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IONOSPHERIC DATA IN JAPAN

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CONTENTS

RADIO RESEARCH LABORATORY

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 side-band 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	λ /2 vertical	λ /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

DEC. 1985 | 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 25 MHz in 24 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	35	37	35	35	30	30	X 26											X 37	A	X 34	40	38	37	37
2	41	40	X 40	41	41	39	43											A	40	43	50	40	39	40
3	44	43	50	50	44	40	38											X 39	X 36	X 33	X 40	X 38	X 42	43
4	X 39	X 37	X 39	X 38	X 39	X 38	X 32											X 46	X 38	X 34	X 39	X 43	X 42	47
5	49	40	44	46	39	38	39											X 39	36	X 38	X 41	X 39	42	45
6	45	46	43	41	40	40	X 30											X 37	X 36	X 31	40	41	40	40
7	40	40	37	40	39	41	28											37	33	X 32	38	38	X 37	40
8	46	47	50	44	44	40	X 38											39	X 37	37	42	40	44	43
9	43	40	40	X 37	X 36	X 35	X 35											X 35	36	X 35	X 39	36	42	50
10	45	47	47	40	43	48	42											X 41	37	40	50	40	44	X 42
11	X 36	41	43	42	X 36	X 31	33											X 45	X 33	X 34	35	33	35	43
12	44	50	49	45	45	40	33											X 39	X 38	X 42	X 44	X 31	33	X 36
13	41	44	41	41	X 39	X 42	X 32											X 44	X 36	X 40	X 40	X 39	X 38	X 41
14	X 42	X 42	X 39	X 30	X 36	X 30	X 29											X 41	X 32	X 35	X 39	X 37	X 38	X 40
15	X 41	40	X 39	X 38	X 33	X 34	X 31											X 36	X 33	X 30	X 35	X 30	X 32	X 35
16	X 37	X 37	X 33	X 38	X 39	X 36	X 30											X 36	X 31	X 36	X 35	X 31	X 36	38
17	38	40	40	X 40	X 36	X 35	X 34											X 38	X 35	X 39	X 41	X 36	X 37	X 37
18	X 34	X 37	X 39	X 39	X 38	X 39	X 38											X 40	X 38	X 40	X 41	X 39	41	X 38
19	X 38	X 38	X 37	X 36	X 36	X 33	X 33											X 50	X 49	X 39	X 38	X 38	X 37	X 36
20	X 38	X 33	X 31	X 33	X 36	X 33	X 38											X 33	X 37	X 37	34	36	37	X 39
21	X 35	X 39	X 35	X 35	X 34	X 33	X 31											X 42	X 32	X 38	X 37	X 38	X 42	X 40
22	X 40	X 40	42	X 41	X 39	40	40											X 37	X 36	X 31	X 31	X 32	X 33	X 35
23	X 37	X 38	X 37	X 36	X 38	X 37	X 38											X 34	X 35	X 36	X 35	X 34	X 33	X 36
24	42	40	X 39	X 38	X 37	X 34	X 34											X 39	X 42	X 47	X 33	X 31	X 38	X 40
25	40	40	40	X 35	X 34	X 33	X 33											X 37	X 33	X 33	X 32	X 37	X 38	X 38
26	X 37	X 38	X 38	X 37	X 35	X 35	X 32											X 40	X 40	X 44	40	43	45	43
27	X 43	X 45	44	42	42	X 42	X 43											X 43	X 39	X 36	X 35	X 37	40	39
28	40	X 37	X 35	X 36	X 36	X 32	X 26											X 39	X 36	X 32	X 37	X 40	X 39	X 40
29	43	X 37	X 40	X 35	X 35	X 35	32											X 34	X 40	X 33	X 31	X 37	42	56
30	56	51	57	55	54	57	44											X 36	A	A	X 35	A	39	A
31	X 39	X 35	X 35	X 38	X 36	39	A											X 44	X 43	X 40	A	A	A	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30											30	29	30	30	29	30	30
MED	40	40	40	X 38	X 38	X 37	X 33											X 39	X 36	X 36	X 38	X 38	38	40
UQ	43	42	43	41	40	40	X 38											X 41	X 38	X 40	X 40	X 39	42	43
LQ	X 38	X 38	X 38	X 36	X 36	X 34	X 31											X 37	X 35	X 33	X 35	X 36	X 37	X 38

DEC. 1985 | FXI (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	F	F	F	F	F 23	19	42	47	54	66	61	59	51	56	57	41	30	A	27	F 29	F 29	F 28	F 28
2	F 31	F 32	33	F 34	F 34	F 32	F	44	50	63	64	54	67	H 59	52	50	43	A	F 34	F	F	F	F	F 25
3	F	F	F	F	F	F 33	F	40	49	61	63	73	64	57	54	55	44	32	29	26	33	31	35	F
4	32	30	32	31	32	31	25	42	47	H 63	67	61	56	51	54	51	44	39	31	27	32	36	35	F
5	F	F	F	F	F	F	F	44	53	61	54	68	71	56	52	65	48	32	F 29	31	34	32	F 34	F 38
6	F 35	F	F	F	F	F	23	34	50	55	66	60	63	60	62	60	45	30	29	24	F	F	F	F
7	F	F 30	F 30	F	F 31	F	F 18	34	50	57	63	59	57	62	54	55	43	F 28	F 26	25	F 31	F 30	30	F
8	F	F	F	F	F	F 30	31	46	51	53	56	63	59	62	H 59	52	41	F 32	30	F 30	F	F	F	F
9	F	F 30	F 30	30	29	28	23	43	46	59	57	64	64	57	55	52	34	28	F 28	28	32	F 30	F	F
10	F	U F 33	F 29	F 29	U F 28	F	F 35	45	51	52	54	58	65	54	49	49	40	34	F 30	F	F	F	F	35
11	29	F	F 31	F 30	29	24	F 23	41	49	64	65	71	61	62	62	58	48	38	26	27	F 28	F	F	F
12	F	F	F	F	F	F 33	F 26	33	51	52	70	72	59	53	58	54	45	32	31	35	37	24	F 26	29
13	F	F	F 34	F	32	35	25	35	45	50	H 60	H 65	61	55	H 53	60	55	37	29	33	33	32	31	34
14	35	35	32	23	29	23	22	35	56	80	65	62	58	63	58	48	40	34	25	28	32	30	31	33
15	34	F 33	32	31	26	27	24	36	47	55	69	70	57	56	58	55	47	29	26	23	28	23	25	28
16	30	30	31	31	32	29	23	33	50	H 55	64	68	H 56	58	62	53	37	29	24	29	28	24	29	F 31
17	F 31	F 33	F	33	29	28	27	36	47	59	55	63	54	53	66	51	43	31	28	32	34	29	30	30
18	27	30	32	32	31	32	31	36	50	61	59	61	54	H 53	53	47	35	33	31	33	34	32	F 34	31
19	31	31	30	29	29	26	26	36	51	56	H 56	67	58	H 55	63	49	47	43	42	32	31	31	30	29
20	31	26	24	26	29	26	31	40	56	52	70	H 61	65	65	67	53	43	26	30	30	F	F	F	32
21	28	32	28	28	27	26	24	37	49	52	53	73	59	51	H 66	60	50	35	25	31	30	31	35	33
22	33	33	F 35	34	32	F 33	F 30	36	46	46	60	66	52	49	53	50	38	30	29	24	24	25	26	28
23	30	31	30	29	31	30	31	41	54	50	53	63	H 57	51	52	54	45	27	28	29	28	27	26	29
24	F	F	32	31	30	27	27	41	51	47	64	58	52	54	57	49	34	32	35	40	26	24	31	33
25	F	F	F	28	27	26	26	31	47	53	68	61	53	48	54	48	36	30	26	26	25	30	31	31
26	30	31	31	30	28	28	25	31	45	52	64	67	50	57	49	H 44	35	33	33	37	F	F	F	F
27	36	38	F	F	F 35	35	36	43	49	63	65	68	52	50	50	43	32	36	32	29	28	30	F	F
28	F	30	28	29	29	25	19	31	49	54	56	63	H 56	58	55	47	50	32	29	25	30	33	32	33
29	F 36	30	33	28	28	28	F 24	A	54	81	82	55	60	57	63	56	38	27	33	26	24	30	F	F
30	F	F	F	F	F	F	F	36	53	61	63	78	79	63	60	52	50	29	A	A	28	A	F	A
31	32	28	28	31	29	F	A	A	52	58	69	73	71	64	61	49	43	37	36	33	A	A	A	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	20	21	21	24	25	26	29	31	31	31	31	31	31	31	31	31	30	29	28	24	22	19	19
MED	31	31	31	30	29	28	26	36	50	55	64	63	59	56	56	52	43	32	29	29	30	30	31	31
UQ	34	33	32	31	32	32	30	42	51	61	66	68	64	60	62	55	46	34	31	32	32	31	33	33
LQ	30	30	30	29	28	26	23	35	47	52	56	61	56	53	53	49	38	29	28	26	28	27	28	29

DEC. 1985 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24sec 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										390	320	360L	L											
2											350L	L	L	320										
3											L	370	L	L										
4											L	350L	330L											
5												360	370											
6												350	350											
7											350L	L												
8												350		A										
9											330	L	L											
10																								
11												L	L											
12												L	350L											
13												L												
14											330L	340L												
15											360L	L	340L											
16												370L	340L											
17													L											
18												L												
19													340											
20												360L	340L											
21												370L	350L											
22												350L		A										
23																								
24																								
25												L	L											
26													350L											
27											340	360												
28												350L												
29								A			350L		340L											
30												370	350											
31								A			340L	360L	350L											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	9	15	13	1										
MED										390	340L	360L	350L	320										
UQ											350L	365	350L											
LQ											330	350L	340L											

DEC. 1985 | FOF1 (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	A	235	235	A	240	225	200	155	S							
2								B	A	225	235	A	240	230	A	A	S							
3								S	A	A	A	250	250	235	210	A	S							
4								S	185	220	230	240	245	235	215	185	S							
5								S	A	A	A	250	250	240	215	A	E							
6								S	195	215	240	A	260	245	215	S	E							
7								A	190	225	235	250	250	240	210	S	E							
8								S	205	235	A	A	255	A	A	190	E							
9								S	A	A	A	A	255	245	235	180	S							
10								S	190	240	A	A	255	250	H 235	S	E							
11								S	195	230	245	250	255	245	225	175	S							
12								A	A	230	B	B	260	B	B	B	E							
13								S	200	230	250	265	260	250	210	175	E							
14								S	175	225	245	250	255	235	A	S	E							
15								S	A	A	A	250	A	235	A	165	E							
16								A	175	230	A	255	255	245	A	A	S							
17								S	200	235	250	B	B	B	B	B	S							
18								S	195	230	B	B	255	B	B	B	S							
19								S	B	B	A	255	B	250	220	S	S							
20								A	A	225	A	255	260	250	B	B	S							
21								A	A	B	235	B	250	245	225	175	E							
22								S	A	220	A	A	A	A	210	155	S							
23								S	185	220	245	250	250	235	210	160	S							
24								S	A	210	230	245	240	225	210	A	S							
25								S	180	215	230	240	H 235	230	215	165	S							
26								S	180	215	245	255	250	245	220	160	S							
27								S	170	A	240	250	250	240	210	S	S							
28								S	180	220	235	250	250	245	220	170	S							
29								A	A	A	A	A	A	235	205	S	E							
30								A	A	A	A	A	A	A	A	S	E							
31								A	A	A	A	A	A	A	B	B	S							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									16	21	16	17	24	24	20	13	12							
MED									188	225	238	250	250	240	215	170	E							
UQ									195	230	245	255	255	245	220	175	E							
LQ									180	220	235	250	250	235	210	160	E							

DEC. 1985 | FOE (0.01 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 S 15	22	J A 30	27	31	E S 16	30	G	G	39	G	G	G	G	E S 16	26	43	J A 50	36	E S 16	26	35
2	26	22	28	23	22	E S 16	22	E B 16	29	G	G	38	G	G	35	33	26	35	36	34	31	23	23	43
3	30	26	E S 16	E S 16	E S 12	E S 16	E S 16	19	30	J A 58	J A 43	26	26	G 17	G 19	26	28	32	24	31	J A 46	31	25	22
4	20	E S 14	E S 12	20	E S 12	20	E S 16	E S 16	G	G 21	29	G 22	G 16	G 16	G	G	E S 16	E S 16	E S 16	E S 13	21	E S 16	E S 16	24
5	E S 16	22	22	E	E	26	28	E S 16	25	26	27	G	G	G 19	30	31	35	28	E S 16	E S 16	E S 14	E S 16	E S 15	E S 16
6	E S 16	E S 16	E S 13	E	E	E S 12	E S 16	E S 16	G	28	G	30	G	G	G	21	22	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16
7	E S 15	E S 11	E	E S 11	E S 14	E S 11	E S 11	19	24	G	G	G	G 21	G	G	E S 16	17	E S 16	E	E	E S 15	24	E S 16	E S 16
8	26	25	E S 14	E S 12	E	E S 16	E S 16	E S 16	G	G	36	35	G	J A 59	J A 43	G	32	34	26	24	26	31	29	25
9	25	23	21	E S 16	E	E S 16	22	26	32	J A 76	34	36	G	G	G	G	E S 13	E S 13	E S 16	E S 16	E S 17	E S 12	E S 16	20
10	32	E S 13	21	20	E S 16	E	20	E S 16	G	26	43	42	31	G	G	24	26	E S 16	E S 15	J A 40	J A 58	E S 11	E	E S 16
11	E S 16	E S 14	E	E	E	E S 16	E S 15	31	G	G	G	G	G	G	G	G	E S 14	E S 16	E S 15	E S 12	40	37	E S 13	E S 16
12	23	31	28	E S 16	E	26	34	41	26	G	29	E B 28	G	27	E B 26	21	27	26	E S 16	E S 16	E S 16	E S 13	E S 16	E S 16
13	E S 16	E	28	E S 11	26	E S 16	E S 16	26	G	G	G	G	G	G	G	G	34	30	E S 16	E S 16	30	E S 16	E S 16	E S 16
14	E S 16	22	E S 13	26	E	E	E S 16	E S 16	G	G	G	35	G	26	23	24	22	38	J A 63	35	E S 16	30	35	26
15	31	32	28	E S 11	28	25	E S 16	25	25	31	40	36	44	36	32	G 25	26	28	21	20	E S 16	29	20	20
16	22	25	25	24	23	22	E S 15	20	24	G 20	43	26	26	G 20	35	27	29	E S 16	E S 16	E	E S 15	E S 16	E S 16	E S 16
17	E S 13	E S 12	E	E S 11	E	E	E	E S 15	G	G	31	E B 31	E B 29	E B 31	E B 24	E B 20	E S 16	E S 12	E S 16	E S 16	E	E S 16	E S 16	E S 16
18	E S 16	E S 16	E S 16	J A 48	23	E	E	E S 16	G	G	E B 26	E B 28	G	E B 27	E B 23	E B 19	E S 15	E S 12	E	E S 13	E S 16	E S 15	31	23
19	20	E S 14	E S 14	E	24	E S 16	E	E S 16	24	E B 23	32	30	E B 26	G	G	E S 17	E S 12	E S 11	E S 13	E S 16	E S 16	E S 15	E S 16	E
20	E S 13	30	27	26	36	34	J A 121	26	J A 81	G	27	G	G	G	24	E B 20	E S 16	E S 11	E	J A 49	24	30	22	23
21	24	22	26	E	E	E S 16	25	38	34	25	29	30	G	30	G	40	20	28	31	22	30	J A 47	35	22
22	22	E S 13	25	22	26	29	30	30	35	30	40	43	40	44	G	G	E S 16	E S 16	E S 13	E S 12	E S 11	E S 16	E	32
23	30	E S 16	19	E	E S 13	E S 14	E S 16	21	25	30	32	G	G	G 17	G	24	E S 13	27	25	E S 16	35	31	35	E S 13
24	E	E S 11	E S 11	E S 12	E	E	E S 16	E S 16	23	G 16	30	G	G	28	G 15	26	26	E S 13	J A 57	E S 16	26	31	22	28
25	E S 16	E S 14	E S 14	E S 13	E	E S 16	E	E S 16	G	28	30	27	G	G	G	23	E S 15	26	27	30	20	E S 16	24	26
26	26	E	E S 13	E S 16	30	20	E S 16	E S 16	G 14	32	32	G	G 15	26	26	32	E S 15	E S 16	E S 14	22	25	E S 13	20	22
27	26	26	E S 11	E S 12	E	E S 16	E S 16	E S 16	21	31	G 16	G	G 16	G 15	G	E S 17	E S 16	E S 13	E S 11	E S 16	23	21	21	23
28	22	26	30	30	E S 16	E S 16	E S 16	E S 13	G	29	G	G	G	G	G	G	E S 16	E S 14	E S 16	E S 16	J A 44	22	23	32
29	21	20	40	33	23	E S 16	30	J A 79	J A 49	J A 49	J A 57	43	28	G	G	21	19	30	J A 61	30	E S 11	E S 16	26	E
30	E S 16	E S 13	E S 12	E	E	E S 16	E S 13	30	J A 53	33	J A 41	J A 88	29	34	32	37	32	33	J A 69	J A 59	J A 157	J A 72	48	J A 54
31	43	32	26	28	J A 43	J A 50	J A 88	J A 119	43	J A 85	J A 52	40	37	27	E B 23	E B 18	31	34	43	J A 72	J A 70	J A 52	44	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	21	16	16	16	E E 13	E S 16	E S 16	E 16	24	25	30	27	G	G 16	G	21	19	E S 16	16	16	23	E S 16	21	22
UQ	26	25	26	22	24	21	24	26	30	30	38	36	25	26	24	26	26	29	29	30	33	30	26	26
LQ	E S 16	E S 13	E S 13	E S 11	E	E S 15	E S 16	E S 16	G	G	E G 16	G	G	G	G	E G 16	E S 16	E S 14	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16

DEC. 1985 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 S 15	E	E	17	E	E S 16	21	G	G	30	G	G	G	G	E S 16	17	A A 43	24	E	E S 16	E	E
2	E	E	E	E	E	E S 16	E	E B 16	19	G	G	27	G	G	23	18	16	A A 35	22	23	E	E	E	17
3	E	E	E S 16	E S 16	E S 12	E S 16	E S 16	17	20	36	27	G	G	G 17	G 19	20	17	E	E	E	E	E	E	E
4	E	E S 14	E S 12	E	E S 12	E	E S 16	E S 16	G	G 21	G	G 22	G 16	G 16	G	G	E S 16	E S 16	E S 16	E S 13	E	E S 16	E S 16	E
5	E S 16	E	E	E	E	E	E	E S 16	G	G	G	G	G	G 19	20	20	28	E	E S 16	E S 16	E S 14	E S 16	E S 15	E S 16
6	E S 16	E S 16	E S 13	E	E	E S 12	E S 16	E S 16	G	G	G	27	G	G	G	20	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16
7	E S 15	E S 11	E	E S 11	E S 14	E S 11	E S 11	18	G	G	G	G	G 21	G	G	E S 16	17	E S 16	E	E	E S 15	E	E S 16	E S 16
8	E	E	E S 14	E S 12	E	E S 16	E S 16	E S 16	G	G	27	30	G	42	30	G	16	E	E	E	E	E	E	E
9	E	E	E	E S 16	E	E S 16	E	17	20	30	27	29	G	G	G	G	E S 13	E S 13	E S 16	E S 16	E S 17	E S 12	E S 16	E
10	E	E S 13	E	E	E S 16	E	E	E S 16	G	G	28	29	G	G	G	20	16	E S 16	E S 15	E	E	E S 11	E	E S 16
11	E S 16	E S 14	E	E	E	E S 16	E S 15	E S 15	G	G	G	G	G	G	G	G	E S 14	E S 16	E S 15	E S 12	E	20	E S 13	E S 16
12	E	E	E	E S 16	E	E	20	25	20	G	G	E B 28	G	26	E B 26	21	16	E	E S 16	E S 16	E S 16	E S 13	E S 16	E S 16
13	E S 16	E	E	E S 11	E	E S 16	E S 16	G	G	G	G	G	G	G	G	G	16	E	E S 16	E S 16	E	E S 16	E S 16	E S 16
14	E S 16	E	E S 13	E	E	E	E S 16	E S 16	G	G	G	G	G	G	23	21	16	22	20	E	E S 16	E	E	E
15	E	E	E	E S 11	E	E	E S 16	E S 16	17	22	28	23	26	G	24	G 15	17	E	E	E	E S 16	E	E	E
16	E	E	E	E	E	E	E S 15	16	17	G 20	24	20	20	G 20	28	19	17	E S 16	E S 16	E	E S 15	E S 16	E S 16	E S 16
17	E S 13	E S 12	E	E S 11	E	E	E	E S 15	G	G	30	E B 31	E B 29	E B 31	E B 24	E B 20	E S 16	E S 12	E S 16	E S 16	E	E S 16	E S 16	E S 16
18	E S 16	E S 16	E S 16	E	E	E	E	E S 16	G	G	E B 26	E B 28	G	E B 27	E B 23	E B 19	E S 15	E S 12	E	E S 13	E S 16	E S 15	E	E
19	E	E S 14	E S 14	E	E	E S 16	E	E S 16	24	E B 23	28	30	E B 26	G	G	E S 17	E S 12	E S 11	E S 13	E S 16	E S 16	E S 15	E S 16	E
20	E S 13	22	E	E	E	E	E	16	22	G	26	G	G	G	24	E B 20	E S 16	E S 11	E	E	E	E	E	E
21	E	E	E	E	E	E S 16	E	23	23	25	29	30	G	G	G	28	16	E	E	E	E	E	E	E
22	E	E S 13	E	E	E	E	E	E S 15	22	20	29	32	29	42	G	G	E S 16	E S 16	E S 13	E S 12	E S 11	E S 16	E	E
23	E	E S 16	E	E	E S 13	E S 14	E S 16	E S 15	15	29	G	G	G	G 17	G	G	E S 13	E	E	E S 16	E	E	21	E S 13
24	E	E S 11	E S 11	E S 12	E	E	E S 16	E S 16	19	G 16	29	G	G	21	G 15	21	E S 16	E S 13	E	E S 16	E	E	E	E
25	E S 16	E S 14	E S 14	E S 13	E	E S 16	E	E S 16	G	27	G	21	G	G	G	G	E S 15	F	E	E	E	E S 16	E	E
26	E	E	E S 13	E S 16	E	E	E S 16	E S 16	G 13	G	21	G	G 15	G	17	G	E S 15	E S 16	E S 14	E	E	E S 13	E	E
27	E	E	E S 11	E S 12	E	E S 16	E S 16	E S 16	G	23	G 16	G	G 16	G 15	G	E S 17	E S 16	E S 13	E S 11	E S 16	E	E	E	E
28	E	E	E	E	E S 16	E S 16	E S 16	E S 13	G	G	G	G	G	G	G	G	E S 16	E S 14	E S 16	E S 16	E	E	E	E
29	E	E	24	E	E	E S 16	17	A A 79	30	30	31	30	26	G	G	20	16	E	20	E	E S 11	E S 16	E	E
30	E S 16	E S 13	E S 12	E	E	E S 16	E S 13	16	51	24	34	30	27	25	28	30	19	22	A A 69	A A 59	24	A A 72	24	A A 54
31	25	E	E	E	E	E	A A 88	A A 119	20	45	24	29	33	25	E B 23	E B 18	16	23	28	26	A A 70	A A 52	A A 44	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E	E	E	E	E	E S 12	E S 15	E S 16	15	G	22	22	G	G	G	E G 18	16	E S 13	E E 15	E E 13	E	E S 13	E	E
UQ	E S 16	E S 14	E S 13	E S 12	E	E S 16	E S 16	16	20	24	28	30	U 18	19	22	20	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
LQ	E	E	E	E	E	E	E	E S 16	G	G	G	G	G	G	G	G	E S 16	E	E	E	E	E	E	E

DEC. 1985 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | FMIN (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 25 MHz in 24sec 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 S 15	E S 15	E S 16	E	E	E S 16	11	11	16	13	16	13	11	12	E S 16	E	E S 12	E S 16	E S 12	E S 16	E	E S 12
2	E S 16	E S 16	E	E S 12	E S 13	E S 16	E S 16	16	13	15	13	11	10	10	10	12	E S 12	E S 11	E	E S 11	E	E S 16	E S 16	E
3	E S 16	E S 16	E S 16	E S 16	E S 12	E S 16	E S 16	E S 13	11	10	10	12	10	11	10	16	E S 11	E S 16	E S 16	E	E S 15	E S 12	E S 16	E S 16
4	E S 13	E S 14	E S 12	E S 16	E S 12	E S 15	E S 16	E S 16	16	11	11	11	10	10	16	E S 16	E S 16	E S 16	E S 16	E S 13	E S 16	E S 16	E S 16	E S 16
5	E S 16	E S 16	E S 16	E	E	E	E S 15	E S 16	16	16	16	13	16	12	10	13	E	E	E S 16	E S 16	E S 14	E S 16	E S 15	E S 16
6	E S 16	E S 16	E S 13	E	E	E S 12	E S 16	E S 16	16	15	13	17	17	17	18	E S 18	E	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16
7	E S 15	E S 11	E	E S 11	E S 14	E S 11	E S 11	E	15	13	16	16	17	16	16	E S 16	E	E S 16	E	E	E S 15	E S 16	E S 16	E S 16
8	E S 12	E S 16	E S 14	E S 12	E	E S 16	E S 16	E S 16	13	16	16	16	17	17	16	13	E	E	E S 16	E S 16	E S 12	E S 16	E S 16	E S 16
9	E S 16	E S 16	E S 16	E S 16	E	E S 16	E S 16	E S 12	12	16	17	16	18	16	17	E S 16	E S 13	E S 13	E S 16	E S 16	E S 17	E S 12	E S 16	E S 16
10	E S 11	E S 13	E	E	E S 16	E	E S 16	E S 16	13	16	12	11	18	16	16	E S 16	E	E S 16	E S 15	E S 16	E S 15	E S 11	E	E S 16
11	E S 16	E S 14	E	E	E	E S 16	E S 15	E S 15	10	17	16	19	18	18	17	13	E S 14	E S 16	E S 15	E S 12	E S 11	E S 13	E S 13	E S 16
12	E S 16	E	E S 12	E S 16	E	E	E S 11	E	18	20	24	28	24	25	26	E S 16	E	E S 11	E S 16	E S 16	E S 16	E S 13	E S 16	E S 16
13	E S 16	E	E S 11	E S 11	E	E S 16	E S 16	E S 16	16	17	20	24	25	23	18	E S 16	E	E	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 13	E S 16	E	E	E S 16	E S 16	16	17	20	19	19	20	20	E S 16	E	E	E S 12	E S 16	E S 16	E S 16	E S 16	E S 16
15	E S 16	E	E	E S 11	E S 16	E S 16	E S 16	E S 16	10	12	12	17	11	10	10	10	E	E S 13	E S 15	E S 16	E S 16	E	E S 13	E S 16
16	E S 13	E S 13	E	E	E	E S 16	E S 15	E	15	14	12	16	17	16	16	15	E S 12	E S 16	E S 16	E	E S 15	E S 16	E S 16	E S 16
17	E S 13	E S 12	E	E S 11	E	E	E	E S 15	16	20	22	31	29	31	24	20	E S 16	E S 12	E S 16	E S 16	E	E S 16	E S 16	E S 16
18	E S 16	E S 16	E S 16	E S 16	E S 13	E	E	E S 16	16	18	26	28	21	27	23	19	E S 15	E S 12	E	E S 13	E S 16	E S 15	E	E S 12
19	E S 16	E S 14	E S 14	E	E S 11	E S 16	E	E S 16	19	23	23	23	26	23	20	E S 17	E S 12	E S 11	E S 13	E S 16	E S 16	E S 15	E S 16	E
20	E S 13	E	E	E	E	E	E S 16	E	17	20	20	23	21	21	22	20	E S 16	E S 11	E	E S 16	E S 16	E S 14	E S 12	E S 12
21	E S 16	E S 13	E	E	E	E S 16	E	E	18	22	20	25	22	22	18	E S 15	E	E S 13	E S 11	E S 11	E S 13	E S 16	E	E S 16
22	E S 16	E S 13	E S 15	E S 13	E S 16	E S 16	E S 16	E S 15	10	12	15	15	17	17	16	E S 11	E S 16	E S 16	E S 13	E S 12	E S 11	E S 16	E	E
23	E S 16	E S 16	E S 16	E	E S 13	E S 14	E S 16	E S 15	10	10	10	17	16	11	12	12	E S 13	E S 16	E S 16	E S 16	E S 16	E	E S 13	E S 13
24	E	E S 11	E S 11	E S 12	E	E	E S 16	E S 16	11	10	10	10	10	10	10	10	E S 16	E S 13	E S 16	E S 16	E S 11	E	E S 16	E S 16
25	E S 16	E S 14	E S 14	E S 13	E	E S 16	E	E S 16	10	10	11	10	13	10	11	13	E S 15	E S 11	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
26	E S 16	E	E S 13	E S 16	E S 16	E S 11	E S 16	E S 16	10	12	10	10	11	10	10	10	E S 15	E S 16	E S 14	E S 16	E S 14	E S 13	E S 16	E S 11
27	E S 16	E S 16	E S 11	E S 12	E	E S 16	E S 16	E S 16	13	10	10	10	10	11	16	E S 17	E S 16	E S 13	E S 11	E S 16	E S 15	E S 16	E S 16	E S 13
28	E S 16	E	E	E S 16	E S 16	E S 16	E S 16	E S 13	10	13	11	16	16	16	17	E S 15	E S 16	E S 14	E S 16	E S 16	E	E S 16	E S 16	E S 16
29	E S 15	E	E	E	E	E S 16	E	E	10	17	17	16	19	17	16	E S 16	E	E	E S 12	E S 11	E S 11	E S 16	E S 16	E
30	E S 16	E S 13	E S 12	E	E	E S 16	E S 13	E	17	17	19	21	23	21	18	E S 16	E	E	E S 13	E	E S 13	E	E	E
31	E S 15	E S 12	E	E	E	E S 13	E	E	13	17	17	20	19	21	23	18	E S 12	E	E S 15	E S 12	E S 11	E	E	E S 13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 16	E S 13	E S 12	E S 11	E	E S 16	E S 16	E S 16	13	16	16	16	17	16	16	U 13	E S 12	E S 13	E S 15	E S 16	E S 15	E S 16	E S 16	E S 16
UQ	E S 16	E S 16	E S 14	E S 16	E S 13	E S 16	E S 16	E S 16	16	17	20	20	20	21	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	E S 16
LQ	E S 15	E E 11	E	E	E	E	E E 11	E E 12	10	12	12	12	14	11	12	12	E	E E 11	E S 12	E S 12	E S 12	E S 12	E S 12	E S 12

DEC. 1985 | FMIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	F	F	F	F	F 315	315	335	395	335	350	345	355	370	370	330	345	355	A	370	F 345	F 320	F 305	F 315
2	F 320	F 310	305	F 305	F 310	F 310	F	365	380	350	365	355	365	H 330	370	365	370	A	F 325	F	F	F	F	F 280
3	F	F	F	F	F	F 305	F	350	365	330	350	370	360	370	365	365	325	350	325	355	335	290	315	F
4	305	300	310	295	310	320	350	355	380	H 305	360	360	385	370	355	360	355	340	350	325	310	300	310	F
5	F	F	F	F	F	F	F	370	345	360	355	350	345	365	350	360	355	345	F 310	335	315	335	F 295	F 295
6	F 315	F	F	F	F	F	345	345	365	365	355	335	340	360	345	365	335	335	345	355	F	F	F	F
7	F	F 315	F 325	F	F 330	F	F 290	350	365	365	350	360	350	340	370	370	370	F 355	F 340	300	F 300	F 325	305	F
8	F	F	F	F	F	F 300	345	360	360	360	350	365	370	350	H 320	370	345	F 350	345	F 300	F	F	F	F
9	F	F 335	F 305	335	310	320	350	355	370	365	365	380	375	335	365	365	300	320	F 320	320	320	F 300	F	F
10	F	U F 305	F 310	F 315	U F 305	F	F 320	320	355	370	370	325	380	365	370	370	305	330	F 295	F	F	F	F	300
11	275	F	F 305	F 325	345	305	F 315	360	370	315	340	360	375	340	345	360	335	330	295	305	F 340	F	F	F
12	F	F	F	F	F	F 335	F 345	325	370	335	330	360	335	360	360	370	355	345	320	335	330	355	F 290	275
13	F	F	F 295	F	310	335	320	330	375	380	H 315	H 340	360	360	H 300	350	365	345	310	305	270	260	260	265
14	300	315	335	270	315	305	280	320	325	350	335	360	350	350	360	375	350	330	290	320	310	300	290	295
15	300	F 305	320	330	305	315	305	340	380	365	345	345	350	355	360	365	380	310	355	295	340	340	290	305
16	305	300	295	300	320	325	320	335	340	H 305	345	350	H 370	365	370	360	355	310	290	345	330	300	320	F 305
17	F 295	F 305	F	310	310	320	370	335	380	355	380	365	360	355	355	360	350	355	290	320	330	310	310	335
18	295	300	310	310	290	310	320	335	380	355	355	345	380	H 325	360	360	315	335	320	325	325	310	F 310	295
19	300	305	315	285	275	275	320	340	370	340	H 305	370	360	H 330	335	395	320	320	335	320	290	285	265	305
20	330	345	290	300	280	275	360	320	340	330	355	H 325	330	340	355	365	330	355	325	315	F	F	F	310
21	315	320	320	320	325	340	310	345	365	360	350	360	365	370	H 305	370	360	350	345	350	305	300	285	310
22	310	310	F 310	295	310	F 335	F 335	340	375	335	350	365	370	370	360	350	340	350	345	335	335	330	300	305
23	295	295	305	310	320	305	330	340	370	365	375	385	H 345	370	365	375	375	295	320	350	350	325	315	310
24	F	F	285	320	300	295	305	340	390	345	345	360	360	340	365	350	350	310	315	350	385	305	290	305
25	F	F	F	355	295	315	345	340	355	345	365	360	360	375	365	380	335	325	340	340	320	300	315	315
26	305	315	320	315	320	320	340	330	375	365	365	375	380	370	385	H 340	320	340	335	325	F	F	F	F
27	305	315	F	F	F 315	315	315	340	355	340	370	365	385	380	365	370	330	320	330	335	340	310	F	F
28	F	315	320	325	310	320	280	320	365	365	350	365	H 320	360	365	360	360	345	345	310	300	325	295	295
29	F 325	295	310	355	315	320	F 310	A	340	370	380	375	355	335	365	380	355	350	340	365	355	300	F	F
30	F	F	F	F	F	F	F	335	A	360	350	345	355	340	360	360	355	305	A	A	340	A	F	A
31	345	285	265	290	310	F	A	A	365	345	360	370	350	345	360	375	335	325	340	340	A	A	A	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	20	21	21	24	25	26	29	30	31	31	31	31	31	31	31	31	30	29	28	24	22	19	19
MED	305	308	310	310	310	315	320	340	368	355	350	360	360	360	360	365	350	338	325	330	330	308	300	305
UQ	315	315	320	325	318	320	345	350	375	365	365	365	370	370	365	370	355	350	340	348	340	325	310	310
LQ	300	300	305	300	305	305	310	335	355	338	348	348	350	340	355	360	332	320	315	318	310	300	290	295

DEC. 1985 | M(3000)F2 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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										370	375	L 360	L											
2											L 360	L	L	395										
3											L	335	L	L										
4											L	L 365	L 370											
5												375	365											
6												400	400											
7											L 395	L												
8												365		A										
9											395	L	L											
10																								
11												L	L											
12												L	L 365											
13												L												
14											L 385	L 375												
15											L 335	L	L 375											
16												L 350	L 395											
17													L											
18												L												
19													380											
20												L 355	L 375											
21												L 345	L 365											
22												A		A										
23																								
24																								
25												L	L											
26													L 390											
27											375	375												
28												L 385												
29								A			A		L 365											
30												355	365											
31								A			L 360	L 360	A											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	8	14	12	1										
MED										370	L 375	L 362	L 372	395										
UQ											390	375	L 385											
LQ											L 360	L 355	L 365											

DEC. 1985 | M(3000)F1 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	250	230	240											
2											240	230	235	230										
3											235	230	225	210										
4											230	230	205											
5												225	230											
6												215	215											
7											220	225												
8												240		235										
9											230	205	225											
10																								
11												225	215											
12												230	225											
13												240												
14											225	225												
15											250	245	220											
16												225	210											
17													220											
18												230												
19													245											
20												240	245											
21												240	230											
22												230		240 A										
23																								
24																								
25												230	225											
26													225											
27											230	220												
28												225												
29								A			225		230											
30												240	225											
31								A			225	230	235											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	11	24	20	4										
MED										300	230	230	225	232										
UQ											238	235	232	238										
LQ											225	225	220	220										

DEC. 1985 | H'F2 (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	320	335	320	S 350	290	300	225	210	195	200	215	210	215	220	225	200	225	A	A	255	255	255	295
2	285	275	283	255	255	245	235	210	205	H 215	225	220	205	200	220	205	205	A	270	250	255	205	245	A
3	265	250	270	255	250	255	220	210	H 205	225	230	215	220	H 200	220	225	205	215	240	230	245	260	275	255
4	260	270	260	280	245	250	205	220	205	205	H 200	205	200	205	220	205	200	205	225	210	255	250	260	250
5	240	255	290	255	250	250	245	200	205	225	215	220	215	220	210	220	210	225	250	230	245	225	280	265
6	265	275	275	265	255	225	205	220	205	210	H 205	200	215	H 205	215	205	200	250	210	250	260	225	300	290
7	250	255	255	255	215	200	265	215	205	205	210	220	210	235	205	225	190	215	210	270	280	240	265	265
8	285	255	255	260	295	255	245	205	200	220	210	220	210	A	220	210	215	230	230	260	255	245	285	290
9	255	245	255	260	250	255	240	205	205	225	200	205	H 195	210	H 225	205	195	205	245	240	235	240	300	300
10	265	250	245	270	270	240	230	215	205	220	H 220	H 195	230	220	H 205	205	200	225	255	255	245	255	275	275
11	295	250	285	255	225	295	280	205	205	215	235	225	215	235	215	205	205	205	250	245	230	A 280	285	295
12	255	260	260	250	240	210	A 245	A	210	H 195	240	230	205	H 205	230	205	210	200	250	245	220	205	295	295
13	295	275	290	255	230	220	205	205	200	H 200	220	225	H 200	225	H 200	240	205	195	250	270	325	335	350	330
14	290	255	230	355	255	240	305	245	230	225	200	205	H 205	245	225	210	210	245	A 305	250	245	265	300	290
15	290	290	245	240	255	255	275	205	205	220	230	230	205	H 215	235	215	200	245	210	300	240	245	295	275
16	260	255	280	280	245	230	255	215	210	H 205	235	220	205	230	230	210	200	235	270	225	225	290	250	255
17	275	265	285	255	245	245	205	235	200	225	215	230	205	245	235	205	205	200	290	245	225	235	240	240
18	275	290	270	275	260	245	245	205	200	200	220	225	220	205	H 200	220	205	210	245	250	235	240	250	275
19	275	255	265	290	300	300	240	205	205	H 200	225	230	200	205	245	210	230	245	235	250	300	300	305	245
20	255	A	305	300	300	325	235	230	220	200	235	210	220	H 200	245	215	200	205	255	250	300	260	270	270
21	275	245	255	245	240	245	270	A 235	205	225	225	230	205	205	235	210	205	205	250	230	245	260	295	255
22	255	275	250	280	255	250	250	205	H 195	225	240	A	H 195	A	210	205	205	240	240	205	245	245	275	305
23	290	275	270	255	250	250	245	230	H 210	205	220	H 210	H 200	220	205	205	205	230	255	220	225	255	A 275	260
24	295	275	295	250	255	255	255	205	200	195	245	225	205	245	205	225	205	245	255	205	205	275	295	255
25	295	290	255	225	250	250	220	230	205	210	225	225	205	210	H 200	200	205	225	255	245	255	275	250	245
26	255	255	250	255	250	250	230	225	210	225	240	H 210	200	H 200	205	205	200	205	240	220	235	250	225	240
27	255	255	250	245	220	235	245	225	235	230	205	220	200	H 200	225	200	200	240	210	225	210	225	255	270
28	235	245	255	240	250	235	S	225	195	230	215	210	200	H 230	220	205	205	210	215	H 210	290	245	270	300
29	245	255	A 305	200	290	255	E A 295	A	230	225	A	205	200	230	225	205	200	205	240	210	215	280	255	250
30	270	260	235	225	240	205	205	230	A	225	240	220	205	220	225	220	205	A	A	A	A	A	A	A
31	A	325	320	290	260	220	A	A	225	A	220	220	A	225	220	205	215	A 245	A	A	A	A	A	295
	00	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	31	31	31	31	29	28	30	30	30	30	30	29	31	31	31	29	28	28	29	29	29	29
MED	268	258	265	255	250	250	245	215	205	218	220	220	205	215	220	205	205	225	248	245	245	250	275	270
UQ	290	275	285	278	258	255	255	228	210	225	235	225	210	230	225	218	205	240	255	250	255	265	295	295
LQ	255	255	255	250	245	235	230	205	205	205	210	210	200	205	208	205	200	205	232	222	230	240	255	255

DEC. 1985 | H'F (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	A	110	110	A	120	120	115	125	S							
2								B	110	110	105	A	105	100	A	A	S							
3								S	A	A	A	120	120	115	A	A	S							
4								S	120	A	110	A	120	120	125	S	S							
5								S	A	A	A	115	110	120	A	A	E							
6								S	130	110	115	A	110	115	120	S	E							
7								A	130	125	120	120	125	110	125	S	E							
8								S	H 125	125	115	115	115	A	A	130	E							
9								S	A	A	A	A	125	125	120	S 135	S							
10								S	125	125	A	A	125	125	125	S	E							
11								S	120	125	120	120	125	125	130	125	S							
12								A	A	135	B	B	B 135	B	B	S	E							
13								S	130	130	130	B 145	A	125	130	S 145	E							
14								S	B	125	140	135	125	125	A	S	E							
15								S	A	A	A	A	A	105	A	A 140	E							
16								A	A	A	A	125	125	120	A	A	S							
17								S	145	130	130	B	B	B	B	B	S							
18								S	140	125	B	B	135	B	B	B	S							
19								S	B	B	A	B 140	B	B 140	B 140	S	S							
20								A	A	B 130	A	B 135	130	135	B	B	S							
21								A	A	B	130	B	B 140	B 135	130	125	E							
22								S	A	A 135	A	A	A	A	110	130	S							
23								S	A 145	130	125	120	120	125	120	125	S							
24								S	A	125	125	105	105	A	120	A	S							
25								S	135	110	110	A	110	115	110	125	S							
26								S	140	130	A	120	120	110	125	125	S							
27								S	140	A	115	115	110	120	125	S	S							
28								S	120	120	115	110	110	120	125	S 130	S							
29								A	A	A	A	A	A	120	120	S	E							
30								A	A	A	A	A	A	A	A	S	E							
31								A	A	A	A	A	A	A	B	B	S							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									15	19	16	15	23	23	18	12								
MED									130	125	118	120	120	120	125	128								
UQ									140	130	128	130	125	125	125	132								
LQ									122	122	112	115	110	115	120	125								

