ISSN 0021—0382

F—407

IONOSPHERIC DATA IN JAPAN

FOR NOVEMBER 1982

VOL. 34 NO. 11

CONTENTS

RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I), solar radio emission (S) and radio propagation (P) obtained at the following stations under the Radio Research Laboratories, Ministry of Posts and Telecommunications of Japan.

Station	Geographic		Geomagnetic		Technical Method
	Latitude	Longitude	Latitude	Longitude	
Wakkanai	45°23.5'N	141°41.2'E	35.3°N	206.5°	Vertical Sounding (I)
Akita	39°43.5'N	140°08.0'E	29.5°N	205.9°	" (I)
Kokubunji	35°42.4'N	139°29.3'E	25.5°N	205.8°	" (I)
Yamagawa	31°12.1'N	130°37.1'E	20.4°N	198.3°	" (I)
Okinawa	26°16.9'N	127°48.4'E	15.3°N	196.0°	" (I)
Hiraiso	36°22.0'N	140°37.5'E	26.3°N	206.8°	Radio Receiving (S, P)
Inubo	35°42.2'N	140°51.5'E	25.6°N	207.0°	" (P)

A. IONOSPHERE

Ionospheric observations are carried out at five stations in Japan by means of vertical sounding method.

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 Handbook of Ionogram Interpretation and Reduction (Second Edition) 1972".

a. Characteristics of Ionosphere

fxI — Top frequency of spread *F* trace

foF2, *foF1*, *foE*, *foEs* — Ordinary wave critical frequency for the *F2*, *F1*, *E* and *Es* including particle *E* layers respectively

fbEs — Blanketing frequency of the *Es* layer, e.g. the lowest ordinary wave frequency visible through *Es*

fmin — Lowest frequency which shows vertical ionospheric reflections

M(3000)F2, *M(3000)F1* — Maximum usable frequency factor for a path of 3000 km for transmission by *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 A. 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.

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 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 perturebation of parameters-Presence of polar spure traces.

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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 is present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple traces 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 normal *E* layer minimum virtual height or below the particle *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 (CNT) is the number of values from which a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (MED) of a set of numbers is the middle value when the numbers 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.

B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 100, 200 and 500 MHz at Hiraiso. Observation equipments are: a 5 meter parabolic reflector with a total-power receiver for 500 MHz and a 10 meter parabolic reflector with two polarimeters for 100 and 200 MHz. Observations are feasible almost from sunrise to sunset.

Time is expressed in hours, minutes and tenths of minutes U. T. and the unit of flux density is 10^{-22} Wm^{-2} Hz^{-1} for both components of polarization.

All symbols and terminology in the table of data are used in accordance with the "Descriptive Text of Solar-Geophysical Data, NOAA" and "Instruction Manual Monthly Report for Solar Radio Emission, WDC-C2".

a. Daily Data

Flux density. The three-hourly and daily mean values are given.

Variability. The three-hourly and daily mean values are given at 200 MHz only.
Variability is expressed in the following four grades.

0 quiet or no burst,
1 a few bursts,
2 many bursts,
3 very many bursts.

The number of bursts exceeding the mean flux level is counted.

Daily data with parenthesis mean that observation time does not exceed one third of the period.

b. Outstanding Occurrences

The phenomena are picked up on the following criteria:

1. distinct from the prevailing kind of activity,
2. correlated with other known solar phenomena,
3. remarkable change-over from one situation to another.

Type is denoted by numerical code and letter symbol in parallel as follows:

SGD Cord	Letter Symbol	Morphological Classification
1	S	Simple 1
2	S/F	Simple 1F
3	S	Simple 2
4	S/F	Simple 2F
5	S	Simple
6	S	Minor
7	C	Minor+
8	S	Spike
20	GRF	Simple 3
21	GRF	Simple 3A
22	GRF	Simple 3F
23	GRF	Simple 3AF
24	R	Rise
25	R	Rise A
26	FAL	Fall
27	RF	Rise and Fall
28	PRE	Precursor
29	PBI	Post Burst Increase
30	PBI	Post Burst Increase A
31	ABS	Post Burst Decrease
32	ABS	Absorption
40	F	Fluctuations
41	F	Group of Bursts
42	SER	Series of Bursts
43	NS	Onset of Noise Storm
44	NS	Noise Storm in progress
45	C	Complex
46	C	Complex F
47	GB	Great Burst
48	C	Major
49	GB	Major+

Flux density is the increase of flux over the level at which daily flux is calculated, or the increase of flux over the underlying burst when the event is superposed on another burst of long duration.

Polarization is expressed by the polarization degree and sence as follows:

R or L	right- or left-handed polarization,
W, M or S	weak, moderate or strong polarization,
0	almost zero or unable to detect polarization deu to small increase of flux.
00	polarization degree of less than 1 percent.

The following symbols may be attached after numerical values in table, if necessary.

D	greater than, or later than,
E	less than, or earlier than,
U	approximate, or uncertain.

C. RADIO PROPAGATION

a. Measurement of H. F. Field Strength

Field strength observation of 15 MHz standard waves transmitted from WWV and WWVH stations which are located respectively at Fort Collins, Colorado and Kauai, Hawaii, is carried out at Hiraiso. In order to avoid interference among the same frequency waves, the upper sideband of WWV or WWVH with the audio tone 600 Hz is picked up by the use of a narrow band pass filter with 80 Hz band width. Particulars of the transmitters and the receiver are summarized in the following table.

Characteristics	Transmitter		Receiver
Station Call	WWV	WWVH	
Location	Fort Collins, Colorado	Kauai, Hawaii	Hiraiso, Ibaraki
latitude	40°41'N	22°00'N	36°22'N
longitude	105°02'W	159°46'W	140°38'E
Distance	9150 km	5910 km	-
Carrier Power	10 kW	10 kW	-
Modulation	50 %	50 %	-
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical	4.5 m vertical rod
Bandwidth	-	-	80 Hz for upper side-band
Calibration	-	-	Every an hour

The tabulated *field strength* in dB above one microvolt per meter is the peak average of the incident upper side-band field intensity in 45 seconds after the universal time indicated on the table. Abbreviated symbols are as follows:

CNT	number of observed values,
MED	median,
UD	value of the uppermost decile when they are ranked according to magnitude,
LD	value of the lowest decile when they are ranked according to magnitude,
U	uncertain,
E	less than,
C	influenced by, or impossible because of, any artificial accident,
S	influenced by, or impossible because of, interferences or atmospherics.

b. Radio Propagation Quality Figures

The tabulated six-hourly quality figures are calculated for standard waves WWV transmitted from Fort Collins and standard waves WWVH transmitted from Kauai.

Quality figures expressing radio propagation conditions are ranged over five grades as follows:

1	very poor (very disturbed),
2	poor (disturbed),
3	rather poor (unstable),
4	normal,
5	good.

Whole day quality figure ranged in grades of 1_0, 1+, 2-, 2_0, 2+, 3-, 3_0, 3+, 4-, 4_0, 4+, 5-, 5_0 stands for an average of six-hourly ones of the two circuits. Abbreviated symbols are as follows:

C	artificial accident,
S	propagational accident,
U	inaccurate.

Radio propagation conditions which can be described with a code in the following

N	normal,
U	unstable,
W	disturbed

are forecast 12 hours in advance and broadcast six per an hour from JJY Station.

Data on a *geomagnetic storm* correlated with a radio propagation disturbance are tabulated from observation at Kakioka Magnetic Observatory, Japan Meteorological Agency. *Time* (U.T.) is expressed in unit of hour and minute (or tenth of hour), and *range* in gamma. When they are uncertain quantitatively, /'s are replaced with them. Continuation of a geomagnetic storm is denoted by ---.

c. Sudden Ionospheric Disturbances

(i) SWF

The table of short wave fade-out (SWF) is prepared from the record of field intensities measured at Hiraiso.

Drop-out intensities of the 10 MHz, the 20 MHz, and the 25 MHz waves are respectively distinguished by marks ', '' and ''' from these of the 15 MHz wave for WWV and WWVH. Values of *start*, *duration*, *type*, and *importance* are obtained from data of the circuit whose drop-out intensity in dB is underlined as xx. When these quantities are not given correctly, they are accompanied by the following symbols.

D	greater than,
E	less than,
U	uncertain or doubtful.

Types of fade-out are as follows:

S	sudden drop-out and gradual recovery,
SL	slow drop-out taking 5 to 15 minutes and gradual recovery,
G	gradual and irregular in both drop-out and recovery.

Importance of fade-out is scaled according to its amplitude into nine ascending grades as 1-, 1, 1+, 2-, 2, 2+, 3-, 3, 3+.

Correspondence of solar optical flare, solar radio burst, and geomagnetic crochet to SWF is marked by X in accordance with interchange messages of IUWDS and observations at Hiraiso.

(ii) SPA

Data of sudden phase anomaly (SPA) are prepared from the records of phase measurement of VLF radio waves received at Inubo. The transmitting stations are listed in the following table.

Phase advance is shown in unit of degree at its maximum stage. No transmission or no reception during the period is indicated by —, and indistinguishable record is spaced out, and multi-peak event is marked by *.

Out of more than two circuits on which the same SPA event is observed, the *phase advance* on the circuit on which the SPA is the most remarkable or distinct is underlined. As for the underlined, *phase advance*, *start*, *end* and *maximum* times are obtained.

In table (i) SWF and (II) SPA, *date* indicates the day to which *start-time* of event belongs.

The following letters may be attached to the value, if necessary.

D	greater than,
E	less than,
U	uncertain or doubtful.

Transmitting Stations

Name	Location (Geographic Coordinate)		Call Sign	Frequency (kHz)	Radiation Power (kW)	Arc Distance from Inubo (km)
Rugby	52°22'N	001°11'W	GBR	16.0	(750) 60	9550
Jim Creek	48°12'N	121°55'W	NLK	18.6	(1200) 130	7620
North West Cape	21°49'S	114°10'E	NWC	22.3	1000	6990
Aldra	66°25'N	013°09'E	Ω/N	13.6	10	7820
North Dakota	46°22'N	098°21'W	Ω/ND	13.6	10	9140
Haiku	21°24'N	157°50'W	Ω/H	13.6	10	6100
La Reunion	20°58'S	055°17'E	Ω/LR	13.6	10	10970

IONOSPHERIC DATA

NOV. 1982 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long. 141° 41·2' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	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 47	X 46	X 45	X 43	X 38	X 32	X 53											X 91	X 80	X 71	X 68	X 66	X 65	X 60
2	X 58	X 57	X 59	X 61	X 57	X 60	X 60											X 90	X 79	X 77	X 63	63	X 62	62
3	62	57	X 57	56	X 50	X 55	X 67											X 108	X 82	X 70	X 52	X 59	X 61	63
4	64	X 61	A	X 47	X 50	X 53	X 65											X 107	X 77	X 66	X 62	X 59	X 57	54
5	56	60	60	57	62	X 48	X 51											X 79	X 71	X 62	X 55	60	59	60
6	60	58	55	57	60	44	X 55											X 73	X 67	X 71	X 57	X 52	X 51	X 50
7	57	59	59	58	X 51	X 50	X 61											X 85	X 60	X 59	X 51	X 50	X 51	X 45
8	X 46	X 48	X 49	X 49	X 51	X 49	X 53											X 76	X 67	X 64	X 52	X 52	X 50	X 50
9	X 51	X 51	X 50	X 48	X 46	X 51	X 59											X 92	X 79	X 69	X 61	X 57	X 57	X 58
10	X 60	X 59	X 57	X 56	X 56	X 56	X 54											X 80	X 71	X 68	X 61	X 58	X 50	X 49
11	X 52	X 55	X 55	X 60	X 57	X 54	X 62											X 90	X 77	X 67	X 58	X 56	X 54	X 57
12	X 60	X 54	X 53	X 55	X 55	X 54	X 59											X 90	X 75	X 59	X 58	X 53	X 53	X 50
13	X 52	X 54	X 52	X 51	X 50	X 50	X 60											X 82	X 66	X 55	X 52	X 52	X 53	X 53
14	X 48	X 45	X 48	X 48	X 50	X 51	X 51											X 74	X 60	X 58	X 59	X 49	X 50	X 52
15	X 53	X 50	X 48	X 50	X 51	X 46	X 43											X 82	X 52	X 50	X 43	X 42	X 45	X 43
16	X 45	X 43	X 43	X 42	X 43	X 42	X 43											X 76	X 64	X 50	X 46	X 43	X 42	X 43
17	X 47	X 44	X 43	X 43	X 44	X 44	X 49											X 72	X 43	X 47	X 47	X 44	X 40	X 41
18	X 42	48	X 43	X 42	X 43	X 35	X 42											X 77	X 59	X 41	X 41	X 41	X 44	X 47
19	S 50	51	50	50	X 44	X 41	X 39											X 66	X 53	X 50	X 45	X 44	X 47	X 47
20	X 50	X 51	X 50	X 51	X 50	X 46	X 41											X 67	X 64	X 57	X 51	X 49	X 50	X 50
21	X 52	X 52	X 55	X 51	X 57	X 48	X 53											X 91	X 78	X 63	X 51	X 50	X 52	X 54
22	X 57	X 57	X 50	X 50	X 50	X 49	X 58											X 113	X 94	X 77	X 75	X 68	X 66	X 64
23	57	65	66	65	X 69	X 67	X 69											X 77	X 71	X 64	X 51	X 48	X 51	56
24	55	58	60	50	X 48	X 47	X 48											X 82	X 75	X 64	57	57	X 60	60
25	X 48	X 43	X 43	X 41	X 45	X 40	X 40											X 90	X 57	X 59	X 52	X 44	45	40
26	46	50	50	37	37	X 35	X 35											X 98	X 69	X 51	X 44	X 40	X 43	X 44
27	X 45	X 44	X 43	X 43	X 47	X 57	X 42											X 81	X 57	X 52	X 44	X 42	X 43	X 43
28	X 44	X 44	X 45	X 47	X 43	X 38	X 40											X 78	X 67	X 61	X 54	X 47	X 46	X 48
29	X 50	X 47	X 47	X 50	X 48	X 51	X 47											X 78	X 68	X 61	X 45	X 39	X 41	X 42
30	X 42	50	50	X 46	X 38	X 33	X 37											X 75	X 57	X 55	X 48	X 44	X 44	X 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	30	30	30	30											30	30	30	30	30	30	30
MED	X 52	X 51	X 50	X 50	X 50	X 48	X 52											X 82	X 68	X 61	X 52	X 50	X 50	X 50
UQ	X 57	X 57	X 55	X 56	X 55	X 53	X 59											X 90	X 77	X 67	X 58	X 57	X 57	X 57
LQ	X 47	X 47	X 47	X 46	X 44	X 42	X 42											X 76	X 60	X 55	X 47	X 44	X 45	X 44

NOV. 1982 | FXI (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1982 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long. 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	41	39	39	37	H 31	26	46	83	114	124	133	134	141	136	141	121	103	84	73	64	61	59	58	53
2	51	50	52	54	50	53	53	101	108	128	125	142	143	126	134	125	113	83	72	70	56	F 56	55	F
3	F	F	50	F	43	48	60	96	144	136	142	151	153	144	140	138	134	101	75	63	H 45	52	54	F 56
4	F 57	54	A	40	43	47	58	110	119	133	136	143	139	126	130	127	120	100	70	59	55	52	50	F 44
5	F	F	F	F	F 50	41	44	73	100	115	124	124	125	118	117	112	100	72	64	55	48	F	F	F
6	F	F	F	F	F	F	48	83	102	120	H 140	132	115	106	110	108	94	66	60	64	50	45	44	43
7	F	F	F	F	44	43	54	91	117	129	131	129	121	113	109	107	95	78	53	52	44	43	44	38
8	39	41	42	42	44	42	46	80	102	111	120	129	114	119	110	101	96	69	60	57	45	45	43	43
9	44	44	43	41	39	44	52	79	105	107	118	137	134	130	124	124	114	85	72	62	54	50	50	51
10	53	52	50	49	49	49	47	84	111	126	118	127	126	130	126	125	105	73	64	61	54	51	43	42
11	45	48	48	53	50	47	55	93	123	132	129	C	C	C	C	C	111	83	70	60	51	49	47	50
12	53	47	46	48	48	47	52	101	117	123	131	131	120	116	119	116	96	83	68	52	51	46	46	43
13	45	47	45	44	43	43	53	86	127	129	128	120	120	120	123	114	97	75	59	48	45	45	46	46
14	41	38	41	41	43	44	S 44	71	96	105	116	124	116	115	111	104	H 93	67	53	51	52	42	43	45
15	46	43	41	43	44	39	36	72	90	115	118	130	128	122	109	104	104	75	45	43	36	35	38	36
16	38	36	36	35	36	35	S 36	76	91	114	141	128	120	120	104	106	96	69	57	43	39	36	35	36
17	40	37	36	36	37	37	42	68	92	95	93	107	118	108	H 108	98	83	65	36	40	40	37	33	34
18	35	F	36	35	36	28	35	69	96	111	113	106	112	116	116	93	85	70	52	34	34	34	37	40
19	S 43	F 40	F 38	F 39	37	34	32	65	98	117	129	126	117	108	109	96	84	59	46	43	38	37	40	40
20	43	44	43	44	43	39	34	64	83	104	113	113	102	101	103	100	86	60	57	50	44	42	43	43
21	45	45	48	44	50	41	46	82	101	100	107	113	110	104	106	103	89	84	71	56	44	43	45	47
22	50	50	43	43	43	42	51	74	100	127	135	141	140	139	143	133	111	106	87	70	68	61	59	57
23	F 50	F	F	F 58	62	60	62	82	94	106	119	133	118	121	117	106	86	70	64	57	44	41	44	F
24	F	F	F	F 43	41	40	41	52	67	100	106	123	126	126	124	125	106	75	68	57	F 50	F 50	53	F
25	41	36	36	34	38	S 33	33	45	63	69	H 86	H 96	89	77	77	71	83	83	50	52	U S 45	37	F	F 33
26	F	F	F	F 30	F 30	28	28	67	95	109	125	137	131	128	124	113	100	91	62	44	37	33	36	37
27	38	37	36	36	40	50	S 35	63	86	116	129	127	125	112	103	101	91	74	50	45	37	35	36	36
28	37	37	38	40	36	31	33	73	110	105	140	135	125	120	130	108	89	71	60	54	47	40	39	41
29	43	40	40	43	41	44	40	68	94	115	129	131	120	105	109	104	86	71	61	54	38	32	34	35
30	S 35	F	F	39	31	26	30	58	98	142	132	H 131	109	111	118	103	89	68	50	48	41	37	37	36
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	21	22	26	29	29	30	30	30	30	30	29	29	29	29	29	30	30	30	30	30	29	28	26
MED	43	43	42	42	43	42	45	75	100	115	126	129	120	119	117	107	96	74	60	54	45	43	44	42
UQ	48	47	46	44	44	47	52	84	111	127	132	134	128	126	124	121	105	83	70	60	51	50	48	46
LQ	40	38	38	37	37	35	35	68	94	106	118	124	116	111	109	103	89	69	53	48	40	37	38	36

NOV. 1982 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11												C	C	C	C	C								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24										L														
25											L 480	L												
26																								
27																								
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													
MED											L 480													
UQ																								
LQ																								

NOV. 1982 | FOF1 (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long. 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								215	275	300	310	A	A	A	300	A	A							
2								200	260	295	315	325	320	310	295	240	175							
3								190	250	290	A	320	320	305	285	225	A							
4								A	235	275	A	A	A	A	A	A	S							
5								200	A	A	A	A	A	A	A	A	A							
6								A	A	A	A	320	310	305	285	A	A							
7								210	A	295	305	310	320	A	A	A	A							
8								200	265	300	A	A	A	305	280	225	A							
9								225	260	290	A	315	320	315	290	A	A							
10								210	A	A	A	A	320	A	295	A	A							
11								200	255	290	300	C	C	C	C	C	145							
12								190	260	295	295	A	A	305	A	A	A							
13								205	265	290	300	A	A	A	A	A	A							
14								190	250	295	310	320	315	310	A	230	S							
15								185	255	290	A	A	305	305	275	A	A							
16								200	260	300	300	305	305	315	290	225	S							
17								180	260	300	305	320	315	305	A	A	A							
18								A	255	295	305	310	A	A	275	230	S							
19								185	225	275	300	315	310	305	295	A	A							
20								160	245	A	A	310	315	300	290	220	S							
21								A	265	300	310	320	315	300	280	230	150							
22								A	A	290	A	A	315	300	290	230	A							
23								A	250	300	315	315	320	310	290	215	S							
24								A	A	A	A	A	305	300	275	200	S							
25								A	A	295	A	A	A	A	A	A	S							
26								A	A	A	A	305	B	B	310	255	A							
27								A	A	A	A	305	305	A	A	A	A							
28								A	245	290	305	305	305	300	280	215	S							
29								S	A	A	A	310	305	300	280	A	A							
30								170	235	A	A	A	310	300	260	210	S							
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	20	21	14	17	20	19	20	14	3							
MED								200	255	295	305	315	315	305	288	225	150							
UQ								205	260	300	310	320	320	308	292	230	162							
LQ								185	248	290	300	310	305	300	280	215	148							

NOV. 1982 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long. 141° 41·2' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	24	E	E	50	26	23	E S 16	G	G	39	37	48	58	48	36	45	43	26	26	30	30	35	40	27
2	E S 16	36	E S 13	E	E	E	E S 16	29	51	38	G	G	G	G	G	G	G	32	30	28	26	E S 16	E S 12	26
3	25	26	28	25	24	E S 16	E S 16	30	G	35	63	G	G	G	G	G	32	24	E S 16	29	27	36	33	32
4	44	53	42	32	E	32	E S 16	33	50	53	96	53	42	50	32	25	E S 18	22	40	40	38	E	31	35
5	26	E	23	29	30	31	30	G	40	43	84	46	64	43	40	65	59	40	96	40	31	32	35	31
6	40	35	32	30	53	36	E S 17	40	58	62	53	G	G	G	G	30	30	27	30	E S 16	E	E S 15	27	26
7	E S 15	32	25	E	E	E S 15	E S 15	G	38	G	G	G	G	41	40	36	41	37	34	24	E S 17	25	30	E
8	E S 14	27	25	24	25	28	30	G	G	G	36	59	58	58	G 22	G 20	23	E S 14	E S 16	E	E S 15	E S 15	E	E S 15
9	E S 16	26	21	23	30	21	E	G	G	32	40	G	G	G	32	50	32	40	40	E S 16	E S 16	20	27	42
10	42	30	34	30	28	26	E S 15	G	33	38	38	66	41	32	G	36	20	E	38	26	50	70	30	27
11	31	28	33	30	26	25	E S 15	G	36	58	40	C	C	C	C	C	28	32	27	E	30	41	22	33
12	33	34	30	E	32	E	E S 15	G	G	G	66	39	33	G	37	32	30	35	E	36	33	32	30	E S 15
13	E	E	22	24	26	26	25	G	G	G	G	33	37	36	44	30	29	E	E	E	E S 15	E	E	E
14	E	E	E	E	25	30	26	G	G	G	G	G	G	G	36	G	E S 16	E	E S 14	E	26	E	31	E
15	30	30	E	E	E	23	E S 15	G	G	G	35	41	G	G	G	39	30	23	31	31	26	E	E S 17	E S 15
16	E S 15	E S 15	E	24	30	E	E	G	G	G	39	36	G	G	G	G	E S 15	31	33	25	41	33	26	38
17	28	E	27	E	E	E S 15	E	G	G	G	G	G	G	G	46	26	45	43	27	26	24	23	24	E
18	E S 15	E	24	E	E	E	30	33	G	G	G	G	63	34	G 23	G	E S 16	E	38	34	24	E	E S 15	E
19	E S 16	24	E	E	26	E	E S 14	26	58	61	G	G	G 26	G 28	G	33	50	32	36	31	30	27	30	E
20	E	E	E	E	E	E	E S 15	G	30	38	33	G	G	G	G	G	E S 15	E	E S 15	E	E	52	45	30
21	36	27	24	E	30	E	E	22	G	G	G	G	40	G	G	G	G	E	E S 15	E	E	E S 15	E S 15	E S 15
22	E	E	E	21	E	E	E S 15	32	40	G	55	40	G	G	G	G	29	30	28	31	29	25	26	31
23	30	27	24	27	23	E	22	41	G	G	G	G	G	G	G	G 15	E S 18	E	E	E	E S 15	E S 15	E	27
24	30	26	25	E	23	E	E S 15	J A 75	33	39	38	40	50	G	G	28	76	83	60	33	40	40	26	E
25	E S 16	E	15	21	31	60	E S 16	30	28	G	40	32	32	40	29	59	E S 17	20	E S 15	E	E	30	E	32
26	27	E	E	E	E	26	27	22	38	60	36	G	E B 60	E B 47	G	G	26	27	E S 16	E S 15	22	37	28	23
27	35	E	E	E	E	E S 15	E	29	36	31	32	33	G 28	40	42	44	30	27	23	E S 16	E S 15	E S 15	E	E
28	E	E	E S 15	E	E	28	E	26	G 23	G	G 30	G	G	G	40	G	20	18	31	36	37	30	30	35
29	30	36	36	30	21	24	E	E S 17	41	54	50	60	G 30	G 25	34	32	31	E S 15	E S 14	E S 14	E	28	31	30
30	24	E	E	E	E	30	E	G	G	50	57	62	G 27	30	27	30	E S 15	26	E S 15	E S 15	E	E S 15	E	E S 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	29	29	29	29	29	30	30	30	30	30	30	30	30
MED	24	25	22	E E 21	24	22	E E 15	E G 17	26	32	36	32	G 26	G	G 23	28	28	26	27	24	25	25	26	26
UQ	30	30	27	27	28	28	E S 17	30	38	43	50	41	40	U 38	36	36	32	32	34	31	30	33	30	31
LQ	E S 15	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E S 17	E E 14	E S 15	E	E E 15	E E 15	E E 15	E

NOV. 1982 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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	E	E	E	E	E	E S 16	G	G	G	G	35	34	35	29	43	20	E	E	E	E	E	21	E
2	E S 16	25	E S 13	E	E	E	E S 16	G	G	G	G	G	G	G	G	G	G	23	E	E	E	E S 16	E S 12	E
3	E	E	E	E	E	E S 16	E S 16	30	G	G	32	G	G	G	G	G	19	E	E S 16	E	E	E	E	22
4	30	27	A A 42	E	E	E	E S 16	26	32	32	35	32	32	34	29	25	E S 18	20	35	E	E	E	E	E
5	E	E	E	E	E	E	E	G	27	31	50	40	35	33	30	26	22	E	E	25	E	E	E	E
6	E	E	E	E	30	E	E S 17	25	32	30	40	G	G	G	G	25	19	17	E	E S 16	E	E S 15	E	E
7	E S 15	E	E	E	E	E S 15	E S 15	G	27	G	G	G	G	31	29	25	30	26	E	E	E S 17	E	E	E
8	E S 14	E	E	E	E	E	E	G	G	G	32	45	36	G	G 20	G 19	19	E S 14	E S 16	E	E S 15	E S 15	E	E S 15
9	E S 16	E	E	E	E	E	E	G	G	G	33	G	G	G	24	26	19	E	33	E S 16	E S 16	E	E	E
10	30	E	E	E	E	E	E S 15	G	27	30	32	47	29	32	G	24	16	E	30	E	26	E	E	E
11	E	E	E	E	E	E	E S 15	G	G	50	G	C	C	C	C	C	22	E	E	E	E	E	E	23
12	30	E	E	E	E	E	E S 15	G	G	G	66	31	31	G	29	24	16	E	E	E	E	22	E	E S 15
13	E	E	E	E	E	E	E	G	G	G	G	32	32	31	28	23	18	E	E	E	E S 15	E	E	E
14	E	E	E	E	E	E	E	G	G	G	G	G	G	G	28	G	E S 16	E	E S 14	E	E	E	E	E
15	E	E	E	E	E	E	E S 15	G	G	G	32	32	G	G	G	22	17	E	E	E	E	E	E S 17	E S 15
16	E S 15	E S 15	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E S 15	E	E	E	20	E	E	E
17	E	E	E	E	E	E S 15	E	G	G	G	G	G	G	G	29	23	18	E	E	E	E	E	E	E
18	E S 15	E	E	E	E	E	E	20	G	G	G	G	31	31	G 22	G	E S 16	E	E	E	E	E	E S 15	E
19	E S 16	E	E	E	E	E	E S 14	G	40	45	G	G	G 26	G 26	G	23	16	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E S 15	G	G	29	31	G	G	G	G	G	E S 15	E	E S 15	E	E	E	E	E
21	E	E	E	E	E	E	E	20	G	G	G	G	G	G	G	G	G	E	E S 15	E	E	E S 15	E S 15	E S 15
22	E	E	E	E	E	E	E S 15	23	25	G	35	32	G	G	G	G	17	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	21	G	G	G	G	G	G	G	G	E S 18	E	E	E	E S 15	E S 15	E	E
24	E	E	E	E	E	E	E S 15	20	30	29	30	31	G	G	G	G	20	E	25	E	E	E	E	E
25	E S 16	E	E	E	E	E	E S 16	21	26	G	32	G	31	31	28	20	E S 17	E	E S 15	E	E	E	E	E
26	E	E	E	E	E	E	E	20	G	50	31	G	E B 60	E B 47	G	G	18	E	E S 16	E S 15	E	E	E	E
27	E	E	E	E	E	E S 15	E	20	27	29	31	G	G	30	27	28	20	E	E	E S 16	E S 15	E S 15	E	E
28	E	E	E S 15	E	E	E	E	21	G 20	G	G	G	G	G	G	G	G	E	E	E	E	E	E	25
29	E	E	E	E	E	E	E	E S 17	26	28	31	G	G 28	G 21	G	22	17	E S 15	E S 14	E S 14	E	E	E	E
30	E	E	E	E	E	E	E	G	G	29	31	31	G 24	24	21	19	E S 15	E	E S 15	E S 15	E	E S 15	E	E S 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	29	29	29	29	29	30	30	30	30	30	30	30	30
MED	E	E	E	E	E	E	E E 14	G	G	G	31	G	G	G	G	20	18	E	E	E	E	E	E	E
UQ	E S 15	E	E	E	E	E	E S 15	20	27	29	32	32	31	31	28	24	19	E	E S 15	E	E E 15	E E 15	E	15
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E G 16	E	E	E	E	E	E	E

NOV. 1982 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | F-MIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45°23.5' N, Long 141°41.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 S 16	E	E	E	E	E	E S 16	E S 16	12	16	18	18	18	20	16	15	E S 13	E	E S 12	E	E S 12	E	E	E S 12
2	E S 16	E	E S 13	E	E	E	E S 16	16	10	10	19	18	19	18	16	16	E S 16	E	E S 12	E S 15	E S 14	E S 16	E S 12	E S 12
3	E S 15	E S 11	E S 12	E	E	E S 16	E S 16	E S 16	16	17	18	19	19	18	16	13	E S 11	E	E S 16	E S 12	E	E S 11	E	E
4	E S 13	E	E S 12	E	E	E S 12	E S 16	E S 16	15	17	17	18	18	10	10	17	E S 18	E	E S 15	E	E	E	E	E
5	E	E	E	E	E	E	E S 15	11	11	16	10	18	17	16	17	16	10	E S 16	E S 15	E	E	E	E	E
6	E	E	E	E S 15	E	E	E S 17	17	17	10	10	17	20	17	11	10	E	E	E S 14	E S 16	E	E S 15	E	E
7	E S 15	E	E	E	E	E S 15	E S 15	17	16	18	18	19	17	11	10	10	10	E	E	E S 16	E S 17	E S 17	E S 16	E
8	E S 14	E	E	E	E	E	E S 16	E S 15	16	17	17	19	19	11	16	15	10	E S 14	E S 16	E	E S 15	E S 15	E	E S 15
9	E S 16	E	E	E	E	E S 15	E	18	19	20	20	26	20	20	18	11	10	E	E	E S 16	E S 16	E	E	E
10	E	E	E	E	E	E	E S 15	16	17	16	18	19	19	18	17	12	10	E	E	E	E	E	E	E
11	E	E	E	E	E	E S 14	E S 15	E S 16	17	17	19	C	C	C	C	C	11	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E S 15	14	12	11	18	18	18	19	17	17	10	E	E	E	E	E	E	E S 15
13	E	E	E	E	E	E	E	13	15	11	18	19	20	19	15	10	E	E	E	E	E S 15	E	E	E
14	E	E	E	E	E	E	E	12	11	11	17	12	17	18	10	10	E S 16	E	E S 14	E	E	E	E	E
15	E	E	E	E	E	E	E S 15	E S 14	12	10	11	18	20	19	11	11	E	E	E	E	E	E	E S 17	E S 15
16	E S 15	E S 15	E	E	E	E	E	11	11	11	17	16	18	20	17	12	E S 15	E	E	E	E	E	E	E
17	E	E	E	E	E	E S 15	E	10	16	12	11	17	18	17	12	10	10	E	E	E	E	E S 15	E S 16	E
18	E S 15	E	E	E	E	E	E	10	13	17	18	18	17	17	17	16	E S 16	E	E	E	E	E	E S 15	E
19	E S 16	E S 15	E	E	E	E	E S 14	12	13	17	12	17	18	17	11	10	E	E	E	E	E	E S 15	E	E
20	E	E	E	E	E	E	E S 15	10	11	11	11	17	18	17	15	15	E S 15	E	E S 15	E	E	E	E	E
21	E	E	E	E	E	E	E	E	17	20	20	20	20	20	18	15	E	E	E S 15	E	E	E S 15	E S 15	E S 15
22	E	E	E	E	E	E	E S 15	E	10	11	18	16	17	18	16	17	10	E	E	E	E	E	E S 16	E S 15
23	E	E	E	E	E	E	E	E	10	18	18	18	18	20	18	10	E S 18	E	E	E	E S 15	E S 15	E	E
24	E	E	E	E	E	E	E S 15	10	16	17	18	17	18	19	19	16	E S 15	E	E	E	E	E S 15	E S 15	E
25	E S 16	E	E	E	E	E S 15	E S 16	11	17	19	18	20	20	19	19	18	E S 17	E S 15	E S 15	E	E	E	E	E
26	E S 15	E	E	E	E	E	E S 15	12	17	17	17	18	60	47	22	20	E	E	E S 16	E S 15	E S 15	E	E	E
27	E	E	E	E	E	E S 15	E	E S 16	20	20	20	19	19	20	19	18	10	E	E	E S 16	E S 15	E S 15	E	E
28	E	E	E S 15	E	E	E	E	E	10	17	11	20	20	20	19	18	E S 14	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E S 17	17	17	19	13	20	19	17	11	E	E S 15	E S 14	E S 14	E	E	E S 15	E
30	E	E	E	E	E	E	E	10	15	19	19	19	18	18	11	10	E S 15	E	E S 15	E S 15	E	E S 15	E	E S 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	29	29	29	29	29	30	30	30	30	30	30	30	30
MED	E	E	E	E	E	E	E S 15	11	15	17	18	18	18	18	16	15	E E 10	E	E	E	E	E	E	E
UQ	E S 15	E	E	E	E	E S 12	E S 15	E S 16	17	17	18	19	20	20	18	16	E S 15	E	E S 15	E S 14	E S 14	E S 15	E S 15	E S 12
LQ	E	E	E	E	E	E	E	10	11	11	17	17	18	17	12	10	10	E	E	E	E	E	E	E

NOV. 1982 | F-MIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	255	255	245	245	H 210	210	260	315	305	310	295	295	290	290	295	295	305	290	285	295	270	270	250	255
2	235	240	230	230	240	275	300	325	335	315	305	310	305	285	300	305	315	290	290	305	295	F 260	265	F
3	F	F	250	F	235	240	285	240	325	305	305	300	295	290	285	295	310	305	285	315	H 245	250	240	F 265
4	F 295	305	A	265	265	275	315	335	330	330	315	315	315	310	305	315	320	330	310	305	305	290	280	F 280
5	F	F	F	F	F 280	280	295	315	340	330	325	305	315	315	315	320	330	300	305	320	295	F	F	F
6	F	F	F	F	F	F	290	335	330	325	H 320	320	320	300	320	315	320	295	295	305	320	280	270	265
7	F	F	F	F	270	285	315	330	330	335	305	315	320	320	320	315	310	335	305	305	295	280	295	275
8	280	280	285	270	285	285	305	335	335	325	315	325	305	320	315	310	335	290	315	315	275	290	275	270
9	265	255	275	255	230	270	310	335	310	310	305	305	300	305	295	305	315	310	300	305	295	275	270	275
10	270	250	260	260	260	270	295	335	330	325	305	310	310	305	305	315	305	305	300	310	305	315	280	250
11	265	270	260	265	270	265	290	315	325	340	320	C	C	C	C	C	315	315	300	300	275	265	250	245
12	275	285	260	250	255	260	290	335	330	325	320	310	315	310	310	320	330	305	315	290	295	280	270	255
13	270	275	275	265	280	265	215	325	335	335	325	315	315	310	310	320	320	310	315	285	285	270	280	295
14	285	280	270	270	275	270	S 295	340	330	315	325	310	320	315	325	325	H 310	315	300	290	315	260	260	270
15	270	265	270	260	270	295	305	325	320	320	315	305	305	305	295	310	335	330	275	300	285	265	285	250
16	290	275	265	265	285	320	S 315	330	320	335	325	305	300	315	310	320	335	310	315	290	305	300	275	250
17	275	285	285	280	290	310	280	325	345	315	320	310	320	325	H 310	315	340	330	315	300	290	325	250	265
18	275	F	280	315	315	340	285	325	335	335	325	300	320	325	305	320	320	300	305	280	295	275	270	275
19	S 255	F 250	F 255	F 270	270	325	305	305	340	305	325	335	330	315	330	335	340	320	310	290	290	290	280	275
20	275	275	275	275	280	300	300	330	325	325	325	335	320	315	320	330	325	315	330	295	295	285	280	280
21	265	270	270	270	300	295	280	360	355	320	325	325	300	310	300	320	315	310	300	320	270	270	265	245
22	270	285	280	260	255	260	305	305	320	315	295	310	300	300	295	305	290	300	310	305	290	305	285	300
23	F 280	F	F	F 265	290	300	310	340	340	320	320	300	305	305	310	320	320	295	305	335	315	275	265	F
24	F	F	F	F 230	235	235	250	305	300	290	300	315	300	310	305	310	320	295	300	290	F 280	F 240	245	F
25	230	220	220	225	225	S 210	240	275	285	275	H 235	H 280	315	335	325	280	290	300	300	285	U S 335	270	F	F 270
26	F	F	F	F 270	F 300	285	285	330	335	320	320	320	320	310	315	320	320	325	320	325	280	250	270	270
27	275	270	250	250	255	320	S 320	315	325	325	340	320	330	320	315	320	330	330	310	300	300	260	270	250
28	265	245	285	275	250	260	270	330	345	340	330	325	320	310	325	330	325	300	310	315	295	280	265	270
29	275	265	265	275	270	290	300	325	320	330	320	330	320	315	320	325	335	320	310	335	295	260	265	275
30	S 255	F	F	270	290	240	235	305	285	325	320	H 305	310	315	320	320	325	295	315	305	305	295	270	275
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	21	22	26	29	29	30	30	30	30	30	29	29	29	29	29	30	30	30	30	30	29	28	26
MED	270	270	268	265	270	275	295	325	330	325	320	310	315	310	310	320	320	308	305	305	295	275	270	270
UQ	275	280	275	270	285	295	305	335	335	330	325	320	320	315	320	320	330	320	315	315	305	290	280	275
LQ	265	255	255	255	255	260	280	315	320	315	305	305	305	305	305	310	315	300	300	290	285	265	265	255

NOV. 1982 | M(3000)F2 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long. 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11												C	C	C	C	C								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
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22																								
23																								
24										L														
25											L 335	L												
26																								
27																								
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													
MED											L 335													
UQ																								
LQ																								

NOV. 1982 | M(3000)F1 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long. 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11												C	C	C	C	C								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24										305 L														
25											345	270												
26																								
27																								
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	1	1												
MED										305 L	345	270												
UQ																								
LQ																								

NOV. 1982 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'F (KM)

135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	340	340	325	345	H 240	445	305	210	230	225	225	225	230	240	240	225	230	220	225	250	300	290	305	265
2	330	A 370	325	345	330	275	225	240	230	235	225	220	H 225	230	245	225	220	200	230	235	250	295	290	330
3	345	360	355	345	405	340	275	245	225	230	230	225	225	235	240	235	225	200	220	225	275	325	350	300
4	A	250	A	300	305	290	255	230	220	215	225	220	220	220	220	225	220	205	A	220	245	250	280	270
5	325	320	305	300	250	250	260	225	230	225	A	220	225	220	225	220	210	215	250	240	235	260	315	330
6	305	330	300	300	A	320	275	220	225	225	H 225	H 220	220	215	235	220	210	205	250	255	220	275	290	285
7	305	285	275	300	290	290	250	230	220	H 200	230	210	225	230	225	225	220	220	255	245	240	265	265	270
8	300	290	280	300	275	230	240	220	220	220	220	A	230	225	225	220	215	200	220	235	250	265	290	305
9	310	300	280	310	415	290	215	220	225	215	205	245	230	240	225	225	210	215	A 250	230	240	255	290	325
10	A 325	305	285	300	280	255	215	220	220	220	210	A 240	220	235	225	230	210	200	270	240	270	270	255	315
11	315	300	305	280	250	250	270	220	225	A	220	C	C	C	C	C	210	215	215	240	270	280	320	350
12	A 315	245	300	305	310	300	265	230	220	220	A	220	220	220	230	220	215	215	210	225	260	290	280	315
13	300	275	265	300	270	300	260	225	225	220	215	210	225	225	225	215	210	200	220	250	260	290	255	240
14	225	285	305	295	280	220	225	205	215	215	225	225	220	225	220	225	200	200	225	250	235	260	340	315
15	275	275	255	270	260	215	240	215	215	230	220	230	225	220	220	215	220	205	220	270	290	330	305	350
16	300	315	305	325	295	215	235	220	210	215	225	215	210	225	215	220	210	200	200	235	270	285	300	370
17	295	275	255	270	280	220	200	220	220	215	205	H 215	225	230	H 220	205	215	205	205	250	235	240	280	305
18	305	320	295	250	250	205	250	220	220	220	220	215	H 205	240	225	210	215	200	210	250	280	295	300	300
19	340	350	350	320	265	225	245	220	A	A	220	225	H 220	225	230	215	210	210	215	250	230	270	295	270
20	280	290	295	290	255	220	240	210	220	220	220	230	225	230	225	225	205	200	230	225	245	275	300	285
21	305	285	270	265	245	220	255	215	210	205	225	230	225	220	235	225	225	220	225	210	235	275	310	340
22	295	250	250	280	310	285	265	250	200	220	225	230	220	245	230	225	210	205	215	230	260	230	245	250
23	260	295	290	290	280	230	210	210	210	210	225	220	220	230	220	210	200	200	225	225	220	275	295	315
24	345	300	300	400	355	390	340	250	230	215	230	245	205	230	225	225	205	205	250	215	250	315	345	320
25	430	450	445	415	430	500	350	270	270	245	260	255	230	215	240	215	250	230	200	260	210	295	350	300
26	370	365	350	310	275	290	245	220	215	A	220	210	B	225	225	220	210	205	215	225	290	320	315	305
27	305	300	350	355	305	225	205	215	220	225	220	215	220	220	215	215	205	210	215	235	240	300	330	335
28	360	350	320	275	300	320	300	230	215	205	215	220	220	215	225	205	210	215	220	220	250	245	310	345
29	300	300	330	300	305	250	220	210	215	225	220	205	210	215	220	215	220	220	225	225	225	290	345	300
30	355	335	300	300	200	370	270	250	235	220	235	210	220	220	230	215	210	205	220	240	225	250	300	305
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	29	30	30	30	29	27	28	28	28	29	29	29	30	30	29	30	30	30	30	30
MED	305	300	300	300	280	265	250	220	220	220	222	220	220	225	225	220	210	205	220	235	248	275	300	305
UQ	340	335	325	320	305	300	270	230	225	225	225	230	225	230	230	225	220	215	230	250	270	295	315	330
LQ	300	285	280	290	260	225	225	215	215	215	220	215	220	220	220	215	210	200	215	225	235	260	290	285

NOV. 1982 | H'F (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								130	110	110	105	A	A	A	A	A	A							
2								125	115	110	110	105	105	105	105	120	S							
3								S 130	120	110	110	105	105	110	105	110	A							
4								A	115	105	A	A	A	A	A	A	S							
5								115	A	105	A	A	A	A	A	A	A							
6								A	A	A	A	105	115	110	105	A	A							
7								120	A	110	110	110	110	A	A	A	A							
8								120	110	110	A	A	A	110	120	130	A							
9								155	125	120	A	120	115	120	125	A	A							
10								135	A	A	A	A	A	A	105	A	A							
11								135	120	115	115	C	C	C	C	C	110							
12								130	115	110	110	110	110	110	A	A	A							
13								125	115	105	110	110	A	A	A	A	A							
14								120	110	110	110	110	115	115	A	110	S							
15								125	115	110	110	A	110	110	105	A	A							
16								130	110	105	105	110	110	115	115	115	S							
17								125	115	105	105	110	110	110	A	A	A							
18								A	115	110	110	105	A	A	120	120	S							
19								125	115	110	105	110	115	115	110	A	A							
20								140	110	A	A	105	110	110	110	120	S							
21								A	115	115	110	115	115	115	110	125	150							
22								115	A	105	A	A	110	105	115	120	A							
23								A	110	110	110	110	115	120	115	115	S							
24								A	A	A	A	A	110	115	115	125	S							
25								A	A	110	110	115	110	110	A	A	S							
26								A	A	A	A	105	B	B	120	130	A							
27								A	A	A	A	120	115	A	A	A	A							
28								A	125	110	115	115	120	125	125	125	S							
29								S	A	A	A	A	A	120	120	A	A							
30								175	120	115	A	A	115	125	110	A 140	S							
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	20	23	17	19	20	20	19	14	2							
MED								125	115	110	110	110	110	112	115	120	130							
UQ								132	118	110	110	112	115	118	120	125								
LQ								122	110	108	110	105	110	110	108	115								

NOV. 1982 | H'E (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	E	E	105	105	105	S	G	G	110	110	105	105	105	105	105	105	105	120	105	105	105	105	120
2	S	110	S	E	E	E	S	130	115	120	G	G	G	G	G	G	G	105	105	100	105	S	S	110
3	105	105	105	105	105	S	S	115	G	120	110	G	G	G	G	G	105	105	S	110	125	105	110	105
4	105	105	100	100	E	105	S	120	110	110	105	105	100	100	100	110	S	115	115	105	110	E	105	105
5	100	E	105	105	105	110	115	G	110	110	105	105	110	100	100	105	105	110	105	105	115	105	100	105
6	100	100	105	105	105	105	S	115	110	105	105	G	G	G	G	100	100	100	100	S	E	S	100	100
7	S	110	100	E	E	S	S	G	110	G	G	G	G	100	100	100	90	95	90	100	S	100	100	E
8	S	100	100	100	100	100	100	G	G	G	105	105	100	125	100	100	100	S	S	E	S	S	E	S
9	S	100	100	100	100	100	E	G	G	150	110	G	G	G	100	95	105	105	110	S	S	110	105	105
10	100	100	100	100	100	100	S	G	115	105	105	105	105	105	G	105	105	E	110	115	110	105	105	110
11	100	100	100	100	110	105	S	G	120	115	120	C	C	C	C	C	120	115	110	E	115	110	105	105
12	100	105	105	E	100	E	S	G	G	G	110	115	110	G	105	110	110	105	E	110	100	100	100	S
13	E	E	100	100	100	100	100	G	G	G	G	110	105	105	105	105	105	E	E	E	S	E	E	E
14	E	E	E	E	100	105	105	G	G	G	G	G	G	G	105	G	S	E	S	E	115	E	110	E
15	100	105	E	E	E	100	S	G	G	G	110	105	G	G	G	110	100	100	100	100	100	E	S	S
16	S	S	E	110	105	E	E	G	G	G	110	115	G	G	G	G	S	120	120	115	110	105	105	105
17	100	E	105	E	E	S	E	G	G	G	G	G	G	G	105	110	110	105	110	105	105	100	100	E
18	S	E	105	E	E	E	120	115	G	G	G	G	105	105	105	G	S	E	105	100	100	E	S	E
19	S	105	E	E	115	E	S	125	115	110	G	G	105	105	G	105	115	115	110	115	110	105	110	E
20	E	E	E	E	E	E	S	G	110	105	105	G	G	G	G	G	S	E	S	E	E	105	100	100
21	100	100	100	E	105	E	E	115	G	G	G	G	125	G	G	G	G	E	S	E	E	S	S	S
22	E	E	E	105	E	E	S	115	110	G	100	100	G	G	G	G	100	100	100	105	100	100	105	105
23	105	100	100	100	100	E	100	115	G	G	G	G	G	G	G	100	S	E	E	E	S	S	E	100
24	105	100	100	E	120	E	S	105	110	110	110	105	130	G	G	125	115	110	110	110	110	125	115	E
25	S	E	120	120	110	110	S	110	110	G	110	115	115	110	105	105	S	115	S	E	E	125	E	105
26	100	E	E	E	E	110	115	115	140	100	105	G	B	B	G	G	100	100	S	S	115	105	105	100
27	100	E	E	E	E	S	E	110	105	110	110	105	105	100	100	100	100	100	100	S	S	S	S	E	E
28	E	E	S	E	E	100	E	110	110	G	100	G	G	G	125	G	115	110	135	110	105	110	105	105
29	110	105	100	105	105	105	E	S	110	110	105	120	110	100	100	100	100	S	S	S	E	100	115	100
30	100	E	E	E	E	115	E	G	G	120	110	110	100	100	100	100	S	100	S	S	E	S	E	S
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	16	18	15	18	16	7	14	16	16	21	15	15	13	16	19	20	21	18	16	18	18	20	17
MED	100	102	100	105	105	105	105	115	110	110	110	105	105	105	102	105	105	105	110	105	110	105	105	105
UQ	105	105	105	105	105	108	115	115	115	118	110	112	110	105	105	108	110	110	110	110	115	110	108	105
LQ	100	100	100	100	100	100	100	110	110	108	105	105	105	100	100	100	100	100	100	102	105	100	100	100

NOV. 1982 | H'ES (KM)

IONOSPHERIC DATA

NOV. 1982 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23·5' N, Long. 141° 41·2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 1			F 5	F 2	F 1				C 3	C 3	L 2	L 3	L 2	L 3	L 6	L 4	F 1	F 1	F 3	F 2	F 3	F 4	F 1
2		F 4						C 3	CL 31	CL 11								F 3	F 1	F 2	F 1			F 2
3	F 3	F 3	F 3	F 3	F 1			C 3		C 3	C 2						L 1	F 1		F 1	F 2	F 2	F 5	F 5
4	F 7	F 4	F 7	F 4		FF 11		C 3	C 5	C 3	L 2	L 2	L 2	L 3	L 2	L 1		F 2	F 3	F 1	F 1		F 2	F 2
5	F 1		F 1	F 2	F 2	F 3	F 1		L 2	C 2	L 2	L 2	CL 22	L 3	L 3	L 2	L 3	F 1	F 2	F 3	F 2	F 2	F 3	F 2
6	F 2	F 2	F 2	F 2	F 4	F 2		L 2	L 2	L 2	L 3					L 2	L 2	F 1	F 1				F 2	F 1
7		F 1	F 2						L 2					L 3	L 2	L 2	L 3	F 3	F 2	F 1		F 1	F 1	
8		F 1	F 1	F 2	F 2	F 2	F 1				L 2	L 3	L 3	CL 11	L 1	L 1	L 1							
9		F 1	F 1	F 1	F 3	F 1				H 1	L 1				L 1	L 4	L 1	F 2	F 3			F 1	F 1	F 3
10	F 4	F 2	F 2	F 2	F 1	F 2			L 1	L 2	L 1	L 3	L 1	L 2		L 2	L 1		F 4	F 1	F 4	F 2	F 2	F 2
11	F 2	F 2	F 2	F 2	F 1	F 1			C 2	C 2	C 1						C 2	F 1	F 1		F 2	F 2	F 2	F 4
12	F 4	F 2	F 2		F 1						C 3	C 2	C 2		L 2	L 2	L 1	F 1		F 2	F 2	F 4	F 2	
13			F 1	F 2	F 2	F 1	F 1					C 2	L 2	L 2	L 2	L 2	L 1							
14					F 1	F 2	F 2								L 2						F 2		F 2	
15	F 2	F 2				F 1					C 2	L 2				L 1	L 2	F 2	F 2	F 2	F 1			
16				F 1	F 1						C 2	C 2						F 1	F 1	F 1	F 3	F 3	F 2	F 3
17	F 2		F 1												L 2	L 1	L 1	F 1	F 1	F 1	F 1	F 2	F 1	
18			F 1				F 1	L 1					L 2	L 2	L 1				F 2	F 2	F 1			
19		F 1			F 1			C 2	C 2	C 3			L 1	L 1		L 1	L 1	F 1	F 1	F 1	F 2	F 1	F 1	
20									C 1	L 2	L 1											F 2	F 3	F 1
21	F 2	F 1	F 1		F 1			L 1					C 1											
22				F 1				C 3	L 2		L 2	L 2					L 1	F 1	F 1	F 1	F 2	F 1	F 1	F 2
23	F 2	F 1	F 2	F 2	F 2		F 1	L 1								L 1								F 1
24	F 1	F 2	F 1		F 1			L 1	L 2	L 2	L 2	L 2	C 1			C 1	C 2	F 1	F 3	F 1	F 2	F 1	F 2	
25			F 1	F 1	F 3	F 1		L 1	L 1		C 1	C 1	C 1	C 1	L 2	L 1		F 1				F 2		F 2
26	F 1					F 2	F 1	L 1	HL 11	L 3	L 1						L 1	F 1			F 2	F 3	F 2	F 2
27	F 2							L 2	L 1	L 1	L 1	L 1	L 1	L 1	L 2	L 2	L 2	F 2	F 1					
28						F 1		L 1	L 1		L 1				C 1		C 1	F 1	F 1	F 2	F 2	F 1	F 2	F 3
29	F 1	F 2	F 2	F 2	F 2	F 1			L 2	L 2	L 2	CL 12	L 1	L 1	L 1	L 1	L 1					F 2	F 1	F 2
30	F 1					F 1				C 1	L 1	L 2	L 1	L 1	L 1	L 1		F 1						
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																								
UQ																								
LQ																								

NOV. 1982 | TYPES OF ES

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43·5' N, Long 140° 08·0' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 48	X 48	X 47	X 46	X 42	X 36												X 100	X 90	X 83	X 71	X 73	X 74	X 68
2	X 61	X 61	X 58	X 56	X 56	X 57												X 96	X 82	X 80	X 68	X 58	X 59	X 53
3	X 53	X 51	X 51	53	53	X 46												X 122	X 90	X 73	X 57	X 59	X 57	X 60
4	X 61	X 53	X 43	X 46	X 44	X 46												X 105	X 76	X 64	X 63	X 59	X 56	X 52
5	X 53	X 53	X 53	X 53	X 53	X 53												X 84	X 76	X 77	X 62	X 52	X 54	X 56
6	X 58	X 59	X 60	X 57	X 53	57	62											X 81	X 69	X 72	X 70	X 48	X 48	X 50
7	X 49	X 50	X 50	X 50	X 49	X 53												X 82	X 68	X 63	X 56	X 49	X 50	X 48
8	X 45	X 48	X 48	X 48	X 49	X 47												X 74	X 71	X 64	X 56	X 54	X 51	X 50
9	X 51	X 50	X 50	X 48	X 45	X 49												X 95	X 72	X 68	X 59	X 57	X 56	X 56
10	X 57	X 57	X 56	X 58	X 57	X 56												X 88	X 67	X 67	X 61	X 58	X 53	X 47
11	X 51	X 53	X 52	X 52	X 48	X 46	X 53											X 89	X 74	X 68	X 65	X 60	A	X 57
12	X 58	X 58	X 50	X 50	X 53	X 53	X 63											X 91	X 87	X 68	X 56	X 56	X 49	X 49
13	X 50	X 50	X 51	X 50	X 49	X 48	X 60											X 88	X 67	X 57	X 55	X 53	X 57	X 53
14	X 49	X 42	X 43	X 45	X 45	X 44	X 50											X 71	X 61	X 56	X 55	X 46	X 46	X 46
15	X 48	X 48	50	X 49	X 47	X 44	X 47											X 91	X 57	X 48	X 42	X 41	X 44	X 41
16	X 44	X 44	X 41	X 39	X 39	X 40	X 44											X 83	X 59	X 49	X 45	X 41	X 41	X 42
17	X 43	X 43	X 42	X 42	X 44	X 41	X 46											X 74	X 57	X 46	X 46	X 44	X 36	X 39
18	X 39	X 41	X 41	X 44	X 45	X 38	X 41											X 74	X 66	X 55	X 40	X 44	X 46	X 45
19	X 43	X 43	X 43	X 45	X 44	X 43	X 44											X 70	X 56	X 49	X 50	X 46	X 43	X 43
20	X 43	X 44	X 45	X 46	X 46	X 40	X 45											X 72	X 59	X 53	X 49	X 45	X 45	X 45
21	X 46	X 47	X 48	X 48	X 48	X 47	X 48											X 84	X 78	X 64	X 51	X 48	X 48	X 47
22	X 51	X 52	X 40	X 39	X 40	X 45	X 53											X 115	X 98	X 73	X 69	X 66	X 58	X 58
23	X 58	X 59	X 61	X 61	X 63	X 61	X 67											X 79	X 70	X 62	X 55	X 41	X 44	X 44
24	X 46	X 48	X 51	X 50	X 50	X 48	X 48											X 92	X 70	X 71	X 62	58	60	X 56
25	X 46	X 44	X 39	X 39	X 38	X 33	X 42											X 92	X 65	X 42	X 53	S 35	X 36	X 38
26	X 36	X 38	A	X 42	X 38	X 38	X 48											X 88	X 80	X 61	X 43	X 45	X 45	X 48
27	X 46	X 45	X 43	X 42	X 46	X 48	X 47											X 82	X 70	X 51	X 50	X 44	X 43	X 44
28	X 43	X 45	X 45	X 46	X 40	X 40	X 42											X 78	X 78	X 65	X 53	X 43	X 44	X 46
29	X 48	X 45	X 46	X 46	X 45	X 45	X 49											X 78	X 73	X 64	X 52	X 37	X 36	X 39
30	X 38	X 38	X 40	X 42	X 36	X 36	X 40											X 74	X 61	X 48	X 51	X 43	X 40	X 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	30	30	30	21											30	30	30	30	30	29	30
MED	X 48	X 48	X 48	X 47	X 46	X 46	X 48											X 84	X 70	X 64	X 55	X 48	X 48	X 48
UQ	X 53	X 53	X 51	X 50	X 50	X 49	X 53											X 92	X 78	X 68	X 62	X 58	X 56	X 53
LQ	X 44	X 44	X 43	X 44	X 44	X 40	X 44											X 78	X 65	X 53	X 50	X 44	X 44	X 44

NOV. 1982 | FXI (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43.5' N, Long. 140° 08.0' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	42	42	41	40	36	30	45	96	115	124	130	146	143	141	139	126	105	94	84	77	65	67	68	62
2	55	55	52	50	50	51	66	86	128	137	138	126	137	139	133	131	113	90	76	74	62	52	53	47
3	47	45	45	F	F	40	60	92	149	146	152	157	158	148	143	145	136	116	84	67	51	53	51	54
4	55	47	37	40	38	40	60	104	124	127	137	141	148	135	127	131	122	99	70	58	57	53	50	46
5	47	47	47	47	47	47	51	95	118	129	124	129	129	133	124	113	103	78	70	71	56	46	48	50
6	52	53	54	51	47	F	F	91	113	125	122	133	129	121	107	104	96	75	63	66	64	42	42	44
7	43	44	44	44	43	47	59	96	113	124	128	131	124	111	108	95	97	76	62	57	50	43	44	42
8	39	42	42	42	43	41	52	85	104	115	121	124	123	119	116	102	94	68	65	58	50	48	45	44
9	45	44	44	42	39	43	50	84	99	116	120	132	134	130	125	123	116	89	66	62	53	51	50	50
10	51	51	50	52	51	50	57	89	109	117	123	128	127	125	128	124	109	82	61	61	55	52	47	41
11	45	47	46	46	42	40	47	105	118	111	117	121	126	122	C	C	C	83	68	62	59	54	A	51
12	52	52	44	44	47	47	57	105	127	125	127	130	121	115	118	120	102	85	81	62	50	50	43	43
13	44	44	45	44	43	42	54	90	117	121	128	127	117	121	118	113	100	82	61	51	49	47	51	47
14	43	36	37	39	39	38	44	77	96	110	116	113	119	123	111	107	93	65	55	50	49	40	40	40
15	42	42	F 42	43	41	38	41	76	104	119	122	128	128	135	123	115	96	85	51	42	36	35	38	35
16	38	38	35	33	33	34	38	73	95	118	127	129	116	112	119	105	101	77	53	43	39	35	35	36
17	37	37	36	36	38	35	40	80	95	104	114	109	113	116	119	100	94	68	51	40	40	38	30	33
18	33	35	35	38	39	32	35	77	93	109	107	113	110	119	116	95	83	68	60	49	34	38	40	39
19	37	37	37	39	38	37	38	74	97	125	130	117	109	106	114	94	84	64	50	43	44	40	37	37
20	37	38	39	40	40	34	39	74	86	105	110	106	110	110	111	99	92	66	53	47	43	39	39	39
21	40	41	42	42	42	41	42	80	96	H 104	104	109	113	112	102	105	95	78	72	58	45	42	42	41
22	45	46	34	33	34	39	47	80	123	123	128	139	142	137	136	126	111	109	92	67	63	60	52	52
23	52	53	55	55	57	55	61	78	92	110	114	127	131	H 119	128	120	92	73	64	56	49	35	38	38
24	40	42	45	44	44	42	42	65	85	122	131	134	139	140	137	131	103	86	64	65	56	F	F	50
25	40	38	33	33	32	27	36	63	89	115	116	132	97	77	H 71	81	94	86	59	36	47	S 29	30	32
26	30	32	A	36	32	32	42	69	96	117	134	134	136	131	122	124	108	82	74	55	37	39	39	42
27	40	39	37	36	40	42	41	65	92	125	136	126	127	118	107	106	95	76	64	45	44	38	37	38
28	37	39	39	40	34	34	36	86	116	110	117	139	132	123	135	113	89	72	72	59	47	37	38	40
29	42	39	40	40	39	39	43	82	89	112	130	135	127	118	110	107	92	72	67	58	46	31	30	33
30	32	32	34	36	30	30	34	63	94	138	132	I C 134	114	117	111	105	92	68	55	42	45	37	34	37
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	29	29	29	29	30	30	30	30	30	30	30	29	29	29	30	30	30	30	29	28	30
MED	42	42	42	40	40	40	44	81	102	118	126	129	127	121	119	113	96	78	64	58	49	42	41	42
UQ	47	47	45	44	43	42	54	91	117	125	130	134	134	133	128	124	105	86	72	62	56	51	49	47
LQ	38	38	37	38	38	34	40	74	94	111	117	124	116	116	111	104	93	72	59	47	44	38	38	38

IONOSPHERIC DATA

NOV. 1982 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43·5 N, Long. 140° 08·0 E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	L											
2											A													
3																								
4										L	L	L	L	L										
5												L												
6										L			L	L										
7										L	L	L		L										
8												L	L											
9												L												
10											L	L	L	L										
11															C	C	C							
12											L	L	L	L										
13																								
14														L										
15												L												
16												L												
17													L	L	L									
18												L	L	L										
19													L											
20															L									
21																								
22																								
23												L		L										
24																								
25										L	L	L												
26											L		B	B										
27																								
28												L												
29													L	L										
30												C		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																								
MED																								
UQ																								
LQ																								

