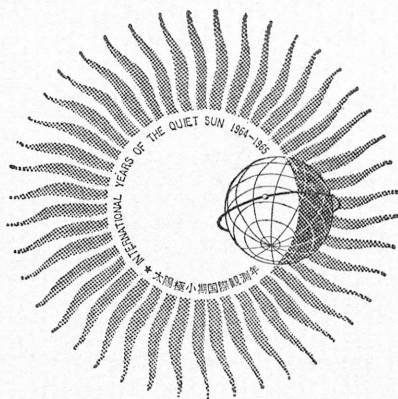


F-186

IONOSPHERIC DATA IN JAPAN

FOR JUNE 1964

Vol. 16 No. 6



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Prepared by

THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS
KOKUBUNJI, TOKYO, JAPAN

IONOSPHERIC DATA IN JAPAN

FOR JUNE 1964

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THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

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SITE OF THE RADIO WAVE OBSERVATORIES

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

	Latitude	Longitude	Site
Wakkanai	45°23.6'N.	141°41.1'E.	Wakkanai-shi, Hokkaido
Akita	39°43.5'N.	140°08.2'E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4'N.	139°29.3'E.	Koganei-shi, Tokyo-to
Yamagawa	31°12.1'N.	130°37.1'E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

Solar radio emission and radio propagation conditions are observed at Hiraiso Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0'N.	140°37.5'E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction," 1961.

Terminology

f_oF2	} The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_oF1	
f_oE	
f_oE_s	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_oE_s	The lowest ordinary wave frequency at which the E_s layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f -min	The frequency below which no echoes are observed.
$M(3000)F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$	The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$	The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
$h'F$	The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.
$h'E_s$	The lowest virtual height of the trace used to give the f_oE_s .
$hpF2$	The virtual height of the $F2$ layer measured on the ordinary

ypF2

wave branch at a frequency equal to $0.834f_0F2$.

The semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at $0.969f_0F2$).

a. Descriptive Letters

The following letters are entered after or used to replace a numerical value on the monthly tabulation sheets.

- A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s .
- B Measurement influenced by, or impossible because of, absorption in the vicinity of f -min.
- C Measurement influenced by, or impossible because of, any non-ionospheric reason.
- D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.
- E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.
- F Measurement influenced by, or impossible because of, the presence of spread echoes.
- G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.
- H Measurement influenced by, or impossible because of, the presence of a stratification.
- L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
- M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
- N Conditions are such that the measurement cannot be interpreted.
- O Measurement refers to the ordinary component.
- R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
- S Measurement influenced by, or impossible because of, interference or atmospherics.
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
- 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 Letters

The following letters are entered in the first column before a numerical

value on the 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.
O	Extraordinary component characteristic deduced from the ordinary component. (Used for x- characteristics only.)
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U	Uncertain or doubtful numerical value.
Z	Measurement deduced from the third magneto-ionic component.

c. Description of Standard Types of E_s

The eight standard types of E_s are identified by corresponding lower case letters: *f, l, c, h, q, r, a, s*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. It is strongly emphasized that these names are not restrictive. The letter 'n' is used to designate any E_s trace that does not correspond to any of the eight types.

- 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*.
- l* A flat E_s trace at or below the normal E layer minimum virtual height in the day or below the night E layer minimum virtual height at night.
- c* An E_s trace showing a relatively symmetrical cusp at or below f_0E . This is usually continuous with the normal E trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)
- 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. (Usually a daytime type.)
- 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 showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick E layer) by the lack of group retardation in the F layer traces at corresponding frequencies and the lack of complete blanketing.
- a* An E_s having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These

sometimes extend over several hundred kilometers of virtual height.

s A diffuse E_s trace which rises steadily with frequency and usually emerges from another type E_s trace. The rising trace alone is classified as 's'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace such as E_s-l or E_s-f , at frequencies which greatly exceed the E layer critical frequency, whereas at low latitudes it usually rises from E_s-q , E_s-c , or E_s-h at frequencies near the regular E critical frequency. Type s is never used to determine f_oE_s and $h'E_s$. The slant trace is sometimes observed to start at f_oE without echoes clearly identifiable as E_s echoes being seen.

n The designation 'n' is used to denote an E_s trace which cannot be classified into one of the standard types. When a trace appears to be intermediate between any two classes a choice should be made whenever possible even if it is uncertain. 'n' should be used sparingly.

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 200 and 500 Mc/s at Hiraiso Radio Wave Observatory.

Antennas are a broadside array of 6×4 doublets for 200 Mc/s and a parabolic reflector of 5 meter for 500 Mc/s, each having the total power receiver.

Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

The unit is $10^{-22} \text{ W} \cdot \text{m}^{-2} \cdot (\text{c/s})^{-1}$ for both components of polarization.

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

The three-hourly and daily mean values are given at 200 Mc/s only.

Variability is expressed in the following four grades:

0=Quiet or no burst,

1=A few bursts,

2=Many bursts,

3=Very many bursts.

The number of bursts exceeding the flux level is counted.

c. Distinctive Events

The phenomena are picked up on the following criteria:

1. Distinct from the prevailing kind of activity,
2. Correlated with other known solar phenomena,
3. Remarkable change-over from one situation to another.

Starting time and *Time of maximum* are given to nearest minute in general, but to nearest a tenth minute for short intense occurrences or clear commencements.

Duration is given in minutes and to nearest a tenth minute, if short or clear.

Descriptive type is denoted by the following symbols:

S = Simple rise and fall of intensity;

C = Complex variation of intensity,

C + = Prolonged broad-band enhancement of radiation, generally of spectral type IV;

F = Group of bursts: multiple peaks probably belonging to the same event, but separated by relatively short period of quietness;

RF = More or less irregular rise and fall of intensity, at metric or decimetric wavelengths;

e = Sudden beginning of burst with steep rise of intensity;

E = Steep rise of intensity of continuum background;

p.i. = post-burst increase;

onset storm = clear-cut beginning of a noise storm.

Peak intensity is the flux density of the highest peak reached during the occurrence, measured above the pre-burst level.

Mean intensity is the flux density averaged over the burst's duration, measured above the pre-burst level; therefore, multiplying the duration, the total energy of the occurrence can be estimated.

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

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

1 = very poor (very disturbed)

4 = normal

2 = poor (disturbed)

5 = good

3 = rather poor (unstable)

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

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

N=normal
 U=unstable
 W=disturbed

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

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

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

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

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

Circuits and Drop-out intensity

WS WWV 20 Mc, 15 Mc and 10 Mc (Washington)
 S F Various commercial circuits (San Francisco)
 HA WWVH 15 Mc and 10 Mc (Hawaii)
 TO JJY 15 Mc and 10 Mc (Tokyo)
 SH BPV 15 Mc and 10 Mc (Shanghai)
 LN Various commercial circuits (London)

Start-time and Duration, Types and Importances are described from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10 Mc ('), 15 Mc (none) and 20 Mc ('').

Start-times and Durations

Types

S : sudden drop-out and gradual recovery
 Slow: slow drop-out taking 5 to 15 minutes and gradual recovery
 G : gradual disturbances; fade irregular in both drop-out and recovery

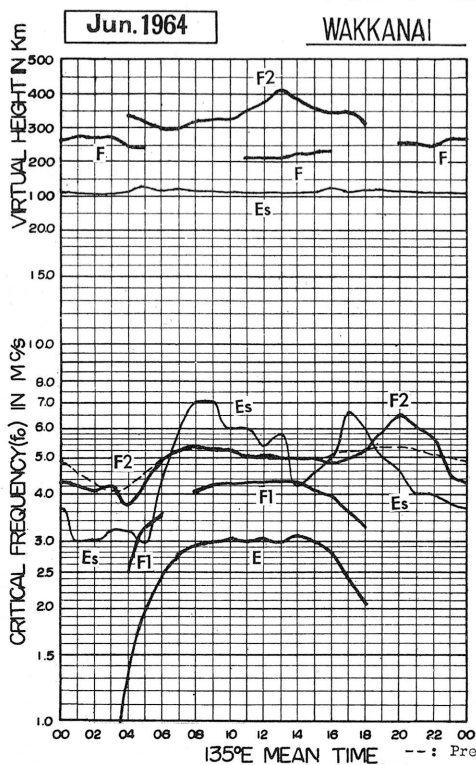
Importances

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

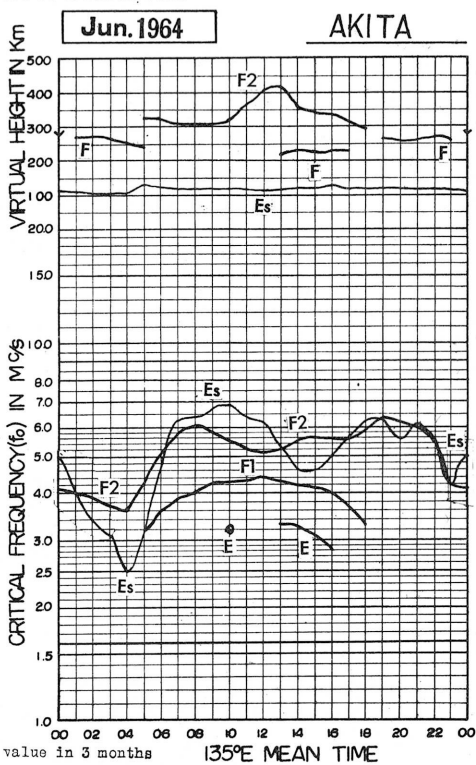
1-	1	1+
2-	2	2+
3-	3	3+

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

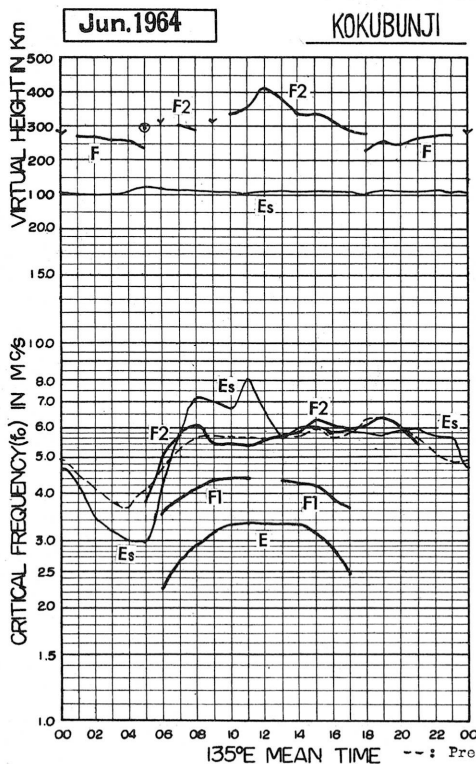
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



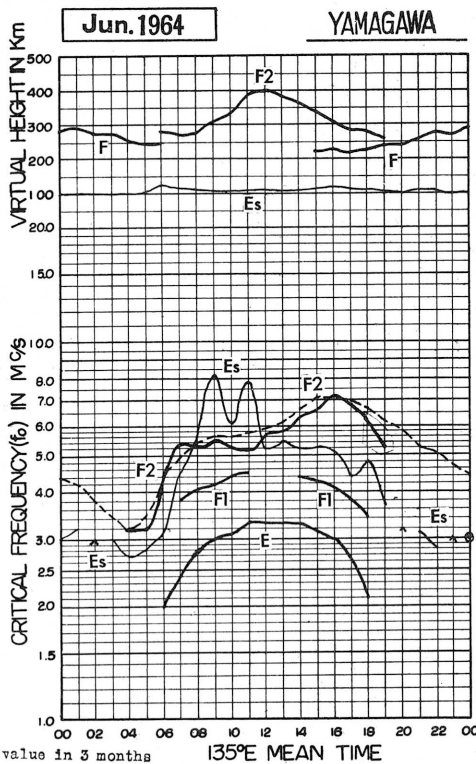
advance by R.R.I.



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



advance by R.R.I.



Lat. 45°23.6' N
Long. 141°41.1' E

IONOSPHERIC DATA

Wakkanai

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foF2

Jun. 1964

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	28
1	043	041	041	042	045	046	053	053	I050A	I051A	051	049	053	055	051	054	059	050	051	057	061	055	049	044	
2	043	041	040F	040	038	043	047	052	I055A	W	A	A	A	A	048	053	A	A	A	065	053	057	041	036	
3	038	035	036	036	040	052	049	050	059	057	054	051	I049A	047	046	049	055	I056A	064	I073A	SF	SF	SF	051	
4	SF	045	042	FS	FS	FS	049	055	A	A	060	056	I051A	048	052	I052A	I050A	I051A	059	071	I078S	074	058	034	
5	036	038	040	040	043	044	I043A	I045A	050	I049A	051	I048A	W	047	050	050	054	I051A	I054A	063	069	069	053	039	
6	039	040	041	043	043	051	063	I058A	049	I045A	053	054	051	050	048	W	A	A	I063S	070	067	057	046	046	
7	044	045	F	FS	F	045	051	I059A	I055A	056	I053A	050	053	048	049	047	048	I050A	I053A	062	I072S	SF	A	FS	
8	SF	SF	SF	SF	SF	050F	I054A	053	I048A	058	060	053	051	I050A	051	055	051	061	071	078	083	I080S	I067S	043	
9	040	043	043	SF	A	A	A	046	050	I050A	051	A	A	A	056	058	051	A	A	069	SF	SF	A	050S	
10	SF	SF	SF	SF	F	047	056	A	A	044	A	A	057	055	069	081	I084A	088	A	A	A	A	A	034S	
11	A	A	A	SF	A	033	A	A	037	044	A	A	A	W	W	A	A	050	044	048	054	I059A	I056S	054F	053
12	046	042	038	F	035	038	043	A	A	A	A	A	A	A	A	A	A	044	045	A	056	053	052	049	
13	044	035	034	032	033	041	048	A	A	A	A	A	R	A	A	A	A	A	A	A	052	064	066	SF	
14	SF	FS	F	FS	037	044	051	051	I047A	A	R	050	050	I047A	I046R	I046R	048	044	049	054	058	SF	SF	SF	
15	044	042	043	SF	033	038E	043	A	A	I062A	060	051	I049A	051	053	051	047	050	050	054	064	065	060	062	
16	050	046	044	043	044	051	054	051	051	I049A	047	054	053	050	I051A	050	048	050	052	056	069	SF	SF	SF	
17	SF	SF	F	SF	043	047	I050A	061	A	A	055	056	058	054	045	046	I046A	I047A	A	062	066	061	I062S	SF	
18	SF	045	SF	FS	FS	050	I054A	I055A	I058A	I057A	I052A	054	051	052	051	050	050	054	051	051	I057S	059	059	050	
19	051	048	048	047	039F	040E	048	I047A	053	071	A	A	050	A	A	A	A	A	A	S	065	062	A	S	
20	A	SF	SF	FS	036	046	045	I049A	055	I054A	058	056	058	I053A	I055A	A	A	A	I056A	052	061	061	SF	SF	
21	SF	052	050	FS	FS	A	A	071	071	052	049	046	049	A	A	A	A	A	A	065	068	068	060S	056F	
22	052	049	048F	SF	043F	I046A	060	064	I054A	A	A	048	I051A	052	A	A	A	A	A	A	A	068	067	I063S	
23	SF	FS	FS	SF	042	A	A	A	A	A	A	A	A	W	043	044	046	I048A	I049A	053	065	060	057	044	
24	043	SF	SF	SF	041	046	057	I056A	I055A	A	A	A	W	A	A	A	I043A	045	050	053	I060A	062S	051	044	
25	039	I040A	040	SF	SF	044	A	I055A	I055A	058	I057A	I056A	055	A	A	A	A	A	I062A	I067A	SF	SF	SF	SF	
26	046	F	FS	SF	035F	I038A	043	I050A	A	A	A	A	051	I048A	049	I049A	I047A	045	045	A	I066S	S	SF	045	
27	SF	SF	SF	SF	036	040	045	044	A	053	051	051	I046A	I046A	046	045	047	049	056	062	I068S	A	SF	040F	
28	040F	SF	A	A	036	039	050	A	A	C	C	C	C	A	A	A	045	051	051	052	063	I066S	058	I057A	A
29	A	038	FS	SF	030F	040	A	A	A	A	047	I048A	I049A	050	050	051	050	047	046	050	056	SF	SF	053	
30	SF	SF	SF	043F	SF	040	I041A	I043A	A	A	A	A	A	A	R	I046R	044	044	046	047	053	050F	SF	I033A	
31																									
No.	17	18	15	9	19	28	24	21	18	17	17	18	20	19	20	19	22	21	21	26	26	20	18	21	
Median	043	042	041	042	038	044	050	052	I054	053	053	051	051	050	050	050	049	050	052	060	065	061	057	045	
U.Q.	046	045	044	043	043	047	054	057	055	058	058	054	053	052	052	052	051	I051	058	065	068	067	068	052	
L.Q.	040	040	040	038	035	040	045	I048	050	I049	051	049	050	048	047	046	I047	045	049	053	060	057	052	040	
Q.R.	006	005	004	005	008	007	009	009	005	009	007	005	003	004	005	006	004	006	009	012	008	010	016	012	

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

foF2

The Radio Research Laboratories, Japan

W 1

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foF1

Jun. 1964

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						340	360	A	A	A	I430A	430	430	430	420	410	390	350	320					
2						330	360	I390A	I410A	430	A	A	A	A	A	A	A	A	A					
3						320L	A	A	A	A	430	I430A	I430A	440	420	410	A	A	A					
4							A	A	A	A	A	A	I430A	430	430	A	A	A	A					
5					250	330	I360A	I390A	I400A	I420A	430	I430A	430	430	430	410	A	A	A					
6					250L	330	A	A	A	A	440	430	430	420	430	410	A	A	A					
7						340L	380	A	A	A	A	A	430	430	420	410	A	A	A					
8						A	A	A	I410A	I430A	430	I430A	I430A	430	420	400	400	A	A					
9						A	A	A	400	A	A	A	A	A	A	A	A	A	A					
10						A	A	A	U420L	A	A	A	A	430	420	420	A	A	A					
11						300	A	A	A	410	A	A	A	410	400	A	A	A	A					
12						A	360	A	A	A	A	A	A	A	A	A	400	A	A					
13					260	320	360	A	A	A	A	A	R	A	A	A	A	A	A					
14					A	320	A	A	A	A	430	I420A	430	I420A	430	400H	I400A	I370A	I340A					
15						A	A	A	A	A	A	430	I430A	I430A	430	420	400	A	A					
16						340	A	A	A	A	A	430	430	A	A	410	400	370	330	270				
17						A	A	A	A	A	A	430	I430A	430	440	410	A	A	A					
18						330	A	A	A	A	A	440	440	430	430	I410R	400	360	I340A					
19							A	A	A	A	A	A	A	A	A	A	A	A	A					
20						330	A	A	A	410	A	A	430	A	A	A	A	A	A					
21						A	A	A	A	430	430	430	A	A	A	A	A	A	A					
22						A	350	A	A	A	A	A	A	A	A	A	A	A	A					
23						A	A	A	A	A	A	A	A	430	410	410	A	A	A					
24						330	A	A	A	A	A	A	A	A	A	A	I390A	I370A	A					
25						330	A	A	A	A	A	A	A	A	A	A	A	A	A					
26							A	A	A	A	A	A	A	A	I430A	I420A	I410A	360	A					
27					240	330	A	A	A	A	A	I430A	I420A	420	410	400	400	A	A					
28							A	A	A	C	C	C	C	A	A	A	380	I350A	I330A					
29					230	320	A	A	A	A	I420A	A	A	A	420	400	390	360	320					
30						310	I340A	I360A	A	A	A	A	A	A	U410R	U420R	I390A	370	330					
31																								
No.	5	17	8	4	5	7	6	12	14	15	18	17	13	9	8	1								
Median	250	330	360	U385	U410	U420	430	430	430	430	430	410	400	360	330	270								
U.Q.																								
L.Q.																								
Q.R.																								

foF1

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

The Radio Research Laboratories, Japan

W 2

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foE

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				E	135	220	245	285	295	300	305	300	A	R	R	A	A	A	205	S				
2				E	125	215	250	285	300	305	310	305	295	I295A	I310A	300	270	230	S	S				
3				E	130	195	235	270	295	300	300	300	I300A	295	300	305	290	235	S	S				
4				E	A	210	250	285	295	300	305	310	310	305	290	290	275	235	S	S				
5				E	130	I180S	240	280	300	300	310	I315A	325	320	320	300	280	235	S	S				
6				E	130	205	245	285	290	315	320	320	315	I320A	I305A	300	275	230	S	S				
7				E	A	205	290	280	300	305	305	310	290	I305A	320	300	280	245	S	S				
8				E	A	200	240	280	300	305	300	300	A	A	A	A	280	240	S	S				
9				E	A	190	225	270	285	310	305	300	I305A	305	310	300	280	235	S	S				
10				E	A	S	I255A	280	295	300	315	300	315	300	I300A	I295A	290	245	A	S				
11				A	130	I175S	225	255	275	300	330	325	325	320	310	300	275	240	S	S				
12				E	125	200	235	275	295	305	310	300	300	300	I300A	I300A	I290A	250	S	S				
13				E	135	200	240	270	280	295	300	295	300	305	315	I295A	270	235	S	S				
14				E	130	205	240	280	295	305	310	315	310	290	A	A	A	A	S	S				
15				E	A	210	250	285	295	300	300	A	A	A	A	A	A	A	A	S	S			
16				E	140	210	250	280	300	300	300	I300A	300	295	265	295	A	A	S	S				
17				E	140	200	255	280	295	300	315	300	I305A	I310A	315	300	285	230	S	S				
18				E	A	210	250	280	300	300	305	300	I320A	330	325	300	285	240	205	S				
19				A	A	210	260	285	300	310	310	300	300	300	300	300	265	250	S	S				
20				E	A	205	250	I280A	300	310	315	310	300	I290A	315	300	290	245	S	S				
21				E	130	200	235	265	285	300	305	305	310	335	315	300	280	245	S	S				
22				E	A	200	245	280	295	300	300	A	A	A	320	300	285	250	205	S				
23				E	110	I200S	245	280	295	300	315	310	305	300	300	300	285	245	S	S				
24				E	140	205	250	270	295	300	300	300	A	A	A	A	A	245	S	S				
25				E	A	195	240	270	295	300	I300B	300	A	A	A	325	290	245	S	S				
26				E	A	200	240	275	295	300	305	315	I310B	295	295	I275A	I260A	250	205	S				
27				E	115	200	245	270	285	300	300	300	I300A	I295A	I300A	I300A	295	235	205	S				
28				E	A	S	255	280	300	C	C	C	C	305	290	A	A	A	A	S				
29				E	A	200	245	275	295	305	310	320	310	320	310	295	I280A	230	S	S				
30				E	A	200	240	270	285	300	305	305	300	300	A	A	A	A	A	S				
31																								
Σ No.				28	15	28	30	30	30	29	29	27	23	24	23	23	23	24	5					
Median				E	130	200	245	280	295	300	305	300	305	300	310	300	280	240	205					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

foE

W 3

IONOSPHERIC DATA

Wakkanai

Lat. 45°23.6'N
Long. 141°41.1'E

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foEs

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	J034	G	G	033	051	065M	070M	060	051	035	G	G	033	040	030	023	025	030	E	025	E
2	E	E	E	E	G	G	030	033	073	040	030	080	J083	078	074	050	J114	072M	084	038	E	030	033	E
3	E	E	E	E	G	G	030	035	041	050	043	040	041	053	042	037	G	043	072M	059	130	J073	053	042
4	029	E	E	029	043	041	028	043	J081	073	051	052	057	042	040	056	073	083	051	042	042	E	E	E
5	E	021	E	018	032	045	051	058	030	052	039	060	G	G	G	G	021	061	060	051	041	035	E	E
6	E	027	E	J023	G	030	043	J066	073	051	G	G	038	037	040	034	J074	072	J116	J058	050	029	030	038
7	J043	E	E	043	033	026	033	J051	J063	J073	100	051	051	043	038	036	050	J065	J078	050	073	051	073	050
8	042	033	051	035	041	051	J065	051	053	050	043	051	058	063	040	033	034	053	040	051	043	028	040	033
9	051	040	030	020	073	093	123	072	070	050	071	080	D180D	110	100	096	057	073	097	071	060	J053	063	J051
10	J040	J033	J048	J056	032	058	036	059	067	040	093	066	045	040	042	051	080	J143	J108	100	072	J096	080	042
11	080	063	060	060	038	026	115	J103	077M	051	058	054	J066	069	038	050	061	040	060	J033	080	041	051	025
12	030	031	031	090	031	051	050	060	082	051	060	080	070	062	068	063	030	042	060	J053	053	040	040	032
13	033	025	E	E	020	028	032	073	090M	076	050	053	038	071	043	074	059	066	050	039	040	E	E	E
14	030	E	E	E	028	026	040	043	050	050	038	043	038	059	051	034	050Y	045	058	053	040	050	E	030
15	032	E	E	061	042	G	045	060	088	098	090	042	085	090	034	034	030	043	040	042	041	033	050	030
16	031	027	021	E	G	033	042	059	044	064	050	063	043	053	064	037	043	040	033	022	053	050	042	052
17	050	030	020	E	020	J043	063	063	090	081	058	035	050	035	036	029	050	089M	073	059	063	060	032	J036
18	J034	031	038	037	037	033	069	061	J094	082	098	039	036	050	040	040	050	J073	051	038	040	030	030	040
19	029	030	030	024	031	030	043	053	J063	073	083	J096	073	078	J133	J094	J143	123	095	050	034	030	J073	J098
20	060	030	J033	030	030	027	045	080	040	107	070	060	040	J061	080	140Y	093	J140	100	060	043	070	063	J034
21	E	030	033	032	J043	068	065	068	048	036	G	G	044	059	075	062	071	073	060	J048	052	043	044	043
22	E	024	018	E	050	057	043	048	070	100M	083	053	072	046	090	J093	075	075	J113	096	074	074	050	073
23	040	J043	036	J033	058	J043	061	071	064	103	073	J095	J070	034	034	035	043	073	080	050	041	037	027	036
24	048	043	030	037	G	028	043	J083	093	100	075	085	120	078	068	078	050	J064	050	040	070	050	043	050
25	J041	050	031	050	063	030	074	070	070	075	106	065	051	070	J074	084	D180D	170	091	096	063	071	051	063
26	063	051	048	050	J053	053	J043	054	062	100	102	083	083	J096	063	058	056	036	J043	060	040	040	028	037
27	046	J034	040	026	G	030	043	044	073	051	J073	060	058	061	040	035	043	J065	060	J064	060	J083	037	038
28	041	050	050	060	040	S	041	071	J121	G	G	G	G	070	072	043	051	050	050	045	072	063	073	J065
29	J073	050	J041	050	J080	J033	068	065	079	076	051	J099	058	057	053	051	033	040	026	028	036	033	033	050
30	040	034	043	031	021	025	050	058	043	063	045	065	054	053	038	033	043	028	034	033	027	J033	040	042
31																								
No.	30	30	30	30	30	30	30	30	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30
Median	037	030	030	032	038	030	043	060	070	070	060	060	054	058	042	046	050	066	060	050	046	040	040	038
U.Q.	046	043	040	050	042	048	063	070	081	082	086	080	071	070	072	063	073	073	084	060	063	053	051	050
L.Q.	029	021	E	018	020	028	041	053	053	050	048	047	042	042	038	034	043	043	050	039	040	030	030	030
Q.R.	017	022	032	032	022	020	022	017	028	032	038	033	029	028	034	029	030	030	030	034	021	023	023	020

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

The Radio Research Laboratories, Japan

foEs

IONOSPHERIC DATA

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

0.1 Mc 135° E Mean Time (G.M.T. +9h)

fbEs

Jun. 1964

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	28
1				E			G 044	A 044	A	A	046	043	035			033	030	025	G	025	E		E		
2						G	044	A 044	A	G	A	A	A	045	044	A	A	A	A	A	025	E	E		
3						G	035	040	048	043	G	A	A	G	G		041	A	052	A	042	040	E	E	
4	E		E	025	041	G	040	A	A	A	043	048	A	040	G	A	A	A	030	040	029				
5		E	E	E	G	G	A	A	043	A	G	A					044	A	A	048	033	E			
6				E		G	042	A	040	A	A	A	G	037	034	G	A	A	043	045	041	E	E	E	
7	E			E	019	G	G	A	A	046	A	044	G	040	G	G	045	A	A	041	040	040	A	035	
8	030	E	E	024	025	032	A	043	A	045	G	046	046	A	033	032	G	052	040	049	030	E	E	E	
9	E	E	E	E	A	A	A	045	G	A	046	A	A	A	046	045	041	A	A	060	047	050	A	E	
10	E	E	E	027	020	043	036	A	A	040	A	A	043	G	033	037	A	043	A	A	A	A	A	027	
11	A	A	A	A	A	G	A	A	042	G	A	A	A	G	G	A	046	037	045	026	A	030	E	E	
12	E	E	E	E	G	036	030	A	A	A	A	A	A	A	A	A	A	040	A	049	038	030	030	E	
13	E	E	E		G	G	A	A	A	A	A	A	G	A	A	A	A	A	A	034	025				
14	E				026	G	036	040	A	A	G	044	G	A	036	034	043	038	040	038	030	025		E	
15	E			020	025		039	A	A	A	045	036	A	044	034	032	030	043	034	034	033	024	E	E	
16	E	E	E			032	040	039	ED4AR	A	044	036	G	044	A	G	035	035	032	G	030	027	E	032	
17	E	E	E		G	040	A	A	A	A	047	G	044	036	G	039	A	A	A	052	060	034	030	E	
18	E	E	E	019	022	030	A	A	A	A	A	G	036	G	040	ED4OR	G	029	044	038	035	E	E	E	
19	E	E	E	018	020	G	042	A	050	060	A	A	046	A	A	A	A	A	A	045	025	025	A	E	
20	A	E	E	018	019	G	040	A	G	A	044	050	G	A	A	A	A	A	A	030	030	033	E	E	
21	E	E	E	020	030	A	A	060	044	G			044	A	A	A	A	A	A	042	033	032	040	E	
22	E	E	E		040	A	032	045	A	A	A	A	A	044	A	A	A	A	A	A	A	055	030	052	
23	029	022	E	023	G	036	A	A	A	A	A	A	A	G	G	036	025	A	A	045	033	024	E	E	
24	036	025	019	020		G	037	A	A	A	A	A	A	A	A	A	A	036	043	033	A	030	035	035	
25	E	A	E	018	020	G	A	A	A	054	A	A	045	A	A	A	A	A	A	A	055	046	036	040	
26	E	030	031	030	020	A	040	A	A	A	A	A	045	A	045	A	A	033	040	A	037	025	E	E	
27	030	E	024	017		026	040	040	A	050	045	043	A	A	034	033	G	042	040	054	042	A	025	E	
28	E	025	A		019	S	038	A	A	C	C	C	A	A	A	043	033	043	034	040	052	047	A	A	
29	A	030	021	025	020	018	A	A	A	A	043	A	A	048	G	G	032	035	G	027	028	E	E	E	
30	E	024	025	020	017	G	A	A	A	A	A	A	A	A	036	033	038	026	026	031	E	E	026	A	
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

fbEs

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. + 9h)

Jun. 1964

f-min

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	E020S	E015S	E	E	E	E 016	E 020	E 020	E 020	E 022	E 025	E 025	E 022	E 022	E 025	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
2	E020S	E	E	E	E	E 019	E 020	E 020	E 020	E 023	E 022	E 021	E 020	E 021	E 020	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
3	E020S	E	E	E	E	E 016	E 020	E 020	E 020	E 020	E 021	E 021	E 022	E 020	E 020	E 021	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
4	E020S	E017S	E	E	E	E020S	E 020	E 020	E 020	E 020	E 020	E 020	E 025	E 025	E 021	E 021	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
5	E020S	E	E019S	E	E	E020S	E 020	E 020	E 021	E 020	E 020	E 026	E 020	E 020	E 020	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
6	E020S	E016S	E016S	E	E	E 016	E 020	E 020	E 020	E 020	E 021	E 020	E 021	E 020	E 020	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
7	E020S	E020S	E020S	E	E	E020S	E 020	E 020	E 021	E 020	E 020	E 026	E 022	E 021	E 020	E 025	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
8	E020S	E016S	E	E	E	E018S	E 020	E 020	E 020	E 021	E 025	E 025	E 022	E 021	E 021	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
9	E020S	E	E	E	E	E 017	E 020	E 020	E 020	E 021	E 021	E 020	E 026	E 021	E 020	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
10	E020S	E	E	E	E	E018S	E 020	E 020	E 020	E 020	E 021	E 020	E 025	E 020	E 024	E 022	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
11	E020S	E	E	E	E	E019S	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 021	E 021	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
12	E020S	E	E	E	E	E 015	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 026	E 025	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
13	E020S	E017S	E020S	E	E	E019S	E 020	E 020	E 020	E 020	E 021	E 025	E 021	E 020	E 020	E 020	E 021	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
14	E020S	E019S	E	E	E	E 020	E 020	E 020	E 021	E 020	E 022	E 020	E 025	E 020	E 023	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
15	E020S	E018S	E	E	E	E 018	E 020	E 020	E 020	E 020	E 020	E 028	E 021	E 025	E 021	E 021	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
16	E020S	E	E	E	E	E020S	E 020	E 020	E 020	E 021	E 020	E 024	E 023	E 021	E 021	E 020	E 021	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
17	E020S	E018S	E	E	E	E 017	E 020	E 020	E 020	E 020	E 020	E 022	E 021	E 020	E 020	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
18	E020S	E016S	E017S	E	E	E 016	E 020	E 020	E 020	E 024	E 025	E 025	E 027	E 021	E 024	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
19	E020S	E	E	E	E	E 014	E 020	E 020	E 020	E 020	E 022	E 022	E 020	E 020	E 020	E 021	E 021	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
20	E020S	E017S	E	E	E	E020S	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 022	E 023	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
21	E020S	E	E015S	E	E	E 012	E 020	E 020	E 022	E 020	E 021	E 020	E 022	E 023	E 021	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
22	E020S	E	E	E	E	E017S	E 018	E 020	E 020	E 025	E 021	E 020	E 020	E 025	E 020	E 025	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
23	E020S	E	E	E	E	E020S	E 019	E 020	E 020	E 020	E 021	E 020	E 021	E 020	E 020	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
24	E020S	E	E	E	E	E 017	E 020	E 020	E 020	E 020	E 020	E 021	E 021	E 021	E 021	E 021	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
25	E020S	E	E	E	E	E 016	E 020	E 020	E 020	E 020	E 032	E 020	E 024	E 021	E 021	E 020	E 020	E 020	E 020S	E 021S	E 020S	E 020S	E 020S	E 020S
26	E020S	E018S	E	E	E	E 016	E 020	E 020	E 020	E 020	E 024	E 024	E 032	E 021	E 020	E 022	E 021	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
27	E020S	E017S	E	E	E	E 017	E 020	E 020	E 020	E 020	E 020	E 021	E 028	E 021	E 020	E 021	E 021	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
28	E019S	E	E	E	E	E021S	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 021	E 021	E 021	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
29	E020S	E	E	E	E	E 015	E 020	E 020	E 020	E 020	E 025	E 022	E 021	E 020	E 021	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
30	E020S	E	E	E	E	E018S	E 019	E 020	E 020	E 020	E 021	E 021	E 021	E 021	E 024	E 020	E 020	E 020	E 020S	E 020S	E 020S	E 020S	E 020S	E 020S
31																								
No.	30	17	24	30	30	17	30	30	30	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30
Median	E020	E	E	E	E	E 016	E 020	E 020	E 020	E 020	E 021	E 021	E 021	E 021	E 021	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 020	E 020
U.Q.																								
L.Q.																								
Q.R.																								

f-min

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

The Radio Research Laboratories, Japan

Lat. 45°23.6'N
Long. 141°41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

0.01 M(3000)F2

Jun. 1964

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	310	300	310	300	320	305	335	340	I335A	I330A	325	280	285	310	310	310	325	320	305	315	315	325	310	300
2	290	295	310F	300	340	270	300	315	I340A	W	A	A	A	290	310	A	A	A	A	290	325	330	300	310
3	300	315	310	305	300	345	325	300	315	335	320	310	I300A	260	260	295	310	I305A	295	I315A	SF	SF	SF	305
4	SF	310	335	FS	FS	310	315	A	A	A	335	330	I300A	255	310	I310A	I300A	I295A	300	290	I315S	330	345	315
5	305	295	290	310	310	340	I285A	I300A	330	I320A	335	I310A	W	290	290	305	335	I315A	I305A	285	305	335	330	310
6	310	305	295	300	300	315	335	I350A	345	I315A	310	355	330	335	300	W	A	A	U295S	315	315	320	335	310
7	315	320	F	FS	F	320	315	I330A	I335A	325	I320A	300	330	275	290	300	295	I310A	I320A	305	U305S	SF	A	FS
8	SF	SF	SF	SF	SF	320F	I345A	345	I300A	330	325	315	315	I290A	295	330	285	295	290	290	305	U315S	U330S	300
9	300	300	300	SF	A	A	A	325	315	I295A	280	A	A	A	280	300	315	A	A	295	SF	SF	A	300S
10	SF	SF	SF	SF	F	300	355	A	A	320	A	A	265	285	275	275	I275A	285	A	A	A	A	A	295S
11	A	A	A	SF	A	250	A	A	305	290	A	A	A	W	W	A	A	245	270	300	I290A	U280S	285F	305
12	305	335	325	F	295	295	295	A	A	A	A	A	A	A	A	A	A	265	285	A	320	310	290	305
13	310	300	325	305	290	315	335	A	A	A	A	A	R	A	A	A	A	A	A	A	295	320	315	SF
14	SF	FS	F	FS	305	295	330	335	I315A	A	R	310	305	I275A	I280R	I275R	315	275	305	300	300	SF	SF	SF
15	295	305	325	SF	340	350H	260	A	I320A	340	315	320	300	300	305	310	295	305	310	295	295	290	295	325
16	320	310	320	290	320	315	315	315	285	I270A	255	315	300	290	I295A	295	310	305	310	305	315	SF	SF	SF
17	SF	SF	F	SF	350	350	I320A	310	A	A	320	310	305	345	300	285	I275A	I285A	A	305	305	310	I325S	SF
18	SF	300	SF	FS	FS	310	I320A	I295A	I330A	I320A	I325A	315	300	310	310	320	325	335	315	315	I305S	305	305	310
19	300	315	315	325	335F	340H	310	I305A	285	325	A	A	280	A	A	A	A	A	A	A	S	310	305	A
20	A	SF	SF	FS	240	350	310	I315A	310	I325A	330	295	295	I295A	I290A	A	A	A	I280A	310	295	280	SF	SF
21	SF	310	305	FS	FS	A	A	325	340	315	315	255	260	A	A	A	A	A	A	290	295	300	300S	305F
22	310	290	300F	SF	300F	I290A	315	330	I330A	A	A	290	I300A	310	A	A	A	A	A	A	A	A	295	300
23	SF	FS	FS	FS	FS	260	A	A	A	A	A	A	A	W	280	255	305	I300A	I295A	300	310	305	335	300
24	300	SF	SF	SF	305	285	325	I330A	I335A	A	A	A	A	A	A	A	I275A	295	315	310	I315A	310S	320	325
25	310	I295A	300	SF	SF	350	A	I300A	I320A	360	I345A	I325A	310	A	A	A	A	A	I285A	I290A	U315S	SF	SF	SF
26	310	F	FS	SF	315F	I300A	285	I325A	A	A	A	315	I300A	305	I320A	I250A	I250A	310	285	A	I300S	S	SF	325
27	SF	SF	SF	SF	305	295	295	300	A	320	315	320	I250A	I265A	275	300	300	300	310	300	U340S	A	SF	300F
28	270F	SF	A	A	340	315	320	A	A	C	C	C	C	A	A	260	315	315	310	300	U329S	300	I310A	A
29	A	290	FS	SF	272F	320	A	A	A	A	A	285	I280A	I290A	300	315	305	325	305	295	295	SF	305	310
30	SF	SF	SF	SF	SF	280F	SF	350	I340A	I295A	A	A	A	A	R	I300R	310	275	310	300	310	305F	SF	I300A
31																								
No.	17	18	15	9	19	28	24	21	18	18	17	18	21	21	21	20	22	21	21	26	26	20	18	21
Median	305	300	310	300	310	315	320	315	U325	320	320	310	300	290	295	300	300	300	305	300	310	305	310	305
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

M(3000)F2

W 7

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

M(3000)F1 0.01

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					355	370	A	A	A	A	I370A	370	375	380	365	360	380	355						
2					365	340	I360A	I365A	380	A	A	A	A	A	A	A	A	A	A					
3					380L	A	A	A	A	A	380	405	I400A	390	380	380	A	A	A	A				
4						A	A	A	A	A	A	A	A	A	370	A	A	A	A	A				
5					360	370	A	A	A	A	375	I405A	395	375	370	365	A	A	A	A				
6					360L	360	A	A	A	A	395	410	415	420	385	375	A	A	A	A				
7						355L	375	A	A	A	A	A	395	385	380	380	A	A	A	A				
8						A	A	A	I395A	I370A	375	I385A	I400A	I385A	375	375	355	A	A	A				
9						A	A	I380A	385	A	A	A	A	A	A	A	A	A	A	A				
10						A	A	A	A	I385A	A	A	A	370	360	A	A	A	A	A				
11						320	A	A	A	390	A	A	A	390	385	A	A	A	A	A				
12						A	340	A	A	A	A	A	A	A	A	A	365	A	A	A				
13					320	340	360	A	A	A	A	R	A	A	A	A	A	A	A	A				
14					A	350	A	A	A	A	395	I390A	395	I380A	370	405H	I365A	A	A	A				
15						A	A	A	A	A	A	410	I385A	I375A	375	365	355	A	A	A				
16						I375A	A	A	A	A	A	410	405	A	A	365	I370A	I350A	I340A	365				
17						A	A	A	A	A	A	400	I400A	405	365	A	A	A	A	A				
18						A	A	A	A	A	A	390	385	385	I395A	I400A	375	375	I370A					
19						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20						390	A	A	A	385	A	A	375	A	A	A	A	A	A	A				
21						A	A	A	A	395	400	395	A	A	A	A	A	A	A	A				
22						A	370	A	A	A	A	A	A	A	A	A	A	A	A	A				
23						A	A	A	A	A	A	A	400	405	365	A	A	A	A	A				
24						365	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
25						365	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
26						A	A	A	A	A	A	A	A	A	I360A	I355A	I365A	A	A	A				
27					355	340	A	A	A	A	A	I375A	I385A	395	375	350	350	A	A	A				
28						A	A	A	A	C	C	C	A	A	A	A	395	I375A	I350A					
29					340	345	A	A	A	I400A	A	A	A	A	400	435	365	I360A	355					
30						380	I405A	I435A	A	A	A	A	A	A	U380R	U385R	I385A	360	350					
31																								
No.					5	16	7	3	4	6	6	12	13	14	18	15	12	6	6	1				
Median					340	360	370	U380	U385	U390	390	400	395	385	380	375	365	U360	350	365				
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

M(3000)F1

Lat. 45°23.6' N
Long. 141°41.1' E

IONOSPHERIC DATA
135° E Mean Time (G.M.T. +9h)

Wakkanai

km

R'F2

Jun. 1964

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						320	290	280	A	A	A	445	400	350	360	350	295	295	300					
2						400	350	325	I320A	W	A	A	A	410	350	A	A	A	A					
3						250	300	360	310	295	320	350	A	495	540	390	310	A	A					
4							310	A	A	A	295	A	A	500	360	I340A	I340A	I340A	305	A				
5					280	295	I420A	I405A	325	I340A	310	A	W	440	400	355	300	A	A					
6					300	300	250	I275A	300	I390A	365	290	360	320	400	W	A	A	290					
7						310	330	I305A	I300A	310	I330A	380	340	450	410	385	A	A	A					
8						295	I270A	280	I375A	305	315	A	370	I410A	390	310	410	I320A	310					
9						A	A	A	320	A	420	A	A	A	415	350	350	A	A					
10						A	235	A	A	U370L	A	A	420	350	375	360	I340A	310	A					
11						550	A	A	A	350	420	A	A	W	W	A	535	450	I330A	295				
12						400	380	A	A	A	A	A	A	A	A	A	480	415	A					
13						350	340	300	A	A	A	A	R	A	A	A	A	A	A					
14						335	350	310	300	A	R	370	375	I445A	I440R	I440R	350	425	325					
15							475	A	A	I300A	285	360	A	415	345	330	380	350	310					
16						300	300	I300A	450	A	A	350	370	410	I390A	395	350	345	295	280				
17							A	A	A	A	340	340	340	305	400	425	I435A	I415A	A					
18						305	A	I340A	I300A	I330A	I335A	360	395	355	360	350	335	290	320					
19							I340A	A	I385A	A	A	A	450	A	A	A	A	A	A					
20							270	A	A	340	I310A	300	A	385	I355A	I375A	A	A	A					
21							A	A	A	260	345	355	495	A	A	A	A	A	A					
22						I370A	295	275	I295A	A	A	445	I380A	365	A	A	A	A	A					
23						I420A	A	A	A	A	A	A	A	W	450	520	A	A	A					
24						370	290	I280A	I285A	A	A	A	A	A	A	A	A	A	365	A				
25						270	I285A	I280A	I310A	A	A	A	350	A	A	A	A	A	A	A				
26							A	I330A	A	A	A	A	360	I385A	370	I350A	A	A	A					
27					350	365	360	A	A	I330A	350	345	A	A	440	410	390	365	310					
28							310	A	A	C	C	C	C	A	A	495	330	320	320					
29					410	325	A	A	A	A	420	I425A	I430A	I410A	370	355	330	310	305					
30						285	A	A	A	A	A	A	A	A	R	R	320	410	325					
31																								
No.					6	21	20	14	16	13	14	13	17	20	21	19	18	17	13	4				
Median					340	320	300	U300	U315	U330	330	360	380	410	390	360	350	350	310	300				
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

R'F2

W 9

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km

R'F

Jun. 1964

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	28	
1	250	255	270	255	250	245	250	A	A	A	A	I240A	210	225	215	210	235	210	245	260	250	245	250	270		
2	295	265	260	260	245	250	I250A	A	I250A	230	A	A	A	A	A	A	A	A	A	A	240	225	250	275		
3	275	270	260	265	245	245	I250A	A	A	A	225	200	I215A	210	220	225	A	A	A	A	I250A	220	215	230		
4	265	265	235	250	255	245	A	A	A	A	A	A	A	A	235	240	A	A	A	I265A	220	215	230			
5	280	290	300	270	245	230	A	A	A	A	220	I210A	200	195	225	240	A	A	A	A	A	245	220	265		
6	265	260	275	270	250	250	A	A	A	A	195	200	210	200	225	225	A	A	A	A	I235A	240	250	285		
7	295	255	225	225	240	245	A	A	A	A	A	A	225	250	250	245	A	A	A	A	A	A	A	A		
8	300A	300	310	265	295	A	A	A	I220A	I230A	230	I215A	I205A	I210A	230	210	260	A	A	A	I245A	235	225	270		
9	310	275	285	275	A	A	A	I230A	240	A	A	A	A	A	A	A	A	A	A	A	A	A	A	290		
10	295	310	325A	285	245	I245A	A	A	A	I240A	A	A	A	235	225	A	A	A	A	A	A	A	A	330A		
11	A	A	A	310	I300A	295	A	A	A	225	A	A	A	215	240	A	A	A	A	A	A	A	A	320	260	
12	290	245	260	285	300	I280A	250	A	A	A	A	A	A	A	A	A	240	A	A	A	A	A	A	265		
13	270	250	260	270	295	295	245	A	A	A	A	A	215	A	A	A	A	A	A	A	275	250	250	215		
14	260	295	265	275	A	250	A	A	A	A	215	I230A	220	I215A	240	200H	I250A	A	A	A	A	295	230	250		
15	280	280	250	260	260	235H	A	A	A	A	A	210	I210A	I210A	210	210	230	A	A	A	A	270	270	250		
16	255	265	255	255	250	I240A	A	A	A	A	A	210	210	I230A	I245A	255	I240A	I230A	I240A	265	I255A	295A	255	I260A		
17	300	300	295	280	230	A	A	A	A	A	A	200	I205A	205	220	A	A	A	A	A	A	A	A	I240A	260	
18	280	275	285	275	290	A	A	A	A	A	A	215	215	200	I215A	A	240	240	I240A	I255A	I280A	260	270	260		
19	280	270	260	245	230	225	A	A	A	A	A	A	A	A	A	A	A	A	A	A	260	255	I250A	295		
20	I260A	260	295	260	260	230	A	A	240	A	A	A	210	A	A	A	A	A	A	A	I280A	I295A	290	295		
21	260	280	270	295	A	A	A	A	A	210	205	195	A	A	A	A	A	A	A	A	A	A	A	I260A	270	
22	255	280	270	265	I255A	I250A	245	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
23	A	275	300	280A	295	A	A	A	A	A	A	A	A	210	210	250	A	A	A	A	A	260A	230	255		
24	I300A	295A	250	275	260	235	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I275A	A	A	A		
25	275	I290A	295	250	250	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I260A		
26	260	A	A	A	275	A	A	A	A	A	A	A	A	A	A	I260A	I260A	A	A	A	A	235	220	270		
27	I260A	280	265	280	270	265	A	A	A	A	A	I225A	I220A	I215A	210	245	250	I250A	I255A	A	A	A	280F	290		
28	285	300	I350A	I315A	245	240	A	A	A	C	C	C	C	A	A	A	220	I240A	I265A	A	A	A	A	A		
29	A	A	325	380A	280A	290	A	A	A	A	A	A	A	A	235	200	235	I245A	225	275A	I270A	275	260	260		
30	255	310A	310A	310	265	240	I230A	I220A	A	A	A	A	A	A	250	215	I230A	250	250	I270A	255	260	245	I280A		
31																										
No.	27	27	28	29	27	23	8	3	4	6	6	12	14	15	19	14	12	7	7	6	13	17	23	26		
Median	270	275	270	270	245	245	250	I230	I240	I230	220	210	210	210	225	225	240	I240	I245	I205	I255	255	250	270		
U.Q.																										
L.Q.																										
Q.R.																										