DEC. 1985 | H'E (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	E	S	125	115	120	115	S	110	G	G	105	G	G	G	G	S	100	110	130	115	S	105	105
2	105	100	105	100	105	S	100	B	120	G	G	105	G	G	100	100	100	115	115	105	105	105	105	100
3	100	100	S	S	S	S	S	120	105	105	105	100	105	105	100	105	100	130	105	105	105	105	105	105
4	105	S	S	105	S	105	S	S	G	110	120	105	105	105	G	G	S	S	S	S	105	S	S	105
5	S	105	105	E	E	115	115	S	155	155	150	G	G	105	105	100	100	100	S	S	S	S	S	S
6	S	S	S	E	E	S	S	S	G	160	G	110	G	G	G	145	100	S	S	S	S	S	S	S
7	S	S	E	S	S	S	S	150	140	G	G	G	105	G	G	S	175	S	E	E	S	140	S	S
8	120	145	S	S	E	S	S	S	G	G	120	120	G	105	100	G	105	105	110	125	120	110	110	105
9	115	105	105	S	E	S	130	115	110	105	105	100	G	G	G	G	S	S	S	S	S	S	S	105
10	105	S	105	100	S	E	120	S	G	105	100	100	165	G	G	125	100	S	S	105	110	S	E	S
11	S	S	E	E	E	S	S	105	G	G	G	G	G	G	G	G	S	S	S	S	105	105	S	S
12	105	100	100	S	E	115	105	105	105	G	160	B	G	130	B	150	105	105	S	S	S	S	S	S
13	S	E	105	S	105	S	S	105	G	G	G	G	G	G	G	G	120	105	S	S	105	S	S	S
14	S	105	S	105	E	E	S	S	G	G	G	105	G	105	105	120	115	105	105	120	S	125	105	110
15	100	100	100	S	105	100	S	110	150	155	105	105	105	110	100	105	105	100	100	100	S	105	110	105
16	100	105	105	100	105	100	S	110	155	105	120	105	105	105	100	100	100	S	S	E	S	S	S	S
17	S	S	E	S	E	E	E	S	G	G	135	B	B	B	B	B	S	S	S	S	E	S	S	S
18	S	S	S	120	105	E	E	S	G	G	B	B	G	B	B	B	S	S	E	S	S	S	110	110
19	105	S	S	E	105	S	E	S	185	B	105	135	B	G	G	S	S	S	S	S	S	S	S	E
20	S	135	135	130	105	115	100	110	105	G	110	G	G	G	165	B	S	S	E	105	105	105	105	105
21	105	130	105	E	E	S	115	105	105	180	175	150	G	140	G	125	120	110	110	110	105	105	105	110
22	125	S	105	105	105	125	105	105	105	105	100	100	105	105	G	G	S	S	S	S	S	S	E	105
23	105	S	105	E	S	S	S	120	105	150	145	G	G	105	G	150	S	115	105	S	105	100	115	S
24	E	S	S	S	E	E	S	S	110	110	175	G	G	100	105	100	100	S	110	S	110	105	105	105
25	S	S	S	S	E	S	E	S	G	155	130	105	G	G	G	145	S	100	100	105	100	S	105	100
26	105	E	S	S	120	120	S	S	105	140	100	G	105	105	105	125	S	S	S	140	140	S	105	105
27	100	100	S	S	E	S	S	S	150	105	105	G	105	100	G	S	S	S	S	S	120	105	105	105
28	125	100	100	125	S	S	S	S	G	130	G	G	G	G	G	G	S	S	S	S	115	120	110	105
29	120	105	105	105	115	S	130	120	105	105	105	105	105	G	G	135	125	115	105	120	S	S	105	E
30	S	S	S	E	E	S	S	110	105	110	105	105	105	105	105	105	105	120	110	110	105	105	105	105
31	105	105	135	105	115	110	105	105	105	105	105	105	100	105	B	B	105	105	110	105	105	105	105	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	15	15	12	12	10	11	15	20	19	22	18	12	16	11	16	17	15	13	14	18	15	18	19
MED	105	105	105	105	105	115	115	110	108	110	108	105	105	105	105	122	105	105	110	108	105	105	105	105
UQ	115	105	105	122	115	120	118	118	145	152	135	105	105	105	105	140	115	115	110	120	115	108	110	105
LQ	105	100	105	102	105	105	105	105	105	105	105	105	105	105	100	102	100	102	105	105	105	105	105	105

DEC. 1985 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 2	F 2	F 2	F 2		L 2			L 3						F 2	F 6	F 2	F 3		F 2	F 2
2	F 1	F 2	F 2	F 2	F 1		F 1		C 2			L 3			L 3	L 3	L 1	F 5	F 6	F 6	F 3	F 1	F 2	F 3
3	F 2	F 3						C 1	L 3	L 4	L 3	L 2	L 2	L 2	L 1	L 1	L 2	FF 11	F 2	F 4	F 2	F 2	F 1	F 2
4	F 1			F 1		F 1				L 2	C 1	L 3	L 1	L 1							F 2			F 2
5		F 1	F 2			F 3	F 2		HL 11	HL 12	HL 12			L 1	L 2	L 3	L 4	F 1						
6										H 1		L 2				C 1	L 1							
7								C 1	C 1				L 2				H 1					F 1		
8	F 1	F 1									C 1	C 1		L 5	L 3		L 2	F 2	F 2	F 1	F 2	F 2	F 2	F 1
9	F 2	F 2	F 1				F 1	L 1	LC 23	L 3	L 2	L 2												F 2
10	F 1		F 2	F 2			F 1			L 1	L 2	L 2	H 1			C 2	L 2			F 2	F 3			
11								L 1													F 2	F 2		
12	F 1	F 3	F 2			F 1	F 2	L 3	L 1		H 1			C 1		C 1	L 2	F 1						
13			F 1		F 1			L 1									C 1	F 1			F 3			
14		F 2		F 1								L 1		L 1	L 1	C 1	C 1	F 3	F 4	FF 11		F F 32	F 2	F F 22
15	F 2	F 2	F 2		FF 11	F 2		L 1	HL 21	HL 32	L 2	L 3	L 1	C 1	L 3	L 1	L 1	F 2	F 1	F 2		F 2	F 1	F 1
16	F 2	F 1	F 1	F 2	F 2	F 1		L 1	HL 22	L 2	CL 12	L 1	L 1	L 1	L 1	L 2	L 1							
17											C 1													
18				F 1	F 1																		F 2	F 1
19	F 1				F 2				H 1		L 1	C 1												
20		F 3	F 4	F 2	F 3	F 1	F 1	L 1	L 2		L 1				H 1					F 3	F 2	F 2	F 1	F 2
21	F 2	FF 11	F 2				F 2	L 2	L 1	H 1	H 1	H 1		C 1		C 3	C 1	F 1	F 2	F 1	F 2	F 3	F 2	F 1
22	F 2		F 2	F 1	F 1	FF 11	F 2	L 2	L 3	L 3	L 2	L 3	L 2	L 4										F 3
23	F 1		F 2					C 1	L 1	CL 41	CL 21			L 1		H 2		F 1	F 1		F 2	F 2	F 3	
24									L 1	L 1	HL 21			L 2	L 1	L 1	L 1		F 2		F 1	F 2	F 2	F 2
25										H 2	CL 11	L 2				C 3		F 2	F 2	F 2	F 2		F 2	F 2
26	F 2				F 2	F 2			L 1	CL 12	LC 42		L 1	L 1	L 2	C 1				F 1	F 1		F 2	F 1
27	F 2	F 2							C 2	L 3	L 1		L 1	L 1							F 1	F 2	F 2	F 2
28	F 1	F 2	F 2	FF 11						C 2											F 2	F 1	F 1	F 2
29	F 1	F 2	F 3	F 1	F 2		F 2	L 5	L 3	L 3	L 2	L 2	L 2			C 1	C 1	F 2	F 3	F 1			F 2	
30								L 2	L 4	L 1	L 2	L 2	L 1	L 1	L 2	L 3	L 2	F 5	F 6	F 5	F 3	F 4	F 4	F 6
31	F 4	F 2	FF 11	F 2	F 2	F 2	F 3	L 5	L 2	L 2	L 1	L 2	L 2	L 1			L 2	F 2	F 5	F 3	F 3	F 3	F 3	F 3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

DEC. 1985 | TYPES OF ES

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	37	38	40	X32	X32	X27	X25											X43	X40	X40	A	A	35	35
2	36	35	34	33	34	34	X30											X31	X36	X42	37	38	36	35
3	X36	X37	38	38	38	34	34											X39	X35	X34	X32	X35	38	40
4	40	38	40	40	39	34	X33											X40	X45	X36	X32	42	43	48
5	50	50	50	50	48	39	X30											X35	X38	X35	X36	X37	X34	40
6	43	50	42	46	39	39	X31											X39	X35	X36	X31	X31	X33	X36
7	X37	41	39	40	39	34	33											X38	X38	X29	36	39	38	39
8	40	48	40	40	40	38	39											X37	X32	X40	40	47	42	41
9	40	37	39	X36	X32	X32	X32											X34	X34	X34	X38	X37	X35	39
10	40	42	43	41	39	37	X36											X38	X40	X39	X41	39	X38	X38
11	X38	X39	X36	X37	40	33	38											X44	X39	X32	37	X26	X32	X36
12	X40	X37	41	46	46	51	39											X48	X35	X38	X37	34	32	36
13	38	43	40	X39	X42	X37	32											X44	X37	X35	X39	X39	X38	X39
14	X40	X42	48	32	32	32	30	51										X41	X41	X38	X38	X35	X36	41
15	40	39	43	43	34	33	X32											X39	X42	X32	X33	X32	X30	X32
16	X35	X36	39	40	X36	X34	X30											X35	X33	X33	X36	X32	33	34
17	35	37	X36	X35	X33	X32	X30											X45	X34	X40	X42	X33	X34	40
18	X35	X34	38	X36	X33	39	X44											X38	X38	X43	X46	X35	X32	X33
19	37	X35	X35	X34	X34	X31	X32											X45	X46	X44	X34	X34	X36	X39
20	X32	X32	X33	38	40	40	X35											X40	X35	43	39	39	37	40
21	40	37	39	40	30	X30	X29											X46	A	X32	X34	X34	X36	X38
22	X37	X38	X38	X37	X35	X36	X37											X38	X37	X34	A	X31	X32	X33
23	X34	X33	X35	X35	X32	X31	X32											X38	X32	X35	X32	X28	X31	36
24	38	37	X33	X34	X32	36	39											X39	X42	X46	X31	X29	X28	X35
25	38	X35	X36	X36	X31	X31	X31											X37	X38	X36	X36	X32	38	X34
26	X34	X34	X36	X33	X32	X32	X32											X38	X37	48	X48	36	44	X39
27	40	38	40	40	40	40	42	51										X35	X49	X39	40	36	40	46
28	43	42	40	39	38	34	X28											X35	X40	X36	X28	X39	42	40
29	X39	X32	X34	X34	X31	X33	X32											X36	X35	X34	X30	X33	41	45
30	47	50	50	52	57	52	44											X39	X33	X45	X34	35	44	41
31	46	39	40	40	35	33	32											X48	X48	A	34	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	2										31	30	30	29	29	30	30
MED	38	38	39	38	35	34	X32	51										X39	X38	X36	X36	X35	36	39
UQ	40	42	40	40	40	38	36											X42	X40	X40	X39	38	38	40
LQ	X36	X36	X36	X35	X32	X32	X30											X37	X35	X34	X33	X32	X33	X35

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	F	F 30	26	26	21	19	43	55	56	H 55	64	67	58	54	50	51	37	34	34	A	A	F	F
2	F	F 26	F 26	F 25	F 26	F 25	24	48	53	54	69	68	62	57	61	50	50	25	30	36	F 26	F 29	F	F
3	30	31	F 26	F	F 26	F 26	F 25	42	50	55	72	74	72	56	54	56	49	33	29	28	26	29	F 30	F
4	F	F 29	F 29	F	F	F 25	27	45	61	52	63	71	59	52	50	58	52	34	39	30	26	F	F	F
5	F	F	F	F	F	F	24	43	51	52	64	70	56	H 57	57	53	53	29	32	29	30	31	28	F 32
6	F	F	F	F	F 31	F 27	25	39	47	H 55	67	70	68	58	60	51	40	33	29	30	25	25	27	30
7	31	F	F	F	F	F	F 24	41	48	57	64	60	69	57	56	H 52	45	32	32	23	F	F 32	F	F
8	F	F	F 30	F 30	F	F	F 30	45	50	51	59	75	75	56	56	52	44	31	26	34	F	F	F	F
9	F	F 30	F 30	30	26	26	26	48	H 54	58	60	65	63	57	54	54	47	28	28	28	32	31	29	F 30
10	F 33	F 33	F	F 33	F 30	F	30	46	49	60	55	56	56	60	54	46	46	32	34	33	35	F 30	32	32
11	32	33	30	31	F 31	F	F	54	60	56	67	71	H 66	60	67	56	48	38	33	26	F 29	20	26	30
12	34	31	F 32	F	F	F	F 29	41	46	58	H 66	82	H 66	61	52	53	H 51	42	29	32	31	F 25	F	F
13	F	F	F 31	33	36	31	F 24	40	45	51	52	66	58	H 57	H 53	50	57	38	31	29	33	33	32	33
14	34	36	F	F	F	F	F	F	65	74	76	75	58	54	58	50	46	35	35	32	32	29	30	F
15	F	F	F	F	F 26	F 25	26	44	52	52	62	78	61	56	50	59	47	33	36	26	27	26	24	26
16	29	30	F 31	F 32	30	28	24	41	49	54	67	72	54	62	H 60	50	46	29	27	27	30	26	F	F
17	F 27	F 29	30	29	27	26	24	41	S 55	56	59	61	54	56	R 55	55	54	39	28	34	36	27	28	F 30
18	29	28	F 30	30	27	F 32	38	40	49	H 52	61	65	58	57	52	52	47	32	32	37	40	29	26	27
19	F 29	29	29	28	28	25	26	47	52	56	69	57	67	H 53	50	67	48	39	40	38	28	28	30	33
20	26	26	27	F	F	F	29	37	59	61	H 67	70	70	60	61	71	44	34	29	F	F	F 32	F	F
21	F	F 29	F 30	F	F 22	24	23	39	47	50	H 70	64	R 76	54	52	66	53	40	A	26	28	28	30	32
22	31	32	32	31	29	30	31	42	47	50	57	68	H 62	H 55	54	51	46	32	31	28	A	25	26	27
23	28	27	29	29	26	25	26	38	53	50	50	66	57	56	53	53	46	32	26	29	26	22	25	F
24	F 28	F 28	27	28	26	F 27	F 29	44	51	44	56	67	55	51	61	59	49	33	36	40	25	23	22	29
25	F 30	29	30	30	25	25	25	40	52	56	71	69	58	52	48	51	42	31	32	30	30	26	F	28
26	28	28	30	27	26	26	26	39	50	50	60	60	60	55	50	43	39	32	31	F 40	42	F	F	33
27	F 32	F 29	F 31	F 30	F	F 30	F 31	F 41	46	53	79	67	54	50	50	46	37	29	43	33	F 31	F	F	F
28	F	F	F	F	F 30	F	22	36	44	53	63	H 63	63	60	52	51	51	29	34	30	22	33	F 33	F
29	33	26	28	28	25	27	26	39	52	76	91	67	62	55	56	58	46	30	29	28	24	27	F	F
30	F	F	F	F	F	F	F	38	46	65	70	83	81	66	60	52	51	33	27	39	28	F	F	F 32
31	F	F 31	F 31	F	F	F	F	A	55	62	84	77	67	65	61	52	44	42	42	A	F 25	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	22	23	18	21	20	27	29	31	31	31	31	31	31	31	31	31	31	30	29	26	24	17	16
MED	30	29	F 30	30	26	26	26	41	51	55	64	68	62	57	54	52	47	33	32	30	28	28	28	30
UQ	32	31	F 30	31	30	28	29	44	54	58	70	72	67	59	59	56	51	36	34	34	32	30	30	32
LQ	28	28	29	28	26	25	24	39	48	52	60	64	58	55	52	50	46	31	29	28	26	26	26	28

DEC. 1985 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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										A	L	L	L	L	L									
2										L	L	L	A	L	L	A								
3										410	L	L	L	L										
4										L	L	380	L	L										
5											L	L	L	L										
6										L	L	360	360	L	L									
7											L	L	L	L	L									
8											L	L	L 380	L										
9										350	L	L 370	L		L									
10											360	L	L	L										
11										L	L	L	L	L	L									
12										L	L	L	L 380	L	L									
13												L	L	L										
14										L	L	L	L	L	A									
15											L	L	L	L										
16										L	L	400	L		L									
17											L	L	L	L	L	L								
18										L	L	L	L	L	A									
19										L	L	L	370	360										
20										L	L	L	L	L	L									
21											L	L	L	L		L								
22											L			L	320									
23											L	L	L	L										
24										L	L	L	L	L	L									
25										L	L	L	L	L	L									
26										L	L	L	L	L	L									
27										L	L	360	L	L	L									
28											L	L	L	L	L									
29										L	L	L	L	L	L									
30											L	380	L	L 360	A	A								
31										A	L	390	L	360	330									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										2	1	7	4	3	2									
MED										380	360	380	375	360	325									
UQ												385	L 380	360										
LQ												365	365	360										

DEC. 1985 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	210	A	255	260	260	250	230	A	S							
2								S	A	A	A	A	A	A	A	A	S							
3								S	A	240	250	A	260	260	A	A	S							
4								S	210	A	A	265	270	260	240	215	S							
5								S	A	A	A	265	265	260	235	A	S							
6								S	210	245	A	280	280	265	240	200	S							
7								S	215	250	A	280	280	270	240	190	S							
8								S	A	A	A	A	280	275	255	A	S							
9								S	A	A	260	280	A	A	245	225	S							
10								S	210	245	255	270	290	265	255	215	S							
11								S	205	255	275	A	A	275	245	210	S							
12								S	265	245	260	I B 280	275	260	240	205	S							
13								S	A	250	270	285	280	260	250	S	S							
14								S	210	245	A	A	280	275	245	A	S							
15								S	200	A	260	275	280	260	235	205	S							
16								S	210	240	260	280	290	A	245	A	S							
17								S	B	B	260	B	B	B	B	B	S							
18								S	205	245	265	A	A	A	A	A	S							
19								S	205	240	255	A	A	265	A	A	S							
20								S	205	225	A	290	285	A	230	S	S							
21								S	205	235	A	A	A	270	A	230	S							
22								S	190	230	250	270	A	A	250	205	S							
23								S	200	245	A	280	A	A	A	220	S							
24								S	195	215	240	255	265	250	A	A	S							
25								S	185	230	255	270	275	A	245	210	S							
26								S	A	A	A	A	280	A	245	200	S							
27								S	200	250	260	275	280	265	240	205	S							
28								S	200	A	265	A	A	280	255	220	S							
29								S	A	A	A	A	285	A	A	200	S							
30								S	A	A	A	270	A	A	A	A	S							
31								S	A	A	A	A	270	A	A	A	S							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									20	18	17	18	20	18	20	16								
MED									205	245	260	275	280	265	245	208								
UQ									210	245	260	280	280	270	248	218								
LQ									200	235	255	270	270	260	240	202								

DEC. 1985 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 A 25	E S 16	E S 15	E S 15	E S 15	J A 18	J A 18	E S 16	31	J A 54	J A 46	G	G	G	25	J A 36	J A 28	J A 25	E S 16	J A 26	J A 51	J A 44	J A 25	J A 25
2	J A 28	E S 16	J A 21	J A 25	E S 16	J A 18	J A 20	E S 16	J A 26	J A 29	J A 50	J A 42	J A 70	J A 50	J A 36	J A 52	J A 24	J A 19	J A 32	J A 22	J A 24	J A 22	J A 21	J A 29
3	E S 15	E S 15	E S 15	J A 20	E S 15	E S 15	E S 15	E S 17	26	G	G	J A 58	30	J A 30	J A 49	J A 29	J A 20	E S 16	E S 15	J A 19	J A 20	J A 26	J A 38	J A 33
4	J A 25	J A 25	J A 18	J A 20	E S 15	E S 15	E S 16	E S 16	G	J A 26	J A 36	J A 29	J A 32	G	J A 26	G	E S 16	E S 15	E S 16	J A 20	E S 15	E S 15	E S 15	E S 15
5	J A 20	J A 18	E S 16	E S 16	J A 20	E S 15	J A 34	J A 31	J A 25	J A 52	J A 35	34	31	G	G	J A 29	J A 25	J A 24	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15
6	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	J A 19	E S 16	G	G	J A 40	G	G	G	J A 50	G	E S 17	E S 15	J A 19	E S 15	E S 15	E S 15	E S 15	E S 15
7	E S 15	E S 15	E S 15	E S 15	J A 60	E S 15	E S 15	E S 16	G	G	30	G	G	G	G	G	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
8	E S 15	E S 16	E S 15	E S 15	E S 16	E S 15	E S 15	E S 16	26	J A 41	J A 32	J A 34	G	G	G	J A 24	E S 16	E S 16	J A 20	E S 16	E S 15	E S 15	J A 20	J A 24
9	J A 24	J A 25	J A 24	J A 28	J A 21	J A 18	J A 18	J A 21	J A 31	J A 35	36	G	J A 50	J A 44	J A 30	G	E S 17	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
10	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	G	G	G	G	G	30	24	E S 16	J A 21	E S 16	J A 29	E S 15	J A 26	J A 24	J A 20
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	G	G	G	J A 32	J A 36	G	G	24	J A 24	J A 23	J A 32	J A 20	J A 20	E S 16	E S 16	J A 19
12	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	J A 20	G	G	G	E B 30	G	G	G	G	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
13	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	J A 25	25	31	G	G	G	G	G	E S 22	E S 16	E S 15	J A 21	E S 15	E S 15	E S 15	E S 16	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	J A 40	26	G	37	32	G	30	J A 44	J A 48	J A 46	E S 15	J A 46	J A 48	J A 26	J A 51	J A 37	J A 41
15	J A 20	J A 25	J A 24	J A 18	J A 24	J A 27	E S 15	E S 16	G	J A 32	32	J A 28	29	G	G	G	E S 16	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15
16	E S 16	J A 18	E S 15	E S 15	E S 15	E S 15	E S 15	J A 19	26	G	G	J A 40	J A 32	J A 44	30	J A 36	J A 26	J A 24	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
17	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	24	28	30	E B 30	E B 30	E B 36	E B 28	E B 25	E S 17	E S 15	E S 15	J A 20	E S 16	E S 15	E S 16	E S 16
18	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	J A 24	G	G	G	29	J A 50	J A 54	J A 40	24	J A 24	J A 32	J A 25	J A 25	E S 16	J A 20	J A 20	E S 15
19	E S 15	E S 15	E S 15	E S 16	E S 16	E S 15	E S 15	E S 16	G	G	32	J A 34	J A 38	G	26	J A 27	E S 17	J A 25	J A 19	E S 15	E S 15	E S 15	E S 15	E S 15
20	E S 15	E S 16	E S 15	E S 15	J A 24	E S 16	E S 15	E S 16	G	J A 52	30	J A 36	G	27	G	E S 22	J A 28	J A 21	E S 16	E S 16	E S 16	E S 16	J A 22	J A 22
21	J A 20	J A 18	J A 82	E S 16	E S 15	E S 15	E S 15	E S 15	G	31	J A 44	J A 54	J A 36	J A 50	J A 26	G	E S 17	J A 23	J A 47	J A 50	E S 15	E S 15	E S 15	E S 15
22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15	E S 15	E S 16	G	G	G	G	J A 36	32	G	G	E S 18	E S 15	E S 15	E S 15	J A 31	J A 34	E S 16	E S 16
23	E S 15	E S 15	J A 18	E S 15	E S 15	E S 15	E S 15	E S 15	G	G	J A 30	G	31	J A 36	J A 35	G	E S 17	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 16
24	J A 25	J A 19	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	J A 24	31	35	30	32	J A 36	25	J A 28	E S 15	E S 15	J A 18	E S 15	E S 15	J A 40	E S 16
25	E S 15	E S 16	E S 15	E S 15	E S 15	J A 23	E S 15	E S 16	G	G	31	32	G	J A 28	G	G	E S 17	J A 21	E S 15	E S 15	E S 15	E S 15	J A 32	J A 24
26	J A 20	J A 24	E S 16	J A 18	E S 16	J A 18	J A 18	E S 16	J A 26	J A 36	32	J A 53	30	31	G	G	E S 17	E S 15	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15
27	E S 16	E S 15	E S 15	E S 15	J A 37	E S 15	E S 15	E S 16	G	G	G	G	J A 36	G	G	G	E S 16	E S 17	E S 15	E S 15	E S 15	J A 19	J A 20	E S 16
28	E S 16	E S 16	J A 24	J A 20	J A 18	J A 20	E S 15	E S 15	G	J A 29	G	J A 32	29	G	J A 28	G	E S 16	J A 24	E S 15	E S 15	E S 15	J A 20	J A 41	J A 20
29	E S 16	J A 21	J A 24	J A 28	E S 16	E S 15	E S 15	E S 17	J A 74	J A 76	J A 54	J A 32	G	J A 44	J A 26	G	20	E S 15	J A 21	J A 65	J A 29	J A 20	J A 20	E S 15
30	E S 16	E S 15	E S 15	J A 24	J A 24	J A 28	J A 24	E S 16	J A 29	J A 50	J A 36	J A 41	J A 46	J A 54	J A 54	J A 42	J A 44	J A 32	J A 23	J A 37	J A 44	J A 20	J A 25	J A 72
31	J A 28	J A 18	J A 25	J A 24	J A 24	J A 20	J A 20	J A 40	J A 166	J A 84	J A 106	J A 54	G	J A 52	J A 28	23	J A 26	E S 15	J A 46	J A 78	J A 54	J A 65	J A 51	J A 57
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	26	31	32	30	28	26	E G 22	E S 17	E S 16	E S 16	E S 16	E S 15	E S 15	E S 16	E S 16
UQ	J A 20	J A 18	J A 18	J A 19	J A 19	J A 18	17	18	26	J A 36	J A 36	J A 36	J A 36	J A 40	J A 32	J A 26	J A 24	J A 23	J A 21	J A 24	J A 20	J A 20	J A 24	J A 23
LQ	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	G	G	G	G	G	G	G	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15

DEC. 1985 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 S 16	E S 15	E S 15	E S 15	E	E	E S 16	26	46	27	G	G	G	18	23	18	E	E S 16	18	A A 51	A A 44	E	E
2	E	E S 16	E	E	E S 16	E	E	E S 16	22	26	26	30	54	35	26	43	20	18	19	E	E	E	E	E
3	E S 15	E S 15	E S 15	E	E S 15	E S 15	E S 15	E S 17	21	G	G	30	23	22	26	22	G	E S 16	E S 15	E	E	E	E	23
4	E	E	E	E	E S 15	E S 15	E S 16	E S 16	G	24	30	24	25	G	17	G	E S 16	E S 15	E S 16	E	E S 15	E S 15	E S 15	E S 15
5	E	E	E S 16	E S 16	E	E S 15	20	G	21	25	26	29	23	G	G	21	G	19	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15
6	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E	E S 16	G	G	29	G	G	G	G	G	E S 17	E S 15	E	E S 15	E S 15	E S 15	E S 15	E S 15
7	E S 15	E S 15	E S 15	E S 15	E	E S 15	E S 15	E S 16	G	G	28	G	G	G	G	G	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
8	E S 15	E S 16	E S 15	E S 15	E S 16	E S 15	E S 15	E S 16	23	26	28	29	G	G	G	22	E S 16	E S 16	E	E S 16	E S 15	E S 15	E	E
9	E	E	E	E	E	E	E	G	23	25	33	G	28	27	19	G	E S 17	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
10	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	G	G	G	G	G	28	23	E S 16	E	E S 16	19	E S 15	19	E	E
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	G	G	G	30	30	G	G	19	G	E	E	E	E	E S 16	E S 16	E
12	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	E B 30	G	G	G	G	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
13	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	G	24	29	G	G	G	G	G	E S 22	E S 16	E S 15	E	E S 15	E S 15	E S 15	E S 16	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	G	24	G	32	30	G	29	38	46	20	E S 15	E	E	E	E	E	E
15	E	E	E	E	E	E	E S 15	E S 16	G	24	29	22	22	G	G	G	E S 16	E S 15	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15
16	E S 16	E	E S 15	E S 15	E S 15	E S 15	E S 15	G	25	G	G	20	20	30	22	21	G	E	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
17	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	24	26	29	E B 30	E B 30	E B 36	E B 28	E B 25	E S 17	E S 15	E S 15	E	E S 16	E S 15	E S 16	E S 16
18	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	G	G	G	G	29	30	30	35	22	21	19	E	E	E S 16	E	20	E S 15
19	E S 15	E S 15	E S 15	E S 16	E S 16	E S 15	E S 15	E S 16	G	G	32	33	32	G	26	22	E S 17	E	E	E S 15	E S 15	E S 15	E S 15	E S 15
20	E S 15	E S 16	E S 15	E S 15	E	E S 16	E S 15	E S 16	G	28	30	22	G	27	G	E S 22	18	19	E S 16	E S 16	E S 16	E S 16	E	E
21	E	E	E	E S 16	E S 15	E S 15	E S 15	E S 15	G	29	32	32	31	32	26	G	E S 17	E	A A 47	E	E S 15	E S 15	E S 15	E S 15
22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15	E S 15	E S 16	G	G	G	G	31	29	G	G	E S 18	E S 15	E S 15	E S 15	A A 31	E	E S 16	E S 16
23	E S 15	E S 15	E	E S 15	E S 15	E S 15	E S 15	E S 15	G	G	28	G	30	30	27	G	E S 17	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 16
24	E	E	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	19	31	35	30	26	32	24	21	E S 15	E S 15	E	E S 15	E S 15	20	E S 16
25	E S 15	E S 16	E S 15	E S 15	E S 15	E	E S 15	E S 16	G	G	31	30	G	26	G	G	E S 17	E	E S 15	E S 15	E S 15	E S 15	E	E
26	E	E	E S 16	E	E S 16	E	E	E S 16	23	25	29	21	25	29	G	G	E S 17	E S 15	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15
27	E S 16	E S 15	E S 15	E S 15	E	E S 15	E S 15	E S 16	G	G	G	G	25	G	G	G	E S 16	E S 17	E S 15	E S 15	E S 15	E	E	E S 16
28	E S 16	E S 16	E	E	E	E	E S 15	E S 15	G	25	G	28	29	G	20	G	E S 16	E	E S 15	E S 15	E S 16	E	E	E
29	E S 16	E	E	E	E S 16	E S 15	E S 15	E S 17	25	26	30	29	G	27	25	G	19	E S 15	E	E	E	E	E	E S 15
30	E S 16	E S 15	E S 15	E	E	E	E	E S 16	21	25	28	23	29	31	37	30	32	E	E	31	E	E	E	E
31	E	E	E	E	E	E	E	A A 40	25	34	29	30	G	26	24	21	19	E S 15	20	A A 78	E	A A 65	A A 51	A A 57
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	G	24	28	U 26	23	U 24	18	E G 21	E S 17	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
UQ	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	23	26	30	30	30	29	26	22	18	E S 16	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	E	E	E	E	E	E	E S 15	E S 15	G	G	G	G	G	G	G	G	E S 16	E	E	E	E S 15	E	E	E

DEC. 1985 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | FMIN (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 25 MHz in 24 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	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	16	16	16	16	16	16	ES 16	ES 15	ES 16	ES 15	ES 16	ES 15	ES 15	ES 15
2	ES 15	ES 16	ES 15	ES 15	ES 16	ES 15	ES 15	ES 16	16	15	16	15	16	16	16	16	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
3	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 17	16	16	16	16	16	16	16	16	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
4	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	16	16	16	16	16	14	ES 16	ES 16	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15
5	ES 15	ES 15	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	15	16	16	16	16	16	14	16	ES 15	ES 15	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15
6	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	16	17	16	17	17	16	ES 17	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
7	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	17	17	16	17	17	16	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
8	ES 15	ES 16	ES 15	ES 15	ES 16	ES 15	ES 15	ES 16	ES 16	16	17	17	16	16	16	16	ES 16	ES 16	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15
9	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	16	17	16	16	16	16	ES 16	ES 17	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
10	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	16	16	17	18	18	17	16	ES 16	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15
11	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	17	18	19	19	17	16	16	ES 16	ES 16	ES 16	ES 15	ES 15	ES 16	ES 16	ES 15
12	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 17	18	21	30	23	20	18	16	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
13	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	16	18	21	18	19	ES 22	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 15
14	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 17	16	16	17	17	17	17	16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	16	16	17	16	16	16	16	ES 16	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15
16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	17	16	16	16	17	16	16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
17	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	21	25	25	30	30	36	28	25	ES 17	ES 15	ES 15	ES 15	ES 16	ES 15	ES 16	ES 16
18	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	18	21	19	20	19	18	17	ES 16	ES 15	ES 15	ES 16	ES 16	ES 15	ES 16	ES 15
19	ES 15	ES 15	ES 15	ES 16	ES 16	ES 15	ES 15	ES 16	ES 17	19	19	19	19	18	20	17	ES 17	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
20	ES 15	ES 16	ES 15	ES 15	ES 15	ES 16	ES 15	ES 16	ES 16	20	19	19	19	19	18	ES 22	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
21	ES 15	ES 15	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15	ES 16	17	18	19	21	20	19	18	ES 17	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
22	ES 16	ES 16	ES 16	ES 16	ES 16	ES 15	ES 15	ES 16	ES 16	17	17	18	18	18	17	16	ES 18	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16
23	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	16	17	17	16	16	16	ES 17	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 16
24	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	16	17	16	16	16	16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16
25	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	17	17	17	16	16	ES 16	ES 17	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
26	ES 15	ES 15	ES 16	ES 15	ES 16	ES 15	ES 15	ES 16	15	15	16	16	17	17	16	16	ES 17	ES 15	ES 15	ES 15	ES 15	ES 16	ES 15	ES 15
27	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	17	16	17	17	16	17	ES 16	ES 16	ES 17	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16
28	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	16	17	16	17	16	16	17	17	ES 16	ES 15	ES 15	ES 15	ES 16	ES 15	ES 15	ES 15
29	ES 16	ES 15	ES 15	ES 15	ES 16	ES 15	ES 15	ES 17	16	16	17	17	17	17	17	16	ES 16	ES 15	ES 15	ES 16	ES 15	ES 15	ES 15	ES 15
30	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	17	17	17	20	20	18	17	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
31	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	17	17	18	19	18	17	17	16	ES 17	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	16	17	17	17	17	16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
UQ	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	16	17	18	18	19	18	18	16	ES 17	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15
LQ	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 16	ES 16	16	16	16	16	16	16	16	ES 16	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15

DEC. 1985 | FMIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | M(3000)F2 (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 25 MHz in 24 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	F	F 305	330	340	310	305	350	370	380	H 380	345	375	360	365	380	355	335	365	355	A	A	F	F
2	F	F 310	F 305	F 315	F 330	F 340	335	375	380	360	360	380	360	365	360	370	360	360	305	355	F 345	F 355	F	F
3	320	340	F 345	F	F 325	F 340	F 360	360	375	345	370	365	375	355	370	365	365	340	340	320	335	315	F 310	F
4	F	F 305	F 305	F	F	F 315	345	355	385	390	360	350	370	365	360	380	385	325	370	395	305	F	F	F
5	F	F	F	F	F	F	360	360	390	350	360	365	380	H 345	375	365	375	335	360	345	335	355	315	F 310
6	F	F	F	F	F 340	F 340	355	245	370	H 345	365	360	380	350	370	370	390	345	325	395	330	320	335	315
7	315	F	F	F	F	F	F 340	380	365	370	375	350	365	390	360	H 375	370	350	380	345	F	F 345	F	F
8	F	F	F 325	F 310	F	F	F 335	355	385	380	345	380	380	350	360	370	380	350	345	380	F	F	F	F
9	F	F 315	F 310	325	315	320	345	400	H 350	390	380	370	365	390	370	380	380	355	340	345	335	315	315	F 305
10	F 320	F 305	F	F 335	F 350	F	355	360	365	385	345	385	340	365	375	375	380	335	345	340	330	F 285	305	295
11	310	305	310	305	F 355	F	F	345	380	355	370	340	H 345	365	360	380	365	325	355	355	F 370	350	275	300
12	310	340	F 305	F	F	F	F 340	370	375	360	H 325	345	H 350	375	355	375	H 335	365	345	345	360	F 330	F	F
13	F	F	F 315	340	350	420	F 325	350	380	390	365	380	355	H 350	H 330	360	370	370	340	310	305	270	275	285
14	280	305	F	F	F	F	F	F	340	350	365	375	365	350	360	355	370	325	330	345	310	330	300	F
15	F	F	F	F	F 335	F 315	345	360	375	360	325	360	360	370	355	360	365	350	340	340	365	355	280	300
16	315	335	F 310	F 320	310	355	335	350	350	355	340	370	360	380	H 345	365	345	340	350	345	340	355	F	F
17	F 320	F 295	300	330	315	340	315	360	S 375	395	350	360	365	365	R 340	355	360	360	320	325	375	370	325	F 320
18	315	295	F 320	330	310	F 335	340	375	385	H 345	355	340	380	370	365	350	380	315	335	350	375	310	310	270
19	F 310	305	310	300	290	310	310	360	440	380	375	390	360	H 350	375	360	310	350	330	340	330	290	295	320
20	290	305	310	F	F	F	325	360	355	360	H 335	360	320	350	315	380	380	325	315	F	F	F 310	F	F
21	F	F 310	F 335	F	F 305	345	315	360	365	355	H 355	340	R 360	370	330	350	365	350	A	350	320	320	315	295
22	305	310	300	310	310	310	330	360	365	380	360	375	H 380	H 380	335	365	380	340	355	350	A	315	310	295
23	315	320	320	330	330	315	340	350	375	380	355	385	370	350	375	365	360	370	325	335	385	320	310	F
24	F 285	F 285	295	305	315	F 315	F 315	360	375	365	340	375	380	375	355	355	380	320	320	365	360	335	A	315
25	F 295	310	315	335	320	325	325	365	360	375	350	395	380	380	365	385	375	320	335	340	335	345	F	320
26	330	325	320	335	335	305	320	370	395	370	380	375	395	365	375	380	380	355	320	F 345	365	F	F	325
27	F 350	F 310	F 305	F 325	F	F 335	F 330	F 340	370	355	390	375	390	380	370	360	385	315	355	395	F 380	F	F	F
28	F	F	F	F	F 325	F	320	370	365	375	365	H 335	360	375	365	355	370	380	350	360	275	330	F 335	F
29	340	330	300	355	325	335	340	360	355	365	375	370	365	390	340	380	390	345	375	365	315	320	F	F
30	F	F	F	F	F	F	F	355	370	365	370	360	365	370	365	360	350	355	320	365	350	F	F	F 310
31	F	F 320	F 310	F	F	F	F	A	365	375	355	360	390	360	375	375	345	350	355	A	F 390	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	22	23	18	21	20	27	29	31	31	31	31	31	31	31	31	31	31	30	29	26	24	16	16
MED	315	310	F 310	328	325	330	335	360	370	365	360	365	365	365	360	365	370	345	340	345	338	325	310	308
UQ	320	320	F 318	335	F 335	340	342	365	380	380	370	375	380	375	370	378	380	355	355	360	365	348	315	318
LQ	305	305	305	310	315	315	322	355	365	355	350	355	360	352	355	360	360	330	325	340	330	315	298	295

DEC. 1985 | M(3000)F2 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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										A	L	L	L	L	L									
2										L	L	L	A	L	L	A								
3										375	L	L	L	L										
4										L	L	400	L	L										
5											L	L	L	L										
6										L	L	420	420	L	L									
7											L	L	L	L	L									
8											L	L	L	L										
9										405	L	L	390		L									
10											420	L	L	L										
11										L	L	L	L	L	L									
12										L	L	L	L	L	L									
13												L	415	L										
14										L	L	L	L	L	A									
15											L	L	L	L										
16										L	L	395	L		L									
17											L	L	L	L	L	L								
18										L	L	L	L	L	A									
19										L	L	L	405	420										
20										L	L	L	L	L	L									
21											L	L	L	L		L								
22											L			L	435									
23											L	L	L	L										
24										L	L	L	L	L	L									
25										L	L	L	L	L	L									
26										L	L	L	L	L	L									
27										L	L	415	L	L	L									
28											L	L	L	L	L									
29										L	L	L	L	L	L									
30											L	395	L	L 415	A	A								
31										A	L	385	L	415	420									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										2	1	7	4	3	2									
MED										390	420	400	410	415	428									
UQ												415	418	418										
LQ												395	398	415										

DEC. 1985 | M(3000)F1 (0.01)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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										235	220	245	245	245	235									
2										220	240	220	A	240	230	A 230								
3										295	245	245	230	230										
4										205	245	235	220	220										
5											245	230	225	235										
6										230	240	240	230	220	225									
7											235	260	245	225	235									
8											235	220	235	280										
9										235	225	230	240		225									
10											250	230	250	240										
11										240	230	240	240	225	240									
12										240	L 290	250	230	245	230									
13												235	220	235										
14										240	240	235	240	240	240									
15											260	240	230	230										
16										240	280	230	230		235									
17											245	240	235	250	245	230								
18										260	250	260	225	255	245									
19										235	230	230	245	240										
20										230	265	235	280	240	250									
21											250	245	235	235		250								
22											245			220	230									
23											230	210	225	230										
24										245	250	230	220	225	250									
25										225	250	220	240	220	220									
26										240	225	225	220	250	230									
27										245	230	225	230	220	235									
28											240	230	225	235	230									
29										240	230	220	240	215	245									
30											240	235	230	230	240	225								
31										225	240	240	210	240	230									
	00	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	30	29	29	21	4								
MED										240	240	235	230	235	235	230								
UQ										240	250	240	240	240	240	240								
LQ										230	230	230	225	225	230	228								

