F—139

IONOSPHERIC DATA IN JAPAN

FOR JULY 1960

Vol. 12 No. 7

(Including Provisional Data at Showa Base)

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Prepared by

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°03.2′E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Koganei-machi, 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.	Hiraiso-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 nomal 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 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 magnetoionic 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 A 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 An 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 thich 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 con 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 = good
2 = normal
3 = rather poor (unstable)
4 = poor (disturbed)
5 = very poor (very disturbed)

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 weighted averages of the 6-hourly indices of London, WWV and S.F., with half weight given to quality grade 2 (normal). This procedure is taken to avoid the concentration of the whole day indices to grade 2.

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 .....WMA-25: 5.0775 Mc, WMA-47: 7.485 Mc, WMF-27A2: 7.712 3 Mc WMH-30A2: 10.3873 Mc, WMH-53A2: 13.7773 Mc and WMJ-30A2: 20.8173 Mc (San Francisco)

H A .....WWVH 15 Mc and 10 Mc (Hawaii)

T O .....JJY 15 Mc and 10 Mc (Tokyo)

L N .....GIJ-27: 7.6975 Mc, GIJ-30: 10.9075 Mc, GBJ-34: 14.798 Mc and GIJ-38: 18.4375 Mc (London)

Start-time and Duration, Types and Importances are described from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10 Mc, 15 Mc and 20 Mc for WWV, WWVH and JJY are marked; 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

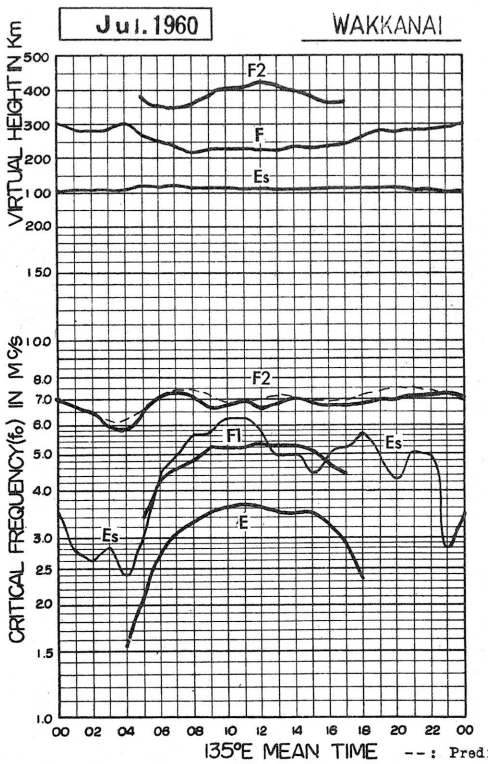
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

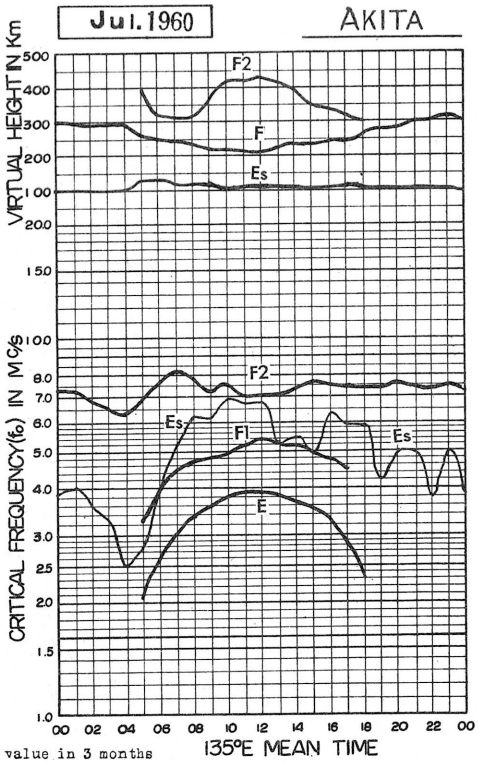
1−	1	1+
2−	2	2+
3−	3	3+

The data of sudden enhancement of atmospheric (SEA) observed on 28 kc are tabulated on each *Start-time, Duration and Importance.*

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.

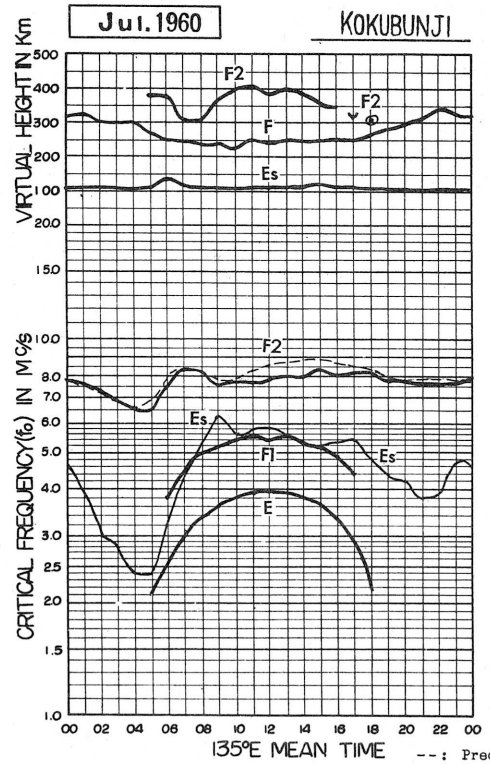
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

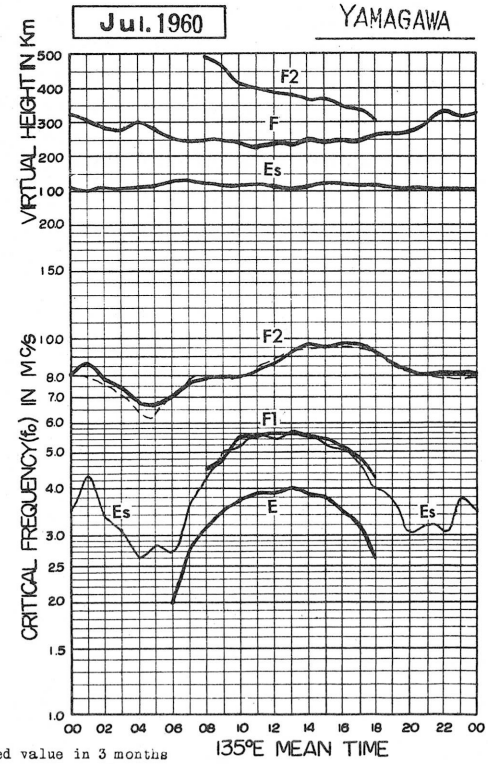




--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





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

IONOSPHERIC DATA

Jul. 1960 | 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	7.2	6.8	6.5	5.9	5.9F	7.0	7.6	8.0	I7.7A	I7.4A	A	A	A	I7.1A	U7.5R	7.3	7.3	6.7	7.8	U8.2S	A	A	S	U7.3S
2	7.4	7.0	I7.0FS	6.8	5.8	I5.9A	6.6	7.3	I7.1A	6.4	A	A	A	A	I5.9A	5.8	5.4	5.8	6.0	6.3	6.1	I6.9S	I6.9S	7.1
3	6.8	6.2	6.0	5.6	5.4	6.7	U7.8R	6.8	6.5	6.3	6.0	A	A	A	A	6.1	6.2	6.2	6.7	6.8	6.7	6.8	7.0	7.2
4	7.3	6.9	6.7	I5.9F	6.3F	5.5	6.0	5.8	5.7	A	A	A	A	A	6.0	I6.2A	I6.1A	6.5	6.5	6.4	I6.7A	7.2	I7.3S	I7.4S
5	I7.0S	6.5	I6.1F	5.7	I6.2F	7.1	7.2	A	A	A	5.5	I5.5A	I5.5R	I5.6A	5.7	5.8	I5.7A	5.8	I6.0A	I6.4A	A	A	A	7.5
6	I7.4S	FS	F	F	F	6.5F	7.3	7.6	6.9	I5.9A	I5.7A	I5.9A	6.1	6.2	5.8	5.5	I6.0A	I6.2A	6.2	I6.6A	I7.0S	I7.5S	7.5	7.0
7	6.8	6.7	6.5	6.5	6.8	7.3	6.6	6.5	I7.1A	7.1	7.2	7.0	6.8	6.9	7.3	7.5	7.6	7.8	7.6	7.8	8.0	I8.2S	I8.0S	I7.9S
8	8.0	7.6	7.0	7.0	6.8	8.0	8.6	9.5	9.3	9.1	I8.3R	7.4	I7.5A	7.5	7.4	7.3	7.3	7.6	7.8	8.5	S	S	S	8.3
9	I8.1S	7.8	7.8	7.5	7.6	I8.9R	9.7	9.2	8.4	7.8	7.8	8.3	8.2	8.3	8.3	7.8	7.8	7.7	8.0	8.5	S	S	S	S
10	8.0	7.3	7.3	7.0	6.7	8.0	9.0	9.5	8.8	7.7	7.4	7.9	8.5	7.9	7.7	7.2	7.5	I7.6C	7.9	7.9	U8.5S	I8.2S	7.5	U7.6S
11	7.6	7.3	7.3	7.0	7.5	7.8	U9.3R	10.7	10.2	8.9	8.2	7.6	7.4	7.6	7.7	7.3	7.5	7.4	I7.3S	7.3	I7.5S	I7.4S	7.6	7.5
12	7.0	6.7	6.7	5.8	6.5	7.5	6.8	6.5	6.3	6.3	I6.0A	I6.3A	6.5	5.3	5.6	6.0	I5.9A	6.0	I6.0A	I6.0A	I6.4A	I7.0S	I7.0AS	I7.2S
13	I7.1S	6.3	I6.3F	5.8F	6.0F	6.5F	7.3	7.5	7.7	7.5	I6.8A	6.3	6.0	6.6	6.7	6.7	6.8	7.3	6.9	7.0	6.8	7.2	U7.3S	7.1
14	7.0	7.0	6.7	5.8	5.1	5.9	6.0	5.5	I5.6A	I5.9A	I5.9A	5.3	5.6	5.5	5.8	5.7	5.5	6.8	I6.8A	I6.7A	6.5	7.3	A	A
15	SF	F	F	F	4.3	5.1	5.5	5.2	I4.9A	W	A	A	A	I5.4A	I5.6A	I5.8A	6.1	5.3	5.9	I6.2A	I6.9A	I7.1S	I7.1S	6.5
16	6.0	6.5	5.3	I4.7S	4.3	I4.3A	I4.8A	W	W	W	A	R	R	A	R	R	A	A	I4.6A	4.7	4.9	5.2	I4.7A	4.5
17	4.5	4.4	4.1	4.3	4.1	5.3	6.5	5.8	5.2	5.0	A	A	A	I5.1R	5.1	5.1	5.3	5.3	5.7	6.0	6.0	6.3	6.2	5.7
18	6.0	5.6	5.3	4.9	4.7	5.9	6.8	I6.5A	I6.1A	I5.8A	5.8	5.9	I5.9A	I5.8R	5.4	I5.8A	5.8	6.2	I6.4A	6.9	7.6	I7.5S	I7.3S	6.8
19	6.7	I6.5FS	I6.2F	6.0	5.7	6.2	6.7	6.8	7.6	8.0	I7.5R	7.1	6.5	6.4	7.0	7.0	7.2	6.7	7.7	9.0	S	S	S	I7.9S
20	U8.1S	6.7	6.5	6.7	6.0	6.7	I7.8R	7.3	6.2	5.5	6.0	I5.8A	I6.0A	6.1	I6.2A	I6.3A	6.6	6.4	6.3	7.3	S	S	S	S
21	6.8	6.6	6.3	6.3	5.9	5.8	6.5	7.3	7.2	6.7	6.0	6.7	6.3	6.8	7.1	I6.8A	I7.3A	I7.6AS	I7.8A	7.8	8.2	I7.6S	7.2	7.4
22	7.1	I7.6S	I7.4SF	I7.2F	6.7F	I6.5F	6.6	7.3	7.5	7.1	7.5	7.8	7.5	U7.6R	7.6	7.4	7.5	7.8	8.1	I8.2S	I8.0S	I7.5S	I7.5S	I7.8S
23	U7.7S	7.9	7.1	6.4	6.6	6.6	8.0	7.3	6.9	6.6	6.0	6.5	7.0	8.3	7.7	7.3	7.0	7.0	6.8	7.2	7.6	S	S	S
24	7.4	7.3	6.5	6.0	6.5	7.0	8.7	9.3	8.3	8.2	7.7	7.3	7.5	7.2	7.5	7.4	7.5	8.0	8.4	8.6	S	S	S	S
25	7.5	7.9	7.7	U7.0S	7.3	7.5	8.3	7.8	8.3	7.8	8.3	7.7	8.2	7.8	7.8	7.7	7.6	7.3	I7.8S	8.3	S	S	S	SA
26	S	U6.7S	F	F	F	7.6	8.2	U8.7R	I7.5A	I6.6A	7.2	7.3	7.8	7.5	7.7	7.6	7.3	7.4	7.5	8.2	I8.6S	S	S	S
27	I7.9S	I7.8S	U7.6S	5.8	5.7	5.9	6.7	7.5	8.1	6.0	I6.2A	I6.1A	6.2	6.3	5.9	6.5	6.7	I6.6A	6.1	6.4	7.0	6.8	7.1	I6.9S
28	I6.6S	I6.5F	6.5	6.7F	6.7	7.6H	8.8	8.0	7.5	8.0	I7.8A	8.7	8.0	8.1	U7.8R	7.2	6.8	7.0	6.8	7.6	U7.9S	S	S	S
29	7.5	U8.0S	6.7	5.8	5.9	6.1	7.7	9.0	9.3	U8.2R	8.0	7.8	8.0	8.4	8.9	9.1	8.3	8.6	7.3	I6.6A	FS	FS	S	7.0
30	6.7	6.1	5.5	5.2	4.8H	5.0	5.8	6.0	I5.4A	I5.2A	I5.0A	W	6.0	5.7	A	A	A	A	6.1	5.8	A	A	S	U6.0S
31	I6.2S	I6.7FS	I6.0S	I4.0F	3.4F	4.1	4.8	4.8	5.6	5.3	I5.4A	W	5.1	5.5	6.0	5.6	5.6	5.5	I5.8A	6.0	I6.6A	I6.9A	6.3	6.0
No.	29	29	28	28	29	31	31	29	29	27	25	22	24	27	28	29	29	29	31	31	21	18	17	23
Median	7.1	6.7	6.5	6.0	5.9	6.5	7.2	7.3	7.2	6.7	6.8	7.0	6.6	6.8	7.0	6.8	6.8	6.8	6.8	7.0	7.0	U7.2	U7.2	7.2
U.Q	7.6	7.4	7.2	6.8	6.7	7.5	8.2	8.4	8.2	7.8	7.8	7.7	7.6	7.6	7.7	7.4	7.5	7.6	7.8	8.2	8.0	7.5	7.5	7.5
L.Q	6.8	6.5	6.2	5.8	5.2	5.9	6.5	6.5	6.2	5.9	6.0	6.1	6.0	5.7	5.8	5.8	6.0	6.2	6.1	6.4	6.6	6.9	7.0	6.8
Q.R	0.8	0.9	1.0	1.0	1.5	1.6	1.7	1.9	2.0	1.9	1.8	1.6	1.6	1.9	1.9	1.6	1.5	1.4	1.7	1.8	1.4	0.6	0.5	0.7

foF2

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 1

IONOSPHERIC DATA

Jul. 1960 | foF1 | 135° E Mean Time (G.M.T.+ 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

10

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	A	A	A	A	A	A	5.3	5.1	I 4.8 LH	L						
2						A	A	A	I 4.7 A	5.1	A	A	A	A	I 5.1 A	4.8	L	L	L					
3						L	A	I 4.5 A	I 4.9 A	5.0	5.1	A	A	A	A	5.0	I 4.8 L	4.6	L					
4					L	3.7	4.2	4.6	A	A	A	A	A	A	5.2	I 5.1 A	I 4.9 A	4.6	L					
5							A	A	A	A	5.0	I 5.0 A	5.1	I 5.0 A	5.0	5.0	A	A	A					
6						L	4.2	A	A	A	A	A	A	5.1	5.3	5.1	A	A	L					
7						L	L	A	A	A	5.3	5.5	5.6	5.5 H	I 5.3 L	5.1	L H	L						
8							L	A	A	5.3	I 5.3 A	5.5	I 5.5 A	5.4	5.3	5.3	A	A	L					
9							L	A	A	A	A	A	5.3	I 5.4 A	I 5.1 A	I 5.1 L	L	L						
10							L	5.0	I 5.3 A	I 5.6 L	5.5	5.6	5.4	5.5	5.3	5.2	4.9	C	L					
11							L	4.8	I 5.1 A	5.4	5.2	5.5	5.3	5.3	5.3	I 5.2 A	L	A	A					
12						L	I 4.4 L	4.6	4.6	4.7	I 4.8 A	4.9	5.0	5.0	4.9 H	I 4.8 A	I 4.7 A	A	A					
13						L	A	A	A	A	A	L	I 5.2 A	I 5.2 A	5.2	A	4.8	4.1						
14					2.6	3.4	4.0	4.3	I 4.5 A	I 4.7 A	I 4.8 A	5.0	5.0	5.0	4.8	4.8	4.6	A	A					
15					A	3.3	3.8	A	A	A	A	A	A	I 4.8 A	I 4.9 A	I 4.8 A	4.6	L	A					
16					L	A	I 3.7 A	4.2	4.3	4.5	A	R	R H	A	R	R	A	A	A					
17						3.3	3.8	4.3	4.6	A	A	A	A	4.9	4.8	4.8 H	4.4	4.2	A					
18						3.5	I 4.0 A	A	A	A	5.0	5.0	I 5.0 A	I 5.1 R	5.1	I 4.9 A	4.7	4.5						
19						L	A	4.6	I 4.9 L	5.2	5.4	I 5.1 A	I 5.2 L	5.3	5.2	I 5.2 L	I 4.8 L H	L	L					
20					L	I 3.6 A	I 4.1 A	4.6	4.6	5.0 H	I 5.0 A	I 5.1 A	I 5.2 A	5.2	I 5.1 A	I 5.0 A	4.7 H	L	A					
21						3.6	4.3	4.6	4.8	I 5.1 L	5.4 H	5.1	5.3	5.3	5.3	A	A	A	A					
22						L	I 4.3 A	I 4.6 L	I 4.8 L	I 5.4 A	5.4	5.4	5.5	5.4	5.3	5.2	L	L						
23							I 4.3 L	4.6	4.9	5.2	I 5.4 A	5.3	5.4 H	5.3 H	I 5.2 A	5.1	I 4.9 L	L						
24							I 4.4 L	4.8	5.0	5.3	5.3	5.5	5.4	5.3	5.3	5.2	L	L	L					
25							L		L	L	5.3 H	I 5.4 A	I 5.5 A	I 5.4 L	5.3	5.1	L	L	L					
26							L	A	A	A	5.3	5.2	5.3	5.3	5.3	5.2	L	L	L					
27						L	4.2	4.6	A	A	A	A	A	I 5.1 A	5.1	4.9	4.7	A	A					
28									A	5.2	I 5.1 A	5.2	5.3	5.2	5.1	L	L	L						
29								A	A	L	5.2	5.4	I 5.3 L	5.3	5.0	A	A	A						
30						3.3	3.7	4.3	A	A	A	I 4.8 A	I 4.8 A	4.8	A	A	A	A						
31						3.2	I 3.6 A	I 4.1 A	I 4.4 A	I 4.6 A	I 4.7 A	4.8	4.8	4.7	4.8	4.7	4.5	A						
No.					1	9	16	17	15	16	20	20	22	26	28	25	15	5						
Median					2.6	3.4	U 4.2	4.6	U 4.8	5.2	5.2	5.2	5.3	5.2	5.2	5.1	4.7	4.5						

The Radio Research Laboratories, Japan.

foF1

Sweep 1.0 Mc to 20.7 Mc in 1 ~~sec~~ min in automatic operation.

IONOSPHERIC DATA

Jul. 1960 | 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					A	A	2.90	3.25	3.50	3.70	3.80	3.80	3.70	3.60	3.50	3.55	3.40	3.00	2.40					
2					A	2.35	2.90	3.25	3.50	3.60	3.60	3.75	3.55	3.55	I 3.50 A	I 3.50 A	3.25	3.00	2.45					
3					A	2.40	3.00	3.30	3.50	3.60	3.75	3.70	3.60	A	A	A	3.25	I 2.95 A	2.50					
4					I 1.55 S	2.35	2.80	3.25	3.50	3.60	3.75	3.75	4.00	3.75	3.45	3.55	3.15	3.05	A	S				
5					1.80	I 2.40 A	3.00	3.25	3.45	3.60	3.80	3.80	A	A	A	3.55	3.40	3.00	2.50					
6					A	A	2.90	3.30	3.45	3.60	3.70	3.75	3.60	I 3.50 A	I 3.50 A	3.45	A	A	A					
7					A	2.25	2.90	3.25	3.40	3.60	3.65	3.75	3.75	3.60	A	A	A	A	A					
8					A	2.40	2.90	3.30	3.50	3.75	3.55	I 3.50 A	3.60	A	A	A	A	3.00	A					
9					A	A	2.90	3.30	3.45	3.55	3.70	3.65	A	A	A	A	A	A	2.60	A				
10					A	2.30	2.90	3.30	3.50	I 3.40 A	I 3.60 A	3.55	3.60	I 3.65 A	3.70	3.50	I 3.30 A	I 3.00 C	2.50	S				
11					A	2.40	2.90	3.15	3.40	3.55	3.55	3.65	3.55	3.60	I 3.55 A	3.50	3.45	3.00	2.35	S				
12					S	2.30	2.65	3.00	3.10	3.50	A	A	A	A	I 3.50 A	I 3.40 A	3.30	2.90	2.45	A				
13					A	2.15	2.80	3.15	3.25	I 3.60 B	3.65	3.55	3.55	3.55	A	A	A	2.90	2.55	S				
14					A	2.10	2.65	3.10	3.25	3.40	3.55	3.55	3.55	3.55	I 3.55 R	3.50	3.20	2.95	A					
15					A	2.20	2.70	3.10	3.35	3.50	3.60	3.65	3.60	3.50	A	A	A	3.00	A					
16					1.65	I 2.05 A	2.60	3.00	3.15	3.35	3.40	A	A	A	A	A	3.15	2.70	2.25					
17					1.60	2.15	2.70	3.00	3.25	3.45	3.55	3.65	3.70	3.70	3.60	3.50	3.20	2.75	I 2.35 A	S				
18					A	2.15	2.60	3.00	3.20	3.45	3.45	3.45	3.50	3.55	3.50	3.55	3.20	2.75	2.25					
19					A	2.15	2.70	3.05	I 3.30 A	I 3.40 A	3.55	3.55	A	A	S	3.50	I 3.30 A	3.00	2.45	S				
20					S	2.15	2.60	3.00	3.30	3.45	3.50	3.60	3.70	I 3.65 A	3.60	3.50	3.15	2.90	2.20					
21					I 1.40 S	2.20	2.60	3.00	3.25	3.40	3.45	3.40	A	A	R	3.55	3.35	2.85	2.30					
22					A	2.10	2.75	3.20	3.40	3.50	3.60	A	A	A	R	A	R	A	A					
23					A	2.25	2.75	3.00	3.30	3.45	3.45	A	R	R	A	A	A	A	A					
24					A	I 2.25 A	3.00	3.35	3.50	3.60	3.70	3.65	3.65	3.55	3.50	A	A	A	A	A				
25					A	2.15 H	2.65	3.10	3.40	3.50 H	3.70	3.65	3.75	3.55	I 3.50 A	I 3.40 A	3.35	2.70	2.35					
26					A	2.10	2.65	3.10	3.30	3.45	A	A	A	R	I 3.65 A	3.50	3.25	2.75	2.20					
27					A	2.15	2.65	3.05	3.30	3.45	3.60	3.55	A	A	A	A	A	A	A					
28					1.25	2.10	2.65	3.00	3.35	3.45	3.50	A	R	R	A	A	A	A	A					
29					A	2.15	2.70	3.00	3.30	3.50	3.45	3.50	I 3.70 A	3.75	A	A	A	A	A	A				
30					S	2.10	2.65	3.00	3.15	A	A	A	A	A	A	3.40	3.10	2.70	2.10					
31					1.50	2.10	2.55	3.00	3.25	3.40	3.50	3.65	3.55	3.55	3.55	3.40	3.20	2.85	2.20					
No.					7	28	31	31	31	30	28	24	19	17	15	18	19	22	19					
Median					1.55	2.15	2.70	3.10	3.35	3.50	3.60	3.65	3.60	3.55	3.50	3.50	3.25	2.90	2.35					

foE

Sweep 1.0 Mc to 20.7 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 3

11

IONOSPHERIC DATA

Jul. 1960 | foEs | 135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

12

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J4.0	J5.5	J7.3	J6.0	J3.5	J6.5	J5.5	J6.3	J8.3	J8.5	J8.5	J9.6	J10.8	J12.8	J11.8	4.1	G	J4.8	J14.3	J11.8	J10.8	J13.5	J7.3	J2.8
2	J2.8	J2.8	J2.8	J2.8	2.4	J6.3	J5.0	J4.7	J7.0	5.3	J8.8	J7.3	10.2	J7.3	J7.3	J6.5	6.7	5.5	3.1	J4.2	J2.8	J11.7	J6.3	J5.0
3	J4.5	J5.0	J4.6	J5.0	J4.0	3.4	5.8	7.3	5.7	4.7	5.0	7.6M	10.0	J12.3	9.5	4.2	3.5	J4.6	3.0	J3.8	J2.8	J2.8	J3.0	J4.1
4	J5.1	J5.1	E	E	S	G	3.2	5.8	J5.3	J7.5	J7.1	6.8	8.3	J10.3	6.0	6.0	J12.0	4.3	J3.8	J5.0	J7.8	J6.3	J6.0	J6.0
5	J4.0	J2.5	J2.4	J2.8	2.4	J6.0	4.5	J8.9	J8.5	J10.0	J6.8	J6.5	10.0	J8.8	5.3	G	J6.3	J6.3	J10.8	7.0	J11.8	J8.3	J10.3	J10.8
6	J10.3	J5.1	J7.0	J4.9	J3.7	3.5	J5.0	5.5	5.3	J9.5	J7.3	J6.3	J6.3	J5.3	4.5	4.5	J8.5	J8.7	6.0	J6.1	J5.7	J4.8	E	2.4
7	E	E	E	2.0	J2.3	G	3.5	J5.5	J8.8	J5.8	4.3	G	4.5	4.7	4.0	4.1	J5.0	J5.0	3.5	J4.3	J3.0	J2.8	J3.0	4.2M
8	J3.5	J2.4	J1.8	2.5	2.5	G	J4.5	7.0M	8.0	5.3	J7.0	6.0	J7.1	J4.8	5.0	5.2M	J5.7	7.2	5.3	J6.0	J6.3	J6.0	6.0	J3.3
9	3.5M	3.6	3.5	J2.4	J2.7	3.1	3.5	J6.0	J6.8	J6.6	J7.3	J7.5	J6.6	J8.3	J5.8	4.0	J4.2	4.2	4.0	J6.3	J8.3	6.0	3.5	E
10	J4.7	J2.5	J2.0	J2.7	1.7	2.8	4.5	5.0	7.9M	J7.3	J5.0	4.5	G	J5.1	G	G	3.5	C	3.0	S	E	E	J2.3	E
11	E	2.6	E	E	2.4	G	4.5	J5.3	J7.3	5.1	6.7	G	G	G	3.8M	J5.5	5.0	7.3	7.0	7.2	4.9	J2.4	E	E
12	E	E	E	E	S	G	4.1	J5.2	J4.2	4.3	J10.0	J6.3	4.2	5.0	4.0	5.0	J6.3	J7.3	J6.7	J6.5	J10.1	6.0	7.0M	6.1
13	J3.5	J5.0	2.6	J7.3	4.4	3.0	J6.5	J7.5	J7.8	6.0M	J8.3	6.0	J6.5	J6.8	J7.3	J6.5	5.8	3.5	6.1	4.1	J4.3	J2.8	J2.3	E
14	E	J2.8	E	E	2.5	2.7	3.5	4.0	6.0	7.1	J6.3	4.5	4.8	G	G	4.5	3.7	J6.3	J6.8	J8.8	J6.3	J5.8	6.0	J6.3
15	J5.0	J5.0	5.0	5.0	3.5	3.5	4.0	4.7	5.2	5.8	J6.5	J9.5	J11.0	J10.3	J8.3	J8.0	4.2	3.5	J4.0	7.0	J8.3	J5.1	3.7	E
16	E	J2.7	J2.3	J2.8	2.8	J5.1	J5.1	G	4.0	G	4.6	4.0	4.3	5.0	3.8	4.2	J5.1	J8.0	J5.2	2.7	J2.8	3.6M	J6.0	3.5M
17	J3.5	6.2	J2.3	2.5	3.8	3.1	3.8	4.3	4.0	5.0	J6.0	J8.0	J7.3	4.7	5.0	5.0	4.8	8.0	J6.1	J3.5	3.5	2.6	E	E
18	E	2.5	J2.3	E	1.9	3.0	J5.1	J7.5	J6.5	J9.5	5.1	J9.5	J10.0	4.3	4.2	11.1	J8.0	J5.3	J8.3	J2.8	J4.3	J5.0	J4.8	J2.8
19	J2.6	J3.3	J2.8	J2.3	J2.3	G	J4.3	4.5	4.2	J4.8	G	6.3	J4.9	J5.0	4.0	G	J3.5	G	3.0	S	E	J2.8	E	E
20	J2.4	2.0	3.5	4.2	2.0	J5.3	J5.8	5.0	G	G	5.8	J6.8	J10.0	J12.5	J8.8	J13.0	J10.0	G	5.7	J13.0	J6.8	J6.3	J5.0	3.6
21	2.6	J2.4	2.5	1.8	S	G	3.2	J5.0	4.4	4.1	G	G	4.6	J5.0	G	J7.3	J10.9	J8.8	J9.5	J4.5	J2.8	5.8M	J2.8	J2.8
22	2.3	J6.0	J5.8	J3.5	J2.3	3.5	5.0	J5.0	5.0	J7.6	4.4	4.2	4.0	4.0	G	4.2	G	4.2	6.2	J5.5	J5.0	J6.3	J5.0	J2.3
23	J3.5	J2.4	J2.8	J2.7	2.4	G	J5.0	J5.7	J6.0	J11.3	J10.8	J8.5	G	G	J6.0	6.0	5.0	4.3	J6.0	J5.0	J4.3	J5.0	E	J2.3
24	J2.8	2.0	J2.1	J2.8	3.6	4.2	3.2	G	5.0	5.3	4.5	5.0	4.3	J4.8	J4.6	4.4	J4.5	J3.5	3.6	J5.0	J4.0	J3.3	E	E
25	E	E	J4.5	J3.0	1.4	G	3.1	4.5	J5.0	G	G	6.0M	J10.0	J11.0	J9.8	7.0	G	J5.2	J3.7	J3.5	E	J8.3	J6.3	J8.8
26	E	J5.0	J3.5	J3.0	1.8	3.1	J4.6	7.2	J8.3	J7.5	J6.0	6.0	4.2	G	J6.3	4.1	3.5	3.8	3.5	2.5	E	J3.0	J4.9	J3.1
27	J3.5	E	E	2.4	J2.3	G	3.5	4.2	J5.3	J7.4	5.5	J7.3	J5.8	J6.3	J5.3	J5.1	J4.8	J6.8	J6.8	J2.8	J2.7	J3.5	J5.8	J6.1
28	7.2	J5.0	3.5	J6.0	G	2.7	4.5	J5.0	J5.3	5.2	J9.0	J4.5	G	G	J5.3	4.3	4.0	3.5	2.5	J2.8	J2.8	3.5M	J2.8	J2.0
29	4.5M	J4.0	J5.0	J3.3	J2.3	J4.3	4.3	7.3	J7.3	4.2	J6.1	4.5	5.0	G	4.3	J4.3	7.0M	J6.0	5.0	J10.3	J5.3	J5.0	J6.3	E
30	E	E	E	E	S	J2.8	3.5	4.3	7.2	J10.3	J6.3	J7.0	J7.0	J7.2	J9.1	J9.0	J8.8	J13.0	5.8	J4.1	J11.3	J6.3	5.8	J5.0
31	J5.8	J4.2	J2.8	J2.8	2.6	3.2	4.1	J4.8	5.0	4.9	J8.3	G	4.4	4.7	G	4.0	4.0	J10.8	J6.5	J8.3	7.2M	J8.3	J5.0	J5.3
No.	31	31	31	31	27	31	31	31	31	31	31	31	31	31	31	31	31	30	31	29	31	31	31	31
Median	3.5	2.8	2.6	2.8	2.4	3.0	4.5	5.0	5.7	5.8	6.3	6.3	5.8	5.0	5.0	4.5	5.0	5.2	5.7	5.0	4.3	5.0	4.9	2.8
U.Q	4.5	5.0	3.5	3.5	3.5	3.5	5.0	6.3	7.3	7.5	7.3	7.3	10.0	8.3	8.3	6.5	6.7	7.3	6.7	7.0	7.2	6.3	6.0	5.3
L.Q	E	2.4	1.8	2.0	2.3	G	3.5	4.5	5.0	4.8	5.0	4.5	4.3	4.3	4.0	4.1	3.7	4.2	3.6	3.6	2.8	3.0	2.3	E
Q.R		2.6	1.7	1.5	1.2		1.5	1.8	2.3	2.7	2.3	2.8	5.7	4.0	4.3	2.4	3.0	3.1	3.1	3.4	4.4	3.3	3.7	

The Radio Research Laboratories, Japan.

foEs

Sweep 1.0 Mc to 20.7 Mc in 1 ~~sec~~ min in automatic operation.