R'F

The Radio Research Laboratories, Japan

W 10

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

Lat. 45°23.6'N
Long. 141°41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km

f_oF₂

Jun. 1964

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

f_oF₂

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

The Radio Research Laboratories, Japan

W 11

Lat. 45°23.6' N
Long. 141°41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Types of Es

Jun. 1964

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			c	e2	e2	e2	c	1				1	1	1	h	c	f				
2						h	e	e3	e2	e	e	e3	e3	e3	e3	e2	e2	e2	e3	e	f	f	f		
3						e	e	e	e	e	e	e	e	e	1	e	e	e6	e6	e5	f6	f	f	f2	
4	f		f	1	1	h1	e2	e2	e2	e	e	e	e	e	e	e2	e3	e4	e2	e3	f2				
5		f2		1	e	e	e2	e3	e	e	1					e2	e2	e2	e4	e2	f2				
6		f		1	e	e	e2	e3	e2	e2			e	1	1	h	e3	e3	e2	e2	f2	f	f	f2	
7	f2		1	1	e	e	e2	e2	e2	e2	e2	e2	e2	e2	h	h	e	e4	e4	e3	f2	f3	f4	f3	
8	f2	f2	f f	12	e1	1 e3	e3	e2	e	e3	e	e2	e2	e2	1	1	h	e2	e2	e2	f2	f	f	f2	
9	f2	f2	f	1	12	e4	e3	e3	e	e2	e2	e2	e2	e2	e2	e2	e	e3	e5	e3	f3	f4	f3	f2	
10	f	f2	f2	12	12	e3	e1	e2	e4	e	e3	e2	e2	e	1	1	e4	e2	14	e3	f3	f3	f3	f2	
11	f f	f	f	e21	e2	e	e3	e3	e	h	e	e	e	e	h	h	e2	e3	e2	e2	f3	f4	f2	f2	
12	f	f	f	e2	h	e4	e2	e2	e2	e	e2	e2	e2	e2	h	e12	1	e3	e4	e3	f4	f2	f3	f	
13	f2	f			e	h	h	e2	e2	e2	e	e	e	e2	h	e	e1	e4	e3	e3	f3				
14	f				e2	h	e	e	e2	e2	e	e	e	e2	1	1	1	12	13	e2	f3			f2	
15	f			12	12		e2	e3	e3	e2	e2	e	12	1	1	1	1	13	12	e2	f2	f	f2	f	
16	f	f	f			e	e2	e3	e	e2	e	1	e	e	e2	1	1	12	h	e	f2	f4	f2	f3	
17	f	f	f		e	e2	e2	e2	e4	e2	e	1	1	1	e	h	e2	e6	e3	e2	f6	f2	f	f2	
18	f2	f	f f	12	12	e	e4	e2	e2	e2	e	1	e	e	h	e	e	e2	e2	e2	f2	f2	f	f	
19	f	f2	f	1	1	h	e	e2	e3	e2	e2	e2	e2	e	e2	e	e3	e2	e2	e2	f	f2	f4	f2	
20	f4	f2	f	1	1	e	e	14	e	e2	e	e2	e	12	e2	e2	e2	e4	e2	e	f3	f2	f	f	
21		f	f	e	e2	e4	e2	e2	e	e			e	h2	e	e	e	e3	e3	e2	f3	f2	f6	f	
22		f	f		e21	e4	e2	e2	e2	13	13	12	12	1	e2	e3	e3	e4	e4	e5	f3	f3	f4	f5	
23	f2	f3	f2	1	e	e2	e4	e3	e2	e	e2	e2	e2	e	h1	e1	e1	e2	e5	e2	f3	f	f	f2	
24	f3	f2	f2	12		e	e	e2	e2	e2	e2	e2	e2	12	12	e1	e1	e2	e3	e2	f5	f4	f4	f4	
25	f2	f4	f2	12	12	e	e5	e3	e2	e2	e2	e	1	1	e1	e2	e3	e3	13	12	f4	f3	f4	f5	
26	f	f2	f3	14	12	e5	e3	e2	e2	e2	e2	e2	e2	e2	e2	12	1	e	e2	e5	f5	f	f	f2	
27	f2	f	f3	12		e	e3	e	e2	e2	e2	e	12	12	1	1	e	e3	e2	1	f3	f4	f	f	
28	f	f2	f2	12	1	e	e	e2	e3					e2	e2	1	12	13	13	e12	f4	f4	f4	f2	
29	f4	f2	f3	12	12	1	e2	e3	e2	e	e	e2	e	e2	e	e	1	e2	e	e	f2	f2	f2	f2	
30	f2	f2	f2	1	1	e	e2	e2	e	e2	e	e2	e2	e3	1	1	12	1	1	e1	f2	f	f	f3	
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

Types of Es

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation
The Radio Research Laboratories, Japan
W 12

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foF2

Jun. 1964

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	042R	F	F	F	039F	051	057	A	A	A	A	A	055	057	064	063	066	067	061	065	066	047S	044S	I042R	
2	041	F	F	F	F	043	A	A	I065A	063	I049R	051	052	052	056	062	058F	059	U060R	067R	RF	F	FS	FS	
3	F	F	F	F	F	044	I048A	055	065	058	061	053	E045G	048	050	056	057	060	068	073	A	A	A	F	
4	A	A	A	A	F	043	056	066S	071	075	063	A	A	052	053	060	056	I057A	I063	071	I078R	I080R	I052A	I036A	
5	030	033	F	F	F	044	049	057	I057A	A	A	A	I048A	I044R	054	052	059	053	056	065	FS	A	FS	FS	
6	FS	F	F	F	F	054	054	052	A	A	C	C	C	C	C	C	A	I062A	A	R	FS	FS	FS	FS	
7	FS	F	F	F	F	A	053	064	073	052	054	050	051	049	051	I048R	051	057	059	065	066S	A	FS	FS	
8	FS	FS	FS	F	F	F	050	A	A	A	062	052	I048R	I050A	I053A	055	053	057	066	RS	R	A	FS	A	
9	A	A	A	A	F	F	049F	A	A	A	A	A	A	A	063	I062A	056	A	A	065	FS	A	A	A	
10	A	A	A	A	F	043F	056	064	R	A	A	A	I064A	070	075	086	I050A	I055R	I054R	057	031S	058S	I059A	040S	
11	034F	I030C	027S	FS	028F	E029G	040	I055A	049H	A	A	047	A	A	A	A	A	I051A	I051A	052	056	053	FS	FS	
12	F	F	034F	035F	F	041	045	051	050	A	A	058	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	040	033	033F	F	050R	I041A	046	A	A	A	A	A	R	047	A	A	A	A	A	066R	063	050S	040S	
14	033	033	F	F	F	A	051	A	A	A	A	050	050	050	050	050	047	047	053	060	062	F	FS	FS	
15	FS	FS	F	F	F	036	I045A	058	061	068	063	051	A	A	063	056	050	053	053	060	063S	061S	RF	RF	
16	RF	RF	044	039	040	054	055	054	058	055	054	053	A	A	C	059	060	062	C	C	C	C	C	C	
17	C	C	C	C	035	038	I048C	058	I064C	060	C	C	C	C	C	C	C	C	I064C	I064C	061	060	A	A	
18	I044R	I044A	F	RF	F	046F	056	062A	I062A	053	I052A	U052R	053	056	059	054	057	053	050	U052R	059	060R	RF	RF	
19	A	050R	049	050	I034R	040	048	064Z	I063A	I066A	071R	058	I057A	I055A	057	I057A	I052R	054	I054A	J061R	I068A	I060A	RF	A	
20	RS	RF	RF	FS	F	A	A	058	A	A	A	052	I056A	054	059	064F	072	074	I070A	I062A	058	I058R	I057R	I056R	
21	I054R	F	049F	F	F	I044A	I053A	088	070R	049	E046G	A	A	055	068	066	I062A	I056A	053	066R	067	I063R	I063R	FS	
22	055R	053F	053R	052R	F	I049R	062R	062R	058R	053	051R	A	A	056	056	052	051R	050	056	063	068	069	067	F	
23	I059R	F	F	F	F	049	048	I050A	051	045	051R	I050R	051	U047R	048R	045	051	047	I055A	064	066R	063	I058A	I051A	
24	F	045F	038F	037F	039	046	I050A	I056A	060	053	A	A	A	047R	050	051	054	I056A	061V	A	RS	A	A	A	
25	A	I041A	A	A	A	044R	I050A	I058A	I061A	A	A	A	A	A	A	A	J059R	061	065H	I072R	RS	RS	A	A	
26	A	RF	I040A	F	I038A	040	A	A	A	A	I056A	058	I056A	053	I050R	I051A	053R	050	A	A	A	A	A	FS	
27	040F	I040A	I039A	037F	033	039	044	A	A	059	A	A	A	A	049	047	050	057	065	I068R	RS	A	A	A	
28	A	A	A	F	RF	039S	049R	058	I058A	062	067	052	050	053	I055A	055	056	056	059	068S	059	054R	I052R	I046R	
29	059F	I038R	I037R	033F	F	I037R	RS	A	A	A	A	051	050R	I053A	055	057	052	053	050	049	054	051	I059R	F	
30	F	F	F	F	F	040F	046	A	A	A	A	A	049	052	I052A	052	047	049	045	052H	I061R	054	F	F	
31																									
No.	11	11	11	8	8	25	26	21	18	15	14	16	16	20	24	24	25	26	24	23	18	16	10	7	
Median	041	040	039	037	036	043	050	058	061	058	055	052	051	052	054	056	056	056	056	059	064	062	060	U054	U042
U.Q.	054	045	049	044	039	048	054	063	065	063	063	053	056	055	059	061	059	060	064	067	066	063	058	051	
L.Q.	034	033	034	034	034	040	048	054	058	053	051	050	050	050	050	052	051	053	053	050	059	054	050	040	
Q.R.	020	012	015	010	005	008	006	009	007	010	012	003	006	005	009	009	008	007	011	007	007	009	008	011	

foF2

A 1

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foF1

Jun. 1964

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	A	A	A	A	A	A	A	A	A	4.20	4.10	3.90	3.70H	3.20L					
2					A	A	A	A	A	4.20	4.40	4.40	4.30	4.30	4.20	4.10A	4.00	A	A					
3					A	A	A	A	A	I4.30A	4.40A	4.30	4.50H	4.30	4.30	4.10A	4.00	A	A					
4					3.70L	4.10L	4.10A	4.30	A	4.30	A	A	A	4.30	4.30	I4.20A	A	A	A					
5					L	A	A	A	A	A	A	A	I4.40A	4.20	4.20F	4.20	4.00	3.70L	A					
6					A	A	A	A	A	A	C	C	C	C	C	C	A	A	A					
7					A	A	A	4.00	4.20	I4.20A	4.30	4.40	4.30	4.40	4.20	4.20	4.00	I3.60A	3.20					
8					A	A	A	A	A	A	A	4.30	4.40	I4.30A	I4.20A	4.20	4.00	A	A					
9					3.00	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
10					3.30L	A	A	A	A	A	A	A	A	A	A	A	I4.00A	A	A					
11					2.90	3.30	I3.60A	3.90A	I4.10A	I4.20A	4.20	A	A	A	A	A	A	A	A					
12					3.20L	I3.60A	I3.80A	4.00	A	A	A	4.20	C	C	C	C	C	C	C					
13					L	A	A	A	A	A	A	A	A	4.20	4.10	I4.00A	A	A	A					
14					A	A	A	A	A	A	A	4.30	4.20	4.20	4.20	4.10	4.00	3.70A	3.30					
15					A	A	A	I3.90A	I4.20A	I4.30A	4.30R	A	A	A	A	I4.20A	I4.00A	3.80	A					
16					L	3.70L	I4.00A	I4.10A	I4.20A	A	A	A	A	A	A	C	C	C	C					
17					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
18					3.50L	A	A	A	A	A	A	A	A	4.40R	4.30R	4.10	4.00S	I3.80S						
19					A	A	A	A	A	A	A	A	A	I4.30A	U4.30R	I4.20A	3.90A	RS						
20					A	A	A	A	A	A	A	A	I4.40A	4.40A	I4.20A	I4.20A	4.10A	A	A					
21					A	A	A	A	A	4.30	4.60R	A	A	A	4.40A	4.40A	A	A	A					
22					A	A	A	A	A	I4.50A	4.50R	A	A	A	4.30	4.30	L	3.90	A	L				
23					3.00	U3.60R	I3.80A	4.00	4.30L	4.20A	4.20A	4.30	4.40	4.40	4.20A	4.20L	4.00	3.90	A					
24					L	A	A	A	4.00	4.30	A	A	A	A	4.30R	4.20A	3.90A	I3.60A	3.30					
25					A	A	A	A	A	A	A	A	A	A	A	A	A	I3.70A	A					
26					A	A	A	A	A	A	A	A	A	A	4.30	4.30A	4.20A	4.00	I3.80A	A				
27					3.10	A	A	A	A	A	A	A	A	A	4.30	4.10R	I4.00A	I3.60A	A					
28					L	3.60	A	A	A	A	4.30A	I4.30A	A	A	A	4.10A	4.00	3.80	A					
29					3.40S	3.60	A	A	A	A	A	A	A	A	4.20	4.10	I4.00A	3.80	L					
30					L	3.50L	A	A	A	A	A	A	4.20	4.20	I4.10A	4.00	3.90	I3.70A	3.60					
31																								
No.					8	8	8	7	8	11	10	10	10	16	20	21	19	15	5					
Median					3.20	3.60	U3.90		4.00	U4.30	4.30	4.30	4.40	4.30	4.20	4.10	4.00	3.70	3.30					
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foE

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
2						A	A	A	A	A	A	A	A	325	310	305	280	A	A					
3						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
4						A	A	A	A	A	A	A	A	A	320	305	1290A	1255A	A					
5						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						A	A	A	A	A	C	C	C	C	C	C	A	A	A					
7						A	A	A	A	A	A	A	A	A	1325A	305	A	A	A					
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
9						A	A	A	A	A	A	A	A	325	320	305	295	A	A					
10						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						A	A	A	A	A	A	A	A	A	320	305	A	A	A					
12						A	A	A	A	A	A	A	C	C	C	C	C	C	C					
13						A	A	A	A	A	A	A	A	A	320	300	275	240	A					
14						A	A	A	A	A	320	A	A	A	A	A	A	A	A					
15						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
16						A	A	A	A	A	A	A	A	R	C	A	A	A	A					
17						A	A	A	A	C	C	C	C	C	C	C	C	C	C					
18						A	A	A	A	1295A	A	A	A	A	A	A	AS	A	A					
19						A	A	A	A	A	A	A	A	330A	325	305R	A	A	A					
20						A	A	A	A	A	A	A	A	A	325	A	A	A	A					
21						A	A	A	A	305A	320A	1330A	1355A	330	325	305	A	A	A					
22						A	A	A	A	A	A	A	A	A	325	315	A	A	A					
23						A	A	A	A	A	325A	A	A	A	A	A	A	A	A					
24						A	A	A	A	A	A	A	A	A	A	A	1280R	A	A					
25						A	A	A	A	A	315A	A	A	A	A	A	A	A	A					
26						A	A	A	A	A	A	A	A	325A	A	A	A	A	A					
27						A	A	A	A	1285A	1300A	A	A	A	A	A	280A	A	A					
28						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
29						A	A	A	A	1310A	325	335	340	340A	1325A	A	A	A	A					
30						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
31																								
No.									2	3	5	2	2	6	11	9	6	2						
Median									1290	1305	320	1330	1340	330	325	305	280	1250						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

foE

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. +9h)

foEs

Jun. 1964

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	J018	J018	J021	J033	J023	J033	J048	J063	J064	J057	J073	J073	J068	J053	J043	J033	040	J028	J029	J030	J026	J033	022	J018	
2	023	J023	E	J031	J020	J058	J059	J118	J076	J050	J051	J051	J041	040	042	J055	J065	J056	J065	J065	J036	J051	J023	J030	
3	J033	J029	J021	J024	J023	027	J059	J053	J061	J062	J067	J061	J042	037	J058	J048	040	J041	J061	J073	J035	J051	J057	J061	
4	J060	J066	J066	J056	J042	032	031	039	J043	J043	J050	J061	J106	J045	042	J051	J083F	J056	J075	J073	J076	J077	J051	J057	J061
5	J033	J030	J021	J023	J023	030	J043	J086	J065	J087	J061	J063	J052	039	J063	J096	J083F	J056	J052	J092	J078	J077	J075	J039	
6	J039	J020	J020	J028	J025	J042	J043	J047	J060	J070	C	C	C	C	C	C	J103	J080	J095	J146	J050	J042	J045	J038	
7	J063	J041	J028	J028	J031	J056	J045	J042	J039	J070	J043	J051	041	J048	036	036	040	J067	J062	J070	J068	J083	J051	J043	
8	J050	J046	J039	J040	J038	030	J043	J067	J078	J054	J048	J050	J040	J073	J063	037	J038	J067	J078	J109	J090	J080	J061	J112	
9	J078	J072	J073	J104	J055	027	J041	J091	J173Y	J126	J086	J085	J085	J083	J057	J078	J076	J089	J078	J061	J060	J085	J043	J064	
10	J060	J054	J051	J060	J082	J039	J052	J060	J050	J087	J165	J085	J066	J073	J080	J058	J140	J088	J077Y	J061	J049	J043	J078	J030	
11	J043	C	J035	J064	J033	027	J035	J072	J072	J080	J054	042	J066	J086	J058	045	J080	J058	J063	J036	J050	J061	J053	J040	
12	J043	J028	023M	022M	022M	J029	J047	J065	J055	J114	J088	J058	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	J031	J019	J018	J033	025	J048	038	J073	J111	J086	J066	J062	J062	042	J054	J057	J100	J088	J082	J036	J061	J024	021M	
14	022M	022	J026	J049	J020	J048	J052	J080	J071	J056	J056	043	044	042	041	035	J040	J040	J033	J031	J046	J062	J049	J041	
15	J023	J033	J037	J030	E	025	J048	J063	J061	J075	J058	J049	J083	J066	J046	J045	J047	J035	J039	J045	J040	J056	J037	J063	
16	023M	J021	023	J020	J018	022	033	J051	J063	J091	J083	J072	J088	J070	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
18	J063	J053	J028	J025	J021	J058	J054	J053	J113	J065	J073	J067	J046	038	035	J042	033	J038	J061	J049	J033	J051	J062	J051	
19	J066	J077	J054	J072	J026	J043	J051	J050	J072	J092	J113	J083	J091	J136	J045	J073	J114	J066	J138	J059	J086	J067	J063	J075	
20	J061	J056	J033	J022	J024	J054	J051	J064	J088	J121	J079	J065	J115	J075	J126	J073	J068	J108	J132	J113	J075	J041	J029	E	
21	J017	E	020	023	J034	J098Y	J114	J072	J063	J065	J073	J080	J051	J047	045	J061	J081	J089	J041	J032	J063	J061	J030	J035	
22	J044	J024	J036	J068	J043	J058	J080	J053	J073	J055	J043	J110	J132	J081	036	037	035	J029	J037	J023	J061	J053	J033	J040	
23	J051	J043	J035	J029	J021	J044	J066	J044	J044	040	J070	J063	J058	J038	038	J034	J039	J042	J065	J065	J043	J030	J073	J048	
24	J052	J033	J034	J038	J030	J029	J056	J065	J060	J068	J088	J076	J055	J041	J076	J039	J041	J088	J063	J088	J093	J111	J065	J061	
25	J052	J058	J063	J055	J062	J043	J070	J070	J103	J089	J085	J136	J102	J091	J100	J146	J135Y	J131Y	J114	J094	J088	J088	J063	J073	
26	J073	J073	J051	J064	J060	J050	J078	J078	J095	J096	J137Y	J059	J068	J050	J046	J061	J095	J053	J060	J083	J085	J075	J093	J061	
27	J058	J065	J038	J027	J023	025	J046	J065	J071	J053	J066	J065	J072	J053	J043	040	J048	J048	J066	J116Y	J113	J071	J088	J073	
28	J068	J068	J074	J031	J021	J033	J033	J045	J064	J050	J055	J055	J090	J059	J064	J042	J040	J038	J041	J035	J035	J062	J043	J030	
29	J053	J048	J035	J033	J018	027	033	J043	J059	J058	J055	J059	J046	J075	J043	J046	J050	J035	J028	E	J033	J036	J086	J030	
30	J030	J038	J031	J031	J032	027	035	J058	J060	J059	J060	J068	J052	036	J064	J039	J036	J043	J030	J039	J042	J033	J027	J021	
31																									
No.	28	28	29	29	29	29	29	29	29	29	28	28	27	27	26	26	27	27	27	27	28	28	28	28	
Median	050	040	034	031	025	032	048	063	064	068	069	064	062	053	046	046	050	056	062	063	055	061	055	042	
U.Q.	060	057	038	056	036	049	055	071	074	090	086	074	085	075	063	061	081	088	078	068	082	073	069	062	
L.Q.	032	026	022	024	021	027	042	050	060	056	055	056	046	041	042	039	040	040	041	035	038	042	035	030	
Q.R.	028	031	016	032	015	022	013	021	014	034	031	018	039	034	021	022	041	048	037	053	044	031	034	032	

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

foEs

Lat. 39°43.5 N
Long. 140°08.2 E

Akita

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

fbEs

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E	E	E	E	017	029	045	A	A	A	A	A	045	046	039	032	034	025	021	020	019	017	E	E	
2	E	E	E	018	E	040	A	A	A	038	042	038	036	038	042	043	039	043	050	030	E	045	E	E	
3	E	E	E	017	E	025	A	051	047	045	045	043	037	035	039	042	040	040	055	055	A	A	A	035	
4	A	A	A	A	E	021	031	036	042	042	048	A	A	040	040	0051R	E057R	A	051	041	E	042	A	A	
5	017	017	E	E	E	022	042	048	A	A	A	A	A	037	035	040	035	035	042	020	040	A	048	E	
6	019	E	E	E	E	032	042	045	A	A	C	C	C	C	C	C	A	A	A	046	E	020	E	017	
7	E	030	018	E	022	A	043	037	034	045	035	038	038	042	036	035	040	033	025	038	040	A	031	040	
8	E	030	023	017	E	030	039	A	A	A	043	041	039	A	A	036	032	039	060	053	037	A	043	A	
9	A	A	A	A	E	020	039	A	A	A	A	A	A	A	056	A	050	A	A	050	030	A	A	A	
10	A	A	A	A	017	026	050	058	043	A	A	A	A	064	050	045	A	075	060	E	019	032	A	019	
11	E	C	021	E	E	023	026	A	040	A	A	042	A	A	A	A	A	A	A	032	045	038	040	018	
12	E	018	E	E	E	023	040	040	040	A	A	035	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	017	E	E	020	023	A	038	A	A	A	A	A	038	035	A	A	A	A	A	035	E	018	E	
14	E	E	E	023	E	A	050	A	A	A	A	043	040	038	039	034	032	039	027	030	018	017	E	E	
15	E	017	017	E		022	A	043	044	050	052	041	A	A	046	044	047	034	039	042	037	035	019	018	
16	017	017	017	017	017	020	031	044	052	045	046	050	A	A	C	C	C	C	C	C	C	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	053	048S	A	A	
18	027S	A	E	017	017	025S	046	048	A	049	A	048	046	037	034	038	037	033	033	020	022	023S	040S	047	
19	A	039	021	018	017	029	044	045	A	A	057	051	A	A	038	A	040	028	A	045	A	A	018	A	
20	020	033	023S	017	017	017	A	053	A	A	A	050	A	045	048	055	042	047	A	A	054	018	017		
21	017	E	E	017	020	A	A	056	046	036	037	A	A	045	045	061	A	A	041	030	020	054	025	032	
22	033	017	030	033S	017	037	049	046	054	049	042	A	A	048	035	033	029	026	032	018	020	021	022S	024	
23	050	030	023	E	E	020	033S	A	040	036	044	039	044	035	034	033	036	033	A	054	034	017	A	A	
24	025	E	017	017	020	019	A	A	040	036	043	A	A	038	044	033	040	A	025	A	026	A	A	A	
25	A	A	A	A	A	030	A	A	A	A	A	A	A	A	A	A	044	031	034	050	060	050	A	A	
26	A	034	A	E	A	035	A	A	A	A	A	047	A	043	044	A	035S	042	A	A	A	A	A	017	
27	022	A	A	018	018	023	039	A	A	049	A	A	A	A	043	035	046	039	044	044	043	A	A	A	
28	A	A	A	021S	017	029	029	045	A	046	044	046	047	050	A	042	034	027	038	018	035S	023	032S	026	
29	017	018	017	E	E	022	032	A	A	A	A	045	046	A	036	034	043	032	024	024	019	021	020	017	
30	017	018	017	017	019	024	030	A	A	A	A	A	037	036	A	033	032	042	029	038	035	032	E	E	
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

fbEs

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

Lat. 39°43.5'N
Long. 140°08.2'E

Akita

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

f-min

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	017	017	017	017	017	017	017	018	017	017	017	017	E	E	E	E	E	E
2	E	E	E	E	E	017	017	017	017	017	019	017	017	018	018	017	017	017	E	E	E	E	E	E
3	E	E	E	E	E	E	E	017	018	017	018	017	017	017	017	018	017	017	017	E	E	E	E	E
4	E	E	E	E	E	E	017	017	017	018	017	017	017	017	017	017	017	017	E	E	E	E	E	E
5	E	E	E	E	E	E	017	017	017	017	C	C	C	C	C	C	017	017	E	E	E	E	E	E
6	E	E	E	E	E	E	017	017	017	017	C	C	C	C	C	C	017	017	E	E	E	E	E	E
7	E	E	E	E	E	E	017	017	017	018	018	017	018	E	018	018	017	017	E	E	E	E	E	E
8	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
9	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
10	E	E	E	E	E	E	017	017	017	017	017	017	018	018	017	017	017	017	E	E	E	E	E	E
11	E	C	E	E	E	E	E	E	017	017	017	017	C	C	C	C	C	C	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
13	C	E	E	E	E	E	017	E	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
16	017	017	017	017	017	017	E	017	017	017	017	017	019	017	E020C	E017C	E017C	E	E017C	E017C	E021C	E	E	E
17	C	E	E017C	E017C	E	E017C	E018C	E017C	E	C	C	C	C	C	C	C	C	C	E	E	E	E	E	E
18	E	E	E	E	E	E	017	017	017	017	017	017	017	018	017	017	017	017	E	E	E	E	E	E
19	017	E	E	E	E	E	017	017	017	017	017	018	017	017	017	017	017	017	E	E	E	E	E	E
20	E	E	E	E	E	E	E	017	017	017	018	017	018	018	017	017	018	017	E	E	E	E	E	E
21	E	017	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
22	017	E	E	E	E	E	E	017	017	017	017	017	017	017	018	E	017	017	E	E	E	E	E	E
23	017	E	E	E	E	E	E	E	017	017	017	017	018	017	018	017	017	017	E	E	E	E	E	E
24	E	E	E	E	E	E	E	017	017	017	017	017	017	017	018	017	017	017	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	E	017	017	018	018	017	017	017	017	E	E	E	E	E	E
26	E	E	E	E	E	E	017	017	017	017	017	018	018	017	017	017	017	017	E	E	E	E	E	E
27	E	E	E	E	E	E	E	017	017	017	017	018	018	018	017	017	018	017	E	E	E	E	E	E
28	E	E	E	E	E	017	E	017	018	017	017	017	017	018	E	017	017	017	E	E	E	E	E	E
29	E	E	E	E	E	E	E	017	017	017	017	018	018	017	017	017	017	017	E	E	E	E	E	E
30	E	E	E	E	E	E	E	017	017	017	017	018	018	019	018	018	E	017	017	E	E	E	E	E
31																								
No.	28	29	29	29	30	29	29	30	30	30	28	28	27	27	26	27	28	28	29	28	28	29	29	29
Median	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

0.01

M(3000)F2

Jun. 1964

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	310R	F	F	F	315F	310	370	A	A	A	A	A	295	295	305	295	315	320	315	320	340	325S	295S	I300R
2	305	F	F	F	F	305	A	A	I330A	335	I305R	305	290	270	295	310	305F	300	U320R	335R	RF	F	FS	FS
3	F	F	F	F	F	330	I305A	315	330	315	330	330	G	275	280	310	315	315	315	345	A	A	A	F
4	A	A	A	A	F	335	290	290S	320	340	355	A	A	290	290	315	305	I300A	290	315	I310R	I340R	I350A	I300A
5	295	305	F	F	F	310	295	335	I340A	A	A	A	I295A	I280A	310	350	325	320	300	305	FS	A	FS	FS
6	FS	F	F	F	F	355	335	335	A	A	C	C	C	C	C	A	A	I315A	A	R	FS	FS	FS	FS
7	FS	F	F	F	F	A	A	320	350	340	330	285	285	280	310	I270R	295	305	325	320	325S	A	FS	FS
8	FS	FS	FS	F	F	F	355	A	A	A	335	330	I250R	I265A	I295A	310	305	295	290	RS	R	A	FS	A
9	A	A	A	A	F	F	310F	A	A	A	A	A	A	A	310	I305A	310	A	A	285	FS	A	A	A
10	A	A	A	A	F	310F	340	370	R	A	A	A	I285A	275	260	275	I280A	I295R	I340R	345	270S	280S	I295A	310S
11	275F	I295C	280S	FS	290F	G	235	I280A	290H	A	A	230	A	A	A	A	A	I310A	I320A	300	295	300	FS	FS
12	F	F	295F	290F	F	300	295	315	300	A	A	305	C	C	C	C	C	C	C	C	C	C	C	C
13	C	320	305	300F	F	320R	I335A	330	A	A	A	A	A	R	285	A	A	A	A	A	305R	335	320S	335S
14	290	305	F	F	F	A	I325A	A	A	A	A	290	285	280	290	285	280	280	295	305	320	F	FS	FS
15	FS	FS	F	F	F	355	I310A	320	325	335	340	310	A	A	320	315	280	310	305	300	300S	310S	RF	RF
16	RF	RF	305	315	320	345	325	320	285	315	315	320	A	A	C	305	300	310	C	C	C	C	C	C
17	C	C	C	C	345	345	I325C	310	I320C	335	C	C	C	C	C	C	C	C	I340C	I325C	310	300	A	A
18	I360R	I330A	F	RF	F	300F	320	310	I330A	325	I300A	U270R	295	290	340	315	325	320	320	U305R	305	295R	RF	RF
19	A	300R	310	340	I330R	330	300	310R	A	A	325R	320	I285A	I300A	320	I320A	I305R	315	I310A	310	I305A	I310A	RF	A
20	RS	RF	RF	FS	F	A	A	345	A	A	A	275R	I285A	275	280	295F	320	335	I330A	I300A	295	I280R	I280R	I290R
21	I290R	F	300F	F	F	I320A	I350A	330	385R	315	G	A	A	265	300	325	I325A	I325A	285	310R	310	I305R	I305R	FS
22	295R	290F	290R	345R	F	I300R	340R	325R	310R	300	285R	A	A	290	305	290	295R	315S	310	295	305	305	310	F
23	I295R	F	F	F	F	310	305	I300A	300	280	295R	I270R	315	U280R	250R	245	315	290	I300A	305	320R	320	I305A	I300A
24	F	325F	320F	325F	335	330	I315A	I310A	350	335	A	A	A	230R	275	265	300	I310A	345V	A	RS	A	A	A
25	A	I310A	A	A	A	335R	I290A	I250A	I320A	A	A	A	A	A	A	A	I270R	295	285H	I300R	RS	RS	A	A
26	A	RF	I315A	F	I320A	325	A	A	A	A	I300A	335	I325A	325	I290R	I290A	300R	310	A	A	A	A	A	FS
27	315F	I310A	I315A	325F	335	295	275	A	A	340	A	A	A	A	305	285	290	310	315	I325R	RS	A	A	A
28	A	A	A	F	RF	275S	300R	330	I315A	325	340	290	285	305	I300A	310	315	310	310	340S	310	315R	I310R	I315R
29	320F	I300R	I320R	290F	F	I280R	RS	A	A	A	A	280	285R	I295A	300	300	310	320	310	305	295	295	I305R	F
30	F	F	F	F	F	300F	330	A	A	A	A	A	275	310	I315A	320	305	300	300	300H	I330R	365	F	F
31																								
No.	11	11	11	8	8	25	26	21	17	14	14	16	16	20	24	24	25	26	24	23	18	16	10	7
Median	295	305	305	320	325	310	310	320	320	330	320	300	285	280	300	305	305	305	310	310	305	310	310	U300
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 20.0 Mc. in 20 sec in automatic operation

M(3000)F2

A 7

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

0.01

M(3000)F1

Jun. 1964

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	A	A	A	A	A	A	A	A	380	390	375	355H	375L					
2						A	A	A	A	375	1390A	415	420	375	A	A	A	A	A					
3						A	A	A	A	A	A	A	380H	375	365	1370A	1365A	A	A					
4						355L	A	A	A	A	A	A	A	A	350	A	A	A	A					
5						L	A	A	A	A	A	A	1390A	385	370F	1370A	340	A	A					
6						A	A	A	A	A	C	C	C	C	C	C	A	A						
7						A	A	A	365	1400A	400	410	390	1380A	360	365	A	A	365					
8						A	A	A	A	A	A	1390A	390	A	A	370	380	A	A					
9						355	A	A	A	A	A	A	A	A	A	A	A	A	A					
10						340	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						320	370	A	A	A	1370A	1370A	A	A	A	A	A	A	A					
12						325L	1355A	A	A	A	A	395	C	C	C	C	C	C	C					
13						L	A	A	A	A	A	A	A	A	360	360	A	A	A					
14						A	A	A	A	A	A	1405A	1385A	375	375	370	355	1355A	345					
15						A	A	A	A	A	A	345R	A	A	A	1370A	1365A	340	A					
16						L	370L	A	A	A	A	A	A	A	A	C	C	C	C					
17						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
18						345L	A	A	A	A	A	A	A	410R	360R	390	370S	1370S						
19						A	A	A	A	A	A	A	A	1370A	U370R	1350A	1355A	RS						
20						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						A	A	A	A	415	370R	A	A	A	A	A	A	A	A					
22						A	A	A	A	1355A	385R	A	A	A	360	365	L	350	A	L				
23						350	U365R	A	A	395L	1400A	375	1390A	385	375	355L	350	345	A					
24						L	A	A	A	375	A	A	A	A	405R	1390A	375	1360A	1350A	365				
25						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
26						A	A	A	A	A	A	A	A	A	A	A	1365A	350	1370A	A				
27						355	A	A	A	A	A	A	A	A	A	A	385R	A	A					
28						L	360	A	A	A	A	A	A	A	A	A	A	315	365	A				
29						340S	355	A	A	A	A	A	A	A	375	365	1365A	370	L					
30						L	375L	A	A	A	A	A	420	380	1390A	405	380	1360A	330					
31																								
No.						8	8	2	2	5	6	8	8	11	14	16	14	11	5					
Median						340	360	U360	370	395	U390	390	390	380	370	370	360	355	365					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

M(3000)F1

IONOSPHERIC DATA

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

135° E Mean Time (G.M.T. +9h)

km

R'F2

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						270	245	A	A	A	A	A	385	360	325	345	300	290	275					
2							A	A	A	295	1370R	370	395	445	360	320	320	305	305	I285A				
3							A	A	A	295	325	305	G	460	420	345	325	300	A					
4							335	300	295	250	270	A	A	400	395	325	I325A	I330A	A					
5							325	370A	A	A	A	A	A	R	350	325	310	300	325					
6							295	270	I270A	A	A	C	C	C	C	C	A	A						
7							A	325	300	250	335	400	415	455	355	455	370	I305A	270					
8								250	A	A	A	300	330	I355R	A	A	340	350	A					
9								375	325	A	A	A	A	A	A	A	A	A	A					
10							300	I260A	A	A	A	A	I365A	I385A	400	395	I325A	I285R	255					
11							G	550	A	395	A	A	570	A	A	A	A	A	A					
12							355	I350A	300	365	A	A	350	C	C	C	C	C	C					
18							260	A	320	A	A	A	A	R	420	A	A	A	A					
14							A	A	A	A	A	A	420	435	405	400	435	400	325					
15							A	305	305	290	285	365	A	A	310	335	I360A	330	300					
16							250	280	305	410	355R	345	350	A	C	C	345	310	C					
17								I320C	345	C	305	C	C	C	C	C	C	C	I290C					
18							345	290A	320	I305A	345A	A	455	400	380	300	340	300						
19								380A	310	A	A	280A	345	A	A	I325A	I350R	I320R						
20								A	A	A	A	A	A	A	445	400	350A	295	280	A				
21							A	A	290	225	320	G	A	A	450	330	I325A	I310A	I290A	I310A				
22							285	315	I305A	380	480	A	A	A	395	350	375	355L	330	300	285			
23							300	335	I340A	350	460	385	475	355	450	505	L	335	405	A				
24							280	I275A	I295A	260	305	A	A	A	605	420	450	350	A	255				
25								A	A	A	A	A	A	A	A	A	A	390	350	300				
26							A	A	A	A	A	300	I325A	340	450R	A	350	345	A					
27							380	445	A	A	280	A	A	A	A	370	445	A	310	280S				
28							425L	350	255	I350A	300	280	420	430A	A	A	325	330	310	295				
29							510	350	A	A	A	A	435	I420A	I390A	355	345	345	305	295				
30							L	290	A	A	A	A	445	350	I340A	320	355	340A	370					
31																								
No.							15	21	15	13	14	12	15	13	16	21	20	23	16	1				
Median							325	325	305	305	305	320	370	410	420	360	345	340	310	295	285			
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

R'F2

A 9

Lat. 39°43.5'N
Long. 140°08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km

R'F

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	255	245	260	245	280	A	A	A	A	A	A	A	A	A	225	220	210H	245	260	220	230	255	260	
2	290	290	275	290	275	A	A	A	A	230	I225A	205	195	245	A	A	A	A	245	225	I240A	240	255	
3	290	E295E	E290E	255	245	240	A	A	A	A	A	A	225	220	I220A	I225A	A	A	260	A	A	A	A	
4	A	A	A	255	245	245	A	A	A	A	A	A	A	A	I250A	A	A	A	290A	255	240	A	A	
5	305	290	290	270	260	245	A	A	A	A	A	A	I215A	225	230	I230A	I230A	A	270	A	A	A	245	
6	270A	265	285	270F	250	A	A	A	A	A	C	C	C	C	C	C	A	A	A	275	290A	270	270	
7	280	I250A	240	260	240	A	A	A	225	I220A	210	200	230	I230A	255	230	A	A	245	260A	A	A	A	
8	280	A	A	290	240	240	A	A	A	A	A	A	210	A	A	240	225	A	A	A	A	A	A	
9	A	A	A	E295E	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
10	A	A	A	240	A	A	A	A	A	A	A	A	A	A	A	A	A	A	215	A	A	A	A	
11	E280E	I255C	A	E270E	E295E	260A	AH	A	A	A	A	A	A	A	A	A	A	A	275A	A	A	A	295	
12	245	240	E285E	290	E305E	255	I250A	A	A	A	A	200	C	C	C	C	C	C	C	C	C	C	C	
13	C	245	290	290	305	250	A	A	A	A	A	A	A	A	245	A	A	A	A	A	A	220	245	
14	E280E	270	E295E	A	290	A	A	A	A	A	A	I220A	I230A	225	230A	225	230	I240A	260	250	225	300	240	
15	275	250	210	240	230	235	A	A	A	A	A	A	A	A	A	I230A	I240A	A	300	280	I255A	255	240	
16	245	245	245	275	270	245	245A	A	A	A	A	A	A	A	A	C	C	C	C	I255C	I325A	330S	I315A	
17	C	I275C	I295C	245	230	230	C	C	C	C	C	C	C	C	200	225A	220S	I220A	250A	260	275	275	I290A	
18	250S	I290A	275	275	295	230A	A	A	A	A	A	A	A	A	I230A	230A	A	215	A	295A	I295A	I270A	240	
19	A	A	275	225	225	255	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	300	290	
20	275S	I300A	265	250	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	260	250	I300A	280	
21	270	275	240	285	275S	A	A	A	A	200	235	A	A	A	A	A	A	A	260	250	I300A	280		
22	295A	295	295S	245	260	A	A	A	A	A	245A	A	A	A	205H	205	205	220	I270A	250	275	265		
23	I280A	300A	280	265	300	250	250A	A	A	205	I215A	250	I225A	220	200	230	I240A	250A	A	A	275S	255		
24	I295A	250	285	275	270	245	A	A	A	A	A	A	A	205	I210A	215	A	A	A	A	265	A		
25	A	A	A	250A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	350A	I255A	260A		
26	A	A	A	250	A	A	A	A	A	A	A	A	A	A	A	I245A	250A	I240A	A	A	A	A		
27	295A	I280A	I300A	275	255	230	A	A	A	A	A	A	A	A	A	225	A	A	255	255A	A	A		
28	A	A	A	I295S	220	I240A	250	A	A	A	A	A	A	A	A	A	A	230	I245A	245	255S	270		
29	270	330	255	315	280	230	250A	A	A	A	A	A	A	A	245	230	I250A	245	250	280S	300			
30	290	290	280	250	I250A	245	245	A	A	A	A	A	200	210	I200A	195	210	I220A	I250A	I265A	250A			
31																								
No.	21	19	25	25	19	7			2	4	5	6	8	10	14	15	11	11	8	20	19	15	17	
Median	E280	275	275	270	255	245			235	210	225	200	220	220	230	225	230	230	250	260	255	260	270	
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

A 10

R'F

IONOSPHERIC DATA

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

135° E Mean Time (G.M.T. +9h.)
km

f^oF₂

Jun. 1964

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

Sweep 1.6 Mc to 20.0 Mc in 20 sec. in automatic operation

f^oF₂

The Radio Research Laboratories, Japan

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

IONOSPHERIC DATA

Types of Es
135° E Mean Time (G.M.T. +9h)

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	f2	f2	f2	f2f	f	h31	h5	h3	h3	h	h4	h2	e2	e2	e2	e2	e2	e2	e2	f2	f	f	f	f	
2	f2	f	f2	f2	f	h4	h3	h5	h3	h2	h2	h	h	h	h2	h2e0	h2	h312	h3	f3	f	f7	f2	f2f	
3	f2	f2	f2	f2	f	h3	h4	h3	h2	h	e2	e2	e2	h	e2	h3	h2	h3	h3	f4	f4f2	f6	f5	f5	
4	f4	f3	f6	f3	f3	h	h2	h3	h2	h2	h3	h4	h2	h2	h	h2	h3	h5	h4	f3	f4	f4	f4	f3	
5	f2	f2f	f2	f2	f2	h2h2	h2	h3	h3	h2	h3	e3	e3	h2	h	h2	h2	h3	h4	e2	f3	f7	f3	f3	
6	f3	f2	f2	f2	f2f	h7	h2	h4	h2	h4							e4	e4	e7	f4	f4	f3	f2	ff2	
7	f3	ff3	f3	f2	f2f2	h41	h3	h2	h	h2	h	h2	h	h21	h	h	h2	h3	h2	e2	f3	f4	f3	f6	
8	f2	f5	f3	f2	ff	h5	h2	h3	h3	h3	h2	e2	e2	h2	e3	e3	e2	h3h	h313	f2f3	f4	f4	f3	f4	
9	f3	f3	f3	f3	f2	h2	h3	h3	e3	e3	e2	h3	h3	h2	h4	h5	h4	h4	e3	f3	f4	f4	f2	f2	
10	f4	f3	f3	f2f4	f4	e3	h4	h3	h2	h3	h2	h3	e31	e4	h2	h2	h4	h4h	h33	f	f6	f4	f2	f2	
11	f2	f3	f3	f2	f2	h2	h3	h3	h2	e2	h2	h	h3	h2	h3	h2	h2	h4	h2	f6	f6	f4	f5	f2	
12	f2	f4	f2	f	f	h3	h2	h2	h3	h2	h3	h2			h	h31	h2	h5	h2	f5	f4	f	f2	f	
13	f4	f4	f2	f2	f3	h4	h3	h3	h3	h5	h3	h2	e2	h	e3	e2	e4	h2e3	h4	f3	f2	f3	f2	f	
14	f2	f2	f2f2	f5	f2	h3	h3	h5	h3	h2	h2	h2	h2	h2	e3	e2	h4	h4	e3	f3	f4	f4	f2	f2	
15	f2	f3	f	f2		h31	h3	h4	h2	h3	e2	e2	e2	e3	e2	h3	h4	h4	h33	f3f5	f5	f3	f3	f2	
16	f2	f2	f2	f2	f2	h2	h2	h2	h3	h3	h2	h3	e4	e5	h	e	h2	h2	h2	h3	f6	f4	f2	f2	
17	f	f2	f2	f2	f	h	h	h	h2	h	h	h2	h2	h2	h	h2	h	h3	h4	e2	f2	f2	f3	f3	
18	f2	f3	f2	f2	f	h4h2	e3	h5	h2	h2	h3	h2	h2	h2	h	h2	h	h3	h3	h4	f4	f4	f5	f9	
19	f3	f3	f6	f3	f4	h4	h5	h4	h6	h4	h3	h3	h3	h3	h	h3	h3	h3	e3	f4	f6	f7	f3	f3	
20	f5	f7	f4	f2	f2	h3	h3	h4	h4	h3	h5	h3	e2	h2	h3	h3h2	h2	h5	h5	h3	f2	f6	ff	ff	
21	f2	f	f2	f2	f8	h4	e4	h2	h3	h2h	h2	h3e	h2h	h21	h2	h212	h413	e412	e3	f4	f5	f8	f8	f5	
22	f5	f5	f5	f2	f3	e213	e5	h2	h4	h2	h2	h5	h3	h2	h	h2	h	h	h3	h4	f6	f4	f6	f7	
23	f5	f4	f4	f	ff2	h2	h4	h3	h4	h2	h2	h2	h2	h	h	h2	h3	h4	h314	f5	f8	f7	f8	f7	
24	f5	f4	f4	f3	f4	h3	h413	h4	h4	h2	h2	e2	h2	h2	h2	h	h2	h3	h4	f3	f3	f6	f3	f3	
25	f8	f3	f4	f4	f4	h3	h5	h4	h5	h3	h2	e2	e3	e2	e2	e3	e3	h3	h4	e4	f3	f5	f2	f6	
26	f6	f4	f6	f2	f3	h4	h5	h5	h6	h2	e4	e2	e3	h2	h2	h3	h4	h2	e4	f7	f8	f3	f4	f	
27	f6	f2	f2	f5	f3	h4	h4	h4	h4	h3	h2	e2	e3	e2	e2	h	h2	h2	h4	f4	f3	f4	f3	f2	
28	f2	f3	f3	f4	ff	e3	h4	h3	h2	h2	h21	h2	e2	e2	e4	h3	h4	h4	h5	f6	f8	f2	f7	f5	
29	f2	f7	f5	f2f	f2	h4	h4	h3	h4	h2	h3	h2	h2	h2	h	h	h2	e4	h2	f2	f4	f4	f3	f	
30	f2	f3	f2	f2	f2	h3	h2	h3	h4	h3	e2	e3	e2	e2	e2	e2	h3	h3	h3	f4	f4	f3	f2	f2	
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
G.R.																									