DEC. 1985 | H'F2 (KM)

The Radio Research Laboratories. Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	ES 315	290	275	255	255	ES 285	ES 360	220	220	A	220	200	H 200	200	210	220	215	240	215	220	A	A	ES 300	ES 315
2	ES 300	290	280	275	250	240	240	220	H 200	200	200	220	A	A	210	A	205	220	270	220	230	220	ES 280	ES 270
3	250	220	220	ES 290	270	240	220	205	220	200	220	200	200	200	225	H 200	205	210	230	250	250	260	270	A
4	275	290	275	250	250	255	240	220	210	200	210	200	200	200	235	220	205	210	210	200	ES 280	260	270	280
5	240	250	250	250	240	235	A	220	200	220	240	220	220	200	225	215	200	230	210	220	235	220	255	260
6	260	270	275	265	235	225	225	210	210	220	230	200	200	195	210	220	195	225	240	205	225	250	255	255
7	260	245	235	245	250	200	225	210	210	240	220	200	200	220	210	205	205	200	205	210	270	245	250	270
8	270	270	260	280	270	260	235	210	205	225	205	H 200	210	200	225	210	200	235	250	220	250	275	270	260
9	245	270	295	245	265	260	240	205	200	200	225	195	H 200	210	205	210	200	210	220	220	235	220	250	ES 285
10	270	270	265	245	235	245	225	225	205	225	200	200	195	225	220	210	210	225	230	235	245	E A 295	275	305
11	250	270	270	260	225	ES 310	275	230	210	220	220	220	220	215	210	210	200	225	210	235	205	240	ES 285	ES 305
12	275	220	255	250	245	200	230	205	205	220	220	225	220	210	200	210	205	200	210	230	205	235	ES 300	ES 310
13	ES 300	270	270	240	230	185	250	210	200	220	225	220	200	195	230	235	210	200	220	245	265	295	ES 340	290
14	295	270	225	220	ES 295	280	ES 325	260	240	H 205	A	220	200	220	A	A	220	240	240	225	250	245	290	ES 300
15	270	270	270	220	275	ES 290	245	205	210	220	205	230	210	205	220	235	200	195	250	210	220	240	ES 320	ES 300
16	270	245	260	260	255	200	235	210	220	220	200	220	200	220	220	210	220	200	225	250	235	200	ES 305	ES 285
17	270	285	290	255	255	240	270	220	205	210	210	230	205	E B 240	230	225	205	210	250	240	210	210	240	255
18	270	ES 290	280	245	245	245	220	200	205	205	200	200	225	200	A	235	200	255	230	240	210	230	A	ES 310
19	255	270	295	280	ES 305	ES 295	250	225	195	200	A	220	200	200	210	245	220	220	245	235	225	260	300	265
20	ES 305	ES 295	ES 290	ES 300	305	295	250	225	240	225	230	200	H 200	200	200	225	200	245	260	245	235	250	285	300
21	255	255	235	210	ES 300	230	255	210	200	210	A	220	235	A	220	210	205	200	A	220	245	240	255	275
22	275	270	275	250	255	245	230	205	200	220	200	240	225	210	200	H 200	200	220	225	210	A	ES 295	240	280
23	270	275	255	235	235	245	245	220	200	205	200	205	210	205	225	220	210	210	240	230	200	270	275	280
24	ES 295	ES 295	ES 295	270	265	250	240	220	205	205	A	A	205	220	A	230	220	245	240	210	195	250	A	280
25	ES 300	275	255	235	250	245	255	220	235	200	A	A	225	H 200	200	205	200	235	240	230	230	235	240	255
26	230	270	255	240	255	265	270	220	205	215	220	205	220	200	200	205	210	220	240	230	200	270	240	240
27	225	270	270	255	270	250	250	220	205	200	240	205	200	200	205	210	205	270	225	200	200	250	255	220
28	225	225	235	245	250	235	245	230	220	225	230	210	230	230	210	240	210	200	220	210	ES 350	250	255	300
29	250	250	295	210	260	270	250	225	220	225	210	220	220	215	200	225	200	220	205	220	255	255	255	270
30	260	255	260	235	230	205	220	210	210	240	220	205	200	210	A	A	230	220	255	A	220	ES 340	ES 320	260
31	235	275	310	305	220	270	250	A	220	A	200	210	205	210	210	220	220	220	225	A	200	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	30	31	29	26	29	30	29	27	28	31	31	30	29	29	29	28	29
MED	262	270	268	248	252	242	242	220	205	220	220	210	205	205	210	218	205	220	230	220	228	248	261	270
UQ	272	272	273	260	263	260	250	220	220	220	225	220	220	215	222	225	210	232	240	235	248	258	ES 295	ES 300
LQ	250	255	255	240	242	235	230	210	202	205	200	200	200	200	205	210	200	210	220	210	210	235	255	260

DEC. 1985 | H'F (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	110	105	105	105	105	110	A	S							
2								S	A	110	A	A	A	A	A	A	S							
3								S	110	110	105	A	A	A	A	A	S							
4								S	110	110	A	A	A	105	110	S	S							
5								S	A	110	A	105	A	105	105	A	S							
6								S	S	110	110	105	110	105	110	110	S							
7								S	S	110	110	105	110	105	105	S	S							
8								S	S	110	110	110	110	110	110	A	S							
9								S	A	A	105	105	A	A	110	S	S							
10								S	110	110	110	110	115	110	120	115	S							
11								S	S	110	110	110	A	105	110	A	S							
12								S	S	110	E B 120	B	E B 120	110	115	110	S							
13								S	S	110	110	110	110	110	110	S	S							
14								S	S	110	110	110	110	110	105	A	S							
15								S	110	110	105	105	105	110	110	110	S							
16								S	110	110	105	110	110	A	A	A	S							
17								S	B	B	B	B	B	B	B	B	S							
18								S	110	110	110	A	A	A	A	A	S							
19								S	S	E B 120	110	105	A	105	A	A	S							
20								S	S	E B 120	E B 115	110	110	A	115	S	S							
21								S	S	110	A	A	E B 120	A	E B 120	E B 125	S							
22								S	S	120	110	110	110	115	110	110	S							
23								S	S	115	110	110	110	110	110	110	S							
24								S	S	110	105	105	110	110	A	A	S							
25								S	S	110	110	105	105	A	105	S	S							
26								S	A	A	A	A	A	A	110	110	S							
27								S	S	115	110	105	A	110	105	S	S							
28								S	115	A	110	105	105	110	110	110	S							
29								S	110	A	A	110	110	110	110	110	S							
30								S	110	110	A	A	A	A	A	A	S							
31								S	A	105	A	A	105	105	A	A	S							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									9	26	22	21	19	20	22	10								
MED									110	110	110	105	110	110	110	110								
UQ									110	110	110	110	110	110	110	110								
LQ									110	110	105	105	108	105	110	110								

DEC. 1985 | H'E (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	S	S	S	S	100	105	S	140	110	110	G	G	G	100	100	100	100	S	105	105	105	105	100
2	100	S	100	100	S	100	100	S	100	110	105	100	100	95	105	105	110	120	110	110	105	105	100	100
3	S	S	S	100	S	S	S	S	110	G	G	100	100	100	100	100	105	S	S	110	110	105	105	105
4	100	100	100	105	S	S	S	S	G	110	105	105	100	G	105	G	S	S	S	95	S	S	S	S
5	100	100	S	S	105	S	110	105	105	115	105	125	100	G	G	100	100	100	S	S	S	S	S	S
6	S	S	S	S	S	S	105	S	G	G	110	G	G	G	100	G	S	S	100	S	S	S	S	S
7	S	S	S	S	100	S	S	S	G	G	120	G	G	G	G	G	S	S	S	S	S	S	S	S
8	S	S	S	S	S	S	S	S	120	110	115	110	G	G	G	105	S	S	105	S	S	S	105	105
9	105	100	100	95	100	105	120	110	105	100	130	G	100	100	100	G	S	S	S	S	S	S	S	S
10	S	S	S	S	S	S	S	S	G	G	G	G	G	G	140	120	S	120	S	110	S	105	110	105
11	S	S	S	S	S	S	S	S	G	G	G	110	105	G	G	100	100	100	100	100	100	S	S	100
12	S	S	S	S	S	S	S	105	G	G	G	B	G	G	G	G	S	S	S	S	S	S	S	S
13	S	S	S	S	S	S	S	100	120	140	G	G	G	G	G	S	S	S	115	S	S	S	S	S
14	S	S	S	S	S	S	S	100	150	G	125	125	G	120	145	125	110	S	150	135	135	110	110	105
15	105	100	100	105	100	100	S	S	G	110	155	100	100	G	G	G	S	S	S	S	S	S	S	S
16	S	100	S	S	S	S	S	110	155	S	G	100	100	95	95	100	100	100	S	S	S	S	S	S
17	S	S	S	S	S	S	S	S	140	130	135	B	B	B	B	B	S	S	S	100	S	S	S	S
18	S	S	S	S	S	S	S	105	G	G	G	105	100	100	100	105	100	100	100	95	S	100	95	S
19	S	S	S	S	S	S	S	S	G	G	150	130	100	G	100	100	S	100	105	S	S	S	S	S
20	S	S	S	S	110	S	S	S	G	125	120	105	G	105	G	S	100	100	S	S	S	S	115	100
21	100	100	110	S	S	S	S	S	G	155	130	145	140	140	120	G	S	130	115	110	S	S	S	S
22	S	S	S	S	S	S	S	S	G	G	G	G	135	140	G	G	S	S	S	S	105	105	S	S
23	S	S	100	S	S	S	S	S	G	G	120	G	110	110	115	G	S	S	S	S	S	S	S	S
24	100	105	S	S	S	S	S	S	G	100	155	140	145	140	95	120	95	S	S	105	S	S	100	S
25	S	S	S	S	S	105	S	S	G	G	145	140	G	100	G	G	S	110	S	S	S	S	110	100
26	100	100	S	100	S	105	105	S	105	105	120	100	100	120	G	G	S	S	S	S	S	S	S	S
27	S	S	S	S	120	S	S	S	G	G	G	G	100	G	G	G	S	S	S	S	S	105	105	S
28	S	S	100	95	95	95	S	S	G	105	G	120	110	G	100	G	S	120	S	S	S	110	105	110
29	S	105	105	100	S	S	S	S	110	105	105	110	G	115	110	G	130	S	100	105	100	100	100	S
30	S	S	S	110	105	110	105	S	120	115	105	100	100	100	100	100	95	100	100	110	110	100	105	105
31	105	100	100	100	100	100	150	105	105	120	100	100	G	110	105	105	110	S	110	105	105	105	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	10	9	10	9	9	8	8	14	17	21	20	18	16	18	14	13	13	12	14	9	12	15	12
MED	100	100	100	100	100	100	105	105	115	110	120	108	100	108	100	102	100	100	105	105	105	105	105	102
UQ	105	100	100	105	105	105	115	108	140	120	130	125	110	120	110	105	110	120	112	110	110	105	108	105
LQ	100	100	100	100	100	100	105	102	105	105	105	100	100	100	100	100	100	100	100	100	105	102	100	100

DEC. 1985 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	F2					F1	F2		H2	C3	C1				L1	L2	L1	F1		F2	F3	F3	F2	F2
2	F2		F1	F1		F2	F2		L1	C2	L2	L4	L4	L6	L3	L3	C2	F2	F3	F1	F3	F2	F2	F2
3				F2					C1			L3	L2	L2	L2	L1	L1			F2	F1	F2	F2	F3
4	F2	F3	F1	F1						C1	L2	L2	L2		L1					F2				
5	F1	F1			F2		F4	L2	L1	C1	LH21	C1	L1			L1	L1	F2						
6							F1				C1				L1				F1					
7					F1						C2													
8									C2	C2	C1	C2				L2			F2				F2	F2
9	F1	F1	F2	F2	F1	F2	F1	C1	L2	LH21	C2		L1	LH11	L1									
10															H1	C1		F1		F2		F2	F1	F1
11												C1	L1			L1	L1	F1	F1	F1	F1			F1
12								L1																
13								L1	CL11	H2									F1					
14								L1	H1		C2	C2		C1	H2	CL22	CL21		FF12	FF12	FF12	F2	F2	F2
15	F2	F1	F1	F1	F2	F1				C2	H1	L1	L1											
16		F1						C1	H2			LC11	L1	L2	L1	L1	L1	F1						
17									H1	C1	H1									F1				
18								L1				L1	L1	L1	L2	L1	L3	F2	F2	F2		F1	F1	
19											H1	C1	L1		L1	L1		F2	F1					
20					F2					C2	C2	L1		L1			L1	F2					F1	F1
21	F2	F1	F1							H	CL11	HL11	H1	HL11	C1			F1	F3	F2				
22													H1	H1							F3	F2		
23			F2								C1		C2	C1	C1									
24	F1	F2								L2	H1	H2	HL11	HL21	L4	CL13	L2			F1			F2	
25						F1					H2	H2		L2				F2					F2	F2
26	F2	F2		F2		F2	F2		L4	L2	CL22	LC12	L2	CL11										
27					F1								L1									F2	F1	
28			F2	F1	F1	F2				L1		C1	C1		L1			F1				F1	F2	F2
29		F1	F2	F2					C2	L1	L2	C2		C1	C1		C2		F1	F2	F2	F1	F1	
30				F2	F1	F1	F2		C1	C1	L1	L1	L1	L1	L1	L2	L2	F1	F1	F2	F1	F2	F1	F2
31	F1	F1	F1	F1	F2	F1	F1	L7	L2	C2	L2	L1		C1	L1	L1	C1		F2	F3	F1	F3	F3	F2
	00	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																								

DEC. 1985 | TYPES OF ES

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 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 37	X 37	X 36	X 33	X 32	X 28	X 27											X 44	X 39	X 34	X 27	A	A	O S 31
2	S 31	S 32	S 32	X 31	S 32	X 32	X 30											X 43	S 37	A	A	S 34	S 34	S 35
3	S 36	X 39	S 35	35	34	S 32	X 32											S 46	X 32	X 32	S 35	X 35	37	S 38
4	X 36	X 35	X 34	X 34	X 35	X 30	X 32											X 40	X 42	X 40	H 30	S 35	X 38	U S 36
5	36	S 37	S 36	S 42	45	S 36	S 32											X 44	S 36	X 35	X 35	X 36	X 36	X 36
6	X 37	S 37	S 39	S 39	S 43	S 31	X 32											X 40	S 41	X 36	X 30	X 30	X 33	X 35
7	X 35	X 36	X 37	X 36	X 38	X 29	X 29											X 41	X 36	S 36	S 31	37	S 36	S 36
8	36	S 36	37	35	36	S 36	S 34											X 35	X 35	X 35	X 32	36	S 36	S 37
9	S 37	X 37	S 35	X 36	X 33	X 33	X 34											X 39	X 33	X 34	X 36	X 36	X 36	X 32
10	X 36	X 37	X 37	S 38	X 35	X 33	X 32											X 40	X 42	S 39	X 38	X 34	X 36	X 36
11	X 39	X 38	S 39	S 38	X 35	X 29	X 29											X 44	X 48	X 35	X 34	S 29	X 29	X 34
12	X 36	S 37	S 39	S 41	S 40	S 35	S 34											X 46	X 39	X 33	X 35	S 34	X 30	X 30
13	S 31	X 33	X 36	X 37	S 43	X 30	X 28											X 50	X 41	X 39	X 42	X 41	S 42	S 45
14	X 45	S 54	61	58	30	30	S 32											X 45	U S 40	S 41	X 37	X 36	35	S 36
15	38	S 37	40	S 37	S 33	S 30	X 32											H 39	X 39	X 46	X 31	H 30	X 29	X 30
16	X 32	X 35	S 35	X 34	X 35	X 30	X 26											S 45	X 35	X 32	X 34	X 35	32	34
17	37	S 36	X 36	S 37	39	S 33	X 29											X 52	X 45	X 39	X 43	X 32	X 31	X 33
18	X 34	X 33	S 35	S 34	X 34	X 36	X 36											X 39	X 38	X 41	X 46	H 31	X 30	X 32
19	X 33	X 33	X 34	X 35	X 33	X 31	X 31											X 50	X 41	X 48	X 46	X 37	X 40	S 45
20	S 37	X 31	X 32	X 32	S 36	X 31	X 31											X 40	X 40	S 37	S 39	36	36	40
21	S 38	X 36	S 39	X 29	X 29	X 29	X 28											X 51	S 41	X 31	X 34	X 32	X 33	X 35
22	X 35	X 34	X 33	X 35	X 33	X 33	S 37											X 38	X 43	X 37	X 32	S 30	X 34	X 34
23	X 35	X 35	X 37	X 36	X 33	X 29	X 31											S 52	X 36	X 35	X 36	X 27	X 29	X 31
24	X 32	S 35	X 33	X 34	X 34	X 34	X 35											X 43	X 43	S 47	X 37	X 29	X 28	X 31
25	X 34	X 34	X 35	X 35	X 35	X 28	X 28											X 38	X 39	S 38	X 43	X 32	X 31	X 33
26	X 34	X 34	X 34	X 34	X 33	X 30	X 30											X 42	X 41	S 43	S 44	S 30	X 36	X 38
27	X 31	X 32	X 32	X 33	X 31	S 33	34											X 34	X 42	S 47	S 34	X 30	S 36	X 41
28	40	40	38	36	S 34	35	X 31											X 44	X 41	X 46	X 30	X 34	X 37	S 36
29	X 37	X 35	X 33	X 33	X 33	X 33	X 31											X 43	X 33	S 31	X 30	S 29	S 30	S 34
30	34	34	39	S 39	S 32	35	S 32											X 47	X 38	S 50	X 31	X 31	37	S 40
31	S 38	37	38	34	39	33	X 29											X 46	X 48	S 45	34	A	36	S 35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31											31	31	30	30	29	30	31
MED	X 36	X 36	36	X 35	X 34	X 32	X 31											X 43	X 40	X 38	X 34	X 34	X 36	X 35
UQ	37	37	38	37	36	33	X 32											X 46	X 42	S 43	X 38	X 36	36	S 36
LQ	X 34	X 34	X 34	X 34	X 33	X 30	X 29											X 40	X 36	X 35	X 31	X 30	X 31	X 33

DEC. 1985 | FXI (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 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	31	31	30	27	26	22	21	49	54	S 67	59	63	62	69	58	55	47	38	33	28	21	A	A	S 25
2	S 25	S 26	26	25	S 26	S 26	24	50	59	55	S 63	75	S 62	69	60	57	46	37	S 31	A	A	S 28	S 28	S 29
3	S 30	33	S 29	F	F	S 26	26	S 52	S 62	59	S 69	S 78	70	69	55	59	49	S 40	26	26	S 29	29	F	S 32
4	30	29	28	28	29	24	S 26	S 53	S 69	60	55	S 74	56	58	53	55	54	34	36	34	H 24	S 29	32	U S 30
5	F	S 31	S 30	S 36	F	S 30	S 26	45	50	S 54	64	S 79	65	S 64	64	65	54	38	30	29	29	30	30	30
6	31	S 31	S 33	S 33	S 37	S 25	26	S 46	55	65	64	84	68	62	62	50	47	34	S 35	30	S 24	24	27	29
7	29	30	31	30	32	23	23	43	S 53	51	68	S 72	59	S 71	55	55	48	35	30	S 30	S 25	F	S 30	S 30
8	F 30	S 30	F	F 29	F	S 30	S 28	48	53	49	S 65	66	62	60	68	59	S 54	29	29	29	26	F 30	S 30	S 31
9	S 31	S 31	S 29	S 30	27	27	28	56	53	S 55	S 73	69	62	69	58	55	54	33	27	28	30	30	30	26
10	30	31	31	S 32	29	27	26	47	S 62	S 62	59	69	54	S 65	61	49	50	34	36	S 33	32	28	30	30
11	33	32	S 33	S 32	29	23	23	55	65	59	69	69	S 74	65	59	69	48	S 38	S 42	29	28	S 23	23	28
12	30	S 31	S 33	S 35	S 34	S 29	S 28	46	53	54	61	R 88	73	H 60	56	49	54	S 40	33	27	29	S 28	24	24
13	S 25	27	30	31	S 37	24	S 22	47	56	52	59	60	56	H 61	68	52	54	44	35	33	36	35	S 36	S 39
14	39	S 48	F	F	F	F 24	S 26	S 42	S 72	S 66	S 79	69	57	59	54	54	52	39	U S 34	S 35	31	S 30	F 29	S 30
15	F	S 31	F	S 31	S 27	S 24	26	51	54	55	66	85	S 80	59	55	H 55	62	H 33	33	40	25	H 24	23	24
16	26	29	S 29	28	29	24	20	46	50	59	57	75	65	60	56	55	51	S 39	29	26	28	S 29	F	F
17	F	S 30	S 30	S 31	F 29	S 27	23	50	S 62	53	55	69	63	53	51	62	54	46	39	33	37	26	25	27
18	28	27	S 29	S 28	28	30	30	S 44	53	52	61	63	64	55	55	49	51	33	32	35	40	H 25	24	26
19	27	27	S 28	29	27	25	25	57	52	54	56	63	R 60	64	S 53	64	S 61	44	35	42	40	31	S 34	S 39
20	S 31	25	26	26	U S 30	S 25	25	S 44	51	S 72	66	89	64	75	H 55	70	55	34	34	S 31	S 33	F	F	F
21	S 32	30	S 33	23	23	23	22	S 45	55	57	56	68	71	65	58	65	60	S 45	35	25	28	26	27	29
22	29	28	27	29	27	27	S 31	S 42	52	54	53	63	S 74	66	51	54	51	32	37	31	26	S 24	28	28
23	29	29	31	30	27	23	25	49	58	59	S 64	R 59	56	56	58	S 61	S 51	U S 46	30	29	30	21	23	25
24	26	S 29	27	28	28	28	29	46	S 55	55	58	66	66	50	H 57	59	55	37	37	S 41	31	23	22	25
25	28	S 28	29	29	29	22	22	S 40	59	S 73	S 63	J S 75	61	57	49	52	44	32	33	32	37	26	25	27
26	S 28	28	28	28	27	24	24	45	48	53	53	68	57	50	51	53	S 41	36	35	37	S 38	S 24	30	32
27	25	26	26	27	25	S 27	F 28	S 39	50	56	S 73	60	56	51	48	49	40	28	36	S 41	S 28	24	S 30	35
28	F	F	F 30	F 26	S 28	F 26	25	37	H 54	52	56	57	58	60	58	62	48	S 38	35	40	24	28	31	S 30
29	31	29	27	27	27	27	25	S 42	56	S 77	91	J R 75	65	64	50	59	50	37	27	S 25	S 24	S 23	S 24	S 28
30	F	F	F	S 33	26	F	S 26	S 44	45	56	R 76	90	93	73	69	55	51	S 41	32	J S 44	25	25	F 31	S 34
31	S 32	F 31	F	F 28	F 25	F	23	S 38	54	69	J S 75	82	J R 74	62	60	53	45	40	42	S 39	F	A	F	S 29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	26	29	27	29	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	27	26	29
MED	30	30	29	29	28	25	25	46	54	56	63	69	63	62	56	55	51	37	34	32	29	26	28	29
UQ	31	S 31	S 31	S 31	29	S 27	26	50	58	61	68	76	69	66	60	60	54	40	36	37	32	29	30	S 30
LQ	28	28	28	28	27	24	23	S 44	52	54	58	64	58	58	54	53	48	34	30	29	25	24	24	27

DEC. 1985 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 400	L	L									
2									L	L		L	L	L	A	A								
3									L	L	L	U L 420	A	L	L	260								
4									L	L	360	L	L	L 390	L 310									
5										L	A	L	L 360	U L 410	L									
6										L	360	L	L 380	L 390	L									
7											L	L 410	L	L 380	L	A								
8										L	L	L 410	L 390	L	L									
9										L	L	L	L 390	L 390	L 330	L								
10										L	L		L	L										
11											L	L 420	L 400	L	L	270								
12										L	L 400	L	L	L	L	L								
13											L 390	L	L	L	L 360									
14											L	A	L	L	L 300	L								
15										320	L	L	L	L	L									
16										L	L 340	L 390	L	L	L	L								
17											L	L	L	L	L									
18										L 360	L	L	L 410	L	L	L								
19									L	L 330		L	L	L	L	L								
20										L	L	L 410	L 430	L	L									
21											A	L	L	U L 390	L	L								
22									L	300		L 390	L	L	L	L								
23										L	L	L 500	L 390	L	L	L								
24								L	L		L	L	L	L	520	L								
25										L	L 340	L	L	L	L 330									
26										L	L	L	L 400	L	L	L								
27									L 260	L	L	L	L	L	L 280									
28										L	L	L	L	L	L									
29										A	A	L	L	L 370	350									
30										L	L	U L 400	U L 400	L 390	L	L								
31										L	L 380	L 390	L	370	340									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	4	7	10	11	9	9	2								
MED									L 260	325	L 360	L 410	L 400	L 390	L 330	265								
UQ										L 345	L 385	L 420	L 400	L 390	350									
LQ										310	350	L 390	L 390	L 380	L 310									

DEC. 1985 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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

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								S	215	A	A	280	285	A	A	220	S							
2								S	A	A	A	A	280	270	A	A	A							
3								S	A	A	A	280	A	A	255	220	S					S		
4								S	240	A	A	A	A	A	A	220	160							
5		S						A	A	A	A	A	295	275	A	A	S							S
6	S							S	A	260	A	285	285	290	A	225	S				S		S	
7								S	230	270	280	A	295	285	255	A	A		S					
8								S	A	A	A	A	A	A	A	230	S							
9								S	A	A	290	A	295	A	270	240	S		S			S		S
10								S	220	265	285	295	295	290	270	235	160							
11				S	S			S	220	A	A	A	A	290	270	A	S							
12								S	A	A	A	R 295	295	I R 290	260	H 220	160	S						
13								S	H 240	H 270	290	300	300	280	260	H 215	S				S	S	S	S
14	S	S	S	B				S	195	H 260	A	295	300	A	270	240	S							
15								S	A	A	A	A	295	A	A	A	S							
16		S	S					S	235	265	275	290	295	285	260	A	A		S	S				
17								S	240	260	275	285	A	300	270	230	B							
18								S	H 210	H 260	280	295	A	280	270	240	A							
19								S	205	250	A	290	290	285	255	220	S		S	S		S	S	
20	S	S	S					S	210	250	280	A	A	A	A	A	A							
21								S	210	H 250	280	290	300	A	A	240	A					S	S	
22								S	200	260	A	A	R	R	A	240	S				S			
23								S	215	255	275	290	A	285	260	A	S		S	S			S	
24								S	A	250	265	275	280	275	260	225	S							
25								S	205	260	A	A	A	275	A	A	S							
26								S	A	255	A	285	290	280	265	230	S							
27		S	S	S				S	H 205	260	H 285	H 290	H 295	280	255	220	S					S	S	
28				S				S	210	A	A	290	A	285	260	230	S							
29								S	A	A	A	A	A	A	A	R	A							
30								S	H 210	A	270	A	A	A	A	A	A							
31								S	A	A	A	275	280	A	255	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									19	17	13	18	18	18	18	19	3							
MED									210	260	280	290	295	285	260	230	160							
UQ									225	260	285	295	295	290	270	238	160							
LQ									208	255	275	285	285	280	255	220	160							

DEC. 1985 | FOE (0.01 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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	25	23	J A 19	23	J A 19	J A 18	20	E S 16	28	32	J A 52	30	G 25	J A 31	J A 36	G 18	J A 20	19	19	E S 15	J A 18	J A 68	J A 60	J A 32
2	20	J A 20	J A 33	J A 18	20	19	24	22	27	J A 30	J A 39	J A 54	J A 39	27	J A 44	J A 53	J A 27	J A 21	J A 33	J A 54	J A 52	J A 33	J A 29	J A 19
3	19	18	19	21	20	19	E S 15	E S 15	24	J A 27	J A 36	G 23	J A 80	J A 50	G 21	G 20	J A 21	20	19	J A 20	J A 20	23	J A 18	22
4	J A 24	J A 24	J A 21	24	20	21	19	19	G 21	28	J A 35	J A 30	J A 41	J A 36	J A 30	G 20	J A 21	E S 15	21	17	17	21	24	19
5	E S 16	E S 15	19	21	24	E S 15	E S 16	18	J A 42	J A 39	J A 56	J A 67	J A 30	J A 32	J A 30	J A 24	J A 22	J A 25	J A 20	18	E S 15	E S 15	18	E S 15
6	E S 16	E S 15	E S 15	E S 15	E S 15	E S 14	E S 16	E S 14	J A 25	G	J A 29	32	30	G 19	30	24	J A 18	J A 18	21	19	18	E S 16	E S 16	19
7	20	18	19	18	20	E S 15	19	E S 16	G	29	G 27	30	G 23	J A 37	G 18	J A 30	J A 22	18	E S 15	E S 15	18	18	19	E S 16
8	E S 15	23	20	E S 15	18	J A 18	19	J A 20	J A 28	J A 30	J A 49	J A 35	J A 32	J A 32	32	J A 27	J A 29	E S 16	J A 20	J A 20	18	20	19	22
9	22	J A 18	J A 22	J A 20	J A 28	17	E S 15	22	J A 37	J A 29	J A 32	J A 51	35	J A 48	J A 32	G	E S 15	20	19	E S 14	18	E S 16	E S 15	E S 15
10	E S 16	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	J A 26	J A 29	G 18	G	G	33	30	25	19	E S 15	19	21	J A 18	23	22	J A 25
11	19	E S 15	E S 14	E S 15	E S 15	E S 14	E S 15	E S 15	G	29	36	J A 32	31	32	29	27	25	J A 30	J A 18	20	20	19	19	20
12	19	E S 16	E S 15	E S 14	E S 14	E S 15	J A 20	J A 20	25	J A 29	33	G	32	G 27	G 25	G 20	G	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
13	E S 15	E S 15	E S 15	E B 13	E S 15	E S 15	E S 15	25	G	30	30	G	G	G	G	G	J A 18	E S 16	18	E S 15	E S 15	E S 16	E S 16	E S 16
14	E S 16	E S 15	E S 15	18	19	E S 15	J A 19	25	26	31	36	J A 48	33	32	G 22	G 19	E S 16	J A 20	J A 35	J A 34	21	20	J A 20	J A 21
15	J A 35	J A 27	J A 19	J A 23	20	J A 18	E S 16	E S 15	J A 29	30	33	32	G 29	J A 31	27	24	22	J A 19	21	J A 24	J A 19	19	E S 15	20
16	18	E S 15	E S 14	E S 16	E S 15	E S 14	22	20	J A 31	29	30	31	31	G 23	J A 30	J A 26	19	20	E S 16	E S 15	E S 15	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 16	E S 16	21	J A 24	28	31	31	30	30	G 25	G	E B 17	19	19	21	19	18	E S 15	E S 15
18	E S 16	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	G	G 24	G 25	G 28	J A 43	G	G	G 22	J A 25	J A 23	J A 21	20	20	20	19	E S 15
19	E S 15	E S 15	E S 15	E S 16	E S 15	19	19	E S 16	G	G	33	31	G 26	G 22	G	25	E S 15	18	E S 15	E S 15	17	E S 15	E S 15	E S 15
20	E S 15	E S 15	18	20	19	21	22	E S 15	G	30	41	36	J A 31	J A 47	J A 31	J A 34	J A 25	24	20	18	19	E S 16	E S 16	E S 16
21	E S 16	E S 15	18	18	20	E S 15	E S 16	23	33	J A 50	J A 63	J A 53	J A 42	J A 39	J A 31	34	22	J A 20	E S 16	J A 28	E S 16	20	E S 16	E S 16
22	E S 16	E S 15	E S 15	E S 15	18	19	E S 15	E S 15	G	G	33	30	G 29	G 29	27	G 22	19	J A 19	20	E S 16	E S 15	19	19	23
23	18	E S 15	E S 14	E B 13	E S 14	E S 15	E S 15	E S 14	G	27	G	31	30	G	29	25	24	20	20	20	E S 16	20	19	18
24	E S 15	E S 14	J A 19	E B 13	19	E S 15	20	E S 15	J A 26	G 21	34	35	33	35	34	36	J A 38	E S 15	18	J A 20	19	J A 32	J A 24	20
25	19	J A 24	20	19	17	20	J A 21	28	G	29	30	32	29	29	27	22	21	19	J A 18	J A 30	E S 15	J A 27	E S 15	20
26	J A 21	J A 21	J A 18	21	19	E S 15	22	19	J A 21	G	33	G	30	G 25	G 20	J A 24	J A 29	19	17	E S 16	18	20	J A 26	E S 16
27	E S 16	E S 14	E S 15	E S 15	E S 16	20	E S 15	E S 15	G 18	G 21	G 21	G 21	G 23	G 18	G	G	21	J A 19	18	E S 15	21	E S 16	J A 19	20
28	J A 18	19	E S 14	E S 14	19	20	22	E S 15	G	J A 30	31	30	31	J A 32	G 25	26	20	E S 16	E S 15	E S 16	19	20	J A 34	J A 20
29	J A 21	22	J A 21	J A 18	J A 22	E S 15	E S 15	E S 16	24	J A 52	J A 83	53	J A 35	J A 38	J A 33	G 25	J A 31	J A 23	J A 25	J A 24	J A 31	J A 27	J A 21	J A 22
30	20	19	18	J A 46	J A 52	J A 25	J A 25	J A 19	G	J A 31	G 26	J A 52	J A 44	J A 36	J A 31	J A 26	J A 29	25	J A 19	22	J A 22	J A 20	J A 21	J A 19
31	21	19	18	E S 15	E S 15	E S 16	E S 16	25	J A 30	J A 67	J A 43	J A 28	J A 31	J A 32	27	J A 35	J A 29	J A 25	J A 31	J A 71	22	J A 90	J A 33	J A 33
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	18	E S 15	18	E 16	19	E S 16	E S 16	E S 16	24	29	33	31	31	32	29	24	J A 21	19	19	20	18	20	19	19
UQ	20	20	19	20	20	19	20	20	J A 28	J A 30	J A 38	36	J A 34	J A 36	J A 31	26	J A 25	J A 20	20	J A 22	20	22	J A 22	20
LQ	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	G	27	30	29	29	G 26	G 24	G 20	19	18	18	E S 16	16	E S 16	E S 16	E S 16

DEC. 1985 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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	16	E	E	E	17	E	E	E S 16	28	28	30	30	G 21	29	30	G 17	20	E	E	E S 15	E	A A 68	A A 60	20
2	E	E	21	E	E	E	E	G	25	26	34	28	25	25	38	45	25	19	28	A A 54	A A 52	E	E	E
3	E	E	E	E	E	E	E S 15	E S 15	22	27	29	G 23	51	28	G 21	G 18	G	E	E	E	E	G	E	E
4	E	19	E	E	E	E	E	G	G 21	26	30	29	29	28	26	G 16	G	E S 15	E	E	E	E	E	E
5	E S 16	E S 15	E	E	E	E S 15	E S 16	15	24	34	40	33	24	24	26	24	19	19	20	E	E S 15	E S 15	E	E S 15
6	E S 16	E S 15	E S 15	E S 15	E S 15	E S 14	E S 16	E S 14	24	G	28	31	G	G 18	30	24	G	E	E	E	G	E S 16	E S 16	E
7	E	E	E	E	E	E S 15	E	E S 16	G	G	G 27	30	G 23	23	G 18	28	19	E	E S 15	E S 15	E	E	E	E S 16
8	E S 15	E	E	E S 15	E	E	E	G	24	26	32	30	31	29	23	21	18	E S 16	E	E	E	E	E	E
9	E	E	18	E	E	E	E S 15	G	25	27	27	31	27	33	24	G	E S 15	E	G	E S 14	E	E S 16	E S 15	E S 15
10	E S 16	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	26	24	G 18	G	G	33	30	G	19	E S 15	E	E	E	E	E	E
11	E	E S 15	E S 14	E S 15	E S 15	E S 14	E S 15	E S 15	G	28	30	30	30	31	24	25	17	23	E	E	E	E	F	E
12	E	E S 16	E S 15	E S 14	E S 14	E S 15	E	G	25	27	30	G	32	G 27	G 25	G 20	G	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
13	E S 15	E S 15	E S 15	E B 13	E S 15	E S 15	E S 15	24	G	G	G	G	G	G	G	G	G	E S 16	E	E S 15	E S 15	E S 16	E S 16	E S 16
14	E S 16	E S 15	E S 15	G	E	E S 15	E	21	26	31	34	40	31	31	G 22	G 19	E S 16	E	30	28	E	E	E	E
15	20	E	E	E	E	E	E S 16	E S 15	24	27	33	31	G 24	29	27	24	21	16	E	21	E	E	E S 15	E
16	E	E S 15	E S 14	E S 16	E S 15	E S 14	E	20	19	28	30	G	G	G 22	23	24	19	E	E S 16	E S 15	E S 15	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 16	E S 16	21	19	27	30	30	30	28	G 25	G	E B 17	E	E	E	E	E	E S 15	E S 15
18	E S 16	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	G	G 24	G 25	G 27	32	G	G	G 21	20	E	E	E	17	E	E	E S 15
19	E S 15	E S 15	E S 15	E S 16	E S 15	E	E	E S 16	G	G	31	30	G 26	G 21	G	25	E S 15	E	E S 15	E S 15	E	E S 15	E S 15	E S 15
20	E S 15	E S 15	G	E	E	E	E	E S 15	G	28	40	34	30	33	27	31	23	E	E	E	E	E S 16	E S 16	E S 16
21	E S 16	E S 15	E	E	E	E S 15	E S 16	21	27	28	42	39	32	33	28	27	22	E	E S 16	E	E S 16	G	E S 16	E S 16
22	E S 16	E S 15	E S 15	E S 15	E	E	E S 15	E S 15	G	G	33	30	G 29	G 29	27	G 22	18	16	E	E S 16	E S 15	E	E	E
23	E	E S 15	E S 14	E B 13	E S 14	E S 15	E S 15	E S 14	G	27	G	30	30	G	28	25	21	E	G	G	E S 16	E	G	E
24	E S 15	E S 14	E	E B 13	E	E S 15	E	E S 15	21	G 18	34	35	33	34	33	25	34	E S 15	E	E	E	E	E	E
25	E	E	E	E	E	E	E	18	G	G	29	31	29	29	26	22	21	E	E	30	E S 15	17	E S 15	E
26	E	E	E	E	E	E S 15	E	G	20	G	28	G	27	G 24	G 20	20	22	E	E	E S 16	E	E	E	E S 16
27	E S 16	E S 14	E S 15	E S 15	E S 16	E	E S 15	E S 15	G 18	G 21	G 19	G 18	G 19	G 17	G	G	G	E	E	E S 15	E	E S 16	G	E
28	E	E	E S 14	E S 14	E	E	E	E S 15	G	30	31	27	30	24	G 25	25	19	E S 16	E S 15	E S 16	E	E	E	E
29	E	E	E	E	E	E S 15	E S 15	E S 16	24	44	40	34	33	30	28	G 25	29	20	22	E	E	E	E	E
30	E	E	E	17	23	16	E	G	G	26	G 26	33	30	30	26	24	21	E	E	E	E	E	18	E
31	E	E	E	E S 15	E S 15	E S 16	E S 16	19	26	26	27	24	17	28	27	23	26	17	25	19	E	A A 90	17	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E 15	E S 14	E E 14	E E 13	E	E S 14	E S 15	E S 15	21	26	30	30	29	28	26	23	19	E	E	E E 14	E	E	E	E
UQ	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	16	24	28	33	31	30	30	28	25	21	16	E E 15	E S 16	E E 15	E S 16	E S 16	E S 15
LQ	E	E	E	E	E	E	E	E S 14	G	G 20	27	26	G 24	G 24	G 22	G 18	E G 16	E	E	E	E	E	E	E

