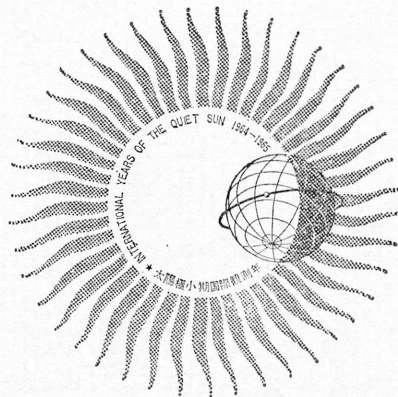


F—185

IONOSPHERIC DATA IN JAPAN

FOR MAY 1964

Vol. 16 No. 5



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Prepared by

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

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THE RADIO RESEARCH LABORATORIES

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_0F2	} The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_0F1	
f_0E	
f_0E_s	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_bE_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_0E_s .
h_pF2	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_0E_s and $h'E_s$. The slant trace is sometimes observed to start at f_0E 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 Hiraio 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

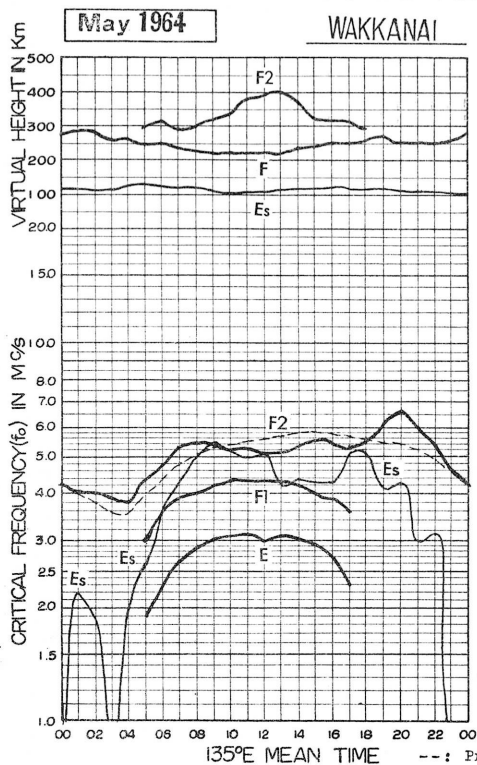
Importances

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

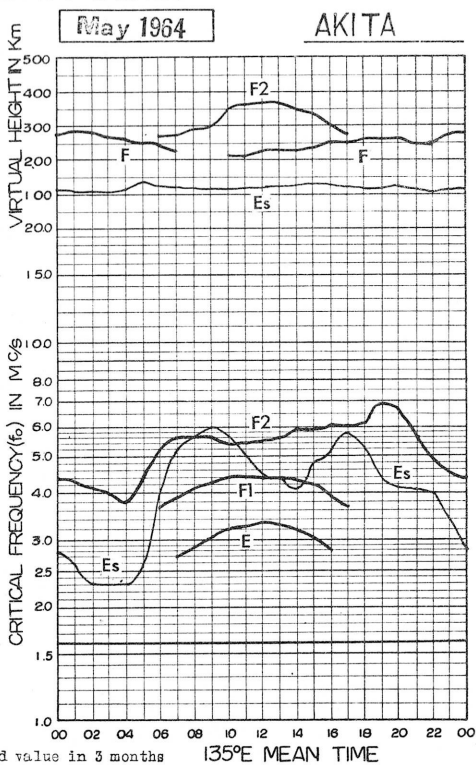
1—	1	1+
2—	2	2+
3—	3	3+

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.

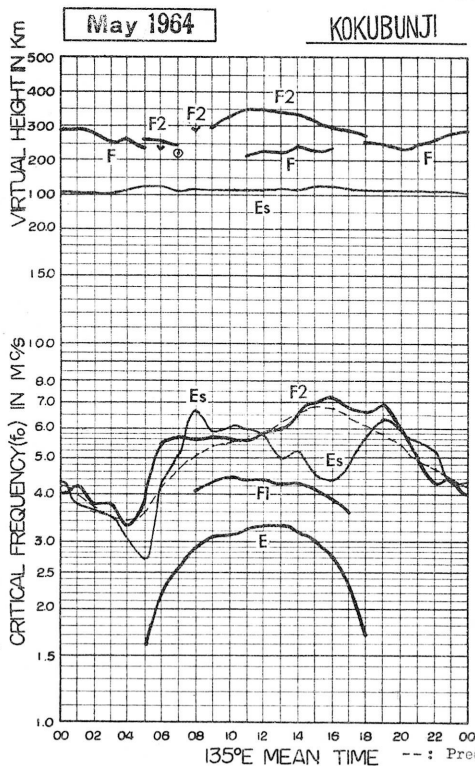
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



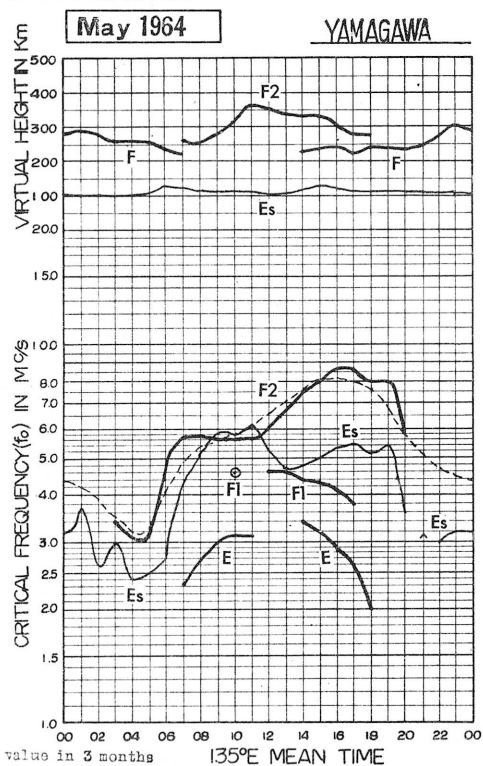
advance by R.R.L.



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



advance by R.R.L.



IONOSPHERIC DATA

Wakkanai

Lat. 45°23.6' N
Long. 141°41.1' E

0.1 Mc
135° E Mean Time (G.M.T. +9h)

f_oF2

May 1964

Table with columns Day (00-31), No., Median, U.Q., L.Q., Q.R. and rows 1-31. Each row contains 24 columns of ionospheric data (00-23) and a final column for SF or FS.

The Radio Research Laboratories, Japan

Sheet No. 10 to 12 of 10 in automatic operation

f_oF2

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

May 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						330L		380	400	I400C	420	I420A	I430A	430H	410	400	A							
2							I390A	I390A	A	A	430	430	430	420	420	I400A	380	350	330					
3						340		390	420	410	440	I430A	I440A	I430A	A	A	A							
4							I380A	I380A	I400A	I420A	430	A	A	A	420	420	I400A							
5							I400A	I400A	A	A	A	A	A	A	430	410	400	A						
6						360	I390A	I390A	I410A	420	430	430	430	A	A	A	A	A						
7							400	400	400	I420A	430	430	I440R	I430A	430	A	A	A						
8							A	A	A	420	A	A	A	430	A	A	A	A						
9						370	380	380	410	I430A	I440A	I440A	440	430	430	410	390							
10						370	400	400	C	C	C	C	C	C	420	410	400	380						
11					290		330	A	A	A	A	I410A	400	I400R	I400A	I390A	I360A	340	300L					
12					300		340	A	A	A	C	C	430H	I430A	I410A	410	A	A	A					
13							390	390	410	420	430	430	430	420	410	400	390	I370A						
14							A	A	400	410	430	430	430	430	420	400	400	I360A						
15					210	290	330	A	A	A	A	430	A	A	A	400	380	A	A					
16							370	370	390	A	A	A	410	A	A	A	A	A	U320L					
17							A	A	A	A	A	A	A	I420R	400	400	370	A	A					
18							A	A	A	A	A	430	430	420	410	400	390	360						
19							A	A	A	I410C	I430A	I430A	430	430	I410A	I400A	390	A	A					
20							A	A	A	A	A	A	A	A	A	I400A	I380A	A	A					
21							A	A	400	420	430	I430A	I430A	430	410	A	A	A	A					
22					C	C	C	C	C	C	A	A	A	A	A	A	A	A	A					
23							370	A	A	A	A	A	430	430	R	A	A	A	A					
24							A	A	C	C	C	C	C	C	C	C	C	C	A	A				
25							A	A	A	A	I410A	420	430	A	A	A	A	A	A					
26						300L	A	A	A	A	A	A	A	A	A	A	A	A	A					
27							A	A	A	A	A	A	A	A	430	410	400	A	A					
28						360L	A	A	A	A	410	420	420H	420	A	A	A	A	A					
29							A	A	A	A	430	I430A	I430A	430H	430	I410A								
30							I390A	I390A	I400A	I420A	I430A	I430A	430	420	420	I410A	380	I360A	A					
31					250	320L	360	A	A	A	430	430	I430A	430	430	400	400	380	A					
No.					2	6	11	12	11	12	15	18	20	20	19	19	15	9	3					
Median					230	300	360	390	400	410	430	430	430	430	420	400	390	360	320					
U.Q.																								
L.Q.																								
Q.R.																								

W 2

The Radio Research Laboratories, Japan

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

foF1

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

May 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						160	215	260	285	I290C	300	305	300	315	300	285	265	220	S	S				
2						I150S	I215S	250	290	295	305	305	I305R	I300B	I295B	295	275	S	S	S				
3						I155S	215	255	285	300	310	I310R	320	320R	315	300	270	S	S	S				
4						S	I225A	270	300	300	315	310	315	305	300	300	265	225	S	S				
5						I150S	240	280	295	305	I315R	320	330	315	320	295	265	225	S	S				
6						S	225	260	295	300	300	320	340	335	325	300	255	220	S	S				
7						160	225	275	300	315	325	320	I330R	I340R	300	285	260	225	S	S				
8						I150S	225	275	290	305	315	325R	295	320	310	A	A	A	S	S				
9						180	225	265	290	300	310	310	315	315	300	290	270	235	S	S				
10						180	235	270	295	C	C	C	C	C	A	300	275	230	S	S				
11						E	190	230	265	280	295	300	315	310	I300R	I305R	295	I260B	S	S				
12						E	190	230	260	295	295	I295C	I300C	300	I300A	I295A	290	270	225	S	S			
13						E	I160S	225	260	285	285	290	295	A	A	A	295	270	225	S	S			
14						E	185	225	265	290	295	305	305	300	305	290	275	230	S	S				
15						E	190	225	260	275	295	300	310	315	320	295	280	265	220	S	S			
16						E	190	230	250	290	300	300	295	I295A	325	305	285	260	215	S	S			
17						E	I190S	225	I255B	I290B	300	310	310	310	315	300	295	I260A	230	S	S			
18						105	160	245	275	295	300	305	305	300	310	305	280	230	S	S				
19						105	I185S	230	265	285	I300C	310	310	320	300	I295A	I305A	270	225	S	S			
20						E	A	175	235	270	290	305	305	320R	300	I300A	300	270	230	S	S			
21						E	A	200	250	280	290	300	295	A	A	310	300	275	235	S	S			
22						C	C	C	C	C	C	300	300	300	I300A	I295A	295	280	240	S	S			
23						C	C	195	245	280	300	305	310	310	300	300	295	270	I215S	S	S			
24						E	A	205	250	265	C	C	C	C	C	C	C	230	S	S				
25						E	E	195	230	265	285	295	305	305	I300B	310	305	265	230	S	S			
26						E	135	200	235	270	290	300	300	300	A	A	A	260	S	S				
27						E	A	190	235	270	295	305	315	305	300	I300A	300	285	245	S	S			
28						E	115	I195S	230	265	290	300	300	325	310	290	275	230	S	S				
29						E	A	200	245	270	295	300	300	305	I290A	I280A	255	240	S	S				
30						E	125	200	230	270	290	295	295	300	300	I290A	I275A	230	S	S				
31						E	120	195	245	270	295	300	310	310	300	A	A	A	A	S	S			
No.						1	11	14	28	30	29	28	29	28	27	25	26	27	27	26				
Median						E	E	E	190	230	265	290	300	305	310	300	310	300	295	270	230			
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

IONOSPHERIC DATA

Wakkanai

135° E Mean Time (G. M. T. + 9h)

0.1 Mc

foEs

May 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	G	G	G	035	C	040	047	071	G	G	035	043	059M	044	043	045	030	030	E	
2	E	E	E	E	S	S	030	038	060	071	067M	G	040	B	040	050	G	S	S	037	043	032	J063	J051	
3	048	030	E	E	S	S	028	035	039	039	040	J063	050	045	074M	098	060	043	031	052	J051	035	J053	058	
4	030	031	032	030	032	023	030	040	042	050	G	090M	073M	066	G	038	J057	051	060	042	030	E	035	E	
5	E	E	E	E	020	S	028	043	068	047	059	085M	090	G	040	G	050	J083	J083	048	030	E	E	E	
6	043	J052	030	E	020	043	032	041	046	040	050	048	044	050	J060	043	048	J074	030	J043	060M	042	046	037	
7	038	044	030	J051	051	034	031	031	035	050	043	037	G	053	G	043	053	041	051	048	032	E	043	E	
8	E	E	030	E	E	031	043	051	045	040	072M	053	051	042	J116	067	J063	J114	050	S	030	E	030	E	
9	E	027	E	E	E	026	038	038	G	J121	J120	J060	072	G	G	G	035	030	060	042	029	E	E	E	
10	E	E	E	020	020	G	027	037	G	C	C	C	C	C	040	040	043	028	023	023	030	030	034	E	
11	034	050M	030	E	E	G	032	041	051	058	050	043	G	G	046	040	039	027	025	022	043	032	041	050	
12	E	E	026	J061	020	035	035	043	064M	J076	C	C	J043	J055	060	056	058	J051	J064	040	J103	031	E	J043	
13	E	030	E	E	E	023	037	039	G	032	033	G	034	034	043	G	033	038	027	032	031	J073	035	030	
14	024	E	E	E	012	G	038	040	038	045	039	037	036	G	037	G	037	040	033	030	035	033	031	040	
15	E	E	E	E	015	023	030	041	053	050	059	040	057	J093	J110	G	G	036	053	053	032	E	E	E	
16	E	E	E	E	G	023	029	033	051	064	094	065	034	044	063	J063	058	098	029	028	030	E	E	E	
17	028	E	J023	E	E	026	043	042	054	070	060	058	070	040	040	043	033	J049	J064	042	042	030	E	E	
18	E	E	E	E	020	028	033	058	046	051	051	044	G	G	G	G	039	030	035	039	024	E	E	E	
19	E	E	015	E	G	030	050	061	053	C	049	J103	040	042	050	047	034	038	060	J102	082M	063	080	023	
20	030	030	020	015	050	044	070M	051	050	J075	068	J076	064	083	083	043	043	078	J080Y	J076	J123	J078	J074	030	
21	J073	051	058	035	020	029	J080	060	040	G	G	060	057	046	G	J058	J074	113	118	040	E	E	E	E	
22	E	C	C	C	C	C	C	C	C	058M	058	058	J075	058	J075	030	J120	J083	068M	036	047	041	E	E	
23	E	023	020	020	028	030	059	053	J056	068	051	049	051	042	040	J073	J142	D	J079	083	075	082	J095	040	
24	E	023	020	J020	028	030	041	049	C	C	C	C	C	C	C	C	C	050	036	040	040	E	032	E	
25	E	020	022	030	J053	041	049	J081	073	058	051	040	B	043	075	080	J066	072	068	030	043	E	E	E	
26	040	037	063	048	028	025	049	064	079	070	076	085	061	079	073	071	042	080	074	078	080	043	053	051	
27	070	072	053	060	043	033	063	065	071	080	083	097	094	071	050	G	037	051	051	060	062	042	033	E	
28	E	E	E	E	G	025	039	075	070	065	070	043	G	042	061	076	J073	063	077M	030	040	E	E	028	E
29	038	030	030	020	030	032	070	J068	058M	050	041	050	068	034	043	070	052	J084	053	050	J053	029	E	043	
30	E	033	E	E	G	G	030	043	050	043	050	034	G	G	G	061	038	037	030	040	051	030	E	033	
31	027	030	020	E	023	026	037	062	053	050	038	043	072	043	041	J043	040	037	050	040	033	029	034	E	
No.	31	30	30	29	29	27	30	30	29	26	28	28	28	28	30	30	30	30	30	30	31	31	31	31	31
Median	E	022	018	E	020	026	036	043	051	054	051	050	050	042	043	043	043	043	051	041	042	030	031	E	
U.Q.	034	031	030	025	028	032	049	060	062	070	068	064	070	054	063	067	058	083	068	052	053	041	043	040	
L.Q.	E	E	E	E	E	023	030	039	040	045	040	043	035	G	037	035	037	038	033	036	030	E	E	E	
Q.R.						009	019	021	022	025	028	021	035		026	032	021	045	035	016	023				

