F—177

IONOSPHERIC DATA IN JAPAN

FOR SEPTEMBER 1963

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THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

KOKUBUNJI, TOKYO, JAPAN

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THE RADIO RESEARCH LABORATORIES

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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. 0234 *x*)

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

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

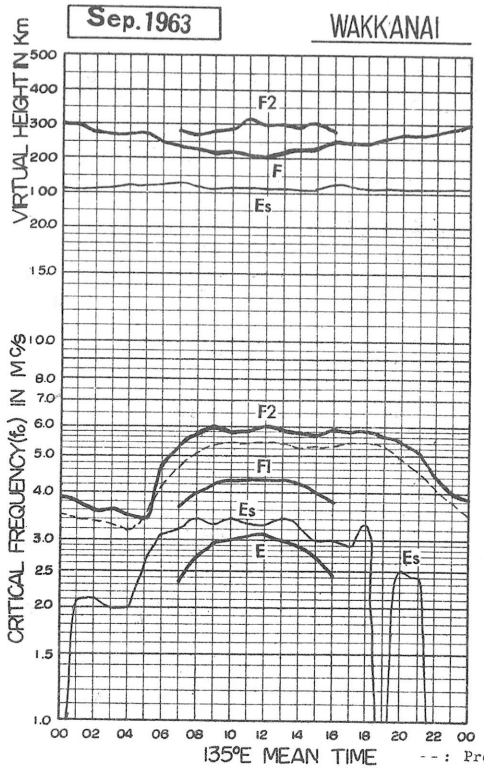
Importances

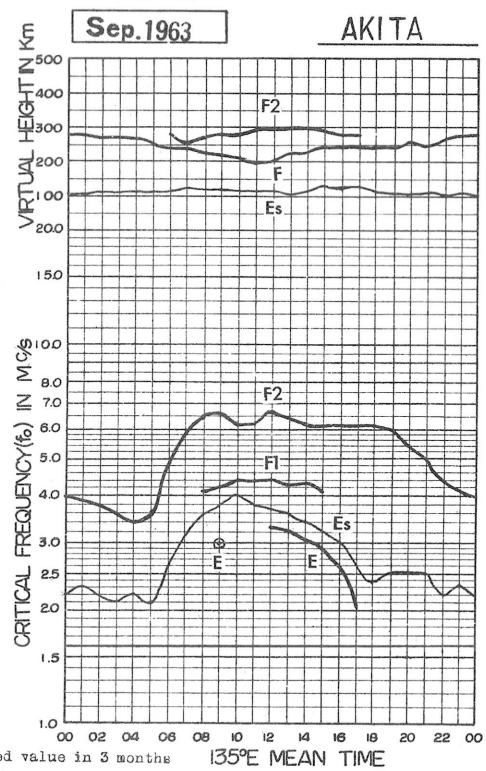
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

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.

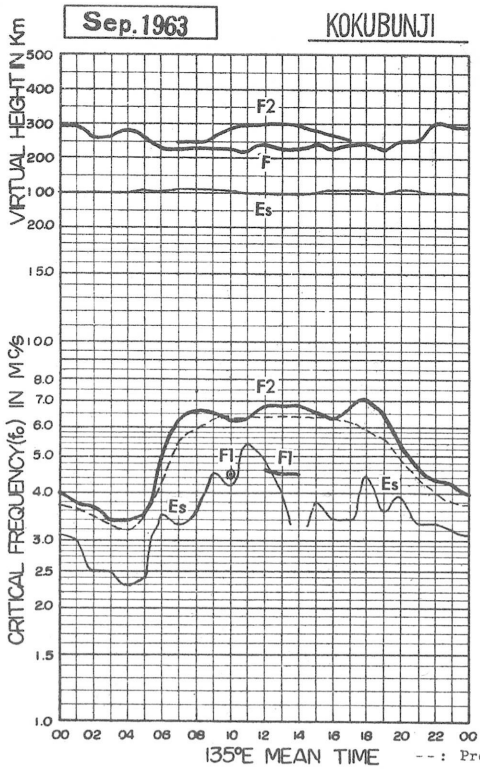
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

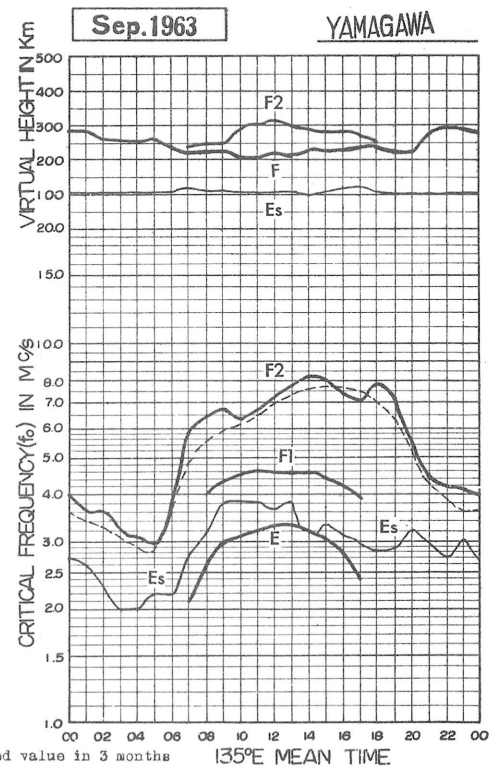




--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





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

IONOSPHERIC DATA

Sep. 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	3.3	3.6	3.5	3.6	3.5	U4.3S	U4.8S	I5.5A	6.2	5.0	6.0	6.6	6.3	5.3	5.3	5.4	5.5	5.0H	5.5	6.3	6.4	I5.8SF	5.0	I4.0A
2	I2.9A	3.6	4.0F	3.7F	I3.6F	I3.7A	4.6	5.1	5.3V	5.9	5.1	5.1	5.0	5.3	5.6	5.4	5.1	5.1	5.1	6.0	5.9	5.9	5.3F	4.4
3	4.0	U3.8F	3.6	3.6	3.6F	4.3	5.1	5.5	5.8	5.7	5.2	5.2	5.4	5.8	5.6	6.0	6.0	5.3H	5.7	U6.4S	6.4	5.9	4.3	4.1
4	3.9	3.9	3.9	3.7	3.6	U4.3S	4.8	5.9	6.9	6.4	5.5	5.7	5.5	5.4	5.5	5.7	5.6	5.4	6.0	6.8	6.7	6.3	5.0	4.0
5	3.7	3.8	3.6	3.8	3.6	3.6	4.7	6.6	6.7	6.3	5.5	6.3	5.8	5.8	6.0	5.7	5.6	5.6	6.1	6.1	U6.0SF	6.3	5.2	4.2
6	4.0	I3.8C	3.7	3.5	3.7	4.2	5.1	4.9	5.7	5.2	5.2	6.1	7.3	7.0	5.4	5.4	5.4	5.6	6.0	6.7	6.5	6.0	5.1	3.8
7	3.7	3.8	3.6	3.4	3.4	3.5	5.0	5.2	5.3	5.4	5.9	5.6	6.0	5.7	5.7	6.1	6.0	5.7	5.6	5.8	5.9	5.7	4.6	4.1
8	4.0	3.9	3.8	3.7	3.6	3.6	4.5	5.6	5.9	C	C	C	C	C	5.1	5.5	6.0	6.2	8.0	7.0	5.3	4.0	3.7	I3.7SF
9	I3.7SF	3.7	4.2	3.0	I2.6A	3.3	5.0	5.3	6.9	7.6	6.9	6.3	5.7	6.3	5.7	5.4H	6.0	6.1	5.7	5.3	5.3	5.3	5.3	4.3
10	4.3	4.0	4.1	4.3	3.5	3.0	4.3	5.1	6.4	6.8	5.6	5.7	5.7	6.1	5.9	5.6	I5.7C	5.9	5.7	5.9	5.8	5.9	4.6	4.3
11	3.9	3.8	3.7	3.6	3.8	4.1	4.9	5.5	5.3	5.5	6.3H	5.8	6.3	6.6	5.8	5.9	6.1	5.7	5.0	5.2	5.8	5.7	4.2	4.0
12	4.0	3.7	3.6	3.5	3.6	3.3	3.9	4.7	4.9	5.4	5.0	5.1	5.4	6.2	7.0	5.8	5.5	5.8	5.5	5.3	5.5	5.0	4.3	4.1
13	4.0	SF	SF	SF	SF	SF	4.3H	5.1F	5.5	I6.0A	5.1	5.8	6.4	6.4	I6.1C	6.3	5.6	5.6	5.3	5.6	5.8	5.7	4.4	4.3
14	4.3	3.9	4.0	U3.8S	I3.6A	U4.1S	5.0	5.0	5.8	6.3	6.3	5.5	6.8	6.4	6.3	6.0	7.3	6.5	U7.2S	I7.8S	I7.6S	6.3	6.0	U4.8S
15	4.3	I3.9S	3.3S	3.1	2.3	2.7	3.3	I4.1R	4.4	4.6	I4.6B	I4.7B	I4.6B	W	4.9	4.7	5.0	4.9	5.3	U5.3S	5.0	U4.3S	3.7	3.8
16	U3.3S	U3.9S	U4.3S	I4.1SF	I3.8^{S}F	3.4S	4.9	5.7	6.8R	6.0	6.1	6.0	5.5	5.5	5.5	5.5H	6.3	6.3	I6.1C	I5.6C	5.2	I4.3S	U4.1S	SF
17	SF	S	3.3S	I3.3S	I3.2^{S}F	I3.2S	4.0	I4.6A	4.8	5.3	I5.0R	I5.4A	5.7	I5.1A	5.0	5.3	5.3	5.7	6.0	5.8	5.9	5.2	U4.5S	I4.3S
18	U4.3S	I3.0S	I2.8A	I2.9A	2.9	2.6	I4.1A	4.6	5.4	5.7	5.3	5.3	6.0	5.7	6.2	I5.4C	5.7	5.6	5.1	4.3	4.7	U4.4S	4.0	3.8
19	4.0	3.3	3.3	3.1	3.0	3.1	4.8	5.3	6.0	5.9	6.2	5.6	6.3	7.0	6.5	6.0	6.6	6.3	6.1	5.8	5.4	5.5S	U4.6S	4.5
20	4.3	4.1	3.3	3.6	3.3	3.0	3.7	4.1	5.0	5.6	5.3	5.4	5.7	5.7	5.6	5.4	5.7	6.4	5.8	5.8	5.4	4.6	4.3	3.8
21	3.3	3.1	3.0	3.1	3.3	3.6	5.1	5.3	5.5	B	B	B	6.6	6.3	I6.2C	6.4	6.3	7.1	I5.8C	5.1	5.1	U5.0S	4.3	4.0
22	3.7	3.3	3.3	3.2	3.2	3.8	4.6	5.9	7.0	7.0	5.9H	7.3	7.2	7.3	7.5	7.5	U9.4S	8.1	8.4	5.2	A	SF	SF	FS
23	F	F	F	I3.7S	I3.6SF	I3.4SF	4.4	4.6	A	R	A	R	5.3	I4.4A	4.2	I4.0R	4.0	3.9	3.2	U3.3S	SF	SF	SF	SF
24	2.4	A	A	A	1.8	2.5	4.6	7.3	8.0	I8.0C	7.3	7.0	7.3	6.7	6.4	6.0	5.8	6.1	6.1	5.9	5.7	4.3	4.0	3.8
25	SF	SF	SF	3.3	3.0	3.0	4.0	4.6	5.2	5.3	5.8	6.2	6.0	5.5H	6.3	6.2	6.3	4.9	4.1	U4.5S	5.2	I4.7A	4.1	3.7
26	3.1	3.1	3.2	3.2	3.3	3.3	4.7	6.2	6.0	I6.4C	6.9	6.1	U6.7C	5.7	5.8	5.7	6.7	7.4	7.7	5.0	I3.6A	3.1	3.3	3.2
27	3.4	3.3	3.5	3.3	3.3	3.3	4.8	I6.5A	I7.1A	6.4	6.9	6.9	6.5	5.9	6.0	5.9	6.5	7.4	7.3	5.4	4.6	4.3	3.6	3.6
28	3.6	3.6	3.7	3.6	3.7	3.6	4.8	6.1H	C	C	C	C	C	C	C	6.5	7.3	7.1	5.9	5.3	4.3	4.0	U4.1S	4.1
29	4.1	4.1	3.9	4.2	3.3	3.0	4.9	5.4	6.4	8.6	8.8	7.7	7.4	I6.8A	6.3	6.5	7.7H	6.0	4.9	5.0	4.9	4.1	4.4	3.9
30	4.2	3.7	4.0	3.8	3.5	3.0	4.3	5.6	5.9	6.7	6.4	6.3	7.7	6.5	6.0	5.6	5.6	5.7	5.3	4.9	U4.7S	4.6	4.7	4.0
31																								
No.	27	25	26	28	29	29	30	30	28	26	26	26	28	27	29	30	30	30	30	30	28	28	28	27
Median	3.9	3.8	3.6	3.6	3.5	3.4	4.7	5.3	5.8	6.0	5.8	5.8	6.0	5.9	5.8	5.7	5.9	5.8	5.8	5.6	5.4	5.1	4.4	4.0
U.Q.	4.1	3.9	3.9	3.7	3.6	3.8	4.9	5.7	6.6	6.4	6.3	6.3	6.6	6.5	6.2	6.0	6.3	6.3	6.1	6.0	5.9	5.8	4.8	4.3
L.Q.	3.4	3.4	3.3	3.2	3.2	3.0	4.3	4.9	5.3	5.4	5.2	5.4	5.6	5.5	5.5	5.4	5.6	5.6	5.3	5.2	5.0	4.3	4.1	3.8
Q.R.	0.7	0.5	0.6	0.5	0.4	0.8	0.6	0.8	1.3	1.0	1.1	0.9	1.0	1.0	0.7	0.6	0.7	0.7	0.8	0.8	0.9	1.5	0.7	0.5

foF2

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

The Radio Research Laboratories, Japan

W 1

IONOSPHERIC DATA

Sep. 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								A	A	4.1	4.2	4.3	4.3	4.3	4.3	U4.2L	3.9							
2								A	3.9	I4.1A	4.3	4.4H	4.3	4.2	4.1	4.0	3.7L	L						
3								3.7	I4.0A	4.2	4.2	4.3	4.3	4.3	4.2	4.2	I3.7A							
4								U4.0L	4.0	4.2	4.3	4.3	4.3	4.3	4.2H	4.1	3.9							
5								U4.0L	4.1	4.3	4.3	4.3	4.3	4.3	4.1	4.1	U3.8L	U3.2L						
6								A	4.1	4.3	4.3	4.3	4.3	4.3H	4.2	4.1	U3.9L							
7							3.3	3.8	4.0	4.2H	4.4	4.3	4.3	4.3	4.1	4.1	3.9							
8								3.9	4.1	C	C	C	C	C	I4.2A	4.0H	3.8	L						
9									4.1H	4.2	4.3	4.3	4.3	4.3	4.2		U3.9L							
10									4.0	4.2	4.3	4.3	4.3H	4.2H	4.0	4.1	C							
11								3.6	4.0		4.3	4.6	4.3	4.2	4.2	4.0	3.5							
12								3.6	I4.0A	4.1	4.2H	4.2L	4.4	4.2	4.1	I4.0A	3.7L	U3.1L						
13									4.0H	I4.2A	I4.3A	4.4	4.3	4.3	I4.1C	3.8L	A							
14								3.6	4.2	I4.2A	I4.3A	4.3	4.4H	4.3	4.3L	4.1	3.8L							
15								3.7	3.8	4.0H	B	B	B	I4.2R	4.1H	U4.0L	3.6							
16							3.5L	3.8	4.0	4.2	I4.2B	4.4	I4.4B	4.3	4.2		U4.0L							
17								I3.7A	4.0	A	R	A	A	A	B	3.9	3.7L							
18								4.0	3.7	4.1	4.3	4.3	4.3H	4.4	4.2	I3.9C								
19								A	4.0	4.2	4.3	4.3	4.4	4.4	4.2	4.0	I3.6A							
20								3.5	3.9	4.0H	4.2	4.3	4.3H	4.3	4.3	U4.0L								
21									4.0	B	B	B	B	U4.3L	I4.2C	U4.2L								
22								3.8L	4.1	I4.1A		4.4H	4.3H	4.2	4.2	3.8	U3.8L							
23								3.7	I3.9L	3.7	I3.8A	I3.9A	4.0	I3.9A	3.9	I3.6A	3.3							
24								L	4.0	I4.2C	4.3	4.3	4.3	4.3	4.1	3.4	L							
25									3.9	4.0	4.2	4.2	4.2	4.0	4.0	3.7								
26									U3.9L	I4.1C	4.2	4.2	4.2	4.2	U4.0L	U3.9L	U3.6L							
27									A	A	4.2	4.3	A	A	A									
28									C	C	C	C	C	C	C	U4.0L								
29									L	4.3	4.2	U4.3L	4.3	A	A	L								
30									A	A	A	A	4.3	I4.1A	I3.9A	3.4								
31																								
No.							2	15	25	23	23	24	24	25	26	26	19	2						
Median							3.4	3.7	4.0	4.2	4.3	4.3	4.3	4.3	4.2	4.0	3.8	U3.2						
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

10

IONOSPHERIC DATA

Sep. 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	2.10	2.35	I2.75A	3.00	3.05	3.00	3.05	3.05	I2.85A	2.50	A	S					
2						S	S	2.15	2.35	A	A	A	3.15	3.10	I2.95A	I2.80A	2.60	2.10	S					
3						A	S	2.05	2.20	I2.75A	3.15	3.30	I3.20A	A	A	A	2.45	2.00	S					
4						S	A	A	2.90	2.95	I3.00A	3.10	3.15	3.05	I2.95A	I2.80A	A	A	S					
5						E	S	A	A	2.95	3.00	3.15	I3.10A	3.10	2.90	2.80	2.50	S	S					
6						S	S	2.05	2.45	3.00	3.00	3.10	3.10	3.05	3.00	2.80	2.45	A	S					
7						E	S	2.15	2.50	2.95	3.00	I3.15A	3.20	3.15	3.00	2.85	2.45	A	S					
8						S	S	2.50	2.80	C	C	C	C	C	A	A	A	A	S					
9						S	S	2.55	2.85	3.00	3.00	3.00	A	A	A	2.80	2.45	S	S					
10						S	S	2.40	2.75	3.00	3.00	3.10	I3.10A	3.00	2.90	2.70	I2.40C	2.05	S					
11						S	S	2.50	2.85	3.00	I3.00R	I3.05A	3.15	2.95	I2.90A	2.80	2.45	S	S					
12						S	S	2.45	2.75	2.90	3.00	3.00	3.00	2.90	2.60	I2.45A	I2.25A	S	S					
13						S	S	2.45	2.70	3.00	3.05	3.05	3.10	2.90	I2.80C	I2.70A	A	A	A					
14						A	S	2.45	2.85	3.00	3.00	3.20	3.20	3.15	I3.05R	2.85	2.50	S	S					
15						A	S	2.35	I2.85A	3.00	B	B	B	3.15	3.00	2.70	2.45	S	S					
16							B	2.50	2.85	3.00	I3.10B	I3.15B	I3.20B	3.15	3.00	2.70	B	S	C					
17							A	S	B	B	B	B	B	B	B	2.85	B	S	S					
18							S	A	I2.80A	3.00	I3.00B	I3.00B	3.00	I2.95B	I2.90B	I2.75C	2.45	S	S					
19						E	S	2.35	2.75	3.00	I3.00B	3.15	3.15	2.95	2.95	A	A	S	S					
20							S	I2.35A	2.70	I2.80A	I2.95B	3.00	3.00	3.10	3.00	2.70	2.35	S	S					
21							S	2.45	2.75	B	B	B	B	B	C	A	S	S	C					
22				E	E	S	S	2.30	2.80	2.95	3.05	3.00	3.00	3.00	2.85	2.55	2.45	S	S					
23							S	2.35	2.55	2.85	I2.85A	2.80	A	A	A	2.55	2.25	S	S					
24							S	2.30	2.65	I2.85C	2.85	3.00	3.00	3.00	I2.80A	S	S	S	S					
25							S	S	A	A	A	3.00	A	A	A	2.70	S	S	S					
26						S	S	S	2.60	I2.90C	3.00	3.00	2.95	2.90	2.90	2.65	2.20	S	S					
27							S	2.35	2.50	2.70	A	A	A	A	A	A	2.25	S	S					
28							S	2.15	C	C	C	C	C	C	C	2.60	2.10	S	S					
29						S	S	2.25	2.60	2.80	2.95	3.00	2.95	2.90	2.60	A	S	S	S					
30							S	2.30	2.70	2.90	2.95	2.90	2.90	I2.70A	I2.45A	I2.30A	I2.20A	S	S					
31																								
No.				1	1	3		24	26	24	22	23	21	21	21	23	20	3						
Median				E	E	E		2.35	2.70	2.95	3.00	3.05	3.10	3.00	2.90	2.70	2.45	2.05						
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

Sep. 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	E	J2.3	J2.3	J2.3	J2.5	S	J3.2	5.3	J6.4	J4.3	G	G	2.5G	3.4	3.7	J3.1	3.2	2.9	5.0M	J3.3	J10.0	J6.3	J5.3	J6.3
2	J7.3	J5.0	J4.4	J4.3	3.6	J4.4	J9.0	J4.4	3.7	J5.1	3.5	J5.3	2.5G	2.7G	4.5M	J3.3	2.9	2.8	3.0	E	3.0	J2.5	E	J2.3
3	J2.6	E	E	J2.8	J4.0	2.9	3.0	J3.6	4.0	3.1	2.7G	2.7G	3.2	3.4	3.8	3.4	4.5	2.9	J5.3	J6.3	J4.0	J4.3	J3.3	J3.2
4	E	J3.3	J2.7	J2.0	1.5	J2.3	J3.3	J3.5	2.5G	3.3	3.6	G	2.5G	G	J3.2	3.9	J3.6	J3.9	J3.1	E	E	E	E	E
5	E	J2.4	J2.5	J2.5	1.4	1.9	J3.3	J3.6	3.3	G	G	G	3.3	G	G	G	G	S	S	3.0	J5.1	J3.1	E	E
6	E	C	E	E	E	J3.1	J3.3	J6.0	J4.2	G	G	G	G	G	2.4G	2.5G	3.0	2.5	S	2.4	J2.5	2.4	E	2.4
7	E	2.2	E	E	1.5	1.6	2.4	3.4	3.4	2.5G	2.9G	3.5	2.5G	2.6G	3.4	3.5	J4.6	J4.1	J3.3	E	J2.6	J2.8	E	E
8	E	E	E	J1.8	J2.5	S	2.2	3.0	3.3	C	C	C	C	C	J4.3	J3.3	3.0	2.4	2.0	J3.3	J4.3	J4.0	J5.0	J4.3
9	J3.3	J3.5	J3.0	J3.0	J4.0	J3.0	2.9	3.0	3.3	3.7	G	G	3.3	3.3	3.3	G	G	S	S	E	J2.5	J3.8	J4.1	J3.3
10	2.4	2.4	2.3	E	E	S	S	2.7	G	G	G	J3.3	3.4	G	G	G	C	2.7	S	E	E	E	3.0	2.3
11	E	2.5	J2.1	2.0	2.0	S	2.6	G	G	3.3	G	J4.0	G	G	3.5	3.2	3.0	2.5	S	E	E	E	E	E
12	E	E	E	1.6	J2.3	J3.1	J4.3	3.1	J4.3	J6.3	G	3.3	3.7	J12.3	4.2	J5.0	2.7	2.5	J4.3	J3.3	E	E	E	E
13	E	J3.0	J5.3	J3.0	E	1.9	S	3.5	3.3	J6.0	4.2	4.6	J4.6	J4.5	C	3.6	J3.5	2.7	J3.0	J3.0	J3.1	3.0	E	J3.3
14	J3.0	J5.3	J4.3	J3.0	J4.3	J3.1	S	G	G	4.9	J5.3	4.0	J5.3	3.8	G	G	G	S	S	E	E	E	E	E
15	J2.3	J2.9	J2.1	J2.1	2.1	J2.6	S	G	3.0	G	B	B	B	G	G	G	3.0	J5.3	S	E	E	E	E	E
16	S	E	E	J3.0	J4.3	E	B	G	G	G	B	B	B	3.5	G	G	3.8	J3.3	C	C	E	E	E	E
17	E	E	E	J2.3	J2.1	S	3.8	J4.3	J4.3	4.0	3.5	4.8	J4.3	J11.5	B	G	3.2	3.5	3.0	E	E	J3.0	J3.0	E
18	E	3.1	J3.1	J7.0	3.3	S	J5.1	3.7	4.0	G	B	B	G	B	B	C	3.0	3.0	J3.3	J4.3	J5.3	J4.3	E	E
19	E	E	E	E	E	E	2.6	4.8	3.4	3.3	B	G	G	3.5	3.7	3.7	J4.1	S	J3.4	J2.8	J2.5	J2.3	E	E
20	E	E	E	1.8	J2.8	J3.0	2.3	2.5	G	3.2	B	G	G	G	G	G	G	S	S	E	E	E	J5.6	E
21	E	E	E	E	1.3	E	S	2.8	3.4	B	B	B	B	B	C	3.0	S	S	C	E	E	E	E	E
22	E	E	E	E	E	S	2.5	3.2	3.4	J4.8	3.8	G	G	G	2.5G	G	3.0	2.3	2.5	J4.0	5.4M	J4.3	J3.3	E
23	E	E	J2.3	J3.3	J2.9	J3.8	J3.7	3.2	J4.3	G	J5.0	3.7	J4.1	J5.3	J4.0	3.7	3.3	2.5	S	E	E	E	E	E
24	J2.5	J3.7	J3.3	3.5	2.5	2.7	2.7	2.9	3.6	C	3.6	G	G	G	3.0	S	S	S	S	E	E	E	E	E
25	E	E	E	E	E	E	S	3.3	3.3	G	3.9	G	J3.3	3.8	3.1	3.1	J4.5	J3.6	J3.0	J3.3	J5.3	J5.3	E	E
26	E	E	2.2	E	E	S	S	3.6	3.4	C	4.3	4.0	3.6	4.1	G	G	2.8	3.2	3.3	3.3	J4.1	J5.3	J3.5	J3.3
27	J3.1	E	2.0	J3.5	J2.0	J2.5	J5.2	J6.4	J7.0	J5.5	3.3	3.8	J4.6	J4.5	J5.2	2.8	4.0	J6.3	J5.1	J4.3	J4.3	J3.3	J3.3	3.3
28	E	2.1	J2.3	E	J2.6	J3.0	2.8	2.8	C	C	C	C	C	C	C	G	3.0	S	J2.3	E	E	E	E	E
29	E	E	E	E	E	S	S	2.6	3.0	3.3	3.3	3.8	4.1	J13.0	4.0	J3.5	S	S	S	E	E	E	E	E
30	E	J2.1	J2.5	E	J2.0	E	S	2.7	3.8	4.3	4.8	J4.5	4.0	J4.5	3.9	3.0	2.9	S	J3.8	J3.0	J5.0	E	J4.3	J4.3
31																								
No.	29	29	30	30	30	21	20	30	29	25	22	24	25	26	25	28	26	20	17	29	30	30	30	30
Median	E	2.1	2.1	2.0	2.0	2.6	3.1	3.2	3.4	3.3	3.4	3.3	3.3	3.4	3.3	3.0	3.0	2.9	3.3	E	2.5	2.4	E	E
U.Q.	2.4	3.0	2.5	3.0	2.8	3.0	3.8	3.6	4.0	4.6	3.9	4.0	4.0	4.5	4.0	3.4	3.6	3.6	4.0	3.3	4.3	3.8	3.3	3.2
L.Q.	E	E	E	E	E	E	2.6	2.7	3.0	G	G	G	G	G	G	G	2.9	2.5	3.0	E	E	E	E	E
Q.R.							1.2	0.9	1.0								0.7	1.1	1.0					

The Radio Research Laboratories, Japan

foEs

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

W 4

IONOSPHERIC DATA

Sep. 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		E	E	E	2.2	S	2.9	A	5.5	3.4			2.5	G	2.5	3.0	2.3	2.4	4.4	2.4	2.4	3.1	3.0	A
2	A	2.2	2.1	E	2.2	A	3.0	4.2	G	4.5	3.4	3.4	2.5	2.7	3.5	3.1	G	2.0	E 1.9S		E	E		E
3	E			E	2.2	2.6	3.0	3.0	4.0	3.1	2.6	2.7	3.2	3.4	3.2	3.3	4.4	G	4.8	E	2.8	2.5	2.5	2.5
4		2.4	2.1	E	E	G	2.6	3.5	2.5	G	3.3		2.5		3.2	3.0	2.7	2.6	2.0					
5		E	E	E	E	G	G	3.5	3.2				3.2					S	S	E	2.5	2.4		
6		C				2.9	3.1	3.8	G						2.4	2.5	2.2	2.2	S	E	E	E		E
7		E			E	G	G	G	G	2.5	2.8	3.5	2.5	2.5	G	G	G	2.6	2.7		E	E		
8				E	2.1	S	G	G	G	C	C	C	C	C	4.0	3.0	2.8	2.3	G	3.0	2.6	E	E	E
9	E	E	E	2.2	A	2.1	G	G	G	G			3.3	3.2	3.2			S	S		E	3.2	2.5	E
10	E	E	E			S	S	G				2.8	3.2				C	G	S				2.5	E
11		E	E	E	E	S	G			G		3.6			3.3	G	G	G	S					
12				E	E	2.3	3.0	G	4.3	G		G	G	G	3.8	4.2	2.6	G	3.1	2.5				
13		E	2.1	E		G	S	G	G	A	4.1	3.9	4.1	G	C	3.4	3.5	2.7	2.5	2.7	2.9	E		E
14	E	2.9	2.5	2.5	A	3.1	S			2.5	2.7	3.9	3.0	3.6				S	S					
15	E	2.5	E	E	2.1	2.0	S		3.0		B	B	B				G	G	S					
16	S			E	E		B				B	B	B	G			G	3.0	C	C				
17				E	E	S	3.0	A	3.6	4.0	A	A	4.3	A	B		G	3.0	G			2.6	E	
18		A	A	A	2.5	S	A	3.7	3.5		B	B		B	B	C	G	G	3.0	E	E	E		
19							G	4.3	G	G	B			G	G	3.7	4.0	S	3.1	E	E	E		
20				E	E	2.5	G	2.5		3.0	B							S	S				E	
21					E		S	G	G	B	B	B	B	B	C	3.0	S	S	C					
22						S	G	G	G	4.2	G				2.5		G	G	G	4.0	A	2.8	2.7	
23			E	3.2	E	E	3.0	G	A		A	A	3.4	A	3.2	A	3.0	G	S					
24	2.0	A	A	A	1.6	2.0	G	G	G	C	G				E 3.0R	S	S	S	S					
25							S	G	2.9		3.1		3.1	3.4	3.1	G	G	3.2	2.7	E	E	A		
26			E			S	S	G	G	C	2.7	G	G	3.8			G	2.9	2.5	E	A	E	E	E
27	3.0		E	E	E	E	2.5	A	A	5.2	3.1	3.8	4.4	4.4	4.2	2.8	3.7	4.0	4.8	3.3	3.0	3.0	2.7	2.6
28		E	E		E	2.5	G	G	C	C	C	C	C	C	C		G	S	G					
29						S	S	G	G	G	G	G	G	A	4.0	3.0	S	S	S					
30		E	E		E		S	G	3.8	4.3	4.4	4.3	G	4.3	3.8	2.6	2.6	S	3.8	E	3.3		E	2.8
31																								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foEs

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

W 5

IONOSPHERIC DATA

Sep. 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	E2.00S	E1.50S	E	E	E	E2.00S	E2.00S	1.90	1.90	2.00	2.00	2.20	2.15	2.15	1.90	1.90	1.85	1.80	E1.80S	E1.90S	E2.00S	E1.90S	E1.90S	E2.00S
2	E1.90S	E1.60S	E	E	E	E1.50S	E1.90S	1.90	1.90	2.15	2.20	2.30	2.20	2.00	2.10	1.90	1.85	1.70	E1.90S	E2.00S	E2.00S	E1.90S	E1.90S	E1.90S
3	E1.85S	E1.20S	E1.60S	E	E	E	E2.10S	1.90	1.90	2.15	2.00	1.90	2.00	2.30	2.50	2.00	1.90	1.90	E1.85S	E2.00S	E1.85S	E2.10S	E2.00S	E1.90S
4	E2.20S	E1.60S	E	E	E	E1.50S	E1.80S	E1.90S	2.00	2.00	2.10	2.15	2.15	2.20	2.00	2.00	1.90	1.75	E1.90S	E2.00S	E1.90S	E1.85S	E 1.80S	E2.00S
5	E2.20S	E1.50S	E	E	E	E	E1.80S	E2.00S	1.95	2.05	2.10	2.50	2.20	2.00	2.50	2.10	1.90	E2.50S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
6	E1.90S	C	E1.70S	E2.00S	E	E1.50S	E2.10S	1.90	1.90	2.10	2.15	2.15	2.10	2.10	2.00	1.85	1.80	1.80	E1.70S	E1.90S	E1.90S	E1.85S	E2.00S	E2.00S
7	E2.00S	E1.60S	E1.50S	E	E	E	E1.70S	1.90	2.00	2.00	2.10	2.35	2.10	2.00	1.85	2.00	1.85	E1.75S	E1.90S	E2.00S	E2.00S	E2.00S	E1.90S	E2.10S
8	E2.00S	E1.70S	E	E	E	E1.60S	E2.00S	2.00	2.00	C	C	C	C	C	2.50	1.90	1.85	1.80	E1.65S	E2.00S	E1.90S	E2.00S	E2.00S	E1.90S
9	E1.90S	E	E	E	E	E1.50S	E2.00S	2.05	2.00	2.00	2.10	2.00	2.00	2.10	1.90	2.15	1.90	E2.10S	E1.85S	E2.00S	E1.90S	E1.90S	E2.00S	E1.90S
10	E1.80S	E1.60S	E1.60S	E	E	E1.80S	E2.10S	2.00	2.00	2.00	1.90	1.90	1.90	1.90	2.10	2.00	I1.90C	E2.00S	E1.80S	E2.00S	E1.90S	E2.00S	E1.90S	E2.00S
11	E2.00S	E1.70S	E	E	E	E1.60S	E1.90S	1.90	2.00	2.10	2.15	2.00	2.20	2.00	2.30	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
12	E2.00S	E	E	E	E	E1.15S	E2.00S	2.00	2.00	2.00	2.00	2.00	2.15	2.00	2.15	2.00	2.00	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
13	E1.90S	E	E	E	E	E	E2.00S	2.00	2.00	2.10	2.20	2.10	2.40	2.20	I3.80C	2.10	2.00	E1.80S	E1.80S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
14	E2.00S	E	E	E	E	E	E2.40S	1.90	2.00	2.00	2.00	2.70	2.20	2.00	2.50	2.15	2.00	E2.20S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
15	E2.00S	E1.70S	E	E	E	E	E2.00S	2.00	2.00	2.15	I3.20B	I4.00B	I4.30B	2.70	2.30	2.15	2.00	E2.00S	E1.85S	E2.00S	E2.00S	E2.15S	E2.00S	E2.00S
16	E2.15S	E2.00S	E	E	E	E2.00S	2.20	2.20	2.30	2.20	4.30	4.00	4.30	2.50	2.00	2.00	2.65	E2.00S	C	C	E2.00S	E2.00S	E2.00S	E2.00S
17	E2.00S	E2.00S	E	E	E	S	E2.00S	E2.50S	3.00	3.00	3.10	3.15	3.50	4.30	4.00	2.50	2.60	E2.00S	E2.00S	E2.00S	E2.00S	E2.20S	E2.30S	E2.10S
18	E2.00S	E2.10S	E2.00S	E2.00S	E2.10S	E2.20S	E2.10S	2.15	2.50	2.30	3.20	3.15	2.60	3.85	3.10	I2.50C	2.00	E2.00S	E1.85S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S
19	E1.90S	E1.80S	E1.50S	E1.80S	E	E	E2.00S	2.00	2.60	2.70	3.60	2.50	2.50	2.70	2.50	2.20	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
20	E2.00S	E1.60S	E2.00S	E	E	E1.70S	E2.00S	1.90	2.15	2.20	3.20	2.60	2.60	2.50	2.20	2.00	2.00	E2,00S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
21	E2.00S	E1.80S	E1.70S	E	E	E1.70S	E2.10S	2.00	2.15	B	B	B	4.30	4.10	I3.15C	2.10	E2.70S	E2.10S	C	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
22	E2.00S	E1.90S	E1.80S	E1.70S	E	E1.70S	E2.00S	2.00	2.00	2.10	2.40	2.00	2.50	2.25	2.00	2.00	2.00	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
23	E2.00S	E1.70S	E	E	E	E1.20S	E2.00S	2.00	2.00	2.00	2.40	2.15	2.00	2.00	2.15	2.00	E2.00S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S	E2.00S	E2.00S
24	E2.00S	E	E	E	E	E1.50S	E2.00S	2.00	2.00	I2.30C	2.10	2.00	2.10	2.50	2.15	E2.60S	E2.40S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
25	E2.00S	E1.50S	E1.70S	E	E	E1.70S	E2.30S	E2.50S	2.15	2.50	2.20	2.20	2.10	2.00	2.20	2.40	E2.30S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
26	E2.00S	E1.90S	E1.70S	E1.70S	E1.70S	E1.70S	E2.00S	E2.40S	2.00	I2.10C	2.50	2.10	2.40	2.50	2.00	2.10	2.00	E2.10S	E2.10S	E2.00S	E2.00S	E1.90S	E2.00S	E2.00S
27	E2.00S	E1.90S	E1.40S	E	E	E1.50S	E2.00S	2.00	2.00	2.45	2.50	2.50	2.60	2.50	2.20	2.00	2.00	E1.95S	E1.90S	E2.00S	E2.00S	E1.90S	E1.90S	E1.90S
28	E2.00S	E1.60S	E1.50S	E1.70S	E	E1.50S	E2.00S	2.00	C	C	C	C	C	C	C	2.00	2.00	E2.10S	E2.00S	E2.00S	E2.10S	E2.10S	E2.00S	E2.00S
29	E2.00S	E1.90S	E2.00S	E	E	E1.60S	E1.90S	2.00	2.10	2.15	2.20	2.00	2.50	2.20	2.15	2.05	E2.50S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S
30	E2.00S	E1.60S	E1.80S	E	E	E1.50S	E2.00S	2.00	2.60	2.50	2.40	2.00	2.10	2.05	2.40	2.00	1.85	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E2.00S	E1.85S
31																								
No.	30	29	30	24	28	29	30	27	29	28	28	28	28	28	29	29	25	30	28	29	30	30	30	30
Median	E2.00	E1.60	E	E	E	E1.50	E2.00	2.00	2.00	2.10	2.20	2.20	2.20	2.20	2.20	2.00	2.00	E2.00	E1.95	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