DEC. 1985 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | FMIN (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 S 16	E S 15	E S 16	E S 16	E S 16	E S 16	16	14	14	16	15	15	15	16	E S 15	E S 16	E S 16	E S 15	E S 16	E S 16	E S 15	E S 15
2	E S 16	E S 15	E S 15	E S 14	E S 15	E S 15	E S 16	E S 16	13	13	15	15	15	15	14	14	E S 15	E S 14	E S 16	E S 16	E S 15	E S 15	E S 15	E S 16
3	E S 16	13	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15	13	14	14	14	14	14	14	14	E S 16	E S 15	E S 15	E S 16	E S 15	E S 16	E S 16	E S 16
4	E S 16	E S 15	E S 15	E S 16	E S 15	E S 15	E S 16	E S 16	15	15	14	15	14	14	13	13	E S 15	E S 15	E S 15	E S 16	E S 15	E S 16	E S 16	E S 16
5	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	13	15	15	14	15	16	14	14	15	E S 15	E S 15	E S 15	E S 15	E S 15	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 14	E S 16	E S 14	15	13	14	15	15	14	15	15	E S 16	E S 16	E S 15	E S 15	E S 15	E S 16	E S 16	E S 16
7	E S 16	E S 15	E S 15	E S 14	E S 16	E S 15	E S 15	E S 16	15	15	15	16	16	16	15	15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16	E S 16
8	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16	14	15	15	14	16	16	16	16	E S 15	E S 16	E S 15	E S 15	E S 16	E S 15	E S 16	E S 16
9	E S 16	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 14	16	15	14	15	14	14	13	15	E S 15	E S 15	E S 16	E S 14	E S 15	E S 16	E S 15	E S 15
10	E S 16	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	14	15	15	15	16	16	15	14	E S 15	E S 15	E S 16	E S 15	E S 14	E S 15	E S 16	E S 15
11	E S 14	E S 15	E S 14	E S 15	E S 15	E S 14	E S 15	E S 15	15	16	16	16	19	19	16	16	E S 14	13	E S 16	E S 15	E S 16	E S 16	E S 15	E S 16
12	E S 16	E S 16	E S 15	E S 14	E S 14	E S 15	E S 16	E S 15	15	19	22	22	21	20	19	14	E S 14	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
13	E S 15	E S 15	E S 15	13	E S 15	E S 15	E S 15	E S 15	15	14	16	16	16	21	16	14	E S 16	E S 16	E S 16	E S 15	E S 15	E S 16	E S 16	E S 16
14	E S 16	E S 15	E S 15	13	E S 15	E S 15	E S 15	E S 15	13	14	14	15	15	15	14	15	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	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 15	15	14	14	15	16	15	14	15	E S 16	E S 15	E S 16	E S 14	E S 15	E S 16	E S 15	E S 15
16	E S 15	E S 15	E S 14	E S 16	E S 15	E S 14	E S 15	E S 15	14	14	15	15	14	14	14	14	E S 14	E S 16	E S 16	E S 15	E S 15	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 16	E S 16	E S 16	14	14	16	19	22	20	20	19	17	E S 15	E S 15	E S 15	E S 15	E S 16	E S 15	E S 15
18	E S 16	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	14	15	21	21	20	20	19	16	E S 14	E S 16	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	E S 15	E S 16	E S 15	E S 15	E S 15	E S 16	14	15	15	17	19	19	17	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
20	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15	15	14	16	20	17	20	17	15	E S 15	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 15	E S 16	E S 15	E S 16	E S 15	E S 16	E S 16	15	15	16	15	14	15	15	16	15	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 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	15	17	16	16	20	17	15	16	E S 15	E S 14	E S 15	E S 16	E S 15	E S 15	E S 15	E S 16
23	E S 16	E S 15	E S 14	13	E S 14	E S 15	E S 15	E S 14	15	13	14	14	14	15	14	14	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16	E S 15	E S 15
24	E S 15	E S 14	E S 15	13	E S 15	E S 15	E S 15	E S 15	15	14	14	15	14	16	16	15	E S 15	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15
25	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 14	14	15	14	14	14	14	14	14	E S 14	E S 16	E S 14	E S 15	E S 15	E S 15	E S 15	E S 16
26	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	E S 15	13	15	14	14	14	15	15	13	E S 14	E S 15	E S 15	E S 16	E S 15	E S 16	E S 15	E S 16
27	E S 16	E S 14	E S 15	E S 15	E S 16	E S 15	E S 15	E S 15	15	14	14	14	14	15	15	15	E S 15	E S 16	E S 15	E S 15	E S 15	E S 16	E S 16	E S 16
28	E S 15	E S 15	E S 14	E S 14	E S 15	E S 15	E S 16	E S 15	14	14	14	15	15	17	14	15	E S 15	E S 16	E S 15	E S 16	E S 16	E S 15	E S 16	E S 15
29	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	13	14	15	16	15	15	16	15	E S 14	E S 14	E S 15	E S 16	E S 15	E S 16	E S 16	E S 16
30	E S 16	E S 15	E S 15	E S 15	E S 15	E S 14	E S 16	E S 16	15	15	16	17	22	16	15	14	E S 14	E S 16	E S 15	E S 15	E S 15	E S 15	E S 16	E S 15
31	E S 16	E S 15	E S 15	E S 15	E S 15	E S 16	E S 16	E S 15	13	15	14	15	15	15	15	14	E S 15	13	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E S 16	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	15	15	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	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	15	16	16	16	17	16	16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
LQ	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15	14	14	14	15	14	15	14	14	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15

DEC. 1985 | FMIN (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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	280	290	305	320	310	310	290	330	340	S 325	340	340	320	340	340	345	335	330	325	340	325	A	A	S 300
2	S 285	S 290	310	300	S 320	S 305	310	340	340	345	S 310	330	S 340	340	330	340	345	345	S 320	A	A	S 310	S 285	S 280
3	S 290	335	S 305	F	F	S 310	315	S 340	S 330	330	S 335	S 330	350	340	320	340	340	S 310	325	310	S 310	315	F	S 305
4	305	310	300	320	320	320	S 310	S 335	S 350	350	325	S 350	340	350	340	340	355	335	335	345	H 280	S 290	320	U S 285
5	F	S 300	S 300	S 310	F	S 290	S 310	340	340	S 340	340	S 330	340	S 335	330	345	340	335	330	310	310	310	310	290
6	310	S 305	S 290	S 300	S 310	S 320	320	S 330	340	350	325	340	350	330	340	340	340	310	S 350	345	S 340	295	310	305
7	300	305	310	310	330	295	310	340	S 335	335	330	S 345	320	S 340	340	340	340	330	320	S 305	S 305	F	S 305	S 310
8	F 280	S 285	F	F 310	F	S 280	S 295	350	330	335	S 330	345	330	330	335	345	S 325	335	325	325	310	F 280	S 290	S 280
9	S 300	S 310	S 305	S 310	310	315	320	340	340	S 340	S 345	340	340	340	340	345	345	335	305	300	300	320	320	290
10	290	305	315	S 315	315	330	320	330	S 330	S 330	350	340	345	S 345	345	340	325	330	320	S 345	300	295	290	285
11	305	295	S 315	S 310	310	290	295	340	345	335	330	330	S 330	350	320	340	335	S 315	S 330	320	350	S 310	285	290
12	300	S 290	S 320	S 315	S 320	S 320	S 310	340	325	330	330	R 330	330	H 310	340	330	340	S 325	325	345	320	S 320	310	280
13	S 280	305	310	315	S 330	350	S 300	330	340	340	335	310	310	H 290	340	335	335	325	340	320	305	285	S 275	S 290
14	285	S 305	F	F	F	F 280	S 280	S 310	S 320	S 320	S 335	340	340	320	335	320	330	330	U S 300	S 310	310	S 305	F 295	S 290
15	F	S 290	F	S 300	S 325	S 275	320	335	360	320	330	315	S 330	340	345	H 325	330	H 310	310	345	320	H 300	300	295
16	300	305	S 305	310	315	310	305	345	345	335	320	335	340	335	350	340	345	S 330	335	330	325	S 335	F	F
17	F	S 280	S 300	S 290	F 295	S 330	305	340	S 340	330	340	345	340	340	330	330	300	335	340	315	340	340	300	305
18	310	300	S 300	S 310	310	310	320	S 340	350	345	340	330	340	330	340	330	330	330	320	320	330	H 285	295	295
19	300	295	S 295	295	300	300	300	350	350	330	310	335	R 310	340	S 335	340	S 345	335	300	320	340	320	S 290	S 290
20	S 340	295	305	285	U S 290	S 280	320	S 345	315	S 340	320	325	325	330	H 305	330	340	340	330	S 320	S 340	F	F	F
21	S 280	310	S 330	330	310	310	315	S 330	340	330	330	340	325	330	325	335	340	S 320	330	330	320	310	310	295
22	285	300	290	300	300	310	S 330	S 330	335	340	340	340	S 315	345	345	335	340	310	330	330	350	S 310	310	300
23	300	300	315	330	330	305	320	330	355	340	S 340	R 300	330	335	340	S 350	S 335	U S 320	330	320	295	295	295	295
24	300	S 295	295	305	310	310	320	330	S 340	340	320	330	345	330	H 280	330	320	320	315	S 325	320	320	280	280
25	300	S 300	305	310	320	310	300	S 330	330	S 330	S 330	J S 335	330	350	335	340	345	325	320	330	335	340	290	310
26	S 300	310	300	320	310	290	310	340	330	350	340	340	340	340	350	345	S 340	325	320	315	S 340	S 270	300	320
27	300	310	305	310	310	S 300	F 300	S 325	335	340	S 330	340	320	335	340	335	335	325	325	S 340	S 355	290	S 305	320
28	F	F	F 320	F 315	S 300	F 300	335	315	H 335	330	340	335	325	345	335	340	345	S 340	335	340	330	300	305	S 290
29	305	320	310	310	320	300	315	S 335	340	S 330	330	J R 340	340	340	325	330	340	340	310	S 340	S 325	S 300	S 295	S 320
30	F	F	F	S 320	335	F	S 320	S 325	350	335	R 325	330	340	330	330	340	330	S 330	330	J S 330	305	275	F 290	S 310
31	S 320	F 290	F	F 290	F 280	F	330	S 340	340	320	J S 315	335	J R 305	320	340	335	340	320	325	S 330	F	A	F	S 320
	00	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	29	26	29	27	29	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	27	26	29
MED	300	300	305	310	310	310	310	335	340	335	330	335	330	340	340	340	340	330	325	328	320	305	298	295
UQ	305	305	310	315	320	310	320	340	342	340	340	340	340	340	340	340	340	335	330	340	340	318	310	305
LQ	285	295	300	300	310	295	302	S 330	332	330	325	330	325	330	330	332	332	320	320	320	310	292	290	290

DEC. 1985 | M(3000)F2 (0.01)

IONOSPHERIC DATA

DEC. 1985 | 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 355	L	L									
2									L	L		L	L	L	A	A								
3									L	L	L	U L 345	A	L	L	380								
4									L	L	400	L	L	L 360	L 370									
5										L	A	L	L 380	U L 340	L									
6										L	380	L	L 355	L 350	L									
7											L	L 360	L	L 340	L	A								
8										L	L	L 355	L 370	L	L									
9										L	L	L	L 350	L 360	L 360	L								
10										L	L		L	L										
11											L	L 340	L 350	L	L	390								
12										L	L 360	L	L	L	L	L								
13											L 345	L	L	L	L 345									
14											L	A	L	L	380	L								
15										385	L	L	L	L	L									
16										L	L 395	L 345	L	L	L	L								
17											L	L	L	L	L									
18										L 370	L	L	L 355	L	L	L								
19									L	L 385		L	L	L	L	L								
20										L	L	L 345	L 360	L	L									
21											A	L	L	U L 350	L	L								
22									L	385		L 360	L	L	L	L								
23										L	L	L 340	L 360	L	L	L								
24								L	L		L	L	L	L	330	L								
25										L	L 360	L	L	L	L 370									
26										L	L	L	L 365	L	L	L								
27									L 380	L	L	L	L	L	L 400									
28										L	L	L	L	L	L									
29										A	A	L	L	L 360	380									
30										L	L	U L 340	U L 345	L 350	L	L								
31										L	L 365	L 345	L	360	385									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	4	7	10	11	9	9	2								
MED									L 380	385	L 365	L 345	L 355	L 350	L 370	385								
UQ										385	388	L 355	L 362	L 360	380									
LQ										378	L 360	L 340	L 352	L 350	L 360									

DEC. 1985 | M(3000)F1 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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

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										245	220	230	255	250	240									
2									220	230		230	240	235	225	245								
3									235	230	230	245	230	230	235	220								
4									215	215	235	225	220	230	230									
5										255	265	230	240	265	265									
6										230	265	215	215	255	230									
7											240	220	245	240	225	225								
8										215	230	240	245	240	245									
9										220	220	225	240	235	235	230								
10										240	225		230	240										
11											250	255	250	230	245	225								
12										240	245	255	215	225	230	225								
13											235	240	295	240	245									
14											240	230	240	245	235	225								
15										225	255	235	235	235	230									
16										235	230	260	240	250	225	235								
17											220	240	245	245	235									
18										230	250	245	235	255	240	220								
19									215	230		240	320	245	255	260								
20										245	285	260	270	245	225									
21											230	250	265	230	230	240								
22									220	230		230	265	230	220	270								
23										235	220	350	245	240	230	240								
24								225	215		265	245	235	230	445	235								
25										230	240	230	240	245	225									
26										230	235	235	240	220	220	225								
27									230	230	230	220	240	225	220									
28										230	235	255	245	215	245									
29										245	245	235	255	240	240									
30										240	245	245	235	245	235	220								
31										255	265	240	230	245	240									
	00	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	24	28	30	31	31	30	16								
MED								225	220	230	238	240	240	240	235	228								
UQ									225	240	250	245	248	245	240	240								
LQ									215	230	230	230	235	230	225	225								

DEC. 1985 | H'F2 (KM)

IONOSPHERIC DATA

DEC. 1985 | 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	325	305	270	250	275	270	E S 285	215	225	220	220	205	185	185	235	H 235	215	215	225	215	E S 245		A	A	E A 340
2	325	315	E A 310	290	260	260	250	H 215	200	H 185	235	225	H 195	H 195	A	A	210	215	E A 340	A	A	235	260	300
3	290	240	230	280	310	260	265	220	H 230	220	220	205	A	190	200	195	210	190	225	230	245	255	290	255
4	280	280	285	270	245	240	255	230	H 215	195	185	H 175	205	205	185	H 225	205	205	215	200	E S 330	285	245	305
5	255	250	270	245	235	230	245	220	220	240	A	225	190	H 195	220	H 225	205	195	E A 255	230	225	250	240	285
6	265	285	280	265	225	230	240	215	H 225	225	H 175	230	195	190	215	H 205	210	195	210	210	210	295	265	275
7	280	270	255	260	230	H 225	255	195	225	H 210	H 180	H 210	190	195	190	A	210	190	245	215	275	255	250	250
8	290	300	285	265	255	255	255	195	210	200	235	190	190	H 175	235	H 225	210	195	230	230	250	285	275	290
9	280	250	305	275	260	250	245	235	210	210	H 185	215	185	195	190	200	205	195	285	215	235	235	240	295
10	285	280	260	245	215	235	250	215	230	215	235	H 235	200	225	230	220	225	195	260	205	255	240	285	310
11	285	290	230	245	230	315	E S 310	240	H 220	H 220	195	195	H 190	230	195	200	H 205	270	220	220	230	E S 265	E S 315	310
12	300	285	250	240	240	195	230	215	H 220	H 185	195	H 180	220	205	H 210	210	205	215	210	215	250	230	265	325
13	325	285	255	250	205	185	E S 310	230	225	H 230	205	H 175	H 195	215	190	H 220	215	205	220	240	270	305	320	310
14	260	240	235	210	250	310	280	250	H 235	H 225	245	A	220	205	195	220	215	220	E A 285	E A 275	255	250	300	290
15	325	255	240	260	225	300	250	215	H 215	190	250	220	225	H 205	H 225	H 225	220	180	245	210	225	E S 250	260	315
16	295	260	265	270	255	230	E S 305	215	H 210	H 210	190	H 180	H 205	H 180	225	H 200	210	205	220	230	235	235	E S 315	270
17	290	285	270	285	270	210	E S 280	230	220	H 190	195	215	215	205	H 205	235	215	215	215	240	200	225	E S 260	300
18	260	300	295	230	260	245	220	210	H 225	H 205	H 180	H 190	210	H 180	225	215	220	210	240	235	215	210	265	275
19	290	295	300	275	295	295	265	215	H 175	H 180	215	220	H 195	H 240	H 225	H 205	215	215	240	230	215	255	305	290
20	195	295	285	305	285	320	280	210	235	225	E A 255	A 235	205	E A 240	205	245	225	205	230	225	210	295	300	305
21	265	255	230	240	285	255	260	220	235	H 220	A	A	210	200	220	220	210	220	205	230	245	255	250	300
22	305	280	285	270	270	270	210	H 210	H 190	190	H 225	H 180	H 190	H 190	210	H 190	210	H 210	220	225	210	245	255	300
23	285	275	250	230	220	E S 280	265	225	210	210	220	H 195	190	H 175	225	H 205	210	200	230	240	215	340	290	300
24	280	280	295	280	255	255	240	220	185	235	235	230	230	225	H 230	230	220	215	230	235	210	270	E S 350	E S 330
25	280	290	280	260	235	E S 275	E S 290	235	H 225	235	H 180	240	H 195	215	195	230	210	230	235	A	220	225	265	245
26	255	270	270	240	265	310	275	220	H 230	H 225	215	H 195	H 195	200	H 205	H 185	220	220	225	240	210	E S 325	270	235
27	220	255	270	270	280	275	270	225	200	H 195	H 180	H 185	H 200	H 185	180	225	H 205	220	230	200	180	E S 280	255	225
28	250	230	215	225	230	260	235	245	205	210	225	H 200	220	H 185	H 230	H 230	220	210	230	205	235	280	280	280
29	255	230	300	255	260	280	250	215	210	A	A	E A 230	A	205	H 200	H 245	215	200	E A 290	220	225	E S 270	340	265
30	295	270	255	225	E A 240	265	270	215	205	H 205	H 175	E A 240	220	205	H 190	H 205	220	210	225	235	215	E S 340	305	260
31	255	260	300	340	325	E S 305	260	225	230	225	215	H 220	H 195	H 185	H 205	220	225	225	A 240	230	200	A	290	245
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	28	29	29	31	30	29	31	31	31	29	30	29	30	31
MED	280	280	270	260	255	258	255	220	220	210	212	208	195	198	208	H 220	210	210	228	228	224	250	268	290
UQ	292	288	285	272	270	276	270	228	225	225	228	222	210	205	225	H 225	220	215	237	232	245	278	295	302
LQ	260	255	252	242	231	238	248	215	210	H 195	185	H 190	H 190	H 188	195	205	210	198	220	215	210	238	260	268

DEC. 1985 | H'F (KM)

IONOSPHERIC DATA

DEC. 1985 | 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

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								S	125	110		E A 130	A 115			115	S							
2								S	A 110	A	A	A	E A 125	E A 130	A	A	A							
3								S	110	A	A	A 120	A	A	A 115	A 120	S					S		
4								S	E A 125	A	A	A	A	A	A	E A 120	E S 135							
5		S						A	A	A	A	A	A 115	A 125	A	A	S							S
6	S							S	A	105	105	105	105	A 115	A	115	S				S		S	
7								S	115	110	E A 130	A	A 120	A 120	A 115	A	A		S					
8								S	A	A	A	A	A	A	A	A 120	S							
9								S	A	110	E A 125	A	E A 120	A	E A 125	115	S		S			S		S
10								S	120	E A 135	A 115	105	110	110	110	110	E S 140							
11				S	S			S	110	A	A	A	A	105	A 120	A	S							
12								S	120	A	A	115	110	A	E A 125	A 120	E S 130	S						
13								S	120	A 120	A 120	110	110	110	110	110	S				S	S	S	S
14	S	S	S	B				S	115	A 120	A 115	A 120	E A 125	A	A 120	A 120	S							
15								S	A	A	A	A	A 120	A	A	A	S							
16		S	S					S	A 125	E A 130	A 120	E A 120	E A 120	A 110	E A 125	A	A			S	S			
17								S	E A 130	A 120	110	110	120	A 130	A 120	120	B							
18								S	115	E A 130	E A 125	A	A	115	115	E A 125	A							
19								S	115	110	A	115	A 120	A 115	110	115	S			S	S		S	S
20	S	S	S					S	110	110	110	115	A	A	A	A	A							
21								S	120	110	110	E A 120	A 120	A	A	115	A					S	S	
22								S	120	115	A 115	110	A	A	A	E A 125	S				S			
23								S	115	105	105	105	110	110	E A 130	A	S			S	S		S	
24								S	A	A 115	E A 130	A 120	105	110	115	E A 130	S							
25								S	120	110	A 115	A 120	A 115	A 115	A 115	A	S							
26								S	A	110	A	105	E A 135	A 120	A 115	E A 135	S							
27		S	S	S				S	E A 130	A 125	A 120	A 115	A 110	A 110	105	110	S					S	S	
28				S				S	115	A	A	E A 130	A	A 120	A 125	A 130	S							
29								S	115	110	A	A	A	A	A	A	A							
30								S	110	A	E A 130	A	A	A	A	A	A							
31								S	A	A	A	E A 120	A 115	A	E A 125	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									23	20	17	20	21	17	19	19	3							
MED									115	110	A 112	112	A 112	A 115	A 115	A 118	E S 135							
UQ									120	A 118	E A 125	A 118	A 118	A 120	A 120	A 121	E S 138							
LQ									115	110	110	110	110	110	115	115	E S 132							

DEC. 1985 | H'E (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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	100	100	100	100	100	100	105	S	140	135	110	150	100	100	100	100	95	95	95	S	105	105	105	100
2	100	100	100	95	100	100	100	105	110	105	105	100	100	105	105	105	110	110	105	105	105	100	100	100
3	100	100	100	100	100	105	S	S	115	105	105	105	105	100	105	105	120	110	105	125	115	115	105	115
4	100	100	100	100	100	100	100	100	110	105	100	100	100	100	100	100	105	S	100	105	105	105	105	105
5	S	S	100	100	100	S	S	105	105	105	105	100	100	100	95	95	100	95	95	95	S	S	105	S
6	S	S	S	S	S	S	S	S	115	G	110	150	130	105	150	140	100	95	105	100	115	S	S	100
7	100	100	100	95	95	S	100	S	G	135	110	110	110	105	105	100	100	100	S	S	100	125	100	S
8	S	105	100	S	110	100	105	100	125	110	110	110	115	110	110	110	105	S	105	100	100	105	105	110
9	100	100	95	110	100	105	S	125	115	115	100	100	100	100	100	G	S	100	100	S	120	S	S	S
10	S	S	S	S	S	S	S	S	120	105	105	G	G	160	145	145	155	S	105	100	110	105	105	100
11	105	S	S	S	S	S	S	S	G	150	125	110	110	155	105	105	105	100	100	100	115	95	95	95
12	100	S	S	S	S	S	110	115	130	110	110	G	150	115	115	110	G	S	S	S	S	S	S	S
13	S	S	S	B	S	S	S	135	G	E G 170	E G 175	G	G	G	G	G	100	S	100	S	S	S	S	S
14	S	S	S	100	100	S	140	145	170	160	140	125	130	125	110	105	S	110	105	100	100	100	95	110
15	105	100	100	100	100	100	S	S	115	110	170	105	105	105	105	135	115	110	100	100	100	105	S	130
16	125	S	S	S	S	S	140	155	105	160	140	145	150	100	100	100	95	95	S	S	S	S	S	S
17	S	S	S	S	S	S	S	145	110	120	140	140	125	115	115	G	B	100	100	100	100	100	S	S
18	S	S	S	S	S	S	S	S	G	110	105	100	100	G	G	105	100	100	100	100	95	95	95	S
19	S	S	S	S	S	105	100	S	G	G	150	145	105	105	G	140	S	100	S	S	100	S	S	S
20	S	S	140	105	100	105	105	S	G	165	120	115	110	105	105	95	95	95	100	95	95	S	S	S
21	S	S	115	105	105	S	S	170	150	130	130	130	125	95	95	125	125	100	S	105	S	110	S	S
22	S	S	S	S	110	105	S	S	G	G	155	120	115	115	115	110	110	105	115	S	S	130	120	110
23	110	S	S	B	S	S	S	S	G	155	G	145	115	G	150	145	125	105	105	105	S	110	110	105
24	S	S	100	B	110	S	105	S	115	105	155	145	145	130	125	120	115	S	115	105	110	105	100	105
25	100	100	100	100	100	110	105	105	G	130	115	165	120	125	120	115	170	100	110	105	S	105	S	105
26	120	105	105	105	105	S	110	115	120	G	125	G	105	105	105	115	95	100	100	S	110	105	100	S
27	S	S	S	S	S	100	S	S	110	105	105	100	100	100	G	G	100	100	100	S	105	S	105	100
28	105	105	S	S	100	100	100	S	G	110	E G 175	110	110	105	105	140	125	S	S	S	140	105	105	105
29	105	105	105	105	105	S	S	S	120	110	105	105	105	110	110	110	105	105	105	100	100	100	100	95
30	95	100	110	105	105	105	105	105	G	115	110	105	100	100	100	100	100	100	105	100	100	100	100	100
31	100	100	100	S	S	S	S	135	105	110	105	105	105	100	160	105	105	105	115	110	110	105	115	110
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	14	17	15	19	14	15	15	20	27	30	27	29	28	27	27	26	24	25	20	23	22	20	19
MED	100	100	100	100	100	102	105	115	115	110	110	110	110	105	105	110	105	100	105	100	105	105	105	105
UQ	105	105	105	105	105	105	108	140	122	134	135	142	120	115	115	122	115	105	105	105	110	105	105	110
LQ	100	100	100	100	100	100	100	105	110	108	105	105	100	100	102	102	100	100	100	100	100	100	100	100

DEC. 1985 | H'ES (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 3	F 3	F 2	F 1	F 2	F 3	F 2		H 2	HC 22	L 2	HL 12	L 1	L 2	L 2	L 1	L 2	F 1	F 1		F 2	F 3	F 3	F 3
2	F 1	F 2	F 3	F 3	F 2	F 2	F 2	L 1	CL 41	L 3	L 4	L 2	L 2	L 3	L 4	L 4	L 5	F 4	F 7	F 5	F 4	F 2	F 2	F 2
3	F 2	F 3	F 1	F 2	F 1	F 1			C 3	L 3	L 4	L 2	L 3	L 2	L 2	L 2	C 1	F 1	F 1	F 1	F 2	LK 11	F 2	F 2
4	F 2	F 2	F 2	F 2	F 2	F 2	F 1	L 1	L 4	L 4	L 3	L 3	L 3	L 2	L 3	L 1	L 1		F 1	F 1	F 1	F 2	F 1	F 1
5		K 1	F 1	F 3	F 3			L 3	LH 42	L 5	L 3	L 2	L 3	L 2	L 4	L 4	L 2	F 4	F 2	F 2			F 1	K 1
6	K 1								L 2		C 2	HL 12	H 1	L 1	HL 22	H 2	L 1	F 1	FF 11	F 1	LK 11		K 1	F 2
7	F 2	F 1	F 2	F 1	F 1		F 1			H 2	L 2	L 2	L 1	L 2	L 1	L 3	L 2	F 1	K 1		F 2	F 1	F 1	
8		F 1	F 2		F 1	F 1	F 2	L 1	L 2	L 2	L 2	L 2	L 2	L 2	L 3	L 1	L 2		F 2	F 2	F 2	F 2	F 1	FF 12
9	F 2	F 3	F 5	FF 11	F 2	F 1		L 1	L 2	C 2	L 2	L 2	L 2	L 2	L 2			F 1	LK 11		F 1	K 1		K 1
10									C 2	L 2	L 1			H 1	H 1	H 1	H 1		F 1	F 1	FF 11	F 1	F 1	F 2
11	F 1			K 1	K 1					HL 11	HL 11	L 1	L 2	H 1	L 2	L 2	L 3	F 4	F 2	F 2	FF 21	F 1	F 1	F 1
12	F 1						F 1	L 1	C 1	L 1	L 1		H 1	L 1	L 1	L 1		K 1						
13								H 4		HL 11	HL 11						L 1		F 1		K 1	K 1	K 1	K 1
14	K 1	K 1	K 1	LK 11	F 1	F 1	F 1	HL 31	H 2	HL 22	HCL 21	CL 22	CL 12	CL 22	L 1	L 1		F 1	F 4	F 5	F 2	F 2	F 2	FF 11
15	F 2	F 2	F 1	F 2	F 1	F 2			L 2	L 2	HL 22	L 2	L 2	L 2	LL 21	HL 22	CL 51	FF 11	F 2	F 3	F 2	F 2		FF 21
16	F 2	K 1	K 1				FF 11	HL 12	L 2	HL 12	HL 11	HL 11	HL 11	L 1	L 2	L 3	L 1	F 2	K 1	K 1				
17								H 4	L 1	CL 21	HC 11	HC 11	C 1	L 1	L 1			F 1	F 1	F 2	F 1	F 1		
18										L 1	L 1	L 1	L 1			L 1	L 1	F 1	F 2	F 2	F 3	F 2	F 1	
19						F 2	F 1				HL 11	H 1	L 1	L 1		H 1		F 1	K 1	K 1	F 1	K 1	K 1	
20	K 1	K 1	HK 11	F 2	F 2	F 2	F 3			H 1	C 3	C 2	LL 11	L 1	LL 11	L 2	L 2	F 2	F 1	F 1	F 1			
21			F 1	F 1	F 2		FF 11	HL 21	H 2	H 2	H 2	HL 22	HL 11	L 2	L 2	C 2	CL 22	F 1		F 2		LK 11	K 1	
22					F 1	F 2					HCL 11	C 1	L 1	L 1	L 2	L 1	L 1	F 3	F 1		K 1	F 1	F 2	F 1
23	F 1									HH 11		HL 11	C 1		HL 13	HL 23	CL 22	F 1	LK 11	LCK 11		F 1	LHK 11	F 2
24			F 1		F 1		F 1		L 2	L 2	HL 24	HL 22	H 2	H 2	C 2	CL 11	C 3		F 1	F 3	F 1	F 2	F 3	F 2
25	F 2	F 2	F 1	F 1	F 1	F 2	F 2	L 4		C 2	CL 22	HCL 22	CL 11	CL 21	CL 22	L 2	HL 21	F 1	F 6	F 4		F 3		F 4
26	F 2	F 2	F 2	F 3	F 3		F 3	L 1	L 3		HL 22		L 2	L 2	L 1	LL 11	L 3	F 1	F 1		F 1	F 2	F 2	
27		K 1	K 1	K 1		F 2			L 4	L 1	L 2	L 1	L 1	L 1			L 1	F 1	F 2		F 1	K 1	LK 21	F 2
28	F 1	F 1		K 1	F 1	F 2	F 3			L 2	HL 12	L 1	L 1	L 1	L 2	HL 21	H 2				FF 11	F 2	F 2	F 2
29	F 2	F 2	F 2	F 3	F 2				C 2	C 3	L 3	L 3	L 3	L 2	LL 12	L 2	L 2	F 2	F 2	F 3	F 2	F 3	F 3	F 2
30	F 1	F 1	F 2	FF 22	FF 32	F 4	F 2	L 1		L 1	L 1	L 2	L 2	L 1	L 2	L 2	L 2	F 1	F 1	F 2	F 1	F 1	F 1	F 2
31	F 1	F 1	F 1				F 1	H 4	LH 31	LH 21	LH 21	L 1	L 1	L 1	HL 11	L 2	L 4	F 4	F 5	F 2	F 1	F 2	F 2	F 2
	00	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																								

DEC. 1985 | TYPES OF ES

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	42	45	45	41	39	35	X 29												X 40	X 38	X 31	X 28	A	A
2	A	U S 34	X 34	S	O S 44	S	S												X 44	X 45	S 42	X 30	X 32	A
3	X 35	X 36	X 39	X 38	O S 35	X 35	34												X 42	X 35	X 40	X 39	X 35	S
4	S 36	44	X 40	X 39	O S 38	X 39	X 32											59	X 41	X 43	O S 34	S 33	X 35	X 35
5	S 34	X 36	38	X 35	X 35	X 29	X 26												X 37	S 38	S 41	X 32	S 33	X 33
6	X 34	X 35	X 36	X 37	X 40	X 40	S 28												X 39	X 40	X 49	U S 28	X 30	X 31
7	X 33	X 33	X 36	X 33	X 31	S 31	X 28												S 56	X 34	O S 28	S 32	X 35	X 34
8	U S 34	X 35	S 37	X 36	X 37	X 37	X 34												S 41	S 36	X 39	S 36	X 36	X 35
9	X 36	X 39	X 33	X 30	X 31	X 32	X 32												X 35	X 34	S 38	S 36	X 35	X 35
10	X 32	X 34	X 36	X 37	S 37	X 33	X 30												X 42	X 46	O S 37	O S 43	X 39	S 35
11	X 39	X 40	U S 49	X 38	O S 34	X 32	X 31												X 60	X 52	X 34	X 31	U S 25	X 30
12	X 32	S 33	X 36	X 40	X 32	S 31	O S 25												X 51	X 36	X 39	X 38	X 34	X 32
13	X 31	X 31	X 33	X 38	X 40	X 28	X 24													S 42	X 50	X 64	90	75
14	71	80	U S 62	65	45	35	X 37												S 43	S 41	X 40	X 34	X 31	X 31
15	X 31	X 34	X 33	S 34	S 33	34	X 27												X 44	R 52	X 34	X 31	X 30	X 28
16	X 30	X 31	X 34	X 33	X 35	X 36	X 29												X 49	X 39	X 34	X 35	S 34	X 29
17	X 31	35	X 34	S 36	33	X 32	X 27												X 68	X 49	X 50	X 38	X 26	A
18	X 30	X 26	X 32	X 32	X 33	X 37	X 29												X 48	X 40	X 43	X 36	X 26	X 28
19	X 29	X 31	X 33	X 34	X 33	X 32	X 31												X 44	X 55	X 62	X 53	X 47	X 44
20	X 38	X 34	X 32	X 32	C	C	C												X 43	X 39	X 37	X 29	X 28	43
21	40	36	40	41	X 34	X 27	X 26												X 47	X 42	X 40	X 35	X 30	X 29
22	X 30	X 32	X 33	X 34	X 35	X 32	X 29												X 56	X 50	X 42	X 39	X 38	X 38
23	X 34	X 36	X 36	X 36	X 32	X 30	X 31												X 54	X 39	X 40	X 36	X 32	S 31
24	X 31	X 33	X 35	X 35	S 37	X 40	X 32												X 48	X 45	X 45	X 29	X 26	X 27
25	X 30	X 32	X 34	X 35	O S 39	X 32	X 23												X 39	S 46	X 47	X 41	X 24	S
26	X 31	X 32	X 32	X 32	X 32	H 33	X 29												X 42	S 44	X 41	X 36	X 32	X 35
27	X 31	X 30	X 30	X 33	S 33	X 32	X 30												X 35	S 41	S	S	O S 27	X 27
28	S 30	S 30	S 31	30	S 30	X 26	S 28												X 41	X 45	S	X 30	S 31	O S 39
29	X 34	O S 33	X 32	X 34	X 31	X 34	X 31												X 38	A	A	S	X 28	S
30	29	35	36	36	U S 29	U S 25	U S 24												X 41	X 41	U S 56	X 29	X 30	S 37
31	X 39	X 31	X 32	X 29	X 30	X 29	X 29												X 46	A	A	A	O S 26	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	30	30	29	29											1	30	29	27	28	30	25
MED	X 32	X 34	X 34	X 35	X 34	X 32	X 29											59	X 43	X 41	X 40	X 35	X 32	X 33
UQ	X 36	X 36	X 36	X 38	37	X 35	X 31												X 48	X 45	X 44	X 38	X 35	X 35
LQ	X 31	X 32	X 33	X 33	X 32	X 31	X 27												X 41	X 39	X 37	X 30	X 28	X 29

DEC. 1985 | FXI (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	F	F	F	F 28	F	23	41	55	63	71	70	81	78	H 77	59	57	45	34	32	25	22	A	A
2	A	J S 28	28	S	S 38	S	S	35	S 62	59	65	65	75	85	H 68	55	56	54	38	39	S 36	24	26	A
3	29	30	33	32	29	S 29	F 24	U S 38	52	62	55	63	70	78	75	55	65	54	35	29	34	32	29	S
4	S 30	F 33	34	33	32	33	26	U S 43	59	59	58	79	59	58	53	60	64	49	35	S 37	28	27	29	29
5	28	30	F	30	29	23	S 20	38	48	54	65	69	74	55	72	73	60	44	31	32	35	26	27	27
6	28	29	30	31	34	34	22	36	50	56	61	63	66	64	70	57	55	A	33	34	43	S 22	S 24	25
7	27	27	30	27	25	25	22	S 37	54	55	R 62	74	R 63	72	60	63	62	45	50	S 28	22	26	29	28
8	S 28	29	31	30	31	31	28	S 39	52	60	68	H 74	72	69	80	64	58	59	35	30	33	30	30	S 29
9	30	33	27	24	25	26	26	42	55	57	H 63	61	59	62	H 52	66	65	47	29	28	S 32	30	29	29
10	26	28	30	31	31	27	24	34	55	62	H 71	64	H 67	64	71	H 66	50	54	36	40	31	37	33	29
11	33	34	42	32	28	26	25	35	H 70	61	61	79	90	71	63	81	54	60	54	S 46	27	25	19	24
12	26	S 27	30	34	26	25	S 19	34	56	60	59	74	94	73	H 69	60	60	56	45	30	33	U S 32	28	26
13	25	25	27	32	34	22	18	28	58	U H 64	59	60	63	U H 77	H 69	U R 68	56	47	U S 46	36	44	58	F	F
14	F	F	S 56	F	F 30	F 27	31	40	69	64	64	77	65	58	60	H 56	56	53	S 37	S 35	34	28	25	25
15	25	28	27	28	S 27	F 25	21	S 32	55	56	67	65	71	72	60	60	60	53	38	46	27	25	24	22
16	24	25	28	27	29	30	23	60	51	60	63	H 61	84	73	64	78	56	52	43	33	28	29	S 28	23
17	25	F	28	30	F	26	21	32	56	57	54	57	67	62	72	62	H 59	69	S 62	43	44	32	20	A
18	24	20	26	26	27	31	23	31	55	54	53	61	72	63	62	58	55	56	42	S 34	37	30	20	22
19	23	25	27	28	27	26	25	40	55	55	H 52	H 60	63	61	H 54	C	C	H 66	38	49	56	47	41	38
20	32	28	26	26	C	C	C	C	C	65	H 77	90	97	H 94	J H 75	64	J S 75	64	37	33	31	23	22	F
21	F	F	F	F 30	28	21	20	33	54	57	58	54	75	82	61	60	78	56	41	36	34	29	24	23
22	24	26	27	28	29	26	23	30	54	59	H 66	73	J H 86	109	J H 122	108	84	H 64	50	44	36	33	32	32
23	28	30	30	30	26	24	25	32	55	63	71	64	64	60	67	53	58	54	S 48	33	S 34	30	26	25
24	25	27	29	29	31	34	26	31	54	57	56	C	C	64	59	54	54	S 58	S 42	39	39	22	20	22
25	24	26	27	29	U S 33	26	17	24	55	64	74	64	74	66	61	55	49	39	33	S 40	41	35	18	A
26	25	26	26	26	26	25	23	30	57	50	56	59	62	68	52	62	55	49	S 36	38	S 35	30	26	29
27	25	24	24	27	27	26	24	28	50	73	59	70	75	70	50	52	53	42	29	S 35	A	A	21	22
28	24	24	25	F	24	20	22	30	52	S 54	50	63	71	59	68	64	53	45	35	39	A	24	25	F 28
29	28	U S 27	26	28	25	28	26	S 38	52	60	R 71	72	81	71	54	61	70	A	31	A	A	A	21	S
30	U F 20	U F 25	F 23	F 27	U S 23	U S 19	U S 18	U S 27	44	52	62	77	93	J R 75	R 73	65	59	49	35	35	J S 50	23	24	31
31	33	25	26	23	24	23	23	30	S 43	56	76	U H 83	68	63	60	58	52	S 47	S 40	A	A	A	S 20	U F 20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	27	29	28	29	30	30	31	31	30	30	31	31	30	30	29	31	29	27	28	29	23
MED	26	27	28	29	28	26	23	34	55	59	62	65	72	69	64	60	58	53	37	35	34	29	25	26
UQ	28	29	30	30	31	28	25	38	56	62	68	74	81	74	72	65	62	56	42	39	38	32	29	29
LQ	24	25	26	27	26	24	21	30	52	56	58	61	65	62	60	57	55	47	35	33	31	24	21	23

DEC. 1985 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	A	L	L	A	A	A								
2									L	330	L	380	L	420	L	L	A							
3										L	L	L 400	L 450	430	L	A	A							
4									L	A	L	380	L	L	A	L	A							
5										L 310	L	L	A	U L 390	A	L								
6										300	L	420	400	U L 370	L	330	A							
7										L	370	L	430	420	L 390	L								
8									250	L	L	L	410	430	L	L								
9									L	U L 350	L 410	U L 420	U L 430	410	L 390	L	L							
10										L	L	U L 410	U L 410	L	L	L	280							
11										L	L	L 430	L 530	400	U L 410	L	L							
12									L	L	L	L	L	410	L	L	L							
13										L	L	L	460	L	U L 430	L	L							
14										L	L	L	U L 410	L	L	L	A							
15										L	400	L	L	L	U L 400	L								
16										L	L	U L 420	L 430	L 420	U L 410	L								
17										L	L	L	L 440	L 420	L	L								
18										L	L	L	L 420	L	L	L	L							
19											L	L	U L 430	L	L 400	C	C							
20								C	C	L	L	L 430	L 430	L 420	L	L								
21										L	L	L	L	U L 420	L	L	L							
22											L	L 420	L	L 420	L	L								
23										L	L	410	L 430	L 410	L	H 300	L							
24									250	300	L 370	C	C	L	L									
25									L	L	L	L	410	L	L	L								
26									L	L	L	L	L	L	L	L								
27									L 260	L	L	400	420	L	L	L								
28									230		U L 330	L	410	L	390	L	L							
29												410	420	L	A	A	A							
30											L	U L 450	L 410	400	410	L	L							
31										L	L	L	U L 420	U L 370	U L 390	L	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	5	5	14	21	17	10	2	1							
MED									250	310	L 370	L 415	L 420	L 420	L 400	315	280							
UQ									255	L 330	400	L 420	L 430	L 420	U L 410									
LQ									240	300	L 370	400	410	L 400	L 395									

DEC. 1985 | FOF1 (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24sec 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	A	A	A	A	A	A	A	A	S								
2								S	A	250	A	A	295	295	A	A	A	S								
3								S	205	240	250	A	A	A	A	A	A	S								
4								S	A	250	A	295	300	A	A	A	A	S								
5								S	A	230	A	255	A	A	A	250	A	S								
6								S	195	A	285	H 300	A	300	285	255	A	S								
7								S	H 205	245	270	295	300	A	290	255	A	S								
8								S	A	A	A	A	A	305	295	A	215	S								
9								S	H 210	A	A	A	A	A	295	260	205	S								
10								S	H 200	250	275	305	295	305	280	255	210	S								
11								S	205	260	A	315	310	300	S 290	R 250	210	S								
12								S	195	245	A	A	300	295	A	255	210	S								
13								S	200	260	275	295	295	300	H 280	260	230	S								
14								S	170	H 240	280	A	295	A	A	A	A	S								
15								S	R 190	A	A	290	A	A	A	A	A	S								
16								S	A	245	275	300	A	A	280	250	A	S								
17								S	195	255	A	A	310	305	A	A	A	S								
18								S	210	250	A	A	A	305	A	A	A	S								
19								S	190	235	265	300	305	300	280	C	C	S								
20								C	C	240	275	A	A	A	A	260	A	S								
21								S	195	235	265	300	305	A	A	A	225	S								
22								S	190	245	275	300	A	A	A	A	A	S								
23								S	195	250	H 285	295	300	A	285	255	225	S								
24								S	S	240	A	C	C	H 290	285	255	A	S								
25								S	185	H 240	H 275	295	300	295	285	250	205	S								
26								S	165	235	255	300	A	300	285	250	215	S								
27								S	A	260	280	295	300	295	285	255	205	S								
28								S	185	270	A	A	300	295	A	A	H 250	A								
29								S	200	R 255	A	A	A	A	A	A	A	S								
30								S	A	A	A	A	290	290	280	A	210	S								
31								S	S	H 230	255	A	A	A	A	260	A	S								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									21	25	16	16	16	16	15	16	13							
MED									195	245	275	298	300	300	285	255	210							
UQ									205	250	278	300	302	302	288	258	225							
LQ									190	240	265	295	295	295	280	250	210							

