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IONOSPHERIC DATA IN JAPAN

FOR OCTOBER 1963

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THE RADIO RESEARCH LABORATORIES

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KOKUBUNJI, TOKYO, JAPAN

F−178

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THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

CONTENTS

SITES OF THE RADIO WAVE OBSERVATORIES

Ionospheric observation is carried out at the following four observatories in Japan.

	Latitude	Longitude	Site
Wakkanai	45°23.6′N.	141°41.1′E.	Wakkanai-shi, Hokkaido
Akita	39°43.5′N.	140°08.2′E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Koganei-shi, Kitatama-gun, Tokyo-to
Yamagawa	31°12.5′N.	130°37.7′E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

Solar radio emission and radio propagation conditions are observed at Hiraiso Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0′N.	140°37.5′E.	Isozaki-machi, Nakaminato-shi, Ibaragi-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, September 2, 1956, and the Second Report of the Committee, May, 1957, supplementary to the First Report.

Terminology

f_0F2, f_0F1, f_0E — The ordinary-wave critical frequency for the $F2$, $F1$ and E layers respectively.

f_0E_s — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

f_bE_s — The ordinary wave frequency at which the highest blanketing E_s layer becomes effectively transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

f-min — That frequency below which no echoes are observed.

$M(3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$M(3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e. g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'E_s$ The lowest virtual height of the trace used to give the f_0E_s.

$hpF2$ The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to 0.834 f_0F2.

$ypF2$ The semi-thickness of the $F2$ layer deduced from a parabolic fit to the " nose " of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at 0.969 f_0F2).

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s.

B Measurement influenced by, or impossible because of, absorption in the vicinity of f-min.

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. Used in a qualifying sense, see below.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density is too small compared with that of a lower thick layer.

H Measurement influenced by, or impossible because of, the presence of a stratification.

L Measurement influenced by, or impossible because the trace has no sufficiently definite cusp between layers.

M Measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.

O Measurement refers to the ordinary component.

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Symbols

Used as a preceeding symbol on monthly tabulation sheets.

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.

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-ionic component.

c. Description of Standard Types of E_s

The nine standard types of E_s are identified by small (lower case) letters: *l*, *c*, *h*, *q*, *r*, *a*, *s*, *f*, *n*. These letters are suggestive of the names low, cusp, high, equatorial, retardation, auroral, slant, flat and unclassified, respectively; it is strongly emphasized that these names are suggestive, not restrictive. The standard types are:

l At flat E_s trace at or below the normal E layer minimum virtual height. Use in daytime only.

c An E_s trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal E trace though, when the deviative absorption is large, part or all of the cusp may be missing. Use in daytime only.

h An E_s trace showing a discontinuity *in height* with the normal E layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. Use in daytime only.

q As E_s trace which is diffuse and non-blanketing over a wide frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

r An E_s trace which is non-blanketing over part or all of its frequency range showing an increase in virtual height at the high frequency end similar to group retardation. This is distinguished at present from true group retardation (a blanketing thick layer included in the E layer tables: f_0E, $h'E$) by the lack of group retardation in the F traces at corresponding frequencies.

a An E_s pattern having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes exceed over several hundred kilometers of virtual height.

s. A diffuse E_s trace which rises steadily with frequency. This usually emerges from another E_s trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace, *l*, *h* or *f*, and frequencies which greatly exceed the E layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type E_s, *q*, at frequencies near the E region critical frequency.

f An E_s trace which shows no appreciable increase of height with

frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat E_s traces observed in the daytime are classified according to their virtual height: h or l.

n An E trace which cannot be classified into one of the standard types. This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.

d. Multiple Reflections from E_s

When the ionogram shows the presence of multiple reflections from E_s the number of traces seen should be recorded after the letter indicating the type.

B. SOLAR RADIO EMISSION

Solar radio emission is received on 200 Mc at Hiraiso Radio Wave Observatory using a 6×4 dipole broadside array and an ordinary superheterodyne receiver. The type of observation is of intensity recording of both steady flux and outstanding occurrences.

a. Daily Data

Steady flux The mean value of recorded base level. Outstanding occurrences are to be omitted except the phenomena with duration of hours or more.

Variability Variability is expressed in four grades as follows:

0=no burst
1=a few bursts
2=many bursts
3=exceptionally many bursts

Number of bursts is determined relatively in comparison with the base level. If the number of bursts be fixed, the variability is greater, when bursts are widely distributed, than in the case of being concentrated in a short period.

b. Outstanding occurrences

Starting time When the start is not obvious, 20% rise time of smoothed flux is adopted and x is suffixed. (e.g. 0234x)

Maximum time When the instantaneous maximum can not be taken, the smoothed maximum is used and x is suffixed. (e.g. 0539x)

Time of end When the phenomena have ended obscurely the time of 20% of maximum smoothed flux is written.

Type Outstanding emissions are classified as follows: On another point of view, the classification in the URSI Interchange code is to be added.

S : simple rise and fall of intensity
C : complex variation of intensity
A : appears to be part of general activity
D : distinct from (i.e. apparently superposed upon) the general

activity

M : multiple peaks separated by relatively long period of quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

Combined letters express one phenomenon (e.g. SD, ECD); letters joined by + express some phenomena occurring in parallel; the preceding term is more important (e.g. SD+F, SA+C).

Maximum intensity

Instantaneous: The highest value above the base level.

Smoothed: By multiplying the duration, the approximate total power of the phenomenon can be estimated.

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

Radio propagation quality figures are usually expressed on the scale that ranges from one to five as follows:

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

The tabulated circuits contain London (commercial circuit), WWV (frequencies 10, 15, 20 Mc broadcast from Washington, D.C.), San Francisco (commercial circuit) and WWVH (frequencies 10, 15 Mc broadcast from Hawaii), which are received at Hiraiso Radio Wave Observatory near Tokyo.

Warnings of radio propagation broadcast from JJY station are expressed in three grades:

N=normal
U=unstable
W=disturbed

The letter W expresses disturbed condition expected to be during the following 12 hours after issue. The letter U and N means also unstable or normal conditions, respectively.

Whole day radio quality indices are the averages of the 6-hourly indices of London, WWV and S. F.

Start- and end-time of principal geomagnetic storms closely correlated to radio propagation conditions are tabulated from observations at Kakioka.

b. Sudden Ionospheric Disturbances (S. I. D.)

The data of short wave fade-out (SWF) are preparated from the field intensity records on following circuits received at Hiraiso. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensity

W S.....WWV 20 Mc, 15 Mc and 10 Mc (Washington)
S F.....Various commercial circuits (San Francisco)
H A.....WWVH 15 Mc and 10 Mc (Hawaii)
T O.....JJY 15 Mc and 10 Mc (Tokyo)
S H.....BPV 15 Mc and 10 Mc (Shanghai)
L N.....Various commercial circuits (London)

Start-time and Duration, Types and Importances are described from the data of a circuit whose Drop-out Intensity is underlined. Drou-out Intensities of 10 Mc ('), 15 Mc (none) and 20 Mc ('').

Start-times and Durations

Types

S : sudden drop-out and gradual recoverly
Slow: slow drop-out taking 5 to 15 minutes and gradual recoverly
G : gradual disturbances; fade irregular in both drop-out and recoverly

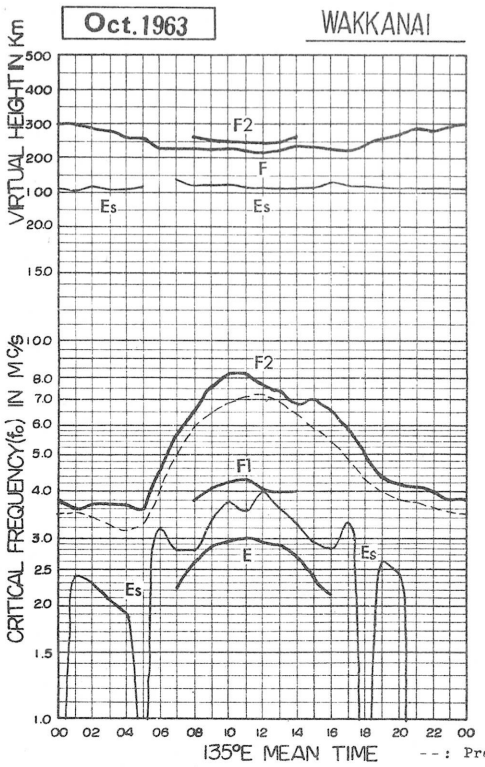
Importances

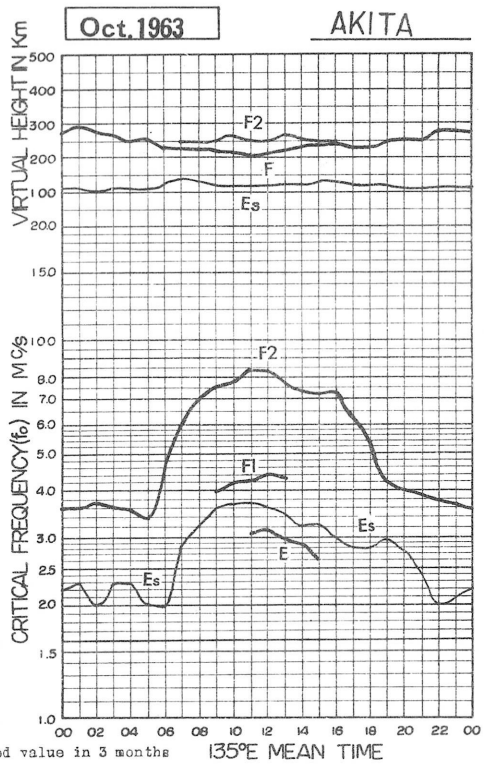
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

1—	1	1+
2—	2	2+
3—	3	3+

Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

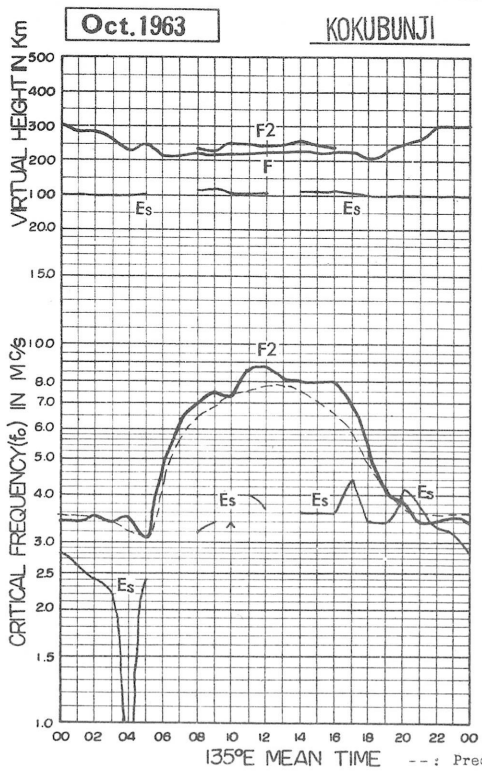
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

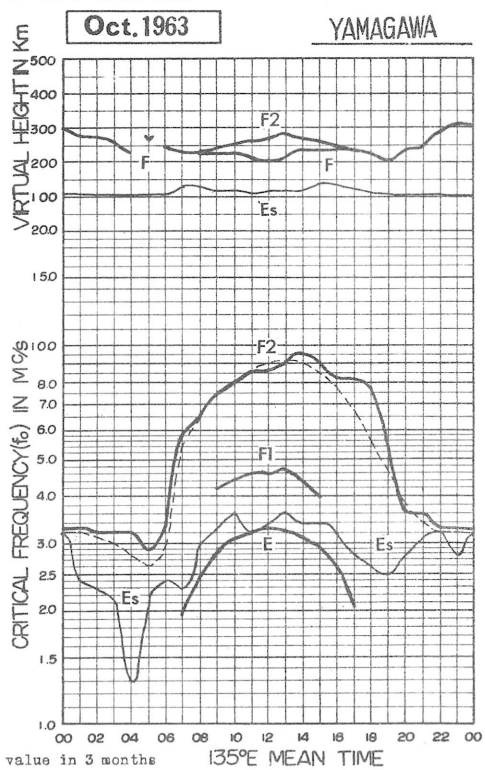




--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA

Oct. 1963 | foF2 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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	4.0	SF	SF	SF	SF	SF	4.6	5.6	5.3	6.4	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	6.1	5.8	5.9	5.4	5.7	5.4	5.0	4.3	4.4	4.3	4.3	4.0
3	3.6	3.6	3.7	4.0	4.3	3.8	4.8	4.8	5.4	6.3	6.7	6.2	6.7	7.1	6.1	6.8	6.1	5.9	5.0	4.3	4.3	U4.1S	3.6	3.6
4	3.4	3.4	3.4	3.6	3.7	3.6	4.5	5.4	5.5	6.0	6.7	6.7	7.3	6.3	6.0	6.2	5.6	6.3	5.7	4.9	U4.3S	I4.3S	SF	SF
5	SF	3.7	3.7	3.7F	I3.6F	I3.4F	4.5	5.0	5.6H	6.3	7.3	7.6	6.6	6.1	6.1	5.9	5.1	6.1	5.0	4.7	4.6	U4.4S	4.0	4.1
6	4.0	4.0	4.1	4.0	3.6	3.4	4.1	5.5	5.8	6.6	6.9	7.6	7.0	6.3	6.0	5.9H	6.5	6.0	4.3	3.5	3.5	3.6	3.6	3.6
7	3.4	3.5S	3.4	3.4	3.4	3.6	4.4	5.1	6.2	6.7	7.9	7.0	6.8	5.5	5.6	6.8H	6.6	6.3	5.0	4.3	3.8	4.3S	4.1	4.1
8	4.0	4.1	4.0	4.2	4.1	3.6	5.0	5.7	5.8	7.9	9.0	8.2	7.3	6.8	6.4	6.6	7.3	6.6	5.0	4.3	4.3	4.6	4.4	4.3
9	4.3	4.1	4.1	4.1	4.3	4.4	5.1	6.7	6.8	6.9	7.0H	9.8	7.5	6.8	6.5	6.4	7.1	7.0	5.5	4.9	4.4	3.8	4.0	3.8
10	3.9	3.6	3.8	3.7	3.6	3.6	4.8	U6.7S	6.3	7.8	8.1	6.5	7.3	7.5	6.8	6.9H	7.0	5.9	5.1	4.9	4.7	4.8	4.3	4.1
11	4.1	4.0	3.9	4.0	4.0	3.3	4.7	6.1	6.4	I8.2C	8.3	I7.6A	7.2	6.7	7.2	I7.7C	8.5	6.7	5.3	5.1	5.0	4.4	4.0	3.7
12	U4.0S	4.1	4.0	3.8	4.0	I4.0A	5.3	6.6	5.7	8.9H	8.1	I8.2A	8.9	9.5	7.1H	7.7H	6.7	5.7	4.9	4.5	4.4	I4.4S	4.3	I4.0A
13	I3.8A	3.6	3.8	3.5	3.3	3.2	5.8	C	C	C	C	C	C	C	C	C	7.4	6.9	5.8	5.5	4.7	4.3	3.3	3.3
14	3.4	3.5	3.6	3.6	4.0	3.3	4.8	6.4	7.6	8.8	8.8	I9.5C	9.0	9.3	7.7	7.9	7.1	7.3	6.7	6.1	4.0	4.5	4.3	4.1
15	4.8	3.7	3.7	3.6	U3.0S	3.4	4.4	6.1	7.6	7.8	8.5	9.0	8.0	7.7	7.6	7.1	6.4	6.4	I5.6A	5.6F	4.0F	I4.1SF	I3.9SF	3.7F
16	SF	SF	SF	SF	SF	3.6	4.9	5.6	7.0	7.6	8.3	9.7	10.0	I8.2A	7.4	7.5	7.3	6.0	5.8	5.2	I4.8A	I4.4AS	3.6	4.1
17	3.9	4.1	3.8	3.8	3.7	3.6	4.6	6.0	7.4H	8.3	8.3H	8.1	7.7	8.1	6.9	6.5	6.6	5.1	4.8	3.9	4.1	4.4	4.0	3.4
18	3.6	3.6	3.6	3.4	3.3	2.7	4.3	6.4	6.3	7.7	9.3	10.0	7.8	7.6	6.6	7.2	6.6	5.8	4.1	4.1	4.1	3.8S	I3.1A	2.9
19	3.2	3.4	3.5	2.6	I3.8A	I4.0A	4.8S	5.6	6.8S	8.5	8.7	8.8	7.7	7.0	7.5	6.6	6.4	5.7	4.1	4.0	3.9	3.6	3.7	3.6
20	3.6	3.4	3.6	I3.6A	3.8S	3.1	4.7	I6.0C	I6.3C	6.6	9.8	10.4	8.4	7.7	7.1	7.2	7.2	5.0	U3.7S	3.9	4.2	4.1	4.1	3.7
21	3.9F	I3.9F	I4.3F	3.8	I3.9FS	3.6	U4.7S	6.2	7.3H	8.0H	8.8	10.0	8.0	6.9	7.6H	7.3	6.5	5.0	4.3	4.3	4.3	3.9	3.3	I3.3S
22	3.4	3.4	3.3	3.9	I3.7SF	I4.0SF	I4.8S	6.7H	7.0H	8.7	9.8	9.1	8.1	7.3	7.0	7.1	6.0	5.1	5.0	4.1	4.1	4.3	I4.3S	U4.3S
23	FS	F	F	F	F	4.8	5.5	7.4	7.5	7.6	7.8	8.0	7.0	6.2	6.6	8.2	6.7S	5.6	4.0	4.1	3.9	4.1	4.0	4.3
24	4.2	4.8	4.8	4.9	5.0	4.8	4.2	6.3	7.1	7.4	7.4	8.4	9.0	9.1H	9.3H	9.9	8.4	6.3	5.5	5.2	4.8	U4.3S	I5.0SF	5.3
25	U3.4S	I2.8S	2.9	I3.1A	3.3	3.7	U4.3S	5.0	U7.5S	7.6H	8.1	7.7	8.1	7.5	8.9	7.4	7.4	6.6	5.7	5.3	4.5	3.9	3.8	3.5
26	I3.4A	3.4	3.4	3.4	3.4	3.1	4.1	6.1	7.0	8.3	8.9	7.6	9.5H	8.6H	7.6	7.3	6.8	5.0	4.3	4.3	4.1	3.8	4.3F	F
27	F	F	3.6	3.6	I3.8SF	I3.8S	C	C	C	C	C	C	C	8.3H	6.3	6.2	7.2	6.1	3.8	3.8	3.8	3.8	3.9	3.6
28	3.4	I3.7F	4.0	4.3	4.3	4.1S	4.0	5.5	7.0	6.9	8.3	9.9	8.3	8.4	7.3H	7.3	6.4	4.7	3.4	4.0	4.0	4.0	4.1	4.1
29	I4.0FS	3.9	3.6	3.4	I3.3SF	3.6	4.3	5.4	6.6	8.1	7.3H	9.6	9.7	7.6H	7.2	7.0	7.8	5.6	4.5	4.3	4.8	4.1	4.4	4.6
30	4.6	4.6F	4.3	3.8	3.6	3.0	I3.3A	3.2	3.3	3.4	3.6	W	4.9	5.1	6.0	6.1	6.0	4.1	4.6	4.1	3.3	U3.0S	3.1S	2.4
31	2.3S	2.1	2.1	2.1	1.9	1.8	3.1	5.1	6.7H	6.3	6.9	7.8	7.3	7.7	5.8	5.5	5.4	3.8	I3.5A	I3.2A	I3.1A	I3.0A	2.9	2.8
No.	26	26	27	27	27	29	29	28	28	28	27	26	28	29	29	29	30	30	30	30	30	30	29	28
Median	3.8	3.6	3.7	3.7	3.7	3.6	4.6	5.8	6.6	7.6	8.1	8.2	7.7	7.5	6.9	7.0	6.6	5.9	5.0	4.3	4.2	4.1	4.0	3.8
U.Q.	4.0	4.0	4.0	4.0	4.0	3.9	4.8	6.4	7.0	8.2	8.8	9.6	8.4	8.2	7.4	7.4	7.2	6.3	5.5	4.9	4.5	4.4	4.3	4.1
L.Q.	3.4	3.4	3.5	3.4	3.4	3.3	4.3	5.4	5.8	6.6	7.3	7.6	7.1	6.5	6.1	6.3	6.4	5.1	4.3	4.1	4.0	3.8	3.6	3.6
Q.R.	0.6	0.6	0.5	0.6	0.6	0.6	0.5	1.0	1.2	1.6	1.5	2.0	1.3	1.7	1.3	1.1	0.8	1.2	1.2	0.8	0.5	0.6	0.7	0.5

The Radio Research Laboratories, Japan

foF2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 1

IONOSPHERIC DATA

Oct. 1963 | foF1 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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										4.1	C	C	C	C	C	C								
2									C	C	C	C	4.2	A	A	A								
3									U3.8L	4.1H	4.2	3.8	3.9	4.0	4.0	U3.8L								
4									A	4.0L	4.1	4.2	U4.0L	4.1	4.0	4.0L								
5										4.1	4.1	4.2	4.2	4.1	4.0	U3.6L								
6										4.1	4.1	4.2	4.2H	U4.2L										
7									U3.9L	4.1	4.2	4.3	4.2	I4.0A										
8										4.3	4.2	4.3H	4.1	U4.0LH										
9										4.1H		U4.3L	4.2	L										
10									U3.8L	4.2	4.1	4.3L	U4.5L	I4.2A	4.0									
11										C	A	A	A	U4.1L	A	C								
12									I3.8A		A	A	A	4.1L										
13									C	C	C	C	C	C	C	C								
14									U4.0L	I4.0A	4.3	I4.3C	U4.3L	3.9										
15									A	A	A	I4.3A	I4.2A	I4.2A										
16										U4.2L	I4.2A	U4.2L	U4.3L	I4.1A	A									
17										U4.2IH	4.2	4.4	4.0	4.0	U3.9L									
18									A	U4.2L	4.3	U4.4L	4.0	U4.0L	A									
19											U4.3L	4.3	4.1L	U4.0L										
20											U4.3L	I4.3A	U4.2L	U4.0L										
21											U4.3L	4.3	4.1L											
22										4.0	4.2	U4.3L		U4.0L										
23										U4.0L	4.0	4.1	3.8											
24										U4.0L	4.0		U4.3L											
25											A	U4.1L	U4.0A	I4.0A	3.5									
26											I4.0A	I4.1A												
27									C	C	C	C	C											
28											U4.0L	U4.3L												
29												4.1L	4.0L		U3.6L									
30									3.0	3.8		3.8	3.7											
31										3.8	3.8	4.0	U4.0L	4.0										
No.									6	18	20	24	23	19	7	3								
Median									U3.8	4.1	4.2	4.3	4.1	U4.0	4.0	U3.8								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foF1

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 2

IONOSPHERIC DATA

Oct. 1963 | foE | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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	I2.50S	2.85	C	C	C	C	C	C	C	C	C					
2							C	C	C	C	C	C	2.95	I2.90S	2.50	I2.35A	I2.25A	S	S					
3							S	A	2.65	2.90	2.90	3.00	2.95	2.95	2.85	2.80	2.15	S	S					
4							S	2.35	2.65	2.95	3.00	3.00	2.90	A	A	A	2.15	S	S					
5							S	2.30	2.85	2.85	3.00	3.00	2.90	I2.80A	2.50	I2.40A	2.25	S	S					
6							S	2.30	2.50	2.90	2.95	2.95	I2.85A	2.70	A	A	S	S	S					
7							S	2.20	2.70	2.85	3.00	3.05	A	A	A	A	A	A	S					
8						E	S	2.25	2.65	2.90	2.95	3.00	3.00	I3.00B	2.80	I2.45B	S	S						
9							S	S	2.75	2.90	3.00	3.05	A	A	R	2.35	S	S	S					
10							S	S	2.60	2.90	3.00	3.05	A	A	A	2.40	S	S						
11							S	S	A	I2.90C	3.00	3.00	3.05	3.05	2.90	I2.55C	S	S						
12							S	2.30	2.70	2.85	2.95	A	A	A	A	A	S	S						
13						E	S	C	C	C	C	C	C	C	C	C	2.00	S						
14							S	S	2.65	2.90	2.95	C	A	A	A	2.45	S	S						
15							S	2.20	2.65	2.95	A	A	A	A	2.95	2.65	S	S						
16							S	S	2.55	2.65	2.70	2.95	I2.95A	I2.90A	2.85	2.40	S	S						
17							S	2.05	2.65	2.80	2.90	I3.00A	I2.95A	2.95	2.85	2.65	S	S						
18							S	S	2.50	2.75	I2.95A	I3.00A	A	A	A	A	A	S						
19							S	2.15	2.45	2.85	2.90	A	A	R	2.70	S	S	S						
20							S	C	C	2.95	2.95	3.00	2.95	I2.90A	I2.50A	S	S	S						
21							S	S	2.55	2.70	2.75	A	A	A	A	B	B	S						
22							S	S	2.50	2.85	2.95	3.00	A	A	B	2.50	S	S						
23							S	B	B	2.70	3.00	3.00	3.00	2.75	2.65	B	S	S						
24							S	S	2.50	2.75	2.85	2.95	I3.00A	I2.85A	I2.55A	B	S	S						
25							S	S	A	2.80	A	A	R	A	2.70	B	S	S						
26							S	S	A	A	A	A	3.00	2.90	A	A	A	S						
27							C	C	C	C	C	C	C	2.70	B	B	S	S						
28							S	S	2.35	2.60	I2.80B	I3.00B	I3.00B	2.95	2.75	2.30	S	S						
29							S	S	2.20	A	A	A	A	A	2.55	2.25	S	S						
30					E	E	S	A	S	I2.35B	I2.55A	2.65	2.90	A	B	S	S	S						
31							S	S	S	2.45	2.55	2.70	2.60	I2.60A	2.50	2.35	S	S.						
No.					1	3		9	21	26	23	19	16	15	16	15	5							
Median					E	E		2.25	2.60	2.85	2.95	3.00	2.95	2.90	2.70	2.40	2.15							
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foE

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 3

IONOSPHERIC DATA

Oct. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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	J4.3	J2.5	J3.8	J2.5	1.5	J2.9	S	2.7	2.7	3.4	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	4.1	4.1	J5.8	J7.7	J 8.4	J 4.5	J 5.3	J 5.3	4.0	J 4.3	E	E
3	E	J 2.3	E	J 6.3	J 3.3	E	3.7	J 2.6	G	G	G	G	G	G	3.7	G	G	S	S	J 3.3	J 5.8	J 3.0	J 3.3	J 4.3
4	J 2.8	2.6	J 2.9	J 2.5	E	E	S	3.4	3.9	3.9	4.1	3.6	4.0	4.0	3.3	2.9	G	3.0	J 3.2	J 3.2	J 5.3	J 3.0	E	E
5	E	J 2.3	J 2.4	3.8	J 4.0	J 2.4	2.6	2.8	G	G	3.8	4.1	J 4.4	3.5	3.3	J 3.4	2.8	S	S	J 2.3	J 2.4	J 3.3	J 3.9	E
6	J 2.5	J 3.5	J 2.3	3.7	J 2.6	J 3.0	S	G	3.1	3.4	3.2	3.4	3.2	3.3	J 3.3	J 3.4	S	S	S	E	J 4.3	E	E	E
7	E	E	E	E	E	J 3.0	S	G	G	3.4	G	G	3.2	J 5.2	J 3.8	J 3.3	J 4.6	J 4.0	J 3.3	J 2.8	E	E	E	E
8	E	E	E	E	E	E	S	G	G	G	2.6G	G	G	B	G	B	2.7	S	E	J 2.3	E	J 2.3	J 2.6	E
9	E	E	J 3.0	J 2.3	J 2.0	2.2	S	S	G	G	4.0	G	3.4	3.8	G	G	S	S	S	E	E	J 4.0	E	E
10	E	E	E	E	E	E	S	2.8	3.3	3.5	3.3	G	3.5	J 5.3	3.0	G	2.4	2.5	E	E	E	E	E	J 2.6
11	E	E	E	E	J 2.0	J 2.5	S	3.0	3.8	C	J 6.4	J 8.5	J 6.0	4.0	J 9.5	C	J 5.1	J 3.5	E	E	E	E	E	E
12	J 2.2	2.4	E	J 2.0	J 2.5	J 4.0	S	3.1	J10.3	J 7.3	9.1	J11.6	J 8.1	J 4.3	J 4.1	J 3.1	2.7	J 4.3	J 3.3	J 2.6	J 2.5	3.3	J 2.3	J 4.1
13	J 4.3	2.5	1.8	2.0	1.8	E	S	C	C	C	C	C	C	C	C	C	2.5	S	E	E	E	E	E	J 2.5
14	2.3	J 2.0	J 2.3	J 1.8	2.1	2.1	S	S	G	J 4.2	4.3	C	J 4.3	J 4.3	5.1	6.9	2.3	J 2.6	E	J 3.3	J 4.3	2.5	E	E
15	E	2.5	2.5	2.4	2.5	E	S	3.6	6.4M	6.4M	J 7.1	J 7.5	J 7.5	J 4.8	G	G	S	2.4	6.3M	J 6.3	3.4M	J 5.3	J 3.0	J 8.3
16	J 5.1	3.8	J 2.4	J 2.3	J 2.5	3.0	S	S	3.6	J 5.3	J 7.8	J 5.4	J 5.1	J14.3	J 5.1	3.3	2.5	S	J10.3	J 8.1	J 5.1	J 6.3	J 4.0	J 2.5
17	E	J 6.0	J 4.3	J 5.0	J 2.5	E	S	G	G	3.4	3.5	4.0	J 5.3	G	G	G	2.5	2.5	E	J 5.3	E	E	E	E
18	J 3.5	E	E	2.0	2.0	E	S	S	J 4.9	3.7	4.8	3.8	3.3	J 4.1	J 5.4	2.9	J 4.0	J 3.0	E	J 2.5	4.8M	J 4.3	J 5.3	J 6.0
19	J 3.3	J 3.1	J 7.3	J 2.4	6.0	J 8.3	S	2.8	3.8	3.4	4.2	3.8	J 5.3	G	G	S	S	S	2.7	J 2.3	J 2.6	E	E	2.6
20	E	E	E	J 5.6	J 6.1	E	2.7	C	C	4.1	3.8	5.0M	4.2	3.5	3.3	S	S	4.1	J10.5	J 4.3	J 5.4	J 5.3	J 4.3	J 2.5
21	E	J 4.3	J 3.2	J 2.8	1.8	E	S	S	2.9	3.0	3.4	3.4	4.0	3.0	J 3.3	B	B	S	E	E	E	E	S	S
22	J 4.3	J 4.3	J 3.0	E	E	1.8	S	S	G	G	4.3	3.8	J 4.3	3.9	4.0	3.4	S	J 6.0	E	J 4.3	J 3.3	E	E	E
23	E	E	E	1.8	1.5	E	S	B	B	3.1	3.2	G	G	G	G	2.8	3.0	S	E	E	J 2.8	E	E	E
24	2.9	E	E	E	E	E	S	S	3.0	3.6	3.2	G	J 4.3	3.2	3.0	B	S	S	E	E	E	E	E	E
25	J 2.5	3.2M	J 4.3	J 3.8	J 6.3	E	S	S	2.6	3.5	J 6.3	5.2	G	4.4	G	5.8M	J 3.6	S	E	J 5.3	J 2.8	E	E	3.2
26	6.4	2.0	2.8	E	E	E	S	S	3.3	J 4.3	J 6.3	J 5.6	G	G	4.0	3.6	3.3	3.3	E	E	E	J 5.3	J 5.3	J 4.3
27	2.4	J 2.3	4.3	3.9	1.5	E	C	C	C	C	C	C	C	G	B	B	S	S	E	J 3.3	E	E	E	E
28	E	2.8	E	E	3.8	E	S	S	2.7	2.9	B	B	B	G	G	2.9	3.0	3.2	E	E	E	E	E	E
29	E	J 3.3	2.1	2.2	E	E	S	S	2.8	4.8M	3.8	3.3	J 5.3	4.0	G	2.9	S	S	E	J 4.0	E	E	E	E
30	E	J 4.0	J 2.3	E	E	E	J 4.3	3.0	S	B	3.3	G	G	2.8	B	S	2.9	S	E	E	E	E	2.5	E
31	E	E	E	E	E	2.4	S	S	S	G	3.2	3.1	3.3	3.0	3.5	2.6	J 7.6	3.3	J12.2	J11.3	J 6.3	J 4.3	E	E
No.	30	30	30	30	30	30	4	14	24	26	26	25	27	28	27	21	20	15	26	30	30	30	29	29
Median	E	2.4	2.3	2.1	1.9	E	3.2	2.8	2.8	3.4	3.8	3.6	4.0	3.6	3.3	2.9	2.8	3.3	E	2.6	2.4	E	E	E
U.Q.	2.9	3.2	3.0	2.8	2.5	2.4	4.0	3.0	3.7	4.1	4.8	5.1	5.1	4.2	4.0	3.4	3.8	4.1	3.3	4.3	4.3	4.0	2.8	2.6
L.Q.	E	E	E	E	E	E	2.6	G	G	2.9	3.2	G	3.2	G	G	G	2.5	2.6	E	E	E	E	E	E
Q.R.							1.4			1.2	1.6		1.9				1.3	1.5						

The Radio Research Laboratories, Japan

foEs

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 4

IONOSPHERIC DATA

Oct. 1963 | f_bEs | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.6	E	E	E	E	E	S	G	2.7	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	G	4.0	4.4	4.0	4.6	4.3	4.0	2.4	E	3.0		
3		E		E	E		2.0	2.5							G			S	S	2.8	2.8	E	E	E
4	2.5	2.6	2.2	E			S	G	G	G	G	G	3.8	3.7	2.9	2.7		G	2.4	3.2	E	2.7		
5		E	E	E	E	E	G	G			G	4.0	G	3.2	G	2.7	G	S	S	E	2.4	E	2.8	
6	E	2.6	E	E	E	E	S		G	G	G	G	3.0	G	2.9	2.7	S	S	S		3.0			
7						E	S			G			3.1	4.6	3.5	2.9	4.2	3.0	3.2	2.4				
8							S				2.6			B		B	G	S		E		E	E	
9			E	E	E	E	S	S			G		3.3	3.2			S	S	S			E		
10							S	G	G	G	G		3.3	5.1	3.0		G	G						2.5
11					E	E	S	2.7	3.5	C	5.0	A	5.2	G	5.7	C	3.1	2.2						
12	E	E		E	2.2	A	S	G	4.2	3.6	6.1	A	7.3	3.5	3.1	2.5	G	G	3.2	2.5	E	A	E	A
13	A	2.3	E	E	E		S	C	C	C	C	C	C	C	C	C	G	S						E
14	E	E	E	E	E	E	S	S		4.0	4.0	C	3.3	3,0	4.3	4.8	G	G		2.6	3.0	E		
15		E	E	E	E		S	3.3	4.2	5.5	7.0	5.0	6.7	4.0			S	G	A	4.0	E	3.0	E	2.2
16	E	2.9	E	E	E	E	S	S	G	4.0	6.1	G	4.0	A	4.0	G	G	S	3.1	4.0	A	AS	3.2	E
17		E	E	E	E		S			G	G	3.3	3.2				G	G		E				
18	E			E	E		S	S	4.7	G	3.8	3.5	3.1	3.2	4.2	2.8	3.9	G		2.3	3.4	3.3	A	E
19	2.5	2.9	E	E	A	A	S	G	G	G	2.8	3.6	3.6			S	S	S	E	E	E			E
20				A	2.5		G	C	C	G	G	4.6	G	3.3	2.9	S	S	3.0	3.0	2.7	E	2.7	E	E
21		2.5	2.4	2.0	E		S	S	G	G	G	3.2	3.2	3.0	3.0	B	B	S					S	S
22	E	E	E			E	S	S			3.6	3.8	3.6	3.4	4.0	G	S	G		2.7	2.6			
23				E	E		S	B	B	G	G					G	G	S			E			
24	E						S	S	G	3.5	G		3.4	3.0	3.0	B	S	S						
25	3.0	A	2.5	A	E		S	S	2.5	G	4.9	3.2		4.3		5.1	3.0	S		3.2	E			2.5
26	A	E	E				S	S	2.3	3.0	4.2	4.2			3.1	2.5	2.5	G				E	E	2.2
27	E	E	3.0	2.2	E		C	C	C	C	C	C	C		B	B	S	S		2.9				
28		E			E		S	S	G	G	B	B	B			G	G	2.8						
29		E	E	E			S	S	G	4.5	3.2	3.3	3.1	3.0		G	S	S		E				
30		E	2.1				A	2.1	S	B	2.9			2.8	B	S	G	S					2.5	
31						E	S	S	S		G	G	G	3.0	G	G	G	2.3	A	A	A	A		
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f_bEs Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 5