IONOSPHERIC DATA

Sep. 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	2.80	2.90	2.85	2.80	3.30	U3.00S	U2.95S	I3.35A	3.55	3.20	3.05	3.35	3.35	3.30	3.10	3.15	3.30	3.35H	3.15	2.90	3.15	I3.20SF	3.50	I3.15A
2	I2.90A	3.05	2.95F	2.95F	I3.20F	I3.05A	3.10	3.20	3.40V	3.40	3.25	3.15	3.40	3.20	3.20	3.25	3.25	3.35	3.10	3.00	3.00	3.10	2.90F	3.00
3	3.25	U2.95F	3.05	3.05	3.15F	3.40	3.35	3.45	3.35	3.50	3.35	3.10	3.10	3.30	3.10	3.15	3.35	3.35H	3.10	U2.95S	3.05	3.20	3.00	2.95
4	2.95	2.95	3.10	3.25	3.15	U3.25S	3.15	3.15	3.45	3.45	3.15	3.40	3.25	3.00	3.25	3.10	3.25	3.20	3.00	3.10	3.05	3.25	3.20	2.95
5	3.10	3.05	3.05	3.20	3.15	3.10	3.20	3.30	3.35	3.50	3.30	3.20	3.30	3.15	3.25	3.35	3.50	3.35	3.15	3.00	U2.85F S	3.15	3.35	2.95
6	3.00	I2.95C	3.00	2.95	3.05	3.40	3.45	3.20	3.50	3.40	3.35	3.10	3.25	3.45	3.40	3.20	3.25	3.30	3.00	3.05	2.95	3.20	3.35	3.15
7	2.95	2.95	3.10	3.25	3.25	3.15	3.50	3.45	3.25	3.45	3.20	3.20	3.35	3.35	3.35	3.30	3.35	3.45	3.20	3.00	3.10	3.20	3.10	2.95
8	2.95	2.95	2.95	3.20	3.20	3.30	3.35	3.40	3.40	C	C	C	C	C	3.40	3.35	3.30	3.05	3.15	3.45	3.25	3.05	3.05	I2.80SF
9	I2.85F S	3.05	3.35	3.55	I2.95A	3.25	3.20	3.40	3.30	3.35	3.50	3.45	3.15	3.20	3.35	3.30H	3.35	3.30	3.35	2.95	3.00	3.00	3.10	2.90
10	3.00	2.85	2.95	3.25	3.35	3.10	3.25	3.25	3.45	3.55	3.55	3.55	3.40	3.50	3.35	3.20	I3.20C	3.20	3.25	3.00	3.05	3.20	3.10	3.00
11	2.90	2.95	3.05	2.95	3.00	3.20	3.35	3.65	3.50	3.25	3.50H	3.00	3.35	3.35	3.30	3.25	3.35	3.35	3.05	2.90	3.00	3.35	2.90	2.95
12	3.05	2.95	2.95	2.90	3.15	2.95	3.05	3.35	3.35	3.30	3.40	3.00	3.00	3.15	3.15	3.40	3.15	3.30	3.15	2.85	3.10	3.10	3.00	2.95
13	2.85	SF	SF	SF	SF	SF	3.30H	3.35F	3.50	I3.50A	3.45	3.05	3.25	3.25	I3.30C	3.20	3.40	3.30	3.10	2.85	3.00	3.35	3.20	3.00
14	2.90	3.05	2.95	U3.25S	I3.15A	U3.15S	3.50	3.40	3.30	3.50	3.60	3.15	3.30	3.30	3.00	3.05	3.20	3.10	U2.75S	I2.80S	I2.90S	2.95	3.35	U2.70S
15	2.65	I2.85S	2.60S	2.90	2.75	3.05	3.25	I2.90R	2.80	2.90	I2.90B	I2.95B	I2.60B	W	3.05	3.20	3.15	3.10	3.20	U3.00S	3.00	U3.00 S	2.85	2.85
16	U2.80S	U2.65S	U2.80S	I2.80SF	I2.80SF	2.70S	3.00	3.00	3.20R	2.95	3.30	3.25	3.15	3.30	3.10	2.90H	3.10	3.05	I3.20C	I3.05C	2.90	I2.85S	U2.70S	SF
17	SF	S	3.05S	I2.95S	I2.90SF	I3.05S	3.25	I3.00A	2.90	3.10	I3.10R	I3.05A	3.15	I3.00A	3.05	3.10	3.15	3.05	3.05	2.60	3.05	3.10	U2.85S	I2.80S
18	U2.95S	I3.05S	I3.10A	I3.25A	2.95	3.10	I3.25A	3.25	3.20	3.20	3.20	3.10	3.15	3.05	3.25	I3.35C	3.35	3.40	3.35	3.00	2.90	U2.85S	2.80	2.90
19	3.00	2.80	3.05	2.90	2.75	2.85	3.30	3.45	3.35	3.20	3.55	3.05	3.10	3.15	3.30	3.15	3.35	3.30	3.10	2.85	2.70	3.25S	U2.85S	2.75
20	2.80	2.75	2.80	2.70	2.65	2.70	3.15	2.90	3.20	3.45	3.35	3.30	3.30	3.25	3.30	3.30	3.25	3.30	3.15	3.05	3.15	3.00	2.90	2.90
21	2.95	3.05	2.80	2.75	2.95	3.20	3.35	3.55	3.25	B	B	B	3.35	3.15	I3.10C	3.15	3.35	3.40	I3.30C	2.95	2.95	U2.95S	3.00	2.95
22	3.00	2.85	2.75	2.80	2.60	3.05	3.50	3.10	3.30	3.20	2.90H	3.20	3.15	3.05	3.15	2.70	U2.75S	3.05	3.10	3.30	A	SF	SF	FS
23	F	F	F	I3.20S	I3.05F S	I3.05F S	2.95	2.60	A	R	A	R	2.70	I2.45A	2.45	I2.55R	2.85	3.15	2.60	U2.75S	SF	SF	SF	SF
24	3.00	A	A	A	I2.80A	2.85	3.25	3.35	3.30	I3.35C	3.35	3.30	3.30	3.30	3.25	3.45	3.35	3.30	3.15	2.95	3.15	3.00	2.90	2.85
25	SF	SF	SF	3.10	3.00	2.85	3.50	3.35	3.25	3.40	3.25	2.95	3.15	3.10H	3.15	3.25	3.45	3.35	2.90	U2.65S	2.95	I3.10A	2.95	3.20
26	2.90	2.80	2.80	2.90	2.95	3.05	3.40	3.40	3.35	I3.35C	3.35	3.20	U3.20C	3.50	3.25	3.25	3.25	3.25	3.40	3.50	I3.25A	2.85	2.85	2.90
27	2.95	2.80	3.15	3.10	2.85	2.90	3.40	I3.45A	I3.50A	3.50	3.35	3.35	3.60	3.25	3.30	3.40	3.25	3.25	3.30	3.35	3.25	2.95	3.05	2.95
28	3.00	2.85	3.05	3.15	3.25	3.35	3.40	3.10H	C	C	C	C	C	C	C	3.35	3.20	3.40	3.15	3.15	3.25	2.95	U2.90S	2.90
29	2.95	2.80	2.85	3.10	3.50	3.25	3.50	3.50	2.95	3.05	3.30	3.35	3.30	I3.50A	3.45	3.25	3.40H	3.60	3.10	3.10	3.05	2.95	3.00	2.90
30	2.90	2.95	3.00	3.15	3.25	3.05	3.50	3.30	3.35	3.50	3.45	3.25	3.50	3.40	3.55	3.40	3.35	3.40	3.25	3.10	I3.00S	3.05	3.40	3.05
31																								
No.	27	25	26	28	29	29	30	30	28	26	26	26	28	28	29	30	30	30	30	30	28	28	28	27
Median	2.95	2.95	3.00	3.10	3.05	3.05	3.30	3.35	3.35	3.40	3.35	3.20	3.25	3.25	3.25	3.25	3.30	3.30	3.15	3.00	3.00	3.10	3.00	2.95
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F2

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

The Radio Research Laboratories, Japan

W 7

IONOSPHERIC DATA

Sep. 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								A	A	4.15	4.10	3.90	4.00	3.95	3.70	U3.40L	3.60							
2								A	3.85	I3.80A	3.80	3.90H	3.80	4.00	3.75	3.75	3.80L	L						
3								4.05	I3.85A	3.80	3.90	3.80	3.75	3.75	3.80	3.55	I3.65A							
4								U3.75L	3.75	3.70	3.95	3.80	3.80	3.70	3.50H	3.65	3.65							
5								I3.85A	3.75	3.70	3.95	3.95	3.80	3.70	3.75	3.70	U3.70L	U3.75L						
6								A	3.80	3.95	4.20	4.05	3.70	3.70H	3.80	3.65	U3.65L							
7							3.80	3.95	4.00	3.95H	3.80	3.90	3.75	3.70	3.75	3.55	3.75							
8								3.65	3.85	C	C	C	C	C	I3.65A	3.60H	3.75	L						
9									3.70H	3.80	3.80	3.95	3.90	3.70	3.80		U3.70L							
10									3.70	3.80	3.80	3.95	3.95H	3.90H	3.75	3.70	C							
11								4.15	4.00		3.75	3.70	4.00	3.90	3.85	3.55	3.80							
12								3.55	I3.75A	3.90	3.90H	4.00L	3.65	3.55	I3.70A	I3.75A	3.70L	U3.70L						
13									3.70H	I3.80A	I3.75A	3.70	I3.75A	3.80	I3.75C	3.90L	A							
14								4.10	3.65	I3.80A	I3.95A	4.00	3.85H	3.85	3.70L	3.65	3.70L							
15								3.25	3.80	3.75H	B	B	B	3.70	3.70H	U3.55L	3.60							
16							3.35L	3.50	3.80	3.75	I3.70B	I3.70B	I3.55B	3.70	3.75		U3.75L							
17								I3.55A	A	A	R	A	A	A	B	3.65	3.60L							
18								I3.75A	3.95	3.70	3.70	3.80	3.95H	I3.55A	3.55	I3.75C								
19								A	3.75	3.65	3.70	4.00	3.70	3.55	3.70	3.75	I3.70A							
20								3.50	3.85	3.85H	4.05	3.95	3.95H	3.65	3.60	U3.75L								
21									3.75	B	B	B	B	B	C	U3.60L								
22								3.45L	3.80	I3.85A		3.65H	3.75H	3.55	3.55	3.55	U3.40L							
23								3.15	I3.30A	3.80	I3.60A	I3.45A	3.05	I3.20A	3.40	I3.45A	I3.40A							
24								L	3.70	I3.75C	3.80	3.75	3.75	3.70	3.85	3.90	L							
25									3.85	3.95	3.75	3.85	3.75	3.75	3.90	3.70								
26									U3.85L	I3.75C	3.65	3.85	3.85	3.65	U3.75L	U3.60L	U3.60L							
27									A	A	3.80	3.80	A	A	A									
28									C	C	C	C	C	C	C	U3.75L								
29									L	3.65	3.75	U3.70L	3.80	A	A	L								
30									A	A	A	A	3.70	I3.85A	I3.80A	3.90								
31																								
No.							2	15	24	23	23	24	24	24	25	26	19	2						
Median							3.60	3.65	3.80	3.80	3.80	3.85	3.80	3.70	3.75	3.65	3.70	U3.70						
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

W 8

IONOSPHERIC DATA

Sep. 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								I270A	I275A	350	325	300	290	300	350	325	295							
2								320	270	265	330	365	320	340	315	300	280	275						
3								260	260	275	300	350	350	300	340	310	I270A							
4								290L	265	270	315	290	315	375	310	315	280							
5								270	265	260	300	305	305	320	290	275	260	260						
6								280	265	285	290	320	300	260	280	300	300							
7							265	260	270	290	315	310	295	305	285	295	265							
8								280	260	C	C	C	C	C	285	300	280	280						
9									280	260	265	280	300	300	300		265							
10									260	255	270	275	275	265	290	310	C							
11								230	260		265	360	285	290	285	295	260							
12								305	300	310	305	U320L	350	315	295	260	280	260						
13									265	I285A	270	320	300	280	I290C	270	260							
14								255	300	270	260	310	285	280	310	300	265							
15								I415R	410	400	I410B	I420B	I395B	W	370	U320L	315							
16							340	325	300	330	290	305	325	310	345		300							
17								I355A	375	340	I350R	I350A	330	I350A	355	320	295							
18								335	310	305	325	350	315	345	280	I275C								
19								265	280	300	270	315	320	295	280	300	270							
20								400	320	290	300	295	310	310	295	280								
21									290	B	B	B	290	300	I295C	305								
22								300	270	300		270	320	295	290	330	300							
23								455	A	R	A	A	410	I510A	510	I605R	410							
24								260	270	I255C	265	270	275	285	280	260	L							
25									290	290	300	320	300	300	300	275								
26									260	I265C	270	275	290	270	290	290	270							
27									A	I260A	260	275	250	275	300									
28									C	C	C	C	C	C	C	260								
29									300	290	255	260	260	I265A	260	270								
30									260	260	270	265	260	250	250	250								
31																								
No.							2	20	27	25	25	26	28	28	29	27	20	4						
Median							300	285	270	285	290	310	300	300	295	300	280	270						
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

IONOSPHERIC DATA

Sep. 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	325	310	325	300	260	270	255	I235A	I210A	200	210	200	185	210	210	220	250	250H	I270A	285	255	A	A	A
2	A	310	295	290	250	A	A	A	200	I200A	225	185H	200	200	245	225	250	250	275	260	270	255	250	270
3	260	255	260	300	300	260	260	235	I205A	190	210	195	210	210	210	260	I250A	250H	I255A	250	260A	255	250	300
4	300	310	295	250	250	260	250	265	210	205	205	200	210	210	230H	225	240	260	265	250	260	240	235	250
5	275	275	275	250	250	270	235	I245A	215	205	200	210	205	200	225	240	255	250	255	260	310	260	225	275
6	280	I290C	280	300	265	255A	255A	I260A	225	210	200	195	200	225H	220	230	240	250	260	250	265	245	235	260
7	305	300	270	240	250	260	240	235	210	190H	190	220	235	225	220	225	240	260	250A	260	260	240	250	280
8	295	280	275	255	260	230	240	250	230	C	C	C	C	C	I240A	220H	250	255	250	225A	250	275	310	350
9	315	295	250	225	I305A	270	245	245	220H	200	205	225	195	210	215	230H	250	260	240	270	285	I280A	275	285
10	290	290	285	250	215	280	250	240	230	215	230	200	190H	180H	215	230	I255A	260	245	260	260	250	255	270
11	285	300	290	280	260	260	240	230	215	205H	220	210	210	210	215	240	230	240H	235	290	275	240	260	290
12	270	270	265	295	265	325	330A	260	I240A	220	210H	205	210	230	I230A	I245A	230	245	I245A	275	260	250	280	280
13	300	310	275	250	220	230	190H	240	205H	I230A	I230A	235	I230A	225	I225C	240	I255A	250	245	290	285A	245	250	265
14	280	310	300	275	I285A	I260A	230	210	225	I235A	I225A	225	210H	210	250	255	260	260H	305	275	250	245	220	345
15	340	320	350	280	I300A	325	260	250	215	210H	B	B	B	230	210H	250	250	270	250	260	275	275	300	310
16	360	330	280	295	300	350	270	250	235	215	I220B	I230B	I220B	235	240	250H	250	270A	I260C	I275C	290	295	315	320
17	285	270	275	275	310	I325S	275A	I240A	A	A	A	A	A	A	B	240	250	240A	255	325	265	275	315	310
18	300	I270A	I275A	I260A	330A	I290S	I280A	I225A	230	215	220	200	185H	I240B	240	I235C	260	250	260A	300	290	280	325	300
19	285	300	275	330	300	295	260	I250A	225	215	235	205	200	225	250	250	I250A	250	260A	285	300	250	300	300
20	280	300	300	315	300	I320A	240	250	230	210H	200	210	200H	250	230	240	250	255	250	250	260	275	285	285
21	290	325	325	325	275	250	240	235H	230	B	B	B	B	B	C	250	250	240	I240C	280	275	280	270	290
22	290	310	330	325	340	275	250	240	245	I225A	225H	190H	200H	190	260	245	265	245	250	I230A	I270A	310A	350A	300
23	300	290	240	I270A	285	310	315A	275	I255A	230	I245A	I255A	305	I280A	275	I260A	I300A	270	345	330	305	350	360	300
24	S	A	A	A	I340A	350A	260	250	250	I240C	220	210	205	220	225	215	240	250	240	260	250	255	300	335
25	325	275	295	275	255	250	240	260	220	215	220	205	210	240	220	260	250	I265A	310A	350	275	I270A	280	250
26	330	320	310	300	290	270	240	260	260	I230C	250	230	215	255A	250	245	260	260A	230	215	I275A	320	315	330
27	I340A	300	265	260	295	300	250	A	A	A	225	235	A	A	A	260	A	A	A	I245A	260A	285A	330	330
28	310	310	295	260	250	270	220	240H	C	C	C	C	C	C	C	245	255	230	230	250	245	300	300	290
29	290	305	305	245	210	270	235	235	245	235	220	245	240	I240A	I235A	250	250H	225	250	255	260	260	275	280
30	300	300	275	235	250	260	230	230	A	A	A	A	235	I225A	I235A	220	240	235	I250A	250	I290A	270	260	295
31																								
No.	28	29	29	29	30	29	29	28	26	24	24	24	24	25	26	30	29	29	29	30	30	29	29	29
Median	300	300	280	275	270	270	250	240	225	215	220	210	210	225	230	240	250	250	250	260	270	270	280	290
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

Sep. 1963 | f'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	E	110	110	110	110	S	115	110	110	110	G	G	105	125	105	100	105	105	110	115	110	110	110	110
2	105	110	125	120	120	115	115	110	110	105	105	130	105	105	105	105	105	125	105	E	115	115	E	115
3	120	E	E	130	120	120	110	115	110	110	110	105	110	110	110	160	125	125	120	115	110	110	105	105
4	E	100	105	105	105	120	110	105	105	115	105	G	105	G	110	110	105	105	105	E	E	E	E	E
5	E	105	105	105	110	120	120	110	110	G	G	G	110	G	G	G	G	S	S	110	115	115	E	E
6	E	C	E	E	E	120	115	110	110	G	G	G	G	G	110	110	135	125	S	115	110	110	E	105
7	E	100	E	E	125	130	120	115	110	115	110	110	105	105	145	125	120	110	110	E	110	110	E	E
8	E	E	E	125	115	S	130	125	120	C	C	C	C	C	110	110	110	110	135	120	115	120	115	110
9	110	110	110	105	105	105	125	125	125	115	G	G	110	110	110	G	G	S	S	E	110	115	105	110
10	105	105	105	E	E	S	S	140	G	G	G	105	105	G	G	G	C	135	S	E	E	E	110	115
11	E	105	105	100	105	S	130	G	G	125	G	105	G	G	140	155	140	130	S	E	E	E	E	E
12	E	E	E	130	130	140	130	130	120	125	G	120	115	110	110	110	110	130	110	120	E	E	E	E
13	E	110	110	115	E	115	S	130	125	115	115	110	110	110	C	105	110	105	105	105	105	100	E	115
14	115	110	110	110	105	105	S	G	G	120	120	125	120	120	G	G	G	S	S	E	E	E	E	E
15	140	125	120	125	120	115	S	G	110	G	B	B	B	G	G	G	130	115	S	E	E	E	E	E
16	S	E	E	125	120	E	B	G	G	G	B	B	B	150	G	G	130	120	C	C	E	E	E	E
17	E	E	E	130	130	S	105	120	125	120	125	115	120	120	B	G	145	125	125	E	E	115	110	E
18	E	125	125	110	145	S	115	110	115	G	B	B	G	B	B	C	135	125	115	110	115	110	E	E
19	E	E	E	E	E	E	135	120	125	115	B	G	G	115	110	110	105	S	110	115	125	115	E	E
20	E	E	E	115	115	115	120	105	G	110	B	G	G	G	G	G	G	S	S	E	E	E	110	E
21	E	E	E	E	140	E	S	135	120	B	B	B	B	B	C	105	S	S	C	E	E	E	E	E
22	E	E	E	E	E	S	145	125	120	115	115	G	G	G	105	G	140	145	130	120	115	115	110	E
23	E	E	135	125	125	120	110	140	130	G	105	110	110	115	110	140	140	135	S	E	E	E	E	E
24	110	105	105	110	110	110	145	145	130	C	115	G	G	G	105	S	S	S	S	E	E	E	E	E
25	E	E	E	E	E	E	S	160	110	G	110	G	105	110	110	155	125	125	115	115	110	110	E	E
26	E	E	105	E	E	S	S	140	140	C	125	120	115	120	G	G	140	125	120	115	110	110	120	110
27	110	E	140	130	130	125	135	120	110	110	110	110	110	110	110	120	130	120	120	115	115	115	110	110
28	E	140	130	E	140	125	130	125	C	C	C	C	C	C	C	G	125	S	130	E	E	E	E	E
29	E	E	E	E	E	S	S	150	150	140	130	120	120	110	110	110	S	S	S	E	E	E	E	E
30	E	110	110	E	110	E	S	155	135	125	120	120	110	110	110	110	105	S	125	125	120	E	110	110
31																								
No.	8	15	17	19	22	16	20	26	24	17	15	14	18	17	18	17	22	20	17	14	16	16	11	11
Median	110	110	110	115	120	120	120	125	120	115	115	110	110	110	110	110	125	125	115	115	110	110	110	110
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f'Es

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

W 11

IONOSPHERIC DATA

Sep. 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		ff	f	f	ff		c	c3	c	1			1	c	1	1	1	1	c2	f3f	f3	f2	f2	f3f2
2	f	f	f f	f f	f2 f2	c	c3	c3	c	1	1	c 1	1	1	12	12	1	c 1	1		f	f		f
3	f			f2	f2	1	c2	c2	c2	1	1	1	1	1	1	h 1	c2	c	c3	f	f2	f2	f2	f2
4		f	f	f	f	c	12	13	1	c	1		1		1	1	1	12	1					
5		f	f	f	r	c	c	12	1				1							f	f2	f2		
6						c2	c2	c2	c						1	1	c 1	c 1		f	f	f		f
7		f			f	c	c	c	c	c	1	1	1	1	h	c	c	12	12		f	f		
8				f2	f2		c	c	c						12	1'2	12	1	c	f	f2	f2	f3	f2
9	f2	f2	f	f2	f3	12	c	c	c	c			1	1	1						f	f4	f	f
10	f	f	f					h				1	1					h					f	f
11		f	f	f	f		c			c		1			h 1	h	h	c						
12				f	f	c2	c2	c	c3	c		c	c	c2	c	13	1	c	c2	f2				
13		f2	f3	f3		c		c	c	c2	c	c2	c	c		1	12	12	12	f2	f2	f		f
14	f	f2	f3	f3	f3	12				c 1	c 1	c	c1	c 1										
15	f	f2	f	f	f	12			1								c	c						
16				f	f									h			c	c						
17				f	f		1 c	c	c	c	c	c	c	c			h	c	c			f	f	
18		f	f	f2	f		c4	1	1								h	c	c	f2	f	f		
19							c	c2	c	c				c	c	1	12		c2	f	f	f		
20				f	f	f3	c	1		1													f	
21					f			c	c							1								
22							h	c	c	c2	c				1		h	h	c	f2	f2	f2	f3	
23			f	f3	f f	f2	1	h	c		12	1	12	c 1	1	h	h	c						
24	f	f4	f4	f	f	f	h	h	c		c				1									
25								h	1		1		1	1	1	h	c	c	c2	f2	f2	f2		
26			f					h	h		c 1	c	c	c			h	c	c	f	f5	f2	f	f
27	f2		f	f	f	f	c	c2	c2	c2	1	1	12	12	1	1	c	c3	c3	f2	f2	f3	f2	f2
28		f	f		f	f2	c	c									c		c					
29								h	h	h	c	c	c	c4	c	1								
30		f	f2		f			h	c	c	c	c2	c	12	12	1	1		c	f	f3		f	f2
31																								
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

W 12

IONOSPHERIC DATA

Sep. 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	3.4	3.1	3.3	3.2^{S}	$I_{3.6}^{RS}$	3.9^{FS}	$I_{4.6}^{RH}$	$I_{6.3}^{R}$	6.6	6.6	5.6	5.7^{V}	6.7	5.7	5.3	5.6	5.6	6.1	6.4	6.4	6.5	5.9	$I_{4.2}^{A}$	A
2	A	F	$I_{3.9}^{RF}$	$I_{3.4}^{F}$	RS	F	R	$I_{5.4}^{R}$	6.0	$I_{5.6}^{R}$	5.4	5.8	5.6	5.1	5.6	5.7	5.2	5.2	5.4^{R}	6.6	6.1	5.3	5.0	F
3	F	3.9^{F}	F	F	FS	4.2^{S}	$I_{4.9}^{A}$	5.9	5.7	5.9	5.7	5.8	5.5	5.8	6.0	6.3	6.6	$I_{6.0}^{A}$	$I_{6.1}^{A}$	$I_{6.2}^{R}$	$I_{6.0}^{R}$	$I_{5.4}^{F}$	R	R
4	R	F	4.1	3.9	3.6^{S}	$I_{3.6}^{S}$	$I_{4.6}^{A}$	5.6	6.9	7.0	6.4	5.4	5.7	5.3^{H}	5.6	6.1	5.8	5.6	6.3	7.1	$U_{6.8}^{R}$	5.8	4.6	4.1^{S}
5	3.6	3.6	3.6	3.5	3.4^{S}	3.7^{S}	5.1	6.7	6.6	6.0	6.7	6.3	6.5	6.4	6.6	6.7	5.6	5.2	6.1	6.7	6.1	FS	FS	4.8
6	4.4	4.0	3.8	3.5	3.6^{S}	3.8^{S}	$I_{4.6}^{RS}$	$U_{6.2}^{R}$	6.6	6.2	$I_{5.6}^{A}$	5.7	7.3	7.5^{S}	6.4	5.5	5.7	6.1	6.8	7.2^{S}	6.1	$I_{5.6}^{F}$	5.1	4.4
7	4.0	3.9	3.9	3.6	3.5	$I_{3.9}^{RS}$	5.6	5.9	5.3	5.4	5.8	6.5	6.6	6.0	6.0	6.1	6.7	6.2	5.2	5.6	$I_{5.5}^{F}$	F	RS	FS
8	4.6^{S}	$I_{4.1}^{C}$	4.1	3.6^{S}	$I_{3.4}^{RS}$	3.4^{S}	4.5	5.5	6.8	6.9	5.7	6.4	6.3	6.1	6.2	5.6	6.2	6.5	7.1	$I_{7.1}^{R}$	4.6	3.6	3.8	3.6
9	$I_{3.6}^{F}$	3.7^{F}	4.3	2.6	2.3^{S}	3.0	5.0^{R}	5.7	6.6	7.3	8.1	8.3	5.7	5.8	6.1	5.8	6.2	5.9	6.1	6.0	5.4	$I_{5.4}^{RS}$	RS	R
10	R	$I_{4.6}^{R}$	4.5	4.2	3.3^{S}	3.3	$U_{4.7}^{R}$	6.4	7.6	6.1	5.5	$I_{6.1}^{R}$	6.0	6.2^{R}	5.6	C	C	5.4	6.6	6.1	6.1	$I_{5.3}^{R}$	4.7^{R}	4.1
11	4.3	4.1	3.7	3.6	3.6	3.9	5.2^{R}	$U_{6.3}^{R}$	5.3^{H}	5.8	6.1	6.4	6.6	6.4	5.9	6.1	$I_{5.5}^{C}$	5.5	6.2	6.4	6.0	5.4	4.7	$I_{4.6}^{R}$
12	4.6	4.5	4.3	3.6	3.8	3.4	4.4	5.1^{R}	5.7	5.9	$I_{5.5}^{A}$	$I_{5.3}^{A}$	$I_{5.7}^{A}$	6.3	6.6	7.0	6.2	6.5	6.1	5.6	5.3	R	A	RF
13	4.4^{F}	$I_{4.1}^{F}$	4.1	4.2	$I_{3.1}^{FS}$	3.3^{S}	4.2	5.4	5.9^{R}	5.5	6.3	$I_{6.0}^{A}$	6.6	6.6	6.8	7.1	5.8	5.7	5.5	6.1	5.7	5.5	4.7	4.3
14	F	F	F	FS	FS	FS	5.1	5.4	5.7	6.6	6.9	5.9	6.4	6.6	6.8	7.7	7.1	7.0	7.2	8.1	7.8	6.1	5.7	4.6
15	4.7^{S}	4.6	5.0	4.7	$I_{3.5}^{A}$	$I_{3.2}^{A}$	3.7	5.1	$J_{5.2}^{R}$	5.2	$I_{5.3}^{B}$	5.5	$I_{5.0}^{R}$	5.0	5.0	5.2	$I_{5.2}^{A}$	5.1	$I_{5.5}^{A}$	5.7	4.6	4.3	4.1	3.9
16	3.7	3.6	3.5	3.6	3.4	$I_{3.4}^{RF}$	4.7	6.2	6.7	5.2	6.2	6.0	6.1	6.0	5.6	5.7	6.6	7.1	6.7	5.7	4.9	4.8	4.6	4.5^{S}
17	$I_{4.8}^{RS}$	4.4	3.7^{FS}	$I_{3.5}^{FS}$	$J_{3.5}^{R}$	3.3	5.4	5.4	$I_{5.4}^{A}$	5.9	$I_{5.8}^{A}$	5.6	6.0	6.4	5.8	5.8	6.1	6.0	6.7	6.2	6.5	5.5	$I_{5.1}^{R}$	4.8^{S}
18	4.7	4.8^{R}	2.6^{F}	$I_{2.9}^{F}$	2.7	$I_{3.6}^{A}$	$I_{4.8}^{R}$	5.7	5.5^{F}	7.1	6.3^{S}	5.5	6.0	6.9	6.7	5.9	5.8	5.9	5.6	4.8	$I_{4.4}^{FS}$	$I_{4.3}^{FS}$	4.0	4.3
19	4.1	3.9	3.3	3.2	3.1	3.1	5.1	5.8	6.4	6.5	6.9	6.6	6.8	7.0	7.2	6.4	6.4	6.8	6.1	$I_{5.8}^{F}$	5.6	6.2^{S}	4.6^{S}	4.5
20	4.5	$I_{4.0}^{RF}$	4.1	4.0	3.8	$I_{3.8}^{RS}$	4.5	$I_{5.8}^{RH}$	6.5	6.6	5.6	6.1	6.1	6.3	6.2	5.9	6.1	6.5	6.4	6.1	5.7	5.0	4.4	4.0
21	3.9	3.5	3.5	3.4	3.6	3.9	5.5	5.9	6.6	$I_{6.9}^{B}$	7.3^{R}	7.7	7.4	6.4	6.7	7.1	7.3	7.0	7.2	4.8	5.0	4.6	4.3	4.2
22	4.0	3.4	3.4	3.5	3.4	4.1	5.3	6.4	6.5	8.7	8.3	7.1	8.1	8.1	7.8	7.7	8.9	10.7	8.4	4.9	4.0	4.2	3.7	$I_{4.0}^{A}$
23	$I_{3.7}^{A}$	$I_{3.8}^{R}$	3.5	3.0	2.9	3.0	4.0	6.5	$I_{6.3}^{C}$	$I_{5.8}^{C}$	5.7	6.2	7.7	6.0	5.5	4.6	4.6	5.0	3.8	3.7	3.9	3.8	3.6	3.8
24	2.9	2.6	$I_{2.2}^{A}$	2.3	$I_{2.4}^{A}$	2.6	4.9	8.2	8.8	10.1	7.5	7.8	7.1	7.0	6.2	6.5	6.1	6.7	6.7	6.0	5.1	$I_{4.7}^{RS}$	4.7	$I_{4.6}^{S}$
25	4.6^{S}	4.1	$I_{4.0}^{F}$	$I_{3.8}^{RS}$	$I_{3.8}^{FS}$	$I_{3.8}^{F}$	$I_{4.7}^{RS}$	5.5	5.6	7.1	6.0	6.4	6.6	6.4	6.9	7.2	7.1	5.6	$I_{5.2}^{A}$	5.1	$I_{5.3}^{S}$	4.9^{S}	$I_{3.6}^{A}$	$I_{3.6}^{A}$
26	3.1^{F}	FS	FS	F	$I_{3.4}^{F}$	$I_{3.8}^{F}$	5.0	5.9	6.3	6.9	6.7	6.9	6.4	6.7	6.0	5.9	7.1	8.2	8.8^{R}	5.6	2.7	2.8	3.1	3.3
27	$I_{3.2}^{R}$	FS	A	A	F	F	5.0	7.1^{R}	7.1	$I_{6.6}^{A}$	7.0	$I_{7.0}^{A}$	7.7	6.2	5.9	6.4	6.8	8.6	8.6	5.9	$I_{4.6}^{A}$	3.7	3.9	$I_{3.6}^{F}$
28	3.7	3.7	3.6	3.5	$I_{3.4}^{RS}$	3.7^{S}	5.7	5.6	8.5	7.1	8.6	6.5	8.9	8.3	8.7	7.0	7.2	7.1	6.5	5.6	4.5	3.5	3.8	4.0
29	3.8	3.6	3.5	3.8	3.2	2.9	$I_{5.0}^{RH}$	6.1	7.1	8.7	8.9	$I_{7.9}^{A}$	7.3^{R}	8.3	6.6	6.5	7.1	7.8	$I_{6.2}^{C}$	4.6	4.2	4.2	4.0	4.0
30	4.0	4.0	4.0	3.6	3.8^{S}	3.2	5.0	6.1	6.6^{H}	6.7	7.0	6.7	8.2	6.9	6.1	6.3	6.5	6.4	5.4	5.0	A	S	F	$I_{3.7}^{F}$
31																								
No.	25	25	26	26	26	27	29	30	30	30	30	30	30	30	30	29	29	30	30	30	29	26	24	24
Median	4.0	3.9	3.8	3.6	3.4	3.6	4.9	5.9	6.5	6.6	6.2	6.2	6.6	6.4	6.2	6.1	6.2	6.2	6.2	6.0	5.4	5.0	4.4	4.1
U.Q.	4.6	4.1	4.1	3.8	3.6	3.8	5.1	6.3	6.7	7.0	7.0	6.7	7.3	6.9	6.7	6.8	7.0	7.0	6.7	6.4	6.1	5.5	4.7	4.5
L.Q.	3.6	3.6	3.5	3.4	3.2	3.2	4.6	5.5	5.7	5.9	5.7	5.8	6.0	6.0	5.8	5.8	5.8	5.6	5.6	5.6	4.6	4.2	3.8	3.8
Q.R.	1.0	0.5	0.6	0.4	0.4	0.6	0.5	0.8	1.0	1.1	1.3	0.9	1.3	0.9	0.9	1.0	1.2	1.4	1.1	0.8	1.5	1.3	0.9	0.7