Sweep 1.6 Mc to 20.0 Mc in 20 sec in automatic operation

A 12

The Radio Research Laboratories, Japan

Types of Es

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foF2

Jun. 1964

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	F	048	054	058	A	A	A	A	053	061R	072R	077R	J076R	085	066	A	R	F	034	F	
2	F	A	F	F	051	040	050R	A	A	A	A	053	A	R	055	068	074R	J077R	R	U082R	A	A	F	F	
3	F	F	F	F	F	038	A	062	U062R	059	A	A	A	A	056	060	062	070	069	068R	A	A	A	A	
4	F	F	A	A	F	036F	050R	060F	U080R	077	J047R	A	053	I058A	I065A	069R	061R	067	I072A	I076R	069	053	F	F	
5	A	A	A	F	F	038F	052F	064F	057	J051A	A	U051A	A	A	058	061	A	055	I059A	065	069	053	F	F	
6	F	F	F	034F	F	049	A	A	A	055	056	A	A	A	A	A	056	068	071	058	A	A	F	F	
7	F	F	F	029	025F	056	052	062	069	050	054	I053A	J052R	J049R	050	A	A	A	A	J065S	A	FR	A	F	
8	F	F	F	F	F	F	A	A	060	A	I055A	A	S	050	I057A	I060A	A	059	062	072R	A	F	A	A	
9	A	A	A	A	F	038F	A	A	A	I051A	I050S	I052A	I055A	A	072	068	A	A	056	A	J075F	A	A	F	
10	F	A	A	A	F	044	062	A	A	A	A	A	066	072	I078S	088	094	099	U118R	A	A	A	032F	036	
11	032	031	A	024	A	A	039	046	A	A	A	A	A	A	A	A	A	055	049	048	052	J051R	047	F	
12	U048A	034R	029	030	028	039	J050R	059	A	A	A	059	A	A	A	056	063	060	057	061	A	A	A	A	
13	A	F	F	F	A	A	U040R	044	A	A	A	A	A	C	C	C	C	A	A	A	F	A	A	F	
14	033	034	F	F	F	042	053F	A	A	A	A	A	A	I054A	I056A	052	J051R	052	057	065	064	J060S	F	A	
15	A	A	F	F	F	036	044	A	065	067	A	054	I057A	061	072R	A	A	A	055	060	J062R	F	F	A	
16	F	A	F	F	F	045	051	055	J052V	A	A	A	A	059	062	065	073	A	A	J083S	J075S	C	040	F	
17	A	F	F	F	F	028F	038	046	055	044R	065	068	051	050	A	A	058	U072S	S	058F	U055S	055F	A	A	
18	A	A	A	C	C	C	C	C	C	C	C	C	C	061R	066	063R	C	C	C	051S	I056A	F	F	A	
19	A	F	A	A	A	S	A	A	A	A	C	C	I057C	J062S	060	I063C	I056C	056	061	060	058	A	A	A	
20	C	C	C	C	C	C	C	C	C	A	053	I056A	058	057	C	C	C	C	083	071	062	052R	053	U053F	050
21	F	045F	U047F	038R	I056C	034	C	087	C	C	C	J051S	C	054	C	077	S	056	C	A	060S	F	F	F	
22	054S	F	F	F	F	F	044S	058S	S	053S	048	050	055	059	065	064	057	056	055	064S	067	J063S	060S	056	
23	F	F	F	F	F	S	A	A	A	R	I045G	049	A	A	I049A	048	A	J050R	A	A	F	A	A	A	
24	A	A	A	A	A	F	035	048	055	057	048	A	A	A	A	058	060S	S	S	A	A	F	A	A	
25	A	A	A	A	F	F	035	A	A	A	A	A	A	A	A	066	068	066R	070R	U066R	U076S	A	A	A	
26	A	A	A	A	F	034	A	I048A	A	U048R	057	058	A	A	A	057	U061S	I060S	I060A	U065S	A	A	A	A	
27	A	A	A	A	F	F	038S	U041S	A	065	A	C	A	A	A	A	A	060	S	A	A	A	A	F	
28	F	F	F	F	F	F	I044A	050S	060	060	A	A	A	A	I062A	I064A	I059A	I060A	I064A	U061S	U057S	055	F	S	
29	F	F	F	F	F	F	034	A	A	A	053	A	A	056	I057A	I057A	060	057S	050S	047S	048S	U053S	F	F	
30	F	F	F	F	F	F	U036S	U049S	055	I058A	049	A	A	A	058	056	A	A	A	A	S	A	027	I025S	
31																									
No.	4	4	4	5	6	21	19	17	12	14	11	13	9	15	19	22	17	22	19	21	16	8	7	4	
Median	040	034	032	030	030	038	050	058	061	054	054	055	055	057	058	063	061	060	061	064	061	054	040	043	
U.Q.	051	040	040	036	034	043	052	061	065	060	057	057	058	061	066	066	071	070	069	067	072	058	053	053	
L.Q.	032	032	030	026	028	036	044	055	058	051	048	050	052	053	056	057	058	056	056	059	056	053	032	030	
Q.R.	019	008	010	010	006	007	008	006	007	009	009	007	006	008	010	009	013	014	013	008	016	005	021	023	

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

foF2

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. + 9h)

foF1

Jun. 1964

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	A	A	A	A	A	A	440R	A	A	A	A	A	A					
2							370	A	A	A	A	A	A	440	420R	S	390	360	A					
3						A	A	A	A	A	A	A	A	A	420	410	390	360	A					
4						L	360L	390S	410	430R	430	430	A	A	A	A	A	A	A					
5						L	A	A	A	420	A	450	A	420	420	A	A	R	A					
6						L	A	A	A	A	A	A	A	A	A	A	L	360	L					
7							A	A	410	430L	A	A	A	430	430	A	A	A	A					
8							A	A	A	A	A	A	S	430	A	A	A	A	A					
9						290	A	A	A	A	S	A	A	A	A	A	A	A	A					
10						L	A	A	A	A	A	A	A	S	S	A	A	A	A					
11							320	360	A	A	A	A	A	410	A	A	A	A	A					
12						L	A	A	A	A	A	A	A	A	A	A	A	A	L					
13						A	L	L	A	A	A	A	A	C	C	C	C	A	A					
14						A	A	A	A	A	A	A	A	A	A	410H	390	370	320					
15							A	A	A	A	A	A	A	A	A	A	A	A	A					
16							L	390	430H	A	A	A	A	A	A	A	A	A	A					
17							380	410	A	A	450	440	A	440	A	A	A	A	A					
18							C	C	C	C	C	C	C	C	A	A	C	C	C					
19						A	A	A	A	A	C	C	1450C	430	1440R	C	C	380	A					
20							C	C	C	C	A	L	A	A	C	C	C	A	L					
21							C	A	C	C	C	A	C	440	C	A	S	A	C					
22						L	A	A	430	A	450	450	450	A	450S	430	390S	S	310					
23							C	A	A	420	450	440S	A	A	A	A	A	A	A					
24							A	A	A	A	A	A	A	A	A	S	A	A	A					
25							A	A	A	A	A	A	A	A	A	R	A	A	A					
26						A	A	A	A	450	A	A	A	A	A	A	440S	A	A					
27							1350S	A	A	A	C	C	A	A	A	A	A	A	A					
28							A	A	1400S	S	A	A	A	A	A	A	A	A	A					
29							A	A	A	A	A	A	A	A	A	A	400	1380S	L					
30							340	1380S	A	L	A	A	A	A	A	S	A	A	A					
31																								
No.						1	6	5	5	5	4	4	5	3	8	6	4	6	2					
Median						290	355	390	410	430	440	440	450	450	430	425	420	390	365					
U.Q.																								
L.Q.																								
Q.R.																								

foF1

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G. M. T. +9h)

foE

Jun. 1964

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	280	300	315	320	325R	320	315	300	A	A	A	A					
2						170	255	275	1300R	325	R	A	A	A	A	1315S	295	255	A					
3						A	A	225	260R	A	A	A	A	A	A	A	280	A	A					
4						A	A	235	270	290	325	315	325	1330R	360	330	315	1285R	245	165				
5						A	A	205	265	285	305	1315R	1320R	1320R	A	A	315	285	A	A				
6						A	A	205	265	295	A	A	A	A	A	A	A	A	A					
7						175A	235	1275A	300	320	325	1330A	1325A	320	330	295	285	A	A					
8						A	A	255	A	A	S	A	A	A	A	A	A	A	A					
9						155	225	R	R	S	S	335	1350A	335	1330S	320	285S	A	A					
10						A	A	A	A	A	S	1330A	A	A	A	A	325	280	255	A				
11						A	220	1250A	1280A	A	A	S	1345A	1345R	330	1315S	1285S	1250A	185R					
12						A	1230R	265	1285R	1310A	1325R	S	A	S	A	A	A	A	A					
13						A	R	265	285	1300A	A	A	A	C	C	C	C	240	A					
14						A	230	1270S	295	S	S	330	335	A	A	A	A	A	A					
15						A	225	1275R	1300A	325	1330S	S	S	A	A	A	A	A	A					
16						155	220	260	A	A	A	A	A	A	A	A	1315A	A	A					
17						1185A	1240A	A	A	325	A	A	325	335R	A	A	A	245	A					
18						C	C	C	C	C	C	C	C	A	A	A	C	C	C					
19						150	225	265	295	1320A	C	C	1350C	330S	1330S	1320C	1290C	255	C					
20						C	C	C	C	305	300	A	325R	340R	C	C	C	240	A					
21						B	C	A	C	C	C	1330S	C	S	1340C	310	1280S	235	C					
22						A	225	A	1290A	325	1325A	1340A	350	340	335	315	285	240	A					
23						1175A	1230A	255S	290	305	325	335	330	A	A	A	A	A	A					
24						170	215	255S	275A	315	A	335	330A	1325A	1315S	1295A	275	250S	170A					
25						A	235	260S	290A	295	1310A	315	320R	1330A	335	305	290	245	B					
26						A	A	R	A	A	A	A	1320S	320S	1310S	1300A	1290A	255	190					
27						A	1230A	260S	280A	A	C	C	A	A	A	325	315	A	A					
28						A	A	1260A	1280A	1300A	315	A	A	A	A	A	A	A	A					
29						160	225	275	290	315	335	345	1340A	330	1315A	1300A	275	A	A					
30						A	A	265	1290A	315	325S	320	A	A	A	A	A	A	A					
31																								
Nc.						9	20	22	20	18	13	14	16	13	13	16	15	13	4					
Median						170	225	265	290	315	325	330	330	330	330	315	285	245	180					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

foE

K 3

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	J083	059M	J054	047M	050	J024	J041	060M	J110	090	J078	J083	059	060	067	J060	058	J048	037	060	047Y	059	047Y	J037	
2	J031	059	025	020	025	020	036	J115	091	090	J065	J048	053	036	039	041	036	028	035M	059	090	058	034	J036	
3	J036	J038	048	035	032	044M	058	J059	090Y	068	090	101	130Y	091	035	041M	023	036	040	043	090	089	J059	057Y	
4	059	037M	047	061	J059	J038	031	038	036	040	043	048	067	047	072	093Y	056M	057M	052	J060	060	029	036	058	
5	J047	045	031M	030M	030	025	037	067	J088	J076	090Y	100Y	090	059	J042	048	115Y	143Y	142M	J070	J043	J035	031	031	
6	042	045Y	031	036	031	J032	059	090M	J061	J063	068	092	J096	080M	J069	070M	046M	J051	J042	051	090	J060	055	037	
7	J037	J030	024	J032	024M	025	J048	064	J072	042	J051	089	J098	038	035	069M	J092	D160D	092M	066M	J093	J052	058	J061	
8	032M	032M	036M	026	J039	J030	048	062M	J068	084	057	065	038	041M	065	073M	078M	066M	059Y	057	094Y	070M	066Y	115M	
9	090Y	090Y	090Y	092Y	057M	036Y	067	092Y	D160D	094	038	J053	066M	J066	061M	J052	075M	D072C	052	071M	J088	071M	099M	J038	
10	J040	J042	044M	J042	029M	019	J032	J080	J110	058M	069M	066M	J084	038	047	J110	J063	063	090	J073	J106	J064	J051	J038	
11	J026	J053	061M	J060	J089	034	031	J036	J054	090Y	J066	110M	057	047M	072Y	090M	082M	061M	049M	053Y	032Y	057	041M	036	
12	058M	037	027M	016	022M	026	044M	046M	071M	080	072	090M	J087	J056	074M	055M	J050	043	037M	125M	D160D	J059	067M	J059	
13	057	037Y	035	068M	066M	116M	032	034	J090	J098	J059	J114	086M	C	C	C	C	J069	J088	068M	J062	J089	J101	J064	
14	059M	J036	J032	035M	022	J044	055	J072	J084	J086	082	090M	080	060	088	047M	J037	037	032	046M	J040	040	060	089M	070Y
15	047	045M	031Y	031	031M	022	044M	077M	070M	072	072	060M	066M	J045	071M	090M	072	072M	060M	J040	040	060	089M	070Y	
16	037	057	024	030M	029M	019	029	038	043M	J138	J111	115M	113	060	060M	J082	058M	J114S	J120	J052	J041	C	025M	J030	
17	043M	050	025	025M	J029	025	034	J040	J053	J059	J050	036	J050	J043	J060	091M	J050	070S	059M	058M	J056	J056	061	J088	
18	087	J090	C	C	C	C	C	C	C	C	C	C	C	068	J054	J060	C	C	C	J036	057	045M	050M	J060	
19	J057	J040	J045	J060	J030	J050	J067	J068	114M	113M	C	C	C	048	g	C	C	035	068M	J040	J053	060Y	060Y	090Y	
20	C	C	C	J054	C	C	C	C	C	J30M	J149	J137	J064	049	C	C	C	J055	032M	024	018	022	S	S	
21	J033	J023	024	024	C	J039	C	J061	C	C	C	051	C	J038	C	J059	D071S	143S	C	076	J060	J052	J058	060	
22	J108	058	036	032	J030	032	J080	J092	050	J054	047	J037	040	049	044	040	030S	029	024	031M	021	025	J044	059M	
23	J050	J040	J032	029	022	030M	J048	059	078	041	041	039	J060	J053	057	J042	143M	057	089M	090M	046	066	058	058	
24	049	059	057M	059M	J040	037	042	J065	J050	J060	099M	090	105	J060	108	037	040	J060	056M	J060	057	090Y	058	037	
25	058M	040M	J040	047	J050	024	J041	J060	160M	J146	070	090	J107	J113	122	048	J065	J108	090	J062	059	059	057	J061	
26	048	044	057	J051	J051	056	J052	J079	J128	J051	J048	047M	099Y	059	059	g	036	J047	067	047	058	J067	J072	057M	
27	J070	058M	J053	J032	028	028	042M	J057	J059	J067	C	C	100M	J118	J061	J127	057	J062	067	057	123Y	J060	067	047	
28	035	J029	032	J029	E	036M	J066	060	J052	J050	J070	J069	099	067	J060	J060	J061	J063	J059	J040	045M	024	057Y	J031	
29	J030	J048	031M	031M	050Y	021	040	041	050	050	047	058	058	J053	070	J065	034	J031	021	J036	021	036	035	039	
30	034	031	030	028	030	023	037	J045	J052	043	J068	J080	068	J059	055	J060	059	057	J058	J059	J040	J040	029M	J025	
31																									
No.	29	29	28	29	27	28	27	28	27	28	26	27	27	29	27	27	26	29	28	30	30	29	29	29	
Median	047	042	034	032	030	030	042	060	071	070	067	080	067	056	060	060	058	060	058	057	058	059	057	057	
U.I.Q.	058	058	048	052	050	038	050	074	091	090	072	092	096	063	071	082	072	071	078	062	090	065	060	060	
L.Q.	036	036	030	029	028	024	036	046	052	052	050	051	059	046	044	047	040	045	038	040	045	042	036	037	
Q.R.	022	022	018	023	022	014	014	028	039	038	022	041	037	017	027	035	032	026	040	022	045	023	024	023	

Note: The upper limit of observational frequency was changed at 0850 (J.S.T.) on 16th from 16 Mc/s to 20 Mc/s.

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

fbEs

Jun. 1964

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	032	A	014	022	039	052	A	A	A	A	039	048	060	066	041	046	033	A	021	033	026	016
2	E	A	016	014	016	020	035	A	A	A	A	046	046	036	039	E041S	035	028	032	040	A	A	021	027
3	026	025	025	026	015	022	A	050	059	050	A	A	A	A	035	036	023	029	034	040	A	A	A	A
4	037	019	A	A	021	025	030	035	036	039	041	040	A	045	A	A	035	052	050	A	052	028	026	A
5	A	A	023	015	020	024	037	058	052	040	A	040	A	039	038	045	A	032	A	029	046	029	019	016
6	026	020	012	024	023	026	A	A	A	053	045	A	A	A	A	A	042	030	020	050	A	A	019	020
7	025	019	015	019	013	G	042	054	038	040	051	A	A	035	035	A	A	A	A	039	A	040	A	028
8	019	015	015	E	012	025	A	A	053	A	A	A	E038S	039	A	A	A	055	045	040	A	040	A	A
9	A	A	A	A	020	024	A	A	A	S	S	A	A	A	055	051	A	A	A	A	042	A	A	029
10	028	A	A	A	015	018	032	A	A	A	A	A	056	E038S	E047S	051	041	045	054	A	A	A	026	023
11	015	014	A	014	A	A	A	025	029	A	A	A	A	040	A	A	A	053	043	027	020	024	035	028
12	040	023	016	013	014	020	037	041	A	A	A	053	A	A	A	045	050	040	029	051	A	A	A	A
13	A	016	019	017	A	A	027	033	A	A	A	A	A	C	C	C	C	A	A	A	033	A	A	015
14	015	023	016	A	E	030	044	A	A	A	A	A	A	A	034	034	033	030	026	040	027	024	025	A
15	A	A	023	012	015	022	040	A	041	055	A	A	A	045	063	A	A	A	053	040	034	044	027	A
16	021	A	016	E	012	019	027	034	035	A	A	A	A	045	051	046	045	A	A	038	021	C	015	021
17	A	016	017	016	015	021	034	035	043	052	042	035	048	E043A	A	A	043	054	055	038	044	045A	A	A
18	A	A	C	C	C	C	C	C	C	C	C	C	C	042	050	055	C	C	C	027	A	015	019	A
19	A	018	A	A	018	A	A	050	A	A	A	C	C	040		C	C	E033A	055	029	029	A	A	A
20	C	C	C	019	C	C	C	C	C	A	040	A	052	049	C	C	C	C	046	025	S	S	S	S
21	018	017	S	016	C	026	C	052	C	C	C	050	C	E038S	C	055	S	047	C	A	035	025	028	037
22	043	026	021	017	017	023	042	048	034	050	039	E037S	040	048	040S	040	030S	E029S	024	026	S	S	029	025
23	028	022	025	E	015	022	A	A	A	040S	040S	037	A	A	A	042	A	049	A	A	023	A	A	A
24	A	A	A	A	020	025	038	051S	045	045	044	A	A	A	A	035	E040A	051	053	A	A	020	A	A
25	A	A	A	A	022	020	A	045	A	A	A	A	A	A	A	E048R	056	051	053	028	044	A	A	A
26	A	A	A	A	019	A	A	A	A	040	044	045	A	A	A		S	044	A	033	A	A	A	A
27	A	A	A	A	016	020	031	A	052	A	C	C	A	A	A	A	A	052	052	A	A	A	A	030
28	030	020	018	017		025	A	042	031	E050S	A	A	A	A	A	A	A	A	A	040	033	020	018	027
29	023	022	022	025	017	020	A	A	A	049	A	A	A	050	A	A	032	030	021	030	S	022	025	019
30	025	016	017	017	017	018	026	030	A	040S	A	A	A	A	E035S	052	A	A	A	A	030	A	021	020
31																								
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

f-min

Jun. 1964

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	E012	E010	E	E	E	E	E014	E014	E013	E016	E017	E016	E018	E017	E018	E017	E017	E013	E011	E011	E015S	E015S	E010	E015S
2	E012	E012	E	E010	E011	E013	E013	E015	E014	E015	E017	E017	E017	E018	E017	E017	E015	E015	E014	E012	E012	E015S	E011	E012
3	E013	E010	E	E	E	E011	E014	E013	E014	E017	E017	E017	E027	E016	E016	E014	E015	E012	E014	E012	E012	E011	E012	E015S
4	E015S	E	E010	E	E011	E012	E015	E014	E015	E015	E015	E016	E020	E014	E015	E014	E017	E011	E013	E013	E012	E010	E012	E010
5	E011	E	E	E	E	E010	E012	E013	E015	E017	E017	E016	E016	E015	E015	E015	E014	E015	E014	E012	E013	E012	E014	E013
6	E013	E010	E	E	E	E014	E013	E014	E017	E014	E015	E017	E015	E015	E014	E015	E018	E012	E012	E011	E015S	E012	E015S	E013
7	E012	E010	E010	E	E	E010	E012	E013	E015	E015	E015	E015	E015	E015	E015	E014	E015	E012	E013	E015S	E012	E015S	E012	E015S
8	E013	E010	E	E	E	E010	E011	E013	E015	E014	E030S	E029	E031S	E017	E016	E015	E015	E012	E014	E012	E012	E014	E013	E015S
9	E014	E013	E010	E011	E	E010	E012	E014	E013	E040S	E031S	E016	E020S	E026	E033S	E026	E018	E016	E015	E013	E015S	E012	E013	E013
10	E011	E011	E010	E010	E	E012	E013	E019	E015	E025S	E035S	E034S	E015	E032S	E026S	E015	E014	E013	E011	E010	E013	E010	E010	E012
11	E011	E011	E	E	E	E010	E015	E013	E015	E015	E016	E034S	E034S	E026	E018	E028S	E019	E014	E012	E012	E013	E015S	E013	E015S
12	E015S	E013	E	E	E	E011	E014	E014	E015	E019	E028S	E034S	E018	E032S	E026S	E033S	E015	E013	E013	E011	E	E015S	E012	E012
13	E	E011	E	E	E	E	E014	E015	E015	E031S	E032S	E016	E027	E	E	E	E	E013	E012	E011	E010	E011	E013	E011
14	E010	E010	E	E	E	E011	E013	E015	E015	E024S	E033S	E018	E017	E019	E018	E017	E014	E014	E012	E014	E013	E013	E014	E015S
15	E015S	E013	E010	E011	E	E014	E013	E014	E014	E016	E033S	E033S	E035S	E027	E029	E034S	E019	E014	E015	E013	E011	E011	E014	E015S
16	E013	E011	E	E	E	E012	E012	E015	E018	E018	E018	E018	E019	E019	E017	E017	E016	E016	E015	E015S	E011	E	E015S	E011
17	E012	E013	E012	E012	E011	E015	E013	E014	E014	E018	E017	E017	E018	E019	E020	E018	E017	E016	E013	E014	E015S	E011	E011	E016S
18	E015S	E014	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
19	E012	E015S	E011	E	E	E014	E013	E015	E017	E018	E018	E018	E017	E018	E018	E015	E	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
21	E014	E011	E016S	E015S	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
22	E016S	E014	E013	E013	E012	E013	E013	E015	E017	E020	E017	E017	E016	E018	E017	E017	E014	E013	E014	E014	E015S	E015S	E012	E011
23	E015S	E013	E015S	E012	E011	E014	E015	E015	E016	E018	E017	E017	E017	E019	E016	E018	E017	E013	E014	E015	E015S	E014	E011	E013
24	E015S	E015S	E011	E015S	E010	E014	E014	E015	E016	E018	E018	E020	E020	E019	E017	E017	E015	E017	E014	E015S	E015S	E015S	E015S	E015S
25	E014	E013	E014	E015S	E014	E013	E015	E015	E017	E017	E017	E017	E020	E019	E018	E017	E017	E015	E017	E015S	E015S	E016S	E016S	E014
26	E016S	E015S	E015S	E015S	E014	E013	E013	E016	E016	E017	E017	E018	E018	E018	E025S	E017	E017	E016	E014	E012	E013	E015S	E015S	E015S
27	E014	E015S	E014	E012	E010	E013	E015	E015	E016	E016	E016	E016	E019	E018	E017	E018	E015	E015	E014	E016S	E013	E015S	E015S	E015S
28	E013	E015S	E015S	E014	E010	E014	E015	E018	E016	E017	E017	E017	E020	E025S	E020	E017	E017	E015	E014	E016S	E013	E014	E014	E015S
29	E015S	E012	E013	E014	E011	E013	E012	E015	E016	E017	E018	E018	E020	E018	E019	E020	E016	E015	E015	E017S	E015S	E015S	E015S	E012
30	E014	E015S	E016S	E014	E013	E012	E014	E015	E016	E016	E018	E017	E019	E016	E016	E016	E016	E014	E016	E016S	E013	E013	E015S	E015S
31																								
No.	20	23	23	25	27	28	27	28	27	24	19	23	22	26	23	24	25	29	27	20	20	17	21	30
Median	E012	E011	E010	E	E	E013	E013	E015	E015	E017	E017	E017	E018	E018	E017	E017	E016	E014	E014	E012	E013	E012	E012	E015
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

f-min

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 28.3' E

Kokubunji Tokyo

0.01 M(3000)F2 135° E Mean Time (G. M. T. +9h)

Jun. 1964

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	F	340	350	315	A	A	A	A	280	290R	305R	315R	J305R	320	325	A	R	F	290	F
2	F	A	F	F	325	310	310R	A	A	A	A	320	A	R	280	295	310R	J310R	R	U340R	A	A	F	F
3	F	F	F	F	F	325	A	340	U340R	315	A	A	A	A	305	300	305	320	320	320R	A	A	A	A
4	F	F	A	A	F	290F	300R	305F	U365R	350	290	R	A	A	285	I290A	I305A	320R	300	A	R	F	F	A
5	A	A	A	F	F	315F	325F	355F	360	J320A	A	U295A	A	A	300	340	A	315	I310A	315	330	345	F	F
6	F	F	F	F	F	345	A	A	A	325	330	A	A	A	A	A	305	320	345	350	A	A	F	F
7	F	F	F	F	295F	300	315	310	350	310	320	I310A	A	J260R	260	A	A	A	A	J340S	A	FR	A	F
8	F	A	A	F	F	F	A	A	335	A	I310A	A	S	255	I300A	I205A	A	310	290	315R	A	F	A	A
9	A	A	A	A	F	310F	A	A	A	I310A	I295S	I285A	I280A	A	305	295	A	A	300	A	J325F	A	A	F
10	F	A	A	A	F	340	355	A	A	A	A	A	275	270	I265S	275	275	275	U340R	A	A	A	280F	275
11	315	260	A	235	A	A	240	275	A	A	A	A	A	A	A	A	A	325	320	290	300	J305R	285	F
12	U315A	320R	310	300	295	295	J300R	340	A	A	A	305	A	A	A	295	300	315	310	310	310	A	A	A
13	A	F	F	F	A	A	U330R	310	A	A	A	A	A	C	C	C	C	A	A	A	F	A	A	F
14	285	290	F	A	F	325	320F	A	A	A	A	A	A	I280A	I295A	285	R	290	300	310	315	J335S	F	A
15	A	A	F	F	F	320	295	A	330	345	A	280	I290A	290	305R	A	A	A	310	310	J325R	F	F	A
16	F	A	F	F	F	335	325	335	J310V	A	A	A	A	285	275	290	295	A	A	J325S	J345S	C	290	F
17	A	F	F	F	285F	310	275	305	330	330	320	350	280	290	A	A	310	U315S	S	345F	U310S	285F	A	A
18	A	A	C	C	C	C	C	C	C	C	C	C	C	C	300R	300	310R	C	C	C	325S	I300A	F	F
19	A	F	A	A	A	A	A	A	A	A	C	C	I290C	J320S	305	I330C	I320C	330	325	325	330	A	A	A
20	C	C	C	F	C	C	C	C	C	A	290	I280A	285	275	C	C	C	325	325	335	290R	270	U285F	280
21	F	280F	U300F	270R	I285C	320	C	345	C	C	C	J315S	C	265	C	315	S	320	C	A	335S	F	F	F
22	305S	F	F	F	F	340S	360S	350	S	340S	315	260	300	310	325	320	315	310	310	305S	325	J315S	315S	310
23	F	F	F	F	F	S	A	A	A	R	G	280	A	A	I300A	290	A	J300R	A	A	F	A	A	A
24	A	A	A	A	F	380	315	320S	335	350	295	A	A	A	A	315	315S	S	S	A	A	F	A	A
25	A	A	A	F	F	355	A	A	A	A	A	A	A	A	A	280	285	260R	285R	U290R	U315S	A	A	A
26	A	A	A	A	A	I340A	A	A	A	U300R	335	330	A	A	A	295	U310S	I335S	I350A	U350S	A	A	A	A
27	A	A	A	A	F	340S	U255S	A	A	365	A	C	C	A	A	A	A	305	S	A	A	A	A	F
28	F	F	F	F	F	F	I320A	A	335	315	A	A	A	A	I325A	I315A	I315A	I315A	I310A	U320S	U335S	345	F	S
29	F	F	F	F	F	325	A	A	A	330	A	A	A	320	I320A	I320A	335	335S	340S	310S	315S	U300S	F	F
30	F	F	F	F	F	U330S	U265S	335	I340A	300	A	A	A	A	310	340	A	A	A	A	S	A	310	I340S
31																								
No.	4	4	4	5	6	21	19	16	12	14	11	12	8	15	19	22	16	22	19	20	16	8	7	4
Median	310	285	310	295	295	325	315	330	340	320	310	300	280	285	300	305	310	315	310	320	320	310	290	295
U.Q.																								
L.Q.																								
Q.R.																								

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

0.01

M(3000)F1

Jun. 1964

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	A	A	A	A	A	A	A	385R	A	A	A	A	A	A					
2						350	A	A	A	A	A	A	390	355R	S	370	360	360	A					
3					A	A	A	A	A	A	A	A	A	A	380	365	365	A						
4					L	360L	355S	365	395R	A	A	A	A	A	A	A	A	A	A					
5					L	A	A	A	385	A	400	A	390	385	A	A	A	R	A					
6					L	A	A	A	A	A	A	A	A	A	A	A	L	360	L					
7						A	A	A	370	395L	A	A	A	395	370	A	A	A	A					
8						A	A	A	A	A	A	S	390	A	A	A	A	A	A					
9					340	A	A	A	A	A	S	A	A	A	A	A	A	A	A					
10						L	A	A	A	A	A	A	A	S	S	A	A	A	A					
11						340	360	A	A	A	A	A	A	A	A	A	A	A	A					
12					L	A	A	A	A	A	A	A	A	A	A	A	A	A	L					
13					A	L	L	A	A	A	A	A	C	C	C	C	C	C	A					
14					A	A	A	A	A	A	A	A	A	A	A	370H	370	350	355					
15						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
16						L	375	355H	A	A	A	A	A	A	A	A	A	A	A					
17						340	345	A	A	350	395	A	395	A	A	A	A	A	A					
18						C	C	C	C	C	C	C	C	400	R	C	C	C	C					
19					A	A	A	A	A	A	C	C	1360C	A	A	A	A	A						
20					C	C	C	C	C	A	L	A	A	A	A	C	C	C	A					
21						C	A	C	C	C	C	A	C	365	C	A	S	A	C					
22					L	A	A	A	370	A	355	400	400	A	355S	345	365S	S	370					
23						C	A	A	A	380	385S	A	A	A	A	A	A	A	A					
24						A	A	A	A	A	A	A	A	A	A	S	A	A	A					
25						A	A	A	A	A	A	A	A	A	A	R	A	A	A					
26					A	A	A	A	395	A	A	A	A	A	A	S	U375S	A	A					
27						A	A	A	A	A	C	C	A	A	A	A	A	A	A					
28						A	A	A	U375S	S	A	A	A	A	A	A	A	A	A					
29						A	A	A	A	A	A	A	A	A	A	A	A	370	U360S	L				
30						370	U370S	A	L	A	A	A	A	A	A	S	A	A	A					
31																								
No.					1	5	5	5	5	5	3	4	3	7	5	3	6	6	2					
Median					340	350	360	370	370	395	355	400	385	390	370	365	370	360	360					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

M(3000)F1

Lat. 35° 42.4' N
Long. 139° 29.3' E

IONOSPHERIC DATA

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

R'F2

Jun. 1964

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						260	225	320A	A	A	A	A	430	375	340	300	310	265	255					
2						320	A	A	A	A	A	340	E455A	430	400	340	290	280	290					
3						240	A	280	E330A	325	A	A	A	A	350	335	325	290	255					
4						400	330	330	255	255	330	500R	A	400	A	A	310	325	315					
5						360	305	290	E270A	320	A	370	A	A	350	280	A	300	A					
6						260	A	A	A	E325A	300	A	A	A	A	A	320	295	225					
7							E310A	300	245	330	345	A	A	460	475	A	A	A	A					
8							A	A	A	300A	A	A	S	525	A	A	A	355	330					
9						330	A	A	A	A	S	A	A	A	330	320	A	A	320					
10							A	A	A	A	A	A	E380A	380	S	375	345	305	290					
11							250	A	A	A	A	A	A	A	A	A	A	E350A	310					
12							440	410	A	A	A	A	A	A	A	A	360	320	280					
13						355	310	280	A	A	A	340	A	A	A	360	280	280	280					
14						A	310	320	A	A	A	A	A	C	C	C	C	A	A					
15						295A	E300A	A	A	A	A	A	A	A	A	400	410	350	315					
16							E370A	A	290	280	A	E470A	A	360	340	A	A	A	E400A					
17							290	300	350	A	A	A	A	375	380	355	310	A	A					
18							400	325	285	290	300	280	410	430	A	A	315	290	250					
19						C	C	C	C	C	C	C	C	340	325	315	C	C	C					
20						A	A	310	A	A	C	C	C	320	345	C	C	290	E310A					
21						C	C	C	C	A	380	A	410A	E405S	C	C	C	260	255					
22						275	255	250	300	C	C	A	C	460	C	280	S	295	C					
23							A	A	A	E300S	370	495	380	360	310	300	315	305	300					
24						300S	E325S	255	265	A	R	G	425	A	A	400	A	E360S	A					
25							A	290	A	265	A	A	A	A	A	350	340	275	E280A					
26						A	A	A	A	375	320	325	A	A	A	355	355	375	315					
27							E500S	A	265	A	C	C	A	A	A	370	325	E325S	A					
28							A	E325A	290	E300S	A	A	A	A	A	A	A	E340A	280					
29							A	A	A	320	A	A	A	E350S	A	A	300	270	270					
30							350	290	A	350	A	A	A	A	325	300	A	A	A					
31																								
No.						9	15	15	11	12	8	8	5	14	12	17	15	18	18					
Median						295	E310	300	285	E310	340	355	410	380	340	340	320	290	280					
U.Q.																								
L.Q.																								
Q.R.																								

R'F2

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

km

k'F

Jun. 1964

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	E310A	A	280	240	A	A	A	A	A	A	E230S	A	A	A	A	A	1255A	1250A	200	E350A	E340A	280	
2	275	I300A	295	260	270	E290A	A	A	A	A	A	A	A	240	270	I250S	260	230	1230A	245	1240A	I315A	280	270	
3	310	275	E300A	290	230	E250A	A	A	A	A	A	A	A	A	225	240	240	230	1245A	255	A	A	A	A	
4	E340A	260	I260A	I245A	260	255	240	E280A	240	E250S	E280A	E270A	A	A	A	A	A	A	A	A	270	240	240	A	
5	A	A	E310A	300	340	260	A	A	A	240	I225A	220	I230A	240	E340S	A	A	230A	1230A	255	250	230	280	240	
6	250	230	260	300	280	245	A	A	A	A	A	A	A	A	A	A	E250A	220	220	E290A	1240A	1280A	300	280	
7	280	255	205	260	300	250A	A	A	240	230	A	A	I210A	205	210	A	A	A	A	250A	1240A	E320A	1290A	310	
8	300	255	290	260	250	225	A	A	A	A	A	A	I230S	225	A	A	A	A	A	A	275	1240A	275	A	
9	A	A	A	A	305	260	A	A	A	A	I210A	I200S	A	A	A	A	A	A	A	A	A	E250A	A	E340A	
10	E350A	A	A	A	280	225	245	A	A	A	A	A	A	S	S	A	A	A	A	A	A	A	A	E340A	
11	250	290	A	470	A	I280A	250A	250	A	A	A	A	A	E275A	A	A	A	A	A	275	280	300	E340A	300	
12	290	250	310	305	330	265	I260A	A	A	A	A	A	A	A	A	A	A	A	A	E270A	E300A	A	A	A	
13	A	275	290	290	A	A	E250A	215	A	A	A	A	A	C	C	C	C	A	A	A	260A	A	A	260	
14	290	320	290	I295A	300	A	A	A	A	A	A	A	A	A	A	225H	240	240	230	275	270	230	E320A	A	
15	A	A	A	230A	230	E250A	250	A	A	A	A	A	A	A	A	A	A	A	A	A	280	255	230	240	I250A
16	240	I250A	250	260	235	230	225	220	180H	A	A	A	A	A	A	A	A	A	A	E250A	220	C	260	315	
17	I300A	270	260	225	220	240	260	250	A	A	E300A	200	I230A	E400A	A	A	A	A	A	E250A	E300A	E300A	A	A	
18	A	A	C	C	C	C	C	C	A	A	C	C	C	A	A	A	C	C	C	C	E250A	270	270	A	
19	A	250	A	A	255	A	A	A	A	A	A	C	C	220	A	C	C	E260A	I245A	240	250	A	A	A	
20	C	C	C	255	C	C	C	C	C	A	E240S	A	A	A	C	C	C	C	A	230	220	255	310	280	275
21	275	280	230	260	I260C	E250A	C	A	C	C	C	A	C	E240S	C	A	S	A	C	A	230	275	280	E300A	
22	E340A	E290A	270	240	245	E240A	A	A	230	I220A	220H	225	220	I230A	E270S	E300S	220	E260S	225	265	230	240	255	250	
23	275	280	290	265	250	230	A	A	A	E250S	225S	210	A	A	A	A	A	A	A	A	250	I265A	A	A	
24	A	A	A	A	250	E250A	A	A	A	I220A	A	A	A	A	A	240	A	A	A	A	A	I255A	225	A	A
25	A	A	A	A	300	250	225	A	A	A	A	A	A	A	A	R	A	A	A	275	260	I220A	A	A	
26	I315A	I315A	A	A	230	A	A	A	A	E250S	A	A	A	A	A	E280S	S	A	A	A	250	I260A	I260A	A	A
27	A	A	A	A	280	240	215	E300A	A	A	C	C	A	A	A	A	A	A	A	A	A	A	A	A	E280A
28	E300A	280	300	275	240	260	A	A	E225S	S	A	A	A	A	A	A	A	A	A	A	255	230	225	265	310
29	270	310	E310A	E310A	265	250	A	A	A	A	A	A	A	A	A	A	210	E240A	E225A	E280A	250	265	250	250	
30	E280S	295	280	225	270	230	230	240	A	E240S	A	A	A	A	S	A	A	A	A	A	230	A	E305A	E310A	
31																									
No.	15	19	16	22	26	21	7	5	5	5	4	4	6	6	3	4	5	5	10	18	25	18	13	13	
Median	E280	275	275	260	260	245	245	240	230	U220	U220	215	U230	230	225	240	240	230	U230	255	250	265	270	275	
U.Q.																									
L.Q.																									
Q.R.																									