W 4

IONOSPHERIC DATA

Jul. 1960 | 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	4.0	2.4	E	4.0	2.0	6.0	4.5	5.5	A	A	A	A	A	A	A	G		3.5	4.5	2.4	A	A	2.5	E
2	2.5	2.5	2.1	E	1.7	A	4.6	4.6	A	4.7	A	A	A	A	A	4.0	G	G	G	4.1	E	2.6	A	4.5
3	4.0	3.5	2.5	E	2.0	G	4.8	5.5	5.0	4.6	4.9	A	A	A	A	3.5	2.7	3.3	2.0	2.9	2.4	E	2.2	4.6
4	2.6	E			S		G	4.5	4.7	A	A	A	A	A	4.5	A	A	3.7	3.4	4.5	A	4.5	A	4.6
5	E	E	E	E	1.6	3.0	4.5	A	A	A	4.7	A	4.3	A	4.7		A	4.8	A	A	A	A	A	6.0
6	5.1	4.0	4.6	3.7	2.0	2.7	4.0	5.5	5.0	A	A	A	5.2	4.5	4.1	G	A	A	3.1	A	A	3.6		E
7				E	1.7		G	4.9	A	5.5	G		G	G	4.0	3.7	3.5	3.6	3.1	2.4	2.1	E	2.5	4.0
8	2.5	E	E	E	1.8		4.0	6.8	5.9	4.5	6.2	4.5	A	3.6	4.3	4.7	5.1	2.9	3.1	3.5	A	2.5	2.5	2.4
9	2.8	E	E	E	1.8	2.4	G	5.4	6.8	6.3	6.1	7.5	4.8	5.5	5.4	3.6	3.8	3.3	2.4	6.2	A	E	2.5	
10	2.7	E	E	E	1.6	G	3.6	4.5	7.5	4.5	4.5	4.5		4.0			3.4	C	G	S			2.1	
11		E			1.6		4.1	3.9	6.0	5.0	4.8				3.7	5.5	4.5	6.5	A	5.5	4.0	E		
12					S		3.6	3.6	G	3.8	A	4.5	4.0	4.0	3.9	4.7	2.9	5.5	A	A	A	A	A	A
13	2.5	E	E	3.0	2.0	G	6.5	6.0	5.5	6.0	A	4.7	5.5	6.0	4.7	6.2	3.7	G	5.0	4.0	3.5	E	E	
14		E			1.6	G	G	G	A	A	A	G	G			4.2	G	6.0	A	A	3.5	4.6	A	A
15	2.5	E	3.5	2.9	2.9	3.2	3.6	4.5	A	A	A	A	A	A	A	A	3.7	3.3	3.6	A	A	4.5	E	
16		E	E	A	G	A	A		G		A	A	3.6	A	3.6	A	A	A	A	2.4	2.5	3.1	A	2.6
17	E	2.5	E	E	3.3	G	G	G	G	4.7	A	A	A	4.5	G	G	3.5	G	4.6	2.1	2.5	E		
18		E	E		1.8	G	4.5	A	A	A	4.5	4.7	A	G	G	A	3.6	G	A	2.4	4.2	4.5	4.5	2.4
19	E	E	E	E	1.7		4.0	G	3.5	3.7		6.0	4.7	4.4	E 4.0 B		3.4		G	S		2.6		
20	E	E	2.5	E	G	4.6	A	3.8			5.5	A	A	4.9	A	A	3.5		4.6	6.0	A	A	A	3.5
21	E	E	E	E	S		G	4.4	G	G			4.5	3.7		A	A	5.1	A	4.4	2.4	A	E	2.4
22	E	E	E	E	1.8	3.2	4.6	4.5	4.8	5.5	4.4	4.0	4.0	3.8		3.6		3.3	4.7	A	4.8	A	3.5	E
23	2.5	E	E	E	1.6		3.5	G	4.5	4.5	5.0	4.0			5.3	4.6	3.2	3.4	3.5	3.0	4.0	4.5		E
24	E	E	E	E	1.6	2.6	2.5		4.7	5.0	4.4	4.7	G	4.6	4.5	4.2	3.8	3.4	2.9	3.0	2.7	2.5		
25			2.8	E	1.3		G	4.4	G			5.5	5.7	4.8	3.8	5.0		3.5	G	E		A	A	A
26		3.0	2.5	E	1.6	G	4.1	5.5	A	A	3.7	4.8	4.0		4.0	2.6	2.6	G	G	2.2		2.7	2.6	2.7
27	2.6			E	1.6		G	4.0	4.6	5.5	A	A	5.5	5.7	4.5	4.6	4.2	A	4.8	2.6	2.2	3.0	4.0	2.4
28	4.5	3.5	2.8	2.6		G	4.1	4.6	4.7	4.5	A	4.4			5.0	3.5	3.6	2.7	2.5	2.6	2.5	2.8	E	E
29	4.0	E	4.6	E	1.6	3.5	3.5	5.5	6.0	G	4.9	4.5	3.8		4.0	5.0	6.4	5.5	3.6	4.5	3.5	4.0	A	
30					S	G	G	4.1	A	A	A	A	4.7	4.5	A	3.1	2.1 G	A	3.5	4.0	A	A	2.1	2.6
31	A	3.8	2.5	E	2.4	G	4.0	4.3	4.6	4.8	A		G	4.6		G	G	A	A	2.2	A	A	2.2	2.5
No.	22	26	24	25	26	21	31	29	30	28	28	27	27	25	26	28	28	28	31	29	27	30	25	22
Median	2.5	E	E	E	1.7	2.4	4.0	4.5	5.2	5.2	A	6.0	4.9	4.6	4.5	4.4	3.6	3.5	3.6	4.0	4.0	3.8	2.6	2.6

foEs

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 5

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IONOSPHERIC DATA

Jul. 1960 | f-min | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E | 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	E1.70S	E1.25S	E	E	E	E1.60S	1.70	1.90	E2.40S	E2.50S	E2.50S	E2.50S	E2.50S	E2.50S	E2.50S	2.10	2.10	1.80	1.90	E1.70S	E1.60S	E1.60S	E1.60S	E1.65S
2	E1.60S	E1.40S	E	E	E1.20S	E1.60S	1.70	1.90	E2.40S	E2.45S	E2.50S	E2.50S	E2.50S	E2.50S	2.00	1.95	1.95	1.85	1.65	E1.70S	E1.60S	E1.70S	E1.60S	E1.60S
3	E1.60S	E1.40S	E	E	E	E1.60S	1.70	1.90	2.10	E2.45S	E2.50S	E2.50S	E2.50S	E2.60S	E2.50S	E2.50S	1.90	1.70	1.70	E1.70S	E1.60S	E1.60S	E1.60S	E1.60S
4	E1.60S	E1.30S	E	E	E1.60S	E1.60S	1.90	1.80	2.10	E2.50S	E2.40S	E2.65S	E2.50S	E2.65S	E2.45S	E2.50S	1.80	1.90	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
5	E1.60S	E1.15S	E	E	E	E1.60S	1.65	1.70	1.90	E2.50S	E2.50S	E2.50S	E2.50S	E2.40S	E2.50S	E2.40S	1.70	1.85	1.70	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
6	E1.60S	E1.20S	E	E	E	E1.60S	1.85	1.90	2.10	E2.50S	E2.40S	E2.50S	E2.50S	E2.10	2.10	E2.60S	1.90	1.70	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
7	E1.60S	E1.60S	E	E	E	E1.60S	1.70	1.80	2.10	E2.50S	E2.50S	E2.50S	E2.50S	E2.80S	E2.50S	E2.40S	E2.40S	1.70	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
8	E1.60S	E	E	E	E	E1.60S	1.70	1.90	1.70	2.00	E2.40S	E2.50S	E2.50S	E2.50S	E2.40S	2.10	1.85	1.80	1.65	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
9	E1.60S	E1.20S	E	E	E	E1.60S	1.65	1.70	1.85	2.10	E2.65S	E2.50S	E2.60S	E2.50S	E2.60S	2.00	1.80	1.90	1.60	E1.70S	E1.60S	E1.60S	E1.60S	E1.60S
10	E1.60S	E	E	E	E	E1.60S	1.60	1.80	1.80	E2.50S	E2.50S	2.00	E2.50S	E2.50S	2.10	2.00	1.85	I.80C	1.60	E2.00S	E1.60S	E1.60S	E1.60S	E1.60S
11	E1.60S	E1.20S	E	E	E	E1.60S	1.70	1.90	2.00	E2.50S	2.00	E2.50S	E2.50S	E2.50S	E2.50S	2.10	1.85	1.75	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
12	E1.70S	E1.60S	E1.20S	E1.40S	E1.60S	E1.60S	1.60	1.70	1.90	2.10	2.10	E2.50S	2.00	2.10	2.00	1.90	1.80	1.60	1.80	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
13	E1.60S	E1.20S	E	E	E	E1.60S	1.70	1.70	E2.40S	3.70	E2.50S	E2.50S	E2.50S	E2.40S	E2.50S	1.90	1.70	1.70	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
14	E1.60S	E1.50S	E	E1.30S	E	E1.60S	1.70	1.70	1.70	1.70	E2.45S	E2.65S	E2.50S	E2.50S	E2.50S	1.70	1.90	1.65	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
15	E1.60S	E1.20S	E	E	E	E1.60S	1.60	1.90	1.70	1.90	2.10	E2.50S	E2.50S	E2.60S	E2.60S	2.80	E2.50S	1.75	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
16	E1.60S	E	E	E	E	E1.60S	1.60	1.80	1.70	2.00	E2.45S	E2.50S	2.10	E2.50S	E2.50S	2.00	2.00	1.70	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
17	E1.60S	E1.20S	E1.20S	E	E	E1.60S	1.60	1.60	1.80	1.85	2.10	E2.50S	E2.50S	E2.60S	E2.50S	2.00	1.80	1.90	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
18	E1.60S	E1.60S	E	E	E	E1.60S	1.70	1.60	2.00	E2.40S	E2.50S	E2.50S	E2.40S	E2.50S	E2.50S	2.00	1.70	1.60	E1.70S	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
19	E1.60S	E1.60S	E	E	E	E1.60S	1.85	1.70	E2.40S	2.00	E2.50S	E2.50S	E2.50S	E2.50S	E2.60S	E2.50S	1.90	1.80	1.70	E1.80S	E1.60S	E1.60S	E1.60S	E1.60S
20	E1.60S	E1.20S	E	E	E1.40S	E1.60S	1.90	1.85	2.10	E2.40S	E2.50S	E2.60S	E2.90S	E2.50S	E2.50S	E2.45S	2.10	1.85	E1.70S	E1.70S	E1.60S	E1.70S	E1.60S	E1.60S
21	E1.80S	E1.60S	E	E	E1.60S	E1.60S	1.70	1.70	1.90	2.10	E2.50S	E2.50S	E2.50S	E2.60S	E2.60S	2.00	2.00	1.80	1.60	E1.60S	E1.60S	E1.60S	E1.80S	E1.60S
22	E1.60S	E1.20S	E	E	E	E1.60S	1.70	1.80	2.00	1.90	E2.50S	E2.50S	E2.45S	E2.50S	E2.45S	E2.50S	2.00	1.80	1.70	E1.70S	E1.60S	E1.60S	E1.60S	E1.80S
23	E1.60S	E1.20S	E1.20S	E	E	E1.60S	1.70	1.85	1.80	E2.50S	E2.50S	E2.50S	E2.50S	E2.50S	2.00	1.80	1.65	1.70	1.70	E1.70S	E1.60S	E1.60S	E1.60S	E1.60S
24	E1.60S	E	E	E	E	E1.60S	1.65	1.80	E2.50S	E2.50S	E2.50S	E2.45S	E2.50S	E2.50S	E2.50S	E2.50S	1.80	1.60	E1.70S	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
25	E1.60S	E1.60S	E1.20S	E	E	E1.60S	1.70	1.80	2.10	2.00	E2.50S	E2.50S	E2.50S	E2.60S	E2.50S	2.05	1.90	1.70	1.60	E1.60S	E1.60S	E1.60S	E1.80S	E1.60S
26	E1.60S	E1.20S	E	E	E	E1.60S	1.90	1.80	1.80	2.00	E2.50S	E2.50S	E2.50S	E2.50S	E2.50S	1.80	1.70	1.60	1.65	E1.70S	E1.60S	E1.60S	E1.60S	E1.60S
27	E1.60S	E1.60S	E1.60S	E	E	E1.60S	1.70	1.70	E2.50S	2.00	2.00	E3.00S	E2.50S	E2.50S	1.85	E2.40S	E2.40S	1.70	1.70	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
28	E1.60S	E1.10S	E1.60S	E	E	E1.60S	1.60	1.80	1.70	2.00	E2.50S	E2.90S	E2.50S	E2.50S	1.90	1.80	2.00	1.70	1.70	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
29	E1.60S	E1.60S	E1.20S	E	E	E1.60S	1.60	1.70	1.85	2.00	1.75	E2.50S	E2.50S	1.90	E2.45S	1.70	1.70	1.70	1.70	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
30	E1.60S	E1.60S	E1.60S	E1.40S	E1.60S	E1.60S	1.70	1.80	1.80	2.10	1.90	E2.50S	E2.50S	E2.50S	E2.50S	2.00	1.70	1.70	1.60	E1.60S	E1.60S	E1.60S	E1.60S	E1.60S
31	E1.60S	E1.20S	E	E	E	E1.60S	1.70	1.70	2.00	1.90	2.00	2.10	E2.50S	1.90	E2.50S	1.80	1.90	1.90	1.60	E1.70S	E1.60S	E1.60S	E1.60S	E1.60S
No.	31	31	23	28	25	31	31	31	25	18	31	31	31	31	31	21	28	31	28	31	31	31	31	31
Median	E1.60	E1.20	E	E	E	E1.60	1.70	1.80	1.90	2.00	E2.50	E2.50	E2.50	E2.50	E2.50	2.00	1.85	1.70	1.60	E1.60	E1.60	E1.60	E1.60	E1.60

f-min

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Jul. 1960 | (M3000)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	2.75	2.65	2.50	2.55	2.65F	2.50	2.65	2.75	I2.85A	I2.75A	A	A	A	I2.65A	U2.75R	2.70	2.80	2.60	2.80	U2.80S	A	A	S	U2.60S
2	2.60	2.55	I2.60FS	2.70	2.50	I2.50S	2.35	2.60	I2.40A	2.65	A	A	A	A	I2.60A	2.65	2.60	2.75	2.65	2.85	2.80	I2.55S	I2.55S	2.55
3	2.70	2.65	2.85	2.75	2.70	2.85	U2.80S	2.60	2.55	2.70	2.40	A	A	A	A	2.60	2.65	2.75	2.85	2.80	2.60	2.55	2.50	2.55
4	2.60	2.60	2.85	I2.65F	2.70F	2.55	2.50	2.50	2.40	A	A	A	A	A	2.45	I2.50A	I2.55A	2.70	2.75	2.65	I2.60A	2.50	I2.50S	I2.55S
5	I2.55S	2.60	I2.60F	2.65	I2.75F	2.70	2.55	A	A	A	2.35	I2.25A	I2.25R	2.30	2.45	2.60	I2.65A	2.65	I2.60A	I2.55A	A	A	A	2.60
6	I2.55S	FS	F	F	F	2.60F	2.65	2.80	2.65	I2.50A	I2.45A	I2.45A	2.55	2.65	2.60	2.65	I2.65A	I2.70A	2.65	I2.60A	I2.60S	I2.60S	2.60	2.60
7	2.55	2.55	2.60	2.60	2.65	2.90	2.75	2.45	I2.60A	2.70	2.65	2.70	2.75	2.60	2.60	2.70	2.65	2.80	2.75	2.75	2.65	I2.70S	I2.60S	I2.65S
8	2.65	2.65	2.60	2.80	2.65	2.55	2.65	2.80	2.70	2.75	I2.75R	2.60	I2.70A	2.65	2.65	2.70	2.70	2.75	2.95	2.90	S	S	S	2.65
9	I2.60S	2.55	2.65	2.70	2.60	I2.65R	2.85	2.85	2.85	2.70	2.50	2.80	2.70	2.75	2.80	2.70	2.75	2.75	2.85	2.75	S	S	S	S
10	2.65	2.60	2.65	2.70	2.85	2.75	2.75	2.75	2.85	2.75	2.65	2.55	2.70	2.80	2.85	2.80	2.80	I2.85C	2.80	2.85	U2.70S	I2.70S	2.65	U2.60S
11	2.55	2.65	2.70	2.70	2.65	2.60	U2.55R	2.65	2.70	2.80	2.80	2.70	2.60	2.80	2.75	2.75	2.80	2.75	I2.80S	2.80	I2.75S	I2.75S	2.65	2.65
12	2.70	2.60	2.70	2.60	2.55	2.75	2.70	2.60	2.55	2.70	I2.65A	I2.35A	2.00	2.40	2.60	2.70	I2.65A	I2.80A	I2.85A	I2.85A	I2.80A	2.65	I2.55AS	I2.65S
13	I2.80S	2.60	I2.70S	I2.70F	2.65F	2.65F	2.60	2.65	2.75	2.80	I2.80A	2.45	2.50	2.65	2.70	2.75	2.80	2.90	2.90	2.85	2.65	2.60	U2.65S	2.55
14	2.70	2.65	2.85	2.60	2.45	2.55	2.65	2.60	I2.55A	I2.55A	I2.70A	2.30	2.45	2.40	2.65	2.90	2.40	2.90	I2.80A	I2.70A	2.65	2.55	A	A
15	SF	F	F	F	2.60	2.55	2.65	2.60	I2.40A	W	A	A	A	I2.60A	I2.50A	I2.60A	2.80	2.55	2.70	I2.60A	I2.60A	I2.65S	I2.70S	2.60
16	2.50	2.65	2.75	I2.65S	2.40	I2.50S	I2.40S	W	W	W	A	R	R	A	R	R	A	A	I2.50A	2.55	2.65	2.65	I2.45A	2.45
17	2.50	2.75	2.50	2.55	2.45	2.65	2.60	2.55	2.50	2.40	A	A	A	I2.10R	2.20	2.45	2.85	2.70	2.70	2.65	2.70	2.60	2.70	2.65
18	2.60	2.75	2.75	2.65	2.60	2.70	2.95	I2.95A	I2.75A	I2.60A	2.60	2.75	I2.70A	I2.60R	2.30	I2.65A	2.70	2.75	I2.85A	2.85	2.75	I2.65S	I2.55S	2.65
19	2.60	I2.55FS	I2.60F	2.75	2.80	2.85	2.70	2.95	2.70	3.00	I3.00R	2.90	2.65	2.70	2.85	2.65	2.80	2.70	2.75	2.65	S	S	S	I2.70S
20	2.85	2.60	2.60	2.70	2.50	2.55	I2.65R	2.90	3.00	2.75	2.65	I2.80A	I2.70A	2.65	I2.70A	I2.75A	2.90	2.90	2.70	2.75	S	S	S	S
21	2.70	2.60	2.55	2.65	2.80	2.65	2.85	2.90	2.85	2.65	2.40	2.90	2.55	2.65	2.70	I2.70A	I2.65A	I2.65AS	I2.70A	2.80	2.85	I2.80S	2.60	2.60
22	2.55	I2.60S	I2.70SF	I2.80F	2.95F	I2.90F	2.90	2.90	2.85	2.75	2.80	2.85	2.80	U2.70R	2.75	2.70	2.85	2.80	2.95	I2.80S	I2.75S	I2.65S	I2.75S	I2.70S
23	U2.55S	2.80	2.75	2.55	2.65	2.65	2.70	2.80	2.80	2.75	2.80	2.60	2.65	2.95	2.90	2.90	2.85	2.95	2.95	2.80	2.75	S	S	S
24	2.65	2.80	2.75	2.65	2.60	2.75	2.85	2.95	2.95	3.00	3.05	2.75	2.75	2.70	2.95	2.75	2.80	2.85	2.95	2.80	S	S	S	S
25	2.70	2.70	2.60	U2.60S	2.75	2.85	3.15	2.80	2.90	3.00	3.00	3.00	2.85	2.75	2.95	2.90	2.90	2.90	I2.85S	2.90	S	S	S	SA
26	S	U2.70S	F	F	F	3.00	3.00	U3.05R	I3.10A	I3.00A	2.90	2.80	2.95	2.80	2.80	2.80	2.90	2.95	2.95	2.85	I2.75S	S	S	S
27	I2.60S	I2.65S	U3.10S	2.85	2.75	2.70	2.55	2.65	2.90	2.70	I2.65A	I2.55A	2.65	2.85	2.65	2.75	2.90	I3.05A	2.80	2.90	2.65	2.65	2.70	I2.65S
28	I2.60S	I2.65F	2.70	2.70F	2.85	2.90H	3.05	3.00	2.80	2.80	I2.70A	2.95	2.80	2.85	U2.95R	2.80	2.75	3.00	2.90	2.75	U2.65S	S	S	S
29	2.55	U2.75S	3.00	2.75	2.90	3.10	2.85	2.85	2.85	U3.30R	2.90	2.70	2.70	2.75	2.75	2.80	2.90	3.00	2.95	I2.80A	FS	FS	S	2.75
30	2.60	2.60	2.70	2.50	2.50H	2.40	2.55	2.75	I2.65A	I2.50A	I3.30A	W	2.55	2.55	A	A	A	A	2.80	2.80	A	A	S	U2.60S
31	I2.70S	I2.90FS	I3.00S	I2.90F	2.65	2.60	2.35	2.30	2.70	2.60	I2.65A	W	2.45	2.40	2.60	2.60	2.85	2.65	I2.90A	2.75	I2.75S	I2.65A	2.60	2.60
No.	29	29	28	28	29	31	31	30	30	29	25	24	24	27	28	29	29	29	31	31	31	18	17	23
Median	2.60	2.65	2.70	2.70	2.65	2.65	2.65	2.75	2.70	2.70	2.65	2.70	2.70	2.65	2.70	2.70	2.80	2.75	2.80	2.80	2.70	U2.65	U2.60	2.60

(M3000)F2 Sweep 1.0 M. to 20.7 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 7

IONOSPHERIC DATA

Jul. 1960 | (M3000)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	A	A	A	A	A	A	A	A	3.50	I 3.30 LH	L						
2						A	A	A	A	A	A	A	A	A	A	3.45	L	L	L					
3						L	A	A	A	A	A	A	A	A	A	3.30	I 3.35 L	3.15	L					
4					L	3.15	3.40	I 3.25 A	A	A	A	A	A	A	I 3.40 A	I 3.25 A	I 3.20 A	3.10	LA					
5							A	A	A	A	A	A	3.70	I 3.60 A	I 3.45 A	3.30	A	A	A					
6						L	A	A	A	A	A	A	A	3.35	3.40	3.50	A	A	L					
7						L	L	A	A	A	3.40	3.45	3.25	3.45 H	I 3.35 L	3.45	I 3.30 LH	L						
8							LA	A	A	A	A	3.40	I 3.55 A	3.50	3.40	A	A	A	L					
9							L	A	A	A	A	A	A	A	I 3.35 A	I 3.35 L	L	L						
10							L	A	A	L	3.50	3.30	3.50	3.45	3.40	3.25	3.25	C	L					
11							LA	A	A	A	I 3.40 A	3.55	3.40	3.30	3.30	A	LA	A	A					
12						L	I 3.35 L	3.30	3.65	3.60	I 3.65 A	I 3.65 A	3.65	3.60	3.65 H	A	A	A	A					
13						L	A	A	A	A	A	LA	A	I 3.35 A	I 3.25 A	I 3.25 A	3.25	3.55						
14					3.00	3.00	3.45	3.35	A	A	A	3.60	3.55	3.70	3.55	I 3.45 A	3.35	A	A					
15					A	A	A	A	A	A	A	A	A	A	I 3.20 A	I 3.25 A	3.30	L	A					
16					L	A	I 3.40 A	3.40	3.50	3.50	A	R	RH	A	R	R	A	A	A					
17						3.15	3.55	3.60	3.70	A	A	A	A	I 3.35 A	3.30	3.35 H	3.40	3.35	A					
18						3.15	I 3.30 A	A	A	A	3.15	A	A	A	3.55	I 3.40 A	3.35	3.20						
19						L	A	3.50	I 3.50 L	3.50	3.40	I 3.50 A	I 3.65 L	3.60	3.25	I 3.30 L	I 3.30 LH	L	L					
20					L	I 3.20 A	I 3.25 A	3.30	3.65	3.60	A	A	A	A	A	A	3.35 H	L	A					
21						3.20	3.25	I 3.35 A	3.55	I 3.50 L	3.55 H	3.75	3.40	3.40	3.25	A	A	A	A					
22						L	A	LA	L	A	A	3.35	3.40	3.50	3.40	3.25	L	L						
23							I 3.25 L	3.50	I 3.50 A	I 3.65 A	I 3.45 A	3.45	3.35 H	3.60 H	I 3.40 A	I 3.35 A	I 3.25 L	L						
24							I 3.30 L	3.35	I 3.45 A	I 3.40 A	3.50	I 3.50 A	3.45	3.60	3.30	3.30	L	L	L					
25							L		L	L	3.60 H	A	A	L	3.40	I 3.45 A	L	L	L					
26							LA	A	A	A	3.45	I 3.50 A	3.40	3.45	3.25	3.25	L	L	L					
27						L	3.40	I 3.30 A	A	A	A	A	A	I 3.60 A	3.35	I 3.30 A	A	A	A					
28									A	3.35	I 3.45 A	3.80	3.50	3.60	I 3.55 A	I 3.40 L	I 3.45 L	L						
29								A	A	L	A	3.25	I 3.50 L	3.25	3.45	A	A	A						
30						3.05	3.30	A	A	A	A	A	A	A	A	A	A	A						
31						3.05	I 3.25 A	I 3.40 A	A	A	A	3.65	3.70	I 3.55 A	3.40	3.45	3.35	A						
No.					1	8	13	12	8	8	12	15	16	20	25	23	15	5						
Median					3.00	3.15	U 3.30	3.35	3.50	3.50	3.45	3.50	3.50	3.50	3.40	3.35	3.30	3.20						

(M3000)F1 Sweep 1.0 Mc to 20.7 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 8

IONOSPHERIC DATA

Jul. 1960 | 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						I 350 A	360	335	I 345 A	I 390 A	A	A	A	I 410 A	370	400	350	L						
2						A	470	390	I 440 A	420	A	A	A	A	I 490 A	450	I 490 L	395	L					
3						325	340	425	430	430	565	A	A	A	A	450	415	370	L					
4					L	460	420	500	545	A	A	A	A	A	515	I 480 A	I 460 A	390	L					
5							400	A	A	A	600	I 666 A	I 650 R	I 625 A	550	495	I 460 A	430	A					
6						L	395	330	410	I 510 A	I 550 A	I 535 A	470	425	490	510	I 480 A	I 400 A	L					
7						L	L	470	I 400 A	380	405	400	400	415	I 400 L	365	365	I 320 L						
8							I 290 L	I 345 A	340	340	I 340 A	380	I 370 A	420	400	370	360	I 330 A	L					
9							300	I 280 L	I 335 A	375	440	I 390 A	350	360	340	360	L	L						
10							270	325	I 305 A	340	415	420	370	375	360	360	340	C	L					
11							335	340	300	320	385	380	420	375	360	365	335	A	A					
12						L	325	400	445	400	I 435 A	I 515 A	590	620	515	420	I 440 A	I 370 A	A					
13						370	I 355 A	I 350 A	355	340	I 400 A	I 475 L	I 485 A	I 410 A	400	I 395 A	365	320						
14					400	400	380	465	I 495 A	I 470 A	I 460 A	670	575	590	460	400	550	A	A					
15					455	430	425	475	I 565 A	W	A	A	A	I 54 A	I 555 A	I 485 A	400	I 430 L	A					
16					L	A	I 540 A	W	W	W	A	R	R	A	R	R	A	A	I 455 A					
17						385	395	470	520	575	A	A	A	I 730 R	660	570	410	440	385					
18						370	300	I 350 A	I 405 A	I 435 A	400	435	I 460 A	I 495 R	665	I 445 A	420	350						
19						L	325	325	I 340 L	320	350	I 370 A	I 400 L	445	375	I 370 L	330	L	L					
20					L	380	I 350 A	320	325	450	I 420 A	I 425 A	I 440 A	450	I 430 A	I 410 A	355	L	A					
21						380	320	325	340	I 330 L	555	370	485	420	400	A	A	A	A					
22						L	300	320	I 330 L	375	360	360	365	390	365	385	340	350						
23							320	300	355	370	I 470 A	440	455	350	340	340	I 335 L	L						
24							315	290	300	340	300	380	370	395	350	360	I 340 L	325	L					
25							265		I 310 L	I 290 L	305	340	360	I 335 L	315	340	I 295 L	L	L					
26							L	A	A	A	350	370	345	365	350	355	L	L	L					
27						L	410	365	335	420	I 445 A	I 470 A	I 460 A	I 430 A	440	390	350	A	A					
28									275	345	I 330 A	335	340	360	315	I 325 L	I 340 L	L						
29								A	A	I 315 L	335	370	I 365 L	360	350	310	A	A						
30						450	440	380	I 470 A	I 540 A	I 655 A	W	485	520	A	A	A	A						
31						525	530	610	425	490	I 550 A	W	720	575	460	450	400	400						
No.					2	12	27	26	28	28	25	24	24	27	28	28	25	15	2					
Median					430	380	350	350	345	385	415	410	430	420	400	390	365	370	U 420					

h'F2

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 9

17

IONOSPHERIC DATA

Jul. 1960 | h'F | 135° E Mean Time (G.M.T.+ 9h.)

Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

18

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	I280A	295	300	I345A	320	A	A	A	A	A	A	A	A	A	A	250	225H	275	I280A	285	I310A	I310A	290	295
2	300	315	305	300	295	A	A	A	A	A	A	A	A	A	A	235	250	250	265	I285A	290	320	A	A
3	A	A	270	290	310	300	A	A	A	A	A	A	A	A	A	230	250	260	260	290	290	300	340	I335A
4	315	290	255	260	300	275	250	I260A	A	A	A	A	A	A	I260A	I245A	I245A	270A	I285A	A	A	A	A	A
5	300	275	270	300	300	275	A	A	A	A	A	A	230	A	A	240	A	A	A	A	A	A	A	A
6	A	A	A	A	295	250	A	A	A	A	A	A	A	260	240	230	A	A	A	A	A	A	285	275
7	300	305	300	280	300	250	225	A	A	A	230	220	225	225H	250	230	230H	260	I250A	270	270	280	290	I295A
8	290	275	290	270	260	245	I245A	A	A	A	A	230	I225A	215	250	A	A	A	265	I265A	I270A	270	315	300
9	300	290	295	270	290	260	250	A	A	A	A	A	A	A	A	230	260	240	A	A	A	275	285	265
10	295	275	280	270	265	245	A	A	A	A	230A	250	230	220	225	225	240	I250C	265	265	265	260	270	290
11	310	295	295	285	290	240	I250A	A	A	A	I230A	220	230	235	240	A	A	A	A	A	A	265	285	290
12	270	275	250	290	320	260	I250A	240	220	225	I210A	I215A	215	240	225H	A	A	A	A	A	A	A	A	A
13	305	280	325	I285A	300	265	A	A	A	A	A	A	A	A	A	A	235	240	A	A	A	290	295	300
14	280	300	290	300	325	280	265	270	A	A	A	230	225	215	240	I235A	240	A	A	A	A	A	A	A
15	315	240	I290A	I340A	A	A	A	A	A	A	A	A	A	A	I290A	I255A	270	230	A	A	A	A	300	275
16	350	315	340	290	365	I335A	I270A	245	250	235	I220A	I210A	200H	I215A	225	A	A	A	A	300	320	I305A	I340A	370
17	365	315	370	325	I390A	305	250	245	215	A	A	A	A	I230A	275	230H	240	250	I290A	285	300	285	275	310
18	310	290	300	300	345	275	I265A	A	A	A	250A	I235A	I215A	200	235	I250A	250	240	I280A	285	I280A	I305A	I290A	310
19	315	315	310	270	290	265	I240A	240	220	200	220	I225A	I260A	225	245	245	230H	235	265	280	265	275	255	310
20	250	295	310	310	325	A	A	A	220	200H	I235A	A	A	A	A	A	220H	250	A	A	A	A	A	A
21	280	305	310	295	300	260	240	I240A	220	230	195H	200	240	220	240	A	A	A	A	A	270	I280A	290	310
22	345	305	300	280	255	260	I235A	I240A	A	A	A	215	225	220	215	225	255	255	A	A	A	I295A	I290A	275
23	305	270	260	290	290	270	I255A	240	I230A	I210A	I255A	230	215H	220H	I245A	I240A	230	260	A	A	A	I295A	290	270
24	280	270	270	310	295	265	250	240	235	I230A	240	I240A	230	240A	250	245	250	250	250	290	270	275	260	300
25	295	270	290	315	290	250	240	I240A	225	210	215H	I220A	I240A	I255A	220	I245A	230	250	265	275	260	A	A	A
26	250	I275A	335	300	275	265	A	A	A	A	200	I245A	220	225	230	235	240	250	280	285	270	270	280	290
27	300	265	230	230	275	260	250	I250A	A	A	A	A	A	I250A	260	I245A	A	A	A	280	290	300	I290A	280
28	I310A	I320A	310	300	270	255H	I245A	I250A	A	250	I225A	210	200	225	I215A	230	250	250	260	270	285	305	275	265
29	I310A	280	I270A	295	285	I255A	285	I280A	I270A	260	I240A	250A	205	250	240	A	A	A	A	A	A	A	A	250
30	290	300	290	350	390H	290	280	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	315	330
31	I300A	I270A	240	320	I315A	300	I310A	I280A	A	A	A	235	230	I235A	225	235	250	I270A	I290A	290	I295A	I300A	295	315
No.	29	29	30	30	30	27	21	15	10	10	15	18	19	21	23	22	21	20	15	16	17	21	23	24
Median	300	290	290	295	300	265	250	0245	220	230	230	230	225	225	240	235	240	250	265	285	280	290	290	295

h'F

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

Jul. 1960 | R'Es | 135° E Mean Time (G.M.T.+ 9h.) | **Wakkanai** | Lat. 45° 23.6' N, Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	105	105	110	105	120	120	115	110	110	120	110	110	110	110	135	G	130	115	110	115	110	110	105
2	100	100	100	100	110	120	120	125	110	110	110	110	110	110	105	105	115	120	120	120	115	115	110	110
3	105	105	105	105	105	135	125	120	115	120	110	110	110	105	105	105	105	105	100	100	100	100	115	115
4	110	110	E	E	S	G	150	125	120	110	110	110	115	110	110	120	110	115	110	120	115	115	120	110
5	110	105	105	105	105	105	125	120	115	110	110	110	110	105	110	G	115	115	115	115	110	110	105	105
6	110	100	105	105	105	110	120	120	115	110	110	110	110	110	110	115	110	105	110	120	120	110	E	110
7	E	E	E	100	105	G	145	125	115	110	120	G	115	110	110	110	110	105	105	110	105	105	105	100
8	100	100	100	100	100	G	115	120	110	110	105	105	105	105	105	105	120	115	110	110	110	110	105	105
9	105	105	105	105	105	105	130	115	110	110	110	105	105	105	110	110	110	105	120	110	110	110	110	E
10	105	105	100	100	140	140	120	115	110	105	105	110	G	110	G	G	105	C	125	S	E	E	110	E
11	E	105	E	E	110	G	120	120	115	110	110	G	G	G	110	125	115	115	115	110	110	110	E	E
12	E	E	E	E	S	G	115	115	110	115	105	105	105	105	110	105	120	120	115	115	115	110	110	110
13	105	105	100	100	100	130	125	115	115	110	110	110	110	105	105	105	105	120	120	115	120	120	120	E
14	E	110	E	E	100	140	130	125	115	110	110	110	110	G	G	115	125	120	110	110	115	115	110	105
15	105	105	105	100	100	125	120	120	115	120	115	110	110	105	110	110	110	110	110	120	115	110	130	E
16	E	120	120	115	130	115	115	G	115	G	110	105	105	105	110	110	120	115	120	120	120	120	110	115
17	110	105	105	105	125	120	120	120	140	125	120	120	120	130	140	125	125	115	115	115	115	110	E	E
18	E	105	100	E	115	125	120	110	110	110	110	110	110	120	120	115	115	120	110	110	110	110	110	105
19	105	100	100	100	100	G	120	115	110	110	G	110	105	105	110	G	105	G	125	S	E	115	E	E
20	110	120	105	105	140	115	120	120	G	G	115	110	110	110	120	110	115	G	115	110	105	105	105	105
21	105	105	100	100	S	G	120	110	120	115	G	G	105	110	G	120	115	120	120	110	115	110	110	105
22	105	105	105	105	105	115	125	120	115	110	115	105	105	110	G	105	G	105	105	105	110	115	110	105
23	100	100	105	100	105	G	120	120	115	115	110	110	G	G	100	100	100	100	115	115	100	115	E	105
24	105	105	100	100	100	120	110	G	115	115	120	110	110	110	110	110	110	105	105	105	105	115	E	E
25	E	E	105	105	115	G	140	120	115	G	G	110	115	110	110	110	G	115	115	115	E	110	110	110
26	E	100	100	100	120	120	120	110	110	105	110	110	105	G	105	105	105	125	120	110	E	110	105	100
27	100	E	E	100	100	G	120	120	110	110	110	110	105	105	105	105	105	100	100	115	110	110	115	115
28	110	110	110	105	G	125	115	120	115	110	105	105	G	G	105	105	110	110	105	105	105	115	110	105
29	100	100	105	110	105	120	120	115	110	115	110	110	110	G	105	105	115	115	115	115	120	110	110	E
30	E	E	E	E	S	105	125	120	110	110	110	105	105	105	120	115	115	115	120	115	115	110	110	110
31	105	105	105	110	130	125	125	130	120	110	110	G	115	115	G	135	140	120	120	115	115	110	110	110
No.	22	26	24	25	26	21	31	29	30	28	29	27	27	25	26	28	28	28	31	29	27	30	25	22
Median	105	105	105	105	105	120	120	120	115	110	110	110	110	110	110	110	110	115	115	115	115	110	110	105

R'Es

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Jul. 1960

Types of Es

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	f3	f3	f2	f4	l2	c3 l3	c2	c	c3	c2	c	c2	c2	c2	c2	R		R	c2	f	f3	f3	f2	f2
2	f2	f4	f3	f2	l	c4	c2	c	c2	c	c3	c2	c2	c2	l2	l	c	c	c	f2	f	f2	f4	f4
3	f4	f3	f2	f2	l2	c	c3	c3	c	c	c	c2	c2	l2	l2	l	l	l3	l	f2	f2	f	f	f3
4	f2	f					R	c2	c2	c	c	c2	c2	c2	c2	c3	c2	c	l2	c3	f4	f2	f3	f5
5	f2	f2	f2	f2	l	l2	c	c5	c4	c2	c	c2	l	l3	l		c2	c4	c4	f5	f4	f3	f2	f2
6	f5	f3	f4	f5	l2	l	c2	c3	c3	c3	c2	c2	c2	l	l	c	l3	l5	l2	f2	f	f2		f
7				f	l		R	c	c3	c	c		c	c	l	l	l	l2	l2	f2	f	f	f2	f3
8	f2	f3	f	f	l		c	c2	c2	c	c2	l2	c	l	l	l	c2 l	c3 l	l	f3	f4	f2	f2	f2
9	f	f	f2	f	l	l	R	c2	c3	c2	c2	c2	l	l2	l2	l	l	l3	c l	l3	f6	f	f2	
10	f2	f2	f	f3	c l	R	c	c	c3	l2	l	c		l			l		c				f	
11		f			l		c2	c2	c3	c2	c2				l	c	c2	c4	c5	c4	f4	f2		
12							c2	c	c	c	l2	l2	l	l	l	l	c3 l	c2 l	c3	c3 l	f4	f2	f5	f4
13	f2	f2	f2	f3	l2	c	c2	c2	c	c	c2	c	c	c2	l2	l3	l2	c	c	c3	f4	f	f	
14		f			l	c	c	c	c3	c3	c	c	c			c	c	c4 l	c3 l	f4	f4	f3	f3	f3
15	f2	f2	f3	f3	l	c	c2	c	c2	c	c2	c2	c2	c2	l2	l3	l	l	l4	f4	f4	f4	f	
16		f4	f2	f2	c l	l3	c3		c		c	l	l	l	l	l	c3	c3	c3	f	f2	f2	f3	f2
17	f	f3	f	f	c	c	c	c	R	c	c	c2	c	R	R	c	c	c	l2	c2	f2	f		
18		f	f		l	c	c2	c2	c2	c2	c	c2	c2	c	c	c2	c2	c	c4	f	f3	f3	f2	f2
19	f	f	f2	f	l		c2	c	l	l		c2	l2	l	c		l		c			f2		
20	f2	f2	f3	f2	c	c4	c2	c			c2	c2	c2	l2	c2	c3	c		c3	f6	f2	f3	f4	f4
21	f	f2	f	f			c	c2	c	c			l	l		c3	c2	c3	c3	f4	f2	f6	f	f2
22	f	f2	f2	f2	l	c3	c	c2	c	c2	c	l	l	l		l2		l	l3	f3	f3	f4	f6	f
23	f	f	f	f2	l		c	c	c2	c l	c2	l			l3	l2	l2	l2	c l3	f f	f	f2 f		f
24	f2	f	f	f6	l2	c2 l	l		c2	c2	c	c	c	c	c2	l	l	l2	l2	l2	f2	f2		
25			f2	f2	l		R	c	c			c	c	c2	l	l2		c2	c	f		f4	f4	f2
26		f3	f3	f2	l	c	c3	c3	c2	c3	l	l	l		l	l	l	c l	c	f		f3	f3	f3
27	f3			f	l		c	c	c	c2	c	c2	l3	l3	l2	l2	l3	l3	l3	f2	f	f2	f2	f4
28	f4	f3	f3	f2		c	c	c2	c	c	c2	l			l2	l	l	l	l	f	f2	f2	f2	f
29	f3	f2	f2	f2	l	c	c2	c2	c4	c	c2	c	l		l	l3	c2 l2	c3 l2	c2 l	c2 l	f2	f3	f4	
30						l	c	c3	c3	l2	l2	l3	l2	l	c2 l2	c4 l2	c3 l	c3	c3	f4	f3	f	f2	f4
31	f3	f3	f2	f2	c3	c	c	R	c3	c2	c3		c	c		R	R	c3	c3	f2	f4	f3	f2	f2
No.																								
Median																								

The Radio Research Laboratories, Japan.

