

IONOSPHERIC DATA IN JAPAN

FOR SEPTEMBER 2019
VOL. 71 NO.9

CONTENTS

Preface	
Introduction	1
A. Ionosphere	
A1. Automatic Scaling	
Hourly Values at Wakkanai ($foF2$, fEs and $fmin$)	4
Hourly Values at Kokubunji ($foF2$, fEs and $fmin$)	7
Hourly Values at Yamagawa ($foF2$, fEs and $fmin$)	10
Hourly Values at Okinawa ($foF2$, fEs and $fmin$)	13
Summary Plots at Wakkanai	16
Summary Plots at Kokubunji	24
Summary Plots at Yamagawa	32
Summary Plots at Okinawa	40
Monthly Medians $h'F$ and $h'Es$	48
Monthly Medians Plot of $foF2$	50
A2. Manual Scaling	
Hourly Values at Wakkanai	51
Hourly Values at Kokubunji	65
Hourly Values at Yamagawa	79
Hourly Values at Okinawa	93
f -plot at Wakkanai	108
f -plot at Kokubunji	138
f -plot at Yamagawa	168
f -plot at Okinawa	198

« Real Time Ionograms on the Webhttp://wdc.nict.go.jp/index_eng.html »



NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the

National Institute of Information and Communications Technology, Japan.

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

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

IONOSPHERE

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

A1. Automatic Scaling

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

The published data consist of tabulations of hourly values of three factors (f_oF2 , fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of f_oF2 .

a. Characteristics of Ionosphere

f_oF2	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 f_oF2).
- C Impossible measurement because of any failure in observation.
- G Impossible automatic scaling because of very small ionization density of the layer (for fEs).
- N Impossible automatic scaling because of complex echoes.
- Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

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

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

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

of values.

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

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

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of f_oF2 , 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 f_xE and f_oE calculated by the method described in the CCIR report 340. The lower part shows the diurnal variation of the virtual height where the echo traces become horizontal.

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

f_xI	Top frequency of spread F trace
f_oF2 f_oF1 f_oE f_oEs	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 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 (CND) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

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

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

HOURLY VALUES OF fof2 AT Wakkanai

SEP. 2019

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	A	40	35	29	28	A	39	A	A	A	40	A		A	35	31	42	44	42	51	41	50	30	30		
2	A	30	A	A	A	A	A	A	A	A		A	A	A	A	31	A	54	A	44	A	32	A	33		
3	34					A	A	A		A	A		A	A	A	A		56	A	A		A	34	31		
4	A	31	26	A	A	A	A	A	A	A	A		42		38	31	43	44	51	A	A	A	A	A		
5	A	A	A	32	A	36	A	A	A	84	A	A	A		46	47	39	47		A	A	A	A	37		
6	40	39	37	A	A	A	39	A	A	48	A	A	A	48	50	65	46		A	42	48	50	45	43	34	
7	25	30	29	29	30	32	44	49	48	49	49	49	48	51	50	44	47	50	47	51	44	43	42	40		
8	38	A	36	38	37	39	44	53	A	A	51	44	A	A	A		51	49	47	54	51	46	49	47	47	
9	A	44	42	46	44	A	42	37	46		A	A		49	50	50	48	47	45	48	33	A	49	45	40	36
10	32	34	32	A	A	A	22	A	42	41	41	43	A	A	A	A		89	42	36	A	A	38	38	34	
11	32	30	31	26	26	30	N	42	A	A	A	A	A	A	A	A	A		40	A	A	A	A	A	A	
12	36	36	34	A	34	38	48	40	42		A	A		51	51	46	46	43	45	42	42	41	48	A	34	
13	30	30		30	29	A	40	44	46	41	50	A		49	43	48	46	48	47	46	45		36	A	A	
14	34	38	36	36	34	40	43	50	47	A	A	A		48	49	42	47	46	48	47	47	47	49	45	36	
15	34	34	35	37	37	37	42	47	51	A	51	47	44	50	46	48	46	51	52	49	50	A	49	50		
16	48	47	42	48	50	47	47	46	55	57	54	48	52	57	53	52	48	51	37	40	42	42	36	34		
17	36	34	35	34	36	36	48	50	55	46	54	56	55	56	55	51	47	47	50	48	47	50	47	50		
18	44	40	42	37	34	36	41	52	54	52	54	57	54	55	57	54	52	50	45	44	A	43	42	34	42	
19	42	42	38	49	32	34	44	54	52	55	56	58	54	44	55	56	54	47	35	A	A		36	36	37	
20	34	40	32	31	A	A	34	48	54	51	55	54	51	44	54	52	49	34	48		A	44	35	40	40	
21	34	32	32	A	30	32	42	49	50	51	A	A		54	50	89	A	48	45	41	45	42	38	36	34	
22	34	A	A	34	31	30	50	46	46	50	54	60	56	58	60	54	50	48	40	40	A	43	41	42	A	
23	40	34	42	40	40	29	40	40	A	A	51	54	52	A	A		55	48	47	42	A	A	50	48	50	44
24	43	46	47	49	50	52	42	A	51	45	A	56	A	A		52	57	52	51	A	A		34	43	47	
25	44	43	A	44	A	29	37	29	A	53	52	51	51	51	51	48	50	51	46	38	45	44	A	40		
26	36	36	37	37	34	32	36	42	46	51	55	54	54	52	50	51	38	46	52	50	47	41	37	37		
27	38	36	36	36	38	38	43	29	47	51	55	58	56	51	47	47	44	46	47	36	30	32	34	34		
28	32	34	34	34	29	32	51	52	A	A	60	66	48	54	55	55	51	48	46	40	A	A	40	38		
29	A	42	42	44	34	34	47	54	52	58	62	58	65	63	60	54	52	51	46	40		A	36	37	39	
30	39	42	42	45	40	40	48	48	A	A	59	56	70	58	54	51	52	48	50	54	53	55	54	49		
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	24	26	24	23	22	21	25	22	19	17	19	20	22	20	24	26	27	29	25	20	20	24	23	26		
MED	36	36	36	37	34	36	42	48	48	51	54	54	52	51	50	51	48	47	46	45	44	42	40	37		
U Q	40	42	42	44	38	38	47	50	52	54	55	57	54	55	55	54	51	50	49	49	48	48	45	42		
L Q	34	34	33	32	30	32	39	42	46	47	51	48	48	49	46	47	45	45	41	40	42	36	36	34		

HOURLY VALUES OF fEs AT Wakkanai

SEP. 2019

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	58	50	35	38	39	25	28	69	38	41	40	47	G	90	G	G	37	32	34	G	G	24	25	25	
2	35	G	50	40	46	37	34	52	60	54	G	59	49	41	38	G	43	50	46	116	127	105	34	35	
3	G					36	32	40	38	108	116	45	G	58	45	41	40	48	84	69	36	38	34	32	
4	32	G	32	44	49	60	79	158	127	60	72	G	40		38	35	44	40	106	115	158	90	65	58	
5	46	45	28	28	71	29	36	45	49	78	79	115	105	G	G	G	32	34	41	111	69	50	41	38	
6	30	32	G	54	45	140	40	130	175	51	65	64	66	108	47	57	41	64	60	35	41	34	29	27	
7	59	23	G	G	G	G		33	116	39	46	47	47	45	G	36	G	34	33	34	33	G	28	29	
8	34	60	30	26	24	G	38	58	64	57	40	41	46	70	71	53	45	38	32	57	52	24	56	69	
9	G	G	G	G	G	50	50	37	45	39	58	38	G	39	37	41	46	43	50	136	33	G	G	G	
10	G	26	30	39	58	50	35	57	41	60	G	G	39	50	54	114	63	41	34	36	33	34	30	33	
11	33	G	G	24	28	26	29	38	145	93	69	75	124	116	92	93	61	56	84	107	113	60	59	48	
12	86	88	G	39	G	28	46	32	39	61	64	69	49	42	42	36	34	39	41	39	38	38	69	34	
13	27	G	G	25	32	73	33	38	38	39	48	47	113	G	44	39	35	G	35	11	58	34	109	48	
14	38	29	30	32	26	G	59	58	141	109	71	67	58	41	44	109	33	36	39	34	40	36	34	G	
15	G	G	G	G	G	28	29	113	37	59	G	39	44	40	36	40	37	29	33	G	G	72	55	33	
16	57	57	G	G	G	G	35	38	38	41	46	48	G	G	G	126	G	29	27	30	34	28	34	27	
17	29	G	G	G	G	G	29	35	85	47	42	40	G	45	G	70	35	37	37	29	G	G	G	G	
18	26	29	G	25	G	G	29	35	39	42	180	135	40	46	G	133	G	36	32	25	G	G	G	G	
19	G	G	G	G	25	G	33	146	40	40	54	40	46	44	G	38	34	33	34	84	43	35	G	27	
20	G	G	25	G	52	32	65	36	36	37	38	39	41	G	56	34	34	56	41	45	33	33	34	28	
21	27	28	28	33	25	G	28	32	35	53	60	64	149	56	59	66	59	40	40	29	G	G	G	31	
22	30	37	113	35	G	G	40	35	40	40	45	38	40	39	38	42	34	27	G	G	G	G	G	53	
23	G	G	34	36	29	G	28	36	134	65	56	55	46	58	39	48	41	34	40	84	40	40	56	114	
24	35	G	G	G	G	G	34	48	70	43	55	53	51	69	64	48	75	58	92	96	109	69	48	32	
25	45	34	48	35	57	24	28	37	44	54	46	45	G	G	G	38	30	38	82	35	34	39	49	31	
26	G	134	G	26	G	G	31	40	40	42	43	43	54	37	38	G	32	29	G	40	G	G	G	G	
27	G	G	G	G	G	G	105	38	34	37	G	46	45	54	G	39	34	32	26	G	29	27	32	G	
28	G	G	G	G	G	G	104	38	46	56	64	G	38	95	39	G	41	G	G	28	44	44	34	36	
29	41	26	28	32	29	28	29	35	60	41	42	43	42	41	40	49	38	34	G	36	43	26	30	26	
30	G	25	G	G	G	G	40	39	59	64	G	38	40	G	G	G	29	G	G	34	26	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	29	29	29	29	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	
MED	30	25	G	26	25	12	34	38	44	52	47	46	44	44	38	40	36	36	36	36	35	34	34	31	
U Q	41	35	30	35	42	32	40	57	70	60	64	59	51	58	45	57	43	41	46	84	44	40	49	36	
L Q	G	G	G	G	G	G	29	36	38	41	40	39	39	38	G	35	33	32	32	29	26	G	G	25	

HOURLY VALUES OF fmin AT Wakkanai

SEP. 2019

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	14	14	14	15	14	17	15	14	14	14	15	15	14	15	15	14	14	14	14	14	15	14	18	14
2	15	14	14	14	14	15	14	14	14	15	14	15	15	15	15	14	14	14	14	14	14	16	14	14
3	15					14	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14
4	14	14	14	14	14	14	14	14	15	14	18	15	17		17	17	15	14	14	14	14	14	14	14
5	14	14	22	14	14	14	14	14	14	15	18	20	15	21	28	28	14	14	14	14	14	14	15	14
6	14	14	21	14	14	14	14	14	15	15	14	15	17	18	15	14	14	14	14	14	14	14	14	15
7	15	14	15	14	14	14	14	14	15	14	15	16	15	14	14	15	14	14	14	14	14	15	14	14
8	14	14	14	14	14	14	14	15	14	14	14	15	15	14	14	14	14	14	14	14	14	14	14	15
9	14	14	26	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	14	15	14	14	14	14
10	14	15	14	14	14	14	14	14	14	14	15	16	22	14	15	14	14	14	14	14	14	14	15	14
11	14	15	14	14	15	15	14	14	14	14	14	15	14	14	14	14	14	14	14	21	14	14	14	14
12	14	14	14	14	14	14	15	15	14	14	14	14	14	15	14	14	14	14	14	14	14	14	15	14
13	14	15	118	15	14	14	14	14	14	14	15	16	14	17	14	14	14	14	14	14	14	14	15	14
14	14	15	14	14	14	14	14	14	14	14	15	15	14	14	15	14	14	14	14	14	14	14	14	14
15	14	15	14	14	14	16	14	14	14	14	14	15	21	18	14	14	14	14	14	14	14	14	15	14
16	14	14	14	14	14	14	14	14	14	14	14	15	15	14	14	14	14	14	14	14	14	15	14	14
17	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14	14	14	14	14	14	15	14	14	14
18	14	14	14	14	14	14	14	14	14	14	14	14	15	15	14	14	14	14	14	14	14	16	14	14
19	14	14	14	14	14	23	14	14	14	14	14	16	14	14	14	14	14	15	14	14	14	14	14	14
20	14	14	14	15	14	14	14	14	14	15	14	14	15	14	14	14	14	14	14	14	14	14	14	14
21	14	14	14	14	14	15	20	14	14	14	17	20	14	14	14	14	14	14	14	14	14	14	14	15
22	14	14	15	14	14	15	14	14	14	14	15	14	15	16	14	14	14	14	14	14	14	14	14	14
23	14	27	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14
24	14	14	14	15	14	14	14	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	15	14
25	14	14	14	15	14	15	14	14	14	14	14	14	15	16	16	14	14	14	14	14	14	14	14	15
26	14	14	15	15	14	14	14	14	14	14	14	14	15	17	14	14	14	14	14	15	15	14	14	14
27	14	14	15	14	14	14	15	14	14	14	14	14	14	14	14	14	14	14	15	14	14	15	14	14
28	14	14	14	17	14	14	14	14	14	14	14	14	14	14	14	14	14	16	14	14	14	14	14	14
29	14	14	14	14	14	14	14	14	14	14	17	17	15	15	14	14	14	14	14	14	23	15	14	14
30	15	14	15	14	14	14	14	14	14	14	15	14	15	14	15	14	14	15	14	14	15	14	15	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	30	29	29	29	29	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30
MED	14	14	14	14	14	14	14	14	14	14	14	15	15	14	14	14	14	14	14	14	14	14	14	14
U Q	14	14	15	14	14	15	14	14	14	14	15	15	15	15	15	14	14	14	14	14	14	14	15	14
L Q	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

HOURLY VALUES OF fof2 AT Kokubunji

SEP. 2019

LAT. 35°43.0'N LON. 139°29.0'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	31		30	A	28	A		A	A	A	A	57	55	55			52	51	56	55	53	28	A	28	
2	28		28	26	N	27	30	A	A	A	A	A			48		A	42	44	A	A	A	A	A	
3	34	A	32	32	A	A	34	A	A	A	A	A			A	A	A	A	A		36	30	30	A	A
4	A	A	A	26	A	A	A	A		A	A		A	A	A	A		44	44	44	45	39	38	36	34
5	32	34	31	31	28	28	43	44	A	A	A					49	59	50	46	A	41	A	37	36	
6	34	32	32	34	30	32	36	42	48	52	51	48	48	A	A		46	51	A	A	51	A	A	A	
7	35	32	48	31	27	28	41	48	57	47	57		38	52	46	48	51	40	54	44	42	32	34	27	
8	36	34	34	31	30	28	41	45	49	46		A	A	A	58	N	51	A	A	52	44	39	40	39	
9	37	35	34	34	36	37	49	48		54	59	59	58	62	54	46	49	50	49	54	49	39	36	38	
10	38	37	34	31	28		41	48	A	A	A		59	54	56	49	50	45	42	45	49	45	41	38	36
11	34	A	27	N	N		39	42	A		A	A	A		52	47	48	A		A	A	A	32	32	
12	34	31	34	30	36	39	46	44	48	44	C	C	C	C	C	C	C		A		A	A	40	32	
13	A	28	27	N		26	36	44	47	54	A		A		51	52	51	45	47	54	46	36	37	A	
14	36	34	35	27	30	28	45	42	47	52	49		52	52		A	A		46	52	52	49	47	41	34
15	31	27	30	30	32	31	40	49	52		49				47	47	50	58	47	A	43	42	42	39	
16	36	A	32	34	32	32	44	53	A	61	47	A		54	58	59	55	48	45	45	A	38	35	37	36
17	32	34	34	34	34	32	44	48	48	61	59	56	56	59	C	A		A	A		51	48	A	A	A
18	37	34	34	32	30	31	46	51	A	A		58	64	67	64	59	58	55	48	A	49	44	42	41	38
19	38	42	32	38	35	34	42	54	111	64	65	59	72	72	58	55	57	53	48	32	36	35	34	32	
20	30	28	28	26	26	28	42	47	52	58	48	A	A	A		48		54	54	53	45	38	39	34	34
21	34	34	30	28	28	28	47	42	41	48	51	56	56	57	52	51	56	56	48	36	34	36	31	32	
22	32	A	26	26		25	42	47	49	54	A		54	61	59	69	53	55	50	42	39	A	36	36	34
23	30	31	27	27	25	N	N	44	A	A		61	58	57	56	51	53	51	A	52		A	34	34	34
24	34	34	34	34	32	34	42	44	47	60	49	54	52	56	58	55	55	61	55	57	43	36	37	34	
25	37	36	37	44	42	34	42	51	47	56	54	A		54	51	49	56	57	57	51	42	46	42	36	34
26	34	34	32	58	25	32	38	47	47	49	56	55	58	54	51	51	52	51	58	63	A	N		27	
27	28	28	26	27	26	27	44	53	47	55	51	62	56	47	51	49	49	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C		86	59	71	67	68	58	56	58	58	51	51	53	54	50	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	25	20	26	24	21	21	24	23	16	19	17	15	18	18	20	18	23	22	20	20	20	20	21	22	
MED	34	34	32	31	30	31	42	47	48	54	54	57	56	56	52	51	51	50	50	48	44	37	37	34	
U Q	36	34	34	34	33	33	44	49	50	60	59	59	58	59	58	55	55	54	53	52	48	41	40	36	
L Q	31	31	28	27	27	28	39	44	47	49	49	54	54	52	49	49	48	45	45	43	38	35	34	32	

HOURLY VALUES OF fEs AT Kokubunji

SEP. 2019

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	G	G	G	53	32	70		40	35	45	46	G	G	G		G	G	G		G		G	G	G		
2	G		G	G	G	25	31	35	49	45	46	45			G		46	37	31	90	59	29	133	52		
3	30	57	29	31	70	31	31	50	43	41	40	40	G	G	39	81	152	122	75	79	G	86	38	45		
4	93	49	32	24	40	43	52	60		38	40	G	45	46	41	40	34	30	36	34	33	34	40	33		
5	25	G	G	G	G	G	29	54	51	55	49	G	G		G	G	G		31	36	41	31	65	G	28	
6	29	G	G	G	G	24	28	G	42	43	44	49	G		62	55	G		38	57	82	47	56	32	36	
7	G	G	G	G	G	G	28	33	G	40		G	G	G		40	42	31	31	29	26	29	29	23		
8	G	G	27	G	G	G	G	G	37	48	54	54	116	43	39	115	108	95	57	57	G	38	33	29		
9	28	G	25	G	G	G	31	39		42	47	G	40	40	G	G	G	G	G	G	G	G	G	G		
10	G	G	32	G	G	38	40	38	39	44	55	G	52	G	G	G	41	G	30	29	25	G	35	24		
11	31	27	25	G	G		29	35	48	50	73	72	49		G	G	45	72		62	69	38	G	G		
12	G	G	G	G	G	24	29	39	36	39	C	C	C	C	C	C	C		33	70	79	57	59	70	35	
13	35	33	G	G	G	G	35	55	55	40	42	40	41	G	G	G	G		32	G	39	46	G	34	41	
14	28	G	G	G	G	G	29	33	35	G	40		G	G		36	72	40	37	31	G	24	G	G		
15	G	G	G	G	G	26	28	33	G		N	G		G	G	G	37	37	40	49	31	34	32	G		
16	G	40	29	31	G	G	29	37	114	46	45	40	42	42	38	G	G		33	32	45	G	26	31	26	
17	G	G	G	G	G	G	26	34	37	42	53	40	N	G	C	65		70	57	G	31	48	57	54		
18	27	G	G	G	G	G	32	56	70	60	G	40	G	41	41	43	44	G	70	81	40	30	31	33		
19	30	G	G	G	G	G	28	41	84	52	G	41	41	39	G	G	G		31	38	G	G	G	G		
20	G	G	G	G	G	G	29	43	43	42	42	45	43	56	39		G	G		28		29	28	36	29	
21	31	31	24	G	G	G	G	148	G	37	45	G	G	43	41	G	36	29	33	28	G	32	G	G		
22	G	33	G	G	G	G	45	41		63	40	40	G	78		34	27	28	11	40	G	G	G	G		
23	G	G	G	G	G	G	32	45	48	65	44		41	42	50	45	51	94	49		57	32	26	29		
24	G	28	23	G	G	G	29	39	G	46	41	47	G	G	G	G	G	G	G		27	36	G	28	G	
25	G	G	G	G	G	G	G	45	G	G	40	41	39	G	G	40	36	30	11	29	G	31	G	G		
26	24	G	G	G	G	G	29	94	42	G	39	40	G	G	G	45	36	32	33	11	60	G		G		
27	G	G	G	G	G	G	G	33	38	40	39	49	45	41		G	G	G	C	C	C	C	C	C	C	
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C		90	41	39	G	G	G	G		29	G	G	G		39	38	50
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	27	26	27	27	25	26	26	27	25	27	26	26	24	24	24	25	26	27	26	26	27	27	26	27		
MED	G	G	G	G	G	G	29	39	39	42	43	40	40	G	G	G	35	31	33	30	31	30	32	26		
U Q	29	28	25	G	G	24	31	50	48	48	47	45	42	42	40	41	44	38	49	57	46	38	36	35		
L Q	G	G	G	G	G	G	28	34	18	39	40	G	G	G	G	G	G	27	28	11	G	G	G	G		

HOURLY VALUES OF fmin AT Kokubunji

SEP. 2019

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	14	18	13	13	14	13		22	14	20	30	22	42	25		21	14	13	14	14	14	22	14	14	
2	13		13	13	14	14	13	13	14	21	17	24			18		13	13	13	14	13	13	13	14	
3	13	14	13	13	13	13	14	13	13	15	20	25	24	24	20	17	14	13	14	13	18	14	13	14	
4	13	14	13	14	13	14	13	14		21	25	28	24	26	18	21	15	14	13	14	13	13	13	14	
5	13	13	13	14	13	14	13	13	17	18	21	22	20		22	20	34	15	13	14	13	14	14	14	
6	13	13	13	13	14	13	15	14	15	18	29	23	44	25	31	20	14	14	14	14	14	14	14	14	
7	14	13	14	14	13	15	14	14	17	18	20	22	42	39	21	17	15	13	13	14	14	14	14	17	
8	13	18	13	15	13	14	14	13	17	20	29	28	24	29	20	17	13	13	13	13	14	14	14	14	
9	14	14	14	15	13	17	13	14		18	21	21	25	20	17	17	14	21	14	15	14	20	17	14	
10	14	13	13	13	13	13	14	13	20	21	17	21	21	20	23	15	17	15	13	13	14	21	14	14	
11	14	13	13	14	17		13	13	15	14	23	20	17		15	17	14	23		15	13	13	13	17	
12	13	14	13	14	15	15	14	14	14	18	C	C	C	C	C	C	C		14	14	13	14	13	14	14
13	13	13	14	14		14	14	14	17	18	21	42	34	42	22	15	15	15	14	14	14	15	14	14	
14	17	14	14	14	17	13	15	15	18	17	23		20	43		17	14	14	18	14	14	14	18	18	
15	15	21	23	14	14	14	14	14	13		14	15		48	18	18	13	13	14	14	13	14	14	17	
16	14	14	13	14	14	13	14	14	14	13	13	15	23	15	18	17	13	13	13	13	20	14	14	13	
17	15	17	17	14	14	14	17	14	18	22	26	18	18	21	C	14		13	14	15	14	13	14	14	
18	14	15	14	14	14	14	13	14	17	20	21	18	21	20	18	18	14	13	14	13	13	14	13	14	
19	13	14	17	14	14	14	14	13	14	17	20	25	20	22	13	17	14	13	13	18	18	15	17	18	
20	14	14	14	14	14	14	17	13	13	20	20	14	22	13	14		17	21	15	22	14	14	14	14	
21	14	14	14	13	15	13	20	17	15	15	31	35	43	22	24	13	14	13	13	13	14	14	20	21	
22	14	14	14	13		14	20	14	14	18	15	18	22	43	14	15	17	14	14	14	13	15	14	14	
23	14	13	13	15	13	14	14	14	15	14	20	17	22	31	30	26	14	13	13		14	13	13	13	
24	13	14	13	15	14	13	13	13	18	20	22	18	33	42	22	14	17	21	18	13	13	18	14	14	
25	15	14	14	14	14	17	14	14	13	17	41	33	39	40	37	18	18	13	14	13	13	14	14	14	
26	14	14	17	15	14	13	14	15	14	20	18	22	41	39	17	17	13	14	14	18	14	21		14	
27	20	14	14	15	15	14	20	14	14	14	14	17	15	15	14	14	15	C	C	C	C	C	C	C	
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C		17	18	21	18	40	40	29	23	13	13	17	20	14	13	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	27	26	27	27	25	26	26	27	25	27	27	26	25	24	24	25	26	27	26	26	27	27	26	27	
MED	14	14	14	14	14	14	14	14	15	18	21	22	23	26	19	17	14	13	14	14	14	14	14	14	
U Q	14	14	14	14	14	14	15	14	17	20	25	25	36	40	22	19	17	15	14	15	14	15	14	14	
L Q	13	13	13	13	13	13	13	13	14	17	18	18	20	20	17	15	14	13	13	13	13	13	14	13	14

HOURLY VALUES OF fof2 AT Yamagawa

SEP. 2019

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	39	38	36	34	28	A	A	35	43	A	49	A	54	50	A	A	55	39	59	54	58	32	34	28
2	A	26	A	B	B	N	26	39	53	54	A	A	A	68	57	47	44	46	47	44	32	A	A	A
3	29	A	A	A	A	A	A	A	58	A	A	A	51	50	50	A	58	58	51	A	A	A	30	A
4	A	A	A	A	B	A	A	A	A	A	A	A	A	51	A	54	54	A	49	A	A	A	69	34
5	32	31	31	59	26	28	32	54	48	50	A	51	A	A	50	54	64	63	A	44	42	A	37	37
6	32	31	31	26	N	26	32	42	54	48	A	53	60	48	52	48	48	54	70	A	A	A	A	A
7	30	31	32	29	N	A	26	33	54	52	44	52	48	45	A	52	A	54	55	41	41	32	32	32
8	34	A	28	49	N	N	31	42	51	50	51	A	A	64	55	79	A	A	A	54	50	42	42	42
9	39	34	32	32	30	25	37	30	A	56	74	56	58	72	63	53	53	54	51	51	46	38	A	38
10	A	36	32	31	29	28	34	47	A	51	61	49	60	58	51	A	42	48	51	53	48	42	42	39
11	34	32	69	N	A	N	28	47	A	50	47	44	52	A	51	A	A	48	40	53	A	A	A	A
12	29	32	34	28	26	26	34	A	50	54	54	58	54	57	51	46	47	49	46	A	40	A	A	31
13	34	31	28	N	N	N	34	48	A	A	50	47	40	54	56	51	50	50	55	51	34	A	A	34
14	32	32	31	28	28	26	34	45	54	48	51	52	57	54	55	51	51	51	51	54	47	44	35	32
15	30	26	29	29	28	28	59	50	48	48	51	42	A	52	54	50	51	A	50	A	A	A	A	34
16	34	34	34	32	32	31	34	54	50	51	52	54	58	68	85	65	56	48	47	41	38	34	34	A
17	A	A	30	29	26	26	34	54	50	49	45	55	50	58	54	58	58	86	A	A	44	41	A	A
18	34	31	32	A	26	B	32	48	A	A	A	65	63	66	66	58	54	139	A	A	A	A	34	A
19	37	38	38	36	34	34	35	54	53	63	55	61	66	75	66	57	58	A	55	44	37	37	34	25
20	30	34	32	32	30	28	34	42	54	43	52	54	51	50	48	50	51	54	55	54	50	41	A	A
21	A	A	A	28	B	59	32	24	51	48	50	53	57	58	54	58	66	63	55	37	A	32	32	32
22	32	32	26	28	29	26	32	40	52	52	56	57	64	65	113	50	54	58	50	48	37	A	A	A
23	31	32	30	30	29	26	32	37	50	34	51	57	66	54	52	56	54	54	39	58	A	A	A	26
24	A	A	29	30	29	28	34	43	47	51	56	58	A	57	63	54	53	66	65	54	48	34	37	36
25	34	36	36	39	35	39	37	53	54	51	51	47	53	56	58	60	60	60	55	54	47	34	34	34
26	34	31	30	28	29	26	45	49	56	51	56	59	58	58	54	58	58	68	72	36	A	B	N	
27	26	28	A	29	26	N	30	54	54	58	59	52	61	64	54	51	45	50	54	54	31	B	28	19
28	28	29	30	29	B	28	52	50	56	61	85	89	65	55	61	77	72	65	48	26	28	49	32	
29	28	25	31	31	N	N	30	49	54	62	65	67	77	82	82	33	65	59	52	40	34	A	34	30
30	34	34	31	31	B	28	31	N	54	53	56	64	72	76	61	54	65	60	54	53	47	50	45	42
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	24	24	25	23	19	18	26	26	24	25	24	25	24	28	27	26	27	26	26	23	22	15	18	20
MED	32	32	31	30	29	28	32	46	52	51	52	54	58	58	55	54	54	54	53	53	42	37	34	33
U Q	34	34	33	32	30	28	34	52	54	55	56	58	63	65	63	58	58	60	55	54	47	42	42	36
L Q	30	31	30	28	26	26	31	40	50	48	50	51	52	53	52	50	51	50	50	44	36	32	34	30

HOURLY VALUES OF fEs AT Yamagawa

SEP. 2019

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	39	26	G	G	49	36	39	31	38	42	53	44	44	45	44	51	40	32	31	G	25	G	24	G	
2	29	26	26	B	B	G	G	34	37	56	81	93	87	46	164	42	40	46	30	32	36	30	60	40	
3	35	40	45	40	94	36	44	56	56	53	48	45	41	44	46	66	48	47	30	39	59	55	47	39	
4	43	44	39	30	B	115	60	54	135	58	86	92	50	53	70	56	48	69	60	58	59	44	26	28	
5	26	27	G	G	G	G	43	51	57	42	112	49	48	45	41	39	42	115	104	44	70	56	29	29	
6	G	G	G	G	G	G	G	33	42	44	49	44	G	41	46	44	132	33	44	60	111	44	57	39	
7	29	28	G	G	G	26	28	38	50	52	44	G	46	47	43	51	76	39	48	25	G	G	27	G	
8	G	29	G	24	G	G	26	37	38	43	126	58	76	57	75	70	155	107	126	116	60	56	45	44	
9	G	28	30	28	G	27	G	36	48	45	49	49	46	67	44	44	36	G	30	27	G	G	58	34	
10	40	28	G	G	G	36	36	54	59	42	54	45	42	G	144	54	40	36	51	40	28	24	44	26	
11	28	G	28	G	28	G	23	33	127	45	44	48	46	92	60	111	72	92	29	G	82	46	60	72	
12	G	G	G	G	G	G	32	71	35	40	48	52	43	48	G	44	G	36	42	61	33	110	47	110	
13	35	29	G	G	G	G	G	32	70	82	47	48	48	47	44	45	36	48	36	42	53	107	36	46	
14	G	G	G	G	G	G	G	35	45	42	44	58	41	40	46	G	38	35	49	33	G	G	G	G	
15	G	G	G	G	G	G	G	31	38	38	47	46	47	G	39	46	110	61	53	48	69	40	41	33	
16	32	30	24	G	G	G	G	40	36	57	45	42	71	45	108	52	G	G	28	G	G	29	25	49	
17	54	41	30	G	G	G	G	34	40	45	50	42	G	46	39	42	52	108	73	150	G	59	94	39	
18	34	29	29	34	G	B	26	36	60	83	92	53	44	48	52	47	52	111	57	170	59	56	41	41	
19	G	24	30	31	105	26	28	31	44	48	46	45	48	52	48	54	52	56	43	28	G	G	G	G	
20	G	G	G	25	27	69	28	30	146	38	40	48	48	48	G	42	39	35	33	G	25	G	38	36	
21	45	G	34	G	B	G	G	30	34	46	47	47	43	44	48	40	38	32	34	36	39	G	G	G	
22	G	G	G	G	G	G	G	34	44	46	54	50	44	47	45	44	38	36	G	24	25	41	40	54	
23	G	G	30	27	G	G	G	36	40	42	40	48	46	45	50	45	38	59	45	44	61	54	44	29	
24	49	45	G	G	G	G	G	28	43	44	45	45	76	45	43	42	38	34	G	G	11	G	G	34	
25	G	G	G	G	G	G	G	32	33	G	44	47	46	G	44	G	G	34	24	G	23	28	29	G	
26	26	25	G	G	G	G	G	32	G	41	38	49	48	46	43	G	40	38	26	11	40	32	B	G	
27	G	G	28	G	G	G	G	G	39	G	48	108	49	46	43	G	166	32	29	27	30	B	G	G	
28	G	G	G	G	G	B	G	33	38	40	43	54	48	44	G	39	34	G	G	41	G	G	G	G	
29	G	25	G	G	23	G	G	32	38	42	49	59	45	43	40	46	36	G	34	G	32	47	45	27	
30	G	29	G	G	B	G	G	33	38	40	44	G	46	41	52	G	G	G	G	G	G	G	G	56	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	29	30	29	26	28	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	30	
MED	14	26	G	G	G	G	G	34	41	44	48	48	46	46	44	44	40	36	34	32	31	32	38	34	
U Q	35	29	29	24	G	26	28	37	56	48	53	53	48	48	52	51	52	59	49	44	59	54	46	41	
L Q	G	G	G	G	G	G	G	32	38	41	44	45	44	44	43	40	36	32	29	G	G	G	12	G	

HOURLY VALUES OF fmin AT Yamagawa

SEP. 2019

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

HOURLY VALUES OF fof2 AT Okinawa

SEP. 2019

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	32	A	39	34	B	N	29	A	39	46	45	A	52	A	A	48	56	58	57	64	47	A	B	26
2	B		25	49	N	A	A	46	60	54	47	A	66	80	69	A	A	A	49	52	38	A	A	B
3	N	B	A	A	A	A	A	50	40	A	A	41	135	87	71	72	75	77	45	A	A	A	A	A
4	A	A	A	A	A	A	A	40	A	A	97	A	A	A	A	A	78	68	60	A	A	A	A	A
5	40	32	35	B	N	B	28	49	43	47	A	A	A	55	55	86	71	71	52	43	38	38	34	34
6	32	34	N	N	A	N	28	50	54	44	A	54	58	61	57	57	59	63	70	32	A	A	A	A
7	26	A	29	29	B	B	B	47	42	A	A	50	66	60	48	54	64	58	32	A	A	A	B	34
8	34	32	N	B	B	B	26	47	54	45	48	A	A	66	66	A	44	59	48	48	45	41	40	38
9	A	31	34	A	A	29	28	64	A	A	67	44	62	78	81	71	58	57	56	54	42	32	34	A
10	34	34	A	A	N	26	49	A	42	A	57	68	70	59	A	50	48	55	34	A	43	A	32	39
11	37	34	A	N	N	A	A	48	54	A	50	51	59	71	66	74	77	68	51	52	52	34	34	A
12	30	A	29	28	25	N	29	45	58	57	51	51	48	62	58	56	50	52	A	A	A	A	A	A
13	A	A	A	B	N	B	30	47	47	50	A	54	52	65	72	57	52	56	52	52	A	A	A	28
14	30	30	30	28	B	B	29	46	49	52	48	56	78	97	101	97	86	70	54	54	74	49	32	30
15	32	34	34	26	N	N	29	50	51	52	50	A	52	58	58	57	A	52	52	34	A	A	32	A
16	30	A	30	31	28	22	32	54	54	55	50	58	71	80	90	86	84	A	50	43	25	34	59	30
17	A	A	A	A	A	A	30	49	45	53	51	50	56	60	64	109	168	81	54	52	51	36	A	A
18	A	A	29	22	A	A	26	48	48	54	64	70	76	76	77	63	58	A	53	54	42	A	A	A
19	31	34	36		29	30	32	51	56	58	56	A	A	102	102	90	78	71	56	54	36	34	26	26
20	28	29	28	28	N	26	59	45	54	58	52	49	52	57	48	57	50	60	63	64	58	34	28	26
21	26	A	26	A	A	A	26	26	53	50	48	50	58	60	65	67	80	84	64	32	A	A	A	30
22	30	30	26	25	N	N	28	43	51	54	A	A	74	75	60	64	66	73	76	64	A	A	28	A
23	A	29	28	28	N	N	28	30	48	51	51	57	65	65	61	66	66	66	75	67	A	A	A	A
24	25	A	69	28	N	N	28	41	47	51	55	66	70	65	60	57	70	75	71	51	66	34	30	32
25	30	A	29	30	49	28	28	53	53	51	51	51	54	56	62	66	65	67	66	60	46	28	29	A
26	30	30	29	29		26	28	45	53	56	56	61	65	62	64	67	76	71	80	73	31	A	A	
27	N	N	B	N	B	N	N	50	54	54	69	64	83	96	91	88	71	58	64	54	44	B	B	N
28	N	N	28	30	N	B	N	54	54	52	56	82	90	70	60	71	87	79	67	73	A	N	B	26
29	A	A	31	26	B	B	N	45	58	66	68	67	78	96	106	88	66	60	54	44	A	A	32	31
30	A	A	30	30	B	B	28	52	64	55	58	80	87	95	69	55	64	64	51	52	51	38	36	34
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	13	21	17	4	7	22	28	28	24	24	22	26	28	27	27	28	27	29	25	18	12	15	15
MED	30	32	29	28	28	26	28	48	53	52	52	55	66	66	65	66	66	66	54	52	44	34	32	30
U Q	32	34	34	30	39	29	30	50	54	55	57	66	76	80	77	86	77	71	65	62	51	38	34	34
L Q	30	30	28	27	26	26	28	45	47	50	50	50	56	60	60	57	58	58	51	46	38	34	29	26

HOURLY VALUES OF fEs AT Okinawa

SEP. 2019

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	39	44	25	G	B	G	G				G												B	24		
2	B	G	G	G	G		58	108	29	35	41	90	70	60	67	66	76	115	57	44	28	39	57	44	B	
3	G	B		36	67	33	28	28	45	46	51	52		106	116	54	G		46	55	39	40	32	43	38	43
4	35	36	36	32	27	46	50	83	114	152	77	96	80	84	108	93	89	77	50	78	43	45	44	45		
5	35	G		33	B	G	B							G					G	G		G	G		35	
6	40	23		G	G		G								G											
7	29	27	35	27	B	B	B																	B	G	
8	G	G	G	B	B	B		25	37	40	41	46	54	62	47	55	113	55	40	29		G	G	33	58	
9	55	32	34	39	35	41	28	38	61	73	50	45	48		G	G		37	35	59	34	35		G	46	
10	38	39	54	34	G	G	G									G								G	G	
11	23	G	44	G	G	34	44	34	46	110	44	45	56	57	64	57	38	G		29	25	40	57	36	60	
12	39	44		G	G	G	G						G				G									
13	47	49	53	B	G	B	G																			
14	G	25	G	G		B	G																	G	25	
15	G	G	G	G	G	G	G																			
16	25	36	32	138	G		G																	G	G	
17	45	91	41	36	36	33	24	34	163	46	51	45	41	40	45	108	144	60	54	30	28	38	48	94		
18	45	48	24	36	70	26	26	34	51	49	61	66	60	62	59	46	54	66	92	92	56	60	48	56		
19	25	34	24		G	G	G																			
20	G	G	G	G	G	G	G																	G	25	
21	G						G	G																G	G	
22	G	34	26	30	34	25	G																			
23																										
24	39	27	G	G	G	G	G																			
25	24	28	G	G	G	G	G																	G	27	
26	G	28	G	G	G	G	G																	G	32	
27	24	G	24	G	G	G	G																	G	G	
28	G	G	B	G	B	G	G																	B	B	
29	G	G	G		G	B	G																	G	B	
30	29	34	24	30	B	B	G																	G	G	
31	34	38	28	G	B	B	G																	G	G	
00																										
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	26	23	22	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	26	29		
MED	25	28	24	G	G	G	G	34	40	46	48	47	50	52	48	46	44	41	38	34	36	36	28	32		
U Q	39	37	34	34	27	33	25	45	52	60	60	54	60	59	55	59	54	57	52	46	43	57	44	45		
L Q	G	G	G	G	G	G	G	31	37	41	45	45	47	46	45	42	38	38	29	27	29	17	G	G		

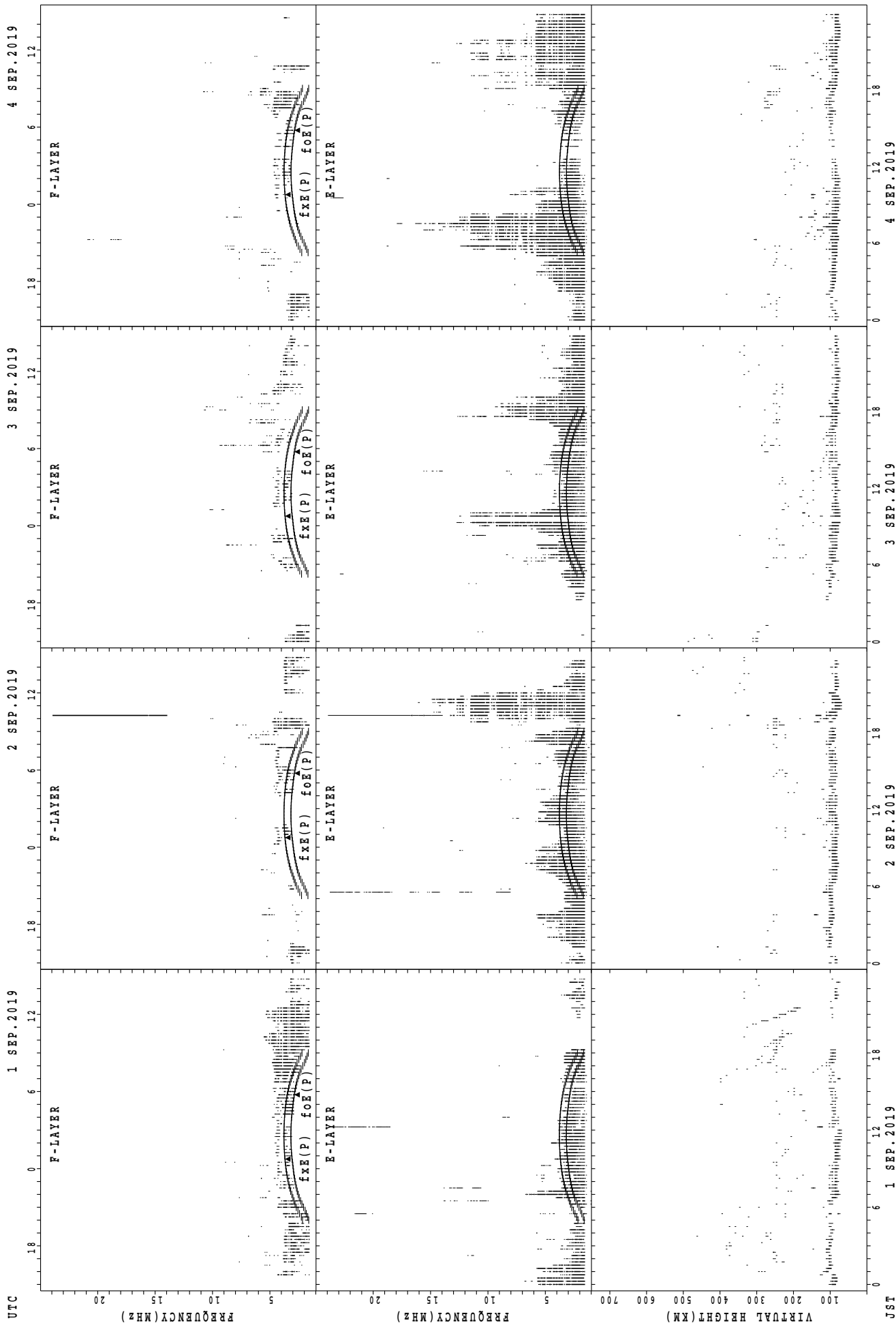
HOURLY VALUES OF fmin AT Okinawa

SEP. 2019

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

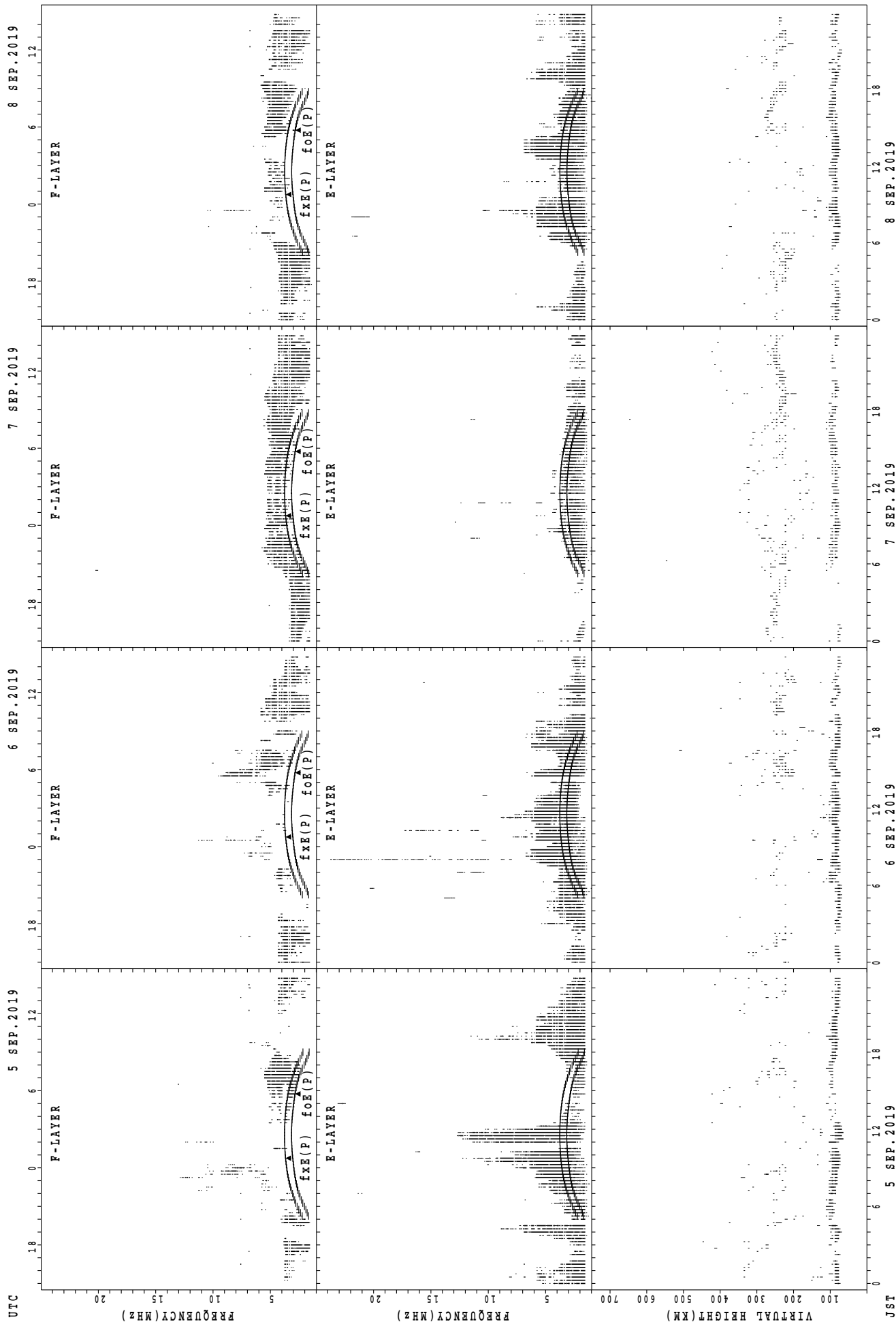
$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	B	14	15	14	14	14	15	21	14	14	15	15	16	14	14	14	14	15	B	14
2	B	17	15	15	14	17	80	15	14	15	17	15	29	22	18	17	14	14	14	14	15	14	14	B
3	16	B	14	14	14	15	14	14	14	14	14	18	17	20	18	18	14	14	14	14	14	14	14	14
4	14	14	14	14	14	14	14	14	14	15	14	18	18	18	18	17	14	15	14	14	14	14	14	14
5	14	15	14	B	14	B	14	14	14	14	15	22	20	18	20	16	15	14	14	15	15	15	15	14
6	14	14	14	15	14	15	14	14	14	15	18	20	17	18	21	20	17	14	14	14	15	14	14	14
7	14	14	14	14	B	B	B	14	14	16	17	20	21	21	22	18	16	15	14	14	14	15	B	14
8	14	14	14	B	B	B	17	14	14	16	18	21	18	23	26	20	14	14	14	14	15	15	14	14
9	14	14	14	14	14	15	14	14	14	15	16	18	18	18	17	16	14	14	14	14	14	14	15	14
10	14	15	14	14	14	15	14	14	14	15	17	17	20	20	18	16	14	14	14	14	14	14	14	14
11	14	14	14	15	15	14	14	14	14	14	16	21	17	21	17	15	14	14	14	15	14	14	14	15
12	14	14	15	15	14	14	14	14	14	14	15	17	20	21	18	16	14	14	14	14	14	14	14	14
13	14	14	14	B	14	B	14	14	14	14	20	20	22	14	22	17	15	14	14	14	14	14	14	14
14	15	14	14	14		B	15	14	14	15	17	20	20	24	20	18	14	14	14	14	15	14	15	14
15	14	15	15	15	15	14	15	14	14	14	14	14	24	17	14	17	18	14	14	14	14	14	14	14
16	14	14	14	14	15	15	15	14	14	15	17	17	20	16	15	15	14	14	14	15	14	14	14	14
17	14	14	14	14	14	15	14	14	14	14	14	17	23	22	16	15	14	14	14	14	14	14	14	14
18	14	15	14	14	14	14	14	14	14	14	14	18	18	20	16	16	14	14	14	14	14	14	14	14
19	15	14	14		15	14	14	14	14	14	14	14	14	15	17	14	14	14	16	14	14	14	15	14
20	15	15	14	14	15	15	14	15	14	15	35	20	20	20	21	18	17	14	14	14	15	15	14	15
21	15	15	15	17	14	15	14	15	14	14	15	17	17	15	14	16	17	14	14	15	14	14	14	14
22	15	15	14	15	14	14	14	14	14	14	15	17	16	14	14	14	16	14	14	14	14	14	14	14
23	14	15	15	14	15	14	15	15	14	14	15	16	16	23	14	14	15	14	14	14	15	15	15	14
24	14	14	14	14	14	15	14	14	14	14	15	17	16	15	14	14	14	14	14	15	15	14	14	14
25	15	14	15	14	14	15	14	14	15	15	15	18	20	17	16	21	14	14	14	14	14	14	14	14
26	14	14	14	15	66	14	14	16	14	17	16	18	33	15	16	14	14	14	14	14	14	15	14	18
27	14	15	B	14	B	14	14	14	14	14	15	15	17	17	15	15	14	14	14	14	14	B	B	14
28	14	15	14	15	14	B	15	14	14	14	15	17	14	14	16	14	14	14	14	14	14	15	B	15
29	14	14	14	14	B	B	15	16	14	14	16	18	18	21	23	17	14	14	14	14	14	15	14	14
30	14	14	15	15	B	B	15	14	14	14	16	15	16	15	15	14	14	14	15	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	26	23	22	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	26	29
MED	14	14	14	14	14	14	14	14	14	14	15	18	18	18	17	16	14	14	14	14	14	14	14	14
U Q	14	15	14	15	15	15	15	14	14	15	17	20	20	21	20	17	15	14	14	14	15	15	14	14
L Q	14	14	14	14	14	14	14	14	14	14	15	17	17	15	15	15	14	14	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai



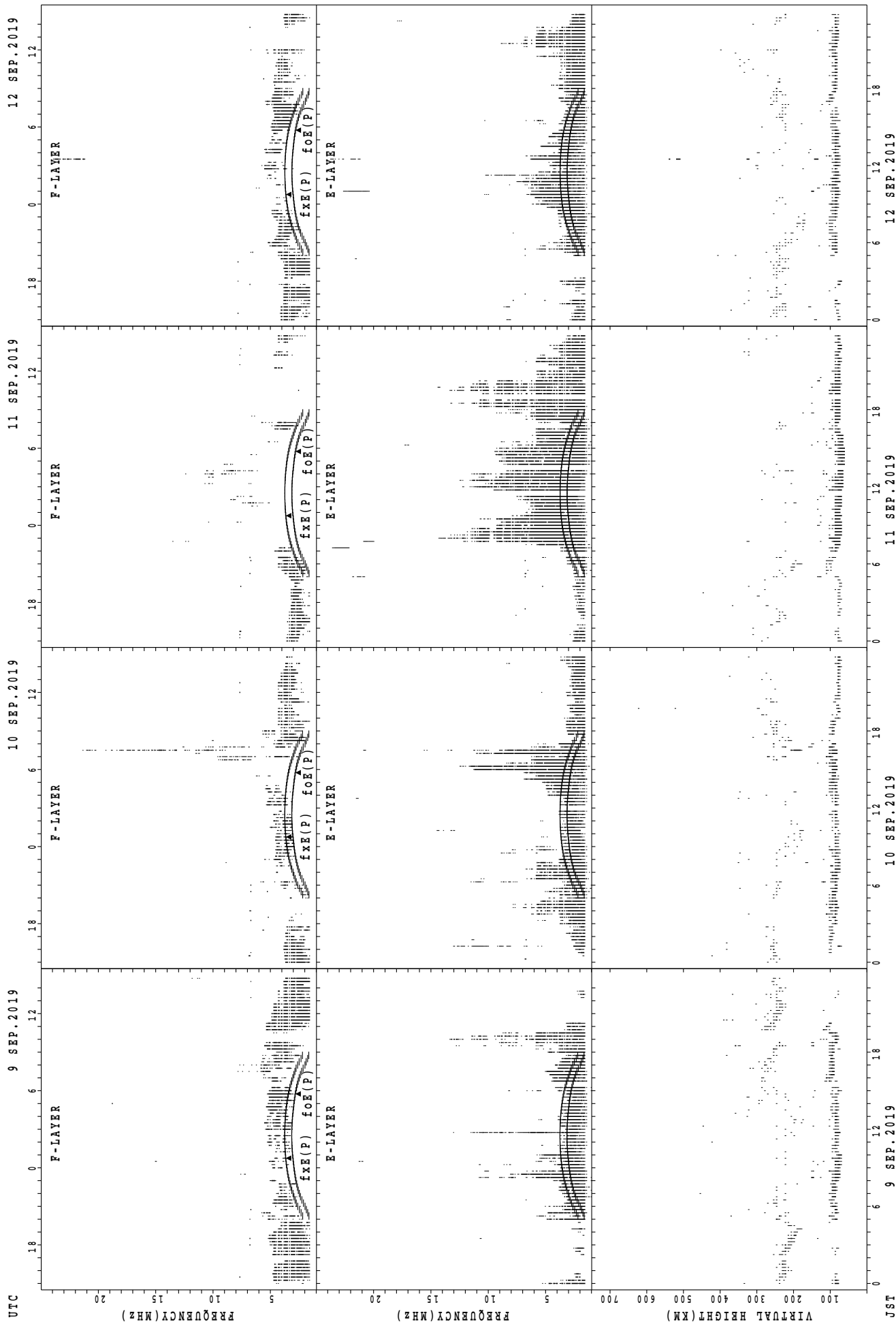
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



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

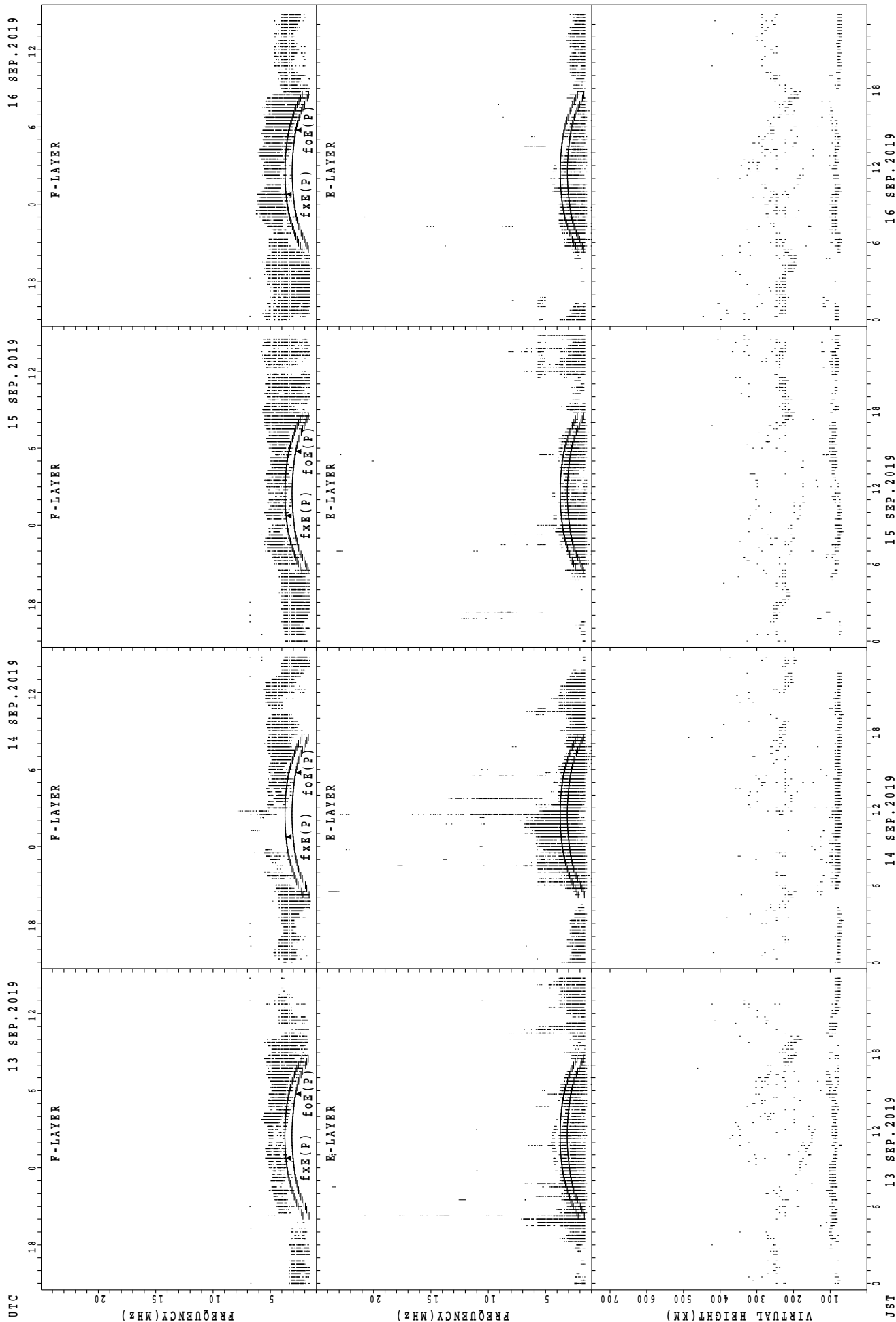
SUMMARY PLOTS AT Wakkanai



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

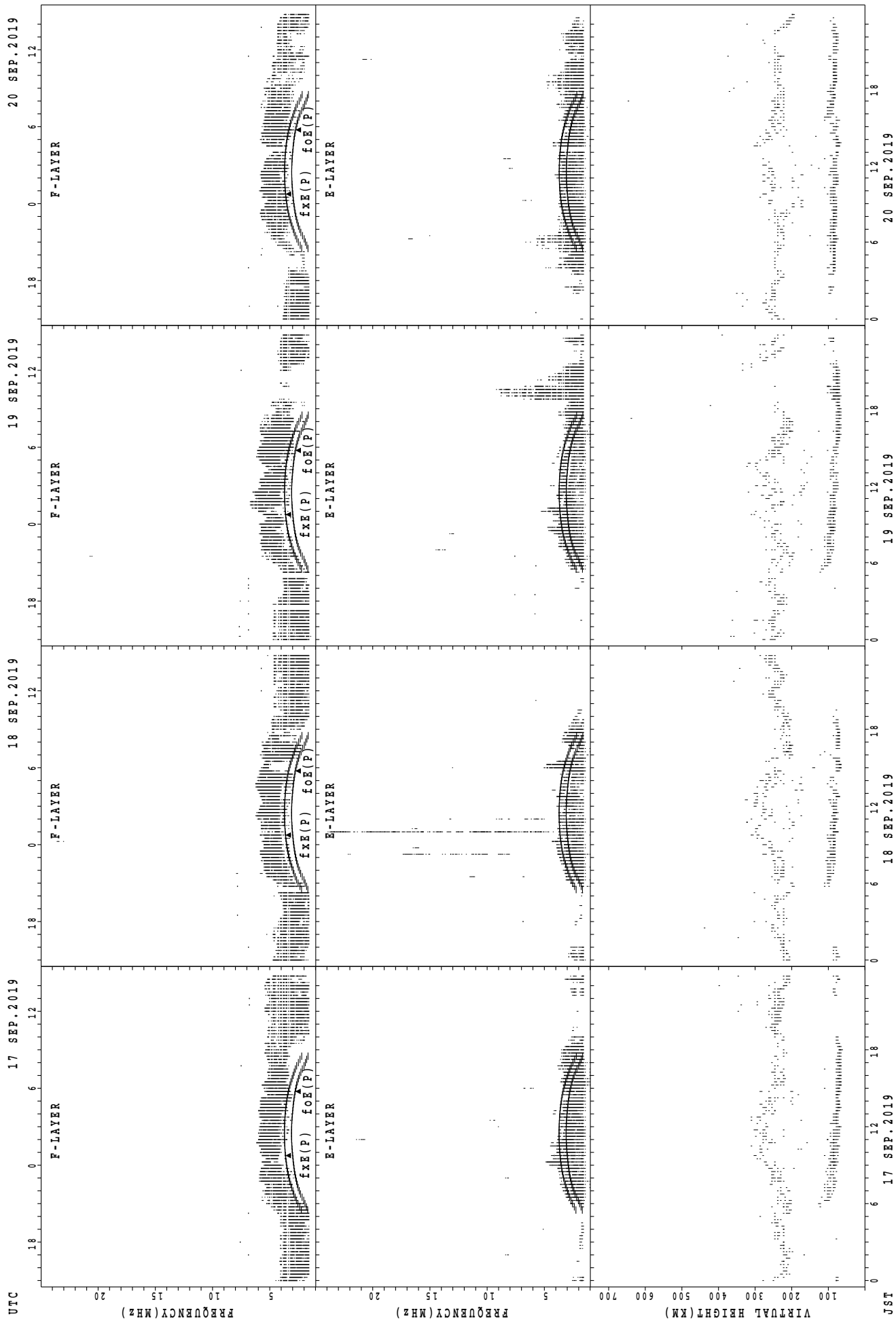
JST

SUMMARY PLOTS AT Wakkanai



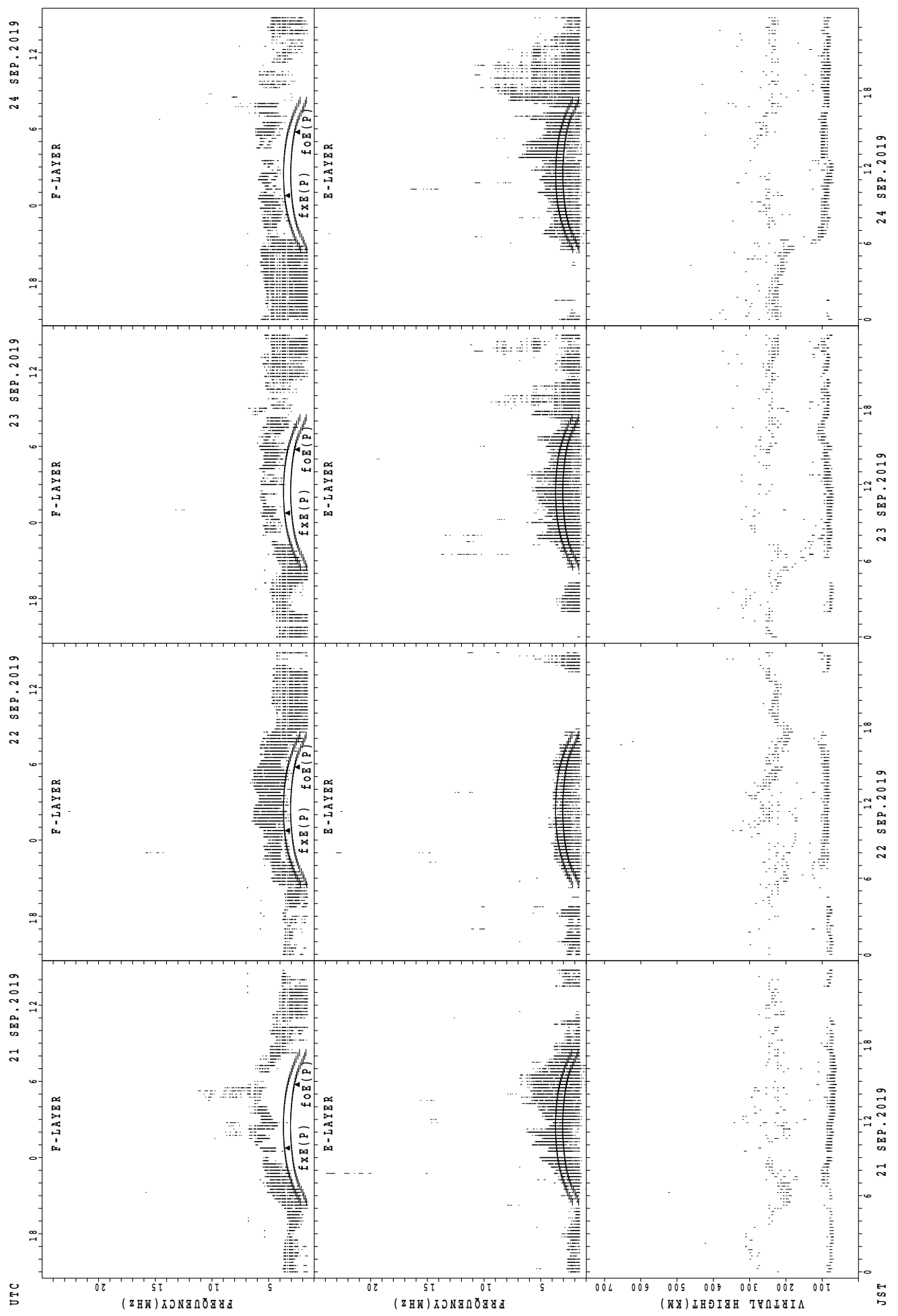
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



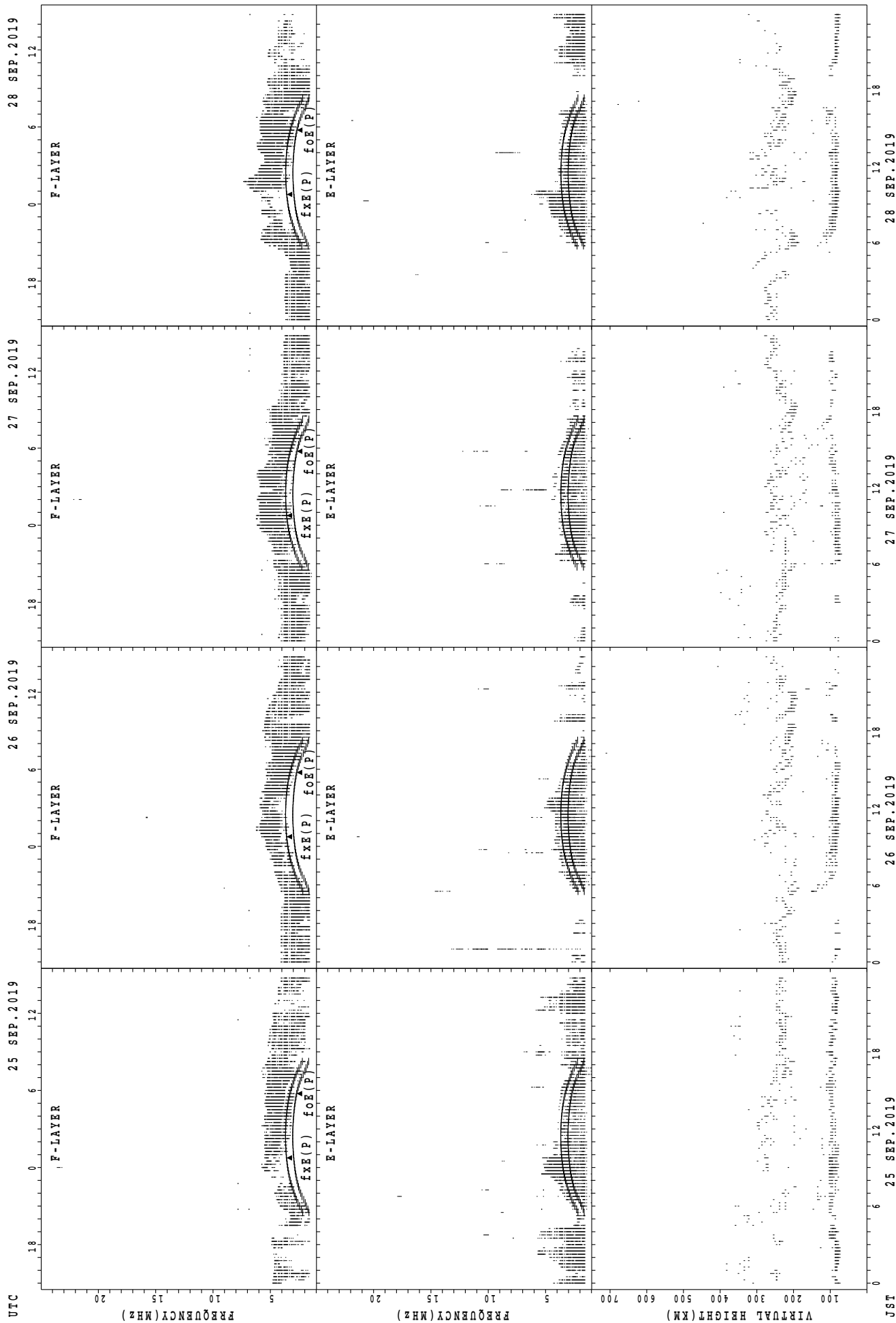
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



f_{xe}(P); PREDICTED VALUE FOR f_{xe}
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

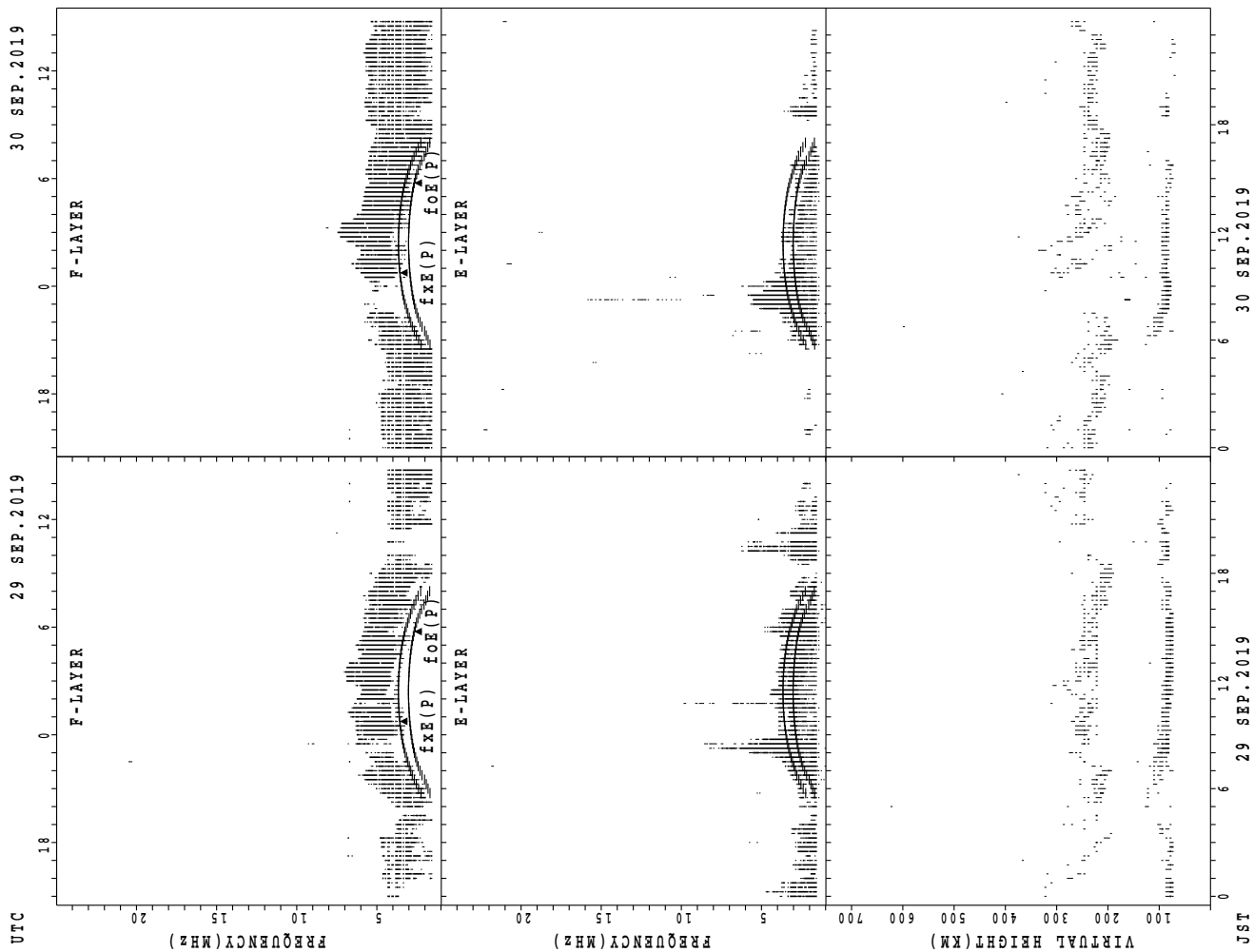


fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

UTC

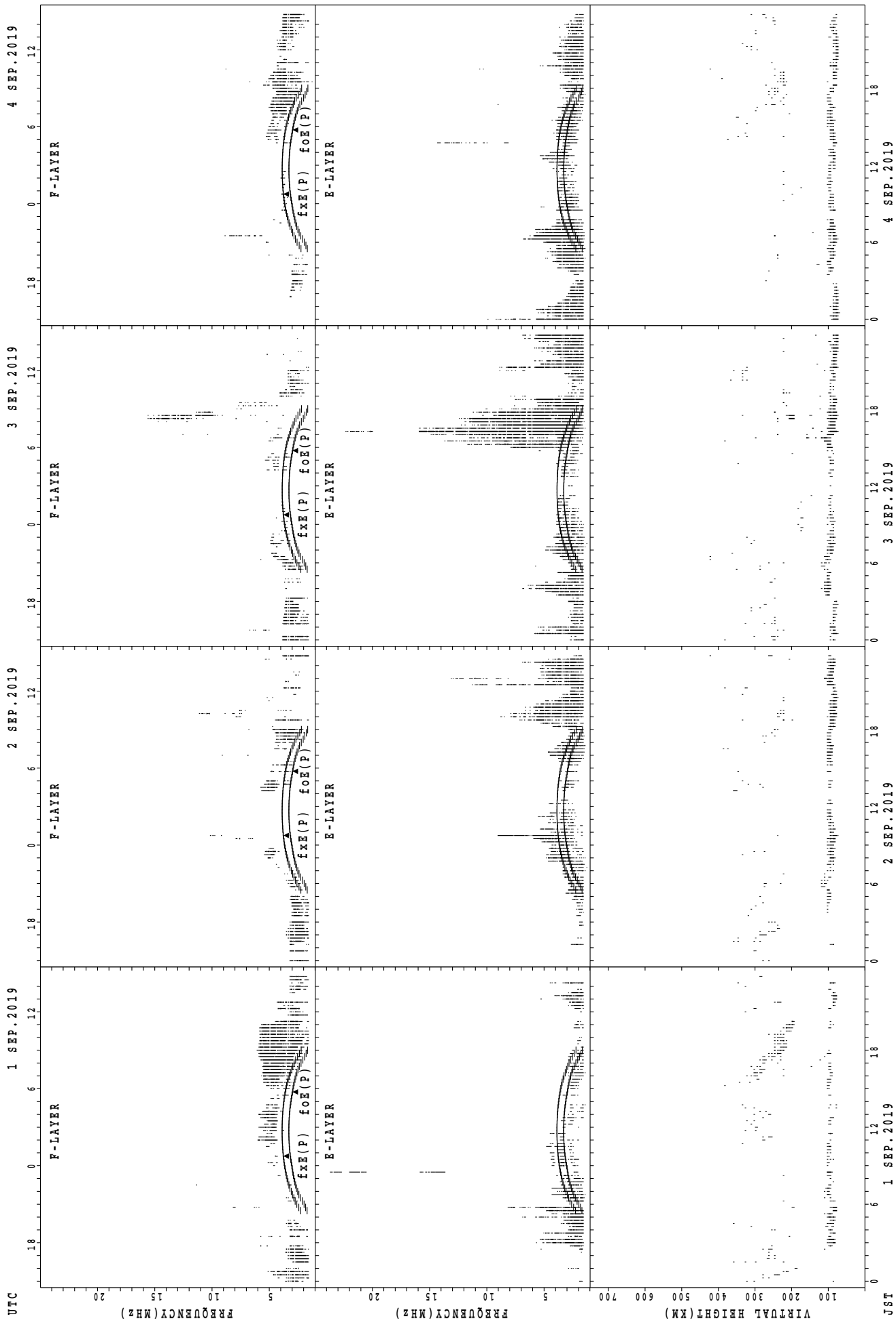
JST

SUMMARY PLOTS AT Wakkanai



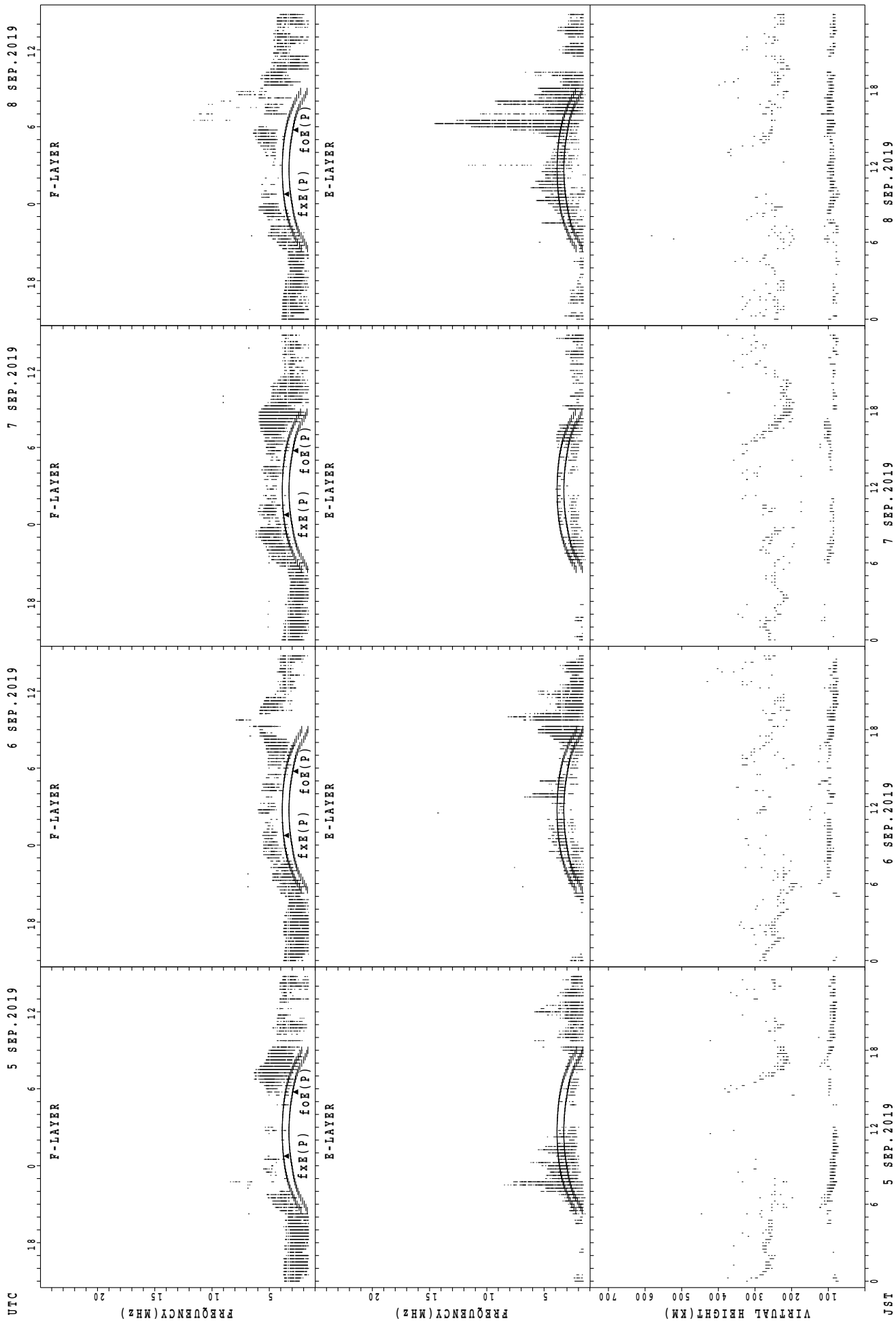
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



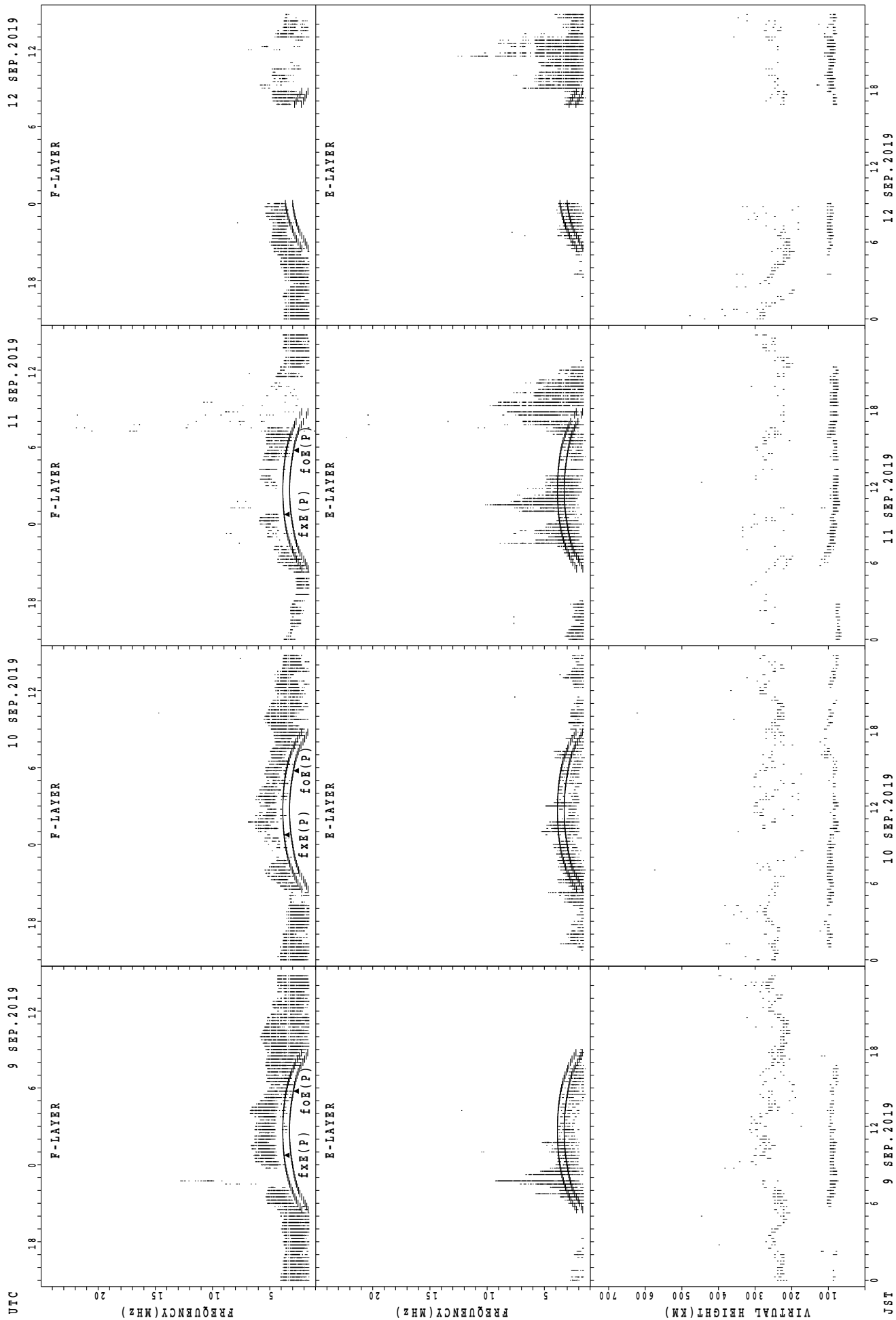
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



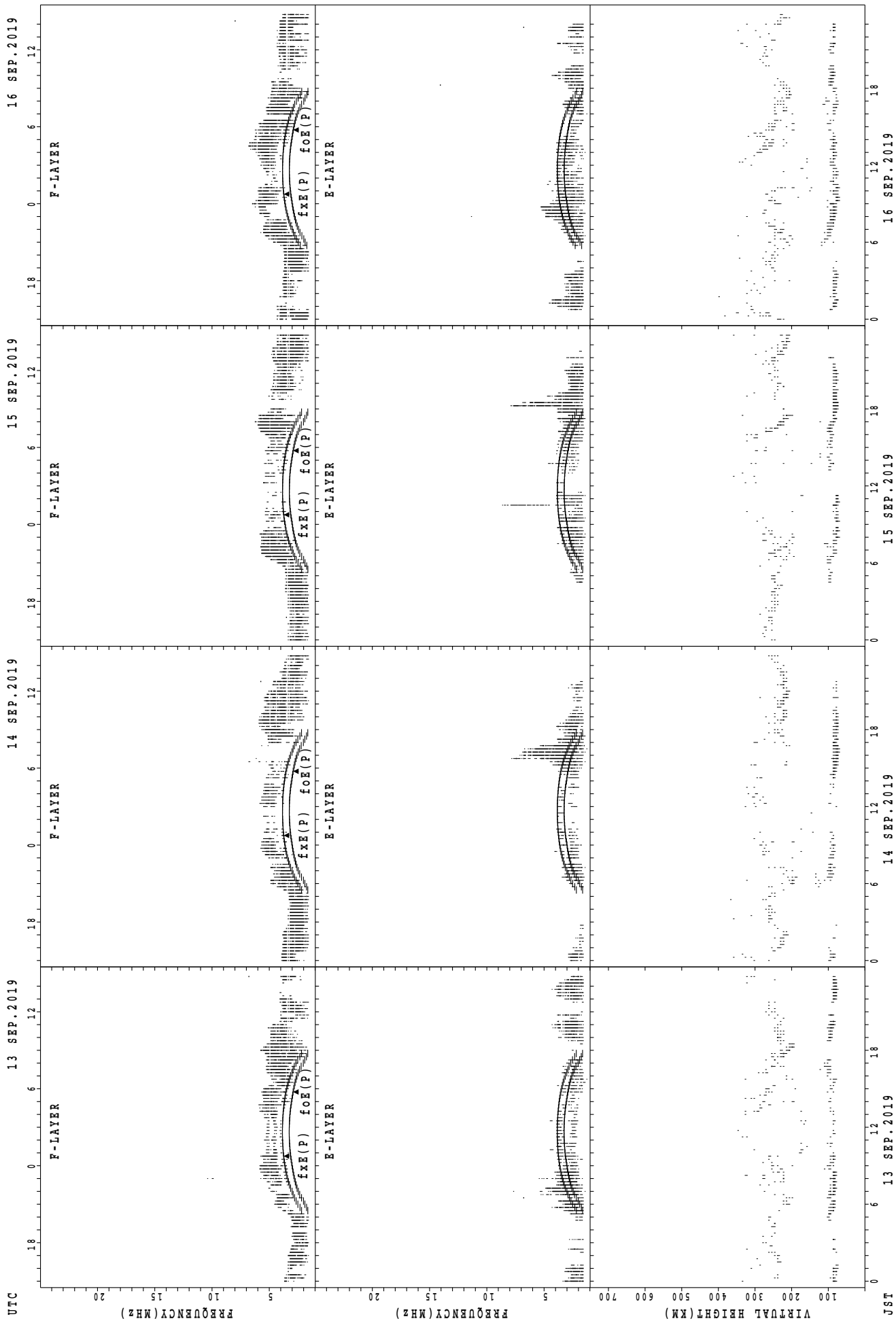
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

16 SEP.2019

15 SEP.2019

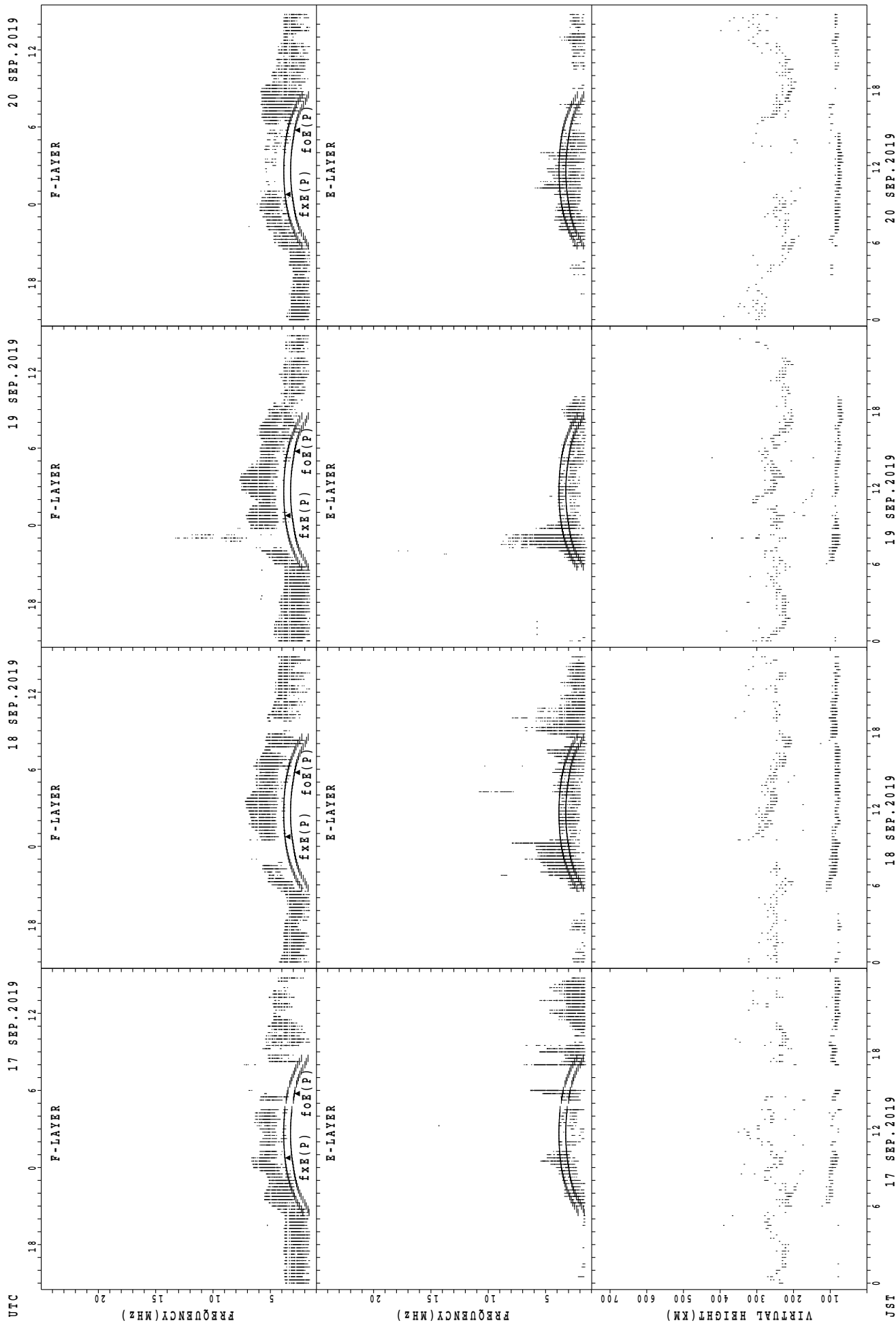
14 SEP.2019

13 SEP.2019

UTC

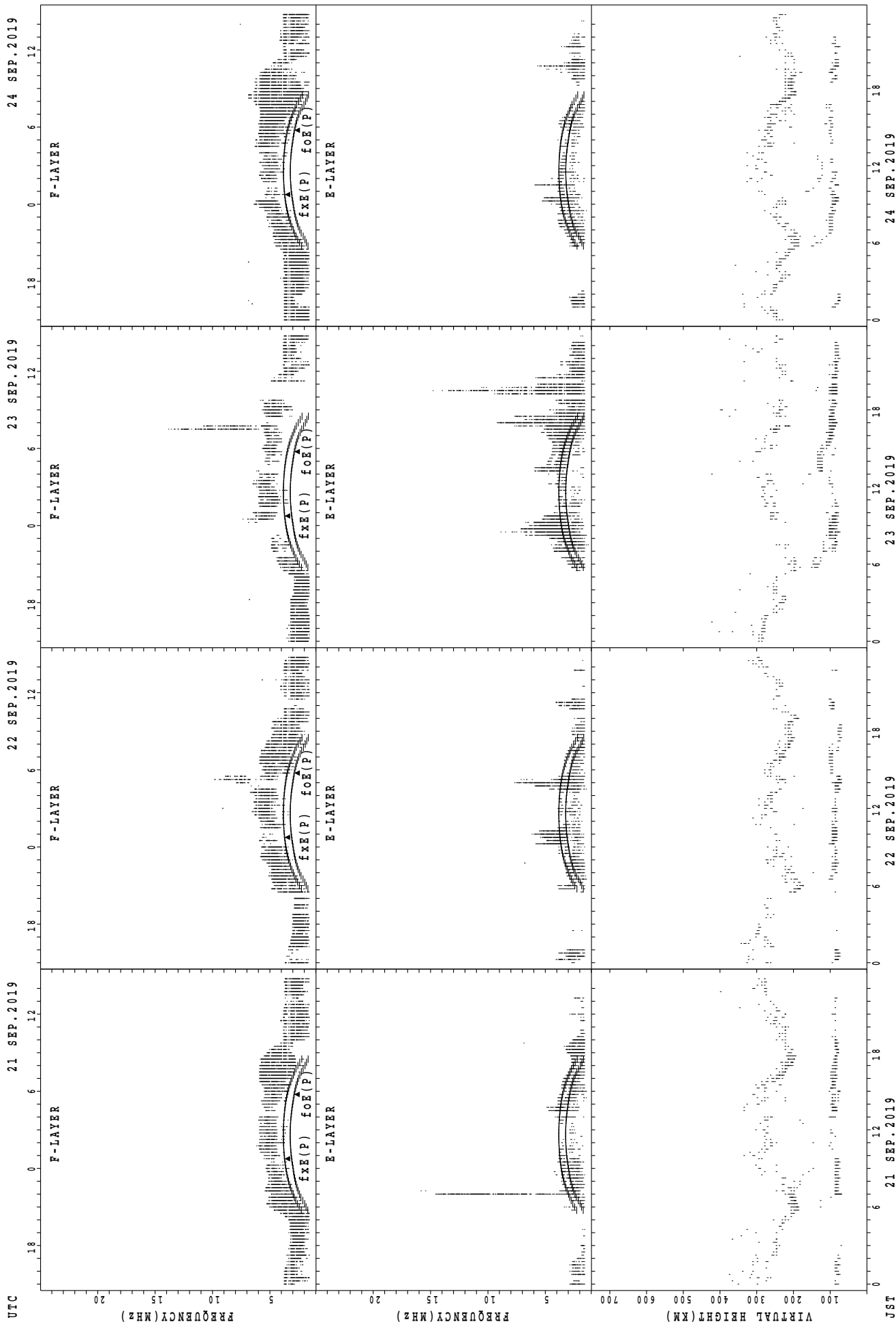
JST

SUMMARY PLOTS AT Kokubunji



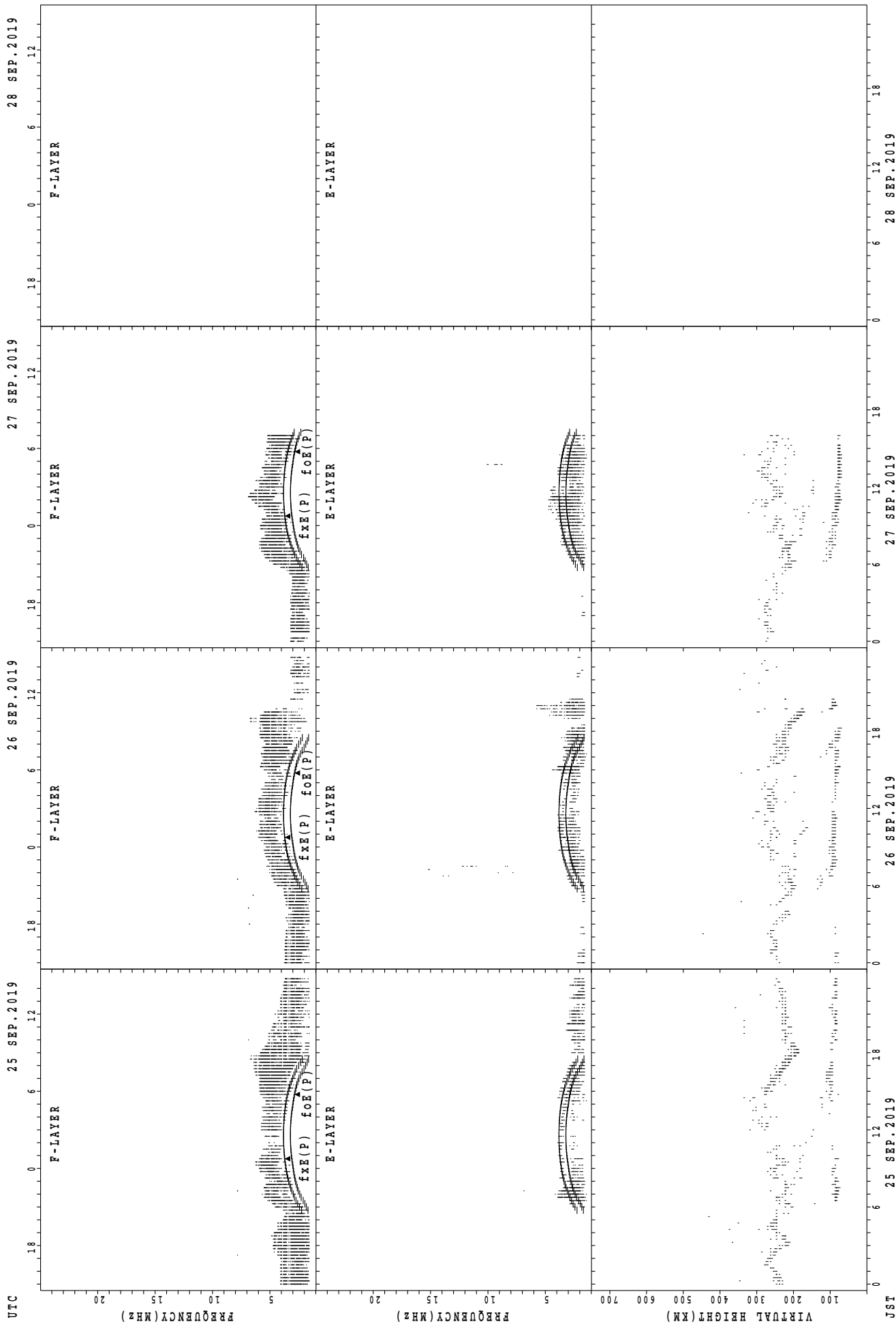
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



