ION. ANT.—4

IONOSPHERIC DATA AT SYOWA BASE (ANTARCTICA)

August 1960—January 1961

Issued in February 1968

Prepared by

THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

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CONTENTS

MAIN CHARACTERISTICS OF THE IONOSONDE USED AT SYOWA BASE

Item	Specification
Frequency Range	1–20 Mc/s
Transmitting Power	10 kW (peak value)
Duration of Sweep	30 sec
Transmitted Pulse width	100 μ sec (variable)
Recurrence Frequency of Transmitted Pulse	50 c/s (by power frequency)
Frequency Scale	Every 1 Mc/s
Height Range	1100 km
Height Scale	Every 100 km
Total Receiver Gain	140 db
Noise Figure	About 9 (at 5 Mc/s)
Time Constant of Differential Circuit	50 μ sec
Recording Method	35 mm film running and 16 mm movie picture
Power Supply	100 V AC, 3 kVA
Transmitting Antenna	20 m high vertical delta terminated by 600 Ω
Receiving Antenna	15 m high vertical delta terminated by 600 Ω

SYMBOLS AND TERMINOLOGY

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

Terminology

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

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

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

$h'F2$ — 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.

$h'E$ — The minimum virtual height, * of the normal E layre taken as a whole.

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

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

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

b. Qualifying Symbols

Used as a preceeding symbol on monthly tabulation sheets.

D	*greater than*.....
E	*less than*.....
I	Missing value has been replaced by an interpolated value.
J	Ordinary component characteristic deduced from the extraordinary component.
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U	Uncertain or doubtful numerical value.
Z	Measurement deduced from the third magnetoionic component.

c. Description of Standard Types of E_s

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

l — 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 thich layer included in the E layer tables: f_0E, $h'E$) by the lack of group retardation in the F traces at corresponding frequencies.

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

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

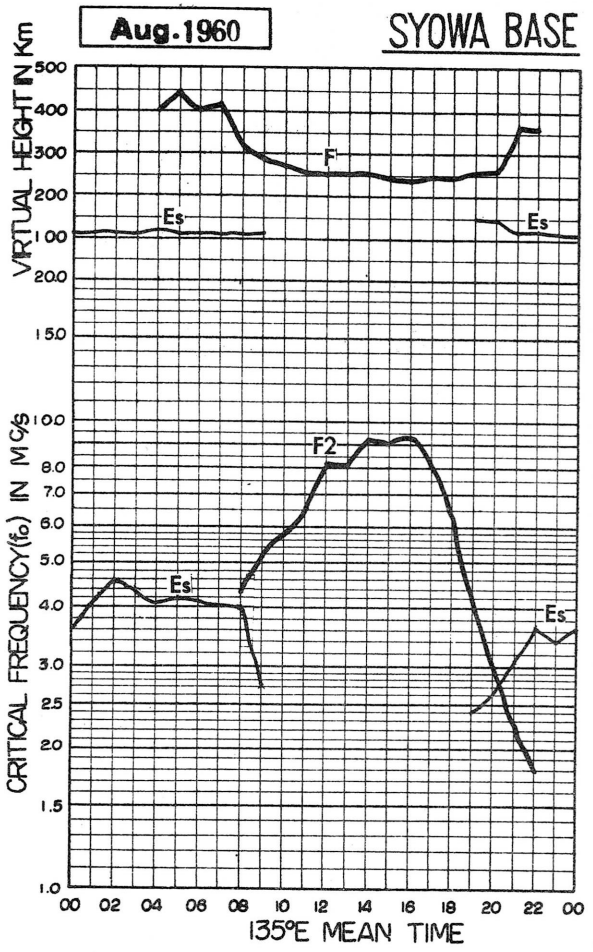
f — An E_s trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat E_s traces observed in the daytime are classified according to their virtual height: *h* or *l*.

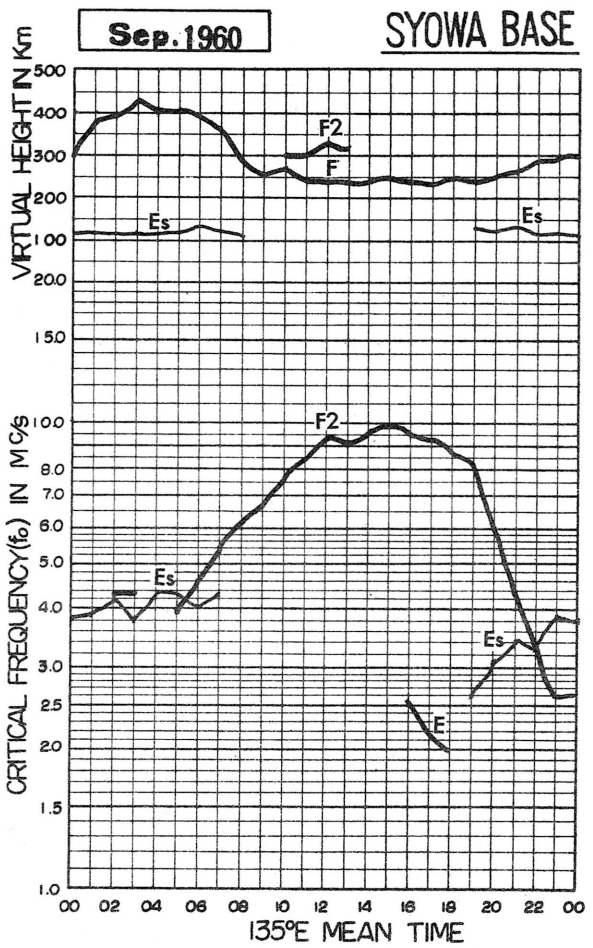
n — An E trace which cannot be classified into one of the standard types. This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.

d. Multiple Reflections from E_s

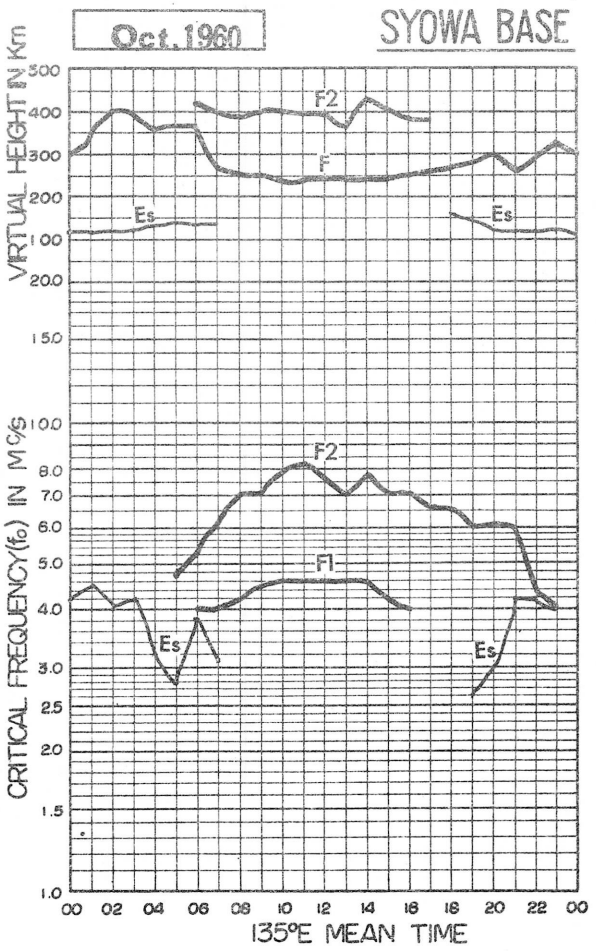
When the ionogram shows the presence of multiple reflections from E_s, the number of traces seen should be recorded after the letter indicating the type.

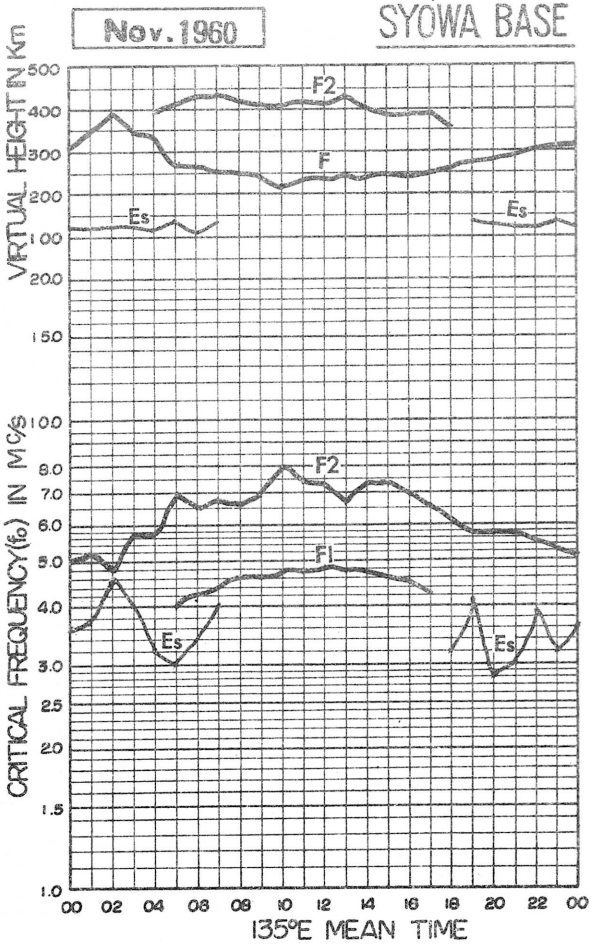
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



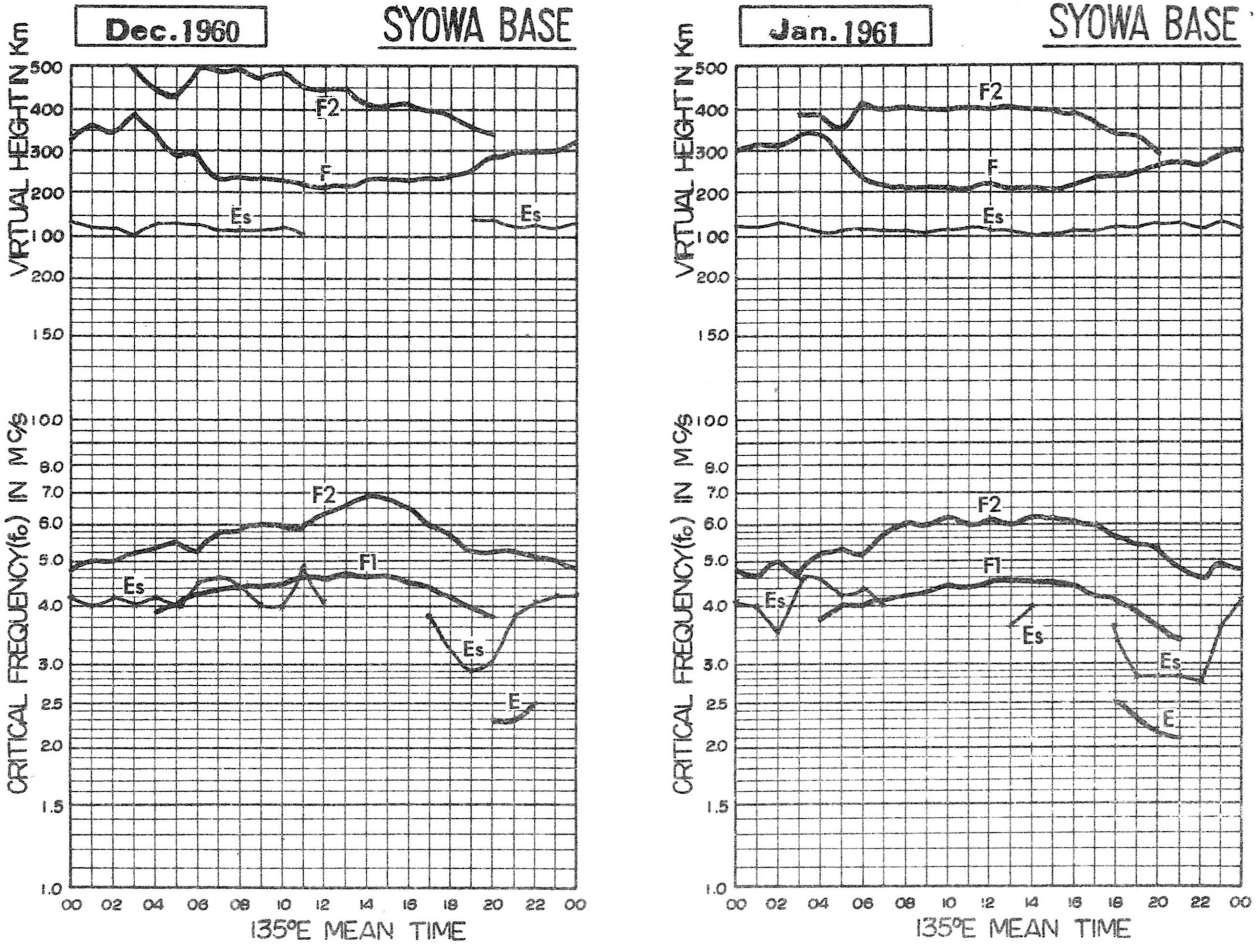


IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: SYOWA BASE

Aug. 1960

45° E Mean Time (G.M.T. +3h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	24	24	25F	23F	23F	41F	47F	35F	42F	43F	43F	46F	32	30F	31	30F	33	32F	24F	24F	21F	23F	18	24
	CNT	3	2	3	2	4	6	6	4	10	10	20	19	15	21	18	20	20	17	12	15	7	7	7	6
	Q R	16		63		89	84	98	11	89	116	210	117	23	27	19	23	24	21	42	26	69	86	10	10
foF1	MED														27	27									
	CNT														1	1									
foE	MED	260	300	260		210				163	190		240	220	220	220	198	170		170	201	260	244	224	260
	CNT	3	3	1		1				1	2		1	1	1	1	2	3		1	1	2	2	4	5
foEs	MED	26	361	46	44	40	42	41	40	40	37	38	26	26	20	24	29	21	21	22	24	26	21	27	31
	CNT	28	20	21	28	25	26	24	22	14	10	2	1	1	2	3	5	5	4	3	6	12	13	21	27
	Q R	18	19	24	19	29	17	17	20	24						28			10	07	08	07	07	22	28
f-min	MED	140	140	170	208	210	208	260	230	210	230	230	270	200	230	230	240	220	240	200	130	160	140	160	140
	CNT	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	20	20	21	21
M (3000) F2	MED																								
	CNT																								
M (3000) F1	MED																								
	CNT																								
h'F2	MED												210	230		205	280	410							
	CNT												1	1		2	1	1							
h'F	MED	310	321	291	415	460	460	400	430	320	280	270	256	260	260	258	240	290	246	246	260	260	270	260	246
	CNT	3	2	2	4	5	8	10	12	13	17	29	29	20	27	24	26	26	29	23	24	12	9	7	6
h'Es	MED	120	124	114	110	120	110	110	114	110	115	140	170	120	146	130	120	140	118	140	163	163	120	120	120
	CNT	28	20	21	28	22	26	24	22	13	7	2	1	1	2	3	3	3	3	3	6	18	17	20	26
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: SYOWA BASE

Sep. 1960

45° E Mean Time (G.M.T. +3h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	26F	123F	23F	23F	26F	28F	46F	53F	61F	68F	71F	36	03	00	06	03	04F	03F	24F	23F	61F	44F	24F	26
	CNT	6	2	10	9	2	6	10	3	8	14	20	20	20	23	26	26	26	27	21	21	13	8	7	6
	Q R	19	10	13	14		03	16	03	09	16	26	07	26	22	20	21	20	22	17	24	26	22	28	23
foF1	MED										45	43	46	46	43F	43	41	32	36						
	CNT										1	2	1	4	1	1	1	1	1						
foE	MED	280	260	230			200	270	260	250	285				230	200	230	255	220	200	170		240	269	240
	CNT	1	2	2			2	1	2	6	1				1	1	2	6	8	6	2		1	2	1
foEs	MED	33	29	43	38	44	43	40	42	G	G	G	G	G	G	G	G	G	G	G	26	31	26	32	29
	CNT	23	27	27	26	26	19	12	8	14	4	6	6	2	6	6	6	10	10	8	8	10	20	28	22
	Q R	21	26	26	19	17	13	07														13	13	13	16
f-min	MED	176	170	200	200	210	220	210	260	260	270	260	240	266	260	240	240	230	216	220	170	170	170	170	180
	CNT	29	30	30	30	30	30	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	29
M (3000) F2	MED																								
	CNT																								
M (3000) F1	MED																								
	CNT																								
h'F2	MED								420	260	210	200	200	220	220	266	266	260	218						
	CNT								1	1	2	2	2	8	7	4	2	2	2						
h'F	MED	200	206	226	226	246	240	230	270	230	266	270	246	240	240	240	260	240	236	260	230	260	260	230	230
	CNT	6	10	18	18	14	17	19	20	16	14	21	13	21	22	24	27	26	26	23	23	23	13	11	8
h'Es	MED	120	120	120	120	120	120	125	120	110	106					110	120	114	160	116	120	120	130	120	120
	CNT	24	26	26	23	26	12	12	6	7	1					1	1	2	1	4	7	10	18	23	22
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: SYOWA BASE

Oct. 1960

45° E Mean Time (G.M.T. +3h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	4.4F	4.0F	4.1F	4.1F	4.2F	4.1F	4.1F	4.0F	3.9F	3.9F	3.9F	3.8	3.7	3.8	3.8F	3.9F	3.9F	4.1F	4.2F	4.0F	4.1F	4.2F	4.4F	4.4F
	CNT	2	3	4	3	3	3	3	2	2	2	2	4	6	3	3	3	5	3	3	3	4	1	1	1
	Q R		0.4	1.6	1.4	1.1	1.1	2.1	2.0	2.6	2.2	2.6	3.0	2.9	2.6	3.0	3.0	3.0	3.0	2.3	2.7	2.7	2.6	3.2	3.2
foF1	MED					3.6	3.6	4.0	4.0	4.3	4.4	4.4	4.4	4.1	4.6	4.6	4.3	4.0	3.9	3.6					
	CNT					1	1	3	1.4	1.1	1.2	1.3	1	1.2	1	1	3	3	1	1					
foE	MED		2.5	2.6	2.6		2.6	2.6	2.6	2.7						2.8		2.7	2.6	2.6	2.6	1.8		2.6	
	CNT		2	1	2		2	2	1	1						1		1	1	2	2	2		1	
foEs	MED	4.2	4.1	4.0	4.2	3.2	3.3	3.3	3.1	G	G	G	3.7	G	G	G	G	G	G	G	2.6	3.0	4.2	4.2	4.0
	CNT	2.1	1.9	1.6	1.7	1.9	1.2	1.1	1.2	1.1	1.4	2	3	3	1	1	1	1	1	1	1.2	1.8	1.3	2.2	2.1
	Q R	2.3	2.6	2.7	2.2	2.1	1.6	2.3														1.6	1.4	1.6	2.0
f-min	MED	1.8.0	1.9.6	1.9.0	2.0.0	2.2.0	2.1.4	2.2.0	2.2.0	1.4.0	1.1.4	B	1.2.0	1.1.0	1.1.0	1.1.2	1.2.0	2.6.4	2.6.2	2.7.6	2.7.4	1.2.2	1.2.0	1.1.0	1.2.6
	CNT	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	1.9	2.3	1.9	1.9	2.1	2.2	1.9	2.1	2.0	2.0	2.0	2.1	2.1
M (3000) F2	MED																								
	CNT																								
M (3000) F1	MED																								
	CNT																								
h'F2	MED					4.1.0	4.0.0	4.2.0	4.0.0	3.7.0	4.0.0	3.9.6	2.9.6	2.9.6	2.6.0	4.2.0	4.1.0	2.7.0	2.7.6	4.3.0					
	CNT					1	2	3	1.6	1.2	1.2	1.3	1.6	1.8	1.6	3	1.3	1.2	1	2					
h'F	MED	2.0.0	2.4.0	2.1.6	2.0.0	2.6.0	2.7.0	2.7.0	4.2.7.0	2.6.0	2.6.2	2.3.0	2.2.6	2.4.0	2.4.0	2.4.0	2.4.0	2.6.0	2.6.0	2.7.0	2.7.6	3.2.0	2.6.0	2.3.6	2.3.6
	CNT	1.2	1.0	1.6	1.6	1.6	1.6	1.6	1.6	1.1	1.6	1.6	1.2	1.6	1.6	1.7	2.0	2.0	2.1	2.6	2.4	2.2	1.7	1.4	1.6
h'Es	MED	1.1.6	1.2.0	1.2.0	1.2.0	1.2.0	1.3.0	1.2.0	1.2.6	1.1.0			1.1.6	1.2.0	1.1.4	1.1.0		1.2.0	1.4.2	1.4.2	1.4.0	1.2.0	1.2.0	1.2.0	1.2.0
	CNT	2.1	2.2	1.6	1.6	1.7	1.1	1.0	3	1.4			2	1	2	1		1	1	1.6	1.9	1.7	1.7	2.2	2.1
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: SYOWA BASE

Nov. 1960

45° E Mean Time (G.M.T. +3h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	4.1F	4.2F	4.2F	4.2F	4.2F	4.2F	4.1F	4.2	4.4F	4.2F	3.9F	3.9F	3.9F	4.1F	3.9F	3.9F	4.0F	4.1F	4.2F	4.2F	4.2F	4.2F	4.1F	4.2F
	CNT	1.1	2	1.0	2	1	1	2	1.0	1.1	1.1	2	1.6	1.1	1.6	1.7	1.7	1.7	1.2	1.7	1.3	1.2	1.6	1.6	1.3
	Q R	1.4	1.4	1.0	1.2	2.4	2.3	4.1	2.3	2.1	2.4	2.1	2.4	2.2	1.2	0.8	0.8	1.2	1.4	1.3	1.2	1.0	1.4	1.0	2.0
foF1	MED					2.2	4.1	4.1	4.4	4.6	4.6	4.7	4.7	4.7	4.7	4.7	4.1	4.6	4.2	4.0	3.6				
	CNT					4	1	2	6	9	8	12	13	9	1.6	12	14	1.6	3	3	2				
foE	MED	2.9.0	2.9.2	2.1.0	2.6.0	2.3.0	2.4.0		2.8.0											2.3.0	2.3.0	2.3.0	2.4.0	2.1.0	1.9.6
	CNT	2	1	1	1	1	3		1											1	2	4	1	2	4
foEs	MED	3.6	3.7	3.6	4.0	3.2	3.0	3.3	4.2	4.0	4.1	4.2	3.7	4.0	3.6	G	G	G	G	2.2	4.1	2.3	3.0	3.9	3.2
	CNT	1.2	1.3	1.9	1.2	3	1	1	2	2	2	2	1	2	2	2	2	1.4	1.6	1.6	1.9	1.2	1.3	1.2	1.4
	Q R	2.9	3.0	2.6	2.0						2.2				2.2								2.2	2.0	1.6
f-min	MED	2.2.6	2.2.7	2.4.0	2.3.0	4.2.4	4.2.2	B	4.2.2	4.1.0	4.6.7	4.6.2	4.6.2	4.0.1	4.2.2	4.4.2	4.4.0	2.7.0	2.7.6	2.6.6	2.3.6	2.2.0	2.1.0	2.6.0	2.1.0
	CNT	2.2	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.7	2.7	2.6	2.7	2.7	2.7	2.7	2.7
M (3000) F2	MED																								
	CNT																								
M (3000) F1	MED																								
	CNT																								
h'F2	MED					2.8.0	4.1.0	4.2.6	4.3.0	4.2.0	4.1.0	4.1.0	4.3.0	4.1.0	4.3.0	4.2.6	2.8.0	2.3.0	2.2.0	2.6.0	2.7.6				
	CNT					7	1.1	1.0	1.2	1.2	1.2	1.6	1.7	1.4	1.8	1.7	1.6	1.7	2	6	2				
h'F	MED	2.1.0	2.4.0	2.2.0	2.4.0	2.4.0	2.7.0	2.4.0	2.4.0	4.2.6.7	2.4.5	2.3.4	2.3.0	2.3.0	4.2.4.6	2.4.0	2.4.2	2.4.0	2.6.0	2.4.0	2.7.0	2.2.6	2.2.6	2.2.0	2.1.0
	CNT	1.6	1.7	1.6	1.7	1.1	2	1.8	1.6	1.0	1.0	1.3	1.2	2	1.6	1.4	1.6	1.5	1.7	1.6	1.8	1.8	1.6	1.7	1.7
h'Es	MED	1.2.6	1.2.0	1.2.6	1.2.6	1.2.0	1.4.0	1.1.0	1.2.0	1.1.0	1.1.0	1.2.6	1.1.0	1.1.0	1.1.0	1.0.0		1.2.6	1.1.0	1.1.1	1.3.0	1.2.6	1.3.0	1.3.0	1.3.0
	CNT	1.0	1.1	2	1.0	1.6	2	1.6	1.6	2	2	2	1	2	2	1		2	2	1.4	2	2	1.2	1.1	1.2
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: SYOWA BASE

Dec. 1960

45° E Mean Time (G.M.T. +3h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	6.3F	6.1F	5.8F	5.7F	5.6F	5.5F	5.7F	6.3F	6.7F	7.0F	7.1F	7.0F	6.9F	7.1F	6.9F	7.3F	7.5F	7.0F	6.7F	6.4F	6.2F	6.3F	6.1F	6.1F
	CNT	16	14	12	14	12	10	12	17	13	19	21	22	20	24	21	26	22	22	26	22	24	26	26	26
	Q R	0.6	0.2	0.6	0.2	0.6	0.5	0.7	0.2	0.3	0.6	0.6	0.2	0.2	0.6	0.2	1.0	0.2	0.3	1.0	0.9	0.8	1.4	0.9	1.1
foF1	MED			3.4	3.6	3.9	4.0	4.2	4.7	4.4	4.4	4.5	4.6	4.6	4.7	4.8	4.6	4.5	4.4	4.2	4.0	3.9	3.2		
	CNT			1	4	9	17	11	16	16	19	22	26	22	22	24	26	22	22	20	14	6	1		
foE	MED			2.40	2.20		2.10	2.00		2.60											2.90	2.20	2.00	2.60	2.67
	CNT			3	2		1	1		1											2	9	7	6	3
foEs	MED	4.2	4.1	4.2	4.0	4.2	4.0	4.5	4.1	4.4	4.2	4.2	4.9	4.1	3.5	4.0	3.6	G	3.8	G	3.9	3.0	3.8	4.1	4.2
	CNT	20	23	20	21	13	18	16	22	12	12	6	9	6	2	2	6	7	6	11	18	26	26	23	22
	Q R	2.3	1.8	2.6	1.9	2.6	2.1	1.2	0.8			1.7	0.8									1.6	1.8	2.6	1.8
f-min	MED	2.00	2.00	2.10	2.00	2.05	2.20	2.30	2.40	2.70	2.80	2.70	2.70	2.80	2.80	2.75	2.65	2.60	2.55	2.20	2.20	2.05	1.90	2.00	2.05
	CNT	21	21	21	21	20	20	20	20	20	21	20	21	21	21	20	20	20	23	29	21	21	21	21	20
M (3000) F2	MED																								
	CNT																								
M (3000) F1	MED																								
	CNT																								
h'F2	MED			3.60	4.20	4.40	4.20	4.05	4.30	4.80	4.75	4.50	4.50	4.40	4.50	4.10	4.10	4.15	4.00	3.85	3.60	3.45	3.00		
	CNT			1	5	14	12	17	19	16	18	22	26	20	25	26	27	28	22	20	15	6	3		
h'F	MED	3.20	2.70	2.60	2.80	2.80	2.80	2.90	2.80	2.90	2.85	2.80	2.85	2.90	2.90	2.85	2.80	2.80	2.60	2.50	2.60	2.85	2.80	2.80	2.80
	CNT	29	24	21	23	17	18	15	17	13	21	26	27	22	23	25	27	22	26	24	26	25	26	27	26
h'Es	MED	1.20	1.20	1.20	1.00	1.00	1.20	1.20	1.15	1.10	1.10	1.20	1.05	1.10	1.00	1.05	1.15	1.10	1.50	1.10	1.40	1.00	1.20	1.20	1.20
	CNT	28	23	20	18	15	16	14	18	9	9	6	6	4	2	1	4	3	2	4	12	18	24	26	21
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: SYOWA BASE

Jan. 1961

45° E Mean Time (G.M.T. +3h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	4.8F	4.6F	4.4F	4.4F	4.1F	4.2F	4.1F	4.7F	6.0F	6.0F	6.2F	6.0	6.1	6.0	6.2F	6.2F	6.1	6.1	6.1	5.6F	6.3	6.3F	6.1F	6.1F
	CNT	20	19	16	16	14	13	16	16	18	22	20	26	22	23	27	26	22	23	26	24	22	27	26	22
	Q R	1.6	1.2	1.6	0.8	1.4	1.8	1.7	2.2	1.6	1.8	1.6	1.8	1.7	0.7	0.3	0.3	0.8	0.9	0.8	1.0	1.6	1.6	1.6	1.5
foF1	MED			2.0	2.6	3.7	4.1	4.0	4.1	4.2	4.3	4.4	4.4	4.5	4.5	4.5	4.5	4.4	4.2	4.1	3.9	3.6	3.4		
	CNT			1	2	6	10	11	13	12	22	20	24	21	26	27	22	24	26	26	13	6	5		
foE	MED	2.16	2.60	2.20		2.60	2.38	2.60	2.26								2.20				2.70	2.60	2.20	2.16	2.20	2.26
	CNT	1	2	2		1	2	1	2								1				1	6	5	7	5	4
foEs	MED	4.1	4.0	3.6	4.6	4.6	4.2	4.4	4.0	G	G	G	2.8	G	3.6	4.0	G	G	G	3.4	3.8	3.2	3.2	3.7	3.6
	CNT	24	23	24	22	24	21	20	22	16	16	13	11	3	9	8	10	14	11	14	19	20	26	27	26
	Q R	2.0	1.8	1.6	2.7	2.2	2.0															1.6	2.0	1.7	1.8
f-min	MED	1.90	1.85	2.00	2.02	2.20	2.20	2.10	2.00	2.60	2.36	2.40	2.60	2.60	2.60	2.60	2.60	2.10	2.20	2.10	2.60	2.06	1.86	1.70	1.80
	CNT	21	20	20	20	20	20	20	20	20	20	27	28	29	29	29	29	20	20	29	20	21	20	20	21
M (3000) F2	MED																								
	CNT																								
M (3000) F1	MED																								
	CNT																								
h'F2	MED				3.90	2.36	3.60	4.20	4.00	4.10	4.00	4.00	3.85	4.00	4.10	4.00	4.00	3.90	3.65	3.60	3.30	2.90	2.80		
	CNT				5	3	16	17	16	22	26	29	26	27	28	29	26	27	28	18	16	9	6		
h'F	MED	2.00	2.20	2.05	2.60	2.20	2.90	2.60	2.10	2.10	2.10	2.10	2.10	2.20	2.10	2.10	2.10	2.20	2.20	2.25	2.60	2.20	2.90	2.70	2.80
	CNT	19	18	21	18	16	17	15	15	19	23	20	24	24	26	27	24	26	27	24	27	27	28	26	22
h'Es	MED	1.20	1.20	1.20	1.20	1.10	1.10	1.10	1.10	1.10	1.06	1.10	1.20	1.10	1.10	1.00	1.00	1.10	1.10	1.20	1.20	1.20	1.20	1.20	1.20
	CNT	26	26	26	24	20	18	16	17	8	9	6	9	4	6	8	6	9	6	9	12	18	20	29	29
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