The Radio Research Laboratories, Japan

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

foEs

W 4

Lat. 45 23.6 N
Long. 141 41.1 E

Wakkanai

IONOSPHERIC DATA

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

fbEs

May 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									G	C	G	043	A			G	039	043	035	040	040	E	E	E	
2					S	S	G	038	A	A	A		040	B	G	046		S	S	036	040	E	E	E	
3	E	E	E	E	S	S	G	G	G	G	A		046	045	A	A	A	030	021	G	040	E	040	028	
4	E	E	E	E	S	S	G	041	040	042	A	A	A	A	040	G	050	044	050	040	E	E	E		
5					S	S	G	041	046	042	A	A	A	A	040		040	A	A	040	E	E	E		
6	E	E	E	E	E	030	G	040	G	G	G	G	G	A	A	041	040	A	030	050	A	032	A	E	
7	A	A	E	E	030	034	034	G	G	043	G	G		048		042	048	039	050	040	E	E	032		
8			E		G	G	040	049	042	G	A	A	048	G	027	050	A	A	040	S	E	E	E		
9			E		G	G	G	037		052	A	A	G				G	G	A	035	E	E	E		
10			E		E	G	G	037		C	C	C	C	C	040	037	G	G	G	G	E	E	024		
11	E	E	E				030	040	A	A	A	A		A	A	038	039	G	G	G	E	E	E	A	
12			E		G	G	032	041	A	A	C	C	G	045	050	037	050	046	A	032	026	024	E	E	
13			E		G	G	034	036	G	G	G		034	033	036		G	036	G	024	E	040	E	E	
14	E				G	G	037	040	G	G	G	G	G				G	038	030	024	E	E	E	E	
15					G	G	G	A	A	A	A	039	A	A	A			035	049	040	E	E	E		
16					G	G	G	G	G	A	A	A	034	A	A	A	A	A	A	G	G	026			
17	E		E		G	A	A	A	A	A	A	A	A	039	G	G	030	G	030	A	040	E			
18					G	G	G	A	040	041	042	G					037	G	030	G	E				
19			E		G	A	A	A	A	C	043	A	G	040	043	040	G	038	A	A	A	A	A	E	
20	E	E	E	G	A	A	A	A	A	A	A	A	A	A	042	041	040	A	060	A	A	A	A	E	
21	A	024	A	C	G	A	A	042	A	A	A	A	A	037			A	A	A	A	A	A	A	E	
22		C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	027	040	038		
23			C	C	C	G	G	043	050	A	050	046	G	G	EDHOR	A	A	A	A	A	A	A	A	035	
24	E	E	E	G	G	G	A	049	C	C	C	C	C	C	C	C	C	039	036	033	040			E	
25	E	E	E	E	A	038	044	A	A	A	A	G	B	042	A	A	A	A	A	A	G	036			
26	E	E	E	G	G	G	A	A	A	A	A	A	A	A	046	A	041	A	A	A	050	A	E	E	
27	A	A	A	A	024	030	A	A	A	055	A	044	033	G	033	G	G	044	042	050	040	032	E	E	
28					G	G	A	A	A	A	G	G	A	A	A	A	A	A	A	A	G	030		E	
29	E	E	E	G	G	G	A	A	046	045	G	044	A	G	036	A	G	A	042	043	E	E	E	E	
30	E	E	E		G	G	040	040	048	042	043	A	G			047	037	A	031	028	031	E	E	E	
31	E	E	E		G	G	035	A	050	047	G	G	A	035	034	033	030	030	041	027	G	G	E	E	
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)

f-min

May 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	E020S	E	E020S	E	E	E013S	020	020	020	C	021	020	020	020	020	020	020	020	E021S	E020S	E020S	E020S	E020S	
2	E020S	E	E	E	E	E020S	E023S	022	020	022	023	023	023	036	027	022	020	E025S	E020S	E020S	E019S	E020S	E020S	
3	E020S	E	E	E	E	E020S	020	020	020	021	020	020	020	020	025	020	020	E020S	E020S	E020S	E019S	E018S	E020S	
4	E018S	E016S	E	E	E	E017S	020	020	020	020	020	020	020	021	020	020	020	020	E020S	E020S	E020S	E020S	E020S	
5	E020S	E018S	E	E	E	E020S	020	020	021	020	020	020	020	021	022	020	020	020	E020S	E020S	E020S	E020S	E020S	
6	E020S	E017S	E	E	E	E020S	020	020	020	020	020	022	021	021	020	021	020	020	E020S	E020S	E019S	E020S	E019S	
7	E018S	E	E	E	E	E	014	020	021	020	023	024	021	021	021	020	020	020	E018S	E020S	E019S	E020S	E020S	
8	E020S	E015S	E	E	E	E019S	019	020	020	020	021	021	021	021	020	020	020	E020S	E020S	E019S	E020S	E020S	E020S	
9	E020S	E	E012S	E	E	E	013	020	021	020	021	022	021	020	020	021	020	020	E020S	E020S	E020S	E020S	E020S	
10	E020S	E020S	E	E	E	E	013	020	021	C	C	C	C	C	025	020	020	020	E018S	E020S	E020S	E018S	E019S	
11	E020S	E	E	E	E	E	E	020	021	021	021	024	021	020	022	020	029	E022S	E020S	E019S	E018S	E019S	E019S	
12	E019S	E	E	E	E	E	015	020	020	020	C	C	020	020	020	020	020	020	E020S	E020S	E019S	E020S	E018S	
13	E019S	E	E012S	E	E	E020S	019	020	020	020	020	027	022	020	020	020	020	020	E019S	E019S	E019S	E020S	E020S	
14	E020S	E	E	E	E	E	015	020	020	022	022	023	025	021	021	020	020	020	E020S	E019S	E018S	E019S	E020S	
15	E020S	E016S	E	E	E	E	016	020	020	020	020	021	020	021	022	020	020	020	E020S	E020S	E020S	E020S	E020S	
16	E020S	E020S	E016S	E	E	E	012	020	020	020	020	020	022	020	020	020	020	020	E020S	E020S	E020S	E020S	E020S	
17	E020S	E	E	E	E	E	020S	020	026	020	020	023	021	025	020	020	025	020	E020S	E020S	E020S	E020S	E020S	
18	E020S	E	E	E	E	E	012	020	020	020	020	021	022	022	021	020	020	020	E019S	E020S	E020S	E020S	E020S	
19	E020S	E018S	E	E	E	E	E020S	020	021	C	024	020	020	020	022	020	020	020	E020S	E020S	E020S	E020S	E020S	
20	E020S	E018S	E	E	E	E	012	E020S	020	022	022	022	020	024	023	020	022	020	E020S	E020S	E020S	E020S	E020S	
21	E020S	E	E	E	E	E	018	020	020	020	021	022	025	025	021	025	022	020	E020S	E021S	E020S	E020S	E020S	
22	E020S	C	C	C	C	C	C	C	C	C	023	022	024	025	024	021	020	020	E020S	E021S	E020S	E020S	E020S	
23	E020S	E	E	C	C	E	020	020	020	020	020	020	022	020	022	020	020	E021S	E020S	E020S	E020S	E020S		
24	E020S	E	E	E	E	E	E020S	020	020	C	C	C	C	C	C	C	C	020	E020S	E020S	E020S	E020S	E020S	
25	E020S	E	E	E	E	E	016	020	024	020	020	025	035	021	024	020	020	020	E020S	E020S	E020S	E020S	E020S	
26	E020S	E	E	E	E	E	017	020	020	020	021	022	025	020	020	020	020	020	E020S	E020S	E020S	E020S	E020S	
27	E020S	E	E	E	E	E	015	020	020	021	020	020	025	021	020	020	020	019	E020S	E020S	E020S	E020S	E020S	
28	E020S	E	E	E	E	E	E020S	020	020	020	020	021	025	020	020	020	020	020	E020S	E020S	E020S	E020S	E020S	
29	E020S	E	E	E	E	E	016	020	020	022	023	021	025	022	021	020	020	020	E020S	E020S	E020S	E020S	E020S	
30	E020S	E	E012S	E	E	E	015	020	020	021	020	021	020	020	024	020	020	020	E020S	E020S	E020S	E020S	E020S	
31	E020S	E015S	E	E	E	E	016	019	020	020	020	021	020	021	020	020	020	020	E020S	E020S	E020S	E020S	E020S	
No.	31	19	25	29	29	19	29	30	29	26	28	28	29	29	30	30	30	28	31	31	31	31	31	
Median	E020	E	E	E	E	E	015	020	020	020	021	021	021	021	021	020	020	020	E020	E020	E020	E020	E020	
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

f-min

IONOSPHERIC DATA

Lat. 45 23.6 N
Long. 141 41.1 E

Wakkanai

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

May 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	300S	300	U300S	305S	305	280	265	305	295	I305C	290	260	I290A	255	320	330	330	340	335	310	I300A	320F	SF	SF
2	300S	SF	SF	SF	U295S	I320S	340	365	A	A	A	295	290	300	300	320	300	310	300	I310S	I305S	I310S	295S	SF
3	SF	SF	SF	SF	SF	310	320	340	305	340	305	I325A	320	305	I320A	I330A	I330A	340	325	305	310S	305	U310S	320
4	300	315	310	295	310	340	345H	350	360	340	355	A	A	A	325	330	325	330	315	I315S	310	I315S	310	315
5	310	300	300	300	I330F	355	350	I335R	335	345	A	A	A	I325R	315	315	300	I310A	A	S	U310S	I315S	I305S	U300S
6	295	I300S	310	305	305	315	325	340	320	300R	305	I315A	I320A	310	315	315	315	I310A	310	325	I315S	320	I300S	320
7	305S	I305A	300S	315S	325	340	330	335	340	335	325	340	I310R	270	295	315	315	305	310	S	S	U330S	300	310
8	U305S	315	U305S	315	300	325	340	320	345	320	I315A	I290R	300	325	I315A	310	I330A	I320A	310	330	U335S	I320S	U300S	300
9	295	U315S	305S	SF	315F	325	335	355	320	335	I315A	I310A	290	310	300	340	320	315	I315A	I310S	U330S	U305S	U325S	315
10	300	285	295	U300S	295	350	335	370	335H	C	C	C	C	C	310	335	320	315	I315H	290	315	320	315	285
11	SF	290	300	305F	305	315	320	A	A	A	A	R	285	I275R	I265A	265	280	300	300	SF	SF	SF	SF	A
12	SF	F	F	285	285	335	335	325	A	A	C	C	315	320	295	315	325	330	I305A	295	300	315	310	305S
13	300	SF	SF	SF	F	300F	300	315	310	345	335	315	330	305	W	315	320	315	310	305	310	I315S	I315S	315
14	SF	275	SF	SF	315F	340	320	380	315	335	300	310	320	275	300	320	295	305	290	310	U320S	330	300	325
15	U320S	285	280	SF	SF	340	360	A	A	A	A	G	A	A	A	285	305	315	325	305S	300	320	295	SF
16	SF	285	315	320	325	305	330	265	295	A	A	A	R	R	A	A	A	A	A	300	I315S	305	310	295
17	295	285	315	SF	290	310	A	A	A	A	A	A	A	W	W	305	300	315	320	I305A	290	325	335	320
18	305	300	305	U315S	330	300	335	I335A	315	325	310	I280R	285	240	285	310	320	315	310	I305S	295	310	I335S	295
19	315	305	310	305	320	335	I330A	I335A	I335A	I335C	325	I300A	280	305	300	315	320	320	A	A	A	I320A	A	SF
20	SF	300	SF	SF	SF	I335A	I325A	335	I330A	A	A	A	A	A	300	300	320	I315A	I320A	A	A	A	A	300
21	I325A	320	A	SF	SF	360	I305A	I340A	340	325	315	I330A	I305A	W	300	A	A	A	A	310S	U350S	310S	SF	300
22	315	C	C	C	C	G	G	C	C	C	A	A	A	A	A	A	A	A	A	S	U315S	I305S	U325S	320
23	300	320	320	I325C	I335C	325	320	310	325	I325A	310	325	320	275	270	I290A	I305A	I310A	I315A	I320A	315	A	A	S
24	300	300	305	300S	330	345	I325A	325	C	C	C	C	C	A	A	A	A	295	320	315	300	300	305	310
25	295	SF	SF	SF	SF	A	320	325	A	A	A	W	285	275	A	A	A	A	A	280	310	315	315	280
26	295	300	305	SF	SF	310	335	A	A	A	A	I315A	I290A	I290A	315	I310A	310	I315A	A	310	I315A	SF	315	310
27	A	A	A	A	A	350	320	A	A	A	A	305	I315A	315	295	315	290	290	300	300	280	SF	SF	300
28	SF	SF	SF	SF	SF	SF	325	315	A	A	A	320	250	W	A	A	A	I295A	I295A	300	300	305	295	295
29	SF	310	310	300	SF	320	I320A	I325A	305	330	300	270	I295A	300	285	I320A	325H	I295A	310	300	I295S	320	305	300
30	315	300	320	310	335	335	325H	295	325	325	330	I300A	295	W	265	310	320	I310A	310	285	315	295	300	310F
31	320	290	285F	SF	SF	315	315	I340A	330	315	330	300	I305A	300	310	325	320	315	310	295	315	305	315	320
No.	23	23	20	15	22	30	27	23	20	17	17	21	22	24	25	25	25	27	25	25	27	26	25	25
Median	300	300	305		310	325	325	325	330	325	315	300	300	300	300	315	320	315	310	305	310	315	310	310
U.Q.																								
L.Q.																								
G.R.																								

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)F1

May 1984

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						325L	315L	360	375	I375C	380	I375A	I370A	370H	340	375	A								
2								I380A	A	A	A	375	I375A	355	380	I370A	345	340	375						
3							380	380	375	410	350	A	A	A	A	A	A								
4							I400A	I395A	I385A	I385A	390	A	A	A	365	360	A								
5							A	A	A	A	A	A	A	400	I380A	380	A								
6							355	I360A	I370A	385	400	370	380	A	A	A	A								
7								375	390	I390A	395	400	I995B	I380A	365	A	A	A							
8								A	A	375	A	A	A	370	A	A	A	A							
9							360	I380A	405	I375A	I380A	I395A	385	380	370	375	360								
10							365	I385A		C	C	C	C	C	A	I355A	360	370							
11							355	365	A	A	A	I355A	350	I375B	I365A	I360A	I355A	355	335L						
12							345	A	A	A	C	C	395H	I365A	I370A	I355A	A	A	A						
13								I370A	380	385	375	415	395	375	360	360	355	I360A							
14								A	375	390	400	370	390	375	385	350	335	I340A							
15					310	370	395	A	A	A	A	I375A	A	A	A	355	370	A	A						
16								355	385	A	A	A	370	A	A	A	A	A	U345L						
17								A	A	A	A	A	A	I380A	400	375	345	340	A						
18								A	A	A	A	375	380	385	380	375	I365A	355							
19								A	A	I385A	I370A	I375A	380	I375A	I385A	I375A	375	A	A						
20								A	A	A	A	A	A	A	A	A	A	A	A						
21								A	A	400	420	I350A	I375A	370	390	A	A	A	A						
22					C	C	C	C	C	C	A	A	A	A	A	A	A	A	A						
23							380	A	A	A	A	A	370	395	A	A	A	A	A						
24								A	A	C	C	C	C	C	C	C	C	C	A						
25								A	A	A	I395A	380	375	A	A	A	A	A	A						
26						380L		A	A	A	A	A	A	A	A	A	A	A	A						
27								A	A	A	A	A	A	A	360	375	345	A	A						
28							390L	A	A	A	395	405	380H	365	A	A	A	A	A						
29								A	A	A	395	I400A	I395A	390H	350	I360A									
30								I375A	I385A	I380A	I385A	I395A	390	405	380	A	A	A	A						
31					335	375L	A	A	A	A	370	395	I390A	390	370	375	355	340	A						
No.					2	6	9	11	10	12	15	17	19	19	18	17	12	8	3						
Median					320	360	365	U375	380	U385	390	380	380	375	370	370	355	350	345						
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

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M.T. + 9h)

km

R'F2

May 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						375	470L	380	360	I355C	370	460	I410A	500	315	300	295							
2							290	290	A	A	A	400	400	330	380	315	300	310	290					
3						270	300	360	295	340	A	A	325	345	I295A	I295A	I290A							
4							255	260	I275L	280	A	A	A	A	310	285	I280A							
5							290	290	280	260	A	A	A	A	330	320	305	320						
6						330	290	295	295	330	340	370	350	I360A	I355A	340	300							
7							295	270	290	330	295	I350R	I380A	370	320	300	300							
8							A	280	320	A	A	A	A	315	I320A	A	A	A						
9						290	255	305	320	I325A	I380A	420	355	370	295	310								
10							290	255	C	C	C	C	C	310	285	300	300							
11						340	325	A	A	A	R	R	400	R	I465A	435	415	370	300L					
12						290	290	320	A	A	C	C	340	325	I350A	320	320	275	A					
13							315	300	300	280	300	350	340	380	W	345	310	300						
14							A	A	335	290	390	345	330	450	400	325	350	320						
15						360	270	250	A	A	A	G	A	A	A	370	310	310	A					
16							A	450	405	A	A	A	I450R	I450A	A	A	A	A	320L					
17							A	A	A	A	A	A	A	W	W	395	380	350	290					
18								I320A	330	330	350	480	420	575	430	350	340	305						
19							A	A	A	I320C	330	A	430	370	390	325	340	310	A					
20							A	A	A	A	A	A	A	A	365	250	310	A	A					
21							A	A	300	330	350	A	I380A	W	400	A	A	A	A					
22						C	C	C	C	C	A	A	A	A	A	A	A	A	A					
23						C	310	340	I315A	I335A	I345A	335	350	450	450	A	I315A	I280A	A					
24							A	A	C	C	C	C	C	C	C	C	C	310	265					
25							A	A	A	A	A	W	400	425	A	A	A	A	A					
26						270	A	A	A	A	A	A	A	I420A	360	I360A	360	A	A					
27							A	A	A	A	A	360	I320A	350	380	350	385	I345A	335					
28							305	A	A	A	340	410	550	W	A	A	A	A	A					
29							I315A	A	A	325	400	470	I395A	415	425	I345A	A	A	295					
30							395	A	300	310	A	410	W	465	I350A	300	I300A	290						
31						300	300	335	I285A	350	315	365	I355A	360	345	310	315	315	320					
No.					2	6	12	17	15	17	16	15	21	24	25	23	23	16	9					
Median					330	295	310	295	300	320	340	380	395	400	375	325	315	310	295					
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

