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IONOSPHERIC DATA IN JAPAN

FOR DECEMBER 1956

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Prepared by

THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

551. 510. 535. 05(52) (047.3)

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THE RADIO RESEARCH LABORATORIES

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CONTENTS

Page

Symbols and Terminology 2

Site of the radio wave observatories 3

Graphs of Ionospheric Data 4

Tables of Ionospheric Data at Wakkanai 6

Tables of Ionospheric Data at Akita 9

Tables of Ionospheric Data at Kokubunji 12

Tables of Ionospheric Data at Yamagawa 24

Data on Solar Radio Emission 27

SYMBOLS AND TERMINOLOGY

The following symbols and terminology have been used in accordance with the recommendation of the International Scientific Radio Union (U.R.S.I.), Zürich, 1950 and at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.), Geneva, 1951.

f_0E, f_0F1, f_0F2	ordinary-wave critical frequency for the E, $F1$ and $F2$ layers respectively
fE_s	highest frequency on which echoes of the sporadic type are observed from the lower part of the E layer
$h'E$, $h'F1$, $h'F2$	minimum virtual height on the ordinary-wave branch for the E, $F1$ and $F2$ layers respectively
$hpF2$	virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to 0.834 f_0F2
$ypF2$	semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at 0.969 f_0F2)
$(M3000)F2$	maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer
$f_{\min}E$, $f_{\min}F$	frequency below which no echoes are observed for the E and F regions respectively
( )	doubtful value
[ ]	interpolated value
A	characteristic not measurable because of blanking by E_s
B	characteristic not measurable because of absorption either partial or complete, and probably non-deviative in type
C	characteristic not observed because of equipment or power failure
D	before a number (or >): greater than alone: characteristic at a frequency higher than the normal upper frequency limit of the equipment
E	before a number (or <): less than alone: characteristic at a frequency lower than the normal lower frequency limit of the equipment
F	spread echoes present
G	a) $F2$-layer critical frequency equal to or less than $F1$-layer critical frequency b) no E_s (or $E2_s$) echoes observed though regular E (or $E2$) layer echoes are present (i.e., a symbol for daytime usage)
H	stratification observed within the layer

J	ordinary wave characteristic deduced from measured extraordinary-wave characteristic
K	ionospheric disturbance in progress (this is always applied to a series of hourly values, never to an isolated value)
L	a) E1-layer characteristic emitted or doubtful because no definite or abrupt change in slope of the $h'f$ curve is observed either for the first reflection or any of the multiples b) $h'F2$ omitted because the $F2$-layer trace is continuous with the $F1$-layer trace and without a point of zero slope
M	characteristic not observed because of some failure or emission on the part of the operater, rather than owing to any mechanical or electrical fault in the equipment or its power supply
N	nature of the record is such that the characteristic cannot readily be interpreted
P	trace extrapolated to critical frequency (it is unnecessary to use this letter for small extrapolations of one or two percent, but use should be made of symbol of ( ) if the extrapolation leads to a critical frequency which exceeds the last observed point on the trace by more than five percent)
Q	distinct layer not present
S	characteristic observed by interference or by atmospherics
T	loss or destruction of successful observations
U	hp or yp not measurable, for instance, because ordinary-wave trace has horizontal tangent at or above the frequency 0.834 f_0F_2
V	trace forked near critical frequency
W	characteristic at a virtual height greater than the normal upper height limit of the equipment
Y	E_s trace intermittent in frequency range very short pieces of trace at the high frequency and should be ignored since they may be presumed to be due to short-lived echoes
Z	third magnet-ionic component of the $h'f$ trace is observed

SITES OF THE RADIO WAVE OBSERVATORIES

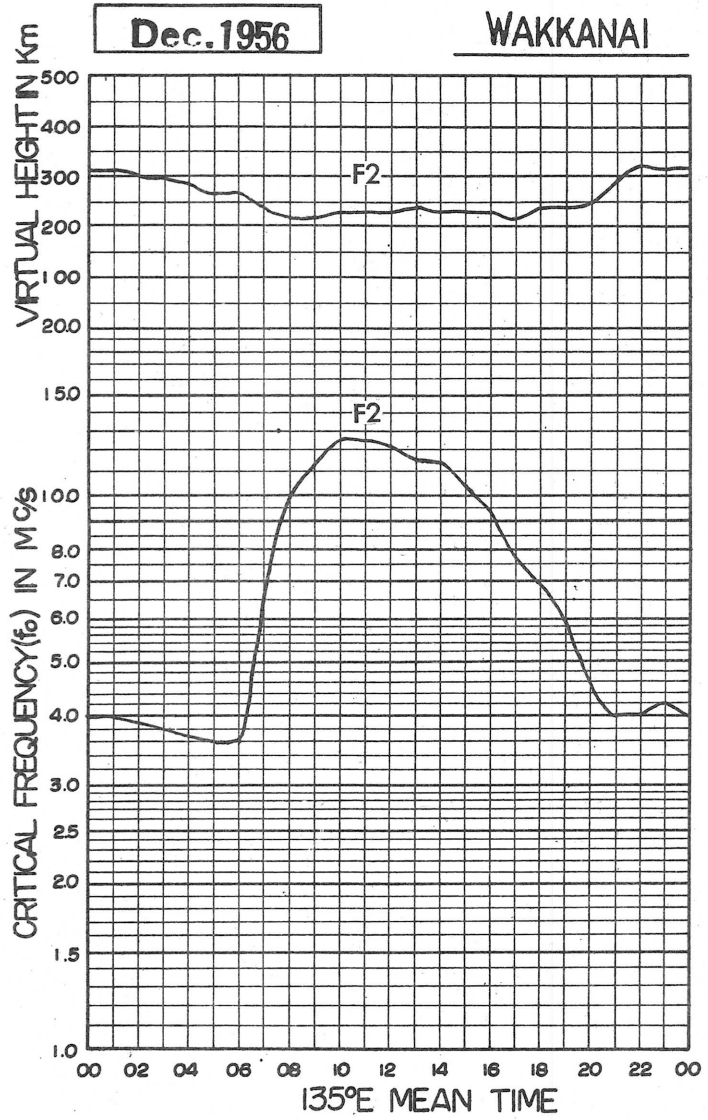
Ionospheric observation is carried out at the following four observatories in Japan.

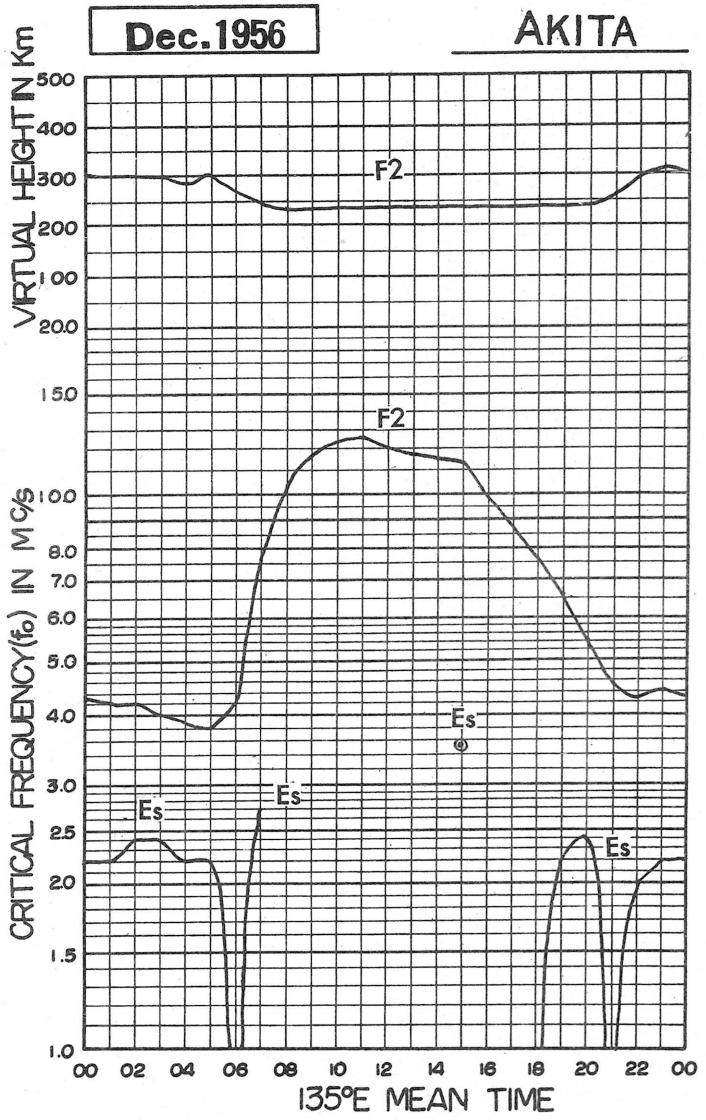
	Latitude	Longitude	Site
Wakkanai	45°23.6′N.	141°41.1′E.	Wakkanai-shi, Hokkaido
Akita	39°43.5′N.	140°03.2′E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Koganei-machi, Kitatama-gun, Tokyo-to
Yamagawa	31°12.5′N.	130°37.7′E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

Solar radio emission is observed at Hiraiso Radio Wave Observatory.

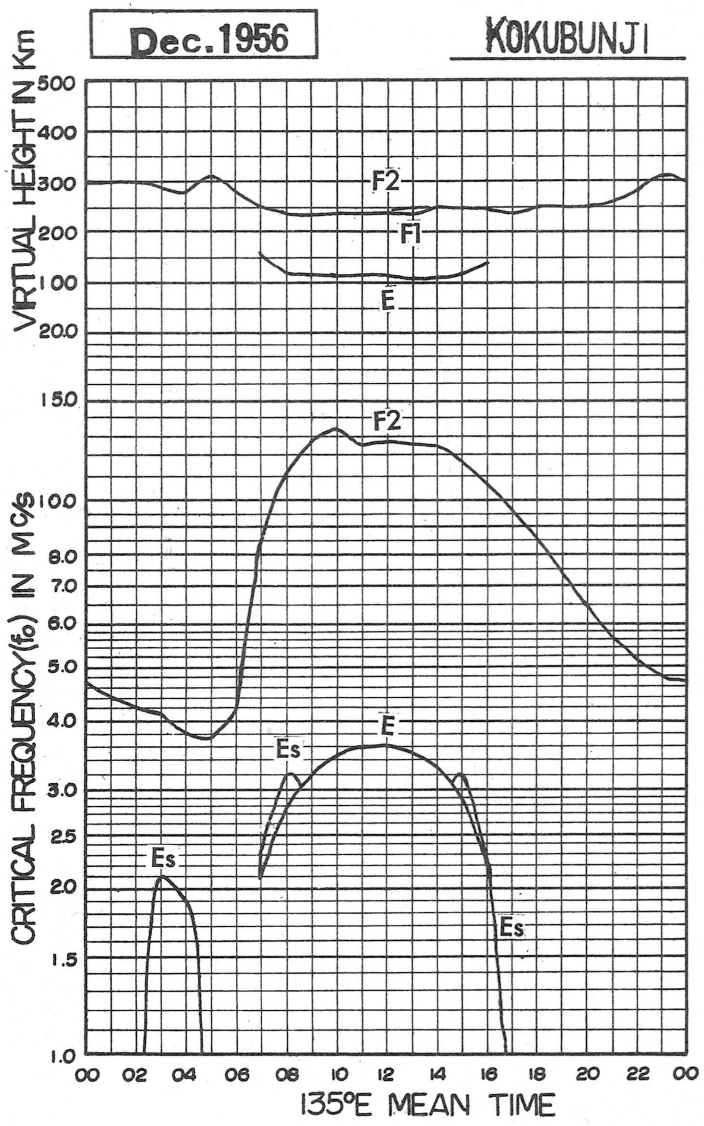
	Latitude	Longitude	Site
Hiraiso	36°22.0′N.	140°37.5′E.	Hiraiso-machi, Nakaminato-shi, Ibaragi-ken

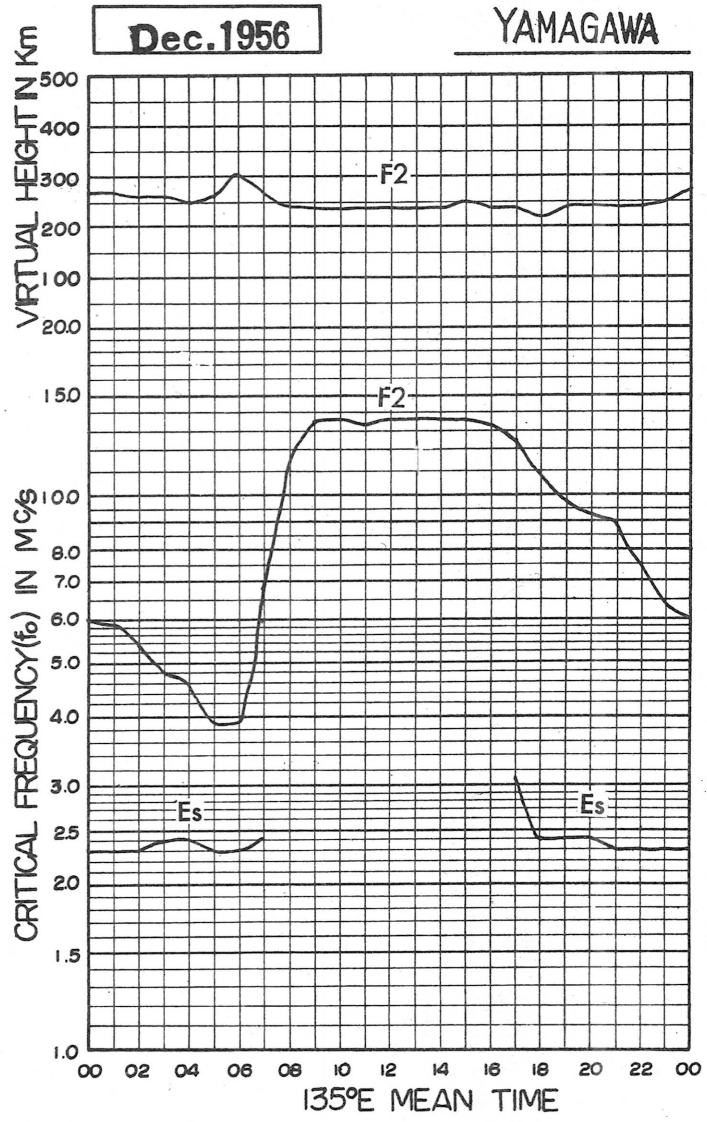
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1956 | foF2 | 135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.0	5.1	5.0	5.0	4.7	4.0	3.7	8.0	11.2	12.8	(13.0)^{P_J}	13.0	C	C	C	C	C	C	C	6.0	5.0	4.3	4.3	4.2
2	4.2	4.1	4.3	4.7	4.5	3.0	3.4	7.2	11.5	12.2	12.7	12.3	12.1	11.3	11.8	10.5	8.6	7.5	7.0	6.5	4.9	(4.3)^{S}	4.4	4.3
3	4.3	4.3	3.8	3.7	3.7	3.8	4.1	7.8	10.4	12.5	13.3^{P_J}	13.0^{P}	12.7	12.7	12.6	11.9	11.0	9.3	8.0	7.0	4.9	4.8	4.7	5.1
4	4.9	4.9	4.9	4.8	5.0	4.6	4.6	8.2	11.6	13.0^{P}	13.0^{P}	12.8	12.5	12.3	12.3	11.7	10.0	8.0	7.5	6.6	4.8	4.5	4.6	4.5
5	4.3	3.8	3.9	3.6	3.8	[4.3]^{C}	4.8	8.0	10.6	12.5	12.7	12.5	12.2	12.0	12.5	11.6	10.0	8.5	7.5	6.7	6.0	5.2	5.0	4.5
6	4.4	4.5	4.3	4.5	4.8	5.3^{J}	4.3	7.0	11.5	12.8	13.0^{P}	13.3$^{P_J H}$	13.0^{P}	12.7	12.5	11.7^{H}	11.0	9.0	8.0	6.5	4.5	4.2^{F}	4.5	4.7
7	4.3	3.8	3.6	3.8	4.0	3.8	3.4	6.6	11.0	13.0^{P}	13.8^{P_J}	12.8	12.7	12.4	12.2	11.0	10.9	8.5^{J}	7.3	6.5	5.0	4.6	4.5	4.3
8	4.2	4.0	4.0	3.7	3.8	4.0	4.1	7.3^{P_J}	10.2	12.6	13.3^{P_J}	13.3^{J}	13.0	12.3	12.0	11.4	10.0	8.5	7.4	7.0	4.5	3.6	3.7	3.8
9	3.8	4.0	3.8	3.6	3.4	3.3	3.7	6.3	10.9	11.4	12.7	12.8	11.9	11.6	11.3	11.0	9.5	7.5	7.3	6.0	4.2	4.0	3.8	3.8
10	4.0	4.0	4.0	4.0	4.0	3.5	3.5	6.6	10.0	12.3	13.0	13.0	12.5	12.1	12.0	11.5	10.8	9.0	8.8^{J}	7.0	6.0	5.6	5.1	4.8
11	5.1	5.1	4.6	4.8	4.9	4.5	4.0	7.5	12.0	13.3^{P_J}	13.4^{P_J}	13.3^{P}	13.0^{J}	12.6	12.3	11.6	11.0	10.0	7.6	7.0	5.0	4.8	4.8	4.3
12	3.6	3.7	3.6	3.7	3.7	3.7	4.0	6.9	11.0	12.3	12.7	12.8	12.4	12.2	11.3	10.7	10.5	7.6	6.7	5.5	4.1	[3.9]^{A}	3.7	3.8^{F}
13	3.5	3.3^{F}	3.0^{F}	2.9	3.0	2.7	3.0^{F}	7.0	10.6	(13.0)^{P_J}	13.5^{J}	13.2	12.8	12.8	12.3^{H}	12.0	11.5	9.0	8.0^{J}	7.0	5.1	4.8	4.4	4.2
14	4.0	4.0	4.0	4.3	4.8	3.9	3.5	7.0	12.1	13.6^{J}	14.4	13.3^{J}	13.1^{P}	12.2	12.0	10.0	9.3	8.9	(8.2)^{PS}	7.1	4.8	3.8	3.9	4.2
15	3.9	3.7	3.7	3.8	3.7	3.7	3.4	5.8	9.5	11.2	12.5	12.1	11.4	11.5	10.5	10.3	9.5	8.6	6.7	6.1	5.3^{J}	4.0	4.2	4.3
16	4.1	4.0	4.0	4.0	4.2	4.2	4.2	7.2	11.0^{P}	11.5	13.0	12.3	11.0	11.0^{H}	10.7^{H}	9.5	9.1	7.3	6.7	5.5	4.0	4.0	4.0	4.2
17	4.3	4.0	4.0	4.0	3.7	3.5	4.2	6.7	9.1	10.5	11.5	12.4	11.7	11.7	10.7	10.1^{P}	9.4	7.8^{P}	6.5	6.1	4.4	3.6	3.6	3.8
18	3.7	3.5	3.6	3.6	3.6	3.6	3.6	6.2	9.2	11.3	11.5	12.3	11.0	10.7	9.8^{P}	6.4	6.8	7.2^{P}	6.3	5.8	3.5	3.3	3.7	3.7
19	3.6	3.6	3.7	3.6	3.6	3.7	4.5	5.6	8.3	10.5	12.2	12.3	11.8	11.4	10.6	9.5	8.3	7.6	6.1	5.0	4.2	3.2	3.5	[3.5]^{A}
20	3.5	3.5	3.6	3.4	3.4	3.6	3.8	5.4	8.5	10.0	12.7	12.2	12.2	11.5	9.8^{J}	8.9	9.1	8.0^{P_J}	6.8	5.0	3.8	3.7	3.7^{F}	3.9
21	3.9	4.2	3.8	3.6	3.6	3.6	3.5	6.2	9.0	10.0	12.0	12.5	11.5	11.3	11.3	10.0	8.5	6.6	6.0	5.3	3.4	3.0	3.2^{F}	3.4^{F}
22	3.4	3.4	3.4	3.5	3.5	3.4	3.5	5.5	8.5	7.7	11.9	12.2	10.9	11.1	10.6	10.4	9.3	7.4^{P}	6.4	4.8	3.4	[3.5]^{A}	3.6	3.6
23	3.6	3.9	4.1	4.0	3.7	3.6	3.6	C	C	10.9	11.5	12.4	11.7	11.4	10.2	9.6	8.7	7.1	5.5	4.7	3.4	3.2	3.3	3.4
24	3.6	3.6^{F}	3.8	3.6	3.6^{F}	3.6	3.8	6.5	10.0	10.7	12.2	12.2	10.7	10.4	9.7	9.5	9.1	[8.0]^{A}	6.8	5.9	4.5	4.7	4.4	4.4
25	4.3	4.5	4.4	4.4	3.8	3.6	3.6	6.0	9.0	10.0	12.0	12.0	11.0	11.5^{H}	10.5	9.6	9.5	8.5	7.2	4.7	4.0	4.0	3.7	3.6
26	3.9	4.1	4.1	4.6	3.4	2.9	3.0^{F}	5.7	9.0	11.3	12.8	12.5	12.1	11.4	11.7	11.0	9.2	7.5	7.0	6.5	4.8	4.6	4.8	4.6
27	4.8	3.9	3.8	3.8	3.6	3.8	3.6	5.5	8.7	11.0	13.0^{P}	12.8	12.5	11.7	11.0	10.0	8.7	7.3	6.4	6.5	5.0	3.7	3.7	3.7
28	3.6	3.8	3.6	3.3	3.2	2.9	3.0	6.5	8.7	11.4	13.0^{P}	12.5	12.0	12.0	12.0	11.7	8.8	7.5^{H}	6.2	5.3	5.0	4.8	4.8	4.6
29	4.5	4.0	4.8	4.3	3.8	3.2	3.0	5.5	9.5	11.4	12.4	12.0	10.8	10.3	10.0	9.5	8.5	7.3^{J}	6.5	6.0	4.8	4.0	4.3	4.5
30	4.0	3.8	4.0	3.9	3.8	3.7	3.3	5.0	9.0	10.6	11.6	11.5	10.4	10.0^{H}	9.8	9.0	7.6^{J}	6.3	6.0	5.5	4.5	3.4	3.6	3.7
31	3.9	4.2	3.9	3.5	3.6	3.3	3.2	5.2	8.6	10.6	12.2	12.4	12.5	11.3	10.4	9.4	9.3	7.5	7.0	5.0^{J}	(4.2)^{S}	3.4	3.8	3.5
Mean Value	4.1	4.0	4.0	3.9	3.9	3.7	3.7	6.5	10.0	11.5	12.6	12.6	12.0	11.6	11.2	10.4	9.5	8.0	7.0	6.0	4.5	4.1	4.1	4.1
Median Value	4.0	4.0	3.9	3.8	3.7	3.6	3.6	6.6	10.0	11.4	12.7	12.5	12.1	11.6	11.3	10.4	9.3	7.7	6.9	6.0	4.5	4.0	4.0	4.2
Count	31	31	31	31	31	31	31	30	30	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31