AUG. 1960 | foF2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4′ S, Long. 39°35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	B	B	B	A	A	R	B	B	B	5.5F	6.4	7.5R	B	B	7.5F	B	F	3.6F	B	B	R	R
2	A	A	A	A	A	A	B	B	B	B	11.4F	B	B	7.1F	B	7.6	B	F	F	B	B	R	R	R
3	R	A	B	R	R	R	A	A	F	F	4.4	5.2F	F	6.8F	B	B	6.1R	5.3	B	B	B	B	B	R
4	R	R	A	B	B	B	B	A	B	B	4.8F	6.1F	B	B	B	B	B	B	4.0F	3.6F	B	B	B	>6
5	R	A	R	A	A	A	>6F	11.2F	>9F	4.0F	4.6	7.2	7.2F	8.0F	8.1F	F	F	F	>8F	3.0F	B	B	B	R
6	>4	R	R	A	A	A	F	F	F	11.4.2F	5.4F	11.6.5F	7.3F	7.9F	9.5F	R	F	5.8F	4.5F	B	B	B	B	R
7	R	A	A	A	F	B	B	A	A	4.5	4.6F	11.6.4F	11.4.5R	7.0F	8.7F	8.4F	6.0	5.8F	F	>9F	B	1.7	1.8	A
8	A	A	3.5F	>4	A	A	F	F	4.9F	F	F	6.2	6.5	F	9.1F	8.2	7.4	F	F	3.6R	A	B	B	A
9	R	A	A	A	B	B	B	F	A	B	B	B	B	6.2	5.6F	B	B	6.5F	3.2	>6F	B	A	A	A
10	A	A	A	A	B	A	A	A	F	F	F	5.9	B	F	F	F	F	F	F	F	>5F	A	A	A
11	F	A	A	F	A	A	F	B	3.8F	B	5.1F	5.2F	4.4	7.9F	8.0F	8.9R	B	R	F	4.9F	B	B	R	R
12	A	A	A	F	A	A	F	A	R	A	4.8	B	B	6.0F	B	3.4F	9.2R	F	F	F	R	A	A	A
13	A	F	A	A	2.7F	F	A	4.4F	4.9F	F	6.2F	F	9.3R	8.5R	10.5	9.0F	8.6	11.8.2F	B	B	B	B	B	R
14	R	A	A	F	A	F	B	B	4.8F	5.2F	11.4.4F	7.4F	8.3	8.3	8.2	F	9.5	8.4	F	C	C	C	A	F
15	A	R	R	A	4.7F	11.2F	F	F	4.7F	5.6F	7.1F	8.6F	9.4F	8.3F	8.3R	11.0	10.0F	F	7.2	F	B	B	B	B
16	B	B	R	R	F	F	F	F	F	5.4F	7.1	8.6F	10.8R	11.0.1R	8.8	10.3	8.7	8.6	F	3.3F	F	F	A	A
17	B	F	3.8F	B	B	B	B	B	B	B	B	B	B	B	11.0	5.2F	4.7F	4.7F	3.6F	R	F	F	F	F
18	F	F	B	A	A	A	A	A	A	A	B	5.8	F	6.2F	8.0	8.0F	7.9F	8.0F	F	F	F	R	>7F	A
19	B	A	A	B	A	A	A	F	F	F	7.2	8.2	10.2	10.1	F	10.7	11.0.7R	11.0	10.9	F	11.4.5F	>3F	B	F
20	A	F	B	F	F	3.8F	5.0	F	B	B	B	B	B	5.1F	5.4	F	F	F	F	>6F	A	F	F	
21	A	A	A	A	A	4.5	B	3.2F	A	B	5.1F	B	B	B	R	11.0	8.9R	8.7F	F	5.8F	R	A	F	A
22	A	B	B	B	3.9F	B	B	B	A	6.2	6.1F	7.0F	7.3F	8.1	9.5	10.9R	10.9	8.7F	F	F	3.2F	R	A	>6
23	A	R	B	B	B	A	A	B	4.1F	5.2F	6.4F	F	F	F	11.0F	10.7	9.8	F	F	5.4F	3.1F	1.9	1.7	1.7
24	1.8	2.0F	A	A	B	B	B	3.8F	4.4F	5.8F	6.6F	7.5	8.2	8.7	10.2	10.2	10.2	8.8	7.4F	6.2F	F	>4	1.7	R
25	R	R	R	R	3.1	3.0F	4.4F	B	4.1F	F	9.3F	F	11.0.5R	8.6F	F	8.2F	F	7.6F	F	F	F	2.4F	1.8	A
26	A	>9	3.1F	3.2F	R	4.1F	F	F	4.2F	5.6F	7.4F	8.9F	F	10.0	F	9.1F	F	F	6.9F	6.4F	3.4F	2.2F	1.9	A
27	A	B	A	B	B	B	B	A	F	F	F	2.4F	8.7	8.9F	8.7	8.8F	9.5F	F	8.8R	4.2F	B	A	11.4.1F	3.9R
28	4.6	F	A	F	F	F	F	B	B	B	5.1R	B	F	F	F	8.3F	9.0	8.8	8.9F	F	B	B	R	R
29	A	A	A	R	B	A	5.5F	F	F	B	B	5.2F	F	F	5.4F	5.6F	5.2F	6.3F	6.0F	4.8F	2.8F	2.5F	A	A
30	A	A	A	A	B	R	B	B	B	B	B	B	B	R	F	R	F	3.8	R	R	R	B	A	B
31	A	A	A	B	B	B	R	B	B	B	B	F	B	B	B	F	9.4	F	F	5.8R	F	R	R	R
No.	3	2	3	2	4	5	4	4	1.0	1.0	>0	1.9	1.5	>1	1.8	>0	>0	1.7	1.2	1.5	7	7	7	4
Median	>6	>4	3.5F	3.3F	3.8F	4.1F	4.7F	3.5F	4.3F	5.2F	5.8F	6.5F	8.2	8.0F	8.2	8.0F	8.3	8.2F	6.4F	4.2F	3.1F	2.3F	1.8	>6
U.Q.	2.5		3.6		4.3	4.4	5.3	4.1	4.9	5.6	6.8	7.5	9.4	9.6	9.8	10.5	9.8	8.9	8.1	5.8	3.4	2.4	2.7	3.2
L.Q.	>4		2.3		2.4	2.8	3.5	3.0	4.0	4.6	4.8	5.8	6.7	6.9	8.0	8.2	7.4	5.8	3.9	3.3	>5	1.9	1.7	2.2
Q.R.	1.4		0.3		0.9	0.6	1.8	1.1	0.9	1.1	>0	1.7	2.7	2.7	1.8	2.3	2.4	3.1	4.2	2.5	0.9	0.5	1.0	1.0

foF2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

S 1

111

IONOSPHERIC DATA

AUG. 1960 | foF1 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

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

The Radio Research Laboratories, Japan

foF1

Sweep 1.1 Mc to 22.4 Mc in 32 sec in automatic operation

S 2

IONOSPHERIC DATA

AUG. 1960 | foE | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4′ S, Long. 39°35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	B	B	B	B	B	B	B	B							
2									B	B	B	B	B	B	B	B	B							
3									B	B	B	B	B	B	B	B	B							
4									B	B	B	B	B	B	B	B	B							
5									B	1.85	B	B	B	B	B	B	B							
6									B	A	B	B	B	B	B	B	B							
7									B	B	B	B	B	B	B	1.70	B							
8									B	B	B	B	B	B	B	B	B							
9									B	B	B	B	B	B	B	B	B							
10									B	B	B	B	B	B	B	B	B							
11									B	B	B	B	B	B	B	B	B							
12	2.10	2.50H							B	B	B	B	B	B	B	B	B				2.50	2.10	2.30	2.30
13	2.60								B	B	B	B	B	B	B	B	B							
14	2.60								B	B	B	B	B	B	B	B	B							2.60
15									B	R	B	B	B	B	B	B	B							
16			2.60						1.60	2.00	B	B	B	B	B	A	1.60							
17									B	B	B	B	B	B	B	B	B							
18									B	B	B	B	B	B	B	B	B							
19		2.00							B	B	B	B	B	B	B	B	B					2.00	2.20	
20									B	B	B	B	B	B	B	B	B		1.75					
21									B	B	B	B	B	B	B	B	B							
22									B	B	B	B	B	B	B	B	B							
23									B	B	B	B	B	B	B	B	1.80							
24									B	B	B	B	B	B	B	B	B							
25									B	B	B	B	B	B	B	B	B							1.80
26		1.70			2.10				B	B	B	B	B	B	B	2.20	A							
27									B	B	B	2.60	2.30	2.30	A	A	1.80							
28									B	B	B	B	B	B	2.20	B	B							
29									B	B	B	B	B	B	B	B	B						2.30	2.80
30									B	B	B	B	B	B	B	B	B							
31									B	B	B	B	B	B	B	B	B			2.00	2.70			
No.	2	2	1		1				1	2		1	1	1	1	2	2		1	1	2	2	4	5
Median	2.60	2.00	2.60		2.10				1.60	1.80		2.40	2.00	2.00	2.00	1.85	1.80		1.75	2.00	2.60	2.65	2.75	2.60
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

S 3

IONOSPHERIC DATA

AUG. 1960 | foEs | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.0	J 4.5	3.6	4.4	B	5.0	J 4.2	J 6.4	B	B	B	B	B	B	B	B	B	B	B	3.0	B	B	2.4	2.7
2	2.8	J 6.6	J 4.1	4.4	4.0	5.2	J 4.7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.2	3.1	3.3
3	3.6	4.6	4.5	4.5	3.9	5.2	4.4	J 3.9	2.3	3.2	B	B	B	B	B	B	B	B	B	B	B	B	B	J 2.8
4	2.7	3.1	J 8.3	B	J 4.7	B	5.0	J 4.8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	2.1	2.7	2.7	J 4.2	3.6	3.6	2.9	6.8	B	G	B	B	B	B	B	B	B	2.1	B	B	B	B	B	2.2
6	1.6	J 5.3	J 9.1	J 3.0	4.6	5.3	J 3.8	2.6	2.7	2.2	B	B	B	B	B	B	B	B	B	B	B	B	B	2.6
7	J 4.2	J 4.8	4.1	J 4.3	2.5	5.2	B	J 6.1	6.2	J 5.2	2.9	B	B	B	B	G	B	B	B	B	B	B	B	J 2.9
8	J 3.5	J 3.9	J 4.2	3.6	J 8.6	J 5.5	J 3.8	4.3	J 4.7	J 3.7	B	B	B	B	B	B	B	B	B	B	3.8	4.8	J 8.7	J 5.1
9	2.6	J 3.0	3.9	4.0	B	4.0	4.6	2.8	5.6	B	B	B	B	B	B	B	B	B	B	B	2.6	J 3.4	3.3	J 3.8
10	3.3	2.7	J 6.0	J 5.5	5.1	J 6.0	5.0	3.6	2.6	2.2	B	B	B	3.2	B	B	B	B	B	B	J 3.0	J 5.3	J 7.0	J 6.7
11	J 3.9	J 8.3	J 6.6	4.5	J 8.8	4.2	2.6	5.2	4.4	B	B	B	B	B	B	B	B	B	B	B	B	B	J 2.8	2.4
12	4.2	J 6.0	4.6	3.8	J 6.5	5.5	J 4.6	5.2	B	5.5	B	B	B	B	B	B	B	B	B	B	G	3.7	J 6.3	3.6
13	J 3.8	2.9	5.0	3.5	3.3	3.3	J 5.7	3.9	B	B	B	B	B	B	J 8.2	B	B	B	B	B	B	B	B	G
14	3.3	J 4.3	J 5.8	3.2	J 3.7	4.0	5.1	B	B	B	B	B	B	B	B	B	B	B	B	C	C	C	6.2	J 4.7
15	J 4.6	4.0	3.8	J 3.8	4.0	3.5	3.3	4.4	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	2.9	3.0	4.1	4.2	3.6	3.0	G	G	B	B	B	B	B	J 4.1	G	B	B	2.2	B	2.4	J 4.2	J 4.5
17	B	J 3.8	2.4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	2.6	3.0	2.6	3.7	J 4.2
18	J 3.8	J 5.6	5.4	3.0	J 7.3	2.4	3.2	3.6	4.7	J 5.6	B	B	B	B	B	B	B	B	B	B	2.3	G	2.5	J 3.5
19	B	4.0	J 5.1	4.1	J 3.2	J 4.8	J 5.0	4.0	2.9	B	B	B	B	B	B	B	B	B	3.2	3.0	3.8	3.3	4.0	4.7
20	J 3.7	5.1	5.2	3.6	2.6	3.2	B	3.6	B	B	B	B	B	B	B	B	2.3	B	B	B	2.5	3.3	J 4.7	J 5.8
21	3.2	J 5.2	J 6.6	5.0	4.4	4.6	B	3.8	J 4.1	B	B	B	B	B	B	B	B	B	B	B	3.2	J 4.5	J 8.2	4.0
22	2.7	J 8.3	5.8	5.3	J 8.5	5.1	B	4.4	5.1	B	B	B	B	B	B	B	2.1	1.8	1.6	B	B	3.0	J 3.5	2.4
23	3.0	J 3.2	5.0	B	B	4.3	4.8	B	B	B	B	B	B	B	B	B	B	B	B	B	E	1.8	B	B
24	2.6	J 3.3	2.6	J 6.6	B	P	3.8	2.7	B	B	B	B	B	B	B	3.3	B	B	B	B	B	2.3	1.5	2.3
25	2.3	2.4	2.7	2.4	J 3.8	2.4	B	B	B	B	2.7	B	B	B	B	G	2.1	B	B	B	B	B	B	J 3.4
26	3.3	J 3.9	3.2	J 3.9	2.7	2.9	1.7	B	B	B	B	2.6	2.6	2.7	2.5	2.6	G	J 3.8	B	B	B	B	B	3.0
27	J 3.7	2.5	J 3.1	J 3.3	B	B	5.5	J 5.1	3.8	B	B	B	B	B	2.6	B	B	B	B	2.3	B	J 5.0	3.7	J 6.7
28	J 3.0	4.2	J 4.6	4.2	J 3.6	J 3.6	2.6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	3.3
29	3.2	3.4	2.5	2.5	B	4.3	4.0	4.4	2.9	B	B	B	B	B	B	B	B	B	B	B	B	1.7	J 6.4	J 4.0
30	J 3.1	J 7.3	5.6	5.4	B	3.8	B	B	B	B	B	B	B	B	B	B	B	B	3.1	3.4	3.0	J 7.9	3.0	B
31	J 8.0	4.0	5.3	J 7.8	B	B	2.9	B	B	B	B	B	B	B	B	B	B	B	B	B	3.3	2.9	J 3.0	2.6
No.	2.8	3.0	3.1	2.8	3.3	2.6	2.4	3.3	1.4	1.0	2	1	1	2	3	5	5	3	3	6	1.2	1.8	2.1	2.7
Median	2.6	J 4.1	4.6	4.4	4.0	4.2	4.1	4.0	4.0	2.7	2.8	2.6	2.6	3.0	2.6	2.3	2.1	2.1	2.2	2.4	2.6	3.1	3.7	3.4
U.Q.	4.0	4.3	4.6	4.3	4.5	4.3	4.9	4.8	4.3	4.3					4.4	3.5	3.3	3.0	2.6	3.0	3.0	4.6	6.2	4.7
L.Q.	2.0	2.4	2.1	2.6	2.6	2.6	3.3	2.8	2.7	G					2.6	G	G	2.0	1.9	3.3	2.3	2.3	2.9	2.7
Q.R.	1.0	1.9	2.5	1.7	2.9	1.7	1.7	2.0	2.5						2.8			1.0	0.7	0.8	0.7	3.3	3.3	2.0

foEs

Sweep 4.0 Mc to 2.0 Mc in 2.0 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1960 | f-min | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.0	2.0	2.0	2.0	B	2.0	2.0	4.0	B	B	B	2.6	4.0	6.0	B	B	4.6	B	2.8	2.4	B	B	1.2	E
2	1.4	2.0	1.8	2.0	2.6	4.2	2.6	B	B	B	2.0	B	B	4.0	B	6.2	B	4.4	1.8	B	B	1.2	1.2	1.2
3	1.4	2.0	2.2	2.4	2.6	2.0	2.0	1.2	1.8	1.8	4.0	4.0	2.6	2.8	B	B	4.8	4.4	B	B	B	B	B	B
4	1.2	1.2	1.2	B	2.0	B	2.0	2.0	B	B	2.2	2.6	B	B	B	B	B	B	2.0	2.4	B	B	B	1.2
5	1.2	1.0	1.0	1.2	1.4	1.6	1.6	1.4	1.8	1.8	2.0	2.2	2.0	2.2	2.2	2.4	2.2	1.6	1.8	1.2	B	B	B	2.0
6	1.4	1.4	1.2	1.2	2.0	2.0	1.2	1.6	1.4	1.6	2.0	2.8	2.8	4.8	4.0	7.8	4.2	2.6	2.0	B	B	B	B	1.6
7	1.4	1.6	2.2	1.8	1.2	4.2	B	2.4	2.6	1.8	1.8	2.0	2.4	2.2	2.2	1.2	2.2	2.0	1.8	1.4	B	1.2	1.6	1.0
8	1.4	1.4	1.2	1.0	2.0	1.6	1.6	1.2	1.8	1.6	2.0	4.6	4.2	4.8	2.8	2.8	4.2	2.2	2.8	2.2	1.6	2.0	2.2	2.0
9	1.8	1.8	1.8	2.2	B	2.6	2.2	1.6	2.2	B	B	B	B	4.2	2.6	B	B	2.2	2.0	1.8	2.0	1.2	1.2	1.2
10	1.2	2.0	1.8	1.4	2.6	2.0	2.0	1.2	1.2	1.2	2.2	4.8	B	2.0	2.2	2.2	1.8	2.2	2.2	1.2	1.2	1.2	1.6	1.2
11	1.2	1.2	1.0	1.2	2.0	1.8	1.2	4.4	2.2	B	2.2	2.2	2.4	2.8	2.6	4.6	B	2.8	2.2	2.6	B	B	B	B
12	1.2	1.6	1.2	1.4	1.8	2.8	2.0	2.8	4.2	2.6	4.2	B	B	2.6	B	4.4	4.6	4.6	2.8	2.8	E	1.2	1.6	1.2
13	1.6	1.8	1.6	E	E	E	2.2	1.8	2.0	2.6	2.0	2.2	2.2	2.0	2.4	2.4	2.2	2.2	B	B	B	B	B	1.4
14	1.2	1.4	1.2	1.6	2.0	2.0	4.0	B	4.2	2.2	2.2	2.2	2.2	4.2	4.2	4.8	5.8	2.8	2.0	C	C	C	2.0	1.2
15	1.2	1.8	1.4	2.2	2.0	1.8	1.8	2.2	2.2	1.8	2.8	2.0	2.8	2.2	2.6	2.2	2.8	2.6	2.6	2.2	B	B	B	B
16	B	B	1.2	1.6	2.0	1.8	1.4	1.6	1.6	2.0	2.2	2.6	2.2	2.2	2.2	2.0	1.6	1.6	1.8	1.2	1.2	1.6	1.8	1.6
17	B	1.6	1.4	B	B	A	B	B	B	B	B	B	B	B	2.2	2.2	2.6	2.6	2.0	1.6	E	1.0	2.6	1.6
18	1.4	1.6	4.0	1.2	1.2	1.8	1.2	2.0	2.0	2.2	B	2.8	2.2	4.2	4.2	2.8	2.0	2.0	2.0	1.6	1.2	1.2	1.4	1.2
19	B	1.6	1.8	2.2	1.8	2.2	1.8	1.2	1.2	2.6	2.0	2.0	2.2	2.2	2.8	2.0	4.2	1.8	1.6	1.4	1.6	1.2	2.2	1.2
20	1.8	1.8	4.0	2.0	1.8	1.4	2.2	1.8	B	B	B	B	B	2.6	4.0	2.8	1.2	1.8	1.2	1.2	1.6	1.2	1.2	1.8
21	1.2	1.2	2.2	2.0	1.8	2.0	B	1.2	2.0	B	2.2	B	B	B	4.6	2.4	4.4	1.8	1.6	1.4	1.6	1.2	1.2	1.8
22	1.6	2.2	2.2	2.2	2.0	2.2	B	2.2	2.2	2.2	4.0	2.6	2.0	2.6	2.2	1.6	1.8	1.6	1.4	1.2	1.6	1.4	1.2	1.2
23	1.6	1.2	4.2	B	B	2.0	2.6	B	2.0	2.2	2.2	4.6	4.0	4.2	2.6	2.8	2.2	2.2	1.6	1.2	E	1.2	1.4	1.4
24	1.4	1.2	1.6	2.2	B	B	2.4	2.0	2.0	2.0	2.4	4.2	4.0	4.0	4.2	2.0	2.6	2.2	1.8	2.0	1.6	1.2	1.2	1.6
25	1.6	2.0	2.2	1.8	1.6	1.4	2.6	B	2.4	2.0	2.0	2.2	2.8	2.6	2.8	2.2	1.6	1.4	1.2	1.2	1.2	1.2	1.6	1.4
26	1.2	1.2	1.2	1.2	1.8	1.2	1.2	1.2	2.2	2.4	2.2	2.0	1.8	2.0	2.0	1.8	1.6	1.6	1.4	1.2	1.4	1.2	1.6	1.4
27	2.0	2.2	1.2	2.2	B	B	4.6	2.4	1.2	2.2	2.2	2.0	2.0	2.6	2.2	2.2	2.0	1.8	1.2	1.4	B	2.0	2.0	1.8
28	2.0	1.8	2.0	2.0	1.2	1.8	2.0	B	B	B	4.6	B	4.2	4.0	2.6	2.6	2.0	2.2	2.0	1.8	B	B	1.2	1.4
29	1.6	1.6	1.2	1.8	B	4.0	2.0	2.4	1.8	B	B	2.0	2.4	2.0	2.0	2.0	2.0	1.8	1.2	1.2	1.2	E	1.4	1.2
30	1.6	1.4	1.4	1.6	B	2.4	B	B	B	B	B	B	B	2.0	2.2	2.2	1.4	1.2	1.4	1.2	B	B	1.2	B
31	1.4	1.2	1.4	2.0	B	B	2.0	B	B	B	B	2.2	A	A	B	4.6	6.2	5.2	4.0	2.2	1.8	1.2	1.4	1.6
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31
Median	1.6	1.6	1.2	2.0	2.0	2.0	1.6	2.2	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.2	1.4	2.0	1.2	1.6	1.4	1.6	1.4
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in 10 sec in automatic operation

The Radio Research Laboratories, Japan

S 5

15

IONOSPHERIC DATA

AUG. 1960 | h'F2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17												B	B	B	L									
18																								
19																								
20													B	L			L							
21																								
22														L										
23																								
24																								
25																								
26													L			L								
27														L	L									
28																								
29												≥10	≥80	L	≥90		L							
30												B	B	R	≤≥0	480	410							
31																								
No.												1	1		2	1	1							
Median												≥10	≥80		405	480	410							
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F2 | Sweep 4.0 Mc to ≥≥.0 Mc in ≥0 sec in automatic operation

S 6

16

IONOSPHERIC DATA

AUG. 1960 | h'F | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	B	B	B	A	A	R	B	B	B	≥4	≥2	≥4	B	B	≥6	B	≥5	≥4	B	B	A	A
2	A	A	A	A	A	A	B	B	B	B	≥6	B	B	≥6	B	≥20B	B	≥4	≥2	B	B	A	A	A
3	A	B	B	R	R	R	A	A	≥6	≥9	≥2	≥9	≥6	≥2	B	B	≥0	≥0	B	B	B	B	B	A
4	A	A	A	B	B	B	B	A	B	B	≥9	≥6	B	B	B	B	B	B	≥6	≥4	B	B	B	≥9
5	A	A	A	A	A	A	4	≥2	≥0	≥2	≥6	≥2	≥1	≥1	≥1	≥1	≥2	≥2	≥4	≥8	B	B	B	A
6	≥9	A	A	A	A	A	4	≥0	≥4	≥4	≥8	≥6	≥9	≥9	≥8	≥9B	≥2	≥5	≥1	B	B	B	B	B
7	A	A	A	A	F	B	B	A	B	≥2	≥4	≥6	≥1	≥6	≥6	≥1	≥2	≥0	≥1	≥6	B	≥2	≥4	A
8	A	A	≥9	4	A	A	≥2	4	≥9	≥9	≥8	≥8	≥2	≥5	≥2	≥6	≥9	≥4	≥2	≥2	A	B	B	A
9	A	A	A	A	B	B	B	≥9	A	B	B	B	B	≥8	≥8	B	B	≥6	≥9	≥0	B	A	A	A
10	A	A	A	A	B	A	A	A	≥6	≥2	≥4	≥0	B	≥4	≥6	≥2	≥4	≥6	≥1	≥9	≥2	A	A	A
11	F	A	A	F	A	A	F	B	4	B	≥9	≥4	≥9	≥6	≥6	≥4	B	≥8	≥6	≥6	B	B	A	A
12	A	A	A	F	A	A	6F	A	4	A	4	B	B	≥4	B	≥8	≥9	≥9	≥6	≥8	R	A	A	A
13	A	F	A	A	≥8	≥0	A	0	≥8	≥1	≥6	≥4	≥6	≥2	≥4	≥4	≥4	≥4	B	B	B	B	B	B
14	B	A	A	F	A	0	B	B	9	≥4	≥6	≥6	≥2	≥4	≥5	≥8	≥4B	≥6	≥9	C	C	C	A	F
15	A	A	A	A	4	0F	F	9	≥4	≥8	≥6	≥4	≥4	≥9	≥6	≥4	≥1	≥2	≥6	≥9	B	B	B	B
16	B	B	R	B	≥2	4	4	≥2	≥8	≥6	≥4	≥4	≥9	≥4	≥2	≥2	≥4	≥2	≥0	≥8	≥2	≥9	A	A
17	B	4	≥2	B	B	B	B	B	B	B	B	B	B	B	4B	≥0	≥2	≥0	≥9	B	F	F	F	F
18	F	F	B	A	A	A	A	A	A	A	B	≥0	≥9	≥8	≥7	≥6	≥6	≥6	≥6	≥8	≥2	R	4A	A
19	B	A	A	B	A	A	A	4	≥0	≥6	≥6	≥4	≥6	≥9	≥2	≥2	≥2	≥6	≥2	≥1	≥9	4A	B	F
20	A	F	B	4	F	6	≤1	4	B	B	B	B	B	≥6	≥0	≥0	≥8	≥7	≥8	≥7	≥0	B	F	F
21	A	A	A	A	A	6	B	6	A	B	≥6	B	B	B	≥0	≥4	≥2	≥4	≥4	≥2	B	A	≥8	A
22	A	B	B	B	4	B	B	B	B	≥2	≥0	≥7	≥7	≥6	≥9	≥2	≥1	≥0	≥2	≥1	≥8	≥9	A	≥6
23	A	A	B	B	B	A	B	B	≥6	≥8	≥8	≥8	≥9	≥6	≥6	≥9	≥2	≥1	≥2	≥0	≥2	4	≥6	≥2
24	≥0	≥2	A	A	B	B	B	4	≥1	≥7	≥6	≥6	≥6	≥6	≥4	≥2	≥9	≥1	≥2	≥2	≥2	4A	A	B
25	B	B	B	B	4	≥8	4	B	≥2	≥6	≥2	≥2	≥6	≥1	≥6	≥1	≥2	≥2	≥2	≥2	≥2	≥6	≥7	A
26	A	≥2	4	4	A	4	≥8	≥6	≥7	≥6	≥6	≥2	≥2	≥2	≥1	≥2	≥1	≥2	≥1	≥1	≥1	≥7	≥8	A
27	A	B	A	B	B	B	B	A	≥6	≥7	≥7	≥6	≥7	≥2	≥9	≥2	≥2	≥1	≥2	≥7	B	A	6	≥2
28	≥1	F	A	4	F	≥7	≥2	B	B	B	0	B	≥9	≥6	≥8	≥6	≥6	≥2	≥6	≥6	B	B	R	B
29	A	A	A	A	B	B	4	6	≥6	B	B	≥1	B	≥6	≥9	≥7	≥6	≥6	≥6	≥6	≥9	≥6	A	A
30	A	A	A	A	B	B	B	B	B	B	B	B	B	≥8	B	B	B	≥9	A	B	B	B	A	B
31	A	A	A	B	B	B	A	B	B	B	B	≥6	B	B	B	≥6	≥7	≥6	≥6	≥7	≥6	A	B	B
No.	3	3	3	4	6	9	10	13	18	19	23	22	20	17	24	26	26	29	28	24	12	9	7	4
Median	≥1	≥2	≥9	4	4	6	4	2	≥2	≥3	≥7	≤6	≥6	≥6	≥6	≥4	≥8	≥9	≥8	≥4	≥8	≥7	≥8	≥4
U.Q.																								
L.Q.																								
Q.R.																								

h'F

Sweep 4 Mc to 20 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

S 7

17

IONOSPHERIC DATA

AUG. 1960 | h'E | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	B	B	B	B	B	B	B	B							
2									B	B	B	B	B	B	B	B	B							
3									B	B	B	B	B	B	B	B	B							
4									B	B	B	B	B	B	B	B	B							
5									B	B	B	B	B	B	B	B	B							
6									B	A	B	B	B	B	B	B	B							
7									B	B	B	B	B	B	B	B	B							
8									B	B	B	B	B	B	B	B	B							
9									B	B	B	B	B	B	B	B	B							
10									B	B	B	B	B	B	B	B	B							
11									B	B	B	B	B	B	B	B	B							
12	110	120							B	B	B	B	B	B	B	B	B				110	120	110	115
13	115								B	B	B	B	B	B	B	B	B							110
14	110								B	B	B	B	B	B	B	B	B							
15									B	140	B	B	B	B	B	B	B							
16			115						B	B	B	B	B	B	B	A	B							
17									B	B	B	B	B	B	B	B	B							
18									B	B	B	B	B	B	B	B	B					110	110	
19		110							B	B	B	B	B	B	B	B	B		120					
20									B	B	B	B	B	B	B	B	B							
21									B	B	B	B	B	B	B	B	B							
22									B	B	B	B	B	B	B	B	B							
23									B	B	B	B	B	B	B	B	B							
24									B	B	B	B	B	B	B	B	B							110
25					120				B	B	B	B	B	B	B	B	A							
26		120							B	B	B	140	120	120	A	A	140							
27									B	B	B	B	B	B	B	B	B							
28									B	B	B	B	B	B	B	B	B						120	120
29									B	B	B	B	B	B	B	B	B							
30									B	B	B	B	B	B	B	B	B		110	110	110			
31									B	B	B	B	B	B	B	B	B							110
No.	3	3	1		1					1		1	1	1			1		2	1	2	2	3	5
Median	110	120	115		120					140		140	120	120			140		115	110	110	115	110	110
U.Q.																								
L.Q.																								
Q.R.																								

h'E

Sweep 1.0 Mc to 22.0 Mc in 10 sec in automatic operation

The Radio Research Laboratories, Japan

S 8

IONOSPHERIC DATA

AUG. 1960 | h'Es | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	115	100	140	105	B	100	100	110	B	B	B	B	B	B	B	B	B	B	B	120	B	B	160	110
2	110	110	110	110	110	125	115	B	B	B	B	B	B	B	B	B	B	B	B	B	B	115	120	115
3	120	110	115	115	140	105	110	115	140	115	B	B	B	B	B	B	B	B	B	B	B	B	B	115
4	110	120	120	B	100	B	105	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	160	110	110	100	120	115	120	125	B	G	B	B	B	B	B	B	B	100	B	B	B	B	B	165
6	165	125	115	105	110	115	115	125	110	120	B	B	B	B	B	B	B	B	B	B	B	B	B	120
7	120	120	120	120	125	100	B	100	105	110	125	B	B	B	B	G	B	B	B	B	B	B	B	160
8	125	120	100	100	125	120	115	115	110	110	B	B	B	B	B	B	B	B	B	B	115	150	120	145
9	120	115	105	115	B	125	115	110	105	B	B	B	B	B	B	B	B	B	B	B	150	115	120	115
10	115	125	120	110	110	105	105	115	110	125	B	B	B	150	B	B	B	B	B	B	165	120	120	115
11	120	125	110	110	110	140	110	120	170	B	B	B	B	B	B	B	B	B	B	B	B	B	110	115
12	125	125	110	125	100	105	110	150	B	120	B	B	B	B	B	B	B	B	B	B	G	140	120	140
13	145	135	115	110	110	125	115	120	B	B	B	B	B	B	110	B	B	B	B	B	B	B	B	G
14	175	135	110	110	110	120	110	B	B	B	B	B	B	B	B	B	B	B	B	C	C	C	120	120
15	110	110	140	100	120	115	110	165	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	150	120	115	110	110	150	G	G	B	B	B	B	B	110	G	B	B	150	B	170	150	100
17	B	120	130	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	150	170	150	140	100
18	110	110	110	120	140	110	110	120	110	110	B	B	B	B	B	B	B	B	B	B	110	G	150	120
19	B	150	130	130	120	110	105	110	130	B	B	B	B	B	B	B	B	B	140	150	170	160	160	130
20	110	120	120	140	140	120	B	120	B	B	B	B	B	B	B	B	160	B	B	B	160	110	110	120
21	100	110	110	110	140	140	B	110	120	B	B	B	B	B	B	B	B	B	B	B	110	110	120	110
22	110	100	110	110	140	110	B	140	110	B	B	B	B	B	B	B	160	150	120	B	B	110	110	130
23	110	110	150	B	B	110	140	B	B	B	B	B	B	B	B	B	B	B	B	B	E	110	B	B
24	130	110	120	120	B	B	110	100	B	A	A	B	B	B	B	120	B	B	B	B	B	120	120	160
25	120	140	120	120	140	130	B	B	B	B	150	B	B	B	B	G	170	B	B	B	B	B	B	120
26	120	140	110	110	120	110	110	B	B	B	B	170	120	140	130	120	G	110	B	B	B	B	B	120
27	130	140	120	100	B	B	110	100	110	A	B	B	B	B	160	B	B	B	B	130	B	110	120	110
28	110	110	130	120	110	110	170	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	160
29	120	120	120	110	B	110	120	110	130	B	B	B	B	B	B	B	B	B	B	B	B	140	150	100
30	110	120	100	130	B	130	B	B	B	B	B	B	B	B	B	B	B	B	170	150	150	150	110	B
31	100	110	110	120	B	B	110	B	B	B	B	B	B	B	B	B	B	B	B	B	120	110	140	130
No.	28	30	31	28	22	24	24	22	17	7	2	1	1	2	3	3	3	3	3	6	1.0	17	20	26
Median	120	120	115	110	120	110	110	115	110	115	140	170	120	145	130	130	160	110	140	150	150	120	120	120
U.Q.																								
L.Q.																								
Q.R.																								

h'Es — Sweep 1.6 Mc to 22.0 Mc in 32 sec in automatic operation

The Radio Research Laboratories, Japan

S 9

19

IONOSPHERIC DATA

AUG. 1960

Types of Es

45° E Mean Time (G.M.T. +3h)

