

F — 151

IONOSPHERIC DATA IN JAPAN

FOR JULY 1961

Vol. 13 No. 7

Issued in September 1961

Prepared by

THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS

KOKUBUNJI, TOKYO, JAPAN

F → 151

IONOSPHERIC DATA IN JAPAN

FOR JULY 1961

Vol. 13 No. 7

THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

CONTENTS

	Page
Site of the radio wave observatories	2
Symbols and Terminology	2
Graphs of Ionospheric Data	8
Tables of Ionospheric Data at Wakkanai	9
Tables of Ionospheric Data at Akita	21
Tables of Ionospheric Data at Kokubunji	33
Tables of Ionospheric Data at Yamagawa.....	47
Data on Solar Radio Emission	59
Radio Propagation Conditions.....	61

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_oF2) The ordinary-wave critical frequency for the $F2$, $F1$ and E layers respectively.
f_oF1	
f_oE	
f_oE_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.
$(M3000)F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$(M3000)F1$	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 .
h_pF2	The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to $0.834 f_0F2$.
y_pF2	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 h_pF2 and the virtual height at $0.969 f_0F2$).

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

A	Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s .
B	Measurement influenced by, or impossible because of, absorption in the vicinity of f -min.
C	Measurement influenced by, or impossible because of, any non-ionospheric reason.
D	Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.
E	Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.
F	Measurement influenced by, or impossible because of, the presence of spread echoes.
G	Measurement influenced or impossible because the ionization density is too small compared with that of a lower thick layer.
H	Measurement influenced by, or impossible because of, the presence of a stratification.
L	Measurement influenced by or impossible because the trace has no sufficiently definite cusp between layers.
M	Measurement questionable because the ordinary and extraordinary components are not distinguishable.
N	Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.
O	Measurement refers to the ordinary component.
R	Measurement influenced by, or impossible because of, absorption in the vicinity of a critical frequency.
S	Measurement influenced by, or impossible because of, interference or atmospherics.
V	Forked trace which may influence the measurement.
W	Measurement influenced 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 preceding symbol on monthly tabulation sheets.

D	<i>greater than.....</i>
E	<i>less than.....</i>
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* At flat E_s trace at or below the normal E layer minimum virtual height. Use in daytime only.
- c* An E_s trace showing a relatively symmetrical cusp at or below f_0E . This is usually continuous with the normal E trace though, when the deviative absorption is large, part or all of the cusp may be missing. Use in daytime only.
- h* An E_s trace showing a discontinuity *in height* with the normal E layer trace at or above f_0E . The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. Use in daytime only.
- q* 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 thick layer included in the E layer tables: $f_0E, h'E$) by the lack of group retardation in the F traces at corresponding frequencies.
- a* An E_s pattern having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes exceed over several hundred kilometers of virtual height.
- s* A diffuse E_s trace which rises steadily with frequency. This usually emerges from another E_s trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace, *l, h* or *f*, and frequencies which greatly exceed the E layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type E_s, q , at frequencies near the E region critical frequency.
- f* An E_s trace which shows no appreciable increase of height with

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

a. Daily Data

Steady flux

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

Variability

Variability is expressed in four grades as follows:

0=no burst

1=a few bursts

2=many bursts

3=exceptionally many bursts

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

b. Outstanding occurrences

Starting time

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

Maximum time

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

Time of end

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

Type

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

S: simple rise and fall of intensity

C: complex variation of intensity

A: appears to be part of general activity

D: distinct from (i.e. apparently superposed upon) the general

activity

M: multiple peaks separated by relatively long period of quietness

F: multiple peaks separated by relatively short period of quietness

E: sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

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

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

1=very poor (very disturbed)

4=normal

2=poor (disturbed)

5=good

3=rather poor (unstable)

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

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

N = normal

U = unstable

W = disturbed

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

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

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

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

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

Circuits and Drop-out intensity

W S WWV 20 Mc, 15 Mc and 10 Mc (Washington)

S F Various commercial circuits (San Francisco)

H A WWVH 15 Mc and 10 Mc (Hawaii)

T O JJY 15 Mc and 10 Mc (Tokyo)

S H BPV 15 Mc and 10 Mc (Shanghai)

L N Various commercial circuit (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 (none) and 20 Mc (").

*Start-times and Durations**Types*

S : sudden drop-out and gradual recovery

Slow : slow drop-out taking 5 to 15 minutes and gradual recovery

G : gradual disturbances; fade irregular in both drop-out and recovery

Importances

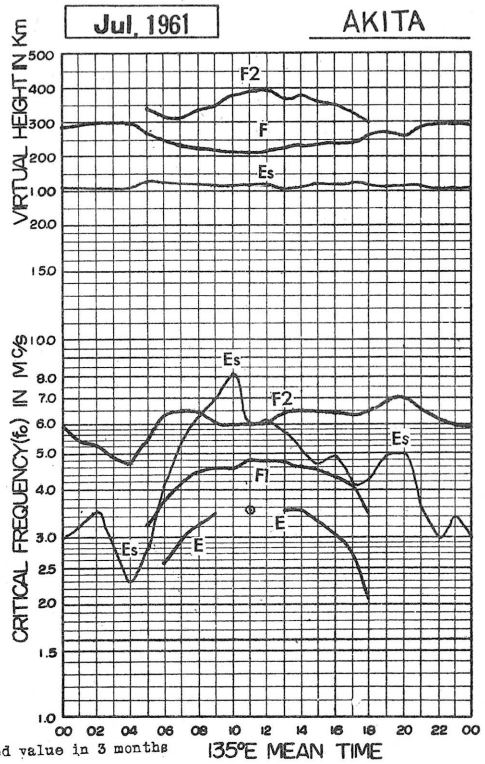
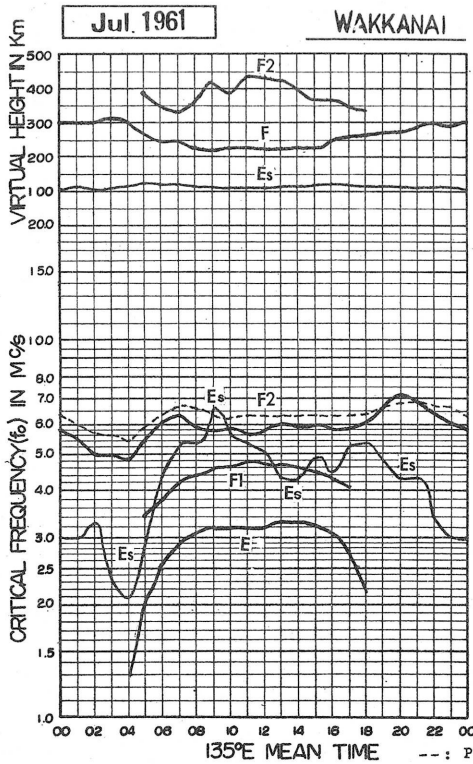
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

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*.

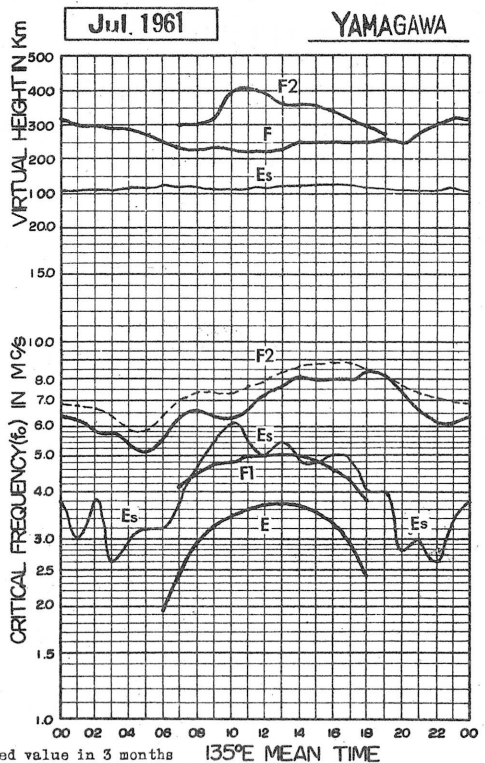
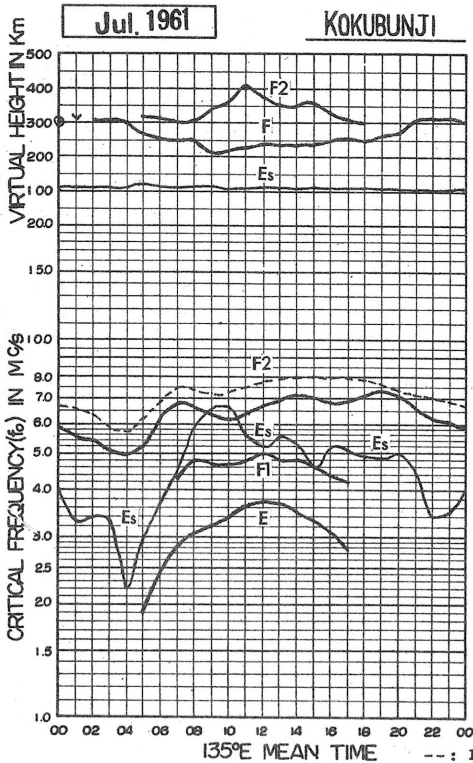
Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



advances by R.R.L.

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

foF₂

Jul, 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.8	5.6	5.0	5.0	5.3	6.0	6.5	6.4	6.8	5.8	6.0	5.6	6.0	6.0	6.0	6.2	6.5	7.0	7.3	8.0	8.1	7.6	7.4	6.9
2	6.3	F	F	F	4.1	4.4	5.3	5.7	5.6	A	A	A	A	5.5	5.8	5.6	5.6	6.0	6.0	6.4	6.7	6.6	6.7	5.9
3	5.5	5.0	4.9	4.7	4.3	5.4	6.5	6.4	6.1	A	A	A	A	5.2	5.4	5.4	5.4	5.3	5.9	6.8	6.8	6.4	6.3	6.1
4	6.1	5.8	5.4	5.0	4.7	5.0	5.8	5.7	5.7	5.9	6.1	5.8	5.8	6.1	6.3	6.1	A	A	A	6.1	7.1	7.1	A	F
5	5.5	5.3	5.0	4.7	5.0	5.6	6.3	7.1	7.7	7.1	7.0	6.4	6.0	6.0	6.3	7.0	6.5	6.5	6.3	6.1	6.6	6.8	6.1	6.4
6	5.6	5.0	F	F	4.3	5.0	6.0	5.6	5.5	5.2	4.9	A	A	A	A	5.0	5.1	5.3	5.4	5.8	6.3	5.6	5.5	5.4
7	5.4	5.2	5.0	4.5	4.3	5.0	6.4	7.4	6.2	5.1	5.5	5.4	A	A	A	6.0	6.0	5.6	6.0	6.3	6.3	6.6	6.6	6.5
8	6.2	6.1	6.0	F	F	5.0	5.2	6.2	5.4	5.1	5.1	A	A	A	A	5.5	5.3	5.6	6.1	6.6	7.1	6.5	6.5	A
9	A	F	F	F	4.9	5.2	5.7	6.4	C	C	C	C	C	C	C	C	C	C	6.3	7.1	7.4	6.8	5.6	A
10	S	F _s	F _s	F	F	5.8	6.4	7.2	7.0	6.0	6.3	5.9	5.9	5.9	6.3	6.2	6.2	6.8	7.7	8.2	7.3	7.3	6.9	6.8
11	6.6	5.8	4.3	4.4	4.1	6.0	7.4	7.5	A	A	R	5.3	5.4	W	5.1	5.3	5.4	5.2	5.6	7.3	8.0	6.6	6.0	5.7
12	5.4	5.5	5.4	5.1	5.1	6.3	8.0	8.5	6.6	6.3	6.1	5.8	6.8	7.0	6.3	6.7	6.4	6.3	6.5	7.6	7.8	7.9	7.6	7.6
13	6.5	5.8	5.6	5.5	5.4	6.1	6.7	7.2	A	A	A	5.3	5.7	5.8	5.5	6.0	5.9	5.9	5.8	6.1	7.2	7.4	7.3	6.0
14	5.8	5.1	4.9	5.1	5.1	5.3	5.5	5.3	A	A	A	A	5.5	5.4	5.4	5.6	5.2	5.4	5.7	6.7	F _s	F	F	6.0
15	F	F	F	F	F _H	4.3	4.9	4.5	G	G	G	G	5.0	W	4.7	4.9	5.3	4.6	4.6	5.3	5.6	6.0	5.6	5.6
16	5.0	5.0	4.6	4.3	4.1	5.0	5.3	5.3	5.0	5.2	5.5	5.8	5.9	6.2	6.3	5.9	5.7	6.3	6.0	6.4	6.3	6.6	6.3	6.0
17	5.8	5.8	5.8	5.3	4.5	5.5	6.2	7.6	7.3	7.5	5.8	6.0	6.8	7.7	7.5	6.8	6.7	6.6	7.1	8.0	8.3	8.6	8.5	8.3
18	7.6	7.5	7.3	5.7	5.3	5.0	5.4	6.2	5.8	5.4	5.9	5.2	W	6.3	6.1	6.3	6.0	6.0	6.3	6.3	6.3	6.3	6.3	5.9
19	5.7	5.5	5.1	4.8	3.8	4.3	4.5	4.9	4.5	4.9	R	W	5.2	5.4	5.2	5.5	5.0	5.1	5.0	5.1	5.9	6.3	6.3	5.8
20	F	F	F	C	C	C	C	C	C	C	C	C	C	C	C	6.4	6.7	7.2	7.8	8.1	8.5	F	F	F
21	6.6	6.5	6.3	5.6	5.3	5.6	6.3	7.0	7.0	7.4	8.4	C	C	C	C	C	9.3	8.4	8.0	8.2	7.1	7.5	7.2	6.8
22	7.0	6.8	6.3	5.5	5.3	5.5	6.2	6.8	5.9	5.1	W	5.6	6.0	6.3	6.1	6.3	5.8	6.3	6.6	7.6	7.5	F	F	F
23	5.8	5.5	5.5	5.5	5.5	5.5	6.0	6.8	6.8	5.7	5.4	5.0	5.7	5.4	5.3	5.3	5.3	5.3	5.8	6.1	6.5	6.3	F	A
24	A	F	F	F	F	5.3	5.5	6.0	5.9	6.0	5.9	5.6	5.6	5.6	5.0	5.6	6.0	6.2	6.1	6.5	7.1	7.0	F	A
25	5.5	5.2	F	F	F _s	6.0	6.2	5.6	5.3	6.0	5.6	5.2	5.2	5.0	5.9	5.4	5.6	5.7	5.9	6.0	6.1	5.6	F	5.7
26	4.6	4.5	F	F	F	6.1	7.3	7.3	8.5	7.6	6.0	5.8	5.3	5.4	5.8	5.6	5.7	C	C	A	7.2	7.3	6.5	6.0
27	5.0	5.1	5.0	4.6	4.6	5.4	5.7	5.7	4.8	5.4	6.1	6.9	6.0	6.3	5.3	5.7	5.8	5.7	6.3	7.0	F	F	F	F
28	F	F	3.5	3.3	3.2	4.2	5.6	5.3	5.4	5.1	5.0	5.1	5.2	5.3	5.5	6.1	5.7	5.5	5.5	6.1	7.0	7.0	6.6	F
29	F	F	F	5.1	5.0	5.6	6.0	6.8	7.4	6.6	6.4	6.6	6.5	6.4	6.4	6.8	6.9	6.0	6.1	6.6	6.6	7.3	7.7	4.8
30	4.4	4.4	4.3	4.3	4.3	5.3	6.7	6.6	6.2	5.6	5.6	C	C	C	C	C	C	C	C	C	7.1	7.3	6.3	4.8
31	5.5	5.0	4.9	4.9	5.0	6.0	7.0	6.6	5.6	6.2	6.1	7.0	5.7	6.0	5.9	6.3	5.6	5.6	5.8	7.0	7.6	7.6	7.5	6.4
No.	24	23	21	21	24	30	30	30	26	24	22	21	20	21	25	28	28	27	28	29	29	26	22	21
Median	5.8	5.5	5.0	5.0	4.8	5.4	6.1	6.4	5.9	5.8	5.9	5.6	5.8	6.0	5.9	6.0	5.8	5.9	6.1	6.6	7.1	6.8	6.4	6.0
U.Q.	6.2	5.8	5.7	5.4	5.2	5.8	6.5	7.1	6.8	6.2	6.1	6.0	6.0	6.3	6.3	6.3	6.3	6.3	6.4	7.4	7.4	7.4	7.2	6.6
L.Q.	5.4	5.0	4.9	4.6	4.3	5.0	5.5	5.7	5.4	5.2	5.5	5.2	5.4	5.4	5.4	5.5	5.4	5.5	5.8	6.1	6.5	6.4	6.3	5.8
Q.R.	0.8	0.8	0.8	0.8	0.9	0.8	1.0	1.4	1.4	1.0	0.6	0.8	0.6	0.9	0.9	0.8	0.9	0.8	0.6	1.3	0.9	1.0	0.9	0.8

Sweep 1.0 Mc to 18.2 Mc in 1 min see in automatic operation.

The Radio Research Laboratories, Japan.

foF₂

W

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

foF1

Jul. 1961

Day	00	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	4.2	A	A	A	A	A	A	A	A	4.4 ^A	A	A					
2						A	A	A	A	A	A	A	A	4.6	4.4	4.4	4.0 ^A	4.0 ^A	A					
3			2.8			3.6	A	A	A	A	A	A	A	A	A	A	A	4.0	3.5 ^A	A				
4						3.3	A	A	A	A	A	A	4.7 ^A	4.7	4.5	A	A	A	A	A				
5						A	A	A	A	A	A	A	4	4.5	4.5 ^F	4.5	A	A	A	A				
6						3.4	A	A	A	A	A	A	A	A	A	A	4.3 ^A	4.0						
7						3.5	A	A	4.6 ^A	4.6	4.7	A	A	A	A	A	4.3	4.1	A					
8						A	A	A	A	A	A	A	4.6 ^A	4.6	4.3	A	A	A	A					
9						A	4.1	A	C	C	C	C	C	C	C	C	C	C	C					
10						A	A	A	A	4.6 ^A	4.6	4.8 ^A	4.8 ^A	4.8 ^A	4.5 ^A	A	A	A	A					
11						3.4	A	A	A	A	A	4.6 ^A	4.7	4.6	4.6	4.3	4.3	4.1 ^A	A	A				
12						4.2	4.3 ^A	4.5	4.8	5.0 ^A	5.0	4.9	4.9	4.9	5.0	A	A	A	A					
13						A	A	A	A	A	A	A	4.8	4.7	4.8	A	A	A	A					
14						3.3 ^A	3.6	A	A	A	A	A	4.8 ^A	4.8 ^A	4.8	4.6	4.3	4.1 ^A	3.7 ^L	3.0				
15						3.2	3.7	4.0	4.4	4.4	4.5	4.4	4.4	4.5	4.4	4.4	4.3 ^A	4.2	3.8	L				
16						3.6	3.8	4.2	4.4 ^A	4.6	4.7	5.0	5.0 ^H	4.9	4.6	4.5	4.5	A	A					
17						A	A	A	A	A	A	4.8	5.0	5.0	4.9	4.7	4.6							
18						3.6	3.8 ^A	4.2	4.6	4.6 ^A	4.6	5.0	4.8	4.8 ^A	5.0	4.8	4.8 ^A	A						
19						2.5	3.2	3.6	4.2	4.2	4.5	4.6 ^R	4.6	4.6	4.6 ^A	4.5	4.5	A	A	L				
20						C	C	C	C	C	C	C	C	C	C	A	4.3	4.3	A					
21						3.5	A	A	A	5.0	A	C	C	C	C	C	4.7 ^A	L						
22						A	A	A	A	4.8	4.9	5.0 ^A	4.9	4.9	4.7	4.7	A	A	A					
23							4.1	4.3 ^A	4.5 ^A	4.6	4.8	4.8	4.7 ^A	4.6 ^A	4.8	4.5	4.3	4.0	A					
24						2.3	3.2	4.0	4.1	4.2	4.4	4.6	4.8	4.9	4.8	4.7	4.7	4.4	4.1					
25						4.0 ^A	4.2 ^A	4.5	A	A	A	A	A	4.7 ^H	4.6	4.4	4.3	4.2						
26						A	4.3	4.7 ^A	4.8 ^A	4.8	4.7 ^A	4.7	4.7	4.6	4.6	4.5 ^A	4.3	C	C					
27						3.9	4.2 ^A	4.4	4.4	4.4	4.5 ^A	4.5	4.6	4.8	4.5	4.3	4.2	4.0	3.3	2.5				
28						A	3.6	A	A	A	4.5	4.5	4.6 ^A	4.7	4.7 ^A	4.5 ^A		A						
29							4.2 ^A	4.4 ^A	4.5	4.9	4.6	4.7	4.8	4.7	4.6	4.5 ^H	4.3	C	C					
30							3.9	4.1	4.3	4.8	4.6	C	C	C	C	C	C	C	C					
31								4.1	4.3	4.5	4.5	4.6	4.6	4.6	4.5	4.4								
No.						3	12	14	14	13	15	16	17	23	22	19	20	12	4	2				
Median						2.5	3.4	3.8	4.2	4.4	4.6	4.8	4.7	4.7	4.6	4.5	4.3	4.1	3.6	2.8				

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 1.8 Mc in 1 min in automatic operation.

foF1

W 2

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

f_oE

135° E Mean Time (GMT.+9h.)

Jul, 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					1.60 ^S	2.10	2.60	2.95	3.10	3.15	3.25	3.25	3.25	3.25	3.10	3.10	3.00	2.75	2.70					
2					1.35	2.10	2.50	2.85	3.10	3.20	3.20	3.25	3.00	3.30 ^A	3.25	2.90	3.00	2.65	S	S				
3					S	2.00	2.60	3.00	3.10	3.25	3.20	3.20	2.95	3.40	3.35	3.00	3.00	A	A	S				
4					S	2.10	2.60	3.00	3.20	3.25	3.20	3.10	3.05 ^A	3.00	3.30	3.20	3.05	2.75	S	S				
5					S	S	2.60	2.95	3.15	3.10	A	A	A	A	3.00	2.95	3.05	2.75	A	S				
6					A	2.05	2.40	2.80	3.00	3.10	A	A	A	3.45	3.25	3.00	A	A	S	S				
7					1.55	2.15	2.50	3.00	3.15	3.15	3.15	3.20	3.25	3.15	A	A	A	2.90	2.70	S				
8					A	2.15	2.50	2.95	3.10	3.15	3.10	3.25	3.20	3.20 ^R	3.20	3.20	3.10	2.80	2.75	S				
9					S	S	2.90	2.95	C	C	C	C	C	C	C	C	C	C	C	A	S			
10					A	2.05	2.45	3.00	3.05	3.15	3.10	3.00	A	A	A	A	3.05	2.75	2.20	S				
11					S	2.15	2.60	2.95	3.15	3.25	3.25	3.20	3.35 ^A	3.50	3.40	3.30	3.10	2.75	2.20	S				
12					S	2.25	2.65	3.00	3.10	3.25	3.20 ^B	3.10 ^A	3.10	3.25 ^A	3.50 ^A	3.45 ^A	3.20	3.00	S	S				
13					1.35	2.25	2.60	3.10	3.20	3.25	3.25	3.30	3.10	3.00 ^B	3.00	3.00	3.10 ^A	2.90	2.75	S				
14					S	2.15	2.55	2.95	3.10	3.20	3.25	3.25	3.00	3.15 ^A	3.00	3.00 ^A	3.00	2.70	2.25	S				
15					1.50	2.15 ^A	2.50	2.90	3.05	3.20	3.20	3.20	3.05	3.05	3.40	3.30	3.15	2.70	2.25	S				
16					2.20	2.65	2.90	3.10	3.10	3.20	3.30	3.15	3.30 ^A	3.65	3.60	3.45	3.15	2.75	2.00	S				
17					1.35	2.15	2.65	2.95	3.10	3.15	3.15	3.05	3.00	A	A	A	3.10	A	A	S				
18					A	2.15	2.55	3.05	3.15	3.25	3.35	3.40	3.50	3.65	3.15	3.20	3.20	2.85	2.25	S				
19					1.20	2.05	2.60	2.95	3.20	3.20	3.15	3.10	3.70	3.25	3.10	3.05	3.15	2.40	A	S				
20					C	C	C	C	C	C	C	C	C	C	C	A	A	2.90	2.75	S				
21					A	2.10	2.60	3.00	3.15	3.30	A	C	C	C	C	C	A	A	A	S				
22					1.20	2.00	2.55	3.05	3.20	3.25	3.30	3.20	3.20 ^A	3.30 ^A	3.55	3.30	3.10	2.85	2.20	S				
23					A	1.90	2.35	2.90	3.05	3.15	3.30 ^A	3.45	3.25	3.30	3.15 ^A	3.25 ^A	3.15	A	A	S				
24					A	2.00	2.50	2.90	3.05	3.10	3.00	3.25 ^A	3.50 ^A	3.55	3.70	3.30	3.10	2.80	2.15	S				
25					E	2.05	2.50	2.95	3.15	3.25	3.30	3.10	3.20	3.20	3.50	3.20	3.05	2.75	2.05	S				
26					1.25	2.00	2.40	2.90	3.10	3.15	3.25	3.00	3.15 ^A	3.25 ^A	3.20	3.30	3.00	C	C	S				
27					1.10	1.90	2.50	2.90	3.00	3.20	3.30	3.20	3.30	3.00 ^A	3.15	3.20	3.00	2.55	2.00	S				
28					A	1.95	2.30	2.80	3.00	3.10	3.25	3.10	B	A	A	3.00	3.00	2.70	2.05	S				
29					1.30	2.00	2.50	2.90	3.00	3.10	3.00	3.30	3.30 ^R	3.25	3.30	3.10	3.05 ^A	2.70 ^A	2.00	S				
30					A	A	2.40	2.90	3.00	3.20	3.15	C	C	C	C	C	C	C	C	C	S			
31					A	2.00	2.30	2.70	2.85	3.00	3.15	2.90	3.00	3.25	3.30	3.25	A	A	A	S				
No.					11	27	30	30	29	29	26	25	23	22	23	24	24	22	17					
Median					1.30	2.10	2.50	2.95	3.10	3.20	3.20	3.20	3.20	3.25	3.25	3.20	3.10	2.75	2.15					

f_oE

Lat. 45° 23.6' N
Long. 141° 41.1' E

IONOSPHERIC DATA

Wakkanai

135° E Mean Time (GMT.+9h.)

Jul. 1961

foEs

Day	00	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	S	3.0	3.3	3.9	4.6	7.3	7.3	7.3	6.3	6.2	6.3	5.1	5.5	7.3	7.2	7.0	7.0	7.2	3.6	3.6	4.0	
2	14.5	16.6	16.0	13.3	9	3.5	3.5	4.8	7.0	7.1	7.3	7.2	7.3	4.0	4.8	5.0	4.0	15.7	13.8	13.6	16.0	16.0	15.3	E	7.8	
3	15.9	12.3	12.1	E	S	3.5	4.5	7.3	7.9	7.8	7.9	7.8	7.1	7.8	7.1	7.8	7.8	7.5	7.5	7.3	7.5	7.5	7.5	7.5	7.5	
4	14.3	2.0	E	12.3	S	3.0	3.0	7.3	7.3	7.3	7.3	7.5	5.0	4.3	4.3	7.5	7.2	7.8	7.6	7.6	7.5	7.8	7.8	7.5	7.3	
5	16.3	15.3	13.5	13.1	12.8	S	14.6	7.5	5.2	7.9	7.0	7.6	7.5	4.2	4.0	4.0	4.2	14.7	14.3	14.3	15.0	4.3	7.3	7.4	7.1	
6	16.3	14.3	15.3	13.5	14.7	3.3	3.6	15.4	15.6	17.5	15.0	17.1	16.3	16.8	18.6	15.3	11.0	14.3	S	S	3.0	7.0	5.3	7.3	7.3	
7	E	E	E	E	9	9	15.3	10.3	7.0	5.8	4.0	9	11.2	10.3	16.6	8.1	15.3	4.1	15.3	15.0	18.3	14.3	E	7.3	7.3	
8	E	12.9	15.3	12.9	16.3	16.4	15.5	14.9	17.4	16.6	7.6	4.8	15.3	4.6	4.3	3.9	4.3	17.8	17.4	17.1	15.3	17.3	11.8	16.0	16.0	
9	17.2	15.3	15.0	14.8	S	16.4	3.5	15.6	C	C	C	C	C	C	C	C	C	C	14.3	12.8	14.3	14.0	16.0	17.5	17.5	
10	16.3	16.3	14.5	13.0	15.0	14.3	15.5	10.0	16.3	16.0	15.5	16.0	19.0	15.8	16.0	4.5	16.0	15.3	16.3	17.3	13.3	15.0	17.3	E	E	
11	14.3	13.3	13.3	E	9	9	14.5	16.3	18.6	17.3	15.0	16.0	4.0	4.0	4.0	3.8	4.3	15.5	14.6	14.3	12.3	12.5	2.8	12.8	12.8	
12	E	13.0	E	E	13.3	4.3	3.5	15.4	14.3	4.3	16.0	14.9	3.9	14.3	4.2	17.0	15.8	10.4	16.3	15.3	16.4	15.3	16.3	15.1	15.1	
13	13.3	14.3	14.3	12.8	9	3.3	18.0	16.5	17.1	17.1	12.1	14.8	14.3	4.0	16.5	16.3	14.6	16.5	15.8	16.3	E	16.3	13.3	12.3	12.3	
14	E	12.3	12.3	E	9	14.0	3.6	15.3	17.3	11.6	17.3	18.0	18.4	16.4	3.5	14.3	15.6	16.0	9	9	9	E	E	E	E	
15	E	1.5	14.3	12.5	9	2.5	9	3.5	14.6	3.9	3.9	4.0	3.9	3.9	5.0	5.2	4.1	3.5	3.1	2.5	12.3	E	12.3	3.8	3.8	
16	14.3	E	E	1.6	17.5	2.9	3.5	3.5	14.6	4.1	4.3	4.0	14.6	9	9	4.5	4.5	16.3	12.3	15.1	12.8	E	17.3	14.3	14.3	
17	14.3	15.0	13.5	13.0	9	14.8	16.0	16.3	17.0	17.0	18.0	14.6	15.3	14.3	4.0	14.3	3.9	3.7	14.3	14.3	13.0	E	13.3	12.9	12.9	
18	12.3	15.4	16.3	12.6	13.0	9	16.3	3.6	15.3	16.0	19.5	15.6	4.5	17.3	19.0	9	15.1	15.3	14.3	16.5	13.3	16.1	12.3	13.0	13.0	
19	E	12.0	E	E	2.3	3.0	14.3	3.6	3.9	4.0	4.1	15.3	9	16.3	16.3	19.0	7.5	17.3	17.3	13.3	14.3	14.3	18.3	13.3	15.0	
20	17.5	14.3	14.5	C	C	C	C	C	C	C	C	C	C	C	C	10.0	13.3	4.0	16.3	14.1	16.3	16.3	14.3	12.5	12.5	
21	13.0	13.5	E	13.0	12.3	2.8	15.3	18.1	17.3	19.0	12.8	C	C	C	C	10.0	15.3	14.3	16.3	14.3	15.3	13.3	16.3	14.5	14.5	
22	12.6	14.6	E	2.0	2.1	16.3	16.0	16.0	15.3	16.0	15.8	19.8	15.0	4.0	9	9	16.6	17.3	17.0	16.3	18.0	16.1	E	E	E	
23	12.3	E	E	E	2.0	2.8	13.3	14.1	17.3	14.6	3.9	15.5	16.5	16.3	15.3	14.3	9	15.3	16.3	13.0	E	13.0	15.3	18.3	18.3	
24	17.0	15.1	E	12.3	12.3	2.6	14.2	14.3	16.9	17.0	14.3	4.0	4.0	14.3	9	15.0	3.8	4.1	15.4	14.5	12.0	17.3	13.0	14.3	14.3	
25	13.5	12.3	13.5	13.0	12.1	14.3	14.3	16.0	4.0	15.3	17.0	15.3	15.5	9	4.8	15.3	3.8	4.1	13.8	15.5	17.3	13.3	13.4	2.9	2.9	
26	12.5	15.0	13.3	E	9	2.8	15.0	14.3	15.3	11.1	14.6	10.3	4.3	3.9	14.3	16.3	5.0	C	C	17.3	15.3	13.0	14.3	14.3	14.3	
27	14.3	12.3	2.8	E	9	9	3.3	15.3	15.0	4.1	14.5	9	4.3	4.0	4.5	4.2	4.1	4.1	9	S	E	E	E	E	E	
28	E	E	13.5	17.3	3.6	17.1	15.3	14.3	14.3	17.3	15.6	3.5	15.3	16.0	15.6	16.3	9	17.3	13.5	13.1	12.3	12.5	E	E	E	E
29	E	1.6	1.6	E	9	3.7	3.4	14.3	14.5	15.0	3.9	9	9	4.1	4.1	3.4	13.4	2.9	9	13.3	14.3	17.2	13.0	13.0	13.0	
30	12.5	E	15.3	13.3	12.0	3.0	14.3	14.3	3.6	15.3	4.2	C	C	C	C	C	C	C	C	C	16.3	15.0	E	E	E	E
31	E	15.3	13.0	11.9	12.3	9	3.0	3.8	3.8	3.6	3.9	14.3	3.6	9	9	9	4.0	13.2	13.2	13.2	E	E	12.4	12.8	12.8	
No.	31	31	31	30	25	29	30	30	29	29	29	27	27	27	28	28	29	28	28	28	28	31	31	31	31	31
Median	3.0	3.0	3.3	2.3	2.1	3.0	4.4	5.3	5.3	6.6	5.6	5.3	5.0	4.3	4.3	4.9	4.5	5.3	5.3	4.8	4.3	4.3	4.3	3.4	3.0	3.0
U.Q.	4.5	5.0	4.5	3.0	2.9	4.3	5.5	6.3	7.2	7.8	7.4	7.1	6.3	6.2	6.2	6.3	5.7	6.9	6.4	6.4	6.3	6.3	6.0	5.0	5.0	
L.Q.	E	1.6	E	E	9	2.7	3.5	4.3	4.6	5.2	4.3	4.0	4.0	4.0	4.2	4.0	4.0	4.1	4.0	3.3	2.3	2.5	2.3	2.3	2.3	
Q.R.		3.4				1.6	2.0	2.0	2.6	2.6	3.1	2.8	2.3	2.2	2.2	2.1	1.7	2.8	2.4	3.1	4.0	3.8	3.7	2.7	2.7	

Sweep 1.e. Mc to 18.0 Mc in 1 min 1 sec in automatic operation.

