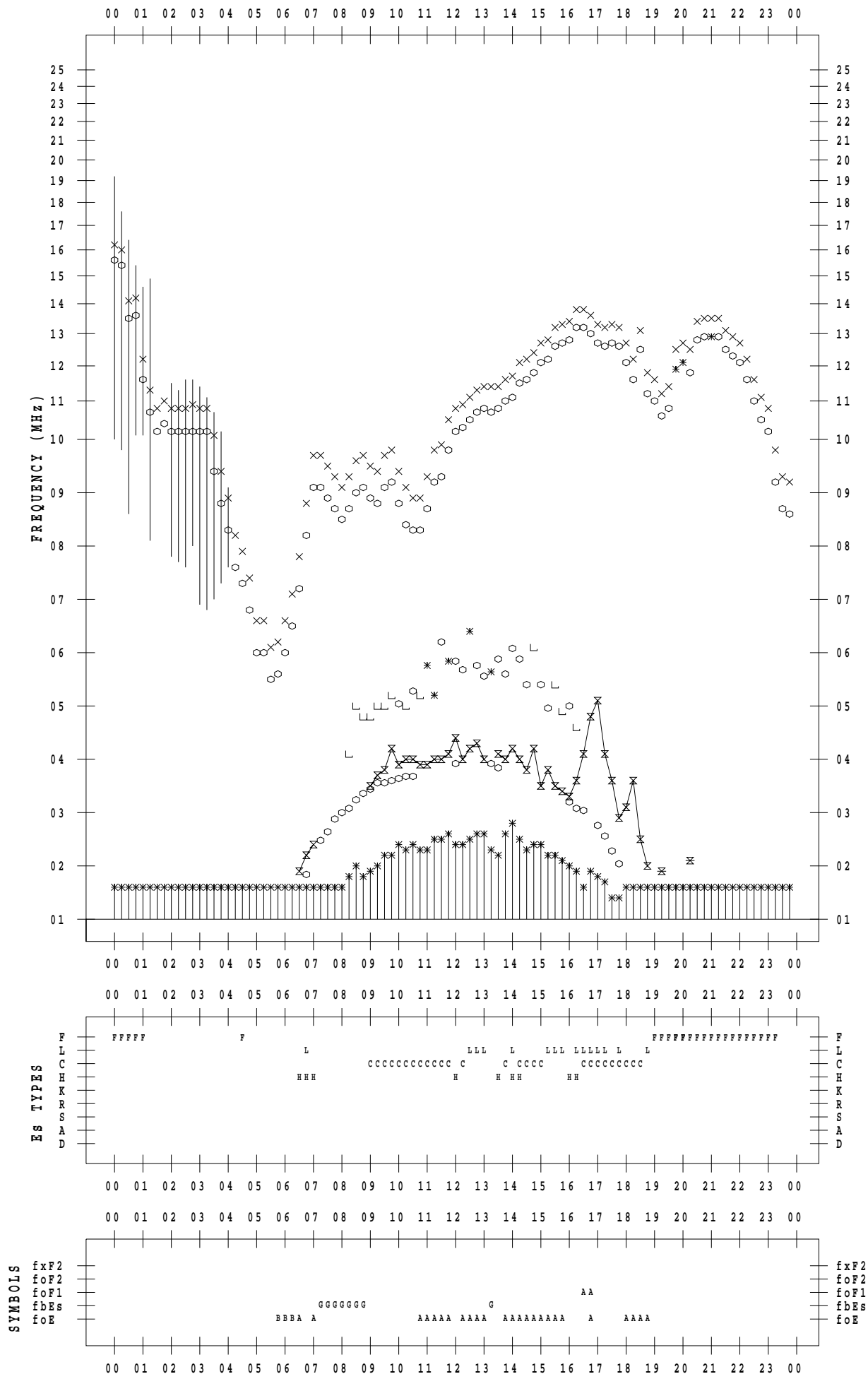
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 29

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2022 / 9 / 30

135 ° E MEAN TIME