Syowa Base

Lat. 69°00.4' S
Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	a	a	a	a		a	a	a												a			a	γ
2	γ	a	a	γ	f	a	a															γ	γ	a
3	γ	γ	γ	a	a	a	γ	a	a	a														γ
4	a	γ	a				a	a																
5	γ	a	γ	f	γ f	γ	γ	a										f						a
6	a	a	f	f	fa	γ	a	a	l	γ														γ
7	a	a	a	a	γ	f		a	a	a	a													a
8	a	f	f	fa	a	a	a	a	a	a											γ	a	a	a
9	a	a	γ	a		a	γ	γ	γ												a	a	γ	a
10	γ	a	a	a	a	a	γ	γ	a	a				a							a	a	a	a
11	a²	a	a	fa	a	γ	a	a	a														a³	γ³
12	k⁴	k⁶	γ	a	a	γ	a²	a		a												k	f	k³
13	k	a	γ²	γ²	a	a²	a	a							l²									
14	k	a²	a³	γ²	a²	a	a																a	a
15	a	a	a³	a	γ²	γ	a	a								l								
16			k	a	a	γ	a³	a								l				a		a	a	f
17		a	a²																	a	a	a	a	a
18	a	a	a	γ³	a	a	γ²	γ²	γ²	a													k	a²
19		a	a	a	a	a	a	γ²	a										k	a	a	a	a	a²
20	a	a	a	a	a	a		a									a				a	γ³	a³	a
21	a²	a	a²	a	γa	a		a	a												γ	a	a	a
22	γ	a	γ	a	a	a		a	γ								k	a	a			a²	a²	a²
23	a²	a	a			a	a															a		
24	a	a	a²	a			a	a								a						γ	a	k
25	a	a	a	a	k	a					k						a							a
26	γ³	k	a³	a²	a	a²	a					k	c	k	a	a		f						a²
27	a	a	a²	a			a	a	a						k					a		a	γ	a
28	a	γ	a	a	a	a²	a																	l
29	γ³	γ³	γ²	γ		a	γ	a	a													a	a	a
30	a²	a	a³	a		a													k	k	k	a	a	
31	a²	γ	γ³	a			a														a	γ³	k	k²
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es

Sweep ~~1~~ Mc to ~~20~~ Mc in ~~2~~ sec in automatic operation

S 10

IONOSPHERIC DATA

SEP. 1960 | foF2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	R	R	B	B	R	≥7	≥6F	4.7	6.0	7.6	7.8	8.2	8.0	8.7F	8.4	F	6.9	S	F	≥1F	B	≥0F	≤8
2	A	R	A	≥1F	≥≥F	F	≥4	F	B	B	B	F	8.0F	F	10.0	8.6F	8.4F	8.7F	F	4.1F	R	A	A	A
3	F	F	F	F	F	F	A	A	A	B	B	B	B	B	4.9F	4.8	≤≥F	≤.9	≤≥	4≥	≥7	R	A	A
4	A	A	≥7R	F	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B
5	A	B	B	F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	F	A
6	A	A	B	B	A	≥4F	R	4.8	B	B	B	B	B	B	B	B	≤.1	≤.1	≤≥F	≥≥F	B	B	A	A
7	A	A	B	B	B	A	B	F	F	B	6.≥	7.1	8.0R	8.≤	8.0	8.6	10.3F	10.0F	R	F	≥.6	B	R	A
8	B	B	F	B	B	F	F	B	B	B	≤.1	≤.7	B	7.0	7.9F	R	8.9FR	7.9F	7.9F	F	R	R	R	B
9	B	R	R	F	F	F	F	F	B	4.8	6.1F	6.1	F	7.0F	7.1F	7.5F	9.4F	9.6F	F	F	≤≥F	B	A	A
10	A	F	F	B	B	A	F	F	B	F	6.≥	7.≥F	8.≥	8.8	10.8	10.4	F	10.5F	8.7F	U 4.4F	R	B	A	A
11	A	F	A	U 4.≥F	F	B	B	B	F	6.7F	6.6F	≥6	7.8	7.7H	8.4	8.8	8.4	8.≥F	8.≥F	F	F	A	A	A
12	A	B	F	F	F	B	F	≤.7F	R	6.6F	7.1F	B	F	6.8	F	F	8.7F	8.4F	S	F	≥.9F	≥.9R	R	R
13	R	U ≥≥F	U ≥4F	F	F	A	U ≤≥F	F	B	B	F	F	F	7.≥F	8.≥F	R	8.≥F	8.1F	F	U ≥≥F	F	F	F	R
14	S	F	F	R	R	R	C	C	C	C	≤.5	≤≥R	F	7.≥F	7.0F	7.9F	8.1F	8.≥F	≥6F	7.≥F	F	F	F	F
15	R	B	4.4F	≥≥F	F	F	≥≥F	B	6.5R	6.4	F	J 8.7R	9.≥R	U 10.0R	10.≤R	F	9.9F	9.4F	8.4F	U ≥≥F	F	≥.5F	≥.1F	C
16	A	A	F	4.6R	B	≥.9F	F	F	F	F	9.1F	10.6R	11.2	11.0	11.0	11.1	10.6	10.≥	9.4F	8.7F	7.1F	5.9F	6.1F	F
17	≥6F	F	4≥	F	F	F	F	F	≤≥	F	F	8.6F	8.9R	8.8	J 10.6R	J 10.7R	J 10.8R	9.7FR	9.6	9.≥	F	F	≥4R	B
18	F	B	≤1F	F	R	F	F	F	F	B	6.≥F	F	6.4F	7.5	F	9.1	9.≥	9.1F	8.8F	U ≥≥F	F	F	R	R
19	R	F	F	A	A	4.7F	U ≤≥F	≤.≥F	6.0F	6.8F	8.1F	9.0F	10.≥F	10.8F	11.0	11.≥	10.9	10.≥	J 10.5	8.≤F	F	F	F	≥6
20	≥≥F	F	F	≥≥F	F	F	F	F	F	F	9.7	10.7	11.0	10.0	J 1.≥R	J 1.1R	J 1.≥R	J 1.1R	U 10.6	8.5	U 6.5	F	≥4F	≥.6F
21	J ≥≥F	A	A	B	F	F	F	F	F	9.6F	10.1F	10.9	11.≥	11.0	11.≥	10.7	11.4	F	8	R	F	A	F	A
22	A	F	F	A	F	F	F	F	≤.7	6.≥	7.6R	8.0	J 10.6	10.9	10.≥	11.6	11.0	11.≤R	10.6R	8.5	6.0	≥.8	F	4.6
23	C	F	F	F	F	A	4.8F	F	≤.9F	≤.7F	F	6.7	7.4	F	F	10.0	9.6	9.6	8.≥	8.0	6.0	4.≥F	F	4.4F
24	F	F	U ≤0R	A	A	A	B	A	A	≤.6F	B	B	4.9F	C	0 ≤≥R	7.0F	U 7.≥F	6.4F	≤.4F	U ≤.9F	F	A	A	F
25	4.0F	A	A	4.5F	F	≥6F	4.4F	F.H	6.≥F	≥5F	8.5F	8.0F	10.4	10.≥	10.7	10.9	10.5	10.≥	9.≥	8.8	7.0F	4.6F	≥4F	R
26	4.5F	U ≥4R	≥6F	F	F	B	F	F	F	8.≥F	8.0F	9.5F	9.4	J 8.7R	11.5	U 11.0R	B	10.5	9.6	8.7F	7.≥F	6.≥F	4.9F	B
27	F	U ≤≥F	≤.≥F	4.≥F	4.8	F	B	B	B	B	B	B	B	9.1R	10.0F	9.8F	9.6	9.≥F	9.≤F	6.5F	≤.≥F	4.8F	R	A
28	A	A	4.0F	4.5	F	F	≤≥F	≤.8F	6.9F	6.9F	7.8V	8.1F	8.8F	8.≥F	8.0F	10.5F	8.6F	7.9F	8.4F	8.≥F	6.0F	A	A	B
29	F	F	F	4.4F	F	F	5.5F	6.5F	7.8F	8.9	9.≥	8.6F	8.9F	8.9F	9.≥F	9.8F	9.9F	10.7	9.1	9.≥F	F	A	A	A
30	F	F	4.9F	F	A	7.9F	4.4F	≤.≥F	B	B	5.0	≤.6	≤.8	6.≥	6.0	6.1F	6.1F	6.≤F	4.1F	≥.8F	A	F	F	F
31																								
No.	≤	≥	10	9	≥	6	10	8	8	14	≥0	≥0	≥0	≥8	≥4	≥4	≥5	≥7	≥1	≥1	12	8	7	≤
Median	≥.6F	U ≥4F	4.≥F	4.≥F	≥.6F	≥.9F	4.6F	≤.≥F	6.1F	6.6F	7.6F	8.4	9.≥	9.0	9.6	9.8	9.4F	9.≥F	8.6F	8.≥F	6.0F	4.4F	≥4F	≥.6
U.Q.	4.≥	4.≥	≤.0	4.4		4.≥	≤.≥	≤.8	6.7	7.6	8.8	9.0	10.≥	10.8	10.9	10.≥	10.6	10.≥	9.6	8.6	7.0	5.4	4.9	4.5
L.Q.	≥≥	≥≥	≥7	≥.0		≥.5	≥8	≤.0	5.8	6.0	6.≥	4.≥	≥≥	7.5	8.0	8.≥	8.6	7.9	7.7	≤.≥	≥.5	≥.≥	≥.1	≥≥
Q.R.	1.9	1.0	1.≥	1.4		0.8	1.4	0.8	0.9	1.5	≥.6	4.7	≥.5	≥≥	≥.9	≥.1	≥.0	≥.≥	1.7	≥.4	≥.5	≥.≥	≥.8	≥≥

foF2

Sweep 1.0 Mc to ≥.0 Mc in ≥0 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

S 1

IONOSPHERIC DATA

SEP. 1960 | foF1 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S | Long. 39° 35.4′E

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

foF1

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

The Radio Research Laboratories, Japan.

S 2

IONOSPHERIC DATA

SEP. 1960 | foE | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	B	R	R	R	≥3.0	A	A	A	B	B					
2												B	B	B	B	B	B	B	B					
3							B	B	B	B	B	B	B	B	B	B	B	B	B					
4												B	B	B	B	B	B	B	B					
5												B	B	B	B	B	B	B	B					
6							B	B	B	B	B	B	B	B	B	B	B	B	B					
7												B	B	B	B	B	B	B	B					
8												B	B	B	B	B	B	B	B					
9												B	B	B	B	B	B	B	B					
10						4.00	A	B	B	B	B	B	B	B	B	B	B	B	B					
11												B	B	B	B	B	B	B	B					
12												B	B	B	B	B	B	B	B				≥2.0	R
13	≥3.0	≥2.0										B	B	B	B	B	≥2.0	B	≥1.0	1.8				
14							C	C	C	C	B	B	B	B	B	B	A	B	B					
15												B	B	B	B	B	U≥5.0R	U≥3.0R	B					
16								≥1.0	≥2.5	B	R	R	B	R	R	≥2.5	R	≥1.0	1.7.0					
17		R	≥7.0R	R								B	B	B	B	B	R	R	B					
18									R	B	B	B	B	B	B	B	B	≥2.0	≥1.0.0	B	B			
19							≥7.0	≥6.0R	R	B	B	B	B	R	R	≥9.0	≥6.0	≥3.0	1.0.0	B	B	B	B	B
20	B							R	≥5.0	≥3.5R	R	R	R	R	≥6.0R	R	≥7.0R	≥3.0	B	B	B			
21								U≥8.0R	U≥6.0R	R	R	R	B	B	B	B	≥4.0	≥3.5R	R	B	B			
22										B	B	B	B	B	B	R	R	≥2.0	B	B	B			
23						B	B	B	A	B	B	B	B	B	B	R	B	B	B	B	B	B		
24							B			A	B	B	B	B	B	B	B	B	B	1.7.0	B	≥4.0	1.8.0	
25				B	R	≥2.0	B	B	≥5.0	R	R	R	R	R	R	≥7.0R	≥6.0R	≥3.5	≥1.0.0	B	B	B	B	
26		≥2.0.0	≥9.0						≥6.0R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
27									A	B	B	B	B	B	B	B	B	B	B					
28									A	B	B	B	B	B	B	B	B	B	B	B	B			
29						3.0.0			B	B	B	B	B	B	B	B	R	B	B	B				
30									B	B	B	B	B	B	B	B	B	B	B					≥4.0
31																								
No.	1	2	2			3	1	2	5	1				1	1	3	6	8	5	2		1	2	1
Median	≥8.0	≥6.0	≥8.0			≥0.0	≥7.0	≥6.0	≥5.0	≥3.5				≥2.0	3.0.0	≥7.0	≥5.5	≥2.0	≥0.0	1.8.0		≥4.0	≥5.0	≥4.0

foE

Sweep 1.0 Mc to 2.0.0 Mc in 1.0 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 3

IONOSPHERIC DATA

SEP. 1960

foEs

45° E Mean Time (G.M.T.+3h)

Syowa Base

Lat. 69°00.4 S
Long. 39°35.4 E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	33	42	44	B	28	B	B	B	B	G	G	G	G	28	22	22	B	25	B	B	B	B	B
2	29	26	22	25	22	B	B	B	B	B	B	B	B	B	B	B	B	B	41	43	40	40	43	J41
3	22	J41	J42	J43	27	48	40	48	56	B	B	B	B	B	B	B	B	B	B	B	B	22	28	28
4	J69	J 33	28	J28	49	52	J62	B	B	B	B	B	B	B	B	B	B	B	B	B	B	39	J56	46
5	J66	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	27	J30	J50	37
6	J38	47	J53	J59	J58	B	J56	B	J	B	B	B	B	B	B	B	B	B	B	B	B	B	27	29
7	28	41	B	B	B	J35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	44	24	J46
8	46	B	B	B	54	27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	21	28	23	37
9	B	30	27	J47	J36	J45	29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	40	J24
10	40	J55	J58	B	51	47	41	B	B	B	B	B	B	B	B	B	B	B	B	26	26	B	J38	41
11	34	50	47	27	J44	53	B	B	50	B	B	B	B	B	B	B	B	B	B	B	B	40	38Y	40
12	J 42	J46	J45	J34	J33	B	B	J67	52	B	B	B	B	B	B	B	B	B	B	B	B	26	33	35
13	J 37	28	27	J33	J54	J45	B	B	B	B	B	B	B	B	B	B	26	B	25	24	30	33	42	J34
14	J 87	J50	30M	31	47M	38	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	47M	J37
15	29	B	27	26	36M	B	B	B	45	B	B	B	B	B	B	B	G	G	33	46	B	47	31	C
16	28	28	40F	J43	48	45	32	G	G	B	G	G	B	G	G	G	G	G	G	B	J33	E	B	B
17	B	33	G	G	J36	B	B	B	B	B	B	B	B	B	B	B	G	G	B	B	B	B	B	B
18	J 81	63M	52	38	45M	B	41	B	G	B	B	B	B	B	B	B	B	G	G	B	B	J36	36	31H
19	31	J34	44M	J51	54	43	33	G	G	B	B	B	B	G	G	G	G	G	G	B	B	B	B	B
20	B	47	48	33	36	J35	37	G	G	G	G	G	G	G	G	G	G	G	B	B	B	33	B	B
21	B	38	56	B	50	J43	38	G	G	G	G	G	B	B	B	B	G	G	B	36	39	J55	J43	J63
22	J 43	J64	J 81	52	44	B	B	B	J46	B	B	B	B	B	B	G	G	G	B	B	B	39	35	42
23	C	28	50	33	34	51	B	47	J 60	B	B	B	B	B	B	B	B	B	B	B	B	B	J33	32
24	33	37	J 66	57	48	47	B	53	52	58	B	B	B	B	B	B	B	B	B	G	44	40	31	J38
25	34	50	44	36	G	39	35	B	G	G	G	G	G	G	G	G	G	G	G	B	B	B	B	35
26	J 64	G	G	37	J43	B	B	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	J48	40	J43	B	B	B	B	B	B	B	B	B	B	B	G	B	B	B	B	B	B	37	J68
28	36	J 81	38	J63	31	50	42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	34	B
29	40	J 39	J80	J59	44	G	B	B	B	B	B	B	B	B	B	B	B	B	B	42	37	44	34	J59
30	44	J 34	41	E	J76	B	B	42	B	B	B	B	B	B	B	B	B	30	B	42	47	J41	J42	J560
31																								
Count	23	27	27	25	26	19	12	9	14	4	5	5	3	5	5	6	10	10	8	8	10	20	23	22
Median	28	29	42	28	44	43	40	42	G	G	G	G	G	G	G	G	G	G	G	36	31	34	32	39
U.Q.	43	53	52	52	51	51	42	50	52	G	G	G	G	G	G	G	G	G	G	42	40	42	42	48
L.Q.	21	28	28	32	34	38	34	G	G	G	G	G	G	G	G	G	G	G	G	G	23	24	24	24
Q.R.	31	25	24	69	47	43	37														17	18	18	14

The Radio Research Laboratories, Japan

foEs

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

S 4

IONOSPHERIC DATA

SEP. 1960 | f-min | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	≥1.0	≥1.0	≥4.0	B	1.60	1.90	1.60	1.80	≥2.0	1.90	≥1.0	≥2.0	≥1.0	≥1.0	≥1.0	≥1.0	1.80	1.50	1.90	1.60	B	1.40	1.40
2	1.30	≥1.0	1.60	1.40	1.50	1.40	1.50	1.60	B	B	5.10	≥5.0	≥2.0	≥1.0	≥2.0	≥1.0	≥2.0	≥2.0	≥5.0	1.70	≥1.0	1.40	1.40	1.50
3	1.50	1.10	1.90	1.30	≥2.0	1.80	≥1.0	≥3.0	≥5.0	B	B	B	B	B	≥6.0	≥3.0	≥5.0	≥3.0	≥6.0	≥2.0	≥2.0	1.70	1.60	1.80
4	≥3.0	1.40	1.30	1.30	≥2.0	≥3.0	≥6.0	B	B	B	B	B	B	B	B	B	B	B	B	B	B	4.10	≥2.0	4.10
5	≥5.0	B	B	≥5.0	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	≥1.6	≥3.0	1.90	≥2.0
6	1.80	1.80	4.30	4.10	≥2.0	≥2.0	≥6.0	6.20	≥5.0	B	B	B	B	B	B	4.00	4.20	≥3.0	≥3.0	≥1.0	B	B	1.80	1.90
7	1.80	≥2.0	B	B	B	≥4.0	B	≥6.0	B	B	4.50	4.90	5.50	≥7.0	4.00	≥1.0	≥7.0	≥3.0	4.40	4.00	1.90	≥7.0	1.80	1.90
8	4.40	B	≥1.0	B	≥3.0	1.90	≥5.0	B	B	B	6.30	4.40	B	4.90	6.30	4.80	5.10	≥9.0	6.20	1.70	1.60	1.80	1.80	≥2.0
9	B	1.80	1.70	1.60	≥3.0	≥3.0	≥1.0	4.00	B	4.40	≥6.0	4.40	≥4.0	≥6.0	≥3.0	≥6.0	≥2.0	≥6.0	≥2.0	≥3.0	≥2.0	1.60	≥9.0	1.60
10	≥3.0	4.40	4.90	B	≥7.0	≥4.0	≥1.0	≥1.0	B	≥5.0	6.20	5.10	6.00	≥8.0	≥3.0	6.20	≥1.0	≥3.0	≥7.0	≥1.0	1.80	B	1.80	1.70
11	1.70	1.60	1.90	1.70	≥1.0	4.60	B	B	≥3.0	≥5.0	4.00	6.20	4.20	≥6.0	≥3.0	≥3.0	≥9.0	≥2.0	1.90	1.20	1.50	1.40	1.80	≥2.0
12	1.60	≥1.0	≥2.0	1.60	1.40	B	≥1.0	≥5.0	4.10	≥3.0	4.30	B	4.30	6.20	6.20	4.80	≥9.0	≥2.0	≥10.5	1.70	1.90	1.90	1.20	1.80
13	1.70	1.60	1.70	1.90	≥6.0	≥2.0	4.00	≥7.0	B	B	≥7.0	≥5.0	4.10	≥6.0	4.20	6.90	≥2.0	≥2.0	1.60	1.60	1.70	1.40	1.40	≥2.0
14	≥3.0	≥4.0	1.80	≥3.0	4.00	1.80	C	C	C	C	4.00	4.40	≥3.0	≥6.0	≥2.0	≥1.0	≥9.0	≥1.0	≥2.0	≥2.0	1.60	1.80	E	E
15	1.70	B	1.90	≥2.0	1.90	≥2.0	≥7.0	B	4.00	≥3.0	4.80	6.20	≥7.0	4.10	≥3.0	≥2.0	≥1.0	1.80	1.40	6.20	1.80	1.20	6.40	C
16	1.40	1.60	≥1.0	1.90	4.00	1.70	1.60	≥1.0	≥2.0	≥2.0	1.80	≥1.0	≥1.0	≥1.0	≥2.0	1.85	1.80	1.60	1.70	1.40	1.30	F	1.20	1.30
17	1.40	1.70	1.60	1.60	1.60	≥2.0	≥6.0	4.30	≥3.0	≥1.0	≥3.0	≥3.0	≥4.0	≥3.0	≥1.0	≥1.0	1.90	≥2.0	1.90	1.60	1.40	1.40	≥8.0	B
18	≥1.0	4.30	≥6.0	1.20	≥3.0	≥2.0	≥1.0	≥6.0	≥2.0	B	≥7.0	≥6.0	≥3.0	4.20	≥5.0	4.40	≥6.0	≥2.0	1.60	1.60	1.60	F	1.60	F
19	F	1.80	≥8.0	≥1.0	≥1.0	1.80	1.80	1.60	1.90	≥1.5	≥5.0	≥4.0	≥3.0	≥6.0	≥1.5	≥0.5	≥2.0	≥0.5	1.60	1.40	1.60	1.40	1.30	1.40
20	1.45	1.60	1.60	1.25	1.20	1.20	1.40	1.40	1.90	1.70	1.90	1.80	≥2.0	≥2.5	≥2.0	≥1.0	≥1.0	≥1.0	≥2.0	1.70	1.60	F	F	1.50
21	1.60	1.60	≥2.0	B	≥7.0	≥2.0	1.80	1.90	≥0.5	≥2.0	≥2.0	≥3.0	≥6.0	≥6.5	≥2.0	≥1.0	≥1.0	1.80	1.80	1.15	1.60	1.80	1.80	1.60
22	1.25	1.80	≥1.0	≥1.5	≥2.5	≥3.5	≥2.0	≥4.5	≥5.0	6.00	4.40	4.45	≥6.0	≥3.0	≥2.0	≥2.0	≥2.0	1.90	≥0.5	1.60	1.40	1.60	1.80	1.80
23	C	1.90	≥4.0	1.75	≥1.0	4.15	≥6.5	≥6.0	≥3.0	≥1.0	≥2.0	4.40	6.00	≥1.0	≥7.0	≥6.5	≥6.0	≥7.0	≥9.0	≥0.5	1.65	1.20	1.60	1.60
24	1.75	1.65	≥5.0	4.00	≥1.5	≥7.0	B	≥9.0	≥4.0	≥2.0	B	B	≥4.0	≥5.0	6.60	4.00	≥1.0	≥1.0	≥1.0	1.30	1.70	1.90	1.55	1.90
25	≥6.0	1.80	1.70	≥2.0	≥2.0	1.90	1.50	1.90	≥1.0	≥2.0	≥3.0	≥1.5	1.90	1.80	1.80	1.90	≥2.0	1.80	1.60	1.45	1.25	F	1.50	1.15
26	≥1.0	1.90	1.80	1.90	≥2.0	B	4.00	≥5.0	≥1.0	≥2.0	≥5.0	4.50	6.70	6.30	6.20	4.10	B	4.10	≥8.0	≥5.0	≥1.0	≥2.0	≥1.0	B
27	≥3.0	≥1.0	≥3.0	≥1.0	4.00	4.50	B	B	B	B	B	B	B	6.00	6.20	4.90	6.20	4.60	≥6.0	≥8.0	≥1.0	≥9.0	≥2.0	≥1.0
28	≥2.0	≥1.0	≥1.5	≥3.0	1.90	≥7.0	≥3.0	4.00	≥3.5	≥4.0	≥5.0	≥6.0	≥4.0	≥7.0	≥8.0	≥3.0	≥6.0	≥5.0	≥9.0	≥0.0	1.80	1.70	≥8.0	B
29	1.60	1.40	≥0.0	1.50	≥3.0	≥0.0	≥0.0	≥0.0	≥6.0	≥6.0	≥1.0	≥3.0	≥5.0	≥6.0	≥1.5	≥5.0	≥1.0	≥2.0	4.20	≥1.0	1.70	≥0.0	1.90	≥3.5
30	1.60	≥0.0	1.80	E	≥9.0	≥2.0	4.00	≥0.0	B	B	4.30	≥7.5	≥8.0	4.60	≥6.0	≥0.0	≥6.0	≥7.0	≥2.0	1.70	1.80	1.40	1.10	1.70
31																								
No.	≥9	≥0	≥0	≥0	≥0	≥0	≥9	≥9	≥9	≥9	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥9
Median	1.25	1.80	≥0.0	≥0.0	≥1.0	≥8.0	≥1.0	≥5.0	≥5.0	≥8.0	4.00	4.40	≥6.5	≥6.0	≥4.0	≥4.0	≥0.0	≥6.5	≥3.0	1.70	1.70	1.70	1.70	1.80
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 20.0 Mc in ≥2 sec in automatic operation

The Radio Research Laboratories, Japan

S 5

25

IONOSPHERIC DATA

SEP. 1960 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	≥60											
2									B	B	B	B												
3															≥30									
4								B	B	B	B	B	B	B	B	B	B	B	B					
5								B	B	B	B	B	B	B	B	B	B	B	B					
6								B	B	B	B	B	B	B	B	B	B	B	B					
7												<90	≥00	<90		L								
8								B	B	B	≥00	≥70	B	≥≥0	<90	≥≥0L	≥20	<60	B					
9											L		L	L										
10										L	≥00	≥00	≥≥0											
11										≥10	L	≥90												
12												B	L	≥≥0										
13										3	L	LF	L	L										
14							C	C	C	C		L	L	L	L									
15															L									
16											L	L	L											
17								<≥0	L		L	L	L											
18									F			400	440		L									
19									LH		≥00L	≥90L		L										
20																								
21			A									L			L									
22				A						B	L													
23											400	≥≥0	≥60	≥70										
24				A						A	B	B	670	620	E400B									
25										≥10	L		≥30	≥60										
26									≥60	L	L													
27								B	B	B	B	B	B	B	B	B	B	B	B					
28											≥<5	L	L											
29									L	≥90	≥70	≥90	≥00		L									
30								B	B	B	600	470	440	400	400	400	400	≥60						
31																								
No.								1	1	2	7	9	9	7	4	2	2	2						
Median								<≥0	≥60	≥10	≥00	≥00	≥30	≥≥0	≥65	≥65	≥40	≥05						

h'F2 Sweep 1.0 Mc to 20.0 Mc in 30 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S6

IONOSPHERIC DATA

SEP. 1960 | h'F | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	A	B	B	A	400	200	240	270	260	230	230	220	210H	210	220	210	220	210	210	B	260	290
2	A	B	A	410	410	260	260	200	B	B	280	250	240	220	240	220	260	260	250	210	A	A	A	A
3	F	F	400	500	280	F	A	A	A	B	B	B	B	B	B	210	200	200	280	200	210	A	A	A
4	A	A	220F	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B
5	A	B	B	200	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	F	A
6	A	A	B	B	A	410	A	400	B	B	B	3	B	B	B	230	200	280	280	280	B	B	A	A
7	A	A	B	B	B	A	B	400	280	B	200	B	B	B	230	270	280	210	200	200	210	B	A	A
8	B	B	430	B	B	270	400	B	B	B	B	B	B	B	B	A	B	B	260	280	B	A	B	B
9	B	A	A	F	290	F	290	260	B	500	210	200	260	270	270	280	270	270	250	260	260	B	B	A
10	A	F	F	B	B	A	290	200	B	200	B	B	B	250	260	250	220	220	260	210	A	B	A	A
11	A	F	A	410	280	B	B	B	230	B	280	B	280	240H	230	240	240	230	220	220	220	A	A	A
12	A	B	200	280	410	B	290	410	A	290	200	B	200	B	200	280	230	230	250	220	200	250	B	A
13	A	500	460	520	F	A	400	400	B	B	200	200	200	230	260	290	260	250	240	240	250	260	290	A
14	B	260	F	B	B	235	C	C	C	C	200	260	260	270	265	260	250	265	230	225	220	230	235	400
15	A	B	270	470	420	290	250	B	240	200	200	200	235	235	220	220	220	220	230	235	220	225	280	C
16	A	A	215	440	B	520	290	285	250	240	225	220	210	220	235	240	220	215	240	220	215	230	230	270
17	200	200	E230R	420	400	420	410	B	280	255	230	230	240	230	241	235	220	200	210	205	210	260	200	B
18	F	B	500	220	B	460	470	280	200F	B	202	260	280	290	255	275	250	245	250	210	250	210	R	R
19	R	300	260	A	A	500	420	400	285	250	220	225	230	220	230	230	230	220	225	200	220	210	220	290
20	240	350	470	470	270	400	290	275	250	240	230	230	220	220	220	220	220	210	210	210	210	260	280	270
21	200	A	A	B	400	410	260	270	260	230	235	240	230	230	230	245	240	240	250	270	400	A	F	A
22	A	A	200	A	430	200	420	280	A	B	200	280	245	240	230	230	240	240	220	215	250	A	A	A
23	C	400	520	410	270	A	A	400	270	271	270	B	B	250	280	260	240	245	230	230	220	220	200	215
24	290	260	270	A	A	A	B	A	A	A	B	B	200	200	B	220	260	290	280	280	280	A	A	260
25	260	A	A	490	460	420	240	290	270	230	245	200	220	235	230	240	230	230	225	220	245	210	270	A
26	250	445	470	400	F	B	F	E250B	240	240	250	280	E200B	290	250	240	B	220	210	200	250	230	250	B
27	F	400	250	290	460	410	B	B	B	B	B	B	B	220	220	290	255	250	250	255	280	270	A	A
28	A	A	A	460	470	230	500	400	290	290	260	E200B	240	250	250	220	220	230	255	200	280	A	A	B
29	F	260	210	470	F	280	260	200	230	240	240	215	245	240	240	250	250	280	255	270	270	A	A	A
30	F	F	400	280	A	E480B	410	290	B	B	B	280	E200B	B	E200B	260	200	S	500	480	A	F	F	230
31																								
No.	6	10	13	18	14	17	18	20	15	15	21	18	21	22	24	27	26	28	23	28	29	13	11	8
Median	200	275	285	420	405	410	290	270	280	265	270	245	240	240	240	250	240	235	250	230	250	260	280	290

h'F

Sweep 1.1 Mc to 4.0 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S7

IONOSPHERIC DATA

SEP. 1960 | h'E | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	B	120	120	110	140	A	A	A	B	B					
2												B	B	B	B	B	B	B	B					
3							B	B	B	B	B	B	B	B	B	B	B	B	B					
4												B	B	B	B	B	B	B	B					
5												B	B	B	B	B	B	B	B					
6							B	B	B	B	B	B	B	B	B	B	B	B	B					
7												B	B	B	B	B	B	B	B					
8												B	B	B	B	B	B	B	B					
9												B	B	B	B	B	B	B	B					
10						110	A	B	B	B	B	B	B	B	B	B	B	B	B					
11												B	B	B	B	B	B	B	B					
12												B	B	B	B	B	B	B	B			120	120	
13	120	120										B	B	B	B	B	150	B	110	120				
14							C	C	C	C	B	B	B	B	B	B	B	B	B					
15												B	B	B	B	B	120	120	B					
16								B	120	B	110	110	B	110	110	115	120	115	B					
17		125	120	120								B	B	B	B	B	120	105	B					
18									125	B	B	B	B	B	B	B	B	160	140	B	B			
19							110	110	120	B	B	B	B	110	110	110	120	170	150	B	B	B	B	B
20	B							110	120	110	110	110	110	110	110	110	120	180	B	B	B			
21								115	120	110	110	110	B	B	B	B	120	120	B	B	B			
22										B	B	B	B	B	B	110	115	150	B	B	B			
23						B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B		
24							B			A	B	B	B	B	B	B	B	B	B	160	B	130	120	
25				B	120	120	B	B	120	110	110	110	105	110	105	110	125	120	140	B	B	B	B	
26		130	130						130	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
27									B	B	B	B	B	B	B	B	B	B	B					
28									B	B	B	B	B	B	B	B	B	B	B	B	B			
29						120			B	B	B	B	B	B	B	B	20	B	B	B				
30									B	B	B	B	B	B	B	B	B	B	B					140
31																								
No.	1	2	2	1	1	3	1	3	7	7	6	6	7	6	4	6	10	9	4	2		1	2	2
Median	120	130	125	120	120	120	110	110	120	110	110	110	110	110	110	110	120	160	140	140		130	120	120

h'E

Sweep 40 Mc to 20.0 Mc. in 30 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