The Radio Research Laboratories, Japan

foF2

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

IONOSPHERIC DATA

Sep. 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	4.1^{H}	4.2^{H}	4.2	4.3	I4.3^{R}	4.3	I4.3^{L}	4.2^{L}	I3.8^{L}	L						
2								A	A	L	I4.3^{A}	4.4	4.3^{R}	4.4	4.2	I4.1^{L}	L	L						
3								A	I4.0^{L}	4.1	I4.4^{A}	4.4	4.6	4.2^{S}	I4.2^{A}	4.1^{L}	L	A						
4								A	A	I4.3^{A}	4.3	4.3^{L}	4.3	4.3^{R}	I4.2^{L}	4.2	L	L						
5							L	L	4.2^{L}	I4.2^{L}	4.3	4.4	4.5	4.2	I4.2^{LH}	4.1	L	L						
6							L	A	A	4.2^{L}	I4.4^{A}	4.3	4.3	I4.3^{S}	4.3^{L}	L	L	L						
7							L	L	4.1^{L}	4.2	4.3^{L}	4.3^{L}	4.5	4.4	4.3	4.0	3.8^{L}	L						
8								L	4.2	4.3	4.5^{L}	4.3^{R}	I4.4^{A}	I4.4^{A}	I4.3^{A}	4.2^{L}	4.0^{LH}	L						
9								L	A	L	I4.3^{A}	I4.3^{A}	4.5	I4.4^{L}	4.3^{L}	4.1^{L}	3.8^{L}	L						
10							L	3.8^{L}	4.1	4.2^{L}	4.4	4.5	I4.4^{R}	4.1	R	C	C	L						
11								L	A	I4.2^{A}	I4.2^{R}	I4.3^{R}	4.2^{H}	4.3	R	L	C	L						
12							A	A	A	A	A	A	A	A	I4.3^{L}	4.0^{L}	L	L						
13								L	L	I4.2^{L}	I4.4^{L}	I4.5^{A}	4.4	4.6^{L}	I4.3^{B}	4.0^{L}	L	A						
14								L	L	4.5^{L}	4.2^{L}	I4.5^{A}	4.4	4.3^{L}	4.6^{L}	LH	L	L						
15								I3.6^{LH}	I4.0^{RH}	4.1	B	B	4.5	4.3^{H}	4.3	L	A	A						
16							L	L	4.1^{L}	4.1^{L}	4.5	4.3	4.6^{LH}	4.2	I4.4^{LH}	4.3^{L}	L	A						
17							A	A	A	4.2^{L}	I4.4^{A}	4.4	4.5	4.2	4.1	4.2^{L}	L	L						
18							L	L	L	4.4	I4.4^{S}	4.6^{L}	A	A	4.4^{L}	I4.0^{L}	L							
19								L	L	L	4.5^{L}	I4.6^{L}	4.7^{L}	4.5^{L}	A	L	L	A						
20								3.8^{L}	4.3	4.3^{L}	4.5	4.7^{LH}	4.6^{LH}	4.5^{H}	4.5	L	L							
21								L	L	B	B	B	B	L	I4.5^{L}	L	L							
22								A	A	4.3	4.5	I4.6^{LH}	I4.6^{L}	4.7^{L}	L	L	L							
23								L	I4.2^{C}	I4.2^{C}	4.0	I4.1^{A}	4.0^{A}	4.0	4.0	4.2^{L}	L							
24								L	L	L	4.5^{L}	4.5^{L}	4.6^{L}	4.5^{L}	3.8	A	A							
25								L	L	I4.2^{A}	4.3	4.5	A	A	LH	4.0^{L}	L							
26								L	L	4.2^{L}	I4.2^{A}	4.5^{L}	4.1^{L}	4.4	4.0^{L}	A	A							
27								L	L	A	A	A	A	L	L	L	L							
28								4.0	L	L	LH	L	L	L	L	L	L							
29									4.1	3.8	L	A	A	L	L	L	L							
30									L	L	L	L	L	L	L	L								
31																								
No.								4	11	21	23	23	22	22	21	15	4							
Median								3.8	4.1	4.2	4.4	4.4	4.4	4.3	4.3	4.1	3.8							
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Sep. 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							A	A	A	3.00	3.15	3.15^{R}	$I_{3.30}{}^{R}$	$I_{3.25}{}^{R}$	$I_{3.15}{}^{A}$	3.00	2.70	2.25^{H}						
2							B	A	A	A	A	A	A	3.25	3.10	3.00	A	A						
3							B	A	A	A	A	A	A	A	R	3.00	A	A						
4							A	A	A	A	A	A	A	R	3.15	2.90	A	A						
5							A	A	A	A	A	A	A	A	3.15	2.95	2.55	2.05						
6							B	A	A	A	A	R	A	A	A	A	A	A						
7							A	A	A	A	A	A	A	A	A	3.00	A	A						
8							A	A	A	A	A	A	A	A	A	A	2.70	2.15						
9							A	A	A	A	A	A	A	R	R	2.90	2.70	A						
10							A	A	A	A	A	R	A	A	A	C	C	2.05						
11							A	A	A	A	A	A	A	A	A	2.75	C	A						
12							A	A	A	3.05	A	A	A	A	A	A	A	A						
13							A	A	A	A	A	A	A	A	B	A	A	A						
14							A	A	A	A	A	A	A	A	3.20	$I_{2.90}{}^{A}$	2.65	A						
15							A	A	A	A	B	B	B	R	3.25	3.00	A	A						
16							A	A	A	3.10	$I_{3.20}{}^{B}$	3.30	$I_{3.30}{}^{R}$	3.25	$I_{3.05}{}^{A}$	2.90	A	A						
17							A	A	A	A	A	R	3.35	R	A	A	A	A						
18							A	A	A	A	A	A	A	A	A	A	A	A						
19							A	A	A	A	A	A	A	A	A	A	A	A						
20							A	A	3.00	A	R	3.30	$I_{3.30}{}^{R}$	3.20	3.10	$I_{2.90}{}^{R}$	2.50	A						
21							A	A	A	B	B	B	B	B	B	$I_{3.00}{}^{R}$	2.55	A						
22							A	A	A	A	3.25	$I_{3.25}{}^{A}$	$I_{3.20}{}^{A}$	$I_{3.05}{}^{A}$	3.00	$I_{2.70}{}^{A}$	A	A						
23							A	A	C	C	A	A	A	A	2.90	$I_{2.70}{}^{A}$	A	B						
24							B	A	2.85	2.95	A	A	A	A	A	A	A	A						
25							R	R	A	A	A	A	A	A	A	A	A	A						
26							B	A	A	A	A	A	A	3.15	3.05	A	A	A						
27							B	A	A	A	A	A	A	A	A	2.95	A	B						
28							B	A	A	2.95	A	R	A	R	3.00	$I_{2.65}{}^{R}$	$I_{2.25}{}^{A}$	E						
29							B	A	2.70	A	A	A	A	3.05	3.00	$I_{2.70}{}^{A}$	A	E						
30							RS	A	A	A	A	A	A	3.10	3.00	2.75	R	B						
31																								
No.									3	5	3	4	5	8	14	19	8	6						
Median									2.85	3.00	3.20	3.30	$U_{3.30}$	3.20	3.10	2.90	2.60	2.05						
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Akita

Lat. 39°43.5' N
Long. 140°08.2' E

Sep. 1963 | **foEs** | 135° E Mean Time (G.M.T. +9h)

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	2.0	E	$J_{1.7}$	$J_{2.0}$	2.2	2.3	$J_{3.1}$	3.0	2.9	G	3.3	G	G	G	3.3	G	G	G	$J_{1.8}$	$J_{1.8}$	$J_{3.5}$	$J_{2.5}$	$J_{4.0}$	$J_{6.1}$
2	$J_{6.2}$	$J_{2.4}$	2.1	$J_{2.7}$	$J_{2.2}^{Y}$	$J_{3.2}$	$J_{6.0}$	$J_{10.0}$	$J_{6.6}$	$J_{4.5}$	$J_{5.8}$	$J_{4.2}$	3.7	G	G	2.5^{G}	$J_{2.8}$	$J_{3.8}$	$J_{2.8}$	$J_{2.3}$	$J_{3.5}$	$J_{1.8}$	2.2	$J_{2.8}$
3	$J_{3.0}$	$J_{2.5}$	$J_{1.8}$	2.1	$J_{2.5}$	$J_{3.2}$	$J_{4.9}$	$J_{6.0}$	$J_{3.7}$	$J_{4.6}$	$J_{6.9}$	3.7	4.2	3.6	$J_{3.9}$	4.6	3.8	$J_{6.5}$	$J_{10.7}$	$J_{7.1}$	$J_{5.6}^{Y}$	$J_{3.3}$	$J_{3.8}$	$J_{3.8}$
4	$J_{3.6}$	$J_{1.8}$	2.0	$J_{1.7}$	$J_{2.8}$	2.3	$J_{7.3}$	$J_{5.9}$	$J_{6.1}$	$J_{5.1}$	3.2^{G}	3.3	3.4	G	G	G	2.8	2.6	2.0	E	2.1	E	E	$J_{2.8}$
5	$J_{1.8}$	$J_{1.8}$	2.3	$J_{1.8}$	$J_{1.9}$	$J_{2.5}$	$J_{3.3}$	2.9	3.2	$J_{4.0}$	4.0	$J_{3.8}$	3.5	3.2	G	G	2.5^{G}	G	E	E	E	$J_{2.8}$	2.0	$J_{2.8}$
6	2.1	E	E	2.0	$J_{2.3}^{Y}$	2.1	$J_{2.6}$	$J_{6.4}$	$J_{4.9}$	$J_{5.0}$	$J_{5.7}$	2.8^{G}	3.2^{G}	$J_{3.8}$	$J_{4.3}$	$J_{3.7}$	2.8	2.7	$J_{2.3}$	2.4	$J_{1.9}$	$J_{2.9}$	$J_{2.1}$	$J_{2.0}$
7	2.0	E	2.2	1.9	2.2	$J_{2.1}$	2.5	2.8	2.8	3.5	3.0^{G}	G	G	G	G	3.2	$J_{3.6}$	$J_{3.6}$	2.4	$J_{5.0}$	$J_{3.0}$	$J_{2.9}$	$J_{3.9}$	$J_{2.5}$
8	E	C	2.3	$J_{3.8}$	$J_{1.8}$	$J_{1.8}$	3.0	3.5	4.0	4.0	3.9	3.8	$J_{4.8}$	$J_{4.8}$	$J_{6.1}$	$J_{3.3}$	2.8	2.5	$J_{1.8}$	$J_{1.8}$	E	$J_{2.9}$	$J_{3.0}$	$J_{2.4}$
9	$J_{2.3}$	$J_{2.0}$	$J_{2.3}$	$J_{1.8}$	2.2	$J_{1.8}$	$J_{2.0}$	3.2	$J_{5.8}$	$J_{3.9}$	4.6	$J_{7.9}$	3.4	3.8	C	3.0	3.0	2.5	2.0	2.1	$J_{2.3}$	$J_{1.8}$	$J_{3.1}$	$J_{2.0}$
10	$J_{3.5}$	$J_{2.5}$	2.2	2.1	2.1	2.2	2.0	3.0	3.5	3.3	3.5	G	3.0^{G}	$J_{3.6}$	3.0^{G}	C	C	$J_{2.0}^{G}$	2.2	$J_{1.8}$	2.2	$J_{3.5}$	2.0	2.2
11	$J_{2.3}$	2.1	2.0	$J_{2.0}$	$J_{1.9}$	2.1	$J_{3.2}$	3.0	$J_{5.5}$	$J_{3.6}$	3.8	$J_{3.3}$	3.5	3.8	3.6	3.2	C	3.6	$J_{2.5}$	$J_{3.1}$	$J_{2.8}$	$J_{2.3}$	2.2	2.3
12	$J_{1.9}$	$J_{2.3}$	1.9	1.9	$J_{2.1}$	E	3.0	3.8	$J_{5.9}$	$J_{5.0}$	$J_{6.9}$	$J_{5.9}$	$J_{12.1}$	$J_{6.5}$	4.0	$J_{3.8}$	3.2	2.2	$J_{1.8}$	$J_{3.4}$	$J_{2.5}$	$J_{3.8}$	$J_{5.0}$	$J_{3.1}$
13	$J_{4.0}$	$J_{3.9}$	$J_{2.9}$	$J_{3.3}$	$J_{2.6}$	$J_{2.4}$	2.5	$J_{3.1}$	3.2	3.9	4.2	$J_{6.0}$	4.0	3.7	B	$J_{3.4}$	$J_{3.5}$	$J_{3.8}$	$J_{3.7}$	$J_{3.8}$	$J_{2.3}$	$J_{2.1}$	$J_{3.8}$	$J_{3.5}$
14	$J_{2.4}$	$J_{3.8}$	$J_{3.1}$	$J_{6.1}$	$J_{3.1}$	$J_{1.8}$	$J_{2.1}$	$J_{3.1}$	3.2	3.6	3.7	4.8	3.6	$J_{4.0}$	G	$J_{3.0}$	2.8	$J_{2.4}$	E	$J_{1.8}$	$J_{2.4}$	$J_{2.0}$	2.2	E
15	$J_{2.4}$	$J_{2.3}$	$J_{2.5}$	$J_{3.3}$	$J_{5.0}$	$J_{3.5}$	2.0	$J_{5.0}$	$J_{5.0}$	3.5	B	B	B	G	3.8	4.0	$J_{5.9}$	$J_{3.5}$	$J_{6.6}$	$J_{5.0}$	$J_{2.8}$	$J_{2.9}$	$J_{2.0}$	E
16	E	2.0	2.0	2.1	2.2	E	$J_{3.2}$	2.9	2.9	G	B	G	G	$J_{4.8}$	4.1	3.5	3.5	$J_{4.0}$	$J_{2.4}$	$J_{1.9}$	$J_{3.8}$	$J_{1.9}$	E	E
17	E	$J_{3.1}$	$J_{2.6}$	$J_{3.4}$	E	E	$J_{3.5}$	$J_{4.5}$	$J_{7.3}$	4.0	$J_{7.4}$	3.4	G	G	3.6	3.7	$J_{3.2}$	$J_{3.4}$	$J_{2.9}$	$J_{2.4}$	$J_{2.4}$	$J_{2.4}$	$J_{2.8}$	$J_{3.1}$
18	$J_{2.5}$	$J_{2.0}$	$J_{2.4}$	2.0	$J_{2.0}$	$J_{6.0}$	$J_{8.3}$	$J_{2.9}$	$J_{3.6}$	$J_{3.5}$	$J_{3.5}^{S}$	$J_{4.0}$	$J_{5.6}$	$J_{5.3}$	$J_{4.1}$	$J_{3.2}$	3.2	$J_{3.1}$	$J_{5.0}$	$J_{3.6}$	$J_{2.5}$	$J_{2.5}$	$J_{3.0}$	2.3
19	$J_{1.8}$	$J_{1.8}$	$J_{2.1}$	$J_{1.7}$	2.2	E	2.5	3.0	3.7	4.1	3.5	$J_{4.3}$	4.1	3.9	4.6	3.6	$J_{3.4}$	$J_{4.8}$	$J_{4.9}$	$J_{4.0}$	$J_{2.8}$	E	$J_{1.9}$	$J_{2.8}$
20	$J_{3.3}$	$J_{2.4}$	E	$J_{2.4}$	$J_{3.7}$	$J_{2.3}$	2.5	$J_{3.5}$	2.6^{G}	$J_{2.3}$	2.6^{G}	2.6^{G}	G	G	3.5	3.1	2.9	2.8	$J_{2.1}$	2.2	2.1	$J_{2.9}$	E	2.3
21	1.9	$J_{1.8}$	2.3	2.1	$J_{2.0}$	E	$J_{2.0}$	3.4	3.2	B	B	B	B	B	3.0	2.3^{G}	2.2^{G}	2.3	2.1	$J_{3.3}$	$J_{2.5}$	E	$J_{2.3}$	E
22	2.2	2.3	E	E	2.2	E	3.2	$J_{4.0}$	$J_{4.8}$	3.7	3.0^{G}	2.7^{G}	3.2	$J_{3.5}$	2.3^{G}	3.1	2.7	2.6	2.2	$J_{2.5}$	E	$J_{2.8}$	$J_{2.9}$	$J_{3.8}$
23	$J_{4.3}$	$J_{4.4}$	$J_{1.9}$	$J_{2.6}$	$J_{2.9}$	$J_{3.4}$	2.6	3.1	C	C	3.6	$J_{5.5}$	4.2	3.6	3.5	3.4	3.0	2.5	$J_{2.3}$	E	$J_{2.8}$	E	2.0	$J_{2.3}$
24	E	2.3	$J_{2.1}$	$J_{1.7}$	$J_{2.5}$	2.1	2.2	2.5	3.2	3.7	4.0	4.1	3.7	3.3	$J_{3.4}$	$J_{4.4}$	$J_{6.1}$	2.5	$J_{3.4}$	$J_{4.1}$	$J_{6.0}^{Y}$	$J_{2.8}$	$J_{2.9}$	2.3
25	2.3	$J_{2.0}$	2.3	E	$J_{2.0}$	E	G	G	3,5	$J_{4.5}$	$J_{5.0}$	$J_{6.3}$	$J_{7.0}$	8.5	$J_{3.9}$	3.5	2.9	$J_{3.5}$	$J_{5.0}$	$J_{5.1}$	$J_{5.0}$	2.2	$J_{5.1}$	$J_{5.0}$
26	$J_{2.1}$	$J_{2.3}$	$J_{2.0}$	2.2	$J_{1.8}$	E	G	2.7	$J_{6.0}^{Y}$	3.6	$J_{4.9}$	3.7	3.8	G	G	$J_{4.6}$	$J_{4.9}$	$J_{3.5}$	$J_{2.5}$	$J_{3.8}$	$J_{2.0}$	2.2	E	2.0
27	$J_{2.8}$	$J_{3.0}$	$J_{5.8}$	$J_{4.6}$	$J_{2.3}$	$J_{2.5}$	2.6	$J_{5.7}$	$J_{9.5}^{Y}$	$J_{8.3}$	$J_{6.2}$	$J_{8.9}$	$J_{6.5}$	$J_{3.9}$	$J_{3.5}$	G	3.2	$J_{3.8}$	$J_{3.8}$	$J_{6.0}$	$J_{5.3}$	$J_{3.5}$	$J_{2.5}$	E
28	E	2.2	2.2	$J_{2.8}$	$J_{2.8}$	$J_{4.9}$	$J_{3.8}$	$J_{3.1}$	$J_{2.9}$	2.6^{G}	3.2	3.5	3.8	G	3.2	2.9	2.7	G	E	$J_{1.8}$	$J_{2.4}$	$J_{2.8}$	E	$J_{2.4}$
29	$J_{3.0}$	$J_{2.3}$	$J_{4.0}$	2.2	2.0	E	2.2	2.9	2.9	3.3	4.2	$J_{9.3}$	$J_{7.2}$	3.5	G	2.9	2.9	2.0	C	$J_{2.5}$	2.2	E	E	E
30	2.1	$J_{3.6}$	$J_{6.2}$	$J_{3.4}$	$J_{3.6}$	$J_{2.8}$	G	2.7	3.2	4.0	$J_{4.3}$	$J_{6.3}^{Y}$	$J_{6.1}$	G	G	G	G	2.2	$J_{2.4}$	$J_{3.1}$	$J_{6.4}$	$J_{5.8}$	$J_{2.4}$	$J_{2.3}$
31																								
No.	30	29	30	30	30	30	30	30	29	28	27	28	28	29	29	29	28	30	29	30	30	30	30	30
Median	2.2	2.3	2.2	2.1	2.2	2.1	2.6	3.1	3.6	3.8	4.0	3.8	3.7	3.6	3.4	3.2	3.0	2.6	2.4	2.5	2.5	2.5	2.2	2.3
U.Q.	3.0	2.5	2.4	2.7	2.8	2.5	3.2	4.0	5.6	4.3	5.0	5.7	4.5	3.9	4.0	3.6	3.5	3.6	3.6	3.8	3.5	2.9	3.0	2.8
L.Q.	1.9	1.9	2.0	1.9	2.0	E	2.1	2.9	3.2	3.5	3.5	G	G	G	G	G	2.8	2.3	2.0	1.8	2.2	1.9	2.0	2.0
Q.R.	1.1	0.6	0.4	0.8	0.8		1.1	1.1	2.4	0.8	1.5						0.7	1.3	1.6	2.0	1.3	1.0	1.0	0.8

The Radio Research Laboratories, Japan

foEs

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

IONOSPHERIC DATA

Sep. 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	2.4	2.7	2.9		2.5				3.3				1.7	E	3.4	2.0	A	A
2	A	1.8	E	E	1.8	1.9	2.8	5.2	4.0	3.9	5.0	3.9	3.4			2.4^G	2.7	3.1	2.3	$U_{2.3}^R$	1.8	1.7	E	1.8
3	2.0	E	E	E	2.5	2.5	A	4.0	3.6	3.4	5.1	3.6	$U_{4.2}^R$	3.5	5.2	3.2	3.7	A	A	5.0	4.8	2.4	3.3	2.7
4	3.3	1.8	E	E	2.0	E	A	4.5	5.0	5.1	$U_{3.2}^{RG}$	$U_{3.3}^R$	3.4				2.7	2.5	1.8		E			1.7
5	E	E	E	E	E	1.8	3.0	2.7	3.2	$U_{4.0}^R$	4.0	3.7	3.4	3.2			1.9^G					E	E	E
6	E			E	E	E	2.3	5.0	4.5	3.9	A	2.7^G	$E_{3.2}^{RG}$	3.5	3.7	3.7	2.7	2.6	1.8	2.3	1.8	E	1.8	1.7
7	E		E	E	E	1.8	2.3	2.8	$U_{2.8}^R$	3.2	$U_{3.0}^{RG}$					G	3.3	2.6	1.7	1.7	1.8	2.0	2.7	1.8
8		C	E	2.9	1.7	E	2.5	3.3	3.9	3.8	3.6	3.4	4.5	4.5	5.0	3.2	1.8	1.8	E	E		1.7	E	E
9	E	E	1.9	E	E	E	1.7	2.9	4.9	3.7	4.4	7.6	3.4	3.4		3.0	2.9	2.4	1.9	E	2.1	E	2.5	1.8
10	E	E	E	E	E	E	2.0	2.9	3.1	3.3	3.5		$E_{3.0}^{RG}$	$U_{3.6}^R$	$E_{3.0}^{RG}$	C	C	1.8^G	E	1.8	1.8	E	E	E
11	E	E	E	E	E	E	3.0	2.8	4.8	$E_{3.6}^R$	$E_{3.8}^R$	$U_{3.3}^R$	3.5	$E_{3.8}^R$	3.6	3.2	C	3.3	2.5	3.0	2.5	2.0	E	1.9
12	E	E	E	E	1.9		2.8	3.7	5.5	4.8	A	A	A	5.7	3.6	3.4	3.1	2.1	1.7	2.0	2.0	1.7	A	2.6
13	3.2	3.0	2.8	2.4	1.9	E	2.3	2.8	3.2	3.9	4.1	A	3.9	3.7	B	3.2	3.4	3.0	2.9	3.1	2.2	2.0	2.0	2.2
14	1.7	E	E	E	2.8	E	2.1	2.7	3.1	3.5	3.5	4.8	3.5	3.5		$U_{3.0}^{RG}$	2.0	2.3		E	1.7	E	E	
15	2.0	2.1	1.8	E	A	A	2.0	2.6	3.1	3.4	B	B	B		3.7	4.0	A	3.3	A	2.5	2.1	2.5	E	
16		E	E	E	E		2.3	2.5	2.9		B			3.9	3.4	3.4	3.4	3.5	E	E	2.5	E		
17		2.1	1.7	2.3			3.2	4.5	A	3.6	A	3.4			3.3	3.3	3.0	2.3	E	1.8	2.0	2.0	2.8	2.2
18	E	E	2.0	E	2.0	A	2.6	2.4	2.9	3.4	$E_{3.5}^S$	3.7	4.9	4.9	$U_{4.1}^R$	3.2	2.8	2.0	4.5	3.3	2.4	1.7	1.7	1.7
19	1.7	1.7	2.0	1.7	E		2.1	3.0	3.7	4.1	3.5	3.9	3.6	3.9	4.6	3.3	3.1	3.8	2.1	2.5	1.8		1.9	1.7
20	1.7	E		1.7	3.0	2.3	2.3	3.0	2.5^G	3.1	2.6^G	$U_{2.6}^G$			3.5	3.1	2.9	2.7	2.0	E	E	1.7		E
21	E	E	E	E	E		2.0	2.6	3.0	B	B	B	B	B	$E_{3.0}^R$	2.3^G	2.0^G	2.2	E	E	2.0		1.8	
22	E	E			E		2.9	3.9	4.6	3.6	3.0^G	$E_{2.7}^{RG}$	3.2	3.4	2.1^G	3.0	2.6	2.5	1.7	2.1		E	2.8	A
23	A	2.9	E	2.2	2.0	2.5	2.5	2.8	C	C	3.3	4.5	4.0	3.3	3.4	3.4	2.5	2.1	E		2.7		E	2.0
24		E	A	E	A	E	2.0	2.5	3.0	3.4	4.0	4.1	3.5	3.3	3.2	4.0	3.9	2.3	3.4	4.0	2.6	2.0	1.8	1.7
25	E	1.8	E		E				3.5	4.4	3.8	4.2	5.7	5.1	3.4	2.8	2.6	3.5	A	4.2	1.7	E	A	A
26	E	E	E	E	E			2.6	3.1	3.4	4.5	3.4	3.5			4.3	4.8	3.0	2.5	1.9	E	E		E
27	2.4	3.0	A	A	E	2.3	2.1	3.1	3.6	A	5.6	A	4.9	3.5	3.3		3.2	3.0	3.8	4.0	A	2.8	E	
28		E	E	E	2.1	2.6	2.7	2.6	2.8	2.5^G	3.2	3.4	3.4		3.2	2.8	2.3			E	2.2	2.6		2.3
29	3.0	2.0	E	E	E		2.0	2.6	2.9	3.3	4.0	A	4.9	3.4		2.9	2.3	1.8	C	2.3	E			
30	E	2.6	E	3.4	2.3	E		2.7	3.0	3.7	4.0	3.9	3.6					2.1	E	E	A	1.7	E	E
31																								
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