foF2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

W 1

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' E

Dec. 1956

h'F2

135° E Mean Time

Day	00	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	320	310	260	240	240	280	240	230	200	220	230	C	C	C	C	C	C	C	220	240	250	310	350
2	340	350	300	270	220	200	290	250	230	220	230	240	230	230	230	220	220	220	250	240	240	310	300	310
3	310	280	290	320	350	270	240	220	210	220	240	240	220	230^{L}	220	230	240	230	230	240	230	280	280	300
4	300	280	300	310	300	250	230	240	220	230	230	230	230	230	240	220	210	230	270	240	230	280	300	270
5	270	290	280	330	300	(280)^{C}	250	230	220	220	230	220	220	230	240	220	230	220	230	250	240	250	270	270
6	310	340	350	330	310	250	230	210	230	220	240	220^{H}	220	240	230	220^{H}	240	220	230	220	250	310^{F}	340	280
7	250	350	370	350	280	200	240	230	230	230	230	230	240	230	230	220	250	210	240	250	250	270	300	280
8	290	300	310	320	350	290	240	220	220	220	220	220	220	230	230	230	220	240	270	240	220	340	350	350
9	310	290	290	270	300	300	270	250	210	240^{A}	230	230	220	230	230	220	220	210	250	240	250	290	320	350
10	370	310	280	260	250	220	250	230	210	220	220	230	230	240	230	220	250	230	250	240	250	270	310	360
11	350	310	310	310	310	240	290	270	230	240	230	230	220	240	(230)^{C}	220	240	220	220	230	250	270	270	260
12	270	300	300	300	290	270	240	220	210	220	220	220	230	240	230	230	230	210	220	240	250	(280)^{A}	300	310
13	320	310	370	400	380	260	320	220	240	220	230	230	230	250	220^{H}	220	230	210	240	240	240	270	310	310
14	320	360	350	300	260	220	290	270	220	220	230	220	220	240	220	220	220	240	250	220	240	290	340	300
15	280	300	310	280	290	230	280	240	220	220	230	220	220	240	230	230	230	210	220	240	240	250	320	310
16	310	340	340	320	290	290	270	240	220	220	230	230	230	230^{H}	230^{H}	230	250	250	240	230	250	290	300	300
17	300	290	290	290	260	230	280	250	220	220	220	240	270	240	240	220	240	230	250	250	250	(350)^{A}	330	310
18	290	290	330	310	280	260	270	240	230	230	240	240	220	230	230	230	240	230	240	240	220	350^{A}	350	300
19	340	350	350	330	340	300	250	240	220	230	230	230	230	240	240	230	230	220	220	240	250	260	320	(310)^{A}
20	300	330	300	350	330	280	220	210	210	230	240	240	240	240	230	230	250	250	230	230	250	330	370	340
21	320	290	280	280	320	270	270	240	210	230	240	240	230	240	240	250^{A}	270^{A}	220	250	240	230	300	330^{F}	310
22	310	320	310	300	280	260	250	230	210	220	240	240	240	240	240	250	230	250	240	230	300	(340)^{A}	(380)^{A}	350
23	370^{A}	330	280	250	290	280	230	C	C	230	230	240	230	230	220	230	220	220	240	250	250	(320)^{A}	(400)^{A}	350
24	300	320	290	270	300	310	270	240	220	220	230	230	220	240	240	240	230	(240)^{A}	260	250	(280)^{A}	300	320	290
25	290	290	280	260	240	280	280	250	210	230	220	240^{F}	230	230^{H}	240	240	240	240	230	230	290	360	420	480
26	440	390	280	230	380	380	350	250	230	220	230	230	230	220	230	230	230	220	260	230	230	310	300	320
27	320^{A}	260	270	270	240	280	250	220	210	220	220	220	260	230	240	230	220	220	250	220	240	260	340	340
28	330	340	320	330	390	300	310	250	220	230	250	230	230	240	250	240	210	220^{H}	270	250	250	300	300	320
29	380	450	350	240	240	330	360	260	220	230	240	230	220	240	230	230	230	230	220	250	250	270	320	290
30	270	340	320	270	250	240	260	240	220	220	220	230	230	230^{H}	220	230	220	(280)^{L}	260	240	240	350	400	380
31	350	300	270	260	320	280	270	240	220	220	230	230	240	230	220	250	230	220	250	250	(300)^{S}	340	310	310
Mean Value	320	320	310	300	300	270	270	240	220	220	230	230	230	240	230	230	230	230	240	240	250	300	330	320
Median Value	310	310	300	300	290	270	270	240	220	220	230	230	230	240	230	230	230	220	240	240	250	290	320	310
Count	31	31	31	31	31	31	31	30	30	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31

h'F2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

W 2

7

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec.1956 | fEs | 135° E Mean Time | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	G	G	G	G	G	C	C	C	C	C	C	C	E	E	E	E	E
2	E	2.2	2.3	2.6	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	4.2
4	E	E	E	2.5	3.2	3.5	2.3	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	2.2	E
5	E	E	E	E	E	C	E	G	G	G	G	G	G	G	G	4.3	3.5	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	3.5	3.5	E	E	E	E	E	E
7	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	4.1	G	E	E	E	E	2.2	4.0	2.2
8	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	3.0	3.5	E	2.5	4.5	E	E
9	E	E	2.3	E	E	E	E	G	3.5	10.4	G	G	4.0	G	4.0	G	E	E	E	E	3.0	E	E	E
10	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	2.3
11	E	E	E	E	E	E	E	G	G	G	G	G	G	G	C	G	G	E	E	3.6	3.4	E	E	E
12	E	E	E	E	E	E	2.5	4.3	3.5	G	G	G	G	G	G	G	G	E	E	E	3.5	6.0	4.0	E
13	E	E	E	2.3	3.1	6.0Y	E	G	3.5	G	G	G	5.0	4.0	G	G	3.5	2.2	4.5	7.5	4.2Y	E	E	E
14	E	E	E	E	E	E	E	G	G	5.0Y	7.0Y	G	G	G	G	G	3.5Y	E	E	E	E	E	2.2Y	E
15	E	E	E	E	E	E	E	G	G	G	2.1	2.1	3.5Y	G	G	G	G	E	E	E	E	4.8Y	2.3	E
16	2.0	E	E	E	E	E	E	G	G	G	G	G	3.4	5.0Y	G	G	G	E	E	E	3.5Y	3.5Y	E	E
17	E	2.3	3.5Y	E	E	E	E	G	G	G	G	7.6Y	G	G	G	G	G	3.2Y	2.8Y	3.5Y	3.9	4.2	3.2Y	E
18	E	E	1.5Y	E	E	E	E	4.0Y	G	G	G	5.3	G	G	G	G	2.3	E	E	E	E	3.5Y	E	3.0Y
19	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	5.1Y
20	2.3	3.1Y	2.3Y	2.3Y	E	E	E	G	3.2Y	G	G	G	G	6.0	B	4.3	3.8Y	E	E	3.5Y	3.2Y	E	E	E
21	E	E	E	1.9	E	E	E	4.1Y	5.1Y	G	G	G	G	G	G	5.3	6.5Y	6.0Y	E	E	E	E	E	E
22	E	E	E	2.2Y	E	1.1	E	G	3.5Y	7.0Y	G	G	G	G	G	7.0Y	3.5Y	3.5Y	3.5Y	3.5Y	5.5Y	6.2	5.3	3.4Y
23	4.4	E	E	3.2Y	4.7Y	3.0Y	E	C	C	G	G	G	G	G	3.9	G	3.3Y	3.5Y	4.1Y	5.3Y	6.5Y	7.4Y	7.7Y	5.5Y
24	3.8Y	3.5Y	E	E	E	1.1	E	3.4Y	G	G	G	G	G	G	G	4.6Y	4.0Y	10.2Y	11.0Y	6.5Y	6.6Y	7.0Y	3.5Y	2.3Y
25	3.4Y	E	E	E	E	E	E	G	G	G	G	5.1YF	G	G	G	G	G	E	E	E	E	2.4Y	E	E
26	E	E	E	E	E	E	2.3	2.8	G	G	G	G	G	G	G	G	G	E	E	E	2.5	4.0	4.0	4.5
27	6.0	3.8	E	E	2.3Y	3.2	3.8Y	G	G	G	G	G	4.3	G	4.2	G	G	E	E	E	E	E	E	3.5YF
28	2.2	2.2	E	2.2	E	E	E	G	G	G	G	4.8	G	4.2	3.7	G	G	E	E	E	E	E	E	E
29	E	E	E	E	2.2Y	2.1Y	E	G	G	G	G	G	4.6	G	G	G	G	E	2.3	E	E	E	E	E
30	2.2	4.5	E	E	1.1	3.5Y	E	G	G	3.5	4.0	4.1	G	G	G	G	G	G	E	E	2.4	E	E	E
31	E	3.0Y	2.2	2.3	2.3Y	E	E	G	G	G	5.2Y	G	4.8Y	G	G	5.5	G	10.0Y	3.3	4.8	5.0	3.2	2.2	2.3F
Mean Value	3.3	3.1	2.4	2.4	2.7	2.9	2.7	3.7	3.7	6.5	4.6	4.8	4.2	4.8	4.0	5.0	3.7	5.0	4.8	4.8	4.3	4.9	4.1	3.5
Median Value	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
Count	31	31	31	31	31	30	31	30	30	31	31	31	30	30	28	30	30	30	30	31	31	31	31	31