IONOSPHERIC DATA

Oct. 1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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	E1.90S	E	E1.50S	E	E	E1.70S	E2.00S	E2.20S	2.15	2.00	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	2.60	2.00	2.00	2.00	2.10	E1.90S	E2.00S	E1.95S	E2.00S	E2.00S	E2.00S	E2.00S
3	E2.00S	E1.70S	E1.20S	E1.20S	E	E1.60S	E1.90S	E1.90S	2.05	2.00	2.20	2.50	2.50	2.00	2.60	2.00	1.95	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
4	E2.00S	E1.60S	E1.70S	E	E	E1.50S	E1.90S	2.00	2.00	2.15	2.00	2.00	2.15	2.50	2.00	2.10	2.00	E1.90S	E1.90S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S
5	E2.00S	E1.80S	E1.60S	E	E	E1.70S	E2.00	2.00	2.00	2.15	2.20	2.50	2.20	2.50	2.10	2.00	2.00	E2.00S	E1.90S	E2.00S	E1.80S	E2.00S	E2.00S	E2.00S
6	E2.00S	E1.80S	E1.50S	E	E	E1.50S	E2.00S	2.00	2.00	2.00	2.40	2.50	2.00	2.15	2.05	2.00	E2.50S	E2.10S	E1.80S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S
7	E2.00S	E	E	E	E	E1.60S	E2.00S	1.90	2.15	1.90	2.00	2.10	2.10	2.30	2.00	2.00	2.15	E1.95S	E2.00S	E2.00S	E1.90S	E2.00S	E1.95S	E2.00S
8	E2.00S	E1.50S	E1.50S	E	E	E1.40S	E2.00S	2.00	1.95	2.00	2.30	2.50	2.00	3.00	2.40	2.70	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
9	E2.00S	E1.20S	E1.80S	E	E	E1.60S	E2.00S	E2.50S	2.00	2.10	2.10	2.40	2.00	2.00	2.00	2.00	E2.30S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
10	E2.00S	E2.00S	E	E1.70S	E1.70S	E1.60S	E2.00S	E2.30S	2.15	2.00	2.50	2.50	2.50	2.50	2.30	2.00	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
11	E2.00S	E	E2.00S	E	E	E1.70S	E1.90S	E2.00S	2.00	I2.10C	2.45	2.15	2.10	2.10	2.10	I1.95C	E2.00S	E1.90S	E2.00S	E1.90S	E2.00S	E1.95S	E2.00S	E2.00S
12	E1.90S	E1.80S	E1.65S	E	E	E1.50S	E1.90S	1.90	1.90	2.00	2.10	2.15	2.15	2.15	2.00	1.95	E2.00S	E1.90S	E2.00S	E1.95S	E2.00S	E2.00S	E1.90S	E2.00S
13	E2.00S	E1.70S	E	E	E	E1.20S	E2.00S	C	C	C	C	C	C	C	C	C	1.80	E2.00S	E1.90S	E2.00S	E2.00S	E1.90S	E1.85S	E1.90S
14	E2.00S	E1.60S	E1.60S	E	E1.80S	E1.70S	E2.00S	E2.20S	1.95	2.00	2.30	I2.30C	2.00	2.00	2.15	2.00	E2.00S	E1.90S	E1.90S	E1.90S	E1.95S	E2.00S	E2.00S	E2.00S
15	E2.00S	E1.90S	E1.50S	E	E	E1.70S	E2.00S	1.90	2.00	2.15	2.30	2.40	2.40	2.05	2.00	1.90	E2.10S	E1.90S	E1.90S	E2.00S	E2.00S	E1.90S	E1.90S	E1.90S
16	E1.95S	E1.60S	E1.50S	E	E	E1.70S	E2.00S	E2.50S	2.00	1.90	2.00	2.40	2.50	2.50	2.00	2.00	E1.90S	E2.00S	E2.00S	E1.90S	E1.90S	E2.00S	E1.90S	E1.90S
17	E2.00S	E1.90S	E	E	E	E1.90S	E2.00S	1.90	2.00	2.50	2.15	1.90	2.20	2.10	2.00	1.90	E1.90S	E1.85S	E1.90S	E1.90S	E2.00S	E2.00S	E2.00S	E1.90S
18	E2.00S	E1.60S	E	E	E	E1.70S	E2.00S	E2.40S	1.90	2.50	2.60	2.50	2.30	2.20	2.30	2.15	E2.15S	E1.90S	E2.00S	E1.85S	E2.00S	E2.10S	E2.00S	E2.00S
19	E1.95S	E1.60S	E1.50S	E1.20S	E1.60S	E2.00S	E2.00S	1.90	2.00	2.50	2.10	2.50	2.40	2.60	2.50	E2.50S	E2.20S	E1.90S	E1.90S	E2.00S	E2.00S	E1.85S	E2.00S	E2.00S
20	E2.00S	E2.00S	E	E	E	E1.70S	E1.90S	C	C	2.15	2.20	2.50	2.20	2.30	2.25	E2.65S	E2.70S	E1.85S	E1.85S	E2.00S	E2.00S	E1.90S	E1.90S	E1.80S
21	E2.00S	E1.70S	E	E	E	E1.80S	E1.90S	E2.30S	2.00	2.10	2.25	2.50	2.50	2.20	2.00	2.40	2.10	E2.10S	E2.00S	E2.10S	E2.00S	E2.00S	E3.00S	S
22	E2.00S	E1.50S	E1.40S	E	E	E	E2.00S	E2.30S	2.00	2.15	2.35	2.50	2.40	2.30	3.00	2.00	E2.30S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
23	E2.00S	E1.80S	E	E	E	E	E2.00S	2.30	2.70	2.10	2.50	2.40	2.60	2.10	2.15	2.50	E2.15S	E1.85S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
24	E2.00S	E1.60S	E1.80S	E1.50S	E	E	E1.90S	E2.20S	2.00	2.15	2.50	2.50	2.30	2.10	2.15	2.60	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
25	E1.90S	E1.50S	E	E	E	E1.60S	E1.80S	E2.30S	2.05	2.15	2.60	2.15	2.30	2.15	2.30	2.30	E2.00S	E2.10S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S
26	E2.00S	E	E1.60S	E	E	E1.70S	E2.15S	E2.00S	2.05	2.10	2.50	2.10	2.50	2.60	2.15	1.80	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.90S
27	E2.00S	E1.50S	E	E	E	E1.20S	C	C	C	C	C	C	C	1.90	2.80	2.75	E2.10S	E2.10S	E1.80S	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S
28	E2.00S	E1.60S	E	E	E	E1.20S	E1.85S	E2.20S	2.00	2.15	3.00	4.00	3.40	2.00	2.00	2.00	E2.00S	E2.00S	E1.80S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
29	E2.00S	E	E	E	E	E1.25S	E1.90S	E2.30S	1.85	2.00	2.00	2.50	2.00	1.90	2.00	1.85	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
30	E2.00S	E	E	E	E	E	E1.90S	1.80	E2.30S	2.50	1.90	2.30	2.15	2.10	2.50	E2.30S	E2.00S	E2.00S	E1.80S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
31	E2.00S	E1.60S	E	E	E	E	E2.00S	E2.00S	E2.50S	2.00	2.15	2.35	2.40	2.50	2.20	2.00	E1.95S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
No.	30	30	30	26	27	30	29	27	25	28	27	27	28	29	29	26	30	30	30	30	30	30	30	29
Median	E2.00	E1.60	E1.30	E	E	E1.60	E2.00	E2.00	2.00	2.10	2.25	2.40	2.30	2.15	2.15	2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00	E2.00
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 6

IONOSPHERIC DATA

Oct. 1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.90	SF	SF	SF	SF	SF	3.50	3.60	3.30	3.45	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	3.45	3.30	3.45	3.45	3.50	3.35	3.15	3.25	3.20	3.00	3.15	3.10
3	3.25	3.15	3.10	3.05	3.25	3.35	3.85	3.80	3.70	3.50	3.55	3.60	3.45	3.55	3.45	3.40	3.30	3.40	3.50	3.10	3.05	U3.40S	3.15	3.20
4	3.20	2.95	2.95	3.10	3.25	3.60	3.55	3.70	3.45	3.30	3.40	3.55	3.40	3.40	3.40	3.40	3.25	3.35	3.40	3.25	U3.25S	I3.25S	SF	SF
5	SF	3.05	2.95	2.90F	I3.10F	I3.20F	3.55	3.70	3.25H	3.45	3.55	3.30	3.35	3.45	3.45	3.60	3.45	3.35	3.40	3.15	3.20	U3.20S	3.00	2.95
6	3.05	3.00	3.05	3.00	3.35	3.25	3.45	3.60	3.50	3.50	3.50	3.40	3.45	3.20	3.35	3.35H	3.40	3.55	3.40	3.30	3.15	2.85	3.05	3.05
7	3.10	3.00S	3.10	2.95	3.25	3.15	3.50	3.25	3.40	3.45	3.40	3.50	3.40	3.50	3.25	3.45H	3.50	3.50	3.40	3.25	3.00	2.90S	3.00	2.95
8	2.95	2.95	3.00	3.00	3.40	3.10	3.60	3.65	3.30	3.40	3.15	3.40	3.45	3.55	3.15	3.35	3.30	3.35	3.35	3.05	3.00	3.05	2.95	2.90
9	2.90	2.85	2.95	2.90	3.10	3.40	3.55	3.55	3.50	3.40	3.15H	3.30	3.35	3.25	3.25	3.30	3.35	3.45	3.35	3.35	3.20	2.95	3.00	2.95
10	2.90	3.00	3.05	3.05	3.20	3.05	3.50	U3.45S	3.50	3.45	3.50	3.40	3.20	3.35	3.15	3.35H	3.45	3.40	3.30	3.15	3.00	3.00	3.00	3.10
11	2.95	2.85	2.85	3.00	3.25	3.10	3.45	3.30	3.35	I3.30C	3.50	I3.25A	3.40	3.30	3.30	I3.35C	3.40	3.45	3.05	3.05	3.30	2.95	2.90	2.90
12	U2.80S	2.85	2.85	2.85	2.85	I3.05A	3.45	3.50	2.90	3.30H	3.45	I3.30A	3.10	3.25	3.25H	3.35H	3.45	3.35	3.20	2.90	2.75	I2.85S	2.90	I2.85A
13	I2.80A	2.80	2.95	3.15	2.75	2.80	3.45	C	C	C	C	C	C	C	C	C	3.30	3.30	3.20	3.25	3.10	3.30	2.95	2.80
14	2.85	2.80	2.85	2.95	3.20	2.90	3.45	3.40	3.30	3.20	3.00	I3.10C	3.10	3.15	3.25	3.35	3.35	3.35	3.30	3.10	3.00	3.00	2.75	3.00
15	2.70	2.70	2.60	3.00	U3.05S	3.30	3.40	3.30	3.30	3.30	3.20	3.35	3.35	3.40	3.40	3.40	3.40	3.35	I3.15A	3.30F	3.00F	I2.80SF	I2.90SF	2.90F
16	SF	SF	SF	SF	SF	3.05	3.45	3.55	3.35	3.30	3.25	3.10	3.30	I3.35A	3.25	3.35	3.40	3.35	3.25	3.10	I2.90A	I2.90AS	3.10	2.80
17	2.85	2.75	2.90	2.95	3.05	3.10	3.50	3.20	3.45H	3.35	3.35H	3.35	3.25	3.45	3.50	3.35	3.45	3.35	3.35	3.10	2.95	3.20	3.25	3.20
18	2.90	2.95	3.05	3.10	3.15	2.95	3.25	3.45	3.25	3.25	3.10	3.40	3.35	3.35	3.40	3.40	3.45	3.45	3.05	3.15	3.10	3.00S	I3.10A	2.95
19	2.80	2.95	2.80	3.00	I2.95A	I3.15A	3.35S	3.45	3.30S	3.30	3.45	3.50	3.40	3.45	3.30	3.50	3.45	3.30	3.15	3.10	3.10	3.05	3.05	2.85
20	3.00	2.90	3.05	I3.05A	3.10S	3.25	3.40	I3.35C	I3.25C	3.15	3.35	3.45	3.35	3.40	3.25	3.35	3.45	3.50	U3.15S	2.95	3.05	2.90	2.90	2.95
21	2.60F	I2.80F	I2.70F	2.95	I2.85 F S	3.05	U3.25S	3.25	3.35H	3.25H	3.30	3.40	3.50	3.50	3.30H	3.35	3.40	3.30	3.05	3.00	3.05	3.15	I2.95S	I2.90S
22	2.95	2.90	2.90	2.85	I3.05 S F	I3.10 S F	I3.45S	3.45H	3.30H	3.45	3.20	3.55	3.35	3.40	3.35	3.50	3.35	3.35	3.40	3.05	2.95	3.00	I3.20S	U2.80S
23	FS	F	F	F	F	3.00	3.30	3.50	3.60	3.50	3.45	3.50	3.40	3.40	3.25	3.55	3.60S	3.55	3.25	3.15	2.95	3.05	3.05	3.00
24	2.90	2.90	2.85	2.90	2.90	3.50	3.40	3.50	3.50	3.50	3.40	3.20	3.10	3.00H	3.00H	3.30	3.35	3.00	2.45	2.50	2.90	U2.50S	I2.85SF	3.30
25	I3.00 S A	I2.70S	2.70	I2.75A	2.90	3.10	U3.50S	3.65	U3.45S	3.40H	3.35	3.40	3.35	3.25	3.40	3.40	3.35	3.35	3.25	3.20	3.30	2.90	2.90	2.85
26	I2.80A	3.05	3.10	3.25	3.25	3.30	3.40	3.60	3.40	3.50	3.40	3.15	3.40H	3.35H	3.30	3.45	3.60	3.50	3.30	3.25	3.40	2.95	2.80F	F
27	F	F	2.90	2.85	I3.05 S F	I3.40S	C	C	C	C	C	C	C	3.50H	3.45	3.55	3.40	3.60	3.30	3.10	3.10	3.10	3.10	3.05
28	2.95	I3.05F	2.90	2.90	3.30	3.60S	3.25	3.65	3.55	3.45	3.40	3.35	3.35	3.25	3.40H	3.55	3.60	3.70	3.25	3.20	3.25	3.10	2.95	2.95
29	I3.00 F S	2.90	3.05	2.95	I2.95 S F	3.15	3.35	3.55	3.50	3.35	3.30H	3.40	3.35	3.45H	3.65	3.45	3.45	3.55	3.35	3.25	3.15	3.00	2.85	3.00
30	2.85	2.85F	2.75	2.70	2.60	2.55	I2.80A	3.05	2.75	3.25	3.40	W	3.05	3.10	3.15	3.45	3.50	2.75	3.10	2.95	3.10	U3.00S	2.75	2.65
31	2.75S	2.85	2.80	2.80	3.00	2.95	3.25	3.40	3.40H	3.55	3.45	3.30	3.50	3.60	3.75	3.70	3.55	3.30	I3.30A	I3.25A	I3.15A	I3.00A	2.90	3.00
No.	26	26	27	27	27	29	29	28	28	28	27	27	28	29	29	29	30	30	30	30	30	30	29	28
Median	2.90	2.90	2.90	2.95	3.10	3.10	3.45	3.50	3.40	3.40	3.40	3.40	3.35	3.40	3.30	3.40	3.40	3.35	3.30	3.15	3.10	3.00	2.95	2.95
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 7

IONOSPHERIC DATA

Oct. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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										3.70	C	C	C	C	C	C								
2									C	C	C	C	3.95	A	A	A								
3									U3.95L	3.80H	3.85	4.35	4.25	3.80	3.75	U3.70L								
4									A	4.00L	3.95	3.85	I3.95A	I3.90A	3.80	3.75L								
5										3.80	3.80	I3.90A	3.90	3.80	3.75	U3.95L								
6										3.80	3.90	3.80	3.85H	U3.80L										
7									U4.00L	3.90	3.75	3.90	3.90	I3.90A										
8										3.70	3.80	3.90H	4.15	U4.00H										
9										3.90H		U3.95L	3.95	L										
10									U3.95L	3.80	3.95	4.00L	U3.70L	I3.80A	3.80									
11										C	A	A	A	U4.10L	A	C								
12									I3.85A		A	A	A	U3.65L										
13									C	C	C	C	C	C	C	C								
14									U3.75L	I3.90A	4.00	I3.95C	U3.90L	3.90										
15									A	A	A	A	A	A										
16										A	A	U3.90L	I3.90A	A	A									
17										U4.00H	3.80	3.90	4.10	3.85	U4.00L									
18									A	U3.90L	3.95	U3.90L	4.00	U3.75L	A									
19											A	3.95	4.10L	U4.00L										
20											U3.65L	I3.90A	U4.00L	U4.00L										
21											U3.80L	3.80	U3.90L											
22										3.80	3.80	U3.90L		U4.00L										
23										U4.00L	4.00	4.05	4.25											
24										U3.95L	4.00		U3.75L											
25											A	U3.95L	U3.95L	I3.85A	3.75									
26											I4.00A	I4.15A												
27									C	C	C	C	C											
28											U4.00L	B												
29												3.70L	4.00L		U3.90L									
30									3.85	4.15		3.40	3.40											
31										3.95	4.20	4.25	U4.00L	3.80										
No.									6	17	18	22	22	17	7	3								
Median									U3.90	3.90	3.90	3.90	3.95	U3.85	3.80	U3.75								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F1 Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										260	A	C	C	C	C	C								
2									C	C	C	C	240	250	260	250								
3									245	260	240	250	280	240	260	265								
4									230	265	260	250	265	260	260	265								
5										265	240	260	260	260	270	240								
6										250	250	250	260	280L										
7									260	250	260	245	250	265										
8										260	260	240	250	250										
9										260		250	240	250L										
10									245	250	240	255	285	I260A	265									
11										C	A	A	A	265	A	C								
12									320		I255A	I255A	I260A	255										
13									C	C	C	C	C	C	C	C								
14									260	260	240	I260C	250	260										
15									250	I255A	I265A	250	I250A	250										
16										255	I255A	265	250	I250A	255									
17										250	240	260	260	250	240									
18									265	265	260	230	250	255	260									
19											235	245	250	240										
20											270	240	250	240										
21											255	240	240											
22										245		225		260										
23										240	250	240	230											
24										240	250		290											
25											260	250	260	245	250									
26											230	225												
27									C	C	C	C	C											
28											240	255												
29												260	250		230									
30									420	325		W	350											
31										255	255	230	245	250										
No.									9	19	22	25	24	21	10	4								
Median									260	255	250	250	250	250	260	260								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F2

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 9

17

IONOSPHERIC DATA

Oct. 1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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	300	310	280	260	250	225	230	230	220	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	230	A	A	A	I250A	I245A	I245A	260	265	300A	255	250
3	260	280	265	270	250	230	210	215	225	210H	210	180	190	215	215	245	235	230	230	275A	280A	240	265	270
4	300A	340A	310	270	245	210	210	225	I230A	230	210	210	I215A	I225A	225	250	240	230	240	I245A	250	230	305	300
5	280	290	280	300	260	230	225	225	225	225	240	I230A	220	220	230	240	230	235	230	260	260	260	I275A	270
6	280	300	270	280	235	240	235	240H	230	220	215	210	205H	195	235	245H	250	220	220	250	I275A	320	285	290
7	280	280	260	270	250	270	215	220	235	220	210	210	200	I210A	250	260H	I240A	235	I235A	240	275	285	275	270
8	275	265	270	270	220	260	230	235	230	230	230	200H	190	180H	240H	225H	250	225	225	270	275	285	295	285
9	280	260	290	290	270	235	220	230	235	225H	240H	245	220	215	220	245	250	230	225	230	260	290	280	280
10	295	260	270	270	250	260	230	230	230	230	220	220	220	I225A	215	240H	235	220	245	250	260	260	280	305
11	290	280	305	260	250	260	210	230	240H	C	A	A	A	200	I255A	I255C	240	230	270	260	250	275	280	320
12	310	300	285	310	305	I290A	220	220	I220A	260H	A	A	A	250	240H	240H	225	240	I260A	300	310	I295A	290	I325A
13	I340A	330A	300	250	300	305	240	C	C	C	C	C	C	C	C	C	240	220	235	240	260	240	260	330
14	300	310	300	280	250	280	230	225	220	I250A	240A	I230C	220	215	240A	I250A	230	230	235	250	I280A	260	300	265
15	350	350	350	300	260	235	260	230	I240A	A	A	A	A	A	250	245	220	225	I250A	I250A	275	I280A	260	325
16	310	360A	260	270	260	240	220	235	225	I240A	I230A	220	I235A	I235A	I245A	240	230	220	A	A	A	I285AS	I315A	300
17	325	305	320	300	280	260	240	225	210H	220H	210	210	200	215	230	235	235	230	230	270	275	255	240	250
18	290	290	295	260	250	310	230	240	I230A	230	225	230	200	210	I240A	250	I225A	220	255	275	A	A	A	310
19	350A	I335A	330	300	I300A	I265A	235	220	250	250H	I235A	225	215	215	220H	240	235	225	240	260	265	285	300	300
20	290	300	280	I295A	290	220	230	I240C	I240C	240	230	I235A	230	220	240	235	230	225	I265A	280	290	305	300	305
21	335	330	335	285	260	275	240	230	220H	235H	235	215	210	225H	250H	240	230	215	260	280	255	250	I280S	I305S
22	320	300	325	290	290	280	225	235H	240	245	240A	230A	230A	225	I245A	230	215	235	230	265	310	295	260	285
23	265	290	280	290	255	245	235	235	225	225	200	225	190	190H	240	250	220	215	250	240	295	280	280	280
24	300	280	265	260	250	220	225	240	230H	240A	225	210H	250	240H	255H	230	220	250	350	370	275	395	325	235
25	I275A	I350A	I380A	I350A	285	260	220	215	210H	240H	I245A	235	220	I245A	240	I240A	250	225	240	I250A	250	285	285	325
26	I340A	300	275	240	230	245	245	215	225	245	I200A	I195A	190H	230H	235	225	220	215	250	250	245	285	300	325
27	325	290	I300A	300	260	210	C	C	C	C	C	C	C	200H	235	225	225	220	225	300	270	275	275	285
28	300	270	275	260	225	205	220	215	220	225	210	I215B	230B	240H	240H	230	215	215	240	270	250	270	270	275
29	300	300	285	290	250	260	240	210	215	I215A	215H	250	225	215H	230	235H	225	215	240	260	245	275	300	290
30	300	300	300	310	310	360	I325A	260	220	220	250	230	255	250	245	245	230	260	260	260	275	315	400A	390
31	415	350	290	275	275	325	260	235	230H	220	205	210	230	250	230	220	215	220	I260A	I265A	I290A	I335A	345	325
No.	30	30	30	30	30	30	29	28	28	26	24	24	25	27	28	28	30	30	29	29	28	29	29	30
Median	300	300	290	280	260	260	230	230	230	230	225	220	220	220	240	240	230	225	240	260	270	285	280	295
U.Q.																								
L.Q.																								
Q.R.																								

h'F

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 10

IONOSPHERIC DATA

Oct. 1963 | h'Es | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N / Long. 141°41.1' E

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	105	105	105	105	105	105	S	160	110	120	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	110	110	110	110	110	120	120	115	115	115	E	E
3	E	110	E	110	105	E	105	110	G	G	G	G	G	G	125	G	G	S	S	125	115	115	120	115
4	110	105	105	105	E	E	S	145	135	125	120	120	110	110	110	110	G	130	125	115	110	110	E	E
5	E	110	110	105	105	110	160	155	G	G	120	115	110	110	115	115	150	S	S	125	110	110	110	E
6	110	105	105	110	110	110	S	G	125	115	120	115	115	115	115	110	S	S	S	E	110	E	E	E
7	E	E	E	E	E	105	S	G	G	120	G	G	110	110	110	105	105	105	105	100	E	E	E	E
8	E	E	E	E	E	E	S	G	G	G	110	G	G	B	G	B	140	S	E	105	E	130	120	E
9	E	E	110	105	110	105	S	S	G	G	125	G	110	110	G	G	S	S	S	E	E	115	E	E
10	E	E	E	E	E	E	S	160	140	135	125	G	110	110	110	G	165	135	E	E	E	E	E	110
11	E	E	E	E	105	125	S	115	115	C	115	110	115	170	135	C	140	140	E	E	E	E	E	E
12	105	105	E	120	115	110	S	140	125	120	110	105	105	105	105	105	140	125	120	120	115	110	110	105
13	105	105	110	105	105	E	S	C	C	C	C	C	C	C	C	C	140	S	E	E	E	E	E	110
14	105	105	110	105	105	105	S	S	G	120	115	C	110	110	110	115	145	125	E	115	110	110	E	E
15	E	105	105	105	105	E	S	125	115	120	110	105	105	105	G	G	S	145	125	115	115	110	110	105
16	105	105	105	105	110	105	S	S	120	115	110	115	110	110	115	115	115	S	115	105	105	105	105	105
17	E	115	115	115	115	E	S	G	G	120	120	110	110	G	G	G	130	120	E	115	E	E	E	E
18	120	E	E	105	105	E	S	S	115	115	110	110	110	110	110	110	110	115	E	120	115	115	115	110
19	110	110	110	120	110	115	S	150	130	125	115	110	110	G	G	S	S	S	125	125	120	E	E	115
20	E	E	E	110	105	E	135	C	C	115	120	115	115	120	120	S	S	125	120	115	110	110	110	105
21	E	115	110	110	110	E	S	S	145	125	120	120	115	110	105	B	B	S	E	E	E	E	S	S
22	110	110	110	E	E	105	S	S	G	G	120	115	110	110	115	125	S	115	E	105	105	E	E	E
23	E	E	E	110	105	E	S	B	B	120	120	G	G	G	G	160	130	S	E	E	105	E	E	E
24	105	E	E	E	E	E	S	S	125	115	125	G	110	110	105	B	S	S	E	E	E	E	E	E
25	135	120	120	120	110	E	S	S	115	130	110	110	G	110	G	125	125	S	E	110	110	E	E	110
26	105	105	105	E	E	E	S	S	115	110	110	110	G	G	105	105	105	105	E	E	E	115	115	115
27	110	110	110	105	120	E	C	C	C	C	C	C	C	G	B	B	S	S	E	100	E	E	E	E
28	E	110	E	E	105	E	S	S	140	125	B	B	B	G	G	140	100	100	E	E	E	E	E	E
29	E	105	100	100	E	E	S	S	120	110	110	110	105	100	G	125	S	S	E	115	E	E	E	E
30	E	105	105	E	E	E	110	115	S	B	105	G	G	110	B	S	125	S	E	E	E	E	115	E
31	E	E	E	E	E	110	S	S	S	G	120	115	120	120	125	130	115	120	110	110	110	105	E	E
No.	14	20	18	20	20	12	4	10	16	20	24	17	21	21	18	16	18	15	9	20	16	14	10	11
Median	110	105	110	105	105	110	120	140	120	120	120	110	110	110	110	115	130	120	120	115	110	110	110	110
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'Es

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 11

IONOSPHERIC DATA

Oct. 1963 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Wakkanai | Lat. 45°23.6' N, Long. 141°41.1' E

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	f2	f2	f2	f	f		h	1	c														
2													c	1	c2	12	1	c2	c212	f f	f f	f2		
3		f		f	f		12	1							c					f	f2	f	f	f
4	f	f2	f2	f2				h	h2	c	c	c	c	1	1	1		c	c	f	f2	f		
5		f	f	f2	f2	f2	h	h			c	c	c	1	c	1	h			f	f	f2	f2	
6	f	f2	f	f2	f	f			c	c	c	c	1	c	1	1					f			
7						f				c			1	12	12	1	12	12	12	f2				
8											1						h			f		f	f	
9			f	f	f	f					c		1	1								f		
10								h	h	h	c		1	12	1		h	c						f2
11					f	f		c	1 c		c2	c3	c3	h	h2		h	c						
12	f	f		f	f2	f4		h	c2	c	c2	13	13	12	1	1	h	c	f2	f	f	f	f	f2
13	f2	f3	f	f	f												h							f
14	f	f	f	f	f	f				c	c		1	1	1	c2	h	c		f2	f3	f		
15		f2	f	f	f			c	c	c	12	12	13	12				h	f4	f3	f	f2	f2	f3
16	f2	f3	f	f	f2	f			c	c2	c2	c2	12	12	c2	c	c		f2	f3	f3	f2	f3	f2
17		f2	f2	f2	f2					c	c	1	12				c	c		f				
18	f			f	f				c	c	1	1	1	1	12	12	1	1		f	f2	f2	f3	f
19	f2	f5	f2	f	f2	f2		h	c	c	c 1	1	12						f	f	f			f
20				f5	f2		c			c	c	c	c	1	1			c2	f3	f2	f2	f2	f	f
21		f2	f2	f2	f				h	c	c	1	1	1	12									
22	f	f	f			f2					c	c	1	1	1	c		c		f	f			
23				f	f					c	c					h	c				f			
24	f								c	c	c		1	1	1									
25	f	f	f2	f3	f2				1	c	12	1		1		c	c			f3	f			f
26	f3	f	f						1	1	12	12			1	1	1	1				f	f	f3
27	f	f	f4	f2	f															f2				
28		f			f				h	c						h	1 c	1 c						
29		f2	f	f					c	12	1	1	12	1		c				f				
30		f2	f				c2	1			1			1			c						f	
31						f					c	c	c	c	c	c	c	c	f4	f3	f2	f		
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | foF2 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

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	3.6^{S}	3.4^{S}	3.7^{F}	3.9	3.3	3.4	4.8	6.3	6.6	6.3	6.5	6.9	7.6	7.6	I$_{7.3}^{C}$	7.1	6.7	7.1	7.1	4.6	I$_{3.9}^{F}$	3.7	3.7	3.6^{S}
2	3.4	3.3	3.4	3.5	3.2	3.2	4.2	5.7	I$_{5.6}^{RH}$	6.2	7.6	I$_{7.8}^{R}$	7.1	6.2	5.8^{H}	6.1	6.1	5.9	5.9	RS	FS	FS	F	3.9^{F}
3	3.7	3.5	3.7^{F}	I$_{3.8}^{A}$	I$_{3.8}^{S}$	I$_{3.9}^{S}$	5.1	5.7	5.6	5.7	6.6	6.4	6.0	6.9	6.8	6.1	7.6	7.4^{S}	6.3^{R}	4.0	3.8	3.9	3.6	3.6
4	3.2^{S}	I$_{3.4}^{FS}$	FS	RS	S	S	4.6	5.4	5.9	6.0	6.7	6.7	6.7	7.1	6.2	6.3	7.8	7.3	6.1	I$_{4.0}^{A}$	RS	FS	F	I$_{3.6}^{RS}$
5	3.6^{F}	3.5	I$_{3.6}^{F}$	RF	A	A	4.5	5.1	5.9	6.7^{R}	I$_{6.2}^{A}$	6.4	8.4^{R}	7.2	6.8	6.0	5.8	5.8^{S}	6.0	I$_{5.0}^{A}$	4.3^{RS}	RS	RF	RF
6	3.8^{R}	I$_{3.6}^{RF}$	RF	RF	RF	A	4.6^{R}	5.8	6.3	7.0	6.7	7.0	7.1	6.9	6.2	6.5	6.9	I$_{7.0}^{RS}$	5.0	3.0	3.1	3.3	3.3^{RS}	3.3
7	3.6	3.3^{F}	3.2	3.2	3.3^{RS}	I$_{3.7}^{RS}$	4.5	5.7	J$_{7.1}^{R}$	6.6	7.2	7.6	6.6	6.1	5.8	6.5	7.6^{RS}	J$_{7.4}^{R}$	5.2	3.8	3.6	3.8	3.8	3.9
8	3.7	3.5	3.6	3.6	3.6	3.2	4.8	6.4	6.2	8.1	8.8	8.0	7.1	6.6	6.2	6.6	8.1	7.6^{S}	5.8	4.1	4.1	4.2	4.2	4.1^{F}
9	4.2	4.1	I$_{4.1}^{F}$	F	FS	F	I$_{5.4}^{FS}$	6.0^{S}	7.1	6.7	8.0	C	C	C	C	C	C	C	6.1	5.1	3.7	3.4^{S}	I$_{3.5}^{F}$	I$_{3.6}^{F}$
10	3.5^{F}	A	F	F	F	S	4.9	6.8^{S}	6.6	6.9	7.6	6.7	7.8	8.5	7.4	7.1	6.9	6.9	6.1	5.4	4.6	4.5	4.2	I$_{4.0}^{F}$
11	3.9	3.9	3.7	4.0	4.1	I$_{3.4}^{RS}$	4.6	5.1	7.0	7.6	8.7	7.1	6.4	6.9	7.1	8.3	8.1	8.0	6.0	5.4	5.1	3.9	3.5	3.5
12	3.5	3.9	3.9	3.6	3.9	4.0	5.5^{S}	6.5	7.3	6.5	9.6	8.6	10.8	8.6	8.3	7.5	7.6	6.3	4.9	4.6	4.6	4.7	4.6	4.0
13	3.9	4.0	4.0	4.6	I$_{3.6}^{RS}$	I$_{4.0}^{S}$	5.6	8.0	9.8^{R}	8.4	10.6	10.6	9.2	8.1	7.2	C	C	C	C	C	C	S	S	F
14	3.6	3.5	3.7	3.7	3.9	3.5^{S}	5.2^{R}	7.4^{S}	7.9	6.7^{H}	9.0	9.5	10.3	9.6^{R}	9.8	8.0	8.7	7.7	6.5	5.5	4.6^{R}	4.1	3.9	4.1
15	3.8^{RF}	4.0^{F}	I$_{3.7}^{FS}$	I$_{4.0}^{FS}$	I$_{4.0}^{RF}$	3.4	U$_{4.9}^{R}$	I$_{6.6}^{RS}$	8.1	8.1	9.0	9.1^{R}	8.3	J$_{8.4}^{R}$	7.3	7.9	7.3	6.5	5.8	5.0	4.0	4.0	3.8	3.5
16	I$_{3.6}^{F}$	3.6^{F}	3.8	3.6	U$_{3.7}^{R}$	2.7	4.5	6.4	7.5^{R}	7.7	8.6	9.1	10.8	U$_{9.6}^{R}$	7.8	7.4	8.0	I$_{7.2}^{A}$	5.8	I$_{4.9}^{A}$	U$_{4.5}^{R}$	4.4	4.0	J$_{4.0}^{R}$
17	4.1	3.9	RF	FS	RS	FS	5.4	6.3	7.2^{R}	7.7	8.9	9.0	9.0	9.0	7.1	7.0^{S}	7.4	6.3	4.5	4.1^{R}	3.8^{RS}	4.1^{RS}	I$_{4.0}^{RS}$	3.1
18	3.0	3.4	3.6	3.6	3.5^{R}	3.0	4.6	6.1^{R}	8.1	7.7	9.4	9.7	9.6	8.2	7.6	6.9	7.0	6.2^{S}	4.6^{R}	I$_{4.1}^{RS}$	4.4	3.9	3.0^{S}	3.0^{S}
19	F	FS	A	FS	S	I$_{4.0}^{FS}$	5.0	6.5	7.1	7.3	8.3	8.9	9.2	7.5	6.9	7.1	6.5	6.2	5.1	4.0	3.6	3.5	3.7^{S}	3.8
20	3.6	3.2	3.3	3.3	I$_{3.4}^{RS}$	3.0^{S}	4.4	6.1	7.5	8.1	7.4	10.0	9.3	7.9	7.1	7.8	7.7	6.3	4.1	4.0	4.0^{S}	3.9	3.8	3.8
21	3.6	3.5	3.7	I$_{3.7}^{F}$	A	A	4.9^{S}	6.8	8.1	7.6	7.9	10.5	8.6	7.3	7.4	U$_{8.6}^{R}$	7.7^{RS}	6.0	4.0^{RS}	3.8^{R}	I$_{4.0}^{RS}$	3.5	3.0	3.1
22	3.1	3.1	3.2	3.3	3.3	3.3^{R}	U$_{5.0}^{R}$	6.5	7.3	8.2	9.3^{R}	8.3	7.4^{R}	8.8	8.4	U$_{7.6}^{R}$	6.5	5.2	4.8	I$_{4.3}^{A}$	3.4	I$_{3.6}^{A}$	RF	RF
23	3.6	3.6	I$_{3.6}^{FS}$	I$_{3.6}^{FS}$	3.7	I$_{3.9}^{RS}$	I$_{5.3}^{FS}$	U$_{7.1}^{R}$	U$_{7.8}^{R}$	8.3^{R}	7.8	7.8^{R}	7.8	6.4	7.6	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	7.3	7.9	8.6	8.6	10.1	10.6	8.2	6.3	5.8	5.3^{S}	6.6^{S}	FS	FS	FS
25	FS	A	FS	FS	F	4.5	5.4^{R}	5.9	6.3	8.0	8.0	9.1	7.5	7.8	9.0	9.1	8.6	6.9	5.4	5.5	I$_{4.8}^{RS}$	3.6^{S}	I$_{3.6}^{FS}$	3.6^{S}
26	3.5	3.6	3.7	3.5	3.6	2.6	I$_{4.4}^{R}$	6.3	7.6	8.0	9.0	8.5	9.1	9.5	8.9	7.9	7.5	6.0	3.7	3.9	I$_{3.7}^{A}$	3.7	3.4	F
27	F	F	F	F	F	3.6	I$_{4.0}^{RS}$	I$_{6.0}^{F}$	6.7^{H}	6.6	7.5	10.1	9.5	8.3	8.2	7.4	6.7	5.5	4.4	3.9	3.7	3.6	F	F
28	F	3.6^{F}	3.6^{S}	I$_{3.9}^{F}$	4.1^{S}	I$_{3.7}^{S}$	3.9	5.4	6.5	7.5^{S}	7.3^{R}	9.0^{R}	8.5	7.2	8.8	7.1	6.9	A	A	3.7^{R}	3.7	3.8	FS	FS
29	I$_{3.8}^{F}$	FS	FS	F	I$_{3.5}^{FS}$	I$_{3.5}^{FS}$	3.7	6.1^{R}	U$_{6.2}^{R}$	J$_{7.6}^{R}$	7.8	9.2	11.0	J$_{9.3}^{R}$	I$_{7.8}^{RS}$	7.4^{R}	7.2	6.0	4.7^{R}	I$_{4.2}^{A}$	4.4	J$_{4.1}^{R}$	I$_{4.4}^{RS}$	I$_{4.6}^{FS}$
30	I$_{4.5}^{FS}$	4.6^{R}	4.5	4.1	U$_{3.2}^{RS}$	I$_{3.2}^{RS}$	I$_{3.5}^{S}$	4.6	3.8	4.6	4.5	6.2	6.9^{H}	6.5^{H}	U$_{7.8}^{R}$	7.3	6.5	5.2	I$_{5.5}^{FH}$	6.3	I$_{4.7}^{F}$	3.9^{F}	I$_{3.8}^{F}$	I$_{4.0}^{FS}$
31	4.1^{F}	4.3^{F}	F	F	2.3^{S}	2.1^{S}	3.1	5.2	6.8	7.8^{R}	7.6	8.4	9.3	6.9^{H}	7.9	6.2	I$_{5.6}^{A}$	4.2	I$_{3.6}^{A}$	I$_{3.9}^{A}$	3.7	A	F	F
No.	26	25	21	19	20	23	30	30	30	30	31	30	30	30	30	28	28	27	28	28	27	24	21	22
Median	3.6	3.6	3.7	3.6	3.6	3.4	4.7	6.1	7.0	7.6	7.8	8.4	8.4	7.7	7.4	7.2	7.4	6.3	5.4	4.2	4.0	3.9	3.8	3.7
U.Q.	3.8	3.9	3.8	3.9	3.8	3.9	5.1	6.5	7.5	8.0	8.9	9.1	9.3	8.6	8.2	7.8	7.8	7.2	6.0	5.0	4.6	4.1	4.0	4.0
L.Q.	3.5	3.4	3.6	3.5	3.3	3.2	4.4	5.7	6.3	6.6	7.3	7.1	7.1	6.9	6.9	6.6	6.7	6.0	4.6	4.0	3.7	3.6	3.5	3.5
Q.R.	0.3	0.5	0.2	0.4	0.5	0.7	0.7	0.8	1.2	1.4	1.6	2.0	2.2	1.7	1.3	1.2	1.1	1.2	1.4	1.0	0.9	0.5	0.5	0.5