A 5

25

IONOSPHERIC DATA

Sep. 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	1.65	1.70	1.70	1.70	1.75	1.80	1.70	1.70	1.70	1.75	1.70	1.65	1.65	E	1.70	1.70	1.70	1.70
2	1.70	1.70	E	E	E	1.65	1.75	1.70	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.65	E	E	1.70	E	1.65
3	1.70	E	E	E	E	1.65	1.75	1.70	1.70	1.70	1.70	1.75	1.95	1.90	1.70	1.70	1.70	1.75	1.65	1.70	1.70	1.70	1.70	1.70
4	1.65	E	E	E	E	1.65	1.70	1.70	1.70	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	E	E	E	E	1.70	E	E
5	E	E	E	E	E	E	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.65	1.70	1.70	1.70	1.70	E	E	E	E	E	E
6	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	1.65	E	E	E	E	E
7	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.80	1.75	1.70	1.65	1.70	1.70	1.70	1.65	1.65	1.70	1.70	1.70	1.70
8	1.70	C	E	E	1.70	E	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E
9	E	E	E	E	E	E	1.65	1.70	1.70	1.70	1.70	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.65	E	E	E	E	E
10	E	E	E	E	E	E	1.65	1.70	1.70	1.70	1.70	1.80	1.80	1.70	1.70	C	C	E	E	E	E	E	E	E
11	E	E	E	E	E	E	1.70	1.65	1.70	1.70	1.70	1.70	1.70	1.75	1.75	1.65	I 1.70 C	1.65	E	E	E	E	E	E
12	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
13	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.90	2.00	1.75	1.70	4.80	2.00	1.70	1.65	E	E	E	E	E	E
14	E	E	E	E	E	E	1.65	1.65	1.70	1.70	1.75	1.70	1.70	1.75	1.75	1.70	1.70	1.70	E	E	E	E	E	E
15	E	E	E	E	E	E	E	1.70	1.70	1.70	B	4.70	3.80	2.00	1.90	1.70	1.70	1.70	1.70	E	E	E	E	E
16	E	E	E	E	E	E	1.65	E	1.70	1.75	3.60	1.90	1.75	1.70	1.70	1.70	1.70	1.65	E	E	E	E	E	E
17	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.70	1.70	1.80	1.95	1.80	1.70	1.70	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	1.65	1.70	1.70	E 2.30 S	1.90	1.70	1.75	1.70	1.70	1.70	1.70	1.70	1.70	1.65	1.70	1.65	1.70
19	1.70	E	E	1.65	E	E	1.70	1.70	1.75	2.00	2.60	2.00	1.80	2.00	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E
20	E	E	E	E	E	E	1.65	1.70	1.75	1.70	2.00	1.80	1.80	1.75	1.75	1.70	1.70	1.70	1.70	E	E	1.70	E	E
21	E	E	E	E	E	E	1.70	1.70	1.70	B	5.20	5.70	4.90	3.90	2.70	1.95	1.75	1.70	E	E	E	E	E	E
22	E	E	E	E	E	E	1.65	1.70	1.75	1.70	1.70	1.75	1.70	1.70	1.70	1.75	1.75	1.70	1.70	E	E	E	1.70	1.65
23	E	E	E	E	E	E	1.70	1.70	I 1.70 C	I 1.75 C	1.75	1.75	1.75	1.70	1.80	1.80	1.70	1.75	E	E	E	E	E	E
24	E	E	E	E	E	E	1.70	1.70	1.75	1.70	1.75	1.75	1.80	1.70	1.70	1.70	1.65	1.70	E	E	E	E	E	E
25	E	E	E	E	E	E	1.70	1.70	1.70	1.70	1.80	1.80	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E
26	E	E	E	E	E	E	1.70	1.70	1.65	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	E	E	E	E	E
27	E	E	E	E	E	E	1.70	1.70	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
28	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	1.70	E	E	E	E	E	E
29	E	E	E	E	E	E	1.65	1.70	1.70	1.65	1.70	1.70	1.70	1.70	1.70	1.70	1.70	E	C	E	E	E	E	E
30	E	E	E	E	E	E	1.65	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																								
No.	30	29	30	30	30	30	30	30	30	30	29	30	30	30	30	29	29	30	29	30	30	30	30	30
Median	E	E	E	E	E	E	1.70	1.70	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
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Sep. 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	2.80	2.95	2.85	2.85^{S}	I$_{3.00}^{RS}$	3.15^{FS}	I$_{3.15}^{RH}$	I$_{3.35}^{R}$	3.40	3.50	3.25	3.00^{V}	3.50	3.20	3.15	3.05	3.25	3.20	3.30	3.20	3.25	3.50	I$_{3.05}^{A}$	A
2	A	F	I$_{3.00}^{RF}$	I$_{3.05}^{F}$	RS	F	R	I$_{3.55}^{R}$	3.55	I$_{3.30}^{R}$	3.15	3.40	3.40	2.75	3.10	3.10	3.40	3.25	3.20^{R}	3.10	3.30	3.05	3.00	F
3	F	3.10^{F}	F	F	FS	3.20^{S}	I$_{3.40}^{A}$	3.40	3.40	3.55	3.35	3.20	2.90	3.10	3.15	3.05	3.45	I$_{3.25}^{A}$	I$_{3.10}^{A}$	I$_{3.20}^{R}$	I$_{3.30}^{R}$	I$_{3.05}^{F}$	R	R
4	R	F	3.20	3.20	3.30^{S}	I$_{3.20}^{S}$	I$_{3.20}^{A}$	3.20	3.30	3.40	3.50	3.30	3.20	3.00^{H}	3.20	3.35	3.30	3.15	3.20	3.10	U$_{3.20}^{R}$	3.15	3.30	3.20^{S}
5	3.10	3.10	3.00	3.20	3.15^{S}	3.35^{S}	3.40	3.50	3.40	3.25	3.50	3.20	3.25	3.30	3.20	3.30	3.55	3.25	3.20	3.20	3.15	FS	FS	3.00
6	3.05	3.00	3.00	2.95	3.00^{S}	3.25^{S}	I$_{3.50}^{RSU}$	3.50^{R}	3.55	3.70	I$_{3.55}^{A}$	3.00	3.15	3.25^{S}	3.25	3.30	3.25	3.30	3.20	3.35^{S}	3.15	I$_{3.10}^{F}$	3.20	3.00
7	3.00	2.90	3.00	3.25	3.20	I$_{3.25}^{RS}$	3.55	3.45	3.60	3.55	3.30	3.45	3.40	3.35	3.25	3.25	3.45	3.50	3.40	3.20	I$_{3.15}^{F}$	F	RS	FS
8	3.05^{S}	I$_{3.10}^{C}$	3.00	3.45^{S}	I$_{2.95}^{RS}$	3.30^{S}	3.25	3.35	3.55	3.65	3.20	3.50	3.35	3.30	3.45	3.15	3.30	3.20	3.25	I$_{3.50}^{R}$	3.30	3.15	2.90	2.85
9	I$_{3.00}^{F}$	3.00^{F}	3.45	3.55	2.80^{S}	3.05	3.45^{R}	3.35	3.40	3.20	3.35	3.50	3.35	3.10	3.40	3.30	3.25	3.40	3.30	3.20	3.00	I$_{2.90}^{RS}$	RS	R
10	R	I$_{3.00}^{R}$	2.95	3.40	3.05^{S}	3.10	U$_{3.25}^{R}$	3.50	3.60	3.50	3.30	I$_{3.40}^{R}$	3.25	3.40^{R}	3.30	C	C	3.15	3.35	3.15	3.35	I$_{3.05}^{R}$	3.25^{R}	3.05
11	3.05	3.10	3.15	3.05	3.15	3.10	3.50^{R}	U$_{3.85}^{R}$	3.60^{H}	3.40	3.20	3.45	3.45	3.40	3.40	3.25	I$_{3.35}^{C}$	3.10	3.30	3.15	3.10	3.20	2.90	I$_{2.95}^{R}$
12	2.95	2.95	3.05	3.00	2.90	3.00	3.20	3.20^{R}	I$_{3.50}^{A}$	3.60	I$_{3.30}^{A}$	I$_{3.00}^{A}$	I$_{3.05}^{A}$	3.20	3.15	3.30	3.30	3.25	3.40	3.15	3.15	R	A	RF
13	3.00^{F}	I$_{2.95}^{F}$	3.10	3.40	I$_{3.35}^{FS}$	2.90^{S}	3.50	3.35	3.60^{R}	3.50	3.40	I$_{3.30}^{A}$	3.35	3.00	3.25	3.45	3.35	3.50	3.20	3.15	3.10	3.15	3.10	3.15
14	F	F	F	FS	FS	FS	3.55	3.45	3.50	3.40	3.60	3.55	3.20	3.25	3.20	3.25	3.25	3.30	2.95	3.00	3.25	3.25	2.85	2.45
15	2.80^{S}	2,80	2.85	3.00	I$_{2.85}^{A}$	I$_{2.75}^{A}$	2.80	3.05	J$_{2.90}^{R}$	2.95	I$_{2.95}^{B}$	3.05	I$_{2.85}^{R}$	2.65	2.95	3.10	I$_{3.30}^{A}$	3.30	I$_{3.25}^{A}$	3.20	3.20	2.90	3.00	2.65
16	2.75	2.80	2.90	2.95	2.75	I$_{2.55}^{RF}$	3.00	3.30	3.45	3.50	3.10	3.10	3.15	3.30	3.30	2.95	3.20	3.25	3.40	3.15	2.90	2.80	2.85	2.70^{S}
17	I$_{3.00}^{RS}$	3.00	3.25^{FS}	I$_{3.15}^{FS}$	J$_{3.00}^{R}$	3.10	3.25	3.50	I$_{3.00}^{A}$	3.10	I$_{3.00}^{A}$	2.90	2.90	3.20	3.15	3.15	3.15	3.05	3.15	2.85	2.85	2.75	I$_{2.80}^{R}$	2.90^{S}
18	2.90	3.35^{R}	2.75^{F}	I$_{3.05}^{F}$	3.00	I$_{3.10}^{A}$	I$_{3.20}^{R}$	3.50	3.20^{F}	3.50	3.40^{S}	3.15	3.00	3.35	3.30	3.20	3.30	3.50	3.40	3.20	I$_{2.95}^{FS}$	I$_{3.00}^{FS}$	2.80	3.00
19	3.00	3.15	3.05	2.75	2.75	2.90	3.35	3.45	3.50	3.55	3.40	3.50	3.15	3.20	3.35	3.30	3.10	3.35	3.30	I$_{3.00}^{F}$	2.90	3.10^{S}	2.80^{S}	3.00
20	3.00	I$_{2.80}^{RF}$	2.90	2.90	2.75	I$_{3.00}^{RS}$	3.45	I$_{3.10}^{RR}$	3.30	3.60	3.40	3.20	3.30	3.30	3.30	3.20	3.30	3.30	3.40	3.15	3.20	3.00	3.00	2.90
21	2.95	2.85	2.70	2.80	3.10	3.20	3.50	3.60	3.40	I$_{3.30}^{B}$	3.35^{R}	3.25	3.35	3.30	3.20	3.30	3.30	3.35	3.55	2.90	2.90	3.00	2.95	2.80
22	3.00	2.75	2.65	2.75	2.75	3.05	3.50	3.40	3.25	3.25	3.45	3.00	3.15	3.10	3.10	2.75	2.65	3.25	3.15	2.95	2.65	2.90	2.70	I$_{2.90}^{A}$
23	I$_{2.95}^{A}$	I$_{3.05}^{R}$	3.15	3.05	2.80	3.05	3.00	2.85	I$_{2.65}^{C}$	I$_{2.30}^{C}$	2.05	1.90	2.80	2.35	2.60	2.85	2.95	3.30	2.90	2.50	2.60	2.65	2.80	2.90
24	3.15	2.90	I$_{2.75}^{A}$	2.75	I$_{2.95}^{A}$	2.85	3.05	3.40	3.20	3.40	3.35	3.20	3.25	3.20	3.40	3.25	3.30	3.30	3.35	3.30	2.95	I$_{2.95}^{RS}$	3.05	I$_{3.10}^{S}$
25	3.25^{S}	3.15	I$_{3.05}^{F}$	I$_{3.00}^{RS}$	I$_{3.10}^{FS}$	I$_{3.20}^{F}$	I$_{3.50}^{RS}$	3.60	3.30	3.35	3.60	3.30	3.05	3.00	3.00	3.30	3.50	3.45	I$_{3.10}^{A}$	2.65	I$_{2.90}^{S}$	3.05^{S}	I$_{2.85}^{A}$	I$_{2.85}^{A}$
26	2.80^{F}	FS	FS	F	I$_{2.80}^{F}$	I$_{3.05}^{F}$	3.40	3.40	3.35	3.50	3.50	3.20	3.30	3.20	3.35	3.15	3.20	3.35	3.45^{R}	3.75	2.60	2.60	2.95	2.85
27	I$_{2.90}^{R}$	FS	A	A	F	F	3.40	3.60^{R}	3.50	I$_{3.50}^{A}$	3.25	I$_{3.20}^{A}$	3.45	3.45	3.30	3.30	3.30	3.40	3.50	3.60	I$_{3.25}^{A}$	2.85	2.90	I$_{2.85}^{F}$
28	3.00	3.00	3.10	3.20	I$_{3.10}^{RS}$	3.30^{S}	3.55	3.25	3.35	2.95	3.55	2.80	3.25	3.30	3.35	3.40	3.45	3.40	3.25	3.30	3.10	2.65	2.70	3.00
29	2.95	2.85	2.90	2.95	3.10	3.45	I$_{3.30}^{RH}$	3.15	3.30	3.20	3.35	I$_{3.30}^{A}$	3.25^{R}	3.45	3.40	3.30	3.30	3.45	I$_{3.40}^{C}$	3.15	2.90	3.10	2.80	2.95
30	2.90	3.10	3.00	3.30	3.10^{S}	3.15	3.30	3.45	3.50^{H}	3.55	3.45	3.30	3.45	3.50	3.30	3.45	3.45	3.50	3.40	3.20	A	S	F	I$_{3.10}^{F}$
31																								
No.	25	25	26	26	26	27	29	30	30	30	30	30	30	30	30	29	29	30	30	30	29	26	24	24
Median	3.00	3.00	3.00	3.05	3.00	3.10	3.40	3.40	3.40	3.50	3.35	3.20	3.25	3.20	3.25	3.25	3.30	3.30	3.30	3.15	3.10	3.00	2.90	2.90
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F2

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

The Radio Research Laboratories, Japan

A 7

27

IONOSPHERIC DATA

Sep. 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	LH	4.00^{H}	4.00^{H}	4.25	4.25	I$_{4.10}^{R}$	3.80	I$_{3.60}^{L}$	3.55^{L}	I$_{3.50}^{L}$	L						
2								A	A	L	I$_{3.80}^{A}$	3.85	4.00^{R}	3.70	3.80	I$_{3.50}^{L}$	L	L						
3								A	I$_{3.80}^{L}$	4.20	I$_{3.90}^{A}$	3.90	I$_{3.80}^{A}$	4.05^{S}	I$_{3.80}^{A}$	3.70^{L}	L	A						
4								A	A	I$_{3.80}^{A}$	3.95	4.05^{L}	4.00	3.90^{R}	I$_{3.65}^{L}$	3.40	L	L						
5							L	L	3.70^{L}	I$_{3.85}^{L}$	4.00	3.90	3.70	3.80	I$_{3.75}^{LH}$	3.75	L	L						
6							L	A	A	3.85^{L}	I$_{4.00}^{A}$	4.15	3.95	I$_{3.80}^{S}$	3.65^{L}	L	L	L						
7							L	L	3.80^{L}	4.10	4.10^{L}	4.25^{L}	3.80	3.80	3.60	3.80	3.70^{L}	L						
8								L	3.80	3.80	3.90^{L}	4.10^{R}	A	A	A	3.65^{L}	3.45^{LH}	L						
9								L	A	L	I$_{3.80}^{A}$	I$_{3.80}^{A}$	3.75	I$_{4.00}^{L}$	3.60^{L}	3.55^{L}	3.60^{L}	L						
10							L	3.70^{L}	3.65	4.00^{L}	3.95	3.90	I$_{3.80}^{R}$	4.15	R	C	C	L						
11								L	A	I$_{4.10}^{A}$	I$_{4.10}^{R}$	I$_{4.00}^{R}$	4.10^{H}	I$_{3.85}^{R}$	R	L	C	L						
12							A	A	A	A	A	A	A	A	I$_{3.60}^{L}$	3.55^{L}	L	L						
13								L	L	I$_{3.80}^{L}$	I$_{3.80}^{L}$	I$_{3.75}^{A}$	4.05	3.60^{L}	I$_{3.65}^{B}$	3.60^{L}	L	A						
14								L	L	3.50^{L}	4.00^{L}	I$_{3.80}^{A}$	4.00	3.70^{L}	3.40^{L}	LH	L	L						
15								I$_{3.35}^{LH}$	I$_{3.50}^{RH}$	3.50	B	B	3.60	4.00^{H}	3.30	L	A	A						
16							L	L	3.45^{L}	3.70^{L}	3.65	3.85	3.50^{LH}	3.90	I$_{3.60}^{L}$	3.35^{L}	L	A						
17							A	A	A	3.60^{L}	I$_{3.50}^{A}$	3.70	3.60	3.85	3.75	3.60^{L}	L	L						
18							L	L	L	3.80	I$_{3.65}^{S}$	3.75^{L}	A	A	A	I$_{3.75}^{L}$	L							
19								L	L	L	3.80^{L}	I$_{3.70}^{L}$	3.55^{L}	3.75^{L}	A	L	L	A						
20								3.60^{L}	3.65	3.55^{L}	3.90	3.80^{LH}	3.90^{LH}	3.50^{H}	3.45	L	L							
21								L	L	B	B	B	B	L	I$_{3.35}^{L}$	L	L							
22								A	A	3.65	3.85	I$_{3.70}^{LH}$	I$_{3.65}^{L}$	3.45^{L}	L	L	L							
23								L	I$_{3.30}^{C}$	I$_{3.40}^{C}$	3.90	I$_{3.60}^{A}$	I$_{3.35}^{A}$	3.50	3.30	3.10^{L}	L							
24								L	L	L	3.80^{L}	3.80^{L}	3.65^{L}	3.75^{L}	4.00	A	A							
25								L	L	I$_{3.70}^{A}$	3.90	3.55	A	A	LH	3.60^{L}	L							
26								L	L	3.65^{L}	I$_{3.85}^{A}$	3.65^{L}	3.90^{L}	3.55	3.70^{L}	A	A							
27								L	L	A	A	A	A	L	L	L	L							
28								3.55	L	L	LH	L	L	L	L	L	L							
29									3.70	4.00	L	A	A	L	L	L	L							
30									L	L	L	L	L	L	L	L								
31																								
No.								4	11	21	23	23	21	21	19	15	4							
Median								3.60	3.70	3.80	3.90	3.80	3.80	3.80	3.60	3.60	3.55							
U.Q.																								
L.Q.																								
Q.R.																								

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

IONOSPHERIC DATA

Sep. 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							240	270	275	250	310^{R}	I$_{340}^{R}$	270	310	345	335	305	285						
2								I$_{250}^{A}$	255	295	I$_{290}^{A}$	295	295	425	345	310	280	280						
3								270	255	290	I$_{305}^{A}$	325	395	320^{S}	I$_{310}^{A}$	300	280	A						
4								I$_{295}^{A}$	290	280	265	315	335	I$_{340}^{R}$	335	295	295	295						
5							295	245	255	295	265	330	305	295	285	285	255	280						
6							245	I$_{250}^{A}$	260	245	I$_{280}^{A}$	370	310	285	300	295	295	280						
7							245	245	250	280	295	290	295	295	300	300	280	250						
8								295	250	245	310	275	295	295	295	320	295	285						
9								250	275	280	285	I$_{265}^{A}$	295	320	300	295	295	250						
10							290^{L}	250	245	265	295	300	320	295	R	C	C	280						
11								225	I$_{285}^{A}$	I$_{330}^{A}$	320	290	295	290	290	295	I$_{260}^{C}$	290^{L}						
12							280	290	I$_{285}^{A}$	280	A	A	I$_{360}^{A}$	I$_{315}^{A}$	310	285	290	265						
13								255	250	250	280	I$_{295}^{A}$	295	330	295	280	265	245						
14								265	280	280	275	280	335	300	320	295	280	255						
15								335	I$_{345}^{R}$	385	I$_{385}^{B}$	375	I$_{405}^{R}$	450	380	345	I$_{305}^{A}$	280						
16							345	250	275	290	345	305	335	310	300	375	295	260						
17							295	270	I$_{320}^{A}$	310	I$_{350}^{A}$	390	370	325	320	315	300	270						
18							285	255	285	290	280	330	365	300	285	285^{L}	275							
19								255	270	280	290	285	325	295	290	290	280	250						
20								300	295	255	285	330	305	305	305	275	265							
21								255	280	I$_{270}^{B}$	285	295	280	295	310	290	270							
22								280	270	290	270	335^{L}	300	310	300	325	345							
23								300	I$_{415}^{C}$	I$_{520}^{C}$	600	600^{A}	380	465	405	405	330^{L}							
24								270	260	245	250	290	290	285	270	270	270							
25								245	285	250	255	295	I$_{325}^{A}$	I$_{305}^{A}$	345	280	245							
26								255	285	255	255	295	290	300	285	285	295							
27								245	245	I$_{260}^{A}$	295	I$_{280}^{A}$	255	290	285	295	260							
28								305	250	290	245	395	285	265	250	275	250							
29									290	280	250	I$_{270}^{A}$	295	270	280	280	255							
30									245	250	255	290	260	255	255	250								
31																								
No.							9	28	30	30	29	29	30	30	29	29	28	17						
Median							285	255	275	280	285	295	300	300	300	295	280	280						
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Sep. 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	295	290	280	300	270	250	200	200^{H}	195^{H}	200^{H}	195	200	195	220	205	240	240	235	245	245	245^{A}	245	I$_{230}^{A}$	A
2	A	270	270	260	265	245	245^{A}	A	A	A	I$_{225}^{A}$	220	195	210	200	245	240	I$_{250}^{A}$	270	250	240	245	250	270
3	245	280	275	270	I$_{250}^{A}$	255	I$_{245}^{A}$	I$_{225}^{A}$	225	200	I$_{220}^{A}$	220	I$_{225}^{A}$	205	I$_{220}^{A}$	245	A	A	A	I$_{245}^{A}$	I$_{245}^{A}$	235	A	A
4	A	290	245	245	245	235	I$_{225}^{A}$	I$_{220}^{A}$	I$_{225}^{A}$	I$_{215}^{A}$	205	200	205	200	200	235	245	240	255	245	245	240	205	255
5	255	270	255	245	245	245	I$_{245}^{A}$	245	200	I$_{220}^{A}$	205	200	200	200	205^{H}	225	230	245	250	240	245	285	245	250
6	245	285	285	290	280	245	230	A	A	I$_{215}^{A}$	I$_{210}^{A}$	200	200	235	230^{A}	I$_{230}^{A}$	245	250	255	245	245	245	240	255
7	280	280	250	245	245	255	240	220	200	195	195	180	230	230	225	210	I$_{230}^{A}$	I$_{240}^{A}$	245	245	240	245	I$_{260}^{A}$	275
8	245	I$_{260}^{C}$	260	I$_{240}^{A}$	245	245	245	I$_{245}^{A}$	I$_{230}^{A}$	I$_{220}^{A}$	200	200	A	A	A	245	225^{H}	245	245	225	205	255	290	295
9	295	295	240	210	E$_{320}^{E}$	260	245	235	A	A	A	A	195	195	205^{H}	235	245	245	245	245	275	290	I$_{280}^{A}$	290
10	275	295	290	220	255	265	250	245	230	205	200	200	230^{A}	200	A	C	C	245	245	245	240	245	245	280
11	280	245	255	280	255	260	245	235	I$_{230}^{A}$	I$_{220}^{A}$	I$_{200}^{A}$	195	190^{H}	I$_{210}^{A}$	I$_{230}^{A}$	250	I$_{245}^{C}$	I$_{250}^{A}$	245	260	270	245	275	250
12	280	255	255	280	290	295	A	A	A	A	A	A	A	A	235	I$_{225}^{A}$	I$_{240}^{A}$	245	245	250	245	245	A	A
13	A	A	A	245	I$_{255}^{A}$	245	245	245	240	I$_{230}^{A}$	A	A	210	245	I$_{225}^{B}$	245	I$_{235}^{A}$	I$_{240}^{A}$	255	255	255	245	260	255
14	255	285	280	275	I$_{280}^{A}$	265	240	225	235	225	215	I$_{220}^{A}$	205	220	205	220	245	250	295	255	245	205	295	365
15	305	325	305^{A}	245	I$_{290}^{A}$	I$_{265}^{A}$	250^{A}	240^{A}	I$_{250}^{AH}$	245^{A}	B	B	245	210	285	A	A	A	A	255	255	I$_{270}^{A}$	290	305
16	305	305	280	270	275	350	I$_{275}^{A}$	245	230	210	240	220	205	220	240	285	I$_{275}^{A}$	I$_{260}^{A}$	245	245	I$_{280}^{A}$	285	290	320
17	245	255	245	I$_{280}^{A}$	270	250	A	A	A	235	I$_{230}^{A}$	225	230	225	220	245	245	245	245	295	260	250	I$_{270}^{A}$	290^{A}
18	295	245	A	E$_{255}^{E}$	I$_{260}^{A}$	I$_{260}^{A}$	I$_{250}^{A}$	245	220	210	I$_{215}^{S}$	220	A	A	A	230	240	250	270^{A}	270^{A}	355^{A}	255	E$_{305}^{E}$	275
19	265	255	I$_{265}^{A}$	325	E$_{325}^{E}$	295	250	245	255	I$_{245}^{A}$	220	I$_{200}^{A}$	215	230	I$_{240}^{A}$	245	250	I$_{245}^{A}$	240	I$_{265}^{A}$	285	245	I$_{265}^{A}$	260
20	250	250	295	310	I$_{295}^{A}$	I$_{260}^{A}$	265	250	240	220	205	195	200^{H}	205^{H}	245	245	245	255	240	245	245	255	250	265
21	280	295	310	310	280	240	240	245	230	B	B	B	B	260	I$_{240}^{R}$	255	250	245	230	240	290	255	250	290
22	260	315	345	310	340	260	230	A	A	230	200	195^{H}	190	245	235	250	270	245	230	245	290	280	I$_{290}^{A}$	I$_{300}^{A}$
23	I$_{280}^{A}$	I$_{255}^{A}$	250	A	A	A	255	275	I$_{250}^{C}$	I$_{240}^{C}$	205	I$_{250}^{A}$	I$_{245}^{A}$	245	I$_{260}^{AH}$	I$_{265}^{A}$	265	255	285	295	I$_{310}^{A}$	305	305	290
24	245	E$_{295}^{E}$	A	E$_{345}^{E}$	A	E$_{295}^{E}$	255	250	240	245	I$_{235}^{A}$	I$_{220}^{A}$	220	220	205	I$_{245}^{A}$	I$_{245}^{A}$	250	250	255	I$_{280}^{A}$	290	295	280
25	250	250	270	290	270	255	215	240	250	I$_{235}^{A}$	225	A	A	A	230^{H}	245	245	240	A	A	275	240	I$_{235}^{A}$	I$_{250}^{A}$
26	250	300	295	320	300	250	245	245	245	245	I$_{230}^{A}$	205	200	240	245	A	A	245	235	205	E$_{340}^{E}$	E$_{340}^{E}$	295	300
27	I$_{305}^{A}$	I$_{300}^{A}$	A	A	305	I$_{280}^{A}$	245	245	A	A	A	A	A	230	245	245	250	255	240	235	A	A	295	295
28	285	270	245	245	I$_{255}^{A}$	I$_{240}^{A}$	240	235	230	200	195^{H}	230	200	240	245	230	250	240	225	230	250	I$_{260}^{A}$	320^{A}	I$_{285}^{A}$
29	I$_{280}^{A}$	340^{A}	295	260	245	220	220	245	230	215	A	A	A	205	230	235	235	245	I$_{230}^{C}$	245	270	245	295	270
30	295	I$_{270}^{A}$	255	A	A	245	240	230	240	I$_{240}^{A}$	I$_{230}^{A}$	225	230	225	210	230	245	235	230	230	I$_{270}^{A}$	290	255	245
31																								
No.	27	28	26	26	25	28	28	25	23	25	23	22	23	26	27	27	26	28	27	29	28	28	27	27
Median	280	280	270	270	270	255	245	245	230	220	210	200	205	220	230	245	245	245	245	245	255	250	270	280
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

IONOSPHERIC DATA

Sep. 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	100	E	100	105	105	105	105	130	120	G	100	G	G	G	130	G	G	G	105	100	115	100	110	105
2	100	100	100	145	120	115	110	110	110	105	100	105	110	G	G	100	100	100	100	100	105	120	120	100
3	110	100	110	130	125	130	120	115	110	110	110	120	135	145	130	145	140	125	115	115	110	105	100	100
4	100	100	100	135	115	120	110	105	105	105	105	105	100	G	G	G	145	130	120	E	100	E	E	105
5	105	110	110	105	110	120	110	115	110	105	105	105	120	120	G	G	100	G	E	E	E	110	105	105
6	105	E	E	105	110	130	110	110	110	105	105	105	105	105	105	100	145	120	105	120	110	110	105	105
7	105	E	135	145	130	125	105	120	110	105	110	G	G	G	G	140	115	110	105	105	105	100	105	105
8	E	C	110	110	125	120	145	120	120	120	110	110	110	110	105	110	100	100	100	100	E	115	120	110
9	105	110	100	100	105	100	105	135	120	120	120	110	110	110	G	160	145	140	125	120	115	110	105	105
10	105	105	110	105	110	110	135	135	120	125	125	G	105	105	105	C	C	100	100	110	100	105	100	105
11	105	100	100	115	130	-145	135	120	120	120	110	110	110	120	110	155	C	135	130	130	125	120	115	115
12	110	115	145	145	130	E	145	135	125	125	120	115	110	110	110	110	115	130	110	105	105	110	110	110
13	105	105	105	105	105	105	160	130	130	130	120	115	110	175	B	105	105	105	105	100	100	100	120	120
14	115	115	105	110	105	105	105	100	135	130	125	125	130	115	G	105	105	105	E	125	100	105	105	E
15	140	140	125	135	130	120	110	105	125	115	B	B	B	G	170	145	125	125	120	110	105	105	105	E
16	E	105	105	105	140	E	115	125	130	G	B	G	G	140	135	180	145	130	130	125	110	110	E	E
17	E	110	110	110	E	E	125	130	130	130	120	145	G	G	135	120	115	110	130	110	115	105	105	100
18	100	100	100	100	125	120	115	110	110	110	105	105	100	100	100	105	145	130	120	115	120	115	110	110
19	110	110	105	105	105	E	140	130	125	120	125	105	115	125	120	125	120	115	105	110	110	E	110	120
20	115	100	E	120	120	115	115	105	105	105	105	105	G	G	160	165	145	130	120	120	110	105	E	105
21	105	105	100	100	100	E	140	130	120	B	B	B	B	B	110	105	105	145	100	105	100	E	100	E
22	105	105	E	E	105	E	145	130	120	120	115	100	120	100	100	175	145	130	100	120	E	120	115	115
23	115	110	110	105	105	105	140	145	C	C	125	120	120	130	150	145	145	135	130	E	135	E	105	120
24	E	110	110	110	110	110	110	110	145	130	125	120	120	115	110	105	105	140	120	120	145	105	105	100
25	105	100	100	E	105	E	G	G	145	120	110	110	105	105	105	120	145	140	125	120	115	110	105	110
26	100	105	145	110	120	E	G	170	145	140	130	125	130	G	G	135	130	125	120	115	120	120	E	110
27	105	110	110	110	130	115	145	130	125	120	115	115	110	120	120	G	140	130	130	120	120	120	110	E
28	E	105	105	110	110	110	105	110	110	110	110	170	110	G	165	145	140	G	E	145	155	110	E	125
29	120	120	110	115	135	E	130	145	145	145	130	120	120	145	G	145	130	135	C	135	140	E	E	E
30	125	115	110	110	110	115	G	155	145	135	120	130	120	G	G	G	G	145	135	120	120	115	110	115
31																								
No.	25	26	27	28	29	21	27	29	29	26	27	24	23	19	20	24	26	27	26	27	27	25	24	24
Median	105	105	110	110	110	115	115	125	120	120	115	110	110	105	115	130	130	130	120	115	110	110	105	110
U.Q.																								
L.Q.																								
Q.R.																								

h'Es

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

The Radio Research Laboratories, Japan

A 11

IONOSPHERIC DATA

Sep. 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	f	f2	12	h	h		1				h12				f	f	f2	f2	f2	f2
2	f2	f	f	ff	f2	f3	c5	c2	c2	12	12	12	c			12	12	13	f3	f2	f2	f	f	f2
3	f2	f2	f2	f	f3	f3	c3	c4	c2	c	c2	h	h	h1	h2	h	h2	h2	f2	f4	f2	f3	f3	f2
4	f3	f	f	f	f3	f	c4	12	12	12	12h	12	12				h	h2	f3		f			f2
5	f2	f2	f2	f2	f	f5	13	c3	c3	c2	13	12	h12	h12			12					f2	f	f2
6	f			f	f	f	c4	c2	c2	c2	c2	1	1	1	13	12	h12	h21	f2	f2	f2	f2	f2	f2
7	f2		f	f	f2	f2	12	c3	c	c	c					h12	c2	c5	f2	f	f	f2	f2	f2
8			f	f3	f	f	h	h4	h2	h	c2	c	c2	c2	c2	c	1	1	f	f		f3	f	f2
9	f2	f2	f2	f	f	f2	1	h2	h2	h2	h2	c2	c	c		h	h2	h4	h2	f	f2	f2	f2	f
10	f2	f2	f	f	f2	f	h2	h2	h	h	h		1	1	12			12h	f	f2f2	ff	f	f	f2
11	f3	f	f	f	f	f	h3	h2	h2	h2	c	c	c	h	c2	h		h2	f3	f3f2	f3f	f3	f2	f2
12	f2	f2	f	f	f		h5	h2	h2	h2	h2	c2	c2	c4	c2	c2	c3	h2	f2	f2	f3	f2	f3	f7
13	f5	f5	f4	f2	f3	f2	hc	h	h2	h	h	c2	c2	h1		c2	13	13	f5	f4	f2	f2	ff3	ff2
14	ff2	ff	f2	f2	f2	f2	12	12	h	h	h	h21	h	c2		12	1	1		f2	f	f	f	
15	f4	f4	f2	f	f7	f4	c2	14	h2	c2					h	h2	h2	h51	f3	f3	f3	f2	f2	
16		f2	f	f2	f		c3	h	h					h2	h	h	h2	h3	f	f	f3	f		
17		f3	f3	f5			h31	h5	h41	h	h2	h			h	h2	c2	12	f	f2	f2	f2	f3	f2
18	f2	f2	f3	f	f2	f3	12	c	12	12	12	12	13	1	12	12	h	h4	f7	f3	f3	f2	f2	f
19	f2	f2	f4	f2	f2		h	h2	h	h	h	12	c	h	h2	h2	h3	13	f2	f2	f2		f2	ff
20	f	f		f4	f4	f3	c3	13	12	12	1	1			h	h	h2	h3	f2	f	f	f2		f
21	f	f	f	f	f		h2	h2	h2						c	1	1	h1	f	f2	f2		f3	
22	f	f			f		h3	h4	h3	h3	c	12	h	12	1	h1	h21	h21	f	f2		f2	f4	f4
23	f4	f3	f2	f2ff	f3	f3	h3	h2			h	h2	h	h	h	h	h1	h2	f2f		f3		f	f4
24		f2	f5	f2	f3	f2	c3	12	h2	h2	h2	h2	h	c2	c2	14	15	h	f3	f7	ff2	f2	f2	f
25	f	f2	f		f				h	h2	c2	c2	c3	c3	12	h1	h2	h5	f4	f6	f2	f2	f2	f3
26	f2	f2	ff2	f	f2			h	h2	hc	h2	h1	h12			h2	h3	h2	f7	f2	f3	f		f
27	f3	f4	f4	f7	ff2	f3	h	h2	h3	h4	c2	c3	c2	h2	h2		h3	h5	f7f	f4f2	f6f2	f4f2	f2	
28		f	f2	f2	f2	f2	f5	f3	f3	13	c	h	h		hc	h1	h			f	f2f	f3		f2
29	f3	f2	f	ff	f		h2	h2	h	h1	h2	h4	h2	h1		h	h	h		f3	f			
30	f2	f3	f3	f7	f3	f2		h2	h2	h2	h2	hc2	h					h2	f	f	f3	f2	f	f
31																								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation

IONOSPHERIC DATA

Sep. 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	I 3.5S	3.4	3.4	3.1	3.4	3.4	U 4.7S	6.1S	7.1S	I 7.5S	J 4.7R	U 6.1R	6.0	I 6.4B	U 5.8R	5.7	6.0R	7.2	I 7.3S	U 6.6S	6.1	5.5	3.6S	J 4.0S
2	3.8S	3.9S	J 4.0S	3.9F	3.8S	3.6	5.4	6.1S	I 5.5A	5.6R	6.4	J 6.4S	5.9	J 5.4R	5.8R	J 6.3S	5.9	5.6	6.1	7.0S	5.7	4.9	4.8S	4.5
3	4.1S	4.1	4.0S	J 3.7S	4.1	3.8	4.5S	6.1S	6.2	6.1	6.0	I 6.5A	5.9	5.9	6.9	6.7	6.5	J 6.6S	I 7.0A	U 6.9S	5.5S	A	A	U 4.1S
4	U 4.4S	4.2	4.1S	4.0	3.4	3.3	4.6	6.1	6.8R	J 7.2S	6.4R	5.6	6.3	5.7	5.8	6.4	J 6.1R	5.9	U 6.9R	I 7.0R	I 6.2S	5.6	4.9	I 4.4S
5	4.1	4.1	3.6	I 3.2A	3.1	3.9S	5.1	6.9	6.6	6.5	7.4S	J 6.7R	7.9R	7.3	6.7	6.7	5.7	5.3	6.0	U 7.3S	5.7	J 4.9S	I 4.2A	U 3.4S
6	I 3.4F	3.5F	I 3.2F	I 3.5F	3.5	J 3.6S	5.2	6.2	6.6	6.3	6.3R	5.7S	7.2	J 8.0S	I 7.9S	J 6.6R	6.0	6.9	I 7.2S	I 6.6S	J 5.4S	I 4.6S	J 4.2S	I 4.4S
7	4.2S	U 3.9S	U 3.9S	3.5	3.4	U 3.8S	5.6	7.0S	I 6.2R	5.4	5.5	6.7	6.5	6.8	6.5	6.5	6.9	6.3	U 5.7S	J 6.4S	U 5.0S	J 4.8S	4.6S	I 4.9S
8	I 5.0F	I 4.6F	I 4.5S	3.2	3.1	3.4S	U 4.4S	J 6.3S	J 7.6S	6.4	6.3R	7.4	7.0	6.9	6.6	6.4	6.6	6.9	7.3S	6.9	4.7S	U 3.8S	3.8S	U 3.5S
9	3.4S	U 3.7S	I 3.8S	2.4	2.1	U 2.8R	J 4.9S	6.0	6.6	I 7.6S	J 8.2R	8.3	U 7.5R	5.9	J 7.3R	6.8	6.4	6.3S	6.4	J 6.7S	J 5.5S	F	A	F
10	F	F	I 3.7F	3.1F	I 2.9F	I 3.1F	J 4.5S	I 6.6S	I 7.0S	6.1R	5.9S	U 6.1R	J 7.4R	J 6.4R	6.3	5.9	5.7	J 5.6R	I 7.2S	I 7.3S	J 6.5S	I 4.4S	I 4.1S	J 4.2S
11	I 4.2S	J 4.1S	3.9S	3.5S	3.4	U 3.6S	5.7	6.1	6.5	5.4	U 5.7S	7.0	I 7.4R	6.5	I 6.2A	6.3	J 5.6R	6.2	J 7.5S	I 7.4S	5.7S	5.3	5.1S	I 4.9F
12	4.8S	U 4.4S	J 4.3S	U 3.8S	I 3.8S	3.8S	4.9	6.2	5.9	5.7	5.6	I 5.8R	I 6.4B	J 6.7R	J 6.5R	6.8	7.1	6.8	6.7	J 6.5S	5.2S	J 4.4S	J 4.5S	J 4.7S
13	4.4	I 4.2S	I 4.2S	3.6S	2.6	2.9	4.5S	5.1	6.4R	5.5	5.6	J 6.3R	6.3R	7.0	7.0	7.3	6.4	5.5	5.8	6.7	J 5.4S	J 4.9S	I 4.8S	I 4.3S
14	U 3.4S	I 3.7S	U 3.7S	U 3.8S	I 3.6A	3.6S	U 4.7S	J 6.5S	6.3	6.5	6.5	J 6.1R	5.3R	6.7	J 7.7R	J 7.8S	I 7.5S	U 7.6S	7.1S	J 8.1S	I 7.1S	5.8	5.0S	I 4.2S
15	J 4.9S	J 5.1S	4.9S	5.8	I 5.1F	I 4.6F	J 4.3S	J 5.4R	5.7R	5.3	I 5.6B	I 6.0B	I 5.6B	I 4.8B	J 5.1R	5.5	5.7	I 5.5A	5.9	J 6.5S	U 4.0S	I 3.6S	3.5S	3.6F
16	3.5	3.6	I 3.8F	3.5	3.2	U 3.5S	J 4.0S	7.0	6.3	5.6H	J 5.5R	6.0	6.3	6.1S	5.9	5.5	7.0	U 7.3S	I 6.8S	5.4S	U 4.0S	I 4.3S	I 4.4S	I 4.2S
17	U 4.4S	U 4.4S	3.6	3.0	3.3	J 3.5S	U 5.2S	6.6	5.3S	5.5	6.3R	6.3	6.9	7.7S	6.6	6.4R	6.5	6.4R	U 7.3S	6.5S	J 6.5S	U 5.0S	I 5.0S	5.0F
18	4.9	5.3F	I 3.1S	2.7	3.0	U 3.6S	5.2	5.9	6.9	7.6S	6.4	6.0	5.3	6.9	7.1	6.6	6.4	6.4	6.0	I 5.0A	A	FS	3.9S	I 3.7S
19	U 4.0S	U 3.8S	3.4	3.2	3.0	3.0	U 4.7R	6.8	6.1	6.8	6.9	J 8.2R	7.8R	J 8.0R	J 7.9S	6.6	6.4	7.1S	I 6.8S	6.1	J 5.4S	I 5.5F	I 5.2F	U 4.5S
20	J 4.3S	3.9	3.8	3.8S	I 3.7F	I 3.8F	4.6S	I 6.7S	7.1	6.6	5.7	6.3R	6.4	J 6.2R	6.5	6.9	6.4	J 6.5S	6.7	6.2	5.3	5.0	4.4	J 4.0S
21	I 3.9R	U 3.5R	U 3.3R	3.4	3.6	4.0	5.4	6.4R	6.8	B	B	B	B	I 7.0B	I 7.2C	J 7.6R	J 7.9S	U 7.5S	U 7.3S	U 4.7S	I 4.5S	U 3.9S	J 4.3S	U 4.0S
22	I 3.8C	3.5	U 3.2S	3.4R	3.6S	U 3.7S	5.0S	6.1	6.8	9.4	9.9S	6.8	J 8.0R	7.8	J 7.6R	J 7.5S	8.2R	I11.0C	8.5	U 4.5S	U 4.6S	I 4.7C	U 4.3S	4.6
23	J 5.1S	I 3.4C	I 3.3F	3.1	3.1S	3.1S	4.0	6.9S	9.6	C	C	7.1S	9.9	8.4R	7.4S	C	C	C	C	U 3.4S	U 3.9S	J 4.2S	I 4.2S	I 4.2S
24	U 4.0S	J 2.8R	2.6	2.6	2.7	3.0	5.0S	U 7.4S	9.4	10.1S	9.1S	I 7.8R	I 7.6A	7.1	6.8	6.4	6.9	7.2	I 6.9C	J 5.6S	A	A	F	F
25	3.5F	I 3.6F	3.6F	3.2F	3.5	I 3.8F	5.3	U 6.1S	J 6.5R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	U 7.4S	U 7.7S	7.8	6.7	6.8	6.9	6.6	U 7.1S	U 9.5S	9.0S	6.2S	A	S	A	I 3.2A
27	I 3.0F	I 3.0A	I 3.0A	3.0	J 2.7R	J 3.0R	5.5S	6.4R	6.7	C	C	C	C	C	C	C	C	C	C	5.4	I 4.6A	I 3.6F	I 3.4A	3.4
28	3.4	3.5	3.4	3.2	2.6	U 3.5S	5.8S	5.6	J 8.0S	7.2	J 8.2S	I 8.4C	8.9	J10.3R	J 8.1R	7.2	6.9	I 7.6S	U 7.1S	5.9S	I 4.8S	3.4	I 3.4S	U 3.7S
29	3.4	I 3.5A	U 3.7S	3.3	U 3.5S	I 3.8S	J 4.7S	I 6.6S	J 7.8S	J 8.2S	J 7.5S	J 8.3R	7.2	J 8.5R	7.1	7.1	6.6R	J 8.5S	I 8.0S	U 4.0S	U 3.6S	I 3.6S	3.5S	I 3.7F
30	U 3.7S	U 3.6S	I 3.4A	3.4	3.5	3.3	J 6.0R	I 6.8S	I 6.8R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
No.	28	28	29	29	29	29	29	29	29	25	25	26	26	27	27	26	26	26	26	28	25	23	24	26
Median	4.0	U 3.8	U 3.7	3.4	3.4	3.6	4.9	6.3	6.6	6.5	6.3	6.4	6.8	6.8	6.8	6.6	6.4	6.7	U 7.0	6.5	5.4	4.7	4.3	U 4.2
U.Q.	4.4	4.2	4.0	3.6	3.6	3.8	5.4	6.8	7.0	7.3	7.4	7.6	7.5	7.7	7.3	6.9	6.9	7.3	7.3	6.9	5.7	5.0	4.8	4.5
L.Q.	3.5	3.5	3.4	3.1	3.0	3.2	4.6	6.1	6.2	5.6	5.7	6.0	6.3	6.2	6.3	6.4	6.0	6.2	6.4	5.5	4.6	3.9	3.8	3.7
Q.R.	0.9	0.7	0.6	0.5	0.6	0.6	0.8	0.7	0.8	1.7	1.7	1.6	1.2	1.5	1.0	0.5	0.9	1.1	0.9	1.4	1.1	1.1	1.0	0.8

foF2

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

The Radio Research Laboratories, Japan

K 1

IONOSPHERIC DATA

Sep. 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								S	L			B	U4.6R	B	B	B	B	L						
2									A	A	4.5L	A	A	S	S	L	L	L						
3							A	A		A	4.4L	A	U4.6L	4.6	4.6	L	A	A	A					
4								L	A	A	L	B	B	U4.5L	L	4.2L	B	L						
5								L	L	L	4.5L	L	4.6L	4.5	L	L	L							
6									L	A	4.5L	A	A	S	4.5	L	S							
7								L	L	L	S	4.5L	4.5L	4.6L	S	A	A	A						
8								L	A	A	L	B	L	L	L	A	3.7L	L						
9								L	L	A	L	4.6L	A	4.5S	4.6L	L	L							
10								L	L	L	4.5S	S	S	L	L	L	S							
11								A	L	L	S	S	S	S	A	L	S							
12								L	L	L	L	R	B	A	A	A	L	L						
13									L	L	A	A	A	A	B	S	A	A						
14									L	L	S	B	L	S	B	L	L	S						
15								A	4.0L	4.4L	B	B	B	B	U4.4S	S	A	A						
16								A	A		B	S	L	L	S	S	L							
17								L	S	L	4.6L	L	B	B	U4.5S	A	A	A						
18							A	L	A	A	AS	A	A	B	L	L								
19								L	L	L	A	B	4.8L	L	B	L	A	A						
20							A	L	L	L	L	4.8L	U4.8L	L	L	L	L							
21									L	B	B	B	B	B	C	B	L							
22									L	4.6L	4.6L	L	4.7L	L	L	L	L	C						
23								L	4.2L	C	C	5.0S	S	L	S	C	C	C	C					
24								L	L	L	A	A	A	U4.5L	A	A	A	A	C					
25									A	C	C	C	C	C	C	C	C	C	C					
26							C	C	C	A	A	A	A	L	S	A	A	A						
27									L	C	C	C	C	C	C	C	C	C	C					
28							A		L	A	L	C	S	L	L									
29								L	L	L	L	L	L	4.6L	L	L	L							
30									L	C	C	C	C	C	C	C	C	C	C					
31																								
No.									2	2	7	4	7	7	5	1	1							
Median									4.1	4.5	4.5	4.7	4.6	4.5	4.5	4.2	3.7							
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

Sep. 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						S	S	S	B	A	B	B	B	B	B	B	B	A	S					
2						S	A	A	A	A	S	A	A	A	R	R	A	B	B					
3						S	A	A	A	A	A	A	S	I3.35S	3.25S	I2.95S	B	A	S					
4						S	S	B	A	A	A	B	B	S	R	S	B	S	S					
5						S	S	A	A	A	S	S	S	S	R	R	I2.60R	R	S					
6						S	A	A	B	A	A	S	A	S	B	S	R	B	S					
7						S	S	A	B	S	S	S	S	S	I3.20S	3.00	R	A	S					
8						S	S	2.55	R	A	S	B	R	A	R	A	B	R	S					
9						S	S	A	U2.85R	S	S	A	A	S	U3.25R	I3.00S	R	A	S					
10						S	S	S	A	A	S	S	S	A	A	S	A	S	S					
11						S	S	I2.40A	I2.80B	A	S	S	S	S	S	B	S	B	S					
12						S	S	B	B	B	B	B	B	A	S	A	A	S	S					
13						S	S	S	R	A	B	S	A	A	B	A	A	A	S					
14						S	B	I2.50B	I2.90B	S	S	B	S	S	B	S	R	S	S					
15							S	R	B	B	B	B	B	B	B	S	U2.60S	A	S					
16							A	A	A	S	B	S	S	S	R	B	B	S	S					
17							S	S	S	S	S	B	B	B	S	S	B	S	S					
18							A	A	A	A	A	A	S	B	A	B	B	S	S					
19							B	A	B	S	S	B	B	S	B	A	A	A	S					
20							S	S	A	S	B	B	B	S	S	B	2.65	A	S					
21							B	B	B	B	B	B	B	B	C	B	B	S	S					
22							B	R	R	B	A	R	B	S	B	B	B	C	S					
23							S	S	I2.75B	C	C	A	A	R	S	C	C	C	C					
24							B	S	A	U3.20S	A	A	A	A	A	R	A	A	A					
25							S	R	A	C	C	C	C	C	C	C	C	C	C					
26							C	C	C	A	A	A	A	S	S	B	S	B	S					
27							S	B	S	C	C	C	C	C	C	C	C	C	C					
28							S	S	A	A	B	C	S	B	B	S	B	S	S					
29							S	S	S	S	S	S	S	S	S	B	S	S	S					
30							B	S	B	C	C	C	C	C	C	C	C	C	C					
31																								
No.								3	4	1				1	3	3	3							
Median								U2.50	U2.80	U3.20				U3.35	U3.25	U3.00	U2.60							
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Sep. 1963

foEs

135° E Mean Time (G.M.T. +9h)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	E	S	S	S	3.0	3.3	B	B	B	B	B	B	B	3.1	3.1	3.1M	S	S	S	S
2	S	2.9M	3.3	2.5M	E	3.7	3.7	8.6M	J 7.1	4.9Y	4.1	J 8.0	5.6	3.3	2.8G	2.8G	3.3Y	B	B	S	S	S	2.4S	S
3	S	S	S	2.3S	2.4	S	4.6	4.8M	5.7	5.2M	4.1S	8.0M	3.2G	S	G	S	4.9	7.0M	8.0M	J 7.8	J 8.4	7.1M	J 7.1	3.1
4	S	S	E	E	2.1	2.1	S	B	5.9M	J 5.0	5.6M	J 5.4Y	B	S	2.9G	2.6G	B	2.5	S	S	2.2	3.0M	S	5.4M
5	3.3M	4.0M	4.1M	4.2S	2.9M	2.4S	J 3.8	3.4	3.8	4.3	3.3G	S	S	S	3.0G	2.5	G	2.9	S	2.1	S	2.2	4.3M	S
6	S	2.5M	E	E	1.8	2.4S	J 3.4	3.8	3.5	7.6M	4.2	5.4	4.9M	5.4Y	B	S	3.1	3.6	S	2.4	3.1M	3.3	2.4	2.4
7	S	S	S	2.1	1.9	S	3.1	3.3	B	S	S	3.0G	2.9G	S	S	J 4.4	5.9M	4.4M	5.7M	J 3.8S	5.7M	J 5.0S	5.2M	J 7.9
8	3.2M	3.1M	3.7S	2.5M	J 3.4	S	3.2	3.2	4.4	5.4	S	B	G	4.1	3.0G	3.8	B	G	S	S	S	S	3.4M	3.0M
9	S	S	S	1.9	B	S	J 2.3	3.0	4.1	5.5M	G	5.9M	4.9S	G	G	S	3.1	J 2.5	3.1	S	3.2Y	3.2	J 6.8S	3.7M
10	3.3M	J 2.4	3.1M	J 4.5	3.1	2.4	S	S	3.1	4.0S	G	S	S	3.7	3.5	S	3.3S	2.6	2.4	J 2.5	J 2.5	3.1M	2.5	3.3M
11	3.5M	4.6M	2.1	E	2.4	S	2.3	J 4.2	3.8	4.3	S	S	S	S	6.7M	B	S	B	S	6.0M	4.0M	S	3.3M	2.5M
12	S	3.1M	2.4M	2.5	2.4	S	2.5S	3.0	3.3S	3.4S	4.2	5.0M	B	5.9M	4.8S	J 4.5	2.9	3.1M	4.0M	3.8M	3.9M	3.5M	3.3M	S
13	3.0M	3.0M	3.0M	2.7M	2.4	2.4S	S	J 3.1S	3.0	3.7	5.9M	5.3M	5.9M	6.5M	B	4.1S	4.0M	5.5M	4.4M	3.4	2.4	S	S	S
14	3.0M	2.9M	S	J 3.2	5.8M	S	B	B	B	3.7S	S	B	3.8	S	B	S	G	S	S	S	S	S	S	2.4
15	2.2	S	3.1M	3.0M	J 3.2S	J 3.2	J 2.6	4.1M	3.0	B	B	B	B	B	B	J 4.1	J 6.8	6.8M	4.8S	S	J 3.5	2.5M	3.2M	S
16	2.5M	S	2.3M	1.9M	2.1	S	J 3.5	5.5M	5.5M	4.1S	B	S	4.1S	S	G	3.2S	3.5S	3.2	3.4Y	3.3	S	S	S	S
17	S	S	E	S	2.2	2.3	S	3.3	3.5S	S	S	B	B	B	S	6.1M	5.7M	8.0M	D 3.4S	J 4.2	S	S	3.2M	4.0M
18	3.1M	S	S	E	E	2.5	J 4.8	3.2Y	J 4.3	J 4.9	4.1S	6.0M	J 5.4Y	B	4.1S	B	B	2.6	J 5.0	J 7.1S	J 4.4	4.1M	3.2M	3.3M
19	J 2.5	2.8M	2.4	2.1	2.0	S	B	2.9	4.0	S	4.9M	B	B	S	B	3.5S	J 4.2	3.9S	7.7S	6.1S	6.2M	3.2M	4.1M	S
20	S	S	E	E	E	S	4.1M	S	3.0	S	B	B	B	S	S	3.2	3.0	3.5	S	S	S	S	S	S
21	S	S	S	B	B	S	B	B	B	B	B	B	B	B	C	B	B	3.1M	S	2.3M	S	S	S	S
22	C	S	S	B	E	S	B	J 3.4S	3.3	4.7M	J 4.4	3.2G	B	S	B	B	3.0	C	S	S	3.2M	C	S	2.4S
23	S	C	S	S	2.0S	2.2	S	2.9	3.3S	C	C	4.6S	3.7S	3.2G	S	C	C	C	C	2.2	3.3M	3.2M	S	S
24	S	S	S	E	E	S	B	G	3.7S	3.5S	4.8	7.1M	9.2M	4.9	6.6M	5.5	4.8M	5.2M	C	5.8M	J 6.2	5.6M	2.8	3.2
25	3.2M	S	1.9	J 3.4	J 2.5	2.1	S	G	3.3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	J 9.2Y	5.8	5.8M	J 7.8	G	S	J 4.9	5.8	6.7	7.1S	5.4M	5.4M	U 4.5S	4.1S	4.0S
27	S	J 4.2	3.5M	2.5M	2.5M	3.0M	S	B	S	C	C	C	C	C	C	C	C	C	C	3.4M	J 6.2	3.6M	J 4.0	S
28	3.3M	J 2.4	3.4M	3.2M	J 3.4	3.9S	J 5.4	5.6M	3.8S	4.7M	B	C	S	B	B	S	B	S	S	S	S	S	S	S
29	S	3.2M	2.5	S	S	S	S	S	S	J 4.2S	S	S	S	S	S	3.7	S	S	3.4	S	S	S	S	S
30	2.1M	2.3M	5.7M	J 2.5	9.1M	3.2M	4.2S	S	3.5S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
No.	13	14	19	23	26	14	15	20	24	20	14	13	13	10	12	15	18	20	13	18	17	15	17	14
Median	3.1M	3.0M	2.5	2.5	2.3	2.4	3.5	3.3	3.6	4.5	4.2	5.4	4.9	3.9	G	3.8	3.4	3.4	4.4	3.6	3.9	3.3M	3.3M	3.2M
U.Q.	3.3	3.2	3.4	3.0	2.9	3.2	4.2	4.2	4.2	5.1	4.9	6.6	5.8	5.4	4.4	4.5	4.9	5.4	6.4	5.8	6.0	4.5	4.2	4.0
L.Q.	2.5	2.5	1.9	E	1.8	2.3	2.6	3.0	3.3	3.8	4.1	4.8	G	G	3.0G	3.2	3.0	2.8	3.2	2.5	3.2	3.1	3.0	2.5
Q.R.	0.8	0.7	1.5		1.1	0.9	1.6	1.2	0.9	1.3	0.8	1.8			1.4	1.3	1.9	2.6	3.2	3.3	2.8	1.4	1.2	1.5

foEs

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Sep. 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	S	S	S	S		S	S	S	E 3.0R	E 3.3R	B	B	B	B	B	B	B	2.6	2.6	2.3	S	S	S	S
2	S	2.1	2.3	E		2.0	2.2	3.0	A	4.3	3.9S	5.6	4.6	E 3.3S	E 2.8S	E 2.8R	2.8	B	B	S	S	S	S	S
3	S	S	S	2.0	1.8	S	4.0	4.0	4.2	4.6	4.1S	A	E 3.2S	S		S	4.6	5.0	A	5.6	4.2S	A	A	2.6
4	S	S			E	U 1.9S	S	B	5.0	4.4	4.1	B	B	S	E 2.9S	2.6G	B	2.5	S	S	2.2	2.1	S	2.6
5	2.2	2.8	1.9	A	2.5	2.2	3.5	3.4	U 3.8S	4.0	E 3.3S	S	S	S	E 3.0S	E 2.5R		2.6	S	E	S	E	A	S
6	S	E			E	S	3.2	3.4	3.5	5.2	3.7	5.1	4.8	S	B	S	U 3.0S	3.1	S	2.1	2.0	2.7	1.9	E
7	S	S	S	2.1	E	S	2.7	3.2	B	S	S	3.0G	E 2.9S	S	S	4.4	5.2	3.9S	5.2	2.4	2.6	2.6	2.8	A
8	1.8	2.0	1.9	1.9	2.6	S	2.7	3.0	4.3	4.4	S	B		4.0	E 3.0R	3.8	B		S	S	S	S	E	2.0
9	S	S	S	E	B	S	2.2	3.0	U 3.8S	4.6		4.1	4.7			S	3.0	2.5	2.6	S	2.7	2.7	A	2.7
10	2.6	1.6	1.8	2.1	2.6	2.2	S	S	3.1S	3.9		S	S	E 3.7S	E 3.5S	S	E 3.3S	2.5	2.4	2.2S	2.5S	E	E	2.2
11	2.7	2.8	E		E	S	S	4.1	3.7	U 4.0S	S	S	S	S	A	B	S	B	S	2.6	2.7	S	2.1	1.8
12	S	2.5	1.9	1.8	E	S	2.5	2.9	E 3.3S	E 3.4S	B	R	B	5.0	4.8	4.4	2.8	2.1	2.7	3.5	2.6	2.6	2.2	S
13	2.5	2.0	2.0	2.6	1.7	S	S	2.8	E 3.0S	3.7S	5.3	5.0	5.2	4.6	B	E 4.1S	3.9	4.4	3.1	2.6	2.2	S	S	S
14	2.5	E	S	1.8	A	S	B	B	B	E 3.7S	S	B	3.8	S	B	S		S	S	S	S	S	S	2.2
15	S	S	E	1.5	1.7	2.5	2.5	3.8	3.0	B	B	B	B	B	B	E 4.1S	5.3	A	2.7	S	2.7	2.1	2.2	S
16	2.0	S	1.7	E	2.1	S	2.6	4.7	4.4	E 4.1S	B	S	E 4.1S	S		E 3.2S	E 3.5S	2.8	2.1	2.5	S	S	S	S
17	S	S		S	E	E	S	3.2	E 3.5S	S	S	B	B	B	S	4.6	4.5	4.6	2.7	3.5	S	S	2.7	3.5
18	2.1	S	S			2.4	3.5	2.7	3.7	4.8	E 4.1S	4.5	4.7	B	4.1	B	B	2.6	4.4	A	A	2.7	2.1	2.7
19	2.2	2.0	2.3	1.5	1.7	S	B	2.9	3.9S	S	4.9	B	B	S	B	E 3.5S	3.5	3.9	4.2	4.1	4.1	E	2.6	S
20	S	S	S			S	2.9	S	U 3.0S	S	B	B	B	S	S	E 3.2S	3.0	3.5	S	S	S	S	S	S
21	S	S	S	B	B	S	B	B	B	B	B	B	B	B	C	B	B	2.7	S	E	S	S	S	S
22	C	S	S	B		S	B	2.7	E 3.3S	4.4	4.5	E 3.2R	B	S	B	B	2.9	C	S	S	2.7	C	S	E
23	S	C	S	S	1.6	2.1	S	S	E 3.3S	C	C	4.6S	E 3.7S	E 3.2S	S	C	C	C	C	2.1	2.5	2.9	S	S
24	S	S	S			S	B		3.4	3.5	4.7	6.1	A	4.2	6.1	4.9	3.9	4.5	C	4.8	A	A	2.1	2.1
25	2.1	S	E	2.0	1.7	E	S		3.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	6.1	4.5	4.5	5.1		S	4.7	4.6	5.7	4.9S	4.8	A	S	A	A
27	S	A	A	1.8	2.0	2.1	S	B	S	C	C	C	C	C	C	C	C	C	C	2.1	A	2.2	A	S
28	2.6	1.6	2.6	2.2	1.6	2.7	4.3	4.0	3.5	4.4	B	C	S	B	B	S	B	S	S	S	S	S	S	S
29	S	A	1.9	S	S	S	S	S	S	3.8S	S	S	S	S	S	3.0	S	S	2.8	S	S	S	S	S
30	S	E	A	E	1.4	2.1	3.5	S	3.3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
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

Sep. 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	E2.80S	E1.90S	E2.10S	E1.90S	1.50	E1.60S	E2.40S	E4.10S	2.75	2.60	3.50	5.60	4.30	B	5.20	4.60	4.00	E2.00S	E1.80S	E1.90S	E2.00S	E1.90S	E1.80S	E1.95S
2	E1.50S	E1.80S	E1.90S	1.50	1.40	E1.80S	2.00	E2.10S	2.60	2.85	E3.75S	2.70	2.60	2.70	2.20	2.10	2.20	2,60	2.20	E2.00S	E2.30S	E1.90S	E2.10S	E1.90S
3	E2.00S	E1.60S	E1.60S	E1.70S	E1.60S	E1.70S	1.50	E2.00S	2.20	2.80	3.10	3.40	2.90	E3.70S	2.70	E3.80S	2.70	2.00	E2.10S	E1.80S	E1.70S	E1.60S	E1.60S	1.40
4	E1.50S	E1.50S	1.30	1.30	1.50	E1.60S	E2.00S	2.70	2.10	2.60	2.60	4.50	4.50	E4.20S	2.20	2.10	4.40	E2.30S	E2.20S	E2.10S	E1.80S	E1.70S	E2.00S	E1.70S
5	E1.90S	E2.00S	E1.60S	1.60	E1.80S	E1.80S	E2.00S	2.20	2.80	2.80	3.00	E3.70S	E3.70S	E3.80S	2.20	2.10	2.20	E1.90S	E1.90S	1.50	E1.60S	E1.60S	E1.70S	E1.90S
6	E1.90S	E1.80S	1.30	1.20	1.50	E1.60S	E1.90S	2.20	2.70	2.65	2.70	E3.60S	2.90	4.50	3.60	E3.50S	2.20	2.10	E1.90S	E1.80S	E1.90S	E1.90S	E1.80S	E1.90S
7	E1.90S	E1.90S	E1.80S	E1.90S	1.60	E1.50S	E1.80S	E2.20S	3.60	E3.40S	E4.50S	2.60	2.70	E3.70S	E4.50S	2.10	2.20	E1.90S	E1.70S	E1.70S	E1.60S	E1.50S	E1.50S	E2.00S
8	E1.50S	E1.50S	E1.50S	1.20	E	E1.60S	E2.05S	2.05	2.10	2.80	E4.40S	4.60	2.80	2.70	2.60	2.20	2.70	1.90	E1.90S	E1.95S	E1.80S	E1.90S	E1.80S	E1.90S
9	E1.70S	E1.75S	E1.50S	1.20	1.70	E1.50S	E1.90S	2.10	2.60	E3.60S	2.85	2.80	2.90	2.90	2.75	E3.10S	2.50	2.00	E2.00S	E1.90S	E2.00S	E1.80S	E1.50S	E1.60S
10	E1.90S	1.45	1.40	1.10	1.40	E1.70S	E2.00S	E2.90S	2.70	2.85	3.00	2.90	E4.80S	2.80	2.70	E3.50S	2.10	E1.90S	E2.00S	E2.00S	E1.90S	E1.90S	E1.80S	E2.00S
11	E1.80S	E1.90S	1.50	1.40	1.40	E1.90S	E2.00S	2.05	2.80	E2.90S	E4.50S	E4.40S	E4.60S	E4.50S	E3.60S	3.80	E3.50S	3.60	E2.10S	E1.90S	E2.10S	E1.90S	E1.90S	E1.50S
12	E1.90S	E1.90S	1.50	1.20	1.40	E1.50S	E2.00S	2.60	2.75	3.05	3.60	3.60	B	3.10	E3.10S	2.60	1.90	E1.90S	E1.90S	E1.50S	E1.50S	E1.90S	E1.90S	E1.90S
13	E1.95S	E1.70S	E1.60S	E1.50S	E1.60S	E1.60S	E2.50S	E2.00S	2.00	2.70	3.50	E3.80S	3.10	2.80	5.90	2.80	2.10	E1.80S	E1.90S	E2.00S	E1.80S	E2.10S	E2.10S	E2.10S
14	E1.90S	E1.90S	E1.50S	1.00	1.00	E1.90S	2.60	2.70	3.20	E3.30S	E4.50S	4.60	E3.60S	E5.30S	6.00	E3.60S	2.00	E2.40S	E2.10S	E1.80S	E2.10S	E2.00S	E2.10S	E2.00S
15	E1.80S	E1.80S	E1.50S	E	E	E1.60S	E1.90S	2.10	2.80	3.70	B	B	B	B	3.70	E3.70S	2.00	1.60	E2.10S	E1.80S	E1.90S	E1.70S	E1.80S	E1.80S
16	E1.50S	E1.80S	E1.50S	E1.50S	1.00	E1.90S	E2.00S	2.20	E2.80S	E3.40S	5.40	E4.60S	E3.70S	2.80	2.80	2.85	2.70	E2.10S	E1.80S	E1.90S	E1.90S	E1.80S	E1.90S	E1.50S
17	E1.90S	E1.80S	1.40	E1.70S	E1.50S	1.40	E2.10S	E2.70S	E3.10S	E4.00S	E3.70S	3.90	5.10	4.70	E3.90S	E2.70S	2.70	E1.90S	E1.90S	E1.90S	E1.90S	E1.90S	E1.60S	E1.90S
18	E1.95S	E1.60S	S	1.40	1.00	E1.80S	E1.90S	E2.00S	E2.30S	2.20	2.80	2.80	E3.60S	5.10	2.80	3.60	2.90	E2.10S	E2.00S	E2.00S	E1.90S	E1.80S	E1.90S	E1.90S
19	E1.70S	E1.50S	1.40	1.40	1.00	E1.40S	2.20	E2.10S	3.10	E4.00S	E3.60S	5.40	3.90	E3.80S	4.50	2.80	2.20	E1.90S	E1.90S	E1.90S	E1.80S	E1.90S	E1.90S	E2.10S
20	E2.10S	E1.80S	1.40	1.10	E	E1.90S	E2.00S	E2.70S	2.70	E4.40S	4.00	4.30	4.00	E3.90S	E3.60S	3.05	2.20	2,00	E2.10S	E1.90S	E1.60S	E1.80S	E1.60S	E1.80S
21	E3.10S	E2.90S	E2.10S	1.60	2.10	E1.80S	2.70	2.90	3.80	B	B	B	B	B	C	4.70	2.90	E2.00S	E2.10S	E1.90S	E2.10S	E2.20S	E2.00S	E1.70S
22	C	E1.90S	E1.90S	2.10	E	E1.60S	2.20	1.90	2.35	3.20	3.10	2.60	4.40	E3.90S	3.50	3.50	2.70	C	E2.10S	E1.90S	E2.00S	C	E2.10S	E1.90S
23	E1.90S	C	E1.60S	E1.80S	E1.50S	E1.60S	E2.20S	E2.70S	2.90	C	C	2.90	2.85	2.80	E4.40S	C	C	C	C	E1.90S	E1.70S	E1.90S	E1.90S	E1.90S
24	E1.90S	E1.90S	E1.60S	1.40	1.40	E1.90S	2.20	2.10	2.20	2.20	3.20	3.40	3.10	2.90	2.70	2.20	2.10	E1.90S	C	E1.90S	E1.90S	E1.90S	E1.80S	E1.90S
25	E1.80S	E1.60S	1.40	1.40	1.10	E1.50S	E2.10S	2.10	2.10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	3.00	3.20	3.10	2.90	2.90	E4.50S	2.75	E2.70S	2.70	E2.05S	E1.60S	E1.90S	E3.10S	E2.00S	E1.90S
27	E1.50S	E1.70S	E1.70S	1.00	E	E1.90S	E2.50S	2.80	E2.50S	C	C	C	C	C	C	C	C	C	C	E1.90S	E1.90S	E1.60S	E1.80S	E1.70S
28	E1.50S	1.40	E1.50S	E1.50S	E1.50S	E1.50S	E1.90S	E1.90S	2.00	2.70	3.60	C	E4.70S	3.80	3.50	E3.80S	2.80	E2.20S	E1.90S	E1.80S	E1.90S	E2.00S	E1.90S	E1.80S
29	E1.60S	E1.90S	E1.50S	E1.50S	E2.10S	E1.70S	E2.00S	E2.60S	E3.05S	E2.90S	E3.90S	E3.60S	E3.70S	2.90	E3.10S	2.80	E2.60S	E2.30S	E1.90S	E1.80S	E1.90S	E2.00S	E1.90S	E1.60S
30	E1.50S	E1.50S	E1.50S	1.00	1.20	E1.70S	2.00	E3.20S	2.90	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
No.	28	28	28	20	22	29	29	21	26	17	18	22	19	18	18	19	23	25	25	28	28	27	28	28
Median	E1.90	E1.80	E1.50	1.25	1.30	E1.60	E2.00	2.10	2.70	2.80	3.20	E3.60	3.10	2.90	2.80	2.80	2.20	E2.00	E2.00	E1.90	E1.90	E1.90	E1.90	E1.90
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

K 6

IONOSPHERIC DATA

Sep.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	I2.95S	2.85	3.10	2.90	2.90	2.95	U3.55S	3.45S	3.40S	S	J3.65R	U3.25R	2.95	I3.30B	U3.20R	3.00	3.10R	3.30	I3.40S	U3.30S	3.15	3.40	3.15S	J2.95S
2	2.75S	3.05S	J3.00S	2.85F	2.90S	3.05	3.65	3.60S	I3.60A	3.35R	3.40	J3.30S	3.25	J2.85R	3.15R	J3.20S	3.25	3.25	3.20	3.40S	3.25	3.00	2.95S	3.15
3	3.05S	3.15	3.00S	J3.05S	3.20	3.20	3.30S	3.45S	3.40	3.45	3.25	I3.00A	3.15	3.00	3.20	3.30	3.25	J3.30S	I3.20A	U3.30S	3.25S	A	A	U2.80S
4	U2.85S	2.90	3.00S	3.45	3.25	3.15	3.00	3.45	3.35R	J3.45S	3.25R	3.05	3.15	3.05	3.10	3.30	J3.25R	3.25	U3.35R	I3.30R	I3.25S	3.00	3.05	S
5	3.15	3.05	3.15	I3.15A	3.40	3.30S	3.20	3.45	3.45	3.25	3.30S	J2.80R	3.15R	3.30	3.25	3.30	3.30	3.15	3.15	U3.40S	3.25	J2.90S	I3.00A	U2.95S
6	I2.90F	2.85F	I2.85F	I2.90F	2.85	J3.05S	3.45	3.45	3.55	3.50	3.15R	2.90S	3.05	J3.10S	I3.30S	J3.20R	3.10	3.20	I3.35S	I3.45S	J3.30S	S	J2.95S	I2.90S
7	3.05S	U3.05S	U3.05S	3.15	3.10	U3.15S	3.40	3.50S	I3.55R	3.55	2.95	3.30	3.40	3.30	3.25	3.25	3.30	3.35	U3.30S	J3.30S	U3.25S	J3.00S	3.00S	I2.95A
8	F	F	S	3.10	3.20	2.95S	U3.40S	J3.35S	J3.45S	3.25	3.05R	3.20	3.30	2.90	3.30	3.10	3.15	3,35	3.25S	3.30	3.50S	U2.90S	2.85S	U2.85S
9	2.95S	U2.95S	I3.30S	3.35	3.05	U3.20R	J3.45S	3.30	3.25	S	J3.10R	3.25	U3.35R	2.90	J3.15R	3.20	3.15	3.20S	3.10	J3.30S	J3.05S	F	A	F
10	F	F	I2.90F	3.20F	I3.20F	I3.20F	J2.90S	I3.45S	I3.65S	3.60R	3.35S	U3.10R	J3.25R	J3.10R	3.15	3.05	3.20	J3.15R	I3.10S	I3.30S	J3.50S	I3.10S	I2.80S	J2.85S
11	I3.05S	J3.00S	3.10S	3.10S	3.00	U3.05S	3.45	3.45	3.70	3.30	U3.30S	3.25	I3.50R	3.35	I3.25A	3.35	J3.20R	3.25	J3.30S	I3.20S	3.05S	3.05	2.85S	I2.90F
12	2.90S	U3.00S	J3.10S	U2.90S	I2.95S	2.85S	3.25	3.55	3.55	3.70	3.40	I3.35R	I3.10B	J3.10R	J3.10R	3.20	3.25	3.20	3.35	J3.35S	3.25S	J3.00S	J2.85S	J2.95S
13	2.95	I2.90S	I3.10S	3.40S	3.10	3.10	3.40S	3.55	3.45R	3.45	3.25	J3.15R	3.00R	3.15	3.15	3.30	3.40	3.45	3.20	3.30	J3.30S	J3.05S	S	S
14	U2.95S	I3.00S	U3.00S	U3.10S	I3.00A	3.05S	U3.40S	J3.50S	3.35	3.50	3.50	J3.30R	3.40R	3.10	J3.15R	J3.30S	S	U3.30S	3.00S	J3.10S	I3.35S	3.05	2.70S	I2.80S
15	J2.90S	J2.80S	2.95S	3.10	I3.10F	I3.10F	J3.30S	J2.95R	3.00R	2.85	I3.00B	I3.10B	I3.15B	I2.90B	J2.80R	3.20	3.35	I3.25A	3.05	J3.35S	U3.25S	I2.85S	2.85S	3.55F
16	2.85	2.75	I3.00F	3.10	2.80	U2.70S	J2.90S	3.45	3.35	2.90H	I3.15B	2.95	3.05	3.20S	3.05	3.10	3.25	U3.40S	I3.40S	3.15S	U3.00S	S	S	I3.00S
17	U3.15S	U3.15S	3.30	2.90	3.05	J3.05S	U3.25S	3.45	3.10S	3.40	3.05R	2.90	2.90	3.15S	3.35	3.10R	3.20	3.15R	U3.15S	2.90S	J2.95S	U3.00S	I2.85S	2.90F
18	2.80	3.15F	I3.05S	2.95	2.95	U3.05S	3.45	3.40	3.50	3.35S	3.10	3.30	2.80	3.15	3.25	3.30	3.30	3.40	3.50	I3.20A	A	FS	2.85S	I3.10S
19	U3.00S	U3.20S	2.90	2.80	2.90	3.00	U3.45R	3.70	3.45	3.55	3.10	J3.30R	3.10R	J3.10R	J3.15S	3.30	3.10	3.35S	I3.30S	3.10	J3.00S	I3.10F	I3.15F	U3.10S
20	J3.00S	3.00	2.65	2.75S	I2.90F	I3.00F	3.05S	I3.25S	3.55	3.60	3.65	3.05R	3.15	J3.10R	3.35	3.45	3.30	J3.30S	3.30	3.20	3.05	3.20	3.15	J2.90S
21	I3.10R	U2.85R	U2.80R	2.90	3.05	3.25	3.55	3.45R	3.55	B	B	B	B	I3.40B	I3.10C	J3.20R	J3.30S	U3.35S	U3.40S	U3.45S	I3.05S	U3.05S	J3.05S	U3.05S
22	I3.00C	2.85	U2.70S	2.90R	2.75S	U3.20S	3.20S	3.45	3.20	3.20	3.35S	3.25	J3.00R	3.15	J3.05R	J2.90S	2.65R	I3.25C	3.55	U3.10S	U3.00S	I2.85C	U2.70S	2.85
23	J3.10S	I3.15C	I3.10F	3.15	2.75S	2.85S	3.15	3.15S	3.25	C	C	C	C	C	C	C	C	C	C	U2.85S	U2.65S	J2.85S	I2.90S	I3.10S
24	U3.25S	J2.70R	2.90	2.85	3.00	3.00	3.20S	U3.30S	3.40	3.35S	3.55S	R	A	3.35	3.30	3.25	3.35	3.35	I3.55C	J3.55S	A	A	F	F
25	3.00F	I3.00F	3.05F	2.80F	2.85	I3.25F	3.60	U3.45S	J3.35R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	U3.35S	U3.25S	3.35	3.25	3.20	3.20	3.20	U3.35S	U3.40S	3.55S	3.55S	A	S	A	I2.85A
27	I2.90F	I3.00A	I3.05A	3.30	J2.95R	J2.70R	3.45S	3.60R	3.35	C	C	C	C	C	C	C	C	C	C	3.50	I3.40A	I2.80F	I2.85A	2.95
28	2.95	2.85	3.20	3.15	3.05	U3.10S	3.65S	3.55	J3.35S	3.40	J3.20S	I3.35C	3.15	J3.30R	J3.45R	3.35	3.20	I3.35S	U3.50S	3.35S	I3.35S	3.15	I2.85S	U2.95S
29	3.10	I2.95A	U2.95S	3.00	U3.10S	I3.20S	J3.40S	I3.25S	J3.35S	J3.30S	J3.50S	J3.15R	3.35	J3.40R	3.40	3.40	3.35R	J3.40S	I3.65S	U3.50S	U3.05S	I3.05S	2.85S	I2.95F
30	U2.95S	U3.30S	I3.00A	2.95	3.15	3.35	J3.30R	I3.50S	R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
No.	27	27	28	29	29	29	29	29	28	23	25	24	24	26	26	26	25	26	26	28	25	21	22	24
Median	2.95	3.00	U3.00	3.05	3.00	3.05	3.40	3.45	3.40	3.40	3.25	3.20	3.15	3.15	3.20	3.20	3.25	3.30	U3.30	3.30	3.25	3.00	2.85	U2.95
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