Types of Es

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

W 12

IONOSPHERIC DATA

Jul. 1960 | 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	7.1	7.0	6.9	6.4	6.1F	7.0	7.7	8.0	8.1	6.9	7.9	6.9	7.0	7.4	8.0	7.9	8.5	7.5	7.8	8.6	[8.1A	[8.2F	8.4F	F
2	F	F	F	F	6.2F	5.6F	6.8	7.4	7.3	6.3	6.0	6.1	[6.2A	[6.3A	6.3	6.0	6.0	6.3	6.2	6.5	6.9	7.4	7.3	7.2
3	7.1	6.7	7.1	6.5	6.2	7.0	7.8	7.4	6.8	[6.8A	A	A	A	A	A	[7.0A	7.0	7.1	7.3	7.2	6.9	7.2	7.3	7.1F
4	7.5F	7.4	6.8	[5.8A	5.3F	5.6	6.0	6.0	6.1	6.6	[6.8A	[5.8A	[6.1A	6.6	7.0	[7.0A	7.0	7.3	7.2	[7.0A	7.2	6.8	F	A
5	F	7.3F	[6.8A	5.8F	6.2F	7.9	7.7	7.1	C	C	C	C	C	C	C	C	C	C	A	6.6	7.3	7.5	7.0	7.4
6	7.4	[7.3F	7.3F	[6.8F	6.9	7.1	8.2	9.1	8.0	7.0	A	A	7.0	6.9	[6.6A	6.5	6.4	6.7	6.9	7.4	7.6	8.0	7.7	7.5
7	7.3	7.1	7.1	6.8	6.7F	7.6	6.7	6.8	7.6	7.9	A	C	C	C	8.5	8.7	[8.6A	[8.4A	8.4	8.7	8.6	8.7	8.5	9.0F
8	F	F	F	F	7.5F	7.8F	9.6	9.5	9.6	[9.6A	[9.0A	[8.5C	8.1	8.1	8.2	8.6	8.6	8.9	9.4	10.0	8.4	8.2	[8.8F	F
9	F	F	F	7.7F	7.5	8.6	U10.0R	11.0	9.5	8.8	8.8	9.3	9.7	A	A	9.2	8.6	8.9	9.0	8.6	9.0	F	F	F
10	8.0F	7.4F	7.5F	7.0F	6.8	7.3	8.5	9.4	8.7	[8.5A	8.3	9.1	9.5	9.7	8.9	8.9	8.8	8.5	9.0	9.2	8.8	8.2	8.0	8.0
11	7.9	7.6	7.5	7.3	7.3	7.9	9.5	U10.8R	11.6	10.5	10.0	A	A	A	9.1	[8.8A	[8.2A	8.0	8.0	8.0	F	F	F	8.5F
12	7.1	7.3	7.1	6.4	6.3	7.1	7.3	7.6	6.5	6.6	6.5	6.0	[5.8A	[5.9A	6.1	6.4	6.4	6.4	6.5	6.4	6.4	6.6	6.9	7.1
13	[7.0F	6.4	[6.6F	[6.6F	6.6F	6.8	7.9	8.8	9.5	9.3	[8.2A	7.9	7.5	7.9	[8.7A	[8.4A	U8.5R	8.8	8.5	7.4	[7.2A	7.1	7.1F	7.1
14	6.9	7.1	6.4	6.1	5.6	5.5	6.3	5.7	[5.7A	6.4	6.1	6.0	5.7	6.0	6.2	6.4	[6.2A	7.5	6.9	6.9	6.4	6.8	7.1	[7.3F
15	[7.0F	7.4	6.8	5.6	5.2	5.9	6.3	5.1	G	G	[5.5A	5.6	5.5	5.5	5.9	[6.0A	6.2	5.9	6.2	6.6	6.8	7.0	7.1	U7.6R
16	6.8	U7.3R	6.7	6.7	5.7	5.0	[5.0A	A	A	A	A	A	A	A	G	G	[4.8A	G	5.0	[5.0A	5.1	[5.0S	4.6	[4.6F
17	[4.7S	4.9	4.9F	4.8F	4.1	[5.2F	6.8H	7.0	6.0	5.3	A	G	5.2	5.6	5.4	5.5	5.4	5.4	6.2	6.5	6.3	6.0	6.2	F
18	F	F	5.7F	[5.2F	5.5F	6.4F	7.3	7.7H	6.7	6.1	[6.4A	6.9	6.0	6.8	6.2	6.5	6.4	[6.6A	[7.0A	7.4	7.6	7.4	7.4	F
19	F	F	F	6.9F	6.0	6.0	6.7	6.9	[7.6C	8.0	[7.5A	[7.1A	7.1	6.9	7.3	7.8	7.6	7.5	7.6	9.0	9.6	9.4	8.0	[7.6F
20	8.6	6.9	6.8	6.5	6.5	7.3	9.0	10.1	7.1	7.1	6.5	6.9	6.4	6.6	6.9	6.6	6.7	6.8	6.9	7.6	8.0	7.9	[8.0F	[8.0F
21	8.1F	7.7	7.0F	6.8	6.4	6.0	6.8	8.2	6.6	7.5	6.3	6.7	6.9	7.1	7.6	7.2	[7.7A	8.4	U9.8R	9.2	7.5	7.2	[7.4S	7.4F
22	F	F	F	F	F	6.7F	7.8F	7.5	[8.0A	7.7	8.4	[8.2A	8.4	7.9	8.5	8.4	8.2	8.6	9.2	9.0	7.9	7.9	8.0F	8.3F
23	F	F	F	F	[7.5F	7.4F	8.6	8.3	8.3	6.7M	6.9	7.7	U8.4R	9.6	9.9	8.5	7.6	7.6	7.2	7.4	7.9	8.3	8.1	[7.7A
24	[7.4F	F	F	F	7.1F	7.6F	8.8	9.7	8.6	8.5	8.2	8.2	8.0	7.8	8.9	8.9	8.3	8.6	9.1	9.3	9.1	8.3	8.0	8.0F
25	8.1	8.3	7.9	[7.7F	7.3F	8.0F	8.5	8.8	9.0	9.0	8.5	8.0	8.4	8.8	8.7	8.2	8.3	8.2	8.8	9.1	U8.8R	9.3	8.9	8.1
26	7.8	8.0V	7.6	7.8	7.5	8.2	8.5	9.0	7.8	7.2	7.6	7.5	7.7	8.0	8.5	8.9	8.6	8.5	[8.1A	8.0	8.3F	F	F	F
27	F	F	F	F	[6.3F	6.2F	6.9	8.8	9.2H	[7.2A	7.0	6.7	7.9	7.1	7.2	7.4	7.4	6.7	6.4	6.4	7.0	7.2	6.9	6.6
28	6.6	6.5	6.5	6.4	6.4	7.0	8.0	8.5	8.1V	7.5	[8.1A	8.0	8.4	8.4	8.0	8.0	7.4	7.3	7.6	8.1	8.0S	F	F	F
29	F	F	F	F	6.2	6.1	6.9	8.6	9.9	9.2	[8.8A	8.9	9.3	10.1	10.8	10.5	10.5	[8.6R	8.2	7.2	A5	F	F	F
30	F	F	6.0F	[5.5F	[4.9F	4.8F	5.7	6.7	A	A	A	A	6.0	5.9	5.7	5.5	[5.6A	6.0	6.2	6.4	[6.4A	[6.4F	6.8F	F
31	F	F	F	4.1F	3.9	4.4	4.9	5.2	5.6	5.9	[5.3R	[5.3R	[5.4A	5.5	6.3	6.0	5.7	5.4	5.9	6.5	6.9	6.7F	6.4	6.5F
No.	19	19	21	24	30	31	31	30	28	28	24	24	26	25	28	30	30	30	30	31	29	26	25	21
Median	7.3	7.3	6.8	6.5	6.3	7.0	7.7	8.1	7.9	7.2	7.6	7.0	7.0	7.1	7.4	7.6	7.5	7.5	7.4	7.4	7.6	7.4	7.4	7.5
U.Q	8.9	7.4	7.1	6.8	6.9	7.6	8.5	9.0	8.9	8.5	8.4	8.0	8.4	8.0	8.6	8.6	8.5	8.5	8.5	8.7	8.4	8.2	8.0	8.0
L.Q	7.0	7.0	6.4	5.8	5.7	5.9	6.7	7.0	6.6	6.6	6.4	6.0	6.0	6.2	6.2	6.4	6.4	6.6	6.5	6.6	6.9	6.8	7.0	7.1
Q.R	1.9	0.4	0.7	1.0	1.2	1.7	1.8	2.0	2.3	1.9	2.0	2.0	2.4	1.8	2.4	2.2	2.1	1.9	2.0	2.1	1.5	1.4	1.0	0.9

foF2

Sweep 1.60 Mc to 20.0 Mc in 2.0 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

A 1

21

IONOSPHERIC DATA

Jul. 1960 | foF1 | 135° E Mean Time (G.M.T.+ 9h.)

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

22

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	5.0L	5.1A	5.2A	5.3	5.6H	5.5A	5.6A	5.5	5.5L	5.0L	L	A					
2						3.5	4.0	4.3	A	A	4.9	A	A	A	5.2A	5.0R	A	L	L					
3						L	4.2	4.7A	4.9A	5.0A	A	A	A	A	A	A	5.0A	4.5L	L					
4						L	4.6H	4.8	4.7	A	A	A	5.2A	5.2	5.3	5.7	A	A	A					
5							A	A	C	C	C	C	C	C	C	C	C	C	A					
6						L	L	A	A	A	A	A	5.3	5.4	5.2A	5.0R	5.1	4.5L	L					
7								5.0	A	A	A	C	C	C	5.5A	5.6H	A	A	A					
8							L	A	A	A	A	C	A	A	5.3L	L	A	A	A					
9						L	L	A	A	A	A	A	A	A	A	A	A	A	A					
10							L	A	A	A	A	A	5.5L	5.3	5.5	5.3	5.0L	L	A					
11							LH	A	A	L	A	A	A	A	A	A	A	A	A					
12							L	4.6L	4.7	4.8	5.0	5.0A	5.0A	5.0A	5.0A	4.9	4.6	A	L					
13							A	A	A	A	A	5.5	A	A	A	A	A	L	A					
14						3.3	4.0	4.4	A	A	5.0	5.2	5.1	5.1	5.1	5.0A	4.6A	4.5L	L					
15						3.3	3.9	4.3A	4.6A	4.6	A	A	A	4.9	4.8A	4.7A	4.7A	4.6	3.6L					
16						A	A	4.2A	4.3A	4.5A	4.6A	A	A	A	4.6	4.5	4.4A	4.2	3.9L					
17						3.4	3.9	4.2	4.5	4.8	4.8A	4.8	5.0A	4.9R	4.8	4.8	4.3	4.3	A					
18							5.0L	4.5A	4.6	4.9	5.0A	5.1	5.3	5.1	5.0H	5.0R	4.8	A	A					
19							3.6L	4.5	C	A	A	A	5.4A	5.5A	5.2B	5.1	5.0L	L	A					
20						L	4.0	4.5L	4.5L	5.3	5.1L	5.3H	5.4	5.3	5.3	5.1	5.0	L	L					
21						L	4.4L	4.7L	4.9	5.0	5.8	5.4A	5.4	5.2	5.4	A	A	A	A					
22								A	A	A	A	A	5.6	5.5	5.5	A	A	L	A					
23							A	L	4.8A	4.7H	5.5	5.3	5.4A	5.4	L	A	L	L	L					
24							A	A	A	L	5.1A	5.2A	L	L	A	5.0L	5.1	L	L					
25								L	4.9A	5.0L	5.2	6.0	5.5L	5.4	5.3L	5.1H	4.5	A	L					
26								A	A	A	A	A	5.5	5.3L	5.2	5.1L	4.8L	L	A					
27							4.1	4.3A	4.8	A	A	A	5.4A	5.2	5.0A	5.0	4.5L	L						
28							L	L	A	A	A	5.1	5.3L	5.2A	5.3	A	A	A						
29							A	A	A	A	A	A	A	5.2	5.0A	5.0	A	A						
30						3.0	3.7A	A	A	4.7	A	A	A	A	4.7	A	A	A	A					
31							A	A	A	4.6A	4.7R	4.9	4.9A	4.8	4.9A	4.8L	A	L	L					
No.						5	12	15	13	13	13	13	18	20	24	20	16	6	2					
Median						3.3	4.0	4.5	U4.7	4.8	5.0	5.2	5.4	5.2	5.2	5.0	4.8	4.5	U3.8					

foF1

Sweep 1.60 Mc to 2.00 Mc in 2.0 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 2

IONOSPHERIC DATA

Jul. 1960 | 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						2.15	2.75	3.25	3.55	3.70	3.80	I 3.90A	I 3.95B	A	A	3.55	3.25	2.95	2.50					
2						2.05	2.70	3.10	3.50	3.70	3.95	3.95	I 4.00B	I 3.95B	3.85	3.70	3.35	3.00	2.40					
3						R	I 2.80R	3.05	3.55	3.90	3.90	3.95	A	A	A	A	A	A	A					
4						A	A	3.20	3.55	3.80	3.90	I 3.95R	I 4.00B	3.95	I 3.80A	3.80	3.45	3.00	A					
5						2.15	2.85	3.40	C	C	C	C	C	C	C	C	C	C	A					
6						2.00	2.80	3.25	3.55	3.75	3.90	I 3.90R	4.00	3.90	3.70	I 3.55A	I 3.30A	3.05	2.45					
7						2.05	2.75	3.05	3.55	3.75	I 3.85R	C	C	C	A	A	A	A	A					
8						A	I 2.70A	3.15	I 3.50A	A	A	C	A	A	A	A	A	A	A					
9						A	2.80	I 3.20A	3.50	A	A	A	3.85	A	A	A	A	A	A					
10						A	2.85	3.20	3.55	3.70	I 3.80R	A	A	A	I 3.80A	I 3.65A	3.45	3.05	2.30					
11						2.05	2.80	3.20	3.60	3.75	3.80	A	R	I 3.65A	I 3.50A	A	A	A	A					
12						2.10	I 2.70R	3.05	A	A	R	A	A	A	A	A	3.35	2.80	2.30					
13						A	2.75	3.10	3.55	I 3.60B	I 3.80R	3.90	3.90	R	A	A	A	A	A					
14						1.90	2.60	3.05	3.45	3.55	A	B	A	A	A	A	A	2.85	2.20					
15						2.05	2.60	3.05	3.35	3.55	I 3.70R	I 3.80R	3.80	3.70	3.50	A	A	A	A					
16						1.95	I 2.45A	I 2.90A	I 3.30A	3.35	3.55	A	A	I 3.80R	3.65	3.50	3.20	2.80	A					
17						1.95	2.55	3.05	3.30	3.60	3.75	3.95	3.95	I 3.85B	3.75	3.55	I 3.30A	2.80	2.25					
18						A	A	2.95	3.40	3.60	I 3.60A	A	A	A	R	3.55	3.40	2.90	A					
19						A	I 2.65R	3.05	I 3.30C	3.50	A	A	A	A	A	A	3.30	2.90	A					
20						B	2.60	I 3.05A	I 3.40A	I 3.60A	3.95	3.90	I 3.90R	3.90	3.75	3.55	3.45	2.90	2.10					
21							2.55	2.85	3.05	A	A	A	A	A	3.85	3.60	3.40	2.80	2.05					
22						A	2.45	2.95	3.40	I 3.60A	A	A	A	A	A	A	A	A	A					
23						1.80	2.65	I 3.05A	3.35	3.55	A	A	A	A	A	A	3.30	2.85	A					
24						A	2.55	3.05	3.50	3.70	3.85	3.95	A	A	A	A	A	A	A					
25						A	2.55	3.05	3.50	I 3.65A	I 3.85A	3.95	4.00	A	A	A	I 3.30A	2.70	A					
26						A	A	3.00	I 3.15A	3.50	3.45	A	A	A	A	A	A	A	A					
27						A	2.50	2.95	3.30	3.55	3.55	I 3.60A	I 3.60R	I 3.55R	3.65	3.55	3.20	I 2.70A	2.20					
28						R	2.55	3.05	3.40	3.55	A	A	A	A	A	A	A	A	A					
29						B	2.50	3.05	I 3.35A	I 3.55A	3.55	3.80	3.70	I 3.90A	A	A	A	I 2.80A	A					
30						A	2.50	2.95	I 3.10A	3.25	A	A	A	3.60	I 3.60A	3.55	3.15	2.50	A					
31						B	2.45	2.85	3.10	3.50	3.55	3.70	3.55	3.55	3.55	3.50	3.30	2.80	A					
No.						12	28	31	29	26	20	14	13	12	13	13	17	19	10					
Median						2.05	2.60	3.05	3.40	3.60	3.80	3.90	3.90	U 3.80	3.70	3.55	3.30	2.85	2.30					

foE

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

IONOSPHERIC DATA

Jul. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J8.3	J3.3	J2.4	J2.3	J2.5	3.0	3.5	4.5	J7.2	J6.3	G	4.1	J6.1	J5.9	4.4	J6.4	G	G	J6.4	J9.2	J13.8Y	J11.9	J6.1Y	J4.2
2	J2.9	J1.38Y	J3.6	J6.0	J2.9	2.7	3.8	4.5	J6.2	J5.8	4.3	5.4	J8.0	J7.0	J5.6	4.0	J5.2	J4.5	3.6	J3.5	2.2	J2.4	J3.1	J3.5
3	3.8	J6.0	J7.7Y	J3.5	J2.5	2.7	3.4	J5.2	J5.3	J7.1	J7.5	J8.1	J13.5	J14.9	J9.8	J12.0	J8.8	J4.4	J4.2	J3.0	J2.4	2.2	J3.3	J2.9
4	J6.1	J5.9	J8.3	J8.7	J5.0	J4.3	3.1	3.8	4.2	5.1	J6.8	J5.0	J7.7	4.4	J6.8	J5.8	J8.0	J7.3	J5.9	J10.6	J8.3	J5.3	J2.6	J8.5
5	J6.3	J6.5	J8.5	J6.5	J6.2	2.5	5.0	J7.0	C	C	C	C	C	C	C	C	C	C	J8.9	J2.8	J3.5	J3.8	J3.9	J5.1Y
6	J6.1Y	J6.0	J6.5	J6.1	J5.8	2.7	3.9	J6.9	J7.0	J5.4	J13.6Y	J12.2	4.5	5.0	J9.4	J3.8	3.9	3.7	3.5	J2.7	J4.1	J8.2	J5.9	J3.0
7	J1.9	J1.8	J2.8	J2.3	E	J4.4	4.1	4.4	J5.6	J6.7	J10.9	C	C	C	J6.8	J4.3	J11.5	J8.8	J8.1	J7.8	J6.5	J6.4	J6.0	J7.9
8	J4.9	J8.3	J8.3Y	J4.3	J3.3	J2.3	4.0	J10.1	J6.9	J13.3	J9.1	C	J7.7	J8.7	5.7	5.3	J6.5	J5.7	J7.6	J6.0	J8.3	J8.3	J13.8	J5.9
9	J4.9	J3.5	J3.5	J3.5	J4.5	J3.5	4.1	J6.2	J8.6	J6.5	J7.1	J10.0	J7.2	J12.7	J14.4	J11.8	J11.7Y	J10.8	J5.9	J3.3	J6.3	J7.8Y	J6.3	J5.0
10	J3.6	J4.0	J3.3	J2.3	J2.8	3.4	4.6	J6.5	J6.2	J9.1	J7.3	J9.4	J7.6	J6.3	4.2	4.2	4.0	4.2	J5.0	J3.7	J2.9	J1.8	2.2	J2.3
11	J3.8	J4.0	J2.8	J2.8	J2.4	J3.8	3.1	5.0	J7.2	J8.9Y	9.0	J15.7Y	J10.1	J17.1	J7.3	J11.5	J9.8	J7.1	J5.9	J7.0	J3.3	J7.6	J1.8	2.2
12	J1.9	J2.3	E	J2.3	E	G	G	4.6	J5.1	4.1	G	J5.6	J7.9	J8.1	4.8	J4.7	4.2	4.4	3.7	J4.3	J8.3	J6.0	J2.5	J6.2
13	J5.0	J6.0	J6.0	J7.8	J6.5	J6.5	4.3	J8.1	J6.1	J7.0	J8.2	4.8	J6.8	J8.3	J8.0	J10.1Y	J6.3	J6.1	J6.0	J6.1	J8.5	J4.9	E	J2.3
14	J1.8	E	E	J2.3	E	2.6	4.4	J5.9	J7.2	6.8	J5.6	4.1	4.4	J5.2	4.5	5.2	J8.3	J4.9	3.5	J2.3	J2.9	J4.9	J8.6	J13.6Y
15	J6.2	J4.9	J6.5	J2.8	J2.8	2.9	3.5	J5.1	J5.8	4.1	J6.8	J5.9	5.0	4.2	J5.5	J6.0	J7.3	3.2	J2.8	J2.9	J1.8	2.1	E	J3.6
16	J3.7	J2.9	J2.4	J6.8	J4.4	J4.3	J6.4	J11.7	J6.8	J6.1	J5.9	J4.7	J7.3	4.6	4.3	4.1	J7.0	J9.4	J7.3	J7.4	J16.0Y	J2.3	J6.4Y	J5.7Y
17	J2.3	J2.7	J2.7	J2.3	E	2.7	4.4	J4.6	J6.2	5.2	J6.0	G	4.9	4.4	4.0	4.5	J5.5	J9.5	J5.0	J4.8	J5.9	J4.9	J2.3	E
18	2.0	J2.3	J2.0	J1.8	J1.7	J3.5	J6.3	J5.8	4.2	4.3	J9.2	J6.5	4.4	4.2	G	4.7	J5.2	J9.7	J16.2Y	J8.8	J2.9	J5.3	J3.8	J5.0
19	J3.4	J6.0	J4.9	J3.8	J2.0	J5.2	G	J6.3	C	J6.2	P20.0P	J14.2	J6.7	J6.5	4.3	3.6	G	4.2	J5.2	J3.8	J2.4	J2.3	J2.8	J6.0
20	J4.9	E	2.1	2.1	E	2.2	3.1	J5.0	J7.8Y	4.1	4.3	4.5	G	5.2	J5.9	4.7	4.2	J3.8	J4.1	J2.3	J2.3	J4.4	J4.9Y	J4.3
21	J3.9	J3.9	J2.1	J2.5	2.1	3.1	J3.6	J5.7	J7.3	J4.7	J5.6	J7.4	4.1	4.1	4.5	J7.5	J9.8	J7.2	J6.0	J4.2	J5.0	J5.9	J3.0	J3.8
22	J6.1	J6.0	J4.9Y	J6.0	J6.3	J3.5	3.0	4.6	J10.1	J7.3	J13.8	J16.1	J6.9	J5.3	J5.4	J9.0	J10.3	J3.6	J8.3Y	J8.3	J2.4	J3.7	J2.3Y	J6.1
23	J6.3Y	J6.0	J3.5	J3.6	J2.3	2.7	J4.1	4.2	J5.4	4.0	4.5	J7.9	J5.9	J4.4	J6.2	J6.2	J8.7	J5.2	J8.7	J8.5	J6.3	J6.3	J5.0	J10.3Y
24	J4.9	J4.0	J6.1	J3.3	J2.8	2.7	4.5	J5.2	J5.2	J5.2	J7.0	J6.1	J5.4	J4.9	J5.9	J5.0	J5.2	J6.3	J4.8	J2.4	J1.9	J2.8	J3.6	J5.1
25	J2.4	J3.5Y	J1.23	J6.4	J2.4	J2.3	3.4	4.1	J4.9	J6.0	4.8	J9.0	J6.3	J5.6	J5.5	4.2	J5.5	J7.3	J8.5	J4.3	J6.0Y	J3.0	J4.0	J4.8
26	J3.8	J5.0	J4.8	J2.4	J2.1	2.5	J1.38	J5.8	J6.3	J7.0	J6.3	J7.0	J5.3	J5.0	J4.8	J4.0	4.5	J5.6	J8.4	J8.3	J5.8	J4.2	J8.3	J8.3
27	J8.2	J7.2	J3.8	J3.4	J2.4	J2.8	3.5	J5.2	J5.2	J6.2	J6.3	J8.8	J7.0	4.2	J6.4	4.5	4.6	J5.0	G	2.8	J3.5	J2.4	J2.9	J4.1
28	J3.0	J2.3	E	J1.7	E	2.1	2.7	5.3	J6.2	J8.8	J13.9	4.5	J5.5	J6.0	J5.0	J6.7	J8.6	J6.8	J5.0	J3.5	J2.9	J8.8	J8.3	J6.1
29	J4.9	2.1	J4.9	J5.0	J6.3	J5.0	J6.5	J5.9	J8.4	J9.7	J14.9	J8.6	J12.4	J5.3	J9.1	4.1	J7.1	J8.8	J10.9Y	J3.8	J8.1	J5.2	J3.0	J8.0
30	J3.5	J2.8	2.0	J2.3	E	2.6	J4.1	4.5	J9.0	J5.2	J8.8	J8.4	J8.7	J5.2	J3.8	J6.0	J11.9	J9.2Y	J6.5	J8.3	J7.6	J4.9	J16.2Y	J4.1
31	J5.0	J4.1	J3.8	J2.8	J2.8	J5.8	J5.8	J5.4	J4.5	J5.6	5.0	4.8	J8.1	J7.7	5.0	B	J6.0	J7.7	J4.8	J4.2	J6.6	J2.6	J8.7	J8.3
No.	31	31	31	31	31	31	31	31	29	30	30	28	29	29	30	29	30	30	31	31	31	31	31	31
Median	3.9	4.0	3.6	3.3	2.5	2.8	4.0	5.2	6.2	6.2	6.9	6.8	6.8	5.3	5.5	5.0	6.4	5.9	5.9	4.2	5.0	4.9	3.8	5.0
U.Q	6.1	6.0	6.1	6.0	4.4	3.8	4.5	6.2	7.2	7.0	9.1	8.9	7.8	7.4	6.8	6.6	8.7	7.7	8.1	7.8	7.6	6.3	6.3	6.2
L.Q	3.0	2.7	2.4	2.3	1.7	2.6	3.4	4.6	5.2	5.2	5.6	4.8	5.2	4.5	4.5	4.2	4.6	4.4	4.2	3.0	2.9	2.6	2.6	3.6
Q.R	3.1	3.3	3.7	3.7	2.7	1.2	1.1	1.6	2.0	1.8	3.5	4.1	2.6	2.9	2.3	2.4	4.1	3.3	3.9	4.8	4.7	3.7	3.7	2.6

foEs

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

The Radio Research Laboratories, Japan.

A 4

IONOSPHERIC DATA

Jul. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.0	1.8	1.8	E	E	2.6	3.3	4.0	7.0	6.2		E4.1B	6.0	5.9	4.4	4.5			5.3	7.5	A	3.0	2.6	E
2	1.9	3.0	2.9	4.0	E	2.7	3.6	4.0	5.9	U5.8B	4.3	5.3	A	A	5.6	4.9	U5.2B	4.5	3.0	3.5	E	2.5	2.9	2.3
3	3.0	4.0	3.9	2.4	2.0	2.4	3.2	4.7	5.1	A	A	A	A	A	A	A	4.9	4.0	3.5	2.8	2.0	E	1.8	2.4
4	2.8	4.9	5.0	A	2.5	2.5	3.0	3.7	4.1	5.1	A	A	A	4.4	5.0	4.6	A	6.7	5.3	A	5.5	U5.3B	1.7	A
5	3.8	3.1	A	2.7	3.5	2.5	4.8	6.8	C	C	C	C	C	C	C	C	C	C	A	U2.8B	2.8	E	3.1	E
6	E	2.9	3.5	2.8	3.3	2.4	3.5	5.3	5.5	5.3	A	A	4.5	4.9	A	3.8	3.4	3.5	3.1	U2.7B	2.9	5.1	2.5	2.8
7	E	E	2.1	E		2.8	3.7	4.0	5.5	U6.7B	A	C	C	C	6.1	4.2	A	A	4.5	4.0	5.5	4.5	3.4	2.9
8	2.9	5.5	1.7	2.0	E	2.2	3.1	9.1	5.5	A	A	C	6.8	7.0	5.4	5.0	5.5	5.4	6.2	5.1	3.8	3.8	3.0	E
9	2.0	E	2.9	2.0	E	2.1	3.0	5.8	8.8	5.3	7.0	8.2	5.5	A	A	8.5	5.5	5.4	4.6	2.9	5.5	4.8	4.9	2.5
10	2.1	E	2.5	1.8	E	3.0	3.9	5.6	5.5	A	6.5	7.3	5.3	4.1	4.0	3.8	3.8	4.1	5.0	2.6	2.0	E	E	E
11	2.0	E	E	1.8	E	G	3.0	4.8	6.0	5.0	8.3	A	A	A	7.0	A	A	7.0	6.0	5.5	3.0	5.3	E	E
12	E	E		E				4.0	3.5	3.9		5.2	A	A	U4.8B	4.7	3.9	4.4	3.5	3.0	5.0	3.0	1.8	5.0
13	4.0	4.5	4.0	4.0	4.3	2.1	4.2	6.7	5.5	7.1	A	4.5	6.5	5.4	A	A	5.7	4.2	3.7	6.5	A	2.8		E
14	E			E		2.3	3.6	4.0	A	5.5	4.4	U4.1B	4.3	4.2	4.0	5.0	A	3.9	2.6	E	2.5	4.0	5.5	3.0
15	5.0	4.2	3.1	E	E	G	3.5	5.0	A	4.0	A	5.3	5.0	4.2	5.2	A	5.1	3.1	2.8	1.8	E	E		3.5
16	3.4	2.0	E	E	E	3.6	A	A	A	A	A	A	A	A	4.0	3.9	A	3.8	3.1	A	E	E	E	E
17	E	2.5	E	E		2.2	3.2	3.5	4.3	4.0	A		U4.9B	E4.4B	4.0	3.8	3.7	3.8	3.8	3.5	4.1	2.8	1.8	
18	E	E	E	E	E	2.7	4.0	4.0	3.8	3.8	A	4.5	4.4	4.0		G	3.9	A	A	4.6	2.9	2.1	2.0	E
19	E	3.0	3.0	E	E	2.0		4.4	C	6.2	A	A	5.4	6.0	E4.3B	3.6		G	4.0	3.5	2.6	E	E	2.0
20	E		E	E		2.1	2.8	3.5	3.8	3.8	G	4.2		5.0	4.5	4.1	4.0	3.5	2.7	1.7	E	3.1	4.2	4.5
21	2.1	3.0	E	E	E	2.3	3.5	4.6	6.3	4.5	5.3	5.4	4.1	4.0	4.5	5.7	A	7.0	5.5	2.0	5.0	4.0	E	E
22	4.5	3.0	2.9	4.0	5.0	2.9	2.8	4.5	A	6.4	6.5	A	5.0	5.0	4.4	7.5	5.5	3.0	3.8	5.0	2.1	3.0	E	5.0
23	4.9	3.5	2.0	2.0	1.9	2.5	4.0	3.4	4.8	3.9	4.1	4.9	5.5	4.4	5.1	5.5	3.0	3.8	3.8	4.0	4.5	3.0	3.0	A
24	5.0	3.5	3.5	2.5	2.1	2.4	4.4	5.1	5.2	4.9	6.9	6.0	4.8	4.9	5.5	4.0	4.0	3.3	3.0	2.4	E	2.4	2.6	4.0
25	E	E	E	1.9	E	2.0	2.9	3.7	4.7	4.0	4.6	5.5	5.2	4.6	4.2	3.8	4.0	4.9	2.9	2.3	2.5	2.7	2.4	2.9
26	3.5	2.3	2.9	E	E	2.4	4.3	5.3	5.5	6.0	5.7	5.7	4.5	4.5	4.0	3.9	3.5	3.9	A	7.6	2.5	4.0	5.4	4.0
27	4.9	2.4	2.0	2.0	E	2.0	3.0	4.6	4.5	A	5.2	5.8	5.9	4.2	6.0	4.5	3.7	3.0		1.7	2.3	E	2.6	4.0
28	2.0	E		E		2.0	2.7	4.0	5.0	6.4	A	4.1	4.5	5.5	4.2	5.5	6.7	4.7	2.7	2.6	2.5	5.2	5.5	E
29	E	E	1.9	2.2	2.0	2.9	5.9	5.3	5.7	8.3	A	7.0	8.5	4.7	8.0	4.0	7.0	7.0	3.0	2.0	AS	E	3.0	6.0
30	2.5	E	E	E		2.1	4.1	4.3	A	4.3	A	A	5.5	U5.2B	3.8	4.9	A	5.4	5.4	5.0	A	E	5.3	E
31	4.0	2.2	1.9	E	E	2.6	4.0	4.6	4.5	4.7	4.7	4.0	A	4.0	U5.0B	B	4.9	3.4	2.8	3.2	2.9	2.5	4.0	2.5
No.	31	29	28	31	24	30	29	31	29	30	28	27	28	29	29	29	28	29	30	31	31	31	29	30
Median	2.1	2.4	2.0	1.8	E	2.4	3.5	4.6	5.5	5.4	A	5.7	5.5	4.9	5.0	4.6	5.2	4.1	3.8	3.2	2.9	2.8	2.6	2.5

foEs

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | 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	1.65	1.70	1.75	1.75	2.75	2.75	2.95	4.00	2.90	2.65	1.95	1.75	1.70	1.70	E	E	E	E	E
2	E	E	E	E	E	1.70	1.75	1.70	1.75	1.70	2.65	3.45	4.00	4.05	1.95	1.85	1.70	1.70	1.65	E	E	E	E	E
3	E	E	E	E	E	1.65	1.70	1.70	1.90	1.95	2.75	2.90	3.05	2.80	3.25	1.80	1.70	1.65	1.65	E	E	E	1.70	E
4	E	E	E	E	E	E	1.65	1.75	1.80	1.80	1.80	2.70	4.00	2.75	1.80	1.80	1.85	1.75	1.65	E	E	E	E	E
5	E	E	E	E	E	1.65	1.65	1.70	C	C	C	C	C	C	C	C	C	C	1.70	E	E	E	E	E
6	E	E	E	E	E	1.65	1.65	1.70	1.80	2.30	2.70	2.90	3.40	3.50	2.80	1.75	1.80	1.70	1.70	E	E	E	E	E
7	E	E	E	E	E	1.70	1.70	1.75	2.00	2.10	2.00	C	C	C	2.60	1.80	1.70	1.75	1.70	E	E	E	E	E
8	E	E	E	E	E	1.65	1.70	1.70	1.80	1.80	2.00	I 2.60 C	3.30	2.95	2.75	1.80	1.70	1.65	E	E	E	E	E	E
9	E	E	E	E	E	1.65	1.65	1.75	1.80	1.80	3.45	2.00	2.00	2.55	2.60	2.00	1.70	1.80	E	E	E	E	E	E
10	E	E	E	E	E	1.65	1.65	1.75	1.75	2.00	3.00	2.00	2.80	2.85	2.95	1.95	1.95	1.80	1.65	E	E	E	E	E
11	E	E	E	E	E	1.65	1.65	1.70	1.85	1.80	2.50	2.05	2.70	2.45	2.80	1.80	1.85	1.65	E	E	E	E	E	E
12	E	E	E	E	E	E	1.65	1.70	1.65	I 1.70	1.75	1.95	2.00	2.00	2.00	1.80	1.75	1.70	1.65	E	E	E	E	E
13	E	E	E	E	E	1.70	1.75	1.80	1.80	4.05	2.45	3.80	1.90	2.65	2.00	1.80	2.40	1.80	1.75	E	E	E	E	E
14	E	E	E	E	E	1.65	1.65	1.75	1.80	1.80	1.80	3.65	2.95	3.00	2.50	1.90	1.70	1.70	1.70	E	E	E	E	E
15	E	E	E	E	E	1.70	1.70	1.65	1.70	1.90	2.00	2.95	2.05	3.05	2.40	3.00	1.80	1.75	1.65	E	E	E	E	E
16	E	E	E	E	E	1.65	1.70	1.75	1.75	1.70	1.90	2.05	1.80	1.90	2.05	1.70	2.00	1.70	1.70	E	E	E	E	E
17	E	E	E	E	E	E	E	1.70	1.65	1.80	2.00	1.95	2.95	3.95	1.80	1.75	1.70	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	1.70	1.70	2.00	2.00	2.00	2.85	3.00	1.95	1.90	1.70	1.70	E	E	E	E	E	E
19	E	E	E	E	E	E	1.65	1.70	I 1.80 C	1.90	3.05	2.00	2.90	3.15	3.50	2.00	2.00	1.65	1.65	E	E	E	E	E
20	E	E	E	E	E	1.65	E	1.70	1.75	1.90	1.90	1.80	2.30	2.00	1.90	1.80	1.90	1.65	1.65	E	E	E	E	E
21	E	E	E	E	E	E	1.70	1.65	1.75	1.85	2.00	3.00	3.05	2.05	2.80	1.90	1.75	1.70	1.65	E	E	E	E	E
22	E	E	E	E	E	E	1.70	1.75	1.70	1.90	2.00	2.50	2.50	2.95	1.90	1.80	1.70	E	E	E	E	E	E	E
23	E	E	E	E	E	E	1.65	1.65	1.95	1.80	2.40	3.40	1.90	2.45	2.50	1.75	1.75	1.70	E	E	E	E	E	E
24	E	E	E	E	E	E	1.70	1.70	1.70	1.95	3.00	2.75	2.75	2.80	2.00	2.00	1.90	1.80	1.65	E	E	E	E	E
25	E	E	E	E	E	E	E	1.65	1.80	1.70	3.20	2.00	2.00	2.45	2.70	1.80	1.70	1.70	E	E	E	E	E	E
26	E	E	E	E	E	E	1.65	1.70	1.70	1.75	1.95	1.70	1.75	2.45	2.75	1.75	1.65	E	E	E	E	E	E	E
27	E	E	E	E	E	E	1.70	1.70	2.00	2.05	2.50	2.00	2.50	2.05	1.75	1.75	1.70	1.70	E	E	E	E	E	E
28	E	E	E	E	E	E	1.65	1.65	1.90	1.90	1.80	1.90	2.95	2.50	2.00	2.80	1.65	1.70	E	E	E	E	E	E
29	E	E	E	E	E	1.65	1.65	1.70	1.70	1.80	1.80	2.00	2.00	1.90	1.70	2.00	1.70	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	1.65	1.65	3.75	2.05	2.50	2.50	2.10	1.70	1.70	1.65	E	E	E	E	E	E
31	E	E	E	E	E	1.65	1.65	1.65	1.75	1.70	1.90	2.00	1.80	2.40	2.00	2.00	1.70	1.70	1.65	E	E	E	E	E
No.	31	31	31	31	31	31	31	31	30	30	30	29	29	29	30	30	30	30	31	31	31	31	31	31
Median	E	E	E	E	E	1.65	1.65	1.70	1.75	1.80	2.00	2.05	2.70	2.65	2.25	1.80	1.70	1.70	1.65	E	E	E	E	E

f-min

Sweep 1.60 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | (M3000)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	2.70	2.70	2.70	2.50	2.60F	2.80	2.90	2.70	3.00	2.60	3.05	2.75	2.70	2.60	2.75	2.75	2.95	2.85	2.80	2.80	[2.75A	[2.70F	2.60F	F
2	F	F	F	F	2.60F	2.40F	2.55	2.45	2.70	2.55	2.40	2.45	[2.60A	[2.75A	2.65	2.80	2.70	2.80	2.80	2.80	2.65	2.55	2.60	2.60
3	2.70	2.70	2.70	2.80	2.80	2.95	2.80	2.70	2.80	[2.60A	A	A	A	A	A	[2.80A	2.75	2.80	2.95	3.00	2.65	2.50	2.55	2.60F
4	2.80F	2.95	3.10	[2.65A	2.80F	2.55	2.55	2.35	2.50	2.80	[2.50A	[2.45A	[2.35A	2.45	2.80	2.80	[2.80A	2.70	2.95	[2.80A	2.65	2.60	F	A
5	F	2.60F	[2.70A	2.60F	2.60F	3.05	2.85	A	C	C	C	C	C	C	C	C	C	C	A	2.60	2.60	2.65	2.60	2.70
6	2.70	[2.60F	2.70F	[2.80F	2.70	2.95	2.80	2.85	2.80	3.00	A	A	2.50	2.70	[2.70A	2.65	2.60	2.75	2.80	2.70	2.65	2.70	2.60	2.60
7	2.65	2.65	2.80	2.70	2.55F	3.15	3.00	2.50	2.80	2.80	A	C	C	C	2.80	2.85	[2.80A	[2.95A	2.90	2.75	2.70	2.70	2.70	2.70F
8	F	F	F	F	2.80F	2.70F	2.90	3.00A	2.85	[2.90A	[2.85A	[2.75C	2.75	2.75	2.70	2.70	2.80	2.80	2.95	2.95	2.90	2.60	[2.60F	F
9	F	F	F	2.85F	2.75	2.80	[2.85R	3.05	[2.90A	2.70	2.60	2.70	2.70	A	A	2.85	2.80	2.90	2.85	2.90	2.70	F	F	F
10	2.85F	2.75F	2.95F	2.80F	2.80	2.90	2.95	3.00	3.00	[2.60A	2.50	2.65	2.70	2.90	2.70	2.80	2.85	2.90	2.90	2.85	2.80	2.70	2.65	2.65
11	2.65	2.70	2.80	2.75	2.75	2.70	2.65	[2.75R	2.85	2.80	2.80	A	A	A	2.75	[2.80A	[2.90A	3.00	2.95	2.75	F	F	F	2.70F
12	2.70	2.75	2.85	2.80	2.70	2.75	2.75	3.00	2.65	2.60	2.65	2.35	[2.45A	[2.40A	2.55	2.65	2.70	2.80	2.80	2.85	2.65	2.70	2.65	2.55
13	[2.70F	2.85	[2.60F	[2.70F	2.75F	2.70	2.55	2.80	2.80	2.90	[2.80A	2.80	2.70	2.80	[2.90A	[2.85A	[2.85R	2.95	3.05	3.00	[2.75A	2.60	2.65F	2.70
14	2.60	2.80	2.65	2.60	2.45	2.55	2.75	2.65	[2.45A	2.75	2.65	2.80	2.30	2.50	2.70	2.80	[2.65A	2.90	2.90	2.90	2.80	2.45	2.55	[2.60R
15	[2.60F	2.70	2.65	2.50	2.35	2.40	2.95	2.80	A	G	[2.40A	2.50	2.50	2.30	2.60	[2.60A	2.75	2.70	2.65	2.70	2.50	2.65	2.55	[2.90R
16	2.50	[2.65F	2.65	2.65	2.50	2.40	[2.60A	A	A	A	A	A	A	A	G	G	[2.35A	G	2.50	[2.65A	2.75	[2.70R	2.50	[2.50F
17	[2.45R	2.60	2.60F	2.50F	2.55	[2.40F	2.60F	2.85	2.60	1.95	A	G	2.20	2.60	2.50	2.60	2.60	2.60	2.75	2.85	2.85	2.55	2.60	F
18	F	F	2.65F	[2.70F	2.75F	2.70F	2.65	3.00H	3.20	2.80	[2.75A	2.85	2.60	2.95	2.60	2.80	2.85	[2.90A	[2.90A	2.85	2.90	2.85	2.85	F
19	F	F	F	2.70F	2.85	3.00	3.10	2.80	[2.90C	3.15	[3.00A	[2.90A	2.90	2.65	2.75	2.95	2.90	2.80	2.65	2.70	2.85	2.90	2.60	[2.60F
20	2.85	2.70	2.75	2.65	2.50	2.65	2.80	3.15	3.10	2.80	2.90	2.80	2.55	2.65	2.75	2.80	2.85	2.95	2.85	2.85	2.90	2.80	[2.70F	[2.65F
21	2.70F	2.70	2.70F	2.80	2.75	2.65	2.65	3.05	2.80	3.15	2.50	2.70	2.75	2.80	2.85	2.65	[2.70A	2.70	[2.95R	3.05	2.80	2.65	[2.60F	2.75F
22	F	F	F	F	F	2.70F	2.90F	3.20	[2.90A	3.05	2.90	[2.90A	3.00	2.70	2.85	2.85	2.80	2.90	3.05	3.05	2.70	2.70	2.60F	2.75F
23	F	F	F	F	[2.80F	2.95F	2.90	3.10	3.15	2.90H	2.60	2.85	[2.75R	2.80	2.95	3.05	3.00	3.05	3.00	2.85	2.75	2.80	2.90F	[2.85A
24	[2.90F	F	F	F	2.85F	2.90F	2.90	3.20	2.90	2.95	2.95	2.95	2.90	2.70	2.85	3.00	2.85	2.95	2.85	2.95	2.95	2.85	2.70	2.60F
25	2.70	2.75	2.80	[2.80F	2.75F	3.00F	3.05	2.85	3.15	2.95	3.05	2.70	2.95	2.90	2.90	2.90	3.00	3.00	2.85	2.85	2.90	2.90	2.90	2.85
26	2.75	2.80V	2.85	2.75	2.95	3.15	3.10	3.15	3.40	2.95	3.00	2.95	2.80	2.75	2.85	3.00	2.75	3.15	[3.00A	A	2.75F	F	F	F
27	F	F	F	F	[2.80F	2.75F	2.60	2.85	2.95H	[2.95A	2.90	2.70	3.10	2.90	2.75	3.00	3.00	3.15	2.85	2.80	2.70	2.80	2.75	2.70
28	2.65	2.65	2.75	2.80	2.80	3.00	3.00	3.05	3.20V	2.80	[2.90A	2.80	2.85	2.90	2.80	3.00	2.90	2.90	2.90	2.90	2.80S	F	F	F
29	F	F	F	F	2.95	3.10	3.00	2.90	2.95	2.75	[3.00A	2.80	2.70	2.60	2.75	2.80	2.95	[2.95R	3.05	3.05	A S	F	F	F
30	F	F	2.60F	[2.50F	[2.40F	2.50F	2.50	2.95	A	A	A	A	2.40	2.50	2.50	2.60	[2.65A	2.75	2.90	2.95	[2.65A	[2.60F	2.55F	F
31	F	F	F	2.90F	2.60	2.65	2.60	2.50	2.60	2.80	[2.40R	[2.30R	[2.40A	2.50	2.70	2.90	2.75	2.80	2.65	2.70	2.85	2.65F	2.60	2.65F
No.	19	19	21	24	30	31	31	29	27	28	24	24	26	25	28	30	30	30	30	30	29	26	25	21
Median	2.70	2.70	2.70	2.70	2.75	2.75	2.80	2.85	2.90	2.80	2.80	2.75	2.70	2.70	2.75	2.80	2.80	2.90	2.90	2.85	2.75	2.70	2.60	2.65

(M3000)F2 Sweep 1.60 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 7.