DEC. 1985 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	J A 17	J A 20	J A 18	J A 22	E S 16	E S 16	G	J A 41	J A 46	29	J A 50	J A 55	J A 47	J A 37	J A 37	J A 18	J A 24	J A 22	J A 18	J A 17	J A 18	J A 51
2	J A 35	J A 73	J A 21	J A 27	J A 33	J A 30	J A 30	J A 17	J A 25	J A 32	J A 73	33	J A 32	J A 31	28	30	J A 33	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	J A 83
3	J A 39	J A 29	24	J A 37	J A 21	E S 16	E S 16	E S 16	25	27	34	32	J A 58	J A 107	J A 44	J A 53	39	28	J A 28	19	E S 16	J A 24	18	J A 52
4	J A 39	J A 33	J A 33	E S 16	18	J A 17	E S 16	E S 16	25	32	30	J A 42	30	J A 35	50	J A 33	J A 46	J A 33	J A 24	J A 18	J A 24	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	24	28	31	34	J A 44	37	J A 48	J G 21	J A 19	J A 35	J A 18	E S 16	E S 16	E S 16	E S 16	J A 18
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	J A 24	J A 31	32	32	J A 34	G	G	27	J A 39	J A 54	J A 25	J A 20	J A 78	21	J A 40	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	27	30	J A 34	33	J A 35	29	G 25	J A 21	G	J A 20	J A 18	E S 16	J A 18	E S 16	E S 16
8	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	32	J A 41	J A 34	J A 39	G	G	30	G	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 16	E S 16	E S 16	E S 16	E S 16	22	J A 29	39	J A 35	J A 33	J A 64	33	G 18	25	J A 17	24	22	J A 17	E S 16	J 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 19	30	32	33	33	36	37	31	G	E S 16	E S 16	24	E S 16	J A 36	J A 25	J A 20
11	J A 25	J A 17	J S 14	J A 18	20	E S 16	E S 16	19	G	G	34	G 19	G	G 20	G 19	G	25	E S 16	E S 16	E S 16	E S 16	J A 17	18	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S	22	E S 16	E S 16	G	G	J A 34	30	G 26	J A 33	J A 39	27	22	J A 18	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	J A 18	E S 16	17	27	28	31	G	34	G 20	G 17	J A 32	23	20	J A 30	20	E S 16	E S 16	E S 16	J A 17
14	17	E S 16	E S 16	E S 16	E S 16	E S 16	J A 17	J A 25	27	30	32	J A 55	J A 51	35	30	J A 35	J A 33	J A 25	J A 24	J A 18	E S 16	E S 16	E S 16	E S 16
15	J A 17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	J A 29	J A 29	J A 34	J A 43	J A 40	J A 50	28	J A 38	J A 52	J A 25	J A 31	18	E S 16	J A 17	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	24	29	30	32	J A 38	J A 36	G 22	J A 28	J A 43	J A 35	J A 28	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	24	30	J A 33	J A 34	G	G	J A 31	J A 32	J A 45	J A 51	E S 16	E S 16	J A 25	J A 31	E S 16	J A 40
18	J A 17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	25	30	J A 33	J A 37	J A 34	G	J A 39	J A 50	J A 35	E S 16	J A 24	J A 21	J A 17	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	J A 17	J A 24	24	28	G	33	34	G	J A 29	C	C	J A 29	J A 36	J S 16	E S 16	E S 16	E S 16	E S 16
20	E S 16	E S 16	E S 16	J S 16	C	C	C	C	C	31	31	J A 33	J A 36	J A 68	J A 37	G	J A 40	J A 18	J A 18	J S 16	J A 17	J A 18	J A 33	J S 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	26	35	38	41	J A 42	J A 40	J A 41	J A 37	G	E S 16	J A 20	J A 20	J A 28	E S 16	J A 37	E S 16
22	E S 16	E S 16	J A 20	J A 23	J S 14	E S 16	E S 16	E S 16	J A 22	G 21	G 21	33	38	J A 33	32	30	25	20	J A 21	J A 32	E S 16	E S 16	E S 16	E S 16
23	J A 18	J A 17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	34	32	30	G	G	24	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	19	G	J A 51	C	C	37	35	J A 33	J A 27	J A 29	J A 21	E S 16	E S 16	E S 16	E S 16	E S 16
25	E S 16	E S 16	J A 18	J A 21	E S 16	E S 16	E S 16	E S 16	G	G	31	41	35	34	31	27	J G 18	19	J A 17	J A 17	E S 16	E S 16	E S 16	J A 26
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	G	G	28	G	J A 39	J G 29	G 23	G 24	G 17	18	24	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	20	G	G	G	G 22	G 20	G 19	G	25	17	J A 18	J A 25	J A 29	J A 25	J A 21	J A 18
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	G	29	J A 35	34	32	J A 44	J A 54	J A 45	39	J A 35	J A 29	J A 21	J A 30	J A 17	J A 51	J A 21
29	J A 22	J A 53	J A 25	J A 21	E S 16	E S 16	E S 16	E S 16	G	34	J A 74	J A 78	J A 59	J A 45	J A 65	J A 50	J A 36	J A 95	J A 77	J A 84	J A 39	J A 34	J A 29	J A 31
30	J A 30	J A 24	20	J A 22	J A 18	J A 20	19	22	21	J A 33	J A 50	J A 60	G	G 20	30	J A 40	23	J A 24	J A 30	J A 23	19	E S 16	E S 16	E S 16
31	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	25	31	37	37	32	J A 37	J A 40	28	J A 31	J A 31	J A 26	J A 51	J A 39	J A 84	J A 76	J A 40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30	30	30	30	31	31	30	30	31	31	30	30	31	31	31	31	31	31	31
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	22	29	32	34	34	J 35	32	30	J 26	J A 20	J A 24	J 18	E S 16	E S 16	E S 16	E S 16
UQ	J A 17	E S 16	16	J 17	E S 16	E S 16	E S 16	E S 16	25	31	J A 38	J A 37	J A 39	J A 38	J A 40	J A 35	J A 38	J A 32	J A 26	J A 22	J A 22	J A 18	J A 20	J A 20
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	24	30	32	32	G 20	26	G 25	22	16	18	E S 16	E S 16	E S 16	E S 16	E S 16

DEC. 1985 | FOES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 16	E S 16	E	E	E	E	E S 16	E S 16	G	34	44	28	38	44	40	35	34	17	22	20	E	E	A A 18	A A 51
2	A A 35	20	20	24	25	S	S	E	20	G	28	G	28	26	28	29	29	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	A A 83
3	18	22	E	18	18	E S 16	E S 16	E S 16	24	27	32	31	33	40	29	36	29	18	20	18	E S 16	E	E	E
4	20	E	E	E S 16	E	E	E S 16	E S 16	25	30	30	28	29	34	34	29	29	18	E	E	19	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	24	28	31	34	42	35	44	G 20	19	32	18	E S 16	E S 16	E S 16	E S 16	E
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	18	25	31	32	30	G	G	26	29	A A 54	E	18	E	E	E	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	G	G	34	G	G 24	20	G	E	E	E S 16	E	E S 16	E S 16
8	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	23	29	30	30	31	G	G	26	G	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 16	E S 16	E S 16	E S 16	E S 16	G	27	31	31	31	34	G	G 18	24	17	E	E	E	E S 16	E	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 18	30	31	G	G	36	26	31	G	E S 16	E S 16	23	E S 16	E	E	E
11	18	E	E	E	E	E S 16	E S 16	G	G	G	31	G	G	G 20	G 19	G	G	E S 16	E S 16	E S 16	E S 16	E	E	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S 16	E	E S 16	E S 16	G	G	31	29	G 26	27	29	G	20	G	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	E S 16	17	24	G	30	G	34	G 17	G 16	19	17	G	E	E	E S 16	E S 16	E S 16	E
14	E	E S 16	E S 16	E S 16	E S 16	E S 16	E	26	26	29	G	35	G	32	29	32	30	19	19	E	E S 16	E S 16	E S 16	E S 16
15	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	25	27	26	19	29	29	28	25	G	23	17	E	E S 16	E	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	23	25	29	31	32	33	G 22	20	40	27	24	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	24	28	28	31	G	G	29	30	24	40	E S 16	E S 16	E	21	E S 16	A A 40
18	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	25	27	30	32	31	G	29	36	22	E S 16	E	E	E	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	G	22	G	G	33	33	G	25	C	C	19	29	E	E S 16	E S 16	E S 16	E S 16
20	E S 16	E S 16	E S 16	E	C	C	C	C	C	28	30	32	35	38	30	G	24	G	E	E	E	E	20	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	25	29	35	39	38	32	30	28	G	E S 16	E	20	E	E S 16	E	E S 16
22	E S 16	E S 16	E	E	E	E S 16	E S 16	E S 16	G	G 20	G 19	G	31	31	31	29	24	18	20	18	E S 16	E S 16	E S 16	E S 16
23	E	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	G	33	31	30	G	G	24	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	19	G	26	C	C	36	24	24	22	25	20	E S 16	E S 16	E S 16	E S 16	E S 16
25	E S 16	E S 16	E	E	E S 16	E S 16	E S 16	E S 16	G	G	31	35	34	33	30	27	G	G	E	E	E S 16	E S 16	E S 16	A A 26
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	G	G	28	G	32	G 27	G 23	G 24	G 16	G	E	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	20	G	G	G	G 22	G 20	G 19	G	G	G	E	19	A A 29	A A 25	17	E
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	G	G	29	32	31	28	34	25	G	27	E	E	A A 30	E	E	E
29	E	19	E	E	E S 16	E S 16	E S 16	E S 16	G	30	69	38	34	31	46	38	32	A A 95	25	A A 84	A A 39	A A 34	19	S
30	18	E	E	E	E	F	E	G	18	26	26	29	G	G 20	G	26	17	17	E	E	E	E S 16	E S 16	E S 16
31	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	29	34	35	G	29	28	23	27	21	21	A A 51	A A 39	A A 84	17	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	29	29	30	30	31	31	30	30	31	31	30	30	31	31	31	31	31	31	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	18	25	30	31	31	30	28	26	23	17	16	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	24	28	31	33	33	34	30	29	29	20	20	18	E S 16	E S 16	E S 16	E S 16
LQ	E S 16	E S 16	E E 16	E S 16	E S 16	E S 16	E S 16	E S 16	G	G	26	G	G 19	G 20	G 19	G 20	G 16	E G 16	E	E	E	E E 16	E E 16	E

DEC. 1985 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | FMIN (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 25 MHz in 24 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	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	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	E S 16	16	16	15	14	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
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	E S 16	E S 16	E S 16	16	15	15	15	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
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	E S 16	E S 16	15	15	16	16	15	15	15	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	E S 16	16	16	16	16	15	15	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
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	E S 16	15	16	15	15	15	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
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	15	16	17	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
8	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	15	15	16	15	16	16	15	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 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	15	16	17	16	16	16	15	E S 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	E S 16	14	16	15	16	15	16	16	16	E S 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	E S 16	16	16	16	16	16	17	15	15	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	E S 16	17	17	18	17	17	15	16	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	E S 16	15	15	14	15	15	14	12	13	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	16	15	16	16	15	15	14	12	E S 16	E S 16	E S 15	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	E S 16	E S 16	15	16	14	15	16	15	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	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	15	16	16	16	16	15	15	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
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	E S 16	16	16	18	16	16	16	17	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	E S 16	15	15	17	17	18	17	15	15	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 16	E S 16	E S 16	E S 16	15	16	16	16	16	16	C	C	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	C	C	C	C	C	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
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	15	16	18	16	16	16	16	15	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	15	15	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
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	15	15	16	16	15	15	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
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	E S 16	15	C	C	16	15	14	15	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	15	16	16	15	15	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
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	15	15	16	16	15	16	16	15	E S 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	E S 16	15	16	15	15	15	16	15	E S 16	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	15	15	15	16	15	16	15	15	E S 16	E S 16	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	E S 16	15	15	16	17	16	16	16	15	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 15	E S 16	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	15	15	16	17	16	16	16	14	E S 15	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16
31	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	16	16	15	15	15	16	15	E S 15	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30	30	30	30	31	31	30	30	31	31	30	30	31	31	31	31	31	31	31
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	E S 16	16	15	16	16	16	16	16	15	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	E S 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	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	15	15	16	16	15	15	15	15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16

DEC. 1985 | FMIN (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	F	F	F	F 305	F	325	365	365	375	375	335	345	340	H 345	340	360	375	365	345	360	365	A	A
2	A	J S 265	305	S	S 225	S	S	340	S 360	345	375	355	355	345	H 365	345	375	370	330	345	S 345	335	325	A
3	295	300	320	330	295	S 325	F 310	U S 330	355	360	365	335	340	370	365	355	370	370	370	310	325	345	310	S
4	S 335	F 335	325	305	310	335	345	U S 325	370	370	395	365	370	360	350	360	375	365	330	S 350	340	315	310	360
5	305	300	F	335	380	370	S 350	340	375	335	360	345	380	345	345	370	385	385	340	330	355	325	335	295
6	305	310	300	320	340	365	320	360	380	355	370	315	380	330	380	350	355	A	350	310	360	S 340	S 290	320
7	335	315	350	370	340	360	320	S 335	370	365	R 345	380	R 335	360	335	350	380	375	360	S 355	410	305	310	320
8	S 305	295	305	335	340	370	320	S 335	355	350	365	H 365	370	335	360	350	380	365	370	300	350	335	335	S 310
9	300	320	335	310	320	305	325	355	370	375	H 350	335	345	355	H 355	355	360	370	345	305	S 330	350	310	295
10	305	305	335	320	340	315	310	340	355	370	H 360	360	H 375	365	345	H 345	360	370	320	335	320	295	320	295
11	305	295	335	345	340	305	280	315	H 355	370	335	335	350	330	325	370	370	290	335	S 370	390	300	370	290
12	290	S 295	300	350	345	340	S 290	325	365	365	330	335	355	340	H 340	360	340	350	365	350	305	U S 330	320	305
13	280	300	315	345	350	385	335	320	335	U H 365	330	385	305	U H 320	H 320	U R 335	365	340	U S 345	335	270	265	F	F
14	F	F	S 330	F	F 350	F 295	290	310	355	365	360	355	355	335	350	H 305	350	340	S 335	S 330	350	355	320	300
15	300	320	295	320	S 335	F 340	335	S 345	365	350	350	325	340	345	335	340	340	360	330	360	370	320	290	295
16	290	320	320	335	345	400	305	335	370	385	375	H 320	345	355	330	335	365	385	350	350	340	325	S 320	280
17	280	F	300	335	F	345	335	330	365	370	370	360	350	355	360	340	H 340	345	S 380	335	365	345	325	A
18	310	300	305	305	315	355	370	340	380	390	365	345	360	340	340	355	345	355	355	S 325	350	350	350	320
19	280	280	295	305	315	305	320	335	380	345	H 315	H 360	365	345	H 295	C	C	H 380	330	335	320	295	290	300
20	345	355	305	305	C	C	C	C	C	340	H 310	345	340	H 330	J H 320	330	J S 320	360	380	335	320	345	320	F
21	F	F	F	F 350	305	355	300	335	370	350	355	350	335	365	360	350	370	355	340	345	365	345	310	305
22	290	305	315	305	310	345	305	335	370	355	H 355	320	J H 315	350	J H 350	350	345	H 345	340	330	335	365	345	360
23	285	300	335	350	345	290	300	330	345	350	365	365	330	335	360	340	360	350	S 355	335	S 340	335	365	280
24	280	315	310	310	320	365	345	340	360	360	350	C	C	360	330	350	350	S 355	S 345	335	360	320	350	295
25	290	305	315	310	U S 340	405	325	310	345	345	370	350	335	350	360	365	345	370	270	S 335	355	370	360	A
26	320	305	305	305	305	300	325	350	385	370	375	355	370	365	375	355	365	365	S 335	315	S 330	350	325	325
27	320	335	310	335	335	345	310	320	350	395	370	355	345	370	350	345	350	370	345	S 370	A	A	310	340
28	310	310	320	F	335	350	340	315	385	S 370	350	335	350	365	345	345	360	355	340	360	A	290	280	F 285
29	305	U S 315	305	320	320	320	325	S 330	365	340	A	355	350	360	340	325	370	A	340	A	A	A	310	S
30	U F 300	U F 300	F 325	F 350	U S 370	U S 315	U S 360	U S 335	350	355	340	335	360	J R 345	R 340	330	355	355	355	315	J S 270	345	270	340
31	350	300	290	280	310	305	325	365	S 360	340	355	U H 345	345	375	325	345	355	S 370	S 350	A	A	A	S 325	U F 325
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	27	29	28	29	30	30	31	30	30	30	31	31	30	30	29	31	29	27	28	29	23
MED	305	305	312	320	335	342	325	335	365	360	360	348	350	350	345	348	360	365	345	335	345	335	320	305
UQ	310	315	325	340	340	362	335	340	370	370	370	360	360	360	360	355	370	370	355	350	360	348	335	322
LQ	290	300	305	308	310	310	310	325	355	350	350	335	340	340	335	340	350	355	335	330	323	318	310	295

DEC. 1985 | M(3000)F2 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	A	L	L	A	A	A								
2									L	395	L	395	L	380	L	L	A							
3										L	L	L 385	L 365	A	L	A	A							
4									L	A	L	395	L	L	A	L	A							
5										L 420	L	L	A	U L 410	A	L								
6										A	L	380	385	U L 420	L	425	A							
7										L	390	L	395	370	L 395	L								
8									420	L	L	L	400	360	L	L								
9									L	U L 400	L 390	U L 405	U L 370	390	L 425	L	L							
10										L	L	U L 390	U L 390	L	L	L	410							
11										L	L	L 350	L 375	400	U L 380	L	L							
12									L	L	L	L	L	400	L	L	L							
13										L	L	L	370	L	U L 360	L	L							
14										L	L	L	U L 390	L	L	L	A							
15										L	375	L	L	L	U L 375	L								
16										L	L	U L 390	L 370	L 380	U L 390	L								
17										L	L	L	L 365	L 380	L	L								
18										L	L	L	L 380	L	L	L	L							
19											L	L	U L 370	L	L 375	C	C							
20								C	C	L	L	L 370	L 370	A	L	L								
21										L	L	L	L	U L 370	L	L	L							
22											L	L 390	L	L 390	L	L								
23										L	L	390	L 370	L 390	L	H 435	L							
24									420	435	L 405	C	C	L	L									
25									L	L	L	L	390	L	L	L								
26									L	L	L	L	L	L	L	L								
27									L 405	L	L	375	355	L	L	L								
28									415		U L 425	L	355	L	A	L	L							
29												A	370	L	A	A	A							
30											L	U L 335	L 365	400	350	L	L							
31										L	L	L	U L 380	U L 405	U L 370	L	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	4	5	13	21	15	9	2	1							
MED									418	410	L 390	L 390	L 370	L 390	U L 375	430	410							
UQ									420	428	L 405	L 390	L 385	400	U L 390									
LQ									410	393	390	L 375	L 370	L 380	U L 370									

DEC. 1985 | M(3000)F1 (0.01)

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IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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									220	230	235	250	265	255	235	240								
2									230	230	235	245	265	250	230	230	215							
3										245	235	265	280	235	235	230	230							
4									230	230	230	245	235	250	240	245	235							
5										240	245	250	225	245	270	245								
6										235	250	255	230	245	230	235	220							
7										230	240	235	245	250	250	250								
8									220	245	250	220	240	270	240	255								
9									220	225	240	255L	255	250	240	250	225							
10										235	225	235	225	225	255	235	220							
11										225	230L	270	245	245	260L	225	205							
12									225	245	270L	260	245	250	245	240	235							
13										225	250L	225	340	250	280	230	220							
14										225	245	250	240	245L	255	235	240							
15										235L	255	255	250	250	245	250								
16										230	250	270	255	250	275	240								
17										235	235	250	265	265	245	270								
18										225	235	265	250	265	265	250	230							
19											240	230	260	270	270	C	C							
20								C	C	265	295	250	255	250	230	275								
21										265	265	240	275	240	250	250	240							
22											230	245	240	245	230	235								
23										250	245	240	280	250	250	230	225							
24									225	240	240	C	C	250	240									
25									250	240	240	250	260	240	240	245								
26									220	235	240	240	240	240	235	245								
27									250	215	230	240	255	230	255	250								
28									215		235	280	255	240	260	245	225							
29													250	255	A	265	230							
30											260	270	235	220	255	245	230							
31										270L	250	240	245	220	270L	245L	230							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									11	26	30	29	30	31	30	29	17							
MED									225	235	240	250	250	250	248	245	230							
UQ									230	245	250	255	260	250	260	250	230							
LQ									220	230	235	240	240	240	240	235	220							

DEC. 1985 | H'F2 (KM)

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IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	ES 330	ES 280	ES 250	ES 260	ES 270	ES 275	ES 270	230	220	A	A	H 180	EA 240	A	A	A	230	200	A 225	A 240	215	ES 260	A	A
2	A	A	EA 305	S	A	S	S	245	215	200	H 200	200	H 185	215	230	215	A	210	ES 225	S 210	S 215	ES 255	ES 255	A
3	EA 300	EA 315	ES 310	EA 250	EA 300	ES 260	ES 265	230	220	210	215	200	190	A	H 190	A	A	210	A 200	EA 265	ES 230	ES 230	ES 260	ES 300
4	EA 300	S 280	S 260	ES 280	ES 265	S 235	ES 265	235	200	A	200	250	205	A 210	A	EA 235	A	200	ES 200	215	EA 210	ES 280	ES 265	ES 210
5	ES 265	ES 275	ES 290	S 255	ES 205	200	ES 285	230	215	210	235	230	A	EA 200	A	245	220	A 205	EA 245	ES 245	S 220	ES 235	ES 255	ES 275
6	ES 295	ES 300	ES 300	ES 270	S 245	S 205	ES 260	235	205	A	235	210	200	185	235	195	A	A	ES 200	EA 260	S 215	ES 215	ES 280	ES 270
7	ES 265	ES 265	S 245	ES 210	ES 240	ES 220	ES 260	235	220	215	210	235	200	230	185	220	230	200	200	ES 205	215	260	ES 250	ES 245
8	ES 300	ES 290	ES 280	ES 265	ES 250	S 230	ES 240	215	205	235	230	200	190	185	250	205	220	220	200	ES 250	S 230	ES 250	ES 255	ES 270
9	ES 285	245	225	ES 250	ES 250	ES 260	250	220	210	205	H 185	205	H 190	200	200	H 175	235	A 250	200	ES 265	230	220	ES 250	ES 250
10	ES 300	ES 285	ES 255	230	240	250	ES 255	245	H 180	230	225	210	195	245	A	A 225	205	205	200	EA 240	ES 250	ES 255	245	ES 270
11	EA 320	ES 300	240	210	220	ES 260	ES 340	250	225	220	H 185	H 195	H 175	H 200	205	245	205	ES 175	220	195	205	195	ES 250	ES 305
12	ES 325	ES 300	ES 280	215	210	ES 230	ES 380	250	220	H 200	H 215	H 195	H 185	200	H 180	225	H 175	210	195	200	ES 240	ES 235	ES 250	ES 280
13	ES 335	ES 310	ES 270	ES 235	225	200	ES 305	EA 250	245	235	225	H 195	210	185	H 190	250	230	205	205	ES 240	ES 275	ES 310	Q 260	ES 315
14	ES 280	250	ES 255	230	225	ES 255	ES 305	EA 295	225	230	220	A	H 205	205	H 200	EA 230	A	225	210	ES 255	230	230	ES 270	ES 290
15	ES 315	ES 275	ES 260	ES 255	ES 265	ES 225	ES 275	ES 235	H 225	H 175	H 195	H 195	H 185	H 180	215	220	H 190	205	A 220	225	205	ES 295	ES 300	ES 285
16	ES 320	ES 300	ES 270	ES 255	ES 250	200	ES 300	S 230	220	205	H 205	200	H 190	215	H 190	220	A 225	220	225	215	220	S 230	S 225	ES 320
17	ES 320	ES 275	ES 265	ES 265	ES 300	S 230	ES 265	S 240	220	230	H 175	H 200	205	H 200	215	220	240	250	195	200	220	EA 250	ES 260	A
18	ES 295	ES 300	ES 275	ES 300	ES 280	220	220	220	220	225	200	205	200	205	H 195	A	220	225	200	S 225	220	215	S 230	ES 260
19	ES 340	ES 310	ES 295	ES 290	ES 275	ES 280	ES 270	230	220	230	H 180	215	H 200	H 200	220	C	C	205	EA 250	S 240	235	230	ES 290	S 250
20	230	230	ES 280	ES 320	C	C	C	C	C	245	235	225	220	A	230	H 190	220	225	210	S 230	S 245	S 235	A	ES 330
21	ES 250	ES 290	S 255	230	225	S 240	ES 300	240	220	230	EA 250	A	A	H 190	215	225	H 190	H 195	200	EA 250	220	S 230	ES 275	ES 300
22	ES 320	ES 300	ES 310	ES 280	S 245	220	ES 270	S 250	220	H 190	H 200	215	210	200	H 195	225	H 195	H 175	200	225	210	225	S 240	ES 265
23	ES 320	ES 280	S 250	S 230	ES 230	ES 250	ES 270	ES 230	230	230	235	215	200	200	210	190	230	225	S 200	ES 215	S 235	ES 220	ES 210	ES 290
24	ES 305	ES 295	ES 280	ES 290	S 250	S 215	ES 220	S 240	190	185	180	C	C	A	220	215	230	210	S 220	S 235	S 215	ES 270	ES 250	ES 335
25	ES 330	ES 290	ES 270	ES 300	S 240	200	S	ES 275	240	200	235	EA 230	A 215	240	215	H 200	215	200	ES 230	S 235	S 225	S 200	S	A
26	ES 270	ES 280	ES 270	ES 270	ES 285	ES 290	ES 295	S 235	H 180	190	195	195	205	180	180	240	235	215	A 205	S 240	ES 205	ES 220	ES 240	ES 240
27	ES 230	ES 250	ES 285	ES 260	ES 265	ES 240	ES 295	ES 250	200	240	210	200	205	210	H 180	220	235	210	ES 210	225	A	A	A	ES 320
28	ES 260	ES 280	ES 250	ES 240	ES 250	ES 260	ES 230	ES 260	200	220	A 190	A 230	215	215	A	235	220	A 225	A 210	S 215	A	ES 285	ES 350	ES 280
29	ES 265	EA 300	ES 290	ES 260	ES 280	S 270	ES 285	S 235	215	235	A	A	EA 235	210	A	A	A	A	A	A	A	A	A	S
30	A	ES 320	ES 295	240	210	ES 300	ES 300	ES 245	H 175	H 185	230	H 180	H 175	H 205	215	A 215	H 235	210	200	250	220	205	ES 330	ES 255
31	235	ES 300	ES 325	ES 345	ES 300	ES 310	ES 270	215	220	240	255	A 240	215	210	195	H 200	A	215	225	A	A	A	EA 300	ES 300
	00	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	31	30	29	29	28	30	30	28	29	27	28	27	25	26	23	29	30	29	27	28	26	26
MED	ES 300	ES 290	ES 270	ES 258	ES 250	ES 240	ES 270	232	220	220	210	202	200	200	205	220	220	210	202	US 222	218	ES 232	ES 255	ES 280
UQ	ES 320	ES 300	ES 290	ES 280	ES 270	ES 260	ES 298	245	220	230	230	218	208	210	215	228	230	220	215	ES 245	S 226	ES 258	ES 275	ES 300
LQ	ES 265	ES 275	ES 255	US 222	S 225	S 210	ES 260	230	205	200	H 195	198	H 190	200	H 190	205	210	205	200	215	215	215	ES 250	ES 260

DEC. 1985 | H'F (KM)

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IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 120	110	110	110	A	A	A	A	A	S						
2								S	A	A	A	110	A	A	A	115	A	S						
3								S	115	110	105	105	A	A	A	A	A	S						
4								S	A	110	110	110	A	A	A	A	A	S						
5								S	A	110	110	105	110	105	A	A	A	S						
6								S	A	A	110	A	A	105	H 105	A	A	S						
7								S	125	115	110	110	110	A	A	A	A	S						
8								S	A	115	A	105	A	105	110	A	110	S						
9								S	E S 125	110	105	110	A	A	110	115	115	S						
10								S	A	110	105	115	110	115	110	E A 125	E A 120	S						
11								S	125	115	110	105	105	105	105	105	110	S						
12								S	E S 125	115	A	A	E A 120	A	A	115	A	S						
13								S	110	A	105	105	105	105	110	110	E A 125	S						
14								S	E S 125	110	110	105	110	105	110	A	A	S						
15								S	E S 120	110	A	A	A	A	A	A	A	S						
16								S	A	110	110	105	A	A	115	A	A	S						
17								S	S 120	115	115	110	H 105	H 105	A	A	A	S						
18								S	S 125	H 105	H 105	105	105	110	A	A	A	S						
19								S	S	115	115	110	110	H 105	A	C	C	S						
20								C	C	115	110	110	110	A	A	110	A	S						
21								S	S 120	115	115	110	110	A	A	A	115	S						
22								S	S 115	A	A	115	115	115	115	115	120	S						
23								S	S	115	110	110	110	A	110	H 110	110	S						
24								S	S	110	A	C	C	105	A	A	A	S						
25								S	E S 135	105	H 105	105	A	A	A	A	A	S						
26								S	S	110	A	110	A	A	A	A	A	S						
27								S	A	115	115	105	A	A	A	110	A	S						
28								S	S 130	110	A	A	105	A	A	A	A	A						
29								S	S 120	110	A	A	A	A	A	A	A	S						
30								S	A	A	A	A	105	110	A	A	A	S						
31								S	S	105	110	A	A	A	A	E A 125	A	S						
	00	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	26	21	23	16	13	10	11	8							
MED									S 120	110	110	110	110	105	110	112	112							
UQ									S 125	115	110	110	110	110	110	115	118							
LQ									S 120	110	105	105	105	105	110	110	110							

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IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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	100	100	100	S	S	G	115	110	115	100	100	100	105	110	100	105	110	105	100	105	100
2	100	115	100	100	100	95	100	105	115	115	110	115	105	110	110	115	110	S	S	S	S	S	S	105
3	100	100	100	100	100	S	S	S	120	115	110	110	100	100	105	110	115	100	100	100	S	115	110	105
4	105	100	100	S	100	100	S	S	110	115	110	110	100	100	100	100	100	100	100	100	110	S	S	S
5	S	S	S	S	S	S	S	S	115	115	115	110	105	105	100	100	100	95	95	S	S	S	S	110
6	S	S	S	S	S	S	S	S	105	120	160	150	110	G	G	145	110	105	120	105	120	105	100	S
7	S	S	S	S	S	S	S	G	G	140	150	120	140	105	125	100	105	G	100	100	S	105	S	S
8	S	S	S	S	S	S	S	S	120	115	110	110	105	G	G	110	G	S	S	S	S	S	S	S
9	S	S	S	S	S	S	S	S	E G 185	125	120	120	110	110	120	105	145	105	100	100	100	S	100	S
10	S	S	S	S	S	S	S	S	120	175	160	155	125	175	155	145	G	S	S	110	S	105	105	110
11	100	100	100	100	100	S	S	100	G	G	120	105	G	105	105	G	150	S	S	S	S	105	100	S
12	S	S	S	S	S	105	S	S	G	G	110	105	105	100	100	E G 185	110	105	S	S	S	S	S	S
13	S	S	S	S	S	100	S	145	160	160	155	G	180	105	100	100	100	100	110	105	S	S	S	105
14	120	S	S	S	S	S	160	145	145	150	150	120	120	115	110	105	105	100	100	100	S	S	S	S
15	100	S	S	S	S	S	S	S	G	125	105	105	105	100	125	105	100	105	105	100	100	S	100	S
16	S	S	S	S	S	S	S	S	170	150	155	175	100	100	100	100	100	95	90	S	S	S	S	S
17	S	S	S	S	S	S	S	S	165	155	120	115	G	G	105	105	100	100	S	S	120	115	S	100
18	100	S	S	S	S	S	S	S	155	135	115	115	115	G	105	100	100	S	100	100	100	S	S	S
19	S	S	S	S	S	S	105	100	165	120	G	140	170	G	105	C	C	100	100	100	S	S	S	S
20	S	S	S	130	C	C	C	C	C	170	175	120	110	100	100	G	95	100	95	100	100	105	100	100
21	S	S	S	S	S	S	S	S	150	170	135	130	125	105	105	125	G	S	100	155	140	S	115	S
22	S	S	100	105	105	S	S	S	105	105	105	145	120	115	120	115	120	110	105	120	S	S	S	S
23	110	110	S	S	S	S	S	S	G	G	G	125	135	115	G	G	165	S	S	S	S	S	S	S
24	S	S	S	S	S	S	S	S	135	G	130	C	C	125	100	100	100	100	100	S	S	S	S	S
25	S	S	110	105	S	S	S	S	G	G	170	115	125	125	125	120	105	170	100	100	S	S	S	110
26	S	S	S	S	S	S	S	S	G	G	120	G	105	H 105	105	100	100	100	100	S	S	S	S	S
27	S	S	S	S	S	S	S	S	120	G	G	G	105	105	105	G	160	105	100	100	100	100	100	95
28	S	S	S	S	S	S	S	S	G	170	110	150	160	110	105	105	100	100	100	105	105	105	130	110
29	120	105	105	105	S	S	S	S	G	160	110	105	105	110	105	105	105	105	100	100	100	100	95	100
30	95	120	115	120	120	115	115	115	105	105	105	105	G	105	E G 180	100	100	100	120	100	100	S	S	S
31	S	S	S	S	S	S	S	S	165	150	140	145	E G 180	105	105	105	105	100	105	100	100	110	105	120
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	7	9	9	7	6	4	6	20	24	28	27	27	26	28	26	27	23	24	21	14	12	13	13
MED	100	105	100	105	100	100	110	110	124	130	120	115	110	105	105	105	105	100	100	100	100	105	100	105
UQ	110	112	105	105	102	105	138	145	160	158	150	135	125	110	112	112	110	105	105	105	110	108	105	110
LQ	100	100	100	100	100	100	102	100	115	115	110	110	105	100	100	100	100	100	100	100	100	102	100	100

DEC. 1985 | H'ES (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 25 MHz in 24 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 2	F 2	F 2	F 2				C 3	C 3	C 2	L 4	L 4	L 4	CL 43	CL 34	L 3	F 5	F 5	F 1	F 3	F 4	F 4
2	F 5	FF 15	F 6	F 7	F 3	F 5	F 5	L 2	L 2	CL 11	L 2	C 1	L 2	L 2	CL 21	C 2	L 4							F 3
3	F 3	F 4	F 2	F 3	F 3				C 4	C 2	C 3	C 3	L 4	L 3	CL 13	CL 33	CL 45	L 2	F 6	F 2		F 2	F 3	F 2
4	F 3	F 3	F 2		F 1	F 2			C 6	C 4	C 2	CH 22	L 3	L 4	L 5	L 5	L 6	L 3	F 4	F 2	F 2			
5									C 4	C 3	C 4	C 2	C 5	C 4	L 6	L 2	L 1	L 4	F 2					F 2
6									L 1	LH 12	H 2	HL 11	L 1			HL 11	L 2	L 4	FF 11	F 3	FF 12	F 2	F 3	
7										H 1	HC 11	C 1	HC 11	L 2	CL 12	L 2	L 1		F 1	F 2		F 1		
8									C 2	C 4	L 2	C 2	L 2			C 2								
9									H 1	C 2	C 1	C 2	L 2	L 3	C 1	L 1	HL 21	L 1	F 1	F 1	F 1		F 1	
10	F 1	F 1							L 3	H 2	H 1	HL 22	CL 11	HL 11	HL 21	HL 22				F 5		F 2	F 2	F 2
11	F 2	F 2	F 1	F 2	F 2			L 1			C 2	L 1		L 1	L 1		H 1					FF 11	FF 24	
12						F 2	F 1				L 2	L 2	L 1	L 2	L 2	H 1	L 2	L 1	F 1					
13						F 1		H 2	H 2	HL 22	H 2		HL 11	L 1	L 1	LH 31	L 4	L 1	F 1	F 2		F 1	F 1	FF 11
14	F 1				F 2		F 1	L 4	H 3	H 2	HL 22	CL 21	C 1	C 2	C 2	L 3	L 4	F 3	F 3	F 2	F 1	F 1		
15	F 1									C 3	L 3	LH 31	L 3	L 3	CL 12	L 3	L 2	LH 11	L 3	F 3	F 1	F 2	F 2	
16									HL 23	H 2	H 2	H 2	L 3	L 3	L 2	L 2	L 6	L 5	F 6					
17									H 2	H 2	C 1	C 1			L 2	L 4	L 3	L 5			F 3	F 4		F 4
18	F 2								H 3	H 3	C 2	C 2	C 2		L 2	L 3	L 3		F 3	F 3	F 3			
19							F 3	L 3	H 4	CH 22		H 3	H 1		L 2			LH 23	F 4	F 2				
20				F 3						H 2	H 2	C 2	C 4	L 3	L 4		L 4	L 1	F 3	F 2	F 3	F 1	F 4	F 2
21									H 3	H 2	H 3	H 3	C 3	L 2	L 2	CL 22			F 3	F 3	F 3		F 2	
22			F 2	F 2	F 2				L 2	L 3	L 2	H 1	C 2	C 2	C 1	C 2	C 2	C 4	F 7	F 6				
23	F 2	F 1										C 3	C 1	L 2			H 2							
24									H 2		HL 13			C 2	LH 21	LH 21	L 2	L 4	F 3					
25			F 2	F 2							H 1	C 3	CL 22	CL 21	CL 22	CL 22	L 1	HL 31	F 2	F 1				F 7
26											CL 23		L 3	L 2	L 2	L 2	L 2	L 1	F 3					
27									L 3				L 2	L 1	L 1		HHL 21	L 1	F 3	F 3	F 6	F 5	F 4	F 2
28										H 2	LH 11	HL 21	H 1	L 2	L 3	LH 21	L 3	L 4	F 4	F 4	F 5	F 2	FF 13	F 1
29	FF 12	F 2	F 2	F 2						H 3	L 4	L 3	L 3	L 3	L 4	L 3	L 5	L 6	F 5	F 3	F 7	F 3	F 3	F 3
30	F 2	FF 21	F 2	F 2	F 1	F 2	F 2	L 1	LL 31	L 4	LH 21	L 2		L 1	HL 11	L 2	LH 31	L 2	FF 11	F 3	F 1			
31									H 3	H 4	H 2	HL 33	HL 11	LH 31	L 3	L 2	L 5	L 4	F 5	F 6	F 4	FF 23	FF 23	FF 22
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

DEC. 1985 | TYPES OF ES

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 24 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	40	44	57	31	31	31	39												X 50	X 47	X 51	X 45	S 38	S 38
2	38	37	X 37	S 40	S 43	S 27	X 24												A	X 54	X 58	X 33	U S 35	X 35
3	S 36	S 34	S 35	U S 35	S 31	S 28	S 27												X 74	S 50	S 50	S 51	S 39	X 39
4	X 38	X 41	X 40	38	35	35	33												A	X 53	X 45	S 38	S 43	S 41
5	X 31	X 32	X 35	X 36	S 44	X 28	X 28												X 50	S 39	X 48	X 38	X 29	S 31
6	X 32	X 32	X 32	X 36	X 41	S 33	X 25												X 56	X 45	X 51	X 47	X 30	X 31
7	S 33	X 34	S 35	S 37	S 36	S 26	S 26												X 71	X 54	X 36	S 38	S 43	X 36
8	S 32	S 33	X 34	S 37	X 39	X 33	X 29												S 73	S 56	X 48	S 49	O S 40	S 45
9	S 41	S 43	S 42	X 40	X 35	X 28	X 29												U S 56	X 40	U S 48	X 45	S 44	X 43
10	X 38	S 34	X 36	X 39	X 38	X 36	X 29												X 62	X 48	S 52	X 56	X 47	S 38
11	X 40	S 41	X 50	S 41	X 30	X 30	X 28												H 80	X 69	H 48	X 34	X 33	X 32
12	X 31	X 32	X 37	S 47	X 34	S 27	X 23												X 57	S 55	X 54	X 48	X 48	X 39
13	X 34	X 32	X 35	X 40	S 33	X 27	S 22												X 56	S 53	X 69	90	93	83
14	83	84	66	64	50	35	30	40	82										S 71	S 36	X 48	S 39	X 30	X 23
15	X 29	X 32	X 33	X 32	X 31	28	S 24	X 37											X 60	S 62	X 56	X 38	X 35	X 33
16	X 28	X 29	X 31	S 34	X 31	X 26	O S 28	C											X 64	X 56	X 45	X 39	X 42	X 28
17	32	X 32	36	34	34	33	30	X 36											S 132	X 82	X 81	X 55	X 30	A
18	S 28	X 29	X 30	X 33	X 32	X 36	X 29	X 36											X 86	S 62	X 56	X 58	X 37	X 28
19	X 29	X 33	X 37	X 38	X 36	X 37	X 36	X 43											X 68	X 58	X 77	X 68	S 58	S 58
20	X 41	X 36	S 34	X 34	X 39	X 37	X 33	X 44											X 98	X 60	A	X 48	X 41	X 34
21	X 29	36	33	X 44	U S 42	29	28	X 39											X 69	S 51	X 46	43	X 41	X 32
22	X 29	32	X 37	X 38	X 38	X 33	X 26	X 34											X 81	X 64	X 56	X 46	X 43	X 43
23	C	X 36	S 39	X 35	X 32	X 32	X 28	X 38											X 82	X 60	X 54	X 54	X 42	X 32
24	X 33	S 33	X 35	X 35	S 38	S 40	S 32	S 33											S 59	X 50	X 60	S 40	X 30	X 30
25	X 29	X 33	S 33	S 33	S 38	S 30	S 24	X 29											S 53	S 55	O S 68	S 56	X 27	S 26
26	X 27	X 29	X 30	X 30	X 30	X 28	X 27	X 36											X 54	H 37	X 47	X 45	X 38	X 33
27	X 34	X 28	S 30	X 31	X 33	X 32	X 27	X 30											X 47	A	40	35	25	X 28
28	X 30	32	X 35	32	29	24	24	X 30											S 48	A	S 43	28	31	37
29	37	36	A	34	33	30	X 30	X 38											X 50	A	39	29	25	26
30	27	28	31	31	27	S	S	X 29											X 47	X 37	X 37	X 33	O S 27	X 30
31	X 35	X 29	X 29	X 31	X 29	X 28	X 27	X 38											X 48	A	S 33	S 28	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	30	31	31	30	30	17	1										29	27	30	31	30	29
MED	X 32	X 33	X 35	X 35	X 34	30	X 28	X 36	82										X 60	X 54	X 49	X 45	X 38	X 33
UQ	X 38	36	X 37	38	38	X 33	X 30	X 38											X 73	X 59	X 56	X 50	43	X 39
LQ	X 29	X 32	X 33	33	X 31	28	X 26	X 33											X 53	X 48	X 45	38	X 30	X 30