NOV. 1982 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

NOV. 1982 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43·5' N, Long 140° 08·0' E | Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S	225	290	A	A	A	360	355	330	A	210							
2							S	235	285	A	A	A	A	360	320	A	A							
3							S	A	A	A	A	A	360	345	315	265	A							
4							S	230	270	A	A	A	A	A	A	285	A							
5							S	205	255	A	A	A	355	A	A	A	A							
6							S	A	A	A	A	A	355	335	305	A	A							
7							S	A	265	300	320	335	350	335	310	270	A							
8							S	225	A	315	325	A	350	A	305	255	A							
9							S	210	280	310	330	355	360	340	310	A	A							
10							S	190	255	A	A	A	A	A	A	275	215							
11								215	A	A	A	A	A	345	C	C	C							
12								200	A	295	A	A	A	A	A	A	A							
13								215	A	A	A	A	A	A	A	A	190							
14								185	250	300	A	A	A	A	305	A	S							
15								180	265	A	A	340	A	A	300	260	195							
16								A	255	A	A	A	A	A	A	275	200							
17								210	A	A	325	335	A	335	A	A	A							
18								190	245	285	315	A	A	A	295	A	A							
19								A	A	A	A	335	350	345	310	265	A							
20								200	255	300	325	A	345	340	310	260	A							
21								180	265	305	325	A	355	340	310	275	190							
22								195	270	310	A	A	A	A	A	A	A							
23								195	A	315	340	355	360	345	310	255	S							
24								205	A	A	330	A	A	A	A	A	A							
25								A	A	A	A	A	A	A	A	A	S							
26								A	A	A	A	A	B	B	B	290	A							
27								S	255	A	A	340	A	335	295	A	A							
28								S	250	300	320	335	350	330	295	260	S							
29								A	225	270	305	320	340	A	A	A	A							
30								A	235	285	315	I C 330	340	330	305	250	S							
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	18	13	12	10	14	15	17	14	6							
MED								205	255	300	325	335	352	340	310	265	198							
UQ								215	270	310	328	340	360	345	310	275	210							
LQ								192	250	295	318	335	350	335	305	260	190							

NOV. 1982 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43·5′ N, Long. 140° 08·0′ E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 S 15	J A 21	E S 12	E S 12	E S 15	E S 15	E S 16	G	G	38	J A 50	J A 45	G	G	G	33	G	J A 25	J A 34	J A 43	E S 15	J A 26	J A 23	J A 17
2	E S 15	E S 14	E S 14	E S 15	J A 24	E S 15	E S 15	G	32	J A 72	J A 109	J A 44	J A 54	G	J A 36	J A 40	J A 35	J A 31	J A 32	J A 24	E S 15	E S 15	J A 21	J A 30
3	J A 34	J A 34	J A 24	E S 15	J A 25	E S 15	E S 16	26	36	40	J A 45	J A 66	G	G	G	G	22	J A 24	J A 60	J A 50	J A 41	J A 50	J A 36	J A 24
4	J A 28	J A 26	J A 20	E S 15	J A 19	J A 19	E S 15	G	G	J A 39	J A 44	J A 41	J A 69	J A 39	J A 41	G	J A 29	J A 27	J A 33	J A 57	J A 33	J A 21	J A 22	J A 24
5	J A 21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	27	G	33	J A 44	J A 61	G	J A 39	34	J A 30	22	J A 25	J A 23	J A 26	J A 64	J A 56	J A 39	J A 44
6	J A 61	J A 41	J A 44	J A 25	J A 36	J A 20	J A 26	27	J A 46	J A 80	J A 41	J A 66	G	J A 35	G	J A 36	J A 40	J A 25	J A 24	J A 17	E S 15	J A 27	J A 26	E S 15
7	E S 16	J A 23	J A 21	E S 16	E S 16	E S 16	E S 16	25	G	J A 50	G	J A 44	G	G	G	G	J A 24	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
8	E S 15	E S 15	J A 24	J A 18	J A 23	J A 19	E S 16	G	J A 30	G	G	J A 41	G	J A 44	G	38	J A 32	J A 25	J A 21	E S 15	E S 15	E S 15	J A 18	E S 15
9	J A 24	J A 24	E S 12	E S 15	J A 19	E S 15	J A 21	J A 30	G	G	G	G	G	36	G	32	J A 31	J A 24	J A 26	J A 20	J A 21	J A 26	E S 15	E S 15
10	J A 20	J A 20	J A 33	E S 16	J A 24	E S 16	E S 16	23	29	J A 45	J A 53	J A 49	J A 45	J A 38	J A 40	G	G	E S 15	E S 16	J A 20	J A 39	J A 26	J A 23	J A 65
11	J A 43	J A 26	J A 25	J A 24	J A 24	E S 15	E S 15	G	40	40	J A 49	41	J A 44	G	C	C	C	J A 29	J A 22	J A 26	J A 17	E S 15	J A 58	J A 41
12	J A 30	J A 29	J A 28	J A 30	J A 21	E S 16	E S 16	G	J A 33	G	37	J A 56	J A 91	J A 55	J A 40	37	33	J A 24	J A 20	E S 16	E S 16	E S 16	J A 22	J A 30
13	J A 34	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	G	31	J A 36	39	41	36	35	J A 43	J A 37	G	J A 24	J A 21	J A 26	J A 17	J A 25	E S 15	E S 15
14	E S 15	E S 15	E S 15	E S 15	J A 19	J A 19	J A 20	G	G	G	37	37	J A 52	J A 35	G	J A 29	E S 16	E S 15	J A 24	J A 17	E S 15	E S 13	E S 15	E S 15
15	E S 15	E S 15	E S 13	E S 15	J A 26	E S 15	E S 15	E S 16	G	J A 32	36	G	J A 37	J A 41	G	G	G	J A 24	J A 24	E S 15	E S 15	E S 15	E S 15	E S 15
16	E S 16	J A 20	J A 19	E S 16	E S 16	E S 16	E S 16	E S 16	G	J A 44	J A 45	J A 52	J A 51	39	J A 34	G	26	J A 20	J A 33	E S 16	E S 16	J A 41	J A 45	E S 16
17	J A 24	J A 31	J A 30	J A 24	J A 19	J A 20	E S 15	G	J A 44	J A 53	G	G	J A 36	G	J A 38	J A 34	J A 24	J A 56	J A 19	J A 27	J A 19	J A 24	E S 15	E S 15
18	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 14	G	G	G	G	J A 45	41	37	G	33	J A 46	J A 36	J A 51	J A 26	J A 21	E S 16	E S 16	E S 16
19	E S 15	E S 15	E S 15	E S 15	J A 19	E S 15	E S 15	J A 29	J A 29	33	J A 34	G	G	G	G	30	28	J A 46	J A 32	J A 29	J A 20	J A 24	E S 15	E S 15
20	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	G	G	G	G	J A 106	G	G	G	G	21	J A 26	E S 15	E S 15	E S 15	J A 26	E S 15	E S 15
21	J A 24	J A 20	J A 24	E S 13	E S 15	E S 15	E S 15	G	G	G	G	J A 54	G	G	G	G	G	E S 15	J A 44	J A 65	J A 78	J A 27	E S 15	E S 15
22	E S 15	E S 15	E S 13	E S 12	E S 15	E S 15	E S 15	G	G	G	43	J A 44	J A 60	J A 64	J A 50	J A 44	J A 24	E S 15	J A 26	J A 20	J A 30	E S 15	J A 31	J A 26
23	J A 24	J A 19	J A 20	J A 24	J A 23	J A 20	E S 15	G	J A 32	G	G	G	G	G	G 30	J A 41	J A 27	E S 15	J A 26	J A 26	J A 44	J A 21	E S 15	E S 15
24	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	J A 40	J A 39	G	36	37	36	36	35	J A 34	J A 31	J A 29	J A 52	J A 38	J A 39	J A 20	J A 41
25	E S 16	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15	23	J A 37	J A 42	J A 40	J A 50	J A 45	J A 37	J A 34	J A 42	J A 41	J A 29	E S 15	J A 32	J A 17	J A 39	J A 26	J A 36
26	J A 21	J A 31	J A 38	J A 26	E S 15	E S 15	J A 21	J A 25	J A 32	36	J A 50	J A 74	E B 80	E B 50	E B 37	J A 53	J A 46	J A 29	J A 24	E S 15	E S 15	J A 25	J A 21	J A 29
27	J A 40	J A 32	J A 24	J A 24	E S 15	J A 25	J A 24	E S 18	G	J A 36	J A 54	G	J A 52	G	G	J A 31	J A 44	J A 27	J A 20	E S 15	E S 15	E S 15	E S 15	E S 15
28	E S 15	E S 13	E S 13	E S 15	E S 13	E S 15	E S 15	E S 16	G	G	G	G	J A 46	J A 42	G	G	E S 17	J A 21	J A 21	J A 27	J A 28	J A 50	J A 27	J A 32
29	J A 28	E S 15	E S 12	E S 16	E S 15	E S 15	E S 16	E S 16	G	J A 40	36	J A 54	G	J A 42	36	J A 46	32	J A 26	E S 15	J A 24	J A 20	E S 16	E S 16	J A 26
30	J A 25	J A 21	J A 21	E S 16	E S 14	E S 16	J A 24	J A 30	G	36	39	C	G	G	36	32	G	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 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	29	30	30	29	29	29	30	30	30	30	30	30	30
MED	J A 20	J A 20	18	E S 16	E S 16	E S 15	E S 16	E G 16	G	36	38	J A 44	36	36	E G 30	32	26	J A 25	J A 24	J A 24	J A 17	J A 24	J A 19	E S 16
UQ	J A 28	J A 26	J A 24	J A 18	J A 23	E S 16	E S 16	25	J A 32	J A 40	J A 45	J A 54	J A 48	J A 39	J A 36	J A 37	J A 33	J A 29	J A 32	J A 27	J A 30	J A 27	J A 26	J A 30
LQ	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	G	G	G	G	36	G	G	G	G	17	J A 20	J A 20	E S 16	E S 15	E S 16	E S 15	E S 15

NOV. 1982 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43·5' N, Long. 140° 08·0' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 S 15	E	E S 12	E S 12	E S 15	E S 15	E S 16	G	G	36	39	37	G	G	G	28	G	22	27	E	E S 15	19	E	E
2	E S 15	E S 14	E S 14	E S 15	E	E S 15	E S 15	G	31	40	58	38	40	G	25	30	24	30	30	19	E S 15	E S 15	E	20
3	23	27	20	E S 15	E	E S 15	E S 16	25	35	33	39	46	G	G	G	G	22	22	42	42	32	30	28	20
4	19	E	E	E S 15	E	E	E S 15	G	G	34	38	36	40	35	36	G	22	25	21	20	18	E	E	E
5	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	25	G	32	34	35	G	35	34	28	21	E	E	20	50	27	21	33
6	30	30	25	E	E	E	G	25	30	37	34	36	G	30	G	28	21	25	E	E	E S 15	22	23	E S 15
7	E S 16	E	E	E S 16	E S 16	E S 16	E S 16	24	G	33	G	36	G	G	G	G	23	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
8	E S 15	E S 15	E	E	E	E	E S 16	G	29	G	G	37	G	35	G	38	26	E	E	E S 15	E S 15	E S 15	E	E S 15
9	E	E	E S 12	E S 15	E	E S 15	G	G	G	G	G	G	G	36	G	29	25	19	20	E	E	E	E S 15	E S 15
10	E	E	E	E S 16	E	E S 16	E S 16	23	28	34	35	34	35	34	37	G	G	E S 15	E S 16	E	E	E	E	28
11	20	E	18	E	E	E S 15	E S 15	G	35	36	38	38	36	G	C	C	C	E	E	E	E	E S 15	A A 58	E
12	E	15	E	E	E	E S 16	E S 16	G	28	G	34	40	36	41	33	28	21	E	E	E S 16	E S 16	E S 16	E	20
13	E	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	G	28	34	35	36	36	35	33	27	G	E	E	E	E	E	E S 15	E S 15
14	E S 15	E S 15	E S 15	E S 15	E	E	E	G	G	G	36	36	35	34	G	26	E S 16	E S 15	E	E	E S 15	E S 13	E S 15	E S 15
15	E S 15	E S 15	E S 13	E S 15	E	E S 15	E S 15	E S 16	G	32	35	G	37	36	G	G	G	24	E	E S 15	E S 15	E S 15	E S 15	E S 15
16	E S 16	E	E	E S 16	E S 16	E S 16	E S 16	E S 16	G	32	34	43	35	37	33	G	21	E	E	E S 16	E S 16	E	E	E S 16
17	E	21	24	E	E	E	E S 15	G	28	31	G	G	36	G	35	28	20	E	E	20	E	E	E S 15	E S 15
18	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 14	G	G	G	G	35	35	35	G	28	23	22	22	E	E	E S 16	E S 16	E S 16
19	E S 15	E S 15	E S 15	E S 15	E	E S 15	E S 15	21	29	33	34	G	G	G	G	30	24	20	26	E	E	E	E S 15	E S 15
20	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	G	G	G	G	36	G	G	G	G	20	E	E S 15	E S 15	E S 15	E	E S 15	E S 15
21	E	E	E	E S 13	E S 15	E S 15	E S 15	G	G	G	G	36	G	G	G	G	G	E S 15	21	22	E	E	E S 15	E S 15
22	E S 15	E S 15	E S 13	E S 12	E S 15	E S 15	E S 15	G	G	G	36	38	42	36	35	34	21	E S 15	E	E	E	E S 15	E	E
23	E	E	E	E	E	E	E S 15	G	29	G	G	G	G	G	G 24	22	21	E S 15	25	21	19	E	E S 15	E S 15
24	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	28	35	G	36	36	35	35	34	30	29	20	32	25	27	E	40
25	E S 16	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15	23	29	31	35	36	36	35	33	34	25	E	E S 15	26	E	E	E	E
26	E	E	A A 38	E	E S 15	E S 15	E	23	27	31	35	40	E B 80	E B 50	E B 37	25	42	26	21	E S 15	E S 15	E	E	E
27	20	E	E	E	E S 15	E	E	E S 18	G	31	35	G	36	G	G	27	29	19	E	E S 15	E S 15	E S 15	E S 15	E S 15
28	E S 15	E S 13	E S 13	E S 15	E S 13	E S 15	E S 15	E S 16	G	G	G	G	23	19	G	G	E S 17	E	18	E	E	E	E	E
29	E	E S 15	E S 12	E S 16	E S 15	E S 15	E S 16	E S 16	G	30	33	34	G	35	31	27	20	E	E S 15	E	E	E S 16	E S 16	E
30	E	E	E	E S 16	E S 14	E S 16	E	22	G	33	35	C	G	G	31	22	G	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 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	29	30	30	29	29	29	30	30	30	30	30	30	30
MED	E E 15	E E 15	E E 13	E S 15	E S 14	E S 15	E S 15	G	G	32	34	36	U 32	33	E G 24	27	21	E E 15	E E 15	E E 15	E E 15	E E 15	E E 15	E S 15
UQ	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	22	29	34	35	37	36	35	33	28	24	22	21	20	E S 16	E S 16	E S 16	E S 16
LQ	E	E	E	E	E	E S 15	E S 15	G	G	G	G	34	G	G	G	G	17	E	E	E	E	E	E	E

NOV. 1982 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | F-MIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43·5' N, Long 140° 08·0' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	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 S 15	E S 15	E S 12	E S 12	E S 15	E S 15	E S 16	16	16	16	17	18	18	22	17	16	16	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15
2	E S 15	E S 14	E S 14	E S 15	E S 15	E S 15	E S 15	17	16	17	17	18	21	17	16	16	15	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15
3	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 17	17	16	20	19	19	20	19	17	16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
4	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	16	16	16	16	16	16	16	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
5	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	17	17	19	17	16	E S 17	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15	E S 15
6	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	16	17	16	16	17	18	16	17	16	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
7	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	18	19	16	16	16	16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
8	E S 15	E S 15	E S 15	E S 13	E S 12	E S 15	E S 16	E S 16	16	16	17	16	16	16	16	13	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
9	E S 15	E S 15	E S 12	E S 15	E S 15	E S 15	E S 15	E S 16	17	17	20	25	20	20	19	17	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
10	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	16	16	18	19	16	16	E S 15	E S 16	E S 16	E S 15	E S 16	E S 16	E S 15
11	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	16	16	18	20	18	18	C	C	C	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
12	E S 15	E S 12	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	19	19	20	16	16	15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
13	E S 15	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 16	16	16	16	18	21	20	17	16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	16	16	17	17	17	16	16	16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 13	E S 15	E S 15
15	E S 15	E S 15	E S 13	E S 15	E S 12	E S 15	E S 15	E S 16	16	16	17	20	20	18	16	16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	18	16	21	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
17	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	17	16	16	17	18	18	17	17	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
18	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 14	E S 16	16	16	16	16	16	16	16	16	14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
19	E S 15	E S 15	E S 15	E S 15	E S 13	E S 15	E S 15	16	15	16	20	18	19	20	16	16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
20	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	E S 16	16	16	16	16	17	18	18	18	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
21	E S 15	E S 15	E S 15	E S 13	E S 15	E S 15	E S 15	E S 16	17	20	19	20	20	20	20	16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
22	E S 15	E S 15	E S 13	E S 12	E S 15	E S 15	E S 15	E S 15	15	16	16	17	18	16	16	15	13	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
23	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	16	19	16	18	17	17	17	14	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
24	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	16	16	16	16	16	17	18	17	17	E S 17	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
25	E S 16	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15	E S 16	16	16	18	16	19	19	19	16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
26	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15	16	16	17	16	16	80	50	37	17	16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
27	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 18	16	18	16	18	18	18	17	16	13	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
28	E S 15	E S 13	E S 13	E S 15	E S 13	E S 15	E S 15	E S 16	17	16	16	17	16	17	19	20	E S 17	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
29	E S 16	E S 15	E S 12	E S 16	E S 15	E S 15	E S 16	E S 16	16	16	16	16	19	16	16	16	16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	E S 16	16	16	16	C	18	17	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 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	29	30	30	29	29	29	30	30	30	30	30	30	30
MED	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	16	16	16	17	18	18	17	16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
UQ	E S 16	E S 15	E S 15	E S 16	E S 15	E S 15	E S 16	16	16	16	17	18	19	20	18	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15
LQ	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 16	16	16	16	16	17	16	16	16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15

NOV. 1982 | F-MIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43·5' N, Longi 140° 08·0' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	260	265	260	250	255	235	245	355	335	320	305	300	300	290	290	310	300	295	290	300	265	285	295	290
2	245	255	245	240	240	265	320	320	330	325	315	290	295	305	295	305	320	300	295	310	320	280	260	260
3	240	245	245	F	F	250	315	320	310	315	300	295	295	295	295	305	305	310	305	295	260	265	245	275
4	285	325	270	280	265	270	315	345	355	315	320	310	315	310	310	315	325	335	305	300	290	290	280	265
5	265	270	270	270	285	280	290	330	330	340	335	325	305	320	315	330	330	305	315	315	A	280	275	275
6	280	275	280	280	275	F	F	330	325	320	320	320	330	315	325	315	315	320	295	305	330	285	280	275
7	270	275	285	280	280	275	310	330	335	315	320	310	315	300	315	310	330	300	320	305	300	295	295	290
8	285	290	285	275	295	290	320	325	340	335	325	320	320	315	320	335	320	340	305	300	300	290	275	270
9	275	270	270	270	245	285	315	350	330	325	310	305	300	305	305	315	325	315	285	305	285	280	270	260
10	270	275	270	275	285	280	320	335	335	315	325	305	300	290	300	315	315	310	300	315	290	290	290	265
11	255	270	275	285	270	275	275	340	340	315	325	310	305	300	C	C	C	315	300	295	300	285	A	255
12	275	300	265	260	260	265	285	325	340	330	315	305	305	305	305	315	320	305	310	320	285	295	280	265
13	270	285	280	275	290	265	315	335	335	330	330	330	315	320	320	310	335	320	320	295	270	275	295	320
14	310	275	270	270	280	315	295	350	335	340	325	315	315	320	320	325	340	325	310	305	295	275	270	260
15	270	285	F 285	295	295	295	305	330	335	325	315	310	300	315	315	320	315	330	295	310	305	275	280	270
16	270	290	280	270	285	315	330	340	335	330	330	310	310	305	330	320	340	320	295	205	300	280	280	275
17	300	270	305	275	295	295	310	340	365	320	335	315	330	320	325	315	350	325	315	310	305	295	295	280
18	270	275	285	295	340	305	290	335	350	330	345	330	330	315	325	345	320	315	330	330	280	280	280	290
19	270	270	255	255	265	285	295	325	330	330	325	325	315	310	325	335	335	325	285	300	300	290	295	285
20	270	275	275	285	305	280	295	335	345	335	330	315	320	320	330	325	325	310	325	310	305	310	255	270
21	270	270	275	290	305	305	300	335	350	H 325	315	305	320	305	305	330	325	300	320	310	310	255	260	270
22	290	320	285	270	255	255	295	315	315	315	300	305	300	295	310	300	300	300	305	300	290	305	290	270
23	270	265	265	270	290	285	325	340	340	340	310	315	320	H 295	310	320	325	310	310	320	320	255	265	265
24	255	270	265	240	245	240	245	325	305	305	305	310	300	305	310	310	300	315	300	305	305	F	F	270
25	230	225	230	230	230	220	250	285	285	295	280	310	325	330	H 310	315	310	320	330	295	325	S 245	255	255
26	255	260	A	295	280	290	305	350	335	330	340	320	315	320	310	320	325	300	335	320	325	285	260	285
27	290	290	270	255	260	315	330	325	330	330	335	315	315	325	315	335	325	325	325	315	300	280	270	265
28	255	260	280	285	280	265	265	330	335	345	325	315	315	315	325	325	330	300	315	330	320	270	275	265
29	285	285	265	265	290	280	305	345	345	325	335	325	315	315	325	330	325	310	370	330	345	295	275	290
30	250	265	275	275	315	255	275	310	310	325	320	I C 320	315	315	315	325	325	320	330	305	315	335	270	270
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	29	29	29	29	30	30	30	30	30	30	30	29	29	29	30	30	30	29	29	28	30
MED	270	272	270	275	280	280	305	332	335	325	322	312	315	312	315	320	325	315	310	305	300	285	275	270
UQ	280	285	280	280	290	290	315	340	340	330	330	320	320	320	325	325	330	320	320	315	315	290	285	280
LQ	255	265	265	265	260	265	290	325	330	315	315	305	300	305	310	315	315	305	300	300	290	275	268	265

NOV. 1982 | M(3000)F2 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | M(3000)F1 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	L											
2											A													
3																								
4										L	L	L	L	L										
5												L												
6										L			L	L										
7										L	L	L		L										
8												L	L											
9												L												
10											L	L	L	L										
11															C	C	C							
12											L	L	L	L										
13																								
14														L										
15												L												
16												L												
17													L	L	L									
18												L	L	L										
19													L											
20															L									
21																								
22																								
23												L		L										
24																								
25										L	L	L												
26											L		B	B										
27																								
28												L												
29													L	L										
30												C		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																								
MED																								
UQ																								
LQ																								

NOV. 1982 | M(3000)F1 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43·5' N, Long. 140° 08·0' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												245	250											
2											230													
3																								
4										225	230	230	250	245										
5												255												
6										250			240	245										
7										230	230	250		230										
8												250	250											
9												270												
10											230	250	250	240										
11															C	C	C							
12											240	235	235	230										
13																								
14														250										
15												250												
16												235												
17													285	260	260									
18												250	255	255										
19													240											
20															250									
21																								
22																								
23												255		290										
24																								
25										300	255	240												
26											250		B 245	235										
27																								
28												240												
29													215	220										
30												C		245										
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	7	14	11	12	2									
MED										240	230	250	250	245	255									
UQ										275	245	250	250	252										
LQ										228	230	240	240	232										

NOV. 1982 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H°F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43·5' N, Long. 140° 08·0' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	ES 320	ES 320	ES 310	ES 320	ES 270	ES 440	320	220	225	230	225	210	235	240	240	230	220	230	230	235	270	270	250	245
2	290	290	300	ES 350	ES 345	295	230	220	230	230	A	220	240	240	240	240	220	210	A	245	210	260	305	A
3	A	A	A	ES 330	ES 400	365	250	230	240	225	220	240	240	230	240	245	220	210	A	A	A	A	A	A
4	250	220	245	ES 280	ES 290	310	260	230	225	210	210	220	A	220	230	230	220	210	210	245	265	250	260	270
5	ES 320	305	295	295	250	ES 260	250	230	225	225	220	200	230	225	230	225	220	200	230	240	A	A	A	A
6	A	A	A	250	260	270	250	230	220	220	220	230	210	205	225	230	215	205	250	250	220	A	A	270
7	ES 300	290	275	ES 310	270	290	260	225	225	220	230	225	240	220	230	220	230	205	230	245	230	240	ES 270	260
8	ES 295	275	275	275	250	260	240	225	225	230	220	220	230	230	235	220	220	200	240	230	240	260	280	ES 305
9	ES 300	ES 300	265	ES 300	ES 400	280	210	220	240	235	230	240	240	H 210	235	240	230	200	215	240	235	260	275	ES 300
10	290	290	290	295	260	245	240	225	215	215	200	200	225	225	235	225	215	200	225	240	245	250	255	A
11	A	290	285	280	235	ES 280	285	240	220	220	240	230	225	235	C	C	C	200	220	245	240	260	A	ES 320
12	275	250	ES 300	ES 310	ES 325	310	280	240	225	225	210	225	225	220	230	230	210	230	220	210	245	255	275	A
13	280	270	270	275	270	ES 320	255	225	230	220	230	220	220	240	230	220	220	210	210	250	250	270	245	225
14	235	255	ES 300	ES 295	270	230	235	220	220	230	235	230	210	220	230	225	225	200	230	230	245	250	ES 275	ES 350
15	295	280	280	265	250	225	245	225	230	230	220	210	235	240	235	225	210	210	200	230	250	ES 290	ES 315	ES 300
16	310	305	290	ES 325	300	240	235	225	230	225	230	225	225	230	240	230	210	200	250	225	230	ES 290	ES 300	ES 325
17	280	A	A	275	270	230	220	240	225	220	225	215	210	235	220	215	210	200	220	A	240	235	230	ES 285
18	ES 305	ES 325	ES 300	275	230	250	230	235	220	225	220	235	225	225	230	215	210	225	240	230	ES 290	ES 300	ES 300	275
19	ES 310	ES 330	ES 340	ES 320	ES 275	240	240	240	240	235	220	H 220	210	220	240	215	220	210	A	220	240	240	260	ES 280
20	ES 290	270	ES 300	ES 280	245	ES 275	225	220	220	220	220	220	H 210	245	230	230	220	200	220	230	240	250	ES 270	ES 280
21	ES 300	ES 290	270	260	250	245	240	220	220	230	210	230	240	240	235	240	220	230	220	230	230	ES 280	ES 320	ES 335
22	ES 290	235	230	ES 300	ES 300	ES 310	250	235	235	235	240	240	240	240	240	225	235	230	230	210	245	225	235	265
23	270	270	280	280	270	240	230	210	210	230	220	230	240	205	240	230	210	220	230	230	240	ES 260	ES 335	ES 315
24	ES 350	ES 320	ES 300	ES 390	ES 350	ES 400	ES 350	220	220	230	230	225	225	225	235	220	200	230	220	A	A	A	ES 340	A
25	ES 460	ES 440	ES 425	ES 455	ES 480	ES 570	380	290	255	245	235	220	225	240	240	240	250	220	200	A	240	ES 270	ES 325	ES 355
26	ES 340	ES 365	A	270	ES 280	ES 295	230	220	215	220	225	225	B	B	235	240	210	210	220	220	230	ES 270	ES 325	ES 275
27	A	265	ES 340	ES 380	ES 350	230	225	210	230	230	230	220	230	230	220	230	210	220	210	220	235	240	ES 290	ES 315
28	ES 375	ES 320	ES 305	255	250	ES 340	310	225	230	210	210	215	230	230	235	220	210	220	235	210	235	ES 270	ES 305	ES 290
29	290	270	300	305	280	280	250	230	215	235	225	225	195	210	235	230	210	220	220	235	205	ES 250	ES 325	ES 325
30	ES 375	ES 340	ES 325	290	205	ES 390	300	230	225	230	225	I C 210	220	205	230	230	220	205	210	225	240	220	ES 300	ES 305
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	26	30	30	30	30	30	30	30	29	30	28	29	29	29	29	30	27	26	27	26	26	24
MED	ES 298	U 272	U 276	U 272	U 255	U 258	245	225	225	228	225	222	225	230	235	230	220	210	220	230	240	250	ES 285	ES 295
UQ	ES 320	ES 320	ES 300	ES 320	ES 300	ES 310	260	230	230	230	230	230	238	240	240	230	220	220	230	240	245	ES 270	ES 315	ES 318
LQ	282	270	275	272	250	242	230	220	220	220	220	220	220	220	230	220	210	200	218	225	232	245	255	U 254

NOV. 1982 | H°F (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43·5' N, Long 140° 08·0' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S 115		110	110	105	A	105	110	110	110	110							
2							S 115		110	110	105	105	A	100	A	A	A							
3							S	S 110	110	110	110	110	105	110	110	105	A							
4							S 115		110	110	A	A	A	A	A	110	A							
5							S	S 110	110	110	110	105	105	100	110	110	S							
6							S 115		110	A	105	100	100	A	100	A	A							
7							S 125		110	110	110	110	110	110	110	115	S							
8							S	S 110	110	105	A	100	A	100	A	S								
9							S	S 110	110	110	110	110	110	110	110	115	S							
10							S	S 115	110	110	A	A	110	110	115	115								
11								S 110	110	115	110	110	110	C	C	C								
12								S 110	110	110	110	110	110	110	110	115	115							
13								S 110	110	105	110	110	110	110	110	110	S							
14								S 110	105	105	105	105	105	105	110	110	S							
15								S 115	110	110	110	110	110	110	110	110	S							
16								S 115	110	110	110	110	110	110	115	120	S							
17								S 110	110	110	110	110	110	110	110	110	S							
18								S 110	110	110	A	110	110	110	A	A								
19								A 110	110	110	110	110	110	110	110	110	S							
20								S 110	110	105	105	105	105	110	115	S								
21								S 115	110	110	110	105	110	110	105	S								
22								S 110	110	105	110	A	A	A	A	A								
23								S 110	110	110	105	110	105	A	A	S								
24								115	110	110	105	110	110	110	115	115	S							
25								S 110	110	110	110	110	110	110	110	110	S							
26								110	110	110	110	A	B	B	B	A	A							
27								S 115	110	110	105	105	105	100	A	A								
28								S 120	110	110	105	A	110	110	120	S								
29								S 120	110	110	110	110	A	A	A	A								
30								S 120	110	110	I C 110	110	110	115	A	S								
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	30	29	29	24	24	24	23	19	3							
MED								115	110	110	110	110	110	110	110	110	115							
UQ								115	115	110	110	110	110	110	110	115	115							
LQ								115	110	110	105	105	105	108	110	110	112							

NOV. 1982 | H'E (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'ES (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43·5 N, Long. 140° 08·0 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	105	S	S	S	S	S	G	G	120	110	105	G	G	G	120	G	105	105	110	S	100	100	105
2	S	S	S	S	100	S	S	G	140	110	105	105	130	G	100	100	105	105	105	100	S	S	105	105
3	105	100	105	S	110	S	S	125	115	110	110	110	G	G	G	G	100	100	100	100	100	100	105	105
4	100	100	100	S	100	100	S	G	G	110	105	100	100	95	115	G	100	100	95	110	105	105	100	100
5	105	S	S	S	S	S	S	145	G	120	110	110	G	110	120	120	140	100	100	105	110	105	100	100
6	100	100	100	100	110	105	120	135	110	105	110	110	G	100	G	100	100	100	95	95	S	110	110	S
7	S	100	100	S	S	S	S	125	G	125	G	125	G	G	G	G	100	S	S	S	S	S	S	S
8	S	S	100	100	100	100	S	G	120	G	G	105	G	100	G	140	130	95	95	S	S	S	105	S
9	120	115	S	S	110	S	110	105	G	G	G	G	G	145	G	135	115	110	105	100	100	100	S	S
10	100	105	100	S	105	S	S	155	130	110	110	105	105	115	110	G	G	S	S	110	110	110	110	100
11	100	105	100	100	105	S	S	G	125	120	120	120	115	G	C	C	C	100	110	110	110	S	110	105
12	105	105	100	100	100	S	S	G	110	G	120	115	110	110	115	120	115	115	110	S	S	S	110	105
13	105	S	S	S	S	S	S	G	125	120	120	110	110	110	110	110	G	105	105	100	100	100	S	S
14	S	S	S	S	120	110	115	G	G	G	135	125	120	125	G	120	S	S	110	105	S	S	S	S
15	S	S	S	S	105	S	S	S	G	120	110	G	110	110	G	G	G	100	100	S	S	S	S	S
16	S	110	105	S	S	S	S	S	G	115	120	115	120	120	120	G	145	115	110	S	S	110	110	S
17	100	100	100	100	100	100	S	G	115	110	G	G	115	G	110	110	120	110	110	105	110	105	S	S
18	S	S	S	S	S	S	S	G	G	G	G	100	120	125	G	100	100	105	100	100	100	S	S	S
19	S	S	S	S	105	S	S	100	120	120	110	G	G	G	G	160	135	120	110	110	115	120	S	S
20	S	S	S	S	S	S	S	G	G	G	G	110	G	G	G	G	140	100	S	S	S	100	S	S
21	100	100	100	S	S	S	S	G	G	G	G	110	G	G	G	G	G	S	105	110	110	110	S	S
22	S	S	S	S	S	S	S	G	G	G	135	115	105	100	100	100	105	S	115	100	120	S	105	105
23	105	110	100	100	100	100	S	G	110	G	G	G	G	G	100	100	95	S	100	105	105	105	S	S
24	S	S	S	S	S	S	S	G	115	125	G	140	135	120	130	130	120	120	115	110	110	110	120	110
25	S	S	S	S	S	S	S	120	110	115	120	125	115	120	110	110	110	110	S	110	115	110	105	105
26	105	110	105	105	S	S	145	110	110	125	110	100	B	B	B	100	100	95	95	S	S	100	100	100
27	100	130	100	100	S	100	100	S	G	110	110	G	110	G	G	100	95	95	100	S	S	S	S	S
28	S	S	S	S	S	S	S	S	G	G	G	G	100	100	G	G	S	105	105	100	105	105	100	105
29	105	S	S	S	S	S	S	S	G	115	120	135	G	100	100	100	100	100	S	95	120	S	S	100
30	105	105	100	S	S	S	110	110	G	135	120	C	G	G	125	100	G	S	S	S	S	S	S	S
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	16	15	8	14	7	6	10	14	20	20	22	16	17	14	20	21	23	24	21	17	18	16	14
MED	105	105	100	100	105	100	112	122	115	118	110	110	112	110	110	110	105	105	105	105	110	105	105	105
UQ	105	110	100	100	110	102	120	135	125	120	120	120	120	120	120	120	120	110	110	110	110	110	110	105
LQ	100	100	100	100	100	100	110	110	110	110	110	105	108	100	100	100	100	100	100	100	105	100	100	100

NOV. 1982 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43·5' N, Long 140° 08·0' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 1								C 2	C 2	L 2				C 1		F 2	F 2	F 1		F 2	F 2	F 2
2					F 1				H 2	C 2	C 2	C 1	CL 12		L 1	L 2	L 2	F 6	F 5	F 2			F 2	F 3
3	F 5	F 6	F 3		F 1			C 2	C 2	C 1	C 2	C 3					L 1	F 2	F 3	F 3	F 3	F 5	F 5	F 3
4	F 3	F 3	F 2		F 1	F 1				C 2	L 2	L 2	L 3	L 3	CL 11		L 2	F 3	F 5	F 3	F 2	F 1	F 2	F 1
5	F 1							H 2		C 2	C 2	C 1		C 1	C 2	C 2	H 1	F 1	F 1	F 2	F 3	F 3	F 2	F 3
6	F 3	F 3	F 2	F 1	F 2	F 2	C 1	H 2	C 3	L 2	C 1	C 1		L 2		L 2	L 1	F 2	F 2	F 1		F 3	F 3	
7		F 1	F 1					C 2		C 1		C 1					L 1							
8			F 2	F 1	F 1	F 1			C 1			L 2		L 2		HL 31	C 3	F 1	F 2				F 1	
9	F 2	F 2			F 1		C 1	L 1						H 1		H 1	C 2	F 2	F 2	F 2	F 2	F 2		
10	F 1	F 1	F 1		F 1			H 1	C 1	C 2	C 1	L 2	L 2	C 1	C 3					F 1	F 2	F 2	F 2	F 4
11	F 4	F 2	F 2	F 2	F 2				C 2	C 2	C 1	C 2	C 1					FF 11	F 1	F 3	F 1		F 5	F 2
12	F 2	F 3	F 3	F 2	F 2				C 1		C 1	C 2	C 1	C 2	C 1	C 1	C 2	F 1	F 1				F 2	F 4
13	F 2								C 1	C 1	C 1	C 1	C 1	C 1	C 2	C 1		F 1	F 2	F 2	F 1	F 1		
14					F 1	F 1	F 1				H 1	C 1	C 1	C 1		C 1			F 1	F 1				
15					F 1					CL 11	C 2		C 1	C 1				F 3	F 1					
16		F 1	F 2							C 1	C 1	C 2	C 1	C 1	C 1		H 1	F 1	F 1			F 2	F 2	
17	F 2	F 3	F 4	F 2	F 2	F 2			C 2	C 2			C 1		C 2	C 3	C 2	F 1	F 1	F 2	F 1	F 1		
18												L 2	C 1	C 1		L 2	L 3	F 5	F 4	F 2	F 2			
19					F 2			L 1	C 2	C 2	C 1					H 1	H 2	F 2	F 2	F 1	F 1	F 1		
20												C 1					H 1	F 1				F 2		
21	F 1	F 1	F 1									C 1							F 3	F 2	F 2	F 2		
22											H 1	C 1	L 2	L 2	L 2	L 4	L 2		F 1	F 1	F 1		F 2	F 3
23	F 1	F 1	F 1	F 2	F 2	F 1			C 1						L 2	L 1	L 3		F 4	F 4	F 3	F 1		
24									C 1	C 2		H 1	H 1	C 1	C 1	C 2	C 2	F 2	F 2	F 3	F 3	F 3	F 1	F 6
25								C 1	C 1	C 1	C 1	C 1	C 1	C 1	C 2	C 2	C 3	F 1		F 3	F 1	F 3	F 1	F 2
26	F 1	F 2	F 4	F 2			F 1	C 2	C 2	C 1	C 2	L 2				L 1	L 4	F 2	F 2			F 2	F 1	F 2
27	F 3	FF 31	F 1	F 1		F 2	F 1			C 2	C 2		C 1			L 2	L 3	F 2	F 1					
28													L 1	L 1				F 1	F 2	F 1	F 1	F 1	F 2	F 2
29	F 2									C 1	C 1	H 1		L 1	L 1	L 1	L 1	F 1		F 1	F 1			F 2
30	F 2	F 1	F 1				F 1	C 1		H 1	C 2				C 1	L 1								
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																								
UQ																								
LQ																								

NOV. 1982 | TYPES OF ES

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N, Long 139° 29·3' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	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 52	X 50	X 50	X 47	X 48	X 36	S 50											S 102	X 100	X 87	X 72	S 79	X 78	X 69
2	X 59	X 60	X 58	X 54	X 54	X 54	S 75											S 101	X 86	X 82	S 77	X 60	X 58	X 60
3	X 54	X 51	S 51	X 51	S 47	X 46	X 70											S 131	X 96	S 83	X 67	X 63	X 63	X 64
4	X 65	X 60	X 51	X 50	X 42	X 44	S 68											S 103	S 84	S 75	X 67	X 62	X 52	X 51
5	X 50	X 51	X 52	X 51	X 49	X 49	X 65											X 92	S 78	X 73	X 66	X 51	S 48	50
6	S 56	S 56	57	58	50	S 51	S 62											X 93	X 73	X 76	S 78	X 50	S 46	S 52
7	X 50	X 49	X 50	X 50	X 51	S 55	S 66											X 89	X 71	X 68	X 61	X 53	X 48	X 48
8	X 44	X 45	X 46	X 46	X 42	X 45	X 61											X 91	X 73	X 67	X 66	X 59	S 54	X 50
9	X 50	X 48	X 48	X 47	X 43	X 49	X 57											S 102	S 74	X 65	X 60	X 60	X 59	X 58
10	X 58	X 57	X 56	X 57	X 53	X 55	X 68											S 106	X 70	X 67	X 66	S 57	X 54	X 49
11	X 47	X 50	X 48	X 49	X 46	X 46	S 54											X 92	X 74	X 73	S 79	S 63	X 56	X 57
12	X 57	X 57	X 45	X 47	X 49	X 49	X 61											X 93	S 92	S 81	X 60	X 55	X 50	O S 53
13	X 50	X 48	X 48	X 49	X 47	X 46	X 60											X 94	X 69	X 63	X 60	X 58	S 62	X 58
14	X 46	X 41	X 42	X 45	X 46	X 43	X 51											X 77	X 64	X 59	X 54	X 47	X 45	X 45
15	X 46	S 47	X 48	S 47	X 45	X 41	S 51											X 94	S 77	X 55	X 43	S 42	S	S 45
16	X 40	S 42	S 42	X 41	X 40	X 40	S 48											X 86	X 64	S 53	X 50	X 44	O S 42	S 41
17	S 47	S 44	X 42	X 43	X 43	X 39	S 47											S 80	X 63	X 56	X 50	X 50	X 42	X 41
18	X 40	X 40	X 40	X 44	X 42	X 37	S 44											S 80	X 68	X 61	X 45	S 45	X 47	X 51
19	X 41	S 42	S 42	S 41	S 44	X 44	X 49											S 80	X 65	X 58	X 57	X 55	X 47	S 45
20	X 44	S 44	S 44	S 45	S 44	X 36	X 45											X 85	X 62	X 63	X 64	X 60	X 51	X 46
21	X 46	S 45	S 44	X 44	X 45	X 43	X 47											X 89	S 80	X 67	X 59	S 53	S 52	X 51
22	S 55	X 56	X 42	X 35	X 36	X 38	X 50											X 118	X 96	S 75	X 69	X 67	X 59	X 49
23	X 52	X 53	S 54	X 56	X 55	S 52	X 57											X 85	S 65	X 62	X 57	X 41	X 42	X 41
24	X 42	X 42	X 45	S 44	S 43	S 42	S 48											X 101	X 79	X 72	X 69	S	X 51	X 56
25	X 44	X 44	X 41	U W 39	U W 39	U W 34	S 45											X 102	S 76	X 51	X 56	U S 44	A	X 36
26	X 38	X 39	X 39	X 40	X 33	X 32	S 43											S 95	X 81	S	X 48	S 52	X 49	50
27	48	50	O S 43	X 42	S 45	X 46	X 45											X 88	S 77	X 58	X 50	S 43	X 43	X 44
28	X 44	X 45	X 47	X 47	X 32	X 37	S 43											X 82	X 81	X 72	X 52	X 46	X 46	X 47
29	S 46	X 48	X 47	X 47	X 44	S 44	X 51											X 88	X 80	X 72	X 71	S 51	X 38	X 39
30	X 38	X 38	X 39	X 39	X 34	S 35	X 42											S 85	X 71	X 50	X 55	X 47	X 40	X 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	30	30	30	30	30	30	30											30	30	29	30	29	28	30
MED	X 47	X 48	X 46	X 47	X 44	X 44	X 51											X 92	X 75	X 67	X 60	X 53	X 50	X 50
UQ	X 52	X 51	X 50	X 50	X 48	X 49	X 61											X 101	X 81	X 73	X 67	X 60	X 55	X 53
LQ	X 44	X 44	X 42	X 43	X 42	X 38	S 47											X 85	X 69	X 59	X 54	X 47	X 46	X 45

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	46	44	44	41	S 42	30	S 44	115	115	118	131	146	143	140	136	126	105	S 96	94	S 81	66	S 73	72	63
2	53	S 54	52	48	48	48	S 69	88	130	148	145	134	R 134	140	138	129	115	S 95	S 80	S 76	S 71	54	S 52	S 54
3	48	S 45	S 45	S 45	S 41	40	64	S 99	135	J R 162	S 151	155	R 163	R 160	150	145	146	S 125	90	S 77	61	57	57	58
4	59	54	45	44	36	38	S 62	104	125	135	R 141	146	S 146	144	134	132	126	S 97	S 78	69	61	56	46	45
5	44	45	46	45	43	S 43	59	S 105	135	135	112	126	134	137	135	116	S 96	86	S 72	67	60	45	S 42	F
6	S 50	S 50	F	F	F	S 45	S 56	S 98	121	S 112	129	127	135	133	118	105	S 95	87	67	70	S 72	S 44	S 40	S 46
7	44	43	44	44	45	S 49	S 60	S 110	112	126	135	127	131	128	113	S 95	S 93	83	65	62	55	47	S 42	42
8	38	39	40	40	36	39	55	90	113	118	123	116	128	125	118	S 106	90	85	67	S 61	60	S 53	S 48	44
9	S 44	42	42	41	37	43	51	S 81	93	117	130	129	135	129	128	122	114	S 96	68	59	54	54	S 53	52
10	52	51	50	51	47	49	S 62	S 98	105	118	129	123	133	132	138	128	118	S 100	64	61	60	S 51	48	43
11	S 41	44	42	43	40	40	S 48	S 102	S 119	110	S 118	133	129	128	129	125	121	86	68	67	S 73	57	50	51
12	S 51	S 51	39	41	43	43	55	105	126	125	122	126	128	124	118	118	S 107	87	S 86	U S 75	54	49	S 44	U S 47
13	44	42	42	43	41	S 40	54	S 95	110	121	129	130	120	123	116	J S 112	S 104	88	63	57	54	52	56	S 52
14	40	35	36	39	40	37	45	82	109	116	122	121	S 119	S 122	120	107	95	71	58	53	48	S 41	39	39
15	40	S 41	42	S 41	39	35	S 45	81	111	S 127	127	125	R 139	R 148	139	128	116	88	71	49	37	S 36	I S 36	S 39
16	34	S 36	S 36	35	34	34	S 42	S 77	S 105	S 122	125	132	S 130	125	128	112	105	80	58	47	S 44	38	36	35
17	S 41	S 38	36	37	37	33	S 41	J S 77	S 100	S 115	124	124	124	131	132	125	100	S 74	57	50	44	S 44	36	35
18	34	34	34	38	36	31	S 38	S 79	S 99	S 102	116	115	119	124	124	111	88	S 74	62	55	39	39	41	45
19	35	36	S 36	S 35	S 38	38	43	S 80	R 110	130	134	128	112	119	115	103	79	S 74	59	52	51	48	S 41	39
20	38	38	38	39	S 38	30	39	S 80	S 95	99	109	109	109	106	116	111	S 96	79	56	57	58	54	45	40
21	40	39	S 38	38	39	37	S 41	S 74	100	112	110	101	112	115	114	106	104	83	S 74	61	53	S 47	S 46	45
22	S 49	50	36	29	30	32	44	89	120	J S 120	120	135	139	134	132	118	115	112	90	69	63	61	53	S 43
23	46	47	48	50	49	46	51	81	S 95	S 105	119	122	134	128	127	125	S 106	S 78	59	56	51	35	36	35
24	36	36	39	38	S 37	S 36	J S 42	83	106	120	142	143	139	150	144	125	116	95	73	S 66	63	I S 52	45	50
25	38	38	35	U W 33	U W 33	U W 28	S 39	U S 75	S 111	131	126	132	99	82	81	S 102	105	96	70	S 45	50	S 38	A	30
26	32	33	33	34	27	26	37	85	97	121	132	140	R 142	131	128	132	115	89	S 75	I S 65	S 42	S 46	S 43	F 44
27	F 42	F 44	S 37	36	S 39	40	S 39	80	S 100	I C 128	146	C	C	130	I C 113	104	I C 97	82	S 71	52	44	37	37	38
28	38	39	S 41	41	26	31	S 37	104	107	128	121	R 138	C 135	C 134	C 134	112	85	76	S 75	66	46	40	40	41
29	40	42	41	S 41	38	38	45	90	S 96	112	I C 138	141	138	135	125	114	107	82	74	66	65	J S 45	32	33
30	32	32	33	33	28	S 29	36	66	S 101	135	141	C	C	C	C	109	91	S 79	65	44	49	41	34	36
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	29	29	30	30	30	30	30	30	28	28	29	29	30	30	30	30	30	30	30	29	29
MED	41	42	40	41	38	38	S 45	86	110	120	128	128	134	130	128	115	105	86	69	61	54	47	43	43
UQ	46	45	44	43	41	43	55	99	119	128	135	136	138	135	134	125	115	95	S 75	67	61	54	48	47
LQ	38	38	36	37	36	32	S 41	S 80	S 100	115	121	124	122	124	118	107	95	79	63	53	48	S 41	39	39

The Radio Research Laboratories, Japan

NOV. 1982 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1982 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4′ N, Long 139° 29·3′ E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L										
2									L	L	A	L	L		A									
3										L	L	L												
4											L	L	L	L	L									
5											L	L	L	380	370									
6											L	L 420	L	L	L									
7												L	L	L										
8										L	L	L	L		L									
9												L		L	L									
10											L	L	L		L									
11											L	L	L											
12											L	L	L											
13											L	L												
14												L		L	L									
15										L 350	L	L	L											
16											L		L											
17												L	L	L										
18												L	L	L										
19										L	L	L	L 450	L										
20												L												
21											L			L										
22												L	L	L										
23																								
24														L										
25										L	L	L	L	L		L								
26											L	A	B	A	A	A								
27										C	L	C	C	L	C									
28												L	L	L										
29											L	L		L										
30											L	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										1		1	1	1	1									
MED										L 350		L 420	L 450	380	370									
UQ																								
LQ																								

NOV. 1982 | FOF1 (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N, Long. 139° 29·3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 K 130			H 230	290	A	350	360	360	355	A	A	225							
2								230	290	330	A	A	A	A	A	295	215							
3								215	A	A	A	A	A	A	325	285	A							
4								230	A	A	350	355	360	345	330	A	A							
5								H 250	H 290	315	A	A	360	340	315	A	205							
6								A	A	A	A	350	350	350	325	A	A							
7								230	290	320	H 340	R 360	355	335	315	H 280	H 200							
8								A	H 280	320	350	355	355	340	320	A	A							
9								H 220	H 290	H 320	340	B	360	H 350	325	285	A							
10								220	290	A	340	350	U R 350	345	315	A	205							
11								H 230	280	A	A	A	A	340	325	A	A							
12								H 235	H 295	A	A	A	A	A	A	A	A							
13								H 235	280	325	A	A	A	355	A	A	180							
14								210	275	H 315	H 350	H 350	340	325	300	270	180							
15								A	A	315	335	B	R 355	340	305	H 260	190							
16								H 220	H 275	A	H 340	A	A	350	330	285	175							
17								235	A	A	350	350	A	A	A	A	A							
18								H 220	R 280	A	340	350	A	A	315	A	A							
19								190	270	315	335	350	350	350	330	275	A							
20								180	270	H 310	H 340	H 345	350	340	H 315	285	180							
21								195	A	H 320	345	360	I R 355	350	320	285	A							
22								195	270	310	345	360	A	A	A	A	A							
23								H 200	A	335	355	365	A	A	A	A	A							J K 100
24	J K 100	J K 100	J K 100	J K 100	J K 100	J K 110	J K 160	H 185	265	315	335	350	360	A	A	A	200							
25		J K 120	J K 120	J K 120	J K 120	J K 120	J K 130	A	A	A	A	A	A	A	A	A	A							
26								A	A	A	A	A	B	B	A	A	A							
27								A	265	I C 300	325	C	C	A	C	A	C							
28								180	260	A	A	A	345	340	325	A	195							
29								175	H 270	A	A	A	350	335	305	A	A							
30						J K 130		170	270	320	A	C	C	C	C	265	S							
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	2	2	2	3	3	2	24	21	16	18	15	16	18	18	11	12							1
MED	J K 100	J K 110	J K 110	J K 110	J K 120	J K 120	J K 145	220	280	318	340	350	355	342	320	285	198							J K 100
UQ					J K 125	J K 125		H 230	290	320	350	360	360	350	325	285	205							
LQ					J K 110	J K 115		192	270	315	340	350	350	340	315	272	180							

NOV. 1982 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4′ N, Long 139° 29·3′ E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 S 15	E S 15	18	E B 13	J K 13	E S 15	23	G	35	37	G	G 22	G	G	34	29	30	E S 16	E S 15	17	22	J A 19	J A 25	27
2	E S 14	16	E S 15	J A 24	J A 19	22	22	G	G	G	J A 52	J A 44	J A 55	J A 39	65	G 23	31	J A 30	22	J A 32	J A 23	J A 20	20	21
3	21	J A 30	19	21	E S 15	E S 15	E S 15	29	J A 48	40	40	J A 45	J A 53	J A 53	40	35	J A 67	J A 86	58	J A 40	J A 32	J A 24	J A 52	J A 32
4	J A 44	J A 22	J A 20	20	20	22	20	G	35	J A 46	G 30	G 30	G 30	40	37	J A 41	J A 53	34	J A 52	27	J A 32	38	J A 28	J A 26
5	J A 22	E B 13	E S 14	E S 14	E B 13	E S 15	E S 16	27	32	36	36	37	G	36	35	28	G 20	22	23	22	J A 33	J A 32	31	23
6	J A 20	J A 31	J A 50	J A 23	J A 24	26	21	27	J A 49	J A 54	J A 65	J A 50	G 20	G 32	G 28	J A 36	J A 53	J A 45	25	20	E S 15	E S 16	E S 16	21
7	E S 15	E S 15	22	E B 13	E S 15	E S 15	23	J G 22	G	G 23	G 25	G 30	G 25	G 25	36	J A 52	J A 37	J A 32	20	17	20	21	20	20
8	21	18	17	21	22	21	21	J A 25	G	J A 53	G 30	G 24	G 25	G 20	34	J A 33	J A 27	J A 25	23	22	J A 20	J A 24	21	21
9	21	22	22	22	E S 14	E S 15	E S 15	G	31	34	36	E B 40	41	G	G	G 28	36	J A 21	J A 19	22	J A 21	J A 21	J A 21	J A 21
10	J A 23	21	E S 15	E S 15	E S 15	E S 15	22	G	G	33	G	G	G	G	35	30	G 20	E S 15	E S 16	E S 15	E S 15	21	E S 15	20
11	22	21	22	22	E S 14	E S 15	E S 16	G	35	47	41	45	38	G 33	G	30	J A 36	E S 14	22	19	J A 25	J A 31	22	J A 33
12	J A 29	J A 24	22	22	J A 18	26	22	G	G	34	36	J A 51	J A 41	39	J A 49	64	J A 94	57	35	E S 14	E S 15	E S 14	E S 15	E S 15
13	E S 15	21	21	E B 13	18	24	J A 23	G	30	37	37	39	39	G 33	36	J A 39	21	E S 16	E S 15	18	20	21	21	19
14	21	E S 15	E B 13	E S 15	E B 13	E S 15	E S 16	J A 29	G	G	39	40	37	36	34	J A 29	G	E S 15	J A 19	24	24	E S 15	E S 15	E S 16
15	E S 15	E S 15	E B 13	E S 15	E B 13	E S 15	E S 15	J A 24	30	G	G	E B 41	G 30	G 29	G 23	G 17	G	20	21	20	23	22	19	E S 16
16	E S 16	E S 14	E S 15	E S 15	22	20	E S 15	23	30	J A 42	40	43	J A 45	45	G	G	24	17	E S 15	22	39	J A 33	J A 52	J A 48
17	J A 24	E S 15	E B 13	E B 13	21	18	22	25	34	J A 38	J A 36	38	J A 56	J A 44	34	J A 44	J A 40	J A 52	34	17	J A 18	E S 15	E S 15	E S 16
18	E S 15	E S 15	E S 15	E B 13	E B 13	E S 15	22	G 19	G 27	J A 64	G 32	40	36	J A 34	35	35	J A 51	J A 52	E S 15	E S 16	E S 15	19	E S 15	E S 15
19	21	22	18	E S 14	E B 13	E S 15	E S 16	G	G	34	42	37	G 22	G 24	G 18	J A 66	25	J A 17	J A 24	J A 62	J A 21	J A 24	27	J A 21
20	23	23	E S 15	E S 14	J A 23	E S 15	E S 15	G	G	34	39	40	39	G 31	G 20	34	29	18	E S 15	17	E S 14	21	E S 15	E S 15
21	E S 15	E S 14	24	23	21	21	22	G	28	G	36	G 28	G 35	G 24	G 31	G 22	J A 37	32	E S 15	E S 16	E S 16	J A 83	J A 26	24
22	E S 16	E B 12	E B 13	E B 13	E B 13	E S 15	E S 15	24	G	35	42	45	70	J A 49	33	28	22	E S 14	27	21	20	E S 15	22	J A 23
23	22	22	19	23	24	21	22	G	35	37	39	G	41	J A 45	44	32	J A 33	36	J A 27	J A 29	J A 34	J A 52	23	J K 10
24	J K 10	J K 10	J K 10	J K 10	J K 10	J K 11	23	G	G	G 20	G 24	42	41	J A 61	J A 40	33	26	J A 24	22	27	J A 34	J A 53	J A 26	22
25	23	22	J K 12	J K 12	J K 12	18	23	23	32	35	36	39	39	J A 49	J A 44	57	24	24	E S 15	21	J A 28	J A 51	J A 61	J A 28
26	J A 35	J A 29	J A 22	J A 18	E S 14	E B 13	21	24	28	39	J A 45	J A 57	E B 101	86	J A 60	J A 85	J A 60	33	J A 22	J A 53	J A 33	J A 87	J A 31	J A 30
27	J A 29	J A 22	J A 31	J A 27	22	24	26	21	29	C	35	C	C	C 39	C	J A 51	C	J A 22	J A 19	J A 21	J A 38	J A 43	J A 23	E S 15
28	E S 15	E S 14	E B 13	E S 15	E S 14	20	J A 23	G	G 22	J A 35	35	38	J G 29	G 26	G	29	G	J A 27	J A 30	E S 15	E B 12	E S 14	E S 15	J A 21
29	J A 32	J A 23	E B 13	E B 12	E B 13	E S 15	E S 14	G	G	31	33	34	G 32	G 31	G	28	28	24	20	E S 16	19	20	E S 16	E S 15
30	21	23	22	E S 15	E B 13	J K 13	E S 15	G	G	36	36	C	C	C	C	G	J A 19	E C 21	E S 15	E S 15	E S 15	17	E S 15	E S 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	30	28	28	29	28	30	29	30	30	30	30	30	30	30
MED	21	21	18	E 15	U 12	15	21	G	28	35	36	39	37	34	34	32	29	24	22	20	21	21	21	21
UQ	J A 23	22	22	22	21	21	22	24	32	39	40	44	41	J A 44	38	J A 41	J A 37	J A 33	25	24	J A 32	J A 33	J A 26	J A 24
LQ	E S 15	E S 15	E E 13	E E 13	E B 13	E S 15	E S 15	G	G	33	G 32	32	G 27	G 26	G 22	28	22	17	E S 15	17	E 16	19	E S 15	E S 16

NOV. 1982 | FOES (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1982 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N, Long 139° 29·3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 S 15	E S 15	E	E B 13	B	E S 15	E	G	33	36	G	G 21	G	G	34	29	19	E S 16	E S 15	E	E	17	19	E
2	E S 14	E	E S 15	E	E	E	E	G	G	G	48	42	46	38	56	G 22	30	28	19	19	16	E	E	E
3	E	18	E	E	E S 15	E S 15	E S 15	27	48	37	39	42	40	40	29	24	40	50	40	35	27	18	33	E
4	24	E	E	E	E	E	E	G	29	40	G 30	G 30	G 29	39	37	39	30	30	35	E	17	17	18	E
5	E	E B 13	E S 14	E S 14	E B 13	E S 15	E S 16	G	31	34	34	36	G	36	34	28	G 18	E	E	E	31	23	21	19
6	17	24	15	E	E	E	E	25	38	41	40	30	G 20	G 31	G 28	33	26	28	19	E	E S 15	E S 16	E S 16	E
7	E S 15	E S 15	E	E B 13	E S 15	E S 15	E	G	G	G 22	G 24	G 30	G 25	G 25	35	46	26	30	E	17	E	E	E	E
8	E	E	E	E	E	E	E	24	G	17	G 29	G 23	G 24	G 19	34	29	22	19	E	E	17	E	E	E
9	E	E	E	E	E S 14	E S 15	E S 15	G	G	G	36	E B 40	40	G	G	G 27	29	19	19	E	E	17	E	19
10	E	E	E S 15	E S 15	E S 15	E S 15	E	G	G	33	G	G	G	G	33	29	G 18	E S 15	E S 16	E S 15	E S 15	E	E S 15	E
11	E	E	E	E	E S 14	E S 15	E S 16	G	G	39	39	42	38	G 32	G	30	21	E S 14	E	17	20	27	15	33
12	23	E	E	16	E	18	E	G	G	34	36	36	36	36	36	54	76	39	24	E S 14	E S 15	E S 14	E S 15	E S 15
13	E S 15	E	E	E B 13	E	E	E	G	G	34	37	39	39	G 33	33	27	16	E S 16	E S 15	E	E	E	E	E
14	E	E S 15	E B 13	E S 15	E B 13	E S 15	E S 16	G	G	G	37	38	37	35	32	26	G	E S 15	15	E	E	E S 15	E S 15	E S 16
15	E S 15	E S 15	E B 13	E S 15	E B 13	E S 15	E S 15	22	28	G	G	E B 41	G 30	G 29	G 23	G 16	G	E	E	E	E	E	E	E S 16
16	E S 16	E S 14	E S 15	E S 15	E	E	E S 15	G	G	35	38	40	37	44	G	G	24	17	E S 15	E	24	E	22	E
17	E	E S 15	E B 13	E B 13	E	E	E	G	32	33	33	37	38	36	34	36	22	39	26	E	E	E S 15	E S 15	E S 16
18	E S 15	E S 15	E S 15	E B 13	E B 13	E S 15	E	G 19	G 27	33	G 29	29	36	34	34	33	33	E	E S 15	E S 16	E S 15	E	E S 15	E S 15
19	E	E	14	E S 14	E B 13	E S 15	E S 16	G	G	G	41	37	G 22	G 24	G 18	49	25	16	17	32	15	E	E	E
20	E	E	E S 15	E S 14	E	E S 15	E S 15	G	G	G	39	38	37	G 19	G 19	32	28	E	E S 15	E	E S 14	E	E S 15	E S 15
21	E S 15	E S 14	E	E	E	E	E	G	28	G	G	G 28	G 35	G 24	G 30	G 19	29	19	E S 15	E S 16	E S 16	41	E	E
22	E S 16	E B 12	E B 13	E B 13	E B 13	E S 15	E S 15	24	G	34	39	39	40	37	32	27	22	E S 14	17	E	E	E S 15	E	17
23	E	E	E	E	E	E	E	G	30	30	30	G	40	40	42	29	27	25	23	18	27	19	E	E
24	E	E	E	E	E	S	S	G	G	G 20	G 23	41	G	35	33	30	22	16	17	20	24	34	18	E
25	E	S	S	S	S	S	S	23	29	32	36	35	37	36	33	34	21	E	E S 15	E	16	27	A A 61	E
26	16	15	18	15	E S 14	E B 13	E	24	28	34	40	45	E B 101	80	53	71	55	E	20	35	E	27	20	17
27	17	E	22	20	E	E	E	20	28	C	30	C	C	35	C	40	C	20	E	E	22	19	E	E S 15
28	E S 15	E S 14	E B 13	E S 15	E S 14	E	E	G	G 16	31	34	35	G 23	G 20	G	28	G	E	E	E S 15	E B 12	E S 14	E S 15	E
29	21	16	E B 13	E B 12	E B 13	E S 15	E S 14	G	G	31	33	34	G 32	G 31	G	28	19	E	E	E S 16	E	E	E S 16	E S 15
30	E	E	E	E S 15	E B 13	S	E S 15	G	G	G	34	C	C	C	C	G	G	E C 21	E S 15	E S 15	E S 15	E	E S 15	E S 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	29	29	29	28	27	28	30	30	29	30	28	28	29	28	30	29	30	30	30	30	30	30	30
MED	E E 14	E E 12	E E 13	E E 13	E E 13	E S 15	E	G	G	32	34	36	36	34	33	29	22	16	E E 15	E E 14	E E 15	E E 15	E E 15	E
UQ	E S 16	E S 15	E 15	E S 15	E E 14	E S 15	E S 15	20	29	34	39	40	38	36	34	34	29	25	19	17	17	19	18	E S 16
LQ	E	E	E	E	E	E	E	G	G	G	G 29	30	G 24	G 24	G 21	27	19	E	E	E	E	E	E	E