f_oF

May 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	300	285	300	260	270	260	250	230	225	I225C	290	I220A	I210A	I210H	265	250	I255A	I250A	I255A	I275A	I280A	260	295	280
2	285	290	290	300	280	220	250	I245A	A	A	A	215	I225A	250	250	I250A	250	250	270	I250A	I245A	230	260	300
3	285	285	280	270	290	250	240	250	230	215	210	A	A	A	A	A	A	260A	250H	255	I265A	270	I265A	275A
4	290	285	300	285	285	245	250H	I235A	I230A	I215A	215	A	A	A	A	240	250	A	A	A	260	260	250	260
5	270	285	280	250	260	245	245	A	A	A	A	A	A	220	A	245	A	A	A	A	235	250	250	250
6	280	270	270	255	280	I265A	250	I235A	I240A	230	215	250	220	A	A	A	A	A	A	A	A	A	A	260
7	300	I305A	300	295	A	I250A	235	220	220	I215A	210	240	I225B	I235A	235	A	A	A	A	A	230	235	I260A	260
8	300	260	290	295	275	260	A	A	A	250	A	A	A	250	A	A	A	A	A	230	225	250	275	270
9	270	275	280	265	255	245	215	I230A	200	I225A	I230A	I220A	230	210	235	225	260	250	I250A	I255A	240	225	250	250
10	285	295	285	260	300	235	250	I240A	225H	C	C	C	C	C	A	I245A	245	250	250H	260	250	240	250	290
11	290	300	290	280	270	260	A	A	A	A	A	A	275	I250B	I260A	I265A	I250A	260	270	290	300	265	300	I325A
12	325	340	315	270	300	260	I255A	A	A	A	C	C	200H	I220A	I230A	I240A	A	A	A	A	265	250	245	270
13	260	250	260	250	220	235	I255A	I240A	215	200	210	210	205	210	250	250	260	I250A	260	270	250	I245A	235	250
14	270	315	280	290	250	235	I255A	I250A	250	240	200	235	235	240	210	250	275	I260A	I265A	260	235	230	250	260
15	285	320	300	295	300	255	250	A	A	A	A	I245A	A	A	A	245	225	A	A	A	265	245	275	310
16	300	310	285	250	250	260	250	245	250	A	A	A	250	A	A	A	A	A	A	A	250A	250	280	285
17	290	295	270	215	285	275	A	A	A	A	A	A	A	I235A	240	240	260	255	A	A	A	250	245	265
18	300	280	270	240	260	260	240	A	A	A	A	220	210	210	220	245	I260A	250	I255A	260	260	255	225	250
19	290	295	285	255	260	250	A	A	A	I240C	I215A	I220A	225	I245A	I245A	I235A	250	A	A	A	A	A	A	290
20	270	300	285	290	265	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	260
21	I270A	290	I290A	270	275	230	A	A	A	210	200	I205A	I225A	245	240	A	A	A	A	A	A	220	265	260
22	250	C	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	A	240
23	270	260	255	I240C	I250C	220	230	A	A	A	A	A	250	200	A	A	A	A	A	A	A	A	A	A
24	270	290	290	260	250	245	I240A	I235A	C	C	C	C	C	C	C	C	C	C	C	C	A	A	265	250
25	285	280	270	300A	A	A	A	A	A	A	I215A	225	235	A	A	A	A	A	A	A	A	A	240	300
26	275	300	285	300	290	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	255	230	265
27	A	A	A	A	250	260A	A	A	A	A	A	A	A	A	210	225	280	A	A	A	A	A	245	260
28	260	275	260	260	250	240	250	A	A	A	210	215	215H	260	A	A	A	I275A	I280A	285	I285A	255	270	275
29	255	260	260	280	265	260	A	A	A	A	225	I210A	I205A	200H	250	I235A	250H	A	A	A	260	290	290	275
30	260	250	260	240	230	240H	230H	I245A	I235A	I225A	I220A	I215A	220	200	210	A	A	A	A	A	A	A	255	250
31	250	295	275	260	270	240	A	A	A	A	230	220	I205A	215	230	240	245	260	I255A	270A	260	255	245	235
No.	30	29	29	29	28	27	19	13	11	12	15	17	19	19	17	17	14	12	12	15	21	26	29	30
Median	280	290	285	260	265	250	250	I240	230	I225	215	220	225	220	240	245	250	250	I260	270	250	250	250	260
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

f_oF

IONOSPHERIC DATA

Wakkanai

Lat. 45°23.6' N
Long. 141°41.1' E

135° E Mean Time (G.M.T. +9h)

km

R'ES

May 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	G	G	G	125	C	115	115	110	G	G	150	140	120	130	125	125	125	115	E
2	E	E	E	E	E	S	S	125	115	115	110	G	125	B	155	130	G	S	S	120	115	115	120	120
3	110	120	E	E	E	S	S	125	115	120	120	120	120	135	120	115	110	110	110	110	125	115	110	110
4	110	130	125	145	120	110	110	135	135	125	G	110	110	110	G	145	125	135	120	120	135	E	120	E
5	E	E	E	E	115	S	170	135	120	120	120	115	110	G	175	G	130	120	120	115	120	E	E	E
6	120	115	110	E	130	120	125	130	115	115	110	125	115	140	*30	140	130	120	135	125	115	110	110	110
7	110	130	145	125	125	125	125	145	140	120	110	120	G	130	G	130	120	115	110	110	110	E	110	E
8	E	E	105	E	E	130	125	120	120	125	110	110	115	125	120	125	120	115	115	S	130	E	125	E
9	E	105	E	E	E	140	125	120	G	115	115	115	115	G	G	G	140	130	120	120	115	E	E	E
10	E	E	E	110	105	G	160	140	G	C	C	C	C	C	115	145	145	145	130	130	120	115	110	E
11	110	110	110	E	E	130	125	125	120	120	125	120	G	G	135	140	125	125	145	135	125	120	115	110
12	E	E	140	140	145	125	125	120	115	110	C	C	115	105	105	110	125	120	120	120	120	110	E	105
13	E	105	E	E	E	150	135	125	G	120	110	G	105	105	110	G	140	125	125	120	110	110	120	110
14	110	E	E	E	E	150	G	135	125	120	120	115	115	G	115	G	140	130	125	120	110	110	110	110
15	E	E	E	E	E	145	135	125	120	110	115	110	120	110	110	G	G	125	125	120	140	E	E	E
16	E	E	E	E	E	G	140	120	125	110	115	115	110	150	125	120	120	115	135	130	120	E	E	E
17	110	E	115	E	E	145	130	135	120	125	115	110	115	120	115	120	115	140	125	120	120	120	E	E
18	E	E	E	E	E	145	130	125	120	125	115	120	G	G	G	G	130	125	125	120	115	120	E	E
19	E	E	105	E	E	G	140	125	120	C	115	110	120	120	110	115	135	120	125	115	115	120	110	165
20	115	120	100	110	110	125	120	120	115	120	110	110	110	105	115	125	125	120	120	120	115	110	115	110
21	110	105	105	100	105	150	130	120	120	G	G	105	110	110	G	120	115	115	115	115	E	E	E	E
22	E	C	C	C	C	C	C	C	C	C	110	110	105	105	105	115	115	110	120	115	115	110	E	E
23	E	E	E	C	C	160	140	125	120	115	110	110	110	115	145	120	110	110	120	120	115	115	115	110
24	E	105	105	105	105	140	120	115	C	C	C	C	C	C	C	C	C	125	135	125	120	E	120	E
25	E	105	115	140	130	130	120	120	115	120	115	125	B	140	125	120	120	120	120	125	115	E	E	E
26	115	120	120	150	135	135	125	115	110	110	110	105	110	105	105	105	125	115	115	125	120	120	120	110
27	110	105	105	105	105	130	125	115	115	115	110	110	110	110	115	G	145	125	115	125	125	115	110	E
28	E	E	E	E	E	G	125	125	115	115	110	120	G	135	120	120	120	140	120	125	115	E	110	E
29	110	110	110	110	110	140	120	115	115	115	110	110	110	115	105	110	115	115	120	115	110	110	E	110
30	E	110	E	E	E	G	125	120	110	115	110	110	115	G	G	105	125	115	125	120	110	110	E	110
31	110	105	105	E	E	145	140	125	115	115	115	110	105	105	105	105	105	100	120	120	115	110	110	E
No.	13	16	16	11	17	22	29	29	26	25	26	26	24	21	23	23	28	30	30	30	30	19	19	13
Median	110	110	110	110	125	135	125	120	120	115	110	110	110	115	115	120	125	120	120	120	115	115	115	110
U.Q.																								
L.Q.																								
Q.R.																								

R'ES

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

May 1964

Types of Es

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	c	c	c	e2		h	h	e2	c	c3	f2	f	f			
2		f					h	c	c	c2	c2		c		c	c				c	f	f	f	f	
3	f						c	c	c	c	c	e	c	h	c	e2	e2	c	c	c2	f2	f2	f2	f2	
4	f2	f	f2	f	f	1	1	h	h	e	e2	e2	e2	e3	h	h	e21	e2	e2	c2	f		f		
5							h	h	c	c	c	e2	e2		h	h	h	e3	c4	c4	f				
6	f	f3	f2				e	e	c	c	e	c	c	h	h2	h	e	e2	c	e2	f3	f3	f3	f2	
7	f3	f f	f	f	f3	e2	c	h	h	c	c	c	h	h	c	c	e	e3	e2	e2	f	f	f		
8			f				c	e3	c	e	e	e2	c	c	e1	e1	e1	e41	e2	f	f	f	f		
9							c	c		e2	e2	e2	c			h	h	c	c	f	f	f	f		
10							h	h						1	h	h	h	h	c	f	f	f	f		
11	f2	f2	f				c	c	c	c	c	c	e	h	h	e	e2	e3	c	e2	f2	f	f	f2	
12			f	f	c	c	c	c	e3	e4		e	e	12	12	e2	e2	e2	e3	f2	f2	f2	f2	f2	
13							c	c	c	c	e		1	1	1	h	h	e2	c	c	f	f3	f	f	
14	f						e3	e2	c	c	c	c	e.	e	e	h	h	c	c	c	f	f	f	f	
15							c	e	e2	e	e2	c	e2	e3	e2			e2	e2	e2	f				
16							c	h	e	c	c	c	1	h	e3	e	e2	e3	c	c	f				
17	f						c	c	c	c	e2	e	e2	c	c	c	1	h	e3	e2	f				
18							c	e	c	e2	c	c	e	c	c	c	c	c	c	e3	f				
19							c	e3	c	e2	c	e3	c	c	1	1	h	c	e2	e2	f4	f4	f2	f	
20	f	f	f	1	1	e2	e2	c	e2	e2	c	e2	e2	1	e2	e	e2	e2	e2	e2	f3	f2	f	f	
21	f5	f2	f4	12	1	e	e	e2	e		1	1	1	1	c	c	e3	e6	e4	c					
22											e	e2	e2	1	12	e2	e2	e2	e2	c	f4	f2			
23							h	h	e2	e2	e2	c	c	h	h	e2	e2	e2	e2	e2	f2	f4	f2	f2	
24							h	e3	e2								e2	e	c	f	f				
25							e2	e2	e3	e2	c	e		h	e3	e2	c	e2	e5	c	f2				
26	f	f2	f2	c	c	e	e2	e2	e3	e3	e3	e3	e2	12	13	12	c	e4	e3	e4	f5	f	f	f2	
27	f6	f7	f3	13	12	e	e2	e3	e3	e3	e2	e2	e2	c	1	h	h	e2	e3	e5	f4	f4	f2		
28							c	c	e3	e2	e	e	h	h	e3	e4	e2	e2	e7	c	f4		f		
29	f2	f	f	12	1	h	e4	e2	e2	e2	c	c	e2	c	1	c	c	e4	e2	e2	f	f	f	f2	
30							c	c	c	c	e2	e2	c		12	c	c	e3	c	e2	f2	f2		f3	
31	f	f	f		h	c	c	e2	e2	c	c	e2	e2	1	1	1	1	1	1	c	f	f	f	f	
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

Types of Es

IONOSPHERIC DATA

Lat. 39°43.5' N
Long. 145°08.2' E

Akita

foF2

0.1 Mc 135° E Mean Time (G.M.T. +9h)

May 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
2	I046R	I044	I043	F	I042R	I048	I053A	I053A	I053R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	
3	F	F	FS	F	F	I044	I053A	I053A	I053R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	
4	I046R	I039	I037F	RF	RF	I044	I053A	I053A	I053R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	I059R	
5	044	043	038	038	036	044	063	056	I056A	056	I054A	060	065	072	062	065	073	077RS	078	I082R	076	064	055	053R	
6	050	047	I044R	042	040	044	057	071	A	A	062	061	053	051	060	065	073	078RS	073	079	071	043	035	036	
7	036	F	F	F	F	043	056	066	055	055	058	054	054	056	060	068	078R	I077C	I075R	I082R	I072R	I048A	I044A	I040R	
8	F	039F	F	F	F	046	055	062	062	I062A	I055A	057	059	067	072	077	076R	070	068	069	064	I048R	I043R	041	
9	041	RF	RF	RF	I039R	I044R	065	057R	058	051R	056	060	053	054	062	064	062	058	060	I072R	070R	049	I041A	I039A	
10	040F	040	039	039	036F	046	058	054	I049R	053	056	063	066	068	066	066	062	060	I063A	069R	065	060	050	I045R	
11	I045R	I043F	I040F	F	F	039	A	A	A	045	I047A	049	050	050	050	053	053	I050A	I048A	049	059	056	044R	042	
12	RF	F	F	F	I044F	I050F	051	056	I056A	058	I051R	052	058	I061A	058	058	059	057	I056A	065	067R	I065R	061F	057F	
13	I051R	I050R	F	F	040F	047	055	063R	076	063	056	055	056	056	052	056	062	060	060	060	072	070	061	055	RF
14	RF	041	041	040	040	049	I049A	I049A	056	078	I061A	054	058	060	057	057	059	059	059	072	I080R	075R	051	038	055
15	035	033	033	033F	031F	032	043	A	A	A	052	056	053	059	059	067	076	I068C	066	065	050	051F	I047R	045	
16	I042R	F	F	F	037	040	041	049	049R	I048C	047	I047R	047	051	056	052	I052A	053	057	058	059	050	043	041	
17	040	039R	I040R	041R	F	040R	E036G	045	050	I050R	049R	I048A	I050A	I048R	050	055	056	051	I052A	I056R	I060R	054	041R	036	
18	035	033F	F	F	F	043	052	052	049	055R	053	052	I052A	051	053	054	053	I054A	I058A	064	068	058	047R	040	
19	F	F	035F	034F	F	038H	052	A	A	A	054	049	050	055	059	059	060	I058A	I064A	077RS	068	A	A	A	
20	A	FS	A	A	033F	042R	I054A	I058A	I056A	062	I050A	I048A	I048R	053	058	068	068	065	068	068	063	I054A	I051R	I053R	
21	I048A	I044A	041F	043F	040F	047	I050A	I058A	A	A	A	A	A	A	A	A	A	A	A	077S	I072A	FS	RS	FS	
22	FS	FS	F	F	F	046R	054R	056	C	A	055	I062A	055	I052A	I050A	055	056	059	066	070F	078	FS	055R	048	
23	045	048F	F	045F	045	048R	049	055R	060	I057A	I055A	054	052R	I057A	I062A	067	I074A	I078R	I074A	071	068	057V	J052R	I049R	
24	A	A	A	F	F	I040R	050	I068A	I068A	060	051	049	051	063	074	074	066	081	082	078	075RS	057	053	I047R	
25	I043R	043F	046R	F	RF	052	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I060A	RS	A	
26	A	A	A	RF	036	A	A	A	A	A	A	A	A	A	A	A	A	055	051	I056A	064	I059A	A	RF	
27	A	A	A	A	035F	I040A	047	051RS	053	I055R	I057A	058	058	I054A	I052A	I054A	055	I053A	I064A	070	065F	FS	FS	FS	
28	049F	045F	F	F	F	058	I043R	I044A	I044A	051	046	050	050	I050A	050	052	050	050	050	I050A	056F	F	053	FS	
29	046F	046	041	041F	038F	042	058	I054A	I053A	050	051R	059	048	054	I058A	055	I056A	059	064	FS	S	FS	FS	FS	
30	FS	044F	042F	F	F	040F	047	057	060	053	050	049	055	E044G	052	055	I057A	061	060	070	071F	065	061	F	
31	F	FS	046	F	F	049	053	061	060	I056A	052	055	059	056	060	057	060	I056A	I055A	062	069	I065S	F	049	
No.	18	18	15	11	16	29	27	25	22	24	28	28	29	28	28	29	29	29	29	30	29	24	23	21	
Median	044	043	041	040	038	044	052	056	056	056	054	054	055	056	059	059	061	060	061	069	067	056	049	045	
U.Q.	046	045	043	042	040	048	057	060	060	058	056	058	059	062	062	068	073	068	068	072	071	060	053	048	
L.Q.	040	039	038	034	036	041	049	052	051	053	050	050	052	051	052	055	056	056	056	062	062	051	044	040	
Q.R.	006	006	005	008	004	007	008	008	009	005	006	008	007	011	010	013	017	012	012	010	009	009	009	008	

foF2

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foF1

May 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							C	C	C	430	430	430	430	430A	420	A	A	L						
2							L	380L	A	A	430	A	A	A	430	420	400	360L						
3							A	A	A	A	A	R	A	460	I450A	430	A	L						
4							450	L	I400R	I430A	I450A	460	450	U450R	440	I420A	A	A						
5							L	400L	A	A	I450A	450	450	440	430	430	A	A						
6							370	A	A	A	A	470L	460A	450	440	I430A	A	A						
7							L	390L	A	A	440	460	450	450A	460	430	400	C						
8							L	400	A	A	A	A	440	460	440A	I420A	I400A	370L						
9							A	400	420	440L	450	440	460L	450	430	420	420	A						
10							L	L	400	430	U440R	I440A	440	I440A	430R	440	390	A						
11							A	A	A	A	A	A	420	410	410	A	A	A						
12							A	A	A	A	450L	440	450	A	A	420	400	370L						
13							A	400	420A	440H	440	450	460	450	440	420	A	A						
14							A	A	A	420	I430A	440	440	I440A	430	430	A	A						
15							A	A	A	A	A	A	440	440R	420H	400	390	C						
16							350	A	410	C	A	420R	430A	430A	410R	410A	I390A	I350A	320L					
17							L	360	A	A	A	A	I430A	U430R	430R	400	390	A	A					
18							A	400	A	A	A	I440A	I440A	430	430	420	400	A						
19							L	A	A	A	430	450L	440	430R	A	A	A	A						
20							A	A	A	420	I440A	I440A	440R	430R	420	A	A	A	A					
21							L	A	A	A	A	A	A	A	A	A	A	A						
22							A	A	C	A	A	A	440R	I430A	I430A	420	390	I380A	L					
23							L	A	A	A	A	440	450	A	A	A	A	380	A					
24							380L	A	A	A	A	440H	450	440	430	420	A	A						
25							A	A	A	A	A	A	A	A	A	A	A	A						
26							A	A	A	A	A	A	A	A	A	A	390	A						
27							A	A	A	A	A	A	A	A	A	A	A	A						
28							A	I380A	I400A	410	420A	420	420	I420A	420	I410A	A	A	A					
29							L	A	A	A	A	I430A	430	I430A	420	I410A	400A	A	A					
30							370	390A	410	I420A	I430A	440	430	440	I420R	410	I390A	A						
31							A	A	A	A	A	440A	430	430	420	410	A	A						
No.							6	10	7	9	16	20	25	24	24	23	14	6	1					
Median							370	395	410	430	440	440	440	435	430	420	395	370	320					
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