SEP. 1960 | h'Es | 45° E Mean Time (G.M.T. + 3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	120	100	120	B	110	B	B	B	B	G	G	G	G	110	120	120	B	110	B	B	B	B	B
2	120	160	120	120	170	B	B	B	B	B	B	B	B	B	B	B	B	B	120	110	120	110	110	110
3	120	120	110	110	110	140	130	120	160	B	B	B	B	B	B	B	B	B	B	B	B	160	110	120
4	160	110	120	140	110	120	160	B	B	B	B	B	B	B	B	B	B	B	B	B	B	130	140	120
5	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	160	140	120	110
6	110	120	100	110	120	B	160	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	110
7	110	120	B	B	B	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	160	110	140
8	110	B	B	B	100	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	160	120	150	120
9	B	120	130	120	100	120	140	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	160	120
10	150	120	120	B	100	150	110	B	B	B	B	B	B	B	B	B	B	B	B	120	120	B	110	110
11	110	160	120	120	120	120	B	B	110	B	B	B	B	B	B	B	B	B	B	B	B	110	110	140
12	140	110	110	110	130	B	B	120	110	B	B	B	B	B	B	B	B	B	B	B	B	140	130	160
13	170	140	120	120	120	100	B	B	B	B	B	B	B	B	B	B	170	B	160	150	120	145	165	165
14	110	140	120	120	120	110	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	120	120
15	140	B	120	125	120	B	B	B	150	B	B	B	B	B	B	B	B	B	G	G	100	170	B	130	130	C
16	120	120	115	110	125	110	110	G	G	B	G	G	B	G	G	G	G	G	G	B	100	E	B	B
17	B	170	G	G	140	B	B	B	B	B	B	B	B	B	B	B	G	G	G	B	B	B	B	B
18	140	115	120	120	125	B	150	B	G	B	B	B	B	B	B	B	B	G	G	B	B	125	115	110
19	120	120	125	100	100	105	165	G	G	B	B	B	B	G	G	G	G	G	G	B	B	B	B	B
20	170	150	120	110	110	120	155	G	G	G	G	G	G	G	G	G	G	G	B	B	B	120	B	B
21	B	120	150	B	110	110	110	G	G	G	G	G	B	B	B	B	G	G	B	120	120	115	110	105
22	110	110	110	110	140	B	B	B	120	B	B	B	B	B	B	G	G	G	B	B	B	120	120	110
23	C	115	120	120	120	130	B	120	110	B	B	B	B	B	B	B	B	B	B	B	B	B	160	120
24	140	120	120	105	120	110	B	105	110	105	B	B	B	B	B	B	B	B	B	G	110	150	130	130
25	115	110	115	130	G	120	110	B	G	G	G	G	G	G	G	G	G	G	G	B	B	B	B	110
26	140	G	G	120	140	B	B	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
27	B	110	150	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	140	110
28	110	100	130	100	120	150	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	170	B
29	120	160	110	125	115	G	B	B	B	B	B	B	B	B	B	B	G	B	B	125	120	110	110	170
30	140	110	110	E	150	B	B	120	B	B	B	B	B	B	B	B	B	160	B	120	120	110	120	170
31																								
No.	26	26	26	23	26	18	12	6	7	1					1	1	2	1	4	7	10	18	20	22
Median	120	120	120	120	120	120	125	120	110	105					110	120	145	160	115	120	120	120	120	120

h'Es Sweep 1.0 Mc to 22.0 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

IONOSPHERIC DATA

SEP. 1960

Types of Es

45° E Mean Time (G.M.T. +3h)

Syowa Base

Lat. 69°00.4' S
Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		a	r	a		r									l	a	l		l					
2	a	a	a	a²	a														a	r³	r	r³	a	a²
3	r	a²	a	a²	a	a		a	a													a	a	r
4	a	a²	r²	a	r	a	a															a	a²	f
5	a																				a	a	a	a
6	a	a	f	a	a		a																r	r
7	r	r				a																a	a	a
8	a				a	a															a	a²	a	a
9		a	a	a	a	a	a															a	a	a²
10	a	a²	a		a	k	a													a	a		a	a
11	r	a	a	a	a	a			a													a	a	a
12	a	a	a	a²	a³			a	a													a	k²	k
13	k	k	a	a	a	a²											k		k	k	a	k	a	a
14	a²	a	a	a	a	r																	a	a²
15	r		a	r	a				a										l	a		a	a	
16	r³	r³	r	a²	a	r²	r														f			
17		k			a																			
18	a	a	a	r	a		r															a	r³	r⁴
19	r⁴	a²	a	a	r²	r	k																	
20		a	a	r³	a³	a	r															r		
21		f³a²	a		f	a	r													a	r	a	a	a
22	a	f	f		r				f													r³	r⁴	f
23		r²	r	r	f	r		a	a														a	r³
24	r	r	r	f	a	f		a	r	f											f	k²	k³	a
25	a	a	a	f		l	f																	r⁴
26	a			r	a																			
27		r	a	a																			a	a
28	r	f	a	a	a	r	a															a	a	
29	a	a	aaa	a	r															f	r²	a	f	a
30	a	a	r		a			a												a	a³	a	a	k
31																								
Count																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

Types of Es

Sweep 10 Mc to 200 Mc in 30 sec in automatic operation

The Radio Research Laboratories, Japan

S10

IONOSPHERIC DATA

OCT. 1960 | foF2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	F	F	F	B	B	A	F	A	B	B	B	B	B	B	9>F	47F	B	41	F	A	A	A	A
2	A	B	54	A	F	A	B	B	B	B	B	B	B	B	B	F	B	B	A	A	B	A	B	B
3	B	B	B	A	B	A	47F	41F	55F	53	61F	61	6.0	6.4	B	63F	9>	66F	60F	62F	F	43F	44F	F
4	A	A	F	F	F	B	F	B	B	B	B	B	C	C	C	F	80F	36F	63F	F	F	F	A	>7
5	A	F	B	B	A	B	B	B	B	B	B	45	B	B	B	55	57F	53	5	47F	45F	U>>F	>4	A
6	50F	F	B	F	F	F	B	B	B	B	B	A	B	40	26	B	43	41	F	F	F	F	F	B
7	A	A	B	B	A	B	B	B	A	R	B	B	F	B	B	HW	B	F	F	F	F	A	U19F	A
8	B	A	A	B	26	B	B	B	B	B	B	B	B	45	B	59	55	5	B	48F	F	A	A	F
9	A	U52F	B	B	3	47F	B	B	B	B	B	B	R	U53F	59R	6.5	69F	63	46	49F	>7	B	A	A
10	A	A	U37F	B	F	U42F	B	B	B	50	B	B	55	53F	59F	6.1	B	V62>	64F	B	6.0F	40F	A	35F
11	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	F	U>7>	>8
12	A	A	F	F	F	F	F	30F	V85>	8.6F	85	85	8.6	85	8.8	87F	85F	79F	76F	75F	70F	62F	61F	F
13	F	F	A	F	F	F	F	F	83F	8>F	9>F	81	94	95F	98	10.6	90	87	87	80F	72F	70F	U62F	U62F
14	F	F	F	F	B	5>F	U5>R	8>F	9>F	8>F	89	88	10>	10.0	84F	86F	89F	5	8>F	82F	U76F	68F	62F	66F
15	F	F	F	>4F	B	B	B	5>F	B	70F	8>	9>	90	9>	87F	16.2	J10.8	10>F	80F	64F	F	A	A	A
16	F	A	B	A	A	45F	49F	43F	U6>F	6.9F	6.5F	66F	6.7	6.6	68F	70F	6.9F	65F	6.5F	6.6F	6.2F	62F	6.0F	F
17	F	F	B	A	5.5F	57F	J26F	90F	90F	85F	89F	89F	96F	96	95	89F	85	8>	77	75F	72F	F	5	A
18	A	50F	53F	F	F	F	6.0	57F	B	B	B	B	65F	B	84F	89F	84F	66F	F	40F	A	A	U>7F	A
19	B	A	F	F	F	F	46F	44F	F	B	48F	51F	55F	56F	5.6F	6.0F	6.2F	61F	59F	57F	U48F	>>F	A	A
20	A	42F	F	F	F	F	F	A	53	65F	F	F	71F	84F	86F	9>F	U94F	U80F	68F	F	44F	5	F	F
21	F	F	40F	52F	U58F	F	F	F	8>F	75F	76F	80F	89F	8>	78F	76F	71F	47F	65	64F	62F	54F	F	A
22	F	A	B	U62F	F	F	86F	88F	8>F	8.6	8.7F	88F	91F	90F	71F	90F	90F	83F	91F	71F	66F	60F	44F	F
23	F	F	F	F	F	F	U62F	F	F	F	F	9>	95F	10.4F	93F	80F	86F	84F	U85F	76F	U7>F	U68F	F	F
24	37F	F	F	F	F	F	F	68F	F	F	70F	6.9	71	75F	77F	80F	87F	80F	74F	57	F	F	F	A
25	F	F	F	F	F	U51F	F	67F	63F	70	B	B	B	B	B	F	48F	B	F	38F	B	F	F	F
26	B	A	A	B	A	B	F	R	B	R	B	C	C	B	70	B	B	B	F	41	F	F	R	B
27	B	B	B	B	B	F	B	F	B	F	60F	57F	61	63	65	B	53F	F	41F	F	F	A	30	A
28	F	B	F	F	F	B	B	B	B	B	B	B	B	43	60F	53	B	B	F	F	F	A	A	B
29	B	A	B	B	B	B	51F	U55F	52F	B	B	B	B	B	B	67	53F	F	47	B	39	A	A	B
30	F	B	B	B	B	U44F	B	B	50F	B	B	B	B	B	B	55	45F	50F	A	44F	U43F	A	A	40F
31	A	F	U47F	B	B	B	B	B	B	53F	B	B	B	61	65	63	66	60F	56	55F	46F	F	A	41F
No.	>	>	<	>	>	7	9	12	12	13	12	14	16	>0	>0	24	>5	>0	>0	>0	.6	11	11	7
Median	44F	50F	47F	52F	55F	47F	5>F	6.0F	40F	40F	39F	8>	77	70	78F	71F	71F	66F	65F	60F	61F	60F	43F	40F
U.Q.		51	54	57	57	54	69	74	8>	84	88	91	9>	91	9>	99	8>	8>	79	7>	7.1	65	6>	53
L.Q.		46	>8	47	46	47	48	54	56	6.>	63	6.1	6.3	57	6>	60	53	6.>	56	46	44	40	>.0	>5
Q.R.		0.5	1.6	1.4	1.1	1.1	>1	>0	>6	2>	>5	>0	>9	>4	>0	>9	>0	>0	>>	>7	>7	>5	>>	>>

foF2

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

The Radio Research Laboratories, Japan

S 1

IONOSPHERIC DATA

OCT. 1960 | foF1 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S, Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	B	B	B	B	B	B	40	39	B						
2							B	B	B	B	B	B	B	B	B	B	B	B	A					
3								37	39	B	42	B	42	43	B	40L								
4								B	B	B	B	B	C	C	C	40								
5												B	B	B	B	B	39	3						
6							B	B	B	B	B						B	B	30F					
7								32	B	38	B	B		B	B	37	B		32					
8							B	B	B	B	B	B	B		B	B	41	3						
9							B	B	B	B	B	B	44	B	B	B	41							
10							B	B	B		B	B	46	46	L	L								
11							C	C	C	C	C	C	C	C	C	C	C	C	C					
12								42	44	L	42	39	L	L	L	L								
13							39L	46	49	45	49	41	B	50	L	51L								
14								41	43	46	L	L	50	L	L									
15								B	B	48	54	L	48	L	L	L								
16							37	38	41	42	44	47	47	49	L	L	L	L						
17							41	42	44	47	50L	50	50	L	L	L								
18									B	B	B	B	46	B	46	45L	L	40L	L					
19							34	B	A	B	44	46	46	44	LH	44								
20						F		A	A	B	44	46	48	L	L	L	40L							
21							40	41	42	45	47	45	45	45	45	L	B							
22						L	37	40	42	45	46L	49	L	L	L	L	L							
23							41	43	45	46	49	L	L	L	L	L								
24								38	41	42	43	45	46	48	45	L	L							
25					34	36	41	41	42	42	B	B	B	B	B	B	B	B						
26								38	B		B	C	C	B	B	B	B							
27									B		44	B	B	B	B	B	B	39	36					
28							B	B	B	B	B	B	B	B	B	B	B	B						
29							B	37	B	B	B	B	B	B	B	44	41							
30							B	B		B	B	B	B	B	B	B	44	38	36					
31							B	B	B	42	B	B	B	B	48		B	39						
No.					1	1	8	14	11	13	13	9	13	7	4	8	7	4	4					
Median					34	36	40	40	42	45	46	46	46	46	46	42	40	39	34					

foF1

Sweep 1.0 Mc to 20.1 Mc in 30 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 2

IONOSPHERIC DATA

OCT. 1960 | foE | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S | Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				≥2.0					B	B	B	B	B	B	B	B	B	B	B	B	A			
2									B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3								B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
4									B	B	B	B	C	C	C	B	B	B	B	B	B	B		
5									B	B	B	B	B	B	B	B	B	S	S	B				
6									B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B
7							B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
8								B	B	B	B	B	B	B	B	B	B	S	B	B	1.80	B	B	B
9								B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10									B	B	B	B	B	B	B	B	B	S	B	B	B	B	B	B
11	B			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
12						B	B	B	B	B	B	B	B	B	B	B	B	R	≥2.0	B	B	B	B	B
13						B	≥60R	≥60R	≥70R	B	B	B	B	B	B	S	B	B	B	≥10	B	B	B	B
14	B					B	B	B	B	B	B	B	B	B	B	R	R	S	B					
15							B	B	B	B	B	B	B	B	B	B	B	R	B	B	B	B	B	
16							B	B	B	B	B	B	B	R	B	R	R	B	B	B	B	B	B	
17								≥80	R	R	B	B	B	B	B	B	B	R	≥40	B	B	B	B	B
18	B					R	B	B	B	B	B	B	B	B	B	B	B	B	R	B	B			
19					R			B	B	B	B	B	R	B	B	B	B	B	B	B				
20						R	B	B	B	B	B	B	B	B	B	B	B	B	≥50	B	B	S		
21									R	R	R	B	B	B	R	R	B	R	≥20	B				
22							≥16	≥50	R	B	B	B	B	B	B	R	R	R	≥20	≥00	R	B	B	
23						≥20		≥50	R	R	R	B	B	R	R	R	≥70	≥25	≥40	≥00				
24		≥80	≥70	≥50				≥00	R	B	B	B	R	R	≥00	R	R	B	B	B	≥00	A		
25						≥20		R	R	R	B	B	B	B	B	B	B	B	≥00					
26							B	R	B	B	B	C	C	B	B	B	B	B	R	R			≥40	
27						B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
28					R	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
29							B	B	B	B	B	B	B	B	B	B	B	B	B	B	R			
30							B	B	B	B	B	B	B	B	B	B	B	B	B					
31		≥70					B	B	B	B	B	B	B	B	B	B	B	B	B	B				
No.		2	1	2		2	2	5	1						1		1	1	7	3	2		1	
Median		≥25	≥30	≥05		≥05	≥30	≥50	≥20						≥00		≥70	≥25	≥30	≥00	1.95		≥40	

foE

Sweep 1.0 Mc to ≥20.0 Mc in ≥2.0 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 3

IONOSPHERIC DATA

OCT. 1960 | foEs | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4′ S, Long. 39°35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J 6.4	J 5.2	2.7	4	B	4.0	J 4.9	4.2	J 6.1	B	B	B	B	B	B	B	B	B	B	2.9	6.1	6.3	3.5	J 8.1
2	J 5.2	B	4.1	5.1	2.2	5.0	B	B	B	B	B	B	B	B	B	B	B	B	J 7.5	J 8.2	B	J 6.2	B	B
3	B	B	4.2	J 6.5	B	4.0	3.8	B	B	B	B	B	B	B	B	B	B	B	B	2.8	2.2	B	B	B
4	2.4	2.9	J 5.2	B	4.9	B	B	B	B	B	B	B	C	C	C	B	B	B	B	J 4.6	B	B	5.2	B
5	2.6	2.8	B	B	J 8.5	B	B	B	B	B	B	B	B	B	B	B	B	8	8	B	B	B	2.3	2.1
6	2.8	2.7	B	2.8	2.5	2.5	B	B	B	B	B	4.2	B	2.5	B	B	B	B	B	B	2.7	3.0	4.4	B
7	J 4.9	4.5	B	B	J 5.0	B	B	J 4.4	B	B	B	B	B	B	B	B	B	B	2.4	B	2.5	2.8	B	J 5.0
8	B	J 7.1	J 8.6	B	2.6	B	B	B	B	B	B	B	B	B	B	B	B	8	B	B	2.3	2.2	4.4	4.9
9	4.4	J 6.8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	2.7	B	4.0	4.7
10	4.2	J 8.1	2.4	B	2.4	B	B	B	B	B	B	B	B	B	B	B	B	8	B	B	B	2.5	2.0	J 4.7
11	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	J 4.7	8	3.3
12	J 4.7	J 6.2	2.8	J 5.5	2.2	B	B	2.8	B	B	B	B	B	B	B	B	B	G	G	B	B	B	B	3.1
13	2.7	4.5	J 5.6	4.2	J 4.0	B	G	G	G	B	B	B	B	B	B	8	B	B	B	G	B	B	B	B
14	B	B	2.7	2.6	B	B	B	B	B	B	B	3.7	B	B	B	G	G	8	2.5	2.2	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	6.1	J 5.9	J 4.4	B	B	G	B	2.6	4.5	J 8.0	J 4.7	4.5
16	J 2.8	5.9	B	4.0	4.5	B	B	3.1	2.2	B	B	B	B	G	B	G	G	B	B	B	B	B	3.1	B
17	B	J 4.6	B	J 5.2	2.8	B	2.9	G	G	G	B	B	B	B	B	B	B	G	G	B	2.6	B	2.4	2.5
18	2.9	J 2.3	J 2.7	J 4.5	B	G	B	B	B	B	B	B	B	B	B	B	B	B	2.4	B	2.5	J 6.4	J 10.0	J 5.5
19	B	4.5	4.7	J 4.4	G	2.2	2.6	B	4.2	B	B	G	G	B	B	B	B	B	B	B	2.0	2.7	4.5	2.6
20	5.0	J 5.6	3.1	3.3	2.5	G	B	5.0	5.5	B	B	B	B	B	B	B	B	B	2.2	B	3.1	8	3.1	2.2
21	3.0	2.3	J 12.4	J 14.1	4.0	2.5	2.4	4.2	G	G	G	B	B	B	G	G	B	G	G	B	2.0	2.0	3.1	2.6
22	J 8.0	5.3	B	4.5	2.9	2.3	2.2	G	G	B	B	B	B	B	B	G	G	G	G	G	G	B	B	1.8
23	2.1	2.8	3.0	2.6	1.9	4.6	2.4	3.0	G	G	G	B	B	G	G	G	2.9	2.6	G	2.2	B	B	B	2.5
24	J 4.2	3.3	2.7	2.4	B	2.4	4.8	4.7	G	B	B	B	G	G	G	G	G	B	B	B	3.0	4.5	3.0	J 4.0
25	J 2.8	J 3.7	B	3.1	2.4	3.0	6.3	G	G	G	G	B	B	B	B	B	B	B	G	2.6	B	2.5	4.4	4.0
26	B	4.0	5.5	B	5.0	B	5.4	G	B	B	B	C	C	B	B	B	B	B	G	3	2.5	3.3	2.8	B
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	J 12.7	4.3	J 6.3	J 8.1
28	2.9	B	B	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	12.4	13.6	3.9	B
29	B	J 7.8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	4.1	4.5	B
30	2.4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.7	4.6	J 11.8	J 8.0
31	J 6.7	3.1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	J 8.9	J 11.6
No.	2.1	2.3	1.6	1.7	1.9	1.3	1.1	1.3	1.1	4	2	3	3	5	4	6	5	6	1.2	1.2	1.9	1.8	2.2	2.1
Median	4.2	4.5	4.0	4.2	3.2	2.8	2.8	3.1	G	G	G	3.7	G	G	G	G	G	G	G	2.6	3.0	4.2	4.2	4.0
U.Q.	5.1	5.9	5.6	5.2	4.5	4.0	4.9	4.2	G	G	G	4.0	G	G	G	G	G	G	G	3.4	3.7	4.7	4.7	5.2
L.Q.	2.8	3.3	2.9	3.0	2.4	2.4	2.6	G	G	G	G	G	G	G	G	G	G	G	G	G	2.2	3.2	3.1	3.2
Q.R.	3.3	2.6	2.7	2.2	2.1	1.6	2.3														1.5	1.5	1.6	2.0

The Radio Research Laboratories, Japan

foEs

Sweep 1.0 Mc to 20.0 Mc in 3.2 sec in automatic operation

S 4

IONOSPHERIC DATA

OCT. 1960 | f-min | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S | Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.10	1.50	1.55	1.70	B	2.50	2.80	2.50	4.40	B	B	B	B	B	B	2.60	2.10	B	2.60	2.40	1.10	1.20	1.40	1.10
2	1.40	B	2.70	1.40	2.10	1.60	B	B	B	B	B	B	B	B	B	4.10	B	B	4.20	2.70	B	1.20	B	B
3	B	B	2.20	2.10	B	2.20	2.20	2.70	2.50	4.10	2.60	4.20	2.20	2.50	B	2.00	2.70	2.90	2.00	1.50	1.90	1.60	1.50	1.60
4	1.40	1.50	1.20	4.20	4.00	B	2.00	B	B	B	B	B	C	C	C	2.20	2.60	2.50	2.55	2.50	2.40	2.40	2.45	1.90
5	2.10	1.90	B	B	2.20	B	B	B	B	B	B	4.20	B	B	B	4.80	2.50	4.10	B	2.00	2.20	2.00	1.80	1.70
6	1.80	1.70	B	2.00	1.60	2.00	B	B	B	B	B	2.10	B	2.10	2.20	B	2.70	2.50	2.10	1.80	1.20	1.40	1.50	B
7	2.10	1.80	B	B	4.60	B	B	2.60	B	2.20	B	B	2.40	B	B	2.20	B	2.00	1.90	2.20	1.80	2.20	1.40	1.70
8	B	1.70	1.50	B	2.00	B	B	B	B	B	B	B	B	4.50	B	4.20	2.20	S	B	2.80	1.60	1.50	2.10	1.60
9	1.65	1.70	B	B	B	4.10	B	B	B	B	B	B	4.10	4.60	4.60	4.90	2.20	2.20	2.50	2.20	1.75	B	1.60	2.00
10	2.00	2.20	1.80	B	2.01	2.20	B	B	B	4.20	B	B	2.50	4.00	2.60	2.60	B	2.50	2.00	B	1.90	1.80	1.45	2.10
11	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	1.25	2.40	1.85
12	1.95	2.60	2.00	2.00	1.50	2.20	2.50	2.50	2.50	2.50	2.40	2.20	2.40	2.70	2.80	2.60	2.10	2.00	2.00	1.80	1.60	1.50	1.70	1.60
13	1.60	2.20	2.50	2.20	2.00	2.70	2.10	2.00	2.20	2.20	2.50	2.70	4.20	3.90	3.20	2.70	2.10	2.80	2.20	1.90	1.70	1.60	1.20	1.20
14	1.50	1.60	2.10	1.60	B	2.60	4.50	2.40	2.20	2.50	2.60	2.55	2.70	2.50	2.50	2.10	1.90	4.20	2.00	1.60	1.70	1.50	1.25	1.10
15	1.25	1.40	1.50	1.50	B	B	B	4.10	B	4.20	2.60	4.10	2.50	2.20	2.00	2.50	2.50	1.90	2.20	1.90	2.00	2.10	1.70	1.65
16	1.40	2.20	B	2.00	2.90	2.40	2.60	2.10	2.00	2.00	2.20	2.20	2.50	2.20	2.20	2.10	2.10	3.00	2.50	2.20	2.00	2.10	1.60	1.50
17	1.60	2.00	B	2.00	2.00	4.00	2.20	2.10	2.15	2.10	2.20	2.40	2.55	2.70	2.60	2.20	2.10	2.00	2.00	2.20	1.70	1.60	1.60	1.45
18	2.00	1.60	2.70	1.70	2.90	1.80	4.90	4.20	B	B	B	B	4.20	B	4.50	4.10	4.50	2.20	2.00	2.00	2.50	1.20	1.10	1.80
19	B	2.90	1.40	1.60	1.90	1.80	1.90	2.90	2.60	B	2.50	2.00	2.10	2.50	2.20	2.20	2.60	2.60	2.70	2.00	1.25	1.20	1.70	1.20
20	1.40	1.90	1.55	2.00	2.00	1.70	2.60	4.10	2.20	5.00	2.50	2.60	2.70	4.10	4.60	4.10	2.10	2.50	2.00	2.50	1.70	B	1.20	1.50
21	1.50	1.10	1.60	1.60	2.10	2.00	1.80	1.80	1.70	1.70	1.90	2.60	4.10	4.00	2.10	2.50	4.10	2.00	1.70	2.00	1.50	1.40	1.20	2.00
22	1.70	2.20	B	2.80	2.80	2.00	1.85	1.80	2.15	2.60	2.50	2.40	2.50	2.20	2.20	2.00	2.00	1.90	1.90	1.60	1.40	1.60	1.20	1.20
23	1.20	1.40	1.80	1.50	1.60	2.10	2.00	1.70	1.60	2.10	2.00	2.50	2.20	2.00	2.10	1.80	1.60	1.70	1.50	1.50	1.70	2.20	1.60	1.50
24	1.20	1.60	1.50	2.00	2.25	1.70	2.90	1.70	1.70	2.20	2.20	2.60	2.10	1.80	2.00	2.00	1.90	2.20	2.60	4.60	1.50	1.20	1.20	1.20
25	1.20	1.20	1.50	1.20	1.50	1.50	1.70	1.50	1.60	2.10	B	B	B	B	B	4.00	2.90	B	1.80	1.60	B	2.10	1.50	1.50
26	B	2.00	2.15	B	2.80	B	2.20	2.00	B	5.00	B	C	C	B	4.20	B	B	B	1.60	2.10	2.10	1.90	2.10	B
27	B	B	B	B	B	4.50	B	4.00	B	5.50	2.50	4.50	4.20	4.20	4.80	B	4.20	2.40	2.70	2.70	1.80	1.90	1.20	1.70
28	2.00	B	2.10	2.40	2.10	B	B	B	B	B	B	B	B	4.20	4.60	4.10	B	B	4.10	4.00	2.10	2.80	1.90	B
29	B	2.60	B	B	B	B	2.75	2.20	4.00	B	B	B	B	B	B	2.60	2.60	2.90	2.50	B	2.00	2.10	2.60	B
30	1.50	B	B	B	B	2.40	B	B	4.50	B	B	B	B	B	B	4.20	2.20	2.10	2.10	2.00	2.10	2.90	2.10	1.90
31	1.90	2.00	2.80	B	B	B	B	B	B	2.50	B	B	B	4.80	4.50	5.15	4.20	2.60	2.80	2.90	2.40	2.90	2.90	2.00
No.	21	20	20	20	20	20	20	20	20	20	20	19	28	29	29	30	30	29	30	30	30	30	31	31
Median	1.80	1.95	2.90	2.00	2.20	2.55	2.80	2.80	4.40	4.65	B	4.20	4.10	4.10	4.50	2.60	2.55	2.50	2.75	2.35	1.80	1.70	1.60	1.70

f-min | Sweep 1.0 Mc to 2.0 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 5

IONOSPHERIC DATA

OCT. 1960 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	B	B	B	B	B	B	≥60	400	B						
2							B	B	B	B	B	B	B	B	B	520	B	B	A					
3								450	420	400	≥70	≥50	≥90	400	B	≥50								
4								B	B	B	B	B	C	C	C	≥30								
5												500	B	B	B	410	≥50	≥45						
6							B	B	B	B	B						E 680	680	F					
7								A	B	R	B	B		B	B	710	B		420					
8							B	B	B	B	B	B	B		B	410	≥30	S						
9							B	B	B	B	B	B	V 600R	B	500	≥30	≥40							
10							B	B	B		B	B	430	420	L	L								
11							C	C	C	C	C	C	C	C	C	C	C	C	C					
12								≥90	≥50	L	≥90	≥60	≥30	≥00L	L	L								
13							≥40	≥90	L	420	410	≥30	≥50	≥00	L	≥40								
14								410	≥70	≥30	L	L	≥30	≥90	L									
15								500	B	500	400	≥60	≥30	L	≥90	L								
16							560	560	495	420	410	450	430	430	L	L	L	L						
17							420	400	400	≥90	≥80	410	≥60	≥50L	L	L								
18									B	B	B	B	490	B	450	370	L	L	≥80					
19							560	630	F	B	480F	500	480L	420	L	410								
20						420		A	550	450	410	420	420	L	L	L	≥90							
21							400	≥90	≥60	≥90	≥95	400	≥95	≥60	≥50	≥30	≥00							
22						L	≥30	≥50	≥41	≥45	≥30	≥50	L	≥00	≥90	L	L							
23							420	≥80	≥40	≥30	≥50	≥00L	L	≥90	L	≥60L								
24								400	≥60	≥50	≥80	≥90	≥60	≥60	≥30	L	L							
25					410	480	410	400	≥90	400	B	B	B	B	B	600	550	B						
26								F	B		B	C	C	B	B	B	B							
27									B		410	480	415	480	530	B	490	≥60	420					
28							B	B	B	B	B	B	B	700	600	600	B	B						
29							490	460	500	B	B	B	B	B	B	460	530							
30							B	B		B	B	B	B	B	B	450	510	440	A					
31							B	B	B	460	B	B	B	410	420		≥50	≥30						
No.					1	2	9	14	17	13	13	14	15	15	9	7	12	5	3					
Median					410	450	420	400	≥80	400	≥95	≥95	≥95	≥60	420	410	≥80	≥95	420					

h'F2 | Sweep 1.2 Mc to ≥20.2 Mc. in ≥20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 6

IONOSPHERIC DATA

OCT. 1960 | h'F | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	400	450	420	B	B	B	B	A	B	B	B	B	B	B	E≥250B	≥00	B	≥70	F	A	A	A	A
2	A	B	420	A	400	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A	B	B
3	B	B	B	A	B	A	440	E400B	E≥20B	B	E≥20B	B	≥60	≥60	B	≥60	≥00	≥30	≥40	≥30	≥90	≥70	≥60	≥00
4	A	A	≥10	B	F	B	≥70	B	B	B	B	B	C	C	C	≥30	≥20	≥70	≥95	≥70	B	450	A	≥50
5	A	400	B	B	A	B	B	B	B	B	B	B	B	B	B	B	≥00	8	8	≥90	≥60	620	400	A
6	≥00	F	B	570	400	≥80	B	B	B	B	B	A	B	≥85	E≥10B	B	B	B	E≥10B	≥70	≥70	≥00	F	B
7	A	A	B	B	A	B	B	≥30	B	≥60	B	B	≥80	B	B	≥70	B	≥00	≥20	F	≥70	A	F	A
8	B	A	A	B	≥70	B	B	B	B	B	B	B	B	B	B	B	≥80	8	B	≥65	≥00	A	A	F
9	A	≥00	B	B	B	≥20	B	B	B	B	B	B	E≥00B	B	B	B	≥80	≥10	≥90	≥95	A	B	A	A
10	A	A	420	B	≥00	670	B	B	B	460	B	B	≥40	E≥70B	≥20	≥70	B	≥70	≥60	B	≥30	≥00	A	≥10
11	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	≥60	8	≥60
12	A	A	400	400	≥00	≥60	≥70	≥50	≥70B	≥60	≥30	≥30	≥10	≥40	≥30	≥30	≥50	≥35	≥30	≥30	≥30	≥35	≥70	≥80
13	≥10	≥10	A	400	400	≥70	≥70	≥50	≥60	≥45	≥30	≥30	B	≥40	≥30	≥60	≥40	≥40	≥35	≥25	≥25	≥30	≥30	≥30
14	≥60	≥90	610	≥00	B	460	400	≥00	≥60	≥50	≥40	≥30	≥30	≥30	≥50	≥30	≥25	≥50	≥30	≥30	≥35	≥30	≥30	≥95
15	≥60	≥10	400	≥90	B	B	B	B	B	E≥00B	≥30	≥60	E≥40B	≥40	≥50	≥30	≥50	≥50	≥40	≥10H	F	A	A	A
16	605	A	B	A	A	460	B	E≥00A	≥00	≥60	≥30	≥30	≥35	≥35	≥50	≥40	≥60	≥60	≥55	≥45	≥50	≥40	≥60	≥80
17	≥95	F	B	A	400	460	≥90	≥70	≥60	≥40	≥30	≥30	≥30	≥50	≥40	≥30	≥30	≥50	≥55	≥30	≥30	≥55	8	A
18	A	≥40	470	≥00	≥50	≥90	600	600	B	B	B	B	E≥10B	B	E≥10B	E≥60B	≥00	≥00	E≥70A	420	A	A	F	A
19	B	A	410	620	≥50	F	E≥40H	B	A	B	≥10H	≥45	≥40	≥40	≥40H	≥50	≥70	≥90	≥70	≥70	≥10	400	A	A
20	A	E≥50A	620	400	≥30	F	400	A	A	B	≥50	≥40H	≥70	≥90	≥30	≥90	≥50	≥90	≥00	410	≥60	8	≥35	≥90
21	≥00	F	≥30	400	≥00	≥50	≥00	E≥70A	≥10	≥50	≥30	≥40	E≥00B	E≥90B	≥50	≥30	B	≥60	≥50	≥40	≥55	≥80	450	A
22	≥00F	A	B	400	≥70	≥50	≥70	≥30	≥40	≥50	≥50	≥10	≥40	≥30	≥10	≥00	≥30	≥40	≥40	≥30	≥30	≥30	≥30	≥40
23	≥95	≥70	≥30	≥10	≥00	400	≥15	≥60	≥30	≥50	≥30	≥50	≥40	≥30	≥10	≥30	≥30	≥50	≥50	≥30	≥30	≥50	≥30	400
24	≥80	F	400	≥90	400	≥10	450	E≥50A	≥30	≥30	≥50	≥40	≥40	≥40	≥30	≥30	≥40	≥50	≥80	B	≥90	≥50	≥00	A
25	≥50	F	≥10	430	A	A	≥50	≥00	≥50	≥50	B	B	B	B	B	B	B	B	≥00	≥00	B	F	460	420
26	B	A	A	B	A	B	F	≥00	B	≥00	B	C	C	B	620	9	B	B	F	≥60	400	F	430	B
27	B	B	B	B	B	400	B	480	B	F	E≥70H	B	B	B	B	B	B	≥10	≥00	≥00	F	A	≥60	A
28	F	B	410	600	≥60	B	B	B	B	B	B	B	B	B	B	B	B	B	F	≥70	≥00	A	A	B
29	B	A	B	B	B	B	B	E≥20B	B	B	B	B	B	B	B	≥00	≥00	F	≥00	B	400	A	A	B
30	≥10	B	B	B	B	460	B	B	F	B	B	B	B	B	B	B	≥40H	≥80	≥00	≥50	≥40	A	A	≥90
31	A	≥80	≥30	B	B	B	B	B	B	≥60	B	B	B	B	E400B	320	B	≥00	≥70	≥80	≥40	≥20	A	620
No.	12	10	16	15	15	15	14	16	11	15	14	12	16	16	17	20	20	21	26	24	22	17	14	14
Median	≥00	≥40	406	400	≥60	≥70	≥70	470	≥50	≥60	≥30	≥35	≥40	≥40	≥40	≥40	≥50	≥60	≥70	≥75	≥00	≥60	≥85	≥35
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

h'F — Sweep 40 Mc to 200 Mc in 20 sec in automatic operation

S 7

IONOSPHERIC DATA

OCT. 1960 | h'E | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				120					B	B	B	B	B	B	B	B	B	B	B	B	A			
2									B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
3								B	B	B	B	b	B	B	B	b	B	B	B	B	B	B	B	
4									B	B	B	b	C	C	C	B	B	B	B	B	B	B		
5									B	B	B	b	b	b	B	B	B	S	S	B				
6									B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B
7							B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
8								B	B	B	B	b	B	B	B	B	B	S	B	B	110	B	B	B
9								B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10									B	B	B	b	B	B	B	B	B	S	B	B	B	B	B	B
11	B			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
12						B	B	B	B	B	B	B	B	B	B	B	B	120	140	B	B	B	B	B
13						B	120	120	120	B	B	B	B	B	B	S	B	B	B	180	B	B	B	B
14	B					B	B	B	B	B	B	B	B	B	B	110	110	S	B					
15							B	B	B	B	B	B	B	B	B	B	B	110	B	B	B	B	B	
16							B	B	B	B	B	B	B	110	B	110	110	B	B	B	B	B	B	
17								120	120	110	B	B	B	B	B	B	B	110	110	B	B	B	B	B
18	B					120	B	B	B	B	B	B	B	B	B	B	B	B	120	B	B			
19					120			B	B	B	B	110	110	B	B	B	B	B	B	B				
20						110	B	B	B	B	B	B	B	B	B	B	B	B	160	B	B	S		
21									110	110	110	B	B	B	110	110	B	110	115	B				
22							115	110	110	B	B	B	B	B	B	110	110	110	110	120	120	B	B	
23						110		110	110	110	110	B	B	110	105	100	110	110	110	120				
24		110	120	110				110	110	B	B	B	110	105	105	110	110	B	B	B	120	110		
25						115		110	110	110	B	B	B	B	B	B	B	B	110					
26							B	110	B	B	B	C	C	B	B	B	B	B	100	110			110	
27						B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
28					120	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
29						B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110			
30							B	B	B	B	B	B	B	B	B	B	B	B	B					
31		105					B	B	B	B	B	B	B	B	B	B	B	B	B	B				
No.		2	1	2	2	4	2	7	7	4	2	1	2	3	3	6	5	6	9	4	4	1	1	
Median		110	120	115	125	110	120	110	110	110	110	110	110	110	105	110	110	110	110	125	120	110	110	

h'E: Sweep 10 Mc to 20.0 Mc in 30 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S8

IONOSPHERIC DATA

OCT. 1960

h'Es

45° E Mean Time (G.M.T.+3h.)