NOV. 1982 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | F-MIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4′ N, Long 139° 29·3′ E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	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 S 15	E S 15	13	13	13	E S 15	E S 16	E S 16	14	16	17	16	16	22	14	16	16	E S 16	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15
2	E S 14	13	E S 15	13	13	E S 14	E S 16	E S 15	14	15	16	17	17	17	18	15	14	13	13	E S 15	E S 15	E S 16	E S 15	E S 16
3	E S 16	13	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	16	17	18	18	17	17	17	15	15	E S 15	E S 14	E S 16	E S 15	E S 14	E S 15	E S 15
4	E S 15	E S 15	E S 15	13	E S 15	E S 15	E S 16	E S 16	15	16	17	15	18	16	17	15	15	13	E S 16	E S 15	E S 14	E S 15	E S 15	E S 16
5	E S 15	13	E S 14	E S 14	13	E S 15	E S 16	14	14	16	15	16	19	16	14	15	14	E S 15	E S 16	E S 16	E S 15	E S 14	E S 15	E S 14
6	E S 15	E S 14	13	E S 14	E S 15	E S 15	E S 15	E S 15	15	16	16	17	17	16	16	14	13	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16	E S 16
7	E S 15	E S 15	13	13	E S 15	E S 15	E S 15	E S 16	15	17	16	16	16	18	15	15	15	E S 16	E S 15	E S 15	13	E S 16	E S 16	E S 15
8	E S 15	E S 15	E S 15	E S 14	13	E S 15	E S 15	E S 15	13	15	15	16	15	15	14	16	14	E S 16	E S 16	E S 15	E S 14	E S 15	E S 15	E S 15
9	E S 16	E S 15	E S 15	13	E S 14	E S 15	E S 15	E S 15	16	17	27	40	21	17	20	16	15	13	13	E S 16	E S 16	E S 15	E S 16	E S 16
10	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 14	16	15	17	19	16	19	17	16	16	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15
11	E S 15	E S 14	13	E S 14	E S 14	E S 15	E S 16	E S 15	15	17	15	18	17	16	17	16	15	E S 14	E S 15	E S 15	E S 15	12	13	E S 16
12	13	E S 15	13	13	E S 14	E S 16	E S 16	E S 15	15	15	15	15	14	25	17	16	14	E S 15	E S 16	E S 14	E S 15	E S 14	E S 15	E S 15
13	E S 15	E S 14	13	13	E S 14	E S 15	E S 15	E S 15	15	18	19	22	23	24	16	16	E S 15	E S 16	E S 15	E S 16	E S 16	E S 15	E S 16	E S 15
14	E S 15	E S 15	13	E S 15	13	E S 15	E S 16	E S 15	15	15	16	15	15	15	16	14	E S 16	E S 15	13	E S 16	E S 15	E S 15	E S 15	E S 16
15	E S 15	E S 15	13	E S 15	13	E S 15	E S 15	E S 14	14	16	15	41	23	19	15	15	E S 15	E S 15	E S 15	E S 16	E S 16	E S 15	E S 15	E S 16
16	E S 16	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	16	14	16	16	18	31	17	16	E S 15	13	E S 15	E S 16	E S 16	E S 15	E S 16	E S 16
17	E S 16	E S 15	13	13	E S 15	E S 15	E S 15	E S 15	15	16	17	16	17	17	16	16	13	13	13	E S 15	E S 15	E S 15	E S 15	E S 16
18	E S 15	E S 15	E S 15	13	13	E S 15	E S 15	E S 14	15	14	15	19	18	17	18	15	E S 16	E S 15	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15
19	E S 15	E S 15	13	E S 14	13	E S 15	E S 16	E S 14	15	15	15	17	18	17	17	16	E S 16	13	13	E S 15	13	E S 16	E S 15	E S 15
20	13	E S 14	E S 15	E S 14	13	E S 15	E S 15	E S 15	14	15	15	16	15	15	14	16	E S 15	E S 15	E S 15	E S 16	E S 14	E S 15	E S 15	E S 15
21	E S 15	E S 14	E S 15	13	E S 15	E S 15	E S 15	E S 16	15	16	18	20	19	17	16	15	E S 15	E S 14	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
22	E S 16	12	13	13	13	E S 15	E S 15	E S 15	14	15	16	17	17	17	16	16	E S 14	E S 14	E S 16	E S 15	E S 15	E S 15	E S 16	E S 16
23	E S 16	E S 15	13	E S 15	E S 16	E S 15	E S 16	E S 16	15	17	17	20	17	18	15	14	13	19	E S 16	E S 15	E S 15	E S 15	E S 16	E S 16
24	E S 15	E S 15	E S 15	E S 15	E S 14	E S 16	E S 16	E S 16	14	14	15	16	17	16	16	16	E S 15	E S 14	E S 15	13	E S 15	E S 15	E S 16	E S 16
25	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	15	16	14	15	17	17	17	15	17	E S 16	E S 15	E S 15	13	E S 15	E S 15	E S 15
26	E S 14	13	E S 14	13	E S 14	13	E S 15	E S 16	15	15	19	17	101	50	31	17	14	E C 21	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
27	E S 14	E S 16	E S 14	E S 15	E S 15	E S 15	E S 15	E S 16	16	C	15	C	C	E C 19	C	15	C	E S 15	E S 15	E S 16	E S 16	E S 16	E S 15	E S 15
28	E S 15	E S 14	13	E S 15	E S 14	E S 15	E S 15	E S 15	13	13	15	16	16	15	18	17	17	E S 16	E S 15	E S 15	12	E S 14	E S 15	E S 16
29	E S 15	E S 15	13	12	13	E S 15	E S 14	E S 15	16	16	17	17	20	17	17	17	15	E S 15	E S 15	E S 16	13	E S 15	E S 16	E S 15
30	E S 16	E S 15	E S 15	E S 15	13	E S 16	E S 15	E S 15	15	14	15	C	C	C	C	16	E S 15	E C 21	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	30	28	28	29	28	30	29	30	30	30	30	30	30	30
MED	E S 15	E S 15	E S 14	E S 14	E S 14	E S 15	E S 15	E S 15	15	16	16	17	17	17	16	16	14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16
UQ	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16	15	16	17	18	18	19	17	16	15	E S 16	E S 15	E S 16	E S 15	E S 15	E S 16	E S 16
LQ	E S 15	E S 14	13	13	13	E S 15	E S 15	E S 15	14	15	15	16	16	16	16	15	14	E S 14	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15

NOV. 1982 | F-MIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	280	275	250	S 260	230	S 250	330	330	300	295	290	295	285	280	290	280	S 290	300	S 280	275	S 275	285	280
2	250	S 260	255	245	250	265	S 295	320	300	305	300	295	R 270	290	290	300	300	S 290	S 300	S 285	S 305	290	S 270	S 275
3	250	S 240	S 250	S 255	S 240	245	290	S 305	290	J R 305	S 285	280	R 285	R 285	285	280	290	S 300	295	S 280	275	265	280	280
4	300	295	275	270	285	265	S 300	335	325	315	R 300	300	S 280	295	295	300	320	S 300	S 290	290	295	305	290	260
5	265	270	255	260	260	S 255	300	S 320	330	330	315	310	300	300	315	315	S 300	305	S 300	305	310	295	S 270	F
6	S 285	S 280	F	F	F	S 260	S 305	S 310	340	S 290	310	295	305	300	305	305	S 300	310	295	295	S 325	S 295	S 255	S 255
7	275	260	270	270	265	S 260	S 300	S 310	315	310	310	295	305	305	305	S 295	S 285	310	310	285	300	295	S 275	270
8	275	270	270	275	275	280	300	330	325	310	310	290	300	290	295	S 305	300	290	295	S 295	295	S 290	S 275	270
9	S 290	270	270	270	240	275	310	S 330	300	300	300	290	290	290	290	295	305	S 295	295	295	280	280	S 275	255
10	270	270	270	270	275	280	S 305	S 325	310	310	300	295	295	285	290	300	295	S 305	290	280	290	S 280	285	270
11	S 250	265	270	280	275	265	S 280	S 315	S 325	310	S 300	310	280	285	290	300	310	290	285	285	S 305	280	255	265
12	S 265	S 280	260	260	270	275	285	320	320	315	310	295	300	300	300	305	S 310	300	S 310	U S 315	290	280	S 275	U S 270
13	270	265	270	270	270	S 255	285	S 340	340	305	310	315	310	280	295	J S 300	S 310	310	295	290	280	275	295	S 310
14	310	265	260	270	290	295	280	310	320	320	320	305	S 290	S 310	310	310	310	320	315	305	280	S 290	265	260
15	260	S 265	275	S 280	295	270	S 280	305	320	S 310	315	295	R 290	R 290	290	310	320	305	320	315	275	S 280	I S 280	S 280
16	265	S 270	S 260	260	260	290	S 290	S 315	S 310	S 310	310	305	S 300	295	300	300	310	305	310	290	S 285	285	285	270
17	S 260	S 300	285	285	305	285	S 290	J S 310	S 320	S 320	310	310	310	300	300	315	320	S 295	295	310	275	S 300	280	295
18	265	270	270	300	320	270	S 290	S 315	S 300	S 300	305	290	290	295	315	310	310	S 295	300	310	295	250	280	300
19	250	255	S 260	S 255	S 265	275	295	S 310	R 305	325	335	325	300	305	320	325	315	S 310	290	310	285	305	S 295	280
20	275	270	280	290	S 340	275	280	S 320	S 330	310	325	315	290	280	305	315	S 310	310	315	305	280	290	270	275
21	285	295	S 295	265	305	300	S 280	S 305	310	310	320	305	285	290	300	300	305	290	S 290	300	280	S 280	S 275	255
22	S 295	310	310	250	240	255	275	305	300	J S 305	295	290	295	285	290	285	285	270	295	285	285	285	315	S 275
23	265	285	270	270	280	285	290	330	S 310	S 300	320	300	300	305	290	310	S 310	S 300	305	295	300	300	260	270
24	245	265	265	235	S 240	S 225	J S 255	315	315	290	300	290	285	300	295	285	295	310	295	S 290	300	I S 280	250	250
25	215	220	225	U W 220	U W 215	U W 205	S 235	U S 280	S 290	295	280	275	285	310	310	S 300	305	310	320	S 300	290	S 270	A	250
26	250	245	245	280	295	270	275	330	330	315	310	310	R 300	300	305	310	325	315	S 305	I S 320	S 325	S 255	S 265	F 270
27	F 270	F 295	S 255	240	S 265	305	S 290	320	S 320	I C 320	320	C	C	305	I C 310	310	I C 315	320	S 300	310	290	285	270	255
28	245	245	S 275	300	350	250	S 260	330	330	330	315	R 295	C 300	C 295	C 305	305	315	300	S 300	310	290	285	270	280
29	275	290	290	S 270	265	265	280	330	S 335	305	I C 300	300	310	295	300	320	320	300	300	295	305	J S 305	255	265
30	275	260	270	270	340	S 240	255	310	S 310	300	305	C	C	C	C	300	305	S 300	315	290	300	295	285	265
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	29	29	30	30	30	30	30	30	28	28	29	29	30	30	30	30	30	30	30	29	29
MED	268	270	270	270	270	268	S 288	318	320	310	310	295	295	295	300	302	310	300	300	295	290	285	275	270
UQ	275	280	275	275	295	280	S 295	330	330	315	315	308	300	300	305	310	315	310	310	310	300	295	285	280
LQ	250	260	260	255	260	255	280	S 310	310	300	300	290	288	290	290	300	300	S 295	295	290	280	280	270	260

The Radio Research Laboratories, Japan

NOV. 1982 | M(3000)F2 (0.01)

IONOSPHERIC DATA

NOV. 1982 | M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4 N, Long. 139° 29·3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L										
2									L	L	A	L	L		A									
3										L	L	L												
4											L	L	L	L	L									
5											L	L	L	405	395									
6											L	L 410	L	L	L									
7												L	L	L										
8										L	L	L	L		L									
9												L		L	L									
10											L	L	L		L									
11											L	L	L											
12											L	L	L											
13											L	L												
14												L		L	L									
15										430	L	L	L											
16											L		L											
17												L	L	L										
18												L	L	L										
19										L	L	L	L 420	L										
20												L												
21											L			L										
22												L	L	L										
23																								
24														L										
25										L	L	L	L	L		L								
26											L	A	B	A	A	A								
27										C	L	C	C	L	C									
28												L	L	L										
29											L	L		L										
30											L	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										1		1	1	1	1									
MED										430		410	420	405	395									
UQ																								
LQ																								

NOV. 1982 | M(3000)F1 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H*F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4 N, Long. 139° 29·3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											275	265	265	260										
2									260	255	240	250	L 285		255									
3										245	240	240												
4											250	245	245	240	240									
5											215	240	260	235	235									
6											235	240	245	245	240									
7												235	260	260										
8										240	245	240	265		240									
9												250		250	245									
10											250	245	250		250									
11											255	250	235											
12											230	250	235											
13											240	240												
14												245		240	235									
15										240	235	240	260											
16											230		255											
17												250	245	260										
18												235	330	240										
19										245	245	245	240	265										
20												250												
21											240			270										
22												245	255	L 285										
23																								
24														255										
25										275	270	240	L	255		275								
26											230	235	E B 285	250	250	255								
27										I C 240	225	C	C	245	C									
28												235	250	245										
29											240	230		250										
30											255	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									1	7	20	24	18	18	9	2								
MED									260	245	240	242	254	250	240	265								
UQ										250	250	250	262	260	250									
LQ										240	232	240	245	245	240									

The Radio Research Laboratories, Japan

NOV. 1982 | H*F2 (KM)

IONOSPHERIC DATA

NOV. 1982 | H'F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4 N, Long 139° 29·3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	315	305	300	315	275	E S 435	310	230	225	230	220	220	235	235	240	230	220	230	235	245	250	275	255	250
2	280	275	295	330	330	305	240	225	240	220	A	225	235	240	A	235	220	220	225	260	240	255	305	275
3	335	375	350	320	375	390	260	230	A 250	225	220	220	235	235	230	245	235	240	240	280	295	310	E A 355	310
4	265	240	255	260	250	325	260	230	230	230	205	205	215	225	225	230	225	220	235	230	250	250	265	295
5	310	300	300	285	240	280	255	235	230	220	205	210	H 215	215	210	220	215	215	220	225	240	265	E A 300	E A 325
6	275	295	270	280	250	295	255	235	230	235	220	200	230	235	230	230	225	230	235	250	215	230	295	290
7	280	285	280	285	275	300	265	240	230	230	220	220	215	220	240	230	240	220	240	235	225	245	270	280
8	280	290	280	280	250	290	255	230	230	220	225	215	H 210	245	230	230	220	220	220	230	255	250	270	300
9	290	295	285	265	395	315	H 215	225	220	235	235	215	240	230	235	240	225	215	A 230	240	250	270	270	315
10	290	285	305	300	245	265	250	225	225	H 200	H 210	215	235	235	235	220	225	220	210	240	235	245	255	295
11	345	290	270	270	255	300	280	230	225	230	225	A 235	225	H 225	235	240	220	195	230	250	245	E A 275	300	E A 355
12	280	250	265	325	325	315	280	235	230	230	220	215	220	235	245	245	275	240	240	215	225	260	270	290
13	265	265	290	270	280	310	270	225	225	225	215	230	230	235	225	225	225	210	210	235	255	270	260	220
14	230	275	300	300	260	225	240	240	225	220	235	220	235	225	225	230	225	210	235	235	240	240	295	300
15	325	295	270	250	240	260	235	225	235	205	230	230	H 225	230	230	235	215	205	225	215	235	280	305	275
16	290	310	310	315	295	250	230	235	240	230	225	230	225	235	230	225	220	200	200	240	275	250	E A 300	E S 295
17	300	255	255	270	240	280	220	230	225	235	225	225	240	210	240	235	220	A 235	235	220	230	240	250	280
18	300	310	295	260	225	235	255	225	220	225	220	225	H 225	215	240	225	215	205	215	230	230	305	300	260
19	265	330	330	325	300	270	250	250	235	235	E A 240	220	220	230	240	230	215	225	225	260	245	245	240	280
20	265	285	290	260	230	E S 290	260	225	225	230	235	220	225	220	235	235	225	210	220	245	220	235	255	275
21	285	275	265	265	255	250	230	215	H 210	225	210	225	225	235	235	235	235	A 225	225	220	215	A	305	345
22	290	230	230	E B 310	E B 355	335	245	H 240	240	235	230	230	E A 240	230	240	225	240	230	215	215	240	225	220	255
23	305	275	270	290	265	260	235	215	220	225	235	235	235	245	245	240	220	220	225	240	E A 245	E A 260	315	310
24	360	335	305	E S 380	E S 375	E S 435	275	245	225	230	245	235	240	230	235	220	220	205	220	260	240	E A 290	E A 340	340
25	E S 425	E S 425	405	E S 490	E S 495	E S 525	375	275	250	245	245	225	215	220	245	A 250	245	210	210	230	260	E A 255	A	360
26	350	380	345	280	260	E B 315	260	220	220	220	225	A	B	A	A	A	A 225	215	225	A	235	E A 350	310	305
27	275	255	E A 350	425	305	235	225	235	225	I C 225	H 220	I C 215	C	255	I C 225	220	I C 220	210	230	215	E A 280	E A 260	E S 275	315
28	360	340	285	250	200	350	315	230	220	220	220	H 220	205	225	225	215	215	240	240	210	210	260	305	270
29	320	295	280	270	260	300	270	235	220	230	220	H 225	225	225	220	230	225	215	220	225	230	210	280	315
30	335	330	305	290	215	390	335	225	230	230	235	C	C	C	C	230	215	220	215	230	245	225	275	305
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	28	27	28	27	29	30	30	30	29	30	29	29	30
MED	290	291	289	282	258	290	255	230	225	230	222	220	225	230	235	230	222	220	225	235	240	250	275	292
UQ	322	310	305	308	292	318	270	235	230	230	232	228	235	235	240	235	225	225	235	245	250	265	302	312
LQ	280	275	270	270	245	262	240	225	225	220	220	215	220	225	228	225	220	210	220	225	230	242	262	275

NOV. 1982 | H'F (KM)

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IONOSPHERIC DATA

NOV. 1982 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4' N, Long 139° 29·3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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			115	105	110	105	A 105	100	115	A 110	110	A 125							
2								115	110	105	A	A	A	A	A	E A 115	115							
3								115	105	105	105	A	A	A	E A 120	E A 125	A							
4								110	110	A	E A 130	E A 120	E A 120	E A 125	E A 125	A	A							
5								110	110	A 110	105	105	110	E A 115	E A 115	E A 115	E A 125							
6								110	A	A	A	E A 120	A 110	E A 125	E A 130	A	A							
7								E S 125	110	A 110	A 115	E A 120	A 120	A 120	A 120	A 115	130							
8								A	105	A 115	E A 125	A 115	A 115	A 110	E A 125	A	A							
9								115	110	110	E B 120	B	115	110	115	E A 135	A							
10								120	110	110	110	110	110	110	110	115	E A 125							
11								E S 125	E A 120	110	105	110	110	E A 130	110	115	A							
12								110	110	105	E A 120	105	105	B 120	A	A	A							
13								120	110	110	110	115	115	E A 130	A	A	E A 125							
14								E S 120	110	105	110	105	A 105	110	110	E A 135	E S 115							
15								A	110	105	105	B	E A 125	E A 120	E A 115	A 115	E S 120							
16								E S 120	110	105	105	105	110	E B 130	110	120	E S 125							
17								115	110	A	E A 130	E A 135	A	A	A	A	A							
18								E A 140	E A 135	A	E A 120	E A 115	A	A	E A 120	A	A							
19								120	110	A 115	A 115	110	A 115	E A 120	E A 120	115	E S 130							
20								E S 120	110	A 115	A 110	A 110	E A 120	E A 110	E A 115	115	E S 125							
21								120	A	110	110	E A 115	E A 135	E A 115	A	E A 115	120							
22								125	110	105	105	110	110	A	A	A	A							
23								E S 125	E A 120	E A 130	E A 130	110	E A 120	E A 120	A	A	A							E
24	E	E	E	E	E	S	S	E S 135	110	A 115	A 115	105	110	A	A	A	E A 135							
25		S	S	S	S	S	S	E S 130	110	110	110	110	110	110	A	A	A							
26								A	110	105	105	A	B	B	A	A	A							
27								A	110	C	A	C	C	A	C	A	C							
28								E S 135	A 110	A 110	105	105	A 110	A 110	115	A	120							
29								E S 125	115	110	110	110	E A 125	E A 130	115	A	A							
30							S	125	115	105	105	C	C	C	C	110	S							
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	28	25	27	23	23	21	18	15	14							
MED								115	110	110	108	108	A 110	E A 120	A 112	A 112	E E 125							
UQ								E S 125	110	A 110	A 114	A 112	A 115	E A 125	E A 120	A 116	E A 125							
LQ								112	110	105	105	105	110	A 110	110	115	E E 120							

The Radio Research Laboratories, Japan

NOV. 1982 | H'E (KM)

IONOSPHERIC DATA

NOV. 1982 | H'ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4 N, Long 139° 29·3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	100	B	B	S	100	G	140	125	G	100	G	G	130	120	115	S	S	105	105	100	100	100
2	S	105	S	105	105	120	100	G	G	G	105	105	100	100	100	100	120	110	105	100	115	100	100	100
3	105	105	105	105	S	S	S	120	115	110	110	105	105	105	105	105	100	100	100	100	100	105	105	105
4	100	110	105	95	100	95	120	G	120	105	105	100	105	125	125	100	100	100	105	110	105	100	100	100
5	100	B	S	S	B	S	S	145	135	120	120	120	G	130	150	120	95	100	100	105	105	100	100	100
6	100	100	100	100	95	95	100	115	105	110	100	100	105	100	100	100	100	95	100	100	S	S	S	95
7	S	S	100	B	S	S	105	105	G	105	105	105	105	105	135	120	125	140	100	110	105	100	105	100
8	100	95	100	100	100	105	105	125	G	105	110	105	100	100	155	120	95	95	95	145	115	105	105	100
9	100	100	100	100	S	S	S	G	150	140	135	B	135	G	G	110	120	110	105	105	105	100	100	100
10	100	100	S	S	S	S	115	G	G	125	G	G	G	G	125	115	110	S	S	S	S	105	S	100
11	100	105	105	105	S	S	S	G	125	120	115	115	120	110	G	120	115	S	120	110	110	100	105	105
12	100	100	100	100	100	100	100	G	G	115	120	115	115	120	115	110	110	110	110	S	S	S	S	S
13	S	110	105	B	105	100	100	G	135	115	120	115	115	115	110	110	110	S	S	105	100	100	100	100
14	100	S	B	S	B	S	S	100	G	G	130	125	125	120	120	110	G	S	105	100	100	S	S	S
15	S	S	B	S	B	S	S	115	120	G	G	B	110	110	105	105	G	100	105	100	125	125	120	S
16	S	S	S	S	110	110	S	100	155	115	125	115	120	125	G	G	130	110	S	125	110	110	105	105
17	110	S	B	B	100	105	120	105	115	110	105	E G 170	110	115	110	115	105	105	105	110	100	S	S	S
18	S	S	S	B	B	S	115	120	115	105	105	105	135	105	130	105	100	105	S	S	S	100	S	S
19	105	105	110	S	B	S	S	G	G	E G 175	125	140	105	105	110	120	125	160	105	105	105	100	100	95
20	95	95	S	S	110	S	S	G	G	E G 175	135	130	130	100	95	150	140	95	S	145	S	100	S	S
21	S	S	100	100	100	100	100	G	155	G	E G 175	110	115	110	110	100	115	105	S	S	S	110	105	110
22	S	B	B	B	B	S	S	155	G	145	125	125	115	110	110	110	135	S	105	115	115	S	110	110
23	110	105	100	100	100	110	100	G	120	110	110	G	120	120	115	115	95	115	105	105	105	105	115	S
24	S	S	S	S	S	S	115	G	G	105	105	140	135	110	110	115	135	120	115	110	110	110	110	110
25	115	115	S	S	S	130	125	120	120	120	120	125	120	115	115	110	110	115	S	115	110	105	105	105
26	105	105	105	110	S	B	115	150	135	110	110	110	B	100	105	105	110	95	115	110	105	105	105	105
27	105	105	100	100	100	100	115	120	130	C	105	C	C	100	C	100	C	95	100	120	105	105	110	S
28	S	S	B	S	S	110	110	G	100	115	120	120	100	100	G	150	G	105	105	S	B	S	S	105
29	100	100	B	B	B	S	S	G	G	120	120	115	110	115	G	110	95	95	95	S	130	115	S	S
30	100	105	105	S	B	S	S	G	G	130	115	C	C	C	C	G	95	C	S	S	S	105	S	S
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	18	16	12	12	13	18	14	18	25	27	24	24	26	23	28	26	23	21	23	22	24	20	20
MED	100	105	100	100	100	105	108	120	122	115	115	115	115	110	110	110	110	105	105	110	105	105	105	100
UQ	105	105	105	105	105	110	115	125	135	122	121	124	120	115	125	120	120	110	105	112	110	105	108	105
LQ	100	100	100	100	100	100	100	105	115	110	105	105	105	100	108	105	100	98	100	105	105	100	100	100

NOV. 1982 | H'ES (KM)

IONOSPHERIC DATA

NOV. 1982 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42·4 N, Long 139° 29·3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 1		K 1		F 1		H 2	C 2		L 1			CL 21	C 2	L 1			F 2	F 2	F 4	F 4	F 2
2		F 1		F 1	F 1	F 1	F 1				L 2	L 2	L 3	L 3	L 3	L 2	C 5	F 5	F 6	F 6	FF 12	F 2	F 1	F 1
3	F 1	F 4	F 1	F 1				C 3	C 3	C 2	C 2	L 2	L 2	L 2	L 1	L 2	L 3	F 3	F 7	F 5	F 4	F 4	F 5	F 2
4	F 3	FF 22	F 2	F 1	FF 11	F 1	F 1		C 2	L 3	L 1	L 1	L 1	CL 12	CL 12	L 4	L 2	F 5	FF 31	FF 11	F 2	F 4	F 2	F 2
5	F 1							H 2	H 2	CL 21	C 1	C 1		CL 11	HL 11	CL 11	L 2	F 1	F 1	FF 11	F 5	F 5	F 6	F 6
6	F 4	F 5	F 2	F 2	F 1	F 1	F 1	C 2	L 3	L 3	L 2	L 2	L 1	L 1	L 2	L 3	L 3	F 3	F 2	F 2				F 1
7			F 1				F 1	L 1		L 2	L 1	L 1	LL 11	L 2	HL 11	CL 31	CL 11	FF 32	F 2	F 2	F 2	F 2	F 1	F 1
8	F 2	F 1	F 1	F 1	F 1	F 2	F 1	L 2		LC 21	LL 11	L 1	L 1	L 2	HL 13	CL 13	LH 51	F 5	F 3	F 1	F 3	F 2	F 1	F 1
9	F 1	F 1	F 1	F 1					H 1	H 1	H 1		H 1			L 2	CL 23	F 5	F 3	F 2	F 2	F 2	F 2	F 2
10	F 2	F 1					F 1			C 1					C 1	C 2	L 2					F 1		F 2
11	F 2	F 1	F 1	F 2					CL 11	C 2	C 1	C 2	C 1	L 1		C 3	L 2		F 1	F 3	F 3	F 6	F 2	F 6
12	F 8	F 3	F 2	F 3	F 3	F 6	F 2			C 1	CL 21	C 2	C 1	C 1	L 2	L 3	L 4	F 4	F 5					
13		F 2	F 1		F 1	F 1	F 1		C 2	C 2	C 1	C 2	C 1	L 1	L 2	L 2	L 1			F 1	F 2	F 2	F 2	F 2
14	F 1							L 1			H 1	C 1	CL 11	C 3	C 2	L 2			F 3	F 3	F 2			
15								L 2	C 2				L 1	L 1	L 2	L 1		F 1	F 2	F 1	FF 22	F 1	F 1	
16					F 1	F 2		L 1	H 2	C 1	C 2	C 2	C 1	C 1			HC 23	F 3		FF 11	F 4	F 3	F 3	F 2
17	F 2				F 1	F 1	FF 12	L 1	C 2	LH 11	L 1	HL 12	L 2	L 2	L 1	L 3	L 3	F 6	F 7	F 1	F 2			
18							F 1	L 2	LL 21	L 2	L 2	L 1	HL 13	L 2	HL 11	LL 22	L 4	F 1				F 1		
19	F 1	F 2	F 2							HL 21	HL 21	H 1	L 1	L 1	L 1	C 5	C 2	F 2	F 3	F 3	F 2	F 2	FF 21	F 2
20	F 2	F 1			F 1					HL 11	HL 21	CL 11	CL 12	L 1	L 2	H 2	H 3	F 2		F 1		F 1		
21			F 1	F 1	F 1	F 1	F 1		HL 12		H 2	L 1	LL 11	L 1	LL 11	L 1	C 4	F 3				F 4	F 2	F 2
22								H 2		H 2	H 2	C 1	C 2	L 2	L 2	L 2	CL 22		F 5	F 1	F 1		F 1	F 4
23	F 1	F 2	F 1	F 2	F 1	F 1	F 1		CL 12	L 1	L 1		CL 11	CL 11	CL 22	CL 23	L 4	FF 15	FF 43	FF 42	F 4	F 3	FF 11	K 1
24	K 1	K 1	K 1	K 1	K 1	K 1	LK 11			L 2	L 1	H 2	H 1	L 1	LH 22	L 2	HL 22	F 5	F 5	F 5	F 5	F 4	F 4	F 2
25	F 3	LK 21	K 1	K 1	K 1	CK 11	CK 21	C 3	C 2	C 2	C 2	C 1	C 2	C 1	L 2	LL 31	L 2	F 1		F 2	F 3	F 7	F 3	F 2
26	F 3	F 3	F 3	F 2			F 1	HL 23	HC 12	C 3	C 2	L 2		L 1	LL 11	LL 31	LL 32	F 3	F 3	FF 61	F 2	F 5	F 4	F 2
27	F 2	F 2	F 2	F 2	F 1	F 2	FF 12	L 1	H 2		L 2			L 2		L 2		F 4	FF 11	FF 11	F 3	F 4	F 2	
28						F 1	F 1		L 1	CL 11	C 1	C 1	L 1	L 1		HL 11		F 2	F 2					F 1
29	F 2	F 1								C 1	C 1	C 1	L 2	L 1		L 2	L 2	F 2	F 1		F 1	F 1		
30	F 1	F 1	F 1			K 1				C 2	C 2						LL 11					F 1		
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																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

NOV. 1982 | TYPES OF ES

IONOSPHERIC DATA

NOV. 1982 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long 130° 37·1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	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 69	X 58	X 56	X 54	X 50	X 42	X 38												X 118	X 102	X 92	X 87	X 84	X 66
2	X 60	X 60	X 56	X 55	X 56	X 52	X 58												X 121	X 100	X 89	X 78	X 62	X 61
3	X 56	X 52	X 52	X 53	X 51	X 51	X 63												X 140	X 112	X 110	X 93	X 86	X 76
4	X 81	X 69	X 61	X 57	X 45	X 39	X 46												X 139	X 121	X 90	X 81	X 72	X 61
5	X 59	X 59	X 59	X 59	X 52	X 48	X 49												X 114	X 87	X 93	X 78	X 60	X 51
6	X 55	X 53	X 50	X 50	X 49	X 45	X 48												X 100	X 94	S 100	X 79	X 60	X 58
7	X 57	X 50	X 50	X 48	X 49	X 47	X 50												X 108	X 89	X 87	X 77	X 60	X 51
8	X 49	X 47	X 44	X 45	X 46	X 45	S 46												X 111	X 89	X 94	X 90	X 71	X 60
9	X 53	X 49	X 48	X 48	X 41	X 44	S 70												X 103	X 81	X 81	X 86	X 74	X 70
10	X 64	X 56	X 52	X 52	X 52	X 51	X 51												X 133	X 96	X 96	X 89	X 73	X 64
11	X 49	X 51	X 50	X 46	X 43	X 43	X 43												X 109	X 107	X 124	X 97	X 74	X 70
12	X 67	X 64	X 55	X 54	X 60	X 56	X 56												X 126	X 113	X 90	X 75	X 71	X 70
13	X 64	X 50	X 45	X 45	X 45	X 44	X 46												X 94	X 84	X 82	X 73	X 70	X 66
14	X 40	X 34	X 36	X 38	X 41	X 38	X 39												X 95	X 74	X 67	X 65	X 56	X 46
15	X 42	X 43	X 43	X 43	X 45	X 35	X 40												X 132	S 114	S 95	S 72	X 57	X 57
16	X 49	X 37	X 38	X 39	X 38	X 37	X 34												X 108	X 85	X 79	X 64	X 48	X 44
17	X 44	X 44	X 42	X 41	X 43	X 34	X 36												S 112	X 84	S 88	X 84	X 69	X 58
18	X 48	X 43	X 43	X 42	X 44	X 33	X 36												X 101	X 85	S 84	X 79	X 75	X 66
19	X 48	X 42	X 44	X 44	X 47	X 47	X 46												X 90	X 78	X 83	X 84	X 71	X 57
20	X 53	X 48	X 46	X 45	X 48	X 32	X 33												X 96	X 93	X 95	X 87	X 74	X 59
21	X 59	X 53	X 50	X 51	X 50	X 41	X 36												X 106	X 93	X 96	X 92	X 83	X 70
22	S 73	X 80	X 62	64	S	S 41	X 37												X 116	X 87	X 81	X 84	X 63	X 46
23	X 45	X 48	X 49	X 46	X 50	X 39	X 38												X 93	X 80	X 85	X 74	S 62	X 55
24	X 51	X 49	X 47	X 42	X 41	X 39	X 42												X 111	S 97	X 85	S 73	X 60	X 58
25	X 53	X 50	S 49	X 45	S 45	X 56	70												X 101	X 91	X 93	S 96	A	X 39
26	X 41	X 40	X 41	S 43	X 42	X 38	X 39												X 92	S 97	X 95	X 71	X 62	X 54
27	X 48	X 51	S 46	X 44	X 46	X 42	X 38												X 95	X 90	X 81	X 70	X 62	X 49
28	X 47	X 51	X 54	S 45	X 39	X 36	X 36												X 101	X 95	X 71	X 59	X 59	X 66
29	X 46	X 47	X 50	X 49	X 45	X 41	X 45												X 111	S 97	S 97	S 81	X 59	X 50
30	S 46	S 46	X 46	X 41	X 40	H 34	X 34												X 101	X 93	X 85	X 71	X 66	X 55
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30												30	30	30	30	29	30
MED	X 52	X 50	X 49	X 46	X 45	X 42	X 42												X 108	X 93	X 90	X 79	X 66	X 58
UQ	X 59	X 53	X 52	X 52	X 50	X 47	X 49												X 116	X 97	X 95	X 87	X 73	X 66
LQ	X 47	X 46	X 44	X 43	X 43	X 38	X 37												X 100	X 85	X 83	X 73	X 60	X 51

NOV. 1982 | FXI (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1982 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	63	52	50	48	44	36	32	94	94	103	144	153	138	140	137	128	116	120	112	96	86	81	78	60
2	54	54	50	49	50	46	52	85	131	151	155	150	138	149	154	147	134	121	115	94	83	72	56	55
3	50	46	46	47	45	45	57	87	125	150	159	159	163	169	166	169	164	150	134	106	104	87	80	70
4	75	63	55	51	39	33	40	90	126	142	143	145	152	161	171	162	153	141	133	115	84	75	66	55
5	53	53	53	53	46	42	43	92	125	125	121	134	141	153	150	139	118	114	108	81	87	72	54	45
6	49	47	44	44	43	39	42	84	112	107	120	131	135	131	135	123	114	107	94	88	94	73	54	52
7	51	44	44	42	43	41	44	85	110	115	131	130	127	138	143	131	114	117	102	83	81	71	54	45
8	43	41	38	39	40	39	40	80	110	121	125	125	115	132	135	125	114	107	105	83	88	84	65	54
9	47	43	42	42	35	38	64	67	87	111	135	136	131	131	136	135	125	112	97	75	75	80	68	64
10	58	50	46	46	46	45	45	80	96	106	128	137	140	144	148	150	144	142	127	90	90	83	67	58
11	43	45	44	40	37	37	37	81	113	100	122	138	136	139	144	145	144	126	103	101	118	91	68	64
12	61	58	49	48	54	50	50	85	117	117	125	129	125	125	127	129	121	115	120	107	84	69	65	64
13	58	44	39	39	39	38	40	84	100	123	137	131	120	126	117	112	111	109	88	78	76	67	64	60
14	34	28	30	32	35	32	33	67	117	108	116	119	127	126	129	122	113	97	89	68	61	59	50	40
15	36	37	37	37	39	29	34	69	113	123	117	127	141	158	157	158	156	144	126	S 108	S 89	S 66	51	51
16	43	31	32	33	32	31	28	65	106	130	121	132	130	145	150	142	141	113	102	79	73	58	42	38
17	38	38	36	35	37	28	30	64	96	117	124	120	126	134	141	144	133	124	S 106	78	S 82	78	63	52
18	42	37	37	36	38	27	30	60	92	112	117	130	117	132	142	136	119	110	95	79	S 78	73	69	60
19	42	36	38	38	41	41	40	67	107	121	133	117	118	118	123	112	103	93	84	72	77	78	65	51
20	47	42	40	39	42	26	27	64	90	108	106	109	119	128	135	130	125	108	90	87	89	81	68	53
21	53	47	44	45	44	35	30	60	S 97	112	105	108	111	119	132	124	120	112	100	87	90	86	S 77	64
22	67	74	56	F	I S 33	S 35	31	S 73	102	116	120	127	134	136	134	125	122	124	110	81	S 75	78	57	40
23	39	42	43	40	44	33	32	66	90	117	132	121	127	127	128	128	134	117	87	74	79	68	56	49
24	S 45	43	41	36	35	33	36	81	S 118	91	130	153	144	148	142	124	129	117	105	91	79	67	54	52
25	47	44	S 43	39	S 39	50	F	S 78	120	152	141	172	148	105	110	139	143	125	95	85	87	90	A	33
26	35	34	35	37	36	32	33	72	92	117	131	145	148	131	145	141	138	112	86	91	S 89	65	56	48
27	42	45	40	38	40	36	32	65	94	123	146	122	134	134	130	131	120	105	89	84	75	64	56	43
28	41	45	48	S 39	33	30	30	66	104	115	134	144	148	153	136	138	110	92	95	89	65	53	53	60
29	40	41	44	S 43	39	35	39	67	106	111	142	143	143	145	138	138	137	122	S 105	91	S 91	S 75	S 53	S 44
30	40	S 40	40	35	34	H 28	28	66	105	120	135	153	154	135	127	127	119	S 109	95	87	S 79	65	60	S 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	30	30	30	29	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30
MED	46	44	43	39	39	36	36	72	106	117	130	132	134	134	136	133	124	114	102	87	84	73	60	52
UQ	53	47	46	45	44	41	42	84	117	123	137	145	143	145	145	142	138	124	110	91	89	81	67	60
LQ	41	40	38	37	36	32	31	66	96	111	121	125	126	128	130	125	116	109	94	79	77	67	54	45

NOV. 1982 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L	L	L						
2									L	L	L	L	L	L	L	L	L	L						
3									L	L	L	L	L	L	L	L	L	L						
4									L	L	L	L	L	L	L	L	L	L						
5									L	L	L	L	L	L	L	L	L	L						
6									L	L	L	L	L	L	L	L	L	L						
7									L	L	L	L	L	L	L	L	L	L						
8									L	L	L	L	L	L	L	L	L	L						
9									L	L	L	L	L	L	L	L	L	L						
10									L	L	L	L	L	L	L	L	L	L						
11											L	L	L	L	L									
12											L	L	L	L	L	L								
13											L	L	L	L		L								
14												L	L	L	L	L								
15										L	L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L								
18											L	L	L	L	L	L								
19											L	L	L	L	L	L								
20										L	L	L	L	L	L	L								
21											L	L	L	L	L									
22												L	L	L	L									
23										L	L	L	L	L	L	L								
24											L	L	L	L		L	L							
25										L	L	L	L		L	L								
26										L	L	L	B	B	L									
27											L	L	L	L	A	L								
28										L	L	L	L	L	L	L								
29											L	L	L	L	L	L	L							
30											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																								
MED																								
UQ																								
LQ																								

NOV. 1982 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

NOV. 1982 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long. 130° 37·1' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								220	280	320	355	380	390	370	A	A	A	220						
2								220	290	335	360	380	A	A	A	330	290	220						
3								210	250	A	A	A	A	A	A	A	A	A						
4								205	265	290	A	A	A	360	340	310	275	A						
5								200	265	310	340	365	A	A	A	315	280	200						
6								220	270	A	A	A	375	A	A	A	A	210						
7								200	260	320	350	A	A	360	340	A	A	220						
8								210	A	310	335	355	A	375	350	325	290	A						
9								210	290	315	340	375	380	370	A	A	A	A						
10								200	250	310	345	360	A	A	350	300	230	A						
11								200	275	315	335	A	A	A	A	A	A	S						
12								185	260	305	A	A	A	B	A	A	A	S						
13								S	260	305	350	A	A	A	A	A	265	180						
14								185	250	300	325	350	A	A	A	A	245	185						
15								195	250	310	335	B	A	A	A	310	260	S						
16								200	270	305	340	360	375	B	350	315	A	S						
17								205	A	A	345	A	A	A	A	A	275	A						
18								180	255	305	A	A	365	355	A	A	A	A						
19								185	260	315	355	370	380	360	350	315	A	S						
20								200	260	310	350	360	370	355	340	A	A	A						
21								S	H 260	H 320	H 340	A	375	A	A	A	A	S						
22								S	250	300	340	A	A	A	350	A	A	S						
23								S	H 270	A	A	375	A	H 380	A	A	A	S						
24								S	H 250	300	320	350	H 360	370	H 340	A	A	S						
25								S	250	290	315	A	A	A	A	A	270	S						
26								S	250	285	330	H 345	B	B	B	A	A	S						
27								S	H 250	H 290	310	A	A	340	A	A	A	A						
28								S	230	295	A	A	360	350	345	320	260	S						
29								S	240	300	320	A	A	A	330	305	265	S						
30								S	240	300	335	A	A	A	320	300	H 250	S						
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	28	26	23	13	10	12	12	11	13	7						
MED								200	260	305	340	360	375	360	342	315	265	210						
UQ								210	268	315	348	375	380	370	350	318	275	220						
LQ								198	250	300	332	355	365	355	340	308	260	192						

NOV. 1982 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	JA 30	JA 30	JA 25	ES 16	ES 16	ES 16	ES 16	JA 25	G	G	G	G	G	41	JA 42	40	32	G	ES 16	ES 16	ES 16	ES 16	ES 16	JA 25
2	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	45	G	G	73	JA 60	43	G	G	G	22	JA 25	JA 30	JA 20	22	ES 16
3	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	32	JA 60	JA 55	JA 75	JA 54	53	JA 40	JA 50	JA 45	JA 40	JA 30	JA 30	24	22	JA 30	21
4	ES 16	22	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	40	40	45	JA 71	41	42	JA 45	33	JA 28	JA 25	23	JA 43	JA 40	JA 32	JA 30
5	JA 44	JA 25	JA 25	JA 25	JA 23	ES 16	ES 16	G	31	JA 50	40	41	40	42	JA 40	G	G	G	22	ES 16	22	JA 24	JA 60	22
6	ES 16	JA 30	JA 45	JA 28	JA 23	ES 16	ES 16	G	G	JA 35	40	36	JA 60	JA 60	JA 60	JA 40	34	G	24	22	22	ES 16	ES 16	ES 16
7	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	G	42	40	42	G	G	JA 40	32	G	ES 16	JA 25	JA 30	ES 16	ES 16	ES 16
8	ES 16	ES 16	EB 13	ES 16	JA 22	ES 16	ES 16	G	30	G	40	42	45	G	42	38	G	JA 32	JA 30	ES 16	ES 16	ES 16	ES 16	ES 16
9	ES 16	23	ES 16	EB 12	ES 16	ES 16	ES 16	G	G	38	40	48	43	40	45	40	40	JA 30	JA 24	JA 25	ES 16	22	ES 16	JA 20
10	22	ES 16	ES 16	JA 25	JA 22	ES 16	ES 16	G	G	G	40	45	52	42	43	44	38	25	22	ES 16	JA 22	ES 16	22	ES 16
11	21	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	29	35	JA 44	JA 60	JA 55	JA 58	JA 50	JA 54	JA 32	JA 23	ES 16	ES 16	JA 21	JA 21	JA 20	ES 16
12	JA 34	JA 26	JA 22	JA 21	ES 16	ES 16	ES 16	G	G	G	JA 35	38	JA 42	EB 42	JA 40	JA 37	JA 31	JA 22	JA 20	JA 24	ES 16	23	ES 16	23
13	23	18	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	JA 33	G	JA 39	41	JA 42	JA 37	JA 46	G	JA 25	JA 20	JA 24	JA 33	21	22	ES 16
14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	G	36	37	40	40	JA 41	JA 35	30	G	23	JA 42	ES 16	22	ES 16	ES 16
15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	G	G	EB 44	39	JA 55	JA 50	JG 26	G	ES 16	20	ES 16	ES 16	ES 16	ES 16	ES 16
16	JA 31	JA 20	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	G	38	42	41	EB 40	JA 47	JA 37	JA 32	JA 19	22	ES 16	JA 23	JA 33	JA 30	JA 22
17	JA 24	JA 24	22	22	ES 16	ES 16	ES 16	G	JA 32	35	38	46	JA 42	JA 44	JA 50	JA 37	G	JA 22	JA 27	JA 20	22	ES 16	JA 25	ES 16
18	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	28	33	JA 34	40	41	42	JA 51	JA 37	JA 29	JA 24	JA 32	JA 28	JA 21	ES 16	ES 16	ES 16
19	ES 16	23	22	JA 24	22	ES 16	ES 16	G	G	34	G	44	42	G	JA 46	JA 53	JA 33	20	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
20	ES 16	ES 16	ES 16	JA 24	JA 27	ES 16	ES 16	G	G	JG 25	39	42	39	40	37	JA 35	JA 35	JA 54	JA 27	ES 16	ES 16	JA 32	JA 24	ES 16
21	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	JA 20	G	G	39	JA 52	41	43	45	JA 53	39	ES 16	JA 20	ES 16	ES 16	JA 18	20	ES 16
22	ES 16	22	ES 16	ES 16	EB 12	ES 16	ES 16	ES 16	G	G	40	40	JA 47	JA 45	G	JA 34	JA 34	JA 53	22	JA 33	JA 26	44	JA 24	23
23	22	JA 44	JA 38	JA 22	ES 16	ES 16	ES 16	ES 16	G	35	JA 52	G	43	G	38	43	JA 35	JA 41	JA 24	20	JA 33	JA 30	JA 61	JA 34
24	JA 29	ES 16	20	ES 15	ES 16	ES 16	ES 16	ES 16	G	JG 26	38	43	45	47	JA 55	JA 54	33	JA 26	24	22	JA 20	JA 28	JA 33	JA 48
25	JA 29	JA 25	21	JA 19	ES 16	ES 16	ES 16	ES 16	G	G	42	JA 47	40	JA 48	JA 63	JA 47	G	23	JA 33	JA 24	JA 18	JA 27	JA 65	JA 21
26	23	ES 16	JA 24	JA 45	JA 29	ES 16	ES 16	ES 16	G	G	41	JA 49	EB 88	EB 56	JA 52	38	30	JA 42	JA 21	JA 29	JA 52	21	JA 33	JA 21
27	19	JA 26	JA 22	JA 29	23	24	JA 18	17	G	G	G	36	JA 46	G 25	JA 55	JA 54	JA 32	JA 32	JA 18	ES 16	ES 16	ES 16	JA 29	23
28	JA 17	21	ES 16	ES 16	ES 16	ES 16	21	ES 16	G	G	JA 33	40	G	G	G	G	G	JA 24	19	JA 30	JA 24	JA 19	ES 16	ES 16
29	ES 16	ES 16	JA 19	JA 18	23	ES 16	ES 16	20	G	JA 33	G	40	JA 40	JA 38	G	G	G	JA 20	JA 18	17	19	18	22	ES 16
30	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	37	JA 60	39	38	G	G	G	ES 16	ES 16	ES 16	JA 21	ES 16	ES 16	ES 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	ES 16	17	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	EG 25	38	42	42	42	JA 42	JA 39	32	JA 23	22	21	21	20	22	ES 16
UQ	JA 23	JA 24	JA 22	JA 22	22	ES 16	ES 16	ES 16	G	35	40	46	46	JA 46	JA 50	JA 46	34	JA 30	JA 24	JA 25	JA 24	JA 24	JA 30	JA 22
LQ	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	G	G	33	39	40	U 32	38	J 35	G	16	19	ES 16	ES 16	ES 16	ES 16	ES 16

NOV. 1982 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	18	E	E	E S 16	E S 16	E S 16	E S 16	G	G	G	G	G	G	38	38	31	28	G	E S 16	E S 16	E S 16	E S 16	E S 16	E
2	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	G	60	50	35	G	G	G	E	20	E	E	E	E S 16
3	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	28	35	46	70	50	46	36	40	40	35	20	20	E	E	E	E
4	E S 16	E	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	35	40	42	38	38	40	G	21	18	E	20	35	25	28
5	43	17	E	E	E	E S 16	E S 16	G	28	40	36	38	38	38	35	G	G	G	E	E S 16	E	E	20	E
6	E S 16	E	18	20	E	E S 16	E S 16	G	G	32	33	25	23	38	42	33	28	G	E	E	E	E S 16	E S 16	E S 16
7	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	37	37	G	G	34	30	G	E S 16	E	19	E S 16	E S 16	E S 16
8	E S 16	E S 16	E B 13	E S 16	E	E S 16	E S 16	G	28	G	35	G	38	G	38	25	G	22	E	E S 16	E S 16	E S 16	E S 16	E S 16
9	E S 16	E	E S 16	E B 12	E S 16	E S 16	E S 16	G	G	32	36	42	40	38	35	30	36	22	22	20	E S 16	E	E S 16	E
10	E	E S 16	E S 16	E	E	E S 16	E S 16	G	G	G	G	40	42	39	38	35	30	20	E	E S 16	E	E S 16	E	E S 16
11	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	34	42	56	42	42	44	40	32	20	E S 16	E S 16	E	E	E	E S 16
12	20	E	E	E	E S 16	E S 16	E S 16	G	G	G	35	37	39	E B 42	39	36	28	19	18	E	E S 16	E	E S 16	E
13	E	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	32	G	38	40	39	35	41	G	G	E	20	24	E	E	E S 16
14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	34	37	40	40	38	32	27	G	E	29	E S 16	E	E S 16	E S 16
15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	E B 44	39	39	36	G 23	G	E S 16	E	E S 16	E S 16	E S 16	E S 16	E S 16
16	E	E	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	35	42	40	E B 40	45	36	30	18	E	E S 16	18	20	E	20
17	21	18	E	E	E S 16	E S 16	E S 16	G	28	30	37	43	37	42	37	32	G	20	23	18	E	E S 16	E	E S 16
18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	32	34	38	41	39	44	36	27	21	E	24	19	E S 16	E S 16	E S 16
19	E S 16	E	E	E	E	E S 16	E S 16	G	G	34	G	43	42	G	42	39	29	G	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
20	E S 16	E S 16	E S 16	E	E	E S 16	E S 16	G	G	G 24	38	41	38	40	37	34	34	50	E	E S 16	E S 16	29	19	E S 16
21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	39	43	G	42	43	49	29	E S 16	17	E S 16	E S 16	E	E	E S 16
22	E S 16	E	E S 16	E S 16	E B 12	E S 16	E S 16	E S 16	G	G	39	38	36	36	G	34	28	49	E	E	20	43	22	E
23	E	19	21	E	E S 16	E S 16	E S 16	E S 16	G	34	37	G	39	G	37	38	35	28	E	E	30	24	44	25
24	E	E S 16	E	E S 15	E S 16	E S 16	E S 16	E S 16	G	G 24	G	41	42	45	53	45	30	18	E	E	E	25	18	25
25	17	20	E	E	E S 16	E S 16	E S 16	E S 16	G	G	G	42	38	42	42	33	G	19	22	21	17	E	A A 65	E
26	E	E S 16	E	30	E	E S 16	E S 16	E S 16	G	G	36	42	E B 88	E B 56	49	36	30	40	17	20	42	E	28	19
27	E	20	E	20	E	E	E	G	G	G	G	36	42	G 25	55	35	29	29	E	E S 16	E S 16	E S 16	17	18
28	E	E	E S 16	E S 16	E S 16	E S 16	E	E S 16	G	G	33	36	G	G	G	G	G	G	E	25	18	18	E S 16	E S 16
29	E S 16	E S 16	E	E	E	E S 16	E S 16	G	G	31	G	39	36	38	G	G	G	G	E	E	E	E	E	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	58	37	38	G	G	G	E S 16	E S 16	E S 16	18	E S 16	E S 16	E S 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 S 16	16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	34	39	39	38	38	34	28	18	E	16	16	16	16	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	32	36	42	42	41	42	38	30	22	17	20	18	E S 16	18	E S 16
LQ	E	E	E	E	E	E S 16	E S 16	G	G	G	G	37	37	38	35	30	G	G	E	E	E	E	E	E S 16

NOV. 1982 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | F-MIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long. 130° 37·1' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	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 S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	19	16	20	25	16	20	18	18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
2	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	19	20	20	18	15	20	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
3	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	15	18	20	19	20	20	16	16	15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
4	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	20	20	20	19	20	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
5	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	15	16	21	20	16	16	18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
6	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	15	18	16	16	16	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
7	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	20	16	16	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
8	E S 16	E S 16	13	E S 16	E S 16	E S 16	E S 16	E S 16	12	13	16	15	15	16	15	15	15	13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
9	E S 16	E S 16	E S 16	12	E S 16	E S 16	E S 16	E S 16	16	15	23	23	16	15	13	15	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
10	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	16	18	16	20	20	16	15	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
11	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	20	21	20	20	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	18	21	42	21	21	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	22	20	26	26	20	20	18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	21	20	20	20	19	20	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	44	23	21	20	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	20	20	40	20	20	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	20	21	21	20	19	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	19	20	20	21	24	18	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
19	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	20	23	25	20	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	19	20	20	22	20	20	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	19	20	20	22	21	18	19	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
22	E S 16	E S 16	E S 16	E S 16	12	E S 16	E S 16	E S 16	E S 16	16	20	20	19	21	20	17	17	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
23	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	20	19	22	21	21	21	19	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
24	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	19	20	20	20	19	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	18	18	20	20	20	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
26	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	20	88	56	42	24	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
27	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	21	20	20	18	17	16	16	13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
28	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	18	21	21	20	20	19	18	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16
29	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	18	19	20	21	22	21	18	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	19	20	23	20	17	19	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 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 S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	20	20	20	20	19	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	19	20	21	22	20	20	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
LQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	19	20	20	17	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16

NOV. 1982 | F-MIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	270	260	260	305	235	250	330	295	280	280	315	290	285	290	290	285	300	295	300	290	285	305	300
2	260	275	260	255	240	260	290	305	310	325	315	320	280	295	300	300	290	295	315	295	300	290	275	290
3	250	260	260	275	255	245	270	305	295	320	310	300	290	285	285	285	290	295	300	275	280	285	275	265
4	295	285	310	315	335	240	275	335	330	315	310	305	295	285	305	295	295	295	300	305	295	285	280	270
5	265	255	285	285	295	275	290	325	350	330	305	300	285	305	300	300	300	305	305	310	320	270	270	265
6	275	285	270	295	325	255	285	345	355	345	320	320	310	305	310	310	305	325	310	295	330	300	275	270
7	295	285	300	295	300	275	295	330	345	330	320	320	300	290	305	305	290	325	305	300	295	310	295	290
8	300	280	290	280	300	280	275	325	335	335	325	330	305	285	295	295	295	315	295	275	285	295	290	275
9	275	265	285	285	230	235	320	330	320	315	315	330	305	295	300	305	310	310	330	275	280	275	295	280
10	285	290	270	270	305	300	310	335	345	300	305	305	295	275	285	285	310	310	300	285	300	300	270	265
11	280	290	320	300	285	270	285	325	355	325	305	310	295	285	290	295	300	305	280	290	305	285	265	275
12	295	310	285	270	295	310	290	315	340	330	325	325	310	310	305	300	300	305	310	325	310	280	290	290
13	325	305	280	280	295	275	300	345	335	325	325	330	315	310	305	305	300	320	305	275	265	290	310	335
14	310	210	250	250	285	310	285	300	335	325	325	310	305	305	315	310	335	310	320	295	310	305	300	300
15	305	295	295	285	335	275	310	310	335	335	320	305	290	305	300	305	300	310	295	S 285	S 275	S 255	275	315
16	350	275	280	285	280	320	320	325	330	340	320	320	305	295	305	305	325	315	295	295	310	320	310	275
17	300	315	320	300	350	355	300	335	350	350	340	315	315	305	305	310	320	315	S 305	320	S 255	305	300	280
18	285	270	285	335	340	295	285	335	325	330	305	325	290	285	310	305	305	320	320	280	S 270	275	290	300
19	310	265	275	265	290	290	310	330	335	345	340	310	320	310	315	330	320	315	315	290	300	305	305	305
20	295	310	300	295	335	365	295	330	345	335	315	310	300	295	305	300	320	425	320	300	295	290	310	290
21	275	285	295	275	320	330	300	290	S 340	340	325	315	275	275	285	300	295	300	295	295	305	295	S 280	250
22	260	305	310	F	I S 270	S 230	290	S 310	325	320	315	290	285	285	285	285	290	300	300	295	S 275	300	315	285
23	270	295	300	300	320	270	295	320	335	325	325	305	305	295	295	290	315	315	315	270	305	280	260	255
24	S 255	265	270	235	240	225	250	285	S 330	315	275	305	290	295	290	285	300	300	295	305	290	305	270	250
25	235	225	S 230	215	S 215	220	F	S 210	280	300	295	290	295	295	270	285	305	315	300	270	265	335	A	240
26	255	250	270	285	305	250	270	345	345	335	320	320	310	295	310	305	310	330	290	320	S 325	285	295	270
27	285	300	260	265	275	335	295	325	330	325	335	320	315	300	300	300	315	315	305	295	275	290	305	265
28	255	275	300	S 345	320	250	250	310	335	315	305	305	305	315	295	315	320	300	305	315	290	265	255	300
29	250	270	295	S 300	305	240	255	315	330	305	310	305	300	295	295	290	300	310	S 290	295	S 305	S 280	S 265	S 250
30	250	S 250	285	285	295	H 230	250	310	320	320	300	305	305	300	290	295	300	S 295	315	300	S 265	285	310	S 255
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30
MED	282	278	285	285	298	272	290	325	335	325	315	310	300	295	300	300	300	310	305	295	295	290	290	275
UQ	295	295	300	295	320	300	300	330	345	335	325	320	305	305	305	305	315	315	315	300	305	300	305	290
LQ	260	265	270	270	280	240	275	310	325	315	305	305	290	285	290	290	295	300	295	285	275	280	275	265

NOV. 1982 | M(3000)F2 (0.01)

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IONOSPHERIC DATA

NOV. 1982 | M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long. 130° 37·1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L	L	L						
2									L	L	L	L	L	L	L	L	L	L						
3									L	L	L	L	L	L	L	L	L	L						
4									L	L	L	L	L	L	L	L	L	L						
5									L	L	L	L	L	L	L	L	L	L						
6									L	L	L	L	L	L	L	L	L	L						
7									L	L	L	L	L	L	L	L	L	L						
8									L	L	L	L	L	L	L	L	L	L						
9									L	L	L	L	L	L	L	L	L	L						
10									L	L	L	L	L	L	L	L	L	L						
11											L	L	L	L	L									
12											L	L	L	L	L	L								
13											L	L	L	L		L								
14												L	L	L	L	L								
15										L	L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L								
18											L	L	L	L	L	L								
19											L	L	L	L	L	L								
20										L	L	L	L	L	L	L								
21											L	L	L	L	L									
22												L	L	L	L									
23										L	L	L	L	L	L	L								
24											L	L	L	L		L	L							
25										L	L	L	L		L	L								
26										L	L	L	B	B	L									
27											L	L	L	L	A	L								
28										L	L	L	L	L	L	L								
29											L	L	L	L	L	L	L							
30											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																								
MED																								
UQ																								
LQ																								

NOV. 1982 | M(3000)F1 (0.01)

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IONOSPHERIC DATA

NOV. 1982 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long 130° 37·1' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	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	280	280	260	270	280	290	280	270	260						
2									280	270	250	260	300	280	280	260	250	280						
3									280	250	280	280	280	290	280	280	260	240						
4									260	240	250	260	280	280	280	260	250	240						
5									240	240	240	250	270	270	260	260	240	250						
6									230	240	240	260	260	270	270	270	260	240						
7									250	250	250	250	260	260	280	270	260	240						
8									250	250	250	260	250	280	260	260	250	240						
9									250	280	270	250	270	280	280	270	250	240						
10									250	250	270	260	270	280	265	260	250	240						
11											290	275	295	305	290									
12											255	245	280	270	280	280								
13											245	250	240	275		270								
14												260	280	250	250	270								
15										250	250	265	280	280	270	260								
16										245	255	280	270	290	270	250								
17											250	270	270	280	280	265								
18											240	260	270	290	275	265								
19											255	240	270	275	275	255								
20										260	265	255	295	290	290	260								
21											245	270	305	295	270									
22												270	285	295	285									
23										250	250	245	275	235	265	285								
24											295	255	245	250		235	250							
25										265	250	250	240		295	275								
26										245	240	240	E B 275	245	260									
27											235	225	255	245	250	255								
28										250	240	245	275	250	245	235								
29											245	240	260	245	245	275	255							
30											260	265	250	225	265	260								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									10	17	28	30	30	29	28	26	12	10						
MED									250	250	250	260	270	280	272	262	250	240						
UQ									260	260	262	265	280	280	280	270	260	250						
LQ									250	245	245	250	260	250	262	260	250	240						