DEC. 1985 | FXI (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 24 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 30	F 34	F	F	F	F	F 19	39	57	76	71	76	R 91	R 124	131	R 125	R 100	R 64	44	S 41	S 45	39	32	S 32
2	F	F 28	S 31	S 34	S 37	S 21	18	36	60	78	R 71	61	71	R 98	94	R 68	63	66	A	48	S 52	U S 27	U S 29	S 29
3	30	28	S 29	S 28	S 25	S 22	S 21	R 37	58	C	C	C	82	R 117	R 129	R 112	79	79	68	44	S 44	S 45	S 33	S 33
4	S 32	35	S 34	F	F	F	F	39	57	R 65	68	57	75	R 65	H 72	80	U R 77	78	A	47	S 39	32	J S 37	S 35
5	S 25	26	J S 29	30	S 38	S 22	22	34	57	58	77	75	68	R 79	68	76	79	52	44	S 33	42	32	23	U S 25
6	26	26	26	30	35	S 27	19	33	51	54	70	75	69	71	84	U R 83	71	67	50	39	45	J S 41	24	J S 25
7	S 27	28	S 29	S 31	S 30	S 20	S 20	37	53	64	R 66	78	R 80	R 75	R 93	R 96	R 98	R 86	S 65	S 48	30	S 32	J S 37	30
8	26	27	S 28	31	33	27	S 23	34	54	R 64	74	83	75	R 105	108	R 111	R 85	R 68	S 67	S 50	S 42	S 43	U S 34	S 39
9	35	S 37	36	H 34	29	22	23	S 37	54	64	H 68	82	75	H 83	H 80	H 75	R 91	R 82	U S 50	34	42	39	38	37
10	32	S 28	30	33	32	30	23	32	52	71	66	70	76	73	67	91	74	R 64	56	42	46	50	U R 39	S 32
11	34	S 35	44	S 35	24	24	22	31	70	74	64	70	J R 100	U S 84	78	R 100	73	70	71	63	39	28	27	S 26
12	25	26	31	S 41	28	S 21	J S 17	30	R 62	76	R 84	69	93	114	R 118	U R 113	R 100	R 95	S 51	S 49	48	S 42	S 42	S 33
13	28	26	29	34	S 27	21	J S 16	30	44	R 80	66	67	68	U R 85	76	R 86	67	54	50	47	S 63	F	F	F
14	F	F	F	F	F	F	F	F	F 71	R 76	A	J R 61	R 75	R 67	A	A	63	R 58	S 65	S 30	42	S 33	24	J S 17
15	S 23	26	27	S 26	25	F	S 18	31	56	67	71	72	66	86	91	76	72	64	S 54	56	50	32	29	27
16	22	S 23	25	28	25	20	22	C	C	65	81	R 73	89	R 107	R 118	115	U R 102	65	58	50	39	33	36	22
17	F	26	F	F	F	F	F	S 30	53	55	69	61	62	69	J R 95	100	J R 86	J R 95	126	U S 76	U S 75	U S 49	S 24	A
18	22	23	U S 24	27	26	30	S 23	30	51	60	R 64	62	64	70	U R 99	107	J R 105	U R 95	80	56	S 48	U S 52	S 31	S 22
19	23	S 27	31	32	30	31	30	37	57	55	67	55	59	72	78	R 76	R 72	77	62	U R 52	71	R 62	J S 52	S 52
20	35	30	S 28	28	33	31	U S 27	38	60	67	95	122	138	132	126	116	104	97	92	54	A	42	35	28
21	23	F	F	38	U S 36	F	F	33	C	60	64	67	62	77	92	R 82	57	74	S 63	45	40	F	35	26
22	23	F 25	31	32	32	27	20	S 28	57	65	87	110	125	124	R 136	136	R 111	114	75	58	50	40	37	37
23	C	30	S 33	29	26	26	22	32	52	66	85	84	H 82	90	92	U R 103	91	83	76	54	48	48	36	26
24	27	27	29	29	S 32	S 34	U S 26	S 27	54	65	74	R 74	79	68	68	72	65	70	S 53	S 44	S 54	S 34	S 24	24
25	23	27	S 27	S 27	32	S 24	U S 18	23	54	74	91	87	91	107	R 101	R 90	R 72	R 62	S 47	49	62	S 50	S 21	S 20
26	21	23	24	24	24	22	J S 21	30	54	54	57	57	57	61	69	67	68	65	48	H 31	S 41	39	S 32	S 27
27	28	22	S 24	25	S 27	S 26	S 21	J S 24	60	69	68	80	R 113	122	R 96	80	R 72	66	S 41	A	F	F	F	22
28	24	F	29	F	F	F	F	S 24	57	R 50	52	S 58	S 77	84	R 84	J R 80	R 68	54	S 42	A	S 37	F	F	F
29	F	F	A	F	F 25	F	J S 24	32	58	60	50	80	A	90	91	87	R 84	U R 74	44	A	F	F	F	F
30	F	F	F	F	F	S	S	S 23	54	61	56	71	107	R 128	120	119	76	60	S 41	31	31	27	21	S 24
31	S 29	S 23	23	25	23	22	21	32	48	57	68	95	92	R 72	77	86	75	R 62	42	A	27	S 22	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	25	24	25	22	25	29	29	30	29	30	30	31	30	30	31	31	29	27	28	26	26	26
MED	26	27	29	30	29	24	S 21	32	56	65	68	72	76	84	92	88	76	68	54	48	44	39	32	S 27
UQ	30	28	31	34	32	27	23	36	58	71	74	80	91	107	R 108	R 111	R 91	80	67	53	50	S 45	37	S 33
LQ	23	26	27	28	25	S 22	S 19	30	53	60	66	62	68	72	78	80	72	64	S 47	42	40	32	24	S 24

DEC. 1985 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 24 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										U L 390	U L 410	L 440	460	L 450	U L 440	L 400	A							
2									L	U L 440	U L 440	U L 430	L	L	L 430	L	L							
3										C	C	C	U L 440	L 440	440	390	L							
4										L	L	L	L	L	L	A	A	A						
5										L	L	L	L	420	L 410	L	L	A						
6										L	L	L	L	L	L	L	L	A						
7										L	U L 420	L 430	430	L	L 430	L 410	L							
8										L	L	L 420	420	430	L 410	L 410	U L 360							
9										L	L	L 430	L	L	L	L	L							
10										L	L	L	U L 430	L	L	L	L							
11										L	L	L 430	L	L	L	L	A							
12										L	L	L	430	440	L	L	L							
13										L	U L 410	L 450	U L 440	L 460	U L 400	U L 390	L							
14										L	A	A	430	A	A	A	A							
15										L	L	L	L	430	420	420	A	A						
16									C	L	L 430	L	450	L	L 420	L 410	L							
17											L	L 420	U L 440	U L 440	L 430	L 400	A							
18										L	L	L 420	L 440	L 450	L 420	L	L							
19										L	L	L	L	L	L	L	L							
20										L	L	L 430	L	L 430	L 420	L	L	L						
21									C	L	L	L	L	L	L	L	A							
22										L	U L 410	L 420	L 420	L	L 430	L	L							
23										L	L	L 420	L 420	L 420	L 430	U L 400	L							
24											L	L 400	L 420	L 430	L	L	L							
25										L	L 420	L 420	L 430	L 430	L 430	L 390	L							
26									L	L	L	L	L	L	L 400	L	L							
27										L	L	L	U L 410	L 420	L	L	L							
28										L	L	L	L 420	L 430	L	L	A							
29										L	L	L	A	L 420	L	L	L							
30										L	L	L	L	L 420	L 430	L 380	L							
31										L	L	L	L	L	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										2	7	14	17	17	17	11	1							
MED										U L 415	U L 420	L 425	L 430	L 430	L 430	L 400	U L 360							
UQ											L 425	L 430	L 440	L 440	L 430	L 410								
LQ											U L 410	L 420	L 420	L 420	L 420	L 390								

DEC. 1985 | FOF1 (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 24 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	210	A	A	A	A	A	A	A	A	A								
2								S	A	A	A	A	A	280	A	A	A	A						
3								S	A	C	C	C	A	A	A	A	A	A						
4								S	A	R 240	275	A	A	A	A	A	A	A						
5								S	195	A	A	A	A	A	A	R 270	A	A						
6								S	200	A	A	A	A	A	A	A	A	A						
7								S	R 215	R 270	A	295	A	A	A	A	A	A						
8								S	A	A	A	A	A	A	A	A	A	A						
9								S	R	A	290	A	A	A	A	A	A	A						
10								S	200	255	A	305	310	310	300	285	A	A						
11								S	205	A	A	A	A	A	A	R 280	A	A						
12								S	230	A	A	A	A	310	A	275	245	180						
13								S	205	255	285	300	305	R 305	300	R 275	R 235	S						
14								S	R 195	A	A	A	A	A	A	A	A	A						
15									200	A	A	A	A	A	A	A	A	A						
16									C	A	A	A	A	A	300	R 290	A	A						
17									220	250	285	R	R	315	A	A	A	A						
18									200	255	R	A	A	A	A	A	A	A						
19									200	A	A	300	A	305	A	A	245	200						
20									195	R 245	A	A	A	A	A	R 295	240	A						
21									C	A	A	A	A	A	A	A	A	R 190						
22									A	255	290	A	310	A	A	R	A	S						
23									205	260	A	A	A	A	A	R	245	195						
24									185	240	A	305	305	300	295	R 280	245	A						
25									175	235	R 270	R 290	R 300	300	A	A	255	215						
26									200	A	A	A	A	A	A	A	A	A						
27									R 200	A	A	A	A	R	A	A	A	A						
28									R 190	A	A	A	A	A	A	A	A	A						
29									S	235	R 280	290	A	A	A	A	A	A						
30									A	A	A	A	A	R 310	300	280	240	A						
31									R 210	A	A	A	A	R 300	R 295	A	245	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									21	12	7	7	5	10	6	9	9	5						
MED									200	252	285	300	305	305	300	R 280	245	195						
UQ									205	255	288	302	310	310	300	R 285	245	200						
LQ									195	240	278	292	305	300	295	R 275	240	190						

DEC. 1985 | FOE (0.01 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 24 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	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	JA 36	JA 37	JA 48	JA 36	JA 37	JA 36	JA 33	JA 34	JA 22	JA 21	JA 22	ES 16	ES 16	ES 16	ES 16
2	ES 16	JA 28	JA 26	ES 16	ES 16	ES 16	ES 16	ES 16	JA 22	JA 32	JA 34	JA 37	JA 37	JA 32	JA 53	JA 37	JA 30	JA 39	JA 44	JA 33	JA 34	JA 25	22	22
3	ES 16	ES 16	ES 16	JA 22	ES 16	ES 16	ES 16	JA 17	24	C	C	C	JA 65	JA 37	JA 41	JA 42	JA 33	JA 27	JA 22	ES 16	22	ES 16	ES 16	ES 16
4	ES 16	22	JA 25	22	JA 22	JA 20	18	20	JA 25	32	JA 37	35	35	34	32	JA 47	JA 38	JA 54	JA 54	JA 25	JA 26	JA 20	22	19
5	ES 16	ES 16	ES 16	ES 16	22	ES 16	18	19	24	29	34	JA 40	39	JA 36	30	G 21	30	JA 42	JA 42	JA 32	JA 32	ES 16	18	ES 16
6	ES 16	21	ES 16	ES 16	20	ES 16	ES 16	21	24	29	JA 29	32	38	42	JA 35	30	JA 37	JA 28	JA 34	JA 25	ES 16	ES 16	ES 16	ES 16
7	ES 16	23	22	22	JA 21	ES 16	ES 16	JA 18	24	36	JA 40	37	JA 51	JA 39	JA 37	JA 37	JA 27	JA 33	JA 36	JA 30	22	23	20	ES 16
8	ES 16	ES 16	ES 16	ES 16	ES 16	21	ES 16	ES 16	JA 34	JA 33	JA 42	JA 33	JA 34	JA 33	JA 38	JA 42	JA 30	JA 25	JA 21	ES 16	ES 16	ES 16	ES 16	ES 16
9	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	JA 32	JA 34	JA 47	JA 34	JA 35	JA 34	JA 54	JA 54	JA 25	JA 32	JA 25	JA 30	JA 24	JA 20	22
10	ES 16	22	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	JA 25	JA 32	JA 36	JA 38	G	G	32	33	JA 33	JA 28	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
11	ES 16	JA 24	JA 22	JA 22	JA 22	21	ES 16	ES 16	25	JA 36	JA 41	JA 38	JA 47	JA 41	JA 34	G	JA 37	JA 41	JA 28	JA 18	ES 16	ES 16	ES 16	ES 16
12	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	20	22	G	JA 36	JA 36	JA 43	JA 31	G	JA 32	G	G	21	22	ES 16	ES 16	22	ES 16	ES 16
13	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	26	33	34	33	G	G	G	G	30	JA 32	24	ES 16	ES 16	ES 16	ES 16	ES 16
14	JA 22	JA 25	JA 21	JA 24	24	22	22	JA 23	31	JA 54	JA 78	JA 77	JA 54	JA 63	JA 77	139	JA 77	JA 36	JA 84	JA 36	JA 33	JA 29	JA 22	JA 22
15	20	18	ES 16	ES 16	ES 16	ES 16	ES 16	21	26	28	33	33	JA 36	JA 32	JA 36	JA 54	JA 64	JA 41	JA 77	JA 30	JA 29	23	20	22
16	JA 25	18	18	20	ES 16	ES 16	ES 16	C	C	30	32	JA 36	JA 35	JA 32	G 22	G	JA 34	JA 22	JA 22	20	ES 16	ES 16	ES 16	ES 16
17	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	JA 21	G	G	G	G	G	G	36	JA 54	JA 54	JA 33	JA 22	ES 16	22	22	ES 16	JA 36
18	JA 25	ES 16	ES 16	ES 16	ES 16	JA 17	ES 16	ES 16	29	30	G	JA 34	JA 36	JA 36	JA 40	33	JA 34	JA 33	JA 31	JA 25	ES 16	ES 16	ES 16	ES 16
19	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 15	20	23	28	31	35	36	34	33	J A 32	28	24	21	20	20	20	ES 16	ES 16
20	ES 16	22	JA 21	23	ES 16	ES 16	ES 16	ES 16	22	32	JA 32	JA 31	JA 40	JA 32	JA 30	G 20	G	JA 28	JA 26	20	JA 50	JA 25	22	ES 16
21	ES 16	22	18	23	18	ES 16	ES 16	ES 16	C	30	32	34	JA 40	JA 43	JA 37	JA 58	JA 41	23	JJA 26	21	23	ES 16	ES 16	22
22	ES 16	21	ES 16	JA 18	ES 16	ES 16	19	ES 16	JA 22	G	G	JA 34	37	JA 39	JA 36	G	31	ES 16	ES 16	29	19	JA 28	24	ES 16
23	C	ES 16	JA 31	JA 24	20	ES 16	ES 16	ES 16	G	G	34	JA 36	39	37	JA 34	G	G	G	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
24	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 15	ES 16	G	G	JA 27	37	36	41	39	JA 36	29	JA 29	JA 22	ES 16	ES 16	ES 16	ES 16	ES 16
25	ES 16	ES 16	ES 16	JA 23	22	ES 16	ES 16	ES 16	G	27	29	37	JA 37	37	JA 36	JA 30	30	28	JA 26	JA 21	JA 21	22	ES 16	JA 21
26	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	30	JA 35	JA 38	40	JA 42	JA 39	33	28	JA 26	27	ES 16	20	ES 16	ES 16	ES 16
27	ES 16	ES 16	ES 16	ES 16	JA 24	ES 16	ES 16	ES 16	G	JA 31	JA 33	JA 43	JA 38	G	JA 34	JA 50	JA 33	JA 53	JA 22	JA 65	JA 33	JA 21	23	20
28	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	JA 26	JA 33	JA 40	JA 41	JA 35	JA 38	JA 37	JA 44	JA 33	JA 44	JA 53	JA 33	22	ES 16	JA 21
29	JA 26	JA 32	JA 53	JA 32	JA 28	JA 22	JA 22	ES 16	ES 16	G	G	32	JA 114	JA 74	JA 54	JA 76	JA 30	JA 33	JA 25	JA 36	JA 21	ES 16	ES 16	ES 16
30	ES 16	ES 16	ES 16	ES 16	ES 16	S	S	ES 16	28	32	JA 34	JA 37	JA 32	33	G	G	G	JA 23	JA 20	ES 16	ES 16	ES 15	ES 16	JA 20
31	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	24	29	36	JA 33	JA 35	34	33	31	32	25	JA 36	JA 52	JA 24	JA 52	JA 65	JA 84
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	30	30	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	23	30	JA 34	JA 36	JA 37	JA 35	JA 36	JA 33	JA 32	JA 28	JA 26	JA 21	21	ES 16	ES 16	ES 16
UQ	ES 16	22	20	22	20	ES 16	ES 16	19	25	JA 32	JA 36	JA 38	JA 40	JA 39	JA 38	JA 44	JA 37	JA 33	JA 35	JA 30	JA 28	22	20	21
LQ	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	28	31	33	JA 35	32	32	G 20	30	JA 25	JA 22	ES 16	ES 16	ES 16	ES 16	ES 16

DEC. 1985 | FOES (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 24 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	G	34	32	39	31	32	32	29	31	22	E	22	E S 16	E S 16	E S 16	E S 16
2	E S 16	E	E	E S 16	E S 16	E S 16	E S 16	E S 16	22	25	29	30	31	30	33	32	24	29	A A 44	20	28	23	E	E
3	E S 16	E S 16	E S 16	E	E S 16	E S 16	E S 16	E	24	C	C	C	40	36	38	36	27	23	22	E S 16	E	E S 16	E S 16	E S 16
4	E S 16	E	20	19	E	E	E	20	25	32	32	35	34	34	31	47	38	45	A A 54	23	23	20	E	18
5	E S 16	E S 16	E S 16	E S 16	E	E S 16	E	G	24	29	34	34	38	32	30	G 21	30	35	30	25	27	E S 16	E	E S 16
6	E S 16	E	E S 16	E S 16	E	E S 16	E S 16	G	24	29	29	30	37	34	33	30	30	28	22	20	E S 16	E S 16	E S 16	E S 16
7	E S 16	E	E	E	E	E S 16	E S 16	E	24	28	20	34	39	35	33	33	27	33	28	26	E	E	E	E S 16
8	E S 16	E S 16	E S 16	E S 16	E S 16	E	E S 16	E S 16	24	33	29	30	31	31	31	31	27	20	E	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 16	E S 16	E S 16	E S 16	E S 16	G	28	33	32	32	33	31	30	28	20	E	21	23	E	E	E
10	E S 16	E	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	24	31	32	36	G	G	G 26	32	27	23	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
11	E S 16	E	E	E	E	E	E S 16	E S 16	24	32	31	33	38	33	32	G	33	22	E	E	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	E	G	28	30	34	31	G	30	G	G	21	E	E S 16	E S 16	E	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	26	31	33	33	G	G	G	G	29	28	E	E S 16	E S 16	E S 16	E S 16	E S 16
14	E	22	E	E	E	E	E	19	31	34	A A 78	59	39	42	A A 77	A A 139	46	25	41	28	28	22	19	E
15	E	E	E S 16	E S 16	E S 16	E S 16	E S 16	G	26	23	32	33	32	32	32	33	51	41	42	20	29	20	E	E
16	E	E	E	E	E S 16	E S 16	E S 16	C	C	30	31	32	32	32	G 22	G	28	21	20	E	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	G	G	G	G	G	G	31	35	42	23	20	E S 16	E	E	E S 16	A A 36
18	E	E S 16	E S 16	E S 16	E S 16	E	E S 16	E S 16	28	29	G	32	32	32	33	30	26	31	28	E	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 15	E	17	28	31	35	36	34	33	32	28	24	E	E	E	18	E S 16	E S 16
20	E S 16	E	E	E	E S 16	E S 16	E S 16	E S 16	20	30	31	30	39	32	30	G 20	G	20	21	E	A A 50	25	E	E S 16
21	E S 16	E	E	E	E	E S 16	E S 16	E S 16	C	30	32	34	32	35	33	32	40	22	E	E	E	E S 16	E S 16	E
22	E S 16	E	E S 16	E	E S 16	E S 16	E	E S 16	22	G	G	32	35	37	31	G	30	E S 16	E S 16	21	E	E	19	E S 16
23	C	E S 16	E	E	E	E S 16	E S 16	E S 16	G	G	33	33	33	32	31	G	G	G	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 15	E S 16	G	G	27	37	36	41	38	29	29	23	U Y 22	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	E	E S 16	E S 16	E S 16	G	27	29	34	33	37	36	29	29	25	25	17	17	E	E S 16	E
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	G	27	30	32	35	34	31	32	27	22	E	E S 16	E	E S 16	E S 16	E S 16
27	E S 16	E S 16	E S 16	E S 16	E	E S 16	E S 16	E S 16	G	31	29	32	32	G	30	33	30	52	E	A A 65	29	E	E	E
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	G	24	30	30	31	34	32	32	31	23	33	A A 53	E	E	E S 16	E
29	E	E	A A 53	21	E	E	E	E S 16	E S 16	G	G	31	A A 114	38	37	33	29	26	E	A A 36	E	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	S	S	E S 16	24	30	30	37	32	33	G	G	G	21	E	E S 16	E S 16	E S 15	E S 16	E
31	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	29	35	33	35	34	32	31	32	25	36	A A 52	18	18	A A 65	A A 84
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	30	30	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
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	22	29	30	33	33	33	32	31	29	23	20	16	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	24	31	32	34	36	34	33	32	31	28	28	22	20	E S 16	E S 16	E S 16
LQ	E S 16	E	E E 16	E	E	E S 16	E S 15		G	27	29	32	32	32	30	G 20	27	22	E	E S 16	E	E E 15	E E 16	E

DEC. 1985 | FBES (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | FMIN (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 24 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	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	14	13	14	14	16	16	13	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
2	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	14	13	13	12	14	13	16	15	15	ES 16	ES 16	ES 16	ES 16	R S 16	ES 16
3	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	C	C	C	14	16	13	14	14	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
4	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	15	15	16	17	15	14	15	14	14	ES 15	ES 15	ES 16	ES 16	ES 16	ES 16
5	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	15	15	14	14	15	14	16	15	ES 16	ES 16	ES 15	ES 16	ES 16	ES 16
6	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	14	14	15	15	14	16	15	15	ES 16	ES 15	ES 16	ES 16	ES 16	ES 16
7	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	16	14	15	17	17	20	18	15	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
8	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	14	16	16	15	16	14	15	16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
9	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	15	14	16	14	17	16	16	16	14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
10	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	14	15	16	17	16	14	14	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
11	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	16	16	17	17	16	16	15	16	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
12	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	16	19	22	17	19	17	14	13	14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
13	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	13	14	13	14	15	14	14	15	E S 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	15	16	15	14	14	15	13	15	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	15	14	15	15	16	15	15	14	15	ES 15	ES 16	ES 15	ES 16	ES 16	ES 16
16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	C	C	15	16	17	15	16	15	15	14	15	ES 15	ES 16	ES 16	ES 16	ES 16	ES 16
17	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	14	16	17	20	14	18	14	14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
18	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	14	14	18	17	15	14	14	14	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
19	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 15	ES 16	E S 15	15	14	15	15	15	16	14	14	14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
20	ES 16	ES 16	ES 15	ES 16	ES 16	ES 16	ES 16	ES 16	15	15	15	16	16	16	16	14	15	15	ES 16	ES 16	ES 15	ES 16	ES 16	ES 16
21	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	C	15	15	16	17	20	18	16	15	16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
22	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	14	15	14	14	18	17	14	15	E S 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
23	C	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	16	14	17	16	17	16	14	14	17	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
24	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 15	ES 16	16	16	16	16	17	16	19	14	14	14	ES 14	ES 16	ES 16	ES 16	ES 16	ES 16
25	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	15	14	15	14	14	14	14	15	16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
26	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	14	14	15	16	15	14	14	14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
27	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	16	14	16	14	15	14	14	16	E S 15	ES 16	ES 16	ES 16	ES 16	ES 16
28	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	14	14	15	15	14	14	14	15	ES 16	E S 16	ES 16	ES 16	ES 16	ES 16
29	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	E S 16	14	14	14	16	14	18	16	16	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
30	ES 16	ES 16	ES 16	ES 16	ES 16	S	S	ES 16	15	15	15	15	15	16	17	16	14	15	ES 16	ES 16	ES 16	E S 15	ES 16	ES 16
31	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	15	15	14	14	14	15	15	15	16	E S 15	ES 16	ES 16	ES 16	E S 15	ES 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	30	30	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	15	14	15	15	16	15	14	14	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
UQ	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	15	15	16	16	16	16	16	15	16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
LQ	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	14	14	14	14	14	14	14	15	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16

DEC. 1985 | FMIN (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1985 | 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 24 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 300	F 295	F	F	F	F	F 340	320	350	360	345	360	R 320	R 335	335	R 340	R 335	R 365	340	S 315	S 345	320	310	S 310
2	F	F 305	S 320	S 340	S 365	S 355	335	335	340	360	R 375	360	315	R 350	365	R 380	340	365	A	335	S 345	U S 350	U S 310	S 295
3	300	305	S 325	S 355	S 340	S 340	S 335	R 335	360	C	C	C	315	R 335	R 340	R 360	330	350	360	365	S 330	S 355	S 305	S 305
4	S 295	310	S 325	F	F	F	F	320	340	R 340	355	350	360	R 365	H 320	350	U R 325	360	A	340	330	310	J S 350	S 340
5	S 300	325	J S 325	335	S 340	S 340	320	340	360	360	350	360	340	R 315	340	340	365	365	365	S 335	345	350	345	U S 300
6	325	305	325	315	355	S 380	315	350	370	340	355	365	370	350	345	U R 300	320	300	345	320	320	J S 365	335	J S 320
7	S 295	305	S 325	S 340	S 365	S 300	S 325	325	365	345	R 365	365	R 360	R 305	R 320	R 330	R 335	R 365	S 345	S 365	315	S 310	J S 335	335
8	305	295	S 320	320	350	315	S 325	340	350	R 350	360	360	295	R 305	335	R 335	R 350	R 330	S 365	S 330	S 295	S 350	U S 350	S 320
9	315	S 325	320	H 340	345	365	305	S 365	380	375	H 350	365	345	H 325	H 335	H 320	R 370	R 365	U S 380	365	320	305	330	325
10	295	S 305	300	365	375	365	345	345	345	350	365	330	370	330	330	330	365	R 360	355	285	345	320	U R 335	S 310
11	295	S 330	365	S 370	335	335	270	305	340	370	350	335	J R 355	U S 375	350	R 345	340	335	350	355	335	300	335	S 270
12	300	305	305	S 340	355	S 355	J S 350	315	R 340	340	R 320	320	340	340	R 345	U R 320	R 350	R 370	S 360	S 305	320	S 295	S 320	S 305
13	285	305	310	365	S 350	335	S	335	340	R 355	370	345	310	U R 305	295	R 360	360	360	330	330	S 300	F	F	F
14	F	F	F	F	F	F	F	F	F 365	R 360	A	J R 325	R 340	R 335	A	A	335	R 355	S 360	S 315	335	S 335	355	S
15	S 305	325	295	S 315	320	F	S 360	320	340	345	340	350	335	325	340	330	345	350	S 335	295	320	310	315	320
16	300	S 320	340	340	340	350	320	C	C	360	350	R 355	300	R 315	R 315	330	U R 325	355	330	325	320	305	340	300
17	F	325	F	F	F	F	F	S 335	350	365	345	360	330	310	J R 335	350	J R 335	J R 315	375	U S 300	U S 360	U S 345	S 355	A
18	320	305	U S 335	315	305	335	S 370	350	350	350	R 350	355	350	315	U R 325	335	J R 315	U R 345	375	355	S 310	U S 345	S 370	S 320
19	290	S 315	290	295	315	305	315	325	350	360	350	360	300	340	335	R 330	R 340	350	340	U R 315	315	R 300	J S 315	S 300
20	300	315	S 305	305	335	305	U S 300	315	350	330	320	320	310	325	335	300	340	325	335	340	A	335	330	355
21	305	F	F	315	U S 345	F	F	320	C	350	345	350	320	310	360	R 360	350	350	S 340	365	325	F	340	325
22	305	F 280	305	310	345	370	325	S 320	370	340	335	340	320	305	R 315	340	R 325	350	335	325	360	335	335	350
23	C	300	S 335	360	325	345	320	330	345	350	350	370	H 340	335	320	U R 350	350	360	370	350	335	335	360	345
24	295	295	310	310	S 330	S 340	U S 365	S 335	350	345	295	R 330	360	325	345	355	340	355	S 360	S 320	S 350	S 350	S 335	310
25	305	315	S 350	S 315	330	S 335	S	305	325	335	340	355	325	350	R 335	R 340	R 355	R 320	S 340	305	340	S 360	S 355	S 300
26	310	345	335	335	335	365	J S 355	350	380	380	350	375	335	350	345	345	350	370	365	H 305	S 315	335	S 345	S 350
27	355	320	S 335	340	S 335	S 365	S 335	J S 335	375	385	375	325	R 325	340	R 345	345	R 355	380	S 365	A	F	F	F	340
28	335	F	325	F	F	F	F	S 335	375	R 390	385	S 320	S 335	335	R 340	J R 370	R 340	370	S 370	A	S 380	F	F	F
29	F	F	A	F	F 360	F	J S 355	330	390	365	350	310	A	320	320	335	R 355	U R 365	365	A	F	F	F	F
30	F	F	F	F	F	S	S	S 325	350	360	365	325	325	R 310	325	345	355	365	S 340	305	355	335	310	S 310
31	S 345	S 305	305	320	305	295	310	310	355	355	330	345	335	R 305	325	325	360	R 355	320	A	335	S 365	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	25	24	25	22	23	29	29	30	29	30	30	31	30	30	31	31	29	27	28	26	26	25
MED	300	305	325	335	340	340	325	330	350	355	350	350	335	325	335	340	340	355	355	325	332	335	335	S 320
UQ	310	320	S 335	340	350	365	S 348	335	365	360	360	360	345	340	345	R 350	355	365	365	345	345	S 350	S 350	335
LQ	295	305	305	315	330	335	318	320	345	345	345	330	320	312	325	330	R 335	350	340	310	320	310	320	S 305

DEC. 1985 | M(3000)F2 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 24 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										U L 410	U L 390	A	L 360	L 365	U L 375	L 375	A							
2									L	U L 385	U L 385	U L 395	L	L	L 385	L	L							
3										C	C	C	U L 350	L 365	A	385	L							
4										L	L	L	L	L	L	A	A	A						
5										L	L	L	L	405	L 390	L	L	A						
6										L	L	L	L	L	L	L	L	A						
7										L	U L 390	L 370	370	L	L 370	L 380	L							
8										L	L	L 405	405	395	L 390	L 380	U L 390							
9										L	L	L 395	L	L	L	L	L							
10										L	L	L	U L 395	L	L	L	L							
11										L	L	L 395	L	L	L	L	A							
12										L	L	L	385	395	L	L	L							
13										L	U L 390	L 365	U L 395	L 370	U L 385	U L 360	L							
14										L	A	A	370	A	A	A	A							
15										L	L	L	L	420	380	405	A	A						
16									C	L	L 395	L	400	L	L 405	L 420	L							
17											L	L 390	U L 385	U L 375	L 350	L 375	A							
18										L	L	L 380	L 385	L 375	L 355	L	L							
19										L	L	L	L	L	L	L	L							
20										L	L	L 395	L	L 395	L 405	L	L	L						
21									C	L	L	L	L	L	L	L	A							
22										L	U L 365	L 380	L 380	L	L 370	L	L							
23										L	L	L 380	L 405	L 390	L 370	U L 375	L							
24											L	L 410	L 380	L 385	L	L	L							
25										L	L 355	L 370	L 395	L 360	L 370	L 385	L							
26									L	L	L	L	L	L	L 400	L	L							
27										L	L	L	U L 415	L 380	L	L	L							
28										L	L	L	L 380	L 370	L	L	A							
29										L	L	L	A	L 380	L	L	L							
30										L	L	L	L	L 405	L 385	L 370	L							
31										L	L	L	L	L	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										2	7	13	17	17	16	11	1							
MED										U L 398	U L 390	L 390	L 385	L 380	L 382	L 380	U L 390							
UQ											U L 390	L 395	L 395	L 395	L 390	L 385								
LQ											U L 375	L 380	L 380	L 370	L 370	L 375								

DEC. 1985 | M(3000)F1 (0.01)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 24 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										250	240	240	290	260	240	230	220							
2									240	250	230	245	280	245	230	220	235							
3										C	C	C	285	250	230	220	225							
4										240	240	230	260	225	260	240	225	225						
5										250	255	240	250	250	250	255	220	210						
6										240	245	235	250	250	245	220	220	210						
7										245	230	245	245	265	240	235	230							
8										245	250	230	260	260	250	230	225							
9										240	245	230	245	250	235	260	230							
10										250	245	250	240	270	245	250	220							
11										230	250	255	250	235	240	250	210							
12										265	230	225	250	255	240	230	225							
13										255	235	265	260	295	255	240	230							
14										250	A	A	270	270	A	A	270							
15										250	250	230	290	270	250	240	230	225						
16									C	240	260	210	310	240	255	260	230							
17											260	250	295	295	270	245	230							
18										L 250	250	250	250	300	270	245	230							
19										235	250	235	250	250	270	240	240							
20										280	280	275	275	255	260	250	230	220						
21									C	240	260	240	240	300	240	240	240							
22										260	260	245	260	290	290	250	230							
23										265	255	240	230	250	265	240	225							
24											260	250	245	285	245	230	250							
25										250	265	240	255	245	245	230	225							
26									220	220	260	L 230	290	250	250	270	240							
27										225	245	250	265	255	220	250	250							
28										210	240	U L 275	260	265	250	240	240							
29										235	230	270	A	260	255	250	245							
30										235	235	275	270	240	260	230	235							
31										230	265	250	240	250	255	260	235							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	28	29	29	30	31	30	30	31	5						
MED									230	245	250	245	260	255	250	240	230	220						
UQ										250	260	250	275	270	260	250	238	225						
LQ										235	240	235	250	250	240	230	225	210						

DEC. 1985 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

DEC. 1985 | 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 24 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 315	280	220	S 240	E S 310	E S 320	S 300	240	220	200	215	A	200	210	225	210	A	205	200	220	215	215	E S 265	S 240
2	250	S 310	S 280	240	210	S 250	S	240	220	210	190	185	190	180	230	220	210	220	A	225	225	A 230	E S 270	S 245
3	S 275	255	245	220	S 255	225	E S 270	240	240	C	C	C	A	230	A	E A 250	210	220	190	180	S 225	215	S 235	250
4	E S 290	S 260	250	E A 280	S 260	250	S	235	235	A 230	A 230	200	H 190	A 220	H 190	A	A	A	A	A 225	A 220	A	E S 260	210
5	S	S	S 250	225	210	E S 260	S	235	230	A 230	A	210	A 220	200	200	180	A	A	A 225	E A 250	A 235	210	E S 240	S
6	S	S	E S 300	S 275	210	200	S	230	220	A	A	190	A 225	210	A	200	A	A	210	210	240	200	S	S
7	S 280	S 270	255	210	215	S	S	220	220	215	230	215	E A 250	190	215	A 230	230	210	205	200	225	S 265	240	S 230
8	S 290	S 300	275	255	220	S 230	S 245	225	220	200	185	200	175	175	190	230	225	215	200	180	220	220	S 245	245
9	250	255	240	215	220	S	S 255	220	215	210	220	200	200	210	210	185	240	210	200	205	255	235	245	240
10	250	S 300	275	230	215	210	250	225	215	245	210	215	H 195	185	180	245	215	200	200	200	210	240	205	230
11	300	260	230	200	E S 250	S 250	S	255	245	A	200	210	A	215	210	240	A	225	200	210	210	S	260	S
12	S 295	E S 315	S 270	220	200	200	S	S 255	250	200	225	205	200	180	175	220	200	220	185	195	220	S 220	S 235	S 250
13	S 295	S 320	270	210	200	S 270	S	220	225	250	230	210	200	185	220	195	230	210	215	210	235	S 275	245	S 290
14	300	230	230	240	220	250	S	A 280	235	A 270	A	A	A 255	A	A	A	A	225	225	A	255	A 255	E A 280	S
15	S	S 275	250	E S 270	E S 260	250	S	260	220	A 230	A 230	220	200	200	A 220	A 220	A	A	A 250	220	210	A 220	S 235	S 240
16	S	S	E S 280	220	230	200	S	C	C	A 230	A 225	210	A	H 190	H 190	H 190	A 225	210	210	200	210	S	215	S
17	S	290	275	250	260	245	250	S 215	225	225	225	205	200	190	190	A	A	250	205	180	200	200	S	A
18	S	S 305	315	280	300	240	220	220	230	210	220	200	200	190	200	215	210	210	200	200	S 235	200	210	S
19	S	S	S	E S 280	S	S 260	S 260	230	230	A 230	A 230	A 220	200	200	200	A 225	A 225	230	200	S 230	220	A 230	220	220
20	S 250	S 230	S	S	S 240	E S 270	S	E S 260	240	210	H 200	205	A	210	210	210	200	A	210	200	A	A 240	220	220
21	S	S 260	S 260	230	220	210	E S 260	S 225	C	A 225	A	A 220	210	200	A	A	A	225	200	200	230	S 240	210	S 260
22	S	S	295	255	240	200	S	250	230	180	215	210	200	210	185	225	A 220	210	190	200	210	220	235	220
23	C	300	260	200	250	230	S	245	230	235	230	205	205	200	200	200	210	210	200	190	200	215	210	230
24	S 305	S 300	S 320	S 280	250	230	200	S 250	230	230	235	210	235	A 260	A 250	200	230	230	210	S 220	200	200	S 250	S 250
25	S 310	285	285	S 290	245	205	S	E S 285	240	230	215	A 220	200	A	240	225	A 230	220	200	E A 255	230	200	200	S
26	S	S 285	260	S 300	270	245	285	240	215	215	295	300	200	210	180	245	240	220	200	195	210	215	230	225
27	240	S	S 280	270	245	230	265	270	240	A 220	200	200	180	H 185	H 190	A	A	220	200	A	A 250	220	S	S
28	300	S	250	225	230	S 300	S 310	270	225	185	205	175	H 180	220	240	A	A	215	A	A	200	S	S	270
29	250	S 290	A	A	240	S	260	250	210	200	210	180	A	A	A	A	240	210	200	A	200	S 250	S	S
30	S	S	S	S	S 220	S	S	E S 250	240	220	210	A	H 190	H 200	210	205	210	210	200	200	200	E S 250	S	A
31	240	S	S	S	S	S	S	230	220	A	A 230	H 200	A	200	H 210	220	A	215	A	A	220	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	22	26	27	29	26	14	30	29	27	26	27	25	28	26	24	19	26	27	26	30	26	24	19
MED	S 290	S 284	262	235	230	236	256	238	230	220	220	205	200	200	205	219	225	215	200	200	220	220	228	240
UQ	S 300	S 300	278	264	248	S 250	S 270	252	235	A 230	230	212	202	210	220	226	230	220	210	215	230	240	S 243	S 250
LQ	250	S 260	250	220	220	210	248	225	220	210	210	200	195	190	190	200	210	210	200	200	210	215	218	228

DEC. 1985 | H'F (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 24 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	105	105	105	110	110	110	100	100						
2								S	105	105	105	105	105	100	100	105	110	105						
3								S	A	C	C	C	105	105	105	105	100	100						
4								S	A	110	110	110	110	110	105	A	A	A						
5								S	105	110	105	A	A	A	A	110	A	A						
6								S	110	105	A	105	A	105	105	105	A	A						
7								S	115	110	105	105	105	110	105	105	105	100						
8								S	100	105	105	105	105	105	105	100	100	100						
9								S	110	110	110	A	A	A	A	A	A	A						
10								S	B 120	110	110	105	105	105	110	110	A	A						
11								S	110	110	A	A	A	A	A	105	A	A						
12								S	115	110	105	A	A	105	A	100	100	135						
13								S	115	A	105	105	105	105	100	105	100	S						
14								S	S 125	105	110	105	105	A	A	A	A	A						
15									105	105	105	A	A	A	A	A	A	A						
16									C	A	A	A	A	A	A 115	100	A	A						
17									B 120	110	110	110	110	105	A	A	A	A						
18									E B 125	110	105	A	A	A	A	A	A	A						
19									E S 140	A	A	A 110	A	A 110	A	A	A 115	110						
20									110	110	110	A	105	105	A	A 115	105	A						
21									C	A	A	A	105	105	A	A	A	110						
22									B	110	110	A	105	110	100	110	110	S						
23									B	110	110	110	110	110	110	110	110	B 120						
24									135	105	105	A	105	105	105	100	100	A						
25									120	110	105	105	105	100	A	A	105	140						
26									110	A	A	A	A	A	A	A	A	A						
27									110	A	A	A	A	105	A	A	A	A						
28									B 120	A	A	A	A	A	A	A	A	A						
29									S	105	105	105	A	A	A	A	A	A						
30									105	A	A	A	A	105	105	105	105	A						
31									105	A	A	A	A	105	105	A	105	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									24	21	20	14	16	21	15	17	15	10						
MED									111	110	105	105	105	105	105	105	105	108						
UQ									119	110	110	110	105	110	108	110	108	120						
LQ									108	105	105	105	105	105	105	105	100	100						

DEC. 1985 | H'E (KM)