The Radio Research Laboratories, Japan

foF2

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 1

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IONOSPHERIC DATA

Oct. 1963 | foF1 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

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	$I_{4.3}^{L}$	4.2^{L}	L	C	L	L							
2								L	L	4.2	$I_{4.2}^{LH}$	$I_{4.3}^{L}$	$I_{4.4}^{L}$	L	LH									
3								A	L	L	4.1	4.3^{L}	4.3^{L}	4.2	L	L	L							
4									L	4.0^{L}	4.1^{L}	A	A	$I_{4.4}^{L}$	4.1^{L}	L	A							
5										4.0	$I_{4.1}^{A}$	4.2^{L}	4.4	$I_{4.2}^{A}$	L	L	A	A						
6									L	4.2^{L}	4.2	4.3^{L}	4.4^{L}	4.5^{L}	4.3^{L}	L	L							
7								L	L	4.3	4.3	4.4^{H}	4.4^{LH}	L	L	L	A							
8									L	LH	LH	4.4^{L}	L	L	3.6^{L}	L	L							
9									L	L	$I_{4.2}^{L}$	C	C	C	C	C	C							
10									L	4.3^{L}	4.3	4.0	$I_{4.6}^{LH}$	4.5^{L}	L	L	L							
11									L	L	L	L	L	L	L	L								
12									L	L	LH	A	LH	L	A	L								
13								A	A	L	A	A	A	L	L	C	C							
14									L	L	L	L	L	L	L	L	L							
15								L	L	A	4.3^{LH}	LH	L	L	LH	L	L							
16								L	$I_{3.4}^{L}$	3.9	$I_{4.0}^{L}$	4.2^{L}	L	L	L	A								
17									L	$I_{3.8}^{LH}$	$I_{4.2}^{LH}$	4.3^{L}	4.6^{L}	4.0^{L}	L	L								
18									L	L	4.4	$I_{4.2}^{LH}$	LH	L	L	L								
19									A	A	A	A	LH	L	L	A								
20									L	L	L	L	L	L	L	L								
21									A	L	A	A	A	L	LH	L	L							
22									L	L	$I_{4.0}^{LH}$	LH	L	4.3^{LH}	L	L	L							
23									L	L	L	$I_{4.3}^{LH}$	LH	L	LH	C	C							
24									C	C	L	4.2^{L}	LH	L	L									
25										L		L	L		L	L								
26									L	L	$I_{4.0}^{L}$	4.2^{L}	LH	L	L									
27									L	L	L	3.9^{H}	L	L	L									
28										L	L	B	L	L	L									
29									L	L	4.3^{L}	$I_{4.2}^{LH}$	L	L	L	L								
30								L		3.7	3.8	4.1	L	L										
31									L	3.8^{L}	L	L	L	L	L	A								
No.									1	10	16	17	8	7	3									
Median									$U_{3.4}$	4.0	4.2	4.2	4.4	4.3	4.1									
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foF1

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 2

IONOSPHERIC DATA

Oct. 1963 | foE | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	A	A	A	A	A	A	3.10	C	A	C	C						
2								C	A	A	A	A	A	A	2.95	2.55	A	A						
3							B	A	A	A	3.10	$I_{3.20}^{A}$	3.15	3.00	2.95^{H}	A	A	A						
4							B	S	A	A	A	A	A	A	A	A	A	B						
5							E	A	A	A	A	A	A	A	A	A	R	B						
6							B	A	A	A	A	A	A	A	A	2.95	A	B						
7							B	A	A	A	A	A	A	A	A	A	A							
8							A	A	2.75	A	A	A	3.20	3.10	2.95	2.65	A	B						
9							B	A	A	A	A	C	C	C	C	C	C	C						
10							E	A	BS	A	A	A	A	A	3.05	R	R	E						
11							E	A	A	A	A	A	A	3.15	A	A	A	E						
12							B	A	A	A	A	A	A	A	A	A	R	B						
13							B	A	A	A	A	A	A	A	A	C	C	C						
14								RS	A	A	A	A	A	A	A	A	A							
15							B	A	A	A	A	A	A	A	A	A	A	B						
16							E	S	A	2.90^{R}	R	A	A	A	A	A	A							
17								A	A	A	A	A	$U_{3.30}^{R}$	$U_{3.10}^{R}$	2.90^{R}	$U_{2.75}^{R}$	A							
18							B	A	A	A	A	A	3.15	$I_{3.05}^{A}$	2.95	A	A							
19								A	A	A	A	A	A	A	2.85	A	A							
20							E	A	A	A	3.05	A	A	A	A	A	A	E						
21								A	A	R	A	A	A	A	2.90	R	S							
22							E	A	A	AH	A	A	A	A	A	A	B							
23								A	A	A	A	A	R	A	R	C	C							
24								C	C	C	A	A	A	A	2.85	2.55	A							
25								A	2.55	2.85	$I_{3.00}^{R}$	3.05	3.05	3.00	2.70	A	A							
26							B	A	A	A	A	$I_{3.05}^{R}$	$I_{3.05}^{A}$	3.00	2.75	A	A							
27							B	A	A	A	A	3.05	A	A	2.80	$I_{2.50}^{A}$	S							
28								AS	A	A	A	B	B	A	2.90^{R}	A	B							
29								A	A	A	A	A	A	A	A	A	A							
30								RS	A	A	A	$I_{3.00}^{A}$	$I_{3.05}^{A}$	$I_{2.90}^{R}$	$I_{2.70}^{A}$	A	B							
31								A	A	A	A	A	A	2.90	2.75	A	A							
No.							6		2	2	3	5	7	10	15	6		3						
Median							E		2.65	2.90	3.05	$U_{3.05}$	3.15	3.00	2.90	2.60		E						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foE

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 3

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IONOSPHERIC DATA

Oct. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

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	$J_{2.5}$	$J_{2.3}$	$J_{1.7}$	$J_{2.0}$	$J_{2.3}$	2.3	G	3.0	3.2	$J_{5.0}$	$J_{4.7}$	$J_{4.8}$	3.4	G	C	$J_{4.3}$	$J_{2.9}$	$J_{4.0}$	$J_{4.9}$	$J_{3.8}$	$J_{3.0}$	$J_{3.0}$	$J_{2.5}$	C
2	$J_{2.0}$	$J_{2.3}$	$J_{2.0}$	$J_{2.0}$	$J_{3.0}$	$J_{1.7}$	C	3.2	$J_{3.6}$	3.9	$J_{4.0}$	3.3	3.5	3.7	2.1^{G}	3.1	$J_{4.4}$	$J_{3.2}$	$J_{4.0}$	$J_{8.8}$	$J_{3.8}$	$J_{3.0}$	$J_{1.8}$	$J_{2.8}$
3	$J_{2.8}$	$J_{2.5}$	$J_{2.3}$	$J_{3.8}$	$J_{3.8}$	$J_{2.0}$	2.4	$J_{5.0}$	$J_{3.3}$	3.7	G	3.7	3.0^{G}	G	3.3	3.2	2.7	$J_{3.6}$	$J_{2.3}$	2.1	$J_{2.8}$	2.2	E	2.3
4	E	$J_{2.4}$	$J_{2.4}$	$J_{3.6}$	$J_{2.4}$	$J_{1.7}$	1.9	G	3.0	3.5	3.8	$J_{7.0}$	$J_{5.5}$	$J_{4.1}$	$J_{4.6}$	3.8	$J_{3.8}$	2.4	$J_{5.2}$	$J_{6.0}$	$J_{6.4}$	$J_{2.6}$	$J_{1.9}$	E
5	$J_{2.4}$	$J_{2.9}$	$J_{2.3}$	$J_{6.0}$	$J_{6.1}$	$J_{6.1}$	$J_{2.9}$	3.7	$J_{4.3}$	$J_{4.1}$	$J_{10.5}$	$J_{7.8}$	$J_{7.6}$	$J_{9.1}$	3.6	3.8	$J_{3.9}$	$J_{5.0}$	$J_{4.1}$	$J_{6.1}$	$J_{7.7}^{Y}$	$J_{3.6}$	$J_{2.0}$	$J_{3.1}$
6	$J_{2.4}$	$J_{2.4}$	$J_{1.8}$	$J_{2.9}$	$J_{2.3}$	$J_{3.8}^{S}$	$J_{3.8}$	$J_{2.3}$	3.2	3.3	3.8	3.8	$J_{3.9}$	$J_{3.5}$	3.5	$J_{2.8}^{G}$	3.0	2.2	$J_{2.3}$	$J_{3.1}$	$J_{2.5}$	$J_{2.5}$	$J_{2.8}$	2.0
7	S	$J_{2.8}$	$J_{2.4}$	$J_{2.0}$	$J_{2.6}^{S}$	E	$J_{2.1}$	3.2	3.6	3.7	3.7	3.5	3.5	$J_{3.4}$	$J_{3.1}$	$J_{4.0}$	$J_{5.2}$	$J_{3.0}$	$J_{2.5}$	$J_{1.9}$	$J_{1.9}$	2.3	E	E
8	E	E	E	$J_{2.0}$	1.8	2.0	2.1	2.6	3.3	3.4	$J_{3.5}$	$J_{3.8}$	G	G	G	2.8	2.5	2.3	1.8	E	E	$J_{1.9}$	2.0	E
9	2.2	$J_{3.1}$	$J_{2.9}$	$J_{4.0}$	$J_{3.1}$	E	G	2.7	3.1	3.6	3.7	C	C	C	C	C	C	C	$J_{2.9}$	$J_{5.8}^{Y}$	$J_{2.5}$	$J_{6.1}$	$J_{6.1}$	$J_{2.5}$
10	$J_{2.0}$	$J_{5.0}$	$J_{3.0}$	$J_{3.0}$	$J_{2.0}$	E	2.0	2.8	3.2	3.4	3.3	3.3	3.3	3.2	2.7^{G}	G	2.5	2.1	$J_{2.5}$	E	$J_{1.7}$	$J_{3.0}$	$J_{1.9}$	$J_{2.3}$
11	$J_{2.5}$	$J_{2.4}$	$J_{2.0}$	2.3	$J_{2.0}$	$J_{2.0}$	$J_{2.3}$	$J_{3.1}$	$J_{3.8}$	3.5	3.5	$J_{3.9}$	$J_{3.9}$	G	3.5	3.6	3.2	$J_{2.3}$	$J_{3.8}$	$J_{2.4}$	$J_{2.8}$	E	E	E
12	E	$J_{2.0}$	$J_{1.8}$	$J_{2.2}$	$J_{2.0}$	2.3	2.0	3.5	3.0	3.6	$J_{5.5}^{Y}$	$J_{7.3}$	$J_{6.4}^{Y}$	$J_{6.0}^{Y}$	$J_{6.5}$	$J_{2.8}$	3.0	$J_{2.8}$	$J_{2.5}$	$J_{2.0}$	$J_{2.4}$	$J_{2.9}$	$J_{1.8}$	$J_{2.1}$
13	$J_{2.3}$	$J_{6.2}$	$J_{2.8}$	$J_{2.5}$	$J_{2.8}$	$J_{2.0}$	G	3.6	$J_{4.3}$	$J_{4.3}$	$J_{7.8}$	$J_{10.8}$	$J_{10.8}$	$J_{6.5}^{Y}$	$J_{6.5}$	C	C	C	C	C	C	$J_{1.9}$	$J_{2.1}$	2.2
14	2.0	2.3	2.2	2.3	$J_{2.1}$	2.3	2.3	G	3.2	3.7	3.5	3.6	$J_{4.1}$	$J_{4.1}$	4.3	$J_{3.9}$	$J_{2.4}$	$J_{3.1}$	$J_{2.0}$	$J_{6.3}$	$J_{5.2}$	$J_{2.1}$	$J_{2.5}$	1.8
15	$J_{1.8}$	$J_{2.0}$	2.2	$J_{2.8}$	$J_{1.7}$	E	2.4	2.5	3.3	$J_{4.0}$	$J_{3.6}$	$J_{3.4}$	$J_{7.5}$	$J_{6.0}$	$J_{5.4}$	G	3.2	$J_{3.1}$	$J_{5.0}$	$J_{2.1}$	$J_{2.9}$	$J_{2.5}$	2.2	E
16	S	$J_{2.0}$	$J_{2.1}$	$J_{1.7}$	E	$J_{1.7}$	G	G	$J_{3.1}$	G	G	3.4	3.6	3.9	$J_{6.0}$	$J_{6.0}$	$J_{6.0}$	$J_{8.3}$	$J_{6.0}$	$J_{6.2}$	$J_{5.0}$	$J_{2.0}$	E	E
17	S	$J_{3.2}$	$J_{3.5}$	$J_{3.7}$	$J_{3.7}$	$J_{3.5}$	E	2.4	3.0	$J_{3.1}$	3.6	$J_{4.9}$	G	G	3.2	2.9	2.8	2.2	$J_{1.8}$	$J_{2.8}$	$J_{6.3}$	$J_{3.8}$	$J_{2.2}$	$J_{2.1}$
18	$J_{2.4}$	$J_{2.1}$	2.1	2.1	2.0	E	2.0	2.6	3.1	4.0	3.7	$J_{4.0}$	3.7	3.1	2.5^{G}	3.1	$J_{3.8}$	$J_{5.0}$	$J_{5.0}$	$J_{2.9}$	$J_{3.8}$	$J_{2.4}$	$J_{3.0}$	$J_{3.3}$
19	$J_{2.5}$	$J_{13.4}$	$J_{7.8}$	$J_{2.3}$	$J_{3.2}$	$J_{2.3}$	$J_{2.9}$	3.1	4.3	$J_{4.3}$	$J_{4.7}$	$J_{4.9}$	$J_{3.3}$	$J_{3.6}$	2.6^{G}	$J_{3.8}$	$J_{2.8}$	$J_{2.4}$	2.3	E	$J_{2.5}$	$J_{2.4}$	$J_{3.8}$	2.3
20	$J_{2.5}$	$J_{1.8}$	$J_{2.6}$	2.3	$J_{3.5}$	$J_{1.9}$	G	$J_{2.5}$	3.2	3.9	4.2	$J_{4.8}$	$J_{6.1}$	3.4	3.2	3.2	2.9	$J_{1.9}$	$J_{2.5}$	$J_{3.0}$	$J_{1.8}$	$J_{2.5}$	$J_{2.3}$	$J_{2.3}$
21	E	E	E	$J_{2.3}$	$J_{5.3}$	$J_{3.8}$	E	$J_{3.8}$	4.2	$J_{4.0}$	$J_{5.8}$	$J_{5.8}$	$J_{8.3}$	3.0	2.9^{G}	G	S	E	$J_{2.8}$	$J_{1.8}$	$J_{2.8}$	2.1	$J_{1.8}$	2.2
22	$J_{1.7}$	2.2	1.9	2.1	E	E	$J_{2.4}$	$J_{3.6}$	$J_{2.8}$	3.3	3.2	3.2	$J_{3.8}$	3.6	3.2	3.2	2.2	E	$J_{2.8}$	$J_{3.6}$	$J_{5.2}$	$J_{6.0}$	$J_{3.7}$	E
23	$J_{2.2}$	$J_{2.0}$	E	$J_{3.8}$	$J_{2.3}$	$J_{2.3}$	$J_{2.4}$	2.7	3.2	3.6	$J_{3.6}$	3.8	3.8	3.5	$J_{1.8}$	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	3.7	3.6	3.1	3.5	3.6	4.0	2.6	$J_{2.8}$	E	E	E	E	$J_{2.0}$	$J_{3.0}$
25	$J_{3.5}^{Y}$	$J_{5.0}$	2.1	$J_{3.4}$	$J_{6.1}$	$J_{1.7}$	E	2.5	G	3.6	3.6	3.5	2.7^{G}	G	3.2	3.2	$J_{3.6}$	$J_{2.8}$	$J_{5.1}$	$J_{2.9}$	$J_{3.9}$	$J_{2.5}$	$J_{3.0}$	$J_{1.8}$
26	E	$J_{5.0}$	$J_{1.9}$	$J_{1.9}$	$J_{2.1}$	E	G	2.3	3.2	3.1	3.6	G	3.5	2.2^{G}	2.0^{G}	$J_{2.5}$	$J_{3.1}$	$J_{2.8}$	$J_{2.1}$	$J_{2.3}$	$J_{4.8}$	E	2.2	2.1
27	$J_{2.2}$	E	2.0	$J_{1.7}$	2.2	E	G	3.0	3.2	3.8	3.2	3.5	$J_{3.4}$	$J_{4.6}$	$J_{3.0}$	$J_{2.8}$	$J_{2.6}$	2.1	$J_{3.4}$	2.0	$J_{2.3}$	E	2.0	E
28	E	E	2.0	2.2	2.3	2.1	E	2.7	$J_{3.8}$	3.3	3.3	B	B	3.5	3.1	$J_{3.8}$	$J_{2.8}$	$J_{5.0}$	$J_{6.4}$	$J_{6.2}$	$J_{3.7}$	$J_{3.0}$	$J_{1.8}$	$J_{2.0}$
29	E	2.0	$J_{1.7}$	$J_{3.8}$	2.2	E	E	2.9	3.2	$J_{3.4}$	$J_{3.8}$	3.5	$J_{4.3}$	3.6	$J_{3.3}$	3.2	2.2	$J_{2.3}$	$J_{2.5}$	$J_{5.8}$	$J_{2.5}$	2.1	E	2.2
30	E	$J_{2.2}$	E	E	E	E	2.2	$J_{3.0}$	3.2	3.7	$J_{4.3}$	3.5	3.5	G	$J_{3.7}$	2.8	$J_{3.8}$	$J_{4.6}$	$J_{5.8}$	$J_{5.8}$	$J_{1.7}$	$J_{2.3}$	$J_{2.3}$	2.2
31	$J_{2.2}$	2.2	2.0	2.2	E	2.2	E	2.3	3.3	2.8	3.5	3.4	3.3	3.5	3.7	$J_{4.5}$	$J_{6.0}$	$J_{1.7}$	$J_{3.4}$	$J_{5.6}$	$J_{2.8}$	$J_{3.8}$	$J_{2.1}$	$J_{2.8}$
No.	27	30	30	30	30	30	29	30	30	30	31	29	29	30	29	28	27	28	29	29	29	30	30	29
Median	2.2	2.3	2.0	2.3	2.3	2.0	2.0	2.8	3.2	3.6	3.7	3.7	3.6	3.5	3.2	3.2	3.0	2.8	2.8	2.9	2.8	2.4	2.0	2.1
U.Q.	2.4	2.9	2.4	3.4	3.1	2.3	2.4	3.2	3.6	3.9	4.2	4.8	4.9	3.9	3.7	3.8	3.8	3.4	5.0	5.8	4.4	3.0	2.5	2.3
L.Q.	E	2.0	1.8	2.0	2.0	E	G	2.5	3.1	3.4	3.5	3.4	3.3	G	G	2.8	2.6	2.2	2.3	2.0	2.4	2.1	1.8	E
Q.R.		0.9	0.6	1.4	1.1			0.7	0.5	0.5	0.7	1.4	1.6			1.0	1.2	1.2	2.7	3.8	2.0	0.9	0.7	

The Radio Research Laboratories, Japan

foEs | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | f_bE_s | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E		2.6	3.0	3.2	3.9	4.4	3.3		C	3.7	2.5	2.5	3.2	3.0	$E_{2.2}^{C}$	2.2	2.2	C
2	$E_{1.9}^{C}$	1.8	1.8	1.8	2.2	E	C	2.8	3.3	3.4	3.4	3.3	3.5	3.7	2.0^{G}	3.1	4.4	3.0	$E_{4.1}^{R}$	4.0	2.1	2.1	1.8	1.8
3	2.2	2.1	1.7	A	2.8	2.1	2.0	3.5	2.9	3.4		3.3	2.3^{G}		3.3	3.0	2.7	2.8	2.0	E	2.0	E		E
4		1.9	1.8	2.7	E	E	1.8		2.9	3.1	3.3	5.0	4.3	4.1	3.5	3.4	3.6	2.2	$U_{5.2}^{R}$	A	2.9	E	E	
5	E	1.8	E	2.0	A	A	2.6	3.2	3.5	4.0	A	3.7	4.2	4.2	3.4	3.0	3.4	5.0	$U_{4.1}^{R}$	A	2.3	2.2	1.7	1.7
6	1.7	2.0	1.7	E	E	A	2.7	$U_{2.3}^{R}$	2.8	3.2	3.7	3.3	3.4	3.1	2.9	2.8^{G}	2.5	1.9	1.7	2.3	2.0	1.7	1.7	1.7
7	S	1.7	1.7	1.7	E		2.1	2.7	2.9	3.5	3.4	3.3	3.3	3.3	3.1	3.8	5.2	$U_{3.0}^{R}$	2.2	E	1.7	E		
8				E	E	E	2.0	2.7	3.1	3.2	3.3	3.5				2.8	2.3	2.0	E			E	E	
9	E	E	2.2	1.9	E			2.5	2.8	3.2	3.3	C	C	C	C	C	C	C	1.7	3.8	2.3	2.0	1.8	E
10	E	A	2.3	1.7	E		1.8	2.8	2.6	3.2	3.3	3.3	3.3	3.2	1.8^{G}		1.8	E	E		E	2.2	1.7	1.8
11	E	E	E	E	E	2.0	2.1	2.6	3.3	3.4	3.4	3.9	3.5		3.2	3.2	2.5	2.3	3.7	2.0	2.0			
12		E	E	E	E	E	1.9	2.6	2.9	3.1	3.3	4.7	3.3	3.3	5.5	2.7	3.0	2.5	1.7	1.7	2.0	2.5	E	1.7
13	2.0	2.6	2.7	1.7	2.7	E		3.6	4.2	3.2	6.7	4.6	5.9	3.4	3.2	C	C	C	C	C	C	E	1.8	E
14	E	E	E	E	2.0	E	E		3.0	3.3	3.2	3.5	3.9	3.6	3.8	3.7	2.2	2.9	1.9	2.5	3.5	1.7	2.0	E
15	1.7	E	E	2.0	E		1.8	2.5	2.9	$U_{4.0}^{R}$	3.4	3.4	4.3	4.3	3.1		2.8	3.0	4.9	1.9	1.8	2.2	E	
16	S	E	E	E		E			2.9			$U_{3.4}^{R}$	3.6	$U_{3.9}^{R}$	4.0	4.2	6.0	A	4.0	A	2.8	E		
17	S	2.4	2.3	3.0	E	1.8		2.4	2.7	3.1	3.3	3.3			3.1	2.8	2.1	1.7	1.7	2.5	2.9	2.7	1.8	1.9
18	E	E	E	E	E		1.8	2.5	2.8	3.4	3.3	3.3	2.8	3.1	2.5^{G}	2.9	2.7	4.6	3.2	1.8	2.1	1.7	1.9	E
19	E	E	A	E	E	E	2.6	2.6	$U_{4.3}^{R}$	4.4	$U_{4.7}^{R}$	4.9	3.3	3.5	2.5^{G}	3.6	2.2	2.0	E		E	E	1.9	E
20	1.7	E	E	E	2.5	E		2.4	3.0	3.9	3.6	4.0	3.5	3.3	3.2	2.9	2.4	1.8	1.7	E	E	1.8	1.8	E
21				2.8	A	A		3.4	4.0	4.0	5.7	4.8	8.2	$U_{3.0}^{R}$	G		S		2.7	E	E	E	1.8	E
22	E	E	E	E			2.2	2.4	2.8	3.1	$U_{3.2}^{R}$	$U_{3.2}^{R}$	3.6	3.3	3.2	2.8	2.2		E	A	1.8	A	2.0	
23	E	E		1.7	2.1	2.0	$U_{2.4}^{R}$	2.2	3.0	3.4	3.0	3.3	3.2	3.4	$E_{1.8}^{R}$	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	3.3	3.2	3.1	3.4	3.6	3.9	2.6	2.7					E	E
25	E	A	E	2.5	2.5	E		2.3		3.5	3.5	3.5	2.2^{G}		3.2	3.0	3.3	1.9	4.0	2.0	1.7	E	E	E
26		2.1	E	E	E			2.3	3.0	3.0	3.1		3.2	2.2^{G}	1.9^{G}	$E_{2.5}^{R}$	2.9	2.3	E	1.8	A		E	E
27	E		E	E	E			2.3	3.0	3.4	3.2	3.0	3.4	3.6	2.2	2.7	2.3	E	3.2	1.7	E		E	
28			E	E	E	E		2.3	G	3.2	3.3	B	B	3.4	3.0	3.6	2.3	A	A	2.7	1.8	2.4	E	E
29		1.7	E	1.7	E			2.2	3.0	3.1	3.2	3.4	4.2	3.5	3.1	2.8	2.2	2.2	2.2	A	1.7	1.7		E
30		E					E	1.7	3.1	3.2	3.5	3.4	3.2		2.8	2.7	2.3	4.6	4.0	4.0	E	E	E	E
31	E	E	E	E		E		2.2	2.8	2.8	3.0	3.1	3.0	3.2	3.2	4.0	A	E	A	A	2.8	A	1.9	2.5
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f_bE_s Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.75	1.70	1.70	1.70	C	$E_{2.30}^{C}$	$E_{2.40}^{C}$	$E_{2.25}^{C}$	$E_{2.20}^{C}$	$E_{2.00}^{C}$	$E_{2.20}^{C}$	$E_{2.10}^{C}$	$E_{2.00}^{C}$	$E_{2.20}^{C}$
2	$E_{1.90}^{C}$	E	E	E	E	E	$E_{2.20}^{C}$	$E_{2.30}^{C}$	$E_{2.45}^{C}$	$E_{2.50}^{C}$	$E_{2.55}^{C}$	$E_{2.50}^{C}$	1.70	1.70	1.75	1.70	1.70	1.70	1.70	E	E	E	E	E
3	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.75	1.70	1.70	1.70	E	E	E	E	E	E
4	E	E	E	E	E	E	1.80	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E
5	E	E	E	E	E	E	E	1.70	1.75	1.70	1.75	1.75	1.75	1.70	1.65	1.75	1.75	1.70	1.70	1.70	E	1.65	1.65	1.70
6	1.70	E	1.65	E	E	E	1.70	1.75	1.70	1.70	1.95	1.75	1.75	1.75	1.70	1.75	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70
7	1.70	E	E	E	E	$E_{1.70}^{S}$	1.75	1.75	1.75	1.75	1.75	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.65	E	E	E	E	E
8	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E
9	E	E	E	E	E	E	E	1.70	1.70	1.70	1.70	C	C	C	C	C	C	C	E	E	E	E	E	E
10	E	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.75	1.75	1.70	1.70	1.70	1.70	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E	E
12	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E
13	E	E	E	E	E	E	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	C	C	C	C	C	C	E	E	E
14	E	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.75	1.75	1.70	1.75	1.70	1.70	E	E	E	E	E	E
15	E	E	E	E	E	E	1.75	1.75	1.70	1.75	1.70	1.75	1.75	1.75	1.75	1.75	1.70	1.70	E	E	E	E	E	E
16	1.70	E	E	E	E	E	1.75	1.70	1.70	1.70	1.70	1.80	1.70	1.70	1.70	1.75	1.75	1.70	E	E	E	E	1.70	E
17	$E_{1.75}^{S}$	E	E	E	E	E	1.75	1.70	1.70	1.70	1.65	1.70	1.70	1.65	1.70	1.70	1.70	1.70	E	E	E	E	E	E
18	E	E	E	E	E	E	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.65	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.65	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.75	1.80	1.70	1.75	1.70	1.70	E	E	E	E	E	E
21	E	E	E	E	E	E	E	1.70	1.70	1.70	1.65	1.80	1.70	1.80	1.75	1.70	1.65	1.65	E	E	E	E	E	E
22	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.75	1.80	1.70	1.65	1.75	1.70	1.70	1.70	E	E	1.65	E	E	E
23	E	E	E	E	E	E	1.70	1.65	1.70	1.70	1.70	1.75	1.75	1.75	1.75	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	1.70	1.65	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E	E
26	E	E	E	E	E	E	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.70	1.65	E	E	E	E	E	E	E
27	E	E	E	E	E	E	1.75	1.70	1.70	1.70	1.70	1.70	1.80	1.70	1.70	1.70	1.70	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	1.70	1.70	1.75	1.70	4.80	4.00	1.75	1.70	1.70	1.70	E	1.70	E	E	E	E	E
29	1.70	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	1.70	1.70	E
30	E	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.65	E	E	E	E	E	E
31	E	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E	E
No.	28	30	30	30	30	29	29	29	29	29	30	29	30	30	29	27	27	27	28	28	28	29	29	29
Median	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | **Akita** | Lat. 39°43.5' N, Long. 140°08.2' E