The Radio Research Laboratories, Japan.

foEs

W 4

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GM.T.+9h.)

fbEs

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					S	4	4	4	4.4	5.5	A	5.0	A	5.9	A	4.3	4.5	5.6	A	4.0	A	3.1	2.8	3.0
2	4.3	4.3	3.1	2.6		3.3	4.9	4.3	A	A	A	A	A	4.0	4.1	4	4	4.8	3.5	4	4.3	E		E
3	2.8	E	E		S	4	4.2	5.1	5.5	A	A	A	A	A	A	4.7	A	3.0	4.8	3.1	3.0	4.3	4.2	3.7
4	3.1	E	E	E	S	3.0	5.0	A	A	A	4.6	4.7	4.8	3.8	A	6.0	A	A	A	5.2	4.5	A	A	4.2
5	4.3	E	E	E	2.4	S	4.6	5.5A	5.2	A	5.0	5.4	A	4.2R	4.0R	4	4.2	4.1	4.0	A	4.5	4.3	E	4.6
6	4.5	3.2	E	2.9	3.0	3.1	4	4.1	A	A	4.5	A	A	A	A	4.4	4.4	3.2	S	S	E	4.5	3.6	2.3
7							4.5	4.5	4.2	4.5	4.0A	A	A	A	A	A	3.2	4	4.6	4.2	4.5	4.2	E	E
8							A	4.5	A	A	A	A	A	A	A	4	3.2	4	A	4.0	5.0	4.2	A	4.6
9	A	2.9	3.2	2.4	S	A	4	5.2	C	C	C	C	C	C	C	3.9	4	A	4.3	4	4.2	3.3	3.2	A
10	4.3	3.0	3.1	2.2	2.1	4.0	4.6	A	5.0	4.6	5.3	A	A	A	4.6	4.7	5.5	4.3	4.8	A	3.1	4.3	A	
11	E	3.0	2.3		S		4.3	5.0	A	A	A	4.6	4.0	4	4	4	4	4.8	4.3	2.5	E	E	E	2.6
12					3.2	3.2	4.1	4.6	4.2	4.2	A	4.4	4	4.3	4.2	4.7	5.0	5.8	4.7	5.2	6.2	4.6	4.3	3.6
13	2.7	4.0	2.4	2.3		3.2	A	A	A	A	A	4	4	4	A	A	4.2	4.3	4.0	4.8		3.2	E	E
14	E	E	E		4.0	4.0	4	4.3	A	A	A	A	A	A	A	4.0	4	4	A	A				
15						2.2		4	4	4	4	4	4	4	4	4.0	4	4	A					
16	3.6				E	4	4	4	4.5	4	4	4	4.0	4	4	4	4.1	4	4	4	2.3	E	E	E
17	3.3	3.3	E	E		4.8	5.1	6.0	6.3	6.3	A	4	4.8	4.0	3.3	3.7	3.0	3.6	3.2	3.5	2.1	3.0	2.3	
18	E	4.3	2.7	E	2.0		4.0	4	4.2	4.9	4	4	4.0	A	4.4	4	4.3	5.0	4.2	4.6	3.2	4.0	E	E
19					4	4	4	4	4	4	A	4.0	4	A	4.2	4	A	4.5	3.4	4	E	4.3	2.7	E
20	3.3	4.0	2.5	C	C	C	C	C	C	C	C	C	C	C	C	4.7	3.2	4	4.8	6.4	E	4.6	E	E
21	E	E			1.7	2.6	5.2	A	A	4.2	A	C	C	C	C	C	4.9	3.3	4.4	4	4.0	3.0	2.5	3.1
22	E	E			4	4.2	5.0	5.2	4.8	4	4	5.0	3.8	4.0	C	C	A	5.0	5.0	5.4	A	4.2		
23	E				1.8	4	4	4	6.0	A	3.9	4.3	A	4.7	4.3	3.6		3.2	4.2	2.7	E	E	3.3	A
24	A	E			1.6	4	4	4	5.3	A	4	4.0	4.0	4	4	4	4	4	4.1	4.3	E	E	E	E
25	E	E	E	E	4	3.2	4.1	A	4	5.2	A	4.5	A	4	4	4	4	4	4	4.2	4.8	E	3.1	3.0
26	E	4.0	E			4	4.3	4	4.4	A	4.3	5.0	4.1	3.5	3.5	4.3	4.0	C	C	A	4.7	2.7	E	E
27	E	E	E				4	4.5	4	4	4.5	4	3.8	3.5	3.3	4	3.6	3.3	S	S				
28			2.2	E	2.5	A	3.2	4.3A	4.3	A	4.3	4	A	3.8	A	4.5	A	A	3.2	3.0	E	E		
29			E	E		4	4	4.1	4.5	4.3	4	4	A	4	4	4	3.1	2.7	2.8	3.3	4.0	E	E	
30	E		E	E	1.4	2.3	4	4	4	4	4	C	C	C	C	C	C	C	C	C	E	E	E	
31		4.0	E	E	1.2		4	3.8	4	4	3.9	4.0	4	4	4	4	3.1	3.0	2.8	4			E	E
No.	2.1	2.5	2.1	1.9	1.6	2.4	2.9	2.9	2.9	2.9	2.5	2.5	2.4	2.3	2.3	2.5	2.7	2.8	2.5	2.7	2.6	2.5	2.4	2.5
Median	2.8	E	E	E	1.8	3.0	4.1	4.3	4.8	5.5	4.6	4.5	A	4.0	4.2	4.0	4.0	4.2	4.2	4.0	3.2	4.0	2.8	2.3

Sweep 1.0 Mc to 18.0 Mc in _____ min _____ sec in automatic operation.

fbEs

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

f-min

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F ₂ 2.00 ^S	E	F ₂ 1.0 ^S	E _s 1.50 ^S	F ₂ 1.0 ^S	2.00	2.10	2.10	2.15	2.30	2.20	2.30	2.15	2.90	2.30	2.90	2.20	2.00	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S
2	F ₂ 1.90 ^S	E	E	E	E	1.50	2.30	2.00	2.10	2.20	2.50	2.20	2.30	2.50	2.25	2.15	2.10	2.15	F ₂ 2.10 ^S	F ₂ 1.90 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.00 ^S
3	F ₂ 2.00 ^S	E	E	E	F ₂ 0.0 ^S	1.60	2.05	2.15	2.15	2.15	3.00	3.00	2.30	2.40	2.30	2.20	2.20	2.20	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S
4	F ₂ 1.85 ^S	E	E	E	F ₂ 1.5 ^S	E	2.10	2.10	2.30	2.30	2.50	2.50	2.40	2.50	2.30	2.25	2.20	2.15	F ₂ 2.10 ^S	F ₂ 1.90 ^S	F ₂ 2.15 ^S	F ₂ 2.10 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S
5	F ₂ 1.90 ^S	E	E	E	F ₂ 2.00 ^S	F ₂ 2.30 ^S	2.20	2.20	2.30	2.20	3.20	3.05	3.00	2.40	2.20	2.30	2.20	2.15	F ₂ 2.00 ^S	F ₂ 1.90 ^S	F ₂ 2.15 ^S	F ₂ 2.10 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S
6	F ₂ 1.90 ^S	E	E	E	E	1.60	2.20	2.10	2.40	2.20	2.50	3.00	3.00	2.40	2.15	2.50	2.20	2.20	F ₂ 1.40 ^S	F ₂ 2.00 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.00 ^S
7	F ₂ 2.00 ^S	E	E	E	1.20	1.50	2.00	2.20	2.20	2.20	2.80	2.80	2.90	2.30	2.80	2.15	2.10	2.20	2.00	F ₂ 2.15 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.00 ^S
8	F ₂ 1.10 ^S	E	E	E	E	2.00	2.10	2.25	2.30	2.20	2.90	2.40	2.40	2.40	2.30	2.20	2.40	2.10	1.90	F ₂ 2.10 ^S	F ₂ 2.05 ^S	F ₂ 2.05 ^S	F ₂ 2.05 ^S	F ₂ 2.00 ^S
9	F ₂ 2.00 ^S	E	E	E	F ₂ 2.00 ^S	F ₂ 2.10 ^S	2.10	2.30	C	C	C	C	C	C	C	C	C	C	F ₂ 1.90 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 1.80 ^S
10	F ₂ 1.90 ^S	E	E	E	F ₂ 1.90 ^S	1.30	1.90	2.00	2.00	2.10	2.15	2.00	2.05	2.00	2.20	2.00	2.05	2.15	1.60	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 1.90 ^S
11	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	E	2.00	2.10	2.15	2.30	2.10	2.40	2.25	2.30	2.25	2.10	2.20	2.15	2.00	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S
12	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	1.80	2.20	2.15	2.60	2.20	3.20	3.00	2.40	2.50	2.40	2.20	2.15	2.15	F ₂ 2.10 ^S	F ₂ 1.90 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 2.00 ^S
13	F ₂ 2.00 ^S	E	E	E	E	1.50	2.10	2.10	2.15	2.10	2.30	2.40	2.50	3.10	2.30	2.10	2.30	2.15	2.00	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S
14	F ₂ 1.90 ^S	E	E	E	F ₂ 2.10 ^S	1.80	2.00	2.15	2.25	2.10	2.90	2.50	2.30	3.00	2.20	2.00	1.85	1.90	1.90	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 1.80 ^S
15	F ₂ 1.90 ^S	E	E	E	E	1.30	1.85	1.90	2.10	2.10	2.15	2.10	2.30	2.30	2.20	2.15	2.10	2.00	1.90	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 1.90 ^S	F ₂ 1.70 ^S	F ₂ 1.90 ^S
16	F ₂ 1.80 ^S	E	E	E	E	1.20	2.00	2.10	2.05	2.15	2.15	2.30	3.00	2.30	2.30	2.30	2.10	2.00	1.90	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 1.90 ^S	F ₂ 1.70 ^S	F ₂ 1.90 ^S
17	F ₂ 1.90 ^S	E	E	E	E	1.80	2.00	2.00	2.15	2.20	2.40	2.60	2.70	3.00	2.40	2.20	2.15	2.15	2.00	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 2.00 ^S	F ₂ 1.80 ^S	F ₂ 1.85 ^S
18	F ₂ 1.90 ^S	E	E	E	E	1.30	1.90	2.30	2.10	2.20	2.30	3.00	2.15	2.50	2.20	2.20	2.10	2.00	1.90	F ₂ 2.10 ^S	F ₂ 2.10 ^S	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.80 ^S
19	F ₂ 2.00 ^S	E	E	E	E	1.30	1.90	2.20	2.20	2.40	2.20	2.15	2.15	2.30	2.20	2.05	2.00	2.00	1.80	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 1.90 ^S	F ₂ 2.00 ^S	F ₂ 1.80 ^S
20	F ₂ 1.80 ^S	E	E	E	C	C	C	C	C	C	C	C	C	C	C	C	2.00	2.00	1.85 ^S	F ₂ 1.85 ^S	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S
21	F ₂ 1.90 ^S	E	E	E	E	1.30	2.00	2.20	2.20	2.05	2.25	C	C	C	C	C	2.10	2.00	1.90	F ₂ 2.00 ^S	F ₂ 1.80 ^S	F ₂ 1.85 ^S	F ₂ 1.85 ^S	F ₂ 2.00 ^S
22	F ₂ 1.70 ^S	E	E	E	F ₂ 1.80 ^S	1.75	2.00	2.10	2.10	2.20	2.10	2.50	2.00	2.15	2.15	2.20	2.20	2.00	1.85	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.70 ^S	F ₂ 2.00 ^S	F ₂ 1.80 ^S
23	F ₂ 2.00 ^S	E	E	E	E	1.50	2.00	2.10	2.15	2.20	2.40	2.40	2.20	2.25	2.30	2.10	2.30	2.00	1.80	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.80 ^S
24	F ₂ 1.85 ^S	E	E	E	E	1.60	1.80	1.90	2.10	2.10	2.00	2.05	2.10	2.10	2.20	2.10	2.05	2.00	1.85	F ₂ 1.90 ^S	F ₂ 2.00 ^S	F ₂ 1.85 ^S	F ₂ 2.00 ^S	F ₂ 1.90 ^S
25	F ₂ 1.70 ^S	E	E	E	E	1.80	2.00	2.15	2.20	2.15	2.15	2.10	2.10	2.15	2.60	2.70	2.20	2.00	1.90	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 1.85 ^S	F ₂ 1.80 ^S	F ₂ 1.90 ^S
26	F ₂ 1.80 ^S	E	E	E	E	1.85	2.10	2.20	2.20	2.20	2.15	2.20	2.10	2.10	2.10	2.05	2.00	2.00	C	F ₂ 1.60 ^S	F ₂ 1.70 ^S	F ₂ 1.80 ^S	F ₂ 1.85 ^S	F ₂ 1.80 ^S
27	F ₂ 1.90 ^S	E	E	E	E	1.20	1.85	1.90	2.00	2.15	2.20	2.25	2.60	2.10	2.10	2.10	2.00	1.90	1.85	F ₂ 1.85 ^S	F ₂ 1.80 ^S	F ₂ 2.00 ^S	F ₂ 2.00 ^S	F ₂ 1.80 ^S
28	F ₂ 1.90 ^S	E	E	E	E	1.30	1.90	1.90	2.00	2.00	2.10	2.20	4.60	2.30	2.20	2.05	2.00	2.00	1.60	F ₂ 2.10 ^S	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.80 ^S
29	F ₂ 1.80 ^S	E	E	E	E	1.40	1.85	2.00	2.10	2.15	2.10	2.15	2.20	2.20	2.10	1.90	2.00	1.90	1.85	F ₂ 2.00 ^S	F ₂ 1.80 ^S	F ₂ 1.80 ^S	F ₂ 1.90 ^S	F ₂ 1.90 ^S
30	F ₂ 1.90 ^S	F ₂ 1.90 ^S	E	E	E	1.50	1.90	1.90	2.10	2.10	2.00	C	C	C	C	C	C	C	C	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.80 ^S	F ₂ 1.80 ^S
31	F ₂ 2.00 ^S	E	E	E	E	1.50	1.90	2.10	2.00	2.10	2.20	2.25	2.10	2.20	2.10	2.30	1.90	1.80	1.90	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.95 ^S	F ₂ 1.80 ^S	F ₂ 1.85 ^S
No.	3/	3/	3/	3/	3/	28	30	30	29	29	29	27	27	27	27	28	29	28	23	30	30	3/	3/	3/
Median	F ₂ 1.90 ^S	E	E	E	E	1.50	2.00	2.10	2.15	2.20	2.20	2.40	2.30	2.30	2.20	2.15	2.10	2.00	1.90	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 1.90 ^S	F ₂ 2.00 ^S	F ₂ 1.90 ^S

Sweep 1.0 Mc to 1.8 Mc in 1 min in automatic operation.

f-min

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

Jul. 1961

M(3000)F2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.95	3.05	3.00	3.00	3.10	3.25	3.30	3.30	3.30	3.00 ^A	2.95 ^A	2.90	2.90 ^A	3.05 ^A	2.95 ^A	2.90	2.90	2.70	2.90 ^A	2.90	3.00 ^A	2.95	3.00 ^S	2.85
2	3.00 ^F	F	F	F	2.85 ^F	2.60 ^F	2.85 ^F	3.00	A	A	A	A	A	A	2.75	3.00	2.95	3.00	3.00	2.90	2.85	2.80 ^S	3.00	3.05
3	3.00 ^F	3.00 ^F	2.80 ^F	2.75 ^F	2.65 ^F	2.85 ^F	2.85	3.10	2.85	A	A	A	A	A	2.90 ^A	3.00	3.00 ^A	3.00	2.90 ^S	3.00	2.95	2.85 ^S	2.80 ^F	2.80 ^F
4	2.85 ^F	2.85 ^F	2.85 ^F	3.00 ^F	2.75 ^F	2.70 ^F	2.75	2.80 ^F	2.80 ^F	2.90 ^A	2.95	3.15	2.80	3.05	2.85	3.10 ^A	A	A	A	2.90	2.75	A	A	F
5	2.90 ^F	3.00 ^F	3.20 ^F	2.90 ^F	2.95 ^F	3.20	2.95 ^F	3.00	3.00	3.10 ^A	3.25	3.00	2.75 ^A	2.90	2.70	2.80	2.95	3.10	3.15	2.90 ^A	2.75	2.90 ^S	2.80	2.80 ^S
6	2.85	2.50 ^F	F	F	2.80 ^F	2.65	2.95	3.05	2.95 ^A	2.80 ^A	2.40	A	A	A	A	2.80	2.80	2.90	3.05 ^A	2.95	3.00 ^S	2.95	2.80 ^F	2.80 ^F
7	2.95	2.90 ^F	2.90 ^F	2.65 ^F	2.65 ^F	2.50	2.85 ^A	3.10	3.05	2.90	2.85	2.75	A	A	A	2.85 ^A	3.10	3.15	2.95	3.00	2.85	2.80 ^S	2.90	2.90
8	2.90	2.90	2.75 ^F	F	F	2.75 ^A	2.90 ^A	3.10	3.00 ^A	2.80 ^A	2.85 ^A	A	A	A	3.05	2.85	3.00	2.90 ^A	2.85 ^A	2.85	3.00 ^S	2.85 ^F	A	F
9	A	F	F	F	2.85 ^F	2.90 ^A	2.85 ^F	2.90	C	C	C	C	C	C	C	C	C	C	C	2.80	2.95 ^S	3.00 ^S	2.90 ^S	A
10	S	F _s	F _s	F	F	3.00	2.80 ^S	3.20 ^A	3.20	3.30	2.95	2.90 ^A	2.75 ^A	2.70 ^A	2.85	2.80	2.90	2.85	2.90	3.05 ^S	3.00 ^S	3.00 ^S	2.90 ^S	2.80 ^S
11	2.90	3.10 ^F	2.90	2.70 ^S	2.65	2.85	3.10	3.15	A	A	R	2.80	2.95	W	2.55	2.90	2.95	2.75	2.80	2.90	2.95 ^S	2.95	2.70	2.90
12	2.80	2.85	2.95	2.95	2.80 ^F	2.90 ^F	2.90	3.20	3.05 ^H	2.95	2.70 ^A	2.90	2.80	2.85	2.60	3.05	3.00	3.00	2.85	2.90	2.85	2.70 ^S	2.90	2.90
13	2.90	2.85	2.75	2.75	2.85 ^F	2.95 ^F	2.80 ^A	3.05 ^A	A	A	A	2.30	2.75	2.75	2.65 ^A	2.80 ^A	2.80	2.95	3.05	2.95	2.80	2.85 ^F	2.90 ^F	2.90
14	2.75 ^F	2.45	2.35	2.55 ^F	2.90 ^F	2.75	2.65	3.20	A	A	A	A	A	2.80 ^A	2.85	3.10	2.95	2.80 ^A	2.70	2.50	F _s	F	F	2.65 ^F
15	F	F	F	F	F _H	2.65 ^F	2.85 ^F	2.65	♀	♀	♀	♀	2.45	W	2.25	2.40 ^A	3.00	3.30 ^H	2.85	2.85	2.80	2.75	2.70	2.70
16	2.75	3.00	2.65 ^F	2.70	2.75	2.80 ^F	3.00	2.90	3.05	2.30	2.60	2.75	2.75 ^A	2.90	3.15	2.90	2.95	3.05	2.95	2.90	2.80	2.65	2.65 ^F	2.60 ^F
17	2.65	2.75 ^F	2.75 ^F	2.80 ^F	2.60 ^F	2.90	2.95	3.05	3.00	3.35	3.20 ^A	2.95	2.80	2.95	3.05	3.00	2.90	2.85	2.85 ^H	2.90	2.85	2.65	2.75	2.70
18	2.65	2.60	3.05	2.85 ^F	2.75 ^F	2.65	2.50	2.90	3.00	2.45	2.95	2.20	W	2.90 ^A	2.80	2.90	2.85	2.60	2.80	2.85	2.80	2.60	2.55	2.45
19	2.50	2.55 ^F	2.50 ^F	2.50	2.35	2.60	2.45	2.20	2.35	2.20	R	2.45	2.45	2.80 ^A	2.30	2.95	3.20 ^A	3.15	2.85	2.80	2.65	2.60	2.65	2.75 ^F
20	F	F	F	C	C	C	C	C	C	C	C	C	C	C	C	2.95	2.85	2.80	2.80	3.05	2.90	F	F	F
21	2.75 ^H	2.75 ^F	2.80 ^F	2.90 ^F	3.00 ^F	2.85 ^F	2.85	2.80 ^A	2.85 ^A	2.75	3.05 ^A	C	C	C	C	2.95	2.95	2.90	2.95	2.80	2.95	2.75	2.75	2.75
22	2.75	2.75	2.85	2.60	2.55 ^F	2.65	2.70	2.80	3.05	2.20	W	2.80	2.85	3.05	3.15	3.15	2.90 ^A	3.00	2.90	2.90	2.80 ^A	F	F	F
23	2.80	2.80 ^F	2.90 ^F	2.95	2.90 ^F	3.10 ^F	2.85	2.80	3.00	2.80 ^A	2.55	2.30	2.75 ^A	2.55	2.70	2.75	2.85	2.95	3.00	3.05	2.90	2.85	F	A
24	A	F	F	F	F	2.85 ^F	2.90 ^F	3.05	2.95	2.80 ^A	2.95	2.65	2.75	2.70	2.85	2.75	2.85	2.95	2.95	2.80	2.80	2.70 ^F	F	F
25	2.95 ^H	2.80 ^F	F	F	F _s	2.90 ^F	2.95	3.00 ^A	2.65	2.95 ^H	2.90 ^A	2.40	2.50 ^A	2.35	2.90	2.80	3.00	3.05	2.95 ^H	3.00	2.90	2.80	F	2.75 ^F
26	2.85	2.95 ^F	F	F	F	3.00 ^F	3.10	3.10	3.10	3.10 ^A	3.00	2.65	2.70	2.55	2.75	3.05	2.85	C	C	A	2.90	2.75 ^S	2.95	2.85
27	2.80	2.80	2.95 ^F	2.90	2.85	3.15	2.95	2.90	2.75	2.20	2.45	2.90	2.55	2.90	2.50	2.50	2.75	2.65	2.55	2.55 ^F	F	F	F	F
28	F	F	2.45	2.55 ^F	2.55	2.75 ^A	3.55	2.85	3.20	2.85 ^A	2.20	3.00	2.80 ^A	2.75	2.70 ^A	3.05	2.90 ^H	3.00 ^A	3.00	2.85	2.80	2.85 ^F	3.00 ^F	F
29	F	F	F	2.75 ^F	2.80 ^F	3.20 ^F	3.20	3.15	3.15	3.00 ^F	3.05	3.05	3.10	2.90	2.90	2.90	3.05	3.30 ^H	2.95	2.90	2.90	2.90	3.00 ^F	2.90
30	2.75	2.75	2.75	2.80 ^F	2.80 ^F	3.05 ^F	3.00	2.90	3.60	2.65	2.85	C	C	C	C	C	C	C	C	C	2.80 ^F	2.85 ^F	2.95	3.00
31	2.90	2.80	2.80 ^F	2.85 ^F	2.60 ^F	2.85 ^H	3.15 ^H	3.40	3.50	3.05	2.80	3.30	2.90	3.10	2.95	3.00	3.15 ^H	3.10 ^H	2.95	2.85	2.90	3.05	3.10	3.30
No.	24	23	21	21	24	30	30	30	25	24	23	22	21	23	25	28	28	27	28	29	29	26	22	21
Median	2.85	2.80	2.80	2.80	2.80	2.85	2.90	3.00	3.00	2.80	2.85	2.80	2.75	2.80	2.85	2.90	2.95	2.95	2.90	2.90	2.85	2.85	2.90	2.80

Sweep i.e. Mc to 1.0 Mc in $\frac{\text{min}}{\text{sec}}$ in automatic operation.

The Radio Research Laboratories, Japan.

M(3000)F2

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakanai

135° E Mean Time (GMT. + 9h.)

M(3000)F1

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						3.65	3.65	A	A	A	A	A	A	A	A	A	A	A	A	A				
2					A	A	A	A	A	A	A	A	A	3.90	3.90 ^A	3.65	3.65	A	A	A				
3				3.15	3.20	A	A	A	A	A	A	A	A	A	A	A	A	3.70	3.60 ^A	A				
4				A	A	A	A	A	A	A	A	A	A	3.60	3.80	A	A	A	A	A				
5				A	A	A	A	A	A	A	A	A	A	R	3.80 ^B	3.45	A	A	A	A				
6				A	3.55	A	A	A	A	A	A	A	A	A	A	A	3.50 ^A	3.50	3.50	A				
7				3.25	A	A	A	3.80 ^A	4.05 ^A	3.70	A	A	A	A	A	A	3.50	3.50	A	A				
8				A	A	A	A	A	A	A	A	A	A	3.80 ^A	3.65	3.75 ^A	3.55	A	A	A				
9				A	3.45	A	C	C	C	C	C	C	C	C	C	C	C	C	C	A				
10				A	A	A	A	A	A	A	A	A	A	A	3.70 ^A	A	A	A	A	A				
11				3.25	A	A	A	A	A	A	A	3.95 ^A	3.90 ^A	3.70	3.75	3.95	3.55	3.45 ^A	A	A				
12					3.55	3.55 ^A	3.60 ^A	3.85	3.70 ^A	3.70 ^A	3.70	3.70	3.70	3.70	A	A	A	A	A	A				
13					A	A	A	A	A	A	A	3.75	3.60	3.60	A	A	A	A	A	A				
14				3.15 ^A	3.75	A	A	A	A	A	A	A	A	3.80	3.80	3.70	3.40	3.80	3.45 ^A	3.70	2.90			
15				3.15	3.25	3.45	3.60	3.70	3.80	3.85	4.05	3.80	4.05	3.80	3.75	3.90	3.40	3.40	A	A				
16				A	A	A	A	A	A	A	A	4.15	3.60	3.40	3.50	3.60	3.50							
17				3.15	3.35	3.55	3.65	3.80 ^A	3.90	3.65	3.60	3.65	3.60	3.55 ^A	3.60 ^A	3.30	3.30 ^B	A	A	A				
18				2.80	3.15	3.35	3.50	3.80	3.55	3.80 ^A	3.75	3.85	3.85	3.85 ^A	3.85 ^A	3.80	A	A	A	A				
19				C	C	C	C	C	C	C	C	C	C	C	C	C	A	3.75	3.50	A				
20																								
21					3.35	A	A	A	A	A	A	C	C	C	C	C	C	A	L					
22					A	A	A	A	3.75	3.75	3.70 ^A	3.70	3.70	3.60	3.60	3.60	A	A	A	A				
23						3.80	3.90 ^A	4.05 ^A	3.90	A	A	A	A	A	A	3.55	3.70	3.40	A	A				
24				3.25	3.20	3.65	3.65	3.70 ^A	3.75 ^A	3.85	3.60	3.60	3.50	3.60	3.70	3.50	3.50	3.70						
25					A	3.55 ^A	3.60	A	A	A	A	A	3.25	4.05	3.95	3.50	3.40							
26					A	3.75	A	A	A	A	3.85 ^A	3.85	3.70	3.60	3.65	A	C	C						
27					3.45	3.40 ^A	3.70	3.65	3.80 ^A	3.55	3.70	3.55	3.70	3.55	3.80	3.70	3.45	3.25	3.10					
28				A	A	A	A	A	A	A	3.80 ^A	3.90	3.50	3.70	3.55 ^A	3.55 ^A		A						
29					3.60	3.80 ^A	3.80 ^A	3.90	4.15	3.60	3.75	3.70	3.55 ^H	3.60										
30					3.60	4.00	3.70	3.55	3.85	C	C	C	C	C	C	C	C	C	C	C				
31					A	4.00	3.95	4.05 ^A	3.80 ^A	3.90	4.15	3.80	3.65											
No.				3	10	12	13	14	16	14	18	20	18	15	10	4	2							
Median				3/5	3/20	3/55	3/55	3/80	3/80	3/75	3/70	3/65	3/70	3/60	3/50	3/50	3/20	3/00						

Sweep 1 sec. Mc to 1.8 sec. Mc in 1 min in automatic operation.

M(3000)F1

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

R'F2

Jul. 1961

135° E Mean Time (GMT.+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						290	280	270	A	A	A	A	A	A	¹ 380 ^A	365	350	A	A					
2					450	¹ 390 ^A	350	A	A	A	A	A	A	A	430	370	385	370	340	¹ 320 ^A				
3				330	360	340	320	400	A	A	A	A	A	A	¹ 420 ^A	380	¹ 365 ^A	365	¹ 340 ^A					
4					400	¹ 360 ^A	A	A	A	A	370	340	420	350	370	A	A	A	A					
5					350	¹ 350 ^A	315	¹ 315 ^A	300	360	360	360	¹ 405 ^A	370	425	360	330	370	A					
6					375	335	350	¹ 385 ^A	¹ 425 ^A	530	A	A	A	A	A	450	425	360						
7					450	350	¹ 455 ^A	340	420	410	445	A	A	A	A	¹ 380 ^A	330	330	335					
8						A	A	¹ 380 ^A	¹ 445 ^A	¹ 440 ^A	C	C	A	A	A	375	410	A	A					
9						A	445	¹ 320 ^A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10						340	¹ 305 ^A	320	295	360	¹ 415 ^A	¹ 430 ^A	¹ 430 ^A	365	400	¹ 360 ^A	340	A						
11						335	285	300	A	A	A	450	410	W	510	400	385	¹ 400 ^A	370	295				
12						320	270	285 ^A	360	¹ 370 ^A	375	370	370	370	475	330	340	¹ 325 ^A	315					
13						¹ 350 ^A	¹ 315 ^A	A	A	A	A	580	435	435	¹ 460 ^A	¹ 390 ^A	380	345	310					
14						370	410	325	A	A	A	A	A	A	¹ 430 ^A	420	350	390	375	390				
15						480	380	470	G	G	G	G	520	W	670	¹ 555 ^A	370	390	L					
16						385	370	395	400	545	485	440			380	330	375	360	¹ 345 ^A	370				
17						¹ 360 ^A	¹ 330 ^A	¹ 300 ^A	285	290	350	370	380	340	320	305	340							
18						425	450	340	360	520	370	620	W	¹ 380 ^A	390	360	370	¹ 360 ^A						
19					460	430	510	620	600	650	R	W	525	¹ 445 ^A	550	375	¹ 350 ^A	350	L					
20						C	C	C	C	C	C	C	C	C	C	360	350	355	A					
21						330	A	A	A	370	¹ 315 ^A	C	C	C	C	C	295	¹ 290 ^A						
22						415	¹ 380 ^A	345	360	670	W	445	420	350	330	325	¹ 320 ^A	335	325					
23							350	¹ 330 ^A	¹ 430 ^A	500	620	¹ 440 ^A	515	490	445	425	350	A						
24					400	370	325	340	¹ 370 ^A	¹ 390 ^A	375	465	435	465	400	420	390	325						
25						325	¹ 350 ^A	465	365	¹ 470 ^A	550	¹ 510 ^A	550	380	435	365	350							
26						275	265	310	¹ 320 ^A	350	¹ 430 ^A	470	510	430	365	380	C	C						
27						350	350	620	580	490	350	466	360	500	410	400	405	385	350					
28					450	¹ 400 ^A	270	430	¹ 360 ^A	¹ 430 ^A	635	380	¹ 455 ^A	470	¹ 445 ^A	350	¹ 350 ^A							
29						300	300	300	300	370	340	340	370	355	340	310								
30						335	280	265	465	400	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31						235	265	345	380	300	370	340	375	325										
N.O.					4	16	25	27	23	22	22	21	19	22	25	27	26	21	12	3				
Median					425	390	350	330	360	420	390	440	435	430	480	375	365	350	340	350				

Sweep 1.0 Mc to 12.0 Mc in 1 min 1 sec in automatic operation.