NOV. 1982 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H°F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long. 130° 37·1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	280	300	290	210	250	ES 420	240	210	H 210	230	240	220	230	240	240	230	240	230	230	250	240	240	240
2	290	280	300	320	290	260	270	240	240	240	240	220	EA 250	EA 250	240	H 220	H 220	H 220	240	220	220	230	260	280
3	310	320	340	290	320	ES 400	290	250	H 230	240	A 260	A	A 260	A 240	230	240	240	230	210	230	260	250	260	290
4	250	220	240	250	220	ES 330	ES 320	240	240	H 210	210	220	H 210	H 210	230	EA 240	230	220	220	220	220	A 260	250	300
5	A	310	300	260	250	280	260	250	230	230	230	210	210	230	230	230	230	230	210	210	230	200	260	290
6	300	280	270	290	240	340	280	240	220	220	H 200	220	H 210	220	230	220	240	240	220	250	220	210	250	280
7	260	270	280	280	280	280	280	250	240	220	230	240	H 210	220	230	240	230	H 190	210	230	220	220	240	260
8	280	280	250	280	240	280	280	240	240	220	230	220	210	210	240	230	230	230	220	220	240	230	230	260
9	280	290	280	255	ES 400	ES 410	230	230	230	240	240	240	240	240	240	240	230	230	220	210	250	250	250	280
10	240	250	280	310	270	270	240	240	240	H 220	H 220	250	230	230	240	230	230	230	210	210	240	230	240	280
11	310	300	250	280	270	ES 300	310	250	230	240	240	250	240	240	240	250	240	225	200	250	245	220	245	295
12	250	255	270	305	275	245	280	250	240	240	230	230	220	230	240	240	235	240	240	220	215	255	270	275
13	245	235	ES 290	300	295	300	300	240	230	240	230	240	230	240	H 230	240	245	240	215	230	250	270	250	230
14	220	265	ES 340	ES 360	280	250	ES 280	260	H 200	230	230	230	H 205	230	225	240	240	H 180	220	EA 250	240	235	240	265
15	300	300	300	290	245	ES 290	280	250	240	240	230	240	H 220	240	235	240	240	230	195	220	225	240	280	270
16	230	ES 310	ES 330	ES 330	290	250	ES 280	250	245	240	225	240	230	240	250	240	240	H 200	200	215	240	240	250	EA 330
17	305	280	270	280	245	245	ES 290	245	240	240	240	240	225	240	240	240	240	215	205	205	210	245	240	260
18	270	300	295	260	235	270	ES 280	240	H 240	240	H 225	230	240	230	A	240	230	225	210	240	240	250	245	240
19	260	ES 340	320	ES 300	290	250	250	250	240	240	225	230	240	H 220	245	240	230	215	215	215	240	240	220	250
20	270	265	300	290	250	230	ES 310	250	H 220	240	235	230	H 210	230	230	240	240	220	210	240	205	250	240	250
21	260	265	260	260	250	245	250	245	245	240	230	245	H 225	245	250	H 255	245	225	220	230	230	240	245	285
22	300	245	210	250	315	420	275	260	245	245	245	235	240	H 245	235	H 245	250	250	210	230	250	A	225	245
23	300	300	275	260	255	280	255	240	225	240	245	235	220	235	240	235	245	225	200	205	250	250	A	315
24	335	300	300	350	395	S 460	355	280	220	220	245	245	240	245	H 245	225	240	H 205	220	220	230	255	285	365
25	350	420	390	ES 500	485	460	445	290	250	250	240	245	225	H 225	240	240	245	220	205	225	245	220	A	330
26	345	360	325	EA 360	275	345	290	225	210	225	225	235	B	B	A 255	245	230	220	200	255	245	230	255	A 280
27	270	295	315	370	295	210	290	240	235	H 235	225	H 210	A 235	235	A	240	235	225	230	225	220	225	250	295
28	355	300	255	220	225	375	360	250	220	225	225	H 205	215	225	230	235	H 230	230	225	245	215	250	285	245
29	235	310	285	245	250	315	300	250	235	240	H 225	H 235	H 220	230	220	H 220	230	220	205	220	220	205	245	280
30	345	340	295	295	265	ES 430	400	255	240	H 200	H 240	A 260	H 205	225	H 210	H 240	230	220	215	220	210	240	245	255
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	29	29	29	28	30	30	30	30	30	30	29	28	30
MED	280	286	286	285	269	268	279	250	238	240	230	235	222	230	240	240	235	225	212	221	235	240	248	279
UQ	305	305	300	300	290	U 322	300	250	240	240	240	240	238	240	240	240	240	230	220	230	245	250	258	290
LQ	260	265	270	260	245	250	265	240	225	220	225	230	H 210	225	230	232	230	220	205	220	220	230	240	255

NOV. 1982 | H°F (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long. 130° 37·1' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								ES 125	110	110	110	110	110	110	110	110	110	ES 125						
2								ES 140	110	110	110	110	A	A	A	110	110	120						
3								ES 135	110	A	A	110	110	110	A	A	A	A						
4								ES 140	110	110	110	110	110	110	110	110	110	A						
5								ES 140	110	110	110	110	110	110	110	110	110	ES 140						
6								ES 130	110	A	A	A	EA 120	A	A	A	A	ES 150						
7								ES 150	110	110	110	110	110	110	110	A	A	ES 130						
8								ES 135	110	110	110	110	110	110	110	EA 120	110	A						
9								ES 155	110	110	110	110	110	110	110	A	A	A						
10								ES 150	110	110	110	110	110	110	110	110	110	A						
11								ES 155	120	120	110	115	115	115	115	120	125	S						
12								ES 170	115	110	110	110	110	B	120	120	120	S						
13								S	120	115	115	110	120	120	115	120	115	A						
14								ES 180	115	115	120	110	115	115	115	115	115	ES 130						
15								ES 150	120	115	110	B	115	A	A	A	120	S						
16								ES 150	120	115	110	110	115	B	120	120	125	S						
17								ES 150	120	115	115	115	115	115	115	115	115	A						
18								ES 160	120	115	115	115	115	115	120	120	120	A						
19								ES 145	120	110	110	115	115	120	115	120	120	S						
20								ES 160	115	115	110	110	115	115	115	115	120	A						
21								S	115	110	115	110	110	110	EA 120	110	120	S						
22								S	115	110	110	110	110	110	110	110	A	S						
23								S	110	110	110	110	110	115	115	115	120	S						
24								S	115	EA 125	110	110	110	110	110	115	EB 125	S						
25								S	120	110	110	110	110	110	110	110	110	S						
26								S	115	110	110	105	B	B	B	EB 125	A	S						
27								S	120	115	110	110	110	EA 125	A	A	A	A						
28								S	120	110	110	115	115	110	110	115	EB 120	S						
29								S	ES 120	110	110	110	110	110	115	115	EB 120	S						
30								S	125	115	115	115	110	110	115	115	120	S						
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	30	28	28	28	28	24	24	24	23	6						
MED								ES 150	115	110	110	110	110	110	114	115	118	ES 130						
UQ								ES 155	120	115	110	110	115	115	115	119	120	ES 140						
LQ								ES 140	110	110	110	110	110	110	110	110	110	ES 125						

NOV. 1982 | H'E (KM)

IONOSPHERIC DATA

NOV. 1982 | H'ES (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long 130° 37·1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	110	110	S	S	S	S	110	G	G	G	G	G	115	115	115	115	G	S	S	S	S	S	110
2	S	S	S	S	S	S	S	G	G	230	G	G	110	110	110	G	G	G	110	110	110	110	100	S
3	S	S	S	S	S	S	S	G	130	110	110	110	110	110	110	110	110	110	110	110	110	110	100	110
4	S	100	S	S	S	S	S	G	G	120	120	120	115	125	130	120	120	110	100	100	100	100	100	100
5	100	100	110	110	110	S	S	G	130	120	120	120	120	120	115	G	G	G	100	S	110	110	110	110
6	S	110	100	100	110	S	S	G	G	110	110	110	110	100	100	100	110	G	110	110	110	S	S	S
7	S	S	S	S	S	S	S	G	G	G	135	115	115	G	G	110	110	G	S	110	110	S	S	S
8	S	S	B	S	110	S	S	G	120	G	130	130	120	G	100	100	G	100	100	S	S	S	S	S
9	S	110	S	B	S	S	S	G	G	135	135	135	135	130	120	100	110	110	110	110	S	110	S	100
10	100	S	S	110	110	S	S	G	G	G	130	130	130	120	120	120	115	110	110	S	110	S	100	S
11	100	S	S	S	S	S	S	G	175	145	130	125	125	125	125	120	120	120	S	S	115	115	100	S
12	105	100	100	100	S	S	S	G	G	G	125	130	125	B	125	125	120	120	110	110	S	110	S	105
13	100	100	S	S	S	S	S	S	G	125	G	120	120	115	120	115	G	110	105	100	100	100	100	S
14	S	S	S	S	S	S	S	G	G	G	140	160	130	130	120	115	125	G	100	110	S	110	S	S
15	S	S	S	S	S	S	S	G	G	G	G	B	110	105	100	105	G	S	100	S	S	S	S	S
16	105	105	S	S	S	S	S	G	G	G	130	145	140	B	130	130	125	120	120	S	105	105	105	100
17	100	100	100	100	S	S	S	G	125	165	150	125	125	115	110	115	G	110	105	105	100	S	100	S
18	S	S	S	S	S	S	S	G	160	165	125	140	140	130	130	120	120	110	110	100	100	S	S	S
19	S	110	110	105	105	S	S	G	G	145	G	145	150	G	125	120	115	140	S	S	S	S	S	S
20	S	S	S	115	115	S	S	G	G	105	145	130	160	130	170	130	120	120	125	S	S	100	100	S
21	S	S	S	S	S	S	S	110	G	G	150	125	145	125	125	115	125	S	105	S	S	105	105	S
22	S	100	S	S	B	S	S	S	G	G	145	125	125	125	G	110	100	100	105	125	115	110	110	110
23	110	100	100	100	S	S	S	S	G	125	120	G	125	G	120	115	115	110	115	100	105	105	105	105
24	110	S	110	S	S	S	S	S	G	110	145	145	140	135	125	120	115	115	110	110	110	115	115	110
25	110	105	120	115	S	S	S	S	G	G	130	125	125	115	110	110	G	110	100	100	105	105	105	125
26	110	S	105	105	105	S	S	S	G	G	140	135	B	B	125	125	115	110	110	110	105	120	105	105
27	110	105	105	105	110	105	105	110	G	G	G	125	105	100	120	95	95	95	95	S	S	S	110	110
28	110	110	S	S	S	S	105	S	G	G	120	125	G	G	G	G	G	100	100	100	100	100	S	S
29	S	S	100	105	105	S	S	125	G	115	G	155	120	110	G	G	G	100	95	140	125	120	105	S
30	S	S	S	S	S	S	S	S	G	G	160	110	120	120	G	G	G	S	S	S	120	S	S	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	15	12	12	9	1	2	4	6	15	23	26	27	22	25	25	20	21	25	18	20	19	18	13
MED	105	105	105	105	110	105	105	110	130	125	130	125	125	120	120	115	115	110	105	110	110	110	105	110
UQ	110	110	110	110	110			118	160	145	142	135	132	125	125	120	120	115	110	110	110	110	105	110
LQ	100	100	100	100	105			110	125	112	122	120	118	110	110	110	110	110	100	100	102	105	100	105

NOV. 1982 | H'ES (KM)

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IONOSPHERIC DATA

NOV. 1982 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12·1' N, Long. 130° 37·1' E Sweep 1 MHz to 20 MHz in 20sec in automatic operation

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

The Radio Research Laboratories, Japan

NOV. 1982 | TYPES OF ES

IONOSPHERIC DATA

NOV. 1982 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16'·9 N, Long 127° 48'·4 E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	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 152	X 116	X 96	X 95	X 65	X 33	H 38												X 140	X 123	X 114	X 111	X 100	X 84
2	X 82	X 66	X 63	X 66	X 58	X 56	X 61												X 148	X 137	X 119	X 110	X 86	X 84
3	X 82	X 73	X 66	X 66	H 56	X 58	X 68												X 176	X 175	X 169	X 154	S 138	X 105
4	X 106	X 98	X 83	X 71	H 35	X 30	X 38												X 217	X 204	X 177	X 148	X 139	X 113
5	U S 101	S 97	X 87	X 91	X 67	X 58	X 54												X 168	X 146	S 135	S 137	X 98	X 81
6	X 75	X 71	X 63	X 64	S 61	X 47	X 50												X 125	X 116	X 124	X 114	X 85	X 83
7	X 74	X 60	X 64	X 63	X 57	X 59	X 50												X 151	X 144	S 138	S 134	X 109	H 85
8	X 74	X 70	X 57	X 53	X 53	X 38	X 42												X 163	S 155	S 156	H 139	X 112	X 85
9	X 75	X 67	X 56	X 56	X 40	70	85												X 130	X 124	X 128	X 136	S 121	S 102
10	S 103	X 86	X 67	H 68	H 66	X 58	X 53												X 200	X 170	X 161	U S 160	S 138	X 114
11	S 86	X 84	X 77	X 60	X 48	X 45	X 48												X 160	S 176	S 217	U S 204	U S 163	S
12	X 117	X 86	X 80	X 70	X 76	X 65	X 56												X 144	X 142	S 153	S 150	S 131	S 126
13	S 99	X 83	X 48	X 46	X 47	X 43	X 44												X 122	X 118	S 117	X 100	X 101	X 89
14	X 53	X 39	H 33	H 37	X 41	H 33	X 36												X 134	U S 123	X 116	X 111	X 94	X 75
15	X 59	X 58	X 56	X 55	X 46	X 41	X 40												X 179	X 169	U S 156	X 144	S 117	X 112
16	X 87	X 48	X 45	X 54	X 57	X 50	X 38												X 176	X 166	X 156	X 127	X 85	X 66
17	X 63	X 67	X 65	X 62	X 62	X 35	X 30												X 191	X 162	S 154	X 153	X 143	X 113
18	X 93	X 88	X 84	S 74	X 63	H 27	X 31												X 169	S 156	X 147	X 153	X 147	X 127
19	X 78	X 69	X 70	X 74	X 76	X 80	X 71												X 115	X 115	X 120	S 130	H 123	X 97
20	X 73	X 70	X 63	X 63	S 63	H 33	U S 33												S 170	S 159	X 173	X 169	S 154	S 135
21	S 126	S 95	X 78	X 77	X 76	X 48	X 38												U S 130	U S 126	S 136	X 143	X 143	S 120
22	S 108	145	113	X 69	S 58	X 54	60												X 137	X 108	S 99	U S 99	S 87	X 64
23	X 59	X 70	X 77	X 65	X 50	X 42	X 41												X 146	U S 131	U S 120	H 112	S 96	X 90
24	X 83	X 73	X 77	X 63	X 56	X 56	X 59												X 141	S 134	S 117	X 103	S 98	U S 94
25	X 81	X 67	X 66	X 56	X 52	X 57	67												X 146	U S 152	U S 161	S 150	U S 101	U S 55
26	X 52	X 54	X 56	X 69	X 53	X 42	X 47												X 144	S 126	H 141	S 123	S 96	X 67
27	X 55	X 53	X 52	X 51	X 55	X 43	X 36												X 122	X 128	H 138	X 121	X 109	H 71
28	X 59	X 70	X 80	X 55	X 42	X 34	X 36												X 129	X 109	X 97	X 85	X 89	S 99
29	X 63	X 55	X 65	X 70	X 56	X 44	X 51												S 165	U S 155	S 149	U S 134	U S 105	X 89
30	X 77	X 65	X 63	X 64	X 45	H 39	X 38												S 155	X 148	S 146	U S 124	S 104	S 97
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30												30	30	30	30	30	29
MED	X 80	X 70	X 66	X 64	X 56	X 44	X 46												X 147	X 143	140	X 134	107	X 90
UQ	X 99	X 86	X 78	X 70	X 63	X 57	X 56												X 169	X 159	S 156	X 150	138	X 112
LQ	X 63	X 65	X 57	X 56	X 48	X 38	X 38												X 134	X 124	120	X 112	X 96	X 83

NOV. 1982 | FXI (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16'·9 N, Long 127° 48'·4 E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	146	110	90	89	59	27	H 32	95	88	89	144	158	130	142	142	129	130	133	134	117	108	105	94	78
2	76	60	57	60	52	50	55	94	128	155	160	155	150	155	160	162	152	144	142	131	113	104	80	78
3	U S 76	67	60	60	H 50	52	62	93	127	163	163	167	170	176	184	188	182	170	170	169	163	148	132	S 99
4	S 100	92	77	65	H 29	24	32	85	126	145	152	152	162	182	197	197	200	203	211	198	171	142	133	S 107
5	S 95	91	81	85	61	52	48	90	R 120	128	129	143	159	171	168	166	165	162	162	S 140	129	131	S 92	75
6	69	65	57	58	55	41	44	89	117	105	123	133	135	140	146	142	138	127	119	110	S 118	108	79	S 77
7	68	54	58	57	51	53	44	81	116	118	135	137	133	151	157	158	147	144	145	138	H 132	128	U S 103	U S 79
8	68	64	51	47	47	32	36	71	118	126	127	124	123	132	146	150	S 155	152	S 157	S 149	S 150	H 133	106	79
9	69	61	50	50	34	F	F	77	J S 84	115	146	146	126	135	143	138	139	131	124	118	S 122	130	115	96
10	97	80	S 61	H 62	H 60	52	47	78	100	107	130	151	148	157	178	185	190	197	S 194	164	S 155	S 154	H 132	J S 108
11	S 80	U S 78	71	54	42	39	42	84	110	109	125	148	139	147	153	165	162	R 155	S 154	S 170	S 211	U S 198	U S 157	S
12	111	80	S 74	64	70	59	50	85	115	128	140	137	118	122	128	130	137	138	138	136	S 147	U S 144	U S 125	S 120
13	93	77	42	40	41	37	38	82	104	112	147	145	135	128	131	125	124	125	116	112	111	94	95	83
14	47	33	27	31	35	27	30	67	122	133	112	122	129	142	140	132	133	135	128	S 117	J S 110	S 105	88	69
15	53	52	50	49	40	S 35	34	71	118	126	135	148	R 155	183	197	R 202	198	182	173	163	150	138	111	S 106
16	81	42	39	48	51	44	32	65	111	145	124	141	147	169	186	191	167	168	170	160	150	S 121	79	60
17	57	61	59	56	56	29	24	63	95	125	134	133	149	170	179	183	186	192	185	S 156	148	147	137	107
18	S 87	82	78	68	57	H 21	26	63	97	111	134	134	146	157	167	161	161	164	163	150	141	147	141	S 121
19	72	63	64	68	70	74	65	76	113	131	127	139	129	130	124	122	119	116	109	109	114	U S 124	H 117	91
20	67	S 64	57	57	57	H 27	27	64	105	108	111	121	122	141	152	160	158	151	164	S 153	167	163	S 148	129
21	U S 120	89	72	71	70	42	32	59	99	121	117	103	112	132	142	139	137	130	124	S 120	130	S 137	S 137	114
22	102	F	F	S 63	52	48	F	73	110	120	120	123	136	145	138	131	129	135	131	U S 102	93	93	81	58
23	53	64	71	59	44	36	35	70	104	113	134	140	130	137	137	148	147	143	140	U S 125	U S 114	U S 106	S 90	S 84
24	77	67	71	57	50	S 50	53	75	141	82	108	157	151	150	140	143	135	138	135	128	S 111	S 97	S 92	U S 88
25	75	S 61	S 60	50	46	51	F	60	128	151	144	R 187	R 155	129	148	174	163	145	140	U S 146	U S 155	S 144	S 95	U S 49
26	46	48	50	63	47	36	41	S 75	108	117	152	143	143	150	148	152	147	139	138	S 120	H 135	H 117	S 90	61
27	49	47	46	45	49	37	30	65	105	129	131	121	133	139	148	152	142	127	116	122	H 132	115	J S 103	U S 65
28	53	64	74	49	36	28	30	63	112	123	148	157	156	159	160	157	129	121	123	103	91	79	83	93
29	57	49	59	64	50	38	45	70	111	128	148	158	146	R 154	157	159	158	R 155	U S 159	U S 149	S 143	128	S 99	S 83
30	S 71	59	57	58	39	33	32	73	116	114	143	168	175	167	168	159	149	R 153	S 149	142	140	S 118	S 98	91
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	30	30	29	27	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29
MED	74	64	59	58	50	38	36	74	112	122	134	143	141	148	150	158	148	144	141	137	134	128	101	84
UQ	93	78	71	64	57	50	46	84	118	129	146	155	151	159	168	166	163	162	163	153	150	144	132	S 106
LQ	57	59	51	50	42	32	32	65	104	112	125	133	130	137	142	139	137	133	128	118	114	106	90	77

NOV. 1982 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long. 127° 48·4' E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

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

NOV. 1982 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

NOV. 1982 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16'·9 N, Long. 127° 48'·4 E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								180	285	A	A	375	390	395	A	345	305	A						
2								190	270	A	355	375	385	385	A	A	300	240						
3								190	275	325	H 345	A	A	A	A	A	A	A						
4								H 190	H 255	H 310	350	A	A	A	A	A	A	H 220						
5								195	270	A	A	A	A	370	345	325	A	225						
6								S	250	305	340	360	375	380	375	A	A	210						
7								S	H 240	310	345	H 365	370	355	345	330	285	A						
8								H 170	H 260	310	H 350	A	A	A	A	A	A	A						
9								S	H 250	310	345	375	375	A	A	A	A	A						
10								S	270	310	340	360	370	A	A	330	290	215						
11								S	270	315	340	355	370	A	A	A	A	A						
12								S	260	300	320	350	365	B	A	A	A	210						
13								190	255	315	H 345	350	A	A	A	A	295	230						
14								195	H 265	305	350	360	370	360	330	A	A	A						
15								S	H 245	A	A	B	375	A	A	A	A	A						
16								S	H 245	300	H 340	A	A	B	365	A	A	A						
17								S	270	315	340	360	A	A	A	A	A	A						
18								S	245	H 305	H 340	355	360	H 360	355	A	A	A						
19								S	H 260	315	H 345	365	U R 370	H 365	360	A	A	H 205						
20								S	250	A	A	A	A	370	A 345	A	295	215						
21								S	265	315	355	360	370	380	375	350	A	240						
22								S	H 260	H 315	H 355	A	A	A	A	335	A	A						
23								S	265	315	A	380	390	390	370	350	A	A						
24								S	250	300	330	350	370	370	355	330	A	S						
25								S	225	285	315	350	A	A	A	A	A	A						
26								S	235	290	335	355	B	B	B	B	A	A						
27								S	H 235	A	325	345	H 350	355	H 345	A	A	A						
28								S	H 225	290	330	A	A	A	A	A	280	200						
29								S	235	290	A	A	345	330	A	A	H 295	230						
30								S	245	H 310	335	H 350	355	A	A	A	290	205						
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								8	30	24	24	20	18	14	12	8	9	13						
MED								190	255	310	340	360	370	370	355	332	295	215						
UQ								192	265	315	348	365	375	380	368	348	295	230						
LQ								185	245	300	335	350	365	360	345	330	290	210						

NOV. 1982 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long 127° 48·4' E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	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 S 16	J A 17	J A 25	E S 16	E S 16	E S 16	E S 16	G	J A 41	J A 34	41	G	G 29	G	38	J G 30	J G 22	J A 30	J A 24	J A 20	E S 16	E S 16	E S 16	E S 16
2	E S 16	J A 24	J A 21	J A 21	J A 21	E S 16	E S 16	G	32	35	39	G	41	42	39	42	33	G 23	E S 16	J A 19	J A 18	J A 18	J A 25	J S 14
3	J S 15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	J A 47	37	J A 51	J A 43	J A 51	J A 54	J A 47	J A 36	J A 52	J A 42	J A 30	J S 12	J A 21	J A 22	J A 23
4	E S 16	E S 16	E S 16	E S 16	18	E S 16	21	J A 26	G	G	37	43	J A 44	J A 88	J A 50	J A 44	J A 42	G	J A 22	J A 30	J A 22	J A 20	E S 16	E S 16
5	E S 16	E S 16	E S 16	E S 16	J A 25	J A 25	E S 16	G	29	36	39	41	45	G	37	G	J A 30	G 20	E S 16	E S 16	E S 16	E S 16	J A 21	E S 16
6	J A 32	E S 16	E S 16	J A 23	J A 36	E S 16	E S 16	E S 16	G	35	39	43	48	50	41	J A 39	J A 35	J A 22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
7	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	G	34	36	40	43	37	40	G	G	30	J A 25	E S 16	E S 16	J S 16	E S 16	E S 16
8	E S 16	E S 16	E S 16	E S 14	E S 14	E S 16	E S 16	G	G	36	38	40	43	43	44	J A 56	J A 30	J A 30	J A 38	J A 18	E S 16	E S 16	E S 16	E S 16
9	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	E S 16	E S 16	G	34	41	47	J A 54	J A 52	J A 50	J A 46	J A 36	J A 24	J A 24	E S 16	E S 15	E S 16	E S 16	E S 16
10	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	37	44	43	43	37	G	G	G	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
11	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	40	43	J A 57	J A 62	40	42	34	27	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	40	42	J A 44	41	32	G	20	E S 16	E S 16	E S 16	E S 16	E S 16
13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	32	36	38	41	40	39	35	G	G	J A 27	J A 21	J A 18	E S 16	E S 16	E S 16
14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	36	40	59	41	49	39	49	J A 54	J A 64	J A 20	E S 16	E S 16	E S 16	E S 16
15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	G	31	34	E B 47	45	43	40	J A 54	J A 35	J A 36	J A 33	J A 22	E S 16	E S 16	E S 16	E S 16
16	J A 22	E S 16	E S 16	J A 20	J A 18	J A 18	20	E S 16	G	33	38	40	J A 38	E B 41	42	J A 40	J A 34	21	E S 15	E S 16	J A 24	J A 27	J A 26	J A 17
17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	36	J A 54	J A 51	J A 44	J A 55	J A 38	J A 51	J A 31	J A 33	J A 24	J A 39	J A 20	E S 16	E S 16
18	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	G	G	G	46	41	G	G	J A 54	J A 51	J A 26	J A 22	E S 16	J A 26	J A 26	J A 20	E S 16
19	E S 16	E S 16	E S 16	E S 16	E S 16	J S 16	J A 20	E S 16	29	37	J A 47	J A 46	39	G	38	45	J A 40	G	J A 27	J A 18	E S 16	E S 15	E S 16	E S 15
20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	J A 31	E S 16	G	37	42	47	43	73	49	45	G	G	J A 21	E S 16	E S 16	J A 25	J A 19	J A 17
21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	38	41	45	J A 67	42	51	43	33	27	E S 16	J A 36	J A 27	J A 18	J A 19	J A 41
22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	43	42	45	J A 72	J A 39	J A 37	J A 30	J A 48	J A 24	J A 22	E S 16	J A 137	J A 29
23	E S 16	E S 16	J A 20	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	40	G	G	57	50	J A 73	40	J A 49	J A 36	J A 25	J A 23	J A 24	J A 28	J A 20
24	E S 16	J A 20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	39	41	47	50	57	47	34	22	E S 16	J A 27	J A 21	J A 27	J A 21	E S 16
25	E S 16	J A 33	J A 29	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	J A 54	J A 56	J A 57	J A 80	J A 90	J A 64	J A 77	J A 39	J A 20	J A 21	E S 16	E S 16
26	E S 16	E S 16	E S 16	J A 17	J A 26	J A 32	J A 20	J A 21	G	G	43	40	E B 110	E B 55	47	J A 51	J A 39	26	J A 17	E S 16	E S 16	E S 16	J S 14	J S 15
27	E S 16	E S 16	J A 30	J A 26	J A 29	J A 25	E S 16	J A 20	G 22	J A 31	J A 34	J G 32	G	G	G	J A 33	J A 54	J A 30	J A 33	J A 18	E S 16	E S 16	E S 16	20
28	J A 41	J A 24	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	J A 42	42	J A 56	J A 40	J A 33	J A 29	G	J A 36	J A 30	E S 16	E S 16	E S 16	E S 16
29	E S 16	E S 16	E S 16	E S 16	J A 21	J A 20	E S 16	E S 16	G	G	J A 36	41	39	48	36	J A 35	G	G	J A 25	E S 16	J A 21	J A 21	E S 16	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	36	G	42	40	42	J A 34	J G 28	J A 25	J A 45	J A 29	E S 16	E S 16	E S 16	E S 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 S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	E G 31	37	41	43	43	42	J A 42	J A 34	26	J A 24	J A 18	E S 16	E S 16	E S 16	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	18	E S 16	E S 16	E S 16	G	35	40	44	48	52	50	J A 47	J A 40	J A 30	J A 36	J A 25	J A 21	J A 21	J A 20	E S 16
LQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	36	38	41	40	39	J A 35	29	G	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16

NOV. 1982 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long. 127° 48·4' E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	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 S 16	E	E	E S 16	E S 16	E S 16	E S 16	G	20	34	39	G	G 28	G	38	G 25	G 20	28	E	18	E S 16	E S 16	E S 16	E S 16
2	E S 16	E	E	E	E	E S 16	E S 16	G	32	34	38	G	41	42	39	37	31	G 20	E S 16	E	E	E	20	S
3	S	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	43	39	49	46	45	33	38	26	24	S	E	20	E
4	E S 16	E S 16	E S 16	E S 16	E	E S 16	E	G	G	G	G	38	40	74	46	43	41	G	20	28	E	E	E S 16	E S 16
5	E S 16	E S 16	E S 16	E S 16	21	18	E S 16	G	29	35	37	40	41	G	37	G	30	G 19	E S 16	E S 16	E S 16	E S 16	E	E S 16
6	E	E S 16	E S 16	E	30	E S 16	E S 16	E S 16	G	35	39	43	48	48	40	36	30	22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
7	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	G	34	G	38	40	37	39	G	G	24	E	E S 16	E S 16	S	E S 16	E S 16
8	E S 16	E S 16	E S 16	E S 14	E S 14	E S 16	E S 16	G	G	34	37	39	38	39	42	45	29	26	30	E	E S 16	E S 16	E S 16	E S 16
9	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	E S 16	E S 16	G	34	41	44	47	40	35	43	31	24	20	E S 16	E S 15	E S 16	E S 16	E S 16
10	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	37	43	42	42	37	G	G	G	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
11	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	38	42	57	54	40	41	33	25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	39	41	39	38	31	G	20	E S 16	E S 16	E S 16	E S 16	E S 16
13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	38	40	40	37	35	G	G	27	18	18	E S 16	E S 16	E S 16
14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	36	40	59	40	39	39	49	37	41	E	E S 16	E S 16	E S 16	E S 16
15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	G	31	34	E B 47	43	41	36	36	31	22	33	19	E S 16	E S 16	E S 16	E S 16
16	E	E S 16	E S 16	E	E	E	E	E S 16	G	32	36	36	36	E B 41	40	35	33	21	E S 15	E S 16	E	24	19	E
17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	36	47	50	43	42	38	35	26	18	E	33	18	E S 16	E S 16
18	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	G	G	G	43	40	G	G	52	37	24	E	E S 16	23	25	20	E S 16
19	E S 16	E S 16	E S 16	E S 16	E S 16	S	E	E S 16	28	36	45	45	39	G	38	43	30	G	E	E	E S 16	E S 15	E S 16	E S 15
20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	19	E S 16	G	31	37	41	43	62	49	44	G	G	E	E S 16	E S 16	22	E	E
21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	36	38	44	40	40	49	38	32	27	E S 16	22	27	E	E	38
22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	40	41	40	43	37	31	25	48	19	21	E S 16	52	26
23	E S 16	E S 16	E	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	37	G	G	52	50	70	40	49	34	21	E	24	28	E
24	E S 16	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	39	41	45	49	57	47	33	22	E S 16	20	E	27	21	E S 16
25	E S 16	19	22	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	G	44	47	57	40	42	60	65	39	19	E	E S 16	E S 16
26	E S 16	E S 16	E S 16	E	E	23	E	G	G	G	38	G	E B 110	E B 55	47	42	38	23	E	E S 16	E S 16	E S 16	S	S
27	E S 16	E S 16	E	17	E	E	E S 16	20	G 22	30	31	G 32	G	G	G	33	30	24	25	E	E S 16	E S 16	E S 16	E
28	25	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	36	40	37	36	33	23	G	27	E	E S 16	E S 16	E S 16	E S 16
29	E S 16	E S 16	E S 16	E S 16	E	E	E S 16	E S 16	G	G	33	36	38	47	36	33	G	G	19	E S 16	19	E	E S 16	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	35	G	41	39	41	33	G 26	G 18	20	19	E S 16	E S 16	E S 16	E S 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28
MED	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	36	39	40	40	40	38	31	22	18	16	E S 16	E S 16	E S 16	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	34	38	43	44	48	46	43	33	26	27	19	E S 16	E S 16	E S 16	E S 16
LQ	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	G	G	G	G	G 32	39	38	37	33	26	G	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16

NOV. 1982 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | F-MIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16'.9 N, Long. 127° 48'.4 E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	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 S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	21	26	21	26	20	20	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
2	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	20	21	23	23	24	22	21	17	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
3	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	20	20	23	22	26	22	20	16	E S 16	E S 15	E S 15	E S 16	E S 16	E S 16	E S 16
4	E S 16	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	E S 16	16	16	20	22	22	23	23	22	16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
5	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	19	21	21	23	26	24	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
6	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	18	22	24	23	22	21	20	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
7	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	16	20	22	23	25	23	22	22	21	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
8	E S 16	E S 16	E S 16	E S 14	E S 14	E S 16	E S 16	E S 16	16	19	20	22	22	23	23	23	21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
9	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	E S 16	E S 16	16	16	24	29	23	23	23	21	23	E S 17	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16
10	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	20	22	24	26	27	25	21	20	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
11	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	19	21	22	24	24	25	26	22	21	18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	21	20	22	21	25	39	24	26	23	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	20	25	22	28	28	23	21	21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	21	21	22	22	21	20	20	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	16	20	20	47	30	24	25	21	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	16	16	21	23	22	41	27	23	19	E S 16	E S 15	E S 16	E S 16	E S 16	E S 15	E S 16
17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	21	23	24	23	24	23	21	17	E S 15	E S 15	E S 16	E S 16	E S 15	E S 16	E S 16
18	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	16	17	24	25	23	27	32	24	20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
19	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 16	16	16	24	23	25	25	24	17	16	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	E S 15
20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	20	22	22	23	21	22	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	18	23	25	29	26	23	23	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	22	23	21	24	23	20	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
23	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	24	23	25	27	26	23	22	18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
24	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	18	22	20	24	23	22	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	20	22	24	23	23	18	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
26	E S 16	E S 16	E S 16	E S 16	E S 16	E S 14	E S 16	E S 16	16	16	19	17	110	55	44	34	26	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
27	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	18	17	23	21	19	15	E S 15	E S 13	E S 16	E S 16	E S 16	E S 16	E S 16
28	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	18	18	22	29	23	27	26	21	19	E S 17	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
29	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	19	21	25	24	27	18	18	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	19	19	23	22	21	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 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 S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	18	21	23	23	24	23	21	18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	20	22	24	25	27	25	22	21	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
LQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	20	22	22	23	22	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16

NOV. 1982 | F-MIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9′ N, Long 127° 48·4′ E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	310	280	280	280	355	220	H 220	325	350	280	300	315	270	280	280	270	285	295	330	300	285	285	310	295
2	275	300	315	315	270	240	275	300	290	290	300	295	285	285	280	290	295	275	305	315	285	305	300	285
3	U S 265	270	260	285	H 245	230	265	290	285	305	290	285	280	270	275	275	275	280	280	285	290	310	285	S 255
4	S 310	305	325	340	H 295	265	265	305	335	330	315	295	275	280	285	280	280	285	300	305	320	300	315	S 290
5	S 280	285	260	270	295	300	270	335	R 340	305	285	300	285	300	280	315	285	300	300	S 280	295	280	S 275	255
6	270	300	280	295	310	270	260	305	350	315	315	315	335	270	300	270	305	315	310	310	S 305	290	290	S 275
7	310	280	310	270	285	290	270	325	335	340	320	320	295	290	285	290	290	300	305	300	H 285	295	U S 295	U S 260
8	295	295	295	285	330	310	275	315	355	340	265	320	305	285	295	290	S 290	295	S 290	S 280	S 285	H 295	305	295
9	290	280	280	320	265	F	F	335	J S 305	305	315	320	285	280	295	280	285	285	295	290	S 275	290	295	295
10	290	310	S 280	H 240	H 275	290	310	320	325	315	300	315	295	280	280	280	285	290	S 295	290	S 285	S 300	H 305	J S 275
11	S 260	U S 245	325	295	285	280	260	315	340	320	305	315	285	285	280	285	295	R 290	S 290	S 280	S 295	U S 290	U S 280	S
12	295	285	S 290	265	305	305	280	295	320	315	320	320	300	290	290	280	290	305	305	310	S 295	U S 270	U S 270	S 290
13	335	300	275	285	290	295	275	315	335	350	325	320	320	290	305	295	300	310	310	300	295	275	320	330
14	320	255	240	260	300	270	265	270	345	295	330	285	300	305	280	290	320	290	320	S 315	J S 285	S 255	305	295
15	285	300	290	290	325	S 270	280	310	330	355	320	310	285	285	285	R 285	260	290	275	280	295	295	260	S 300
16	340	285	235	235	275	300	280	290	315	335	305	295	290	280	285	300	285	290	300	285	300	S 315	295	265
17	270	280	305	320	355	280	270	315	320	330	330	310	300	290	285	290	295	300	315	S 320	290	290	315	290
18	S 275	285	290	310	360	H 285	270	315	340	300	315	305	295	285	280	275	295	285	290	300	285	295	320	S 335
19	290	255	265	270	270	285	315	330	325	335	340	325	305	305	305	305	305	310	300	285	290	U S 300	H 310	280
20	330	S 310	315	280	395	H 275	260	330	345	335	330	305	295	285	290	320	280	305	300	S 295	300	300	S 295	280
21	U S 300	305	265	290	350	320	295	305	330	330	340	330	285	285	315	285	320	295	295	S 290	275	S 295	S 275	280
22	250	F	F	S 295	260	250	F	295	340	325	310	290	270	290	280	280	280	290	305	U S 295	285	270	315	310
23	265	290	325	340	340	335	300	315	335	320	315	315	290	290	275	295	290	305	315	U S 270	U S 265	U S 285	S 300	S 285
24	265	270	295	290	240	S 210	245	280	345	340	265	300	300	295	280	285	280	290	300	295	S 290	S 295	S 275	U S 260
25	265	S 240	S 235	215	230	225	F	275	310	310	305	R 300	R 295	270	275	300	310	305	280	U S 245	U S 275	S 300	S 305	U S 255
26	250	250	280	325	350	250	280	S 325	340	325	330	310	295	305	290	295	290	295	280	S 275	H 285	H 275	S 310	295
27	285	295	270	255	285	310	270	315	335	325	330	310	295	285	285	300	300	305	295	295	H 305	280	J S 305	U S 270
28	250	275	335	315	305	250	250	300	335	315	310	300	295	290	295	305	285	305	300	290	300	280	275	320
29	340	255	295	350	380	265	300	300	315	285	315	295	280	R 295	290	290	295	R 265	U S 310	U S 300	S 295	280	S 255	S 260
30	S 280	245	290	285	270	255	260	315	325	305	295	305	300	275	265	290	270	R 300	S 260	300	260	S 235	S 260	265
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	30	30	29	27	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29
MED	285	285	290	288	295	275	270	315	335	320	315	310	295	285	285	290	290	295	300	295	290	290	298	285
UQ	310	300	305	315	340	295	280	320	340	335	325	315	300	290	290	295	295	305	305	300	295	300	310	295
LQ	265	270	270	270	270	250	262	300	320	305	300	300	285	280	280	280	285	290	290	285	285	280	S 275	S 265

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IONOSPHERIC DATA

NOV. 1982 | M(3000)F1 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long 127° 48·4' E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

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

NOV. 1982 | M(3000)F1 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long. 127° 48·4' E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											300	255	245	325	250		300							
2												260	300	310	295	285								
3											250	285	310	335	315	290	275							
4										250	250	290	315	325	300	285	270							
5													300	265	255	280	270							
6														280	275									
7											245	250	305	285	300									
8										245	245	250	250	290	290									
9											255	255	305	310	290	285								
10											295	265	285	290	290	280								
11											275	260		290	300	280								
12																								
13											250	245	240	295	245									
14												250		270	270	280								
15										250	260	280	300	300	300	290								
16										250	230	250	290	310	290	255								
17											250	270	285	265	275	265	265							
18										285	255	255	295	290	275	285	260							
19											240	255	245	265	250	270								
20												260	300	320	290	280								
21													285	300	290	290								
22													300	310	310 L	315	280							
23													290	275	295	295								
24											330 L	275				295								
25												270		315	325	270								
26											245	240	325 E B	290	280	275								
27												230	280	245	295	265								
28											260	260	265	260	250	250								
29										265	250	245	280	275	285	280								
30											280	270	250	250	275	275	280							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										6	19	24	24	28	28	24	8							
MED										250	250	258	289	290	290	280	272							
UQ										265	268	270	300	310	298	288	280							
LQ										250	248	250	272	272	275	272	268							

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IONOSPHERIC DATA

NOV. 1982 | H'F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long. 127° 48·4' E Sweep 1 MHz to 25 MHz in 25sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	235	225	260	240	195	S 300	450	250	220	H 225	230	H 240	H 215	225	230	H 235	235	250	245	230	240	235	230	240
2	260	250	265	275	225	265	255	260	240	H 240	H 235	225	H 230	230	230	235	H 235	230	230	225	230	215	255	280
3	260	275	295	270	H 240	375	310	265	250	H 240	220	H 230	215	A 250	A 250	A 245	235	240	240	250	250	240	215	240
4	255	225	215	220	195	350	335	260	240	240	215	H 225	H 200	A	A 255	A 240	230	H 220	230	215	215	210	230	240
5	250	255	260	265	235	240	265	250	235	225	225	H 210	H 220	220	220	H 215	230	230	220	205	220	215	220	230
6	285	255	250	260	240	265	320	240	225	H 225	220	H 230	235	240	H 215	230	H 240	230	230	230	245	220	220	240
7	240	260	250	245	260	245	260	250	H 240	225	220	215	H 210	H 215	225	H 230	H 220	245	220	210	235	225	215	245
8	255	235	230	280	240	235	300	245	245	240	230	225	210	H 200	225	E A 250	H 230	240	235	205	240	225	220	235
9	250	250	255	235	320	Q 380	240	225	235	235	240	240	H 245	225	E A 250	245	H 240	230	220	215	220	240	230	235
10	240	225	240	285	260	250	245	245	H 225	H 220	H 220	250	H 225	H 220	225	230	H 230	250	215	200	225	230	225	245
11	255	275	220	245	250	295	315	255	230	230	240	235	A 250	E A 255	A 235	A 245	245	230	235	240	250	210	230	245
12	220	225	240	290	250	220	265	275	235	H 235	H 240	H 230	H 220	H 230	H 225	240	245	245	240	230	235	215	240	240
13	220	220	200	300	285	275	300	255	H 230	230	225	215	225	H 225	220	235	235	240	225	235	230	240	235	215
14	210	255	E S 320	310	260	235	S 325	265	240	235	230	220	265	215	240	225	245	235	240	200	230	225	230	225
15	250	240	265	265	215	265	280	260	H 240	225	235	E B 250	H 220	H 215	H 200	235	240	225	215	210	210	220	245	235
16	225	230	325	325	245	225	260	265	245	230	225	215	H 210	H 225	H 230	240	225	H 220	210	200	220	225	215	245
17	255	265	240	230	215	290	275	255	235	H 240	235	E A 245	E A 250	E A 245	A 240	H 225	H 240	240	210	210	H 215	210	230	220
18	220	245	245	230	215	300	325	255	235	H 220	225	240	H 210	H 230	H 220	E A 245	E A 250	240	205	200	A 255	245	230	205
19	210	280	290	260	260	225	225	235	240	H 240	A 240	A 230	215	H 200	225	230	230	H 220	220	210	235	215	210	215
20	245	240	270	270	220	200	E A 350	260	240	235	H 225	H 210	240	A	245	245	245	230	220	200	230	215	225	230
21	225	220	240	240	225	220	255	260	230	240	H 235	235	220	260	E A 265	235	250	235	220	220	250	225	235	265
22	270	240	205	220	250	270	290	250	245	240	240	240	240	230	A 250	245	250	260	245	210	235	220	265	250
23	270	275	240	225	225	240	260	250	230	235	240	H 240	240	E A 265	240	A	240	235	220	200	230	230	250	240
24	260	270	250	270	340	325	375	290	225	225	235	245	250	250	245	240	H 240	240	225	220	215	250	255	235
25	325	390	250	H 445	490	460	475	300	H 250	H 240	H 245	230	230	230	E A 265	240	250	245	250	250	235	215	205	205
26	345	335	300	240	225	E A 385	295	215	225	225	230	210	B	E B 260	E B 250	240	H 240	235	205	205	235	205	H 215	225
27	265	265	295	315	250	200	300	255	235	H 240	H 225	200	H 205	H 205	H 210	H 205	H 240	225	225	225	215	210	220	250
28	E A 370	300	230	225	220	300	355	265	240	235	H 225	H 210	H 200	220	225	225	H 215	240	225	205	215	240	260	225
29	205	310	280	230	210	E A 325	275	265	235	235	230	220	H 215	A 245	H 220	H 220	235	235	225	215	215	230	230	240
30	235	290	260	255	250	S 320	E S 400	265	240	235	230	H 210	230	230	H 220	235	H 230	235	220	210	205	210	230	235
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	28	30	29	30	30	30	30	30	30	30	30
MED	250	255	250	260	240	266	292	255	235	235	230	228	220	228	228	235	239	235	225	210	230	222	230	238
UQ	260	275	268	280	260	310	322	265	240	240	235	238	238	238	A 242	240	242	240	235	225	235	230	235	245
LQ	225	235	240	235	220	235	260	250	230	225	225	215	H 215	H 220	H 220	230	230	230	220	205	215	215	220	225

NOV. 1982 | H'F (KM)

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IONOSPHERIC DATA

NOV. 1982 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long. 127° 48·4' E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Day \ Hour	00	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 S 140	E A 120	A	H 120	110	120	H 110	105	120	120	A						
2								S 145	115	115	115	115	115	110	115	115	E A 145	A						
3								E S 145	H 115	110	H 110	110	110	110	A	110	105	A						
4								E A 160	H 110	110	110	110	110	115	115	115	115	E S 120						
5								E S 150	115	115	115	110	115	115	115	115	A	A 120						
6								S	115	115	115	110	110	A 120	A 120	A	A	A						
7								S	110	110	110	H 110	110	110	110	H 110	H 115	A						
8								S	H 110	110	H 105	110	110	115	115	A	A	A						
9								S	115	110	115	115	H 110	110	110	110	A	A						
10								S	115	115	110	110	110	115	115	115	H 115	E B 130						
11								S	120	120	115	115	H 115	115	115	115	120	B 125						
12								S	120	115	H 110	H 110	H 110	B	115	120	115	E B 130						
13								S	120	115	115	115	115	115	115	115	H 115	S 130						
14								S	115	115	115	110	115	110	110	110	120	A						
15								S	115	110	110	B	115	115	115	A	A	A						
16								S	115	110	H 105	110	115	B	E B 120	115	115	S						
17								S	115	115	115	115	115	110	115	115	115	A						
18								S	H 110	H 110	115	115	110	115	E B 125	E B 120	E B 120	A						
19								S	H 110	H 105	110	110	114	110	115	110	115	110						
20								S	H 115	115	115	115	115	110	110	115	115	H 105						
21								S	115	115	115	115	115	115	115	H 115	115	115						
22								S	115	115	115	110	110	110	110	E A 140	A	105						
23								S	115	115	110	110	110	110	110	115	115	S 125						
24								S	H 115	110	H 110	110	110	110	H 110	115	115	S						
25								S	115	110	110	110	110	110	110	110	A	A						
26								S	115	110	110	105	B	B	B	B	E B 125	B						
27								S	E A 125	A	A	E A 145	105	H 110	115	115	A	A						
28								S	E B 120	115	115	115	110	110	A	A	E A 125	110						
29								S	120	115	A	115	115	115	115	A	115	120						
30								S	120	115	115	115	115	115	115	A	E A 125	S						
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	30	28	28	29	29	27	27	23	22	13						
MED								E S 145	115	115	115	110	110	110	115	115	115	115						
UQ								E S 150	118	115	115	115	115	115	115	115	118	122						
LQ								E S 145	115	110	110	110	110	110	110	112	115	110						

NOV. 1982 | H'E (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

NOV. 1982 | H'ES (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long. 127° 48·4' E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	100	95	S	S	S	S	G	110	110	120	G	100	G	115	100	100	100	100	100	S	S	S	S
2	S	100	100	100	100	S	S	G	160	125	165	G	160	145	120	145	150	110	S	120	110	100	100	S
3	S	S	S	S	S	S	S	G	G	130	140	110	110	110	105	105	105	100	100	100	S	100	95	95
4	S	S	S	S	110	S	110	110	G	G	130	120	125	110	110	110	110	G	100	100	95	100	S	S
5	S	S	S	S	95	100	S	G	135	120	120	120	120	G	125	G	100	100	S	S	S	S	95	S
6	105	S	S	110	105	S	S	S	G	E G 165	E G 170	150	140	130	135	100	100	100	S	S	S	S	S	S
7	S	S	S	S	S	S	S	S	G	E G 150	150	135	125	155	140	G	G	E G 190	100	S	S	S	S	S
8	S	S	S	S	S	S	S	G	G	E G 170	155	125	120	120	155	105	110	100	100	100	S	S	S	S
9	S	S	S	S	S	S	S	S	G	155	140	135	130	125	115	110	110	115	115	S	S	S	S	S
10	S	S	S	S	S	S	S	S	G	G	140	125	120	115	120	G	G	G	S	S	S	S	S	S
11	S	S	S	S	S	S	S	S	G	G	135	130	120	115	115	115	115	110	S	S	S	S	S	S
12	S	S	S	S	S	S	S	S	G	G	G	G	135	130	120	115	115	G	125	S	S	S	S	S
13	S	S	S	S	S	S	S	G	G	120	E G 140	115	115	115	110	110	G	G	100	100	100	S	S	S
14	S	S	S	S	S	S	S	G	G	G	E G 180	140	120	125	115	115	120	115	110	110	S	S	S	S
15	S	S	S	S	S	S	S	S	G	105	110	B	125	115	115	105	100	95	95	95	S	S	S	S
16	100	S	S	105	105	100	100	S	G	E G 165	145	120	115	B	135	120	115	120	S	S	120	100	95	100
17	S	S	S	S	S	S	S	S	G	G	160	130	125	115	115	110	105	105	105	105	105	100	S	S
18	S	S	S	S	S	S	S	S	G	G	G	120	135	G	G	115	115	115	115	S	105	100	95	S
19	S	S	S	S	S	S	100	S	E G 160	140	115	120	150	G	140	110	110	G	100	100	S	S	S	S
20	S	S	S	S	S	S	105	S	G	110	110	110	105	115	120	115	G	G	105	S	S	100	95	95
21	S	S	S	S	S	S	S	S	G	165	140	135	125	130	120	115	115	160	S	110	100	100	100	100
22	S	S	S	S	S	S	S	S	G	G	G	115	115	115	110	105	110	110	115	115	115	S	115	110
23	S	S	100	S	S	S	S	S	G	G	115	G	G	125	120	115	115	115	115	110	110	105	105	110
24	S	105	S	S	S	S	S	S	G	G	155	150	140	130	125	115	115	115	S	105	105	105	100	S
25	S	110	105	S	S	S	S	S	G	G	G	G	120	115	110	105	100	100	100	100	100	100	S	S
26	S	S	S	105	105	100	105	110	G	G	130	140	B	B	125	115	120	120	100	S	S	S	S	S
27	S	S	105	105	105	105	S	100	110	105	105	105	G	G	G	115	95	95	95	100	S	S	S	100
28	105	105	S	S	S	S	S	S	G	G	G	125	115	125	110	105	110	G	100	105	S	S	S	S
29	S	S	S	S	100	100	S	S	G	G	115	120	120	110	115	115	G	G	105	S	120	100	S	S
30	S	S	S	S	S	S	S	S	G	G	E G 175	G	160	120	110	110	110	110	95	95	S	S	S	S
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	5	5	5	8	5	5	3	5	15	25	23	27	23	28	27	25	22	22	18	12	12	10	7
MED	105	105	100	105	105	100	105	110	U 122	U 120	135	125	120	120	118	110	110	110	100	100	105	100	98	100
UQ	105	105	105	105	105	100	105	110	160	U 145	U 148	135	132	128	125	115	115	115	110	110	112	100	100	105
LQ	102	100	100	105	100	100	100	105	110	115	118	120	118	115	112	105	105	100	100	100	100	100	95	98

NOV. 1982 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

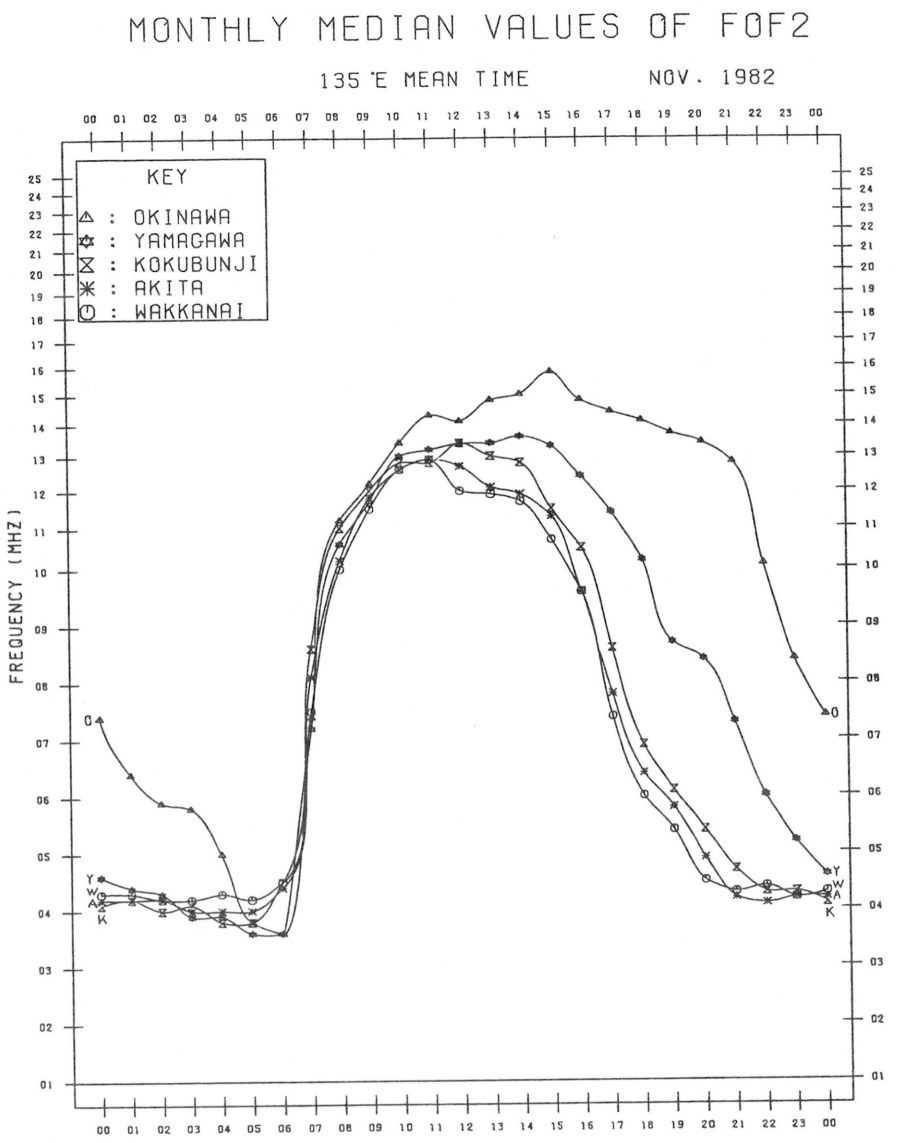
NOV. 1982 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9′ N, Long. 127° 48·4′ E Sweep 1 MHz to 25 MHz in 25 sec in automatic operation

Hour / Day	00	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 1	F 2						L 1	L 1	C 1		L 1		C 1	L 1	L 1	L 2	F 1	F 2				
2		F 2	F 1	F 1	F 1				H 2	C 1	H 1		H 1	H 1	C 1	HC 11	HL 12	L 1		F 3	F 3	F 1	F 2	F 1
3	F 1									H 1	H 1	C 2	C 1	C 2	L 3	C 3	C 3	L 3	F 3	F 5	F 1	F 2	F 2	F 1
4					F 1		F 1	L 1			H 1	C 1	C 1	C 7	C 2	C 3	C 5		F 4	F 5	F 1	F 1		
5					F 4	F 3			H 1	C 2	C 2	C 1	C 1		H 1		L 2	L 2					F 2	
6	F 2			F 1	F 3					H 1	H 1	H 1	H 2	HL 21	H 1	L 2	L 2	L 1						
7										H 1	H 1	H 1	H 1	H 1	H 1			HL 11	F 1			F 1		
8										H 1	H 1	C 1	C 1	C 1	HC 12	L 4	L 1	L 2	F 5	F 1				
9										H 2	H 2	H 1	H 2	C 1	C 4	C 2	L 2	L 1	F 2					
10											H 2	H 2	C 2	C 2	C 1									
11											H 2	H 2	C 4	C 3	C 2	C 3	C 2	C 2						
12													H 1	H 1	C 1	C 2	C 2		F 1					
13										C 1	H 1	C 1	C 1	C 1	C 1	C 2			F 4	F 3	F 1			
14											H 1	H 1	H 4	H 1	C 2	C 3	C 4	C 2	F 6	F 3				
15										C 1	C 2		C 1	C 1	C 1	L 2	L 3	L 4	F 5	F 2				
16	F 3			F 2	F 1	F 2	F 1			H 1	H 1	C 1	C 1		H 2	C 1	C 2	C 1			F 1	F 3	F 4	F 1
17											H 2	H 3	C 3	C 3	C 3	C 2	C 3	L 3	F 3	F 3	F 5	F 2		
18												H 2	H 1			C 5	C 3	L 1	F 1		F 5	F 3	F 1	
19						F 1	F 2		H 1	H 1	H 2	H 2	H 1		H 1	C 2	C 3		F 2	F 1				
20							F 7			C 2	CH 21	CH 21	C 2	C 4	C 2	C 2			F 2			F 5	F 2	F 1
21										H 2	H 1	H 1	C 1	C 1	C 2	C 1	C 1	H 1		F 4	F 4	F 1	F 1	F 7
22												C 1	C 1	C 1	C 2	LH 11	L 1	C 1	F 7	FF 72	F 7		F 6	F 7
23			F 2								C 1			H 2	C 3	C 4	C 3	C 6	F 4	F 6	F 2	F 5	F 4	F 1
24		F 1									H 2	H 2	H 2	H 3	H 3	C 3	C 3	C 2		F 3	F 1	F 3	F 3	
25		F 5	F 7										C 2	C 2	C 3	C 3	L 3	L 5	F 6	F 6	F 3	F 2		
26				F 1	F 2	F 5	F 2	L 1			H 1	H 1			H 1	C 1	C 1	C 1	F 1				F 1	F 1
27			F 2	F 2	F 2	F 1		L 3	L 1	L 1	L 2	L 1				C 1	L 2	L 3	F 4	F 1				F 1
28	F 5	F 5										C 1	C 1	C 1	L 1	L 1	L 1		F 3	F 1				
29					F 1	F 1					L 1	C 1	C 1	C 2	C 1	L 1			F 2		F 4	F 1		
30											H 1		H 1	C 1	C 3	C 2	L 1	L 1	F 4	F 3				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