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	3.05^{S}	3.05^{S}	3.05^{F}	3.20	3.10	3.10	3.55	3.65	3.60	3.30	3.40	3.35	3.30	3.35	I$_{3.45}^{C}$	3.50	3.45	3.40	3.45	3.65	I$_{3.10}^{F}$	3.00	3.05	3.10^{S}
2	3.20	3.05	3.00	3.20	3.10	3.15	3.45	3.65	I$_{3.75}^{RH}$	3.50	3.40	I$_{3.50}^{R}$	3.40	3.65	3.10^{H}	3.20	3.60	3.50	3.40	RS	FS	FS	F	3.20^{F}
3	3.25	2.95	3.25^{F}	I$_{3.20}^{A}$	I$_{3.35}^{S}$	I$_{3.40}^{S}$	3.70	3.60	3.55	3.50	3.35	3.45	3.40	3.35	3.45	3.30	3.35	3.40^{S}	3.50^{R}	3.40	3.40	3.35	2.95	3.10
4	3.15^{S}	I$_{3.05}^{FS}$	FS	RS	S	S	3.50	3.60	3.60	3.65	3.40	3.40	3.45	3.40	3.50	3.20	3.45	3.55	3.70	I$_{3.40}^{A}$	RS	FS	F	I$_{3.15}^{RS}$
5	3.10^{F}	2.95	I$_{3.05}^{F}$	RF	A	A	3.50	3.70	3.55	3.65^{R}	I$_{3.50}^{A}$	3.30	3.40^{R}	3.35	3.50	3.60	3.55	3.45^{S}	3.60	I$_{3.40}^{A}$	3.25^{RS}	RS	RF	RF
6	3.30^{R}	I$_{3.05}^{RF}$	RF	RF	RF	A	3.70^{R}	3.40	3.65	3.65	3.60	3.35	3.55	3.50	3.40	3.30	3.50	I$_{3.60}^{RS}$	3.65	3.40	2.90	3.00	3.10^{RS}	3.10
7	3.00	3.20^{F}	3.05	3.05	3.05^{RS}	I$_{3.30}^{RS}$	3.45	3.40	J$_{3.70}^{R}$	3.65	3.35	3.35	3.50	3.35	3.25	3.30	3.35^{RSJ}	3.55^{R}	3.60	3.25	3.00	2.90	3.05	3.00
8	3.10	3.00	2.90	3.05	3.30	3.00	3.40	3.60	3.50	3.45	3.50	3.40	3.55	3.20	3.35	3.20	3.50	3.50^{S}	3.45	3.20	3.20	3.00	3.05	2.95^{F}
9	3.00	2.95	I$_{3.00}^{F}$	F	FS	F	I$_{3.50}^{FS}$	3.50^{S}	3.55	3.50	3.20	C	C	C	C	C	C	C	3.40	3.45	3.65	3.00^{S}	I$_{3.00}^{F}$	I$_{3.00}^{F}$
10	3.05^{F}	A	F	F	F	S	3.50	3.40^{S}	3.60	3.40	3.50	3.30	3.20	3.35	3.45	3.30	3.40	3.45	3.45	3.20	3.10	3.05	2.95	I$_{2.90}^{F}$
11	2.90	2.80	3.00	3.15	3.45	I$_{3.05}^{RS}$	3.50	3.50	3.55	3.30	3.50	3.60	3.40	3.20	3.20	3.45	3.40	3.50	3.35	3.35	3.25	2.80	2.90	2.90
12	2.70	2.85	3.10	2.80	2.85	3.00	3.40^{S}	3.35	3.60	3.30	3.25	3.15	3.35	3.40	3.30	3.35	3.45	3.50	3.10	2.90	2.90	3.00	3.10	2.90
13	2.70	2.85	2.80	3.20	I$_{2.95}^{RS}$	I$_{2.90}^{S}$	3.35	3.40	3.50^{R}	3.15	3.20	3.15	3.35	3.35	3.25	C	C	C	C	C	C	S	S	F
14	3.00	2.85	2.95	3.00	3.00	3.15^{S}	3.35^{R}	3.50^{S}	3.60	3.45^{H}	3.20	3.10	3.15	3.20^{R}	3.25	3.40	3.45	3.40	3.40	3.25	3.05^{R}	3.00	2.80	3.00
15	2.70^{RF}	2.90^{F}	I$_{3.00}^{FS}$	I$_{2.90}^{FS}$	I$_{3.35}^{RF}$	3.15	U$_{3.35}^{R}$	I$_{3.45}^{HS}$	3.45	3.45	3.45	3.35^{R}	3.45	J$_{3.40}^{R}$	3.35	3.55	3.50	3.40	3.45	3.40	3.10	2.95	3.25	2.95
16	I$_{2.85}^{F}$	2.90^{F}	3.15	3.10	U$_{3.45}^{R}$	3.35	3.45	3.60	3.45^{R}	3.40	3.30	3.15	3.25	U$_{3.35}^{R}$	3.45	3.40	3.50	I$_{3.50}^{A}$	3.45	I$_{3.20}^{A}$	U$_{2.95}^{R}$	3.20	3.00	J$_{3.00}^{R}$
17	2.90	3.10	RF	FS	RS	FS	3.40	3.40	3.50^{R}	3.35	3.35	3.45	3.30	3.50	3.50	3.40^{S}	3.45	3.65	3.30	3.30^{R}	3.25^{RS}	3.20^{RS}	I$_{3.45}^{RS}$	3.20
18	3.05	2.95	2.85	3.05	3.30	3.00	3.30	3.45^{R}	3.55	3.35	3.35	3.40	3.40	3.35	3.40	3.45	3.35	3.65^{S}	3.35^{R}	I$_{3.15}^{RS}$	3.25	3.40	3.05^{S}	3.05^{S}
19	F	FS	A	FS	S	I$_{3.25}^{FS}$	3.40	3.55	3.40	3.35	3.30	3.30	3.45	3.50	3.30	3.40	3.35	3.30	3.40	3.25	3.10	2.90	2.85^{S}	3.05
20	3.20	2.85	2.95	3.20	I$_{3.40}^{RS}$	3.10^{S}	3.20	3.55	3.55	3.50	3.30	3.40	3.35	3.45	3.30	3.40	3.45	3.45	3.30	3.05	3.10^{S}	3.20	2.90	2.90
21	2.90	2.85	2.85	I$_{3.10}^{F}$	A	A	3.25^{S}	3.55	3.60	3.70	3.35	3.35	3.60	3.40	3.40	U$_{3.40}^{R}$	3.65^{RS}	3.55	3.25^{RS}	3.10^{R}	I$_{3.20}^{RS}$	3.40	3.00	2.75
22	2.95	2.95	2.85	2.95	3.05	3.00^{R}	U$_{3.60}^{R}$	3.45	3.65	3.50	3.50^{R}	3.60	3.40^{R}	3.30	3.40	U$_{3.50}^{R}$	3.45	3.40	3.35	I$_{3.35}^{A}$	3.10	I$_{3.05}^{A}$	RF	RF
23	3.10	3.00	I$_{3.00}^{FS}$	I$_{3.00}^{FS}$	3.00	I$_{3.10}^{RS}$	I$_{3.40}^{FS}$	U$_{3.50}^{R}$	U$_{3.70}^{R}$	3.60^{R}	3.50	3.50^{R}	3.60	3.30	3.30	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	3.40	3.20	3.30	2.95	3.10	3.20	3.50	3.20	2.70	2.45^{S}	3.20^{S}	FS	FS	FS
25	FS	A	FS	FS	F	3.15	3.40^{R}	3.50	3.40	3.55	3.40	3.35	3.25	3.30	3.25	3.45	3.45	3.55	3.10	3.30	I$_{3.15}^{RS}$	3.10^{S}	I$_{2.95}^{FS}$	2.95^{S}
26	2.90	2.95	3.10	3.20	3.50	3.10	I$_{3.50}^{R}$	3.65	3.55	3.45	3.50	3.35	3.30	3.25	3.45	3.55	3.60	3.65	3.45	3.30	I$_{3.25}^{A}$	3.20	3.10	F
27	F	F	F	F	F	3.60	I$_{3.50}^{RS}$	I$_{3.70}^{F}$	3.70^{H}	3.50	3.05	3.30	3.30	3.40	3.50	3.60	3.65	3.45	3.25	3.20	3.20	3.30	F	F
28	F	2.95^{F}	3.10^{S}	I$_{3.10}^{F}$	3.25^{S}	I$_{3.35}^{S}$	3.50	3.60	3.35	3.50^{S}	3.55^{R}	3.45^{R}	3.40	3.45	3.45	3.55	3.80	A	A	2.85^{R}	3.10	3.15	FS	FS
29	I$_{3.20}^{F}$	FS	FS	F	I$_{3.00}^{FS}$	I$_{3.30}^{RS}$	3.55	3.70^{R}	U$_{3.75}^{R}$	J$_{3.80}^{R}$	3.45	3.15	3.30	J$_{3.50}^{R}$	I$_{3.55}^{RS}$	3.60^{R}	3.55	3.65	3.35^{R}	I$_{3.15}^{A}$	3.10	J$_{3.20}^{R}$	I$_{3.00}^{RS}$	I$_{3.00}^{FS}$
30	I$_{3.05}^{FS}$	2.90^{R}	2.90	2.75	U$_{2.90}^{RS}$	I$_{2.90}^{RS}$	I$_{2.80}^{S}$	3.05	3.60	2.75	2.90	2.95	3.10^{H}	3.45^{H}	U$_{3.35}^{R}$	3.40	3.35	3.25	I$_{3.00}^{FH}$	3.35	I$_{3.10}^{F}$	3.10^{F}	I$_{2.95}^{F}$	I$_{2.85}^{FS}$
31	2.70^{F}	2.80^{F}	F	F	2.80^{S}	2.55^{S}	3.20	3.30	3.50	3.50^{R}	3.45	3.50	3.45	3.40^{H}	3.45	3.55	I$_{3.70}^{A}$	3.40	I$_{3.10}^{A}$	I$_{3.20}^{A}$	3.40	A	F	F
No.	26	25	21	19	20	23	30	30	30	30	31	30	30	30	30	28	28	27	28	28	27	24	21	22
Median	3.00	2.95	3.00	3.10	3.10	3.10	3.45	3.50	3.55	3.50	3.40	3.35	3.40	3.35	3.40	3.40	3.45	3.50	3.40	3.25	3.10	3.10	3.00	3.00
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F2

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

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	I 3.90 L	4.00 L	L	C	L	L							
2								L	L	3.90	I 4.00 LH	I 3.90 L	I 3.80 L	L	LH									
3								A	L	L	4.40	3.85 L	4.00 L	3.95	L	L	L							
4									L	3.95 L	4.10 L	A	A	I 3.60 L	3.65 L	L	A							
5										A	A	4.15 L	A	A	L	L	A	A						
6									L	3.65 L	3.95	3.85 L	3.65 L	3.55 L	3.60 L	L	L							
7								L	L	3.75	3.75	3.70 H	3.65 LH	L	L	L	A							
8									L	LH	LH	3.90 L	L	L	4.20 L	L	L							
9									L	L	I 4.00 L	C	C	C	C	C	C							
10									L	3.85 L	4.15	4.25	I 3.65 LH	3.60 L	L	L	L							
11									L	L	L	L	L	L	L	L								
12									L	L	LH	A	LH	L	A	L								
13								A	A	L	A	A	A	L	L	C	C							
14									L	L	L	L	L	L	L	L	L							
15								L	L	A	3.95 LH	LH	L	L	LH	L	L							
16								L	I 4.00 L	3.90	I 3.95 L	4.10 L	L	L	L	A								
17									L	I 4.00 LH	I 3.70 LH	3.85 L	3.70 L	3.75 L	L	L								
18									L	L	3.90	I 4.10 LH	LH	L	L	L								
19									A	A	A	A	LH	L	L	A								
20									L	L	L	L	L	L	L	L								
21									A	L	A	A	A	L	LH	L	L							
22									L	L	I 3.95 LH	LH	L	3.75 LH	L	L	L							
23									L	L	L	I 3.90 H L	LH	L	LH	C	C							
24								C	C	C	L	4.00 L	LH	L	L									
25										L		L	L		L	L								
26									L	L	I 4.10 L	4.05 L	LH	L	L									
27									L	L	L	4.05 H	L	L	L									
28										L	L	B	L	L	L									
29									L	L	3.70 L	I 3.85 LH	L	L	L	L								
30								L		3.50	3.75	3.60	L	L										
31									L	3.85 L	L	L	L	L	L	A								
No.									1	9	15	17	7	6	3									
Median									U 4.00	3.85	3.95	3.90	3.70	3.70	3.65									
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F1 Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 8

IONOSPHERIC DATA

Oct. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								245	245	245H	250	285	290	260	I255C	260	245							
2								245	235H	280	255	245	250	250	250									
3								230	245	255	260	255	280	295	270	250	265							
4									245	250	275	I250A	265	270	285	290	250							
5										250	I260A	280	275	260	255	240	250	I250A						
6									250	245	255	260	260	285	300	265	250							
7								250	235	245	275	260	250	280	280L	280	255A							
8									250	270	245	245	250	260	270	265	250							
9									250	250	285	C	C	C	C	C	C							
10									240	270	250	250	280	280	260	275	245							
11									245	275	245	245	250	295	290	255								
12									250	240	280	255	265	255	280	255								
13								255	245	250	I250A	255	245	255	255	C	C							
14									235	235	270L	250L	255	255	260	245	240							
15								235	240	250	255	250	245	260	250	255	230							
16								225	255	240	260	265	260	255	250	255								
17									250	265	260	250	270	250	250	250								
18									250	250	265	245	245	260	255	250								
19									250	250	260	250	250	265	245	245								
20									245	250	255	260	250	250	245	250								
21									245	235	270A	255	I250A	250L	260	260	230							
22									235	255	245	230	260	275	250	245	230							
23									230	245	250	240	250	265	275	C	C							
24									C	C	255	295	260	290L	280									
25										245		250	245		290	245								
26									240	245	245	250	255	260	240									
27									230	240	245H	245	245	250	250									
28										230	255	250	250	260	250									
29									220	230	270	290	260	245	250	235								
30								315		440	395	320	280	240										
31									245	245	270	245	245	245	250	245								
No.								8	26	30	30	30	30	29	29	22	12	1						
Median								245	245	250	260	250	250	260	255	250	250	U250						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F2 | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 9

IONOSPHERIC DATA

Oct. 1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	260	265	290	245	245	255	220	235	235	210	I_{200}^{A}	I_{210}^{A}	205	240	I_{225}^{C}	I_{235}^{A}	240	245	230	230	E_{295}^{C}	E_{295}^{C}	295	C
2	260	280	280	265	I_{255}^{A}	245	230	240	235	205	230	205	225	I_{200}^{A}	210^{H}	245	245	240	A	A	270^{A}	240	245	255
3	I_{250}^{A}	290	245	I_{255}^{A}	I_{250}^{A}	240	215	I_{230}^{A}	225	215	195	195	195	195^{H}	250	245	245	240	215	220	240	225	190	255
4	260	I_{280}^{A}	280	I_{265}^{A}	245	250	215	220	225	210	200	A	A	A	250	275	I_{255}^{A}	240	I_{220}^{A}	I_{240}^{A}	I_{250}^{A}	280	260	265
5	285	295	270	275^{A}	A	A	210	240	260	A	A	200	A	A	255	240	A	A	250^{A}	I_{260}^{A}	270	275	245	275
6	250	280	260	260	225	I_{260}^{A}	235	230	230	220	210^{A}	205	200	215	230	250	250	230	220	I_{240}^{A}	I_{275}^{A}	290	290^{A}	290
7	275	275	255	290	255	270	225	240	235	220	200	205^{H}	200^{H}	200	225	A	A	230	215	230	245	285	280	270
8	250	270	295	285	230	265	225	245	240	230^{H}	230^{H}	205	195	195	195	235	245	230	220	240	245	270	255	280
9	275	260	295	295	260	260	210	225	235	230	210	C	C	C	C	C	C	C	210	I_{230}^{A}	225	I_{250}^{A}	295^{A}	255
10	250	I_{265}^{A}	I_{280}^{A}	280	245	255	230	245	240	220	200	200	190^{H}	230	245	210	240	245	220	240	245	285^{A}	250	295
11	295	295	285	250	225	I_{225}^{A}	215	215	I_{230}^{A}	240	230	I_{230}^{A}	220	240	230	245	245	230	245^{A}	245	245	240	275	295
12	305	295	255	295	295	275	220	235	225	220	210	I_{240}^{A}	190^{H}	240	I_{235}^{A}	240	245	225	235	290	295	295^{A}	255	260
13	295^{A}	I_{330}^{A}	I_{305}^{A}	255	A	E_{305}^{E}	245	I_{235}^{A}	I_{240}^{A}	220	I_{240}^{A}	I_{240}^{A}	I_{240}^{A}	220	245	C	C	C	C	C	C	230	I_{265}^{A}	285
14	285	300	285	265	270	245	240	240	230	220	205	220	A	A	I_{235}^{A}	I_{240}^{A}	245	235	220	245	I_{260}^{A}	270^{A}	I_{290}^{A}	280
15	310^{A}	305	330	305	245	275	220	235	230	I_{210}^{A}	205^{H}	200^{H}	I_{220}^{A}	I_{210}^{A}	205^{H}	255	I_{245}^{A}	230	I_{255}^{A}	240	260	275	245	275
16	300	305	260	250	235	225	220	225	200	200	245	200	230	I_{250}^{A}	A	A	255	I_{250}^{A}	240	I_{265}^{A}	290^{A}	245	250	290
17	300	300^{A}	300	I_{300}^{A}	265	280	235	220	215	210^{H}	200^{H}	200	235	190	230	230	245	220	225	250^{A}	A	I_{250}^{A}	240	250^{A}
18	E_{300}^{E}	E_{290}^{E}	270	250	240	265	245	230	230	220	205	195^{H}	205^{H}	195	240	230	240	I_{230}^{A}	I_{235}^{A}	255	250	240	A	E_{285}^{E}
19	E_{295}^{E}	280	A	295	270	E_{300}^{E}	245	235	A	A	A	A	195	215	240	I_{230}^{A}	235	225	220	245	245	290	I_{295}^{A}	260
20	255	250	295	260	I_{250}^{A}	245	240	240	240	I_{240}^{A}	240	I_{220}^{A}	230	210	230	240	245	220	220	255	255	255	285	285
21	295	295	295	A	A	A	245	245	A	A	A	A	A	220	205^{H}	255	245	220	250^{A}	290	270	215	265	E_{300}^{E}
22	295	295	310	300	265	280	240	230	235	225	215^{H}	215^{H}	205	225^{H}	250	240^{A}	I_{230}^{A}	225	240	I_{255}^{A}	270^{A}	A	A	245
23	E_{270}^{E}	270	275	300	275^{A}	275^{A}	I_{230}^{A}	230	230	220	215	205^{H}	190^{H}	210	200	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	225	205	200^{H}	245	255	240	230	245	290	380	255	280	290	250
25	245	A	E_{320}^{E}	A	A	245	230	225	235	I_{230}^{A}	250	235	245	260	250	245	245	220	I_{245}^{A}	245	245	245	290	290
26	295	I_{295}^{A}	270	235	240	245	240	225	240	220	210	200	195^{H}	245	210	245	235	220	220	240	I_{250}^{A}	245	250	295
27	325	295	295	270	260	225	205	225	215	230	220	200	235	I_{210}^{A}	240	245	225	205	I_{240}^{A}	245	245	245	275	280
28	270	295	270	260	240	205	215	215	230	220	205	I_{210}^{B}	I_{235}^{B}	235	235	235	220	A	A	A	275^{S}	I_{270}^{A}	295	265
29	255	260	255	300^{A}	280	300	220	215	I_{215}^{A}	225	200	225^{H}	I_{245}^{A}	225	I_{230}^{A}	235	230	205	230	I_{255}^{A}	260	235	255	270
30	275	295	275	330	330	E_{360}^{E}	290^{H}	310	250	A	A	250	250	240	245	230	230	I_{250}^{A}	I_{275}^{A}	255	225	250	290	300
31	320	295	295	325	E_{295}^{E}	E_{345}^{E}	255	245	240	210	200	205	245	220	240	I_{230}^{A}	I_{225}^{A}	205	I_{240}^{A}	A	A	A	A	A
No.	28	29	28	28	25	24	30	30	28	26	27	27	26	27	29	26	26	26	27	26	26	27	27	26
Median	275	295	280	270	250	255	230	230	230	220	210	205	210	220	235	240	245	230	230	245	250	250	275	275
U.Q.																								
L.Q.																								
Q.R.																								

h'F | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A10

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IONOSPHERIC DATA

Oct. 1963 | h'Es | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

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	105	110	105	105	105	105	G	155	145	120	110	110	120	G	C	120	125	120	110	105	105	105	105	C
2	105	100	105	100	105	120	C	135	135	120	110	125	115	120	105	155	140	135	120	110	125	105	100	120
3	120	115	115	115	110	110	110	105	105	140	G	120	100	G	170	145	150	130	120	120	110	100	E	105
4	E	110	105	105	105	105	145	G	145	140	120	120	115	120	120	150	145	135	120	120	115	110	105	E
5	115	110	110	110	110	110	115	145	140	125	115	140	120	115	155	140	135	125	120	130	120	130	115	120
6	110	110	110	110	110	110	110	110	130	125	120	120	120	125	120	125	130	105	100	110	110	110	110	110
7	S	110	110	110	110	E	150	140	120	120	120	115	115	115	110	110	105	105	105	105	100	100	E	E
8	E	E	E	110	105	105	155	170	140	120	110	105	G	G	G	155	145	130	120	E	E	105	105	E
9	120	115	115	105	105	E	G	145	140	130	130	C	C	C	C	C	C	C	105	135	105	100	105	115
10	110	115	110	105	110	E	155	160	105	130	130	125	130	120	100	G	105	100	135	E	110	110	110	110
11	105	105	105	125	115	115	120	115	110	110	110	110	105	G	155	145	135	120	120	115	110	E	E	E
12	E	130	130	120	120	120	160	145	145	145	125	115	130	110	100	100	140	130	120	120	115	110	110	110
13	105	105	105	110	105	105	G	135	120	120	110	105	105	145	105	C	C	C	C	C	C	110	110	110
14	110	110	105	105	105	105	105	G	140	130	125	120	120	120	120	120	130	130	120	115	110	115	110	150
15	130	120	125	125	130	E	150	150	120	115	125	110	105	105	105	G	150	130	125	120	115	115	115	E
16	S	110	110	105	E	110	G	G	110	G	G	130	125	125	120	115	115	115	110	110	110	115	E	E
17	S	120	115	110	110	110	E	145	125	110	110	130	G	G	160	150	130	100	120	115	115	115	110	105
18	105	105	105	100	100	E	145	140	145	120	115	110	120	110	110	120	120	110	110	110	115	110	110	110
19	115	115	115	120	110	115	115	130	135	120	110	105	105	100	105	100	100	100	100	E	100	110	110	110
20	110	110	105	105	105	110	G	105	135	120	125	120	120	125	125	140	155	140	125	120	105	105	105	125
21	E	E	E	110	110	110	E	135	130	130	130	120	115	115	125	G	S	E	125	130	125	105	100	100
22	100	100	100	100	E	E	105	110	110	125	125	120	120	130	135	120	125	E	120	135	115	110	105	E
23	115	115	E	110	110	110	110	110	125	120	120	125	130	125	105	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	125	125	120	125	145	140	145	145	E	E	E	E	165	145
25	140	125	130	120	120	110	E	165	G	160	155	155	105	G	155	145	135	120	115	110	110	110	105	110
26	E	105	100	105	100	E	G	145	140	130	120	G	105	105	105	105	100	100	105	110	110	E	110	100
27	100	E	100	120	105	E	G	130	125	120	120	115	105	105	100	130	115	100	130	105	115	E	105	E
28	E	E	105	105	100	105	E	150	100	120	115	B	B	120	165	130	145	120	115	115	110	110	105	105
29	E	105	100	115	100	E	E	130	115	120	120	125	125	125	100	130	120	100	115	110	110	110	E	105
30	E	110	E	E	E	E	155	105	140	135	125	145	125	G	120	140	130	120	120	115	110	110	110	105
31	105	110	105	110	E	120	E	145	145	130	120	120	120	145	135	135	125	120	115	115	110	105	110	105
No.	19	26	26	29	26	20	16	27	29	29	29	28	27	23	28	25	27	26	28	25	27	26	25	21
Median	110	110	105	110	110	110	130	140	130	120	120	120	120	120	120	130	130	120	120	115	110	110	110	110
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'Es

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

A 11

IONOSPHERIC DATA

Oct. 1963 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Akita | Lat. 39°43.5' N, Long. 140°08.2' E

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	f2	f2	f2	f2	f		h2	h2	h21	c2	c2	h			h2	h	c2	f2	f2	f	f2	f	
2	f	f2	f2	f2	f3	f		h2	h	h2	c2	h 12	c2	h212	1	h2	h5	h4	f4	f2	f3	f2	f2	f2f
3	f3f	f2f	f2f	f3	f2	f3	c2	13	12	h21		h	1		h	h2h	h21	h31	f3	f	f2	f		f
4		f2	f3	f3	f2	f	h		h21	h 1	h 1	h5	c3	h2	h3	h3	h5	h3	f6	f3	f2	f2	f	
5	f2	f2	f	f2	f3	f3	c	h3	h2	h2	c4	h c2	h2	c3	h 13	h212	h4	h6	f3	f6	f3	ff2	f2	f2f
6	f	f2	f	f3	f2	f3	13	12	h	h2	h2	h 1	h	h	h 1	h212	h 1	1	f	f2	f2f2	f2	f2	f
7		f2	f2	f2	f2		h	h	h	h3	h2	h2	h2	c2	12	14	15	f5	f3	f	f2	f		
8				f	f	f	h	h	h2	h2	c2	12				h 1	h 1	h2	f2			f	f	
9	f2	f2	f3	f2	f2			h2	h2	h21	h								f	f2f2	f3	f3	f2	f2f
10	f2	f3f	f3	f4	f2		h	h2	1	h	h2	h	h	h	1		1	1	f2f		f	f3	f2	f2
11	f2	f2	f	f f	f	f2	c	c5	c2	c3	c2	c3	12h		h	h2	h2	h3	f3	f2	f2			
12		f2f	f2	f2	f	f	h	h2	h	h c	h	c2	h c	c2	13	13	h2	h3	f	f3	f3	f5	f2	f2
13	f3	f3	f3	f3	f8	f2		h3	h3c	h2	c5	c3	13	h212	1							f	f4	f2
14	f2	f2	f2	f2	f2	f2	f		h2	h2	h	h2	h2	h2	h2	h3	h31	f2	f3	f5	f4	f2	f4	f f
15	f3	f2	f2	f6	f		h	h2	h2	h2	h21	c2	12	13	12		h3	h71	f3	f4	f5	f4	f	
16		f2	f	f2		f2			14			h	h	h2	c3	c3	c5	f4	f6	f3	f3	f2		
17		f4	f3	f2	f2	f2		h	h	c2	c	h 1			h	h 1	h 1	f	f	f3	f2	f3	f3	f4
18	f2	f2	f2	f	f		h	h	h	h2	c	c2	c	c2h	12	h3	c3	f3	f2	f2	f2	f2	f3	f2
19	f2	f2	f3	f2	f2	f2	f2	h	h3	h3	c2	12	12	13	12	13	12	f2	f		f	f	f2	f2
20	f3	f	f2	f2	f3	f2		13	h212	h212	h	h213	h	h2	h2	h	h	h2	f	f	f	f3	f3	f
21				f5	f3	f2		h4	h	h2	h3	c21	c3	c2	h2				f2	f2	f2	f	f	f
22	f	f	f	f			12	12	12	h	h	c 1	c21	h 1	h	c31	c21		f3f2	f2f	f2f2	f3	f2	
23	f	f2		f2	f3	f3	f2	12h	h212	c21	h	h	h	h	1									
24											h2	h	h	h2	h2	h2	h51	f2					f	f
25	f	f3	f2	f4	f5	f		h c		h2	h	h 1	1		h21	h21	h4	f3f	f3	f2	f2	f	f3	f
26		f3	f	f	f2			h 1	h4	h 1	h		12	12	1	13	13	f2	f2	f2	f4		f2	f2
27	f		f	f	f			h2	h31	h2	h	c12	12	13	12	h	c	f	f3	f2	f		f	
28			f	f	f	f		h	1 h2	h2	c2			h	h 1	h21	h 12	f3f	f4f	f2	f2	f4	f2	f2
29		f	f2	f2f2	f			h	c4	h4	h	h	h213	c212	14h	h213	c2	f2f	f2f5	f3	f3	f		f3
30		f					f	1	h31	h2	h21	h	h2		ch	h21	h4	f5	f3f	f3	f	f2	f2	f2
31	f2	f	f	f		f		h	h1	h	h2	h2	h	h2	h21	h2	h4	f	f6	f5	f4	f3	f2	f3
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Oct. 1963 | foF2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35°42.4'N | Long. 139°29.3'E

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	C	C	C	C	C	C	C	C	C	C	6.9	6.9	6.9	I 8.0R	J 8.5S	J 8.5R	I 8.5R	J 8.1S	U 7.4S	J 4.7S	I 2.9A	I 3.1A	U 3.3S	I 3.4A
2	U 3.4S	U 3.2S	3.1	3.0	2.8	I 2.8S	J 4.4S	5.9Z	6.4	5.8	7.0	7.2S	J 8.3R	I 6.9R	5.4	J 6.4S	6.0	U 6.7S	6.1	6.1	U 4.3S	I 3.7A	U 3.4S	3.5
3	3.6	3.6	3.6	3.3	3.2H	U 3.1S	I 5.1A	J 6.6R	6.0	6.5	U 6.2R	6.7R	6.0	6.4	6.9	6.6	U 7.0S	9.1S	U 7.2S	I 5.0S	3.2	3.4	3.2	3.2
4	U 3.2S	3.2	3.2	3.2	I 3.6A	I 3.5S	J 5.0S	5.8	6.3	6.8	U 5.9S	J 7.3R	6.4R	I 6.4C	U 6.3R	6.9	U 8.8R	S	A	3.4	I 3.2S	2.8	J 3.0R	I 3.3F
5	3.4	3.4	3.5	3.4	3.6	3.2	I 4.6S	5.8	6.0	6.6	6.2	6.7	9.4R	J 8.8R	U 7.2S	6.0S	6.1	6.2	J 6.6S	J 5.0S	J 4.0S	A	A	I 3.5F
6	U 3.6S	A	A	3.4	3.3	J 3.0R	U 4.8S	J 6.2S	I 7.2S	7.1	6.4	6.9	6.9	6.4R	7.0R	7.1S	I 7.6S	I 7.0S	J 5.3S	S	S	I 2.8S	I 3.0S	U 3.0S
7	3.3S	U 3.2S	3.0	2.9	2.7	U 2.7S	U 4.7S	U 5.8S	U 7.2S	U 7.0S	6.4	J 7.2S	7.2	6.5	J 6.3R	5.8	I 7.3S	J 8.9S	J 6.6S	U 3.9S	U 3.3S	U 3.4S	I 3.6S	3.5S
8	U 3.6S	I 3.4S	U 3.4S	3.4	3.6	U 3.5S	J 4.4S	J 6.2S	I 7.0S	J 8.1S	8.7	8.1	7.2S	5.8	6.6	7.0	8.2	I 7.8S	6.0	I 4.6S	U 3.7S	3.6S	3.6	I 3.7F
9	U 3.5S	4.0	I 4.0F	U 4.1S	3.6F	I 4.0F	6.0	6.6	U 7.1S	6.7	J 8.0S	8.2	J 7.7S	U 7.4S	7.3S	I 7.3S	I 8.0S	I 8.2S	I 7.2S	F	A	2.9S	I 2.8R	J 3.0S
10	3.0S	3.1	3.1	A	A	A	U 4.8S	5.3	J 7.8S	J 7.6S	6.8	J 7.8S	8.3	8.9	J 8.0S	7.0	U 7.1S	U 7.2S	D 7.4S	5.5	I 4.2S	3.9S	U 3.9S	U 3.8S
11	U 3.7S	3.6	3.5	U 3.8S	3.6	U 2.9S	5.4S	5.5	6.8	7.4	8.3S	J 7.7S	J 7.2S	7.0	J 8.0S	8.4R	J 8.4R	U 9.1S	7.1S	5.3S	U 4.6S	3.0	3.1	3.1
12	J 3.0S	3.5	I 3.6S	3.0	3.1	3.5	U 5.6S	6.9	7.0S	U 7.4S	I 8.1R	J10.1S	J 9.1S	9.1	J 7.6S	J 8.0S	J 8.3R	6.9	I 5.4A	U 3.9S	S	A	F	U 3.5S
13	I 3.4F	3.6S	U 3.8S	I 4.1C	2.8	J 3.0S	J 5.2S	I 7.6S	U 9.5S	U 9.8R	J10.1S	9.1	9.8S	9.0	J 8.2R	J 8.3S	8.6	I 7.8S	I 6.8A	I 5.8A	I 4.6S	3.4	U 3.5S	3.3
14	3.4S	C	C	C	C	C	C	C	C	7.2	8.3	I 9.1C	I 9.9C	10.6	I10.4R	J10.2S	U 8.6S	I 8.1S	6.6S	I 4.6S	4.4	3.5S	3.4	3.8S
15	3.4	3.5S	I 3.5A	3.7	4.1S	2.9R	U 5.7S	J 7.2S	8.6	I 8.7C	8.8	9.1	J10.0R	8.1	J 8.3S	U 7.6S	8.2	J 8.1S	5.9	U 4.1S	I 4.2S	I 3.8A	3.6	3.4
16	3.4S	3.4F	3.5S	U 3.6S	3.9S	I 2.7S	J 5.0S	U 6.9S	7.1S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	J 9.8S	8.9	J10.1S	8.2	J 7.8R	J 7.6S	J 8.3S	U 7.5S	I 4.8S	U 3.7S	U 4.6S	U 3.8S	U 3.7S	I 3.4A
18	U 3.2S	3.3	2.9S	U 3.3S	3.1	2.7S	U 4.5S	J 7.8S	I 7.0C	J 9.1S	U 9.5S	9.5	J10.5R	9.4S	8.4	7.3	7.0	I 7.5S	5.4	3.8S	J 4.0S	3.4	3.0	2.9
19	U 2.7S	3.2	3.1	3.2S	3.1	3.1	J 5.4S	I 7.4S	6.4	7.3	J 7.3S	U 9.0R	9.0	8.4	7.4	U 7.2S	7.1	6.6	J 5.4R	3.6	U 3.2S	I 3.4A	I 3.5A	3.8
20	3.9S	I 3.3A	I 3.2A	3.4	3.5	I 2.9A	U 4.4S	6.7	J 8.1R	8.7	J 7.6S	J 8.1R	J10.0S	8.4R	8.1	J 7.6S	J 8.1S	J 7.9S	J 5.5R	3.6	3.9	I 3.9S	3.7	3.6S
21	I 3.5S	3.3	3.5S	U 3.6S	3.1	2.9	J 5.0S	U 7.6S	I 8.2R	7.8S	7.4S	9.5	J 9.7S	8.4	8.1	J 8.3S	9.0	6.1S	3.8S	3.5S	A	A	S	3.0
22	U 2.9R	2.9	I 2.9C	2.9	3.4	3.1S	4.9S	7.2S	6.6	J 8.1S	8.9	7.0	8.1R	U 7.8R	9.0	J 8.2S	U 8.1S	5.8	U 4.7S	4.4	I 3.6A	I 3.2A	3.2	3.5
23	I 3.4A	3.4	3.2	3.4	3.5	3.5S	5.4	6.9	7.4	9.0	I 8.2S	J 8.1R	6.9	7.2	7.6S	8.4S	8.4R	J 6.8S	U 4.6S	3.1	2.9	3.0S	U 3.3S	I 3.2R
24	3.4	3.4	3.4	3.7	U 4.2S	J 3.1F	U 4.4S	U 6.3S	J 7.9S	U 7.8S	I 7.2S	8.8	8.6	J 8.0S	10.8	11.0	U 7.4S	6.0	U 5.2S	U 5.1S	6.4	U 3.9S	U 3.9S	U 5.2F
25	F	F	U 4.1S	F	F	I 4.0F	J 4.9S	6.5R	6.0	8.5R	7.3S	J 9.9S	8.5	7.1	8.9	J10.5S	J 8.2S	U 7.4S	5.4	5.9	J 4.3S	3.4	3.3	F
26	F	3.4	U 3.5S	3.6	3.5	I 2.6S	4.1S	I 6.8S	J 6.6R	J 9.4R	8.9R	8.8	9.1S	9.2	J10.0S	8.9	J 7.8S	6.9	U 4.2S	I 3.3A	I 3.4A	I 3.3A	3.2	3.4
27	3.3S	3.3	J 3.2F	I 3.6F	J 4.2S	3.3	J 4.1S	5.9	J 6.6R	7.0	7.5S	9.8S	10.6	U 9.6S	I 9.2S	8.9	7.2S	I 4.8C	4.3S	U 3.9S	3.8	U 3.5S	I 3.2A	3.5S
28	3.4	3.7S	I 3.6S	3.6	3.9S	3.5	U 3.6S	5.6	6.6	U 8.0R	8.0R	I 8.6B	I 8.4R	9.0	J 7.9R	J 8.4S	J 8.0S	I 5.0A	3.0S	A	A	A	I 3.7A	I 3.5A
29	3.5	3.4S	3.9S	2.9	U 3.6S	I 4.0F	J 4.3S	J 6.3S	5.9	6.8	7.1	8.5	I10.5C	J10.8R	8.4S	I 8.0C	I 7.6C	5.9	J 5.2R	U 3.4S	I 3.6A	4.0S	4.0S	3.9S
30	U 3.8S	4.0	J 4.3S	U 3.9S	I 3.5F	U 2.8R	J 4.4S	5.7	5.3	6.4R	7.3	I 9.4C	J 9.1R	7.8R	9.4	J 7.9S	6.9	I 6.8C	J 5.3S	6.7	4.6	4.2S	4.1	4.0
31	3.9	4.0	4.0	4.0	4.2F	3.5	4.2S	6.4	J 8.1S	U 9.5R	7.1	J10.9R	9.0	8.5	J 7.7S	8.8	I 6.0A	I 4.8A	I 4.0A	I 3.7S	I 3.5A	3.1S	I 3.3A	I 3.4F
No.	27	26	27	26	26	27	28	28	28	28	30	30	30	30	30	30	30	29	29	27	25	26	27	29
Median	3.4	3.4	3.5	3.4	3.5	3.1	4.8	6.4	7.0	7.5	7.4	8.6	8.8	8.2	8.0	8.0	8.0	U 7.0	5.4	1.4	U 3.9	3.4	U 3.4	3.5
U.Q.	3.6	3.6	3.6	3.7	3.6	3.5	5.2	6.9	7.6	8.6	8.3	9.1	9.8	9.0	8.5	8.4	8.3	8.0	6.6	5.1	4.4	3.8	3.7	3.6
L.Q.	3.3	3.3	3.2	3.2	3.1	2.9	4.4	5.8	6.4	6.9	7.0	7.3	7.2	7.1	7.3	7.1	7.1	6.2	4.8	3.6	3.4	3.1	3.2	3.2
Q.R.	0.3	0.3	0.4	0.5	0.5	0.6	0.8	1.1	1.2	1.7	1.3	1.8	2.6	1.9	1.2	1.3	1.2	1.8	1.8	1.5	1.0	0.7	0.5	0.4

The Radio Research Laboratories, Japan

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 1

IONOSPHERIC DATA

Oct. 1963 | foF1 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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							C	C	C	C	L	L	S	L	S	L	L							
2									L		L	B	L	L	L	L								
3							A		L	A	L	L	B	S	L	L								
4									L	L	S	S	S	C		L	L	S	A					
5										L	L	B	B	L	L	B								
6									L	L	L	S	L	L	L		L							
7										L		L	L	L	L	L	L	A						
8								L	L	L	L	L	S	S	L	L	L							
9									L	L	L	L	L	L	L	S	L							
10										L	S	L	L	L	L	L								
11									A	L	L	S	L	L	L	L								
12											L	L		L	L	L	A							
13										L	L	L	L	L	L	L								
14										L	L	C	C	L	A	L								
15									L	C	S	L	L	L	L									
16										C	C	C	C	C	C	C	C	C						
17							C	C	C	C	L	S	S	L	S									
18									C	L	L	L	L	L	L	L								
19										L	L	L	L	L	L		L							
20									L	L	L	L	S	L	L	L								
21									L	L	L	L	L	L	L									
22										L	L	B	L	L	L	L								
23									L	L	L	L			L									
24									L	L	L	A	A	L	L	L								
25										L	L	L	L	L	L	L								
26										L	L	L	L	A	A	L								
27										L	L	L	L	L	L	L		C						
28										L	L	B	B	L	L	L		A						
29									A	L		A	C	L	L	C	C							
30									L	L	L	L	L		L	A		C						
31									L	L	L	L	L	L		A	A	A						
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 2

IONOSPHERIC DATA

Oct. 1963 | foE | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N. | Long. 139° 29.3'E