27

IONOSPHERIC DATA

Jul. 1960 | (M3000)F1 | 135° E Mean Time (G.M.T.+ 9h.) | **Akita** | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						L	L	340L	I345L	I370A	380	I355H	I350A	I330A	345	315L	I340L	L	A					
2						295	330	I365A	A	A	405	A	A	A	A	R	A	L	L					
3						L	345	A	A	A	A	A	A	A	A	A	A	340	L					
4						L	320H	320	390	A	A	A	A	370	360	345	A	A	A					
5							A	A	C	C	C	C	C	C	C	C	C	C	A					
6						L	L	A	A	A	A	A	360	I360A	I360A	I365R	340	330L	L					
7								360	A	A	A	C	C	C	345	340H	A	A	A					
8							L	A	A	A	A	C	A	A	A	L	A	A	A					
9						L	L	A	A	A	A	A	A	A	A	A	A	A	A					
10							L	A	A	A	A	A	I330L	360	350	340	340L	L	A					
11							LH	A	A	L	A	A	A	A	A	A	A	A	A					
12							L	330L	380	415	400	I390A	I370A	I360A	I355A	I350A	370	A	L					
13							A	A	A	A	A	350	A	A	A	A	A	L	A					
14						305	320	360	A	A	370	365	390	375	370	I360A	I350A	320L	L					
15						320	345	I350A	I370A	405	A	A	A	360	I355A	I360A	I340A	325	I340L					
16						A	A	I345A	I370A	I380A	I370A	A	A	A	370	375	I335A	305	300L					
17						325	330	355	375	350	I415A	390	I360A	I360R	365	375	300	330	A					
18							345L	I370A	390	390	I400A	375	370	375	I370A	I360R	340	A	A					
19							I390L	I360A	C	A	A	A	I350A	I350A	I360R	350	340L	L	A					
20						L	365	355L	I395L	375	390L	360A	360	I355A	345	350	360	L	L					
21						L	310L	I350A	360	375	I365A	I350A	355	370	330	A	A	A	A					
22								A	A	A	A	A	335	350	350	A	A	L	A					
23							A	L	I390A	I415H	360	355	I350A	360	L	A	L	L	L					
24							A	A	A	L	I380A	I365A	L	L	A	360L	340	L	L					
25								L	I365A	I385L	380	A	A	355	355L	350H	380	A	L					
26								A	A	A	A	A	360	360L	365	350L	I350L	L	A					
27							350	I330A	350	A	A	A	A	360	I380A	355	360L	L						
28							L	L	A	A	A	395	375L	360A	340	A	A	A						
29							A	A	A	A	A	A	A	350	I350A	360	A	A						
30						300	I325A	A	A	345	A	A	A	A	365	A	A	A	A					
31							A	A	A	I390A	I390R	390	I380A	370	I370A	355	A	L	L					
No.						5	12	14	12	12	13	12	15	20	22	19	15	6	2					
Median						305	340	U350	U370	380	380	365	360	360	360	355	340	330	U320					

(M3000)F1 Sweep 1.60 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

IONOSPHERIC DATA

Jul. 1960 | 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						L	305	390	I335A	I430A	345	I440L	440	445	395	395	345	305L	335A					
2						460	405	415	I380A	I445A	515	530	I485A	I445A	480	435	I445A	395	I335L					
3						320L	300	385	395	I450A	A	A	A	A	A	A	345	350	300L					
4						355L	455	540	495	405	I430A	I560A	I560A	510	445	400	A	A	330					
5							340	A	C	C	C	C	C	C	C	C	C	C	A					
6						L	320	300	350	345	I505A	I500A	460	410	I450A	440	450	365	305L					
7								445	360	A	A	C	C	C	350	345	I345A	I320A	295					
8							315	I290A	300	A	A	C	A	A	395	350	345	315	305					
9						L	I275L	295	I255A	325	A	A	345	A	A	I340A	310	310	295					
10							290L	285	295	I360A	I400A	I385A	355	320	360	350	345	320	300					
11							305L	305	305	I310L	A	A	A	A	A	A	A	A	I295A					
12							I320L	310	395	430	445	545	I520A	I545A	495	445	395	360	345L					
13							345	330A	345	320	I360A	395	I395A	395	I350A	I345A	350	300	295					
14						400	355	445	I525A	415	445	445	595	495	455	405	I435A	345	295					
15						405	330	I400A	G	G	A	A	545	600	455	I470A	400	415	395					
16						480	I460A	A	A	A	A	A	A	A	G	G	I585A	G	450L					
17						410	385	340	450	715	I540A	G	650	490	545	495	490	465	390					
18							350	270H	300	395	I435A	400	480	370	I420L	360	395	A	A					
19						290	285	370	I340L	300	I330A	I355A	380	455	405	350	345	335L	345A					
20						300L	300	270	255	390	355	395	495	450	405	395	395	340L	310					
21						L	390	315	I280A	335	545	445	435	405	390	415A	I365A	I330A	295					
22								255	I310A	I340A	A	A	345	350	360	I350A	345	325	285					
23							290	295	295	285A	460	395	370	350	305	305	325	295	300L					
24							295	250	265	300	I320A	350	345	400L	350	300	345	295	300					
25								I300L	260	305	305	405	345	345	340	305	305	295	295					
26								255	260	I280A	305	345	385	355	355	310	I350L	295	A					
27							405	325	300	I365A	380	445	340	375	I370A	350	345	300L						
28							255L	260L	280	I340A	I350A	345	350	345	360	345	I325A	310A						
29							I295A	290	300	A	A	A	A	370	345	305	320	I270A						
30						445	445	345	A	A	A	A	A	495	500	A	A	A	A					
31							445	I450A	455	400	I580R	I630R	I580A	520	425	370	410	I400L	350L					
No.						10	27	29	28	25	20	20	23	24	27	27	27	26	24					
Median						400	320	310	310	360	415	420	435	410	395	350	345	320	300					

h'F2

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

The Radio Research Laboratories, Japan.

A 9

29

IONOSPHERIC DATA

Jul. 1960 | 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	[290A	290	300	335	310	290	245	250A	[245A	[235A	200	215H	[230A	[230A	250	[245A	245	250	[280A	[295A	[260A	340A	300	295
2	295	305	305A	[300A	305	305	[265A	A	A	A	205	A	A	A	A	240	A	A	275A	[290A	295	330A	300A	310A
3	310A	[305A	[305A	260	280	260	250	A	A	A	A	A	A	A	A	A	A	A	A	265	270	295	310	330A
4	295	305A	[270A	[305A	300	265	220H	255	230	A	A	A	A	220	A	A	A	A	A	A	A	A	300	[340A
5	[340A	340A	[305A	330A	[305A	255	A	A	C	C	C	C	C	C	C	C	C	C	A	310	305A	295	[320A	295
6	300	310	300A	275A	300A	255	260	A	A	A	A	A	245	[240A	[235A	205H	250	250	[260A	295A	305A	[300A	305A	310A
7	305	295	295	260	295	255	245	240	A	A	A	C	C	C	A	240H	A	A	A	290A	[320A	310	295	330
8	320	[320A	260	260	290	250	245	A	A	A	A	C	A	A	A	A	A	A	A	290	255	300A	295A	300
9	295	295	295	265	290	250	245	A	A	A	A	A	A	A	A	A	A	A	A	255	[280A	[305A	[300A	255
10	245	300	295	250	260	245	245	A	A	A	A	A	[205A	215	235	220	245	[245A	[260A	265	245	255	285	295
11	295	295	280	265	300	255	250H	[245A	[245A	A	A	A	A	A	A	A	A	A	A	[290A	320A	[330A	255	295
12	260	295	255	255	310	250	250	[250A	240	200	200	[205A	[230A	A	A	A	245	A	A	295	A	A	290	A
13	A	[310A	[300A	[320A	[320A	245	A	A	A	A	A	245	A	A	A	A	A	A	A	A	[285A	310	295	305
14	300	280	290	310	395	290	[250A	250	A	A	245	230	205	205	205	[245A	[235A	[240A	245	260	305	[350A	[330A	305A
15	[325A	320A	330A	340	395	270	250A	[245A	[220A	205	A	A	A	245	A	A	[230A	245	290	300	300	300	330	305
16	[335A	300	295	295	345	A	A	A	[240A	[235A	[230A	A	A	A	240	245	A	A	[290A	[295A	295	280	330	355
17	350	[310A	345	320	350	255	250A	245	245A	240	[205A	205	[230A	[240A	240	235	A	A	A	290A	[295A	300A	300	300
18	305	295	290	305	295	255	245	[240A	205	220	[205A	205	205	210	205H	210	245	A	A	A	255	295	295	305
19	300	300A	345	295	245	245	245	A	C	A	A	A	A	A	B	210	240	245A	[260A	[280A	255	255	250	340A
20	290	255	295	300	320	245	240	210	245	205	200	240H	205	[235A	245A	245	245	[240A	240	280	255	290A	[295A	[300A
21	300A	300A	295	295	270	260	[255A	[240A	[230A	[210A	[220A	[210A	205	200	260A	A	A	A	A	240	[255A	[305A	305	305
22	[315A	330A	295	290A	[285A	255	245	A	A	A	A	A	A	[210A	220A	A	A	245	[260A	255	260	295	305	310A
23	[310A	300A	260	295	260	255	[250A	245	[225A	200H	240	[200A	[210A	240	[225A	[210A	245	245A	[250A	[270A	[300A	295A	285	[265A
24	[275A	310A	[300A	295	295	255	A	A	A	A	[230A	[240A	A	A	A	230	240	230	[255A	260	245	250	290A	[320A
25	295	275	290	300	265	250	245	235	[245A	240	240	A	A	240	230	205H	240A	[245A	255	245	255	270A	250	290A
26	[290A	295	295A	295	260	245	255	A	A	A	A	A	235	240A	245	245	240	A	A	A	310	305A	[310A	310
27	[310A	255	245	245	280	250	250	A	A	A	A	A	A	220	[240A	255A	245	240	250	255	295A	290	290	[320A
28	310	310	295	290	290	250	240	240	A	A	A	205	205	[225A	245	A	A	[220A	255	255	255	A	A	340
29	295	245	290	275	255	255	A	A	A	A	A	A	A	A	[240A	240	A	A	255	250	[270A	340	A	A
30	295A	305	345	345	345	305	[260A	A	A	A	A	A	A	A	240	A	A	A	A	A	A	340	[320A	305
31	[340A	300	225	290	300	[300A	A	A	A	[235A	[230A	225	[240A	240	[245A	230	[245A	245	[280A	300	290A	300	[300A	305
No.	30	31	31	31	31	30	25	14	12	11	13	12	13	17	18	18	15	14	17	26	28	28	29	29
Median	300	300	295	295	295	255	250	245	[240	220	220	210	210	230	240	240	245	245	260	280	280	300	300	305

h'F | Sweep 1.60 Mc to 2.00 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 10

IONOSPHERIC DATA

Jul. 1960 | h'Es | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	195	100	105	145	135	130	110	110	G	105	105	110	110	110	G	G	110	105	105	105	105	105
2	105	110	100	100	100	140	120	115	105	105	120	125	115	115	115	145	125	115	110	105	110	105	100	100
3	100	100	100	100	100	145	140	115	110	110	105	105	105	100	100	100	100	100	100	100	100	100	105	105
4	100	105	100	100	100	100	100	145	140	130	115	110	110	120	110	125	110	110	105	105	105	105	100	110
5	105	100	100	100	100	150	140	115	C	C	C	C	C	C	C	C	C	C	105	105	105	105	100	105
6	100	105	100	100	100	145	140	110	105	110	105	105	110	110	105	105	105	145	115	110	105	105	105	105
7	115	115	110	120	E	145	135	130	115	110	110	C	C	C	105	105	105	100	100	100	100	100	100	105
8	105	100	100	100	100	100	130	110	105	100	100	C	105	100	130	135	115	115	100	100	105	105	105	100
9	100	105	100	100	100	105	125	105	105	105	105	105	105	105	105	105	100	105	115	110	105	105	105	100
10	100	100	100	100	100	145	130	110	110	105	105	100	105	105	105	105	140	120	105	105	105	105	105	100
11	100	100	100	100	100	100	145	130	110	110	105	140	105	105	105	100	100	100	100	105	110	105	100	105
12	100	100	E	100	E	G	G	120	110	110	G	105	100	100	140	100	140	120	110	105	105	100	100	105
13	100	100	100	100	100	100	135	115	115	110	110	110	105	105	105	100	100	100	100	110	100	105	E	100
14	100	E	E	100	E	145	130	135	110	110	105	110	105	105	145	110	100	110	110	110	105	105	105	105
15	100	100	100	100	100	145	145	110	130	140	110	110	110	110	105	105	105	110	105	105	100	100	E	105
16	110	105	105	105	125	110	105	105	105	105	105	105	105	135	140	145	110	110	105	105	105	105	105	105
17	100	100	100	105	E	130	140	145	145	140	140	G	140	140	145	135	105	110	110	105	100	100	100	E
18	100	100	100	100	100	110	105	105	105	110	105	105	105	110	G	145	140	110	105	105	105	100	100	100
19	100	100	100	100	100	140	G	105	C	105	100	100	100	100	105	105	G	145	110	110	105	105	105	100
20	100	E	100	100	E	110	125	105	110	105	145	135	G	130	120	125	130	110	110	105	105	100	100	100
21	100	100	100	100	100	120	105	105	100	105	100	105	110	105	145	120	110	110	105	105	105	100	100	105
22	100	100	100	100	100	100	125	115	110	105	105	100	100	105	100	105	100	105	100	100	105	100	100	100
23	100	100	100	100	105	145	145	145	125	120	105	105	100	100	100	100	115	120	105	105	105	105	100	100
24	105	100	100	100	100	135	115	110	110	110	105	105	105	105	105	105	105	105	100	100	100	100	105	105
25	105	105	105	105	110	100	145	130	110	105	110	105	110	110	105	130	115	105	105	105	105	105	105	100
26	100	100	100	100	100	110	105	105	105	105	105	105	105	105	100	105	125	115	105	105	105	105	100	100
27	105	100	100	100	100	100	140	115	115	105	110	105	105	110	110	110	110	105	G	100	100	100	100	100
28	100	100	E	105	E	125	145	115	110	105	100	105	105	100	105	105	100	100	100	110	105	105	105	110
29	100	100	100	100	100	125	110	110	110	105	105	105	105	110	115	130	110	105	110	100	110	110	105	105
30	105	105	105	100	E	145	125	115	105	110	105	105	105	105	105	125	115	110	105	105	105	110	110	105
31	100	100	105	105	140	130	135	125	125	115	115	115	105	110	110	B	135	110	105	105	105	105	105	100
No.	31	29	28	31	24	30	29	31	29	30	28	27	28	29	29	29	28	29	30	31	31	31	29	30
Median	100	100	100	100	100	130	130	115	110	110	105	105	105	105	105	105	110	110	105	105	105	105	105	105

h'Es

Sweep 160 Mc to 200 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 11

IONOSPHERIC DATA

Jul. 1960

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

32

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f2	f2	f	f	f	h	h2	h2	c2	c2		l	c2	c2l	c l	c2			c3	f3	f2	f3	f3	f2
2	f3	f3	f5	f3	f2	h2	h2	c3	c3	c2	h	h	c2	c2	c	h	h	c2	c2	f2	f	f3	f3	f3
3	f3	f2	f3	f3	f	h	h2	c2	c2	c3	c2	c2	c2	l2	l2	l2	l2	l2	l2	f	f2	f	f2	f
4	f2	f2	f4	f5	f3	l2	l	h2	h	h	c2	c	c2	c	c2	h2	c3	c3	l2	f3	f4	f3	f2	f3
5	f3	f3	f5	f3	f3	h2l	h2	c3											l4	f4	f3	f2	f3	f2
6	f2	f4	f4	f5	f4	h2	h2l	c3	c2	c	c2	c2	c	c	c2	l	l	h	c2	f3	f3	f3	f2	f3
7	f	f2	f	f		h2	h2	h2	c2	c2	c2				l2	l2	l2	l4	l3	f2	f3	f3	f4	f3
8	f4	f5	f2	f2	f2	l	h	c4	c2	l3	l2		l2	l2	h l	h	c2l	c2l3	l2	f4	f2	f3	f4	f2
9	f2	f2	f2	f2	f2	l2	h3	l3	c3	l2	l3	l2	c	c3	l2	l2	l2	l3	c2l2	f3	f4	f4	f3	f2
10	f2	f2	f5	f2	f2	h2l	h3	c3	c3	c2	c3	l2	l	l	l	c l	h	c2	c3	f2	f2	f	f	f2
11	f2	f4	f2	f2	f	l	h	h2	c2	c	c2	h l2	c2	l2	l3	l4	l3	l5	l4	f4	f2	f4	f	f2
12	f2	f2		f				h2	c	c		l2	l	l3	h l	l3	h l	h2	c2	f3	f3	f2	f2	f3
13	f3	f4	f2	f2	f3	l	h2	c2	c2	c	c2	c	c2	c2	l2	l2	l3	l2	l2	f3	f2	f2		f2
14	f2			f		h2	h2	h2	c2	c3	l	c	l	l	h l	c l	l2	c2	c2	f	f4	f3	f3	f2
15	f3	f3	f4	f2	f3	h	h2	c3	c2	h2	c2	c	c2	c	c2	l2	l2	c2	l3	f2	f2	f	f2	f2
16	f3	f2	f3	f2	f2	c3	l3	l2	c2	c2	c2	l	l	h	h	h	c2	c2	c3	f2	f	f	f2	f2
17	f2	f2	f2	f2		h2	h2	h	h2	h	h		h	h	h	h	l2	c2	c4	f5	f4	f3	f2	
18	f	f	f	f2	f	l3	l3	c2	c2	c	c3	l	l	l		h	h2	c3	l5	f3	f3	f2	f2	f2
19	f2	f2	f2	f2	f	h l		c2		c2	c2	l2	l2	l3	l	l		h2	l3	f3	f2	f	f2	f2
20	f2		f	f		c2	h2	l	l	l	h	h		h	h	h	h	c2	c2	f2	f2	f4	f3	f3
21	f3	f4	f	f2	f	h3l	c3	c3	c3	l2	l2	l2	l	l	h	c2	c3	c3	c3	f3	f3	f3	f2	f2
22	f2	f2	f2	f2	f3	l3	h	c2	c3	l3	l2	l3	l2	l2	l2	l2	l2	l2	l2	f2	f3	f2	f	f2
23	f2	f2	f2	f2	f2	h2	h2	h	c2	h	l	l	l2	l2	l2	l3	l c2	h2	l2	f4	f3	f2	f3	f3
24	f3	f5	f2	f2	f2	h2l	c2	c3	c2	c2	c3	c2	c	l2	l2	l2	l2	l2	l2	f2	f	f2	f2	f3
25	f2	f	f2	f2	f2	l	h	h2	c2	l	c l	c2	c2	c l	l	h	c2l	c2	l2	f3	f3	f3	f2	f2
26	f4	f2	f3	f	f	c3	l2	c2	c2	c2	c2	c2	l2	l2	l2	l	h l2	c2l2	l3	f5	f3	f3	f3	f3
27	f2	f2	f2	f2	f	l	h2	c2	c2	c2	c	l2	c2	c	c2	c2	c2	l2		f	f2	f2	f2	f4
28	f3	f2		f		h2	h	c2	c2	c4	l2	l	l2	l3	l2	l2	l3	l3	l2	f3	f2	f3	f3	f2
29	f2	f	f2	f2	f2	h2	c3	c3	c3	c3	c2	c2	c2	c	c2l	h l2	c2l2	l3	c2l	f2	f4	f2	f3	f3
30	f3	f2	f	f		h l2	h4	c2	c3	c2	l2	l2	l2	c2	l	h2	c3	c3	l4	f4	f4	f2	f3	f2
31	f3	f2	f3	f2	f2	h3	h2	h2	h2	c2	c	c	c3	c	c		h2	c2	l3	f3	f3	f2	f3	f2
No.																								
Median																								

Types of Es

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | foF2 | 135° E Mean Time (G.M.T.+ 9h.) | **Kokubunji Tokyo** | Lat. 35° 42.4' N, Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	7.4	7.6	7.5	I 7.6A	8.0	8.7	u 9.1 s	J 9.7 s	8.6	8.2	8.4 s	8.2	7.9 s	8.4	u 9.0 F
2	J 9.2 s	J 7.8 R	7.2	7.1	6.7	6.2	6.4	7.0	I 7.1 A	I 6.4 A	J 6.1 s	u 6.4 s	6.5	6.6 s	I 6.9 A	I 6.4 A	6.5	6.4	6.3	6.7	u 7.0 s	u 7.4 s	7.3 s	u 7.3 s
3	J 7.2 s	C	C	C	C	C	C	C	C	7.3	7.7	7.8	7.9	7.6	7.6	7.6	7.9	8.1	8.2	7.6	7.2 s	u 7.3 s	7.7	7.6
4	u 7.9 s	7.8 V	5.7	5.7	5.6	5.2 F H	6.4	6.4	6.5 R	7.5	6.7 Z	6.4	6.4	I 7.3 A	7.9	7.8	7.7	7.7	7.7	7.3 s	7.4 s	u 7.4 s	7.6	7.2
5	7.1	u 7.2 F	7.4	6.5	6.0 F	7.3 s	7.9	7.9	A	A	A	A	A	A	6.5	6.9	u 6.7 s	6.5	6.3	6.6	7.7	7.5	7.3	7.5 s
6	8.0	8.2	8.1	7.0	6.9	u 6.8 R	9.1	J 9.8 s	8.2	7.6	7.7	7.9	8.0	7.9	7.4	7.5	7.1	7.3	7.5	7.6	8.0	8.0	7.4	7.6
7	8.1	7.8	7.2	6.7	6.2	7.4	6.7	7.3	I 7.6 A	8.3	I 8.6 A	I 8.9 C	9.5	I 9.6 A	9.7	u 9.6 s	I 9.2 A	9.0	9.1	u 9.3 s	J 9.1 s	I 9.1 s	u 9.1 s	J 9.1 s
8	9.1	9.0	u 9.1 s	J 8.1 s	7.7	8.0	9.2	9.3	9.8 s	I 9.0 A	9.2	8.8	8.8	8.8	9.2	9.6	9.9	J 10.4 s	J 11.0 s	10.7	8.4	8.4	I 8.8 F	9.1 F
9	u 9.4 F	9.4 F	8.9	I 8.9 F	7.7 F	J 8.2 R	J 10.7 s	J 10.7 s	J 10.0 R	A	A	A	10.6	10.5	10.4	10.1	9.6	9.9	9.6	I 9.2 s	9.0	J 8.9 s	8.5	u 9.2 F
10	u 8.8 F	8.2	I 8.4 F	8.5	7.4	7.6	8.9	9.2	7.9	8.5	8.9	9.2	10.0	10.2	9.8	9.8	10.4	9.4	9.8	J 10.1 s	I 8.8 A	8.0	8.5	8.3
11	8.0	7.9	7.8	u 7.6 R	7.5	7.6	8.9	10.1	J 10.9 R	J 10.8 s	10.3	9.6	9.7	J 10.5 R	10.8	10.2	9.1	8.7	8.2	8.4	J 7.9 s	J 8.2 s F	9.0 F	8.7 F
12	J 8.4 R	8.4 F	7.5 F	6.9	6.8	6.9	C	C	C	A	6.6	6.3 s	5.9	I 6.1 A	6.5	6.7	6.9 s	6.5	6.3	I 6.0 A	6.7	6.7	6.4 s	6.2
13	6.7 F	6.7 F	6.3 F	u 6.8 F	6.8 F z	6.6 R	7.5	9.1	9.9	I 9.8 A	u 9.4 s	8.9	8.8	9.5	10.1	9.6	9.9	10.0	9.6	7.4	I 7.1 A	I 7.0 A	7.0 F	6.8 s
14	6.7	6.5	6.2	6.3	5.8	5.7	6.5	5.7	5.5	A	A	A	6.3	I 6.4 A	6.7	7.2	6.7	7.6	7.4	7.3	6.5	J 6.8 s	7.3	7.3
15	7.0	7.4	7.1	6.0	5.6	6.3	7.1	5.2	A	A	A	6.3	I 5.8 A	u 5.7 s	6.2	I 6.2 A	6.4 s	6.4	6.4	6.3	6.8	7.0	7.3	8.0 s
16	6.9	7.5	7.6	6.7	6.6	5.8	5.8	A	A	AS	A	I 5.4 s	u 5.5 s	I 5.2 s	5.5	I 5.2 A	I 5.4 A	u 4.6 s	5.3 V	5.4	5.2	5.0	5.0	4.8
17	4.8	5.4	5.2	4.6	4.5	5.5	6.4	u 6.1 s	6.1	5.7	5.5	5.5 s	5.5	6.0	5.7	5.8	5.7	6.0	6.7	7.0	6.6	6.4 s	6.5	6.3
18	5.8	6.0	5.5	5.3	5.3	I 6.0 R	6.9	7.9	I 7.4 R	7.1	6.7	7.5	6.5	7.2	7.3	7.0	7.0	7.2	7.4	7.7	7.8	7.6	8.1 s	7.8
19	u 7.4 F	7.3	7.2	6.8 R	6.3	6.4	6.3	7.4	8.1	7.6	7.2	7.0	7.0	I 7.6 A	7.6	8.4	I 8.6 R	8.1	7.6	I 9.4 s	I 9.6 s	I 8.8 s	I 8.2 s	u 7.7 s
20	8.6	7.6	7.0	6.6	6.7	7.7	9.6 s	9.4	8.4	7.6	7.0	7.2	7.1	7.2	7.7	7.3 s	6.9	7.5	7.7	8.2	8.2	I 8.4 s	7.1 s	J 7.8 s
21	8.3	8.2	7.8	7.7	6.9	6.4	7.1	8.2	7.3	7.2	I 7.0 A	6.7	7.5	7.3	7.5	7.8	8.0	9.1	10.8	I 9.2 s	6.6	I 7.1 A	6.9	I 7.0 A
22	7.0	7.6	7.7 F	6.6	6.0	6.1	8.2	8.3	J 9.0 R	I 8.4 A	J 8.9 s	A	A	A	A	9.7	J 9.1 s	9.7 s	u 10.0 s	8.8	J 8.1 s	8.2	8.0	8.0
23	8.1	8.1	7.9	7.4	7.4	7.7	8.2	9.5	8.3	7.2	7.8	8.4	9.5	11.0 s	11.6	10.5	9.1	u 8.2 R	8.3	8.2	J 8.4 s	8.6	8.1	7.3
24	u 7.1 s	I 6.6 F	6.5 s	6.7 R	6.4	7.3 F	9.3	9.1	8.7	8.4	8.6	8.8	I 8.4 A	8.9	9.9	10.3 s	9.3	9.5	u 10.0 s	10.0 s	9.3	8.3	u 7.9 s	8.1
25	8.2	8.9	8.3	7.8	7.6 F	8.3	8.5	9.0	9.3	9.5	8.4	8.5	9.3	9.2	9.6	9.2	9.4	u 9.3 A	9.1	8.9	I 9.1 s	u 9.1 s	J 8.4 s	J 8.4 s
26	8.0	J 8.1 R	J 8.6 s	8.0	8.0	8.1	8.7	8.8	7.6	7.8	8.3	7.5	I 7.8 A	8.7	9.1	9.9	10.3	9.6 s	8.3 s	8.1	u 8.2 s	8.1	J 8.2 s	F
27	F	I 8.8 F	I 8.8 F	I 8.7 F	7.1 F	6.4	7.4	9.5	9.4	7.3 s	7.3	8.0	9.4	9.5 s	9.0	8.4	7.8	7.0	7.0	6.6	7.2	7.1	J 6.7 s	6.4
28	6.3	6.3	6.5	6.5	6.4	6.7	7.6	8.6	7.9	I 7.5 A	8.0	7.8	I 8.4 A	8.3	8.2	8.4	8.2	8.2	8.3	8.6	J 8.3 s	u 8.0 s	u 7.9 s	I 8.4 A s
29	I 9.1 F	u 6.6 s	8.6	7.9	6.0	5.9	J 7.6 s	I 8.3 A	9.6	9.5	9.4	9.8	10.7	11.0 R	11.6	11.6	I 10.8 A	10.0	J 9.6 s	7.4	6.4	6.2	6.2 F	7.4
30	I 6.8 A	5.9	5.5	5.4	5.3	4.5 F	5.5	6.5	A	A	A	A	5.8	6.2	I 6.0 B	u 6.0 s	I 6.0 A	6.2	I 6.4 s	I 6.4 s	6.4	6.4	6.3 F	I 6.2 A F
31	u 6.4 s F	I 6.3 C	I 6.2 C	I 5.6 C	4.7	4.3	5.0	5.3	5.8	5.5	5.6	5.4	5.6	A	A	6.3	5.6	5.6	5.6	6.4	6.9	6.4	6.3	6.5
No.	29	29	29	29	29	29	28	27	24	24	25	26	29	28	29	31	31	31	31	31	31	31	31	30
Median	7.9	7.6	7.4	6.8	6.6	6.6	7.6	8.3	8.2	7.6	7.7	7.6	7.8	8.0	7.9	8.4	8.0	8.1	8.2	7.7	7.8	7.6	7.6	7.6
U. A.	8.4	8.2	8.2	7.8	7.2	7.6	8.8	9.3	9.4	8.4	8.8	8.8	9.4	9.5	9.8	9.7	9.4	9.4	9.6	8.9	8.4	8.3	8.2	8.3
L. A.	6.8	6.6	6.4	6.4	5.9	6.0	6.4	7.0	7.4	7.2	6.8	6.4	6.4	6.9	6.8	6.9	6.7	6.5	6.7	6.7	6.8	7.0	6.9	7.0
Q. R.	1.6	1.6	1.8	1.4	1.3	1.6	2.4	2.3	2.0	1.2	2.0	2.4	3.0	2.6	3.0	2.8	2.7	2.9	2.9	2.2	1.6	1.3	1.3	1.3

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 1

IONOSPHERIC DATA

Jul. 1960 | foF1 | 135° E Mean Time (G.M.T.+ 9h.)

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						C	C	C	C	A	5.8L	L	A	5.7L	u5.5S	5.4S	u5.2L	L						
2						3.4L	A	5.0L	A	A	A	S	S	A	A	A	L	L	A					
3						C	C	C	C	5.3	u5.4S	S	5.5H	5.5H	u5.4S	A	A	A	A					
4							4.6L	4.6S	5.0	5.6L	A	5.6	A	A	A	u5.4S	L	A	A					
5								A	A	A	A	A	A	A	A	5.1S	5.2S	A	L					
6							u4.5L	u5.4L	A	u5.6L	5.5	5.6	5.5L	5.4	S	S	5.1	u4.6L	A					
7								u5.1L	A	5.6L	A	C	A	A	A	A	A	A	A					
8									5.2H	A	A	5.6L	5.7	5.7	5.5	5.4L	L	A	A					
9							L	L	A	A	A	A	A	A	A	A	A	A	A					
10								A	A	A	A	A	A	A	5.6	5.2L	5.0	A	A					
11								L	4.6	5.2	5.8L	5.7L	5.6L	5.5	5.3L	5.3L	u5.3L	u4.4L						
12							C	C	C	A	S	S	A	S	S	A	A	A	A					
13							L	u4.7L	A	A	A	A	5.8	5.5	A	A	L	A	A					
14						3.3	3.9	4.4	4.9	A	A	A	A	A	I5.1A	5.0S	4.8	4.4L						
15						3.1L	3.7	I4.4L	A	A	A	A	A	I5.0S	5.2	I4.8A	4.7	u4.3L	u3.7L					
16						A	3.8	I4.1A	I4.3A	4.7	A	4.7	5.0	u4.9S	4.7	I4.6A	I4.6A	4.3	u4.0L					
17						3.0	3.8	4.3	4.3	4.8	4.9	4.7	5.0	A	5.0	A	4.8	4.4	u3.8L					
18						A	L	A		u5.1S	5.3	5.4	5.3	5.3S	5.2	5.3L	A	4.5L	L					
19							5.2L	u4.5L	5.0	4.9L	A	A	A	A	6.3L	5.3L	5.1L	u5.2L	A					
20						B	L	L	L	u5.0L	S	5.2	L	S	5.3L	5.3S	4.7	u4.5L	L					
21							u4.8L	4.5L	u5.2L	A	A	5.6	5.4	5.5	5.3L	A	A	A	L					
22								A	L	A	A	A	A	A	A	A	A	A						
23								u4.8L	L	5.7	5.3L	6.2	5.2S	5.4	5.5	5.5H	5.0L	L						
24									A	L	u5.5L	A	A	5.6L	A	u5.3L	4.5L	A	A					
25								L	L	A	A	5.9L	5.4	5.6L	5.2L	5.1L	A	L						
26										A	5.4L	A	A	A	5.4L	5.2L	A	A	A					
27							L	L	4.7	A	u5.3S	S	A	A	A	A	L	L	L					
28								L	u5.5L	A	A	A	A	A	5.5L	A	4.8L	u4.6L						
29								A	L	A	A	L	5.7L	A	A	A	A	A						
30						L	3.8	4.3	A	A	A	A	A	4.9	B	4.8	A	A	S					
31							3.5	4.1	A	S	4.8	A	A	A	A	4.8	A	L	L					
No.						4	10	14	10	11	11	11	12	14	17	18	14	10	3					
Median						3.2	3.8	u4.5	5.0	5.2	5.4	5.6	5.4	5.5	5.3	5.2	4.9	u4.4	u3.8					

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 2

IONOSPHERIC DATA

Jul. 1960 | foE | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						C	C	C	C	3.70	3.95	A	A	A	$I_{3.95}^{A}$	$I_{3.80}^{R}$	3.30	2.95	2.40					
2						2.40	2.70	3.15	$I_{3.45}^{A}$	$U_{3.65}^{S}$	$I_{3.70}^{S}$	$U_{3.85}^{S}$	$I_{4.00}^{S}$	$I_{4.00}^{S}$	$I_{3.70}^{S}$	$U_{3.55}^{S}$	3.30	3.00	2.30					
3						C	C	C	C	S	$U_{3.85}^{S}$	$I_{4.00}^{S}$	S	A	A	A	A	A	S					
4						A	A	$I_{3.20}^{A}$	3.55	3.90	$U_{4.00}^{R}$	B	S	$I_{4.00}^{A}$	3.90	3.80	3.55	2.90	A					
5						B	2.75	3.20	3.50	3.70	3.95	$I_{4.00}^{R}$	$I_{4.00}^{B}$	$I_{3.90}^{A}$	$I_{3.90}^{S}$	3.70	3.30	2.90	$U_{2.10}^{A}$					
6						$U_{1.85}^{R}$	2.75	3.20	$I_{3.50}^{A}$	3.55	3.90	$I_{4.00}^{R}$	3.95	3.95	3.80	3.35	3.40	3.00	2.35					
7						A	2.70	3.15	3.45	3.90^{A}	$U_{3.90}^{A}$	C	B	A	A	A	A	A	A					
8						A	2.60	3.15	A	A	A	A	A	A	A	3.90	3.55	2.95	A					
9						B	2.75	A	A	A	A	A	A	$U_{3.90}^{A}$	A	A	A	A	A					
10						2.50^{A}	2.70	3.10	3.60^{R}	3.65	3.80	A	A	A	A	3.70^{A}	$I_{3.40}^{A}$	3.00	A					
11						B	2.65	3.10	$I_{3.60}^{R}$	3.80^{S}	$I_{3.90}^{A}$	$I_{3.95}^{A}$	$I_{3.90}^{R}$	$I_{3.80}^{S}$	$I_{3.75}^{R}$	3.65	3.30	$I_{2.90}^{A}$	2.25					
12						A	C	C	C	A	A	$U_{3.75}^{S}$	$I_{4.05}^{A}$	$I_{4.10}^{A}$	A	A	A	A	A					
13						B	2.60	3.10	3.50	$I_{3.70}^{S}$	$I_{3.80}^{A}$	$I_{3.80}^{A}$	$U_{3.90}^{S}$	3.90^{S}	3.60	A	A	A	A					
14						2.00	2.50	3.05^{S}	3.40	3.60	3.70	A	A	A	A	A	3.40	A	B					
15						$U_{2.10}^{R}$	2.60	3.00	3.35	3.60	3.75	$U_{3.90}^{S}$	3.90^{S}	3.80	3.50	A	A	A	A					
16						A	2.50	A	A	A	A	3.85	$I_{3.80}^{S}$	3.80	3.80	3.50	3.25	2.80	2.20					
17						2.10	2.60	$I_{3.10}^{A}$	3.50	3.70	3.80	3.90	3.95	3.80	3.65	3.70	3.20	2.80	2.15					
18						A	A	A	A	3.55	3.80	$I_{3.75}^{A}$	A	A	A	3.60	3.40	2.85	$U_{1.90}^{A}$					
19						2.10	2.65	A	A	3.60	A	A	A	A	B	A	A	A	$I_{2.20}^{R}$					
20					1.60^{S}	$I_{1.95}^{B}$	2.55	$I_{3.00}^{A}$	3.30	$I_{3.60}^{A}$	4.00^{S}	$I_{4.00}^{R}$	$I_{3.95}^{S}$	3.95^{S}	3.80^{S}	3.70	3.40	2.90	$U_{2.10}^{A}$					
21						B	2.50	$I_{2.80}^{A}$	$I_{3.10}^{A}$	A	A	A	A	A	4.00	3.50	3.30	2.80	A					
22						A	2.55	3.10	3.50	3.60	3.70	A	A	A	A	A	A	A	A					
23						2.15	2.45	3.00	$I_{3.30}^{A}$	3.60	$U_{3.70}^{R}$	$I_{3.95}^{C}$	4.00	$I_{4.00}^{A}$	3.90^{A}	$I_{3.60}^{S}$	3.30	2.80	A					
24						$I_{2.05}^{B}$	2.60	$I_{2.90}^{A}$	3.35	3.70	3.80	3.85	A	A	A	A	A	A	A					
25						A	A	A	A	A	A	A	A	3.95	3.90	3.80	3.30	2.90	A					
26						B	A	$I_{2.75}^{A}$	$I_{3.10}^{A}$	3.35	3.60	A	C	A	A	A	A	A	A					
27						B	2.50	3.00	3.20	3.55	3.65^{S}	S	A	S	$I_{3.60}^{A}$	3.50	$I_{2.95}^{A}$	$I_{2.65}^{A}$	2.10^{S}					
28						A	2.45	2.95	3.15	3.40	3.50	A	A	A	A	A	A	2.70	2.00^{A}					
29						A	2.70	3.10	$I_{3.40}^{A}$	$I_{3.60}^{A}$	$I_{3.70}^{A}$	$I_{3.90}^{A}$	3.90	$I_{3.85}^{B}$	3.80	3.65	3.25	2.80	2.10					
30						B	2.60	2.95	3.20	3.40	$I_{3.50}^{A}$	A	A	A	$I_{3.60}^{B}$	3.70	3.15	2.60	S					
31						2.10	2.30	3.00	3.15	3.40	3.60	3.75	$I_{3.70}^{A}$	3.65	3.60	3.50	3.20	2.65	B					
No.					1	11	24	23	22	24	24	16	13	16	18	19	20	20	13					
Median					1.60	2.10	2.60	3.10	3.40	3.60	3.80	$U_{3.90}$	$U_{3.95}$	$U_{3.90}$	3.80	3.65	3.30	2.90	2.15					

foE

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 3

IONOSPHERIC DATA

Jul. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.)

Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	5.9	5.1	4.2	10.1	4.8^{s}	4.2	G	3.9	4.0	3.1	3.1	6.4	8.4	5.2	5.2
2	4.8	S	2.1	2.1	2.6	G	5.8	4.0	11.5	9.8	G	G	G	7.6	6.9^{M}	8.1^{M}	G	4.7	4.6	3.2^{M}	E	E	E	2.1
3	3.3	C	C	C	C	C	C	C	C	4.3	G	G	G	4.5	4.5	6.8^{M}	7.9^{M}	5.7	3.7	4.0	4.2	E	2.4	2.4
4	2.9	5.3	3.8	5.7	3.6	3.3^{s}	3.3	3.4	4.4	5.7	5.7	5.1	5.5^{M}	7.8	6.6	4.7	5.0	7.6	7.5	4.6	3.6	3.9	3.1	S
5	5.8	6.5	4.1	3.0	2.6	2.5	3.6	5.0	7.3	9.9	11.6	8.6	7.6	7.6	6.0^{M}	4.2	11.3^{Y}	11.8	4.2	4.4	6.4	7.9	3.4	S
6	2.8^{s}	2.5^{M}	2.4	B	B	2.2	3.1	4.4^{s}	5.4	8.8	4.5	G	4.2	4.7	G	3.7	3.8	4.5	3.9	2.8	S	3.3	6.3	4.3
7	6.4	5.5	3.5	3.8	5.0	3.4	2.9	3.8	9.3	5.2	15.0	C	12.4^{M}	7.7	7.3	7.0	8.5^{M}	7.7	6.5	5.1	7.8	3.7	3.8	3.0
8	2.4^{M}	2.7	2.4	2.4	2.5^{M}	2.2	G	G	3.8	11.9^{M}	11.4	5.9	5.6	5.6	4.3	4.6	6.0	7.0	8.3	8.3	6.9	7.8	5.6	5.6
9	5.7	2.9	2.5	2.3	2.1	B	3.3	4.6	7.6	13.9	13.7	14.3	7.2	12.4	6.5	8.4	12.9	6.3	6.2	6.2	8.8	5.0	9.6	7.6
10	11.2^{s}	4.6	3.9	3.4	2.4	4.6	3.9	6.0	5.6	6.3	7.6	10.1^{M}	7.0	7.4	5.4	4.4	3.8	4.9	6.7	6.3	9.7^{s}	5.9	5.4	4.9
11	2.9	2.2	2.0	1.9^{R}	2.1	B	2.9	3.8	G	G	4.0	4.0^{s}	4.6	G	G	3.9	4.0	4.2	3.0	4.6	5.2	8.5	8.9	2.1
12	E	2.4	2.3	2.1	2.3^{M}	2.2	C	C	C	8.3	4.7	8.8	6.0	7.5^{M}	4.4	5.7	5.8	5.7	5.9	6.0^{M}	5.6	4.8	8.1	8.1
13	7.5	5.4	4.8	4.9	3.7	B	3.9	4.4	6.1	9.6^{M}	9.4	8.3	4.9^{s}	4.5	8.2	7.6^{M}	6.3	8.1	6.4	5.9	11.0	8.2	8.5	3.0
14	3.3	3.3	1.3	1.9^{Y}	2.1	2.8	3.8	5.1	5.2	8.8^{M}	12.7	11.8^{M}	8.2	8.1^{M}	6.3	4.5	4.8	3.5	8.5^{Y}	2.9	2.6^{M}	4.4	E	3.4
15	3.8	3.4	3.8	3.6	3.5	G	3.3	4.8	5.8	8.6^{M}	7.7	6.2	6.8^{M}	4.4	4.2	8.0	4.8	4.3	3.2	3.8	7.7^{M}	1.9	S	E
16	4.3	6.4	2.2	3.4	2.7^{M}	5.0	5.3	5.7^{M}	7.7^{Y}	5.1^{s}	7.6	4.6	G	4.3	5.3	6.1	9.6	9.7	6.0	5.4	3.9^{M}	3.4^{M}	3.8	S
17	3.8	2.4	2.9	2.4	3.3	G	3.5	3.5	4.5	5.5	4.6	4.7	5.7	5.0	G	5.8	3.8	3.6	2.4	2.7	2.4^{M}	2.5^{M}	3.8	5.0
18	4.8	4.0	3.0	2.8	2.2	5.7	5.2	6.3	5.0^{M}	4.8	4.4	5.0	4.3	4.8	3.9	4.5	5.6^{M}	4.4	5.7^{M}	6.1^{M}	3.4	4.8	3.9	4.6
19	4.0	3.9	2.6	2.2^{Y}	B	G	G	3.3	3.8	4.0	5.7	6.2	10.0	14.2	5.3^{s}	4.1	3.5	5.9	4.7	6.3	5.4	S	E	S
20	E	2.1^{M}	2.0^{M}	1.3	2.3	B	3.5	3.5	4.3	4.3	S	4.5^{s}	S	4.3	5.0^{s}	5.3^{s}	4.6	3.8	4.0	2.1	4.3	3.2	3.2	4.8
21	4.0	3.8	3.7	2.7	2.3	B	2.9	4.0	4.4	5.4	9.1	5.0	4.0	5.8	4.8	7.1	8.5	11.3	5.0	3.4	6.0	6.9^{M}	8.6	8.6
22	8.3	4.4	4.8	4.4	4.0	2.6	3.0	5.6	5.1	10.6	7.2	16.1	13.7	15.9	11.7	6.4	5.5^{Ms}	5.3	5.6	5.5	5.4	2.4	1.9^{M}	2.3^{M}
23	E	3.8	2.2	1.8	E	G	2.8	G	3.9	4.0	G	4.9	4.9	5.3	4.5	G	3.7	3.4	2.5	4.0	3.3^{M}	2.9	5.8	4.8
24	5.0	5.0	3.4	2.8	2.0	B	2.9	4.9	5.7	4.9	5.6	6.8	9.8^{M}	5.2	5.5	4.9	4.4	5.4^{M}	10.8	4.4	3.0	3.0	2.6	4.8
25	4.2	5.4	3.0^{M}	5.9	3.9	2.8	4.4	4.9	3.9	5.6	5.8	4.5	4.3	4.8	4.3^{s}	4.9	6.0	4.7	3.6	3.2^{M}	3.2	3.1	2.2	2.1
26	5.2	3.9	4.0	3.0	2.1	2.3	3.4	5.6	9.3	6.9^{M}	4.6	6.7	11.5	8.0^{M}	4.3	4.9^{s}	5.3	11.0	9.6	5.6	3.4	11.5	6.8	5.3
27	7.8^{Y}	5.5	5.1	5.0	2.1	2.2	3.1	5.0	5.8	8.6	4.9	4.9^{s}	5.9	9.5^{M}	6.2^{M}	5.5	7.1	3.9	2.3	4.7	4.0^{s}	2.6	3.0	2.3^{M}
28	5.4	3.7	2.2	1.4	2.7	3.1	4.1	3.9	5.5	9.9^{M}	5.5^{s}	8.9	17.9	5.1	6.3	6.3	3.3	3.1	4.1	1.9^{s}	5.4	5.0	8.0	9.5
29	5.8	5.4	5.6	5.0	5.1	5.3	G	10.2	4.5	11.5	8.6	5.7	5.0	6.4	8.7^{M}	11.4	10.6	9.8	2.9	1.9	3.2	3.4	4.8	6.7
30	7.9	3.3	3.4	3.4	B	B	G	3.5	5.5	8.7	5.5^{M}	11.3	8.8^{M}	4.5	B	5.7	6.8	6.0^{M}	S	S	4.2^{s}	3.8	8.0	8.1
31	5.0	C	C	C	E	G	4.3	3.7	5.5^{M}	5.6	4.3	6.1	5.2	6.5	6.6	3.8	5.0	9.6	6.2	1.9	S	2.7	S	5.5
No.	30	27	28	27	26	22	28	28	28	31	30	30	30	31	30	31	31	31	30	30	29	30	29	27
Median	4.6	3.9	3.0	2.8	2.4	2.4	3.3	4.4	5.4	6.3	5.6	5.8	5.8	5.6	5.3	5.3	5.3	5.4	4.8	4.4	4.2	3.8	3.9	4.8
U. Q.	5.8	5.4	3.8	3.8	3.5	3.3	3.9	5.0	6.0	9.6	8.6	8.6	8.8	7.8	6.5	6.8	7.1	7.7	6.4	5.6	6.0	5.9	7.4	5.6
L. Q.	3.3	2.9	2.2	2.1	2.1	G	2.9	3.6	4.4	5.1	4.6	4.6	4.6	4.7	4.3	4.4	3.9	4.2	3.6	3.1	3.2	2.9	2.8	2.4
Q. R.	2.5	2.5	1.6	1.7	1.4		1.0	1.4	1.6	4.5	4.0	4.0	4.2	3.1	2.2	2.4	3.2	3.5	2.8	2.5	2.8	3.0	4.6	3.2

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	5.6	5.0^{s}	u4.2^{s}	A	4.8	4.2		3.5	3.2	3.0	2.5	3.0	3.5	3.4	2.0
2	2.3	S	E	2.1	E		5.8	3.8	A	A				6.0	A	A		3.4	4.6	2.1				2.1
3	1.8	C	C	C	C	C	C	C	C	4.3				4.4	E4.5^{s}	6.5	6.6	5.0	3.2	3.6	3.5		E2.4^{s}	E2.4^{s}
4	E2.9^{s}	3.9	3.2	4.6	3.0	3.1	3.0	3.4	4.2	5.4	5.6	4.8	5.5	A	6.2	4.2	4.9	5.7	6.5	4.6	3.4	3.6	2.1	S
5	3.7	4.8	3.2	2.5	2.3	2.5	3.4	4.9	A	A	A	A	A	A	5.9	4.1	3.8	5.3	3.7	3.8	2.6	5.0	2.5	S
6	S	E	2.4	B	B	2.2	2.9	u4.4^{s}	5.3	4.2	4.3		u4.2^{s}	4.7		3.7	E3.8^{s}	4.0	3.9	2.6	S	2.1	2.9	3.0
7	4.3	2.8	3.1	3.8	3.4	2.5	2.8	3.7	A	4.7	A	C	6.6	A	6.2	6.5	A	6.8	4.1	4.5	6.9	3.6	3.2	2.5
8	2.1	2.2	2.1	2.2	2.1	2.1			3.7	A	6.2	4.8	5.4	5.2	E4.3^{s}	4.5	5.5	6.2	8.3	7.8	4.6	3.7	3.9	3.2
9	5.0	2.5	1.9	1.9	2.0	B	3.2	4.0	6.6	A	A	A	6.4	9.8	6.4	6.6	5.2	5.8	5.7	5.0	4.3	3.7	2.5	4.2
10	4.5	2.7	2.3	2.7	2.2	4.2	3.4	5.0	5.4	6.3	6.5	8.2	6.1	5.5	4.8	4.3	3.6	4.7	6.2	5.8	A	2.0	4.6	3.4
11	2.1	1.8	1.7	E	2.0	B	2.8	3.7			u4.0^{R} E4.0^{s}		4.6			3.8	3.7	3.7	2.7	3.7	2.0	4.9	5.8	E
12		2.0	1.9	1.9	1.7	2.1	C	C	C	A	4.0	4.2	5.6	A	E4.4^{s}	5.3	5.6	5.7	5.1	A	2.4	3.1	5.2	2.1
13	3.2	2.1	3.4	2.0	2.7	B	3.4	3.7	5.6	A	8.2	7.9	4.7^{s}	4.4	7.9	7.3	5.3	7.8	5.6	4.3	A	A	3.9	1.6
14	2.5	2.3	1.3	1.6	E	2.5	3.5	3.8	4.0	A	A	A	5.3	A	5.3^{s}	4.1	4.0	3.3	3.0	2.3	E	2.9		2.4
15	2.6	2.5	2.3	3.2	2.2		3.1	3.8	A	A	A	5.4	A	4.4	4.0	A	4.1	3.9	2.4	2.6	2.0	1.8	S	
16	3.9	3.7	2.1	3.4	1.9	3.8	1.9	A	A	3.8	A	4.4		u4.3^{s}	4.3	A	A	3.2	2.8	3.5	3.3	3.1	2.5	S
17	2.4	1.4	1.6	2.3	2.0		2.9	3.5	3.8	4.3	4.3	4.4	4.6	4.9		5.1	3.8	3.3	2.4	2.1	2.0	2.1	2.1	4.4
18	4.5	2.9	2.8	1.5	1.7	5.0	4.2	5.5	4.4	u4.8^{s}	4.3	4.7	4.2	4.7	E3.9^{s}	4.2	E5.6^{s}	4.2	2.7	E	1.9	2.9	2.8	3.5
19	3.0	2.7	2.0	2.0	B			3.3	3.6	4.0	5.0^{s}	5.6	5.3	A	5.1	3.9	3.5	u4.4^{s}	4.1	3.9	5.4	S		S
20		2.1	2.0	1.3	2.1	B	3.3	3.4	3.7	3.9	S	u4.5^{s}	S	4.3	u4.8^{s}	4.5	3.7	3.5	3.2	1.8	3.6	2.2	2.1	2.5
21	2.0	2.9	2.3	2.5	1.6	B	2.9	3.7	3.7	5.2	A	4.6	4.0	4.4	4.5	6.0	7.2	6.1	2.6	3.1	5.2	A	5.2	A
22	4.8	2.9	3.5	4.3	2.2	2.6	2.9	5.1	3.7	A	6.8	A	A	A	A	5.9	5.3	4.6	3.1	4.5	4.0	2.2	E1.9^{s}	1.7
23		E	1.9	1.8			2.8		3.7	4.0		4.6	4.9	5.3	4.0		3.7	3.2	2.4	u2.8^{s}	E	1.8	2.7	4.6
24	2.2	2.0	2.9	2.2	1.7	B	2.9	4.7	5.5	4.7	4.6	6.2	A	5.0	5.4	4.8	3.7	4.4	7.3	2.2	1.9	2.3	2.2	3.5
25	2.8	3.8	1.7	1.8	2.3	2.5	3.2	3.9	3.7	5.3	5.2	4.5^{s}	4.3	4.7	G	4.5	5.5	4.1	3.3	2.8	2.5	2.3	1.7	2.1
26	2.8	2.1	3.5	2.2	E	2.2	3.2	5.0	4.3	6.8	4.4	5.5	A	6.5	4.3	4.1	5.0	6.8	5.5	2.9	3.4	3.9	3.0	4.2
27	5.9	4.0	4.4	3.1	E	2.2	2.7	4.1	3.8	6.5	E4.9^{s}	E4.9^{s}	5.6	7.9	5.8	5.4	4.0	2.9	2.3	2.9	4.0	2.5	2.2	2.0
28	3.5	2.7	1.8	E1.4^{s}	2.1	2.9	3.8	3.4	u4.9^{s}	A	5.5	5.3	A	5.1	5.1	5.6	3.3	2.9	4.0	1.6	3.2	3.0	4.1	3.4
29	2.9	2.6	2.0	3.0	2.9	2.5		A	4.4	6.6	6.9	5.3	4.8	6.2	7.5	10.7	A	4.5	2.8	E	2.5	2.7	3.9	5.0
30	A	2.7	2.1	2.6	B	B		3.4	A	A	A	A	5.3	4.3	B	4.0	A	5.3	S	S	2.8	2.7	2.7	4.1
31	3.5	C	C	C			3.1	3.3	5.1	4.3^{s}	4.0	5.0	5.1	A	A	3.8	4.8	3.5	2.3	1.9	S	2.3	S	1.9
No.	26	27	28	27	24	16	24	26	27	30	27	27	27	30	27	29	29	31	30	30	28	28	26	26
Median	3.0	2.6	2.1	2.2	2.0	2.5	3.1	3.8	4.4	6.0	5.6	5.0	5.4	5.2	5.1	4.8	4.8	4.4	3.2	2.9	3.2	2.9	2.8	2.8

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 5

IONOSPHERIC DATA

Jul. 1960 | f-min | 135° E Mean Time (G.M.T.+ 9h.) | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	2.70	2.65	2.90	2.85	3.50	3.00	2.90	2.60	2.40	2.20	E1.70 S	E1.70 S	E1.50 S	E2.00 S	E1.60 S
2	E1.50 S	E1.80 S	1.50	1.60	1.80	2.10	2.20	2.15	2.60	E2.95 S	2.95	3.05	E3.05 S	E3.20 S	2.80	2.55	2.30	2.20	E2.10 S	1.95	1.75	1.75	E2.15 S	1.90
3	1.60	C	C	C	C	C	C	C	C	2.70	2.90	3.05	3.00	2.75	3.05	2.40	2.00	2.15	2.10	1.85	1.50	1.85	E1.95 S	E2.15 S
4	E2.50 S	1.65	1.60	1.50	E2.05 S	2.10	1.80	2.10	2.50	2.75	3.15	4.00	3.10	3.20	3.10	2.95	2.80	1.90	1.95	E1.90 S	E2.00 S	E2.10 S	E1.60 S	E1.90 S
5	E1.70 S	1.65	1.50	1.90	1.65	2.35	2.00	2.30	3.10	2.60	3.10	3.10	4.00	3.10	2.90	2.35	2.20	2.10	1.95	E1.60 S	E1.80 S	E1.60 S	E1.80 S	E1.90 S
6	E1.90 S	1.70	1.60	2.20	2.95	1.50	2.10	2.10	2.45	2.80	2.80	3.35	3.60	2.80	3.10	2.25	2.50	2.25	2.00	1.50	E1.90 S	E1.85 S	E1.50 S	1.50
7	E1.95 S	1.50	1.55	1.90	1.50	1.70	2.20	2.40	2.60	2.20	2.90	I3.15 C	4.00	2.80	2.50	2.50	2.50	2.10	E1.90 S	E2.00 S	E1.70 S	E1.80 S	E1.45 S	E1.95 S
8	E1.50 S	E1.95 S	1.60	1.50	1.60	1.50	2.10	2.20	2.20	2.40	2.60	2.45	2.80	2.50	2.60	2.20	2.35	1.60	E1.60 S	E1.70 S	1.25	1.60	1.20	E1.70 S
9	1.75	1.10	1.10	1.45	1.80	2.20	1.80	1.95	2.30	2.65	2.70	2.75	3.45	2.60	2.60	2.10	2.20	1.80	1.70	1.50	1.55	1.65	1.20	1.60
10	E1.70 S	1.45	1.20	1.20	1.30	1.25	1.85	1.80	2.60	2.25	2.90	2.40	3.15	2.80	2.50	2.20	2.20	2.20	1.60	E1.60 S	E1.80 S	1.40	E1.60 S	E1.70 S
11	1.35	1.20	1.45	1.45	1.50	2.10	1.90	2.20	2.30	2.40	2.65	2.85	3.50	2.80	2.60	2.25	2.60	1.80	1.70	E1.95 S	E1.60 S	1.50	1.70	1.70
12	1.45	1.60	1.25	1.15	1.20	1.45	C	C	C	2.20	2.30	E3.10 S	E2.65 S	2.45	2.15	2.30	2.15	2.10	1.80	1.90	1.75	1.70	1.15	1.25
13	1.25	1.15	1.20	1.05	1.60	2.30	2.40	2.15	2.15	3.10	2.95	2.50	2.95	2.90	2.40	2.10	2.30	1.85	1.50	E1.60 S	1.80 S	1.20	E1.70 S	1.20
14	1.50	1.20	1.00	1.20	1.40	1.60	1.80	2.15	2.10	2.30	2.50	2.70	3.20	2.50	2.40	2.30	2.20	2.20	1.90	1.30	1.45	1.35	1.45	1.60
15	1.70	1.30	1.60	1.60	1.15	1.95	1.90	1.90	2.25	2.25	2.20	3.20	3.15	2.60	2.50	2.50	2.30	1.85	1.25	E1.95 S	E1.60 S	E1.50 S	E1.80 S	1.40
16	1.40	1.60	1.20	1.15	1.15	1.85	1.30	1.70	2.10	2.10	2.20	2.20	2.95	2.40	2.70	2.50	2.25	2.05	2.00	1.60	1.30	E1.60 S	1.20	E1.70 S
17	1.20	1.20	1.20	1.20	1.20	1.90	1.60	2.00	2.15	2.25	2.60	2.60	2.50	2.30	2.20	2.25	2.15	2.20	1.70	E1.60 S	E1.60 S	E1.60 S	1.50	1.50
18	E1.70 S	E1.40 S	1.50	1.30	1.10	1.70	E1.90 S	1.80	2.35	2.20	2.90	3.20	2.70	2.70	2.70	2.30	2.60	2.20	E1.80 S	E1.80 S	E1.60 S	1.40	1.40	E1.60 S
19	E1.50 S	1.65	1.60	1.25	1.60	2.05	2.20	1.80	2.25	2.20	2.90	2.60	2.60	2.70	4.40	2.90	3.05	2.60	1.75	1.70	1.40	E1.70 S	1.30	E1.80 S
20	1.70	1.25	1.60	1.20	1.20	2.95	1.80	2.10	2.70	2.40	2.90	3.10	E4.40 S	2.70	2.75	2.60	2.10	2.10	1.70	1.10	E1.70 S	1.20	E1.70 S	E1.40 S
21	1.10	1.70	1.55	1.60	1.20	2.20	2.20	1.80	2.10	2.25	2.60	2.60	2.80	2.70	2.60	2.30	2.10	2.15	2.10	1.60	E1.90 S	E2.10 S	1.70 S	1.40
22	E1.45 S	1.60	1.70	1.70	1.50	2.20	2.15	2.20	2.30	2.20	2.80	2.50	3.00	2.95	3.25	2.50	2.25	E1.85 S	1.60	1.20	E1.45 S	1.20	E1.60 S	1.20
23	1.20	1.30	1.25	1.20	1.20	1.95	1.65	2.20	2.10	2.30	2.20	E4.10 C	E3.50 C	2.80	2.90	2.20	2.30	2.20	1.80	E1.70 S	E1.45 S	1.25	1.45	E1.95 S
24	E1.90 S	1.65	1.40	1.35	1.10	2.10	1.90	2.20	2.10	2.60	2.40	3.20	2.70	3.65	2.40	2.60	2.20	1.90	E1.90 S	1.10	E1.30 S	1.45	1.50	1.40
25	1.45	1.30	1.30	1.30	1.30	1.50	1.70	1.90	2.30	2.20	2.70	3.10	2.80	2.95	2.65	2.10	2.20	2.20	1.85	1.30	1.25	1.60	E1.50 S	E1.70 S
26	1.30	1.20	1.00	1.25	1.30	1.70	1.80	1.95	2.30	2.30	2.45	2.80	E4.10 C	3.25	2.40	2.30	1.80	1.70	1.70	E1.70 S	1.50	E1.60 S	1.40	1.50
27	1.45	1.50	1.25	1.40	1.35	1.80	1.80	1.95	2.05	2.20	2.40	2.60	3.55	2.60	3.75	2.20	2.00	1.80	1.80	E1.50 S	E1.45 S	1.50	E1.45 S	E1.40 S
28	E1.80 S	1.60	1.35	1.30	1.30	1.80	1.80	2.10	2.20	2.20	2.50	3.30	3.20	2.80	2.60	2.20	2.20	1.80	1.65	1.30	E1.50 S	E1.60 S	1.40	E1.60 S
29	1.20	1.45	1.30	1.30	1.50	1.70	2.20	1.90	2.10	2.10	2.30	2.70	2.60	3.95	2.30	2.10	2.20	2.15	1.60	1.65	1.65	1.75	1.30	E1.70 S
30	E1.50 S	1.50	1.60	1.60	2.10	2.10	1.70	2.00	2.20	2.30	2.70	3.25	2.70	3.20	B	2.10	2.50	2.00	E3.90 S	S	E1.70 S	E1.70 S	E1.60 S	E1.90 S
31	E1.90 S	C	C	C	1.50	1.90	2.15	2.00	2.10	2.10	2.40	2.80	2.80	3.10	2.60	2.60	2.10	2.10	1.95	1.50	E1.80 S	1.80	E2.10 S	E1.70 S
No.	16	26	28	28	28	29	28	28	28	30	31	29	27	30	30	31	31	31	27	17	31	20	31	31
Median	1.40	1.50	1.40	1.30	1.40	1.90	E1.90	2.05	2.25	2.25	2.65	2.85	2.95	2.80	2.60	2.30	2.20	2.10	E1.80	1.50	E1.60	E1.50	E1.50	E1.60

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | (M3000)F2 | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	z.70	z.60	z.70	Iz.65^{A}	z.65	z.65	^{u}z.75^{s}	Jz.80^{s}	3.00	z.65	z.75^{s}	z.70	z.40^{s}	z.50	^{u}z.55^{F}
2	z.70	Jz.70^{R}	z.50	z.50	z.50	z.40	z.35	z.45	Iz.55^{A}	Iz.60^{A}	Jz.50^{s}	^{u}z.55^{s}	z.45	z.75^{s}	Iz.70^{A}	Iz.60^{A}	z.80	z.80	z.70	z.70	^{u}z.50^{s}	^{u}z.45^{s}	z.45^{s}	^{u}z.45^{s}
3	Jz.50^{s}	C	C	C	C	C	C	C	C	z.60	z.50	z.75	z.65	z.60	z.80	z.80	z.70	z.85	z.90	z.85	z.50^{s}	^{u}z.40^{s}	z.35	z.40
4	^{u}z.80^{s}	z.85^{V}	z.70	z.30	z.40	z.90^{F_2}	z.80	z.65	z.60^{R}	z.80	z.55^{z}	z.65	z.25	Iz.50^{A}	z.70	z.70	z.80	z.80	z.80	z.65^{s}	z.55^{s}	^{u}z.55^{s}	z.50	z.70
5	z.40	^{u}z.50^{F}	z.90	z.60	z.65^{F}	z.90^{s}	z.75	z.65	A	A	A	A	A	A	z.30	z.50	^{u}z.50^{s}	z.65	z.60	z.55	z.45	z.45	z.45	z.55^{s}
6	z.60	z.65	z.85	z.55	z.65	^{u}z.70^{R}	z.55	J3.05^{s}	z.60	z.50	z.45	z.60	z.65	z.65	z.60	z.65	z.65	z.65	z.75	z.65	z.65	z.60	z.45	z.50
7	z.50	z.70	z.80	z.70	z.55	z.95	z.95	z.75	Iz.60^{A}	z.65	Iz.60^{A}	Iz.60^{C}	z.65	Iz.70^{A}	z.70	^{u}z.80^{s}	Iz.80^{A}	z.80	z.75	^{u}z.80^{s}	Iz.60^{s}	^{u}z.65^{s}	Jz.65^{s}	
8	z.60	z.65	^{u}3.00^{s}	Jz.80^{s}	z.70	z.70	z.85	z.60	z.85^{s}	Iz.60^{A}	z.70	z.65	z.60	z.60	z.60	z.60	Jz.70^{s}	Jz.65^{s}	z.80	z.65	Iz.60^{F}	z.65^{F}		
9	^{u}z.55^{F}	z.65^{F}	z.55	Iz.70^{F}	z.70^{F}	Jz.70^{R}	Jz.70^{s}	Jz.90^{s}	J3.00^{R}	A	A	A	z.75	Iz.70^{A}	z.70	z.75	z.70	z.70	z.80	Iz.80^{s}	z.65	Jz.55^{s}	z.60	^{u}z.70^{F}
10	^{u}z.60^{F}	z.80	Iz.65^{F}	z.95	z.75	z.75	z.95	3.05	3.15	z.60	z.45	z.60	z.50	z.65	z.55	z.65	z.75	z.75	z.75	Jz.85^{s}	Iz.80^{A}	z.50	z.60	z.65
11	z.65	z.65	z.70	^{u}z.65^{R}	z.70	z.65	z.70	z.65	Jz.55^{R}	Jz.70^{s}	z.70	z.60	z.45	Jz.60^{R}	z.70	z.75	z.75	z.90	z.85	z.75	Jz.60^{s}	Jz.45^{s_F}	z.55^{F}	z.85^{F}
12	Jz.65^{R}	z.65^{F}	z.80^{F}	z.60	z.65	z.60	C	C	C	A	z.50	z.45^{s}	Iz.55^{A}	Iz.40^{A}	z.50	z.55	z.75^{s}	z.65	z.90	Iz.50^{A}	z.55	z.55	z.35^{A}	z.35
13	z.40^{F}	z.50^{F}	z.45^{F}	^{u}z.50^{F}	z.55^{F_2}	z.90^{R}	z.55	z.65	z.75	Iz.75^{A}	^{u}z.65^{s}	z.65	z.70	z.60	z.75	z.70	z.75	z.90	z.95	z.70	Iz.55^{A}	Iz.55^{A}	z.40^{F}	z.50^{s}
14	z.55	z.60	z.45	z.50	z.40	z.55	z.65	z.80	z.35	A	A	A	z.50	Iz.55^{A}	z.70	z.80	z.70	z.75	z.85	z.80	z.50	Jz.40^{s}	z.40	z.50
15	z.55	z.55	z.70	z.55	z.40	z.55	z.85	z.60	A	A	A	z.65	Iz.45^{A}	Iz.35^{s}	z.40	Iz.40^{A}	z.50^{s}	z.80	z.60	z.55	z.40	z.45	z.40	z.70^{s}
16	z.35	z.50	z.60	z.50	z.45	z.40	z.40	A	A	As	A	Iz.20^{s}	^{u}z.25^{s}	Iz.10^{s}	z.35	Iz.25^{A}	Iz.25^{A}	^{u}z.10^{s}	z.30^{V}	z.50	z.60	z.45	z.40	z.35
17	z.30	z.55	z.65	z.50	z.35	z.65	z.55	^{u}z.45^{s}	z.80	z.35	z.20	z.35^{s}	z.20	z.65	z.65	z.85	z.55	z.50	z.65	z.85	z.60	z.40^{s}	z.50	z.70
18	z.25	z.70	z.75	z.65	z.65	I3.00^{R}	z.60	z.90	Iz.85^{R}	z.85	z.55	z.85	z.35	z.65	z.90	z.70	z.75	z.75	z.70	z.75	z.85	z.50	z.65^{s}	z.60
19	^{u}z.55^{F}	z.65	z.65	z.70^{R}	z.85	z.95	z.35	z.95	z.95	3.00	z.65	z.75	z.85	Iz.70^{A}	z.65	z.80	Iz.70^{R}	z.70	z.50	S	S	S	S	^{u}z.50^{s}
20	z.65	z.80	z.65	z.50	z.60	z.60	z.95^{s}	z.90	3.00	3.05	z.55	z.65	z.65	z.55	z.85	z.75^{s}	z.70	z.80	z.75	z.75	z.75	Iz.80^{s}	z.80^{s}	Jz.45^{s}
21	z.70	z.60	z.55	z.75	z.60	z.65	z50	z.95	z.75	z.80	Iz.60^{A}	z.40	z.80	z.65	z.65	z.65	z.65	z.65	z.95	I3.10^{s}	z.45	Iz.45^{A}	z.45	Iz.45^{A}
22	z.45	z.60	z.75^{F}	z.90	z.70	z.65	3.05	3.05	Jz.90^{R}	Iz.85^{A}	Iz.80^{s}	A	A	A	A	z.70	Jz.75^{s}	z.90^{s}	^{u}z.90^{s}	z.75	Jz.70^{s}	z.60	z.50	z.60
23	z.60	z.70	z.80	z.60	z.70	3.05	z.95	z.85	3.15	z.50	z.60	z.50	z.65	z.70^{s}	z.40	z.85	z.95	^{u}z.80^{R}	z.90	z.75	Jz.60^{s}	z.75	z.80	z.65
24	^{u}z.65^{s}	Iz.50^{F}	z.55^{s}	z.60^{R}	z.65	z.85^{F}	3.00	3.05	z.75	z.85	z.80	z.85	Iz.75^{A}	z.60	z.70	z.80^{s}	z.70	z.65	^{u}3.00^{s}	3.00^{s}	z.90	z.90	^{u}z.65^{s}	z.60
25	z.45	z.70	z.80	z.60	z.65^{F}	z.80	z.80	3.00	z.90	z.85	z.85	z.80	z.70	z.75	z.80	z.70	z.75	^{u}z.90^{A}	z.85	3.05	Iz.70^{s}	^{u}z.85^{s}	Jz.85^{s}	Jz.75^{s}
26	z.65	Jz.70^{R}	Jz.55^{s}	z.75	3.00	3.10	z.95	3.15	z.90	z.85	3.00	z.80	Iz.75^{A}	z.75	z.65	z.75	z.85	z.95^{s}	z.90^{s}	z.85	^{u}z.55^{s}	z.60	Jz.60^{s}	F
27	F	F	F	Iz.80^{F}	z.80^{F}	z.40	z.45	z.75	3.00	z.65^{s}	z.60	z.60	z.80	z.65^{s}	z.80	z.85	3.00	z.85	3.00	z.55	z.70	z.70	Jz.80^{s}	z.50
28	z.50	z.55	z.70	z.75	z.85	3.00	z.95	3.10	z.90	Iz.70^{A}	z.90	z.60	Iz.70^{A}	z.65	z.70	z.75	z.80	z.75	z.90	z.80	Jz.55^{s}	^{u}z.75^{s}	^{u}z.50^{s}	Iz.50^{s}
29	Iz.50^{F}	^{u}3.20^{s}	z.80	z.90	z.80	z.90	J3.05^{s}	Iz.60^{A}	z.80	z.75	z.65	z.45	z.60	z.65^{R}	z.70	Iz.70^{A}	Iz.80^{A}	z.80	Jz.85^{s}	3.00	z.65	z.40	z.40^{F}	z.55
30	Iz.65^{A}	z.40	z.45	z.40	z.50	z.45^{F}	z.40	z.90	A	A	A	A	z.30	z.55	Iz.50^{B}	^{u}z.65^{s}	Iz.70^{A}	z.75	Iz.85^{s}	Iz.70^{s}	z.50	z.50	z.55^{F}	Iz.45^{A_F}
31	^{u}z.50^{s}	Iz.40^{C}	Iz.50^{C}	Iz.65^{C}	z.55	z.80	z.30	z.75	z.55	z.15	z.30	z.30	z.35	A	A	z.85	z.65	z.70	z.55	z.65	z.75	z.50	z.55	z.60
No.	29	28	28	29	29	29	28	27	24	24	25	26	29	28	29	31	31	31	31	30	30	30	30	30
Median	z.55	z.65	z.70	z.60	z.65	z.70	z.70	z.85	z.80	z.70	z.60	z.60	z.65	z.65	z.70	z.70	z.75	z.75	z.80	z.75	z.60	z.50	z.50	z.55

(M3000)F2 Sweep 4.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 7

IONOSPHERIC DATA

Jul. 1960 | (M3000)F1 | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						C	C	C	C	A	3.15L	L	A	S	"3.45S	S	"3.25L	L						
2						2.95L	A	3.75L	A	A	A	S	S	A	A	A	L	L	A					
3						C	C	C	C	3.00	"3.50S	S	3.10H	3.25H	"3.25S	A	A	A	A					
4							3.25L	3.05S	3.40	A	A	3.20	A	A	A	"3.50S	L	A	A					
5								A	A	A	A	A	A	A	A	3.20S	3.20S	A	L					
6							L	"3.50L	A	"3.05L	3.30	3.40	3.25L	3.25	S	S	3.35	"3.35L	A					
7								L	A	3.30L	A	C	A	A	A	A	A	A	A					
8									3.45H	A	A	3.40L	A	3.30	3.25	3.15L	L	A	A					
9							L	L	A	A	A	A	A	A	A	A	A	A	A					
10								A	A	A	A	A	A	A	3.40	3.45L	3.40	A	A					
11								L	3.90	3.65	3.30L	3.35L	3.30L	3.45	3.40L	3.40L	"3.20L	"3.35L						
12							C	C	C	A	S	S	A	S	S	A	A	A	A					
13							L	"3.45L	A	A	A	A	A	3.30	A	A	L	A	A					
14						3.00	3.25	3.45	3.65	A	A	A	A	A	I3.50A	3.40S	3.35	3.35L						
15						3.05L	3.50	I3.60L	A	A	A	A	A	I3.75S	3.45	I3.50A	3.45	"3.25L	"3.20L					
16						A	3.15	A	A	3.60	A	3.70	3.60	"3.65S	3.50	I3.40A	I3.30A	3.05	"2.85L					
17						3.10	3.20	3.25	3.75	3.75	3.65	4.00	3.50	A	3.40	A	3.40	3.20	"3.35L					
18						A	L	A		"3.45S	3.55	A	3.60	A	3.50	3.25L	A	3.30L	L					
19							3.25L	L	3.60	3.90L	A	A	A	A	3.05L	3.35L	3.30L	"3.30L	A					
20						B	L	L	L	"3.60L	S	3.50	L	S	I3.40S	3.40S	3.85	"3.30L	L					
21							"3.35L	3.60L	"3.45L	A	A	3.40	3.50	A	A	A	A	A	L					
22								A	L	A	A	A	A	A	A	A	A	A						
23								L	L	3.35	3.60L	3.25	3.60S	A	3.35	3.60H	3.40L	L						
24									A	L	"3.40L	A	A	3.25L	A	A	3.65L	A	A					
25								L	L	A	A	3.40L	3.70	3.40L	3.50L	3.35L	A	L						
26										A	3.50L	A	A	A	3.35L	3.45L	A	A	A					
27							L	L	3.55	A	S	S	A	A	A	A	L	L	L					
28								L	"3.45L	A	A	A	A	A	A	A	3.50L	"3.50L						
29								A	L	A	A	L	A	A	A	A	A	A						
30						L	3.15	3.50	A	A	A	A	A	3.60	B	3.50	A	A	S					
31							3.15	3.20	A	S	3.70	A	A	A	A	3.40	A	L	L					
No.						4	9	10	9	10	10	10	9	10	15	16	14	10	3					
Median						3.00	3.25	3.50	3.55	3.50	3.50	3.40	3.50	3.35	3.40	3.40	3.40	"3.30	"3.20					

(M3000)F1 Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | h'F2 | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						C	C	C	C	370	410	355^{L}	A	425	395	360	345	300						
2						400	E495^{A}	435	A	A	515	465	500	E650^{S}	A	A	380	355	E330^{A}					
3						C	C	C	C	430	430	400	400	425	425	E450^{A}	E380^{A}	E320^{A}	295					
4							445	405	430	380	E460^{A}	455	580	A	400	380	350	E350^{A}	E370^{A}					
5								370	A	A	A	A	A	A	E550^{A}	450	445	400^{A}	350					
6							350	295	295^{H}	440	455	415	375	405	410	395	400	360	320					
7								340^{L}	A	390	A	C	395	A	355	320^{A}	A	E350^{A}	305					
8									300	A	375	355	395	395	390	375	350	E325^{A}	E350^{A}					
9							300	300	300^{A}	A	A	A	350^{A}	E495^{A}	350	340	350	325	300^{A}					
10								290	280	360	400^{A}	E445^{A}	380	355	385	355	325	305	E325^{A}					
11								300	300	305	350	355	385	375	350	345	340	310						
12							C	C	C	A	450	480	E575^{A}	A	475	430	380	E430^{A}	E330^{A}					
13							375	345	E325^{A}	A	E410^{A}	E440^{A}	375	380	E355^{A}	E360^{A}	330	E340^{A}	280					
14						400	380	380	555	A	A	A	480	E460^{A}	410	380	395	355						
15						365	300	420	A	A	A	440	A	A	505	E490^{A}	450	355	370					
16						400^{A}	455	A	A	AS	A	S	600	S	555	E600^{A}	E560^{A}	S	445^{L}					
17						365	385	400	370	525	640	550	650	450	450	400	460	445	355					
18						300^{A}	L	300		330	450	350	500	430	360	400	E400^{S}	350	305					
19							495^{L}	305	320	300	310^{H}	400^{A}	360	A	440	355	340	355	E350^{A}					
20						300	275	250^{H}	295	300	410	420	440	450	355	370	375	355	310					
21							400^{L}	300	350	360	A	545	380	410	400	390	E455^{A}	E355^{A}	295					
22								290	300	A	350	A	A	A^{V}	A	350	350	310						
23								305	260	445	380	455	360	345	325	300	305	295						
24									E300^{A}	310	355	340^{A}	A	400	355	325	300	300	310^{A}					
25								270	305	300	300	350	355	350	320	340	330	300						
26										E360^{A}	340	310	A	E360^{A}	355	345	300	300^{A}	300^{A}					
27							L	310	305	E510^{A}	425	425	350	E395^{A}	340	340	320	260	290					
28								260	330	A	350	350	A	360	390	355	325	320						
29								A	310	345	350	410	360	360	350	E450^{A}	A	300						
30						440	460	350	A	A	A	A	E555^{A}	455	B	S	A	E390^{A}	E325^{S}					
31							495	405	450	650	560	600	555	A	A	380	E400^{A}	L	L					
No.						8	13	23	19	18	21	22	22	20	26	27	24	22	15					
Median						380	385	305	305	360	400	410	390	400	390	360	350	E320	305					

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

Jul. 1960 | h'F | 135° E Mean Time (G.M.T.+ 9h.)