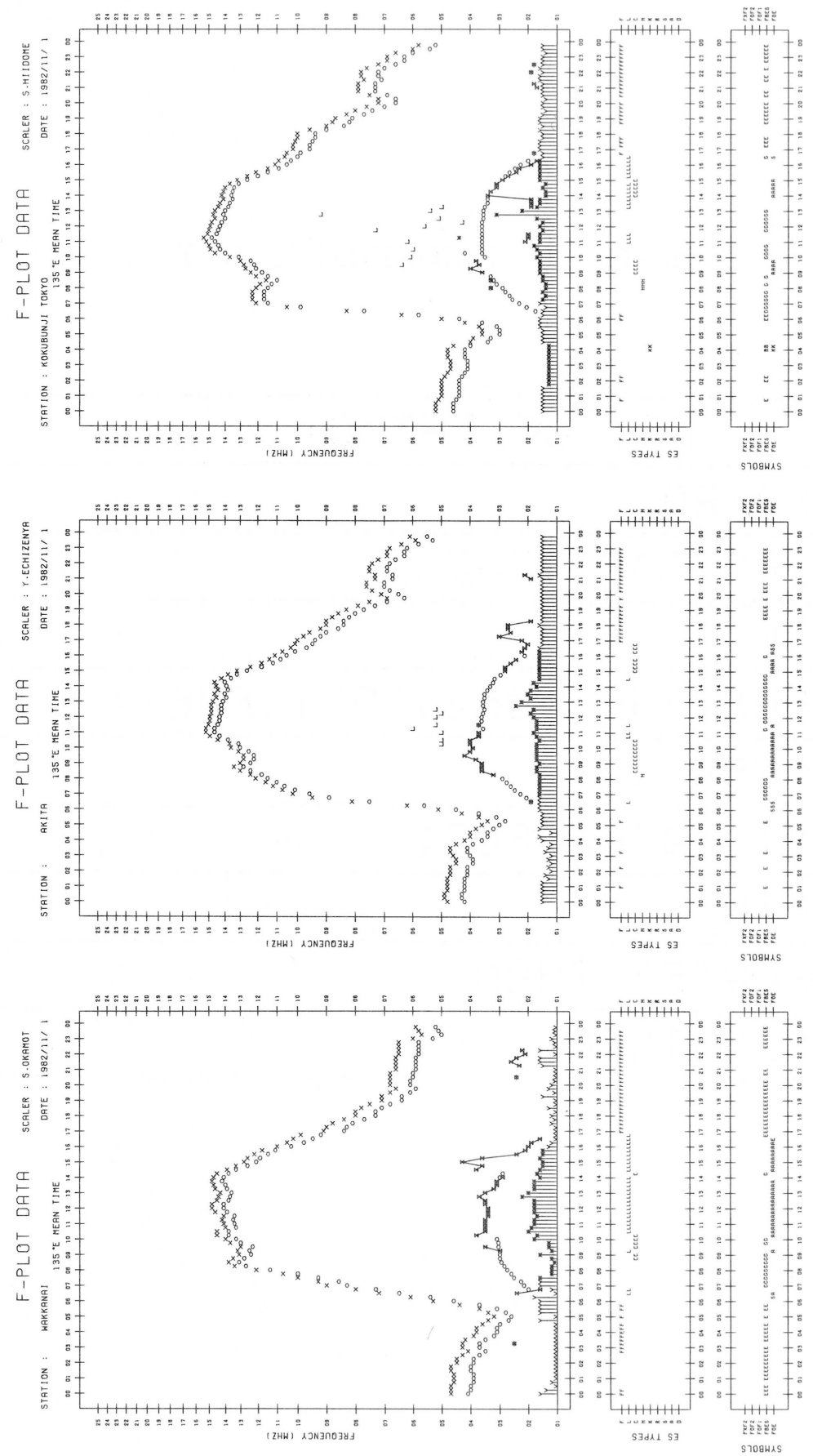
NOV. 1982 | TYPES OF ES

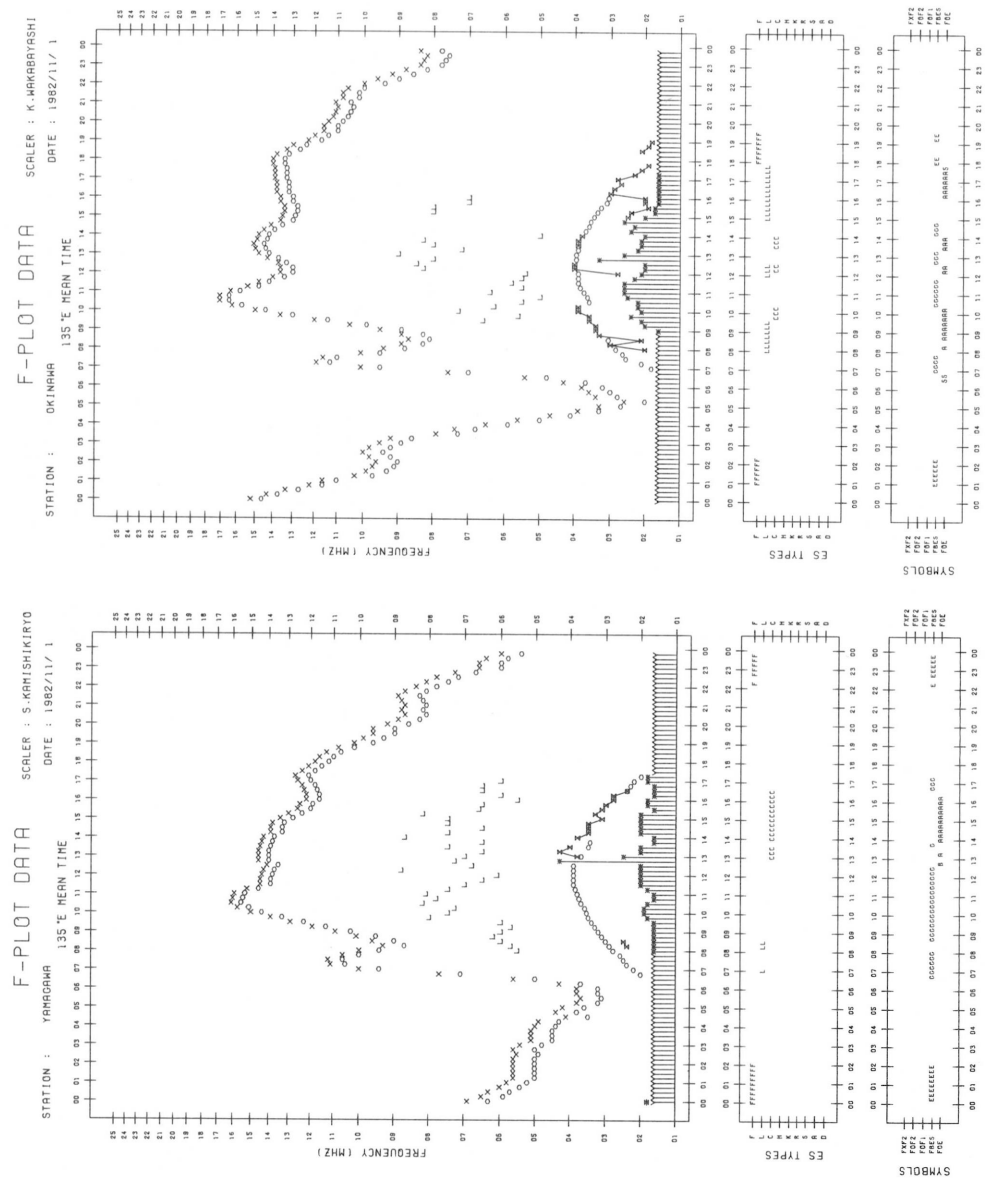
The Radio Research Laboratories, Japan

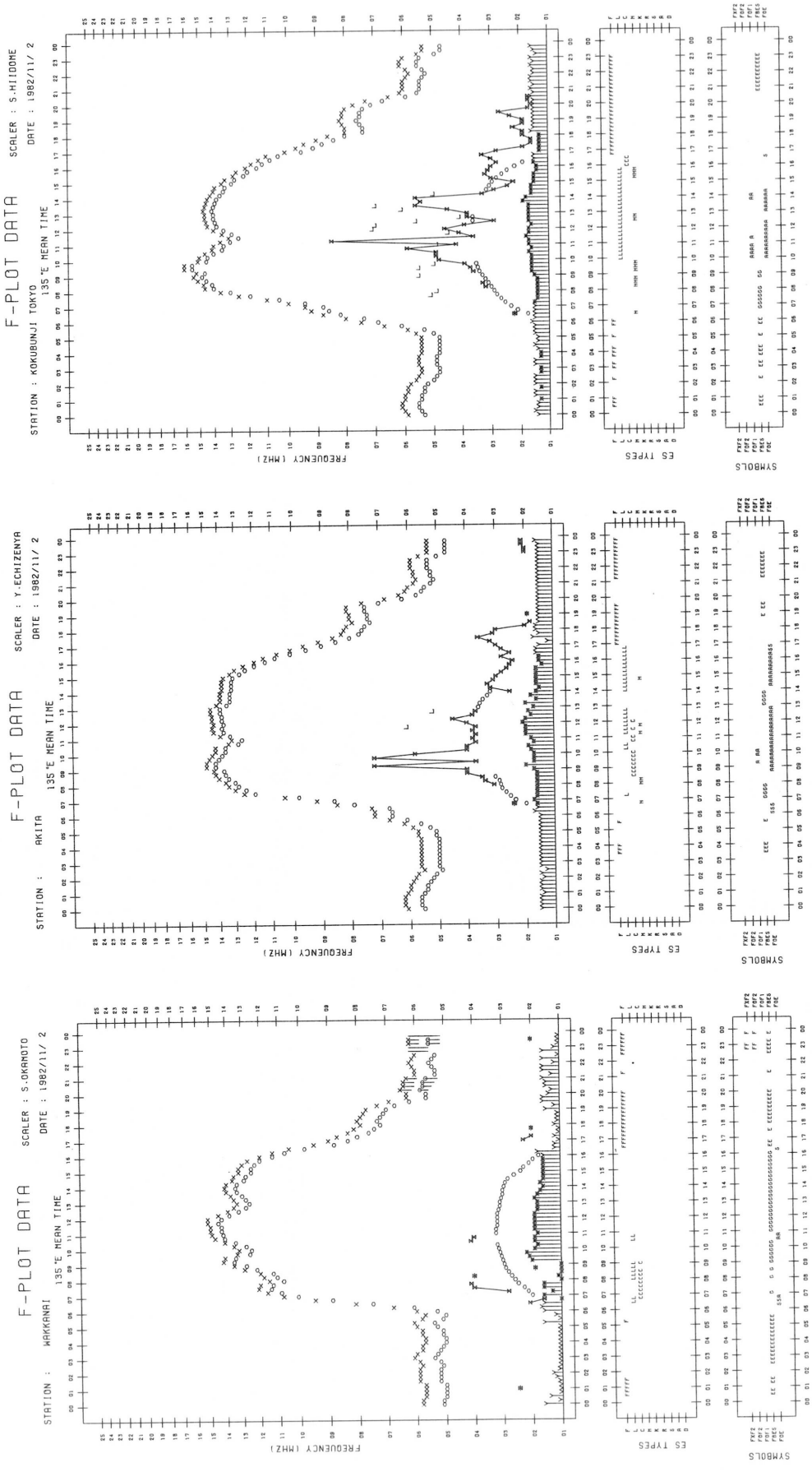

MONTHLY MEDIAN VALUES OF FOF2
135 'E MEAN TIME
NOV. 1982
KEY
△ : OKINAWA
✡ : YAMAGAWA
⊠ : KOKUBUNJI
✳ : AKITA
⊙ : WAKKANAI
FREQUENCY (MHZ)
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Y
W
A
K

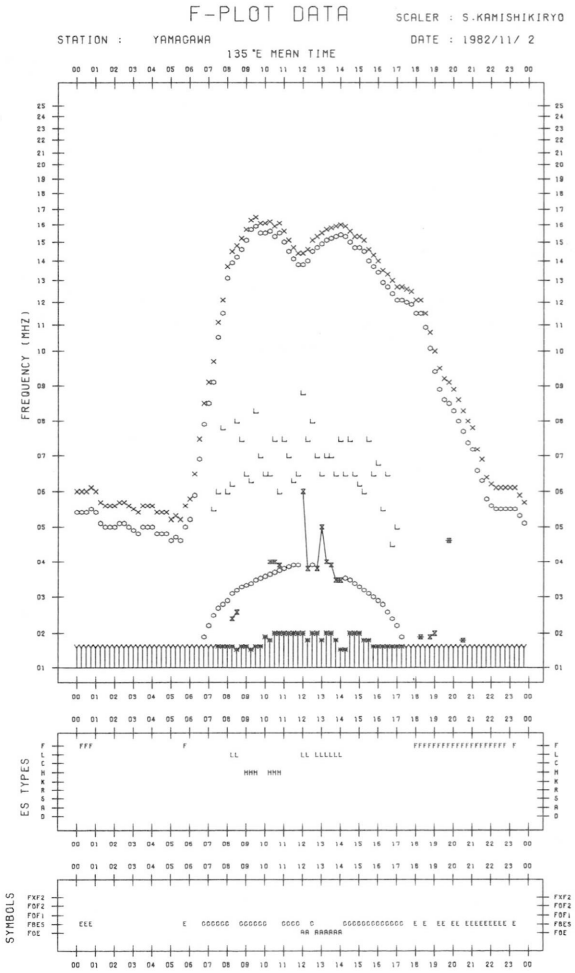
f-PLOTS OF IONOSPHERIC DATA

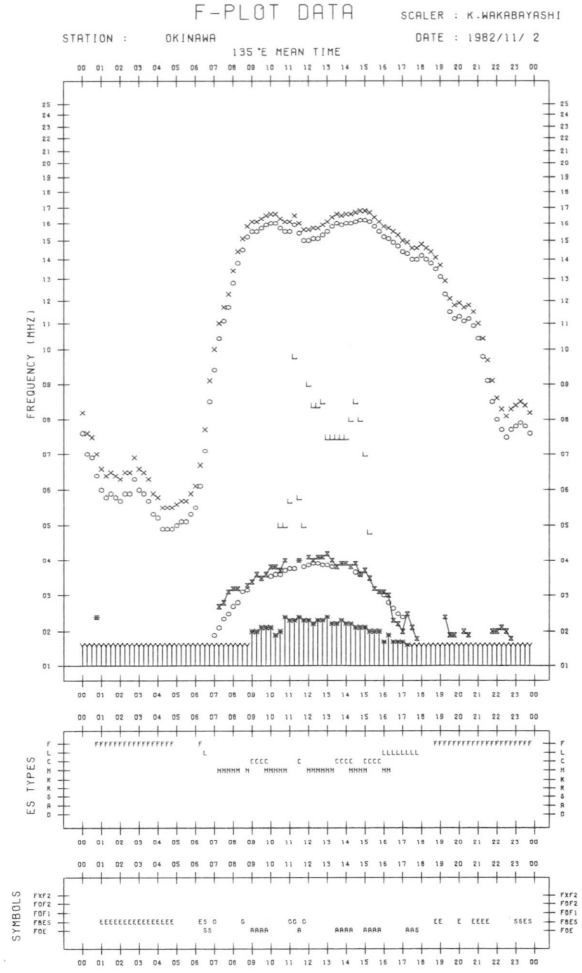
KEY OF F-PLOT	
I	SPREAD
○	FOF2,FOF1,FOE
×	FXF2
✳	DOUBTFUL FOF2,FOF1,FOE
⧖	FBES
⌊	ESTIMATED FOF1
*,Y	FMIN
∧	GREATER THAN
∨	LESS THAN

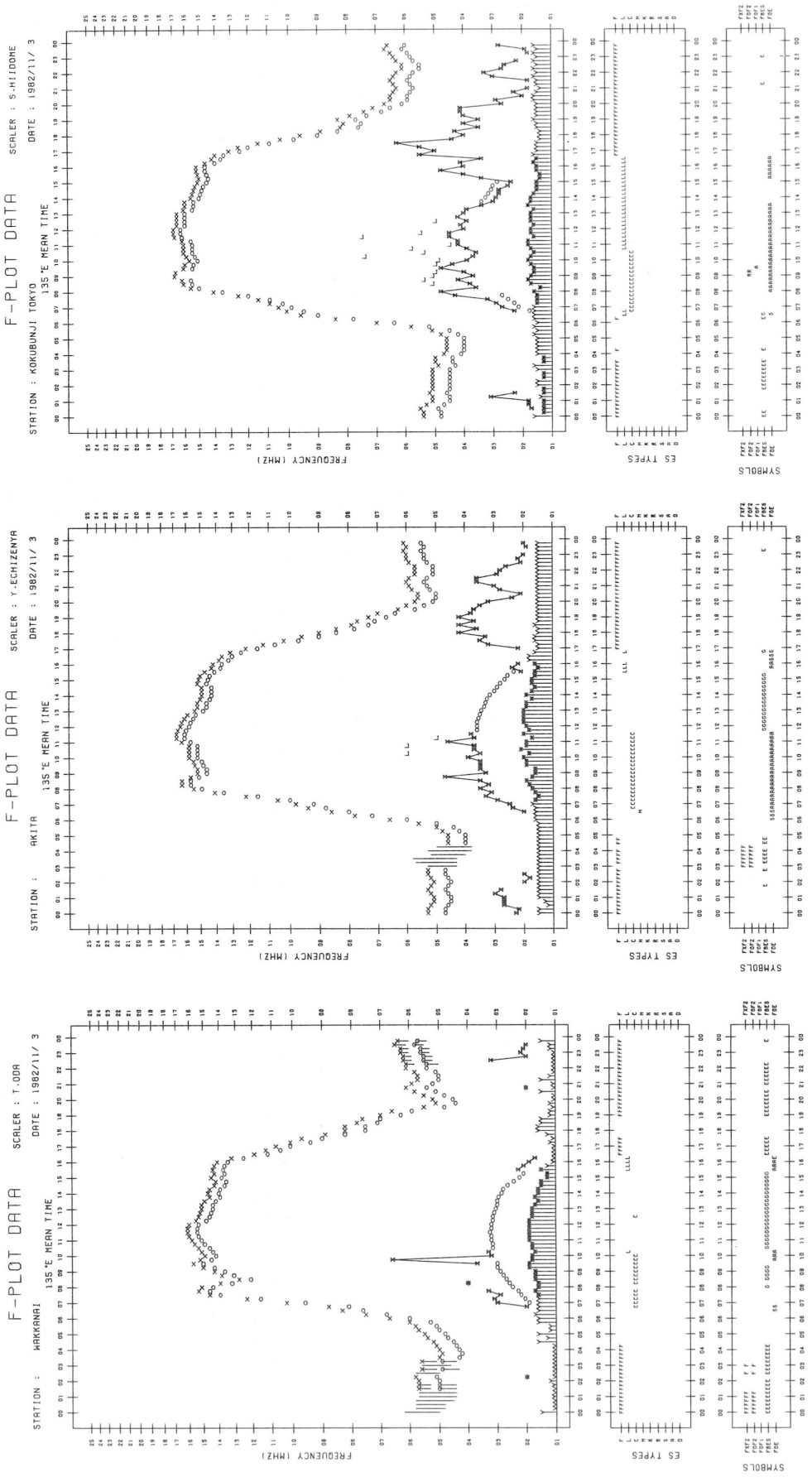

F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/ 1
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/ 1
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : S.OKAMOT
DATE : 1982/11/ 1
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

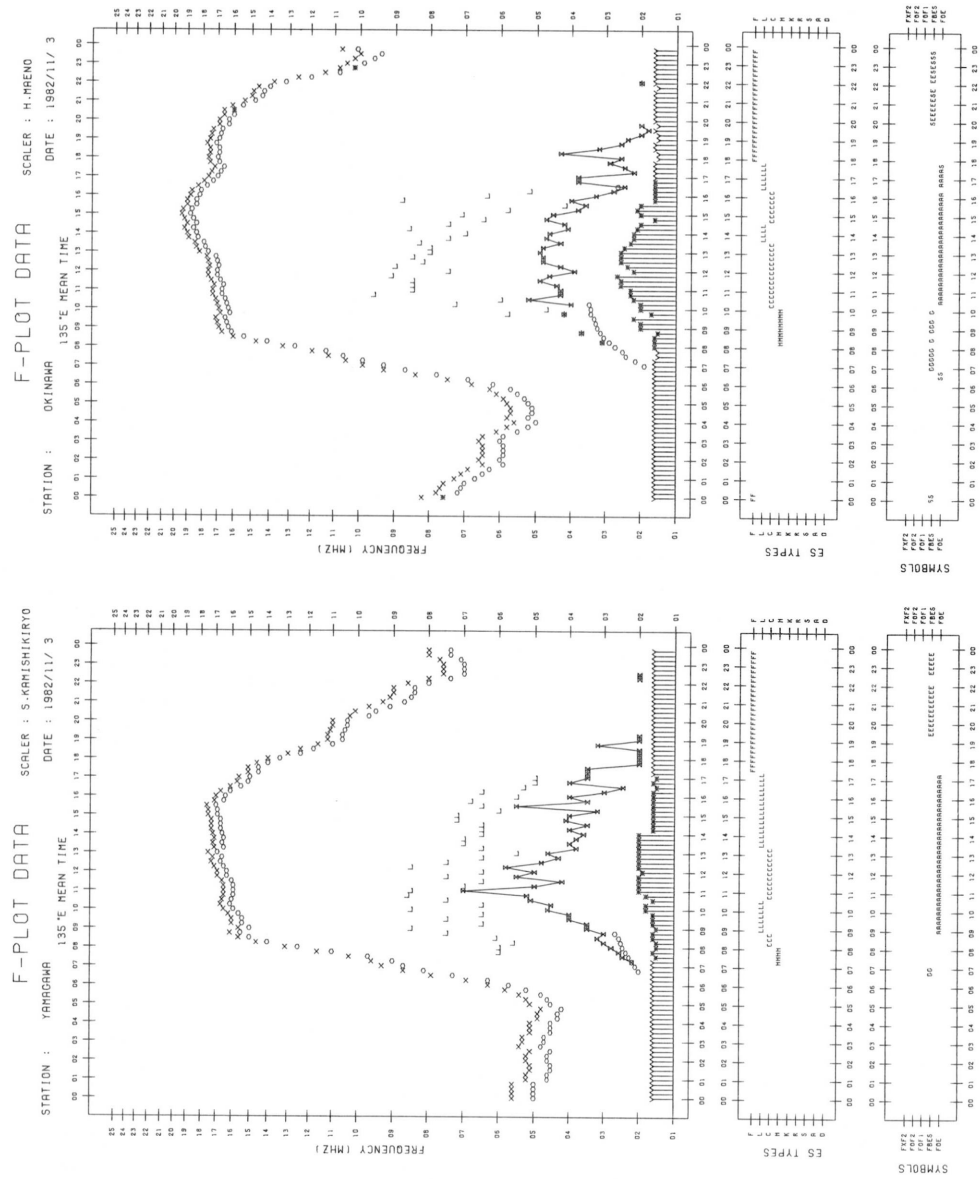

F-PLOT DATA
STATION : OKINAWA
135°E MEAN TIME
SCALER : K.WAKABAYASHI
DATE : 1982/11/ 1
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : S.KAMISHIKIRYO
DATE : 1982/11/ 1
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

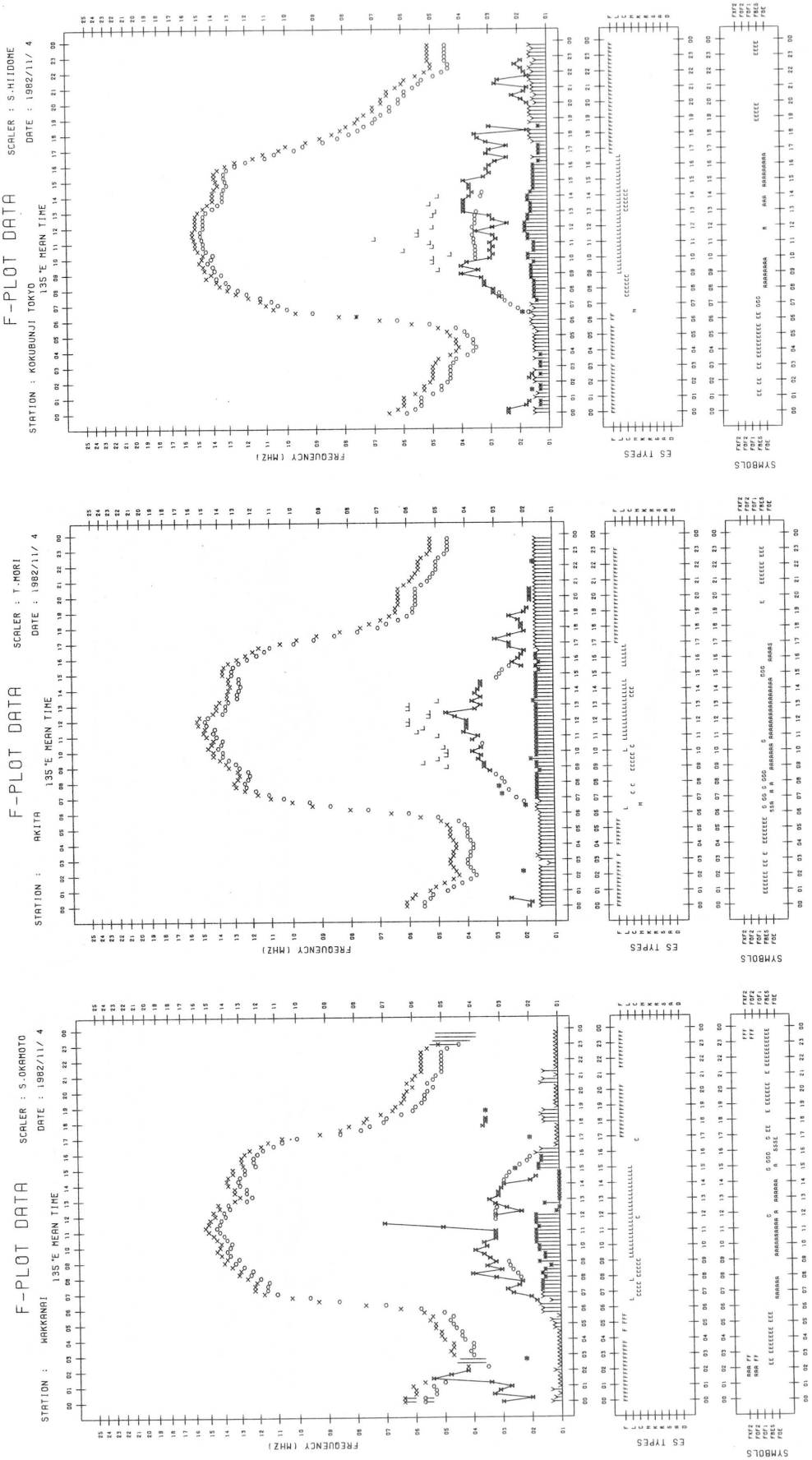

F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIIDOME
DATE : 1982/11/ 2
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/ 2
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : S.OKAMOTO
DATE : 1982/11/ 2
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

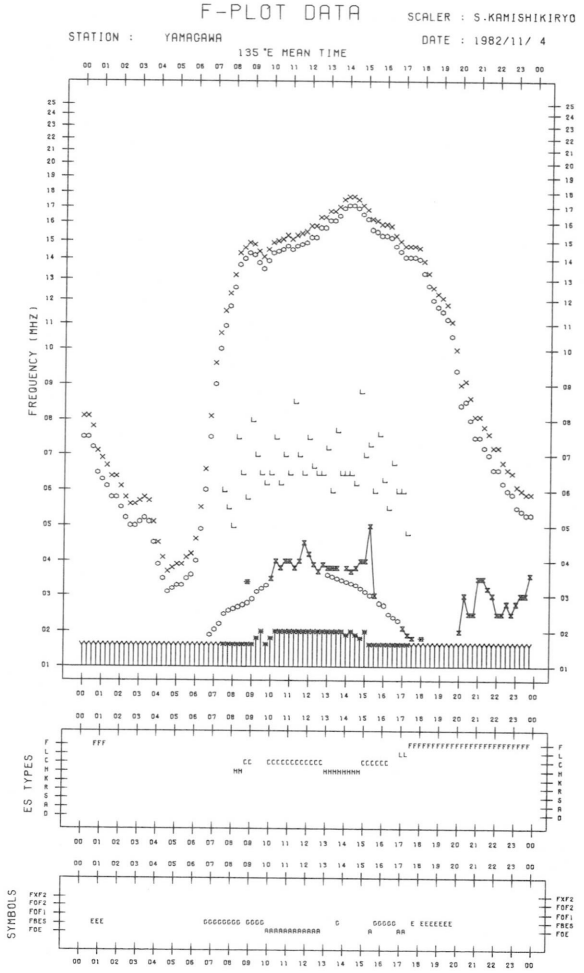

F-PLOT DATA
SCALER : S.KAMISHIKIRYO
STATION : YAMAGAWA
DATE : 1982/11/ 2
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FAES
FOE


F-PLOT DATA
SCALER : K.WAKABAYASHI
STATION : OKINAWA
DATE : 1982/11/ 2
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FAES
FOE


F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S-HIDOME
DATE : 1982/11/ 3
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/ 3
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/ 3
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : H.MAENO
STATION : OKINAWA 135°E MEAN TIME
DATE : 1982/11/ 3
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
SCALER : S.KAMISHIKIRYO
STATION : YAMAGAWA 135°E MEAN TIME
DATE : 1982/11/ 3
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/ 4
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : T.MORI
DATE : 1982/11/ 4
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : S.OKAMOTO
DATE : 1982/11/ 4
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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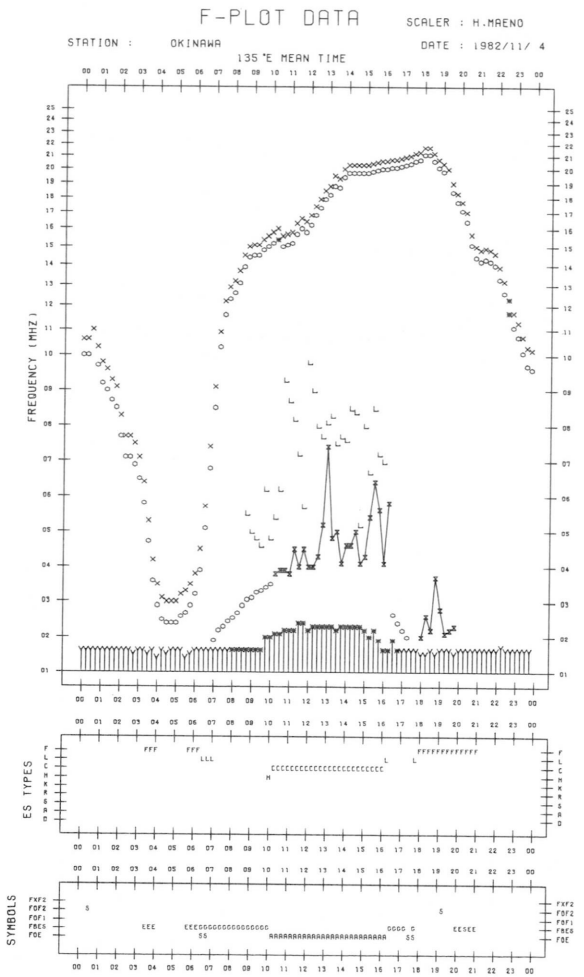
SCALER : S.KAMISHIKIRYO
STATION : YAMAGAWA
DATE : 1982/11/ 4
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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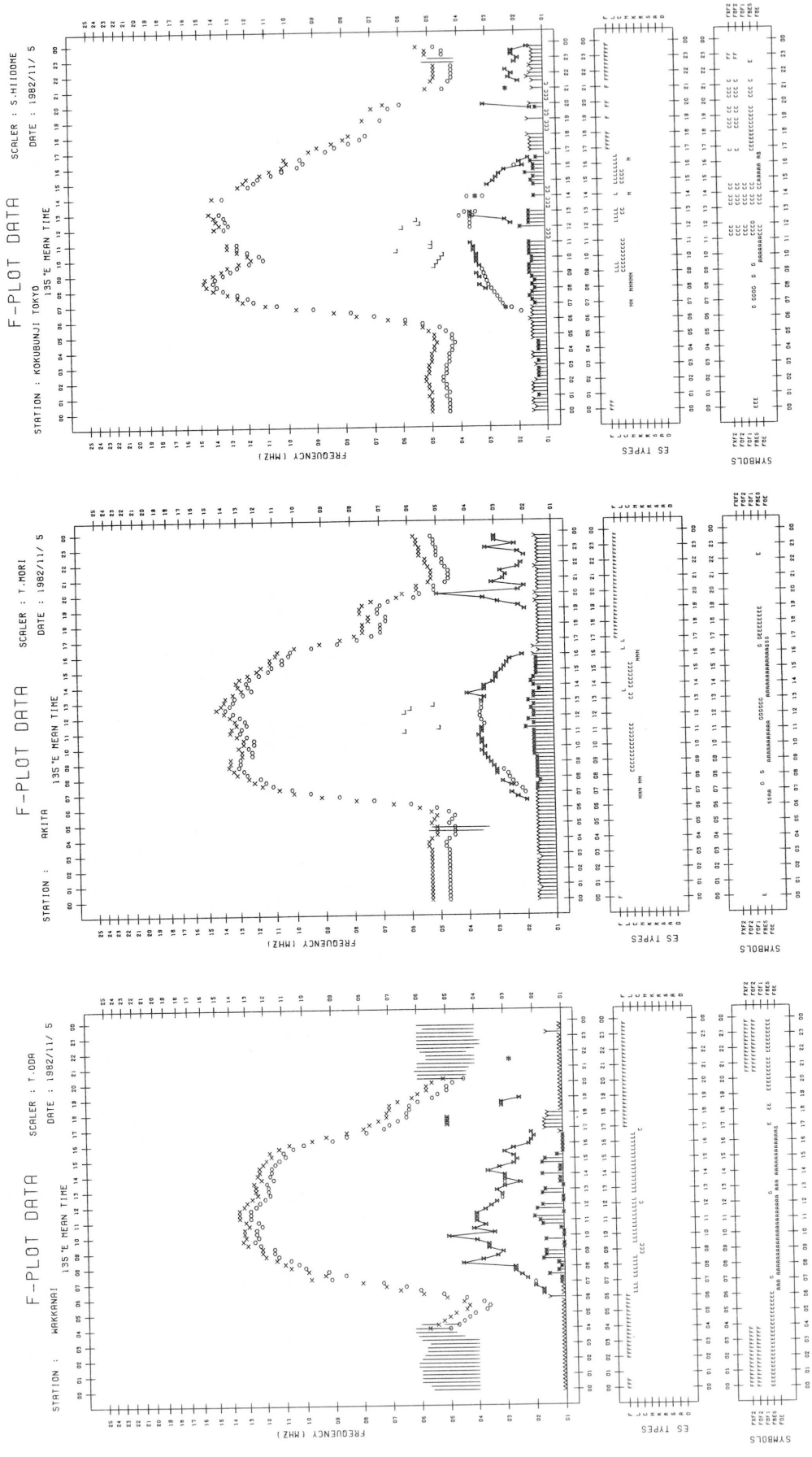
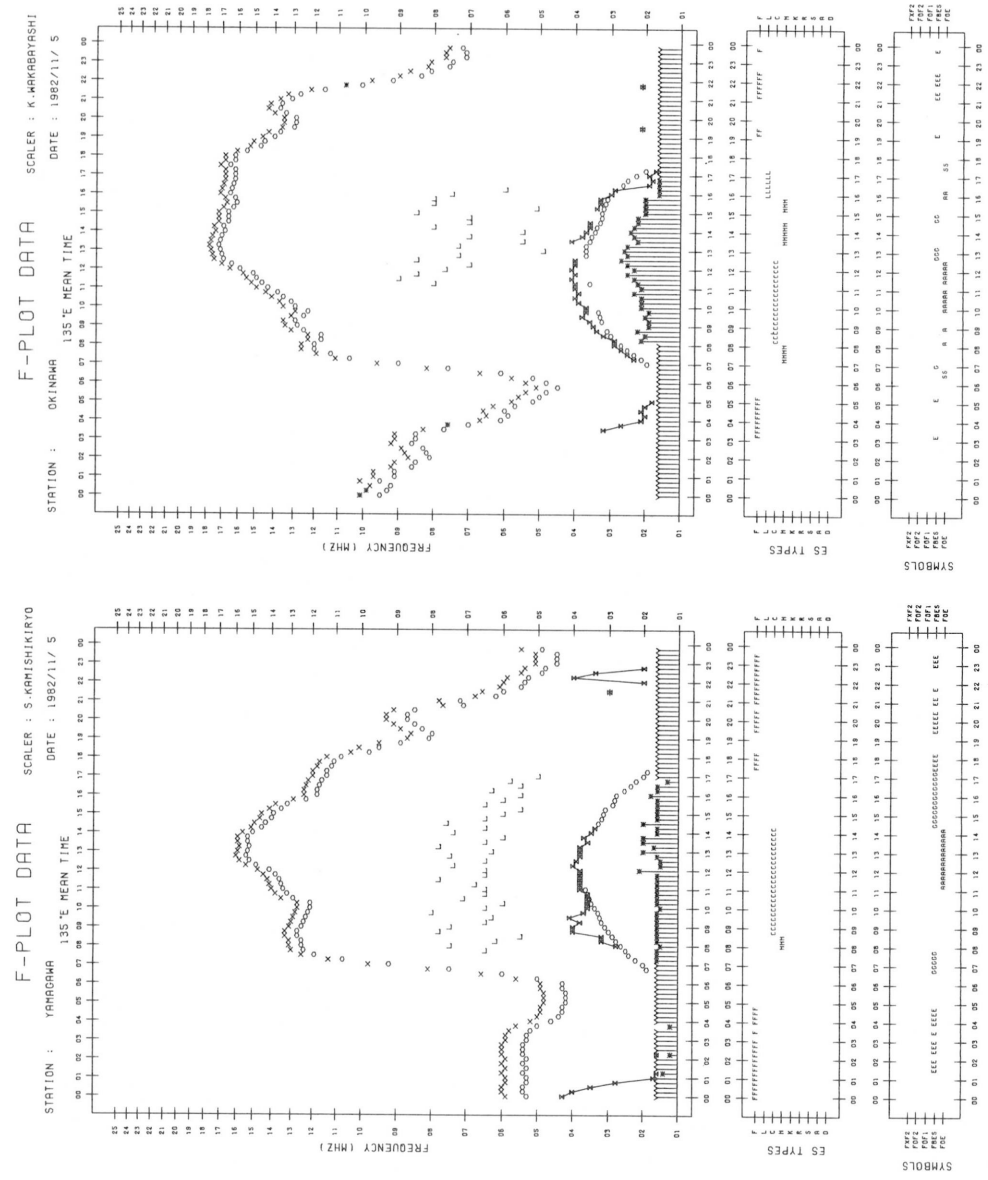
SCALER : H.MARENO
STATION : OKINAWA
DATE : 1982/11/ 4
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : S.HIDOME
DATE : 1982/11/ 5
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
F-PLOT DATA
SCALER : T.MORI
DATE : 1982/11/ 5
STATION : AKITA
135°E MEAN TIME
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/ 5
STATION : WAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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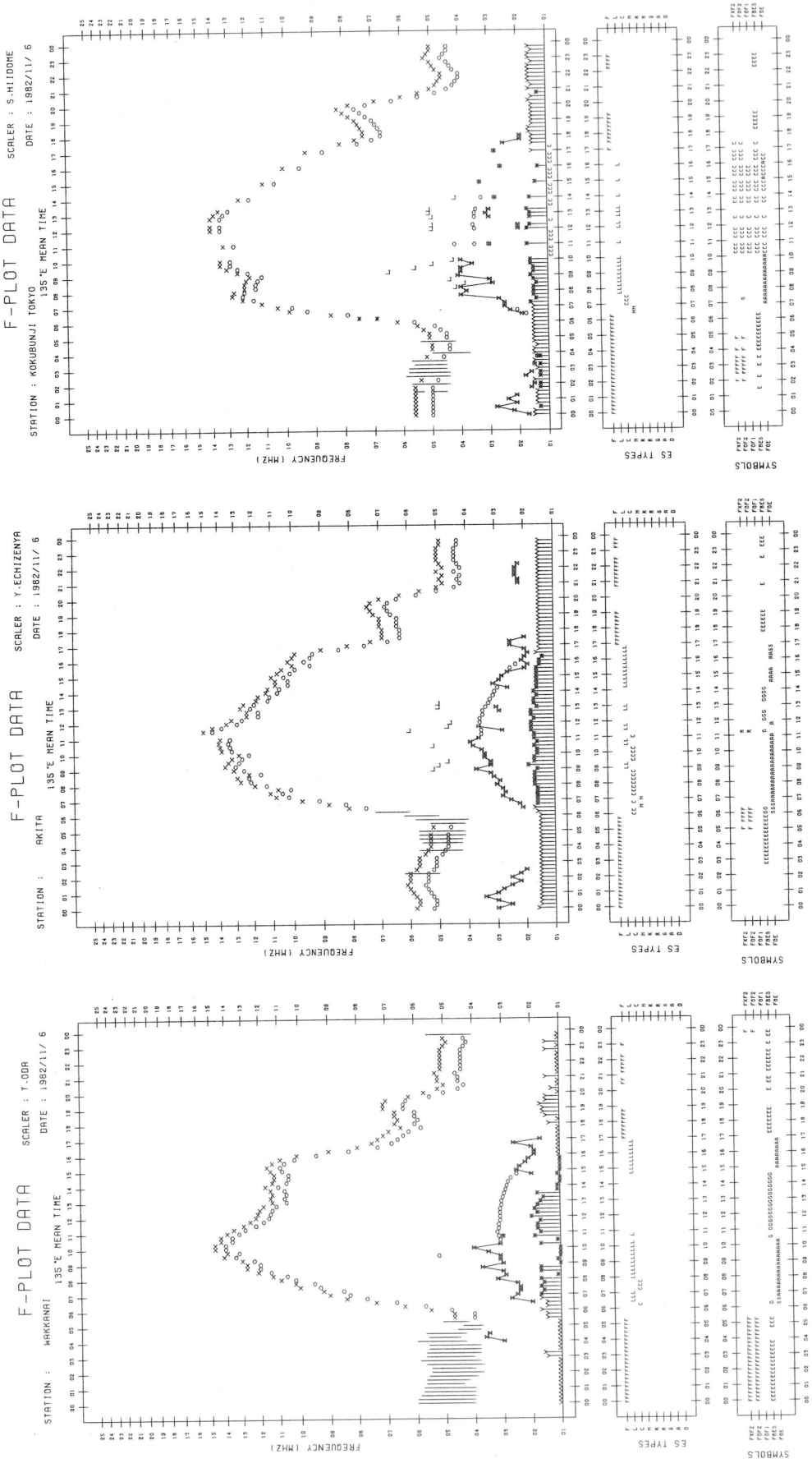
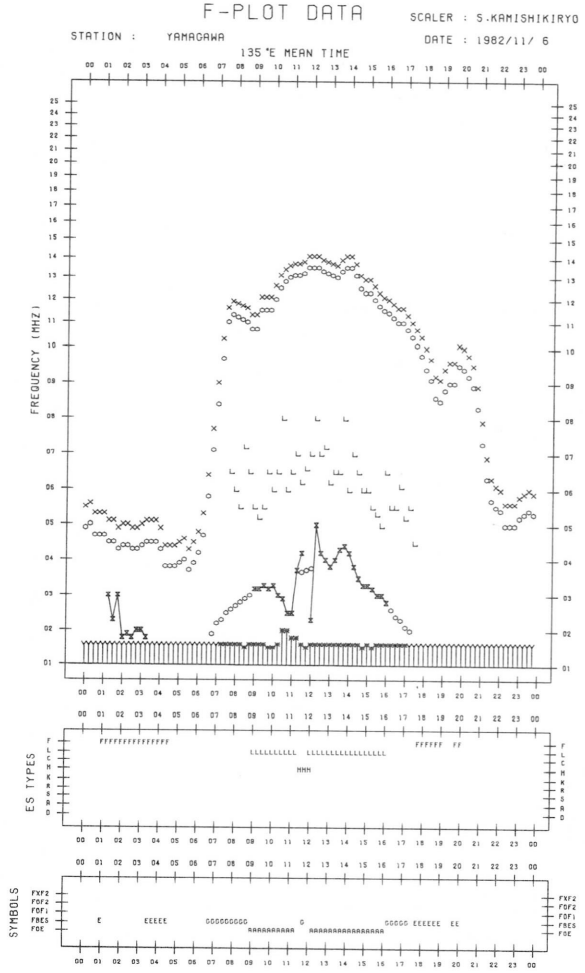
135°E MEAN TIME
SCALER : K.AKABAYASHI
DATE : 1982/11/ 5
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : S.KAMISHIKIRYO
DATE : 1982/11/ 5
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/ 6
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/ 6
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/ 6
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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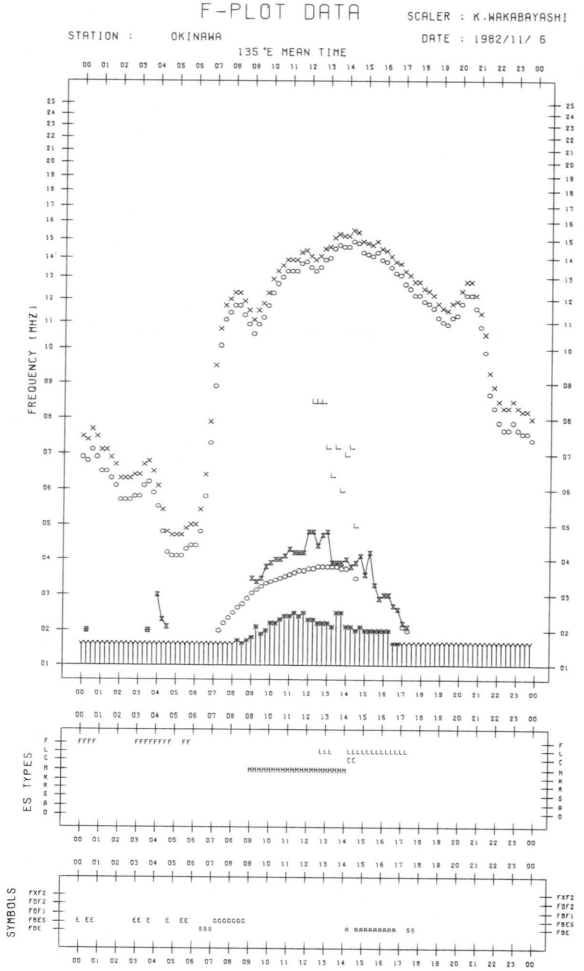
STATION : YAMAGAWA
DATE : 1982/11/ 6
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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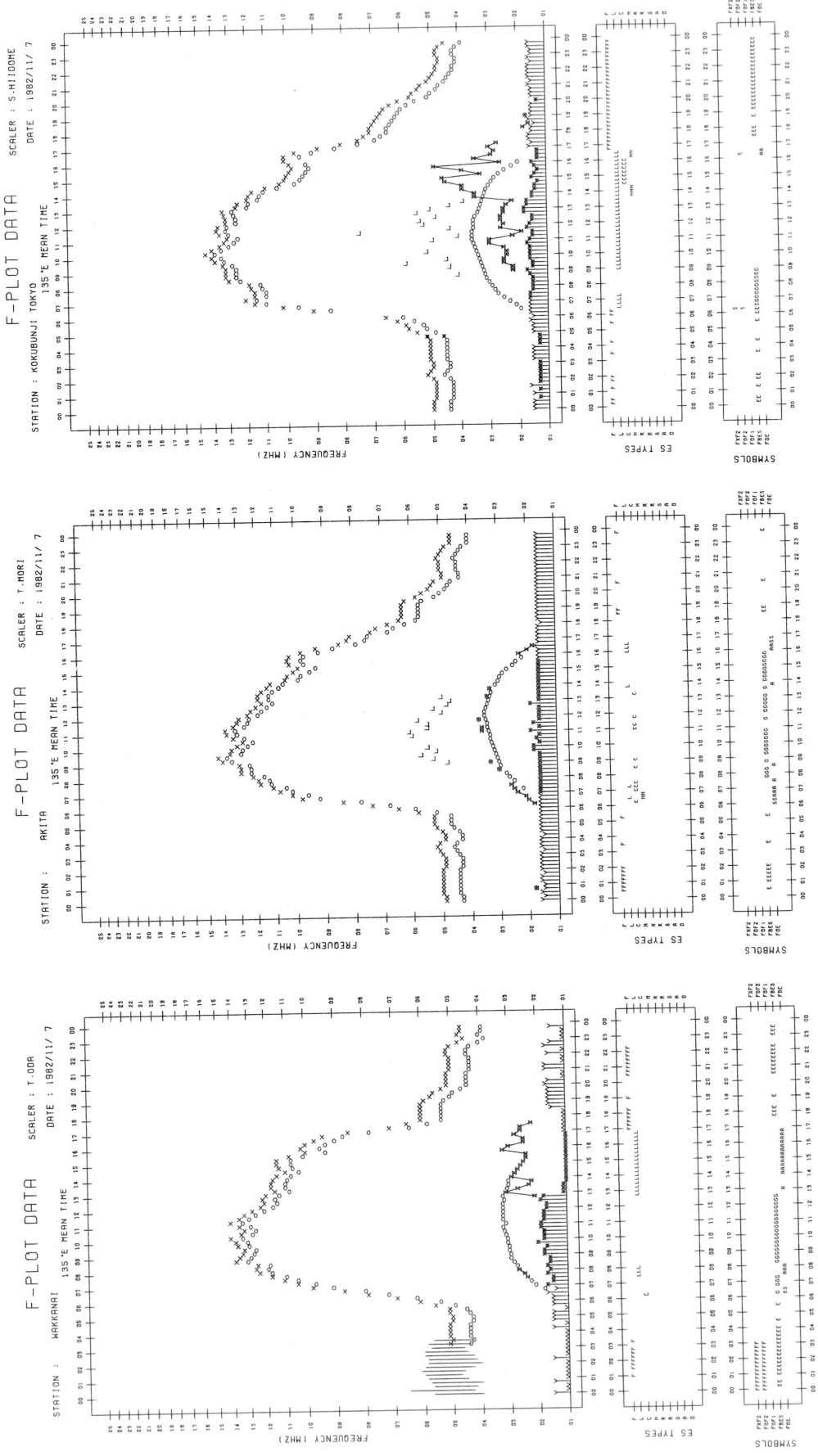
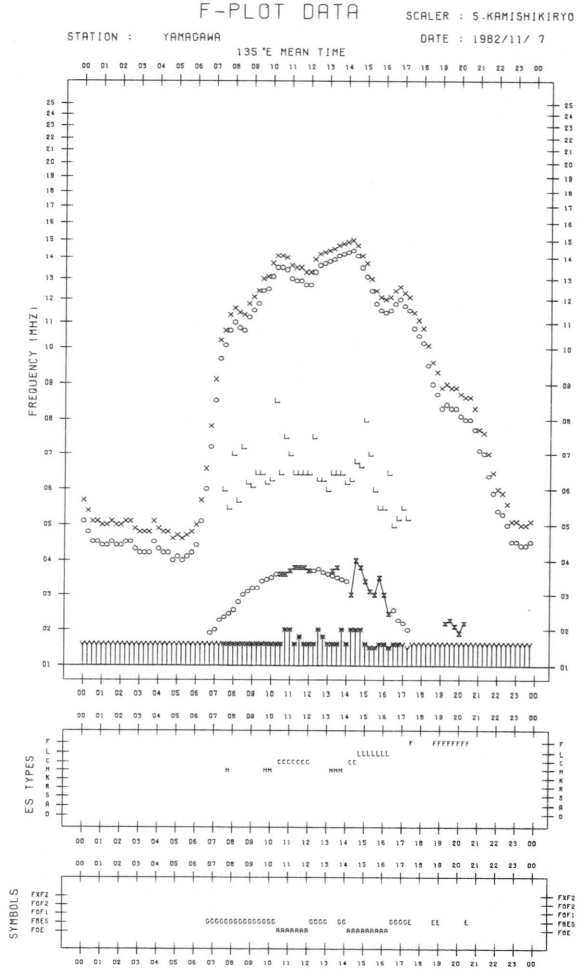
STATION : OKINAWA
DATE : 1982/11/ 6
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/ 7
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : T.MORI
DATE : 1982/11/ 7
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/ 7
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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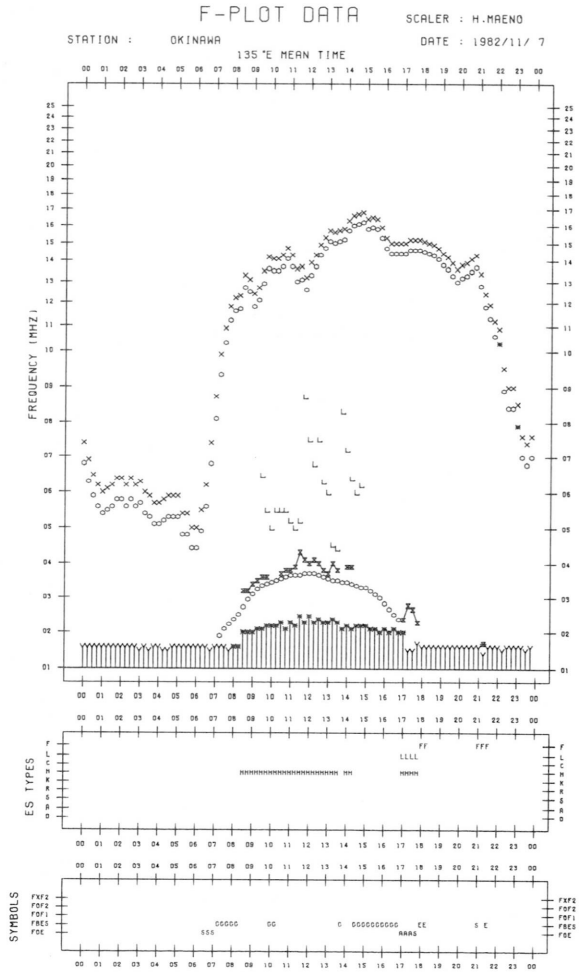
SCALER : S.KAMISHIKIRYO
STATION : YAMAGAWA
DATE : 1982/11/ 7
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOFi
FBES
FOE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STATION : OKINAWA
DATE : 1982/11/ 7
135 °E MEAN TIME
FREQUENCY (MHZ)
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SYMBOLS
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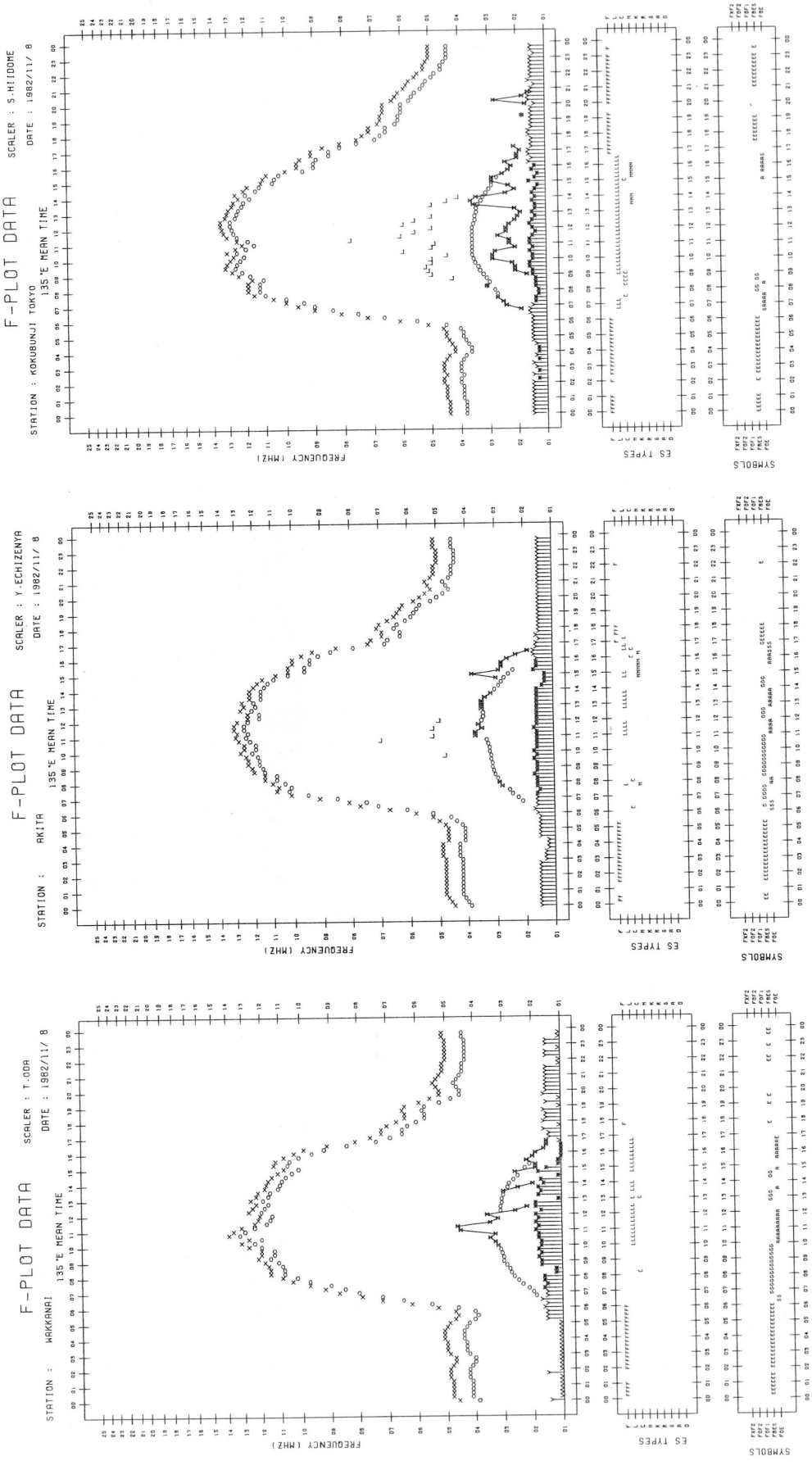
FOF2
FOFi
FBES
FOE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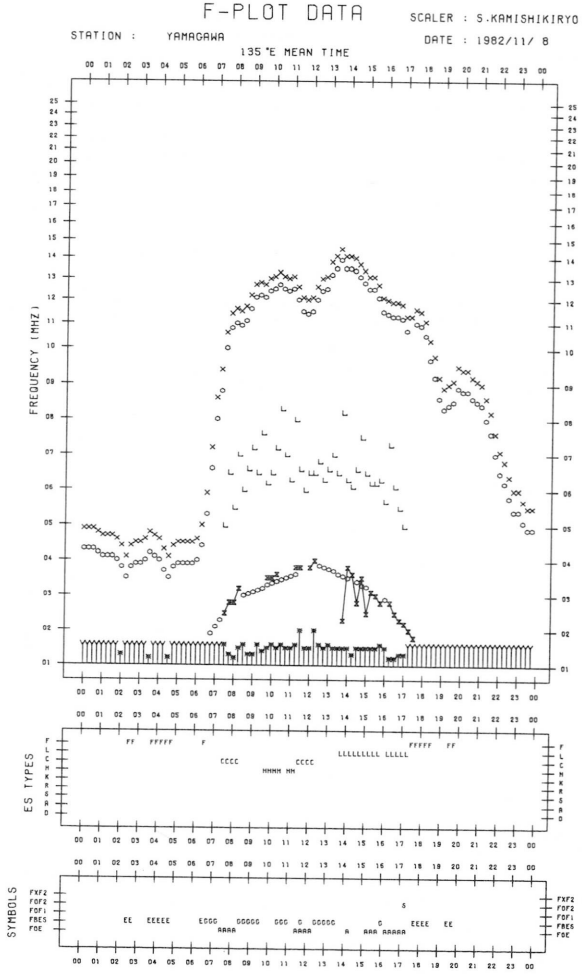
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/ 8
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/ 8
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/ 8
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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STATION : YAMAGAWA
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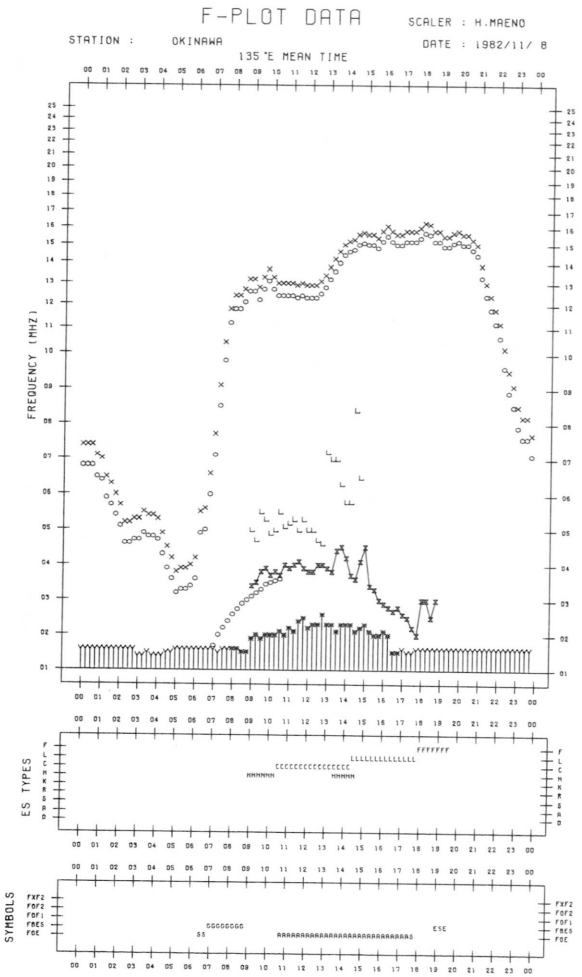
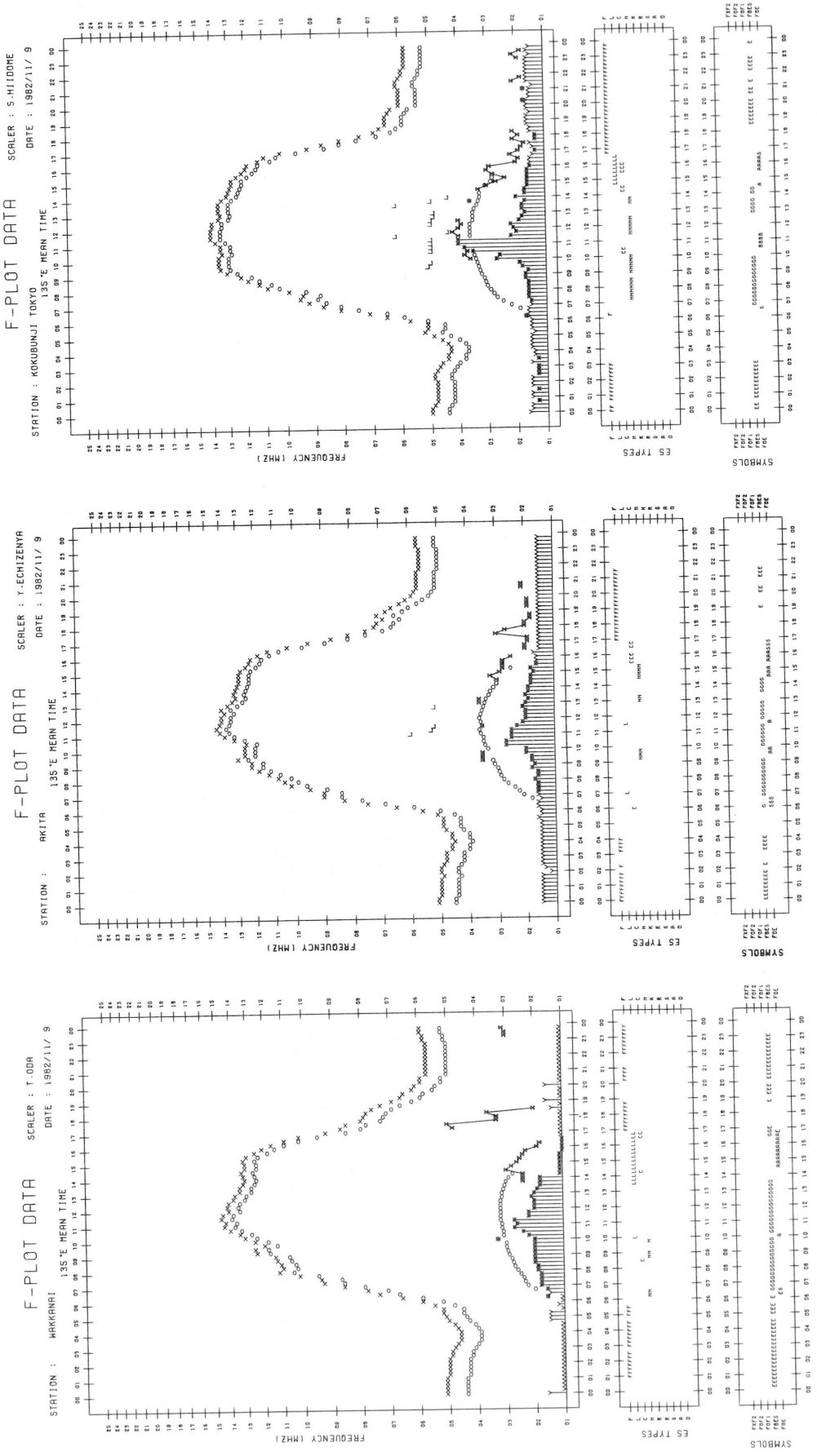
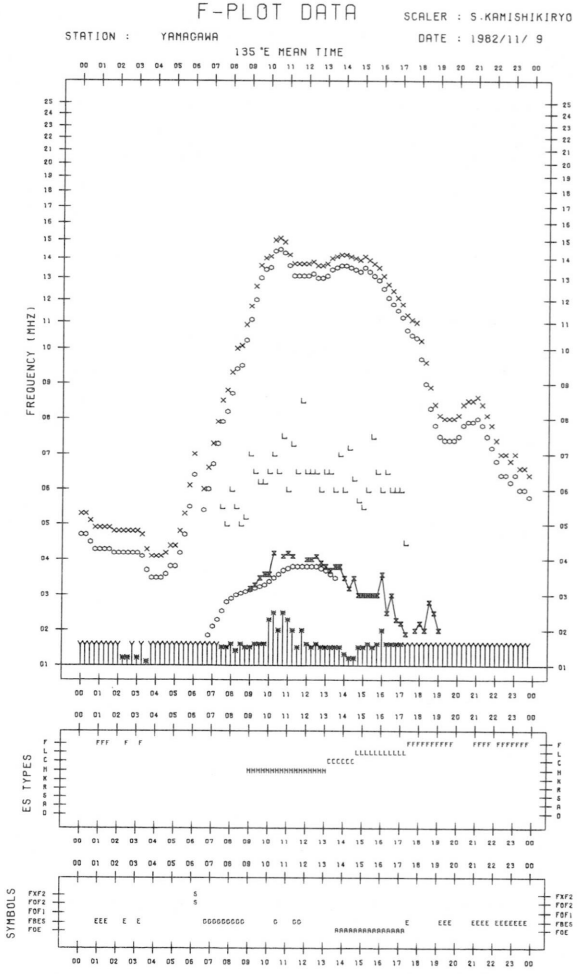
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FGF2
FGF1
FBES
FGE


F-PLOT DATA
SCALER : H.MAENO
STATION : OKINAWA
DATE : 1982/11/ 8
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FGF2
FGF1
FBES
FGE