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

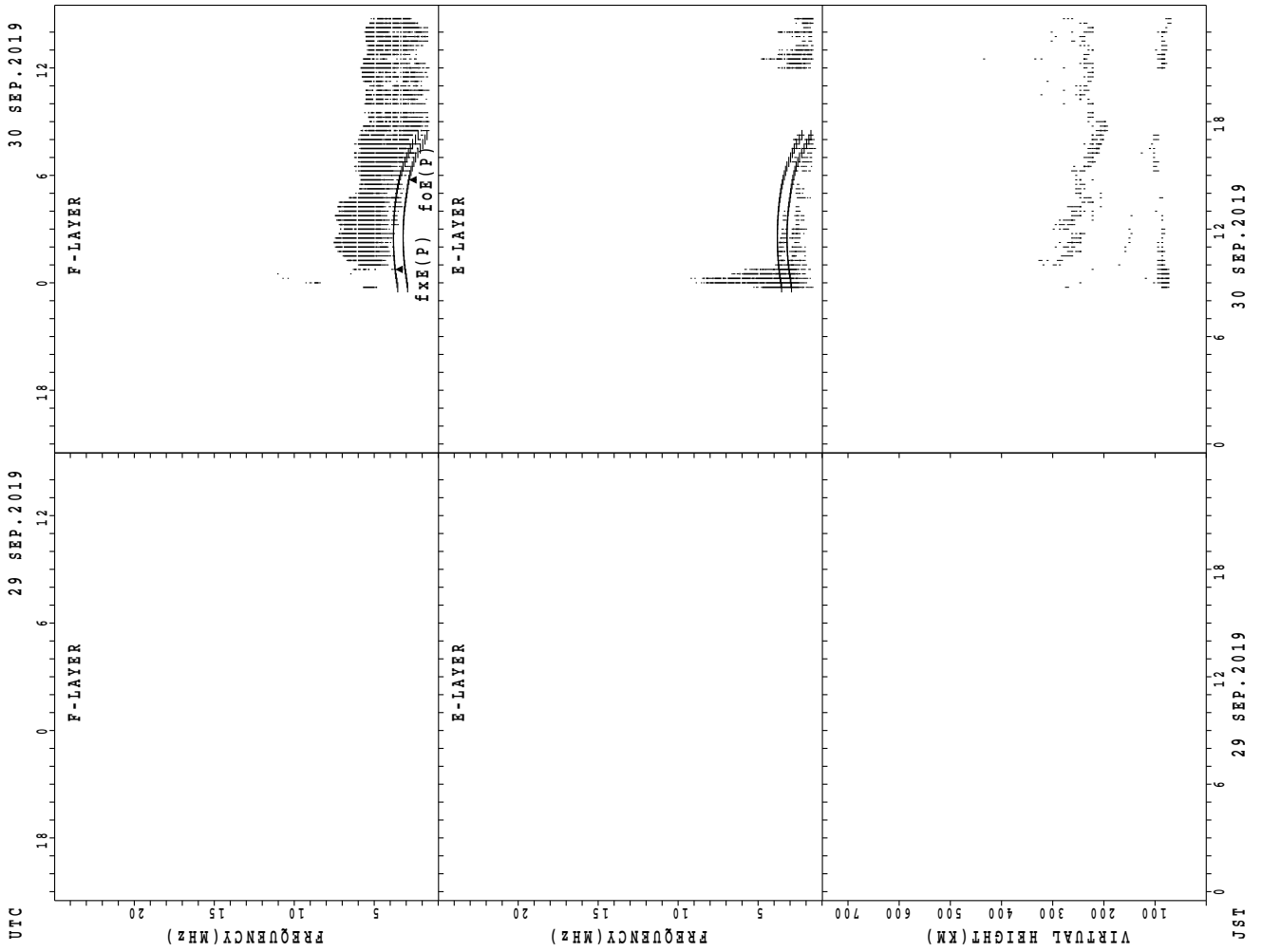
SUMMARY PLOTS AT Kokubunji



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

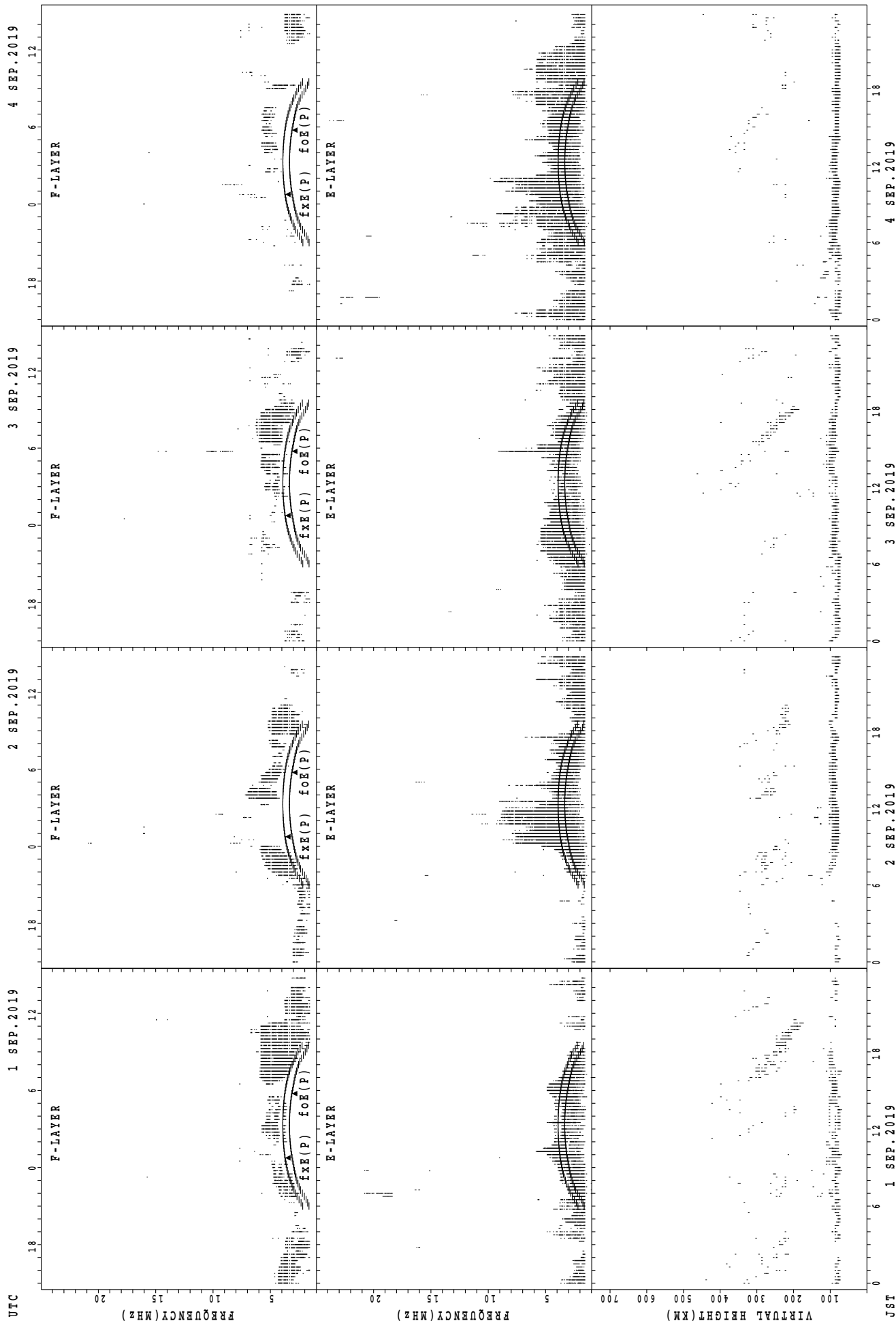
JST

SUMMARY PLOTS AT Kokubunji



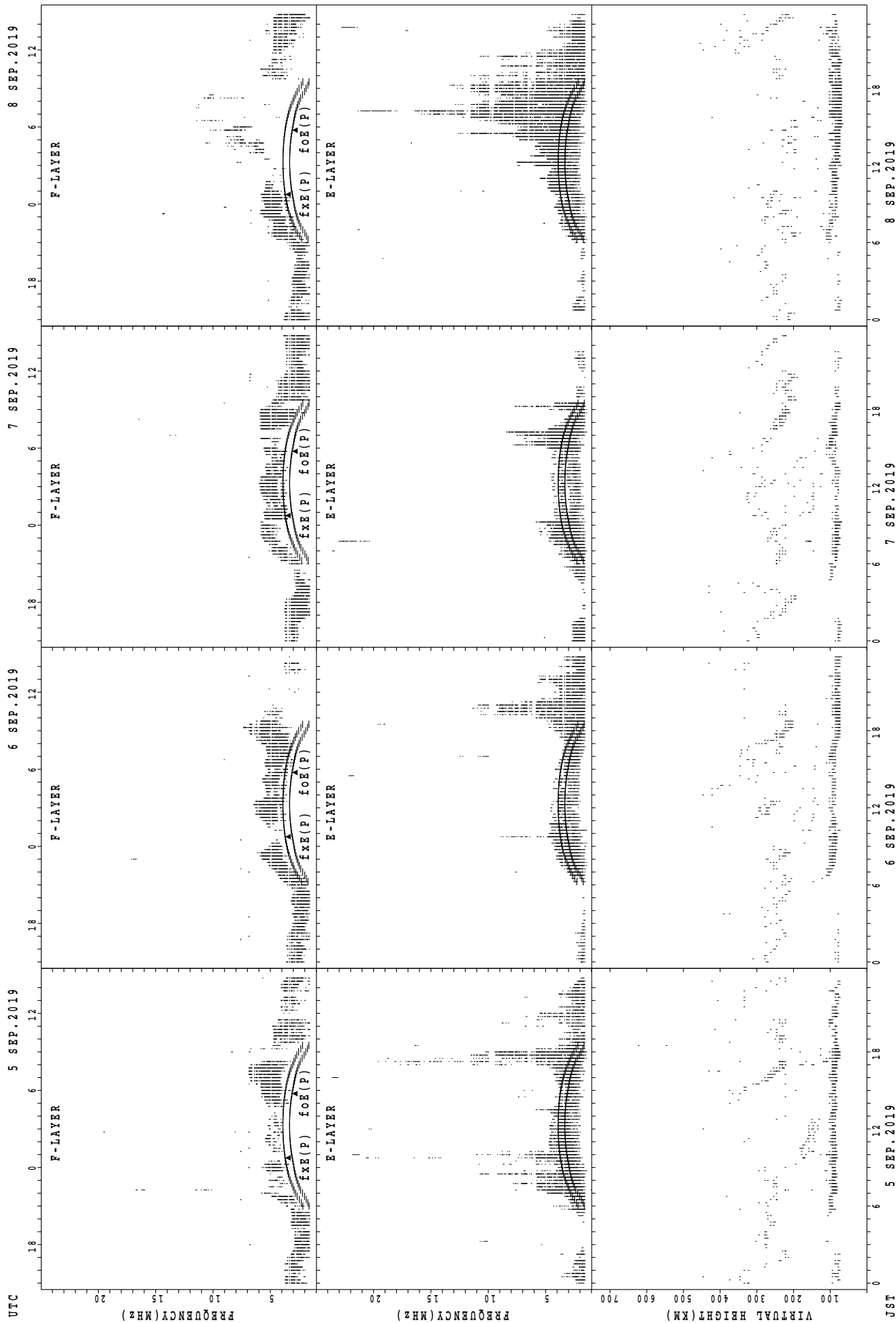
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



fxe(p); PREDICTED VALUE FOR fxe
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Yamagawa



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

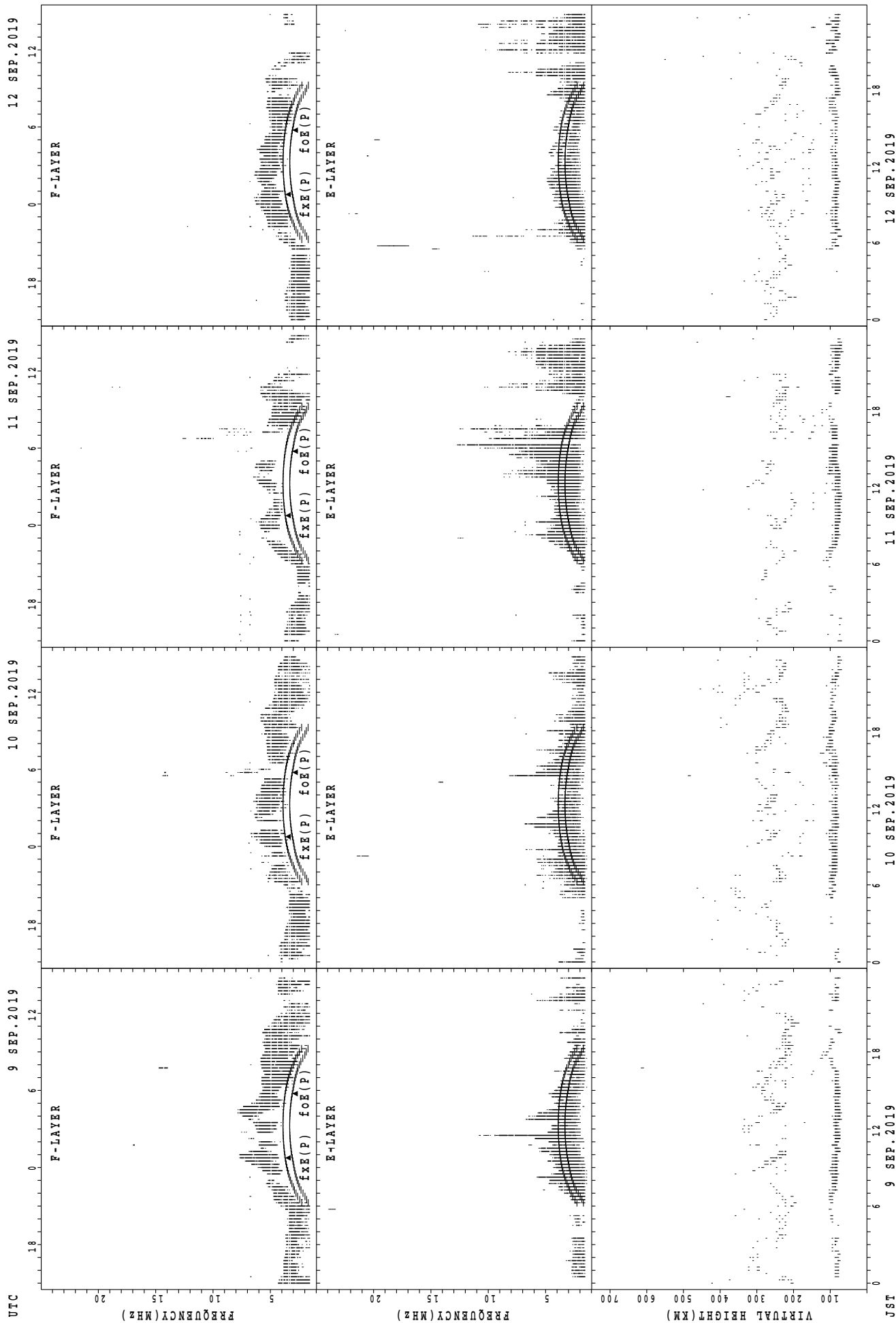
JST 5 SEP.2019

6 SEP.2019

7 SEP.2019

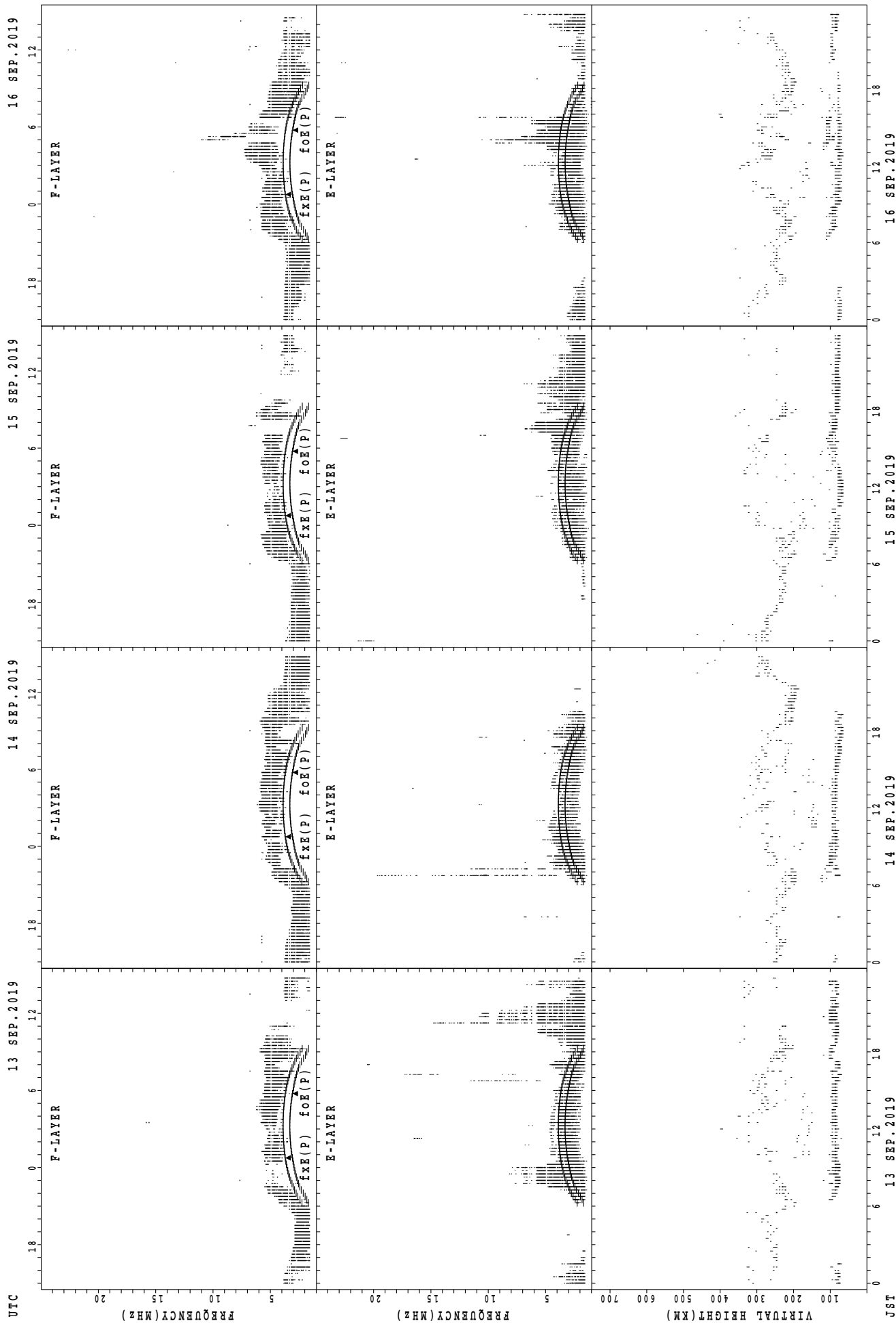
8 SEP.2019

SUMMARY PLOTS AT Yamagawa



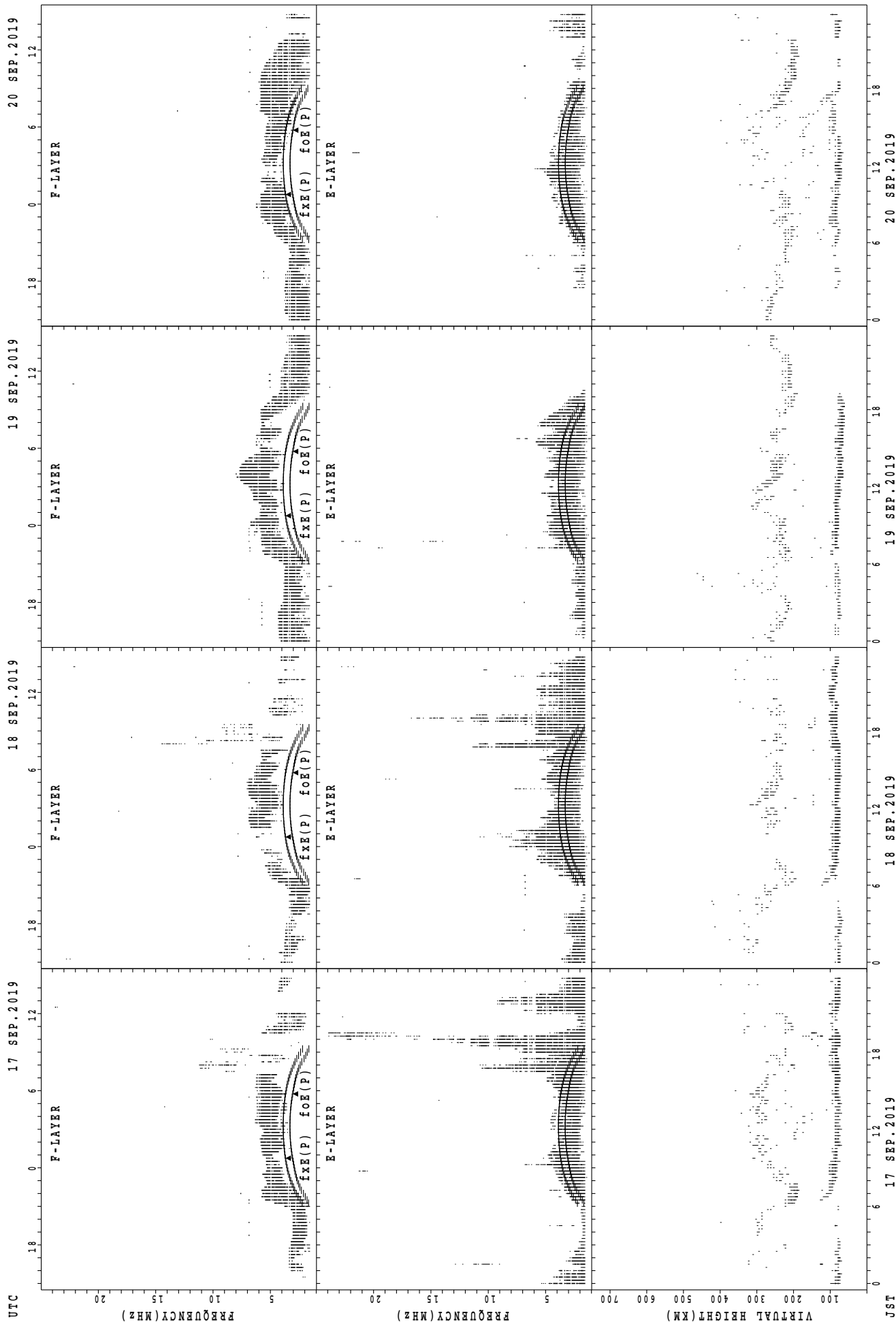
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



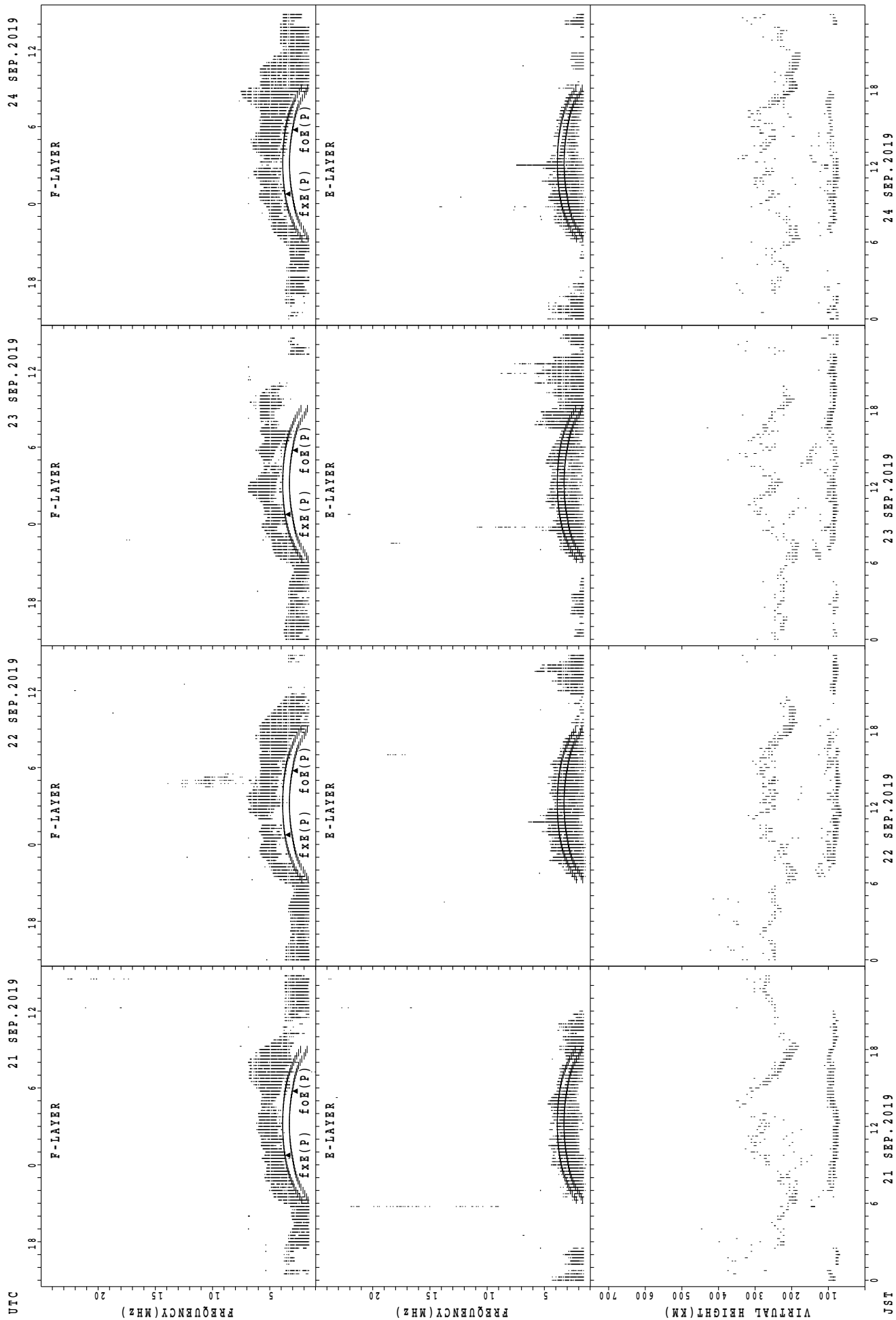
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



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

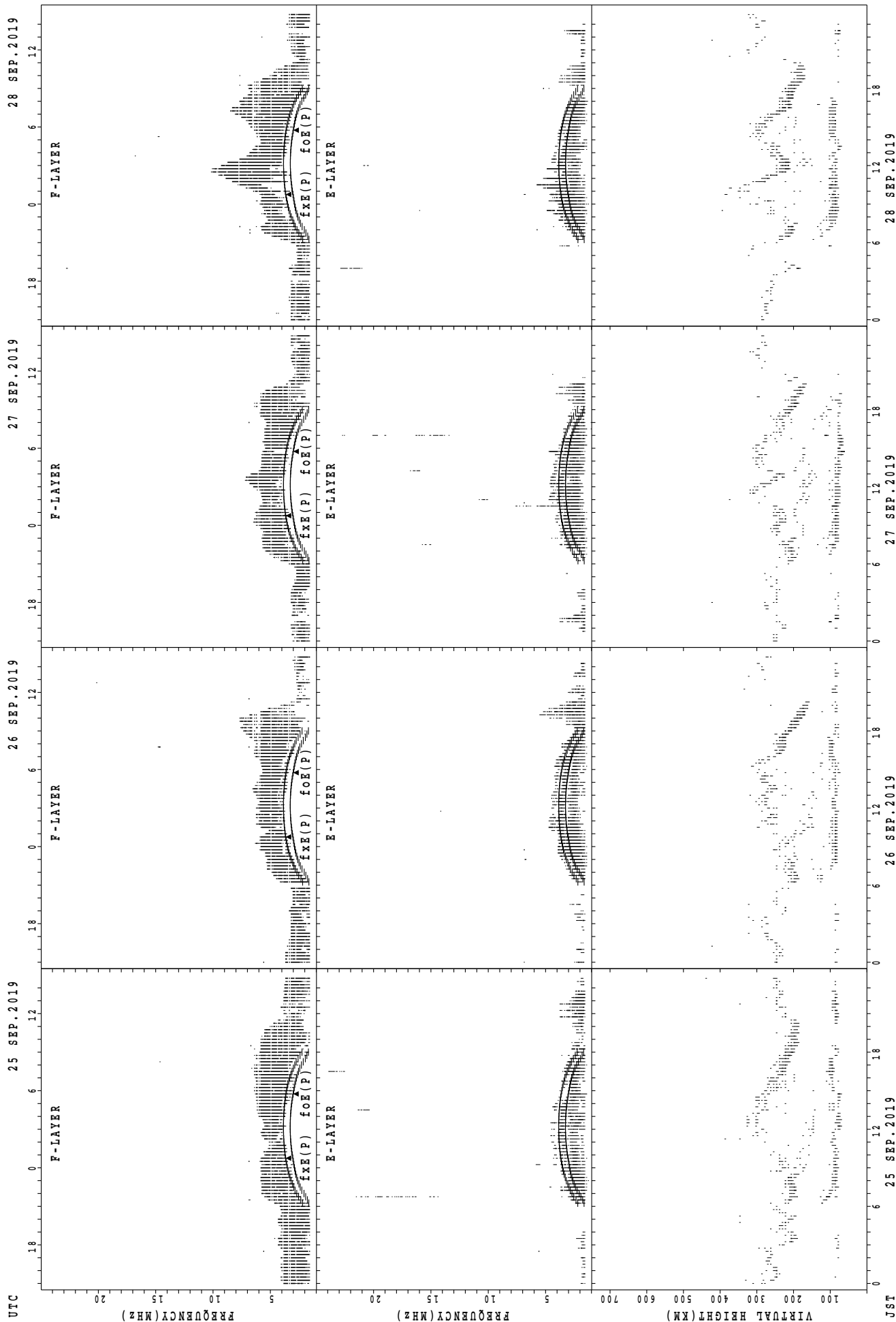
SUMMARY PLOTS AT Yamagawa



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

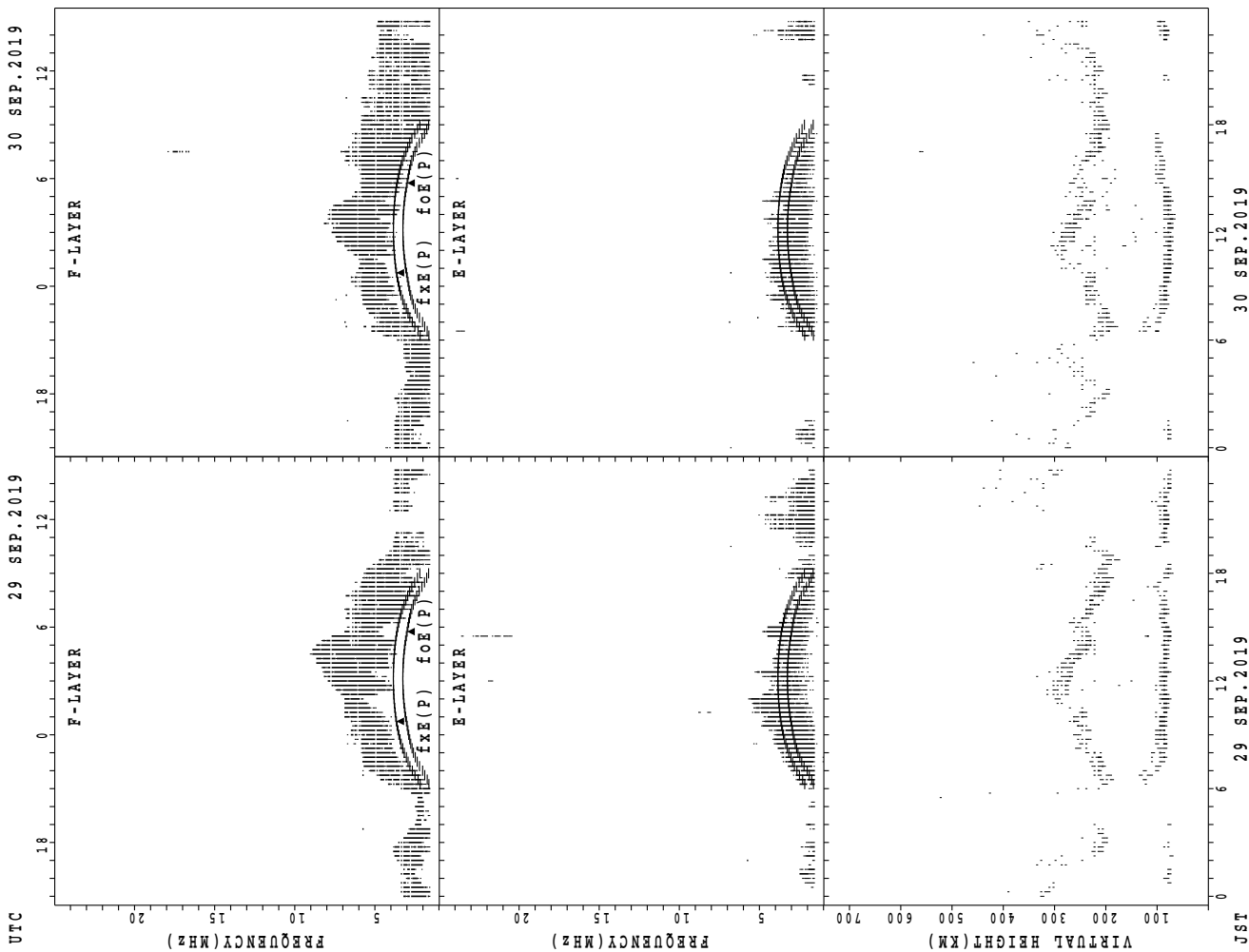
JST

SUMMARY PLOTS AT Yamagawa



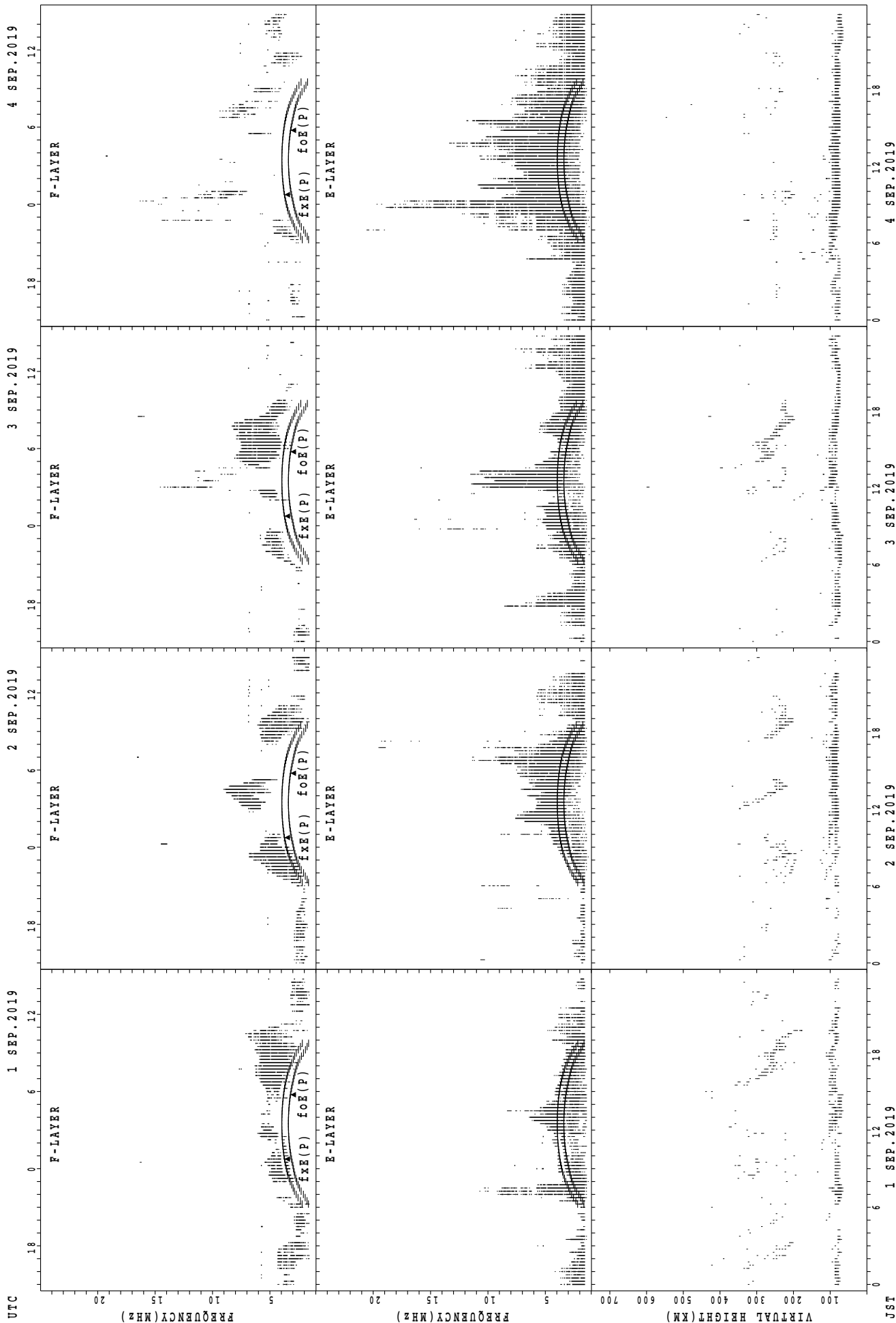
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



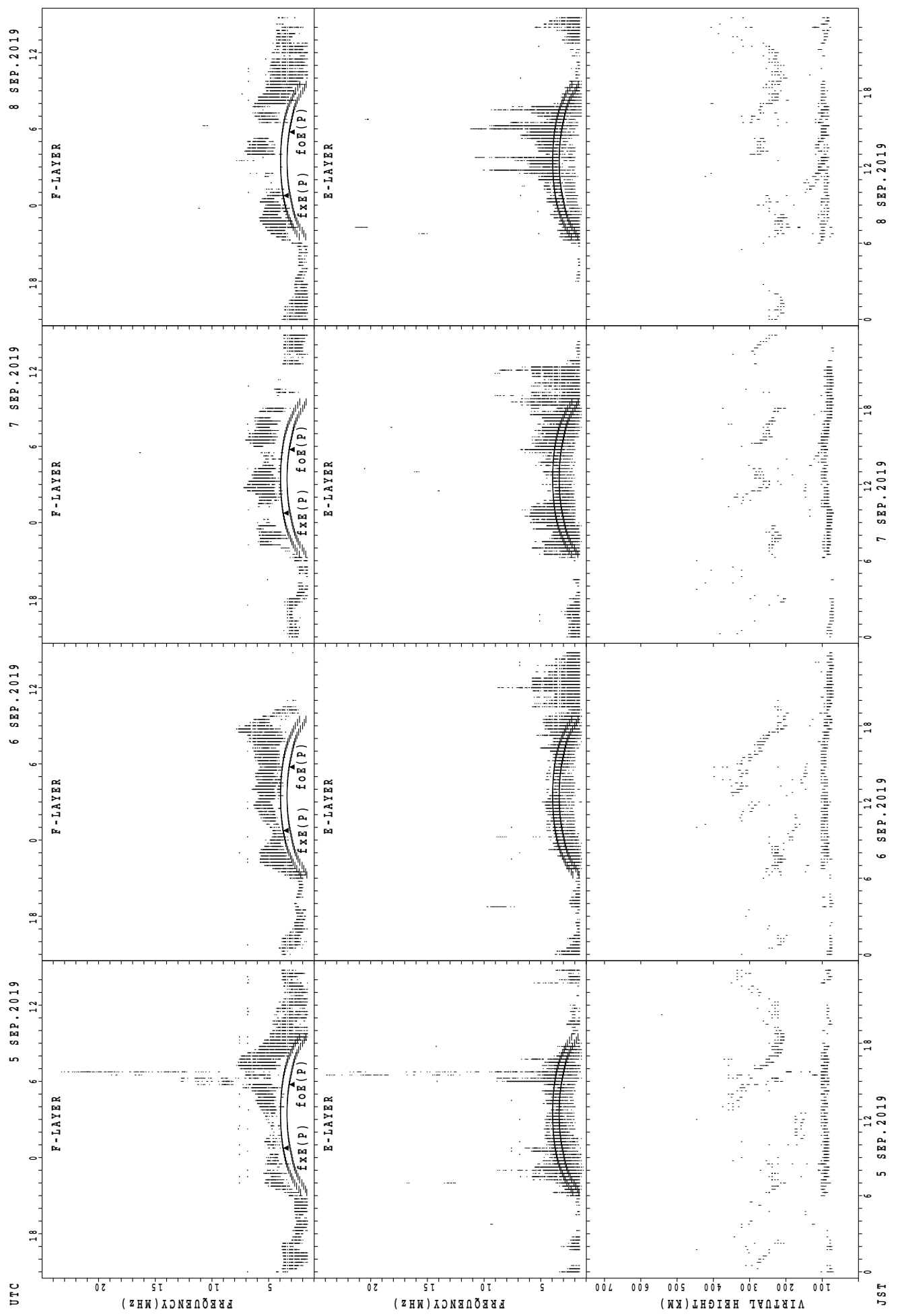
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



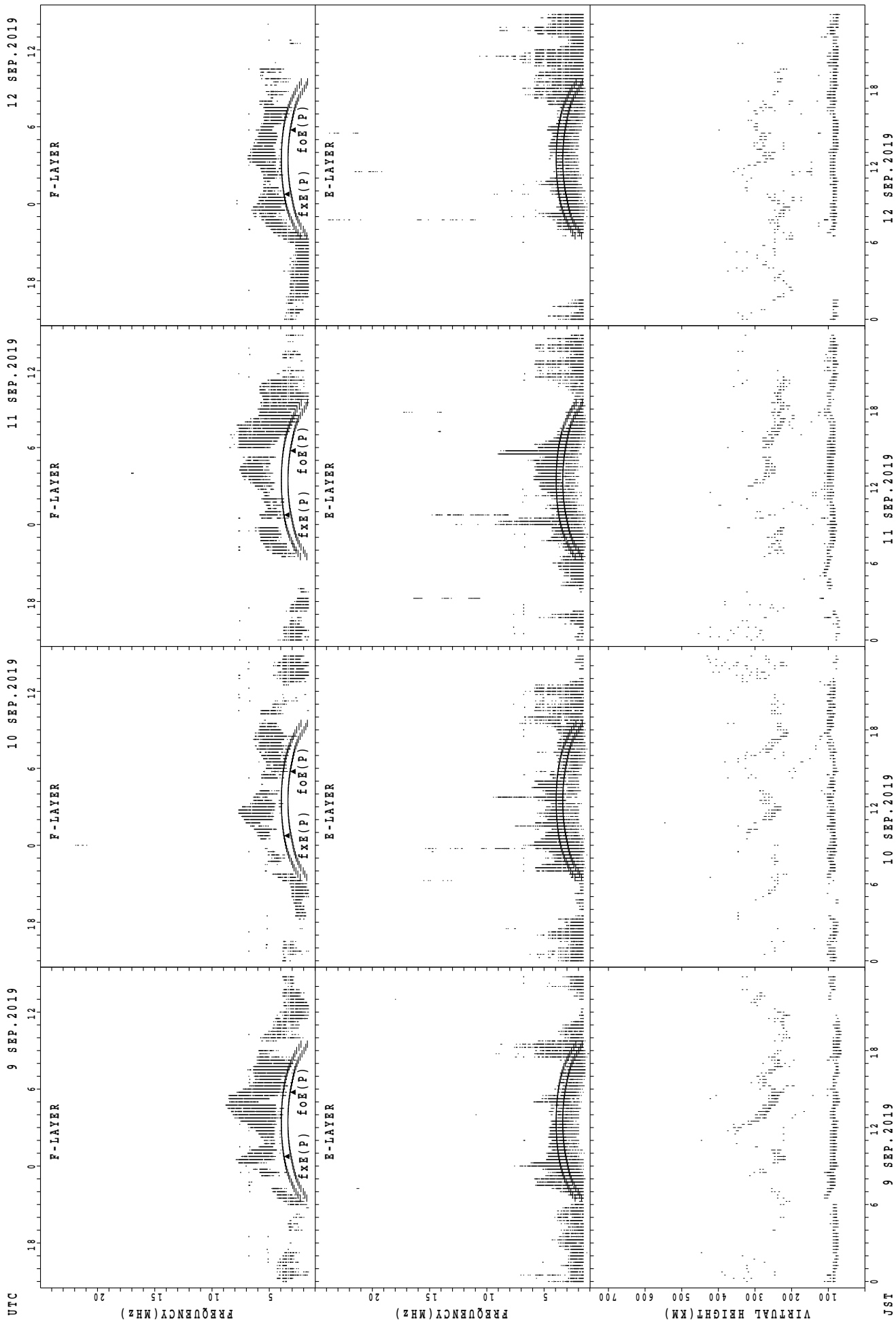
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



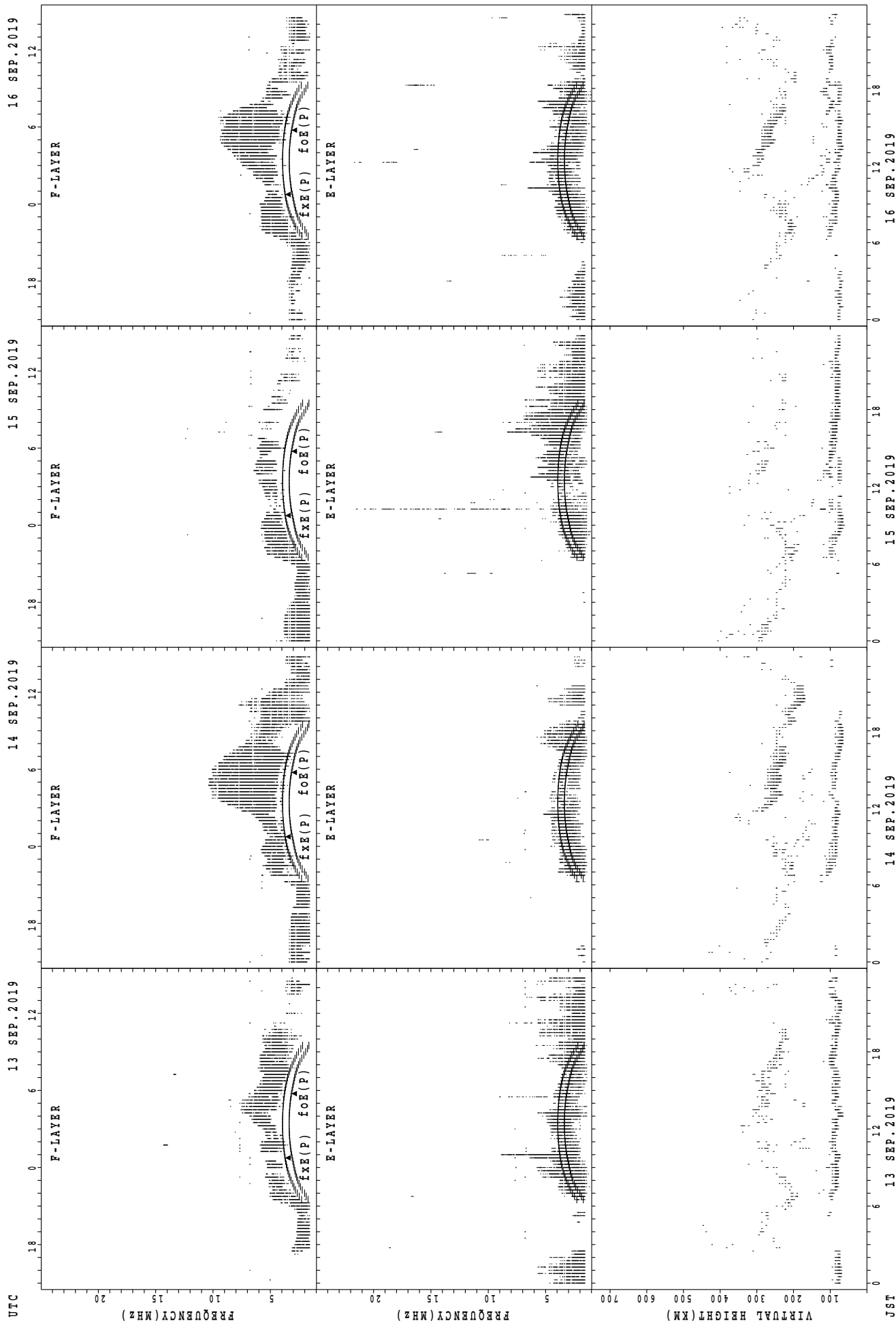
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



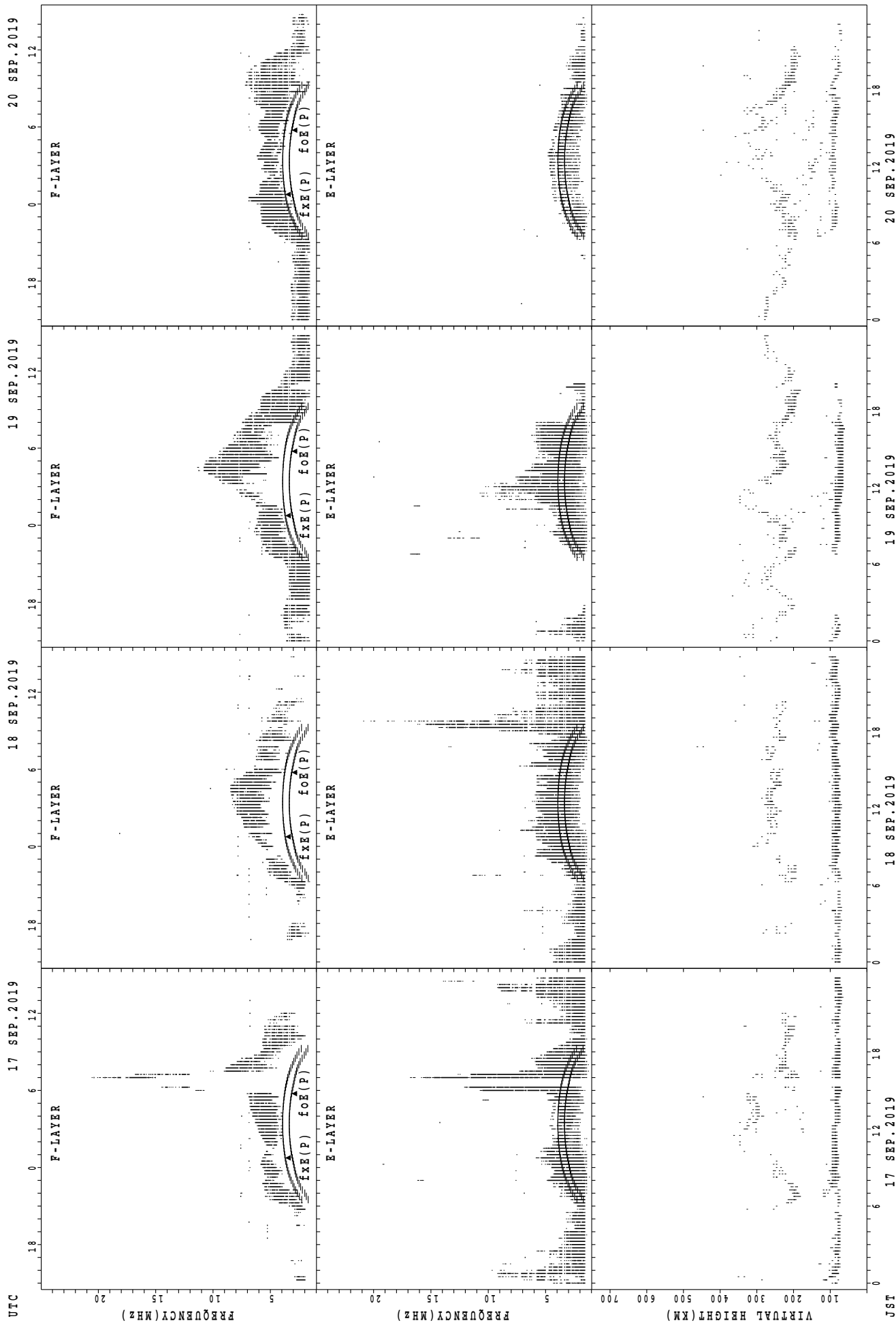
fxe(P); PREDICTED VALUE FOR fxe
foe(P); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Okinawa



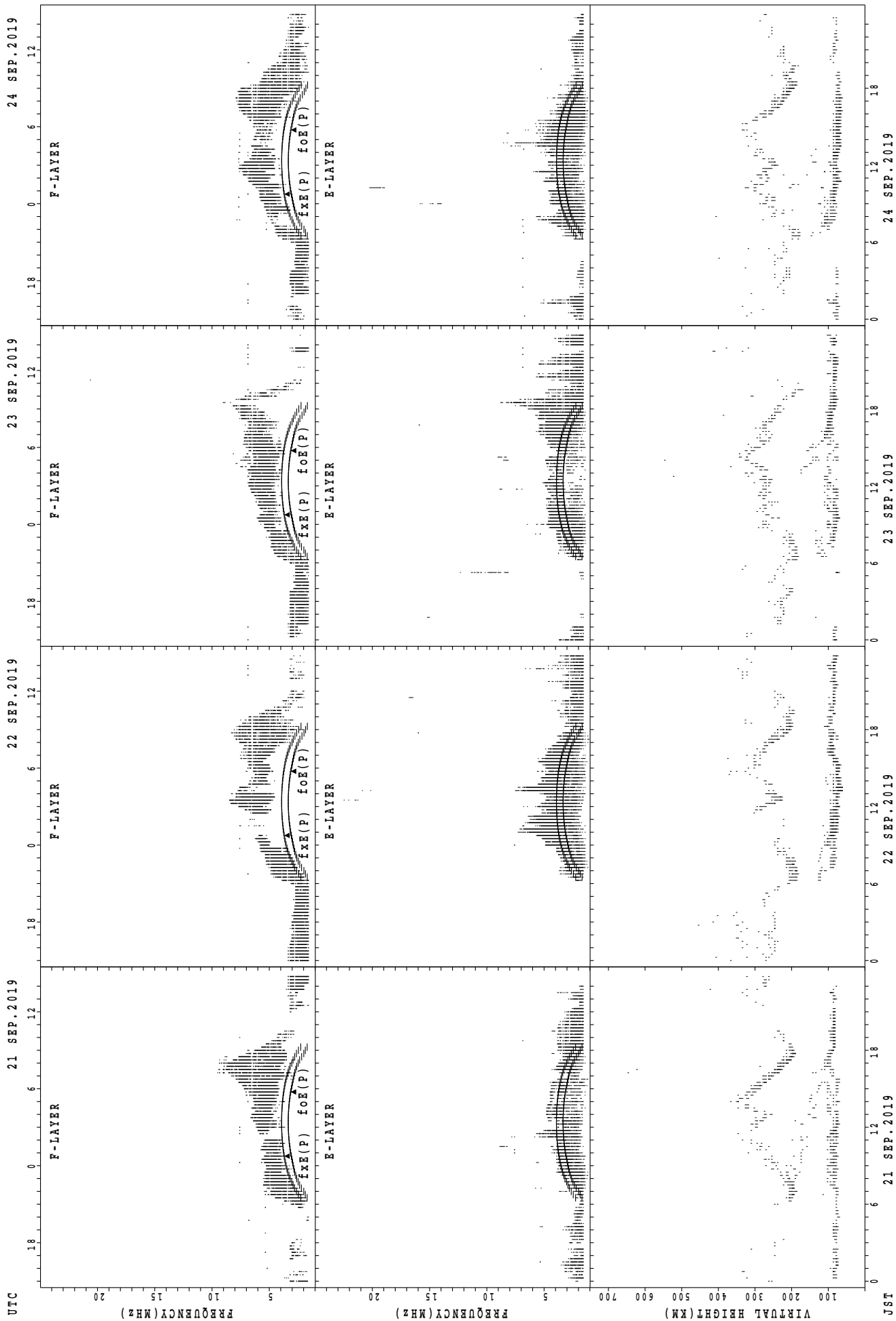
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



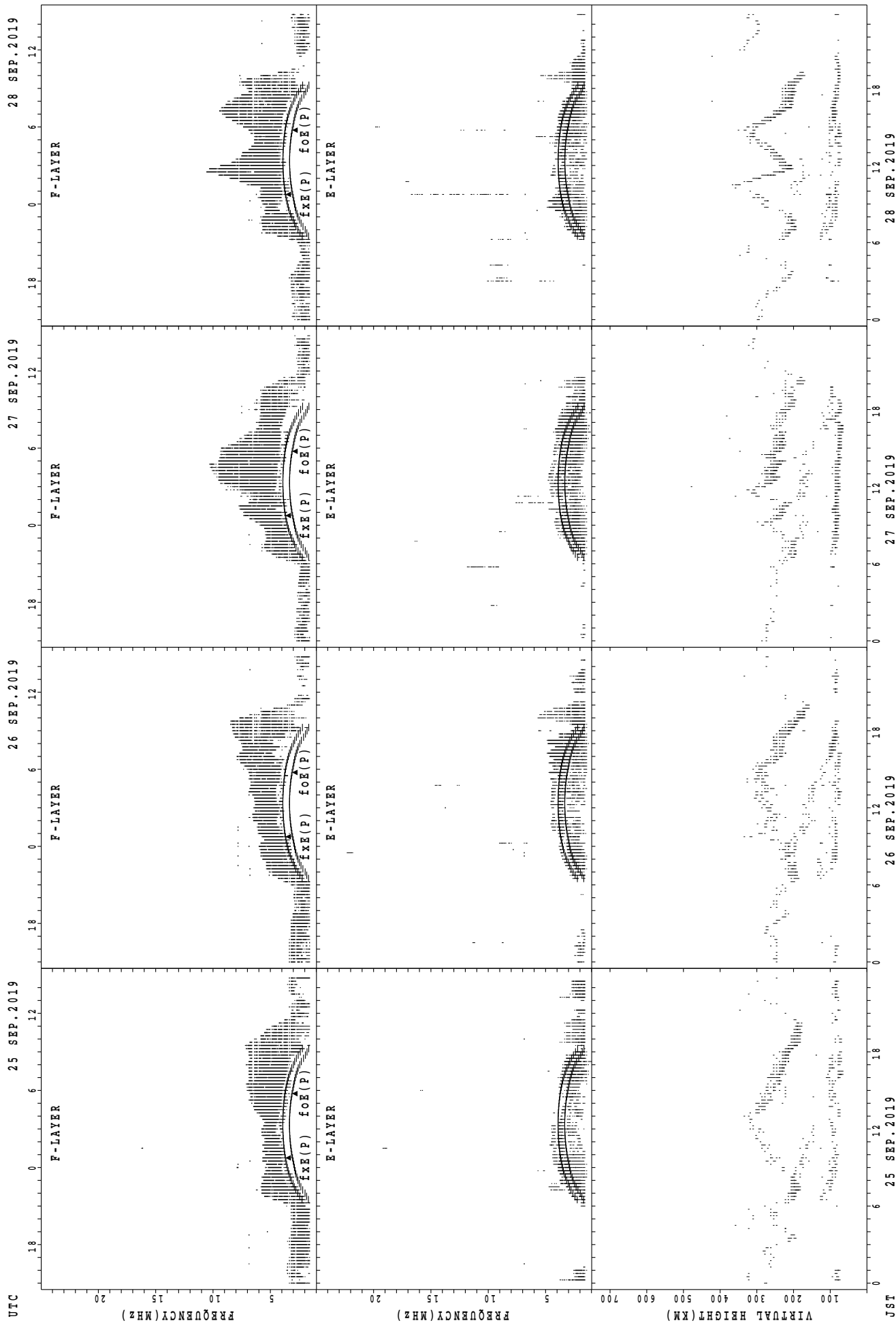
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Okinawa



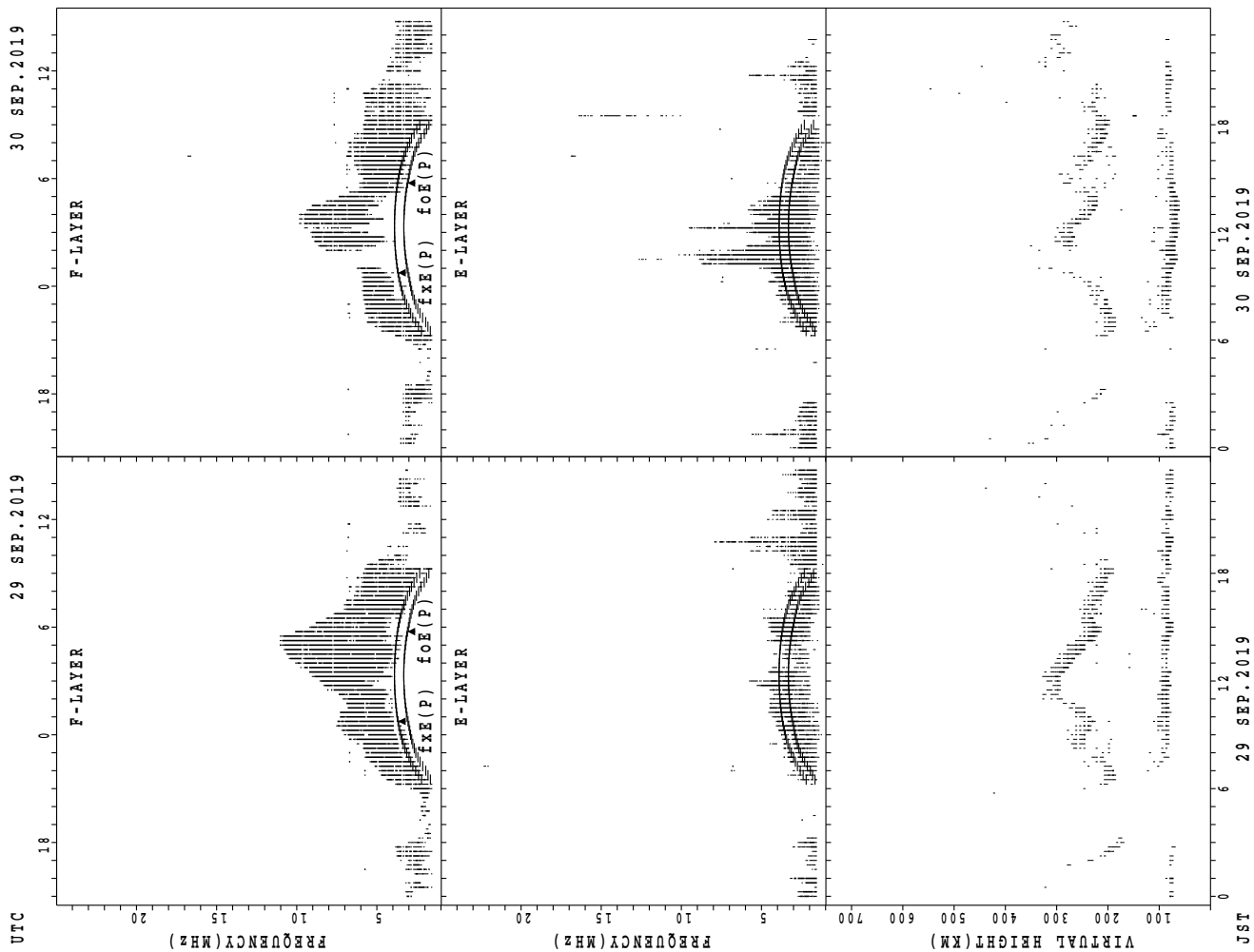
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



foF2(P); PREDICTED VALUE FOR foF2
foE(P); PREDICTED VALUE FOR foE

MONTHLY MEDIANS OF h'F AND h'Es
 SEP. 2019 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1							1	2	2	1	1				
MED									192							272	227	266	212	204				
U Q									96							136	232	282	106	102				
L Q									96							136	222	250	106	102				

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	16	13	19	16	15	29	30	30	30	25	27	24	23	20	24	27	27	25	25	23	22	22	23
MED	82	84	97	83	93	95	99	98	101	94	87	95	96	107	95	96	97	95	91	89	89	87	89	87
U Q	91	100	104	91	101	107	114	113	113	97	92	167	158	167	110	121	101	107	96	101	97	93	93	89
L Q	81	80	82	79	81	89	89	89	89	87	84	89	87	87	85	88	87	81	87	86	83	81	83	81

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								1							
MED									192								272							
U Q									96								136							
L Q									96								136							

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	12	8	9	5	4	8	21	25	19	23	23	17	13	11	10	10	15	21	21	18	18	19	18	16
MED	87	84	81	85	94	96	105	95	95	91	95	95	107	89	89	93	99	91	91	89	89	89	87	85
U Q	90	89	85	94	104	99	123	107	99	101	157	162	168	157	95	107	107	97	96	95	91	91	93	88
L Q	83	82	80	80	92	90	97	89	89	85	87	89	83	81	85	83	91	85	83	85	83	83	83	83

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																	6	5	3	1				
MED																	270	224	230	200				
U Q																	280	230	230	100				
L Q																	252	196	228	100				

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	15	18	12	8	5	8	12	29	29	28	30	28	28	27	27	25	26	24	26	21	21	19	22	21
MED	89	81	83	83	85	97	94	99	99	95	100	95	103	101	97	95	95	96	89	87	89	91	89	85
U Q	89	85	87	87	95	103	98	119	115	104	159	155	155	157	141	107	107	107	99	96	94	99	91	89
L Q	81	81	79	81	80	86	88	90	89	89	87	83	89	89	83	85	89	89	83	81	87	87	81	81

MONTHLY MEDIANS OF h'F AND h'Es
 SEP. 2019 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										2							14	15	6	3				
MED									281								257	236	208	204				
U Q									292								266	250	232	222				
L Q									270								238	224	208	202				

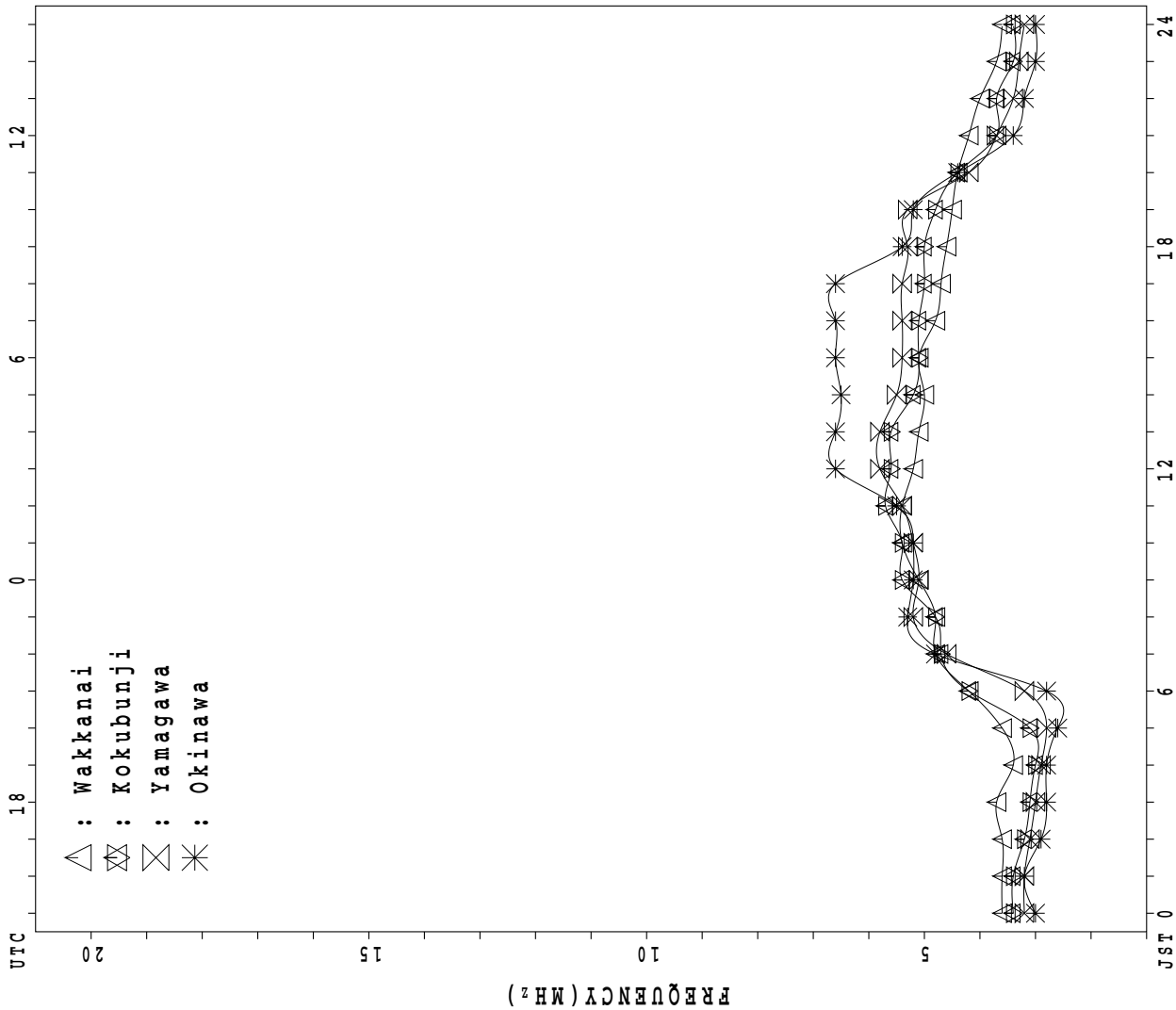
h'Es

	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	19	19	17	11	7	10	9	28	29	30	28	27	29	26	26	25	26	28	27	26	28	22	17	19
MED	81	81	83	83	81	89	97	99	101	95	93	101	101	101	100	95	99	95	89	85	87	87	85	89
U Q	89	83	86	95	85	107	115	116	113	107	113	149	154	119	133	108	113	101	95	93	89	89	89	95
L Q	81	79	79	79	79	83	83	93	89	89	88	89	87	85	89	89	89	88	85	81	82	81	83	83

MONTHLY MEDIANS PLOT OF fOF2

SEP. 2019

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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 44	X 43	X 40	38																	X 47	X 54	X 36	X 36	
2	X 34	X 34	X A	A																	A	X 40	X 39	X 29	
3	X 35	X 35	X ^O 31	X 31																	X 46	X 41	X 39	X 35	
4	X 34	X 34	X 34	A										C							X 45	X 46	X 44	X 42	
5	X 38	X 41	X 37	X 37																	X 48	X 48	X 46	X 42	
6	X 44	X 43	X 39	X 42																	X 56	X 50	X 48	X 39	
7	X 35	X 35	X 34	X 34																	X 51	X 49	X 48	X 45	
8	X 43	X 41	X 39	X 45																	X 48	X 55	X 51	X 50	
9	X 48	X 48	X 47	X 51							47										X 54	X 49	X 44	X 41	
10	X 39	X 39	X 36	X 35																X 47	X 45	X 45	X 43	X 37	
11	X 35	X 35	X 35	X 31																	A	X 49	X 45	X 43	
12	X 41	X 40	X 37	X 37	X 39																X 45	X 45	X 46	X 37	
13	X 35	X 34	X 34	X 35	X 32																50	X 40	X 41	X 41	X 41
14	X 40	X 40	X 40	X 41	X 40	44															X 50	X 54	X 55	X 49	X 40
15	X 39	X 39	X 41	X 41	X 42																X 54	X 55	X 55	X 56	X 48
16	X 44	X 47	X 48	X 52	X 52																X 45	X 47	X ^O 44	X 48	X 43
17	X 40	X 42	X 42	X 42	X 44																X 54	X 52	X 54	X 51	X 52
18	X 49	X 45	X 41	X 41	X 37																X 47	X 48	X 47	X 47	X 46
19	X 46	X 44	X 43	X 43	X 35																X 48	X 43	X 40	X 40	X 40
20	X 40	X 37	X 37	X 35	X 35																X 48	X 48	X 46	X 46	X 44
21	X 37	X 37	X 37	X 35	X 35																X 50	X 47	X 44	X 42	X 39
22	X 37	X 37	X 36	X 38	X 35																X 45	X 48	X 46	X 46	X 45
23	X 45	X 42	X 44	X 43	X 42																X 51	X 53	X 53	X 51	X 50
24	X 49	X 49	X 49	X 53	X 54																X 59	X 53	X 47	X 47	X 51
25	X 48	X 45	X 51	X 48	X 36																X 51	X 49	X 49	X 45	X 43
26	X 43	X 41	X 41	X 41	X 41																X 55	X 51	X 46	X 40	X 42
27	X 41	X 40	X 40	X 41	X 44																X 43	X 43	X 41	X 40	X 39
28	X 37	X 37	X 38	X 38	X 33																X 51	X 47	X 52	X 45	X 45
29	X 45	X 46	X 46	X 48	X 39																X 45	X 42	X 42	X 41	X 45
30	X 43	X 47	X 49	X 49	X 45																X 58	X 57	X 56	X 57	X 50
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	29	28	19	1					1									20	28	30	29	30	
MED	X 40	X 40	X 40	X 41	X 39	44					47									X 50	X 48	X 47	X 45	X 42	
U Q	X 44	X 44	X 44	X 44	X 44															X 52	X 52	X 52	X 48	X 45	
L Q	X 37	X 37	X 36	X 36	X 35															X 46	X 46	X 44	X 41	X 39	

SEP. 2019 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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	37	36	33	F 26	28	C	37	A	RE 44	GE 36	GE 39	R	R	41	40	43	41	42	42	49	41	48	30	30	
2	28	28	A	A	29	AU 31	R	33	42	40	42	R	A	A	36	40	37	41	A	38	42	A	33	32	22
3	28	28	25	R 24	B	A	33	R 37	38	39	A	RE 39	GE 40	GE 40	GE 39	R 44	39	A	39	42	39	34	32	28	
4	27	27	27	A	A	A	A	37	38	39	40	EG 40	EG 42	CE 39	EG 38	R 42	40	40	R 31	41	J 38	R 39	37	35	
5	31	34	30	30	32	34	31	38	A	A	R 40	EG 47	EG 36	50	44	45	50	44	A	40	44	J 41	R 41	39	35
6	37	36	32	35	EG 38	EG 32	38	39	A	A	44	46	A	46	48	49	44	A	40	48	49	43	41	32	
7	28	28	27	27	29	30	45	46	46	48	48	47	47	48	48	43	44	48	44	51	44	42	41	38	
8	36	34	32	38	33	36	42	50	43	43	48	43	46	A	49	49	47	46	52	A	41	48	44	43	
9	41	41	40	44	42	R 42	38	38	44	43	A	47	49	49	46	46	43	41	43	47	47	42	37	34	
10	32	32	29	28	26	26	37	42	EG 41	EG 39	40	41	46	44	46	A	42	EG 39	EG 36	40	38	38	36	30	
11	28	28	28	24	24	27	UR 40	40	A	A	44	A	A	A	A	A	45	40	A	A	A	42	38	36	
12	34	33	30	30	32	34	46	38	41	42	46	48	48	50	44	44	42	44	40	38	38	39	A	30	
13	28	27	27	28	25	34	40	44	44	45	47	46	46	50	48	44	47	46	44	43	33	34	34	34	
14	33	33	33	34	F 29	F 32	41	50	44	47	49	50	46	46	48	45	45	46	43	43	47	48	42	33	
15	32	32	34	34	35	35	40	46	48	43	49	46	49	49	45	45	45	49	48	47	48	48	49	41	
16	F 34	F 37	F 36	F 38	F 39	43	44	44	53	56	51	48	51	55	50	50	45	49	36	38	40	37	R 41	36	
17	33	35	35	35	37	36	46	48	54	50	52	55	53	55	52	50	46	45	48	47	45	47	44	45	
18	42	38	34	34	30	34	38	49	50	50	53	57	52	53	56	52	50	48	42	40	41	40	40	39	
19	39	37	36	36	28	32	41	50	50	53	55	57	52	49	54	54	51	44	39	41	36	33	33	33	
20	33	30	30	28	28	28	40	45	53	48	54	52	48	42	52	50	47	45	45	41	41	39	39	37	
21	30	30	30	28	28	28	42	46	48	47	56	A	52	53	52	51	46	44	41	43	40	37	35	32	
22	30	30	29	31	28	28	43	43	44	47	53	58	54	57	60	51	48	48	37	38	41	39	39	38	
23	37	36	38	36	35	32	36	38	A	46	49	52	51	50	48	52	45	45	44	44	46	46	F 36	43	
24	42	42	42	46	47	48	44	45	A 49	48	50	54	43	A	53	54	52	54	54	52	46	40	40	44	
25	41	38	F 37	41	29	26	34	41	A	50	49	49	49	49	49	48	47	49	43	44	42	42	38	36	
26	36	34	34	34	34	34	36	41	44	48	54	52	54	51	48	48	41	44	50	48	44	39	34	35	
27	34	33	33	34	F 33	33	41	43	46	56	53	56	54	55	46	45	42	45	45	36	36	34	33	32	
28	30	30	31	31	26	28	47	47	45	A	57	63	51	52	54	54	50	46	46	44	40	45	38	38	
29	38	39	39	41	32	33	44	50	52	56	62	56	64	61	58	52	50	49	44	39	35	35	34	38	
30	36	40	42	42	38	38	45	45	A	45	58	54	67	56	52	49	51	47	47	51	50	49	50	43	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	29	28	28	26	29	29	24	26	28	26	26	26	29	28	30	27	29	28	28	30	29	30	
MED	34	34	33	34	31	33	40	44	44	47	49	50	49	50	48	48	45	45	43	43	41	40	38	36	
U Q	37	37	36	37	35	35	44	46	50	50	54	55	52	53	52	51	48	48	46	47	46	45	41	38	
L Q	30	30	30	28	28	28	37	38	44	43	45	46	46	46	46	44	42	44	40	40	38	37	34	32	

SEP. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP.2019 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					D C 236	L A	H 360	364	392	396	396	372	372	356	356	316	416			B				
2					A 276	A 276	A 340	A 364	L	A	A	L		348	348	L	A	A	A					
3					B A	A 304	L	L	368	A	L	396	396		364	L	A	L	A					
4					A A	A A	340	356	348	404	L	L	L	C	392	368	L	L	A	A				
5					A L	L 308	L	A	A	L	L	L	L	L	L	L	360	L	A	L				
6					A 204	L	L	L	A	A	L	L	A	L	L	L	L	A	A	B				
7						L	L	L	L	L	L	L	L	L	L	L	L	L	L					
8					L	L	348	L	L	L	416	L	L	A	L	368	L	L	L	A				
9						L		356	360	L	L	L		412	396	L	L	L						
10					A	A	340	360	L	396	320	400		L	A	A	344	392	352					
11					B		360	L	A	A	L	A	A	A	A	A	L	L	A					
12						L	L	L	L	L	L	404	408	L	L	L	L	L						
13					L	L	348	392	L	L	L	L	L	408	396	L	364	L						
14						L	L	372	400	400	L	L	L	L	L	368	L	L						
15					L	L	L	L	L	L	L	L	L	L	L	L	360	L						
16					L	L	L	384	412	L	L	L	L	400	400	L	L	A	A					
17						L	388	L	408	L	L	L	L	396	L	L	L							
18					L	356	396	L	412	L	416	416	L	L	L	L	L							
19						L	392	392	412	420	412	L	L	368	344	L	L							
20						L	388	404	L	L	420	L	L	L	L	L	L							
21						L	L	L	A	A	412	A	A	A	A	A	A							
22						L	L	L	408	L	L	L	L	L	L	L	L							
23						L	L	A	L	L	L	L	L	L	L	L	L							
24						L	A	L	L	A	A	A	A	A	L	L	L							
25						L	400	A	A	404	L	404	396	396	L	L	L							
26					L		L	400	L	416	L	388	L	L	L	L	L							
27					L		L	L	392	424	400	L	L	L	L	L	L							
28						L	L	A	L	L	L	412	400	L	L	L	L							
29						L	L	L	412	L	L	L	L	376	L	L	L							
30							A	408	L	420	L	396	396	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	1	5	6	12	11	12	7	11	10	10	7	6	2	2					
MED					D C 240	236	308	352	378	392	408	404	412	398	396	368	358	354	384					
U Q							354	356	390	404	412	420	416	408	396	368	360							
L Q							290	340	360	364	402	396	400	396	376	356	344							

SEP.2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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					B 196	A 208	A 212	A 232	A 300	A 288	A 276	A 280	A 272	A 248	A 196	A A	B							
2					A A	A 188	A 232	A 248	A 248	A 296	A 308	A 304	A 256	A 296	A 272	A 244	A 192	A 228	A A					
3					B 272	A 248	A 228	A 248	A 260	A 260	A 264	A 296	A 304	A 276	A 256	A 232	A 196	A A	A A					
4					A A	A A	A 280	A 292	A 304	A 308	A 272	A 260	C 300	B 276	B 240	A 208	A A							
5					A 200	A 200	A 232	A 260	A 288	A A	A 296	A 292	B 284	B A	A 240	A 192	A A	A A						
6					A 248	A 264	A 228	A 256	A 256	A 284	A 316	A A	A A	A 276	A 276	A 240	A 260	A A						
7					B B	B 204	B 232	B 280	B 288	B 292	B 316	U R 320	A 280	A 236	A 276	A 248	A 200	A A	A A					
8					B B	B 256	B 212	B 244	B 264	B A	B A	B 256	B 312	B 268	B 272	B 244	B 196	B A	B A					
9					B A	B 228	B 252	B 272	B 280	B 276	B 268	B 288	B 304	B 276	B 264	B 232	B 192	B 284	B A					
10					252	A A	A 264	A 264	A 280	A 284	A 300	A A	A 300	A 280	A 252	A 228	A 180	A A						
11					B B	B 188	U A 232	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A	A A					
12					B B	B 236	B 244	B 264	B 288	B 288	B 288	B 264	B 264	B 268	B 216	B 240	B 212	B A						
13					A A	A 196	A 276	A 284	A 292	A 292	A 312	A 308	A 308	A 284	A 268	A 256	A 204	A A						
14					B B	B 252	A A	A 272	A 264	A A	A A	A 316	A 288	A A	A 296	A 232	A A	A A						
15					B B	B 196	B 196	B A	B 280	B 288	B 292	B 300	B 312	B 292	B 272	B 236	B 192	B A						
16					B B	B 280	B 248	B 248	B 292	B A	B 304	B 288	B 296	B 280	B 240	B 240	B 196	B A						
17					B B	B 208	B 260	B 272	B 296	B 292	B 284	B 304	B 304	B 284	B 256	B A	B 256	B A						
18					B B	B 176	B 244	B 272	B 272	U R 312	B 312	B 304	B 296	B 280	B A	B 204	B A	B A						
19					B B	B 216	B 248	B 276	B 284	B 304	B 284	B 308	B 304	B 280	B 260	B A	B 196	B A						
20					A A	A A	A 232	A 268	A 300	A 320	A 320	A 316	A 296	A 280	A 280	A 240	A 252	A A						
21					B B	B 212	B 236	B 272	B 272	B A	B A	B A	B A	B A	B A	B A	B A	B A						
22					B B	B 184	B 252	B 272	B 292	B 292	B 304	B 284	B 260	B 284	B 284	B 240	B 200	B B						
23					B B	B 188	B 224	B 284	B 284	B 296	B 268	B A	B 240	B 212	B A	B 204	B A	B A						
24					B B	B 192	B 224	B 256	B 292	B 292	B 292	B A	B 312	B 288	B 264	B 228	B A	B A						
25					B B	B 196	B 216	B 260	B 284	B 292	B 308	B 316	B 292	B 292	B 272	B 224	B A	B B						
26					B B	B 176	B 240	B 264	B 280	B 296	B A	B 296	B 308	B 276	B 252	B 212	B 208	B B						
27					B B	B 184	A A	A 264	A 288	A 300	A 280	A 296	A 276	A 276	A 232	A 224	A 220	B B						
28					B B	B 204	B 228	B 260	B 268	B 268	B 276	B 308	B 288	B 276	B 256	B 224	B A	B B						
29					B B	B 204	B 240	B 268	B 268	B 288	B 284	B 260	A A	B 260	B A	B 216	B A	B B						
30					B B	B 184	B 224	B 240	B 268	B 272	B 296	B A	B 280	B 260	B 248	B 204	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					1	4	27	28	28	28	24	24	23	24	27	24	26	19	2	1				
MED					252	224	204	232	264	282	292	294	296	296	280	266	234	196	272	228				
U Q					260	228	248	272	290	298	308	308	304	284	274	240	208							
L Q					198	188	226	256	268	286	282	288	278	276	254	224	192							

SEP. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP.2019 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 49	J A 46	J A 27	39	30	D C 24	30	J A 62	J A 30	J A 33	J A 33	46	35	38	31	G	29	25	34	E B 18	E B 17	E B 19	23	24	
2	36	E B 11	J A 42	39	J A 41	35	J A 25	J A 43	J A 52	J A 46	39	J A 53	J A 42	41	37	30	J A 37	J A 43	J A 38	36	J A 109	94	34	37	
3	E B 20	E B 21	E B 19	22	B	37	29	31	31	104	63	J A 32	39	37	37	35	31	48	J A 77	J A 65	35	37	J A 25	32	
4	28	E B 18	J A 29	45	42	59	71	J A 85	J A 120	J A 56	38	40	J A 31	C	36	32	J A 38	J A 32	J A 97	64	60	57	J A 56	56	
5	J A 44	J A 39	35	31	J A 65	27	J A 30	J A 37	J A 45	J A 71	71	108	68	33	E B	G E 30	B	G J 28	J A 26	J A 35	J A 102	J A 51	J A 43	J A 35	J A 31
6	28	J A 29	26	49	44	42	39	35	64	J A 44	J A 56	J A 56	J A 57	J A 50	J A 41	J A 49	J A 35	J A 66	J A 35	J A 34	42	30	E B 27	18	
7	E B 20	22	E B 17	16	22	22	J A 21	J A 25	J A 30	J A 32	35	G	G	32	31	38	29	26	J A 25	J A 28	26	16	23	28	
8	31	57	30	25	E B 22	16	J A 38	J A 51	J A 60	J A 50	36	35	33	63	63	46	44	J A 30	30	56	51	23	J A 51	J A 49	
9	J A 44	E B 18	E B 19	17	J A 22	J A 41	J A 42	37	43	40	51	39	38	40	37	34	38	42	49	68	34	E B 18	E B 16	E B 20	
10	E B 20	24	30	38	J A 49	34	36	J A 48	40	53	32	G J 31	J A 42	J A 47	J A 107	64	J A 34	J A 28	31	33	33	29	32		
11	28	E B 18	E B 20	24	E B 26	20	22	J A 31	J A 138	70	63	J A 63	75	69	85	71	J A 56	J A 32	59	J A 107	J A 107	51	50	J A 39	
12	31	E B 17	E B 20	37	E B 19	28	J A 41	G 28	J A 32	J A 56	J A 59	J A 61	J A 41	35	35	35	J A 32	J A 30	J A 33	40	38	38	60	J A 29	
13	E B 19	E B 21	J A 183	23	J A 28	66	J A 25	J A 31	J A 35	J A 32	29	G 29	37	35	33	33	J A 36	25	34	18	51	34	J A 36	J A 40	
14	35	29	32	32	E B 22	19	40	J A 51	J A 42	J A 50	J A 66	J A 61	43	33	33	J A 32	J A 28	J A 30	J A 32	34	41	36	J A 26	E B 20	
15	E B 20	E B 24	E B 13	E B 20	E B 18	20	J A 21	J A 27	J A 31	J A 53	35	34	34	34	34	J A 34	J A 30	J A 21	33	E B 16	E B 19	E B 64	J A 50	36	
16	40	26	E B 13	E B 16	E B 18	21	J A 35	J A 31	J A 31	J A 36	38	G	G	G	J A 32	J A 31	G 28	G 29	G 27	29	36	E B 20	30	E B 20	
17	E B 16	E B 18	E B 14	E B 20	E B 21	17	23	28	30	39	J A 35	34	36	32	34	J A 63	J A 27	36	36	28	E B 19	E B 19	E B 18	E B 18	
18	E B 24	E B 20	E B 19	E B 20	E B 19	18	J A 23	28	31	35	J A 254	J A 128	J A 41	33	G 44	G	J A 36	J A 32	19	E B 16	E B 19	E B 21	E B 18	E B 18	
19	E B 20	E B 21	E B 19	E B 19	E B 18	19	24	30	33	J A 32	J A 48	33	G	G	G	30	31	30	35	J A 69	42	J A 29	E B 19	E B 18	
20	E B 24	E B 17	E B 28	E B 17	J A 43	J A 27	55	36	32	36	32	33	36	32	J A 57	J A 51	J A 29	J A 37	J A 42	J A 39	35	34	34	E B 20	
21	27	27	27	29	E B 20	20	27	26	31	J A 46	J A 52	J A 56	47	55	51	J A 60	J A 43	40	37	E B 18	E B 18	E B 20	E B 20	28	
22	27	31	E B 20	27	J A 19	E B 20	21	28	34	J A 33	J A 37	39	40	32	38	J A 36	J A 35	J A 22	J A 19	E B 26	E B 25	E B 23	E B 16	J A 45	
23	E B 20	E B 20	J A 33	38	E B 27	20	21	30	J A 48	J A 57	J A 54	J A 47	J A 38	52	35	J A 32	J A 26	J A 46	J A 70	J A 35	J A 36	J A 34	J A 56	J A 56	
24	J A 29	J A 19	E B 13	E B 26	E B 18	22	27	J A 41	J A 62	J A 35	J A 52	J A 45	J A 48	64	62	J A 43	J A 67	J A 58	J A 83	J A 90	J A 99	J A 58	J A 44	J A 36	
25	J A 37	J A 34	J A 48	J A 31	J A 43	23	28	30	36	J A 47	38	36	35	34	33	30	30	38	J A 62	38	35	40	37	31	
26	E B 18	J A 129	E B 19	24	E B 18	18	23	31	32	36	36	J A 35	J A 46	39	31	31	24	27	E B 18	36	E B 25	E B 20	E B 20	E B 19	
27	E B 19	E B 18	E B 20	28	E B 14	E B 16	21	J A 31	30	32	G	31	34	31	G	29	28	31	E B 18	E B 20	E B 18	E B 25	E B 19	E B 20	
28	E B 20	E B 19	E B 18	19	E B 19	19	J A 21	31	J A 38	J A 49	58	34	37	36	32	31	J A 36	J A 17	E B 18	E B 18	44	J A 37	32	34	
29	38	26	29	31	29	26	29	30	J A 52	34	34	J A 35	J A 35	32	32	43	38	32	E B 17	36	J A 45	E B 16	E B 20	E B 20	
30	E B 20	E B 23	E B 20	E B 18	E B 12	E B 18	22	29	J A 49	45	31	J A 37	J A 32	G	28	30	J A 23	E B 18	E B 18	J A 27	E B 18	E B 26	E B 26	E B 21	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	29	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	
MED	27	E B 22	E B 20	26	E B 22	22	27	31	J A 36	J A 44	38	36	37	37	34	34	32	30	34	35	35	32	28	28	
U Q	35	29	30	32	J A 36	28	36	J A 37	J A 49	J A 53	J A 56	J A 53	J A 42	42	J A 38	44	38	37	J A 42	J A 64	45	38	J A 36	J A 36	
L Q	E B 20	E B 18	E B 19	E B 20	E B 18	E B 19	22	29	J A 31	35	35	33	34	33	31	31	28	26	E B 27	E B 26	E B 25	E B 20	E B 20	E B 20	

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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	E 30	E 26	E 17	E 18	17	19	22	A 62	A 28	32	31	32	34	34	29	G	27	23	26	E 18	E 17	E 19	E 19	E 18	
2	E 24	E 11	E 42	A 39	A 24	A 35	22	A 29	A 26	30	32	A 53	A 42	32	32	27	G	A 27	A 43	24	A 21	A 109	19	A 19	
3	E 20	E 21	E 19	E 19	B 37	A 23	29	27	33	63	32	33	31	35	30	A	30	A 48	25	A	20	20	20	E 18	
4	E 18	E 18	E 19	A 45	A 42	A 59	A 71	28	G 28	G 29	32	33	31	C	33	30	26	25	E 27	A	20	26	A	25	
5	E 25	E 20	E 18	E 18	26	21	25	30	A 45	A 71	34	33	33	E 33	G	E 30	G	24	23	23	26	20	23	23	
6	E 18	E 18	E 20	E 20	16	16	G 20	24	A 64	A 44	34	33	A 57	33	36	34	30	A 66	A 26	G 23	16	18	16	E 18	
7	E 20	E 16	E 17	E 16	E 16	E 16	G 18	24	G 28	G 27	32	G	G	30	30	30	26	24	22	18	22	E 16	18	20	
8	20	19	19	E 16	E 16	E 16	26	31	26	32	32	34	32	A 63	35	29	30	22	20	A 56	E 18	17	23	E 18	
9	E 18	E 18	E 19	E 17	22	33	G 19	G 25	G 30	G 27	25	32	32	33	29	32	32	26	G 25	G 30	E 18	E 18	E 16	E 20	
10	E 20	E 17	E 19	A	G 25	E 18	G 21	G 24	G 25	G 29	32	G	31	34	35	A 107	A	25	29	22	22	24	E 21	E 20	24
11	20	E 18	E 20	E 18	E 26	E 20	20	30	A 138	A 70	34	A 63	A 75	A 69	A 85	A 71	32	23	A 59	A 107	A 107	E 29	E 29	E 27	
12	E 24	E 17	E 20	E 25	E 19	E 20	24	26	G 27	G 32	38	G 32	36	32	32	27	26	G 22	G 22	24	21	E 21	E 60	E 21	
13	E 19	E 21	E 17	E 22	E 19	E 20	22	26	G 29	G 29	29	G 27	35	32	31	28	27	19	19	18	21	21	25	25	
14	E 19	E 20	E 20	E 19	E 19	E 19	G 24	26	29	29	36	31	34	32	33	30	26	22	20	25	30	25	23	E 20	
15	E 20	E 24	E 13	E 20	E 18	E 20	G 18	24	28	31	30	32	32	32	32	30	26	20	22	E 16	E 19	25	20	19	
16	26	23	E 13	E 16	E 18	E 21	G 25	26	29	32	34	G	G	G	31	28	23	25	17	19	E 26	E 20	E 26	E 20	
17	E 16	E 18	E 14	E 20	E 21	E 17	G 20	26	28	36	32	31	32	31	31	27	25	27	26	21	E 19	E 19	E 18	E 18	
18	E 24	E 20	E 19	E 20	E 19	E 18	G 18	24	30	33	31	31	33	31	G 31	31	G	26	23	19	E 16	E 19	E 21	E 18	
19	E 20	E 21	E 19	E 19	E 18	E 19	G 21	28	29	30	33	33	G	G	G	30	25	20	20	30	21	E 26	E 19	E 18	
20	E 24	E 17	E 19	E 17	E 20	E 19	G 20	25	30	30	31	31	34	30	33	31	24	G 22	G 18	28	E 21	E 20	E 27	E 20	
21	E 18	E 19	E 20	E 19	E 20	E 20	G 20	25	31	35	50	A 56	35	A	A	A	38	E 28	A 21	E 18	E 18	E 20	E 20	18	
22	E 20	E 27	E 20	E 20	E 19	E 20	G 20	24	31	30	34	34	33	30	32	30	25	G 18	G 19	26	E 25	E 23	E 16	E 28	
23	E 20	E 20	E 21	E 26	E 20	E 20	20	25	A 48	32	32	31	32	37	32	34	30	26	26	32	25	E 24	E 23	E 20	
24	E 20	E 19	E 13	E 26	E 18	E 22	G 23	32	32	34	44	42	34	A 64	A	32	27	28	25	26	22	E 20	E 20	E 20	
25	24	20	24	20	E 23	E 19	G 18	27	A 36	44	36	33	33	33	31	28	23	23	19	E 19	E 18	E 18	24	26	
26	E 18	E 15	E 19	E 21	E 18	E 18	22	27	27	31	32	34	39	32	G 32	G 25	23	G 20	G 18	31	E 25	E 20	E 20	19	
27	E 19	E 18	E 20	E 20	E 14	E 16	19	25	27	32	G	30	31	28	G	28	23	G 22	G 18	20	E 18	E 25	E 19	20	
28	E 20	E 19	E 18	E 19	E 19	E 19	G 20	27	A 49	32	30	33	33	30	28	25	E 25	E 17	E 18	E 18	E 25	E 25	E 23	25	
29	E 25	E 19	E 16	E 18	E 21	E 21	G 18	24	29	31	32	32	32	30	27	27	24	E 24	E 17	22	22	E 16	E 20	E 20	
30	E 20	E 20	E 20	E 18	E 12	E 18	G 18	28	A 49	34	29	33	30	G	27	G 24	G 20	E 18	E 18	24	E 18	E 26	E 26	E 21	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	29	29	30	30	30	29	30	30	30	30	28	28	29	30	30	30	28	29	30	28	30	
MED	E 20	E 19	E 19	E 19	E 19	E 20	20	26	29	32	32	32	33	32	G	30	26	23	22	22	E 21	E 20	E 20	E 20	
U Q	E 24	E 20	E 20	E 20	E 22	E 21	23	28	A 32	34	34	33	34	33	33	31	27	26	25	27	25	25	24	23	
L Q	E 19	E 18	E 17	E 18	E 18	E 18	G 19	25	G 28	G 30	31	G	G	32	31	31	28	24	E 22	E 19	E 19	E 18	E 19	E 18	

SEP. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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

$\begin{matrix} H \\ D \end{matrix}$	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	19	17	18	16	12	16	12	16	16	15	15	16	18	17	16	16	16	18	18	17	19	19	18
2	19	11	15	17	16	17	12	12	12	16	15	15	16	17	17	16	14	12	16	16	18	18	16	18
3	20	21	19	19	B	17	16	15	15	15	15	18	14	17	14	14	12	12	16	17	16	16	18	15
4	18	18	12	12	16	16	15	17	17	16	18	12	19	C	17	19	16	16	15	16	17	20	19	18
5	20	20	17	18	17	15	16	16	12	13	22	23	17	33	18	30	15	15	15	18	18	19	18	16
6	18	17	20	18	16	15	16	14	14	17	17	18	22	17	17	14	16	15	15	16	16	16	15	18
7	20	17	17	16	16	16	15	13	17	14	17	17	16	16	13	15	14	16	16	16	16	16	17	15
8	19	17	16	16	16	16	16	16	14	14	16	18	16	16	14	15	15	11	16	16	17	17	16	18
9	18	18	19	17	16	16	16	13	12	12	14	14	16	12	12	13	12	12	17	25	18	18	16	20
10	20	17	17	18	19	18	16	17	17	12	17	16	17	14	16	14	12	12	11	17	17	20	15	20
11	18	18	20	18	26	20	12	12	15	17	15	17	18	13	12	12	12	16	18	16	19	18	18	18
12	23	17	20	18	19	20	12	18	16	15	13	14	14	16	16	14	12	16	17	18	19	21	20	20
13	19	21	18	19	18	17	12	16	17	13	18	16	17	19	13	12	13	12	18	18	18	20	19	19
14	19	20	18	19	19	19	13	16	15	15	20	18	16	14	16	13	12	17	17	17	19	20	16	20
15	20	24	13	20	18	20	11	14	12	13	13	14	14	19	15	15	12	15	16	16	19	18	18	13
16	14	22	13	16	18	21	17	16	11	14	14	18	14	12	13	13	12	12	16	17	19	20	18	20
17	16	18	14	20	21	17	14	16	13	15	17	14	14	17	15	13	12	12	12	21	19	19	18	18
18	24	20	19	20	19	18	12	13	14	14	15	16	17	19	14	14	13	15	17	19	16	19	21	18
19	20	21	19	19	18	19	18	12	18	18	18	19	14	14	14	15	10	11	11	19	19	20	19	18
20	24	17	20	17	12	13	12	12	14	16	14	18	17	15	12	16	16	17	18	18	20	20	20	20
21	20	20	20	19	20	20	17	12	16	18	20	13	15	16	13	13	12	16	21	18	18	20	20	18
22	20	19	20	20	19	20	11	13	13	14	15	15	16	15	16	12	11	15	19	26	25	23	16	18
23	20	20	21	18	19	20	12	12	16	16	14	16	13	15	12	11	13	15	19	18	18	20	19	21
24	20	19	13	26	18	22	12	13	11	14	13	15	13	14	18	13	12	14	18	18	18	20	17	21
25	20	19	20	17	19	18	12	14	12	13	13	16	16	16	16	18	12	12	18	19	20	20	21	20
26	18	14	19	17	18	18	12	12	12	13	16	14	17	21	15	12	12	17	18	20	25	20	20	19
27	19	18	20	14	14	16	17	16	12	12	12	12	13	14	13	12	14	16	18	20	18	25	19	20
28	20	19	18	19	19	19	16	12	12	12	12	15	15	15	15	13	15	17	18	18	18	20	20	18
29	18	20	16	18	20	20	17	16	12	16	16	13	13	13	14	14	12	17	17	17	16	16	20	20
30	20	20	20	18	12	18	15	12	14	14	17	17	16	16	15	16	13	18	18	18	18	26	26	21
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	29	30	30	30	30	30	30	30	30	30	30
MED	20	19	18	18	18	18	15	14	14	14	15	16	16	16	15	14	12	15	17	18	18	20	18	18
U Q	20	20	20	19	19	20	16	16	16	16	17	18	17	17	16	15	14	16	18	19	19	20	20	20
L Q	18	17	16	17	16	16	12	12	12	13	14	14	14	14	13	13	12	12	16	17	17	18	17	18