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							C	C	C	C	A	S	S	S	S	R	B	B	S					
2							A	S	R	S	S	B	B	S	B	S	B	S	S					
3							A	B	U2.65R	S	S	B	B	S	S	B	B	S	S					
4							S	S	B	I2.90B	I3.25R	I3.20S	S	C	A	I2.80S	B	S	S					
5							S	I2.40S	B	S	R	B	B	S	B	B	B	A	S					
6							S	B	A	A	S	S	S	S	A	S	A	B	S					
7							S	S	B	A	S	A	A	S	S	A	A	S						
8							S	B	R	B	S	B	S	S	S	B	S	S						
9							S	S	S	3.00R	3.20R	S	S	S	S	A	S	S						
10							S	A	S	B	S	S	S	3.20	S	R	B	B						
11							A	A	A	A	A	R	S	3.40S	I3.15S	I2.85S	A	A						
12							S	S	A	A	A	S	A	A	R	S	B	S						
13							S	S	A	A	A	A	A	S	S	S	S	S						
14							C	C	C	S	A	C	C	A	A	A	A	S						
15							I2.00S	S	A	C	S	A	S	S	S	S	2.55	S						
16							S	S	S	C	C	C	C	C	C	C	C	C						
17							C	C	C	C	S	S	S	S	S	B	S	S						
18							S	S	C	A	A	S	S	S	A	A	S	S						
19							S	A	A	S	S	A	S	S	S	A	A	S						
20							S	S	S	R	S	S	S	A	A	S	S	S						
21							S	S	2.75R	S	S	S	A	S	S	S	B	S						
22							S	B	R	A	S	B	B	B	B	B	S	S						
23							S	A	A	A	S	S	S	S	S	2.75R	U2.45S	S						
24							S	B	R	2.95R	A	A	A	S	S	B	S	S						
25							S	S	B	S	B	S	S	B	B	B	B	S						
26							S	S	A	B	B	B	A	A	A	B	S	S						
27							S	S	A	A	A	S	A	B	B	A	B	C						
28							S	B	A	R	A	B	B	S	S	B	A	S						
29							S	A	R	R	S	A	C	S	3.00	C	C	A						
30							S	B	2.50	I2.80A	S	A	A	S	B	A	A	C						
31							S	S	S	A	S	B	B	I3.00S	2.90	I2.50A	A	S						
No.							1	1	3	4	2	1		3	3	4	2							
Median							U2.00	U2.40	2.65	U2.90	U3.20	U3.20		3.20	3.00	U2.80	U2.50							
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 3

IONOSPHERIC DATA

Oct. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4 N | Long. 139° 29.3 E

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	C	C	C	C	C	C	C	C	C	C	3.3	S	S	S	S	G	B	B	2.2M	3.5M	6.3M	J 4.4S	3.5M	3.3M
2	S	S	2.5M	2.2	E	S	3.0S	S	3.2	G	G	B	B	S	B	S	B	S	S	S	3.5M	J 5.6	4.5M	3.2M
3	J 3.0	3.4M	2.5M	3.1	E	2.4M	6.7M	B	3.6	5.5M	S	B	B	S	3.6S	3.6	B	2.5	2.3	S	3.6M	S	S	S
4	S	S	2.2M	2.1M	3.4M	2.5	S	S	J 3.4	3.4S	G	S	S	C	3.3S	S	3.3	S	7.1M	3.0M	S	S	2.0	E
5	S	S	S	S	E	S	S	S	3.4	S	G	B	B	S	B	B	B	3.5S	3.2	3.5M	4.1M	J 5.4	J 4.8	S
6	J 3.6	J 4.4	J 5.8	2.6	2.3	S	S	B	3.4	J 3.7S	S	S	S	S	3.5	3.1	J 2.5S	B	S	S	S	S	S	S
7	S	2.6	2.4	E	2.3	2.4S	S	S	3.1	J 3.6S	J 4.0S	4.1S	4.1S	3.0G	3.1	3.6S	3.5	6.2S	3.1M	3.0	S	S	S	S
8	S	S	S	E	E	S	S	B	2.5G	3.5S	S	B	S	S	S	3.4S	S	S	S	S	S	S	S	S
9	3.1M	J 2.6	3.3	S	S	S	S	S	S	3.4S	G	S	S	S	S	3.7	S	J 5.2S	J 3.6	3.4M	J 4.0S	3.2S	S	S
10	S	S	2.4	J 4.8	4.0M	6.2M	S	3.0	S	3.4	S	S	S	G	S	2.9	B	3.3	S	2.3	S	S	S	S
11	S	S	S	S	E	2.5	3.9M	6.2M	5.2M	3.5	3.4	3.0G	S	4.0	4.1	S	J 4.8Y	5.9S	3.3	4.2M	4.2M	2.4	S	S
12	S	1.9	S	S	S	S	S	3.2	3.1	3.2S	D 3.4S	4.0	3.4	3.3	G	S	J 4.4	5.3M	J 6.8	3.0M	J 4.8S	4.9S	4.1M	2.5
13	S	S	2.4	C	3.5M	2.6	2.4	S	3.2	3.4	4.1S	4.0	3.4	S	3.7	S	S	5.5	J 8.4	8.4M	J 4.0	S	2.5	2.4
14	2.4	C	C	C	C	C	C	C	C	3.2	3.8	C	C	J 4.1S	4.9	3.8	3.6	3.5	3.1	S	2.4	2.5	S	S
15	S	S	3.6	2.5	2.3	S	S	S	3.0	C	S	3.6	S	S	S	S	3.3	J 3.6	S	J 5.4	J 4.4	4.1S	2.5	2.2
16	S	S	S	S	2.4	2.4	S	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	B	S	S	S	S	S	2.3	2.5	J 4.4
18	S	2.4	S	S	S	S	S	S	C	3.4S	4.0S	3.8	S	S	3.4S	3.1Y	S	7.3	J 3.4S	3.0M	2.8M	3.1M	J 2.4S	S
19	S	2.4	S	S	S	2.4	S	3.1	3.9	S	3.0G	3.8S	S	S	S	J 3.6	J 3.6S	2.4	S	S	S	J 3.6S	5.8M	3.3S
20	2.4	3.6M	J 3.8	2.2	2.1	J 4.1S	S	S	S	G	S	S	S	J 4.6	3.5S	S	S	S	S	3.0M	S	S	S	S
21	S	S	C	S	S	S	S	S	3.4	3.7	S	S	3.7	S	S	S	B	S	J 3.5S	J 2.3	5.9M	J 6.3	2.9M	S
22	S	S	C	S	E	S	S	B	G	3.7S	S	B	B	B	3.8	3.2S	2.5	S	S	J 4.6S	J 3.7	3.4M	S	4.0M
23	J 3.8S	J 4.2	E	E	E	S	2.4	J 2.8Y	3.1	J 4.8S	S	S	S	S	S	3.2S	G	3.1	S	S	J 3.4Y	S	S	S
24	S	S	E	E	E	S	S	B	3.1	3.6S	4.1	5.5M	4.8	S	S	4.2	S	S	S	S	S	S	S	S
25	2.5	2.3	J 3.4	3.4M	3.3M	2.3	S	S	3.2	S	3.7	S	4.0	B	3.8S	3.4	3.1	S	3.3M	4.3M	J 3.5	5.2M	S	S
26	S	2.5	S	2.4	E	S	S	S	3.0Y	B	B	B	3.3	6.2M	4.2	B	S	S	S	6.2M	5.2M	5.4M	2.4Y	S
27	J 2.3	S	E	E	E	E	S	S	J 3.4Y	3.3	4.2S	S	3.3	B	B	4.0	B	C	S	3.4	3.0M	3.1M	J 6.0	S
28	J 3.4S	S	S	E	E	S	S	B	3.3	3.2	3.5	B	B	S	S	4.0	5.8	7.0M	S	7.4M	10.3M	5.8M	5.4M	J 5.4
29	2.5	J 3.5	S	3.1	S	S	S	3.2	J 4.5	J 3.5S	J 4.9	5.7M	C	S	3.3	C	C	3.1	S	J 3.4S	5.1M	J 3.5	S	S
30	S	S	S	S	S	S	S	B	3.0	3.1	S	5.4M	3.7	S	B	J 4.7	J 5.6S	C	S	3.2S	5.7M	4.0M	3.1M	S
31	S	2.1	E	E	E	S	S	S	S	3.0Y	3.2G	B	B	S	3.6	5.8M	J 6.9	11.8M	J 5.4	2.5	5.0M	3.0M	J 4.5	S
No.	10	13	15	17	21	11	5	6	22	23	18	10	9	7	15	18	14	16	14	21	21	20	16	10
Median	2.8	2.6	2.4	2.2	E	2.4	3.0	3.2	3.2	3.4	D 3.4	4.0	3.7	4.0	3.6	3.6	3.6	4.4	3.4	3.4M	4.1M	3.8	3.3	3.2
U.Q.	3.4	3.6	3.4	2.8	2.4	2.6	5.3	3.2	3.4	3.6	4.0	5.4	4.0	4.6	3.8	4.0	4.8	6.0	5.4	4.4	5.2	5.3	4.6	4.0
L.Q.	2.4	2.4	E	E	E	2.4	2.4	3.0	3.0	3.2	G	3.8	3.4	G	3.3	3.2	3.1	3.2	3.1	3.0	3.5	3.1	2.5	2.4
Q.R.	1.0	1.2				0.2	2.9	0.2	0.4	0.4		1.6	0.6		0.5	0.8	1.7	2.8	2.3	1.4	1.7	2.2	2.1	1.6

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Oct. 1963 | f_bEs | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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	C	C	C	C	C	C	C	C	C	C	E3.3S	S	S	S	S		B	B	2.0	2.1	A	A	2.6	A
2	S	S	2.1	2.5		S	2.7	S	U3.0S			B	B	S	B	S	B	S	S	S	2.0	A	2.7	2.1
3	2.1	1.8	1.9	1.7		E	A	B	3.3	4.5	S	B	B	S	E3.6S	3.5	B	2.5	2.2S	S	2.1	S	S	S
4	S	S	1.9	1.8	A	U2.5S	S	S	3.4	U3.4S		S	S	C	3.3	S	3.1	S	A	2.8	S	S	E	
5	S	S	S	S		S	S	S	E3.4S	S		B	B	S	B	B	B	2.7	2.6	U3.5S	2.7	A	A	S
6	2.5	A	A	1.7	1.6	S	S	B	3.3	3.6	S	S	S	S	E3.5S	E3.1S	2.5	B	S	S	S	S	S	S
7	S	E2.1S	1.9		2.0	U2.2S	S	S	E3.1S	3.4S	3.9	E4.1S	3.9	E3.0S	E3.1S	3.3	2.5	4.5	2.8	2.2	S	S	S	S
8	S	S	S			S	S	B	E2.5R	3.0	S	B	S	S	S	E3.4S	S	S	S	S	S	S	S	S
9	2.3	1.8	2.0	S	S	S	S	S	S	3.3		S	S	S	S	E3.7S	S	2.6	2.7	2.6	A	2.1	S	S
10	S	S	E	A	A	A	S	2.7	S	U3.4S	S	S	S			E2.9S	B	2.6	S	2.0	S	S	S	S
11	S	S	S	S		2.0	2.9S	4.0	4.0	E3.5S	3.4	E3.0R	S	3.8	3.6	S	4.2	4.2	2.1	2.7	2.5	2.2	S	S
12	S	1.8	S	S	S	S	S	3.1	3.1	E3.2S	E3.4S	E3.8S	E3.4S	3.3		S	4.1	2.8	A	2.1	2.2	A	2.2	2.1
13	S	S	E	C	1.9	1.9	2.1	S	E3.2S	3.3	3.8	3.8	E3.4S	S	3.2	S	S	2.6	A	A	3.0	S	2.2	E
14	2.0	C	C	C	C	C	C	C	C	E3.2S	3.8	C	C	3.9	4.5	3.5	2.9	2.7	2.3	S	2.2	2.4S	S	S
15	S	S	A	2.0	1.7	S	S	S	E3.0S	C	S	E3.6S	S	S	S	S	3.0	3.5	S	2.9	2.8	A	2.0	E
16	S	S	S	S	E	S	S	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	B	S	S	S	S	S	2.1	2.0	A
18	S	E	S	S	S	S	S	S	C	U3.3S	3.8S	E3.8S	S	S	E3,4S	2.9	S	2.1	3.4	2.2	2.6	2.1	2.1	S
19	S	E	S	S	S	2.1	S	2.7	3.5	S	E3.0S	3.7	S	S	S	3.5	3.5	2.3	S	S	S	A	A	1.9
20	2.3	A	A	E	1.2	A	S	S	S		S	S	S	3.9	3.3	S	S	S	S	2.2	S	S	S	S
21	S	S	S	S	S	S	S	S	3.3	3.6	S	S	E3.7S	S	S	S	B	S	2.6	2.3	A	A	S	S
22	S	S	C	S		S	S	B		3.7	S	B	B	B	E3.8S	U3.2S	2.5S	S	S	2.8	A	A	S	2.8
23	A	1.8				S	1.9	2.6	3.1	4.0	S	S	S	S	S	E3.2S		2.1	S	S	2.1	S	S	S
24	S	S				S	S	B	3.1	3.5	E4.2S	4.8	4.5	S	S	4.2	S	S	S	S	S	S	S	S
25	E	E	1.9	1.9	1.5	E	S	S	3.2	S	3.6	S	3.8	B	3.6	E3.4S	2.7	S	2.7	3.7	2.0	2.8	S	S
26	S	1.9	S	2.2		S	S	S	2.8	B	B	B	E3.3S	5.1	4.4	B	S	S	S	A	A	A	2.2	S
27	2.3S	S					S	S	3.0	3.3	3.8S	S	3.3	B	B	3.5	B	C	S	2.9	E	2.3	A	S
28	E	S	S			S	S	B	3.3	3.2	E3.5S	B	B	S	S	3.5	4.2	A	S	A	A	A	A	A
29	E	2.1	S	2.1	S	S	S	2.7	4.5	U3.4S	4.1	4.5	C	S	3.2	C	C	2.9	S	2.2	A	2.5	S	S
30	S	S	S	S	S	S	S	B	2.9	E3.1S	S	3.9	3.7	S	B	4.4	4.0	C	S	2.0	3.1	2.8	2.3	S
31	S	2.1				S	S	S	S	E3.4S	E3.2S	B	B	S	3.6	4.5	A	A	A	2.3	A	2.8	A	S
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f_bEs Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 5

IONOSPHERIC DATA

Oct. 1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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	C	C	C	C	C	C	C	C	C	C	2.80	E4.40S	E4.50S	E4.05S	E4.50S	2.10	3.05	2.50	E1.60S	E2.00S	E1.90S	E1.80S	E1.80S	E1.90S
2	E2.00S	E2.00S	E1.50S	1.00	1.40	E1.90S	E2.10S	E2.90S	2.10	2.70	2.80	4.60	4.00	E3.50S	3.70	E3.40S	2.70	E2.20S	E2.00S	E1.80S	E1.90S	E1.80S	E2.00S	E1.90S
3	E1.50S	E1.50S	E1.50S	1.40	E	E1.40S	E1.70S	2.10	2.30	E3.20S	E3.80S	4.50	4.40	E4.60S	E3.00S	2.90	2.20	E2.00S	E1.90S	E1.80S	E2.00S	E1.60S	E1.80S	E1.80S
4	E1.90S	E1.80S	E1.50S	1.40	1.10	E1.50S	E2.30S	E2.00S	2.80	3.05	2.80	E4.60S	E4.30S	C	2.80	E3.40S	2.70	E2.90S	E1.60S	E1.50S	E1.90S	E1.80S	E1.50S	1.40
5	E1.50S	E1.50S	E1.80S	E1.90S	1.60	E1.90S	E1.90S	E2.90S	2.95	E3.70S	2.80	4.90	4.60	E3.80S	3.60	3.60	2.80	E1.70S	E1.70S	E1.70S	E1.50S	E1.80S	E1.90S	E1.80S
6	E1.90S	E1.90S	1.50	E1.50S	1.40	E1.60S	E2.10S	2.60	E2.00S	2.20	E3.80S	E4.40S	E3.80S	E3.80S	2.80	E2.90S	E2.10S	2.50	E1.90S	E2.00S	S	E2.00S	E1.90S	E2.00S
7	E2.10S	E1.70S	E1.60S	1.30	E1.50S	E1.80S	E2.10S	E2.70S	2.75	2.75	E3.20S	3.05	2.70	2.20	2.20	2.10	1.95	E2.20S	E1.60S	E1.90S	E2.80S	E2.80S	E2.50S	E1.70S
8	E1.90S	S	E1.50S	1.20	E	E1.50S	E1.90S	2.80	2.10	2.80	E4.00S	3.90	E4.30S	E3.90S	E3.40S	2.80	E3.10S	E2.20S	E2.00S	E2.00S	E1.70S	E1.90S	E1.60S	E1.50S
9	E1.50S	E1.70S	E1.50S	E1.80S	E1.50S	E1.50S	E1.90S	E2.60S	E3.00S	2.80	2.80	E4.20S	E3.80S	E3.30S	E3.90S	2.20	E2.60S	E1.80S	E1.80S	E1.70S	E1.80S	E1.90S	E2.50S	E2.10S
10	E1.80S	E1.50S	E1.60S	E1.50S	1.10	E1.50S	E2.40S	E1.90S	E4.00S	2.95	E4.50S	E4.70S	E3.60S	2.80	E3.60S	2.20	2.80	2.05	E1.80S	E1.90S	E1.90S	E1.60S	E1.90S	E1.80S
11	E2.20S	E1.80S	E1.50S	E1.90S	1.50	E1.60S	E1.50S	2.00	2.10	2.80	2.40	2.90	E3.70S	2.80	E3.60S	E3.40S	2.10	E2.00S	E1.80S	E2.00S	E2.00S	E1.90S	E1.80S	E1.50S
12	E1.80S	E1.50S	E2.10S	E1.70S	E1.90S	E1.80S	E2.30S	E2.70S	2.10	2.85	E2.80S	E3.00S	2.75	2.70	2.75	E2.90S	2.65	E1.90S	E2.00S	E1.90S	E1.90S	E1.90S	E1.80S	E1.80S
13	E1.60S	E1.90S	E1.60S	C	E1.50S	E1.70S	E1.50S	E2.80S	2.10	2.75	2.60	2.80	2.60	E3.60S	E3.10S	E3.40S	E2.80S	E1.90S	E1.90S	E1.90S	E1.90S	E1.90S	E1.90S	E1.90S
14	E1.90S	C	C	C	C	C	C	C	C	E3.00S	E3.30S	C	C	2.75	2.80	2.20	2.20	E2.10S	E1.90S	E1.80S	E1.70S	E2.00S	E1.90S	E2.00S
15	E1.80S	E1.70S	E1.80S	E1.70S	1.00	E1.80S	E2.20S	E2.70S	2.10	C	E4.60S	E3.00S	E3.60S	E4.10S	E3.80S	E3.00S	2.30	E1.90S	E1.70S	E1.80S	E1.50S	E1.50S	E1.80S	E1.50S
16	E2.10S	E1.90S	E1.80S	E1.90S	1.50	E1.80S	E1.80S	E2.70S	E3.10S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	E4.10S	E3.80S	E4.50S	E3.50S	E3.40S	3.00	E2.80S	E2.00S	E1.90S	E2.00S	E1.90S	E1.90S	E1.90S	E1.50S
18	E2.10S	E1.50S	E1.90S	E2.00S	E1.90S	E2.10S	E1.80S	E2.50S	C	2.80	2.80	E3.30S	E3.60S	E3.40S	2.70	2.00	E2.80S	E2.10S	E1.80S	E1.90S	E1.90S	E1.90S	E1.90S	E1.60S
19	E1.70S	E1.50S	E1.90S	E1.90S	E1.90S	E1.50S	E2.10S	E2.10S	E2.10S	E3.60S	2.70	2.70	E3.90S	E3.80S	E3.20S	2.10	2.20	E2.00S	E1.60S	E2.10S	E1.90S	E1.90S	E2.00S	E1.50S
20	E1.90S	E1.70S	E1.60S	E1.50S	1.00	E1.70S	E1.90S	E2.80S	E3.10S	2.20	E3.60S	E3.80S	E4.50S	E2.90S	2.20	E2.90S	E2.70S	E1.90S	E2.40S	E1.70S	E1.80S	E2.80S	E2.00S	E1.90S
21	E2.00S	E1.50S	E2.50S	E1.80S	E1.90S	E1.60S	E2.00S	E2.60S	2.20	E3.30S	E3.80S	E3.50S	2.85	E3.70S	E3.50S	E3.60S	2.80	E2.10S	E1.80S	E2.00S	E1.70S	E1.80S	E1.90S	E1.80S
22	E2.10S	E1.70S	C	E1.80S	1.30	E2.00S	E2.10S	2.60	2.80	2.75	E3.80S	4.70	4.20	3.40	3.40	2.70	E2.10S	E1.80S	E2.00S	E1.80S	E1.80S	E1.50S	E1.50S	E1.60S
23	E2.00S	E1.80S	1.30	1.20	1.10	E1.50S	E1.60S	E2.10S	2.20	E2.90S	E3.80S	E3.80S	E3.80S	E3.80S	E3.10S	2.20	2.30	E1.70S	E2.00S	E2.10S	E1.60S	E2.00S	E1.50S	E2.10S
24	E1.90S	E1.80S	1.50	1.10	1.05	E1.60S	E1.50S	2.80	2.10	2.25	E2.80S	2.70	E3.10S	E3.50S	E3.80S	2.60	E2.10S	E1.80S	E1.70S	E1.90S	E1.50S	E1.50S	E2.10S	E1.50S
25	E1.50S	E1.50S	1.50	E	E	E1.50S	E1.50S	E2.80S	2.90	E3.70S	3.30	E3.60S	E3.60S	3.30	3.00	2.80	2.00	E1.90S	E1.70S	E1.80S	E1.50S	E1.60S	E1.70S	E1.50S
26	E1.50S	E1.50S	E2.00S	E1.50S	1.50	S	E1.80S	E2.60S	2.10	3.20	3.20	3.20	2.80	2.70	2.10	2.80	E2.70S	E1.90S	E1.90S	E1.90S	E1.50S	E1.90S	E2.00S	E1.90S
27	E1.70S	E1.55S	1.50	1.40	1.20	1.20	E2.00S	E2.80S	E1.90S	2.70	2.85	E3.60S	2.10	3.50	3.20	2.10	2.60	C	E1.80S	E1.90S	E1.90S	E1.90S	E1.60S	E2.00S
28	E1.80S	E1.90S	E1.80S	1.70	1.40	E1.60S	E1.90S	2.20	2.70	2.20	2.80	B	4.70	E3.80S	E3.30S	2.80	2.10	E1.80S	E2.60S	E1.80S	E1.50S	E1.80S	E1.80S	E1.50S
29	E1.80S	E1.50S	E1.50S	1.40	E1.90S	E1.80S	E1.90S	E1.90S	2.10	2.00	E3.45S	2.80	C	E3.40S	2.60	C	C	1.50	E1.60S	E1.90S	E1.50S	E1.50S	E2.20S	E2.30S
30	E2.10S	E1.90S	E1.60S	E1.90S	E1.90S	E2.20S	E1.50S	2.60	2.20	E2.75S	E3.80S	3.00	2.80	E3.50S	3.10	2.20	E1.80S	C	E1.60S	E1.80S	E1.50S	E1.80S	E1.50S	E1.50S
31	E1.50S	E1.50S	1.20	1.30	1.50	E1.80S	E1.90S	E2.10S	2.20	2.20	2.25	3.30	3.80	E3.50S	2.10	2.10	E1.70S	E1.60S	E1.50S	E1.50S	E1.50S	E1.70S	E1.50S	E1.50S
No.	29	27	27	27	19	27	28	28	23	20	30	17	28	29	16	20	22	28	30	30	29	30	30	30
Median	E1.90	E1.70	E1.60	E1.50	1.20	E1.60	E1.90	E2.60	2.10	2.75	E3.20	3.05	E3.80	E3.50	2.80	2.20	2.20	E1.95	E1.80	E1.90	E1.80	E1.85	E1.90	E1.80
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Oct. 1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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	C	C	C	C	C	C	C	C	C	C	3.45	3.20	3.30	I3.25R	J3.30S	J3.30R	R	J3.45S	U3.65S	J3.40S	I3.05A	I3.05A	U3.30S	I2.85A
2	U2.90S	U2.90S	2.90	3.30	3.20	I3.20S	J3.45S	3.35Z	3.40	3.60	3.25	3.45S	J3.40R	I3.40R	3.50	J3.30S	3.50	U3.50S	3.25	3.60	U3.35S	I3.15A	U2.95S	3.10
3	3.05	3.30	3.30	3.25	3.25H	U3.20S	I3.45A	J3.60R	3.80	3.50	U3.55R	3.25R	3.30	3.15	3.40	3.30	U3.30S	3.40S	U3.60S	I3.60S	3.40	3.50	2.80	2.85
4	U3.05S	3.10	3.10	3.15	I3.40A	I3.40S	I3.50S	3.60	3.50	3.55	U3.25S	J3.40R	3.30R	I3.30C	U3.35R	3.20	U3.50R	S	A	3.05	I3.05S	2.90	J2.95R	I2.90F
5	2.95	2.80	2.90	3.20	3.60	3.40	I3.40S	3.45	3.70	3.45	3.30	3.15	3.30R	J3.30R	U3.50S	3.50S	3.45	3.40	J3.35S	J3.40S	J3.25S	A	A	I3.15F
6	U3.05S	A	A	3.20	3.05	J3.05R	U3.35S	J3.40S	I3.60S	3.65	3.40	3.40	3.45	3.40R	3.25R	3.50S	S	S	J3.30S	S	S	I2.85S	I3.00S	U2.85S
7	3.25S	U3.10S	3.00	3.10	3.10	U2.95S	U3.45S	U3.65S	U3.50S	U3.55S	3.30	J3.45S	3.45	3.35	J3.35R	3.40	I3.40S	J3.50S	J3.65S	U3.35S	U3.05S	U2.95S	I2.95S	3.15S
8	U3.10S	I3.10S	U2.95S	2.95	3.25	U3.15S	J3.40S	J3.40S	I3.50S	J3.35S	3.35	3.55	3.50S	3.35	3.15	3.45	3.30	S	3.35	I3.30S	U3.35S	3.10S	3.05	I3.00F
9	U2.85S	3.00	I3.05F	U2.95S	3.05F	I3.20F	3.55	3.70	U3.55S	3.60	J3.35S	3.65	J3.25S	U3.35S	3.30S	S	S	S	S	F	A	3.05S	R	I3.00S
10	2.95	2.90	2.95	A	A	A	U3.30S	3.40	J3.60S	J3.55S	3.25	J3.20S	3.15	3.35	J3.50S	3.55	U3.50S	U3.45S	I3.50S	3.25	I3.20S	3.10S	U3.05S	U3.15S
11	U2.90S	2.90	3.10	U3.15S	3.35	U2.75S	3.50S	3.60	3.65	3.65	3.40S	J3.35S	J3.35S	3.25	J3.25S	3.35R	J3.45R	U3.50S	3.50S	3.40S	U3.45S	3.35	2.90	2.90
12	J2.95S	2.85	I3.25S	3.00	2.85	2.85	U3.55S	3.60	3.40S	U3.50S	I3.25R	J3.25S	J3.35S	3.30	J3.30S	J3.25S	J3.35R	3.45	I3.20A	U3.50S	S	A	F	U3.15S
13	I2.90F	2.80S	U2.90S	I3.15C	2.85	J2.90S	J3.25S	I3.20S	U3.25S	U3.35R	J3.25S	3.40	3.15S	3.30	J3.30R	J3.25S	3.35	I3.35S	A	A	I3.35S	2.95	U2.85S	3.00
14	2.95S	C	C	C	C	C	C	C	C	3.45	3.15	I3.10C	I3.20C	3.20	I3.30R	J3.35S	U3.35S	I3.45S	3.35S	I3.20S	3.20	3.00S	2.90	2.85S
15	2.95	2.90S	I2.90A	2.95	3.40S	2.95R	U3.45S	J3.30S	3.50	I3.45C	3.40	3.40	J3.40R	3.20	J3.35S	U3.40S	3.40	J3.55S	3.60	U3.10S	I3.20S	I3.00A	3.10	2.95
16	2.90S	2.90F	3.10S	U3.25S	3.45S	I3.05S	J3.40S	U3.50S	3.55S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	J3.25S	3.35	J3.20S	3.40	J3.35R	J3.40S	J3.50S	U3.60S	I3.35S	U3.25S	U3.40S	U3.25S	U3.20S	I3.00A
18	U2.80S	3.00	3.10S	U3.15S	3.25	2.95S	U3.30S	J3.30S	I3.50C	J3.50S	U3.45S	3.35	J3.30R	3.30S	3.50	3.55	3.40	I3.60S	3.50	3.15S	J3.25S	3.10	2.95	2.95
19	U2.80S	2.85	2.90	2.80S	3.20	2.90	J3.45S	I3.60S	3.45	3.55	J3.50S	U3.40R	3.55	3.50	3.40	U3.60S	3.40	3.40	J3.50R	3.60	U3.40S	I2.90A	I2.90A	3.10
20	3.35S	I3.30A	I2.90A	3.05	3.40	I3.10A	U3.60S	3.60	J3.45R	3.55	J3.55S	J3.20R	J3.35S	3.45R	3.35	J3.30S	J3.55S	J3.55S	J3.45R	3.05	3.05	I3.05S	2.95	2.90S
21	I2.95S	2.90	2.90S	U3.30S	3.25	2.90	J3.40S	U3.55S	I3.55R	3.60S	3.40S	3.40	J3.40S	3.35	3.30	J3.35S	3.55	3.60S	3.25S	2.95S	A	A	S	2.95
22	U3.05R	3.05	I2.90C	2.75	3.20	3.05S	3.40S	3.50S	3.65	J3.55S	3.50	3.25	3.10R	U3.10R	3.35	J3.50S	U3.60S	3.45	U3.30S	3.40	I3.20A	I3.10A	3.10	2.85
23	I3.05A	3.20	2.80	2.95	3.10	3.25S	3.55	3.60	3.50	3.50	I3.60S	J3.55R	3.35	3.30	3.30S	3.45S	3.55R	J3.50S	U3.70S	2.80	3.05	3.05S	U2.75S	I2.80R
24	2.95	2.95	2.95	3.20	U3.30S	J3.05F	U3.40S	U3.65S	J3.55S	U3.45S	I3.45S	3.35	3.25	J2.85S	3.15	3.35	U3.45S	3.30	U2.90S	U3.35S	3.05	U2.90S	U2.75S	U2.70F
25	F	F	U2.65S	F	F	FS	J3.35S	3.55R	3.65	3.55R	3.30S	J3.40S	3.40	3.25	3.15	J3.40S	J3.40S	U3.50S	3.15	3.20	J3.25S	2.95	2.85	F
26	F	2.90	U3.10S	3.30	3.45	I3.35S	3.40S	I3.45S	J3.25R	J3.00R	3.50R	3.55	3.30S	3.35	J3.30S	3.60	J3.45S	3.50	U3.35S	I3.20A	I3.15A	I3.10A	2.80	2.80
27	2.80S	2.75	J2.90F	F	J3.50S	3.15	J3.60S	3.75	J3.50R	3.45	3.35S	3.25S	3.40	U3.30S	I3.45S	3.60	2.90S	I3.30C	3.30S	U3.30S	3.40	U3.15S	I3.15A	3.15S
28	2.95	2.90S+I3.20S	3.10	3.30S	3.30	U3.60S	3.55	3.60	U3.50R	3.50R	B	R	3.35	J3.30R	J3.55S	J3.50S	I3.80R	3.30S	A	A	A	I3.10A	I3.00A
29	2.90	2.95S	3.10S	2.75	U3.30S	I3.40F	J3.45S	J3.65S	3.35	3.70	3.25	3.30	I3.20C	J3.55R	3.55S	I3.60C	I3.70C	3.55	J3.00R	U3.20S	I3.05A	3.15S	3.25S	3.05S
30	U3.15S	2.85	J3.00S	U2.70S	I2.70F	U2.65R	J3.40S	3.10	3.00	2.95R	3.15	I3.30C	J3.65R	3.60R	3.40	J3.45S	3.40	I3.25C	J3.40S	3.10	3.35	3.10	2.95	2.75
31	2.85	2.85	2.85	3.05	3.05F	2.85	3.10S	3.45	J3.30S	U3.60R	3.55	J3.50R	3.55	3.55	J3.20S	3.75	I3.85A	I3.55A	I3.30A	I3.25S	I3.10A	2.95S	I2.90A	I2.95F
No.	27	26	27	25	26	26	28	28	28	28	30	29	29	30	30	29	27	26	27	26	25	26	26	29
Median	2.95	2.90	2.95	3.10	3.25	3.05	3.40	3.55	3.50	3.50	3.40	3.35	3.35	3.30	3.30	3.40	3.45	3.50	3.35	3.25	U3.20	3.05	U2.95	2.95
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 7

IONOSPHERIC DATA

Oct. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4' N, Long. 139° 29.3' E

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							C	C	C	C	L	L	S	L	S	L	L							
2									L		L	B	L	L	L	L								
3							A		L	A	L	L	B	S	L	L								
4									L	L	S	S	S	C		L	L	S	A					
5										L	L	B	B	L	L	B								
6									L	L	L	S	L	L	L		L							
7										L		L	L	L	L	L	L	A						
8								L	L	L	L	L	S	S	L	L	L							
9									L	L	L	L	L	L	L	S	L							
10										L	S	L	L	L	L	L								
11									A	L	L	S	L	L	L	L								
12											L	L		L	L	L	A							
13										L	L	L	L	L	L	L								
14										L	L	C	C	L	A	L								
15									L	C	S	L	L	L	L									
16										C	C	C	C	C	C	C	C	C						
17							C	C	C	C	L	S	S	L	S									
18									C	L	L	L	L	L	L	L								
19										L	L	L	L	L	L		L							
20									L	L	L	L	S	L	L	L								
21									L	L	L	L	L	L	L									
22										L	L	B	L	L	L	L								
23									L	L	L	L			L									
24									L	L	L	A	A	L	L	L								
25										L	L	L	L	L	L	L								
26										L	L	L	L	A	A	L								
27										L	L	L	L	L	L	L		C						
28										L	L	B	B	L	L	L		A						
29									A	L		A	C	L	L	C	C							
30									L	L	L	L	L		L	A		C						
31									L	L	L	L	L	L		A	A	A						
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 8

IONOSPHERIC DATA

Oct. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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							C	C	C	C	250	250	250	290	255	250	245							
2									230		290	260	250	225	240	275								
3							A		225	250	250	300	260	300	255	275								
4									250	240	250	260	270	C		280	245	210	A					
5										230	280	280	270	250	255	240								
6									230	230	250	260	260	250	280		250							
7										240		250	260	260	260	250	250	225						
8								250	250	250	260	230	250	E250S	300	260	245							
9									240	230	255	225	280	275	260	255	245							
10									250	245	250	300	290	250	250	250								
11									230	240	245	E245S	280	270	260	255								
12											295	260		250	250	250	240							
13										245	240	250	260	260	255	260								
14										230	255	C	C	250	250	245								
15									240	C	250	250	245	240	250									
16										C	C	C	C	C	C	C	C	C						
17							C	C	C	C	255		250	250										
18									C	250	240	245	250	250	250	240								
19										240	245	250	240	250	260		240							
20									250	235	230	275	250	245	250	250								
21									245	225	245	250	230	245	260									
22										220	245	210H	295	255	250	245								
23									245	230	240	225			270									
24									240	245	255	260	250A	300	275	230								
25										240	260	250	250	250	265	245								
26										225	250	230	250	250	245	225								
27										230	250	255	245	250	245	225		C						
28										225	240	B	245	250	250	220		A						
29									250	225		260	C	240	245	C	C							
30									325	320	275	240	225		245	210		C						
31									240	230	220	250	230	235		230	A	A						
No.								1	16	25	28	27	26	27	27	23	8	2						
Median								250	240	235	250	250	250	250	255	250	245	220						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 9