fEs

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

W 3

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec. 1956

foF2

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.5	5.4	5.3	5.0	4.8	4.7	5.1	8.9	(12.2)P	13.5	13.6	13.5H	13.7H	13.6H	13.0H	12.1	10.8	9.6	8.7	7.3	5.6	5.2	4.7	4.7
2	4.6	4.6	5.0	5.5T	4.3	3.2VH	3.8	7.6	12.5	12.5	13.5H	12.8H	13.1H	12.5H	11.6H	11.5H	9.9	8.2	7.3	7.3	5.9	4.7	4.8	4.8
3	4.9	5.2	4.8	3.9V	4.0	4.3	4.5	8.6	11.3	12.1	13.6	14.0	13.1H	12.8H	12.5H	11.7	10.6	9.8	7.8P	7.5	5.7	5.0	5.2P	5.2
4	5.0	4.8	4.6	4.9	4.8	5.1	5.2	9.0	12.0	13.0H	13.7	13.6H	13.5H	12.7H	12.5H	12.0H	11.7	9.1	8.5	7.8P	6.9	5.2P	5.2	4.8
5	4.4	4.2	4.0	3.4F	3.6V	3.7	4.4	8.1	10.6	11.7H	13.1H	12.5H	11.8H	11.6H	11.5H	11.5	10.5	9.0	C	C	6.3	5.5	5.0	4.8
6	(4.6)F	4.8	4.6	4.6	4.5	4.8	5.6	8.3P	10.6	12.7	13.7	14.0	13.7H	13.0H	12.4	12.2	11.5	10.0	8.1	7.7	5.0	4.5	4.6	4.8V
7	4.6	4.1	4.2VF	4.1	4.3	4.3	4.1	7.5	10.4P	12.3	13.5	13.5H	13.4H	13.0H	12.2H	11.7H	11.3	9.9P	(8.3)F	(7.4)F	5.9P	5.0	4.6	4.5
8	4.0	4.2	4.2	3.9	3.8	4.0	4.7	(8.3)P	10.4	11.6	13.8	13.5	12.9	12.4	11.9H	11.9P	11.1	9.4	8.0	8.3P	(5.9)P	4.0	4.0	4.4
9	4.4	4.5	4.5	4.2	3.9	3.9	4.7	7.6	11.1	11.4	(11.9)P	12.1	12.3H	11.9PH	11.5	11.2	10.1	9.1	7.6	7.0	5.8	4.2	3.8	3.7
10	3.7	3.8	3.9	4.0	4.0	3.6	3.6	7.9	11.6	11.7	12.6H	13.5H	12.9H	12.4H	12.1H	11.5H	10.5	9.6	8.6	7.3	6.5	6.2	5.2	5.2P
11	5.2F	5.7	4.8	5.0	5.2	5.4	4.9	8.0	12.6	14.5	15.5	13.8H	13.0H	13.0H	12.1H	12.0H	11.0	10.7	9.2	7.5	6.6	5.6	5.2	4.7
12	3.9	3.7	3.6	3.5	3.6	3.7	4.0	7.7	11.3	12.6	13.0H	12.5H	12.0H	12.5H	12.0	11.5	10.3	9.5	7.7	6.7	5.2	4.6	4.3	4.1
13	3.8	3.8	3.6	3.4	3.5	3.5	3.5	7.6	9.9	13.6	13.8	13.5H	12.5H	12.5H	12.0	11.5H	11.0	10.6	8.6	7.4	5.6	5.2P	4.5	4.5
14	4.5	4.3	4.2	4.5	4.7	4.5	4.5	8.0P	12.6	13.5	14.6H	13.1H	12.5H	11.7H	11.7H	11.4	10.6	9.6	8.3	7.1	5.6	4.6	4.2	4.6
15	4.6	4.0	3.9	4.0	3.6	3.7	3.9	8.0	9.7	11.8	12.3	12.6H	11.9H	10.7H	11.0H	10.1	[9.4]C	8.6	7.6	6.1	5.3P	4.8	4.3	4.5
16	4.3	4.1	4.2	4.2	4.4	4.4	4.6	7.9	10.5	11.8	12.4H	11.8H	11.5H	11.4H	11.9H	11.0	9.5	8.7	7.4	5.4P	4.7	4.5	4.2	4.3
17	4.2	4.0F	4.0	4.1	3.2F	3.5F	3.5	7.1	10.2	12.3P	11.9HP	12.5H	11.9P	11.9PH	11.5	10.6	9.2	8.8	7.9	6.1	(5.4)P	4.4	3.8	3.9
18	4.0	3.7	3.6	3.8	3.7	3.5	3.6	6.9	9.7	11.8P	11.8P	11.6H	10.5H	10.7	10.5H	10.0	9.5	8.3P	5.7	5.7	4.8	3.8	3.7	3.9
19	3.6	3.5	3.6	3.8	3.9	4.2	4.5	6.5	8.9	11.4	(11.9)P	(11.7)C	11.5H	11.5H	10.6	10.7	8.8	7.7	7.3	5.8	4.8	3.9	3.7	3.9
20	3.8	3.5	3.6	3.4	3.5	3.7	4.4	6.5	9.7	10.9	12.1	12.7	12.0	12.1H	10.9	9.5	9.2	8.4	7.1	6.1	4.3	(3.8)F	3.9	4.1
21	B	4.2	4.1	4.0	4.0	4.1	4.2	C	C	C	11.8PH	13.0	12.0	11.7	11.1H	10.5	9.8	7.7P	6.2	(5.4)F	4.8	3.5	3.3P	C
22	C	C	C	C	C	C	C	C	C	C	11.0H	12.5	12.5	11.1H	11.2H	10.8	10.0	7.1	7.3	(5.9)F	4.3	4.1	4.4	4.0
23	4.0	4.2	4.4	4.5F	3.9	4.0	4.3	6.9	10.1	10.7	11.1	11.7H	11.6	11.6	11.0	9.6	9.3	7.4	6.2	4.8	4.0	3.5	3.5	3.6
24	3.8	3.8	4.1	3.6	3.3	3.3	4.0	7.3	10.5	11.0	11.6	11.9	11.8H	10.5H	10.7H	10.1	9.2	8.7	7.5	6.4	5.2	4.8	4.7	4.6
25	4.4	4.5	4.8	4.7	3.8	3.4	3.8	7.6	10.6	11.1	11.0	12.3PH	11.7	11.0	10.9	10.3H	9.4	8.5	8.0P	5.2P	4.3	4.2	4.1	4.0
26	4.3	4.6	4.8	4.2	3.5	3.2	3.4	6.7	9.8	11.9	11.9	12.5H	11.8	11.4H	11.5H	10.8	9.3	8.0P	6.9	6.8	4.9	4.3	4.7	4.7P
27	4.8	4.4	4.2	3.7	3.9	3.9	4.2	7.1	10.1	11.5	11.9P	11.7	11.6	11.8	11.8JH	11.5	9.3	7.6	7.6	8.1P	6.1	3.9	3.7	3.7
28	4.0	3.9	3.9	3.6	3.5	3.5	3.5	6.7	9.7	11.5	13.5	12.0P	11.5H	11.9P	11.5	11.5	9.1	7.8	6.7	6.5	5.5	4.7	4.7P	4.3
29	4.3	4.1	4.5	4.6	3.6	3.3	3.2	6.9	10.4	12.1	11.9P	11.8	11.4H	9.9P	10.1	9.8	8.5	7.6H	6.7	6.3P	5.6	4.3	4.3	4.5
30	4.1	3.7	4.1	4.2	3.5	3.5	3.5	6.6	9.3	10.9	11.7	11.4H	11.9PH	10.4H	10.3H	10.0	9.1	6.7H	6.5	6.1	4.8	3.6	3.7	4.0
31	4.5	4.5V	4.2	3.9	4.0	3.9	3.8	6.7	9.7	10.9P	11.5	12.4	12.5	11.8	10.6H	9.5	9.4	B	7.4	5.8	4.2H	4.2	4.2	4.0
Mean Value	4.3	4.1	4.2	4.1	4.0	3.9	4.2	7.5	10.6	12.0	12.6	12.6	12.3	11.8	11.5	11.0	10.0	8.7	7.6	6.6	5.3	4.5	4.3	4.4
Median Value	4.3	4.2	4.2	4.0	3.9	3.8	4.2	7.6	10.4	11.8	12.3	12.5	12.0	11.8	11.5	11.2	9.8	8.7	7.6	6.6	5.4	4.5	4.3	4.4
Count	29	30	30	30	30	30	30	29	29	29	31	31	31	31	31	31	31	30	30	30	31	31	31	30

foF2

Sweep 0.85 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

A 1

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec.1956 | h'F2 | 135° E Mean Time | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	300	280	250	240	300	280	250	240	230	230	240^{H}	230^{H}	240^{H}	240^{H}	240	220	240	240	230	240	260	280	300
2	340	350	300	240	210	200^{H}	300	260	250	230	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	230^{H}	240	240	240	250	230	280	320	330
3	300	260	270	300	380	300	250	240	230	230	240	240	240^{H}	240^{H}	230^{H}	240	240	240	240	260	240	290	300	300
4	280	290	310	300	300	250	240	250	220	220^{H}	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250	210	250	240	240	240	270	280
5	290	260	270	280	330	310	250	230	220	230^{H}	230^{H}	240^{H}	230^{H}	230^{H}	240^{H}	250	230	A	C	C	250	250	290	290
6	320	310	330	310	300	300	240	230	220	240	240	250	240^{H}	250^{LH}	250	240	240	220	230	240	230	290	300	300
7	290	300	350	350	290	250	250	240	240	240	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250	240	240	250	240	250	280	280
8	290	290	300	300	350	320	250	230	220	230	240	240	240	240	240^{H}	250	240	200	250	250	220	270	340^{B}	330
9	290	270	300	290	290	330	270	240	230	230	240	250^{A}	240^{H}	240^{H}	240	240	240	240	240	250	240	240	300	310
10	350	350	300	250	260	230	250	250	240	220	230^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250	250	270	250	250	260	320	350
11	350	320	310	260	320	270	260	250	250	250	250	220^{H}	240^{H}	240^{H}	250^{H}	240^{H}	240	250	240	240	250	250	260	250
12	250	280	300	300	290	270	250	230	220	230	230^{H}	230^{H}	230^{H}	230^{H}	250	240	220	240	220	230	240	250	280	290
13	300	310	360	370	330	300	310	250	240	240	240	220^{H}	220^{H}	240^{H}	250	230^{H}	230	240	250	240	250	260	270	310
14	350	350	360	300	250	250	290	270	240	220	230^{H}	240^{H}	240^{H}	240^{H}	250^{H}	250	250	240	240	230	240	270	330	300
15	260	260	290	270	250	270	280	250	220	240	240	230^{H}	230^{H}	240^{H}	240^{H}	250	[240]^{C}	230	240	240^{A}	250	250	300	300
16	280	290	320	320	310	270	270	250	230	230	220^{H}	230^{H}	240^{H}	240^{H}	240^{H}	240	240	230	240	220	250	270	280	280
17	300	300^{F}	280	280	230	310^{F}	290	250	240	240	240^{H}	230^{H}	240	240^{H}	[240]^{B}	240	240	240	250	240	240	250	280	320
18	300	300	300	300	250	250	290	250	240	240	240	240^{H}	230^{H}	250	240^{H}	250	240	240	[260]^{A}	280	250	260	340	310
19	300	340	350	350	350	340	250	240	240	240	240	[240]^{C}	250^{H}	250^{H}	240	240	220	240	250	[240]^{A}	240	240	A	310
20	300	290	300	310	370	310	250	220	240	240	240	240	240	240^{H}	[240]^{B}	250	240	250	250	270	250	290	350	320
21	290	300	300	270	300	300	250	C	C	C	240^{H}	250	240^{H}	250	240^{H}	250	250	240	240	230	250	250	350	C
22	C	C	C	C	C	C	C	C	C	C	230^{H}	270	250	240^{H}	240^{H}	240	240	200	250	240	250	300	290	330
23	340	330	300	290	260	290	270	230	240	230	230	240^{H}	250	240	250	240	240	230	240	240	240	310	350	340
24	300	290	290	250	270	310	290	240	230	240	240	240	240^{H}	240^{H}	250^{H}	250	230	250	240	250	250	270	290	280
25	290	290	280	270	220	310	300	250	230	230	230	230^{H}	240	240	240	240^{H}	230	250	250	280^{A}	310	340	410	440
26	440	350	270	240	330	390	330	240	240	240	250	240^{H}	250	250^{H}	270^{H}	240	240	240	240	250	220	300	300	300
27	300	[300]^{A}	290	290	290	290	250	250	230	240	240	240	240	250	250^{H}	250	240	200	250	250	220	250	340	340
28	350	330	320	350	410	320	310^{A}	280	240	240	260	240	240^{H}	250	250	250	230	240	250	250	250	300	320^{A}	350
29	400	440	350	240	200	360	350	250	240	250	250	260	260^{H}	240	250	250	230	240^{H}	250	250	250	250	330	300
30	250	330	330	300	220	280	290	250	230	240	250	250^{H}	260^{H}	240^{H}	240^{H}	240	250	200^{H}	300	250	260	350	390	400
31	350	280	290	300	310	300	250	250	240	240	240	250	250	260	240^{H}	240	240	200	250	220	230^{H}	300	340	320
Mean Value	310	310	310	290	290	290	270	250	230	240	240	240	240	240	240	240	240	230	250	250	240	270	300	320
Median Value	300	300	300	300	290	300	270	250	240	240	240	240	240	240	240	240	240	240	240	240	240	260	300	310
Count	30	30	30	30	30	30	30	29	29	29	31	31	31	31	31	31	31	30	30	30	31	31	30	30

h'F2

Sweep 0.85 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

A 2

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' E

Dec.1956 | **fEs** | 135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.0Y	3.0	E	2.4Y	2.1Y	2.1	E	G	G	4.2	G	G	G	G	G	G	3.1Y	E	E	2.0	E	2.1	E	3.5Y
2	2.7Y	E	2.2Y	2.0Y	2.1YF	2.5Y	2.5Y	3.1	3.5	5.0	4.0	4.3	G	G	G	3.4Y	3.3Y	3.1Y	3.1Y	2.4	3.0YF	E	3.2	2.5Y
3	2.5YF	3.0Y	E	3.2F	3.2	2.2	E	2.4	G	G	G	G	G	4.3	4.3	6.5	6.2F	2.4	4.5F	4.0	3.2	E	2.5	2.4
4	3.0	2.3Y	2.9YF	2.0Y	3.5F	2.2	2.2	2.7Y	G	G	G	3.4	3.5	G	3.5	3.5	3.5	3.5F	E	E	E	E	E	E
5	2.5F	2.2F	2.0F	2.2F	E	E	E	G	G	G	3.5	G	G	G	4.5Y	3.5Y	G	8.0	C	C	3.0Y	E	E	E
6	2.2F	E	2.5Y	E	E	3.2YF	E	G	G	G	G	G	G	G	3.4Y	G	G	E	2.4	2.0	2.0	E	E	E
7	3.0	E	2.1Y	2.4Y	E	E	E	G	G	G	G	G	G	G	G	B	G	E	E	E	E	E	E	E
8	1.8Y	2.7YF	2.3	2.5	2.1YF	2.1Y	E	2.9Y	3.5	G	G	G	G	G	G	3.5Y	G	E	E	2.4	E	E	E	E
9	E	E	2.6YF	2.4Y	2.4	2.5	3.0	3.0	3.5	G	4.4	7.0	G	G	G	3.5	3.0Y	E	2.7Y	2.1	2.1	2.3	E	2.5
10	E	E	2.1Y	3.1	2.5Y	2.4Y	E	3.0Y	G	G	G	G	4.4	G	G	2.8	G	3.4	1.9	2.7	2.7	2.5	2.4Y	3.5Y
11	2.7F	E	2.3Y	2.5F	2.0YF	2.6Y	E	G	G	3.5	4.7	3.4Y	5.0	4.5	5.5	6.1	3.5	3.5	E	3.5	2.7Y	E	3.0Y	2.4
12	E	E	2.5YF	3.0F	2.5F	3.0F	2.4Y	3.1Y	4.5	3.8	G	4.2	G	G	G	3.5	G	2.5Y	E	2.2Y	3.1	E	E	E
13	E	2.5Y	2.5Y	E	2.2F	E	2.2	3.1Y	3.5	G	B	4.2	G	G	G	3.5	3.5	3.5	E	E	E	E	4.2F	E
14	3.0	3.5F	2.5F	3.0F	3.0F	2.0Y	2.5Y	3.1Y	3.5	3.7	3.0Y	3.9	4.2Y	4.1	3.5	2.2	2.5Y	3.5Y	E	2.3	2.4	E	E	E
15	2.5	2.5F	3.0F	3.0F	2.5YF	2.3F	E	3.5Y	G	G	G	G	4.4	4.2	G	4.2	3.2	3.5	3.2	4.3	2.3	E	2.2	E
16	E	2.2Y	2.5F	2.5Y	3.2F	2.2F	E	G	G	3.8	G	G	G	4.2	3.5	G	G	E	E	E	E	E	E	2.8
17	2.2	E	E	E	2.5F	2.5YF	E	G	G	G	G	G	G	G	B	4.9	G	E	2.5	3.0	2.4	E	E	3.5
18	3.0Y	3.0Y	3.0Y	2.5Y	2.1Y	2.2	3.5	G	G	G	G	6.5Y	G	G	4.5	G	4.1	6.3	4.5	4.2Y	2.6	E	2.0	2.5
19	E	2.4Y	2.4Y	2.2Y	E	2.2Y	E	4.1	4.5	4.5	G	C	G	G	G	G	3.5Y	E	E	4.3	3.0	3.0	4.5	3.0
20	3.0	3.0	E	3.0	3.8	E	2.1Y	G	G	G	G	G	G	G	B	7.5	4.1	4.0	3.0	4.4	3.2	2.2	3.0	E
21	3.0	3.0	E	E	2.0Y	E	E	C	C	C	3.4	4.4	4.3	G	G	G	G	E	3.1Y	E	3.0Y	E	3.0	C
22	C	C	C	C	C	C	C	C	C	C	5.5	3.5	G	4.4	G	3.5	4.3	3.5	3.0Y	3.1Y	2.5	2.6Y	E	3.1
23	3.1F	3.0Y	3.5F	3.1F	3.2F	3.0	3.0Y	3.0Y	G	G	G	G	G	G	4.2Y	G	3.5Y	3.5Y	3.1Y	3.5F	E	3.5YF	4.5Y	4.7Y
24	E	E	3.2	E	1.5Y	3.0Y	E	3.1Y	3.5	G	G	G	G	G	G	G	G	E	E	E	2.6Y	E	E	E
25	E	E	E	E	E	3.1	E	3.0Y	G	G	G	G	G	G	G	4.7	G	3.2Y	2.7	3.5	3.0	E	E	E
26	E	E	E	2.0Y	E	E	E	2.4	3.2Y	G	G	G	G	G	B	G	G	E	E	E	E	2.6Y	2.5	E
27	2.1	4.0	3.1	2.0Y	3.2	E	E	2.7Y	3.5	4.0	G	G	G	G	G	4.1Y	G	E	E	E	E	E	E	2.1
28	E	1.8	2.5	2.6	E	2.0Y	4.1	G	3.2	G	G	G	4.4	G	G	3.5	G	E	2.4	2.1	2.4	3.0	2.6	3.0
29	2.0	E	E	E	2.0	2.1	2.2	3.3	G	3.5	B	G	6.4	G	G	G	G	E	E	E	2.0Y	E	2.5	2.5
30	E	E	3.5	4.0	3.0	2.8	E	2.4	G	G	G	G	4.5	G	G	4.1	G	E	E	3.1	3.0	E	3.3	E
31	3.1	3.0	4.1	3.0	3.0	2.0Y	3.0	3.0	3.0	G	G	G	G	G	4.2	3.5	G	E	E	E	2.4	3.0	4.9	3.9
Mean Value	2.6	2.6	2.7	2.6	2.6	2.4	2.7	3.0	5.6	4.0	4.1	4.5	4.6	3.6	4.1	4.1	3.7	3.8	3.0	3.1	2.7	2.7	3.1	3.0
Median Value	2.2	2.2	2.4	2.4	2.2	2.2	E	2.7	G	G	G	G	G	G	G	3.5	G	E	E	2.2	2.4	E	2.0	2.2
Count	30	30	30	30	30	30	30	29	29	29	29	30	31	31	28	30	31	31	30	30	31	31	31	30