SEP. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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	316	301	341	279 ^F	301		327 ^C		305 ^A					310	322	270	280	311	312	313	269	338	276	308		
2	298	326		326 ^A		303 ^A	270 ^R	286	298	288				334	365	385	306		317	291		280	287	317		
3	304	319	305	272 ^R		303 ^A	359 ^R	381	377 ^R												332	239	324	311	325	326
4	315	330	330					334	396	390	403															
5	316	308	306	306	298	392	401	341																		
6	344	303	335	309	333		363	338																		
7	335	335	327	327	318	336	356	354	365	364	334	334	341	347	336	313	329	345	339	339	338	320	309	310		
8	315	317	327	291	333	347	364	354	357	351	347	382	302													
9	318	317	330	336	353	345 ^R	359	291	334	298	268	303	328	330	359	349	329	329	341	317	300	304	319	325		
10	320	321	317	315	323	323	359	340	338																	
11	342	314	356	340	328	379	254	345																		
12	324	337	313	333	319	334	387	392	298	279	279	329	353	360	333	348	335	352	362	321	321	318				
13	342	331	329	319	315	254 ^F	369	344	368	351	342	327	318	354	330	326	328	334	344	380	310	318	318	341		
14	326	327	341	325	315	338 ^F	360	369	365	395	338	330	349	347	334	325	322	349	340	328	301	302	380	334		
15	316	325	329	330	332	328	327	339	372	323	372	357	340	334	310	334	332	357	346	323	315	294	311	320		
16	322 ^F	312 ^F	305 ^F	325 ^F	344 ^F	318	331	328	344	351	363	316	329	347	354	351	366	363	337	321	308	336	301	320		
17	327	304	321	336	328	310	356	376	369	358	352	347	354	354	366	347	344	345	349	313	321	309	326	333		
18	339	332	322	322	315	344	348	372	364	364	350	337	340	333	348	370	358	379	360	335	316	308	309	303		
19	303	316	323	314	325	308	352	335	353	379	341	338	342	351	346	359	367	370	348	329	318	298	323	339		
20	319	336	336	338	336	337	376	372	365	374	367	357	353	398	350	355	353	359	356	334	326	317	325	342		
21	327	325	299	319	328	356	379	408	387	393	366															
22	340	326	330	322	331	331	383	383	373	334	339	373	351	347	358	354	371	362	354	318	322	337	318	328		
23	332	314	328	347	341	349	344	369																		
24	327	307	314	325	337	337	331	374	382	362	371	373	353													
25	328	314	321	297	319	276	347	351																		
26	333	336	335	339	345	339	370	359	363	358	341	368	349	351	355	367	346	354	350	336	365	344	331	308		
27	315	323	323	312	316	317	361	368	334	377	331	369	358	388	361	365	348	351	364	331	339	325	317	322		
28	320	320	312	312	289	332	392	360	318																	
29	278	307	308	345	322	311	359	396	346	352	343	361	341	359	348	363	372	358	359	326	306	307	305	296		
30	303	316	341	331	338	328	396	351																		
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	29	28	28	26	29	29	24	26	29	26	26	26	29	28	30	27	29	28	27	30	29	30		
MED	321	320	327	324	327	333	359	354	364	356	342	342	342	347	348	348	340	352	341	327	321	318	323	324		
U Q	332	327	332	334	334	344	373	372	370	374	361	368	353	354	356	362	358	359	354	336	329	331	330	334		
L Q	315	314	314	312	317	317	338	340	336	334	326	327	328	333	326	326	329	342	330	318	307	307	310	313		

SEP. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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					D C 317	L A	H 407	410	378	400	424	422	391	401	366	361	320			B				
2					413	A 354	A 381	396		L	A	A	L	429	374	L	A	A	A					
3					B A 332	L	L	439		A	L	395	387		390	L	A	L	A					
4					A A A	A 395	452	460	393		L	L	L	C 429	408	L	L	A	A					
5					A L 383	L	L	A	A	L	L	L	L	L	L	L	365	L	A	L				
6					A 551	L	L	A	A	L	L	A	L	L	L	L	L	A	A	B				
7						L	L	L	L	L	L	L	L	L	L	L	L	L	L					
8					L L 337	L	L	L	L	L	380	L	L	A	L	411	L	L	L	A				
9						L	L	L	L	L	L	L	L	376	367	L	L	L						
10					A A	A 369	371	L	408	500	419	A	A	A	A	A	387	340	323					
11					B 405	L	A	A	L	A	A	A	A	A	A	A	L	L	A					
12						L	L	L	L	L	419	392	L	L	L	L	L	L						
13					L L 413	L 372	L	L	L	L	L	L	L	387	397	L	359	L						
14						L L 398	375	430		L	L	L	L	L	L	433	L	L						
15					L L L	L	L	L	L	L	L	L	L	L	L	L	374	L						
16					L L L	L	L	L	L	L	L	L	L	386	375	L	L	A	A					
17						L L 383	L	405		L	L	L	L	382	L	L	L							
18					L L 377	L 382	L	389		L	395	402	L	L	L	L	L							
19						L L 396	393	385	407	414	L	L	L	383	382	L	L							
20						L L 410	406	L	L	L	392	L	L	L	L	L	L							
21						L L L	L	A	A	A	417	A	A	A	A	A	A							
22						L L L	L	L	L	L	385	L	L	L	L	L	L							
23						L L L	A	L	L	L	L	L	L	L	L	L	L							
24						L L L	A	L	L	A	A	A	A	A	A	L	L							
25						L L 344	A	A	391	L	410	390	374	L	L	L	L							
26					L L L	L	L	371	L	390	L	419	L	L	L	L	L							
27						L L L	L	406	402	432	L	L	L	L	L	L	L							
28						L L L	L	A	L	L	L	382	391	L	L	L	L							
29						L L L	L	L	377	L	L	L	374	L	L	L	L							
30						L L L	A	L	388	L	383	L	388	385	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	1	5	6	12	11	12	7	11	10	10	7	6	2	2					
MED					D C 482	317	354	374	390	396	390	407	395	389	384	401	370	350	322					
U Q							394	395	408	410	404	432	417	402	397	411	382							
L Q							334	369	382	377	382	390	392	387	374	383	365							

SEP. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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						290	330		A		G		A	R			330	336	428	394	328	348	254	
2					328	A	336	A	394	394	356		A	A			254	254	242	320		A	268	226
3					B	A	364	270	246	266		A		G	G	G		390	312		A	300		A
4					A	A	A	300	278	222	230		G		C	G		378	314	274		A	E	A
5					268	232	230	272		A	A		232	332			300	380	354	280	258	230	280	
6					280	G	226	268		A	A		350	368			A			322		A	238	248
7							252	262	280	270	316	318	306	296	296	332	280	260						
8					242	242	246	250	226	274	308	250	254		A	304	266	278	264	252			A	
9							252	400	328	378	344	362	340	306	286	270	284	294						
10					A		250	306	306		G	306	220	376		A		A		G			272	
11					246		A	518	288		A	330		A	A	A	A			262	250		A	
12								218	220	358		A		298	290	280	286	286	234	252				
13							328	242	272	272	308	308	330	332	288	302	288	288	254					
14							242	250	272	252	318	318	302	312	276	288	316	258						
15							264	248	284	248	304	262	308	308	308	354	316	288	256					
16							236	252	312	272	272	254	354	320	286	286	262	244						
17								240	250	268	286	276	284	274	260	276	232	246	228					
18							248	242	246	276	282	300	300	300	282	246	246							
19								258	264	240	290	266	292	282	290	246	246							
20								236	246	260	250	260	274	212	278	276	244							
21								210	238	248	250		A	310	266	270	240	240	236					
22								242	244	264	298	262	270	266	252	252	232							
23								232	232		A	286	292	288	276	280	300							
24								232	242	242	262	248	268	226		A	A		270	282				
25								260	262		A	258	274	278	294	272	288	262	250					
26						248			266	280	280	262	278	282	246	254	236	262						
27						258		256	260	242	266	258	268	236	274	240	240							
28								260	312		A	328	240	266	306	258	270	228						
29								216	280	262	262	248	278	246	256	254		236						
30									A	276	276	346	258	272	274	262	248							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					5	9	19	26	24	25	28	26	26	25	28	26	28	16	8	5				
MED					268	258	248	259	269	270	288	283	291	282	286	270	270	258	260	251				
U Q					304	309	260	272	293	295	317	330	310	306	303	288	288	269	286	299				
L Q					244	239	232	242	246	259	262	260	270	269	272	254	242	251	234	237				

SEP. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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

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 A} 298	276	224	296	262	^A 258	^A 192	210	212	204	192	190	208	196	212	208	246	^B 290	236	292	258					
2	^{E B} 314	230	^A A	^A A	220	^A 230	^A 200	194	194	^A 198	^A 200	200	230	^A A	^A A	^A A	^A A	^A A	^A A	^A A	^A A	^B A	^A A	^A A	^A A	
3	^{E B} 304	274	286	^B A	^B A	^A A	^A A	210	198	198	198	^A 192	206	202	^{E A} 228	202	228	^A A	^A A	^A A	^A A	238	270	276	230	
4	270	258	254	^A A	^A A	^A A	^A A	218	192	182	180	196	188	^C 182	188	^{E A} 244	226	^A A	^A A	^A A	^A A	256	266	^A A	276	
5	^{E B} 276	274	268	268	^A 202	198	222	^A A	^A A	^A A	196	184	180	186	192	206	202	204	^A A	^A A	^A A	^A A	266	266	250	
6	234	266	246	246	200	202	184	204	^A A	^A A	196	182	^A 196	^A A	206	214	^A A	^A A	^B A	^B A	244	244	206	232		
7	^{E B} 244	266	248	250	248	256	218	192	192	200	194	194	196	190	186	188	222	222	230	230	^A 248	248	250	250		
8	260	250	250	238	216	216	208	206	202	192	196	196	174	^A 208	196	230	206	222	^A 244	^A 232	^A 232	^A 232	^A 232	^A 232		
9	252	232	240	218	212	216	216	222	206	180	196	196	204	192	192	220	226	234	250	268	^Q 260	250	254	242		
10	270	268	276	^A A	^{E B} 256	^A 202	204	194	194	194	188	202	^A A	^A A	^A A	^A A	202	244	^{E A} 234	288	274	264	264	268		
11	268	^{E B} 252	232	246	^B 238	198	198	^A A	^A A	196	^A A	^A A	^A A	^A A	^A A	^A A	190	202	^A A	^A A	^A A	^A A	^A A	^A A	^A A	
12	250	222	232	^{E A} 262	^Q 230	244	198	194	190	212	^A 190	198	172	192	198	162	234	218	266	^Q 282	244	^A 260	^A 260	^B 260		
13	230	^{E B} 258	244	212	^{E B} 270	228	204	196	196	184	174	172	204	198	194	204	204	206	224	192	258	282	270	258		
14	258	^Q 258	232	260	260	228	204	204	218	200	180	194	202	194	172	188	198	208	242	250	^Q 276	242	216	242		
15	250	270	252	242	230	230	202	202	186	190	188	190	190	190	186	202	202	202	216	230	230	264	236	236		
16	^Q 266	236	^Q 244	^Q 244	218	206	216	210	200	196	188	178	188	208	208	196	206	226	222	254	276	244	270	242		
17	242	220	228	228	228	260	226	214	206	204	194	188	188	186	204	188	192	^A 258	^A 258	258	258	252	232			
18	220	234	248	248	248	248	196	210	196	206	198	200	200	190	212	184	198	222	230	230	250	270	236	256		
19	274	274	248	236	258	258	238	204	204	190	190	200	184	184	188	200	208	220	228	238	246	266	280	242		
20	240	256	248	232	^{E A} 236	218	230	194	198	194	194	190	198	180	192	200	200	224	226	248	258	264	252	212		
21	242	^{E B} 266	^{E B} 276	264	248	236	206	206	202	202	^A A	^A A	190	^A A	^A A	^A A	^A A	^A A	^A A	^A A	222	246	250	250	244	248
22	^{E B} 244	^A A	^{E B} 260	236	^{E B} 260	236	218	210	196	190	196	204	198	198	204	204	200	214	226	236	244	230	254	272		
23	242	242	242	242	^{E B} 228	^{E B} 226	190	190	^A A	196	200	200	194	^A A	200	264	226	226	226	246	228	250	246	240		
24	242	230	240	234	224	^Q 218	200	^A A	194	188	^A A	^A A	^A A	^A A	^A A	220	224	214	218	218	210	226	242	244		
25	256	262	258	256	290	310	216	226	^A A	^A A	204	178	182	192	198	214	216	226	226	236	230	230	230	232		
26	232	246	246	256	216	216	224	224	200	200	192	198	198	198	198	^{E A} 224	206	220	234	234	216	216	232	248		
27	248	256	250	256	240	204	218	188	194	198	196	180	184	182	204	168	196	228	220	232	244	264	264	264		
28	^{E B} 276	254	254	254	^{E B} 296	278	212	212	220	^A A	198	198	198	200	226	226	210	228	228	226	296	242	268	288		
29	^Q 274	274	248	230	248	240	230	208	224	198	198	196	196	194	194	216	232	206	212	234	274	240	270	256		
30	^Q 240	248	226	234	204	244	206	230	^A A	206	262	196	188	188	196	202	202	228	252	252	244	244	244	228		
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	26	25	26	28	27	24	25	26	26	26	24	25	27	29	25	24	22	27	29	27	29		
MED	247	256	247	244	232	231	211	206	199	196	196	194	193	192	197	201	206	222	226	237	250	249	252	246		
U Q	270	267	254	256	259	248	221	214	204	201	198	198	198	198	206	214	225	227	232	252	274	265	268	259		
L Q	242	239	240	234	219	216	201	198	194	190	192	188	188	187	192	196	200	207	222	230	244	241	236	234		

SEP. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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					B	114	112	102	96	A	116	A	96	102	106	106	106	106	A	B				
2					A	A	116	100	100	100	112	112	106	100	108	108	108	108	A	108				
3					B	110	110	110	110	110	112	106	106	106	106	106	106	106	A	A				
4					A	A	A	106	120	110	110	96	100	C	108	108	108	112	A	A				
5					A	112	112	112	102	102	A	102	102	B	106	B	106	106	A	A				
6					A	86	90	100	100	100	100	98	A	A	104	104	104	A	110	A				
7					B	B	118	100	100	100	102	108	108	102	102	114	114	106	A	A				
8					B	B	104	92	92	98	A	A	94	102	102	106	106	106	A	A				
9					B	A	114	110	110	110	96	96	108	108	104	104	104	104	108	A				
10					A	A	118	106	106	106	106	106	A	106	106	106	106	106	A					
11					B	B	120	104	A	A	A	A	96	A	A	A	A	A	A	A				
12					B	108	108	108	98	98	98	98	98	98	98	98	98	108	A					
13					A	112	112	112	112	104	104	104	104	104	104	112	100	100	A					
14					B	A	112	112	A	A	A	104	104	A	104	104	A	A	A					
15					B	104	94	A	94	94	104	98	116	106	106	106	106	A						
16					B	108	108	108	108	A	104	104	108	108	108	112	116	A	A					
17					B	124	120	106	106	94	94	94	94	94	94	A	94	A	A					
18					B	116	106	106	106	108	108	108	100	100	A	100	A	A						
19					B	112	112	112	112	102	102	102	102	88	102	A	94	A	A					
20					A	A	110	110	110	98	102	102	102	102	102	102	102	102	A					
21					B	B	106	106	98	A	A	A	A	A	A	A	A	A	A					
22					B	116	106	108	108	108	108	108	98	114	114	114	108	B						
23					B	108	108	98	108	108	94	A	94	94	A	90	A	A						
24					B	122	106	106	106	106	102	A	102	102	106	106	A	A						
25					B	120	110	102	102	102	100	100	106	104	104	114	A	B						
26					B	114	106	106	106	106	A	106	106	106	106	106	106	B						
27					B	108	A	108	108	108	100	112	112	112	100	116	134	B	B					
28					B	138	112	112	112	112	112	112	100	100	100	110	A	B						
29					B	124	104	104	104	102	102	102	A	102	A	102	A	B						
30					B	116	96	102	102	102	102	A	102	104	106	106	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					1	4	26	28	28	28	24	25	23	24	27	24	26	19	2	1				
MED					108	111	113	106	106	106	105	102	104	102	104	106	106	106	109	108				
U Q					113	118	110	110	110	108	106	108	106	106	107	108	108							
L Q					98	108	103	102	101	101	98	100	100	102	103	104	104							

SEP. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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	104	120	120	112	112	110	120	98	98	98	96	98	88	102	146	G	134	116	104	B	B	B	104	96
2	96	B	114	114	114	114	114	104	104	110	198	116	116	104	112	126	104	118	106	106	90	106	96	96
3	B	B	B	B	B	106	106	106	106	100	100	100	100	118	118	122	112	102	102	102	102	100	100	100
4	100	B	116	110	110	102	102	102	110	104	96	94	98	C	112	112	112	112	110	102	102	108	92	94
5	94	94	102	102	96	116	114	104	106	102	102	108	94	B	G	B	130	110	110	104	104	98	98	94
6	94	94	94	94	94	90	90	104	104	104	96	104	104	102	102	102	102	96	96	96	100	100	100	B
7	B	84	B	B	88	108	106	106	98	98	100	G	G	106	106	106	140	108	108	102	102	B	102	102
8	92	104	96	96	92	102	100	100	108	100	106	108	102	104	100	110	102	102	102	110	86	106	106	B
9	96	B	B	B	110	102	102	108	98	94	94	96	96	104	96	138	118	112	112	96	118	B	B	B
10	B	112	112	102	102	104	100	104	96	110	G	G	100	112	112	104	116	102	108	92	94	94	94	94
11	84	B	B	84	B	B	118	102	102	94	94	94	84	88	88	88	88	102	94	94	94	98	98	90
12	94	B	B	94	102	98	102	102	102	102	102	102	98	98	98	98	98	112	112	102	102	102	102	98
13	B	B	176	218	116	100	100	108	108	108	100	96	158	154	132	122	108	114	106	B	106	98	98	90
14	96	90	90	90	90	B	96	96	96	96	96	96	96	88	170	94	138	90	102	90	96	96	92	B
15	B	B	B	B	B	B	96	112	96	90	90	138	138	104	132	110	102	102	98	B	B	94	94	94
16	98	98	B	B	B	B	102	108	102	102	100	G	G	G	134	100	104	122	96	102	86	B	86	B
17	B	B	B	B	B	B	130	126	112	104	104	104	96	86	86	86	82	82	82	82	B	B	B	B
18	B	B	B	B	B	B	108	104	112	104	88	94	94	148	G	84	G	86	86	B	B	B	B	B
19	B	B	B	B	B	B	104	110	110	110	102	102	G	G	G	154	86	86	86	100	100	88	B	B
20	B	B	104	B	104	98	98	104	172	94	94	110	150	90	90	90	106	100	100	92	94	94	94	B
21	94	88	88	88	B	B	88	120	120	98	90	90	90	90	90	90	86	86	100	B	B	B	B	96
22	94	94	B	94	B	B	144	124	108	108	98	98	98	98	102	108	108	92	B	B	B	B	102	102
23	B	B	96	88	88	B	148	134	120	98	98	98	98	102	102	102	102	110	102	102	102	102	102	102
24	92	B	B	B	B	B	130	120	94	108	106	106	94	116	116	112	112	108	102	102	102	102	100	100
25	92	98	98	98	106	100	100	130	126	112	116	164	112	124	126	112	106	106	110	102	102	102	102	102
26	B	90	B	94	B	B	132	122	122	106	106	106	102	102	144	94	126	122	B	106	B	B	B	B
27	B	B	B	B	B	B	162	84	124	136	G	110	130	148	G	148	148	134	B	B	B	B	B	B
28	B	B	B	B	B	B	140	108	108	102	102	102	102	102	142	128	114	B	B	B	102	102	102	94
29	94	94	94	94	102	126	126	106	106	106	96	96	96	96	88	100	100	100	B	100	106	B	B	B
30	B	90	B	B	B	B	122	112	104	98	98	98	100	G	132	96	96	B	B	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	16	14	14	19	15	14	30	30	30	30	28	27	27	25	26	28	29	28	24	22	21	18	20	18
MED	94	94	100	94	102	103	106	106	106	103	99	102	98	102	112	103	108	104	102	102	102	99	99	96
U Q	96	98	114	110	110	110	126	112	112	108	102	106	108	114	132	117	117	112	108	102	103	102	102	102
L Q	93	90	94	94	92	100	100	104	100	98	96	96	96	97	98	95	101	98	97	96	95	94	94	94

SEP. 2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

SEP. 2019 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	F4	F4	F2	F3	L2	L1	C2	C3	C3	L2	L2	L2	C2	C1	H1		H1	C2	L3				F2	F1	
2	F2		F3	F7	L4	L4	C2	C4	C2	C2	C1	C2	C1	C1	C1	C2	C2	C6	L4	L2	F5	F1	F2	F1	
3				F1		C2	C1	C4	C3	C3	C2	C1	LC11	C2	C1	C2	C3	C3	L6	L7	F3	F2	F1	F2	
4	F1		F2	F6	L8	L4	L3	C1	C2	C1	C2	C2	LC11			C1	C2	C2	L4	L5	F3	F2	F3	F2	
5	F2	F2	F1	F2	L2	L2	C2	C2	C3	C3	L2	C2	C2				C1	C1	L3	L4	F6	F3	F2	F2	
6	F1	F2	F1	F3	L4	L2	L2	C2	C3	C2	C2	C1	L2	L1	C2	C2	C3	L5	L3	L2	F2	F2	F1		
7		F1			L1	L1	C2	C2	L2	C2	LC11			C2	C2	C1	C2	C4	L3	L2	F2		F1	F2	
8	F2	F2	F2	F1	L2		C3	C3	L2	L2	L1	L1	C1	C3	C2	LC11	C3	C3	L2	L5	F1	F2	F1	F1	
9	F2				L1	L2	LC31	C1	C2	L2	L3	C1	C1	C1	C2	C1	C3	C4	C3	L3	F1				
10		F2	F3	F3	L2	L1	L2	C2	C3	C1	C1		L1	C1	C2	C3	C1	C2	L1	F2	F2	F1	F2	F2	
11	F1			F2			C1	C2	LF32	LF43	LF21	CF31	LF52	LF31	LF62	LF31	LF21	L3	L6	F4	F4	F2	F3	F1	
12	F1			F2		L1	L1	LC11	C2	C2	C3	C1	C3	C2	C2	C2	LC11	C2	L6	F2	F2	F1	F3	F1	
13			F1	F1	F1	3	C3	C2	C2	C1	C1	C1	H1	H1	H1	C1	C1	C2	L1		F2	F1	F1	F2	
14	F2	F1	F1	F2	F2		L2	L2	C2	C3	L3	L3	LC21	LC21	L2	L3	HL11	L2	L1	F1	F2	F1	F2		
15							L2	C2	L2	L3	LC21	H1	H1	C1	H1	C2	C3	LC11	L1			F2	F2	F1	
16	F2	F1					C4	C4	C3	C2	L2				C1	LC11	LC11	C2	L1	F2	F1		F1		
17							C2	C2	C2	C2	C2	C1	L2	LC11	LC21	L2	L3	L3	L3	F1					
18							C2	C2	C2	C1	L1	C1	LC11	H1			LC31		L3	L2					
19							C2	C2	C2	C1	C2	C1				H1	L2	L2	L2	F2	F1	F1			
20			F1		F2	L1	L2	L2	H1	LC11	CL11	CL21	HL11	LC11	LC11	LC11	C1	C3	L1	F1	F1	F1	F2		
21	F1	F1	F1	F1			L1	C1	C1	C4	L4	L3	L3	L4	L4	L3	L5	L4	L1					F1	
22	F1	F1		F1			H1	C1	C2	C2	C2	C2	C1	C1	C1	C2	C2	LC11						F3	
23			F1	F1	F1		H1	CL21	C3	C2	C2	C2	L1	C3	C2	C2	C2	L2	L2	F2	F1	F1	F1	F1	
24	F2						C1	C4	C2	C2	C2	C2	C1	C3	C4	C3	C4	L4	L3	F2	F3	F1	F2	F1	
25	F2	F2	F3	F2	F2	C1	LC11	H2	C2	C2	C2	C1	C1	C2	C1	C1	C1	L2	L1	F1	F1	F1	F2	F2	
26		F1		F1			C1	C2	C2	C2	C2	L2	C2	L1	H1	C2	C2	C2		F1					
27				F1			C1	L2	CL21	CL11		CL11	C1	HL21		HL21	HL21	H2							
28							H1	C2	C3	C3	C2	C1	C2	C2	C1	C2	C2				F2	F2	F1	F3	
29	F2	F1	F1	F2	F1	L1	C1	C1	C4	C2	C2	C2	C2	L2	C2	L2	C2	L2		F2	F2				
30		F1					C1	C2	C4	C2	C2	LC11	L2		C1	L2	L1			F2					
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 f_{XI} (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 ⁰ 44	X 52	X 36	X 39	X 37															X 60	X 60	X 42	X 41	X 36
2	X 34	X 33	X 33	X 30	X 31														X 50	A	A	X 38	A	A
3	44	43	38	X 35	A														A	X 46	X 35	X 35	X 33	X 34
4	A	A	X 33	X 32	X 31														X 48	X 50	X 44	X 43	X 41	X 40
5	X 38	X 36	X 35	X 36	X 33	38														X 48	X 46	X 44	X 42	X 41
6	X 38	X 36	X 36	40	X 35															X 65	X 56	X 46	X 44	X 42
7	X 40	X 37	X 37	X 37	X 33															X 51	X 48	X 42	X 40	X 40
8	43	X 39	X 37	X 36	X 34	36														X 59	X 50	X 46	X 47	X 46
9	X 43	X 40	X 38	X 38	X 40															X 60	X 55	X 51	X 47	X 44
10	X 43	X 41	X 37	X 36	X 39															X 56	X 51	X 46	X 50	X 39
11	X 38	X 34	X 33	X 31	X 26							C	C	C	C	C	C			X 55	X 48	X 44	X 38	X 37
12	X 38	X 41	X 38	X 43	X 44							C	C	C	C	C	C			X 55	A		48	43
13	X 37	X 34	X 33	X 32	X 30															X 60	X 52	X 48	X 41	X 41
14	45	X 39	X 38	X 34	X 34															X 60	X 56	X 52	X 46	X 40
15	X 36	X 36	X 35	X 35	X 36															X 50	X 48	X 48	X 48	X 47
16	52	49	43	42	38	40														A	X 43	X 48	X 43	X 46
17	X 38	X 40	X 39	X 39	X 38	40									C		C			X 57	X 54	X 50	X 55	X 49
18	44	40	38	38	36															X 53	X 48	X 46	X 46	X 44
19	X 44	X 46	X 43	X 43	X 46															X 47	X 44	X 44	X 38	X 38
20	X 35	X 33	X 34	X 31	X 32															X 50	X 47	X 44	X 42	X 40
21	40	40	38	X 33	X 33															X 42	X 41	X 41	X 38	X 38
22	X 38	X 36	X 33	X 31	X 31															X 46	A	X 41	X 42	X 38
23	38	39	X 33	X 33	X 30															X 52	X 48	X 39	X 39	X 39
24	X 38	X 37	X 40	X 44	X 36															X 66	X 64	X 51	X 42	X 41
25	X 42	X 42	X 50	X 50	X 44	50														X 53	X 49	X 47	X 43	X 40
26	X 38	X 38	X 38	X 37	X 35		X 45													X 69	X 39	X 32	X 32	X 33
27	X 34	X 33	X 32	X 32	X 33	X 31													C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C											X 56	X 59	X 57	X 53	X 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	26	26	27	27	26	6	1												5	25	24	26	26	26
MED	X 38	X 39	X 37	X 36	X 34	39	X 45												X 56	X 53	X 48	X 44	X 42	X 40
U Q	43	41	38	39	38	40													X 63	X 60	X 52	X 47	X 47	X 44
L Q	X 38	X 36	X 33	X 32	X 32	36													X 49	X 50	X 45	X 41	X 40	X 38

SEP. 2019 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 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	38	46	30	33	F	26	A	A	46	41	46	56	52	55	48	46	52	52	57	54	54	36	35	30	
2	28	28	27	24	25	26	29	36	47	47	A	R	A	50	48	45	40	42	44	A	A	32	A	A	
3	F	F	F	29	A	A	36	43	45	41	54	50	R	48	51	A	48	A	A	40	29	29	27	28	
4	A	A	27	26	25	A	A	39	44	55	R	R	R	A	47	47	42	43	42	44	38	37	35	34	
5	32	30	29	30	27	F	41	44	40	49	A	45	52	46	45	50	59	50	46	42	40	38	36	35	
6	32	30	29	F	29	30	37	40	48	52	51	51	54	56	A	45	47	50	A	59	50	40	38	F	
7	34	31	31	31	27	28	41	48	55	46	56	49	49	52	47	48	51	54	53	45	42	36	34	34	
8	F	33	31	30	28	F	40	45	50	51	50	49	R	48	49	58	59	51	A	A	53	44	40	41	40
9	37	34	32	32	34	36	48	48	A	53	59	59	58	62	53	46	48	49	48	54	49	45	41	38	
10	37	35	31	30	F	27	39	48	47	48	56	61	A	54	55	50	49	45	41	44	50	45	40	F	33
11	32	28	27	25	20	21	39	41	46	54	A	A	C	C	C	C	C	C	A	F	A	A	F	F	
12	32	F	32	F	F	38	45	43	46	49	C	C	C	C	C	C	C	43	A	F	A	A	F	F	
13	31	28	27	26	24	24	41	45	48	54	49	50	47	50	52	50	46	A	47	54	46	42	34	35	36
14	F	33	32	28	28	27	44	42	47	52	50	50	52	51	50	44	A	46	52	54	50	46	40	34	
15	30	30	29	29	30	31	39	54	53	48	49	46	48	49	48	46	49	58	45	44	42	42	42	41	
16	F	F	F	F	F	F	42	50	50	59	57	48	53	59	60	55	48	45	44	A	37	F	37	F	
17	32	34	33	33	32	F	44	50	48	60	57	55	56	60	C	A	C	46	50	51	48	44	F	F	
18	F	34	32	32	30	30	46	52	A	51	58	61	66	64	59	59	55	48	44	47	42	40	40	38	
19	38	40	37	37	F	32	42	54	63	63	64	59	71	70	56	55	57	53	47	41	38	38	32	32	
20	29	27	28	25	26	27	42	46	52	56	48	53	50	50	48	46	53	53	54	44	41	38	F	F	
21	F	F	F	27	27	26	46	46	45	49	50	56	55	56	52	52	55	56	48	36	35	35	32	32	
22	32	30	27	25	25	24	44	46	53	52	54	54	60	60	A	52	55	49	43	40	A	35	36	32	
23	F	F	27	27	24	23	38	42	44	52	60	55	58	56	49	52	50	A	51	46	42	33	33	33	
24	32	31	F	F	30	31	41	42	49	60	50	52	53	56	56	54	55	62	60	58	45	36	36	35	
25	36	36	F	F	38	F	40	50	46	56	54	47	54	53	49	55	56	60	58	47	43	41	37	34	
26	32	32	32	31	29	32	39	46	47	49	56	54	56	53	50	52	52	50	58	63	33	26	26	27	
27	28	27	26	26	27	25	43	52	53	53	51	61	56	51	50	49	48	C	C	C	C	C	C	C	
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	A	58	70	66	68	57	56	58	57	50	F	51	51	47	F	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	19	21	22	22	21	20	25	26	25	27	23	26	25	26	24	25	25	23	22	23	24	25	22	20	
MED	32	31	30	29	27	27	41	46	47	52	54	52	54	54	50	50	51	50	49	47	42	38	36	34	
U Q	36	34	32	31	30	31	44	50	51	55	57	56	57	59	54	54	55	54	54	54	46	40	40	36	
L Q	31	29	27	26	25	26	39	42	46	49	50	49	51	50	48	46	48	46	44	44	39	35	33	32	

SEP. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2019 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	A	U	L	A	A	A	U	L	U	L	L	L						
2								U	L	A	A		A	A	U	L	U	L	A	A					
3						A		A	U	L	U	L	U	L	U	L	U	L	A	A					
4						A	A		U	L	U	L	U	L	U	L	A		L						
5							L	L	A	A	A		U	L	U	L	U	L	L						
6									U	L	U	L	U	L	U	L	U	L	L	A					
7								L	U	L	U	L	U	L	U	L	U	L	L						
8								L	A			A	U	L	U	L	U	L	A	A					
9							L	L	A	U	L	U	L	U	L	U	L	L	L						
10								U	L	U	L	A	U	L	U	L	U	L	A	U	L				
11								U	L	U	L	A	A	A	U	L	U	L	L	A	A				
12								L	L			C	C	C	C	C	C	C		A			A		
13								L	L									U	L	L					
14								L	U	L	U	L	U	L	U	L	U	L	A	L					
15								U	L	U	L	U	L	U	L	U	L	U	L	L					
16								L	A	U	L	U	L	U	L	U	L	U	L	L					
17								U	L	U	L	U	L	U	L	U	L	C	A	C					
18								A	A	A	U	L	U	L	U	L	U	L	A						
19								L	A			U	L	U	L	A	U	L	U	L	L				
20								L	U	L	U	L	U	L	U	L	U	L	L						
21								U	L	A	U	L	U	L	U	L	U	L	L						
22								L	L		A		U	L	U	L	A	L	L						
23									A	A					A	A	A	A	A						
24									L		U	L	A	U	L	U	L	L	L						
25									A		U	L	U	L	U	L	L	L	L						
26									U	L	U	L	U	L	U	L	U	L	A	L					
27								L	L	U	L	U	L	A	U	L	U	L	L	L	C	C			
28						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
29						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
30						C	C	C	C	A			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							1	4	15	20	21	22	21	21	21	16	9	1							
MED							212	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L	U	L
U Q								370	396	412	428	432	436	428	416	396	382								
L Q								342	384	394	416	420	424	416	404	378	364								

SEP.2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 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						R	A	A	A	A	A	A	A	A	U	R	R	R		B				
2						B	A	A	A	A	A	A	A	A	U	R	R	A	A					
3						B	B	A	A	A	R	R	U	R	A	A	A	A	A					
4						B	B	A	A	A	A	A	A	A	A	A	U	R	B					
5						B	A	A	A	A	A	R	A	R	R	U	A	A	A	B				
6						B	U	R	R	A	A	A	A	A	A	U	A	A	A	B				
7						B	U	R	R	U	R	R	R	R	A	U	A	A	A	B				
8						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
9						B	B	A	A	A	A	A	U	R	U	R	U	R	A	A	B			
10						B	A	A	U	R	A	A	R	A	U	R	A	U	R	A	B			
11						B	B	A	A	A	A	A	A	A	A	U	R	A	B	B				
12						B	B	A	A	A	C	C	C	C	C	C	C	U	R	B			A	
13						B	A	A	A	A	U	R	R	R	U	R	R	R	A	A				
14						B	A	U	R	A	R	U	R	R	A	A	A	A	A	B				
15						B	B	U	R	A	A	R	A	R	U	R	R	A	A	B				
16						B	U	R	A	A	A	A	A	A	A	U	R	U	R	A	B			
17						B	U	R	A	A	A	U	R	R	R	C	A	C	A	B				
18						B	A	A	A	A	R	A	A	A	A	A	A	A	A	B				
19						B	U	R	A	A	A	U	R	U	R	A	A	U	R	A	B			
20						B	U	R	A	A	A	A	A	A	U	R	U	R	A	B	B			
21						B	U	R	R	U	A	R	A	U	R	A	A	A	A	B				
22						B	B	A	R	A	A	A	A	R	A	R	A	A	B	B				
23						B	B	A	A	A	A	A	A	U	A	U	A	A	A	B	B			
24						B	U	R	A	A	A	U	R	A	A	A	A	A	U	R				
25						B	U	R	A	U	R	R	R	U	A	A	A	A	B	B				
26						B	U	R	R	A	A	A	R	R	A	A	A	A	B					
27						U	R	A	A	A	A	A	A	A	A	A	A	C	C					
28						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
29						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
30						C	C	C	C	A	A	R	U	A	R	A	A	A	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							10	6	4	2	5	3	5	9	7	9	6	4						
MED							U	R	U	R	U	U	U	U	R	U	U	U	U					
U Q							198	260	292	328	328	344	328	324	312	292	254	210						
L Q							U	R	U	R	U	U	U	U	R	U	U	U	U					
							208	264	302		330	392	354	336	320	306	260	216						
							U	R	U	R	U	U	U	U	U	U	U	U						
							196	260	288		316	336	312	320	304	288	248	198						

SEP. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION kokubunji

SEP. 2019 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	22	E B	15	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		
2	E B	E B	16	23	22	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		
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	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	J A		
6	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	E B		
7	24	19	20	20	16	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		
8	J A	31	21	J A	25	22	22	23	22	28	33	44	50	49	118	40	38	112	103	89	54	39	26	38	28	26
9	J A	E B	J A	J A	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	
10	E B	16	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	
11	J A	J A	J A	J A	J A	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	
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	E B	
13	J A	J A	J A	J A	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	
14	J A	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	
15	22	E B	15	15	16	15	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	
16	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	
17	20	20	19	21	21	20	G	30	32	J A	J A	J A	J A	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	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	
19	J A	E B	15	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	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	E B	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	J A	
22	J A	J A	E B	E B	E B	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	
23	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	
24	E B	J A	25	24	20	16	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	
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	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	22	21	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	
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	E B	
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	27	27	27	27	27	27	27	27	27	28	27	27	27	27	26	27	26	27	27	27	27	27	27	27	27	
MED	24	21	21	20	20	21	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	
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	E B	E B	E B	E B	E B	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. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 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		E	B	E	B	E	B	B	A	A	A				G	G	G			E	B	E	B	E	B					
2	E	B	E	B	E	B	E	B	E	B	E	B	A	A	A	A	G	G			A	A	A	A	A	A				
3	E	B	E	B	E	B	E	B	A	A	A				G	G			A	A	A	A	E	B	E	B				
4	A	A	A	A	E	B	E	B	A	A	A							G		A	A	A	E	B	E	B				
5	E	B	E	B	E	B	E	B	E	B	E	B	A	A	A	A	G						E	B	E	B				
6	E	B	E	B	E	B	E	B	E	B	E	B								A	A		E	B	E	B				
7	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								A	A	A	E	B	E	B				
9	E	B	E	B	E	B	E	B	E	B	E	B											E	B	E	B				
10	E	B	E	B	E	B	E	B	E	B	E	B											E	B	E	B				
11			E	B	E	B	E	B	E	B	E	B	A	A	A	A	G			A	A	A	E	B	E	B				
12	E	B	E	B	E	B	E	B	E	B	E	B	C	C	C	C	C	C		G	A	A	A	E	B	E	B			
13			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								A	A		E	B	E	B				
15	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								A	A	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			
18	E	B	E	B	E	B	E	B	E	B	E	B	A	A	A	A	G					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		
20	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		
22	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								A	A		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		
25	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		
27	E	B	E	B	E	B	E	B	E	B	E	B											E	B	E	B	E	B		
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
31																														
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
CNT	27	27	27	27	27	27	27	27	27	28	27	27	27	27	26	27	26	27	27	27	27	27	27	27	27	27	27	27		
MED	E	B	E	B	E	B	E	B	E	B	E	B											E	B	E	B	E	B	E	B
U Q	16	16	16	16	16	16	16	16	22	30	35	36	37	37	36	36	34	32	30	A	A	A	21	20	20	20	18	16		
L Q	E	B	E	B	E	B	E	B	E	B	E	B											E	B	E	B	E	B	E	B

SEP. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 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	15	14	16	16	16	14	14	14	17	18	17	17	15	13	16	15	16	16	16	16	16	14	16
2	15	16	16	16	16	16	16	15	13	14	17	18	21	17	16	16	14	13	14	15	16	15	16	15
3	15	15	16	16	15	15	16	14	15	14	14	23	19	12	17	16	14	13	16	14	17	16	16	16
4	16	16	16	16	15	15	15	14	16	20	16	18	16	16	16	14	16	13	15	14	16	16	16	16
5	17	16	16	15	16	16	15	14	16	17	18	22	17	22	17	17	19	14	15	16	16	16	16	15
6	16	16	16	15	16	16	15	14	16	14	21	20	22	21	20	20	16	15	15	15	17	16	16	15
7	16	16	16	16	16	16	15	16	14	16	17	19	22	17	20	14	16	14	14	15	16	16	16	16
8	16	16	16	16	16	16	15	14	12	17	15	18	22	17	17	16	16	14	14	16	16	15	16	16
9	16	16	16	16	15	16	16	14	15	16	16	19	20	17	16	13	14	14	15	15	14	16	15	16
10	16	16	16	16	16	16	16	14	17	15	18	20	20	18	18	17	14	14	14	16	16	16	16	16
11	15	16	16	16	16	15	15	16	16	15	15	16	14	14	14	15	12	15	16	15	16	16	15	17
12	16	16	16	15	16	17	16	14	15	16	C	C	C	C	C	C	C	16	14	16	15	16	16	16
13	15	16	16	16	16	16	16	16	16	19	18	19	20	20	17	17	16	16	16	16	16	16	16	17
14	16	16	14	16	16	16	14	14	17	16	21	21	18	21	18	13	14	14	15	15	16	16	16	16
15	17	15	15	16	15	15	16	16	14	16	16	15	17	18	18	19	15	13	15	16	16	16	16	15
16	16	16	16	16	16	16	16	16	11	15	16	17	17	15	16	18	16	16	16	15	16	16	16	16
17	16	16	16	16	16	16	15	15	20	19	22	19	16	18	C	16	C	14	15	16	16	15	15	15
18	16	15	16	15	16	16	16	16	16	17	20	20	21	17	15	15	15	15	16	16	16	16	16	16
19	16	15	15	16	16	16	14	14	16	15	19	24	18	22	16	15	12	14	16	15	18	16	16	16
20	16	15	16	16	16	16	16	15	13	19	17	16	19	15	14	14	18	15	15	16	16	14	16	16
21	16	16	16	16	16	16	16	16	16	16	17	15	20	16	18	14	14	14	15	15	16	16	16	17
22	16	16	16	16	15	16	16	14	14	15	16	17	16	17	16	15	14	14	15	16	15	15	16	16
23	15	15	15	15	15	16	14	15	15	15	15	16	17	14	17	18	14	15	14	15	16	16	16	16
24	15	16	16	15	16	16	15	14	14	15	16	16	17	20	20	16	15	15	16	16	14	16	15	15
25	16	16	16	16	15	16	15	14	15	14	16	16	18	20	19	16	17	16	16	16	15	15	16	16
26	16	16	16	16	17	16	15	14	16	15	16	18	19	20	16	16	15	16	15	17	17	16	16	16
27	15	16	16	16	16	16	14	15	16	18	15	18	17	16	14	15	15	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	16	15	16	18	21	16	18	14	14	15	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	27	27	27	27	27	27	27	27	27	28	27	27	27	27	26	27	26	27	27	27	27	27	27	27
MED	16	16	16	16	16	16	15	14	15	16	16	18	18	17	16	16	15	14	15	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	17	18	20	20	20	18	17	16	15	16	16	16	16	16	16
L Q	15	15	16	16	15	16	15	14	14	15	16	16	17	16	16	15	14	14	15	15	16	16	16	16

SEP. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 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	278	352	329	309	F	315	A	A	257	306	310	349	348	362	339	290	321	322	351	329	363	285	328	296	
2	319	307	299	349	314	332	385	245	289	320	A	R	A	317	314	342	317	331	339	A	A	310	A	A	
3	F	F	F	331	A	A	335	338	337	294	282	252	R	298	327	A	348	A	A	362	309	297	333	336	
4	A	A	310	335	357	A	A	348	307	282	R	R	R	A	308	335	336	371	356	372	308	336	301	319	
5	309	301	309	277	288	F	355	353	371	365	A	R	R	334	288	264	304	358	367	360	320	333	317	292	325
6	312	323	341	F	324	344	389	384	338	330	346	320	345	381	A	282	322	336	A	355	351	360	321	F	
7	318	321	319	352	343	328	343	345	347	350	367	329	366	337	313	341	330	361	370	341	350	303	287	319	
8	F	312	320	356	334	F	356	353	348	364	358	354	314	307	358	369	360	A	A	340	318	300	306	314	
9	336	327	346	318	318	354	359	363	A	325	336	350	359	342	370	352	351	365	336	342	322	315	311	298	
10	331	308	338	299	F	320	345	348	288	308	322	346	355	346	362	359	355	330	350	324	326	304	F	308	
11	312	332	330	313	324	341	387	331	331	351	A	A	336	366	355	345	357	A	A	341	335	349	331	309	
12	271	F	356	F	F	350	392	356	365	340	C	C	C	C	C	C	C	354	A	F	A	A	F	F	
13	309	340	344	314	344	350	391	347	364	373	355	346	321	327	359	361	320	A	343	359	340	379	324	316	334
14	F	317	362	322	323	339	394	375	342	360	350	331	342	343	348	330	A	333	340	347	335	342	338	346	
15	323	323	331	334	342	326	348	369	377	335	349	327	332	342	341	350	336	367	353	338	331	332	321	327	
16	F	F	F	F	F	F	364	392	342	382	368	322	327	338	347	360	350	363	350	A	318	F	313	F	
17	320	335	345	329	330	F	370	379	352	364	367	360	346	353	C	A	C	343	350	338	336	324	F	F	
18	F	331	298	332	329	321	378	359	A	337	330	332	342	351	357	366	381	368	355	330	343	311	333	302	
19	315	334	328	320	F	320	359	348	364	356	325	331	348	333	366	358	359	374	359	353	322	354	349	296	
20	296	315	307	317	331	357	394	373	359	393	363	331	339	345	350	321	354	362	363	337	342	315	F	F	
21	F	F	F	353	313	352	400	382	369	343	344	355	348	361	342	338	356	373	371	328	337	317	316	314	
22	310	327	283	305	317	330	393	395	350	365	367	335	352	350	A	353	369	369	345	378	A	329	319	299	
23	F	F	307	332	337	334	388	388	354	342	359	335	337	349	345	354	352	A	350	362	362	347	318	298	
24	301	294	F	F	310	343	392	375	371	390	339	348	332	350	327	342	345	347	344	369	358	321	326	336	
25	321	323	F	F	327	F	349	386	368	365	362	315	349	362	338	340	347	368	358	335	347	338	306	329	
26	336	314	324	329	348	320	378	377	373	355	359	364	349	353	351	353	347	353	354	368	383	298	320	315	
27	331	329	328	325	329	345	374	381	374	386	336	348	367	363	350	351	365	C	C	C	C	C	C	C	
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	A	325	337	323	343	349	335	363	366	336	F	325	320	305	F	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	19	21	22	22	21	20	25	26	25	27	23	26	25	26	24	25	25	23	22	23	24	25	22	20	
MED	315	323	328	327	329	336	378	366	352	351	349	334	342	346	348	345	351	362	352	341	336	320	318	314	
U Q	323	332	341	334	340	348	392	381	368	365	362	348	349	353	356	356	358	368	359	362	350	337	328	328	
L Q	309	313	309	314	318	324	356	348	338	330	330	322	332	337	332	335	336	343	345	335	324	307	306	300	

SEP. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 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	A	U	L	A	A	A	U	L	U	L	L	L					
2								U	L	A	A		A	A	U	L		A	A					
3						A		A	U	L	U	L	U	L	U	L	A		A					
4					A	A			U	L	U	L	U	L	A			L						
5						L	L		A	A	A		U	L	U	L		L						
6									U	L	U	L	U	L	A	A	U	L	L	L	A			
7								L	U	L	U	L	U	L	U	L	U	L	L					
8								L	U	L	A		A	U	L	U	L	A	A					
9						L	L		A	U	L	U	L	U	L	L	L	L						
10								U	L	U	L	A	A	U	L	U	L	A	U	L				
11								U	L	U	L	A	A	U	L	U	L	L	A	A				
12								L	L			C	C	C	C	C	C		A			A		
13								L	L								U	L	L					
14								L	U	L	U	L	U	L	U	L	U	L	A	L				
15								U	L	U	L	U	L	G				L						
16								L	A	U	L	U	L	U	L	U	L	L						
17								U	L	U	L	U	L	U	L	C	A	C		A				
18								A	A	A	U	L	U	L				A						
19								L	A		U	L	U	L	A	U	L	U	L	L				
20								L	U	L	U	L	U	L	U	L	U	L	L					
21								U	L	A	U	L	U	L	U	L	U	L	L					
22								L	L		A		U	L		A	L	L						
23									A	A					A	A	A	A	A					
24								L		U	L	A	U	L	U	L	L	L						
25								A		U	L	U	L	U	L	L	L	L						
26								U	L	U	L	U	L	U	L	U	L	A	L					
27								L	L	U	L	U	L	A	U	L	U	L	L	L	C	C		
28						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
29						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
30						C	C	C	C	A			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							1	4	15	20	21	22	21	21	21	16	9	1						
MED							474	394	404	416	421	424	416	405	407	404	379	359						
U Q								406	407	424	438	432	424	425	418	418	388							
L Q								U	L	U	L	U	L	U	L	U	L	U	L					
								376	397	410	404	405	400	388	392	392	369							

SEP. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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	E A E A	E A	E A	274	288	268	322	386	302	284							
2								470	356	328	A		A	338	328	302	E A	346	282						
3						A		294	298	390	410	R	R	410	306		A	284	A						
4						A	A		R	R	R	R	R	A	350	304	330	268							
5							252	258	E A E A	E A	A	R	408	304	396	488	348	252	244						
6								310	304	278	328	280	E A	A	404	320	288		A						
7								274	254	298	262	326	272	304	346	314	282	260							
8								274	286	246	274	296	368	364	274	238	268		A	A					
9							258	244	A	298	280	270	266	270	246	262	282	256							
10								270	380	352	306	250	282	264	270	256	222	302							
11								342	316	270	A	A	304	280	278	296	258		A	A					
12								256	268	292	C	C	C	C	C	C	C		A			A			
13								268	262	242	282	308	352	324	266	262	312	258							
14								256	300	264	278	324	306	288	292	316	A	294							
15								238	238	310	288	348	336	306	284	270	304	244							
16								246	286	246	260	332	320	284	260	248	250								
17									286	254	252	262	294	258		C	A	C		E A	290				
18								244	A E A	294	284	272	266	256	260	248	226								
19								272	E A	246	244	256	300	262	242	262	260	236							
20								258	256	226	274	310	320	304	288	316	258								
21									E A	272	224	310	262	274	262	296	282	254							
22							194	222	266	246	246	298	260	268	A	270	248								
23									E A E A	252	304	250	280	284	270	292	266	E A	A						
24									246	228	282	292	308	286	276	272	252	246							
25									226	252	254	334	276	260	282	274	258								
26									256	270	254	260	264	260	282	274	262								
27								240	238	238	312	264	238	272	270	268	264		C	C					
28						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
29						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
30						C	C	C	C	A		284	266	274	252	252	268	242							
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							3	18	25	27	24	25	26	26	24	25	25	12	1						
MED							252	258	268	261	278	298	286	274	282	272	260	264	E A	290					
U Q							258	274	305	304	297	330	320	304	301	309	293	286							
L Q							194	244	251	246	258	268	272	262	268	262	251	251							

SEP. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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 278	188 E B 240	E B 232	E B 236	E B 258	A	A	200	A	A	A	202	202	196	194	216	210	220	216	200	E B 306	E B 204	E B 308	
2	E B 262	E B 274	E B 264	E B 228	E B 278	254	220	218	A	224	A	226	A	A	198	198	A	A	238	A	E B 296	A	A	
3	E A 228	E A 264	E A 234	E A 252	A	A	222	A	206	192	192	198	200	210	200	A	202	A	A	212	E B 242	E B 294	E B 312	E B 292
4	A	A	E A 232	E A 244	E A 232	A	A	214	188	184	198	206	212	A	196	196	198	200	230	210	234	E A 286	E A 272	E B 242
5	E B 276	E B 260	E B 242	E B 256	E B 256	E B 248	214	202	A	A	A	202	186	184	184	196	192	204	206	230	214	E A 260	E A 288	E B 236
6	E B 256	E B 246	E B 240	E B 236	208	208	196	212	202	184	188	184	208	A	A	210	234	218	A	E A 234	224	206	254	290
7	E B 238	E B 258	218	216	226	E B 236	214	202	188	194	184	186	180	180	196	196	216	214	202	206	206	E B 238	E B 268	E B 258
8	234	222	E B 242	E B 216	E B 232	E B 250	212	194	188	A	196	A	198	210	196	A	196	A	A	216	212	E A 272	E B 238	222
9	E B 218	E B 222	214	E B 236	E B 240	E B 206	204	202	A	196	192	192	A	188	202	200	200	212	220	220	206	E B 236	E B 224	242
10	E B 242	E B 238	E B 240	E B 250	E B 268	E B 240	204	196	200	212	A	A	190	A	196	184	182	A	204	222	224	E B 264	E B 258	218
11	E A 256	E A 256	E A 238	E B 230	E B 286	E B 254	214	204	204	A	A	A	188	202	190	190	202	A	A	216	206	210	206	E B 244
12	E B 282	E B 250	200	E B 244	E B 220	E B 208	206	192	192	186	C	C	C	C	C	C	C	C	A	202	A	E B 234	E B 226	
13	E A 256	E A 226	222	E B 248	E B 236	E B 234	222	200	200	194	192	180	180	172	194	188	198	192	212	216	216	E B 240	E B 240	240
14	E B 242	220	212	226	E B 232	E B 238	200	188	194	182	186	186	182	186	214	190	A	202	226	216	214	214	214	212
15	E B 238	E B 248	E B 248	E B 236	E B 238	E B 234	204	192	192	178	184	188	190	202	198	184	198	204	204	216	218	E A 222	E A 240	210
16	216	E B 270	E B 254	E B 240	E B 234	E B 230	216	200	A	198	174	174	178	190	208	192	200	218	208	A	242	E B 254	E B 252	228
17	226	230	214	212	E B 236	E B 248	214	202	188	188	206	192	194	182	C	A	C	A	A	214	228	E A 290	E A 252	226
18	E B 238	E B 234	E B 232	E B 230	E B 228	E B 238	218	A	A	A	192	184	184	188	210	198	A	220	216	218	214	E B 242	E B 228	E A 260
19	E B 260	226	216	214	E B 236	E B 242	220	210	A	200	194	178	178	A	188	202	196	210	204	212	212	220	208	E B 252
20	E B 266	E B 264	E B 262	E B 274	E B 242	E B 210	204	202	192	184	190	194	196	204	186	190	208	212	200	204	214	226	E A 260	E B 260
21	E B 260	E B 260	E B 254	E B 230	E B 228	E B 218	200	192	182	A	184	E A 230	196	184	182	200	200	210	202	210	214	224	E A 250	E B 258
22	E B 264	E B 256	E B 256	E B 274	E B 258	E B 252	166	186	194	198	A	198	186	186	A	194	204	208	208	198	A	228	E B 228	E B 256
23	E B 274	E B 272	E B 254	E B 228	E B 238	E B 232	198	214	A	A	196	192	192	A	A	A	A	A	A	212	220	E A 242	E B 212	E B 236
24	228	E B 250	E B 262	226	224	210	196	186	194	182	182	A	216	206	188	204	204	208	200	200	196	204	E B 236	224
25	220	E B 236	E B 256	214	E B 232	E B 238	206	216	A	190	180	178	212	230	212	214	204	222	192	200	204	210	E B 214	224
26	224	E B 238	E B 246	E B 240	214	220	196	208	194	192	192	186	178	186	186	A	218	220	216	196	192	E B 234	E B 258	248
27	E B 246	E B 252	E B 246	E B 252	E B 232	E B 246	210	206	194	188	186	180	A	200	196	202	206	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	A	188	176	228	208	198	206	206	216	206	212	E B 228	214	220	220
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	27	27	26	25	25	24	19	20	21	23	23	22	23	22	21	22	21	25	24	26	26	26
MED	E B 244	E B 249	E B 240	E B 236	E B 235	E B 238	206	202	194	191	190	187	192	193	196	196	202	210	208	214	213	E B 235	E B 239	E B 242
U Q	E B 262	E B 260	E B 254	E B 248	E B 240	E B 248	215	209	200	197	193	198	202	204	200	202	207	218	220	219	E B 226	E A 264	E B 258	E A 258
L Q	228	230	222	226	228	219	200	193	188	184	184	180	182	186	188	190	198	204	203	208	206	214	224	224

SEP. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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	A	A			A	A	A						B					
2						B	A		116	116		A	A	A	126	112	114	114	112					
3						B	B	A	A	A					A		A	A	A					
4						B	B	A	A	A	A	A	A	A	A	A			B					
5						B	A	A	A	A	A		A							B				
6						B			A	A	A	A	A	A					A	B				
7						B	128	130							108	112	116		A	A	B			
8						B	B		118	120	116	112	114	108	116	108	112	108		A	A	B		
9						B	B	A	108	108		A	A	A	A	A	A	A	A	B				
10						B	A	A		A	A	A		A					A	B				
11						B	B	A	110	A	A	A	A	A	A	A	108	A	B	B				
12						B	B	A	A	A	C	C	C	C	C	C	C	C	B			A		
13						B	A	A	A	A														
14						B			A		112	108	112	110	110	110	110	110						
15						B	B		A	A	A	A							A	B				
16						B	126		A	A	A	A	A	A	A	A	108	110	112	B				
17						B			A	A	A					C	A	C	A	B				
18						B	A	A	A	A	116		A	A	A	A	A	A	A	B				
19						B		A	A	A	112	110		A	A	A	108		A	B				
20						B		A	A	A	A	A	A	A					B	B				
21						B			A	A	A	A							A	B				
22						B	B		120	118	112	112	112	106		A	A	A	B	B				
23						B	B		110	110	110				108		108		A	B	B			
24						B			116	116		A												
25						B	126	122	116		116	114	112	112	112	112	112	112	B	B				
26						B			A	A	A	A							A	B				
27							110	110										110						
28						C	124	122	A	A	A	A	110		A	A	A	108	C	C				
29						C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
30						C	C	C	C	A	A									B				
31												112	112	112	112	112	112							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							11	13	11	6	10	12	12	16	16	17	15	8						
MED							120	116	112	113	112	111	111	110	112	108	110	112						
U Q							126	121	116	116	114	112	112	112	112	112	114	113						
L Q							118	110	110	112	108	109	110	110	110	108	108	110						

SEP. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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	92	B	112	102	98	98	94	114	114	112	106	104	104	132	G	G	G	134	116	108	106	94	90	118
2	B	B	112	92	102	110	102	110	102	100	98	106	108	106	G	G	108	106	104	100	96	92	102	94
3	94	94	94	88	110	112	104	104	98	98	G	G	146	100	122	102	102	100	98	96	94	92	88	94
4	88	86	86	90	100	96	98	92	98	108	104	104	98	102	100	98	G	96	98	94	92	88	90	92
5	84	B	B	B	B	100	106	106	90	90	94	G	94	G	G	G	122	116	102	106	98	92	94	94
6	90	96	B	B	114	82	G	G	100	102	102	104	104	92	116	144	116	106	98	98	92	88	90	90
7	96	88	116	112	B	B	G	G	G	G	G	162	G	132	128	118	106	108	94	94	90	90	96	92
8	92	92	96	94	94	92	102	114	114	104	100	100	100	100	104	102	104	98	94	96	106	102	100	100
9	100	B	92	90	B	B	106	98	90	90	94	92	178	G	G	G	78	126	84	B	B	B	B	B
10	B	104	102	102	102	102	98	100	G	100	84	G	84	G	122	G	112	114	122	98	98	B	96	92
11	84	82	84	84	84	B	110	102	100	98	90	82	84	84	90	G	90	88	92	90	90	88	90	B
12	B	B	104	86	102	94	94	98	102	102	C	C	C	C	C	C	C	90	100	100	94	92	96	92
13	92	92	90	B	B	100	100	98	94	102	G	G	G	G	G	G	122	114	104	104	104	104	94	94
14	90	94	94	B	B	B	126	G	104	G	128	G	84	124	138	94	88	88	88	88	84	84	84	B
15	84	B	B	B	B	98	98	G	86	86	G	84	G	144	132	118	112	96	92	86	86	84	88	88
16	88	88	88	88	88	88	G	106	98	96	82	90	88	94	94	G	G	118	86	98	102	100	88	92
17	94	86	86	86	86	82	128	112	100	100	G	G	G	C	C	92	C	96	98	102	104	90	90	86
18	86	88	86	84	84	B	100	98	88	94	G	88	92	92	90	92	92	92	96	96	104	88	92	94
19	94	B	92	B	B	B	G	104	90	94	G	G	92	146	86	78	G	80	82	86	82	82	88	B
20	B	B	B	B	92	96	G	92	92	90	90	84	82	84	84	G	116	100	94	B	90	90	92	88
21	86	86	86	86	86	86	G	G	G	140	G	134	G	94	94	94	94	94	94	92	92	100	98	90
22	92	90	B	B	84	84	B	138	G	118	100	94	92	G	90	G	94	104	88	84	96	B	98	B
23	94	B	B	B	B	94	136	116	116	100	100	94	100	152	128	118	102	100	100	98	98	98	98	96
24	B	96	86	86	B	B	G	130	118	98	G	134	116	128	122	120	114	G	88	94	92	92	92	B
25	B	B	B	B	B	B	G	96	150	G	G	G	142	114	122	122	114	104	104	100	102	98	96	96
26	92	92	92	B	B	86	124	G	G	106	102	98	G	G	98	96	120	106	88	82	96	B	B	92
27	B	B	92	B	B	100	G	134	104	104	98	92	134	84	82	82	158	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	90	90	G	150	142	130	126	124	108	B	B	B	96	94	92
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	16	21	15	15	19	16	21	22	25	18	18	21	20	21	17	22	26	26	24	25	23	25	21
MED	92	91	92	88	94	96	102	104	100	100	99	96	100	104	104	102	110	102	95	96	96	92	92	92
U Q	94	94	99	94	102	100	108	115	112	104	102	104	125	132	125	119	116	108	100	100	102	98	96	94
L Q	87	87	86	86	86	86	98	98	92	94	90	90	90	93	90	93	94	96	88	91	91	88	90	91

SEP. 2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2019 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

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	F4	F2	L2	L5	L2	C2	C1	L1	L1	L1	C1				H1	C3	F1	F1	F2	F3	F2	
2			F1	F2	F2	L3	L3	C2	L2	L2	L2	L1	L2	L2			L3	L3	F5	F6	F7	F4	F7	F7	
3	F2	F7	F4	F4	F8	L8	L2	L3	L2	L2			H1	L2	CL12	L3	L3	L5	F5	F7	F2	F2	F5	F6	
4	F6	F4	F6	F2	F6	L6	L4	L3	L2	L2	L1	L1	L1	L2	L2	L3		L2	F4	F4	F3	F7	F4	F4	
5	F2					L1	L3	L3	L2	L3	L3		L1				C1	C2	L3	F3	F3	F3	F1	F3	
6	F2	F1			F1	L3			L2	L2	L1	L2	L1	L3	C2	H2	C1	L3	L6	F6	F3	F3	F2	F2	
7	F1	F1	F1	F1								H1		H1	C1	C1	L3	L2	L3	F3	F3	F3	F2	F2	
8	F2	F1	F2	F2	F3	L2	L2	C2	C2	L2	L1	L2	L2	L2	L2	L3	L3	L6	F4	F1	F3	F2	F2	F2	
9	F2		F2	F1			L2	L3	L5	L2	L2	L2	H1				L2	C1	L2						
10		F2	F4	F2	F2	F4	L3	L2		L2	L3		L2		C1		C2	C2	C1	F2	F3		F4	F2	
11	F3	F5	F2	F2	F1		C2	L2	L3	L3	L3	L2	L2	L2	L2		L2	L4	L5	F5	F7	F4	F1		
12			F1	F1	F2	L1	L2	L3	L1	L1								L2	L7	F3	F7	F7	F2	F3	
13	F5	F3	F1			L2	L4	L3	L2	L1							C2	C2	L1	F3	F3	F2	F4	F4	
14	F2	F2	F2				C2		L1		H1		L1	C1	H1	L2	L4	L3	L3	F2	F1	F2	F1		
15	F2					L2	L2		L3	L2		L2		H1	H1	C1	C2	LC32	L5	F3	F2	F3	F2	F1	
16	F1	F2	F3	F3	F2	L2		L3	L3	L2	L2	L1	L2	L2	L2			CL12	L2	F6	F1	F2	F2	F3	
17	F1	F1	F1	F2	F1	L1		C2	C1	L2	L2					L4		L4	L4	F1	F2	F5	F3	F2	
18	F2	F1	F1	F2	F1		L3	L3	L3	L3		L2	L1	L1	L2	L2	L3	L2	L4	F2	F2	F3	F3	F3	
19	F2		F1					L2	L4	L2			L2	HL2	L2	L2		L2	L2	F1	F1	F1	F1		
20			F1		F2	L1		L4	L3	L2	L2	L2	L2	L2	L1		C1	L2	L1		F3	F4	F2	F2	
21	F2	F2	F2	F2	F2	L1				H1		C1		L2	L2	L2	L2	L3	F4	F1	F2	F5	F1		
22	F2	F3			F2	L2		C1		C1	L3	L2	L1		LL33		L1	L2	L2	F1	F7		F2		
23	F1					L1	H3	C3	C2	L2	L2	L1	L2	H1	C2	C2	L4	L5	L3	F5	F7	F4	F3	F3	
24		F2	F3	F1				C1	C2	L2		CL12	C1	C1	C1	C2	C1		L1	F1	F3	F2	F2		
25								L3	H1				H1	C1	C1	C1	C2	L3	L1	F4	F1	F2	F2	F2	
26	F2	F1	F2		L3	C3			L2	L1	L1				L2	L3	C1	L2	L2	F1	F2			F1	
27			F1		L1		C1	L2	L1	L1	L3	C1	L3	L2	L2		H1								
28																									
29																									
30										L3	L2		H1	H1	C1	C1	C1	L3				F2	F2	F2	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

SEP. 2019 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 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	48	X	43	X	33		X														X	X	X	X	
2	X	X	X	X	X		X					A										X	X	X	X
3	38	38	38	35	31	34																A	A	X	X
4	A	36	38	31	A																	X	X	X	X
5	43	39	X	X	X																	X	X	X	X
6	X	X	X	X	X																X	A	X	A	X
7	X	X	40	42	34																57	X	X	X	X
8	X	X	X	X	X																	X	X	X	X
9	51	45	42	36	36																	X	X	X	X
10	X	42	X	X	X																	X	X	X	X
11	X	X	X	X	X																	X	X	A	X
12	X	X	X	X	X																	X	X	X	X
13	41	36	32	31	32																	X	X	X	X
14	X	X	X	X	X																	X	X	X	X
15	41	33	X	X	X																	A	X	X	X
16	44	X	X	X	X																	X	X	X	X
17	39	X	X	X	X																	X	X	A	X
18	47	48	44	39	36	34																X	X	X	X
19	46	X	X	X	X																	X	X	X	X
20	X	X	X	X	X																	X	X	X	X
21	40	41	42	38	33																	X	X	X	X
22	X	X	X	X	X																	X	X	X	A
23	X	X	X	X	X																	X	A	46	X
24	39	39	38	38	34	34																X	X	X	X
25	43	43	44	47	42	44																X	X	X	X
26	X	X	X	X	X																	X	X	X	X
27	X	X	X	X	X																	X	X	X	X
28	X	X	X	X	X																	X	X	X	X
29	X	X	X	X	X																	X	X	X	X
30	X	X	X	X	X																	X	X	X	X
31																						X	X	X	X
	00	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	29	7	5														7	27	28	27	29
MED	X	X	X	X	X		X														X	X	X	X	X
U Q	42	39	39	38	35	40	38														60	50	40	39	38
L Q	X	X	X	X	X		X														X	X	X	X	X
	36	36	34	33	31	34	34														54	44	37	37	36

SEP. 2019 f_{XI} (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

SEP. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 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						B		A	A	A	A	A	A	A	A	A	A	U R	A	B				
2						B		A	A	A	A		A	A	A	A	A	A	B	B				
3						B	A	A	A	A	A	A	U R	A	A	A	A	A	B	B				
4						B	B	A	A	A	A	A	A	A	A	A	A	A	B	B				
5						B	A	A	A	A	A	U R		A	U R	U R	A	A	A	B				
6						B	B	A	A	A	A	A	A	U R	U A	A	A	U A	A	A				
7						B	B	A	A	A	A	R	U R		A	A	A	A	A	B				
8						B	B	A	A	A	A	A	A	A	A	A	A	A	A	B				
9						B	B	A	A	A	A	A	A	A	A	A	A	R	A	A	B			
10						B	B	A	A	A	A	A	A	U R	A	A	U A	A	A	B				
11						B	B	A	A	A	A	A	A	A	A	A	A	U R	B	B				
12						B	B	A	U R	A	U R	A	A	U R	U A	U R	U R	U R	A	B				
13						B	B	A	A	A	U R	U R	U R	U R	A	A	A	A	A	B				
14						B	B	A	A	A	A	U A	U A	A			U A	U R	A	B				
15						B		U R	A	R	U R	U A	U A	U A	A	A	A	A	B	B				
16						B	B	A	A	A	A	R	A	U A	A	U A	U R	U R	A	B				
17								A	A	A	A	U R	U R	R	A	A	A	A	B	B				
18						B	B	A	A	A	A	A	A	A	A	A	A	A	B	B				
19						B	B	A	A	A	A	A	U R	A	A	A	A	A	B	B				
20						B	B	U R	A	A	A	A	U A	A	U A	U A	A	A	B	B				
21						B	B	U R	U R	A	A	A	A	A	A	A	A	A	B	B				
22						B	B	U A	A	A	A	A	A	A	A	A	A	A	B	B				
23						B	B	A	A	A	A	A	A	A	U A	U A	U A	A	B	B				
24						B	B	U A	A	A	A	A	A	U A	U A	A	A	A	B	B				
25						B	B	U A	U R	U R	U R	U A	U A	U R	A	A	U R	A	B					
26						B	B	A	A	A	A	A	A	A	A	A	A	A	B					
27						B	B	U R	A	U R	U R	U R	U A	U R	U A	U R	U R	A	B					
28						B	B	A	A	A	A	A	A	A	A	A	A	R	A	B				
29						B	B	A	A	A	A	A	A	A	A	A	A	U A	B					
30						B		A	A	U R	A	A		U R	U R	U R	U R	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								7	4	3	7	9	13	12	10	9	10	7						
MED								U R	U R	U R	U R	U R	U R	U	U A	U	U R							
U Q								220	278	308	324	340	340	332	322	300	276	236						
L Q								U R	U R	U R	U R	U R	U R	U R	U R	U R	U R							
								208	270	296	308	330	328	324	308	292	268	220						

SEP. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 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		E B	J A	J A	J A				J A				J A	J A			J A	E B				
2	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
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	E B	E B		J A	J A	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
6							E B	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		G				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
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
10	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
11	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
12		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
13	J A	J A		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
14	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	E B	E B	E B	E B
15	E B	E B	E B	E B	E B	E B	E B	G	J A		G						J A	J A	J A	J A	J A	J A	J A	J A
16	J A	J A	J A		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
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	E B	E B	E B
20	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
21	J A	J A	J A	J A	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
22	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	J A
23	E B		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
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	E B	E B	E B	J A
25	J A					E B	E B		G	G									J A	J A			J A	J A
26	J A		E B	E B			E B											J A	J A	E B	J A	J A	E B	J A
27	E B		J A	E B		E B	E B		G									J A	J A	E B	E B	E B	E B	E B
28	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	E B	E B	E B	E B	E B
29	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
30		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	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A	J A						J A	J A	J A	J A	J A	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	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. 2019 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 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	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	A 33	A 18						A 48				E 14	B 16	E 16	B 16	E 16		
2	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	A 23	A 28	A 38	A 75	A 86	46	36	34	32	30	27	20	20	24	21	E 16	B 20	
3	19	19	E 16	B 16	18	18	22	A 51	A 53	A 50	38	37		33	36	44	38	28	19	30	A 63	A 53	20	19		
4	A 42	19	19	19	A 34	A 61	19	34	A 67	40	A 84	37	36	37	44	34	33	33	28	28	36	18	17	E 16	B 16	
5	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	39	28	29	33	41	40	35		G 30	23	A 100	20	19	20	15	E 16	B 16	
6	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	24	32	34	34	36	36		36	35	31	30	34	A 25	A 111	18	A 54	B 16	
7	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 16	20	35	38		G 37	38	38	35	40	47	28	22	16	16	16	16	15	
8	E 15	B 18	E 16	B 16	E 16	B 17	E 17	27	30	33	36	A 53	A 58	49	51	A 64	A 161	A 98	A 109	19	29	19	17	E 16	B 17	
9	E 16	B 15	E 20	B 16	E 16	B 16	E 16	B 16	22	30	33	34	39	36	42	36	32		G 24	18	18	E 16	B 16	19	E 16	B 16
10	E 22	B 16	E 16	B 16	E 16	B 16	E 16	B 20	19	36	32	32	32	35		G 35	40	32	27	36	23	E 15	B 15	E 16	B 16	
11	17	E 16	B 16	E 15	B 17	E 16	B 16	20	36	32	32	35	37	40	43	A 108	A 70		G 20	16	29	E 16	B 65	A 20		
12	E 16	B 16	E 16	B 16	E 16	B 16	E 18	22		G 30		G 35	35		G 34				G 29	A 58	16	16	20	E 16	B 16	
13	18	E 16	B 16	E 16	B 16	E 15	B 16	22	27	31		G 35	35		G 35	31	28	33	20	20	20	16	18	E 16	B 16	
14	E 16	B 16	E 16	B 16	E 15	B 15	E 16	25	31	34	35	39	37	36	38	29	22	21	25	16	17	18	16	E 16	B 16	
15	E 16	B 16	E 17	B 17	E 16	B 16	E 16		G 27		G 27		G 38	37	36	36	36	46	41	40	A 67	16	22	19		
16	E 16	B 18	E 16	B 16	E 16	B 16	E 16	26	29	30	32		G 35	36	A 104	38		G 20	16	16	17	16	E 16	B 16		
17	20	E 16	B 16	E 16	B 15	E 16	B 16	25	29	31	34		G 27		33	31	36	A 104	A 70	A 145	20	17	90	A 22		
18	20	20	E 16	B 16	E 16	B 16	E 16	21	36	33	34	37	36	36	36	34	33	46	44	A 165	21	28	16	E 16	B 19	
19	16	E 16	B 19	E 16	B 16	E 16	B 16	19	30	30	34	36		G 41	34	32	27	39	25	19	E 16	B 16	15	E 16	B 15	
20	E 16	B 16	E 16	B 16	E 16	B 16	E 19	20	30	30	31	36	39	40	36	34	32	27	22	16	18	16	18	E 16	B 18	
21	E 16	B 16	E 20	B 16	E 16	B 16	E 16		G 32	32	34	36	35	37	33	30	24	21	25	20	15	15	E 16	B 15		
22	E 15	B 15	E 15	B 15	E 16	B 16	E 16	25	33	34	37	37	35	35	35	32	30	24	17	17	E 17	18	24	A 51		
23	E 16	B 16	E 16	B 16	E 16	B 16	E 15	26	31	33	33	36	37	37	41	37	31	43	34	34	A 30	55	28	E 16	B 17	
24	19	E 16	B 16	E 16	B 16	E 16	B 16	24	35	35	36	36	45	37	35	34	30	26	16	16	16	16	16	16	E 16	B 23
25	E 16	B 15	E 15	B 16	E 15	B 15	E 15	24		G 36		G 35	31				G 24	17	16	16	18	17	16	E 16	B 16	
26	E 16	B 16	E 15	B 15	E 15	B 15	E 16	23	28	32		G 39		G 38	36	32	32	29	18	15	16	16	16	E 16	B 16	
27	E 16	B 16	E 16	B 16	E 16	B 16	E 16		G 27		G 33	42		G 37	22		G 22	25	16	16	16	15	16	E 16	B 16	
28	E 16	B 16	E 15	B 16	E 15	B 14	E 15	24	29	33	34	45	34	34	32	32		G 20	16	16	16	16	16	E 16	B 16	
29	E 16	B 16	E 16	B 16	E 16	B 16	E 15	23	27	33	34	44	35	33	33	38	27	24	23	16	19	21	16	E 16	B 18	
30	E 16	B 16	E 16	B 16	E 16	B 16	E 16	23	30	26	37	36	35	36	26		G 15	15	15	15	15	16	15	E 16	B 16	
31																										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 23	30	32	34	36	36	36	35	34	30	27	22	18	18	16	16	E 16	B 16	
U Q	17	16	16	16	16	16	16	25	33	34	36	39	37	37	36	38	33	33	34	25	24	18	20	19		
L Q	E 16	B 16	E 16	B 16	E 16	B 16	E 16	B 20	28	30	32	35	34	33	34	31		G 24	18	16	16	16	16	E 16	B 16	

SEP. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 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

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

SEP. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F		324	F	321	F	A	304	375	341	295	A	277	335	312	294	A	324	331	343	351	389	271	311	300
2	F	291	292	323	326	292	314	309	318	316	372	A	A	278	332	355	354	317	328	349	353	380	297	266	288
3	F	F	F	F	F	F	F	319	A	A	A	327	281	327	288	318	322	350	369	391	355	A	A	323	286
4	A	F	F	F	357	A	A	351	350	A	358	A	305	268	327	325	338	358	340	375	331	337	319	328	326
5	F	F	353	316	326	327	350	377	377	361	432	353	281	265	305	307	346	379	A	342	331	317	F	304	
6	321	331	316	351	320	346	370	361	354	369	264	317	353	283	333	287	316	332	358	349	A	301	A	301	
7	290	290	F	F	F	297	358	369	370	383	364	328	355	325	307	321	341	347	376	347	320	301	302	307	
8	343	352	312	348	344	318	354	369	359	367	371	A	A	343	362	A	A	A	A	323	338	311	F	332	
9	F	F	F	321	321	352	381	351	333	334	375	310	312	331	359	341	349	353	361	343	354	317	320	303	
10	320	F	320	298	281	296	330	374	365	321	381	344	354	375	351	314	312	347	351	359	350	F	F	329	
11	318	317	334	365	338	338	355	367	351	367	363	278	335	368	362	A	A	352	361	335	347	309	A	303	
12	323	336	352	310	328	F	364	350	339	362	366	356	335	360	342	332	335	357	350	A	371	307	344	F	
13	F	304	331	306	F	328	379	367	371	380	361	340	304	333	354	334	342	342	353	348	390	325	295	304	
14	309	325	352	312	335	352	364	388	366	353	363	346	360	347	353	346	328	347	349	358	A	358	358	298	
15	F	311	310	347	358	350	344	362	380	379	346	346	266	341	344	338	348	357	384	358	A	343	339	324	
16	F	304	300	328	308	307	353	390	377	398	324	352	316	328	A	341	355	362	366	362	345	335	307	303	
17	F	333	334	338	320	321	349	398	380	361	361	343	304	355	348	334	342	A	A	A	359	301	A	327	
18	F	F	F	F	F	F	352	386	353	344	342	356	347	350	353	369	352	371	345	A	F	F	F	F	
19	F	317	354	345	293	F	328	386	357	380	361	354	338	352	350	349	354	357	379	355	350	340	347	319	
20	316	315	312	312	342	350	366	376	385	389	397	379	339	348	313	336	328	366	368	345	360	364	350	330	
21	F	F	F	F	F	F	334	386	382	398	373	342	347	345	351	321	329	356	373	389	369	334	320	332	289
22	297	316	324	334	F	342	379	388	371	399	380	348	362	366	358	329	343	342	368	360	350	309	315	A	
23	330	330	320	329	338	349	382	394	373	381	349	341	363	365	311	358	356	368	362	390	397	A	F	310	
24	F	F	F	F	F	F	323	371	402	383	366	354	342	345	340	363	338	329	346	381	343	357	340	335	F
25	F	F	F	F	F	F	301	376	371	379	362	347	358	331	342	342	350	368	366	361	366	331	317	325	
26	328	319	305	314	353	350	362	385	378	385	377	353	363	343	347	330	357	356	367	395	413	305	341	313	
27	325	353	325	327	321	306	367	384	373	368	377	331	337	359	333	337	352	355	358	373	375	317	306	312	
28	326	341	324	325	357	301	317	388	346	322	295	316	366	360	320	334	348	367	369	378	387	296	298	311	
29	295	281	290	378	401	336	346	380	374	340	357	316	321	326	343	340	378	388	367	365	327	323	291	F	
30	302	303	325	F	F	330	352	393	368	370	349	336	325	346	346	348	364	380	349	317	319	337	310	286	
31																									
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		16	21	21	23	20	22	30	29	28	29	27	28	29	30	29	27	28	28	27	27	26	26	22	24
MED		319	317	324	327	327	332	354	377	370	368	361	342	337	343	344	337	348	356	366	355	356	317	316	308
U Q		326	332	334	347	343	349	367	388	377	380	375	350	354	355	354	342	354	368	375	362	375	335	335	324
L Q		300	304	312	314	320	314	344	367	354	356	346	316	314	328	320	329	332	346	351	343	338	305	302	302

SEP. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 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						A		A	A		A					A		U L	L						
2								U L		A	A		A				U L		L						
3								A	A	A	A	U L					A	A	L						
4						A		A	A	A	A	U L	U L	U L	A		430	413	A		A				
5										L		A	A	U L				L	A						
6											U L		U L				U L								
7											A	A	U L	U L		A	A	L							
8												A	A	A		A	A	A	A						
9											A	U L		A			U L	L							
10											A	U L				U L	U L	L	A						
11								L	A		U L	U L			A	A	A	L							
12								L	U L		U L	U L				U L	U L	L				A			
13								L	A		U L							A	A						
14																		L	L	A					
15								L	U L		U L	U L					U L	A	A			A			
16								L	L		U L	U L	U L			A	A	L							
17																	U L	A	A	A	A				
18																		A	A	A	A				
19								L	L	U L								L	A						
20																									
21																									
22																									
23																									
24																									
25								L	L	U L	U L	U L					U L	L	L						
26																									
27								L	L	U L	L	A					U L	L							
28																									
29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								1	5	21	22	23	26	24	24	21	14	3							
MED								U L																	
U Q																									
L Q																									

SEP. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 h'F2 (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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		238	310	384	A	432	300	358	402	A	302	274	258						
2								308	288	230	A		E A 414	266	266	280	354	302	272						
3								A	A	A	322	386	352	390	334	304	266	240							
4						A		E A 268	A	274	A	366	454	310	E A 310	290	274	264		E A 246					
5									254	264		296	432	474	370	340	264	232		A					
6									252	252	424	330	274	410	316	384	350	284							
7									246	222	248	312	280	318	380	308	E A 272	A	256						
8									268	268	248			294			A	A	A	A					
9									E A 240	282	234	326	318	278	250	270	270	270							
10									E A 244	322	244	292	272	248	292	342	338	280	250						
11								276	266	254	292	424	324	264	264		A	A	264						
12								280	280	252	252	256	296	274	286	306	302	266			A				
13								256	224	246	282	318	378	324	264	298	286	256	234						
14									244	272	282	282	276	288	274	276	278	278	246						
15								246	236	274	288	300	444	298	286	300	262	E A 272		E A 292					
16								238	238	238	304	334	324	268		A	268	258	258						
17									246	270	270	290	338	280	280	288	258		A	A	A				
18									246	266	266	254	258	258	244	244	256	E A 264	E A 284		A				
19								236	248	226	264	264	278	238	238	274	250	E A 232							
20									232	224	226	244	316	270	328	292	304	254							
21									234	256	296	284	274	274	326	292	250	236							
22									236	226	236	284	252	252	252	270	268	268							
23									260	244	290	290	252	252	330	258	268	252	228						
24										264	258	288	E A 274	282	248	298	298	256							
25								228	228	228	258	290	264	304	282	268	262	242							
26									242	242	244	268	256	280	280	300	260								
27								230	230	240	240	300	294	246	288	302	268								
28									286	300	320	278	220	242	300	280	256	240							
29										266	264	272	278	278	248	248	248								
30										248	272	282	268	264	256	256	254								
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								11	25	29	26	28	29	30	28	27	28	24	7	2					
MED								242	246	254	265	290	279	278	282	290	268	258	248	E A 269					
U Q								276	263	271	290	322	331	304	321	302	292	271	272						
L Q								236	236	239	248	280	270	264	260	270	258	247	234						

SEP. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 h'F (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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 292	228	228	E B 228	220	A E A 258	A	A E A 240	A	A	A	206	192	200	200	A	200	208	208	208	196	324	E B E B 258 294	
2	E B E B 300	E B E B 290	E B E B 256	E B E B 260	E B E B 292	E B E B 286	E B E B 244	E B E B 244	198	A	A	A	A	198	198	198	198	208	208	208	208	E A E B E A 350 324 318		
3	E A E A 316	E A E A 310	E B 310	228	E A E A 310	E A E A 322	E A E A 236	A	A	A	A	216	194	194	192	A	A	204	204	E A 250	A	E A E A 284 310		
4	A E A 284	E A E A 272	228	228	A	A	228	A	A	A	A	224	194	196	A	188	218	A	218	E A E A 260	E A E A 240	E A E A 240	E A E A 240	
5	E B E B 280	E B E B 272	224	E B E B 256	E B E B 256	E B E B 244	220	230	202	196	176	A	A	184	194	192	202	202	A	218	224	E A E B E B 250 268 254		
6	E B E B 254	E B E B 252	220	E B E B 222	E B E B 236	E B E B 218	218	208	206	194	190	190	192	192	182	196	196	212	212	210	E A E A 262	E A E B 262	E B E B 286	
7	E B E B 284	E B E B 270	234	206	222	E B 256	212	202	A	A	176	186	190	202	190	A	A	200	204	204	E B 204	E B E B 204	E B E B 272 254	
8	E A E B 226	E A E B 246	E B 246	E B E B 226	E B E B 242	E B E B 264	222	216	204	202	202	A	A	E A E A 266	A	A	A	A	A	212	220	E A E B E B 252 252 236		
9	202	E B E B 260	E B E B 260	258	230	210	208	206	A	206	206	206	186	A	204	204	204	210	210	210	204	216	E A E B 268 268	
10	E B 234	E B 228	E B 228	E B E B 266	E B E B 254	E B E B 238	210	A	198	192	178	190	190	190	224	224	216	A	216	210	E B E B 278	E B E B 238	220	
11	E A E B 248	E A E B 238	E B 238	208	E A E B 292	E A E B 270	222	206	A	206	206	196	186	A	A	A	A	186	222	222	212	E B E B 232	E A E A 266	
12	E B E B 250	E B E B 236	222	E B 260	220	214	214	206	200	198	198	192	192	178	178	174	182	182	220	A	190	E B E B E B 296 254 258		
13	E A E B 266	E A E B 246	E B E B 236	E B E B 236	E B E B 240	E B E B 258	212	196	A	196	176	176	176	176	174	176	A	A	206	204	E B E B E B 234 310 242			
14	E B E B 240	E B E B 240	E B E B 236	E B 244	228	218	202	200	202	192	192	192	194	194	200	200	200	206	A	204	E B 204	E B 202	E B 224	E B 250
15	E B E B 258	E B E B 252	E B E B 252	228	226	226	214	190	188	180	180	178	200	200	198	226	A	A	210	A	A	210	E A E B 246 228	
16	232	E B E B 278	E B E B 262	226	E B E B 234	E B E B 234	212	208	188	188	188	188	182	182	A	A	184	186	206	206	206	204	E B E B E A 246 310	
17	E A E B 268	E A E B 238	E B E B 244	218	E B E B 274	E B E B 270	214	204	194	188	188	186	184	178	178	178	A	A	A	A	204	204	E A E A 232	
18	E A E B 274	E A E B 274	E B E B 274	E B E B 266	E B E B 258	E B E B 250	216	212	A	190	192	202	194	188	188	190	A	A	A	A	220	E A 312	E A 232	E A 236
19	E B E B 244	E B E B 226	E B E B 226	E B E B 212	E B E B 240	E B E B 240	224	206	206	194	190	190	178	A	192	190	190	A	202	202	208	E B 210	E B 244	
20	E B E B 260	E B E B 260	E B E B 248	E B E B 232	E B E B 232	E B E B 218	216	206	188	188	188	188	200	A	214	214	206	206	210	208	204	198	E A 198	E A 254
21	E B E B 290	E B E B 260	E B E B 260	214	214	214	194	194	194	194	180	180	180	180	198	188	222	202	202	214	224	E B E B 244	E B E B 244 256	
22	E B E B 244	E B E B 244	E B E B 252	E B E B 252	E B E B 228	E B E B 236	210	198	A	A	A	198	198	194	180	180	180	210	206	200	200	E A E A 246 298	A	
23	E B 232	228	228	226	216	216	200	200	190	204	196	188	186	196	A	A	198	A	A	A	198	196	E A E B 344 264	
24	E A E B 250	E A E B 270	E B E B 232	E B E B 224	E B 212	E B 250	192	192	208	200	200	192	A	192	206	202	202	210	200	202	190	E B 188	E B 216	E B 272
25	E B E B 260	E B E B 246	E B E B 252	E B E B 232	208	206	222	192	192	186	182	180	180	180	188	208	208	208	208	200	198	206	E B E B E B 226 226	
26	E B E B 234	E B E B 234	E B E B 260	E B E B 258	216	220	202	202	194	194	192	A	180	210	190	190	208	220	220	196	176	E B E B E B 284 262 262		
27	E B 240	E B E B 218	E B E B 240	E B E B 240	E B E B 240	E B E B 210	198	178	178	178	A	178	A	178	202	204	204	208	196	182	E B E B E B 236 276 274			
28	E B E B 268	E B E B 268	E B E B 254	E B E B 204	E B E B 286	E B E B 236	206	196	190	188	A	182	176	184	198	202	202	202	186	186	E B E B E B 288 266 270			
29	E B E B 310	E B E B 284	E B E B 234	198	E B 198	E B 264	220	220	220	204	204	A	192	192	192	A	202	206	206	194	220	E A E B E A 262 264 274		
30	E B E B 260	E B E B 260	214	198	E B E B 218	E B E B 236	214	198	208	200	196	188	180	192	188	188	186	206	206	204	202	E B 206	E B 220	E B 246
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	29	28	30	27	20	25	25	23	26	24	26	22	23	22	22	25	27	28	27	29
MED	E B E B 258	E B E B 252	E B E B 242	E B E B 215	E B E B 230	E B E B 240	214	206	197	194	190	190	188	192	190	194	202	206	208	205	204	E B E B 235	E B E B 254	E B E B 256
U Q	E B E B 277	E B E B 270	E B E B 256	E B E B 252	E B E B 249	E B E B 261	222	208	205	201	197	198	194	196	198	202	206	210	210	211	212	E A E A 270	E A E A 272	E A E A 273
L Q	E B 240	E B 238	E B 228	E B 222	E B 217	E B 218	210	198	191	189	181	186	180	181	184	188	190	202	204	200	196	E 206	E 232	E 241

SEP. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 h'E (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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		108	108	108	108	108	108	108		A	A	108	108		A	B			
2						B		108	108		A	A		A	A	A	A	A	A	B	B				
3						B	A	A	A	A	A	A		A	A	A		108		A	B	B			
4						B	B	A	A	A	A	A		A	A	A	A	A	A	B	B				
5						B	A	A	A	A	A			A				A	A	A	B				
6						B	B	A	A	A	A	A		108	108		108	108		A					
7						B	B	A	A	A				108	108	108	108	108	108	A	A	A	B		
8						B	B	A			108	108	108	108	108	108		A	A	A	A	B			
9						B	B	A	A	A	A	A	A	A	A			108	108		A	B			
10						B	B	A	A	A	A	A		A			A			A	B				
11						B	B	A	A	A	A	A		114		A	A	A		A	B	B			
12						B	B	A		A		A		A					114		A	B			
13						B	B	A	A	A				108	108	108	108		A	A	A	A	B		
14						B	B		A	A	A										A	B			
15						B		112				112	112	114	114	116	116	116		A	A	B	B		
16						B	B	A		A	A		A								B				
17								108	A	A	A			108	110	108	108		A	A	A	B	B		
18						B	B	A	A	A	A	A		A	A	A	A	A	A	A	B	B			
19						B	B	A	A	A	A	A		110		A	A	A	A	A	B	B			
20						B	B		A	A	A	A									B	B			
21						B	B	112				112	110	110	110	110	110	110			B	B			
22						B	B	110	108	108		A	A	A	A				A	B	B				
23						B	B	108	108	108	108							108		A	B	B			
24						B	B	112	114	114					116	108	108			A	B	B			
25						B	B	120	120	116		A	A								B				
26						B	B	114	114	114	114	114	114	108	108	108	108			A	B				
27						B	B	110	110	110	110	110	110	110	110	108	106				B				
28						B	B	114	114	114	114	114	114	108	108	110	110	110		A	B				
29						B	B	120	120	120	114		A	A	A	A	A	108			B				
30						B		114	120	114		A	A					114			B				
31								114	A	116		A	A												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								16	14	13	10	11	18	17	16	14	17	12	1						
MED								112	112	114	110	108	110	108	108	108	108	110	108						
U Q								114	114	115	114	112	114	110	110	110	110	114							
L Q								109	108	108	108	108	108	108	108	108	108	108							

SEP. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 h'Es (KM)

135°E MEAN TIME (G.M.T. + 9 H)

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

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	94	B	94	92	92	114	120	118	110	114	114	112	104	104	114	124	110	B	98	96	96	96	
2	96	96	94	92	B	108	112	112	112	94	94	94	94	94	94	98	98	98	98	96	96	94	94	92	
3	96	88	88	88	86	86	86	94	96	102	102	102	G	104	104	104	110	104	102	90	90	90	90	90	
4	96	96	90	90	90	90	98	98	98	98	96	96	100	98	96	96	96	96	96	92	92	92	92	92	
5	90	88	88	B	B	94	102	102	102	102	102	142	148	102	G	G	100	98	98	98	96	96	88	88	
6	88	88	88	88	88	102	B	106	102	102	102	102	138	G	128	128	142	118	96	96	94	94	94	94	
7	88	88	88	88	100	100	100	100	94	94	G	146	132	110	118	114	94	94	94	92	92	92	84	84	
8	90	90	90	90	90	90	108	106	116	114	102	100	100	100	94	90	90	90	90	90	90	90	90	90	
9	90	90	90	90	90	94	94	102	102	102	102	98	98	90	90	90	G	122	102	102	102	102	96	96	
10	86	86	B	86	94	98	98	98	98	98	100	100	100	G	114	102	114	116	100	100	100	100	100	92	
11	84	84	94	100	100	B	100	100	100	96	90	90	114	92	98	98	98	G	112	100	90	90	90	88	
12	88	B	B	88	88	96	96	94	G	94	G	94	94	G	128	G	G	G	94	94	94	92	92	92	
13	86	86	86	B	86	B	B	96	96	94	G	G	G	G	94	94	94	92	94	94	92	92	92	92	
14	92	B	B	B	B	B	B	116	106	102	100	142	142	124	160	158	88	88	88	84	B	B	90	B	
15	B	B	B	B	B	90	B	G	90	G	G	G	126	122	122	122	104	98	86	86	86	86	86	86	
16	86	86	86	86	B	B	B	92	112	94	94	G	90	140	92	112	G	G	116	90	98	100	100	98	
17	94	92	90	90	90	90	84	128	98	98	98	G	88	G	120	94	94	88	88	86	86	86	86	86	
18	86	86	86	86	86	86	112	100	94	94	92	92	92	92	92	90	88	88	92	92	92	98	98	96	
19	96	92	86	86	86	96	94	96	96	96	96	94	G	84	84	84	82	80	78	78	B	B	B	B	
20	B	B	84	84	84	88	90	88	94	92	90	90	140	160	126	150	150	116	88	88	88	B	88	88	
21	94	90	86	88	B	B	B	G	G	114	94	94	92	92	92	92	92	96	96	94	92	92	B	B	
22	B	B	B	B	B	B	B	124	120	118	118	88	88	86	94	92	106	106	78	94	94	90	88	88	
23	B	88	88	88	88	88	B	134	134	134	92	102	96	98	138	138	138	98	96	96	96	94	94	94	
24	90	90	90	90	90	88	88	148	112	112	104	90	108	110	128	122	122	104	B	B	B	B	90	88	
25	88	88	88	86	86	B	B	118	G	G	G	142	G	G	120	120	G	102	90	90	90	88	88	88	
26	88	88	B	B	88	88	B	124	128	126	G	158	G	136	124	144	114	104	102	B	98	98	B	98	
27	B	90	90	B	90	B	B	G	G	G	G	146	86	G	G	G	86	122	102	102	B	B	B	B	
28	B	B	88	B	B	B	B	128	114	114	114	98	114	114	106	98	G	98	B	B	B	90	96	96	
29	B	90	90	90	90	88	128	128	120	114	96	96	96	94	92	92	92	126	82	82	88	88	88	86	
30	86	86	B	B	B	B	120	124	100	98	L	90	90	146	146	86	G	G	G	B	B	B	94	94	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	23	24	23	20	21	20	18	27	27	27	24	26	24	24	29	26	24	26	27	25	24	25	25	26	
MED	90	88	88	88	90	90	98	106	102	102	99	98	100	103	104	100	98	98	96	92	92	92	90	92	
U Q	94	90	90	90	90	96	108	124	114	114	102	114	129	123	123	122	114	116	102	96	96	96	95	94	
L Q	86	87	86	86	86	88	92	98	96	94	94	94	94	93	92	92	92	94	88	89	90	90	88	88	