IONOSPHERIC DATA

Lat. 39°43.5' N
Long. 140°08.2' E

Akita

May 1964

foE

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					C	C	C	C	C	305	A	A	330	1325A	1320A	A	A	230	E					
2					E	A	1260A	290	A	A	A	325	A	A	320	1300A	1270R	235	A					
3					E	A	A	A	A	A	A	A	A	R	A	A	A	A	E					
4					A	A	A	A	A	A	A	A	330	1320A	315R	300	A	A	A					
5					E	A	A	A	290	1305A	315	325	U345R	340R	330	1310R	280R	A	E					
6					E	A	A	A	A	A	A	1325R	335R	330R	320	U300R	A	A	A					
7					E	A	260	285	A	A	A	A	R	335R	320	300	A	C	A					
8					A	A	A	A	R	A	A	A	345	340R	325R	U305R	A	A	A					
9					A	A	A	A	A	A	A	A	320R	1330A	330	1325A	310R	290	A	A				
10					E	A	270	300R	315	1320A	325	A	A	A	A	305	290	A	A					
11					E	A	A	A	295	1305A	320	325	335	330	320	300	275	A	E					
12					E	A	A	A	280R	295R	310R	A	A	A	320R	A	A	A	E					
13					A	A	260	290R	300	U310R	320R	335R	330R	330R	1325A	310	A	A	E					
14					A	A	270	290R	310A	310A	A	A	A	320R	320R	300	A	A	A					
15					A	A	A	A	A	305A	320A	1330A	335R	1330A	320	U300R	275R	C	A					
16					A	A	250R	270R	A	A	A	A	335R	1320A	305	300	275A	A	A					
17					A	A	270R	300R	320R	325	330	335R	340A	325R	1320A	305A	A	A	A					
18					A	A	A	A	A	A	A	320R	325R	340A	325R	1320A	305	A	A					
19					A	A	275	1290A	300	320	325R	335R	325	310A	1295A	1275A	250A	A	A					
20					E	A	A	A	A	A	A	A	A	U335R	320	300	270R	240A	A					
21					A	A	A	A	A	A	A	A	A	A	A	310	A	A	A					
22					A	A	240A	A	C	A	A	A	A	A	A	315	280A	A	A					
23					A	A	A	280A	A	A	A	A	A	A	325A	315A	285A	A	A					
24					A	A	A	A	A	305	320A	335A	A	A	320R	310R	290A	A	A					
25					A	A	A	A	A	A	A	A	A	A	325R	U310R	285A	A	A					
26					A	A	1275A	285	1305A	320A	A	A	A	A	A	A	290R	A	A					
27					A	A	270	1290A	1310A	320A	1330A	A	A	A	A	A	300A	A	A					
28					A	A	A	A	A	A	A	A	A	A	320R	305	A	A	A					
29					A	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
30					A	A	A	A	A	315	A	A	R	1325R	1315A	A	A	A	A					
31					A	A	A	A	A	A	A	A	A	A	320	310	A	A	A					
No.					9	1	11	14	15	14	13	13	18	24	24	15	4	6						
Median					E	240	270	290	305	320	325	335	330	320	305	280	240	E						
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

A 3

Akita

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. + 9h)

foEs

May 1964

Day	00	01	02	08	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	040	045	045	040	043	035	040	050	034	033	040	040	043	036	018
2	J038	J039	022	J021	J019	019	032	034	041	045	040	J050	J055	J056	G	032	G	031	J033	J034	J039	J068	J043	J058
3	J033	J053	J059	J034	J049	J039	J044	J054	J048	J057	J053	J062	J108	046	J065	J038	J044	J050	J026	J030	J034	J023	J044	J065
4	J052	J025	J031	J061	J046	J033	J036	J035	J033	J063	J068	J040	J040	J039	041	J048	J058	J061	J042	J040	J038	J030	J062	J053
5	J033	J030	J037	E	E	022	J040	J053	J089	J051	J063	J050	040	038	041	039	J056	J042	J036	J020	E	E	E	E
6	E	E	E	E	E	J022	026	J042	J070	J077	051	G	047	G	043	J048	J058	J048	J043	J033	J042	J027	J027	J027
7	J027	J025	J018	J023	J022	J024	028	035	J048	J063	038	035	045	047	045	035	033	C	J031	J028	J061	J065	J037	J037
8	0238	E	J031	J026	J030	J021	035	038	J042	J078	J066	J052	037	044	045	J062	J034	J045	J035	J036	J030	J026	J033	J033
9	J055	J031	J022	J041	J029	J033	J053	J041	039	J048	040	039	J036	G	034	039	036	J039	J053	J036	J041	J020	J050	J061
10	E	022	J040	023	E	019	029	035	039	027	042	J060	037	J053	J033	042	031	J083	J113	J057	J049	J020	023	J033
11	J025	J020	J021	J019	023	020	J042	J066	J047	J053	J057	J051	036	039	040	J048	J053	J084	J080	J045	J028	J026	J023	023
12	023	022	J018	021	J018	025	J045	J052	J061	J048	J040	040	J046	J079	J083	J050	J057	J030	J087	J058	J090	J073	J062	J043
13	J033	J028	J033	J018	E	027	J045	035	J042	038	037	039	037	J042	J037	038	J058	J038	J026	J018	023	023	023	J052
14	J020	J030	J025	J023	E	027	J070	J057	J059	J047	J070	J042	J048	J045	038	037	J056	J065	J038	J024	J035	J020	J017	J020
15	S	E	019M	E	J020	025	J043	J063	J056	J075	J066	J060	J049	J046	G	G	G	C	J031	J028	J027	J026	J025	J064
16	J025	J025	023M	021M	E	023	032	J038	J038	C	J060	J081	J068	J086	042	J057	J080	J063	025	J043	J028	J044	J027	021
17	J022	J038	J040	J033	J024	026	030	J043	J041	J043	J040	J060	J063	039	037	035	035	J041	J053	J040	J057	J037	J028	J025
18	E	E	J023	J038	J024	J033	J038	J041	J048	J083	J053	J045	J059	041	J038	037	037	J057	J055	J073	J053	J037	J020	J022
19	E	E	J020	J018	E	025	J030	J053	J065	J055	J043	040	037	035	J042	J048	J050	J058	J064	J061	J061	J063	J065	J047
20	J061	J026	J061	J061	J033	J043	J062	J067	J065	J041	J068	J066	J038	043	041	043	J053	J072	J036	J043	J050	J068	J053	J042
21	J063	J049	J033	J025	J031	022	J053	J065	J075	J073	J063	J075	J086	J078	J058	J083	J123	J136	J103	J074	J059	J041	J041	J045
22	J046	J028	E	J050	J025	J032	J046	J043	C	J071	J060	J083	J121	J112	J068	040	J087	J052	J036	J059	J058	J041	J025	E
23	E	E	E	J033	025	J036	025	J036	J062	J076	J061	J051	J051	J065	J073	J078	J105	J095	J086	J053	J033	J053	J060	J035
24	J061	J075	J043	J037	J040	035	J033	J053	J083	J068	037	035	J035	037	G	040	042	J064	J060	J060	J043	J030	J030	S
25	S	J018	E	E	J050	J056	J074	J065	J078	J113	J121	J086	J092	J049	J061	J086	J036	J123	J102	J089	J091	J063	J066	J082
26	J063	J081	J065	J059	J031	J042	J047	J050	J059	J073	J082	J118	J126	J112	J104	J053	J027G	J067	J061	J062	J090	J073	J063	J058
27	J073	J080	J051	J054	J043	J042	J042	J059	J061	J061	J060	J076	J090	J078	J073	J095	J047	J071	J104	J073	J053	J083	J063	J025
28	J023	J023	J031	J024	023M	J030	J041	J063	J031	J054	J070	J040	040	J098	040	J048	J047	J053	J043	J072	J038	J040	J032	J025
29	J025	021	022	023	J034	025	037	J054	J066	J080	J050	J068	039	J056	J036	J063	J041	J058	J061	J065	J050	J043	J048	J029
30	J028	J033	J018	J018	E	J023	029	039	036	J050	J073	036	G	G	J048	J063	J058	J056	J056	J063	J073	J063	J048	J042
31	J044	J059	J023	J023	J021	J035	J046	J059	J050	J070	J045	036	035	J033	J030G	030G	J063	J145	J052	J040	J050	J067	J059	J027
No.	28	30	30	30	30	30	30	30	29	30	31	31	31	31	31	31	31	29	31	31	31	31	31	30
Median	028	026	023	023	023	026	040	052	056	060	057	050	045	044	041	048	053	058	053	043	041	041	040	034
U.Q.	049	038	037	037	033	033	046	063	066	073	066	066	063	065	058	053	062	072	065	062	057	063	060	052
L.Q.	022	020	019	018	E	023	032	039	042	048	042	040	037	038	036	038	037	042	036	035	033	026	025	025
Q.R.	027	018	018	019	019	010	014	024	024	025	024	026	026	027	022	015	025	030	029	027	024	037	035	027

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

May 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	C	C	C	C	C	C	C	C	C	040	037	040	038	043	034	045	050	032	026	040	040	018	031	E	
2	030	035	E	E	E	018	030	034	041	045	039	050	050	045	032	032	042	027	030	E034R	038	050	E	E	
3	E	E	023	E	E	035	041	048	050	048	044	044	A	042	054	032	042	026	020	E	020	017	017	017	
4	017	E	E	E	017	031	033	034	U033R	047	A	040	038	037	041	046	053	060	040	E040R	032	021	028	A	
5	026	017	018			020	032	035	A	049	A	043	040	038	039	036	050	042	034	019					
6						017	025	U042R	A	A	051		046		040	048	052	039	030	030	E	030	018	017	
7	018	E	017	E	E	022	026	034	U042R	048	036	U035R	044	045	042	035	033	C	030	023	023	A	A	017	
8	017		E	017	020	019	030	038	046	A	A	050	036	043	044	049	055	030	045	032	017	020	022	017	
9	020	018	017	017	017	027	U053R	035	034	035	037	036	036	033	033	038	034	036	053	018	032	017	A	A	
10		017	E	E		019	028	035	038	035	040	054	037	047	U033R	038	030	058	A	057	049	018	017	017	
11	018	017	017	017	017	018	A	A	A	041	A	044	036	038	038	047	050	A	A	044	017	019	017	017	
12	E	017	017	017	017	021	040	049	A	045	040	036	040	A	050	039	030	028	A	054	053	038	038	040	
13	027	021	020	E		024	039	035	042	036	035	037	037	040	034	038	055	039	021S	023	E	017	017	029	
14	017	017	019	018		024	A	A	050	040	A	039	038	U045R	038	037	050	048	040	018	028	017	E	E	
15	S		E		E	017	039	A	A	A	A	046	049	041	036			C	030	018	025	018	020	017	
16	017	E	017	017		021	032	035	033	C	044	036	039	043	037	041	A	050	022	018	026	E	019S	E	
17	020	017	032	021	E	018	028	041	U041R	A	E040R	A	A	037	035	031	030	039	A	A	050	024	025	020	
18			E	018	E	028	037	038	043	052	049	U045R	A	036	035	035	036	A	A	050	021	017	018	018	
19		017	017	017		020	026	A	A	A	039	038	037	035	U042R	047	043	A	A	060	056	A	A	A	
20	A	017	A	A	020	036	A	A	A	035	A	A	037	039	038	042	U053R	045	U036R	040	042	A	040S	037S	
21	A	A	032	020	017	020	A	A	A	A	A	A	A	A	A	A	A	A	A	A	063	A	040	S	
22	035	E		017	E	030	045	041	C	A	048	A	041	A	A	035	032	040	031	021	051	030S	017		
23					020S	020	035	045	053	A	A	039	040	A	A	058	A	030	030	043	020	025	A	020	
24	A	A	A	027	024	037	033	A	A	053	034	035	034	033	037	037	040	062	053	053	030	025	017	S	
25	S	017			020S	045	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	S	A	
26	A	A	A	035S	E	A	A	A	A	A	A	A	A	A	A	038	024G	040	A	048	A	A	A	018	
27	A	A	A	A	023	A	U042R	048	047	048S	A	045	045	A	A	A	045	A	A	A	037	020	053S	020	
28	017	017	E	017	E	029	040	A	A	034	042	037	037	A	036	047	046	040	041	A	E	031	E	E	
29	E	E	E	E	E	022	034	A	A	A	044	046	E039R	045	035	A	040	A	053	055	033	E	E	E	
30	E	E	E	E	E	020	028	039	034	047	047	035			036	035	A	040	046	063	022	E	034	021	
31	022	017	E	017	E	027	043	048	049	A	044	036	035	033	027G	025G	055	A	A	A	035	030	E	E	
No.																									
Median																									
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

fbEs

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

May 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
6	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017
7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	017	E	E	E	017	017	017	017	017	017	017	017	017	E	017	017	017	017	E	017	017	017	017	017
9	017	E	017	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017
10	E	017	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017
11	E	017	E	017	017	E	E	017	017	017	017	017	017	017	017	017	017	E	017	017	E	E	017	017
12	E	017	017	017	017	E	E	017	017	017	017	017	017	017	017	017	017	E	E	E	E	017	017	E
13	017	017	E	E	017	017	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	017	017	E
14	E	017	E	E	E	E	E	017	017	017	017	017	E	017	017	E	017	017	017	017	E	E	E	E
15	017	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	017
16	E	E	017	017	017	E	017	E	E	C	017	017	017	017	017	017	E	017	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E
18	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	017	E	E
19	017	017	E	E	E	017	E	017	017	017	017	E021S	017	017	017	017	017	017	017	017	017	017	017	017
20	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E
21	E	E	E	E	E	E	E	E	E	017	017	E	017	017	017	E	017	017	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017	017
23	017	E	E	E	E	E	E	017	E	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E
24	E	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	E	E	E	017
25	017	E	017	E	E	017	017	017	017	E	017	017	017	017	E	017	017	017	017	017	E	017	E	017
26	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	E	E	E	E	017	017
27	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	017	E	017
28	017	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E
29	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E
30	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	017
31	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E
No.	30	30	30	30	30	30	30	30	29	30	31	31	30	31	31	31	31	29	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	017	017	017	017	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

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

The Radio Research Laboratories, Japan

A 6

f-min

Lat. 39°43.5' N
Long. 140 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

0.01

M(3000)F2

May 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	C	C	C	C	C	C	C	C	C	305	275	280	270	300	310	330	350	350	335	310R	290	320S	280	295	
2	1290R	280	290	F	1295R	315	355	320	315	350	310	305	315	310	310	310	320	340	315	300	310	285S	FS	F	
3	F	F	FS	F	F	325	320	1340A	330	330R	335	1305R	1310A	305	320	335	345	350	320	300	320	325	1310R	1300R	
4	1310R	310	295F	RF	RF	325	355	1375R	350R	340R	1335A	290	315	290	320	330	335	330R	335	315R	315	290R	300	1300A	
5	305	295	300	315	305	320	365	340	1340A	340	1310A	315	325	335	310	310	310	315R	310	1325R	340	325	300	285R	
6	290	300	1300R	300	300	320	315	340	A	320	330	330	310	290	305	310	315	320R	315	330	350	300	295	300	
7	305	F	F	F	F	325	330	355	330	1330A	355	280	290	290	290	310	320R	1320C	1310R	1330R	1350R	1325A	1315A	1305R	
8	F	310F	F	F	F	330	340	340	320	1345A	1310A	315	320	315	310	320	1330R	330	340	335	340	1315R	300R	310	
9	300	RF	RF	RF	1320R	320R	355	350R	360	335R	315	335	275	290	320	310	310	330	300	1315R	340R	355	1330A	1310A	
10	300F	300	300	310	320F	330	360	360	1360R	320	310	320	320	315	305	315	305	1310A	1310A	310R	310	320	295	1300R	
11	1300R	300F	280F	F	F	335	A	A	A	245	1250A	255	280	275	285	300	300	1295A	1300A	280	300	320	295R	290	
12	RF	F	F	F	F	295F	330F	340	335	1325A	330	1310R	280	290	1320A	310	320	325	1315A	310	315R	1300R	305F	310F	
13	1310R	1305R	F	F	F	330F	320	340	335R	340	350	320	305	325	290	310	320	320	335	310	320	340	300	RF	
14	RF	290	300	300	310	365	1330A	1280A	285	335	1340A	315	305	315	310	310	305	290	290	1325R	355R	335	310	300	
15	290	275	280	275F	320F	350	345	A	A	A	295	315	285	290	270	280	300	1310C	315	335	295	300F	1300R	290	
16	1280R	F	F	F	F	320	270	320	330R	1310C	295	1265R	235	275	305	290	1295A	300	305	310	310	305	300	300	
17	275	280R	1290R	330R	F	310R	G	290	320	1295R	300T	1260A	1300A	1280R	280	310	320	320	1300A	1300R	1315R	310	330R	285	
18	300	290F	F	F	F	305	345	355	310	320R	290	310	1280A	300	300	295	320	1315A	1310A	310	325	315	300R	320	
19	F	F	300F	325F	F	320H	340	A	A	A	335	270	275	295	315	305	315	1295A	1295A	330RS	355RS	A	A	A	
20	A	FS	A	A	A	310F	1315R	1340A	1335A	1330A	345	1340A	1295A	1235R	280	295	310	315	310	315	325	1310A	RF	1303R	
21	1300A	1300A	305F	300F	320F	330	1340A	1345A	A	A	A	A	A	A	A	A	A	A	A	325S	1330A	FS	RS	FS	
22	FS	FS	F	F	F	345R	355R	360	C	A	290	1320A	330	1310A	1295A	295	305	305	305	320F	330	FS	310R	310	
23	310	305F	F	F	330F	325	320R	345	315R	345	1330A	1310A	325	290R	1305A	1295A	1320A	1320A	1330R	1320A	325	320	300V	1305R	
24	A	A	A	F	F	1325R	320	1345A	1360A	345	310	290	260	280	285	270	300	305	320	325	320RS	310	320	1305R	
25	1290R	300F	320R	F	RF	330	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	1300A	RS	A	
26	A	A	A	RF	335	A	A	A	A	A	A	A	A	A	A	315	330	300	1305A	345	1310A	A	A	RF	
27	A	A	A	A	345F	1350A	320	355RS	315	1310R	1325A	310	310	1300A	1275A	1290A	290	1300A	1300A	315	295F	FS	FS	FS	
28	305F	310F	F	F	F	365	370R	1305A	1310A	315	285	295	240	1280A	275	300	305	300	300	1295A	285F	F	305	FS	
29	310F	305	295	310F	320F	325	340	1345A	1335A	A	310	300R	290	285	285	1310A	300	1310A	300	390	FS	S	FS	FS	
30	FS	310F	315F	F	F	320F	300	340	355	330	300	290	305	G	295	305	1305A	325	295	300	320F	320	315	F	
31	F	FS	295	F	F	335	340	345	1320A	300	265	310	315	315	320	310	335	1320A	1310A	300	295	1320S	F	310	
No.	18	18	15	11	16	29	27	25	22	23	28	28	28	28	28	29	29	29	29	29	30	29	24	22	21
Median	300	300	300	310	320	325	340	340	330	330	310	300	290	300	300	310	310	315	315	310	320	320	315	300	300
U. Q.																									
L. Q.																									
Q. R.																									