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	A	E300A	z50	I250A	E300S	z45	E300S	z50	z55	z60	z95	z80	350A	380A	330A
2	300A	300	300	320	325	305	A	E290A	A	A	z10	zz0	S	A	A	A	z50	z45	I285A	305	310	320	330	350
3	305	C	C	C	C	C	C	C	C	zz5	zz0	z50	z30	z30	E300S	A	A	A	A	z75	330	350	370	380
4	310	z95	300	E480A	355	z55H	z50	z50	z60	I250A	I230A	300A	I295A	A	A	z10	E350A	A	A	E355A	310A	E350A	325	300
5	400A	425A	300A	z95	305	z50	z50	A	A	A	A	A	A	A	A	z55	z70A	I270A	E340A	355A	340A	E400A	350A	345
6	310	z95	z80	305	E300B	z70	z50	U220S	I250A	z40	z45	z30	z45	z55A	z25	z55	E290S	E310A	I290A	300	300	300	345	355
7	E370A	320	300A	320A	355A	z70	z30	z55	I305A	z55	A	C	A	A	A	A	A	A	I260A	E300A	E345A	300A	305	300A
8	325	310	z60	z95	300	z80	z55	z50	z25	A	A	z50	A	E295A	z65	E200A	z80	A	A	E300A	300A	355A	395A	320A
9	E380A	320	300	z90	z75	z75	z50	z55	A	A	A	A	A	A	A	A	A	A	A	z95S	325A	E345A	350A	350A
10	E350A	300	305	z75	z55	E295A	z60	I270A	I250A	I260A	A	A	A	A	z60	z60	z50	A	A	E300A	I275A	z70	E350A	E350A
11	310	305	z90	z85	z80	z50	z50	z50	z30	z05	zz0	zz5	zz5	z40	z45	z45	z55	z55	z70	z90A	z85	E405A	E400A	z80
12	300	300	z55	z95	305	z70	C	C	C	A	z00	z00	A	A	S	A	A	A	A	A	305	E330A	E455A	370
13	375	320	310	350	330	z30	z50	z45	A	A	A	A	E300A	z50	A	A	E320A	A	A	E300A	I300A	I300A	E395A	300
14	E340A	310	300	340	350	310	E300A	z60	z50	A	A	A	A	A	I255A	z55	z60	z55	z70	z60	z95	380A	345	305
15	320	325A	300	355	375	305	z50	E310A	A	A	A	A	A	I245S	z40	I205A	z55	E340A	z75	300	345	315	350	300
16	E395A	360A	320	350A	340	I355A	z95	A	A	z45	I230A	z55	z45	z50	z55	I265A	I260A	z50	300A	E350A	E350A	340A	355	395
17	420A	350	325	360	370	305	z90	z55	z30	z35	z50	z45	E300A	I240A	z25	I230A	z50	z50	z80	z75	z75	330	350	E355A
18	E450A	345A	300	z95	305	I265A	z50	I250A	z50	z60A	z20	E300A	z25	E330A	z30	z60	I250A	z50	z60	z80	z55	350A	310	325
19	350	325	310	z95	z55	z70	z45	z55	z35	z10	I210A	A	A	A	E340A	z45	zz0	z60	I325A	300	E300A	z60	z70	310
20	300	z50	z95	310	305	I290B	z50	z10	z10	z05	I230S	z50	E300L	z30	E310S	z50A	z25	z60	z90	z80	z95A	z75	z60	370
21	300	330	305	300	z80	z80	z55	z50	z05	I235A	I230A	z45	z10	300A	E300A	A	A	A	z55	z50	E400A	A	E410A	A
22	E410A	355A	300	E300A	300	z60	z55	I250A	z45	A	A	A	A	A	A	A	A	A	z70	E280A	E300A	300A	335	325
23	300	300	z75	z80	z80	z50	z50	z45	z45	z10	z05	z55	z70A	I250A	z50	z25	z45	z45	z45	z60	z90	z95	z90	E350A
24	350	310A	350A	325	300	z60	z45	z55	I260A	z70A	z50	I260A	I270A	E300A	I250A	E320A	z50	I270A	I270A	z60	300	z70	300	350A
25	355	330A	z75	345	320	z60	z50	z50A	z45	I245A	I260A	zz5	z00	z55	z25	z50	I270A	E290A	z60	z60	z75	z75	z55	z75
26	345	305	320	300	z55	z50	z50	z50A	z50	I250A	z10A	A	A	A	z50	z50	I265A	I250A	I270A	z80A	300A	E350A	350A	E350A
27	E400A	E400A	300	z95A	z60	z60	z55	E295A	z40	I260A	I255S	I240S	A	A	A	A	z50	z40	z50	z90A	300A	z95	300A	305
28	375A	350A	300	z90	z75	z60	z70A	z45	E270S	A	A	A	A	A	E355A	A	z50	z50	z95	z60	305A	E295A	355A	350A
29	310	z45	z95	z50	z95	z75	z55	I275A	E290A	I250A	I210A	E300A	E340A	A	A	A	A	A	z60	z45	300	355A	400A	E385A
30	I345A	350A	380	395	355	300	z70	z50	I245A	I215A	I230A	I255A	I250A	z50	I255B	z55	A	A	S	I300S	330A	370A	360A	E350A
31	E390A	C	C	C	300	300	E310A	E290A	A	E350B	zz0	A	A	A	A	z50	I250A	E280A	z70	z95	z80	320	320	320
No.	z1	z7	z8	z7	z9	z8	z5	zz	19	19	z0	17	1z	1z	15	17	z0	15	zz	24	z8	z4	z6	z4
Median	320	320	300	300	300	z70	z50	z50	z45	z45	zz5	z50	z45	z50	z50	z50	z50	z50	z70	z80	300	310	345	325

h'F

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | h'Es | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	110	110	110	105	110	110	G	145	130	120	100	105	105	110	110
2	105	S	105	105	105	G	125	120	110	115	G	G	G	120	125	125	G	135	120	120	E	E	E	110
3	110	C	C	C	C	C	C	C	C	125	G	G	G	110	110	105	105	105	105	100	100	E	100	100
4	110	105	105	105	105	100	105	110	145	130	130	115	125	115	115	125	115	115	110	110	110	105	105	S
5	115	105	105	105	105	110	145	130	125	110	110	110	110	110	110	150	125	110	115	110	110	110	110	S
6	115	105	105	B	B	145	150	130	115	120	120	G	130	150	G	120	155	135	125	115	S	110	105	105
7	105	105	105	100	100	105	155	145	115	130	115	C	110	110	110	110	110	110	105	105	105	105	100	105
8	105	105	105	105	105	105	G	G	110	105	105	105	105	105	110	155	125	115	110	110	105	105	105	105
9	100	100	100	100	105	B	140	110	110	110	110	105	110	110	105	105	105	110	105	105	105	105	105	110
10	105	100	100	100	105	145	135	120	110	110	105	105	105	105	105	150	110	115	110	110	105	105	105	105
11	105	105	105	105	110	B	155	140	G	G	110	110	110	G	G	150	135	115	110	110	110	115	110	110
12	E	110	105	105	105	135	C	C	C	110	120	125	110	105	115	140	130	130	115	110	110	110	105	105
13	105	105	105	105	100	B	150	150	120	110	110	110	110	115	105	105	110	105	105	105	105	110	105	105
14	105	105	105	105	110	150	145	130	125	120	110	110	105	105	105	105	115	115	110	110	110	105	E	105
15	105	105	100	105	100	G	150	145	130	110	115	110	110	110	110	105	105	105	105	105	105	105	S	E
16	110	110	110	110	125	120	110	110	110	110	105	140	G	150	130	130	125	120	125	115	110	115	110	S
17	105	105	105	110	110	G	150	115	150	145	150	145	135	135	G	125	145	125	145	110	105	105	110	105
18	105	105	105	105	105	110	110	105	110	110	115	110	110	110	110	145	135	125	115	125	105	105	105	100
19	100	100	105	105	B	G	G	115	110	115	110	105	105	105	105	105	120	125	125	115	110	S	E	S
20	E	100	100	125	130	B	115	115	115	110	S	130	S	145	130	130	125	110	110	110	105	105	105	105
21	100	100	100	100	100	B	125	105	105	105	105	105	105	105	145	135	115	115	115	105	105	105	105	105
22	100	105	105	105	105	110	150	130	125	110	110	110	105	105	105	105	105	105	105	105	105	105	105	105
23	E	105	110	110	E	G	170	G	110	130	G	135	130	125	140	G	145	125	125	115	110	110	105	105
24	105	100	100	100	100	B	135	110	110	110	110	110	105	105	105	105	110	105	105	105	105	105	105	105
25	105	105	110	110	110	110	110	110	110	105	110	110	110	130	150	130	120	125	110	110	105	105	105	105
26	105	105	105	105	110	125	115	110	110	110	110	105	105	105	105	105	105	110	110	105	105	105	105	110
27	105	105	105	105	110	145	140	110	110	110	110	110	115	110	115	110	110	105	145	105	100	100	100	100
28	105	105	100	110	110	115	115	115	110	105	105	105	105	105	105	105	105	145	125	110	105	110	110	110
29	105	105	105	105	105	105	G	115	110	110	110	110	130	130	110	110	115	115	125	105	105	105	115	105
30	110	110	105	105	B	B	G	115	110	110	110	110	110	110	B	130	115	110	S	S	105	115	110	110
31	105	C	C	C	E	G	130	145	130	115	130	110	115	110	110	145	125	115	115	115	S	110	S	110
No.	27	27	28	27	24	16	24	26	27	30	27	27	27	30	27	29	30	31	30	30	28	28	26	26
Median	105	105	105	105	105	110	140	115	110	110	110	110	110	110	110	125	115	115	110	110	105	105	105	105

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K11

IONOSPHERIC DATA

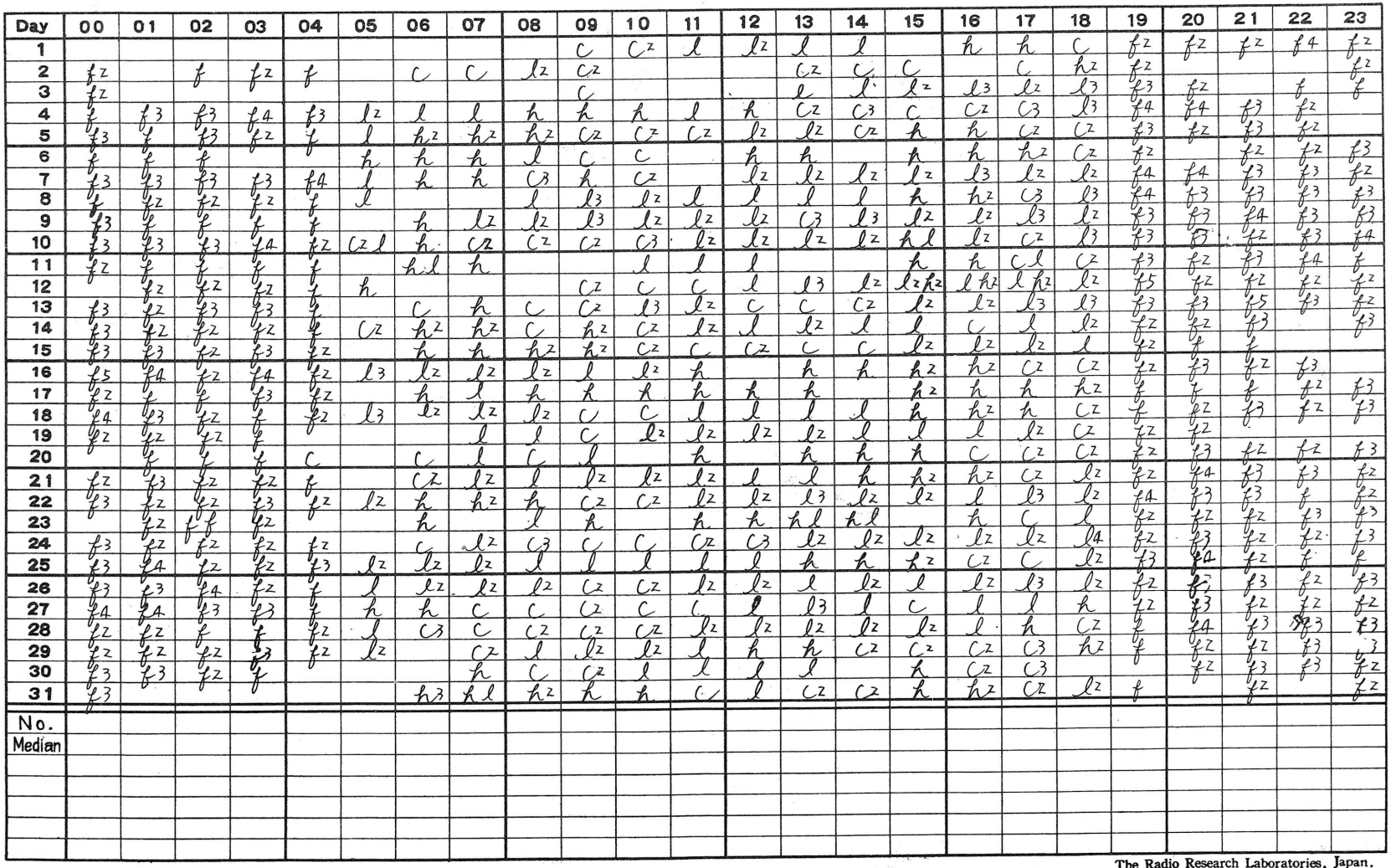
Jul. 1960

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										C	Cz	l	lz	l	l		h	h	C	fz	fz	fz	f4	fz
2	fz		f	fz	f		C	C	lz	Cz				Cz	C	C		C	hz	fz				fz
3	fz									C				l	l	lz	l3	lz	l3	f3	fz		f	f
4	f	f3	f3	f4	f3	lz	l	l	h	h	h	l	h	Cz	C3	C	Cz	C3	l3	f4	f4	f3	fz	
5	f3	f	f3	fz	f	l	hz	hz	hz	Cz	Cz	Cz	lz	lz	Cz	h	h	Cz	Cz	f3	fz	f3	fz	
6	f	f	f			h	h	h	l	C	C		h	h		h	h	hz	Cz	fz		fz	fz	f3
7	f3	f3	f3	f3	f4	l	h	h	C3	h	Cz		lz	lz	lz	lz	l3	lz	lz	f4	f4	f3	f3	fz
8	f	fz	fz	fz	f	l			l	l3	lz	l	l	l	l	h	hz	C3	l3	f4	f3	f3	f3	f3
9	f3	f	f	f	f		h	lz	lz	l3	lz	lz	lz	C3	l3	lz	lz	l3	lz	f3	f3	f4	f3	f3
10	f3	f3	f3	f4	fz	Czl	hl	Cz	Cz	Cz	C3	lz	lz	lz	lz	hl	lz	Cz	l3	f3	f3	fz	f3	f4
11	fz	f	f	f	f		hl	h			l	l	l			h	h	Cl	Cz	f3	fz	f3	f4	f
12		fz	fz	fz	f	h				Cz	C	C	l	l3	lz	lzhz	lhz	lhz	lz	f5	fz	fz	fz	fz
13	f3	fz	f3	f3	f		C	h	C	Cz	l3	lz	C	C	Cz	lz	lz	l3	l3	f3	f3	f5	f3	fz
14	f3	fz	fz	fz	f	Cz	hz	hz	C	hz	Cz	lz	l	lz	l	l	C	l	lz	fz	fz	f3		f3
15	f3	f3	fz	f3	fz		h	h	hz	hz	Cz	C	Cz	C	C	lz	lz	lz	l	fz	f	f		
16	f5	f4	fz	f4	fz	l3	lz	lz	lz	l	lz	h		h	h	hz	hz	Cz	Cz	fz	f3	fz	f3	
17	fz	f	f	f3	fz		h	l	h	h	h	h	h	h		hz	h	h	hz	f	f	f	fz	f3
18	f4	f3	fz	f	fz	l3	lz	lz	lz	C	C	l	l	l	l	h	hz	h	Cz	f	fz	f3	fz	f3
19	fz	fz	fz	f				l	l	C	lz	lz	lz	lz	l	l	l	lz	Cz	fz	fz			
20		f	f	f	C		C	l	C	l		h		h	h	h	C	Cz	Cz	fz	f3	fz	fz	f3
21	fz	f3	fz	fz	f		Cz	lz	l	lz	lz	lz	l	l	h	hz	hz	Cz	lz	fz	f4	f3	f3	fz
22	f3	fz	fz	f3	fz	lz	h	hz	h	Cz	Cz	lz	lz	l3	lz	lz	l	l3	lz	f4	f3	f3	f	fz
23		fz	f	fz			h		l	h		h	h	hl	hl		h	C	l	fz	fz	fz	fz	f3
24	f3	fz	fz	fz	fz		C	lz	C3	C	C	Cz	C3	lz	lz	lz	lz	lz	l4	fz	f3	fz	fz	f3
25	f3	f4	fz	fz	f3	lz	lz	lz	l	l	l	l	l	h	h	hz	Cz	C	lz	f3	f4	fz	f	f
26	f3	f3	f4	fz	f	l	lz	lz	lz	Cz	Cz	lz	lz	l	lz	l	lz	l3	lz	fz	f3	f3	fz	f3
27	f4	f4	f3	f3	f	h	h	C	C	Cz	C	C	l	l3	l	C	l	l	h	f	f3	fz	fz	fz
28	fz	fz	f	f	fz	l	C3	C	Cz	Cz	Cz	lz	lz	lz	lz	lz	l	h	Cz	f	f4	f3	f3	f3
29	fz	fz	fz	f3	fz	lz		Cz	l	lz	lz	l	h	h	Cz	Cz	Cz	C3	hz	f	fz	fz	f3	f3
30	f3	f3	fz	f				h	C	Cz	l	l	l	l		h	Cz	C3			fz	f3	f3	fz
31	f3						hl	hl	hz	h	h	C	l	Cz	Cz	h	hz	Cz	lz	f		fz		fz
No.																								
Median																								

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 12

IONOSPHERIC DATA

Jul. 1960 | hpF2 | 135° E Mean Time (G.M.T.+ 9h.) | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	380	430	390	I420A	415	400	U390S	J375S	335	390	375S	365	450S	450	U405F
2	390	J395R	420	440	430	455	A	450	A	A	G	G	G	A S	I460A	I440A	380	360	350	370	U400S	U450S	445S	U420S
3	J405S	C	C	C	C	C	C	C	C	425	430	400	405	425	420	G	380	345	330	320	400S	U450S	475	470
4	U430S	310V	370	A	450	420F	450	400	430R	385	A	G	A	I455A	400	400	380	370	A	390S	405S	U415S	445	390
5	455	U455F	380	400	395F	330S	375	400	A	A	A	A	A	A	A	455	U445S	400	395	400	445	445	445	425S
6	400	395	355	400	385	U365R	400	J310S	395	445	455	415	390	405	405	400	400	395	370	355	400	400	450	445
7	435	390	350	360	405	330	300	360	I380A	400	I405A	I410C	400	I400A	390	U355S	I380A	370	375	U360S	J375S	I395S	U385S	J375S
8	400	400	U350S	J390S	400	390	350	400	350S	I390A	385	385	405	405	400	400	390	J365S	J380S	340	380	425	I440F	395F
9	U430F	400F	405	I385F	380F	J375R	J375S	J335S	J310R	A	A	A	395	I400A	390	390	390	390	350	I360S	400	J400S	415	U385F
10	U405F	380	I395F	350	355	355	330	305	300	400	440	A	430	400	405	400	360	375	380	J340S	I355A	430	420	400
11	400	400	390	U400R	380	370	390	385	J400R	J375S	385	400	440	J400R	390	385	365	355	345	355	J400S	J455SF	445F	365F
12	J395R	400F	365F	400	400	390	C	C	C	A	450	490S	A	A	G	430	375S	A	335	I380A	410	410	A S	475
13	430F	430F	410F	U410F	420F	330R	420	360	355	I360A	A	A	400	400	380	380	370	345	325	355	I425A	I405A	455F	405S
14	400	400	405	445	450	430	400	G	G	A	A	A	A	A	410	380	400	380	350	350	410	J455S	450	405
15	400	405	390	405	450	405	350	G	A	A	A	A	A	S	G	A	450S	360	400	385	450	445	455	390S
16	455	450	400	410	445	455	460	A	A	A S	A	S	G	S	G	A	A	G	470V	435	400	445	450	485
17	500	405	400	435	480	400	405	U445S	375	G	G	G	G	A	G	A	G	450	395	330	395	445S	415	395
18	495	390	350	385	390	I315R	400	350	I370R	350	455	350	500	G	360	400	I360S	380	360	365	350	430	400S	400
19	U405F	395	400	380R	350	305	G	350	345	305	385	400	365	I385A	445	370	I370R	385	405	S	S	S	S	U445S
20	390	350	395	410	400	400	325S	330	330	310	430	415	430	450	355	380S	385	380	355	360	355	I355S	350S	J455S
21	385	400	405	375	390	370	450	320	365	365	I425A	G	380	410	400	400	A	400	330	I300S	445	I450A	445	I450A
22	450	445	350F	330	380	380	305	305	J340R	I355A	I370S	A	A	A	A	390	J370S	350S	U330S	355	J390S	400	445	405
23	400	385	370	400	380	305	330	350	300	450	400	455	395	390S	355	350	345	U350R	350	355	J400S	380	355	395
24	U400S	I420F	415S	400R	385	350F	305	300	355	355	365	355	I400A	405	390	355S	380	385	U330S	320S	335	350	U400S	400
25	455	395	355	400	400F	350	350	330	350	355	330	380	380	385	350	375	365	U350A	350	325	I370S	U355S	J345S	J380S
26	405	J395R	U400S	380	325	300	330	300	330	A	350	350	I390A	385	395	390	350	325S	330S	350	U405S	405	J405S	F
27	F	F	F	I355F	355F	425	425	355	340	A	425	440	375	400S	360	350	345	350	330	400	385	380	J360S	400
28	425	405	395	370	350	305	315	300	350	I355A	355	400	I380A	400	400	390	355	375	350	355	J390S	U360S	U425S	I400SA
29	I375F	U290S	365	330	350	330	J305S	I340A	350	385	380	450	405	400R	390	A	I365A	355	J350S	300	385	455	455F	405
30	I385A	405	455	490	445	450F	470	350	A	A	A	A	A	G	B	G	A	A	S	I370S	405	445	400F	I450P
31	U445SE	C	C	I370C	395	360	500	400	A	G	G	A	A	A	A	380	A	380	405	380	380	400	420	400
No.	29	27	27	28	29	29	26	25	21	19	20	17	20	20	23	25	26	28	29	30	30	30	29	30
Median	405	400	395	400	395	370	375	350	350	375	400	400	400	400	395	390	375	370	350	355	400	420	440	400

hpF2

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 13

IONOSPHERIC DATA

Jul. 1960 | ypF2 | 135° E Mean Time (G.M.T.+ 9h.) | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	120	115	105	I 90A	85	100	u 70S	J 110S	90	110	120S	125	145S	95	u 145F
2	105	J 100R	125	115	120	145	A	145	A	A	G	G	G	AS	I 90A	I 90A	100	105	120	135	u 140S	u 100S	110S	u 150S
3	J 125S	C	C	C	C	C	C	C	C	100	120	90	95	120	85	G	100	130	120	175	100S	u 110S	105	125
4	u 120S	185V	110	A	140	180H	145	100	75R	105	A	G	A	I 95A	100	95	75	125	A	110S	95S	u 90S	150	105
5	130	u 110F	120	100	100F	125S	110	130	A	A	A	A	A	A	A	95	u 55S	100	110	155	150	125	100	120S
6	145	105	100	105	115	u 130R	145	J 85S	160	95	95	135	145	95	110	100	100	105	125	125	130	135	100	100
7	110	105	140	135	100	105	200	135	I 100A	110	I 135A	I 110C	100	I 100A	110	u 90S	I 95A	85	120	u 90S	J 110S	I 105S	u 115S	J 80S
8	105	100	u 55S	J 100S	100	110	95	80	105S	I 110A	70	140	145	95	110	100	110	J 130S	J 120S	110	115	120	I 90F	100F
9	u 65F	95F	140	I 120F	115F	J 125R	J 120S	J 110S	J 115R	A	A	A	105	I 120A	115	110	105	110	145	I 135S	100	J 110S	115	u 65F
10	u 120F	115	I 105F	55	145	130	170	95	145	195	155	A	125	95	145	105	145	120	120	J 105S	I 130A	120	90	100
11	100	105	90	u 100R	115	125	115	120	J 145R	J 125S	105	150	130	J 110R	110	110	125	90	110	140	J 145S	J 100S F	100F	90F
12	J 100R	105F	140F	120	100	160	C	C	C	A	100	85S	A	A	G	90	75S	A	95	I 110A	135	135	AS	125
13	95F	115F	140F	u 140F	85E	130R	120	135	135	I 120A	A	A	95	100	115	120	120	85	120	145	I 120A	I 100A	155F	140S
14	105	100	190	100	145	75	95	G	G	A	A	A	A	A	40	70	100	115	100	120	140	J 140S	145	160
15	100	145	105	95	140	140	105	G	A	A	A	A	A	S	G	A	100S	95	100	155	145	145	140	110S
16	140	105	105	145	150	140	135	A	A	AS	A	S	G	S	G	A	A	G	130V	105	140	100	140	115
17	150	100	100	110	115	100	145	u 60S	120	G	G	G	G	A	G	A	G	145	160	165	155	105S	140	100
18	150	105	145	115	105	I 145R	130	140	I 80R	145	50	105	100	G	90	85	I 120S	120	135	125	145	120	95S	100
19	u 95F	105	100	115R	100	100	G	95	60	95	120	100	85	I 90A	55	85	I 115R	115	140	S	S	S	S	u 150S
20	110	105	105	140	105	100	80S	80	70	85	115	85	65	95	85	115S	120	115	130	135	140	I 115S	135S	J 130S
21	100	130	110	120	160	130	100	125	135	100	I 130A	G	75	90	110	100	A	95	100	I 100S	150	I 150A	150	I 130A
22	105	60	145F	125	115	115	95	95	J 65R	I 95A	I 90S	A	A	A	A	110	J 85S	80S	u 80S	125	J 110S	100	105	100
23	100	100	130	150	115	95	115	95	95	105	150	95	105	125S	95	105	100	u 100R	100	140	J 145S	85	145	100
24	u 90S	I 130F	135S	100R	120	95F	90	125	130	90	90	100	I 110A	140	110	95S	125	115	u 75S	85S	120	105	u 105S	120
25	95	90	90	110	100F	135	150	100	70	100	125	105	80	80	100	125	130	u 65A	95	70	I 105S	u 90S	J 105S	J 80S
26	130	J 105R	J 130S	105	105	95	95	100	115	A	60	105	I 90A	65	105	105	105	115S	70S	145	u 130S	100	J 95S	F
27	F	F	F	I 140F	130F	170	125	130	60	A	75	110	80	95S	135	105	55	135	120	145	115	115	J 115S	120
28	120	120	100	120	100	95	85	105	90	I 120A	90	145	I 115A	95	95	100	140	130	80	140	J 110S	u 135S	u 130S	I 120S
29	I 90F	u 95S	90	85	100	120	J 95S	I 80A	105	110	155	145	145	105R	105	A	I 110A	130	J 105S	105	120	140	105F	140
30	I 135A	145	95	105	100	115F	110	100	A	A	A	A	A	G	B	G	A	A	S	I 105S	160	105	105F	I 100AE
31	u 100SF	C	C	I 100C	105	130	145	50	A	G	G	A	A	A	A	50	A	105	100	120	120	145	85	100
No.	29	27	27	28	29	29	26	25	21	19	20	17	20	20	23	25	26	28	29	30	30	30	29	30
Median	105	105	110	110	115	125	115	100	105	105	110	105	100	95	105	100	105	110	110	125	130	110	105	110

ypF2

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | 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	$^{J}8.2^{S}$	$^{E}8.3^{S}$	$^{E}8.0^{S}$	F	C	C	C	C	9.6^{H}	8.8^{H}	7.8^{H}	8.8	9.6^{S}	9.4	10.2	11.3	11.4	10.8	$^{U}9.5^{SH}$	$^{E}9.6^{S}$	9.3	8.3	$^{E}8.6^{S}$	8.7
2	8.5	$^{E}9.1^{S}$	8.5	8.1	8.1	7.2	6.7^{H}	6.5	6.9	6.7	7.2	7.1	8.3^{R}	8.8^{S}	8.8	8.0	8.0	$^{E}7.6^{SH}$	$^{J}7.6^{SH}$	$^{J}7.7^{S}$	$^{J}7.7^{S}$	$^{J}7.7^{S}$	$^{J}7.7^{S}$	$^{E}7.6^{S}$
3	$^{E}7.6^{S}$	$^{J}8.1^{S}$	7.7	7.5^{S}	6.9	6.8	7.5^{S}	6.8	$^{U}7.5^{S}$	8.3	9.1	9.6	9.8	9.8	9.3	9.6	10.2	11.1	10.5	9.2	8.2	$^{J}8.4^{S}$	$^{J}8.4^{S}$	$^{J}8.4^{S}$
4	9.0	8.8	7.4^{S}	6.2	5.1^{F}	5.1^{F}	6.2	7.4^{SH}	$^{J}7.8^{RH}$	7.5^{H}	7.1^{H}	$^{E}7.2^{A}$	$^{J}7.6^{R}$	8.5	9.6	9.9^{S}	$^{J}9.7^{S}$	8.4^{H}	8.8^{H}	8.6	$^{J}8.2^{S}$	8.1	$^{J}8.1^{S}$	8.1^{S}
5	$^{J}7.8^{S}$	7.2^{S}	$^{E}6.7^{S}$	F	F	7.0	8.5	8.8	8.1^{H}	8.4^{H}	8.2^{SH}	8.4	8.2	$^{J}8.1^{R}$	$^{J}7.8^{A}$	7.8	$^{J}8.2^{S}$	A	A	7.4^{S}	$^{E}7.9^{A}$	8.4	8.5	9.0
6	8.8	9.3^{S}	8.4	6.7	6	6.7	$^{J}7.5^{S}$	8.4	$^{J}7.8^{S}$	8.5^{H}	8.9	9.7	9.2	10.1	10.1	$^{E}9.6^{A}$	9.0	8.7	9.3^{S}	9.3^{S}	9.3	8.0	$^{E}7.6^{S}$	$^{E}7.8^{S}$
7	8.3	$^{U}9.3^{S}$	8.5	$^{E}7.4^{S}$	6.8	$^{U}6.5^{S}$	6.9	$^{J}7.8^{RH}$	7.6	8.3	8.8	9.2	$^{E}9.7^{A}$	$^{E}9.6^{A}$	9.9	9.3	$^{E}9.4^{A}$	$^{E}9.8^{A}$	A	A	$^{U}9.4^{S}$	9.3^{S}	$^{E}9.7^{S}$	$^{J}10.0^{S}$
8	$^{E}10.6^{S}$	10.9^{S}	$^{J}9.8^{S}$	8.5	$^{J}8.2^{R}$	8.2	9.0	10.5	9.6^{H}	8.1^{H}	8.3^{H}	8.3	8.7	9.1	9.7	10.6	10.9	11.4	12.3	$^{U}11.8^{S}$	9.2^{S}	8.6	S	F^{S}
9	S	S	C	C	C	C	C	C	8.6	9.0^{F}	9.3	F	10.0^{F}	10.6	11.0	11.0	11.2	10.6	10.6^{H}	10.5	$^{E}9.7^{S}$	8.9	8.7	8.4^{S}
10	S	F	7.8^{F}	S	S	F	$^{J}7.6^{S}$	7.7^{S}	7.5	$^{E}8.0^{A}$	8.6	$^{E}9.1^{A}$	9.9	10.3	10.6	10.7	10.5	10.9	A	A	A	9.1	S	S
11	$^{J}9.9^{S}$	8.5^{F}	8.2	7.8^{S}	7.3^{S}	6.9	7.0	8.5	9.3^{S}	10.2^{H}	9.8^{H}	9.0	9.4	10.3	11.1	11.7	10.7	$^{E}9.8^{C}$	9.5^{SH}	9.0	$^{J}8.0^{S}$	$^{J}7.6^{S}$	$^{J}7.7^{S}$	S
12	F	F^{S}	S	F	F	S	$^{J}7.7^{S}$	$^{J}7.7^{S}$	6.7	$^{E}6.6^{A}$	6.6	$^{E}6.4^{A}$	$^{E}6.6^{A}$	6.7	6.8	7.1	7.0	7.1	6.8	$^{E}6.6^{A}$	6.7	6.6	$^{E}6.7^{S}$	6.5
13	6.6	F	F	F	F	6.2	6.6	8.4	9.4^{S}	$^{E}8.8^{C}$	9.0	9.6	9.8	$^{E}10.1^{A}$	10.3	10.8	11.3	11.0^{S}	10.2	8.0	$^{J}7.5^{S}$	$^{E}7.2^{S}$	S	S
14	S	F^{S}	$^{U}7.1^{S}$	F	F	F	6.0	6.0	5.8	5.9	6.4	7.3	$^{E}7.1^{A}$	7.6	7.8	9.2	8.0	7.8	8.9	7.8	7.4^{S}	$^{E}7.4^{S}$	$^{E}7.8^{S}$	8.5^{S}
15	$^{J}7.9^{S}$	$^{J}7.4^{S}$	$^{U}7.2^{S}$	6.1	5.5	5.3	5.5	5.3	4.9	5.4	5.7	5.6	$^{E}5.9^{R}$	6.2	6.4	6.4	7.0	7.4	6.4^{H}	6.4	6.3	6.8	7.0	$^{E}7.5^{S}$
16	6.8	$^{E}7.2^{S}$	$^{J}7.6^{S}$	7.0	6.8	6.9	$^{E}7.0^{S}$	6.1	5.0	A	5.3	5.4	5.2	A	A	5.3	5.2	5.1	5.7	6.1	5.6	5.6	5.9	5.8^{S}
17	$^{E}6.0^{S}$	6.0	5.7^{F}	5.5	5.5	5.3	5.8	5.7^{R}	5.2	5.7	$^{E}5.8^{A}$	6.1	6.4^{R}	6.8	6.6	6.7	7.2^{S}	$^{U}8.0^{S}$	7.8^{S}	$^{J}7.8^{S}$	$^{U}6.5^{S}$	$^{E}6.4^{S}$	6.8	6.7
18	$^{E}6.4^{S}$	F	6.8	F	5.2	5.0	5.6^{H}	6.8	7.0^{H}	7.3^{S}	7.8	7.4	6.8	$^{E}7.7^{A}$	8.4	8.3	8.4	7.9	8.7	8.5	8.1	8.1	8.4^{S}	$^{U}8.7^{S}$
19	8.5	8.9	F	F	F	F	6.0	7.7	8.5^{H}	7.5^{H}	7.7	7.8	8.5	8.8	8.3	8.9	$^{E}9.7^{S}$	9.3^{S}	8.7	$^{J}10.1^{S}$	$^{J}10.7^{S}$	$^{U}9.6^{S}$	9.1	8.6
20	8.5	S	$^{J}7.7^{S}$	6.8	$^{U}7.1^{S}$	7.0^{S}	$^{U}7.6^{S}$	$^{J}7.6^{S}$	8.1^{H}	8.1^{H}	8.2^{H}	8.7	9.9	9.1	9.1	8.9	9.0	$^{U}9.7^{S}$	$^{J}10.2^{S}$	10.5	10.5	8.7	$^{U}9.5^{S}$	9.3^{S}
21	$^{E}9.4^{S}$	$^{E}9.6^{S}$	$^{E}9.3^{S}$	8.7	7.5	6.6	6.3^{S}	8.1	$^{J}8.4^{SH}$	6.2^{H}	7.0	7.7^{R}	8.3	7.5^{R}	7.6	8.2	8.3	9.3	$^{E}9.0^{A}$	8.8	7.1	7.1	$^{J}7.8^{S}$	$^{J}8.0^{S}$
22	7.8^{S}	8.1	8.7	7.7^{S}	5.7	5.7	7.1	8.4	7.7	8.4^{H}	8.1^{H}	8.4^{H}	9.3	10.2	10.8	10.4	10.6	11.1	11.0^{S}	10.5	9.2	8.1	8.3	$^{E}8.7^{S}$
23	8.7	8.6	8.8	$^{J}8.1^{S}$	6.9	6.7	7.3^{S}	9.2	8.0	7.8^{H}	7.9^{H}	9.6	10.4	11.1	12.1	11.9	11.1	11.1^{H}	11.4	$^{J}10.6^{S}$	$^{U}9.4^{S}$	$^{E}9.4^{S}$	9.1	$^{J}7.9^{S}$
24	$^{J}7.5^{S}$	S	S	F	F	F	9.1^{S}	$^{J}7.5^{RH}$	7.9	$^{J}7.6^{R}$	8.2	7.9	8.1	9.7	10.9	11.1	11.3	12.0	12.8	12.1	9.5^{S}	8.9	8.9	C
25	C	C	C	C	C	C	C	C	C	8.4	8.2^{H}	8.2^{H}	9.0	10.1^{S}	10.2^{S}	10.2^{S}	10.6	11.1	11.2	10.4	$^{J}9.6^{S}$	8.9	9.0	$^{U}9.3^{S}$
26	$^{E}9.3^{S}$	$^{E}9.3^{S}$	$^{U}9.3^{S}$	9.3	8.1	$^{J}7.4^{S}$	8.5	8.0	$^{U}7.6^{S}$	8.4^{H}	$^{E}8.0^{A}$	7.7	8.7	9.2	10.5	11.3	11.4	A	9.2	8.9	8.6	$^{J}7.9^{S}$	8.4	8.3
27	F	F	F	F	7.6	7.2^{S}	8.2	$^{J}10.0^{S}$	9.8^{H}	8.1^{H}	8.2	9.2	11.0	11.4	10.5	10.2	$^{J}9.5^{S}$	$^{U}9.6^{S}$	$^{E}9.4^{S}$	9.0	8.3	6.8	6.8	6.8
28	6.7	6.7	6.7	6.7	7.1^{S}	7.0	7.3^{S}	8.4	7.6^{S}	8.0^{H}	7.7	8.4	8.9	9.8^{S}	$^{E}10.2^{A}$	10.3	10.5	10.2	10.5	10.4	9.3^{S}	8.8	9.1	$^{U}9.3^{S}$
29	$^{E}9.0^{S}$	$^{E}9.6^{S}$	$^{J}9.6^{S}$	$^{J}7.5^{S}$	6.5	6.1	6.7	$^{J}7.5^{R}$	7.9	7.2^{SH}	7.2	8.9	9.5	10.9	11.0	11.3	11.3	10.6	10.7^{S}	$^{U}9.3^{S}$	$^{J}7.4^{S}$	$^{E}6.5^{S}$	6.5	6.8^{S}
30	6.7	F	S	F	F	F^{S}	5.4	5.5	5.6	A	A	A	6.2	7.0	$^{E}7.3^{A}$	7.1	6.7	6.7	$^{E}6.8^{A}$	6.3^{S}	6.3^{S}	6.6	$^{E}7.0^{S}$	7.4
31	6.9	6.8	$^{J}7.1^{S}$	6.9^{S}	6.7	5.8	5.6	5.7	4.7	$^{E}5.5^{A}$	5.2	5.6	$^{E}5.8^{A}$	5.9	$^{E}6.4^{A}$	6.9	6.5	6.2	5.8	6.4	6.8	6.3^{S}	6.2^{S}	$^{U}6.3^{S}$
No.	25	20	23	18	20	22	28	28	30	29	30	29	31	30	30	31	31	29	28	29	30	31	28	26
Median	8.2	8.6	7.8	7.4	6.8	6.7	7.0	7.7	7.8	8.0	8.0	8.3	8.7	9.3	9.8	9.6	9.7	9.7	9.4	9.0	8.2	8.1	8.2	8.2
U.Q	8.9	9.3	8.7	8.1	7.4	7.0	7.6	8.4	8.4	8.4	8.3	9.0	9.7	10.1	10.5	10.8	10.9	11.0	10.6	10.4	9.3	8.8	8.8	8.7
L.Q	6.8	7.3	7.1	6.7	6.1	5.8	6.1	6.6	6.9	7.0	7.1	7.2	7.1	7.7	7.8	8.0	8.0	7.8	8.2	7.8	7.4	6.8	7.0	7.4
Q.R	2.1	2.0	1.6	1.4	1.3	1.2	1.5	1.8	1.5	1.4	1.2	1.8	2.6	2.4	2.7	2.8	2.9	3.2	2.4	2.6	1.9	2.0	1.8	1.3