SEP. 2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

SEP. 2019 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	F3	F5	F4		F2	L3	L3	CL32	C3	CL22	CL32	C1	C2	C2	L2	L3	C2	C2	L3		F3	FF22	F2	F2	
2	F2	F2	F2	F2		L2	C2	C3	C3	L4	L6	L4	L4	L2	L2	L2	L3	L4	L3	L3	F8	F9	F3	F9	
3	F8	F8	F6	F4	F5	L5	L7	L8	L8	L6	L3	L3		L3	L2	L5	C3	C3	L4	L9	F9	F9	F3	F8	
4	F5	F3	F5	F5	F4	L6	L5	L7	L6	L4	L4	L3	L2	L3	L4	L3	L4	L8	L7	L9	F9	F7	F3	F2	
5	F2	F2	F3			L2	L3	L5	L3	L3	L2	H2	H2	L2			L2	L3	L7	L4	F3	F5	F2	F2	
6	F2	F2	F2	F2	F2	L1		L2	L4	L2	L2	L2	C1		C1	C2	H1	C2	L4	L8	F6	F4	F8	F4	
7	F2	F2	F2	F1	F1	L2	L2	L3	L5	L4		H1	H1	CL22	C1	C2	L8	L3	L4	L2	F1	F1	F2	F2	
8	F1	F2	F1	F2	F1	L1	L1	L2	C2	C2	L2	L3	L4	L5	L3	L6	L7	L6	L9	L8	F4	F3	F3	F4	
9	F1	F2	F6	F2	F1	L1	L1	L2	L6	L3	L3	L3	L2	L4	L2	L3		C2	L4	L1	F1	F1	F3	F2	
10	F5	F5		F3	F2	L2	L4	L3	L4	L2	L2	L2	L2		C2	L4	C2	C3	L7	L9	F1	F2	F6	F2	
11	F3	F3	F2	F1	F6		L1	L3	L6	L2	L3	L2	CL22	L2	L5	L5	L4		C2	L1	F5	F4	F8	F3	
12	F1			F1	F1	L1	L4	L3		L2		L2	L2		C1				L9	L6	F2	F2	F6	F2	
13	F7	F3	F2		F1			L3	L3	L3					L2	L2	L2	L6	L5	L7	F6	F6	F7	F4	
14	F2							C4	L3	L2	L2	H1	H1	C1	H1	HL22	L3	L3	L5	L2			F1		
15					L1			L2					CL12	CL12	C1	C3	L4	L8	L8	L6	F7	F5	F4	F5	
16	F3	F4	F2	F2				L5	C3	L3	L3		L2	HL12	L3	C2			C3	L2	F2	F8	F3	F7	
17	F7	F4	F3	F3	F2	L2	L1	C2	L3	L3	L2		L2		C1	L3	L6	L9	L7	L5	F3	F3	F8	F6	
18	F3	F4	F2	F3	F2	L1	C2	L3	L4	L3	L3	L3	L2	L2	L2	L3	L4	L7	L8	L6	F6	F8	F2	F5	
19	F2	F2	F5	F5	F2	L2	L2	L4	L2	L2	L2	L2		L4	L2	L3	L4	L7	L5	L2					
20			F1	F2	F2	F2	L3	L3	L2	L2	L2	L2	HL12	HL12	CL11	H1	H2	C2	L4	L1	F1		F2	F2	
21	F2	F2	F6	F2						C2	L2	L3	L3	L2	L2	L2	L2	L2	L6	L9	F6	F2			
22								C2	C4	C3	C3	L2	L2	L2	L2	L2	C2	L3	L1	L1	F1	F9	F9	F9	
23		F2	F3	F2	F2	L1		C2	C2	C2	L2	L2	L2	L2	H2	H2	H2	L8	L8	L8	F6	F9	F8	F2	
24	F6	F5	F3	F2	F1	L3	L2	H2	C3	C3	L2	LC21	C2	CL11	C2	C2	C2	L3					F2	F5	
25	F2	F1	F2	F2	F1			C2				H1			C1	C1		L2	L1	L1	F1	F3	F3	F3	
26	F2	F4			F2	L1		C3	C2	C2		H2		H1	C2	H1	C2	L4	L2		F2	F2		F2	
27		F3	F3		F2			CL22			H1	H1		H1	L2		L3	C2	L2	F1					
28			F1					C6	C3	C2	C3	L3	C1	C1	C2	L2		L2				F2	F2	F2	
29		F2	F2	F2	F2	L2	C2	C2	C2	C2	L3	L5	L3	L2	L2	L5	L3	C4	L5	F2	F9	F6	F2	F2	
30	F1	F3				C1	C4	L3	L3	L3	L4	L3	HL22	HL22	L2							F2		F2	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
U Q																									
L Q																									

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	F 32	F	F 35	32	22	24	28	A	43	46	44	E G 41	52	A	46	47	56	58	57	63	47	25	28	26			
2	25	24	25	24	22	18	22	46	60	54	E G 45	A	66	79	68	47	44	47	54	51	38	F 24	23	24			
3	26	23	25	A	21	19	27	48	50	A	44	47	A	A	70	71	74	76	45	34	30	A	27	26			
4	F 26	26	28	A	A	18	23	44	48	A	A	A	A	56	62	70	78	68	60	A	45	40	44	48			
5	38	32	32	22	22	22	26	48	46	46	45	E G 43	47	53	59	A	70	69	52	42	43	38	33	32			
6	34	34	25	21	22	19	26	48	53	44	45	53	57	60	56	56	58	61	68	44	32	24	26	F 24			
7	F 24	26	F 28	F 26	18	18	23	46	54	54	50	54	64	58	48	58	62	58	51	40	38	A	31	32			
8	33	30	24	22	20	20	26	46	54	48	46	47	49	65	65	54	57	58	48	48	45	44	38	F 35			
9	F 31	F 31	F 30	28	27	28	42	50	66	66	66	51	62	77	80	67	59	56	56	52	A	43	37	34	29		
10	34	34	27	21	23	25	28	42	44	A	56	67	68	56	53	48	52	56	54	A	42	34	34	F 33			
11	F 27	F 24	F 20	18	17	A	46	52	53	49	50	58	70	66	J R 79	J R 74	J R 69	57	52	R	52	32	32	A			
12	F 27	28	28	26	F 23	F 19	F 25	44	58	56	49	52	57	62	57	52	49	50	49	53	42	A	F 24	F 27			
13	F 27	26	24	23	21	20	27	45	46	48	54	51	51	62	69	56	52	55	52	53	47	30	31	31			
14	28	28	28	28	25	22	27	45	48	52	48	54	H 76	96	97	96	85	69	54	60	73	48	31	28			
15	F 31	F 32	28	F 26	24	22	28	50	Z 51	51	49	48	52	58	57	57	56	54	52	45	40	32	31	28			
16	28	28	28	28	26	26	30	54	53	55	48	57	68	78	89	85	J R 84	A	A	80	55	48	41	38	F 35	F 28	F 27
17	F 28	A	27	F 23	22	F 24	F 28	48	50	52	50	50	56	61	64	A	A	80	55	52	51	35	24	A			
18	A	A	F 27	F 26	F 21	F 22	F 24	48	48	53	62	68	74	76	76	62	57	59	55	48	42	37	F 28	33			
19	F 28	F 31	35	31	F 28	F 29	F 28	48	56	57	54	60	83	99	98	87	76	70	57	53	37	33	26	27			
20	28	28	27	27	26	26	27	44	52	57	54	48	51	55	48	56	50	60	63	64	V 57	33	26	26			
21	26	26	25	25	A	18	25	45	48	49	48	48	57	62	H 62	68	78	82	59	41	31	29	30	29			
22	28	28	25	25	22	23	26	44	48	53	A	53	72	75	60	62	67	71	76	64	38	28	27	26			
23	26	27	28	27	24	23	26	42	45	50	50	56	64	65	61	64	66	65	76	68	33	22	23	F 23			
24	F 24	F 25	F 24	F 27	F 22	F 22	26	40	46	50	54	65	69	60	60	57	67	73	70	51	41	34	31	30			
25	30	30	29	29	26	26	28	57	52	50	50	51	53	55	62	65	64	65	65	61	47	28	28	30			
26	30	29	27	28	24	24	27	46	53	56	56	60	60	61	63	66	76	70	78	74	32	20	22	24			
27	25	24	24	22	22	20	24	48	49	55	68	55	H 78	96	93	86	69	H 59	59	54	44	23	24	24			
28	26	26	27	30	24	19	23	55	53	52	57	81	89	69	59	69	87	78	66	56	22	25	26	27			
29	27	27	32	26	J B 14	17	24	44	52	65	67	68	81	96	106	88	66	60	56	42	R 34	29	31	F 31			
30	F 28	30	29	28	J B 13	19	26	51	53	54	58	78	86	94	68	54	62	64	55	52	51	38	36	34			
31																											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	27	27	30	28	28	30	29	29	30	27	28	28	28	28	30	28	29	30	30	28	30	27	30	28			
MED	28	28	27	26	22	22	26	46	50	53	50	53	63	64	62	63	66	62	56	52	42	32	28	28			
U Q	30	30	28	28	24	24	28	48	53	55	56	60	73	78	70	70	75	70	63	58	47	37	31	32			
L Q	26	26	25	23	21	19	24	44	48	50	48	49	54	59	59	56	56	58	52	44	37	25	26	26			

SEP. 2019 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	372	380	400	408	U A	A	420	412	388	372		L					
2								L	372	400	452	A	A	A	A	404	U L	U L	L	L					
3								L	368	A	A	412	A	A	A	408	392	A							
4									A	A	A	A	A	A	A	A	A	A			A				
5								L	400	424	432	416	420	412		A	384	368		L					
6								L	L U L	404	404	416	424	428	416	400	384	368							
7									A								A	A							
8									380	424	432	432	432	424	416	416									
9									U L U L	416	412	A	424	420		A	404	400	372	L					
10									A	A	428	436	432	420		A	420	400	L						
11							A	L		A	416	420	424	432	A	412	392	A		A					
12									380	400	424	424	A	A	A	A	392	360	L	L					
13									L	404	412	428	428	420	428	416	388	L	L						
14									L	U L	400	420	428	420	420	404	400	L	A						
15									L	408	416	428	424		A	404	A	A							
16									L	L	U A U A	420	408	A	424	A	392	A							
17										412	424	432	428	424	420		A	A	A						
18										412	416	424	A	428	424	420		A	A						
19														A	U A	A				L					
20									L	372	408	428	424		424	416	392	336							
21									L	U L U L	400	416	432	440	A	424	404	376	360	L	L				
22									L	A	A	A	A	A	A	A	A	L							
23									L	A	416	432	436	456	436	400	A	A							
24									A	408	416	420	428	424	432	412	392	L							
25									L	U L U L	404	428	432	432	440	424	408	396	L	L					
26									L	408	428	424	428	428	428	416	A	A							
27									U L	380	408	420	464	420	432	412	400	388	A						
28									U L U L	348	404	444	424	436	432	432	424	388	L						
29									L	U L	420	432	436	428	436	440	408	L							
30									L	U L	436	432	A	436	A	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									10	22	27	26	22	20	20	24	20	9							
MED									372	404	424	428	428	428	424	408	392	368							
U Q									L	L	L	L	L	L	L	L	L	L	L						
L Q									380	408	428	432	432	432	428	416	398	372							
									372	400	416	424	424	422	418	404	388	358							

SEP. 2019 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	A												A	A			
2							B	A	252	284	308	320	332	328	316	304	280	248						
3							B	A	188	248	280	304	320	320	324	316			A	A	A			
4							B	A	244	272	292	316	344	332	328	316	284			A	A	A		
5							B	A	252		A	304	312		316				A	A	A			
6							B	A	A	A	A	A	A	A	A									
7							B	A	196		A	U A	A	U A	320	340	332			A	A			
8							B	A	196	256	284	304	328	344	344	332	316	288	244					
9							B	A	248	288														
10							B	A	260	280	U A	304	324	336	324	324	312	284	252	184				
11							A		188		A	A	328	340	348	328	308	288	228					
12							B	A		A	296		A	A	A	A	A	288						
13							B	A		A	A	A	A	A	A	A								
14							B	U A	212	268	284	312		A	328	340	324	312	280					
15							B	A	248		A	A	A	340	348	328	320	280						
16							B		204	252	276	U A	A	A	A	A	308	280	228					
17							B	A	212	252	280	U A	A	A	A	A	A	A	A	A	A			
18							B	A	U A	U A	U A	A	A	A	A	A	A	288						
19							B		208		A	A	A	A	A	A	A	A	A	A	A			
20							B		180	236	284	324	332	340	336	328	312							
21							B		208	264		A	A		328	328	316	276	244					
22							B		228	260	292	308	324		A	324	324	276						
23							B	A		240	288	304	316	328	336	320	308	292	256					
24							B		200	252	296	304		A	A	A	A	A						
25							B		196	252	284	308	328	332	336	320	304	280						
26							B		232	232	288	320	308	328	U R	336	320	296	276	228				
27							B		184	248	284	292	312	328	336	308	296	268	216					
28							B	A	260	292	U A	284	324	332	328	320	300	U A	A	A				
29							B		184	236	280	300		A	A	A	A	272						
30							B	U A	220	248	276	U A	A	A	A	A	300	268	228					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								17	24	22	20	14	16	20	18	18	22	16	2					
MED								200	250	284	304	322	332	336	324	310	280	238	180					
U Q								212	254	288	308	328	340	338	328	316	288	250						
L Q								188	244	280	296	316	328	326	320	304	276	228						

SEP. 2019 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	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	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
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	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	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	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	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	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	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	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	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	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	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	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B
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																								
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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
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	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B	E B

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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 B 16	21 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	A A 86	29	32	34	37	42	60	37	34	31	26	21	35	19	22	E B 16	E B 16
2	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	27	34	39	A A 66	49	51	48	35	33	34	23	20	E B 16	17	E B 16	E B 16
3	E B 16	E B 16	20	A A 64	E B 16	E B 16	E B 16	E B 16	22	29	44	43	35	A A 102	75	47	33	35	42	25	27	20	A A 36	21	E B 16
4	E B 16	E B 16	17	A A 27	A A 21	E B 16	E B 16	E B 16	25	43	A A 146	A A 70	A A 62	A A 74	49	44	57	54	42	37	A A 70	18	E B 16	28	32
5	20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	28	31	34	34	35	37	36	A A 76	33	28	18	16	E B 16	E B 16	E B 16	18
6	21	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	29	31	33	35	40	38	38	35	34	31	28	20	E B 16	E B 16	E B 16	E B 16
7	E B 16	E B 16	20	E B 16	E B 16	E B 16	E B 16	E B 16	24	29	41	41	37	37	38	38	38	41	39	27	19	21	A A 86	E B 16	E B 16
8	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	32	33	G	45	38	38	45	37	36	28	23	16	E B 16	E B 16	E B 16	E B 16
9	E B 16	E B 16	E B 16	18	E B 16	E B 16	E B 16	E B 16	23	39	51	38	38	38	35	44	36	30	26	29	18	16	E B 16	E B 16	E B 16
10	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	31	A A 65	39	38	38	40	51	G	34	33	28	A A 64	E B 16	E B 16	E B 16	E B 16
11	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	29	34	34	36	46	45	44	46	G	24	20	16	E B 16	E B 16	E B 16	E B 16
12	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	G	35	36	36	40	37	37	G	40	36	46	27	A A 53	E B 16	E B 16
13	E B 16	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	28	32	36	34	37	37	34	33	30	29	23	20	22	E B 16	18	E B 16
14	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	28	31	32	36	38	36	G 28	35	G	32	40	30	E B 16	E B 16	E B 16	E B 16	E B 16
15	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	24	29	31	35	35	40	44	44	35	40	40	39	27	17	E B 16	E B 16	E B 16
16	E B 16	22	20	19	E B 16	E B 16	E B 16	E B 16	28	28	33	38	42	41	48	37	40	37	49	34	16	19	E B 16	E B 16	E B 16
17	E B 16	A A 64	21	17	E B 16	E B 16	E B 16	E B 16	26	32	35	34	36	35	37	34	A A 103	A A 159	43	34	22	20	19	E B 16	E B 16
18	A A 42	A A 42	E B 16	20	E B 16	E B 16	E B 16	E B 16	21	36	35	35	35	47	38	36	36	46	47	32	E B 16	23	25	22	29
19	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	28	33	33	36	66	44	42	36	35	20	17	E B 16	23	E B 16	E B 16	E B 16
20	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	28	31	36	38	40	40	35	37	33	28	28	16	E B 16	E B 16	E B 16	E B 16
21	E B 16	20	E B 16	A A 33	E B 16	E B 16	E B 16	E B 16	G	G	32	32	34	36	43	37	38	30	30	29	23	20	22	E B 16	E B 16
22	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	29	A A 41	67	44	44	44	44	42	41	31	20	22	22	E B 16	E B 16	E B 16
23	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	26	34	40	41	40	42	37	43	37	42	41	56	18	E B 16	18	E B 16	E B 16
24	E B 16	18	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	35	37	27	37	39	38	37	34	31	18	19	16	16	E B 16	E B 16	E B 16
25	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	32	34	33	40	38	36	35	33	31	27	18	17	16	E B 16	E B 16	E B 16
26	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	G	29	32	G	39	36	39	36	37	40	41	20	E B 16	E B 16	E B 16	E B 16	E B 16
27	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	20	27	22	G	G	G	26	40	37	26	34	34	28	21	E B 16	E B 16	E B 16
28	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	25	30	37	34	35	35	36	35	34	31	26	20	20	16	E B 16	E B 16	E B 16
29	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	32	36	37	36	37	33	36	G	28	19	18	20	E B 16	E B 16	E B 16
30	E B 16	E B 16	19	E B 16	E B 16	E B 16	E B 16	E B 16	24	28	31	37	36	47	42	41	G	G	G	E B 16	18	17	E B 16	E B 16	E B 16
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	23	29	33	35	37	38	40	37	36	34	31	26	18	16	E B 16	E B 16	E B 16
U Q	E B 16	16	16	16	E B 16	E B 16	E B 16	E B 16	25	32	37	38	39	44	44	44	38	40	40	30	22	20	18	16	16
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	22	28	32	33	35	36	37	36	34	31	27	20	16	E B 16	E B 16	E B 16	E B 16

SEP. 2019 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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

$\begin{matrix} H \\ D \end{matrix}$	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	14	12	14	16	17	16	14	17	16	16	16	16	16	16	16	16	16
2	16	16	16	16	16	16	16	16	14	15	15	16	22	17	17	16	14	15	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	15	14	15	18	16	20	19	19	16	15	14	16	16	16	16	16
4	16	16	16	16	16	16	16	16	12	16	14	18	20	20	19	19	15	16	14	16	16	16	16	16
5	16	16	16	16	16	16	16	16	13	16	16	24	21	20	20	17	16	15	15	16	16	16	16	16
6	16	16	16	16	16	16	16	15	14	17	20	21	20	16	22	19	18	16	14	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	16	19	22	21	23	21	20	17	16	14	16	16	16	16	16
8	16	16	16	16	16	16	16	16	16	16	20	20	19	22	21	20	14	14	14	16	16	16	16	16
9	16	16	16	16	16	16	16	16	15	16	15	19	19	20	18	17	14	14	14	16	16	16	16	16
10	16	16	16	16	16	16	16	16	16	16	17	18	19	18	19	18	14	14	14	14	16	16	16	16
11	16	16	16	16	16	16	16	16	13	14	16	17	17	19	16	16	14	13	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	15	16	15	18	21	22	20	17	15	14	14	16	16	16	16	16
13	16	16	16	16	16	16	16	14	14	14	21	21	20	14	20	18	15	15	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	18	20	20	23	22	20	14	15	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	15	14	14	14	24	18	14	18	18	15	14	16	16	16	16	16
16	16	16	16	16	16	16	16	16	16	16	16	18	18	18	16	16	14	10	15	16	16	16	16	16
17	16	16	16	16	16	16	16	16	14	14	14	16	22	22	17	16	14	13	15	16	16	16	16	16
18	16	16	16	16	16	16	16	16	14	14	15	21	20	21	18	17	14	14	16	16	16	16	16	16
19	16	16	16	16	16	16	16	15	14	14	15	15	15	16	18	12	13	12	16	16	16	16	16	16
20	16	16	16	16	16	16	16	16	15	15	20	20	21	21	19	20	18	14	16	16	16	16	16	16
21	16	16	16	16	16	16	16	16	13	14	17	19	19	16	16	17	18	15	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	14	14	15	18	18	15	14	15	15	14	15	16	16	16	16	16
23	16	16	16	16	16	16	16	16	14	14	17	20	17	22	15	14	16	15	16	16	16	16	16	16
24	16	16	16	16	16	16	16	14	14	14	16	19	16	15	15	13	14	14	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	16	16	18	18	18	16	16	14	12	13	16	16	16	16	16
26	16	16	16	16	16	16	16	16	14	18	16	19	24	16	15	14	14	13	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	15	14	16	16	19	16	15	14	14	15	16	16	16	16	16
28	16	16	16	16	16	16	16	16	14	14	16	17	16	14	14	14	14	15	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	14	14	14	15	21	21	26	18	14	14	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	14	16	18	16	18	16	15	14	13	11	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	14	15	16	18	19	18	18	17	14	14	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	15	16	17	20	21	21	20	18	16	15	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	14	14	15	17	17	16	16	15	14	14	14	16	16	16	16	16

SEP. 2019 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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

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	F	F	F					A				G		A										
2											G	A										F		
3				A						A			A	A								A		
4	F			A	A					A	A	A	A							A				
5												G					A							
6																								F
7	F		F	F																		A		
8																								F
9	F	F	F																					F
10											A										A			F
11	F	F	F	F		A										J R	J R				R			A
12	F	F	F	F	F	F	F															A	F	F
13	F																							F
14													H											
15	F	F	F	F				Z																F
16		A		F	F	F	F										J R	J R				F	F	F
17	F															A	A							A
18	A	A	F	F	F	F	F																	F
19	F	F																						
20																						V		
21					A										H									
22												A												
23																								F
24	F	F	F	F	F	F	F																	
25																								
26																								
27													H											
28																								
29	F				B																R			F
30	F				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	27	27	30	28	26	30	29	29	30	27	28	28	28	28	30	28	29	30	30	28	30	27	30	28
MED	316	324	332	340	336	340	353	392	384	368	342	318	332	334	327	324	335	356	363	357	352	331	309	316
U Q	329	341	349	366	345	350	357	397	389	377	360	340	344	348	342	339	346	367	368	369	370	342	323	324
L Q	F																							
	306	312	326	327	325	326	339	374	360	357	324	303	307	322	310	316	322	345	351	346	335	310	301	303

SEP. 2019 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	377	387	415	412	A	A	399	391	379	368	L						
2								L	377	399	370	A	A	A	A	388	U	L	U	L	L				
3								L	394	A	A	431	A	A	A	374	396	A							
4									A	A	A	A	A	A	A	A	A	A			A				
5								L	409	416	431	464	397	414		A	382	379	L						
6								L	L	U	L	422	449	439	419	427	393	413	408	388					
7									A	A	A	414	415	380	429		A	A	A						
8									U	L	U	L	407	445	432	422	425	395	374	L					
9									A	A	426	412	423	430		A	381	380	L						
10									A	430	439	437		A	A	418	390	A		A					
11							A	L	389	415	417	422	A	A	A	A	404	395	L	L					
12									391	415	427	420	428	409	430	436	389	A							
13									L	411	437	428	438	435	416	411	404	L	L						
14									L	U	L	409	422	437	428	443	457	434	437	L	A				
15									L	404	437	455	419		A	A	408	A	A						
16									L	L	L	A	A	A		A	A	A							
17									397	426	427	430	445	437		A	A	A							
18									402	426	442		A	416	418	387		A	A						
19									391	401	419	446		A	A	A	399	396	397	L					
20									L	417	406	424	389	412	460		A	L	L						
21									L	U	L	U	L	410	430	424	407	412	375	390	384				
22									L	A	A	A	A	A	A	A	A	A	L						
23									L	A	A	432		A	414		A	A	A	A					
24									A	381	425	447	455	414	386	388	368	L							
25									L	U	L	U	L	428	419	412	396	385	378	379					
26									L	L	401	419	A	430	407	413	379	A	A						
27									U	L	414	416	403	386	454		A	401	383	A					
28									U	L	U	L	L	408	403	376	429	421	423	409	370	368			
29									L	U	L	379	385	422	423	384	364	391	L						
30									L	U	L	406	425		A	A	A	L	L	L					
31																	380								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									10	22	25	23	19	17	18	21	19	9							
MED									392	406	421	428	428	414	412	391	387	379							
U Q									U	L	408	415	430	439	438	428	429	412	396	392					
L Q									389	399	410	422	419	402	393	380	379	366							

SEP. 2019 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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								A	388	304	348	G	312	A	470	424	306	266	270					
2								284	260	258	G	A	334	276	238	308	L	370	338	250				
3								236	234	A	E	A	426	A	A	300	280	256	228					
4								E	A	A	A	A	A	A	328	298	306	258	256		A			
5									234	282	414	G	414	348	354	A	278	236	226					
6								252	232	258	446	324	290	330	338	328	282	264						
7									230	242	338	330	260	282	438	312	260	246						
8									278	250	398	500	286	272	336	302	254							
9									304	264	254	456	352	284	254	262	290	250						
10									A		318	272	244	268	E	A	326	318	312	252		A		
11							A	244	260	248	272	324	314	262	276	276	254	234	236					
12									236	236	312	326	310	262	284	288	284	264						
13									212	256	260	284	368	286	284	284	280	254	236					
14									230	254	L	334	286	246	252	256	246	250						
15									262	282	410	362	304	286	270	278	234							
16									232	240	348	328	304	302	270	270	A	248	A	246				
17									246	260	352	322	300	310				230						
18									298	268	264	258	274	250	268	272	256							
19									232	236	284	324	292	256	232	244	252	236	214					
20									230	250	250	284	310	272	362	290	314	260						
21									222	258	L	324	302	266	356	304	264	230						
22									222	242	A	374	282	258	282	314	294	264						
23									220	264	284	286	274	320	326	300	258	264						
24									244	266	292	276	256	288	286	316	270	236						
25									212	238	276	282	304	326	288	266	252	234						
26									234	228	290	264	278	298	296	304	248	242						
27									232	276	240	258	296	268	246	246	242	242						
28									222	L	334	304	226	258	308	312	252	218						
29									260	252	302	306	284	258	234	242								
30									236	304	274	284	248	232	270	248	226							
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	23	27	28	28	28	28	30	28	29	29	6					
MED								248	232	258	289	324	303	283	286	289	264	246	236					
U Q								268	244	266	326	363	318	301	326	312	287	258	250					
L Q								240	222	242	264	283	280	264	258	269	252	234	226					

SEP. 2019 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	250 ^Q 300 ^{E A}	238	214	272	238	260		A	212	214	198	200	A	A	218	206	210	218	228	242	182	450 ^{E A}	284	302	
2	324	308	274	266	274	314	260	222	202	206	230	A	A	A	A	218	228	266 ^{E A}	226	218	206	304 ^{E A}	332	304	
3	274	338	308	A	270	312	244	214	222	A	A	188	A	A	A	220	224	A	212	224	290 ^{E A}	A	322	298	
4	316	310	200	A	A	288	246	222	A	A	A	A	A	A	A	A	A	A	A	234	A	194	236	280 ^{E A}	260
5	242	262	234	308	282	262	238	214	208	186	180	166	166	214	192	A	216	214	194	214	232	230	270	280	
6	276	202	230	296	244	244	238	224	216	188	176	176	218	206	240	200	228	210	208	204	198	290	282	286	
7	310 ^Q	260	228	194	270	294	232	220	208	A	E A	272	196	196	242	200	294	A	A	218	210	224	A	284	256
8	226	208	224	250	294	296	226	216	214	190	172	A	200	214	A	206	222	212	208	206	212	222	284	282	
9	292	250	230	262 ^{E A}	232	210	220	220	A	A	200	200	200	182	A	228	184	210	228	206	204	224	284	296	
10	256	220	216	292	316	258	224	220	214	A	206	192	192	A	A	188	214	A	222	A	206	244	258	218	
11	252 ^Q	286	244	228	310	370	A	216	200	188	192	194	A	A	A	A	182	216	224	238	200	216	268	A	
12	276	268	214	216	254 ^Q	226	232	208	194	190	176	192	172	226	192	194	182	A	256	250	208	A	312	290 ^{E A}	
13	286	292	246	236	268	244	204	192	194	180	180	190	172	194	176	182	194	228	208	208	210	220	276	244	
14	278	252	252	234	218	248	214	210	208	190	190	194	170	162	172	160	214	A	A	224	208	192	186	218	258
15	284	264 ^Q	248	242	234	214	212	198	192	186	168	150	222	A	A	196	A	A	A	230	220	228	212	244	262
16	256	292 ^{E A}	290	254	242	234	224	214	200	206	200	A	A	A	244	A	A	A	A	236	194	250	272	250	290
17	280	A	282	234	276	292	222	204	220	216	190	178	182	182	166	A	A	A	A	224	216	206	206	314	A
18	A	A	238	198	276	272	230	210	236	198	178	162	A	206	186	212	A	A	A	230	214	216	256	350	338 ^{E A}
19	264	254	220	208	242	266	244	212	200	196	182	178	A	A	A	198	E A	220	202	200	200	218	204	242	262
20	280	266	258	220	224	208	208	204	200	190	204	194	240	222	178	252	208	234	232	204	188	192	238	264	
21	252 ^{E A}	298	238	216	A	288	224	202	204	192	184	178	186	A	A	204	264	208	220	206	222	248	300	314	268
22	262	244	262	242	246	260	200	200	204	A	A	A	A	A	A	A	A	A	252	218	206	200	224	278	294
23	288	246	224	228	204	232	206	204	208	A	A	202	A	178	A	E A	244	A	A	232	192	182	218	316	314 ^Q
24	260	256	222	220	210	230	212	192	A	234	200	190	180	194	208	208	200	222	208	212	192	198	236	256	
25	268	256	252	238	206	256	244	208	204	182	174	254	208	192	204	224	212	214	224	192	188	208	258	256	
26	246	244	250	246	218	234	214	204	210	206	180	254	178	216	184	230	A	A	220	184	168	244	300	266	
27	272	264	256	256	244	240	220	204	186	178	174	196	172	248	226	A	234	A	220	198	182	234	276	304	
28	282	302	260	220	208	330	258	208	202	224	198	182	172	180	170	210	216	210	212	182	214	324	300	286	
29	318	292	234	178	B	E B	326	232	204	210	200	210	184	198	216	222	212	214	216	202	194	218	280	256	282
30	312	250 ^{E A}	250	210	B	300	236	200	216	196	200	188	A	A	A	200	194	188	214	230	214	252	278	298	
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	28	30	28	26	30	29	29	27	23	26	25	19	18	18	23	21	17	30	28	30	27	30	28	
MED	276	260	240	232	245	258	226	208	208	192	188	189	186	200	196	205	213	215	221	208	206	225	276	278	
U Q	287	292	256	252	274	294	241	216	214	206	200	196	200	216	218	228	221	225	228	219	218	272	300	297	
L Q	256	250	228	216	224	234	214	204	200	188	178	178	172	182	178	198	197	210	208	199	192	212	258	261	

SEP. 2019 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	A											A	A				
2							B		104	104	104	104	104	104	104	104	104	A	A	A	A			
3							B	A											A	A	A			
4							B	A		A				A	A	A	A	A	A	A	A			
5							B	A	A	A	A	A	A	A	A		104	104	104		A	B		
6							B		A			A					A	A			A			
7							B	A		104	104	A	104	104	104				104	102	A	A		
8							B		102				102	102	102	106	106			A	B			
9							B	A		108	106	106	106	106	108	108	108	106	106	106		A	A	
10							B	A		106	106							102	102					A
11							A		A	A	A									A	B			
12							B	A	A		A	A	A	A	A	A			A	A	A			
13							B	A	A	102								102		A	A			
14							B		A			A							A	A	B			
15							B	A		108	106	106	106		106	106	104	102	106		A	A	A	
16							B		104				A	A	A	A			A	B				
17							B		104	104	104	102					104	104	104		A			
18							B	A		112	108	106	104					A	A	A	B			
19							B		104	102								102		A	A	B		
20							B		102									A		A	B			
21							B		102	102	102	106	106	106	106	106			102		A	A		
22							B		112	104									A	A				
23							B	A		102	102	104								A				
24							B		104	104	104	104	104	104	104	104	104	106	106					
25							B		108	108	108	108							98	A	A			
26							B		110	106	104	104	104	104	104	104	104			A				
27							B		126	100	112	106	104	104	104	104	104	104	104		A			
28							B	A		98	104	104	100	100	100	104	104	104	104		A	A		
29							B		110	100	100	100	100	100	100	100	102		A	A				
30							B		118	106	104	104			104			104		A	A			
31							B		120	112	102	102					100	100	104		B			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								17	24	22	20	14	16	20	18	18	22	16	2					
MED								108	105	104	104	104	104	104	104	104	104	104	104	103				
U Q								112	107	106	106	104	105	105	104	104	104	104						
L Q								104	104	102	102	104	103	104	104	104	104	103						

SEP. 2019 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 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	94	90	90	92	90	124	122	88	120	122	122	120	108	102	104	106	104	114	114	98	96	94	90	92
2	90	94	114	116	92	114	90	114	122	118	114	102	100	100	100	104	118	98	98	100	100	100	96	B
3	92	B	92	92	92	88	84	88	102	106	102	122	114	106	112	126	108	96	96	92	90	90	94	102
4	90	92	98	98	88	122	122	102	102	96	96	96	96	96	96	96	96	98	96	92	92	92	86	86
5	90	88	90	B	144	94	106	106	110	102	104	104	104	140	110	104	102	104	102	96	90	94	92	92
6	92	92	92	88	86	108	88	148	104	106	104	104	100	156	152	146	118	120	102	102	94	94	94	92
7	92	90	82	82	82	82	100	100	100	94	94	146	150	104	122	106	104	98	92	92	88	94	90	82
8	B	B	B	86	86	92	112	108	118	114	G	122	112	124	118	106	112	112	100	106	88	98	106	124
9	114	92	90	90	90	92	92	108	104	100	98	98	94	94	90	160	142	126	90	86	88	92	106	98
10	98	102	98	92	84	88	104	102	102	100	100	104	108	116	108	G	156	120	110	102	102	96	96	88
11	88	84	96	86	102	118	112	112	102	100	100	110	120	112	108	108	G	138	110	104	100	100	96	96
12	96	90	B	B	B	B	86	102	102	G	98	96	94	160	92	92	G	96	96	96	96	94	114	96
13	88	88	88	B	B	122	B	140	102	112	92	106	96	84	98	98	100	106	104	96	92	92	92	106
14	98	94	B	B	B	B	B	116	112	114	164	96	150	98	146	G	172	86	84	84	84	B	B	102
15	B	B	B	90	120	120	B	128	106	106	106	104	136	116	114	118	104	100	96	92	92	92	96	86
16	86	84	86	86	86	B	118	110	120	102	124	98	124	116	150	116	116	108	124	84	108	114	100	100
17	96	96	92	92	90	90	90	122	102	104	100	96	96	92	92	100	94	96	96	92	92	92	90	86
18	92	92	90	88	86	108	124	108	98	100	100	94	94	94	96	96	104	96	102	96	94	92	102	100
19	106	94	94	B	B	B	94	G	94	96	96	92	88	88	84	86	86	86	82	78	98	B	B	B
20	B	B	B	B	B	88	B	128	134	142	168	160	152	124	144	154	132	114	100	94	88	88	82	80
21	110	94	90	90	90	86	88	88	G	110	110	100	110	148	156	128	168	114	104	96	96	96	94	92
22	B	B	B	B	B	B	B	B	128	114	110	104	86	102	102	106	102	106	102	102	98	96	92	98
23	94	92	88	B	B	92	B	128	122	112	112	110	110	122	138	142	118	112	102	96	96	96	96	96
24	88	88	88	86	86	B	B	140	116	114	94	90	90	90	84	84	84	86	86	82	96	96	94	92
25	92	92	84	B	90	90	90	126	112	110	114	158	140	136	140	120	110	106	102	98	80	94	90	98
26	94	92	104	B	B	92	B	G	126	116	G	156	130	150	134	132	114	104	100	84	94	94	92	98
27	B	92	92	B	B	B	104	124	122	94	G	G	90	164	170	150	128	118	112	104	80	B	B	B
28	B	B	B	B	B	B	B	122	126	114	126	122	118	110	108	104	102	118	94	90	90	94	92	90
29	86	90	88	88	84	138	B	164	118	110	102	104	98	150	96	94	G	98	98	96	92	92	90	90
30	84	86	86	86	B	B	B	126	116	104	94	92	84	84	82	G	G	G	B	92	96	90	94	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	24	24	23	18	19	21	19	27	29	29	27	29	30	30	30	27	26	29	29	30	30	27	27	26
MED	92	92	90	89	90	92	100	114	112	106	102	104	106	111	108	106	109	106	100	96	93	94	94	94
U Q	96	93	94	92	92	119	112	128	121	114	114	121	120	136	138	128	118	114	103	98	96	96	96	98
L Q	89	89	88	86	86	89	90	102	102	100	98	96	94	96	96	98	102	97	96	92	90	92	90	90

SEP. 2019 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

SEP. 2019 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

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

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

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

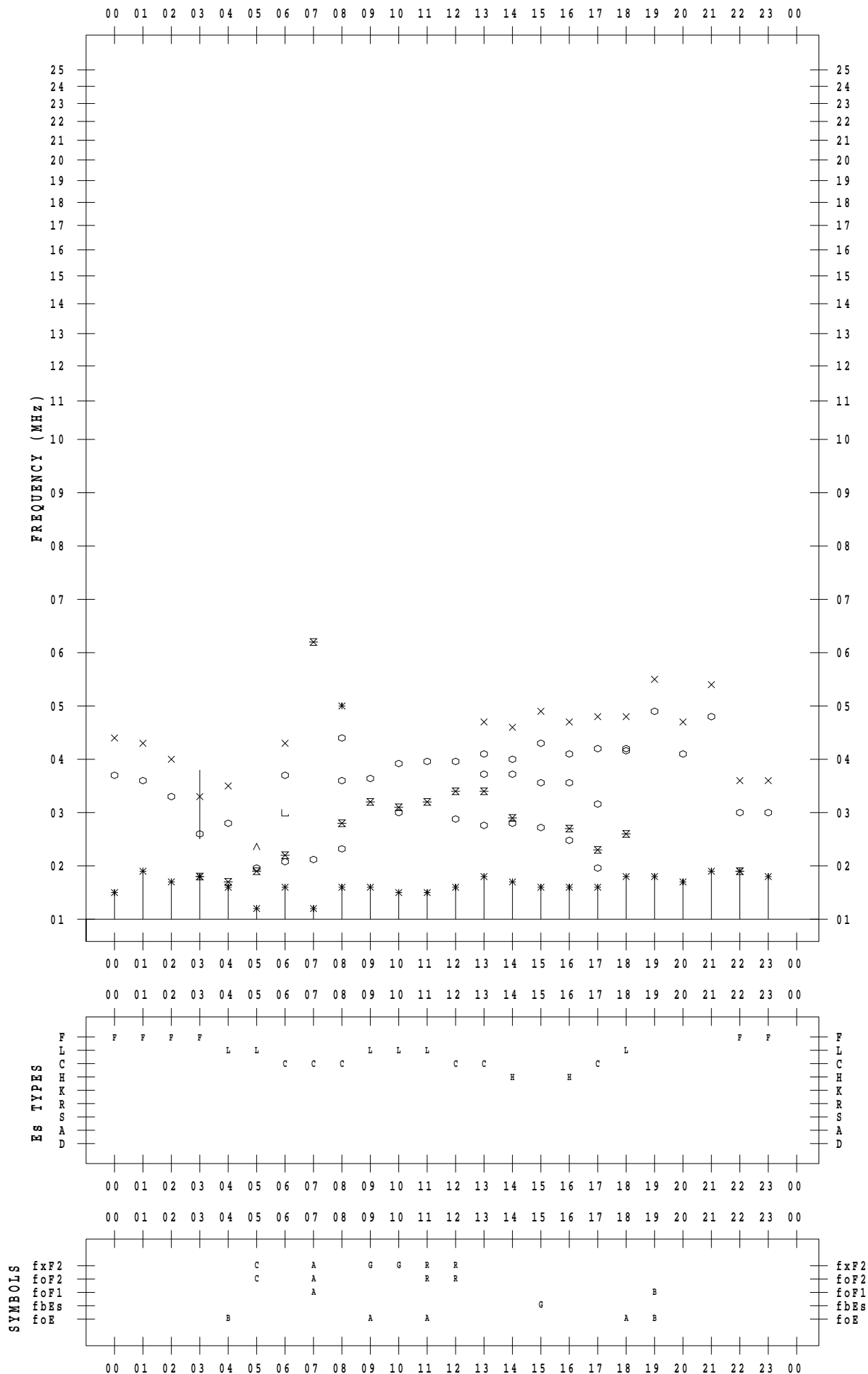
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 1

135 ° E MEAN TIME



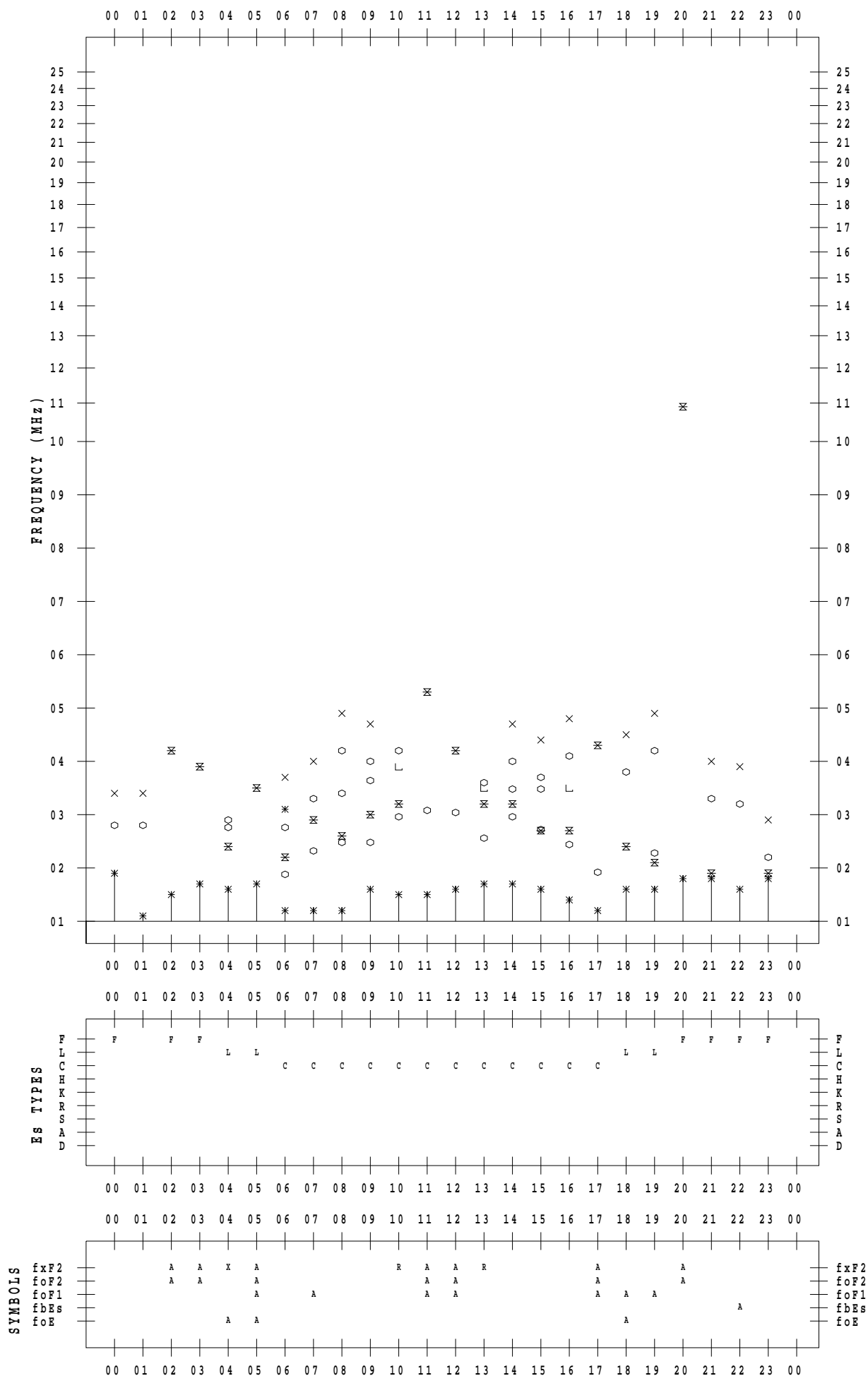
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 2

135 ° E MEAN TIME



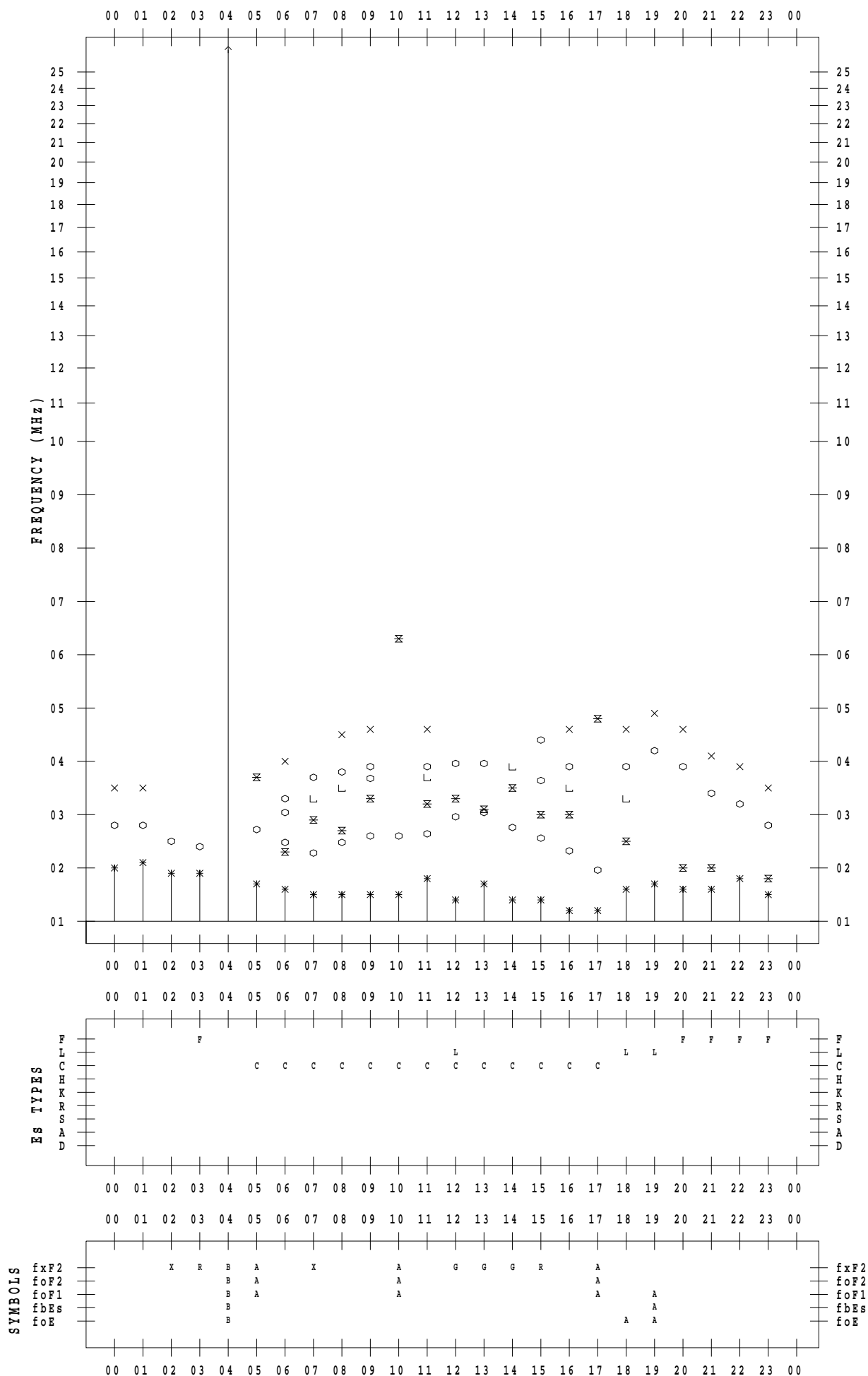
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 3

135 ° E MEAN TIME



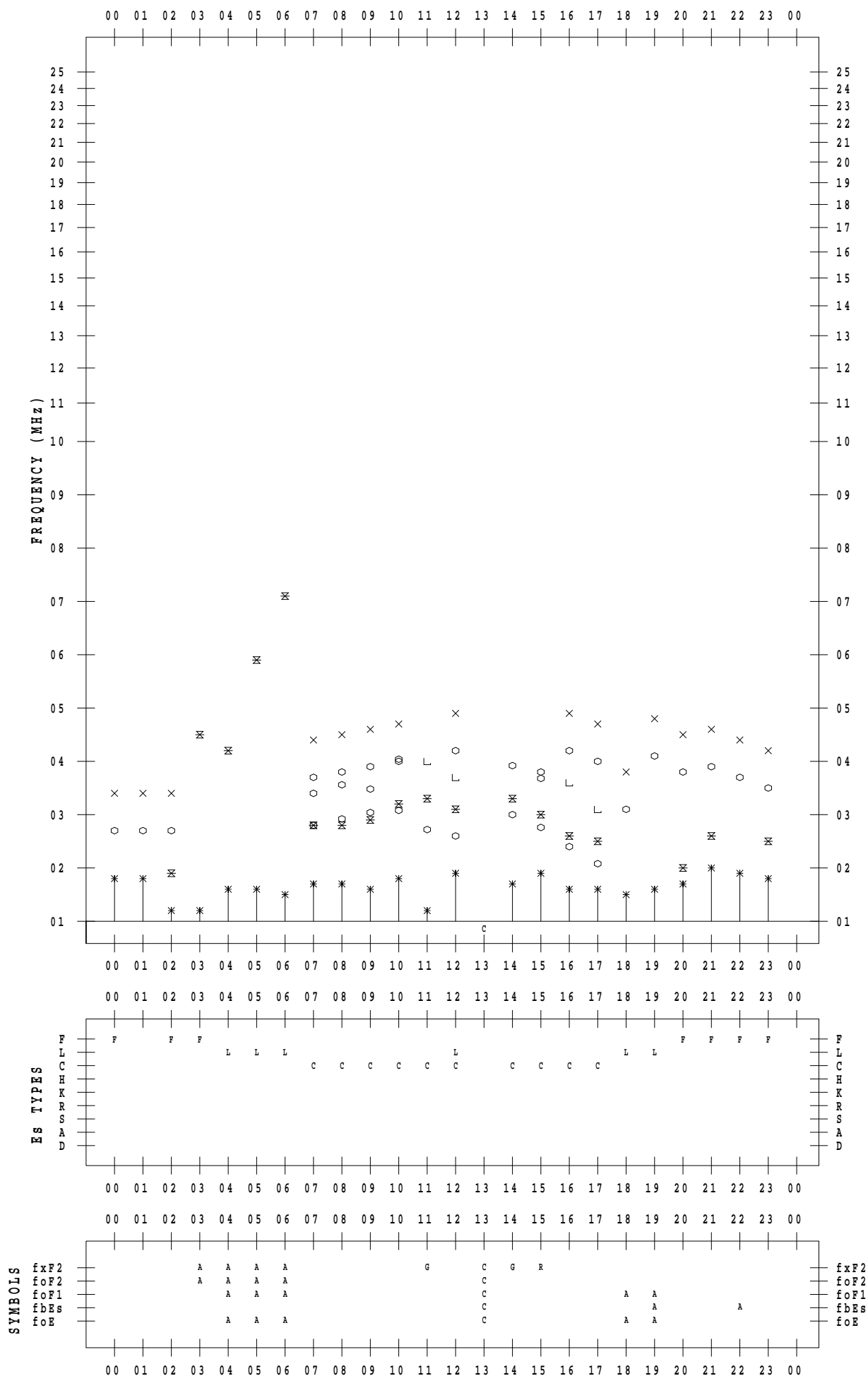
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 4

135 ° E MEAN TIME



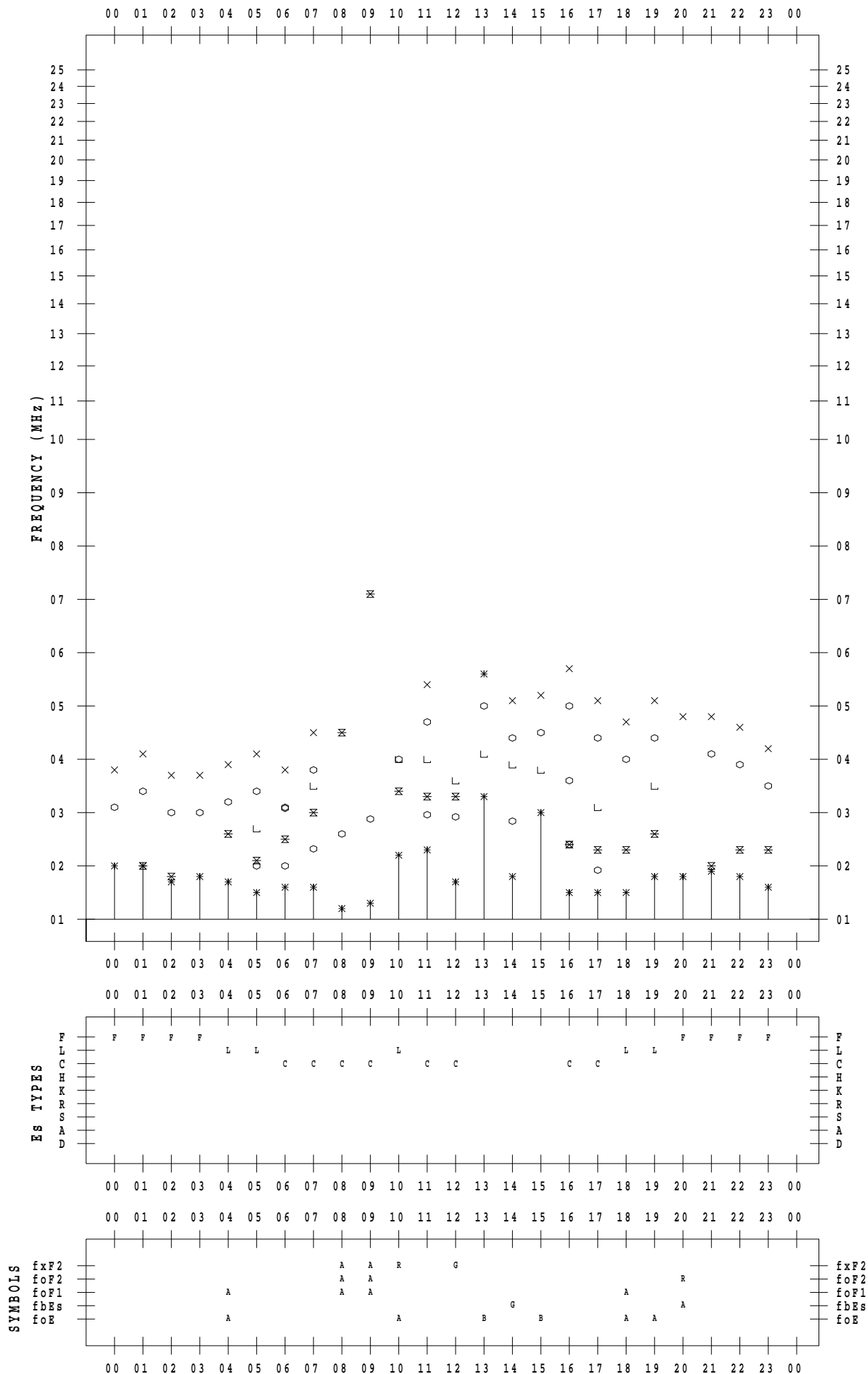
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 5

135 ° E MEAN TIME



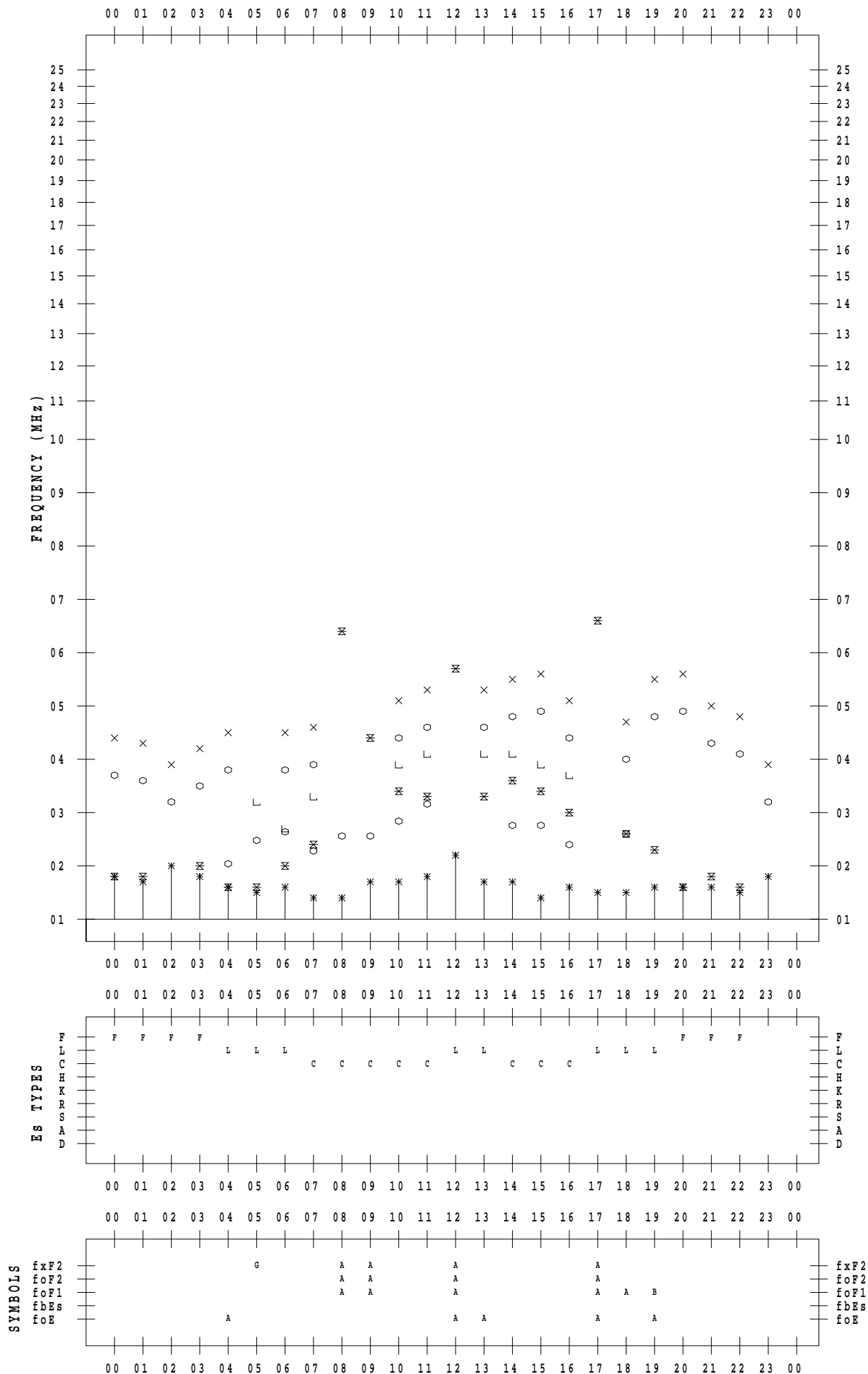
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 6

135 ° E MEAN TIME



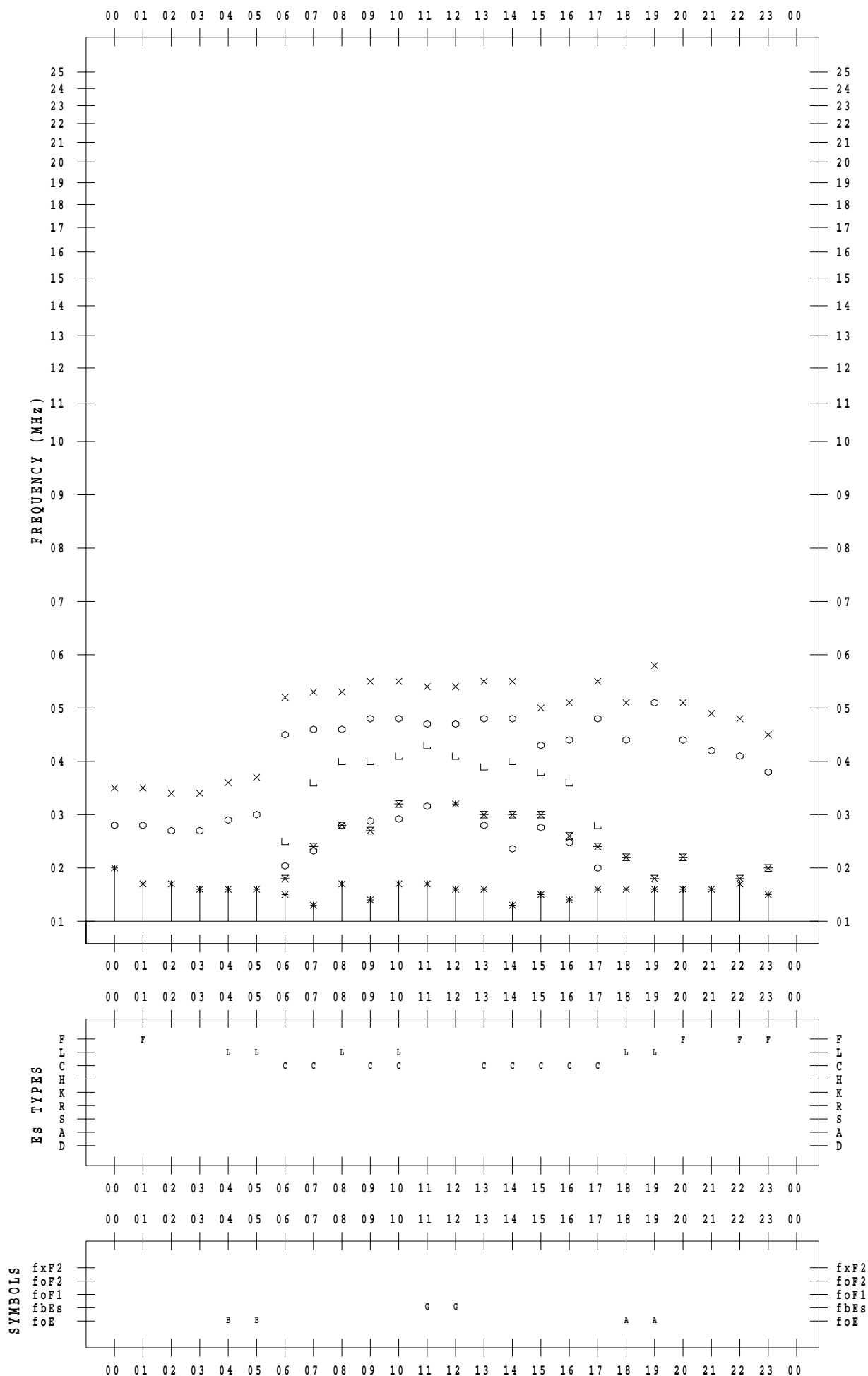
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 7

135 ° E MEAN TIME



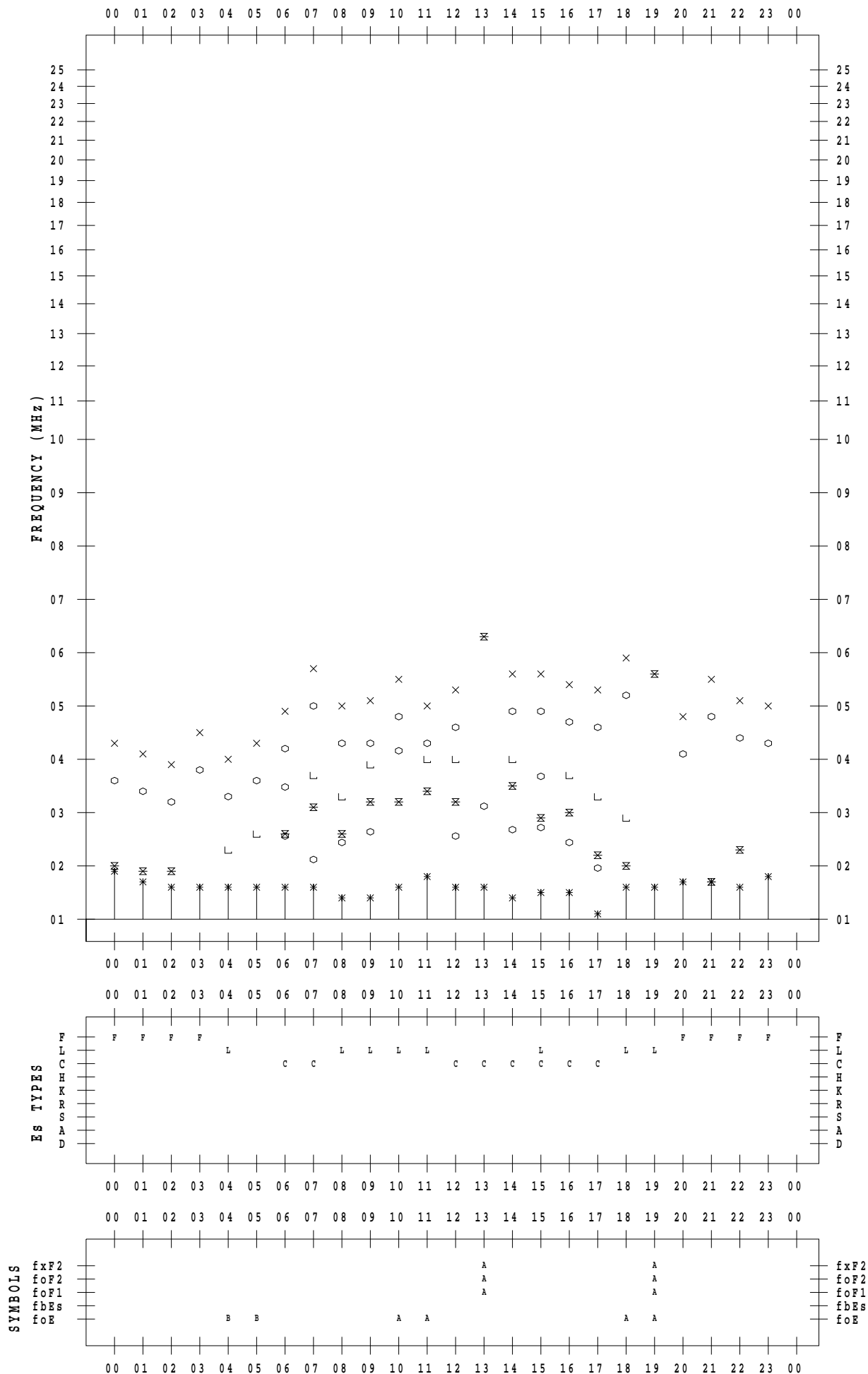
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 8

135 ° E MEAN TIME



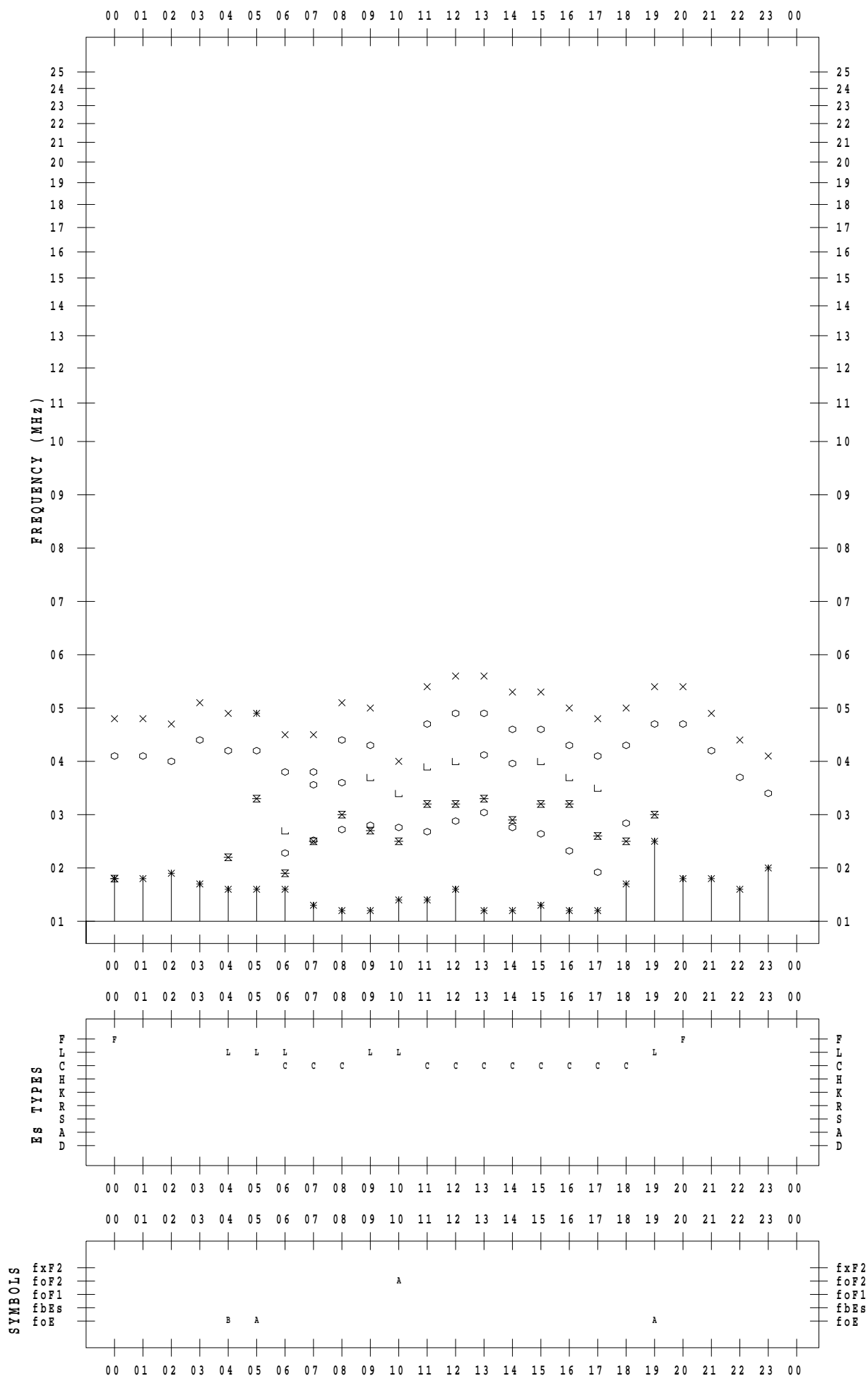
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 9

135 ° E MEAN TIME



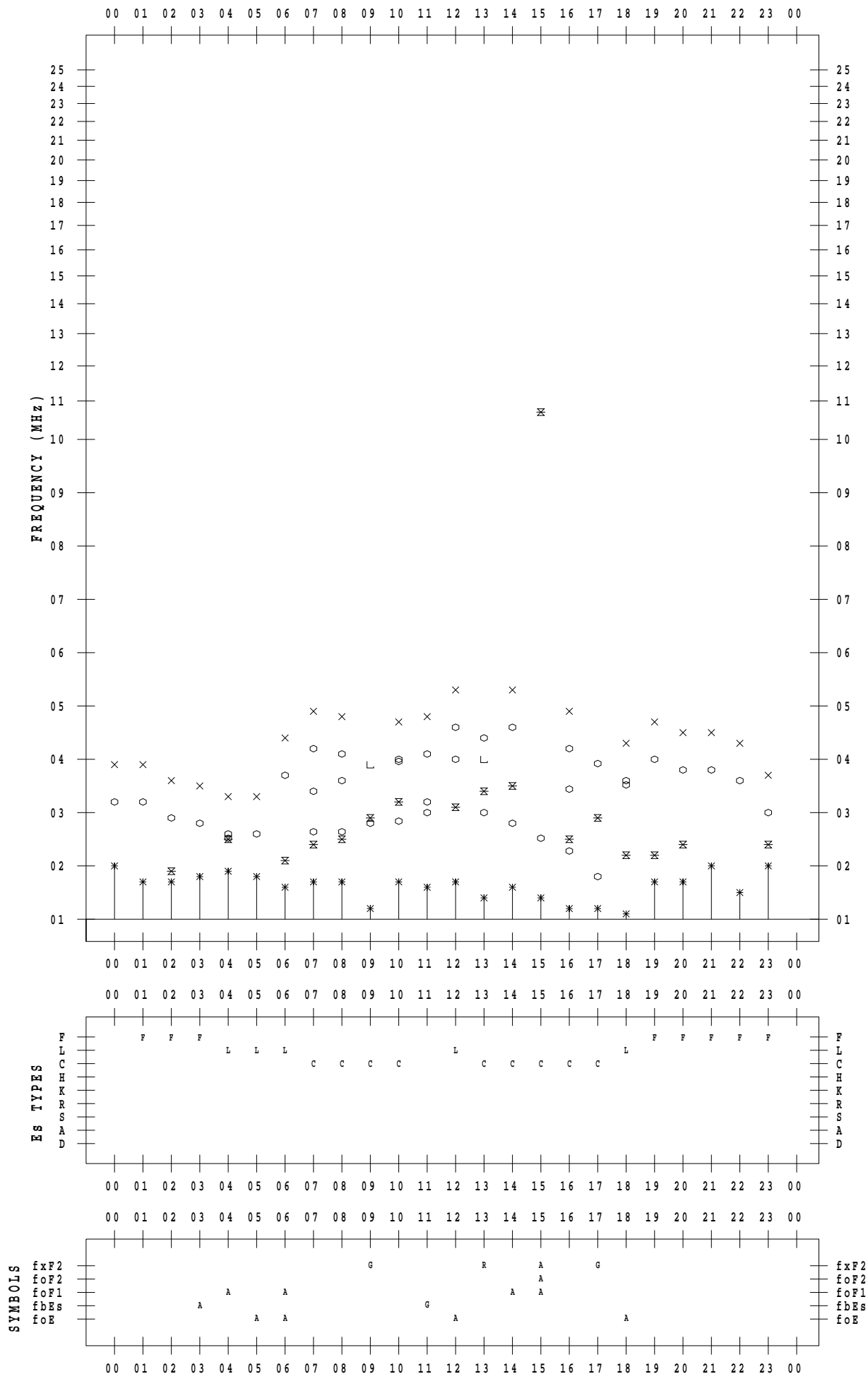
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 10

135 ° E MEAN TIME



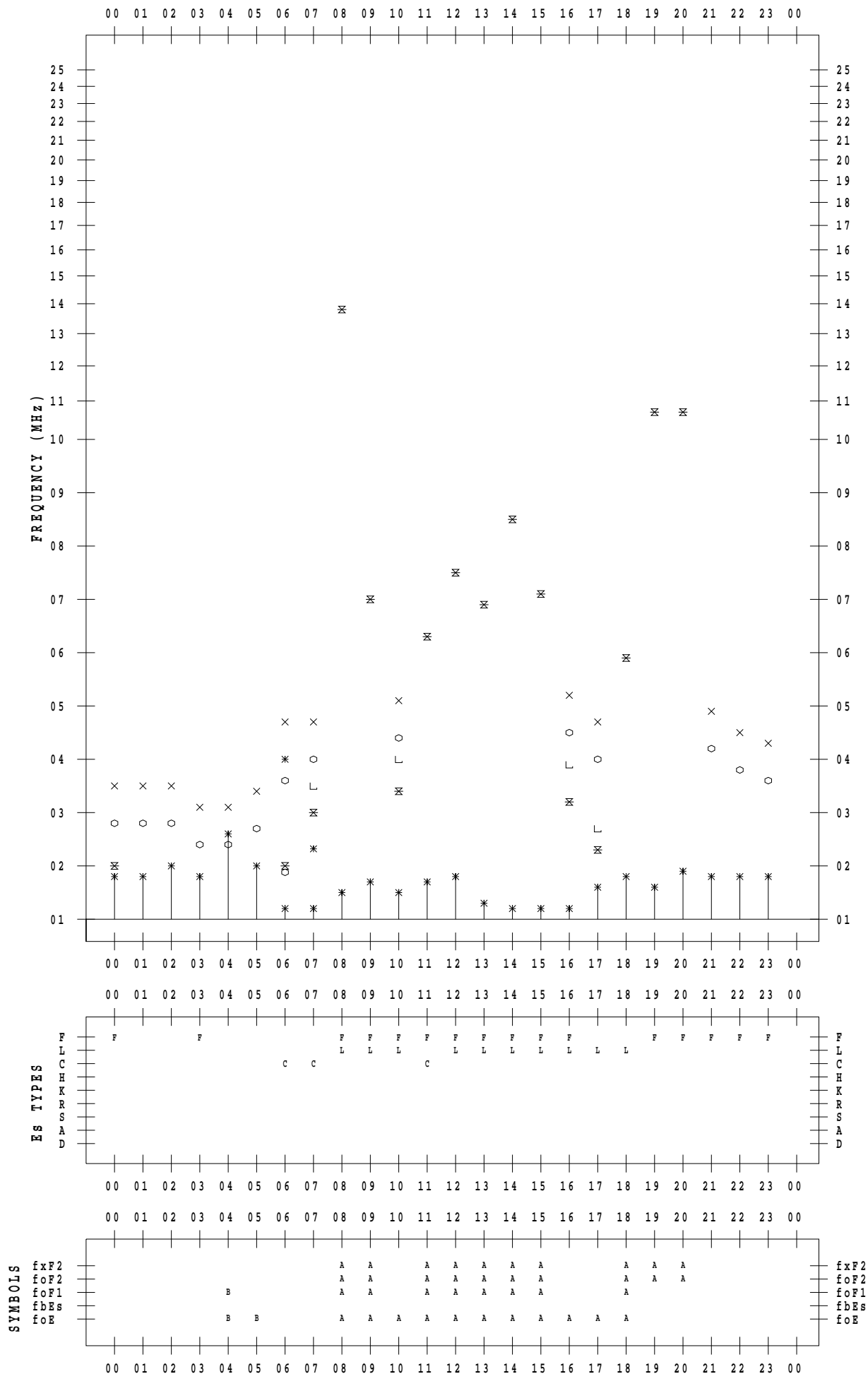
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 11

135 ° E MEAN TIME



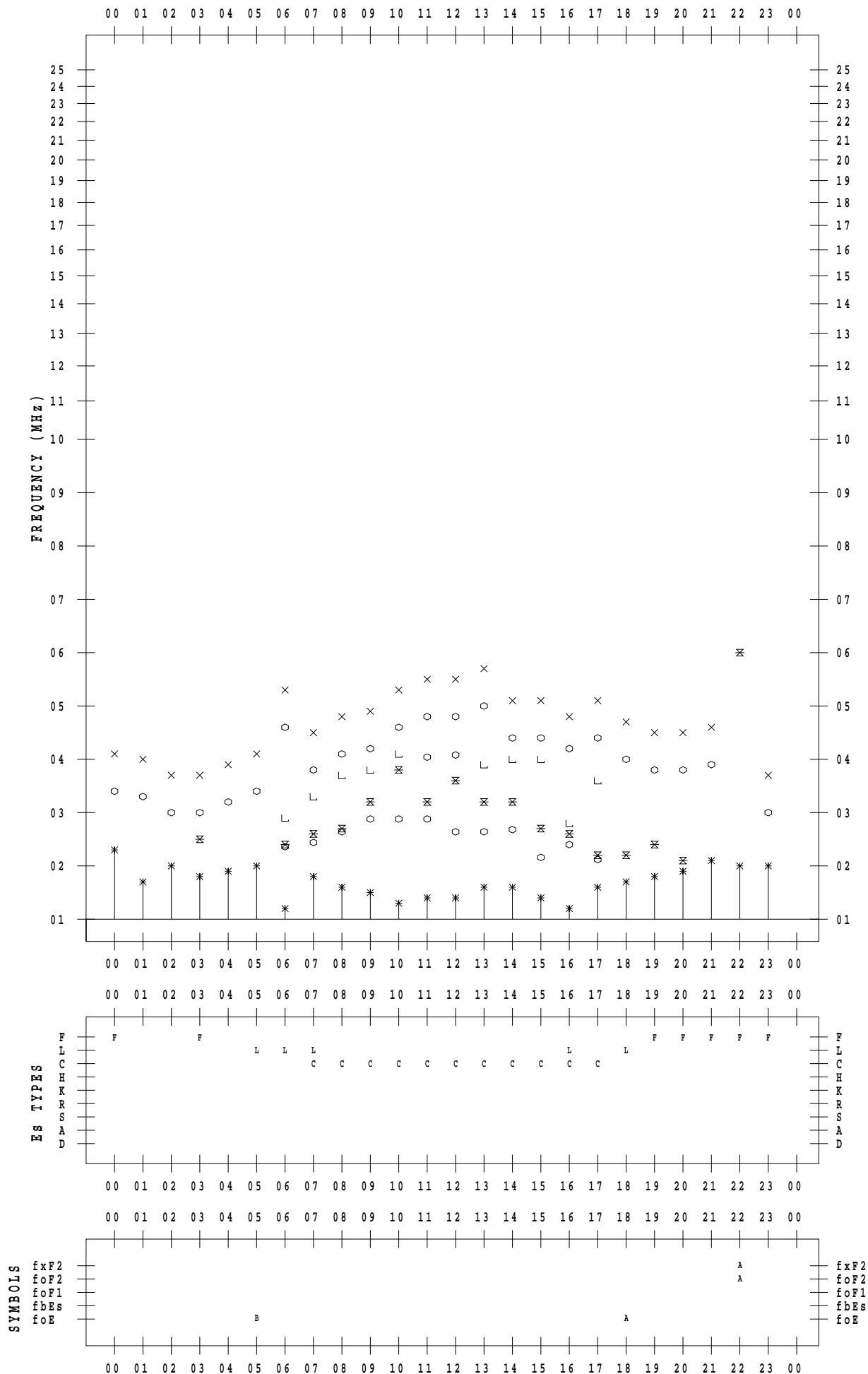
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 12

135 ° E MEAN TIME



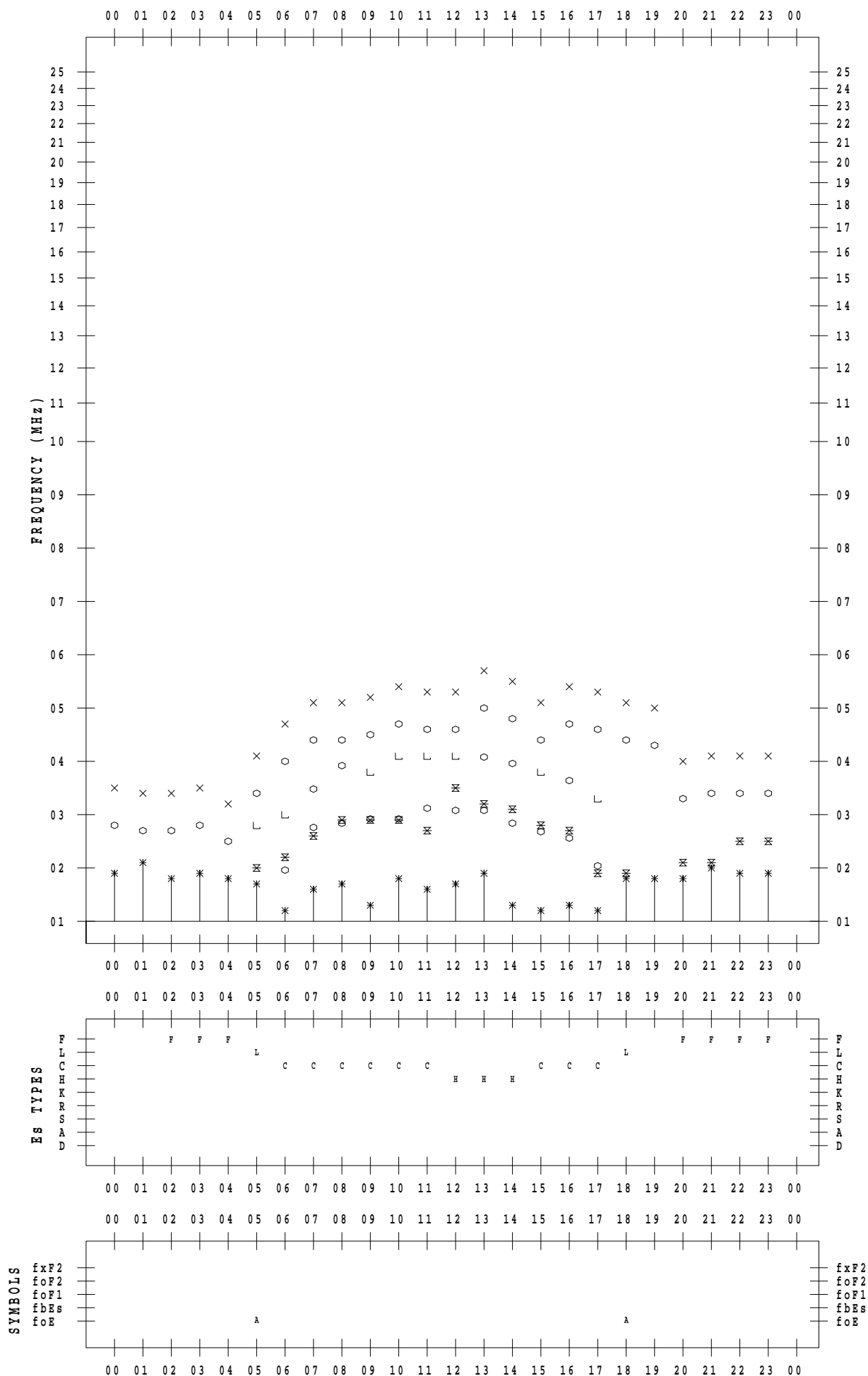
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 13

135 ° E MEAN TIME



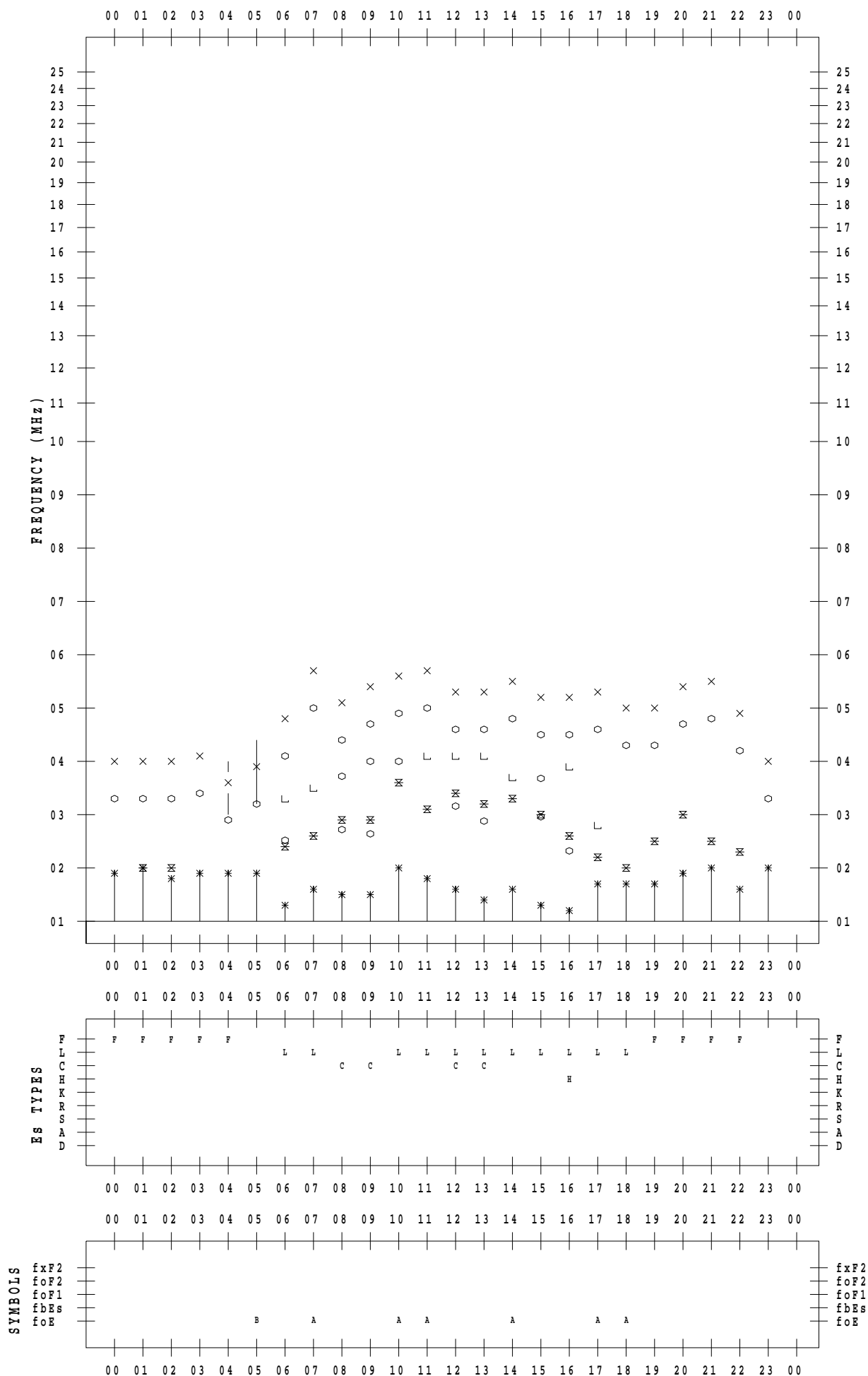
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 14

135 ° E MEAN TIME



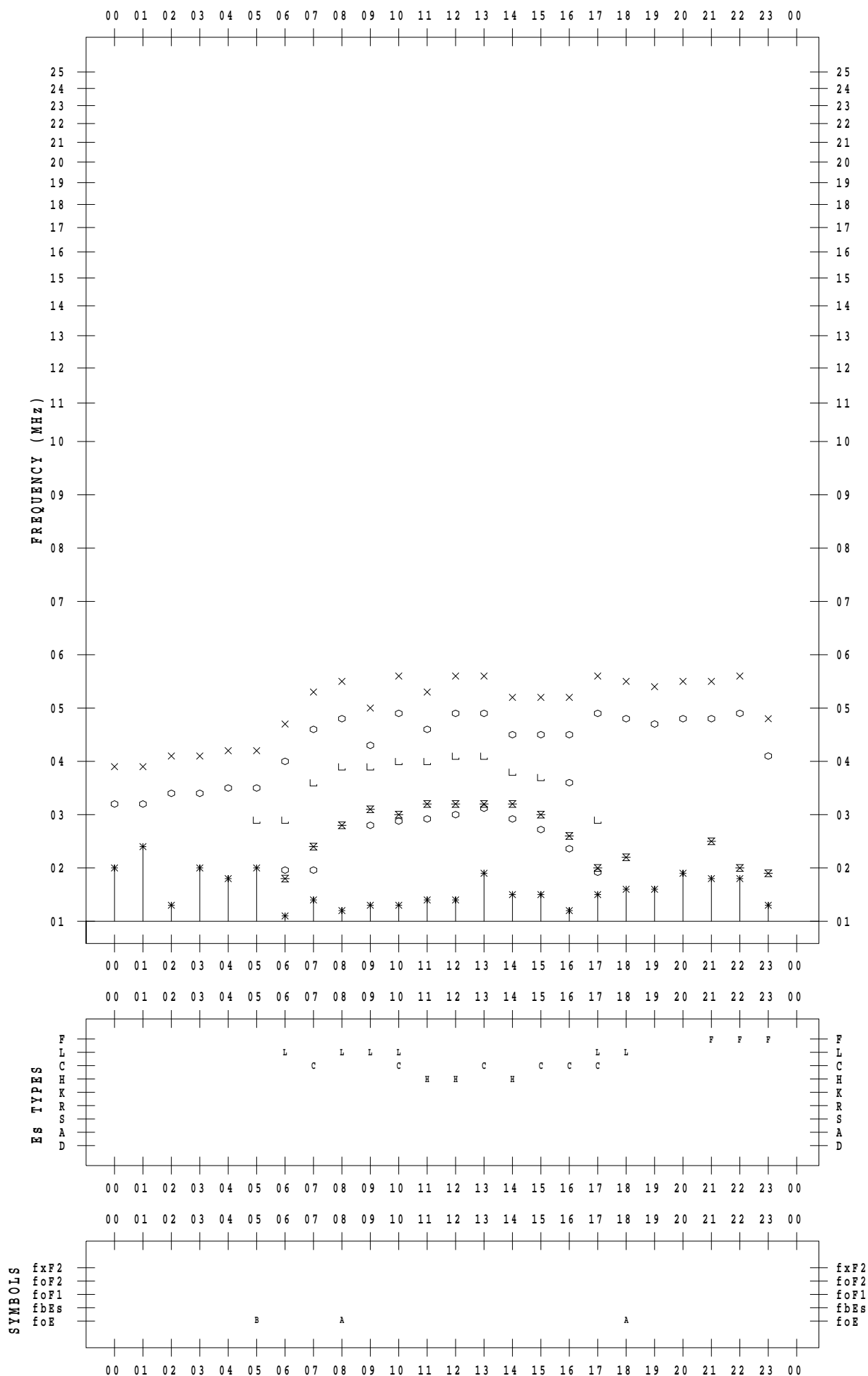
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 15

135 ° E MEAN TIME



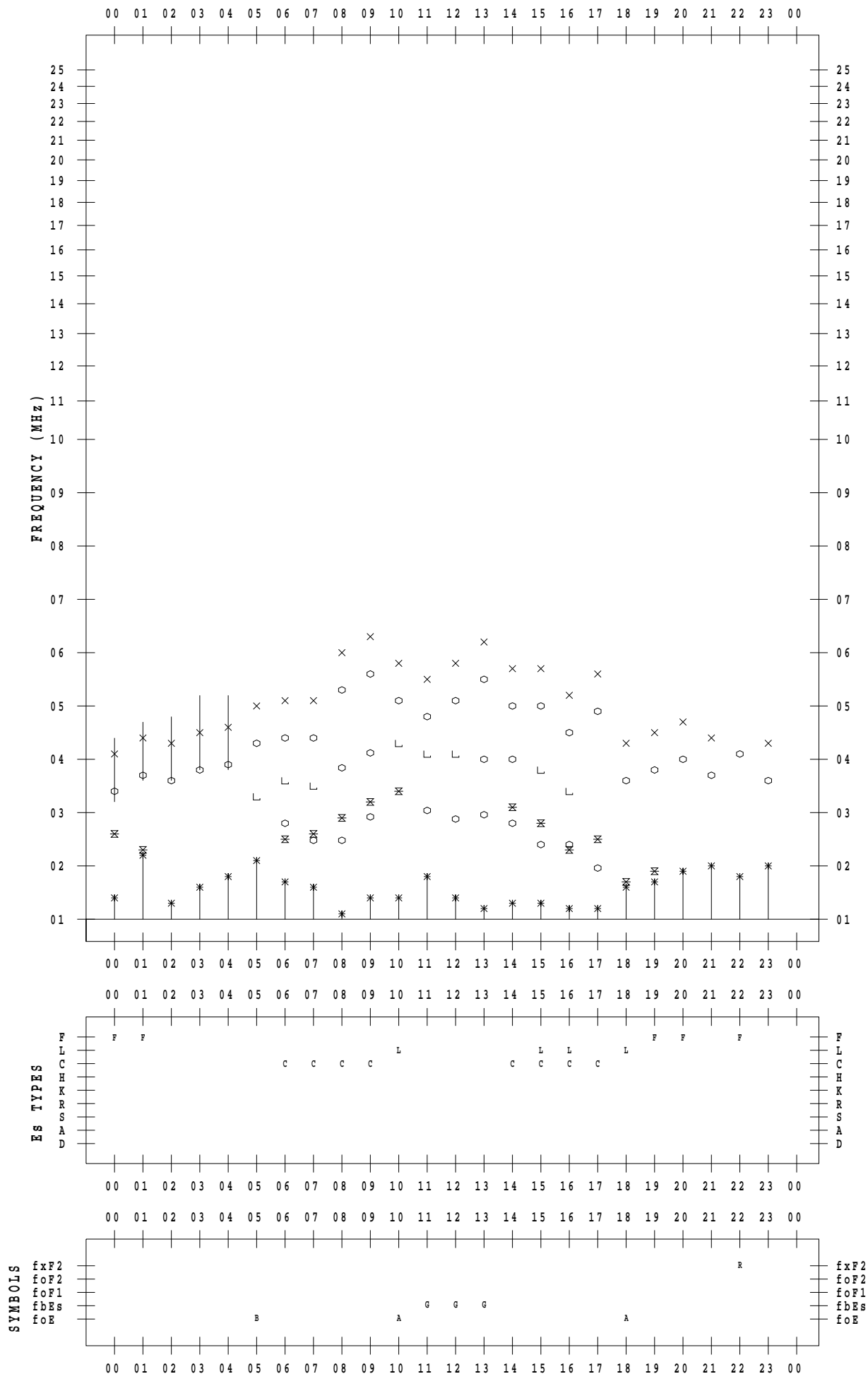
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 16

135 ° E MEAN TIME



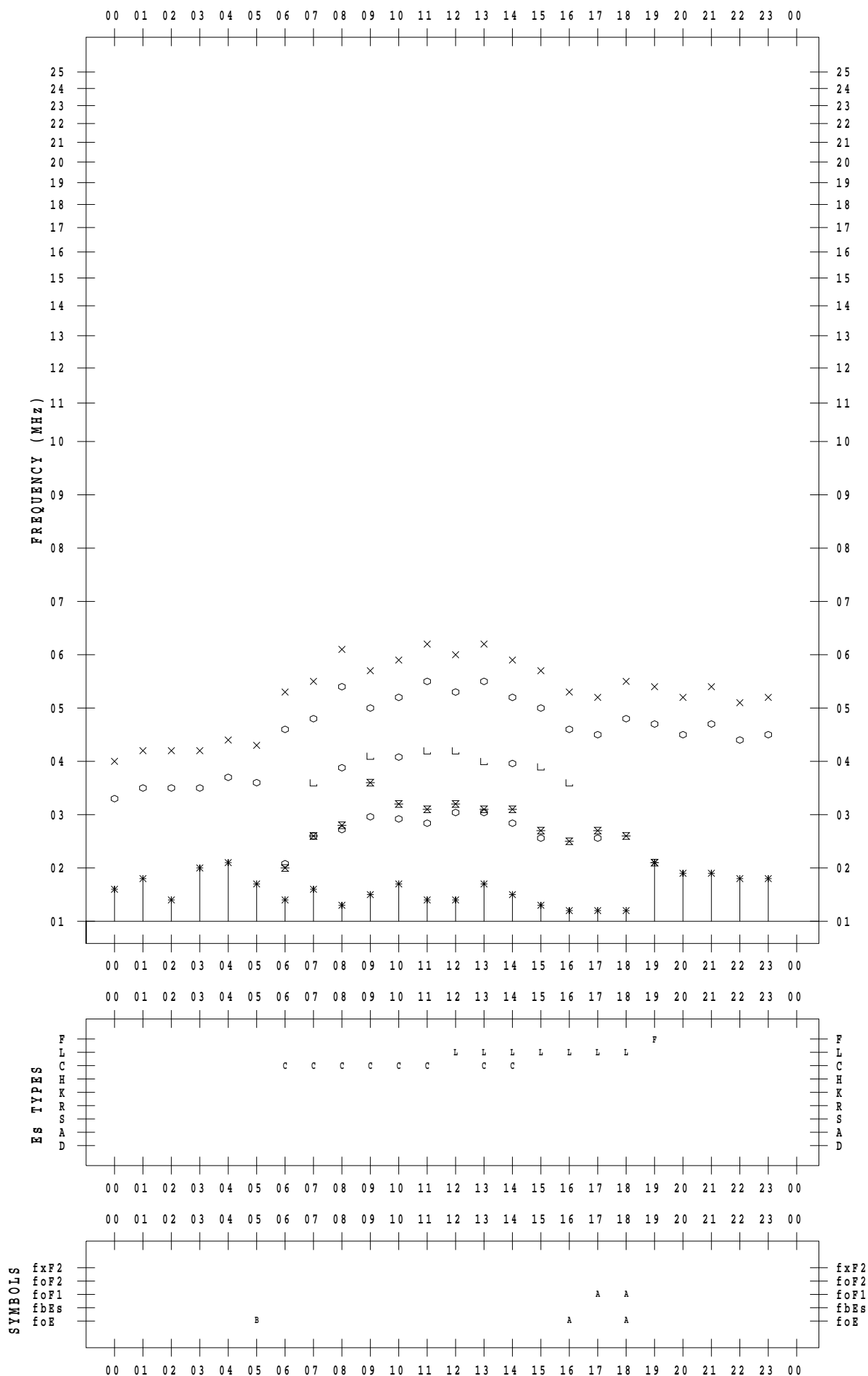
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 17