Sep. 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								S	L			B	U3.65B	B	B	B	B	L						
2									A	A	3.80L	A	A	S	S	L	L	L						
3							A	A		A	3.60L	A	U3.50L	3.70	3.50	L	A	A	A					
4								L	A	A	L	B	B	U3.55L	L	3.55L	B	L						
5								L	L	L	3.55L	L	3.65L	3.75	L	L	L							
6									L	A	3.55L	A	A	S	3.55	L	S							
7								L	L	L	S	3.55L	3.55L	3.70L	S	A	A	A						
8								L	A	A	L	B	L	L	L	A	3.50L	L						
9								L	L	A	L	3.75L	A	3.40S	3.50L	L	L							
10								L	L	L	3.55S	S	S	L	L	L	S							
11								A	L	L	S	S	S	S	A	L	S							
12								L	L	L	L	R	B	A	A	A	L	L						
13									L	L	A	A	A	A	B	S	A	A						
14									L	L	S	B	L	S	B	L	L	S						
15								A	3.25L	3.40L	B	B	B	B	U3.60S	S	A	A						
16								A	A		B	S	L	L	S	S	L							
17								L	S	L	3.65L	L	B	B	U3.55S	A	A	A						
18							A	L	A	A	AS	A	A	B	L	L								
19								L	L	L	A	B	3.50L	L	B	L	A	A						
20							A	L	L	L	L	3.50L	U3.50L	L	L	L	L							
21									L	B	B	B	B	B	C	B	L							
22									L	A	A	L	B	L	L	L	L	C						
23								L	3.80L	C	C	C	S	L	S	C	C	C	C					
24								L	L	L	A	A	A	A	A	A	A	A	C					
25									A	C	C	C	C	C	C	C	C	C	C					
26							C	C	C	A	A	A	A	L	S	A	A	A						
27									L	C	C	C	C	C	C	C	C	C	C					
28							A		L	A	L	C	S	L	L									
29								L	L	L	L	L	L	3.65L	L	L	L							
30									L	C	C	C	C	C	C	C	C	C	C					
31																								
No.									2	1	6	3	6	6	5	1	1							
Median									3.50	3.40	3.60	3.55	U3.50	3.70	3.55	3.55	3.50							
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

40

IONOSPHERIC DATA

Sep. 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								255	270			310	375	B	E330B	340	310	260						
2									A	310	275	300A	305	395	310	300	290	260						
3							E300A	250A		300	295	A	320	350	300	290	260	290	A					
4								240	260	250	260	340	310	340	330	295	285	275						
5								250	250	295	290	355	290	275	300	255	280							
6									245	260	290	E360A	310	300	295	295	E290S							
7								240	280	260	E355S	295	280	300	295	295	260	250						
8								265	250	280	310	295	275	315	285	300	275	250						
9								275	285	270	285	275	260	350	300	295	300							
10								245	250	260	275	345	285	300	300	305	E295S							
11								230	225	290	300	295	265	275	A	260	300	260						
12								240	210	250	290	R	B	300	295	280	260	250						
13									240	260	E340A	300	300A	300	300	260	250	260A						
14									255	275	260	280	275	325	300	260	265	245						
15								350	350	380	B	B	B	B	400	320	E310A	A						
16								250	E250A		E345B	325	300	315	345	E300S	290							
17								250	E310S	285	330	350	345	300	280	310	280	275						
18							250A	250	250	260	305	300	E400A	305	290	280								
19								230	250	250	310	280	310	290	280	280	260	245						
20							E290A	245	240	255	255	330	310	330	290	260	250							
21									250	B	B	B	B	B	C	280	250							
22									300	295	250	280	320	280	280	325	350	C						
23								295	275	C	C	520	390	335	335	C	C	C	C					
24								275	225	250	235	275	A	270	E300A	280A	255	245	C					
25									E250A	C	C	C	C	C	C	C	C	C	C					
26							C	C	C	270	290	260	275	305	290	270	250	250						
27									240	C	C	C	C	C	C	C	C	C	C					
28							230		245	250	255	C	300	250	260									
29								240	255	245	250	280	260	275	255	255	250							
30									210	C	C	C	C	C	C	C	C	C	C					
31																								
No.							4	19	26	23	20	21	22	24	23	24	21	14						
Median							E270	250	250	260	290	300	300	300	295	285	265	255						
U.Q.																								
L.Q.																								
Q.R.																								

h'F2

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

The Radio Research Laboratories, Japan

K 9

IONOSPHERIC DATA

Sep. 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	E310S	E300S	255	300	300	300	240	I230S	E245R	240	245	B	E255B	B	B	B	B	245	245	240	245	225	235	295
2	300	300	290A	260	255	260	225	240	A	A	245	A	A	S	I245S	E250S	240	235	255	225	210	250	255	245
3	285	280	270	260	225	245	I240A	I250A	E250A	A	E250S	A	245S	200	210	E250S	A	A	A	E250A	E250A	A	A	305
4	300	300	250	225	230	280	230	200	I235A	A	E250A	B	I230B	E300S	I245S	E250A	I240B	245	245	245	215	245	285	255
5	260	300	250	A	E310A	250	E260A	E260A	245	E290A	245	245	210	210	I220S	245S	225	245	245	210	210	285	I270F	255
6	295	285	260	260	280	255	245	240	210	I240A	250A	A	A	S	245	245	S	260	245	215	210	E300A	255	260
7	255	295	255	275	255	245	240	230	245	200	I215S	245	245	200	S	A	A	A	E310A	245	250	295	300	I280A
8	290	260	245	250	E300A	270	210	255	I220A	I210A	E300S	I210B	210	E290A	E255A	I240A	220	245	245	210	200	275	300A	310
9	300	275	205	245	E310B	250	225	205	245	I250A	I200A	205	I220A	210	220	245	245	245	245	210	260	310	I330A	300
10	310	300	260	260	E340A	260	245	230	210	E245S	245S	I220S	I245S	E250S	245	245	I245S	245	245	225	200	245	300	295
11	295	E300A	250	250	280	265	240	I230A	240	E250S	S	S	I230S	I245S	I245A	245	I245S	I245B	245	235	250	245	295	260
12	295	295	250	250	285	295	250	230	230	E245S	E295B	R	B	A	A	A	230	210	230A	245	225	E290A	300	285
13	300	300	260	225	250	300	210	225	230	230	A	A	A	A	B	S	A	A	250A	230	230	255	260	225
14	300	295	255	250	I295A	255	225	230	210	E250S	I255S	I215B	245	I230S	I215B	E270S	205	I245S	270	250	225	245	310	360A
15	300	300	285	245	260	250A	245	I245A	E255A	255	B	B	B	B	235	S	A	A	E250A	215	250A	280A	310	350
16	305	310	260	255	320	355	E290A	A	I225A	300H	I260B	I250S	E300S	I215S	I230S	I225S	I230S	250A	225	235	250	305	300	305
17	260	255	210	300	255	250	250	245	I220S	E250S	205	E255S	B	B	E245S	A	A	A	250A	E300A	250	250	310	E310A
18	300	230	I300S	300	260	255	I240A	210	I220A	A	AS	A	I240A	I235B	E260A	E250B	245	245	E250A	I275A	I305A	E350A	305	300
19	285	250	320A	305	310	300	215	245	230S	220	A	B	260	E255B	I230B	250	A	A	E240A	E260A	E310A	255	280	255
20	280	255	305	290	300	300	I250A	245	240	E250S	215	275	245	E260S	230	245	230	250A	230	220	245	230	245	280
21	305	E350S	310	310	300	255	220	230	240	B	B	B	B	B	C	B	235	245	210	210	260	E280S	275	275
22	I260C	300	355	310	325	260	210	230	E250S	E305A	I220A	210	E300B	E250S	230	255	250	I235C	205	225	260	I300C	310	300
23	250	I260C	300	250	305	300	250	250	250S	C	C	E295A	S	250	S	C	C	C	C	300	370A	E340S	300	255
24	245	E355S	300	310	260	300	230	235	230	225	A	A	A	E260A	A	A	A	A	C	E240A	A	A	300	300
25	280	255	250	300	280	255	205	235	I230A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	A	A	A	A	250S	I255S	A	A	A	E240A	210	A	S	A	I310A
27	300	I305A	I270A	250	E350A	340A	225	225	230	C	C	C	C	C	C	C	C	C	C	210	I290A	380	I330A	300
28	E310A	275	E290A	255	E290A	E300A	I240A	230A	245	I225A	210	I235C	I250S	245	245	E245S	225	235	210	205	255	E260S	320	300
29	270	I300A	275	270	260	220	230	230	205	E250S	220	210	E260S	230	220	245	225	245	205	205	295	260	305	285
30	300	250	I280A	245	240	250	E260A	240	225	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
No.	27	25	28	28	23	28	26	27	24	11	14	11	13	12	17	12	16	18	21	24	25	19	26	27
Median	295	295	260	260	280	260	235	230	230	230	230	220	245	230	230	245	230	245	245	225	250	255	300	295
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

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

h'Es

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

The Radio Research Laboratories, Japan

K 11

IONOSPHERIC DATA

Sep. 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								1	1	f2				
2		f2	f	f2		12	1	12	12	1	1	12	1	1	1	1	1						f	
3				f	f		12	12	1	c1	1	12	1				1	12	13	f2	f2f2	f3	f2	f
4					f	1			12	1	1	1			1	c		h			f	f2		f2
5	f2	f2	f3	f3	f3	1	12	12	1	1	1				1	1		h		f		f	f3	
6		f			f	1	12	12	1	12	1	1	1	1			c	12		f	f	f3	f	f
7				f	f		12	12				1				h	c3	12	12	f3	f2	f2	f3	f3
8	f2	f2	f2	f2	f4		1	c2	c	1				1	1	1							f2	f
9				f			1	1	c	1		12	1				h	h	12		f	f2	f3	f2
10	f2	f2	f2	ff3	f	1			1	1				1	1		1h	h	1	f	f	f	f	f2
11	f	f2	f		f2		h	12	1	1					h2					f	f2		f2	
12		f2	f	f2	f2		h	h	1	h	1	1		1	i	1	1	1	13	f2	f3	f2	f2	
13	f2	f	f2	f2	f2	1		12	c	1	1	1	12	1		1	1	13	13	f2	f			
14	f2	f2		f2	f3					1			h											f2
15	f		f2	f	f3	12	1	c2	h							h	c2	14	12		f3	f2	f2	
16	f2		f2	f	f2		1	12	12	1			1			h	h	1	1	f2				
17					f	f		h	h							12	1	12	12	f3			f2	f2
18	f2					f	12	12	12	1	1	12	1		1			1	12	f3	f2	f3	f2	f2
19	f3	f3	f3	f2	f2			1	1		1					1	12	13	12	f3	f2	f	f2	
20							12		1							h	h	12						
21																		1		f				
22								c	c	1	1	1					1				f2			f
23					f	f		h	h			1	1	1						f	f2	f		
24									1	h	1	12	13	12	12	c2	12	13		f3	f2	f3	f2f	f
25	f		f	f	f	f			1															
26										1	1	12	12			h	12	12	13	f2	f2	f	f2	f2
27		f2	f2	f2	f2	f2														f	f2	f2	f2	
28	f	f	f2	f2	f2	f2	12	12	1	1														
29		f2	f2							1						h			1					
30	f	f	f3	f	f2	f2	1		1															
31																								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es

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

K 12

IONOSPHERIC DATA

Sep. 1963 | h_pF2 | 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	I340S	340	300	340	355	330	U250S	260S	285S	S	S	B	375	B	B	345	315R	295	I260S	U290S	295	280	290S	J325S
2	360S	320S	J320S	350F	330S	310	250	250S	I260A	310R	280	A	305	S	315R	J300S	300	295	300	260S	270	310	310S	300
3	335S	310	305S	J305S	280	290	A	250S	280	300	300	I345A	320	350	300	300	295	J290S	I300A	U275S	295S	A	A	U355S
4	U350S	345	310S	255	260	300	285	250	280R	J260S	280R	G	310	340	330	295	J290R	300	U290R	I280R	I265S	350	330	S
5	305	305	265	I300A	A	290S	295	260	260	305	300S	J360R	300R	295	300	290	290	300	300	U250S	285	J350S	I315A	U305S
6	I335F	340F	I320F	I330F	310	J300S	255	250	250	260	290R	A	325	J305S	I295S	J300R	310	300	I285S	I265S	J280S	S	J320S	I340S
7	305S	U320S	U305S	300	305	U300S	265	250S	R	260	S	300	290	300	300	300	290	280	A	J290S	U290S	J320S	345S	I345A
8	F	F	S	305	A	305S	U255S	J290S	J255S	300	320R	300	280	350	295	310	300	260	290S	260	235S	U325S	350S	U350S
9	340S	U320S	I270S	260	B	U300R	J250S	295	300	S	J300R	295	U285R	350	J300R	300	300	295S	300	J285S	J305S	F	A	F
10	F	F	I335F	300F	I305F	I300F	J290S	I250S	I245S	260R	280S	S	J300R	J300R	300	310	305	J305R	I300S	I275S	J255S	I305S	I345S	J355S
11	I310S	J320S	300S	300S	310	U300S	250	250	240	290	U300S	300	I280R	290	I300A	290	J310R	295	J290S	I295S	305S	300	345S	I340F
12	350S	U310S	J300S	U310S	I320S	350S	300	250	250	250	290	R	I305B	J300R	J300R	300	290	290	270	J270S	270S	J310S	J355S	J320S
13	345	I330S	I305S	250S	300	300	245S	250	250R	260	A	J300R	305R	305	300	295	270	260	300	290	J280S	J305S	S	S
14	U300S	I310S	U310S	U300S	I305A	300S	U250S	J250S	260	275	260	J285R	275R	330	J300R	J295S	S	U290S	320S	J305S	I260S	305	395S	I370S
15	J345S	J355S	325S	305	I300F	I300F	J265S	J350R	350R	380	B	B	B	B	G	320	A	I280A	300	J255S	U275S	I330S	355S	405F
16	350	360	I325F	305	350	U390S	J315S	255	280	330H	B	330	330	320S	350	305	300	U280S	I265S	300S	U310S	S	S	I340S
17	U300S	U300S	260	335	305	J305S	U295S	250	315S	295	330R	350	350	300S	295	310R	300	300R	U305S	345S	J315S	U305S	I350S	345F
18	360	295F	I320S	320	335	U305S	255	260	255	280S	310	300	A	305	300	295	290	280	255	I290A	A	FS	350S	I320S
19	U310S	U300S	350	365	355	325	U250R	250	260	250	310	J300R	310R	J305R	J295S	305	300	280S	I280S	330	J330S	I310F	I300F	U300S
20	J320S	330	395	355S	I345F	I325F	310S	I280S	250	255	255	330R	310	J330R	300	285	270	J280S	280	285	310	295	300	J340S
21	I320R	S	U345R	355	325	290	245	260R	250	B	B	B	B	B	C	J300R	J275S	U280S	U250S	U250S	I310S	U305S	J305S	U310S
22	I310C	350	U295S	355R	390S	U300S	300S	255	305	310	260S	295	J330R	300	J305R	J350S	400R	I290C	250	U295S	U320S	I365C	U385S	360
23	J300S	I290C	I305F	290	390S	310S	295	305S	300	C	C	C	C	C	C	C	C	C	C	U355S	U400S	J370S	I340S	I305S
24	U280S	J400R	350	355	310	310	290S	U300S	255	270S	250S	R	A	285	280	295	280	260	I250C	J250S	A	A	F	F
25	300F	I300F	305F	355F	340	I280F	245	U260S	J290R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	U285S	U300S	270	290	305	300	295	U295S	U260S	250S	240S	A	S	A	I350A
27	I345F	I310A	I305A	290	J360R	J355R	250S	250R	260	C	C	C	C	C	C	C	C	C	C	240	I290A	I370F	I365A	330
28	320	310	300	290	310	U305S	245S	250	J255S	270	J295S	I300C	310	J260R	J290R	270	290	I270S	U255S	250S	I265S	305	I350S	U320S
29	320	I340A	U310S	315	U305S	I290S	J250S	I290S	J275S	J270S	J260S	J295R	280	J290R	270	270	260R	J260S	I235S	U245S	U345S	I305S	350S	I330F
30	U335S	U270S	I330A	305	300	260	J285R	I250S	R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
No.	27	26	28	29	26	29	28	29	27	23	20	17	22	22	23	26	24	26	25	28	25	21	22	24
Median	320	320	U310	305	310	300	255	250	260	275	290	300	305	305	300	300	295	285	285	280	290	310	345	U340
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h_pF2 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

K 13

IONOSPHERIC DATA

Sep. 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	I 60S	65	55	60	50	65	U 50S	45S	20S	S	S	B	30	B	B	15	40R	35	I 40S	U 45S	55	40	60S	J 75S
2	85S	75S	J 75S	60F	75S	85	45	45S	I 40A	20R	30	A	40	S	40R	J 50S	45	50	45	55S	70	80	85S	55
3	65S	55	90S	J 85S	60	55	A	50S	30	15	50	I 50A	40	45	55	45	55	J 50S	I 55A	U 40S	50S	A	A	U 90S
4	U 65S	100	80S	45	80	55	55	50	35R	J 45S	60R	G	45	35	30	50	J 20R	45	U 50R	I 50R	I 60S	45	65	S
5	55	75	45	I 70A	A	55S	45	45	50	45	45S	J 80R	50R	45	40	30	20	60	60	U 50S	60	J 65S	I 60A	U 90S
6	I 75F	70F	I 80F	I 70F	90	J 55S	50	55	45	40	40R	A	60	J 50S	I 30S	J 60R	80	60	I 50S	I 45S	J 50S	S	J 80S	I 90S
7	90S	U 75S	U 85S	50	45	U 55S	45	45S	R	40	S	20	25	45	50	50	25	35	A	J 25S	U 25S	J 75S	50S	I 55A
8	F	F	S	55	A	90S	U 65S	J 20S	J 45S	55	70R	60	70	55	50	40	55	50	50S	50	60S	U 80S	75S	U 50S
9	55S	U 75S	I 50S	85	B	U 50R	J 50S	50	45	S	J 55R	55	U 25R	55	J 55R	40	50	50S	50	J 60S	J 60S	F	A	F
10	F	F	I 65F	50F	I 55F	I 50F	J 25S	I 50S	I 30S	35R	30S	S	J 45R	J 50R	50	55	40	J 50R	I 55S	I 50S	J 45S	I 80S	I 70S	J 85S
11	I 90S	J 75S	55S	95S	85	U 95S	50	50	40	55	U 45S	45	I 20R	25	I 50A	50	J 50R	55	J 30S	I 50S	90S	90	60S	I 70F
12	65S	U 90S	J 95S	U 95S	I 75S	50S	45	50	40	40	20	R	I 50B	J 55R	J 60R	50	60	55	45	J 35S	50S	J 85S	J 55S	J 75S
13	70	I 80S	I 70S	50S	55	60	55S	45	55R	45	A	J 55R	90R	45	55	45	30	50	50	55	J 50S	J 55S	S	S
14	U 55S	I 80S	U 85S	U 55S	I 70A	95S	U 55S	J 45S	40	25	40	J 25R	35R	30	J 50R	J 35S	S	U 25S	60S	J 45S	I 50S	90	60S	I 50S
15	J 55S	J 90S	70S	60	I 60F	I 50F	J 80S	J 55R	45R	50	B	B	B	B	G	30	A	I 60A	95	J 60S	U 65S	I 80S	45S	90F
16	50	75	I 55F	50	60	U 55S	J 80S	55	35	115H	B	70	65	30S	30	90	50	U 30S	I 50S	60S	U 85S	S	S	I 70S
17	U 55S	U 55S	50	70	45	J 90S	U 50S	55	50S	35	60R	60	55	55S	35	85R	50	45R	U 80S	60S	J 90S	U 90S	I 70S	60F
18	85	55F	I 55S	75	70	U 55S	45	50	50	30S	45	25	A	65	50	35	40	30	50	I 50A	A	FS	55S	I 60S
19	U 85S	U 45S	55	80	85	70	U 55R	25	45	55	65	J 45R	55R	J 55R	J 60S	40	65	60S	I 50S	30	J 65S	I 55F	I 50F	U 55S
20	J 75S	65	65	90S	I 80F	I 70F	55S	I 50S	45	40	35	65R	45	J 40R	30	25	75	J 50S	65	55	85	50	65	J 60S
21	I 60R	S	U 60R	55	65	65	55	45R	45	B	B	B	B	B	C	J 45R	J 70S	U 35S	U 55S	U 55S	I 80S	U 65S	J 75S	U 60S
22	I 85C	55	U 65S	50R	55S	U 50S	55S	50	50	40	50S	45	J 70R	60	J 70R	J 65S	95R	I 60C	45	U 70S	U 75S	I 50C	U 65S	85
23	J 65S	I 60C	I 80F	50	55S	90S	60	60S	45	C	C	C	C	C	C	C	C	C	C	U 55S	U 60S	J 60S	I 60S	I 70S
24	U 60S	J 45R	50	50	85	85	65S	U 20S	50	50S	50S	R	A	55	65	50	35	60	I 80C	J 50S	A	A	F	F
25	60F	I 60F	60F	90F	65	I 70F	55	U 45S	J 35R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	U 25S	U 45S	35	55	50	60	55	U 30S	U 45S	50S	55S	A	S	A	I 70A
27	I 70F	I 80A	I 55A	50	J 45R	J 90R	50S	45R	60	C	C	C	C	C	C	C	C	C	C	55	I 40A	I 50F	I 60A	65
28	60	90	55	60	60	U 60S	35S	40	J 55S	40	J 50S	I 30C	50	J 55R	J 25R	55	50	I 40S	U 45S	55S	I 40S	60	I 70S	U 75S
29	40	I 60A	U 85S	65	U 45S	I 60S	J 55S	I 35S	J 35S	J 75S	J 50S	J 55R	35	J 25R	50	40	50R	J 50S	I 40S	U 55S	U 50S	I 55S	55S	I 50F
30	U 60S	U 40S	I 45A	90	55	50	J 40R	I 45S	R	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
No.	27	26	28	29	26	29	28	29	27	23	20	17	22	22	23	26	24	26	25	28	25	21	22	24
Median	65	70	U 60	60	60	60	50	45	45	40	50	50	50	50	50	50	50	50	50	50	60	65	60	U 70
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

ypF2

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

K 14

IONOSPHERIC DATA

Sep. 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	3.7S	3.5	3.7	3.2	3.5	3.5	4.0	5.1S	6.6	I7.1S	6.3S	5.3H	6.0	6.7	J7.6S	I7.2S	J7.7S	J7.7S	7.3	I6.5S	J5.2S	J4.8S	4.5	4.4S
2	J4.4S	4.2	3.8	3.5	3.5S	3.2	3.8	5.8	5.5	5.4	J6.9S	J6.5S	6.1	5.9	I6.2S	6.4	6.4	7.1S	I6.8S	J6.3S	5.8	4.7	I4.0S	I4.0S
3	4.0	3.9	4.0	4.3	4.1S	2.7	3.6S	5.4	7.0	I6.0S	5.8	7.2	6.2HS	7.8S	8.5	8.6	8.5	J8.3S	I7.9A	A	5.2S	I4.4A	I4.1S	J3.9S
4	J4.1S	3.9	F	3.4	2.7F	I2.8A	I3.7A	5.7	6.1	6.8	5.8	6.0	I6.8S	7.2S	7.1S	6.7	I7.0S	6.9	8.2	8.2	5.6	J4.4S	3.8	I3.6S
5	I3.4S	3.5S	I3.4A	I3.2A	I2.7A	2.7	3.6	5.8	6.4	6.6	6.5	6.8	9.2S	I9.3S	7.9S	6.0	6.0	5.8	I7.2S	8.6	6.1S	J4.4S	4.4S	I4.1S
6	I4.1S	3.8	3.8S	3.5	3.2	3.4	4.5	6.3	6.4	6.1	6.0	5.3	6.3S	J7.3S	8.4	8.5	7.7	I7.1S	J8.1S	8.0S	J6.1S	3.6	I3.9S	I4.0S
7	3.2	3.1H	3.4	3.2	3.2	I3.4S	4.5S	I6.3S	5.9H	5.4	5.7	6.6	7.1	8.2	8.9	J7.9S	6.2	6.3	6.9	J8.2S	5.0S	A	A	S
8	I3.6A	I3.2S	3.1S	3.2	2.7	2.9	3.6	5.7	6.9	5.8	6.7	5.9	5.8	6.6	9.0	8.9	J7.6S	6.7S	I7.4S	I7.2S	J4.6S	3.5	I3.5S	I3.6S
9	3.4	3.4S	I3.8S	3.3S	2.1	2.2	3.4S	5.6	J6.5S	8.1	7.2	6.4	7.2	I7.4S	9.1	J8.0S	J6.8S	6.2	I6.9S	J7.9S	6.2S	I4.4S	S	S
10	S	I4.3S	I3.9S	3.6	3.5	3.3	J4.6S	I5.9S	I6.3S	6.0	5.9	7.5	J6.5S	6.3	I5.6S	I5.6S	J6.3S	J8.1S	I8.0C	J7.9S	3.7	I3.5S	I3.3S	3.2
11	I3.5S	3.2	I3.2C	3.2	2.8	2.9	3.8	5.6	6.1	5.7	5.9	6.5	7.2	6.4	I6.5S	6.1	6.3	6.9S	J7.9S	J8.1S	I7.0S	J5.4S	J5.3S	I5.2S
12	5.1S	J5.0S	4.4S	I3.9S	3.8	3.7	4.3	S	I6.7S	5.5	5.9	6.0	6.7S	6.5	I7.1S	7.7	J7.6S	J7.7S	J8.0S	J7.7S	5.4	J4.0S	4.1	4.3S
13	4.2	4.1	I4.1S	I3.9S	2.7	2.5	J3.8S	5.9	5.6	5.6	6.2	6.3	7.0	8.5	9.3	9.0	8.0	6.5	J6.2S	6.8	I6.6S	J4.4S	I4.4S	4.3
14	4.4S	J4.1S	I3.9S	I3.7S	3.1	2.8	I3.8S	5.8	I7.0S	J7.5S	5.8	5.9	6.5	J7.3S	8.4	9.0	J7.7S	9.1	9.1	8.9	I8.2S	5.1S	J4.8S	I4.4S
15	I4.6S	I5.0S	I5.2S	I5.0S	J4.9S	I3.5S	4.4	5.9	I6.1S	A	B	6.1	6.5	6.1	5.9	6.2	5.9	6.9S	I6.7S	J6.5S	5.1S	J4.2S	3.3	3.2
16	3.7	3.2	I3.2S	3.0	2.9	F	3.3	6.0	I6.2S	6.1	6.0	7.8	J7.7S	7.1S	J6.7S	6.8	6.9	S	S	6.0	J4.9S	I4.6S	4.8S	J4.4S
17	I4.5S	4.8	J4.5S	2.8	2.6	2.6	4.0	6.1S	S	5.5	5.9	6.9	9.5	I9.4S	7.4S	6.5S	7.3	J7.8S	I8.0S	J8.2S	J6.3S	5.8H	5.5	I5.4S
18	4.8	5.2S	4.5	3.1H	3.1	3.0	3.3	J6.1S	6.3	I6.5A	6.6	J7.5S	8.0	9.2	8.1	J8.0S	7.3S	7.0	I7.0S	I6.8S	4.6S	I4.6S	4.5	J4.4S
19	3.8	3.6	3.2	3.1	3.0	3.0	I4.0S	J6.3S	I6.8S	J7.6S	8.8	J11.2S	12.4S	13.3	J12.8S	11.5S	9.2S	8.8S	8.6	I7.8S	6.7	5.8	5.9	5.5
20	5.1	4.9	4.4	4.4S	4.2	3.9	J4.4S	7.0	I6.6S	7.0S	6.4	6.5	7.1	I7.6S	8.6	8.0	I7.0S	6.4	I6.7S	I6.3S	I6.2S	5.5	4.7	I4.8S
21	4.4	3.6	3.6	3.5	3.5	3.0	3.6	J6.3S	I7.1S	I8.0B	8.3	I8.2B	8.4	8.4	7.5	8.3	8.8	8.5	8.5	I6.5S	4.5S	I4.3S	4.2	4.0H
22	3.9H	I3.8SH	3.4H	3.5	I3.4S	3.6S	4.2S	5.0	C	C	J9.5S	8.4	9.1	10.6	J10.0S	8.6	8.8	13.1	I7.0S	5.5	5.9	I4.3S	J4.6S	I4.6S
23	5.8S	3.5	3.1	3.1	2.9	3.3	I3.8S	J6.1S	11.6	J7.9S	G	I7.7S	I9.5S	10.9	8.5	J10.4S	8.1S	6.6SH	I6.3S	I4.5S	I4.9S	I5.0S	J5.2S	J5.1S
24	4.6S	3.0H	3.2	3.1	3.0	3.0	J4.0S	J6.3S	I9.3S	J9.7S	I9.4S	9.0	8.7	J8.1S	8.5	J8.3S	8.9	9.1S	J7.9S	I5.2S	I4.4A	4.4S	I4.8S	J5.3S
25	4.9S	4.2	I3.8S	I3.1S	3.1	I3.3S	I4.3S	5.6S	I6.6S	J7.8S	6.4	6.0	8.4	9.1	8.3	8.9	8.2	7.1S	I6.4S	J5.5S	5.9	I5.8S	A	A
26	3.6	3.1	3.0	3.1	3.2	3.1	3.5	4.9	6.4	I6.9S	I7.2C	J7.7S	7.2	8.3S	8.8	J8.1S	7.1	I9.6S	I9.4S	8.6	I5.2A	J2.6S	J2.9S	3.1
27	3.1	3.5S	2.9	2.9	2.6	2.7F	3.9S	J6.2S	5.6	6.8	I7.1S	6.9	I7.1S	J7.9S	I7.6S	7.1S	8.2	8.5	I8.5S	I7.2S	A	I4.2A	3.3	3.5
28	3.5	3.5S	3.6S	3.4	2.9	2.5	3.6S	5.8S	J8.3S	J7.6S	6.9S	6.1	8.6	11.1	J7.6S	U7.1S	7.1SH	8.6	8.6	5.9	J5.0S	3.8S	3.7	I3.8S
29	4.0	3.7	I3.6S	J3.1S	3.2	J2.9S	3.5	J6.2S	S	J7.8S	6.5	6.9	8.9	J9.6S	J9.7S	J7.6S	J7.8S	9.1S	I8.2S	I5.3S	3.6	I3.7S	3.5S	3.7S
30	I3.6S	I3.4S	3.1	2.9S	2.5	3.0	3.8S	5.5	6.0	6.6	I6.4A	6.8	7.2	I7.6S	8.0	6.7	6.7	6.0	I6.7S	I7.5S	5.5	3.1	3.0	3.2
31																								
No.	29	30	29	30	30	29	30	29	27	28	29	30	30	30	30	30	30	29	29	29	29	29	27	27
Median	4.0	3.6	3.6	3.2	3.1	3.0	3.8	5.9	6.4	6.7	6.4	6.7	7.2	7.8	8.2	8.0	7.4	7.1	U7.9	7.2	5.4	4.4	4.2	4.1
U.Q.	4.6	4.2	4.0	3.5	3.5	3.4	4.2	6.2	6.9	7.6	7.0	7.5	8.6	9.2	8.8	8.6	8.1	8.6	8.2	8.0	6.2	4.9	4.8	4.6
L.Q.	3.6	3.4	3.2	3.1	2.7	2.8	3.6	5.6	6.1	5.9	5.9	6.1	6.5	7.1	7.4	6.7	6.8	6.6	6.8	6.2	4.9	3.9	3.5	3.6
Q.R.	1.0	0.8	0.8	0.4	0.8	0.6	0.6	0.6	0.8	1.7	1.1	1.4	2.1	2.1	1.4	1.9	1.3	2.0	1.4	1.8	1.3	1.0	1.3	1.0