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IONOSPHERIC DATA

DEC. 1985 | 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 24 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	S	S	S	S	S	S	G	120	115	110	115	115	120	120	110	100	100	100	S	S	S	S
2	S	115	100	S	S	S	S	S	125	110	105	110	110	115	120	115	120	105	105	105	100	100	100	115
3	S	S	S	110	S	S	S	170	170	C	C	C	105	105	110	110	105	100	100	S	120	S	S	S
4	S	100	105	110	100	100	100	100	110	115	115	115	115	115	115	100	100	100	100	100	100	100	100	100
5	S	S	S	S	110	S	110	110	115	115	115	110	135	110	110	100	150	110	110	110	110	S	110	S
6	S	110	S	S	110	S	S	110	E G 165	115	110	115	150	115	115	115	110	110	110	110	S	S	S	S
7	S	100	100	100	100	S	S	140	E G 170	135	115	115	110	110	105	105	105	100	100	100	100	100	100	S
8	S	S	S	S	S	100	S	S	100	115	120	115	105	105	105	100	100	100	100	S	S	S	S	S
9	S	S	S	S	S	S	S	S	G	110	145	110	110	110	110	105	105	100	100	100	110	100	100	100
10	S	100	S	S	S	S	S	S	160	150	150	130	G	G	100	165	100	100	S	S	S	S	S	S
11	S	110	100	100	100	100	S	S	150	115	110	105	105	100	100	G	100	100	100	100	S	S	S	S
12	S	S	S	S	S	S	170	170	G	125	120	105	105	G	100	G	G	155	100	S	S	100	S	S
13	S	S	S	S	S	S	S	G	160	145	140	150	G	G	G	G	115	105	105	S	S	S	S	S
14	115	110	145	135	120	110	105	140	140	130	125	120	115	105	105	105	100	100	105	95	95	95	95	95
15	100	100	S	S	S	S	S	110	115	115	115	150	105	105	105	105	105	100	100	100	100	100	105	120
16	110	110	110	110	S	S	S	C	C	150	150	110	110	110	100	G	100	100	100	100	S	S	S	S
17	S	S	S	S	S	S	S	100	G	G	G	G	G	G	105	100	100	100	100	S	100	100	S	100
18	100	S	S	S	S	100	S	S	150	150	G	105	105	100	100	100	100	100	100	100	S	S	S	S
19	S	S	S	S	S	S	S	110	110	160	150	140	140	140	150	105	160	130	100	100	100	100	S	S
20	S	110	105	105	S	S	S	S	120	120	120	110	115	115	110	100	G	100	100	100	105	105	100	S
21	S	110	110	110	100	S	S	S	C	150	150	125	115	115	110	125	120	120	100	105	110	S	S	115
22	S	100	S	105	S	S	100	S	125	G	G	100	120	115	115	G	110	S	S	120	125	110	110	S
23	C	S	105	100	100	S	S	S	G	G	130	110	120	120	110	G	G	G	S	S	S	S	S	S
24	S	S	S	S	S	S	S	S	G	G	115	E G 180	140	120	120	100	120	100	100	S	S	S	S	S
25	S	S	S	105	105	S	S	S	G	165	C 120	115	115	115	110	110	155	150	100	95	95	95	S	105
26	S	S	S	S	S	S	S	S	G	110	110	110	105	105	105	165	155	100	100	S	100	S	S	S
27	S	S	S	S	110	S	S	S	G	105	105	105	105	G	100	100	100	115	100	100	100	100	100	100
28	S	S	S	S	S	S	S	S	G	105	105	105	105	105	100	100	100	100	100	100	105	100	S	100
29	100	100	100	100	100	105	105	S	S	G	G	145	105	105	105	105	105	105	105	100	100	S	S	S
30	S	S	S	S	S	S	S	S	115	110	110	110	110	E G 160	G	G	G	100	100	S	S	S	S	100
31	S	S	S	S	S	S	S	S	115	150	150	110	110	E G 160	E G 160	150	E G 160	130	110	110	110	110	110	110
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	13	10	12	11	6	6	10	18	25	26	29	28	26	29	24	27	29	28	21	19	15	11	12
MED	100	110	105	105	100	100	105	110	122	120	118	110	110	111	108	105	105	100	100	100	100	100	100	100
UQ	110	110	110	110	110	105	110	140	155	150	140	118	115	115	112	115	119	110	102	105	110	100	108	112
LQ	100	100	100	100	100	100	100	110	115	115	110	110	105	105	105	100	100	100	100	100	100	100	100	100

DEC. 1985 | H'ES (KM)

IONOSPHERIC DATA

DEC. 1985 | 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 24sec in automatic operation

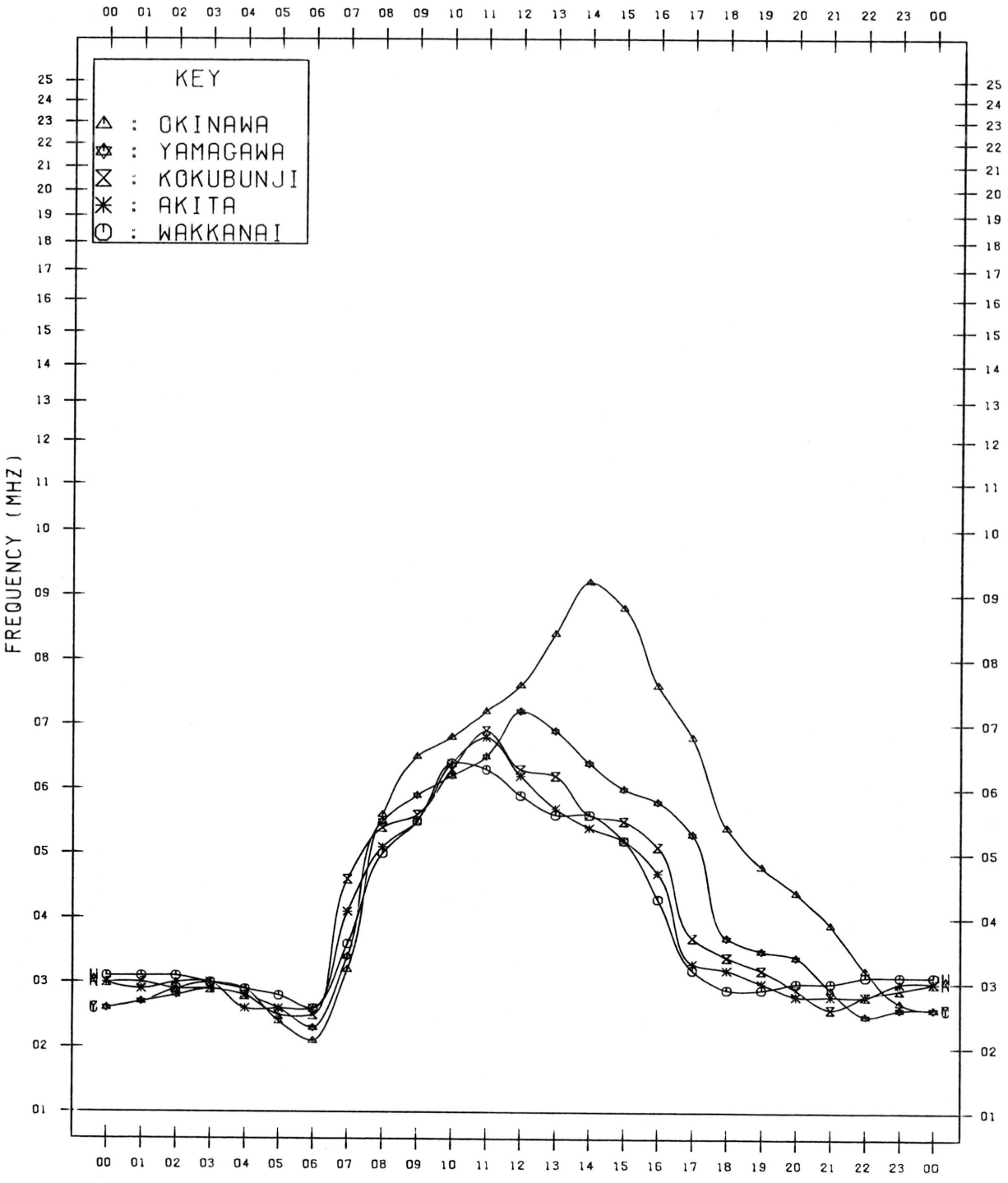
Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										CH 21	C 2	C 5	C 3	C 2	C 2	C 2	C 4	L 3	F 3	F 4				
2		F 2	F 5						C 2	L 3	L 3	C 2	C 2	C 1	C 2	C 2	C 1	L 3	F 4	F 4	F 5	F 3	F 2	F 1
3				F 1				H 2	HL 11				L 5	L 2	L 3	L 3	L 3	L 4	F 3		F 1			
4		F 2	F 3	F 2	F 2	F 2	F 1	L 1	L 1	C 3	C 2	C 2	C 2	C 2	C 2	L 2	L 7	L 6	F 5	F 3	F 2	F 2	F 3	F 2
5					F 1		F 1	L 1	C 2	C 2	C 2	L 2	HL 24	L 1	L 2	L 1	HL 23	LL 13	FF 45	FF 52	F 7		F 1	
6		F 1			F 1			L 1	H 2	C 2	L 2	C 1	HL 21	L 2	C 1	C 1	L 2	L 2	FF 22	F 2				
7		F 3	F 2	F 1	F 1			H 2	H 2	H 2	C 3	C 3	C 3	C 3	L 2	L 3	L 2	L 3	F 3	F 4	F 3	F 4	F 1	
8						F 1			LC 23	C 3	C 2	C 2	L 2	L 1	L 2	L 2	L 1	L 1	F 2					
9										CH 21	H 2	L 2	L 1	L 1	L 2	L 2	L 1	L 2	F 3	F 4	FF 31	F 1	F 2	F 1
10		F 1							H 1	H 2	HC 31	H 2			L 1	HL 11	L 2	L 2						
11		F 2	F 2	F 3	F 1	F 2			H 1	C 3	L 1	L 2	L 2	L 2	L 2		L 4	L 2	F 1	F 1				
12							F 1	H 2		C 1	C 2	L 2	L 2		L 2			H 2	F 1			F 1		
13									H 3	HL 32	HL 21	HL 11					C 3	L 3	F 1					
14	F 2	F 4	F 1	F 1	F 1	F 1	F 1	H 5	H 3	C 2	C 5	C 6	C 3	L 5	L 7	L 6	L 5	L 3	F 4	F 7	F 4	F 5	F 7	F 5
15	F 1	F 1						L 1	C 2	C 2	C 2	HL 11	L 1	L 1	L 1	L 3	L 4	L 3	F 3	F 3	F 5	F 2	F 1	F 1
16	F 1	F 1	F 1	F 1						HL 11	HL 11	L 1	L 1	L 1	L 1		L 1	L 1	F 4	F 1				
17								F 1							L 1	L 2	L 3	L 3	F 4		F 1	F 1		F 4
18	F 5					F 2			H 3	H 2		L 1	L 1	L 3	L 1	L 2	L 3	L 3	F 4	F 3				
19								F 1	L 1	HL 11	HL 11	HL 21	HL 21	HL 11	HL 11	L 1	HL 11	C 1	F 1	F 1	F 1	F 2		
20		F 1	F 2	F 1					C 1	C 2	C 2	L 1	C 2	C 2	L 1	L 1		L 1	F 4	F 1	F 4	F 3	F 2	
21		F 1	F 1	F 1	F 1					HL 11	HL 11	CL 11	C 1	C 1	L 1	CL 32	CL 31	C 1	F 3	F 1	F 1			F 1
22		F 1		F 2			F 2		C 2			L 1	C 1	C 3	C 2		C 2			F 6	F 2	F 5	F 3	
23			F 4	F 1	F 2						C 2	CH 13	C 2	C 2	C 2									
24											C 1	HL 21	H 1	C 2	C 2	LC 12	CL 23	L 4	F 4					
25				F 4	F 3					HL 12	C 1	C 3	C 2	C 2	CL 32	CL 21	HL 21	HL 41	F 3	F 5	F 5	F 2		F 3
26										L 2	L 2	L 2	L 2	L 2	L 1	HL 31	HL 13	LH 52	F 3		F 1			
27					F 1					L 4	L 2	L 3	L 1		L 2	LH 32	LH 32	CL 62	F 3	F 6	F 4	F 3	F 2	F 3
28										L 2	L 1	L 2	L 2	L 2	L 3	L 3	L 3	L 2	F 5	F 4	F 2	F 2		F 2
29	F 3	F 2	F 3	F 3	F 3	F 1	F 1					H 1	L 6	L 2	L 3	L 2	L 2	L 1	F 1	F 5	F 1			
30									C 3	L 2	L 2	L 2	L 2	H 1				L 2	F 1					F 1
31									C 1	HL 22	HL 21	L 2	L 2	H 1	H 1	HL 21	H 2	CL 42	F 5	FF 32	F 5	F 5	F 7	F 5
	00	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

DEC. 1985 | TYPES OF ES

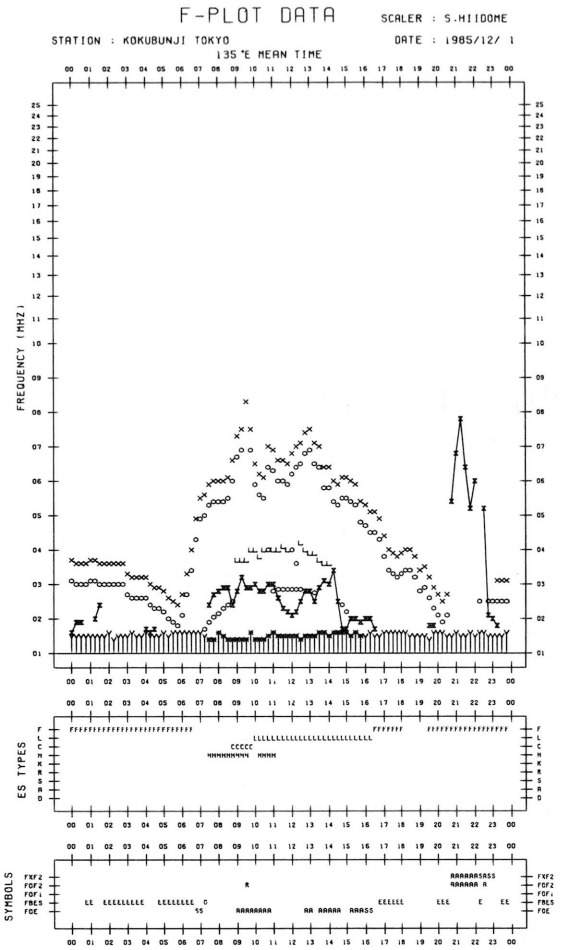
MONTHLY MEDIAN VALUES OF FOF2

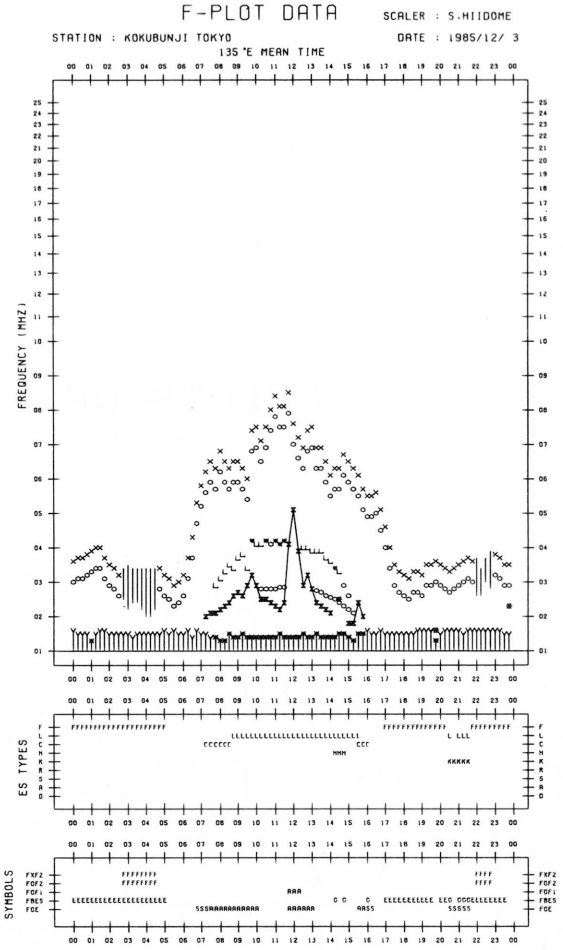
135 °E MEAN TIME DEC. 1985

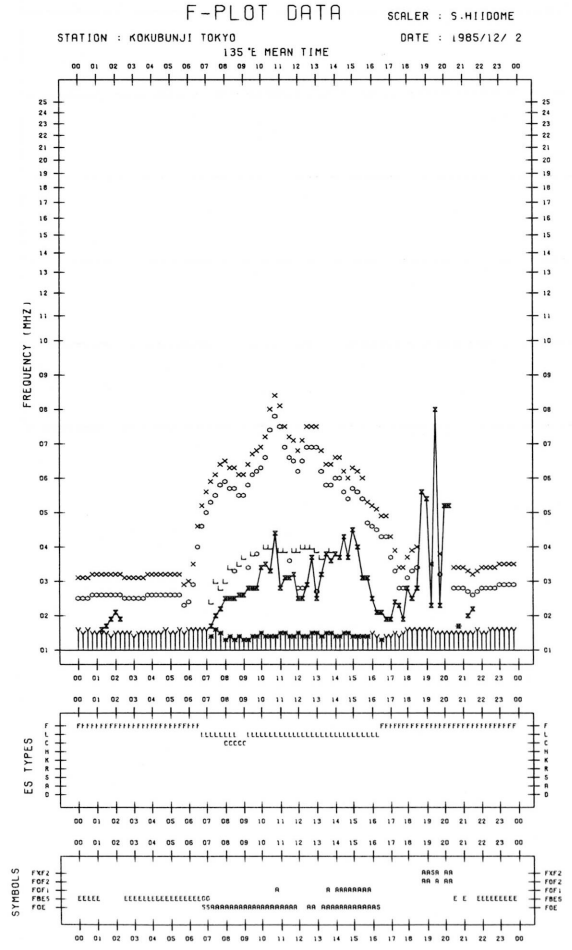


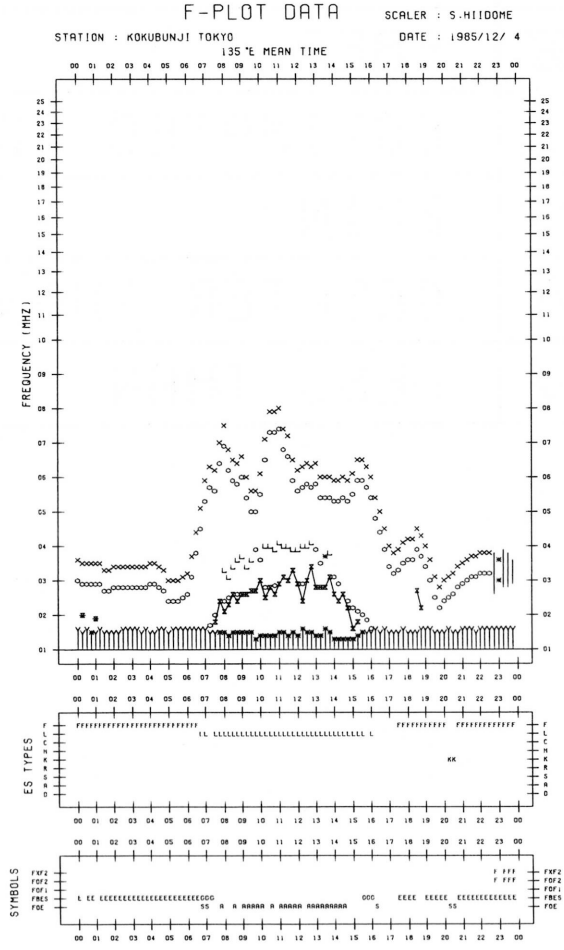
f-PLOTS OF IONOSPHERIC DATA

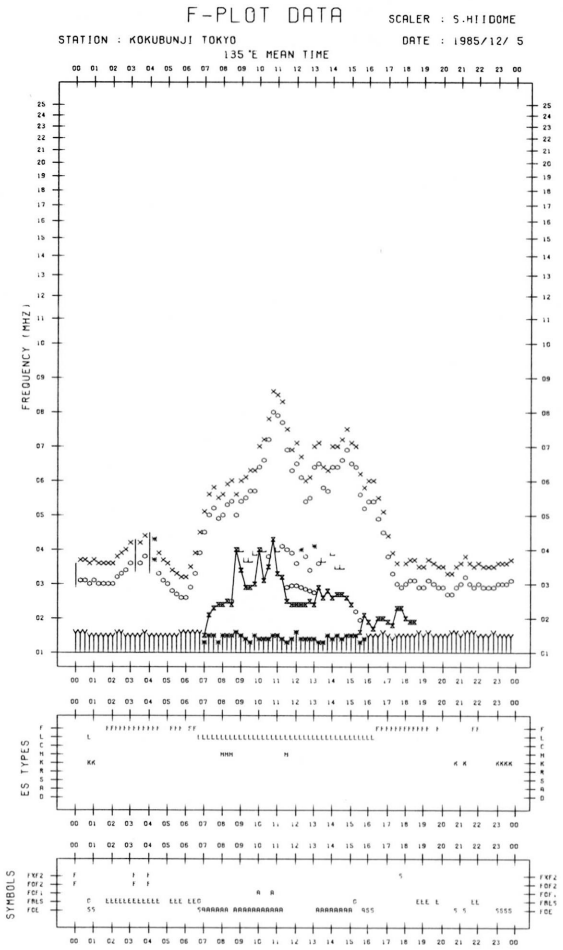
KEY OF F-PLOT	
I	SPREAD
○	FOF2, FOF1, FOE
×	FXF2
✳	DOUBTFUL FOF2, FOF1, FOE
⧖	FBES
⌊	ESTIMATED FOF1
↑, ↑	FMIN
∧	GREATER THAN
∨	LESS THAN

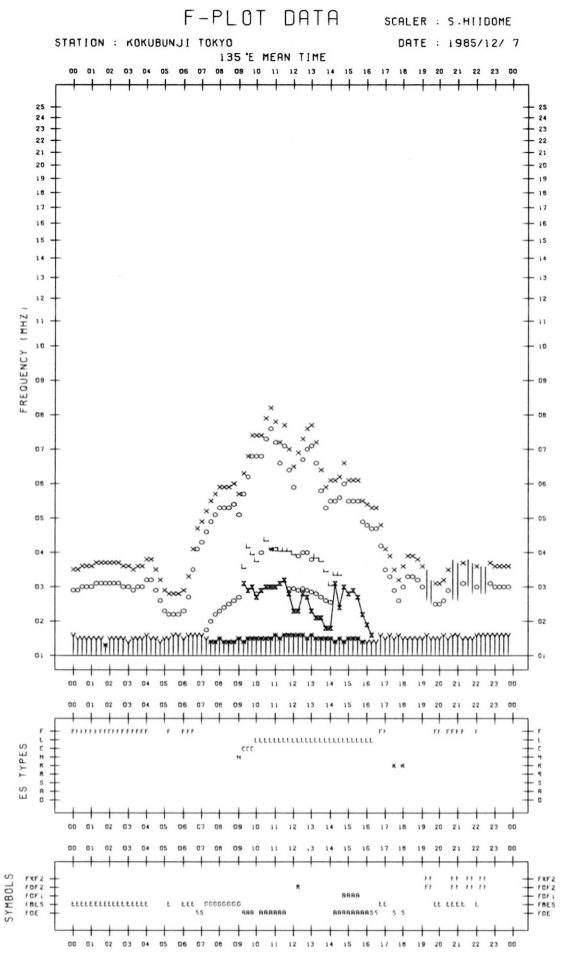

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 1
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FMES
FOE


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 3
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FMES
FOE


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 2
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FMES
FOE


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 4
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FMES
FOE


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 5
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
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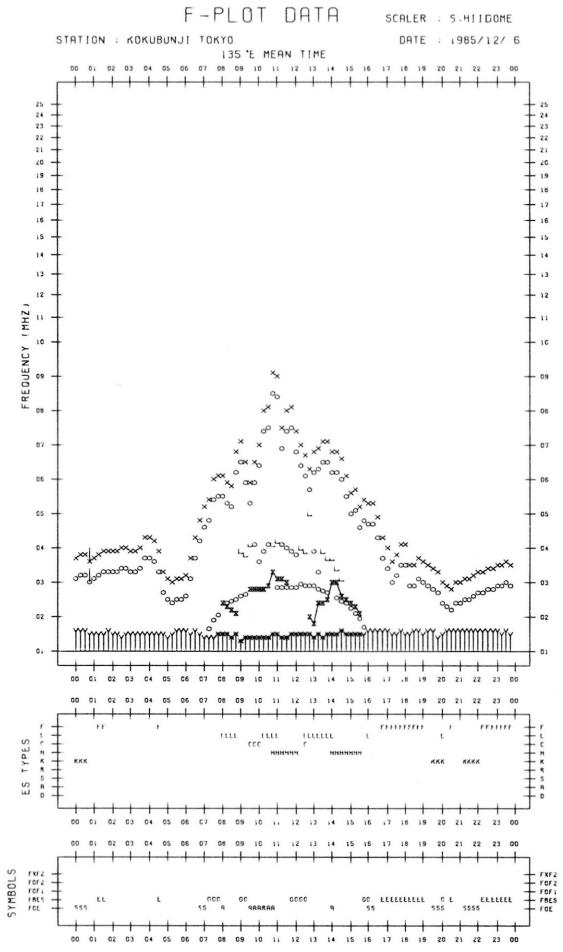
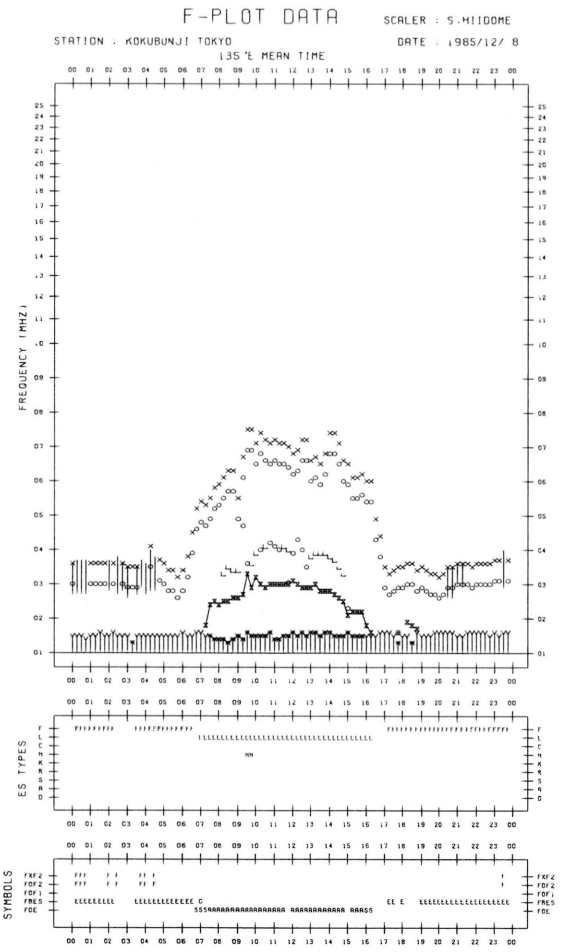
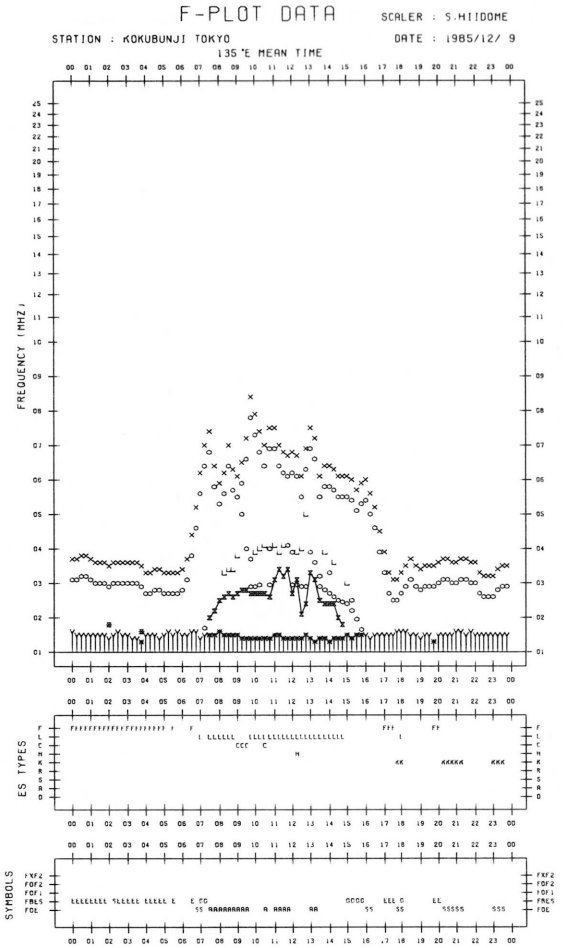
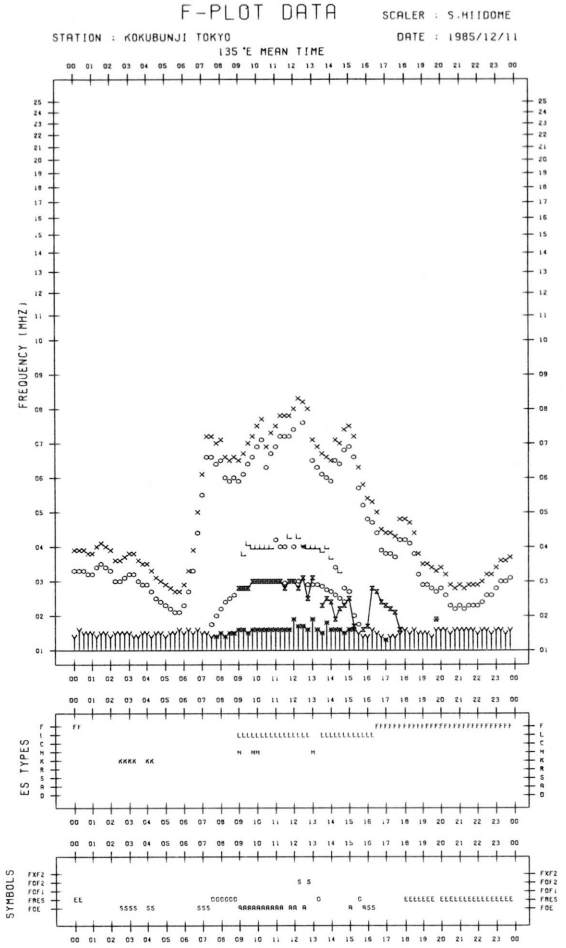
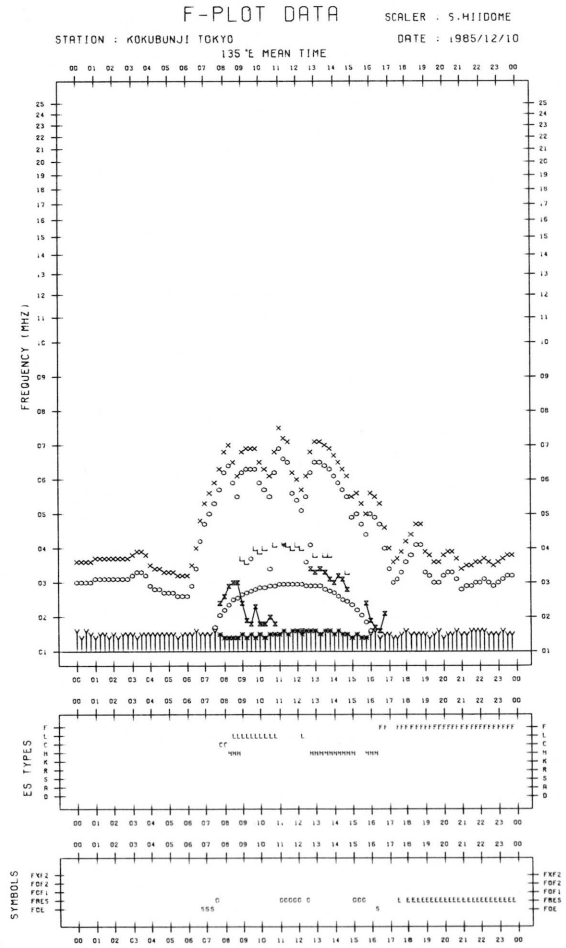
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 7
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

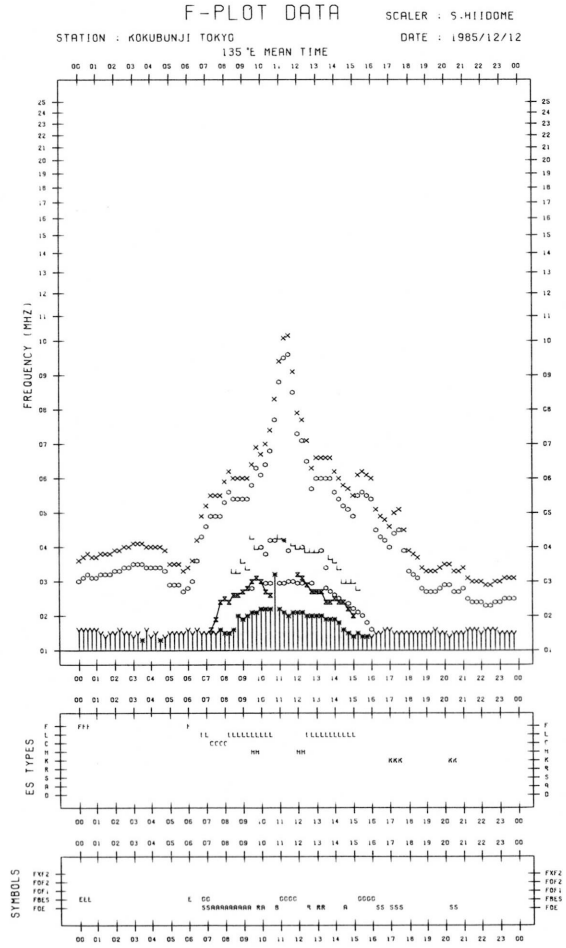

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 6
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

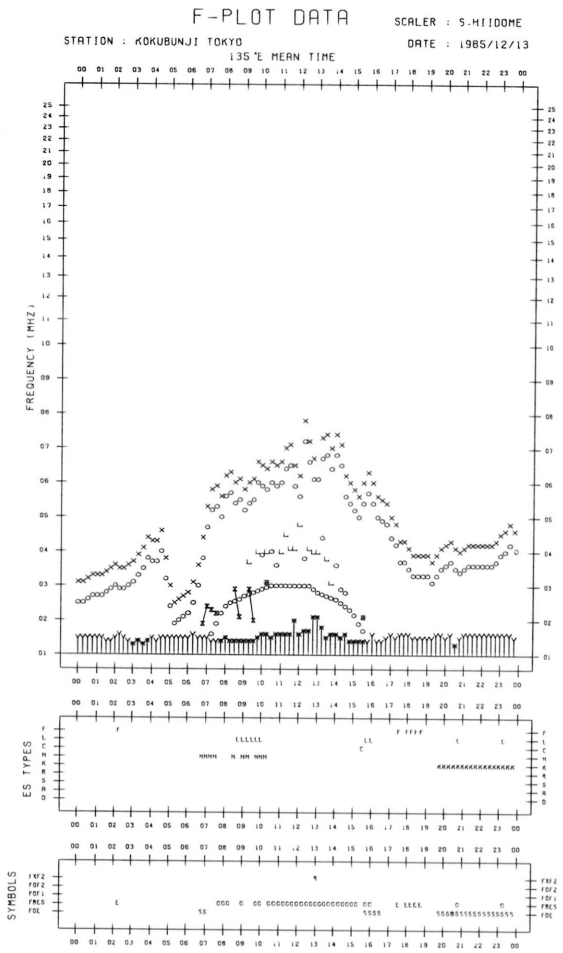

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 8
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

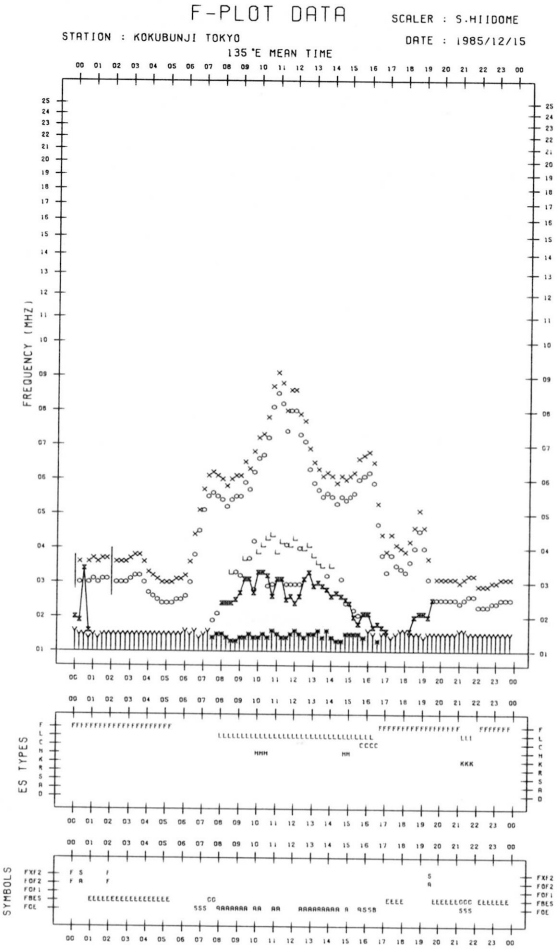

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/ 9
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

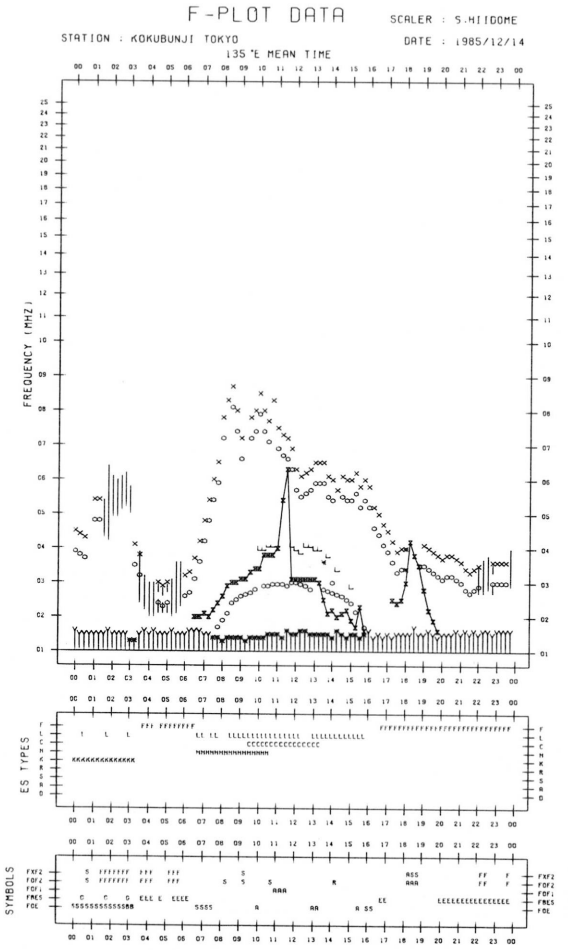

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/11
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

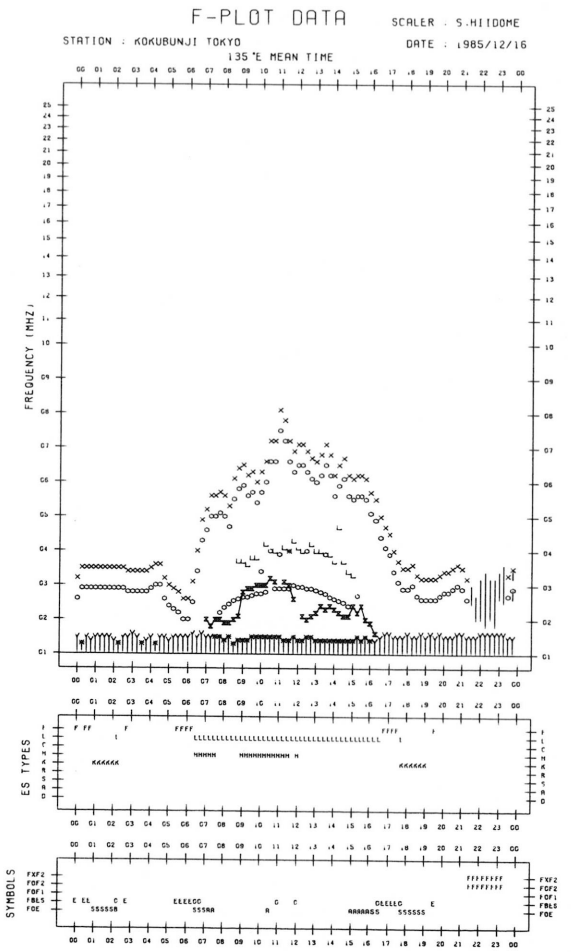

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/10
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

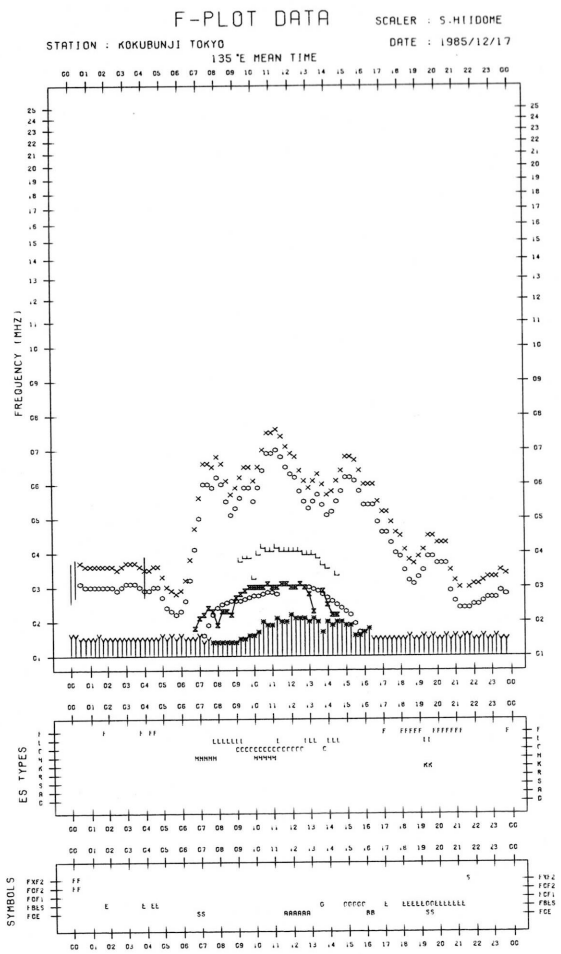

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/12
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