Syowa Base

Lat. 69° 00.4' S
Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110	120	150	q	B	180	120	120	100	B	B	B	B	B	B	B	B	B	B	110	110	110	140	120
2	130	B	170	130	120	110	B	B	B	B	B	B	B	B	B	B	B	B	130	125	B	140	B	B
3	B	B	120	130	B	140	130	B	B	B	B	B	B	B	B	B	B	B	B	150	130	B	B	B
4	110	115	120	B	150	B	B	B	B	B	B	B	C	c	c	B	B	B	B	150	B	B	120	B
5	115	150	B	B	120	B	B	B	B	B	B	B	B	B	B	B	B	S	S	B	B	B	130	115
6	125	145	B	110	130	130	B	B	B	B	B	110	B	120	B	B	B	B	B	B	140	120	120	B
7	120	100	B	B	150	B	B	160	B	B	B	B	B	B	B	B	B	B	160	B	150	110	B	120
8	B	130	100	B	120	B	B	B	B	B	B	B	B	B	B	B	B	S	B	B	160	120	130	120
9	120	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	B	120	120
10	140	105	120	B	130	B	B	B	B	B	B	B	B	B	B	B	B	S	B	B	B	130	120	150
11	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	120	S	125
12	110	110	150	150	120	B	B	120	B	B	B	B	B	B	B	B	B	G	G	B	B	B	B	120
13	150	120	110	110	120	B	G	G	G	B	B	B	B	B	B	S	B	B	B	G	B	B	B	B
14	B	B	110	125	B	B	B	B	B	B	B	120	B	B	B	G	G	S	120	120	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	120	110	110	B	B	G	B	150	120	120	105	110
16	120	120	B	120	120	B	B	120	110	B	B	B	B	G	B	G	G	B	B	B	B	B	110	B
17	B	160	B	110	140	B	150	G	G	G	B	B	B	B	B	B	B	G	G	B	120	B	115	120
18	120	110	110	120	B	G	B	B	B	B	B	B	B	B	B	B	B	B	160	B	160	140	130	110
19	B	115	110	110	q	170	110	B	120	B	B	G	G	B	B	B	B	B	B	B	170	120	110	110
20	110	105	120	120	120	G	B	140	110	B	B	B	B	B	B	B	B	B	150	B	120	S	120	120
21	110	130	110	110	140	130	120	110	G	G	G	B	B	B	G	G	B	G	G	B	150	150	120	160
22	110	100	B	130	130	130	140	G	G	B	B	B	B	B	B	G	G	G	G	G	G	B	B	130
23	110	120	130	130	180	150	110	160	G	G	G	B	B	G	G	G	130	140	G	150	B	B	B	130
24	110	130	150	150	B	110	130	170	G	B	B	B	G	G	G	G	G	B	B	B	150	150	140	105
25	125	140	B	120	150	140	140	G	G	G	B	B	B	B	B	B	B	B	G	140	B	150	140	140
26	B	110	110	B	120	B	150	G	B	B	B	C	C	B	B	B	B	B	G	G	110	120	130	B
27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	110	130	100
28	105	B	B	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	120	110	B
29	B	105	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	110	110	B
30	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	115	110	130	110
31	110	160	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	100	140
No.	21	23	16	16	17	10	10	8	4			2	6	2	6		6	6	5	9	17	18	22	21
Median	115	120	120	120	120	130	120	125	110			115	120	115	110		130	140	160	140	120	120	120	120

h'Es

Sweep 1.0 Mc to 22.0 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

IONOSPHERIC DATA

OCT. 1960

Types of Es

45° E Mean Time (G.M.T.+3h.)

Syowa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	a	a	a			a	f	a	f											a	r³	r²	a	a
2	a		a	r	r	r													a	h		f		
3			r	a		r	r													f	r			
4	r²	r	a		f															a			f	
5	a	a			f																		a	a
6	r	a		a	f	a						r		f							a	f²	a	
7	a	a			a			a											a		a	a		a
8		a	f³		f																h	r²	a	a
9	r³	f																			f		a	a
10	a	f	r²		r																	r	r	a
11																								r³
12	a	a	a	a	r			f																r³
13	r	a	a	r	r																			
14			r	r								a							a					
15													f²	f	f					r	f	f	a	a³
16	f²	a		r	f			r	f														r	
17		a		a	a		a														f		r²	r⁴
18	r	a	f	a															h		r	a	f	a
19		r	a	a		a	a		r												r	r	a	a
20	a	a	a	r	a			a	f										l		r		r⁴	r³
21	a²	a	f	a	a	r	r	r													a	r	r²	
22	a	f		a	a	a	h																	r
23	a	r³	r	a	a	h	r	h									h	h		h				r²
24	r³	h⁴	h²	h		f	a	h													h	h	a³	a²
25	a²	a		a³	a	r²	r f													a		a	a	a
26		r	a		f		a														r	r²	h	
27																					a	r	a	a
28	a																				f	f	f	
29		f																				r	a	
30	a																			r	r	a	a	a
31																							f	a
No.																								
Median																								

The Radio Research Laboratories, Japan.

Types of Es

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

S 10

IONOSPHERIC DATA

NOV. 1960 | foF2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4′ S, Long. 39°35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	F	4.5F	U 4.5F	5.0F	F	5.4F	F	B	B	B	B	B	F	U 5.5F	6.0	6.9F	6.1F	S	S	≥5F	F	F	A	A
5	A	A	F	B	B	5.0F	B	B	B	F	F	6.3F	5.5F	5.9F	6.1F	6.2F	6.0F	6.9F	6.8F	4.7	4.7	4.7	5.2	5.3F
6	5.2F	U 4.7F	F	F	F	F	F	F	F	F	F	3.4F	F	F	7.6F	F	7.8F	7.1F	7.1F	6.1F	6.1F	6.0F	U 5.2F	3.6F
7	F	F	F	F	F	F	B	6.0	6.8F	A	6.7F	5.7F	F	6.2F	6.5F	7.3F	6.8F	6.5F	6.4	6.4	6.5	6.5	6.3F	6.3F
8	U 6.3F	F	F	F	8.3F	8.0F	8.8	10.2	10.2	10.2	10.3	10.2	8.8	8.0	8.0F	7.4	7.0	7.1	7.1	7.0	6.9F	U 7.2 S	6.9F	F
9	F	F	F	F	F	F	F	6.5F	6.6F	6.8F	F	7.7F	F	F	7.0F	S	7.0F	7.0F	7.0F	6.9F	6.5	6.4F	6.2F	F
10	F	F	6.0F	7.1F	F	U 8.8F	8.5F	8.5F	F	8.5F	8.5F	8.6	8.6	8.6	8.3	S	8.5	8.6	8.4F	7.7F	U 7.5F	U 7.1F	F	5.7F
11	U 5.0F	F	F	F	F	F	F	U 7.2R	F	F	F	7.8F	7.7F	7.5	7.6F	8.5	8.1F	5.4F	5.5F	5.4F	5.5F	5.2F	5.5F	5.3F
12	U 5.8F	5.8F	F	A	B	4.8	5.4F	6.5	7.5	7.7	7.5	7.2	7.2	6.9F	7.2	6.9F	6.2F	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	U 5.5	6.1	6.0	5.6	5.5	5.7	6.0	6.1
19	6.2	6.5	6.8F	7.4F	7.7F	8.6	8.8F	8.8	8.8	8.9	8.6	8.0	7.8	7.9	7.4	6.7F	6.7F	6.7F	6.2F	6.5F	6.4F	6.5F	6.5F	U 7.0F
20	6.4F	6.2F	5.9	B	B	B	B	F	5.6F	5.1	F	F	7.0	6.4F	7.1F	7.0	R	6.8F	B	5.7	5.7F	4.5	5.4	5.2
21	U 4.8F	5.1F	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
23	B	B	B	B	B	B	B	B	4.9F	5.1	B	5.6F	5.6F	6.5F	6.8F	7.0F	7.7F	6.8F	6.0F	5.2F	4.8F	4.8F	4.4	4.0
24	4.0F	4.2	4.5F	U 5.2F	F	B	B	F	5.7F	6.5F	6.4F	6.4F	7.1F	7.7F	7.7F	8.0F	7.9	7.2	6.3F	6.0F	4.6F	4.6F	5.7F	F
25	3.8F	F	4.2F	A	4.5F	F	B	B	B	B	B	B	B	R	B	7.4	F	4.8F	4.5F	F	5.5F	A	A	4.0F
26	F	F	4.9F	4.9F	4.4F	B	A	F	B	F	F	F	B	U 6.5F	7.4F	7.6F	6.8F	5.8F	5.0F	5.4F	5.5	5.9	5.5	4.2
27	4.8F	F	4.8F	5.7F	A	A	5.2F	5.9F	6.1F	5.5F	F	U 5.4F	B	6.2F	6.6F	7.0F	6.9F	5.8F	5.0F	4.5F	A	A	U 5.0F	F
28	B	A	4.0	A	B	A	5.4F	F	B	B	B	5.0F	5.8F	6.4	F	U 8.1F	F	5.1F	5.2F	5.2	5.2F	5.7F	6.8	5.2
29	5.1F	F	F	5.2F	F	F	6.5F	7.1F	7.8F	8.2F	8.4F	7.8F	7.7F	7.2F	7.4	7.5	7.6	7.8	6.2	5.7F	5.7	5.7	5.4F	4.0
30	F	5.5	5.5F	5.8F	5.7F	F	F	4.8	6.5F	6.4F	7.1F	6.8F	C	6.8F	7.3F	7.0F	6.9F	6.7F	6.3F	6.0F	5.7	4.7F	F	A
31																								
No.	11	8	10	8	5	6	7	10	11	11	8	15	11	16	17	17	17	18	17	18	17	16	15	13
Median	5.1F	5.2F	4.8F	5.8F	5.7F	7.0F	6.5F	6.8	6.6F	6.8F	8.0F	7.8F	7.8F	6.6F	7.2F	7.8F	6.9F	6.6F	6.2F	5.7F	5.7F	5.7F	5.5F	5.3F
U.Q.	6.2	6.0	5.5	6.4	8.0	8.8	8.5	8.8	7.8	8.9	9.0	8.0	7.8	7.6	7.6	7.8	7.8	7.1	6.7	6.4	6.4	6.4	6.2	6.0
L.Q.	4.8	4.6	4.5	5.2	4.4	5.0	5.4	6.0	5.7	5.5	6.9	5.6	5.8	6.4	6.7	7.0	6.6	5.5	5.4	5.2	5.4	5.0	5.2	4.8
Q.R.	1.4	1.4	1.0	1.2	3.6	3.8	4.1	3.8	2.1	3.4	2.1	3.4	3.0	1.2	0.9	0.8	1.2	1.6	1.3	1.2	1.0	1.6	1.0	2.0

The Radio Research Laboratories, Japan

foF2

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

S 1

IONOSPHERIC DATA

NOV. 1960 | foF1 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4′ S, Long. 39°35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						B	36	B	B	B	B	B	B	46	B	42	43	S	S					
5					B	B	B	B	B	42	B	45	44	47	45	44	41	42	L					
6						41	40	42	43	B	47	48	B	50	47	46	45							
7					B	B	B	B		A	48	46	50	53L	48	L	L	L	L					
8					34	39	43	44	49	50	48	50	52	52	50	50	L	L						
9						L	41	A	50	50	48	50	50	50	50	S	50	L	L	L				
10					35	39	42	45	47	50	50	53	53	53	L	L	L							
11					L	35	F	B	46	46	48	48	48	47	47	47	46	L	L					
12					B	B	44	46	45	46	47	47	47	47	49	49L	47	B	B					
13					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
14					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
15					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
16					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
17					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
18					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
19					B	B	B	B	B	B	B	47	B	49	50	47	46							
20					B	B	B	B	B	B	46	B	B	B	B	47	B	45							
21					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
22					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
23					B	B	B	B	B	B	B	B	45	44	45	45	44	L	40					
24					42	B	B	F	46	44	44	B	B	45	B	45	45	43	L	35				
25					B		B	B	B	B	B	B	B	B	B	B	44	41						
26						B			B	A	42	42	B	46	44	45	44	L	42					
27							A	43	44	A	44	B	B	B	46	44	46	42	40	37				
28					B	A	40	A	B	B	B	43	B	B	B	B	45	42						
29						42	B	41	45	46	45	46	46	47	47	47	45	43	L					
30					40	41		B	B	46	46	46	C	48	47	48	49	45	L					
31																								
No.					4	6	7	6	9	9	13	13	9	15	13	14	15	8	3	2				
Median					38	40	41	44	46	46	47	47	48	47	47	46	45	43	40	36				

foF1

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

The Radio Research Laboratories, Japan.

S2

IONOSPHERIC DATA

NOV. 1960 | foE | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4						B	R	B	B	B	B	B	B	B	B	R	R	S	S	B	B	R	B	R
5												B	B	B	B	B	B	B	B	R	≥10	B	B	1.8
6	R	R	B	R	B	≥40	B	R	B	B	B	B	B	B	B	B	B	B	B					
7					≥80		B	B	B	B	B	B	B	B	B	B	B	B	B	≥25	B	B	B	B
8	B	B	B			≥50	R	≥90	R	R	B	B	B	B	B	R	R	R	≥80	≥30	≥20			
9						A	B			B	B	B	B	B	R	S	B	B	B			≥10	R	1.5
10				≥60	R	≥10A	R	R	B	B	B									R			≥25	≥95
11	≥60	≥90	≥10				R	B	B	B	B	B	B	B	B	B	B	B	R	≥25	≥30	B	B	B
12	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
13	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
14					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
15					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
16					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
17					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
18					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
19					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
20					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
21					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
22					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
23					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
24					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
25					B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
26					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
27					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				1.8	≥00
28					B	B	B	B	B	B	B	B	B	B	B	B	B	R	R					
29	≥20	B			B	B	B	B	B	B	B	B	B	B	R	B	B	B	B					
30					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
31																	B	R	R	R	≥20			
No.	≥	1	1	1	1	≥		1											1	≥	4	1	≥	4
Median	≥90	≥90	≥10	≥60	≥30	40		≥90											≥30	≥30	≥20	≥00	≥10	1.9
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foE

Sweep 10 Mc to ≥20 Mc in ≥0 sec in automatic operation

S 3

IONOSPHERIC DATA

NOV. 1960 | foEs | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	B	J7?	J8?	B	J8?	B	G	B	B	B	B	B	B	B	B	G	G	S	S	B	46	49	J50	26
5	67	45	45	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	27	19	G
6	G	G	B	G	B	31	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	J22	29
7	28	37	B	25	G	B	B	B	55	51	46	B	B	B	B	B	B	B	B	37	22	20	45	B
8	B	27	B	B	B	G	G	G	G	35	28	37	36	32	57	G	G	G	32	43	G	20	B	23
9	26	J44	20	J42	B	30	B	47	50	B	B	B	B	B	G	S	B	B	B	B	27	G	G	27
10	24	27	46	G	G	24	G	G	B	B	B	B	B	28	B	B	27	B	44	44	J62	J59	J40	G
11	G	G	G	22	25	37	G	B	B	B	B	B	42	36	B	B	B	51	J64	J62	G	J80	J84	J41
12	J82	23	B	28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	46	J78	B	B	B	B	B	B
20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
21	B	42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	50	26
25	22	B	B	44	46	G	B	B	B	B	B	B	B	B	B	B	B	B	B	42	B	47	47	27
26	J64	B	49	28	B	B	50	49	B	B	B	B	B	B	B	B	B	B	B	41	22	26	B	J59
27	44	30	J81	J64	51	45	45	41	B	J51	B	B	B	B	B	B	B	G	G	B	J28	50	B	42
28	B	53	J62	44	B	45	33	47	B	B	B	B	B	B	B	B	B	B	32	29	29	26	26	23
29	20	B	27	J50	40	B	43	29	B	B	B	B	B	B	G	B	B	B	B	B	42	30	24	J44
30	46	J54	B	46	G	42	40	B	B	B	B	B	C	B	B	B	B	G	G	G	25	29	28	56
31																								
No.	12	12	9	12	8	9	9	8	8	8	2	1	2	3	3	2	4	5	6	9	12	13	12	14
Median	26	27	46	40	32	30	32	40	50	51	42	37	40	26	G	G	G	G	32	41	28	30	29	32
U.Q.	55	54	52	48	48	44	46	47	52	51				37	G		G	G	44	44	46	50	48	42
L.Q.	26	24	28	28	G	G	G	G	G	42				34	G		G	G	G	G	G	32	28	27
Q.R.	29	30	26	30						08				03								28	20	15

The Radio Research Laboratories, Japan

foEs

Sweep 10 Mc to 20.0 Mc in 20 sec in automatic operation

S 4

IONOSPHERIC DATA

NOV. 1960 | f-min | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	≥2.0	1.9	≥1.0	≥0.9	≥5.0	4.≥	≥.0	B	B	B	B	B	4.9	4.0	4.6	≥1.0	≥.≥	S	S	≥1.0	≥0.9	≥.0	≥.0	1.8
5	≥1.0	≥.0	1.9	B	B	4.≥	B	B	B	≥8.0	4.5	≥5.0	≥6.0	≥6.0	≥6.0	≥≥.0	≥5.0	≥1.0	≥≥.0	≥.1	≥.0	1.7	1.4	1.6
6	1.≥	1.4	≥.0	1.7	4.0	≥.0	≥.7	≥.1	≥.≥	≥.5	≥5.0	≥9.0	≥.1	≥8.0	≥7.0	≥≥.≥	≥4.0	≥.5	≥6.0	≥.1	4.0	≥.1	1.5	1.≥
7	1.9	≥.1	≥≥.≥	≥≥.0	≥≥.0	4.4	B	4.8	4.≥	4.≥	≥4.0	≥9.0	4.1	≥8.0	≥7.0	≥7.1	≥.1	≥≥.≥	≥9.0	≥.1	≥.0	1.8	1.9	1.8
8	1.8	1.8	≥.0	≥.0	≥5.0	1.7	1.8	1.8	≥.1	≥≥.0	≥8.0	≥5.0	≥5.0	≥≥.0	≥8.1	≥.1.0	1.8	1.9	1.8	1.6	1.8	1.9	1.7	1.6
9	1.9	1.8	1.7	≥.9	4.≥	≥.0	≥.6	4.1	≥5.0	≥5.0	≥7.1	≥8.0	≥.7.≥	4.0	≥.9	S	≥≥.0	4.1	≥.0	≥.0	1.8	1.5	1.5	1.≥
10	1.9	≥.0	≥5.0	1.9	≥.1	1.7	1.7	≥4.0	≥≥.0	≥≥.0	≥.7	4.0	≥8.0	≥4.0	5.8	4.≥	≥6.0	≥≥.0	≥.1	1.8	≥≥.0	1.5	1.6	1.7
11	≥.0	1.≥	1.6	1.5	1.9	1.5	≥.0	5.7≥	≥.9	≥6.0	≥6.0	≥6.0	≥6.0	≥≥.0	≥5.0	≥5.0	≥4.0	≥.1	≥.1	≥.0	1.9	≥.0	≥.0	1.9
12	1.8	≥.1	≥.1	≥6.0	B	4.1	4.6	≥6.0	≥7.0	≥6.0	≥4.0	≥7.0	≥6.0	≥8.0	≥5.0	≥8.0	≥5.0	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	4.9	4.8	4.9	4.9	4.5	4.1	4.5	≥.9
19	4.0	4.0	4.≥	4.≥	4.0	4.1	4.6	4.7	5.1	4.8	4.8	4.5	5.≥	4.≥	4.7	4.0	4.0	≥.0	4.7	≥.9	≥.9	≥.5	≥.6	≥.5
20	≥.5	≥.8	4.≥	B	B	B	B	4.4	4.5	4.5	4.0	5.0	4.8	4.8	4.5	4.6	5.1	4.1	B	4.≥	≥.8	≥.6	4.≥	≥.7
21	≥.6	4.≥	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
23	B	B	B	B	B	B	B	B	4.0	4.0	B	4.8	≥8.0	4.≥	≥8.0	≥.9	≥.9	4.0	≥6.0	≥5.0	≥.9	4.0	≥.6	≥.6
24	≥≥.0	≥5.0	≥5.0	≥.8	≥5.0	B	B	≥7.0	4.≥	≥.9	≥5.0	4.5	4.6	4.0	4.6	≥.9	≥7.6	≥≥.0	≥≥.0	≥.9	≥.0	≥.6	≥5.0	≥.0
25	≥.1	≥.0	≥6.0	≥.0	≥6.0	≥.1	B	B	B	B	B	B	B	4.6	B	4.4	≥4.0	≥5.0	4.5	≥.1	≥6.0	≥6.0	≥.7	≥.0
26	≥.≥	≥.0	≥.5	≥.1	≥5.0	B	≥8.0	≥5.0	B	4.0	≥≥.0	≥4.0	B	4.≥	4.≥	≥6.0	≥7.1	≥.1	≥.0	≥.7	≥≥.0	≥.0	≥.1	≥.1
27	1.9	≥.0	≥.6	≥.5	≥.7	4.1	≥≥.0	≥≥.0	≥5.0	≥5.0	≥6.0	4.9	B	5.≥	4.0	≥8.0	4.≥	≥≥.5	≥.0	≥4.1	≥.1	1.8	4.1	1.8
28	B	4.1	≥.1	4.1	B	≥≥.6	≥≥.0	4.≥	B	B	B	4.1	4.8	4.8	4.8	5.0	≥.≥	≥≥.0	≥.1	≥5.0	≥.1	1.8	1.6	1.5
29	≥.0	≥.0	1.9	≥.0	≥.5	≥4.0	≥.8	≥5.0	4.0	4.1	4.0	≥6.0	≥6.0	≥5.0	≥.1	≥4.0	≥≥.0	≥5.0	≥5.0	≥≥.5	≥≥.0	≥.0	1.9	1.8
30	≥.4	≥6.0	4.0	≥≥.0	≥.0	≥.0	≥.0	4.4	4.7	≥5.0	≥5.0	≥5.0	C	≥6.0	≥4.0	≥5.0	2.4	1.9	1.8	≥.1	≥.0	1.7	1.9	≥6.0
31																								
No.	≥3	≥7	≥7	≥7	≥7	≥7	≥7	≥7	≥7	≥7	≥7	≥7	≥6	≥7	≥7	≥6	≥7	≥6	≥6	≥7	≥7	≥7	≥7	≥7
Median	≥2.6	≥5.0	≥4.0	≥8.0	4.≥	4.≥	B	4.8	6.1	4.5	4.5	4.5	5.0	4.≥	4.5	4.0	≥7.1	≥7.5	≥5.5	≥≥.5	≥7.1	≥.1	≥.6	≥.1

f-min

Sweep 1.0 Mc to 2.0.0 Mc in ≥0 min sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

NOV. 1960 | h'F2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
2					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
3					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
4						440	F	B	B	B	B	B	F	F	500	420	410	S	S					
5					B	480	B	B	B	F	680	600	520	450	410	390	410	450	L					
6						410	390	390	400	450	440	410	400	390	380	400	370							
7						410	B	510		A	480	480	500	500	410	L	L	L	L					
8					320	360	360	320	340	350	350	360	350	330	350	300	L	L						
9						L	450	460	490	430	420	400	390	400	405	S	390	L	L	L				
10					390	370	360	360	360	370	370	370	370	340	L	L	L							
11					L	300	F	440	420	460	405	420	430	500	515	460	310	L	L					
12						460	550	520	410	410	410	420	405	440	405	400	400	B	B					
13					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
14					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
15					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
16					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
17					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
18					B	B	B	B	B	B	B	B	B	B	B	B	410	300	310					
19					350	310	360	370	380	360	360	390	380	370	390	390	380							
20					B	B	B	520	460	520	440	410	420	490	400	390	390	390						
21					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
22					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
23					B	B	B	B	550	520	B	500	430	420	400	380	370	L	350					
24					450	B	B	F	550	400	430	420	450	390	400	350	330	320	360	300				
25					600		B	B	B	B	B	B	B	570	B	460	370	520						
26						B			B	F	700	600	B	500	420	390	420	L	420					
27							430	390	460	400	500	470	B	430	420	390	360	430	470	450				
28					B	A	440	650	B	B	B	580	520	460	410	400	380	500						
29					460	350	410	430	400	390	350	370	360	390	390	380	360	300	L					
30					300	520	700		420	450	400	400	C	430	400	350	400	330	L					
31																								
No.					7	11	10	12	13	13	15	17	14	18	17	16	17	9	5	2				
Median					390	410	405	430	430	410	410	430	410	430	405	390	380	390	360	375				
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

S6

IONOSPHERIC DATA

NOV. 1960 | h'F | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	F	≥80	≥90	≥40	≤30	B	≥80	B	B	B	B	B	B	E≥90B	B	≥60	≥40	S	S	≤50	≤60	F	A	A
5	A	A	F	B	B	B	B	B	B	≥90	B	≥20H	≥50	≥60	≥50	≥20	≥50	≥50	E≥20B	≥80	≥80	≥90	≥60	≥20
6	≥20	≥20	≥90	≥90	≤00	≥20	≥50	≥40	≥30	B	≥50	≥90B	B	≥60	≥70	≥20	≥50	≥50	≥80	≥70	≥90	≥90	≥40	≤20
7	≥80	≤30	≤00	≥10	≥10	B	B	B	≤70	A	≥00	≥50	≥80	≥70	≥50	≥60	≥40	≥50	≥60	≥90	≥70	≥60	≥60	≥80
8	≥70	≥90	≥00	≥10	≥05	≥60	≥40	≥30	≥25	≥30	≥05	≥10H	≥30	≥30	≥30	≥20H	≥30	≥30	≥70	≥60	≥40	≥50	≥60	≥70
9	≥30	≤00	≥00	≥05	≥40	≥90	≥10	A	≥10B	≥50	≥10B	≥30H	≥50	≥50	≥10	S	≥20	≥00	≥50	≥60	≥60	≥50	≥50	≥00
10	≥70	≥50	≤00	≤00	≥00	≥60	≥50	≥40	≥20	≥10	≥30	≥90	≥25	≥30	≥10	≥90	≥60	≥50	≥60	≥50	≥60	≥70	≥05	≥20
11	≤00	≥60	≥90	≥05	≥10	≥10	F	B	≥60	≥50	≥20	≥20	≥20	≥20	≥40	≥70	≥70	≥70	≥00	≥00	≥00	≥00	≥20	≥10
12	≥15	≥20	≥00	A	B	B	B	E≥80B	≥70	≥50	≥15	≥20	≥20	≥40	≥20	≥60	≥30	B	B	B	B	B	B	B
13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	≥10	≥10	≥00	≥00	≥00
19	≥00	≥10	≥10	≥20	B	B	B	B	B	B	B	B	B	≥90	≥00	≥00	≥00	≥90	≥00	≥80	≥70	≥80	≥70	≥80
20	≥80	≥90	≥40	B	B	B	B	B	B	B	E≥90B	B	B	B	B	≥20	B	E≥60B	B	≥00	≥80	≥00	≥20	≥50
21	≥10	≥70	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
23	B	B	B	B	B	B	B	B	B	B	B	B	≥70	E≥80B	E≥60B	E≥60B	E≥60B	≥00	≥00	≥00	≥05	≥10	≥00	≤00
24	≤20	≤20	≤90	≥50	≥50	B	B	F	E≤60B	≥90	≥10	B	B	≥60	B	≥40	≥00	≥20	≥40	≥60	≥90	≥00	≥50	≥90
25	≤70F	≥10	≤70	A	B	≥20	B	B	B	B	B	B	B	A	B	B	≥40	≥80	≤20	≥50	≥00	A	A	≥20
26	≥50	≤00	≤05	≤10	≤00	B	A	≥80	B	E≥90B	≥00H	≥20	B	E≥20B	E≥70B	≥60	≥80	≥20	≥20	≥40	≥60	≥80	≥60	≥00
27	≥00	≥70	≥10	≤00	A	A	A	F	≥00	A	≥20	B	B	B	E≥70B	B	≥70	≥60	≥50	≥30	≥50	≥50	≤40F	≤70
28	B	A	≤50	A	B	A	E≥20A	A	B	B	B	≥00	B	B	B	B	≥30	≥50	≥50	≥30	≥50	≥60	≥60	≥80
29	≥00	≥10	F	≥20	≤00	≥80	B	≥80	E≥70B	E≥20B	≥50	≥00H	≥20	≥10	≥10	≥10	E≥20B	≥40	≥20	≥50	≥70	≥60	≥90	≤00
30	≥00	E≤90A	≤00	≥90	≥70	≥60	F	B	B	≥70	≥00	≥00	C	≥00	≥20	≥20	≥20	≥10	≥20	≥20	≥70	≥50	≤20	A
31																								
No.	16	17	16	12	11	8	6	6	10	10	13	12	8	15	14	16	13	17	16	19	18	16	17	17
Median	≥10	≥40	≥90	≥40	≥40	≥70	≥60	≥50	U≥50	≥45	≥20	≥30	≥30	U≥45	≥40	≥50	≥40	≥50	≥60	≥70	≥75	≥85	≥00	≥10

h'F

Sweep 1.0 Mc to 20.0 Mc in ≥0 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 7

IONOSPHERIC DATA

NOV. 1960 | h'E | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

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

h'E | Sweep 1.0 Mc to 2.0 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

NOV. 1960 | h'Es | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

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

h'Es — Sweep 12 Mc to 320 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

IONOSPHERIC DATA

NOV 1960

Types of Es

45° E Mean Time (G.M.T.+3h.)