The Radio Research Laboratories, Japan

foF2

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

Y 1

47

IONOSPHERIC DATA

Sep. 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	4.0	4.3	4.4		4.6	4.7	4.4^{H}	4.1	4.2	$I_{3.8}{}^{L}$	L					
2								L	A	A	$I_{4.4}{}^{A}$	$I_{4.5}{}^{A}$	4.6	$I_{4.4}{}^{A}$	A	$I_{4.4}{}^{A}$	$I_{4.2}{}^{L}$	3.9	A					
3								A	4.0	4.2	4.5	4.4	4.6	4.6	4.5	4.3	A	A	A					
4									4.1	4.2	4.4	4.6	$I_{4.6}{}^{A}$	4.6	4.4	4.4	4.1	3.9	L					
5								L	L	$I_{4.4}{}^{L}$	4.7	4.5	4.6	4.5	4.5^{H}	4.3	4.2	L^{H}	L					
6								L	4.0	$I_{4.4}{}^{L}$	4.5	$I_{4.5}{}^{L}$	A	4.5	4.6	4.4	4.1	L	A					
7								L	L	4.2	$I_{4.6}{}^{A}$	4.4	4.6	4.5^{H}	4.4	4.4	4.2	A	A					
8									4.0	4.3	4.4	4.5^{H}	4.5^{H}	4.5	4.4^{H}	4.3	4.1	L	L					
9									L	4.3	4.5	4.6^{H}	4.6	4.7	A	4.3	4.1	L	L					
10								L	A	4.3	$I_{4.5}{}^{L}$	4.5	4.4	4.5	$I_{4.4}{}^{A}$	A	L	L	C					
11									L	4.2	4.3	4.5	4.5	4.6	4.4	4.3	$I_{4.2}{}^{L}$	3.9	L					
12									L	4.2	4.4	4.7	A	A	A	4.5	4.2	L	A					
13										4.3	4.5	L	4.5	$I_{4.6}{}^{C}$	$I_{4.6}{}^{B}$	4.6	L	A	A					
14									L	4.3^{L}	4.5	$I_{4.8}{}^{L}$	4.8^{H}	4.6	4.6	4.4	4.2	L	L					
15									A	A	B	B	$I_{4.5}{}^{B}$	4.4	4.7^{H}	4.4^{H}	4.2	3.9	A					
16									L	L	L	$I_{4.6}{}^{R}$	4.7^{R}	4.7	4.9^{H}	4.4	4.2	L						
17									L	4.1	I^{H}	4.9	$I_{4.8}{}^{R}$	B	4.6	L^{H}	4.4^{H}	L						
18								L	3.7	$I_{4.4}{}^{A}$	$I_{4.6}{}^{A}$	4.9	4.8	$I_{4.7}{}^{A}$	4.6	4.5^{H}	4.1	L	A					
19								L	L	$I_{4.4}{}^{L}$	4.8	4.9	4.9^{R}	4.8	4.7	4.5	I^{H}	L						
20									L	L	L	4.8	4.7	4.9	4.7	4.5	L	L						
21									L	B	B	B	B	B	L	4.5	$I_{4.3}{}^{L}$	L						
22									C	C	4.7	4.6^{H}	$I_{4.7}{}^{L}$	$I_{4.6}{}^{L}$	4.9	4.8	L	L						
23									L	L	5.3^{H}	5.6^{H}	5.0	4.6	$I_{4.9}{}^{L}$	4.4	L							
24									L	L	$I_{4.6}{}^{L}$	4.6^{L}	A	A	A	L	L	L						
25									A	A	4.2	L	4.7^{H}	4.7	4.5	4.3	$I_{3.7}{}^{L}$	2.6						
26									L	$I_{4.2}{}^{L}$	4.2	$I_{4.5}{}^{A}$	4.7	4.7^{H}	4.5	$I_{4.4}{}^{L}$	L	A	A					
27									L	4.4	$I_{4.4}{}^{L}$	4.3	4.6	4.6	4.5	4.5	4.1	A	A					
28									L	L	L	5.1^{H}	4.5^{L}	4.5	4.4	3.8								
29									L	L	$I_{4.4}{}^{L}$	L	4.5^{H}	4 6	4.7^{L}	L	4.0							
30									L	$I_{4.1}{}^{A}$	$I_{4.2}{}^{A}$	4.2	$I_{4.6}{}^{L}$	$I_{4.6}{}^{L}$	4.6	L^{H}	L							
31																								
No.									6	19	24	24	26	26	25	25	19	6						
Median									4.0	4.3	4.5	4.6	4.6	4.6	4.6	4.4	4.2	3.9						
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

Y 2

IONOSPHERIC DATA

Sep. 1963 | foE | 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	2.25	2.70	2.95	3.10	$I_{3.20}^{R}$	R	R	R	3.10	2.90^{R}	$I_{2.45}^{A}$	A					
2							S	2.25	2.70	3.00	3.10	3.15	3.05	A	A	A	A	A	A					
3							S	A	A	A	A	A	3.40	R	A	3.20	2.85	2.40	1.70					
4							S	2.15	2.50	2.70	A	A	A	A	3.30	3.20	2.80	2.30	S					
5							S	2.40	2.75	$I_{3.00}^{R}$	R	R	R	3.30	$I_{3.25}^{A}$	3.10	2.85	2.40	A					
6							S	2.00	2.50	$I_{2.70}^{A}$	A	A	A	A	A	A	A	2.40	A					
7							S	A	2.75	A	A	A	3.20	A	A	3.10	2.80	2.45	S					
8							S	2.00	$I_{2.55}^{A}$	3.10	A	R	A	$I_{3.35}^{R}$	3.20	3.10	2.90	2.30	S					
9							S	2.10	2.70	3.10	3.20	R	A	A	A	A	A	2.30	1.80					
10							S	2.00	2.60	2.95	3.05	3.30	3.30	A	A	A	A	A	C					
11							S	1.75	2.40	3.00^{H}	3.10	3.10	3.20	$I_{3.30}^{A}$	3.20^{R}	$I_{3.05}^{A}$	2.80	2.50	1.70					
12							S	2.20	2.70	3.00	3.15	3.30	$I_{3.30}^{R}$	3.25	3.15	3.05	2.75	2.20	S					
13							S	2.10	2.60	2.95	3.30	3.20	3.30	A	B	R	2.90	A	A					
14							S	2.30	2.80	3.05	$I_{3.25}^{R}$	$I_{3.35}^{R}$	3.40^{R}	3.40^{R}	$I_{3.40}^{B}$	3.15	2.95	2.40	S					
15							S	2.15	A	A	B	B	B	B	R	$I_{3.20}^{R}$	2.95	$I_{2.40}^{A}$	S					
16							S	A	A	A	B	A	B	$I_{3.45}^{R}$	3.35	3.15	2.80	2.40	S					
17							S	2.20	2.70	3.05	$I_{3.25}^{R}$	R	B	B	R	3.20^{R}	$I_{2.90}^{R}$	2.40	S					
18							S	A	A	A	A	A	A	A	A	A	A	A	S					
19							S	2.10	2.60	B	A	A	R	B	R	$I_{3.10}^{R}$	$I_{2.80}^{A}$	2.30	S					
20							S	2.25^{H}	A	A	R	A	R	A	R	R	2.80	2.40	S					
21							S	A	A	B	B	B	B	B	B	B	2.90	2.40	S					
22							S	2.10	C	C	3.10	R	R	R	3.20	3.00	2.70	2.20	S					
23							S	2.10	2.65	2.90	3.10	3.10	A	R	R	3.00^{R}	2.60^{H}	2.25	S					
24							S	1.95	$I_{2.50}^{A}$	$I_{2.80}^{A}$	3.20^{R}	3.30	$I_{3.20}^{R}$	3.15	A	A	R	2.50	S					
25							S	A	2.60	A	A	A	A	A	R	R	2.70	2.20	S					
26							S	2.10	2.60	3.00	$I_{3.15}^{C}$	3.10	A	A	R	3.00^{R}	2.80	$I_{2.55}^{B}$	S					
27							S	A	A	A	R	A	C	A	A	3.00^{R}	2.70	2.30	S					
28							S	A	A	A	A	A	R	A	3.15^{R}	2.95^{R}	2.60	2.20	S					
29							S	2.05^{H}	2.50^{H}	2.80	3.10^{R}	3.20^{R}	$I_{3.20}^{R}$	3.20^{R}	$I_{3.05}^{R}$	2.90	2.60	2.10	S					
30							S	2.00	2.50	A	A	3.30^{R}	R	R	$I_{3.10}^{R}$	2.90^{R}	2.60	2.20	S					
31																								
No.								22	21	17	14	12	10	8	11	20	24	26	3					
Median								2.10	2.60	3.00	3.10	3.20	3.25	3.30	3.20	3.10	2.80	2.40	1.70					
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

Y - 3

IONOSPHERIC DATA

Sep. 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	$J_{2.7}$	2.3	S	E	E	S	2.2	2.5	3.0	3.9	3.5	3.6	2.9^{G}	2.8^{G}	3.0^{G}	2.7^{G}	2.9	$J_{4.4}$	$J_{3.0}$	2.0	S	$J_{2.7}$	$J_{2.3}$	2.7
2	E	2.1	2.2	E	E	$J_{1.7}$	S	2.5	$J_{4.4}$	5.1	6.5	$J_{5.0}$	4.9	9.0^{M}	$J_{5.2}$	8.9^{M}	$J_{4.3}$	$J_{3.6}$	$J_{4.1}$	$J_{4.2}$	3.5	2.8	2.4	3.1^{M}
3	$J_{2.7}$	3.0	2.9	$J_{1.9}$	1.8	2.3	2.3	$J_{4.5}$	6.0^{M}	$J_{5.4}$	$J_{5.2}$	4.3	5.0	G	$J_{5.4}$	3.7	4.2	$J_{5.4}$	9.0^{M}	$J_{8.4}$	5.7^{M}	6.0^{M}	3.5^{M}	$J_{5.3}$
4	3.4	3.2	2.4	1.8	3.6	6.0	$J_{5.1}$	5.0	3.3	$J_{3.2}$	$J_{5.3}$	4.6	$J_{5.4}$	$J_{4.4}$	3.1^{G}	3.5	3.3	3.5	2.9	$J_{3.2}$	S	S	2.1	2.4
5	3.5^{M}	2.6	6.5^{M}	$J_{8.4}$	4.0^{M}	S	S	2.3^{G}	2.7^{G}	2.8^{G}	3.1^{G}	G	G	3.5	3.4	2.3^{G}	2.4^{G}	2.9	2.1	S	2.0	2.6	2.6	2.2
6	2.1	1.9	2.2	$J_{1.7}$	1.7	2.4	S	2.7	3.1	3.2	3.8	4.0	$J_{4.8}$	3.9	4.0	4.7	$J_{3.1}$	3.2	3.6	$J_{2.9}$	2.3	S	$J_{3.0}$	2.3
7	$J_{2.4}$	2.5	2.1	1.2	1.4	$J_{1.6}^{S}$	$J_{1.5}^{S}$	2.3	2.8	3.3	$J_{4.8}$	3.3	4.0	$J_{4.3}$	3.8	3.4	3.9	$J_{4.6}$	$J_{5.1}$	3.7	3.1^{M}	$J_{5.2}$	$J_{5.1}$	$J_{5.3}$
8	6.0	3.5^{M}	2.7	$J_{2.8}$	$J_{2.3}$	2.3^{M}	2.0	2.8	$J_{3.4}$	3.7	$J_{3.4}$	3.1^{G}	3.8	2.7^{G}	2.4^{G}	2.8^{G}	3.1	2.8	2.2	S	S	S	S	S
9	S	2.3	2.1	2.2	2.1	2.1	S	2.7	3.3	3.5	G	3.1^{G}	3.5	$J_{4.3}$	$J_{5.3}$	$J_{4.4}$	3.5	3.3	2.4	2.3	S	2.3	2.4	8.9^{M}
10	3.8	3.6	3.6	2.7	2.5	2.2	2.5	3.1	$J_{4.5}$	4.9	3.7	3.9	3.6	$J_{5.3}$	$J_{5.3}$	$J_{5.1}$	$J_{5.4}$	3.9^{M}	C	$J_{3.0}$	$J_{3.0}$	$J_{3.2}$	S	$J_{4.2}$
11	2.7	2.4	C	$J_{2.6}$	2.7	2.4	2.2	$J_{5.2}$	3.2	3.7	3.6	3.6	3.7	4.0	2.9^{G}	4.9	3.3	G	2.4	$J_{1.6}^{S}$	2.3	2.3	2.8^{M}	3.0
12	3.0^{M}	2.5	2.2	2.3	2.0	S	S	2.8	3.2	3.8	3.8	$J_{4.6}$	6.3	$J_{5.3}$	$J_{4.6}$	3.6	$J_{4.3}$	3.1	$J_{2.9}$	$J_{3.1}$	$J_{3.2}$	$J_{3.2}$	2.7	2.7
13	$J_{2.5}$	$J_{2.6}$	2.1	1.2	1.7	1.7	2.3	2.8	3.2	3.5	4.2	4.1	4.2	4.2	B	2.8^{G}	2.8^{G}	4.4	$J_{5.1}$	2.6	2.3	$J_{2.2}$	S	2.3
14	2.3	2.2	2.4	$J_{2.5}$	$J_{2.6}$	2.4	1.8	2.6	3.0	5.8^{M}	3.6	3.8	3.8	3.8	4.0	3.7	G	2.8	2.9	2.9	2.3	2.8	2.6	S
15	S	S	1.2	1.9	1.5	$J_{1.7}^{S}$	$J_{2.7}$	3.3	11.0	$J_{8.7}$	B	B	B	B	G	2.7^{G}	3.4	$J_{5.2}$	5.9	5.9^{M}	4.3^{M}	$J_{3.0}$	3.4	3.2
16	2.3	2.7	2.6	$J_{2.2}$	2.2	S	S	2.4	3.2	4.0	4.4	4.0	B	G	G	3.9	$J_{4.9}$	$J_{4.2}$	2.1	$J_{5.2}$	S	S	2.2	2.2
17	S	S	2.2	1.3	E	1.3	S	3.0	3.9	6.0^{M}	2.2^{G}	2.6^{G}	B	B	4.8	G	G	2.9	G	$J_{2.2}$	3.6^{M}	3.6^{M}	2.4	3.0
18	3.0^{M}	2.7	2.3	1.8	1.3	1.9	$J_{2.7}$	3.8	$J_{5.4}$	$J_{8.5}$	$J_{5.6}$	$J_{5.4}$	$J_{5.4}$	5.3	$J_{5.3}$	$J_{3.2}$	3.1	$J_{4.3}$	3.7	$J_{3.0}$	$J_{4.0}$	$J_{4.2}$	3.8^{M}	$J_{5.1}$
19	$J_{2.8}$	$J_{4.1}$	$J_{2.5}$	$J_{2.3}$	$J_{2.0}$	$J_{2.2}$	S	2.6	3.2	3.5	4.1	3.5	3.1^{G}	B	3.0^{G}	3.0^{G}	2.9	2.7	$J_{2.2}$	2.6	2.4	$J_{2.7}$	$J_{2.8}$	2.4
20	2.8	3.0	2.1	S	S	S	1.8	2.4	3.0	$J_{3.2}$	3.1^{G}	3.6	2.8^{G}	$J_{3.7}$	3.0^{G}	3.6	3.4	3.0	2.2	2.3	S	2.0	$J_{2.3}$	S
21	S	S	S	E	E	S	$J_{1.7}^{S}$	2.4	3.1	B	B	B	B	B	B	B	2.5^{G}	2.9	2.8	$J_{2.6}$	2.3	2.2	2.2	S
22	S	S	S	2.0	S	S	S	2.8	C	C	3.4	3.2^{G}	2.9^{G}	$J_{3.2}^{G}$	2.4^{G}	2.3^{G}	3.1	2.8	2.1	S	S	$J_{1.7}^{S}$	S	S
23	S	S	S	S	2.6	2.3	2.2	2.5	2.9	G	3.7	$J_{5.1}$	3.5	3.0^{G}	G	G	G	2.6	2.4	$J_{2.9}$	3.1	3.5	4.0^{M}	2.2
24	2.2	S	2.3	S	E	S	S	2.2	2.6	3.8	$J_{5.2}$	4.1	$J_{5.6}$	$J_{6.8}$	$J_{7.3}$	3.5	2.7^{G}	2.5	1.8	$J_{5.3}$	4.7^{M}	$J_{4.1}$	3.9^{M}	2.4
25	2.5	S	S	1.2	$J_{2.9}$	2.9^{M}	2.6	$J_{5.4}$	3.7	$J_{4.3}$	4.8	3.8	3.5	3.8	3.2^{G}	2.9^{G}	3.1	2.9	$J_{2.8}$	3.6^{M}	4.6^{M}	5.8^{M}	5.8^{M}	5.8^{M}
26	3.0	2.4	2.1	S	S	S	S	2.3	3.2	3.4	C	12.0^{M}	3.7	$J_{4.6}$	G	3.3	3.3	3.5	$J_{4.9}$	8.4	10.6^{M}	$J_{3.0}$	$J_{5.1}$	3.1
27	3.9^{M}	S	3.9^{M}	2.5	1.2	S	$J_{2.2}$	2.7	3.2	3.2	3.1^{G}	3.4	C	3.5	4.0	3.5	3.9	$J_{6.2}$	5.9	5.9^{M}	$J_{5.1}$	5.7^{M}	4.7^{M}	3.5^{M}
28	2.7	$J_{2.5}$	$J_{2.8}$	$J_{2.3}$	$J_{2.9}$	$J_{2.9}$	2.4	3.7	6.1	$J_{5.1}$	4.0	3.8	3.0^{G}	$J_{3.3}^{G}$	2.2^{G}	2.0^{G}	3.1	2.7	1.8	$J_{2.0}$	$J_{2.0}$	S	2.2	S
29	S	S	S	S	2.2	S	S	2.6	3.6	3.6	3.8	3.6	3.5	G	G	G	3.0	2.7	1.9	$J_{2.9}$	S	S	S	S
30	2.2	S	2.2	2.2	E	1.9	S	3.0	3.7^{M}	6.7	$J_{6.6}$	2.9^{G}	3.0^{G}	2.7^{G}	G	G	G	2.4	$J_{2.7}$	2.2	9.0^{M}	$J_{5.3}$	2.4	$J_{3.0}$
31																								
No.	23	20	23	25	27	19	17	30	29	28	27	28	25	26	28	29	30	30	29	27	22	24	25	23
Median	2.7	2.6	2.3	2.0	2.0	2.2	2.2	2.7	3.2	3.8	3.8	3.8	3.7	3.8	G	3.3	3.1	3.0	2.8	2.9	3.2	3.0	2.7	3.0
U.Q.	3.0	3.0	2.7	2.4	2.6	2.4	2.6	3.1	3.8	5.1	4.8	4.2	4.8	4.4	4.7	3.7	3.5	4.2	3.9	4.2	4.6	4.2	3.8	4.2
L.Q.	2.3	2.4	2.1	1.2	1.2	1.7	1.9	2.5	3.0	3.4	3.4	3.4	G	G	G	G	G	2.8	2.2	2.3	2.3	2.4	2.4	2.4
Q.R.	0.7	0.6	0.6	1.2	1.4	0.7	0.7	0.6	0.8	1.7	1.4	0.8						1.4	1.7	1.9	2.3	1.8	1.4	1.8

IONOSPHERIC DATA

Sep. 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	E	E	S			S	G	G	2.9	3.4	3.5	3.6	$E_{2.9}^{R}$	$E_{2.8}^{R}$	$E_{3.0}^{R}$	2.7^{G}	G	G	2.6	2.0	S	1.8	2.3	1.9
2		E	E			1.7	S	G	4.0	4.2	4.6	4.6	3.8	5.2	4.6	4.5	4.0	3.1	3.7	4.1	2.8	2.0	E	E
3	2.1	2.0	1.8	1.7	1.8	1.8	G	4.1	3.2	3.5	4.0	4.1	4.2		3.7	3.4	4.1	5.1	A	A	2.2	A	E	2.0
4	1.7	1.7	E	1.7	1.7	A	A	2.8	3.2	3.2	3.6	3.9	5.3	4.2	3.0^{G}	3.5	3.3	3.4	2.8	A	S	S	E	E
5	A	1.7	A	A	A	S	S	2.2^{G}	2.6^{G}	$E_{2.8}^{R}$	$E_{3.1}^{R}$			G	3.4	2.3^{G}	2.2^{G}	1.9	2.1	S	E	E	E	E
6	E	1.6	1.6	1.6	1.6	1.6	S	2.6	3.0	3.2	3.6	3.9	4.6	3.8	3.7	3.8	2.8	2.0	3.5	A	E	S	1.8	E
7	E	E	E	$E_{1.2}^{S}$	$E_{1.4}^{S}$	S	S	2.3	2.7	3.3	4.7	$E_{3.3}^{R}$	3.8	4.0	3.7	G	3.9	4.5	4.9	3.6	1.9	A	A	2.0
8	A	1.8	1.7	1.9	1.8	E	G	2.6	3.2	2.9	$E_{3.4}^{R}$	$E_{3.1}^{R}$	3.7	2.5^{G}	2.4^{G}	2.1^{G}	3.1	2.8	2.2	S	S	S	S	S
9	S	E	1.7	1.7	1.6	1.7	S	2.5	3.3	3.4		$E_{3.1}^{R}$	3.5	4.0	4.4	4.0	3.2	3.2	2.3	2.2	S	E	E	1.8
10	1.8	1.8	1.8	1.7	1.7	1.7	1.7	2.8	4.2	4.0	3.6	3.6	3.6	3.7	4.7	A	3.9	3.2	C	3.0	2.0	A	S	1.8
11	E	1.9	C	2.0	1.7	E	G	2.5	3.2	3.6	3.5	3.6	3.6	3.9	2.8^{G}	3.4	3.3		2.3	S	1.9	E	1.8	1.8
12	1.8	1.8	E	1.7	E	S	S	2.5	G	3.7	3.6	4.3	6.1	4.9	4.6	3.5	3.7	3.0	2.7	3.0	2.6	2.1	E	1.7
13	1.8	1.8	1.8	1.2	1.6	1.6	G	2.7	3.2	3.4	4.1	4.0	4.0	4.1	B	$E_{2.8}^{R}$	2.5^{G}	3.7	3.2	1.7	E	1.7	S	E
14	E	E	1.7	1.7	2.3	E	G	G	G	G	3.6	3.8	3.8	3.8	3.9	3.5		G	2.1	1.9	E	1.8	1.7	S
15	S	S	$E_{1.2}^{S}$	1.8	$E_{1.5}^{S}$	S	2.2	3.0	4.7	A	B	B	B	B		$E_{2.7}^{R}$	3.4	2.9	5.5	4.1	2.2	2.6	1.8	1.8
16	E	1.7	1.8	1.9	E	S	S	2.3	2.9	3.8	4.2	3.9	B			3.6	4.1	3.3	G	4.6	S	S	E	E
17	S	S	E	$E_{1.3}^{S}$		E	S	2.8	3.5	3.4	2.2^{G}	2.4^{G}	B	B	4.5			G		E	2.0	1.9	E	1.8
18	2.2	2.0	2.1	1.3	$E_{1.3}^{S}$	1.7	1.7	2.9	3.2	A	$E_{5.6}^{R}$	4.1	3.9	4.7	3.8	$E_{3.2}^{R}$	3.1	3.6	3.3	2.6	2.0	2.0	2.5	1.9
19	1.9	1.8	E	1.9	1.7	1.7	S	2.6	3.2	3.5	4.1	$E_{3.5}^{R}$	$E_{3.1}^{R}$	B	2.8^{G}	$E_{3.0}^{R}$	2.9	G	2.0	E	1.8	2.0	2.3	E
20	E	2.1	E	S	S	S	1.8	2.4	$E_{3.0}^{R}$	3.2	$E_{3.1}^{R}$	$E_{3.6}^{R}$	$E_{2.8}^{R}$	$E_{3.7}^{R}$	$E_{3.0}^{R}$	3.6	3.4	2.9	2.1	E	S	1.9	1.9	S
21	S	S	S			S	S	2.3	2.9	B	B	B	B	B	B	B	2.5^{G}	2.8	2.2	1.9	E	E	1.9	S
22	S	S	S	1.4	S	S	S	2.5	C	C	G	$E_{3.2}^{R}$	2.9^{G}	$E_{3.2}^{R}$	2.4^{G}	2.3^{G}	3.1	2.7	2.0	S	S	S	S	S
23	S	S	S	S	2.0	1.7	G	G	G		3.4	3.6	$E_{3.5}^{R}$	$E_{3.0}^{R}$				G	2.3	1.8	A	2.2	1.8	E
24	E	S	E	S		S	S	G	$E_{2.6}^{R}$	3.7	4.3	3.9	$E_{5.6}^{R}$	6.5	$E_{7.3}^{S}$	3.3	$E_{2.7}^{R}$	G	1.8	A	A	2.3	2.9	E
25	E	S	S	$E_{1.2}^{S}$	E	E	1.8	4.8	3.6	4.0	3.6	3.5	$E_{3.5}^{R}$	3.7	$E_{3.2}^{R}$	$E_{2.9}^{R}$	3.1	2.4	2.1	$E_{3.6}^{S}$	$E_{4.6}^{S}$	A	A	A
26	1.9	E	E	S	S	S	S	G	3.1	3.3	C	5.2	3.6	3.7		3.3	3.3	3.5	4.8	8.0	A	1.8	1.9	1.9
27	2.5	S	2.3	1.6	$E_{1.2}^{S}$	S	G	2.2	2.9	3.1	$E_{3.1}^{R}$	3.4	C	$E_{3.5}^{R}$	3.5	3.5	3.2	6.0	4.5	A	A	A	2.3	2.2
28	E	2.5	2.6	2.0	2.2	1.9	1.9	2.9	3.7	3.2	3.3	3.7	$E_{3.0}^{R}$	$E_{3.3}^{R}$	2.2^{G}	2.0^{G}	G	2.6	1.7	1.8	E	S	E	S
29	S	S	S	S	E	S	S	2.4	3.6	3.5	3.5	3.5	3.5				3.0	2.6	1.9	2.0	S	S	S	S
30	1.7	S	E	E		E	S	2.5	3.1	5.3	A	2.9^{G}	$E_{3.0}^{R}$	2.3^{G}				2.4	2.4	1.9	4.6	1.9	1.7	E
31																								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

foEs

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

The Radio Research Laboratories, Japan

Y 5

IONOSPHERIC DATA

Sep. 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	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	1.10	E	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.40	1.60	1.65	1.70	1.70	1.80	1.80	1.70	1.60	1.40	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
2	1.30	$E_{1.70}^{S}$	$E_{1.70}^{S}$	E	$E_{1.60}^{S}$	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.60	1.70	1.80	1.80	1.85	1.75	1.80	1.80	1.65	1.40	$E_{1.65}^{S}$	$E_{1.65}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	1.35	$E_{1.70}^{S}$
3	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.20	E	E	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.60	1.80	1.90	1.80	1.90	1.90	1.80	1.75	1.70	1.60	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$
4	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	1.60	1.80	1.80	1.90	2.00	1.95	1.80	1.80	1.60	1.60	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$
5	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.60	1.80	1.95	1.90	1.80	1.80	1.80	1.65	1.60	1.60	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
6	$E_{1.70}^{S}$	$E_{1.50}^{S}$	1.20	E	E	E	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.65	1.70	1.80	1.90	2.00	1.70	1.80	1.80	1.60	1.60	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$
7	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	E	E	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.50}^{S}$	1.55	1.70	1.70	1.80	1.80	1.75	1.80	1.90	1.60	1.65	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.65}^{S}$
8	$E_{1.65}^{S}$	$E_{1.60}^{S}$	1.10	E	E	1.10	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.70	1.70	1.80	1.80	1.95	1.80	1.80	1.80	1.70	1.60	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$
9	$E_{1.65}^{S}$	$E_{1.60}^{S}$	E	E	E	E	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.70	1.80	1.80	1.90	2.30	1.95	1.90	1.70	1.70	1.60	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
10	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	E	E	1.10	$E_{1.60}^{S}$	$E_{1.50}^{S}$	1.60	1.70	1.80	1.85	1.80	1.80	1.80	1.90	1.60	$E_{1.60}^{S}$	C	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$
11	$E_{1.70}^{S}$	$E_{1.70}^{S}$	C	$E_{1.60}^{S}$	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.65	1.80	1.75	1.80	1.90	1.80	1.80	1.80	1.65	1.65	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
12	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	E	1.60	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.65	1.80	1.80	1.80	1.80	1.90	1.85	1.80	1.90	1.60	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$
13	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	E	E	1.10	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.70	1.80	2.00	1.95	2.20	2.20	5.00	2.20	1.80	1.60	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$
14	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	1.70	1.85	1.80	2.30	2.00	1.95	3.50	1.80	1.80	1.80	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.50}^{S}$	$E_{1.70}^{S}$
15	$E_{1.70}^{S}$	$E_{1.65}^{S}$	E	E	E	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.60	1.60	1.80	B	5.40	5.10	4.20	2.40	1.80	1.80	1.70	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$
16	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	E	$E_{1.50}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.70	1.80	1.90	3.40	3.00	3.80	2.20	1.85	1.90	1.85	1.80	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
17	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	E	E	E	$E_{1.70}^{S}$	1.75	1.75	1.80	1.90	1.90	4.10	4.70	2.20	1.80	2.50	1.60	2.10	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.50}^{S}$	$E_{1.60}^{S}$
18	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.40	1.70	1.80	2.30	2.00	2.30	2.75	2.00	1.75	1.70	1.70	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
19	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	E	E	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	1.90	3.25	2.90	2.70	2.75	4.30	2.40	2.25	1.70	1.60	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$
20	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.75}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	1.60	1.70	1.80	2.20	2.40	2.00	1.90	1.80	1.80	1.70	1.60	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.60}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$
21	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.10	E	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.60	B	5.50	B	5.20	5.20	4.10	3.40	1.80	1.70	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
22	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	E	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	C	C	1.80	1.80	2.00	1.85	1.80	1.80	1.75	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.90}^{S}$	$E_{1.70}^{S}$
23	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	E	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.70	1.70	1.80	1.95	1.80	1.90	2.20	1.85	1.80	1.60	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
24	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	1.80	1.85	1.95	2.30	2.00	1.85	2.00	1.80	1.80	1.70	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
25	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.80}^{S}$	1.00	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.80	1.90	1.90	2.50	2.30	2.35	2.30	1.80	1.80	1.80	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
26	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.70	2.00	$E_{4.10}^{C}$	1.95	2.00	1.85	1.85	1.85	1.60	2.90	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
27	$E_{1.65}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.05	E	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.75}^{S}$	1.70	1.75	2.00	2.00	$E_{3.80}^{C}$	1.95	1.80	1.75	1.70	1.75	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.80}^{S}$	$E_{1.50}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
28	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	1.40	E	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.65}^{S}$	1.80	1.80	1.90	1.80	1.80	1.70	1.60	1.70	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$
29	$E_{1.80}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.80}^{S}$	E	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.80	1.75	1.80	1.85	1.85	2.20	1.80	1.75	1.80	$E_{1.70}^{S}$	$E_{1.65}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$
30	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	1.15	E	$E_{1.60}^{S}$	$E_{1.80}^{S}$	$E_{1.70}^{S}$	1.70	1.75	1.80	1.80	1.80	1.80	1.80	1.60	1.85	1.70	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$	$E_{1.70}^{S}$	$E_{1.60}^{S}$	$E_{1.70}^{S}$
31																								
No.	30	30	29	24	25	30	30	30	29	29	29	30	29	30	30	30	30	28	29	30	30	30	30	30
Median	$E_{1.70}$	$E_{1.70}$	$E_{1.60}$	E	E	$E_{1.60}$	$E_{1.60}$	$E_{1.70}$	1.70	1.80	1.80	1.90	2.00	1.90	1.80	1.80	1.70	1.60	$E_{1.65}$	$E_{1.65}$	$E_{1.70}$	$E_{1.60}$	$E_{1.70}$	$E_{1.70}$
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