R'F2

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

h'F

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	285	270	270	280	260	260	245	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	280	265 ^A	
2	A	A	A	350	345	A	A	A	A	A	A	A	A	230	220 ^A	230	250	255 ^A	260 ^A	270	275 ^A	280	260	265	
3	290	275	300	310	285	260	A	A	A	A	A	A	A	A	A	A	A	210	235 ^A	260 ^A	270 ^A	300 ^A	315 ^A	310 ^A	
4	290 ^A	290	270	295	300	A	A	A	A	A	A	A	A	220	235	A	A	A	A	A	A	A	A	A	
5	A	305	250	300	300	250	A	A	A	A	A	A	A	A	240 ^A	230	255 ^A	270 ^A	A	A	A	A	A	A	
6	A	A	300	320 ^A	300 ^A	275 ^A	250	A	A	A	A	A	A	A	A	A	230 ^A	275	255 ^H	275	260	275 ^A	300 ^A	330	
7	305	275	270	305	320	260	A	A	A	230 ^A	220 ^A	235	A	A	A	A	235	260	A	A	A	A	A	290	
8	290	300	310	310	325	A	A	A	A	A	A	A	A	250 ^A	230	210 ^A	260	A	A	A	250 ^A	A	A	A	
9	A	A	330 ^A	315	300	280 ^A	235	A	C	C	C	C	C	C	C	C	C	C	C	C	C	A	A	A	
10	A	A	A	290	275	A	A	A	A	A	A	A	A	A	255 ^A	A	A	A	A	A	A	A	A	A	
11	260	265 ^A	290	340	295 ^S	280	A	A	A	A	A	225 ^A	230 ^A	235	225	225	265	280 ^A	260 ^A	255 ^A	255	250	300	300	
12	320	310	300	295	300 ^A	275 ^H	260	A	A	A	A	A	230	A	A	A	A	A	A	A	A	A	A	A	
13	265	275 ^A	300	290	265	300	A	A	A	A	A	230	215	225	A	A	A	A	A	A	A	285	290 ^A	260	
14	285	260	400	350	335	295 ^A	260	A	A	A	A	A	A	A	240	220 ^A	235	240 ^A	260	300	340	330 ^F	300 ^F	325 ^F	
15	325 ^F	400 ^F	410	400	400 ^H	290 ^F	280	260	240	220	240	215	210	225	240 ^H	250 ^H	240 ^A	240 ^H	250 ^H	290 ^A	295	290	300	310	
16	310 ^A	275	310	310	310	270	245	240	240 ^A	225	250	235	250 ^H	235 ^H	235	230	260	A	A	A	A	290	300	330	
17	310 ^A	315 ^A	325	305	325	A	A	A	A	A	A	205	225	260	220	235	235	275	285 ^H	275 ^A	270	300	300	290	
18	285	300 ^A	265	275	290	265	250 ^A	250	235 ^A	225 ^A	215	230	235	265 ^A	245 ^A	260	260 ^A	A	A	A	A	330 ^A	325	360	
19	350	350	315	330	380	305	260	260	220	215	240 ^A	230	230	230 ^A	235 ^A	240	250 ^H	250 ^A	285	305	315 ^A	305	290	290	
20	320 ^A	310 ^A	350	C	C	C	C	C	C	C	C	C	C	C	C	C	235	260	270 ^A	280 ^A	290	260 ^A	290	290	
21	305	290	290	280	290	270	A	A	A	A	A	C	C	C	C	C	A	260	265 ^A	260	265 ^A	295 ^A	275	290 ^A	
22	300	295	300	345	370	A	A	A	A	A	235	220	240 ^A	210	230	240	225	A	A	A	A	A	250	250	
23	300	300	285	275	270	260	260 ^H	240	240 ^A	210 ^A	230	A	A	A	A	230	240	275	275 ^A	275	255	295	305 ^A	295 ^A	
24	310 ^A	315	340	325	310	300	270	225	225 ^A	230 ^A	250	230	230	265	235	245	260	260	265 ^A	270 ^A	270	300	315	280	
25	260	305	325	345	330 ^H	265 ^A	245 ^A	250	A	A	A	A	A	235 ^H	225	250	250	240	280 ^H	260 ^A	265 ^A	270	330 ^A	300 ^A	
26	295	300 ^A	320	290	275	245	260 ^A	240	A	A	220 ^A	215	215	230	235	235 ^A	A	A	C	C	A	265	260	290	
27	320	300	280	255	290	260	250	260 ^A	250	225	220 ^A	230	250	235	220	240	265 ^A	280 ^A	275	330	310	275	430	360	
28	380	350	420	400	A	A	A	250 ^A	235 ^A	225 ^A	240 ^A	210	255 ^B	240	265 ^H	245 ^A	255	A	A	A	A	285	290	240	
29	310	300	300	280	270	250	240 ^H	250 ^A	245 ^A	230 ^A	210	195	230	225	240	220 ^H	235	250 ^H	250	280 ^A	275 ^A	260 ^A	230	270	
30	315	300	325	300	300	275 ^H	260	235	210	270	230	C	C	C	C	C	C	C	C	C	280	265	250	255	
31	285	290 ^A	310	285	300	270	240 ^H	230 ^A	210	200	205 ^A	225 ^A	220	200	220	215	220 ^H	250 ^H	265	280	265	260	260	240	
No.	26	27	29	30	29	23	17	14	12	13	13	15	15	18	20	19	20	18	16	17	21	22	26	27	
Median	300	300	300	305	300	270	250	250	235	225	230	230	230	230	235	230	250	260	260	260	275	275	290	300	290

The Radio Research Laboratories, Japan.

Sweep sec. Mc to sec. Mc in min sec. in automatic operation.

h'F

IONOSPHERIC DATA

Lat. 45° 28.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GM.T. + 9h.)

f_oF₂S

Jul. 1961

Day	00	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	S	1.35	1.35	1.25	1.20	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.25	1.20	1.10	1.10	1.10	1.15	1.15	1.10
2	1.15	1.10	1.05	1.05	1.10	1.25	1.20	1.20	1.10	1.10	1.10	1.05	1.10	1.15	1.20	1.15	1.25	1.10	1.10	1.10	1.10	1.10	1.10	1.10
3	1.05	1.10	1.10	E	S	1.30	1.25	1.20	1.15	1.10	1.10	1.10	1.10	1.20	1.15	1.25	1.15	1.15	1.10	1.15	1.20	1.15	1.15	1.10
4	1.10	1.10	E	1.10	S	1.30	1.20	1.20	1.15	1.15	1.10	1.10	1.10	1.10	1.10	1.25	1.15	1.15	1.10	1.10	1.10	1.10	1.10	1.10
5	1.05	1.05	1.05	1.00	1.05	S	1.25	1.10	1.10	1.10	1.05	1.05	1.05	1.10	1.15	1.10	1.25	1.10	1.10	1.10	1.10	1.10	1.10	1.10
6	1.10	1.20	1.10	1.10	1.10	1.40	1.25	1.20	1.15	1.10	1.10	1.10	1.10	1.15	1.10	1.10	1.10	1.10	S	S	1.10	1.10	1.10	1.05
7	E	E	E	E	1.15	1.15	1.20	1.10	1.10	1.10	1.20	1.10	1.10	1.05	1.05	1.05	1.10	1.30	1.15	1.15	1.15	1.15	1.10	1.10
8	1.10	1.05	1.05	1.05	1.10	1.20	1.15	1.20	1.10	1.10	1.05	1.10	1.10	1.20	1.25	1.40	1.30	1.15	1.15	1.15	1.15	1.15	1.15	1.10
9	1.10	1.05	1.05	1.05	S	1.10	1.10	1.25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.10
10	1.05	1.05	1.05	1.05	1.20	1.20	1.15	1.10	1.05	1.05	1.05	1.05	1.05	1.05	1.40	1.40	1.25	1.25	1.15	1.15	1.05	1.05	1.10	1.05
11	1.05	1.10	1.05	E	S	1.25	1.15	1.15	1.10	1.10	1.10	1.10	1.15	1.25	1.15	1.50	1.40	1.25	1.25	1.15	1.15	1.10	1.10	E
12	E	1.05	E	E	1.25	1.20	1.20	1.10	1.10	1.15	1.10	1.10	1.10	1.20	1.25	1.20	1.20	1.20	1.20	1.15	1.15	1.15	1.15	1.15
13	1.05	1.05	1.05	1.05	1.10	1.30	1.20	1.15	1.10	1.10	1.05	1.05	1.05	1.10	1.05	1.10	1.10	1.15	1.15	1.15	1.10	1.10	1.10	1.05
14	E	1.10	E	1.10	1.10	1.20	1.25	1.20	1.10	1.10	1.10	1.10	1.05	1.10	1.10	1.10	1.25	1.20	1.15	1.15	1.10	1.10	1.10	1.10
15	E	1.30	1.20	1.20	1.10	1.25	1.15	1.25	1.20	1.20	1.15	1.10	1.15	1.10	1.25	1.35	1.30	1.25	1.25	1.20	1.15	1.15	1.10	1.15
16	1.10	E	E	1.25	1.35	1.30	1.25	1.20	1.15	1.15	1.15	1.15	1.20	1.10	1.50	1.30	1.30	1.20	1.15	1.15	1.15	1.15	1.15	1.10
17	1.05	1.10	1.05	1.10	1.10	1.20	1.15	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.35	1.05	1.05	1.05	1.05	1.15	1.15	1.10
18	1.10	1.05	1.05	1.10	1.10	1.10	1.25	1.25	1.20	1.15	1.20	1.10	1.20	1.15	1.10	1.10	1.20	1.25	1.25	1.15	1.15	1.20	1.25	1.15
19	E	1.15	E	E	1.30	1.25	1.20	1.15	1.20	1.20	1.15	1.15	1.15	1.10	1.10	1.15	1.15	1.15	1.10	1.20	1.20	1.25	1.10	1.15
20	1.20	1.10	1.10	C	C	C	C	C	C	C	C	C	C	C	C	1.10	1.10	1.30	1.15	1.15	1.15	1.15	1.10	1.15
21	1.05	1.10	E	1.05	1.05	1.35	1.15	1.10	1.10	1.15	1.05	C	C	C	C	C	1.05	1.05	1.05	1.05	1.05	1.05	1.10	1.10
22	1.05	1.15	E	1.35	1.30	1.20	1.15	1.15	1.10	1.10	1.15	1.10	1.05	1.05	1.10	1.10	1.20	1.20	1.20	1.15	1.10	1.15	1.10	1.10
23	1.10	E	E	E	1.25	1.25	1.20	1.15	1.10	1.10	1.15	1.10	1.10	1.10	1.05	1.10	1.10	1.20	1.20	1.20	1.15	1.15	1.10	E
24	1.10	1.15	E	1.10	1.10	1.40	1.15	1.15	1.10	1.05	1.10	1.05	1.10	1.25	1.10	1.10	1.10	1.05	1.05	1.05	1.10	1.15	1.10	1.10
25	1.05	1.05	1.20	1.40	1.25	1.30	1.35	1.20	1.25	1.15	1.10	1.10	1.10	1.10	1.30	1.20	1.25	1.30	1.30	1.20	1.15	1.10	1.15	1.05
26	1.05	1.05	1.05	E	1.20	1.10	1.10	1.10	1.10	1.10	1.10	1.05	1.10	1.20	1.15	1.30	1.30	1.30	1.15	1.15	1.10	1.05	1.05	1.05
27	1.10	1.05	1.10	E	1.15	1.25	1.15	1.15	1.20	1.20	1.15	1.20	1.10	1.10	1.10	1.30	1.30	1.25	1.15	1.15	1.15	1.10	1.10	1.05
28	E	1.25	1.15	E	1.20	1.15	1.15	1.20	1.15	1.10	1.15	1.20	1.10	1.10	1.10	1.30	1.30	1.25	1.15	1.15	1.15	1.10	1.10	1.05
29	E	1.10	1.10	E	1.10	1.05	1.20	1.15	1.15	1.10	1.10	1.10	1.10	1.20	1.10	1.10	1.10	1.25	1.15	1.15	1.15	1.10	1.10	E
30	1.05	E	1.05	1.25	1.05	1.25	1.20	1.20	1.15	1.10	1.10	1.10	1.10	1.20	1.25	1.05	1.10	1.10	1.10	1.20	1.20	1.15	1.10	1.10
31	E	1.05	1.05	1.05	1.10	1.15	1.15	1.15	1.15	1.20	1.15	1.15	1.10	1.10	1.10	1.10	1.10	1.05	1.10	1.10	1.10	1.10	1.10	1.05
No.	2/	25	2/	19	16	24	29	30	29	29	29	25	24	24	23	25	27	28	25	27	26	25	24	25
Median	1.05	1.10	1.05	1.10	1.15	1.25	1.20	1.20	1.15	1.10	1.10	1.10	1.10	1.10	1.10	1.20	1.25	1.20	1.15	1.15	1.10	1.10	1.10	1.10

Sweep $\frac{1}{2}$ Mc to $\frac{1}{2}$ Mc in $\frac{1}{2}$ min in automatic operation.

f_oF₂S

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT. + 9h.)

Types of Es

Jul. 1961

Day	00	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 ₂	C	C ₂	C ₂	C ₃	C ₂	C	C	C ₂	C ₂	C ₂	f ₂	f ₂	f ₂	f ₂
2	f	f	f	f		C	C ₃	C ₂	C ₂	C ₂	C ₂	C	C	C	C	C	C	C ₂	C ₂	C ₂	f ₂	f ₂	f ₂	f ₂
3	f	f ₂	f ₂	f		C ₂	C	C ₂	C ₃	C ₃	C ₂	C ₂	C	C	C ₂	C ₂	C ₃	C ₂	C ₂	C ₂	f ₂	f ₂	f ₂	f ₂
4	f ₂	f	f	f		C	C ₂	C ₂	C	C ₂	C ₂	C ₂	C	C	C	C ₂	C ₃	C ₄	C ₅	C ₄	f ₂	f ₂	f ₂	f ₂
5	f ₂	f ₂	f ₂	f	f	C	C	C	C	C ₂	C ₂	C ₂	C ₂	C ₂	C	C	C	C	C ₂	C ₄	f ₂	f ₂	f ₂	f ₂
6	f ₂	f ₂	f	f ₂	f	C	C	C ₂	C ₃	C ₂	C ₂	C ₂	C ₂	C ₂	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f
7						C	C ₂	C	C ₂	C ₂	C ₂	C	C ₂	C ₂	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f
8						C ₃	C ₂	C	C ₂	C ₂	C ₂	C	C ₂	C ₂	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f
9	f ₂	f ₂	f ₂	f ₂	f ₂	C ₃	C ₂	C ₂	C ₂	C ₂	C ₂	C	C	C	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f ₂
10	f ₂	f ₂	f ₂	f ₂	f ₂	C ₂	C ₂	C ₂	C ₂	C ₂	C ₂	C	C	C	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f ₂
11	f ₂	f ₂	f	f		C	C ₂	C ₂	C	C	C ₂	C	C	C	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f
12	f ₂	f ₂	f ₂	f		C	C ₂	C ₂	C ₂	C ₂	C ₂	C	C	C	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f
13	f ₂	f ₂	f ₂	f		C	C ₂	C ₂	C ₂	C ₂	C ₂	C	C	C	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f
14	f	f	f	f		C ₂	C	C	C ₂	C ₂	C ₂	C	C	C	C	C	C	C	C ₂	C ₂	f ₂	f ₂	f ₂	f
15	f	f	f	f ₂	f ₂	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
16	f ₂	f ₂	f	f	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
17	f ₂	f ₂	f	f	f	C ₃	C ₂	C ₃	C ₂	C ₂	C ₂	C	C	C	C	C	C	C	C	C	f	f	f	f
18	f	f ₂	f ₂	f	f	C	C ₂	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
19	f	f	f	f	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
20	f ₂	f ₂	f ₂	f ₂	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
21	f	f	f	f	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
22	f ₂	f	f	f	f	C	C ₄	C ₂	C	C ₂	C	C ₂	C	C	C	C	C	C	C	C	f	f	f	f
23	f	f	f	f	f	C	C	C	C ₄	C ₂	C	C	C	C	C	C	C	C	C	C	f	f	f	f
24	f ₂	f	f	f	f	C	C	C	C ₃	C ₂	C	C	C	C	C	C	C	C	C	C	f	f	f	f
25	f	f	f	f	f	C	C ₂	C	C	C ₂	C ₂	C	C	C	C	C	C	C	C	C	f	f	f	f
26	f ₂	f ₂	f	f	f	C	C	C	C ₃	C ₂	C	C	C	C	C	C	C	C	C	C	f	f	f	f
27	f ₂	f ₂	f	f	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
28						C ₅	C ₂	C	C	C ₂	C	C	C	C	C	C	C	C	C	C	f	f	f	f
29	f	f	f	f	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
30	f	f	f	f	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
31	f	f	f	f	f	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	f	f	f	f
No.																								
Median																								

Sweep $\frac{1}{2}$ sec to $\frac{1}{2}$ sec Mc in $\frac{1}{2}$ min in automatic operation.

Types of Es

The Radio Research Laboratories, Japan.

Lat. 35° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

foF2

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	59	55	54	53	53	53	69	69	59R	58	I62A	I60A	A	A	65	66	71	76	85	I89E	I86E	80R	RF	F
2	F	F	F	F	I44F	60	52F	61	51	I52R	I54R	54	56	64	I58A	61	65	64	64	69R	I72R	I64R	I62F	59
3	55	52	47R	48R	47	56	69	71	166R	60	A	I54A	59	I56A	57	58	I58A	I62A	I62A	I62A	62	R	F	I66E
4	I61F	F	F	F	53	55	63	65	70	65	60	66	I65A	66	69	68	67	66	66	I62A	I60A	67R	68F	61F
5	65F	F	F	R	50F	55	66	76	180R	I77A	71R	68	I66A	66R	67	76	80	70	I68A	I60A	67R	68F	65F	
6	59	53	I52F	I45R	54	60F	74	76	180R	I77A	71R	68	I66A	66R	67	76	80	70	I68A	I60A	67R	68F	65F	
7	52F	53	I50F	44	42	45	65	72	I66R	I66A	61	61	I61A	A	A	53	55	58	59	60	66	61	56	I56R
8	F	F	57F	55	53	I54A	I58A	I60A	I58A	55	53	57	55	I58A	I60R	58	59	61	66	66	70	71	55	55
9	52F	52	47	45	46	53	55	66	66	65	64	I60A	55	61	58	60	61	63	73	49	5R	86	51	50
10	515	50	I48R	I46F	44F	50	I63A	65	74R	I66A	I62A	58	I60A	I62A	I64A	I69A	I69A	75	86	I80R	67R	I68R	I66E	F
11	F	F	A	I41A	41	56R	I69A	75	A	A	I58A	I58A	62	I54R	51	I56A	I56A	59	65	I86R	70	57	I55F	58
12	54	54	55	52	46F	58F	A	R	A	65	I66A	71	70	I77	I79A	73	I72A	67	66	71	A	R	F	F
13	I70A	F	F	F	F	60F	76	89	I78A	60	A	A	A	63	I65A	65	65	65	64	68R	I70F	I72F	I72F	68F
14	I64F	I60F	50F	53F	51F	51	53	60	I52A	A	A	58	65	59	56	58	57	58	60	64	82	I86E	F	F
15	F	R	A	I34F	I37F	45	51F	49F	49	49	A	A	53	A	A	I54A	53F	51	I52A	50	I54F	58	56	55
16	51	50	F	F	F	54	57	I60A	63	57	69	I75A	75	75	71	68	66	68	67	67	68	71	F	F
17	51	50	F	F	F	54	57	I60A	63	57	69	I75A	75	75	71	68	66	68	67	67	68	71	F	F
18	I84F	79	I82F	59	I51F	51	55	61	I61A	59	I55A	A	A	68	72	68	60	67	71	68	I60A	I59E	I60F	60F
19	61	I60F	I55F	I50F	I42E	46	50	56	55	56	I55A	59	60	67	61	60	57	I54A	54	54	60	I62F	61F	I60F
20	60	A	A	A	F	F	61M	65	I68A	74	57	I65A	70	70	73	70	71	76	I80R	86	80	A	A	A
21	RF	F	F	F	F	F	61F	68M	78	88	99	85	83	82	90	103	I97A	91	83	85	84F	77	72	I70C
22	70	68F	69	63	64	61	69	73	63	I58A	55	55	60	69	67	68	65	67	69	74	I76E	F	F	F
23	F	F	F	F	F	F	63F	65	60	59	I56S	54	I56A	58	58	55	60	59	65	64	59	60	58	F
24	F	C	F	F	F	54F	60	I62A	I62A	I60A	60	60	66	61	63	I66A	I66A	A	A	A	A	R	A	F
25	F	F	F	F	F	F	I66F	67H	66	68	I50A	I58A	60	I60A	66	61	62	71	65	69	58F	58F	I58F	57
26	I57F	I51F	48F	I46F	I45F	53F	68	I78R	84	81	66	58	A	C	C	C	C	63	67	67	69	69F	63	61
27	60F	54F	50	47	46	52	60	65	56	I58A	63	70	69	67	57M	57	57	I64A	69	74	R	C	C	69
28	F	R	F	F	F	A	57	I52A	64	69	56	I58M	I56B	59	60	66	66	57	60	I68A	72	71	I65F	56F
29	56F	I55F	I55F	55F	54F	54	61	65	71	66	69	66	64	68	74	76	75	62	65	72	I74F	67	58	56F
30	F	F	F	F	F	45	43	50	71	62	58	61	69	69	66	69	68	60	60	I66A	70	F	F	F
31	F	F	F	F	F	48F	I59F	67R	61	53	62	65	66	61	58	66	65	59	58	71	81R	79R	70	52
No.	19	15	16	18	23	26	30	30	28	28	26	28	27	27	28	30	30	30	30	30	27	24	21	21
Median	59	54	53	49	47	54	63	65	65	61	60	60	60	64	65	65	65	64	65	68	70	66	61	60
U.Q	6.1	6.0	5.6	5.3	5.3	5.6	6.6	7.3	7.1	6.6	6.5	6.6	6.9	6.9	7.0	6.8	6.9	6.8	6.9	7.5	8.0	7.1	6.6	6.6
L.Q	5.4	5.2	4.9	4.5	4.4	5.0	5.7	6.1	5.8	5.8	5.5	5.8	5.6	6.0	5.9	5.8	5.9	5.9	6.1	6.4	6.6	5.8	5.7	5.6
Q.R	0.7	0.8	0.7	0.8	0.9	0.6	0.9	1.2	1.3	0.8	1.0	0.8	1.3	0.9	1.1	1.0	1.0	0.9	0.8	1.1	1.4	1.3	0.9	1.0

The Radio Research Laboratories, Japan.

Sweep 160 Mc to 200 Mc in 20 ^{min} sec in automatic operation.

foF2

A 1

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

foF1

135° E Mean Time (GMT.+9h.)

Jul, 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																	I44A							
2						31	A	I44A	I43A	A	A	A	A	A	A	I44A	I44A	I44A	A					
3						32	L	40	A	A	A	A	I46A	I46A	I44A	I44A	I44A	I44A	A					
4						33	I40A	A	A	A	A	A	A	A	A	I44A	I44A	I44A	A					
5						L	40	I43A	I43A	A	A	A	A	A	A	I44A	I44A	I44A	A					
6						L	A	A	A	A	A	A	I46A	A	A	I44A	I44A	I44A	A					
7						32	38	40	A	A	A	A	I46A	A	A	I44A	I44A	I44A	A					
8						I38	I41A	I43A	45	46	I46A	A	A	A	A	I45A	I44A	I44A	A					
9						L	A	A	A	A	A	A	I48A	I48A	47	46	I45A	I42A	I42A	I42A	I42A	I42A	I42A	I42A
10							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
11							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
12							A	A	A	50	A	A	A	A	A	A	A	A	A	A	A	A	A	A
13							A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A
14						A	I42A	I46A	I46A	A	A	A	I48A	49	46	46	46	44	41	L	L	L	L	L
15						36	40	44	45	I46A	45H	A	A	A	A	I45A	I45A	I45A	I45A	I45A	I45A	I45A	I45A	I45A
16						A	I43A	45	48H	A	A	A	A	A	A	I50A	I45A	I45A	I45A	I45A	I45A	I45A	I45A	I45A
17						33	L	I40A	A	A	A	A	A	A	A	C	I46A	I46A	I46A	I46A	I46A	I46A	I46A	I46A
18						34	I38A	43	A	A	A	A	A	A	A	49	48L	47L	I43A	I43A	I43A	I43A	I43A	I43A
19						30	I35A	40	I44A	46	I48A	I48A	I48A	I48A	I48A	I48A	I48A	I48A	I48A	I48A	I48A	I48A	I48A	I48A
20						L	A	A	47	50	I50A	I51A	I48A	50	48	45	45	43L	43L	43L	43L	43L	43L	43L
21						I41A	I45A	I48L	50	49	50	I51A	53L	A	A	A	A	A	A	A	A	A	A	A
22						I32L	38	42	I46A	I48A	50	50L	49	48L	46L	45	45	41L	41L	41L	41L	41L	41L	41L
23						A	A	44	46	I48A	48	I48A	47	I46A	I46A	I46A	I46A	I46A	I46A	I46A	I46A	I46A	I46A	I46A
24						31	L	I36A	L	A	A	A	I48A	50	50	A	A	A	A	A	A	A	A	A
25						A	A	44	A	A	A	A	47	I47A	46	45	43	41L	41L	41L	41L	41L	41L	41L
26						L	L	L	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C
27						A	35	I38A	43	I46A	46	I46A	46	46	45	44	43	I39A	I39A	I39A	I39A	I39A	I39A	I39A
28						A	A	45	46	47	I47B	A	A	A	A	A	I42A	I42A	I42A	I42A	I42A	I42A	I42A	I42A
29						A	A	45	48H	48	49	49	48	47H	45	46H	42L	I39L	I39L	I39L	I39L	I39L	I39L	I39L
30						39	L	I42A	I45A	I50A	I46A	I48A	I48A	47	47	45	42	A	A	A	A	A	A	A
31						L	I41L	46L	I45A	I46A	47	I46H	47H	45	46L	43L	43L	43L	43L	43L	43L	43L	43L	43L
No.						9	15	16	15	17	16	19	17	16	20	23	24	18	5					
Median						32	38	42	44.5	46	46	48	44.8	47	46	45	43	41	35					

foF1

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

The Radio Research Laboratories, Japan.

A 2

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+9h.)

foE

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						R	R	R	R	R	R	B	B	R	B	R	R	R	R					
2						R	R	R	R	R	B	B	B	R	R	R	R	295	R	R				
3						200	255	R	R	R	B	B	R	R	R	R	R	295	R	R				
4						245	260R	305	R	R	R	R	R	R	R	R	305	245	R	R				
5						R	255	R	R	R	R	R	B	R	R	R	300	265R	R	R				
6						B	240	R	R	R	R	R	R	1350R	R	R	R	R	R					
7						R	R	R	R	R	R	R	R	R	R	R	A	260	R	R				
8						R	R	R	R	R	R	R	R	R	R	R	310	260R	205					
9						1190B	1240R	295	R	R	R	R	R	R	R	R	325	305	R	A				
10						B	A	R	R	R	R	R	R	R	R	355	310	270	R					
11						R	R	R	R	R	R	R	R	R	R	R	1330R	R	R					
12						B	R	R	R	R	R	R	R	R	R	R	A	A	A					
13						B	1245R	1300R	1320B	R	R	R	R	R	R	R	A	A	275	205				
14						R	255	1290R	1325R	345	1360R	360	1360B	R	R	R	325	305	R	R				
15						R	R	R	R	R	R	R	R	R	R	R	R	305	270	R				
16						B	R	R	R	R	R	R	R	R	R	R	355	280	B					
17						R	R	R	R	R	R	R	R	R	R	R	R	A	A	A				
18						A	245	305	1330R	1350R	1350R	1355R	R	R	R	R	1330R	285	R	A				
19						R	260	R	R	R	R	R	R	R	R	R	A	A	285	R				
20						R	270	1300R	1325R	1350R	R	R	R	R	R	R	345	215	1290R	240				
21						A	R	305	1325R	355	R	R	R	R	R	R	A	A	A					
22						B	1265R	310	R	R	R	R	R	R	R	R	300	275	215					
23						A	245	305	R	R	R	R	R	R	R	1350R	305	270	A					
24						R	R	1285R	1325R	355	R	R	R	R	R	R	1380R	345	1300R	225R				
25						A	1240R	280	R	R	R	R	R	R	R	R	300	300	R	A				
26						R	R	R	R	R	R	R	R	R	R	R	C	260	200					
27						B	250	295	335	R	R	R	R	R	R	1290R	1245A	190						
28						A	A	R	R	R	R	R	R	R	R	300	255	R	R					
29						A	A	R	R	R	R	R	R	R	R	R	A	255	R					
30							R	305	1330R	R	R	R	R	R	R	R	A	250	185					
31						R	R	R	R	R	R	R	R	R	R	R	A	A	A					
N.o.						3	14	14	9	5	2	5	3	6	7	10	17	19	8					
Median						200	255	300	1225	350	1355	355	4360	1355	355	330	305	270	205					

foE

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2 E

Akita

135° E Mean Time (GMT.+9h.)

foEs

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J23	J24	J25	E	E	27	38	J53	J60	J69	J85	J73	J73	J82	J51	J52	J55	43	J41	E	22	J50	J78	J21	
2	J49	J35	J22	J26	E	G	J46	J48	J53	J46	42	45	49	J66	J73	39	J57	J53	J38	J25	21	J24	J28	J43	
3	J25	J18	E	E	E	23	31	40	J68	J04	J33	J62	J54	48	J58	44	J50	J83	J14	J59	J23	J36	J68	J39	
4	J29	J46	J28	J24	J34	24	35	48	J58	J71	61	45	J64	51	J38	50	40	J67	J88	J71	J72	J61	J61	J73	
5	J44	J43	J28	J43	J24	G	31	41	J69	J33	J08	J80	J84	J49	J22	47	J60	J64	J70	J34	J88	J76	J49	J28	
6	J73	J49	J38	J28	J35	27	41	J53	J03	J88	42	J55	J68	J49	J23	J93	J85	34	G	E	E	E	E	E	
7	J28	J25	J23	21	E	30	29	31	J103	J08	J43	J50	J45	J83	J52	J35	32	J49	J29	E	E	J21	J28	22	
8	J18	J34	J37	J66	J76	J63	J60	J108	J61	G	41	47	49	J62	J54	46	J73	J41	J56	24	J50	J29	J28	20	
9	J27	J26	J23	J18	E	G	G	J46	J60	J63	45	J63	G	G	40	J56	J56	J40	J35	J25	J28	J28	E	20	
10	J34	J28	J36	J24	22	J44	J38	J58	J64	J08	J76	J59	J90	J65	J08	J88	J46	J39	J53	J64	J53	J40	J74	J77	
11	J28	J54	J68	J66	J35	34	J65	J63	J40	J35	J85	J29	J38	J59	40	37	J67	J86	J43	J59	J28	J52	J53	J29	
12	J24	J31	J43	J46	E	J42	J84	J68	J00	J30	J04	J81	J75	J69	J80	J72	J83	J38	J59	J63	J23	J80	J82	J60	
13	J87	J70	J58	J70	J51	23	J50	J65	J43	J53	J67	J40	J08	J54	J73	J50	J39	J59	J40	J65	J60	J28	J42	J24	
14	J60	J41	J38	J28	18	J58	36	J57	J01	J66	J85	J60	J51	J66	J42	36	46	J36	G	E	E	E	E	E	
15	J24	J23	J43	J27	E	25	32	J52	J21	J38	40	59	J38	J81	51	J61	J48	J83	J13	J28	J28	J29	J23	J19	
16	J18	J18	J41	J57	J28	J60	J23	J103	J69	J72	J08	J200	J11	G	J60	J58	40	J43	29	21	J35	J51	J78	J43	
17	J28	J61	J53	J23	E	28	60	J61	J90	J27	J85	J85	J89	J58	C	40	J50	J41	J36	J50	J28	J32	J19	J50	
18	J61	J60	J83	J61	J64	J32	J63	J51	J65	J60	J72	J88	J18	J80	J63	G	J75	J60	J87	J42	J83	J28	23	J28	
19	J28	J43	J59	J60	J23	J82	40	38	J60	J73	J60	J62	46	J65	J80	J103	J55	J84	J79	J60	J23	J61	J43	J60	
20	J50	J61	J28	J30	J28	26	38	J61	J81	J60	J78	J83	J200	J84	J48	J82	39	J31	J65	J59	J85	J86	J83	J87	
21	J64	J52	J35	J38	J21	J28	J69	J61	J64	J83	J88	J56	51	J55	J49	J69	J36	J36	J103	J20	J61	J53	J29	C	
22	J28	J19	J60	J63	J23	31	J38	J52	J13	J70	42	44	G	J42	G	G	34	31	28	24	J57	J58	J27	J52	
23	J83	J35	J29	J50	J62	J51	J52	J60	J28	J36	42	43	J60	40	48	G	G	G	3.1	J42	J19	J23	21	J23	
24	J50	C	J52	J28	J28	27	J49	J50	J12	J73	37	J88	J50	56	J88	J85	J44	J85	J63	J68	J71	J78	J38	J59	
25	J40	J25	J18	J34	J24	J38	37	36	J70	52	J84	J18	J38	J83	40	G	G	J45	J29	J35	J79	J28	J19	J49	
26	J49	J23	J23	J23	E	J26	J36	J53	J60	J73	J38	J47	C	C	C	C	C	36	J49	J49	J60	J50	J62	J60	
27	J59	J38	J23	J28	J28	25	J43	J53	J63	J43	J84	J62	J99	42	44	G	38	J08	G	E	E	C	C	E	
28	20	J20	J22	J23	J23	J38	J30	J64	35	40	J84	G	B	J46	51	J57	44	39	J50	J97	J79	E	E	J19	
29	J18	21	J22	J32	J22	J85	J22	J60	40	J40	J82	42	J49	39	J58	J47	30	G	G	J19	J52	J35	J18	J25	
30	J30	J28	E	E	E	J35	J63	J52	J57	J58	J54	J48	J64	39	J38	J42	J34	43	J39	J75	J50	J59	J30	J59	
31	J60	J22	E	E	E	J20	29	J42	35	41	J45	38	37	35	J38	J40	J38	J40	J28	J52	J60	J23	J30	J25	
No.	31	30	31	31	31	31	31	31	31	31	31	31	30	30	29	30	30	31	31	31	31	30	30	30	30
Median	30	32	35	28	23	28	41	53	64	70	82	60	62	57	51	47	49	41	43	49	50	36	30	34	
U. Q	59	46	52	50	28	42	63	61	90	88	88	85	89	69	68	61	67	67	70	64	72	58	62	59	
L. Q	25	23	23	23	E	25	35	48	58	52	45	45	49	42	41	37	38	36	29	24	23	28	21	21	
Q. R	34	23	29	27		17	28	13	32	36	43	40	40	27	27	24	29	31	41	40	49	30	41	38	

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

foEs

The Radio Research Laboratories, Japan.