F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIIDOME
DATE : 1982/11/ 9
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/ 9
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/ 9
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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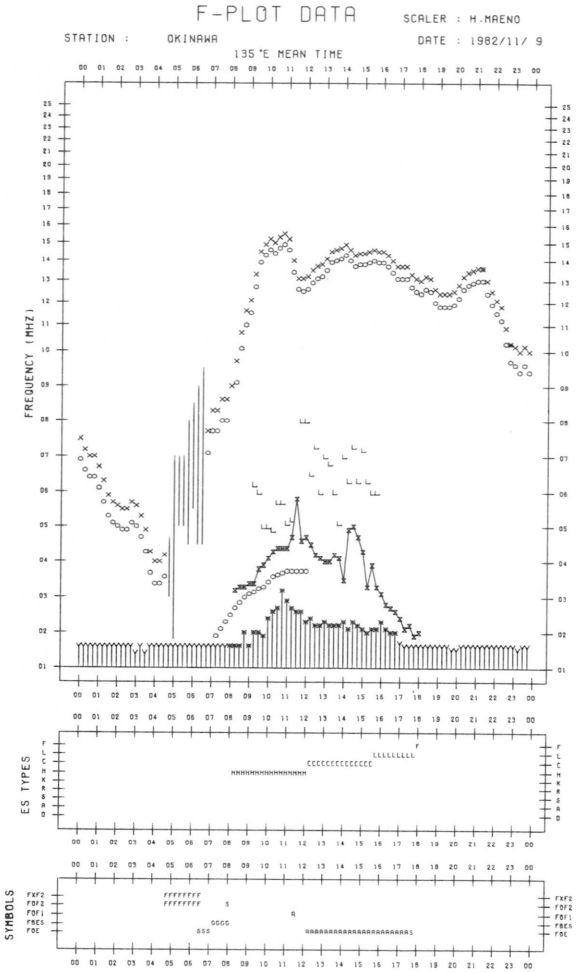
STATION : YAMAGAWA
DATE : 1982/11/ 9
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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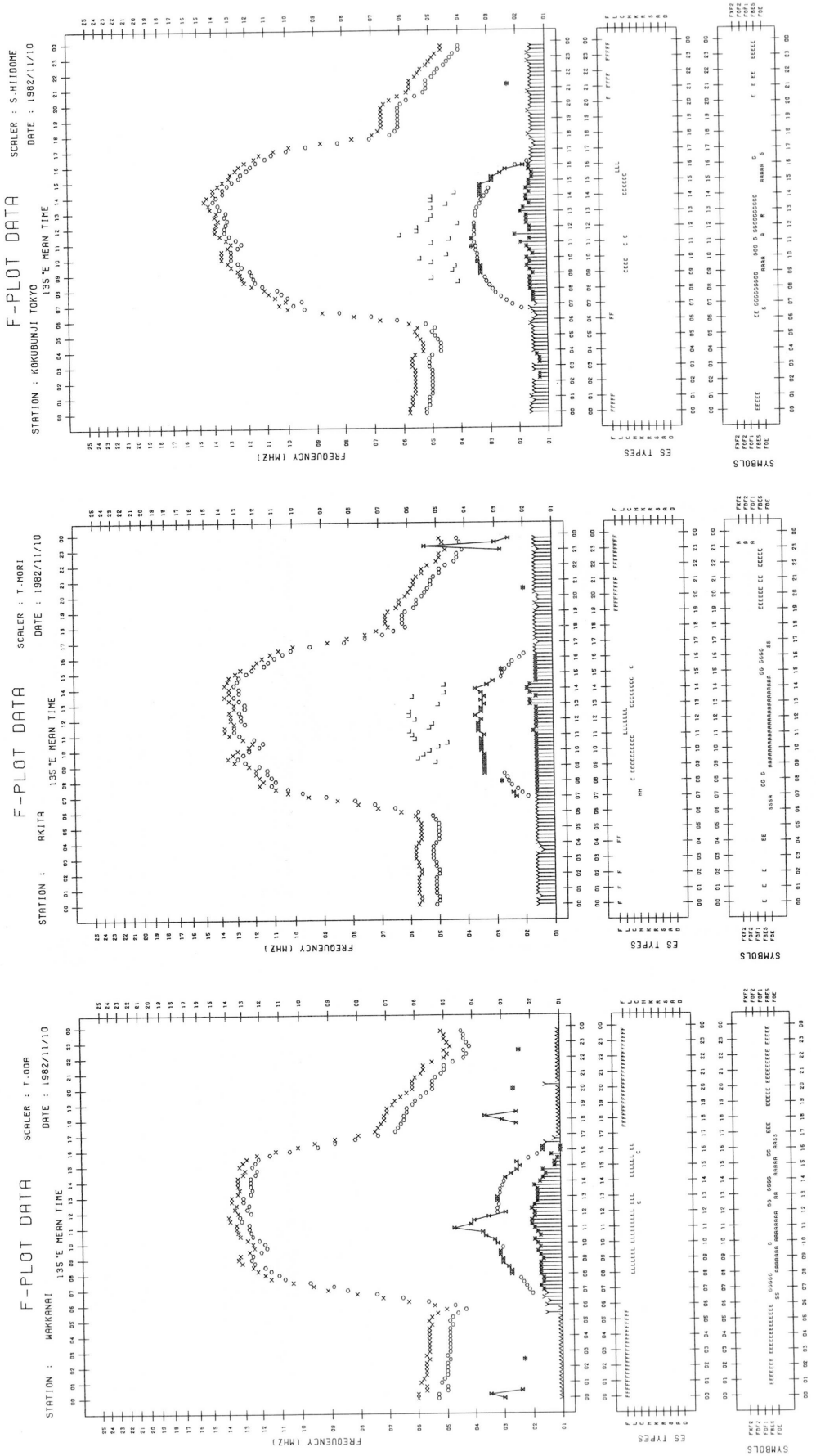
SCALER : H.MAENO
STATION : OKINAWA
DATE : 1982/11/ 9
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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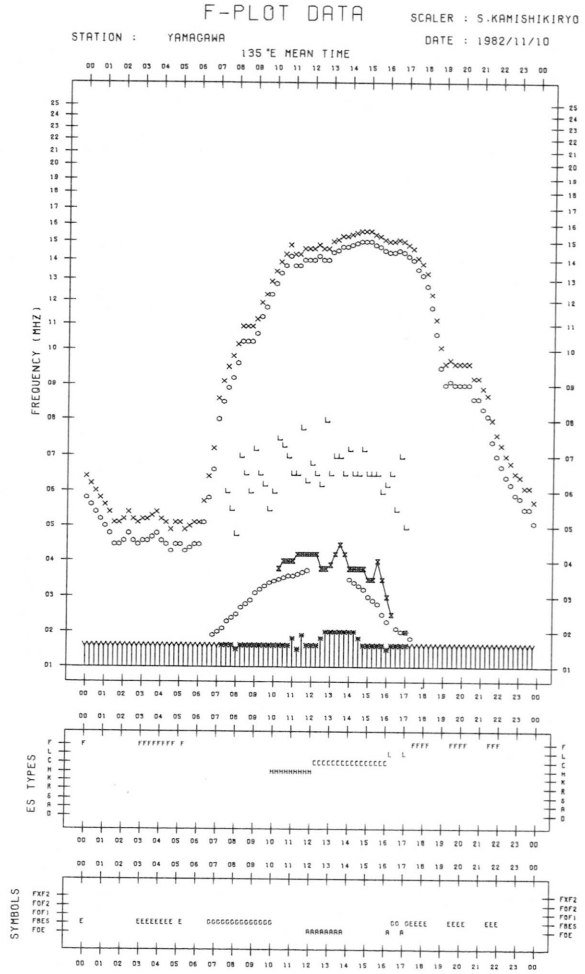
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/10
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : T.MORI
DATE : 1982/11/10
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/10
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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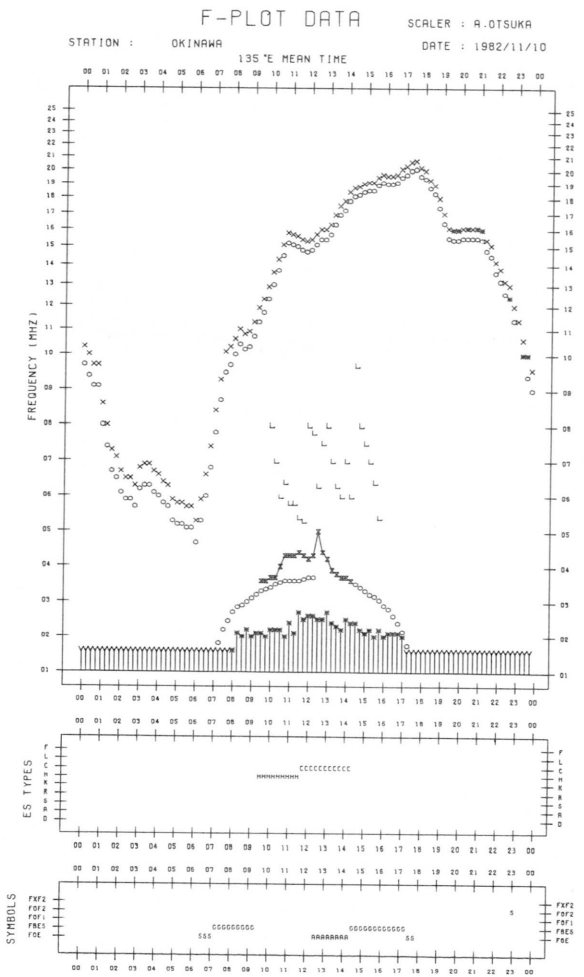
STATION : YAMAGAWA
DATE : 1982/11/10
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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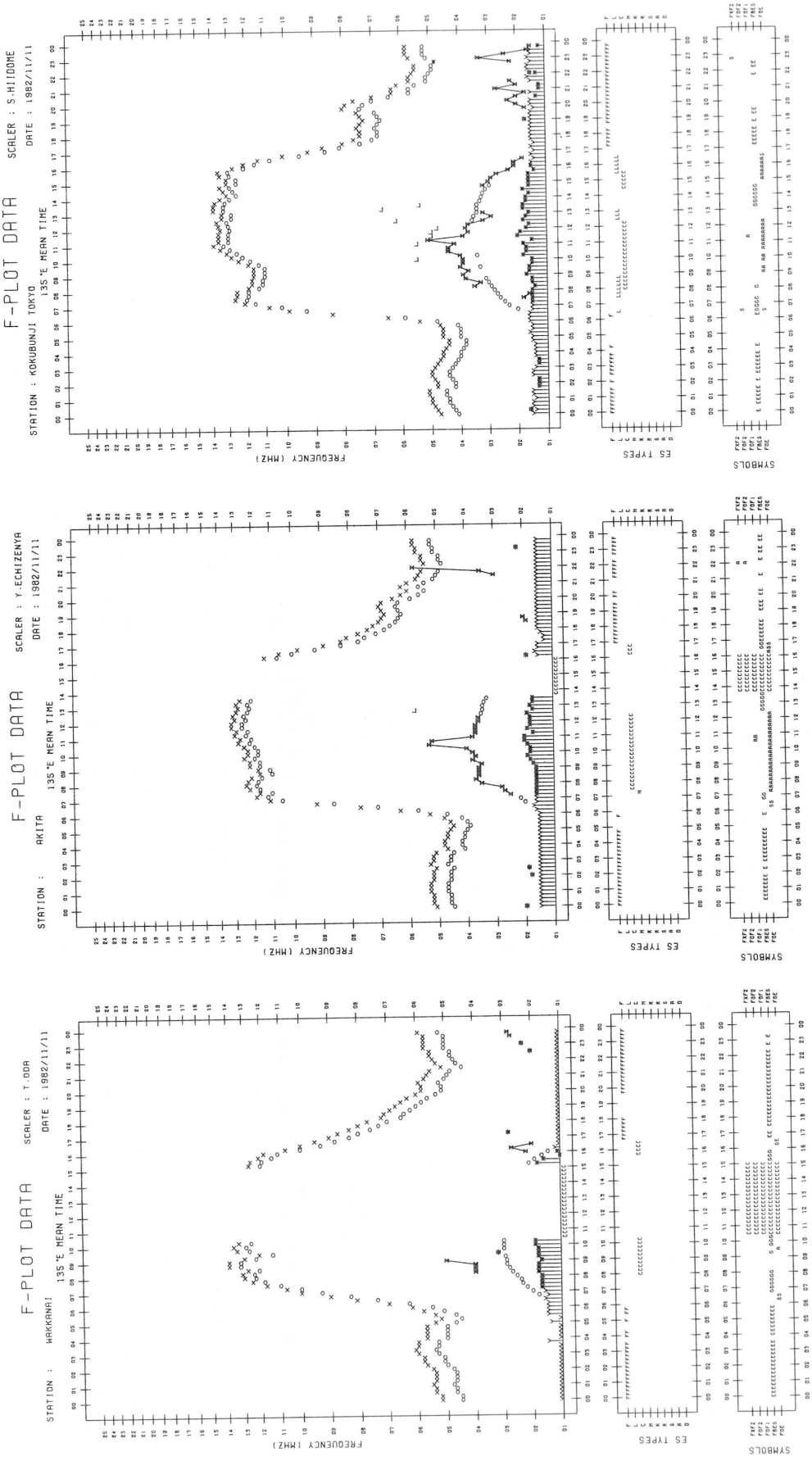
STATION : OKINAWA
DATE : 1982/11/10
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/11
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/11
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
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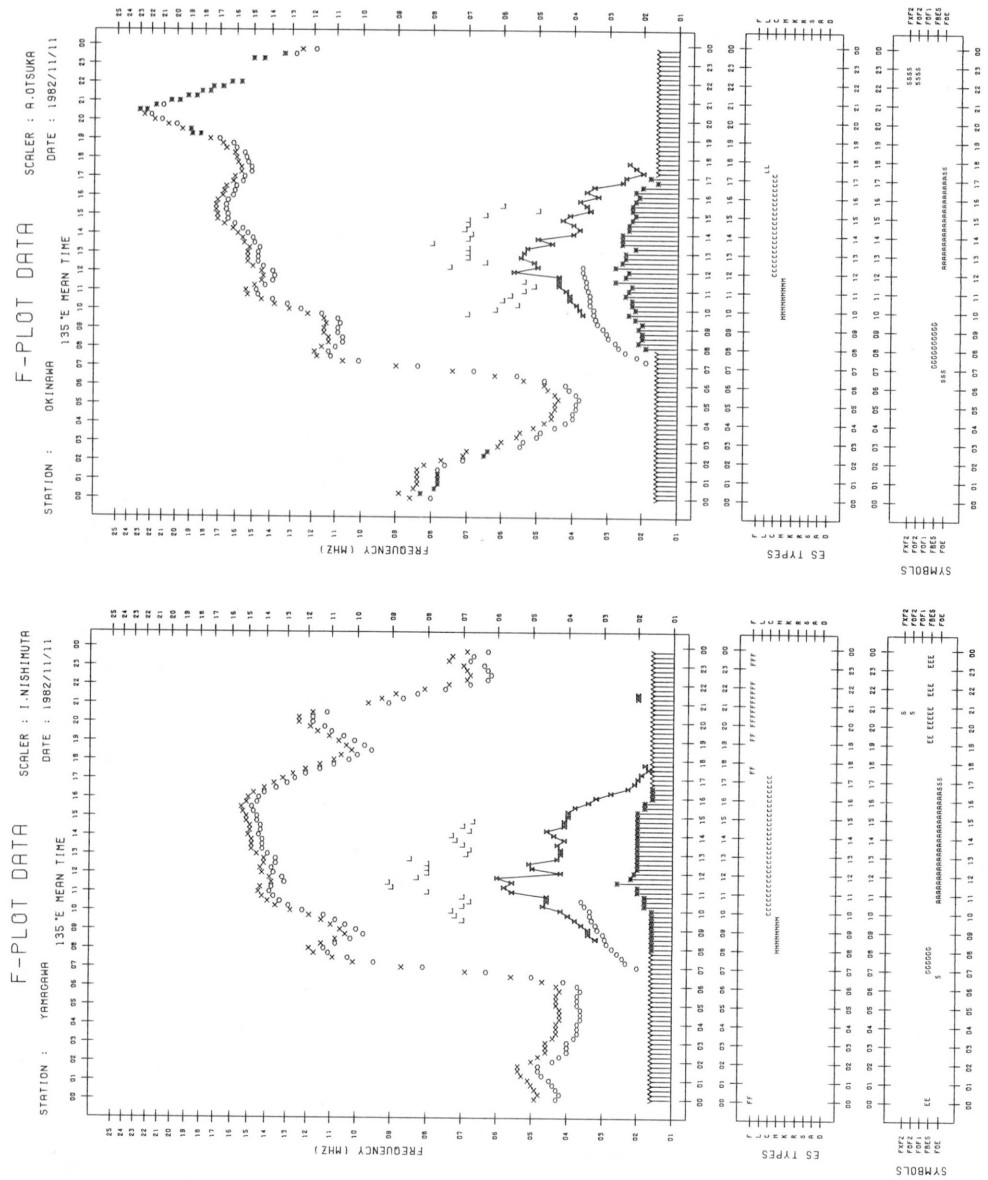
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/11
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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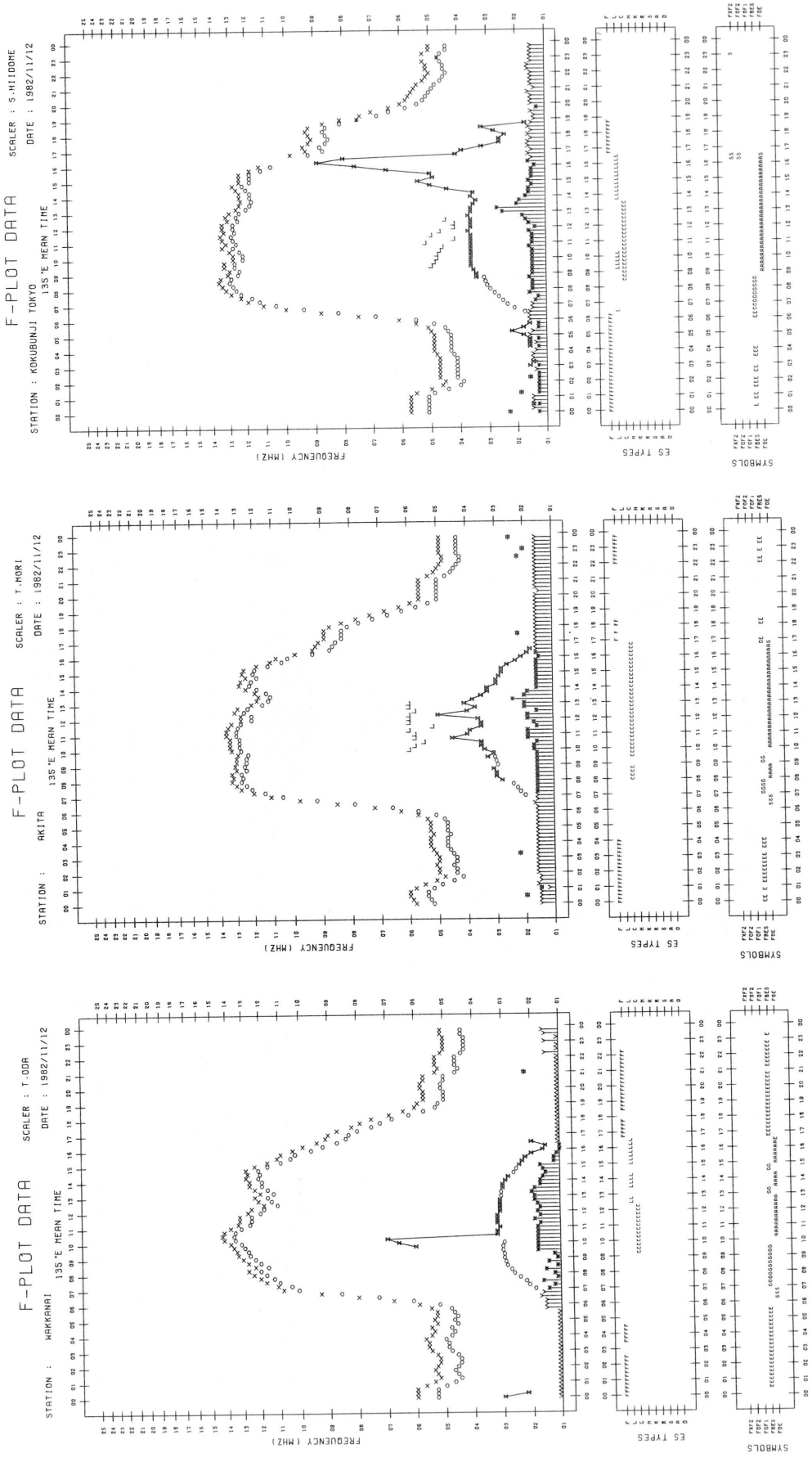
135°E MEAN TIME
SCALER : A.OTSUKA
DATE : 1982/11/11
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : I.NISHIMUTA
DATE : 1982/11/11
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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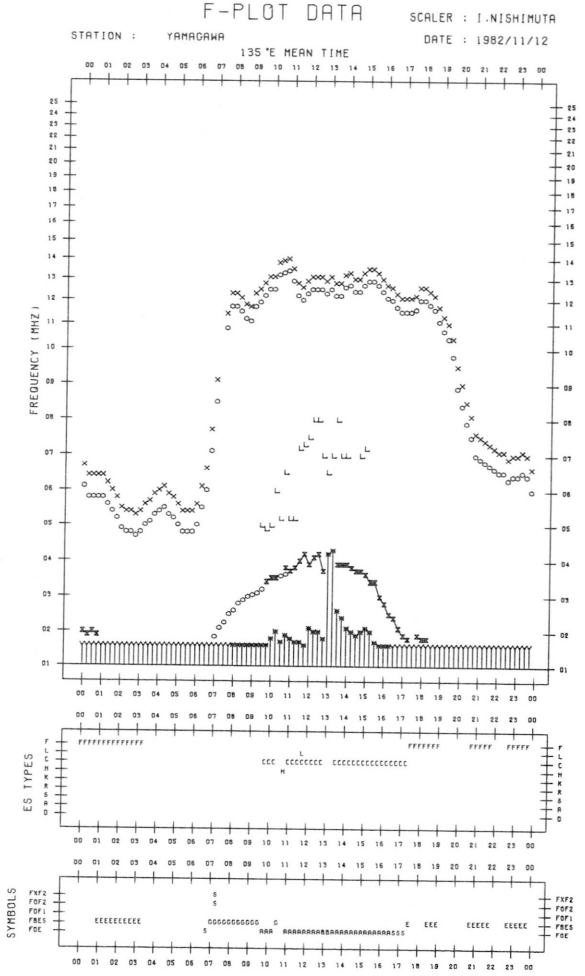
DATE : 1982/11/12
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
F-PLOT DATA
SCALER : T.MORI
DATE : 1982/11/12
STATION : AKITA
135°E MEAN TIME
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/12
STATION : WAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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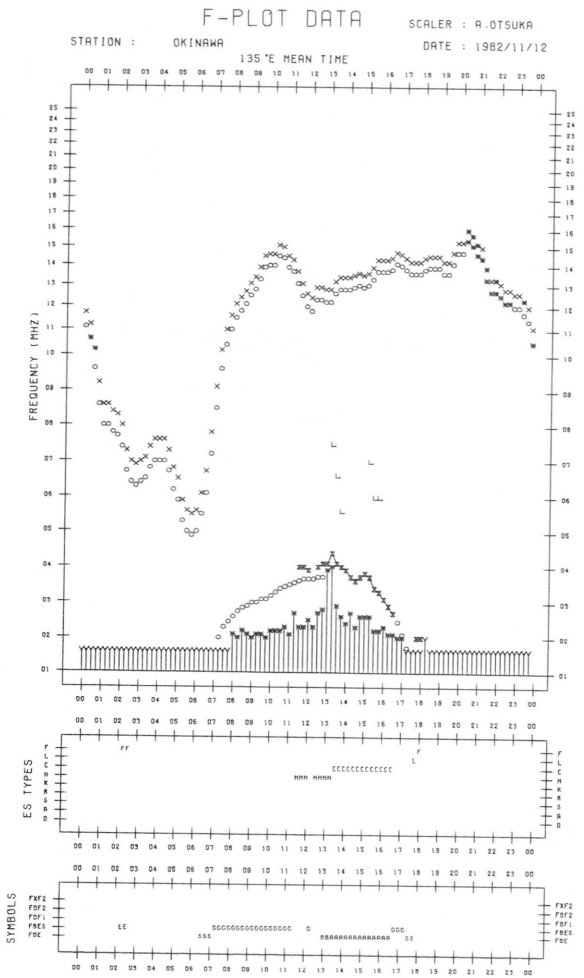
STATION : YAMAGAWA
DATE : 1982/11/12
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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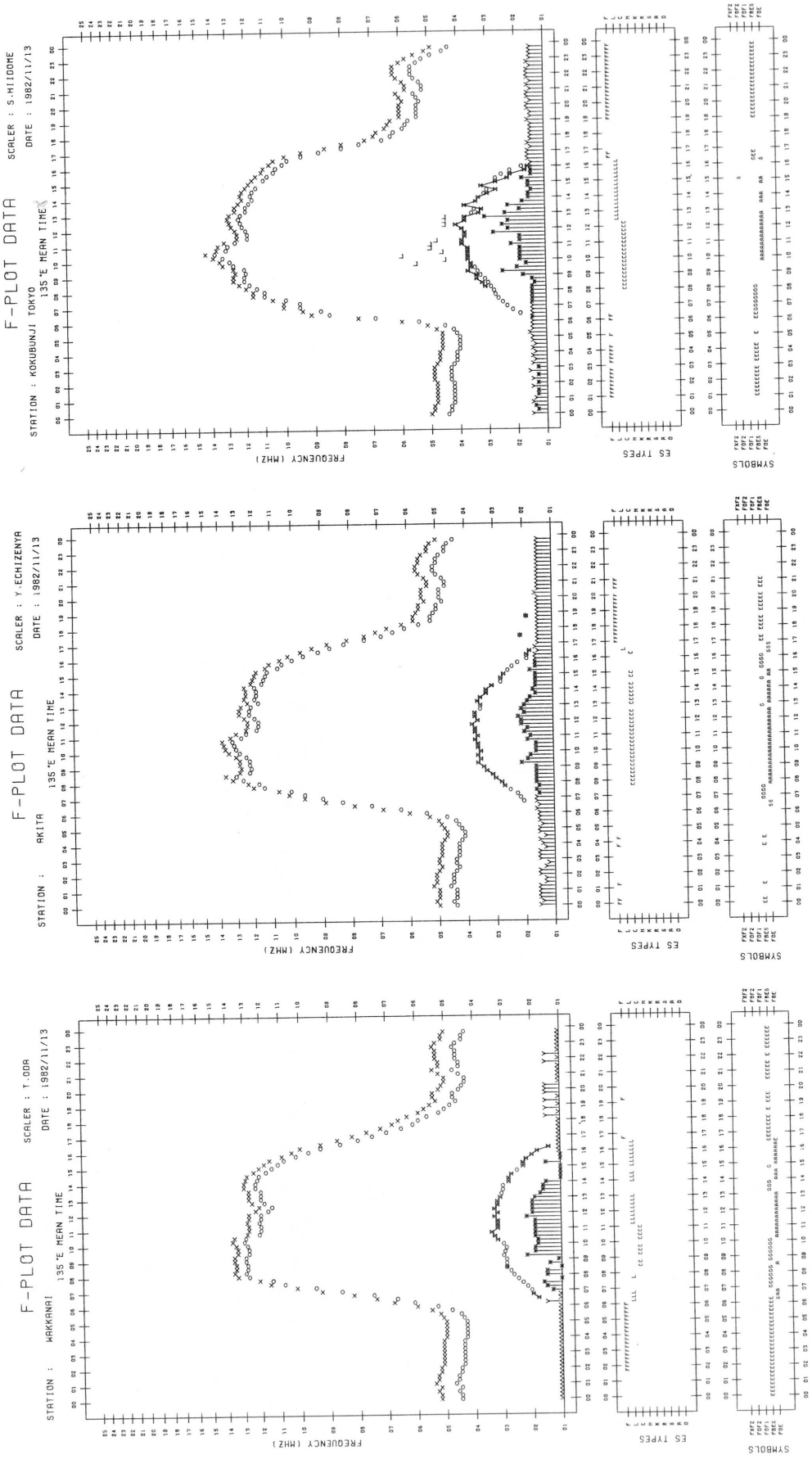
STATION : OKINAWA
DATE : 1982/11/12
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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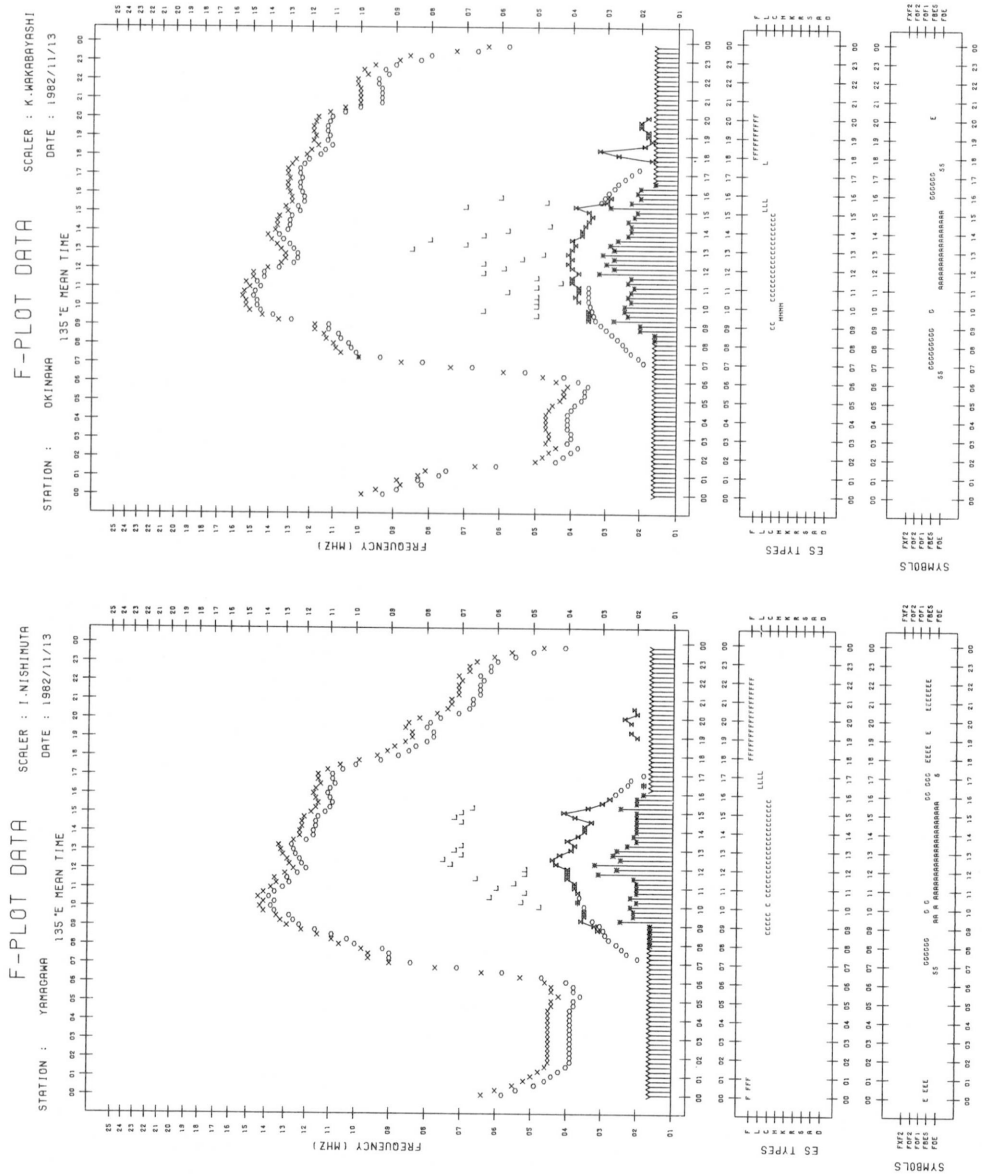
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/13
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/13
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/13
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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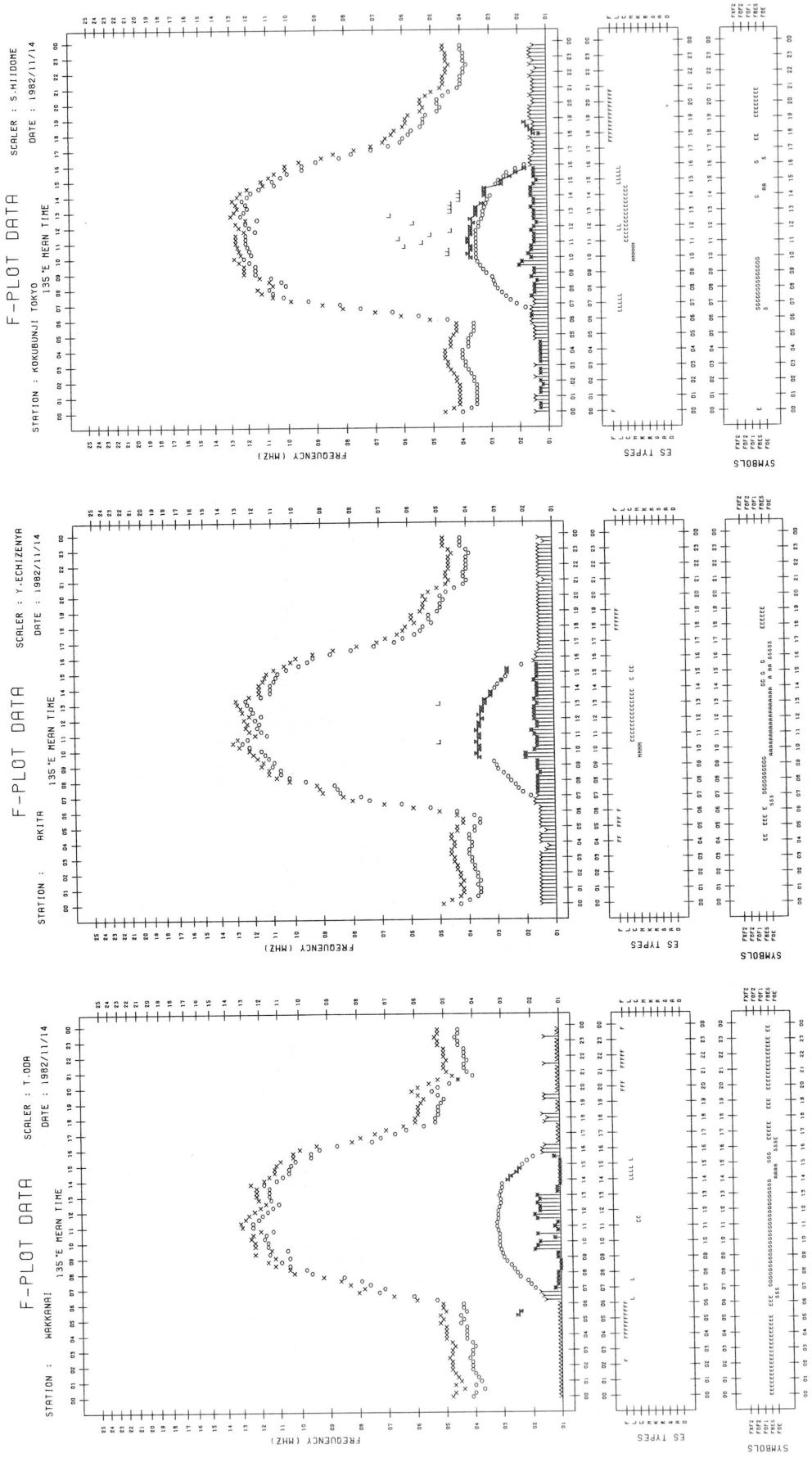
STATION : OKINAWA
135°E MEAN TIME
SCALER : K.WAKABAYASHI
DATE : 1982/11/13
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : I.NISHIMUTA
DATE : 1982/11/13
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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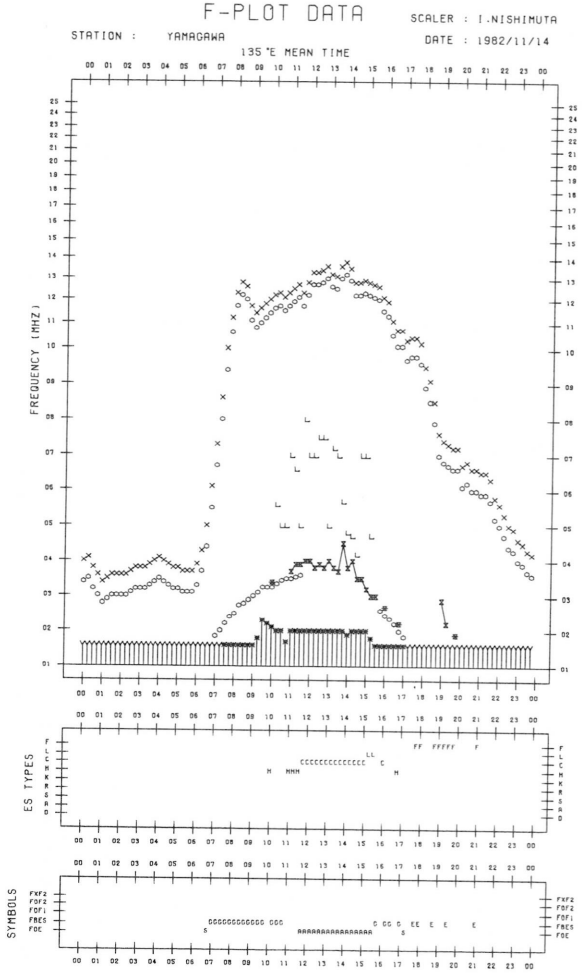
135°E MEAN TIME
SCALER : S.MIIDOME
DATE : 1982/11/14
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/14
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/14
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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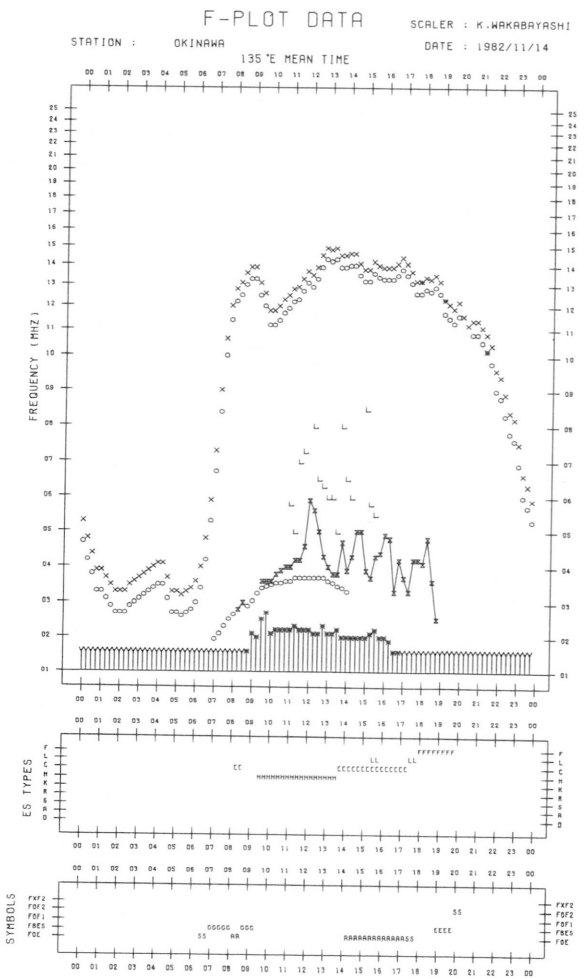
STATION : YAMAGAWA
DATE : 1982/11/14
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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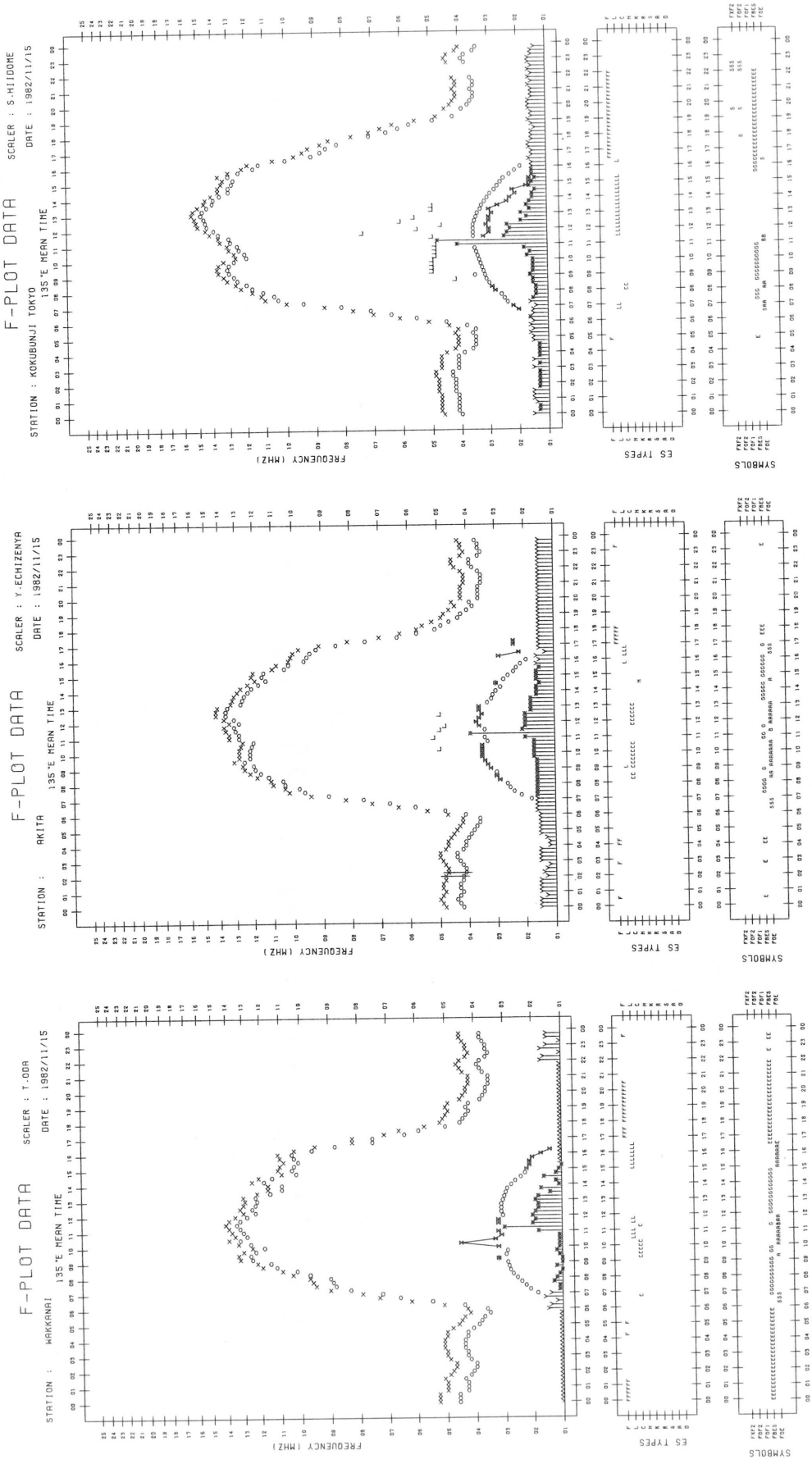
STATION : OKINAWA
DATE : 1982/11/14
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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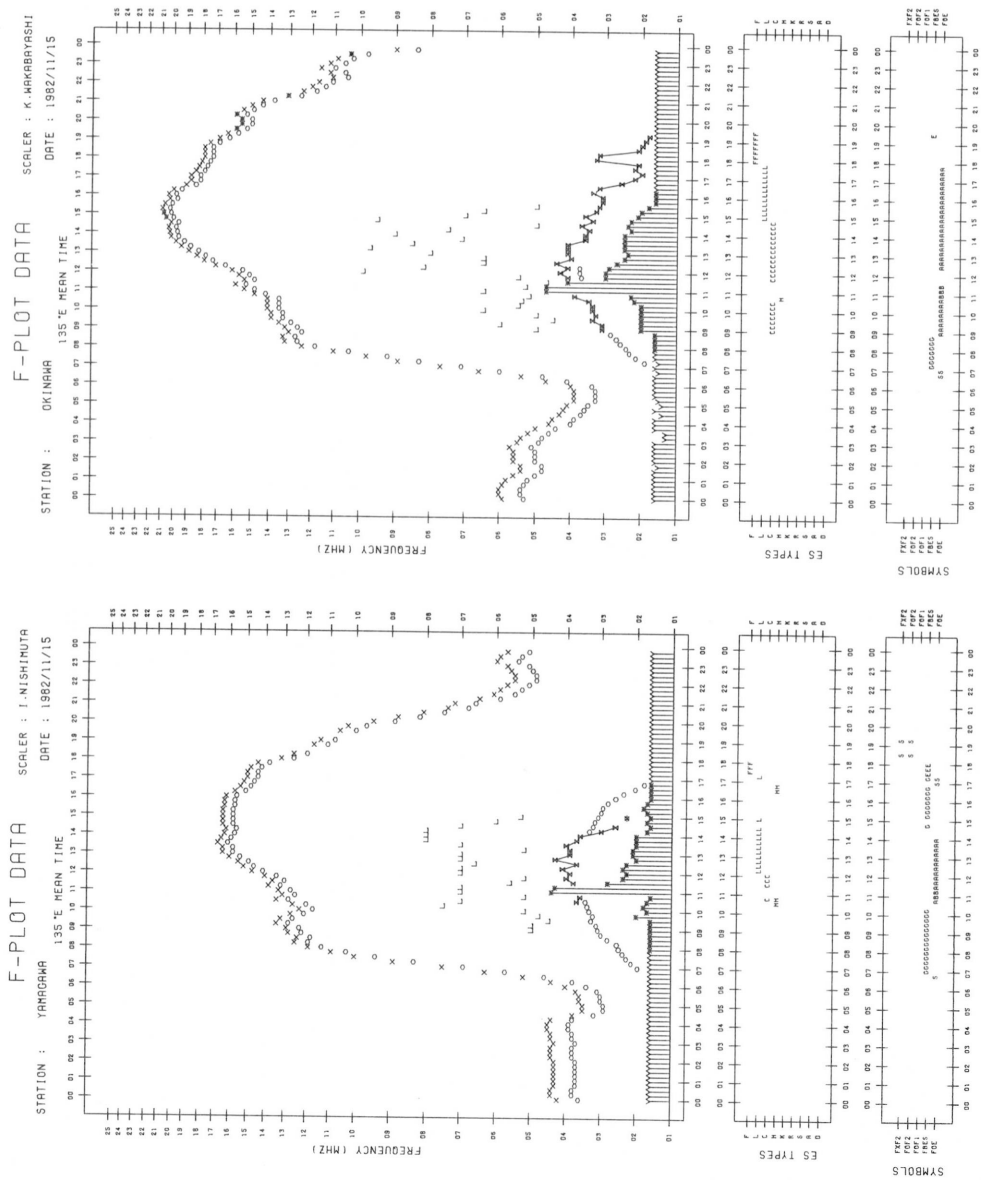
DATE : 1982/11/15
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
F-PLOT DATA
SCALER : Y.ECHIZENYA
DATE : 1982/11/15
STATION : AKITA
135°E MEAN TIME
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/15
STATION : HAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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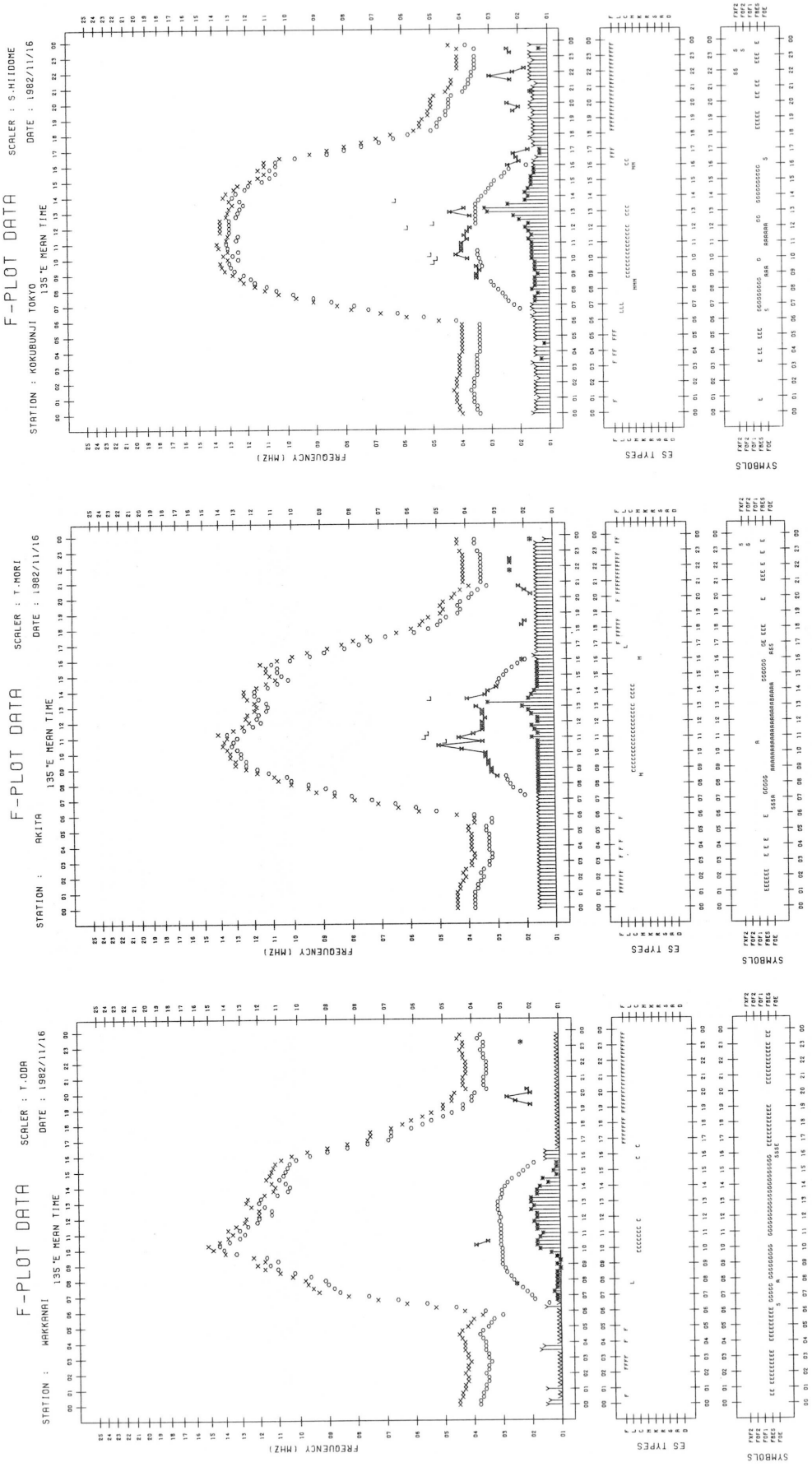
135°E MEAN TIME
SCALER : K.WAKABAYASHI
DATE : 1982/11/15
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : I.NISHIMUTA
DATE : 1982/11/15
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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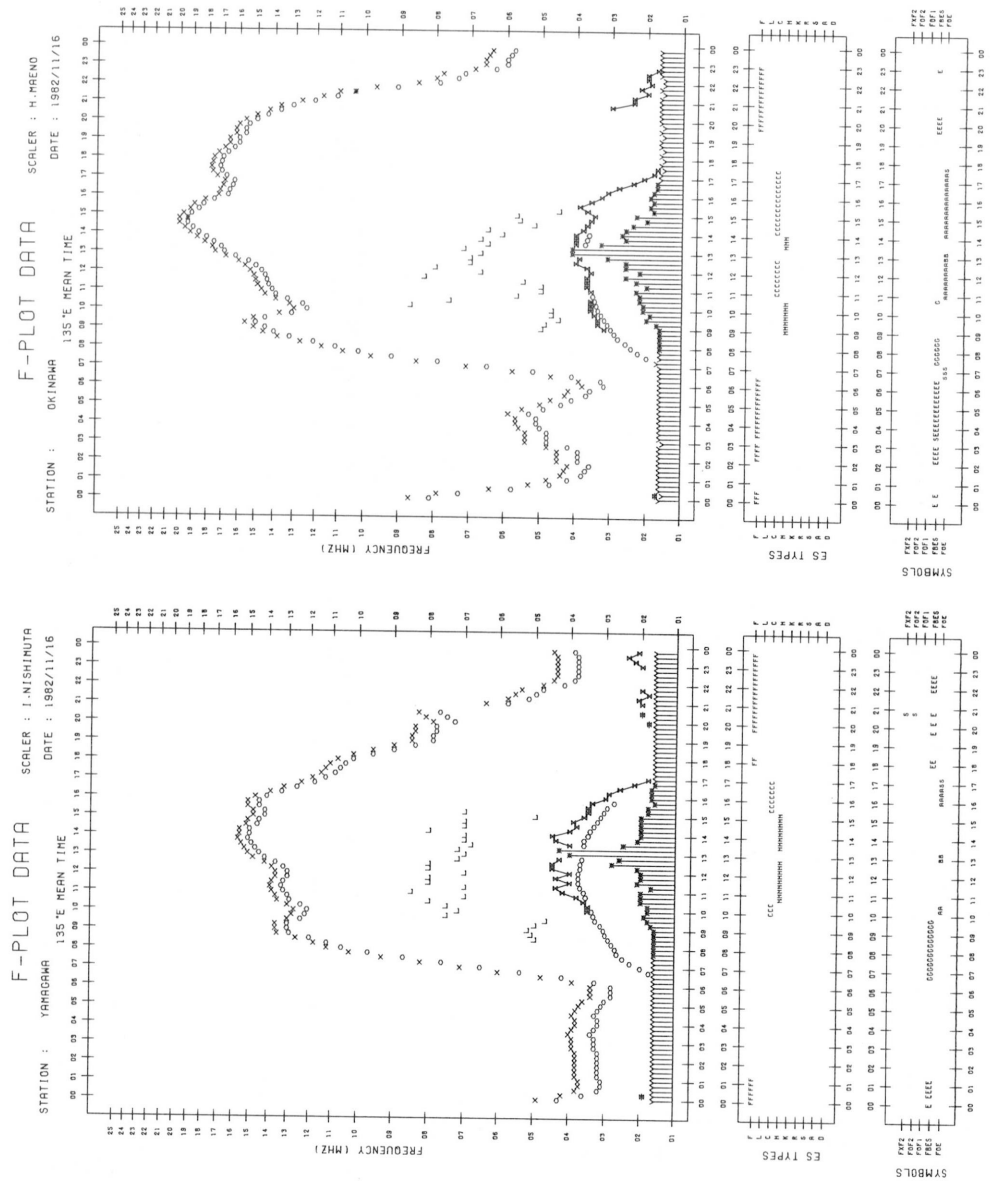
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/16
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : T.MORI
DATE : 1982/11/16
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/16
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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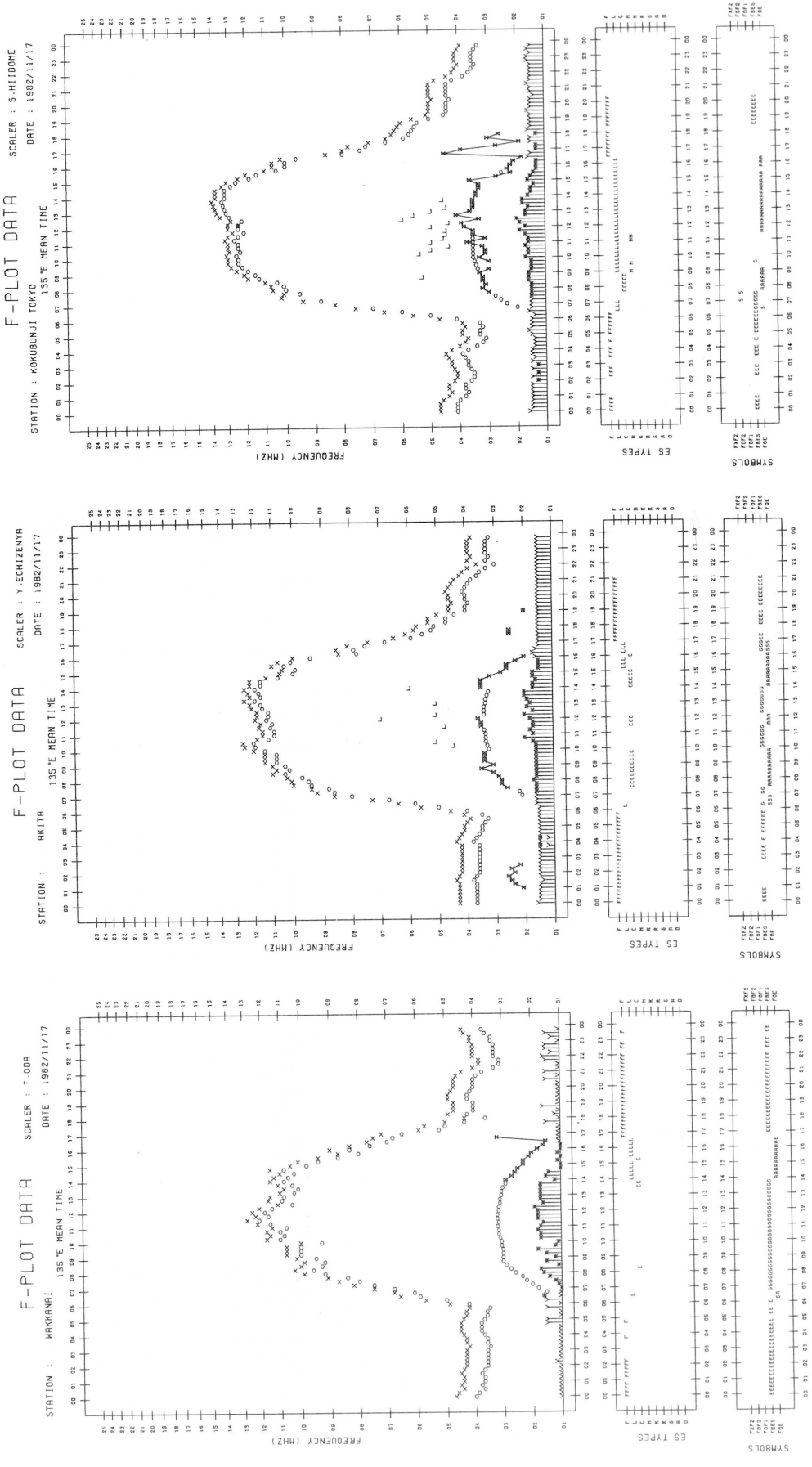
135°E MEAN TIME
SCALER : M.MAENO
DATE : 1982/11/16
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : I.NISHIMUTA
DATE : 1982/11/16
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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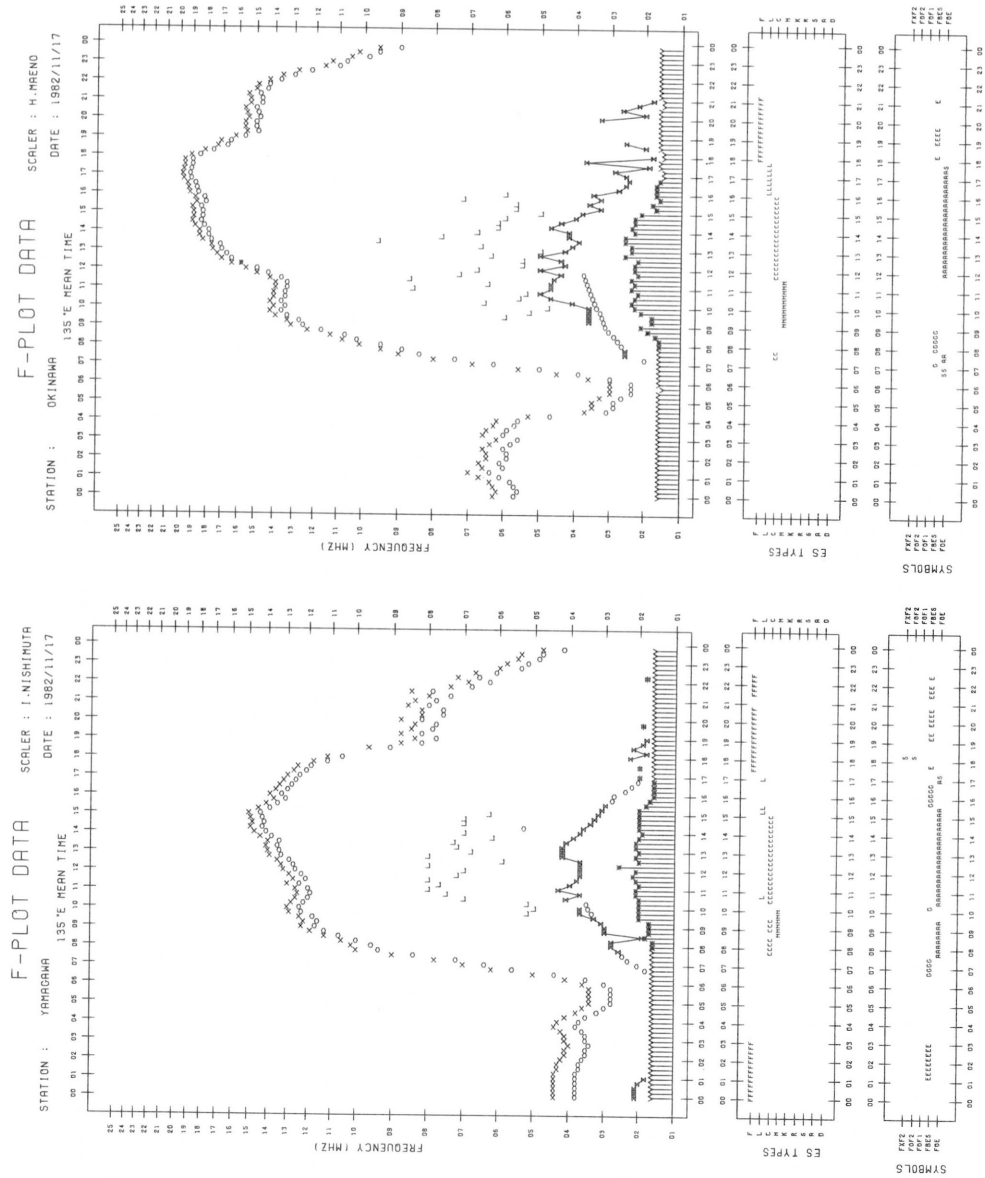
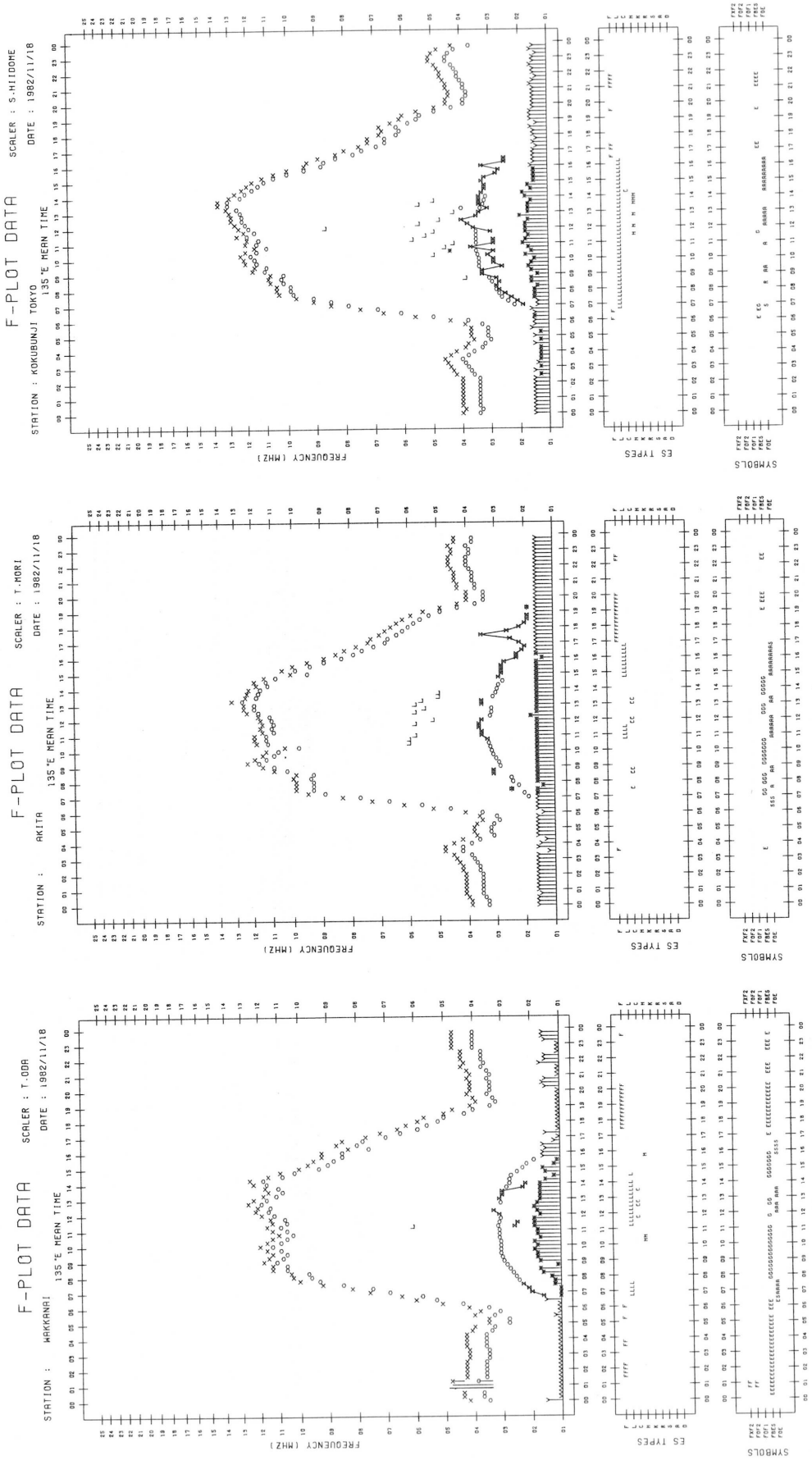
DATE : 1982/11/17
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
F-PLOT DATA
SCALER : Y.ECHIZENYA
DATE : 1982/11/17
STATION : AKITA
135°E MEAN TIME
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/17
STATION : WAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : OKINAWA
135°E MEAN TIME
SCALER : H.MAENO
DATE : 1982/11/17
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : I.NISHIMUTA
DATE : 1982/11/17
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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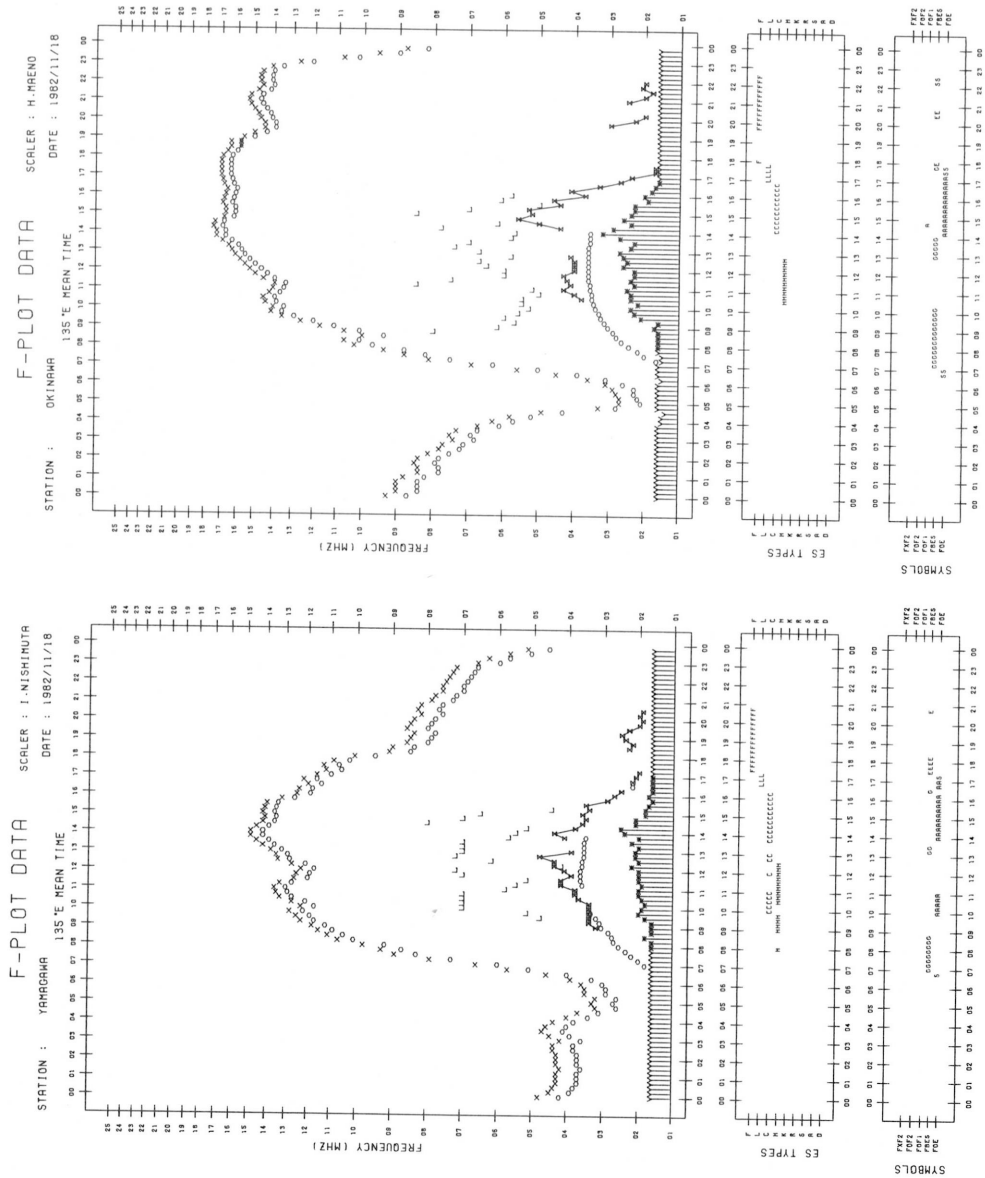
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/18
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : T.MORI
DATE : 1982/11/18
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/18
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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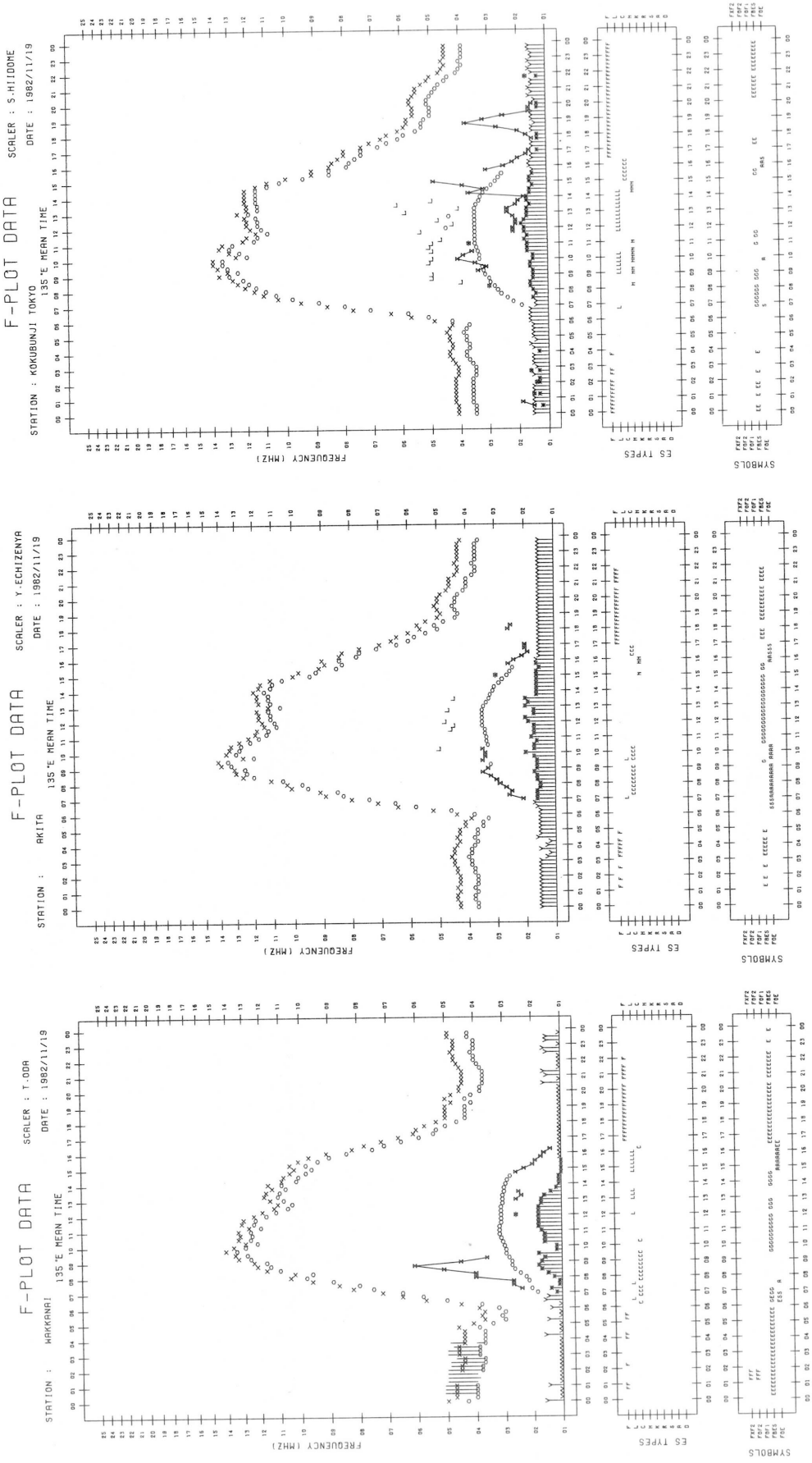
135°E MEAN TIME
SCALER : H.MAENO
DATE : 1982/11/18
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : I.NISHIMUTA
DATE : 1982/11/18
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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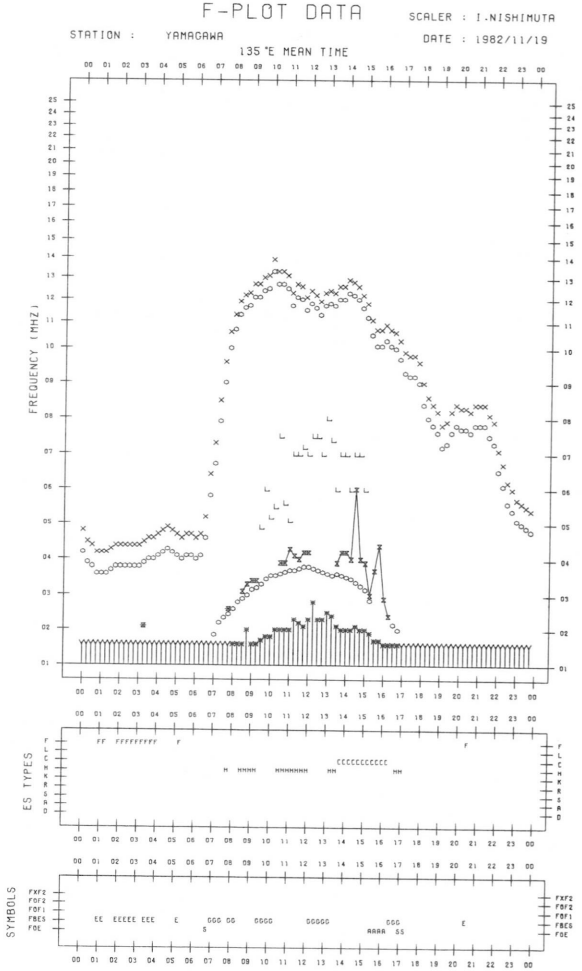
DATE : 1982/11/19
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
F-PLOT DATA
SCALER : Y.ECHIZENYA
DATE : 1982/11/19
STATION : AKITA
135°E MEAN TIME
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/19
STATION : HAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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SCALER : I.NISHIMUTA
STATION : YAMAGAWA
DATE : 1982/11/19
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
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FBES
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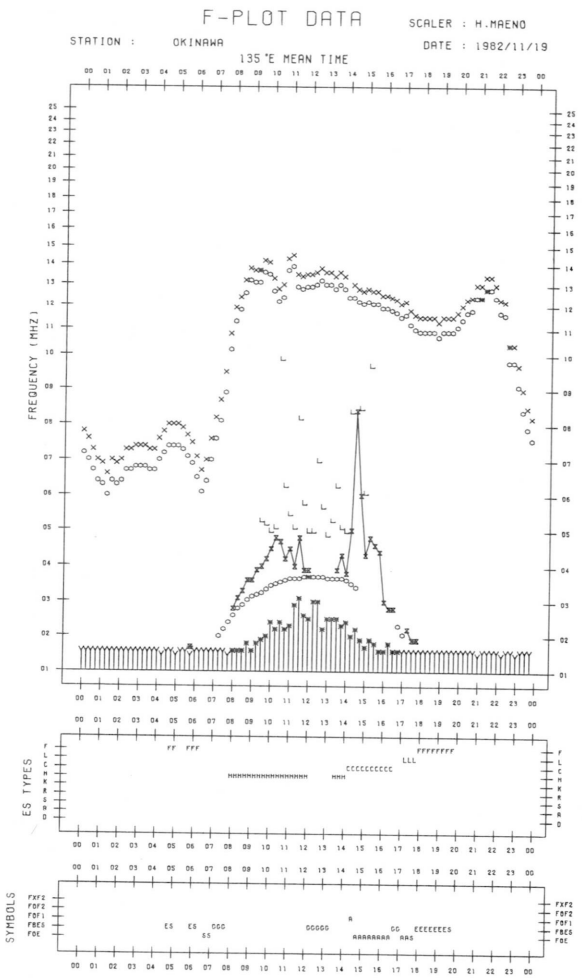
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SCALER : H.MAENO
STATION : OKINAWA
DATE : 1982/11/19
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
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FBF2
FBF1
FBES
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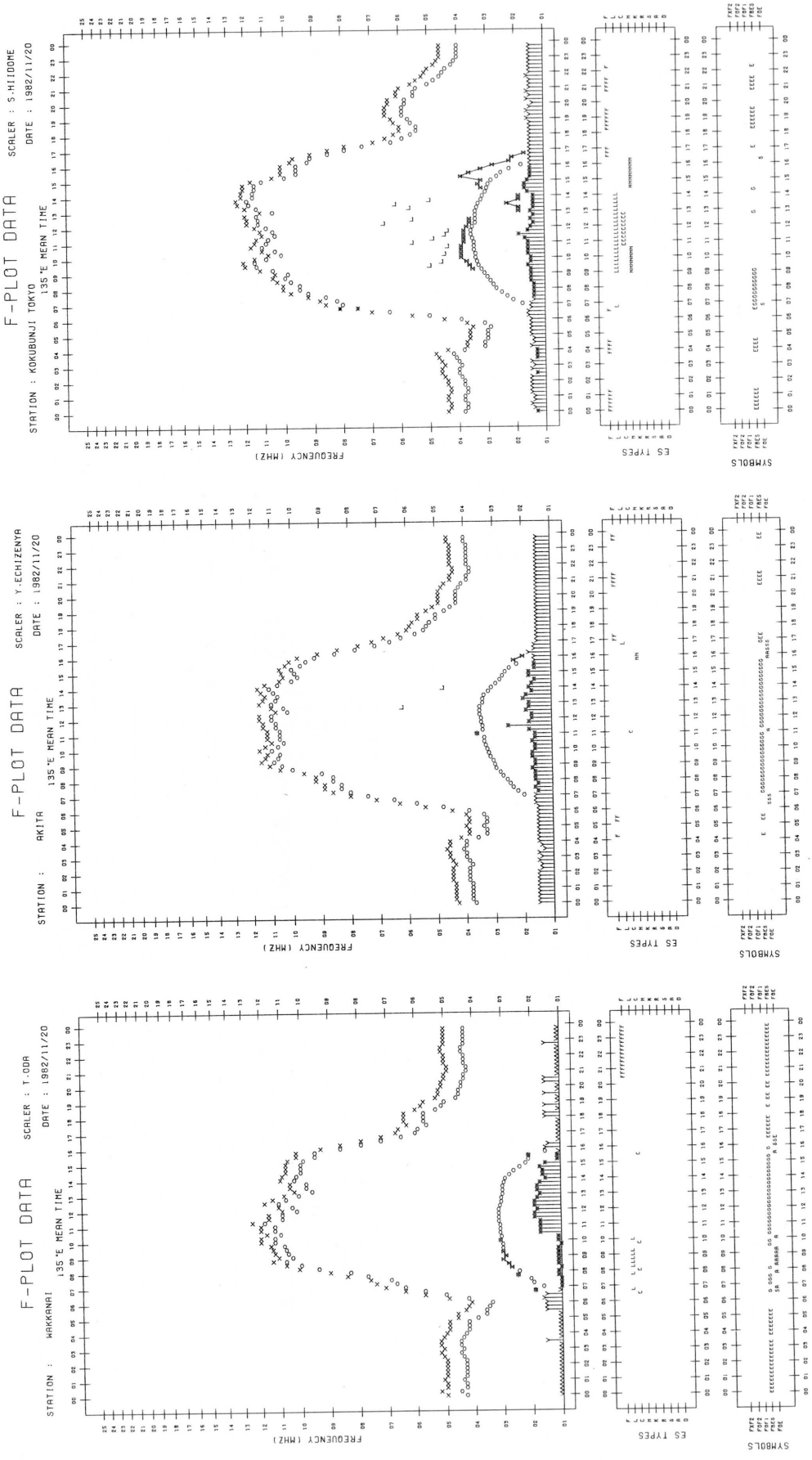
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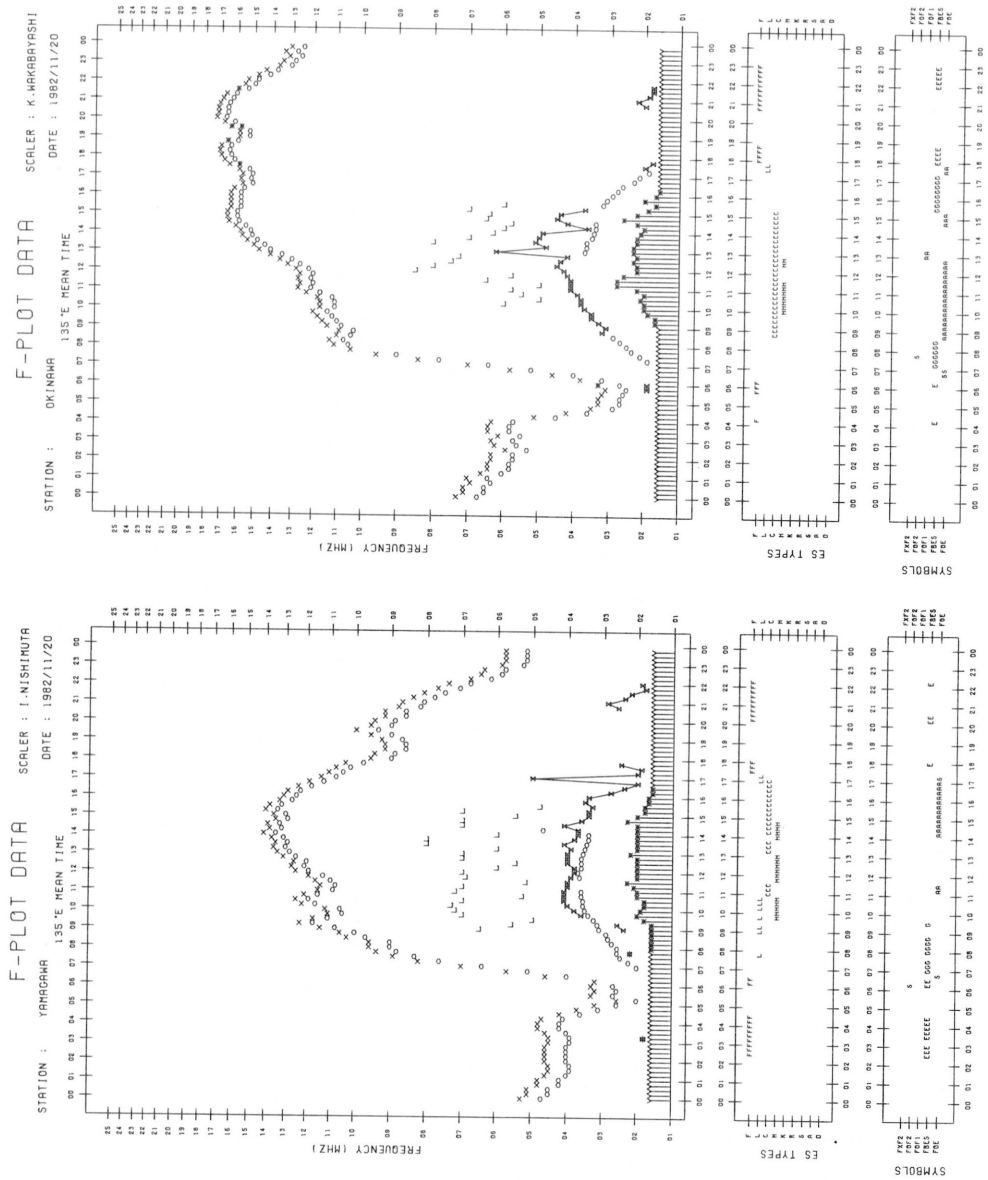
DATE : 1982/11/20
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
SCALER : Y.ECHIZENYA
DATE : 1982/11/20
STATION : AKITA
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/20
STATION : WAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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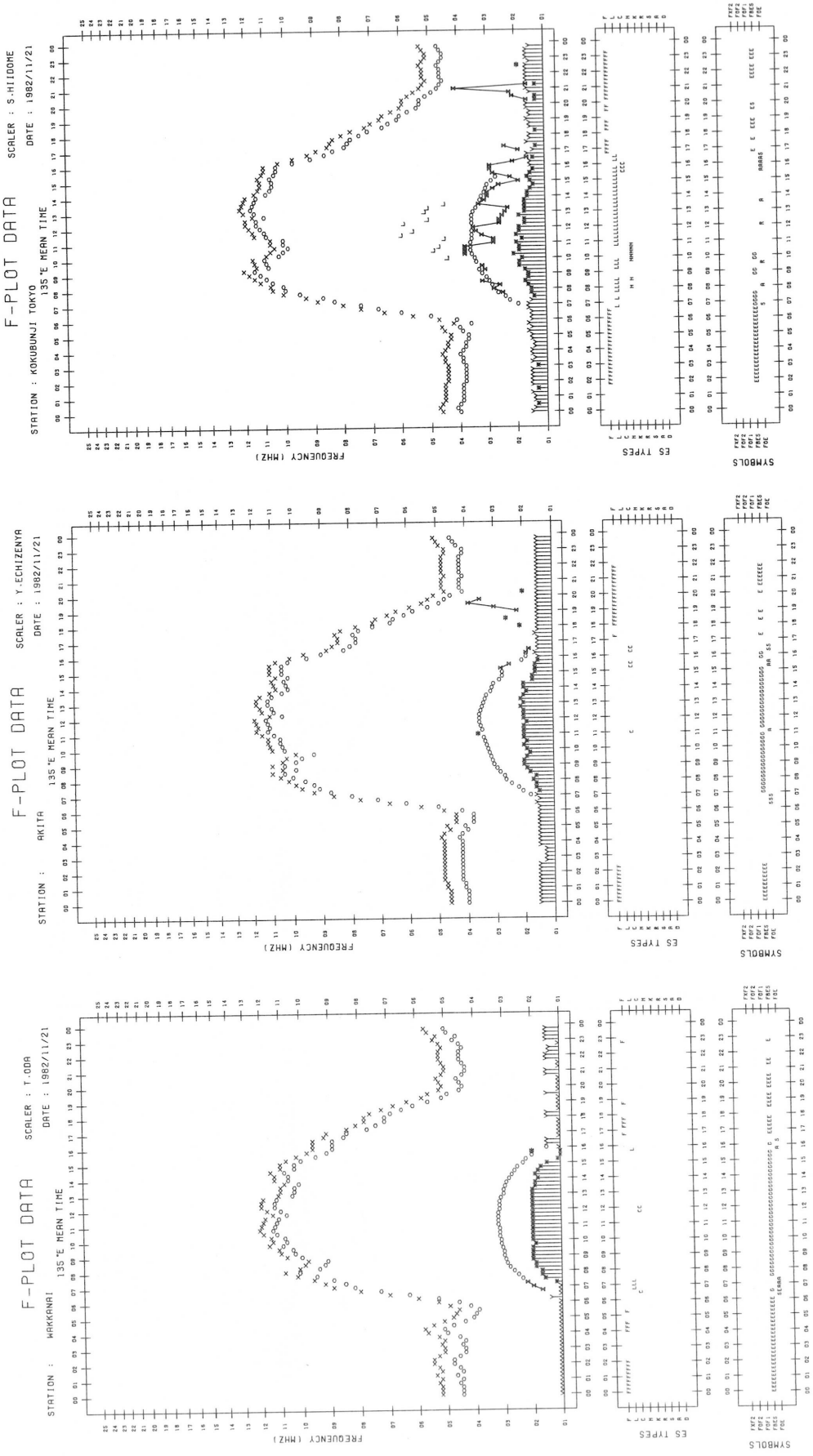
STATION : OKINAWA
135°E MEAN TIME
SCALER : K.WAKABAYASHI
DATE : 1982/11/20
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : I.NISHIMUTA
DATE : 1982/11/20
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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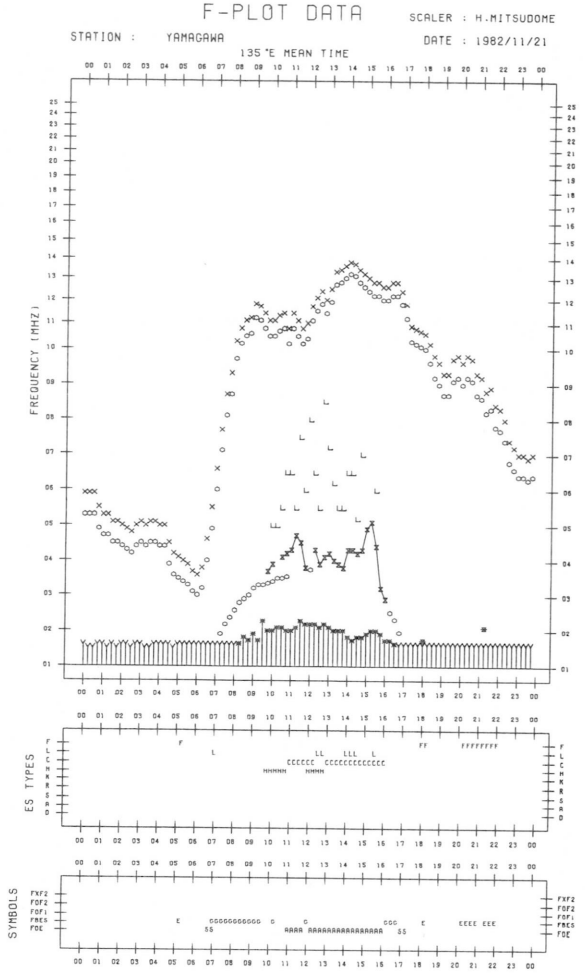
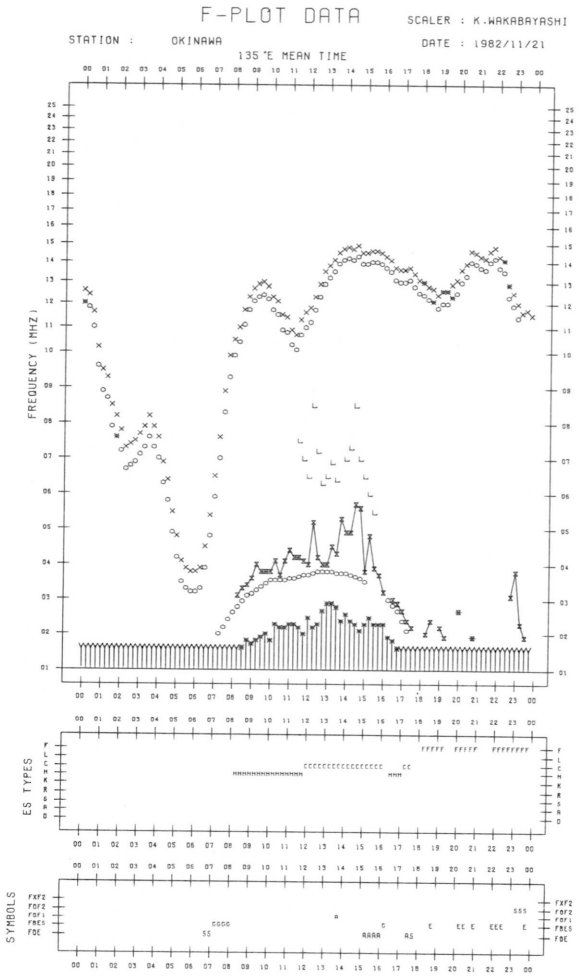
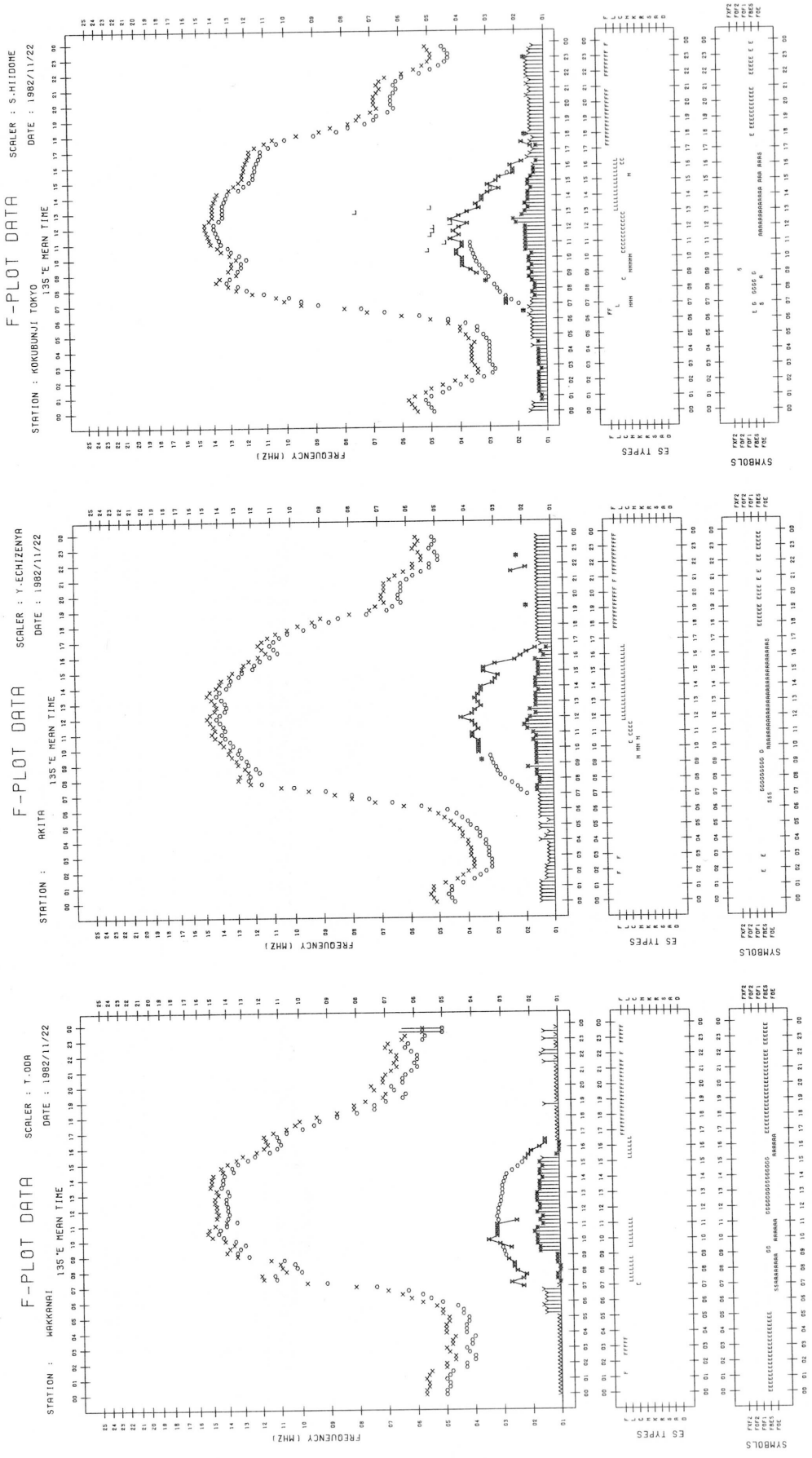
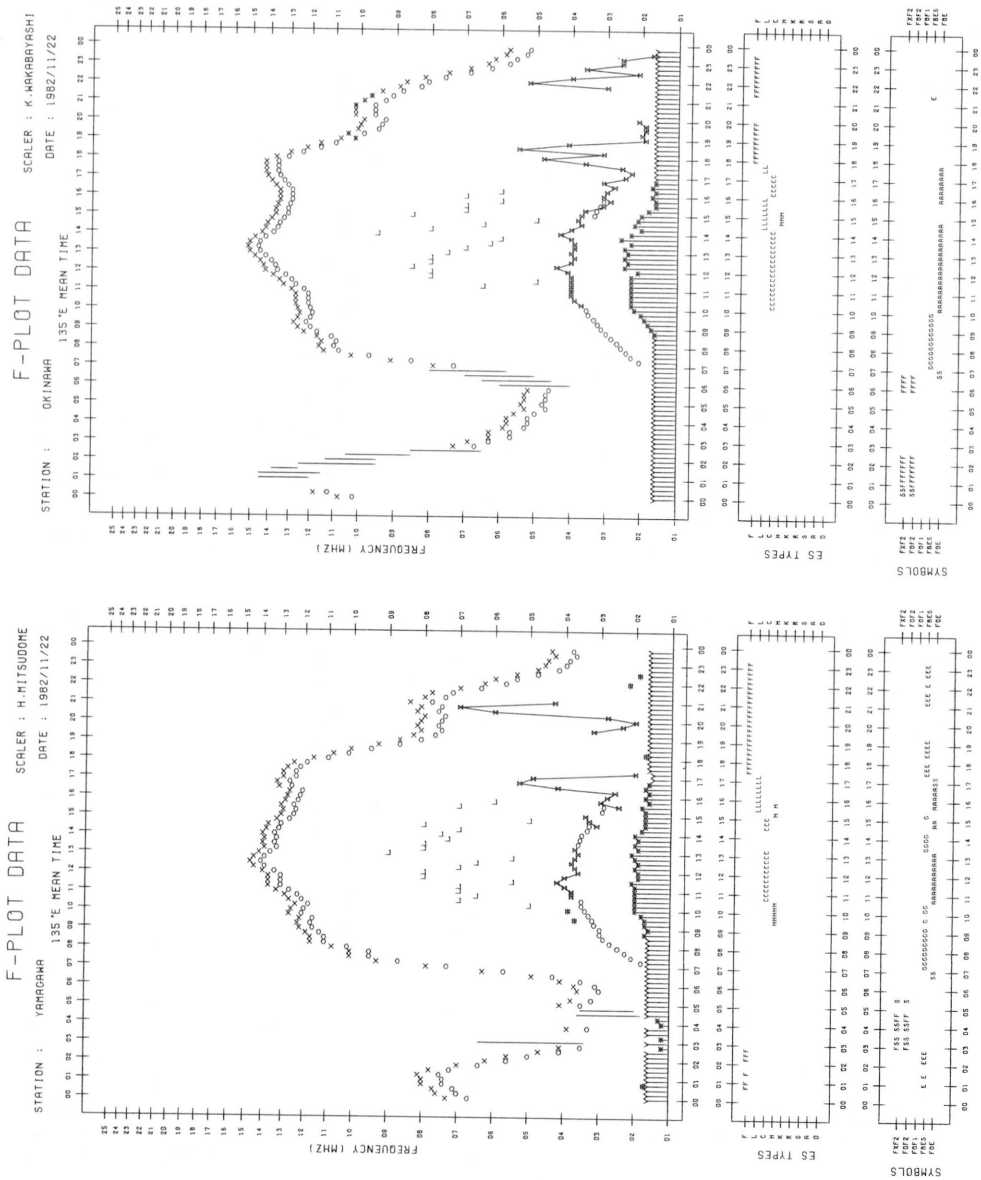
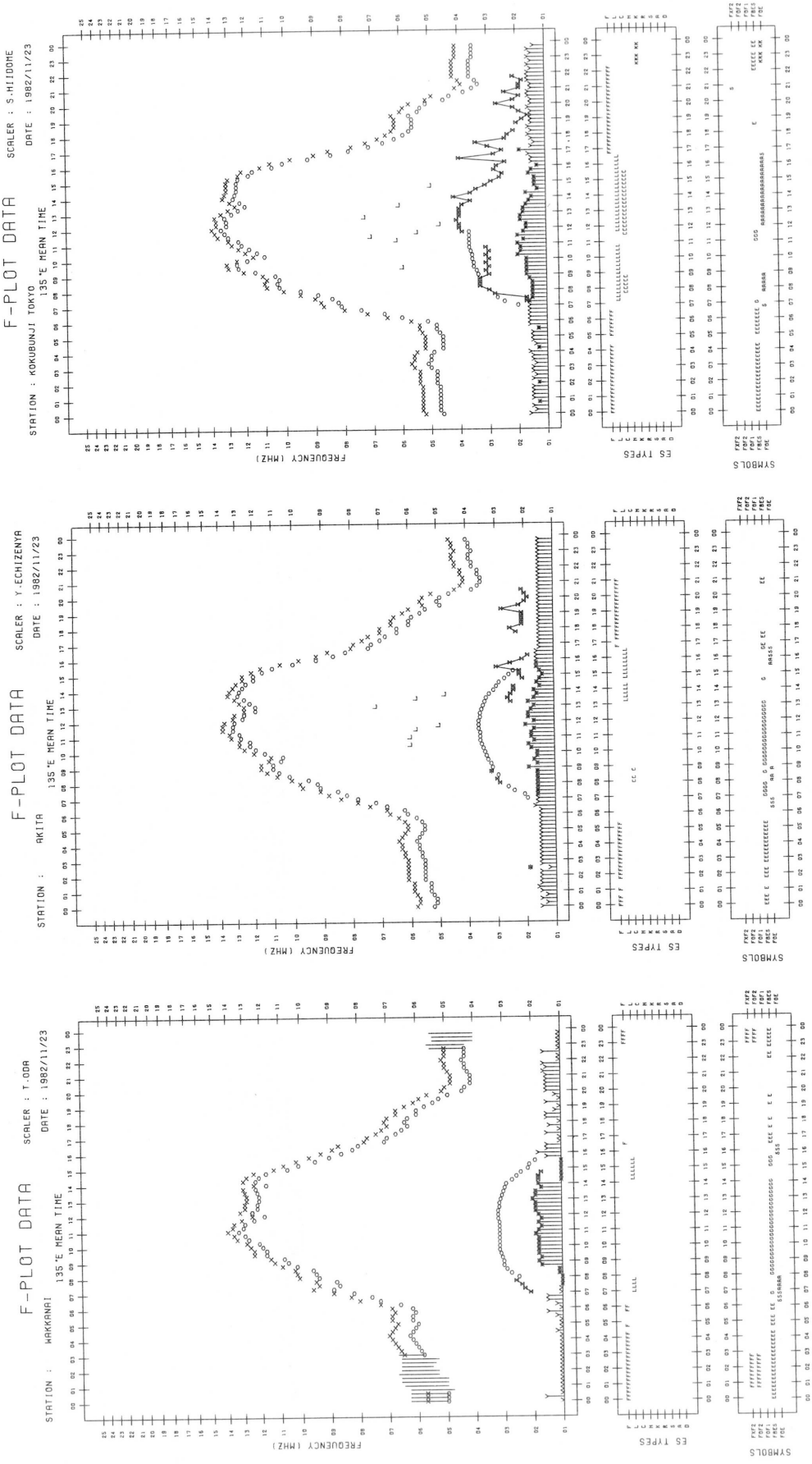
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/21
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/21
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/21
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : H.MITSUDOME
STATION : YAMAGAWA
DATE : 1982/11/21
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : K.WAKABAYASHI
STATION : OKINAWA
DATE : 1982/11/21
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/22
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/22
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/22
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : OKINAWA
135°E MEAN TIME
SCALER : K.WAKABAYASHI
DATE : 1982/11/22
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : H.MITSUDOME
DATE : 1982/11/22
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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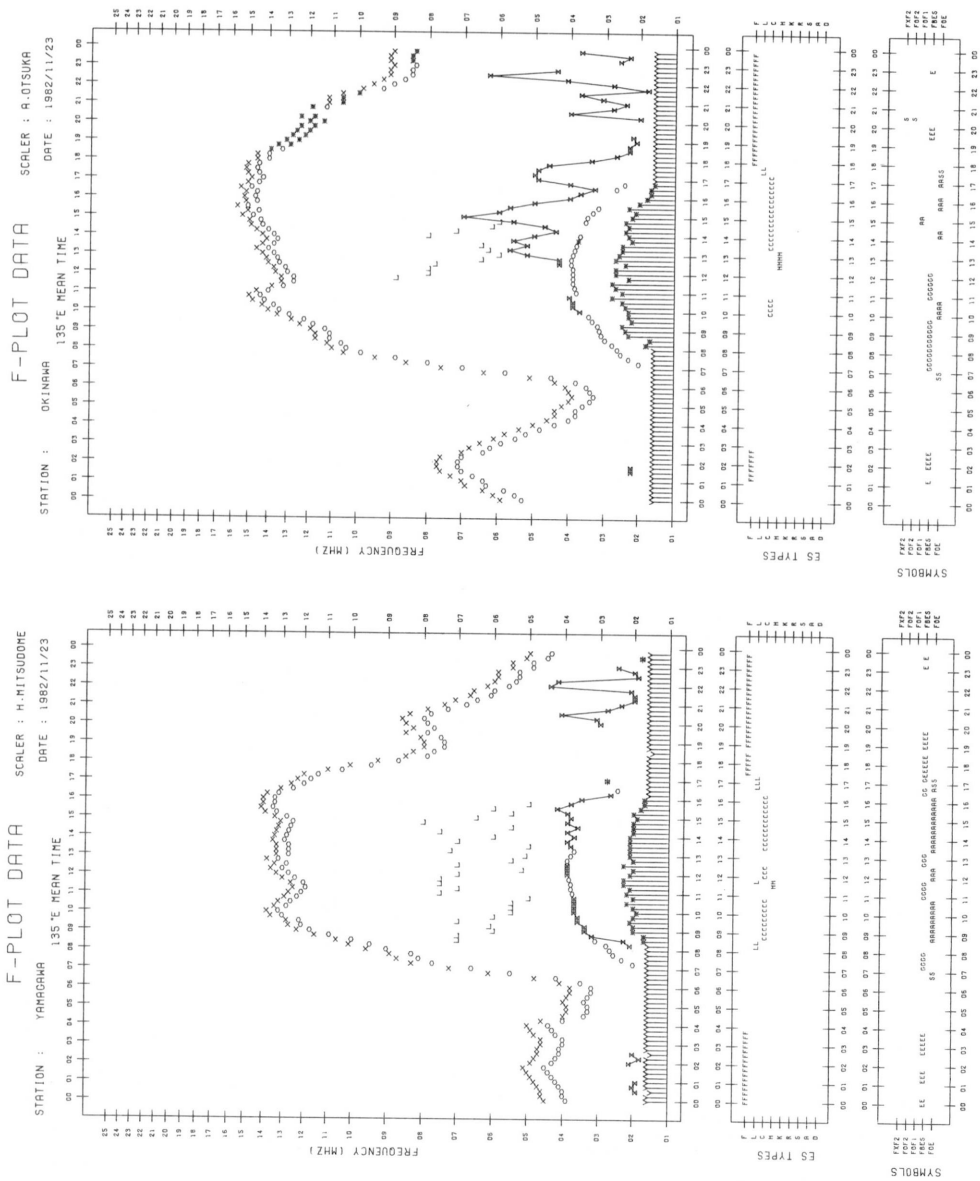
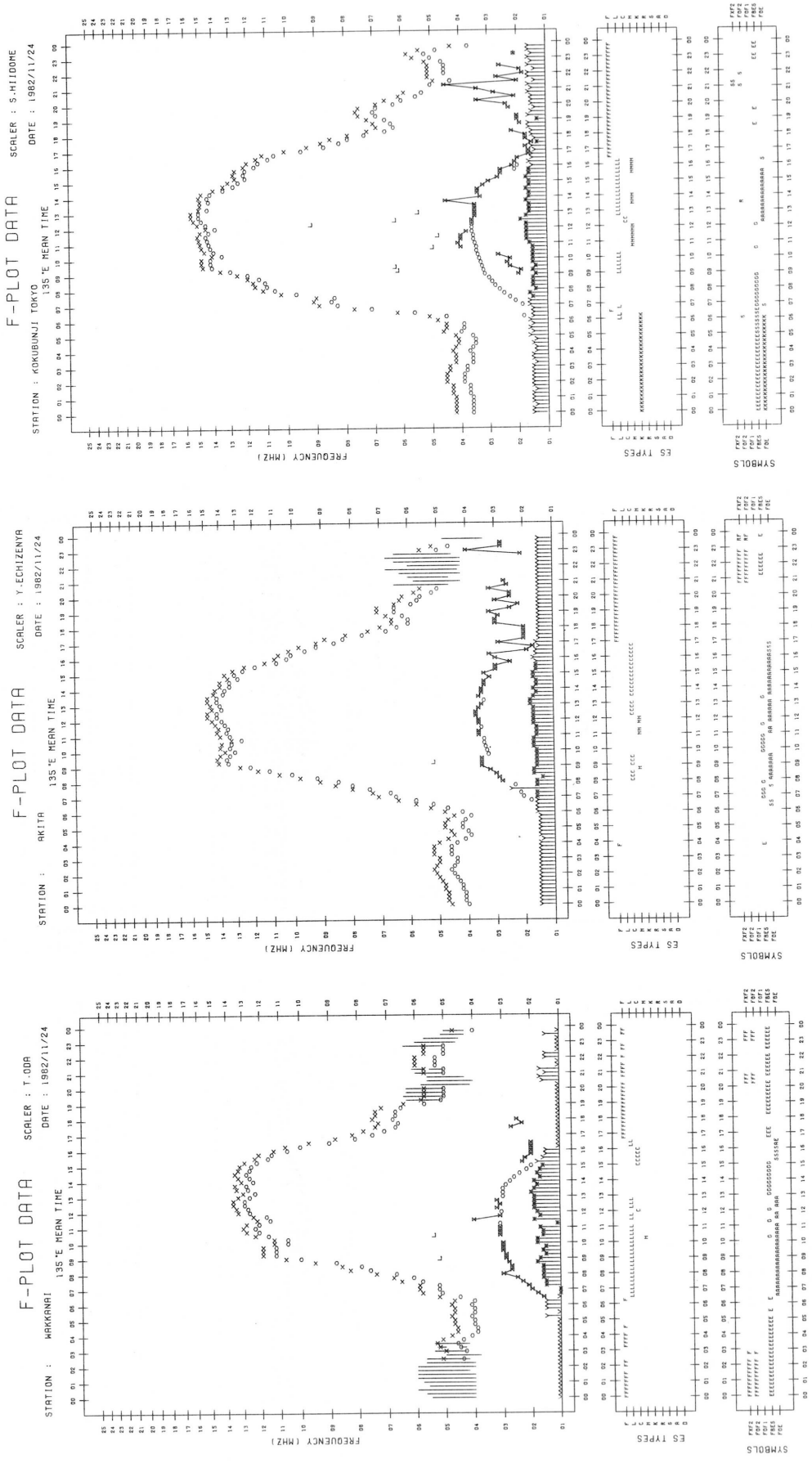
135°E MEAN TIME
SCALER : S.HIIDOME
DATE : 1982/11/23
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/23
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/23
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : OKINAWA
135°E MEAN TIME
SCALER : A.OTSUKA
DATE : 1982/11/23
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : H.MITSUDOME
DATE : 1982/11/23
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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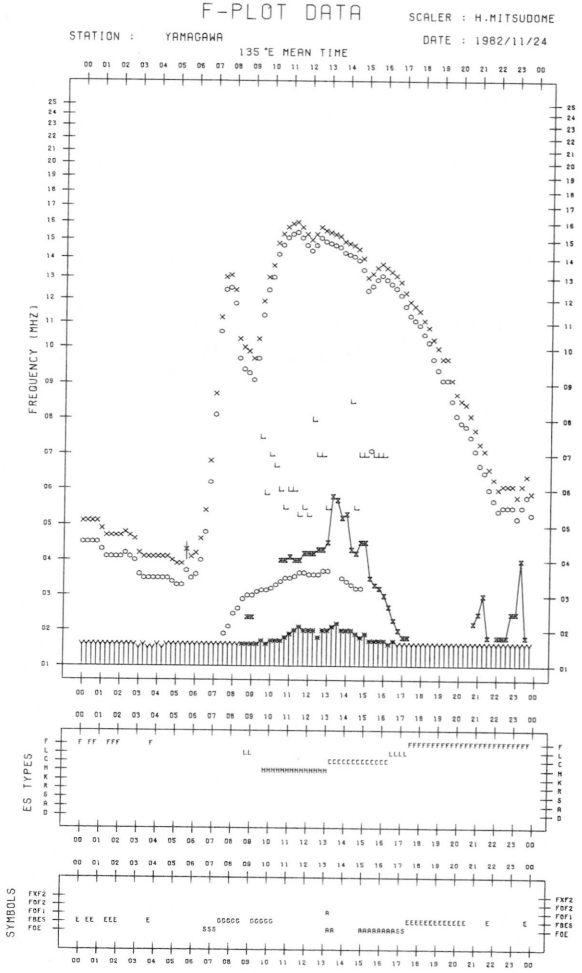
DATE : 1982/11/24
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
SCALER : Y.ECHIZENYA
DATE : 1982/11/24
STATION : AKITA
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/24
STATION : WAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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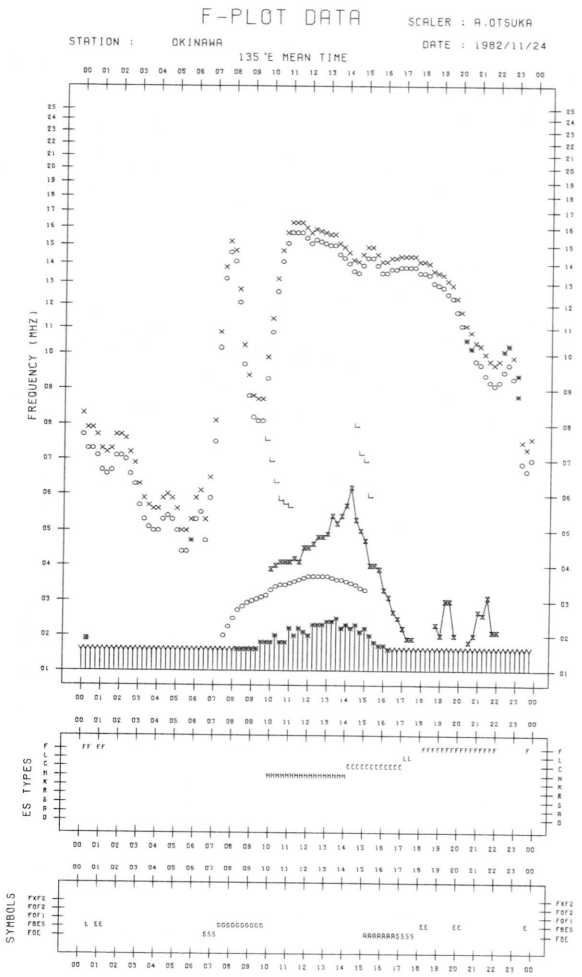
SCALER : H.MITSUDOME
STATION : YAMAGAWA
DATE : 1982/11/24
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FOES
FOE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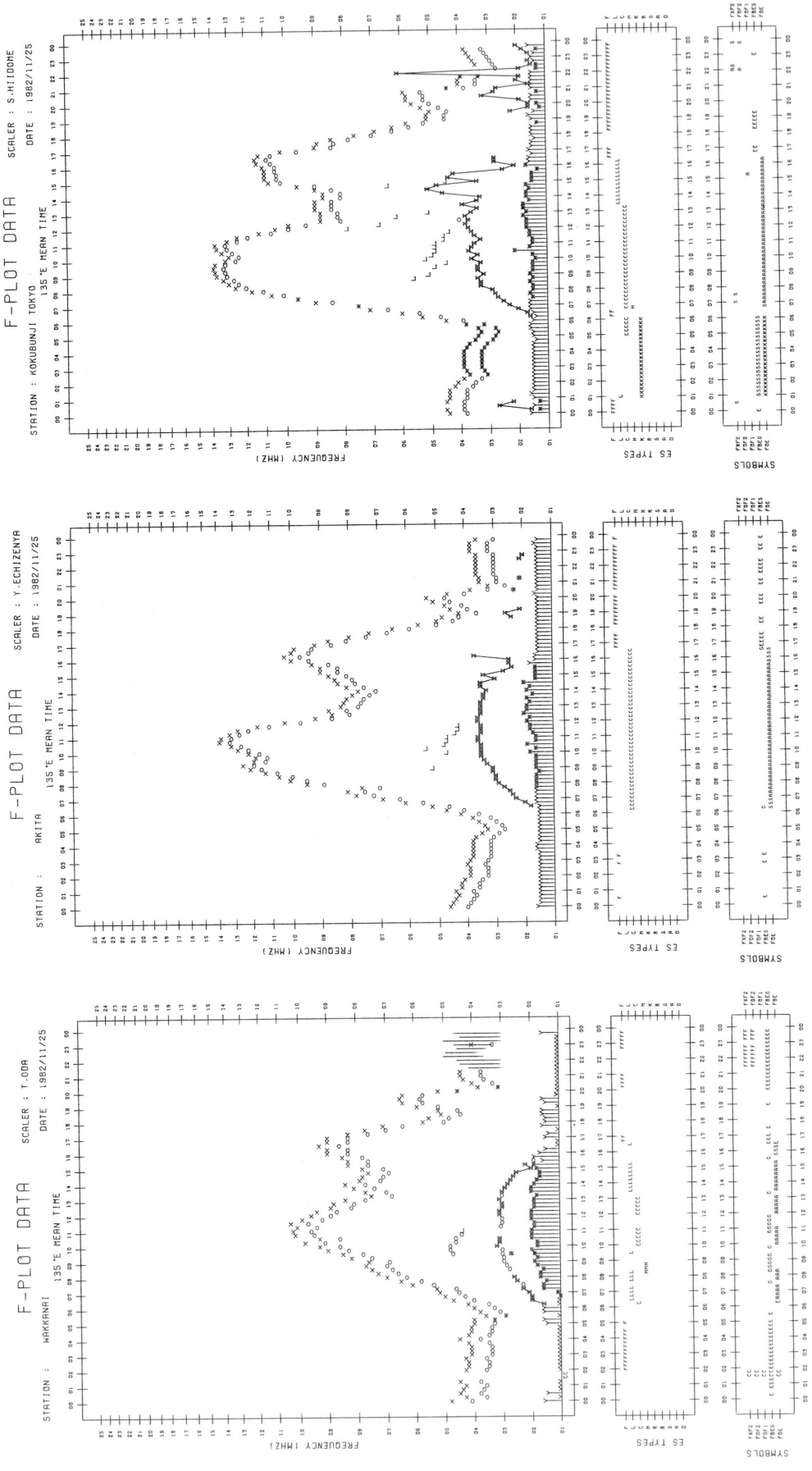
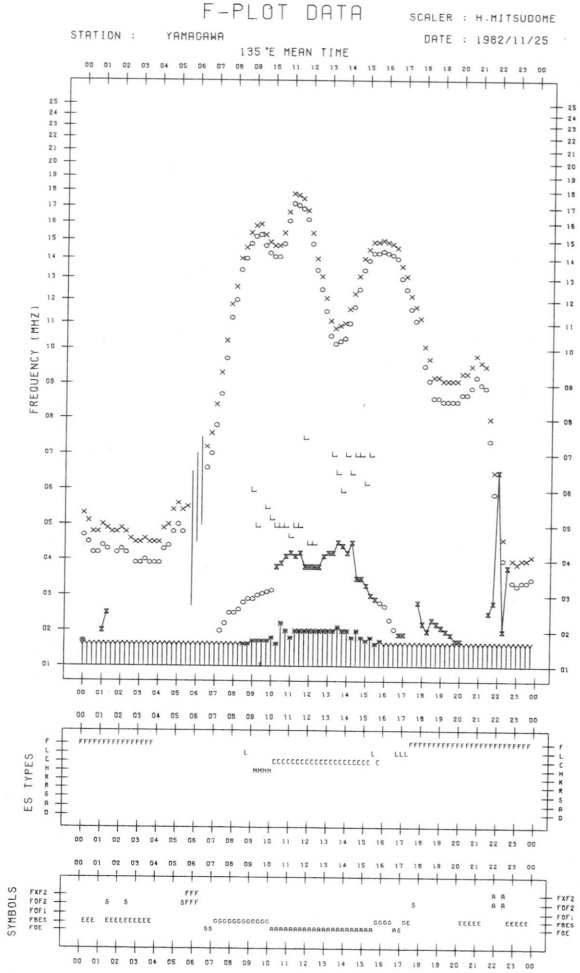
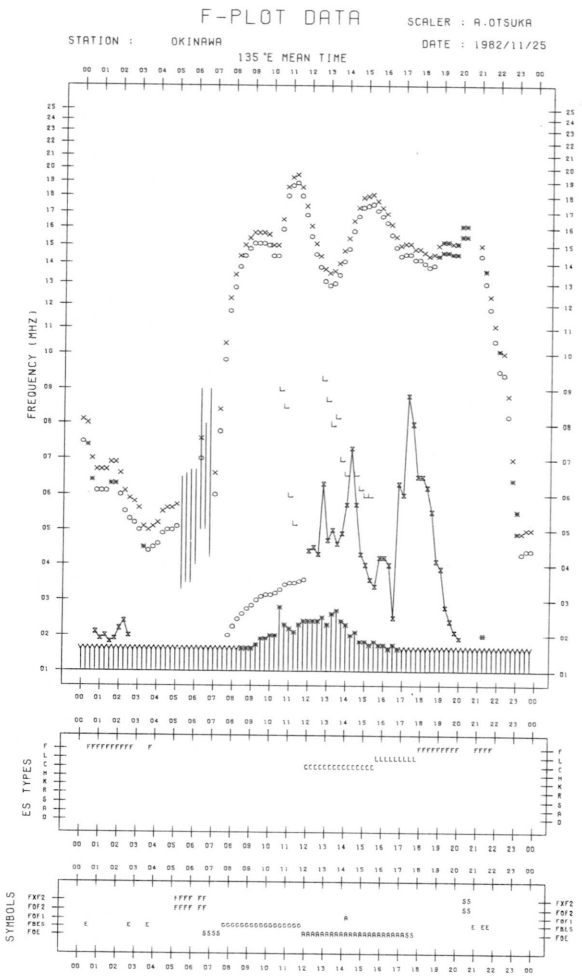
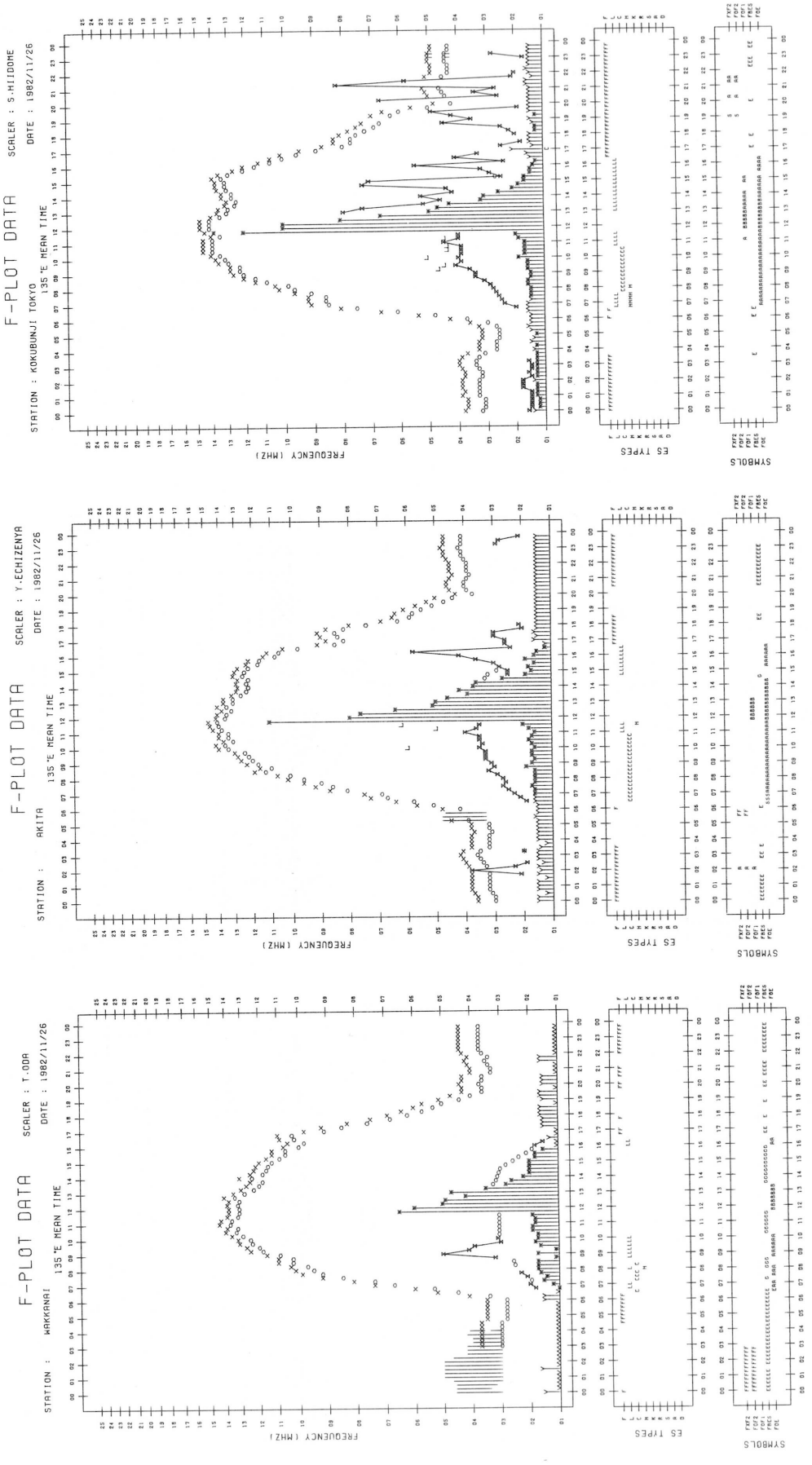
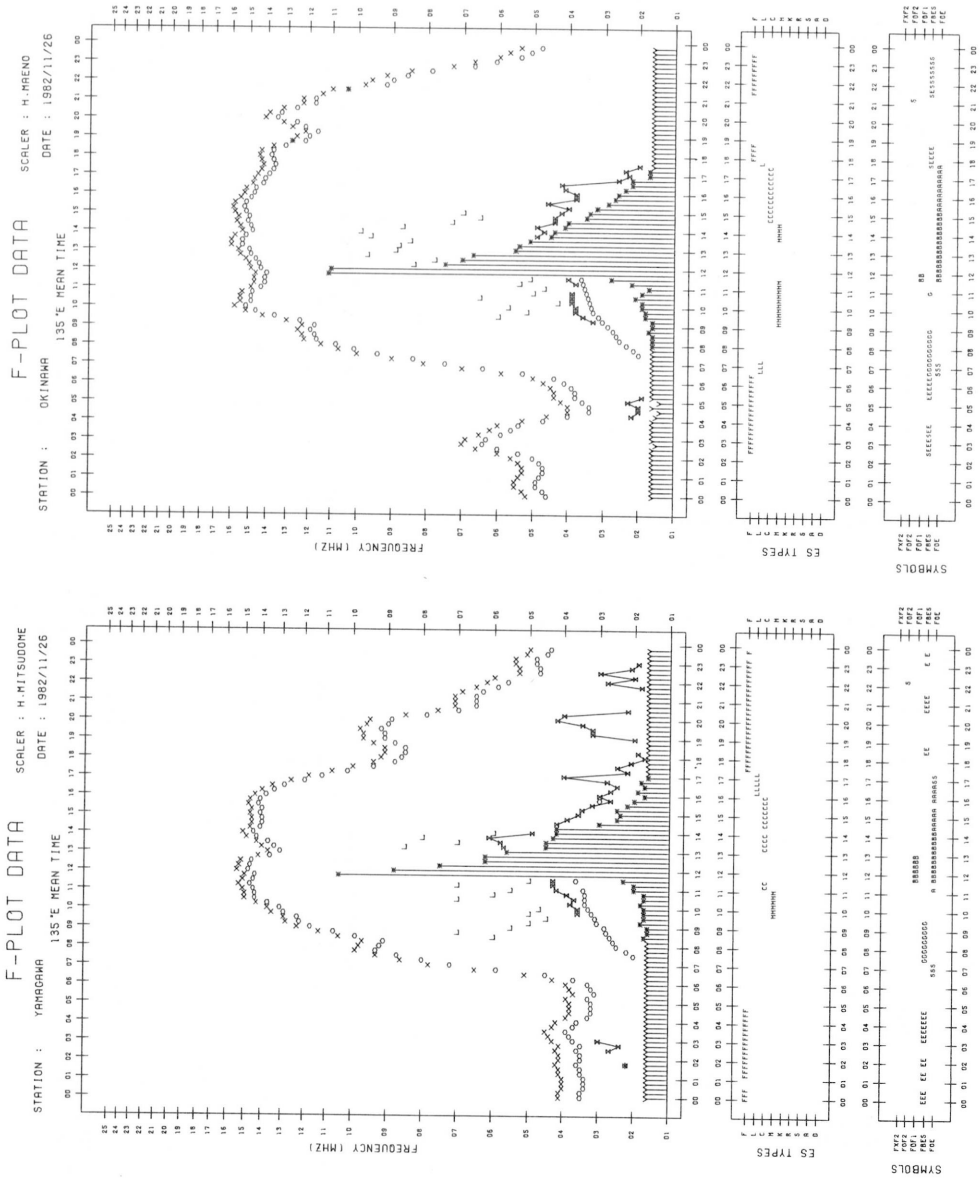
STATION : OKINAWA
DATE : 1982/11/24
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FOES
FOE