Sep. 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^{S}	3.05	3.15	2.90	3.15	3.40	3.75	3.55^{S}	3.50	I3.60^{S}	3.50^{S}	3.45^{H}	3.05	3.00	J3.05^{S}	I3.10^{S}	J3.10^{S}	J3.40^{S}	3.30	I3.45^{S}	J3.10^{S}	J3.20^{S}	2.95	3.05^{S}
2	J3.00^{S}	3.05	3.15	3.15	3.15^{S}	3.40	3.50	3.65	3.80	3.30	J3.50^{S}	J3.25^{S}	3.30	3.05	I3.15^{S}	3.15	3.25	3.20^{S}	I3.35^{S}	J3.65^{S}	3.40	3.15	I3.10^{S}	I2.95^{S}
3	3.00	2.95	3.00	3.30	3.60^{S}	3.35	3.15^{S}	3.20	3.65	I3.60^{S}	3.10	3.40	2.75$^{S}_{H}$	2.80^{S}	3.05	3.15	3.15	J3.15^{S}	I3.20^{A}	A	3.25^{S}	I3.20^{A}	I2.85^{S}	J2.90^{S}
4	J2.75^{S}	3.10	F	3.45	3.35^{F}	I3.50^{A}	I3.35^{A}	3.60	3.50	3.40	3.20	2.95	I3.10^{S}	3.05^{S}	3.10^{S}	3.20	I3.20^{S}	3.25	3.35	3.55	3.40	J3.25^{S}	2.90	I2.80^{S}
5	I3.05^{S}	2.95^{S}	I3.15^{A}	I3.25^{A}	I3.35^{A}	3.35	3.35	3.45	3.45	3.35	3.15	3.05	3.15^{S}	I3.30^{S}	3.55^{S}	3.20	3.15	3.20	I3.30^{S}	3.50	3.60^{S}	J3.20^{S}	2.85^{S}	I2.95^{S}
6	I2.90^{S}	3.05	3.00^{S}	3.25	3.00	3.25	3.55	3.80	3.75	3.40	3.35	3.30	2.95^{S}	J3.00^{S}	3.00	3.20	3.15	I3.40^{S}	J3.25^{S}	3.40^{S}	J3.80^{S}	3.00	I2.95^{S}	I3.30^{S}
7	3.15	3.05^{H}	3.05	3.15	3.15	I3.40^{S}	3.35^{S}	I3.65^{S}	3.45^{H}	3.75	3.15	3.20	3.10	2.70	3.20	J3.25^{S}	3.15	3.25	3.50	J3.50^{S}	3.75^{S}	A	A	S
8	I3.25^{A}	I3.15^{S}	3.25^{S}	3.30	3.40	3.10	3.20	3.50	3.60	3.60	3.35	3.40	3.30	3.00	3.10	3.15	J3.30^{S}	3.30^{S}	I3.30^{S}	I3.45^{S}	J3.45^{S}	3.05	I2.80^{S}	I2.80^{S}
9	2.75	2.90^{S}	I3.30^{S}	3.45^{S}	2.95	3.15	3.30^{S}	3.55	J3.15^{S}	3.55	3.60	3.05	3.00	I3.00^{S}	3.25	J3.20^{S}	J3.35^{S}	3.25	I3.25^{S}	J3.45^{S}	3.40^{S}	I3.05^{S}	S	S
10	S	I2.80^{S}	I3.00^{S}	3.10	3.10	3.10	J3.25^{S}	I3.70^{S}	I3.65^{S}	3.55	3.20	3.35	J3.70^{S}	3.30	I3.10^{S}	I3.20^{S}	J3.15^{S}	J3.25^{S}	I3.45^{C}	J3.65^{S}	3.55	I3.10^{S}	I3.05^{S}	2.95
11	I2.90^{S}	3.20	I3.10^{C}	3.15	3.00	2.95	3.40	3.95	3.65	3.70	3.20	3.25	3.35	3.25	I3.20^{S}	3.10	3.05	3.20^{S}	J3.30^{S}	J3.35^{S}	I3.30^{S}	J3.00^{S}	J3.00^{S}	I2.90^{S}
12	3.05^{S}	J3.30^{S}	3.10^{S}	I3.05^{S}	2.80	2.95	3.25	S	I3.75^{S}	3.75	3.45	3.00	3.15^{S}	3.10	I3.10^{S}	3.05	J3.20^{S}	J3.25^{S}	J3.40^{S}	J3.40^{S}	3.50	J3.00^{S}	2.80	2.90^{S}
13	3.15	2.90	I3.10^{S}	I3.60^{S}	2.95	3.20	J3.70^{S}	3.75	3.60	3.45	3.40	3.05	3.15	3.10	3.25	3.25	3.25	3.40	J3.40^{S}	3.35	I3.50^{S}	J3.05^{S}	I2.95^{S}	2.95
14	3.00^{S}	J3.00^{S}	I3.10^{S}	I3.25^{S}	3.30	3.15	I3.30^{S}	3.65	I3.70^{S}	J3.65^{S}	3.45	3.20	3.10	J3.05^{S}	3.10	3.25	J3.00^{S}	3.15	3.20	3.05	I3.30^{S}	3.10^{S}	J2.65^{S}	I2.70^{S}
15	I2.70^{S}	I3.05^{S}	I3.25^{S}	I3.20^{S}	J3.45^{S}	I3.00^{S}	3.20	3.30	I3.35^{S}	A	B	2.95	3.00	3.05	2.95	3.20	3.15	3.20^{S}	I3.25^{S}	J3.30^{S}	2.95^{S}	J2.85^{S}	2.75	2.75
16	2.85	2.80	I3.15^{S}	3.00	3.00	F	3.10	3.55	I3.40^{S}	3.45	2.85	3.10	J3.20^{S}	3.25^{S}	J3.35^{S}	3.15	3.35	S	S	3.30	J3.05^{S}	I2.80^{S}	2.70^{S}	J2.75^{S}
17	I2.90^{S}	3.15	J3.25^{S}	3.15	3.10	3.25	3.50	3.45^{S}	S	3.65	2.90	2.75	3.05	I3.30^{S}	3.25^{S}	3.20^{S}	3.15	J3.20^{S}	I3.20^{S}	J3.30^{S}	J3.05^{S}	2.95^{H}	2.90	I2.90^{S}
18	2.90	3.10^{S}	3.35	2.90^{H}	3.05	3.00	2.95	J3.45^{S}	3.45	I3.40^{A}	3.10	J2.90^{S}	3.00	3.25	3.20	I3.20^{S}	3.30^{S}	3.30	I3.35^{S}	I3.50^{S}	3.25^{S}	I3.20^{S}	3.15	J3.05^{S}
19	3.15	3.05	2.90	2.85	2.95	2.85	I3.20^{S}	J3.65^{S}	I3.40^{S}	J3.35^{S}	2.85	J3.00^{S}	3.05^{S}	3.15	J3.05^{S}	3.00^{S}	3.05^{S}	3.15^{S}	3.25	I3.30^{S}	3.05	2.75	3.20	2.95
20	2.75	2.95	2.85	2.95^{S}	2.85	2.95	J3.25^{S}	3.55	I3.60^{S}	3.55^{S}	3.30	3.20	3.10	I3.10^{S}	3.30	3.40	I3.40^{S}	3.30	I3.30^{S}	I3.20^{S}	I3.20^{S}	3.15	3.00	I3.00^{S}
21	3.20	2.95	2.80	2.85	3.35	3.45	3.35	J3.50^{S}	I3.50^{S}	B	3.25	B	3.25	3.25	3.10	3.15	3.30	3.45	3.55	I3.55^{S}	2.90^{S}	I2.95^{S}	2.90	2.95^{H}
22	2.85^{H}	I3.00$^{S}_{H}$	2.70^{H}	2.75	I2.70^{S}	3.20^{S}	3.60^{S}	3.35	C	C	J3.35^{S}	3.05	2.80	3.20	J3.00^{S}	2.70	2.70	3.35	I3.50^{S}	2.90	3.20	I2.75^{S}	J2.85^{S}	I2.85^{S}
23	3.20^{S}	3.15	2.80	2.95	2.85	2.90	I3.20^{S}	J3.30^{S}	3.45	J3.55^{S}	G	I2.25^{S}	I2.45^{S}	3.05	2.85	J3.35^{S}	3.60^{S}	3.20^{S}	HI3.65^{S}	I2.80^{S}	I2.65^{S}	I2.70^{S}	J3.00^{S}	J3.20^{S}
24	3.25^{S}	2.85^{H}	2.80	2.75	3.00	3.00	J3.50^{S}	J3.50^{S}	I3.40^{S}	J3.50^{S}	I3.40^{S}	3.35	3.45	J3.20^{S}	3.30	J3.10^{S}	3.25	3.50^{S}	J3.60^{S}	I3.40^{S}	I2.95^{A}	2.85^{S}	I2.95^{S}	J3.10^{S}
25	3.10^{S}	3.10	I3.40^{S}	I3.15^{S}	2.90	I3.10^{S}	I3.50^{S}	3.70^{S}	I3.65^{S}	J3.45^{S}	3.35	3.00	3.05	3.30	3.05	3.25	3.55	3.40^{S}	I3.20^{S}	J2.90^{S}	3.00	I3.15^{S}	A	A
26	3.30	2.90	2.80	2.90	3.30	3.50	3.40	3.65	3.60	I3.40^{S}	I3.35^{C}	J3.20^{S}	3.05	3.15^{S}	3.30	J3.35^{S}	3.10	I3.40^{S}	I3.60^{S}	3.80	I3.25^{A}	J2.90^{S}	J2.95^{S}	2.90
27	3.05	3.25^{S}	3.05	3.10	2.85	2.90^{F}	3.55^{S}	J3.85^{S}	3.85	3.40	I3.40^{S}	3.35	I3.25^{S}	J3.45^{S}	I3.30^{S}	3.25^{S}	3.25	3.40	I3.55^{S}	I3.60^{S}	A	I3.10^{A}	2.90	2.90
28	3.05	3.10^{S}	3.05^{S}	3.40	3.40	3.35	3.35^{S}	3.50^{S}	J3.50^{S}	J3.70^{S}	3.35^{S}	2.95	2.95	3.40	J3.40^{S}	U3.25^{S}	3.15$^{S}_{H}$	3.35	3.50	3.20	J3.30^{S}	2.95^{S}	2.65	I2.85^{S}
29	3.00	3.25	I3.20^{S}	J3.05^{S}	3.05	J3.45^{S}	3.20	J3.45^{S}	S	J3.65^{S}	3.40	3.10	3.25	J3.25^{S}	J3.30^{S}	J3.15^{S}	J3.35^{S}	3.50^{S}	I3.60^{S}	I3.40^{S}	3.10	I2.80^{S}	3.05^{S}	2.90^{S}
30	I3.00^{S}	I3.30^{S}	3.20	3.25^{S}	3.05	3.40	3.30^{S}	3.90	3.55	3.80	I3.50^{A}	3.40	3.20	I3.30^{S}	3.50	3.45	3.60	3.45	I3.40^{S}	I3.65^{S}	3.80	2.75	2.90	3.05
31																								
No.	29	30	29	30	30	29	30	29	27	27	29	29	30	30	30	30	30	29	29	29	29	29	27	27
Median	3.00	3.05	3.10	3.15	3.05	3.20	3.35	3.55	3.55	3.55	3.35	3.10	3.10	3.15	3.20	3.20	3.20	3.30	U3.35	3.40	3.25	3.00	2.90	2.90
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

Sep. 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	3.75	3.75	3.90		3.90	3.80	3.90^{H}	3.90	3.60	$I_{3.70}^{L}$	L					
2								L	A	A	A	$I_{3.80}^{A}$	3.75	$I_{3.90}^{A}$	A	A	$I_{3.60}^{L}$	3.60	A					
3								A	3.75	3.75	3.75	A	3.60	3.70	3.65	3.70	A	A	A					
4									3.65	3.80	3.85	3.70	$I_{3.85}^{A}$	A	3.85	3.65	3.70	3.60	L					
5								L	L	$I_{3.80}^{L}$	3.60	4.00	3.70	3.95	3.60^{H}	3.75	3.65	L^{H}	L					
6								L	4.00	$I_{3.75}^{L}$	3.80	$I_{4.00}^{L}$	A	3.90	3.65	3.50	3.55	L	A					
7								L	L	3.95	$I_{3.75}^{A}$	4.05	3.70	4.00^{H}	3.70	3.65	A	A	A					
8									3.75	3.95	4.00	3.85^{H}	3.90^{H}	4.00	3.95^{H}	3.65	3.55	L	L					
9									L	3.90	3.80	3.80^{H}	3.90	3.85	A	A	3.60	L	L					
10								L	A	A	$I_{3.90}^{L}$	4.05	4.15	3.75	$I_{3.75}^{A}$	A	L	L	C					
11									L	3.80	4.00	4.00	4.05	3.55	3.90	3.70	$I_{3.55}^{L}$	3.60	L					
12									L	4.05	3.90	3.70	A	A	A	3.50	3.55	L	A					
13										3.95	A	L	4.00	C	$I_{3.45}^{B}$	3.35	L	A	A					
14									L	3.70^{L}	4.00	$I_{3.80}^{L}$	3.60^{H}	3.70	3.70	3.65	3.60	L	L					
15									A	A	B	B	B	B	3.40^{H}	3.40^{H}	3.60	3.50	A					
16									L	L	L	$I_{3.90}^{R}$	3.40^{R}	3.80	3.50^{H}	3.65	A	L						
17									L	4.05	L^{H}	3.60	$I_{3.50}^{R}$	B	A	L^{H}	3.50^{H}	L						
18								L	4.00	$I_{3.60}^{A}$	$I_{3.85}^{A}$	3.45	3.55	A	3.65	3.50^{H}	3.65	L	A					
19								L	L	$I_{3.70}^{L}$	3.60	3.65	R	3.55	3.60	3.60	L^{H}	L						
20									L	L	L	R	3.80	3.50	3.65	3.55	L	L						
21									L	B	B	B	B	B	L	3.55	$I_{3.60}^{L}$	L						
22									C	C	3.70	3.95^{H}	$I_{3.75}^{L}$	$I_{3.95}^{L}$	3.40	3.30	L	L						
23									L	L	3.30^{H}	2.90^{H}	3.20	3.65	$I_{3.30}^{L}$	3.60	L							
24									L	L	L	3.80^{L}	A	A	A	L	L	L						
25									A	A	4.25	L	3.65^{H}	3.60	3.60	3.70	$I_{3.85}^{L}$	4.25						
26									L	$I_{3.80}^{L}$	C	$I_{3.80}^{A}$	3.65	3.70^{H}	3.55	$I_{3.70}^{L}$	L	A	A					
27									L	3.85	$I_{3.95}^{L}$	4.20	3.80	3.50	3.70	3.60	3.75	A	A					
28									L	L	L	3.40^{H}	3.55^{L}	3.80	3.85	4.10								
29									L	L	$I_{3.85}^{L}$	L	4.00^{H}	3.65	3.60^{L}	L	3.80							
30									L	$I_{4.05}^{A}$	$I_{4.10}^{A}$	4.20	$I_{3.80}^{L}$	$I_{3.60}^{L}$	3.50	L^{H}	L							
31																								
No.									6	18	20	22	24	22	24	23	17	6						
Median									3.75	3.80	3.85	3.80	3.75	3.70	3.65	3.65	3.60	3.60						
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

IONOSPHERIC DATA

Sep. 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								250	260	255	250		350	345	305	300	295	250	255					
2								245	250	275	270	295	310	355	320	305	290	280	260					
3								255	245	250	340	275	315H	330	295	280	290	275	I270A					
4									255	260	295	340	335	310	305	300	290	280	250					
5								250	255	280	305	340	290	275	250	295	305	280	280					
6								230	240	275	280	290	355	330	325	280	290	280	260					
7								230	240	240	320	305	310	325	290	280	290	290	255					
8									245	245	275	275	310	340	290	270	280	260	250					
9									290	250	250	325	320	345	290	280	275	280	250					
10								210	240	250	300	280	270	305	305	I320A	305	275	C					
11									245	245	305	300	280	305	280	310	305	280	255					
12									225	240	290	360	340	325	305	295	290	275	245					
13										250	270	335	310	300	290	285	270	255	240					
14									250	245	260	320	330	310	310	275	295	280	265					
15									270	A	B	355	340	345	365	315	305	290	260					
16									260	275	385	315	280	295	290	305	275	270						
17									245	250	380	390	320	285	280	310	295	280						
18								255	250	I270A	335	340	300	290	290	290	280	265	250					
19								240	255	255	300	290	290	290	275	285	285	260						
20									255	245	300	295	310	310	295	275	260	255						
21									255	I260B	285	I300B	300	290	320	295	275	250						
22									C	C	255	280	300	285	300	350	330	255						
23									255	250	G	630	450	260	340	265	245							
24									255	250	255	270	275	290	I280A	290	275	250						
25									250	240	250	465	305	275	295	260	240	250						
26									250	250	I270C	285	275	305	275	260	280	255	240					
27									230	280	290	265	290	280	285	285	270	255	250					
28									260	235	255	360	300	250	250	250								
29									250	235	260	310	290	290	275	260	260							
30									250	240	A	275	265	285	260	250	245							
31																								
No.								9	28	28	28	29	30	30	30	30	29	26	17					
Median								245	250	250	290	305	310	300	290	285	285	270	255					
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

Y 9

IONOSPHERIC DATA

Sep. 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	285	300	260	290	270	250	225	225	230	225	205	185H	220	200	200H	235	225	230	250	230	240	250	295	290
2	275	275	260	225	240	250	230	230	I230A	I235A	I205A	I210A	205	I210A	I210A	I220A	I255A	250	I250A	245	240	245	270	260
3	300	295	290	245	200	230	255	I245A	240	225	240	I220A	255	210	230	220	A	A	A	I250A	200	I260A	255	330
4	310	290	270	225	230	I265A	A	230	225	205	210	220	I200A	I210A	235	230	225	260	I240A	220A	210	235	275	300
5	I290A	295	I295A	I270A	I255A	240	240	220	205	200	205	200	225	200	195H	205	210	205H	250	225	205	250	260	270
6	295	290	270	240	260	240	240	230	210	200	225	230	I215A	205	210	E260A	230	235	I235A	220A	200	285	350	240
7	260	290H	280	255	255	240	240	210	200	200	I205A	200	225	205H	230	230	A	A	A	240	200	I325A	I340A	255
8	I300A	260	250	245	250	265	250	215	225	210	195	190H	190H	195	190H	230	240	235	245	210	205	255	320	300
9	310	300	240	230	E300A	305	245	235	240	210	195	190H	200	205	I220A	I250A	240	250	250	230	210	245	280	260
10	300	300	260	265	270	285	250	A	A	A	205	190	170	240	I225A	I240A	I250A	A	C	220	215	I280A	295	310
11	305F	260	I280C	275	280	290	240	225	240	225	205	205	205	255	200	205	250	240	245	235	235	250	255	290
12	255	245	250	255	300	290	245	225	230	220	200	260	A	A	A	235	255	250	I240A	240	210	290	305	305
13	255	300	260	200	230	260	230	230	225	215	I225A	195	200	250	I255B	225	240	I245A	I240A	240	225	225	275	290
14	265	250	265	250	260	295	250	240	240	240	205	200	200H	245	240	235	235	210	260	250	225	220	305	325
15	325	290	205	260	225	260	260	245	A	A	B	B	B	B	240H	240H	250	245	I235A	255	240	325	350	355
16	295	340	275	300	325	305	275	240	230	255	250	E250A	245	210	210H	220	I250A	260	245	260	220	305	335	340
17	280	255	240	235	270	240	240	240	245	225	200H	225	250	I250B	I250A	200H	250H	240	260	240	250	255H	270	270
18	290	275	240	270H	275	280	290	245	220	I240A	I195A	250	240	I240A	230	220H	245	A	A	225	220	320	275	290
19	265	280	290	310	310	320	260	240	240	235	245	205	I250R	250	215	235	220H	245	245	230	240	300	250	280
20	285	270	295	290	300	295	260	240	240	210	250	225	245	240	240	255	245	240	245	250	235	240	275	275
21	250	270	310	300	230	245	250	230	240	B	B	B	B	B	250	250	250	245	245	205	250	260	290	295H
22	295H	295H	350H	305	330	270	220	240	C	C	240	195H	205	190	240	240	255	250	220	240	245	305	300	300
23	245	230	265	275	345	300	275	245	240	230	220H	220H	250	240	240	240	240	245H	225	275	I315A	325	280	240
24	250	360H	310	300	255	280	245	230	240	240	I250A	205	200	A	A	225	255	240	225	I255A	I305A	330	300	250
25	250	250	230	270	260	260	240	250	I230A	I225A	200	190	200H	220	220	225	240	220	235	A	E320S	I285A	A	A
26	255	300	350	300	255	240	240	225	240	210	I250C	I215A	200	200H	250	245	240	A	A	E250A	A	E345A	340	340
27	330	250	E310A	260	350	340	250	220	225	225	195	195	220	270	240	240	245	A	A	220A	A	A	330	300
28	285	300	285	245	250	255	240	235	I245A	220	195	210H	220	240	225	200	230H	250	230	200	230	280	325	310
29	290	260	245	300	250	240	255	245	I245A	225	200	200	205H	200	235	240	230	245	220	230	230	300	280	300
30	275	250	250	240	260	240	245	210	210	I230A	I200A	200	250	195	220	200H	240	240	250	225	225	310	335	290
31																								
No.	30	30	29	30	29	30	29	29	27	26	28	27	27	26	28	29	28	24	24	28	27	28	29	29
Median	285	285	265	260	260	260	245	230	230	225	205	205	215	210	230	230	240	245	245	230	225	280	295	290
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

Y 10

IONOSPHERIC DATA

Sep. 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	95	100	S	E	E	S	100	135	140	110	125	95	100	100	100	100	130	130	125	125	S	100	100	100
2	E	100	105	E	E	105	S	155	120	115	110	110	105	105	100	100	100	100	100	100	100	100	115	105
3	105	105	105	105	105	105	105	105	105	105	105	120	120	G	105	155	125	120	110	110	105	105	105	110
4	110	105	110	105	105	105	120	120	110	110	105	100	100	100	105	150	140	120	110	105	S	S	110	110
5	105	105	105	105	105	S	S	110	105	105	105	G	G	120	100	100	100	100	100	S	120	105	105	110
6	110	105	105	105	105	105	S	120	110	105	105	105	100	100	100	100	100	100	115	105	105	S	110	105
7	105	105	105	105	110	S	S	105	110	110	105	110	110	100	130	155	125	110	110	105	105	105	105	105
8	105	105	105	105	105	110	110	110	110	100	105	105	105	105	105	100	155	140	120	S	S	S	S	S
9	S	105	105	105	100	100	S	135	125	125	G	105	105	100	100	100	100	125	125	110	S	110	110	105
10	105	105	105	105	105	105	105	115	120	110	110	110	110	105	105	105	100	100	C	100	95	95	S	105
11	110	105	C	105	105	105	105	110	120	125	140	120	115	105	105	105	190	G	120	S	110	110	105	105
12	105	105	105	100	105	S	S	135	125	125	125	115	110	110	110	110	110	105	105	105	100	100	100	105
13	100	100	100	100	100	100	100	150	145	110	110	110	105	105	B	105	100	100	100	100	110	110	S	105
14	105	105	105	105	100	100	105	165	150	100	125	125	125	125	125	120	G	145	110	105	105	105	105	S
15	S	S	135	130	140	S	130	130	100	100	B	B	B	B	G	105	140	110	105	105	105	105	105	100
16	100	100	100	100	100	S	S	115	110	105	105	105	B	G	G	130	120	120	125	110	S	S	105	105
17	S	S	105	105	E	140	S	125	120	120	105	105	B	B	130	G	G	115	G	105	105	105	105	100
18	100	95	120	120	120	120	110	110	110	105	105	105	120	100	100	100	100	100	100	100	115	120	105	105
19	105	105	105	105	105	105	S	120	115	120	105	105	105	B	105	105	105	105	100	100	100	110	105	105
20	100	100	95	S	S	S	120	155	105	100	105	100	100	100	100	155	140	130	115	100	S	105	105	S
21	S	S	S	E	E	S	S	110	105	B	B	B	B	B	B	B	100	140	105	120	100	100	100	S
22	S	S	S	105	S	S	S	120	C	C	115	105	100	100	100	100	140	130	120	S	S	S	S	S
23	S	S	S	S	100	100	100	150	120	G	115	110	105	105	G	G	G	150	130	120	120	110	110	105
24	100	S	100	S	E	S	S	150	110	125	120	110	105	105	100	105	105	140	110	100	100	105	100	100
25	100	S	S	100	150	145	110	110	130	110	105	105	105	105	105	105	110	120	115	110	110	105	105	105
26	100	100	100	S	S	S	S	135	125	125	C	105	105	105	G	155	140	140	115	110	110	105	105	105
27	105	S	100	100	100	S	100	110	105	105	105	105	C	105	100	140	140	120	110	105	105	105	100	100
28	100	100	100	105	100	100	130	100	100	100	100	100	100	100	100	100	160	140	140	125	120	S	110	S
29	S	S	S	S	100	S	S	140	130	130	125	140	145	G	G	G	150	130	125	125	S	S	S	S
30	105	S	105	105	E	105	S	130	100	100	100	105	100	100	G	G	G	150	120	110	110	105	105	105
31																								
No.	22	20	23	22	21	17	15	30	29	27	26	27	24	23	22	25	26	29	28	26	22	23	25	23
Median	105	105	105	105	105	105	105	120	110	110	105	105	105	105	100	105	120	120	110	105	105	105	105	105
U.Q.																								
L.Q.																								
Q.R.																								

h'Es

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

The Radio Research Laboratories, Japan

Y11

IONOSPHERIC DATA

Sep. 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	f2	f					ℓ	hℓ	hℓ	h	hℓ	ℓ	ℓ	ℓ	ℓ2	ℓ2	hℓ2	h2ℓ2	h3ℓ2	f		f2	f2	f2
2		f	f			f2		h2	h4	c2	c2	c2	c2	ℓ2	ℓ3	ℓ2	ℓ3	ℓ3	ℓ4	f6	f3	f2	ff	f
3	f2	f2	f2	f	f2	f3	ℓ2	ℓ4	ℓ2	ℓ2	ℓ2	cℓ	h		ℓ	h	h3ℓ	c2	c5	f6	f2	f3	f2	f3
4	f2	f2	f2	f	f2	f4	c3	c6	c2	c	ℓ	ℓ2	ℓ2	ℓ2	ℓ	hℓ	hℓ2	h3ℓ	c3	f4			f	f2
5	f5	f2	f3	f3	f3			ℓ	ℓ	ℓ	ℓ			cℓ	ℓ2	ℓ	ℓ2	ℓ2	ℓ2		f	f2	f	f
6	f	f2	f2	f	f2	f2		h3	h3	ℓ2	ℓ	ℓ2	ℓ3	ℓ2	ℓ2	ℓ2	ℓ4	ℓ3	c2ℓ	f2	f		f2	f
7	f2	f2	f	f	f	f	ℓ	ℓ3	ℓ2ℓ	ℓℓ	ℓ2ℓ	ℓℓ	cℓ	ℓ2	hℓ2	hℓ3	h3ℓ2	c5	c7	f5	f	f2	f3	f3
8	f4	f2	f2	f3	f2	f2	c2	c2	c2ℓ2	ℓ2	ℓ	ℓ	ℓ2	ℓ	ℓ	ℓ	h	h2	c2					
9		f2	f2	f	f3	f2		h	h	h		ℓ	ℓ	ℓ2	ℓ2	ℓ3	ℓ2	c2ℓ2	c2	f3		f	f2	f2
10	f2	f3	f3	f3	f4	f2	ℓc	c3ℓ2	c5	c2	cℓ	cℓ	c	ℓ	ℓ2	ℓ3	ℓ2	ℓ3		f5	f4	f3		f2
11	f	f2		f4	f3	f2	ℓ	c2	h	h2	h	h	h	ℓ	ℓ	ℓ	hℓ		c3	f	f3	f	f2	f3
12	f2	f	f2	f2	f			h2	h	c2ℓ	cℓ	c2ℓ	c2ℓ	c2	c	c	c2	c2	c3	f4	f3	f3	f	f2
13	f2	f2	f	f	f	f	ℓ2	h	hc	c	c	c	c	ℓ		ℓ	ℓ	ℓ2	ℓ2	f2	f	f		f
14	f	f	f2	f3	f4	f2	ℓ	h	h	ℓh	h	h	h	h	h	h		h	ℓ	f	f	f2	f2	
15			f	f2	f2	f	c2	h2	ℓ3	ℓ3						ℓ	h	ℓh2	c4	f3	f3	f3	f3	f3
16	f	f2	f2	f2	f			ℓ	ℓ	ℓ2	ℓ	ℓ				h	h2	c	c	f3			f	f
17			f	f2		f		c3	h2	h2	ℓ	ℓ			h			c		f	f3	f2	f	f2
18	f	f	ff2	f	f	f2	ℓ2	ℓ3	ℓ2	ℓ4	ℓ	ℓ	hℓ	ℓ	ℓ	ℓ	ℓ2	ℓ3	ℓ4	f3	ff2	f2f	f3	f2
19	f3	f3	f2	f2	f2	f2		h2	c	c	ℓ	ℓ	ℓ		ℓ	ℓ	ℓ2	ℓ	ℓh	f2	f2	f2	f2	f2
20	f	f2	f				ℓ	hℓ	ℓ2	ℓ2	ℓ	ℓ	ℓ	ℓ	ℓ	hℓ2	hℓ	h	c2	f		f2	f2	
21							ℓ	ℓ2	ℓ4								ℓ	hℓ2	ℓc	f2f	f	f	f	
22				f				c3			h	ℓ	ℓ	ℓ2	ℓ	ℓ	h	hℓ	c			f		
23					f2	f2	ℓ	h	c		h	c	ℓ	ℓ				h	c2	f3	f3	f3	f2	f
24	f		f					h2	ℓ	h2ℓ	h2	c	c2	c3	ℓ3	ℓ2	ℓ	hℓ3	c	f4	f3	f4	f3	f
25	f2			f	ff	ff	ℓ	ℓ2	h2ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	h	h	c2	f3	f2	f2	f3	f3
26	f3	f	f					h	h2	h		c2	ℓ	ℓ		hℓ	hℓ	h	c3	f3	f2	f2	f2	f3
27	f4		f2	f	f2		ℓ	ℓ3	ℓ3	ℓ	ℓ	ℓ		ℓ	ℓh	h	h	c4	c5	f3	f3	f3	f3	f2
28	f2	f2	f2	f4	f4	f2	hℓ5	ℓ5	ℓ2	ℓ2	ℓ2	ℓ2	ℓ	ℓ	ℓ	ℓ	h	h3	c	f3	f		f	
29					f			h2	h3	h	h	h	h				h	h2	h	f3				
30	f4		f	f		f		h3ℓ2	ℓ2h	ℓ3	ℓ3	ℓ	ℓ	ℓ				h	c4ℓ2	f2	f3	f2	f2	f3
31																								
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.

Sept. 1963	Steady Flux					Variability				
	00-03	03-06	06-09	21-24	mean	00-03	03-06	06-09	21-24	mean
1	5	5	5	5	5	0	0	0	0	0
2	5	5	5	5	5	0	0	0	0	0
3	5	5	5	5	5	0	0	0	0	0
4	5	5	5	-	5	0	0	0	-	0
5	q	q	q	q	q	0	0	0	0	0
6	q	q	q	q	q	0	0	0	0	0
7	q	q	q	-	q	0	0	0	-	0
8	q	q	q	q	q	0	0	0	0	0
9	q	q	q	-	q	0	0	0	-	0
10	q	q	q	q	q	0	0	0	0	0
11	q	q	q	-	q	0	0	0	-	0
12	q	q	q	q	q	0	0	0	0	0
13	q	q	q	q	q	0	0	0	0	0
14	q	q	q	20	q	0	0	0	1	0
15	21	7	7	q	15	1	0	0	1	1
16	q	q	q	q	q	0	1	1	0	1
17	q	q	q	(14)	q	0	0	0	(0)	0
18	28	27	27	99	26	1	0	1	1	1
19	39	16	(11)	54	41	1	1	(1)	1	1
20	44	39	47	83	48	1	1	1	2	1
21	657	20	20	64	224	2	1	0	0	2
22	62	56	38	6	57	1	1	1	0	1
23	10	12	13	9	10	1	2	1	1	1
24	11	8	6	-	9	1	1	0	-	1
25	q	q	q	5	q	0	0	0	0	0
26	6	6	33	-	19	0	0	1	-	1
27	-	-	5	-	(5)	-	-	0	-	(0)
28	-	-	-	q	-	-	-	-	0	-
29	q	q	q	q	q	0	0	0	0	0
30	q	q	q	-	q	0	0	0	-	0

Note No observations during the following periods:

7th 2220- 8th 0135
9th 2010- 10th 0000
11th 2014- 12th 0110
17th 2020- 2230
26th 2030- 27th 0500
27th 2030- 28th 0830
30th 2030- 1st 0000 (Oct.)

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

Outstanding Occurrences

Sept. 1963	Start-time	Dura-tion	Type	Max. Inst.	Int. Smd.	Max. Time	Remarks
13	0423.0	1.2	CD/8	190	15	0423.4	
15	0025	80	CD/9	-	20	-	
	0025.7	4		440	-	0025.9	
	0033.5	7		>800	180	0035	off scale
17	2358.8	0.4	CD/8	240	60	-	
18	<0227	>2.5	CD/8	>370	>25	-	
	0347.6	0.5	CD/8	330	170	-	
	0618.9	5	F/3	820	-	0623.9	
	0636.3	1.7	CD/8	210	40	0637.4	
	0721.7	0.3	ECD/8	760	360	0721.8	
	0723.0	0.9	CD/8	>800	410	0723.5	off scale
20	0208.0	0.7	CD/8	190	30	-	
	0257.0	0.5	CD/8	220	80	-	
	0258.5	2.0	CD/8	>900	380	0259	off scale
	0450.4	0.4	SD/8	530	160	-	
	2350	170	CD/9	>10000	1000	-	off scale
26	0706	20	CD/8	390	140	0710.8	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Sept. 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	3+	(3	3	3)	-	-	-	4	4	4	4	3	4	4	4	4	N	N	N	N			
2	4o	4	4	4	-	-	-	5	3	4	3	4	4	3	3	4	N	N	N	N			
3	4-	4	4	4	(4)	-	-	3	4	3	4	4	4	4	4	5	N	N	N	N			
4	4o	5	4	4	-	-	-	5	3	3	4	4	4	4	5	5	N	N	N	N			
5	4+	5	5	5	(5)	-	-	4	4	3	3	4	5	5	4	4	N	N	N	N			
6	4+	5	4	5	-	-	-	4	4	4	4	4	4	4	4	4	N	N	N	N			
7	4+	5	5	5	-	-	-	3	3	4	4	5	4	4	4	4	N	N	N	N			
8	4-	3	3	3	-	-	-	3	5	5	4	4	4	5	5	3	N	N	N	N			
9	4o	4	4	4	(5)	-	-	4	3	3	4	4	4	3	3	4	N	N	N	N			
10	4+	4	4	5	-	-	-	4	5	4	4	4	4	3	4	4	N	N	N	N			
11	3+	4	3	3	-	-	-	3	3	3	4	4	4	4	3	4	N	N	N	N			
12	4-	4	4	4	-	-	-	3	3	4	4	3	4	4	4	4	N	N	N	N			
13	4+	5	5	(5)	-	-	-	5	3	3	4	4	3	4	4	4	N	N	N	N			
14*	2+	3	1	2	-	-	-	1	4	2	3	2	4	4	3	1	N	U	U	U	0519	---	139$^{\gamma}$
15*	2o	3	2	2	-	-	-	3	1	2	3	1	1	2	2	2	W	W	W	W	---	---	
16*	2o	2	2	1	-	-	-	2	2	3	3	2	3	3	3	3	U	U	U	U	2229	22.0	80$^{\gamma}$
(17)*	2o	2	1	1	-	-	-	1	2	3	3	3	3	4	4	4	U	U	W	W	---	---	
(18)*	2+	3	3	2	-	-	-	2	2	2	3	2	3	3	2	2	U	U	U	U	---	21.0	
(19)	2+	3	2	4	-	-	-	1	2	2	2	3	3	3	4	3	W	W	W	W	0544	---	45$^{\gamma}$
20	2o	2	1	3	-	-	-	4	(2	2)	2	1	3	3	3	3	W	U	U	U	---	18.0	
21	2-	1	1	2	-	-	-	2	1	2	3	2	1	4	3	4	W	W	W	W	1414	---	275$^{\gamma}$
22*	2o	(2	2)	3	-	-	-	1	2	3	2	2	4	3	3	4	W	W	W	W	---	---	
23*	1+	1	2	1	-	-	-	1	2	2	2	1	4	3	4	2	W	W	U	U	---	---	
24	3-	4	4	3	-	-	-	1	2	2	2	3	4	4	4	4	U	U	N	N	18.2	17.0	112$^{\gamma}$
25	3o	(3	2)	1	-	-	-	4	3	3	3	4	4	3	3	4	N	U	U	U	---	---	
26	3-	2	2	2	-	-	-	3	4	3	3	3	4	4	(4)	4	U	U	U	U	---	19.0	
27	3o	2	2	3	-	-	-	4	3	3	4	4	4	3	(4)	5	N	N	N	N	1942	---	88$^{\gamma}$
28	3+	2	(3)	4	-	-	-	2	4	4	4	3	4	4	-	4	N	U	U	U	---	---	
29	3+	2	2	3	-	-	-	3	(4	4	4	4)	4	4	(4)	5	N	U	U	U	---	17.0	
30	4-	3	3	4	-	-	-	2	4	4	5	(4)	3	4	(4)	3	N	N	N	N			

* = day of Special World Interval

( ) = Regular World Day

- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Sept. 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							
13		-	26	-'			04.12	68	Slow	3-		x	
15		>20		>32'			00.22	110	S	3	x	x	x
18		>38				23'	02.23	90	Slow	3-		x	
		>38				>18'	03.52	55	S	3-		x	
20	11"		11	31'			23.51	214	Slow	1+	x	x	x
26		-	13				07.12	54	Slow	2-	x	x	

IONOSPHERIC DATA IN JAPAN FOR SEPTEMBER 1963
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