The Radio Research Laboratories, Japan

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

k'F

K 10

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

km

f'Es

Jun. 1964

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

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

The Radio Research Laboratories, Japan

K 11

f'Es

IONOSPHERIC DATA

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

Types of Es

Jun. 1964

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	24
1	f4	f4	f4	f4	f4	12h2	13	c3	c3	c3	c3	c2	c2	c2	c3	13	13	14	h14	f2f2	f2	f4	f4	f3	
2	f2	f2	f2	f2	f2f3	h2	h4	c3	c5	c3	c2	13	c2	12	h1	h	h2	h2	1	f3	f3	f4	f4	f4	
3	f3	f5	f2	f3	f2	c3	c3	c3	13	12	13	13	12	12	1	12h	1	12	12	f3	f3f6	f3f4	f2f4	f6	
4	f5	f6	f3	f8	f3	14	h2	h2	h3	c	c2	c2	c2	h2	h4	h2	h3	c3	13	f4	f2	f6	f7	f3	
5	f6	f4	f6	f2	f4	h3	h3	c5	c2	c2	c3	12	c2	1	1	h2	h4	12	13	f2	f3	f3	f2	f4	
6	f2	f4f	f2	f2	f2	12	c3	c4	c2	12	12	13	12	13	13	13	12	12	13	f5	f4	f4	f4	f4	
7	f4	f3	f2	f3	f2	h2	12	c3	c2	c2	c2	12	12	c	h	c3	c4	15	14	f5	f6	f4	f4	f4	
8	f4	f3	f4	f2f2	f3	c2	13	c3	13	13	1	12	1	1	14	13	12	17	13	f3	f3	f2	f5	f4	
9	f3	f2	f4	f3	f2	12	c4	c2	c2	12	1	h2	h2	h2	12	c2	c2	12	14	f4	f3	f4	f3	f3	
10	f3	f4	f4	f3	f3	12	1	13	13	12	12	12	13	1	h	h2	c2	c3	13	f4	f4	f4	f4	f4	
11	f3	f2	f5	f4	f6	h2	h2	12	12	12	12	12	h	h2	h3	h3	c3	12	c2	f	f4	f2	f3	f4	
12	f3	f3	f2	f3	f2f2	h2	12	h3	c3	12	c2	12	12	12	13	12	12	1	h3h2	f2	f6	f2	f5	f6	
13	f6	f2f	f2	f3	f4	12	h	h	h3	13	12	13	12	12	13	12	c2	c2	14	f5	f4	f2	f3	f3	
14	f3	f3	f3	f5	f3	h12	c4	c5	c4	c5	13	c3	c3	13	14	13	12	14	13	f f	f6	f2	f2	f3	
15	f5	f3	f5	f3	f3	h2	h3	c4	c2	c5	12	1	12	12	13	14	12	13	14	f2	f3f2	f5	f3	f3	
16	f2	f4	f2	f2	f2	h	h	h	1	12	13	13	13	12	12	13	13	13	15	f4	f4	f3	f3	f3	
17	f5	f3	f2	f2	f2	h2	h3	12	12	c2	1	1	c2	h	13	13	h2	h4	14	f4	f4	f4	f6	f4	
18	f4	f4	f4	f5	f3	h6	h3	h3	h2	12				c2	12	13				f6	f5	f3	f6	f4	
19	f4	f4	f6	f5	f3	h6	h3	h3	h2	12				h				h	12	f2	f3	f5	f4	f3	
20				f3					c3	c2	13	13	12	h				c3	12	f	f	f2			
21	f2	f2	f2	f2		h3		13				h2	h	h	h2	h2	12	ch3		f4	f4	f6	f4	f4	
22	f4	f3	f2	f	f2f	12	c4	12	h	c2	1	1	h	h	h	h	h	h2	c2	f5	f2	f3	f6	f4	
23	f4	f3	f5	f3	f2	1h4	h4	h3	c3	c	h	h	c3	c2	c2	h	12	13	12	f3	f3	f5	f5	f5	
24	f4	f3	f3	f5	f5	h2	h3	c2	c2	c2h	c	c3	c2	c2	c2	h	h	h2	13	f2	f3	f2	f3	f2	
25	f3	f3	f3	f	f3	h1	h2	c2	c2	c2	12	c2	c2	12	h	c	h2	c3	12	f2	f4	f3	f5	f4	
26	f5	f5	f3	f2	f2	13	16	c2	c2	12	1	h	c	h2	c		h	h2	h4	f5	f4	f6	f5	f4	
27	f3	f2	f5	f2	f3	h	h2	c2	c2	c2			12	12	c2	h3	12	12	13	f2	f3	f3	f4	f3	
28	f4	f	f	f2		16	13	12	1	c2	c2	c2	c2	12	12	12	12	13	13	f3	f4f	f3f	f2f	f6	
29	f4	f3	f5	f3	f3	h2	h3	h2	h2	h2	h	c	c2	c2	c2	c2	c2	13	12	f3	f2	f3f2	f2	f3	
30	f2	f2	f	f2	f2	1h	12	c2	12	c2	c2	c2	12	12	1	12	12	13	12	f2	f3	f3	f2	f2	
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

Types of Es

The Radio Research Laboratories, Japan

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

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km

h p F 2

Jun. 1964

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	F	260	250	A	A	A	A	A	G	375R	340R	315R	330R	295	275	A	R	F	360	F
2	F	F	F	F	315	310	320R	A	A	A	A	A	A	R	G	355	320R	315R	R	0280R	A	A	F	F
3	F	F	F	F	F	280	A	280	A	A	A	A	A	A	355	340	330	300	280	290R	A	A	A	A
4	F	F	F	F	F	G	330R	340F	0270R	265	340	R	A	G	A	1330A	315R	325R	325	A	R	F	F	A
5	A	A	A	F	F	G	305F	A	A	A	A	G	A	A	350	280	A	310	1320A	300	290	260	F	F
6	F	F	F	340F	F	260	A	A	A	A	A	A	A	A	A	A	325	300	250	A	A	A	F	F
7	F	F	F	300	320F	300	A	A	260	G	A	A	A	G	G	A	A	A	A	0270S	A	FR	A	F
8	F	F	F	F	F	F	A	A	A	A	A	A	S	G	A	A	A	A	340	310R	A	F	A	A
9	A	A	A	A	F	G	A	A	A	A	S	A	A	A	350	340	A	A	345	A	0290F	A	A	F
10	F	A	A	A	F	250	250	A	A	A	A	A	395	390	1410S	400	385	360	0255R	A	A	A	395F	395
11	295	390	A	A	A	A	G	G	A	A	A	A	A	A	A	A	A	A	A	340	360	0340R	360	F
12	0290A	290R	345	340	370	G	0310R	280	A	A	A	A	A	A	A	360	320	300	305	300	A	A	A	A
13	A	F	F	F	F	A	G	G	A	A	A	A	A	C	C	C	C	C	A	A	F	A	A	F
14	345	345	F	F	F	300	A	A	A	A	A	A	A	A	A	G	R	G	335	315	320	0265S	F	A
15	A	A	F	F	F	275	A	A	290	280	A	A	A	360	A	A	A	A	A	A	310	0295R	F	A
16	F	A	F	F	F	270	G	G	G	A	A	A	A	G	A	355	340	A	A	0295S	0245S	C	340	F
17	A	F	F	F	280F	290	G	325	295	300	300	G	A	G	A	A	315	0300S	S	260F	0330S	330F	A	A
18	A	A	C	C	C	C	C	C	C	C	C	C	C	A	330	A	C	C	C	275S	A	F	F	A
19	A	F	A	A	A	A	A	310	A	A	C	C	C	0320S	G	0295C	C	290	A	290	290	A	A	A
20	C	C	C	F	C	C	C	C	C	A	A	A	A	A	C	C	C	C	280	275	270	0340R	390	0355F
21	F	355F	0300F	350R	1340C	280	C	265	C	C	C	A	C	G	C	300	S	295	C	A	270S	F	F	360
22	350S	F	F	F	F	275S	270S	250	S	A	G	G	G	G	310	300	315	305	320	320S	295	0310S	310S	325
23	F	F	F	F	F	S	A	A	A	R	G	G	A	A	A	G	A	A	A	A	F	A	A	A
24	A	A	A	A	F	A	300	A	A	265	A	A	A	A	A	350	340S	S	S	A	A	F	A	A
25	A	A	A	F	F	250	A	290	A	A	A	A	A	A	A	365	360	410R	350R	0335R	0295S	A	A	A
26	A	A	A	A	265	A	A	A	A	G	G	325	A	A	A	370	0325S	0280S	0280S	A	A	A	A	A
27	A	A	A	F	F	260S	G	A	265	A	C	C	A	A	A	A	A	A	S	A	A	A	A	F
28	F	F	F	F	F	F	A	A	G	300	A	A	A	A	A	A	A	A	A	0280S	260	0290S	260	F
29	F	F	F	F	F	300	A	A	A	A	A	A	A	A	A	A	300	275S	275S	320S	315S	0325S	F	S
30	F	F	F	F	F	0300S	G	290	A	G	A	A	A	A	325	A	A	A	A	A	S	A	310	0305S
31																								
No.	4	4	4	5	6	16	8	9	5	5	2	1	1	4	8	15	14	16	15	19	14	8	7	4
Median	320	350	315	340	320	280	300	290	270	280	320	325	395	370	345	340	325	300	305	295	295	320	355	340
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

h p F 2

K 13

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km

ypF2

Jun. 1964

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	F	045	045	A	A	A	A	A	G	055R	060R	065R	J080R	055	075	A	R	F	060	F	
2	F	A	F	F	045	065	070R	A	A	A	A	A	A	R	G	095	070R	J085R	R	U070R	A	A	F	F	
3	F	F	F	F	F	070	A	050	A	A	A	A	A	A	045	080	080	060	080	065R	A	A	A	A	
4	F	F	A	A	F	G	070R	050F	U060R	055	090	R	A	G	A	I050A	065R	075R	085	A	R	F	F	A	
5	A	A	090	F	F	G	035F	A	A	A	A	G	A	A	040	060	A	055	I070A	080	090	060	F	F	
6	F	F	060	040F	F	050	A	A	A	A	A	A	A	A	A	A	070	055	045	A	A	A	F	F	
7	F	F	F	095	F	095	A	A	040	G	A	A	A	G	G	A	A	A	A	J040S	A	FR	A	F	
8	F	F	F	F	F	F	A	A	A	A	A	A	S	G	A	A	A	A	090	070R	A	F	A	A	
9	A	A	A	A	F	G	A	A	A	A	S	A	A	A	050	060	A	A	060	A	J060F	A	A	F	
10	F	A	A	A	F	050	045	A	A	A	A	A	070	090	I080S	070	075	085	U045R	A	A	A	055F	055	
11	055	110	A	100	A	A	G	G	A	A	A	A	A	A	A	A	A	A	A	090	050	J060R	090	F	
12	U090A	080R	055	080	050	G	J060R	060	A	A	A	A	A	A	A	040	100	080	070	070	A	A	A	A	
13	A	F	F	F	A	A	G	G	A	A	A	A	A	C	C	C	C	C	A	A	F	A	A	F	
14	060	055	F	A	F	050	A	A	A	A	A	A	A	A	A	G	R	G	085	065	050	J075S	F	A	
15	A	A	F	F	F	F	065	A	070	045	A	A	A	060	A	A	A	A	A	060	J080R	F	F	A	
16	F	A	F	F	F	F	050	G	G	A	A	A	A	G	A	055	060	A	A	J050S	J055S	C	065	F	
17	A	F	F	F	F	070F	075	G	050	050	050	G	A	G	A	A	055	U070S	S	070F	U065S	100F	A	A	
18	A	A	C	C	C	C	C	C	C	C	C	C	C	A	070	A	C	C	C	C	A	F	F	A	A
19	A	F	A	A	S	A	A	050	A	A	C	C	C	J050S	G	I050C	C	070	A	080	080	A	A	A	
20	C	C	C	F	C	C	C	C	C	A	A	A	A	A	C	C	C	070	065	060	090R	060	U065F	085	
21	F	090F	U075F	075R	I070C	075	C	065	C	C	C	A	C	G	C	080	S	065	C	A	080S	F	F	F	
22	050S	F	F	F	F	065S	055S	050	S	A	G	G	G	G	050	065	075	075	080	080S	065	J090S	080S	065	
23	F	F	F	F	F	S	A	A	A	R	G	G	A	A	A	G	A	A	A	A	F	A	A	A	
24	A	A	A	A	A	F	A	075	A	035	A	A	A	A	A	080	060S	S	S	A	A	F	A	A	
25	A	A	A	A	F	F	090	A	A	A	A	A	A	A	A	070	065	090R	070R	U080R	U065S	A	A	A	
26	A	A	A	A	A	075	A	A	A	G	G	035	A	A	A	060	U065S	I070S	I050R	U070S	A	A	A	A	
27	A	A	A	A	F	F	090S	G	035	A	C	C	A	A	A	A	A	A	S	A	A	A	A	A	
28	F	F	F	F	F	F	A	A	G	070	A	A	A	A	A	A	A	A	A	U095S	U060S	080	F	S	
29	F	F	F	F	F	F	080	A	A	A	A	A	A	A	A	A	050	075S	065S	060S	085S	U075S	F	F	
30	F	F	F	F	F	F	U070S	G	035	A	G	A	A	A	045	A	A	A	A	A	S	A	090	I070S	
31																									
No.	4	4	4	5	6	16	8	9	5	5	2	1	1	4	8	15	14	16	15	19	14	8	7	4	
Median	060	085	070	080	070	070	060	050	050	050	070	035	070	060	050	065	070	070	070	070	065	075	065	070	
U.Q.																									
L.Q.																									
Q.R.																									

The Radio Research Laboratories, Japan

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

ypF2

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foF2

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	S	S	A	A	A	A	A	A	A	0630	J0830	088	091	0920	I0810	S	S	S	S	S
2	S	S	S	I0340	I0320	I0330	J0460	J0530	I0640	0580	I0610	I0640	I0510	I0510	055	I0630	085	0870	I0850	S	S	S	S	S
3	A	A	S	S	S	S	I0460	I0570	056	A	A	A	A	A	0630	0630	I0720	I0670	0620	S	S	S	S	A
4	S	S	S	S	S	S	S	J0610	I0600	I0580	0510	I0510	052	0540	I0580	0640	A	A	S	S	S	S	S	S
5	S	S	S	S	S	S	0440	I0640	I0620	053	I0530	I0540	057	058	060	0660	I0750	I0810	S	S	S	S	S	S
6	S	S	S	S	S	S	I0470	0560	0660	A	A	I0510	I0530	I0540	J0520	I0630	J0830	S	S	S	S	S	S	S
7	S	S	S	S	S	S	031	033	039	S	A	A	S	S	J0520	I0580	I0690	J0750	I0700	0620	S	S	S	S
8	S	S	S	S	S	S	I0340	027	038	0510	A	A	A	A	A	S	I0660	0680	S	S	S	S	S	S
9	A	A	A	A	A	A	S	0490	I0470	0530	I0510	J0480	051	052	058	0630	I0700	J0790	0640	059	0560	I0600	S	S
10	A	S	S	S	S	S	I0350	A	S	0600	A	A	A	0620	J0650	J0810	087	S	S	I0490	J0360	032	S	S
11	S	0320	0320	029	I0300	0320	I0350	I0430	0510	A	S	C	C	A	A	S	A	060	I0570	I0440	I0470	C	C	C
12	C	C	C	C	C	C	I0310	0550	C	A	A	A	I0600	0610	0630	0700	J0820	0660	0640	S	A	A	S	A
13	S	S	S	S	S	S	S	057	0500	I0510	C	C	A	A	A	I0500	0520	051	054	052	A	S	S	S
14	032	A	A	A	A	S	I0330	I0440	I0540	I0500	A	A	A	A	A	A	A	A	A	S	C	C	S	I0600
15	S	S	A	S	S	S	0250	0260	I0400	J0540	A	A	A	I0620	I0740	I0780	J0800	I0730	I0640	0620	I0610	S	S	S
16	S	A	S	S	S	S	0330	0300	I0450	0540	0510	0620	A	A	A	J0820	I0890	I0920	I0910	I0880	I0630	I0380	S	S
17	S	S	S	A	A	A	I0260	I0370	0510	058	I0660	064	0530	051	I0500	I0520	0650	J0810	A	A	S	058	I0570	S
18	A	A	A	S	0400	0370	0480	0500	S	A	A	A	A	062	A	A	068	0690	0620	0530	A	A	S	S
19	0320	S	A	A	A	A	A	A	I0620	I0530	051	A	A	A	A	A	068	0660	0600	I0600	S	S	S	S
20	S	S	S	S	S	S	0280	A	A	A	A	A	I0560	I0560	I0570	058	0620	I0800	I0800	I0620	I0520	S	S	S
21	S	S	S	S	S	S	034	033	056	I0590	052	J0510	I0490	I0510	054	058	J0780	I0920	087	I0700	I0640	S	S	S
22	S	S	S	S	S	S	S	S	S	I0510	055	0520	0530	058	0660	J0770	0680	0690	S	S	S	S	S	S
23	S	S	S	A	S	S	S	I0440	0570	0530	S	A	S	057	052	058	I0570	I0540	0550	057	A	S	A	A
24	S	S	S	S	S	S	S	0430	0570	I0620	0610	A	A	S	0540	J0630	I0740	J0850	I0890	S	A	S	S	S
25	S	S	S	S	S	S	I0240	0250	J0430	057	0530	I0560	0550	050	0520	052	065	S	S	S	C	S	S	S
26	S	S	S	S	S	S	S	0350	I0420	S	A	A	055	0510	054	053	060	064	I0670	I0700	I0880	S	S	S
27	S	S	A	S	A	A	A	036	050	S	A	A	A	0570	0580	056	I0630	I0660	I0670	I0630	I0640	S	S	0570
28	S	S	S	J0380	I0390	0400	039	J0530	J0610	0550	051	R	A	066	I0700	064	I0670	058	057	J0550	S	S	S	S
29	S	S	S	S	S	S	I0260	0330	I0500	050	I0510	051	0490	0520	0600	0610	056	0690	0630	0550	I0470	I0480	S	S
30	S	S	S	S	S	S	S	0310	050	055	048	045	I0520	S	A	0630	I0630	0590	055	S	S	S	S	S
31																								
No.	2	1	1	4	12	18	24	23	21	15	14	13	18	21	25	25	26	23	18	13	7	5	3	2
Median	032	032	032	033	I032	032	044	054	053	I055	052	I051	056	058	063	066	072	067	062	052	I058	I038	057	I044
U.Q.				036	034	033	048	057	062	058	055	054	058	062	071	077	083	080	064	063	061	058	058	058
L.Q.				030	029	027	039	050	051	051	051	051	052	052	058	063	066	058	057	050	048	031	046	046
Q.R.				006	005	006	009	007	011	007	004	003	006	010	013	014	017	022	007	013	013	027	012	012

The Radio Research Laboratories, Japan

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

foF2

Y 1

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foF1

Jun. 1964

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	410	A	A	A					
2							L	400	420	A	A	A	A	A	A	A	A	A	A	A				
3							A	A	A	A	A	A	A	A	430	1420S	1400R	380	350L					
4							A	A	A	A	S	A	R	R	A	A	A	A	A	A	A			
5							L	A	A	A	S	A	A	A	R	R	410	A	A	A				
6							A	410	A	A	A	A	R	R	R	R	A	A	A	S				
7							L	A	A	A	A	R	R	A	A	A	A	A	A	A				
8							A	A	A	A	A	A	A	A	A	A	S	1980A	1950A					
9							L	380	1990S	420	1430S	1430R	1440R	S	R	1430R	430	390	350R	L				
10							A	A	A	A	A	A	450S	1450S	440R	1430S	410R	370	L					
11							S	380	A	A	A	C	A	A	A	A	A	A	A	A				
12							L	C	A	A	A	A	A	A	A	A	A	A	A	A				
13							L	L	1990A	C	C	A	A	A	R	430	410	1980S	A					
14							A	A	A	A	A	A	A	A	A	A	A	A	A	C	C			
15							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
16							L	410	A	A	A	A	A	A	A	A	A	A	A	A				
17							I380A	410	1420A	1440A	1440A	1440A	450	1450R	A	A	A	A	A	A				
18							A	L	A	A	A	A	A	A	A	A	A	A	A	A				
19							A	A	A	C	A	A	1460A	A	A	A	A	A	A	A				
20							A	A	A	A	A	A	A	A	450	450	1440A	370	L	L				
21							L	S	L	440L	L	A	A	A	A	A	A	A	A	A				
22							L	I370L	450	420	1440S	450R	R	A	A	A	A	A	A	A				
23							A	A	A	A	A	A	A	A	440	A	S	1380S	S					
24							A	A	A	A	A	A	R	R	A	A	A	A	A	A				
25							A	380	A	A	A	440	A	R	A	S	S	390S	A					
26							A	A	A	A	A	450	R	A	A	A	420R	400	330					
27							A	A	A	A	A	A	A	R	430	420	A	A	A					
28								370	A	A	A	430S	R	A	A	A	1400A	390	A	L				
29							L	340	A	A	A	A	A	A	440R	1420A	410	390	340R					
30							L	L	390	L	A	A	A	A	A	A	400R	A	A	L				
31																								
No.							7	8	5	5	5	5	3	3	7	8	10	11	6					
Median							380	405	420	U440	U450	U440	U440	450	440	U425	410	380	345					
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan
Sweep 0.55 Mc to 17.0Mc in 20 sec in automatic operation

foF1

Y 2

IONOSPHERIC DATA

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

foE

Jun. 1964

0.01 Mc 135° E Mean Time (G.M.T. +9h)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					S	S	190	230	280	310	R	R	R	R	R	A	A	A	A					
2					S	S	S	230	270	A	A	A	R	R	A	A	A	A	A					
3					S	S	S	230	A	A	A	A	A	R	A	R	R	R	A					
4					S	S	S	124.5A	280	295	300	A	R	R	R	R	R	300	260					
5					S	S	S	240	280	300	305R	R	R	R	R	R	R	300R	260					
6					S	S	S	225	275	A	A	A	A	A	R	R	320	300	260					
7					S	S	190	240	270	310	R	R	R	R	R	R	R	300	260					
8					S	S	S	250	280	300	A	A	R	R	A	A	A	A	260					
9					S	S	S	240	127.5A	290	305	R	R	R	R	R	R	R	265					
10					S	S	S	A	A	300	A	A	A	A	R	R	131.5R	295	260					
11					S	S	S	230	280	A	R	C	C	C	C	R	130.5R	265						
12					C	C	210	124.5C	275	300	A	A	A	A	A	A	1290R	255R						
13					C	S	S	240	270	C	C	C	C	C	R	1310R	290	260						
14					S	S	S	240	280	300	320	R	R	R	R	A	A	A						
15					S	S	S	250	285	300	315	R	R	R	R	A	A	A						
16					S	S	S	A	300	310	320	330	A	A	A	A	A	A						
17					S	S	195	235	280	300H	131.5R	330	132.5A	R	C	A	A	130.5R	265					
18					S	S	S	240	280	300	310	330	R	A	A	A	A	A						
19					S	S	200	230	260	G	A	A	A	A	A	340	1295R	265H						
20					S	S	S	240	280	300	310	320	1330R	330	320	A	A	A						
21					S	S	S	230	270	300	1310R	R	R	R	R	R	R	R						
22					S	S	S	A	A	R	A	A	R	1350R	335	320	300	270						
23					S	S	210	240	285	300	320	330	1335R	1330R	320	310	1280H	265						
24					S	S	S	230	275	290	310	320	330	G	R	A	A	A						
25					S	S	S	240	280	R	A	A	R	R	R	R	R	295						
26					S	S	S	A	A	A	A	A	A	A	C	131.5R	1290R	265						
27					S	S	S	A	240	275	305	310	320	320	1325R	330	131.5R	300						
28					S	S	S	230	1270S	280	315	R	S	A	A	A	A	A						
29					S	S	S	240	275	300	330	330	1330R	1330R	1325R	1305R	285							
30					S	S	S	270	305R	R	R	R	R	R	R	A	A	A						
31																								
No.						6	26	26	21	15	8	6	5	6	9	16	18	18						
Median						200	240	280	300	310	330	U330	U330	330	U315	300	260	210						
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

foE

Y 3

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foEs

Jun. 1964

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	J025	J030	J024	030	J024	J021	J051	J084	J084	J096	J085	J083	J066	050	052	038	J053	J045	J055	J028	J032	J025	J021	S
2	S	S	S	S	E	S	022	029	036	053	J053	J068	J052	J065	J054	J064	J051	J041	J084	J051	J054	J022	J029	J027
3	J052	J051	J025	J024	J030	J016S	041	J049	J084	J106	J086	J108	J084	J076	038	036	036	033	030	J028	J027	J032	J029	J052
4	J029	J032	J023	J030	J024	J030	J032	J054	J050	J104	J050	J051	027G	G	058	056	J107	J085	027	J032	D035S	J031	J030	J026
5	J030	024	J021	030M	028M	S	021	J046	J066	050	038	J080	J083	J084	G	044	035	057	J053	029	J025	J052	J028	J026
6	J030	D038S	J030	D035S	J028	J032	037	041	035	J083	064M	J080	J052	040	036	037	044	044	023	028	J031	S	J025	J027
7	S	J026	S	S	S	S	033	046	057	J084	J066	040	037	046	J147	J086	J048	J053	J054	J053	J026	J030	J031	J031
8	J031	J030	J025	J018	J019	S	029	J050	J105	J084	J116	J080	J107	J086	J080	061	040	050	J060	J053	023	031	J029	J029
9	J052	J051	J051	J051	J051	J024	026	033	032	038	036	025S	042	040	036	G	G	027	024	S	S	J024	J028	J029
10	J050	J026	J023	J025	J023	J024	J054	J052	J100	J13M	J087	J09M	J052	037	030G	038	036	033	026	021	S	S	S	S
11	S	S	S	S	C	J018S	022	027	J051	J26M	J051	G	043	061	044	J114	051	J061	J041	J051	C	C	C	C
12	C	C	C	C	C	C	025	G	J061	J083	J17M	J082	J061	J051	J054	044	107M	J054	J048	J053	J053	057M	039M	057
13	025M	057M	D031S	057M	037M	J030	J030	032	J054	G	G	J078	J080	102M	G	G	038	051	J16M	J051	J051	J052	J023	J031
14	J027	J052	035M	J043	J025	J054	J058	J063	058	J084	J161	J084	087	165M	J089	J084	J127	J042	G	G	021	J024	J024	J025
15	J024	057M	J051	J025	024	S	J064	J061	J057	J081	J084	J108	J075	J080	J054	049M	J060	J046	J042	J026	J030	057M	J029	J052
16	D030S	J053	D030S	J021	S	S	J031	031	J042	J052	J061	064	J083	J085	J116	J056	120M	J052	J061	036	J025	J029	J020	J029
17	J030	J021	J052	037M	J025	J024	J043	J040	J052	J076	J054	J080	J052	040	G	J052	J060	128M	J21M	J061	J037	J026	J028	J032
18	J061	J084	J061	J029	J015	S	J033	J051	J061	J12M	107M	J077	J060	J110	J086	J084	J040	J041	J061	J060	J052	J029	J031	J031
19	J050	D033S	J040	J041	J051	J055	J084	134M	J103	G	J051	J081	J081	J104	J060	052	J050	043	J050	J036	D037S	D032S	D035S	D030S
20	J030	J026	J026	S	J028	D036S	D090G	D090G	D14G	148M	D090G	D118G	107M	J050	J043	J052	J054	J052	024	J019S	S	S	S	S
21	J020	S	J023	J030	J027	J020	J031	032	032	042	G	J062	047	J054	J062	046	J053	J052	J055	057M	057M	D032M	035M	031M
22	S	S	S	S	S	S	025	028	030	030G	035	038	044	054	052	048	J051	J062	J061	J051	J051	J031	J024	J021
23	J019	J025	J051	J051	J016S	J021	026	J045	J054	J059	J079	J054	J049	D090S	042	J061	035	037	J031	J062	J052	J062	J080	J052
24	J051	J031	J026	S	S	S	J032	036	066M	108M	J085	J078	J043	039	J052	151M	113M	J058	J061	090M	S	S	S	D030S
25	S	D031S	D031S	021M	J027	027	J046	035	J045	J052	044	043	041	J046	J052	043	J051	035	J059	G	J030	D032S	D033S	D032S
26	D034S	D032S	D036S	D037S	D035S	J052	J030	J049	D060S	J113	J052	J047	J042	J052	056	J079	G	030	027	J029	035M	032M	049M	057M
27	043M	D030S	057M	D030S	057M	057M	J029	J051	J084	J063	J066	J101	J050	G	040	038	060M	J053	J042	J037	D032S	023M	J021	S
28	S	J017S	J017S	S	S	S	024	J045	J054	063M	038	J098	J053	J053	J043	J042	J028	034M	021	024M	034M	021M	030M	030M
29	030M	027M	S	027M	J030	036M	021	034	042	044	052	048	044	J051	041	J051	035	029	J026	J051	J021	031M	028M	030M
30	D030S	D032S	030M	S	S	S	024	032	036	040	045	J053	J053	067M	J050	J064	J030	J040	047M	J027	D032S	S	J018	023M
31																								
No.	23	23	24	21	23	18	30	29	30	28	29	29	30	30	29	30	30	30	29	27	25	24	26	25
Median	030	032	D030	030	027	028	031	045	056	082	061	078	052	054	052	052	051	044	048	037	D032	031	028	D030
U.Q.	050	052	051	045	030	D036	043	052	084	105	086	082	080	084	059	064	060	053	060	054	052	052	031	D032
L.Q.	027	026	024	025	024	021	025	032	042	052	048	050	044	046	040	043	036	035	028	028	026	026	024	027
Q.R.	023	026	027	018	006	D015	018	020	042	053	038	032	036	038	019	021	024	018	032	026	026	026	007	D005

The Radio Research Laboratories, Japan

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

foEs

Y 4

IONOSPHERIC DATA

Lat. 31°12'1"N
Long. 130°37'1"E

Yamagawa

0.1 Mc 135° E Mean Time (G.M.T. +9h)

fEs

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	A	A	A	A	A	A	A	A	A	A	A	A	A	047	050	036	046	040	A	024	A	A	020	A	
2	S	S	S	S	S	021	027	027	034	037	A	049	A	A	050	A	046	040	079	046	A	020	A	A	
3	A	A	A	A	A	020	040	049	052	A	A	A	A	A	037	035	036	033	027	027	A	A	A	A	
4	A	A	A	A	A	A	A	054	A	A	047	040	E027R	A	A	055	A	A	025	E032S	A	A	A	A	
5	A	A	A	A	A	S	021	040	A	049	A	A	052	054	E044C	033	055	046	026	A	A	A	A	A	
6	A	A	A	A	020	021	A	E041S	034	A	A	A	040	040	E036R	E037R	E044S	040	E023R	025	A	S	A	A	
7	S	022	S	S	S	S	032	045	047	A	A	A	A	E046R	A	A	053	040	050	041	A	A	A	A	
8	A	A	A	A	018	S	028	047	A	A	A	A	A	A	A	A	E040S	050	A	A	E	A	A	A	
9	A	A	A	A	A	019	G	025	032	035	036	E025R	E042R	040	036		G	G	G	S	S	E	A	A	
10	A	A	A	A	A	A	020	A	043	A	A	A	041	037	E030R	036	035	032	024	021	S	S	S	S	
11	S	S	S	S	C	S	G	G	044	A	A	C	A	A	A	A	050	A	A	A	C	C	C	C	
12	C	C	C	C	C	C	023	C	A	A	A	A	A	E051S	047	044	A	052	E048S	A	A	A	A	A	
13	A	A	A	A	A	A	027	032	A	C	C	A	A	A	A	A		032	040	A	A	A	A	A	
14	019	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	040	040	C	020	E024S	019	021	
15	A	020	023	019	019	S	A	A	A	A	A	A	A	A	050	044	060	E046S	E042S	E026S	E030S	A	A	A	
16	A	A	A	A	S	S	030	029	035	046	A	A	A	A	A	056	A	050	E061S	E036S	023	A	020	A	
17	019	019	A	A	A	A	A	040	036	049	045	050	045	040	C	044	057	A	A	A	E037S	023	A	A	
18	A	A	A	A	A	E	S	032	039	A	A	A	056	A	A	A	040	039	A	A	A	048	A	A	
19	021	A	020	A	A	A	A	A	A	C	047	A	A	A	055	051	E050S	E043S	A	036	A	E	A	A	
20	A	018	A	S	023	A	A	A	A	A	A	A	048	038	038	047	042	031	G	S	S	S	S	S	
21	A	S	019	A	018	018	028	E032S	032	040	A	A	047	040	E062S	046	053	047	A	048	A	E	A	A	
22	S	S	S	S	E	S	024	027	E030R	E030R	E035R	E038R	E044R	052	050	045	049	A	A	A	E031S	A	A	A	
23	E019S	A	A	A	E	019	024	043	049	A	A	A	048	050	040	A	034	E037S	030	A	A	A	A	A	
24	A	A	A	S	S	S	032	E036S	A	053	A	A	A	E039R	052	A	080	A	A	A	S	S	S	A	
25	S	A	A	E	A	G	A	032	045	052	042	E043R	E041R	046	049	043	033	034	055	C	A	A	A	A	
26	A	A	A	A	A	020	A	A	A	A	047	042	E042R	050	054	062		019	G	E029S	A	A	A	A	
27	A	022	A	A	A	A	025	047	056	A	A	A	047		040	036	A	041	042	A	A	022	020	S	
28	S	S	S	S	S	S	022	034	050	046	037	038	A	051	044	E043S	040	027	033	G	E	A	020	028	
29	A	021	S	020	A	A	G	033	042	A	046	046	E044S	045	040	051	033	028	024	A	020	023	020	018	
30	A	A	A	S	S	S	023	031	036	039	045	A	A	A	046	A	E030R	040	047	021	A	S	018	019	
31																									
No.																									
Median																									
U.Q.																									
L.Q.																									
G.R.																									

fEs

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

f-min

Jun. 1964

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	E016S	E017S	E019S	E018S	E019S	E018S	E017S	E017S	017	019	020	020	021	022	022	021	021	019	E017S	E017S	E018S	E017S	E016S	E018S
2	E018S	E020S	E018S	E018S	012	E019S	E017S	017	018	018	019	019	022	020	025	020	018	E017S	E017S	E016S	E017S	E017S	E017S	E017S
3	E016S	E018S	E017S	E017S	008	E017S	E017S	017	018	019	020	020	021	022	020	022	020	019	E017S	E017S	E018S	E017S	E017S	E017S
4	E018S	E016S	E016S	010	E018S	E017S	E018S	E018S	018	020	021	022	022	024	024	021	019	018	E017S	E017S	E016S	E017S	E017S	E016S
5	E017S	E018S	E017S	E017S	E018S	E019S	E019S	017	018	018	020	021	023	020	025	020	020	019	E017S	E017S	E018S	E017S	E017S	E016S
6	E017S	E017S	E018S	E018S	E017S	E017S	E017S	017	020	020	022	022	022	024	023	019	022	E018S	E018S	E019S	S	E018S	E018S	E018S
7	E018S	E017S	E018S	E018S	E018S	E019S	E017S	016	018	019	021	023	034	022	023	020	018	E019S	E017S	E017S	E018S	E017S	E017S	E016S
8	E016S	E018S	010	011	011	E017S	E016S	016	018	019	020	021	020	023	020	020	019	E017S	E017S	E017S	E016S	E017S	E017S	E016S
9	E017S	E017S	E016S	010	011	E017S	E016S	017	017	021	019	020	024	020	020	020	018	E017S	E017S	E018S	E016S	E017S	E017S	E016S
10	E016S	E017S	E017S	009	E017S	E017S	E016S	017	017	020	020	023	021	022	020	020	019	E017S	E017S	E016S	E019S	S	S	S
11	E017S	E017S	E017S	E017S	G	E016S	E017S	017	018	019	022	G	E039G	E036G	023	022	021	E017S	E017S	E017S	G	G	G	G
12	G	G	G	G	G	G	E017S	G	017	019	020	022	022	021	022	020	019	E017S	E017S	E017S	E017S	E017S	E016S	E017S
13	E017S	E017S	E017S	011	E017S	E028G	E017S	017	018	G	G	020	E039G	E039G	020	020	018	E017S	E017S	E017S	E017S	E017S	E017S	E016S
14	E016S	E016S	E016S	010	E016S	E017S	E017S	017	017	020	020	020	025	021	020	022	018	E018S	G	G	E017S	E017S	E017S	E016S
15	E017S	E017S	E016S	E017S	010	E017S	E017S	017	018	020	020	021	023	024	022	021	020	019	017	E019S	E017S	E017S	E017S	E018S
16	E017S	E017S	E017S	011	E017S	E017S	E017S	E017S	018	019	019	020	021	022	020	020	018	017	E017S	E018S	E017S	E017S	E017S	E018S
17	E017S	E016S	E016S	010	010	E017S	E016S	016	017	017	018	019	020	020	G	019	020	018	E018S	E017S	E016S	E017S	E017S	E017S
18	E019S	E019S	E017S	E018S	E018S	E018S	E017S	E017S	017	019	021	020	020	022	020	020	017	017	E018S	E017S	E017S	E017S	E018S	E018S
19	E016S	E017S	E017S	011	E017S	E017S	E017S	017	017	G	020	019	020	023	025	022	021	017	E018S	E017S	E017S	E017S	E017S	E016G
20	E017S	E017S	E017S	E017S	E016S	E016G	E016G	017	017	020	020	020	021	019	022	022	018	E017S	E016S	E018S	E017S	E018S	S	E016S
21	E017S	E020S	E017S	E017S	011	E017S	E017S	016	017	020	019	020	019	022	020	019	019	018	E017S	E016S	E017S	E017S	E019S	E017S
22	S	E019S	E017S	E018S	E017S	E017S	E017S	017	017	021	020	020	022	023	020	019	019	017	E017S	E017S	E017S	E017S	E017S	E017S
23	E017S	E017S	E017S	011	E017S	E017S	E018S	E017S	017	020	019	022	026	020	020	019	019	017	E017S	E017S	E017S	E017S	E017S	E017S
24	E017S	E017S	E018S	S	E017S	E017S	E017S	016	019	022	019	022	022	E039G	022	020	022	E018S	E017S	E016S	S	S	S	E018S
25	S	E017S	E017S	E017S	011	E016S	E017S	017	017	018	019	021	020	022	020	020	018	E017S	E017S	E017S	G	E017S	E017S	E017S
26	E017S	E017S	E017S	010	012	E016S	E017S	017	017	018	019	020	023	020	E039G	019	017	017	E017S	E017S	E017S	E017S	E017S	E017S
27	E017S	E017S	E017S	011	E017S	E018S	E017S	017	017	020	019	020	022	023	018	018	018	E017S	E016S	E017S	E017S	E017S	E018S	E018S
28	E017S	E017S	E017S	E017S	010	E018S	E018S	017	017	019	019	021	E039S	022	023	020	018	E016S	E018S	020	E017S	E016S	E019S	E017S
29	E017S	E018S	E017S	010	010	E017S	E017S	017	017	018	019	020	020	020	020	020	019	019	E017S	E016S	E017S	E017S	E017S	E017S
30	E017S	E017S	E017S	S	S	E017S	E017S	016	020	018	019	020	020	021	021	018	018	017	E018S	E016S	E017S	E017S	E017S	E017S
31																								
No.	27	29	29	27	27	29	30	28	30	28	29	29	27	27	28	30	30	30	29	28	28	27	26	28
Median	E017	E017	E017	E016	E017	E017	E017	017	017	019	020	020	022	022	020	020	019	E017	E017	E017	E017	E017	E017	E017
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Jun. 1964

M(3000)F2

0.01

135° E Mean Time (G. M. T. +9h)

Yamagawa

Lat. 31°12.1' N
Long. 130°37.1' E

IONOSPHERIC DATA

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	28	
1	S	S	S	S	S	S	A	A	A	A	A	A	A	A	A	300S	J300S	320	320	325S	I340S	S	S	S	S	S
2	S	S	S	I305S	I295S	I315S	J325S	J290S	I325S	300S	I305S	I340S	I300S	I270A	275	I300A	310	335S	I340S	355S	S	S	S	S	S	S
3	A	A	S	S	S	315S	I330S	I335S	340	A	A	A	A	A	310S	325S	I325S	I335S	325S	S	S	S	S	S	S	A
4	S	S	S	S	S	S	S	J330S	I350S	I360A	335S	I310S	290	280S	I295S	315S	A	A	A	S	S	S	S	S	S	S
5	S	S	S	S	S	S	300S	I340S	I345A	340	I335S	I310A	315	310	290	315S	I305S	S	S	S	S	S	S	S	S	S
6	S	S	S	S	S	S	I320S	330S	335S	A	A	I300A	I290S	I295S	J275S	I300S	J325S	S	S	350S	S	S	S	S	S	S
7	S	S	S	S	S	325	310	320	S	A	A	A	S	J295S	I290A	I320A	J335S	I325S	340S	330	S	S	S	S	S	S
8	S	S	S	S	S	I340S	335	330	335S	A	A	A	A	A	A	S	I305S	305S	305S	S	S	S	S	S	S	S
9	A	A	A	A	A	A	S	365S	I325S	310S	I330S	J270S	300	270	290	280S	I290S	J295S	330S	305	305S	I345S	S	S	S	S
10	A	S	S	S	S	I340S	A	S	U325S	A	A	A	A	260S	J265S	J265S	265	S	S	I360S	J290S	270	S	S	S	S
11	S	285S	310S	280	I305C	320S	I300S	I285S	310S	A	S	C	C	A	A	S	A	320	I275A	S	I300A	C	C	C	C	
12	C	C	C	C	C	I305C	345S	C	A	A	A	A	I300A	300S	290S	305S	J330S	325S	315S	S	A	A	A	A	A	
13	S	S	S	S	S	S	380	370S	I340A	C	C	A	A	A	I270R	290S	275	300	310	A	S	S	S	S	S	S
14	295	A	A	A	A	S	I340A	I365A	I330A	A	A	A	A	A	A	A	A	A	S	C	C	S	I340S	305S	S	S
15	S	S	S	S	S	305S	315S	I345A	J370S	A	A	A	I270A	I280A	I290S	J300S	I305S	I305S	310S	300S	I310S	S	S	S	S	S
16	S	A	S	S	S	315S	310S	I335S	340S	315S	U3370S	A	A	A	A	J280S	I300A	I325S	I345S	I365S	U370S	I320S	S	S	S	S
17	S	S	S	A	A	I315S	I315A	320S	330	I340S	350	305S	290	I275C	I270C	295S	J320S	A	A	S	U305C	I315S	S	S	S	
18	A	A	A	S	S	305S	305S	320S	345S	S	A	A	275	A	A	A	A	325S	C	A	A	C	S	S	S	S
19	320S	S	A	A	A	A	A	A	I350A	I310C	315	A	A	A	300	325S	310S	335S	I335S	335S	S	S	S	S	S	S
20	S	S	S	S	S	345S	A	A	A	I325A	I300A	I280A	265	290S	280S	300S	I325S	I350S	U345S	S	S	S	S	S	S	S
21	S	S	S	S	S	300	305	330	I355S	330	J300S	I285S	I285A	280	260	J270S	I315S	335	I335S	I320S	S	S	S	S	S	S
22	S	S	S	S	S	S	S	370	I330S	295	310S	285S	295	300S	J305S	310S	U305S	S	S	S	S	S	S	S	S	S
23	S	S	A	A	S	S	I335S	340S	340S	S	A	S	290	275	310	I300A	I305S	295S	315	A	S	A	A	A	S	
24	S	S	S	S	F	S	310S	355S	I340A	335S	A	A	S	280S	J275S	I300A	J325S	I335S	S	A	S	S	S	S	S	S
25	S	S	S	S	S	I320A	310S	J320S	350	340S	I335S	330S	270	290S	265	290	S	S	S	C	S	S	S	S	S	S
26	S	S	S	S	S	S	350S	I330S	S	A	A	325	295S	305	290	290	285	I275S	I260S	U340S	S	S	S	S	S	S
27	S	S	A	S	A	A	330	310	S	A	A	A	300S	310S	270	I320S	I310S	I325S	I325S	I330S	S	S	S	S	S	S
28	S	S	S	S	S	J305S	I315S	335	J325S	J360S	345S	335	R	A	300	U315S	300	I315S	310	350	J310S	S	S	S	S	S
29	S	S	S	S	S	I295S	I305A	285S	I335C	340	I325S	310	285S	270S	300S	310S	290	335S	320S	340S	I310S	S	S	S	S	S
30	S	S	S	S	S	S	330S	355	365	345	280	300	I290S	S	A	275S	I315A	305S	285	S	S	S	S	S	S	S
31																										
No.	2	1	1	4	12	18	24	23	21	15	14	13	18	21	25	25	26	21	17	12	6	5	3	2		
Median	310	285	310	300	U310	315	330	340	340	U330	310	U295	290	290	290	300	310	325	335	330	U310	U320	305	U310		
U.Q.																										
L.Q.																										
Q.R.																										