fEs

Sweep 0.85 Mc to 22.0 Mc in 2 min ☐ Manual ☒ Automatic

A 3

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | foF2 | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.5	5.5	5.5	4.8	4.5H	4.7	5.5	10.3	12.4	13.9	14.1	13.6	14.5H	14.5	13.5	13.0	12.0	10.4	10.0	8.4	7.1	6.2	5.7	5.4
2	5.2	5.0	5.5	6.5	3.5	2.9	3.9	8.9	13.0	14.5	13.5	13.6H	14.5H	14.0	13.4H	12.5H	11.5	9.5	8.5	8.0	7.9	5.4	5.1	5.0
3	4.8	5.3	4.9	3.6	3.7	3.9	4.5	8.9	12.0	13.0	13.5	13.5	13.4	12.8	12.2	12.0	[9.4]C	6.9	[6.9]C	(6.9)P	6.2	5.8	C	C
4	C	C	4.5	4.8	4.6	5.2	C	C	C	C	14.3	14.0	13.9	13.5H	12.9H	12.9	12.3	11.0	9.4	9.7	9.0	7.2	6.5	5.5
5	4.8	4.8	4.5	4.0	3.6	3.7	4.7	8.9	11.0	11.9	13.1	13.0	12.6	12.0H	11.5H	11.8	11.0	10.0	8.5	7.6	7.4	5.5	4.8	4.9
6	4.7	4.7	4.7	4.5	4.5	4.9	6.4	10.3	12.0	13.4	14.0	14.3	14.3H	13.2H	13.0	13.0	12.5	11.4	9.2	8.4P	6.5	5.5	5.3	5.3
7	4.8	4.0	4.0	3.9	4.0	4.1	4.5	8.5	10.9	13.1	13.8	13.9H	14.1	14.0H	13.5H	12.9	12.0	11.3	9.9	8.4	7.5	6.0	5.4	4.8
8	4.1	4.3	4.3	3.8	3.7	3.8	4.6	8.5	11.8	12.4	14.1	13.6	13.6	13.3H	12.8	12.7	12.5	10.9	8.9	9.0	7.5	5.9	5.1	5.4
9	5.3	5.3	5.0	4.9	4.3	4.2	5.3	9.0	11.6	12.6	11.5	12.1H	13.0	13.0	12.3	11.5	10.7	9.7	8.9	7.9	7.2	6.1	4.6	4.3
10	3.8	3.7	4.0	4.1	3.9	3.4	3.9	8.6	11.9	13.0	12.4	12.6	13.5H	13.5	13.0H	12.4	11.0	10.5	9.2	8.7	7.9P	6.7	5.5	5.7
11	5.6	6.1	5.5	5.3	5.3	5.8	6.0	10.0	12.9	14.8	15.8	14.0H	13.3H	12.9H	12.8H	12.5	12.0	11.1	10.0P	8.6	7.7P	6.7	6.0	5.1
12	4.2	3.7	3.6	3.7	3.6	3.4	3.8	9.0	11.9	13.0	13.7	12.6	12.2	13.0	13.2	12.6	11.3	10.9	9.5	8.4	6.9	5.9	5.0	4.5
13	3.9	3.8	3.7	3.4	3.4	3.5	3.9	8.5	10.5	13.6	14.2	13.1H	12.6H	12.9H	13.0	11.7	11.0	10.7	9.0	7.4	6.2	6.2	5.6	4.6
14	4.7	4.5	4.4	4.7	4.8	4.5	4.9	8.6	13.6	15.0	13.6	13.5H	12.6H	12.6H	12.4H	12.0	11.2	10.6	8.6	7.8	6.7	6.4	5.2	5.0F
15	5.0	4.6	4.0	4.2	3.5	3.5	4.0	8.7	10.6	11.9	13.3	12.5	12.8	11.2H	11.1	10.6	10.0	8.7	7.9	6.6	6.0	6.5	5.6	5.0
16	4.8	4.2	4.2	4.1	4.0	4.3	4.8	8.2	12.0	13.4	13.9	12.3H	12.5	12.4	12.8	12.4	10.5	10.0	7.9	6.5H	6.5	6.3	5.2	4.5
17	4.2	3.9	3.9	3.9	3.2	2.9	3.5	8.0	11.6	13.9	13.5	12.3	12.9	12.5	13.0	12.1	10.7	9.1	8.6	7.2	6.5	5.8J	5.2	4.5
18	4.3	4.2	3.9	4.1	3.9	3.5	3.7	7.4	10.4	12.9	13.8	12.5H	11.6H	11.8	12.1	11.4	10.1	8.5	7.0	5.9	6.2	5.4	4.1	4.2
19	4.7	3.7	3.7	3.8	3.8	4.3	4.8P	7.9P	10.4	12.9Z	[12.3]C	11.7	12.3H	11.9H	12.6	11.8	9.9	8.3	8.3	7.2	6.3	5.1	3.9	4.2
20	4.5	4.2	3.8	3.6	3.4	3.4	4.2	8.7	10.9	12.0	13.0	13.5	13.5	13.0H	12.0	10.9	10.1	8.8	8.0	6.8	6.5	5.1	4.8	5.1
21	4.9	4.3	4.2	4.1	3.7	3.9	4.5	8.2	10.7	11.7	12.3	13.0	13.3	12.4	11.8H	11.0	10.3	8.8	7.2	6.0	5.9	5.1	4.1	4.0
22	4.0	3.8J	3.9	3.9	3.7	3.2	3.4	7.4	10.8	12.0	11.8	12.6	13.7	12.7H	12.7H	12.1H	11.2	10.0	8.3	7.0	6.5	5.8	5.4	4.4
23	4.4	4.4	4.7	4.9	4.3	3.7	4.2	8.1	10.2	11.9	12.0	11.0	12.6H	12.0H	11.5	10.5P	10.1	8.2	6.9	6.1	5.9	4.8	4.3	4.4
24	4.5	4.3	4.1	3.9	3.5	3.4	4.0	9.0	11.2	11.7	11.5	12.1	12.4H	12.0	11.2H	10.9H	10.2	9.6	8.5	6.7	6.2	5.5	5.3	4.8
25	5.0	5.3	5.2	4.5	4.3	3.4	3.7	8.2	10.9	11.9	12.0	12.0H	12.5	11.7H	11.5	10.7	10.0	9.1	7.9	6.8	4.8	5.0	4.8	4.5
26	4.6	5.3	5.3	4.7	3.9HP	3.4	3.8	8.2	11.1	13.5	12.3	12.3H	C	C	C	11.2	10.1	8.2	8.0	7.1	6.2	4.6	5.0	5.3
27	5.0	5.1	4.3	3.3	3.7	3.7	4.1	8.1	11.1	12.5	13.0	12.5	12.7H	12.7H	13.3H	12.9	10.9	10.1	8.7	9.0	8.1	5.5	4.3	4.5
28	4.3	4.1	4.0	3.8	3.7	3.5	3.3	6.9	11.4	12.1	13.4	13.0	12.0H	12.7	11.8	10.7	10.5	8.8	7.2	8.0	6.7	5.4	5.0	4.8
29	4.6	4.4	4.6	5.2	3.6H	3.4	3.5	8.3	10.9	12.3	12.1	11.8H	11.5H	11.0H	10.8H	10.4	C	C	C	C	C	C	C	C
30	4.8	3.7	[4.0]C	4.3	3.9	3.0	3.4	7.4	10.6	12.0	11.5	11.4H	12.0H	12.0	11.0	10.5	10.3	8.0H	6.7	7.4	5.5	3.9	4.2	4.1
31	4.8	5.2	4.2	4.4	4.0	4.0	4.2	7.3	10.8	[11.5]C	12.2	12.4	12.0	11.6H	10.9	10.7	9.3	8.5	7.7	7.2	5.6	4.8	4.7	4.4
Mean Value	4.7	4.5	4.4	4.3	3.9	3.8	4.3	8.5	11.4	12.8	13.1	12.8	12.9	12.6	12.3	11.8	10.8	9.6	8.4	7.6	6.7	5.7	5.0	4.8
Median Value	4.7	4.4	4.2	4.1	3.8	3.7	4.2	8.5	11.1	12.8	13.3	12.6	12.8	12.7	12.5	11.8	10.7	9.6	8.5	7.4	6.5	5.6	5.1	4.8
Count	30	30	31	31	31	31	30	30	30	30	31	31	30	30	30	31	30	30	30	30	30	30	29	29

foF2

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 1

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

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

Dec. 1956 | h_pF2 | 135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	390	390	340	430	440^{H}	450	390	320	290	340	340	390	390^{H}	410	390	410	360	380	370	350	340	370	370	410
2	420	430	390	310	280	440	420	340	320	320	350	390^{H}	410^{H}	400	410^{H}	410^{H}	370	360	360	350	360	410	440	410
3	390	370	330	480	500	410	370	310	300	330	370	360	390	410	410	370	[360]^{C}	340	[340]^{C}	(350)^{P}	330	420	C	C
4	C	C	460	390	400	390	C	C	C	C	340	400	400	410^{H}	420^{H}	410	380	360	360	360	330	350	400	370
5	390	380	370	370	440	440	350	300	310	310	370	370	380	390^{H}	400^{H}	380	360	350	370	390	360	350	390	410
6	440	410	450	430	440	420	350	310	320	330	360	380	390^{H}	420^{H}	400	400	370	370	350	350^{P}	370	400	420	380
7	360	440	440	460	440	410	360	310	310	330	350	390^{H}	390	410^{H}	410^{H}	380	380	360	340	350	340	390	390	330
8	400	390	380	400	480	450	340	310	310	330	350	380	380	410^{H}	400	390	350	350	350	350	340	420	430	430
9	430	380	380	370	370	410	340	290	300	300	330	380^{H}	380	380	390	380	340	360	340	350	310	330	410	420
10	430	450	440	380	360	310	350	320	300	310	330	370	390^{H}	400	400^{H}	380	380	380	370	340	350^{P}	390	480	450
11	470	430	460	440	460	400	380	330	340	340	360	400^{H}	400^{H}	410^{H}	420^{H}	390	370	370	340^{P}	340	340^{P}	330	330	320
12	350	400	400	390	370	390	360	300	310	300	320	350	370	400	380	350	350	360	320	330	360	340	370	370
13	390	410	450	450	410	470	420	310	310	350	350	360^{H}	400^{H}	400^{H}	380	370	360	360	340	330	370	350	330	420
14	450	450	460	430	350	400	390	330	300	310	340	340^{H}	370^{H}	390^{H}	400^{H}	390	350	350	330	350	360	320	420	410^{E}
15	350	350	410	380	300	400	380	300	280	300	330	350	370	400^{H}	360	350	330	340	340	330	370	350	400	400
16	360	400	440	440	410	390	360	320	300	330	290	360^{H}	360	370	370	350	340	350	340	400^{H}	380	360	350	370
17	380	390	400	370	320	410	400	340	300	300	330	370	360	400	370	360	340	370	350	340	350	(390)^{J}	350	420
18	390	390	400	390	350	370	380	290	310	320	310	340^{H}	340^{H}	360	340	330	320	340	310	400	340	360	380	380
19	380	400	470	470	470	450	350^{P}	300^{P}	310	340^{Z}	[330]^{C}	320	340^{H}	390^{H}	340	340	330	360	330	310	340	320	450	420
20	380	380	390	430	460	420	330	300	320	300	340	390	350	380^{H}	380	350	340	350	340	340	350	360	400	410
21	360	400	400	390	390	420	350	320	300	320	340	380	350	370	390^{H}	350	350	340	330	350	330	360	390	390
22	410	(390)^{J}	370	330	330	350	380	320	300	310	330	360	360	380^{H}	360^{H}	360^{H}	360	330	350	330	350	400	330	370
23	420	430	400	330	330	400	350	280	300	300	310	340	370^{H}	390^{H}	360	330^{P}	330	330	330	330	350	380	430	420
24	370	360	360	330	370	430	350	300	270	320	350	370	370^{H}	380	380^{H}	380^{H}	360	360	330	350	330	350	370	380
25	380	390	380	370	310	440	380	310	290	310	320	360^{H}	350	380^{H}	360	360	350	360	350	310	370	450	480	550
26	560	470	390	350	540^{HP}	540	400	300	310	320	330	380^{H}	C	C	C	360	350	360	350	360	330	380	410	350
27	410	350	310	450	400	400	360	310	290	300	310	360	390^{H}	390^{H}	400^{H}	380	350	360	380	350	280	330	390	420
28	410	420	390	460	580	440	330	360	310	320	370	370	380^{H}	390	380	400	366	350	390	370	320	390	410	440
29	520	580	490	350	480^{H}	500	440	310	310	320	340	380^{H}	390^{H}	370^{H}	390^{H}	370	C	C	C	C	C	C	C	C
30	350	400	[380]^{C}	370	280	380	A	310	300	320	330	360^{H}	370^{H}	370	370	380	340	360^{H}	380	310	360	400	520	460
31	430	350	460	490	450	410	290	320	300	[320]^{C}	340	360	390	400^{H}	370	350	360	340	330	320	370	370	370	370
Mean Value	410	410	410	400	400	420	370	310	300	320	340	370	380	390	380	370	350	360	350	350	350	370	400	400
Median Value	390	400	400	390	400	410	360	310	300	320	340	370	380	390	380	370	350	360	340	350	350	360	400	410
Count	30	30	31	31	31	31	29	30	30	30	31	31	30	30	30	31	30	30	30	30	30	30	29	29

h_pF2

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 2

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec.1956 | h'F2 | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.8' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	300	260	250	210^{H}	320	290	260	250	240	240	240	280^{H}	240	250	240	240	230	260	230	250	260	270	310
2	320	310	300	250	200	330	320	270	250	240	240	240^{H}	250^{H}	250	240^{H}	240^{H}	250	240	270	270	260^{A}	250	320	330
3	300	280	270	300	370	330	250	250	240	240	240	250	240	250	250	250	260	240	250	250	260	270	320	300
4	270	280	340	300	280	300	250	260	240	240	250	250	230	250^{H}	250^{H}	250	260	240	260	270	250	240	260	270
5	290	300	280	270	320	330	270	250	230	240	240	250	240	250^{H}	250^{H}	250	250	250	250	250	270	260	280	330
6	330	330	330	300	290	310	270	250	240	250	240	250	240^{H}	250^{H}	250	250	250	240	240	250	240	270	300	300
7	280	350	350	350	310	280	280	250	240	250	250	240^{H}	250	250^{H}	240^{H}	260	260	240	250	240	240	260	250	250
8	280	310	300	300	350	350	270	240	240	230	240	240	240	250^{H}	250	270	250	230	250	250	250	240	310	310
9	290	290	280	280	280	310	280	260	240	230	240	240^{H}	250	250	250	250	240	230	250	250	240	230	350	310
10	320	360	320	230	280	240	280	240	230	240	240	240	250^{H}	250	240^{H}	250	270	250	260	270^{A}	270^{A}	260	300	340
11	340	310	300	270	310	290	290	270	240	250	250	240^{H}	240^{H}	240^{H}	250^{H}	250	240	240	250	240	250	250	250	250
12	280	300	300	300	280	280	270	250	240	230	240	230	240	230	250	240	230	240	240	250	250	250	260	290
13	310	330	350	350	300	370	320	260	240	250	250	240^{H}	250^{H}	250^{H}	300	240	240	250	240	240	250	260	250	310
14	350	370	350	310	260	260	310	270	260	240	240	230^{H}	230^{H}	240^{H}	240^{H}	250	250	240	230	240	250	240	280	320
15	270	280	290	260	240	300	300	260	230	250	260	260	260	240^{H}	270	260	260	240	240	250	250	250	280	300
16	280	320	330	310	300	280	270	250	250	240	240	230^{H}	300	280	280	250	240	250	240	220^{H}	250	260	260	270
17	300	300	300	280	240	340	300	240	240	270	250	240	270	300	320^{B}	250	250	230	250	260	250	250	260	290
18	310	300	310	330^{A}	270	260	290	240	240	250	250	230^{H}	230^{H}	300	280	250	240	230	240	240	270	260	300	300
19	310	330	370	350	360	350	270	250	240	240	[240]^{C}	250	240^{H}	230^{H}	270	250	230	210	250	250^{A}	250	250	310	330
20	310	300	300	300	360	340	270	230	240	250	250	250	270	250^{H}	[250]^{B}	250	250	220	240	250	250	250	270	330
21	300	270	270	300	280	320	280	250	240	250	250	270	270	260	250^{H}	250	240	220	250	250^{A}	250	250	290	320
22	330^{A}	330	300	270	250	280	300	240	240	240	240	300	270	240^{H}	250^{H}	250^{H}	240	230	220	250	250	270	250	280
23	340	320	320^{A}	270	270	300	270	230	230	240	250	230	250^{H}	250^{H}	270	250	240	230	230	230	250	260	320	330
24	300	290	270	280	290	340	300	250	230	230	230	240	250^{H}	290	250^{H}	250^{H}	250	260	240	240	250	250	280	270
25	280	300	280	250	250	300	300	250	230	240	250	240^{H}	250	230^{H}	300	250	250	240	230	240	260	300	350	410
26	450	350	240	250	260^{H}	400	320	250	250	250	240	230^{H}	C	C	C	260	260	240	260	270	250	250	320	280
27	300	270	250	250	300	310	290	250	240	250	250	250	240^{H}	230^{H}	250^{H}	260	250	240	240	260	240	230	290	330
28	330	330	280	330	450	360	270	280	240	240	250	240	240^{H}	300	250	250	250	220	280	270	250	270	300	320
29	420	460	350	250	200^{H}	390	350	260	240	240	250	240^{H}	230^{H}	250^{H}	250^{H}	250	C	C	C	C	C	C	C	C
30	290	300	[300]^{C}	290	250^{F}	280	A	260	240	230	240	240^{H}	250^{H}	250	250	230	250	210^{H}	270	250	250	280	390	380
31	350	260	270	350	380^{A}	320	250	260	240	[240]^{C}	250	250	250	240^{H}	250	250	250	250	250	250	230	260	270	300
Mean Value	310	310	300	290	290	310	290	250	240	240	240	240	250	250	250	250	250	240	250	250	250	260	240	310
Median Value	300	300	300	290	280	310	280	250	240	240	240	240	250	250	250	250	250	240	250	250	250	260	280	310
Count	31	31	31	31	31	31	30	31	31	31	31	31	30	30	30	31	30	30	30	30	30	30	30	30