M(3000)F2

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

The Radio Research Laboratories, Japan

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

May 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							C	C	C	390	375	380	375	I375A	360	A	A	L						
2							L	375L	A	A	420	A	A	A	A	350	350	360L						
3							A	A	A	A	A	R	A	330	I335A	350	A	L						
4							A	L	R	A	A	350	380	U380R	I365A	I355A	A	A						
5							L	375L	A	A	I365A	365	355	375	370	350	A	A						
6							350	A	A	A	A	360I	I380A	330	345	I340A	A	A						
7							L	360L	A	A	400	390	I380A	I350A	315	350	350	C						
8							L	365	A	A	A	A	365	350	I360A	I355A	I360A	355L						
9							A	380	370	405L	390	400	365L	380	360	360	345	L						
10							L	L	I390A	415	U375R	I375A	385	I365A	370R	340	365	A						
11							A	A	A	A	A	A	350	365	340	A	A	A						
12							A	A	A	A	360L	350	345	A	A	350	360	380L						
13							A	350	I380A	365H	385	385	370	380	365	355	A	A						
14							A	A	A	A	380	I370A	365	I360A	360	340	A	A						
15							A	A	A	A	A	A	335	365R	365H	365	360	C						
16							345	370	370	C	A	380R	370R	I350A	365R	I370A	I360A	I350A	345L					
17							L	350	A	A	A	A	I360A	U350R	370R	375	360	A	A					
18							A	A	A	A	A	I375A	I380A	355	360	360	350	A						
19							L	A	A	A	405	390L	410	370R	A	A	A	A						
20							A	A	A	380	I400A	I405A	365R	355R	345	A	A	A	A					
21							L	A	A	A	A	A	A	A	A	A	A	A	A					
22							A	A	C	A	A	A	340R	I370A	I350A	365	365	I345A	L					
23							A	A	A	A	A	400	350	A	A	A	A	345	A					
24							365L	A	A	A	400H	390	370	365	350	335	A	A						
25							A	A	A	A	A	A	A	A	A	A	A	A	A					
26							A	A	A	A	A	A	A	A	A	335	385	A						
27							A	A	A	A	A	A	A	A	A	A	A	A						
28							A	I360A	I390A	405	I390A	405	395	I380A	360	A	A	A	A					
29							L	A	A	A	A	I395A	I380A	I390A	375	I365A	I360A	A	A					
30							380	I360A	375	I360A	I375A	395	400	380	I380R	370	I365A	A						
31							A	A	A	A	A	335	395	390	405	370	A	A						
No.							5	9	6	8	14	20	25	24	24	22	14	6	1					
Median							350	365	U380	385	390	390	370	370	360	355	360	350						
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

May 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						C	C	C	C	335	410	395	405	345	315	285	260A	250						
2						250	290	290	320	290	305	390	1370A	345	345	330	300	280						
3						290	1290A	295	295A	315	395	1350A	335	335	295	280	265	250						
4						245	240	245	245	310	A	355	310	355	300	275	270A	1275A						
5						235	260	260	1275A	300	1320A	320	305	290	310	330	300	280						
6						305	260	A	A	A	315	310	355	400	345	335	300	265						
7						290	255	275	1295A	280	430	370	390	390	365	315	290	1270C						
8						250	280	295	1285A	A	345	325	320	320	310	300	280	270						
9						255	250	255	300	350	310	L	400	400	305	310	300	280						
10						240	250	250	330	350	325A	310	310	310	305	310	305	A						
11						A	A	A	325	1510A	495	420	435	400	360	A	A							
12						295A	295A	290	1305A	290	345L	425	390	1320A	340A	330	300	280						
13						250	295	260	295	260	315	355	395	330	395	345	1300A	275						
14						A	A	A	A	250	1290A	340	350	305	345	340	340	350A						
15						A	A	A	A	A	385	350	460	365	400	360	300	1295C						
16						445	325	305	305	C	400	R	560	450	350	375	1350A	345A	290					
17						345L	G	400	1380A	390	1500A	1390A	430	425	345	310	305	A						
18						280	270	345	350A	1350A	350R	A	375	355	355	320	A							
19						280	A	A	A	A	325	465L	450	380	340	345	305	A						
20						A	A	A	1285A	275	A	A	645	405	355	315	300	300	270					
21						275	1270A	1275A	A	A	A	A	1375A	A	A	A	A	A						
22						290	290	290	C	A	375	1335A	320	1355A	1405A	365	345	320	290					
23						255	290A	300	A	1325A	335	395	1360A	1350A	1350A	355	A	265	A					
24						300	1275A	1250A	305	350	410	500	500	395	370	365	300	310						
25						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	300	320						
27						A	1315A	345	1340A	1345A	390	340	1370A	A	A	355	1335A							
28						250A	1375A	1360A	335	430	395	555	1435A	435	1360A	A	A	A						
29						260	1270A	1295A	A	A	375	345	1400A	390	1350A	345	1340A	1305A						
30						345	270	275	300A	A	435	355	G	390	390	350	1320A	295						
31						290	260	260	290	A	375	375	330	340	325	345	A	A						
No.						2	22	23	21	20	23	26	27	28	27	28	25	23	4					
Median						310	275	275	295	300	350	365	370	370	350	340	300	280	290					
U.Q.																								
L.Q.																								
Q.R.																								

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

R'F2

The Radio Research Laboratories, Japan

Akita

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

km

May 1964

f_oF

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	C	C	C	C	C	C	C	A 215	I240A	220	I220A	235	A	A	I240A	245	I260A	I285A	255	I285A	260	
2	I295A	I300A	295	300	265	260	I265A	240	A	A 205	A	A	A	A	240	230H	250	250	I260A	I260A	I270A	270	265	
3	280	295	290	245	245	A	A	A	A	A	A	A	A	I230A	I240A	240	I240A	245	245	235	235	235A	300	
4	270	260	295	275	295	270	I245A	230	I220A	I260A	I270A	255	220	205A	I250A	I250A	A	A	250A	I270A	265	250	290	I290A
5	290	295	295	265	270	245	I250A	230	A	A	I205A	I200A	I245A	245	265	250	A	A	265	240	220	230	250	275
6	280	285	270	250	260	250	255	A	A	A	A	200H	I230A	210	I250A	A	A	A	255	245	215	I250A	275	295
7	295A	295	285	275	250	240	250	A	A	A	A	200	210	A	I250A	225	255	I250C	280	240	220	A	A	290
8	270	260	275	275	295	245	240	250A	A	A	A	A	250	I250A	I250A	A	A	245	250A	250A	215	240	280A	270
9	295A	280	295	285	275	255	I250A	230	220	200	200	205	215H	205	200H	I235A	250	I255A	I260A	255	245A	290	I255A	I265A
10	275	280	290	280	250	230	245	230	I225A	195	245A	I250A	205	I225A	215H	255	235	A	A	A	I245A	225	240	300
11	305	260	305	290	265	250	A	A	A	A	A	A	280	250A	I290A	A	A	A	A	I295A	280	250	230A	250
12	295	290	295	270S	280	245	A	A	A	A	A	225A	230	250A	A	A	245A	230	I260A	I265A	295A	295	300A	
13	275	280	300	240	255	250	I250A	270	I230A	230H	210	205	210	I205A	225	260A	A	A	255	250	235	240	245	295
14	245	300	295	275	270	220	A	A	A	A	A	245	255	I250A	250	275A	A	A	305	250	225	205	240	290
15	290	325	305	320	280	230	A	A	A	A	A	A	I255A	245	205H	230	240	I235C	255	245	280A	270	265A	275
16	300	280	275	270	255	235	I250A	250A	220	I200C	A	245	245A	I250A	270	A	A	A	240	255	275	225	275A	255
17	335	325	A	255	270	260	250	A	A	A	A	A	I250A	250A	235	220	250	I250A	I260A	I280A	270	245	245	295A
18	275	290	250	255	255	290A	I260A	A	A	A	A	I245A	I240A	240	225	240	255	A	A	I270A	245	235	235	255
19	270	280	250	265	255	210H	245	A	A	A	210	205	200	235	A	A	A	A	A	280	255	I250A	A	A
20	A	295	A	A	295	A	A	A	A	200	I205A	I205A	235	250A	I255A	A	A	A	A	255	275	I290A	I310A	300
21	I280A	I300A	330	270	250	255	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I265A	300S	I305S	325A
22	295S	255	245	275	295	255	A	A	C	A	A	A	A	I240A	I230A	220	250	I250A	I280A	245	265	235S	245	250
23	265	255	255	240	235S	245	I250A	A	A	A	A	215	250A	A	A	A	A	A	I260A	265	250	245A	I260A	255
24	A	A	A	295	275	I255A	250	A	A	A	195H	205	205	225	215H	A	A	A	275	270	245	255	250	245
25	270	290	255	305	305S	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I275A	S	A
26	A	A	A	A	250	A	A	A	A	A	A	A	A	A	A	A	220	A	A	A	255A	A	A	295S
27	A	A	A	A	255	I260A	A	A	A	A	A	A	A	A	A	A	A	A	A	I280A	295S	300S	250	235
28	260	255	260	260	250	225	I230A	I210A	I210A	200	I220A	215	215	I210A	200	A	A	A	A	A	270	I280A	240	290
29	270	255	280	275	260	245	A	A	A	A	A	A	A	I215A	235	I230A	I240A	A	A	A	A	245	245	245
30	245	255	250	245	220	240	245	I235A	220	I230A	I220A	200	195	I215	225	240	A	A	A	I280A	240	240	I250A	275
31	290	295	285	270	270	250	A	A	A	A	A	210	200	200	205	220	A	A	A	I265A	I270A	I245A	240	230
No.	26	27	25	27	30	26	17	10	7	8	14	20	23	23	24	17	12	11	18	27	28	29	27	29
Median	280	285	285	270	260	250	I250	230	I220	200	210	210	230	235	235	240	250	I250	260	260	260	250	250	275
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

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

f_oF

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

R'ES

May 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	C	C	C	C	C	C	C	C	C	130	130	130	130	125	130	145	135	145	140	130	130	125	115	115
2	105	105	105	110	105	170	145	135	135	130	125	120	120	115	G	120	G	160	140	130	125	125	120	110
3	110	115	115	140	110	130	130	135	135	120	120	125	125	130	120	125	130	125	120	110	105	120	120	115
4	110	125	120	120	115	105	110	110	115	110	110	120	120	120	150	140	140	130	125	130	120	130	130	120
5	120	115	115	E	E	150	140	130	125	125	125	E1756	175	175	160	130	130	125	120	120	E	E	E	E
6	E	E	E	E	E	135	150	125	115	110	125	G	135	G	145	135	125	120	115	115	115	110	110	110
7	110	110	150	145	130	130	135	140	125	120	120	140	140	130	130	140	125	C	120	115	115	115	115	110
8	140	E	110	105	105	140	130	130	120	115	115	120	145	150	130	125	120	115	110	110	130	125	120	125
9	110	105	105	105	130	125	120	120	130	125	120	120	115	G	120	140	140	125	120	120	120	110	115	110
10	E	105	105	105	E	155	140	140	125	125	120	110	115	G	110	145	160	120	115	115	120	115	110	110
11	110	105	105	105	100	140	125	125	125	130	125	120	155	145	170	140	125	115	115	130	120	115	110	105
12	110	105	105	105	105	140	130	120	120	115	110	115	110	110	115	115	115	120	120	115	115	115	115	105
13	105	100	100	100	E	135	125	125	120	120	115	120	125	120	115	155	130	125	120	120	115	115	105	110
14	105	105	105	100	E	140	125	125	120	120	110	110	105	110	130	145	130	125	115	120	110	105	110	105
15	S	E	145	E	105	140	125	120	120	110	110	110	120	120	G	G	G	C	125	125	125	120	110	115
16	105	105	120	105	E	140	130	120	120	C	115	115	120	115	145	125	115	110	120	120	120	120	115	105
17	105	105	105	105	115	130	140	135	130	125	125	115	115	125	125	140	130	130	125	120	115	120	120	110
18	E	E	140	140	145	140	130	125	120	115	110	120	115	120	110	145	140	125	120	115	110	120	105	110
19	E	105	140	110	E	140	140	120	115	115	120	120	125	E140G	120	140	130	125	115	115	110	110	110	110
20	105	105	105	105	105	125	125	115	115	125	115	105	115	140	145	130	125	120	120	120	115	115	110	105
21	105	100	100	100	150	145	130	125	115	110	105	105	105	105	130	125	120	115	115	110	120	115	110	105
22	105	105	E	105	105	105	130	125	C	115	110	105	105	110	125	135	120	120	115	115	120	115	110	E
23	E	E	E	E	105	145	130	125	125	110	115	115	115	120	115	125	120	115	115	120	110	130	105	105
24	105	105	105	100	130	135	125	115	115	115	125	120	110	125	G	140	135	125	125	120	115	120	110	S
25	S	140	E	E	130	130	120	120	110	110	115	110	110	110	125	125	120	120	120	120	120	110	110	110
26	110	105	105	100	100	125	125	120	115	115	110	105	105	105	105	105	105	105	130	120	120	120	120	115
27	105	105	105	105	105	130	125	120	120	115	115	115	110	110	105	110	130	130	120	115	120	120	115	115
28	115	110	130	105	110	125	125	125	120	125	125	120	125	130	145	130	130	125	125	125	125	115	115	110
29	110	105	105	105	105	145	140	125	120	120	120	120	120	115	120	120	135	130	135	130	120	115	110	110
30	110	105	105	105	E	145	130	125	125	120	120	120	G	G	125	125	130	135	125	120	115	115	110	110
31	110	100	100	100	100	140	130	125	125	120	120	120	120	105	105	100	120	130	130	125	120	120	110	110
No.	23	25	26	25	22	30	30	30	29	30	31	30	29	27	28	30	29	29	31	31	30	30	30	28
Median	110	105	105	105	110	140	130	125	120	120	120	120	120	120	125	130	130	125	120	120	115	115	110	110
U.Q.																								
L.Q.																								
Q.R.																								

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

A 11

The Radio Research Laboratories, Japan

R'ES

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

Types of Es

May 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																									
2	f2	f3	f2	f2	f	h	h2	h2	h2	h2	h2	h	h2	h	h2	h2	h2	h3	h3	f3	f7	f5	f3	f2	
3	f3	f3	f5	f	f2	h3	h4	h3	h2	h2	h2	h2	h2	h2	h3	h	h2	h2	h3	f2	f4	f3	f2	f2	
4	f2	f2	f2	f3	f3	f4	13	13	e1	e3	e2	h2	h	h	h	h2	h3	h3	f6f3	f7f2	f3f	f3	f3	f4	
5	f3	f2	f3		h2	h	h	h2	h3	h2	h4	h2	h	h	h	h2	h2	h2	e4	f3					
6					h1	h	h	h2	e3	e4	h3	h2	h2	h2	h2	h2	h3	e4	15	f4	f5	f6	f5	f3	
7	f2	f2	f	f2f2	f2	h3	h21	h	h	h	h	h	h2	h2	h	h	h2	h2	f3	f6	f7	f4	f4	f6	
8	f	f2	f2	f2	f3	h	h2	h3	h	h3	h2	h2	h	h2	h	h2	h4	e4	16	f5	f	f2f	f2	f2	
9	f5	f3	f	f2	f3	e41	e3	h2	h	h2	h	h	h	h	h	h	h	h3	e5	f6	f8	f3	f4	f3	
10	f	f2	f	f	h	h	h2	h	h	h	h	e2	h	c	1	h2	h	e4	f5	f3	f7	f	f	f2	
11	f3	f2	f2	f2	f2	h3	h2	h6	h3	h2	h2	h2	h	h2	h	h2	h3	e8	e6	f7	f3	f6	f2	f	
12	f2	f2	f	f2	f2	h2	h5	h4	h2	h3	e2	h	e2	e3	e2	e2	e3	e2	e2	f4	f2	f3	f4	f4	
13	f5	f3	f2	f	h3	h3	h3	h4	h2	h2	e2	h	h	h2	c	h	h2	h3	e6	f2	f	f2	f2	f4	
14	f3	f2	f5	f2	h5	h5	h3	h2	h2	h2	e2	eh	e2	e2	hh	h2	h2	h4	15	f3	f6	f6	f2	f2	
15	f2	f2	f	f2f	f	h	h2	h2	h4	e3	e2	e2	h2	h	h2	h2	e3	e4	e2	f3	f4	f3	f8	f2	
16	f4	f4	f7	f3	f	h	h3	h2	h	h2	h2	h3	h2	h	h	h	hh	h4	h4	f3	f3	f4	f8	f3	
17	f2	f2	ff	f2	f	h5	h5	h2	h2	h2	h2	h2	h2	h	h	h	h2	h2	e4	f2	f4	f	f2	f2	
18	f4	f2	f	f2	f4	h7	h5	h8	h4	h	h2	e3	hh	h	h	h2h	h3	h3	15	f3	f7	f5	f5	f8	
19	f4	f4	f3	f4	f4	h2	h3	h3	h5	h	h2	e3	e3	h	h	h2	h5	e2	e2	f3	f5	f6	f3	f4	
20	f3	f4	f6	f2	f2f	h2	h3	h3	h5	h4	e3	e3	e3	e3	h2e	h4	h4	e3	18	f6	f8	f4	f8	f8	
21	f3	f3	f6	f2	f2	16h2	h5	h3	h2	h2	e4	e3	e2	e3	h2	h2	h2	e3	14	f3	f3	f4	f3f	f5	
22	f3	f6		f2	f2	h312	h2	h4	h2	h5	h2	h2	h2	h2	h4	h3	h5	e3h	16	f4	f4f	f7	f4	f5	
23	f5	f4	f7	f4	f2f2	h5	h3	h5	h5	h2	h	h	h	h	h3	h3	h2	h5	h3	f7	f6	f4	f4	f5	
24	f5	f2		f4	f5	h5	h3	h3	h3	h3	h5	h3	h3	h2h2	h2	h4	h3	h7	e4	f7	f4	f4	f2	f3	
25	f2	f3	f4	f3	f3	h51	h5	h3	h2	h3	h6	e3	e3	e5	e3	12	1	h3	e6	f5	f8	f7	f3	f3	
26	f5	f2	f4	f5	f4	h6	h4	h3	h4	h3	h2	h2	e2	e4	e4	e5	h2h	h5	h5	f2	f3	f3	f3	f	
27	f2	f3	f2	f3	f2	h7	h4	h3	h3	h	h	h	h	h2	h	h2	h3	h2	h4	f3	f3	f4	f2	f2	
28	f2	f2	f	f	f2	h2	h4	h4	h3	h3	h2	h2	h2	h2	h2	h4	h2	h3	h3	f5	f3	f2	f2	f3	
29	f2	f2	f	f	f2	h	h4	h3	h2	h2	h2	h	h2	h	h	h2	h3	h3	h3	f6	f3	f3	f3	f3	
30	f2	f3	f2	f2	f	h	h4	h3	h2	h2	h2	h	h	h	h	h2	h3	h3	h3	f6	f3	f3	f3	f3	
31	f3	f3	f2	f2	f	h5	h3	h31	h3	h2	h2	h	h	c	1	12	h2	h2	h2	f4	f6	f3	f2	f2	
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