135 ° E MEAN TIME



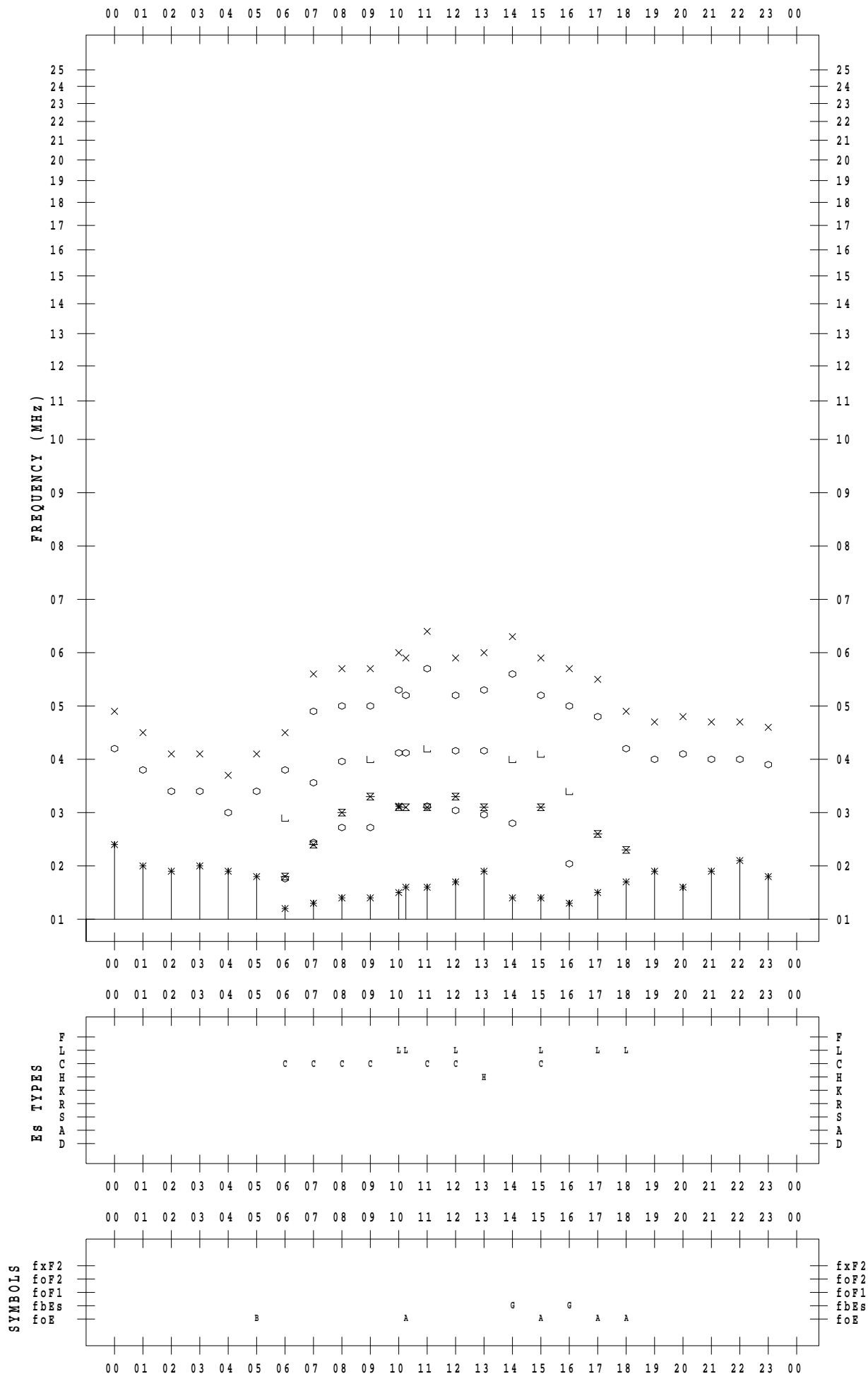
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 18

135 ° E MEAN TIME



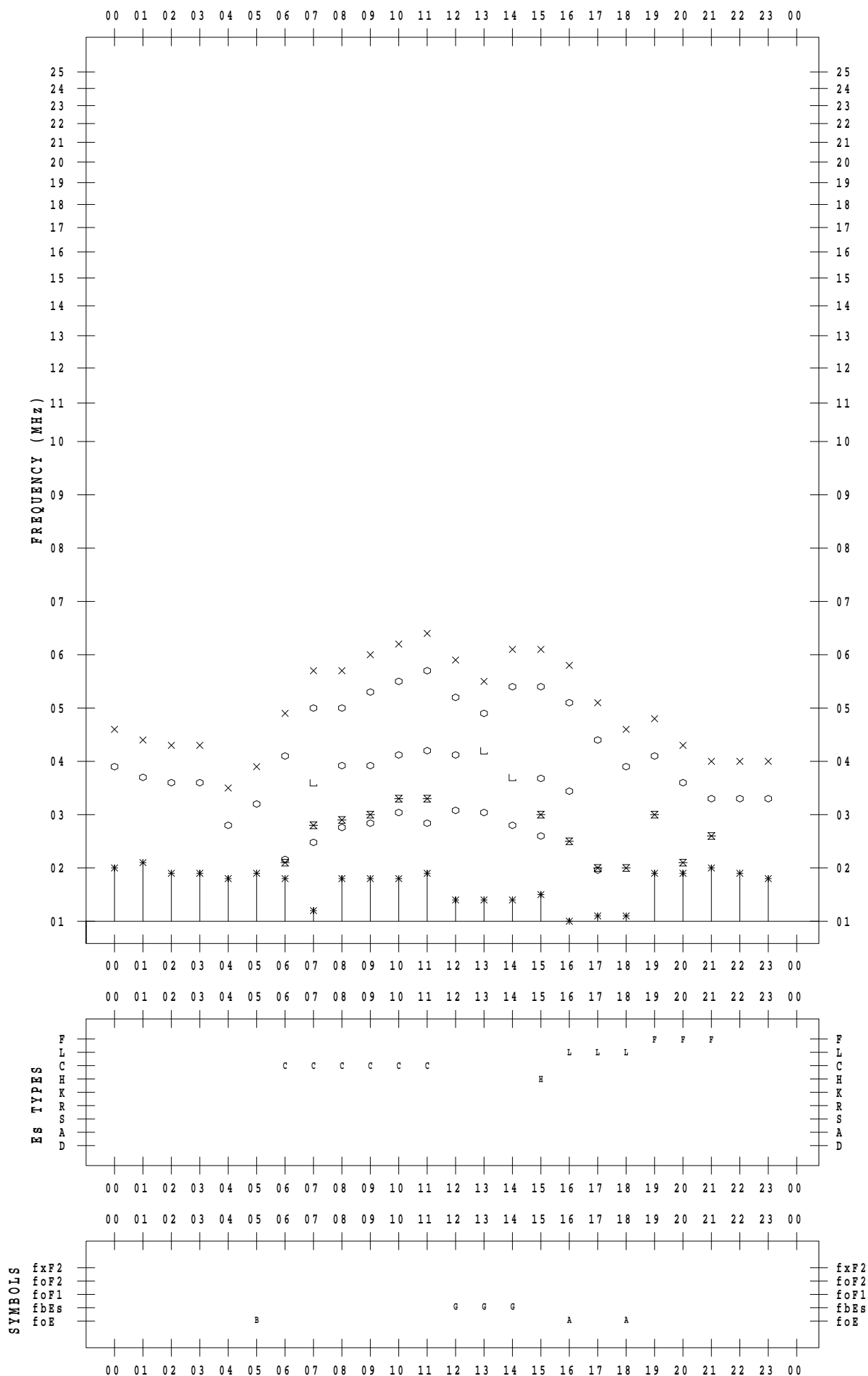
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 19

135 ° E MEAN TIME



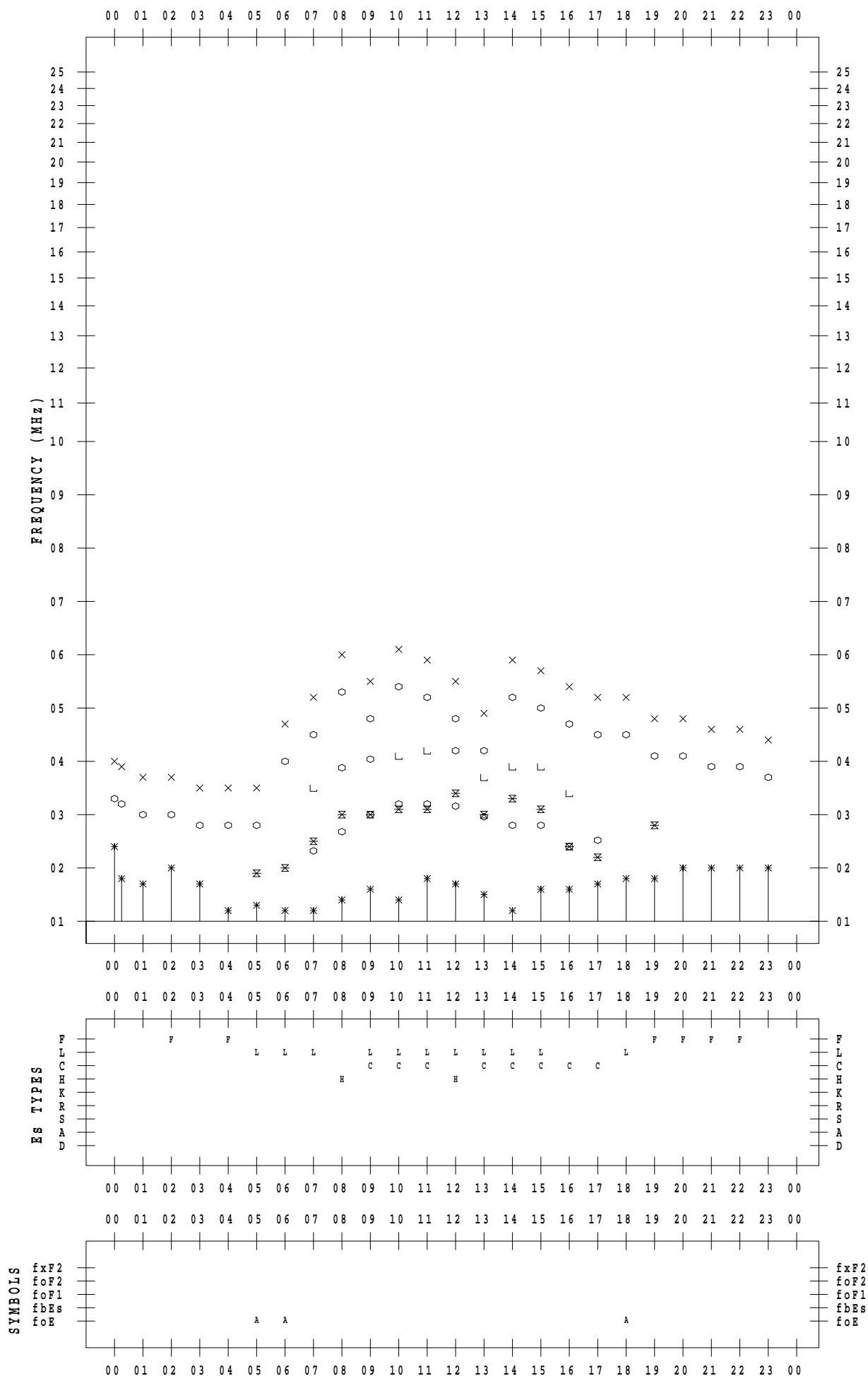
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 20

135 ° E MEAN TIME



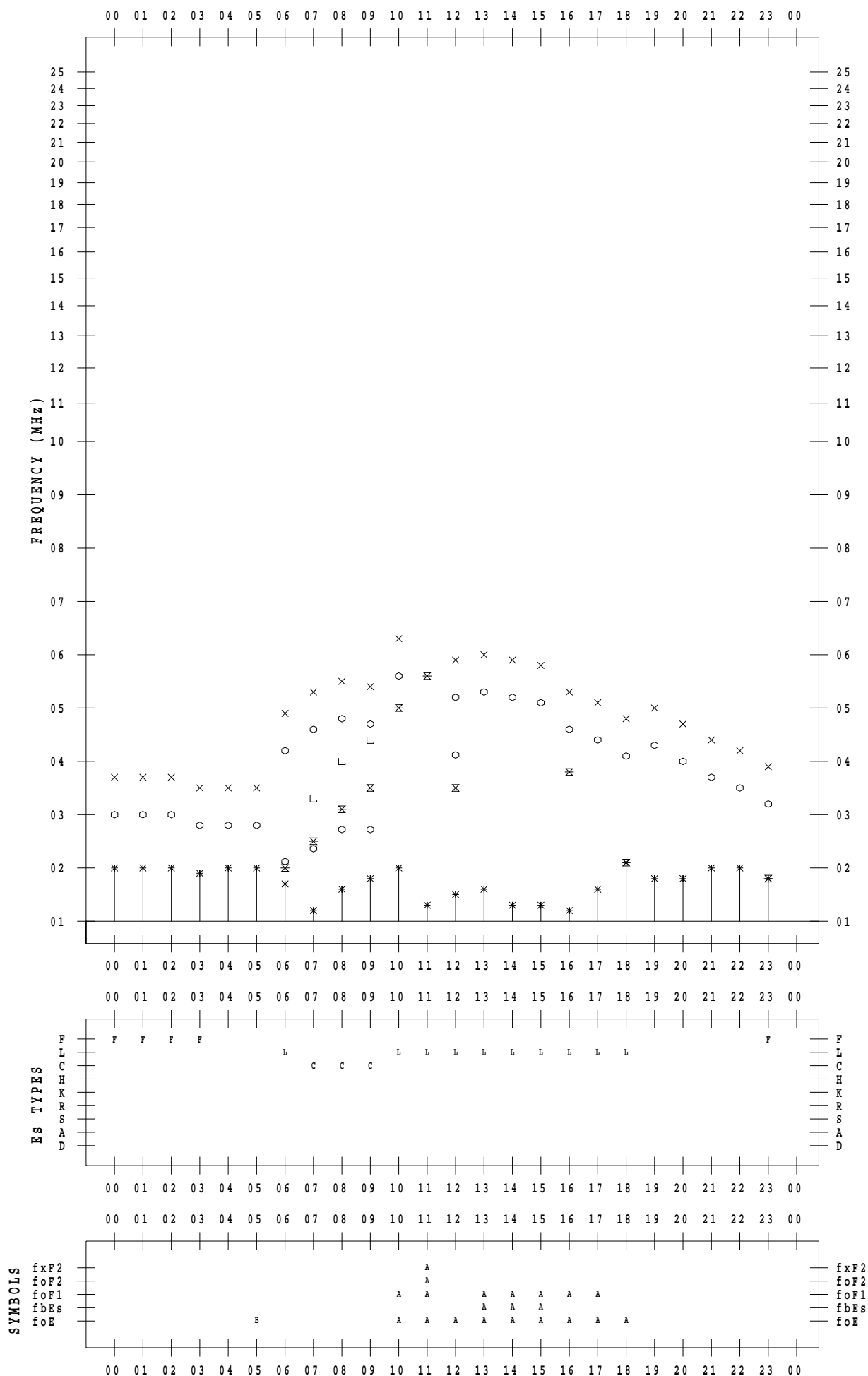
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 21

135 ° E MEAN TIME



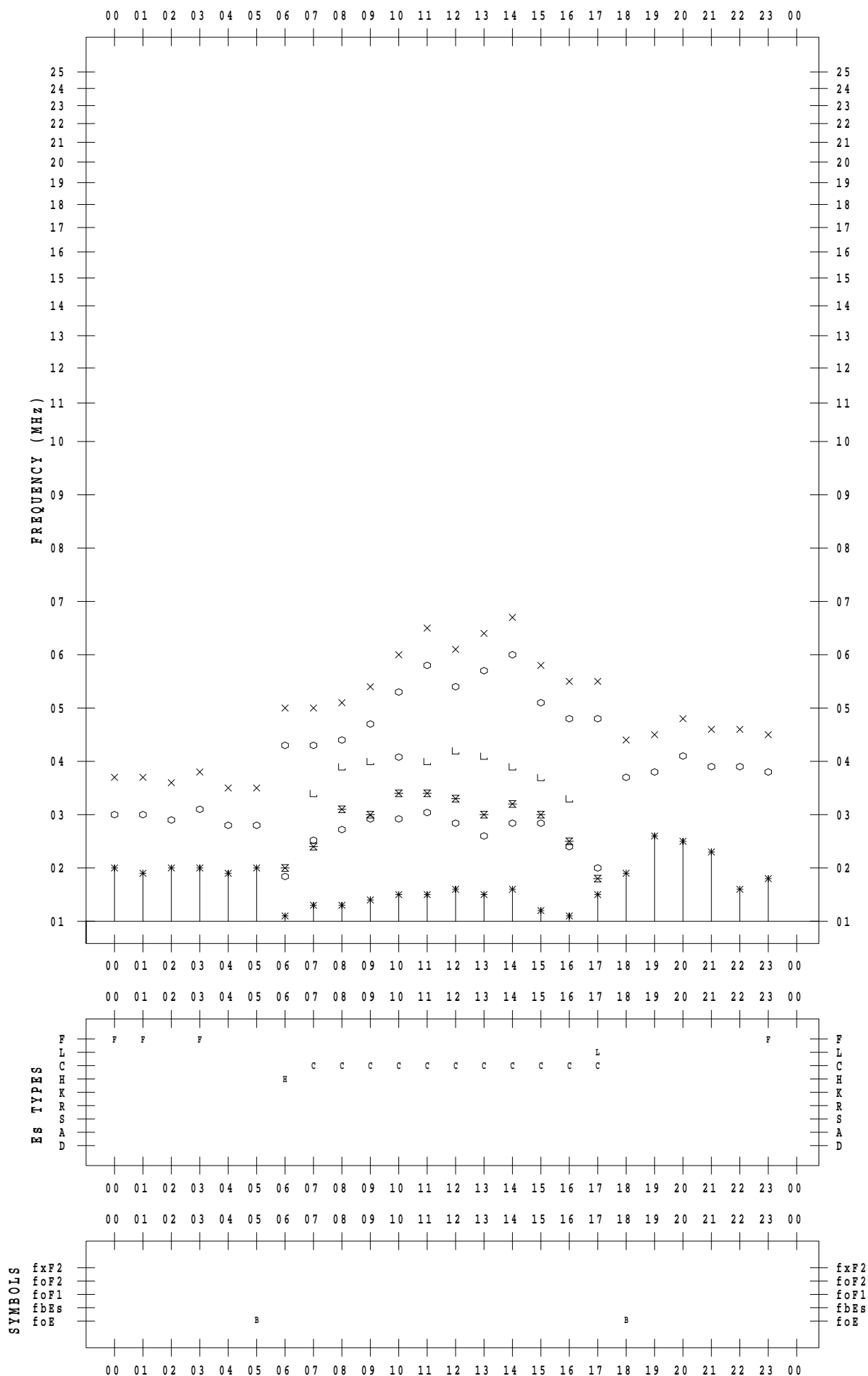
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 22

135 ° E MEAN TIME



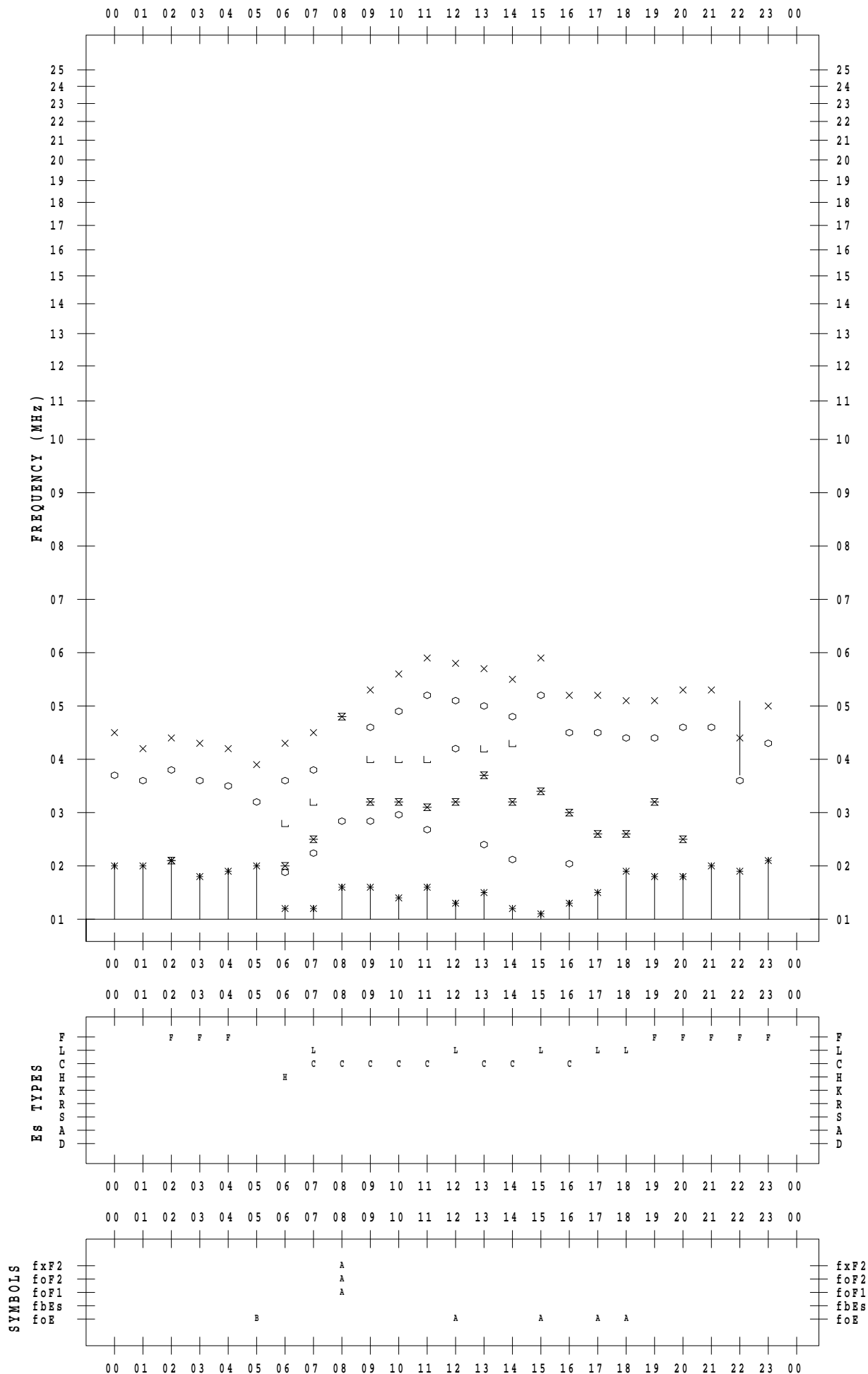
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 23

135 ° E MEAN TIME



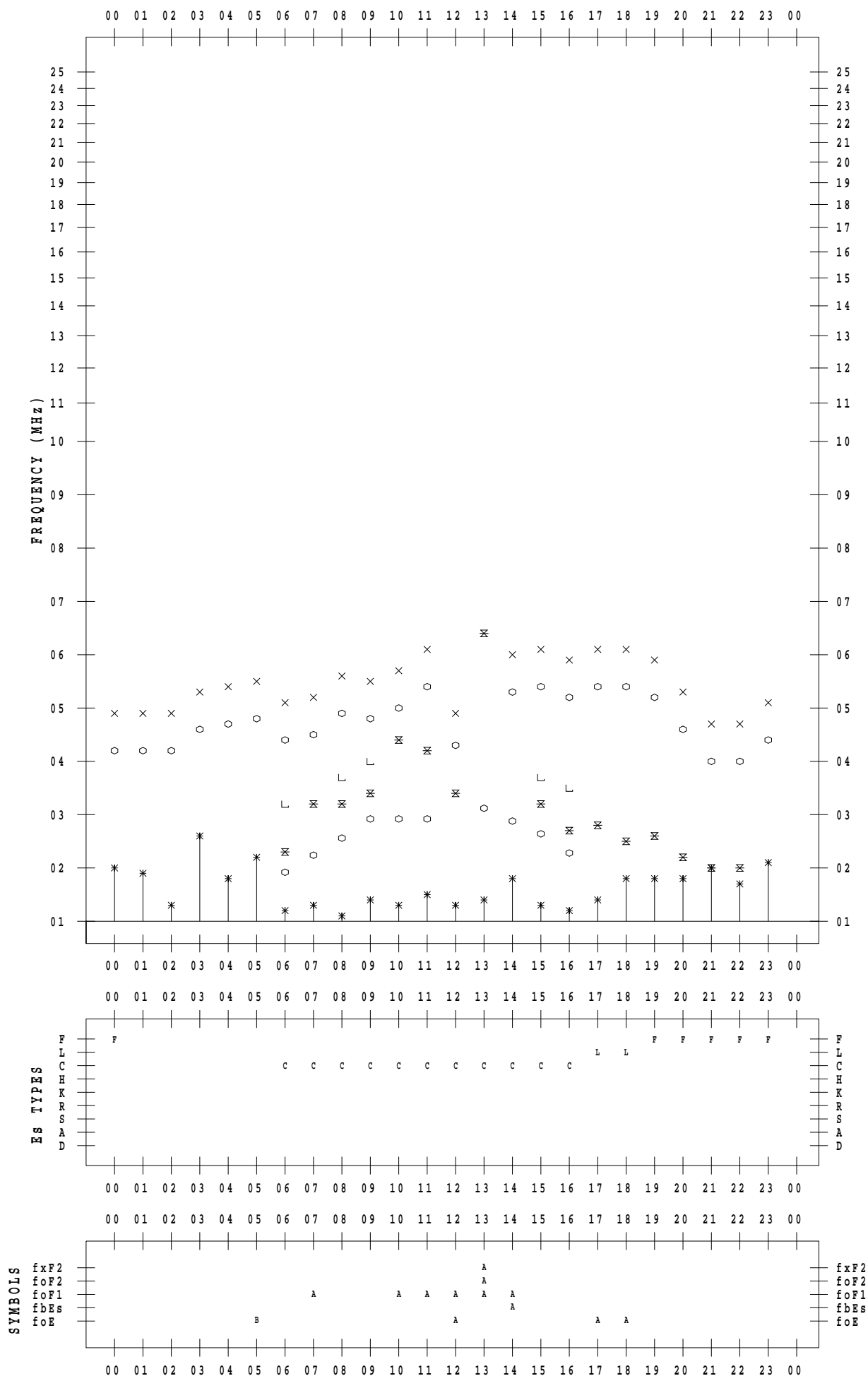
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 24

135 ° E MEAN TIME



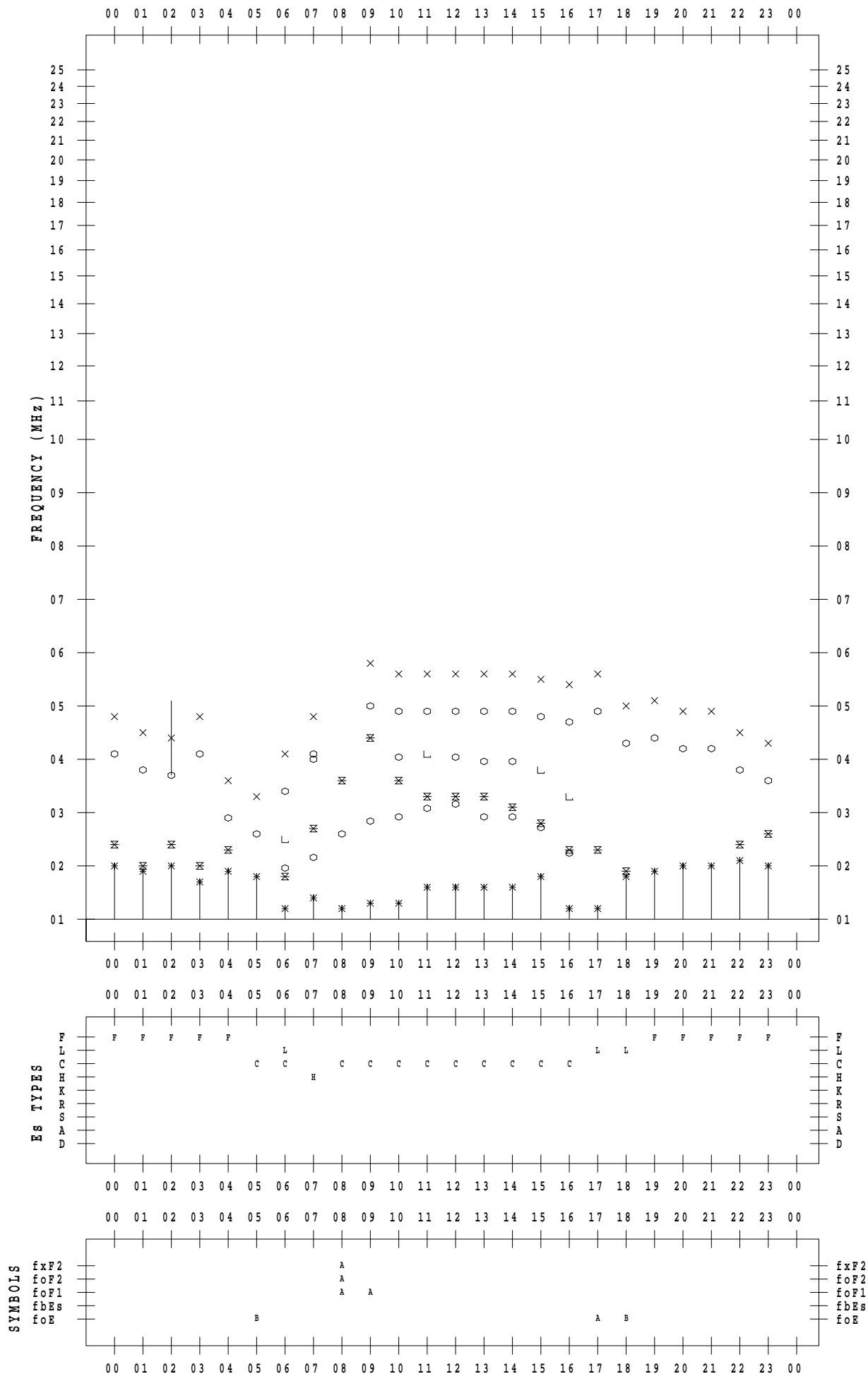
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 25

135 ° E MEAN TIME



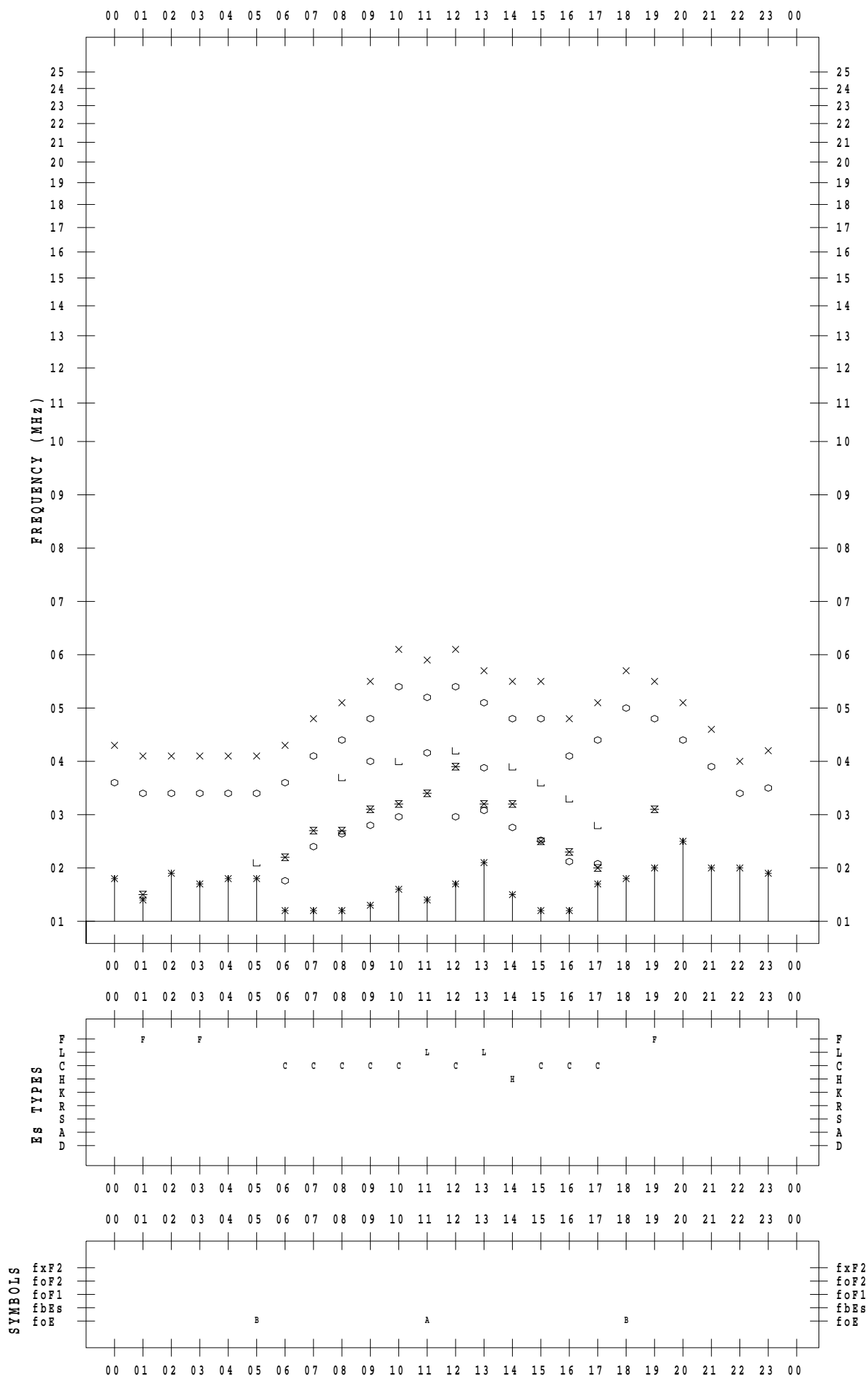
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 26

135 ° E MEAN TIME



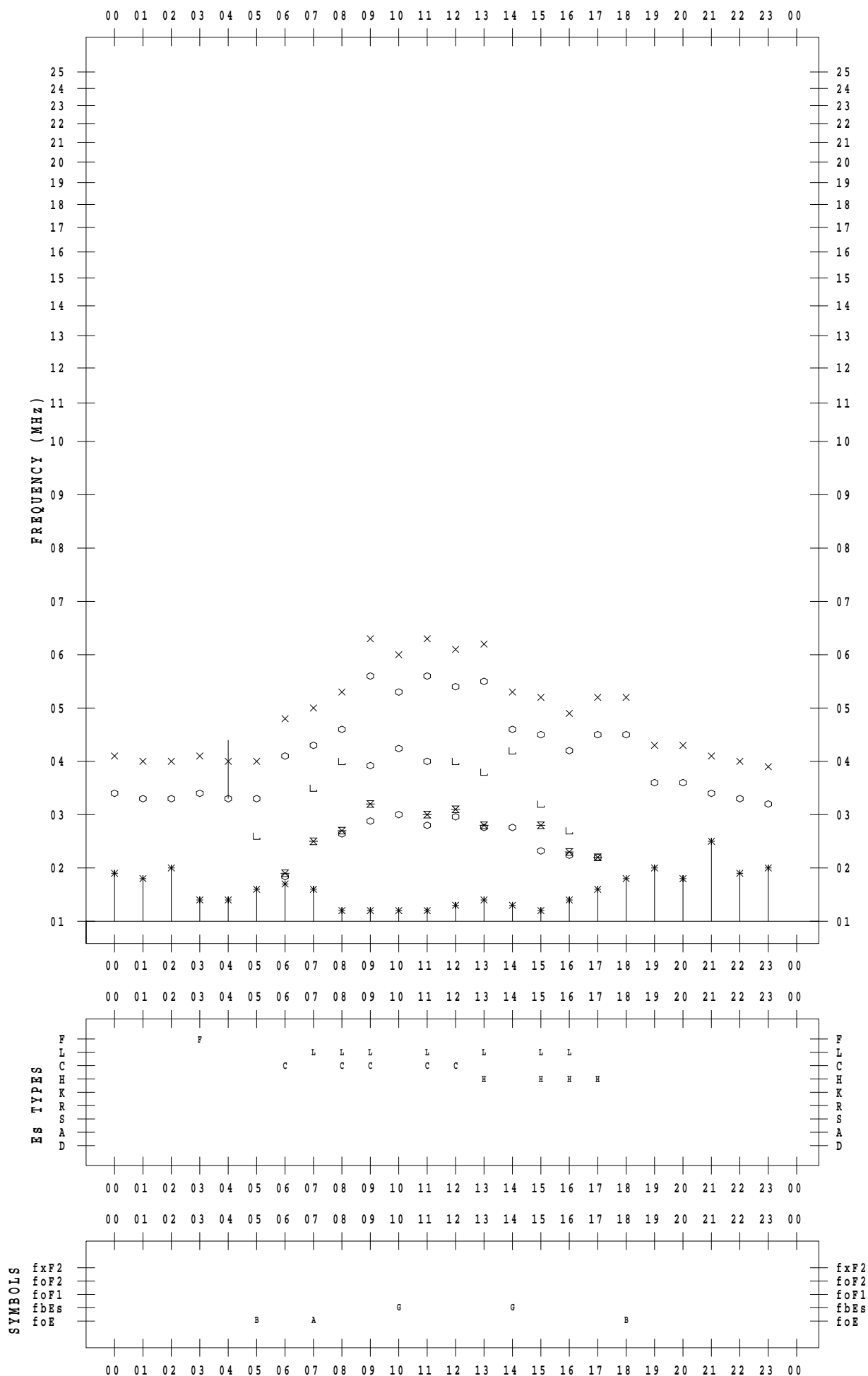
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 27

135 ° E MEAN TIME



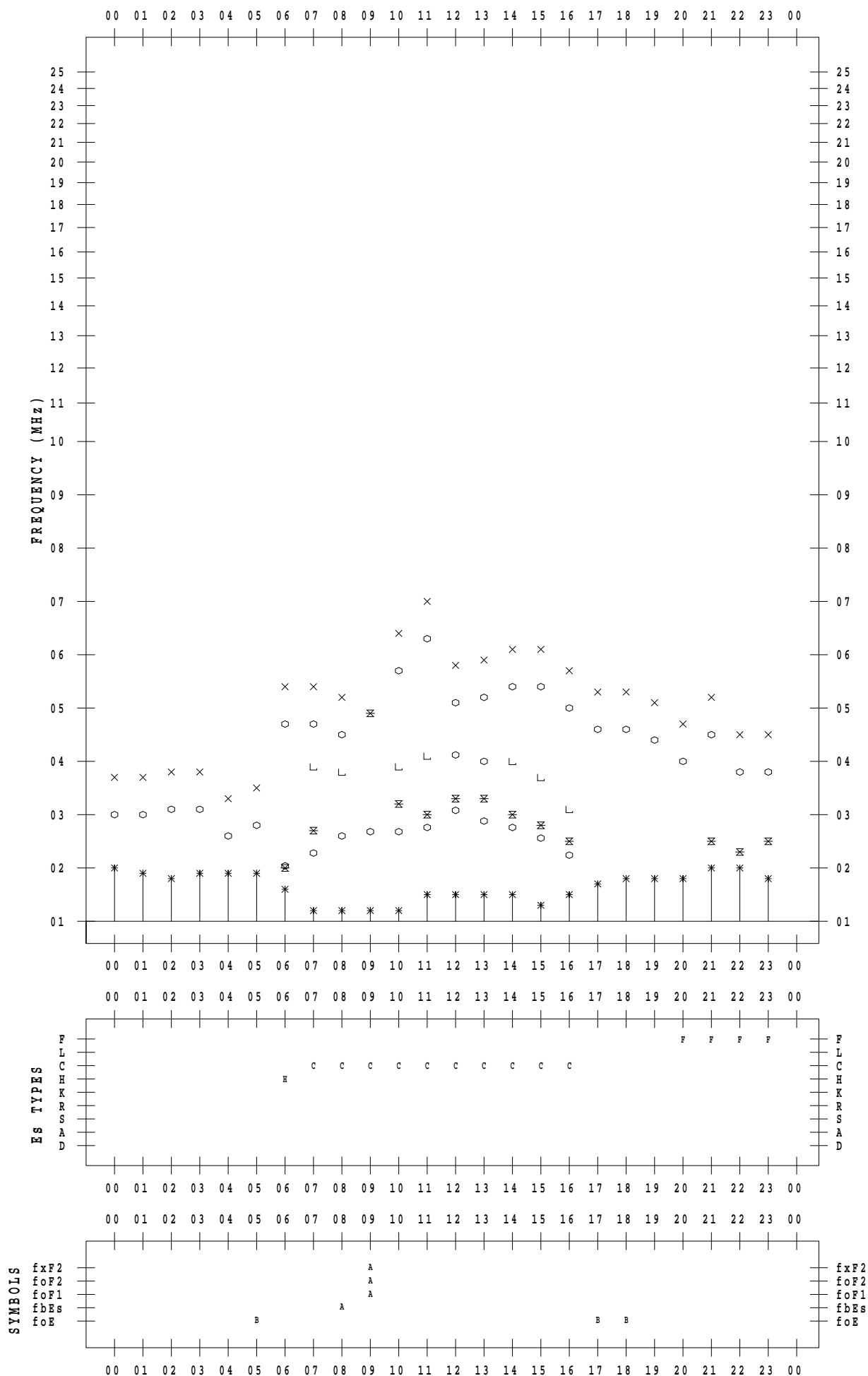
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 28

135 ° E MEAN TIME



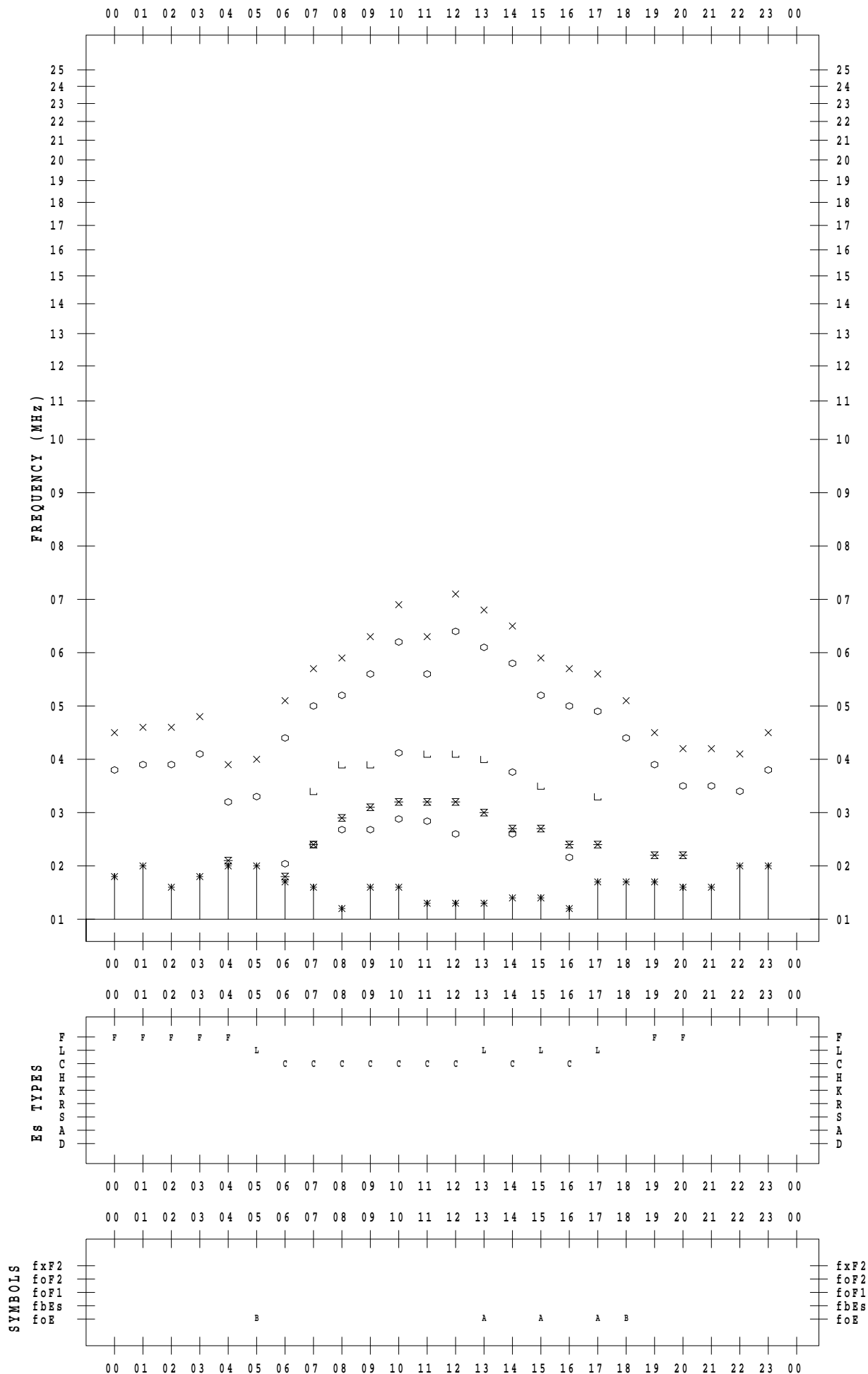
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 29

135 ° E MEAN TIME



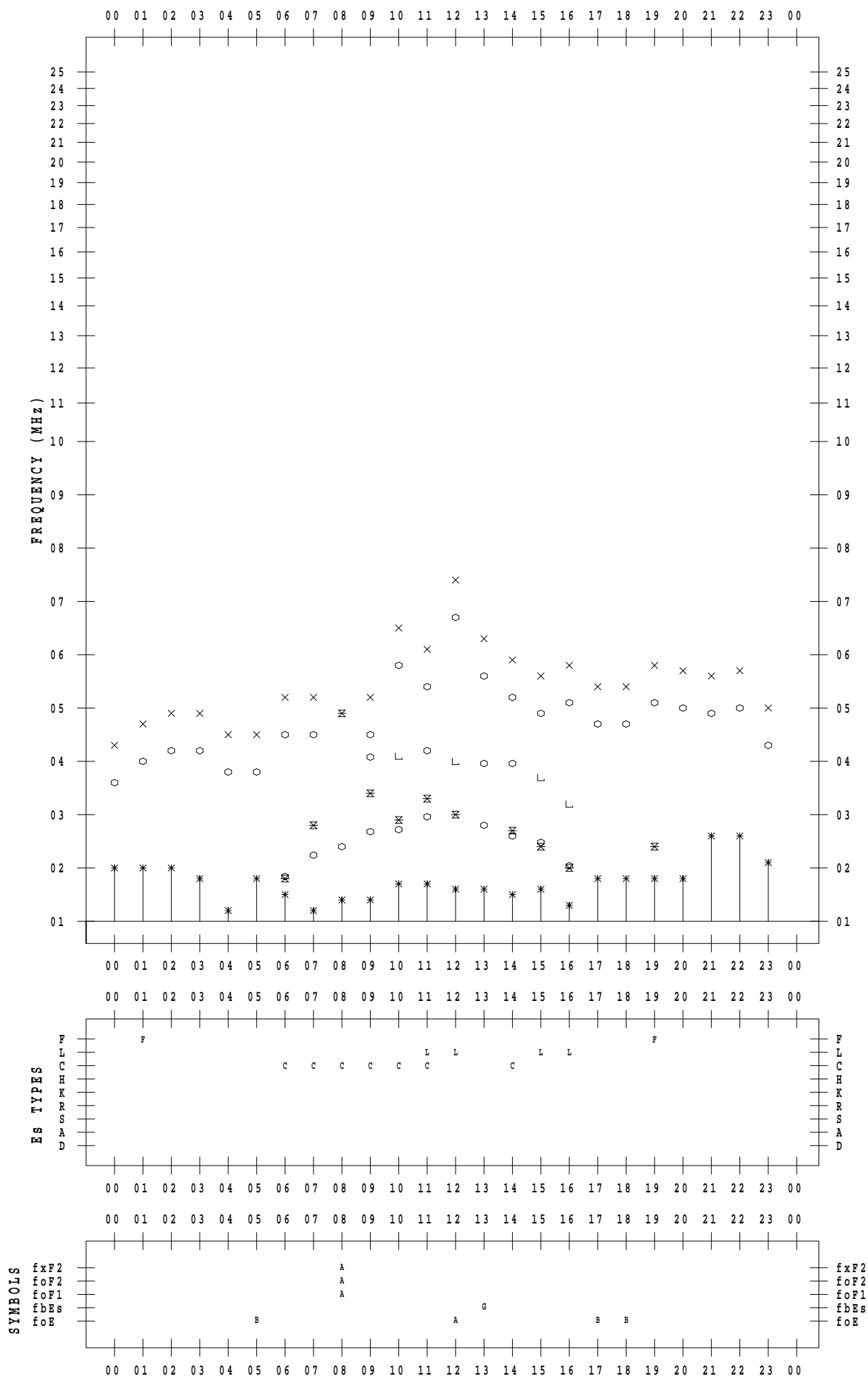
f - PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2019 / 9 / 30

135 ° E MEAN TIME



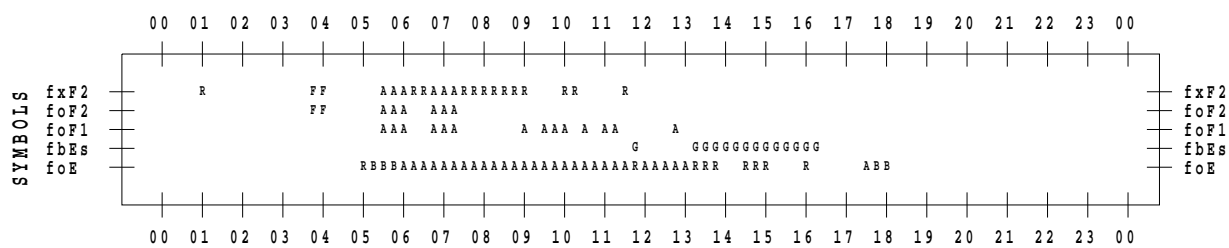
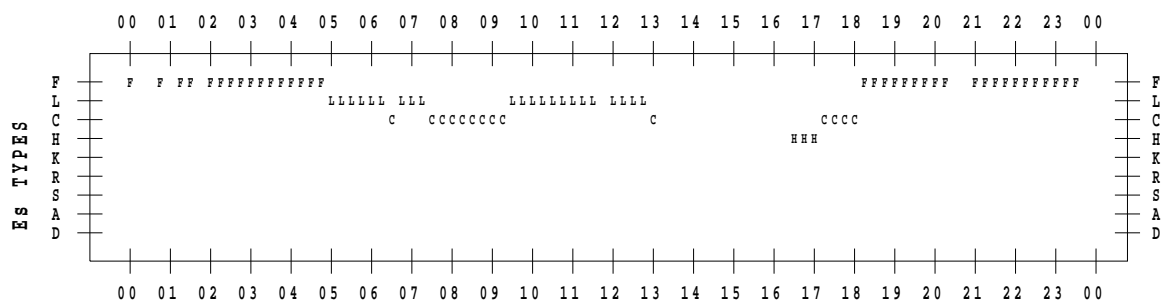
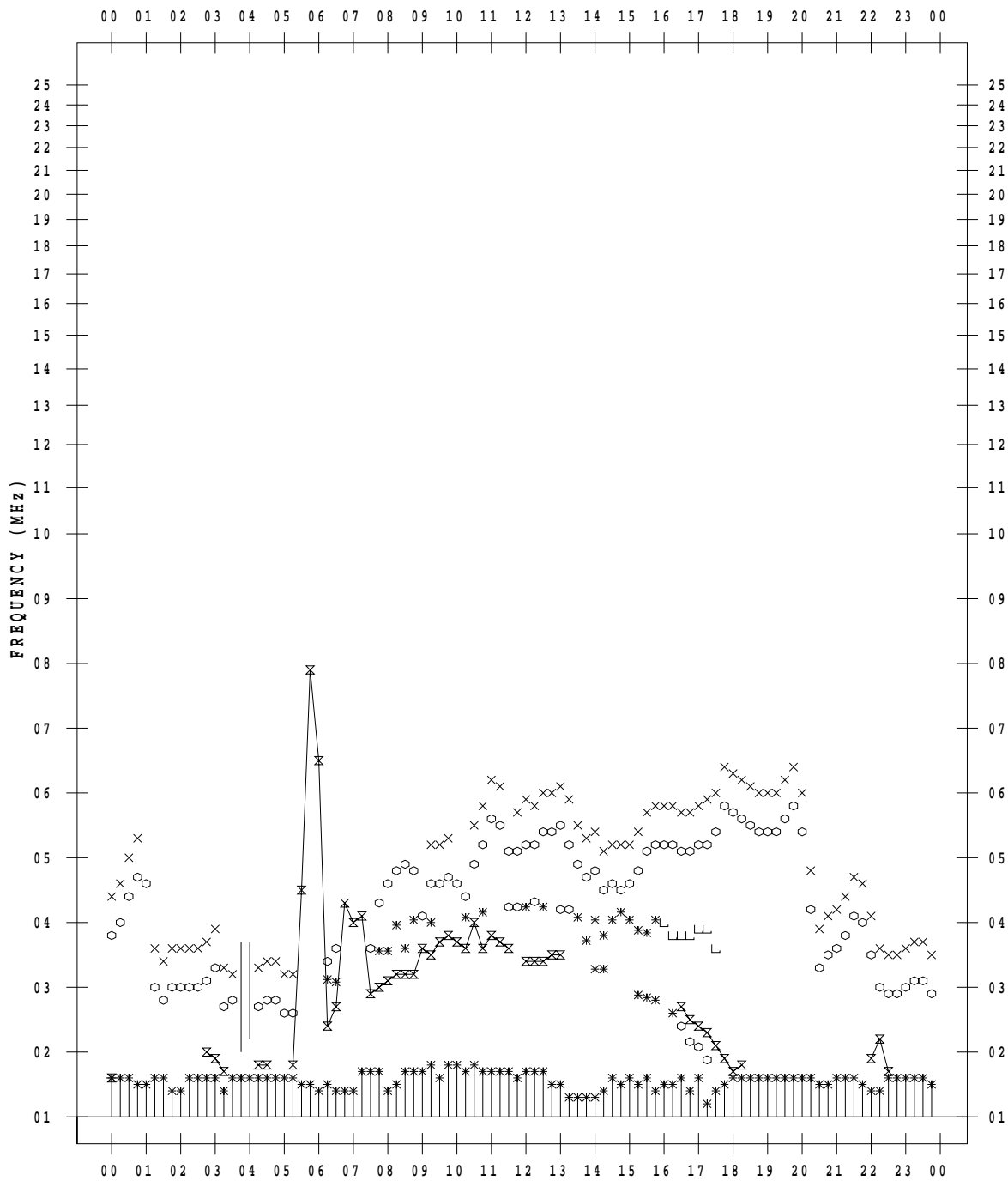
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 1

135 ° E MEAN TIME



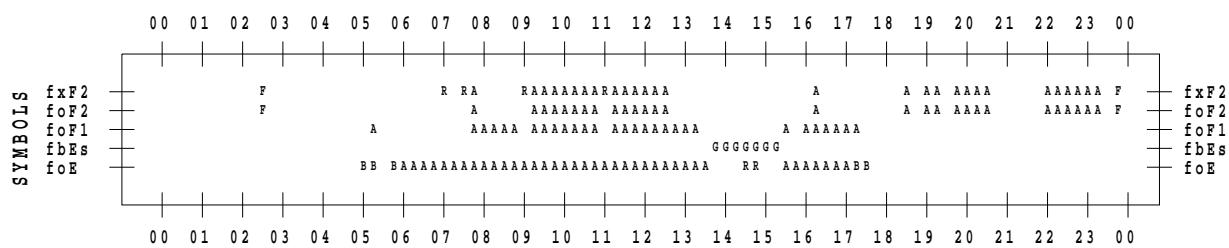
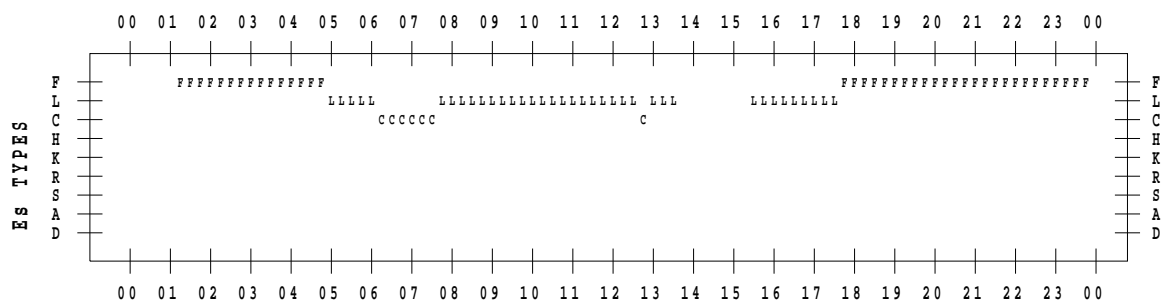
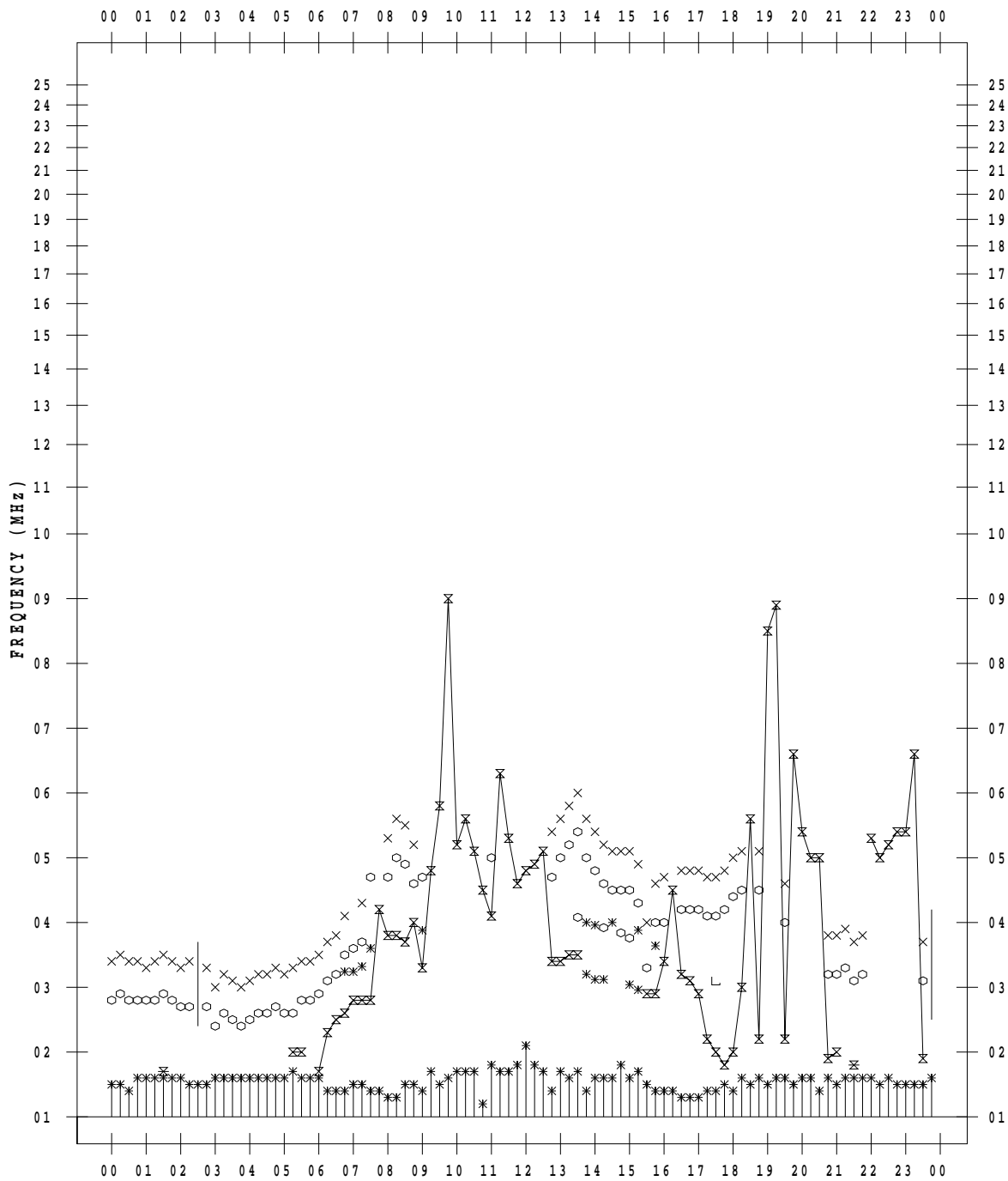
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 2

135 ° E MEAN TIME



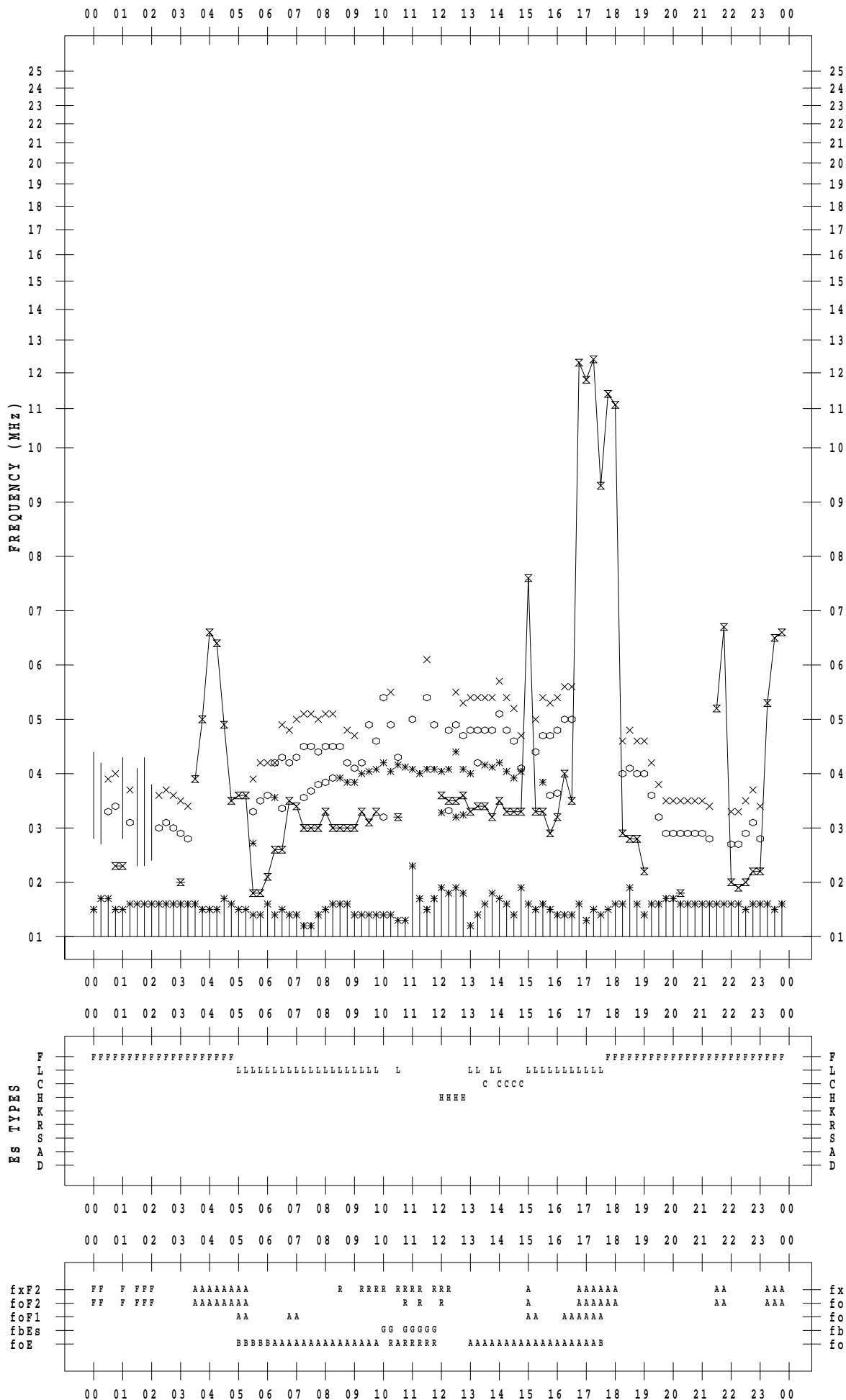
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 3

135 ° E MEAN TIME



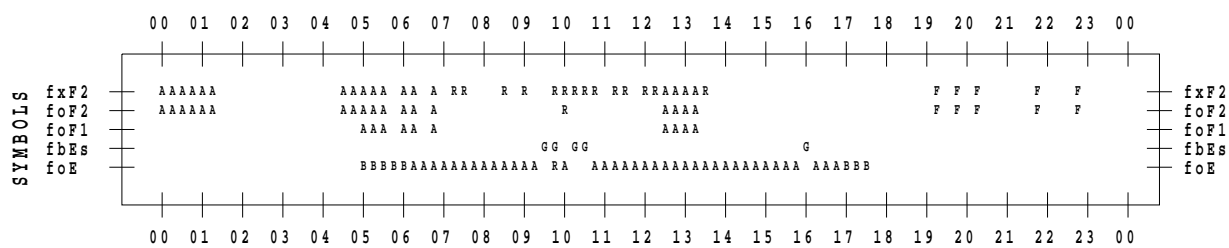
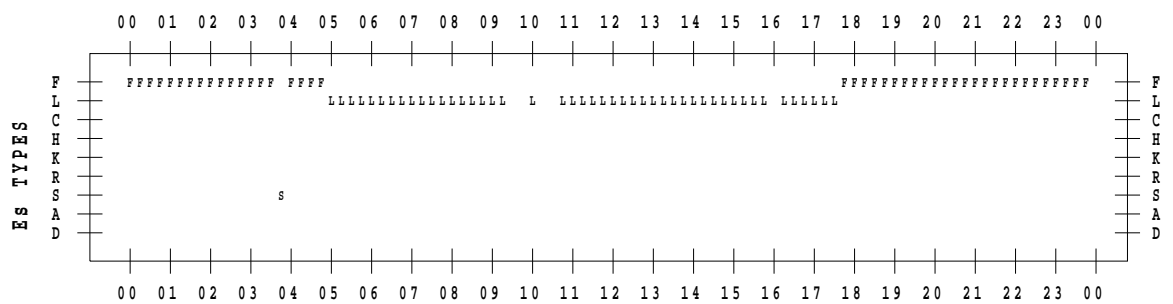
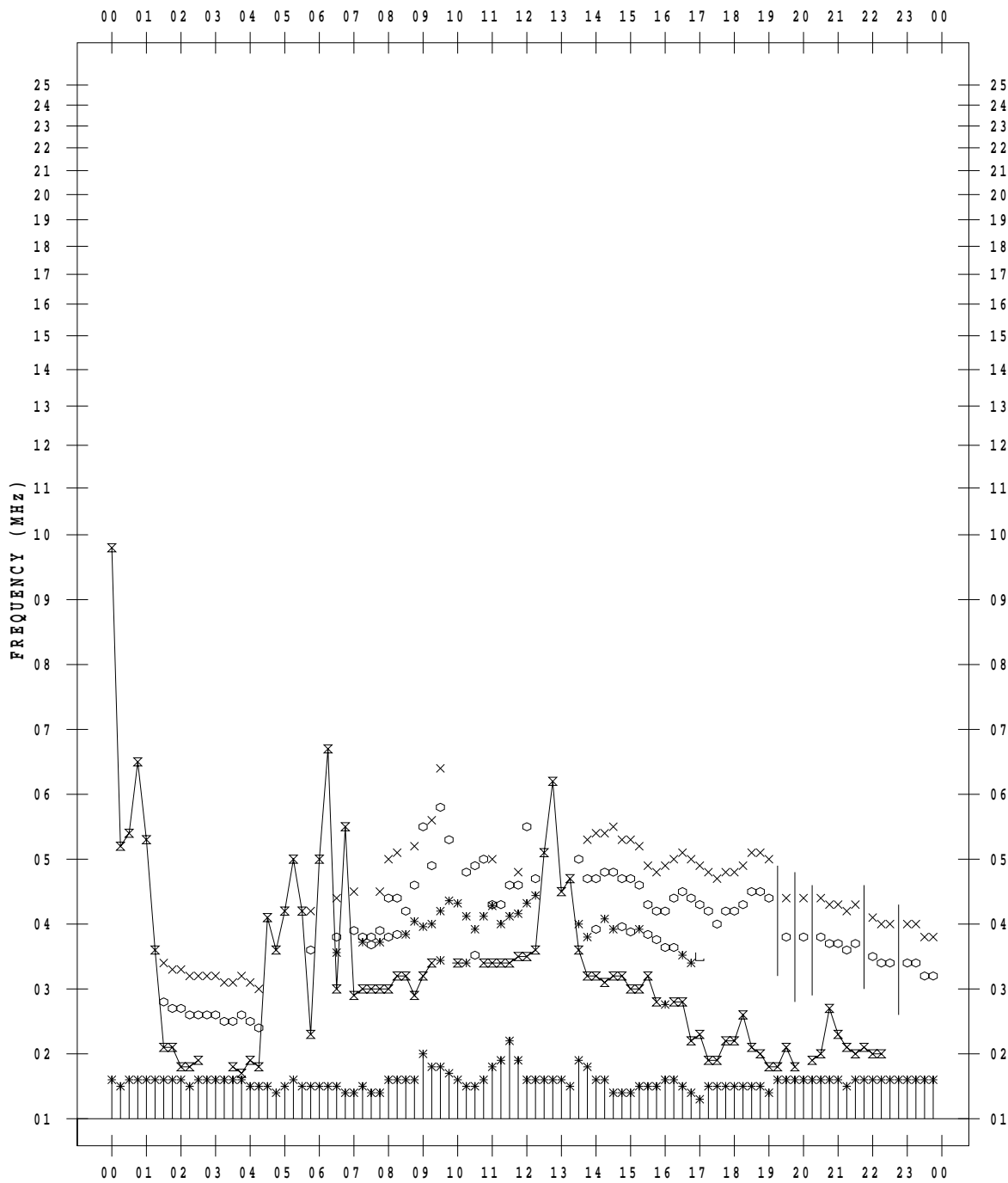
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 4

135 ° E MEAN TIME



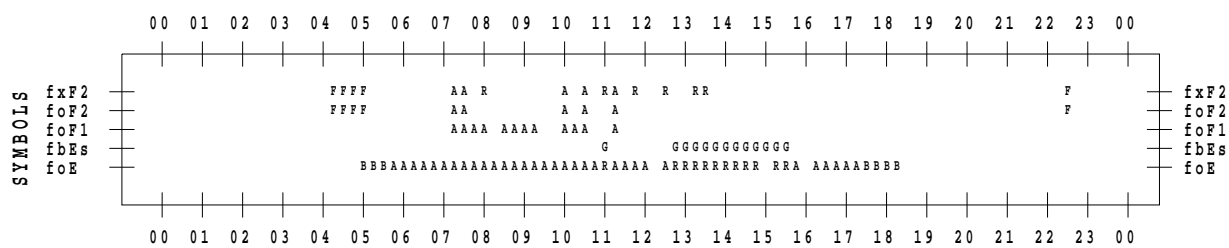
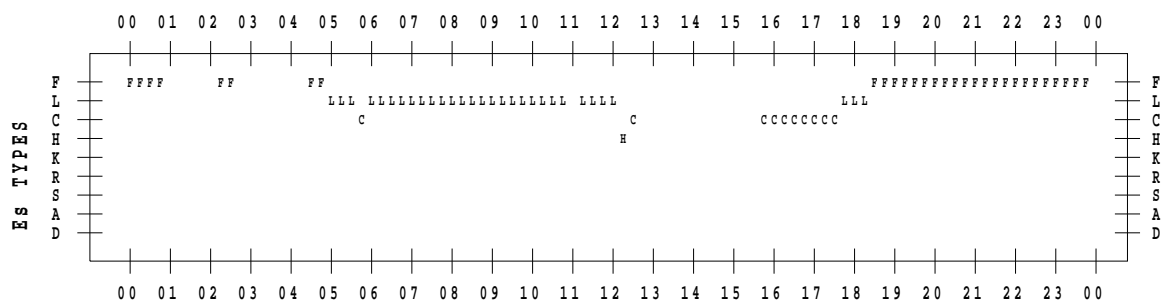
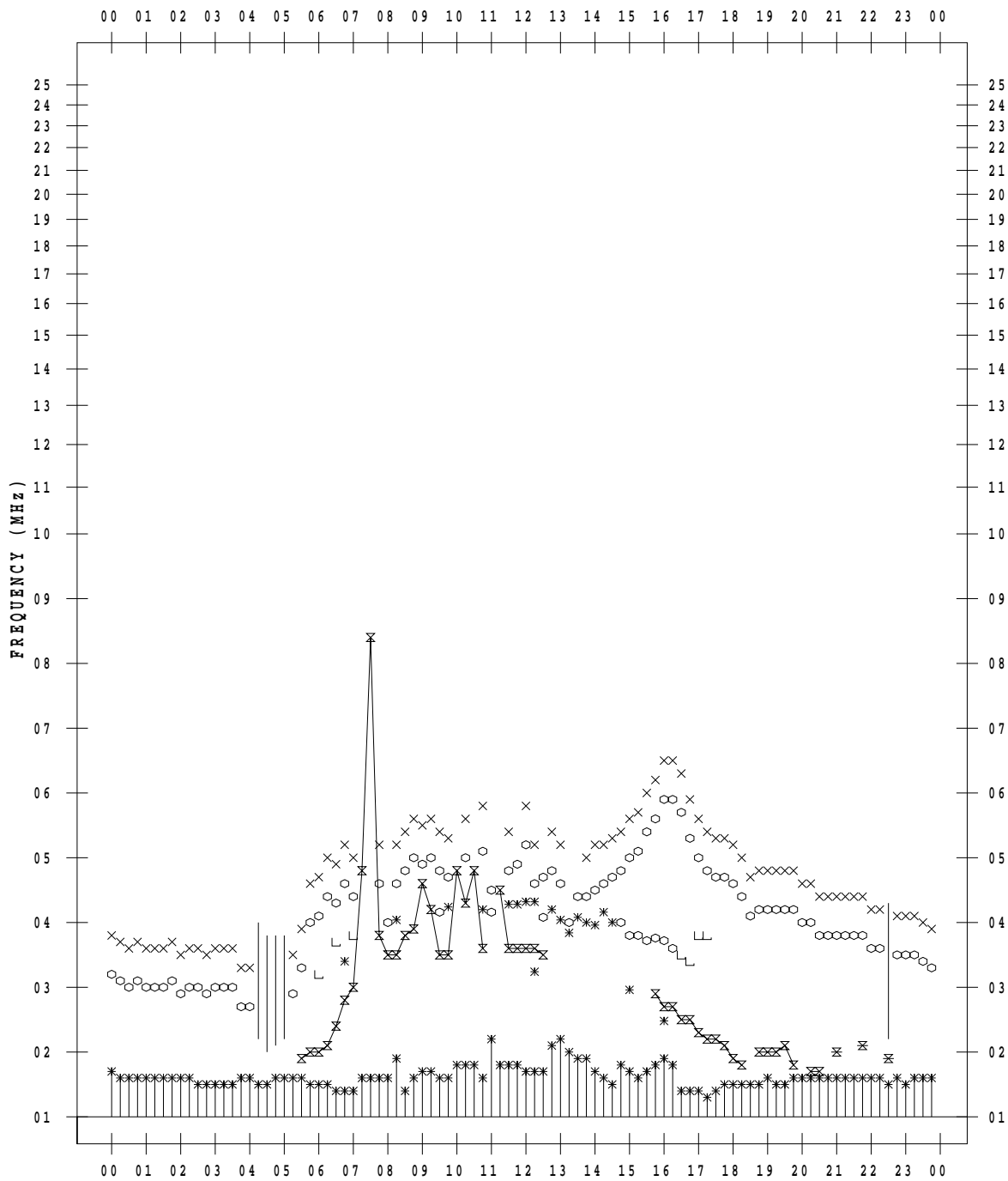
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 5

135 ° E MEAN TIME



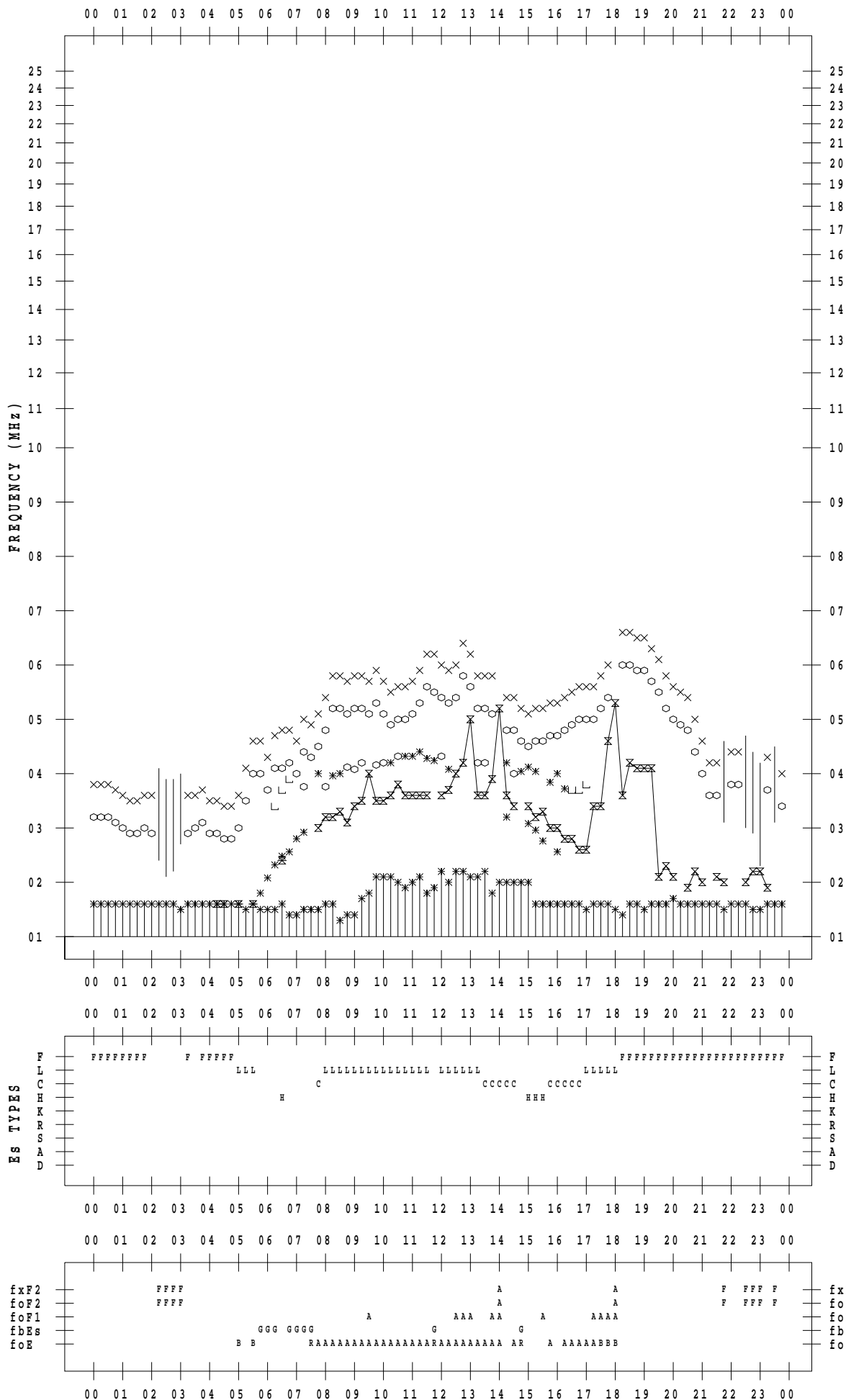
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 6

135 ° E MEAN TIME



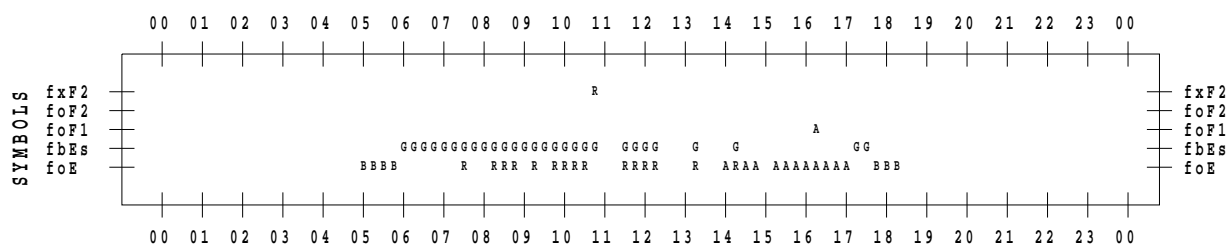
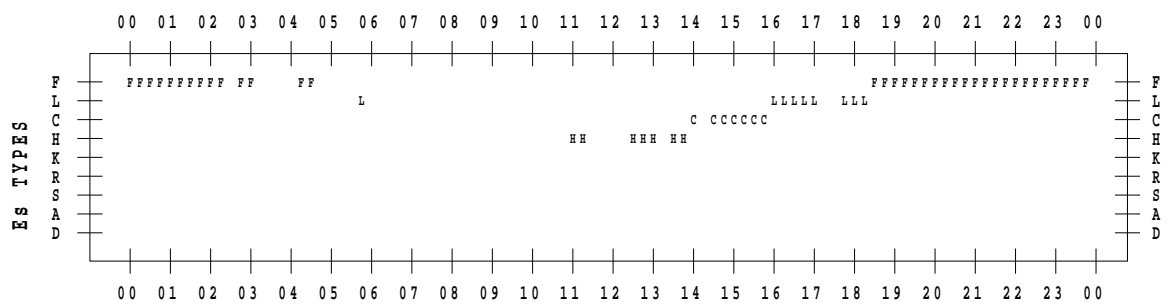
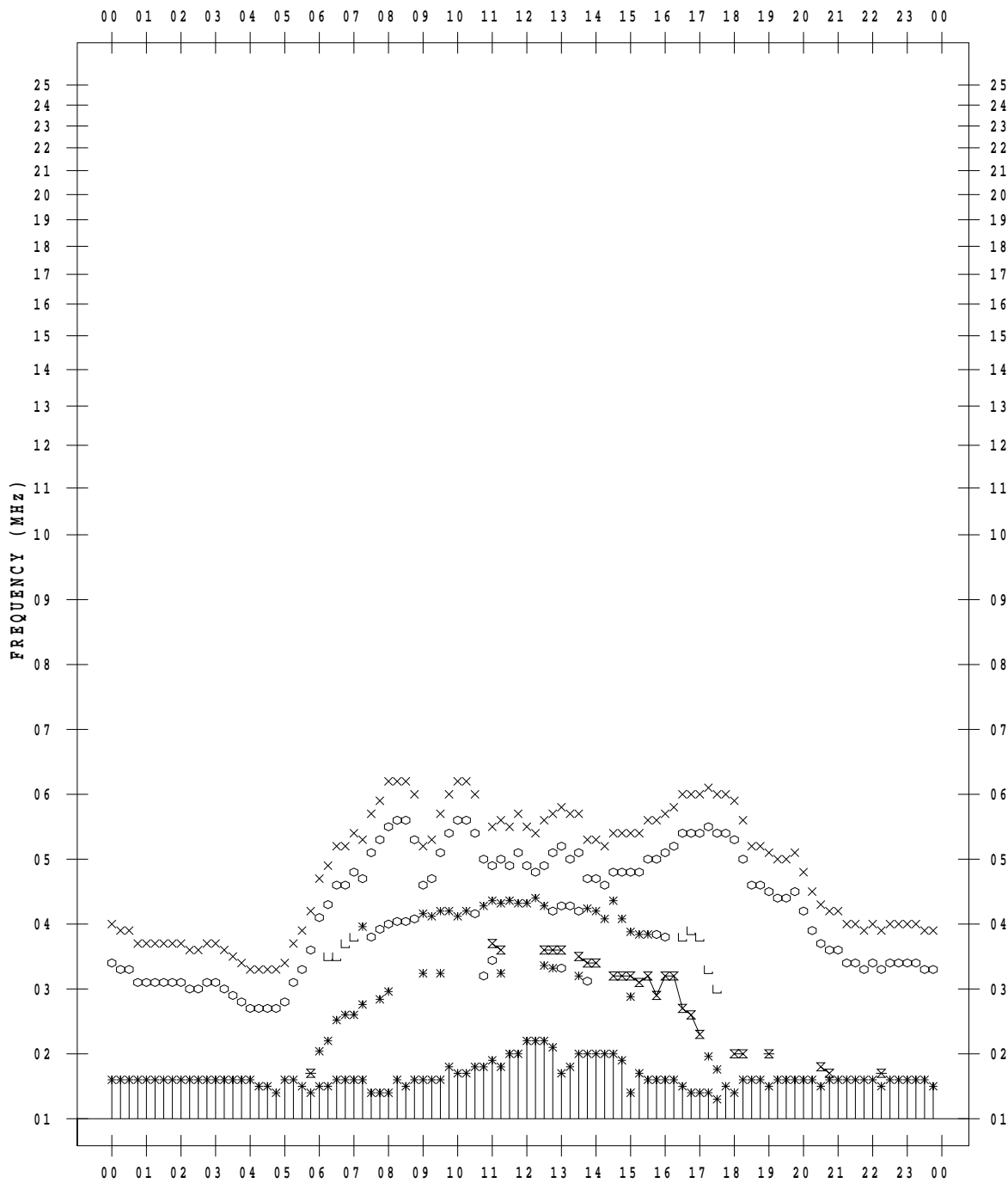
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 7

135 ° E MEAN TIME



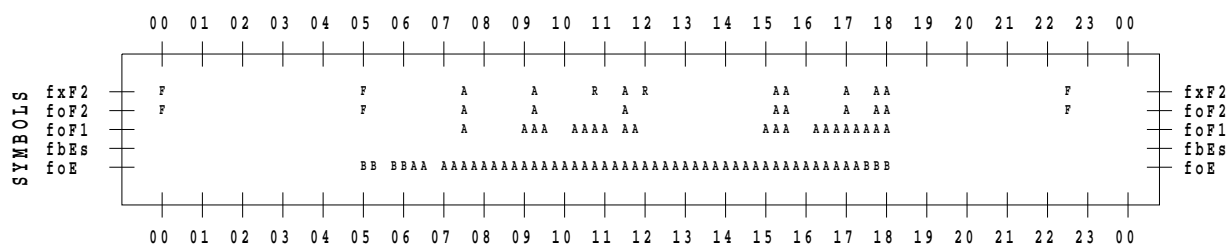
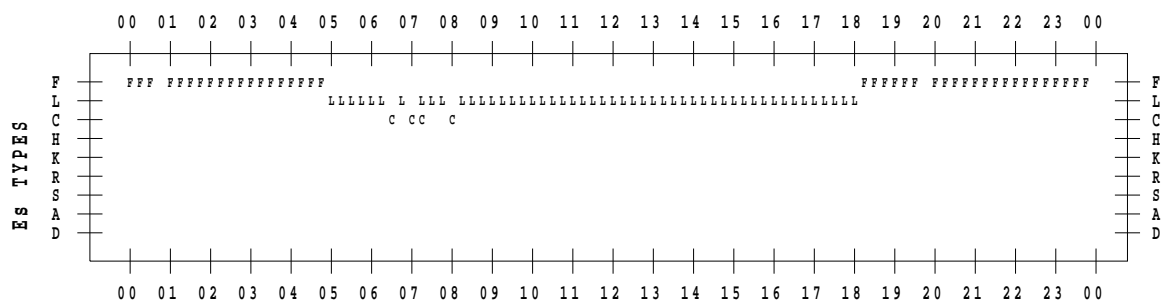
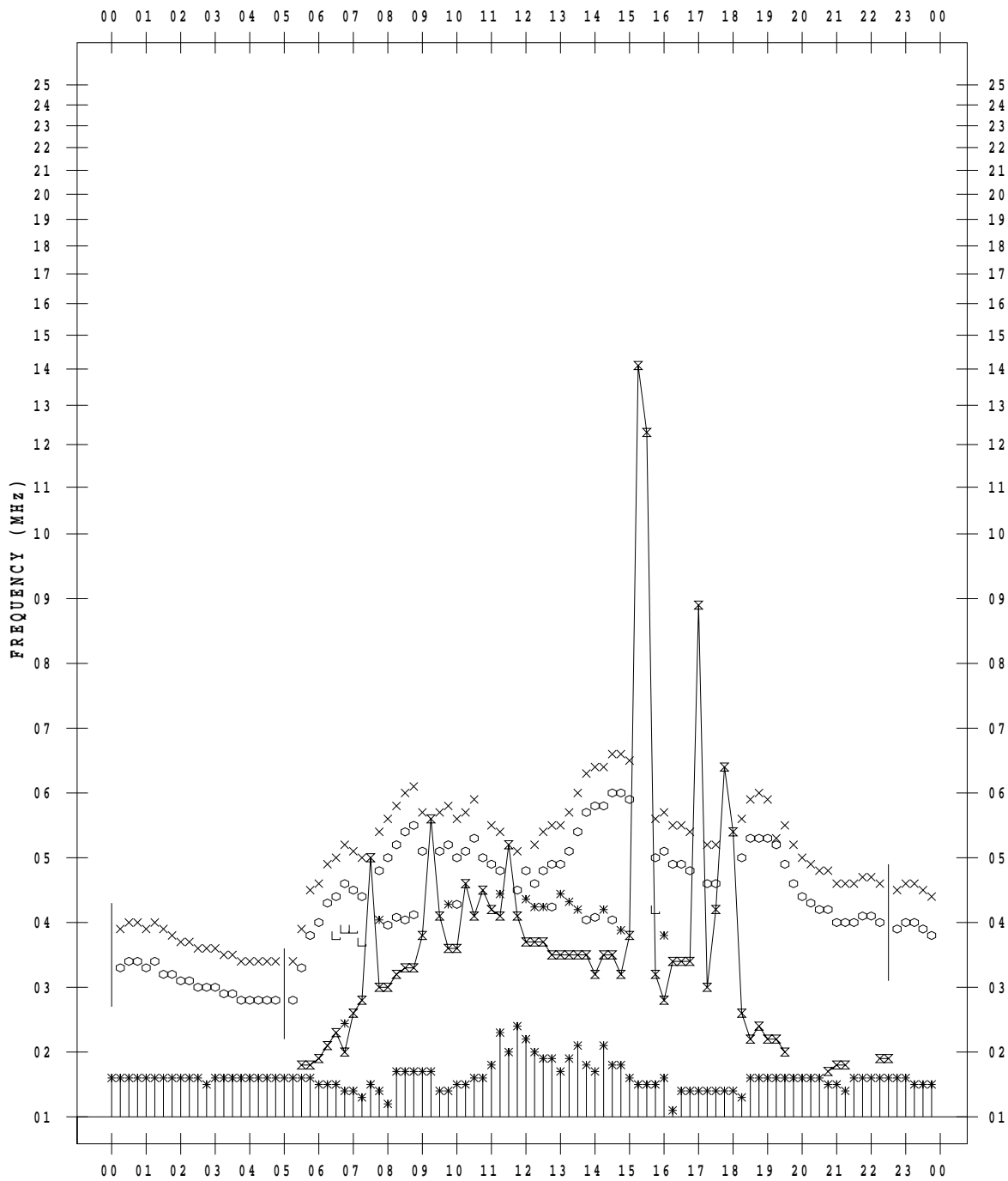
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 8

135 ° E MEAN TIME



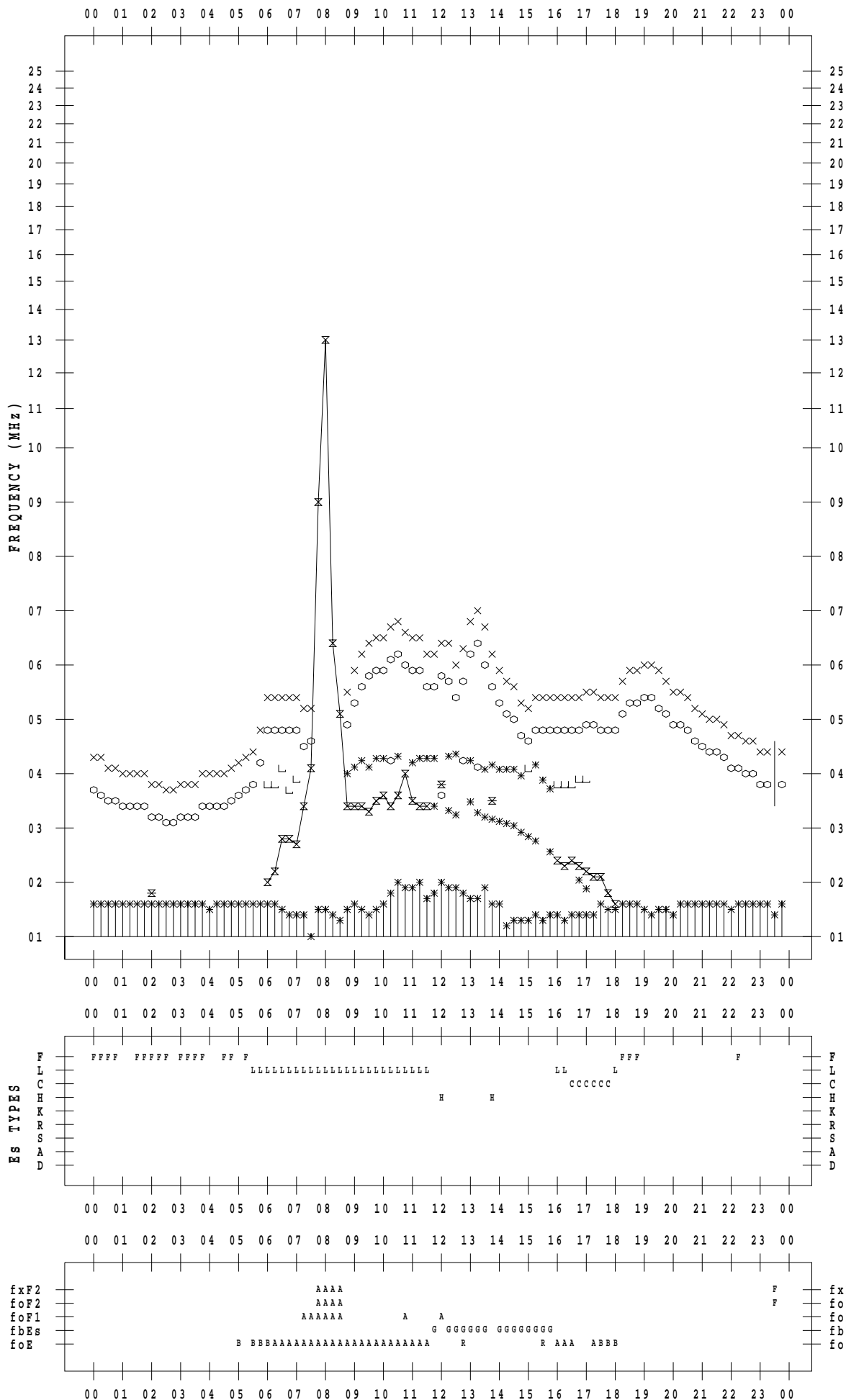
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 9

135 ° E MEAN TIME



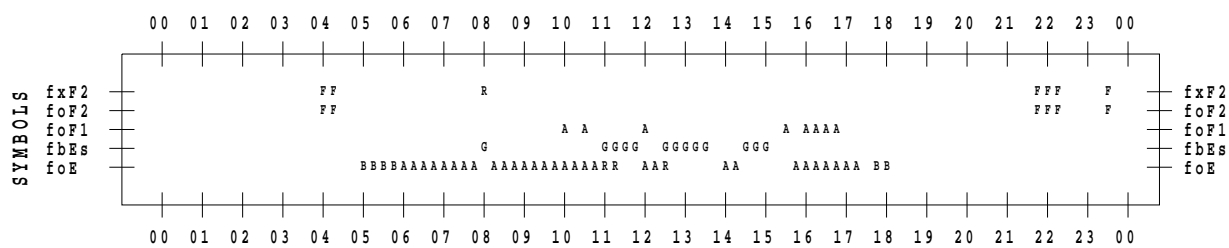
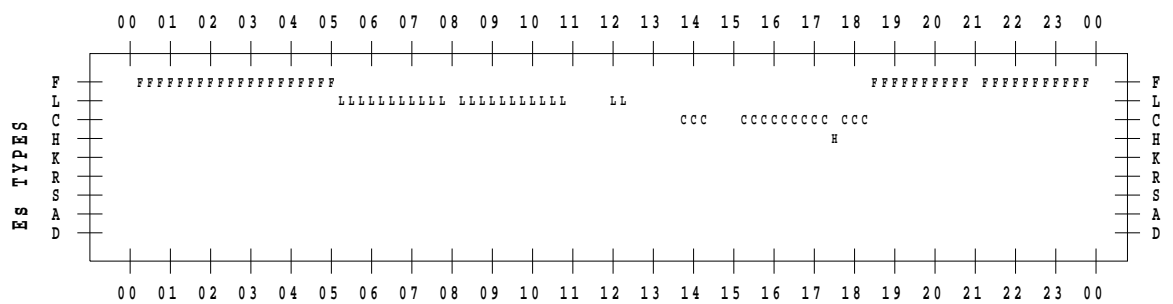
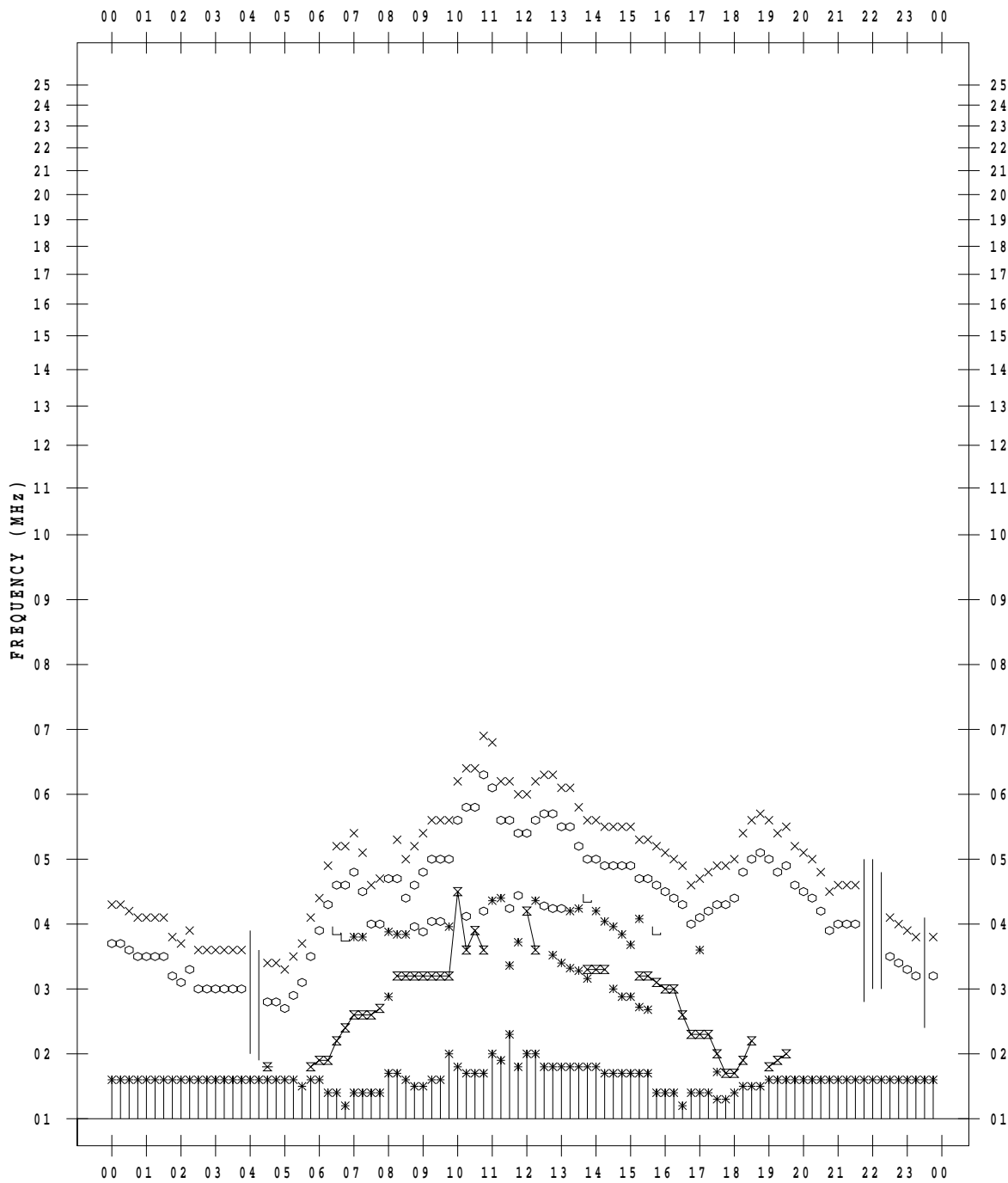
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 10