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

M(3000)F2

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

0.01

Jun. 1964

M(3000)F1

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	380	A	A	A					
2							L	375	390	A	A	A	A	A	A	A	A	A	A					
3							A	A	A	A	A	A	A	A	395	1385S	1375R	370	350L					
4							A	A	A	A	S	R	R	R	A	A	A	A	A					
5							L	A	A	A	S	A	A	A	R	R	370	A	A	A				
6							A	370	A	A	A	A	R	R	R	R	A	A	A	S				
7							L	A	A	A	A	R	A	A	A	A	A	A	A					
8							A	A	A	A	A	R	A	A	A	A	S	1370A	1345A					
9							L	355	1390S	380	1400S	1415R	1405R	S	R	1365R	355	380	345H	L				
10							A	A	A	A	A	A	385S	1375S	365R	1360S	350R	345	L					
11							S	315	A	A	A	C	A	A	A	A	A	A	A					
12							L	C	A	A	A	A	A	A	A	A	A	A	A					
13							L	L	1385A	C	C	A	A	A	R	400	370	1355S	A					
14							A	A	A	A	A	A	A	A	A	A	A	A	C	C				
15							A	A	A	A	A	A	A	A	A	A	A	A	A					
16							L	370	A	A	A	A	A	A	A	A	A	A	A					
17							A	365	1370A	1385A	1410A	1410A	1410A	380	1365C	A	A	A	A					
18							A	L	A	A	A	A	A	A	A	A	A	A	A					
19							A	A	A	C	A	1365A	A	A	A	A	A	A	A					
20							A	A	A	A	A	A	A	385	365	1370A	1365A	405	L	L				
21							L	S	L	365L	L	A	A	A	A	A	A	A	A					
22							L	1380L	375	405	1395S	395R	R	A	A	A	A	A	A					
23							A	A	A	A	A	A	A	A	385	A	S	1360S	S					
24							A	A	A	A	A	A	R	R	A	A	A	A	A					
25							A	370	A	A	A	A	R	R	A	S	S	350S	A					
26							A	A	A	A	A	360	R	A	A	A	355R	350	370					
27							A	A	A	A	A	A	R	R	370	380	A	A	A					
28							355	A	A	A	395S	R	A	A	A	A	1385A	375	A	L				
29							L	A	A	A	A	A	A	A	A	365R	1365A	365	375	375H				
30							L	L	385	L	A	A	A	A	A	A	395R	A	A	L				
31																								
No.							5	8	5	4	5	3	3	3	7	8	10	11	6					
Median							355	375	380	U395	U395	U405	380	365	U375	370	370	370	360					
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F1

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Lat. 31°12'1" N
 Long. 130°37'1" E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

km **R'F2**

Jun. 1964

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	360	325	300	290	270	I270A					
2							325	325	255	345	I315S	270	A	I455A	410	I355A	295	270	A					
3							300	275	300	A	A	A	A	A	325	320	290	260	290					
4							E300A	I245A	I260A	300	S	S	400	400	I395A	345	A	A	290					
5							310	250	A	310	S	A	340	350	360	325	305	290	275	260				
6								290	280	A	A	A	S	S	435	360	290	250	255					
7							350	250	225	A	A	S	R	I415A	A	A	290	270	260					
8							E300A	A	A	A	A	A	A	A	A	A	335	315	I285A					
9							250	335	345	285	S	360	455	375	390	325	305	280	300	280				
10								A	300	A	A	A	420	420	405	395	340	330	225					
11							S	S	350	A	A	C	C	A	A	A	300	I310A	A					
12							260	C	A	A	A	A	U360C	U375C	U340C	U340C	E360S	285	E300S					
13							235	255	I270A	C	C	A	A	A	R	380	400	345	300					
14								A	I285A	A	A	A	A	A	A	A	A	325	C	C				
15								A	A	A	A	A	A	A	A	340	315	325	E350S	E325S				
16								270	340	275	A	A	A	A	A	355	A	300	E280S					
17							325	U280C	U300C	290	U265C	E370A	400	450	I445C	345	U290C	A	A					
18								A	A	A	A	A	U400C	A	A	A	C	C	A					
19							A	A	I265A	C	350	I435A	A	A	325	310	305	305	I285A					
20								A	A	A	A	A	430	375	360	305	280	245	245					
21							300	240	300	340	400L	I390A	410	450	E400A	280	255	285	I310A					
22							250	245	S	350	370	400	390	345	300	330	325	A	A					
23								280	E300A	A	A	A	375	E450A	345	I365A	350	350	300					
24							300	260	I265A	300	A	A	S	430	380	A	S	I270A	A					
25							I275A	260	280	310	330	450	400	455	350	350	370	320	315					
26								A	A	A	310	395	375	E480A	370	I350A	310	300	250					
27								E370A	290	A	A	A	355	345	400	310	I310A	290	280					
28								305	250	270	310	R	A	340	300	340	305	305	260	270L				
29								400L	295	290	A	350	425	450	345	325	295	270	270					
30							250	245	275	350L	400	A	I365A	I395A	355	I305A	320	380	300	250				
31																								
No.							13	18	20	12	11	9	15	18	22	24	24	25	21	5				
Median							280	270	280	305	330	395	400	385	360	340	305	290	280	260				
U.Q.																								
L.Q.																								
Q.R.																								

R'F2

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

km

RF

Jun. 1964

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	I255A	I255A	A	A	A	A	A	A	A	A	I230A	235	A	A	A	245	I230A	I255A	290	275	
2	280	300	280	275	250	275	245	235	235	215	A	A	A	A	A	A	A	A	A	235	A	295	A	A	
3	A	A	A	A	280	275	I260A	A	A	A	A	A	A	A	210	215	235	250	215	245	A	A	A	A	
4	A	A	A	A	A	A	A	A	A	A	A	200	R	R	A	A	A	A	225	290	I265A	A	A	A	
5	A	A	A	A	A	250	230	A	A	A	I200A	A	A	A	R	I215A	235	A	A	A	A	A	A	A	
6	A	A	A	275	245	250	A	A	240	A	A	A	220	230	A	A	A	A	220	230	I260A	I280S	I275A	I260A	
7	230	250	265	275	265	255	I250A	A	A	A	A	A	A	A	A	A	A	A	A	275	A	A	A	A	
8	A	A	A	250	200	250	250	A	A	A	A	A	A	A	A	A	A	I220A	I235A	I250A	225	A	A	A	
9	A	A	A	I270A	265	240	245	E250A	210	220	195	I200R	I210A	E250A	200	235	205	220	210H	245	210	215	A	A	
10	A	A	A	A	I305A	225	I225A	A	A	A	A	A	220	190	250	215	E250A	275	230	200	255	350	I305S	I285S	
11	250	300	250	275	I275C	250	250	235	A	A	A	C	A	A	A	A	A	A	A	A	C	C	C	C	
12	C	C	C	C	I265C	250	250	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
13	A	A	A	A	A	A	230	E245A	A	C	C	A	A	A	210	185	245	230	A	A	A	A	A	A	
14	300	A	A	A	A	I260A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	245	E280S	280	250	
15	I260A	290	235	255	E300A	255	A	A	A	A	A	A	A	A	A	A	A	A	A	S	E260S	A	A	A	
16	A	A	A	I310A	280	250	250	220	235	I240A	A	A	A	A	A	A	A	A	A	A	225	205	A	320	I345A
17	335	I310C	I275A	I245A	A	A	A	A	240	I220A	I230A	I210A	I205A	250	I205G	I245A	A	A	A	A	A	U300C	290	A	A
18	A	A	A	A	U275C	U260C	I240A	U250C	A	A	A	A	A	A	A	A	A	A	A	A	A	G	A	A	
19	290	I300A	290	A	A	A	A	A	A	C	A	A	A	A	A	I250A	I245A	I270A	I235A	255	I245A	210	A	A	
20	A	300	A	225	E290A	A	A	A	A	A	A	A	200	220	I235A	I240A	220	225	225	210	255	295	I300S	275	
21	I290A	275	255	I235A	280	300	275	I225A	200	E250A	190	A	A	A	A	A	A	A	A	A	A	E300A	A	A	
22	I300S	275	280	275	250	215	210	225	200	200	250	210	A	A	A	A	A	A	A	A	A	A	A	A	
23	300	A	A	A	250	240	250	A	A	A	A	A	A	A	E240A	A	205	I255A	250	A	A	A	A	A	
24	A	A	A	A	I240S	250	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S	S	A	
25	S	A	A	A	275	I265A	250	I250A	255	A	A	A	A	A	A	A	225	200	275	A	C	A	A	A	
26	A	A	A	A	225	225	I210A	A	A	A	A	A	E275A	A	A	A	A	225	200	220	240	A	A	A	
27	A	E270A	A	A	A	A	210	A	A	A	A	A	A	A	I240R	250	220	I220A	I215A	I230A	I250A	I240A	240	260	250
28	260	275	290	280	250	255	225	E275A	A	A	200	205	A	A	A	A	I215A	210	I220A	220	230	I220A	265	250	
29	I290A	330	280	295	A	A	275	A	A	A	A	A	A	A	E250A	A	225	215	210H	I260A	270	270	260	270	
30	A	A	A	A	I275S	260	250	220	250	E280A	A	A	A	A	A	A	215	A	A	A	250	I205A	205	270	275
31																									
No.	12	12	11	17	19	23	21	8	8	5	6	5	4	5	8	11	13	13	13	17	15	14	10	10	
Median	290	295	280	275	255	250	250	230	235	220	200	205	U215	230	215	225	225	220	225	245	245	255	280	270	
U.Q.																									
L.Q.																									
Q.R.																									

RF

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation
The Radio Research Laboratories, Japan
Y 10

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km

f^oF₂

Jun. 1964

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	95	95	95	120	110	110	105	105	105	105	105	105	105	100	105	105	100	95	95	95	S
2	S	S	S	S	E	S	115	105	105	105	105	100	105	100	100	100	100	100	110	105	95	100	100	105
3	105	105	100	100	100	S	110	105	105	105	100	100	100	100	100	140	135	125	115	110	100	105	105	105
4	105	105	105	105	105	105	110	110	110	105	105	105	105	G	125	125	115	110	110	105	105	105	100	100
5	100	100	100	95	95	S	130	115	110	105	110	105	105	105	G	125	125	125	110	105	105	105	100	100
6	100	100	100	100	100	110	110	105	105	100	100	105	105	140	145	130	115	110	125	110	105	S	110	110
7	S	100	S	S	S	S	120	110	110	105	105	105	120	135	120	115	115	115	110	105	105	105	105	100
8	100	100	100	100	100	S	120	110	105	105	105	105	105	105	100	100	125	125	115	105	110	110	110	110
9	105	105	105	105	105	105	130	115	105	105	110	105	135	130	140	G	G	140	130	S	S	105	105	105
10	105	95	95	95	95	100	125	115	110	105	105	105	105	105	105	130	125	115	105	105	S	S	S	S
11	S	S	S	S	G	S	120	120	105	105	105	G	130	125	120	110	110	105	110	110	C	C	C	C
12	G	G	G	G	G	G	125	G	110	110	110	110	110	110	110	110	110	120	120	115	115	110	105	105
13	100	100	100	105	105	105	120	120	120	G	G	105	105	105	G	G	G	140	125	110	110	110	110	110
14	110	105	105	100	100	105	115	115	120	110	110	105	105	105	100	100	100	100	100	G	110	105	110	105
15	105	100	100	105	130	S	120	115	110	105	105	105	105	100	100	100	100	100	100	100	100	110	105	105
16	105	105	105	105	S	S	105	125	115	110	105	105	105	105	125	100	100	100	100	100	120	115	100	100
17	110	G	125	105	150	130	125	120	115	110	110	110	105	145	G	140	140	130	125	110	110	110	105	100
18	G	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
19	110	110	110	110	110	110	115	115	110	G	100	100	125	125	125	140	125	140	115	110	115	110	105	100
20	100	100	100	S	100	100	115	115	110	105	105	100	105	105	105	105	100	105	100	S	S	S	S	S
21	100	S	100	100	100	100	120	115	125	110	G	110	120	120	115	140	125	115	110	110	100	100	100	95
22	S	S	S	S	110	S	105	105	100	100	100	100	140	120	115	110	110	105	105	105	100	100	100	100
23	100	100	100	100	S	100	140	120	105	105	105	105	105	105	105	105	150	130	110	105	100	100	110	100
24	100	100	100	S	S	S	115	110	105	105	105	105	105	105	105	100	100	100	100	100	S	S	S	100
25	S	100	100	100	100	130	130	130	130	125	130	125	125	105	105	135	125	130	105	105	G	100	100	100
26	100	100	100	100	100	100	100	100	100	100	100	100	100	115	110	105	G	100	140	110	100	100	105	105
27	100	100	100	100	100	100	105	110	100	100	100	100	100	G	150	145	120	120	120	120	125	120	110	S
28	S	S	S	S	S	S	130	110	105	100	110	105	100	100	100	100	100	100	100	100	140	100	100	100
29	100	100	S	100	100	100	140	130	120	115	115	120	120	120	110	105	105	105	100	100	100	100	125	115
30	110	105	100	S	S	S	145	135	130	125	110	105	105	100	100	100	100	100	100	100	100	100	100	100
31																								
No.	22	23	23	21	21	16	30	29	30	28	28	29	30	28	27	28	26	29	28	25	24	24	25	24
Median	100	100	100	100	100	100	120	115	110	105	105	105	105	105	105	110	115	110	110	105	100	105	105	100
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

f^oF₂

Y 11

IONOSPHERIC DATA

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

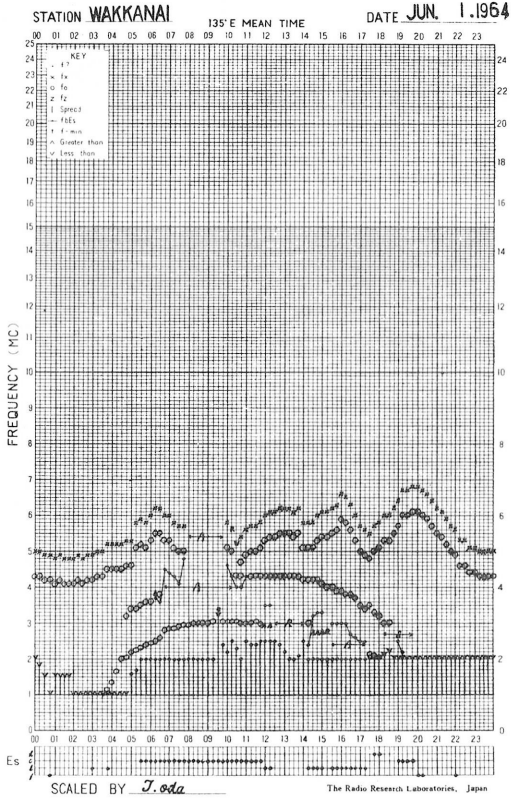
135° E Mean Time (G. M. T. +9h)

Types of Es

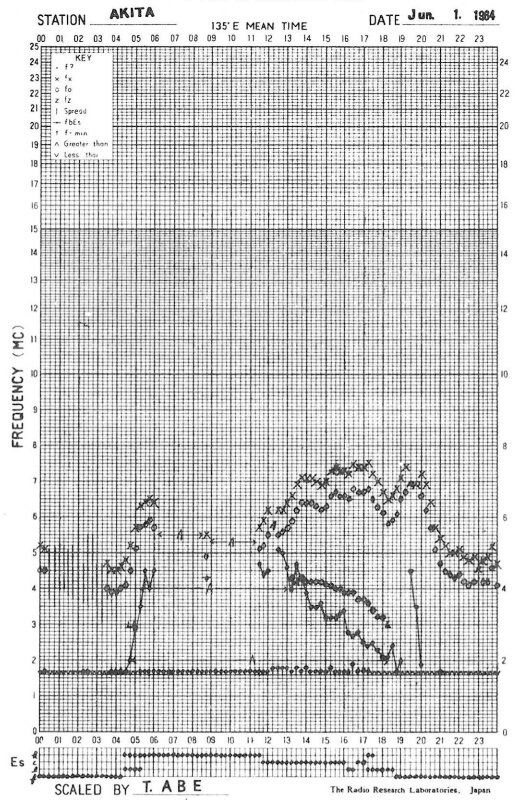
Jun. 1964

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	24
1	f	f2	f	f	f	l	h	e3	e2	e2	e2	e	e2	e	e	l	l2	l3	l	f2	f2	f	f2		
2						c	e2	e2	e	l	l2	l2	l	l2	l	l2	l2	h2l2	h2l2	f2f	f2	f	f3	f	
3	f2	f2	f2	f2	f4	e	e3	e2	e2	e2	l	l	l2	l2	l	h1	h1	h1	e2l	f2f	f2	f f	f f	f2	
4	f	f2	f	f2	f	l2	l2	e2l	e2	e2	e2	l	l	l	h	h	e2	e	e2	f2	f	f2	f2	f2	
5	f2	f2	f2	f2	f2	e	e2	e2	e3	e	e	e2	e	e2	e	h	h	h	h2	e2	f	f2	f	f	
6	f2	f	f	f	f2	e	e3	e2	e	l2	l	l	l	h1	h	h	e2	e	e	f3	f4		f	f	
7																									
8	f3	f2	f2	f	f		e2	e2	e	e3	e3	e	h	h	h2	e	e2	e2	e2	f3	f2	f	f2	f2	
9	f2	f2	f2	f3	f2	l	h2	e2	l2	e	e	l	h	h	h	h	h12	e3l	e2	f3	f f	f f	f2	f	
10	f2	f2	f2	f2	f2	l3	e3l2	e	e2l	e2	l2	l2	l	l	l	h	h	e	c	f	f	f	f	f2	
11						l	h	h	e	l2	l	h	h	h	h	e2	c	e2	e2	f3					
12																									
13	f	f	f	f3	f2	l2	c	h	e2	e2	l2	l2	l2	l	l	h1	h	h2	e2l	f f	f2	f	f2	f3	
14	f2	f2	f2	f3	f	e2	e5	e2	e2	e2	e2	e2	e2	e2	e3	l4	l3	h	h	f2	f3	f2	f	f2	
15	f2	f2	f2	f2	f2												l3	l2	l2			f f	f2	f	
16	f	f2	f2	f	f												l2	l3	l3	f	f2	f2	f	f2	
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18	f2	f4	f3	f2	f											h1	h2	h3	e2	f2	f2	f2	f4	f2	
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21	f																								
22																									
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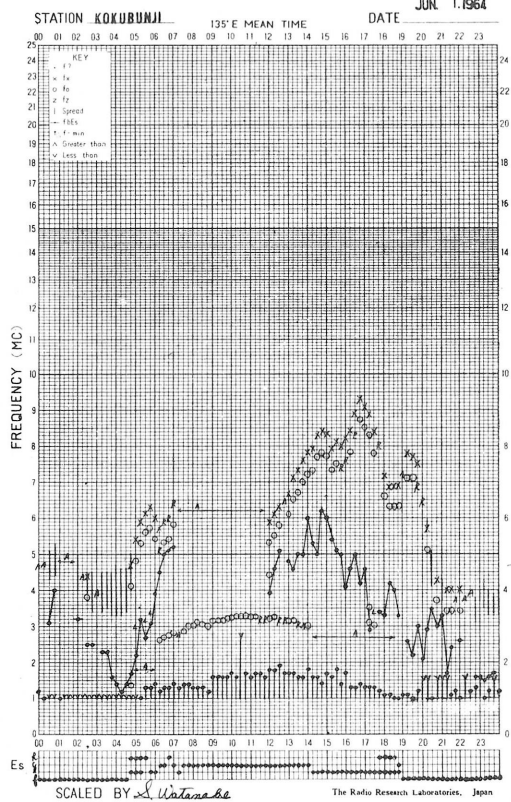
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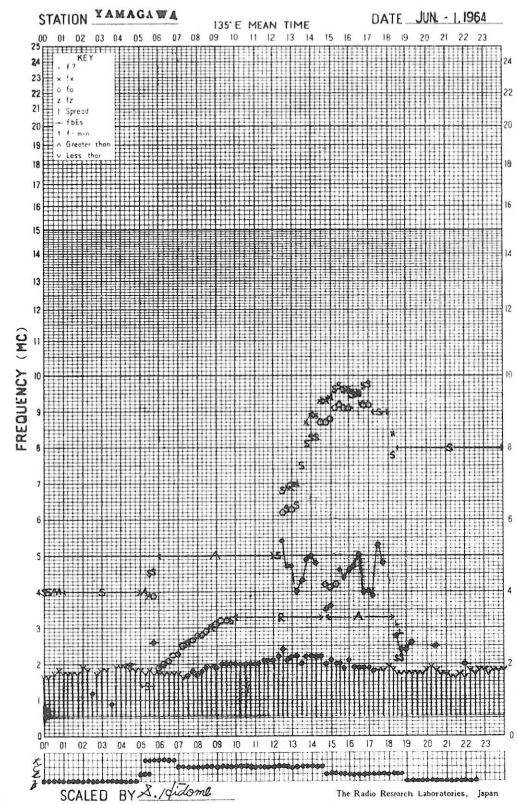
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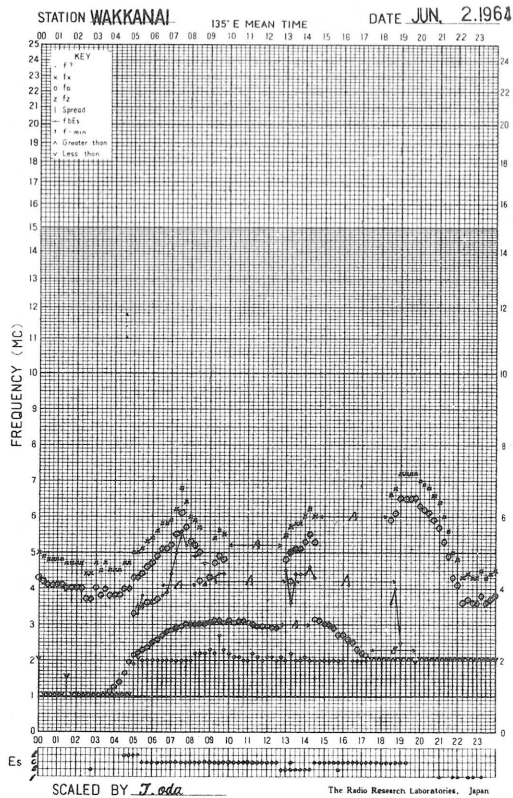
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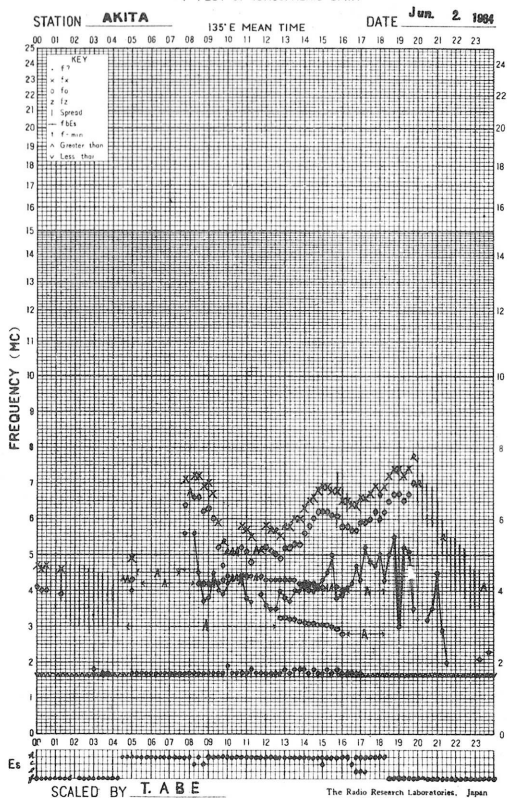
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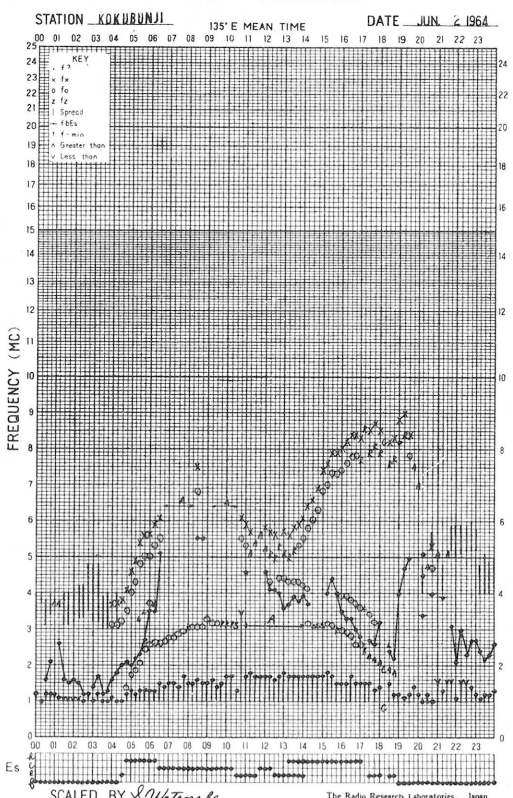
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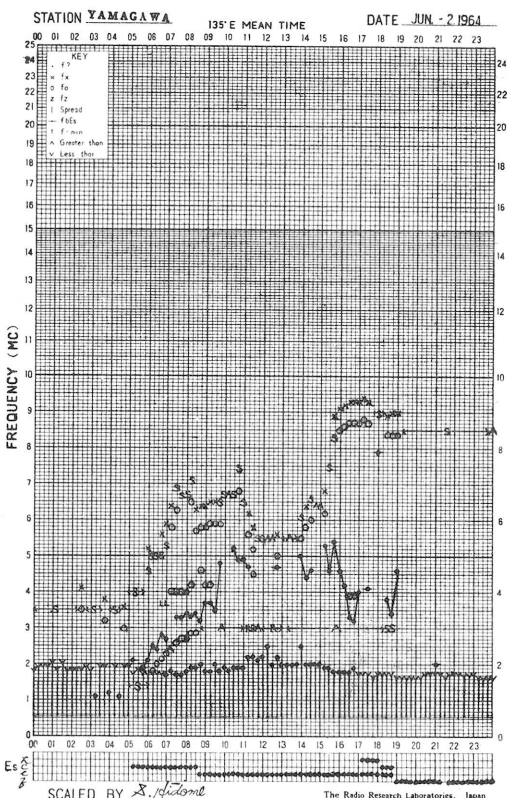
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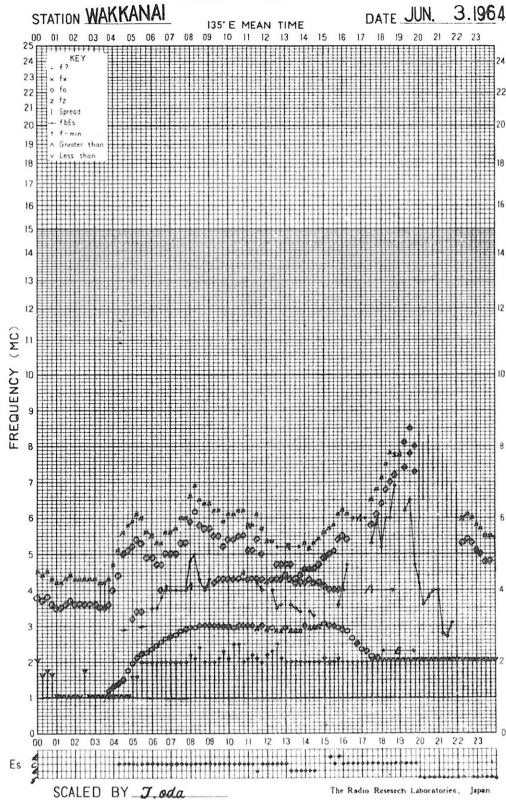
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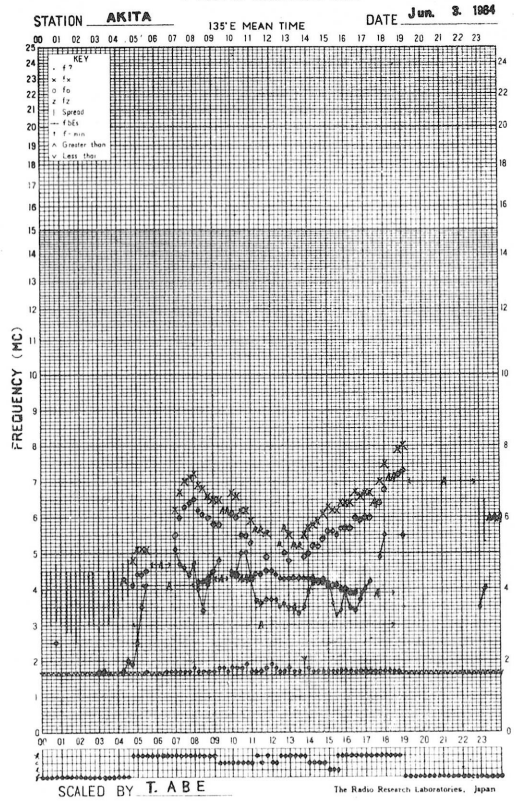
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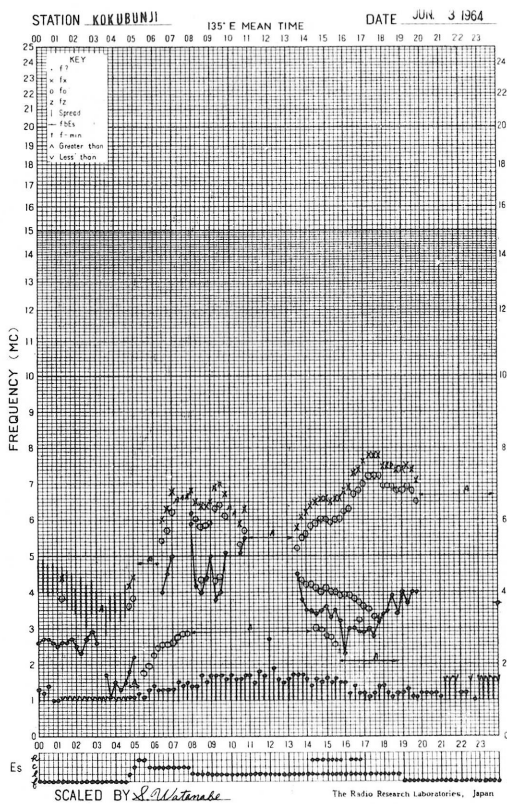
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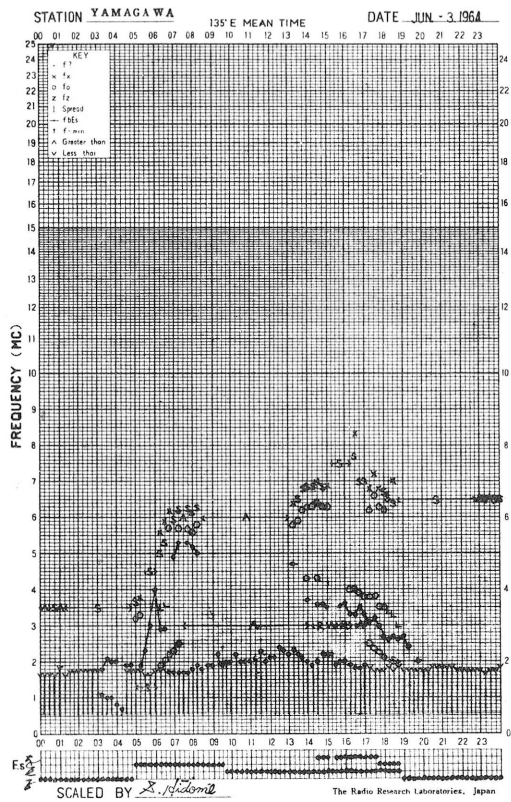
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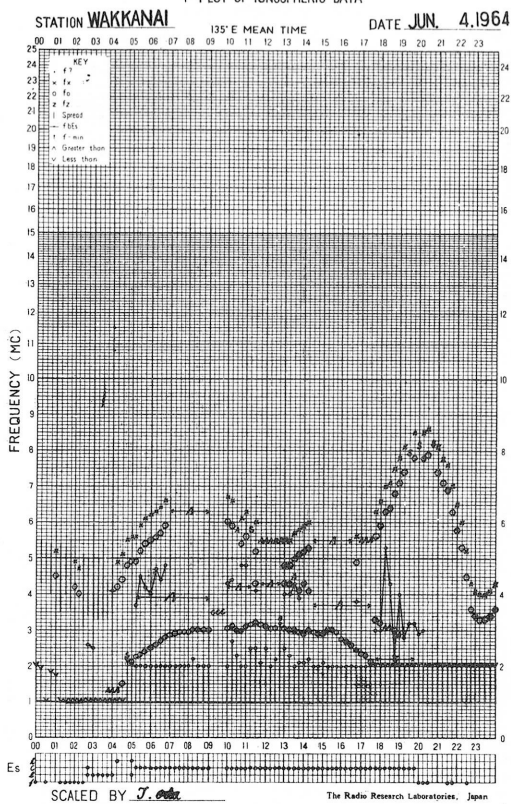
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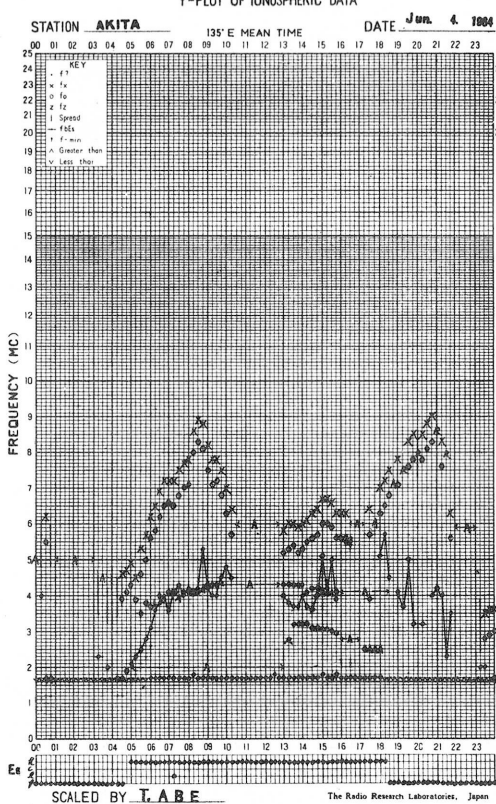
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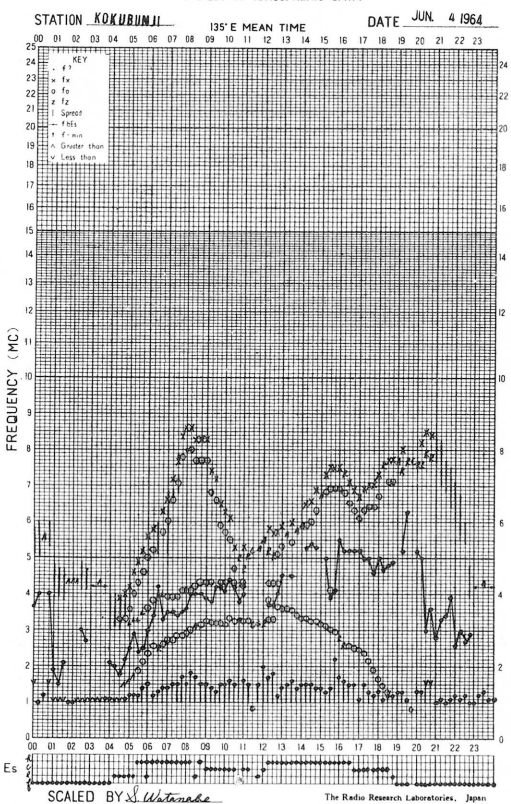
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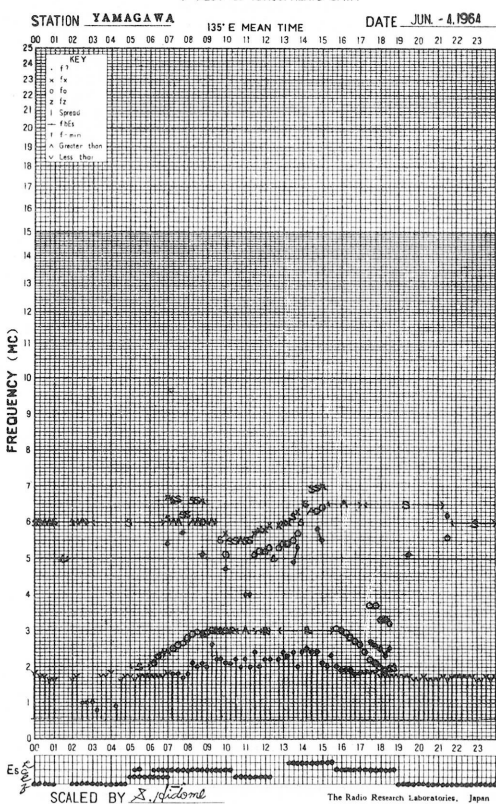
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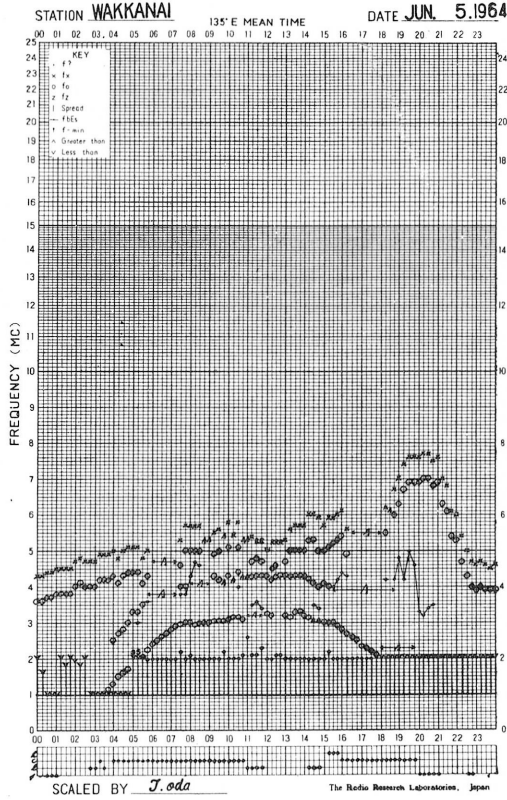
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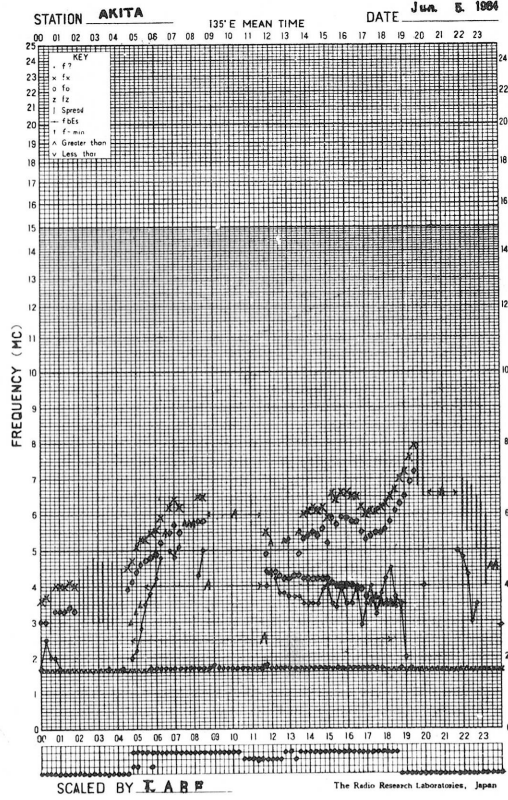
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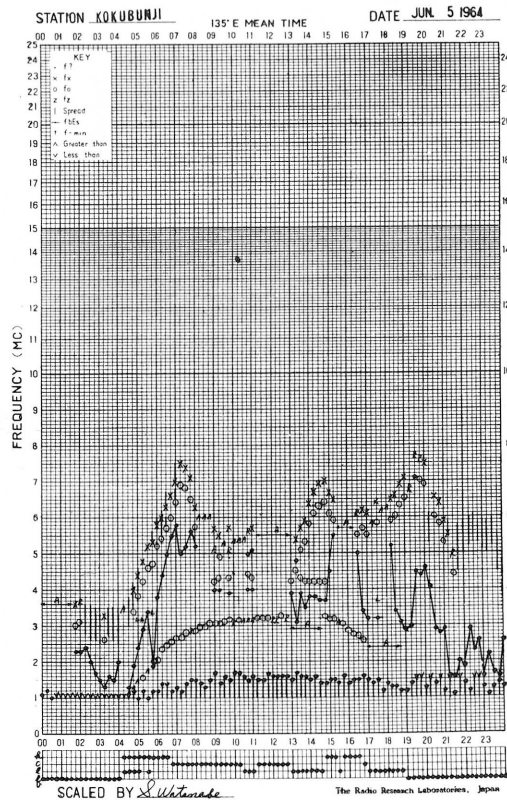
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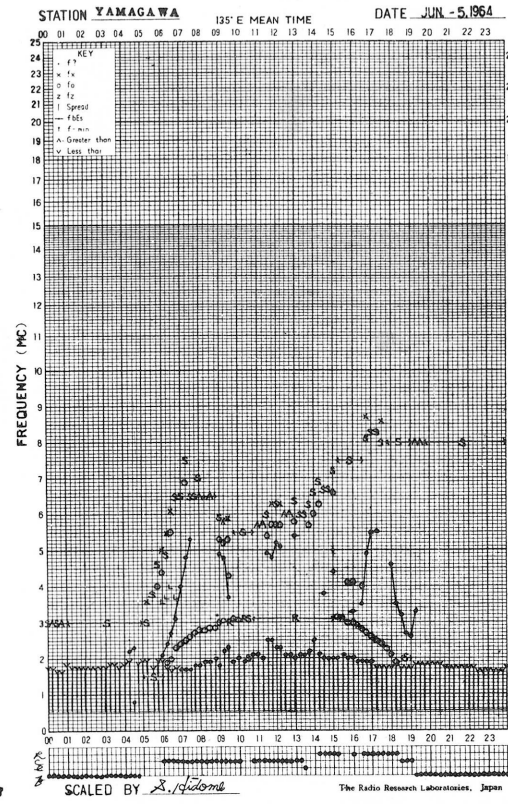
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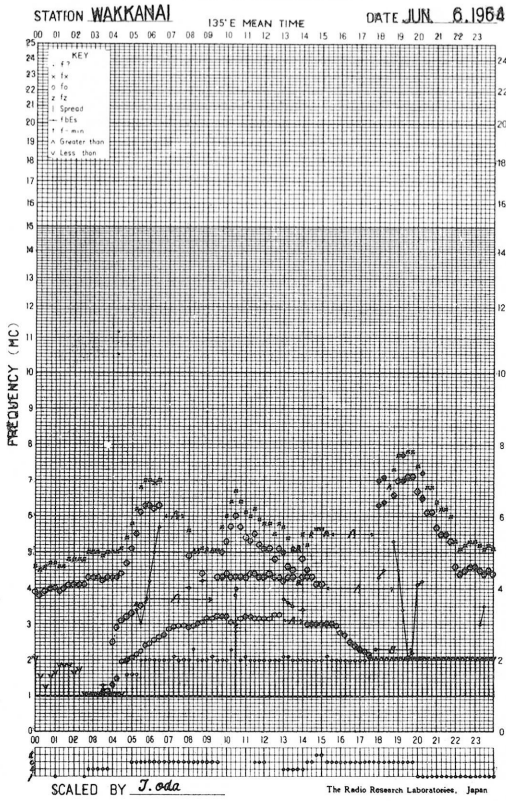
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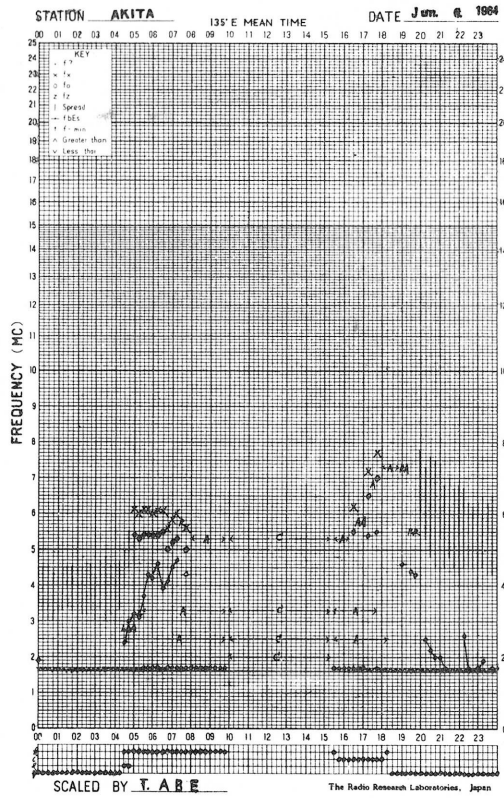
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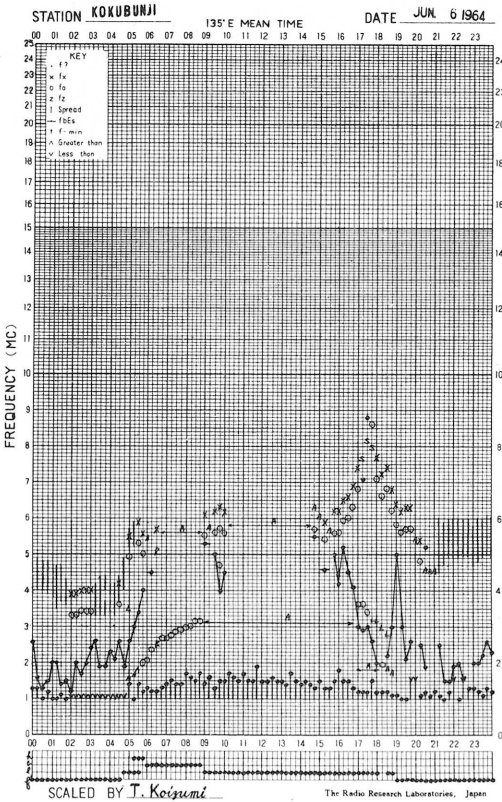
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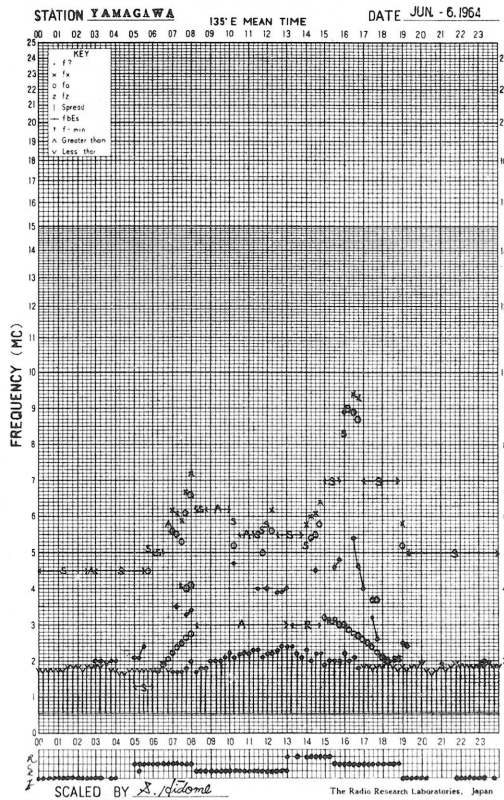
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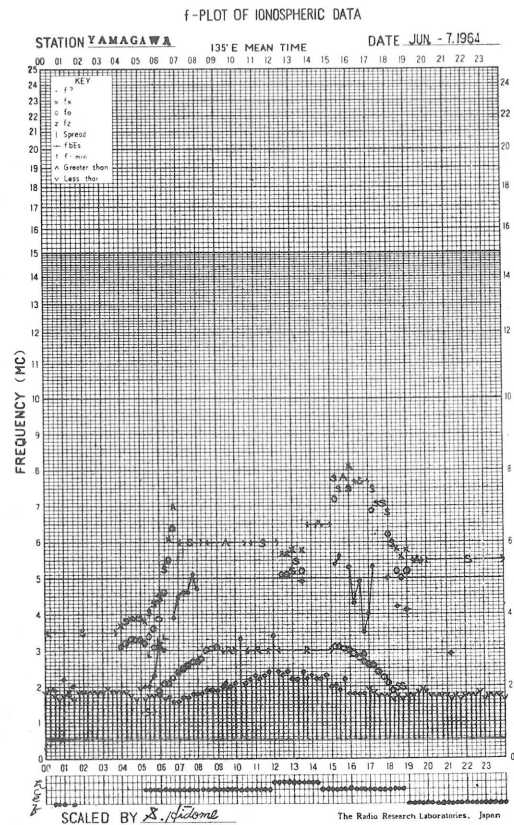
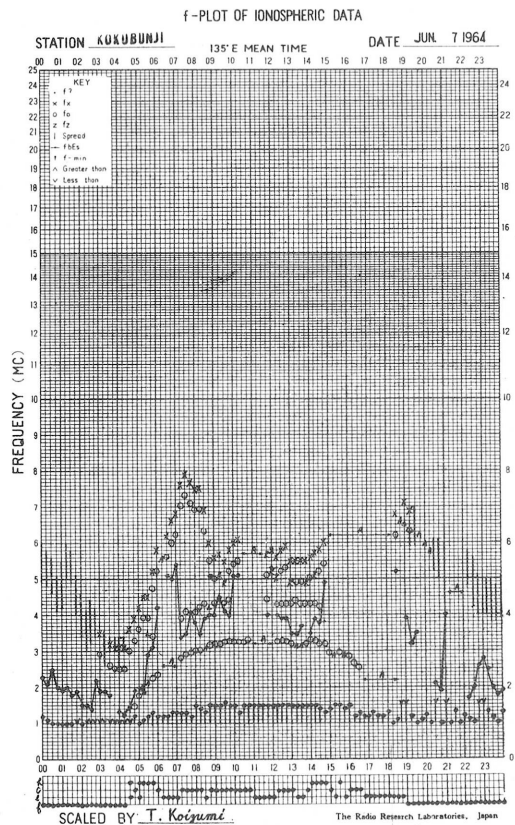
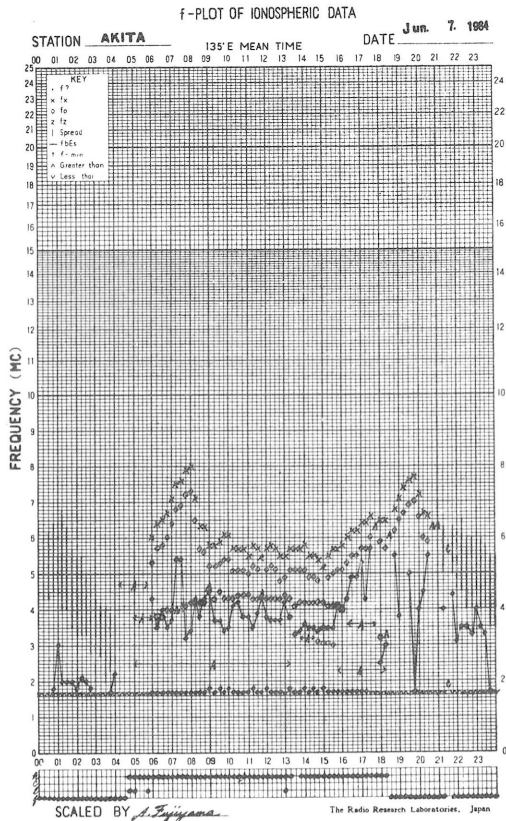
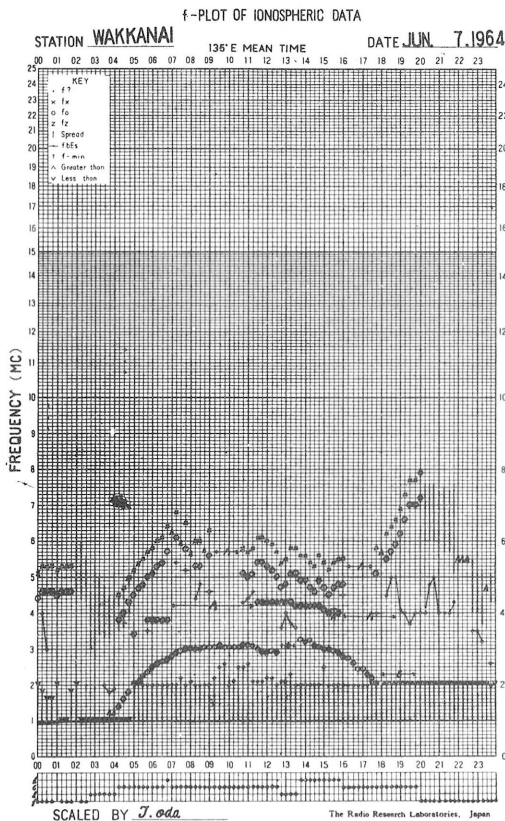