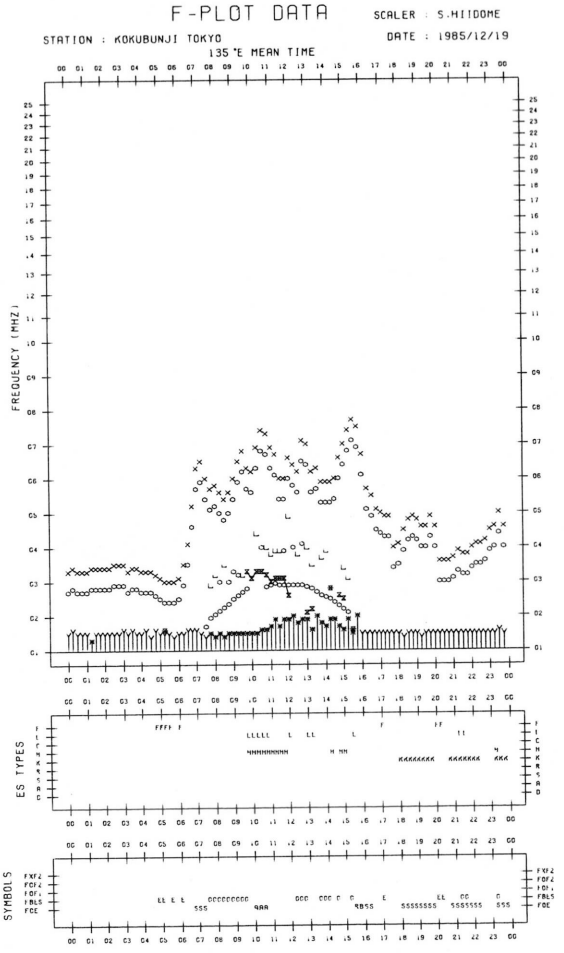

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/13
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

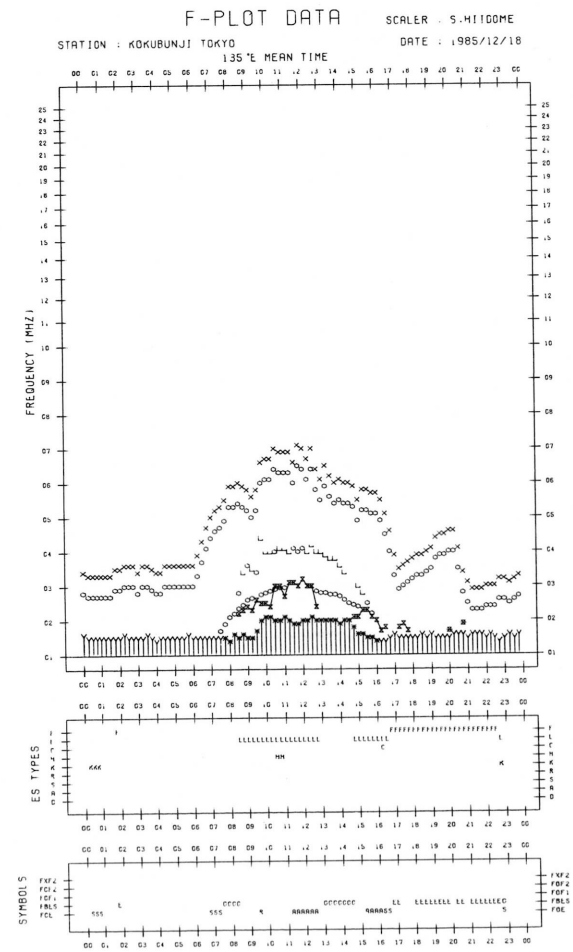

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/15
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

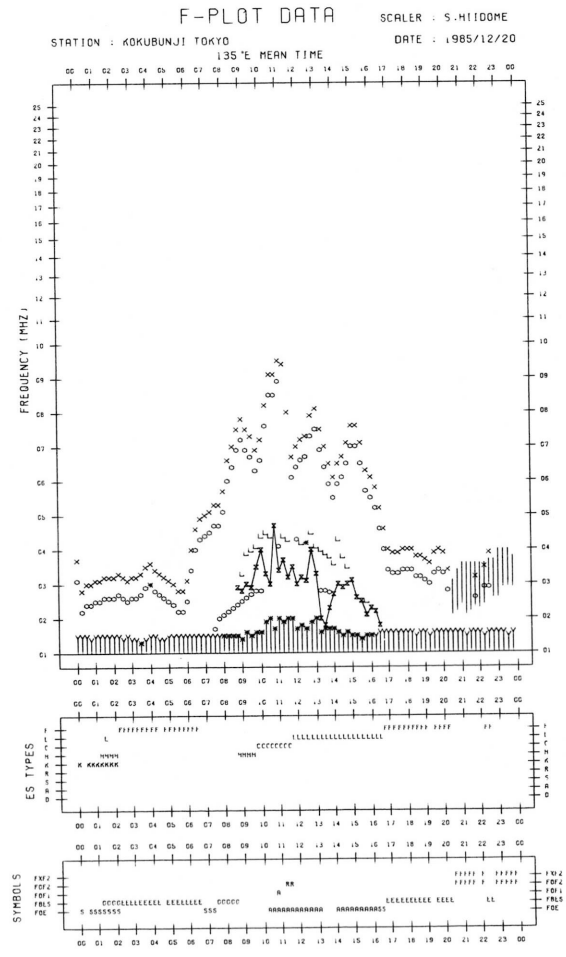

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/14
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

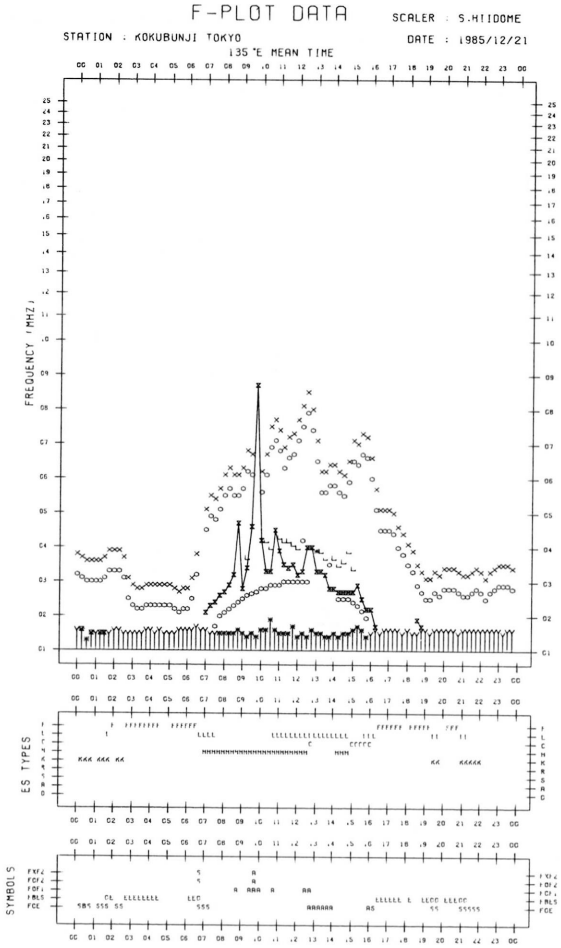

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/16
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

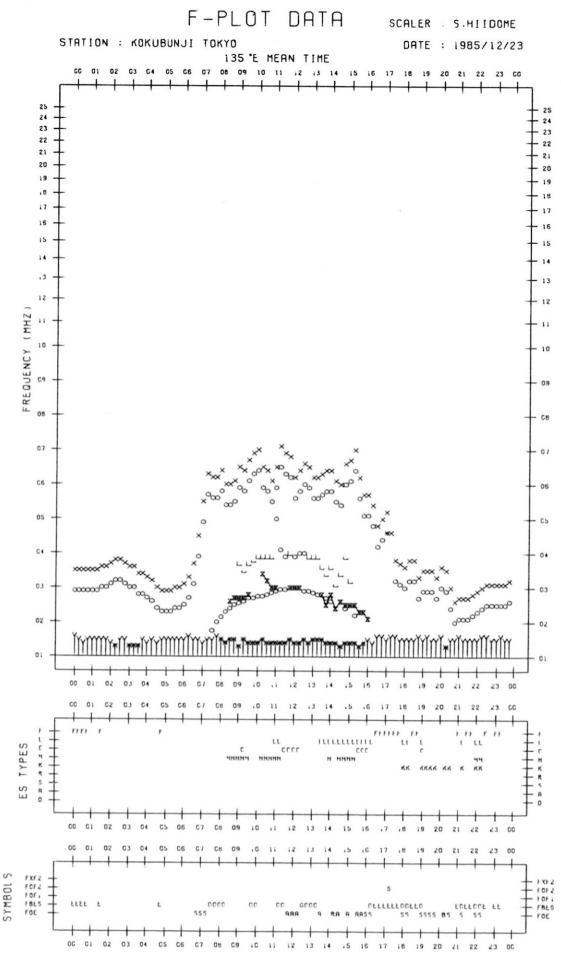

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/17
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

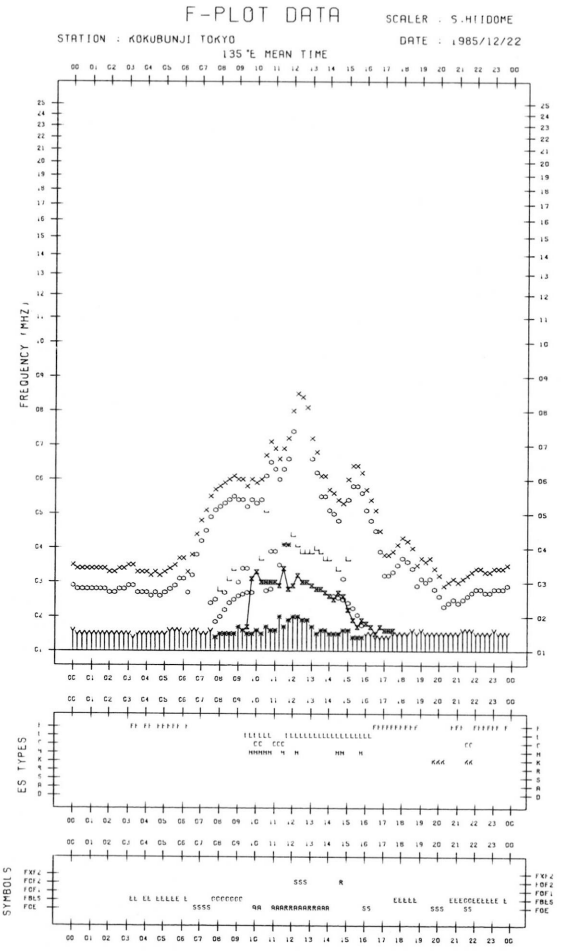

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/19
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

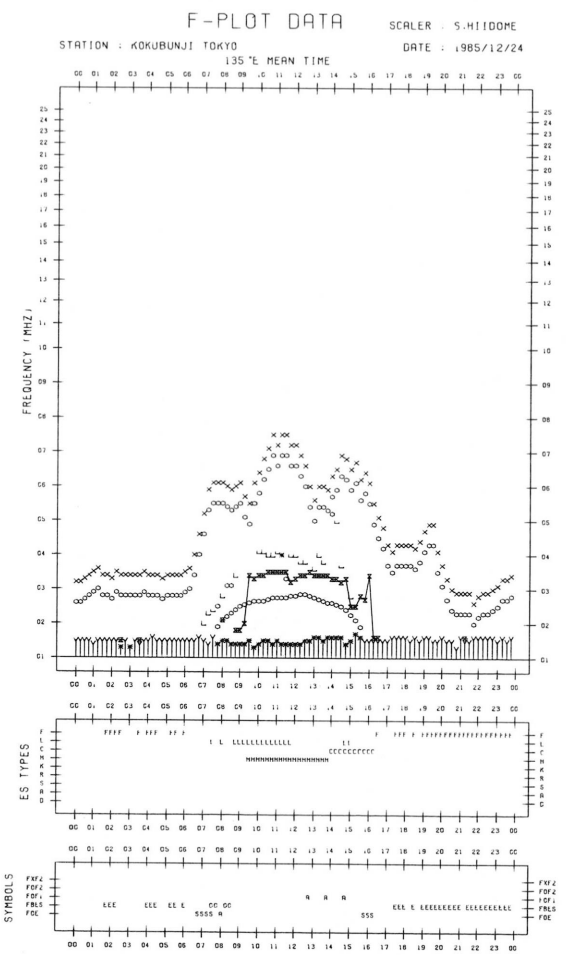

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/18
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

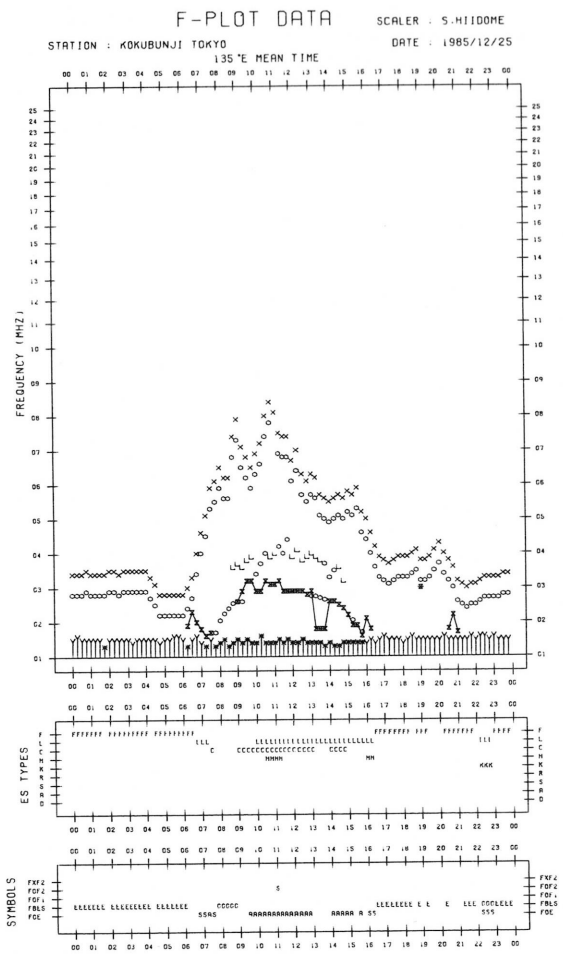

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/20
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

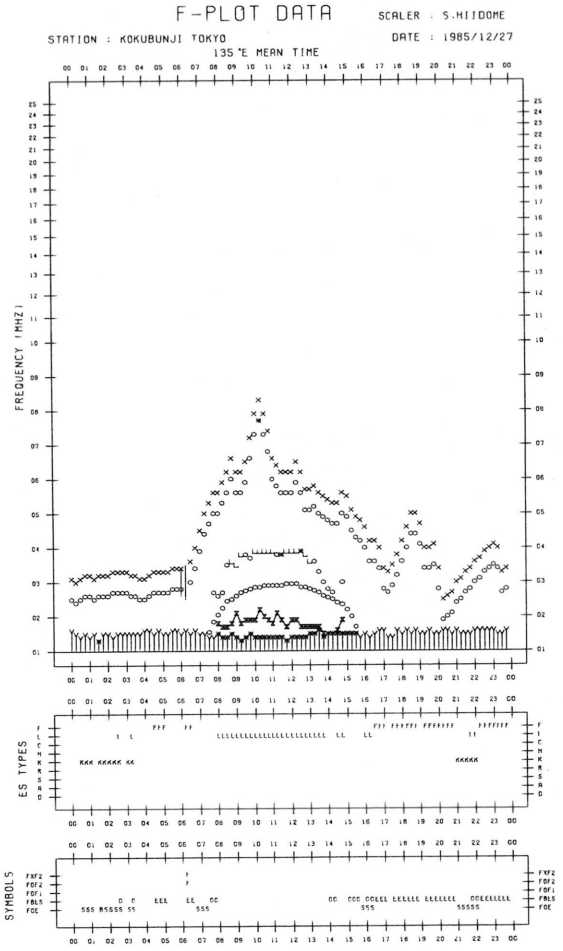

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/21
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

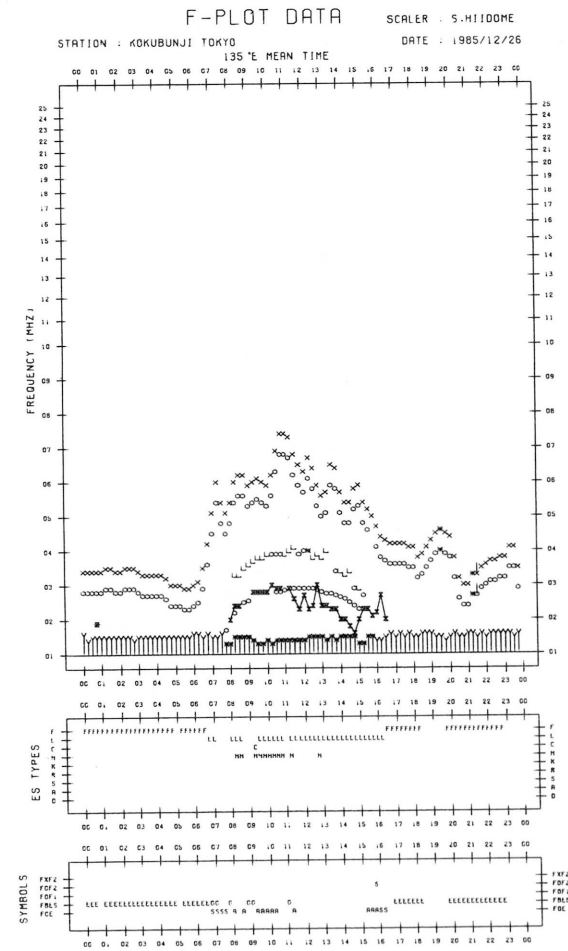

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/23
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

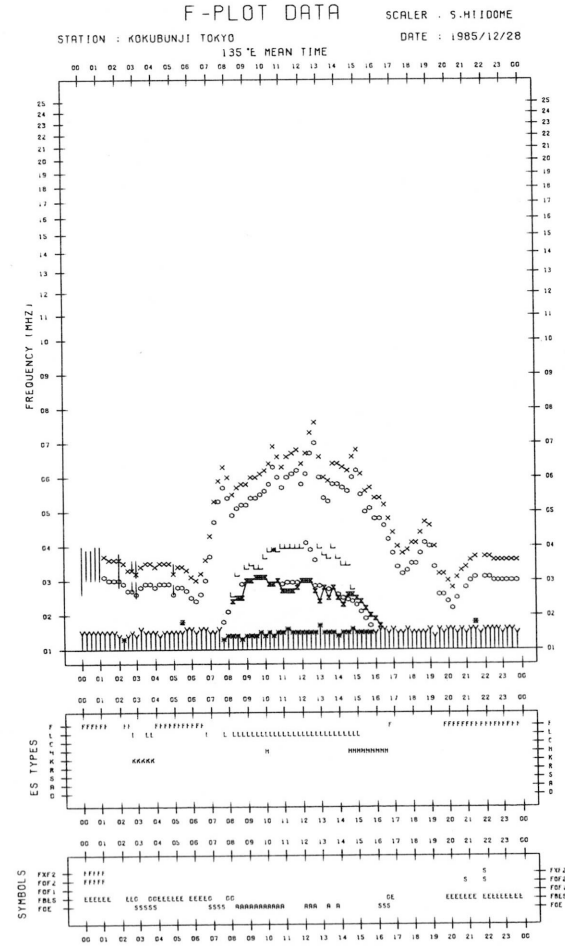

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/22
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

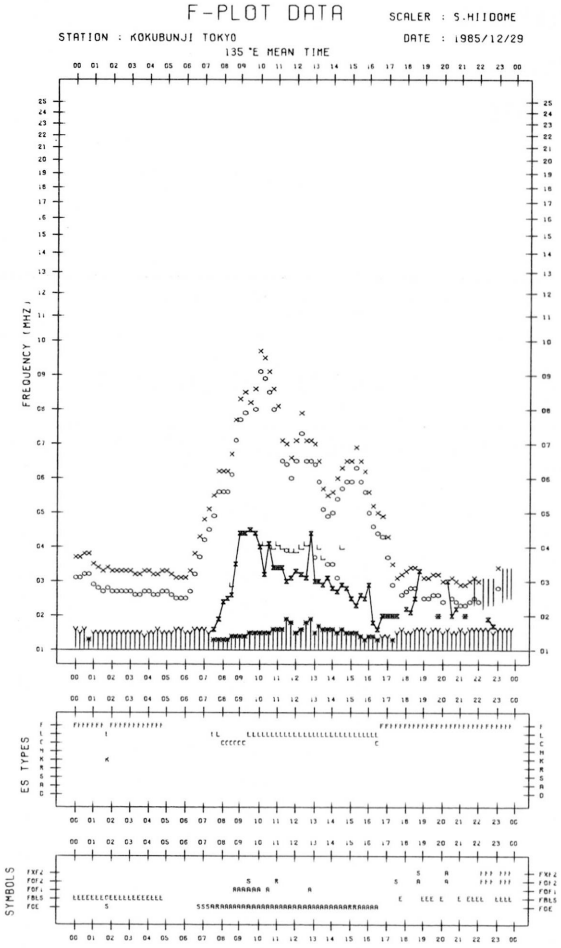

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/24
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

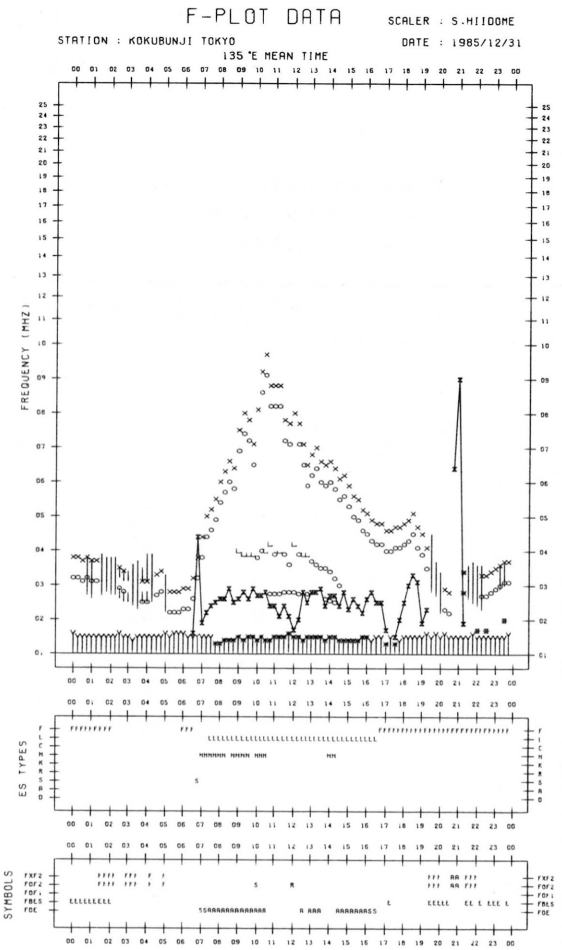

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/25
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

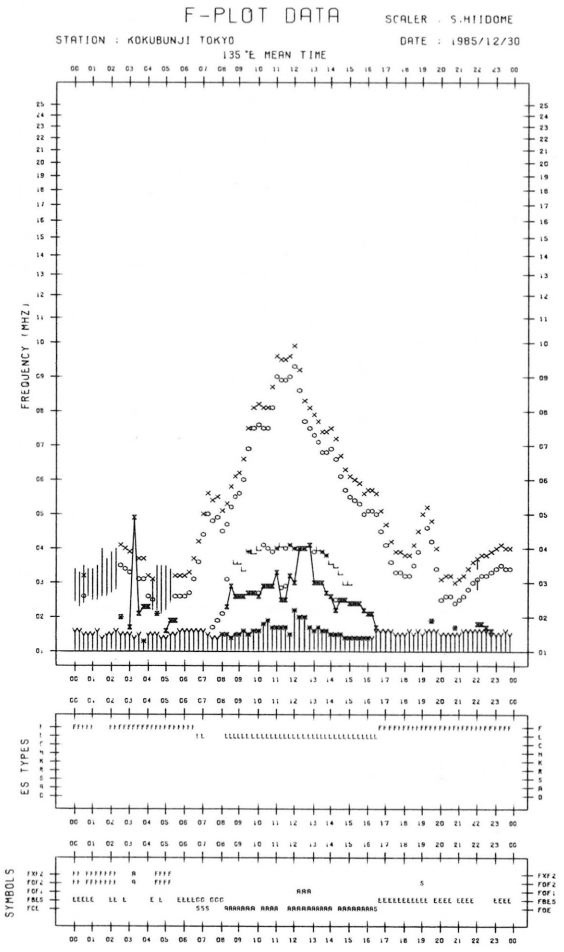

F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/27
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/26
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/28
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/29
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/31
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : S.HIIDOME
STATION : KOKUBUNJI TOKYO
DATE : 1985/12/30
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

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

December 1985

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	6	6	(6)	6	6	0	0	(0)	*	0
2	6	6	(6)	6	6	0	0	(0)	*	0
3	6	6	(6)	6	6	0	0	(0)	*	0
4	6	6	(6)	6	6	*	*	(*)	*	*
5	6	6	(6)	6	6	0	0	(0)	0	0
6	6	6	(6)	q	6	*	0	(*)	*	0
7	q	q	(q)	-	q	*	*	(*)	-	*
8	-	-	-	-	-	-	-	-	-	-
9	6	6	(6)	6	6	0	0	(0)	*	0
10	6	6	(6)	6	6	0	0	(*)	*	0
11	6	6	(6)	-	6	*	0	(0)	-	0
12	6	-	(7)	7	6	*	-	(*)	*	*
13	6	7	(7)	6	7	0	0	(*)	*	0
14	6	6	(6)	6	6	0	0	(0)	*	0
15	7	7	(7)	7	7	*	*	(*)	0	*
16	7	7	(7)	8	7	0	*	(*)	*	*
17	7	7	(7)	7	7	0	0	(*)	0	*
18	7	7	(7)	q	7	0	*	(*)	*	0
19	6	6	(6)	q	6	0	0	(*)	*	*
20	6	6	(6)	6	6	0	0	(*)	*	0
21	7	7	(7)	7	7	0	*	(0)	*	*
22	8	8	(7)	7	7	*	*	(*)	0	*
23	7	7	(q)	6	7	*	*	(*)	0	*
24	6	6	(6)	-	6	0	0	(0)	-	0
25	7	7	(7)	7	7	0	*	(*)	*	*
26	7	6	(6)	6	6	0	*	(*)	*	*
27	6	6	(6)	6	6	*	0	(0)	*	*
28	6	6	(6)	6	6	0	0	(0)	*	0
29	6	6	(6)	q	6	*	*	(*)	*	*
30	6	6	(q)	6	6	*	*	(*)	0	*
31	6	6	(6)	6	6	0	*	(*)	0	0

Note No observations during the following periods:

7th 2133 - 2400
8th 0000 - 0720
8th 2134 - 9th 0015
11th 2135 - 12th 0011
12th 0247 - 0552
24th 2146 - 2357

q: likely quiet.

*: interference.

SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

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

December 1985

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	25	25	(25)	25	25
2	25	25	(25)	25	25
3	25	25	(25)	25	25
4	25	25	(25)	25	25
5	25	25	(24)	25	25
6	26	25	(25)	-	25
7	25	26	(25)	25	25
8	25	25	(25)	26	25
9	26	26	(26)	26	26
10	26	26	(26)	26	26
11	27	27	(27)	27	27
12	28	28	(27)	28	27
13	28	28	(28)	-	28
14	27	27	(28)	28	27
15	28	28	(28)	29	28
16	29	29	(29)	28	29
17	29	29	(29)	28	29
18	28	28	(28)	29	28
19	29	29	(29)	28	29
20	28	28	(27)	28	28
21	28	28	(27)	27	28
22	27	27	(26)	26	27
23	26	26	(26)	25	26
24	25	26	(26)	24	26
25	25	26	(25)	24	25
26	25	25	(24)	24	25
27	24	24	(24)	24	24
28	24	24	(23)	23	24
29	23	23	(23)	24	23
30	24	24	(24)	24	24
31	24	24	(24)	24	24

Note No observations during the following periods:

1st 0000 - 0010
6th 2140 - 2340
13th 2145 - 2343

SOLAR RADIO EMISSION

HIRAISO (HIRA)

36.37N 140.62E

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

December 1985

Outstanding Occurrences

(single-frequency observations)

Normal observing period: 2145 - 0730 (sunrise to sunset)

DEC 1985	FREQ	STATION	TYPE	START TIME UT	TIME OF MAXIMUM UT	DUR MIN	FLUX DENSITY PEAK	FLUX DENSITY MEAN	POLARIZATION POSITION REMARKS
12	500	HIRA	42 SER	0030.4	0030.7	3.0	7	-	O
	500		42 SER	2300.7	2304.9	4.5	15	-	WL
	200		41 F	2304.3	2304.5	1.0	48	-	O
15	500		42 SER	0205.0	0206.0	1.8	5	-	WR
	500		45 C	0605.1	0605.6	2.5	85	10	WR
	500		45 C	2216.0	2216.6	1.5	60	30	MR
16	500		8 S	0243.6	0243.7	0.5	4	-	WL
	500		8 S	0259.2	0259.3	0.5	20	-	WL
	500		45 C	0349.4	0351.5	2.5	110	20	WR
18	500		8 S	0119.3	0119.4	0.7	4	-	O

RADIO PROPAGATION

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

DEC 1985 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	ES 12	ES 2	ES 1	ES 0	ES 4	ES -8	ES -4	ES -8	ES -8	ES -23	ES -23	ES 2	ES 0	ES 0	ES -4	ES -2	ES 1	ES -23	ES -8	ES -4	ES -4	-1	6	2
2	ES -6	ES -6	ES -13	ES -18	ES -18	ES -18	ES -18	ES -18	ES -6	ES -18	ES -7	ES -7	ES -9	ES -9	ES -9	ES -13	ES -18	ES -23	ES -23	ES -23	ES -23	-7	0	2
3	S	ES 5	ES 1	ES 7	ES 3	ES 7	ES -18	ES -18	ES -18	ES -18	ES -18	ES -18	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-14	5	7
4	ES -4	ES -3	ES 5	ES -2	ES -6	ES 1	ES -2	ES -5	ES -8	ES -23	ES -14	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-14	7	3
5	7	0	-1	ES -14	ES -14	ES -14	ES -4	S	S	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	0	3	7
6	ES 1	S	ES -1	ES -5	ES 4	ES -8	ES -5	ES -1	ES 1	ES -1	ES -1	ES 1	ES -6	ES -2	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	0	8	11
7	ES 2	1	ES -1	ES 1	ES 1	ES 1	ES 1	ES 1	ES 1	ES 1	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	1	4	8
8	-5	ES -3	ES -3	2	ES -5	ES -2	ES -4	ES 4	ES -5	ES -3	ES -3	ES -3	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	6	12	6
9	4	ES -8	ES -5	ES -5	ES -6	ES -6	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	ES -23	ES 1	-2	8	12
10	11	ES -8	ES -8	ES -11	ES -14	ES -8	ES -14	ES -14	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	8	14	9
11	11	ES -4	ES -2	ES -4	ES -10	ES -6	ES -2	ES -23	ES -23	ES -23	ES -23	ES -23	ES -14	ES -14	ES -14	ES -14	ES -14	ES -14	ES -5	ES -5	ES -9	-2	6	0
12	-9	ES -9	ES -6	ES -4	ES -5	ES -6	ES -4	ES -9	ES -9	ES -18	ES -18	ES -18	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-14	0	2
13	-3	ES -3	ES -4	ES -2	ES 0	ES -5	ES 1	ES -5	ES -23	ES -23	ES -23	ES -23	ES -14	ES -14	ES -14	ES -14	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	-2	-5
14	-8	1	ES 7	ES -2	ES -1	ES -4	ES -4	ES -8	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -4	ES -5	0	3	
15	3	ES -5	ES -5	ES -8	ES -10	ES -8	ES -8	ES 0	ES -8	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -14	8	7
16	6	ES -1	ES 2	6	ES -4	ES 0	ES 3	ES -8	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	0	8	8
17	-1	ES -5	ES -9	-3	ES -10	ES -8	ES -8	ES -2	ES -8	ES -14	ES -23	ES -23	ES -23	ES -5	ES -5	ES -5	ES -5	ES -23	ES -23	ES -23	ES -23	-5	4	-5
18	-14	ES -5	ES -5	ES -4	ES -8	ES -11	ES -8	ES -8	ES -2	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -8	ES -8	ES -3	ES -3	ES -3	ES -3	1	2
19	-4	ES -5	ES -8	ES -4	ES 1	ES -6	1	ES -1	ES -14	ES -23	ES -4	ES -8	ES -5	ES -5	ES -5	ES -5	ES -23	ES -23	ES -23	ES -23	ES -23	-2	-4	-4
20	1	ES 5	ES 8	ES -3	ES -2	ES -4	ES -1	ES -4	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -5	ES -5	ES -14	ES -14	ES -14	ES -5	-3	-4
21	S	ES -3	ES -1	ES 4	ES -2	ES -8	ES -5	ES 3	ES -4	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-2	-4
22	S	ES 3	ES -1	ES 2	ES -1	-2	ES -8	ES -3	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	1	5
23	4	-2	ES -1	ES -3	-2	ES -5	ES -2	ES -1	ES -1	ES -1	ES -1	ES -1	ES 0	ES 0	ES 0	ES -4	ES -4	ES -4	ES -4	ES -23	ES -23	ES -8	9	9
24	10	-5	ES -11	ES -11	ES -15	ES -15	ES -15	ES -5	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	8	6	11
25	ES -8	ES 7	ES -3	ES 1	ES -8	ES -8	ES -8	ES -3	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	11	11
26	-4	ES 4	ES -9	ES -6	ES -15	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -9	ES -9	ES -9	ES -8	-2	-2	ES -5	ES -5	ES -5	ES -5	4	7
27	ES -8	ES -2	ES 3	ES 3	-14	-11	-8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	3	2
28	ES 8	S	ES 0	ES 0	ES -3	ES 1	ES -8	ES -8	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -5	ES -5	ES -5	2	-3
29	-4	ES -6	ES -6	ES -7	ES -7	ES -7	ES -3	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	5	3	
30	ES -11	ES -1	ES -5	ES -8	ES -8	ES 0	ES 0	ES 1	ES 2	ES -3	ES -23	ES -23	ES -23	ES -23	ES -5	ES -5	ES -5	ES -5	ES -23	ES -23	ES -23	-1	7	2
31	ES -15	ES 1	ES -1	ES -4	ES -4	ES -3	ES -5	ES -9	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-6	3	-1
CNT	28	29	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	ES -2	ES -3	ES -2	ES -3	ES -5	ES -6	ES -5	ES -5	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -5	4	3
UD	ES 11	ES 5	ES 5	ES 4	ES 3	ES 1	ES 1	ES 1	ES 1	ES -1	ES -3	ES -1	ES -5	ES -2	ES -5	ES -5	ES -4	ES -5	ES -5	ES -4	ES -4	6	11	11
LD	ES -11	ES -8	ES -9	ES -11	ES -15	ES -14	ES -18	ES -23	ES -23	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -23	-2	-4

RADIO PROPAGATION

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

DEC 1985 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	18	17	17	20	17	23	20	ES -8	ES -23	ES -23	-6	ES 2	2	0	3	ES -14	ES -14	ES -23	ES -8	ES -4	17	16	12	16
2	13	18	18	24	17	13	11	-7	ES -6	ES -6	ES -6	ES -9	ES -9	ES -9	ES -9	ES -18	ES -18	ES -23	ES -23	ES -23	7	20	18	18
3	18	19	23	23	15	1	ES -9	ES -18	ES -18	ES -18	ES -18	ES -18	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	12	20	20	23
4	16	18	22	23	21	15	-2	ES -5	ES -14	ES -14	ES -14	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	11	20	16	18
5	27	18	20	19	27	12	15	S	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	18	18	26	18
6	20	16	24	14	17	-3	ES -1	ES -1	ES -1	ES -1	ES 1	ES 0	ES -3	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	1	15	16	17
7	17	22	21	21	25	ES 1	ES 1	ES 1	ES 1	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-7	ES -24	18	21	14	17
8	18	20	17	21	7	-5	1	ES -5	-2	ES -3	ES -3	ES -3	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	14	16	17	19
9	22	24	19	24	9	ES -3	ES -5	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	14	22	22	22
10	17	15	22	24	17	-8	ES -14	ES -14	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	2	18	21	19
11	22	23	22	23	17	14	2	ES -23	ES -23	ES -23	ES -23	ES -23	ES -14	ES -14	ES -14	ES -14	ES -14	ES -5	ES -5	ES -5	16	8	16	19
12	17	17	18	18	12	1	ES -5	ES -9	ES -9	ES -18	ES -18	ES -18	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	7	12	13	22
13	17	17	21	18	27	1	ES 7	ES -8	ES -23	ES -23	ES -23	ES -23	ES -14	ES -14	ES -14	ES -14	ES -14	ES -23	ES -23	ES -23	2	13	27	30
14	22	22	28	20	17	ES -2	3	ES -4	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	17	19	18	22
15	21	22	25	23	19	17	12	-1	ES -8	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-1	17	22	17
16	17	21	18	24	27	13	ES -3	ES -8	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -8	ES -8	ES -8	ES -8	ES -8	ES -8	2	19	20	17
17	18	19	18	24	26	16	8	ES -3	ES -14	ES -23	ES -23	ES -23	ES -23	ES -5	ES -5	ES -5	ES -23	ES -23	ES -23	ES -23	19	18	19	13
18	18	22	20	22	22	25	7	ES -6	ES -8	-8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -8	ES -8	ES -3	ES -3	17	19	17	17
19	15	15	19	18	14	-2	ES 11	ES -8	ES -5	2	-4	-5	ES -5	ES -5	ES -5	ES -23	ES -23	ES -23	ES -23	ES -23	12	14	14	21
20	17	22	22	21	22	15	15	-6	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -5	ES -5	ES -14	ES -14	5	20	18	17
21	23	19	20	22	22	22	10	ES -4	ES -4	-13	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	3	15	15	11
22	17	17	12	18	17	12	2	ES -3	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	1	29	17	13
23	19	16	25	20	22	13	2	ES -1	ES -1	ES -1	ES -1	ES -1	ES 0	ES 0	ES 0	ES -4	ES -4	ES -4	ES -23	ES -23	5	22	27	17
24	19	25	17	20	23	2	ES -6	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	-7	13	16	21
25	22	17	19	24	17	11	3	-3	-6	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	4	16	20	20
26	16	18	15	18	13	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -9	ES -9	ES -9	ES -8	ES -8	ES -5	ES -5	ES -5	ES -5	17	22	20
27	24	20	19	23	14	4	ES -8	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	18	22	20
28	13	18	19	17	22	17	23	-3	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-4	ES -5	12	18	24	23
29	21	16	19	19	14	-7	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	ES -6	-1	16	17	20
30	15	18	22	18	12	17	22	2	8	3	-10	ES -23	ES -23	ES -5	ES -5	ES -5	ES -5	ES -5	ES -23	ES -23	-8	7	12	9
31	6	12	16	19	ES -4	ES -5	-2	ES -9	ES -24	ES -24	-12	-9	ES -24	-4	ES -24	ES -24	ES -24	ES -24	-3	12	13	16	18	21
CNT	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	18	18	19	21	17	11	US 2	ES -6	ES -14	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	7	18	18	19
UD	23	23	25	24	27	22	20	ES -1	ES -1	ES -1	ES -3	ES -1	ES -3	ES -4	ES -5	ES -5	ES -5	ES -5	ES -4	ES -4	18	22	26	23
LD	13	15	16	18	9	ES -7	ES -9	ES -23	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -7	12	13	13

RADIO PROPAGATION

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Dec. 1985	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+	S S S 4U	4 5U 5U 4	N N N N			
2	4o	S S S 4U	4 S S 4	N N N N			
3	4o	S S S 4U	4 S S 4	N N N N			
4	4o	S S S 4	4 S S 4	N N N N			
5	4o	4U S S 4U	4 S S 4	N N N N			
6	4o	S S S 4U	4 S S 4	N N N N			
7	4o	S S S 4	4 S S 4	N N N N			
8	4+	4U S S 5	4 4U S 4	N N N N			
9	4o	S S S 4	4 S S 4	N N N N			
10	4o	S S S 5	3 S S 4	N N N N			
11	4o	S S S 4	4 S S 4	N N N N			
12	4o	S S S 4	4 S S 4	N N N N	21.3	---	123
13	4-	S S S 3U	4 S S 4	N N N N	---	24.0	
14	4-	3U S S 4U	4 S S 4	N N N N			
15	4o	S S S 4U	4 4U S 4	N N N N			
16	4-	4U S S 4	4 3U S 4	N N N N			
17	4-	4U S S 3	4 S S 4	N N N N			
18	4o	S S S 4U	4 4U S 4	N N N N			
19	4o	4U S S 3	4 5U S 4	N N N N	00.3	---	129
20	4-	S S S 3U	4 S S 4	N N N N	---	15.0	
21	4o	S S S 3U	4 5U S 4	N N N N			
22	4o	S S S 4U	4 S S 4	N N N N			
23	4o	4U S S 4U	4 S S 4	N N N N			
24	4o	S S S 4U	4 S S 4	N N N N			
25	4o	S S S 4U	4 4U S 4	N N N N			
26	4o	S S 5U 4U	3 S S 4	N N N N			
27	3+	S S S 3U	4 S S 3	N N N N			
28	4o	S S S 4U	4 4U S 4	N N N N			
29	4o	S S S 4U	4 S S 4	N N N N	23.2	---	69
30	4o	S S S 4U	4 5U S 3	N N N N	---	---	
31	4o	S S S 4U	3 5U S 4	N N N N	---	19.0	

SUDDEN IONOSPHERIC DISTURBANCES

HIRAISO

Time in U.T.

Dec. 1985	S W F					Correspondence		
	Drop-out Intensities(dB) CO HA 1) 2)	Start	Duration	Type	Imp.	Solar Flare	Solar Noise	Geomag. Crochet
	None							

RADIO PROPAGATION

Sudden Ionospheric Disturbance (SPA)

I N U B O

Dec.	S P A							
1985	Phase Advance (degrees)					Time (U.T.)		
Date	GBR	Ω/LR	NWC	Ω/H	Ω/ND	Start	End	Maximum
15		12				0610	0658	0617
15				8		2218	2248	2221
16		7	—	4		0327	0348	0335
16		9	—	6		0350	0416	0354
16		13	—			0527	0611	0531

IONOSPHERIC DATA IN JAPAN FOR DECEMBER 1985

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