h'F2 | Sweep 1.0 Mc to 17.2 Mc in 2 min | ☐ Manual ☒ Automatic | K 3

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | foF1 | 135° E Mean Time

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	Q	Q	Q	Q	Q	L	Q	Q	Q	Q	Q						
2								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
3								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
4								Q	C	Q	Q	Q	Q	Q	Q	Q	Q							
5								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
6								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
7								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
8								Q	Q	Q	Q	Q	Q	Q	Q	L	Q							
9								Q	Q	3.7	Q	Q	Q	Q	Q	Q	Q							
10								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
11								Q	Q	Q	Q	L	Q	Q	Q	Q	Q							
12								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
13								Q	2.9	Q	Q	L	Q	Q	4.8L	Q	Q							
14								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
15								Q	Q	Q	L	L	L	Q	Q	Q	Q							
16								Q	Q	Q	Q	Q	L	L	L	Q	Q							
17								Q	Q	L	Q	Q	L	L	B	Q	Q							
18								Q	Q	Q	Q	Q	Q	L	L	Q	Q							
19								Q	Q	Q	C	Q	Q	Q	4.8L	Q	Q							
20								Q	Q	Q	Q	Q	L	Q	B	Q	Q							
21								Q	Q	Q	Q	L	A	Q	Q	Q	Q							
22								Q	Q	Q	Q	6.0L	Q	Q	Q	Q	Q							
23								Q	Q	Q	L	Q	Q	A	L	Q	Q							
24								Q	Q	Q	Q	Q	Q	5.4	Q	Q	Q							
25								Q	Q	Q	L	Q	Q	5.6L	Q	Q	Q							
26								Q	Q	Q	Q	Q	C	C	C	Q	L							
27								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
28								Q	Q	Q	Q	Q	Q	L	Q	Q	Q							
29								Q	Q	Q	B	Q	Q	Q	Q	Q	C							
30								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
31								Q	Q	C	Q	Q	Q	Q	Q	Q	Q							
Mean Value									2.9	3.7		6.0		5.5	4.8									
Median Value									2.9	3.7		6.0		5.5	4.8									
Count									1	1		1		2	2									

foF1

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 4

15

The Radio Research Laboratories
Koganei-machi. Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | h'F1 | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q	Q	Q	Q	Q	Q	240	Q	Q	Q	Q	Q						
2								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
3								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
4								Q	C	Q	Q	Q	Q	Q	Q	Q	Q							
5								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
6								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
7								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
8								Q	Q	Q	Q	Q	Q	Q	Q	250	Q							
9								Q	Q	240	Q	Q	Q	Q	Q	Q	Q							
10								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
11								Q	Q	240	Q	Q	Q	Q	Q	Q	Q							
12								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
13								Q	280	Q	Q	230	Q	Q	250	Q	Q							
14								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
15								Q	Q	Q	240	230	240	Q	Q	Q	Q							
16								Q	Q	Q	Q	Q	240	240	250	Q	Q							
17								Q	Q	250	Q	Q	250	240	B	Q	Q							
18								Q	Q	Q	Q	Q	Q	240	270	Q	Q							
19								Q	Q	Q	C	Q	Q	Q	250	Q	Q							
20								Q	Q	Q	Q	Q	250	Q	B	Q	Q							
21								Q	Q	Q	Q	240	A	Q	Q	Q	Q							
22								Q	Q	Q	Q	240	Q	Q	Q	Q	Q							
23								Q	Q	Q	240	Q	Q	A	250	Q	Q							
24								Q	Q	Q	Q	Q	Q	230	Q	Q	Q							
25								Q	Q	Q	230	Q	Q	Q	240	Q	Q							
26								Q	Q	Q	Q	Q	C	C	C	Q	240							
27								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
28								Q	Q	Q	Q	Q	Q	250	Q	Q	Q							
29								Q	Q	B	Q	Q	Q	Q	Q	Q	C							
30								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q							
31								Q	Q	C	Q	Q	Q	Q	Q	Q	Q							
Mean Value									280	240	240	240	240	240	250	250	240							
Median Value									280	240	240	240	240	240	250	250	240							
Count									1	3	3	4	5	5	6	1	1							

h'F1

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 5

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Dec. 1956

foE

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	2.4	2.6	3.0^{H}	3.3^{A}	B	B	B	3.3	2.9	2.3	B						
2								2.4	3.0	3.4	3.5	3.4	[3.5]^{A}	3.6	3.3	2.9	2.4	1.9						
3								2.2	2.7^{A}	(3.4)^{B}	B	A	A	A	3.2	3.0	2.3							
4								B	B	C	3.6	3.7	[3.7]^{B}	3.7	3.4	2.9	2.5							
5								2.3	2.9	B	B	3.8	3.7	3.5	[3.2]^{B}	2.9	2.2							
6								2.2	2.8	B	B	3.8^{B}	3.7^{B}	3.6	3.2	2.9	2.2							
7								2.2	2.8	3.3	[3.4]^{B}	3.4	A	A	B	3.0	2.3							
8								2.4	2.8	(3.2)^{A}	3.5	3.7	[3.6]^{B}	3.5	3.2	2.8	2.3							
9								2.0	2.5	3.2	3.5	3.7^{B}	[3.6]^{A}	3.5	3.4^{B}	(2.8)^{A}	1.9							
10								1.9	2.7	3.2	3.6	3.7	A	B	3.3	2.8	1.9							
11								2.1	2.8	3.2	3.3	[3.6]^{B}	3.8	3.6	3.3	2.9	2.2							
12								2.2	3.0	A	B	A	B	B	3.3	2.8	1.9							
13								1.9	2.6	B	B	3.7	[3.6]^{B}	3.5^{B}	3.2	2.5^{A}	2.2							
14								2.0^{H}	[2.6]^{A}	3.3^{B}	B	B	B	3.4	B	A	2.2							
15								AF	2.7	3.2	[3.4]^{B}	3.6	B	B	B	3.2^{A}	A							
16								2.0	A	A	A	3.4	3.6^{A}	3.7^{B}	[3.2]^{B}	2.8	2.3^{H}							
17								2.3	2.7	3.2	B	B	3.7^{B}	3.5	[3.2]^{B}	3.0	2.3							
18								2.2	2.8	3.2	[3.3]^{B}	3.4	[3.4]^{B}	3.5	3.3^{B}	3.0	A							
19								2.5	2.9	3.3	[3.5]^{C}	3.7	B	B	3.3^{B}	3.0	2.3							
20								2.1	B	B	B	B	B	B	B	3.2	2.5							
21								2.1	2.9	B	B	B	B	B	B	3.0	2.4							
22								2.1	3.0^{H}	B	B	B	B	3.4	3.1	[2.9]^{A}	2.3^{H}							
23								1.9	2.8	3.0	3.3^{B}	B	B	B	B	3.1^{B}	2.2							
24								2.1	2.7	3.4	B	B	B	B	3.1^{B}	2.7	B							
25								2.0	2.6	3.1	3.5	B	B	3.3	[3.0]^{B}	2.8	2.2							
26								2.0	2.8	3.3	3.3^{B}	B	C	C	C	3.0	2.2							
27								1.9	2.7	3.4	3.5	3.5	A	B	B	2.9	A							
28								2.0	2.7	3.3	3.4^{B}	3.6	B	B	B	3.1^{A}	2.5							
29								2.0	2.8	A	B	B	B	3.4	3.3	2.9	C							
30								A	2.5	3.3	3.5	3.6	3.6	3.4	3.3	2.9	2.2							
31								B	2.6	C	B	3.7	3.6^{B}	3.5	3.4^{A}	[2.8]^{A}	2.2							
Mean Value								2.1	2.8	3.2	3.4	3.6	3.6	3.5	3.3	2.9	2.2	1.9						
Median Value								2.1	2.8	3.2	3.5	3.6	3.6	3.5	3.3	2.9	2.2	1.9						
Count								27	28	20	17	18	13	17	22	30	26	1						

foE

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 6

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | h'E | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	150	120	[110]H	110	120	120	110	110	120	160	B						
2								160	120	120	110	120	[120]A	110	120	110	140	160						
3								160	120	110	110	A	A	A	120	130A	160							
4								B	120	[120]A	120	120	110	110	110	120A	160							
5								120	130	120	110	110	110	110	110	120A	120A							
6								160	130	120	120	120	110	110	110	120	140							
7								160	120	120	120	120	A	A	120	120	140							
8								160	120	110	110	110	110	120	110	110	150							
9								160	120	110	110	120	[120]A	110	110	120	150							
10								150	120	120	120	120	[120]A	130A	120	120	180							
11								180	120	120	110	110	130A	120A	120A	120	130							
12								170	A	A	120	[120]A	120	120	110	120	130							
13								150	120	120	120	120	120	110	120	[140]A	160							
14								BH	A	120	120	120	120	120	110	A	A							
15								AF	130	110	120	120	120	120	110	120	A							
16								170	A	A	A	120	120	120	120	110	140H							
17								120	120	120	120	120	120	120	[120]B	120	160							
18								170	120	120	[120]B	120	120	120	120	120	A							
19								150	120	120	[120]C	110	120	110	110	120	130							
20								170	B	120	120	120	120	120	[120]B	130A	130							
21								170A	130	120	120	120	120A	B	B	120	130A							
22								180	120H	120	110	120	120	110	110	[110]A	110H							
23								160	130	120	120	120	B	B	120	120	160							
24								160	130	130A	120	110	110	120	120	120	B							
25								B	110	110	110	110	110	110	110	110	140							
26								160	120	120	110	110	C	C	C	120	150							
27								160	120	110	110	120	[120]A	110	110	110	A							
28								180	120	120	120	110	110	110	110	[120]A	140A							
29								140A	120	A	B	110	110	110	110	120	C							
30								A	120	120	110	110	120	110	120	120	130							
31								B	130	[120]C	120	120	120	120	120	A	A							
Mean Value								160	120	120	120	120	120	120	110	120	140	160						
Median Value								160	120	120	120	120	120	110	110	120	140	160						
Count								25	27	28	29	30	27	26	29	29	24	1						

h'E

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Dec. 1956

fEs

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	B	3.0	3.2	3.3	4.3	G	G	G	G	G	G	B	E	E	E	E	E	E
2	E	E	E	E	E	E	E	3.1	3.3	3.5	G	4.4	5.0	3.8	G	3.3	G	2.5	3.2	3.5	3.4	E	E	2.5
3	2.8	3.2	3.2	2.3	3.2	2.3	E	3.0	3.2	G	G	5.2	5.7	4.4	G	4.9	G	E	E	E	E	E	E	E
4	E	E	2.2	E	E	E	E	B	G	C	G	G	G	G	G	3.3	G	2.2	2.5	E	E	E	E	E
5	E	E	2.5	2.3	2.5	2.3	E	G	G	G	G	4.7	4.8	G	G	2.0	2.5	2.3	2.1	E	E	E	E	E
6	E	E	E	E	2.0	E	E	G	3.3	G	G	6.8	G	G	G	G	2.8	2.2	2.2	E	E	E	E	E
7	E	E	E	2.4	2.1	1.6	E	G	G	G	G	4.5	4.8	4.5	G	G	G	E	2.8	2.2	2.3	E	E	2.5
8	E	E	E	2.3	E	E	E	3.0	G	4.5	G	G	G	G	G	3.2	1.8	E	2.1	E	E	E	E	E
9	E	E	E	2.0Y	2.2	E	2.1	G	3.2	3.3	3.6	4.8	6.5	4.6	G	3.5	2.0	E	E	E	E	E	E	E
10	2.8	2.4	2.1F	E	E	2.1	E	G	3.3	G	G	G	4.9	3.3	G	3.3	3.2	3.0	3.2	3.4	3.3	2.1	2.3	2.3
11	3.0	E	E	2.1	2.3	2.5	E	G	G	G	G	G	2.6	3.8	1.9	G	G	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	G	3.4	4.4	G	3.6	G	G	G	3.3	2.9	E	2.4	2.0	E	E	E	E
13	E	E	2.5F	2.3	E	2.3	E	G	3.2	G	G	3.6	G	G	2.6	3.2	2.0	3.0	E	E	E	E	2.4	3.3
14	2.1	3.0	E	3.0Y	2.4	E	2.8	2.5	3.2	G	G	G	G	G	G	4.2	3.1	E	E	2.2	E	E	E	E
15	E	E	2.4	E	E	E	E	3.0F	3.2	G	G	G	G	G	G	3.7	3.2	2.0	3.3	3.0	3.2	3.2	4.2	2.3
16	2.2	1.9	E	E	2.3	E	E	G	3.3	3.7	3.5	G	6.6	G	G	G	G	E	E	E	E	E	E	E
17	E	E	E	E	2.1	2.4	E	G	G	G	G	G	G	4.8	B	G	G	E	E	E	2.4	2.5	2.4	E
18	E	E	E	3.3	2.4F	2.4F	E	G	G	G	B	G	G	5.2	G	G	2.4	E	E	E	3.2	3.2	E	E
19	E	E	2.4	2.0Y	E	E	E	G	3.3	G	C	5.0	G	G	G	3.0	G	E	E	3.3	3.2	2.4	E	E
20	E	E	E	2.1Y	E	2.2	E	G	B	G	G	G	G	G	B	2.7	G	5.7	3.0	2.2	E	E	E	E
21	3.2	2.1	E	2.2	2.2	2.1	E	2.8	G	G	G	G	7.0	6.3	4.5	G	2.2	E	E	3.3	E	2.3	2.4	E
22	3.3	2.8	E	2.1	E	E	E	G	G	G	G	4.8	G	G	3.5	3.3	2.5	2.7Y	3.0	3.1	3.3	2.3Y	E	E
23	2.4	2.5	3.9	2.5	2.2Y	2.1	2.7	G	G	G	G	G	4.5	5.9	4.7	G	G	3.0Y	E	2.6	2.4	E	E	3.2
24	4.4	3.5	E	2.2	E	E	E	2.8	G	3.2	G	G	G	G	G	G	B	E	E	E	2.5Y	E	E	E
25	E	E	E	E	E	E	E	G	G	G	G	G	G	G	5.4	G	G	2.5	E	2.4	E	2.5	E	E
26	2.2	2.1	2.3	2.3	2.2	E	E	2.3	3.2	G	G	G	C	C	C	G	3.2	E	E	E	E	2.3	E	2.9
27	3.2	2.4	3.9	3.0	E	E	E	G	3.2	4.4	5.6	5.0	4.7	G	G	3.3	3.2	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	G	3.3	G	G	G	G	G	G	3.3	3.0	2.4	E	2.5	2.3	2.3	2.2	2.1
29	3.3	3.3	2.1	E	1.9	2.1	2.1	2.4Y	3.2	3.6	B	4.8	5.0	5.0	4.8	4.2	C	C	C	C	C	C	C	C
30	2.3Y	2.3	C	2.0	3.2	3.2	3.6	3.0	3.0	3.3	G	5.5	5.0	5.7	4.2	3.3	3.0	E	E	3.0	3.2	E	2.5	E
31	2.5	3.2	3.2	4.8	6.9	3.0	2.5	2.5	3.3	C	G	G	G	4.7Y	4.8	4.3	3.0	3.1	2.0	E	E	E	E	2.7
Mean Value	2.8	2.7	2.7	2.5	2.6	2.3	2.6	2.8	3.2	3.7	4.3	4.8	5.2	4.8	4.0	3.4	2.7	2.8	2.7	2.8	2.9	2.5	2.6	2.6
Median Value	E	E	E	2.1	1.9	E	E	G	3.2	G	G	G	G	G	G	3.2	2.0	E	E	E	E	E	E	E
Count	31	31	30	31	31	31	30	30	30	29	28	31	30	30	28	31	29	29	30	30	30	30	30	30