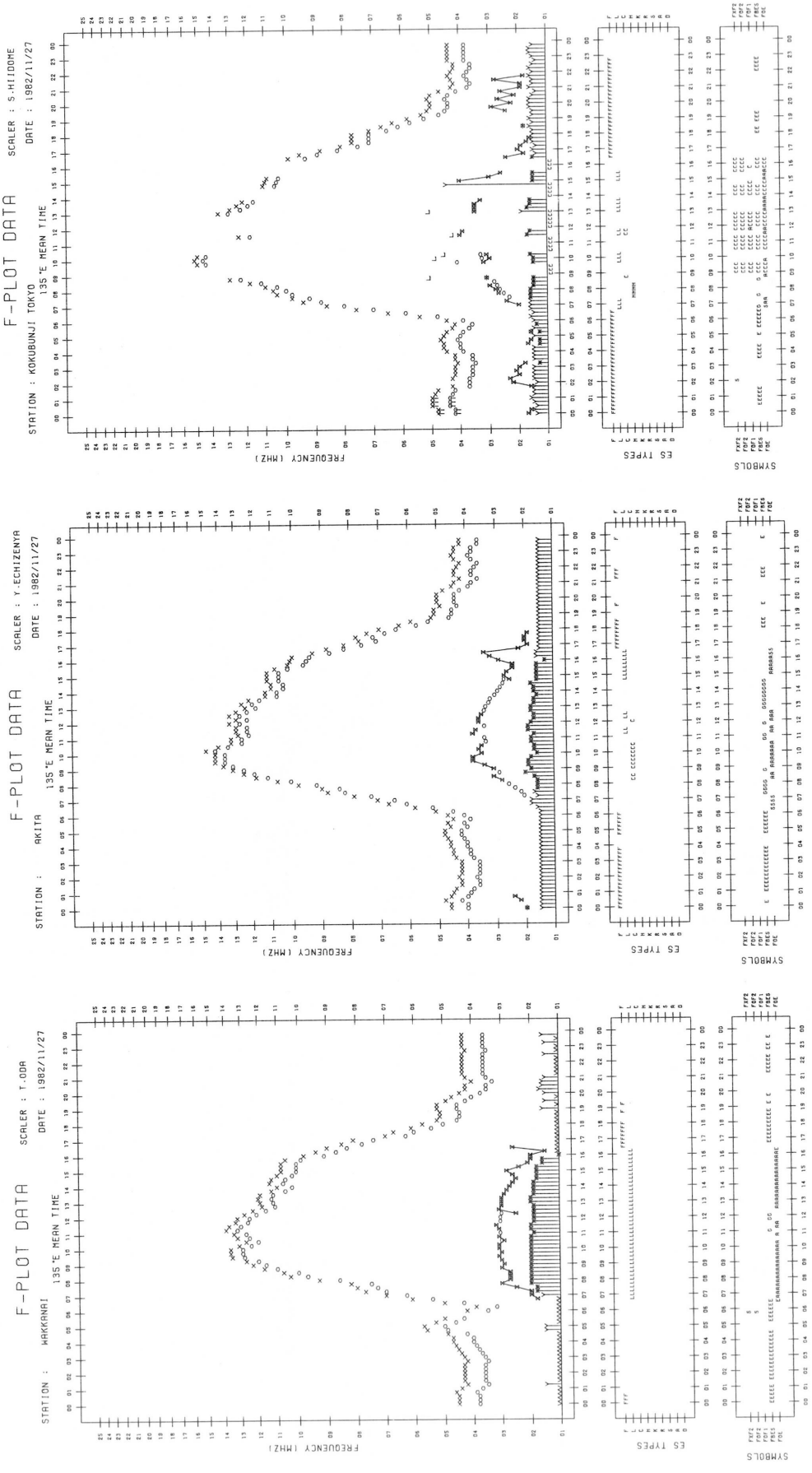

F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIIDOME
DATE : 1982/11/25
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/25
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/25
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