Types of Es

Sweep 1.6 Mc to 20.0 Mc in 20 sec

automatic operation

The Radio Research Laboratories, Japan

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

May 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	032F	035F	036	033F	035	051	065	060	057	054	061	074	079	087	089	J078R	057	052	J048A	J052R	051	046	044
2	I041A	F	F	036F	U035F	045	055	051R	055	059	054	A	A	A	067	077	087	072	I060A	066	055	F	A	A
3	A	A	A	F	F	043F	054	058	055	A	059	A	062	067	086	093	082	067	060	062	065	J054R	040	038
4	F	041	F	056	056R	050	065R	054	J051R	056	056	062	072	071	085	097	091	072	064R	065	055	050	U050A	U047F
5	046	042F	058	057	033	047	060	053	056	058	055	059	068	075R	070	071	083	082	U085R	U091R	R	053	046R	046
6	044	043	U040R	038	035	039	U062R	074R	055	062	067	059	054	053	064	075R	088	091	R	R	059	A	038	I036A
7	036	034F	034	033F	029	040	058	058	A	064	A	052	A	A	069	J080R	I038A	A	A	A	A	A	A	A
8	A	A	A	033F	F	031	039	057	060R	057	062	055	064	I072A	080	091	090	082R	073	068R	I060A	040	I038A	036R
9	036	I036A	F	F	F	045	060	I058A	054	J051R	054	056	059	059	063	068	072	068	074R	I077A	077R	F	F	F
10	F	F	F	F	F	045	055	049	J050R	060H	055	061	065	070	074	077	078	074S	073	081	A	A	U042S	F
11	U040F	F	F	F	040F	042	039	A	A	C	C	C	C	C	C	057	050	050	044	A	J062R	A	075	037
12	J038R	043	048	F	F	F	053F	I056A	057	051	A	052	059	061	065	A	I066A	058	053	065	U063R	058R	057R	F
13	U050F	U047F	F	F	F	045	044	073	083	060	056	054	058	063	058	057	068	066	066	U073R	U064R	057	051	F
14	F	042	038	040	039F	040	044	A	061	085	A	A	060	065	066	059	A	A	J076R	088	D075R	043R	024R	034
15	033	F	F	F	F	039R	J050R	A	A	J050R	A	058	059	068	067	074R	086	J080R	U077S	070	J050R	045F	A	A
16	A	F	032	F	033F	038	043	058	052R	045	E042G	A	A	054	061	063	058	058	064	063	052	049F	042F	J041F
17	038F	039	032	F	F	033	A	048	056	050	A	A	A	055	058	058	062	056	054	065	066R	F	040	F
18	056F	I034A	030F	F	027F	039	055	055	A	A	A	A	054	A	A	A	A	A	A	A	A	A	A	F
19	A	A	033F	F	029F	037	055	051	A	A	A	A	057	063	067	071	068	074	J091S	060	A	A	A	A
20	A	034	A	F	F	039	056V	A	A	A	E047G	E044G	049	055	062	A	A	A	A	A	A	A	043R	F
21	F	U042F	F	F	F	046	053	A	A	A	A	A	A	058	A	056	062	069R	J076R	080R	A	F	F	F
22	F	F	F	F	F	040F	053	A	A	A	A	A	059	I052A	054	058	065	071R	074R	J081R	A	F	F	F
23	F	F	041F	F	040F	040	044R	054R	058	A	A	A	A	060	070	080R	085R	084R	A	A	F	F	044R	F
24	F	F	F	F	F	F	055	A	A	A	A	R	050R	060	075R	076R	088	088	083	083R	R	058R	047	045
25	042F	F	F	F	F	F	065R	A	A	A	A	A	A	J051R	045	043	A	059	I066A	066	F	F	F	U052R
26	U052F	F	049F	054Z	050F	056	A	A	A	A	A	A	053	064	073	071	060	054	060	063	A	A	A	A
27	A	A	A	A	051F	041	A	A	I055A	C	058	A	056	057	054	061	068	070	071	069	A	A	A	067
28	J045F	F	I042A	041	J044F	J054F	A	049	I054A	C	A	A	C	C	C	C	C	C	C	C	C	C	C	C
29	C	045	040	038	037	048R	I048A	A	A	A	A	I054A	052	057	057	062	070	064	065	069	A	A	F	F
30	F	F	F	040	033	037	052	062	059	050R	A	050	055	057	I054A	056	058	060	066	074	A	F	F	045F
31	F	045F	F	F	U041F	045F	056	060	060	A	I056A	055	057	062	A	A	062	054	A	065	A	F	A	A
No.	14	15	15	11	19	28	26	20	19	16	14	14	21	26	26	26	26	26	24	24	15	12	16	13
Median	040	042	038	038	033	040	055	057	056	057	056	056	059	060	066	070	072	068	066	069	060	050	043	044
U.Q.	045	043	041	040	039	045	057	061	060	060	058	059	063	067	073	077	086	074	074	080	065	058	048	046
L.Q.	036	034	033	036	031	039	051	052	054	050	054	052	054	055	058	058	062	058	060	065	055	046	039	036
Q.R.	009	009	008	004	008	006	006	009	006	010	004	007	009	012	015	019	024	016	014	015	010	012	009	010

Sweep 1.0 Mc to 16.0Mc in 20 sec in automatic operation

foF2

The Radio Research Laboratories, Japan

K 1

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

foF1

May 1964

0.01 Mc

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	360L	380L	400L	L	450	440R	A	430	A	A	L	A						
2						L	L	L	A	430	440L	A	A	A	A	410	390	L	A					
3						A	A	A	A	A	A	A	450	440	440L	420	A	A	A					
4						A	A	S	410L	L	430L	440	A	A	A	A	A	A	A					
5						A	A	A	A	430L	L	440	450R	A	L	440L	A	L	A					
6						L	L	L	L	440L	450	470	440L	L	420	410	A	A						
7						L	L	L	A	A	A	A	A	A	440	A	A	A						
8						A	L	L	410L	L	A	450	440	A	A	410	400	A						
9						L	L	A	A	L	A	LH	440	430	430L	410	390	360L	A					
10						L	L	A	450	440L	A	440L	450	430	440L	A	A	A						
11								A	A	C	C	C	C	C	C	400	360L	340L	A					
12						L	L	A	A	A	A	440	A	A	A	A	A	A						
13						A	A	A	A	A	A	A	A	A	430L	A	A	A						
14						A	A	A	A	A	A	A	A	420	430	A	A	A						
15						A	A	A	A	410	A	A	A	A	430	410H	390L	L	A					
16						A	A	A	400	420	420	A	A	A	A	A	A	A						
17						A	A	A	A	410	A	A	A	A	A	A	390	0380L	L					
18						A	A	A	A	A	A	A	A	A	A	A	A	A						
19						A	A	L	A	A	A	A	A	440	A	A	A	A						
20						L	L	A	A	A	470H	440	440	A	A	A	A	A						
21						L	L	A	A	A	A	A	A	A	A	A	A	A						
22						A	A	A	A	A	A	A	A	L	430	A	390	A						
23						L	L	A	A	A	A	A	A	A	A	400R	390	A						
24						A	A	A	A	A	A	430R	430R	420R	420	A	A	A						
25						A	A	A	A	A	A	A	A	420	410	A	A	A						
26						A	A	A	A	A	A	A	440	440	0430R	420	400L	L						
27						A	A	A	A	C	A	A	A	A	A	A	400	370L	A					
28						A	A	400	A	C	A	A	C	C	C	C	C	C						
29						A	A	A	A	A	A	A	A	A	A	A	A	A						
30						L	L	A	A	430L	A	440	440	A	A	400S	400L	L						
31						A	A	A	A	A	A	A	440	430	A	A	A	L						
No.	1	1	3	5	8	6	10	10	10	10	10	11	11	12	11	11	11	5						
Median	200	360	380	410	430	445	440	440	440	430	430	430	430	430	430	410	390	360						
U.Q.																								
L.Q.																								
Q.F.																								

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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)

f_oE

May 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						B	210	255	290	310	325	325	330	320	305	305	280	230	155S					
2						A	210	260	295	310	320	325	332SA	A	A	A	270	225	150					
3						A	225	260	295	315	335	340	345	335	320	305	275	A	A					
4						A	A	A	A	R	325	330	332SR	330R	332OR	3310A	275	1250R	A					
5						B	210	260	290	315	325	330	340R	340	320	305	270	A	A					
6						A	200	255	290	310	325	335	330	330	320	300	270	230	A					
7						A	215	255	285	295	315	335	335	325	325	300	270	225	A					
8						135	1210R	255	285	300	A	A	335	330	325	295	1270A	A	A					
9						A	1200A	255	285	295	A	300	A	A	A	310	A	A	A					
10						A	220	255	290	315	332SA	3320A	332SA	332SA	330	315	280	240	A					
11						A	A	1295A	1295A	C	C	C	C	C	C	A	260	225	A					
12						A	200	250	280	290	310	A	R	3330R	315	300	260R	A	A					
13						140	220	260	290	300	310	310R	A	A	320	320	280	230	A					
14						A	230	260	290	315	315	325	330	330	330	315	1275R	250	A					
15						A	R	255	280	305	315	325	330	335	325	300	1280R	250	A					
16						1170R	225	260	R	A	A	3345A	330	320	315	305	270	1220A	A					
17						A	230	255	300	310	325	330R	325	320	310	300	280	A	A					
18						A	210	265	290	295	315	325	325	R	A	A	A	A	170R					
19						A	210R	255	285	300	305	325	A	325	A	A	275	225	A					
20						A	230	250	280	305	330R	330R	340	335	320	300	270	A	A					
21						1160A	220	265	275	1295A	1300R	325	332SR	340	325	310	230	R	A					
22						A	A	270	290	A	315R	3315A	320	325	325	305	275	245R	B					
23						A	A	275	295	320R	3315R	330	345	3335R	320	305	275	235	A					
24						130	225R	255	285	295	3315R	3320R	3320R	320	3320A	295	270	235R	175R					
25						A	215	255	290	310	3315A	3320R	A	A	330R	315	270	235	1180A	110				
26						A	230	1265A	290	300	3320A	A	A	A	A	A	R	245	A					
27						A	210	270	3300A	C	330	320	A	A	300	300	280	A	A					
28						1160A	230	1255A	290	C	310	320	C	C	C	C	C	C	C					
29						170	240	265	300	A	A	A	A	A	A	A	A	1250A	S					
30						190	230	260	295	310	A	A	A	A	A	3310R	280	A	A					
31						A	230	265	300	310	320	A	A	A	A	A	A	250	A					
No.						8	26	30	29	24	25	24	19	19	21	23	25	19	5	1				
Median						160	220	260	290	310	315	325	330	330	320	305	275	235	170	110				
U.Q.																								
L.Q.																								
Q.R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

f_oE

K 3

Lat. 35° 42.4' N
Long. 139° 29.3' E

IONOSPHERIC DATA

Kokubunji Tokyo

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foEs

May 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	044	023	030	026	024	J030	049	032	055	J059	054M	064M	042	037	J038	J038	090	J043	042M	057M	068M				
2	068M	J064	025	034M	J027	019	027	J037	J043	J043	042	J080Y	107M	072M	068	074	g	075	078M	J018S	046M	J053	103M	J083	
3	089M	J072	J070	068M	069	J022	032	J051	049	059M	066	087	040	033	047	059M	056	024	051	020	025	031			
4	060	J050	049	034	056M	045	047	J040	J033	J091Y	038	036	043	049	J053	J066	048	J054	039	048	045	027	053	J026	
5	J062	J052	032	030	016	025	035	038	068	044	042	040	043	049	047	043	039	031	046	055Y	022	020	E	E	
6	019	B	017	011	B	020	030	035	033	039	036	040	G	036	040	041	J047	077M	037	031	056Y	057	032	056Y	
7	036	030	036	024	020	017	024	032	068M	074M	064M	045	073M	089	041	089M	072	102	101	089Y	034	034	047	058	
8	037	046	048Y	043	077Y	018	031	031	035	036	039	040	038	068	049M	035	036	042	032	071	064	037	057	034	
9	035	048	030	032	012	023	031	030	047	047	032	042	035	J040	046	035	036	036M	044M	090	093	J038	J037	036	
10	056M	067	027	024	022M	018	030	044	040	049M	046	038	039	J030	039	048	063M	060M	117M	J033	J098	J098	J077	J051Y	
11	030M	030M	J036	035M	J042	J022	032	032	090M	C	C	C	C	C	C	C	029M	040M	031	019	088M	057	065	030	023
12	040	031	037	025	022M	016	031	061	058	052	058	036	046	066	075	091	090	J094	068	071	J062	J063	068	035	
13	036	J037	037	025	024	043	037	068	067	048	033	067	072	068	039	067	J060	068	059	043	047	035	032	032	
14	049	032	031	049	J029	J027	049	071M	067M	060	059	055	049	039	036	067	143Y	144	070	067	035	025	030	030	
15	024	021	033Y	039	E	032M	047	047	057	070	077M	039	*065	058M	038	G	G	030	J038	J037	J038	J038	057M	063M	
16	J060	058M	J054	J040	032M	J029	043M	J054	J064	J052Y	060M	J061	090M	042	061M	059M	J051	J050	057M	033	J061	036M	035M	037	
17	J034	J060Y	J062	J050	J062	019	045M	037	060M	039	065M	072	063M	058	058	059M	032	J032	032	J040	057	057Y	J031	J044	
18	042	042	J030	022	025	J032	045M	J049	060M	072	072	J060	057M	090	109	110	090	094	D160D	130Y	143	116	090	068	
19	056	047	035	037Y	056M	031	038	033	J058	033M	077M	058M	058M	041	J053	057	039	J039	044M	J030	J060	059M	067M	031M	
20	J079	J137	J047	J049	J054	J029	032	094M	J083	058	035	G	039	043	J052	J096	110M	J150	J138	106M	J115	032	043	J037	
21	J045	J042	025	J039	030	018	039	088	092	J091	075	J090	J094	J050	071	090	079M	088Y	058	J059	070	J057	J038	057M	
22	089Y	025	024	035	025	035	046	J070	072M	D055C	090	143Y	090	060	090	044	035	046M	056	036	090	J043	J039	J024	
23	022	018	036	036	031M	032	031	J049	J067	090	095Y	078	068	047	048	J072	047M	059	090	143Y	142Y	035	025	025	
24	042	035M	034	036M	035M	020	069Y	J083	J083	118M	105Y	040	038	034	032	J045	040	060M	060M	J060	067	J059	032	J030	
25	022	036	021	E	035	J040	J060	088	088	090	J090	J096	073M	036	036	042	J088	J041	J126	067	068M	J053	J067	J061	
26	J061	J043	043M	J040	J070	038	059M	115M	094	078	J067	J090	J063	J057	J049	J036	025G	036	060M	J062	J117	070M	J097	J092	
27	072M	J130	090M	J058	J038	J039	068	067M	070M	C	068	085M	J086	D160D	085	073M	034	J097	J134	D160D	J083	J063	089	J048	
28	049M	J038	J049	040	038M	J030	057M	032	J074	C	058	065	C	C	C	C	C	C	C	C	C	C	C	C	
29	C	J032	032M	J032	031M	021	048M	J060	090	J074	J112	J114	J091	J089	J057	J041	J040	032	J054	J083	J150	070M	067M	J042	
30	J040	J038	J028	031	J018	020M	034	J043	057	J041	058	J062	039	J055	J084	G	032	J042	J030	J043	J145	J145	039M	J052	
31	040	058M	J061	J048	J032	J031	J054	057	070M	059	J062	J049	J049	J037	J108	J128	066	040	J100	J072	J100	J058	J118	063M	
No.	30	31	31	31	31	31	31	31	31	27	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30
Median	043	038	036	035	031	027	043	051	067	059	061	060	058	050	052	046	044	048	058	064	062	055	052	043	
U.Q.	060	032	049	043	038	032	049	070	074	083	075	080	077	068	070	072	068	068	090	089	098	063	068	061	
L.Q.	036	031	030	026	022	020	031	037	049	044	053	040	040	040	040	036	036	036	039	040	046	036	032	031	
Q.R.	024	021	019	017	016	012	018	033	025	039	022	040	037	028	030	036	032	032	032	051	049	052	027	036	030

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

foEs

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

0.1 Mc 135° E Mean Time (G.M.T. + 9h)

fbEs

May 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	016	015	E	E	015	026	027	033	035	035	040	044	G	048	041	037	034	035	022	041	026	017	025	
2	A	022	017	014	016	017	026	034	042	041	041	A	A	A	052	033	040	033	A	014	040	040	A	A	
3	A	A	A	016	015	018	026	030	045	A	037	A	038	E038R	033	033	040	041	032	015	026	E	020	017	
4	017	020	013	014	016	035	033	037	033	040	038	036	E043R	048	051	046	040	041	026	033	029	017	041	019	
5	016	015	012	E	E	018	030	034	040	036	040	039	041	049	039	040	039	031	033	030	014	015			
6	015	E	E	E	014	026	032	038	038	039	035	040		036	038	040	042	050	032	016	040	A	S	A	
7	023	016	015	E	012	017	024	032	034	060	A	045	A	A	039	063	A	A	A	A	A	023	A	A	
8	A	A	021	022	015	015	031	031	035	036	030	040	037	A	044	035	033	035	025	055	A	033	A	025	
9	017	A	A	016	015	E	014	031	040	039	045	038	035	038	039	035	030	028	036	A	045	025	025	022	
10	E	016	015	E	011	018	029	039	040	041	046	036	039	039	039	047	053	046	055	060	A	A	A	020	015
11	013	016	025	014	025	020	025	A	A	C	C	C	C	C	C	029	033	028	018	A	039	A	A	021	021
12	029	023	026	016	014	016	025	A	046	044	A	035	044	051	A	A	A	051	029	024	032	033	028	018	
13	016	016	020	012	013	015	A	038	034	043	030	032	051	045	039	055	042	044	052	041	042	025	013	028	
14	027	018	015	031	022	026	042	A	043	032	A	A	049	039	036	048	A	A	A	050	054	025	025	020	016
15	017	014	014	012	019	019	033	A	A	039	A	040	053	052	038				026	027	030	030	032	A	A
16	A	026	025	017	E	031	035	043	033	034	038	A	A	041	053	044	045	036	046	027	020	029	025	026	
17	018	020	019	013	017	017	A	034	045	038	A	A	A	051	046	047	030	028	020	040	040	026	022	029	
18	028	A	019	E	013	028	037	043	A	A	A	A	049	A	A	A	A	A	A	A	A	A	A	A	028
19	A	A	018	019	020	022	038	032	A	A	A	A	A	039	044	042	039	038	037	029	052	A	A	A	A
20	A	018	A	019	015	025	030	A	A	A	035		039	048	043	A	A	A	A	A	A	A	017	030	023
21	023	014	014	017	015	016	032	A	A	A	A	A	A	050	A	053	052	041	045	045	052	046	034	032	
22	050	015	014	014	013	019	026	A	A	A	A	A	053	040	040	044	034	040	050	031	A	035	021	015	
23	015	E	016	015	016	026	027	042	034	A	A	A	A	044	046	039	037	046	A	A	037	045	016	022	
24	020	016	015	017	027	020	040	A	A	A	A	039	038	034	032	045	040	054	046	060	055	045	025	022	
25	S	016	E		020	035	034	A	A	A	A	A	A	036	035	041	A	041	A	A	053	045	040	039	
26	031	032	030	029	020	031	A	A	A	A	A	A	051	040	039	034	0253	034	044	018	A	A	A	A	A
27	A	A	A	A	019	036	A	A	A	C	036	A	052	055	050	051	030	034	060	046	A	A	A	030	024
28	022	020	A	027	019	018	A	030	A	C	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	014	023	012	015	021	A	A	A	A	A	A	A	045	043	041	040	030	050	045	A	A	A	030	016
30	022	029	E	012	013	G	034	039	050	040	A	038	039	046	A		031	027	019	027	A	019	028	026	
31	029	031	029	013	015	028	050	045	052	A	A	044	041	035	A	A	051	034	A	051	A	A	039	A	A
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

fbEs

K 5

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

May 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	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	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	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
No.	20	30	31	31	31	31	31	31	31	27	30	30	29	29	29	30	30	30	29	22	24	25	22	21
Median	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
U.Q.																								
L.Q.																								
Q.R.																								