135 ° E MEAN TIME



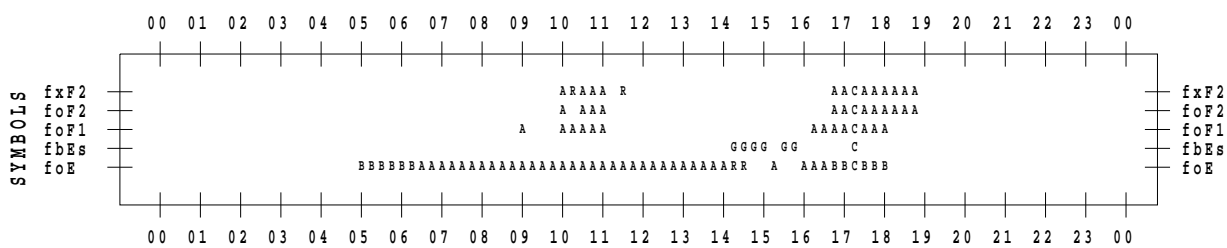
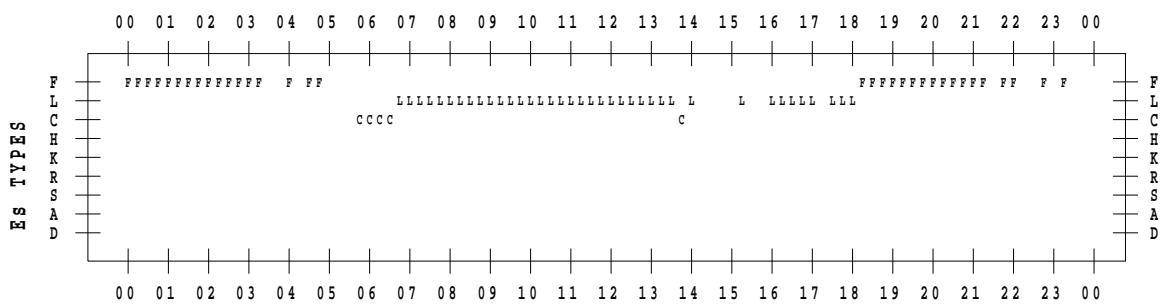
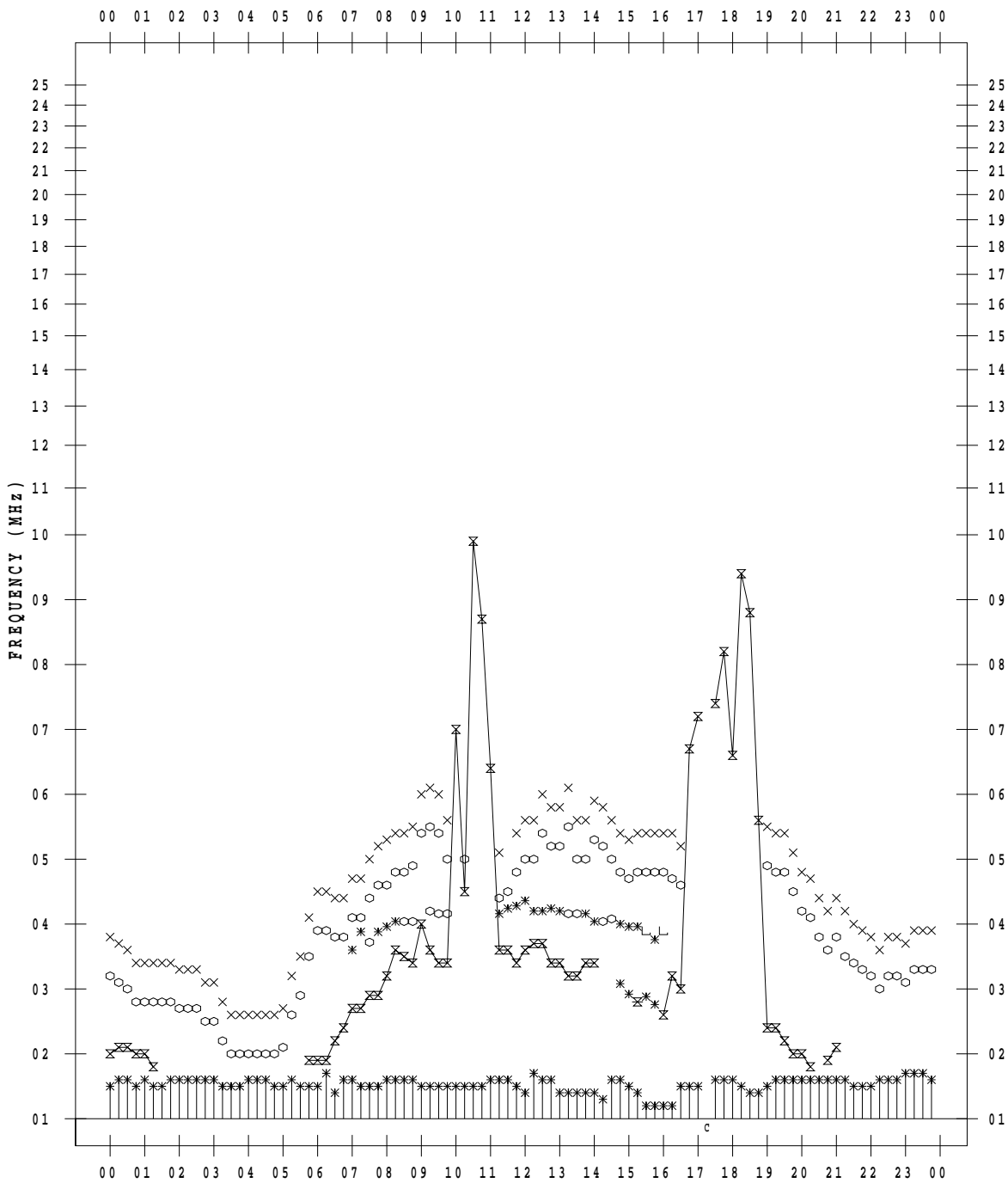
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 11

135 ° E MEAN TIME



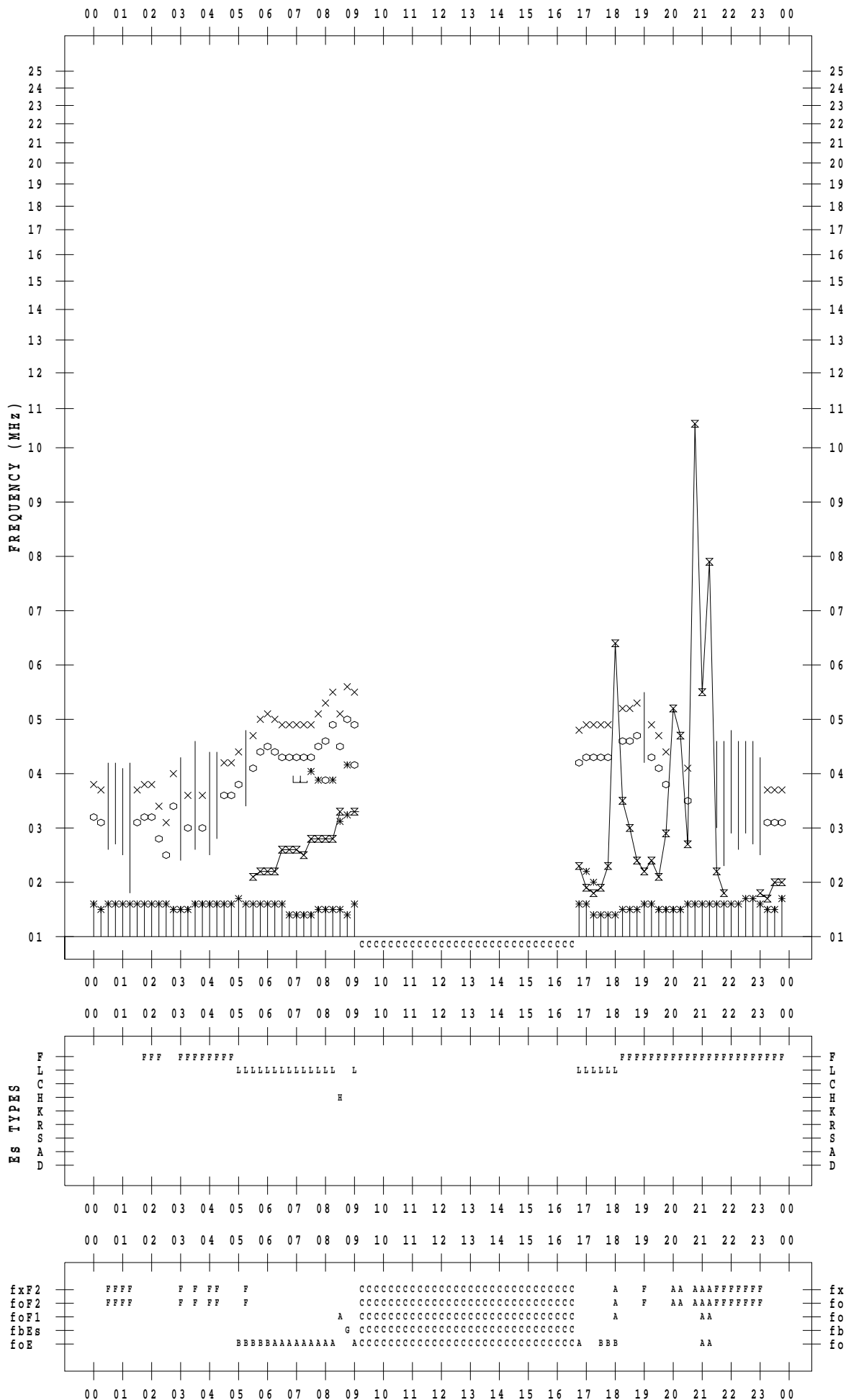
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 12

135 ° E MEAN TIME



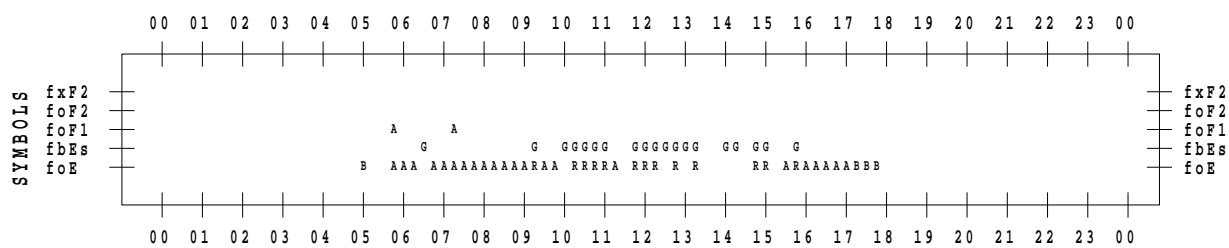
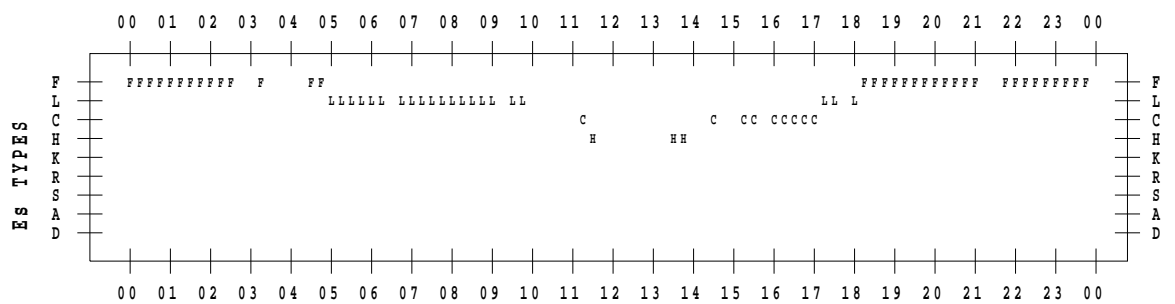
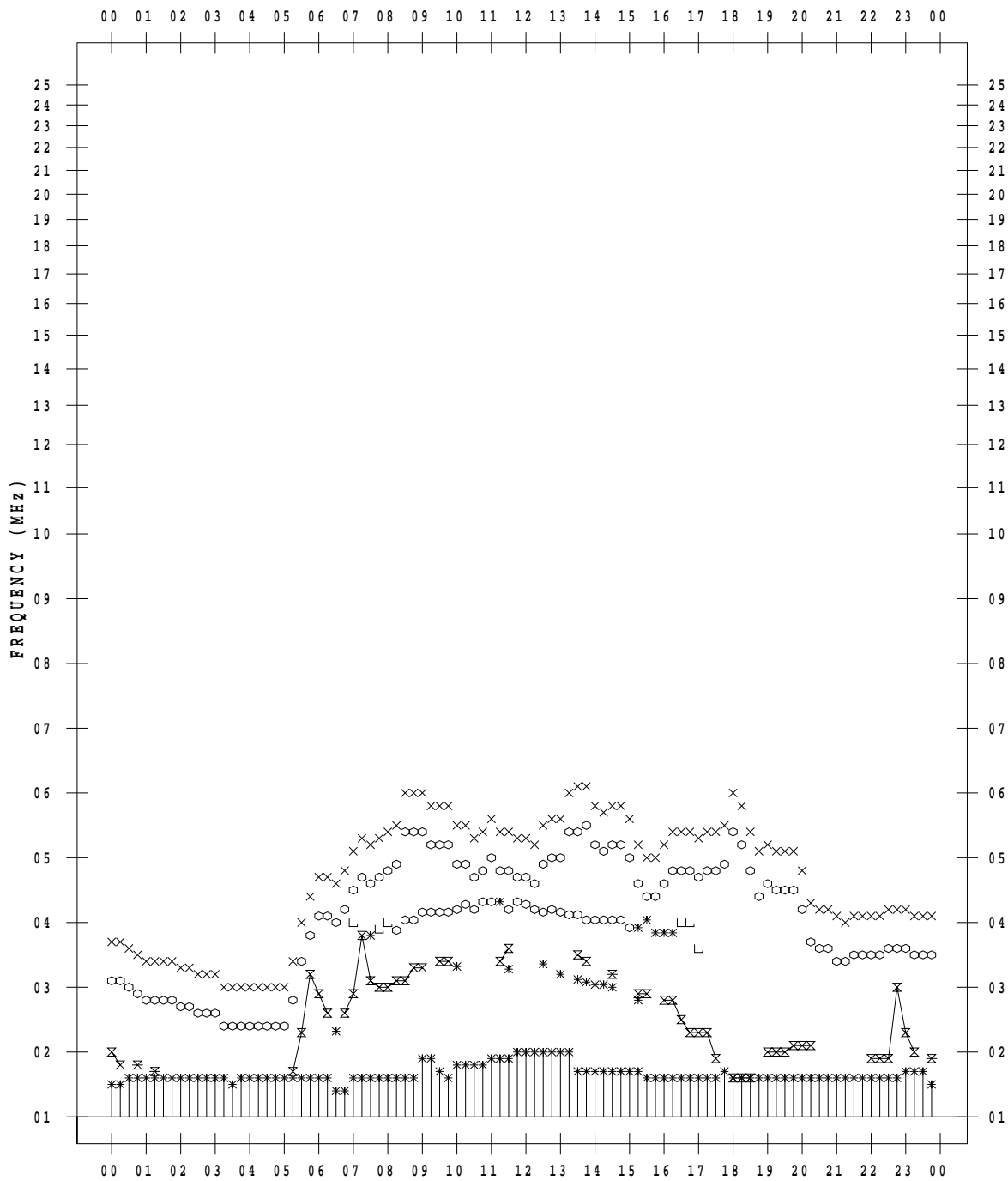
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 13

135 ° E MEAN TIME



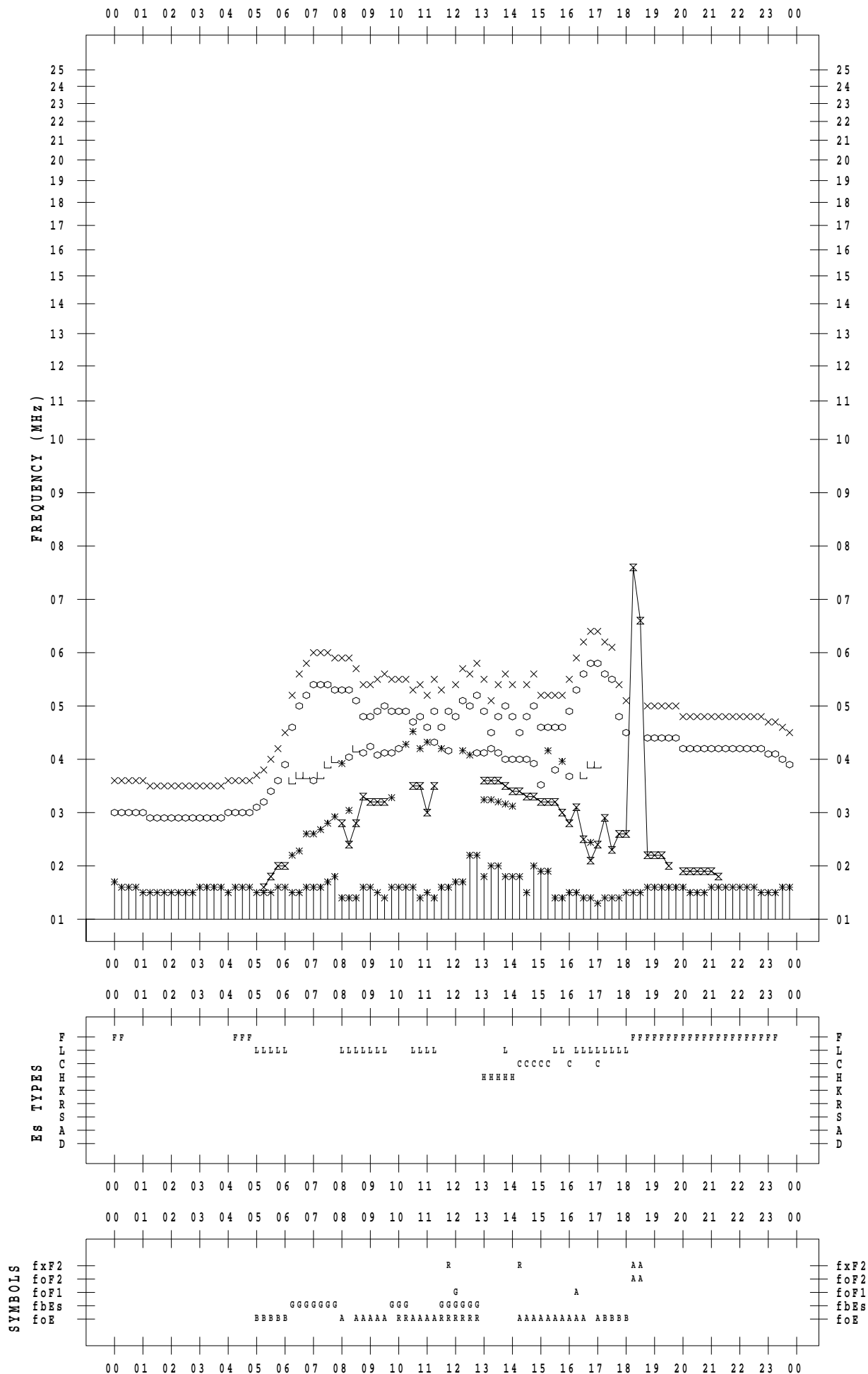
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 15

135 ° E MEAN TIME



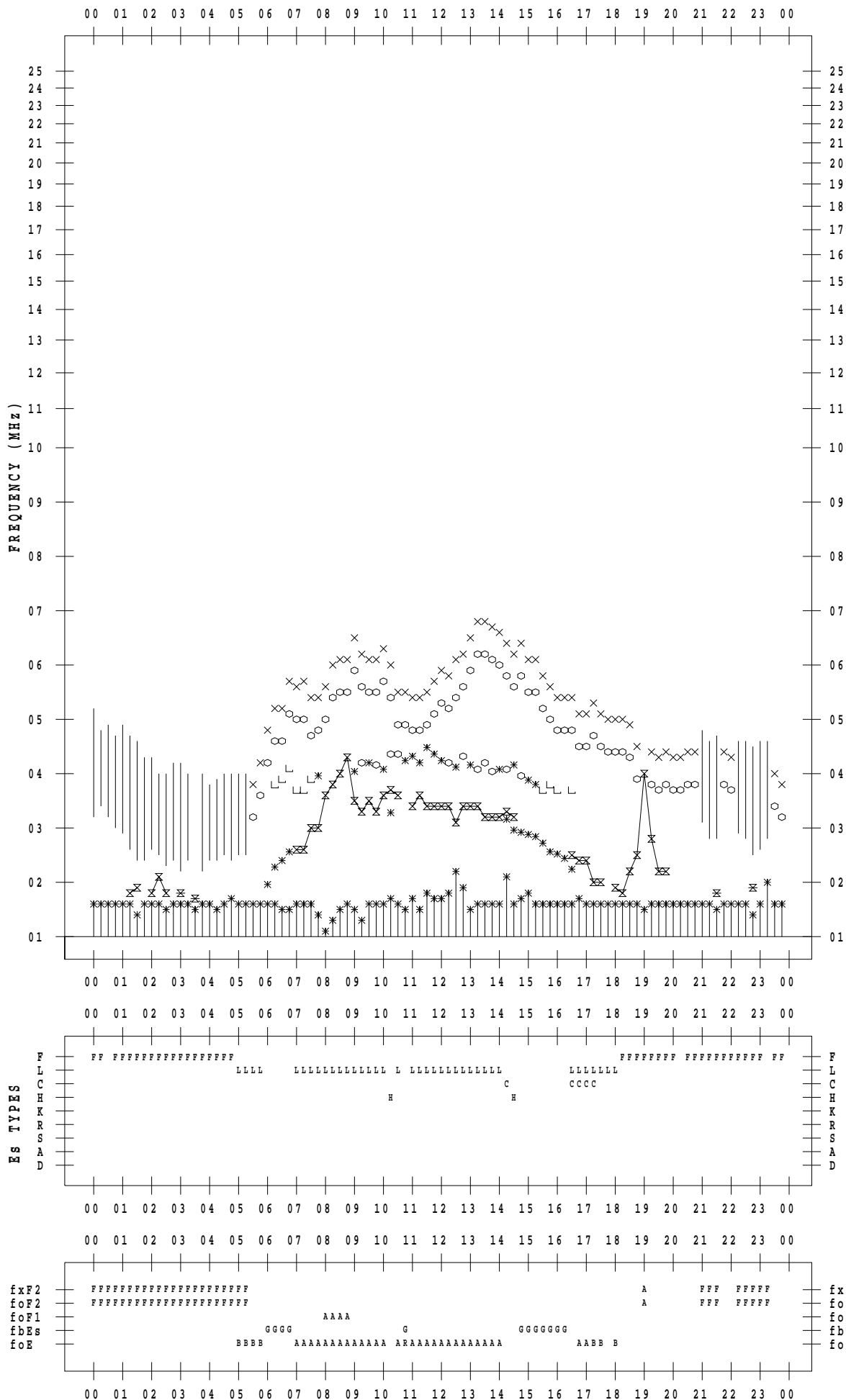
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 16

135 ° E MEAN TIME



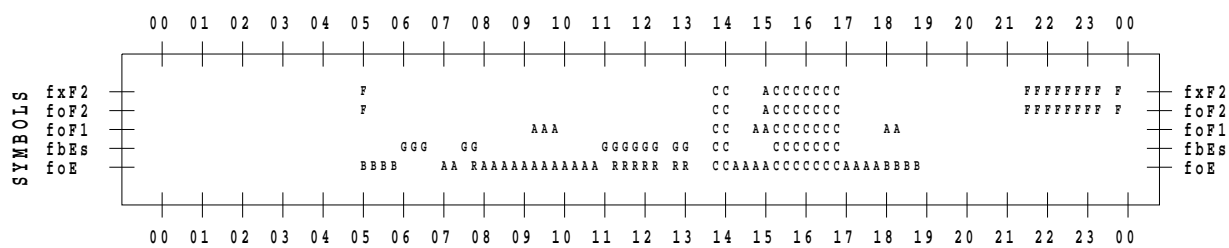
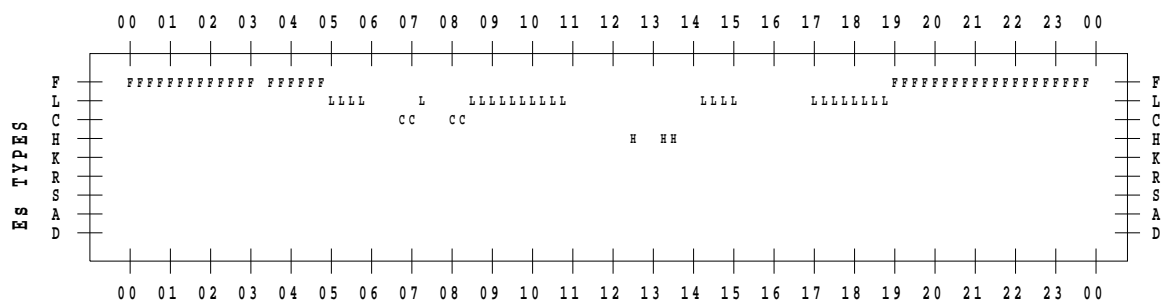
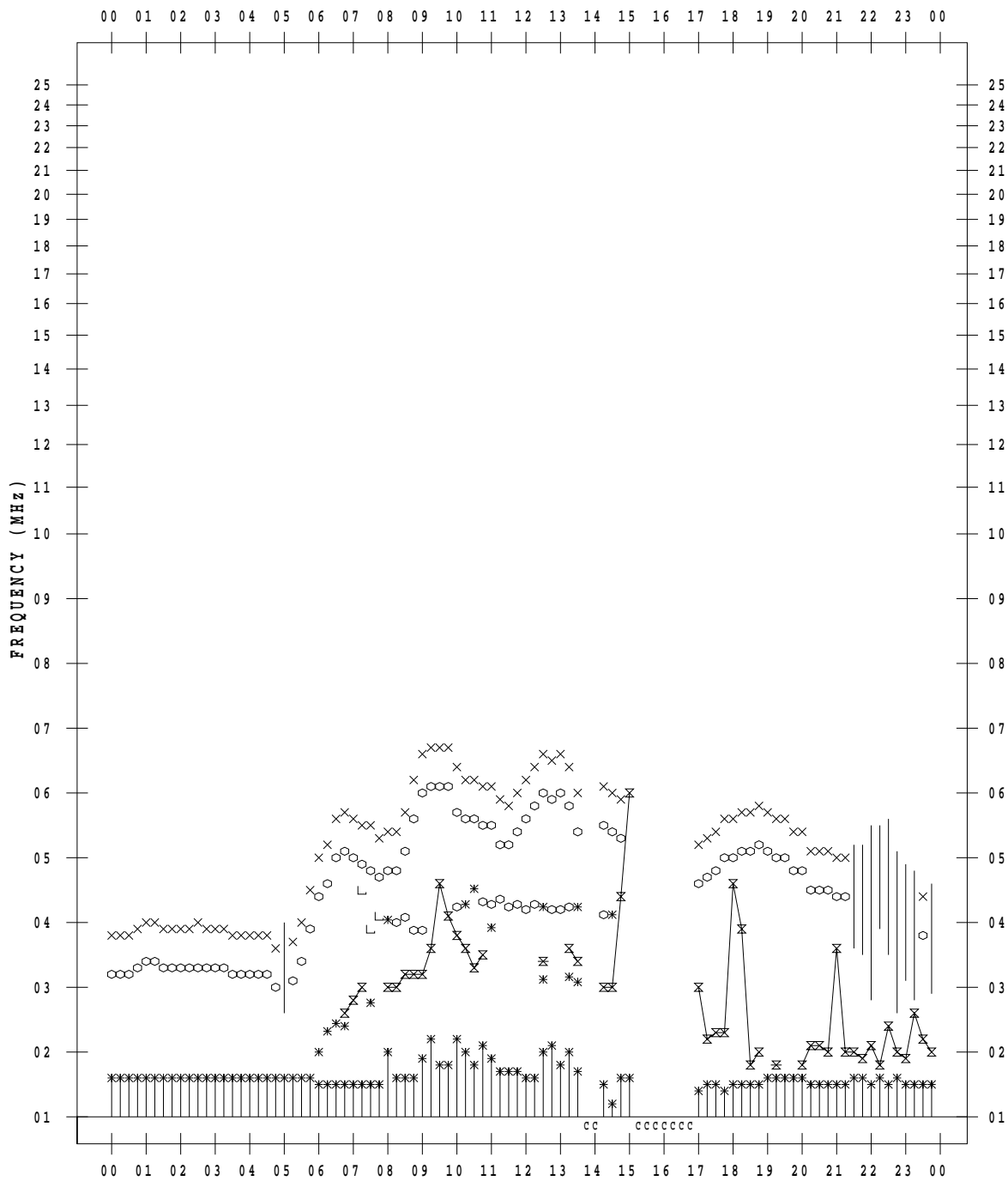
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 17

135 ° E MEAN TIME



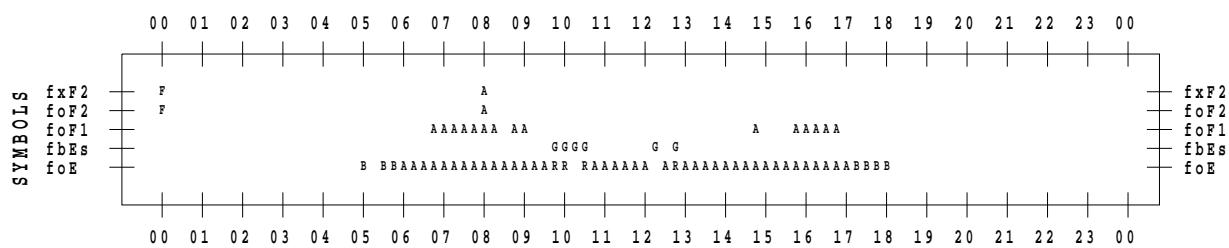
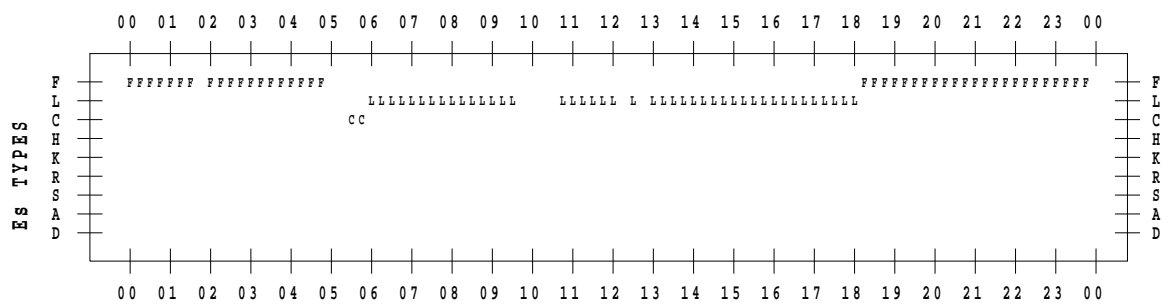
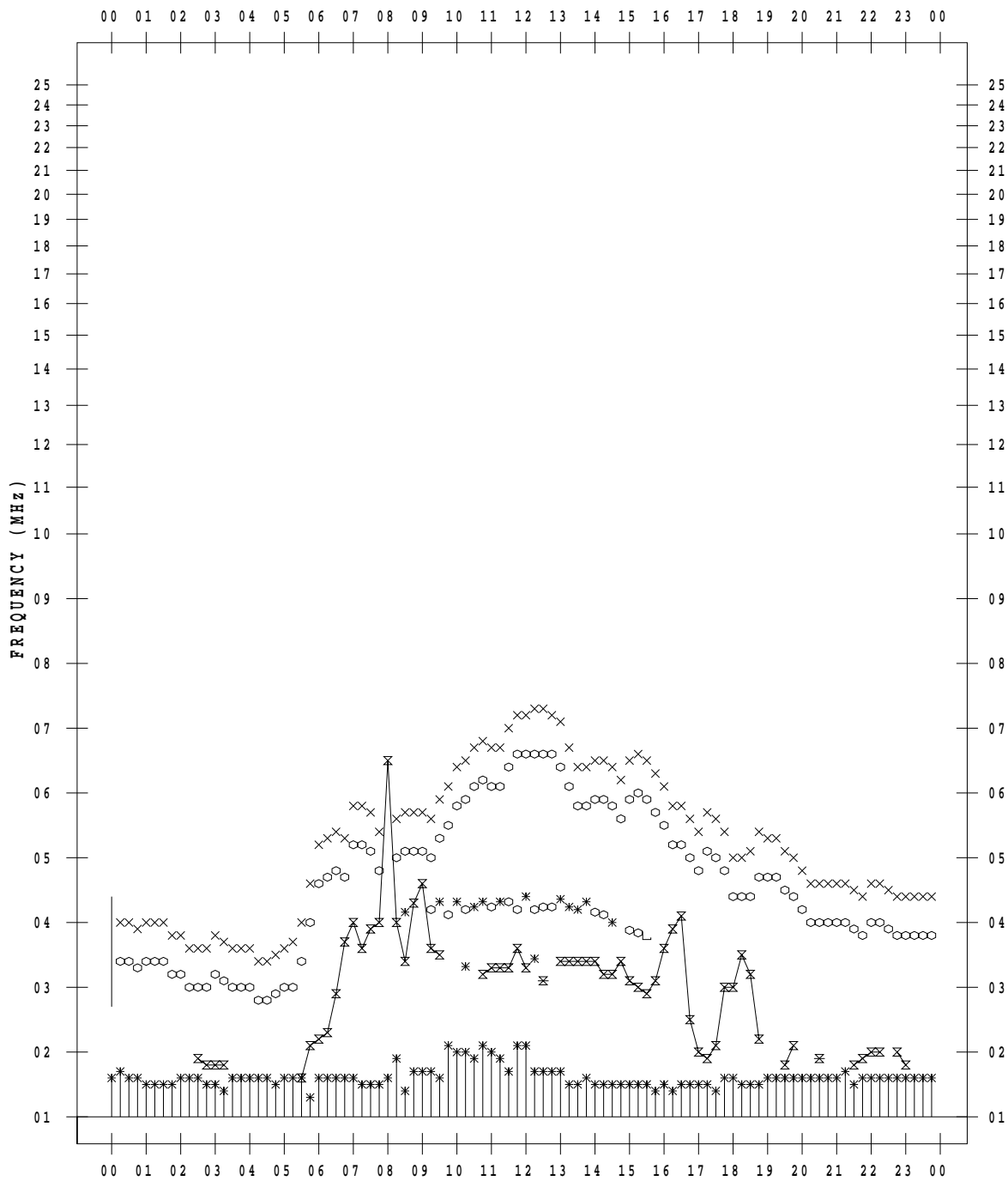
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 18

135 ° E MEAN TIME



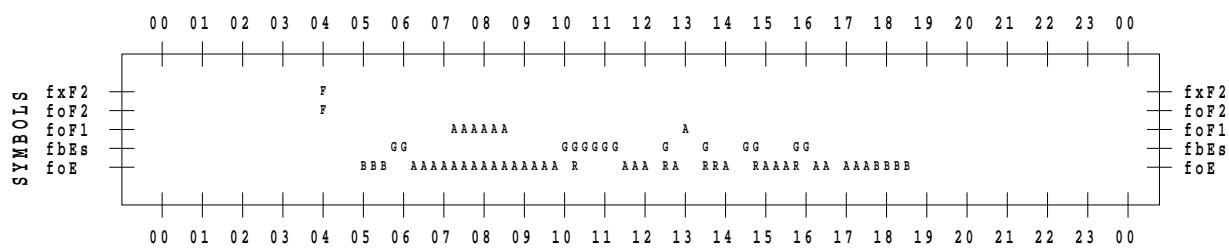
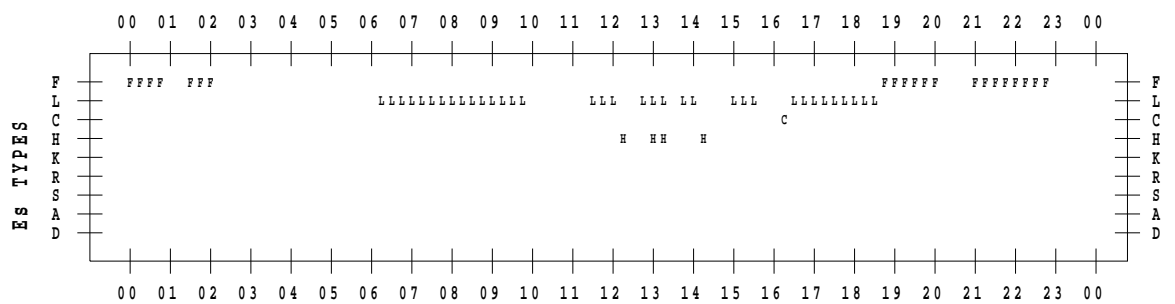
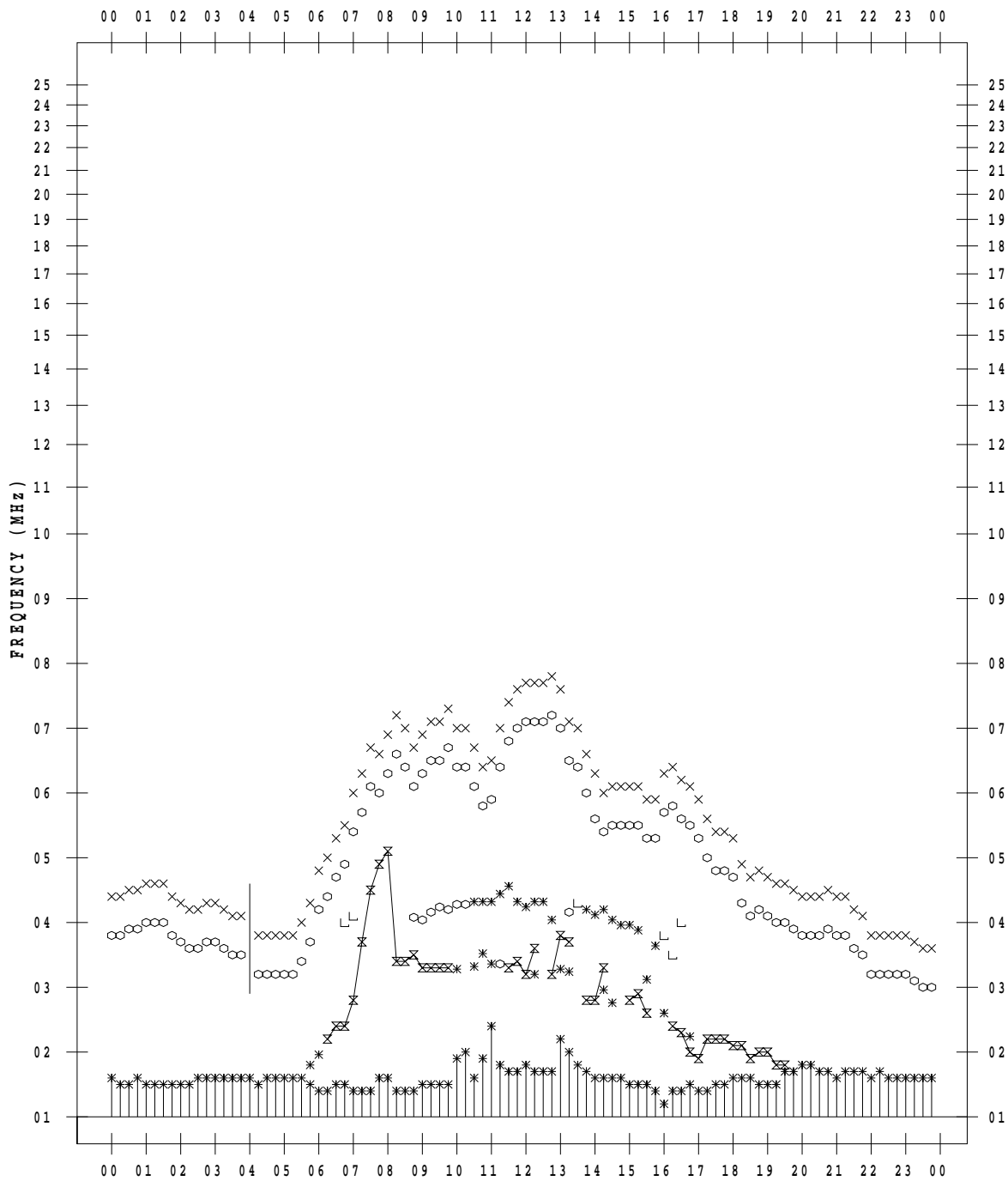
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 19

135 ° E MEAN TIME



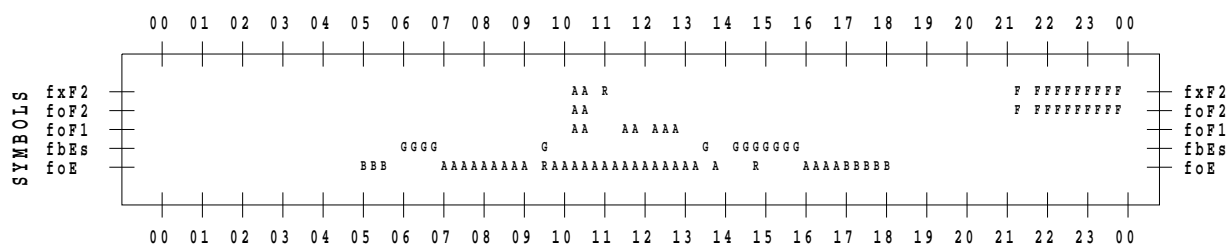
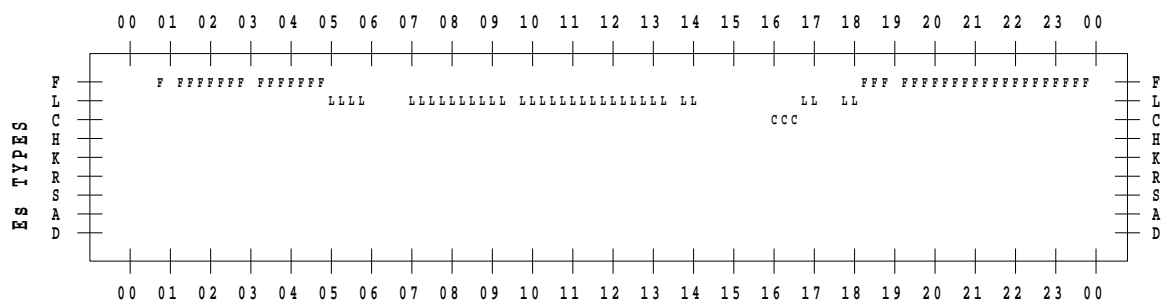
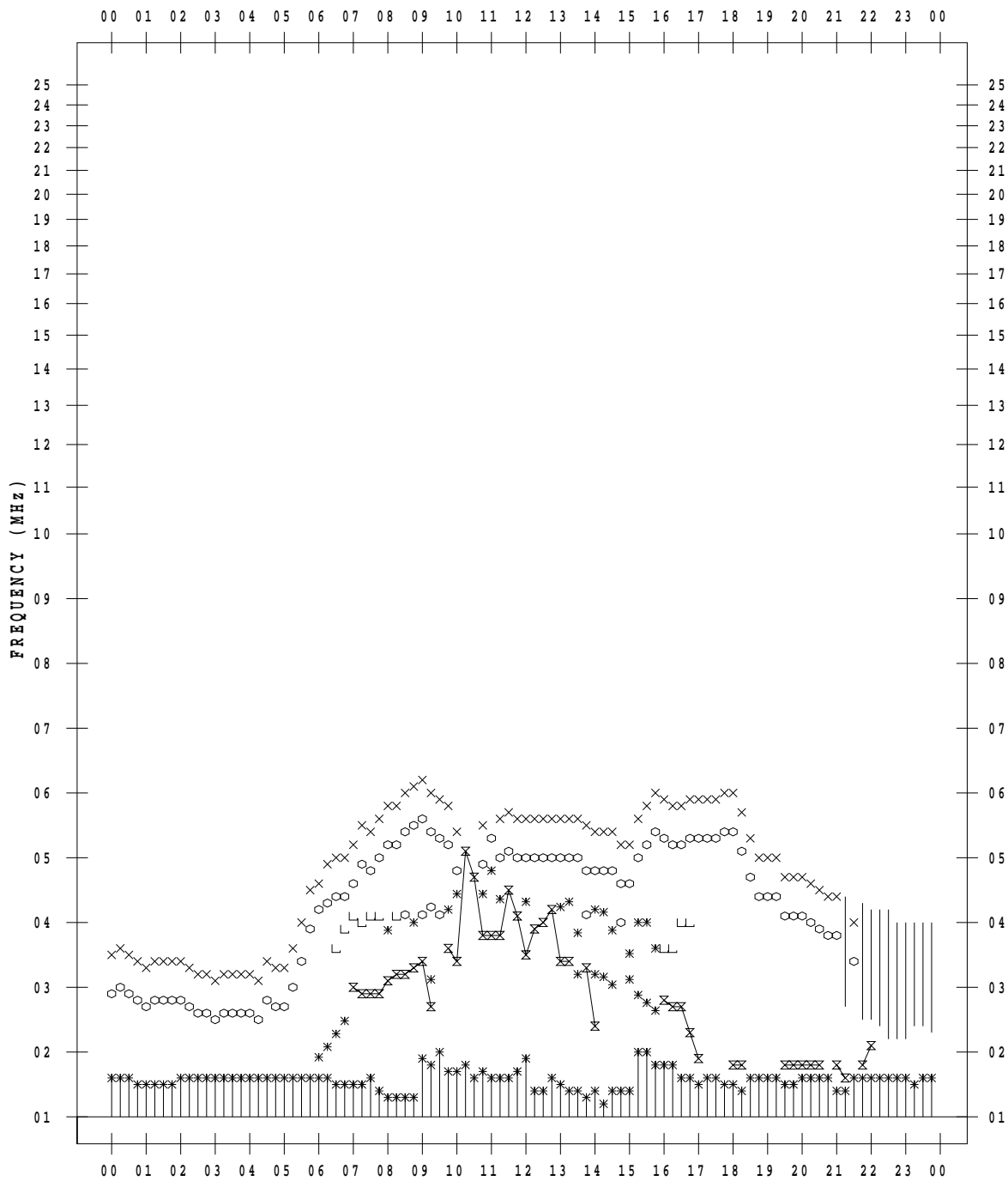
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 20

135 ° E MEAN TIME



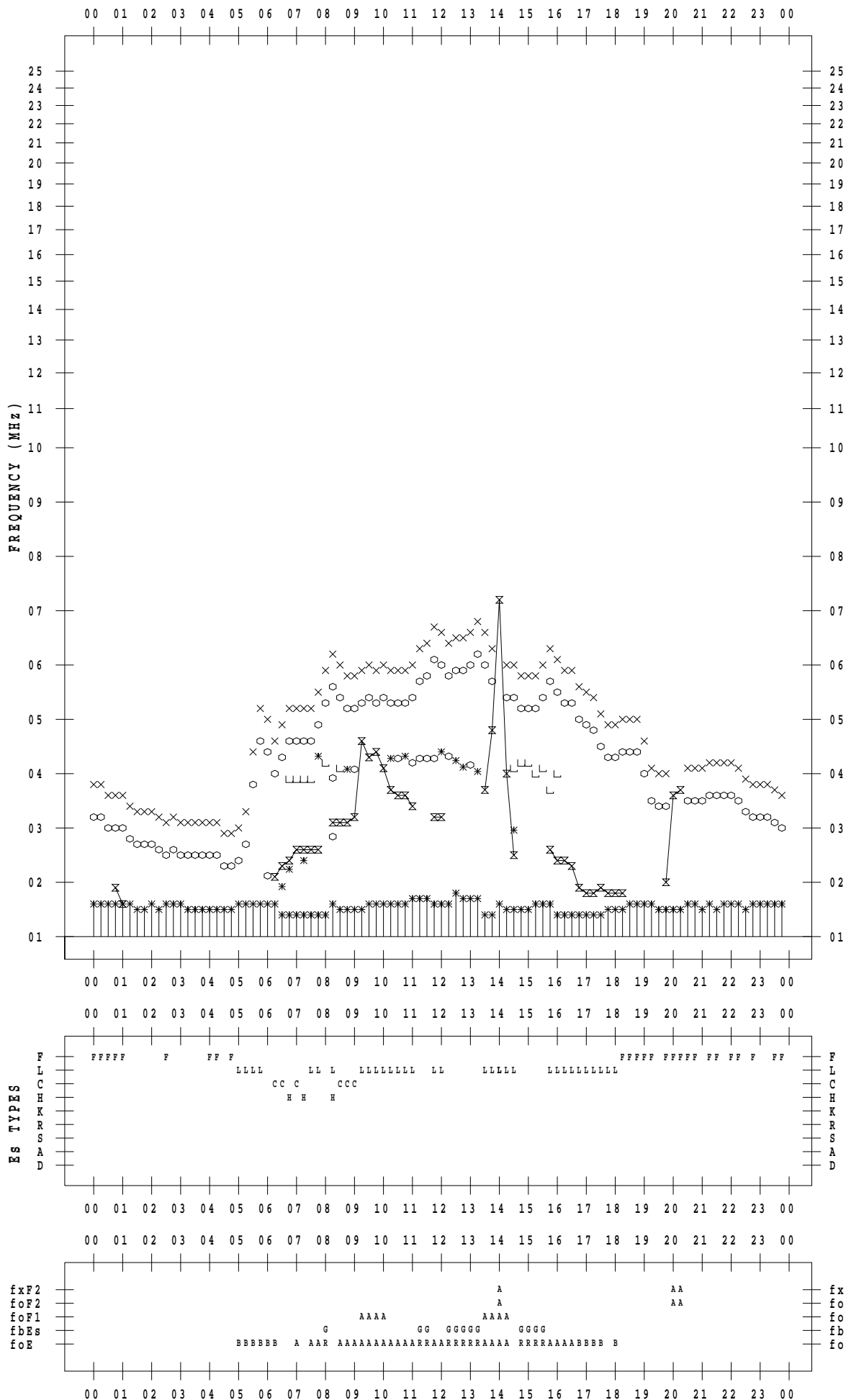
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 22

135 ° E MEAN TIME



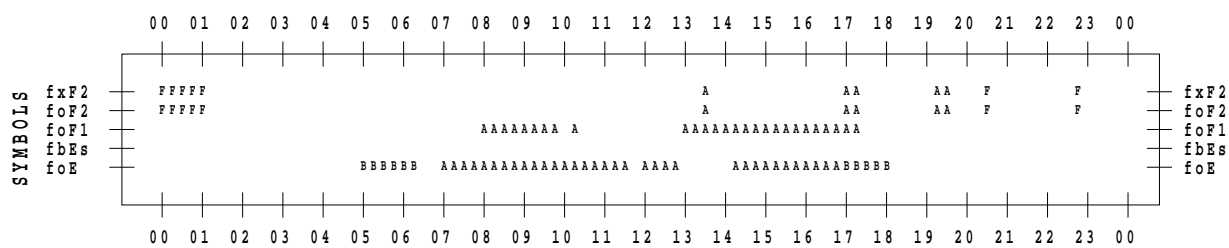
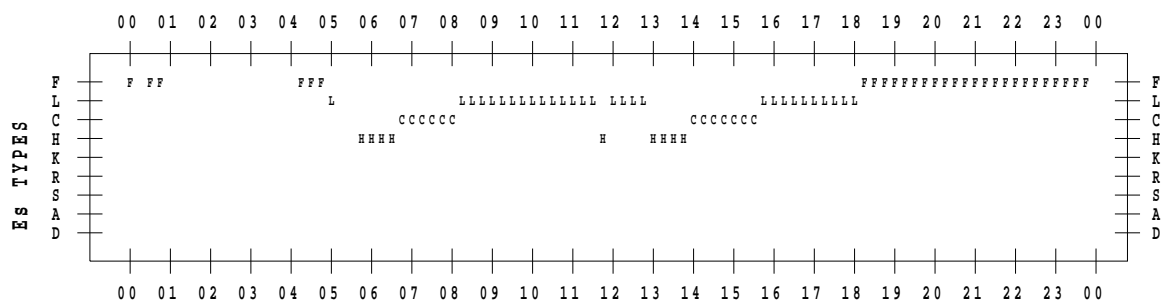
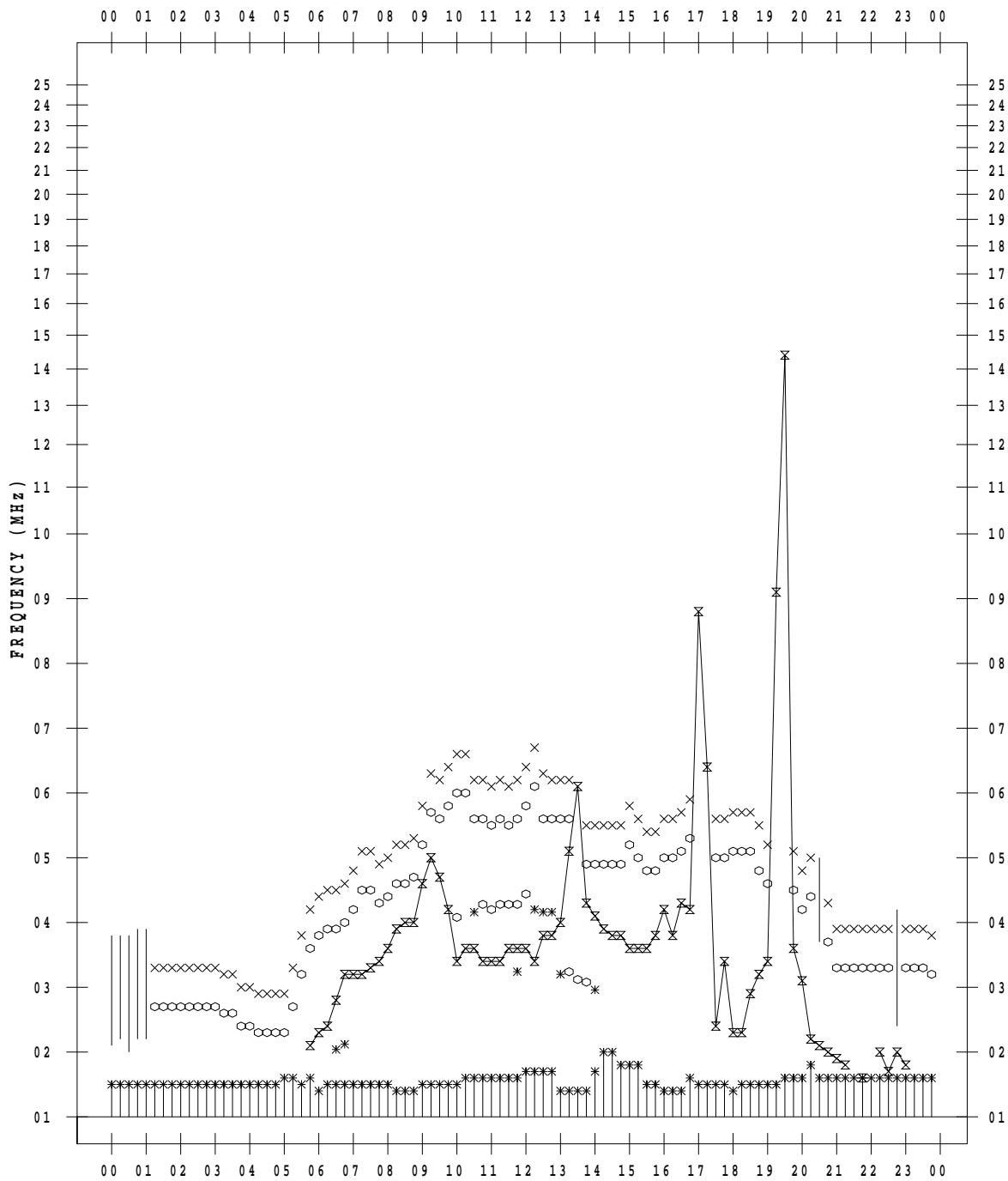
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 23

135 ° E MEAN TIME



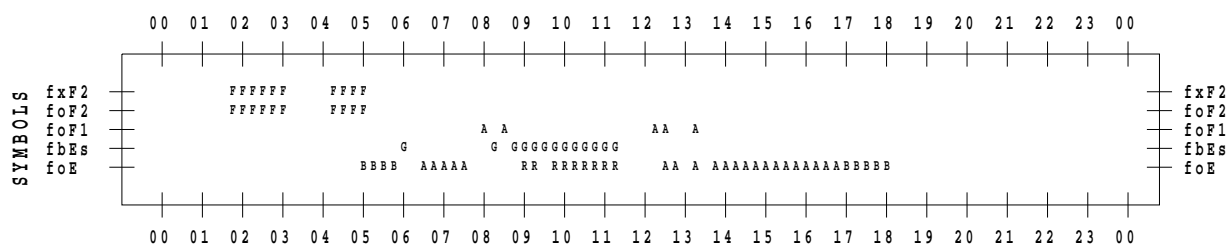
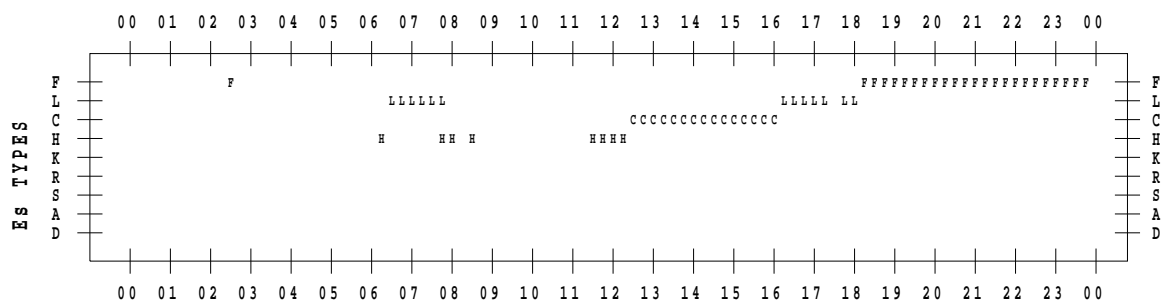
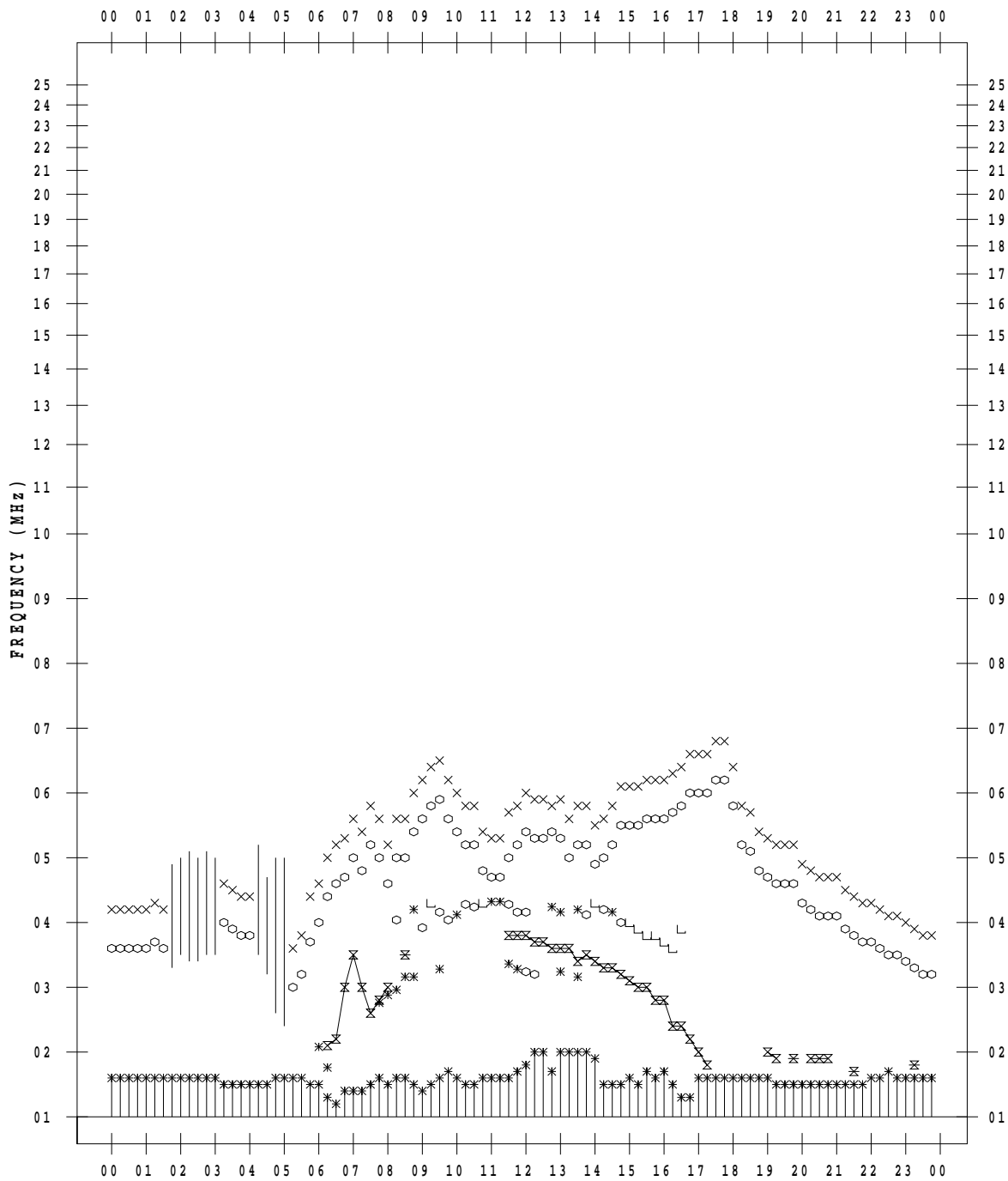
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 25

135 ° E MEAN TIME



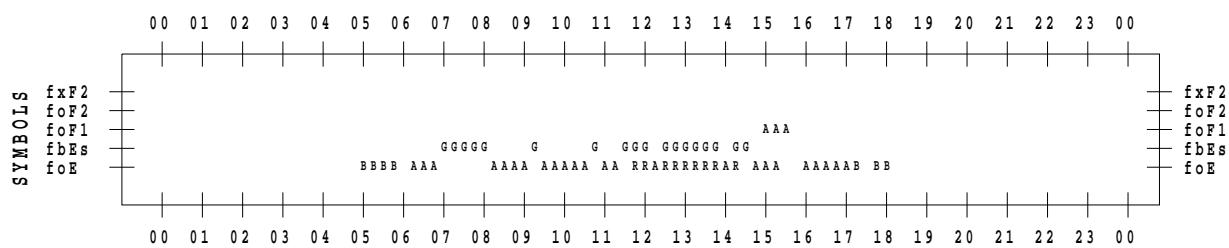
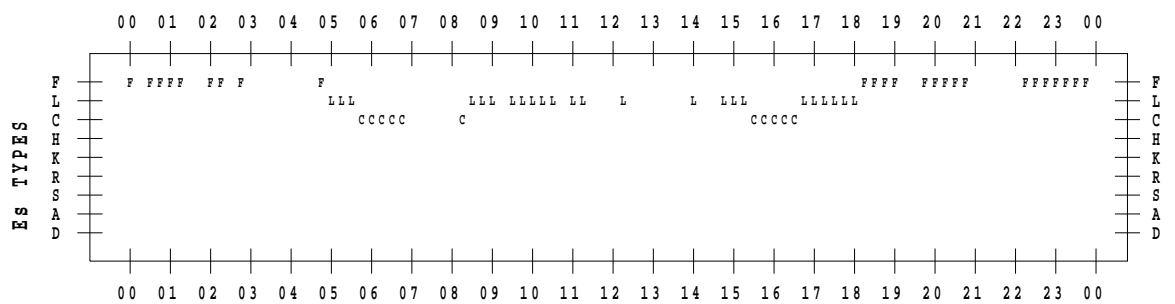
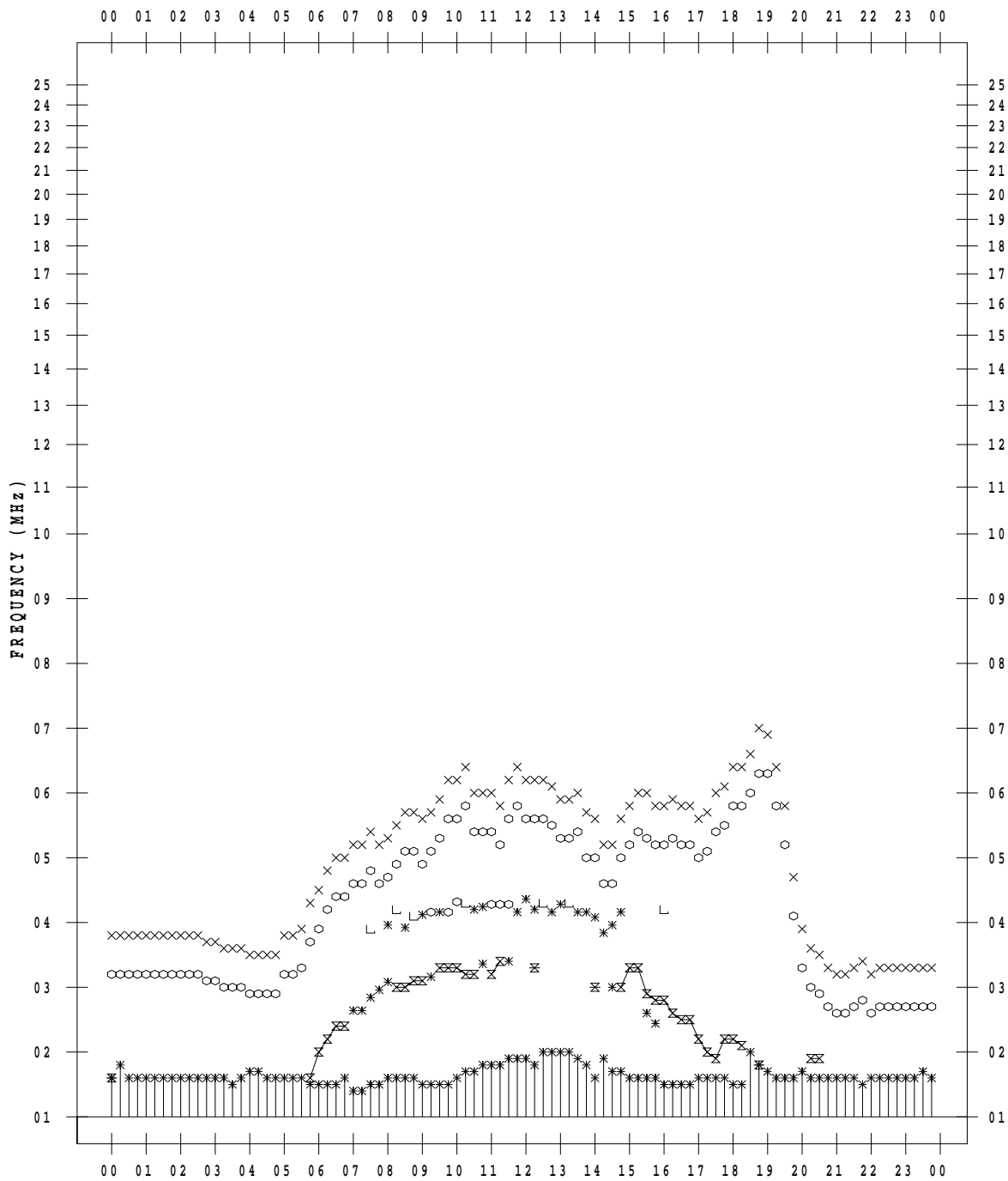
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 26

135 ° E MEAN TIME



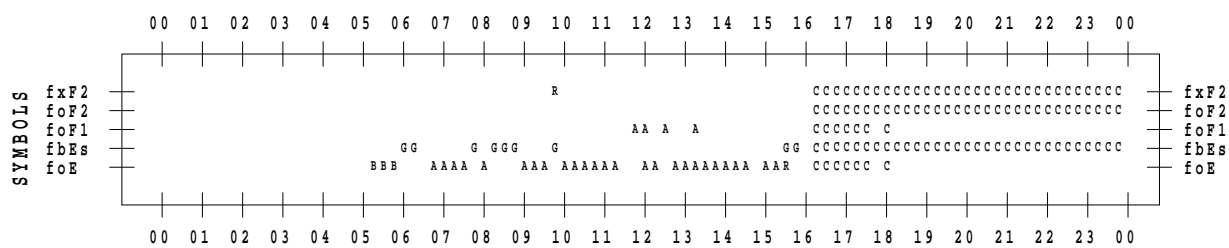
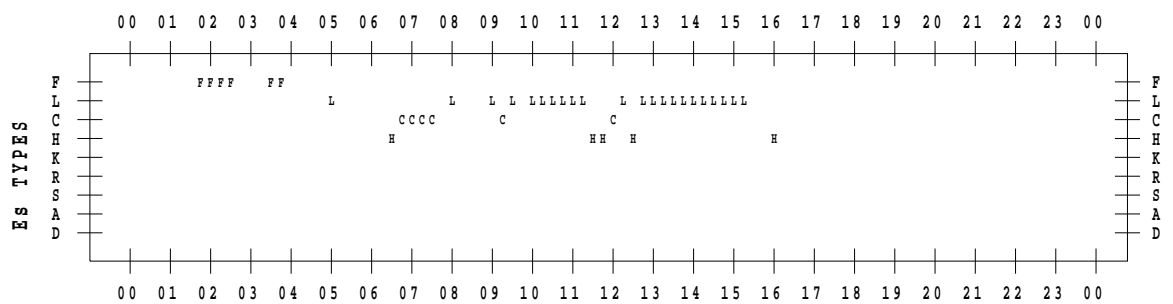
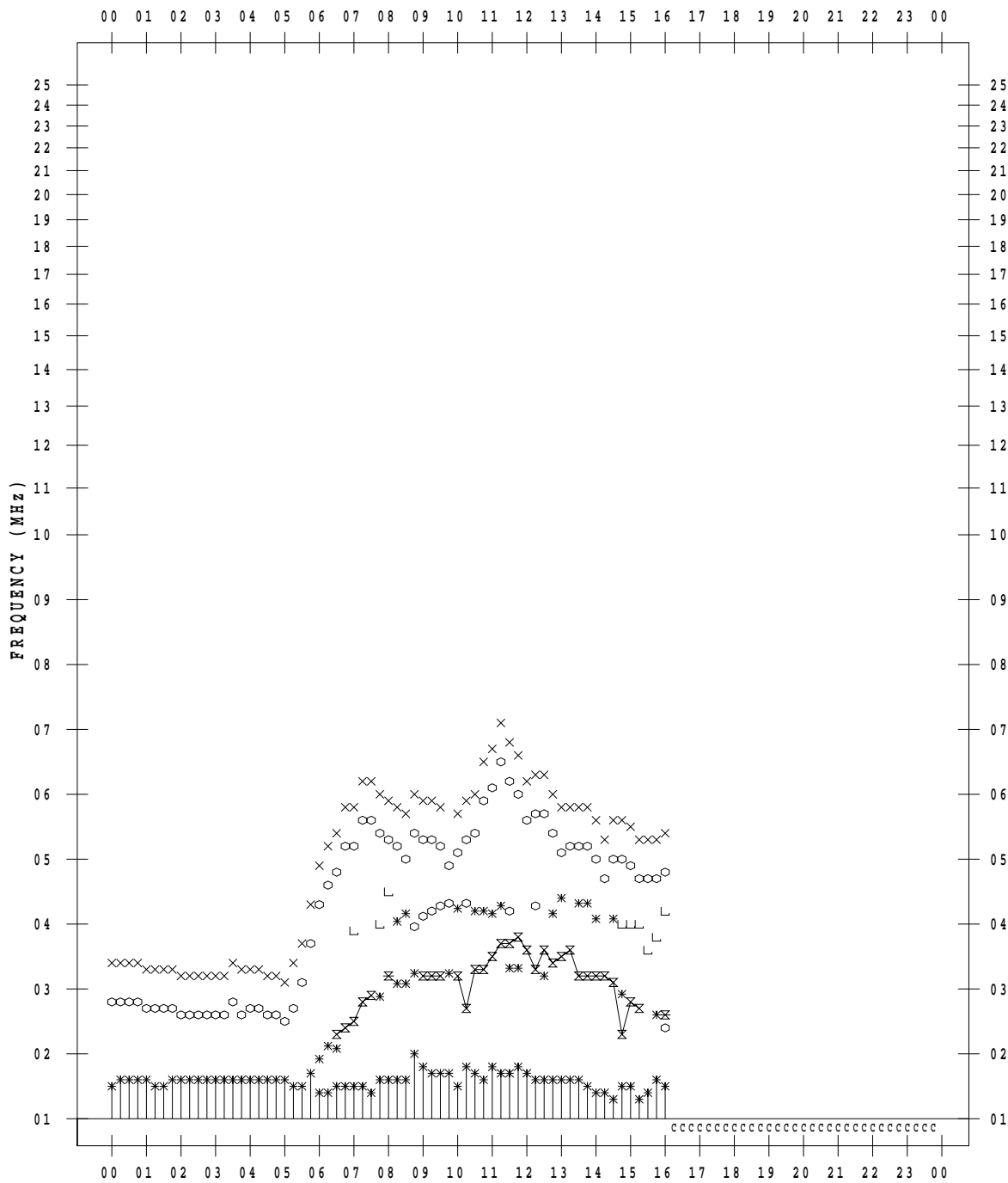
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 27

135 ° E MEAN TIME



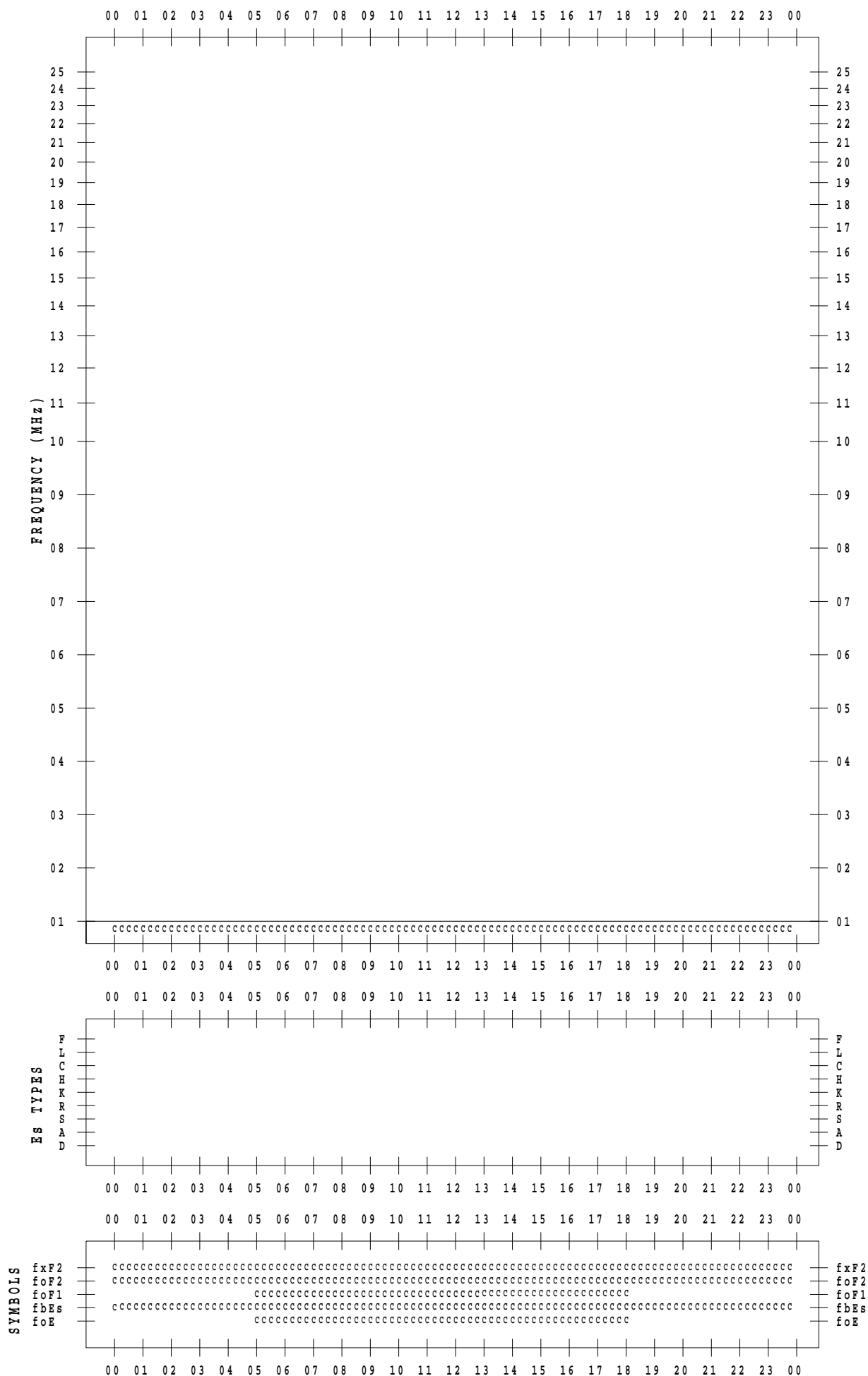
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 28

135 ° E MEAN TIME



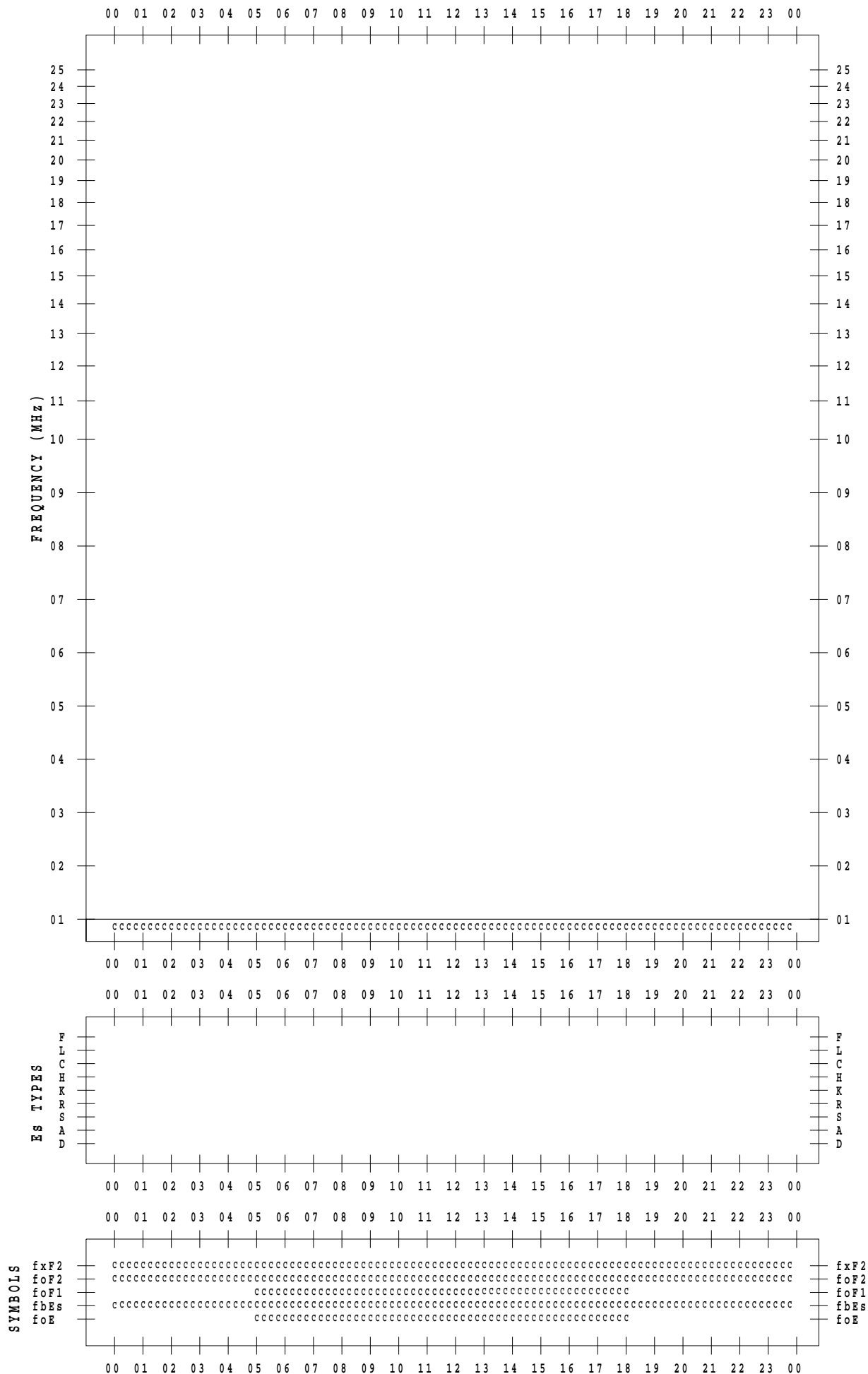
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 29

135 ° E MEAN TIME



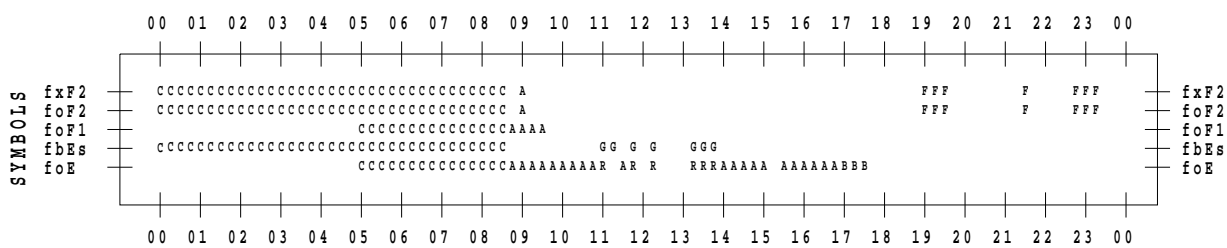
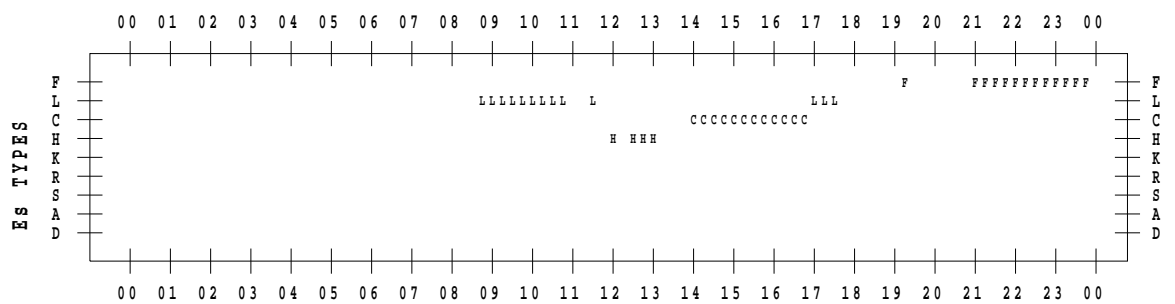
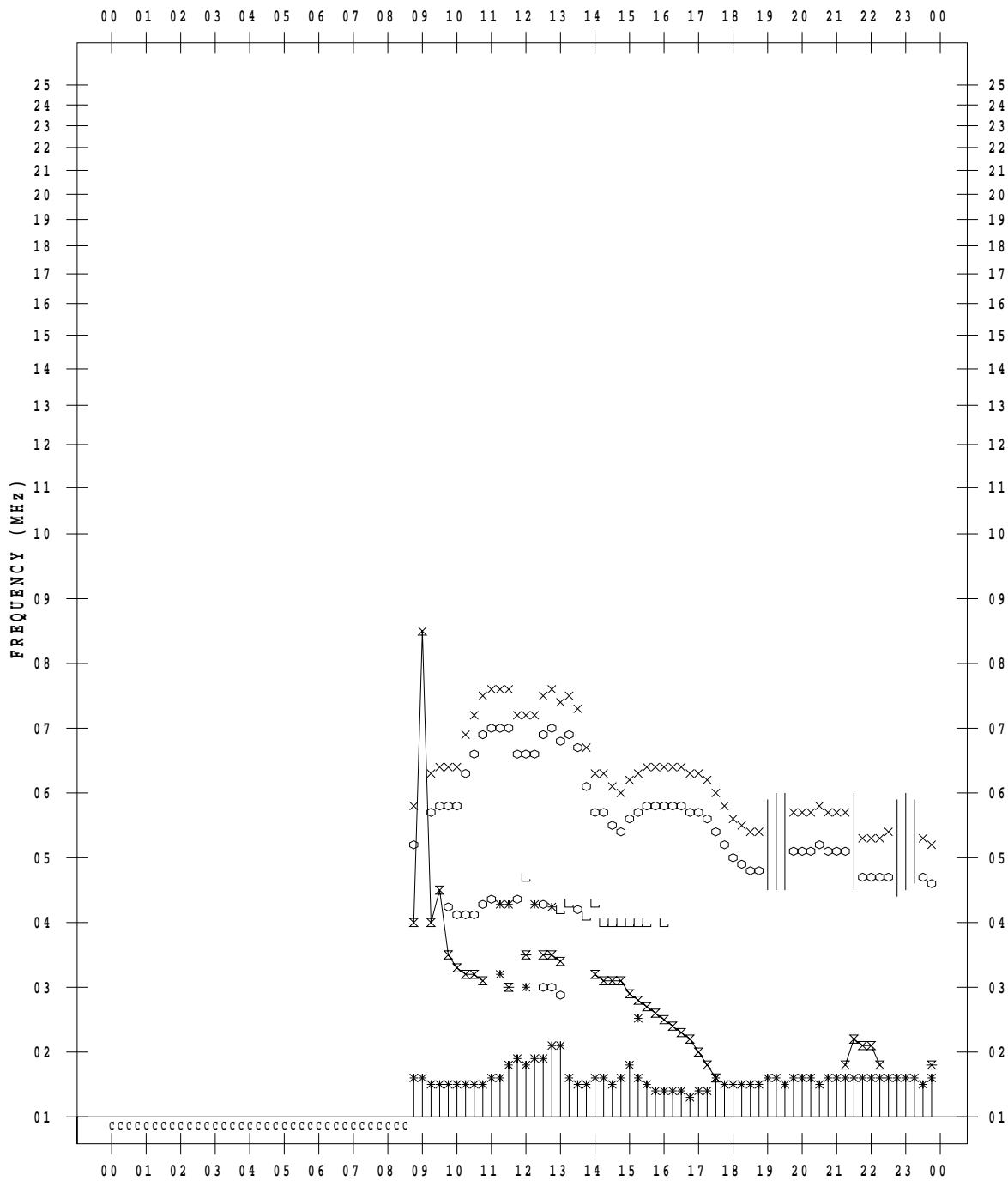
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2019 / 9 / 30

135 ° E MEAN TIME



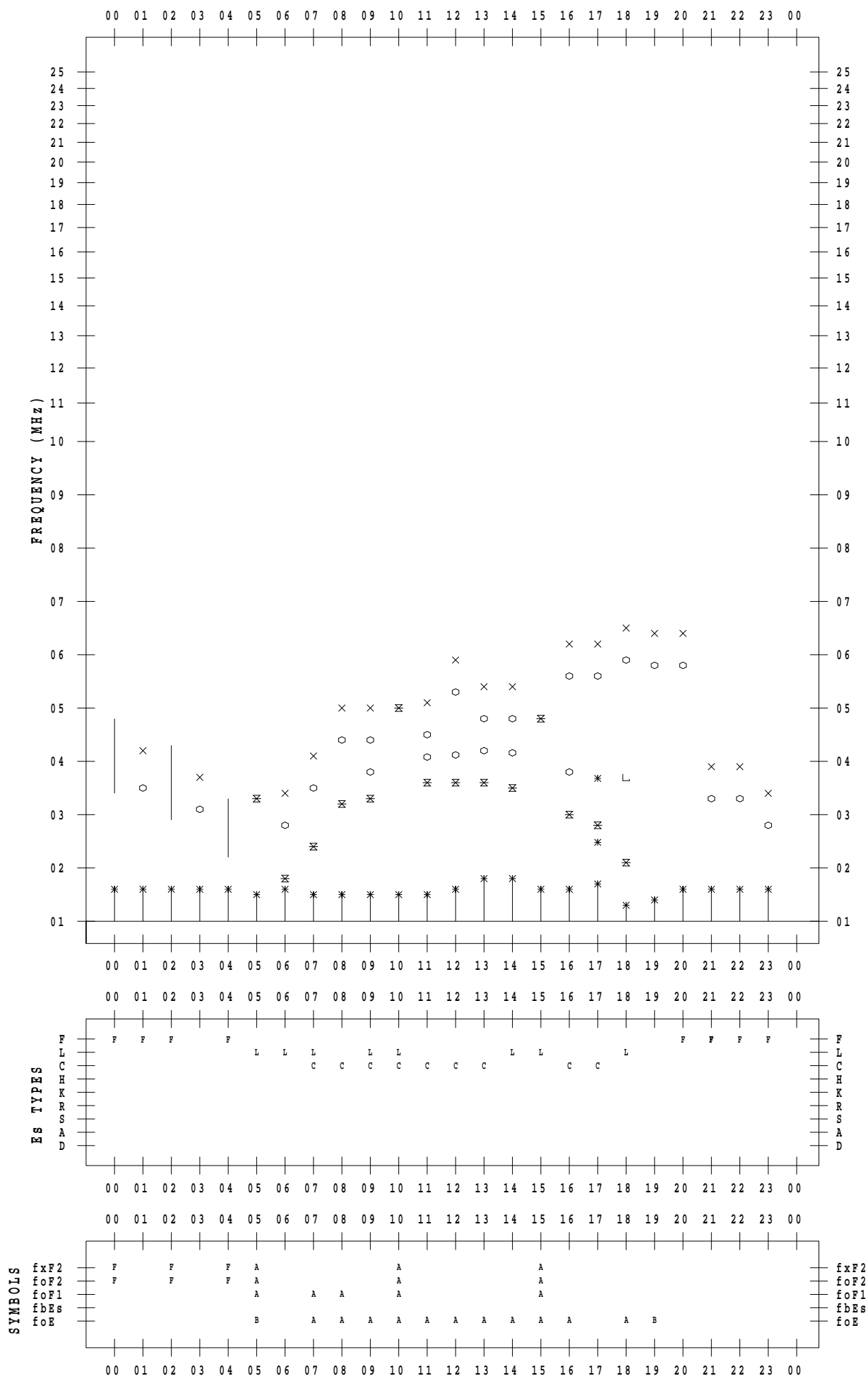
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 1

135 ° E MEAN TIME



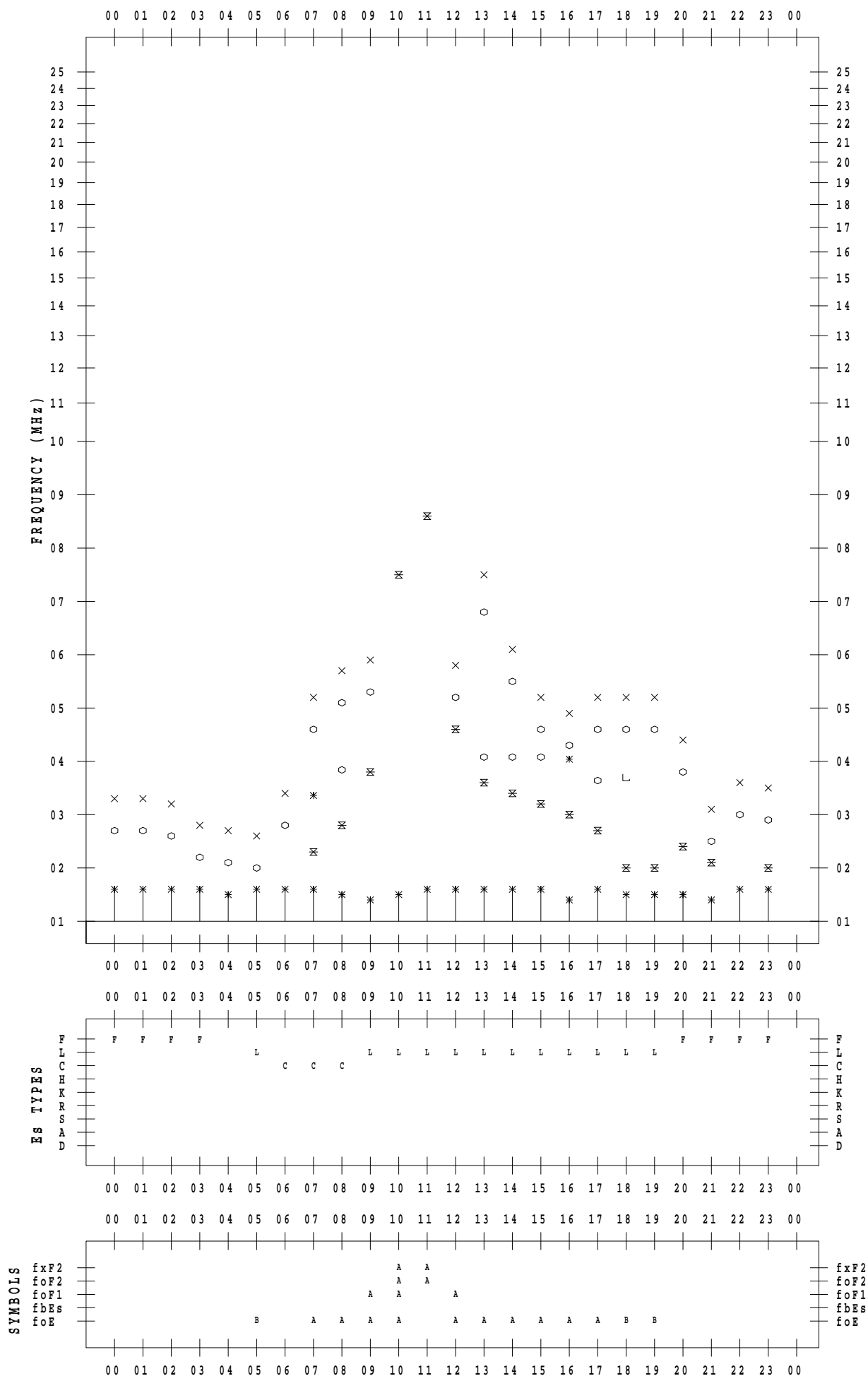
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 2

135 ° E MEAN TIME



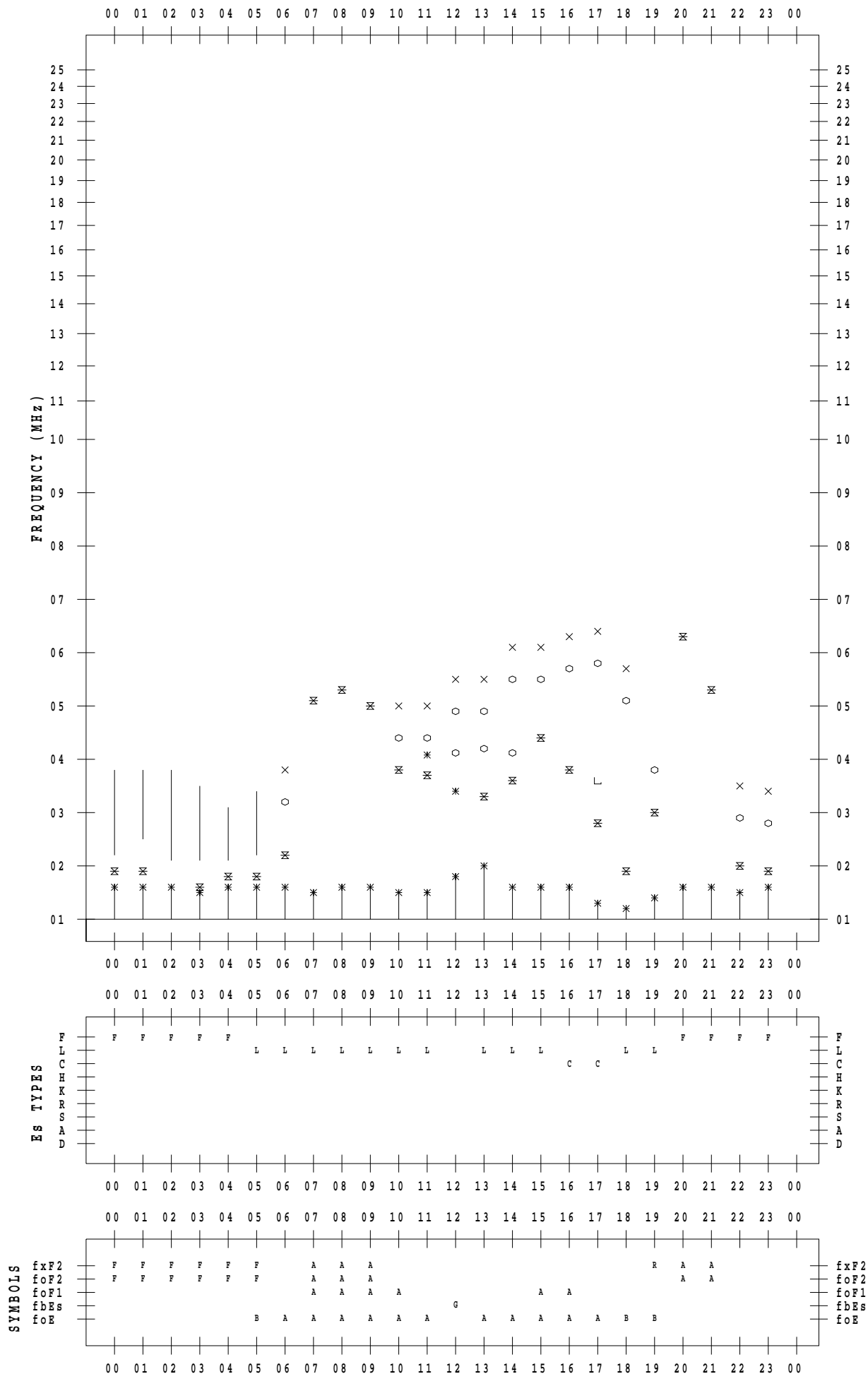
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 3