IONOSPHERIC DATA

Oct. 1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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	C	C	C	C	C	C	C	C	C	C	205	E245S	I220S	E260S	I225S	205	230	225	200	200	A	A	E300A	A
2	E305S	E300S	E300S	250	245	E250S	220	210	220	230	205	I210B	E250B	200	230	230	230	230	225	200	230	I265A	E310A	295
3	295	255	240	225	205H	250	I205A	225	210	I235A	210	E250B	B	S	E250S	245	225	225	200	205	245	225	295	305
4	285	280	295	250	I230A	250	200	210	245	210	I220S	I230S	S	C	235	230	245	I225S	A	E300A	E300S	310	310	300
5	250	260	295	250	200	240	205	210	230	E250S	250	I245B	I245B	245	235	I225B	225	225	225	230	260	I295A	I270A	255
6	E300A	A	A	250	220	250	210	225	225	220	200	I220S	E250S	205	240S	E245S	225	225	200	205	S	U250S	300S	E300S
7	260	260	295	255	E300A	E350S	210	225	245	230	E250S	E250S	245	220	220	225	235	I235A	200	225	E300S	E350S	E310S	260
8	250	I280S	280	260	225	250	205	225	225	E250A	250	205	I235S	I235S	250	205	225	225	205	260	250	245	260	300
9	345	280	280	255	240	250	205	225	220	205	205	230	245	210	E250S	I230S	225	225	200	210	I280A	300	E300S	300
10	300	275	300	A	A	A	225	225	I245S	205	I230S	E310S	260	230	245	220	245	225	205	210	245	280	260	255
11	305	300	295	255	205	320	225	210	I220A	230	225	S	240	245	220	245	245	225	205	210	245	245	300	305
12	305	305	255	280	305	300	210	230	210	230	245	245	250	210	225	205	I225A	230	I240A	210	300A	I300A	275	250
13	300	310	300	I235C	300	350	225	225	245	205	205	220	245	225	210	245	235	225	A	A	225	300	300	300
14	300	C	C	C	C	C	C	C	C	205	245S	I235C	I215C	245	I250A	245	230	225	205	205	230	300A	305	300
15	260	305	I330A	300	225	310	225	215	220	I215C	I225S	210	200	230	230	220	225	225	200	E300A	250	I270A	260	260
16	E310S	305	285	250	210	I260S	210	210	210	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	245	245	I240S	220	245	230	230	210	210	240	240	250	245	I275A
18	E310S	260	255	255	250	E310S	225	225	I225C	220	245	210	210	220	205	230	230	215	225	250	245	250A	300A	300
19	310	300	305	285	250	310	225	225	225	210	205	200	210	225	205	230	210	210	210	225	260	A	A	280
20	245	I265A	I305A	260	210	I280A	210	230	225	E245S	205	E255S	I220S	E260S	220	205	230	210	210	260	285	E300S	300	300
21	300	260	310	250	245	310	225	225	240	225	205	230	205	210	245	245	230	200	245	305	A	A	S	310
22	310	310	I310C	310	250	300	225	210	225	220	205	I210B	220	225	225	230	225	210	210	230	A	A	275	E350A
23	I285A	250	280	260	245	255	225	210	205	E245A	225	205	210	E250S	225	230	230	205	200	280	305	E300S	305	310
24	295	300	260	230	205	260	210	215	225	225	E240S	I240A	I220A	E250S	E260A	225	225	210	260	405	275	260	355	310
25	255	250	355	300	280	210	210	210	210	225	225	245	245	225	E260A	I240S	225	210	225	250	210	E350A	300	330
26	310	300	285	250	210	I245S	210	210	225	220	200	205	200	I225A	I210A	225	225	200	200	I250A	I260A	I260A	310	305
27	320A	310	250	260	210	225	205	210	210	210	205	210	225	210	225	210	205	I210C	225	260	245	260	I255A	260
28	300	295	250	255	225	210	210	210	225	205	230	B	B	225	225	225	210	I220A	E300S	A	A	A	I255A	I285A
29	285	250	225	340A	250	300	210	210	I205A	205	230	I235A	I225C	210	210	I205C	I205C	200	205	245	I330A	285	255	255
30	275	300	295	350	350	E390S	210	245	250	245	245	225	240	230	230	I210A	230A	I220C	225	225	250A	E270A	300A	300
31	305	300	260	250	220	250	245	210	225	220	205	200	205	225	225	I220A	I220A	I225A	I240A	230	A	E350A	I310A	300
No.	26	26	26	27	26	24	28	28	28	24	28	23	25	24	26	29	30	30	27	26	22	19	26	28
Median	300	290	290	255	230	250	210	215	225	220	220	220	225	225	225	225	225	225	210	230	250	265	300	300
U.Q.																								
L.Q.																								
Q.R.																								

h'F

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | $h'Es$ | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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	C	C	C	C	C	C	C	C	C	C	100	S	S	S	S	G	B	B	100	100	100	100	100	100
2	S	S	100	100	E	S	105	S	110	G	G	B	B	S	B	S	B	S	S	S	100	105	105	105
3	100	100	100	100	E	105	100	B	130	110	S	B	B	S	150	130	B	110	105	S	100	S	S	S
4	S	S	100	100	100	100	S	S	120	120	G	S	S	C	115	S	120	S	105	100	S	S	110	E
5	S	S	S	S	E	S	S	S	125	S	G	B	B	S	B	B	B	105	105	100	105	105	105	S
6	125	120	115	100	100	S	S	B	100	100	S	S	S	S	110	E160S	105	B	S	S	S	S	S	S
7	S	100	100	E	100	100	S	S	120	110	105	105	105	105	105	100	100	100	100	100	S	S	S	S
8	S	S	S	E	E	S	S	B	100	110	S	B	S	S	S	120	S	S	S	S	S	S	S	S
9	105	100	100	S	S	S	S	S	S	125	G	S	S	S	S	100	S	105	100	100	100	100	S	S
10	S	S	100	100	100	100	S	100	S	115	S	S	S	G	S	110	B	130	S	100	S	S	S	S
11	S	S	S	S	E	100	100	100	100	100	100	105	S	140	125	S	110	105	100	100	100	100	S	S
12	S	105	S	S	S	S	S	130	100	115	110	105	105	105	G	S	120	110	105	105	100	100	100	100
13	S	S	100	C	100	100	100	S	110	100	100	100	100	S	105	S	S	105	100	100	100	S	100	100
14	100	C	C	C	C	C	C	C	C	120	110	C	C	105	110	105	105	100	100	S	100	100	S	S
15	S	S	105	105	110	S	S	S	105	C	S	110	S	S	S	S	130	110	S	105	100	100	100	100
16	S	S	S	S	100	100	S	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	B	S	S	S	S	S	100	105	100
18	S	100	S	S	S	S	S	S	C	110	105	125	S	S	100	105	S	105	100	100	100	100	105	S
19	S	100	S	S	S	105	S	105	100	S	100	100	S	S	S	90	95	100	S	S	S	100	105	100
20	100	100	100	100	100	100	S	S	S	G	S	S	S	110	105	S	S	S	S	100	S	S	S	S
21	S	S	C	S	S	S	S	S	115	115	S	S	100	S	S	S	B	S	105	115	100	100	100	S
22	S	S	C	S	E	S	S	B	G	115	S	B	B	B	115	110	110	S	S	100	115	100	S	105
23	100	100	E	E	E	S	100	100	110	110	S	S	S	S	S	130	G	120	S	S	115	S	S	S
24	S	S	E	E	E	S	S	B	115	120	110	105	105	S	S	125	S	S	S	S	S	S	S	S
25	125	115	110	110	105	110	S	S	150	S	130	S	130	B	145	125	115	S	100	100	100	100	S	S
26	S	100	S	95	E	S	S	S	105	B	B	B	105	100	100	B	S	S	S	100	100	100	110	S
27	100	S	E	E	E	E	S	S	105	105	105	S	100	B	B	100	B	C	S	110	110	105	110	S
28	100	S	S	E	E	S	S	B	110	110	105	B	B	S	S	115	105	100	S	110	100	100	100	100
29	95	100	S	100	S	S	S	120	110	110	115	110	C	S	125	C	C	100	S	100	100	100	S	S
30	S	S	S	S	S	S	S	B	130	130	S	105	105	S	B	110	110	C	S	105	100	100	100	S
31	S	100	E	E	E	S	S	S	S	110	105	B	B	S	125	110	110	100	100	100	100	100	100	S
No.	10	13	11	10	9	10	5	6	21	21	14	10	9	6	14	16	13	16	14	21	21	20	16	9
Median	100	100	100	100	100	100	100	100	110	110	105	105	105	105	110	110	110	105	100	100	100	100	100	100
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

$h'Es$

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 11

IONOSPHERIC DATA

Oct. 1963 | Types of Es | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N, Long. 139° 29.3'E

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											1								1	f	f	f	f	f
2			f	f			1		c												f	f2	f	f
3	f	f2	f2	f		f	12		h	1					h	h		1	1		f			
4			f	f2	f2	f2			h	h					1		h		12	f			f	
5									h									1	1	f2	f2	f	f3	
6	f2	ff	f2	f2	f2				1	1					1	h	1							
7		f	f		f	f2			1	1	1	1	1	1	1	1	12	12	f	f				
8									1	1						h								
9	f	f2	f							h						1		1	f	f2	f2	f		
10			f	f3	f3	f2		12		1						c		h		f				
11						f	12	13	1	1	1	1		h	h		1	1	f	f	f	f		
12		f						h	1	1	1	1	1	1			h	1	f3	f	f2	f3	f3	f2
13			f		f2	f	1		1	1	1	1	1		1			1	f2	f2	f2		f	f
14	f									1	1			1	1	1	12	1	f		f	f		
15			f2	f2	f				1			1					h	1		f2	f	f3	f2	f
16					f	f																		
17																						f	f	f4
18		f								1	1	h			1	1		1	f2	f2	f	f	f	
19		f				f2		1	1		1	1				12	12	1				f	f2	f
20	f2	f2	f	f	f	f2								1	1					f2				
21									c	1			1						f2	f	f2	f2	f	
22										1					1	1	1			f2	f	f2		f2
23	f3	f2					1	1	1	1						h		h			f			
24									c	h	1	12	1			h								
25	f	f	f2	f2	f2	f			h		h		h		h	h	1		f	f2	f	f3		
26		f		f					1				1	12	12					f2	f2	f2	f	
27	f								1	1	1		1			1				f2	f	f2	f	
28	f								1	c	1					1	12	12		f3	f3	f3	f3	f3
29	f	f2		f				1	c2	c	1	1			h			1		f	f2	f2		
30									h	h		1	1			12	12			f	f2	f2	f	
31		f								1	1				h	12	12	13	f2	f2	f2	f	f3	
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | hpF2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4'N | Long. 139° 29.3'E

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	C	C	C	C	C	C	C	C	C	C	260	270	260	I290R	J285S	J280R	R	J250S	U230S	J250S	I315A	I330A	U295S	I340A
2	U330S	U325S	305	290	270	I280S	J250S	260Z	245	250	300	280S	J260R	I255R	250	J300S	250	U250S	280	240	U260S	I300A	U330S	310
3	305	300	260	280	255H	U280S	I235A	J245R	225	250	U250R	300R	280	305	285	295	U290S	245S	U245S	I240S	260	250	380	350
4	U310S	305	310	290	I255A	I250S	I230S	230	250	250	U270S	J270R	285R	I290C	U290R	300	U250R	S	A	300	I305S	330	J340R	I325F
5	315	330	310	300	225	255	I245S	245	230	245	285	300	290R	J260R	U255S	250S	255	250	J260S	J250S	J295S	A	A	I300F
6	U300S	A	A	300	290	J300R	U260S	J260S	I250S	240	260	280	290	260R	300R	250S	S	S	J250S	S	S	I315S	I315S	U340S
7	280S	U300S	305	300	305	U345S	U245S	U245S	U250S	U250S	270	J260S	265	280	J280R	255	I280S	J250S	J230S	U255S	I305S	U350S	I320S	295S
8	U300S	I310S	U330S	310	280	U280S	J250S	J260S	I255S	J260S	280	245	250S	280	305	270	260	S	250	I270S	U260S	290S	305	I340F
9	U350S	315	I305F	U320S	310F	I295F	245	230	U250S	240	J280S	245	J295S	U295S	295S	S	S	S	S	F	A	300S	R	I305S
10	315S	305	315	A	A	A	U250S	255	J250S	J250S	295	J300S	300	265	J255S	250	U250S	U250S	I245S	280	I275S	310S	U305S	U300S
11	U340S	350	310	U300S	245	U350S	250S	240	240	250	250S	J280S	J290S	295	J295S	280R	J260R	U250S	245S	260S	U255S	250	305	310
12	J340S	350	I295S	305	345	345	U240S	250	250S	U250S	I295R	J300S	J295S	270	J285S	J285S	J250R	250	A	U300S	S	A	F	U300S
13	I350F	355S	U345S	I295C	315	J350S	J290S	I280S	U290S	U260R	J290S	260	300S	285	J295R	J300S	255	I270S	A	A	I255S	305	U330S	340
14	325S	C	C	C	C	C	C	C	C	255	290	I305C	I295C	300	I295R	J260S	U260S	I250S	250S	I275S	280	340S	330	340S
15	320	340S	I365A	345	255S	340R	U250S	J290S	250	I255C	260	280	J260R	260	J260S	U250S	250	J250S	240	U305S	I290S	I310A	305	310
16	340S	350F	305S	U280S	245S	I310S	J260S	U240S	245S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	J290S	260	J275S	260	J260R	J260S	J255S	U245S	I250S	U280S	U260S	275	295	I320A
18	U350S	310	300S	U285S	260	S	U255S	J280S	I250C	J260S	U255S	270	J280R	270S	255	250	265	I250S	230	295S	J295S	295	320	355
19	U330S	340	345	340S	290	330	J255S	I250S	250	250	J260S	U280R	250	260	265	U250S	260	255	J260R	250	U280S	I355A	I360A	305
20	260S	I320A	I350A	305	250	I320A	U250S	250	J260R	250	J250S	J300R	J285S	260R	270	J295S	J260S	J245S	J250R	305	320	I305S	330	345S
21	I335S	340	340S	U295S	280	345	J260S	U250S	I245R	225S	260S	290	J260S	260	280	J280S	250	230S	260S	330S	A	A	S	330
22	U340R	320	I345C	360	300	315S	250S	245S	245	J240S	255	260	300R	U300R	270	J250S	U245S	250	U260S	255	I270A	I290A	320	355
23	I315A	300	345	320	300	300S	250	250	250	250	I245S	J245R	270	300	295S	260S	250R	J240S	U225S	305	305	310S	U380S	I350R
24	320	325	310	300	U260S	J315F	U260S	U245S	J250S	U260S	I255S	270	285	J345S	295	260	U255S	260	U340S	U465S	305	U325S	U380S	U380F
25	F	F	U405S	F	F	FS	J260S	250R	240	250R	280S	J280S	275	300	300	J260S	J255S	U250S	300	295	J270S	355	350	F
26	F	340	U310S	285	245	I255S	250S	I250S	J280R	J250R	250R	245	295S	285	J270S	250	J250S	240	U230S	I290A	I300A	I300A	360	350
27	350S	360	J345F	F	J250S	285	J240S	230	J240R	255	280S	295S	260	U285S	I255S	250	225S	I255C	265S	U285S	280	U295S	I300A	300S
28	325	340S	I290S	300	280S	260	U225S	235	245	U245R	250R	B	R	260	J265R	J240S	J245S	I220A	S	A	A	A	I300A	I305A
29	325	305S	280S	355	U280S	F	J250S	J230S	260	240	280	300	I290C	J250R	250S	I245C	I235C	245	J300R	U295S	A	300S	295S	305S
30	U300S	350	J340S	U390S	I380F	U395R	J255S	305	350	350R	305	I290C	J250R	250R	260	J245S	260	I280C	J260S	295	270	300S	330	360
31	380	350	360	305	305F	360	300S	250	J260S	U250R	245	J255R	250	250	J300S	245	I230A	I250A	I280A	I260S	I300A	A	A	I330F
No.	27	26	27	25	26	24	28	28	28	28	30	29	29	30	30	29	27	26	25	26	24	25	25	29
Median	325	330	310	300	280	310	250	250	250	250	265	280	280	275	280	260	255	250	250	280	280	305	320	330
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

hpF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 13

IONOSPHERIC DATA

Oct. 1963 | ypF2 | 135° E Mean Time (G.M.T. +9h) | Kokubunji Tokyo | Lat. 35° 42.4 N | Long. 139° 29.3 E

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	C	C	C	C	C	C	C	C	C	C	45	75	65	I 45R	J 40S	J 65R	R	J 45S	U 65S	J 55S	I 60A	I 55A	U 45S	I 75A
2	U 70S	U 75S	90	50	75	I 60S	J 50S	60Z	35	45	45	25S	J 50R	I 50R	50	J 40S	50	U 50S	70	40	U 85S	I 45A	U 65S	75
3	85	45	50	65	90H	U 70S	I 55A	J 30R	30	55	U 45R	40R	45	50	25	35	U 25S	60S	U 50S	I 60S	55	55	65	60
4	U 85S	55	75	60	I 50A	I 70S	I 65S	30	50	45	U 80S	J 40R	40R	I 40C	U 40R	50	U 55R	S	A	55	I 60S	65	J 55R	I 70F
5	80	85	80	50	65	55	I 55S	55	40	55	35	80	55R	J 70R	U 45S	50S	50	55	J 50S	J 50S	J 45S	A	A	I 45F
6	U 65S	A	A	50	60	J 50R	U 50S	J 50S	I 40S	30	45	40	15	60R	55R	45S	S	S	J 60S	S	S	I 65S	I 80S	U 60S
7	60S	U 45S	90	90	45	U 50S	U 50S	U 50S	U 45S	U 45S	60	J 45S	40	45	J 40R	45	I 40S	J 50S	J 55S	U 60S	I 60S	U 50S	I 80S	55S
8	U 50S	I 50S	U 65S	85	65	U 65S	J 50S	J 50S	I 40S	J 50S	35	50	60S	30	55	35	65	S	70	I 50S	U 45S	55S	50	I 55F
9	U 55S	75	I 70F	U 75S	70F	I 50F	50	40	U 40S	40	J 30S	50	J 50S	U 30S	50S	S	S	S	S	F	A	50S	R	I 80S
10	80S	90	80	A	A	A	U 55S	60	J 45S	J 45S	35	J 45S	55	45	J 45S	50	U 45S	U 45S	I 50S	65	I 60S	50S	U 90S	U 55S
11	U 60S	50	45	U 50S	60	U 70S	50S	55	35	45	60S	J 30S	J 30S	45	J 50S	40R	J 50R	U 50S	50S	50S	U 45S	55	90	85
12	J 55S	50	I 50S	90	50	55	U 55S	45	50S	U 45S	I 40R	J 45S	J 20S	55	J 30S	J 60S	J 55R	50	A	U 60S	S	A	F	U 50S
13	I 50F	55S	U 55S	I 50C	80	J 55S	J 50S	I 55S	U 50S	U 60S	J 55S	45	50S	35	J 20R	J 45S	50	I 45S	A	A	I 70S	90	U 70S	55
14	65S	C	C	C	C	C	C	C	C	40	60	I 60C	I 50C	50	I 40R	J 55S	U 65S	I 50S	55S	I 50S	65	25S	65	60S
15	75	55S	I 55A	50	45S	60R	U 45S	J 35S	50	I 40C	45	35	J 50R	85	J 50S	U 50S	55	J 45S	40	U 45S	I 50S	I 80A	45	85
16	55S	60F	45S	U 40S	50S	I 60S	J 50S	U 55S	50S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	J 35S	55	J 70S	45	J 45R	J 45S	J 45S	U 35S	I 55S	U 45S	U 50S	U 50S	U 50S	I 55A
18	U 65S	50	50	U 40S	55	S	U 60S	J 40S	I 50C	J 40S	U 40S	55	J 45R	75S	45	45	50	I 35S	65	50S	J 45S	55	80	75
19	U 70S	65	55	65S	55	70	J 45S	I 40S	50	45	J 45S	U 35R	45	35	45	U 45S	50	50	J 40R	45	U 30S	I 35A	I 40A	45
20	55S	I 55A	I 50A	45	50	I 60A	U 45S	45	J 40R	35	J 40S	J 50R	J 60S	50R	50	J 45S	J 40S	J 50S	J 50R	50	65	I 65S	65	55S
21	I 60S	55	55S	U 50S	45	55	J 50S	U 45S	I 50R	45S	55S	30	J 45S	65	45	J 30S	50	50S	50S	55S	A	A	S	70
22	U 55R	75	I 60C	60	45	80S	50S	50S	35	J 55S	50	100	50R	U 55R	40	J 50S	U 45S	50	U 60S	55	I 75A	I 55A	75	45
23	I 60A	50	65	75	50	45S	50	50	50	50	I 40S	J 50R	50	45	40S	50S	45R	J 55S	U 45S	45	75	80S	U 65S	I 60R
24	80	75	85	45	U 65S	J 50F	U 45S	U 30S	J 45S	U 45S	I 55S	50	55	J 60S	55	55	U 50S	75	U 55S	U 85S	60	U 70S	U 65S	U 65F
25	F	F	U 40S	F	F	FS	J 45S	45R	55	45R	45S	J 45S	40	60	55	J 45S	J 55S	U 45S	60	50	J 55S	60	60	F
26	F	60	U 50S	55	55	I 50S	50S	I 50S	J 65R	J 50R	45R	45	25S	30	J 55S	45	J 50S	55	U 50S	I 60A	I 50A	I 50A	80	60
27	55S	70	J 60F	F	J 50S	60	J 55S	30	J 60R	50	35S	50S	45	U 30S	I 40S	45	40S	I 40C	80S	U 30S	30	U 55S	I 50A	50S
28	75	55S	I 55S	50	45S	50	U 70S	45	35	U 50R	45R	B	R	65	J 60R	J 50S	J 50S	I 45A	S	A	A	A	I 60A	I 75A
29	70	65S	45S	90	U 40S	F	J 60S	J 40S	50	30	80	30	I 55C	J 50R	45S	I 45C	I 45C	60	J 90R	U 50S	A	60S	55S	65S
30	U 55S	55	J 55S	U 55S	I 60F	U 65R	J 50S	55	55	50R	45	I 50C	J 40R	45R	45	J 50S	50	I 60C	J 60S	60	35	55S	70	70
31	50	55	85	90	85F	85	65S	55	J 70S	U 45R	50	J 45R	45	45	J 40S	75	I 35A	I 55A	I 60A	I 60S	I 50A	A	A	I 75F
No.	27	26	27	25	26	24	28	28	28	28	30	29	29	30	30	29	27	26	25	26	24	25	25	29
Median	60	55	55	55	55	60	50	50	50	45	45	45	50	50	45	45	50	50	55	50	U 55	55	55	60
U.Q.																								
L.Q.																								
Q.R.																								

ypF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 14

IONOSPHERIC DATA

Oct. 1963 | foF2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7 E

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	3.1	3.2	F	F	3.2^{S}	F	3.5^{S}	$I_{6.1}{}^{S}$	6.2^{S}	$J_{7.9}{}^{S}$	6.3	$I_{6.8}{}^{S}$	7.1^{S}	8.3	$J_{9.5}{}^{S}$	$J_{9.9}{}^{S}$	9.1	$J_{10.0}{}^{S}$	8.8	6.0	3.1	2.9	2.9^{S}	3.0
2	3.2	3.3	3.2	2.8	2.6	2.6	3.1	5.9^{S}	5.7	$I_{6.4}{}^{S}$	7.0^{S}	6.9	$J_{8.2}{}^{S}$	8.4	6.7	6.1^{S}	6.4	6.9	$J_{7.8}{}^{S}$	$I_{7.4}{}^{S}$	4.9^{S}	$I_{2.2}{}^{A}$	2.5	2.6^{S}
3	$I_{2.9}{}^{S}$	3.0	2.5	2.7^{S}	2.3	2.3	2.9	$J_{5.3}{}^{S}$	6.0	$J_{6.6}{}^{S}$	6.8^{S}	5.8	6.4	$J_{7.9}{}^{S}$	$J_{7.7}{}^{S}$	6.3	$I_{7.1}{}^{S}$	9.3^{S}	$I_{9.1}{}^{S}$	5.9	$J_{3.6}{}^{S}$	2.9	2.9	3.0^{S}
4	3.0	3.1	3.1	3.1	3.0	2.1	2.9	6.0^{S}	$I_{6.1}{}^{S}$	6.2^{S}	6.6^{S}	$I_{6.9}{}^{S}$	6.2	6.5	8.2	$U_{8.8}{}^{S}$	$I_{9.2}{}^{S}$	$I_{7.7}{}^{S}$	$J_{6.4}{}^{S}$	$I_{4.6}{}^{S}$	$I_{2.6}{}^{A}$	2.7	2.9^{S}	2.9
5	3.0	3.0	2.9	3.0	3.1^{S}	2.7	3.3	5.3	6.1^{SZ}	6.4^{S}	5.8	6.5	9.0	9.5^{S}	$J_{7.8}{}^{S}$	$I_{7.3}{}^{S}$	6.0	$J_{6.9}{}^{S}$	$J_{7.9}{}^{S}$	$I_{6.8}{}^{S}$	$J_{2.8}{}^{S}$	$J_{2.7}{}^{S}$	$I_{3.0}{}^{A}$	3.4^{S}
6	3.3^{S}	$I_{3.1}{}^{S}$	$I_{2.7}{}^{A}$	3.1	3.0^{S}	$I_{2.4}{}^{A}$	$I_{3.3}{}^{S}$	5.9	S	S	6.1	$I_{7.3}{}^{S}$	8.4	$J_{8.3}{}^{S}$	$J_{8.1}{}^{S}$	$J_{7.8}{}^{S}$	$J_{7.8}{}^{S}$	7.5^{S}	$I_{6.6}{}^{S}$	$J_{4.2}{}^{S}$	2.6	$I_{2.8}{}^{A}$	2.9	3.1
7	3.2^{S}	3.3^{S}	3.0	2.9	2.7	2.7^{S}	3.0	5.9	6.8^{S}	7.0^{S}	6.6	6.4^{S}	8.7	9.2^{S}	$I_{7.6}{}^{S}$	6.1	6.2	$J_{8.3}{}^{S}$	$I_{8.7}{}^{S}$	4.4^{S}	3.7	$I_{3.4}{}^{S}_{H}$	$I_{3.6}{}^{S}$	3.6^{S}
8	$I_{3.4}{}^{S}$	$J_{3.2}{}^{S}$	3.1	3.3^{H}	3.1^{H}	3.3	3.1	$J_{5.2}{}^{S}$	6.2^{S}	8.3	9.0	8.0	6.9	6.5	6.3	$I_{7.4}{}^{S}$	$I_{7.9}{}^{S}$	S	S	S	3.7	$J_{3.7}{}^{S}$	3.4	3.4
9	$I_{3.6}{}^{S}$	3.7^{S}	3.9^{S}	3.7	$I_{4.0}{}^{SH}$	3.7^{S}	$J_{3.6}{}^{S}$	5.8	6.3	6.4	$J_{8.0}{}^{S}$	8.6	8.4	8.3^{S}	9.1	$J_{8.3}{}^{S}$	8.3	$I_{8.9}{}^{S}$	9.1^{S}	5.8	3.0^{S}	3.0^{S}	3.1	3.2
10	$I_{3.2}{}^{S}$	3.2	3.0	3.1	2.9	2.5^{S}	3.2	5.6	6.5^{S}	8.2	$J_{7.8}{}^{S}$	7.2	$J_{7.9}{}^{S}$	9.1^{S}	8.4	$I_{7.6}{}^{S}$	7.2^{S}	8.9^{S}	9.1^{S}	$I_{6.7}{}^{S}$	3.4^{S}	3.6^{H}	3.4	3.3^{S}
11	3.3	3.2	3.2	3.2	3.5	2.9	3.4	6.3	$J_{6.4}{}^{S}$	7.2^{S}	$J_{6.6}{}^{S}_{H}$	8.4	8.7	9.3^{S}	$J_{9.9}{}^{S}$	8.4	$J_{8.3}{}^{S}$	$I_{9.2}{}^{S}$	$I_{10.0}{}^{S}$	$I_{7.7}{}^{S}$	$J_{4.5}{}^{S}$	$J_{4.3}{}^{S}$	A	A
12	3.4	3.3	$I_{3.6}{}^{S}$	3.2	3.0	3.1	3.8^{S}	$J_{6.1}{}^{S}$	$I_{7.0}{}^{S}$	$J_{8.2}{}^{S}$	8.6	$I_{9.2}{}^{S}$	10.1	10.3^{S}	$J_{9.5}{}^{S}$	9.1	9.1	$I_{7.9}{}^{S}$	$I_{7.1}{}^{S}$	$I_{7.7}{}^{S}$	5.0^{S}	$I_{4.7}{}^{S}$	4.5	$I_{4.2}{}^{S}$
13	$I_{4.0}{}^{S}$	$I_{4.0}{}^{S}$	$J_{4.1}{}^{S}$	4.3	F	S	4.0	$I_{6.0}{}^{S}$	6.9^{S}	9.3^{S}	10.6	$U_{9.3}{}^{S}$	$J_{9.6}{}^{S}$	10.4	10.3	9.2^{S}	$J_{8.4}{}^{S}$	8.9	8.9^{S}	$I_{6.7}{}^{S}$	$I_{5.0}{}^{A}$	$I_{4.6}{}^{S}$	$I_{4.1}{}^{A}$	3.4^{S}
14	$I_{3.8}{}^{S}$	$I_{3.7}{}^{S}$	3.0	3.6^{S}	3.1	3.1^{S}	3.6	$J_{6.1}{}^{S}$	$I_{7.2}{}^{S}$	$I_{7.5}{}^{S}$	$J_{7.8}{}^{S}$	8.7	10.3^{S}	10.2	11.3^{S}	$I_{11.6}{}^{S}$	$J_{10.1}{}^{S}$	9.2	$J_{7.9}{}^{S}$	5.1	$I_{5.0}{}^{S}$	3.6^{S}	3.6^{S}	$I_{3.5}{}^{S}$
15	$I_{3.6}{}^{S}$	$J_{3.7}{}^{S}$	3.6	3.6	$J_{4.3}{}^{S}$	2.6^{S}	3.6	5.9^{S}	8.3^{H}	$I_{9.1}{}^{S}$	8.9	8.7	9.3	10.3	$I_{9.3}{}^{S}$	8.6	$I_{9.3}{}^{S}$	$J_{10.3}{}^{S}$	$J_{7.9}{}^{S}$	$J_{4.4}{}^{S}$	$I_{4.1}{}^{A}$	$I_{3.6}{}^{S}$	3.7^{S}	3.6
16	3.8	3.5	3.2	3.2	3.6	2.0	3.1	5.8	6.8^{H}	7.7^{S}	9.0	8.6	10.3	10.9	9.4	$J_{9.6}{}^{S}$	$U_{9.5}{}^{S}$	8.7	$J_{8.1}{}^{S}$	$J_{4.2}{}^{S}$	3.8^{S}	$I_{4.0}{}^{S}$	$I_{3.9}{}^{S}$	3.7
17	3.7	$I_{3.7}{}^{S}$	$I_{3.8}{}^{S}$	4.0	5.0	2.7	3.4	$J_{6.3}{}^{S}$	6.7	$J_{7.7}{}^{S}$	9.1	$I_{9.8}{}^{S}$	10.6	10.5	$I_{9.8}{}^{S}$	9.3^{S}	9.1^{S}	8.8	$I_{7.3}{}^{S}$	5.4	4.4	$I_{3.8}{}^{S}$	3.1	2.6
18	2.7^{S}	3.0	$I_{2.9}{}^{A}$	$I_{2.9}{}^{A}$	2.9	2.7	3.1	$J_{6.0}{}^{S}$	$I_{7.8}{}^{C}$	8.7	$I_{9.4}{}^{S}$	$J_{10.1}{}^{S}$	9.4^{S}	$J_{11.5}{}^{S}$	$J_{10.3}{}^{S}$	8.8^{H}	$J_{7.4}{}^{S}$	8.7	$J_{8.7}{}^{S}$	$J_{3.8}{}^{S}$	3.5^{S}	3.7^{S}	3.0	$I_{3.0}{}^{A}$
19	$I_{3.0}{}^{A}$	3.1	3.1	3.1	3.0	3.2	3.8	$I_{5.3}{}^{C}$	6.7	6.9^{S}	$I_{7.6}{}^{S}$	9.1	8.9	$I_{9.3}{}^{C}$	8.6	9.0	$J_{9.9}{}^{S}$	$J_{7.7}{}^{S}$	6.8	$J_{5.0}{}^{S}$	3.3^{S}	3.0	3.3	3.5^{S}
20	3.7^{S}	3.3	3.3^{S}	3.6	3.7	3.1	3.1	5.8	$J_{7.8}{}^{S}$	8.9^{S}	6.7	8.3	9.3^{S}	$J_{9.8}{}^{S}$	8.7	8.8	9.2^{S}	$I_{9.3}{}^{S}$	9.2^{S}	5.7	$I_{4.2}{}^{S}$	$I_{4.2}{}^{S}$	3.8^{S}	3.6^{S}
21	3.5^{H}	3.7^{S}	3.3	3.3	3.4	3.1	3.5^{S}	$I_{6.2}{}^{S}$	$I_{7.6}{}^{S}$	$J_{7.7}{}^{S}$	$J_{7.7}{}^{S}$	9.2	10.9	$J_{9.6}{}^{S}$	9.1	10.6^{S}	$J_{11.5}{}^{S}$	$J_{9.9}{}^{S}$	5.8	3.9	$J_{4.5}{}^{S}$	4.5	2.7	2.7
22	$I_{3.1}{}^{A}$	2.9	3.0	3.0	3.2	3.2	$I_{3.9}{}^{C}$	5.9	6.8^{S}	$I_{7.4}{}^{S}$	8.2	7.6	8.2	9.0	10.3	$J_{10.1}{}^{S}$	8.8^{S}	$J_{7.9}{}^{S}$	$J_{5.9}{}^{S}$	4.6	3.3	3.0	3.0	$I_{3.0}{}^{S}$
23	$I_{3.1}{}^{S}$	3.3^{S}	$J_{2.6}{}^{S}$	3.0	3.1	3.1	3.5^{S}	5.6	$I_{7.5}{}^{S}$	$J_{7.6}{}^{S}$	$J_{8.2}{}^{S}$	9.2	6.8	8.7	$J_{10.1}{}^{S}$	$J_{10.2}{}^{S}$	9.0	8.6	6.9	$I_{4.0}{}^{S}$	$I_{2.8}{}^{A}$	$I_{3.1}{}^{A}$	3.4	3.1
24	3.3^{S}	3.3^{S}	3.2	3.4	3.4	2.9	3.1	5.5	6.5	6.0^{S}	8.9	$J_{7.8}{}^{S}$	$J_{7.9}{}^{S}$	8.7	11.1^{S}	11.0^{S}	$J_{7.9}{}^{S}$	$I_{6.5}{}^{S}$	5.9	5.5	$I_{5.9}{}^{S}$	$J_{6.0}{}^{S}$	$I_{4.5}{}^{S}$	4.2^{S}
25	$I_{5.0}{}^{S}$	4.9	$I_{4.6}{}^{C}$	$J_{5.0}{}^{S}$	3.9	4.7^{S}	$I_{3.6}{}^{S}$	6.1^{S}	$I_{6.8}{}^{S}$	$I_{8.0}{}^{S}$	8.8	9.2^{S}	$J_{8.0}{}^{S}$	$I_{8.4}{}^{C}$	$J_{10.2}{}^{S}$	$I_{10.2}{}^{C}$	$I_{8.8}{}^{C}$	$I_{8.0}{}^{C}$	$I_{8.4}{}^{C}$	$I_{6.2}{}^{C}$	$I_{4.7}{}^{C}$	$I_{3.6}{}^{C}$	$I_{2.9}{}^{C}$	$I_{3.0}{}^{C}$
26	$I_{3.2}{}^{C}$	$I_{3.2}{}^{C}$	$I_{3.2}{}^{C}$	$I_{3.6}{}^{C}$	$I_{3.6}{}^{C}$	$I_{2.2}{}^{C}$	$I_{2.8}{}^{C}$	$I_{5.4}{}^{C}$	$I_{6.2}{}^{C}$	$I_{8.6}{}^{C}$	$I_{9.5}{}^{C}$	$I_{8.7}{}^{C}$	$I_{8.4}{}^{C}$	$I_{8.4}{}^{C}$	$I_{10.3}{}^{C}$	$I_{10.0}{}^{C}$	$I_{9.3}{}^{C}$	$I_{7.5}{}^{C}$	$I_{6.1}{}^{C}$	C	C	C	$I_{3.0}{}^{C}$
27	$I_{3.2}{}^{C}$	C	C	C	C	C	C	C	C	C	$J_{8.1}{}^{S}$	9.4^{S}	9.2	9.0	11.1^{S}	$I_{9.8}{}^{S}$	$I_{7.3}{}^{S}$	$J_{6.4}{}^{S}$	4.8	3.3	3.5	$I_{3.6}{}^{A}$	$I_{3.3}{}^{S}$	$I_{3.3}{}^{A}$
28	$I_{3.5}{}^{A}$	$I_{3.4}{}^{S}$	$I_{3.4}{}^{S}$	3.2	3.2	3.1	2.7	$J_{5.4}{}^{S}$	$J_{6.4}{}^{S}$	$I_{6.7}{}^{S}$	7.4^{S}	8.1^{H}	$J_{7.8}{}^{R}$	9.4^{S}	10.7	$J_{9.6}{}^{S}$	$J_{7.4}{}^{S}$	6.7	4.3	2.7	3.0	3.4	3.0	$I_{3.3}{}^{S}$
29	3.7^{S}	$I_{3.6}{}^{S}$	$I_{3.5}{}^{S}$	F	3.1^{F}	S	S	$I_{6.2}{}^{S}$	$J_{6.1}{}^{S}$	6.4	6.8	8.6	$I_{10.0}{}^{S}$	$J_{11.3}{}^{S}$	11.8	$J_{10.2}{}^{S}$	8.3	$I_{6.8}{}^{S}$	5.1^{S}	3.6	3.8^{S}	$I_{4.1}{}^{A}$	4.0^{S}	3.6^{S}
30	3.7	3.5^{S}	3.7	3.7	4.2	4.3	3.8	5.4	7.0	7.4^{H}	12.9^{S}	$J_{13.2}{}^{S}$	$J_{8.1}{}^{S}$	8.4	9.3^{S}	8.7	6.5	$J_{7.9}{}^{S}$	$J_{7.9}{}^{S}$	6.4^{S}	$J_{4.6}{}^{S}$	4.7	$I_{4.2}{}^{S}$	3.9^{S}
31	3.9^{S}	$I_{3.8}{}^{S}_{H}$	3.8	$I_{4.0}{}^{S}$	$I_{3.6}{}^{S}$	2.8	3.0	5.7	$I_{7.8}{}^{S}$	9.1	$I_{9.0}{}^{S}$	$J_{10.2}{}^{S}$	9.5	8.0	$J_{9.7}{}^{S}$	$J_{11.1}{}^{S}$	7.3^{S}	6.5	4.9	3.7	$J_{3.7}{}^{S}$	$I_{3.4}{}^{A}$	3.7	$I_{3.1}{}^{S}$
No.	31	30	29	28	29	27	29	30	29	29	31	31	31	31	31	31	31	30	30	29	30	30	29	30
Median	3.3	3.3	3.2	3.2	3.2	2.9	3.3	5.9	6.7	7.6	8.0	8.6	8.7	9.1	9.5	9.1	8.3	8.2	7.8	5.1	3.7	3.6	3.3	3.3
U.Q.	3.7	3.7	3.6	3.6	3.6	3.1	3.6	6.1	7.1	8.2	9.0	9.2	9.5	10.2	10.3	10.1	9.2	8.9	8.7	6.3	4.5	4.1	3.8	3.6
L.Q.	3.1	3.2	3.0	3.0	3.0	2.6	3.1	5.5	6.2	6.6	6.8	7.3	7.9	8.4	8.4	8.3	7.3	7.5	6.1	4.1	3.3	3.0	3.0	3.0
Q.R.	0.6	0.5	0.6	0.6	0.6	0.5	0.5	0.6	0.9	1.6	2.2	1.9	1.6	1.8	1.9	1.8	1.9	1.4	2.6	2.2	1.2	1.1	0.8	0.6