fEs

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 8

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | (M3000)F2 | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.6	2.7	2.9	2.4	2.4^{H}	2.5	2.7	3.0	3.0	2.9	2.8	2.6	2.7^{H}	2.5	2.6	2.6	2.7	2.6	2.7	2.8	2.8	2.6	2.6	2.5
2	2.5	2.4	2.7	2.9	3.1	2.4	2.5	2.9	3.0	2.9	2.8	2.6^{H}	2.6^{H}	2.5	2.5^{H}	2.5^{H}	2.7	2.7	2.7	2.8	2.7	2.5	2.4	2.6
3	2.6	2.7	2.8	2.3	2.3	2.5	2.6	3.0	3.0	2.8	2.7	2.7	2.6	2.6	2.6	2.7	[2.7]^{C}	2.7	[2.8]^{C}	(2.8)^{P}	2.9	2.5	C	C
4	C	C	2.4	2.7	2.6	2.7	C	C	C	C	2.8	2.5	2.6	2.5^{H}	2.5^{H}	2.5	2.6	2.8	2.7	2.7	2.9	2.7	2.6	2.7
5	2.7	2.7	2.8	2.7	2.5	2.5	2.8	3.0	3.1	3.0	2.7	2.7	2.7	2.6^{H}	2.5^{H}	2.6	2.8	2.8	2.7	2.6	2.8	2.7	2.5	2.6
6	2.4	2.5	2.4	2.5	2.4	2.4	2.8	3.1	3.0	2.9	2.8	2.7	2.6^{H}	2.5^{H}	2.5	2.5	2.6	2.7	2.8	2.8^{P}	2.7	2.5	2.5	2.6
7	2.7	2.4	2.4	2.3	2.5	2.5	2.8	3.0	3.0	2.9	2.8	2.6^{H}	2.6	2.5^{H}	2.5^{H}	2.6	2.7	2.7	2.8	2.7	2.9	2.6	2.6	2.8
8	2.5	2.7	2.7	2.6	2.3	2.5	2.8	3.0	3.1	2.9	2.8	2.6	2.6	2.5^{H}	2.5	2.6	2.8	2.8	2.8	2.8	2.9	2.4	2.5	2.5
9	2.5	2.7	2.7	2.7	2.7	2.6	2.9	3.1	3.1	3.1	2.9	2.7^{H}	2.6	2.7	2.6	2.7	2.8	2.7	2.9	2.9	3.0	2.9	2.5	2.4
10	2.5	2.4	2.5	2.7	2.7	3.0	2.8	3.0	3.1	3.1	2.9	2.7	2.6^{H}	2.6	2.6^{H}	2.6	2.7	2.7	2.7	2.8	2.8^{P}	2.6	2.4	2.4
11	2.3	2.5	2.3	2.4	2.4	2.6	2.6	2.9	2.8	2.8	2.7	2.6^{H}	2.6^{H}	2.5^{H}	2.5^{H}	2.6	2.7	2.7	2.9^{P}	2.8	2.9^{P}	2.9	2.8	2.9
12	2.8	2.7	2.7	2.7	2.7	2.6	2.7	3.1	3.0	3.0	3.0	2.8	2.7	2.7	2.7	2.8	2.8	2.7	3.0	2.9	2.7	2.8	2.7	2.8
13	2.6	2.6	2.6	2.4	2.5	2.4	2.5	2.9	3.0	2.8	2.8	2.7^{H}	2.6^{H}	2.6^{H}	2.7	2.7	2.8	2.8	2.8	2.9	2.7	2.7	2.8	2.5
14	2.4	2.6	2.3	2.4	2.8	2.6	2.6	2.9	3.1	3.0	2.8	2.8^{H}	2.7^{H}	2.6^{H}	2.5^{H}	2.6	2.8	2.8	2.9	2.8	2.8	2.9	2.5	2.5^{F}
15	2.7	2.8	2.6	2.6	2.9	2.7	2.7	3.0	3.2	3.0	2.9	2.8	2.7	2.7^{H}	2.8	2.8	2.9	2.8	2.8	2.8	2.7	2.8	2.5	2.6
16	2.7	2.6	2.4	2.4	2.6	2.6	2.7	3.0	3.1	2.9	3.0	2.8^{H}	2.7	2.7	2.7	2.8	2.9	2.8	2.8	2.5^{H}	2.6	2.7	2.7	2.7
17	2.6	2.7	2.6	2.7	2.9	2.5	2.7	2.8	3.1	3.1	2.9	2.6	2.7	2.6	2.7	2.7	2.8	2.7	2.8	2.9	2.8	(2.7)^{5}	2.7	2.4
18	2.6	2.6	2.6	2.6	2.7	2.8	2.7	3.2	3.0	3.0	3.1	2.9^{H}	2.9^{H}	2.8	2.8	2.9	2.9	2.8	3.0	2.6	2.9	2.8	2.6	2.6
19	2.7	2.6	2.4	2.3	2.4	2.4	2.7^{P}	3.1^{P}	3.0	3.0^{Z}	[3.0]^{C}	2.9	2.9^{H}	2.7^{H}	2.9	2.9	2.8	2.7	2.9	3.0	2.9	2.9	2.4	2.5
20	2.8	2.6	2.7	2.5	2.4	2.6	2.9	2.9	2.9	3.1	2.9	2.6	2.8	2.7^{H}	2.7	2.8	2.8	2.8	2.9	2.9	2.8	2.8	2.6	2.6
21	2.8	2.6	2.6	2.6	2.7	2.5	2.8	3.1	3.0	3.0	2.9	2.7	2.8	2.7	2.6^{H}	2.8	2.8	2.8	2.9	2.8	2.8	2.7	2.6	2.7
22	2.6	(2.7)^{T}	2.7	2.9	2.9	2.7	2.7	2.9	3.1	3.1	2.9	2.7	2.7	2.7^{H}	2.7^{H}	2.8^{H}	2.7	2.9	2.8	3.0	2.8	2.5	2.9	2.7
23	2.5	2.5	2.6	2.8	3.0	2.6	2.8	3.1	3.1	3.1	3.0	2.9	2.8^{H}	2.7^{H}	2.7	2.8^{F}	2.8	2.9	2.9	2.7	2.7	2.7	2.4	2.5
24	2.7	2.8	2.8	2.9	2.8	2.4	2.8	3.1	3.3	3.0	2.9	2.7	2.7^{H}	2.7	2.6^{H}	2.7^{H}	2.8	2.8	2.9	2.8	2.9	2.8	2.7	2.6
25	2.7	2.6	2.7	2.7	3.0	2.4	2.7	3.0	3.2	3.1	3.0	2.7^{H}	2.8	2.7^{H}	2.9	2.8	2.8	2.8	2.8	3.0	2.7	2.4	2.5	2.2
26	2.1	2.4	2.6	2.8	2.2^{H}	2.2	2.6	3.1	3.1	3.0	2.9	2.7^{H}	C	C	C	2.7	2.8	2.8	2.8	2.8	2.9	2.7	2.6	2.8
27	2.6	2.8	3.0	2.4	2.6	2.6	2.7	3.1	3.2	3.2	3.0	2.8	2.6^{H}	2.6^{H}	2.6^{H}	2.6	2.8	2.7	2.7	2.8	3.2	2.9	2.5	2.5
28	2.5	2.5	2.6	2.3	2.1	2.5	2.8	2.7	3.1	2.9	2.7	2.7	2.7^{H}	2.6	2.6	2.5	2.7	2.8	2.6	2.8	2.8	2.5	2.6	2.4
29	2.2	2.1	2.3	2.8	2.2^{H}	2.3	2.5	3.0	3.0	3.0	2.9	2.7^{H}	2.6^{H}	2.7^{H}	2.6^{H}	2.7	C	C	C	C	C	C	C	C
30	2.8	2.5	[2.6]^{C}	2.7	3.2	2.6	2.5	3.0	3.2	3.0	2.9	2.8^{H}	2.7^{H}	2.7	2.7	2.7	2.9	2.8^{H}	2.6	3.1	2.7	2.5	2.2	2.3
31	2.5	2.7	2.3	2.2	2.5	2.6	3.1	3.0	3.1	[3.0]^{C}	2.9	2.7	2.6	2.6^{H}	2.7	2.8	2.7	2.8	2.9	2.9	2.6	2.7	2.8	2.7
Mean Value	2.6	2.6	2.6	2.6	2.6	2.5	2.7	3.0	3.1	3.0	2.9	2.7	2.7	2.6	2.6	2.7	2.8	2.8	2.8	2.8	2.8	2.7	2.6	2.6
Median Value	2.6	2.6	2.6	2.6	2.6	2.5	2.7	3.0	3.1	3.0	2.9	2.7	2.7	2.6	2.6	2.7	2.8	2.8	2.8	2.8	2.8	2.7	2.6	2.6
Count	30	30	31	31	31	31	30	30	30	30	31	31	30	30	30	31	30	30	30	30	30	30	29	29

(M3000)F2 | Sweep 1.0 Mc to 17.2 Mc in 2 min | ☐ Manual ☒ Automatic | K 9

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Dec.1956

fminF

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.7	1.4	E	E	E	1.3	1.7	2.5	2.8	3.4	4.0	4.1	4.1	4.1	3.5	3.0	2.4	1.6	1.6	1.7	1.7	1.7	1.6	1.5
2	1.6	1.4	E	E	E	1.4	1.7	2.5	3.0	3.4	3.7	4.0	4.1	4.0	3.4	2.9	2.4	1.9	2.1	1.8	2.6[A]	1.7	1.5	1.7
3	1.7	1.4	1.7	E	E	1.4	1.7	2.3	2.8	3.5	4.0	4.1	4.3	4.1	4.0	3.0	2.4	1.6	2.1	1.9	2.3	1.6	1.9	1.8
4	1.4	1.4	1.3	1.3	1.3	1.3	1.6	<2.4[C]	<4.2[C]	<5.5[C]	4.0	4.0	4.0	4.1	3.5	2.9	2.5	1.6	1.7	1.7	1.7	1.7	1.7	1.7
5	1.7	1.7	1.0	E	1.0	1.4	1.7	2.3	2.9	4.0	4.0	4.0	4.1	4.1	4.1	2.6	2.8	2.0	1.9	1.6	1.6	1.7	1.6	1.7
6	1.7	1.4	1.0	E	1.3	1.4	1.7	2.2	2.9	4.1	4.1	4.1	4.2	3.8	3.5	3.0	2.8	1.6	1.7	1.7	1.7	1.6	1.7	1.7
7	1.3	1.7	1.3	E	1.2	1.3	1.6	2.2	2.8	3.5	4.1	4.3	4.2	4.0	4.1	3.1	2.5	1.6	1.8	1.7	1.8	1.6	1.6	1.6
8	1.4	1.6	1.5	1.3	1.1	1.4	1.6	2.4	3.1	3.5	4.0	4.0	4.1	3.7	3.5	3.0	2.3	1.6	1.6	1.6	1.6	1.6	1.6	1.6
9	1.6	1.6	E	E	1.3	1.4	1.6	2.1	2.7	3.3	4.1	4.1	4.4	4.0	3.5	2.9	2.3	1.5	1.5	1.5	1.5	1.6	1.5	1.6
10	1.5	1.4	E	E	E	1.3	1.5	2.2	2.9	3.4	4.0	4.1	4.3[A]	4.1	3.5	2.8	1.9	1.7	1.7	2.7[A]	2.7[A]	1.9	1.7	1.6
11	1.7	1.4	E	E	1.4	1.4	1.7	2.1	2.8	3.4	3.5	4.1	4.1	3.8	4.1	3.0	2.3	1.6	1.6	1.7	1.7	1.7	1.7	1.6
12	1.7	1.4	E	1.3	1.4	1.4	1.6	2.2	3.0	3.3	4.1	4.0	4.1	3.7	3.6	2.9	2.3	1.6	1.6	1.7	1.5	1.6	1.6	1.6
13	1.6	1.5	1.5	1.4	E	1.4	1.6	2.1	2.7	3.3	3.6	4.0	4.1	4.1	4.1	3.0	2.3	2.2	1.6	1.6	1.6	1.5	1.7	1.5
14	1.7	1.8	1.4	1.3	1.3	1.3	1.6	2.0	2.7	3.5	4.0	4.1	4.0	4.0	4.0	3.0	2.5	1.6	1.6	1.6	1.5	1.6	1.6	1.6
15	1.6	1.5	E	E	E	1.0	1.7	2.2	2.8	3.3	4.0	4.0	4.1	4.1	4.0	4.0	2.6	1.7	1.6	1.9	1.9	1.9	2.1	1.7
16	1.4	1.7	1.0	E	1.3	1.4	1.6	2.2	2.9	3.5	4.1	4.0	4.1	4.0	3.5	2.9	2.3	1.6	1.7	1.6	1.7	1.7	1.6	1.7
17	1.7	1.4	E	E	E	1.4	1.6	2.3	3.0	4.1	4.1	4.5	4.1	4.2	8.0	3.5	2.3	1.4	2.1	1.9	1.9	1.6	1.7	1.7
18	1.6	1.4	1.3	[1.2][A]	1.0	1.4	1.6	2.2	2.8	3.6	4.6	4.0	4.0	4.1	4.1	4.1	2.5	1.7	1.7	1.6	1.6	1.7	1.7	1.7
19	1.7	1.7	1.3	1.3	1.4	1.4	1.7	2.6	2.9	3.5	[3.8][C]	4.1	4.0	4.0	3.5	3.1	2.8	1.7	1.7	[1.8][A]	2.0	1.6	1.7	1.5
20	1.7	1.8	1.4	E	1.5	1.4	1.6	2.6	4.1	4.1	4.0	4.1	4.0	4.1	10.0	3.3	2.6	1.8	1.9	1.9	1.6	1.9	1.6	2.0
21	1.9	1.4	E	1.3	E	1.4	1.6	2.1	2.9	4.0	4.0	4.0	5.7[A]	5.2[A]	5.4	4.1	2.6	1.7	1.7	2.3[A]	1.8	1.7	1.7	1.7
22	2.3[A]	1.7	1.3	1.3	E	1.4	1.7	2.2	3.1	3.4	4.0	4.2	4.2	4.0	3.5	3.0	2.3	1.6	1.6	1.9	1.8	1.6	1.6	1.7
23	1.8	1.4	[1.4][A]	1.3	1.3	1.4	1.5	2.1	2.9	3.5	3.9	4.1	4.3	5.5[A]	4.3	3.1	2.7	1.3	1.6	1.7	1.7	1.6	1.7	1.6
24	1.7	1.4	1.3	1.3	E	1.4	1.6	2.1	2.8	3.6	4.0	3.9	4.0	4.0	3.7	2.9	2.5	1.5	1.7	1.6	1.6	1.6	1.6	1.6
25	1.5	1.4	1.3	1.0	1.0	1.3	1.5	2.0	3.0	3.5	3.7	4.0	4.0	3.6	4.1	2.9	2.5	1.6	1.5	1.6	1.6	1.7	1.5	1.6
26	1.7	1.3	1.4	1.3	1.2	1.4	1.6	2.1	2.9	3.4	4.0	4.0	C	C	C	3.1	2.5	1.6	1.6	1.6	1.6	1.7	1.6	1.7
27	1.7	1.5	1.5	E	1.4	1.4	1.6	2.1	2.9	3.7	4.0	4.4	4.0	4.0	3.5	3.4	2.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6
28	1.5	1.4	E	E	1.4	1.4	1.6	2.0	2.8	3.4	3.5	4.1	4.1	4.1	4.0	4.1	2.5	1.7	1.6	1.7	2.2	1.6	1.6	1.7
29	2.0	1.9	1.4	1.4	1.0	1.4	1.7	2.0	2.8	3.4	5.1	4.0	4.4	4.1	4.0	3.4	C	C	C	C	C	C	C	C
30	1.6	1.4	C	E	1.7	1.3	2.9[A]	2.0	2.7	3.4	3.8	4.6	4.5	4.4	3.7	3.1	2.7	1.6	1.6	1.7	1.7	1.6	1.7	1.6
31	1.6	1.5	1.3	1.4	2.8[A]	1.6	1.6	2.0	2.8	[3.4][C]	4.1	4.0	4.1	4.1	3.5	3.0	2.6	2.2	1.7	1.7	1.7	1.6	1.6	1.7
Mean Value	1.7	1.5	1.3	1.3	1.3	1.3	1.7	2.2	2.9	3.5	4.0	4.1	4.2	4.1	4.2	3.2	2.8	1.7	1.7	1.8	1.8	1.6	1.7	1.7
Median Value	1.7	1.4	1.3	E	1.2	1.4	1.6	2.2	2.9	3.5	4.0	4.1	4.1	4.1	3.8	3.0	2.5	1.6	1.6	1.7	1.7	1.6	1.6	1.6
Count	31	31	30	31	31	31	31	30	30	30	31	31	30	30	30	31	30	30	30	30	30	30	30	30