A 4

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT. + 9h.)

fbEs

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E	1.7	1.7	E		27	35	"5.3 ^B	56	48	A	A	A	A	51	"5.2 ^B	45	33	35		E	48	53	E	
2	E	3.0	3.3	E			39	41	43	45	40	41	"4.9 ^B	47	A	35	44	26	38	E	25 ^B	E	21	20	3.3
3	E	E	E			21	31	38	49	56	A	A	A	47	A	38	39	A	A	55	E	E	E	2.0	4.5
4	2.0	2.0	E	E	2.3	2.3	3.5	4.4	5.8	4.5	4.7	4.1	A	4.9	3.8	"3.0 ^B	3.9	6.2	A	5.5	6.3	5.9	3.5	4.5	
5	2.5	3.1	2.5	4.0	1.8	3.0	3.0	4.2	E 6.9 ^B	A	5.6	5.5	A	4.9	4.0	4.0	5.8	4.5	A	A	5.4	4.0	2.5	3.5	
6	5.0	3.5	2.1	2.0	2.0	2.6	3.9	4.5	A	A	4.1	4.0	A	A	A	4.0	3.5	2.6							
7	2.5	1.8	E	E	1.9	2.2	2.9	3.1	4.6	A	5.0	4.0	3.8	5.0	4.9	3.5	3.1	3.4	4.6	2.1	E 2.1 ^B	E 1.7	E	E	
8	E	2.0	E	E		A	A		A		4.0	4.0	4.7	A	4.6	4.6	5.3	3.5	3.6	2.5	E 2.9 ^B	E	E	E	
9	E	2.0	E	E					5.0	5.4	4.4	A	A	A	3.6	5.5	4.5	3.6	2.5	2.1	E "2.8 ^B	E	E	E	
10	2.5	E	3.1	1.7	E	4.0	A	5.1	E 6.4 ^B	A	5.5	A	A	A	A	A	A	3.9	5.0	5.8	"5.3 ^B	4.0	1.8	4.7	
11	2.8	2.0	A	A	3.0	3.2	A	"6.3 ^B	A	A	A	5.0	A	5.1	3.9	"3.7 ^B	A	4.9	3.8	E 5.9 ^B	1.8	2.5	1.9	1.8	
12	E	2.4	"4.3 ^B	2.5	4.5	4.1	A	E 6.8 ^B	A	A	5.7	A	A	6.2	A	5.6	A	3.7	5.0	5.5	A	6.3	5.8	4.1	
13	A	5.5	4.0	4.0	4.5	2.0	4.5	E 6.5 ^B	A	C	A	A	A	5.0	A	E 5.0 ^B	3.7	3.7	5.0	5.5	A	6.3	5.8	4.1	
14	2.1	3.0	2.7	1.8	1.8	4.6	3.3	5.0	A	A	5.6	A	4.9	4.0	3.8	3.6	4.0	3.0	2.8	5.5	5.1	"2.8 ^B	"4.2 ^B	E	
15	E	E	A	E		2.1	2.5	G	3.5	2.5	A	3.7	5.0	A	A	A	4.0	3.8	A	1.7	1.9	2.8	2.6	E	
16	E	E	E	4.0	E	4.7	4.6	A	4.1	2.1 ^A	5.0	A	6.4	"6.0 ^B	A	4.8	3.9	3.8	2.8	2.0	E 3.5 ^B	3.8	3.1	3.0	
17	E	2.9	2.5	2.0	3.5	2.7	4.9	5.2	A	5.8	5.4	A	A	5.5	C	4.0	4.7	3.5	3.1	3.5	2.6	2.0	E	4.0	
18	E	4.0	4.0	2.5	3.5	2.5	4.9	4.0	A	5.5	A	A	A	5.2	4.6	4.0	4.0	4.4	3.0	4.0	A	"2.8 ^B	E	"2.8 ^B	
19	2.4	2.5	3.3	3.0	1.9	G	4.0	3.5	4.6	4.2	A	5.4	4.3	5.0	5.3	5.0	3.8	4.4	4.5	4.6	E	3.0	3.8	4.5	
20	1.7	A	A	E	E	2.2	3.0	5.2	A	4.1	4.6	A	5.0	5.7	4.6	3.7	3.4	3.0	E 6.5 ^B	3.4	6.5	A	A	A	
21	4.3	2.3	2.9	3.3	E	2.5	3.8	4.3	4.0	3.9	4.0	4.7	5.1	4.9	"4.9 ^B	6.4	A	7.5	7.0	4.3	3.5	2.8	2.5	C	
22	2.1	E	E	4.0	E	2.8	3.0	3.6	4.1	4.0	3.8	3.9	A	4.0	4.7		3.4	3.0	2.6	2.3	5.8	1.9	2.6	1.7	
23	2.9	E	E	E	2.3	2.3	4.5	4.2	4.0	3.6	E 4.2 ^S	4.0	A	3.9	4.7		A	A	2.8	2.9	E	E	E	E	
24	1.8	C	2.5	E	2.0	2.3	4.0	4.0	A	A	3.6	5.5	4.9	4.5	4.5	A	A	A	A	2.9	E	E	E	E	
25	2.6	E	E	3.0	E	3.0	3.7	3.6	4.6	5.0	A	A	3.8	A	G		A	2.9	2.9	2.5	E	1.8	E	4.0	
26	4.0	E	E	E		2.5	2.8	3.1	5.8	6.6	6.0	4.0	A	C	C	C	C	3.3	4.5	4.9	5.4	2.6	4.7	4.0	
27	2.3	2.9	E	E	E	2.2	3.3	5.0	5.3	3.5	3.8	3.9	A	3.9	3.6		3.1	A	5.0	4.9	5.4	C	C	C	
28	E	E	E	E	1.9	5.0	4.7	5.0	3.7	3.8	4.2	4.0	B	"4.6 ^B	"5.1 ^B	4.5	4.4	3.4	5.0	A	2.5	E	E	E	
29	E	E	E	E	1.7	5.0	4.7	5.0	3.7	3.8	4.2	4.0	4.1	3.9	4.3	3.9	3.0	4.0	3.9	A	E	E	E	E	
30	E	E	E	E	3.0	3.0	G	4.3	4.9	5.2	5.4	4.8	5.2	3.7	3.6	4.2	3.4	4.0	3.9	A	3.0	5.0	E	4.1	
31	E	E	E	E	E	E	2.6	3.0	3.4	"4.1 ^B	4.4	"3.8 ^B	3.6	"3.5 ^B	3.6	4.0	3.3	3.2	2.3	4.0	5.0	2.1	2.1	"2.5 ^B	
No.	31	30	28	28	20	28	30	29	29	29	31	30	28	28	28	24	28	29	26	26	27	26	26	27	
Median	2.0	2.0	2.1	1.9	1.8	2.6	3.8	4.3	5.0	5.2	5.0	5.2	5.6	5.0	4.6	4.4	4.0	3.6	3.8	3.8	E 3.5	2.8	2.5	2.8	

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

The Radio Research Laboratories, Japan.

fbEs

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GM.T. + 9h.)

f-min

Jul. 1961

Day	00	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	1.75	2.00	3.45	1.70	2.50	3.45	3.50	2.00	3.50	2.00	1.70	1.75	1.65	E	E	E	E	E
2	E	E	E	E	E	E	1.65	1.65	1.80	1.95	3.40	3.30	3.60	3.50	2.95	1.80	1.65	1.65	E	E	E	E	E	E
3	E	E	E	E	E	1.75	1.70	2.05	3.45	2.10	3.00	2.50	2.00	2.00	2.00	1.90	1.75	E	1.65	E	E	E	E	E
4	E	E	E	E	E	1.70	1.70	1.80	1.90	1.70	2.00	1.85	2.10	2.10	2.55	2.00	1.70	1.70	1.70	1.70	E	E	E	E
5	E	E	E	E	E	1.70	1.65	1.65	1.70	2.00	1.70	2.25	2.25	2.95	2.00	1.70	1.70	1.70	1.70	1.70	E	E	E	E
6	E	E	E	E	E	1.80	1.70	1.80	1.95	1.80	1.90	2.00	2.55	1.95	1.90	1.80	1.65	E	1.70	E	E	E	E	E
7	E	E	E	E	E	E	1.65	E	1.65	1.75	1.65	1.95	1.85	2.00	2.00	1.80	1.70	1.65	E	E	E	E	E	E
8	E	E	E	E	E	E	1.65	1.75	1.70	1.65	1.65	1.80	1.70	2.00	2.00	2.00	1.75	E	1.65	E	E	E	E	E
9	E	E	E	E	E	1.90	1.65	1.65	1.65	1.65	1.85	1.80	1.95	1.95	1.95	E	E	1.80	E	E	E	E	E	E
10	E	E	E	E	E	1.75	1.70	1.70	1.75	1.65	1.70	1.75	2.00	2.70	1.95	1.90	E	1.80	E	E	E	E	E	E
11	E	E	E	E	E	1.75	1.70	1.70	1.75	1.95	1.70	2.00	2.70	2.00	1.85	1.70	2.00	1.75	1.70	E	E	E	E	E
12	E	E	E	E	E	1.75	1.75	2.00	2.05	2.05	2.50	2.35	3.00	1.85	2.00	1.70	1.70	1.70	E	E	E	E	E	E
13	E	E	E	E	E	1.65	1.75	1.80	3.45	1.70	1.80	2.00	2.00	3.25	2.55	1.95	1.75	1.65	E	E	E	E	E	E
14	E	E	E	E	E	E	1.70	E	1.80	1.70	1.80	1.90	3.60	2.00	1.90	1.80	1.95	1.65	1.65	E	E	E	E	E
15	E	E	E	E	E	E	E	E	1.75	E	1.95	2.05	1.70	2.00	2.00	1.90	1.90	1.65	1.65	E	E	E	E	E
16	E	E	E	E	E	E	E	E	1.65	1.85	1.70	2.00	2.00	1.90	1.90	1.80	1.80	1.75	1.70	E	E	E	E	E
17	E	E	E	E	E	E	E	E	1.70	1.70	1.95	2.00	2.50	2.00	2.00	2.00	1.70	2.00	1.65	E	E	E	E	E
18	E	E	E	E	E	E	E	1.80	1.65	1.90	1.80	2.05	2.00	2.00	2.00	1.90	1.70	1.65	E	E	E	E	E	E
19	E	E	E	E	E	E	E	1.70	1.65	2.05	2.05	2.55	1.95	2.00	2.40	1.70	1.70	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	1.65	1.65	1.65	1.70	1.90	1.70	2.00	1.95	1.70	1.75	E	1.65	E	E	E	E	E
21	E	E	E	E	E	E	E	1.80	1.65	1.80	1.80	2.55	3.45	2.45	3.00	2.00	1.70	E	E	E	E	E	E	E
22	E	E	E	E	E	1.70	1.65	2.00	1.70	1.80	2.00	1.95	2.00	1.80	1.80	1.70	1.95	1.70	E	E	E	E	E	E
23	E	E	E	E	E	E	E	1.65	1.65	2.05	2.20	2.20	2.65	2.00	1.80	1.70	1.65	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	1.65	1.80	1.65	2.00	2.00	2.00	2.00	1.70	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	1.65	1.85	2.00	2.00	2.00	2.00	1.65	1.80	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	1.75	1.70	1.80	2.05	C	C	C	C	C	E	E	E	E	E	E	E
27	E	E	E	E	E	1.70	E	1.70	1.90	1.70	1.90	1.85	2.55	1.75	1.85	1.70	1.70	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	1.70	1.65	1.70	B	2.50	2.00	1.65	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	1.80	1.70	1.75	2.00	2.00	1.85	1.70	2.00	E	E	E	E	E	E	E	E
30	E	E	E	E	E	1.70	E	1.70	1.65	2.00	1.75	1.80	2.00	1.80	2.00	1.70	2.00	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	1.70	2.00	1.80	1.75	2.05	1.90	1.90	E	1.70	E	E	E	E	E	E	E
No.	31	30	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	30	30	30
Median	E	E	E	E	E	E	E	1.65	1.70	1.80	1.80	2.00	2.00	2.00	2.00	1.80	1.70	1.65	E	E	E	E	E	E

Sweep 1.60 Mc to 2.00 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 6

f-min

Lat. 39° 43.5' N
 Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GM.T.+9h.)

M(3000)F2

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	275	275	275	270	300	325	345	340	330A	325	I285A	A	A	A	295	285	280	290	295	I300S	I300S	290K	R	F	
2	F	F	F	F	I270F	295F	290F	310	305	I290R	I290K	300	285	320	I280A	295	300	300	290	I310K	I290K	I270F	I270F	290	
3	270	300	280R	280R	270	290	295	300	300	305	305	290	A	I270A	300	I300A	315	320	I280A	I280A	I310K	I290A	I270A	I280F	
4	I285F	F	F	F	280	265	290	300	300	305	305	250	290	I300A	290	310	315	320	I300A	I275	R	F	F	I300S	
5	310F	F	F	R	290F	300	310	295	I310K	I310A	305K	290	I280A	I280A	290K	270	300	300	I305A	I290A	I285R	I280F	I280F	270F	
6	275	250	I285F	I290R	280	280F	290	315	A	280	250	I290A	A	I290A	A	285	275	295	300	300	300	290	290	270	I270K
7	260F	275	I275F	280	270	250	290	290	I300A	I290A	300	290	270	I290A	I285K	290	300	300	305	300	300	290	285	270	285
8	F	F	270F	285	280	I280A	I295A	I300A	I300A	310	265	300	270	I290A	I285K	290	300	300	300	300	300	320	280	275	280
9	280F	285	290	270	285	305	290	290	290	300	300	I275A	255	285	295	I290A	295	270	275	I310K	I310K	I310K	I275	I275	265
10	260S	285	I270R	I290F	280F	290	I310A	300	330R	I350A	I310A	280	I285A	I290A	I280A	I285A	290	290	305	I310K	I310K	I265R	I275K	F	
11	F	F	A	I285A	255	I275R	I300A	320	A	A	A	I280A	I275A	305	I270K	255	I270A	290	280	I315R	I315R	I265F	I260F	275	
12	280	280	290	280	285F	295F	A	R	A	300	I280A	300	275	290	I305A	300	I310A	315	290	310	A	K	F	F	
13	I270A	F	F	F	F	270F	285	300	I315A	290	A	A	A	I285	I290A	280	295	310	295	285R	I280F	I280F	I275F	I275F	
14	I270F	I260F	240F	290F	250F	280	255	305	I305A	A	A	A	290	270	280	290	305	285	285	290	250	I260S	F	F	
15	F	R	A	I230F	I290F	270	260F	235F	210	G	A	G	270	A	A	I255A	285F	280	285	280	I260F	260	260	260	
16	280	270	F	F	F	275	275	I280A	310	250	290	I395A	300	295	315	325	300	295	290	290	290	270	280	F	
17	F	F	F	F	F	290F	290	305	I310A	295	290	I285A	I285A	300	I295C	300	300	285	290	295	290	280	F	F	
18	I275F	280	I310F	320	I270F	260	265	305	I290A	250	I250A	A	A	A	280	280	295	295	285	305	310	I280A	I255K	I260F	275F
19	245	I240F	I275F	I260F	I245F	230	290	265	250	260	I245A	270	245	290	290	290	330	I290A	290	280	285	I275F	I280F	I285F	
20	290	A	F	F	F	F	300A	305	I305A	315	350	I285A	300	290	295	290	285	285	285	I300K	305	300	A	A	
21	R	F	F	F	F	F	270F	290H	280	280	305	295	290	270	270	285	I295A	285	280	290	280F	275	280	I270C	
22	280	275F	275	265	255	270	265	305	280	I280A	255	270	275	300	295	305	295	310	305	290	I300S	F	F	F	
23	F	F	F	F	F	F	290F	310	290	285	I275S	230	I250A	265	290	265	285	305	300	310	275	270	F	F	
24	F	C	F	F	F	F	270F	295	I310K	I290A	I275A	270	265	280	280	I290A	I280A	A	A	A	A	R	A	F	
25	F	F	F	F	F	F	I290F	I280H	270	285	I300A	I280A	270	I275A	290	290	295	300	320	305	295F	I260F	I270F	280	
26	I270F	I280F	280F	I280F	I280F	285F	315	I275R	325	310	325	270	A	C	C	C	C	315	310	300	290	I280F	280	280	
27	I285F	I280F	280	280	285	290	315	305	I255A	285	275	280	280	280	280	260	255	I270A	265	250	290	K	C	270	
28	F	R	F	F	F	A	345	I285A	300	G	300	305H	I285B	290	280	305	320	310	300	I290A	290	300	I290F	270F	
29	I270F	I275F	I280F	275F	285F	280	310	310	325	305	305	300	270	280	300	295	315	290	295	310	I320F	300	280	270F	
30	F	F	F	F	F	285	300	300	325	325	270	295	305	305	290	310	325	335	300	I295A	290	F	F	F	
31	F	F	F	F	F	280F	I225F	345R	330	330	325	295	300	315	290	320	305	310	285	300K	310K	335	290	290	
No.	19	15	16	18	23	26	30	30	28	28	26	26	27	27	28	30	30	30	30	30	30	27	24	21	
Median	280	280	280	280	280	280	270	305	300	290	290	285	280	290	290	290	295	295	295	300	290	280	275	275	

The Radio Research Laboratories, Japan.

Sweep 460 Mc to 24.0 Mc in 20 sec in automatic operation.

M(3000)F2

Lat. 39° 43.5' N
Long. 140° 08.2' E

IONOSPHERIC DATA

Akita

135° E Mean Time (GMT. + 9h.)

M(3000)F1

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1																									
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									
17																									
18																									
19																									
20																									
21																									
22																									
23																									
24																									
25																									
26																									
27																									
28																									
29																									
30																									
31																									
No.	9	13	12	15	17	15	19	16	15	20	22	23	17	4											
Median	330	340	360	360	370	390	375	4370	365	365	360	355	345	340											

Sweep 1.60 Mc to 2.00 Mc in 20 ^{min} Sec in automatic operation.

M(3000)F1

The Radio Research Laboratories, Japan.

A 8

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GM.T. + 9h.)

R'F2

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							270	I285A	A	A	A	A	A	A	355	365	365	345	295					
2	355	350	320	345	400	395	390	I430B	I410A	380	350	350	350	350	350	350	350	335	300					
3	310	305	320	305	I340A	A	A	I450A	I395A	385	370	370	370	370	370	370	370	A	A					
4	400	350	315	I405A	335	395	380	I370A	355	340	320	305	305	305	305	305	305	A	A					
5	270	310	340	I305A	I310A	320	350	I360A	350	425	350	305	305	305	305	305	305	A	A					
6	300L	335	295	A	A	400	A	A	A	A	420	400	400	400	400	400	400	305	300					
7	445	335	330A	I370A	370	395	405	430	385	385	385	385	385	385	385	385	385	305	300A					
8	A	I350A	I335A	I360A	350	440	380	I390A	I395A	I395K	380	I380A	350	310	310	310	310	350	310					
9	345	345	345	345	345	345	I420A	I410B	395	380	I380A	350	400	345	345	345	345	400	345					
10	I290A	315	I290A	A	A	A	A	A	A	I380A	I385A	I360A	340	295A	295A	295A	295A	340	295A					
11	I305A	A	A	A	A	A	420	I410A	355	410	520	A	A	345	345	345	A	A						
12	305	I310A	A	A	345	I395A	355	I370A	350A	I340A	355	I310A	300	335A	335A	335A	300	335A						
13	295L	300	325	I315A	I350C	A	A	A	395	I370A	I370B	350	300	295	295	295	300	295						
14	A	405	I330A	I375A	A	A	A	A	395	445	415	400	355	405	405	405	355	335						
15	445	590	650	G	A	A	A	A	A	A	I480A	360	400A	A	A	A	400A	A						
16	A	I360A	I380A	340	445	355	I350A	I350A	350	305A	320	330	300L	295L	295L	295L	300L	295L						
17	345	I340A	325	I300A	I315A	I350A	I410A	I400A	330	I335C	310	305	345	310	310	310	305	310						
18	400	I400A	310	I335A	I375A	A	A	A	400	355	350	400	350	300	300	300	300	300						
19	445	495	415	490	455	I520A	I450A	505	370	395	355	300	I300A	I300A	I300A	I300A	I300A	I300A						
20	290	260H	335	I340A	305	290	I395A	350	370	345	350	350	350	350	350	350	350	350	A					
21	315	295	295	340	330	300	320	345	345	355	330	A	A	A	A	A	A	A						
22	355	375	310	395	I410A	495	445	395	355	355	310	350	320	300	300	300	300	300						
23	I300A	320	355	395	I440A	595	I510A	445	400	435	365	340	305	305	305	305	305	305						
24	355	295	285H	I370A	I425A	445	I420A	395	400	420	I365A	I360A	A	A	A	A	A	A						
25	300	300	355H	350	385	I380A	I440A	450	I430A	360	395	350	325	280	280	280	280	280						
26	260	275	280	I325A	I335A	450	A	C	C	C	C	C	C	305	295	295	295	295						
27		325	I375A	I465A	465	395	355	400H	445	445	I390A	365	345	345	345	345	345	345						
28	A	280	I350A	310	G	385	385	I415B	395	405	345	300A	300A	300A	300A	300A	300A	300A						
29	A	275A	295	305	355	345	350	420	370	345	335	270	310L	300	300	300	300	300						
30	305	290	300	300	325	I370A	350	355	340	385	335	300	295	295	295	295	295	295						
31	260	255	305	320	345	350	335	345	340	310	310	310	310	310	310	310	310	310						
No.	15	29	29	28	26	23	24	24	26	28	30	28	26	24	24	24	28	26	24					
Median	345	315	320	340	350	380	395	395	370	380	360	350	335	300	375	375	350	335	300					

Sweep 4.60 Mc to 22.0 Mc in 20 sec in automatic operation.

R'F2

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT + 9h.)

h'F

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	225	230	275	280	265	235	250	A	A	A	A	A	A	A	A	A	A	A	245	1250A	235	245	1255A	1260A	1270A
2	210A	210A	215	305	310	260	A	A	A	220A	205	205	A	A	A	225	1245A	245	1270A	240	245	230	245	245	270A
3	265	260	300	310	340	255	250	A	A	A	220A	1210A	1210A	1240A	1230A	245	1235A	1245A	1265A	260	215	265	1315A	300	
4	245	305	280	235	305	255	1250A	A	A	A	A	225	A	A	215	A	A	A	A	A	1310A	1320A	245A	1290A	
5	255	270A	235A	300A	245	240	250	A	A	A	A	A	A	A	240	A	A	A	A	A	A	A	A	305	1320A
6	A	A	335	245	325	230	A	A	A	A	240	240	1230A	A	A	A	240	245	255	260	235	250	230	245	
7	245A	270	215	300	345	250	255	210	A	A	A	200	210	1205A	1205A	220	215H	270	1260A	260	250	1280B	300	255	
8	270	275	300	245	305	A	A	A	1220A	205	200	1200A	A	A	A	A	1240A	1250A	1275A	260H	250A	1255A	305	245	
9	300	275	270	240	255	255	245	A	A	A	225	1210A	205	225	245	A	A	1250A	245	255	205	1250A	305	300	
10	300A	275	1300A	245	245	A	A	A	A	A	A	A	A	A	A	A	A	A	A	255	1255A	1280A	240	1290A	
11	270A	255	A	A	A	290A	A	A	A	A	A	A	A	A	240	240	A	A	A	1270A	225	300A	340	305	
12	300	305	1310A	295A	300	A	A	A	A	A	A	A	A	A	A	A	A	210A	A	A	A	A	A	1325A	260
13	1265A	1270A	1290A	1280A	1290A	260	A	A	A	C	A	A	A	A	A	A	245	245	255	1285A	1295A	245A	1300A	305	
14	330A	1340A	1335A	340	340	1285A	250A	1240A	1230A	1230A	A	A	A	A	230	235	245	1245A	250	290	305	345	305	265	320
15	260	255	1380A	415	340	300	280	250	240	205	1200A	195	A	A	A	A	A	A	A	295	275	340A	340A	300	
16	245	300	305	1310A	325	1320A	1265A	1240A	1225A	220	A	A	A	230	1230A	1225A	1235A	1250A	1250A	255	1300A	310A	300A	330A	
17	305	340A	305	280A	280	A	A	A	A	A	A	A	A	A	A	245	1240A	A	A	270	290	300	295	305	
18	305	305	290A	240	1300A	1290A	A	A	A	A	A	A	A	A	1230A	235	1240A	1250A	1260A	280A	1290A	1330A	345	1380A	
19	375A	355	1310A	1340A	440A	A	A	255	1230A	240	1245A	1245A	240A	1220A	1230A	220	A	A	A	245	245	300A	1300A	1295A	
20	255	A	A	305	300	265	205	A	240	230	225	1220A	1220A	1215A	1220A	220	245	255	1280A	265	1260A	A	A	A	
21	A	245A	330A	320A	255	280	1250A	1245A	240	240	210	1220A	1240A	A	A	A	A	A	A	280A	250	295	245	1300C	
22	245	270	240	1305A	320	A	A	A	1240A	1230A	205	200	235	220	225	245	240	245	270	290	1255A	255	320A	285	
23	270A	305	300	280	280A	255	A	A	A	210	12155	230	1215A	225	1235A	240	225H	240	270A	255	250	270	285	315	
24	345	1375C	350A	340	355A	245	A	A	A	A	200	1210A	1220A	A	A	A	A	A	A	A	1285A	245	1290A	280A	
25	290A	300	300	1310A	245	1270A	1270A	1240A	A	A	A	A	200	1210A	205	240	220	240	1250A	275	255	320A	300	1275A	
26	1270A	280	280	300	245	260	245	235	A	A	210	A	A	C	C	C	C	255	1255A	1265A	1280A	290	1290A	1295A	
27	290	305A	270	245	290	265	255	1240A	A	A	1210A	1235A	245	240	225	205	230	1255A	285	335	340	C	C	290	
28	275	335E	355	1370A	350	1290A	240	1225A	245	250	200	195	1210B	1240A	1245A	1245A	1240A	1240A	1215A	1270A	255	255	245	290	
29	305	245	245	295	235	A	A	1240A	205	195	215	200	230	200H	1235A	1235A	235	245	250	255	245	245	250	295	
30	240	300	280	255	295	245	1245A	A	A	A	1200A	1200A	1240A	220	220	1240A	245	1245A	1270A	1260A	245	1285A	240	1260A	
31	245	245	290	300	245	250	245	220	205	1210A	1230A	240	195H	200	205	210	240	1240A	240	1290A	240	250	230	270A	
No.	29	28	29	30	30	24	17	13	10	13	16	20	16	15	19	17	19	22	21	26	29	27	29	30	
Median	290	295	300	300	300	265	250	4240	4230	220	210	210	4220	225	230	240	240	245	4260	270	255	290	295	295	

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

The Radio Research Laboratories, Japan.

h'F

A 10

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GMT. + 9h.)

f_oF₂

Jul. 1961

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

Sweep 660 Mc to 200 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

f_oF₂

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT. + 9h.)

Types of Es

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
3	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
4	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
5	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
6	F3	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
7	F3	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
8	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
9	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
10	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
11	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
12	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
13	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
14	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
15	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
16	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
17	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
18	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
19	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
20	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
21	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
22	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
23	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
24	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
25	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
26	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
27	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
28	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
29	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
30	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
31	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
No.																									
Median																									

Sweep 1.60 Mc to 2.00 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

Types of Es

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

135° E Mean Time (GMT.+9h.)

Jul. 1961

foF2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.9	5.8	5.2	5.1	5.3	6.0	5.6	6.4	6.2	6.2	6.1	6.2	6.2	6.7	7.4	7.8	7.8	9.0	9.6	9.9	8.7	7.8	7.2	7.5
2	6.9	6.5	5.6	5.3	5.0	5.1	5.9	5.9	5.9	5.2	5.8	5.9	6.1	6.6	6.5	6.8	7.4	7.0	7.3	8.2	7.8	6.2	6.6	6.1
3	6.0	5.7	4.7	4.8	5.2	5.7	7.3	7.8	7.5	6.5	6.5	6.5	6.5	6.2	6.5	5.9	6.0	6.3	6.7	7.6	7.3	6.1	5.3	6.0
4	5.6	5.8	5.5	5.4	6.0	5.9	7.0	7.3	6.7	6.7	6.5	6.5	7.6	7.0	7.3	7.6	7.9	7.3	7.2	7.2	7.2	6.6	7.0	7.2
5	5.9	5.5	5.4	5.4	4.5	5.0	6.3	7.1	8.1	8.0	7.0	7.1	7.5	6.8	7.4	7.9	7.8	7.2	7.2	7.2	7.2	6.6	6.0	6.5
6	R	5.5	5.8	6.3	6.4	6.3	7.6	7.8	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
7	5.5	5.6	4.9	4.1	4.0	4.2	5.7	6.4	6.7	7.6	6.1	6.1	6.1	6.2	6.4	6.8	6.6	7.1	6.8	7.3	6.3	6.3	5.9	5.6
8	6.4	6.0	5.8	5.8	5.9	6.0	6.3	6.5	6.5	6.5	6.5	6.5	6.1	6.2	6.0	6.1	6.4	7.0	7.2	7.6	6.6	5.4	6.0	6.1
9	5.6	5.5	5.4	4.8	4.7	5.1	5.6	6.4	8.3	7.4	5.4	5.5	6.3	6.4	7.2	6.4	6.0	6.9	8.7	10.5	8.9	4.6	4.7	4.9
10	4.8	4.6	4.6	4.4	4.4	4.8	6.4	6.9	7.5	6.6	6.3	5.8	6.4	6.9	6.7	7.0	7.7	7.7	8.9	8.6	6.3	6.4	6.4	6.4
11	6.2	5.4	5.6	4.6	4.2	4.9	7.2	7.5	7.4	7.4	7.4	7.4	7.4	8.2	8.7	8.2	8.0	7.1	8.1	7.1	5.5	5.3	5.3	6.0
12	5.9	5.5	6.1	5.8	5.0	5.4	7.6	7.8	7.5	7.5	7.5	7.5	7.5	7.4	7.8	8.0	7.9	7.4	7.0	7.0	6.9	6.8	6.9	6.0
13	7.8	6.5	5.6	4.0	4.8	5.5	8.2	10.0	8.1	6.4	6.6	6.1	6.7	7.2	7.8	8.0	7.9	7.4	7.0	7.0	6.9	6.8	6.9	6.0
14	6.5	6.3	4.8	5.9	5.4	5.0	5.4	5.8	5.4	5.4	5.4	5.4	6.7	6.8	6.0	5.9	6.4	5.9	6.4	6.4	7.7	9.0	8.6	7.0
15	8.2	5.5	3.6	F	F	3.8	5.3	4.7	5.0	G	5.0	5.2	5.0	4.8	5.0	5.2	5.5	5.8	5.8	4.9	4.9	5.5	5.8	5.7
16	5.2	5.2	4.9	4.5	4.5	5.4	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.6	6.9	7.9	7.0	7.2	7.2	6.8	7.2	7.1	6.7	6.6
17	6.6	6.7	6.7	7.0	5.8	6.0	6.6	7.8	7.5	6.2	6.2	6.2	7.6	7.6	7.6	9.0	7.6	7.6	8.8	8.8	8.8	8.8	8.8	8.8
18	8.8	8.4	9.4	5.9	5.2	5.2	5.4	6.6	6.4	6.4	6.4	6.4	6.4	7.0	8.0	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
19	5.2	5.5	5.6	5.0	4.7	5.0	5.4	6.2	6.2	6.2	6.2	6.2	6.2	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
20	5.5	5.4	5.6	5.7	5.7	5.4	5.4	6.2	6.2	6.2	6.2	6.2	6.2	7.6	7.7	7.6	7.6	7.6	8.0	8.0	7.8	7.8	6.7	6.7
21	AS	F	F	F	5.4	5.4	5.7	6.6	8.6	9.6	9.3	8.7	8.6	9.0	10.4	11.4	10.3	8.9	8.9	8.9	8.6	7.5	7.3	7.0
22	7.3	6.8	6.6	6.2	6.3	6.7	7.4	7.7	7.6	7.3	7.6	6.4	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	5.4	5.6	4.6	4.5	4.5	5.0	6.2	6.6	5.7	5.5	5.3	6.0	6.0	5.9	6.1	6.4	6.6	6.7	6.9	5.7	5.6	5.6	5.6	
25	6.9	6.0	7.2	5.8	5.7	5.2	6.0	7.3	7.1	7.1	7.1	6.2	6.5	6.7	7.0	6.7	7.1	7.8	7.5	8.1	7.7	7.4	6.9	6.6
26	5.0	4.9	4.7	4.5	4.0	5.0	6.6	7.4	8.4	7.9	8.2	6.7	6.1	6.3	6.5	6.6	6.8	7.1	7.3	6.8	6.9	6.6	6.2	6.3
27	6.1	5.4	5.0	4.8	5.0	4.8	5.0	5.8	6.0	5.9	6.4	7.4	7.8	8.0	6.5	5.7	5.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0
28	6.5	F	F	F	3.5	4.1	5.2	5.2	5.5	5.8	6.3	6.3	6.2	6.2	6.5	7.4	7.0	6.7	6.2	6.3	7.6	6.4	6.6	6.3
29	5.7	5.6	5.7	5.6	5.1	5.5	6.1	7.1	7.1	6.0	6.4	6.4	6.6	7.1	7.3	9.0	7.6	7.4	7.7	7.9	8.8	5.4	5.4	
30	5.2	5.0	5.1	4.8	4.8	4.9	6.2	8.1	8.1	7.4	6.6	6.4	6.6	7.1	7.4	8.1	7.6	6.7	6.0	6.8	6.9	6.9	6.8	5.6
31	4.2	4.7	3.7	4.0	4.1	5.1	7.4	5.5	6.3	5.8	6.1	6.2	6.7	6.6	6.9	6.6	6.4	6.1	6.3	7.4	8.0	7.7	5.8	4.6
No.	2.8	2.8	2.7	2.9	3.0	3.0	2.9	2.9	2.6	2.4	2.2	2.3	2.4	2.7	2.8	2.8	2.7	2.6	2.8	2.8	2.7	2.8	2.7	2.7
Median	5.9	5.5	5.4	5.1	5.0	5.2	6.2	6.9	6.7	6.4	6.2	6.4	6.7	6.9	7.1	7.0	6.8	7.0	7.2	7.4	7.2	6.6	6.2	6.1
U.L.	6.6	6.0	5.8	5.8	5.6	5.5	7.0	7.6	7.7	7.4	6.6	6.8	7.4	7.5	7.8	7.9	7.6	7.4	8.0	8.6	8.6	7.8	7.2	6.9
L.L.	5.4	5.4	4.8	4.5	4.5	5.0	5.6	6.4	6.0	5.8	5.8	5.9	6.2	6.5	6.5	6.4	6.4	6.4	6.6	6.8	6.3	5.7	5.6	5.6
Q.R.	1.2	0.6	1.0	1.3	1.1	0.5	1.4	1.2	1.7	1.6	0.8	0.9	1.2	1.0	1.3	1.5	1.2	1.0	1.4	1.8	1.5	1.5	1.3	1.5

foF2

Sweep $\frac{1}{\text{sec}}$ Mc to $\frac{1}{\text{sec}}$ Mc in $\frac{1}{\text{sec}}$ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 1