Syowa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4		a	f		a																a	k	a	k
5	a	a	a																			f	f²	
6																							a	r²
7	r	r		r					r	f	r									l	a	a	f²	
8		a								k	f	f	f	f	f²				k	k		f		a
9	a	a	a²	a		k			r												a			k
10	r	a	a														f		f	k	a	f²	l	
11				f	a	a							f	f				a	k	c		f	ff	f
12	f	a		a																				
13																								
14																								
15																								
16																								
17																								
18																								
19																	f	f²						
20																								
21																								
22																								
23																								
24																							aa	r
25	a			a	a															k		r	a	r
26	a a		a	r			f	f												a	a	f		a
27	a	a	f	a	f	a	a	a		a											f	a		a
28			a	a		f	a	a											a	f	a	a²	l²	k
29	k		a	f	a		a	a													f	f	r	a
30	a	a		a		a	a														k	r	r	r
31																								
No.																								
Median																								

Types of Es

Sweep 1 Mc to 20 Mc in 2 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 10

IONOSPHERIC DATA

DEC 1960 | foF2 | 45° E Mean Time (G.M.T. + 3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.4F	E	F	F	F	F	F	B	B	F	B	F	B	4.4	C	5.2F	4.9F	F	C	F	3.6F	A	4.0F	4.4F
2	B	A	A	3.9F	4.2F	4.0F	E	4.3F	A	4.6	U 5.5F	5.2F	5.6F	5.9	5.3	5.9F	B	W	C	5.0F	4.5F	5.2F	4.7F	4.6F
3	A	A	5.6	F	B	4.5F	5.1F	5.0F	B	6.0F	F	6.4F	6.4F	7.1F	8.0F	U 7.2F	F	6.5F	6.1F	6.2F	5.5F	5.0F	F	4.5F
4	5.1F	5.2F	4.9F	5.7F	6.2F	7.1F	7.2F	8.2F	8.7	8.4F	8.6F	8.2F	8.1F	8.4F	8.0F	7.8F	7.1F	7.1	6.2F	5.2F	5.0F	5.2F	5.2F	5.5
5	F	R	5.0F	F	6.0F	7.1F	F	8.0F	8.2F	F	6.0F	7.2F	6.8F	F	F	F	8.2F	U 8.2	7.5F	6.2F	5.5F	5.0F	5.2F	5.5F
6	4.8F	5.4F	F	6.0F	F	7.2F	7.2F	6.5F	7.0F	B	6.5F	F	F	F	F	8.0	7.1	C	5.2F	B	B	B	F	F
7	4.5F	5.0	F	F	W	A	4.8	F	F	5.4F	5.7F	5.8F	6.0F	5.9	6.1F	6.6F	6.6F	6.4	5.4F	4.9F	5.6F	5.8F	A	5.4F
8	F	F	A	F	5.0F	F	F	F	R	B	R	R	4.9W	5.6F	U 6.0F	C	6.2	R	5.4F	5.7F	5.6F	5.4F	5.2F	5.2F
9	5.2F	5.2F	F	6.0F	F	6.1F	F	A	A	4.6R	5.4F	5.9	5.8F	U 5.7F	5.9F	6.2F	6.5F	5.2F	5.0F	5.1F	5.6	5.9F	4.6F	4.4F
10	4.0R	F	U 5.2F	5.2F	5.5F	5.6F	B	6.0F	6.8F	7.6F	7.4F	7.4F	7.0	7.0	7.0	7.1	7.4	7.2	6.4F	5.9	5.5	5.4	5.2F	4.2F
11	5.1F	5.6F	6.4F	6.9F	7.5F	F	F	8.6F	9.0F	9.0	R?	9.2	9.0	8.6	8.7	9.0	8.2	B	B	B	B	5.4F	5.9	5.8F
12	F	F	F	F	U 5.2F	F	A	5.0F	F	6.2F	7.0F	7.1F	7.8F	7.6F	8.1F	8.4	7.5F	S	5.2F	F	F	4.8F	A	A
13	F	F	B	F	C	F	A	A	B	A	A	U 4.7F	B	7.2	7.6F	U 6.8F	6.2	6.2	6.0F	5.2F	5.5F	5.8F	5.8F	6.0F
14	5.7F	U 6.2F	6.2F	6.9F	F	F	F	8.4F	F	9.5F	8.0F	9.1F	8.7F	7.8F	7.0	6.5F	6.4F	6.4F	6.2F	6.4F	7.0F	6.7F	6.7F	U 6.2F
15	J 6.0F	F	F	5.7F	F	A	A	5.8F	5.8F	6.0F	6.1F	F	7.2F	7.7F	F	R	B	F	F	F	4.0F	U 3.8F	3.1F	A
16	3.8F	3.8	4.5F	F	A	F	3.7F	A	B	B	B	F	A	R	R	F	5.7F	5.5F	5.7F	5.9F	5.6F	U 5.6F	5.0F	4.6
17	4.5F	4.0F	3.8F	F	4.6F	F	5.0F	5.8F	5.2F	5.8F	F	F	5.9F	F	6.6F	6.6F	R	6.2F	6.0F	5.7F	5.5F	5.7	5.2F	4.5F
18	F	F	F	6.0F	4.7F	4.9F	5.4F	B	F	B	C	R	R	U 5.2F	5.9F	6.8F	5.8F	5.8F	4.5F	4.4F	F	F	5.0F	C
19	A	4.0F	F	A	F	A	4.8	5.0F	5.8F	6.0F	6.4F	6.1F	6.4F	6.6F	6.9F	7.2F	7.5F	5.9	5.7F	5.2F	4.5F	4.9	4.7	5.2F
20	F	4.8F	F	4.8B	F	A	B	B	5.0	6.0F	5.4F	6.9F	6.0F	6.5	7.2F	8.2F	7.2F	5.5	6.2	5.0	5.0	5.1F	A	A
21	A	F	F	3.9F	F	B	B	A	5.4F	5.8F	5.8F	6.2	6.0	6.5F	6.5F	6.8F	6.1F	6.0F	4.9F	F	4.9F	4.6F	F	F
22	4.5F	B	F	F	B	4.1F	B	A	B	B	B	5.1F	B	5.4R	R	6.8F	6.5F	6.4F	6.4F	5.6F	4.9F	4.7	4.2	5.0F
23	4.7F	A	B	B	B	B	B	5.8F	B	B	U 6.0F	F	B	F	7.8F	7.1	5.6	5.2F	C	5.1F	5.0F	5.0F	5.0	4.2F
24	4.9F	5.0F	4.8F	4.7F	F	A	5.0F	5.1F	6.2F	6.1F	6.1F	6.2F	6.2	6.8	7.1	7.1	7.0	5.6	5.9F	5.2	4.8F	4.2F	5.0	4.6
25	B	C	B	F	F	C	C	C	C	4.8	4.9W	5.4	5.9	6.7F	6.8	6.7F	6.3F	6.0	6.5F	6.9	6.1	5.5	5.5	5.2F
26	4.6F	4.1F	B	A	B	B	5.2F	5.6F	A	B	R	W	B	B	R	6.6F	C	C	6.2F	6.6F	6.5	6.0F	6.1F	6.2F
27	5.0F	U 5.2F	6.0F	F	5.2F	F	B	A	A	W	F	A	R	4.5F	R	4.8W	B	B	F	F	W	W	F	A
28	B	B	A	B	A	R	A	5.0F	5.0F	5.2F	5.2	5.6	5.6	6.2	6.5	B	B	4.9F	4.6F	W	F	F	4.5F	4.1F
29	B	4.1F	4.7F	F	B	B	B	F	5.4F	5.0F	5.9	6.0F	6.5F	6.5F	C	7.5F	F	5.7F	5.5F	F	5.0F	5.0F	5.8F	6.0F
30	F	P	F	4.9F	5.4F	5.4F	5.3F	F	F	6.3F	7.0F	F	B	6.1	6.8F	6.5F	6.0F	6.0F	5.4F	4.9F	4.2F	4.2F	5.6F	5.0
31	F	F	4.5F	5.0F	5.6F	F	5.2F	5.9F	B	B	6.2F	4.5F	B	B	B	7.5F	7.0F	6.0F	5.0F	5.0	F	4.5	3.7	4.2F
No.	16	14	12	14	12	10	12	11	13	18	21	20	20	24	21	26	23	22	25	22	24	26	24	24
Median	4.8F	5.0F	5.0F	5.2F	5.4F	5.5F	5.2F	5.8F	5.8F	6.0F	6.0F	6.0F	6.2F	6.6F	6.9F	6.8F	6.5F	6.0F	5.7F	5.2F	5.2F	5.3F	5.1F	5.0F
U.Q.	5.1	5.3	5.6	6.0	6.2	7.1	5.6	7.2	7.6	6.8	7.2	8.2	7.1	7.2	7.2	7.5	7.2	6.4	6.2	5.8	5.6	6.2	5.6	5.6
L.Q.	4.6	4.1	4.6	4.7	4.8	4.6	4.9	5.0	5.3	5.2	5.6	5.4	5.9	5.8	6.0	6.5	6.0	5.6	5.2	5.0	4.8	4.8	4.7	4.5
Q.R.	0.6	1.2	1.0	0.3	1.4	2.5	0.7	2.2	2.3	1.6	1.6	1.8	1.2	1.4	1.2	1.0	1.2	0.8	1.0	0.8	0.8	1.4	0.9	1.1

foF2

Sweep 4.0 Mc to 20.0 Mc in 30 sec in automatic operation

The Radio Research Laboratories, Japan

S 1

IONOSPHERIC DATA

DEC. 1960 | foF1 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4′ S, Long. 39°35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						40	F				B		B		B	44	42		C					
2						32	40	A	A		45	44	46	46	47	46		42	42C	41				
3						32	40	B	B	45	B	49	49	49	50	50	50	L	L	39	39			
4					40	41	42	45	46	47	49	49	49	A	50	51	43	47	44	41	40			
5					40	42	45	43	50	50F	50	50	50	50	49	48	47	45	44	42	L			
6					41	41	44	F	44	B	49	48	47	48	47	45	45	C	42					
7					R	47	A	45	46	43	46	47	47	49	47	46	47	46	45	41				
8						A	F	42	F	B	45	46	48	46	L	C	43	43	L					
9					A	41	41				47	50	48	47	47	47	47	46	42	L				
10					A	B	B	A	48	49	48	49	50	49	49	48	47	47	L	L	L			
11			36	37	40	42	42	46	47	48	50	50	50	49	49	50	45	B	B					
12					36	39	A	44	44	45	45	48	49	48	48	50	B	38	L	39				
13					C	40	A	A	B	A	A		B	B	46	45	47L	47	44					
14					36	40	42	42	46	47	47	47	50	49	48	49	A	L	A					
15				37	39	A	A	42	43	43	43	45	B	B	42			40	38					
16					A	A		A	B	B	B	B	A	42	43	43	44	43	41	40				
17							40	42	R	41	F	45	46	47	46	46	45	43	41	L	C	A		
18						42			43	B	C	46	43	43	45	45	44	44	40					
19						A	A	A	42	41	42	44	45	44	B	44	44	44	43	40				
20					L	A	B	B	B	43	43	45	45	B	44	44	45	42	40					
21					R	B	B	A	42	43	43	44	44	45	45	45	44	43	40	39	A			
22					B	35	B	B	B	B	B	43	B	B	B	B	B	43	B	39	L	A		
23				B	B	B	B	43	B	B	48	B	B	B	45	B	B	42	C					
24					B	A	A	41	45	43	46	44	45	44	46	44	44	R	40	B	36	A		
25					38	C	C	C	C	43	43	45	45	45	45	45	45	43	41	39				
26					B	B	A	41	A	B	42	43	B	B	B	45	C	C	43	40	38			
27				35	37	40	B	A	A	43		A	42	43	43	40	B	B			35	32		
28					A		A	40	41	43	43	45	46	46	44	B	B	42	A	36	F			
29				38	B	B	B	43	43	44	B	45	45	47	C	46	45	45	42					
30					A	39	42	43	47	49	49	45	B	47	46	45	46	45	42	L				
31					A	36	42	43	B	B	45	47	B	B	B	46	45	47	46	40				
No.			1	4	9	17	11	16	16	18	22	26	22	22	24	26	22	22	20	14	6	1		
Median			36	36	39	40	42	42	44	44	45	46	46	47	46	46	45	44	42	40	38	32		

foF1

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

The Radio Research Laboratories, Japan.

S2

IONOSPHERIC DATA

DEC. 1960 | foE | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S, Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					A	A	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B			
2					B	R	B	R	B	B	B	B	B	B	B	B	B	B	C	R	B			
3					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
4					B	R	R	R	B	B	B	B	B	B	B	B	B	B	R	B	A			
5					B	≥10	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
6				R	R	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B			
7					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
8	R				B	B	B	B	B	B	B	B	B	B	B	C	B	B	R	A	B			
9	R				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	≥20	≥10		
10					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	B	≥10	R	B
11	R	R	B	≥15	R	B	R	R	R	B	B	B	B	B	B	B	R	B	B	B	B	≥15	B	≥40
12			≥40	≥50	A	A	B	B	R	R	B	B	B	B	B	B	B	S	B	B	B		450	
13				R	C	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
14					B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	≥20	A		
15					A	A	B	A	A	A	A	A	B	B	B	B	B	B	B	A	A			
16					A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	≥50	A			
17			≥15		B	A	B	R	B	B	B	B	B	B	B	B	R	R	R	A	A	A	≥60	
18				R	B	B	B	B	B	B	C	A	B	B	B	B	B	B	R	≥20	≥70	R		
19			≥20		B	B	≥20	B	R	R	B	B	B	R	B	B	B	B	B	B	R	B	B	
20		A			B	B	B	B	B	B	B	B	B	B	B	R	R	B	B	≥40	≥20	≥20		
21					R	B	B	B	B	B	B	R	B	B	B	B	B	R	R	A				
22					B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	≥40	
23					B	B	B	A	B	B	B	B	B	B	B	B	B	B	C	R	≥15	≥40	≥70	≥20
24					B	B	B	A	A	R	B	B	R	B	B	B	B	B	B	B	R	B	B	≥50
25					B	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	≥20	≥10	B
26					B	B	B	A	B	B	B	B	B	B	B	B	C	C	B	R	B			
27					A	B	B	B	B	R	B	B	B	B	B	B	B	B	R	R	≥15	1.90	1.70	
28					R	B	B	B	≥40	B	R	B	B	B	B	B	E	B	B	B				
29					B	B	B	B	R	R	B	B	B	B	B	B	B	B	B	R				
30					B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	≥20			
31					B	R	B	B	B	B	B	B	B	B	B	B	R	B	B	R				
No.			≥	≥		1	1		1											≥	7	7	6	≥
Median			≥40	≥20		≥10	≥10		≥40											1.90	≥20	≥20	≥60	≥50

foE

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

The Radio Research Laboratories, Japan.

S 3

IONOSPHERIC DATA

DEC. 1960 | foEs | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.9	3.9	3.9	4.8	3.6	4.0	B	B	B	4.7	B	4.8	B	B	B	B	B	B	C	J 8.0	B	7.2	J 8.6	J 11.9
2	B	6.5	7.3	B	5.2	G	B	4.2	4.7	4.0	B	B	B	B	B	B	B	B	C	G	5.0	3.8	4.7	3.9
3	5.0	5.1	5.1	B	B	B	4.2	B	B	B	B	B	B	B	B	B	B	B	3.5	3.0	3.7	B	3.2	3.4
4	3.5	3.0	J 5.1	B	B	G	G	G	B	B	B	B	4.9	5.5	5.4	3.8	B	B	G	B	3.5	3.5	B	B
5	3.8	B	4.0	B	4.0	G	3.7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.9	5.0	4.2
6	3.9	5.3	J 5.4	G	G	B	B	B	B	B	B	B	B	B	J 6.7	B	B	C	B	B	B	B	4.1	B
7	J 5.4	B	B	B	B	J 4.6	4.4	4.2	B	B	B	B	B	B	B	3.6	B	B	B	B	3.8	3.8	5.5	5.2
8	G	4.5	5.3	4.1	5.0	4.0	5.0	B	B	B	B	B	B	B	B	C	B	B	G	4.6	B	B	B	B
9	G	B	B	B	4.5	B	B	5.1	5.9	B	B	B	B	B	B	B	B	B	B	B	G	G	4.1	B
10	B	3.8	B	4.7	4.3	B	B	4.8	4.5	4.5	B	B	B	B	B	B	B	B	B	G	B	3.6	G	3.0
11	G	G	3.2	3.4	G	B	G	G	G	3.2	B	B	B	B	B	B	G	B	B	B	B	3.4	3.2	G
12	4.7	J 6.0	G	3.9	3.5	J 5.2	J 5.7	4.6	4.2	4.8	B	B	B	B	B	B	B	J	B	B	4.8	5.0	5.2	4.2
13	5.0	3.0	B	G	C	B	6.1	4.6	B	5.6	4.6	B	B	B	B	B	B	B	B	J 8.7	J 4.7	5.3	J 4.7	3.6
14	3.7	3.8	B	B	B	B	B	4.6	B	B	B	5.9	4.0	B	B	B	J 6.2	J 3.6	J 6.4	5.2	3.7	J 6.2	5.6	3.2
15	3.7	4.0	4.0	4.0	3.0	5.1	6.6	4.2	3.2	J 3.2	3.7	4.9	B	B	B	B	B	B	B	J 4.7	3.0	5.8	J 6.0	J 5.9
16	J 8.2	4.2	5.1	3.6	4.2	5.8	4.0	5.9	B	B	B	B	4.1	B	B	3.6	3.4	3.9	4.8	G	3.9	B	B	B
17	3.2	4.8	6.7	3.9	B	3.0	B	G	4.4	3.8	4.2	4.2	4.6	B	B	J 5.8	G	G	G	3.9	3.7	4.4	G	3.9
18	3.2	E	E	G	B	3.5	5.0	B	B	B	C	5.0	B	B	B	B	B	3.8	G	J 7.9	G	4.4	J 7.2	C
19	4.4	3.0	J 4.4	4.6	B	5.0	4.6	4.9	G	G	B	B	B	G	B	B	B	B	B	B	G	B	3.2	3.2
20	J 6.8	4.0	3.8	3.7	4.0	5.5	B	B	B	B	B	B	B	B	B	G	G	B	B	3.9	3.7	2.8	6.8	5.9
21	5.1	3.5	4.0	3.4	G	B	B	4.2	B	B	B	G	B	B	B	B	3.5	G	G	3.9	4.0	4.0	4.0	4.4
22	J 7.4	A	7.8	J 8.4	B	3.2	B	4.6	B	B	B	B	B	B	B	B	B	B	B	B	3.7	3.0	3.0	4.8
23	4.2	4.5	B	B	B	B	B	5.5	B	B	B	B	B	B	B	B	B	B	C	3.0	3.6	4.7	3.6	4.2
24	J 6.5	J 5.4	5.3	B	J 8.4	J 8.0	4.6	4.7	4.5	G	B	B	G	B	B	B	B	B	B	B	G	3.2	3.7	3.1
25	B	B	B	3.9	B	C	C	C	C	B	B	B	B	3.5	B	B	B	B	B	B	B	G	G	3.2
26	3.1	3.9	B	5.0	B	B	4.5	4.7	5.1	B	3.7	B	B	B	B	B	C	C	B	G	5.0	3.0	3.4	B
27	4.0	3.7	3.7	4.0	J 5.3	3.5	B	5.3	4.7	4.0	4.2	4.9	B	B	B	B	B	B	G	G	G	3.5	3.1	J 6.4
28	B	B	4.0	B	6.2	4.0	4.5	4.0	G	B	G	B	B	B	B	B	B	B	4.2	B	4.4	3.5	3.6	4.0
29	B	4.5	3.0	3.7	B	B	B	3.9	G	G	B	B	B	B	C	B	B	B	G	G	4.4	4.4	4.2	B
30	4.0	3.0	3.8	5.6	4.8	4.5	3.5	B	B	B	B	B	B	B	B	B	B	B	B	3.4	3.1	4.9	4.5	4.2
31	4.0	5.9	B	4.5	3.6	3.8	B	4.0	B	B	B	B	B	B	B	B	G	B	B	G	3.5	J 8.9	4.2	B
No.	23	23	20	21	18	19	16	22	12	12	6	7	5	3	2	5	7	5	11	19	24	26	23	22
Median	4.2	4.0	4.2	4.0	4.2	4.0	4.5	4.6	4.6	4.0	4.0	4.9	4.1	3.5	6.0	3.6	G	3.8	G	3.9	3.0	3.8	4.1	4.2
U.Q.	5.0	5.0	5.3	4.8	5.0	5.1	5.0	4.8	4.7	4.8	4.4	5.0	4.8	4.5	—	4.8	3.5	6.2	G	4.7	4.2	4.9	5.1	4.8
L.Q.	3.7	3.2	3.8	3.8	3.6	3.0	3.8	4.0	G	G	2.7	4.2	G	G	—	G	G	G	G	G	3.6	3.0	3.7	3.0
Q.R.	3.3	1.8	3.4	1.9	3.4	3.1	1.2	0.8			1.7	0.8									1.6	1.8	3.4	1.8

The Radio Research Laboratories, Japan

foEs

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

S 4

IONOSPHERIC DATA

DEC. 1960 | f-min | 45° E Mean Time (G.M.T.+3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.9	≥1.0	1.7	1.8	1.8	1.7	≥1.0	B	B	≥3.0	B	4.2	B	≥2.0	B	≥6.0	4.0	≥8.0	C	≥1.0	≥3.0	≥5.0	≥6.0	≥5.0
2	B	1.9	≥2.0	1.5	≥2.0	≥2.0	≥5.0	≥2.0	4.2	≥5.0	≥6.0	≥6.0	4.5	4.2	4.2	3.5	B	≥3.0	≥9.0	1.8	≥2.0	1.8	1.9	≥5.0
3	≥1.5	≥3.0	≥3.0	≥3.5	B	≥3.0	≥4.0	4.1	B	≥6.0	6.0	4.0	4.0	4.2	4.1	4.0	≥3.0	≥5.0	≥1.0	≥1.0	≥2.0	≥2.0	1.8	1.9
4	1.8	1.9	≥1.0	≥2.0	≥2.0	≥1.0	1.8	1.8	≥3.0	4.0	4.2	≥5.0	≥3.0	≥5.0	≥2.0	≥4.0	≥2.0	≥2.0	1.9	≥5.0	≥2.0	≥1.0	4.0	4.2
5	≥4.0	≥3.0	≥2.0	≥3.0	≥5.0	≥1.0	≥2.0	≥5.0	4.2	4.5	4.0	4.2	≥3.0	4.0	≥3.0	≥3.0	≥3.0	≥2.0	≥2.0	≥2.0	≥4.0	≥2.0	≥6.0	≥3.0
6	≥2.0	≥2.0	1.7	1.9	≥1.0	≥5.0	≥5.0	≥4.0	≥5.0	B	≥3.0	≥6.0	≥3.0	≥3.0	≥3.0	≥6.0	4.0	C	≥3.0	B	B	B	≥2.0	≥1.0
7	≥3.0	≥3.0	≥6.0	≥5.0	≥1.0	≥3.0	≥3.0	≥6.0	4.2	4.1	4.0	≥3.0	≥3.0	≥3.0	≥6.0	≥3.0	≥5.0	≥2.0	≥2.0	≥1.0	≥2.0	≥2.0	≥4.0	≥1.0
8	≥2.0	≥1.0	≥5.0	≥1.0	≥3.0	≥2.0	≥5.0	≥6.0	4.2	B	≥6.0	≥3.0	≥5.0	≥5.0	≥6.0	C	≥5.0	≥4.0	1.9	≥2.0	≥2.0	≥3.0	≥5.0	≥2.0
9	≥2.0	≥2.0	≥3.9	≥2.0	≥2.0	≥2.0	≥2.0	≥3.0	≥2.0	4.1	≥3.0	4.0	≥3.0	≥3.0	≥3.0	≥3.0	≥5.0	≥2.0	≥4.0	≥2.0	≥1.5	≥1.0	≥2.0	≥2.0
10	≥3.0	1.9	4.2	≥5.0	≥2.0	4.1	B	≥2.0	≥6.0	4.0	4.0	≥6.0	≥3.0	≥6.0	≥6.0	≥5.0	≥4.0	≥2.0	≥1.0	1.9	≥3.0	≥2.0	≥2.0	≥2.0
11	≥2.0	≥2.0	≥2.0	≥2.0	≥2.0	≥2.0	≥1.0	≥2.0	≥1.0	≥1.0	4.1	≥6.0	≥3.0	4.0	≥5.0	≥5.0	1.9	B	B	B	B	1.5	≥2.0	1.8
12	1.9	1.8	1.7	1.8	1.9	1.9	≥1.0	≥4.0	1.9	≥2.0	4.1	≥7.0	≥3.0	4.2	≥8.0	≥8.0	4.8	S	≥2.0	≥5.0	≥6.0	1.7	4.2	≥8.0
13	1.8	≥2.0	B	1.5	C	≥5.0	≥2.0	≥2.0	B	4.2	4.0	4.2	B	6.0	≥6.0	≥5.5	≥4.0	4.2	≥7.0	≥2.5	≥4.0	≥2.0	≥6.0	E
14	E	E	≥2.0	≥4.0	≥2.0	≥5.0	≥1.0	≥1.0	≥4.0	≥4.0	4.1	≥5.0	≥6.0	≥8.0	4.2	≥5.0	≥2.0	≥2.0	E	E	E	E	≥2.0	E
15	≥1.0	1.2	E	E	E	E	≥1.0	≥1.5	≥1.0	≥2.0	≥2.0	≥1.0	4.7	5.1	≥6.0	4.0	B	≥1.0	≥2.0	E	E	E	E	E
16	E	E	E	E	1.1	E	1.5	4.2	B	B	B	4.2	≥5.0	≥6.0	≥8.0	≥2.0	≥1.0	≥1.5	≥2.0	1.4	≥6.0	≥7.1	≥9.0	≥9.0
17	≥6.0	≥8.0	≥7.0	E	≥6.0	≥1.0	≥2.0	≥6.0	≥2.0	≥2.0	≥6.0	≥2.0	≥8.0	≥6.0	≥4.0	≥4.0	≥5.0	E	E	E	E	E	E	E
18	E	E	E	≥2.0	≥5.0	≥1.0	≥7.0	B	≥5.0	B	C	≥5.0	≥2.0	≥6.0	≥8.0	4.0	≥4.0	≥4.0	1.8	1.5.0	≥2.0	1.8.0	1.7.0	C
19	≥6.0	1.9.0	1.5.0	≥4.0	≥6.0	≥5.0	≥2.0	≥5.0	≥2.0	1.9.0	≥5.0	4.0	≥6.0	1.9.0	4.5.0	≥2.0	≥9.0	≥4.0	≥5.0	≥7.0	≥2.0	≥5.0	1.5.0	1.7.0
20	1.9.0	1.7.0	1.8.0	≥2.0	≥9.0	≥2.0	B	B	4.1.0	≥4.0	≥2.0	≥6.0	≥5.0	4.6.0	≥4.0	≥2.0	≥1.0	4.0.0	≥5.0	1.5.0	1.9.0	1.2.0	≥1.0	1.5.0
21	≥2.5	1.9.0	≥5.7	1.4.0	1.9.0	B	B	≥5.0	≥7.0	4.0.0	≥7.1.0	≥2.0	≥4.0	≥4.0	≥7.0	≥9.0	≥1.0	≥2.0	1.8.0	≥2.0	1.8.0	1.9.0	1.6.0	1.7.0
22	1.5.0	B	1.4.0	≥2.0	B	1.9.0	B	≥6.0	B	B	B	≥5.0	B	4.8.0	5.0.0	4.4.0	4.4.0	≥8.0	4.0.0	≥1.0	1.9.0	1.7.0	1.8.0	≥2.0
23	≥2.0	≥2.0	B	B	B	B	B	≥2.0	D	B	≥7.0	4.2.0	B	4.5.0	≥9.0	6.1.0	4.2.0	≥4.0	C	≥1.0	1.7.0	1.8.0	1.4.0	1.5.0
24	1.5.0	1.6.0	1.6.0	≥3.0	4.0.0	6.8.0	≥2.0	≥2.0	1.7.0	≥2.0	≥6.0	≥5.0	≥2.0	≥5.0	4.0.0	≥7.0	≥1.0	≥6.0	≥2.2	4.1.0	1.9.0	1.8.0	≥2.0	1.9.0
25	B	≥1.0	B	≥4.0	≥1.0	C	C	C	C	≥2.0	≥2.0	≥2.0	≥6.0	≥2.0	≥8.0	≥9.0	≥5.7	≥4.6	≥5.2	≥6.2	1.6.0	1.7.1	1.5.2	1.5.7
26	1.4.0	≥2.0	B	≥6.0	B	B	≥2.0	≥2.0	≥6.0	B	≥5.0	≥7.0	B	B	4.5.0	≥5.0	C	C	≥4.0	1.9.0	≥2.0	≥2.0	1.9.0	≥1.0
27	1.6.0	1.9.0	1.7.0	1.5.0	1.9.0	≥2.0	B	≥5.0	≥8.0	≥2.0	≥6.0	4.2.0	≥9.0	≥8.0	≥6.0	≥4.0	B	B	1.9.0	≥2.0	1.5.7	1.2.0	1.2.0	1.4.2
28	B	B	≥1.0	B	1.9.0	≥8.0	≥2.0	≥1.8	≥1.5	≥4.0	1.8.0	≥5.0	≥6.0	≥6.0	≥6.0	B	B	≥1.5	≥1.0	≥2.5	1.9.0	1.6.0	1.5.0	1.6.8
29	B	≥2.0	1.5.0	1.2.0	B	B	B	≥4.0	1.9.0	≥2.0	4.8.0	4.1.0	≥8.0	≥7.0	C	4.2.0	≥2.2	≥2.2	≥1.0	1.8.0	1.7.0	1.9.0	≥2.1	≥2.2
30	1.7.0	1.6.0	1.5.0	≥2.0	≥2.0	≥2.0	≥2.2	≥5.2	4.2.0	≥8.0	≥6.0	≥8.0	B	≥9.0	≥9.0	4.0.0	≥8.0	≥2.2	≥2.2	≥2.2	1.9.0	1.5.2	≥2.0	≥2.2
31	1.6.0	≥1.0	≥5.0	≥2.0	≥2.2	1.7.0	≥7.5	≥4.0	B	B	≥8.0	≥6.0	B	B	B	4.0.0	≥2.0	≥4.0	≥5.0	1.8.0	1.6.0	≥4.0	≥2.0	≥4.6
No.	≥1	≥1	≥1	≥1	≥0	≥0	≥0	≥0	≥0	≥1	≥0	≥1	≥1	≥1	≥0	≥0	≥0	≥8	≥9	≥1	≥1	≥1	≥1	≥0
Median	≥2.0	≥2.0	≥1.0	≥2.0	≥0.6	≥2.0	≥7.0	≥4.0	≥7.0	≥8.0	≥7.0	≥7.0	≥8.0	≥8.0	≥7.5	≥6.6	≥5.7	≥2.5	≥2.0	≥2.0	≥2.0	1.9.0	≥2.0	≥0.6
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