fminF

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K 10

21

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec.1956 | fminE | 135° E Mean Time | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	B	1.7	1.6	1.5	1.7	2.1	2.0	1.7	1.6	1.7	1.8	B	E	E	E	E	E	E
2	E	E	E	E	E	E	E	1.8	1.7	1.7	1.7	2.1	2.1	2.3	1.7	1.7	1.7	1.6	1.5	1.6	1.4	E	E	1.7
3	1.3	1.3	E	E	E	1.4	E	1.7	1.6	1.7	1.8	1.9	1.9	1.7	1.9	1.6	1.9	E	E	E	E	E	E	E
4	E	E	1.3	E	E	E	E	B	2.0	[2.0]C	2.1	2.1	1.8	1.7	1.7	1.7	2.0	1.7	1.6	E	E	E	E	E
5	E	E	1.7	E	1.0	1.7	E	1.7	1.8	1.8	2.1	1.8	1.7	1.9	1.7	1.4	1.7	1.7	1.7	E	E	E	E	E
6	E	E	E	E	1.7	E	E	1.6	1.8	1.9	1.7	2.2	1.9	1.8	1.7	1.7	1.7	1.7	1.6	E	E	E	E	E
7	E	E	E	1.4	1.3	1.4	E	1.7	1.7	2.0	2.0	2.1	2.3	2.5	2.3	2.1	2.0	E	1.6	1.7	1.8	E	E	1.8
8	E	E	E	1.7	E	E	E	1.7	1.7	1.6	1.7	2.1	2.0	2.1	1.7	1.6	1.5	E	1.9	E	E	E	E	E
9	E	E	E	E	E	E	1.7	1.6	1.5	1.6	1.8	2.5	1.8	1.8	1.5	1.6	1.6	E	E	E	E	E	E	E
10	1.6	1.5	1.4	E	E	1.7	E	1.5	1.6	1.7	2.2	1.8	1.7	1.8	2.1	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.8	2.0
11	1.4	E	E	1.8	1.9	1.8	E	1.6	1.7	1.7	1.8	1.7	2.2	1.7	1.6	1.8	1.6	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	1.7	1.6	1.8	2.0	2.1	2.1	2.1	1.8	1.7	1.6	E	1.6	1.6	E	E	E	E
13	E	E	1.3	1.7	E	1.7	E	1.6	1.6	1.5	1.8	2.0	2.1	2.1	1.7	1.6	1.5	1.5	E	E	E	E	1.7	1.6
14	1.8	1.4	E	1.4	1.5	E	1.6	1.6	1.6	1.7	1.8	2.2	2.1	2.0	1.5	1.6	1.4	E	E	1.8	E	E	E	E
15	E	E	1.8	E	E	E	E	1.5	1.5	1.4	1.7	1.9	1.9	2.1	1.7	2.0	1.6	1.6	1.7	1.6	1.6	1.7	1.6	1.7
16	1.6	1.7	E	E	1.7	E	E	1.7	1.7	1.7	2.1	2.1	2.0	1.9	1.8	1.7	1.7	E	E	E	E	E	E	E
17	E	E	E	E	E	1.9	E	1.6	1.6	1.9	2.0	2.8	2.4	2.1	[2.0]B	1.8	1.9	E	E	E	1.7	1.6	1.8	E
18	E	E	E	1.0	1.0	1.4	E	1.7	1.7	2.0	[2.0]B	2.1	2.1	2.2	2.1	1.8	1.8	E	E	E	1.6	1.7	E	E
19	E	E	1.5	1.4	E	E	E	2.0	1.7	1.7	[1.8]C	1.9	2.0	2.0	1.7	1.5	1.9	E	E	1.7	1.7	1.8	E	E
20	E	E	E	E	E	1.7	E	1.8	[2.4]B	2.9	2.4	2.5	2.7	2.5	[2.1]B	1.7	1.9	1.7	1.6	1.7	E	E	E	E
21	1.3	1.8	E	E	1.7	1.7	E	1.4	1.8	2.5	2.6	2.3	2.2	4.0	4.0	2.2	1.7	E	E	1.6	E	1.7	1.7	E
22	1.7	1.6	E	1.7	E	E	E	1.7	1.7	1.8	2.1	2.4	2.5	2.0	1.7	2.0	1.7	1.6	1.6	1.6	1.6	1.7	E	E
23	1.4	1.8	1.3	E	1.8	1.7	1.7	1.6	1.8	1.7	2.4	2.5	4.1	4.0	2.3	2.1	2.0	1.8	E	1.6	1.6	E	E	1.5
24	1.5	2.5	E	1.4	E	E	E	1.7	1.8	2.1	2.4	2.3	2.1	2.7	2.2	1.6	B	E	E	E	1.7	E	E	E
25	E	E	E	E	E	E	E	1.7	1.6	1.8	2.0	2.0	2.1	2.2	1.7	1.8	1.8	1.5	E	2.0	E	1.6	E	E
26	1.6	1.7	E	E	E	E	E	1.6	1.9	1.8	2.0	2.2	C	C	C	2.1	1.9	E	E	E	E	1.8	E	1.6
27	1.7	1.4	E	E	E	E	E	1.6	1.7	1.5	1.6	1.9	1.8	1.7	1.9	1.4	1.4	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	1.6	1.6	1.7	1.9	1.7	1.8	1.7	1.4	1.7	1.6	1.7	E	1.9	1.8	1.8	1.8	1.8
29	1.3	1.4	E	E	1.5	1.7	1.7	1.6	1.5	1.5	[1.9]B	2.3	1.8	1.8	1.8	1.5	C	C	C	C	C	C	C	C
30	1.6	1.8	C	E	E	1.3	1.6	1.6	1.5	1.6	1.6	2.1	1.7	1.8	1.9	1.6	1.6	E	E	1.5	1.6	E	1.7	E
31	1.6	1.4	E	E	E	1.3	1.7	1.6	1.6	[1.6]C	1.5	2.5	1.9	1.9	1.7	1.7	1.6	1.6	1.7	E	E	E	E	1.7
Mean Value	1.5	1.6	1.5	1.5	1.5	1.6	1.7	1.7	1.7	1.8	1.9	2.1	2.1	2.1	1.9	1.7	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.7
Median Value	E	E	E	E	E	E	E	1.6	1.7	1.7	1.9	2.1	2.0	2.0	1.7	1.7	1.7	E	E	E	E	E	E	E
Count	31	31	30	31	31	31	30	30	31	31	31	31	30	30	30	31	29	29	30	30	30	30	30	30

fminE

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' E

Dec. 1956

yp F2

135° E Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	120	90	90	180	120^{H}	90	110	80	120	70	80	110	100^{H}	110	110	100	140	120	130	90	120	130	130	100
2	130	120	90	120	80	130	120	110	90	130	100	90^{H}	100^{H}	110	110^{H}	120^{H}	140	100	110	110	120	100	110	100
3	110	110	90	130	90	110	180	90	90	130	100	110	110	120	110	100	[100]^{C}	110	[100]^{C}	(80)^{P}	90	70	C	C
4	C	C	90	100	100	90	C	C	C	C	100	110	100	110^{H}	130^{H}	140	120	100	140	100	120	120	120	100
5	80	90	80	120	100	120	80	100	60	110	110	100	90	130^{H}	150^{H}	100	90	90	130	100	130	120	110	90
6	100	90	110	80	120	100	90	50	120	80	90	80	90^{H}	110^{H}	120	150	130	120	100	100^{P}	130	120	100	120
7	90	140	110	120	90	100	100	120	90	80	90	80^{H}	110	110^{H}	140^{H}	150	120	130	100	100	70	120	100	100
8	110	90	110	110	110	110	110	90	80	90	70	90	80	90^{H}	100	90	100	80	100	100	70	140	120	110
9	110	100	80	90	80	90	80	70	80	60	90	100^{H}	130	90	100	80	90	70	90	80	90	100	140	140
10	100	100	110	80	90	80	100	70	70	80	120	110	100^{H}	110	110^{H}	120	80	90	90	90	100^{P}	120	110	120
11	120	120	140	110	100	100	150	120	100	100	100	110^{H}	100	120^{H}	110^{H}	120	130	90	80^{P}	100	70^{P}	90	100	90
12	100	90	70	50	90	100	110	100	120	90	60	90	90	70	80	80	90	90	80	80	140	100	100	80
13	70	80	100	100	80	70	100	80	100	70	80	100^{H}	110^{H}	110^{H}	90	100	60	60	120	90	80	100	110	100
14	130	80	100	120	100	100	90	80	60	60	70	80^{H}	90^{H}	110^{H}	100^{H}	100	90	80	80	100	90	120	110	140^{F}
15	100	110	100	90	100	70	110	80	70	130	80	110	130	80^{H}	90	70	90	90	110	120	120	110	120	150
16	100	100	90	110	100	130	120	80	100	110	120	90^{H}	140	130	110	110	110	100	120	100^{H}	130	100	110	140
17	110	90	100	90	130	110	90	90	100	70	100	130	140	130	120	110	110	110	90	80	100	(90)$^{?}$	120	160
18	100	110	100	110	130	80	120	70	100	80	60	70^{H}	100^{H}	100	90	120	90	100	100	100	70	100	110	120
19	90	90	80	130	90	110	100^{P}	70^{P}	90	60^{2}	[80]^{C}	110	90^{H}	110^{H}	80	80	110	100	80	90	110	110	100	100
20	80	110	90	100	90	70	130	90	90	80	110	120	130	90^{H}	80	100	110	100	110	70	90	100	100	90
21	90	120	110	120	100	100	100	50	90	90	90	120	80	130	110^{H}	110	90	110	100	100	120	120	100	120
22	110	(80)$^{?}$	90	90	120	150	80	120	70	60	80	100	90	90^{H}	100^{H}	90^{H}	90	120	110	70	100	150	100	100
23	120	110	110	80	90	100	90	80	60	70	90	70	90^{H}	80^{H}	110	120^{P}	120	90	80	130	120	130	140	80
24	100	90	90	80	70	120	60	70	60	60	90	90	100^{H}	100	100^{H}	80^{H}	90	80	90	110	110	100	120	130
25	100	110	80	100	100	100	80	60	60	80	90	100^{H}	110	80^{H}	100	80	110	100	100	100	120	160	120	100
26	110	90	120	110	80^{HP}	80	100	70	60	90	110	80^{H}	C	C	C	100	100	90	100	90	110	100	120	110
27	100	60	80	110	110	80	100	50	60	60	80	100	70^{H}	70^{H}	100^{H}	110	80	100	70	100	80	90	140	140
28	100	90	110	130	150	70	120	100	80	130	90	130	120^{H}	100	120	130	110	90	100	100	150	130	110	130
29	130	100	90	90	190^{H}	100	90	90	160	70	80	80^{H}	100^{H}	110^{H}	90^{H}	90	C	C	C	C	C	C	C	C
30	70	130	[100]^{C}	80	80	130	A	50	60	80	80	110^{H}	90^{H}	130	90	80	70	90^{H}	140	70	140	130	140	90
31	100	140	140	130	90	100	110	80	70	[80]^{c}	100	140	120	130^{H}	120	80	140	120	80	120	110	100	110	100
Mean Value	100	100	100	110	100	100	100	80	90	90	90	100	100	110	110	100	100	100	100	100	110	110	110	110
Median Value	100	100	100	110	100	100	100	80	80	80	90	100	100	110	100	100	100	100	100	100	110	110	110	100
Count	30	30	31	31	31	31	29	30	30	30	31	31	30	30	30	31	30	30	30	30	30	30	29	29

yp F2

Sweep 1.0 Mc to 17.2 Mc in 2 min ☐ Manual ☒ Automatic

K

23

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | foF2 | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	7.4	6.6	6.6	4.8	4.0	3.9	4.4	7.8	12.5	14.5^{H}	14.5^{J}	14.2^{H}	15.0^{H}	14.9$^{J}_{H}$	14.4^{H}	14.4^{H}	14.2^{H}	13.0^{H}	12.2^{H}	11.5	11.2	10.0	9.2	8.4
2	8.0	7.8^{V}	6.6	6.6	4.5	2.5^{H}	2.8	7.0	13.0	14.4^{H}	14.4	15.3^{H}	15.4$^{J}_{H}$	14.6$^{J}_{H}$	[14.4]$^{S}_{H}$	14.3^{H}	13.3^{H}	12.5^{H}	11.2^{H}	9.9^{H}	9.9	8.3	6.4	6.2^{H}
3	6.5	6.6	5.7	4.2	3.8	4.0	5.4	8.5	13.6	13.5^{H}	13.6^{H}	13.7^{H}	13.8^{H}	13.6^{H}	13.0^{H}	12.7^{H}	12.0^{H}	11.6^{H}	10.9^{H}	9.0	7.7	8.0	7.7	7.0
4	6.5	6.0^{H}	5.4^{H}	5.7	5.3^{H}	3.9	3.9	6.9	12.6	14.0	14.2^{H}	14.3^{H}	14.7^{H}	14.8^{H}	15.0^{H}	14.5^{H}	14.6^{H}	14.3^{H}	13.7^{H}	13.4	13.8	13.4	9.6	7.2
5	7.0	6.0	5.1	4.6	4.1	3.9	4.1	7.3	10.9	13.1	13.1^{H}	13.2^{H}	13.0^{H}	13.2^{H}	12.5^{H}	12.4^{H}	12.0^{H}	11.0$^{J}_{H}$	10.6	9.5	8.8	8.1^{H}	7.1	6.1
6	6.2	6.2	5.3	5.2	5.6	5.1	5.9	9.6^{P}	13.5	14.0^{H}	14.0^{H}	14.1^{H}	14.2^{H}	13.9^{H}	14.4$^{P}_{H}$	14.2^{H}	13.7^{H}	13.0	12.4^{H}	10.4	9.9	8.7	7.5	6.6
7	6.1	5.3	4.8^{V}	4.7	5.3^{V}	5.5$^{S}_{H}$	5.0^{V}	7.5^{S}	11.3	14.1	14.2^{H}	14.3$^{P}_{H}$	14.3^{J}	14.4^{H}	14.7^{H}	14.5^{H}	13.8$^{J}_{H}$	14.3	13.3	13.6^{H}	11.3	10.8	8.8	C
8	C	C	C	C	C	C	C	C	C	14.0^{H}	14.5	14.0^{H}	14.1^{H}	14.2^{H}	14.6^{H}	14.2^{H}	15.4$^{J}_{H}$	13.7^{H}	12.5^{H}	12.8	12.3	10.8^{J}	7.1	7.0
9	6.2	6.0	5.3	5.0	5.0^{H}	4.3	4.3	7.3	11.6	14.0^{H}	11.8	12.6^{H}	13.6^{H}	14.2^{H}	13.7^{H}	14.2^{H}	14.5^{H}	14.2	13.6	13.2	13.5	12.7	9.0	6.5^{J}
10	5.6	5.6	6.3	6.0	5.2	4.1	3.6	6.7	11.5	12.5	12.4	12.5^{H}	13.8^{H}	14.0$^{J}_{H}$	14.0$^{J}_{H}$	14.2^{H}	13.5^{H}	13.0	12.4	12.3	11.8	9.9	9.0	8.1^{J}
11	7.5^{H}	8.1^{H}	7.6^{S}	7.3^{H}	7.2^{H}	7.0^{H}	6.2^{H}	9.0	12.7	C	C	14.0$^{J}_{H}$	14.2^{H}	13.9^{H}	14.3^{H}	14.6^{H}	14.0$^{J}_{H}$	13.9	13.0	12.4	12.1	10.0	7.8	6.0^{H}
12	5.1	5.2	4.6^{H}	4.5	4.5	3.5^{H}	3.5	6.5	11.2	13.4	14.0^{H}	12.6^{H}	13.0^{H}	13.1^{H}	13.5^{H}	14.2^{H}	13.6^{H}	13.0^{H}	12.9	12.5	10.6	9.4^{H}	7.1	5.5^{J}
13	4.3^{S}	4.4	4.1	3.5	3.1^{J}	3.5	3.7	6.8	11.5	13.0^{H}	14.5^{H}	13.4^{H}	12.8^{H}	13.5^{H}	C	C	12.3^{H}	11.5	10.6	10.2	9.0^{H}	9.0	8.6	6.0
14	5.1	5.4^{H}	5.5	4.8	4.7	3.7^{H}	3.9	6.0	12.0	14.0	13.8^{H}	13.3^{H}	14.1^{H}	14.1^{H}	14.5^{H}	14.3^{H}	13.5^{H}	13.0	11.0^{H}	9.4^{H}	9.7	10.6^{J}	8.8	7.2^{H}
15	7.8	6.7	5.7^{H}	4.7	3.8	3.1^{H}	3.0	6.2	11.0	13.0	13.7^{H}	12.7^{H}	13.6^{H}	13.0^{H}	12.0^{H}	12.0^{H}	11.2^{H}	11.0^{H}	9.8	8.9^{H}	9.3	9.5	8.7	7.6
16	6.6^{H}	6.1	5.4	5.2^{H}	4.8	4.5	4.4	6.3	10.4	13.6	14.2	13.5^{H}	13.6^{H}	14.2^{H}	14.1^{H}	14.5^{H}	14.1	13.6^{H}	12.9	10.4^{H}	9.8$^{P}_{H}$	9.4	8.6	7.0
17	5.7^{H}	5.0^{H}	4.7	4.1	3.7^{F}	3.6^{F}	3.5	6.0	10.7	13.5^{H}	14.4$^{J}_{H}$	14.2$^{J}_{H}$	14.3$^{J}_{H}$	14.2^{H}	14.6	14.4^{H}	14.0^{H}	13.1^{H}	11.5	10.2^{H}	10.5	10.7	8.6^{H}	7.1
18	6.2	6.0	6.1	6.0	4.9^{H}	3.9	3.3	5.9	9.9	12.4	13.5^{H}	13.8^{H}	13.4^{H}	13.0^{H}	13.5^{H}	13.6^{H}	13.0	11.0^{H}	9.5^{H}	7.6^{H}	8.2	9.0	7.6	6.3
19	5.1^{H}	5.3	4.8	4.8	4.6	4.6^{H}	5.3	7.5	11.3^{H}	13.4	13.5	11.6^{H}	13.4^{H}	12.6^{H}	12.5^{H}	13.5^{H}	12.0^{H}	11.3	9.4	7.7^{S}	7.5	7.9	7.5	5.4^{H}
20	4.6^{H}	4.7	4.0	3.7	3.4^{V}	3.4^{V}	3.6	7.0	12.0	13.5^{H}	13.8^{H}	13.6^{H}	14.0^{H}	13.7^{H}	13.2	12.3^{H}	11.9^{H}	10.4	9.4^{H}	7.9^{H}	8.1	7.7	6.9	6.1
21	6.0	5.8	5.3	4.4	4.0^{H}	3.7	3.9	6.2	10.6^{H}	12.2	13.4^{H}	13.1^{H}	13.7^{H}	13.7^{H}	13.6^{H}	13.6^{H}	13.4^{H}	12.8	10.5^{H}	8.5	8.7	8.2^{H}	7.2	6.0
22	5.2	5.0	4.4^{H}	5.0	4.9	3.4	2.9	5.4	9.4	12.5	13.3	13.8^{H}	14.5^{H}	15.0^{H}	15.2^{H}	14.5^{H}	14.3^{H}	14.0^{H}	13.0	10.0	9.0	9.4	7.0	5.3
23	4.6^{H}	4.8^{H}	5.2^{H}	5.1	5.8	4.1	3.3	6.0	10.9	10.9^{H}	13.6^{H}	12.0	11.9^{H}	12.8^{H}	13.1^{H}	13.1^{H}	12.8	13.0^{H}	10.3^{H}	9.8	9.7	8.6	6.6	6.3^{H}
24	6.5	6.5	6.4^{V}	4.9^{V}	4.4$^{V}_{H}$	3.9^{H}	4.1	7.0	12.4	12.4^{H}	13.0	11.9^{H}	13.5^{H}	13.2^{H}	13.1^{H}	13.0^{H}	12.5^{H}	11.7^{H}	10.7	9.8	9.3	8.3	8.1	7.3^{H}
25	6.3	6.1^{H}	5.5	5.1	4.7	4.2	3.7	6.7	10.8	12.0^{H}	13.0^{H}	13.0^{H}	13.1^{H}	12.9^{H}	13.3^{H}	12.8^{H}	11.4^{H}	11.1	9.8^{H}	9.1	7.5	7.3	6.8	6.0
26	5.7	6.5	6.5	4.4	4.0	4.0	4.5	7.5	10.5	14.0	12.9	12.0^{H}	12.5^{H}	12.4^{H}	12.4^{H}	11.8^{H}	11.1^{H}	9.9^{H}	9.4^{H}	8.3	8.2	6.8	6.6	6.7
27	5.6	4.5	4.2	3.4$^{F}_{H}$	3.8$^{F}_{H}$	[3.7]^{F}	3.6^{F}	6.1	10.4^{H}	13.0^{H}	13.5^{H}	13.1^{H}	12.8^{H}	12.9^{H}	13.7^{H}	13.6^{H}	13.6^{H}	12.6^{H}	11.7^{P}	9.4^{H}	9.5	9.8	7.0	5.7
28	5.4^{H}	5.2^{H}	4.8	3.7	3.5	4.0	5.2^{P}	7.4	12.3	12.8	13.0^{H}	12.9^{H}	13.0^{H}	12.4^{H}	11.9^{H}	11.1^{H}	11.4^{H}	10.7^{H}	8.8	9.5	8.3	7.3	6.3	5.3^{H}
29	5.4^{H}	[5.4]^{S}	5.3	5.4	3.8^{H}	4.5	4.3	7.2	11.4	12.3	12.0	11.6^{H}	11.6^{H}	12.3^{H}	11.4^{H}	11.5^{H}	10.5	10.0^{H}	8.7	8.8	8.4	8.7	6.6$^{P}_{H}$	5.4^{H}
30	4.7	5.0	4.4	5.4	5.3	3.8	3.0	5.5	11.0	14.0	13.4	11.6^{H}	12.5^{H}	12.6^{H}	12.5^{H}	11.0^{H}	11.2^{H}	11.0	8.6	8.3	6.9^{H}	7.0	6.9	6.4
31	6.5	6.4	7.6	5.3^{H}	4.9	5.0	4.9	5.9	10.4	12.3^{H}	13.0^{H}	12.0	11.9^{H}	11.6^{H}	12.2^{H}	11.6^{H}	11.0	10.5	8.8^{H}	8.1	8.1	7.0^{H}	6.0	5.4
Mean Value	6.0	5.8	5.4	4.9	4.6	4.1	4.1	6.9	11.4	13.2	13.5	13.2	13.5	13.5	13.5	13.4	12.9	12.2	11.1	10.1	9.6	9.1	7.6	6.4
Median Value	6.0	5.9	5.3	4.8	4.6	3.9	3.9	6.8	11.3	13.4	13.6	13.2	13.6	13.6	13.6	13.6	13.3	12.6	10.9	9.8	9.3	9.0	7.5	6.3
Count	30	30	30	30	30	30	30	30	30	30	30	31	31	31	30	30	31	31	31	31	31	31	31	30