The Radio Research Laboratories, Japan

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 1

IONOSPHERIC DATA

Oct. 1963 | foF1 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	4.4	L^H	L^H	$I_{4.4}{}^L$	A	A	A						
2										4.2	4.2	4.2	4.5	4.5	L^H	L	L							
3										L	4.3	4.4	4.6	4.4	4.3	L	L	L						
4									L	4.2	4.4	4.5	L	L^H	4.4^S	4.2^S	4.0	A						
5									L	L^H	4.3	4.6	4.5	4.5	4.3	4.3^H	L							
6									L	4.2	4.4	4.6	4.6	L	L	A	A	A						
7									L	$I_{4.2}{}^L$	4.4	4.5	4.7^H	4.5	$I_{4.4}{}^A$	L	L	A						
8									L	$I_{4.3}{}^L$	L^H	4.4	4.5^L	$I_{4.5}{}^L$	4.5	L^H	L							
9										L	4.6^H	4.7^H	4.8^H	5.0	L		4.1	L						
10									L	4.0	$I_{4.6}{}^L$	4.8	4.7^H	4.7^L	4.5	L^H	L	L						
11										L	L	4.7	5.0	4.8	4.7	L	L							
12									L	$I_{4.4}{}^L$	$I_{4.6}{}^L$	$I_{4.6}{}^L$	4.0	4.8^L	L	L	L							
13									L	L	L	L	4.8	L	L^H	L^H								
14										L	L	L	L	A	L	A	L							
15										L	4.9	4.8	L^H	L^H	L	L	L							
16										L	4.6	L^H	4.4	L	L	L								
17										L	L	4.6	4.6^L	L	L^H	L	L							
18									C	L	$I_{4.6}{}^L$	4.7	L^H	L^H	L	L	L							
19										L^H	L	L	L	C	L^H	L	L							
20										L	4.5	4.5	4.6	L	L	L	L							
21										L	L	5.0^H	4.3^H	L^H	L^H	L	L^H							
22										L	L	L	L	$I_{4.9}{}^L$	L									
23									L	3.6	$I_{4.3}{}^L$	$I_{4.6}{}_H^L$	L	4.8^H	4.6	L								
24										L	$I_{4.4}{}^L$	4.1	$I_{4.6}{}^L$	L	L	L								
25										A	$I_{4.6}{}^L$	4.6	A	C	A	C	C	C						
26								C	C	$I_{3.6}{}^C$	$I_{4.1}{}^C$	$I_{4.4}{}^C$	$I_{4.2}{}^C$	$I_{4.4}{}^C$	$I_{4.4}{}^C$	$I_{3.7}{}^C$	$I_{3.0}{}^C$	C						
27								C	C	C	L	A	4.5	L	L	L	L							
28										L	A	A	B	4.7	L	3.9	A							
29										L	A	A	L	L	A	4.0	A	2.3						
30											4.7	L	A	A	A	A	L							
31										L	L	4.4	4.0	L	L	L	A							
No.										9	18	22	19	13	10	5	3	1						
Median										4.2	4.4	4.6	4.6	4.7	4.4	4.0	4.0	2.3						
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Oct. 1963 | f_0E | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5′ N, Long. 130°37.7′ E

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	1.90	2.50	2.80	3.10	$I_{3.20}^{R}$	3.25	3.25	3.15	3.00	2.50	S	S					
2							S	S	2.50	2.90	3.05	3.20	$I_{3.20}^{R}$	$I_{3.20}^{R}$	3.10	2.90	2.70	2.30	S					
3							S	2.20	2.60	2.90	$I_{3.00}^{A}$	3.10^{R}	3.20	$I_{3.20}^{R}$	3.10^{R}	2.90	2.60	2.20	S					
4							S	2.00	2.60	2.90	3.10	3.20	$I_{3.30}^{R}$	3.30	3.20	3.00	2.70	2.15	S					
5							S	2.10	2.60	3.00	3.10	3.20^{R}	$I_{3.20}^{R}$	3.25^{R}	$I_{3.10}^{R}$	2.95	2.70	2.05	S					
6							S	A	$I_{2.60}^{A}$	$I_{2.75}^{A}$	3.10	3.25^{R}	$I_{3.30}^{R}$	3.30	3.15	3.00^{R}	2.70	2.25	S					
7							S	2.10	2.70	2.80	3.10	3.20	3.20^{R}	3.15	A	A	A	2.10	S					
8							S	2.10	2.45	2.80	3.10	3.10	3.15	$I_{3.20}^{R}$	3.20^{R}	3.00	2.70	2.20	S					
9							S	1.90	2.60	3.00^{R}	$I_{3.10}^{R}$	3.20^{R}	3.30^{R}	3.25	3.35	3.10_{H}^{R}	2.60	S	S					
10							S	1.80	2.50	3.00	$I_{3.20}^{A}$	3.25^{R}	$I_{3.25}^{R}$	3.30	3.20	3.00	2.60	2.00^{H}	S					
11							S	2.05	A	A	A	3.20	3.20	3.40^{R}	3.25	3.10^{R}	2.70	2.05	S					
12							S	S	2.50	2.80	3.05	3.15	$I_{3.30}^{R}$	3.35	3.30	3.20	2.60	2.00	S					
13							S	2.00	A	A	A	R	$I_{3.20}^{R}$	$I_{3.20}^{R}$	3.15	2.95	2.65	2.10	S					
14							S	2.10	2.50	3.00	3.20	3.30	3.40	3.35	3.25	3.00	2.40	A	S					
15							S	2.00	2.60	2.90	3.05^{H}	$I_{3.15}^{R}$	3.20	$I_{3.20}^{R}$	3.20	2.90	2.60	1.90	S					
16							S	1.95	2.55	2.90	3.10	3.45	$I_{3.40}^{R}$	$I_{3.35}^{R}$	3.30	3.10	2.60	1.70	S					
17							S	1.80	2.50	2.80	3.00	3.15^{R}	$I_{3.30}^{R}$	3.30^{R}	3.15	2.85	2.60	S	S					
18							S	1.80	$I_{2.40}^{C}$	2.70	2.80	R	3.20	$I_{3.25}^{R}$	3.20	2.90	2.70	1.90	S					
19							S	C	A	A	A	3.20	R	C	3.10	2.90	2.60	2.10	S					
20							S	1.80	2.45	2.90^{H}	3.10	$I_{3.15}^{R}$	3.30	$I_{3.20}^{R}$	3.10	3.00	2.60	2.00	S					
21							S	1.90	2.60	2.95	$I_{3.10}^{A}$	3.20^{R}	$I_{3.20}^{R}$	3.20	3.05	2.95	2.60	A	S					
22							C	1.75	2.50	$I_{2.90}^{A}$	3.15	$I_{3.20}^{B}$	$I_{3.25}^{R}$	3.30^{R}	3.20	3.00	2.60	2.10	S					
23							S	S	2.5 0	2.90	3.10	3.20	A	A	A	A	2.60	1.95	S					
24							S	S	2.50	2.80	3.00	3.10	3.20^{R}	3.20	$I_{3.15}^{R}$	2.80	2.40^{H}	1.80	S					
25							S	S	2.30	2.80	3.00^{R}	3.20	$I_{3.30}^{R}$	$I_{3.20}^{C}$	3.10^{H}	$I_{2.80}^{C}$	$I_{2.50}^{C}$	C	C					
26							C	C	$I_{2.40}^{C}$	$I_{2.80}^{C}$	$I_{3.05}^{C}$	$I_{3.20}^{C}$	$I_{3.30}^{C}$	$I_{3.20}^{C}$	$I_{3.00}^{C}$	$I_{2.80}^{C}$	$I_{2.40}^{C}$	C	C					
27							C	C	C	C	2.90	2.90	A	A	R	3.00	2.45	S	S					
28							S	2.00	2.50	2.90	3.05	B	B	B	3.15	2.90	2.50	S	S					
29							S	1.80	2.5 0	2.85	3.05	3.20	3.35	3.20	3.10	A	A	S	S					
30							S	1.85	2.45	2.75	3.00	3.05	3.15	3.20	2.95	2.55	A	A^{F}	S					
31							S	S	2.30^{H}	2.70^{H}	3.05^{H}	3.10	3.20	3.30	3.20	2.90	2.40	S	S					
No.								21	27	27	28	28	27	27	28	28	28	19						
Median								1.95	2.50	2.90	3.10	3.20	3.25	3.25	3.15	2.95	2.60	2.05						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f_0E

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 3

IONOSPHERIC DATA

Oct. 1963 | foEs | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	3.1^{M}	2.9	$J_{2.6}$	2.1	1.9	S	$J_{2.4}$	3.0	4.0	3.6	3.8	3.9	3.7	3.6	3.5	$J_{4.5}$	$J_{5.3}$	$J_{5.4}$	3.7^{M}	$J_{2.9}$	2.4	2.4	2.2	S
2	S	S	S	E	E	S	S	2.1	2.8	3.0	G	G	G	2.4^{G}	2.2^{G}	2.1^{G}	2.9	2.7	1.9	S	S	3.0	3.3	2.3
3	$J_{2.6}$	$J_{2.5}$	$J_{2.3}$	$J_{2.6}$	$J_{1.8}$	$J_{2.0}$	2.5	$J_{8.4}$	3.5	3.2	$J_{3.2}$	$J_{2.9}^{G}$	2.9^{G}	G	3.8	3.3	3.2	2.8	S	2.2	S	S	2.3	S
4	S	S	S	E	E	S	S	2.7	3.4	4.0	3.8	4.1	G	G	G	3.4	3.7	$J_{5.3}$	$J_{2.6}$	3.5	5.7^{M}	$J_{2.7}$	3.7	S
5	S	2.9	2.3	2.2	S	2.1	S	G	2.3^{G}	G	2.9^{G}	2.5^{G}	2.8^{G}	2.7^{G}	2.3^{G}	3.2	G	2.7	2.0	$J_{2.4}$	$J_{3.0}$	$J_{2.9}$	5.7^{M}	$J_{5.3}$
6	4.8^{M}	3.3	$J_{3.0}$	$J_{3.1}$	2.8^{M}	2.7^{M}	2.7^{M}	$J_{3.2}$	4.2	$J_{4.4}$	3.4	4.5	4.5	4.1	G	4.2	4.5	3.8	$J_{3.2}$	$J_{2.5}$	$J_{2.0}$	3.5^{M}	2.4	2.0
7	S	S	S	E	E	S	S	2.2	2.9	3.5	3.8	3.8	3.7	3.9	$J_{6.0}$	3.8	3.3	3.0	2.2	2.3	S	S	1.8	$J_{2.6}$
8	S	S	S	E	E	S	S	2.3	3.0	3.3	3.5	3.7	3.7	3.5	3.5	3.5	2.8	3.3	S	2.2	S	S	2.6	S
9	2.4	S	S	S	E	S	S	2.1	3.1	G	3.6	3.5	G	3.6	G	3.5	3.1	2.5	2.3	S	S	2.3	2.4	$J_{2.8}$
10	3.0	$J_{2.4}$	$J_{1.7}^{S}$	1.4	1.2	S	$J_{2.9}$	3.0	3.0	$J_{3.2}$	$J_{4.2}$	2.7^{G}	$J_{3.1}^{G}$	G	G	G	G	2.4	S	2.2	S	S	S	1.9
11	S	S	2.6	S	$J_{3.1}$	S	$J_{2.0}$	2.5	3.7	$J_{5.4}$	$J_{4.8}$	2.6^{G}	2.1^{G}	3.8	3.7	3.4	3.8	2.8	$J_{3.2}$	S	$J_{2.5}$	2.4	5.1	$J_{6.1}$
12	2.9	2.4	2.1	2.1	$J_{2.5}$	$J_{1.8}^{S}$	S	2.3	2.9	3.1	2.7^{G}	2.6^{G}	2.7^{G}	G	2.5^{G}	G	3.2	3.1	$J_{4.7}$	5.9^{M}	3.6^{M}	3.5^{M}	3.6^{M}	3.0
13	5.8^{M}	2.3	2.5	2.2	2.4	2.3	S	2.4	2.8	3.1	3.4	2.7^{G}	G	G	G	G	G	2.3	$J_{1.7}^{S}$	4.3	$J_{6.5}$	3.6^{M}	5.8^{M}	3.9^{M}
14	3.2^{M}	2.6	S	S	2.9	2.3	2.4	2.5	3.0	3.8	3.9	4.0	4.3	4.5	4.9	$J_{4.8}$	4.3	8.5	$J_{3.9}$	3.6	$J_{2.8}$	2.7	S	S
15	S	S	S	S	E	S	S	2.3	3.3	3.1	G	G	G	G	G	G	3.0	4.3	$J_{4.2}$	3.5	6.7^{M}	3.2	2.2	3.1
16	S	S	S	E	S	S	S	2.4	G	2.1^{G}	3.4	3.7	3.6	G	3.6	G	3.5	$J_{5.4}$	$J_{5.2}$	$J_{2.5}$	3.1	2.6	2.8	2.2
17	S	S	E	E	E	2.2	2.2	2.5	2.1^{G}	$J_{2.7}^{G}$	2.6^{G}	G	3.5	3.6	3.4	G	2.8	2.5	2.5	S	2.6	2.4	S	2.3
18	S	2.8	3.7	3.1	$J_{2.6}$	S	S	2.8	C	3.8	3.7	3.1^{G}	2.9^{G}	2.7^{G}	2.8^{G}	2.3^{G}	2.0^{G}	2.5	$J_{1.6}^{S}$	$J_{1.3}^{S}$	2.8	3.3	5.8^{M}	3.7
19	3.6	3.0	2.4	2.7	3.6	3.0	3.3	C	$J_{5.2}$	6.0^{M}	$J_{3.3}$	2.7^{G}	3.1^{G}	C	2.2^{G}	2.1^{G}	2.9	2.3	S	S	S	S	2.7	2.4
20	4.2^{M}	2.1	E	E	E	S	2.1	G	2.7	G	2.5^{G}	2.7^{G}	3.7	3.7	3.6	3.3	2.9	G	2.1	3.1^{M}	2.2	S	S	S
21	S	S	S	E	E	S	S	2.2	3.0	3.4	3.9	3.2	G	2.4^{G}	G	G	G	2.2	S	2.1	S	S	2.3	$J_{2.8}$
22	4.8^{M}	$J_{2.5}$	$J_{1.8}^{S}$	1.3	$J_{1.3}^{S}$	2.0	C	2.3	$J_{2.7}$	$J_{3.1}$	3.5	B	$J_{5.2}$	$J_{4.4}$	3.4	3.5	3.3	2.6	$J_{3.0}$	$J_{2.3}$	2.8	3.6	3.0	2.6
23	S	2.4	$J_{3.2}$	2.3	2.4	2.3	S	2.3	2.8	3.1	5.0	3.0^{G}	3.8	3.3	3.7	3.4	3.2	2.8	$J_{3.0}$	3.6^{M}	3.5^{M}	$J_{4.1}$	3.1^{M}	2.8^{M}
24	S	S	S	S	1.8	S	S	1.9	2.6	3.0	3.2	3.0^{G}	2.7^{G}	2.1^{G}	G	G	G	2.1	1.9	1.8	S	S	S	2.9^{M}
25	3.0^{M}	2.3	2.9	3.1	3.5	$J_{3.0}$	S	G	3.1	4.1	3.8	4.3	4.2	C	4.6	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	$J_{5.4}$	5.7	$J_{5.1}$	4.0	3.5	3.5	3.2	2.4	2.3	2.2	2.4	5.9^{M}	3.5	3.9^{M}
28	7.1^{M}	2.1	$J_{2.7}$	2.2^{M}	2.2	2.3	2.1	2.4	2.9	3.5	$J_{6.5}$	7.0	4.8	3.9	G	3.4	3.5	2.1	2.2	$J_{2.7}$	3.6^{M}	3.0	5.7^{M}	3.5^{M}_{F}
29	2.8	2.8	2.3	2.3	1.1	1.9	S	G	3.0	4.2	$J_{5.1}$	$J_{5.1}$	$J_{6.0}$	8.9^{M}	$J_{8.7}$	9.0^{M}	$J_{5.4}$	4.9^{M}	$J_{2.0}$	2.5	2.4	4.8^{M}	5.0	$J_{5.3}$
30	3.8^{M}	$J_{1.8}$	$J_{2.0}$	S	1.1	2.1	S	G	3.8	$J_{4.7}$	4.2	4.2	4.7	$J_{5.7}$	$J_{6.1}$	$J_{8.1}$	6.1^{M}	4.7	3.6^{M}	$J_{2.9}$	2.2	S	4.7^{M}	2.3
31	$J_{2.7}$	2.4	E	1.3	E	S	S	2.1	3.0	3.4	3.9	3.8	3.4	3.6	3.4	3.7	$J_{5.2}$	6.7^{M}	$J_{2.8}$	1.9	$J_{2.3}$	$J_{5.2}$	$J_{5.2}$	$J_{3.3}$
No.	16	18	19	23	27	14	10	28	28	29	30	29	30	28	30	29	29	29	24	24	20	20	24	23
Median	3.2	2.4	2.3	2.1	1.3	2.2	2.4	2.3	3.0	3.3	3.6	3.2	3.4	3.6	3.4	3.4	3.2	2.8	2.6	2.5	2.8	3.1	3.2	2.8
U.Q.	4.5	2.8	2.7	2.3	2.5	2.3	2.7	2.5	3.4	3.9	3.9	4.0	4.2	3.9	3.7	3.6	3.8	4.5	3.4	3.3	3.6	3.6	5.0	3.7
L.Q.	2.8	2.3	1.8	E	E	2.0	2.1	2.1	2.8	3.0	3.2	G	G	G	G	G	2.8	2.4	2.2	2.2	2.4	2.6	2.4	2.3
Q.R.	1.7	0.5	0.9			0.3	0.6	0.4	0.6	0.9	0.7						1.0	2.1	1.2	1.1	1.2	1.0	2.6	1.4

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Oct. 1963 | f_bEs | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	1.9	1.8	E	1.7	E	S	G	2.6	2.9	3.4	3.8	3.8	3.6	3.5	3.5	4.3	5.1	4.1	1.9	A	E	E	E	S
2	S	S	S			S	S	G	G	G				2.4^G	2.2^G	2.0^G	G	G	1.9	S	S	A	1.8	E
3	2.0	1.7	1.7	1.7	1.7	1.8	2.0	2.9	3.4	G	$E_{3.2}{}^R$	2.2^G	2.5^G		3.8	G	3.1	2.7	S	E	S	S	E	S
4	S	S	S			S	S	2.5	3.3	3.6	3.6	3.8				3.3	3.6	3.3	A	1.8	A	1.9	2.0	S
5	S	1.8	1.7	E	S	E	S		1.8^G		2.9^G	2.4^G	2.2^G	2.7^G	2.3^G	G		2.5	1.7	2.0	1.8	1.7	A	2.6
6	2.7	A	A	2.3	1.8	A	1.9	2.3	3.1	3.5	3.4	4.5	4.5	4.0		4.1	4.2	3.8	3.2	E	1.7	A	E	E
7	S	S	S			S	S	G	G	3.4	3.8	3.7	3.6	3.8	A	3.8	3.3	3.0	2.2	E	S	S	1.8	2.6
8	S	S	S			S	S	G	2.9	$E_{3.3}{}^R$	G	3.6	3.7	$E_{3.5}{}^R$	3.5	3.4	G	3.2	S	E	S	S	1.9	S
9	1.8	S	S	S		S	S	1.8	3.0		3.4	G		3.5		G	G	2.3	G	S	S	E	1.7	2.4
10	2.2	1.7	S	$E_{1.4}{}^S$	$E_{1.2}{}^S$	S	2.0	A	G	2.3	3.8	2.5^G	$E_{3.1}{}^R$					G	S	E	S	S	S	1.8
11	S	S	2.0	S	2.4	S	G	2.4	3.2	3.5	4.4	2.6^G	2.1^G	3.8	3.7	G	3.2	2.3	2.6	S	1.7	E	A	A
12	1.9	E	1.8	1.9	2.2	S	S	2.2	2.9	$E_{3.1}{}^R$	2.5^G	2.5^G	2.4^G		2.2^G		3.2	3.0	4.3	3.4	A	2.5	2.0	E
13	2.9	E	1.8	1.1	1.6	1.6	S	2.3	2.8	3.1	3.4	2.6^G						G	S	A	A	1.9	A	2.4
14	1.8	E	S	S	1.8	1.6	G	1.8	2.9	3.6	3.7	3.9	4.3	$E_{4.5}{}^R$	4.5	4.3	3.4	5.3	A	2.9	1.8	1.8	S	S
15	S	S	S	S		S	S	2.2	3.2	$E_{3.1}{}^R$							G	$E_{4.3}{}^S$	A	3.1	A	1.8	E	2.0
16	S	S	S		S	S	S	G		2.0^G	G	3.6	3.6		G		3.3	5.2	A	A	E	E	2.8	2.1
17	S	S				1.7	G	G	1.9^G	2.5^G	2.3^G		G	G	3.4		G	2.4	1.7	S	2.0	2.0	S	E
18	S	E	A	A	2.2	S	S	2.7	C	3.6	3.6	$E_{3.1}{}^R$	2.8^G	2.5^G	2.3^G	2.2^G	2.0^G	2.3	S	S	1.9	2.0	1.9	A
19	A	2.2	1.8	1.8	2.3	1.7	2.0	C	3.3	3.3	A	2.7^G	$E_{3.1}{}^R$	C	2.2^G	2.1^G	G	2.2	S	S	S	S	E	E
20	2.6	E				S	1.8		G		2.4^G	2.2^G	G	3.7	G	3.3	2.9		G	E	E	S	S	S
21	S	S	S			S	S	G	3.0	3.2	3.7	2.7		$E_{2.4}{}^R$				2.1	S	1.8	S	S	E	2.0
22	A	1.8	S	$E_{1.3}{}^S$	S	E	C	G	1.8	$E_{3.1}{}^R$	3.5	B	3.7	4.1	$E_{3.4}{}^R$	3.5	3.1	2.5	$E_{3.0}{}^S$	1.8	2.1	2.6	2.0	1.9
23	S	1.9	1.6	1.1	1.6	E	S	2.2	G	3.1	3.5	2.3^G	3.5	$E_{3.3}{}^R$	3.6	3.4	3.2	2.6	2.2	2.9	A	A	2.0	2.0
24	S	S	S	S	E	S	S	$E_{1.9}{}^S$	G	$E_{3.0}{}^R$	G	2.3^G	2.3^G	$E_{2.1}{}^R$				G	G	1.8	S	S	S	2.0
25	1.8	E	A	2.8	1.9	1.8	S		3.1	4.0	3.7	4.0	4.2	C	4.6	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	4.5	4.6	3.7	3.6	$E_{3.5}{}^R$	3.4	3.1	2.3	1.8	2.0	E	A	1.7	A
28	A	1.8	2.3	1.8	1.7	1.8	1.7	G	G	3.5	5.1	6.6	$E_{4.8}{}^R$	3.9		3.3	3.5	2.0	2.2	2.4	2.3	2.1	1.8	A
29	1.8	2.0	1.8	1.7	1.1	E	S		G	3.6	5.1	4.4	4.5	4.1	8.1	3.2	3.5	1.9	1.9	1.9	E	A	1.8	E
30	2.6	1.8	1.8	S	$E_{1.1}{}^S$	1.9	S		3.6	4.5	4.0	4.2	4.6	5.5	4.7	7.6	2.9	2.4	2.8	2.0	E	S	2.2	E
31	2.0	E		$E_{1.3}{}^S$		S	S	G	2.9	3.2	3.9	3.7	3.3	3.4	3.3	3.3	A	A	2.6	E	2.2	A	1.9	2.0
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f_bEs Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 5

IONOSPHERIC DATA

Oct. 1963 | f-min | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.80}^{S}$	E	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.40	$E_{1.60}^{S}$	1.80	1.70	1.80	1.70	1.80	1.80	2.00	1.70	1.60	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$
2	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	E	E	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.70	1.70	1.80	1.80	1.80	1.70	1.65	1.65	1.80	$E_{1.65}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
3	$E_{1.70}^{S}$	$E_{1.50}^{S}$	1.15	1.10	E	1.20	$E_{1.65}^{S}$	$E_{1.60}^{S}$	1.60	1.80	1.70	1.70	1.70	2.20	1.90	1.90	1.60	1.70	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.90}^{S}$
4	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.10	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.65	1.60	1.90	2.00	2.30	2.40	1.80	1.65	1.80	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
5	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.15	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	1.60	1.65	1.70	1.80	1.80	1.90	1.90	1.65	1.70	1.70	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
6	$E_{1.60}^{S}$	$E_{1.65}^{S}$	1.10	E	E	1.40	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.65	1.60	1.70	1.70	1.90	2.40	2.10	1.75	1.65	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$
7	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.40	1.60	1.70	1.70	1.80	2.05	1.80	1.80	1.95	1.75	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
8	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.60	1.70	1.70	1.80	1.70	1.85	1.80	1.70	1.65	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
9	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.00	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.60	1.70	1.80	1.90	1.90	2.00	1.70	1.70	1.65	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
10	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.50}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.60	1.60	1.80	1.70	1.70	1.95	2.00	1.90	1.80	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.90}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$
11	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.00	$E_{1.50}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.70	1.85	1.85	1.80	1.90	2.00	1.80	1.70	1.70	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
12	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.35	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.60	1.80	1.80	1.80	2.05	1.80	1.80	1.70	1.65	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$
13	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	E	E	1.05	$E_{1.65}^{S}$	$E_{1.80}^{S}$	1.70	1.80	1.80	1.85	1.85	1.80	1.80	1.75	1.70	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
14	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	E	1.10	$E_{1.60}^{S}$	1.40	1.70	1.70	1.70	1.65	1.70	1.75	1.70	1.65	1.80	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$
15	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.80	1.80	1.80	1.90	1.90	1.80	1.80	1.70	1.60	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.50}^{S}$
16	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	1.10	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	1.60	1.60	1.70	1.85	1.90	1.90	1.80	1.90	1.80	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.50}^{S}$
17	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.10	1.05	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.50	1.70	1.80	1.85	1.85	1.80	1.70	1.80	1.80	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
18	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	C	1.70	1.90	1.85	1.90	1.80	1.80	1.80	1.60	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
19	$E_{1.60}^{S}$	$E_{1.50}^{S}$	E	E	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	C	1.60	1.75	1.80	1.90	1.90	$I_{1.90}^{C}$	1.90	1.60	1.80	1.70	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$
20	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.10	E	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	1.60	1.70	1.80	1.75	1.70	1.90	1.80	1.80	1.70	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.80}^{S}$
21	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	E	E	$E_{1.90}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.65	1.85	1.90	1.85	1.95	1.80	2.20	1.80	1.90	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
22	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.80}^{S}$	E	E	$E_{1.70}^{S}$	C	$E_{1.60}^{S}$	1.65	1.70	1.80	3.80	2.30	2.00	1.90	1.80	1.70	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
23	$E_{1.60}^{S}$	$E_{1.60}^{S}$	E	E	E	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.70	1.85	1.90	1.85	1.85	1.80	1.85	1.85	1.70	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
24	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.00	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.70	1.80	1.60	1.70	1.85	1.80	2.30	1.90	1.80	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.50}^{S}$
25	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{C}$	E	E	1.10	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.70	1.65	1.60	1.80	1.90	$I_{1.80}^{C}$	2.00	$I_{1.70}^{C}$	$I_{1.70}^{C}$	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	$I_{1.70}^{C}$	$I_{1.70}^{C}$	$I_{1.75}^{C}$	$I_{1.70}^{C}$	$I_{1.85}^{C}$	$I_{1.90}^{C}$	$I_{1.80}^{C}$	$I_{1.85}^{C}$	$I_{1.75}^{C}$	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	1.80	1.85	1.80	1.85	1.85	1.75	1.60	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
28	$E_{1.60}^{S}$	$E_{1.60}^{S}$	E	E	E	$E_{1.50}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.60	1.80	1.60	4.60	4.50	3.30	2.20	1.90	1.90	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$
29	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.10	E	E	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.70	1.70	1.85	1.90	1.90	1.85	1.90	1.80	1.75	$E_{1.70}^{S}$	$E_{1.45}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
30	$E_{1.70}^{S}$	1.00	E	$E_{1.60}^{S}$	E	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.65	1.70	1.75	1.90	1.80	1.70	1.80	1.75	1.70	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.75}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
31	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.00	E	1.35	$E_{1.50}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.70	1.60	1.70	1.80	1.80	1.95	1.80	1.70	1.80	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
No.	29	29	29	23	26	29	28	28	29	30	31	31	31	31	31	31	31	29	29	29	29	29	29	29
Median	$E_{1.70}$	$E_{1.65}$	$E_{1.60}$	E	E	$E_{1.60}$	$E_{1.60}$	$E_{1.60}$	1.65	1.70	1.80	1.85	1.85	1.85	1.85	1.80	1.70	$E_{1.70}$	$E_{1.65}$	$E_{1.65}$	$E_{1.65}$	$E_{1.70}$	$E_{1.70}$	$E_{1.60}$
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 6