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+ 9h.)

foF1

Jul, 1961

Day	00	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	4.7	A	A	A	A	A	A	A	A	A	A	A	A	A
2						A	A	A	A	4.5L	A	A	A	A	4.6	A	A	A	A	A	A	A	A	A
3						A	A	A	A	AS	S	AS	A	A	A	A	4.4	A	A	A	A	A	A	A
4						3.1L	S	S	AS	AS	S	S	A	A	A	C	S	L	A	A	A	A	A	A
5						L	S	S	AS	AS	S	S	A	A	A	S	S	4.0L	L	A	A	A	A	A
6						3.7L	S	S	S	S	S	S	A	A	A	AS	S	S	4.0L	L	A	A	A	A
7						S	S	S	S	S	S	S	A	A	A	4.5	A	A	L	A	A	A	A	A
8						S	S	S	S	S	S	S	4.8	4.7R	A	A	A	A	A	A	A	A	A	A
9						L	L	L	L	L	L	L	4.9R	4.8H	4.6L	4.7	4.5L	4.6L	L	L	L	L	L	L
10						L	L	L	L	L	L	L	4.9S	A	A	A	A	A	A	A	A	A	A	A
11						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
12						L	L	L	L	L	L	L	5.1S	A	A	A	A	A	A	A	A	A	A	A
13						A	A	A	A	A	A	A	R	R	A	A	A	A	A	A	A	A	A	A
14						A	A	A	A	A	A	A	4.9SW	4.9R	A	A	A	A	A	A	A	A	A	A
15						3.7	A	A	A	A	A	A	4.7S	A	A	A	A	A	A	A	A	A	A	A
16						L	L	L	L	L	L	L	5.1	5.0L	A	A	A	A	A	A	A	A	A	A
17						L	L	L	L	L	L	L	5.1L	5.2R	A	A	A	A	A	A	A	A	A	A
18						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
19						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
20						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
21						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
22						L	L	L	L	L	L	L	5.1	A	A	A	A	A	A	A	A	A	A	A
23						L	L	L	L	L	L	L	5.2	C	C	C	C	C	C	C	C	C	C	C
24						L	L	L	L	L	L	L	R	4.7R	5.0L	S	4.2	4.1L	A	A	A	A	A	A
25						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
26						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
27						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
28						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
29						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
30						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
31						L	L	L	L	L	L	L	A	A	A	A	A	A	A	A	A	A	A	A
No.						1	4	10	8	9	8	8	8	6	9	10	10	6	1					
Median						3.1	3.7	4.3	4.8	4.7	4.7	4.8	5.0	4.8	4.8	4.6	4.4	4.2	3.3					

Sweep / sec Mc to 20.0 Mc in 20 sec in automatic operation. The Radio Research Laboratories, Japan. K 2

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 138° 29.3' E

Kokubunji Tokyo

Jul, 1961

foE

135° E Mean Time (GMT.+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						A	1.40 ^u	2.80 ^R	3.10	3.30	3.50 ^M	3.60 ^u	3.75 ^A	3.50	3.40	3.30	3.05	2.60							
2					I	1.75 ^A	2.50	2.85 ^S	3.05	3.35	3.50 ^A	3.50 ^A	3.55 ^A	3.50 ^A	3.40	3.30 ^R	3.00	2.60							
3					A	2.55 ^u	2.80 ^S	3.10	3.25 ^R	3.25 ^R	3.30 ^R	3.10 ^A	3.20 ^R	3.45	3.20 ^A										
4					S	2.05 ^R	2.40 ^A	3.00	3.10 ^R	3.35 ^R	3.30 ^A	3.50 ^A	3.60 ^S	3.50 ^A	3.30	3.30 ^{cl}	2.75 ^S								
5					A	S	2.70 ^A	2.85	3.10	S	A	A	A	K	3.35 ^R	3.10 ^S	2.60 ^S								
6					S	B	2.90 ^S	3.10	S	S	S	3.40 ^S	3.10 ^A	3.10 ^A	2.80 ^S										
7					I	1.90 ^S	2.35 ^R	2.85 ^S	3.05 ^u	3.25 ^R	3.35 ^R		A	A	A	3.15 ^R	B								
8					S	2.50 ^l	2.75 ^u	3.00 ^l	3.45 ^A	A	S	A	R	R	3.20 ^B	B									
9					S	2.35 ^R	2.95 ^l	3.10 ^l	3.25 ^A	A	A	A	R	3.65	3.50	3.30	3.10	2.65 ^R							
10					A	A	R	S	A	A	A	A	A	3.80	3.50 ^B	3.40	3.20	A							
11					S	2.40 ^l	2.80 ^S	3.15 ^A	C	3.55 ^A	A	A	A	A	A	A	A	A							
12					S	B	A	A	A	A	A	A	A	A	A	A	A	A							
13					I	2.00 ^A	2.40	2.90	3.10 ^l	3.20 ^A	S	3.80	A	A	A	A	A	A							
14					1	.90	2.50 ^A	2.80 ^R	3.25	3.30	3.55	3.80 ^S	3.80 ^R	3.70 ^R	3.55	3.30	3.10 ^R	2.75							
15					2	.00	2.25	2.75	3.10	3.20	3.50	3.70 ^R	3.75 ^R	3.85	3.50 ^B	3.40	3.15	2.70							
16					A	R	1.90 ^u	2.10 ^A	3.10 ^A	3.30	3.60	3.75 ^R	3.70 ^u	3.75 ^R	3.70	3.40	3.00 ^A	B							
17					A	2.55 ^R	2.80	3.05 ^A	3.20	A	A	A	A	A	A	A	A	A							
18					I	1.85 ^S	2.60 ^l	3.15 ^S	3.45	3.55 ^A	3.70	3.80 ^u	3.90 ^R	3.85 ^A	3.80 ^S	3.60 ^S	3.75	2.90 ^C							
19					A	2.50 ^l	2.80 ^A	3.00 ^u	3.30 ^A	B	A	R	3.95	3.80 ^B	3.50 ^A	3.25	2.80								
20					B	2.65 ^u	3.10 ^S	3.45 ^l	3.30 ^M	3.40 ^A	A	A	A	A	A	3.55	3.20	2.85							
21					S	1.45 ^l	2.95 ^l	3.20 ^l	3.25 ^R	3.40 ^B	B	A	S	B	B	A	A	A							
22					u	1.80 ^l	2.40 ^l	2.90 ^A	3.20	3.40	A	A	A	A	A	A	A	A							
23					C	C	C	C	C	R	3.70 ^R	C	B	3.70 ^R	3.50 ^R	3.30 ^R	3.20	2.70 ^B							
24					S	2.40 ^R	2.75 ^l	2.95 ^l	3.25 ^l	3.45 ^A	3.70	3.95 ^l	3.95 ^u	3.90 ^S	3.55	3.10 ^S	2.45 ^S								
25					S	A	2.80 ^S	A	A	A	A	3.70 ^R	A	A	A	3.65 ^S	3.20 ^S	2.75 ^S							
26					S	A	2.90 ^S	3.25	A	A	A	A	A	A	3.85	3.70	3.35	3.00	2.90 ^B						
27					S	S	2.90 ^S	3.25	A	A	A	A	A	A	A	A	A	A	B						
28					B	B	A	3.00 ^l	3.20 ^S	3.40	R	A	B	B	3.75	3.45	3.15 ^S	2.80 ^S							
29					S	A	A	A	C	A	A	A	A	3.45	3.20 ^l	3.20 ^M	3.00 ^A	A							
30					A	A	A	3.10	3.25	3.40 ^A	3.25	3.10	A	A	A	A	A	2.60 ^B							
31					1	.75	2.20 ^l	2.50 ^A	2.70	A	A	A	A	A	A	A	A	A							
No.					8	19	24	25	20	16	12	11	15	17	20	21	17								
Median					u	1.90	2.40	2.80	3.10	3.25	3.40	3.65	3.75	3.70	3.50	3.35	3.10	2.75							

foE

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT. + 9h.)

foEs

Jul. 1961

Day	00	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 33	J 29	J 43	J 36	J 37	J 47	J 49	J 50	6.0	5.9M	4.3	J 6.2	J 5.3	J 5.4	J 6.2	J 5.3	J 6.8	7.8	7.3	J 5.2	J 5.0	J 5.8	J 2.5	J 3.6	
2	J 35	J 27	J 20M	J 15	J 33	J 51	J 55	J 55	J 81	4.4	6.6	J 6.3	J 6.3	4.4	4.5	4.3	4.7	8.5	6.5	5.0	J 11.5	J 8.7	J 4.9	J 4.0	
3	J 40	J 31	J 32	E	E	2.1	6.3	S	4.8	4.6	4.5	J 6.5	J 8.7	J 9.8	J 6.4	4.6	3.4	J 6.3	J 5.4	J 8.1	J 4.5	J 4.0	J 4.8	J 3.4	
4	J 78	J 51	J 42	J 43	J 30	S	J 37	J 37	J 6.8	J 5.8	J 4.1	J 4.1	J 7.9	S	J 3.4	4.3	C	J 12.9	J 11.1	J 8.1	J 5.5	J 4.9	J 7.6	J 6.2	
5	C	J 34	J 4	J 39	E	J 30	J 32	J 34	J 6.4	J 8.0	J 8.9	J 3.8	4.0	J 6.1	J 4.0	4.6	S	J 4.1	J 8.5	J 8.8	J 6.0	J 5.1	J 7.5	J 5.4	
6	J 39	J 37	J 33	J 39	J 26	S	J 32	S	3.3	J 5.7	S	S	4.5	J 11.4	J 7.8	J 7.7	J 3.7	3.2	2.8	C	S	J 2.3	J 3.3	S	
7	S	J 27	J 33	J 30	S	S	S	S	3.0	3.2	4.5M	3.8	J 11.5	J 8.8	J 7.7	4.5M	3.9	5.9M	4.2	J 4.0	J 2.9	J 2.1	S	J 2.7	
8	S	J 27	J 33	J 30	J 21	J 39	J 11.5	3.4	4.5	3.9	4.6	S	G	4.4	G	4.6	4.6	4.9	5.6	B	J 4.3	J 2.3	J 2.6	J 2.3	
9	3.6	2.3	2.1	1.7	S	J 33	J 33	J 33	3.0	J 5.0	4.6	4.5	3.4	G	G	4.4	J 5.0	J 4.3	2.3	4.0M	J 2.9	2.6	J 3.0	J 5.0	
10	J 26	J 38	J 26	J 1.6	J 1.8	J 30	J 39	J 38	J 4.8	J 9.0	9.2M	5.3	J 5.2	5.0S	B	7.0M	9.3	9.4M	8.1	9.4M	5.6	6.0M	7.9	J 6.0	
11	J 40	J 30	J 30	J 3.0	J 2.8	J 3.5	J 5.9	J 9.5	8.7	8.9M	9.2M	20.0M	20.0M	20.0M	17.9	20.0M	17.9	9.8M	6.2	J 8.8	J 5.9	4.2	J 4.8	J 6.3	
12	J 59	J 39	J 30	J 3.0	J 2.8	J 3.5	J 4.8	4.6M	8.4	14.0	12.2	9.0M	J 7.9	8.5M	6.7	7.57	7.57	4.2	J 3.8	J 4.1	J 9.0	J 8.2	J 5.4	6.3M	
13	J 66	J 68	J 2.2	J 3.4	J 2.0M	J 3.4	J 7.4	J 3.9	9.2M	J 3.9	3.9	3.9	3.9	3.9	3.9	6.6M	4.4	4.8	J 3.4	J 3.7	J 3.6	J 4.0	J 3.8	2.1	4.6M
14	J 32	J 68	J 38	J 4.0	J 3.4	J 3.0	6.1	3.8	4.6	4.4	4.7	4.0	4.4	4.4	3.8	3.7	4.5	5.8	2.4	B	E	E	E	3.0M	J 3.2
15	J 32	J 28	J 4.4M	J 4.0	J 2.1	G	J 3.4	4.3M	6.0	4.0	G	4.2	4.6	J 5.5	6.1M	9.9M	4.6	5.0	J 5.2	4.7M	J 9.9	J 3.5	J 2.9	J 3.2	
16	J 27	J 22	J 1.9	J 1.9M	J 2.3	J 3.0	J 5.0	5.9	6.9M	5.0	G	4.0	G	J 5.4	J 6.2	J 6.2	4.0	4.8	J 3.2	J 3.5	J 6.7	J 6.0	S	J 3.2	
17	J 38	4.7	J 3.0	E	J 2.6	J 3.3	4.4	4.5M	4.9	11.8M	6.6M	8.2M	8.5	8.0	4.7	7.6M	7.6M	7.6M	7.6M	7.5	J 4.0	J 4.4	J 2.4	4.2	
18	J 38	5.0	J 4.2	J 4.2	S	S	3.5	5.8	5.8	J 10.5	J 11.7	7.1	9.0M	J 11.9	10.0M	S	G	C	J 3.3	S	5.6M	2.6	S	3.4M	
19	J 47	J 33	J 6.1	J 8.8	J 7.6	J 7.3	J 5.9	J 9.4	10.4M	6.8M	5.6	5.2	7.3	B	4.6	7.8	7.6M	9.3	7.6	6.8M	J 11.0	J 3.4	J 5.2	J 7.4	
20	J 86	J 63	J 5.0	J 3.9	J 4.9	B	3.2	J 4.9	10.6M	9.5M	9.8M	12.2M	J 11.3	J 10.6	4.5	J 7.8	9.5M	8.1	6.9	J 4.4	S	J 5.2	J 3.5	J 3.4	
21	J 58	J 44	J 3.6	J 5.0	J 2.0	J 2.1	J 3.0	J 4.4	8.4M	14.9	3.9	J 13.7	J 4.2	J 4.5	C	C	8.2M	9.4	J 4.9	S	J 3.3	J 4.0	J 2.7	J 3.0	
22	S	J 29	S	J 2.8	J 3.8	J 3.8	4.7	5.3	3.9	J 7.3	J 7.2	J 4.2	J 4.5	C	C	C	C	C	C	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
24	J 20	J 32	J 1.1M	J 3.2	J 2.0M	S	4.0	J 4.9	J 8.8	C	5.0	5.2	9.0M	J 9.4	J 6.5	J 8.4	J 6.1	J 8.4	J 5.3	J 5.1	J 4.9	J 4.4	J 4.6	J 6.7	
25	4.7M	J 32	J 3.6	J 3.4M	J 4.2	J 3.7	4.4M	J 2.8	8.6M	9.2M	4.8	4.6	J 5.4	5.0M	3.5	3.5	S	J 4.4	J 3.4	S	S	J 5.6	J 5.0	J 5.5	
26	4.8M	J 28	J 4.4	J 2.4	J 2.4	S	J 3.7	J 4.8	J 5.1	J 6.7	J 6.6	J 5.6	J 6.2	4.2	4.6	J 6.4	J 9.0	7.5M	6.9M	5.1M	J 3.1	J 6.9	J 5.0	J 6.8	
27	J 84	J 42	J 3.5M	J 3.2	J 2.8	S	4.1	J 4.7	6.0	8.7M	14.9M	10.4M	J 8.9	5.5	4.0	3.5	7.5	4.5	B	B	S	S	S	1.7	
28	J 25	J 39	J 3.9	J 6.0	J 3.3	J 3.1	J 9.0	5.9M	3.5	3.8	4.0	G	B	B	4.8	4.0	S	J 4.8	J 3.2	J 5.4	4.2	J 6.2	J 3.4	2.4	
29	J 42	J 33	J 4.4	4.8M	J 2.5	3.1	J 3.1	7.4	10.7M	J 3.0	C	12.1M	1.22	8.0M	J 7.9	3.7	J 0.4	J 4.4	4.2M	5.0	J 5.1	J 4.6	J 3.4	J 3.2	
30	J 28	J 23	J 2.0M	J 4.2	E	4.8M	2.6	3.9	J 4.4	6.6M	10.7	J 8.4	J 5.4	3.8	4.0	J 3.8	J 3.5	B	G	J 4.9	J 7.7	J 2.8	J 3.2	J 3.4	
31	J 47	J 4.5	J 2.0	J 2.0	J 1.9	G	J 2.9	J 3.7	J 6.5	3.6	3.7	J 5.3	4.4	5.7	J 6.3	4.6	5.4	5.1	J 3.3	J 4.7	J 5.2	J 2.8	J 3.4	2.6M	
No.	76	79	28	27	26	21	30	28	29	27	27	30	28	28	28	29	26	28	27	25	26	28	27	28	
Median	4.0	3.3	3.4	3.4	2.2	3.0	3.7	4.5	6.0	6.6	6.6	5.6	5.2	5.5	5.2	4.6	5.2	5.0	4.9	4.9	5.0	4.5	3.4	3.5	
U.O.	4.8	4.4	4.2	4.2	3.3	3.6	4.9	5.6	8.5	9.5	9.8	8.4	8.7	8.6	6.7	6.6	7.5	8.0	6.9	5.3	6.0	5.9	5.0	5.8	
L.O.	3.2	2.8	2.5	2.1	1.9	2.7	3.2	3.8	4.7	4.5	4.3	4.5	4.4	4.0	4.0	4.0	4.0	4.4	3.3	4.0	3.3	3.2	2.9	3.2	
Q.R.	1.6	1.6	1.7	2.1	1.4	0.9	1.7	1.8	3.8	5.0	5.5	3.9	4.2	4.2	2.7	2.6	3.5	3.6	3.6	1.3	2.7	2.7	2.1	2.6	

Sweep 1.0 Mc to 2.1 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

foEs

K 4

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

fbEs

Jul, 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	1.8	E	2.4	1.9	2.0	4.2 ^A	3.8	4.6	5.9	5.7	4.2	A	5.3 ^S	5.4	5.8	5.1	6.8	6.8	7.3	5.0	3.1	3.3	1.7	7.0	
2	1.8	2.0	E	E	1.5	2.9	4.3	4.6	A	3.8	A	A	5.1	E 4.4 ^S	4.1	4.6	4.7	3.4	5.7	4.4	A	A	1.8	E	
3	2.3	1.7	2.7		1.9	5.2	S	4.8	A	4.6	S	AS	A	5.8	A	4.6	3.1	A	5.4	2.6	2.2	3.0	2.6	2.5	
4	2.0	2.8	E	3.8	2.2	S	2.9	E 3.7 ^S	5.7	AS	S	E 4.1 ^S	A	S	E 3.4 ^{SE}	4.3 ^S	C	A	A	A	3.6	S	AS	5.4	
5	C	1.6	2.3	C	S	2.5	3.0	S	AS	AS	AS	E 3.8 ^{SE}	4.0 ^S	6.1	E 4.0 ^{SE}	4.6 ^S	S	3.5	A	A	5.2	S	2.2	AS	
6	3.9 ^A	3.2	S	3.5	2.6	S	3.1	S	S	S	S	S	S	S	A	AS	3.5	3.1	2.2	C	S	S	3.2	S	
7	S	S	S	S	S	S	1.9	E 3.2 ^S	S	3.9	3.8	S	A	A	4.5	3.8	5.5	3.1	3.5	2.5	E	S	2.7	2.5	
8	S	2.5	2.6	3.0	2.0	2.3	A	E 3.4 ^S	4.5 ^S	3.9	4.3	S		4.3		4.5	4.9	4.3	B	2.7	2.1	E	2.2	2.2	
9	E	2.0	1.7	1.7	S	S	3.0	3.0	4.8	4.3	4.1	E 3.4 ^R				4.3	3.9	3.6	2.3	3.1	2.5	2.6	2.4	2.3	
10	1.9	2.3	2.4	1.5	1.8	2.5	3.4	3.5	4.0	5.6	A	4.2	5.2 ^{SE}	5.0 ^S	B	A	A	A	8.1	A	4.4	A	A	4.4	
11	2.2	2.5	2.7	A	4.0	2.7	3.5	5.9 ^S	A	A	A	A	A	A	A	A	A	A	5.9	7.4	3.5	3.0	3.9	A	
12	4.3	2.8	E	1.5	E	2.3	3.1	4.3	A	A	A	A	4.3	5.6	6.2	5.6	5.1	3.9	3.8	2.7	3.4 ^S	3.9	2.6	3.1	
13	5.1	3.6	A	2.7	E	3.0	5.4	3.5	A	A	A	3.9	3.6 ^{SE}	3.0 ^S	6.6	4.0	E 4.8 ^S	3.0	3.1	2.8	2.5	3.1	1.7	3.2	
14	2.2	4.8	3.1	2.6	2.6	2.7	A	3.1	4.1	3.8	A	4.0	4.4 ^{RE}	4.4 ^R	3.8	3.5	E 4.5 ^S	4.9	2.4	B					
15	2.3	1.9	A	E	1.5	1.5	2.6	3.5	A	3.7	A	4.1	4.4 ^S	A	A	A	4.4	5.0	4.1	2.4	A	1.9	2.1	2.5	
16	E	2.0	1.8	E	2.2	2.4	4.8	4.0	A	4.2			4.0		5.1	3.9	3.8	3.9	2.5	2.7	2.6	4.9	S	2.0	
17	3.0	2.5	1.6		2.3	2.3	3.1	3.5	4.3	4.9 ^S	A	A	A	A	A	7.9	4.7 ^S	5.4	4.9 ^S	5.2	4.9	4.0	2.8	2.1	2.6
18	2.8	2.7	2.9	3.7	S	S	S	A	5.4	A	A	A	A	A	A	S		C	2.8 ^S	S	A	2.5	S	2.8	
19	2.9	2.6	3.9	A	A	A	2.8	A	A	A	A	5.2	5.2	A	B	E 4.5 ^S	6.0	A	3.8	A	A	3.0	2.3	A	
20	3.1	2.7	2.6	2.8	2.6	B	3.0	4.7	A	A	A	A	A	A	A	6.1	A	A	6.2	S	S	2.6	2.5 ^S	2.8	
21	AS	2.7	2.6	2.8	1.9	E 2.1 ^S	2.8	4.2	A	A	B	A	6.5	5.7	6.0	8.1	5.3	4.9	S	2.2	2.8	3.5	2.7	2.7	
22	S	2.6	S	S	C	C	C	C	C	S	5.2	4.2	4.5 ^R	C	C	C	C	C	C	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	C	C	C	E 4.5 ^R	C	C	C	3.4	3.0	4.1	1.8	E	2.5	2.4	S	
24	2.0	2.1	E	2.7	1.5	S	3.0	4.9	A	A	C	5.0 ^S	5.2	5.4	5.5	5.4	5.2	6.3	2.6	4.5	3.1	3.8	4.1	2.8	
25	2.6	2.8	2.5	2.7	2.6	E 3.7 ^S	3.9	A	A	A	A	E 4.8 ^S	4.4	4.3	5.0	3.5 ^{SE}	S	3.8 ^S	3.2	S	A	A	3.9		
26	S	2.7	2.7	2.4	S	S	3.5	4.7	5.1	5.0	5.2	5.3	5.5	4.0	4.5	4.2	6.1	4.6	5.3	4.6	2.6	3.9	3.8	4.5	
27	A	3.0	2.0	2.6	2.7	S	3.9 ^S	3.7	4.2	A	A	A	6.2	5.4	3.7	3.5	5.4 ^S	3.1	B	B	S	S	E 1.7 ^S		
28	2.5	3.8	2.5	2.6	2.8	B	A	A	3.4	3.8 ^S	3.8		B	4.8	4.0 ^S	S	4.2	2.9	5.4	4.0	3.4	2.5	2.4 ^S		
29	2.6	2.5	2.9	3.3	2.5	2.4	3.1	4.3	A	A	C	A	6.4	7.5	3.7	3.0	3.4	3.2	4.3	3.9	3.3	2.8	E		
30	2.2	E	1.7	E	3.6	2.6	3.1	4.0	A	A	A	A	4.4	3.8	4.0	3.6	3.5	B	4.4	4.4	1.7	4.8	1.9	2.0	
31	A	2.5	E	E	1.9		2.5	3.7	3.8	3.6	3.7	5.3 ^S	4.1	5.7	5.4	E 4.6 ^{SE}	5.4	5.0	2.9	3.5	3.2	2.5	2.6	1.9	
No.	2.5	2.9	2.7	2.5	2.2	1.7	2.8	2.7	2.8	2.6	2.3	2.4	2.8	2.4	2.5	2.5	2.5	2.8	2.6	2.4	2.5	2.4	2.7	2.8	
Median	2.5	2.6	2.5	2.6	2.2	2.5	3.2	4.0	5.8	A	A	A	5.2	5.6	5.4	4.3	4.9	4.4	3.8	4.4	3.2	3.2	2.6	2.6	

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 28.3' E

Kokubunji Tokyo

135° E Mean Time (GMT + 9h.)

f-min

Jul, 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	1.50 ^E	1.50 ^E	1.50 ^E	1.20	1.35 ^E	1.40 ^E	1.60 ^E	1.90	1.80	2.30	2.40	2.20	2.60	2.40	2.30	2.30	2.65	1.85	1.70	1.70 ^E	1.70 ^E	1.30 ^E	1.60 ^E	1.30	
2	1.45 ^E	1.60 ^E	1.45	1.35	1.20	1.50 ^E	1.60	1.90	1.90	2.15	3.60	2.70	2.70	2.50	2.80	2.30	2.30	1.90	1.55	1.45	1.50 ^E	1.50 ^E	1.60 ^E	1.30	
3	1.50 ^E	1.55 ^E	1.45	1.05	1.10	1.60 ^E	2.00	3.40 ^S	2.10	2.10	2.40	2.40	2.70	2.40	2.20	2.10	2.70	2.60	1.90	1.90	1.85	1.80	1.80	1.50	
4	1.50 ^E	1.70 ^E	1.70 ^E	1.50	1.10	1.70 ^E	1.70	3.00 ^S	1.95	2.05	2.40	3.30	3.15	6.10 ^S	2.55	2.40	C	3.20 ^S	2.70	2.50	1.90	1.70	1.80 ^E	2.50 ^S	
5	C	1.70 ^E	1.90 ^E	C	1.50	1.80	2.60 ^S	2.20	2.10	3.00	3.55	3.20	2.90	3.70 ^E	2.40	2.20	5.60 ^E	3.00 ^S	2.55	2.50	1.95	1.95	1.80	2.45	
6	1.85 ^E	1.85 ^E	2.70 ^E	1.60 ^E	1.40	3.80 ^S	2.50	4.00 ^S	2.55	3.60 ^S	3.65	3.20	3.90 ^E	3.70 ^E	3.00	3.00	3.00	2.80	2.60	2.50 ^E	2.00 ^E	1.90 ^E	1.70 ^E	1.90	
7	2.30 ^E	2.00 ^E	2.20 ^E	1.90 ^E	1.90 ^E	2.60 ^S	2.25	2.90 ^S	2.00	3.00	3.00	3.20	3.25	3.10	2.80	3.00	2.80	2.60	2.50 ^E	2.00 ^E	1.70 ^E	1.45 ^E	1.95 ^E	1.95	
8	2.00 ^E	1.60 ^E	1.60 ^E	1.60 ^E	1.70 ^E	1.80 ^S	2.20	1.60 ^E	1.85	2.80 ^S	3.90 ^S	3.60	3.60	3.60	2.85	2.40	3.60	2.80	2.50	2.05	1.70 ^E	1.45 ^E	1.95 ^E	1.95	
9	2.00 ^E	1.70 ^E	1.50 ^E	1.55	1.50 ^E	2.70 ^S	1.90	2.70	2.80	2.35	2.80	3.00	2.50	2.35	2.60	2.30	2.65	2.10	2.10 ^E	1.90 ^E	1.50 ^E	1.50 ^E	1.50 ^E	1.60 ^S	
10	1.60 ^E	1.60 ^S	1.45	1.20	1.20	1.60 ^S	1.90	1.85	1.95	2.70	2.60	2.95	2.80	2.80	2.95	2.20	2.70	2.50 ^S	2.65	2.50 ^S	1.45	1.70 ^S	1.60 ^S	1.35	
11	1.50 ^E	1.50 ^E	1.50 ^E	1.40	1.75 ^E	1.60 ^S	1.70	1.35	2.40	2.80 ^S	2.40	2.70	2.80	2.60	2.50	2.50 ^E	2.60 ^E	2.50 ^S	2.65	1.60 ^E	1.65 ^S	1.45 ^E	1.50 ^S	1.10	
12	1.50 ^E	1.50 ^E	1.50 ^E	1.40	1.25 ^E	1.60 ^S	1.60	1.70 ^S	2.70 ^S	2.70	2.90	3.10	2.85	3.15	3.20	2.60	2.55	2.50	2.55	1.50 ^S	1.65 ^S	1.60 ^S	1.40	1.45	
13	1.45 ^E	1.70 ^E	1.45	1.45	1.25 ^E	1.70 ^S	1.75	1.85	2.75	2.35	2.70	2.80	2.60	3.10	2.70	2.15	2.70	1.65	1.60	1.60	1.60	1.30	1.50	1.50	
14	1.40	1.50	1.45	1.45	1.10	1.60	1.70	2.00	2.10	2.45	2.40	3.15	3.50	2.45	3.30	2.50	2.70	2.50	1.85	1.60	1.70	1.30	1.40	1.40	
15	1.50 ^E	1.65 ^E	1.55 ^S	1.40	1.25	1.60	1.75	2.25	2.15	2.40	2.40	2.50	2.70	2.95	3.70	2.35	2.70	2.00	1.85	1.10	1.60 ^E	1.70 ^E	1.60 ^E	1.50	
16	1.45	1.45	1.50 ^S	1.30	1.75	1.70 ^S	1.70	2.60	2.70	2.55	2.60	2.90	2.70	2.80	2.70	2.45	2.60	2.60	1.60	1.75	1.45	1.50 ^E	1.70 ^E	1.45	
17	1.50 ^E	1.50 ^E	1.40	1.40	1.45	1.60	2.10	2.70	2.20	2.65	2.65	3.00	3.50	3.20	3.00	2.70	2.20	3.20 ^E	2.40 ^E	1.95	2.45	2.10 ^E	1.95 ^E	1.75	
18	1.65	1.55	1.65	1.45	1.95 ^E	2.30 ^E	2.80 ^E	2.20	2.85	3.10	3.10	3.10	3.10	3.70 ^S	2.80	4.10 ^S	2.40	2.20 ^E	2.30 ^E	1.80	1.70 ^E	1.80 ^E	1.90 ^E	1.60 ^S	
19	1.40	1.60 ^E	1.70 ^E	1.50 ^E	1.70 ^E	1.80 ^S	1.80 ^S	2.10	2.80	3.60	3.60	3.60	3.20	3.10	3.80	2.85	2.70	2.50	2.50 ^E	1.65	1.80 ^S	1.25	1.65 ^E	1.60 ^S	
20	1.50	1.35	1.65	1.45	E	1.50	2.00	2.30 ^E	2.90 ^E	3.20 ^S	2.85	3.30	3.10	2.85	2.40	2.50	2.25	1.85	2.35 ^E	2.70 ^S	1.90 ^E	1.60 ^E	1.85 ^E	1.70	
21	1.85 ^E	1.95	1.45	1.50 ^E	1.50 ^E	1.85 ^E	2.60 ^E	2.90 ^E	3.00	3.40	4.60	4.65	3.80 ^S	3.70	3.65	3.20	2.45	1.90	2.30 ^E	1.95	1.95	1.90 ^E	2.00 ^E	1.65	
22	1.80 ^E	1.40	1.95 ^E	1.80 ^E	1.40	2.20	1.70	1.70	2.20	2.60	2.80	3.15	2.80	C	C	C	C	C	C	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	2.80 ^S	3.10	C	3.95	2.45	2.45	2.60	2.70	2.70	1.70	1.55	1.40	1.95 ^E	1.50 ^E	1.55 ^S	
24	1.50 ^E	1.60 ^S	1.50 ^E	1.20 ^E	1.20 ^E	1.80 ^S	1.70	2.65	1.85	C	2.40	2.80	3.10	3.15	3.20	2.85	3.20 ^E	2.60 ^E	2.00 ^E	1.85 ^E	1.85 ^E	2.00 ^E	2.00 ^E	1.70	
25	1.60 ^E	1.40	1.40	1.50	1.60 ^E	1.80 ^E	2.00 ^E	2.60 ^S	2.20	2.60	2.80	3.00	2.80	2.80	2.60	2.40	3.50 ^S	2.00 ^E	2.40 ^E	1.70 ^E	2.10 ^E	1.65 ^E	1.70 ^E	1.65	
26	1.90 ^E	1.50 ^E	1.70 ^E	1.30 ^E	1.50 ^E	2.20 ^E	2.10 ^E	2.90 ^S	2.30	2.45	2.80	2.60	2.70	3.35	2.60	2.50	2.80	2.70	2.60	2.50	1.60 ^E	1.55 ^E	1.80 ^E	1.80	
27	1.70 ^E	1.20	1.70 ^E	1.60 ^E	1.70 ^E	1.90 ^E	2.75 ^E	2.95	2.50	2.45	2.60	2.60	2.55	2.80	2.90	2.70	2.70	2.35	2.70	2.20	2.50 ^E	1.80 ^E	2.50 ^E	2.40 ^E	
28	1.50 ^E	1.90 ^E	1.80 ^E	1.70 ^E	1.45	2.45	2.75	2.80	2.20	2.85	2.40	2.80	B	5.10	2.85	2.70	3.50 ^E	2.80 ^E	2.20 ^E	1.70 ^E	1.85 ^E	1.80 ^E	1.80 ^E	2.00	
29	1.70 ^E	1.70 ^E	1.55 ^E	1.50 ^E	1.50 ^E	2.00 ^E	1.80 ^E	2.85	2.25	2.25	C	3.45	3.40	2.75	2.40	2.00	2.60	1.80	1.80	1.95	1.50 ^E	1.50	1.40	1.75	
30	1.70 ^E	1.40	1.45	1.20	1.40	1.70 ^S	2.20	2.60	2.10	2.60	2.50	2.65	2.40	2.50	2.90	2.20	2.60	2.50	1.95	1.50	1.40	1.50 ^E	1.45	1.50	
31	1.70 ^E	1.45	1.30	1.30	1.20	1.30	2.25	2.70	2.00	3.10	2.70	2.50	2.95	2.50	2.50	2.20	2.50	2.50	2.60	2.10	1.45	1.85 ^S	1.50	1.50 ^E	
No.	29	30	30	18	17	30	25	30	26	24	29	29	29	27	29	28	25	22	20	29	30	30	30	30	30
Median	1.50 ^E	1.60 ^E	1.55	1.40	1.25	1.80 ^E	2.00 ^E	2.70	2.20	2.50	2.70	2.95	2.90	2.80	2.80	2.40	2.65	2.50	1.95	1.75	1.70	1.60	1.70	1.60	