foF2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

Y 1

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | h'F2 | 135° E Mean Time | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	250	240	220	230	350	300	260	240	240^{H}	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	220^{H}	240	240	240	240	240
2	260	250	250	240	200	190^{H}	350	290	250	240^{H}	240	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	240^{H}	250^{H}	240^{H}	240^{H}	240	240	230	270^{H}
3	260	240	240	270	300	340	260	290	240	240^{H}	230^{H}	240^{H}	240^{H}	240^{H}	220^{H}	240^{H}	240^{H}	240^{H}	240^{H}	230	240	240	240	250
4	240	250^{H}	290^{H}	270	240^{H}	210	290	290	240	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	240^{H}	240^{H}	220^{H}	240	240	220	210	240
5	280	250	260	290	300	280	270	270	240	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	250	260^{A}	240	230^{H}	250	290
6	290	300	300	340	270	240	320	270	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240	240^{H}	220	240	240	240	240
7	250	270	340	340	240	220^{H}	290	260	240	240	240^{H}	240^{H}	240	240^{H}	240^{H}	250^{H}	230^{H}	240	240	240^{H}	220	210	240	C
8	C	C	C	C	C	C	C	C	C	240^{H}	240	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	260^{H}	230^{H}	200^{H}	240	230	230	240	260
9	270	270	250	270	270^{H}	260	280	270	240	240^{H}	230	230^{H}	230^{H}	240^{H}	230$^{A}_{H}$	260^{H}	250^{H}	240	220	230	220	210	210	240
10	280	310	270	240	240	220	250	260	240	240	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250	240	250	250	240	240	300
11	300^{H}	280^{H}	250	270^{H}	240^{H}	250^{H}	270^{H}	280	250	C	C	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250	210	240	240	220	230	200^{H}
12	270	250	250^{H}	260	250	240^{H}	290	280	240	240	240^{H}	220^{H}	240^{H}	240^{H}	240^{H}	250^{H}	240^{H}	240^{H}	240	220	240	240^{H}	210	250
13	300	220	290	350	290	330	350	290	240	250^{H}	240^{H}	240^{H}	240^{H}	240^{H}	C	C	240^{H}	240	220	250	240^{H}	240	220	220
14	320	340^{H}	290	280	220	300^{H}	310	340	250	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240	240$^{A}_{H}$	240^{H}	250	240	220	240^{H}
15	260	240	250^{H}	230	230	260^{H}	290	290	240	240	240^{H}	240^{H}	240^{H}	250^{H}	220^{H}	240^{H}	250^{H}	240^{H}	220	220^{H}	250	240	240	240
16	260^{H}	250	290	270^{H}	270	250	270	270	240	240	250	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	250	240^{H}	210	200^{H}	240$^{A}_{H}$	250	240	220
17	240^{H}	270^{H}	280	250	250	300^{F}	300	290	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	300	250^{H}	240^{H}	240^{H}	200	230$^{A}_{H}$	250	230	200$^{A}_{H}$	200^{A}
18	250	290	250	240	210$^{A}_{H}$	240	300	270	240	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	240	210^{H}	240^{H}	230^{H}	250	240	240	240
19	240^{H}	270	280	270	270	300^{H}	300	260	240^{H}	240	240	240^{H}	240^{H}	240^{H}	240^{H}	270^{H}	240^{H}	250	200	220	240	240	240	230^{H}
20	290^{H}	280	280	270	320	350	310	270	250	250^{H}	240^{H}	240^{H}	240^{H}	(270)$^{A}_{H}$	[260]^{B}	240^{H}	250^{H}	240	200$^{A}_{H}$	230^{H}	240	240	240	250
21	290	270	240	250	290^{H}	250	280	290	240^{H}	240	240^{H}	240^{H}	240^{H}	(270)$^{A}_{H}$	240^{H}	230^{H}	250^{H}	240	200^{H}	210	240	210^{H}	240	250
22	260	270	290^{H}	260	240	240	320	250	220	240	240	220^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	210	200	240	240	220	240
23	300^{H}	300^{H}	280^{H}	260	260	200	250	250	240	220^{H}	250^{H}	240	240^{H}	240^{H}	250^{H}	250^{H}	250	230^{H}	200^{H}	240	220	240	240	270^{H}
24	270	240	250	220	250^{H}	290^{H}	300	260	230	240^{H}	240	240^{H}	240^{H}	240^{H}	230^{H}	250^{H}	250^{H}	220^{H}	240	240	240	220	240	250^{H}
25	250	260^{H}	260	250	250	250	300	250	240	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	250	200^{H}	240	240	250	260	340
26	400	320	240	210^{A}	290	400	330	250	250	250	240	240^{H}	250^{H}	240^{H}	240^{H}	250^{H}	240^{H}	240^{H}	230^{H}	250	240	210	270	250
27	250	250	250	250$^{A}_{H}$	290^{H}	290	300	260	240^{H}	240^{H}	240^{H}	240^{H}	230^{H}	240^{H}	250^{H}	250^{H}	250^{H}	240^{H}	210	240^{H}	240	220	230	250
28	300^{H}	280^{H}	250	310	400	380	290	310	240	240	250^{H}	240^{H}	240^{H}	240^{H}	240^{H}	240^{H}	250^{H}	240^{H}	250	290	240	240	240	280^{H}
29	380^{H}	400	320	200^{A}	250^{H}	350	340	290	240	240	240	240^{H}	240^{H}	250^{H}	240^{H}	250^{H}	250	250^{H}	220	240	240	250	220^{H}	270^{H}
30	270	310	320	300	250	220	350	300	250	240	240	230^{H}	230^{H}	240^{H}	240^{H}	230^{H}	250^{H}	250	270^{A}	250	220^{H}	250	250	290
31	290	250	260	330^{H}	290	250	230	250	250	240^{H}	240^{H}	240	240^{H}	240^{H}	250^{H}	250^{H}	250	240	240^{H}	270	240	220^{H}	240	270
Mean Value	280	270	270	270	260	280	300	280	240	240	240	240	240	240	240	250	240	240	220	240	240	230	230	250
Median Value	270	270	260	260	250	260	300	270	240	240	240	240	240	240	240	250	240	240	220	240	240	240	240	250
Count	30	30	30	30	30	30	30	30	30	30	30	31	31	31	30	30	31	31	31	31	31	31	31	30

h'F2

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

Y 2

25

The Radio Research Laboratories
Koganei-machi, Kitatama-gun, Tokyo, Japan

IONOSPHERIC DATA

Dec. 1956 | fEs | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' E

135° E Mean Time

Day	00	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	2.4	2.3F	2.3	E	E	2.4	B	G	G	G	G	G	G	G	G	G	3.8	3.8	2.3	2.3	E	E	2.4
2	2.4	3.6	3.7	2.5	2.4	E	E	3.1	G	G	G	3.9	G	G	G	6.5	G	G	E	2.3	E	E	2.4	E
3	2.3	2.3	E	3.8	3.6	2.5	2.4	2.5	G	G	4.0	4.0	G	5.9Y	G	G	G	G	2.4	2.4	2.7	2.4	2.3	3.3
4	2.4	2.4	2.5	2.4	2.3	2.4	2.3	2.4	G	6.2Y	6.5	8.9Y	8.6Y	8.9	4.1	G	G	3.8	2.4	2.4	2.2	2.2	2.3	2.4
5	3.1	2.3	2.4	2.5	2.3	2.2	2.3	2.3	G	G	G	G	5.9	G	G	G	5.9	5.8	3.9	3.7	2.5	2.3	2.3	2.3
6	E	E	E	E	2.3	2.3	E	2.4	G	5.9Y	G	G	5.7	G	6.4Y	G	3.6	4.8	3.2	2.3	2.3	2.5	2.3	2.1
7	2.3F	2.3	2.3S	3.5	2.3	2.3	2.3	3.2F	3.5F	G	G	G	G	G	G	G	G	2.4	3.0	3.1	2.4	2.4	2.4	C
8	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G	G	2.3	E	2.4	2.4	2.3	E	2.3
9	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	G	6.2Y	5.9Y	G	G	G	5.9	6.5	G	2.3	2.3	2.6	3.2	E	2.3F	2.3
10	2.3	2.3F	2.3	2.5	2.1	2.5	2.3	2.3	G	5.5	5.5	6.5	8.9Y	8.9	8.9	G	5.9Y	3.2	2.3	3.5	2.3	3.6F	4.0	2.3
11	3.2	3.1	2.3	E	3.1	3.2	2.3	2.3	G	C	C	G	G	G	G	G	G	3.7	2.4	2.3	E	2.4	2.3F	2.3
12	E	E	2.3	E	3.3	2.3	2.3	B	2.8	G	G	4.9	6.5	6.6	8.8	G	4.0	5.9	E	E	E	E	E	E
13	E	E	E	E	E	E	E	1.9	G	G	G	G	G	G	C	C	6.7	3.1	2.3	E	2.4	E	E	2.4
14	E	E	2.4	2.4F	2.3	E	2.3	3.5	G	4.4	G	G	6.4	5.9	G	G	G	3.2	3.4	2.4	E	E	E	E
15	E	2.4	2.4	2.3	2.3	2.3	E	S	G	G	6.5	G	G	G	G	G	G	G	3.3	3.2	3.2	2.6F	2.3	E
16	E	E	2.3	E	E	E	2.4	S	G	4.0	G	5.4	4.7	5.9	4.6	G	3.5	3.2	2.3	2.4	2.5	2.5	2.5	2.4F
17	2.4	E	E	2.2	2.7	2.5	2.5	2.3	G	6.5	G	G	G	G	B	3.8	5.7	2.4	2.3	3.4	4.3	2.3	3.8	3.4F
18	2.3	E	2.3	2.3	2.7F	4.5	4.9	3.5	3.3	3.8	G	G	5.9	G	G	G	G	4.5	3.6	2.5	2.4	2.4	S	S
19	2.4F	2.4F	2.4	S	2.3	2.4	S	3.2	3.4	4.0	G	6.4	G	6.4	G	G	G	G	2.4	2.4	2.4	S	2.3S	2.3
20	2.6	E	3.2F	2.3F	2.5	E	E	4.6Y	G	G	5.9Y	5.1	4.9	7.4	B	G	6.2	6.5	4.3	3.2	2.3	2.3FS	S	E
21	S	S	S	3.8	3.8	S	3.1	2.4	G	G	G	G	5.5	7.5	8.9	G	G	G	E	E	2.2	2.2	S	S
22	2.2	2.1	3.4	3.0	S	2.3	2.1	2.4	7.2	G	5.1	5.9	G	8.6	G	4.0	G	G	2.5	2.7	2.4	S	2.1	2.4
23	2.3	E	2.8F	2.4	2.4	S	S	2.3	G	3.4	G	G	6.6	5.1	G	8.9	3.6	3.5	3.4	5.9	3.3	3.2	3.2	2.7
24	2.5F	3.9F	2.3	3.0F	2.8F	4.0F	2.5	2.3	G	3.5	G	G	G	G	G	G	G	G	2.4	2.5	2.4	2.4	2.4	S
25	3.4	2.3	2.4	E	E	2.3	2.1	2.6	G	3.5	G	5.8	6.5	6.5	6.2	G	G	G	E	S	S	E	S	S
26	2.4	2.4	2.4	4.2	3.1	2.4	2.3	2.4	3.7	G	G	6.5	G	G	B	G	G	2.5	E	E	E	E	E	E
27	E	E	E	7.0	5.9F	5.9F	2.5	B	G	G	4.0	5.1	5.9	G	4.1	G	3.1	G	3.0	2.2	E	E	E	E
28	E	E	E	2.3	2.3	E	2.3	2.3	G	4.0	4.1	5.9	G	G	G	G	4.8	3.3	2.7	2.4	2.4	2.4	2.4	S
29	2.4	2.4	2.6	3.2S	4.4	2.8	2.4	2.6	3.2	3.8	B	G	G	5.2	3.9	4.8	4.2	3.0	2.4	2.9	2.3	2.3	S	S
30	E	2.4	2.4	2.4F	2.4F	2.3	2.3	2.4	G	G	9.0Y	6.5Y	G	G	6.7	3.8	3.8	4.1	4.2	3.8	3.8	2.3	S	S
31	2.4	S	2.4	S	S	>2.9	2.4	2.3	3.5	5.9	G	G	G	5.2	5.9	8.0	5.3	4.8	5.0	3.5	3.4	S	3.0	S
Mean Value	2.5	2.5	2.5	2.9	2.8	2.8	2.5	2.6	3.8	4.7	5.7	5.8	6.3	6.7	6.2	5.8	4.7	3.7	3.0	2.9	2.7	2.5	2.6	2.5
Median Value	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.4	G	G	G	G	G	G	G	G	G	3.1	2.4	2.4	2.4	2.3	2.3	2.3
Count	29	28	29	28	28	28	28	25	30	30	29	31	31	31	27	30	31	31	31	30	30	28	25	22

fEs

Sweep 1.0 Mc to 22.0 Mc in 1 min ☐ Manual ☒ Automatic

Y 3

SOLAR RADIO EMISSION

DEC. 1956

Observing Station: HIRAISO

Frequency: 200 Mc/s.

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

Time in U.T.

Daily Data

Date	Steady Flux		
	00-03	03-06	Daily Averages
1	11	13	12
2	7	7	7
3	16	10	13
4	9	6	7
5	9	8	8
6	(5)	(5)	(5)
7	(6)	(6)	(6)
8	(6)	(7)	(7)
9	(7)	(7)	(7)
10	-	-	-
11	-	-	-
12	-	-	-
13	-	-	-
14	(11)	(14)	(13)
15	11	14	13
16	-	-	(6)
17	14	23	17
18	20	16	18
19	19	23	21
20	35	48	41
21	184	211	195 *
22	44	59	52
23	107	260	184 *
24	94	49	71
25	51	37	44
26	25	22	23
27	24	26	25
28	14	8	11
29	71	32	53
30	13	28	21
31	16	18	17

* ... noise storm: 21st, all day
23rd, 0400 to sunset

Outstanding Occurrences

Date	Starting Time	Duration	Type	Peak Flux	Time
Nov. 30	2208	30s	SD	300	-
	2209	30s	SD	> 1000	-
	2210-30s	30s	SD	320	-
Dec. 1	0150	1m	SD	260	-
	0152	1m	SD	460	-
	0251	instant	SD	800	-
3	0203-?	2m	SD	540	0203-20s
4	0544	instant	SD	970	-
5	0442-30s	30s	SD	490	-
9	0219-00s	40s	SD	370	-
17	0300	40s	SD	850	-
18	0315	30s	SD	810	-
22	0610	2m10s	CA	> 1000	0610
				> 1000	0611
28	2242-30s	1m20s	SD	700	2242-?
30	0333	40s	SD	850	-
	0458	1m	CD	850	-
	0459-50s	1m	CD	650	-
31	0034	1m	CD	690	-

IONOSPHERIC DATA IN JAPAN FOR DECEMBER 1956
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