f-min

Sweep 1.0 Mc to ≥20.0 Mc in ≥0 sec in automatic operation

S 5

IONOSPHERIC DATA

DEC. 1960 | h'F2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S / Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						420	450	B	B		B		B		B	490	700		C					
2						470	490	600	A		610	600	590	570	500	510		730	C	400				
3						440	470	530	B	550	F	600	470	450	410	390	390	L	L	300	330			
4					L	400	400	400	400	400	400	390	380	390	400	370	410	400	400	410	400			
5					430	405	430	400	400	530	550									360	L			
6					410	410	410	605	490	B	560	580	600	490	440	500	605	C	L	B	B			
7					F	A	600	F	F	600	600	580	600	510	505	430	470	430	400	400				
8						600	500	F	R	B	R	R	800	530	L	C	390	450	L					
9					500	370	505				600	530	570	F	600	490	470	600F	570	L				
10					490	430	B	530	530	400	440	410	440	430	440	430	380	360	L	L	L			
11			360	370	400	360	390	380	400	390	400	390	400	400	405	400	410	B	B					
12					430	430	A	610	605	490	470	440	440	450	430	370	405	S	L	530				
13					C	600	A	A	B	A	A		B	500	405	430	490	400	390					
14					400	360	390	410	370	360	380	380	360	380	390	405	430	400	360					
15				600	550	A	A	530	500	500	510	530	570	500	510			F	440					
16					A	A		A	B	B	B	F	A	R	R	650	500	400	430	360				
17							600	480	600	520	530	450	400	370	410	440	R	400	350	L	L	300		
18						570			490	B	C	R	F	600	570	405	450	440	500					
19							600	600	450	480	430	430	400	450	380	380	320	390	355	310				
20					L	A	B	B	490	470	510	430	430	460	450	405	450	400	350					
21					500	B	B	A	540	450	490	400	450	400	380	360	400	400	560	450	360			
22					B	530	B					500	B	500	400	410	410	360	360	360	300	370		
23				B	B	B	B	490	B	B	400	430	B	360	390	490	450	605	C					
24					405	A	500	415	430	400	405	400	430	400	370	370	410	500	300	300	330	410		
25					430	C	C	C	C	390	530	500	405	360	315	320	295	305	330	330				
26					B	B	505	460	A	B	R	E710R	B	B	400	400	C	C	340	390	380			
27				390	400	360	B	A	A	F		A	R	560	R	700	B	B			F	F		
28					A		A	540	500	505	490	470	510	430	490	B	B	500	530	700	F			
29				570	B	B	B	430	450	560	480	470	400	490	C	320	390	400	430					
30					450	430	450	410	F	405	405	390	B	405	370	450	430	450	360	L				
31				500	450	500	600	480	B	B	600	530	B	B	B	415	430	400	400	410				
No.			1	1	14	18	17	19	16	18	22	24	20	25	24	27	24	22	20	15	6	3		
Median			360	500	440	430	500	480	490	475	490	450	440	450	410	410	415	400	385	360	340	300		
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories Japan

h'F2 Sweep 10 Mc to 20 Mc in 20 sec in automatic operation

S6

IONOSPHERIC DATA

DEC. 1960 | h'F | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	≤00	≥40	≥00	F	≥80	E≥90	≥90	B	B	F	B	F	B	≥30	B	≥60	E≥70B	F	C	F	≥00H	A	≥00	≤30
2	B	A	A	≥≤	≥00	≥60	≥50	A	A	≥00	E≥60B	≥00	E≥80B	E≥40B	E≥30	≥30	B	≥40	E≥70C	≥00	F	≥30	≥80	≤00
3	A	A	≤≤	≤10	B	≥60	E≥60B	B	B	≥60	F	≥80	≥40	≥70	≥60	≥90	≥20	≥30	≥40	≥60	≥80	≥70	≥90	≥60
4	≥10	≥80	≤00	≥80	≥00	≥90	≥30	≥≤	≥20	≥60	≥60	≥00	≥00	A	≥00	≥90	≥90	≥30	≥60	≥00	≥60	≥00	≥10	≥00
5	≥10	≥50	≥70	≤10	≥50	≥90	≥00	≥30	≥90	≥00	≥10	≥00	≥90	≥60	≥30	≥40	≥50	≥50	≥50	≥50	≥40	≥40	≥50	≥70
6	≥50	≤10	≥90	≥≥0	≥00	≥00	≥00	≥30	≥10	B	≥30	≥30	≥70	≥60	≥40	≥≤	≥60	C	E≥80B	B	B	B	≥00	≤00
7	≤00	≤10	≤00	≤90	E≥90B	≥30	A	≥60	≥20	≥00	≥30	≥60	≥50	≥20	≥≤	≥20B	≥30	≥40	≥50	≥00	≥50	≥00	A	≥10
8	≥00	≤00	A	≤80	≤50	A	≥10	≥50	≥00	B	≥10	≥00H	≥30	≥≤	≥60	C	≥50	≥20	≥30	≥70	≥90	≥00	≥00	≥0≤
9	≥50	≥80	≥00	≥≥0	A	≥70	≥30	A	A	≥30	≥30	≥60	≥60	≥40	≥60	≥20	≥60	≥50	≥00	≥60	≥00	≥60	≥80	≥00
10	≤10	≥80	≥70	≤00	A	B	B	A	E≥00A	E≥90A	≥60	≥0≤	≥20	≥00H	≥10	≥30	≥≤	≥40	≥60	≥30	≥40	≥70	≥80	≥00
11	≥00	≥00	≥90	≥00	≥00	≥80	≥50	≥≤	≥10H	≥10	≥50	≥≤	≥0≤	≥40	≥10	≥10	≥20	B	B	B	B	≥40	≥70	≥90
12	≥70	≤60	F	≥00	≥60	F	A	≥20	≥50	≥00	≥00	≥50	≥60	≥70	≥30	≥30	B	S	≥50	≥50	F	≥80	A	A
13	≥50	≥00	B	≥50	C	≥80	A	A	B	A	A	E≥50B	B	B	≥30	≥60	≥60	≥20	≥80	≥90	≥80	≥00	≥80	≥70
14	≥80	≥00	≥20	≥60	E≥60B	≥00	≥30	≥20	≥40	≥≤	≥30	≥10	≥10	≥20	E≥70B	≥20	A	≥70	A	≥90	≥70	≥70	≥80	≥70
15	≥20	≥70	F	F	≥00	A	A	≥00H	≥20	≥00H	≥40	≥60	B	B	≥70	≥80	B	≥50	≥60	≥90	≥80	≥90	A	A
16	A	A	≤60	≥,90	A	A	≥70	A	B	B	B	F	A	E≥90B	E≥80B	≥60	≥60	≥60	≥00	≥90	≥90	≥90	≥95	≥90
17	≥60	≤70	≤00	≥10	≥90	≥70	≥60	≥50	E≤60A	≥90H	≥90	≥20	≥10	≥10	≥10	≥10	≥≤	≥10	≥00	≥30	≥50	A	≥00	≥80
18	≤60	≥70	≥50	≥≥0	≥00	≥00	≥50	B	≥10	B	C	≥00	≥10	≥60	≥00	≥00	≥40	≥70	≥80	≥70	≥00	≤50	≥00	C
19	A	≤50	≥≤0	A	≥50	A	A	A	≥20	≥30	≥20	≥00	≥20	≥10H	B	≥10	E≥90B	≥50	≥60	≥60	≥00	≥40	≥80	≥60
20	≥20	≤00	≤90F	≤00	≥00	A	B	B	B	≥00	≥00	≥20	≥0≤	B	≥30	≥10	≥≤	≥00	≥00	≥60	≥≥0	≥90	A	A
21	A	≥70	F	≥90	B	B	B	A	≥60	≥00	≥30	≥≥0	≥≥0	≥≥0	≥60	≥60	≥10	≥10	E≥60B	E≤70A	A	≥60	≥00	≥10
22	≤00	B	≥≥0	≤00	B	≥10	B	A	B	B	B	≥60	B	B	B	B	B	≥90	B	≥00	≥60	A	≥40	≥00
23	≥40	A	B	B	B	B	B	≥90	B	B	≥≥0	B	B	B	≥10	B	B	≥60	C	≥60	≥≥0	≥≥0	≥60	≥00
24	≥00	≥20	≥90	≤80	B	A	A	E≤00A	≥90	≥00H	≥30	≥00	≥00	≥00	E≥80B	≥90	≥≥0	E≥80B	≥60	B	≥≥0	A	≥0≤	≥90
25	B	≥70	B	F	≥00	C	C	C	C	≥00	≤80	≥00	≥00	≥00	≥≤	≥10	≥0≤	≤90	≥60	E≥80B	≥40	≥40	≥40	≥≥0
26	≥90	≤60	B	A	B	B	A	≥00H	A	B	≥60	≥≥0	B	B	B	≥30	C	C	≥60	≥60	≥60	≥60	≥70	≥80
27	≥00	≥60	≥00	≥90	E≥50A	E≥10B	B	A	A	≥60	≥40	A	≥90	≥30	≥40	≥70	B	B	≥≤	F	≥60	≥40	≥80	A
28	B	B	A	B	A	≥00	A	≥90	≥00	≥40	≥30	≥≤	≥0≤	≥20	≥30	B	B	≥20	A	≥70	F	≥≤	≥00	≥80
29	B	≤60	≥40	≥90	B	B	B	≥30	≥00H	≥00	B	≥00	≥60	≥10	C	E≥90B	≥10	≥≤	≥60	≥10	≥60	≥00	≥80	≥90
30	≥00	≥00	≥70	≤00	A	≤00	≥90	≥20	≥00	≥0≤	≥0≤	≥0≤	B	≥10	≥90	≥80	≥60	≥20	≥20	≥60	≥60	≥00	≥60	≥00
31	≥20	≤60	≥40	A	A	≥60	≥10	≥10	B	B	≥60	≥10	B	B	B	≥60	≥30	≥00H	≥60	≥40	≥10	≥00	≥70	≥00
No.	≥9	≥6	≥≤	≥9	≥7	≥8	≥6	≥7	≥8	≥≤	≥4	≥7	≥≥	≥3	≥6	≥,7	≥≥	≥6	≥5	≥6	≥6	≥6	≥7	≥6
Median	≥20	≥10	≥40	≥90	≥00	≥80	≥90	≥30	≥30	≥0≤	≥30	≥≥6	≥≥0	≥≥0	≥0≤	≥30	≥≥0	≥40	≥60	≥60	≥80	≥00	≥00	≥00
U.Q.																								
L.Q.																								
Q.R.																								

h'F — Sweep 1.0 Mc to ≥10.0 Mc in ≥0 sec in automatic operation

The Radio Research Laboratories, Japan

S 7

IONOSPHERIC DATA

Syowa Base

Lat. 69°00.4′ S
Long. 39°35.4′ E

DEC. 1960 | h'E | 45° E Mean Time (G.M.T. +3h)

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	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B			
2					B	100	B	100	B	B	B	B	B	B	B	B	B	B	C	100	B			
3					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
4					B	110	100	100	B	B	B	B	B	B	B	B	B	B	105	B	A			
5					B	120	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
6				120	110	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B			
7					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
8	120				B	B	B	B	B	B	B	B	B	B	B	C	B	B	100	A	B			
9	150				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	110		
10					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	B	150	150	B
11	150	120	B	120	110	B	105	100	100	B	B	B	B	B	B	B	100	B	B	B	B	110	B	150
12			140	120	A	A	B	B	100	100	B	B	B	B	B	B	B	B	B	B	B		120	
13				100	C	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
14					B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	120	A		
15					A	A	B	A	A	A	A	A	B	B	B	B	B	B	B	A				
16					A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	150	A			
17			200		B	A	B	120	B	B	B	B	B	B	B	B	100	110	110	A	A	A	150	
18				150	B	B	B	B	B	B	C	A	B	B	B	B	B	B	105	105	170	110		
19			120		B	B	100	B	100	105	B	B	B	100	B	B	B	B	B	B	110	B	B	
20		100			B	B	B	B	B	B	B	B	B	B	B	100	100	B	B	100	110	110		
21					100	B	B	B	B	B	B	100	B	B	B	B	B	100	105	A				
22					B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	125	
23					B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	105	105	105	110	110
24					B	B	B	A	A	105	B	B	100	B	B	B	B	B	B	B	100	B	B	120
25					B	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	120	110	B
26					B	B	B	A	B	B	B	B	B	B	B	B	C	C	B	100	B			
27					A	B	B	B	B	100	B	B	B	B	B	B	B	B	110	105	105	105	100	
28					100	B	B	B	100	B	100	B	B	B	B	B	B	B	B	B				
29					B	B	B	B	100	100		B	B	B	B	B	B	B	110	100				
30					B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120			
31					B	110	B	B	B	B	B	B	B	B	B	B	100	B	B	105				
No.	3	2	3	5	4	4	3	4	5	5	1	1	1	1		1	4	2	7	10	8	8	7	3
Median	150	115	140	120	105	110	100	100	100	100	100	100	100	100		100	100	105	105	105	110	110	120	120

h'E

Sweep 40 Mc to 200 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

DEC. 1960 | h'Es | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	120	120	116	120	100	B	B	B	140	B	160	B	B	B	B	B	B	C	150	B	150	130	140
2	B	100	100	B	180	G	B	120	110	110	B	B	B	B	B	B	B	B	C	G	120	120	110	120
3	100	100	100	B	B	B	170	B	B	B	B	B	B	B	B	B	B	B	150	160	170	B	170	140
4	130	130	130	B	B	G	G	G	B	B	B	B	110	100	105	105	B	B	G	B	120	120	B	B
5	140	B	120	B	120	G	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	120	120
6	120	110	120	G	G	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B
7	160	B	B	B	B	130	150	130	B	B	B	B	B	B	B	110	B	B	B	B	150	150	100	110
8	G	120	140	150	150	130	140	B	B	B	B	B	B	B	B	C	B	B	G	120	B	B	B	B
9	G	B	B	B	100	B	B	120	110	B	B	B	B	B	B	B	B	B	B	B	G	G	130	B
10	B	130	B	100	100	B	B	110	110	120	B	B	B	B	B	B	B	B	B	G	B	120	G	120
11	G	G	120	120	G	B	G	G	G	110	B	B	B	B	B	B	G	B	B	B	B	140	140	G
12	130	110	G	190	110	110	110	120	120	120	B	B	B	B	B	B	B	S	B	B	170	100	130	150
13	110	130	B	G	C	B	110	110	B	100	100	B	B	B	B	B	B	B	B	140	150	130	130	140
14	170	150	B	B	B	B	B	140	B	B	B	110	110	B	B	B	100	100	100	100	120	120	120	100
15	160	130	170	120	120	110	100	110	100	100	100	100	B	B	B	B	B	B	B	140	150	180	200	120
16	130	100	150	100	100	140	150	120	B	B	B	B	110	B	B	180	170	150	125	G	150	B	B	B
17	130	130	130	130	B	130	B	G	130	110	120	100	140	B	B	120	G	G	G	130	140	120	G	150
18	140	E	E	G	B	180	120	B	B	B	C	100	B	B	B	B	B	170	G	140	G	170	105	C
19	110	110	160	160	B	105	125	100	G	G	B	B	B	G	B	B	B	B	B	B	G	B	130	110
20	130	120	110	100	120	100	B	B	B	B	B	B	B	B	B	G	G	B	B	160	160	150	120	100
21	110	110	150	100	G	B	B	100	B	B	B	G	B	B	B	B	110	G	G	110	110	120	110	105
22	120	B	100	100	B	105	B	100	B	B	B	B	B	B	B	B	B	B	B	B	115	110	140	120
23	110	100	B	B	B	B	B	110	B	B	B	B	B	B	B	B	B	B	C	140	150	150	140	130
24	110	100	100	B	100	160	110	100	100	G	B	B	G	B	B	B	B	B	B	B	G	110	110	120
25	B	B	B	120	B	C	C	C	C	B	B	B	B	100	B	B	B	B	B	B	B	G	G	140
26	150	140	B	100	B	B	120	140	100	B	190	B	B	B	B	B	C	C	B	G	120	150	120	B
27	110	110	110	105	100	140	B	106	105	120	120	120	B	B	B	B	B	B	G	G	G	160	170	130
28	B	B	100	B	120	100	100	105	G	B	G	B	B	B	B	B	B	B	100	B	110	110	105	105
29	B	140	100	100	B	B	B	110	G	G	B	B	B	B	C	S	B	B	G	G	100	115	120	B
30	100	140	160	100	100	100	130	B	B	B	B	B	B	B	B	B	B	B	B	110	150	105	120	120
31	110	120	B	100	150	120	B	120	B	B	B	B	B	B	B	B	G	B	B	G	105	120	120	B
No.	22	22	20	18	15	16	14	19	9	8	6	6	4	2	1	4	2	3	4	12	19	24	24	21
Median	120	120	120	100	120	120	120	110	110	110	120	106	110	100	106	115	110	150	110	140	140	120	125	120
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

S 9

IONOSPHERIC DATA

DEC. 1960

Types of Es

45° E Mean Time (G.M.T. +3h)

Syowa Base

Lat. 69°00.4′ S
Long. 39°35.4′ E

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

Types of Es

Sweep 40 Mc to 200 Mc in 20 min sec in automatic operation.

The Radio Research Laboratories, Japan.

S 10

IONOSPHERIC DATA

JAN. 1961 | foF2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.2F	4.4F	4.1F	5.0F	[illegible]	[illegible]	.9	A	A	5.5F	A	5.2F	5.6	5.8F	6.0F	6.0F	5.9	6.0F	5.8F	5.8F	5.7	6.5F	5.6F	5.5F
2	5.4F	5.9	6.0F	F	6.0F	F	9.2F	9.4	9.1	8.5	8.2	8.4	8.4	8.1	7.8	7.8	8.2F	7.2F	6.7F	6.2F	6.0F	6.1F	5.7F	5.8F
3	5.5F	5.4F	5.8F	4.7F	6.2F	6.8F	6.8F	7.8F	8.2F	F	F	8.5F	8.4F	8.4F	8.0F	7.4F	6.7	6.8	6.2	6.4F	6.0F	5.9F	5.4F	5.2F
4	5.5F	5.5F	6.0F	5.9F	6.2F	7.1F	7.4F	8.0F	7.9F	8.4F	F	F	8.0F	7.9F	7.2F	7.2	7.6F	7.6	7.1	7.0	6.4F	B	5.6F	5.4F
5	5.6F	B	6.4F	7.1F	7.9F	9.0F	9.7F	10.1	8.6	8.5	9.3	9.2	8.9	8.7	8.2	7.8	7.2	7.2	7.1	6.4F	6.4	6.7F	6.2F	5.5F
6	4.2F	5.0F	5.1F	F	4.9	F	F	5.1	6.0F	5.7F	6.0F	6.0F	6.2F	6.6	6.9	7.1	7.1F	7.2	B	6.0F	6.0F	5.7F	4.7F	4.4F
7	4.7F	F	5.0F	5.1F	F	F	A	A	6.0F	6.2F	6.2F	6.0	5.7	5.5	6.0	6.0F	6.2	6.2	6.2	6.2F	6.0F	5.9F	11 5.7F	5.6F
8	5.4F	4.8F	F	3	4.4	F	5.1F	B	B	B	A	6.0	6.4	6.0	6.5F	7.0F	5.9	5.1F	F	F	F	4.0F	A	4.2F
9	4.4F	F	F	U 4.0F	4.9F	F	4.7F	F	B	R	5.0F	B	4.6	4.7F	5.4F	J 6.4	B	B	C	F	F	F	A	3.8F
10	F	F	4.0F	4.3F	F	4.7F	5.0F	5.2F	4.6F	4.8F	5.4F	5.5	5.4F	6.0	6.2	6.2	6.0F	6.1F	5.8F	F	6.0F	5.5F	4.9F	4.9F
11	4.8F	4.7F	U 4.9F	5.0F	5.4F	6.1F	F	6.5F	7.0F	7.4F	7.4F	7.2	7.0	6.6	6.2	6.2F	6.1	6.0F	6.0F	5.7F	5.6F	5.9	5.8	5.9F
12	5.8F	6.0F	U 6.2F	F	6.5F	F	F	F	8	F	F	8.0F	7.0F	6.8F	6.9F	6.6F	6.2F	6.2F	6.0F	5.8	6.2F	6.3F	5.0F	F
13	5.8F	C	F	F	A	4.7	5.1F	5.5	6.0F	6.1F	6.4	6.2F	6.4	6.0F	6.4F	6.6F	6.8	6.0F	6.5F	5.1F	5.4F	4.8F	3.8F	3.9F
14	A	4.2F	F	4.0F	F	F	W	B	4.9F	4.9F	5.0F	5.2	5.5	5.3F	5.0F	5.2F	5.7F	5.1	4.9	4.9	U 4.9C	4.4F	3.5	A
15	F	A	A	F	4.4F	F	F	A	B	A	5.0	5.7F	4.9	5.2	5.1	4.8	5.2	5.4	5.1	5.0	4.0	4.8F	4.1F	3.8
16	4.0	4.2F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	5.0F	C	C	4.1F
17	A	4.5F	4.4F	4.5F	F	F	B	F	R	4.9	5.0	5.8F	5.6F	5.4	5.7F	6.1F	6.0	5.7	5.6F	5.0F	4.8	4.7F	5.1F	5.0F
18	5.0	5.6F	5.1F	4.5F	B	U 5.2F	5.9F	6.2F	6.5F	6.8F	6.9F	6.2	6.7F	6.8F	6.3F	6.5F	6.7F	5.0F	U 5.2F	4.9F	4.0	4.0	4.5F	T 4.9F
19	5.0F	A	A	A	R	4.0	B	R	4.9	4.4	4.9F	5.0	C	C	C	U 5.0R	5.2	5.2	5.4	5.4	6.2	5.0	A	F
20	F	A	B	A	B	A	A	R	A	R	A	R	B	R	B	B	B	B	B	R	B	A	A	4.9F
21	F	A	A	B	A	A	B	B	A	4.5F	C	C	5.0	5.0	5.5	6.2F	6.1F	5.5F	4.5F	F	4.0F	4.0	2.9	A
22	2.6F	4.2F	4.4F	F	4.6F	F	4.8F	5.0F	5.5F	5.9F	B	4.8F	4.9F	5.0F	C	B	5.0F	6.2	5.5	4.0	2.4	4.2	4.4	2.7
23	B	2.6F	B	B	R	5.0F	B	B	5.0	5.7F	5.5F	5.6	5.5	5.4	5.7	C	5.6	5.5	5.4	5.4F	4.9	4.2	4.0F	4.0F
24	4.2	4.1F	4.5	4.9F	A	A	4.9F	B	F	F	C	B	B	5.0F	5.1F	6.2F	6	6.7F	5.6	4.6F	4.0F	4.2F	4.1	B
25	R	R	B	A	B	4.4F	5.0F	A	B	4.7F	5.3F	5.1F	U 5.0F	U 5.2F	5.9F	B	6.2	5.2	R	4.4F	4.5	4.0	2.7	A
26	4.0F	2.9F	A	F	F	U 5.0R	5.8	F	F	F	7.5F	7.8	6.5	6.2	6.6	6.2F	6.2F	6.02	4.7F	4.6F	4.0	4.4	4.6F	R
27	B	F	R	4.6F	F	B	4.6F	5.1F	5.4F	5.4F	5.7	6.7	6.0	6.0	6.2F	5.8	5.1	5.8	5.5	5.8	6.1	6.2F	2.8F	U 2.9F
28	4.4F	4.6	F	B	R	R	B	5.7F	6.5F	6.4F	6.6F	6.4F	6.1	5.9	6.0	5.8	5.8	6.0	B	F	5.2F	2.9	U 4.0F	B
29	F	U 4.2F	F	A	4.6	F	F	F	5.5F	6.0F	6.7F	6.8F	6.8F	5.8F	5.7F	5.7	5.7	5.5	5.7	4.8	4.2	2.8F	U 2.8F	B
30	B	A	R	4.0F	B	B	R	5.0F	5.7F	6.1F	C	C	6.1	5.9	5.5	5.2	5.1	5.4	5.6	5.4	5.1	5.4	5.7	5.5
31	5.7	5.2F	F	A	5.4F	6.6F	B	5.7	6.5F	6.8	6.8	7.0	7.2	6.5	6.2	6.2	6.2	6.2	6.2	6.0	5.6	5.8	5.7	5.0F
No.	20	19	16	14	14	13	14	14	19	22	20	24	27	28	27	26	27	28	24	24	23	27	26	22
Median	4.8F	4.6F	5.0F	4.6F	6.2F	6.2F	6.1F	5.7F	6.0F	6.0F	6.2F	6.0	6.1	6.0	6.2F	6.2F	6.1	6.0	5.6	5.4F	6.2	4.8F	4.6F	4.9F
U.Q.	5.4	5.4	6.0	5.0	6.0	6.6	6.6	7.2	7.0	6.7	6.8	7.1	7.2	6.1	6.5	6.6	6.7	6.2	6.2	6.0	6.0	5.8	5.6	5.5
L.Q.	4.2	4.2	4.4	4.2	4.6	4.7	4.9	5.1	5.4	4.9	5.2	6.2	5.2	5.4	5.7	5.8	5.8	5.4	5.4	5.0	4.4	4.2	4.0	4.0
Q.R.	1.1	1.2	1.6	0.8	1.4	1.8	1.2	2.7	1.6	1.9	1.6	0.9	1.7	0.7	0.8	0.8	0.9	0.9	0.8	1.0	1.6	1.6	1.6	1.5

foF2

Sweep 1.0 Mc to 20.6 Mc in 2.0 sec in automatic operation

The Radio Research Laboratories, Japan

S1

61

IONOSPHERIC DATA

JAN. 1961 | foF1 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	B	A	A	45	A	46	46	46	46	46	47	46	42L	46	L	L		
2			≥0	≥2	42	40	42	46	45	46	46	43	50	48	42	50	47	45	42	L	L			
3					40	42	45	47	43	49	49	50	48	49	50	47	48	45	L	41	L			
4						≥9	42	46	46	48	42	43	50	51	49	50	48	44	41	40L	L			
5					≥9	41	43	43	45	48	47	49	51	50	50	49	43	43	41	A	A	≥2		
6				A	≥6	F	F	A	44	45	45	45	48	47	50	47	47	44	B	≥9	≥4	≥6		
7					A	50	A	A	43	46	45	45	48	49	46	47	46	46	44	42	≥6			
8					A	A	40	B	B	B	A	44	B	B	45	43	45	44	F					
9				≥9		F	≥8	41	B	45	44	B	R	42	43	B	E	B	C					
10						≥6	40	41	41	41	43	43	44	45	45	44	44	43	4-C	40	≥7			
11				R	≥7	40	4-	41	41	44	46	45	48	47	46	45	40	42	L	L				
12					≥5	≥5	41	42	F	44	46	45	46	48	46	46	45	42	41	≥5	L			
13						A	A	A	41	41	42	43	B	45	43	42	B	B	≥7	≥6	≥6	≥7L		
14							≥8	B	43	40	42	43	44	U 46R	44	45	43	41	L		C	42		
15								A	B	A	B	R	R	42	45	41	41	41	L	≥6				
16					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	≥5	C	C	
17				B	A	B	B	R	B	41	42	41	43	44	43	44	43	42	L					
18						≥6	≥9	46	41	41	42	43	42	44	42	43	43	41	B					F
19						A	B	A	B	41R	42	R	C	C	C	R	R	44	42	41	41	40		
20					B	A	A	R	A	≥5	A	R	B	B	B	B	B	B	B					
21					A	A	B	B	A		C		B	B	41	B	40	42	L					
22						≥5	A	40	40	40	B	44	43	42	C	B	42	40	≥9	≥7				
23					A		B	B	B	41	42	R	43	43	44	C	42	43	40	≥6				
24					A	A	B	B	41	45	C	B	B	44	43	R	B	42	41	≥9				
25					B		A	A	B	42	43	43	44	B	43	B	41	42	42					
26				≥4			F	41	43	44	B	B	R	45	45	43	43	43	41	L	L			
27						B		≥8	40	41	42R	43	43	44	45	44	42	42	L	L				
28					A	A	B	41	42	43	44	43	45	46	46	45	45	43	B	L				
29						L	F	F	B	42	43	44	46	45	44	45	44	42	41					
30					B	B	A	A	42	43	C	C	45	45	44	46	45	42	L		L			
31						LF	B	B	43	45	B	47	47	47	50	47	A	L	L					
No.			1	2	6	10	11	13	13	17	20	21	21	26	27	22	24	26	15	13	6	5		
Median			≥0	≥4	≥7	40	40	41	42	43	44	44	45	45	45	45	44	43	41	≥9	≥6	≥4		
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

foF1

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

S2

IONOSPHERIC DATA

JAN. 1961 | foE | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4′ S, Long. 39°35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B	B	B	B	B	B	B	B	B	R		B	B	B	R	R	R	≥≥0	≥10	B
2	B	B	B	B	B	A	A	R	B	B	R	B	B	B	B	B	R	R	R	R	B			
3		R			A	R	R	R	B	B	B	B	B	A	B	B	B	B	R	R	R	B	B	B
4	B	B			B	B	R	R	R	R	R	R	R	B	B	R	B	R	R	R	≥≥0	B		
5					B	B	B	R	R	B	B	B	B	B	B	B	R	B	B	B	B	≥15	≥10	
6					≥60	B	B	B	B	B	R	B	R	R	R	B	R	B	B	B	B	≥≥0	B	B
7	B	≥00		A		A	B	A	B	B	B	B	R	R	B	B	R	R	R	B	≥≥0			
8				B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	≥70	A			
9					A	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	≤70
10					A	A	R	B	R	R	R	R	B	B	B	B	B	R	R	≥50				
11				R	A	A	≥60	≥90	R	B	B	B	R	R	B	B	R	B	B	A				
12					A	R	B	B	B	R	R	B	B	B	B	B	R	R	B	R	≥≥0	B		
13					A	A	A	A	R	R	R	B	B	B	B	R	B	B	B	≥≥0	≥≥0	B	B	≥10
14					A	A	A	B	B	R	B	R	R	B	B	≥≥0	R	R	≥70	≥60	C	B	≥00	
15					A	A	A	B	B	A	B	B	B	B	B	R	R	R	B	≥50				
16					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		R
17				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	≥10	B	R
18						B	R	R	R	R	R	R	R	B	B	B	R	B	B	B	B	B		≥60
19						B	B	B	B	B	B	B	C	C	C	B	B	B	B	B	B	≥15	R	
20					B	A	B	R	A	A	B	B	B	B	B	B	B	B	B	B	B			
21		B	≥50		A	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	A	A	≥15	≥50
22	≥10		≥00		B	≥15	A	B	R	R	B	B	B	B	B	B	R	B	B	B	B	B	B	
23					B	B	B	B	B	B	B	B	B	B	B	C	B	R	B	≥10	B	≥00	≤90	
24					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	R			
25					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	≥≥0	≥10	B	B
26					R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A			
27					B	B	B	B	R	R	R	B	B	B	B	B	B	B	B	B	B		A	
28		≥≥0			B	B	B	A	R	A	B	R	B	B	B	B	R	B	B	A	B			
29					B	≥50	A	≥80	B	B	B	B	B	B	B	B	B	B	B	B				
30					B	B	B	B	B	B	C	C	B	B	B	R	B	B	B	B	A			
31					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
No.	1	1	1		1	1	1	1								1			1	1	5	7	5	4
Median	≥10	≥60	≥≥0		≥60	≥30	≥60	≥≥5								≥≥0			≥70	≥60	≥≥0	≥15	≥10	≥≥5
U.Q.																								
L.Q.																								
Q.R.																								