Sweep / sec to 2.0 Mc in 2.0 sec in automatic operation.

f-min

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

Jul. 1961

M(3000)F2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.90	2.75	2.65	2.45	2.95	3.30	3.20	3.15	3.20	3.15	3.15	3.15	2.85	2.70	2.85	2.70	2.60	2.65	2.90	3.05	2.90	2.80	2.80	2.80
2	2.90	2.90	2.75	2.70	2.75	3.00	2.90	2.90	3.00	2.90	2.90	3.00	2.75	3.00	2.85	2.80	2.95	3.00	2.95	2.80	2.80	2.80	2.80	2.80
3	2.90	2.85	2.70	2.55	2.50	2.80	2.90	3.05	3.15	2.85	S	AS	A	2.85	2.85	2.95	2.85	2.85	2.85	2.90	2.90	2.75	2.75	2.75
4	2.90	2.95	2.80	2.80	2.75	2.85	3.00	3.05	3.00	AS	2.80	2.75	2.90	2.85	2.95	2.90	C	A	A	A	3.05	2.80	2.75	2.75
5	2.85	2.85	2.75	2.75	2.80	2.95	3.00	2.85	2.85	A	3.00	2.70	3.05	2.65	2.75	2.85	2.85	2.85	A	A	2.85	2.70	2.80	AS
6	R	2.35	2.55	2.75	2.75	2.90	2.75	2.80	S	S	S	S	S	S	A	AS	2.85	2.85	3.00	2.90	2.85	2.80	2.65	2.70
7	2.75	2.85	2.70	2.65	2.65	2.85	2.85	2.85	2.90	3.15	2.80	S	A	A	2.75	2.95	2.90	2.95	2.95	3.05	2.90	2.85	2.65	2.75
8	2.90	2.75	2.75	2.75	2.70	2.85	2.90	2.90	3.05	S	2.70	2.70	2.90	2.90	2.70	2.70	2.90	2.90	2.90	2.90	3.15	2.95	2.65	2.65
9	2.70	2.75	2.80	2.85	2.80	3.10	3.00	2.65	3.25	3.10	2.65	2.70	2.60	2.75	3.05	2.95	2.65	2.70	2.75	3.00	2.70	2.60	2.55	2.60
10	2.70	2.65	2.80	2.70	2.80	3.00	3.25	3.05	3.20	3.45	2.70	2.45	2.80	2.90	2.85	A	A	A	A	2.95	2.30	2.85	2.60	2.90
11	2.75	2.80	3.00	3.20	2.70	2.80	3.20	3.05	3.00	A	A	A	A	A	A	A	A	A	A	2.90	3.25	2.65	2.55	2.60
12	2.70	2.60	2.75	2.70	2.40	2.75	3.00	3.05	A	A	A	A	2.80	2.65	2.80	2.85	2.90	2.95	2.80	2.70	2.80	2.70	2.60	2.60
13	2.95	2.90	2.75	2.80	2.90	2.75	2.70	3.15	3.20	3.10	3.00	2.50	2.80	2.70	2.80	2.90	2.90	2.95	2.85	3.15	2.90	2.65	2.85	2.50
14	2.75	2.50	2.30	2.55	2.60	2.75	2.60	2.70	G	2.25	2.70	2.70	2.70	2.90	2.80	2.70	2.95	2.90	2.80	2.35	2.45	2.60	2.55	2.55
15	2.70	2.75	2.45	F	2.45	F	2.45	2.30	G	2.30	2.40	S	A	A	A	2.40	2.60	2.95	2.95	2.65	2.55	2.55	2.65	2.70
16	2.60	2.65	2.55	2.60	2.80	2.80	2.85	2.85	2.90	2.65	2.65	2.85	2.90	2.90	3.05	3.05	3.00	3.05	3.05	2.70	2.70	2.80	2.65	2.60
17	2.55	2.65	2.70	2.85	2.80	2.90	2.85	2.95	3.10	3.40	A	A	A	A	3.00	3.20	2.95	2.95	S	C	S	S	F	
18	SF	F	F	2.90	2.90	S	A	A	S	A	A	A	A	A	2.70	2.90	2.65	2.70	3.00	3.10	2.90	2.45	2.45	
19	2.50	2.60	2.65	2.50	2.40	2.50	A	A	A	A	A	A	2.75	2.75	2.95	2.80	2.60	2.70	2.90	2.90	2.90	2.45	2.45	
20	2.70	2.60	2.65	2.60	2.65	2.95	3.05	3.05	A	A	A	A	A	A	2.80	2.75	A	A	2.85	2.90	2.95	2.85	S	F
21	AS	F	F	F	F	2.80	2.80	2.80	2.75	2.70	2.90	2.80	2.85	2.70	2.85	2.95	2.90	2.95	2.80	2.95	3.20	2.70	2.80	2.75
22	2.85	2.70	2.75	2.65	2.60	2.70	2.85	2.85	2.75	3.05	3.00	2.75	2.80	2.80	2.85	2.95	2.90	2.95	2.80	2.95	3.20	2.70	2.80	2.75
23	C	C	C	C	C	C	C	C	C	2.50	2.50	2.35	2.80	2.75	2.85	2.90	2.90	2.95	2.85	2.95	3.25	2.55	2.60	2.75
24	2.50	2.40	2.60	2.60	2.50	2.70	2.90	3.05	2.80	2.85	2.85	2.85	2.85	2.75	2.85	2.75	2.85	2.85	3.05	2.80	2.70	2.65	2.70	2.60
25	2.60	2.60	2.75	2.75	2.90	2.60	2.75	2.70	2.85	2.90	3.10	2.65	2.85	2.85	2.80	2.80	2.80	2.80	2.90	2.95	2.90	2.70	2.85	2.75
26	2.90	2.65	2.85	2.90	2.85	2.90	3.00	3.10	2.95	2.90	3.05	2.80	2.45	2.70	2.80	2.80	2.90	2.95	3.00	3.15	3.05	2.80	2.85	2.75
27	2.85	2.80	2.70	2.75	2.80	2.90	2.95	3.10	2.75	2.50	2.40	2.60	2.80	2.85	2.90	2.80	2.65	2.75	2.70	2.55	2.90	2.75	2.70	2.70
28	2.75	F	F	F	2.55	2.70	3.00	3.00	2.95	2.90	2.75	2.85	2.70	2.85	2.85	2.85	2.85	2.85	2.70	2.55	2.60	F	F	2.80
29	2.80	2.80	2.80	2.85	2.75	3.05	3.30	3.25	3.20	3.10	C	A	A	2.65	3.00	3.00	3.15	3.05	2.95	3.30	2.90	2.80	2.70	2.80
30	2.70	2.80	2.90	2.95	2.80	2.90	2.95	3.15	3.20	2.50	2.65	2.80	2.90	2.80	2.80	3.05	3.30	3.15	3.05	2.90	3.05	2.85	2.80	2.80
31	2.70	2.65	2.70	2.75	2.85	3.15	3.50	3.45	3.35	3.05	3.10	2.95	3.00	2.85	3.05	3.05	2.90	3.00	2.85	2.85	3.15	3.05	2.85	2.85
No.	27	27	27	27	29	30	29	28	25	22	21	23	22	26	27	27	26	26	27	27	28	27	26	26
Median	2.75	2.75	2.75	2.75	2.75	2.80	2.90	3.00	3.00	2.90	2.80	2.75	2.80	2.80	2.85	2.85	2.90	2.90	2.95	2.90	2.90	2.75	2.70	2.70

Sweep 1.0 Mc to 2.0 Mc in _____ sec in automatic operation.

M(3000)F2

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

M(3000)F1

135° E Mean Time (GMT. + 9h.)

Jul. 1961

Day	00	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	4.00	A	A	A	A	A	A	A	A	A				
2						A	A	A	A	A	3.80 ^L	A	A	A	A	A	A	A	A	A	A			
3							A	A	A	A	S	AS	A	A	A	A	A	A	A	A	A			
4						3.20 ^L	3.35	S	AS	AS	S	S	A	A	A	A	A	A	A	A	A			
5							L	S	AS	AS	S	S	A	A	A	A	A	A	A	A	A			
6							3.45 ^L	S	S	S	S	S	A	A	A	A	A	A	A	A	A			
7						S	A	S	S	S	3.70 ^S	3.55 ^S	A	A	A	A	A	A	A	A	A			
8							A	S	S	S	3.75 ^S	3.90	3.80 ^S	3.75	3.40 ^L	3.80 ^L	A	A	A	A	A			
9							L	3.40 ^L	A	A	3.40	3.75	3.65 ^R	3.70 ^L	3.60	3.40 ^L	3.40 ^L	3.40 ^L	3.40 ^L	3.40 ^L	3.40 ^L			
10								L	S	A	A	A	A	A	A	A	A	A	A	A	A			
11							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
12							L	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
13							A	3.45 ^L	A	A	A	A	A	A	A	A	A	A	A	A	A			
14							A	3.25 ^S	3.30	3.80	A	A	R	R	A	A	A	A	A	A	A			
15							3.35	3.30	A	A	3.70	3.80	3.55 ^S	S	A	A	A	A	A	A	A			
16						L	A	A	A	A	3.25 ^L	3.50 ^L	3.25 ^L	3.35	3.40 ^L	A	A	A	A	A	A			
17						L	L	S	A	A	A	A	A	A	A	A	A	A	A	A	A			
18							L	S	A	A	A	A	A	A	A	A	A	A	A	A	A			
19								3.10 ^S	A	A	A	A	A	A	A	A	A	A	A	A	A			
20									A	A	A	A	A	A	A	A	A	A	A	A	A			
21								S	A	A	A	A	A	A	A	A	A	A	A	A	A			
22						L	L	A	A	A	3.65	S	3.30	C	C	A	A	A	A	A	A			
23						C	C	C	C	C	3.70 ^S	3.60 ^S	R	3.15 ^R	S	S	S	S	S	S				
24						L	L	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
25						A	A	A	A	A	A	A	S	3.45 ^S	A	A	A	A	A	A	A			
26								A	A	A	A	A	A	L	A	A	A	A	A	A	A			
27								3.40 ^L	3.35 ^L	A	A	A	A	A	A	3.55 ^L	3.60	A	A	A	A			
28							A	A	A	A	A	A	B	A	A	A	3.55 ^L	L	L	L				
29						L	A	A	A	A	A	A	A	A	A	A	3.75	3.60 ^L	3.30 ^L	L	L			
30						L	3.45 ^L	3.55 ^L	A	A	A	A	3.30 ^L	3.80 ^R	3.15 ^L	3.65	3.60 ^L	L	L	L				
31						L	L	L	3.75	3.90	4.10 ^L	A	3.40 ^S	A	A	AS	A	A	A	A				
No.						1	4	8	7	9	8	7	8	6	8	10	10	6	6	6				
Median						3.20	3.35	3.40	3.55	3.70	3.70	3.55	3.40	3.40	3.50	3.50	3.60	3.70	3.70	3.70				

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

M(3000)F1

The Radio Research Laboratories, Japan.

K 8

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. + 9h.)

R'F2

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							290	F3.50 ^A	F3.50 ^A	S	A	F3.60 ^A	4.05	3.50 ^A	3.75	F3.95 ^A	F3.80 ^A	F3.05 ^A							
2						350	310	300 ^A	A	A	A	A	4.10	3.50	3.60	3.55	3.10	3.10	F3.20 ^A						
3							310	290	310	380	S	AS	A	4.00 ^A	3.50	3.75	4.00	A	3.40						
4							355	345	F3.05 ^S	AS	S	F4.50 ^S	A	F3.85 ^S	3.50	3.25	C	A	A						
5							300	350	F3.55 ^S	A	A	F4.10 ^S	3.20	F4.50 ^S	3.70	3.55	3.35	3.25	A						
6							335	295	S	S	S	S	S	S	AS	AS	3.65	4.45	3.00						
7							300	375	F3.55 ^S	3.00	F3.75 ^S	A	A	A	A	S	3.55	3.55	3.20	3.05					
8							A	F3.50 ^S	F3.40 ^S	S	S	S	3.75	3.55	F3.90 ^S	3.95	3.15	3.10	2.90						
9							260	400	280	300	485	455	4.50	4.10	3.30	3.55	4.10	3.80	3.20						
10							300	275	265	A	A	460	4.00 ^A	3.50	3.60	A	A	A	F3.80 ^A						
11							275	310 ^S	A	A	A	A	A	A	A	A	A	A	A	F3.20 ^A					
12							305	300	A	A	A	A	3.90	3.50	3.50 ^A	3.10	3.00 ^A	3.25	3.00 ^A						
13							350	270	A	A	A	F4.55 ^S	4.45	4.00	F3.80 ^A	3.10	3.25	3.30	2.75						
14							A	S	S	G	A	4.15	3.95	F3.55 ^S	4.00 ^S	S	F3.55 ^S	F3.50 ^A	3.10						
15							550	505	A	G	R	5.00	S	A	A	A	4.50	F3.50 ^A	3.05						
16							305	F3.60 ^A	365	A	4.20	3.55	3.60	3.45	3.30	3.10	3.05	3.05	3.05	2.75					
17							300	315	305	F2.90 ^S	A	A	A	A	F3.50 ^A	2.80	3.10	F2.90 ^S	2.60 ^A						
18							310	S	A	F3.50 ^A	A	A	A	A	A	3.25	3.55	C							
19							420	A	A	A	A	4.00	3.75	3.30	3.25	3.60 ^S	A	A							
20								275	A	A	A	A	A	A	A	3.50	3.60	A	A	F3.30 ^A					
21								425	A	A	A	3.00	3.25	3.55 ^A	3.80	3.50	3.20 ^A	3.00 ^A	2.90	2.75					
22							355	355	305	355	325	4.05	3.75	C	C	C	C	C	C						
23							C	C	C	460	R	C	650	4.50	4.55	3.60	3.45	3.05	2.95						
24							320	290	F3.00 ^A	A	C	4.25	4.10	3.60	3.55	3.80	3.45	3.55 ^A	2.95						
25							F3.55 ^S	355	A	A	A	3.55	4.40	3.90	3.80	3.85	3.80	3.50	3.05						
26							290	300	300	300	350	F5.05 ^A	3.55 ^S	4.00	3.75	F3.70 ^A	3.05	F2.90 ^A							
27							300	380	A	A	A	3.60 ^A	3.45	3.50	4.60	S	3.50	3.30							
28							A	A	S	A	4.25	3.60	B	3.75	3.20	3.30	3.00	3.15	3.00						
29							275	275	A	A	C	A	F3.95 ^A	3.50 ^A	3.00	3.00	3.25	2.90							
30							270	290	255	A	A	A	3.55	3.60	3.55	3.05	2.60	2.85	2.60						
31							225	245	325	345 ^S	310	350	3.20	F3.60 ^A	3.00	F3.40 ^A	F3.50 ^A	F3.05 ^A	3.05						
No.	8	19	22	10	13	9	13	19	18	23	25	20	20	20	20	20	20	20	20						
Median	315	310	300	305	345	355	405	375	355	350	355	340	310	300											

Sweep 1.0 Mc to 2.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

K 9

R'F2

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 136° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

17 F

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	760	775	300 ^A	290	255	250 ^A	250 ^A	260 ^A	A	A	205	A	A	A	A	A	A	A	A	A	270 ^A	260 ^A	260	305	
2	750	255	290	300	305	A	210	230 ^A	A	A	210	A	A	A	A	A	A	A	A	A	300 ^A	265 ^A	290 ^A	300	265
3	295	255	310	345	305	250	250 ^A	245	240 ^A	S	AS	AS	A	A	A	A	A	A	A	A	260	250 ^A	275	305	355
4	290	295	310	350 ^B	305	285	255	S	AS	AS	S	S	235 ^A	250 ^A	255 ^A	S	C	A	A	A	300 ^A	S	AS	345 ^A	
5	310 ^C	300	300	190 ^C	250	260	255	250 ^A	250 ^A	AS	AS	S	S	AS	S	310 ^S	S	280	A	A	350 ^A	S	295	AS	
6	A	345	340 ^S	340	300	300	255	250 ^A	270 ^S	S	S	S	A	A	AS	AS	250	250	245	270 ^A	275	280 ^S	325	315	
7	305	295	295	330	345	260 ^S	240	250 ^A	270 ^S	210	210	A	A	A	310 ^S	245	245	255	250 ^A	255	255	300	310	300	
8	260	300	300	305 ^S	300	300	260 ^A	250 ^A	250 ^A	210	245	200	245	290 ^A	205	230 ^A	250 ^A	250 ^A	250 ^A	255	255	295	350	300	
9	315	295	255	255	290	255	230	230	215	210 ^A	260	210	240	200 ^A	200	255 ^A	250 ^A	260	260	255	205	360	350 ^A	340 ^A	
10	305	350 ^A	305	300	290	260	250 ^A	250 ^A	255	A	A	220	200 ^A	240 ^A	240	A	A	A	A	A	300 ^A	A	A	355 ^A	
11	255	255	300	250 ^A	280 ^S	345	A	A	A	A	A	A	A	A	A	A	A	A	A	A	290 ^A	350 ^A	355	420 ^A	
12	420 ^A	350 ^A	300	255	300	255	245	A	A	A	A	A	250	A	A	A	A	A	A	A	300 ^A	270 ^A	300 ^A	320 ^A	
13	330 ^S	290 ^A	300 ^A	310	250	300 ^A	255 ^A	255	A	A	A	275	250 ^A	205	250 ^A	250 ^A	255	245	295 ^A	260	280	330	260	355	
14	310	410 ^A	450 ^A	355	340 ^A	305	270 ^A	245	245	220	230 ^A	240	260 ^A	R	240	270	250 ^A	260 ^A	250 ^A	305 ^A	350	310	255 ^A	310	
15	305	295	400 ^A	350	350 ^F	350	260	260	250 ^A	205	210	245	S	A	A	A	400 ^A	A	A	A	290 ^A	330 ^A	305	310	310
16	300	305	300	310	345	290 ^A	255 ^A	245 ^A	245	245	220	270	250	250	220 ^A	230	260	260	260	280 ^A	310	340 ^A	300	325	
17	355 ^A	345	310	260	260	280	260 ^A	250	250	S	A	A	A	A	A	A	A	A	A	A	290 ^A	290 ^A	315	315	300 ^A
18	290	310	245	300 ^A	305	270 ^S	S	A	A	A	A	A	A	A	A	A	A	A	A	A	290 ^A	290 ^A	370	375	400 ^A
19	400 ^A	350	360 ^A	370 ^A	370 ^A	310 ^A	260	A	A	A	A	A	A	A	A	A	A	A	A	A	300 ^A	305 ^A	305	360 ^A	
20	360 ^A	325	325	305	300	255	240	A	A	A	A	A	A	A	A	A	A	A	A	A	260	245	250 ^A	325	350 ^A
21	315 ^A	330 ^F	350 ^A	345	260	285	310 ^S	350 ^S	A	A	A	250 ^A	A	A	A	A	A	A	A	A	250 ^S	260	245	305	305
22	295	300	305	310	325	350 ^A	300 ^A	280 ^A	255 ^A	220	225 ^A	240 ^C	250	270	240 ^S	235	C	C	C	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
24	300	355	350	360 ^A	350	260	250	260 ^A	260 ^A	240	225	240 ^C	250	270	240 ^S	235	225	240	255 ^A	260 ^A	280 ^A	300 ^A	325	300 ^A	
25	325	340 ^A	305	300	300 ^A	270 ^A	A	A	A	A	S	S	245	250	240 ^A	250	240	280 ^A	250	220	220	A	A	350 ^A	
26	300 ^S	330	305	300	300 ^F	260	275	260 ^A	270 ^A	A	A	A	A	A	240	280 ^A	A	A	A	A	260 ^A	250	305	340 ^A	
27	305 ^A	310 ^A	305	305	305	260	290 ^A	260 ^A	260 ^A	A	A	A	A	A	225	240	S	280	260 ^A	355	290	410 ^F	390	300	
28	265	450 ^A	400 ^F	450 ^F	400 ^A	350	270 ^A	210 ^A	225	330 ^S	300 ^S	230	240 ^B	240 ^B	250	290 ^S	270 ^A	250 ^A	250 ^A	300 ^A	300 ^A	305 ^A	295	300	
29	325	325	305	325	290	260	255 ^A	A	A	A	C	A	240 ^B	240 ^B	205	225	255	270 ^A	250 ^A	245	245	250 ^A	340 ^A	280	
30	300	295	265	245	255	310 ^A	240	250 ^A	250 ^A	A	A	A	290 ^A	205	245	240	240	210	240	300 ^A	255	300 ^S	260 ^F	220	
31	325 ^A	325	300	300	290	250	225	240	205	200	185	240 ^A	A	AS	A	AS	A	A	A	290 ^A	295	245	245	210	300
No.	25	29	28	29	29	28	24	19	17	11	12	11	11	10	15	13	15	14	15	23	27	24	25	24	
Median	300	310	305	305	300	270	255	250	230	245	240	240	240	240	240	240	240	250	255	250	260	265	305	305	310

Sweep 1.0 Mc to 20.0 Mc in 2.0 msec sec in automatic operation.

17 F

The Radio Research Laboratories, Japan.

K 10

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (G.M.T.+9h.)

h'ES

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	105	105	105	105	115	115	110	115	115	105	110	110	110	115	115	110	110	110	105	105	105	105	105
2	105	105	105	105	105	130	110	110	105	115	105	105	110	110	115	140	120	110	110	105	105	105	105	105
3	105	105	110	E	E	150	110	S	110	115	110	110	110	110	115	110	115	110	110	110	110	110	110	110
4	110	110	110	110	105	S	135	115	110	115	110	110	110	S	115	135	C	115	110	110	110	110	110	110
5	C	110	110	C	E	120	115	115	110	110	110	110	105	110	130	135	S	115	110	110	105	110	110	115
6	110	110	110	110	110	S	130	S	135	130	S	S	125	130	115	115	110	125	110	C	S	110	105	S
7	S	S	S	S	S	S	125	125	S	110	110	105	105	105	105	160	120	170	110	110	110	105	100	100
8	S	105	105	105	110	115	110	110	110	110	105	S	G	110	G	140	120	115	B	110	105	105	100	100
9	105	100	100	105	S	S	G	110	115	105	105	105	105	G	G	145	115	110	110	105	105	105	100	105
10	105	105	105	105	110	110	110	110	105	105	100	100	105	145	B	125	115	115	110	110	105	115	105	110
11	105	110	105	105	105	100	120	110	110	110	110	110	110	105	105	105	105	105	105	105	100	100	100	100
12	105	100	100	105	110	115	110	110	105	105	105	105	105	105	105	105	105	105	105	105	105	100	105	105
13	105	100	100	100	100	120	110	110	110	105	105	105	105	105	105	100	100	100	100	100	100	105	105	110
14	105	105	105	105	120	120	110	115	110	115	110	50	150	140	155	155	140	120	130	B	E	110	105	105
15	145	130	120	120	130	G	120	110	110	110	G	150	130	125	115	110	125	110	110	110	105	110	105	100
16	100	105	105	105	105	115	110	110	105	110	G	150	150	G	125	115	110	110	110	125	110	105	105	105
17	105	100	100	E	E	110	110	110	105	105	105	105	105	110	105	105	105	105	105	105	100	110	110	110
18	105	105	105	105	S	S	120	120	120	105	115	110	110	110	110	S	G	C	115	S	110	115	S	110
19	110	110	110	110	110	120	125	110	105	105	110	110	135	125	B	125	125	115	20	110	110	110	110	105
20	105	105	105	105	105	B	140	125	110	110	110	105	105	105	105	125	125	125	110	110	S	115	105	105
21	105	105	100	120	100	120	115	110	110	105	B	B	110	110	105	110	105	105	S	105	100	105	105	100
22	S	115	S	S	110	130	120	115	110	110	110	110	125	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	S	G	C	125	G	G	G	145	140	115	110	100	105	105	105
24	100	100	105	100	100	S	110	105	105	C	130	130	130	20	25	25	110	115	110	110	105	105	110	105
25	110	105	105	105	105	105	105	105	105	105	105	G	110	105	110	110	S	130	130	S	S	110	120	105
26	100	105	105	110	S	110	105	105	110	100	100	100	120	140	140	125	110	110	105	105	100	105	105	100
27	105	105	105	105	105	S	110	125	120	100	100	100	100	100	105	105	100	100	B	S	S	S	110	100
28	120	105	105	110	105	110	100	100	105	115	110	G	B	B	130	130	S	130	130	105	100	105	105	125
29	105	105	105	105	100	110	110	105	105	105	C	100	100	105	100	100	100	100	100	100	100	100	100	100
30	120	120	100	105	E	100	105	100	100	100	100	100	100	100	100	100	100	B	G	105	105	105	105	100
31	100	100	100	100	100	G	105	105	100	100	100	100	100	100	100	100	100	100	100	105	100	100	100	100
No.	26	29	28	25	22	19	29	28	29	29	25	24	29	25	25	28	25	28	26	25	25	27	27	28
Median	105	105	105	105	105	115	110	110	110	110	110	105	110	110	110	115	110	110	110	110	105	105	105	105

Sweep / 0 Mc to 2.00 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

K 11

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

Types of Es

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
2	f3	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
3	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
4	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
5	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
6	f4	f3	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
7	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
8	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
9	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
10	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
11	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
12	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3
13	f4	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3
14	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
15	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
16	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
17	f4	f3	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
18	f4	f3	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
19	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
20	f3	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
21	f3	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
22	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
23	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
24	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
25	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
26	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
27	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3
28	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
29	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3
30	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2	f2
31	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3	f3
No.																								
Median																								

Types of Es

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

fpF2

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	355	355 ^F	365 ^F	370 ^F	370 ^F	370 ^F	370 ^F	370 ^F	A	A	S	1360 ^A	A	400	355	400	405 ^R	400	345 ^R	305 ^R	370 ^R	350 ^R	370 ^R	385	
2	330	345	360 ^S	380	385	350 ^S	320	S	A	G	A	A	A	350	365	355	340	345	330	350	310 ^M	370 ^M	395 ^M	385	
3	350	345	380	400 ^M	405 ^M	350 ^S	350	305	315	380 ^R	S	AS	A	A	345 ^A	370	395	360 ^A	350	320 ^U	305	350	380	385	
4	350 ^S	345	350 ^F	360 ^F	385 ^F	395	355	310	295	AS	1400 ^S	S	A	S	350	335	C	A	A	A	335	350 ^S	350	385	
5	340 ^U	335	360 ^F	355 ^F	350 ^F	320 ^S	330 ^R	355 ^S	360	S	1330 ^A	S	325 ^S	R	380	380	350 ^R	380	A	A	4350 ^S	350 ^S	340 ^S	340 ^S	
6	R	365	420 ^F	370 ^F	385 ^S	350	370	345 ^S	S	S	S	S	A	A	A	AS	S	370 ^S	325	370 ^S	350 ^S	370 ^S	400 ^S	370	
7	380	350	355	400 ^S	405	365	375	360	S	305	S	A	A	A	A	S	345	320	335	370 ^S	370 ^S	385 ^S	395 ^S	380	
8	345	390	385	385	390	355	350 ^M	350 ^S	S	S	S	S	G	355	345	310	355	345	310	330	320	345	405	345	
9	400	355	350	350	350	305	305	395	300	305 ^R	G	G	R	410	340	355	410	400	360	310 ^R	350 ^R	400	405	405	
10	385	400	355	350	355	305	290	305	295	270	A	A	A	A	370	A	A	A	1300 ^A	330	405 ^A	400	405	405	
11	380	345	305	290 ^M	400 ^S	390	300	330 ^S	A	A	A	A	A	A	A	A	A	A	A	1300 ^A	330	405 ^A	400	405	405
12	AF	395	375	355	395	330 ^S	345	325 ^S	A	A	A	1370 ^A	405	370	355	345	345	350	345	350 ^S	350	305	395	370	
13	350	325	370 ^M	355	330	355	395	305	330 ^M	320 ^M	345 ^R	R	G	400	A	350 ^S	315	350	300	345	355	400	355	435	
14	400	400	490	420	395	350	360 ^M	R	G	G	A	410	400	355	G	340 ^S	S	A	355	455 ^S	455 ^S	395	420 ^F	445	
15	395	355	455 ^F	F	455 ^F	G	R	A	A	A	R	A	A	A	A	A	A	A	345	375	405 ^A	415	395	390	
16	400	390	395	410	410	360	360	360	350 ^A	G	400 ^R	375	355	350	345	325 ^R	330	340	305	380	390 ^S	360 ^S	405	415	
17	440	405	400	355	360	350	350	330	300	S	A	A	A	1320 ^M	315 ^M	300 ^S	345 ^S	330 ^S	S	C	S	S	S	F	
18	SF	F	F	310	330	330	S	A	A	A	A	A	A	A	A	A	G	380 ^U	330 ^S	300	325 ^A	430 ^S	445 ^U	455	
19	445 ^U	405 ^F	390	420 ^M	A	A	G	A	A	A	A	A	A	A	A	A	325	330 ^S	340 ^A	330	1350 ^A	A	F	SF	A
20	395	395	400 ^F	395	370 ^F	305	300	300	A	A	A	A	A	A	350 ^S	375 ^S	A	1350 ^S	340 ^S	330	340 ^S	310 ^S	345	S	F
21	AS	F	F	F	350 ^F	320	345	445	400 ^A	A	355	350	1380 ^R	400	395	340	335	325	350 ^S	330	300	365	370	380	
22	365	375	365	400	400	400	395	350 ^S	380	325	S	G	G	C	C	C	C	C	C	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
24	395	450	430 ^S	420	435	355	310	300	315 ^A	C	A	G	G	R	400 ^R	385	350	320	310	330	360	390 ^M	365	400	
25	400 ^U	410 ^F	365	360 ^F	330	S	360	380 ^A	355	1355 ^A	350 ^A	S	G	380	390	385	355	330 ^U	300 ^S	300 ^S	355	370 ^S	355	375	
26	350	380	355	350	350 ^F	345	310	310	335	350	330	355	1420 ^A	400	400	385	340 ^A	330	305	300	335	350	375	395	
27	350 ^F	355	385 ^F	360	340	330	320	320	G	A	A	1420 ^M	360	355 ^R	350	G	1400 ^S	375	390	420 ^R	400 ^R	F	375	395	
28	350 ^F	F	F	F	445 ^F	385	320 ^M	A	S	330 ^S	G	S	B	G	320	350	300	320 ^S	335	350	330	355	355	390 ^S	
29	365	360 ^F	355	370 ^F	345	300	295	295	S	A	A	A	A	400	350 ^A	320	335	350	320	300 ^S	305	305	400	355	
30	355	360	350	310 ^F	345	345	320	300	295	A	A	A	A	355	360	330 ^R	320	295	305	305	350	330	340	320 ^F	
31	390	395	400 ^F	395	355 ^F	300	2250 ^S	255	285	G	310	370 ^S	320	330 ^M	305	320 ^S	310 ^A	310	345	340 ^R	300 ^R	295	355	355	
No.	26	27	27	27	28	28	27	24	15	9	8	9	10	19	21	23	21	23	26	27	28	26	26	25	
Median	370	365	370	370	365	350	330	320	315	325	350	370	360	360	355	350	345	345	330	330	330	370	395	380	

Sweep / ° Mc to 20. ° Mc in 20. sec in automatic operation.

fpF2

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT. + 9h.)