foF2

Sweep 1.0 Mc to 20.0 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | 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						C	C	C				5.9	6.0^{H}	6.1^{L}	5.4	5.5	I5.3^{A}	L						
2								4.6	5.0	5.3	5.3	5.7	5.7^{H}	5.7	5.5	5.6	5.2							
3									L	5.8	6.0	5.6	5.8	I5.6^{A}	6.0	5.5	5.5	A	A					
4												A	5.7^{R}	A	A	I5.6^{A}	I5.4^{A}							
5												5.7	5.5	5.6	I5.4^{A}	5.4	5.3	A						
6											L	5.3	5.6	5.8	5.9	A	A	A	A					
7											5.8	A	A	A	A	5.6^{L}	A	A	A					
8												I5.4^{A}	5.8	6.2	6.0	5.5	5.0^{H}	5.1	A					
9						C	C	C			5.9	5.5	6.3^{L}	5.6	5.3	5.9	5.6	5.2						
10											A	A	A	I6.0^{A}	5.6	5.7	5.8^{L}	A	A					
11												6.0	5.7	5.8	5.6	5.5	5.0	C						
12										A	A	I5.3^{A}	I5.3^{A}	5.0	5.1	I5.0^{A}	4.9	4.6	4.3					
13										C		A	5.3	A	A	5.3	5.1	4.6^{L}	L					
14								A	I4.5^{A}	I4.8^{A}	I5.2^{A}	5.3	I5.4^{A}	5.4	I5.3^{A}	5.1	5.0	5.2^{L}	4.0^{L}					
15									4.5	4.7	4.8^{C}	4.9	I5.1^{A}	5.2^{R}	I5.1^{A}	5.0	5.0	A						
16							L	I4.0^{A}	I4.3^{A}	I4.6^{A}	4.7	4.8	4.8	A	A	4.8	4.8	I4.4^{A}	4.2	L				
17									4.5	4.6	A	A	5.1	5.1	5.2^{H}	5.3	5.1	4.7	4.3^{L}	L				
18										I5.2^{L}	5.2^{H}	5.8	5.6	I5.5^{A}	A	I5.2^{A}	5.2^{L}	5.1	A					
19											5.7^{H}	5.7	5.6	6.1^{H}	B	5.4	A	5.1^{L}	4.7					
20												5.7	5.8	5.8	5.6	5.5	5.6	4.7	L					
21											5.7^{H}	I5.5^{A}	5.5	5.5	5.5	A	A	A	A					
22													A	5.4^{L}	I5.5^{A}	I5.5^{A}	A	A	A					
23												5.6	L	5.8	5.6	5.3^{H}	5.3							
24										5.8	A	L	A	5.6	A	A	5.5^{L}	A	L					
25						C	C	C	C				I5.4^{A}	5.6	5.8^{L}	5.5	5.4	L						
26												L	5.5	A	A	A	A	A	A					
27											5.7	5.3	I5.5^{A}	5.4	I5.3^{A}	5.1	5.3	4.9	L					
28											5.5	L	5.7^{L}	5.4	A	A	A	4.8	L					
29											5.6^{L}	5.5	5.6	5.4	I5.3^{A}	5.2^{L}	5.3	4.9						
30									I4.6^{A}	A	A	A	A	I5.0^{A}	I5.1^{A}	5.2	5.0	4.6	A					
31							3.2	3.9	4.4	I4.6^{A}	4.8^{R}	4.9	I5.0^{A}	5.0	I4.9^{A}	I4.9^{A}	4.9	4.7	4.3^{L}					
No.							1	3	7	9	14	20	25	26	22	26	24	15	6					
Median							3.2	4.0	4.5	4.8	5.6	5.5	5.6	5.6	5.4	5.4	5.2	4.8	4.3					

foF1

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 2

IONOSPHERIC DATA

Jul. 1960 | 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						C	C	C	3.40	A	A	A	R	A	A	A	A	A	A	A				
2						A	2.20	2.80	I 3.25 A	3.65	I 3.90 R	4.05	4.20	I 4.10 R	I 4.00 R	3.90	3.60	3.25	2.75	B				
3						S	2.00	2.90	3.40	3.55	3.70 R	3.80	4.00	A	A	R	A	3.25	2.75	S				
4						A	A	3.10	3.40	3.60	3.80	3.90 R	I 3.90 R	3.85 R	3.80 R	3.90 R	3.60	3.30	2.75	S				
5						S	2.40	3.00	3.30	3.60 R	I 3.90 C	4.20 R	I 4.20 R	4.20	4.10	I 3.95 R	I 3.75 A	3.30	2.70	B				
6						S	2.40	2.95	3.30	3.60	3.85	4.00	4.10 R	4.10 R	I 3.95 R	3.85	3.60	3.30	2.60	S				
7						S	2.15	2.85	3.40	3.70	3.90	4.00	4.10 R	4.05	3.95	3.60	A	A	A	B				
8						B	2.20	3.00	I 3.15 A	3.60	A	A	A	R	R	4.00 R	3.60	3.30	2.70	1.60 B				
9						C	C	C	A	3.80	3.90	I 4.05 B	R	A	A	A	3.70	3.20	I 2.75 A	A				
10						S	2.30	3.00	3.35	3.60	3.85	3.90	3.80	R	A	A	3.70	3.40	2.70	1.90				
11						S	A	2.75	3.20	A	A	B	R	I 4.05 R	4.00 R	R	A	I 3.15 C	2.60	S				
12						S	2.00	2.70	3.20	I 3.40 A	3.50	I 3.60 B	3.70	A	A	I 3.75 A	3.50 R	3.25	2.65	1.80				
13						B	A	2.70	3.20	I 3.60 C	I 3.75 A	3.90	A	A	A	A	A	3.15	2.35	B				
14						S	2.10	2.85	3.20	3.40	3.65	3.70	4.00 R	4.00	3.95	3.90	3.60	3.25	2.60	B				
15						S	1.90	2.75 H	3.25	3.55	3.70 C	I 3.85 R	4.00 R	3.90	A	A	A	A	A	A				
16						S	1.90	2.65	3.20	3.45	3.65	I 3.80 R	I 3.85 R	I 3.85 R	I 3.80 R	3.70	3.40	3.10	2.60	B				
17						A	A	2.70	3.20	I 3.45 R	I 3.75 C	I 3.95 R	4.00 R	I 4.00 R	3.90	3.70	3.40	3.00	2.40	A				
18						S	A	A	A	A	A	3.90	3.90 R	A	A	A	3.50	3.20	2.35	S				
19						S	2.00	2.90	3.15	3.40	3.80 R	3.75	3.80	I 3.90 R	B	A	A	A	2.55	B				
20						A	A	A	A	3.70	3.90 R	I 4.00 R	4.10	I 4.00 R	I 3.90 R	3.80 R	3.50	3.15	2.70	B				
21						S	1.75	2.55	3.00	3.35	I 3.60 C	A	A	A	R	3.85	3.60	3.20	2.45	B				
22						S	A	2.65	3.20 R	3.60	3.70	3.80	3.80	A	A	A	A	A	S	B				
23						S	2.30 H	2.70	3.10	3.45	3.80	I 3.80 R	3.90 R	B	R	3.80	3.50	3.20	2.65	B				
24						S	B	2.75	3.20	3.60	3.70	I 3.85 R	3.90	4.00	3.85	A	A	A	A	A				
25						C	C	C	C	3.40	3.65	3.70	3.80	4.20	4.20	3.90	3.50	3.20	2.65	A				
26						A	1.90	2.75	3.20	3.50	3.65	3.70	3.80	A	A	A	A	A	A	S				
27						S	1.80	2.65	3.20	3.50	3.70	3.90	I 3.85 R	4.00 R	I 3.90 R	I 3.75 R	3.45	3.10	2.30	A				
28						A	A	2.80	3.25	3.45	3.60	3.70	I 3.75 R	A	A	A	A	A	A	A				
29						S	2.00	A	A	A	3.80	I 3.85 R	I 3.95 R	I 4.00 R	I 3.85 R	3.65	I 3.55 A	3.15	A	A				
30						S	2.00	2.70 H	3.10	I 3.45 R	3.75	3.90	3.90	3.80	3.75	3.70	3.50 R	3.10	2.60	B				
31						S	2.20	2.60	3.10 H	3.40 R	I 3.65 A	R	I 3.75 R	I 3.80 R	I 3.80 R	3.70	3.40	3.15	2.60	B				
No.							19	25	26	27	27	26	25	18	16	18	20	23	23	3				
Median							2.00	2.75	3.20	3.55	3.75	3.90	3.90	4.00	3.90	3.80	3.50	3.20	2.60	1.80				

foE

Sweep 1.0 Mc to 20.0 Mc in 30 min sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 3

IONOSPHERIC DATA

Jul. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.)

Yamagawa Lat. 31° 12.5' N Long. 130° 37.7' E

50

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	J2.4	J5.3	4.0	J3.1	C	C	C	C	4.2	5.2	5.5	4.2	4.5	4.7	5.1	5.5	6.2	J5.7	4.9	J2.5	3.1	J2.4	J2.1	J1.9
2	3.2	J3.9	J5.0	6.3	4.7	J5.3	5.0	3.8	3.6	G	4.9	4.6	G	G	4.9	4.9	J5.7	6.3	4.0	J3.7	J2.6	J2.1	3.2	4.6
3	J2.4	J2.0	J2.1	E	E	S	G	G	4.2	5.4	5.1	5.4	5.7	6.1	5.4	G	J5.4	J6.7	J4.7	J2.9	J2.5	J2.5	J2.9	J4.0
4	J3.6	J4.0	J4.2	3.8	J3.3	J2.2	3.2	3.5	4.8	6.3	5.4	J8.4	5.7	8.2	9.3	8.3	5.9	3.7	3.3	2.7	J2.6	J2.4	J2.9	J3.8
5	2.2	3.3	J6.0	5.3	E	S	J4.7	7.0	J5.4	9.5	4.7	5.2	4.8	5.2	8.5	G	6.0	11.2	J10.2	6.8	9.2	J5.4	J5.5	6.1
6	J3.3	4.3	3.0	J2.5	1.4	2.2	2.7	3.6	3.8	4.5	5.2	6.0	5.2	G	6.8	J10.7	J10.1	5.4	J4.7	J5.2	3.8	4.5	J2.8	J3.3
7	J3.3	J4.6	3.6	J3.7	J4.8	2.3	3.8	3.7	J8.6	12.3	4.8	6.1	J12.8	J13.5	6.1	J16.6	15.4	J10.5	11.4	14.5	9.3	J3.9	J3.2	J2.8
8	J2.1	S	2.4	E	E	B	G	G	3.2	5.6	5.2	J8.1	4.9	G	G	G	3.2	4.3	J6.9	J4.9	J8.6	7.0	8.7	8.5
9	6.0	3.5	C	C	C	C	C	C	3.6	4.3	4.5	4.5	4.3	5.6	5.5	5.3	4.2	6.2	7.2	J5.7	3.2	3.7	J3.1	J3.1
10	3.9	5.0	5.3	5.6	J5.4	3.8	2.8	5.3	6.1	10.0	J11.5	12.2	J10.7	8.5	9.4	4.8	4.3	9.1	14.8	12.2	13.4	9.0	6.0	J5.4
11	J5.1	2.9	J2.3	J2.3	J2.3	J3.0	2.5	3.4	4.0	4.8	J4.4	4.6	G	G	4.5	5.1	4.3	C	J4.2	2.7	J2.7	3.6	J3.7	6.0
12	J5.4	4.4	5.5	6.0	J3.5	3.7	2.7	4.3	6.9	8.6	J7.5	8.4	10.3	4.4	4.4	5.5	4.4	4.4	3.6	10.2	6.3	3.7	5.2	J5.2
13	4.0	5.3	3.1	6.2	6.0	3.0	J5.2	4.5	7.0	C	8.0	J14.5	8.5	12.1	7.5	5.2	4.0	3.3	2.9	2.1	2.3	4.0	7.1	6.0
14	J5.2	3.4	4.0	6.6	J1.8	S	2.8	J5.2	6.9	7.1	6.0	8.2	8.7	5.7	8.2	4.7	4.4	3.6	3.1	2.5	J2.0	2.5	J2.5	J2.0
15	3.7	J2.1	J2.2	J2.2	1.3	S	2.5	3.3	4.3	4.8	4.9	5.0	6.0	4.7	5.1	3.9	J4.0	6.9	J4.0	4.7	J2.2	J1.9	S	S
16	J2.0	J4.9	5.1	J5.3	J2.4	1.8	2.7	4.1	5.4	7.1	4.2	4.1	G	5.7	5.6	4.5	5.1	4.9	3.6	2.7	4.7	3.2	J3.3	2.5
17	J3.9	J5.4	3.7	J4.0	J3.1	4.1	J2.4	4.6	4.0	J4.3	9.3	5.8	4.7	G	5.2	5.3	4.2	3.5	3.0	2.0	S	J2.2	J2.2	J2.0
18	S	5.2	4.6	1.6	E	J2.2	5.2	6.0	3.3	4.1	4.7	5.2	4.9	J12.1	9.1	6.1	3.9	J5.8	12.2	J2.3	S	J2.3	5.3	J3.6
19	3.7	5.0	J2.3	J2.5	J1.8	G	2.7	3.1	3.8	4.4	5.0	6.6	5.3	4.2	5.0	5.5	6.2	3.5	3.4	5.9	6.0	6.0	J4.4	3.1
20	S	S	2.2	4.0	J2.9	J3.2	J3.8	9.1	4.0	5.3	6.0	4.5	4.9	J8.4	4.9	4.2	4.5	3.8	3.0	2.1	2.1	J3.1	J2.1	J2.3
21	J2.3	2.3	S	J2.2	J5.5	J2.1	2.1	2.9	3.2	3.8	C	9.1M	5.5	4.9	4.5	J8.5	J10.7	J8.5	J13.9	11.3	6.0	J2.4	S	S
22	J2.1	J2.5	J3.2	J2.5	J3.0	2.2	2.1	G	6.0	4.4	6.0	J7.2	J6.5	6.9	6.3	7.1	7.0	8.4	7.0	5.4	7.0M	5.1	3.1	S
23	J2.1	3.1	2.0	2.1	J2.3	S	G	4.3	J7.7	4.0	4.7	G	4.3	B	5.0	4.3	4.1	3.9	3.5	2.4	2.3	J3.6	3.0	5.4
24	3.4	4.3	J2.9	J2.6	J2.3	J2.2	B	3.3	4.1	5.0	9.1	5.4	8.6	8.3	8.6	7.9	9.4M	J5.3	J4.6	4.2	3.1	J2.4	S	C
25	C	C	C	C	C	C	C	C	C	4.9	5.1	J5.8	J6.1	5.3	4.5	5.2	4.0	4.3	3.9	1.9	J2.4	J2.6	J2.4	J3.2
26	3.1	J2.9	2.4	2.0	1.4	J2.8	2.7	3.1	4.9	4.3	J8.4	4.8	6.3	5.5	9.2	11.4	J7.3	J12.8	9.1	6.0	J3.0	J3.0	J2.1	5.7
27	6.0M	J5.5	4.5	3.6	J2.2	S	2.4	3.3	4.3	5.4	G	6.0	6.1	4.8	J5.5	4.1	6.0	3.3	3.5	2.1	J2.5	S	S	S
28	J2.1	S	E	2.5	3.0	J5.8	J3.7	G	G	G	4.1	4.6	5.2	5.6	J14.3	8.9	J6.1	3.8	3.3	3.6	3.0	2.0	J2.2	S
29	4.9	J3.2	J2.8	3.1	3.5	4.0	G	4.7	9.0	4.8	G	4.8	5.1	J5.6	5.4	5.2	4.0	3.8	J3.5	J3.3	J5.2	6.7M	J3.1	J3.0
30	6.0	6.0M	5.7	J5.3	3.7	S	2.9	4.4	5.9	6.5	8.2	J9.2	5.4	12.2	11.6M	G	7.3	3.6	J8.5	6.3	J4.3	J3.1	3.1	5.8
31	4.6	J5.1	5.1	5.3	3.2	S	2.8	3.3	3.6	J8.1	5.2	J5.6	J8.3	4.9	10.1	5.5	4.2	3.4	3.3	J4.1	J5.1	J8.3	J5.3	J5.3
No.	28	27	28	29	28	19	27	28	30	30	30	31	31	30	31	31	31	30	31	31	29	30	27	25
Median	3.5	4.3	3.4	3.1	2.6	2.8	2.7	3.6	4.2	5.0	5.2	5.6	5.4	5.6	5.5	5.2	5.1	4.6	4.0	3.7	3.1	3.2	3.1	3.8
U.Q	4.8	5.1	4.8	5.3	3.5	3.8	3.7	4.6	6.0	6.5	6.0	8.1	6.5	8.2	8.6	7.1	6.2	6.7	7.2	5.9	6.0	4.5	5.2	5.6
L.Q	2.4	3.1	2.4	2.2	1.6	2.2	2.4	3.2	3.8	4.3	4.7	4.6	4.8	4.7	5.0	4.3	4.2	3.7	3.4	2.5	2.5	2.4	2.5	2.9
Q.R	2.4	2.0	2.4	3.1	1.9	1.6	1.3	1.4	2.2	2.2	1.3	3.5	1.7	3.5	3.6	2.8	2.0	3.0	3.8	3.4	3.5	2.1	2.7	2.7

foEs

Sweep 1.0 Mc to 20.0 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 4

IONOSPHERIC DATA

Jul. 1960 | 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	2.0	5.1	3.4	2.9	C	C	C	C	4.0	4.8	5.2	G	G	4.7	4.7	5.0	5.6	4.4	G	G	2.1	S	1.9	E
2	1.9	1.9	4.1	5.1	3.6	5.0	4.5	3.6	G		4.7	4.5			4.7	4.8	4.5	4.9	4.0	3.7	2.5	2.0	E3.2S	2.5
3	2.0	2.0	2.1			S			4.1	4.8	4.7	4.5	5.7	6.1	5.0		4.5	6.5	4.4	2.2	1.8	2.5	2.6	3.6
4	3.1	3.2	2.3	1.4	2.7	1.9	G	G	4.5	5.7	5.2	A	5.4	8.0	7.4	6.2	5.4	3.6	G	2.7	2.2	2.0	2.1	3.2
5	1.9	2.2	4.8	2.0		S	4.6	6.7	5.4	6.7	E4.7B	4.8	4.8	5.2	A		4.5	A	A	6.4	A	4.8	2.3	4.6
6	2.5	3.3	2.4	2.1	E1.4S	G	G	3.4	3.8	4.5	4.8	5.0	5.0		5.5	A	8.7	5.4	4.5	4.5	3.0	2.3	2.5	2.7
7	1.9	3.3	3.0	3.4	3.2	G	3.5	3.6	5.1	5.0	E4.8B	5.7	A	A	E6.1B	4.7	A	A	A	A	7.6	3.6	2.8	2.4
8	1.9	S	1.8			B			G	4.4	4.9	6.9	4.8				3.2G	E4.3B	6.8	4.3	5.0	5.1	2.2	6.4
9	2.7	2.6	C	C	C	C	C	C	3.5	4.3	4.5	E4.5B	E4.3B	5.3	4.4	5.0	E4.2B	4.3	6.0	4.9	2.7	2.0	2.3	2.7
10	3.5	3.9	2.3	2.6	3.1	2.9	2.6	5.2	5.5	A	8.2	A	8.1	7.6	5.1	4.6	E4.3B	8.6	A	A	A	5.1	4.2	4.8
11	3.7	2.4	1.8	2.0	1.9	2.6	G	3.3	3.7	4.5	4.2	4.5			4.5	5.0	4.1	C	3.7	2.7	2.5	3.3	3.5	4.3
12	4.7	2.9	2.6	2.8	2.3	3.5	G	4.1	6.1	A	5.3	A	A	4.3	4.2	5.2	4.2	4.4	3.5	A	4.3	2.0	4.6	3.5
13	3.3	3.7	1.9	2.4	3.3	2.1	4.8	4.4	5.2	C	6.2	8.5	4.9	A	7.5	5.0	E4.0B	G	2.8	G	E2.3B	E	A	A
14	3.5	1.9	2.0	1.3	1.3	S	2.8	4.3	5.4	5.1	5.6	5.1	A	4.9	5.9	4.3	4.0	G	3.0	G	E	1.8	2.0	1.7
15	3.2	2.0	1.8	E	E1.3B	S	G	3.2	4.1	4.2	4.5	4.6	A	4.6	E5.1B	E3.9B	3.9	6.5	4.0	4.7	2.0	1.8	S	S
16	E2.0B	3.6	2.4	4.8	1.7	1.7	2.6	E4.1B	4.5	A	G	E4.1B		A	A	4.4	4.0	4.6	3.1	2.3	4.2	S	2.3	2.2
17	3.6	4.8	2.5	2.7	2.5	2.2	G	G	G	4.0	A	5.2	4.4		4.1	4.6	4.1	3.3	2.9	G	S	1.9	S	S
18	S	2.2	2.8	1.4		G	G	3.3	G	G	4.1	5.1	4.7	A	5.3	E6.1B	E3.9B	5.0	4.4	G	S	1.9	4.8	2.2
19	1.8	3.2	1.8	1.8	1.6		2.6	E3.1B	3.6	4.2	4.4	5.2	5.1	E4.2B	E5.0B	5.2	A	3.5	3.3	5.3	3.0	2.1	2.2	3.1
20	S	S	1.8	2.8	2.8	3.0	3.6	A	3.6	5.2	4.3	4.4	4.7	4.9	4.8	4.2	4.2	3.8	3.0	G	1.8	1.9	1.8	2.3
21	1.9	S	S	2.0	4.5	1.9	G	G	G	G	C	6.6	4.8	4.9	4.5	5.8	6.8	6.3	A	7.9	4.1	1.8	S	S
22	1.9	1.9	2.6	1.9	2.9	G	G		G	4.3	5.0	5.8	6.3	4.7	6.1	6.4	6.1	E8.4S	6.0	4.3	E7.0S	3.8	1.9	S
23	2.0	2.4	1.8	1.8	2.0	S		3.4	6.6	4.0	4.6		E4.3B	B	4.9	4.3	4.1	3.7	2.9	G	1.8	3.3	2.1	2.3
24	2.8	3.6	2.7	1.8	2.2	1.8	B	3.3	3.9	4.5	7.8	5.0	6.7	5.4	8.0	7.2	4.5	5.0	4.0	3.2	2.3	2.2	S	C
25	C	C	C	C	C	C	C	C	C	4.5	4.7	5.7	5.5	4.4	4.4	4.5	3.9	4.3	E3.9B	G	2.2	2.3	2.2	2.1
26	2.1	2.2	S	1.7	1.4	2.2	G	G	4.3	G	A	4.4	5.1	5.5	7.9	7.5	E7.3S	A	8.7	E6.0S	2.6	3.0	1.7	2.4
27	1.9	2.3	2.5	2.1	1.6	S	G	3.3	4.2	5.1		4.9	5.6	4.5	5.4	G	5.1	3.3	3.4	G	S	S	S	S
28	E	S		1.7	2.1	4.2	3.4				G	4.3	4.7	4.8	A	7.9	5.5	3.8	3.3	2.2	1.8	1.9	1.9	S
29	1.8	2.5	2.2	2.5	2.4	2.3		4.6	5.7	G		4.7	4.9	5.2	5.4	4.9	4.0	G	3.5	2.8	4.6	E	2.4	2.9
30	4.5	2.6	3.1	3.6	2.2	S	2.4	4.4	5.0	A	A	A	5.2	5.4	A		G	G	A	5.2	E4.3B	2.7	1.8	3.2
31	1.9	3.1	2.3	4.1	2.4	S	2.7	3.2	G	A	4.3	4.3	A	4.3	A	5.4	4.2	3.4	3.3	4.1	1.9	2.5	3.9	2.1
No.	28	26	26	27	24	18	23	23	29	28	27	30	28	25	29	26	29	29	30	30	26	28	25	24
Median	2.0	2.6	2.4	2.1	2.2	2.2	2.4	3.4	4.1	4.5	4.7	5.0	5.1	5.2	5.3	5.0	4.2	4.3	3.8	3.0	2.5	2.2	2.3	2.7

foEs

Sweep 1.0 Mc to 20.0 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 5

51

IONOSPHERIC DATA

Jul. 1960 | 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	E1.70	E1.80	E1.70	1.20	C	C	C	C	1.90	1.90	2.40	2.70	3.40	3.60	2.60	2.70	1.90	1.90	1.60	1.70	E1.60	E1.80	E1.70	E1.70
2	E1.70	E1.60	E1.80	E	1.05	1.20	1.70	1.95	2.00	2.20	2.40	2.40	2.30	2.50	2.20	2.40	1.90	1.60	1.60	1.70	E1.65	E1.65	E1.80	E1.50
3	E1.80	E1.70	E	1.40	1.15	E1.60	1.80	2.00	2.00	2.00	2.00	2.10	2.25	2.60	3.80	2.20	2.20	1.90	1.80	E1.60	E1.70	E1.70	E1.60	E1.70
4	E1.70	E1.70	E	E	E	1.30	1.80	1.70	1.80	1.80	2.05	2.20	2.65	3.35	2.40	2.10	2.00	1.80	E1.65	E1.60	E1.70	E1.65	E1.70	E1.70
5	E1.60	E1.70	1.15	1.30	1.30	1.40	1.70	1.90	1.80	1.90	E4.30	2.60	3.30	3.25	2.50	2.10	2.20	2.40	E1.70	1.80	E1.70	E1.60	E1.60	E1.70
6	E1.60	E1.60	E1.70	1.20	1.20	1.50	1.80	1.70	1.90	1.90	2.40	3.30	2.40	3.40	2.40	2.00	2.05	1.80	1.70	1.70	E1.70	E1.70	E1.60	E1.80
7	E1.55	E1.60	1.35	1.00	E	E1.70	1.80	2.00	1.90	2.00	2.35	2.35	2.60	3.55	2.40	2.50	2.20	1.80	1.65	1.60	E1.70	E1.60	E1.70	E1.50
8	1.30	E1.75	E1.70	1.10	1.20	1.70	1.70	1.80	1.80	1.90	2.20	2.20	2.50	3.60	2.30	1.90	1.90	1.80	1.90	1.20	E1.60	E1.70	E1.60	E1.65
9	E1.70	E1.70	C	C	C	C	C	C	1.85	1.80	2.55	4.10	2.40	2.60	2.60	2.40	2.35	1.90	1.70	1.70	E1.70	E1.60	E1.70	E1.70
10	E1.60	E1.70	E1.70	E	1.60	1.70	1.70	1.80	1.80	1.80	2.20	2.40	2.10	2.50	2.40	2.30	2.00	1.90	1.80	1.70	E1.70	E1.60	1.30	E1.70
11	E1.70	E1.70	1.30	E	E	1.80	1.70	1.70	1.70	2.20	2.40	4.10	2.50	2.60	2.50	2.50	2.25	I1.80	1.60	1.80	E1.70	E1.70	E1.70	E1.60
12	E1.60	E1.80	E	E	E	1.70	1.60	1.60	1.90	1.80	1.90	3.70	2.40	2.60	3.40	2.20	2.05	1.80	1.70	1.60	E1.70	E1.70	E1.70	E1.60
13	E1.70	E1.65	1.70	1.15	1.20	1.60	1.70	2.10	1.90	I2.30	2.20	2.20	2.20	2.40	2.20	2.20	2.20	2.00	1.60	1.70	E1.60	E1.60	E1.70	E1.60
14	E1.70	E1.60	E	E	E	1.70	1.70	1.70	1.80	1.80	1.80	2.00	2.55	2.20	2.40	2.25	1.90	1.85	E1.60	1.60	E1.70	E1.70	E1.65	E1.60
15	E1.70	E1.70	E1.70	1.25	E	1.20	1.80	1.70	1.65	1.90	E2.95	2.60	2.40	2.20	2.40	2.30	1.80	1.80	1.60	1.60	E1.60	E1.70	E1.80	E1.70
16	E1.70	1.60	E1.60	E	E	1.30	1.60	1.70	1.80	1.90	2.00	2.40	2.40	2.20	3.20	2.05	1.90	1.70	1.70	1.80	E1.70	E1.70	E1.60	E1.70
17	E1.70	E1.65	1.10	E	1.10	1.30	1.70	1.60	1.60	1.85	E4.00	2.40	2.50	2.55	2.20	2.00	1.80	1.85	E1.60	E1.60	E1.70	E1.80	E1.70	E1.60
18	E1.80	E1.60	1.40	1.00	1.60	E1.60	1.60	1.60	1.80	1.85	2.20	2.60	3.40	2.30	3.30	2.20	2.20	1.80	1.55	E1.60	E1.70	E1.70	E1.70	E1.50
19	E1.70	E1.60	1.20	1.00	1.00	1.75	1.80	1.90	1.90	2.30	2.40	2.45	2.30	3.30	4.55	2.60	E3.30	1.80	1.80	1.70	E1.60	E1.60	E1.60	E1.70
20	E1.60	E1.80	E1.60	E	1.70	1.30	1.70	1.80	1.80	1.90	2.20	2.30	2.60	2.40	2.50	2.25	2.10	1.80	1.60	1.60	E1.60	E1.80	E1.70	E1.60
21	E1.60	E1.80	E1.70	E	1.05	E1.70	1.65	1.80	1.80	1.70	E4.50	2.20	2.30	2.55	2.30	2.20	2.10	1.80	1.60	1.70	E1.70	E1.70	E1.80	E1.70
22	E1.60	E1.70	E1.70	1.15	1.30	E1.50	1.60	1.70	2.10	2.00	2.35	2.20	3.30	2.40	2.20	2.40	2.00	1.80	E1.60	1.30	E1.70	E1.60	E1.70	E1.80
23	E1.60	E1.80	E1.70	1.20	1.10	1.30	1.80	1.80	1.90	1.85	1.90	2.20	2.30	4.50	2.40	2.50	2.20	1.80	1.80	1.70	E1.70	E1.70	E1.60	E1.70
24	E1.65	E1.70	1.60	E	E	1.50	2.20	1.85	1.90	2.25	2.25	2.40	2.40	3.35	2.60	2.20	2.10	1.70	E1.60	1.60	E1.70	E1.70	E1.70	C
25	C	C	C	C	C	C	C	C	C	1.90	2.20	2.60	2.30	2.50	2.20	2.30	2.20	1.80	1.60	1.40	E1.70	E1.60	E1.70	E1.60
26	E1.60	E1.70	E1.70	E	E	1.20	1.70	1.70	1.80	1.80	2.00	2.10	2.20	2.55	2.50	2.30	1.90	1.70	E1.60	E1.70	E1.60	E1.50	E1.60	E1.60
27	E1.70	E1.70	1.20	E	1.20	1.30	1.70	1.70	1.70	2.30	2.40	2.45	2.45	2.60	2.70	2.40	1.90	1.70	1.60	1.20	E1.70	E1.75	E1.75	E1.80
28	E1.70	E1.80	1.40	E	1.10	1.10	1.70	1.70	1.70	2.00	2.10	2.50	2.40	2.40	2.50	2.40	2.25	1.80	1.60	1.60	E1.70	E1.80	E1.70	E1.70
29	E1.60	E1.60	E1.60	E	E	E1.60	1.65	1.80	1.70	1.85	1.90	2.30	2.25	2.10	2.45	2.00	1.90	1.70	1.60	E1.70	E1.70	E1.60	E1.70	E1.70
30	E1.60	E1.70	1.10	1.00	1.20	1.70	1.70	1.70	1.85	1.90	2.20	2.20	2.40	2.40	2.25	2.60	2.20	1.80	1.60	1.60	E1.70	E1.70	E1.60	E1.70
31	E1.60	E1.70	1.10	E	1.00	1.70	1.70	1.80	2.00	1.90	2.00	2.25	2.40	2.30	1.95	2.05	2.40	1.95	1.80	E1.50	E1.70	E1.60	E1.70	E1.70
No.	30	30	16	29	28	23	28	28	30	31	27	31	31	31	31	31	30	31	29	29	31	31	31	30
Median	E1.70	E1.70	1.20	E	1.10	E1.50	1.70	1.75	1.80	1.90	2.20	2.40	2.40	2.55	2.40	2.25	2.10	1.80	1.60	1.60	E1.70	E1.70	E1.70	E1.70