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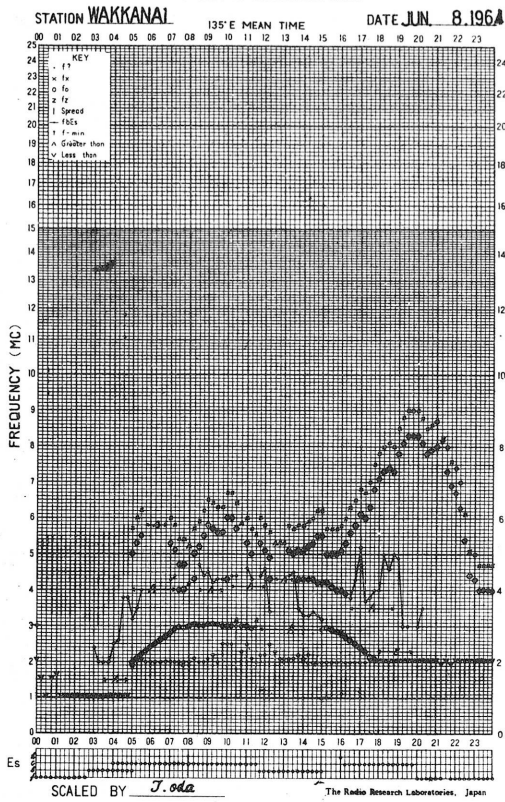


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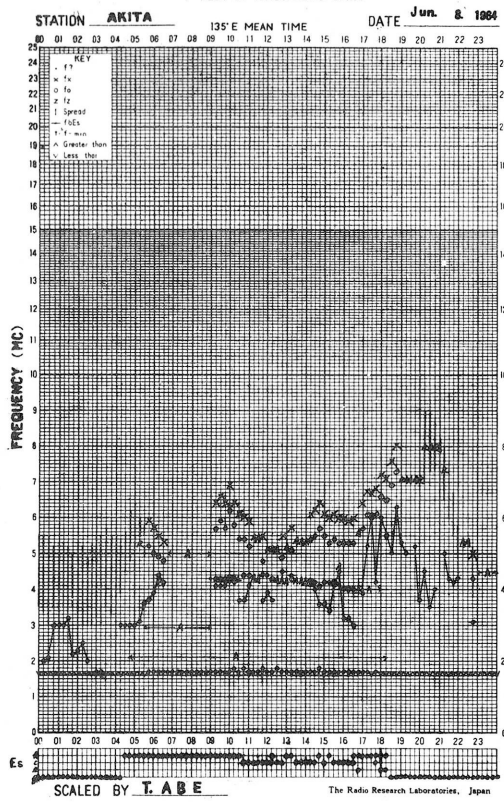




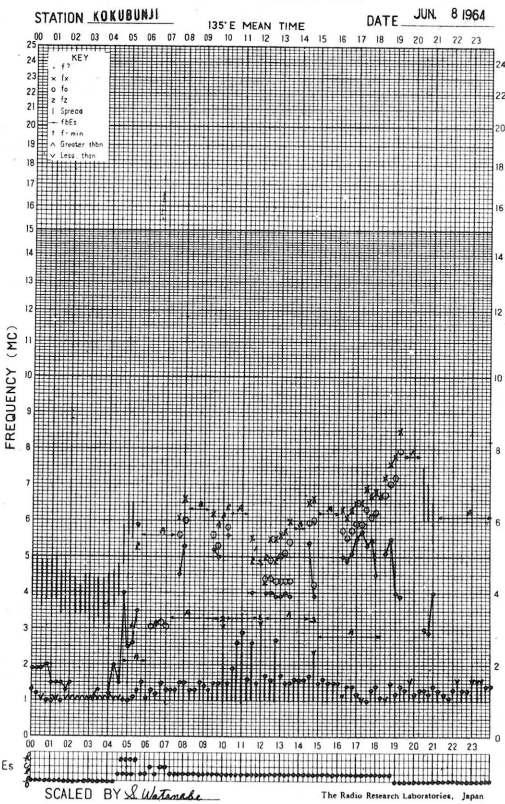
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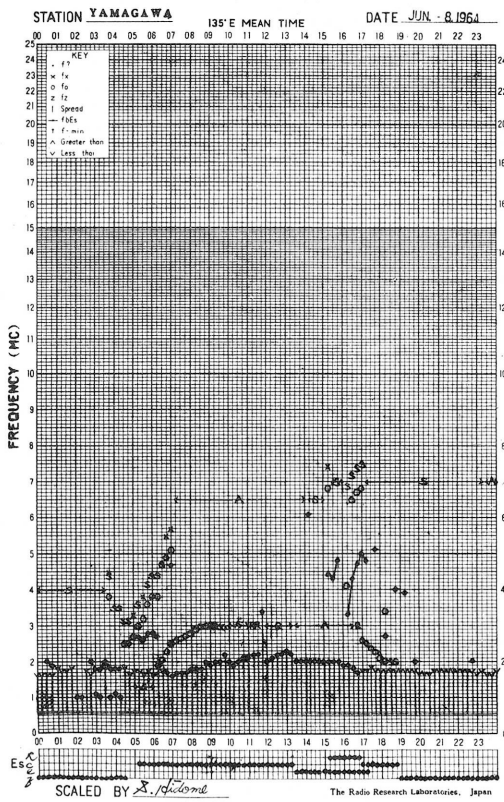
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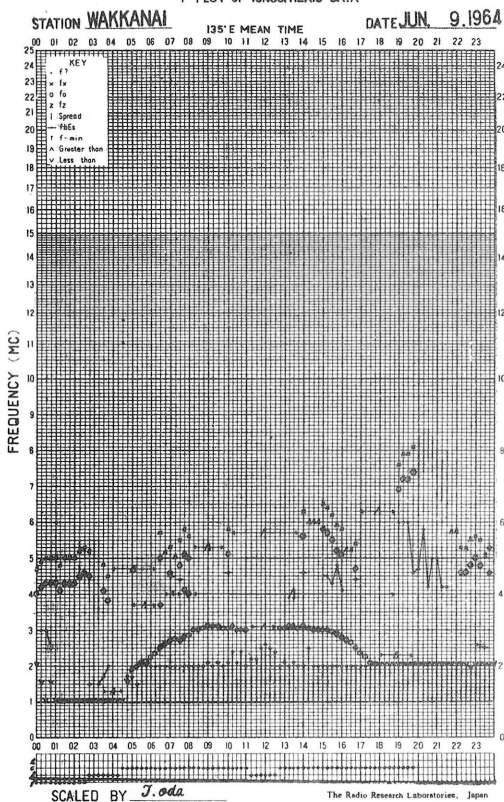
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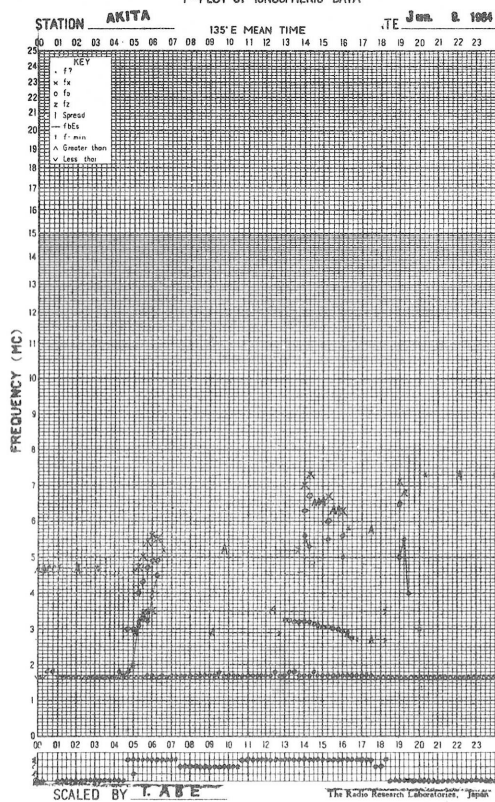
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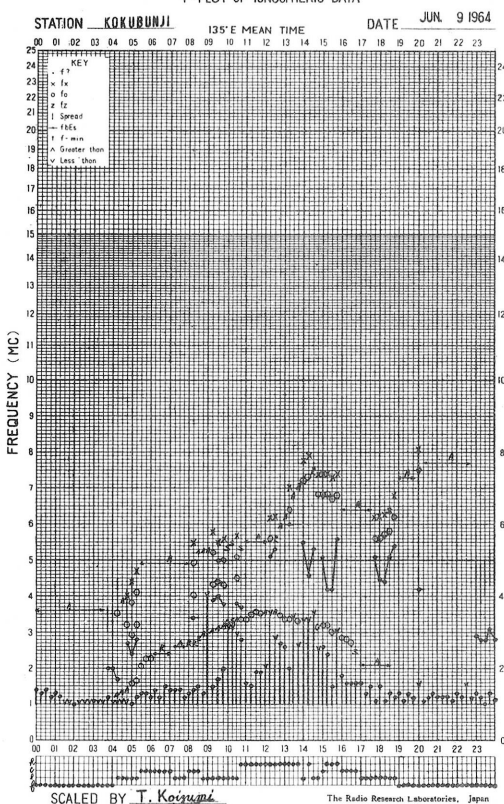
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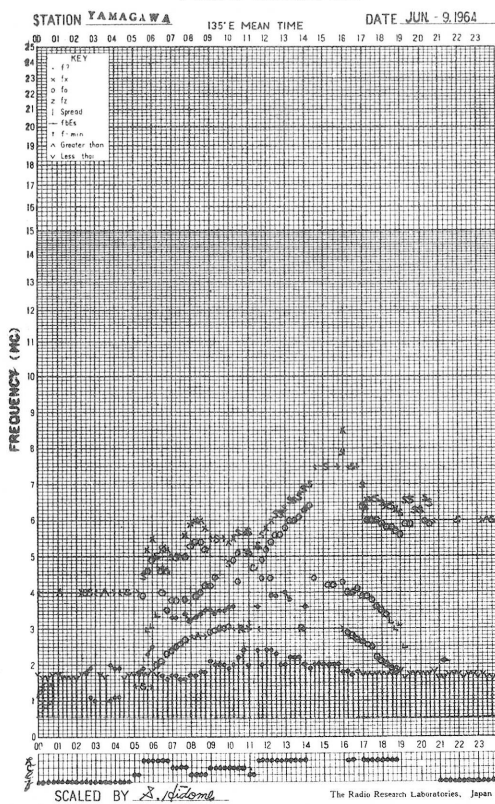
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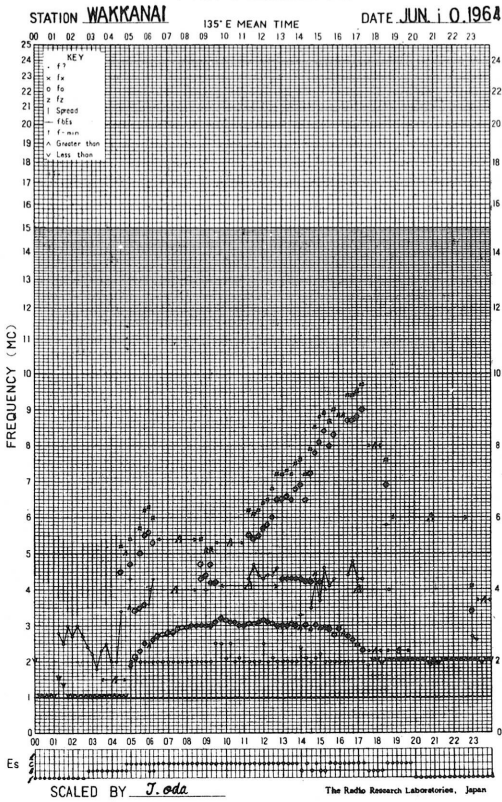
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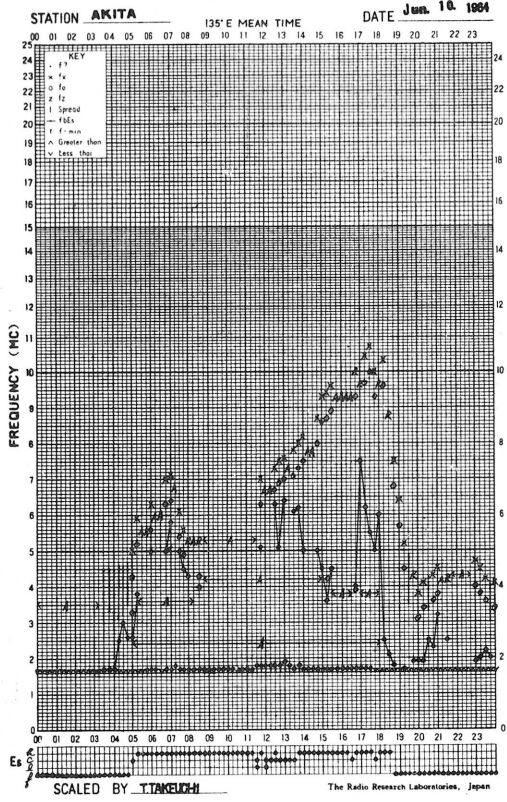
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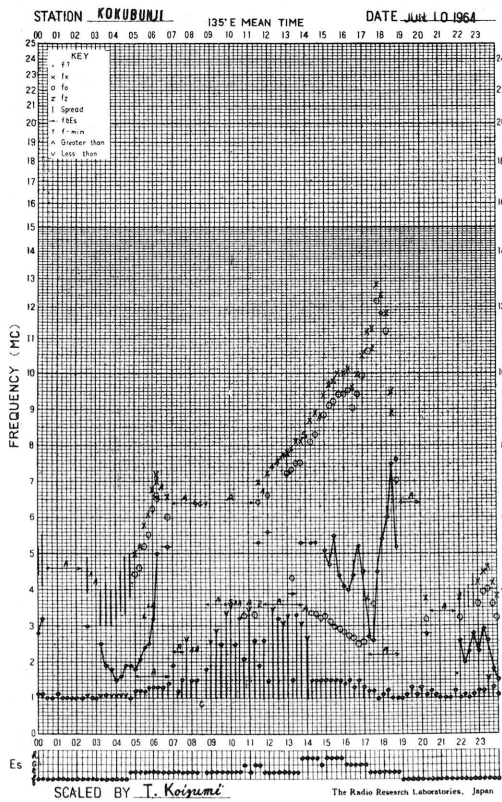
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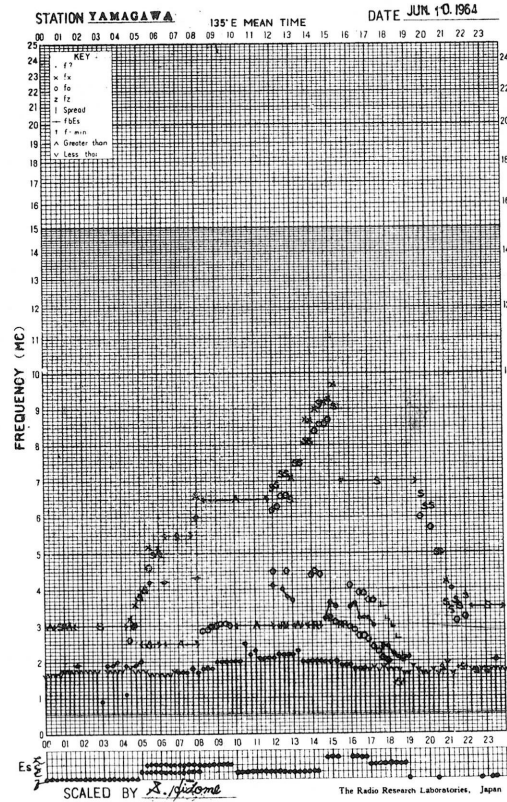
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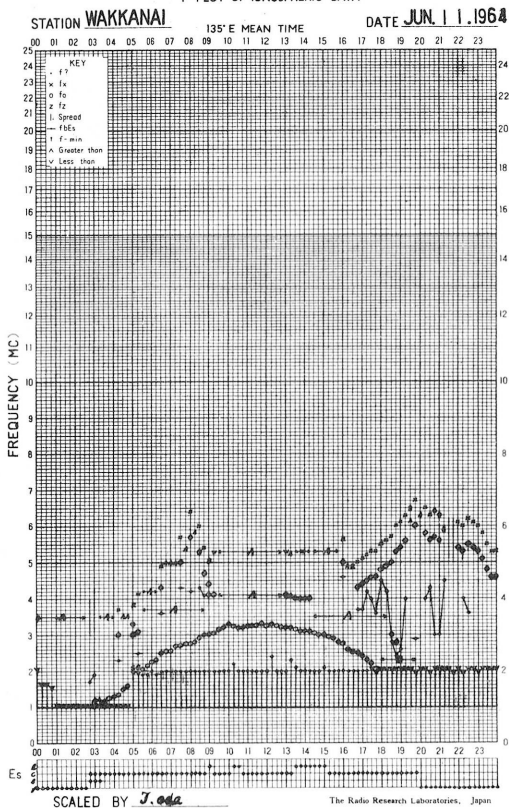
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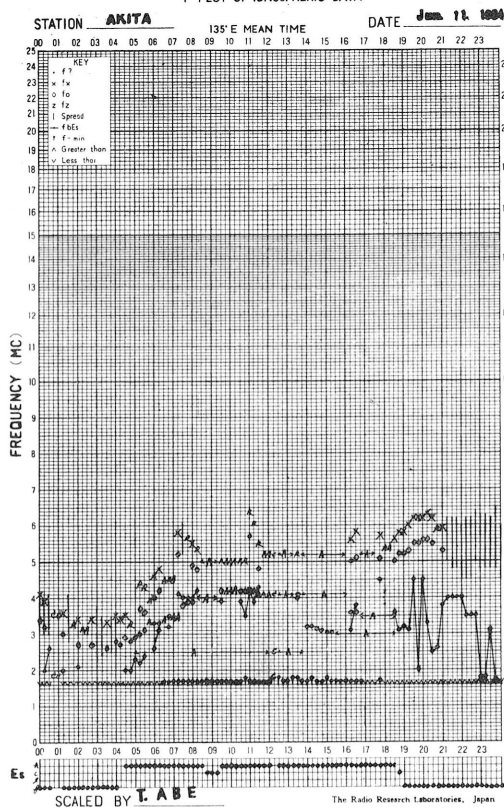
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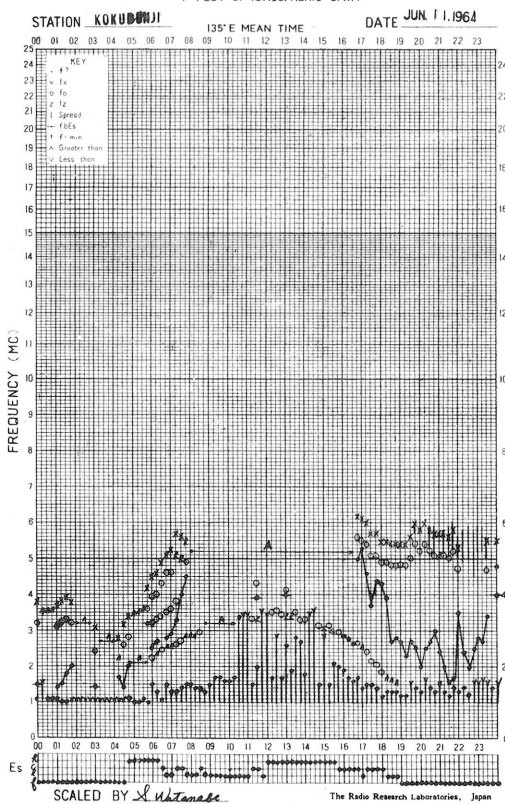
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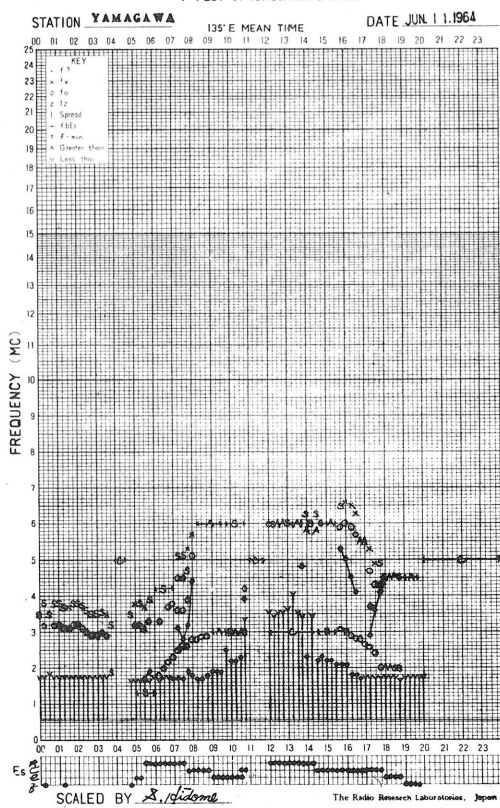
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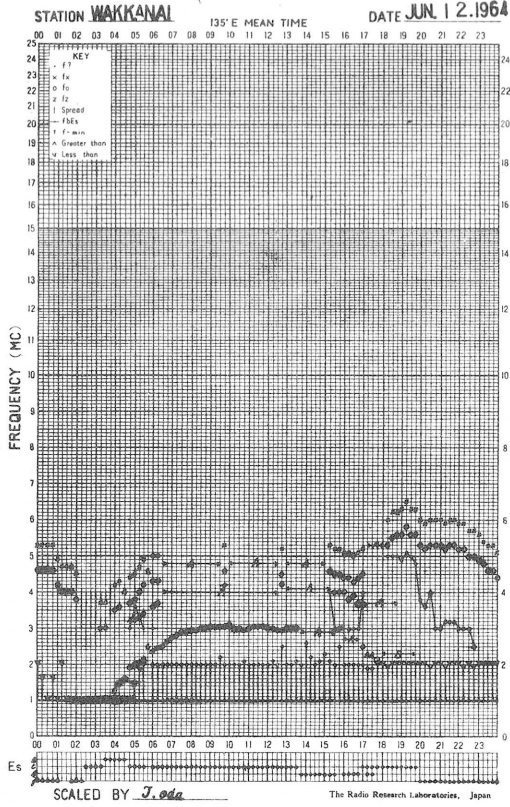
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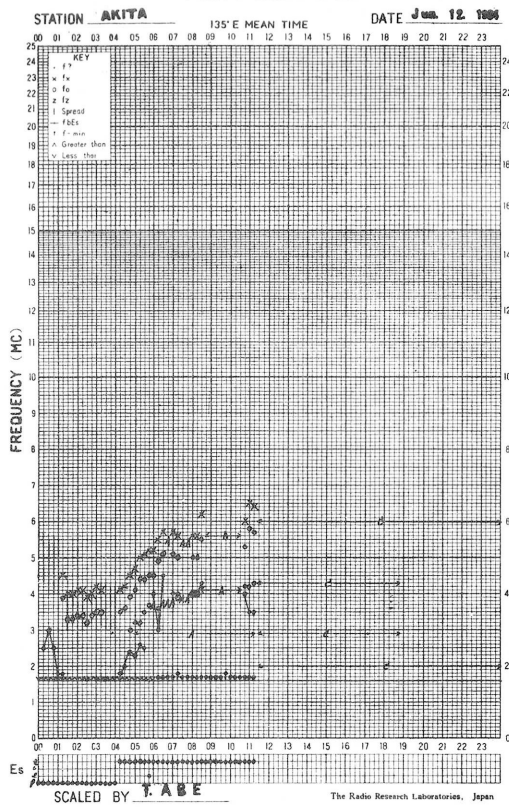
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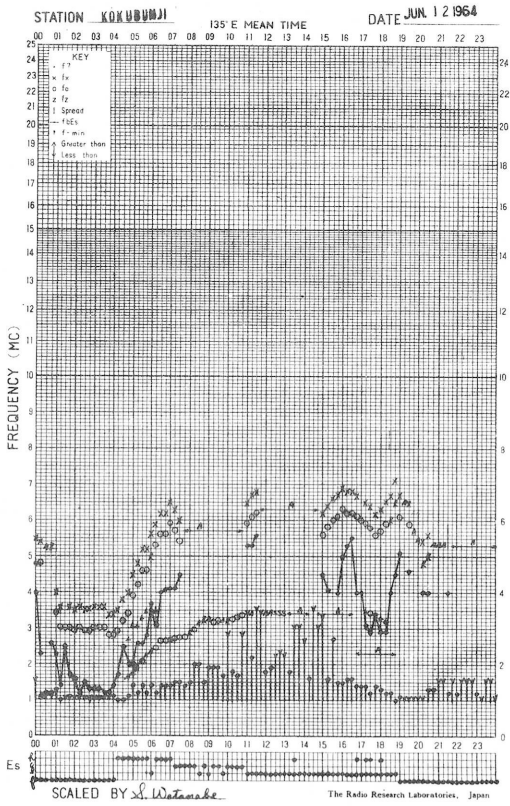
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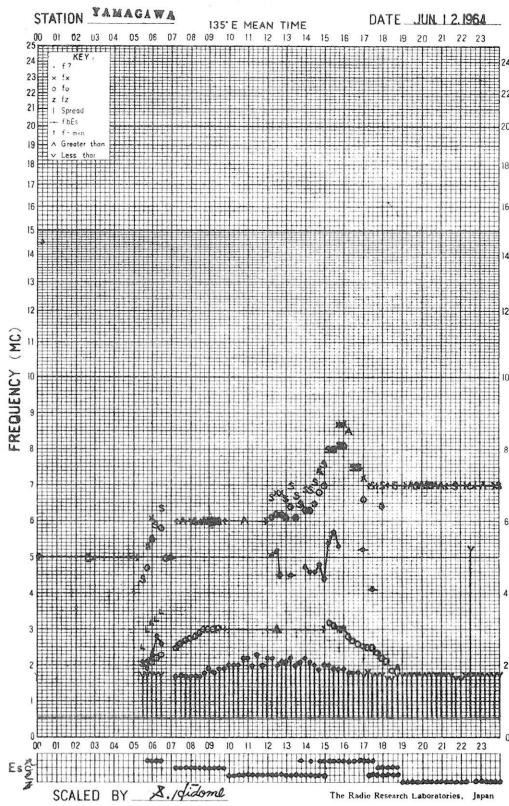
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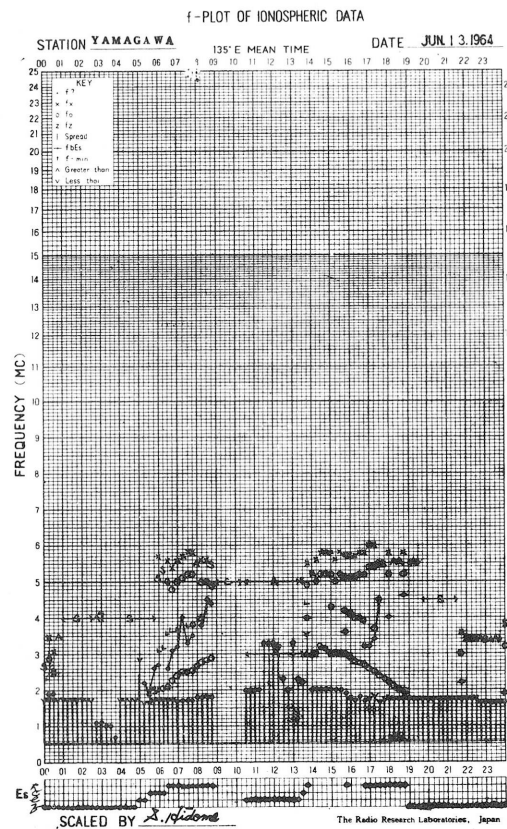
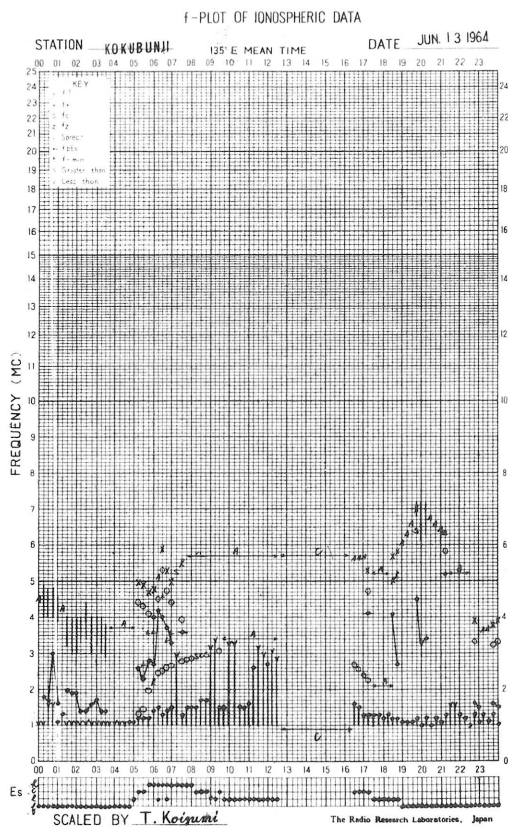
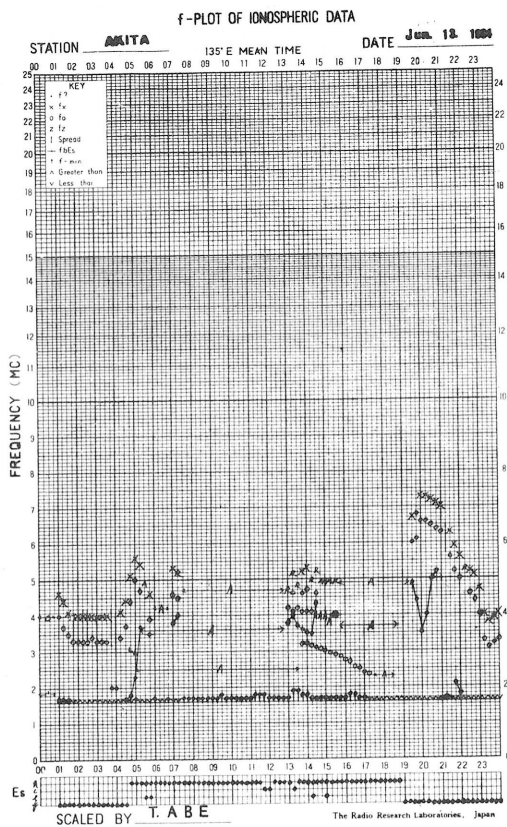
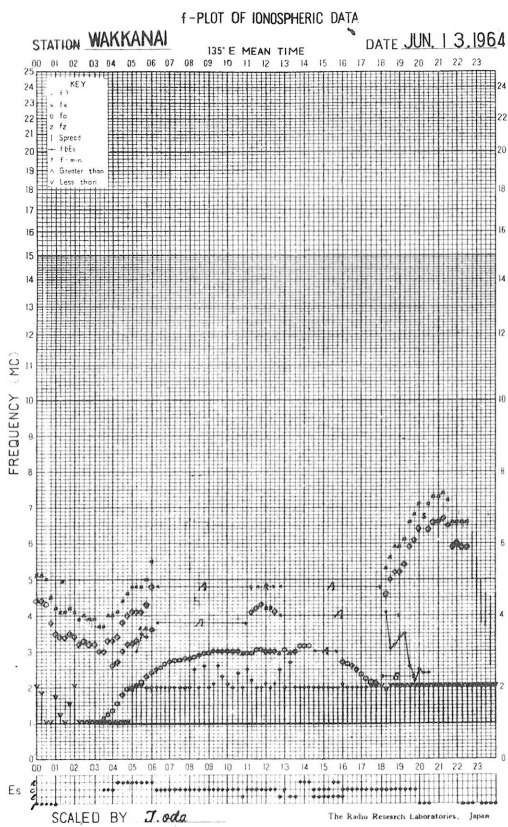


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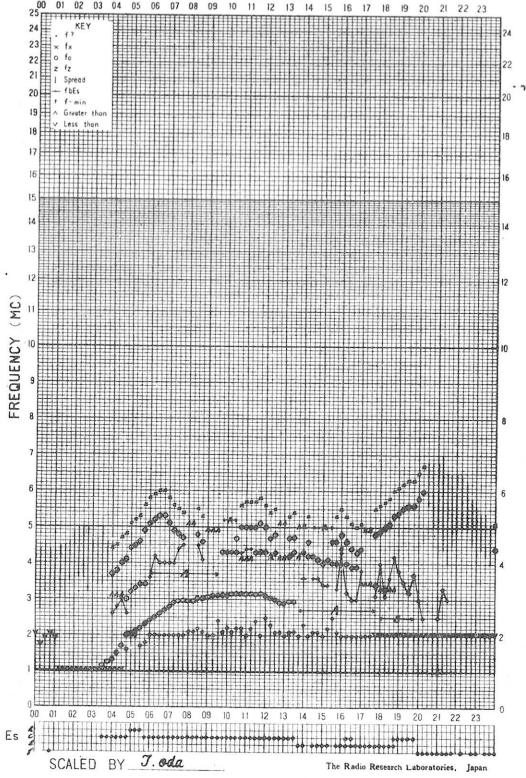
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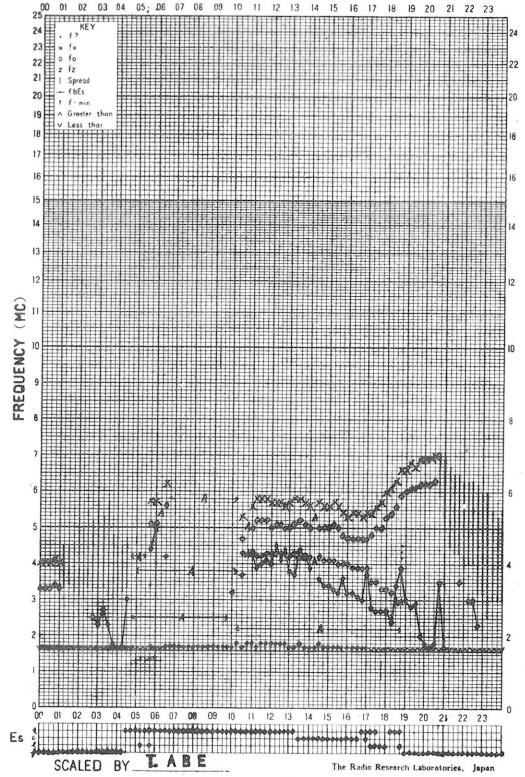
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STATION **WAKKANAI** 135° E MEAN TIME DATE **JUN 14 1964**



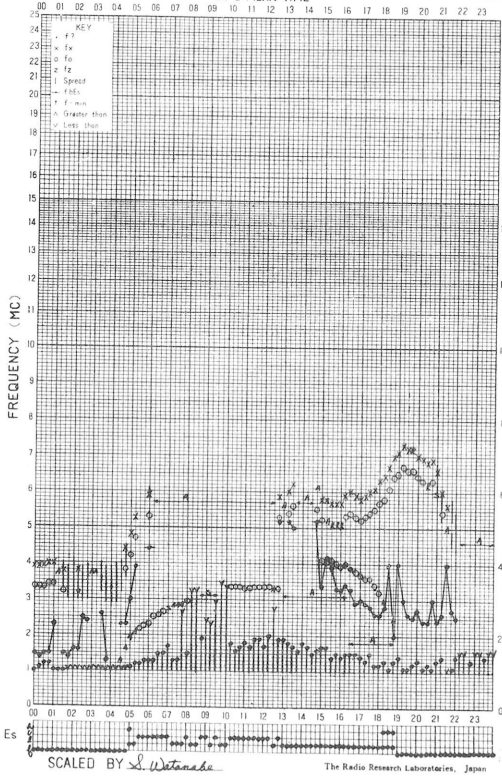
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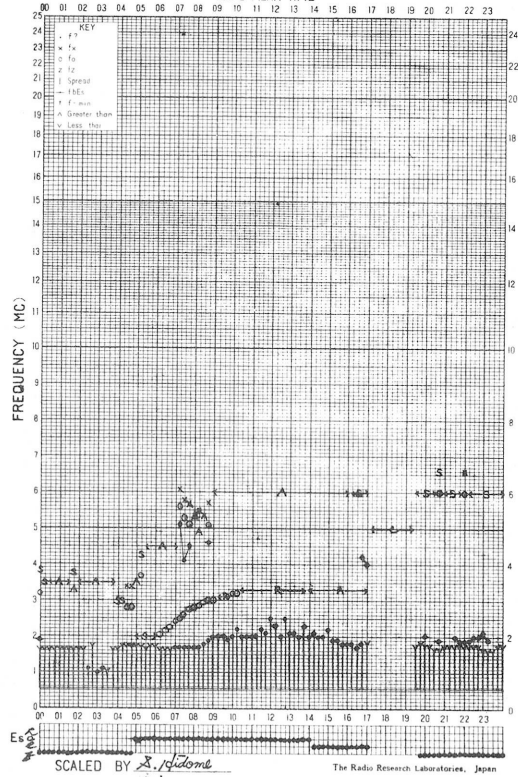
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STATION **KOKUBUNJI** 135° E MEAN TIME DATE **JUN 14 1964**