Jul. 1961

ypF2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	95	7100 ^F	130	80 ^S	75 ^S	60	55	80	A	A	S	I 90 ^A	A	65	95	100	7105 ^R	100	100	7125 ^R	95	I 80 ^A	110		
2	115	65	85	110	100 ^S	85	85	80	A	G	A	A	A	50	90	140	105	85	80	145	85 ^A	I 105 ^A	7100 ^F	100	
3	95	100	115	I 100 ^F	100 ^F	95	95	95	65	70 ^R	S	AS	A	A	55 ^A	50	50	A	A	55	40	90	70	70 ^S	
4	90 ^S	60	I 65 ^F	I 80 ^F	65 ^F	65	65	65	105	AS	I 50 ^S	S	A	A	80	85	C	A	A	A	65	I 70 ^I	90 ^S	90 ^S	
5	I 85 ^C	I 100 ^S	I 100 ^S	I 95 ^C	I 100 ^S	90 ^R	70 ^S	75	75	A	I 70 ^A	S	70 ^S	R	115	110	795 ^R	65	A	A	400 ^R	S	75	AS	
6	R	90	65 ^S	90 ^S	95 ^S	80	85	7105 ^S	S	S	S	S	S	A	A	55	A	100 ^S	85	I 85 ^C	95 ^S	I 90 ^S	100 ^S	80 ^S	
7	70 ^S	95	95	60	95	85	55	120	S	55	S	A	A	S	A	55	A	70	90	110	785 ^T	60	40	115	
8	100	105	110	80	110	140	I 95 ^I	100 ^S	S	S	S	S	G	50	R	90	90	60	90	85	I 80 ^S	60	95	100	
9	90	40	140	100 ^S	95	95	90	110	50	785 ^R	G	G	R	85	60	50	90	95	135	785 ^T	65	100	95	100	
10	110	100 ^S	90 ^S	105	90 ^S	95	60	90	60	55	A	A	A	60	85	A	A	A	A	I 90 ^A	115	I 90 ^A	75 ^T	70 ^S	
11	I 75 ^T	100 ^S	90 ^S	I 75 ^A	95 ^T	70 ^S	55	55	A	A	A	A	A	A	A	A	A	A	A	795 ^R	50 ^S	100	115	95	A
12	AF	105	I 80 ^T	100 ^S	105	75	100	780 ^S	A	A	A	I 80 ^A	95	80	95	100	60	80	100	100	110	100	115	85 ^F	
13	90 ^S	110	I 110 ^A	100	115	135 ^F	95	90	I 90 ^A	I 80 ^A	R	R	G	90	A	770 ^T	60 ^S	110	95	105	90	100	115	155 ^F	
14	790 ^S	145	110	125	7100 ^S	95	I 25 ^A	G	G	A	A	45	95	95	G	795 ^S	A	A	A	95	90 ^S	7100 ^S	100 ^S	105	
15	760 ^F	100	I 130 ^A	F	I 100 ^F	G	R	R	A	G	R	S	S	A	A	50	770 ^R	75	65	95	115	105	100	100	
16	100	105	105	135	90	95	85	85	I 80 ^A	G	I 105 ^R	70	90	95	A	50	770 ^R	75	65	95	115	105	100	85	
17	115	90	90	100	130	145	145	110	95	S	A	A	A	A	A	50 ^S	I 80 ^A	50 ^T	110	55 ^C	60 ^S	I 75 ^I	75 ^I	60 ^S	45
18	SF	F	85	70	65	A	A	A	S	A	A	A	A	65	G	S	I 50 ^S	I 50 ^S	50 ^A	80 ^I	65 ^A	A	F	SF	A
19	60 ^S	90 ^F	105	I 75 ^A	A	A	A	A	A	A	A	A	A	A	A	50 ^S	7105 ^S	A	A	65 ^S	I 85 ^I	75 ^I	100	S	F
20	770 ^S	I 60 ^F	90 ^F	I 70 ^T	105 ^F	90	65	75	A	A	A	A	I 95 ^R	I 95 ^R	A	100	60	I 80 ^S	70 ^S	95 ^S	65	I 55 ^I	115 ^I	90 ^S	70 ^S
21	AS	F	F	F	80 ^F	70	60	100	I 105 ^A	A	100	95	I 95 ^R	100	100	60	I 80 ^S	I 80 ^S	70 ^S	95 ^S	65	I 55 ^I	115 ^I	90 ^S	70 ^S
22	65	90	130	95	95	100	90	95	75	70	S	G	G	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	115	145	65 ^S	85	110	140	95	100	I 115 ^A	C	A	85	85	85	75	110	95	A	770 ^T	60 ^T	70 ^T	90 ^T	100 ^T	95 ^T	
25	795 ^F	85 ^F	85 ^F	90 ^F	65	S	90	I 95 ^A	I 80 ^A	50 ^A	95 ^S	S	G	75	65	80	55	I 55 ^S	55 ^S	65 ^S	75 ^S	I 95 ^I	90 ^T	80 ^S	
26	I 50 ^S	85	90	50	I 80 ^F	60	85	85	65	95	60	145	I 100 ^A	I 100 ^A	105	65	80	I 80 ^A	65	85	95	75	75	75 ^S	60
27	I 80 ^A	90 ^S	60 ^F	90	60	75	80	40	G	A	I 115 ^A	I 85 ^R	75 ^R	75 ^R	100 ^R	95	G	I 75 ^S	120	110	780 ^I	85 ^F	F	65 ^S	
28	105 ^F	F	F	F	I 100 ^F	65	I 80 ^A	A	S	750 ^S	G	A	B	S	G	75	95	55	75 ^S	55 ^S	95 ^S	70 ^S	95	I 90 ^S	
29	45 ^S	60 ^F	60	75 ^F	100 ^S	65	40	55 ^S	A	A	C	A	A	100	I 90 ^A	85	115	95	85	760 ^S	55	150	100	100 ^F	
30	70	60	65	95 ^F	55	60	85	55	50	A	A	A	A	60	90 ^T	90 ^R	75	55	50	90	95	70	70	100 ^F	
31	I 90 ^A	I 100 ^S	95 ^F	100	65 ^F	50	755 ^S	50	40	G	85	I 80 ^S	65	I 65 ^A	90	I 75 ^S	I 90 ^A	90	105	I 95 ^R	95 ^R	90 ^R	110	90	
No.	26	27	27	27	28	28	27	24	15	9	8	9	10	19	21	23	21	23	26	27	28	26	26	26	25
Median	90	100	90	90	95	90	85	90	75	70	80	85	90	85	80	80	75	80	90	90	90	85	100	95	90

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

ypF2

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7 E

Yamagawa

135° E Mean Time (GM.T.+9h.)

foF2

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	160A S	50 S	48 S	42	56	53	58	61	62A	65	69	80A	84	86	90	98S	104S	100S	85S	70S	65S	65S	61S	61S
2	64S	67S	64	63	60S	53	53A	A	54	61	58	63	74R	88	92	95S	99S	95	90	64	58	61S	61S	61S
3	A	A	C	C	C	C	C	C	73S	68V	61	64	70	78	71	73S	78S	80	85	78S	63S	61S	61S	61S
4	F5	S	S	S	55S	60S	64S	76	A	61S	61A	69	81R	85	87A	79	75S	74S	C	C	S	A	S	A
5	A	S	S	S	57S	57S	57S	73S	78S	71A	69A	71	71A	71	71A	78	77A	100S	94	78A	74S	74S	63S	63S
6	S	S	S	S	55	54	62	75	69	58A	64	63R	58	57	60A	67	70	70	71S	69	65	65S	63S	62S
7	64S	62	57	56	51	51	49	64S	69	65	69	59	56A	62	66	74S	81	A	79S	76S	74	63S	63S	63S
8	S	S	61	60	58S	58	60	59V	67	63S	58	62S	70	61	63	66	80	88	87	75S	67S	67S	64S	64S
9	S	S	S	S	56	54	53	68	79	61S	59	60	68	81	82	84A	65S	48S	109S	114	72S	56	61S	88H
10	85H	S4	67	66S	54S	48S	54	72S	70	76S	60	62S	73	74	69	74S	81	88	90	90	70S	57S	58	58
11	A	S	S	S	55S	52S	76S	71S	65S	78	70S	74R	77A	71R	62	66R	77S	95S	93S	79A	64	A	S	S
12	S	S	S	S	57	53	48S	58	69	69	72	70	80	84	93	93	79C	90	83	78S	64	A	S	S
13	S	S	S	S	55S	55S	55	85	67	71	73	71R	74R	89	99	99S	93	95S	94S	83	74S	68S	69S	71S
14	69S	70S	52S	56	52S	48	55A	57A	A	A	A	67	76R	88	71	70	75	71S	76S	67S	70S	79S	88	88
15	S	170S	62S	S	F5	F5	41S	51	48	49R	51	54	52A	52	R	A	63R	64	54	44	52	60	62	S
16	S	S	S	S	51S	44S	74S	72S	60S	71S	72	79	86	86	92S	91S	79	76S	77S	44	85S	69S	69S	S
17	S	S	S	S	70S	73	66	74	66	60	68	75	72A	77	90	99	98S	90	86	84	784S	78S	78S	87
18	85	48S	86	80A	58	49	46A	56	65	61	60A	66	73A	67	84	85	73	80	91	81	61S	55S	58	62S
19	164S	168S	S	S	45S	47	45A	47	53	53	55	53R	74	71S	74A	67	71	67	70	67	70S	70S	61S	62S
20	165S	162S	58S	S	F5	F5	56	66	74S	65	61A	64A	70	77	83	84S	93S	86	88	91	78S	72S	61S	S
21	S	S	70S	70S	54F	47F	50	61S	89	93	88A	85	88	93	110	115	106	105	105	704S	93	74S	73S	74S
22	74	781S	80S	76S	70S	63S	71S	79S	79S	85	76A	74	84	89	97S	93	85	72	76S	89	94S	64S	59	60S
23	S	S	S	S	56S	55	46S	57	57	57S	56R	57	57	61	60	67	72S	74	68	61	56	52S	53S	52
24	51	48S	46S	48S	45S	44	60	60	58	55H	65	76	79	76	75	77S	75S	79S	80	80	A	A	S	S
25	S	S	S	S	61	52	49S	54	77S	70	65R	72	75S	82S	71R	81R	86	87	99S	57	55S	56	58	58
26	58	58	57	51	46	41	52	69S	72	81S	70	67	76S	88	94	104S	70S	106	96S	88	76S	69S	S	S
27	S	S	S	S	55S	57A	69A	64	64	61S	68A	80	88	84	84	71A	70	76S	79S	82S	498S	S	S	78S
28	78S	S	S	S	56S	S	52H	51	51	49H	54A	61R	66S	67S	84	83	77R	72S	73	83S	69S	56S	58S	59S
29	62S	S	S	S	754S	45S	51	51C	46S	74	62S	66C	74S	95	700S	74C	92	104S	119S	205S	168S	45H	46S	48
30	50C	47	48	48	43	41	50A	72S	70	58	60	66	69	58C	79C	101	91	69	59H	68C	78S	66C	51S	C
31	S	54	49S	49S	50S	51C	51C	56H	64	64	61S	60	68	77	74	71S	74A	77A	80A	82S	89S	82	50	52S
No.	14	13	17	20	23	27	29	30	28	29	30	31	31	31	30	30	31	30	30	29	29	27	24	15
Median	64	62	58	58	54	51	54	64	66	64	63	66	73	77	82	80	80	80	84	82	74	66	61	62
4Q	74	70	66	65	57	56	60	72	71	74	70	72	77	85	92	93	92	95	94	90	84	72	64	74
1Q	60	56	52	50	45	50	56	60	60	59	60	61	68	67	71	71	73	74	76	72	68	57	58	58
Q.R	14	14	14	15	07	11	10	16	11	15	10	11	09	18	21	22	19	21	18	18	16	15	06	16

Sweep 1.0 Mc to 2.0 Mc in 30.0 sec in automatic operation.

foF2

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

Jul. 1961

135° E Mean Time (GMT. + 9h.)

foF1

Day	00	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	4.8	A	A	A					
2									A	A	4.9	4.8	4.8 ^A	4.8	4.7	4.7	4.6	4.3	A					
3					C		C	C	A	A	4.8 ^L	5.0	4.8	4.9 ^A	4.9	4.7	4.6	A	A	C				
4									A	A	4.8	A	A	4.8	5.0	4.7	4.8	4.2	C					
5									A	A	A	A	A	A	A	A	A	4.5 ^A	A					
6									A	A	4.6	4.8 ^A	4.7	4.7	A	A	A	4.2 ^A	3.8 ^L					
7									4.5 ^L	4.6 ^A	4.7	4.8 ^A	4.8 ^A	4.8	4.8	4.6	A	3.8						
8									4.4	4.8	4.8	5.0	5.0	5.0	5.0	4.8	4.6 ^R	4.4	A					
9									L	4.6	4.7	5.0	4.9	5.0	4.8	A	4.7	4.3	4.1					
10									L	4.5 ^L	4.8	5.2	5.1	5.0	4.8	4.7	4.8	4.3	L					
11									4.8 ^L	4.8	5.1 ^A	A	4.9 ^A	5.0 ^A	4.8	4.6 ^M	A	A						
12									4.2 ^L	A	4.8	5.3	5.2 ^A	5.1 ^A	5.0	4.8 ^C	4.3 ^M	4.3 ^L						
13									4.0 ^L	5.0	5.2	5.1	5.3	5.1	5.0	5.0	4.7	4.4	4.0 ^L					
14									A	A	4.9	5.0 ^A	5.0	5.0	5.1	5.1 ^M	A	A	4.5 ^L					
15									3.9	4.0	4.4	A	A	A	4.7	4.8 ^A	A	4.2	4.3 ^L					
16									4.1 ^L	4.8	5.0 ^A	5.3	5.1	5.2	5.0	5.0 ^A	4.8 ^A	4.6 ^L	L					
17									L	4.5 ^L	4.7	A	A	A	5.1	A	A	A	L					
18									L	4.4 ^L	4.8	5.0	4.9	5.0	5.1 ^A	A	5.2	4.5	4.1 ^L					
19									4.3 ^A	4.4	4.8	5.0	4.9	5.0	4.9	4.9 ^A	4.7 ^L	4.5 ^L	L					
20									L	4.6	4.8	A	5.1 ^A	5.0	4.9	4.8 ^A	A	A						
21									A	4.6	4.8	5.0 ^A	5.2	5.2 ^A	A	5.1 ^A	4.9 ^A	A	L					
22									4.3 ^L	4.5 ^L	4.8	5.2	5.1 ^A	5.0	5.0	4.7	4.4 ^L	L						
23									4.3 ^L	4.7	4.8	4.8 ^R	4.9 ^R	4.9 ^R	4.8 ^R	4.7 ^R	4.5	4.4	3.8 ^A					
24									L	4.5 ^L	5.0	5.0	5.1	A	5.2	4.8	4.6	4.6	A					
25									L	4.5 ^L	4.8	5.0 ^A	5.0	5.0 ^A	4.9 ^A	A	4.6	4.3 ^L	L					
26									A	A	4.9 ^A	L	5.1	4.9	4.9 ^A	5.0	4.5	4.2	L					
27									A	A	4.8	4.9 ^A	4.9 ^A	4.9	4.7 ^A	4.7 ^A	4.6	4.3	3.7 ^L	L				
28									4.1	4.6 ^A	4.8	4.8 ^R	4.8	4.7 ^R	4.8	4.8	4.6	4.3	L					
29									L	4.5 ^L	4.9	4.8 ^C	4.7	4.8	4.8	4.8 ^C	4.6 ^A	4.2	A					
30									L	4.2	4.5	5.1	4.7	A	C	C	4.4	4.2						
31									4.2 ^L	4.4 ^A	4.6	4.8	5.0	4.8	5.0	4.7 ^A	A	A						
No.								9	17	18	22	22	25	23	24	24	23	22	10					
Median								4.4	4.5	4.8	4.8	5.0	5.0	5.0	5.0	4.8	4.6	4.3	4.3					

Sweep / 0 Mc to 20.0 Mc in 3.0 sec ^{***} in automatic operation.

foF1

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

foE

135° E Mean Time (GMT. + 9h.)

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						S	180	260 ^A	300	330	340 ^R	365	370 ^R	365 ^R	360 ^R	345	325	300	240					
2						S	200	250	310	315	340	340	360	360 ^R	360	360	330	300	240					
3						C	C	C	C	A	335	370	370 ^R	370	360	340	330	A	A					
4						S	260	300	330	340	340	375	370	370 ^R	370	350	330	300	C	C				
5						A	210	240	280	310	320	345	B	355	370	355	330	295	230					
6						S	205	260	315	325	340	360	360	370	365	350	320	280	220					
7						S	A	270	300	320	330	345	340	345	330	305	A	A	A					
8						S	190	270	300	A	A	A	A	A	R	355	325	300	240					
9						S	A	250	290	320	310	A	A	A	R	355	300	240						
10						S	S	240	290	300	325	325	340	370 ^R	370	355	330	290	220					
11						S	A	A	310	350	365	375	380	380	360	360	340	300	260					
12						S	180	250	310	340	360	370	380	380	360	360	330	290	A					
13						S	170	250	300	330 ^R	A	A	A	R	360 ^R	A	A	A	A					
14						S	A	250	310	330	355	365	385	380	380	365	335	290	250					
15						S	S	250	300	325	360	370 ^R	380	380	370 ^R	360	340	290	250					
16						S	190	270	300	320	355	370	380	370	380	360	335	290	240					
17						S	200	250	320	310	330	360	360	R	A	A	A	A	A					
18						S	B	280	320	360	365	385	385	370 ^R	355	340	310	250	R					
19						A	185	250	290	325	350	355	360	380	370	340	270	250	180					
20						S	210	270	315	330	350	360	365	390	370	370	345	A	A					
21						S	B	270	320	335	350	360	360	360	350	A	A	A	S					
22						S	205	A	A	A	A	A	A	A	A	A	A	A	S					
23						S	S	260	305	340	370	380	370	375	380	350	330	300	250					
24						S	A	A	300	350	365	375	380	370	370	340	300	240						
25						S	A	A	A	360	350	A	A	A	A	R	A	240						
26						S	S	250	300	320	340	A	A	A	A	350	330	290	240					
27						S	S	240	310	345	360	370	375	370	A	A	A	290	240					
28						S	A	230	285	310	320	370	B	370	360	325	280	220						
29						S	B	250	300	320	350	360	370	370	350	335	310	A	A					
30						S	A	A	310	330	350	345	345	320	A	A	A	A	A					
31						C	C	235	280	310	320	330	340	A	A	330	270	220	S					
No.							12	25	27	28	26	22	22	22	22	22	22	22	21	2				
Median							195	250	300	325	345	360	370	370	370	355	330	290	240	185				

foE

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT. + 9h.)

foEs

Jul, 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	76.1	76.2	76.6	77.4	77.9	78.5	79.1	79.7	80.3	80.9	81.5	82.1	82.7	83.3	83.9	84.4	85.2	86.0	86.7	87.5	88.3	89.1	89.9	90.7	
2	72.4	72.9	73.2	72.9	72.5	71.8	71.4	71.1	70.8	70.5	70.2	69.9	69.6	69.3	69.0	68.7	68.4	68.1	67.8	67.5	67.2	66.9	66.6	66.3	66.0
3	75.2	75.4	C	C	C	C	C	C	C	76.3	76.5	76.7	76.9	77.1	77.3	77.5	77.7	77.9	78.1	78.3	78.5	78.7	78.9	79.1	79.3
4	72.6	73.8	75.2	73.6	73.3	73.0	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8	72.8
5	78.4	76.1	75.5	74.2	75.1	75.4	75.8	76.1	76.4	76.7	77.0	77.3	77.6	77.9	78.2	78.5	78.8	79.1	79.4	79.7	80.0	80.3	80.6	80.9	81.2
6	75.4	75.4	75.4	75.7	74.3	75.3	75.3	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4	75.4
7	S	72.1	E	E	71.5	S	72.2	72.7	73.2	73.7	74.2	74.7	75.2	75.7	76.2	76.7	77.2	77.7	78.2	78.7	79.2	79.7	80.2	80.7	81.2
8	72.9	72.1	E	E	71.5	S	72.2	72.7	73.2	73.7	74.2	74.7	75.2	75.7	76.2	76.7	77.2	77.7	78.2	78.7	79.2	79.7	80.2	80.7	81.2
9	72.4	72.6	74.9	75.4	72.4	S	72.5	73.5	74.5	75.5	76.5	77.5	78.5	79.5	80.5	81.5	82.5	83.5	84.5	85.5	86.5	87.5	88.5	89.5	90.5
10	72.1	72.5	72.0	72.2	73.1	S	73.2	74.1	75.0	75.9	76.8	77.7	78.6	79.5	80.4	81.3	82.2	83.1	84.0	84.9	85.8	86.7	87.6	88.5	89.4
11	78.4	75.1	75.4	73.7	73.0	72.4	72.6	73.7	74.8	75.9	77.0	78.1	79.2	80.3	81.4	82.5	83.6	84.7	85.8	86.9	88.0	89.1	90.2	91.3	92.4
12	73.7	72.6	73.6	73.4	73.0	72.4	72.6	73.7	74.8	75.9	77.0	78.1	79.2	80.3	81.4	82.5	83.6	84.7	85.8	86.9	88.0	89.1	90.2	91.3	92.4
13	75.6	75.0	75.6	E	1.5	2.2	2.5	2.4	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2
14	44.4	43.7	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5	42.5
15	72.3	72.5	72.5	73.5	74.6	73.6	75.4	76.4	77.4	78.4	79.4	80.4	81.4	82.4	83.4	84.4	85.4	86.4	87.4	88.4	89.4	90.4	91.4	92.4	93.4
16	75.2	72.1	72.2	72.1	72.0	S	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
17	75.4	75.4	73.4	72.2	71.7	S	4	3.2	3.5	4.4	4.6	4.1	3.8	3.4	3.1	2.8	2.5	2.2	1.9	1.6	1.3	1.0	0.7	0.4	0.1
18	S	72.2	73.8	73.5	73.8	73.4	74.6	73.7	75.8	75.4	61.4	61.1	72.0	74	78.2	78.3	76.6	75.4	74.2	73.0	71.8	70.6	69.4	68.2	67.0
19	72.1	75.4	75.5	72.4	74.5	78.9	75.4	70.9	73.5	78.8	41.1	42.2	44.4	44	44	42.7	42.8	41.6	40.4	39.2	38.0	36.8	35.6	34.4	33.2
20	75.4	72.4	78.5	73.3	73.6	72.9	2.3	2.3	2.5	4.3	7.1	7.5	41.9	76.7	44	45	45.4	44.2	43.0	41.8	40.6	39.4	38.2	37.0	35.8
21	73.8	74.2	73.8	71.9	73.4	S	2.3	2.3	2.5	7.9	7.8	7.4	78.0	70.2	78.6	78.5	75.4	74.2	73.0	71.8	70.6	69.4	68.2	67.0	65.8
22	72.6	73.0	72.0	72.1	1.5	S	2.1	2.1	2.4	7.5	7.8	7.0	44	76.6	41	40	35.0	32	28	20	S	72.3	72.7	73.1	73.5
23	75.4	75.4	75.3	74.4	74.2	73.2	2.3	2.3	2.3	3.8	4.4	4.9	4.8	6.0	4.8	4.8	4.2	3.6	3.9	2.1	S	72.3	72.7	73.1	73.5
24	2.2	2.5	2.8	2.6	72.0	73.8	75.4	72.9	74.4	75.4	78.2	75.6	74.4	76.0	75.4	75.4	74.4	73.4	72.4	71.4	70.4	S	72.3	72.7	73.1
25	2.1	2.3	2.2	2.7	73.8	75.5	75.1	74.3	74.4	75.4	78.2	75.6	74.4	76.0	75.4	75.4	74.4	73.4	72.4	71.4	70.4	S	72.3	72.7	73.1
26	72.4	72.4	S	72.2	72.2	S	75.2	76.1	75.1	79.8	76.6	76.3	75.0	75.4	78.2	78	77	73.8	74.1	73	72.3	S	72.2	72.6	73
27	75.4	75.4	78.4	78.4	73.8	74.5	78.4	72.2	75.9	76.1	75.2	76.4	79.1	79.2	75.4	74.0	75.2	73.2	74	74.3	72.6	S	71.6	72.2	72.8
28	S	72.6	72.2	72.1	76.4	72.5	73.2	3.1	4	3.8	7.8	7.7	4.7	4.0	4.3	4.2	3.6	3.0	3.4	2.8	2.2	S	71.9	72.5	73.1
29	73.6	72.1	75.3	73.5	75.4	75.2	B	3.9	3.9	7.5	4.1	4.5	4.0	4.0	4.0	3.6	3.1	2.6	2.1	1.6	1.1	S	72.2	72.8	73.4
30	C	E	2.0	E	E	72.5	78.5	76.4	75.0	73.8	74.1	74.5	74.0	73.5	73.0	72.5	72.0	71.5	71.0	70.5	70.0	S	72.2	72.8	73.4
31	75.4	73.8	73.6	72.7	72.9	C	2.7	2.7	4.7	5.9	7.6	7.5	4.0	7.2	7.9	7.9	7.2	6.5	5.8	5.1	4.4	3.7	3.0	2.3	1.6
No.	27	30	29	30	30	21	28	27	30	31	30	30	30	29	30	30	30	30	30	28	27	24	29	27	27
Median	3.8	3.0	3.8	2.6	3.0	3.2	3.2	3.7	4.6	5.4	6.1	5.4	5.0	5.4	4.8	4.8	5.0	4.8	4.0	4.0	4.0	2.8	3.0	2.6	3.4
4.Q	5.4	5.4	5.4	3.7	3.8	5.1	5.2	5.4	5.4	6.1	8.7	6.1	7.1	7.0	6.2	6.2	5.6	6.0	6.6	6.4	6.4	4.7	5.4	4.4	5.2
1.Q	2.4	2.4	2.2	2.1	2.0	2.5	2.3	3.1	3.6	4.0	4.3	4.6	4.3	3.9	4.1	4.2	3.7	3.6	2.9	2.2	2.2	2.3	2.4	2.2	2.2
0.R	3.0	3.0	3.2	1.6	1.8	2.6	2.9	2.3	1.8	2.1	4.4	1.5	2.8	3.1	2.1	2.0	1.9	1.9	2.4	3.7	4.2	2.4	3.0	2.2	3.0

Sweep 1.0 Mc to 20.0 Mc in 3.0 Sec in automatic operation.

foEs

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

fbEs

Jul. 1961

135° E Mean Time (GMT. + 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	A	29	17	11	20	24	30	38	50	47	A	51	54	A	56	42	50	83	52	35	20	17	24	21
2	E	E	27	23	20	G	24	A	A	A	46	40	50	44	44	43	38	33	45	65	33	25	26	19
3	A	A	C	C	C	C	C	C	C	57	43	43	42	52	43	47	41	67	47	80	26	17	36	
4	18	28	28	28	24	23	26	33	A	38	A	50	42	44	56		40	41	C	23	A	A	A	
5	A	A	A	28	32	A	37	37	46	58	A	A	60	54	A	56	A	41	43	63	37	37	32	A
6	27	26	23	19	33	28	28	37	45	A	44	53	45	45	A	56	44	46	32	25	E	19	20	S
7	S	16			11	15	22	21	37	46	40	48	A	54	40	43	A	A	32	38	16	18	18	17
8	17	18			13	S	22		35	46	39	38	42	42		38	40	35	A	56	41	39	21	24
9	19	20	16	17	18	S	23	33	41	36	38	45	38			46	36	34	31	21	22	17	19	E
10	E	21	E	13	15	S	G	29	G	40	39	40	48	5388			38	36	25	19	26	16	A	
11	A	33	19	23	14	16	27	G	35	38	A	62	A	51	57	41	G	A	A	51	A	6	A	28
12	30	24	23	16	18	21	G	G	47	45	42	45	58	53	43	408	C	33	G	22	22	26	27	A
13	18	A	28		12	16	53	33	G	G	42	42	5398			38	69	A	G	40	30	19	21	25
14	40	A	25	17	15	20	38	A	A	A	A	43	54C			41	47	46	G	S	S	S	18	S
15	E	19	28	16	18	20	42	32	38	38	47	47	A	51	44	A	45	G	G	S	S	S	25	A
16	A	18	18	16	16	S	G	30	35	50	43	43	43	51	43	70	56	45	32	A	44	19	19	42
17	33	19	20	17	13	S		29	34	41	45	41	1	45	73	76	66	32	44	28	20	S	S	S
18	S	18	27	A	19	22	A	37	25	38	A	52	A	65	74	67	G	34	29	248	475	26		
19	20	22	32	20	17	21	31	A	35	42	40	42	42			46	66	33	G	G	25	S	S	19
20	19	S	25	18	26	17	23	30	41	42	A	45	45	54	41	41	548	56	A	46	38	30	28	23
21	25	A	25	15	24	S	G	47	41	44	A	42	53	67	77	57	50	49	26	21	16	20	18	25
22	18	22	S	16	13	S	G	G	33	41	A	44	448	52	40	40	38	G	28	20	S	27	18	19
23	22	23	25	27	26	A	23	29	33	37	40	42			44	448	37	35	39	19	20	18	S	S
24	19	18	23	20	17	31	25	G	34	G	42	45	46	50	46	46	G	40	50	46	A	A	A	21
25	19	S	18	26	28	27	32	32	36	44	53	52	44	52	50	47		44		S	S	S	S	
26	22	S	S	21	22	S	A	47	44	75	50	43	42	46	56	37	36	37	36	22	19	S	21	19
27	43	A	26	A	22	28	A	A	43	51	A	41	80	51	45	A	36	27		S	S	S	21	
28	S	21	16	14	20	16	G	30	36	40	37	C	G	B	42	42	G	G	27	40	22	A	17	16
29	24	S	18	17	24	25	B	C	36	40	37	C	G	5408	42	C	55	30	A	27	19	S	19	20
30	C		E		S	S	A	35	35	35	37	43	58	C	C	53	38	34	G	C	21	C	22	C
31	19	28	27	20	16	C	C	G	31	48	41	39	40	40	46	49	62	4	A	25	26	21	33	24
No.	27	26	26	26	29	20	27	28	29	31	30	30	28	23	24	28	27	31	28	25	25	23	24	23
Median	22	22	24	18	19	22	26	32	36	42	46	44	46	51	46	46	41	40	32	35	23	25	21	23

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

fbEs

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT. + 9h.)