135 ° E MEAN TIME



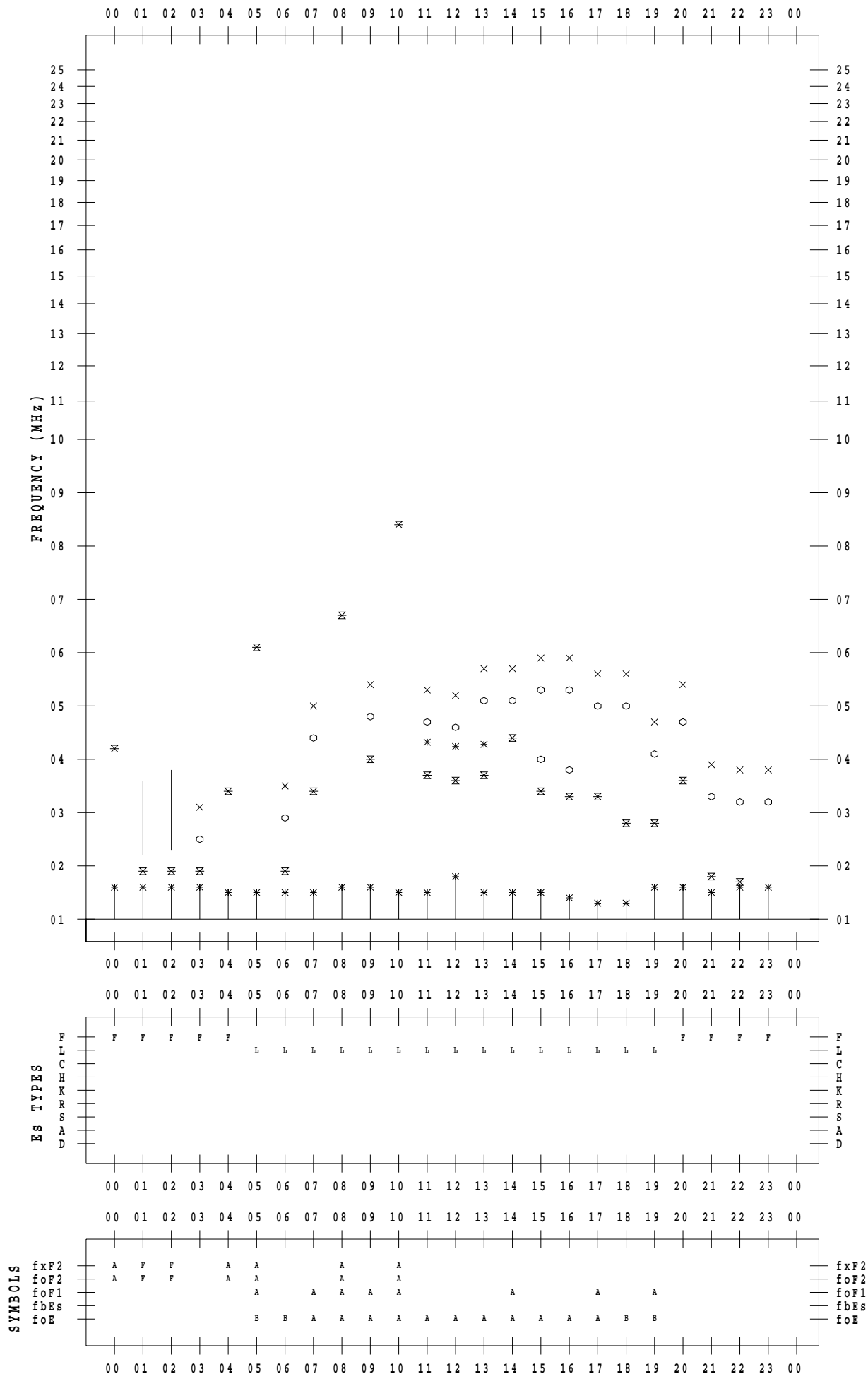
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 4

135 ° E MEAN TIME



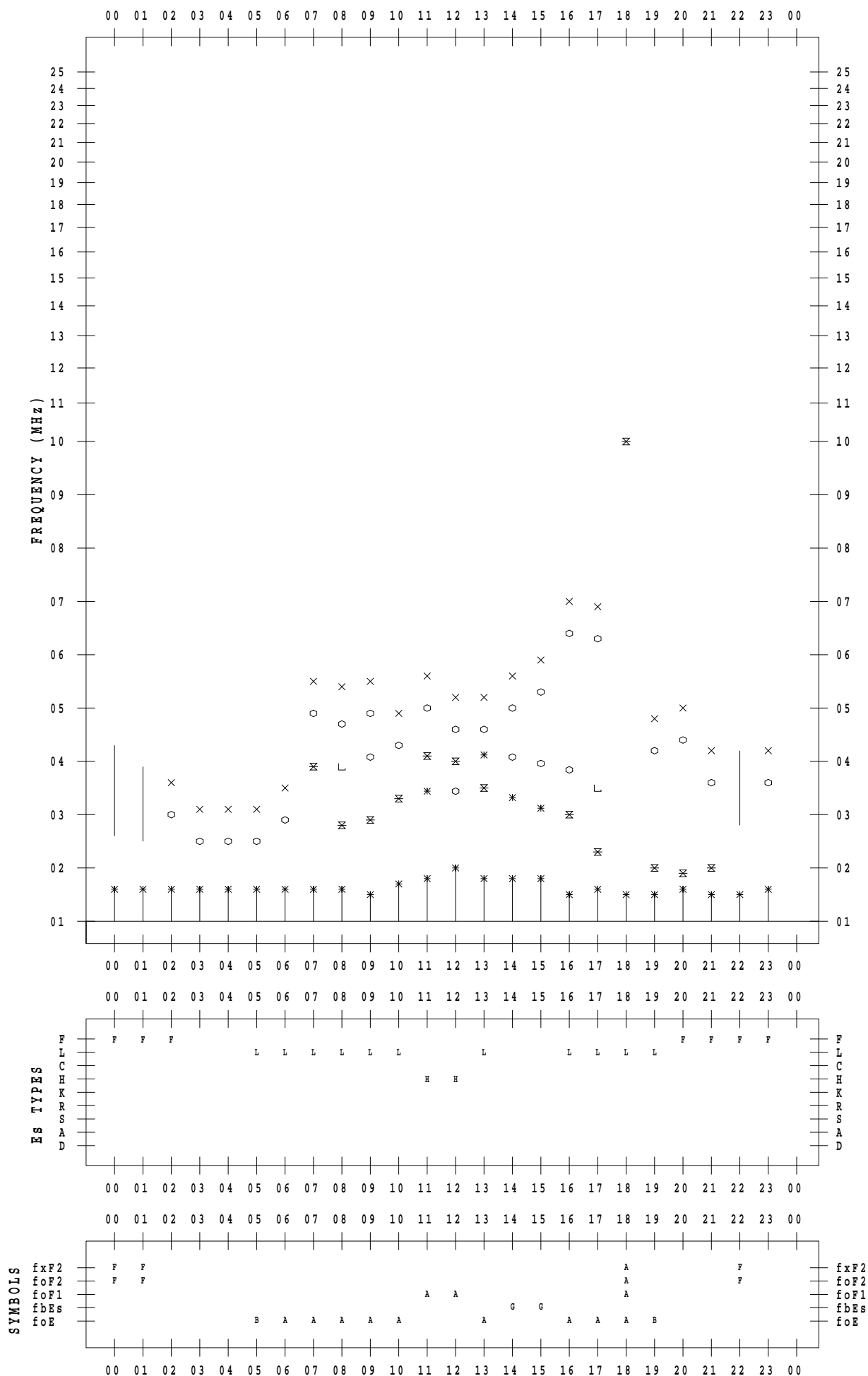
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 5

135 ° E MEAN TIME



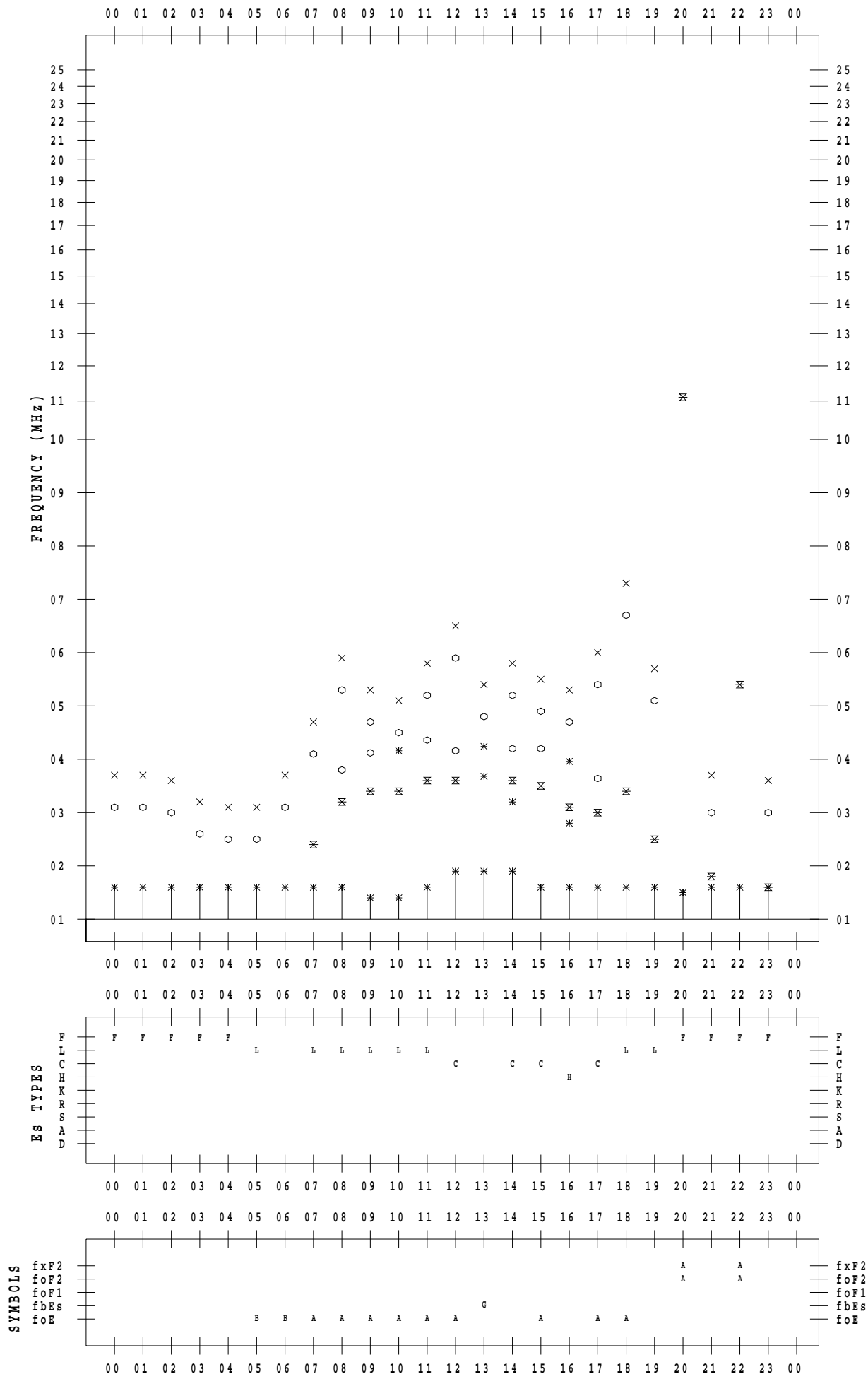
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 6

135 ° E MEAN TIME



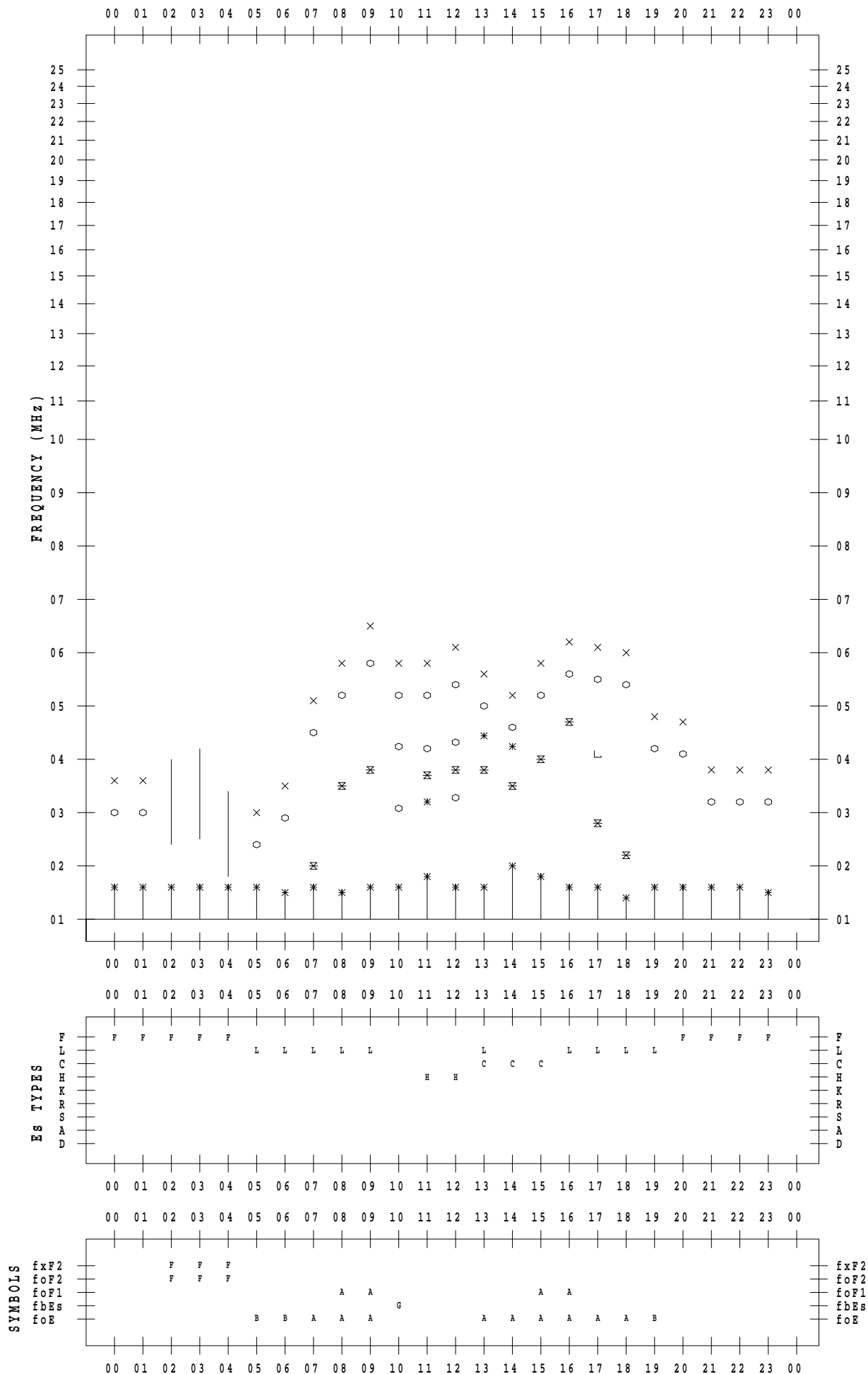
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 7

135 ° E MEAN TIME



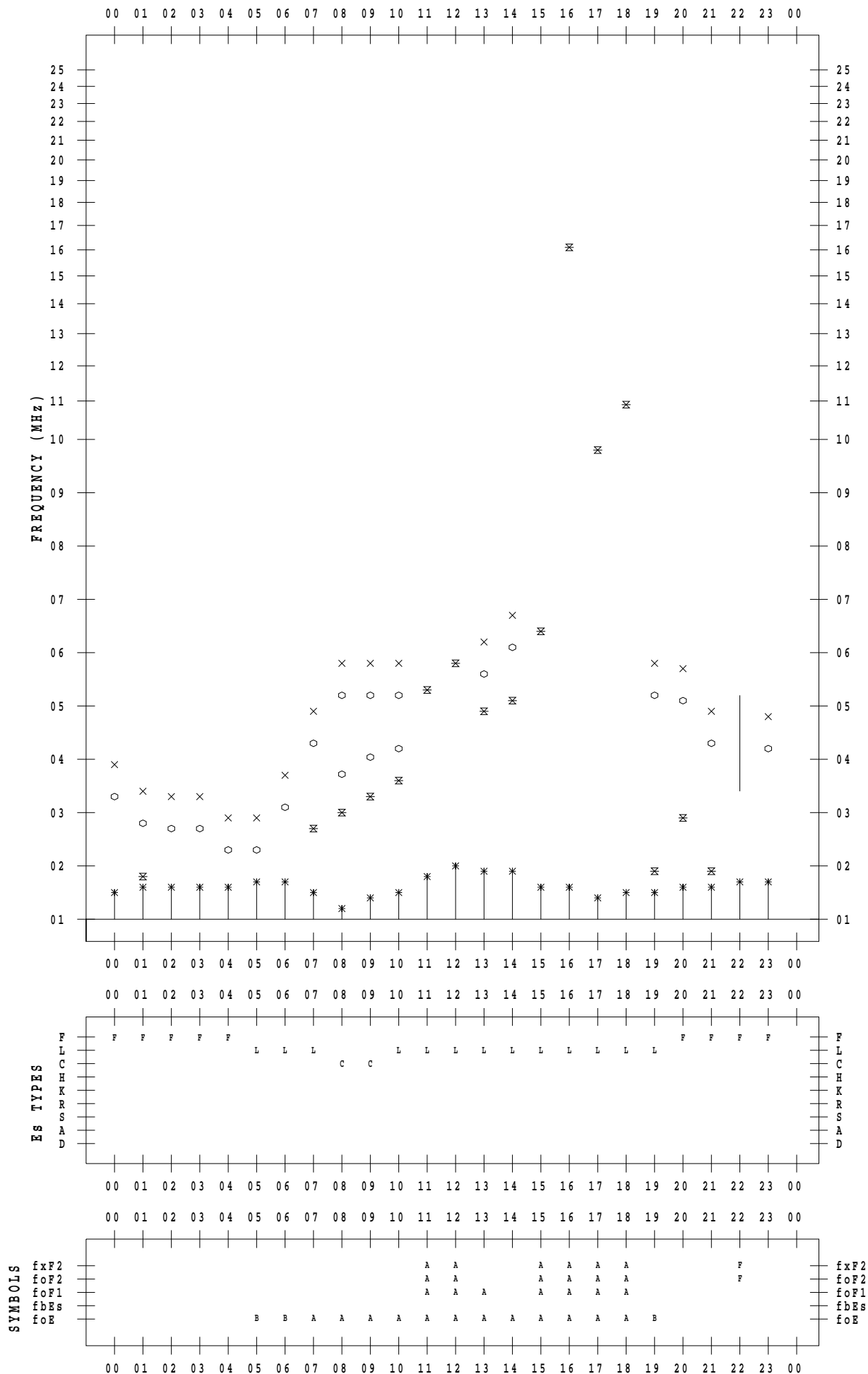
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 8

135 ° E MEAN TIME



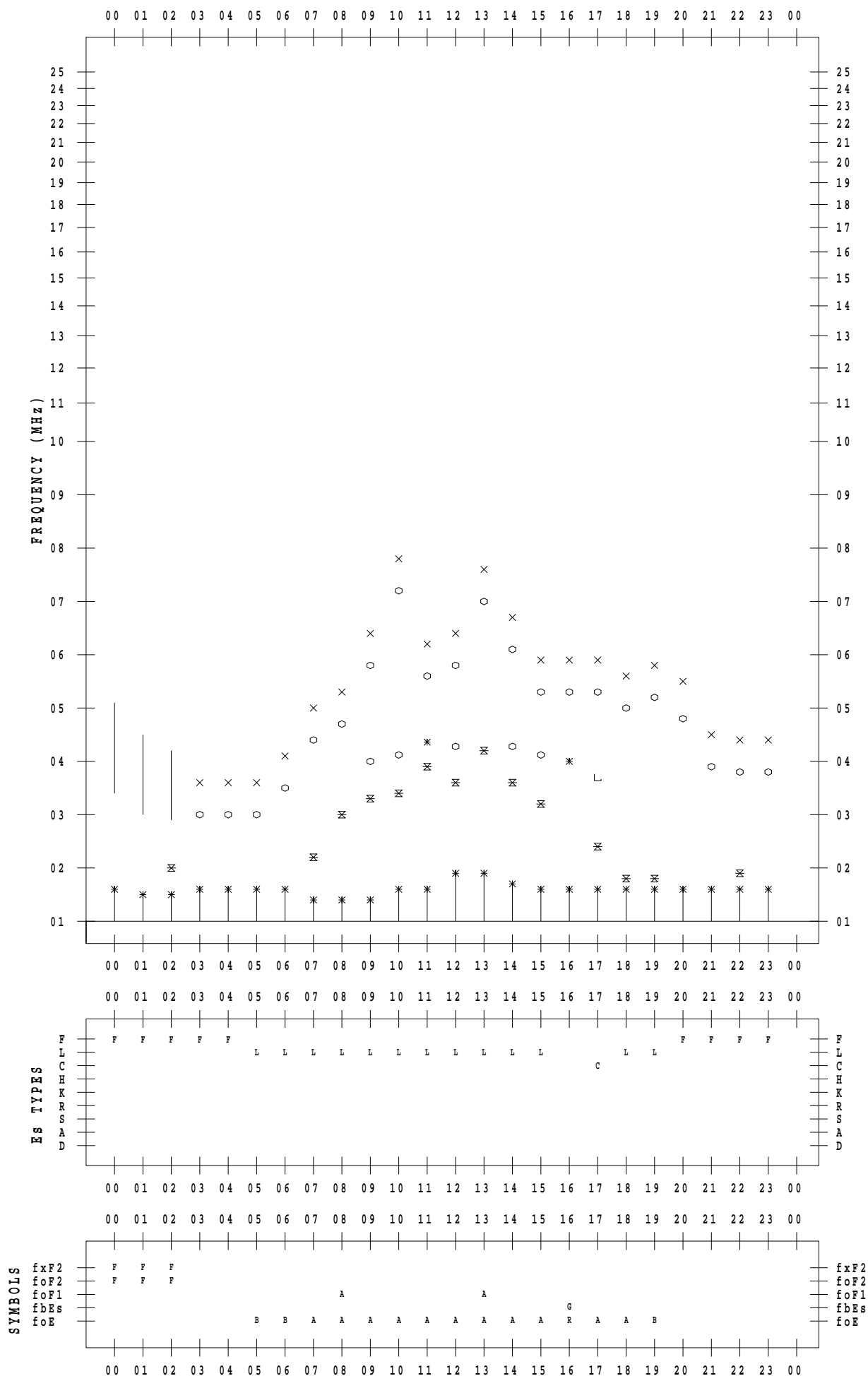
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 9

135 ° E MEAN TIME



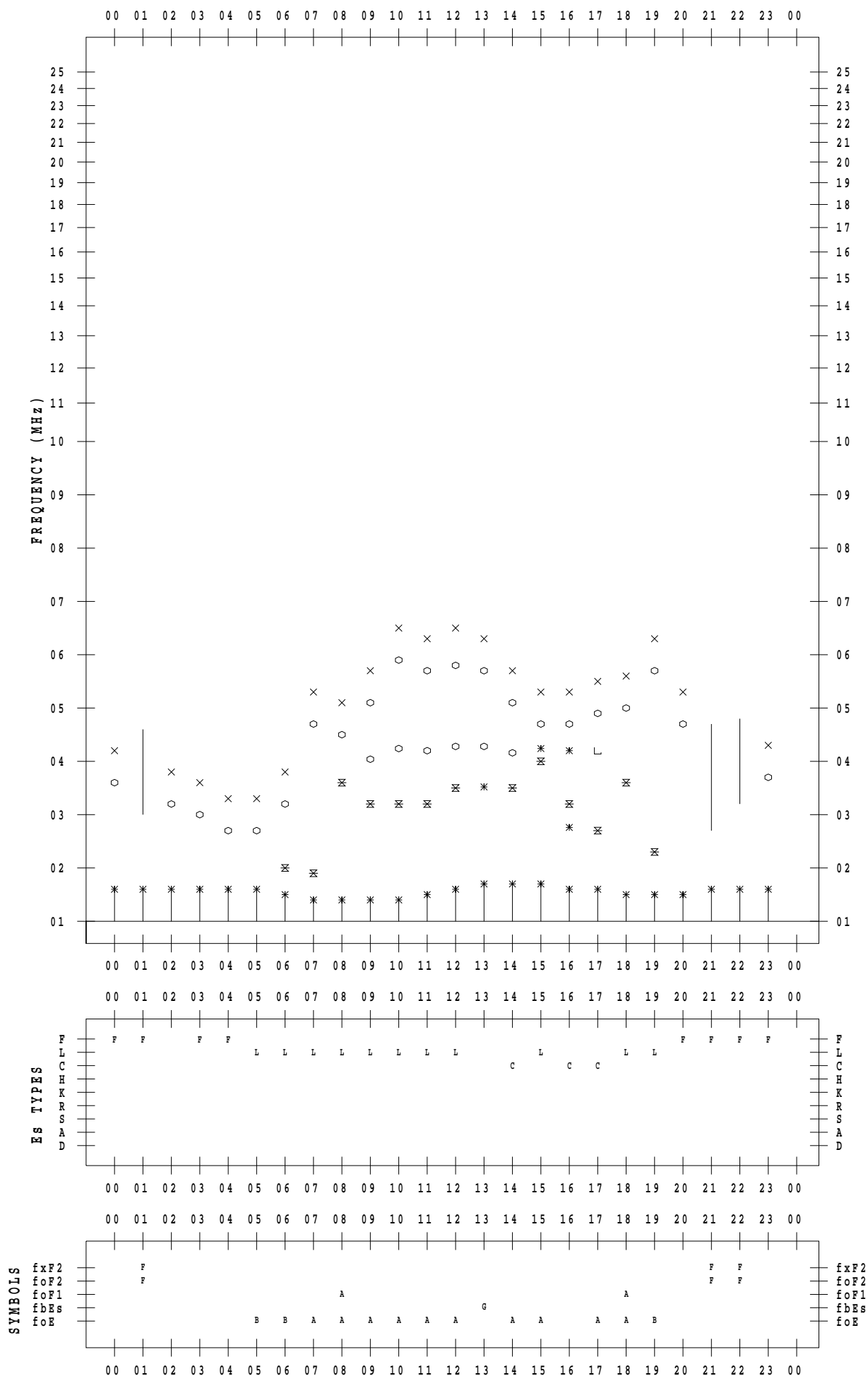
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 10

135 ° E MEAN TIME



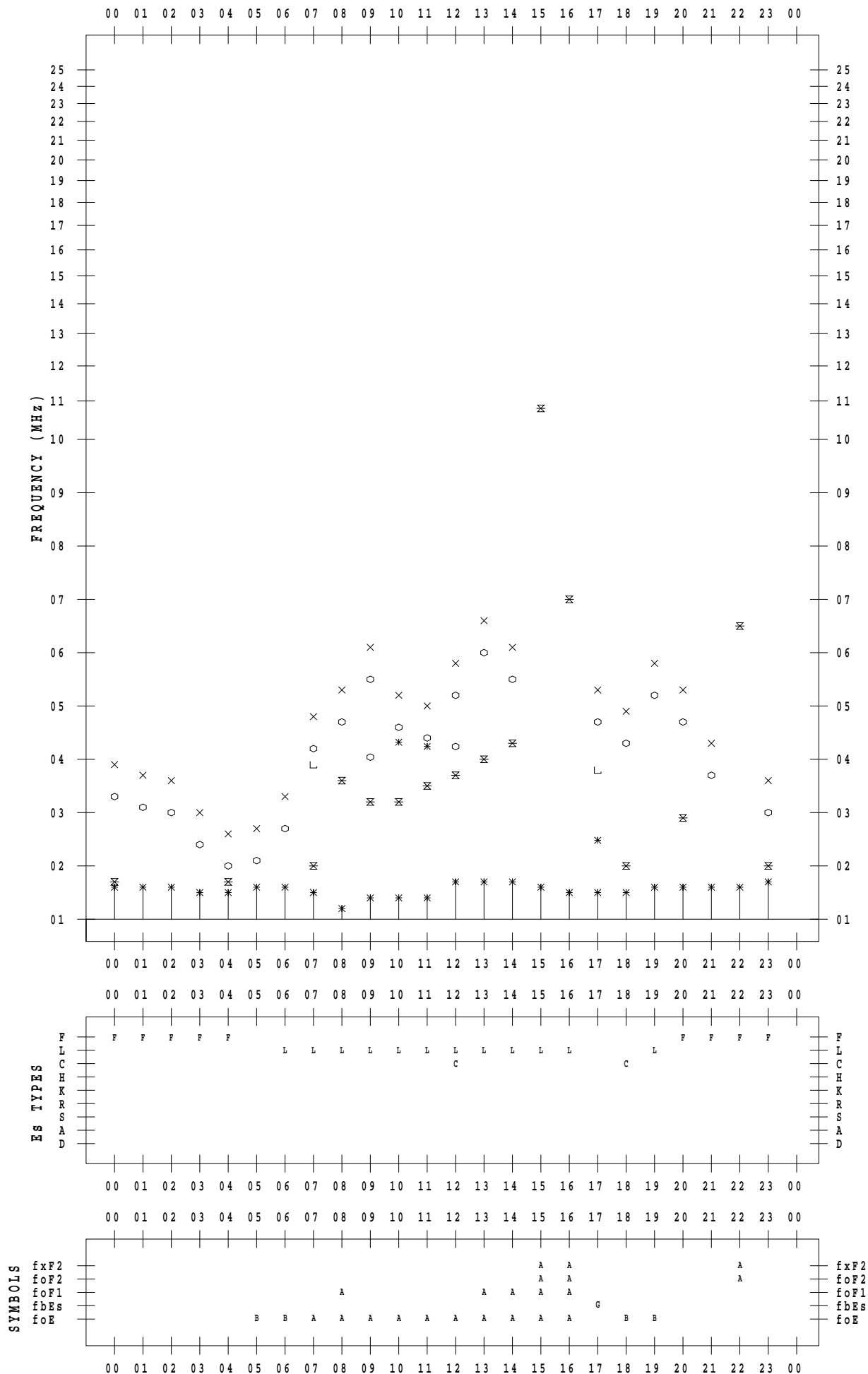
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 11

135 ° E MEAN TIME



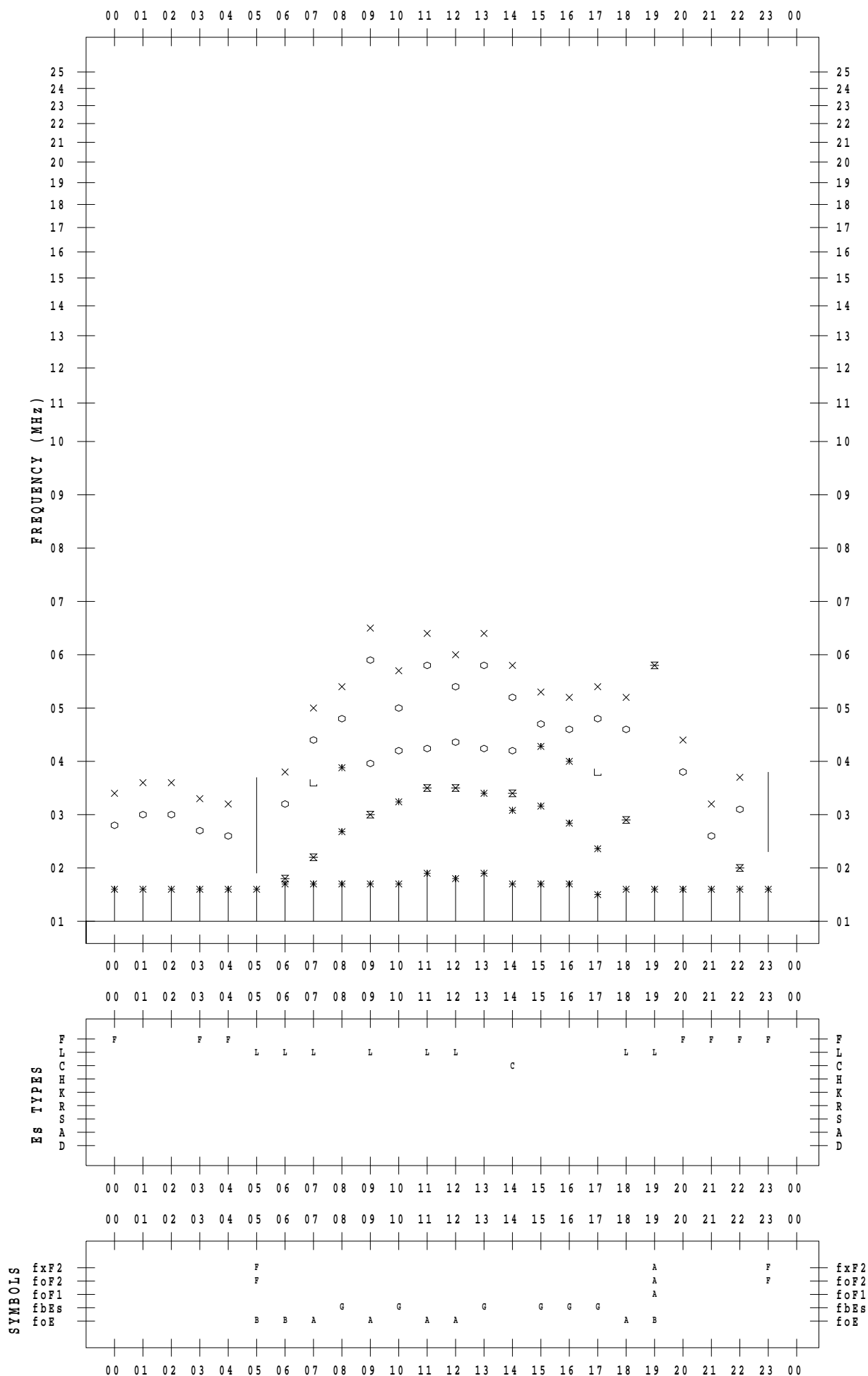
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 12

135 ° E MEAN TIME



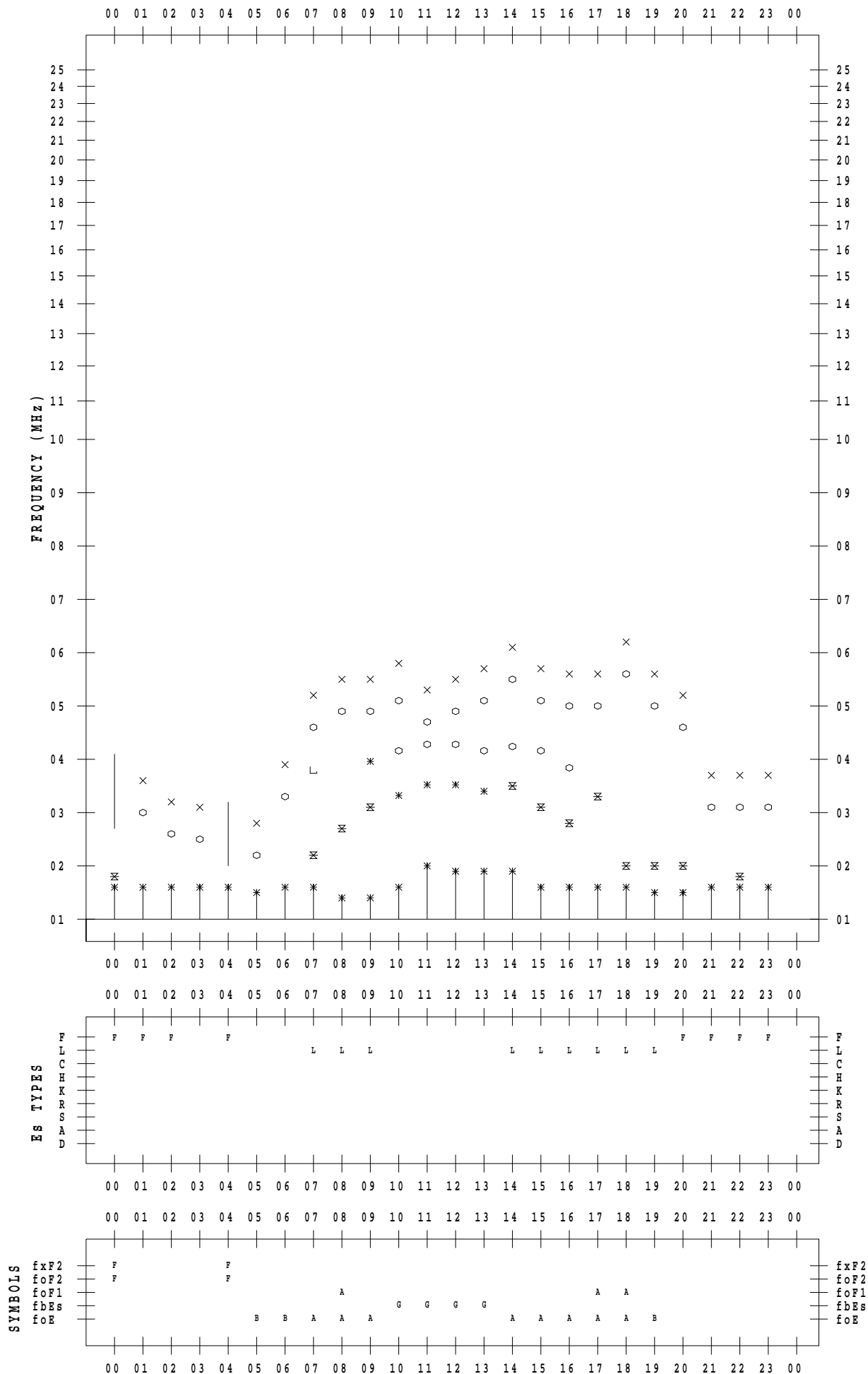
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 13

135 ° E MEAN TIME



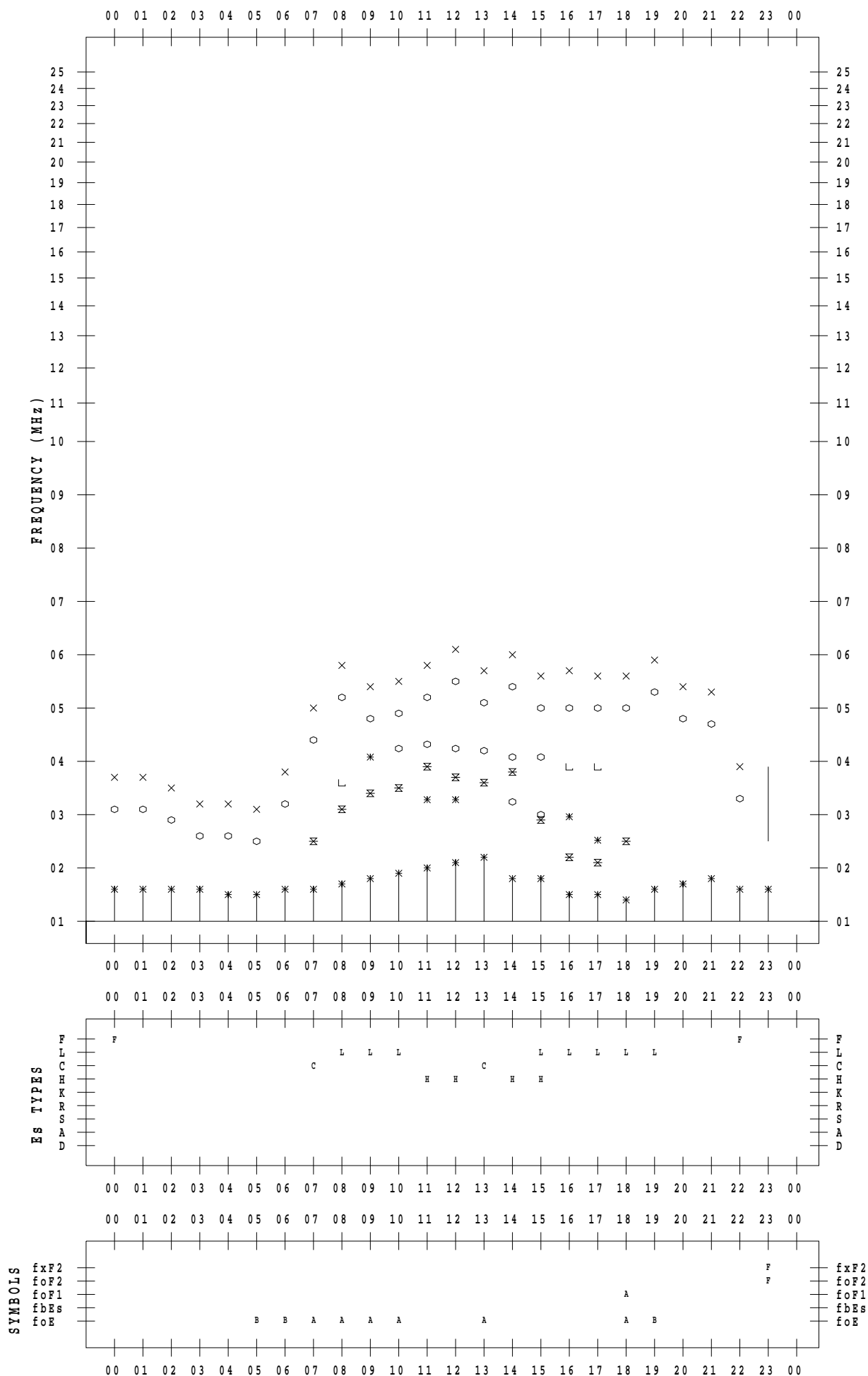
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 14

135 ° E MEAN TIME



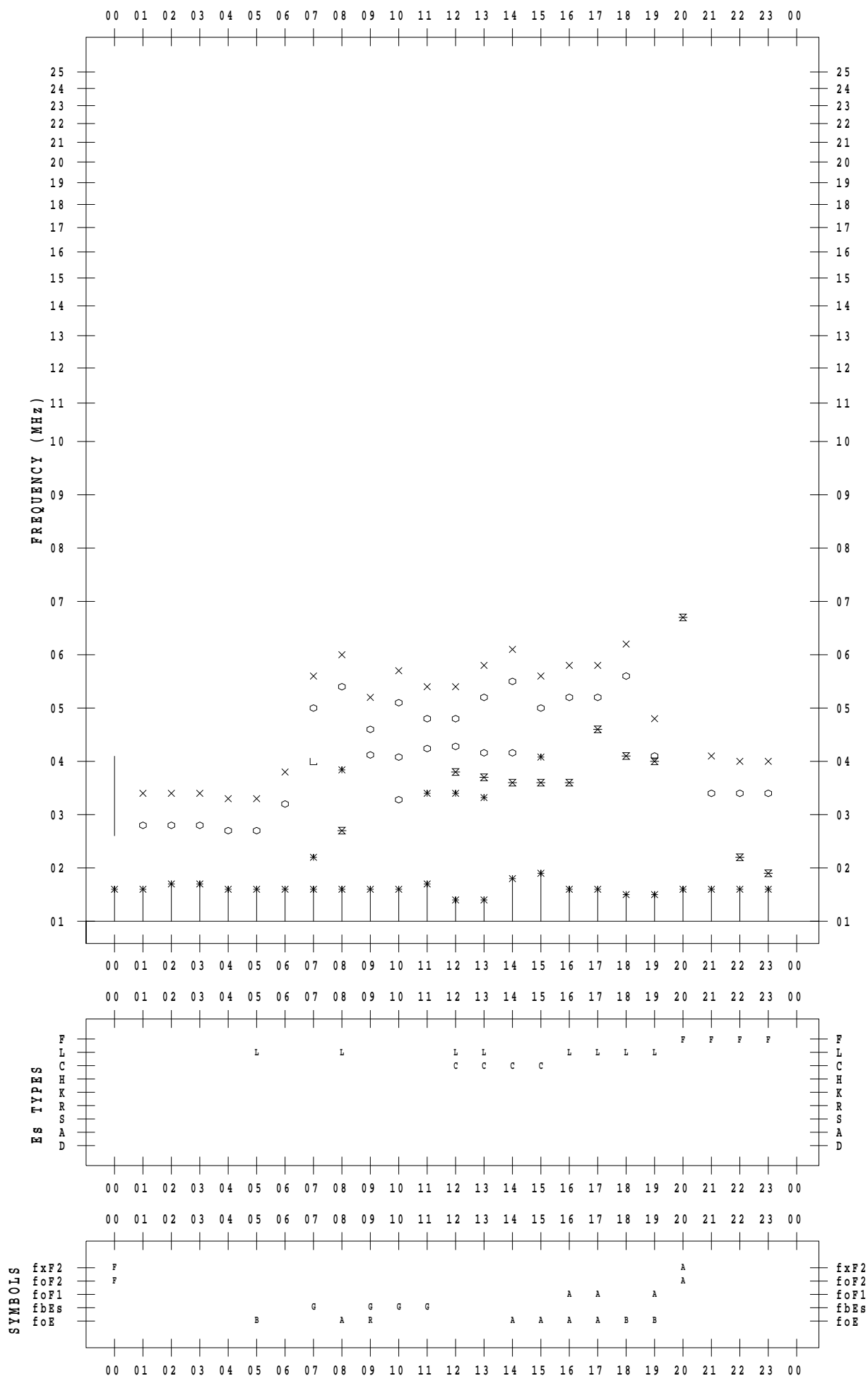
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 15

135 ° E MEAN TIME



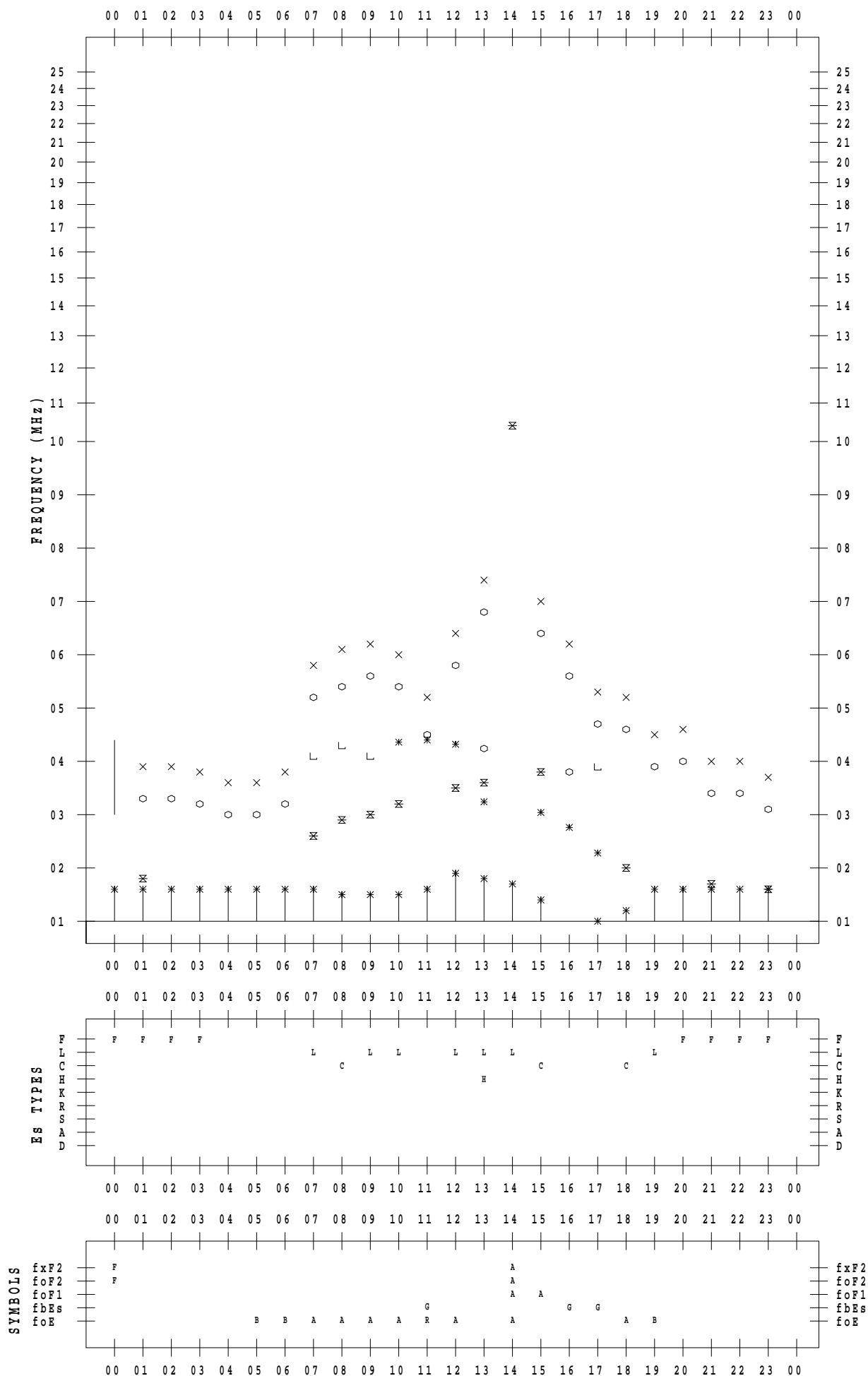
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 16

135 ° E MEAN TIME



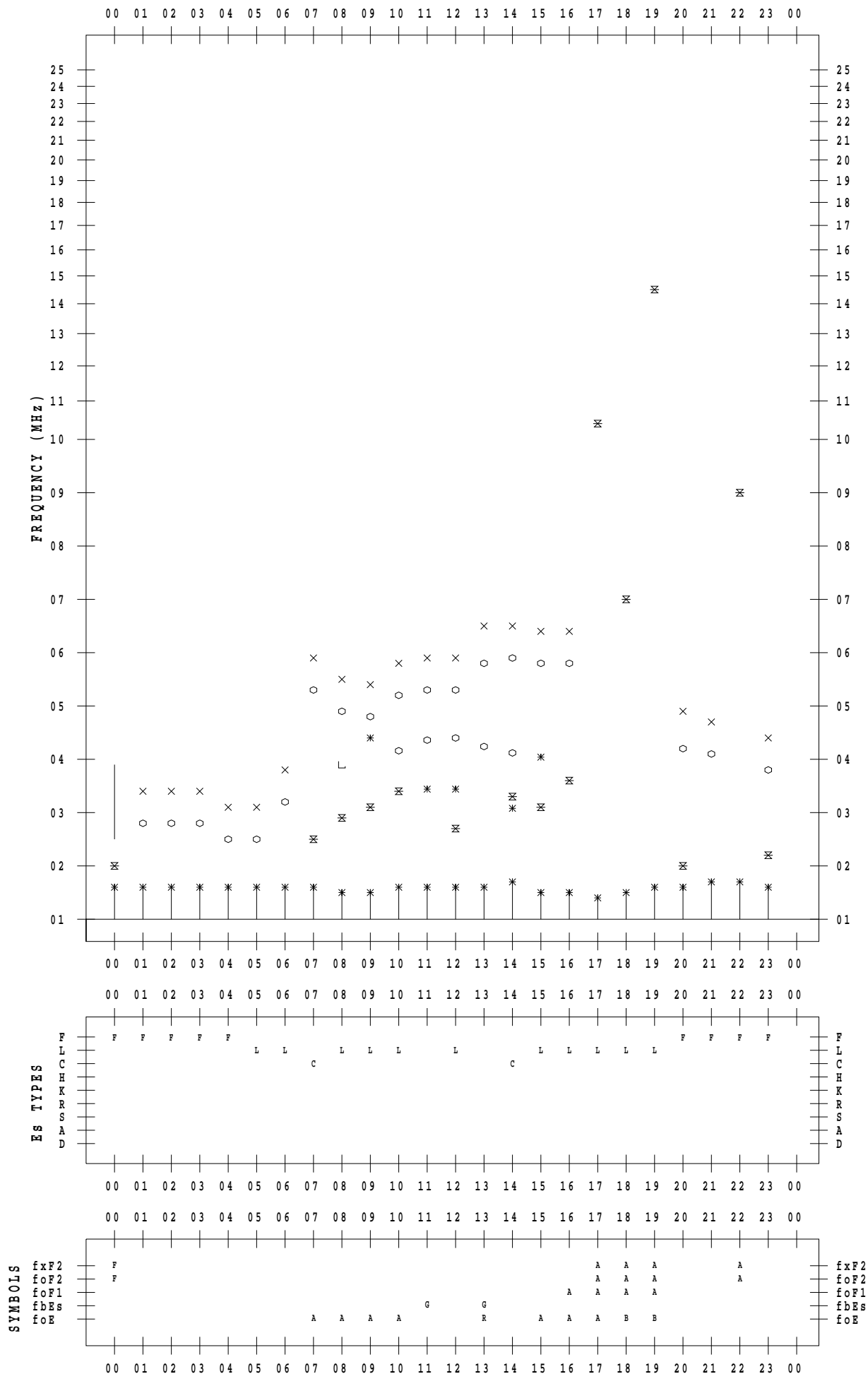
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 17

135 ° E MEAN TIME



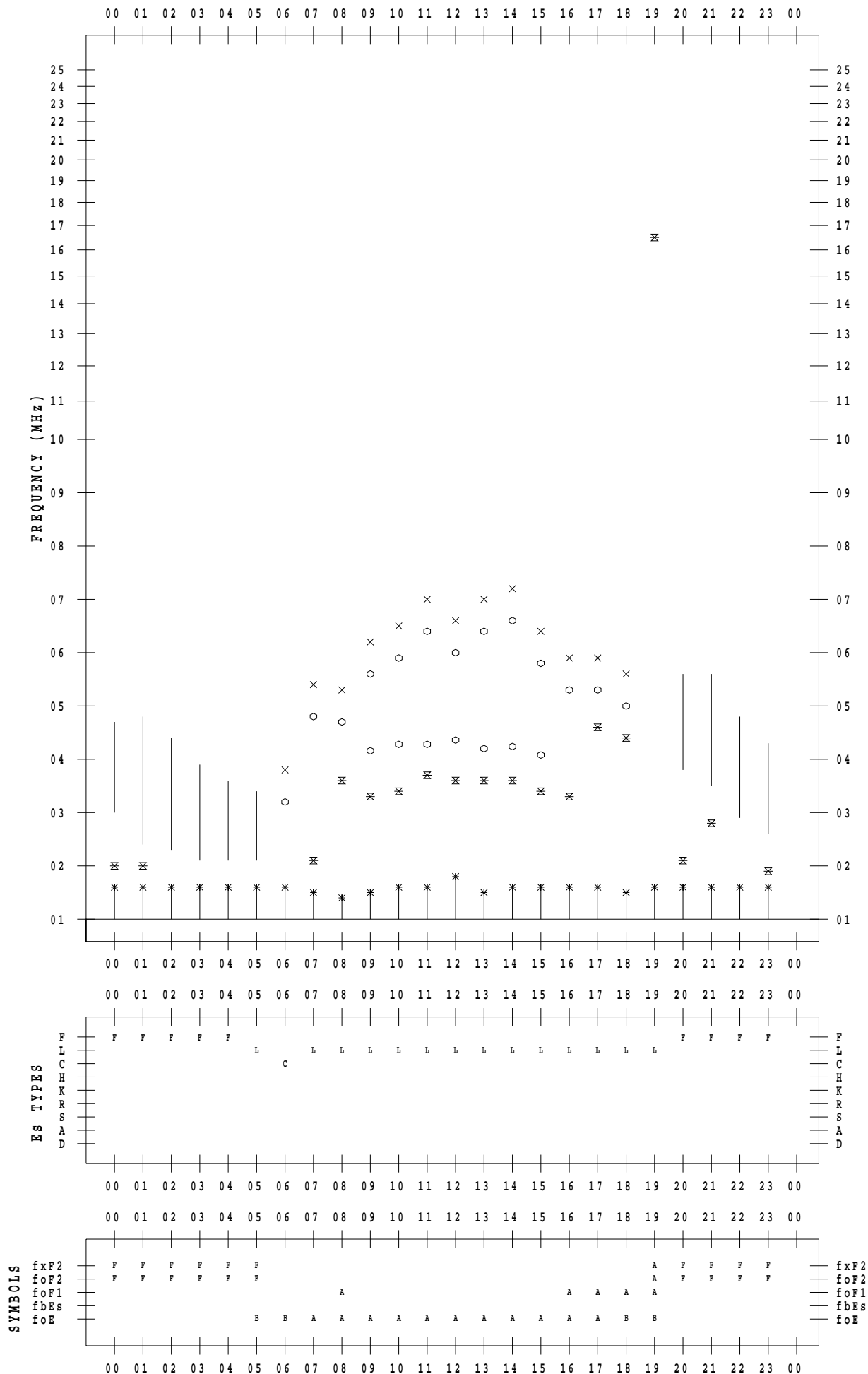
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 18

135 ° E MEAN TIME



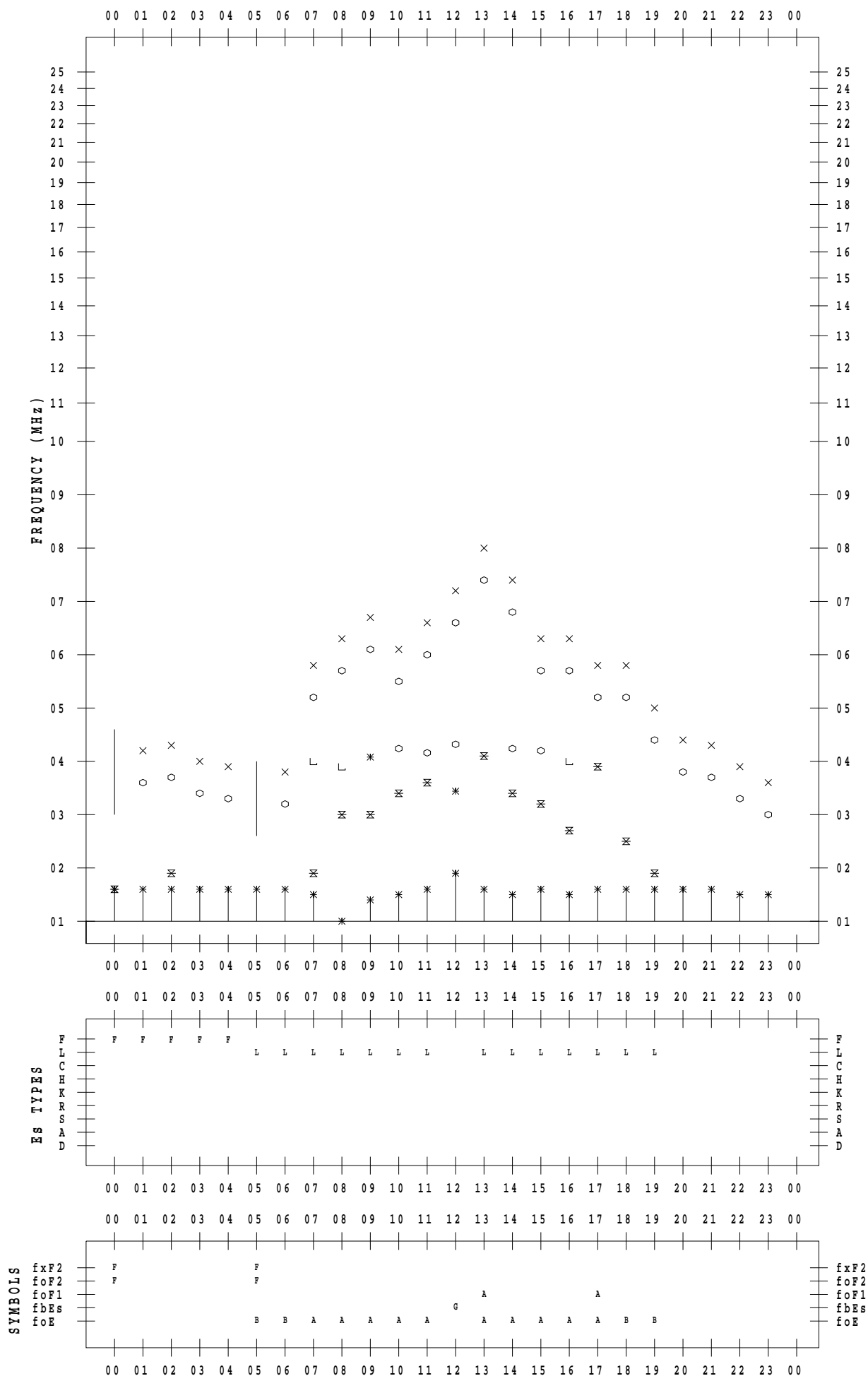
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 19

135 ° E MEAN TIME



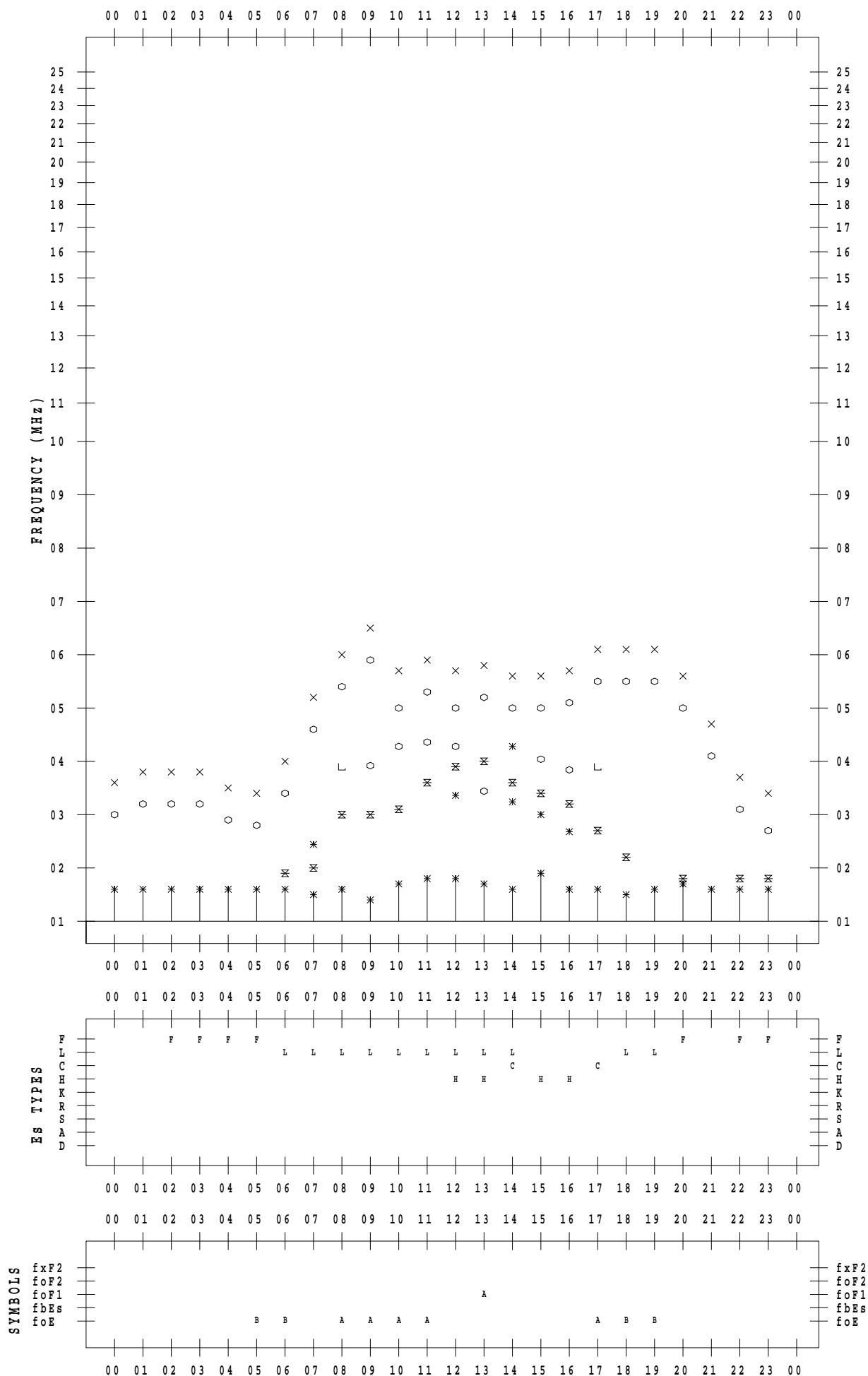
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 20

135 ° E MEAN TIME



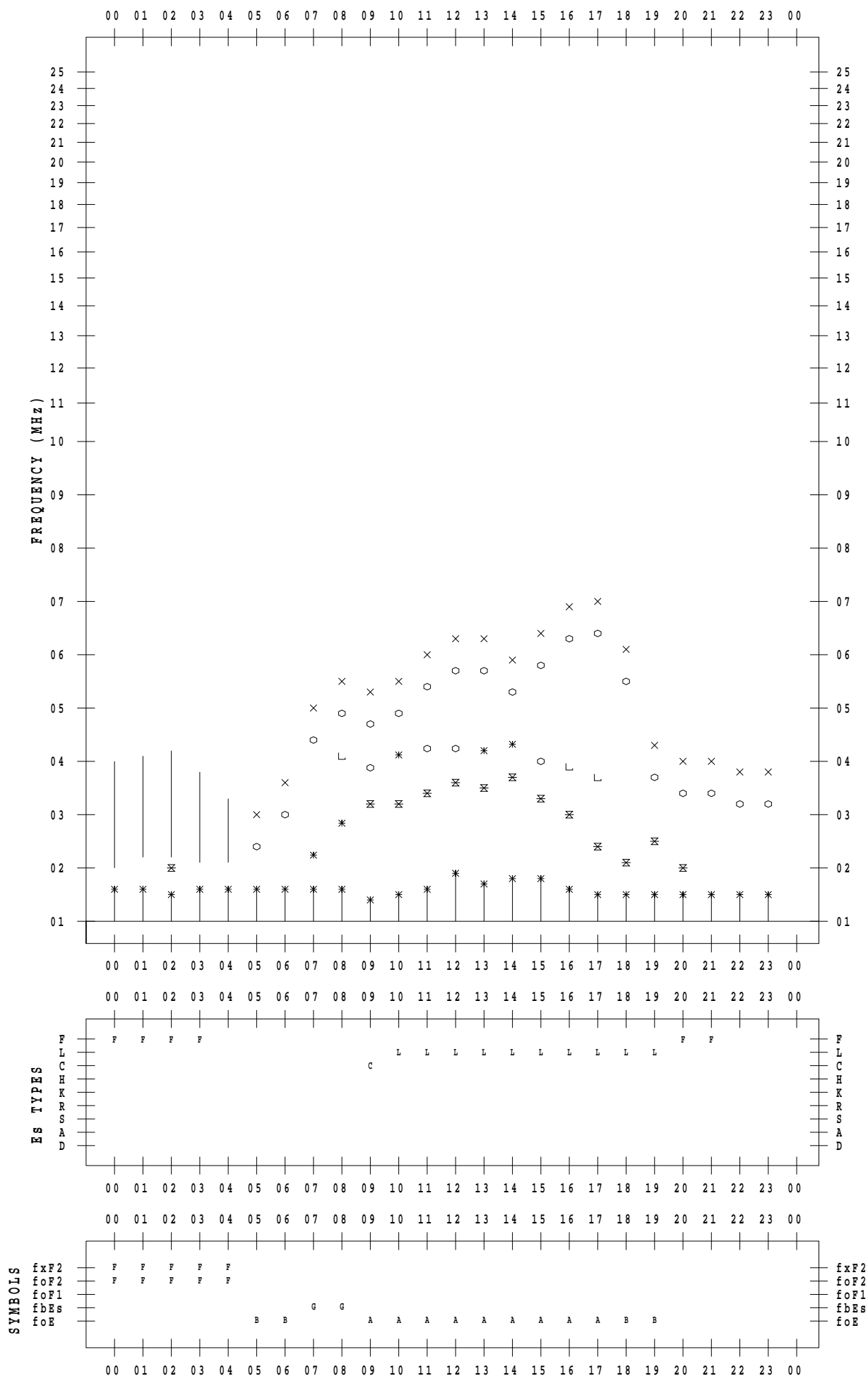
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 21

135 ° E MEAN TIME



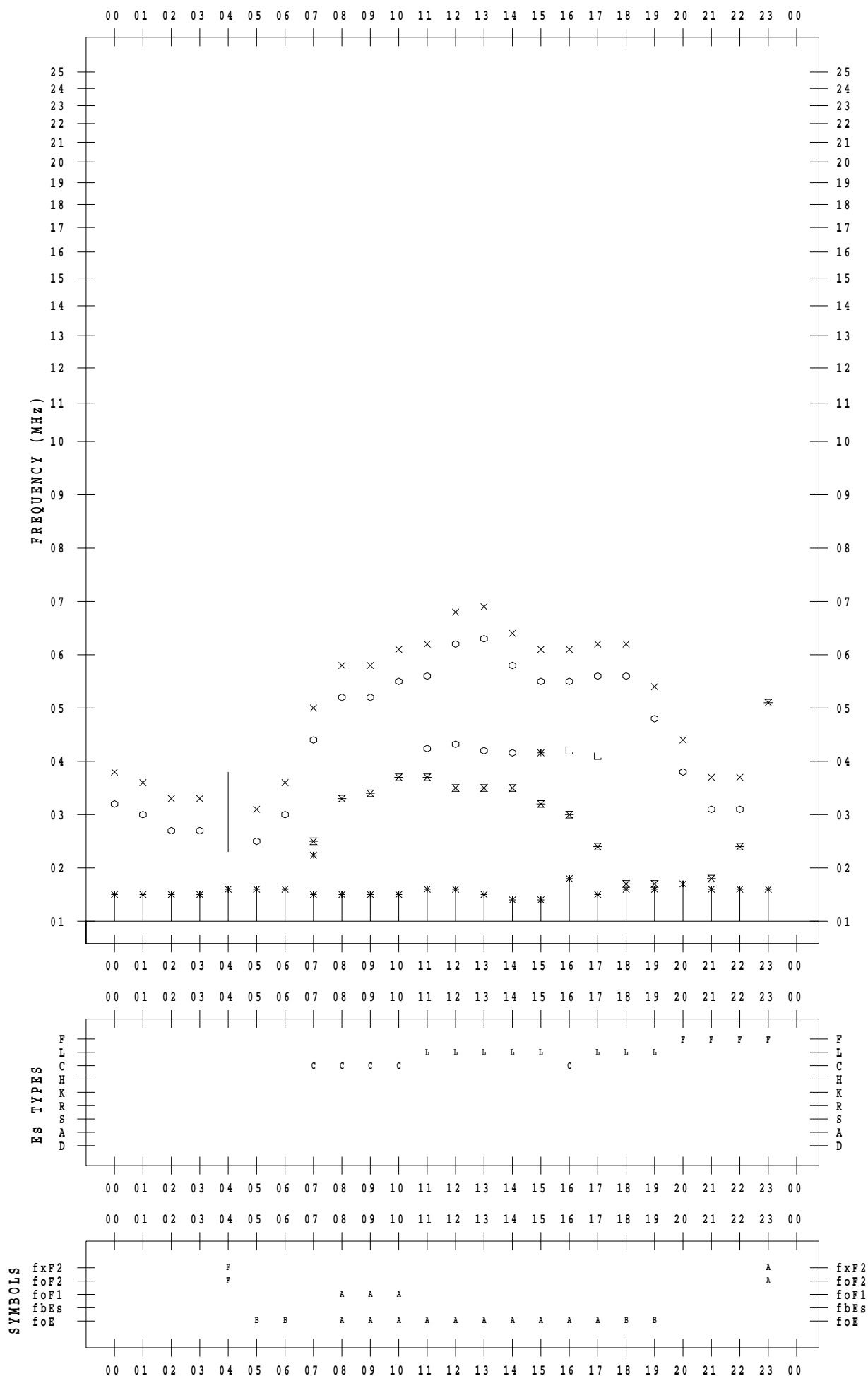
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 22

135 ° E MEAN TIME



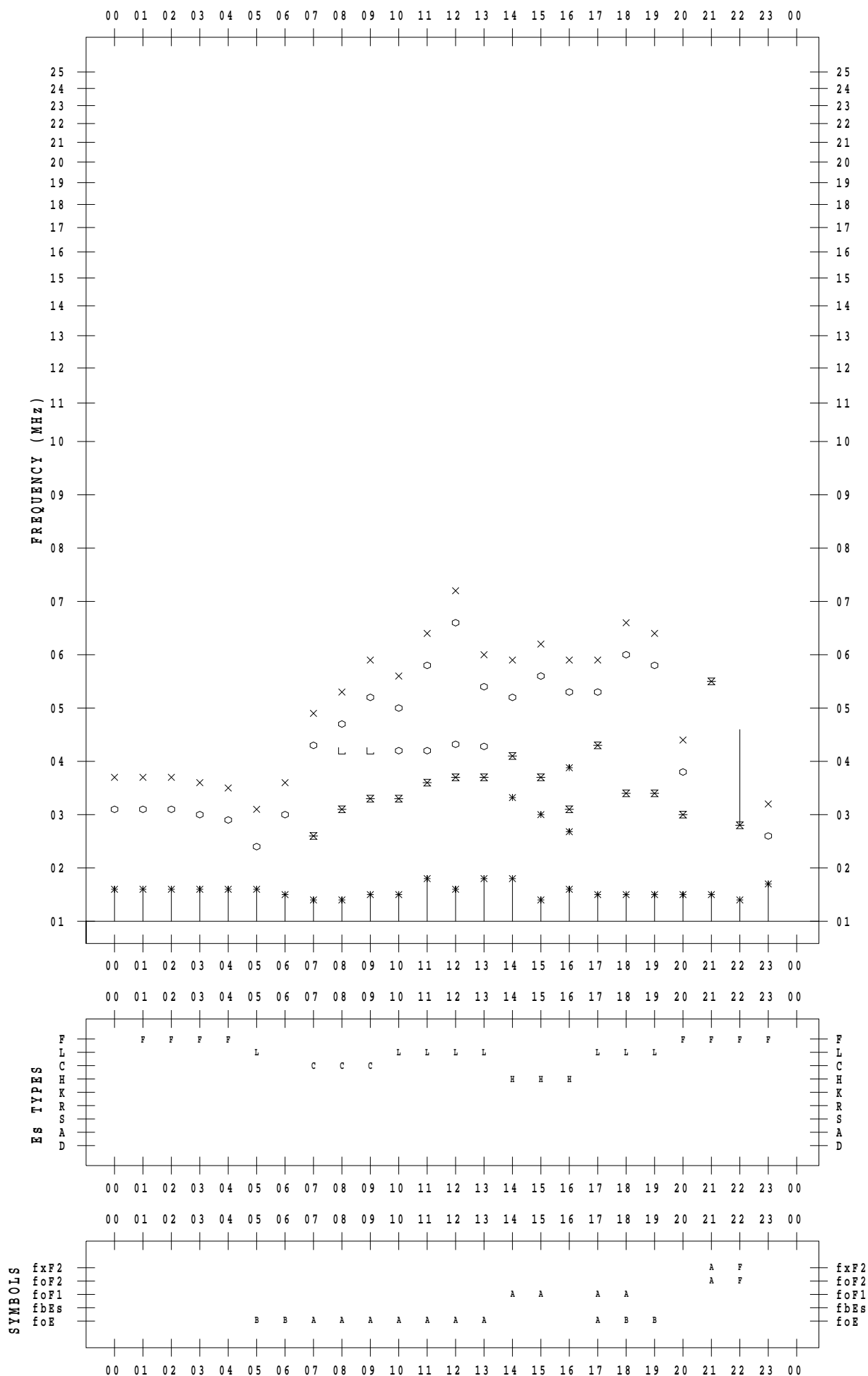
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 23

135 ° E MEAN TIME



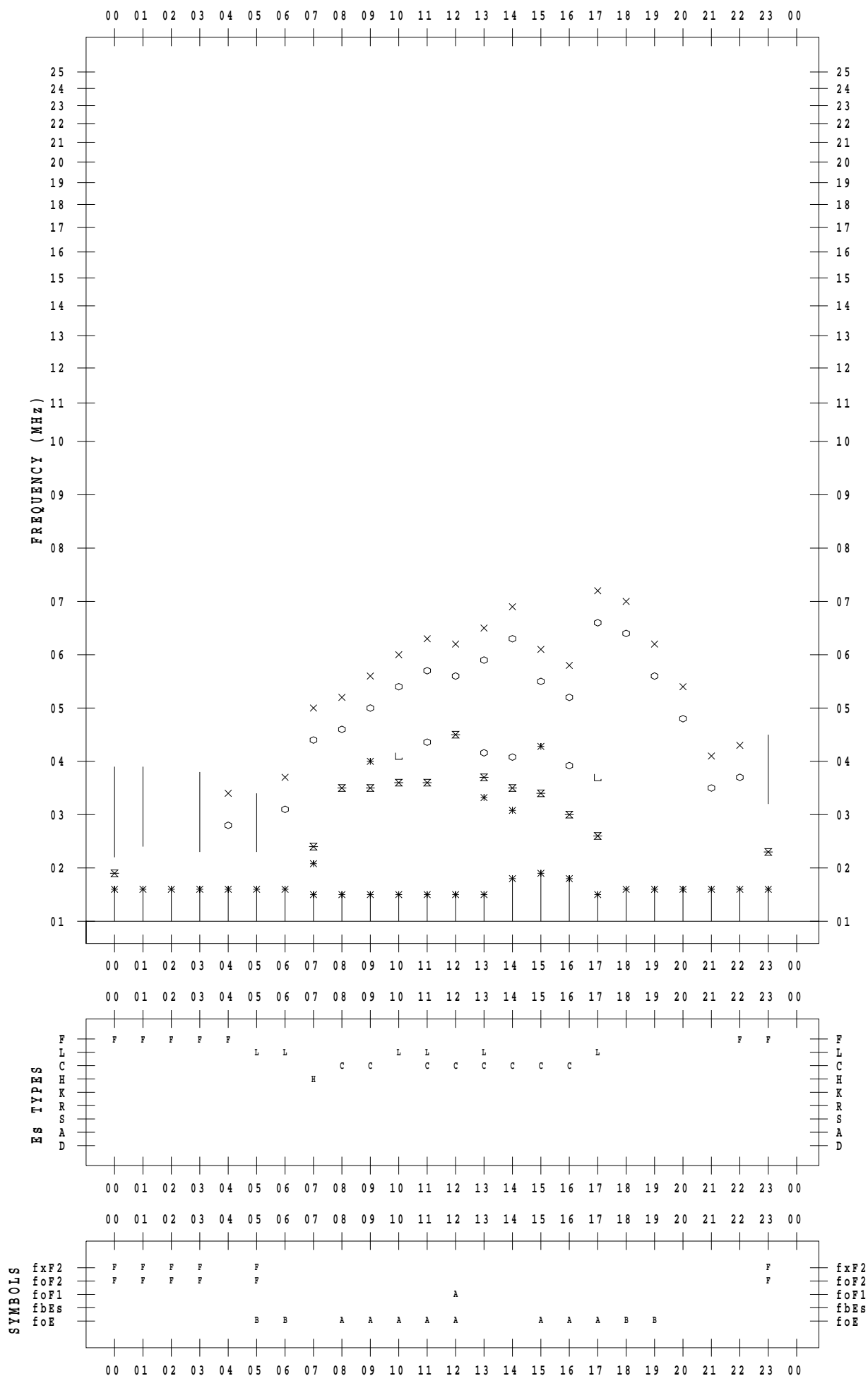
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 24

135 ° E MEAN TIME



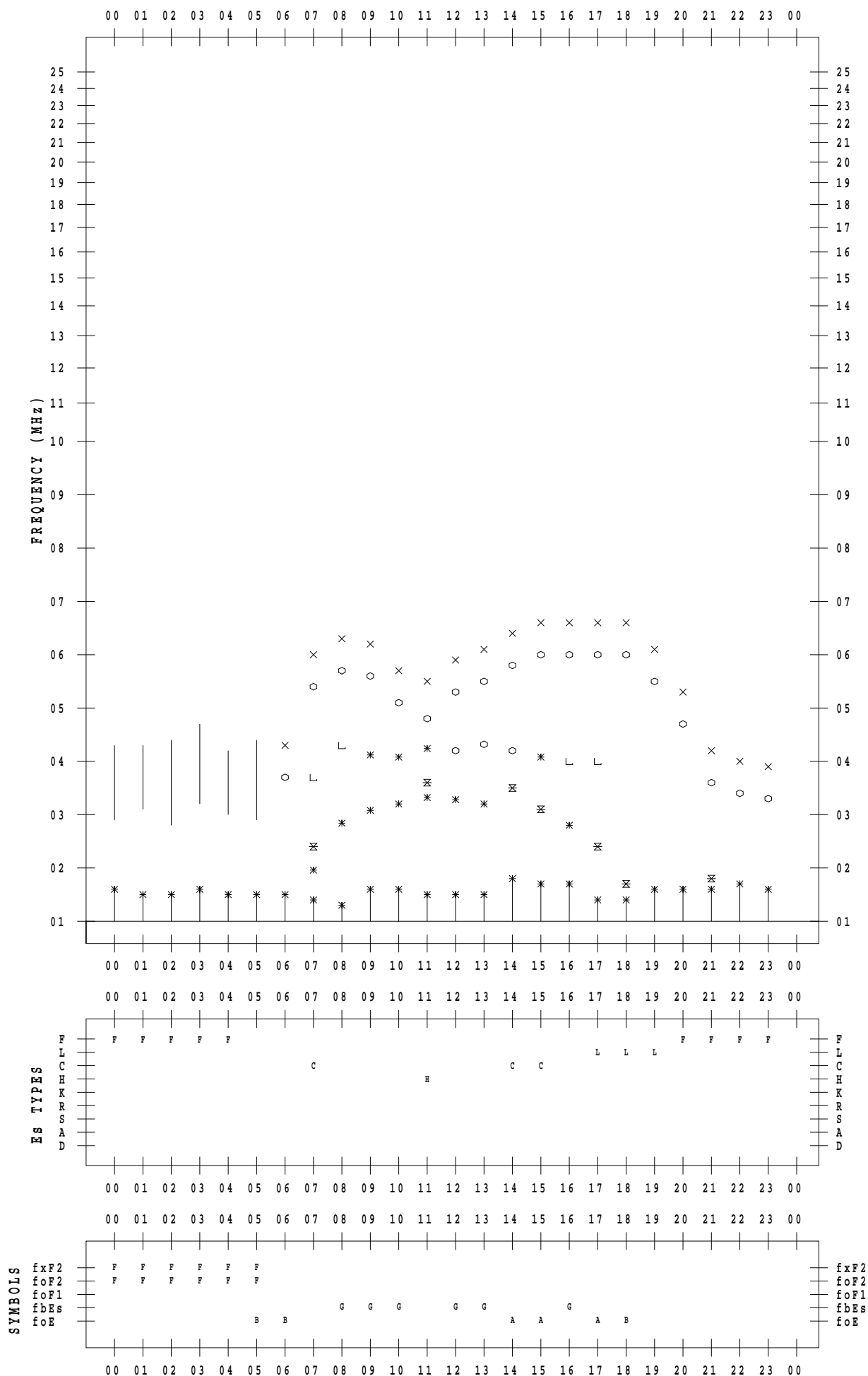
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 25

135 ° E MEAN TIME



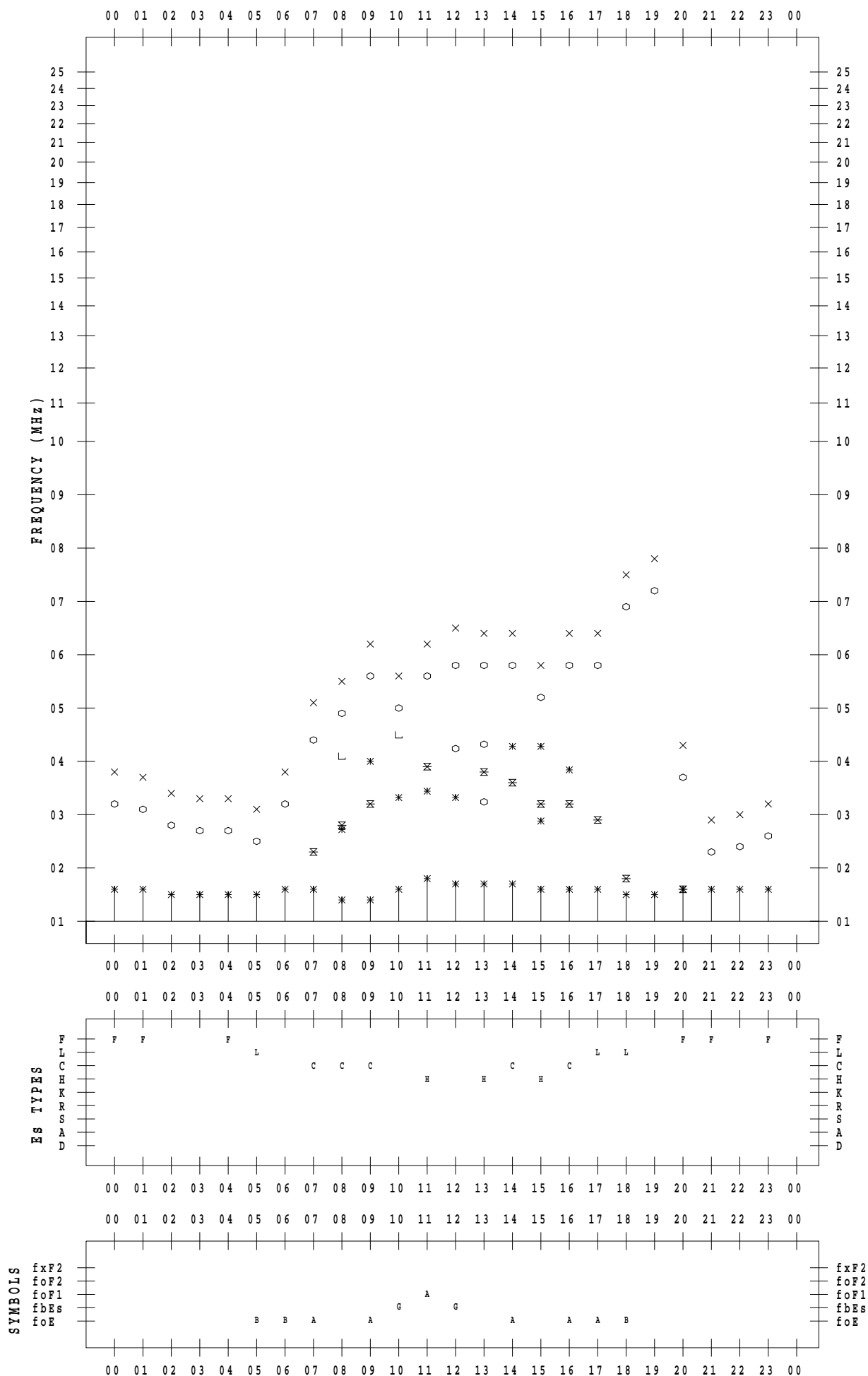
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 26

135 ° E MEAN TIME



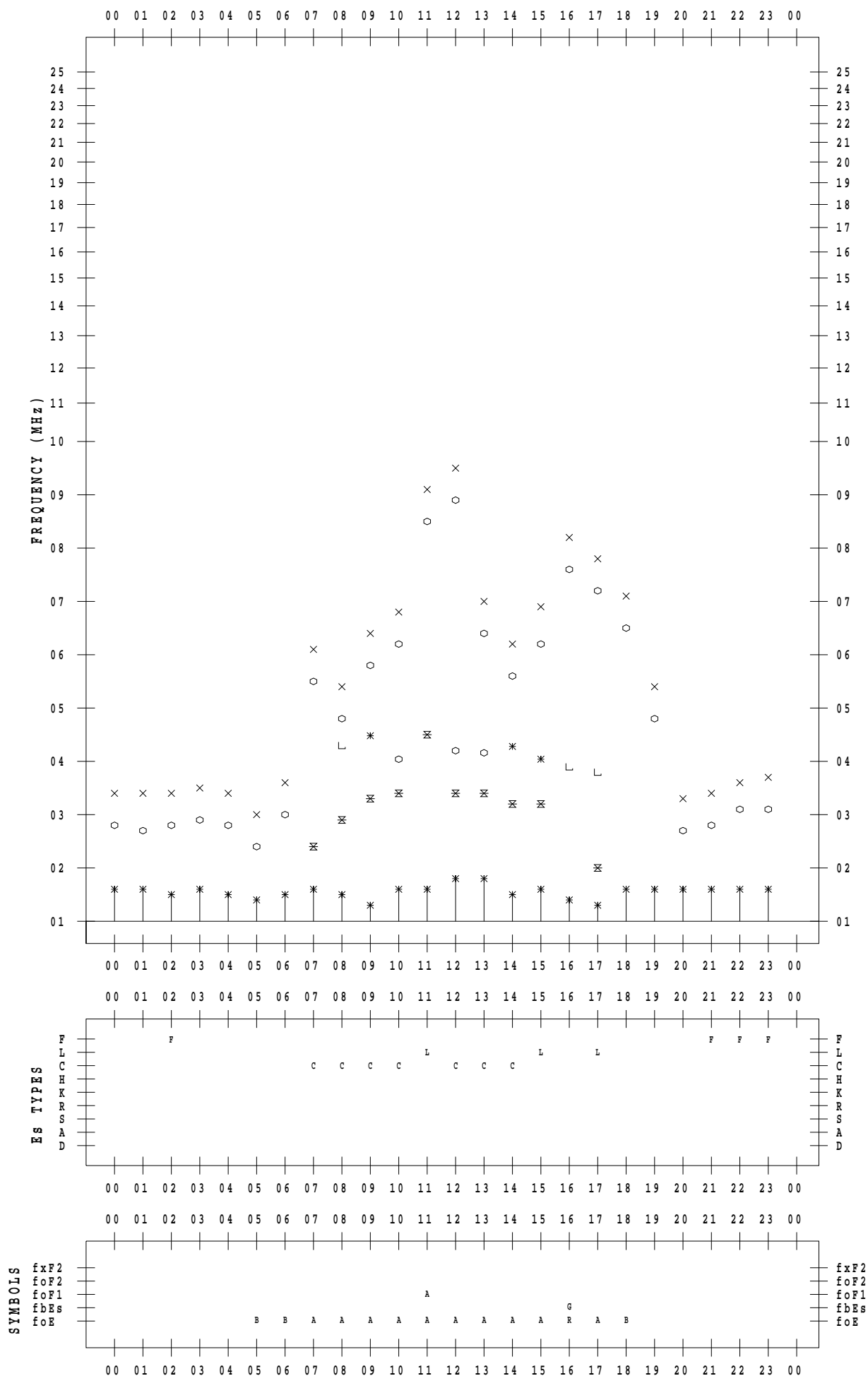
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 28

135 ° E MEAN TIME



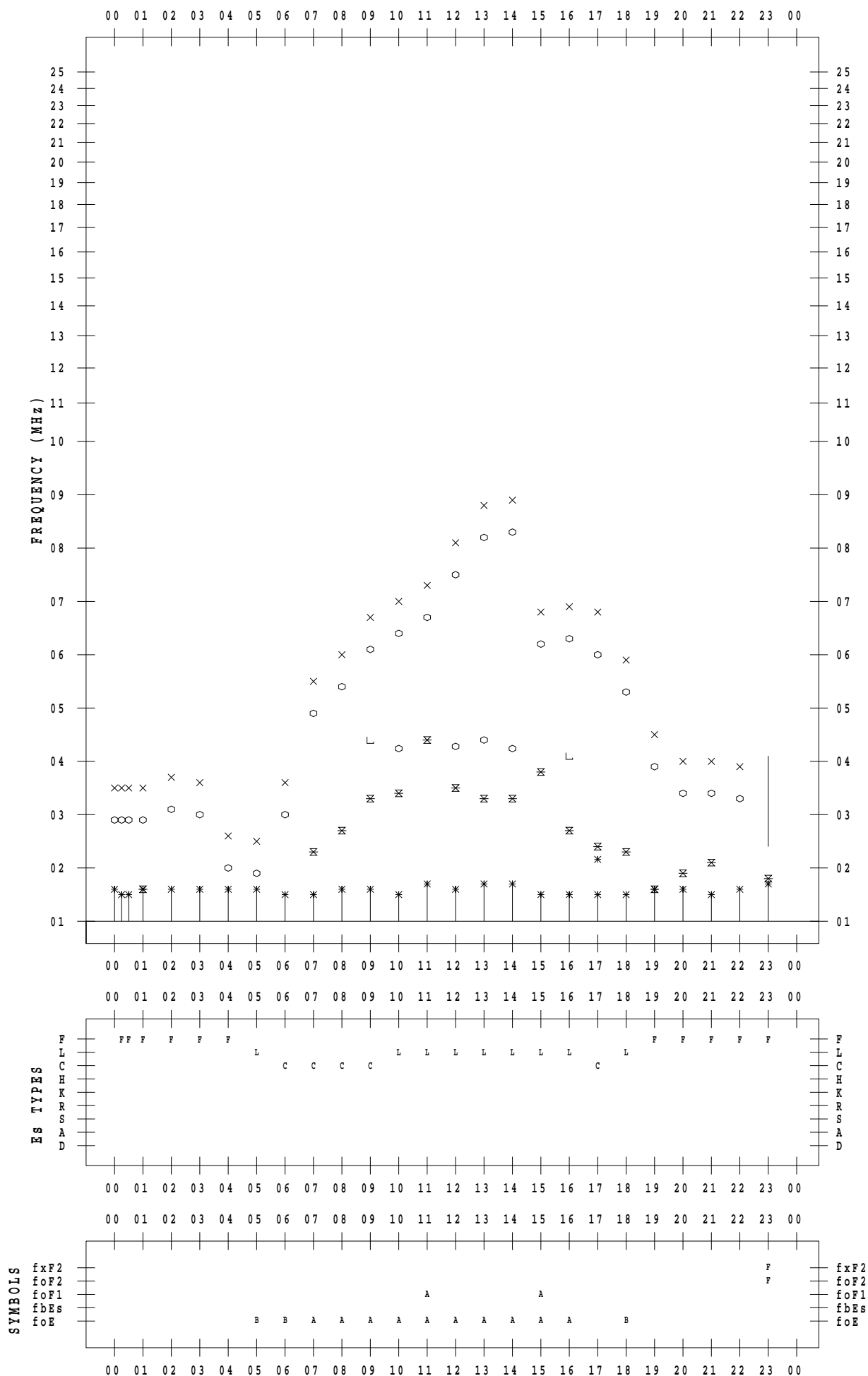
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 29

135 ° E MEAN TIME



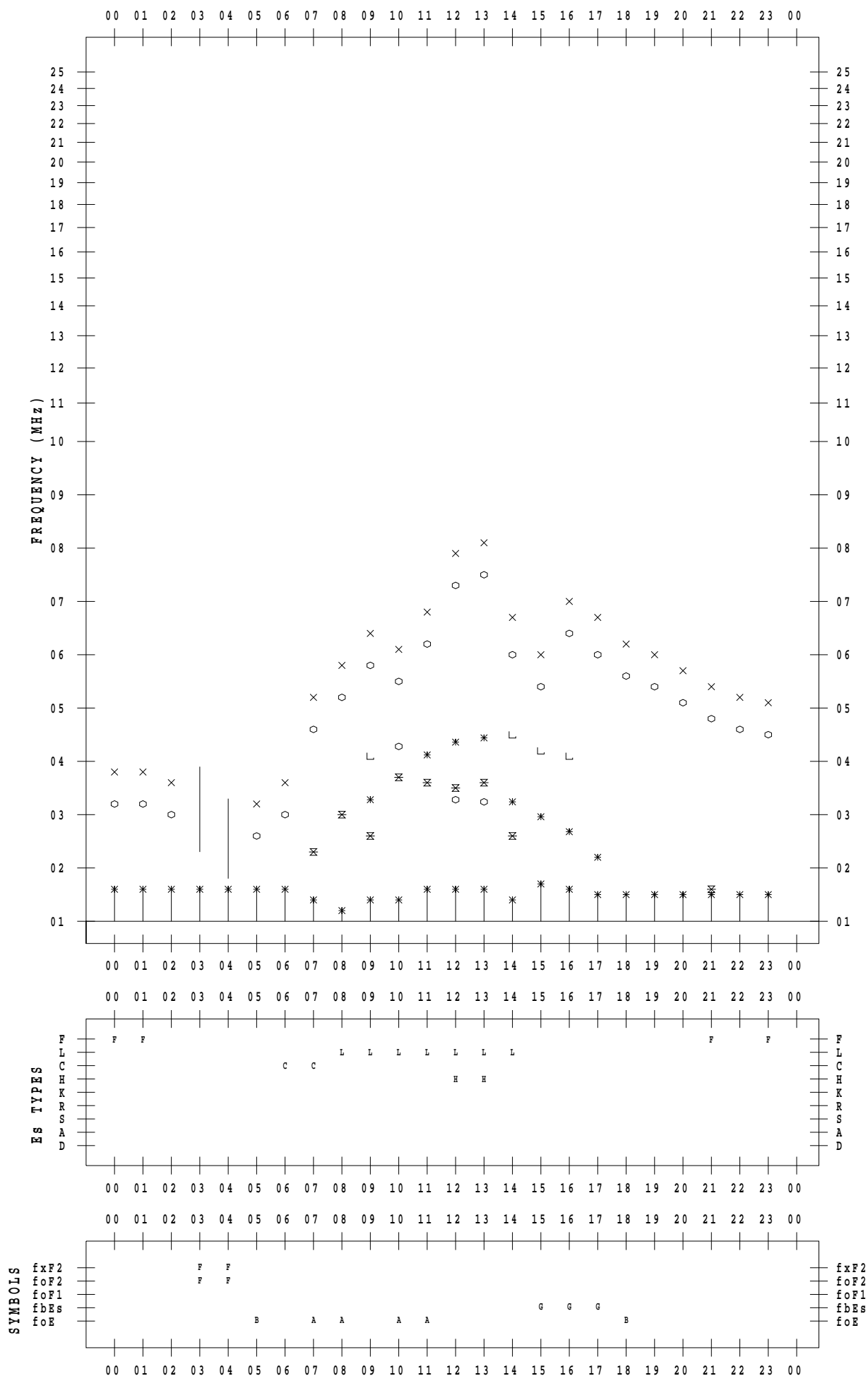
f - PLOT DATA

SCALER : I.NISHIMUTA

STATION : Yamagawa

DATE : 2019 / 9 / 30

135 ° E MEAN TIME



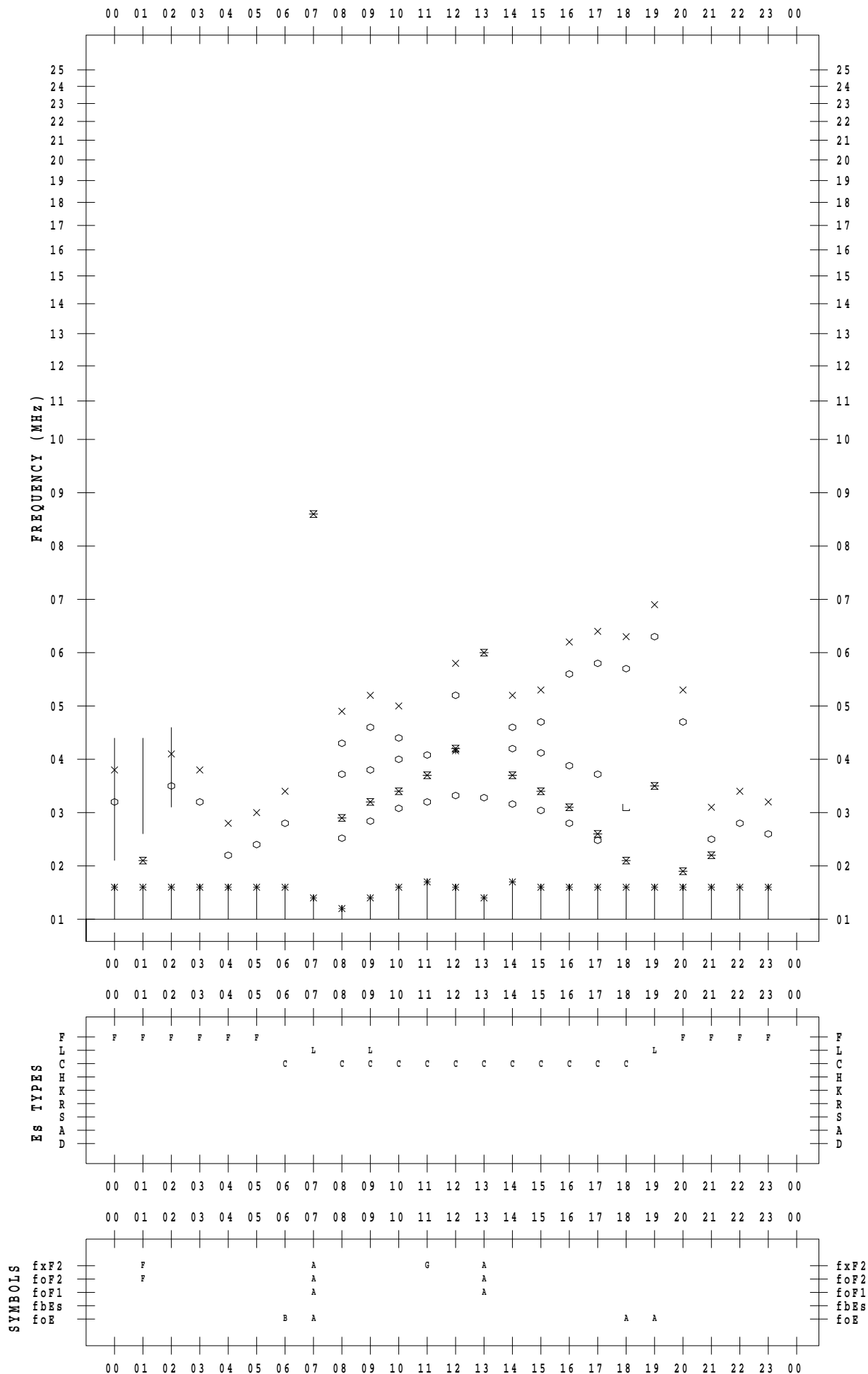
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 1