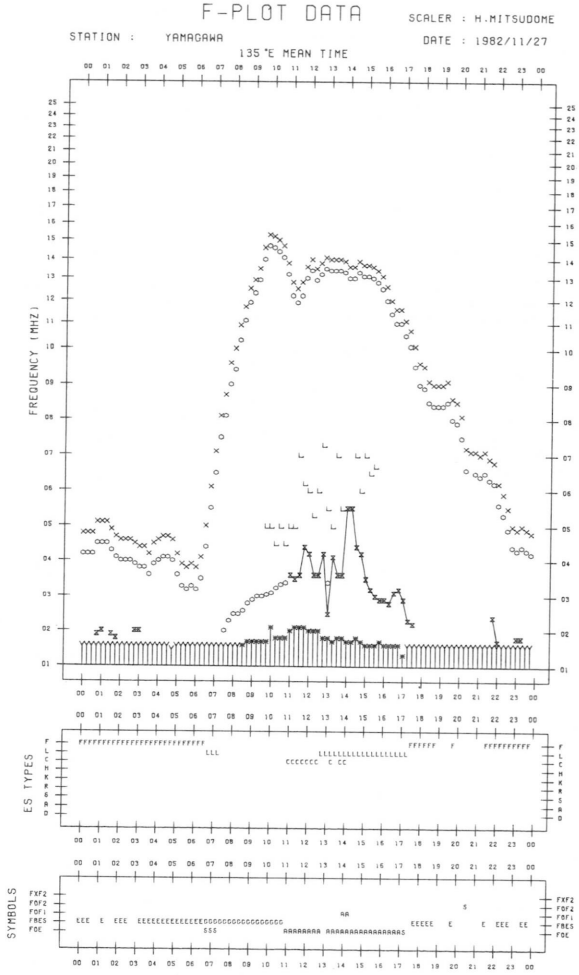

F-PLOT DATA
SCALER : H.MITSUDOME
STATION : YAMAGAWA
DATE : 1982/11/25
135 'E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE

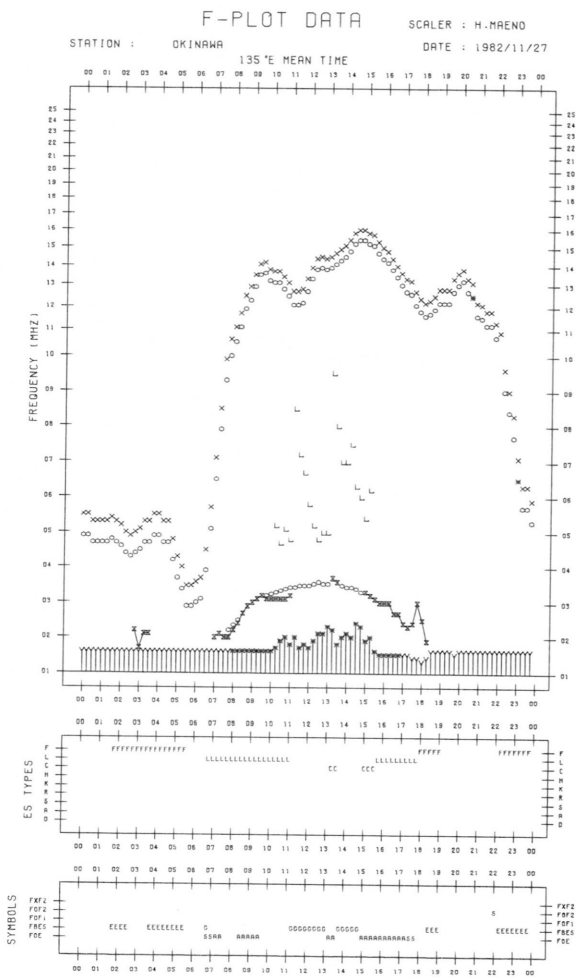

F-PLOT DATA
SCALER : A.OTSUKA
STATION : OKINAWA
DATE : 1982/11/25
135 'E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE

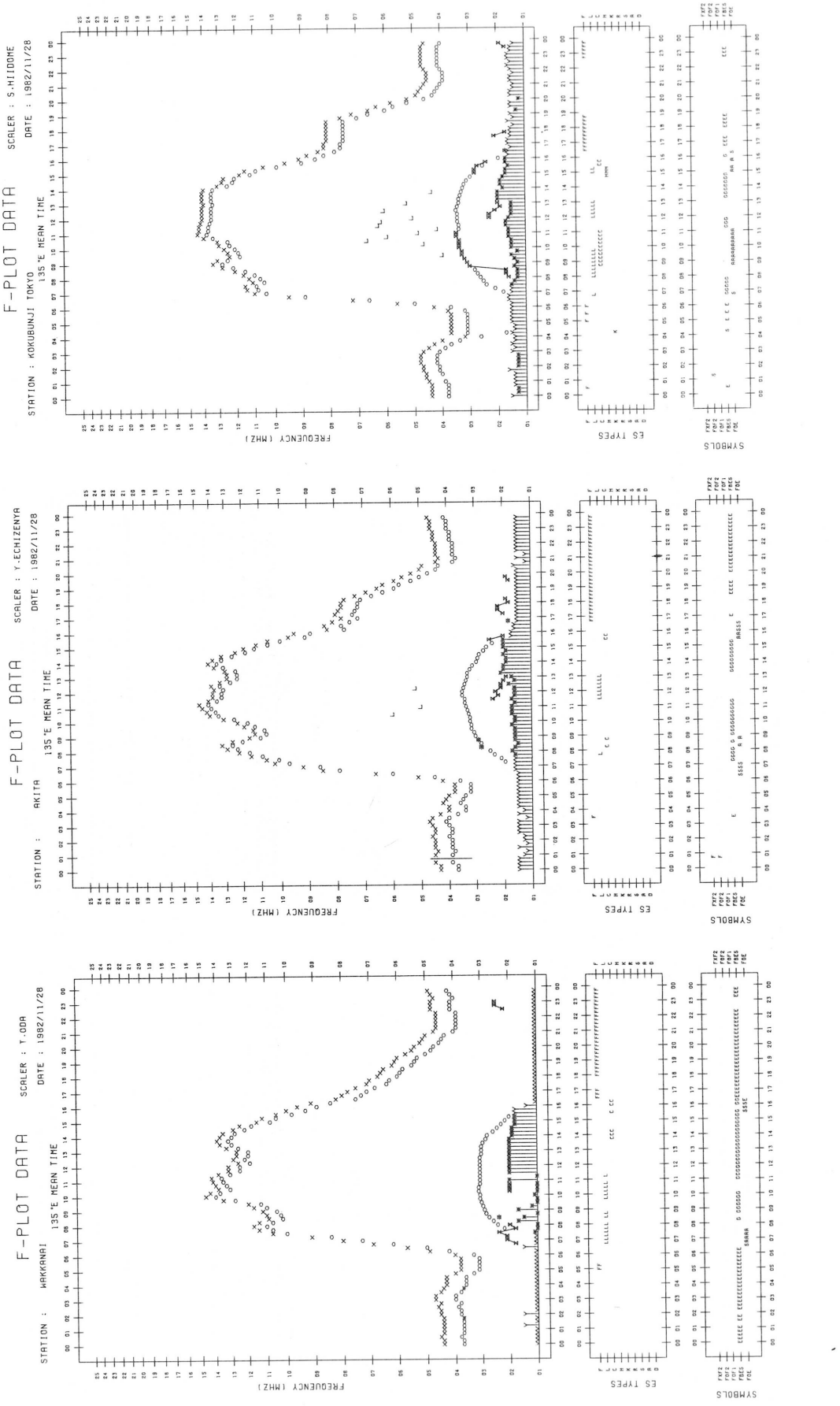

F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/26
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/26
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/26
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : OKINAWA
135°E MEAN TIME
SCALER : H.MAENO
DATE : 1982/11/26
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA
135°E MEAN TIME
SCALER : H.MITSUDOME
DATE : 1982/11/26
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

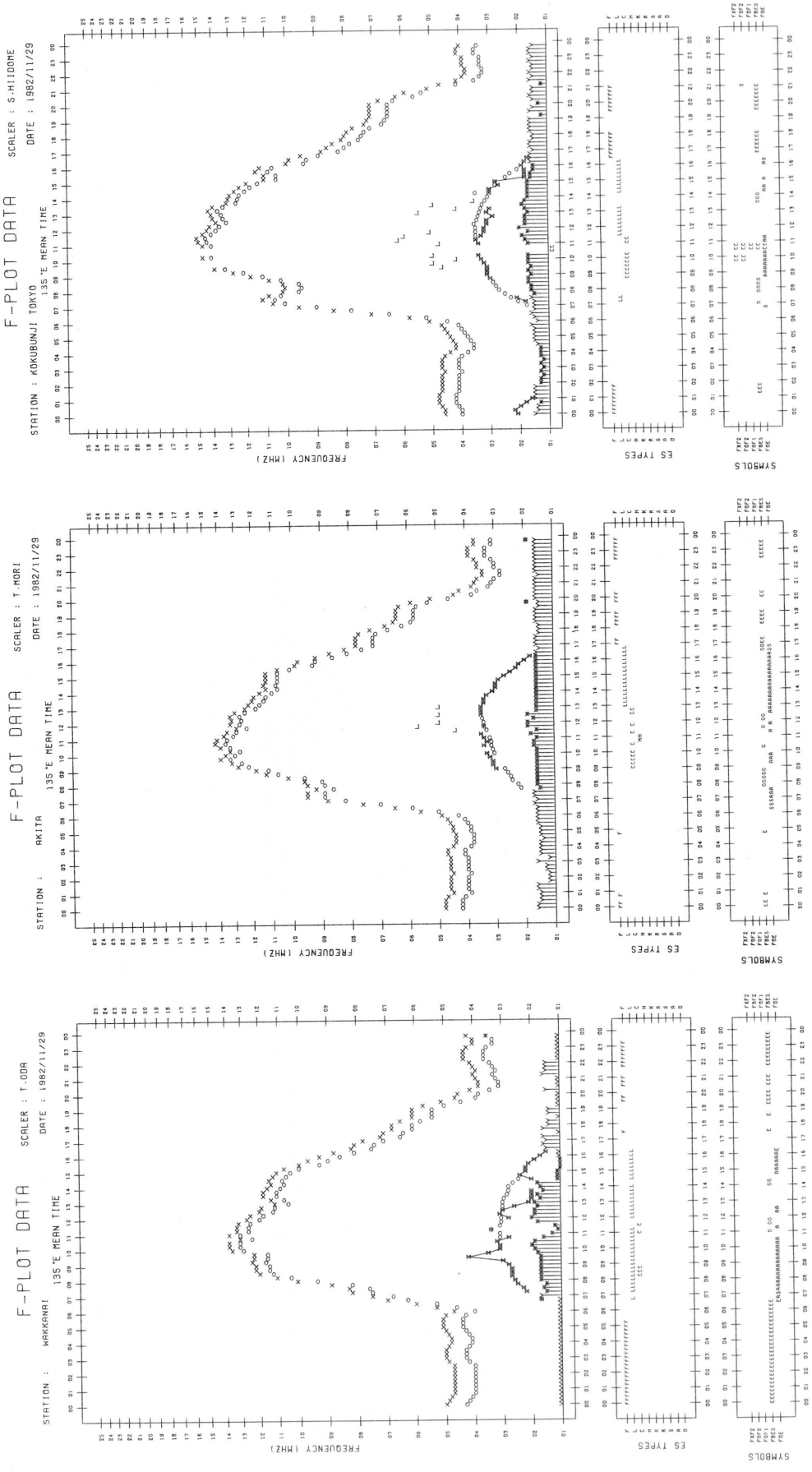

F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIIDOME
DATE : 1982/11/27
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/27
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : HAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/27
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

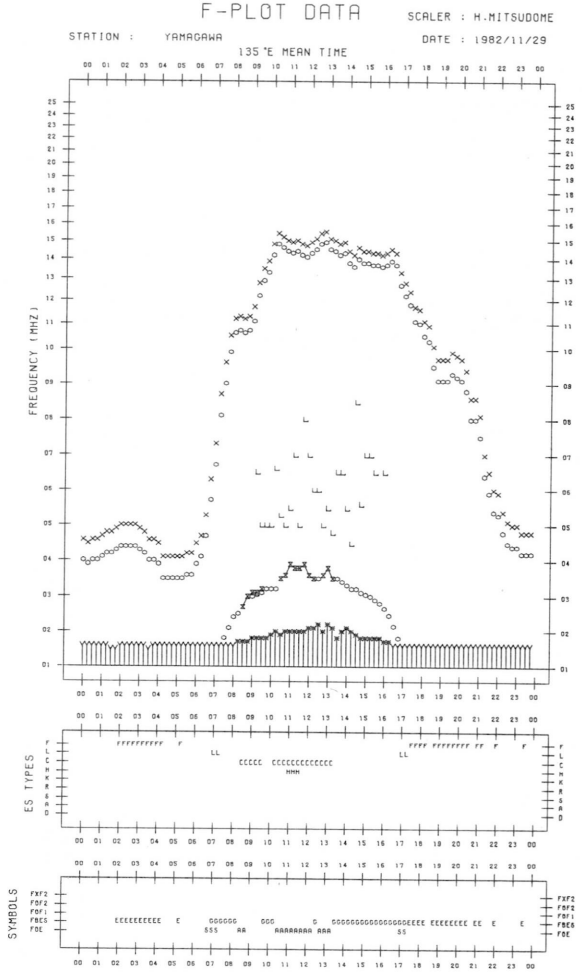

F-PLOT DATA
SCALER : H.MITSUDOME
STATION : YAMAGAWA
DATE : 1982/11/27
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FRES
FOE

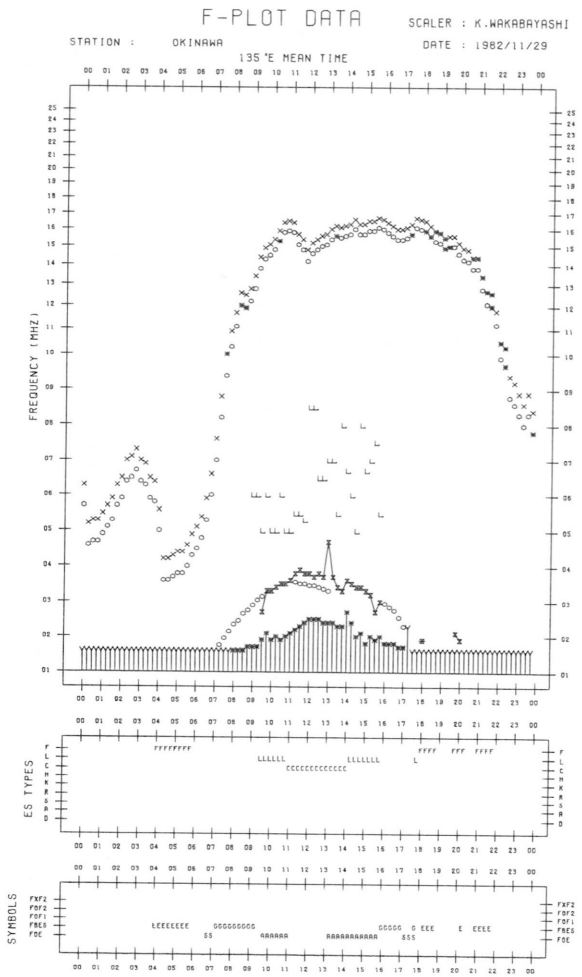

F-PLOT DATA
SCALER : H.MAENO
STATION : OKINAWA
DATE : 1982/11/27
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FRES
FOE

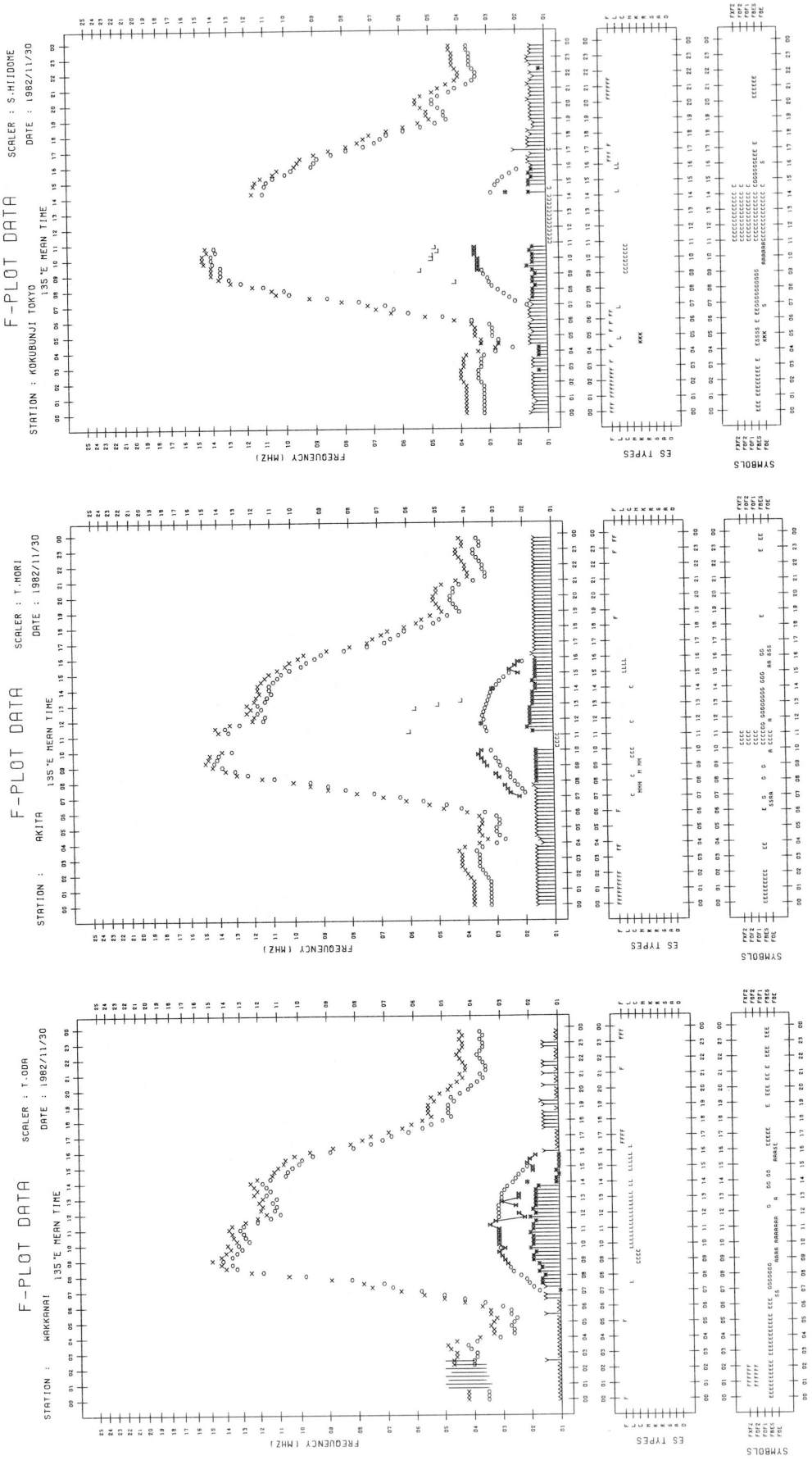

F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIDOME
DATE : 1982/11/28
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : Y.ECHIZENYA
DATE : 1982/11/28
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/28
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : OKINAWA 135°E MEAN TIME
SCALER : H.MAENO
DATE : 1982/11/28
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA 135°E MEAN TIME
SCALER : H.MITSUDOME
DATE : 1982/11/28
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
SCALER : S.HIIDOME
DATE : 1982/11/29
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : AKITA
135°E MEAN TIME
SCALER : T.MORI
DATE : 1982/11/29
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : WAKKANAI
135°E MEAN TIME
SCALER : T.ODA
DATE : 1982/11/29
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : H.MITSUDOME
STATION : YAMAGAWA
DATE : 1982/11/29
135 'E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : K.WAKABAYASHI
STATION : OKINAWA
DATE : 1982/11/29
135 'E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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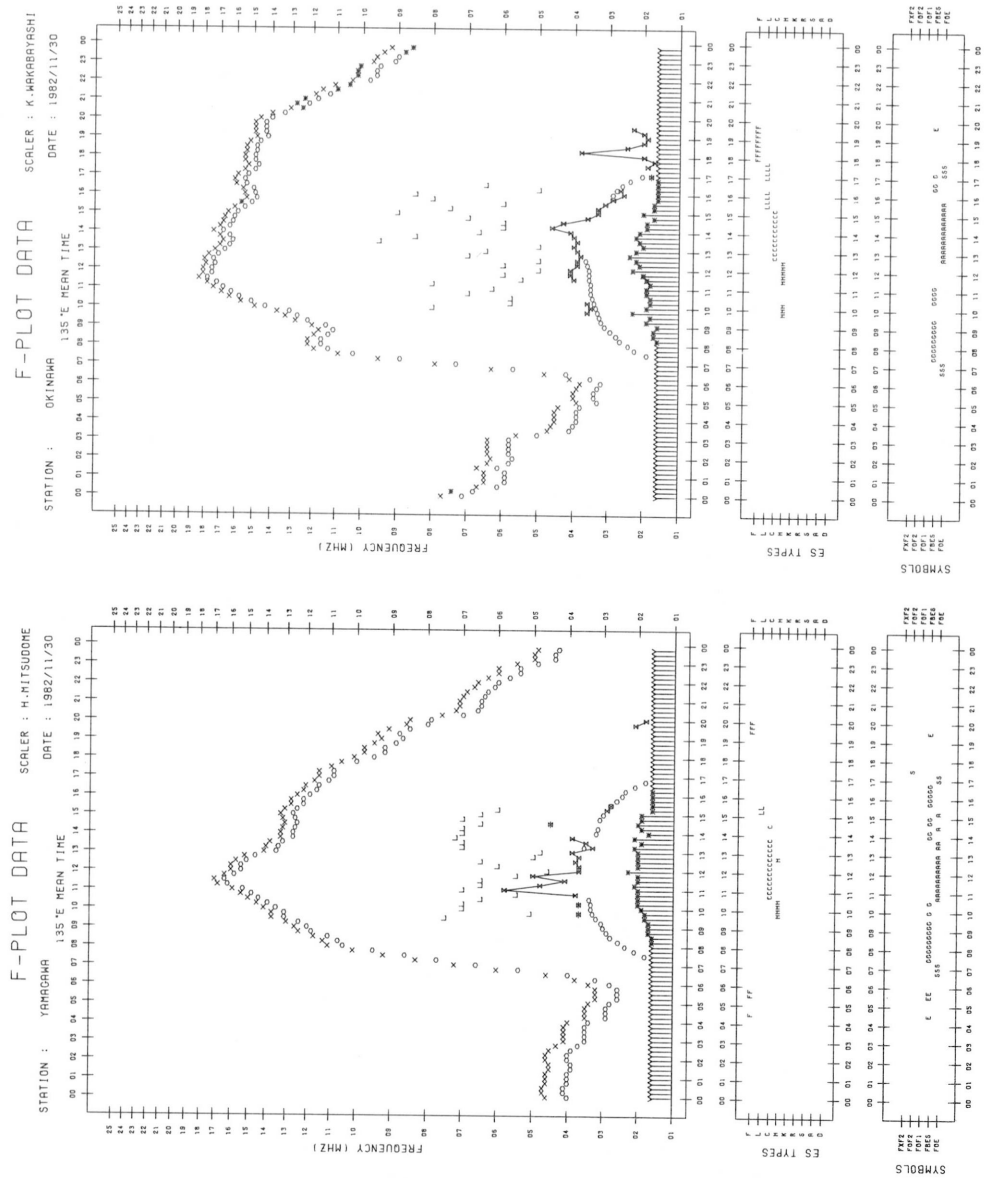
SCALER : S.HIIDOME
DATE : 1982/11/30
STATION : KOKUBUNJI TOKYO
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
SCALER : T.MORI
DATE : 1982/11/30
STATION : AKITA
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
SCALER : T.ODA
DATE : 1982/11/30
STATION : WAKKANAI
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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STATION : OKINAWA 135°E MEAN TIME
SCALER : K.WAKABAYASHI
DATE : 1982/11/30
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
F-PLOT DATA
STATION : YAMAGAWA 135°E MEAN TIME
SCALER : H.MITSUDOME
DATE : 1982/11/30
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

Hiraiso Branch, R.R.L.,
Nakaminato, Ibaraki,
311-12 JAPAN

November 1982

Single-frequency total flux observations at 200 MHz

Flux density: 10^{-22} $Wm^{-2}Hz^{-1}$ Variability: 0 to 3

UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	10	10	(10)	10	10	1	0	(0)	*	1
2	10	11	(12)	11	11	*	*	(*)	0	*
3	12	11	(11)	10	11	1	0	(0)	0	0
4	10	10	(10)	10	10	0	0	(0)	0	0
5	10	10	(q)	11	10	0	0	(*)	0	0
6	10	10	(10)	10	10	0	0	(0)	0	0
7	10	10	(10)	10	10	0	0	(0)	0	0
8	10	10	(10)	10	10	0	0	(*)	1	0
9	10	10	(10)	10	10	2	2	(2)	0	2
10	10	10	(10)	11	10	0	0	(0)	0	0
11	12	12	(q)	11	12	1	*	(*)	1	*
12	11	11	(11)	11	11	3	3	(2)	1	2
13	11	11	(11)	11	11	1	3	(2)	2	2
14	11	11	(11)	10	11	2	3	(3)	2	3
15	10	10	(10)	10	10	2	2	(2)	1	2
16	10	10	(10)	10	10	2	2	(2)	0	2
17	11	10	(10)	9	10	*	*	(*)	0	*
18	9	9	(q)	9	9	0	0	(*)	2	0
19	9	9	(9)	9	9	3	2	(1)	0	2
20	10	10	(10)	10	10	0	0	(0)	3	0
21	10	10	(10)	10	10	3	3	(3)	2	3
22	10	10	(10)	10	10	1	1	(1)	3	1
23	10	10	(10)	10	10	2	2	(2)	1	2
24	10	10	(10)	12	10	1	1	(*)	1	1
25	12	13	(13)	13	13	0	0	(*)	0	0
26	11	11	(11)	12	11	0	0	(0)	1	0
27	11	11	(10)	11	11	0	1	(0)	0	0
28	11	11	(11)	11	11	0	0	(0)	*	0
29	11	11	(11)	11	11	0	0	(1)	1	0
30	11	11	(q)	11	11	2	*	(*)	2	*

q: likely quiet.

*: interference.

SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

Hiraiso Branch, R.R.L.,
Nakaminato, Ibaraki,
311-12 JAPAN

November 1982

Single-frequency total flux observations at 500 MHz					
Flux density: 10^{-22} Wm^{-2}Hz^{-1}					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	44	45	(45)	44	45
2	44	46	(47)	44	45
3	44	44	(44)	43	44
4	43	44	(44)	42	44
5	42	44	(44)	44	43
6	44	46	(46)	43	45
7	43	43	(43)	44	43
8	44	46	(45)	43	45
9	45	45	(44)	43	44
10	44	44	(44)	42	43
11	42	44	(44)	42	43
12	42	45	(47)	43	43
13	43	45	(45)	42	44
14	42	43	(42)	42	42
15	42	43	(43)	40	42
16	41	42	(41)	40	41
17	40	41	(42)	42	41
18	42	43	(44)	45	43
19	45	44	(44)	44	45
20	44	46	(46)	50	45
21	59	52	(50)	50	54
22	52	52	(51)	53	51
23	53	54	(54)	55	54
24	61	59	(56)	52	59
25	52	51	(50)	-	51
26	49	49	(46)	46	49
27	47	46	(45)	46	46
28	47	46	(45)	-	46
29	48	48	(46)	52	48
30	52	52	(50)	48	52

Note No observations during the following periods:

22nd 0600 - 0622

25th 2130 - 2340

28th 2130 - 2400

SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

Hiraiso Branch, R.R.L.,
Nakaminato, Ibaraki,
311-12 JAPAN

November 1982

Outstanding Occurrences

(single-frequency observations)

Normal observing period: 2120 - 0735 (sunrise to sunset)

NOV 1982	FREQ	STATION	TYPE	START TIME UT	TIME OF MAXIMUM UT	DUR MIN	FLUX DENSITY PEAK	FLUX DENSITY MEAN	POLARIZATION POSITION REMARKS
1	200	HIRA	46 C	0335.0	0340.3	13.2	30	8	0
					0335.6		5		0
	100		46 C	0336.0	0337.3	3.3	2300	1200	WL
	100		46 C	0340.7	0343.1	8.4	480	114	0
2	200		42 SER	0341.3	0353.8	53	59	-	0
4	100		42 SER	0538.2	0542.3	7.7	2700	-	WL
	200		46 C	0542.3	0542.6	0.8	89	24	0
5	100		45 C	0402.0	0402.2	2.0	270	73	0
8	200		46 C	0445.1	0445.5	1.0	47	26	0
	200		8 S	0449.6	0449.6	0.3	82	-	0
	200		44 NS	2106E	0152	627D	60	10	0
9	500		7 C	0102.6	0102.7	0.7	7	4	0
	500		7 C	0105.0	0105.4	1.0	15	5	0
	500		20 GRF	0107.4	0116.0	33	6	3	0
10	200		46 C	2258.1	2259.0	1.1	84	29	0
11	200		43 NS	2313	0428	480D	50	30	WL
12	100		43 NS	0228	0358	260D	400	130	ML
	100		46 C	0233.0	0234.4	2.7	580	240	WL
	500		48 C	0521.0	0547.0	43	600	100	WR
					0552.9		250		MR
	200		27 RF	0522	0547	96	150	50	WL
	100		27 RF	0525	0600	120D	920	400	0
	100		45 C	0549.7	0550.0	1.0	9200	3050	WL
	200		44 NS	2113E	0551	615D	20	10	WL
13	500		8 S	0002.5	0002.5	0.6	200	-	WR
	500		8 S	0004.3	0004.4	0.4	300	-	WR
	500		46 C	0232.0	0235.0	7	40	14	ML
	200		46 C	0234.6	0236.5	6.3	905	91	0
	100		45 C	0236.3	0236.6	1.2	1200	410	WL
	100		43 NS	0250E	0458	265D	250	120	ML
	200		27 RF	0258	0342	150	80	30	WL
	500		22 GRF	0258.8	0310.6	63	6	4	0
	100		27 RF	0307	0331	50D	300	100	0
	500		45 C	0316.3	0316.7	1.0	25	15	MR
	100		45 C	0401E	0401.3	1.0D	1700	480	ML
	200		44 NS	2113E	2324	615D	80	40	ML
	100		44 NS	2113E	0525	615D	280	95	ML
14	200		44 NS	2115E	0325	615D	50	35	ML
	100		44 NS	2115E	0440	615D	800	240	ML
	100		42 SER	2244.3	2244.6	5.0	2400	-	ML
15	500		45 C	0201.0	0206.4	16	30	14	WL
	500		27 RF	0219.5	0241.7	57	18	10	SR
	100		8 S	0527.8	0528.0	0.4	2700	-	ML

NOV 1982	FREQ	STATION	TYPE	START TIME UT	TIME OF MAXIMUM UT	DUR MIN	FLUX DENSITY PEAK	FLUX DENSITY MEAN	POLARIZATION POSITION REMARKS
	200	HIRA	42 SER	0539.7	0541.0	9.0	100	-	ML
	100		44 NS	2115E	0044	610D	400	150	ML
	200		44 NS	2115E	0329	610D	40	20	ML
16	500		46 C	0328.6	0338.5	15.6	5	3	O
18	500		45 C	0122.0	0123.7	3.3	80	15	O
	500		42 SER	0454.0	0454.0	18	30	12	MR
	200		46 C	0455.8	0505.0	18.7	25	7	O
	200		44 NS	2115E	0015	610D	10	5	WR
19	200		42 SER	2309.0	2315.5	10	1200	-	O
20	200		44 NS	2118E	0130	605D	250	85	WR
	100		44 NS	2118E	0205	605D	1400	380	MR
	500		46 C	2222.0	2320.4	88	90	30	ML
21	500		45 C	0212.0	0213.4	3.0	10	4	O
	200		44 NS	2120E	2318	605D	10	5	WL
22	100		44 NS	2120E	0105	605D	780	10	WL
	200		44 NS	2120E	0542	605D	45	10	ML
	100		46 C	2234.0	2236.5	60	110	40	WL
23	100		42 SER	0406.5	0406.5	17.7	5300	-	WL
	100		46 C	0552.7	0553.8	1.5	430	225	WL
	200		44 NS	2121E	2346	605D	10	5	WL
24	200		46 C	0239.0	0239.6	0.9	55	34	O
	200		46 C	0443.5	0444.0	3.6	550	78	O
	100		46 C	0443.7	0444.8	2.5	440	90	WL
25	100		8 S	0357.9	0358.0	0.2	4000	-	WL
	100		42 SER	0647.3	0647.3	5.6	1200	-	WL
26	500		7 C	0036.8	0036.8	0.8	60	20	WL
	200		48 C	0217.8	0238.0	98	580	74	WL
	500		48 C	0220.2	0256.6	73	1100	250	SL
					0236.9		800		ML
					0306.0		700		SL
	100		48 C	0221.5	0232.7U	71	10000D	650	-
					0240.5		8900		WL
	500		42 SER	2203.0	2204.0	3	210	-	WL
	500		42 SER	2237.3	2241.6	5	80	-	WL
27	200		42 SER	0303.5	0304.0	2.5	95	-	O
	200		42 SER	0617.5	0628.5	14.5	710	-	O
	100		42 SER	0618.0	0626.6	13	320	-	WL
	500		8 S	0626.6	0626.6	0.5	400	-	O
28	200		46 C	0520	0522.0	4.0	350	27	O
	100		46 C	0520.1	0521.7	3.5	230	41	O
	500		45 C	0521.1	0521.6	2.0	20	7	MR
29	500		8 S	0024.0	0024.1	0.3	25	15	O
	200		8 S	0024.3	0024.4	0.6	260	-	O
	500		7 C	0222.7	0222.8	3.0	12	3	SR
	200		44 NS	2128E	0020	330D	15	5	WR
	100		46 C	2322.6	2323.4	2.0	710	120	O
	200		46 C	2322.6	2323.5	2.0	1400	85	O
	500		45 C	2323.0	2323.7	1.5	420	90	SR
	100		43 NS	2327	0023	148	15	5	O
	100		41 F	2331.2	2334.5	8.7	1300	-	WL
	200		46 C	2332.0	2332.5	1.0	410	52	WR
	500		22 GRF	2356	0044.0	91	10	6	SR
30	100		8 S	0103.0	0103.2	0.6	4100	-	WL
	200		44 NS	2128E	0447	590D	25	5	MR
	200		46 C	2237.7	2238.3	2.0	74	25	MR
	200		46 C	2321.5	2322.5	1.6	25	11	WR
	200		46 C	2348.8	2349.5	1.4	84	27	MR

RADIO PROPAGATION

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

NOV 1982 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 15M	01H 15M	02H 15M	03H 15M	04H 15M	05H 15M	06H 15M	07H 15M	08H 15M	09H 15M	10H 15M	11H 15M	12H 15M	13H 15M	14H 15M	15H 15M	16H 15M	17H 15M	18H 15M	19H 15M	20H 15M	21H 15M	22H 15M	23H 15M
1	7	10	13	13	20	15	2	ES -8	ES -3	ES 3	ES -3	-7	2	16	29	ES -10	ES -10	ES -10	ES -19	ES -19	-7	4	4	2
2	C	8	11	15	17	0	-3	-3	3	3	ES -3	ES -4	ES -9	ES -24	ES -24	ES -24	ES -4	ES -4	ES -24	ES -24	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	ES -15	2	6	8	ES -9	-1	ES -6	ES 1	ES -6	ES -1	ES -9	-7	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-3	2	3
5	5	7	2	13	ES -9	ES -11	ES -3	ES -2	ES -1	ES -3	ES -2	ES -3	ES -9	ES -9	ES -9	ES -9	ES -20	ES -20	ES -20	-15	-11	4	5	4
6	6	9	8	11	8	-4	-4	ES -9	ES -9	-7	-7	ES -2	ES 0	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	3	4	0
7	8	9	11	9	14	-2	ES -4	ES -4	ES -9	ES -9	ES -3	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-9	-2	0	3
8	2	5	C	6	9	ES -15	ES -9	ES -9	-1	ES -3	ES -15	ES -9	ES 1	ES -6	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	0	2	-1
9	-6	ES 0	-1	10	9	17	5	2	-2	ES -9	ES -9	ES -3	ES -7	ES 4	ES -24	-9	ES -24	ES -24	ES -24	ES -24	-7	-7	-3	-3
10	-1	-1	4	7	10	-7	ES -7	ES -7	ES -7	ES -9	ES -7	ES -1	ES -9	ES -7	-6	-6	-1	6	ES -24	ES -24	ES -24	-6	2	2
11	4	-1	5	10	16	8	9	ES -7	ES -8	ES -10	ES -7	ES -7	ES -9	ES -9	ES -24	14	-1	ES -24	ES -24	ES -24	ES -24	-2	-1	-5
12	-2	3	-5	5	-15	-6	ES -11	ES -6	ES -6	ES -6	ES -10	ES -7	ES -6	ES -6	ES -24	ES -24	-5	ES -24	ES -24	ES -24	ES -24	-1	1	3
13	-9	6	2	2	-9	ES -9	ES -9	ES -9	ES -7	ES -15	ES -24	ES -9	ES -9	-6	-1	ES -24	ES -24	ES -24	ES -24	ES -24	-6	3	8	4
14	6	8	11	9	-9	ES -15	ES -9	ES -4	ES -9	ES -9	ES -9	ES -5	ES -24	ES -24	-6	ES -24	ES -24	ES -24	ES -24	ES -24	-4	7	10	8
15	8	6	-15	7	-5	ES -7	ES -9	ES -5	ES -7	ES -6	ES -7	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-2	6	8	7
16	12	11	13	11	-9	ES -9	ES -9	ES -7	ES -4	ES -7	ES -9	ES -24	ES -24	ES -9	ES -5	-9	-4	-6	-9	-2	-2	-6	4	6
17	3	5	7	14	ES -5	ES -9	ES -9	-2	ES -2	ES -6	ES -9	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-6	2	6
18	4	8	6	11	16	5	-6	ES -7	ES -5	ES -5	ES -1	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	6	8	5
19	6	10	8	12	ES -9	-6	ES -9	ES -6	ES -3	ES -24	ES -24	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	6	6	7
20	2	6	7	6	ES -9	ES -15	ES -11	ES -9	ES -5	-9	ES -6	ES -6	ES -9	ES -9	ES -9	ES -24	-9	ES -24	ES -24	ES -24	ES -24	0	5	2
21	1	1	4	4	ES -8	ES -8	ES -8	ES -4	ES -8	ES -2	ES -5	ES 1	ES -9	ES -5	ES -9	6	9	ES -9	ES -24	ES -24	ES -24	6	6	4
22	6	12	8	16	13	3	-2	ES 11	ES 19	ES 13	ES 6	ES 2	ES 10	ES 19	-6	3	7	4	8	-7	-9	-9	ES 0	ES 5
23	ES 4	ES 12	ES 10	ES 10	ES -3	ES 8	ES 11	ES 10	ES 14	ES -1	ES 7	ES 9	ES 5	ES 14	ES -25	ES -25	ES -25	ES -25	ES -25	ES -25	ES -25	2	ES 11	ES 11
24	ES 17	10	13	13	25	24	C	23	1	ES -8	ES 0	ES 0	ES -3	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	6	-9
25	-1	ES -3	ES -4	ES -6	-3	-3	9	ES -6	ES -1	ES 2	ES -9	C	C	C	C	C	C	C	C	C	C	C	C	C
26	-3	ES -4	ES 12	ES -24	ES -24	ES -24	ES -24	-5	ES -24	ES 0	ES -2	ES -1	ES 0	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24
27	2	ES -8	0	0	-8	-5	ES -6	-5	ES -6	ES 0	ES -5	ES -5	ES -5	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23
28	-2	2	2	-4	-5	-5	-5	ES -8	ES -5	ES -1	ES 0	0	-8	ES -23	ES -2	3	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23
29	-5	ES 15	ES 11	-6	-5	-6	-5	ES -8	ES -5	ES -1	-2	ES 3	ES -24	-6	-9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-7	-1	-2
30	ES 4	0	11	14	6	8	11	ES -3	ES 2	ES -4	ES -7	-4	ES -9	ES -9	-9	ES -24	ES -24	ES -24	4	ES -24	ES -24	-6	2	-2
CNT	28	29	28	29	29	29	28	29	29	29	29	28	28	28	28	28	28	28	28	28	27	27	27	27
MED	ES 4	US 6	ES 7	US 9	US -5	US -5	ES -6	ES -5	ES -5	ES -5	ES -7	ES -5	ES -9	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-2	US 2	US 3
UD	ES 8	ES 12	13	14	17	15	ES 9	ES 10	ES 3	ES 3	ES 0	ES 2	ES 2	ES 14	ES -2	3	-1	ES -4	-9	-15	-4	6	ES 8	ES 7
LD	ES -6	ES -3	ES -4	ES -6	ES -9	ES -15	ES -11	ES -9	ES -9	ES -10	ES -15	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -23	ES -23	ES -23

RADIO PROPAGATION

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

NOV 1982 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M
1	9	6	8	11	18	18	25	22	32	22	1	28	17	ES 1	ES -10	ES -10	ES -10	ES -10	ES -19	6	16	8	7	4
2	3	7	9	19	19	30	29	26	33	22	4	ES -9	ES -24	ES -24	ES -24	ES -9	ES -4	ES -24	ES -24	ES -24	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	3	8	12	17	17	29	29	25	26	7	1	10	-3	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	8	15	10	7	6
5	4	8	10	16	24	27	25	22	19	12	ES 3	ES 0	ES -9	ES -9	ES -9	ES -9	ES -20	ES -20	ES -20	12	13	9	5	7
6	5	7	12	17	23	17	22	21	20	24	21	-2	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	14	9	6	4
7	11	7	13	16	17	24	27	22	11	-1	ES -9	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-7	9	11	4	6
8	6	5	11	15	21	27	23	20	24	12	14	ES -1	ES -6	ES -6	ES -9	ES -24	ES -24	ES -24	ES -24	0	10	8	0	3
9	9	-1	5	16	18	23	26	23	21	21	ES -9	ES -7	ES -6	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	2	7	13	2	2
10	5	7	11	16	19	23	27	22	29	20	19	3	-9	ES -11	ES -24	ES -24	ES -24	ES -24	ES -24	-15	9	11	3	2
11	5	7	14	13	17	26	23	29	22	ES -5	-2	ES -7	ES -6	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-4	14	6	-5	-2
12	6	4	15	13	18	17	21	21	17	7	-5	ES -2	ES -15	ES -15	ES -24	ES -24	ES -24	ES -24	ES -24	-6	7	1	5	3
13	-4	3	-6	11	19	18	9	8	3	ES 5	ES -6	ES -9	ES -5	-3	ES -24	ES -24	ES -24	ES -24	ES -24	-3	10	8	8	3
14	ES -9	4	12	17	25	18	20	6	-2	ES -9	ES -9	ES -9	ES -24	ES -24	ES -6	ES -24	ES -24	ES -24	ES -24	5	14	5	10	3
15	4	9	0	11	16	21	21	23	-2	-9	ES -4	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	0	11	9	6	4
16	9	10	11	11	20	20	21	23	-2	ES -9	ES -9	ES -24	ES -24	-3	ES -9	ES -24	ES -24	ES -24	ES -24	-2	6	-6	10	0
17	6	5	9	16	20	17	16	18	5	-5	ES -6	ES -24	ES -24	ES -6	ES -24	ES -24	ES -24	ES -24	ES -24	-9	6	7	7	3
18	6	8	13	12	26	23	23	6	6	16	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	10	2	4	6
19	3	7	9	11	17	24	25	16	9	-3	-4	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-2	10	7	7	2
20	0	6	ES 11	16	21	19	28	4	11	-2	-6	ES -5	ES -2	ES -6	ES -15	ES -24	ES -24	ES -24	ES -24	ES -24	11	9	-5	-2
21	1	3	7	8	19	15	26	20	12	22	7	ES 0	ES -2	ES -9	ES -9	ES -5	ES -9	ES -9	ES -24	ES -24	2	1	-2	-2
22	-1	6	7	15	17	28	20	27	13	ES 0	ES 11	ES 14	ES 3	-9	ES -24	ES -24	ES -24	-6	ES -15	3	8	ES 7	3	ES 2
23	ES 10	ES 4	ES 9	14	22	26	21	ES 14	ES 14	ES 5	ES 9	ES 1	ES 10	ES -1	ES -25	ES -25	ES -25	ES -25	ES -25	ES -25	12	5	ES 15	ES 15
24	ES 8	7	14	20	18	C	26	22	27	17	20	ES -1	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	3	5	5	-1
25	4	3	7	9	16	20	23	23	21	2	2	C	C	C	C	C	C	C	C	C	C	C	C	1
26	ES 3	ES 14	ES -15	ES -20	1	15	21	ES 16	17	8	ES -6	ES -2	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	5	2	-2	-3
27	2	3	3	11	15	19	20	14	7	ES -5	ES -5	ES -2	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-2	7	4	-6
28	0	2	5	11	16	17	11	-8	ES -5	8	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-5	ES -23	-6	2	5	3	-2
29	2	ES 13	ES 12	10	13	17	21	22	15	17	0	ES -2	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-1	3	3	-2
30	1	11	4	15	18	19	17	18	12	ES -6	ES -7	ES -7	ES -24	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	7	8	3	-2
CNT	29	29	29	29	29	28	29	29	29	29	29	28	28	28	28	28	28	28	28	28	27	27	27	28
MED	US 4	US 7	US 9	14	18	20	23	21	US 14	7	ES -4	ES -4	ES -19	ES -23	ES -24	ES -24	ES -24	ES -24	ES -24	-6	9	7	US 4	US 2
UD	ES 9	ES 11	14	17	24	28	28	26	29	22	19	ES 10	ES 3	ES -3	ES -9	ES -9	ES -10	ES -9	ES -20	6	14	11	ES 10	ES 6
LD	ES -1	ES 3	ES 0	9	15	17	16	ES 6	ES -2	ES -9	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	2	ES 1	ES -2	ES -2

RADIO PROPAGATION

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Nov. 1982	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Conditions 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start	End	Range
1	4+	5 4U 5U 4U	4 5 S 4	N N N N	---	---	
2	4+	4 4U S C	4 5 S C	N N N N	---	04.0	
3	C	C C C C	C C C C	N N N N			
4	4+	4 S S 4	4 5 S 4	N N N N			
5	4o	4 S S 4	4 4 S 4	N N N N			
6	4o	4 4U S 4	4 4 S 4	N N N N			
7	4o	4 S S 4	4 4 S 4	N N N N			
8	4o	4 S S 4	4 4 S 4	N N N N			
9	4o	4 5U S 3	4 4 S 4	N N N N			
10	4+	4 S 5U 4	4 5 S 4	N N N N			
11	4o	4 S 5U 3	4 4U S 4	N N N N			
12	4-	3 S S 4	4 4 S 4	N N N N			
13	3+	3 S 4U 4	3 3U S 4	N N N N			
14	4-	4 S S 5	4 2U S 4	N N N N			
15	4o	4 S S 5	4 3 S 4	N N N N			
16	4o	4 S 5U 4	4 3U S 4	N N N N			
17	4-	4 S S 4	4 3 S 4	N N N N			
18	4-	4 S S 4	4 3 S 3	N N N N			
19	4-	4 S S 4	4 3 S 4	N N N N			
20	4-	4 S S 4	4 3 S 3	N N N N			
21	4o	4 S 5U 4	4 4 S 3	N N N N			
22	4+	5 S 5U 4U	4 4U 5U 4U	N N N N			
23	4-	S S S S	4 4U S 3U	N N N N	0917	---	89
24	4o	5 5U S 3	4 5 S 3	U N N N	0921	---	213
25	4-	3U S C C	4 4 C 4U	U U U U	---	---	
26	3-	2U S S 2U	3U 4U S 3	U U N N	---	20.0	
27	3o	3 S S 2U	4 3U S 3	N N N N			
28	3+	4 4U 4U 2U	4 2U S 4	N N N N			
29	4-	3 4U 4U 3U	4 4 S 3	N N N N			
30	4o	4 4U 5U 4U	4 3U S 4	N N N N			

RADIO PROPAGATION

SUDDEN IONOSPHERIC DISTURBANCES

HIRAISO

Time in U.T.

Nov. 1982	S W F								Correspondence		
	Drop-out Intensities (dB)				Start	Duration	Type	Imp.	Solar Flare	Solar Noise	Geomag. Crochet
	CO	HA	1)	2)							
1	5	5	10	17	0338	37	G	1-	x	x	
9			10	8	0052	20	S	1-	x	x	
10			8	9	0602	28	SL	1-	x	x	
11			10	15	0219	21	SL	1-			
12	10D	10	20	15	0355	55	SL	2-	x	x	
12			12		0548	32	S	1	x	x	
13	15D	25D	35	12	0007	13	S	3-	x	x	
13	13D	15	11	10	0237	15	SL	1-	x	x	
13			15	12	0603	35	SL	1	x		
14	23D	x	24	15	0017	40	G	2		x	
15	25D	20D	42D	10	0158	52	S	3+	x	x	
16	23D	10	16	12	0340	56	G	1+	x	x	
16	10	10	8		2136	10	S	1+	x		
16	10	13	8	12	2326	20	SL	2-		x	
18	x	x	12	15	0458	32	SL	1	x	x	
20	10	17	14	12	0212	30	SL	1	x	x	x
20			9	12	0529	19	SL	1-	x	x	
22			12	x	2345	27	S	1	x	x	
23			8		0120	15	SL	1-	x		
23			10	7	0220	17	S	1-	x		
23			11	7	0400	20	S	1			
25			15		0010	20	SL	1	x		
25		12	11		0126	9	S	1-	x	x	
25		x	14	x	0416	9	S	1	x	x	
26	x	x	40D	x	0227	198	SL	3+	x	x	
28			8	11	0523	17	SL	1-	x	x	
30			7		0410	14	SL	1-	x	x	

NOTES CO: Colorado (WWV) HA: Hawaii (WWVH) 1): Australia 2): New Zealand

RADIO PROPAGATION

Sudden Ionospheric Disturbance (SPA)

I N U B O

Nov. 1982	S P A							
	Phase Advance (degrees)					Time (U.T.)		
Date	GBR	Ω/LR	NWC	Ω/H	NLK	Start	End	Maximum
1	21	79	—	34	—	0333	0625	0349
2	9		18	17	—	0012	0123	0019
2			22	13	—	0201	0300	0208
2		—	6		—	0522	0605	0535
2	25	—		27	—	2200	2320	2216
3		—	10	7	—	0052	0206	0056
3		—	31	13	—	0349	0516	0354
3		—	7		—	0544	0623	0601
4		—	7		—	0238	0312	0247
4		—	6	—	—	0511	0541	0523
4		—	6	—	—	0542	0620	0550
8		—	—	5	—	0004	0029	0014
8		—	—	14	—	0034	0134	0046
8		—	—	3	—	0231	0246	0234
8		—	—	19	—	2156	2324	2215
9	48	—	—	84	—	0023	0440	0146
9		—	—	5	—	2319	2348	2326
10	17	—	—	35	—	0022	0153	0029
10		—	—	13	—	0222	0346	0236
10		—	—	16	—	0353	0440	0407
11		—	—	36	—	0217	0357	0231
11		—	—	51	—	2234	0053	2258
12		—	—	14	—	0129	0207	0140
12	56	—	—	61	—	0353	0530	0406
12		—	—	15	—	0531	0654	0550
12	23	—	—		—	1422	——	1439
12		—	—	10	—	2138	2210	2150
12		—	—	6	—	2217	2312	2222
13	36	—	—	114	—	2351**	0229	0013
13	29	—	—	62*	—	0237	0340D	0247
13	18	—	—	58	—	0340E	0441	0346
13		—	—	42	—	0450	0510	0453
13	46	—	—	18	—	0601	0723	0610
14	31	—	111	93	—	2358**	0304	0037
15	81	—	—	146	—	0157	0524	0206
15		—	—	9	—	2001	2020	2009
15		—	—	6	—	2344	0021	2348
16	34*	—	92*	82*	—	0311	0543	0408
16		—		37	—	2042	2110D	2053
16		—		89	—	2110E	2307	2124
16	19	—	48	49	—	2323	0104	2334
17	8	—	14	6	—	0123	0218	0137
17		—	6	4	—	0304	0330	0309
17		—	9	10	—	0330	0411	0339
17		—	27	9	—	0420	0520	0431

I N U B O

Nov.	S P A							
1982	Phase Advance (degrees)					Time (U.T.)		
Date	GBR	Ω/LR	NWC	Ω/H	NLK	Start	End	Maximum
17		—	6		—	0532	0554	0538
17	20	—			—	1038	1130	1057
18		—	8	9	—	0021	0121	0028
18		—	7	5	—	0121	0156	0130
18	12	—	28	16	—	0301	0424	0308
18	28	—	71	26	—	0453	0652	0506
18		—		14	—	2116	2204	2129
19		—	10	7	—	0124	0149D	0133
19		—	29	22	—	0149E	0244D	0212
19		—	44	32	—	0244E	0452	0305
19		—	6		—	0454	0524	0501
19		—	28		—	0726	0826	0738
19		—		14	—	2124	2221	2138
19		—		4	—	2250	2314	2257
19		—	9	7	—	2319	2350	2323
20		—	14	9	—	0021	0126	0036
20	33	—	88	64	—	0206	0407	0224
20	41	—	85	15	—	0527	0805	0536
20		—		10	—	2057	2134	2102
20		—		46	—	2202	0114	2238
21		—	5	14	—	0115	0135	0120
21		—	8	19	—	0136	0158	0140
21		—	10	17	—	0203	0240	0210
21		—	9	10	—	0253	0325	0259
21		—	26	21	—	0327	0419D	0405
21		—	26	17	—	0419E	0449D	0425
21		—	24	13	—	0449E	0547	0454
21		—	51		—	0602	0814	0642
21	11	—			—	1018	1050	1022
21		—		15	—	1940	2018	1949
21		—		24	—	2134	2314	2143
21		—	6	9	—	2319	2344	2324
22		—	—	12	—	0015	0104	0022
22		—	—	10	—	0128	0222	0136
22		—	—	18	—	2152	2227	2201
22		—	—	12	—	2231	2300	2238
22		—	—	18	—	2303	2341	2310
22	23	—	—	54	—	2343	0112	2352
23	7	—	—	24	—	0125	0228	0135
23	12	—	—	40	—	0221	0316	0226
23	10	—	—	36	—	0317	0418	0322
23		—	—	12	—	0425	0446	0429
23		—	—	17	—	1942	2007	1946
23		—	—	5	—	2208	2222	2211
24		—	—	12*	—	0000	0100	0003

I N U B O

Nov. 1982	S P A							
	Phase Advance (degrees)					Time (U.T.)		
Date	GBR	Ω/LR	NWC	Ω/H	NLK	Start	End	Maximum
24		—	—	5	—	0106	0144	0114
24		—	—	8*	—	0146	0254	0216
24		—	—	10	—	0443	0513	0452
24		—		28	—	1942	2000	1950
24		—		87	—	2126	2236	2133
24		—	18	29	—	2253	0006	2305
25	17	—	39	37	—	0012	0120	0025
25	28	—	65	49	—	0125	0340	0131
25	50	—	112	83	—	0412	0545	0418
25		—	13		—	0809	0839	0813
25		—	6	4	—	2304	2330	2310
25	10	—	12	13	—	2340	0015	2350
26		—	6	10	—	0015	0108	0025
26	11	—	5	4	—	0109	0123	0112
26	134	—	223	196	—	0222	0546	0250
26		—		30	—	1941	2018	1947
26		—	6	13	—	2221	2300	2225
27		—	5		—	0304	0325	0307
27		—	10		—	0452	0549	0457
27		—		7	—	2334	0054	2356
28		—		3	—	0104	0136	0110
28		—	16	10	—	0146	0233	0156
28		—	9	12	—	0316	0350	0322
28	15	—	47	31	—	0401	0514	0411
28	20	—	59	11	—	0520	0653	0529
28		—		12	—	2001	2024	2012
28	14	—	7	14	—	2306	0007	2309
29		—	6	5	—	0011	0034	0017
29		—	7	5	—	0034	0109	0039
29		—		4	—	0136	0159	0140
29		—	18	12	—	0200	0329	0220
29		—		9	—	2101	2132	2110
29		—		36	—	2136	2251	2143
29		—		14	—	2308	0115	2342
30		—		3	—	0236	0256	0240
30		14		13	—	0409	0519	0416
30		18	6		—	0738	0830	0748
30		28	10		—	0839	1004	0848
30				5	—	2323	2352	2338

IONOSPHERIC DATA IN JAPAN FOR NOVEMBER 1982

F-407 Vol.34 No.11 (Not for Sale)

電離層月報（1982年11月）

第34巻 第11号（非売品）

1983年2月25日 印刷

1983年2月28日 発行

編集兼 郵政省電波研究所

発行所 〒184 東京都小金井市貫井北町4丁目2－1

☎（0423）（21）1211(代)

印刷所 有限会社 研文社

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