f-min

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E 1.50 ^s	E 1.60 ^s	E	E	E	E 1.50 ^s	1.60	E 1.60 ^s	1.50	2.20	2.45	2.50	2.05	1.90	1.85	1.80	1.60	E 1.40 ^s	1.50	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s		
2	E 1.60 ^s	E 1.60 ^s	E	E	E	E 1.50 ^s	1.60	E 1.40 ^s	1.50	1.60	2.30	2.05	2.50	2.30	2.20	1.90	1.65	1.70	E 1.55 ^s	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s		
3	E 1.70 ^s	E 1.50 ^s	C	C	C	C	C	C	C	1.70	2.05	2.00	2.10	2.00	1.90	1.90	1.60	1.60	E 1.50 ^s	1.30	E 1.50 ^s	E 1.40 ^s	E 1.80 ^s	E 1.70 ^s	
4	E 1.30 ^s	E 1.60 ^s	1.10	E	E	E 1.40 ^s	E 1.70 ^s	1.50	1.60	1.60	1.90	1.70	2.00	2.05	1.95	1.65	1.65	1.60	C	C	E 1.60 ^s	E 1.70 ^s	E 1.60 ^s	E 1.70 ^s	
5	E 1.60 ^s	E 1.45 ^s	E	E	E	E 1.35 ^s	E 1.60 ^s	1.40	1.65	1.60	2.60	1.85	2.40	2.40	2.30	2.00	1.90	E 1.65 ^s	E 1.55 ^s	E 1.65 ^s	E 1.55 ^s	E 1.60 ^s	E 1.70 ^s	E 1.70 ^s	
6	E 1.60 ^s	E 1.60 ^s	E	E	E	E 1.60 ^s	E 1.50 ^s	1.40	1.60	1.70	1.70	2.00	2.30	2.20	2.40	1.90	1.80	E 1.65 ^s	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	
7	E 1.80 ^s	1.10	1.40	E	E	E	E 1.60 ^s	E 1.60 ^s	1.70	1.70	1.70	1.90	2.30	2.00	2.00	1.80	1.60	E 1.55 ^s	E 1.50 ^s	E 1.80	E 1.60 ^s	E 1.50 ^s	E 1.70 ^s	E 1.60 ^s	
8	E 1.50 ^s	E 1.60 ^s	1.80	1.70	E	E 1.50 ^s	E 1.50 ^s	E 1.60 ^s	1.70	1.90	2.30	2.50	2.40	1.90	1.80	1.70	1.70	E 1.50 ^s	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	
9	E 1.40 ^s	E 1.60 ^s	E 1.40 ^s	E	E	E 1.20	E 1.50 ^s	E 1.60 ^s	1.60	1.65	1.65	2.30	2.50	2.20	2.20	1.90	1.90	1.70	E 1.50 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	
10	E 1.50 ^s	E 1.80 ^s	1.30	1.15	E	E 1.50 ^s	E 1.55 ^s	E 1.60 ^s	1.60	1.90	1.70	2.20	2.50	2.20	2.40	2.00	2.20	1.70	E 1.55 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	
11	E 1.50 ^s	E 1.30 ^s	E	E	E	E 1.50 ^s	E 1.60 ^s	E 1.70 ^s	2.00	2.50	2.20	2.20	2.20	2.50	2.30	2.20	1.80	E 1.70 ^s	E 1.50 ^s	1.20	E 1.60 ^s	E 1.55 ^s	E 1.60 ^s	E 1.50 ^s	
12	E 1.60 ^s	E 1.70 ^s	E	E	E	E 1.30 ^s	1.60	1.70	1.85	2.20	2.50	2.50	2.60	2.70	2.75	2.50	2.20	1.90	E 1.50 ^s	1.30	E 1.60 ^s	E 1.70 ^s	E 1.60 ^s	E 1.60 ^s	
13	E 1.70 ^s	E 1.60 ^s	E 1.20	E	E	E 1.20	1.40	E 1.50 ^s	1.80	1.70	2.20	2.00	2.40	2.40	2.00	2.20	1.80	1.50	E 1.60 ^s	1.40	E 1.60 ^s	E 1.70 ^s	E 1.60 ^s	E 1.70 ^s	
14	E 1.70 ^s	E 1.60 ^s	1.15	E	E	E 1.30 ^s	1.80	E 1.60 ^s	1.90	1.70	2.20	2.50	2.70	2.70	2.20	2.20	1.80	E 1.60 ^s	E 1.50 ^s	1.70	E 1.70 ^s	E 1.70 ^s	E 1.70 ^s	E 1.70 ^s	
15	1.10	E 1.70 ^s	E	E	E	E 1.30 ^s	E 1.60 ^s	E 1.60 ^s	1.60	2.00	2.20	2.25	2.50	2.20	2.40	2.00	2.00	1.70	E 1.50 ^s	1.50	E 1.60 ^s	E 1.70 ^s	E 1.60 ^s	E 1.60 ^s	
16	E 1.60 ^s	E 1.70 ^s	E 1.30 ^s	E	E	E 1.40 ^s	1.50	E 1.40 ^s	1.60	1.85	2.20	2.20	2.40	2.20	2.45	2.00	1.90	E 1.50 ^s	1.70	E 1.50 ^s	1.50	E 1.60 ^s	E 1.55 ^s	E 1.70 ^s	
17	E 1.60 ^s	E 1.60 ^s	E 1.50 ^s	E	E	E 1.30 ^s	1.65	1.70	1.60	1.80	2.25	2.20	2.70	2.80	2.50	2.30	1.80	2.60	E 1.60 ^s	E 1.50 ^s	E 1.55 ^s	E 1.60 ^s	E 1.80 ^s	E 1.60 ^s	
18	E 2.00 ^s	E 1.50 ^s	1.10	E	E	E 1.30 ^s	1.75	1.85	E 1.70 ^s	2.20	2.00	2.50	2.40	2.40	2.20	2.70	1.80	1.60	E 1.50 ^s	1.80	E 1.60 ^s	E 1.60 ^s	E 1.80 ^s	E 1.70 ^s	
19	E 1.30 ^s	E 1.35 ^s	E	E	E	E 1.00	1.60	E 1.60 ^s	E 1.85	1.85	2.60	2.65	2.80	2.60	2.70	2.50	2.00	2.20	E 1.65 ^s	1.60	E 1.60 ^s	E 1.60 ^s	E 1.80 ^s	E 1.80 ^s	
20	E 1.70 ^s	E 1.60 ^s	1.30	E	E	E 1.40 ^s	1.80	E 1.70 ^s	1.80	1.90	2.30	2.30	2.40	2.40	2.90	2.50	2.00	1.90	E 1.50 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	
21	E 1.50 ^s	E 1.60 ^s	E	E	E 1.25	E 1.60 ^s	2.00	1.70	1.90	2.20	2.55	2.55	2.70	2.80	2.80	2.55	2.00	1.60	E 1.70 ^s	E 1.40 ^s	E 1.55 ^s	E 1.60 ^s	E 1.50 ^s	E 1.50 ^s	
22	E 1.50 ^s	E 1.60 ^s	E 1.75 ^s	E	E	E 1.60 ^s	E 1.55 ^s	E 1.60 ^s	1.80	2.00	2.30	2.30	2.20	2.00	2.55	2.40	2.30	1.90	E 1.60 ^s	E 1.50 ^s	E 1.65 ^s	E 1.50 ^s	E 1.70 ^s	E 1.50 ^s	
23	E 1.60 ^s	E 1.70 ^s	E	E	E	E 1.30	1.70	E 1.60 ^s	1.70	1.85	2.25	2.30	2.65	2.70	2.40	2.30	1.90	E 1.75 ^s	E 1.40 ^s	E 1.70 ^s	E 1.50 ^s	E 1.65 ^s	E 1.60 ^s	E 1.70 ^s	
24	E 1.40 ^s	E 1.70 ^s	1.30	E	E	E 1.40 ^s	E 1.60 ^s	E 1.60 ^s	1.90	1.90	2.20	2.15	2.00	4.20	4.20	2.40	1.90	E 1.65 ^s	E 1.50 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	
25	E 1.50 ^s	1.20	1.30	E	E	E 1.30 ^s	E 1.50 ^s	E 1.50 ^s	1.55	2.05	2.45	2.45	2.20	2.50	2.50	2.30	1.90	E 1.70 ^s	E 1.50 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	E 1.70 ^s	E 1.75 ^s	
26	E 1.60 ^s	E 1.60 ^s	E 1.70 ^s	E	E	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	2.20	1.80	1.70	1.90	2.40	2.20	2.30	1.85	1.60	1.60	E 1.40 ^s	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	
27	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	E	E	E 1.00	E 1.55 ^s	E 1.60 ^s	1.80	2.00	1.90	1.90	2.20	2.20	2.40	2.00	1.80	E 1.60 ^s	E 1.50 ^s	1.70	E 1.60 ^s	E 1.60 ^s	E 1.70 ^s	E 1.50 ^s	
28	E 1.60 ^s	1.30	E 1.50 ^s	E	E	E 1.30	1.50	E 1.60 ^s	1.60	1.85	2.40	2.40	4.30	2.40	2.20	2.00	2.00	1.90	E 1.55 ^s	E 1.55 ^s	E 1.65 ^s	E 1.60 ^s	E 1.55 ^s	E 1.50 ^s	
29	E 1.50 ^s	E 1.60 ^s	E	E	E	E 1.60 ^s	2.20	C	1.70	1.80	2.20	2.10 ^c	1.90	2.20	2.00	2.10 ^c	1.85	E 1.60 ^s	E 1.40 ^s	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	E 1.80 ^s	E 1.80 ^s	
30	C	4.50	1.50	1.00	1.00	E 1.60 ^s	E 1.60 ^s	E 1.60 ^s	1.90	2.50	2.20	2.20	2.40	2.30	1.80	1.80	1.70	E 1.55 ^s	E 1.60 ^s	C	E 1.70 ^s	C	E 1.60 ^s	E 1.80 ^s	
31	E 1.60 ^s	1.70	E	E	E	C	E 1.50 ^s	E 1.50 ^s	1.60	1.60	1.80	1.90	2.20	2.20	2.20	1.80	1.80	1.60	E 1.60 ^s	E 1.50 ^s	E 1.60 ^s	E 1.70 ^s	E 1.60 ^s	E 1.65 ^s	
No.	→ 0	→ 1	→ 2	→ 3	→ 0	→ 0	→ 2	→ 2	→ 1	→ 1	→ 1	→ 1	→ 0	→ 1	→ 1	→ 1	→ 1	→ 1	→ 1	→ 1	→ 1	→ 1	→ 1	→ 1	→ 0
Median	E 1.60	E 1.60	E	E	E	E 1.40	E 1.60	E 1.60	1.60	1.80	2.05	2.20	2.40	2.40	2.30	2.00	1.80	1.60	E 1.50	E 1.50	E 1.50	E 1.60	E 1.60	E 1.60	E 1.60

The Radio Research Laboratories, Japan.

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

f-min

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT. + 9h.)

M(3000)F2

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	300 ^A	S	290 ^S	290 ^S	290 ^S	300	355	345	310	300	285	280	255	260	260	255	260	285	300	320	320	285	285	265	
2	270 ^S	290 ^S	C	280 ^S	285 ^S	300	330	320	310	A	250	295	260	260	265	275	275	295	295	305	320	300	265	S	
3	A	C	C	C	C	C	C	C	C	290	295	260	280	280	295	280	275	280	275	305	320	300	275	S	
4	F _s	S	S	S	270 ^S	285	300 ^S	340	A	250	270 ^A	265	270	280	305	295	270 ^S	290 ^S	C	C	S	A	A	A	
5	A	S	A	S	S	A	280	300 ^S	300 ^S	295	270 ^A	260	255	265	260	255	275	300	300	300	270	280	285	S	
6	S	S	255	275	285	280	275	315	320	280	280	285	280	250	250	280	285	300	300	310	275	270	260	250	
7	275	275	270	240	265	275	285	295	310	300	305	280	240	265	265	275	285	A	305	295	300	265	270	S	
8	S	260	265	270 ^S	285	320	310	290	315	270 ^M	295	270	315	265	270	275	270	305	300	315	270	265	255	S	
9	S	S	S	270 ^S	285	285	290	310	330	305	280	250	280	285	305	265	255	265	295	305	305	255	265	S	
10	260 ^M	S ^M	285	290 ^S	285	275	315	305	315	305	270	245	280	285	270	275	255	300	300	305	285	265	240	A	
11	A	S	S	S	260 ^S	270 ^S	310	335	290 ^S	305	305	285	300	280	A	265	280	310	300	325	315	A	S	S	
12	S	S	290	300	270 ^S	280 ^S	305	315	310	275	305	260	275	260	275	280	285	270	270	275	285	270	S	S	
13	S	S	S	285	285	275	305	340	275	280	285	285	255	275	285	285	290	245	320	315	305	265	275	260	
14	270 ^S	285	240 ^S	265	275	265	270 ^S	300 ^A	A	A	A	270	270	270	275	270	280	275	305	305	285	245	255	260	S
15	S	260 ^S	260 ^S	S	F _s	F _s	245	280	315	260 ^F	295	260	270	A	R	A	270	300	300	250	250	255	250	S	
16	S	S	275	265	275	290 ^S	265	325	240 ^S	295	280	285	290	285	305	320	305	270	275	A	295	255	S	S	
17	S	S	275	290 ^S	290 ^S	295	305	310 ^S	320	315	285	295	A	260	260	285	285	285	280	275	275	265	255	260	
18	270	260 ^S	280	320	275	265	270	255	290	330	285	260	A	A	290	290	295	265	285	310	285	265	295	245	
19	245	260 ^S	S	S	S	245	255	260 ^A	270	320	275	270 ^R	285	290	280	270	295	300	285	300	270	285	265	275	
20	270	270	260 ^S	F _s	F _s	S	305	315	315	325	300	270	270	270	265	260	280	280	275	290	320	280	265	S	
21	S	S	270 ^S	290 ^S	305	275	265	250 ^F	295	315	300	275	280	260	275	285	280	275	275	270	295	250	250	260	
22	245	265	270	270	265	255	265	265	280	320	300	270	285	280	295	310	305	270	270	290	315	295	270	265	
23	S	S	S	S	310	325	325	325	290	280	250	250	260	265	250	275	300	300	300	300	290	265	265	260	
24	275	260	255	260 ^S	245	275	315	335	310	245	260	285	285	280	265	285	270	280	300	300	290	265	265	260	
25	S	S	S	S	320	290	300	270	300 ^S	315	245	265	275	285	280	280	290	305	300	295	270	A	S	S	
26	275	270	295	280	285	275	A	320	295	310	325	270	265	265	270	280	295	305	310	295	275	255	260	265	
27	S	S	S	S	S	290	305	315	280	330	330	240	260	260	285	280	270	285	270	240	255	S	S	245	
28	260 ^S	S	S	S	S	265	S	315	260	325	300	275	290	270	300	300	300	305	290	315	300	270	265	260	
29	260 ^S	S	S	S	S	295	320	335	305	330	290	270	245	275	290 ^S	270	270	280	290	305	305	265	265	265	
30	270	280	285	290	275	295	310	340	305	335	300	275	265	250	260	300	320	320	290	300	290	270	260	C	
31	S	280	265	280	300	330	355	305	330	330	305	245	280	295	285	295	300	270	270	295	305	330	270	S	
No.	14	13	17	20	23	27	28	30	28	29	30	31	28	29	29	30	31	30	30	29	27	27	24	15	
Median	270	270	270	280	285	280	305	315	310	305	285	270	280	270	275	280	285	290	295	300	295	265	265	260	

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

The Radio Research Laboratories, Japan.

M(3000)F2

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

M(3000)F1

135° E Mean Time (GMT. + 9h.)

Jul. 1961

Day	00	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	A					
2									A	A	A	A	A	A	A	A	A	A	A					
3						C		C	A	A	A	A	A	A	A	A	A	A	A					
4						L		L	A	A	A	A	A	A	A	A	A	A	A	C	C			
5						A		A	A	A	A	A	A	A	A	A	A	A	A					
6						L		L	A	A	A	A	A	A	A	A	A	A	A					
7						A		A	A	A	A	A	A	A	A	A	A	A	A					
8						L		L	A	A	A	A	A	A	A	A	A	A	A					
9						L		L	A	A	A	A	A	A	A	A	A	A	A					
10						L		L	A	A	A	A	A	A	A	A	A	A	A					
11						L		L	A	A	A	A	A	A	A	A	A	A	A					
12						L		L	A	A	A	A	A	A	A	A	A	A	A					
13						A		A	A	A	A	A	A	A	A	A	A	A	A					
14						A		A	A	A	A	A	A	A	A	A	A	A	A					
15						A		A	A	A	A	A	A	A	A	A	A	A	A					
16						L		L	A	A	A	A	A	A	A	A	A	A	A					
17						L		L	A	A	A	A	A	A	A	A	A	A	A					
18						L		L	A	A	A	A	A	A	A	A	A	A	A					
19						L		L	A	A	A	A	A	A	A	A	A	A	A					
20						L		L	A	A	A	A	A	A	A	A	A	A	A					
21						A		A	A	A	A	A	A	A	A	A	A	A	A					
22						L		L	A	A	A	A	A	A	A	A	A	A	A					
23						L		L	A	A	A	A	A	A	A	A	A	A	A					
24						L		L	A	A	A	A	A	A	A	A	A	A	A					
25						L		L	A	A	A	A	A	A	A	A	A	A	A					
26						A		A	A	A	A	A	A	A	A	A	A	A	A					
27						A		A	A	A	A	A	A	A	A	A	A	A	A					
28						A		A	A	A	A	A	A	A	A	A	A	A	A					
29						L		L	A	A	A	A	A	A	A	A	A	A	A					
30						L		L	A	A	A	A	A	A	A	A	A	A	A					
31						L		L	A	A	A	A	A	A	A	A	A	A	A					
No.						7		15	15	16	19	20	18	18	18	16	19	16	16					
Median						A		A	A	A	A	A	A	A	A	A	A	A	A					

The Radio Research Laboratories, Japan.

Y 8

Sweep 1.0 Mc to 2.0 Mc in 30 sec in automatic operation.

M(3000)F1

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

R'F2

Jul. 1961

135° E Mean Time (GMT. + 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									300	305	375	390	435	A	360	390	375	380 ^A	290						
2									A	370	500	375	460	445	375	350	340	310	300						
3					C				C	A	350	450	395	385	340	355	355	360 ^A	315						
4										330 ^A	460	420	340	350	320	315	350	310	C	C					
5									300	280	310	A	400	405	A	400	350 ^A	290	280						
6									300	290	410 ^A	395	400	500	460	385	345	325	300	275					
7									325	300	345	305	525 ^A	445	415	370	325	320 ^A	295						
8									310	310	355	410	340	440	410	395	345	300	350 ^A	280					
9									290	255	255	395	495	395	310	310 ^A	450	375	305	250					
10									290	285	310	400	480	370	350	395	380	345	305	290	250				
11										350	340	340 ^A	360	A	370	450	420	355	320 ^A	270 ^A					
12									280	275	400	335	425	390	375	350	345	330 ^A	305	300					
13									250		355	360	365	440	390	350	340	320	300	270					
14								370	330 ^A	A	A	A	370	410	310	400	400	350	335	320	300				
15									305	330	575 ^R	580	490	570 ^A	480	545 ^B	545 ^A	395	390	310					
16									375	475	325	390	355	350	350	315	310	325	320	300					
17									275		390	350	400 ^A	395	380	350	350	340 ^A	300						
18									430	350	305	360 ^A	450	A	570 ^A	365	385	400	355	305					
19									450 ^A	440	700	420	440	355	370	390 ^A	405	380 ^A	305	340					
20									300	295	275	345 ^A	A	410	400	370	375	350	305	A					
21									435	320	285	315 ^A	350	335	390 ^A	350	310	305	330	300					
22									350	370	300	285	A	390	350	340	300	295	315	300					
23									295	400	495	B	475	445	480	400	345	310	295						
24									300	300	440	370	360	360	380	340	345	335	300						
25									L	305	305	500	400	390	330	385	360	330	300	250					
26									290	285	340 ^A	290	450	385	355	325	300	300	275						
27									300 ^A	550	520 ^A	435	445 ^A	365	335	360 ^A	380	345	335	L					
28									455		A	405	395 ^B	400	330	310	310	315	290 ^A						
29									340	275	340	430	440	350	305	345	355	320	290 ^A						
30									L	250	270	520	390	400 ^A	C	350 ^A	300	265	275						
31									290	290	320	490	380	325	350	345	A	315 ^A	320 ^A						
No.									3	20	26	24	27	28	27	27	29	31	29	28	28	5			
Median									350	300	300	320	390	405	395	370	360	355	345	315	300	275			

R'F2

Sweep 1.0 Mc to 20.0 Mc in 3.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT.+9h.)

f_oF

Jul. 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	270 ^A	260	255	240	250	260	240	245	A	A	A	A	A	A	290 ^A	290 ^A	A	A	250	240	230	230	230	240	230
2	270	290	290	290	295	255	250	A	A	A	260 ^A	205	A	270 ^A	235 ^A	200	245	250	A	295 ^A	250	245	205	245	250
3	A	A	C	C	C	C	C	C	C	A	245	240	230	205	250 ^A	200	275 ^A	A	A	260 ^A	250	230	230	240	205
4	290	290	295	290	295	290	255	250	A	275	A	A	225	250	250 ^A	250	260	A	C	C	260	A	A	A	A
5	A	A	A	290	290	290	290	250	A	A	A	A	A	A	A	A	260 ^A	260 ^A	260 ^A	260 ^A	260 ^A	260 ^A	260 ^A	260 ^A	260 ^A
6	290	290	295	295	295	295	255	A	A	A	A	A	A	A	A	A	250	250	260 ^A	260 ^A	255	280	280	280	280
7	280	290	295	295	295	295	240	210	250	230 ^A	205	225	210 ^A	A	215	230 ^A	A	A	260	260	240	250	270	270	270
8	280	290	295	295	295	295	240	235	240	275 ^A	220	205	200	220	240	260	260	260	270	270	275	275	275	275	275
9	290	290	295	295	295	295	250	250	230 ^A	225	210	255	205	250	210	230 ^A	230	240	260	220	205	260	260	260	260
10	290 ^A	290 ^A	295	295	295	295	250	240	210	215	210	220	220	220	215 ^A	230	245	265	245	245	225	260	260	260	260
11	280 ^A	290	280	280	280	280	250	245	250	240	220 ^A	A	A	A	A	250	245	A	A	290 ^A	250	270	270	270	270
12	285	280	275	250	260	270	250	240	220	200 ^A	250	250	A	A	275	225	C	230 ^A	250	260	250	270	270	270	270
13	290	290	295	295	295	295	250	240	220	200 ^A	210	210	205	235	205	245	A	A	240	255	250	270	270	270	270
14	290	290	295	295	295	295	250	240	220	200 ^A	A	A	A	230	250	250 ^A	A	255	250	280	245	255	270	270	270
15	295	295	295	295	295	295	250	240	220	200 ^A	210	A	A	A	250 ^A	A	245	245	265	265	225	275	275	275	275
16	295	295	295	295	295	295	250	240	220	200 ^A	210	250	250	250	250	235	250	250	275	275	285	255	275	275	275
17	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	A	270	270	270	275	270	270	270	270
18	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	230	245	250	250	280	270	270	270	270
19	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
20	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
21	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
22	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
23	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
24	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
25	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
26	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
27	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
28	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
29	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
30	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
31	295	295	295	295	295	295	250	240	220	200	240	200	215	210	250	A	270	245	250	270	280	275	275	275	275
No.	28	28	29	29	29	29	29	26	20	22	20	22	19	20	21	21	20	21	23	27	29	27	27	28	29
Median	290	290	290	290	290	290	290	240	235	240	230	225	220	230	250	250	250	250	250	265	250	270	270	270	275

Sweep 1.0 Mc to 2.0 Mc in 30 sec in automatic operation.

f_oF

The Radio Research Laboratories, Japan.

Y 10

IONOSPHERIC DATA

Lat. 31° 12.5'N
Long. 130° 37.7'E

Yamagawa

135° E Mean Time (GMT.+9h.)

f_oF₂

July 1961

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110	105	105	110	105	105	130	120	125	125	120	130	125	120	125	140	125	120	115	110	110	110	105	110
2	105	105	105	105	105	150	140	120	120	120	120	120	125	130	130	150	145	135	120	120	110	105	105	110
3	105	105	C	C	C	C	C	C	C	105	115	125	135	125	125	115	120	115	110	105	105	115	110	E
4	120	105	105	105	105	105	145	140	130	125	110	115	150	135	130	4	145	125	C	C	110	100	110	110
5	110	105	105	105	105	105	130	125	110	110	105	105	105	105	125	120	115	120	110	105	105	110	105	110
6	S	110	E	E	125	125	145	135	130	120	130	115	125	130	125	125	125	120	115	105	105	105	105	S
8	100	100	E	E	110	S	140	4	125	110	110	110	110	105	110	110	105	105	105	100	100	100	100	100
9	100	125	115	115	110	S	110	110	105	115	110	105	105	4	4	140	145	130	115	110	110	105	105	105
10	105	130	140	125	125	S	125	110	110	105	105	105	105	125	4	4	130	130	125	120	110	110	110	110
11	110	105	105	105	105	105	105	105	140	140	125	115	115	120	115	120	140	110	105	105	100	100	100	100
12	100	100	100	100	110	110	115	110	110	120	125	125	110	110	115	110	140	110	105	105	100	100	100	100
13	100	100	105	E	145	135	120	115	125	105	105	105	105	4	4	105	100	100	100	145	140	125	105	100
14	105	105	105	105	140	135	130	125	120	115	110	115	115	4	4	150	145	130	155	S	S	S	110	S
15	115	115	120	125	125	115	115	120	120	125	140	135	125	130	140	125	130	140	120	4	S	S	100	100
16	100	100	100	100	100	S	150	145	125	110	4	150	150	135	145	125	130	140	130	125	110	105	105	100
17	100	100	120	100	100	S	4	125	110	110	110	110	110	4	105	105	100	100	100	100	100	100	S	100
18	S	105	100	105	105	105	130	140	125	130	120	120	115	120	120	125	150	140	125	130	115	110	E	120
19	110	105	105	105	110	110	120	105	110	110	115	115	110	4	125	140	125	125	115	135	100	S	120	110
20	110	105	105	105	105	105	160	150	125	120	110	110	110	130	150	145	130	105	105	105	105	115	115	110
21	125	110	110	110	115	S	125	125	120	110	110	110	110	110	110	110	110	110	105	105	105	105	115	110
22	110	120	100	110	115	S	175	110	110	110	110	110	110	110	110	105	100	175	150	130	S	120	125	110
23	110	110	110	110	110	110	145	110	150	145	145	110	4	4	140	160	150	140	125	105	100	100	100	110
24	105	105	105	115	120	120	110	115	120	155	145	140	140	130	140	140	145	125	120	110	110	105	105	105
25	105	105	105	105	105	105	105	105	105	105	110	110	110	105	110	110	4	105	4	4	S	S	S	S
26	100	S	S	125	125	S	115	115	110	110	105	105	110	105	105	150	130	125	120	110	S	S	105	105
27	105	105	105	105	110	110	120	115	110	115	110	110	110	110	105	105	105	105	4	S	S	120	120	120
28	S	115	110	110	110	110	105	110	120	4	125	110	145	B	B	4	175	170	130	125	120	110	110	115
29	115	140	110	110	110	110	B	C	145	125	130	C	140	125	110	C	110	110	105	100	100	100	100	100
30	C	E	115	E	E	110	105	105	105	115	115	125	105	C	C	105	105	105	105	C	100	C	100	C
31	105	100	100	125	125	C	125	125	125	115	110	115	110	105	100	105	120	120	115	110	110	110	100	100
No.	27	29	27	26	29	21	27	28	29	31	30	30	29	23	24	28	28	31	28	25	26	24	28	26
Median	105	105	105	105	110	110	125	120	120	115	110	115	110	120	120	125	125	125	115	110	105	105	105	110

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 20.0 Mc in $\frac{1}{30}$ sec in automatic operation.

f_oF₂

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT. + 9h.)

Types of Es

Jul. 1961

Day	00	01	02	03	04	05	06'	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F4	F2	F2	F2	F2	F2	C2	C3	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	C4	C2	F2	F2	F2	F2	
2	F	F2	F2	F4	F4	F	F	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	C4	C3	F2	F2	F2	F2	
3	F3	F2	F2	F2	F2	F2	F	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
4	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	C4	F2	F2	F2	F2	
5	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
6	F	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
7	F	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
8	F	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
9	F	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
10	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
11	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
12	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
13	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
14	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
15	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
16	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
17	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
18	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
19	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
20	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
21	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
22	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
23	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
24	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
25	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
26	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
27	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
28	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
29	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
30	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
31	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	F2	
No.																									
Median																									

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

The Radio Research Laboratories, Japan.

Types of Es

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 1961	Steady Flux					Variability				
	00-03	03-06	06-09	21-24	mean	00-03	03-06	06-09	21-24	mean
1	-	5	(6)	7	6	-	0	(0)	1	0
2	7	6	5	(7)	6	1	1	1	(0)	1
3	(6)	-	5	5	5	(0)	-	0	0	0
4	6	5	4	-	5	0	0	0	-	0
5	5	4	4	4	5	0	0	0	0	0
6	5	5	5	(5)	5	0	0	0	(0)	0
7	(5)	5	4	8	5	(0)	0	0	1	0
8	7	6	5	6	6	1	0	0	0	1
9	6	6	7	5	6	0	1	1	0	1
10	6	5	5	9	5	0	0	0	1	0
11	10	10	19	9	12	1	2	1	1	1
12	6	6	8	10	7	1	1	1	1	1
13	11	14	-	-	11	1	1	-	-	1
14	-	-	-	5	-	-	-	-	0	-
15	14	15	15	(7)	12	1	2	2	(0)	2
16	8	9	5	6	8	0	1	0	0	0
17	5	5	5	(7)	5	0	0	0	(0)	0
18	6	7	6	5	6	0	0	0	0	0
19	5	5	5	5	5	0	0	0	0	0
20	5	6	5	5	5	0	0	0	0	0
21	5	5	5	-	5	0	0	0	-	0
22	5	5	5	16	5	0	0	0	1	0
23	40	13	5	5	20	2	1	1	1	1
24	5	69	82	18	40	0	2	2	2	2
25	13	16	16	-	16	1	1	1	-	1
26	6	9	5	-	7	1	0	0	-	0
27	8	5	4	-	6	1	0	0	-	0
28	12	12	-	-	12	1	0	-	-	0
29	-	-	-	-	-	-	-	-	-	-
30	6	6	6	(5)	6	0	0	0	(0)	0
31	5	5	5	-	5	0	0	0	-	0

Outstanding Occurrences

July 1961	Start- time	Dura- tion	Type	Max.	Int.	Max. Time	Remarks
				Inst.	Smd.		
9	0742.7	0.9	CD/4	420	130	-	
23	2226.2	1.5	ECD/4	>900	150	2226.5	off scale
	2346	18	CD/8	190	90	2355.0	
24	0339.0	0.5	CD/4	>800	>430	-	off scale
	0428.7	0.9	CD/4	>800	200	-	off scale
	0429.6	0.6	CD/4	550	260	-	
25	0029.7	0.9	CD/4	480	100	-	
	0520.9	3.0	F/3	>800	-	-	off scale

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

July 1961	Whole Day Index	L. N.			W W V				S. F.				W W V H				Warning				Principal magnetic storms		
		06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
11	4-	5	5	2	4	4	5	3	3	4	4	3	4	5	5	5	N	N	N	N			
2	4+	5	5	4	5	4	5	3	4	5	4	3	4	4	4	5	N	N	N	N			
3	3-	3	2	4	1	1	1	2	4	4	3	3	5	5	5	5	N	N	U	U			
4	4-	4	3	3	4	5	5	5	3	3	3	4	5	5	5	5	U	U	U	U	02.0	---	
5	3+	4	4	3	4	4	3	1	4	3	2	4	4	5	4 (5)	U	U	U	U	---	---	102 ^y	
6	3-	4	3	3	1	3	3	2	3	3	3	3	4	5	4	4	U	U	N	N	---	01xx	
7	3+	3	2	3	3	3	5	4	3	4	4	4	4	2	2	5	N	N	N	N			
8	4+	5	4	2	5	5	5	4	4	5	5	5	5	5	4 (4)	N	N	N	N				
9	4+	5	5	5	3	3	4	4	3	4	5	5	4	5	3 (3)	N	N	N	N				
10	4-	5	4	3	5	(2)	3	3	4	5	4	4	4	5	4	5	N	N	N	N			
11	4-	5	4	2	2	4	5	4	4	3	4	4	3	4	3	3	N	N	N	N			
12*	4o	4	4	5	3	3	5	3	4	5	5	4	3	4	3	4	N	N	N	N			
13*	3+	4	3	4	3	4	2	2	4	4	3	2	4	5	3	4	N	N	W	W	1113	---	
14*	2-	2	2	1	1	2	1	1	3	3	(2	2)	4	3	2	1	W	U	W	W	---	---	334 ^y
15	2o	3	2	2	1	1	1	1	2	3	3	3	2	3	3	4	W	W	U	U	---	17xx	
16*	3o	3	4	3	1	3	3	3	3	4	4	3	4	3	3	3	W	W	W	W			
17*	3+	4	4	4	1	1	3	3	4	4	(4)	3	4	4	3	4	U	U	U	U	1826	---	
[18]	2+	3	2	2	2	2	1	1	4	3	(2)	2	5	4	3	2	U	U	U	U	---	---	106 ^y
[19]	2+	2	3	2	1	(2	2)	1	3	3	3	4	3	3	2	4	U	U	U	U	---	06xx	
[20]	3o	3	3	3	1	4	4	4	3	3	(3)	3	3	3	4	3	U	U	U	U	0247	---	
21	3+	4	4	3	4	(3	3)	1	3	4	4	3	3	4	4	4	U	U	U	U	---	---	83 ^y
22	3-	3	3	-	(1)	3	3	3	(3	3	3	3)	4	4	3	5	U	U	U	U	---	18xx	
23	3+	4	(4)	4	3	4	3	3	(2	3	3	3)	4	4	3	4	U	U	U	U			
24	3o	3	(4)	5	4	2	1	3	(3	4	3	2)	4	4	3	4	U	U	U	U			
25	3+	4	4	(5)	3	3	3	4	3	3	3	3	4	4	4	4	U	U	U	U			
26	3+	5	5	(4)	3	2	3	3	3	(3)	3	3	4	4	3	4	U	U	U	U	1950	---	
27*	2+	3	2	2	2	2	3	1	4	2	2	-	4	3	2	3	U	U	W	W	---	---	161 ^y
28	3-	3	4	4	1	1	1	3	2	4	4	-	4	3	3	3	W	U	U	U	---	---	
29	4-	4	5	5	3	3	4	5	2	3	3	(4)	5	5	4	3	U	U	U	U	---	---	
30	5-	3	(5	5)	5	4	5	4	5	5	4	-	4	5	4	5	U	N	N	N	---	20xx	
31	4+	5	4	4	4	4	5	4	4	5	5	4	5	5	4	4	N	N	N	N			

* = day of Special World Interval

() = inaccurate

= Regular World Day

C = artificial accident

- = impossible to evaluate

--- = continuing magnetic storm

Note: Estimation of propagation quality figures are revised from this issue.
See Symbols and Terminology.

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

Time in U.T.

HIRAISO

July 1961	S W F						S E A			Correspondence				
	Drop-out Intensities (db)						Type	Imp.	Start- time	Dura- tion	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN	SH								
17	18	-	-	13'	13	02.14	S	1+	53			X		
17	<u>42</u>	-	-	-	-	21.37	S	3	65			X	X	
18	12	<u>16</u>	<u>35'</u>	-	-	05.05	S	2-	12					
20	8	4	<u>17'</u>	-	-	03.22	S	2	20					
20	9	-	-	<u>13</u>	<u>19</u>	07.22	S	2-	11			X	X	
20	-	-	-	-	-	15.53	S	3-	(50)					
21	<u>28</u>	15	12'	-	12	00.51	S	2	16					
21	<u>17</u>	-	-	-	-	04.07	S	1+	46			X	X	
28	-	-	-	-	-	02.34	S	(3)	66					

IONOSPHERIC DATA IN JAPAN FOR JULY 1961

電波観測報告 第13巻 第7号

昭和36年9月20日 印刷
昭和36年9月30日 発行 (不許複製非売品)

編集兼
発行人

糟

谷

績

東京都小金井市貫井北町4の573

発行所

郵政省電波研究所

東京都小金井市貫井北町4の573

電話 国分寺 1211-1214

印刷所

山内欧文社印刷株式会社

東京都豊島区日ノ出町2の228

電話 (971) 9341