f-min

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 6

IONOSPHERIC DATA

May 1964

M(3000)F2

0.01

135° E Mean Time (G.M.T. +9h)

Kokubunji Tokyo

Lat. 35° 42.4'N
Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	290F	290F	280	290F	230	315	350	315	315	260	270	275	300	310	335	J360R	345	325	J290A	J305R	305	300	285
2	I290A	F	F	235F	U275F	325	365	350R	335	345	315	A	A	A	300	300	315	340	I330A	315	320	F	A	A
3	A	A	A	F	F	335F	350	360	310	A	330	A	305	300	315	340	350	345	310	305	320	J335R	290	305
4	F	290	F	305	310R	335	370R	350	J350R	330	315	280	315	305	305	340	350	340	325R	320	305	305	U295A	U280F
5	285	230F	300	290	300	345	380	355	330	345	310	300	315	320R	310	310	315	305	U305R	U325R	R	345	290R	290
6	290	290	U305R	310	295	310	U335R	350R	325	315	330	320	310	280	310	310R	320	340	R	R	345	A	285	I300A
7	295	295F	300	295F	305	335	345	360	A	350	A	290	A	A	295	J305R	I330A	A	A	A	A	R	A	A
8	A	A	A	315F	F	305	325	330	345R	335R	310	225	295	I305A	290	325	335	330R	335	310R	I340A	315	I295A	290R
9	295	I290A	F	F	F	340	350	I365A	340	J345R	310	295	315	305	310	315	315	310	310R	I320A	340R	F	F	F
10	F	F	F	F	F	340	365	325	J330R	310H	305	315	310	305	305	300	310	300S	305	335	A	A	U305S	F
11	U265F	F	F	F	F	325F	350	355	A	C	C	C	C	C	C	300	300	305	285	A	R	A	A	285
12	J280R	230	280	F	F	F	320F	I335A	330	290	A	280	315	300	310	A	I315A	320	310	305	U300R	310R	315R	F
13	U280F	U280F	F	F	F	330	A	330	355	335	320	300	300	310	295	305	330	325	325	U320R	U330R	300	305	F
14	F	280	290	280	280	310F	355	A	285	355	A	A	290	315	305	310	A	A	J310R	325	R	325R	290R	295
15	295	F	F	F	F	F	355R	J350R	A	J320R	A	305	300	300	280	275R	300	J315R	U320S	330	J320R	285F	A	A
16	A	F	285	F	F	285F	325	280	330R	310	G	A	A	280	305	300	295	290	315	330	285	300F	230F	J230F
17	280F	280	280	F	F	F	325	A	320	340	A	A	A	A	A	A	A	A	A	A	A	A	A	A
18	305F	I305A	300F	F	F	320F	315	345	A	A	A	A	285	A	A	A	A	A	A	A	A	A	A	F
19	A	A	A	F	F	F	310F	345	A	A	A	A	A	A	300	300	295	310	310	J340S	335	A	A	A
20	A	300	A	F	F	F	310	310W	A	A	G	G	275	285	295	A	A	A	A	A	A	A	315R	F
21	F	U305F	F	F	F	F	365	355	A	A	A	A	A	315	A	305	300	315R	R	350R	A	F	F	F
22	F	F	F	F	F	F	345F	345	A	A	A	A	320	I300A	295	285	290	305R	310R	R	A	F	F	F
23	F	F	F	F	F	F	345F	335R	360	A	A	A	A	300	295	305R	320R	340R	A	A	F	F	F	F
24	F	F	F	F	F	F	315	A	A	A	A	R	255R	265	295R	275R	295	310	305	315R	R	345R	300	305
25	290F	F	F	F	F	F	380R	A	A	A	A	A	A	J290R	245	280	A	310	I305A	305	F	F	F	U285R
26	U305F	F	285F	260%	335F	310	A	A	A	A	A	A	275	290	305	315	300	310	330	330	A	A	A	A
27	A	A	A	A	A	A	315F	345	A	I320A	C	A	300	A	270	295	270	310	310	305	A	A	A	270
28	J295F	F	I290A	310	J315F	J335F	A	300	I340A	C	A	A	C	C	C	C	C	C	C	C	C	C	C	C
29	C	310	305	295	315	355R	I340A	A	A	A	A	A	I305A	280	300	295	285	315	290	315	A	A	F	F
30	F	F	F	F	F	330	305	325	340	365	340R	A	285	290	325	I300A	305	320	305	285	305	A	F	F
31	F	280F	F	F	F	U290F	310F	320	335	335	A	I290A	305	290	310	A	A	325	315	A	290	A	F	A
No.	14	15	15	11	19	28	25	20	19	16	11	13	21	25	26	26	26	26	23	23	13	12	16	13
Median	290	290	300	295	310	335	345	340	330	330	315	295	300	300	300	305	315	310	310	310	320	310	295	290
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F2

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

M(3000)F1 0.01

May 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	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
2																								
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31																								
No.	1	1	3	5	7	6	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Median	405	340	370	365	365	370	385	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370
U.Q.																								
L.Q.																								
Q.R.																								

Sweep 1.0 Mc to 16.0Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 8

M(3000)F1

IONOSPHERIC DATA

Lat. 35° 42' 4" N
Long. 139° 29' 3" E

Kokubunji Tokyo

May 1964

f'F₂

km

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						370	340	260	290	320	460	E380R	355	310	300	270	240	250						
2						230	250	290	290	275	310	A	A	A	340A	320	275	245	A					
3						220	250A	305	305	A	E350A	A	340	350	300	275	260	250	255					
4						220	230	250	250	300	350	350	305	310	310	275	250	255						
5						220	230	250	250	280	350	350	320	300	300	320	290	275	280					
6						270	250	280	280	310	290	330	350	425	325	315	280	250						
7						250	250	A	A	E305A	A	380	A	A	350	330	A	A	A					
8						235	275	245	280	340	320	390	350	A	325	275	265	250						
9						260	260	A	245	280	350	320	330	345	325	300	280	300	270					
10						E290A		E290A	R	300H	350	320	320	340	300	320	300	290	E300A					
11								A	A	C	C	C	C	C	C	350	340	315	250					
12						295	A	A	E290A	310	A	425	345	345	E360A	A	A	305	270					
13						A	290	A	245	280	315	385	365	330	345	375	290	280	295					
14						E300A	A	A	360A	250	A	A	E370A	320	330	345	A	A	300					
15							A	A	A	350A	A	350	E360A	330	360	375	300	260	255					
16						260	E360A	290	300	390	G	A	A	400	345A	320	340A	330	E290A					
17							A	355	300	300	A	A	A	E370A	325	350A	295	305	280					
18							260	245	A	A	A	A	E390A	A	A	A	A	A	A					
19						260	270	255	A	A	A	A	A	375	340	340	310	295	280					
20							255	A	A	A	G	G	460	400A	355	A	A	A	A					
21						205	250	A	A	A	A	A	A	340	A	E370A	330	290	270					
22							255	A	A	A	A	A	E310A	A	330	E380A	335	300	290					
23							235	295	E290A	A	A	A	A	365	340	310	280	260	A					
24							300	A	A	A	A	R	520	430	340	365	310	280	275					
25							280	230	A	A	A	A	A	395	470	430	A	310	A	E305A				
26							E340A	A	A	A	A	A	E450A	355	305	295	320	315	275A					
27							E290A	A	A	C	E390A	A	E370A	E450A	E450A	350A	340	295	E320A					
28							A	E350A	A	C	A	A	C	C	C	C	C	C	C					
29							245	A	A	A	A	A	A	420	355	340	320	290	E320A					
30							290	270	245	295	A	415	390	305	A	310	315	305	310					
31							E310A	260	300	A	A	350	380	320	A	A	300A	295	A					
No.						8	18	16	16	15	12	13	15	22	23	24	24	26	15	1				
Median						260	260	250	E290	300	330	350	350	345	340	320	300	290	275	E305				
U.Q.																								
L.Q.																								
Q.R.																								

Sweep 1.0 Mc to 16.0 Mc in 2.0 sec in automatic operation

The Radio Research Laboratories, Japan

K 9

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km

R'F

May 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	310	290	215	290	260	250	235	225	220	210	220	I225A	210	I245A	A	E260A	A	E260A	270	E300A	260	260	310	
2	A	340A	290	300	310	240	230	225	A	E290A	E250A	A	A	A	A	250	245	E260A	A	240	E250A	E350A	A	A	
3	A	A	A	250	255	225	240	A	A	A	A	A	210	225	205	230	A	A	A	240	250	210	240	280	
4	265	275	270	265	280	260	A	220	200	210	250	215	A	A	A	A	A	A	A	245	265	250	300	265	
5	265	290	265	245	280	240	I235A	I230A	I250A	260	245	215	260	A	240	270	I270A	270	I265A	240	220	200	260	290	
6	280	290	250	240	260	255	240	245	260	245	220	230	235	240	E300A	A	A	A	250	220	230	I265A	270	I320A	
7	295	290	275	265	250	250	230	240	A	A	A	A	A	A	270	A	A	A	A	1220A	280	A	A	A	
8	A	A	280	280	290	I250A	260	240	240	220	I230A	245	260	I240A	I290A	250	240	I230A	245	280	I275A	280	I285A	310	
9	300	I345A	280	290	275	E250S	245	A	A	245	I240A	200H	220	240	230	220	230	240	I255A	I270A	240	240	E300A	230	
10	270	260	275	260	260	225	220	I235A	240	E295A	A	190	240	210	E295A	A	A	A	A	E250A	A	A	E250A	280	
11	300	290	E350A	290	240	225	240	A	A	C	C	C	C	C	C	240	E290A	250	I255A	I305A	300	I290A	295	295	
12	E350A	330	320	280	260	235	225	A	A	A	A	200	A	A	A	A	A	A	A	I260A	270	225A	265	260	
13	305	305	270	205	225	255	A	A	A	A	A	A	A	A	270	A	A	A	A	A	255	230	265	250	265
14	265	300	310	340	255	210	A	A	A	A	A	A	A	E260A	245	A	A	A	A	250	215	250A	280A	300	
15	285	330	325	300	255	215	255	A	A	E260S	A	A	A	A	E290S	195H	210	225	I265A	240A	260	E340A	A	A	
16	A	E350A	E350A	260	280	A	A	A	240	200	200	A	A	A	A	A	A	A	A	240	260	290	310	320A	
17	310	300	E350A	260	290	240	A	E250A	A	E260A	A	A	A	A	A	A	240	230	260	280	240A	250	260	E350A	
18	310	A	300	245	280	290	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E320A	
19	A	A	280	E300A	270	A	A	230	A	A	A	A	A	255	A	A	A	A	A	210	210	A	A	A	
20	A	260	A	250	290	250A	E240A	A	A	A	180H	185	245	A	A	A	A	A	A	A	A	225	340	280	
21	300	255	270	280	240	205	E260A	A	A	A	A	A	A	A	A	A	A	A	A	250	E320A	E280A	300A	280	
22	E310A	250A	240	250	270	240	A	A	A	A	A	A	A	210	E260S	A	E260A	A	A	230	A	E290A	255	255	
23	275	265	250	260	225	240	E240A	A	A	A	A	A	A	A	A	E290S	E310A	A	A	A	250	E230A	260	245	
24	280	260	290	295	280	245	A	A	A	A	A	230	210	220	255	A	A	A	A	290	245	250	265	300	
25	290	300	275	295	290	A	A	A	A	A	A	A	A	225	245	A	A	A	A	A	E340A	E360A	E390A	E340A	
26	310A	320A	310A	E290A	245	A	A	A	A	A	A	A	A	E260A	E280R	230	230	E295A	A	225A	A	A	A	A	
27	A	A	A	A	240	A	A	A	A	C	A	A	A	A	A	A	240	E300A	A	E260A	A	A	250A	250	
28	290	300	I310A	270	245	225	I220A	200	A	C	A	A	C	C	C	C	C	C	C	C	C	C	C	C	
29	C	245	275	265	270	A	A	A	A	A	A	A	A	A	A	A	I240A	240	A	E280A	A	A	E250A	245	
30	280	E310A	250	225	240	250	E290A	A	A	E250A	A	195	230	I245A	I245A	200	230	230	240	260	A	240A	245	250	
31	E310A	E310A	E300A	250	250	E250A	A	A	A	A	A	A	E300A	190	A	A	A	E300A	A	E320A	A	250	A	A	
No.	19	23	24	28	31	23	15	10	7	7	8	11	10	12	11	9	10	8	10	22	17	18	21	21	
Median	290	290	280	260	260	240	E240	230	240	220	225	215	230	225	245	230	240	235	0255	250	240	250	260	280	
U.Q.																									
L.Q.																									
Q.R.																									

K 10

Sweep 1.0 Mc to 16.0Mc in 20 sec in automatic operation

R'F

The Radio Research Laboratories, Japan

Lat. 35°42.4'N
Long. 139°29.3'E

Kokubunji Tokyo

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

f_oF₂
km

May 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	110	110	140	130	130	140	125	125	125	115	115	115	110	120	110	130	130	125	120	115	115	120	110	110
2	105	105	100	100	100	140	145	125	120	110	110	110	105	105	100	175	g	130	115	115	115	115	115	110
3	110	105	110	105	105	110	125	115	115	110	130	125	140	140	g	150	125	110	110	110	105	110	100	120
4	115	115	110	110	110	105	105	105	105	110	115	115	140	130	130	120	125	125	125	110	115	125	120	110
5	105	110	105	115	100	100	130	130	105	120	125	120	155	150	140	190	140	125	110	110	115	115	E	E
6	115	E	140	125	E	130	130	125	140	130	145	150	g	170	155	140	125	120	110	110	105	105	105	105
7	105	105	120	105	130	130	130	125	115	115	120	125	130	125	130	120	115	115	115	110	105	110	110	110
8	110	105	105	105	125	115	125	125	120	115	105	120	140	130	130	125	110	110	110	110	110	105	120	120
9	105	105	105	140	125	125	115	110	110	110	105	115	110	105	105	140	130	110	110	110	110	110	105	110
10	110	105	100	100	100	140	140	130	120	115	110	110	110	105	150	135	125	115	110	110	115	115	115	110
11	105	105	100	100	105	130	115	115	110	c	c	c	c	c	c	110	125	120	110	115	110	110	105	105
12	105	105	105	100	105	130	130	120	115	115	115	105	115	115	115	115	110	110	115	110	115	115	110	110
13	105	105	100	105	125	125	120	110	115	110	110	110	105	110	120	140	125	115	115	115	115	115	110	105
14	100	100	105	100	100	130	125	115	115	110	110	115	115	150	165	130	125	120	115	115	115	110	105	105
15	110	140	115	125	E	125	120	120	115	115	115	110	110	135	150	g	g	120	115	110	110	110	110	110
16	105	100	100	140	130	125	125	115	110	110	110	125	120	140	125	115	115	110	110	110	110	105	105	110
17	100	100	100	100	105	105	130	125	115	120	115	110	110	110	110	110	130	110	115	115	105	110	115	110
18	105	105	100	120	130	125	120	110	120	115	115	115	115	105	110	110	110	115	115	115	110	110	110	110
19	140	105	105	105	130	120	125	120	115	110	105	110	105	110	105	105	125	115	110	100	105	105	105	105
20	100	105	105	100	115	115	120	110	110	115	120	g	170	130	125	115	110	105	105	105	105	105	105	100
21	100	100	100	100	100	130	120	110	105	100	105	105	105	125	135	130	125	105	110	105	105	105	105	105
22	105	105	105	105	105	105	140	130	125	105	105	105	110	125	140	125	130	120	105	105	110	110	105	105
23	110	110	105	105	105	105	105	130	115	105	105	120	125	120	130	125	130	120	120	110	110	115	115	110
24	100	100	100	100	100	130	125	115	115	110	110	110	110	125	105	130	140	125	125	115	130	110	110	110
25	105	125	135	E	120	120	120	120	120	110	110	110	110	120	145	130	120	115	110	115	110	105	105	105
26	105	100	100	100	115	125	115	115	115	105	105	105	105	105	105	105	105	105	115	115	115	115	115	110
27	110	105	100	100	100	115	120	115	115	c	105	105	105	105	105	105	140	110	105	105	115	115	105	105
28	105	105	100	100	100	115	110	115	110	c	115	140	c	c	c	c	c	c	c	c	c	c	c	c
29	c	105	100	100	100	110	125	115	110	110	105	105	100	105	100	100	110	110	120	110	110	110	105	105
30	100	100	105	100	100	105	115	115	110	110	105	105	105	105	105	g	140	115	115	110	110	110	105	105
31	100	100	100	100	100	115	115	110	105	110	105	105	100	105	105	105	105	130	115	115	115	115	110	105
No.	30	30	31	30	29	31	31	31	31	28	30	29	28	29	28	28	28	30	30	30	30	30	29	29
Median	105	105	105	100	105	125	125	115	115	110	110	110	110	120	120	125	125	115	115	115	110	110	110	110
U.Q.																								
L.Q.																								
G.R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

f_oF₂

K 11

IONOSPHERIC DATA

May 1964

Types of Es

135° E Mean Time (G.M.T. +9h)