135 ° E MEAN TIME



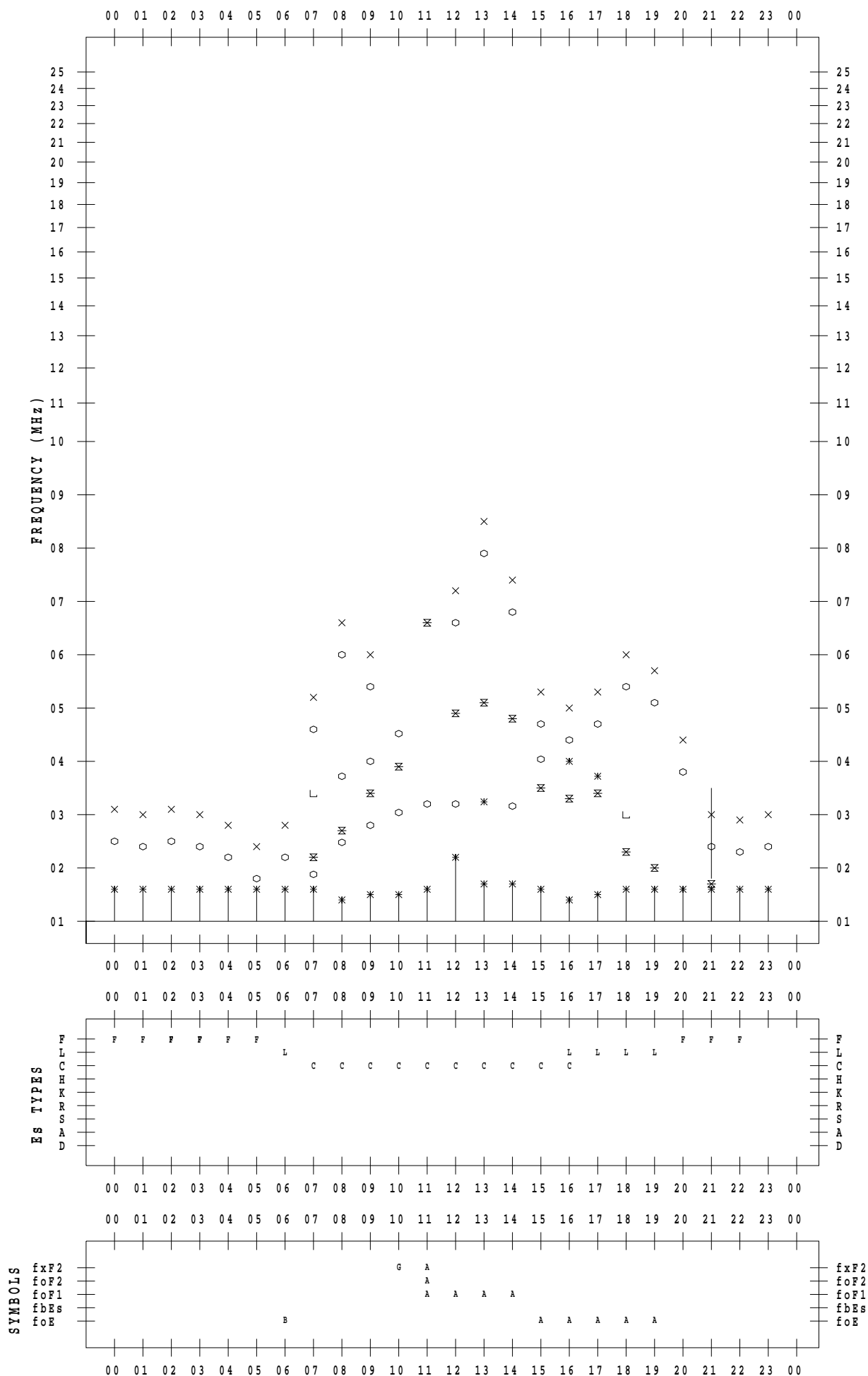
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 2

135 ° E MEAN TIME



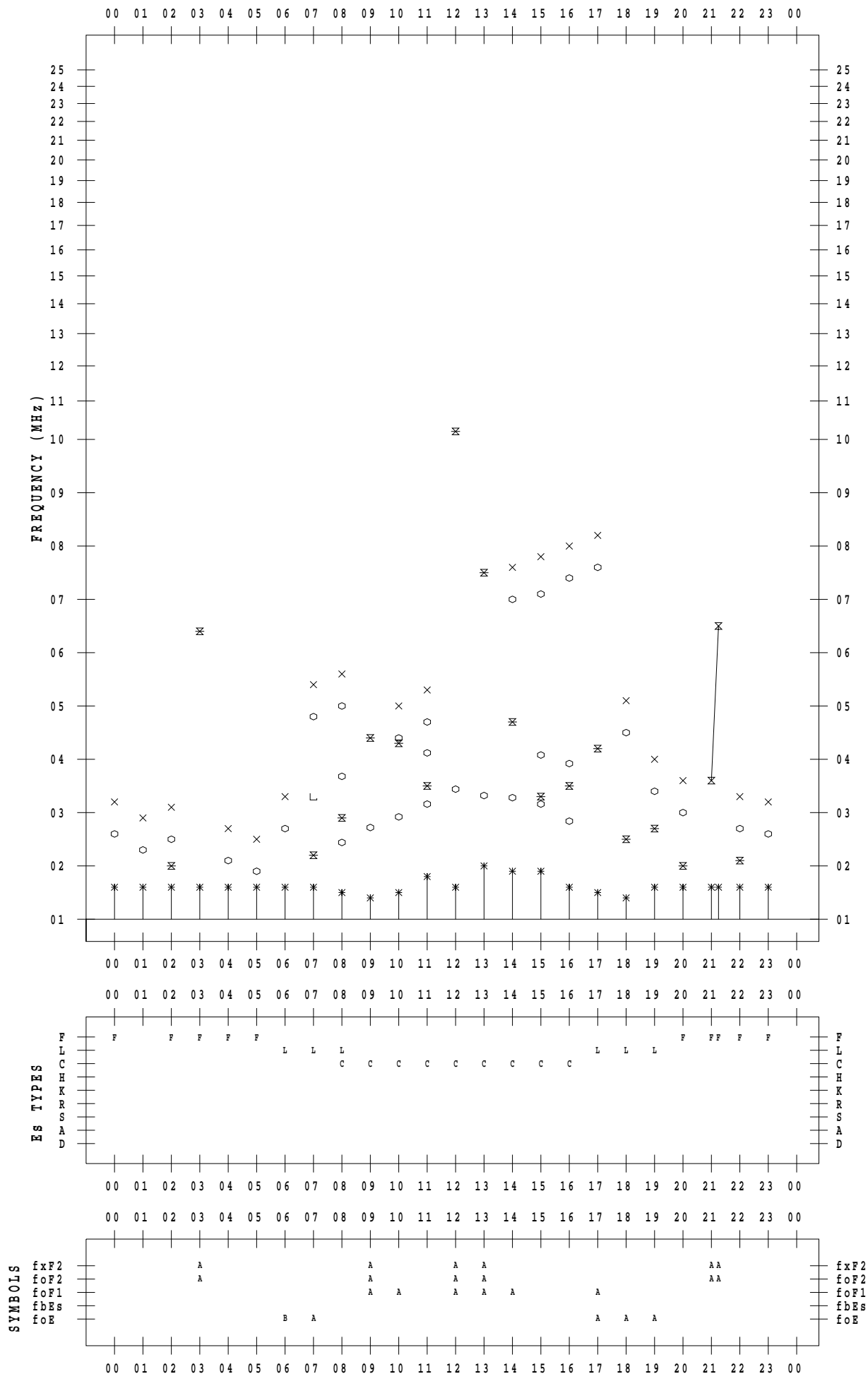
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 3

135 ° E MEAN TIME



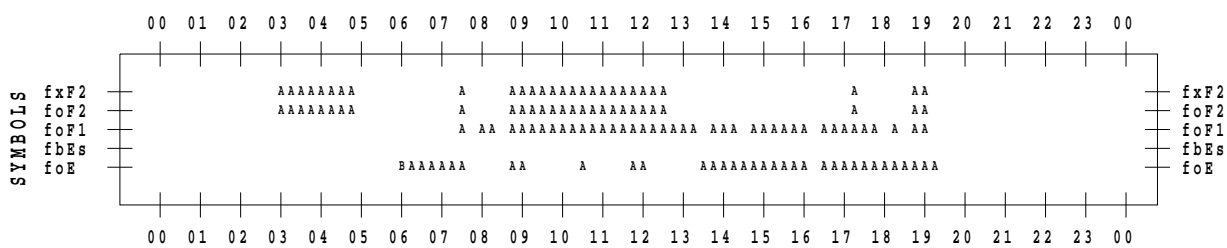
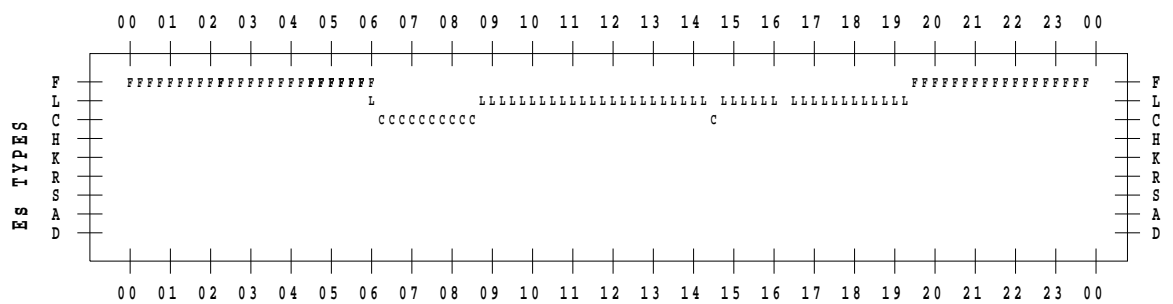
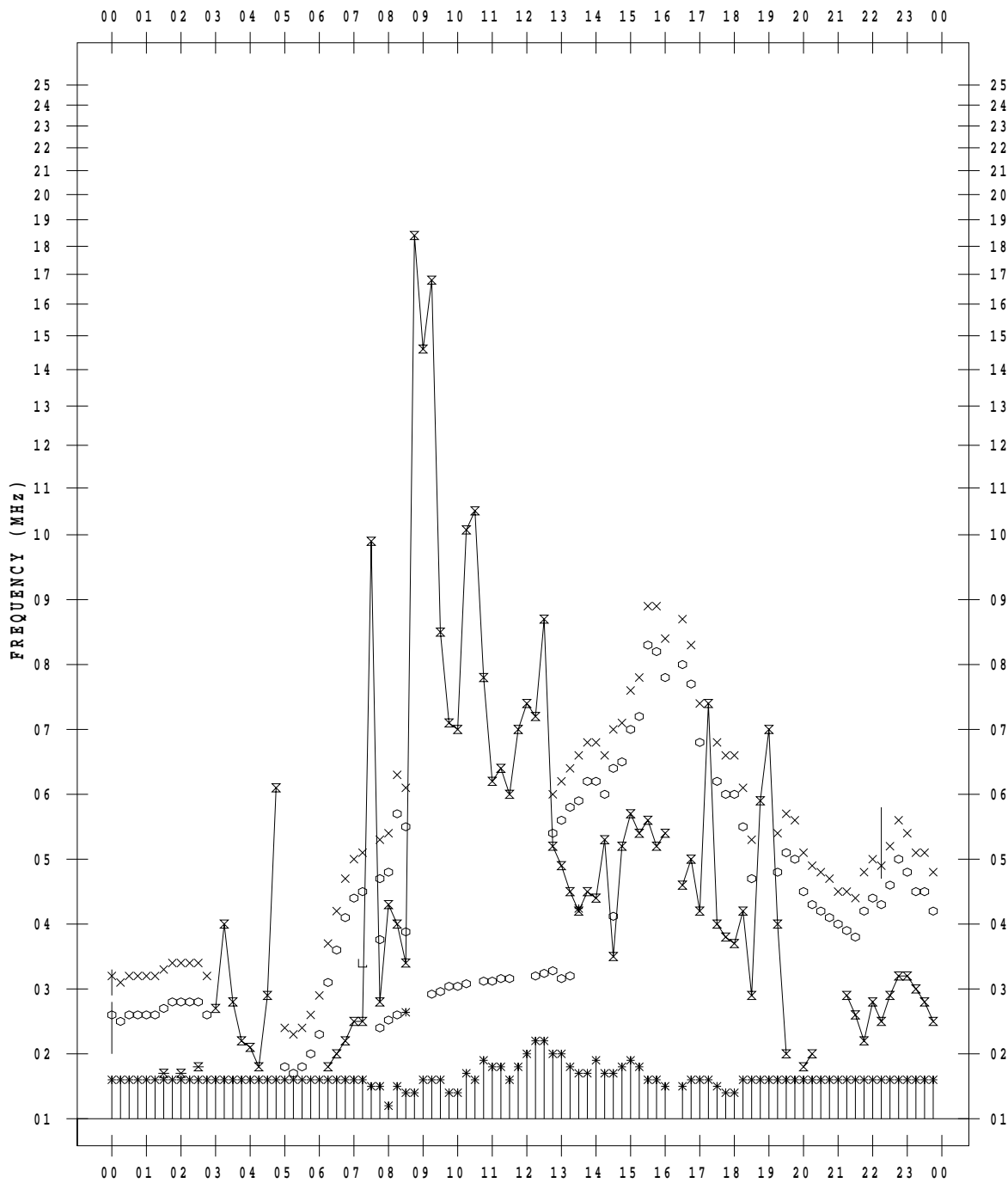
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019/ 9/ 4

135 ° E MEAN TIME



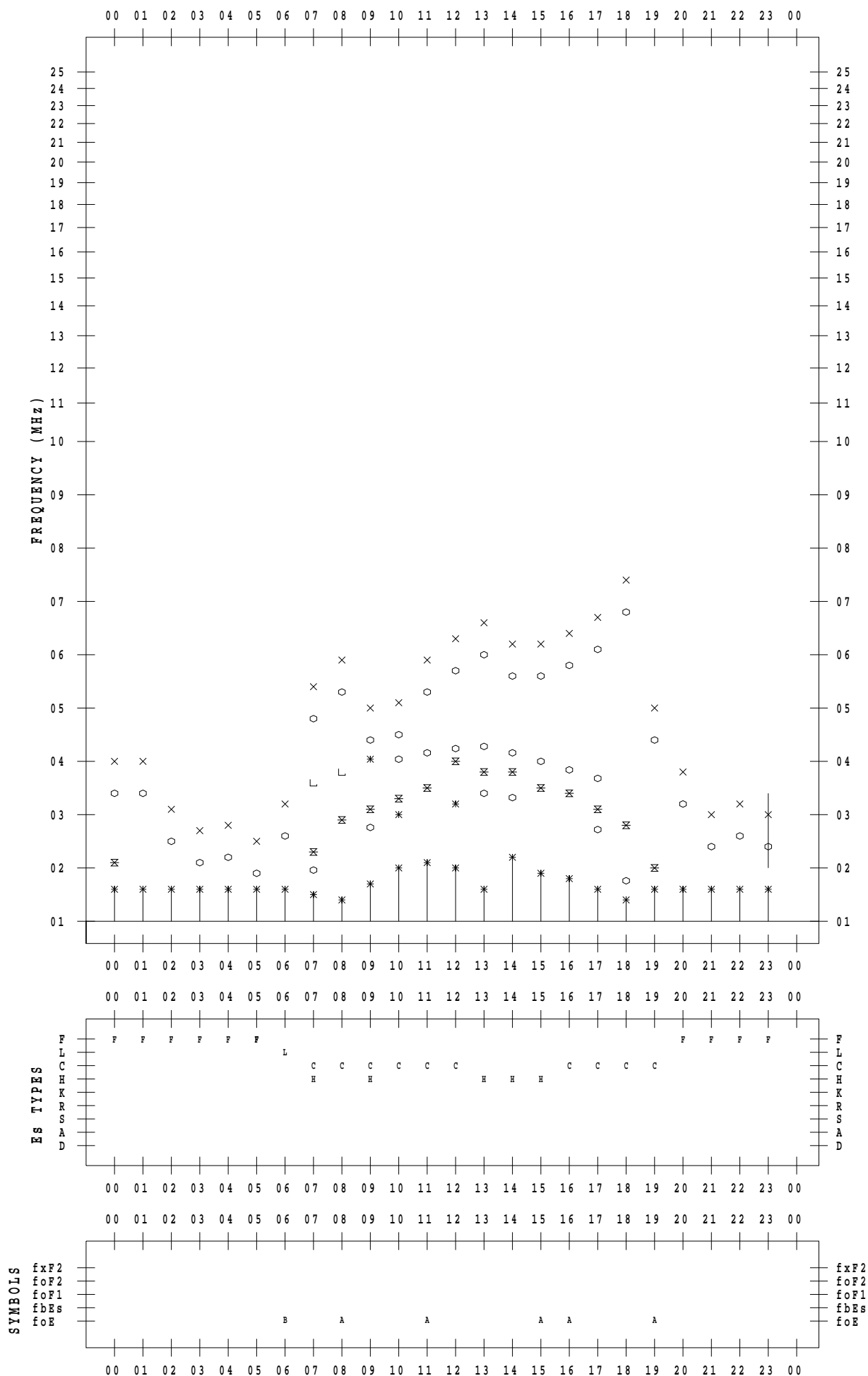
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 6

135 ° E MEAN TIME



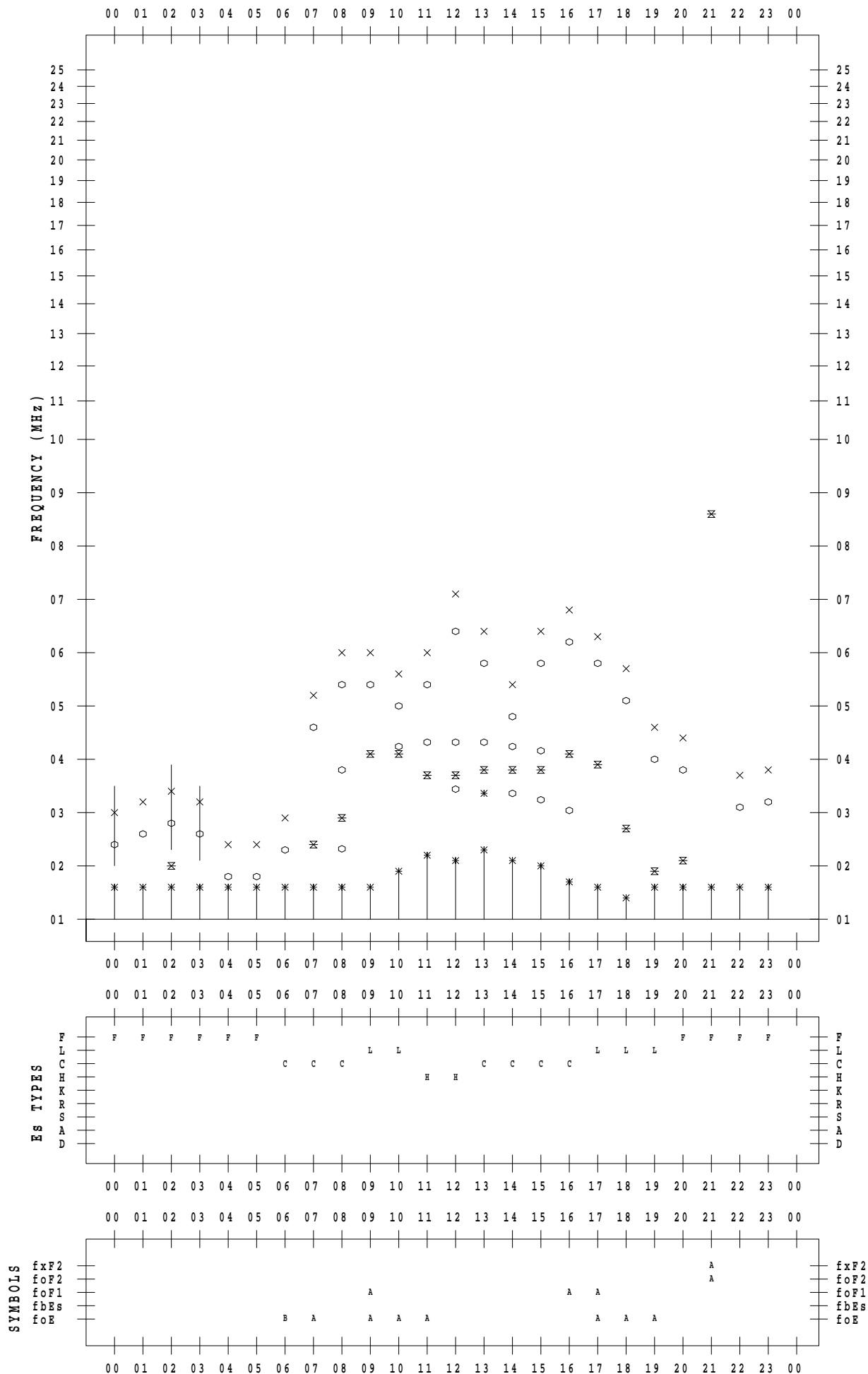
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 7

135 ° E MEAN TIME



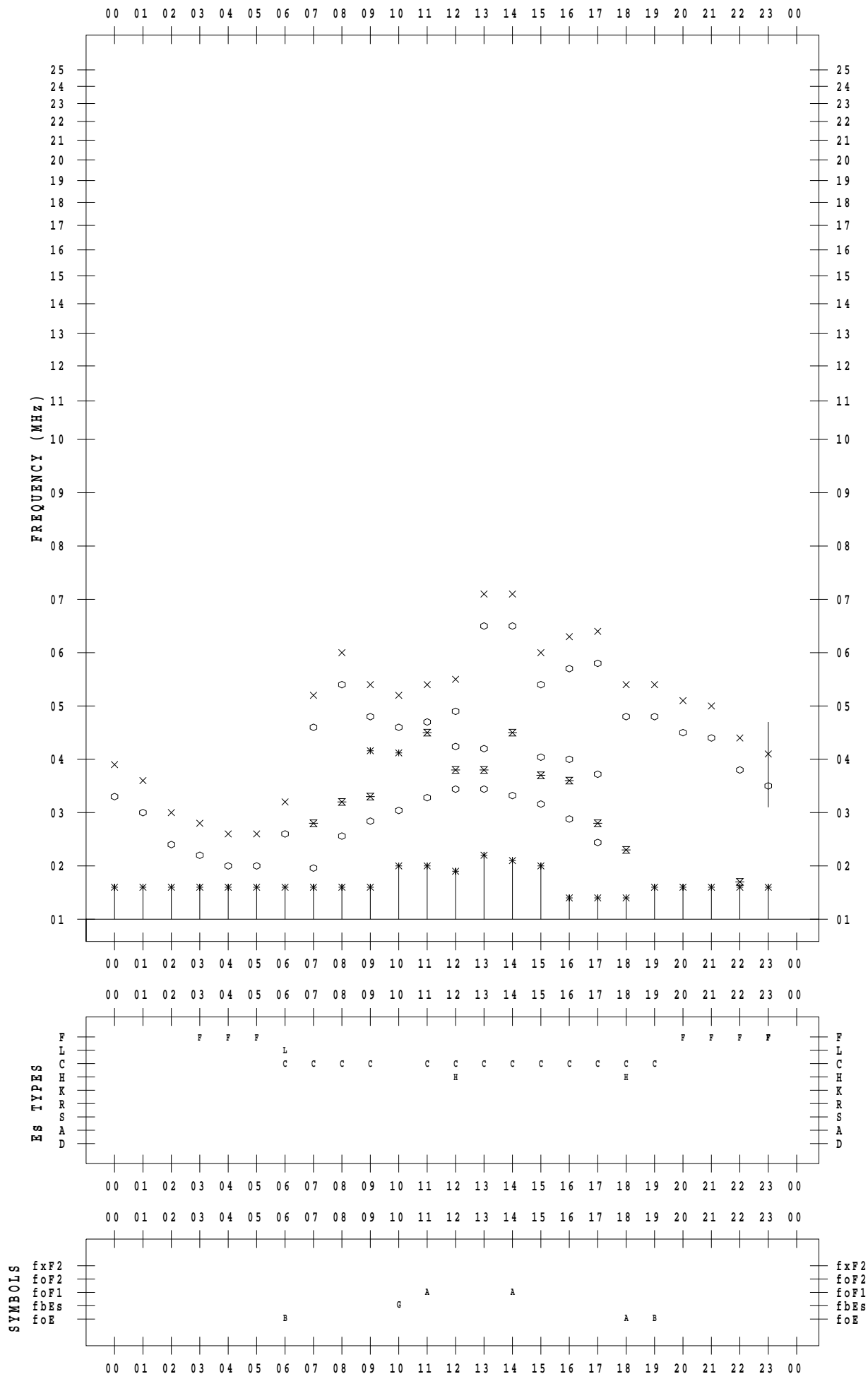
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 8

135 ° E MEAN TIME



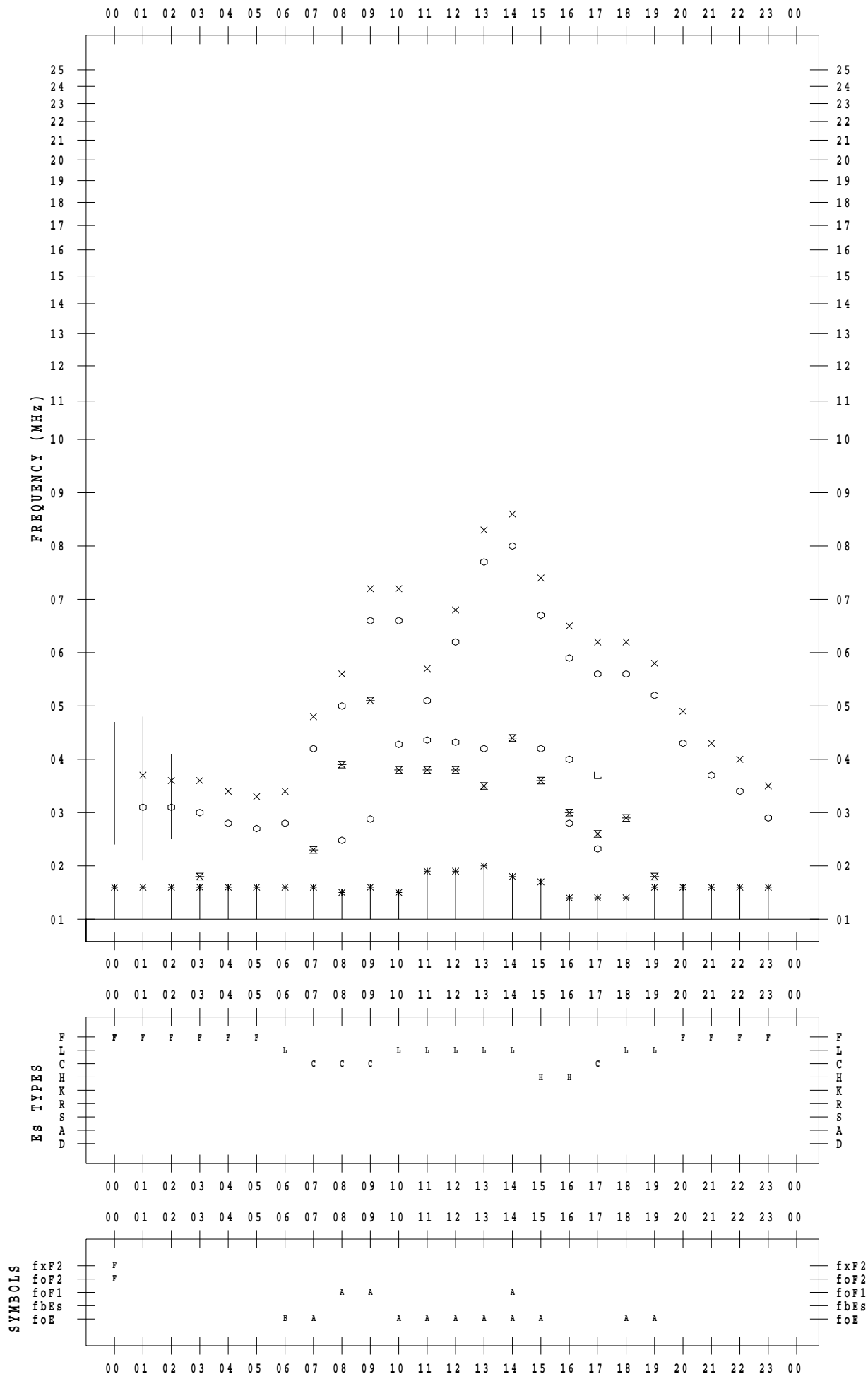
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 9

135 ° E MEAN TIME



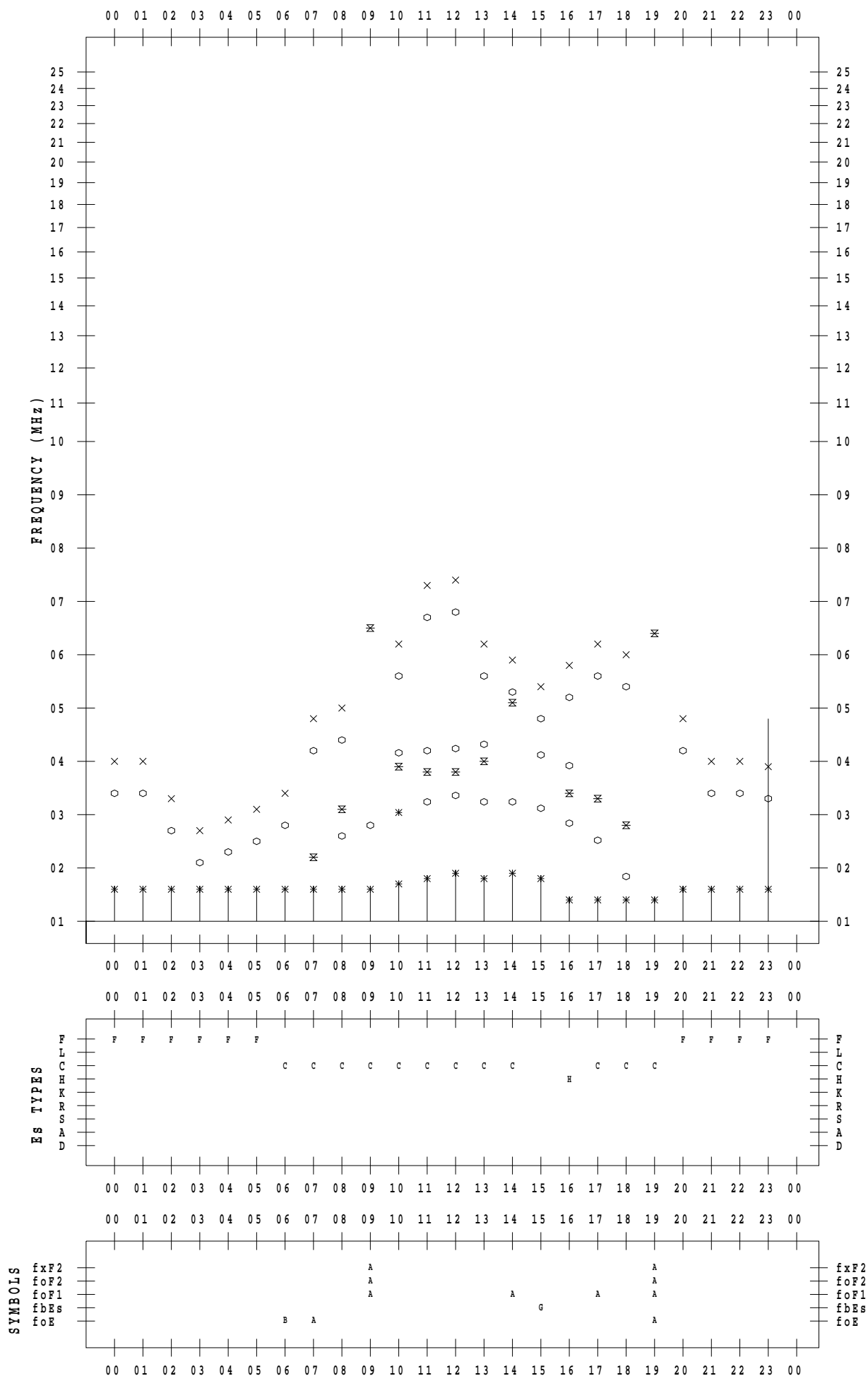
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 10

135 ° E MEAN TIME



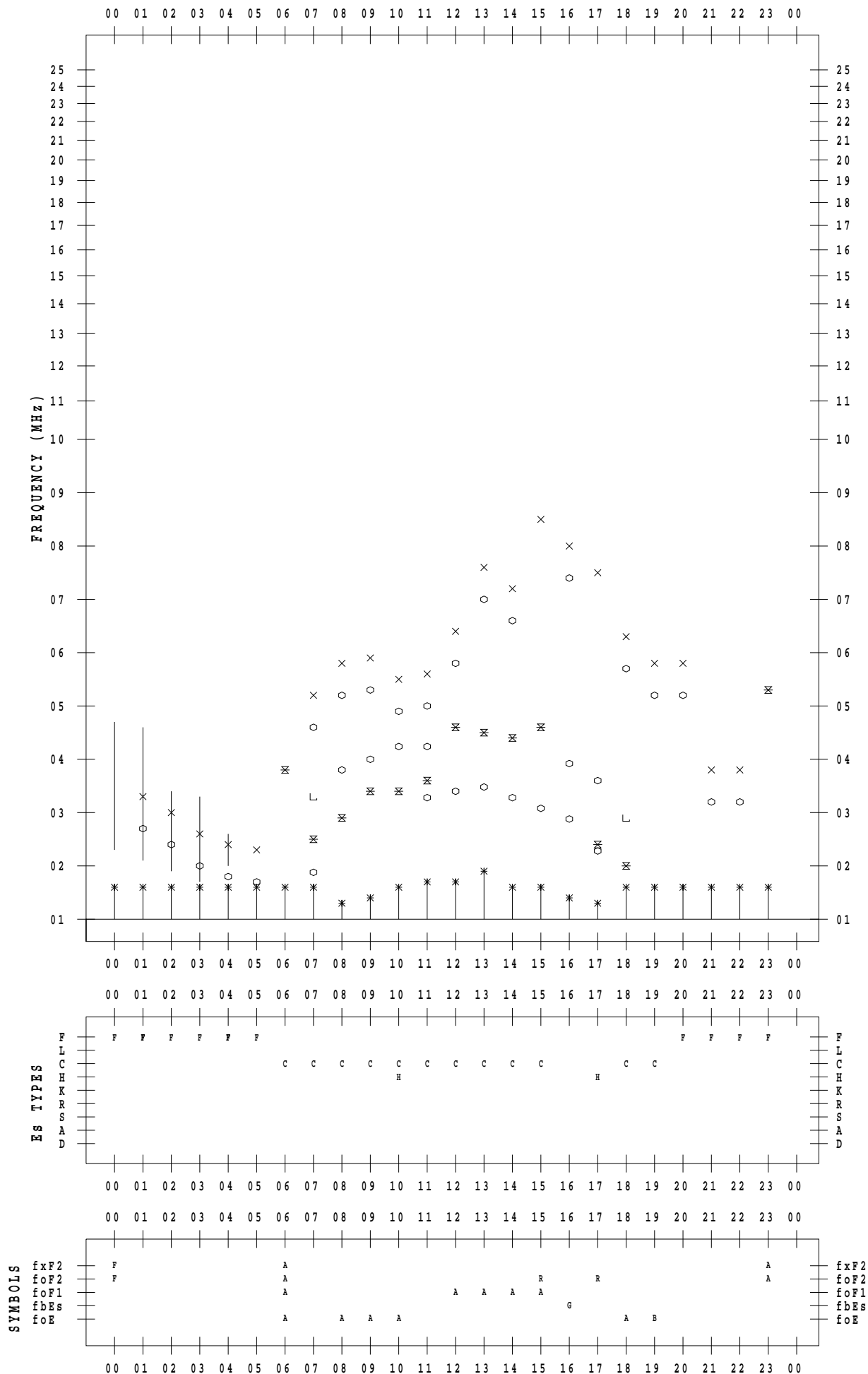
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 11

135 ° E MEAN TIME



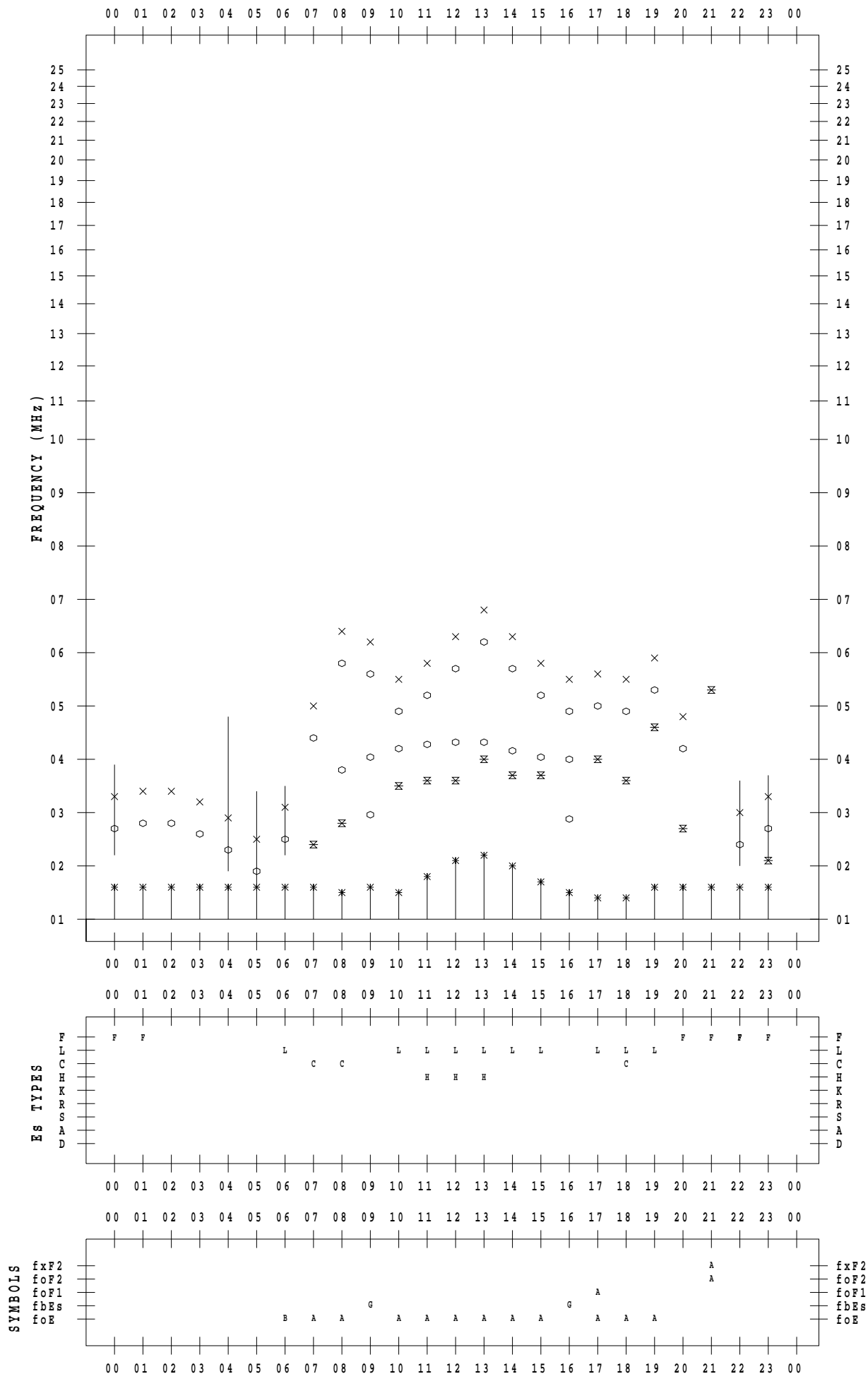
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 12

135 ° E MEAN TIME



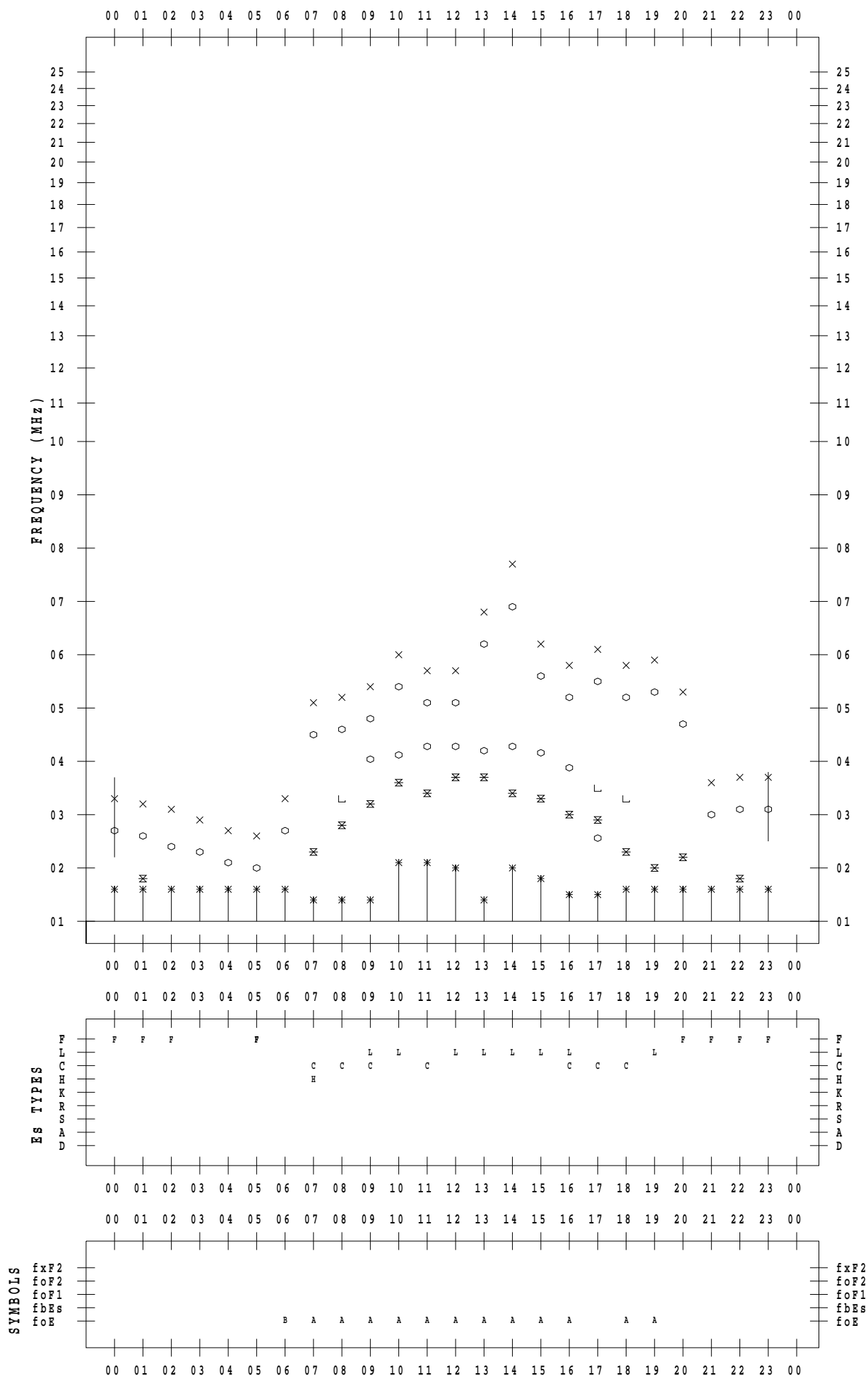
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 13

135 ° E MEAN TIME



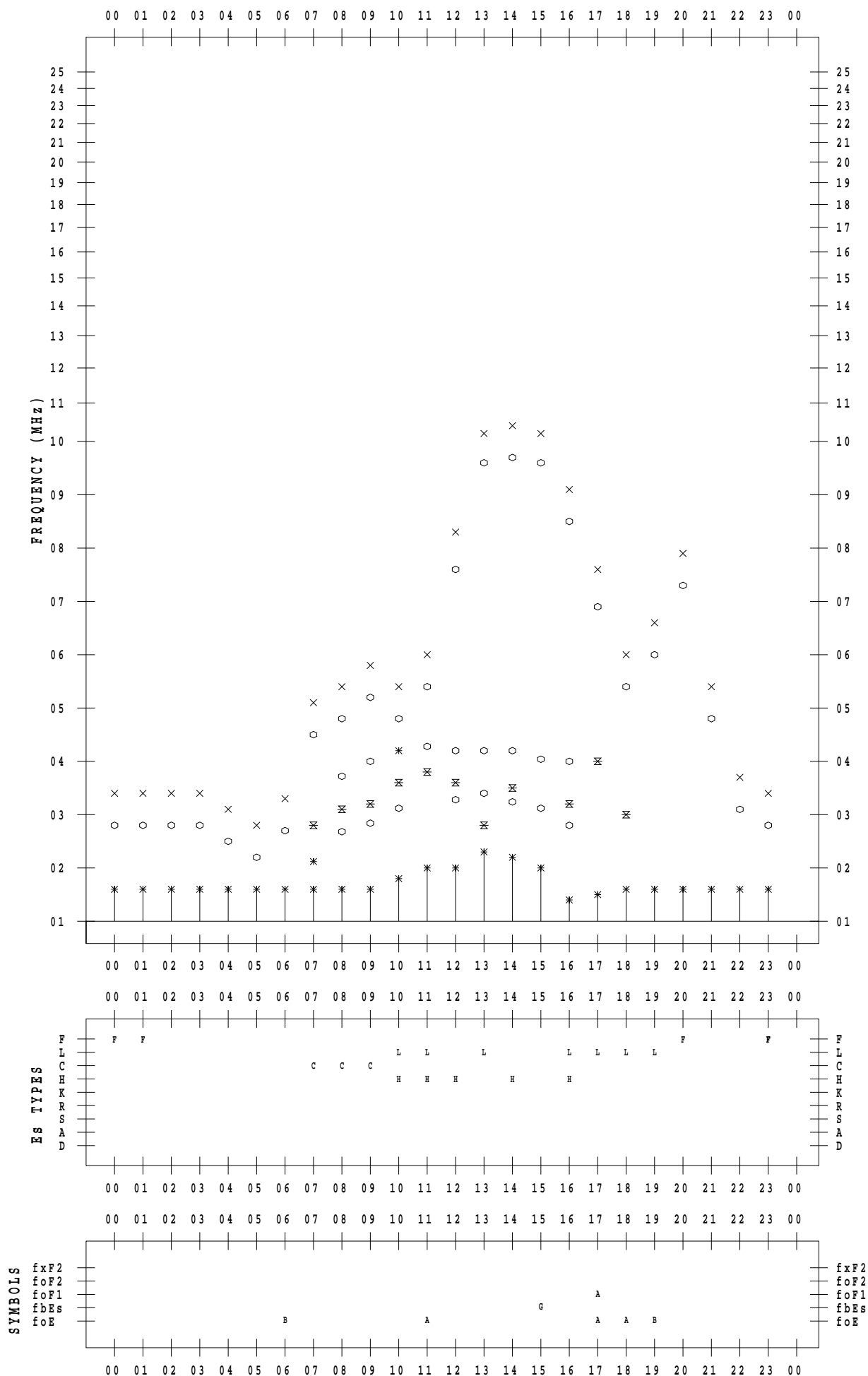
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 14

135 ° E MEAN TIME



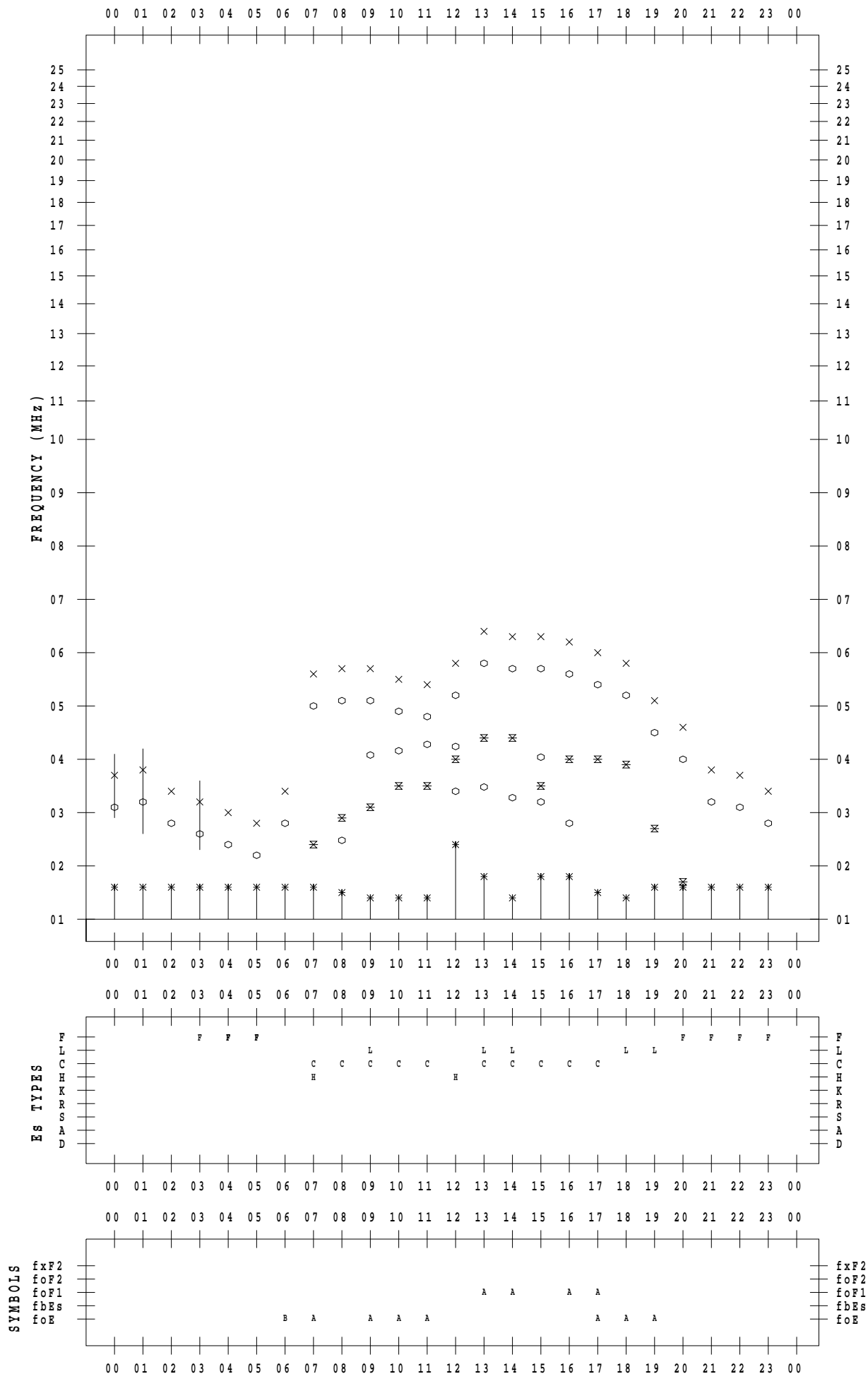
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 15

135 ° E MEAN TIME



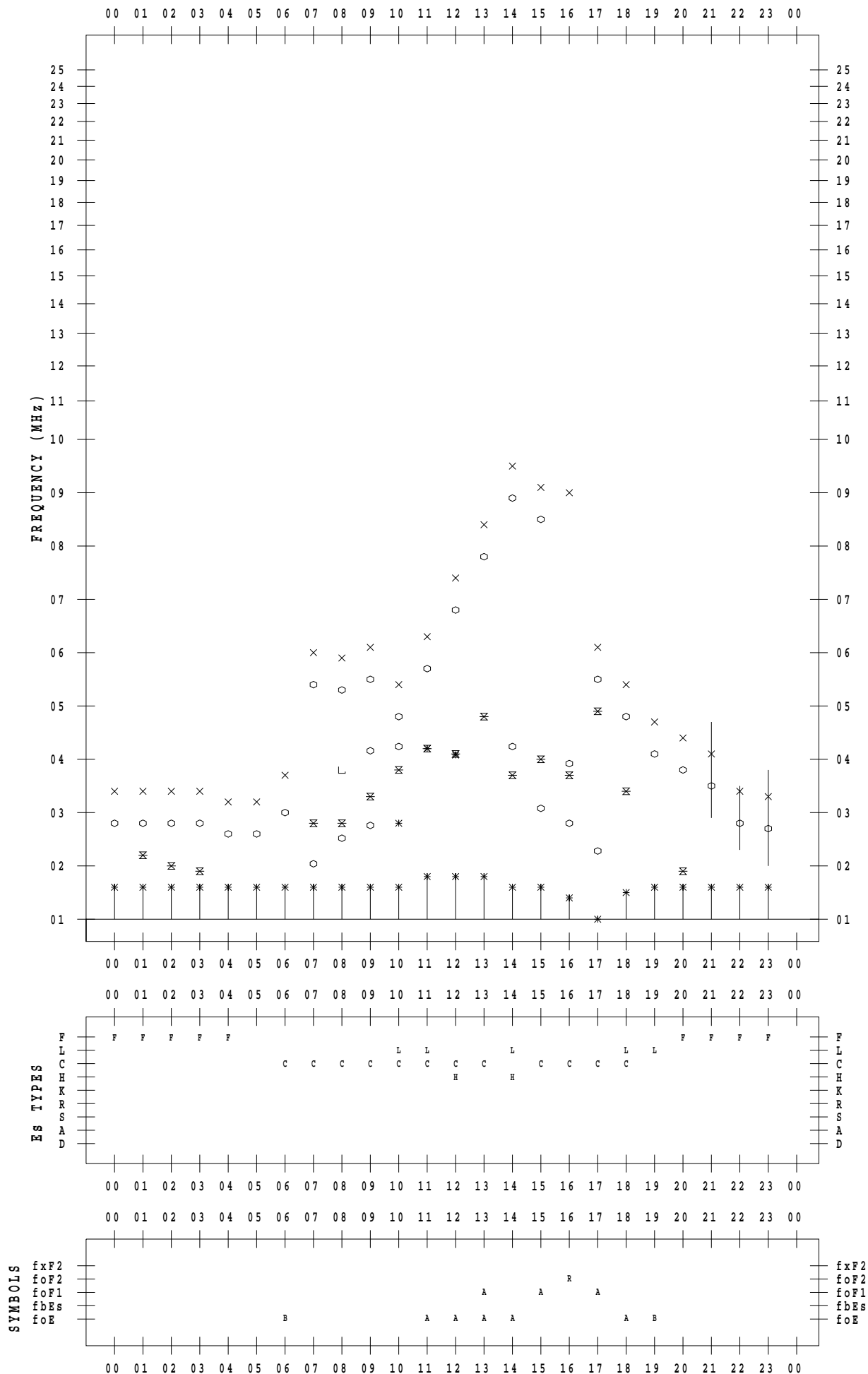
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 16

135 ° E MEAN TIME



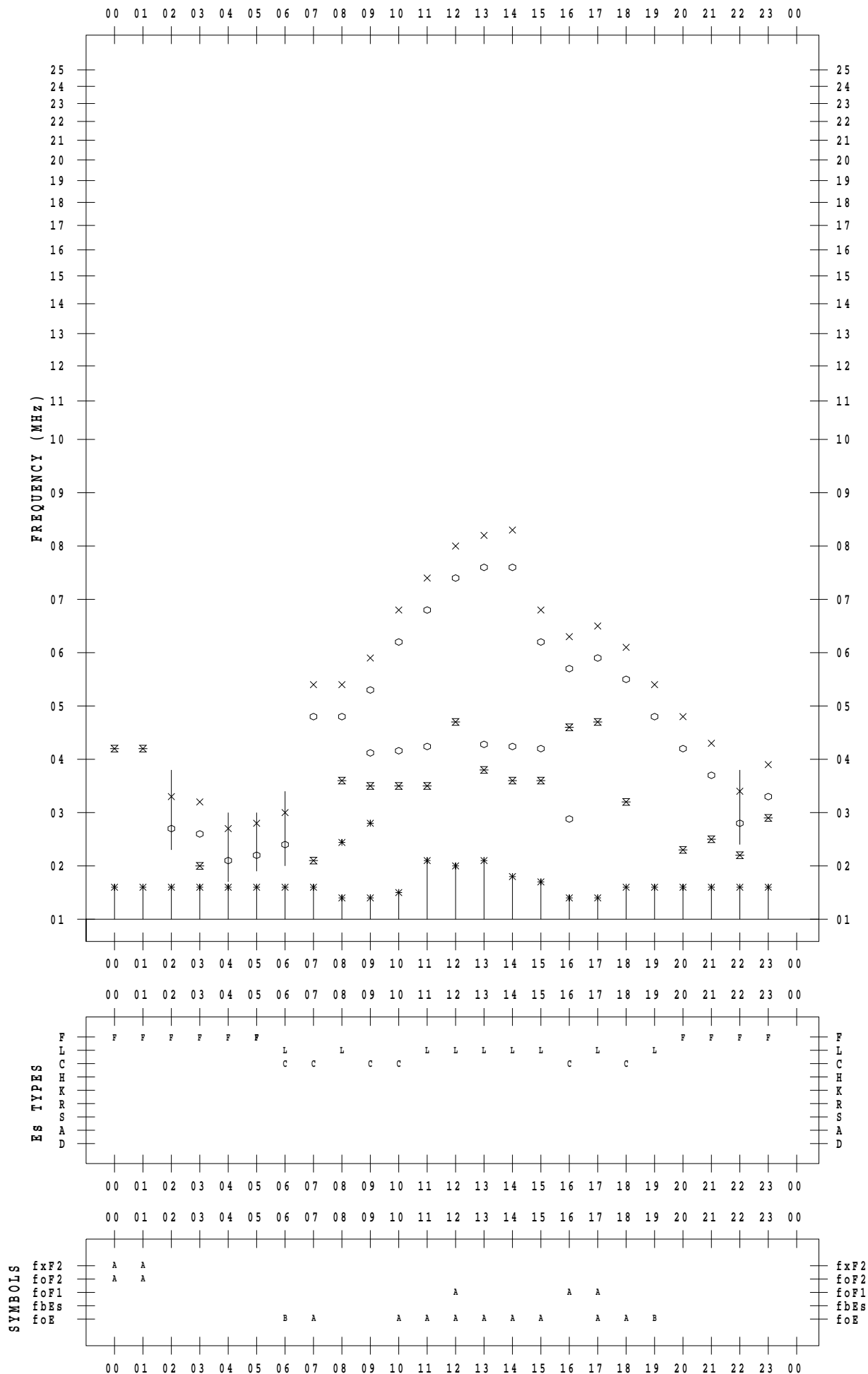
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 18

135 ° E MEAN TIME



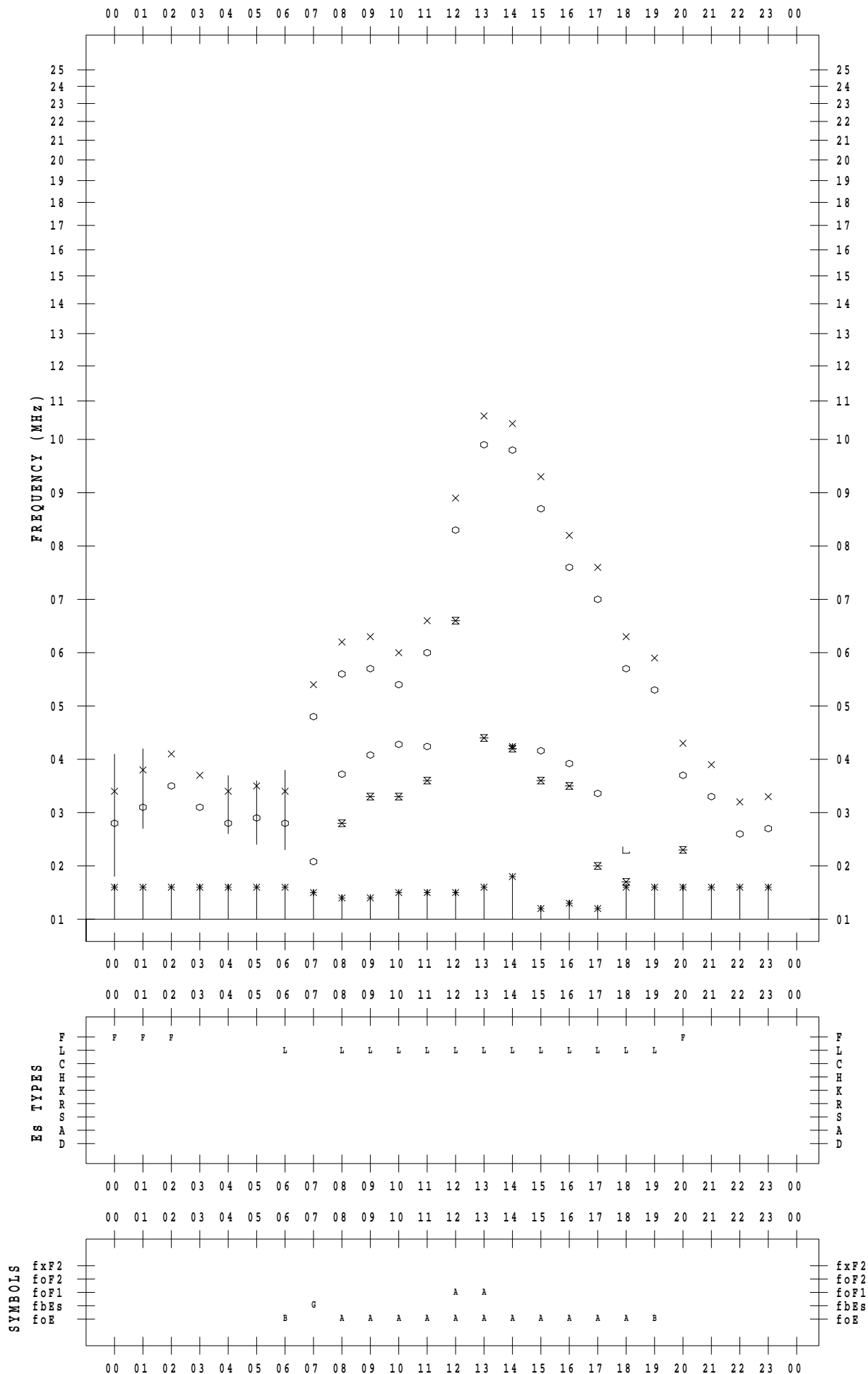
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 19

135 ° E MEAN TIME



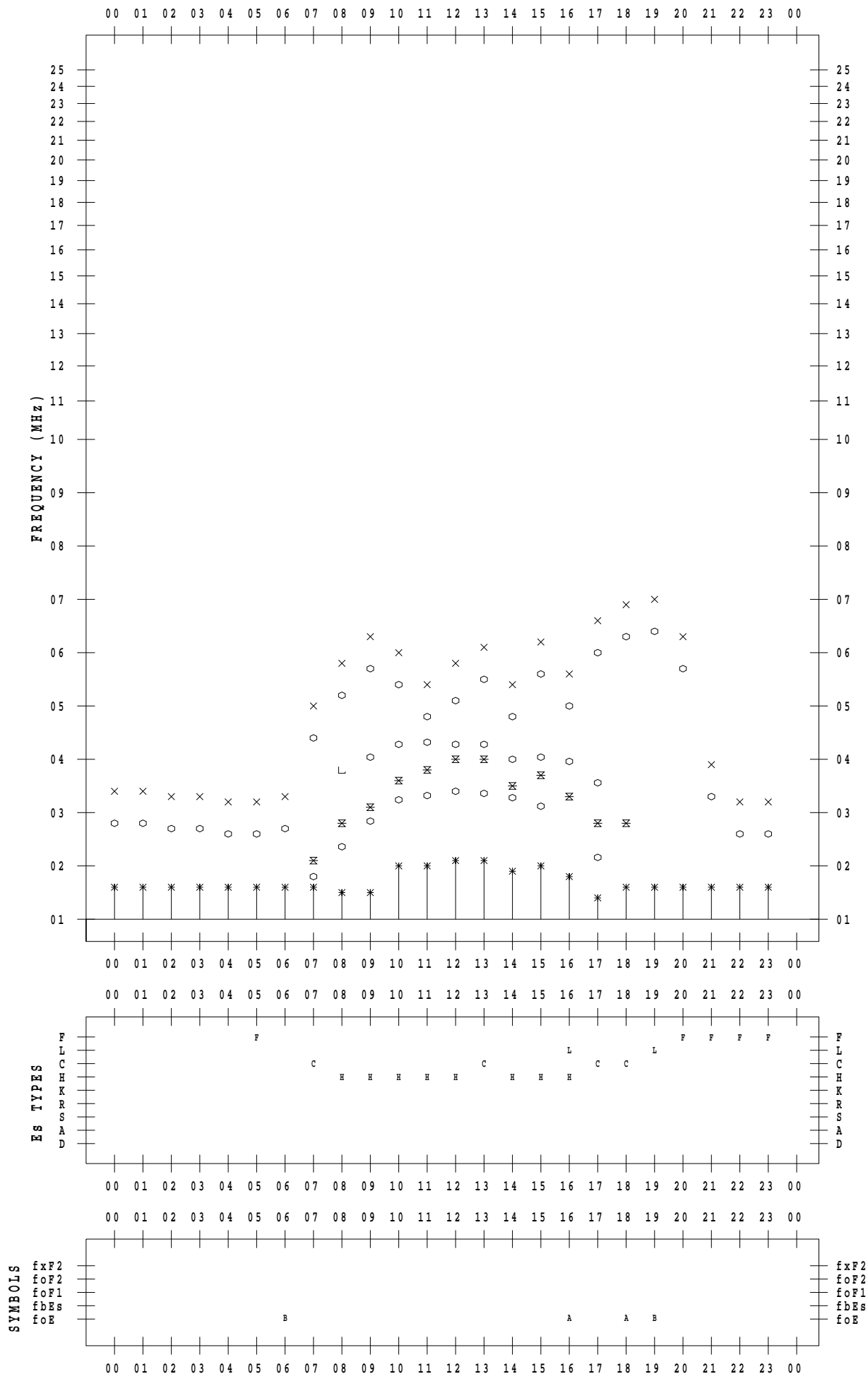
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 20

135 ° E MEAN TIME



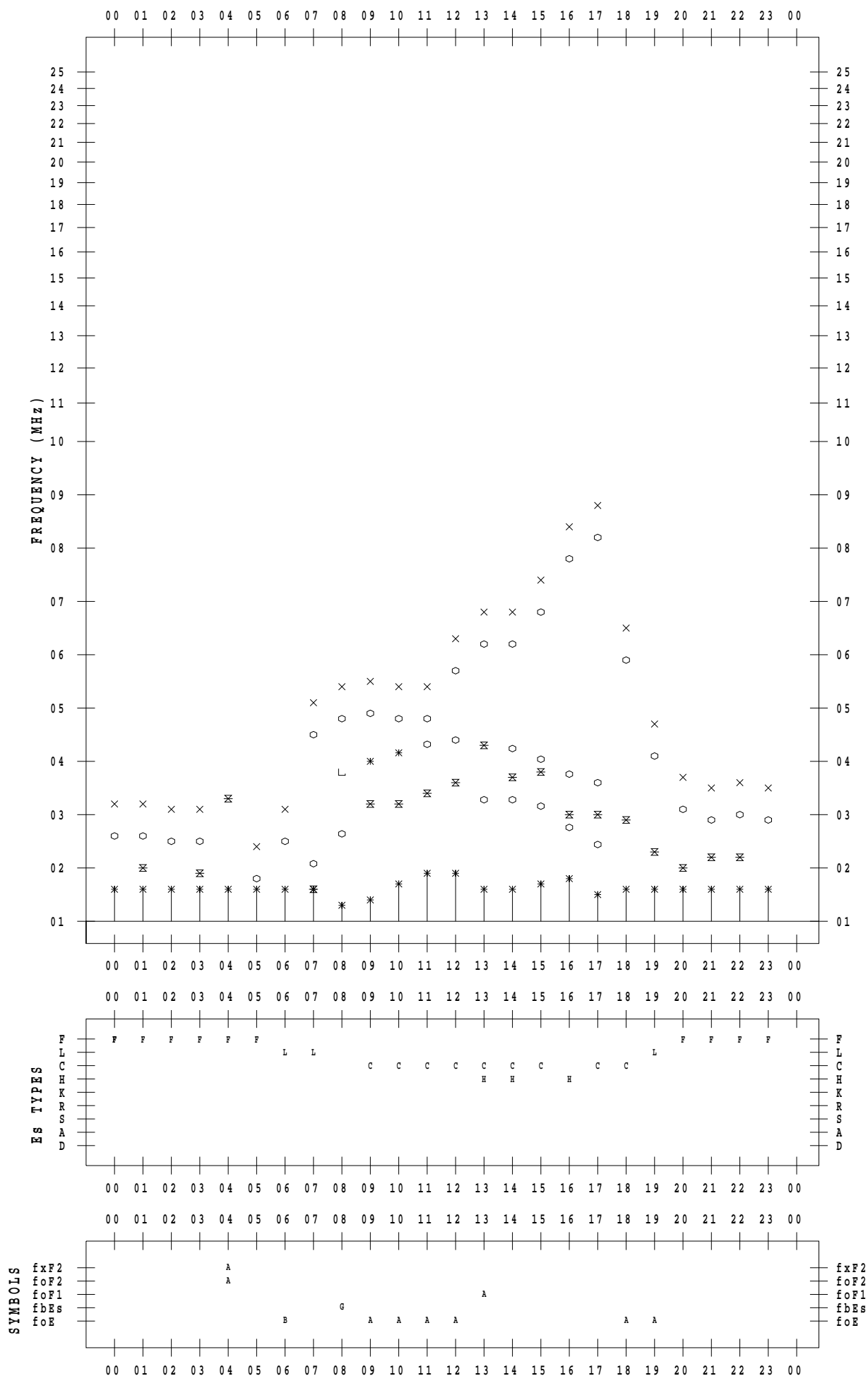
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 21

135 ° E MEAN TIME



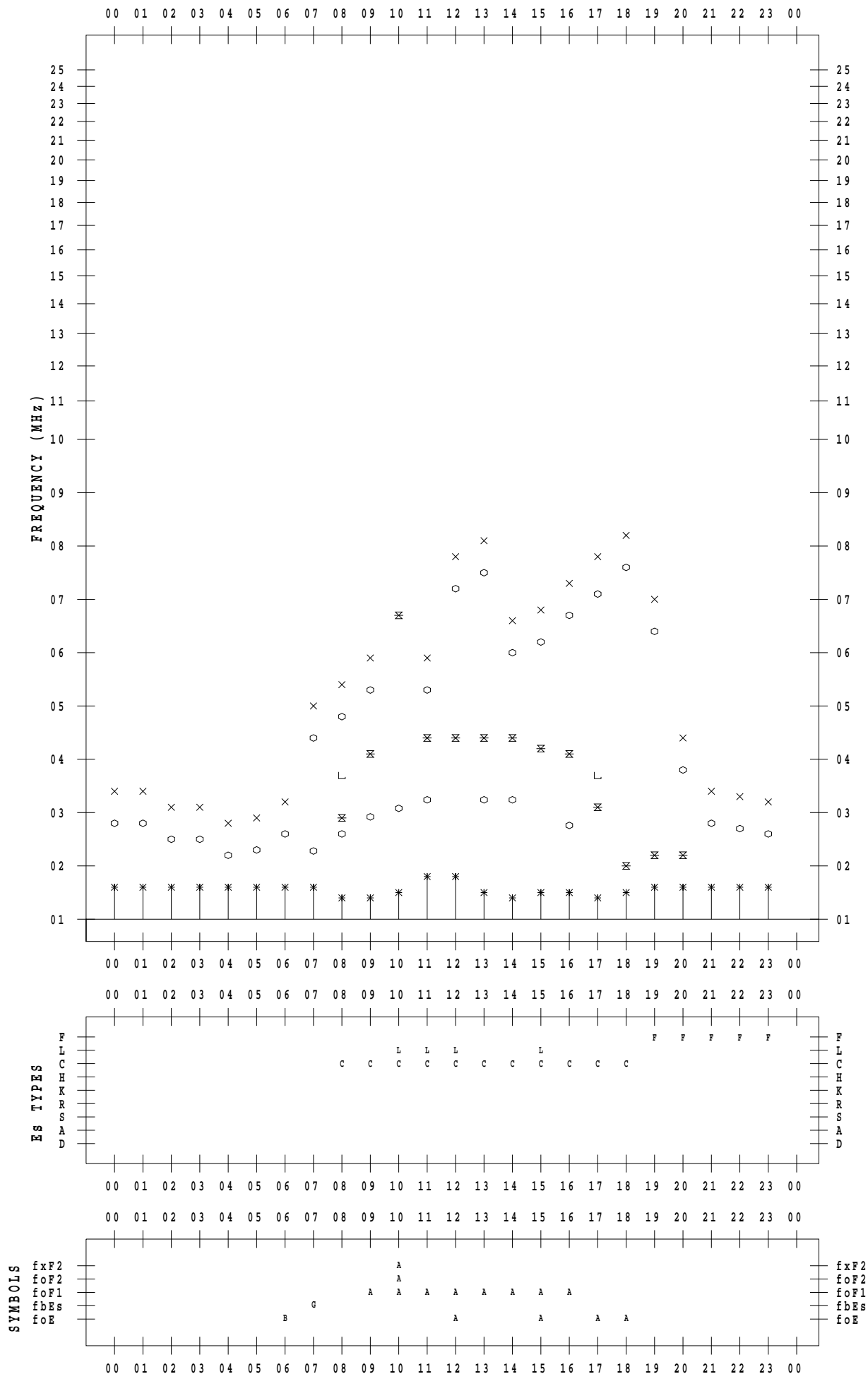
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 22

135 ° E MEAN TIME



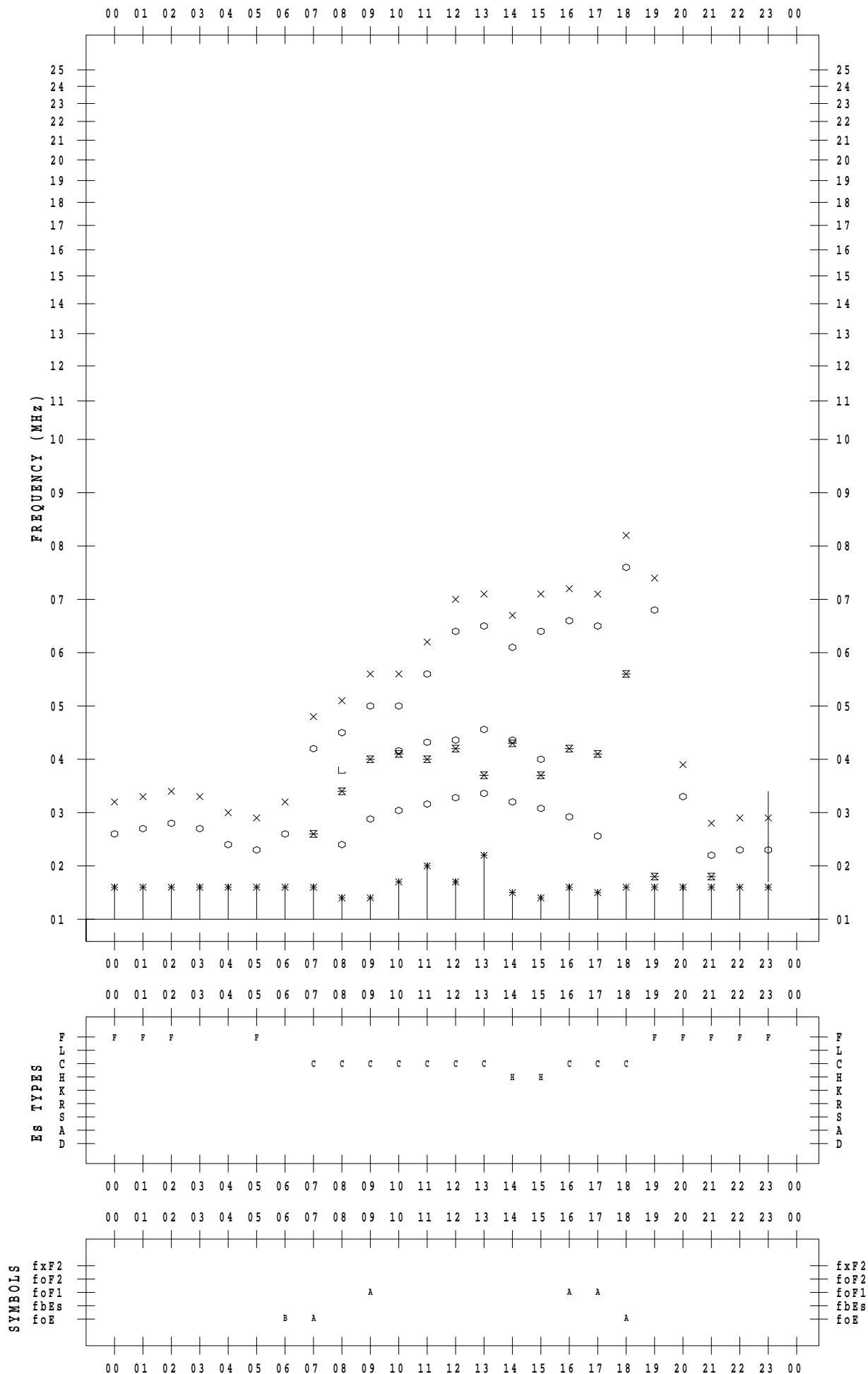
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 23

135 ° E MEAN TIME



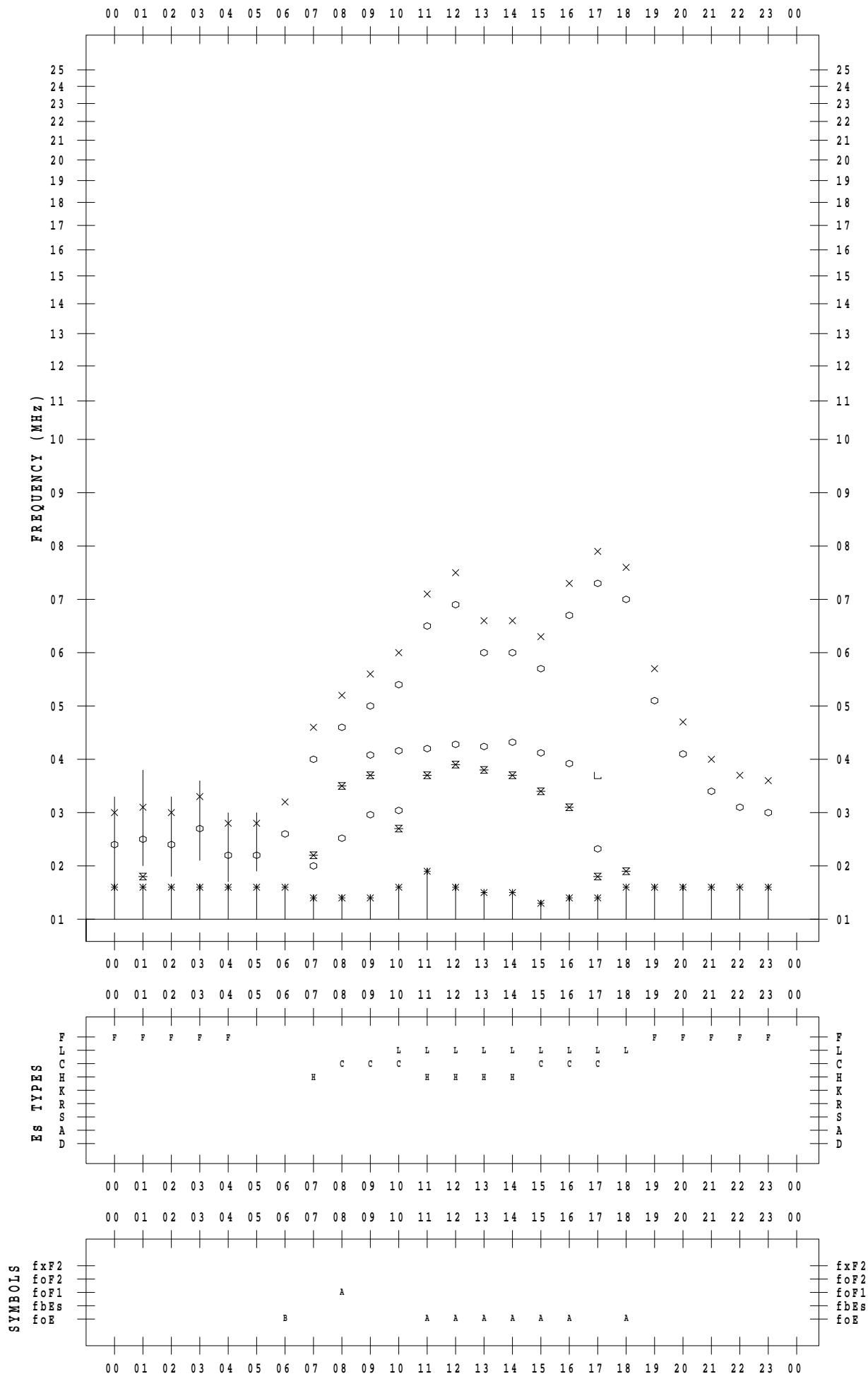
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 24

135 ° E MEAN TIME



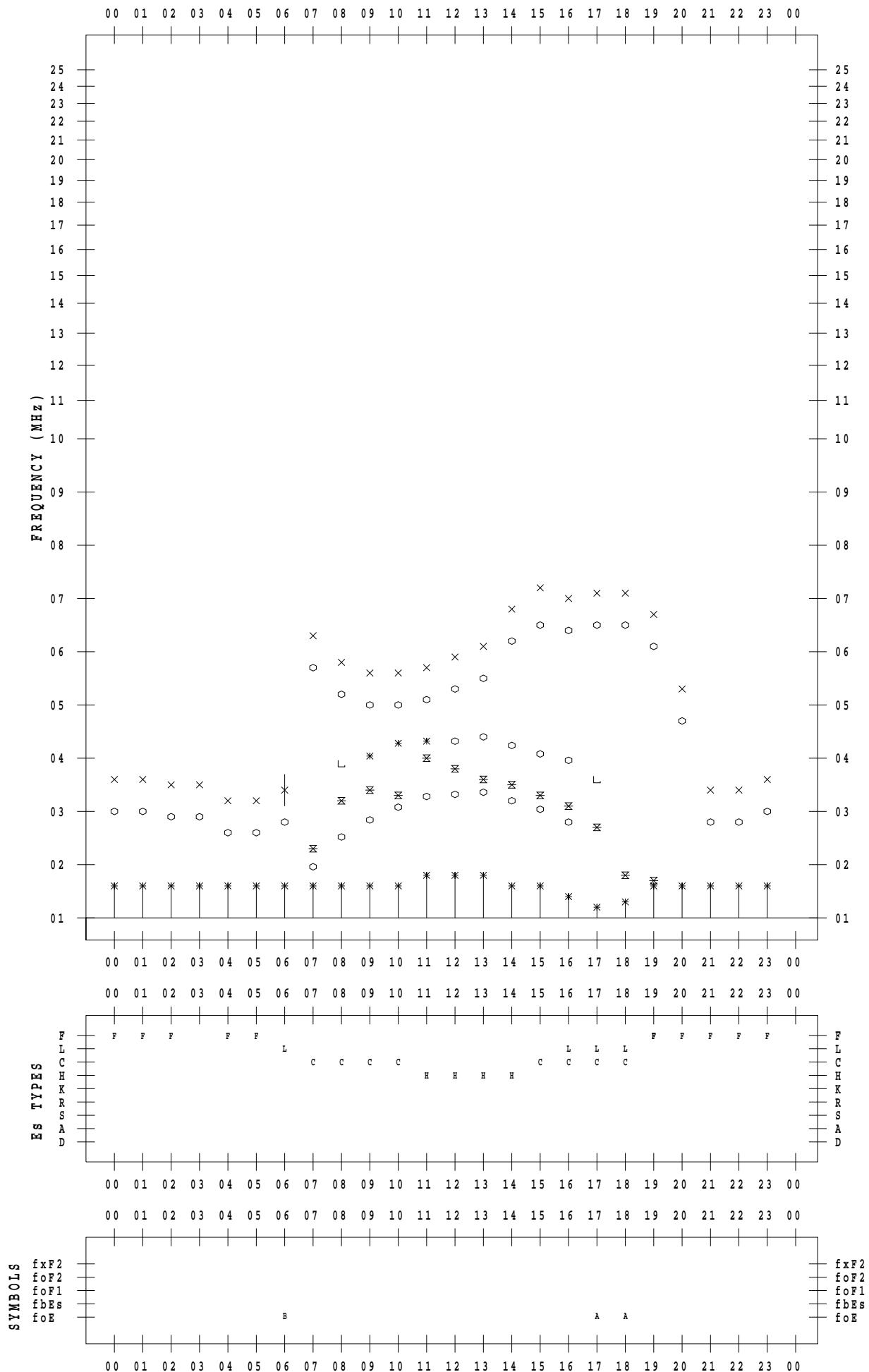
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 25

135 ° E MEAN TIME



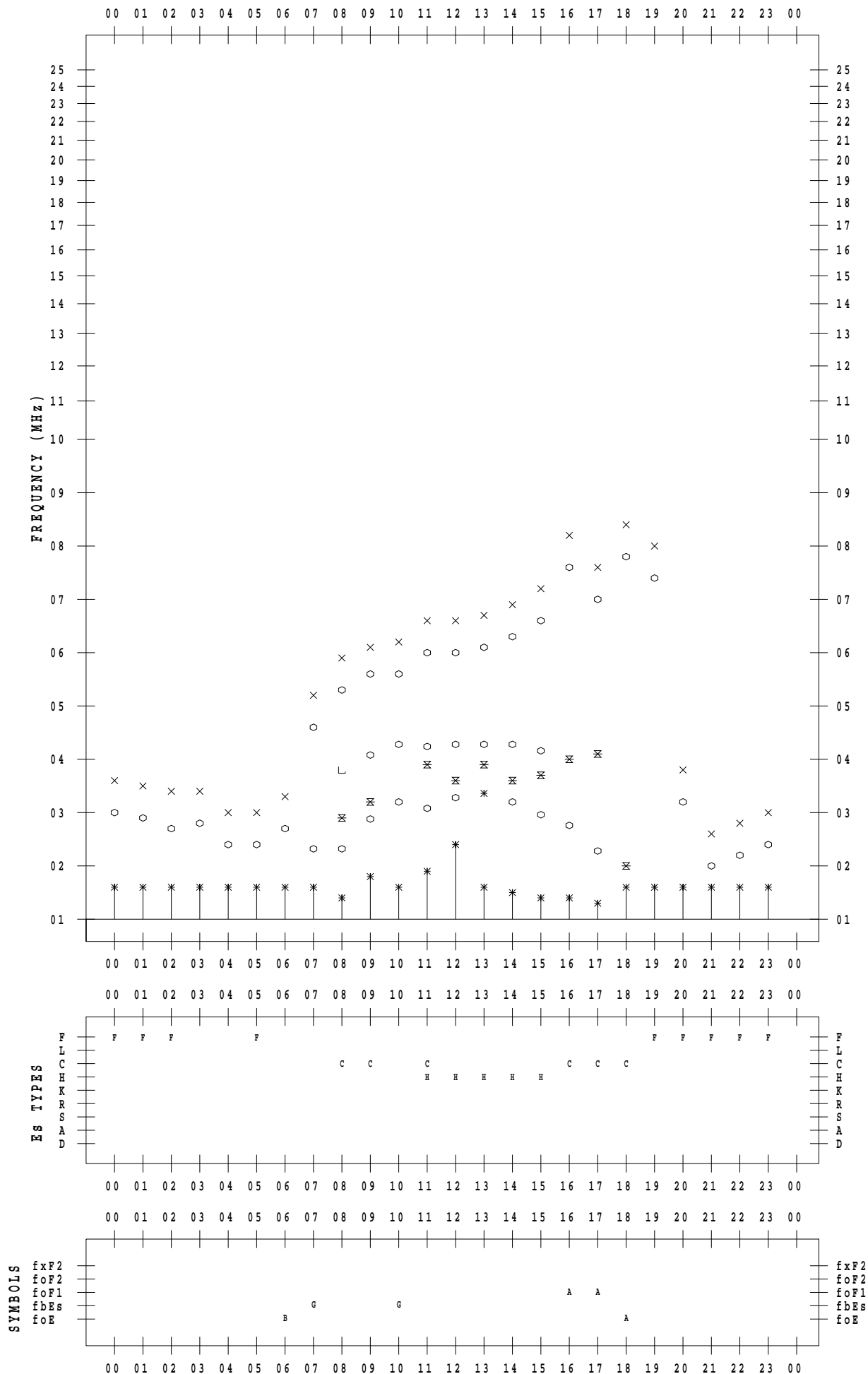
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 26

135 ° E MEAN TIME



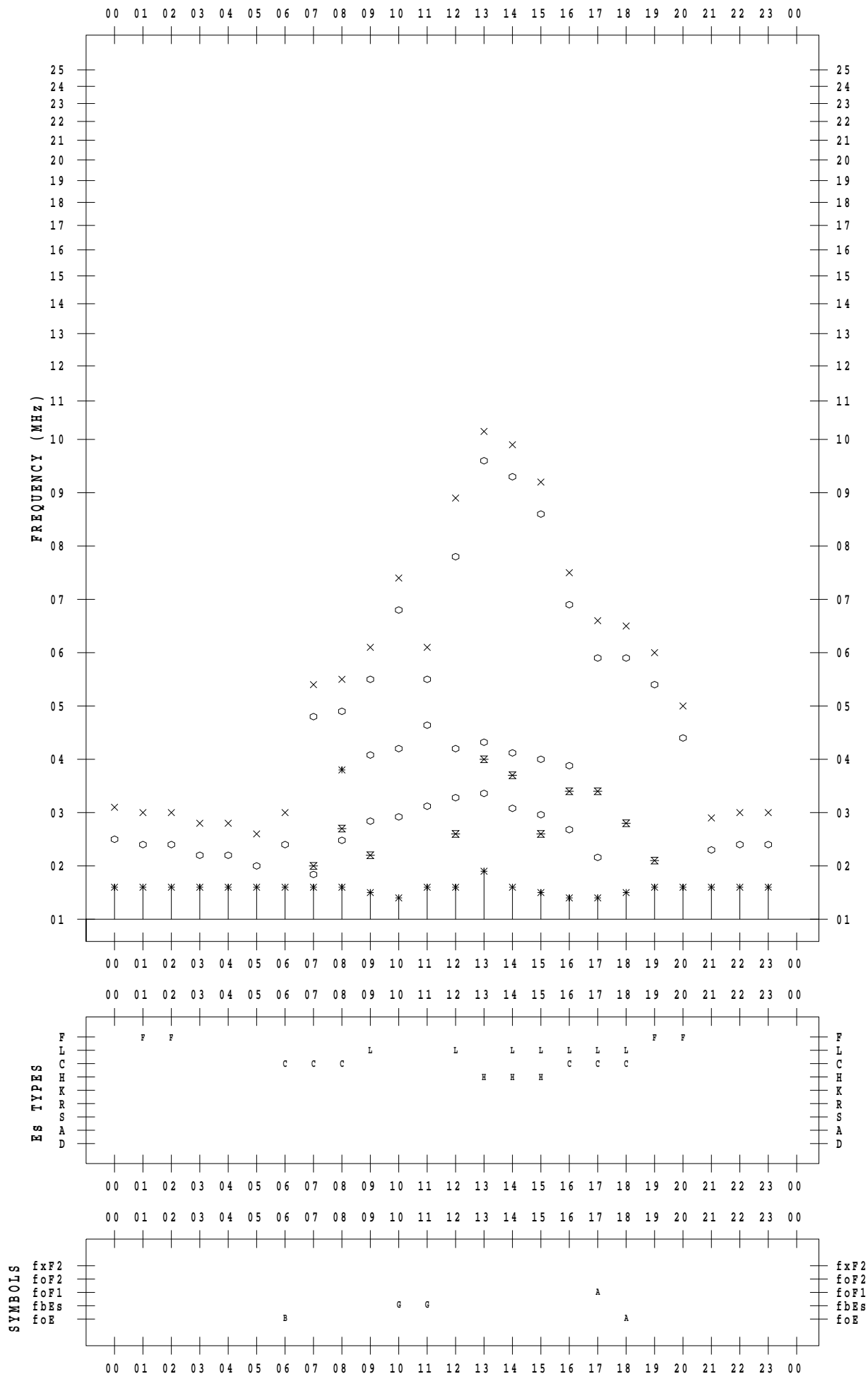
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 27

135 ° E MEAN TIME



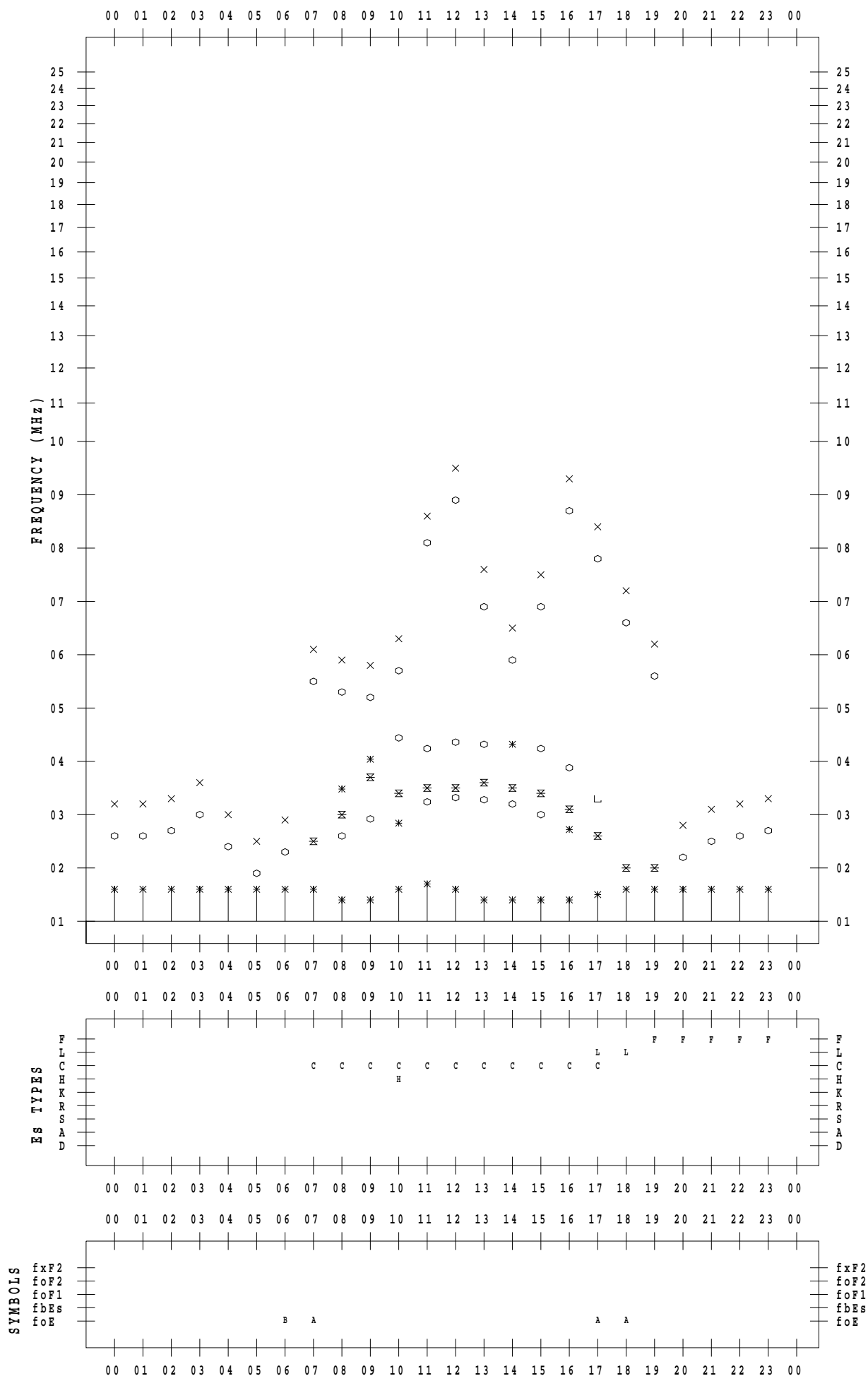
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 28

135 ° E MEAN TIME



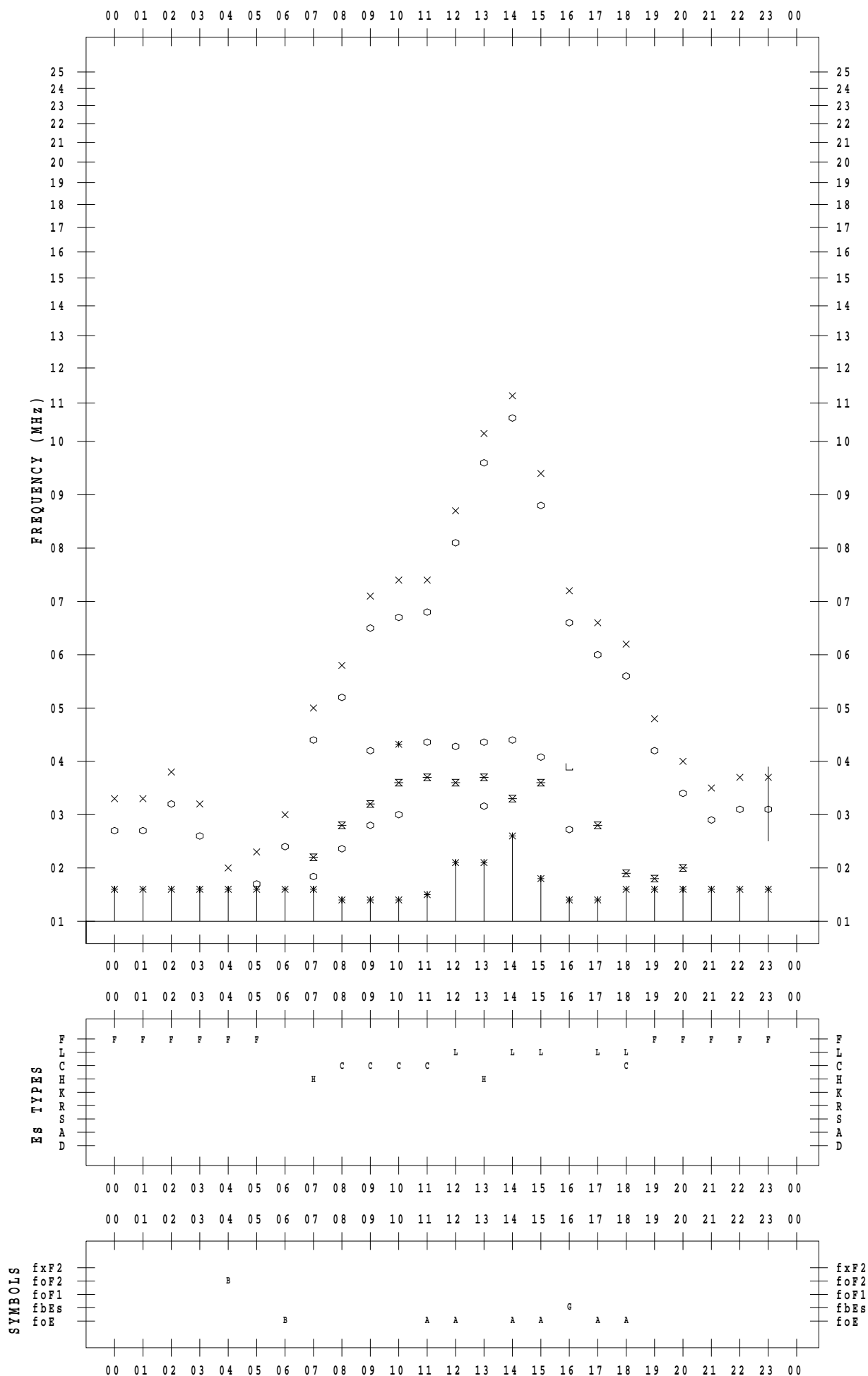
f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 29

135 ° E MEAN TIME



f - PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2019 / 9 / 30

135 ° E MEAN TIME