IONOSPHERIC DATA

Oct. 1963 | M(3000)F2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	3.15	3.15	F	F	3.55^{S}	F	3.35^{S}	$I_{3.70}{}^{S}$	3.55^{S}	$J_{3.65}{}^{S}$	3.40	$I_{3.35}{}^{S}$	3.10^{S}	3.05	$J_{3.25}{}^{S}$	$J_{3.35}{}^{S}$	3.30	$J_{3.50}{}^{S}$	3.65	3.75	3.30	2.80	2.90^{S}	2.95
2	3.15	3.10	3.25	3.05	3.25	3.10	3.25	3.60^{S}	3.50	$I_{3.45}{}^{S}$	3.45^{S}	3.25	$J_{3.20}{}^{S}$	3.45	3.45	3.30^{S}	3.45	3.40	$J_{3.45}{}^{S}$	$I_{3.75}{}^{S}$	4.10^{S}	$I_{2.95}{}^{A}$	3.10	3.05^{S}
3	$I_{3.15}{}^{S}$	3.35	3.20	3.40^{S}	3.15	3.50	3.45	$J_{3.75}{}^{S}$	3.65	$J_{3.35}{}^{S}$	3.55^{S}	3.45	3.15	$J_{3.35}{}^{S}$	$J_{3.50}{}^{S}$	3.35	$I_{3.20}{}^{S}$	3.45^{S}	$I_{3.55}{}^{S}$	3.75	$J_{3.70}{}^{S}$	2.90	3.10	3.00^{S}
4	2.95	3.05	3.05	3.25	3.45	3.70	3.40	3.70^{S}	$I_{3.70}{}^{S}$	3.60^{S}	3.40^{S}	$I_{3.60}{}^{S}$	3.25	2.95	3.05	$U_{3.10}{}^{S}$	$I_{3.50}{}^{S}$	$I_{3.60}{}^{S}$	$J_{3.70}{}^{S}$	$I_{3.65}{}^{S}$	$I_{3.30}{}^{A}$	2.80	2.95^{S}	2.90
5	2.95	2.95	3.10	3.35	3.55^{S}	3.35	3.45	3.80	3.70_{Z}^{S}	$J_{3.60}{}^{S}$	3.40	3.05	3.15	3.25^{S}	$J_{3.35}{}^{S}$	$I_{3.35}{}^{S}$	3.50	$J_{3.35}{}^{S}$	$J_{3.65}{}^{S}$	$I_{3.55}{}^{S}$	$J_{3.25}{}^{S}$	$J_{2.60}{}^{S}$	$I_{2.80}{}^{A}$	2.95^{S}
6	3.35^{S}	$I_{3.20}{}^{S}$	$I_{3.20}{}^{A}$	3.25	3.50^{S}	$I_{3.35}{}^{A}$	$I_{3.30}{}^{S}$	3.65	S	S	3.40	$I_{3.20}{}^{S}$	3.35	$J_{3.15}{}^{S}$	$J_{3.00}{}^{S}$	$J_{3.25}{}^{S}$	$J_{3.50}{}^{S}$	3.65^{S}	$I_{3.65}{}^{S}$	$J_{3.95}{}^{S}$	2.90	$I_{2.80}{}^{A}$	2.95	2.90
7	2.90^{S}	2.90^{S}	3.00	3.10	3.15	2.90^{S}	3.20	3.70	3.70^{S}	3.55^{S}	3.50	3.30^{S}	3.15	3.40^{S}	$I_{3.40}{}^{S}$	3.30	3.15	$J_{3.50}{}^{S}$	$I_{3.65}{}^{S}$	3.25^{S}	3.15	$I_{2.95}{}_{H}^{S}$	$I_{3.05}{}^{S}$	2.95^{S}
8	$I_{3.10}{}^{S}$	$J_{3.05}{}^{S}$	2.90	2.80^{H}	3.25^{H}	3.50	3.25	$J_{3.65}{}^{S}$	3.40^{S}	3.35	3.55	3.25	3.50	3.40	3.15	$I_{3.20}{}^{S}$	$I_{3.35}{}^{S}$	S	S	S	3.25	$J_{3.20}{}^{S}$	2.65	2.75
9	$I_{2.85}{}^{S}$	2.90^{S}	2.95^{S}	3.15	$I_{3.00}{}_{H}^{S}$	3.15^{S}	$J_{3.35}{}^{S}$	3.65	3.50	3.55	$J_{3.30}{}^{S}$	3.35	3.10	3.05^{S}	3.15	$J_{3.25}{}^{S}$	3.25	$I_{3.35}{}^{S}$	3.65^{S}	3.60	3.05^{S}	3.05^{S}	2.90	2.95
10	$I_{3.20}{}^{S}$	3.20	3.00	3.25	3.60	3.05^{S}	3.25	3.60	3.40^{S}	3.55	$J_{3.45}{}^{S}$	3.35	$J_{3.10}{}^{S}$	3.35^{S}	3.30	$I_{3.40}{}^{S}$	3.20^{S}	3.35^{S}	3.40^{S}	$I_{3.75}{}^{S}$	3.55^{S}	2.80^{H}	3.10	3.05^{S}
11	2.80	2.95	2.90	2.95	3.25	3.25	3.35	3.75	$J_{3.60}{}^{S}$	3.35^{S}	$J_{3.00}{}_{H}^{S}$	3.25	3.20	3.10^{S}	$J_{3.30}{}^{S}$	3.15	$J_{3.25}{}^{S}$	$I_{3.30}{}^{S}$	$I_{3.50}{}^{S}$	$I_{3.50}{}^{S}$	$J_{3.45}{}^{S}$	$J_{3.25}{}^{S}$	A	A
12	2.95	2.95	$I_{3.20}{}^{S}$	3.20	2.85	2.90	3.15^{S}	$J_{3.50}{}^{S}$	$I_{3.45}{}^{S}$	$J_{3.30}{}^{S}$	3.35	$I_{3.10}{}^{S}$	3.25	3.15^{S}	$J_{3.15}{}^{S}$	3.20	3.30	$I_{3.50}{}^{S}$	$I_{3.45}{}^{S}$	$I_{3.50}{}^{S}$	3.20^{S}	$I_{3.10}{}^{S}$	2.90	$I_{3.00}{}^{S}$
13	$I_{3.05}{}^{S}$	$I_{2.90}{}^{S}$	$J_{3.00}{}^{S}$	3.10	F	S	3.00	$I_{3.65}{}^{S}$	3.05^{S}	3.35^{S}	3.60	$U_{3.25}{}^{S}$	$J_{3.15}{}^{S}$	3.20	3.20	3.25^{S}	$J_{3.25}{}^{S}$	3.30	3.45^{S}	$I_{3.55}{}^{S}$	$I_{3.40}{}^{A}$	$I_{3.30}{}^{S}$	$I_{3.05}{}^{A}$	2.80^{S}
14	$I_{2.90}{}^{S}$	$I_{2.95}{}^{S}$	2.85	3.05^{S}	3.10	3.55^{S}	3.15	$J_{3.65}{}^{S}$	$I_{3.55}{}^{S}$	$I_{3.50}{}^{S}$	$J_{3.20}{}^{S}$	3.10	3.20^{S}	3.10	3.20^{S}	$I_{3.30}{}^{S}$	$J_{3.30}{}^{S}$	3.55	$J_{3.65}{}^{S}$	3.35	$I_{3.00}{}^{S}$	3.35^{S}	2.85^{S}	$I_{2.70}{}^{S}$
15	$I_{2.80}{}^{S}$	$J_{2.90}{}^{S}$	2.70	2.85	$J_{3.20}{}^{S}$	2.75^{S}	3.30	3.50^{S}	3.50^{H}	$I_{3.50}{}^{S}$	3.35	3.20	3.15	3.30	$I_{3.20}{}^{S}$	3.25	$I_{3.30}{}^{S}$	$J_{3.60}{}^{S}$	$J_{3.55}{}^{S}$	$J_{3.35}{}^{S}$	$I_{3.20}{}^{A}$	$I_{3.05}{}^{S}$	2.95^{S}	3.05
16	3.05	3.25	3.15	3.15	3.40	3.30	3.15	3.55	3.55^{H}	3.30^{S}	3.35	3.05	3.15	3.30	3.20	$J_{3.45}{}^{S}$	$U_{3.40}{}^{S}$	3.45	$J_{3.65}{}^{S}$	$J_{3.60}{}^{S}$	2.95^{S}	$I_{3.00}{}^{S}$	$I_{3.10}{}^{S}$	2.95
17	2.95	$I_{2.95}{}^{S}$	$I_{3.00}{}^{S}$	3.05	3.60	2.75	3.05	$J_{3.50}{}^{S}$	3.55	$J_{3.30}{}^{S}$	3.20	$I_{3.20}{}^{S}$	3.20	3.25	$I_{3.30}{}^{S}$	3.35^{S}	3.40^{S}	3.55	$I_{3.45}{}^{S}$	3.35	3.35	$I_{3.50}{}^{S}$	3.25	2.75
18	2.95^{S}	2.90	$I_{2.90}{}^{A}$	$I_{2.90}{}^{A}$	2.95	3.25	2.90	$J_{3.50}{}^{S}$	$I_{3.40}{}^{C}$	3.45	$I_{3.40}{}^{S}$	$J_{3.40}{}^{S}$	3.00^{S}	$J_{3.20}{}^{S}$	$J_{3.20}{}^{S}$	3.05^{H}	$J_{3.30}{}^{S}$	3.35	$J_{3.70}{}^{S}$	$J_{4.05}{}^{S}$	3.10^{S}	3.20^{S}	2.85	$I_{2.95}{}^{A}$
19	$I_{2.90}{}^{A}$	2.90	2.90	2.85	3.00	2.95	3.15	$I_{3.50}{}^{C}$	3.60	3.60^{S}	$I_{3.30}{}^{S}$	3.40	3.25	$I_{3.25}{}^{C}$	3.15	3.20	$J_{3.55}{}^{S}$	$J_{3.65}{}^{S}$	3.40	$J_{3.60}{}^{S}$	3.05^{S}	2.95	2.95	2.90^{S}
20	2.90^{S}	3.05	2.95^{S}	3.05	3.25	2.95	3.25	3.50	$J_{3.60}{}^{S}$	3.55^{S}	3.55	3.30	3.35^{S}	$J_{3.25}{}^{S}$	3.20	3.20	3.25^{S}	$I_{3.50}{}^{S}$	3.70^{S}	3.60	$I_{3.20}{}^{S}$	$I_{3.20}{}^{S}$	3.05^{S}	2.70^{S}
21	2.85^{H}	3.15^{S}	3.10	3.05	3.25	2.90	3.15^{S}	$I_{3.45}{}^{S}$	$I_{3.55}{}^{S}$	$J_{3.55}{}^{S}$	$J_{3.65}{}^{S}$	3.20	3.30	$J_{3.20}{}^{S}$	3.20	3.25^{S}	$J_{3.40}{}^{S}$	$J_{3.75}{}^{S}$	3.45	3.55	$J_{2.90}{}^{S}$	3.55	2.75	2.75
22	$I_{2.80}{}^{A}$	2.90	2.85	3.00	3.20	3.15	$I_{3.35}{}^{C}$	3.70	3.70^{S}	$I_{3.60}{}^{S}$	3.30	3.40	3.25	3.10	3.15	$J_{3.35}{}^{S}$	3.55^{S}	$J_{3.65}{}^{S}$	$J_{3.65}{}^{S}$	3.50	3.35	2.95	3.00	$I_{2.90}{}^{S}$
23	$I_{3.05}{}^{S}$	3.20^{S}	$J_{3.10}{}^{S}$	2.95	3.10	3.30	3.45^{S}	3.60	$I_{3.70}{}^{S}$	$J_{3.55}{}^{S}$	$J_{3.55}{}^{S}$	3.60	3.40	3.10	$J_{3.25}{}^{S}$	$J_{3.35}{}^{S}$	3.55	3.50	3.75	$I_{3.70}{}^{S}$	$I_{2.85}{}^{A}$	$I_{2.80}{}^{A}$	2.90	2.95
24	3.05^{S}	3.10^{S}	3.05	3.25	3.55	3.25	3.25	3.55	3.60	3.70^{S}	3.60	$J_{3.45}{}^{S}$	$J_{3.20}{}^{S}$	3.00	3.15^{S}	3.35^{S}	$J_{3.60}{}^{S}$	$I_{3.45}{}^{S}$	3.15	2.40	$I_{2.75}{}^{S}$	$J_{3.50}{}^{S}$	$I_{3.25}{}^{S}$	2.65^{S}
25	$I_{2.85}{}^{S}$	3.05	$I_{2.70}{}^{C}$	$J_{3.10}{}^{S}$	3.10	3.15^{S}	$I_{3.60}{}^{S}$	3.50^{S}	$I_{3.40}{}^{S}$	$I_{3.40}{}^{S}$	3.60	3.50^{S}	$J_{3.25}{}^{S}$	$I_{3.10}{}^{C}$	$J_{3.35}{}^{S}$	$I_{3.30}{}^{C}$	$I_{3.40}{}^{C}$	$I_{3.50}{}^{C}$	$I_{3.50}{}^{C}$	$I_{3.55}{}^{C}$	$I_{3.30}{}^{C}$	$I_{3.20}{}^{C}$	$I_{3.00}{}^{C}$	$I_{2.80}{}^{C}$
26	$I_{2.85}{}^{C}$	$I_{3.05}{}^{C}$	$I_{3.10}{}^{C}$	$I_{3.40}{}^{C}$	$I_{3.70}{}^{C}$	$I_{3.40}{}^{C}$	$I_{3.45}{}^{C}$	$I_{3.65}{}^{C}$	$I_{3.50}{}^{C}$	$I_{3.55}{}^{C}$	$I_{3.60}{}^{C}$	$I_{3.50}{}^{C}$	$I_{3.40}{}^{C}$	$I_{3.10}{}^{C}$	$I_{3.35}{}^{C}$	$I_{3.45}{}^{C}$	$I_{3.60}{}^{C}$	$I_{3.65}{}^{C}$	$I_{3.75}{}^{C}$	C	C	C	C
27	$I_{2.90}{}^{C}$	C	C	C	C	C	C	C	C	C	$J_{3.35}{}^{S}$	3.55^{S}	3.45	3.20	3.40^{S}	$I_{3.60}{}^{S}$	$I_{3.70}{}^{S}$	$J_{3.60}{}^{S}$	3.55	3.10	2.95	$I_{2.90}{}^{A}$	$I_{3.15}{}^{S}$	$I_{3.25}{}^{A}$
28	$I_{3.20}{}^{A}$	$I_{3.10}{}^{S}$	$I_{3.15}{}^{S}$	3.30	3.30	3.30	3.05	$J_{3.65}{}^{S}$	$J_{3.60}{}^{S}$	$I_{3.70}{}^{S}$	3.30^{S}	3.55^{H}	$J_{3.35}{}^{R}$	3.20^{S}	3.45	$J_{3.55}{}^{S}$	$J_{3.65}{}^{S}$	3.65	3.70	A	2.85	3.25	2.70	$I_{3.00}{}^{S}$
29	3.25^{S}	$I_{3.30}{}^{S}$	$I_{3.45}{}^{S}$	F	2.90^{F}	S	S	$I_{3.75}{}^{S}$	$J_{3.95}{}^{S}$	3.35	3.55	3.15	$I_{3.20}{}^{S}$	$J_{3.20}{}^{S}$	3.45	$J_{3.45}{}^{S}$	3.65	$I_{3.70}{}^{S}$	3.45^{S}	3.20	2.95^{S}	$I_{3.05}{}^{A}$	3.05^{S}	3.20^{S}
30	3.05	3.00	3.05	2.90	3.35	3.00	3.05	3.00	3.55	2.25^{H}	3.30^{S}	$J_{3.70}{}^{S}$	$J_{3.75}{}^{S}$	3.40	3.55^{S}	3.70	3.40	$J_{3.40}{}^{S}$	$J_{3.50}{}^{S}$	3.40^{S}	$J_{3.15}{}^{S}$	3.20	$I_{2.90}{}^{S}$	2.80^{S}
31	2.75^{S}	$I_{3.00}{}_{H}^{S}$	2.90	$I_{3.05}{}^{S}$	$I_{3.40}{}^{S}$	2.85	3.00	3.40	$I_{3.55}{}^{S}$	3.60	$I_{3.50}{}^{S}$	$J_{3.50}{}^{S}$	3.70	3.15	$J_{3.40}{}^{S}$	$J_{3.60}{}^{S}$	3.70^{S}	3.95	3.40	3.35	$J_{3.45}{}^{S}$	$I_{3.15}{}^{A}$	3.25	$I_{3.00}{}^{S}$
No.	31	30	29	28	29	27	29	30	29	29	31	31	31	31	31	31	31	30	30	28	30	30	29	30
Median	2.95	3.05	3.00	3.10	3.25	3.15	3.25	3.60	3.55	3.55	3.40	3.35	3.20	3.20	3.25	3.30	3.40	3.50	3.55	3.55	3.20	3.05	2.95	2.95
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F2

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 7

IONOSPHERIC DATA

Oct. 1963 | M(3000)F1 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	3.90	L^H	L^H	$I_{3.65}{}^L$	A	A	A						
2										3.75	4.05	4.10	3.95	3.80	L^H	L	L							
3										L	4.00	4.00	4.00	3.85	3.60	L	L	L						
4									L	3.85	3.80	3.90	L	L^H	3.45^S	3.55^S	A	A						
5									L	L^H	4.00	3.80	4.00	3.80	3.80	3.60^H	L							
6									L	3.90	3.90	A	A	L	L	A	A	A						
7									L	$I_{3.80}{}^L$	3.95	3.80	3.85^H	3.60	A	L	L	A						
8									L	$I_{3.70}{}^L$	L^H	4.10	3.85^L	$I_{3.80}{}^L$	3.70	L^H	L							
9										L	3.70^H	3.85^H	3.75^H	3.50	L		3.60	L						
10									L	4.15	$I_{3.75}{}^L$	3.65	3.85^H	3.65^L	3.80	L^H	L	L						
11										L	L	3.75	3.50	3.60	3.60	L	L							
12									L	$I_{3.85}{}^L$	$I_{3.75}{}^L$	$I_{3.90}{}^L$	4.50	3.55^L	L	L	L							
13									L	L	L	L	3.65	L	L^H	L^H								
14										L	L	L	L	A	L	A	L							
15										L	3.85	3.75	L^H	L^H	L	L	L							
16										L	3.75	L^H	4.00	L	L	L								
17										L	L	3.80	3.90^L	L	L^H	L	L							
18									C	L	$I_{3.80}{}^L$	3.75	L^H	L^H	L	L	L							
19										L^H	L	L	L	C	L^H	L	L							
20										L	4.00	4.00	3.85	L	L	L	L							
21										L	L	3.60^H	4.00^H	L^H	L^H	L	L^H							
22										L	L	L	L	$I_{3.65}{}^L$	L									
23									L	4.15	$I_{4.05}{}^L$	$I_{3.85}{}^L_H$	L	3.75^H	3.50	L								
24										L	$I_{3.90}{}^L$	3.95	$I_{3.80}{}^L$	L	L	L								
25										A	$I_{3.70}{}^L$	3.70	A	C	A	C	C	C						
26								C	C	$I_{4.25}{}^C$	$I_{4.05}{}^C$	$I_{3.95}{}^C$	$I_{4.15}{}^C$	$I_{4.00}{}^C$	$I_{3.60}{}^C$	$I_{3.80}{}^C$	$I_{3.95}{}^C$	C						
27								C	C	C	L	A	3.95	L	L	L	L							
28										L	A	A	B	3.60	L	3.85	A							
29										L	A	A	L	L	A	4.00	A	4.10						
30											3.65	L	A	A	A	A	L							
31										L	L	4.05	4.00	L	L	L	A							
No.										9	18	21	18	13	9	5	2	1						
Median										3.85	3.90	3.85	3.90	3.65	3.60	3.80	$^U3.80$	4.10						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

M(3000)F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | h'F2 | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										245	275^{L}	270	310	295	275	260	250	240						
2										255	255	255	265	250	260	290	255							
3										250	250	260	310	275	260	275	280	245						
4									230	250	270	250	285	350	300	280	250	235						
5									225	240	280	320	290	265	255	270	245							
6									235	230	280	295	265	290	295	260	250	240						
7									240	245	250	275	290	255	I$_{260}^{A}$	275	300	250						
8									250	270	245	260	250	280	310	290	260							
9										245	270	255	295	290	295		280	250						
10									240	255	255	280	300	260	270	260	290	250						
11										245	255^{H}	290	290	295	270	270	265							
12									245	260	265	285	260	290	260	280	250							
13									255	255	240	270	285	280	275	255								
14										250	255	280	275	270	280	255	250							
15										245	250	260	275	270	270	260	260							
16										250	260	255	270	255	270	255								
17										245	280	255	270	255	270	255	250							
18									C	255	270	245	300	275	250	260	255							
19										250	270	260	270	I$_{270}^{C}$	260	280	245							
20										245	240	275	270	280	250	260	250							
21										235	245	290	260	255	285	275	250							
22										240	275	245	265	295	295									
23									240	235	250	250	250	305	280	255								
24										230	255	255	290	300^{L}	290	250								
25										245	255	270	250	I$_{280}^{C}$	280	I$_{250}^{C}$	I$_{250}^{C}$	C						
26								C	C	I$_{255}^{C}$	I$_{250}^{C}$	I$_{250}^{C}$	I$_{245}^{C}$	I$_{280}^{C}$	I$_{275}^{C}$	I$_{250}^{C}$	I$_{240}^{C}$	C						
27								C	C	C	280	250	260	270	255	245	235							
28										235	265	255^{H}	270	290	255	245	235							
29										255	245	275	260	290	250	250	235	215						
30											280	235	220	250	250	255	230							
31										245	250	250	230	250	260	245	230^{A}							
No.									9	29	31	31	31	31	31	29	26	8						
Median									240	245	255	260	270	280	270	260	250	240						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 9

IONOSPHERIC DATA

Oct. 1963 | h'F | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	285	295	280	225	260	240	225	230	230	225	210	190^{H}	210^{H}	250	A	A	A	220	205^{A}	205	E_{280}^{S}	305	305
2	275	260	250	245	245	300	255	235	225	210	200	200	200	220	195^{H}	230	240	250	235	200	195	A	300	330
3	300	250	280	240	E_{275}^{A}	E_{250}^{A}	235	220	230	225	205	200	190	205	260	240	245	240	225	200	205	300	260	305
4	320	290	290	250	200	E_{250}^{S}	240	225	230	225	220	205	200	190^{H}	250	240	A	A	225^{A}	200	A	E_{340}^{A}	320	300
5	305	300	300	250	205	250	220	205	210	210^{H}	195	190	185	230	225	200^{H}	230	240	225	205	245	E_{370}^{A}	A	E_{300}^{A}
6	290	I_{275}^{A}	A	E_{295}^{A}	225	A	250	225	235	230	225	I_{205}^{A}	A	245	205	A	A	A	225	200	E_{250}^{A}	A	305	295
7	300	260	290	250	245	320	260	230	240	220	205	200	190^{H}	250	I_{250}^{A}	250	240	A	225	200	240	290^{H}	280	300
8	255	260	310	280^{H}	240^{H}	240	235	230	220	215	205^{H}	200	195	205	225	220^{H}	240	240	235	205	225	250	300	315
9	300	295	255	270	230^{H}	240	230	225	240	240	210^{H}	200^{H}	200^{H}	250	265	250	235	250	220	205	250	260	300	305
10	275	245	265	260	220	E_{260}^{S}	250	230^{A}	225	205	240	210	195^{H}	205	205	195^{H}	235	240	225	200	205	295^{H}	250	285
11	295	300	310	305	275	240	250	225	235	230	240	195	220	210	250	240	245	250	225	205	230	225	A	A
12	320	295	250	270	E_{345}^{A}	310	250	240	235	225	225	210	195	210	245	230	240	230	255	250	225^{A}	310	250	270
13	E_{350}^{A}	300	275	255	260	330	265	220	230	235	220	205	200	240	205^{H}	220^{H}	240	245	230	225^{A}	I_{260}^{A}	255	I_{285}^{A}	E_{350}^{A}
14	330	285	305	260	260	245	235	220	225	230	225	220	E_{250}^{A}	A	I_{265}^{A}	I_{250}^{A}	250	240	220^{A}	230	250	240	255	335
15	295	295	320	310	235	260	250	225	235^{H}	240	220	200	200^{H}	195^{H}	205	230	245	240	225^{A}	235	A	270	290	300
16	290	240	250	245	230	S	270	220	220^{H}	220	240	200^{H}	200	240	230	240	250	240	220^{A}	200^{A}	290	265	290	295
17	300	270	265	255	210	E_{300}^{A}	270	225	230	235	225	220	200	195	200^{H}	235	240	235	220	210	240	220	250	E_{330}^{S}
18	320	305	A	I_{330}^{A}	310	255	260	240	I_{245}^{C}	240	240	240	200^{H}	185^{H}	245	230	245	240	215	200	260	250	330	A
19	A	340	290	320	E_{350}^{A}	300	260	I_{230}^{C}	235	225^{H}	210^{A}	210	205	I_{215}^{C}	195^{H}	240	245	230	220	205	245	E_{260}^{S}	300	290
20	E_{320}^{A}	270	255	260	240	260	250	230	240	240	225	200	240	220	220	235	240	245	210	205	250	240	260	320
21	325^{H}	275	255	260	240	300	250	240	240	225	245	205^{H}	200^{H}	220^{H}	220^{H}	250	240^{H}	215	205	225	265	215	E_{295}^{S}	E_{380}^{A}
22	I_{350}^{A}	305	305	305	270	250	I_{245}^{C}	225	230	240	240	225	215	260	240	250	250	240	220	210	250	E_{350}^{A}	295	310
23	305	255	250	285	280	245	225	220	230	220	200	195^{H}	200	190^{H}	255	255	240	230	205	220	A	A	300	325
24	295	280	260	255	230	245	230	210	225	210	200	200	205	240	245	240	240	225	240	390	310	210	220	350
25	300	295	A	295	250	240	225	225	235	A	270	250	I_{245}^{A}	C	A	C	C	C	I_{240}^{C}	I_{235}^{C}	I_{245}^{C}	I_{250}^{C}	I_{315}^{C}	I_{340}^{C}
26	I_{335}^{C}	I_{295}^{C}	I_{280}^{C}	I_{250}^{C}	I_{215}^{C}	C	C	I_{210}^{C}	I_{225}^{C}	I_{220}^{C}	I_{230}^{C}	I_{200}^{C}	I_{200}^{C}	I_{190}^{C}	I_{250}^{C}	I_{245}^{C}	I_{230}^{C}	I_{225}^{C}	I_{205}^{C}	C	C	C	C	C
27	I_{345}^{C}	C	C	C	C	C	C	C	C	C	I_{225}^{A}	I_{230}^{A}	205	245	250	240	235	225	200	250	290	A	250	I_{305}^{A}
28	I_{310}^{A}	260	285	240	250	250	240	230	230	235	A	A	B	245	255	230	I_{230}^{A}	225	200	A	E_{350}^{A}	255	E_{340}^{A}	A
29	250	255	240	290^{F}	270	345	235	210	210	240	I_{235}^{A}	A	a	E_{260}^{A}	A	220	I_{215}^{A}	I_{210}^{A}	200	225	E_{280}^{S}	A	280	250
30	300	250	290	325	285	315	270	260	250	255^{H}	250	A	A	A	A	A	A	240	230	220	255	245	300	310
31	340	295^{H}	255	270	210	260	290	240	230	230	240	205	205	200	220	240	I_{230}^{A}	225^{A}	245	210	230	I_{290}^{A}	250	E_{350}^{A}
No.	28	30	27	29	27	26	29	30	30	29	30	28	26	27	28	27	26	26	31	29	24	20	26	23
Median	300	280	280	260	240	E_{260}	250	225	230	230	225	205	200	215	240	240	240	240	225	205	245	250	290	305
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Oct. 1963 | h'Es | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5 N, Long. 130°37.7 E

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	105	105	105	105	105	S	105	120	120	120	120	120	120	120	120	110	110	105	105	100	105	105	100	S
2	S	S	S	E	E	S	S	130	130	120	G	G	G	100	100	100	140	135	110	S	S	110	110	105
3	105	105	105	100	105	120	105	130	125	140	100	100	100	G	155	150	140	130	S	110	S	S	105	S
4	S	S	S	E	E	S	S	130	120	120	115	110	G	G	G	150	130	115	110	105	105	105	105	S
5	S	105	100	100	S	105	S	G	100	G	105	105	105	100	105	150	G	110	110	105	105	115	105	120
6	125	105	105	105	105	105	105	100	100	110	125	120	120	120	G	155	145	140	135	130	105	105	100	100
7	S	S	S	E	E	S	S	150	140	120	120	120	110	110	105	155	105	145	140	100	S	S	140	125
8	S	S	S	E	E	S	S	155	140	140	125	120	120	140	155	140	185	120	S	105	S	S	100	S
9	100	S	S	S	E	S	S	125	170	G	150	150	G	130	G	175	130	115	120	S	S	105	140	125
10	120	105	S	105	105	S	115	110	120	100	100	100	100	G	G	G	G	165	S	100	S	S	S	95
11	S	S	105	S	105	S	115	150	105	105	105	105	100	145	145	160	130	125	110	S	105	105	105	100
12	100	130	125	120	120	S	S	125	120	125	105	105	105	G	105	G	115	130	115	110	105	110	110	105
13	105	105	105	105	105	105	S	145	105	105	105	100	G	G	G	G	G	175	S	110	115	110	105	150
14	160	155	S	S	150	105	105	100	130	120	125	120	120	120	115	110	110	105	105	105	105	105	S	S
15	S	S	S	S	E	S	S	145	130	135	G	G	G	G	G	G	160	120	110	110	105	105	105	100
16	S	S	S	E	S	S	S	155	G	100	150	135	140	G	145	G	140	110	110	105	105	110	100	95
17	S	S	E	E	E	105	105	105	105	100	100	G	E145G	145	145	G	140	120	95	S	105	105	S	110
18	S	105	105	105	105	S	S	140	C	120	110	105	105	100	105	105	105	140	S	S	105	105	105	105
19	110	110	110	110	115	115	120	C	110	105	105	105	105	C	105	105	E155G	140	S	S	S	S	105	105
20	105	105	E	E	E	S	110	G	150	G	100	100	140	140	140	130	120	G	115	105	105	S	S	S
21	S	S	S	E	E	S	S	155	135	135	110	105	G	105	G	G	G	115	S	140	S	S	105	105
22	125	105	S	105	105	105	C	110	105	100	140	B	125	130	135	160	145	130	110	100	105	105	105	105
23	S	105	100	100	100	100	S	145	150	140	100	105	100	100	105	155	140	125	100	105	100	100	100	100
24	S	S	S	S	100	S	S	120	125	125	135	100	100	100	G	G	G	140	110	110	S	S	S	100
25	105	105	125C	115	110	110	S	G	160	145	140	140	150	C	140	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	110	130	120	130	140	120	110	110	100	100	130	110	115	100
28	105	100	100	100	100	100	100	105	150	130	120	120	120	120	G	150	120	110	105	105	100	105	105	105F
29	105	100	100	100	105	100	S	G	170	140	125	125	120	115	110	110	110	110	105	105	105	105	100	105
30	100	100	105	S	100	105	S	G	135	130	125	130	130	120	110	110	110	110F	105	105	105	S	105	105
31	105	105	E	100	E	S	S	145	140	135	130	125	135	135	145	130	110	110	110	105	105	105	105	100
No.	16	18	14	15	17	13	10	23	27	26	28	26	23	21	21	21	23	28	22	23	20	20	24	23
Median	105	105	105	105	105	105	105	130	130	120	120	115	120	120	120	140	130	120	110	105	105	105	105	105
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Y 11

IONOSPHERIC DATA

Oct. 1963 | **Types of Es** | 135° E Mean Time (G.M.T. +9h) | Yamagawa | Lat. 31°12.5' N, Long. 130°37.7' E

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	f3	f2	f	f	f		l	c2	c	cl	h2	h	h	hl	h	c2	c3	c6	c2	f3	f	f	f	
2								c	h	h				l	l	l	h	h	c			f2	f2	f
3	f2	f3	f2	f3	f2	f	l2	c2l2	c2l2	h	l	l	l		h	h	hl	h2		f			f	
4								c4	c2l	c2l	h	c				h	h2	c3	c4	f	f2	f3	f2	
5		f2	f2	f		f			l		l	l	l	l	l	hl		c2	c	f2	f3	f2	f4	ff2
6	ff3	f4	f3	f4	f3	f3	l	l3	l2	c2l2	hl	hl	h	h		h2	h2	h2l3	c3l	f2	f2	f2	f2	f2
7								h2	hl2	h	hl2	h	h	c2	l2	hl	l	h4l2	h2l	f			f2	f3
8								h2	h2l	h	h	h	h	h	h	h2	h	c2		f			f2	
9	f							l	h		h	hl		hl		h	h	c3	c			f	f2	f5
10	ff	f2	f	f2	f2		l2	c6	h	l2	l2	l	l					h		f				f
11			f2		f2		l	h2	l3	l2	l3	l	l	h	h	h	h2	c2	c4		f	f	f3	f6
12	f3	ff	f	f2	f4	f		c2	h	h	l	l	l		l		h	c3	c5	f3	f2	f3	f3	f2
13	f3	f2	f2	f	f2	f		h2	l3	l2	l2	l						h	h	f5	f5	f3	f3	f3f3
14	ff2	ff			ff	f2	l2	l2h2	h2l	c2l	cl	cl	cl	c	cl	c2l	c2	l3	l3	f2	f2	f2		
15								h2	h	hl							h	c3	c6	f7	f3	f2	f	f5
16								h2		l	h	h	hl		h		h2	c4	c3	f3	f2	f	f	f2
17						f	l	l	l	l2	l2		hl	h	h		h	h3c2	l		f2	f2		f
18		f2	f4	f4	f4			c2		c2	c	l	l	l	l	l	l	h2	l	f	f3	f3	f3	f5
19	f4	f4	f2	f2	f5	f2	l4		l2	l2	l2	l	l		l	l	h	h					f	f
20	f4	f					l		hl2		l	l	hl	h	hl	h	h2		l	f	f			
21								h2	h2	hl	l	l		l				l		f			f	f2
22	ff2	f2	f	f2	f	f		l	l	l2	h		h	h	h	h	h2	h2	h5	f	ff	f2	f2	f
23		f2	f3	f	f2	f		h2	h	h	lc	l	l	l	l	hl	h2	c3	l2	f2	f2	f3	f2	f2
24					f			l	h	h	hl	l	l	l				h	h	f				f2
25	f	f2	f2	f6	f4	f2			h3	h2	h	hl	h		h2									
26																								
27											c2	hc2	hl	hcl	hl	cl	c2l	c2	l	f4	f2	f4	f2	f3
28	f6	f2	f4	f	f2	f2	l2	l	hl	h	h3l	h	h	h		h	c2	c	c3	f5	f3	f3	f2	f3
29	f3	f4	f2	f2	f	f			h	h2	h2	h2	h2	c	c2	l	l3	l2	l4	f2	f2	f5	f2	f2
30	f3	f2	f2		f	f2			h3	h2	h2	h	h	h2	h2	c2	l2	l3	l3	f	f		f2	f2
31	f2	f2		f				h2	h2	hl	h	h	h	h	h	h	c2	c2	c5	f	f2	f2	f3	f3
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Types of Es Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 12

58

SOLAR RADIO EMISSION 200 Mc/s

Flux in 10^{-22} w.m.$^{-2}$ (c/s)$^{-1}$, 2 polarizations

HIRAISO

Time in U.T.

Oct. 1963	Steady Flux					Variability				
	00-03	03-06	06-09	21-24	mean	00-03	03-06	06-09	21-24	mean
1	-	-	-	5	-	-	-	-	0	-
2	-	-	-	5	(5)	-	-	-	0	(0)
3	5	5	5	-	5	0	0	0	-	0
4	5	5	5	-	5	0	0	0	-	0
5	5	5	5	5	5	0	0	0	0	0
6	5	5	5	5	5	0	0	0	0	0
7	5	5	5	5	5	0	0	0	0	0
8	5	5	5	5	5	0	0	0	0	0
9	5	5	5	6	5	0	0	0	1	0
10	5	7	5	5	6	0	1	0	0	0
11	5	5	5	5	5	0	0	0	0	0
12	8	5	5	5	6	1	0	0	0	0
13	5	5	5	15	5	0	0	0	2	0
14	8	8	5	5	8	1	1	0	1	1
15	5	5	5	5	5	0	0	0	0	0
16	5	5	5	5	5	0	0	0	0	0
17	5	5	5	5	5	0	0	0	0	0
18	5	5	5	-	5	0	0	0	-	0
19	5	5	5	5	5	0	0	0	0	0
20	5	5	5	-	5	0	0	0	-	0
21	5	5	5	5	5	0	0	0	0	0
22	5	5	6	6	5	0	0	1	1	0
23	8	7	5	-	7	1	1	0	-	1
24	(5)	(5)	5	q	5	(0)	(1)	0	0	0
25	q	q	q	q	q	0	0	0	0	0
26	q	q	q	11	q	0	0	0	1	0
27	q	q	q	q	q	1	0	1	0	1
28	8	6	(18)	q	15	1	0	(1)	0	1
29	q	q	q	q	q	0	0	0	0	0
30	q	q	q	q	q	0	0	0	0	0
31	q	q	q	q	q	0	0	0	0	0

Note No observations during the following periods:

1st	0000-		0820	21st	0100-		0200
2nd	0040-		0820	23rd	0100-		0210
3rd	2030-	4th	0040	23rd	2050-		2400
18th	2050-	19th	0110	24th	0120-		0500
20th	2050-		2400				

" q " means almost quiet level but uncertain owing to receiver instability

Outstanding Occurrences

Oct. 1963	Start-time	Dura-tion	Type	Max. Int.		Max. Time	Remarks
				Inst.	Smd.		
24	0539.7	0.5	ECD/8	340	170	-	
28	0142.2	100	CA/1	-	-	-	*

* storm-like phenomenon but likely to be of Type IV because of its association with other frequencies.

RADIC PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Oct. 1963	Whole Day Index	L. N. 06-12	L. N. 12-18	L. N. 18-24	W W V 00-06	W W V 06-12	W W V 12-18	W W V 18-24	S. F. 00-06	S. F. 06-12	S. F. 12-18	S. F. 18-24	W W V H 00-06	W W V H 06-12	W W V H 12-18	W W V H 18-24	Warning 00-06	Warning 06-12	Warning 12-18	Warning 18-24	Principal magnetic storms Start	End	ΔH
1	4-	4	C	4	-	-	-	1	3	4	5	4	3	4	-	4	N	N	N	N			
2	4+	4	5	5	-	-	-	2	4	5	5	5	3	3	-	4	N	N	N	N			
3	5-	4	4	5	-	-	-	4	4	5	5	5	4	4	-	4	N	N	N	N			
4	4+	4	4	5	-	-	-	4	4	5	5	4	4	3	-	4	N	N	N	N			
5	4o	5	4	5	-	-	-	3	4	4	4	4	4	3	-	4	N	N	N	N			
6	3+	4	3	(4)	-	-	-	4	3	3	4	3	4	(3)	-	3	N	N	N	N			
7	4o	4	3	4	-	-	-	5	4	4	4	4	3	3	-	4	N	N	N	N			
8	4o	3	4	4	-	-	-	4	5	4	5	4	4	4	-	4	N	N	N	N			
9	5o	5	5	4	-	-	-	5	5	5	5	5	5	4	-	5	N	N	N	N			
10	5-	5	(5)	(4)	-	-	-	5	4	5	4	4	5	5	-	4	N	N	N	N			
11	4o	4	4	3	(4)	-	-	4	5	(4)	4	4	5	5	-	3	N	N	N	N			
12	4o	4	3	4	-	-	-	5	4	4	4	3	4	5	-	4	N	U	U	U			
13	3+	3	3	3	-	-	-	4	2	3	4	4	5	4	-	4	U	U	U	U			
14	3+	4	3	4	-	-	-	3	4	3	3	3	4	5	-	4	U	U	U	U			
(15)	4-	4	3	4	-	-	-	4	3	3	4	4	4	4	-	5	U	U	U	U			
(16)	4-	4	4	5	(4)	-	-	3	3	3	4	3	5	5	-	5	N	N	N	N			
(17)	4o	4	5	5	-	-	-	4	3	3	4	3	4	4	-	5	N	N	N	N			
18	4+	5	5	5	-	-	-	3	4	5	4	4	4	4	-	4	N	N	N	N			
19	4-	3	4	5	-	-	-	4	4	4	3	(3)	4	3	-	5	N	N	N	N			
20	4+	4	3	4	(5)	-	-	5	5	5	4	3	4	4	-	5	N	N	U	U			
21	4+	4	4	4	-	-	-	5	4	4	4	5	4	5	-	4	N	N	N	N			
22	4+	5	5	5	-	-	-	5	3	4	4	4	3	3	-	5	N	N	N	N			
23	4+	5	5	5	-	-	-	4	3	4	4	4	4	4	-	5	N	N	N	N	19.0	---	206γ
24*	3o	2	3	4	-	-	-	2	4	3	3	4	5	5	-	4	N	U	U	U	---	---	
25*	4o	4	(4)	4	-	-	-	4	4	5	4	4	5	4	-	(4)	U	U	N	N	---	21xx	
26	3+	4	2	3	-	-	-	4	4	3	4	(4)	4	4	-	4	N	N	N	N			
27	4o	4	4	5	-	-	-	2	4	4	4	4	4	4	-	4	N	N	N	N			
28	4+	5	5	4	-	-	-	3	3	5	5	4	3	4	-	3	N	N	N	N			
29*	3o	4	2	1	-	-	-	1	4	5	C	3	(4)	(3)	-	3	N	N	N	N	1400	---	189γ
30*	3o	2	2	3	-	-	-	4	2	4	4	4	4	(4)	-	4	W	W	U	U	---	---	
31	5-	5	4	5	-	-	-	5	4	4	4	5	4	3	-	(4)	N	N	N	N	---	21xx	

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

∘ = MAGCALME

▵ = COSMIC EVENT

( ) = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Oct. 1963	S W F									Correspondence		
	Drop-out Intensities (db)						Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN	SH							
18	-	10	>8				23.42	12	S	1		x	x
22		14					22.42	18	S	1	x	x	x
28		>42	25	-		19'	01.42	97	Slow	3-	x	x	x

IONOSPHERIC DATA IN JAPAN FOR SEPTEMBER 1963

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