foE

Sweep 40 Mc to ≥00 Mc in ≥0 sec in automatic operation

The Radio Research Laboratories, Japan

S 3

63

IONOSPHERIC DATA

JAN. 1961 | foEs | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.5	J 5.6	J 8.4	B	J 6.4	5.5	B	6.5	6.0	6.1	4.8	3.8	B	2.7	3.6	B	B	B	G	G	G	G	G	3.3
2	3.6	3.5	3.5	3.6	B	3.8	3.0	G	B	B	G	3	4.3	B	3.4	4.0	G	G	G	G	3.6	3.4	4.5	3.1
3	3.3	G	3	2.7	3.3	3.5	G	G	B	B	B	B	B	B	B	B	B	B	G	G	G	B	3.1	B
4	B	B	3.3	B	B	B	G	G	G	G	G	G	G	3.6	B	G	3.0	G	G	G	3.6	B	3.3	3.5
5	2.5	B	2.8	2.7	B	B	B	G	G	3.3	5.0	4.4	B	4.0	5.0	4.3	5.4	B	J 6.3	4.7	3.8	G	G	3.6
6	4.4	4.5	5.0	3.3	G	J 8.5	B	5.0	3.0	B	G	B	G	G	G	B	G	B	B	B	B	3.3	B	3.5
7	3.5	G	3.5	J 6.4	4.6	4.5	7.0	5.4	4.0	4.8	B	4.2	G	G	B	B	G	G	G	B	3.8	5.3	3.8	3.0
8	4.5	3.8	3.5	B	4.6	5.3	5.0	B	B	B	5.3	4.3	B	D	B	B	3.8	4.5	4.5	4.5	J 6.6	J 4.8	5.7	5.5
9	5.3	5.0	3.5	D	4.2	G	2.7	4.6	B	B	B	B	B	3	B	3	B	B	C	J 8.4	J 10.0	J 5.4	3.0	J 6.0
10	4.8	4.7	3.3	3.8	5.1	3.6	G	4.0	G	G	G	G	B	B	B	B	B	G	G	G	3.6	3.5	3.1	3.8
11	3.0	3.8	3.6	G	3.8	3.8	G	G	G	B	B	B	3.5	G	5.0	3.0	3.5	3.0	4.4	4.0	C	3.0	3.8	4.2
12	3.8	J 6.5	B	J 6.4	4.1	G	3.8	4.4	3.1	G	G	B	3.4	B	4.3	4.8	G	G	B	G	3.4	B	3.6	3.0
13	4.3	C	3.5	4.5	4.8	4.7	J 6.5	J 5.0	4.1	G	G	B	B	4.8	5.2	G	B	B	J 5.8	4.0	5.5	5.3	3.8	3.7
14	3.8	4.6	4.0	3.8	4.0	4.2	4.3	B	3.6	G	3.6	3.7	4.1	3.3	G	G	3.8	3.1	4.5	5.2	C	3.4	3.2	4.0
15	J 5.4	4.8	4.1	4.8	4.3	3.0	5.3	4.3	B	4.3	B	B	B	B	B	B	G	G	4.3	3.1	3.5	B	3.3	3.4
16	3.3	3.2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	C	C	G
17	5.0	3.8	3.6	B	4.5	B	B	B	B	D	B	B	B	5	B	B	B	B	B	5.3	6.0	G	3.0	G
18	3.4	3.1	3.3	5.0	B	3.8	G	G	G	G	G	G	G	B	B	B	G	B	B	B	3.8	3.0	J 4.4	J 6.2
19	4.8	3.7	4.0	4.7	3.7	B	3	4.1	B	B	B	4.8	C	C	C	5.3	B	5.3	3.7	B	B	3.1	4.8	J 7.4
20	J 5.4	J 8.2	B	5.3	B	4.3	6.0	3.1	4.3	5.4	4.7	4.4	B	4.8	B	B	B	B	B	4.5	B	J 8.6	J 6.8	J 9.3
21	J 8.6	4.3	4.1	B	J 7.4	4.2	B	B	4.0	5.1	C	C	B	B	B	B	B	B	B	B	3.8	3.3	3.4	J 7.2
22	4.6	3.8	3.5	3.4	B	3.4	4.2	3.8	G	G	A	B	B	B	A	B	G	B	B	B	B	B	3.5	3.5
23	B	3.1	B	B	5.3	4.9	B	B	B	B	A	B	B	B	B	C	B	G	B	3.3	B	3.3	G	3.3
24	B	3.6	B	J 6.1	J 5.1	4.5	4.5	B	B	4.3	C	B	B	B	B	B	B	B	B	G	4.4	4.4	4.7	B
25	3.8	4.5	B	5.3	B	B	3.7	J 6.5	B	B	B	B	B	D	B	B	B	B	B	B	3.5	G	B	5.4
26	3.3	3.3	J 5.4	4.7	J 8.4	B	4.6	4.0	B	B	B	B	B	B	B	B	B	B	B	3.8	3.7	3.8	3.7	3.7
27	B	J 8.3	4.0	4.0	5.3	B	B	3.0	G	G	G	B	B	B	B	B	B	B	B	B	B	B	G	B
28	3.3	3.4	3.8	B	4.6	4.6	B	3.1	G	3.8	B	G	B	B	B	B	G	B	B	3.6	B	3.4	B	B
29	4.8	4.7	5.0	5.5	3.8	G	4.6	4.4	B	B	B	B	B	B	B	B	B	B	B	B	3.5	3.7	3.8	B
30	B	4.1	4.3	B	B	B	4.5	4.5	B	B	C	C	B	B	B	G	3.7	B	3.4	B	3.3	3.3	3.7	3.7
31	3.3	3.7	J 6.3	J 7.8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.3	4.6	4.3
Nc.	3.6	3.8	3.4	3.3	3.1	3.1	3.0	3.3	1.6	1.6	1.3	1.1	0.8	0.8	0.8	1.0	1.4	1.1	1.4	1.9	3.0	3.4	3.7	3.5
Median	4.1	4.0	3.5	4.6	4.6	4.3	4.4	4.0	G	G	G	3.8	G	3.6	4.0	G	G	G	3.6	3.8	3.8	3.8	3.7	3.6
U.Q.	4.8	4.7	4.3	5.4	5.1	4.8	4.8	4.8	4.0	4.6	4.8	4.4	3.8	4.4	5.0	4.8	3.7	3.1	4.4	4.5	4.1	4.3	3.8	5.4
L.Q.	3.3	3.9	3.6	3.8	3.9	3.3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	3.5	3.2	3.1	3.6
Q.R.	3.0	1.8	1.6	3.7	6.2	3.0															1.6	2.0	1.7	1.8

Sweep 1.0 Mc to 3.0 Mc in 30 sec in automatic operation

foEs

The Radio Research Laboratories, Japan

S4

IONOSPHERIC DATA

JAN. 1961 | f-min | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	≥1.0	≥0.0	≥1.0	4.1.0	≥2.0	≥3.0	B	≥2.0	≥2.0	≥4.0	≥5.0	≥2.0	≥3.0	≥0.0	≥4.0	≥3.0	≥5.0	≥5.0	1.8.0	1.6.0	≥1.5	1.9.0	1.6.0	1.5.0
2	1.5.0	1.7.0	1.9.0	≥0.0	≥5.0	1.8.0	1.7.0	1.8.0	≥5.0	≥5.0	≥0.0	4.1.0	≥5.0	≥8.0	≥0.0	≥4.0	≥0.0	1.9.0	1.9.0	≥6.0	1.7.0	≥6.0	1.6.0	1.6.0
3	≥0.0	≥0.0	≥6.0	1.9.0	1.8.0	≥0.0	1.9.0	≥0.0	≥4.0	≥7.0	≥6.0	4.0.0	4.0.0	4.0.0	≥7.0	≥6.0	≥2.0	≥3.0	1.9.0	1.7.0	≥0.0	≥4.0	1.6.0	≥0.0
4	≥0.0	≥0.0	1.9.0	≥6.0	≥3.0	≥0.0	≥1.0	1.9.0	≥0.0	1.9.0	1.9.0	≥1.0	≥0.0	≥0.0	≥6.0	≥0.0	≥0.0	≥0.0	≥0.0	1.9.0	1.8.0	B	≥0.1	1.8.0
5	1.9.0	B	≥0.0	≥0.0	≥0.0	≥3.0	≥2.0	≥0.0	1.9.0	≥0.0	≥4.0	≥4.0	E4.0.0	≥6.0	≥5.0	≥5.0	≥0.0	2.8.0	≥5.0	1.6.0	1.8.0	≥6.0	1.4.0	1.5.0
6	≥0.0	≥3.0	≥0.0	≥0.0	1.5.0	1.9.0	≥5.0	4.0.0	≥0.0	≥4.0	≥0.0	≥5.0	≥1.0	≥0.0	≥0.0	≥5.0	≥1.0	4.0.0	B	≥0.0	≥7.0	1.5.0	≥2.0	1.8.0
7	1.6.0	1.9.0	≥2.0	1.7.0	1.9.0	≥0.0	≥0.0	≥8.0	≥4.0	≥0.0	≥5.0	≥5.0	≥0.0	≥0.0	≥6.6	≥7.6	≥6.0	1.8.0	1.6.0	≥5.0	1.6.0	1.5.0	1.8.0	1.9.0
8	1.8.0	≥0.0	1.5.0	B	≥2.0	≥2.0	≥0.0	B	B	B	≥4.0	≥6.0	4.6.0	4.6.0	4.0.0	≥6.1	≥1.5	≥2.0	≥4.0	≥0.0	1.9.0	≥1.5	1.9.0	1.5.0
9	1.8.0	1.4.0	1.5.0	1.9.0	1.9.0	≥0.0	1.8.0	≥5.0	B	≥7.0	≥4.0	B	4.0.0	≥7.0	≥5.0	6.9.0	B	B	C	≥0.0	≥0.0	1.6.0	1.7.0	1.4.0
10	≥0.0	1.8.0	1.7.0	≥0.0	1.8.0	1.8.0	≥0.0	≥0.0	1.7.0	1.9.0	≥0.0	≥1.0	≥4.0	≥5.0	≥5.0	≥8.0	≥1.0	≥0.0	1.9.0C	1.7.0	≥0.0	1.8.0	1.6.0	1.6.0
11	1.4.0	1.6.0	1.7.0	≥0.0	1.9.0	≥0.0	1.8.0	≥8.0	≥0.0	≥5.0	≥4.0	≥4.0	≥0.0	≥1.0	≥1.0	1.9.0	1.9.0	1.8.0	≥0.0	≥4.0	E4.≥0C	1.6.0	1.7.0	1.6.0
12	1.6.0	1.9.0	≥0.0	≥1.0	1.8.0	≥1.5	≥1.0	≥1.0	1.8.0	≥0.0	≥4.0	≥2.0	≥1.0	≥2.0	≥0.0	≥1.5	1.8.0	≥1.0	≥2.0	≥1.0	1.8.0	≥2.0	1.5.0	≥0.0
13	1.4.0	C	1.6.0	1.9.0	≥1.0	≥0.0	1.9.0	≥0.0	1.7.0	1.8.0	1.7.0	≥4.0	4.5.0	≥4.0	≥4.0	≥0.0	4.8.0	4.1.0	≥2.0	1.8.0	≥1.0	1.7.0	1.4.0	1.3.0
14	1.5.0	1.9.0	1.8.0	1.7.0	1.5.0	1.8.0	1.8.0	B	≥0.0	1.7.0	≥1.0	≥0.0	≥0.0	≥2.0	≥0.0	≥0.0	≥1.0	≥0.0	1.9.0	1.7.0	E2.4.0C	1.5.0	1.5.0	≥2.0
15	1.5.0	≥1.0	≥0.0	≥0.0	1.7.0	1.7.0	≥0.0	≥8.0	B	≥2.0	4.1.0	≥9.0	≥5.0	≥5.0	≥4.0	≥0.0	≥0.0	1.9.0	≥2.0	≥0.0	1.8.0	≥4.0	≥0.0	1.4.0
16	≥1.0	≥0.0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	≥2.0	C	C	≥1.0
17	≥0.0	≥0.0	≥0.0	≥5.0	≥0.0	≥9.0	B	≥2.0	4.2.0	≥4.0	≥5.0	3.4.0	≥2.0	≥2.5	≥2.0	≥5.7	≥5.0	≥5.0	≥8.0	≥4.0	≥5.0	1.7.0	1.6.0	1.5.0
18	1.5.0	1.5.0	1.1.0	1.7.0	B	1.9.0	≥0.0	≥0.0	1.7.0	≥0.0	≥0.0	≥0.0	≥4.0	4.1.0	≥9.0	4.0.0	1.9.0	≥6.0	4.0.0	≥2.0	≥0.0	1.8.0	1.6.0	1.5.0
19	1.6.0	1.8.0	≥0.0	1.8.0	≥2.0	≥3.0	B	≥5.0	4.2.0	≥7.0	≥5.7	≥5.0	C	C	C	≥7.0	≥8.0	≥7.0	≥6.0	≥5.0	≥6.0	≥1.0	1.6.0	≥0.0
20	1.7.0	1.4.0	B	1.5.0	B	≥4.0	4.6.0	1.8.0	1.8.0	≥0.0	≥4.0	≥8.0	B	4.1.0	B	B	B	B	B	≥4.0	B	≥2.0	≥1.0	≥0.0
21	≥2.0	≥0.0	1.9.0	B	≥0.0	≥0.0	B	B	≥0.0	≥6.0	C	C	4.2.0	4.2.0	≥5.0	4.2.0	≥2.0	≥2.0	≥3.0	4.0.0	≥0.0	1.6.0	1.6.0	1.6.0
22	1.5.0	1.5.0	≥2.0	≥0.0	4.0.0	1.8.0	≥0.0	≥0.0	≥0.0	1.8.0	B	≥8.0	≥7.0	≥3.0	C	B	≥1.0	≥9.0	≥1.0	≥3.0	≥7.0	≥8.0	≥0.0	1.5.0
23	B	≥6.0	B	B	≥3.0	≥5.0	B	B	4.1.0	≥1.0	≥4.0	≥4.0	≥4.0	≥6.0	≥6.0	C	≥7.0	≥2.0	≥1.0	1.8.0	≥4.0	1.8.0	1.5.0	1.5.0
24	≥1.0	1.5.0	≥6.0	1.7.0	≥2.0	≥4.0	≥3.0	B	≥5.0	≥4.0	C	B	B	≥8.1	≥4.0	≥7.0	B	≥1.0	≥1.0	1.8.0	≥6.0	1.5.0	1.7.0	B
25	≥2.0	≥2.0	B	≥5.0	B	≥7.5	≥4.0	≥2.0	B	≥4.0	≥4.0	≥2.0	≥2.0	4.7.0	≥6.0	B	≥0.0	≥2.0	≥6.0	≥6.0	≥0.0	1.5.0	≥0.0	1.9.0
26	1.4.0	1.8.0	≥8.0	1.6.0	1.9.0	4.1.0	≥4.0	≥2.0	≥5.0	≥7.0	4.6.0	4.6.1	4.2.0	≥6.0	≥9.0	≥2.0	≥2.0	≥5.0	≥6.0	≥6.0	≥1.0	1.6.0	1.8.0	≥2.0
27	B	≥2.0	≥1.5	1.6.0	≥1.0	B	≥6.0	≥1.0	≥1.0	≥5.0	≥0.0	≥5.0	4.0.0	≥9.0	4.1.0	≥4.0	≥7.0	≥7.0	≥6.0	≥5.0	≥4.0	≥1.0	1.5.0	1.9.0
28	1.5.0	1.3.0	1.5.0	B	≥6.0	≥4.0	B	≥0.0	1.8.0	1.9.0	≥9.0	≥0.0	≥7.0	≥6.0	≥6.0	≥7.0	≥1.0	≥2.0	B	≥2.0	≥7.0	1.6.0	≥5.0	B
29	≥0.0	≥1.0	1.6.0	≥1.0	≥2.0	6.0.0	≥0.0	≥2.0	4.1.0	≥3.0	≥7.0	≥7.0	≥2.0	≥2.2	≥2.0	4.0.0	≥7.0	≥1.0	≥1.0	≥1.0	≥1.0	≥1.0	≥2.0	B
30	B	≥7.0	≥6.0	≥0.0	B	B	≥5.0	≥5.0	≥6.0	≥3.0	C	C	≥5.0	≥5.0	≥4.0	≥0.0	≥0.0	≥3.0	≥2.0	≥1.0	1.8.0	1.9.0	≥0.0	1.8.0
31	≥0.0	1.5.0	≥9.0	≥0.0	4.0.0	≥4.0	B	4.4.0	≥5.0	≥5.0	4.8.0	≥8.0	≥8.0	≥6.0	≥9.0	≥7.0	≥6.0	≥7.0	≥6.0	≥4.0	≥4.0	≥0.0	1.7.0	≥1.0
No.	≥1	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥0	≥7	≥8	≥9	≥9	≥8	≥9	≥0	≥0	≥9	≥0	≥1	≥0	≥0	≥1
Median	1.9.0	1.9.5	≥0.0	≥0.0	≥2.0	≥3.0	≥1.0	≥0.0	≥4.0	≥3.5	≥4.0	≥5.0	≥5.0	≥5.0	≥5.0	≥6.0	≥1.0	≥3.0	≥1.0	≥5.0	≥0.5	1.8.5	1.7.0	1.8.0
U.Q.																								
L.Q.																								
Q.R.																								

f-min Sweep 4.0 Mc to ≥4.0 Mc in ≥0 sec in automatic operation

The Radio Research Laboratories, Japan

S 5

IONOSPHERIC DATA

JAN. 1961 | h'F2 | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						600	B	A	A	650	A	600	600	600	460	405	420	390	L	320	L	L		
2				370	320	400	220	280	250	290	400	400	280	270	400	400	220	200	200	L	L			
3					450	250	400	400	400	270	400	290	400	290	290	220	280	450	200	200	L			
4						250	400	280	290	400	280	250	280	270	280	400	270	210	200	260	260			
5					215	250	225	205	220	260	270	280	400	270	220	250	230	260	200	270	260	250		
6				430	470	250	600A	E	F	600A	460	480	460	470	490	440	430	400	390	220	B	210	290	L	
7					F	250	A	A	280	250	420	400	450	520	430	420	400	440	290	260	290			
8					670	250	490	B	B	B	A	590	520	600	430	420	230	490	600					
9				F		F	550	600	B	R	550	B	650	650	570	720	B	B	C					
10						220	505	500	500	570	470	410	500	455	405	280	405	440	280	260	290			
11				290	290	405	405	400	280	280	270	250	290	280	260	250	220	200	L	L				
12					210	220	405	400	250	260	270	250	220	260	215	210	220	210	200	200	L			
13						500	500	490	460	400	260	400	405	400	280	400	240	240	260	270	220	290		
14							800	B	505	500	570	470	400	470	270	430	250	200	L		220	270		
15								A	B	A	480	600	550	400	505	520	220	280	L	270				
16					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	240	C	C	
17				400	280	F	B	F	500	400	500	405	290	410	405	270	405	270	200					
18						280	270	280	290	280	220	220	400	400	280	220	290	520	290					F
19						A	B	R	500	600	460	500	C	C	C	460	440	520	420	290	400	420		
20					B	A	A	R	A	R	A	R	B		B	B	B	B	B					
21					A	A	B	B	A		C		570	520	480	480	440	220	L					
22						520	450	450	410	400	B	490	600	480	C	B	400	220	280	600				
23					A		B	B	500	400	470	410	400	440	400	C	290	280	220	200				
24					A	A	600	B	290	450	C	B	B	450	490	470	B	250	260	400				
25					B		260	A	B	520	450	420	470	E	500	B	450	B	400	400	220			
26				280			420	400	400	295	260	270	240	230	260	400	435	400	520	L	L			
27						B		400	415	420	420	440	400	420	280	280	220	240	L	L				
28					A	A	B	270	280	400	290	290	420	410	400	250	290	400	B	260	L			
29						290	F	F	500	400	400	400	215	290	420	420	280	420	240					
30					B	B	A	A	460	290	C	C	400	280	270	290	420	260	L		L			
31						L	B	450	280	270	400	290	240	270	410	280	260	280	200					
Count				5	8	15	17	16	29	26	29	25	27	28	27	28	27	28	19	15	9	6		
Median				290	285	250	420	400	410	400	400	405	400	410	400	400	290	265	240	220	290	280		
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Sweep 1.0 Mc to 20.0 Mc in 2 sec in automatic operation

The Radio Research Laboratories, Japan

S 6

IONOSPHERIC DATA

JAN. 1961 | h'F | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	400H	430	460	≥320	400	A	B	A	A	≥300	A	≥320	≥260	≥205	≥205H	≥200	≥205	≥210	≥220	≥230	≥240	≥240	≥260	≥270
2	≥300	≥200	≥220	≥200	≥300	≥260	≥290	≥320	≥205	≥205	≥205	≥270	≥230	≥205	≥240	≥230	≥205	≥210	≥230	≥230	≥240	≥260	≥260	≥280
3	≥300	≥260	≥210	≥270	≥320	≥300	≥320	≥210H	≥210	≥210	≥210	≥260	≥260	≥230	≥205	≥200H	≥300	≥230	≥230	≥230	≥260	≥280	≥280	≥280
4	≥260	≥280	≥280	≥215	≥300	≥290	≥240	≥270	≥215	≥200	≥200H	≥200	≥210	≥220	≥205H	≥200	≥210	≥210	≥220	≥220	≥220	B	≥260	≥260
5	≥290	B	≥300	≥300	≥290	≥290	≥230	≥205	≥210	≥205	E≥290A	400	≥260	≥220	≥210	≥205	≥220	≥230	≥240	A	A	≥260	≥240	≥300
6	400	415	405	A	≥300	F	≥210	A	≥230	≥200H	≥215	≥200H	≥200	≥220	≥200H	≥220	≥230	≥220	B	≥230	≥260	≥290	≥210	≥290
7	≥210	≥210	≥200	≥260	A	≥300	A	A	E≥260A	≥300	≥200	≥270	≥220H	≥210H	≥205	≥220	≥220	≥210H	≥220	≥200	≥260	≥270	≥290	≥270
8	≥290	≥260	≥270	B	A	A	≥300	B	B	B	A	≥290	B	B	E≥300B	≥220	≥220	≥230	≥200	≥200	400	≥300	A	400
9	600	≥300	≥270	≥360	≥300	F	≥260	≥290	B	≥205	≥210	B	≥300	≥260	≥260	B	B	B	C	F	F	≥270	A	≥210H
10	F	420	≥300	600	≥290	≥260	≥260	≥200	≥230	≥200	≥225	≥200	≥215	≥205	≥220	≥230	≥210	≥200	≥260	≥230	≥260	≥260	≥260	≥300
11	≥225	≥210	≥260	R	E400A	≥260	≥230	≥200	≥220	≥260	≥205	≥205	≥200	≥205	≥200	≥200	≥200	≥200	≥215	≥260	≥300	≥260	≥260	≥280
12	≥270	≥280	≥280	≥300	≥290	≥290	≥200	≥200	≥200	≥210	≥205	≥200H	≥200	≥204H	≥210	≥200	≥215	≥210	≥230	≥200	≥230	≥240	≥240	F
13	≥300	C	≥220	≥290	A	A	A	A	≥230	≥200	≥210	≥220	B	≥260	≥220	≥200	B	B	≥260	≥260	≥270	≥240	≥210	≥300
14	A	480	460	400	F	F	≥260	B	≥200	≥200H	≥200H	≥200	E≥270A	≥220	≥205H	≥220	≥205H	≥260	≥240	≥290	C	≥260	≥260	A
15	F	A	A	≥290	400	≥260	≥300	A	B	A	B	≥240	≥260	≥220	≥205	≥201	≥230	≥220	≥270	≥240	≥280	≥300	≥260	≥260
16	≥260	≥300	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	≥300	C	C	≥300
17	A	≥210	≥200	B	A	B	B	≥200	B	≥210	≥210	≥220	≥215	≥210	≥200	≥220	≥225	E≥240B	≥280	≥290	≥290	≥280	≥260	≥260
18	≥240	≥280	≥300	400	B	≥300	≥210	≥200	≥200	≥200	≥205	≥210H	≥260	≥300	≥270	≥290	≥230	≥200	B	≥230	≥260	≥270	≥260	F
19	≥270	A	A	A	R	≥260	B	A	B	E≥260B	≥260	E≥300A	C	C	C	E≥300A	≥220	≥210	≥260	≥220	≥300	≥280	A	≥290
20	≥260	A	B	A	B	A	A	R	A	≥220	A	R	B	R	B	B	B	B	B	R	B	A	A	≥220
21	≥300	A	A	B	A	A	B	B	A	460	C	C	A	B	≥260	B	≥220	≥230	≥270	≥210	≥290	410	E≥260	A
22	E410A	400	≥210	≥210	≥260	≥260	A	≥260	≥205	≥210	B	≥270	≥260	≥200	C	B	≥205	≥205	≥260	≥300	≥280	≥290	≥300	400
23	B	≥270	B	B	A	410	B	B	B	≥205	≥200H	≥205	≥200	≥200	≥210	C	≥260	≥260	≥220	≥210	≥220	≥260	≥270	≥290
24	≥260	≥220	400	420	A	A	B	B	≥205	≥220	C	B	B	≥220	≥210	≥230	B	≥230	≥260	≥290	490	400	400	B
25	A	A	B	A	B	600	A	A	B	≥205	≥210	≥205	≥200H	B	≥240	B	≥210	≥230	E≥290B	≥300	≥270	≥290	≥280	A
26	≥220	≥260	A	≥290	≥270	400	F	E≥270A	≥260	≥290	B	B	E≥300B	≥200	E≥260B	≥200	≥230	≥240	≥240	≥260	≥200	≥200	≥255	A
27	B	460	A	≥215	500	B	500	≥260	≥200H	≥200H	≥215	≥200	E≥280B	E≥290	E≥280B	≥205	≥260	≥260	≥260	≥290	≥260	≥260	≥280	≥200
28	≥290	≥200	≥205	B	A	A	B	E≥300A	≥210	≥210	≥240	≥200H	≥240H	≥215	≥230	≥210	≥210	≥240	B	≥240	≥290	≥280	≥260	B
29	≥290	470	≥260	A	600	≥270	≥200	F	B	≥200	≥230	≥240	≥210	≥210	≥200H	E≥260B	≥270	≥220	≥230	≥260	≥270	≥200	≥280F	B
30	B	A	A	≥260	B	B	A	≥230	E≥270B	≥200	C	C	≥205	≥200H	≥205	≥205	≥220	≥240	≥260	≥260	≥280	≥270	≥260	≥270
31	≥260	≥290	≥270	A	≥220	≥260	B	B	≥220	≥210	B	≥200	≥205	≥210	≥220	≥220	A	E≥280A	E≥240A	≥260	≥230	≥260	≥260	≥280
No.	27	29	21	18	16	17	15	16	19	28	30	24	24	25	27	24	25	27	25	27	27	28	26	22
Median	≥300	≥220	≥205	≥240	≥230	≥290	≥240	≥210	≥210	≥210	≥210	≥210	≥220	≥210	≥210	≥210	≥220	≥230	≥235	≥260	≥270	≥270	≥270	≥290
U.Q.																								
L.Q.																								
Q.R.																								

h'F

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

The Radio Research Laboratories, Japan

S 7

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IONOSPHERIC DATA

JAN. 1961 | h'E | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B	B	B	B	B	B	B	B	B	100	B	B	B	B	100	100	110	120	120	B
2	B	B	B	B	B	A	A	100	B	B	100	B	B	B	B	B	100	100	100	100	B			
3		120			A	100	105	105	B	B	B	B	B	B	B	B	B	B	105	105	120	B	B	B
4	B	B			B	B	105	105	100	100	100	100	100	B	B	100	B	100	100	100	105	B		
5					B	B	B	105	100	B	100	B	B	B	B	B	100	B	B	B	B	140	150	
6					105	B	B	B	B	B	100	B	100	100	100	B	100	B	B	B	B	110	B	B
7	B	120		A		A	B	A	B	B	B	A	100	100	B	B	100	105	100	B	110			
8				B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	105	A			
9					A	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120
10					A	A	105	B	105	100	105	100	B	B	B	B	B	100	100	100				
11				120	A	A	105	150	105	B	B	B	100	100	B	B	100	B	B	A				
12					A	105	B	B	B	100	100	B	B	B	B	B	100	100	B	120	120	B		
13					A	A	A	A	100	100	100	B	B	B	B	100	B	B	B	110	120	B	B	110
14					A	A	A	B	B	100	B	100	100	B	100	100	100	105	110	110	C	B	180	
15					A	A	A	B	B	A	B	B	B	B	B	105	100	105	B	110				
16					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		150
17				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	B	150
18						B	110	100	110	105	100	100	100	B	B	B	105	B	B	B	B	B		140
19						B	B	B	B	B	B	B	C	C	C	B	B	B	B	B	B	110	100	
20					B	A	B	105	A	A	B	B	B	B	B	B	B	B	B	B	B			
21		B	105		A	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	A	A	110	110
22	110		125		B	105	A	B	105	100	B	B	B	B	B	B	105	B	B	B	B	B	B	
23					B	B	B	B	B	B	B	B	B	B	B	C	B	100	B	105	B	120	150	
24					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	105			
25					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	120	B	B
26					100	B	B	B	B	B	A	B	B	B	B	B	B	B	B	A	A			
27					B	B	B		110	110	105	B	B	B	B	B	B	B	B	B	B		A	
28		105			B	B	B	A	100	A	B	100	B	B	B	B	105	B	B	A	B			
29					B	105	A	150	B	B	B	B	B	B	B	B	B	B	B	B				
30					B	B	B	B	B	B	C	C	B	B	B	B	B	B	B	B	A			
31					B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B			
Count	1	3	2	1	2	5	5	8	9	8	9	5	6	4	2	4	11	8	7	12	8	7	6	6
Median	110	120	115	120	100	105	105	105	100	100	100	100	100	100	100	100	100	100	100	105	115	120	125	125
U.Q.																								
L.Q.																								
Q.R.																								

h'E

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

The Radio Research Laboratories, Japan

S 8

IONOSPHERIC DATA

JAN. 1961 | h'Es | 45° E Mean Time (G.M.T. +3h) | Syowa Base | Lat. 69°00.4' S, Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	170	110	100	B	170	120	B	100	105	105	100	110	B	110	110	B	B	B	G	G	G	G	G	180
2	110	120	120	120	B	110	100	G	B	B	G	B	105	B	100	100	G	G	G	G	100	180	120	120
3	150	G	B	105	100	140	G	G	B	B	B	B	B	B	B	B	B	B	G	G	G	B	160	B
4	B	B	120	B	B	B	G	G	G	G	G	G	G	110	B	G	100	G	G	G	120	B	120	120
5	140	B	160	120	B	B	B	G	G	100	110	105	B	105	110	120	110	B	100	105	100	G	G	140
6	120	120	120	120	G	105	B	105	100	B	G	B	G	G	G	B	G	B	B	B	B	150	B	150
7	120	G	140	120	120	110	105	105	120	105	B	180	G	G	B	B	G	G	G	B	120	105	140	120
8	120	120	140	B	100	110	110	B	B	B	120	150	B	B	B	B	180	180	150	150	105	140	105	100
9	100	150	120	100	105	G	105	150	B	B	B	B	B	B	B	B	B	B	C	120	110	150	100	120
10	100	120	110	105	110	100	G	100	G	G	G	G	B	B	B	B	B	G	G	G	160	120	180	120
11	120	120	120	G	105	120	G	G	G	B	B	B	150	G	100	100	120	105	105	105	C	100	100	100
12	100	150	B	110	105	G	100	115	105	G	G	B	105	B	100	100	G	G	B	G	150	B	170	120
13	110	C	105	110	100	105	100	100	150	G	G	B	B	110	100	G	B	B	120	170	120	120	110	170
14	110	105	120	105	100	110	110	B	170	G	120	120	120	110	G	G	120	120	120	110	C	150	190	120
15	105	100	120	120	110	110	110	110	B	105	B	B	B	B	B	G	G	G	120	170	180	B	180	120
16	120	120	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	C	C	G
17	115	120	120	B	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	115	G	120	G
18	100	130	120	120	B	105	G	G	G	G	G	G	G	B	B	B	G	B	B	B	140	130	105	140
19	120	130	110	120	120	B	B	120	B	B	B	120	C	C	C	115	B	110	120	B	B	140	105	170
20	105	120	B	100	B	100	160	120	100	130	110	100	B	120	B	B	B	B	B	100	B	120	190	110
21	150	140	150	B	120	105	B	B	110	140	C	C	B	B	B	B	B	B	B	B	110	110	160	130
22	110	105	160	150	B	160	105	110	G	G	B	B	B	B	B	B	G	B	B	B	B	B	170	105
23	B	105	B	B	100	100	B	B	B	B	B	B	B	B	B	C	B	G	B	120	B	170	G	120
24	B	105	B	110	100	120	120	B	B	120	C	B	B	B	B	B	B	B	B	G	110	100	115	B
25	130	120	B	100	B	B	110	120	B	B	B	B	B	B	B	B	B	B	B	B	130	G	B	110
26	110	110	125	120	150	B	120	170	B	B	B	B	B	B	B	B	B	B	B	130	150	120	110	140
27	B	110	150	105	120	B	B	110	G	G	G	B	B	B	B	B	B	B	B	B	B	B	G	B
28	150	120	110	B	110	100	B	105	G	100	B	G	B	B	B	B	G	B	B	120	B	110	B	B
29	120	150	110	120	150	G	105	150	B	B	B	B	B	B	B	B	B	B	B	B	150	180	120	B
30	B	120	140	B	B	B	120	120	B	B	C	C	B	B	B	G	100	B	120	B	105	105	105	100
31	100	160	150	120	B	B	B	B	B	B	B	B	B	B	B	B	105	105	100	B	B	105	100	B
No.	26	26	24	21	20	18	15	17	8	8	5	7	4	6	6	5	7	5	8	12	18	20	23	29
Median	120	120	130	120	110	110	110	110	110	105	110	120	110	110	100	100	110	110	120	120	120	130	120	120
U.Q.																								
L.Q.																								
Q.R.																								

h'Es

Sweep 10 Mc to 20 Mc in 30 sec in automatic operation

The Radio Research Laboratories, Japan

S9

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IONOSPHERIC DATA

JAN. 1961

Types of Es

45° E Mean Time (G.M.T. +3h)

Syowa Base

Lat. 69°00.4' S
Long. 39°35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	a	a	f		a	a		f	f	f	f	f		h	f									a
2	a	a	a	a		a	a						f		f	f					a	a	a	f
3	a			r	a	h																	a	
4			a											a			f				h		a	f²
5	a		a	a						f	f	f		f	f	a	h²		f²	f²	f³			a
6	a	a	a	a		a		f	r															a
7	a		a	a	a	a	a	a	a	a		a									h	f	a	a
8	f	a²	a		a	a	a				a	a					a	a	a	h	a	a	a	a
9	a	a	a	a	a		a	a												a	a	a	f	
10	a	a	a	a	f	f		a													a	a	a	
11	r²	a	a		a	a							h		f²	f	h	f	f²	f		f	f	f
12	f	a		f	f		a	a	a				f		f	f					h		a	a
13	a		r	r	a	r	f²	f	h					f	f				f	h	h	a	r	h
14	r	r	r²	r²	a²	a	a		a		a	h	h	a			h	h	h	C²		a	a	r
15	a	a	a	a	a	a	a	a		a									f	h	a		a	a
16	a	a																		f	f		a	
17	a	a	a		f																a	a²	f²	ca
18	f	a	fr	a		a						f²				f		f	f			h	h	f
19	a	a	r	a	a			a						a						a		a	a	a²
20	a	f²		a		f	a	h	a	a	a	f									a	r²	h	h⁵
21	a	a	h		f	a			a	a													a	a²
22	C³	a²	h	a²		h	a	a												h		h		a
23		r			a	f															h	a	r	
24		f		a	a	a	a			a											h			f²
25	a	r		f			f	a																
26	a	a	a	a	h		a	a												a	a	a	f²	a
27		a	a	a	a			r														r		
28	a	h²	a		r	a		r		f										a				
29	a	a	a	a	a		a	C													a	a	r	
30		a	a				a	a									f		a		f	f²	f	f
31	f	a	a	f													f	f	f			f	f	
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Types of Es

Sweep 2 Mc to 20 Mc in 2 sec in automatic operation

S 10