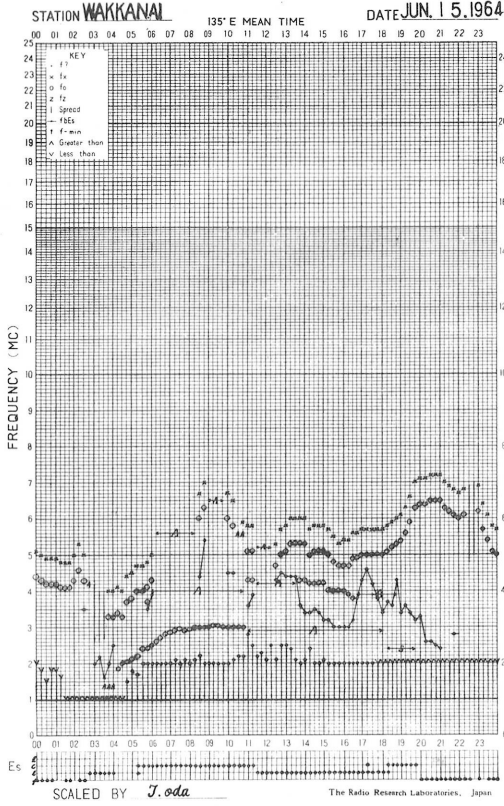


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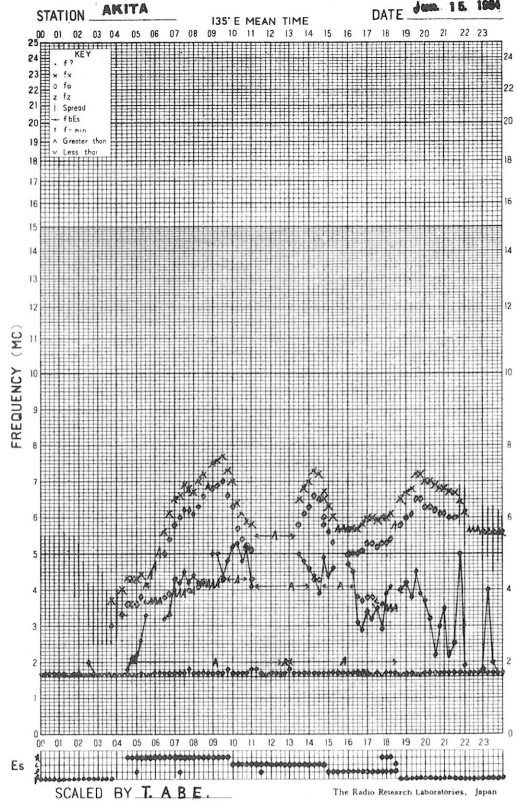
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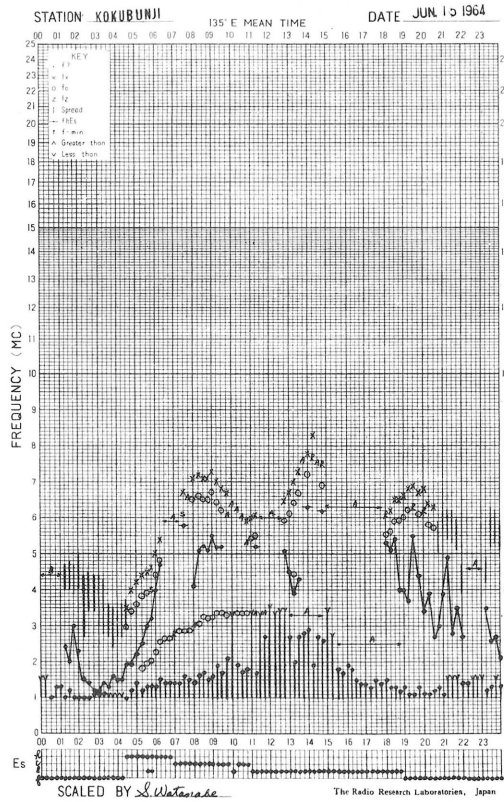
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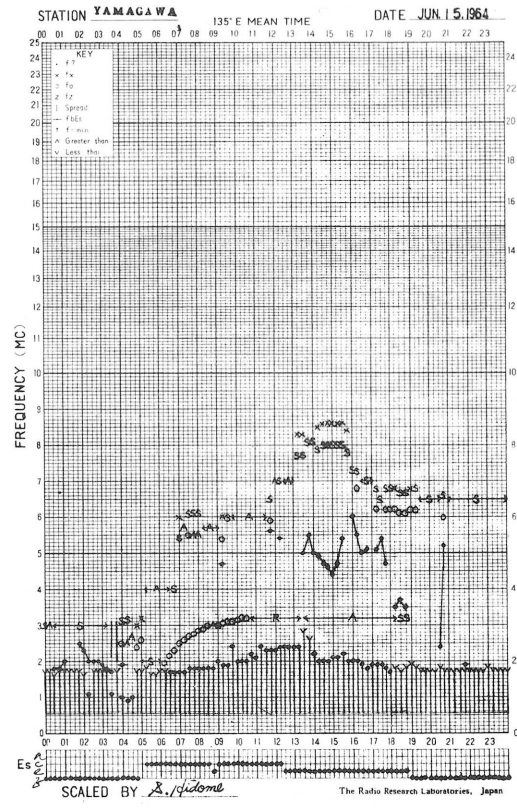
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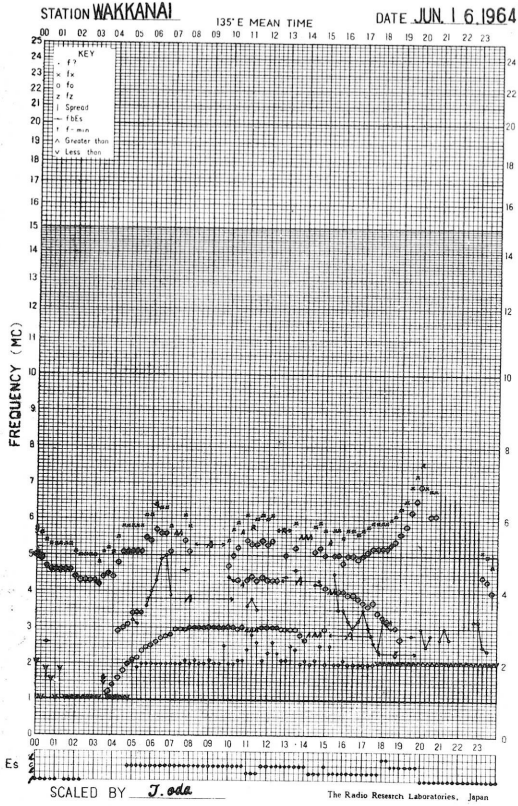
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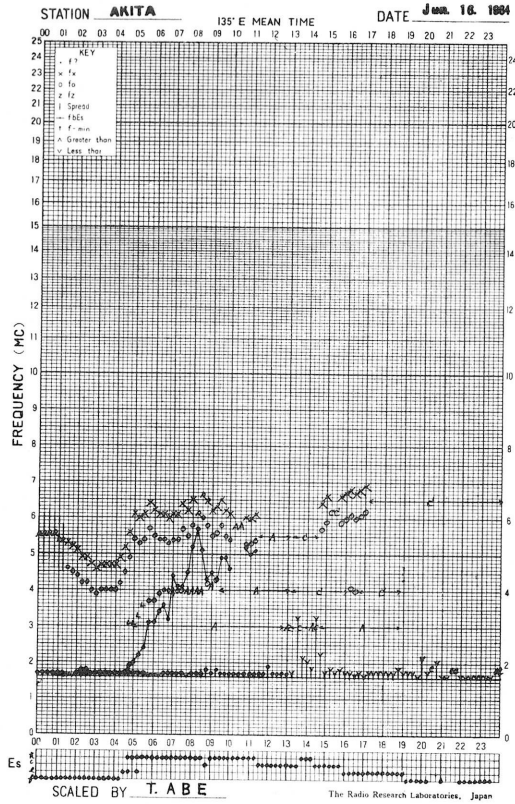
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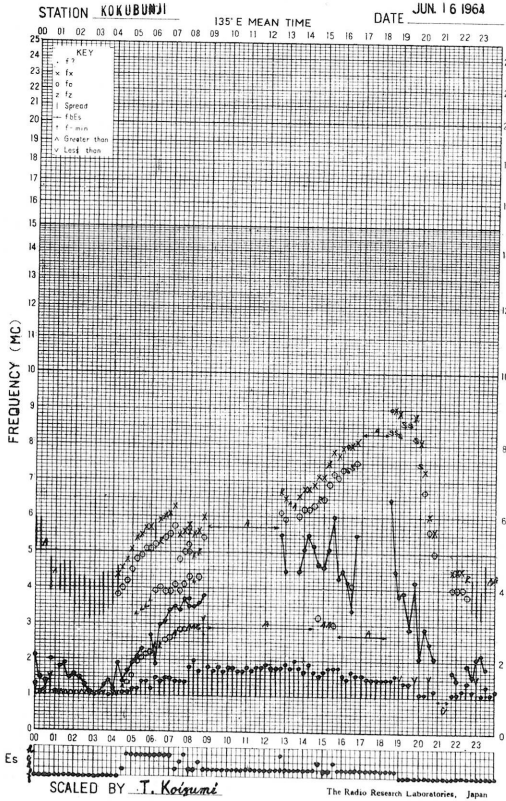
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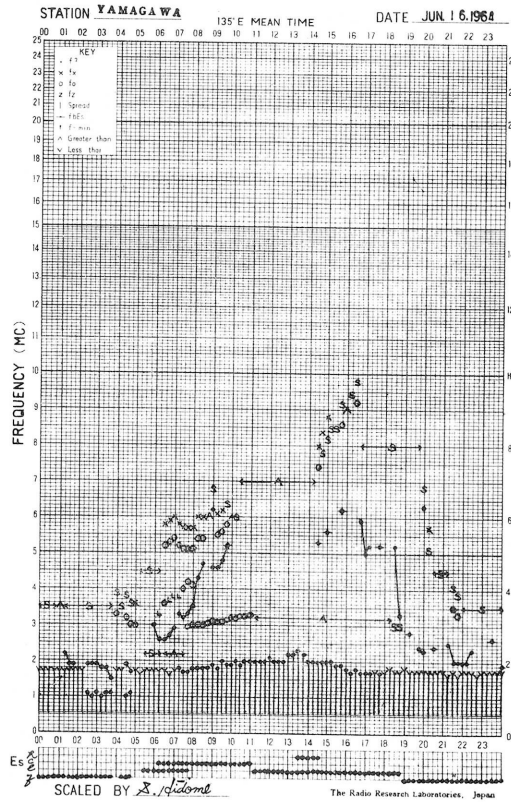
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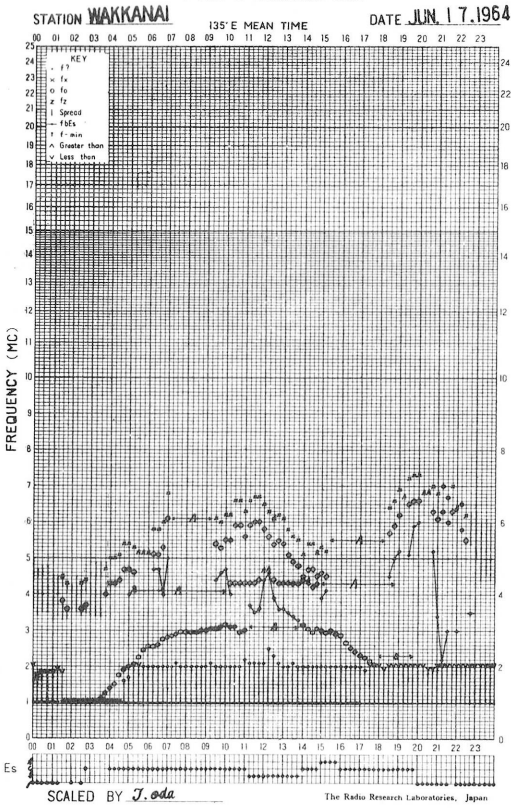
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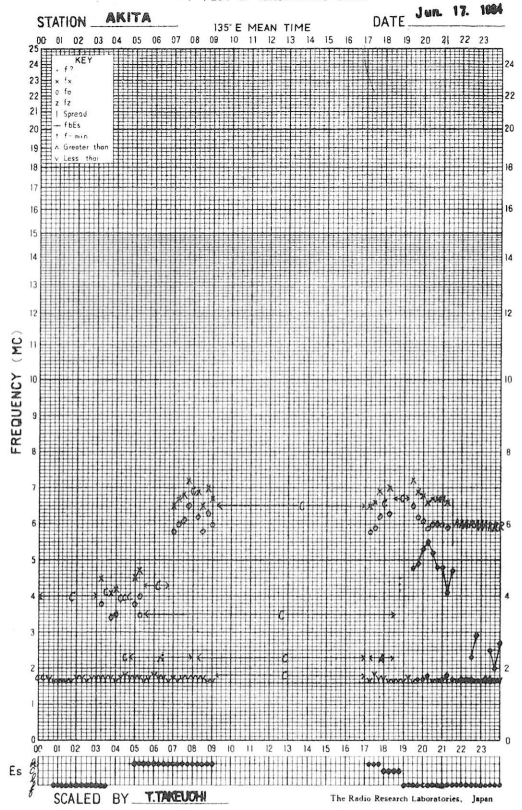
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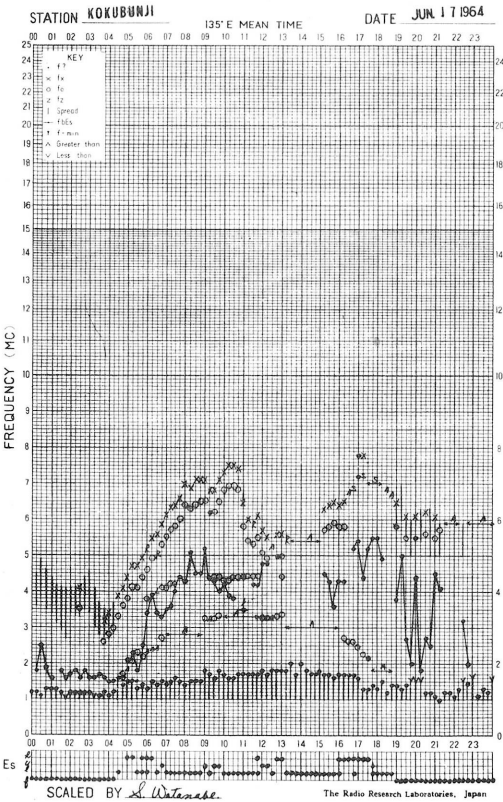
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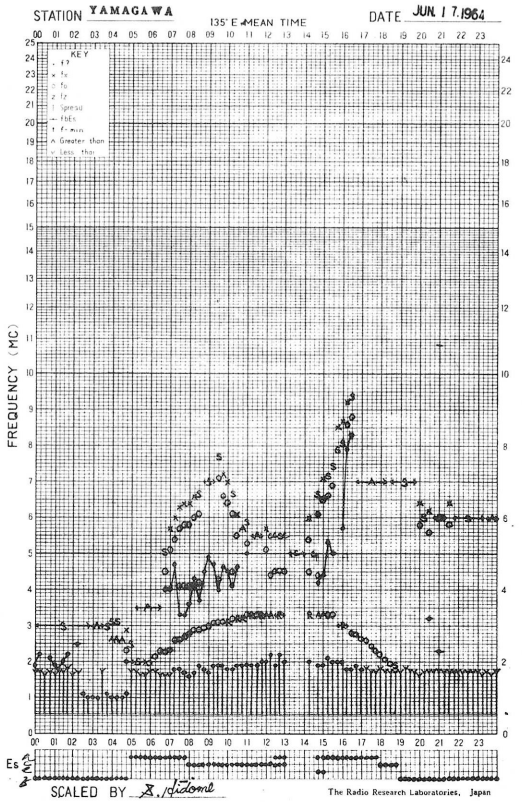
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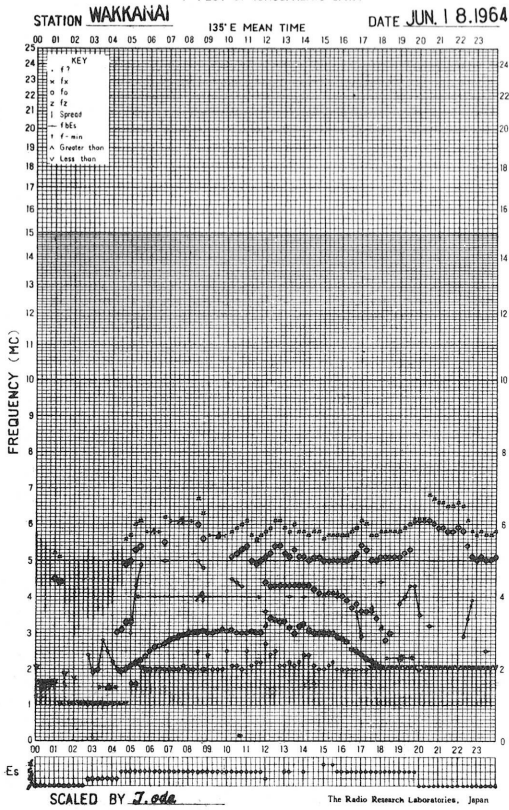
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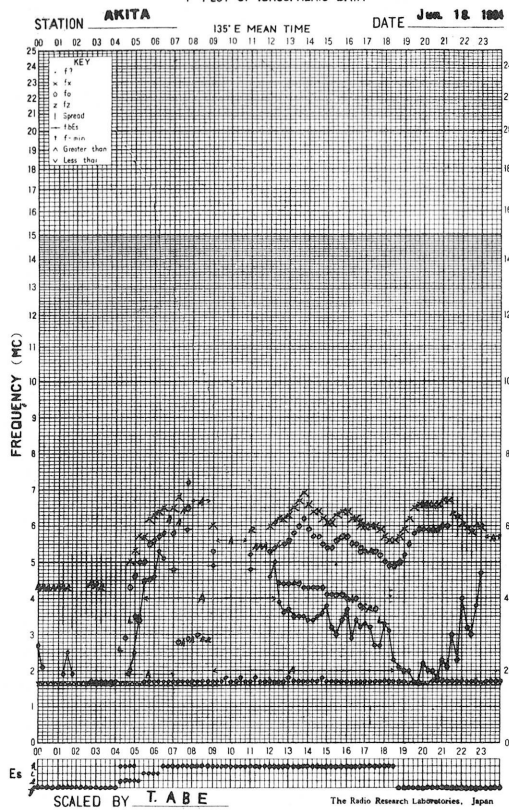
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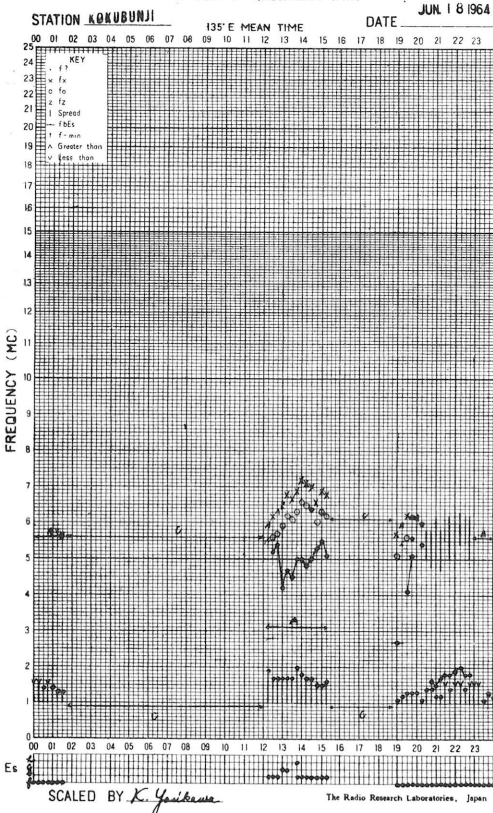
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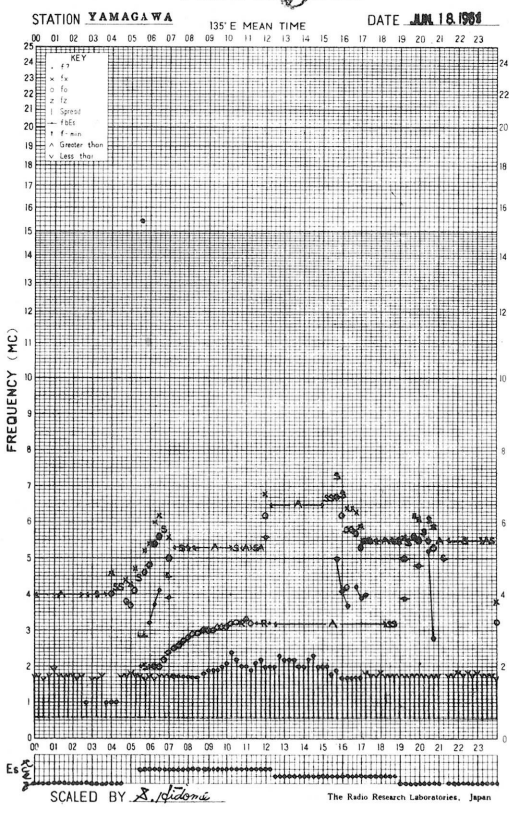
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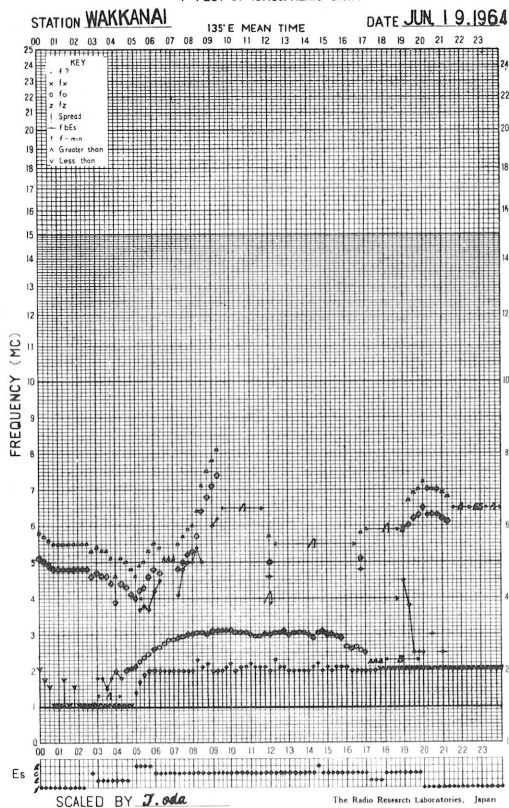
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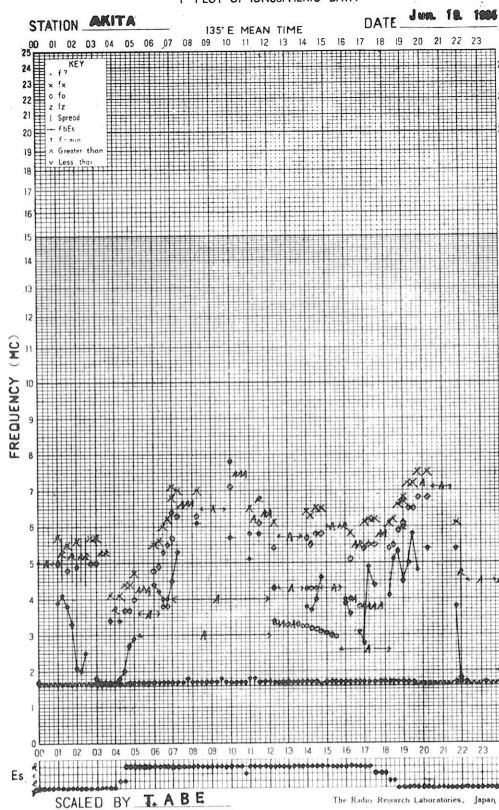
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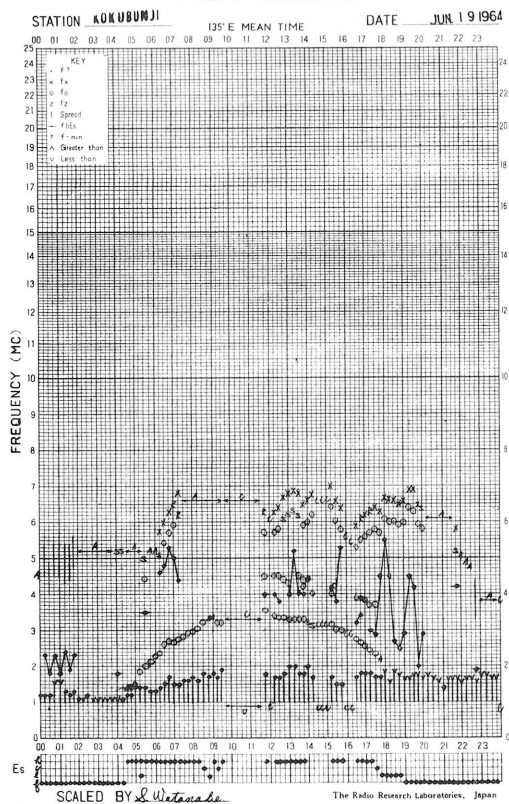
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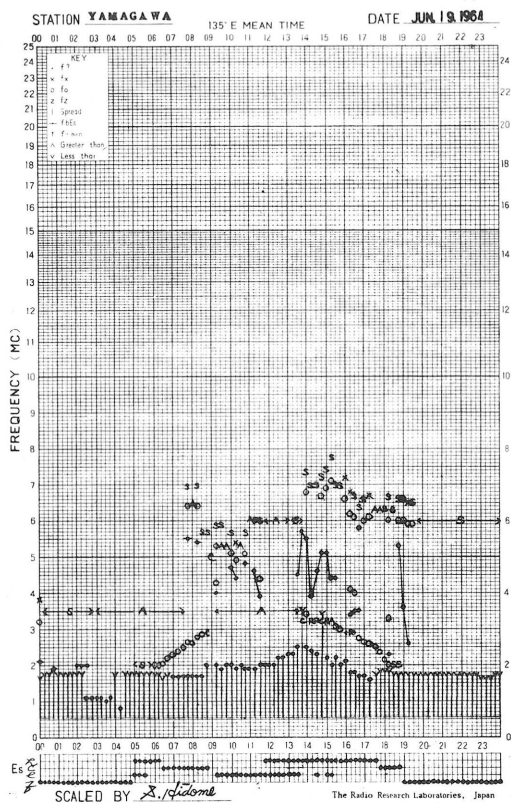
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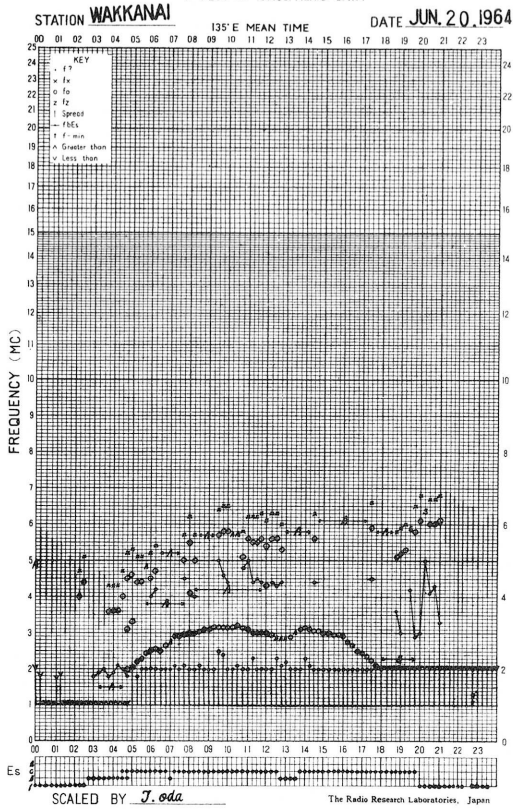
f- PLOT OF IONOSPHERIC DATA



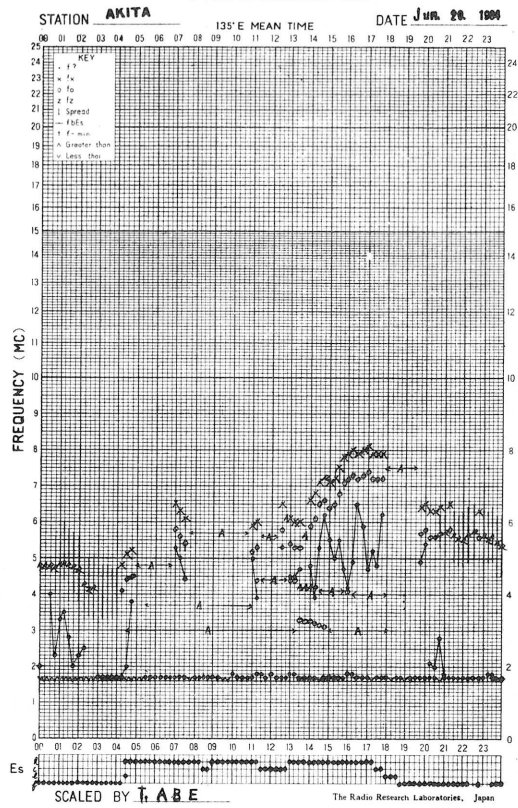
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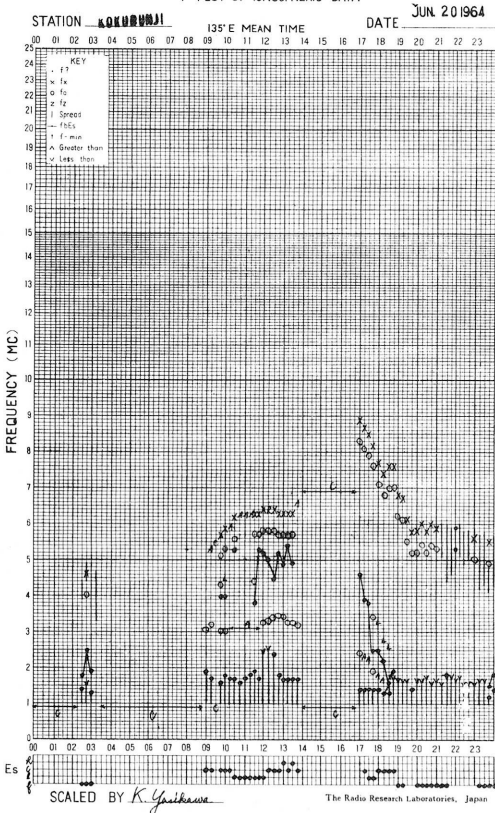
f-PLOT OF IONOSPHERIC DATA



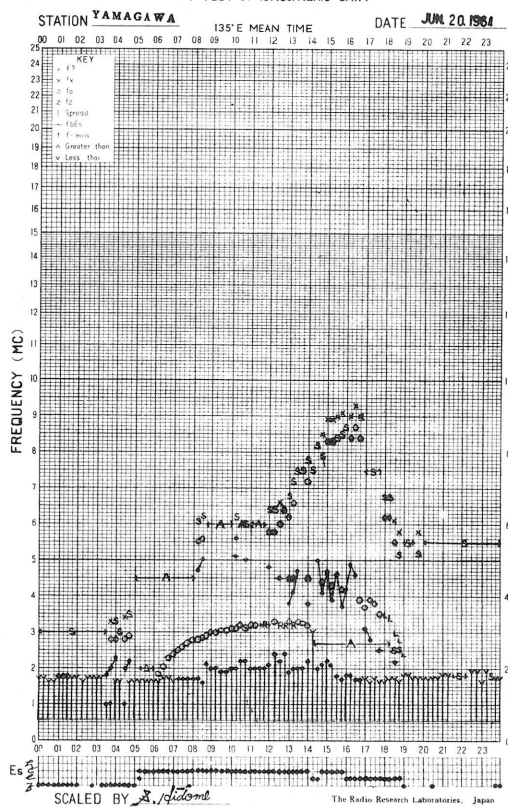
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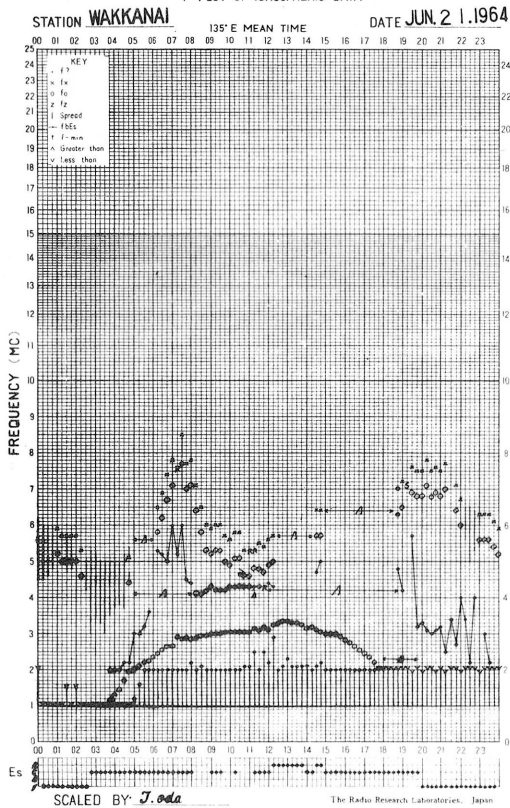
f-PLOT OF IONOSPHERIC DATA



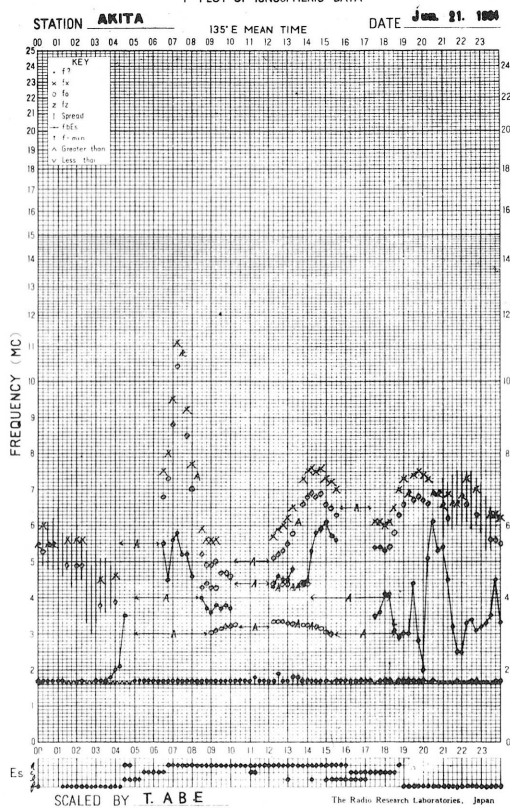
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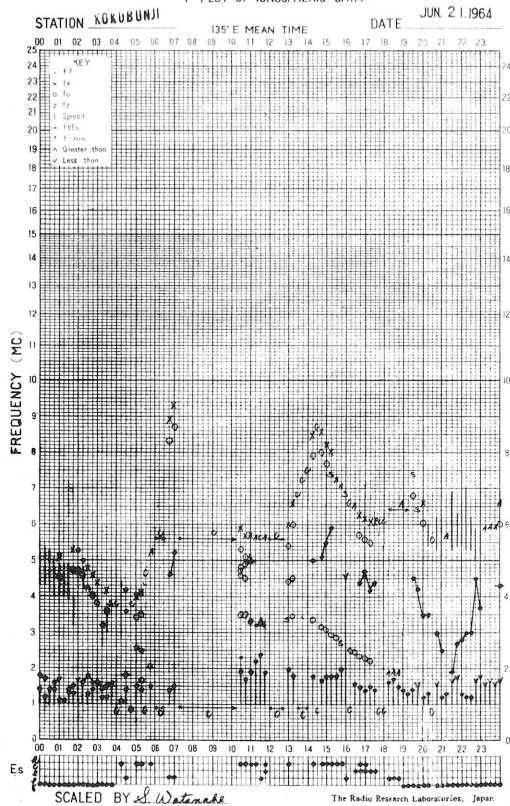
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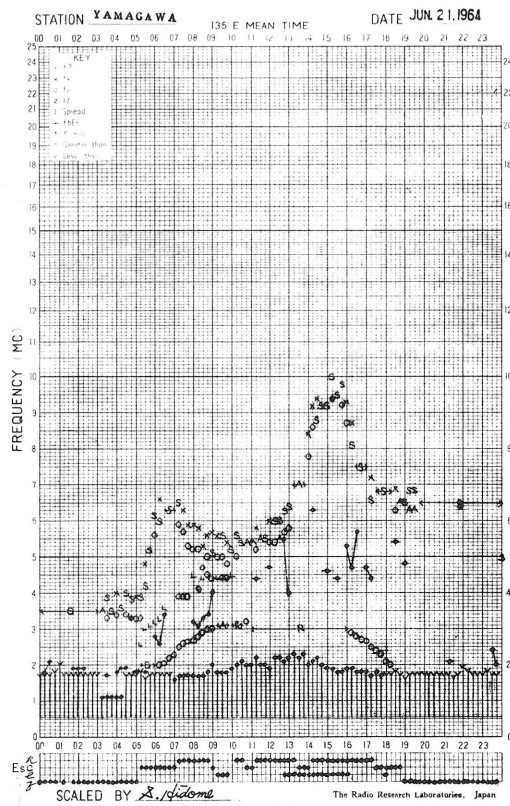
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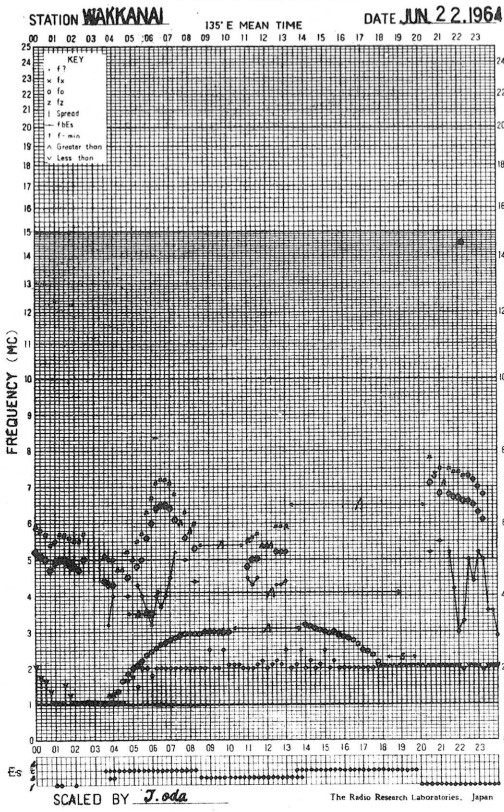
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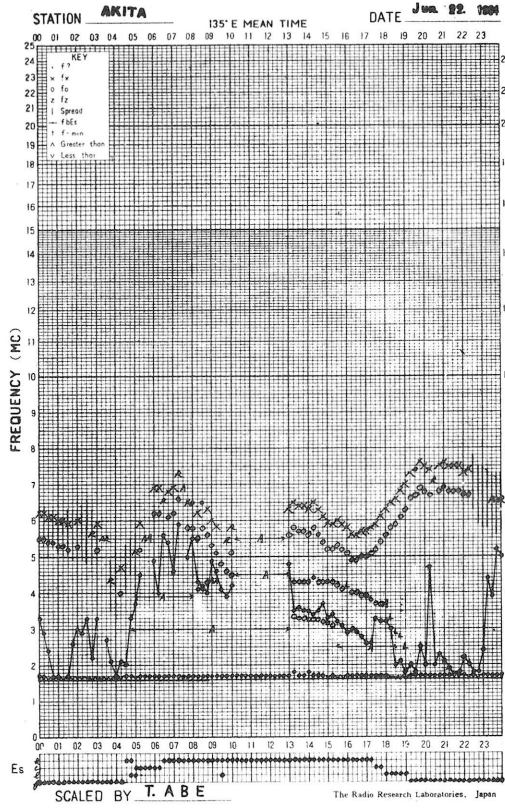
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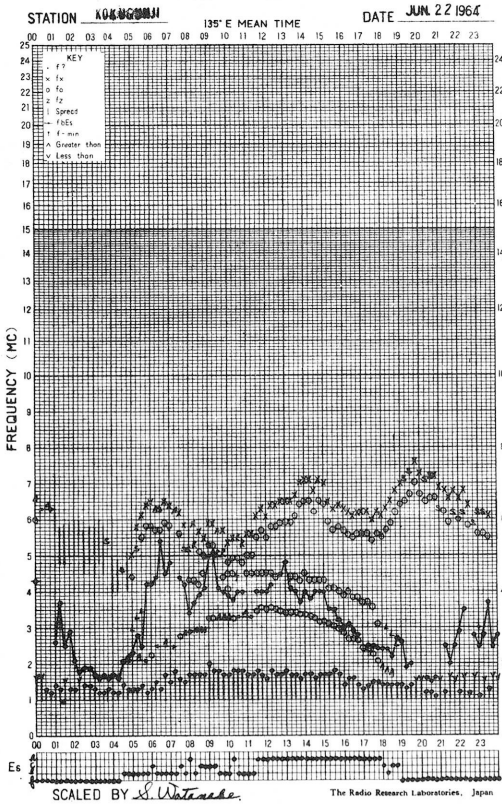
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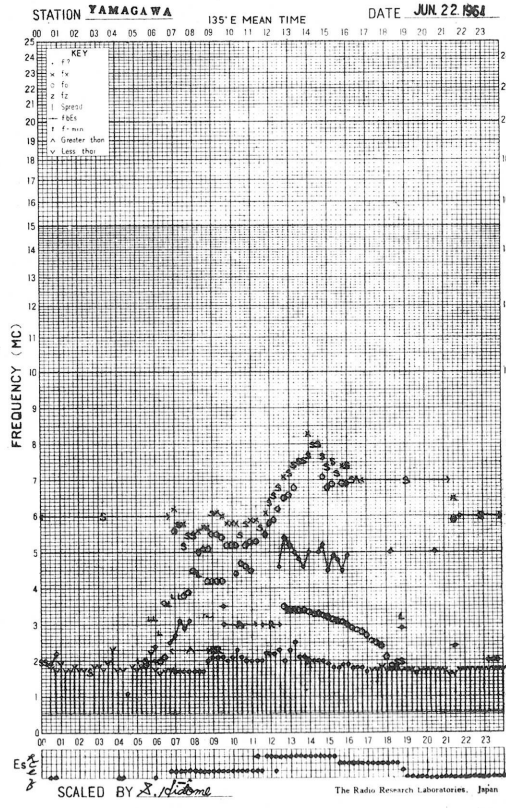
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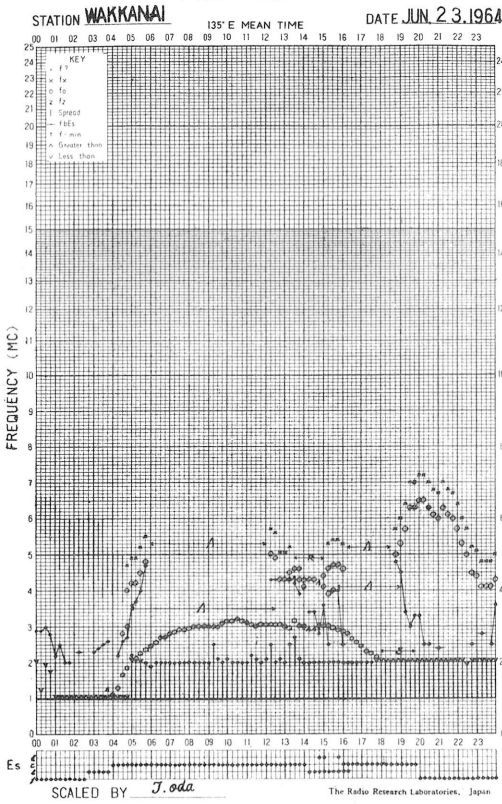
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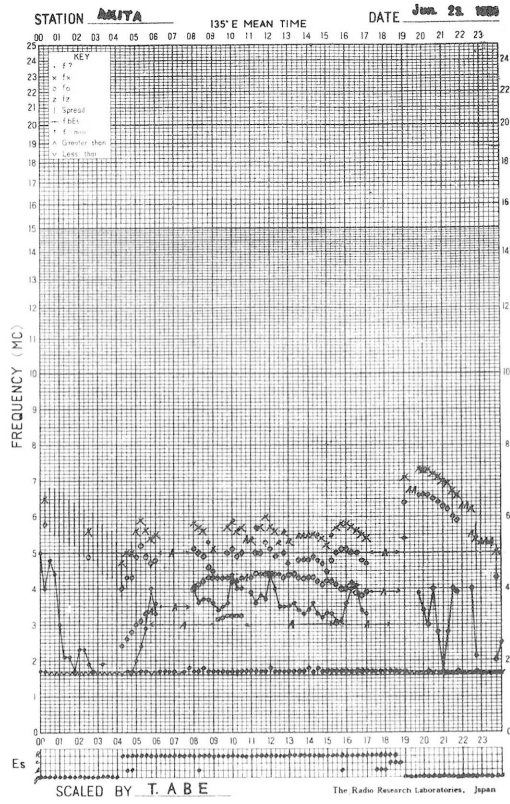
f- PLOT OF IONOSPHERIC DATA