f-min

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | (M3000)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	J2.55S	I2.70S	I2.85S	F	C	C	C	C	2.90H	2.90H	2.60H	2.65	2.65S	2.60	2.60	2.75	2.75	2.90	U2.65SH	I2.70S	2.80	2.55	I2.50S	2.65
2	2.60	I2.65S	2.70	2.75	2.95	2.65	2.50H	2.40	2.55	2.60	2.65	2.50	2.65R	2.55S	2.65	2.75	2.90	I2.85SH	J2.90SH	J2.75S	J2.75S	J2.55S	J2.50S	I2.45S
3	I2.50S	J2.65S	2.60S	2.85S	2.85	2.95	3.25S	2.95	U2.70S	2.60	2.65	2.70	2.60	2.55	2.60	2.65	2.65	2.85	2.90	3.05S	2.70	J2.55S	J2.40S	J2.45S
4	2.75	2.85	2.75S	2.75	2.40F	2.45F	2.80	2.95SH	J2.80RH	2.65H	2.80H	I2.60A	J2.45R	2.60	2.70	2.75S	J2.90S	2.70H	2.75H	2.70	J2.70S	2.50	J2.55S	2.60S
5	J2.60S	2.65S	I2.80S	F	F	2.70	2.95	3.00	2.75H	2.65H	2.60SH	2.45	2.50	J2.50R	J2.45A	2.60	J2.75S	A	A	2.60S	I2.50A	2.55	2.50	2.55
6	2.65	2.75S	3.00	2.55	2.75	2.80	J2.85S	2.75	J2.95S	2.65H	2.60	2.75	2.55	2.60	2.75	I2.75A	A	2.70	2.75S	2.85S	2.80	2.65	I2.45S	I2.45S
7	2.55	U2.80S	2.95	I2.80S	2.70	U2.85S	3.10	J2.90RH	2.70	2.60	2.50	2.55	I2.65A	I2.65A	2.75	2.70	I2.60A	I2.60A	A	A	U2.85S	2.60S	I2.60S	J2.60S
8	I2.60S	2.80S	J2.95S	2.65	J2.75R	2.75	2.80	2.95	3.15H	2.65H	2.65H	2.45	2.50	2.50	2.55	2.60	2.70	2.70	2.85	U3.05S	2.80S	2.50	S	F S
9	S	S	C	C	C	C	C	C	3.05	2.65F	2.50	F	2.40F	2.65	2.65	2.65	2.75	2.75	2.85H	2.80	I2.80S	2.70	2.55	2.50S
10	S	F	2.80F	S	S	F	J3.10S	3.15S	3.15	I2.75A	A	I2.45A	2.50	2.55	2.65	2.70	2.65	2.75	A	A	A	2.55	S	S
11	J2.55S	2.70F	2.75	2.80S	2.75S	2.70	2.70	2.75	2.55S	2.65H	2.75H	2.55	2.40	2.50	2.65	2.80	2.90	I2.85C	2.90SH	2.80	J2.80S	J2.50S	J2.60S	S
12	F	F S	S	F	F	S	J3.15S	J3.05S	2.50	I2.55A	2.60	I2.55A	I2.45A	2.45	2.50	2.65	2.70	2.85	2.85	I2.80A	2.80	2.60	I2.55S	2.55
13	2.75	F	F	F	F	2.75	2.90	2.80	2.75S	I2.60C	2.60	2.65	2.70	I2.65A	2.70	2.75	2.90	2.80S	3.05	2.80	J2.70S	I2.60S	S	S
14	S	F S	U2.70S	F	F	F	3.00	2.75	2.55	2.55	2.60	2.75	I2.70A	2.80	2.70	2.95	2.95	2.60	2.95	2.90S	2.65S	I2.40S	I2.50S	2.70S
15	J2.70S	J2.70S	U2.80S	2.75	2.55	2.45	2.75	3.05	2.05	2.35	2.45	2.45	I2.40R	2.50	2.50	2.55	2.65	2.95	2.65H	2.60	2.45	2.45	2.40	I2.55S
16	2.45	I2.50S	J2.70S	2.60	2.60	2.50	I2.70S	2.50	2.50	A	2.15	2.15	2.20	A	A	2.30	2.00	2.20	2.50	2.70	2.75	2.45	2.40	2.35S
17	I2.40S	2.55	2.80F	2.60	2.75	2.70	2.95	2.85R	2.40	2.55	I2.55A	2.50	2.45R	2.85	2.85	2.60	2.70S	U2.70S	2.80S	J2.90S	U2.60S	I2.50S	2.50	2.70
18	I2.60S	F	2.20	F	2.75	2.85	3.05H	2.95	3.05H	2.80S	3.25	2.85	2.80	I2.60A	2.75	2.80	2.85	2.80	2.90	2.95	2.75	2.60S	2.60	U2.65S
19	2.55	2.90	F	F	F	F	2.85	3.00	3.30H	3.10H	2.85	2.80	2.85	2.75	2.75	2.75	I2.70S	2.80S	2.55	J2.70S	J3.00S	U2.65S	2.55	2.50
20	2.55	S	J2.75S	2.70	U2.65S	2.90S	U3.05S	S	2.90H	2.75H	2.75H	2.55	2.70	2.75	2.75	2.80	2.65	U2.80S	J2.75S	2.90	3.00	2.55	U2.60S	2.55S
21	I2.65S	I2.70S	I2.75S	2.85	2.85	2.80	2.85S	3.00	J3.45SH	3.10H	2.35	2.75R	2.90	2.85R	2.65	2.75	2.65	2.80	I2.95A	3.10	2.65	2.45S	J2.55S	J2.65S
22	2.60S	2.70	3.15	3.45S	2.65	2.65	3.15	3.35	2.95	3.00H	2.90H	2.60H	2.40	2.55	2.80	2.70	2.70	2.75	2.85S	3.00	2.95	2.60	2.60	I2.55S
23	2.60	2.70	3.00	J2.90S	2.90	2.75	2.70S	3.10	3.10	2.95H	2.65H	2.70	2.60	2.65	2.80	2.75	2.80	2.70H	2.90	J2.90S	U2.80S	I2.75S	2.75	J2.80S
24	J2.55S	S	S	F	F	F	3.30S	J3.10RH	3.20	J2.90R	2.95	2.80	2.60	2.70	2.70	2.75	2.75	2.70	2.95	3.05	2.75S	2.70	2.70	C
25	C	C	C	C	C	C	C	C	C	2.85	2.85H	2.75H	2.65	2.75S	2.65	2.70S	2.75	2.80	2.75	2.95	J2.90S	2.70	2.65	U2.65S
26	I2.70S	I2.75S	U2.80S	2.95	3.05	J2.95S	3.20	3.40	U3.10S	3.10H	I2.80A	2.75	2.70	2.55	2.65	2.80	2.95	A	2.85	2.90	2.90	J2.75S	2.65	2.75
27	F	F	F	F	2.90	2.70S	2.60	J3.05S	3.25H	2.80H	2.60	2.65	2.65S	2.90	2.85	2.70	J2.70S	U2.80S	I2.85S	2.80	2.95	2.65	2.55	2.60
28	2.55	2.65	2.75	2.85	2.70S	2.85	3.05S	3.25	3.10S	3.10H	2.85	2.60	2.50	2.50S	I2.55A	2.60	2.70	2.75	2.80S	3.05	2.90S	2.60S	2.75	U2.70S
29	I2.70S	I2.85S	J3.25S	J3.20S	2.90	3.10	3.05	J3.30R	3.10	3.10SH	2.70	2.70	2.55	2.60	2.60	2.65	2.65	2.75	3.00S	U3.15S	J2.70S	I2.60S	2.45	2.65S
30	2.60	F	S	F	F	F S	2.80	2.75	2.95	A	A	A	2.35	2.65	I2.80A	2.75	2.85	2.95	I3.00A	2.85S	2.55S	2.45	I2.50S	2.55
31	2.50	2.55S	J2.60S	2.75S	2.85	2.65	2.80	3.10	1.95	I2.05A	2.20	2.45	I2.50A	2.45	I2.55A	2.90	2.75	2.75	2.55	2.70	2.65	2.40S	2.55S	U2.55S
No.	25	20	23	18	20	22	28	27	30	29	29	29	31	30	30	31	30	29	28	29	30	31	28	26
Median	2.60	2.70	2.80	2.80	2.75	2.75	2.90	3.00	2.90	2.65	2.65	2.60	2.55	2.60	2.65	2.75	2.70	2.75	2.85	2.85	2.80	2.55	2.55	2.60

(M3000)F2

Sweep 1.0 Mc to 20.0 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 7

IONOSPHERIC DATA

Jul. 1960 | (M3000)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						C	C	C				2.45	2.40H	2.30L	2.70	A	A	L						
2								2.15	2.30	2.40	2.60	2.35	2.40H	2.50	2.50	2.25	2.40							
3									L	2.35	2.35	2.65	A	I3.60A	2.15	2.50	2.35	A	A					
4												A	A	A	A	A	A							
5												2.45	2.75	2.50	A	2.50	2.30	A						
6											L	A	2.55	2.45	A	A	A	A	A					
7											2.40	A	A	A	A	2.30L	A	A	A					
8												A	2.50	2.15	2.15	2.40	2.60H	2.25	A					
9						C	C	C			2.70	2.50	2.15L	A	2.75	2.20	2.30	2.35						
10											A	A	A	I2.20A	A	2.35	2.15L	A	A					
11												2.25	2.50	2.35	2.40	2.15	2.60	C						
12										A	A	I2.70A	I2.75A	2.90	2.60	A	2.45	A	2.30					
13										C		A	A	A	A	A	2.35	2.50L	L					
14								A	A	A	A	A	A	2.55	I2.60A	2.65	2.45	2.10L	2.60L					
15									2.40	2.70	C	2.70	A	2.65R	A	2.60	2.35	A						
16							L	I2.30A	I2.35A	I2.60A	2.75	2.95	2.55	A	A	2.45	2.40	I2.25A	2.00	L				
17									2.65	2.85	A	A	2.90	2.75	2.65H	2.40	2.35	2.60	2.25L	L				
18										I2.60L	2.70H	2.45	2.55	A	A	I2.45A	2.30L	A	A					
19											2.50H	2.45	A	2.25H	B	A	A	2.25L	2.05					
20												2.55	2.35	2.30	2.45	2.45	2.20	2.40	L					
21											2.55H	I2.55A	2.45	2.45	2.50	A	A	A	A					
22													A	2.80L	A	A	A	A	A					
23												2.55	L	2.45	2.40	2.60H	2.45							
24										2.45	A	L	A	A	A	A	2.25L	A	L					
25						C	C	C	C				A	2.55	2.30L	2.30	2.35	L						
26												L	2.50	A	A	A	A	A	A					
27											2.40	2.70	I2.40A	2.70	A	2.70	A	2.25	L					
28											2.50	L	2.35L	2.70	A	A	A	2.35	L					
29											2.40L	2.45	2.25	A	A	A	2.30	2.35						
30									A	A	A	A	A	I2.40A	I2.45A	2.35	2.40	2.35	A					
31							2.95	2.35	2.60	I2.60A	2.75R	2.85	I2.80A	2.75	A	A	2.40	2.30	2.05L					
No.							1	3	5	8	12	17	18	22	14	18	21	13	6					
Median							2.95	2.30	2.40	2.60	2.50	2.55	2.50	2.50	2.50	2.40	2.35	2.35	2.15					

(M3000)F1 Sweep 1.0 Mc to 20.0 Mc in 30 min sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 8

IONOSPHERIC DATA

Jul. 1960 | 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						C	C	C				400	390	380	400	345	330	300						
2								480	430	450	410	445	375	400	370	370	350							
3									360	350	390	360	380	390	400	385	355	320	285					
4												A	475	I 415 A	390	350	335							
5												440	430	430	I 450 A	405	350	A						
6											395	355	355	375	370	I 390 A	I 360 A	355	315					
7											400	355	A	A	355	355	A	A	A					
8												460	400	410	400	380	345	340	310					
9						C	C	C			420	360	400	365	350	370	345	325						
10											A	A	I 410 A	385	365	345	360	365	A					
11												405	425	405	370	330	305	C						
12										A	A	I 470 A	I 495 A	480	470	420	400	355	330					
13										C		A	360	I 370 A	365	350	315	290	290					
14								390	I 455 A	490	465	405	I 395 A	395	400	335	330	390	280					
15									750	600	505	550	I 520 A	500	495	460	420	365						
16							340	370	525	A	670	645	675	A	A	595	750	625	455	330				
17									550	490	I 495 A	500	500	395	395	440	400	350	340	285				
18										300	295	375	375	I 440 A	380	400	340	350	310					
19											345	380	360	380	350	375	A	325	375					
20												410	370	350	355	350	360	325	300					
21											470	380	360	360	430	380	400	340	A					
22													400	350	335	350	350	350	295					
23												365	370	360	330	305	305							
24										350	I 335 A	350	400	370	360	340	340	340	290					
25						C	C	C	C				355	350	355	345	350	300						
26												300	360	360	390	345	310	A	A					
27											430	400	340	330	315	340	345	320	300					
28											350	390	380	400	I 375 A	390	345	315	295					
29											390	375	390	380	355	340	355	315						
30									350	A	A	A	545	440	A	405	350	340	A					
31							355	320	860	I 690 A	650	550	I 510 A	515	I 470 A	370	380	385	410					
No.							2	4	8	8	17	25	30	29	29	31	29	24	16	2				
Median							350	380	490	470	410	400	390	385	370	370	350	340	305	310				

h'F2

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 9

IONOSPHERIC DATA

Jul. 1960 | 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	325	340	300	300	C	C	C	C	250H	260H	270H	205	220H	230	240	I270A	I270A	260	250H	290	255	290	330	295
2	305	320	310	340	290	I290A	I305AH	260	245	225	245	250	205H	220	250	300	270	I255AH	I270AH	305	295	295	360	350
3	335	305	290	255	255	275	250	240	250	275	250	220	I230A	I235A	290	245	255	A	A	260	260	320	355	360
4	300	280	290	280	370	345	270	250H	280H	AH	AH	A	A	A	A	A	A	250H	240H	290	260	320	330	310
5	305	330	340	260	290	280	290	305	AH	I280AH	250H	250	240	295	I230A	240	275	A	A	A	A	350	375	355
6	305	300	255	250	260	295	270	250	230	250H	245	I225A	250	225	A	A	A	A	A	290	275	250	340	375
7	340	300	270	280	320	255	260	250H	I280A	I280A	270	A	A	A	A	250	A	A	A	A	A	300	310	310
8	305	290	250	255	275	295	255	245	240H	240H	250H	I235A	250	260	250	240	230H	A	A	260	250	400	375	355
9	330	305	C	C	C	C	C	C	235	220	220	245	250	I230A	230	I230A	250	295	I260AH	295	280	270	325	300
10	305	330	290	255	280	295	250	250	270	A	A	A	A	I290A	I260A	260	255	A	A	A	A	350	350	350
11	340	320	295	290	275	300	260	250	250	250H	220H	230	205	220	245	I265A	250	I240C	275H	265	270	345	350	395
12	380	300	260	275	290	285	250	290	A	A	A	A	A	200	240	I245A	260	I260A	270	I280A	310	300	395	355
13	330	360	320	320	350	295	300	295	300	C	A	A	A	A	A	I245A	I230A	230	230	255	285	295	I380A	I305A
14	350	300	325	315	300	320	260	A	A	A	A	A	A	260	I250A	250	240	235	245	255	260	340	355	300
15	305	295	260	275	340	315	260	250	280	250	I250C	275	I290A	250	I245A	230	250	I275A	I260AH	I290A	315	340	345	330
16	350	350	320	300	305	310	295	I280A	I295A	I255A	230	205	280	A	A	290	255	I270A	260	295	I275A	330	375	390
17	400	I370A	300	355	310A	310	285	250	230	225	A	A	220	240	220H	280	260	240	240	255	255	340	330	295
18	305	350	295	255	300	280	250H	250	200H	220	210H	280	225	A	A	I255A	230	I260A	I260A	260	275	300	350	305
19	305	300	290	260	230	260	260	250	255H	230H	210H	290	I210A	205H	I255B	A	A	240	255	E325A	280	255	300	340
20	325	255	260	305	300	290	240	I250A	240H	290H	240H	220	250	250	255	230	240	245	250	285	255	235	270	310
21	300	300	270	250	300	270	255	250	230H	205H	205H	I250A	260	270	245	A	A	A	A	A	305	325	325	305
22	340	310	250	240	310	305	250	245	240	250H	270H	AH	A	215	A	A	A	A	A	260	I295A	310	320	310
23	310	305	255	260	280	275	250	240	I245A	230H	250H	220	205	250	285	230H	240	230H	250	275	275	290	260	270
24	320	340	290	280	300	290	245	230H	225	240	I250A	I250A	I245A	A	A	A	260	A	A	260	240	255	280	C
25	C	C	C	C	C	C	C	C	C	250	250H	290H	I220A	225	230	255	240	280	255	255	260	270	240	305
26	300	295	275	255	240	255	250	230	250	200H	A	220	280	A	A	A	A	A	A	A	270	305	300	300
27	335	300	250	280	255	290	255	245	250H	260H	225	235	I265A	245	I250A	225	I250A	240	250	260	250	245	305	320
28	330	310	300	290	300	305	255	240	205	255H	235	205	250	245	A	A	A	255	260	275	240	290	275	290
29	300	280	245	235	260	250	250	260	310	210H	210	250	300	A	A	A	245	230	275	250	310	320	360	340
30	I345A	340	400	400	390	330	280	390	A	A	A	A	A	I285A	I260A	245	245	245	A	A	A	350	335	345
31	340	350	330	300	310	325	320	285	245	I255A	250	225	I225A	225	A	A	255	230	275	E330A	290	300	390	340
No.	30	30	29	29	28	28	28	27	26	25	23	22	23	23	19	21	23	21	20	23	27	31	31	30
Median	325	305	290	280	300	290	260	250	250	250	245	235	245	240	250	245	250	245	260	265	275	300	335	315

h'F

Sweep 1.0 Mc to 20.0 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Jul. 1960 | k'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	100	100	105	105	C	C	C	C	140	125	120	105	130	105	105	105	105	105	105	100	100	100	100	100
2	100	105	105	105	110	125	125	120	105	G	130	125	G	G	140	135	125	120	125	120	115	110	105	105
3	105	100	100	E	E	S	G	G	130	110	110	110	105	105	105	G	105	115	110	105	100	100	100	100
4	100	100	100	105	100	100	105	140	130	125	120	110	115	110	110	120	110	130	125	110	100	105	100	100
5	105	100	105	100	E	S	140	130	130	130	140	130	140	130	125	G	130	120	120	120	110	105	105	105
6	105	100	100	100	100	100	145	130	130	130	125	115	120	G	130	130	125	120	120	120	110	105	105	105
7	105	105	105	100	100	105	130	130	120	120	120	110	120	110	110	110	110	110	105	105	105	100	100	100
8	100	S	100	E	E	B	G	G	105	115	105	105	110	G	G	G	105	130	115	110	105	105	105	105
9	100	100	C	C	C	C	C	C	105	130	130	130	125	110	110	130	130	110	105	105	105	120	105	100
10	100	100	105	100	105	105	130	130	120	120	110	110	110	110	105	110	130	130	120	120	110	105	105	100
11	100	100	100	100	100	105	110	140	130	105	105	110	G	G	130	125	135	C	120	120	110	105	100	100
12	105	105	105	105	110	120	125	115	110	105	105	105	110	105	150	130	140	130	130	120	115	115	120	105
13	100	105	100	105	105	110	110	130	130	C	125	120	105	110	110	120	110	130	120	120	125	115	120	115
14	110	105	105	100	100	S	145	130	125	120	115	110	120	130	120	130	130	130	130	110	110	105	105	100
15	100	100	100	105	100	S	150	145	140	130	135	130	125	130	110	110	110	105	105	100	105	105	S	S
16	110	110	110	110	120	130	130	130	125	120	145	155	G	140	130	130	135	125	125	120	115	115	110	110
17	110	105	105	100	105	105	105	140	145	145	130	130	140	G	130	130	125	120	115	105	S	105	100	100
18	S	100	100	110	E	110	110	110	110	105	110	110	110	110	105	110	150	120	110	120	S	105	100	100
19	100	100	100	100	100	G	150	155	120	115	120	110	110	125	120	110	110	105	130	125	120	110	110	110
20	S	S	105	105	110	110	110	105	110	130	130	140	135	130	140	150	130	125	130	120	105	105	105	100
21	100	100	S	100	100	100	130	125	120	125	C	110	105	105	150	130	125	120	110	105	105	105	S	S
22	110	110	110	110	110	115	110	G	110	130	115	110	110	115	110	110	110	105	105	105	120	120	100	S
23	100	110	110	110	110	S	G	135	120	130	125	G	125	B	130	140	145	130	130	125	105	110	105	105
24	105	100	100	100	100	100	B	130	125	125	115	120	110	110	110	110	105	105	105	100	100	100	S	C
25	C	C	C	C	C	C	C	C	C	110	110	110	110	130	140	130	135	130	135	105	105	115	110	105
26	105	100	100	110	125	115	135	145	130	130	110	120	110	110	110	110	105	105	105	105	105	105	105	110
27	100	100	100	100	100	S	140	135	130	120	G	120	115	130	120	130	120	125	110	105	105	S	S	S
28	120	S	E	110	110	110	115	G	G	G	120	120	115	110	105	105	105	105	105	105	100	100	100	S
29	110	105	110	110	110	110	G	110	110	105	G	150	150	130	125	125	140	135	105	100	100	130	100	100
30	110	110	110	115	110	S	150	140	130	130	125	125	120	115	120	G	130	130	120	120	120	115	110	110
31	105	105	105	100	100	S	135	135	140	120	105	120	120	125	120	125	130	140	125	110	110	115	110	110
No.	28	27	27	27	24	18	23	24	29	28	28	30	28	25	30	27	31	30	31	31	29	30	27	25
Median	105	100	105	105	105	110	130	130	125	120	120	120	115	110	120	125	125	120	120	110	105	105	105	105

k'Es

Sweep 1.0 Mc to 20.0 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 11

IONOSPHERIC DATA

Jul. 1960

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	f5	f4	f5	f6					h2	h2l	h2l	l	h	l	l	l	l4	l2	l	l2	f3	f2	f2	f2
2	f2	f2	f4	f5	f6	l6	C3	h	l		h	h			h	h	h2	h2	h4	l5	f5	f3	f5	f3
3	f2	f	f2						h2	h2	h2	h	C2	l2	l		l	h3l2	C3	l3	f2	f2	f4	f9
4	f5	f7	f2	f2	f4	l3	l3	h	h2	h2	h2	h4	h2	h2	h2	h3	h3	h	h3	l4	f3	f	f3	f3
5	f2	f3	f5	f2			h2	h3	h3	h3	h	h	h	h	h2		h2l	h4	h5	C6	f3	f2	f3	f2
6	f2	f4	f3	f2	f	l	h2	h	h2	h2	h	h2	h		h2	h4	h4	h5	h2	C5	f4	f3	f4	f3
7	f2	f5	f4	f5	f5	l	h3	h2	h2	h2	h	h2	h4	h3	h2	h4	l5	l2	l7	l4	f4	f4	f4	f3
8	f2		f						l	C2	l2	l2	l				l	h2	C6	C6	f3	f4	f3	f3
9	f2	f4							l	h	h	h	h	l2	l	h2l	h	h2	l2	l3	f5	f2	f4	f3
10	f5	f4	f2f2	f2	f3	l4	h3	h2	h3	h2	h4	C5	C4	C2	l2	l	h	h3	h4	C4	f3	f4	f5	f5
11	f3	f2	f2	f2	f	l3	l2	h	h2	l	l	l			h	h	h l		h2l	l2	f4	f4	f5	f4
12	f2	f3	f2	f4	f8	l4	h3	h3	C4	l4	C2	C2	C4	l	h l	h2l	h	h	h3	C3	f6	f2	f5	f3
13	f4	f3	f	f2	f4	l	l4	h	h3		h3l	h2	l2	l3	l3	h l	C2l	h l	h3	C3	f4f	f2	f8	f3
14	f3	f2	f3	f3	f2		h3	h2	h4	h2	h2	h2	h3	h2	h2	h	h	h	h3	C2	f	f2	f6	f2
15	f4	f2	f2	f	f2		h2	h2	h2	h	h	h	h2	h	l	l	l	l6	l3	l2	f2	f		
16	f3	f4	f3	f5	f2	h2	h3	h	h2	h2	h	h		h2	h2	h	h	h2	h3	C2	f4	f2	f3	f3
17	f3	f4	f3	f3	f2	l3	l	h	h	h	h3	h	h		h	h2	h	h	h3	l2		f2	f2	f
18		f3	f2	f		l	l2	l2	l	l	l	C2	C	l3	l2	l3	h	h2	C3	l		f2	f3	f4
19	f	f3	f2	f2	f		h2	h	h	h	h	C2	C2	h	h	l2	l3	l2	h l3	C5	f3	f2	f3	f3
20			f	f4	f6	l7	l4	l3	h l	h2	h	h	h	h	h	h	h	h2	h2	C2	f2	f3	f2	f4
21	f2	f2		f4	f7	l	h	h2	h	h		l2	l	l	h	h3	h	h5	h6	C3	f4	f2		
22	f2	f2	f3	f2	f7	l	l		l h	h	C2	C2	C3	l2	l3	l3	l5	l2	l7	l6	f7f2	f f5	f3	
23	f	f2	f	f	f4			h	h2	h	h		h		h	h	h2	h	h2	C2	f2	f6	f3	f4
24	f3	f3	f3	f4	f2	l2		h	h	h	h3	h	C2	C3	C3	l3	l2	l3	l4	l3	f2	f		
25										C2	C2	C3	C3	h	h	h	h	h	h2l2	l	f2	f4	f2	f2
26	f2	f2	f	f2	f2	l4	h2	h2	h2	h	h4	h	h2	l2	l3	l2	l5	l7	l7	l3	f10	f8	f2	f f2
27	f2	f3	f4	f2	f		h2	h2	h	h2		h2	h2	h	h2	h	h2	h	C3	l2	f3			
28	f			f2	f2	l6	l3				h	h	h2	l2	l4	l3	l3	l2	l4	l2	f2	f2	f2	
29	f2	f2	f2	f2	f4	l3		l2	l3	l		h	h	h2	h2	h2l	h l	h l2	l4	l3	f4	f f3	f3	f3
30	f3	f2	f4	f6	f5		h	h	h3	h3	h2	h2	h	h2	h3		h	h	h2	C4	f6	f5	f2	f4
31	f4	f4	f3	f3	f2		h2	h	h	h2	l	h	h2	h	h3	h2	h	h	h2	C3	f2	f2	f4	f4
No.																								
Median																								

Types of Es

Sweep 1.0 Mc to 20.0 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 12

SOLAR RADIO EMISSION 200 Mc/s

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

HIRAISO

Time in U.T.

July 1960	Steady Flux					Variability				
	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	14	15	(14)	-	15	0	0	(-)	-	0
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	(14)	17	15	-	16	(1)	1	1	-	1
5	20	18	(16)	-	19	2	1	(1)	-	2
6	15	10	(12)	-	12	1	0	(1)	-	1
7	7	10	9	-	9	1	1	1	-	1
8	8	8	8	-	8	0	0	0	-	0
9	9	9	9	(8)	9	0	0	0	(0)	0
10	8	9	9	-	9	0	0	0	-	0
11	8	8	9	-	8	0	0	0	-	0
12	8	9	(10)	-	8	0	0	(0)	-	0
13	7	7	7	-	7	0	0	0	-	0
14	9	11	14	-	11	1	1	1	-	1
15	9	14	16	-	13	1	1	1	-	1
16	13	13	12	-	13	0	0	1	-	1
17	9	9	10	-	10	0	0	0	-	0
18	8	7	7	-	7	0	0	0	-	0
19	9	7	8	-	8	0	0	0	-	0
20	8	8	(9)	-	8	0	0	(0)	-	0
21	11	9	8	-	10	0	0	0	-	0
22	8	9	9	-	8	0	0	0	-	0
23	7	7	(7)	-	7	0	0	(0)	-	0
24	(6)	(6)	(6)	-	(6)	(0)	(0)	(0)	-	(0)
25	7	8	8	-	8	0	0	0	-	0
26	9	9	9	-	9	0	0	0	-	0
27	7	7	8	-	7	0	0	0	-	0
28	8	8	7	-	7	0	0	0	-	0
29	7	7	(8)	-	7	0	0	(0)	-	0
30	8	7	(8)	-	7	0	0	(0)	-	0
31	6	7	(11)	-	7	0	1	(1)	-	0

Outstanding Occurrences

July 1960	Start-time	Dura-tion	Type	Max. Int. Inst.	Max. Int. Smd.	Max. Time	Remarks
4	0648.3	0.6	CD/4	>1100	60	0648.5	off scale
4	0748.1	1.0	CD/4	>1100	450	-	off scale
6	0226.8	1.0	ECD/4	>1100	140	-	off scale
7	0201.5	8	CD/4	340	110	0204.2	
7	0228.2	1.5	ECD/4	1500	440	0228.5	

Errata

Outstanding Occurrences

June 1960	Start-time	Max. Int. Inst. for	Max. Int. Inst. read	Max. Int. Smd. for	Max. Int. Smd. read
20	0131.8	>900	>1100	≳500	≳640
20	0515.9	760	970	-	-
23	0329.3	360	460	70	90
23	0331.2	360	460	60	80
26	0435.0	520	670	70	90
26	0752	>1200	>1500	90	120
		-	-	10	10
26	2351.7	670	860	170	220
27	0005	-	-	30	40
27	0425	190	240	70	90
27	0445	370	470	70	90
29	0139.2	>1000	>1300	60	80
	0138	-	-	110	140
29	≲0214	260	330	60	80
	0221.8	380	490	160	200

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jul. 1960	Whole Day Index	L. N. 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	S. F. 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	3o	2 1 2	3 3 3 4	3 2 3 3	2 2 2 2	U U U U	---	---	
2	3+	2 2 2	4 4 3 3	3 3 3 2	2 2 2 1	U U U U	---	1800	146γ
3	3-	1 1 2	4 3 3 2	3 2 3 3	(2 2 2 2)	U U N N			
4	3o	(2) 2 3	3 3 3 3	3 2 2 3	(2 2 2 2)	N N N N			
5	3+	2 2 1	4 4 4 3	4 4 3 4	2 1 2 2	N N N N			
6	3o	1 3 2	4 4 3 2	3 3 3 3	2 2 2 1	N N N N			
7	2o	1 1 1	3 2 1 1	4 3 2 2	1 1 1 2	N N N N			
8	1+	1 1 1	1 1 1 1	2 2 2 2	1 2 2 2	N N N N			
9	2-	1 1 1	2 1 1 1	3 2 2 2	2 2 2 2	N N N N			
10	1+	1 1 1	1 2 2 1	2 1 2 1	2 2 2 2	N N N N			
11	2-	1 1 1	1 2 2 2	1 2 2 2	2 2 (2) 2	N N N N			
[12]	3-	2 1 2	2 3 3 3	3 2 3 3	2 2 2 2	N N N N			
[13]	2+	1 1 3	1 3 3 3	3 2 3 2	2 2 3 3	N N N N			
[14]	3+	3 3 4	3 3 3 4	3 3 3 3	3 3 3 3	N N N U	0447	---	
15	4-	4 4 -	4 4 4 5	3 3 3 (4)	3 3 4 3	U U U U	---	---	
16	4+	3 4 -	5 5 5 5	4 4 4 (5)	4 3 4 4	W W W W	---	2200	183γ
17	4+	4 (4) -	5 5 5 5	(5) 4 3 (3)	3 3 3 3	U U U U			
18	3+	3 3 3	5 (5) 4 3	3 3 3 3	3 2 2 2	U U N N			
19	3+	2 3 3	2 4 4 (4)	4 3 2 3	3 1 2 2	N N N N			
20	3o	2 2 3	(4) 2 2 2	3 2 3 3	2 1 1 1	N N N N			
21	3o	2 2 1	4 2 3 2	3 3 3 3	1 1 1 1	N N N N			
22	2-	2 1 1	2 2 1 1	3 2 2 (1)	1 1 1 2	N N N N			
23	1+	1 1 1	2 1 1 1	2 2 2 1	1 2 1 2	N N N N			
24	1+	2 2 1	1 1 1 1	1 2 2 1	1 1 1 1	N N N N			
25	1+	1 1 1	1 1 1 1	1 1 1 3	2 2 (2) 1	N N N N			
26	2-	1 1 1	2 1 1 2	3 2 3 2	(2 2 2 2)	N N N N			
27	2-	1 1 1	2 2 1 1	2 2 2 3	1 2 3 2	N N N N			
28	1+	1 1 1	1 1 1 1	1 2 3 1	2 2 2 2	N N N N			
29	2+	1 2 3	2 3 3 (4)	1 1 2 3	2 2 2 3	N N N N			
30	4+	3 2 (4)	(5 5 5 5)	4 4 (4 4)	3 3 (4 3)	U U U U			
31	4-	4 3 (4)	(4 4 4 5)	3 3 3 3	2 2 2 2	U U U U			

* = day of Special World Interval
( ) = inaccurate
[ ] = Regular World Day
--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

July 1960	S W F								S E A			Correspondence		
	Drop-out Intensities (db)					Start-time	Dura-tion	Type	Imp.	Start-time	Dura-tion	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN										
4		44				02.03	21	S	3						
4										23.20	25	1+	x		
12	12	30		13		23.45	21	S	2	23.45	50	2	x		

May. 1960

foF2

45° E Mean Time (G.M.T.+3h.)

Showa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	B	B	B	6.7F	6.7F	6.8F	6.7R	7.2	6.4R	B	6.0F	4.4R	3.3R	3.3R	B	B	B
2	B	B	B	4.1	5.3R	B	B	B	B	4.8R	6.3R	B	B	7.8R	5.4R	7.3	B	7.1F	6.0F	4.4F	2.7F	B	B	B
3	B	B	B	B	B	B	B	B	5.0F	4.7F	5.9F	6.4F	6.7F	7.6F	B	8.6F	8.3F	6.9F	7.7R	5.7F	B	B	B	B
4	B	B	B	B	3.1R	4.5R	4.4F	5.0F	5.2F	5.5F	6.8F	7.4	8.4	9.3	9.8	8.8F	7.5F	6.6F	5.3F	4.2F	2.6F	2.0R	B	B
5	B	B	B	B	4.1F	4.3	B	5.8F	5.3F	5.8	6.6F	7.6F	8.6	9.0	8.7	8.0	8.8	7.3F	5.4R	B	B	B	2.0R	B
6	B	B	B	B	B	B	4.1F	B	4.7	5.3F	B	B	B	B	B	6.8F	8.2F	9.3	B	3.5F	B	B	B	B
7	4.0F	B	B	4.1F	B	B	B	B	B	B	B	B	6.0R	B	6.6R	6.1F	5.4	B	B	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	6.8R	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	2.6R	C	6.0	9.4	9.0	10.6	11.2	9.0	8.9	8.7F	8.2	6.0	B	B	B	B
10	3.5R	B	B	B	B	B	B	4.7R	3.6F	5.0F	7.7	8.4	B	10.9	9.9	10.2	8.6F	8.7F	8.5F	6.0R	B	B	B	B
11	B	B	B	B	B	B	B	5.1F	B	B	B	B	B	B	6.3F	7.1F	6.6F	8.0F	7.1F	4.5R	B	B	B	3.7R
12	B	B	B	B	B	B	B	B	B	B	B	5.1F	B	8.0F	10.7R	10.4	15.0R	B	F	B	R	B	B	B
13	B	B	B	B	B	B	B	B	4.6R	B	6.3R	8.1F	9.0F	10.4	10.2	9.4	9.1R	8.3F	7.5F	5.4R	B	B	B	B
14	B	B	B	B	B	4.5R	B	B	B	B	B	5.4F	B	B	9.7R	9.3R	9.7F	9.0F	8.0F	6.9F	5.9F	B	B	B
15	R	3.4R	B	B	3.4R	F	4.6F	5.0F	6.0F	6.0F	6.9R	8.0F	8.2F	8.8F	R	10.0F	10.3	11.0F	F	F	S	B	B	B
16	4.9R	3.6F	B	B	B	B	4.3F	4.7F	3.7F	B	6.7F	8.3F	9.0F	8.6F	9.9F	8.3F	7.6F	7.6F	6.5F	B	5.5F	5.3F	4.9F	B
17	4.7R	4.3R	4.4R	3.6F	6.1F	B	5.1F	6.1F	5.6F	5.5F	C	6.7	6.9F	7.9F	S	8.9F	5.5F	5.0	6.5F	D4.8F	4.1F	B	B	B
18	B	U3.7F	B	B	B	B	B	B	B	5.0F	5.6F	8.6F	9.1F	9.5F	9.4F	8.9F	7.3F	7.0F	5.6F	5.0F	4.0F	B	B	B
19	2.8R	B	B	B	B	4.8F	5.0F	4.8F	4.7F	4.3F	B	6.0F	6.8F	8.3F	8.8F	8.3F	7.3F	5.8F	4.6F	3.0F	2.2R	B	1.9R	B
20	3.3R	3.6R	B	2.6R	2.7R	2.7R	3.1R	3.3F	2.7R	3.7R	5.4F	8.0F	8.4F	8.8F	9.1R	7.3F	7.6F	7.5F	4.9F	4.6F	2.7F	B	B	B
21	2.1R	B	2.0R	B	4.7F	4.6F	5.3F	F	F	4.8F	5.7F	7.2F	8.3F	9.7F	5.3F	8.5F	7.6F	7.7F	5.9F	5.1R	B	B	B	B
22	B	3.6R	B	3.4	R	R	R	R	2.6R	3.6F	4.7F	7.3F	9.3	9.3F	8.7F	6.5F	5.8F	4.1F	3.0R	2.1R	B	B	B	B
23	B	B	2.0R	B	2.4	2.5	2.9	2.7R	1.9R	2.8	4.5R	6.4F	8.1F	9.4	9.6F	8.0F	6.9	5.5F	4.8F	4.4F	3.5F	B	U4.0R	B
24	B	B	B	F	B	4.0F	F	B	B	B	8	8	B	B	5.1F	6.1R	7.4F	7.6	B	B	B	B	B	B
25	B	B	B	B	F	B	B	2.1R	B	2.4R	S	4.5F	5.0F	6.0F	6.9S	5.4F	7.0F	5.0F	4.7F	B	B	B	4.3F	B
26	B	B	B	B	B	B	B	B	B	B	B	B	4.6F	6.0F	7.3R	7.3R	6.9F	5.9F	B	B	R	B	B	B
27	B	B	B	B	B	B	B	B	B	B	B	5.5F	6.1F	6.5F	7.6F	6.3F	5.3F	5.1F	B	B	B	B	B	B
28	B	B	B	B	B	B	B	B	4.0F	B	4.3R	5.7F	6.9F	7.4F	8.4F	6.3F	5.1F	4.4F	3.6F	2.0F	2.0R	B	B	B
29	B	B	B	B	B	B	B	B	4.3R	5.0F	B	B	5.0F	5.4	6.1F	6.0F	5.0	3.9F	3.5F	2.1R	2.1R	B	B	B
30	U3.9F	B	B	B	B	B	4.8	5.3F	4.0F	4.1F	4.9R	4.9R	5.4R	6.4R	6.9F	S	9.3R	R	R	B	B	B	B	B
31	B	B	B	B	B	B	B	B	B	B	4.2F	6.0F	7.4	8.2	8.3	7.5	C	C	3.7	C	2.2R	B	B	B
No.	8	6	3	5	8	8	10	12	17	17	18	23	23	25	26	29	28	26	22	19	13	2	5	1
Median	3.7	3.6	2.0	3.6	3.8	4.4	4.5	4.9	4.3	4.8	6.0	6.7	7.4	8.3	8.6	8.0	7.6	7.2	5.5	4.5	2.7	3.6	4.0	3.7
U.Q	4.4	3.7	2.2	4.1	5.0	4.6	5.0	5.2	5.1	5.4	6.7	8.0	8.6	9.4	9.7	8.9	8.4	8.0	7.1	5.4	4.0		4.6	
L.Q	3.0	3.6	2.0	3.0	2.9	3.4	4.1	3.8	3.2	3.9	5.5	5.7	6.1	7.0	6.9	6.6	6.8	5.8	4.6	3.3	2.2		2.0	
Q.R	1.4	0.1	1.2	1.1	2.1	1.2	0.9	1.4	1.9	1.5	1.2	2.3	2.5	2.4	2.8	2.3	1.6	2.2	2.5	2.1	1.8		2.6	

Observed by M. Ose

foF2

Sweep 1 Mc to 20 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA IN JAPAN FOR JULY 1960
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