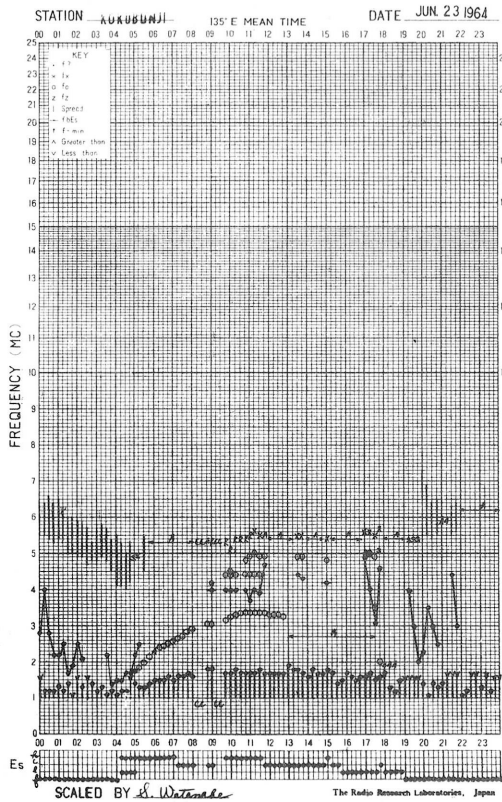
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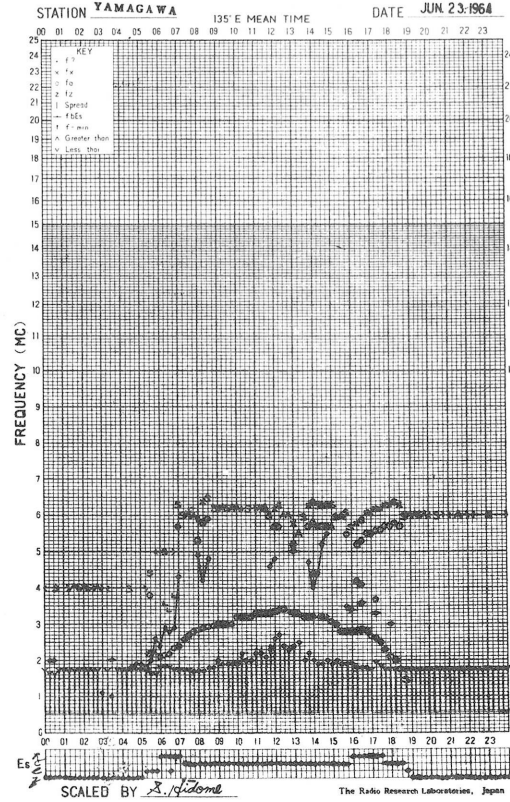
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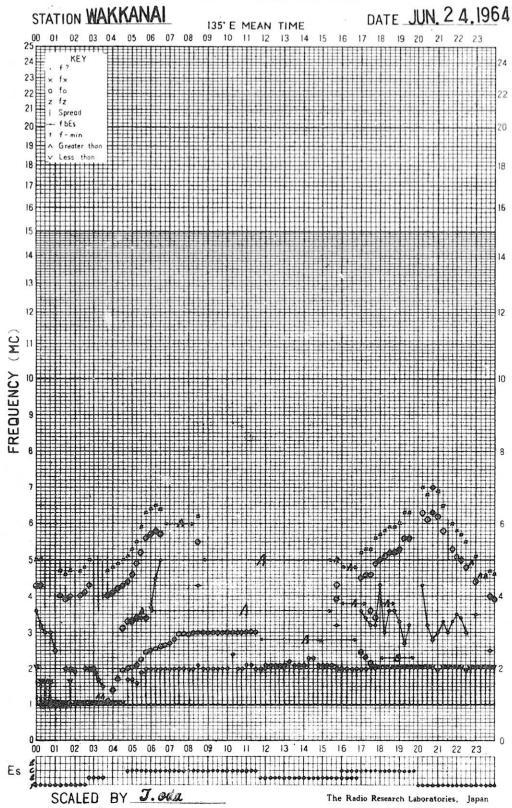
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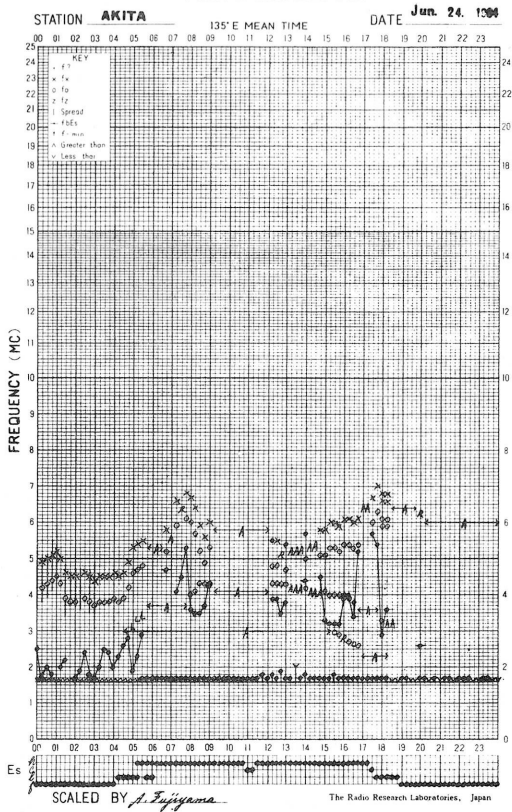
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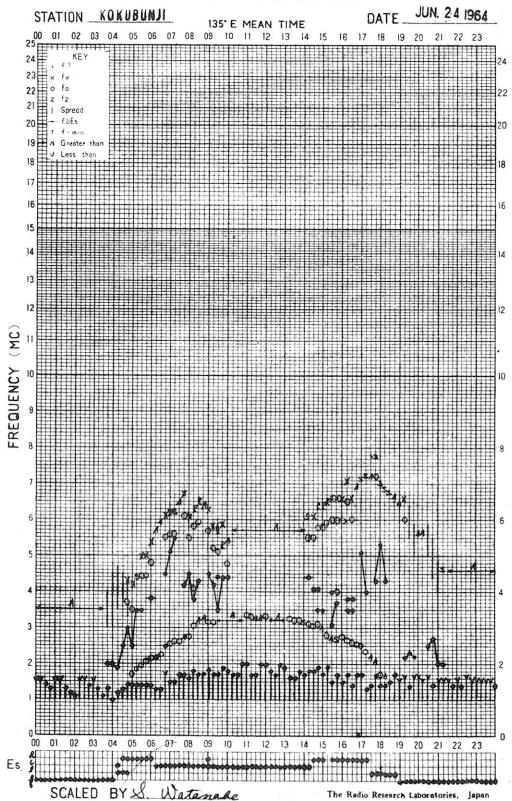
f-PLOT OF IONOSPHERIC DATA



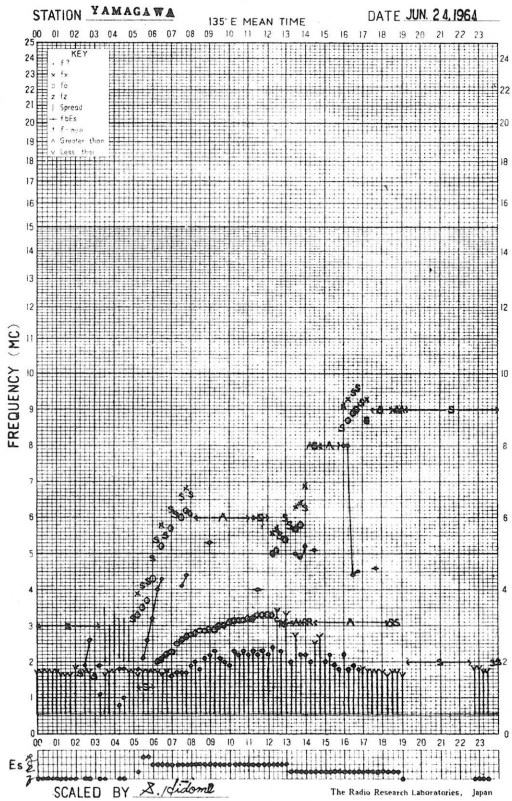
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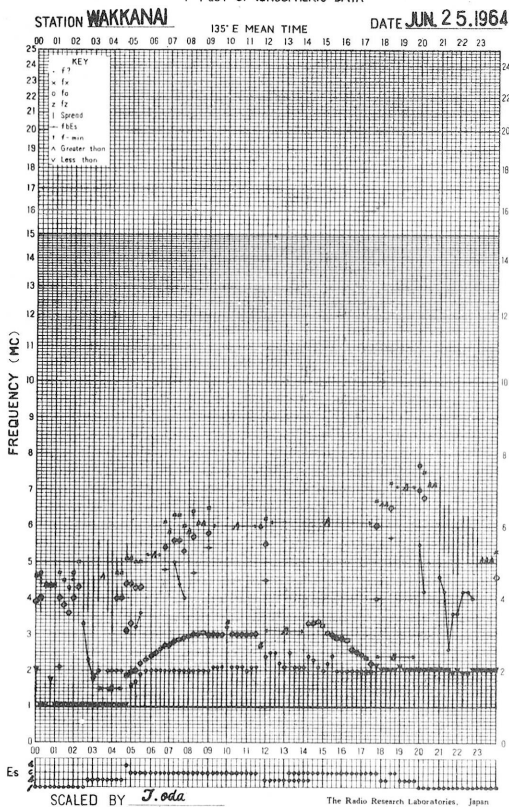
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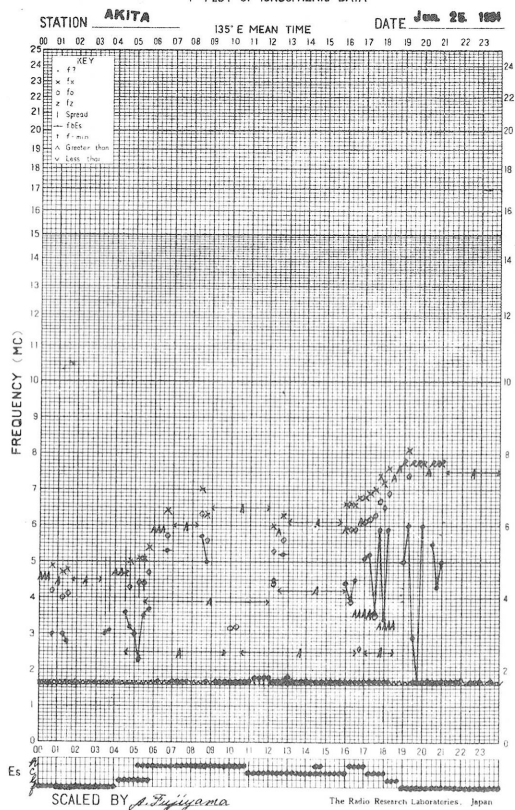
f-PLOT OF IONOSPHERIC DATA



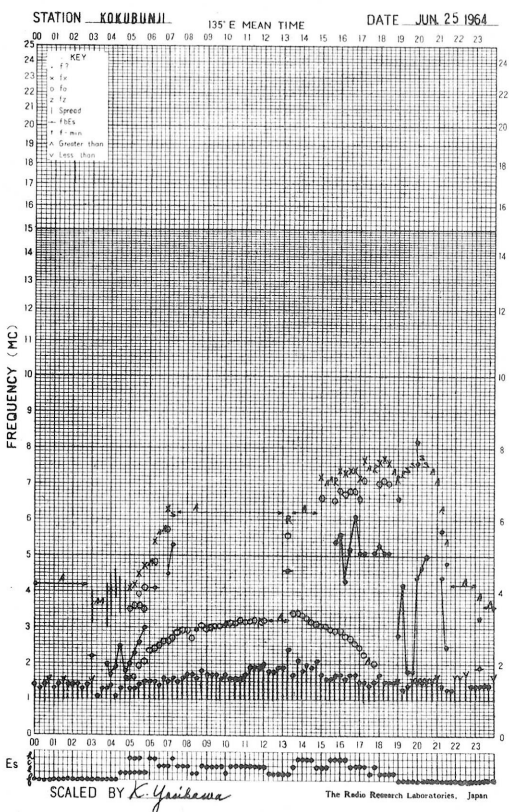
f-PLOT OF IONOSPHERIC DATA



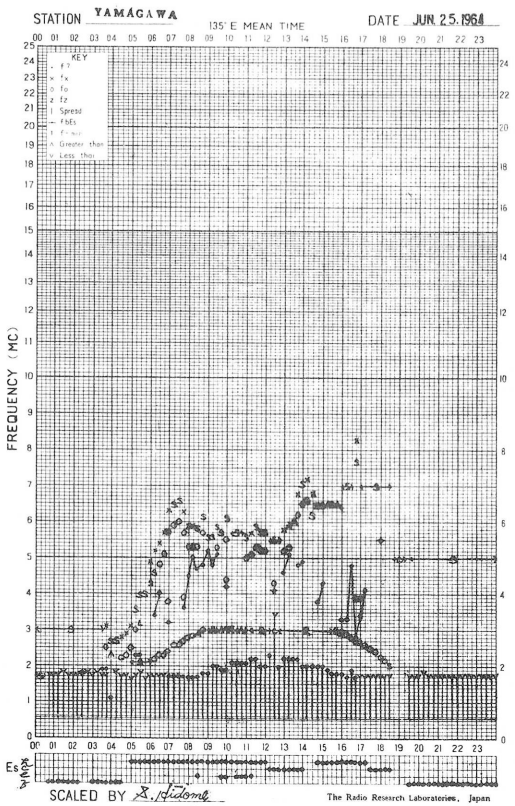
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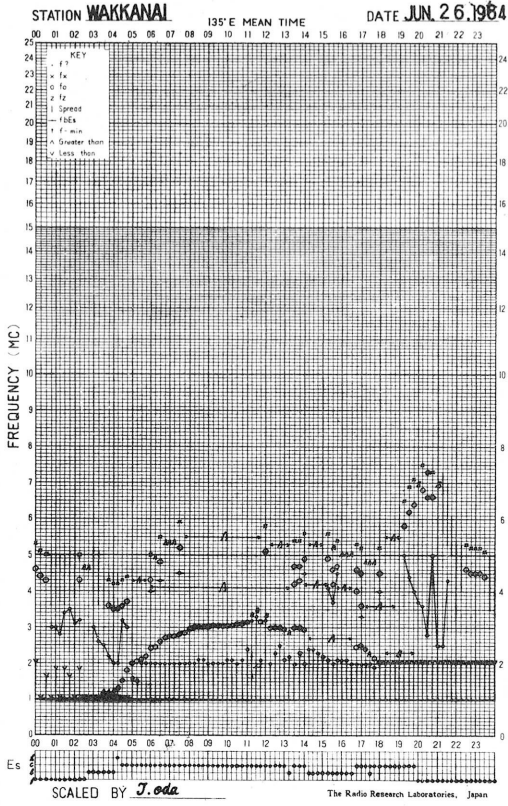
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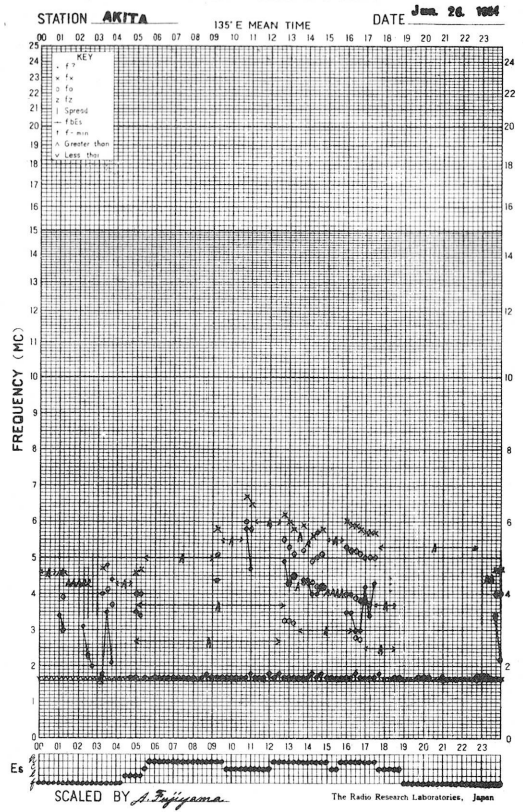
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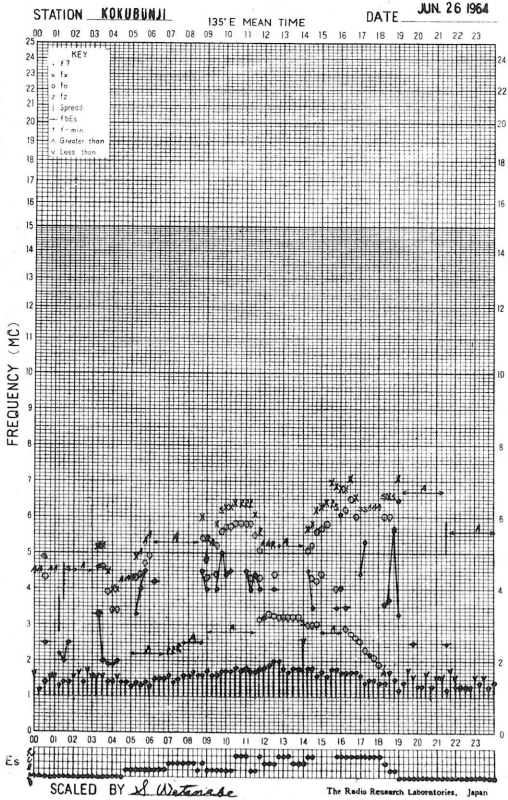
f-PLOT OF IONOSPHERIC DATA



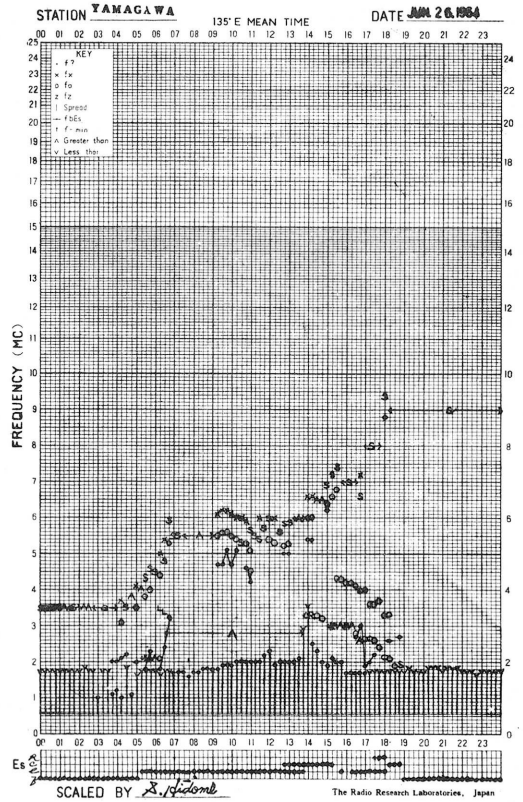
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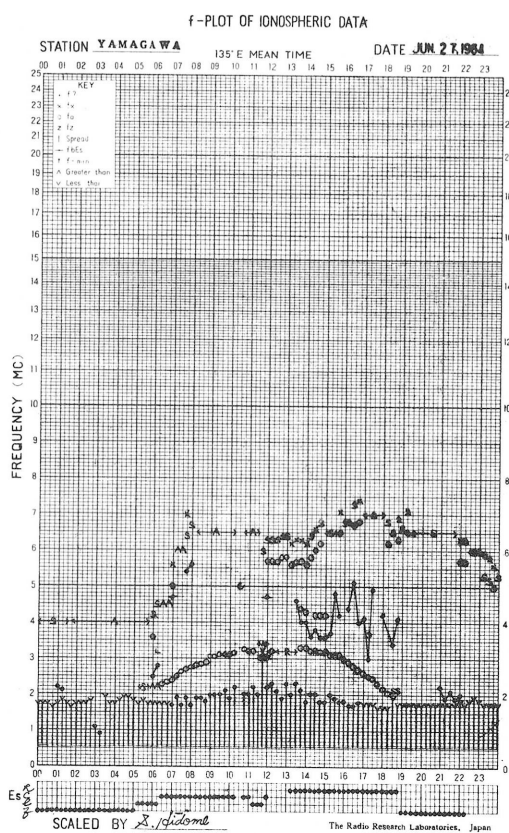
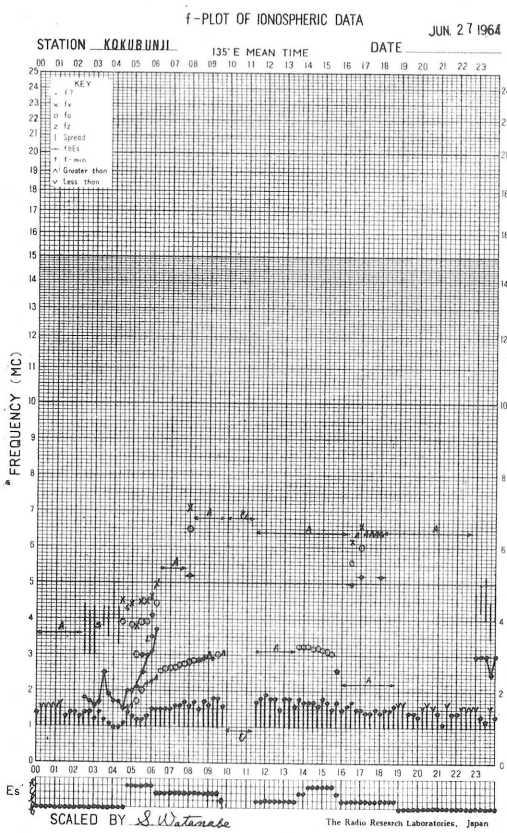
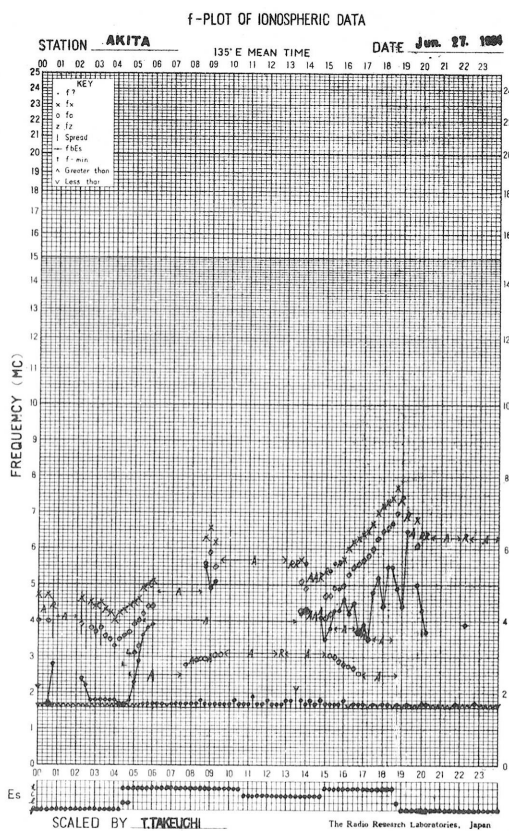
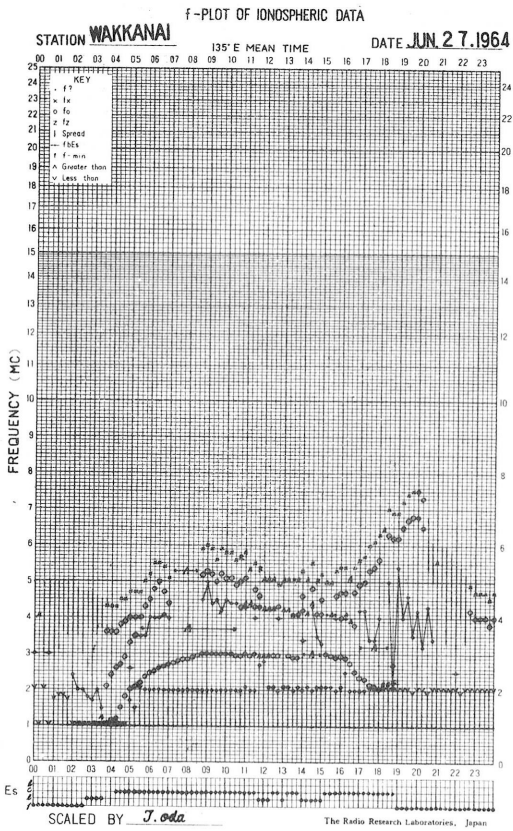


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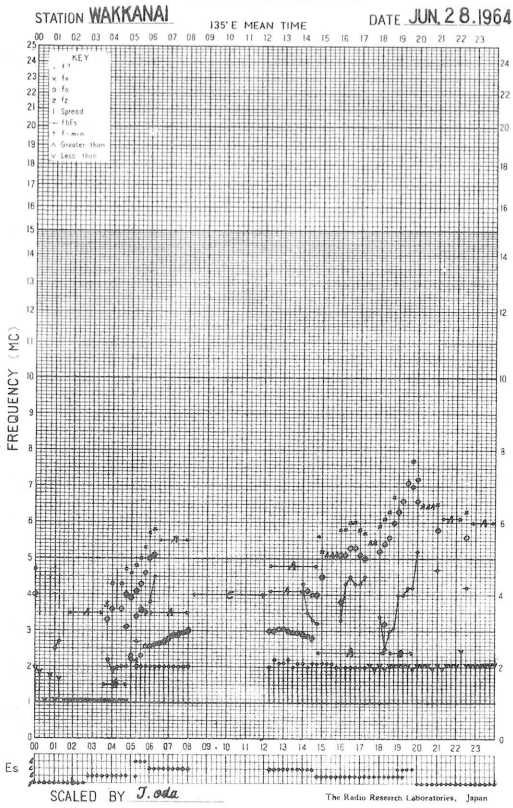


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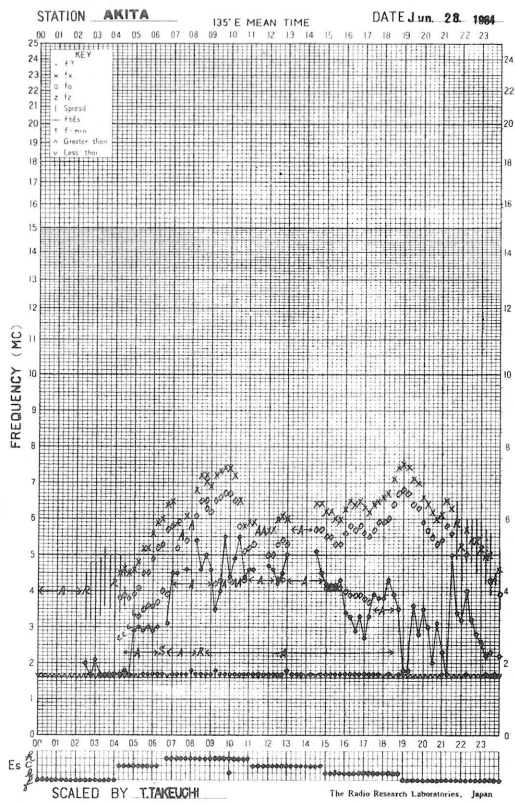




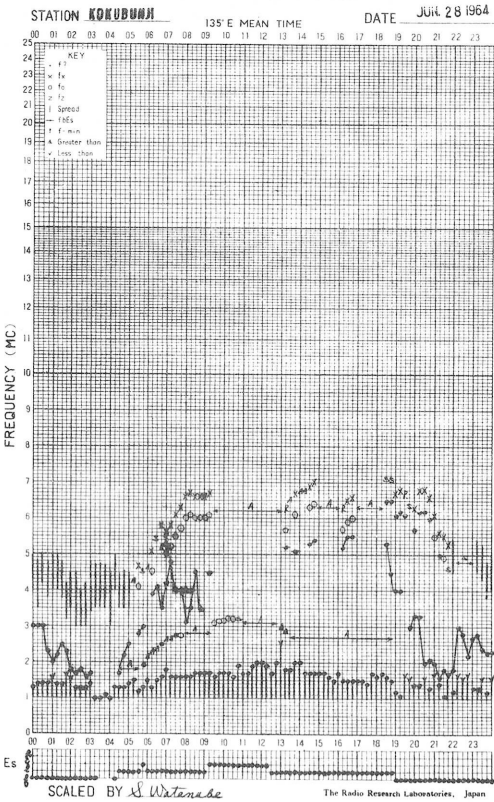
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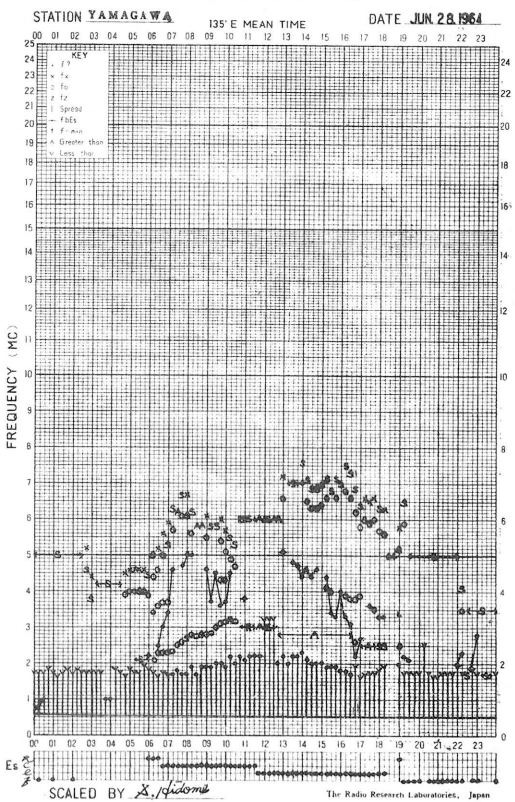
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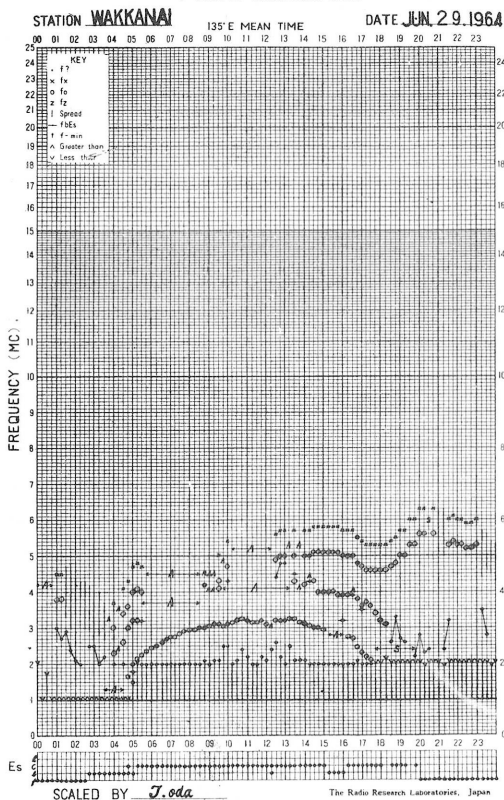
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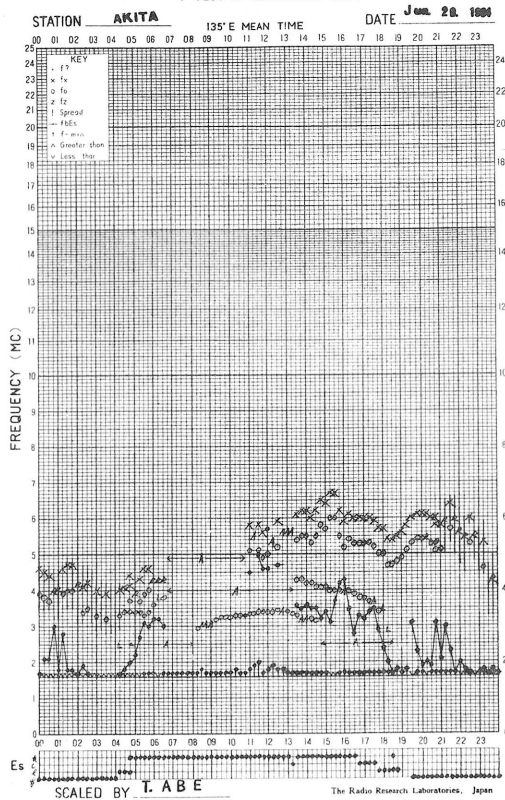
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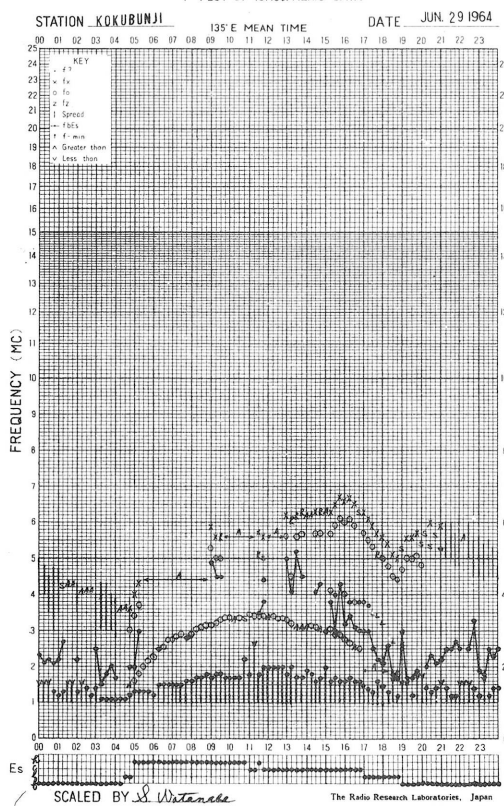
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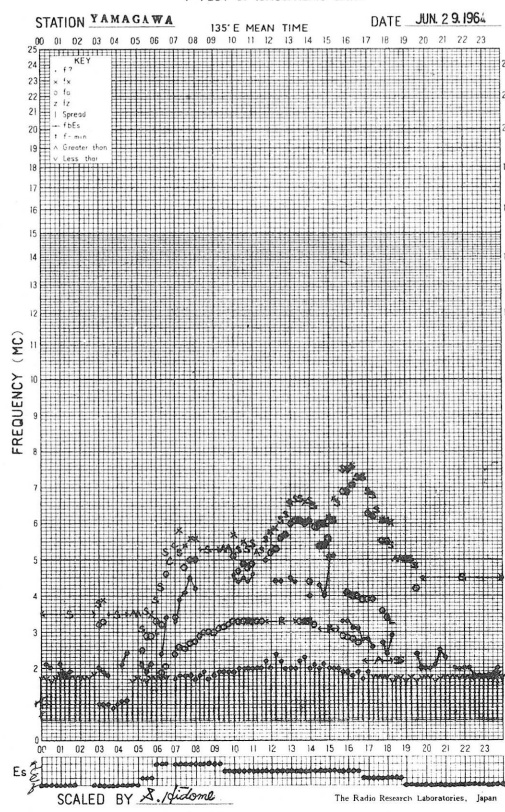
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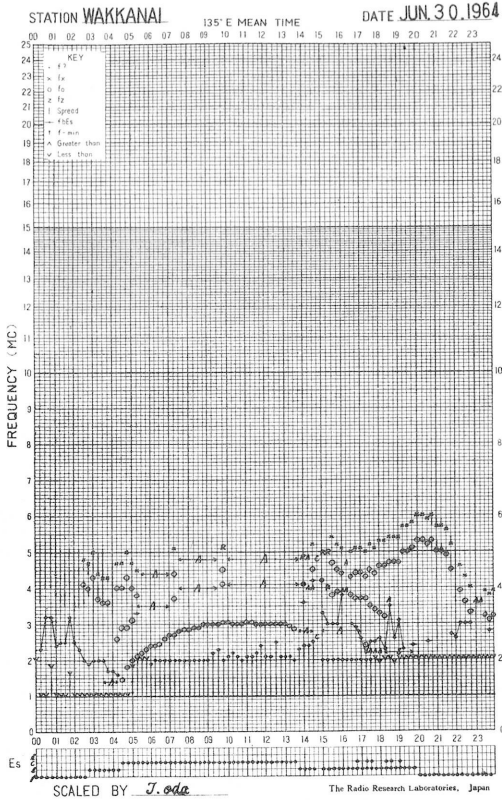
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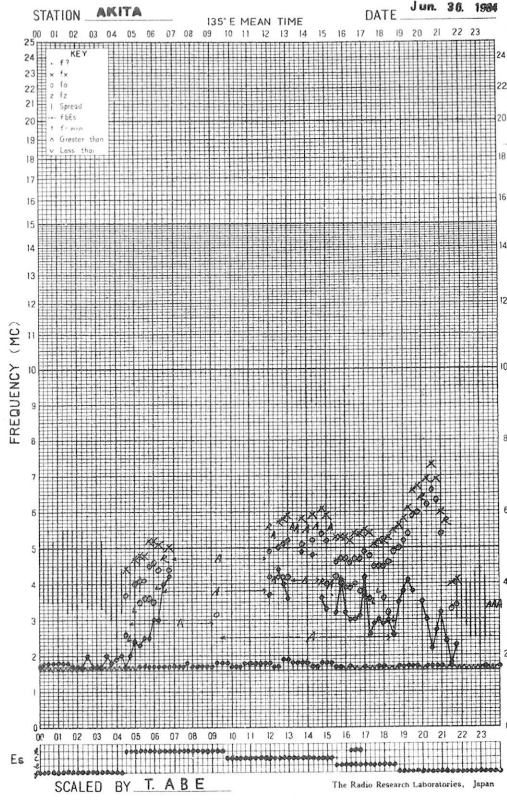
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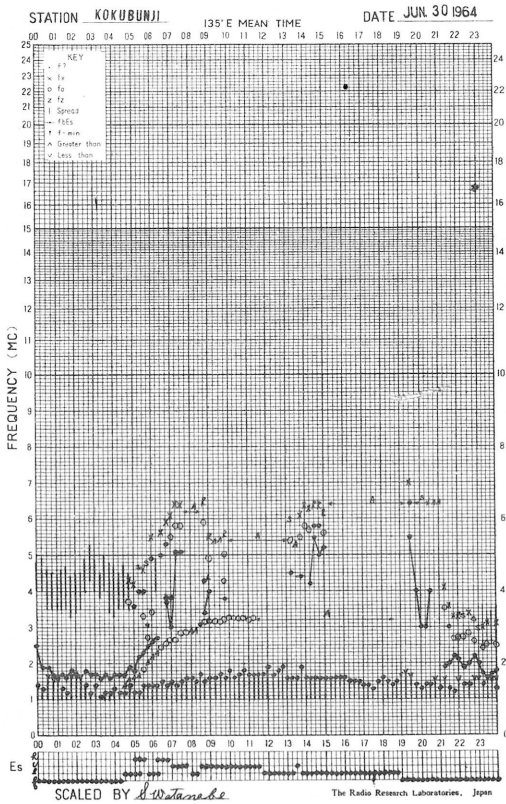
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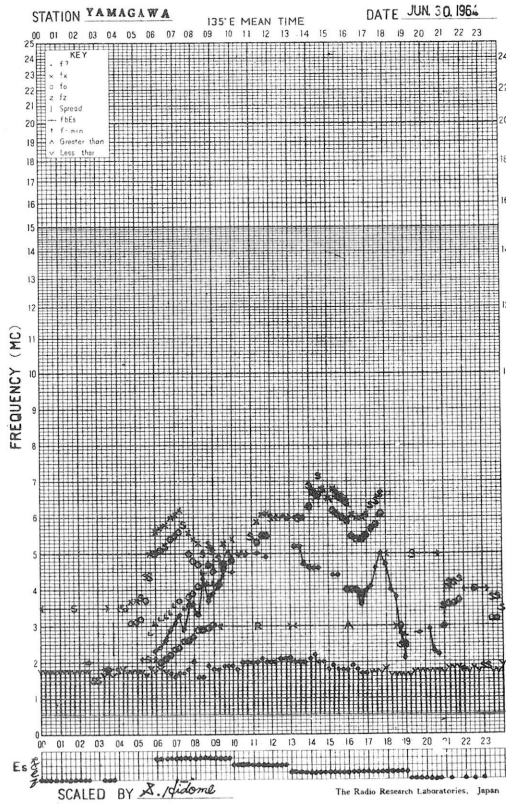
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION

Flux Density and Variability										
Month: June 1964.						Frequency: 200 Mc/s				
Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$						Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	7	7	7	8	7	0	0	0	0	0
2	7	-	-	7	8	0	-	-	0	0
3	7	(7)	-	7	7	0	(0)	-	0	0
4	7	8	8	8	8	0	0	0	0	0
5	8	7	6	9	7	0	0	0	0	0
6	7	(6)	-	-	8	0	(0)	-	-	0
7	8	7	8	(8)	8	0	0	0	(0)	0
8	8	7	7	8	7	0	0	0	0	0
9	9	7	7	6	8	0	0	0	0	0
10	7	7	7	7	7	0	0	0	0	0
11	7	8	7	7	8	0	0	0	0	0
12	7	7	7	-	7	0	0	0	-	0
13	8	-	-	(6)	(8)	0	-	-	(0)	(0)
14	6	6	6	-	6	0	0	0	-	0
15	7	7	7	(8)	7	0	0	0	(0)	0
16	7	8	8	6	8	0	0	0	0	0
17	8	10	8	-	8	0	0	0	-	0
18	10	10	10	-	10	0	0	0	-	0
19	8	7	9	-	8	0	0	0	-	0
20	9	8	8	8	8	0	0	0	0	0
21	9	8	7	6	8	0	0	0	0	0
22	7	8	8	9	7	0	0	0	0	0
23	9	9	8	(9)	8	0	0	0	(0)	0
24	8	8	8	8	8	0	0	0	0	0
25	9	8	8	9	8	0	0	0	0	0
26	10	9	8	-	9	0	0	0	-	0
27	9	8	8	8	8	0	0	0	0	0
28	9	10	9	7	9	0	0	0	0	0
29	8	7	6	-	7	0	0	0	-	0
30	8	7	6	7	7	0	0	0	0	0

Note No observations during the following periods:

May 31st	1920-	1st	0100	17th	1920-	18th	0040
	0200-		0950	18th	1920-		2400
	0400-		0950	19th	1920-	20th	0040
	0400-		0950	21st	1920-		2200
	1920-	7th	0100	22nd	1920-		2200
	1920-		2400	23rd	1920-		2300
	0120-		2300	26th	0800-	27th	0100
	1920-		2300	29th	1920-	30th	0100
	1920-		2200				

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: June 1964.					
Observing Station: Hiraizo			Frequency: 500 Mc/s		
Flux density $10^{-22} \text{Wm}^{-2} (\text{e/s})^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	21	22	20	21	21
2	20	22	20	20	21
3	21	21	21	19	21
4	21	21	21	20	20
5	20	20	22	21	21
6	20	21	21	20	21
7	20	21	22	20	20
8	21	21	24	21	22
9	21	22	22	20	21
10	21	21	20	22	21
11	20	22	21	20	21
12	20	21	21	20	21
13	21	21	22	21	21
14	23	22	21	21	22
15	21	22	22	19	22
16	20	21	21	20	20
17	20	22	20	20	20
18	20	21	20	20	20
19	22	22	21	18	20
20	20	21	19	19	20
21	21	21	20	20	20
22	21	21	20	19	20
23	19	21	19	20	20
24	20	20	19	19	20
25	19	22	19	19	20
26	20	20	(19)	19	20
27	20	20	19	20	20
28	21	20	19	20	20
29	20	19	19	19	20
30	20	19	18	20	19

Note No observations during the following periods:

3rd	0400-	0500
21st	1920-	2100
26th	0500-	0800

Distinctive Events

(single-frequency observations)

Month: June 1964.

Observing Station: Hiraiso

Normal observing period: 1920 - 0955 (sunrise to sunset)

Date	Frequency	Starting time	Time of Maximum	Duration	Type	Flux density $10^{-22} \text{Wm}^{-2} (\text{c/s})^{-1}$		Remarks
	Mc/s	UT	UT	minutes		peak	mean	
5	200	2343.0	2343.5	1	C	600	70	
5	500	2343.3	2343.5	0.5	C	65	10	
28	200	0414.5	0415	1	C	578	83	
28	500	0414.5	0415	0.5	C	58	14	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jun. 1964	Whole Day Index	L. N.			W W V				S. F.				W W V H				Warning				Principal magnetic storms		
		06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
1	4o	4	4	4	4	4	3	4	4	4	4	3	4	4	3	N	N	N	N				
2	4o	5	4	4	4	3	4	4	4	4	(4)	4	3	4	4	N	N	N	N				
3	5-	5	5	5	5	3	5	5	4	5	4	4	4	5	5	N	N	N	N				
4	4-	4	4	5	3	2	3	4	4	4	4	5	5	5	4	N	N	N	N				
5	4o	4	5	4	3	5	4	3	4	5	4	4	4	4	3	N	N	N	N				
6	4+	4	5	5	3	4	4	5	4	5	5	5	5	5	4	N	N	N	N				
7	5-	5	5	5	5	5	5	5	5	4	4	5	4	5	4	N	N	N	N	1852	---	53 ^y	
8	4+	5	5	4	5	4	3	4	5	5	4	4	4	5	4	N	N	N	N	---	18xx		
9	4-	4	5	4	4	3	2	3	4	4	4	4	4	4	4	N	N	N	N	21.2	---	162 ^y	
10	3-	3	3	4	2	2	1	1	5	3	3	3	4	5	4	N	U	U	U	---	---		
11*	2+	3	3	3	1	1	1	1	3	3	3	3	3	4	4	U	U	W	W	---	---		
12	3-	4	4	4	1	1	1	1	4	4	3	3	4	3	4	U	U	U	U	---	---		
13	3o	4	(3)	(3)	1	2	2	2	4	4	4	3	4	5	5	U	U	U	U	---	18xx		
14	4-	4	5	4	1	2	4	4	4	4	4	4	4	5	4	U	U	U	U				
15	4o	4	4	4	5	2	3	4	5	5	5	4	5	5	5	N	N	N	N				
(16)	4o	5	4	4	3	(2)	4	4	4	5	4	5	4	4	4	N	N	N	N				
(17)	4+	4	5	4	5	3	5	5	5	5	4	4	4	5	5	N	N	N	N				
(18)	5-	5	5	4	5	4	5	4	5	5	4	4	5	5	4	N	N	N	N				
19	5-	5	5	5	4	5	4	4	4	5	5	4	4	5	(4 5)	N	N	N	N				
20	3+	4	3	3	3	2	2	2	5	5	4	3	5	5	4	N	N	N	N				
21	3+	3	4	3	2	3	3	3	3	4	(4 3)	3	4	(4) 5	4	N	N	U	U				
22	4-	4	5	3	2	4	4	2	3	4	4	4	4	4	5	U	N	N	N				
23	4-	3	4	3	2	3	3	4	4	5	4	4	5	5	4	N	N	N	N				
24	4-	3	5	4	2	4	5	4	4	4	4	3	4	5	4	N	N	N	N				
25	3+	4	4	3	3	3	3	2	(4 4 4 4)	4	4	4	4	5	4	N	N	N	N				
26	3+	4	3	3	2	3	2	3	4	5	(3 4)	4	4	4	3	N	N	N	N				
27	4o	4	4	4	3	4	5	5	5	4	3	4	4	4	4	N	N	N	N				
28	3o	3	4	3	4	3	2	1	(3 3 3 3)	3	3	3	5	4	4	N	N	N	N				
29	3o	4	4	5	1	1	2	1	3	4	4	4	4	3	3	N	N	N	N				
30	4+	3	4	5	4	5	4	5	4	4	4	5	4	4	(4)	N	N	N	N				

IQSY GEOALERT and ADALERT (Western Pacific Region)

- * = MAGSTORM
- o = MAGCALME
- Δ = COSMIC EVENT

- () = Regular World Day
- = impossible to evaluate
- () = inaccurate
- C = artificial accident
- = continuing magnetic storm

Errata:

For

Read

May 1964	Warning			
	00	06	12	18
16	U	U	N	N
17	N	N	N	N
18	N	N	N	N

May 1964	Warning			
	00	06	12	18
16	U	U	U	U
17	U	U	U	U
18	U	N	N	N

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbance was observed during June, 1964.

IONOSPHERIC DATA IN JAPAN FOR JUNE 1964

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