Kokubunji Tokyo

Lat. 35° 42.4 N
Long. 139° 29.3 E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	f6	f2	f2f2	ff	f2	h2	h2	h	h	h2	c	c	c2	h	c2	h	h2	h3	h4	f4	f4	f4	f4	f4	
2	f6	f4	f4	f3	f3	h1	h2	h	h2	c2	c2	c2	l3	l3	l2	h1	h2	h3	c5	f	f6	f6	f5	f4	
3	f5	f6	f3	f4	f3	h2h2	h2	c3	c2	c3	h2	h3	h	h	h	h	h2	h3	l3	f3	f4	f	f2	f2f2	
4	f2	f5f	f3	f5	f4	l5	l4	l2	l	c	c	c	hc	h	h	h2l	h	h2	h12	f3	f2f2	ff	f4	f4	
5	f2	f3	f2	f	f	lh	h2	h2	lh	h2	h	h	h	h	h	h2	h2	h2	l3	f3	f	f	f	f	
6	f2	ff	ff	f	ff	h2	h2	h2	h2	h	h	h	h	h	h	h2	h2	h3	l4	f5	f5	f3	f3	f5	
7	f5	f2	f3	ff	ff	h2	h2	h2	c2	c2	h2	h	h3	h3	h	h3	c3	c4	l7	f4	f5	f6	f8	f8	
8	f8	f8	f5	f7	ff5	c	h2	h	h2	c2	l2	h1	h	h3	h	h	l2	l2	l3	f2	f4	f5	f4	f5	
9	f2	f7	f2	ff2	f	h3	l2	c5	c2	c2	l	c	l	l2	l	h	h	c2	l4	f5	f4	f4	f2	f6	
10	f2	f3	f2	f	f2	h2l	h2	h2	h2	c2	l2	l	c	l2	h	h2	h3	c4	l3	f4	f6	f5	f4	f3	
11	f2	f3	f4	f4	f4	h2	c2	c3	l3							l	h2	h	l3	f3	f6	f5	f5	f2	
12	f6	f5	f7	f5	f3	h	h	h2	c2	c2	c2	l	c	c2	c3	c3	c3	l2	l2	f4	f3	f3	f2	f2	
13	f2	f2	f2	f	ff2	h	h4	c3	c3	c2	c2	c2	l2	l2	h	h2	h2	c2	l6	f4	f8	f6	f2	f6	
14	f5	f5	f2	f3	f6	h3l	h3	c4	c2	c2	c2	c2	e2	h2	h	h2	h3	h4	l3	f4	f4	f5	f2	f2	
15	f2	f2	f2	f2	f2	h2	h2	h2	c3	c2	c3	c2	c2	h	h	h	h	h	l5	f4	f6	f7	f7	f4	
16	f4	f4	f4	ff4	f3f2	h3	h3	c3	c2	l	l	h	h	h	h2	c2	c3	c3	l4	f5	f4	f5	f7	f5	
17	f5	f6	f3	f3	f3	l2	h3	h2	c3	h	c3	c3	c2	c2	c3	c3	h	l3	l2h	f3	f4	f6f	f4	f4	
18	f5	f4	f2	f	f3	h4	h4	h2	h3	l3	c3	c3	c2	c2	l2	l3	l3	l3	c4	f3	f3	f6	f6	f4	
19	ff4	f4	f4	f2	ff4	h2	h2	h2	c3	c4	c4	c3	l2	c2	l	l3	h2	c3	l4	f4	f4	f4	f5	f5	
20	f4	f3	f6	f3	ff6	l4	h2	c4	c4	c2	h		h	h2	h2	c4	c4	l4	l4	f6	f3	f6	f6	f4	
21	f2	f3	f2	f3	f3	h	h3	c5	c4	l3	c3	c2	c3	h	h2	h2	h2	c2	l3	f3	f4	f6	f8	f6	
22	f4	f3	f4	f3	f5	h2h3	h4l	h4l	h4	l3	c3	c3	c2	h	h1	h2	h2	h3	l4	f4	f8	f3	f4	f2	
23	f	f2	f2	f3	f3	l2	l3	h2	c4	c3	c2	h12	h2	h	h2h2	h	h2	h3	h4	f3	f5	f4	f2	f4	
24	f2	f3	f2	f3	f2	h2	h3	c3	c3	c4	c2	c2	c2	h	l	h	h2	h4	h7	f7	f3f6	f5	f4	f4	
25	f	f2f2	f		f3	h4	h2	h4	h3	c3	l3	c3	l4	h	h	h2	h3	c3	l5	c4	f4	f7	f4	f4	
26	f4	f4	f5	f3	f2f3	h4	c4	l4	c3	c3	l2	l2	l2	l	l2	l	l	h2l2	h5l3	f3f3	f5	f7	f4	f4	
27	f4	f4	f5	f3	f4	l4	h4	c4	l3		c2	c4	l2	l2	c2	c3	h	l3	l3	f4	f4	f7	f4	f4	
28	f5	f4	f4	f4	f4	l2	c4	c2	c3		c2	hc2									f4	f7	f4	f4	
29	f4	f4	f2	f2	f2	l	h3l2	c4	c3	l2	l3	l2	l2	l2	l2	l2	l2	c2	l3	f4	f4	f5	f4	f4	
30	f4	f4	f2	f3	f2	l	c4	c4	c3	c2	l	l2	l2	l2	l3	l3	h	l	l2	f5	f5	f3	f4	f4	
31	f5	f4	f4	f4	f3	l2	c4	c4	c4	c2	c3	l2	l2	l2	l3	l4	l4	h4	l5	f4	f6	f6	f4	f4	
No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

Types of Es

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 12

Lat. 35°42.4'N
Long. 139°28.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

km

fpF2

May 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	28
1	A	350F	350F	360	365F	370	345	270	300	320	G	405	380	340	305	285	J250R	260	285	J340A	J330R	310	345	350
2	I355A	F	F	360F	U355F	290	245	255R	295	280	310	A	A	A	350	345	300	255	I290A	300	290	F	A	A
3	A	A	A	F	F	255F	250	A	305	A	A	A	340	350	315	280	270	260	300	340	310	J280R	350	340
4	F	330	F	330	325R	280	230R	230	J255R	300	330	350	310	330	365	280	265	260	280R	300	315	305	U350A	U355F
5	350	355F	335	390	350	265	230	265	265	290	330	350	325	310R	310	325	310	310	U310R	U290R	R	250	355R	350
6	350	360	U310R	300	330	300	U280R	255R	280	310	290	G	G	G	325	325R	300	270	R	R	R	250	A	330
7	330	340F	325	325F	300	270	260	250	A	G	A	G	A	A	355	J350R	A	A	A	A	A	A	A	A
8	A	A	A	315F	F	310	280	250R	280R	340	320	G	350	I330A	340	290	280	270R	265	300R	A	300	I340A	340R
9	350	I350A	F	F	F	260	260	A	250	G	G	G	G	G	325	310	310	315	315R	I290A	260R	F	F	F
10	F	F	F	F	F	250	230	G	G	310H	A	320	320	340	320	350	320	320S	320	270	A	A	U310S	F
11	U395F	F	F	F	F	265F	250	250	A	C	C	C	C	C	C	350	340	320	340	A	R	A	A	350
12	J370R	380	370	F	F	F	300F	I270A	290	A	A	430	350	345	A	A	A	A	A	310	315	U315R	300R	305R
13	U370F	U355F	F	F	F	280	A	295	245	280	A	A	A	A	330	355	A	300	295	U305R	U275R	325	320	F
14	F	375	365	365	300F	245	A	A	370	260	A	A	370	320	330	350	A	A	J225R	290	R	270R	350R	350
15	340	F	F	F	F	245R	J270R	A	A	R	A	A	A	340	370	375R	325	J290R	U300S	260	J290R	360F	A	A
16	A	F	355	F	F	340F	290	360	300R	G	G	A	A	400	350	325	350	350	300	290	340	305F	350F	J355F
17	395F	350	390	F	F	290	A	360	305	G	A	A	A	A	330	350	300	310	320	310	280R	F	330	F
18	330F	I315A	320F	F	F	325F	305	265	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
19	A	A	A	320F	F	310F	315	270	260	A	A	A	A	375	345	350	330	310	305	J250S	225	A	A	A
20	A	305	A	F	F	F	295	300V	A	A	G	G	G	A	355	A	A	A	A	A	A	A	300R	F
21	F	U305F	F	F	F	220	250	A	A	A	A	A	A	A	A	A	330	320R	R	280R	A	F	F	F
22	F	F	F	F	F	260F	255	A	A	A	A	A	A	A	G	G	340	325R	320R	R	A	F	F	F
23	F	F	F	290F	F	270F	260	300R	290R	A	A	A	A	365	350	330R	295R	280R	280R	A	A	F	F	320R
24	F	F	F	F	F	F	305	A	A	A	A	R	G	430	360R	380R	340	305	315	310R	R	255R	340	340
25	350F	F	F	F	F	F	F	F	230R	A	A	A	A	G	G	A	A	315	I305A	325	F	F	F	U340R
26	U330F	F	360F	315Z	A	A	A	A	A	A	A	A	A	355	325	320	320	320	280	300	A	A	A	A
27	A	A	A	A	A	A	A	A	A	C	A	A	A	C	360	A	380	305	A	305	A	A	A	295
28	J340F	F	I330A	305	U295F	U250F	A	G	A	C	A	A	C	C	C	C	C	C	C	C	C	C	C	C
29	C	315	325	340	325	250R	A	A	A	A	A	A	A	A	355	350	350	300	340	305	A	A	F	F
30	F	F	F	270	300	295	295	270	250	G	A	G	G	305	A	310	320	320	350	305	A	F	F	305F
31	F	350F	F	F	U355F	300F	A	290	A	A	A	A	G	320	A	A	300	300	300	A	350	A	F	A
No.	14	15	15	11	18	26	23	16	14	9	5	5	8	17	21	22	24	25	22	23	12	12	16	13
Median	350	350	330	325	320	275	265	270	290	300	320	350	345	340	345	340	315	305	310	300	290	300	340	340
U.Q.																								
L.Q.																								
Q.R.																								

fpF2

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

ypF2

May 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	A	100F	080F	080	075F	070	055	060	050	040	G	095	080	080	065	040	J050R	045	060	J070A	J065R	085	060	075		
2	I070A	F	F	080F	I100F	040	035	045R	030	025	040	A	A	A	055	060	050	055	I055A	060	065	F	A	A		
3	A	A	A	F	F	085F	045	A	090	A	A	A	040	060	065	050	040	065	090	060	080	J090R	070	055		
4	F	060	F	060	065R	070	090R	050	J045R	040	045	050	065	075	035	065	075	070	070R	050	055	065	I055A	I085F		
5	075	075F	045	055	035	055	045	045	065	040	040	030	045	050R	090	075	070	090	I090R	I070R	R	080	055R	070		
6	070	065	I060R	080	070	080	I080R	040R	085	060	065	G	G	G	050	065R	060	050	R	R	070	A	065	I065A		
7	070	060F	075	075F	070	080	070	040	A	G	A	G	A	A	065	J080R	A	A	A	A	A	R	A	A	A	
8	A	A	A	040F	060	070	070	070R	075R	030	050	G	050	I070A	090	080	060	075R	060	080R	A	070	I070A	060R		
9	060	I055A	F	F	F	060	040	A	090	G	G	G	G	G	065	060	080	065	085R	I065A	090R	F	F	F		
10	F	F	F	F	F	065	090	G	G	090R	A	040	065	055	075	055	075	080S	075	055	A	A	I035S	F		
11	I100F	F	F	F	080F	050	050	A	A	C	C	C	C	C	C	040	060	070	110	080	R	A	A	090	080	
12	J050R	075	080	F	F	050F	I060A	060	060	A	A	035	050	050	095	A	A	A	070	080	I085R	080R	090R	F		
13	I085F	I085F	F	F	F	070	A	045	055	070	A	A	A	050	095	A	050	050	055	I095R	060	070	070	F		
14	F	065	065	075	070F	050	A	A	080	050	A	A	080	070	070	050	A	A	J075R	065	R	030R	075R	065		
15	070	F	F	F	F	055R	J030R	A	A	R	A	A	A	A	080	075R	085	J080R	I050S	085	J065R	045F	A	A		
16	A	F	055	F	070F	055	080	030	050R	G	G	A	A	050	050	075	060	060	085	060	070	090F	095F	J090F		
17	045F	090	060	F	F	060	A	040	055	G	A	A	A	A	030	090	055	085	100	070	090R	F	070	F		
18	070F	I070A	080F	F	035F	065	065	040	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
19	A	A	A	080F	070F	045	050	080	A	A	A	A	A	A	025	075	075	075	070	090	J060S	035	A	A	A	
20	A	095	A	F	F	055	065V	A	A	A	G	G	G	A	055	A	A	A	A	A	A	A	080R	F	F	
21	F	I090F	F	F	F	055	045	A	A	A	A	A	A	A	A	A	090	060R	R	050R	A	F	F	F		
22	F	F	F	F	F	060F	045	A	A	A	A	A	A	A	A	G	075	075R	060R	R	A	F	F	F		
23	F	F	070F	F	070F	065	060R	040R	A	A	A	A	A	A	035	080	080R	085R	090R	A	A	F	F	050R	F	
24	F	F	F	F	F	F	065	A	A	A	A	R	G	070	065R	095R	040	075	085	090R	R	065R	060	060		
25	070F	F	F	F	F	F	050R	A	A	A	A	A	A	A	G	A	A	065	I080A	070	F	F	F	I070R		
26	I070F	F	060F	080Z	A	A	A	A	A	A	A	A	A	085	070	070	070	075	085	060	A	A	A	A	A	
27	A	A	A	A	060F	A	A	A	A	C	A	A	A	A	A	085	090	090	A	090	A	A	A	055	075F	
28	J055F	F	I065A	055	J050F	J050F	A	G	A	C	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	
29	G	055	065	070	045	070R	A	A	A	A	A	A	A	A	045	075	095	090	085	065	A	A	F	F		
30	F	F	F	055	095	060	050	040	045	G	A	G	G	045	A	085	050	075	075	090	A	F	F	F	090F	
31	F	070F	F	F	I065F	065F	A	055	A	A	A	A	G	045	A	A	060	095	A	050	A	F	F	A	A	
No.	14	15	15	11	18	26	23	16	14	9	5	5	8	17	21	22	24	25	22	23	12	12	16	13		
Median	070	070	065	075	070	060	050	045	060	040	045	040	060	055	065	070	065	075	080	065	070	080	070	070	070	
U.Q.																										
L.Q.																										
Q.R.																										

Sweep 1.0 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

K 14

ypF2

Lat. 31°12'N
Long. 130°37'E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. + 9h)

foF2

May 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	I033S	033	I031S	026S	I049S	I056H	052S	I054S	I056S	059	J080S	093S	J079S	S	U092S	063S	I057S	A	S	S	S	S
2	A	S	S	A	A	A	I055S	050	055	I056A	060S	I054S	061S	J075S	086	I106S	I107S	J088S	I071S	I064S	062S	S	S	S
3	A	A	S	051S	I040S	025S	045	A	S	C	C	C	072S	075S	086	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	063S	065S	077	085	087	I045	I118S	I099S	I081S	I066S	059	I049S	I040S	S
5	S	S	I038S	I035S	I033S	I038S	056	060S	057	057	056	062	071	072S	071S	084	093S	090	089	S	S	060	S	S
6	S	S	S	I041S	I038S	032S	J051S	055S	I061S	I063S	I059S	060	070S	063	064S	I081S	092S	I093S	I091S	083S	059	S	S	S
7	S	C	S	032S	I030S	029	049S	062	I063S	060	I051A	I057A	061	070S	086	096S	097S	089	I080S	I080S	I063S	S	S	A
8	S	I030S	034S	I032S	029S	029S	049	058	I060S	055	062S	062	I072S	085	090	I097S	I02S	S	C	C	S	S	S	S
9	A	S	S	032S	032S	I031S	J051S	I063S	A	A	056	056	I066A	I069A	072S	070S	A	A	I086A	090	I060S	034S	S	A
10	A	A	S	034	025S	S	045S	055	054	059S	I061S	I054A	061	069	069S	J080S	088	092	090	I089S	S	S	S	A
11	A	S	S	I031S	J029S	028F	040S	I045S	052S	050	S	S	I050S	058	062S	058	057S	054	053S	J052S	S	S	S	A
12	S	S	S	S	S	040S	050S	058	053	I050A	050S	053S	I061S	074S	077S	J079S	A	A	A	A	A	A	A	S
13	A	S	S	S	S	F	048S	I073S	I064S	I055A	I055S	I056S	I074S	088	084	I089A	J095S	I088S	A	A	A	A	A	A
14	S	S	S	I034S	I035S	026	041S	056	064	A	A	R	A	A	J079S	J083S	I084A	J086S	S	A	A	A	A	A
15	S	S	S	S	S	032	030S	047S	059	062S	A	S	A	A	J081S	092	091S	J107S	I110S	S	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	A	C	C	C	I073S	I075C	C	S	S	I060S	I060S	I055S	S	S
17	S	S	S	A	A	A	I050S	J057S	I061A	052	I046A	I050A	057	062C	067S	072S	I065S	I061S	062S	085	S	S	S	S
18	S	S	S	026	I026S	I029S	J043S	054S	056	A	C	I053C	060	I060C	061	I063C	I069A	I065A	I071S	086	S	S	S	S
19	A	A	S	A	A	027	I045A	I054S	I056S	053	053	051	J054C	062	065	071	J079S	A	S	099S	S	S	I034S	S
20	S	S	I029S	A	C	C	C	C	C	A	A	A	052	056	061	069S	A	A	A	A	068	I061S	S	S
21	S	S	S	S	S	I033S	041S	060S	S	A	A	A	A	I068S	067S	059	064	I068S	I069S	S	S	S	S	S
22	S	J053S	S	J052H	J040S	I043S	I052S	I055A	I061A	057	I056A	I053A	A	A	A	J083S	087	I087S	J081S	I081S	J078S	J051S	S	S
23	S	S	S	I040S	I031S	031	J047S	J064S	S	A	A	A	058	I073S	I083S	I085A	I087A	I086A	J083S	I080S	S	S	S	S
24	A	A	A	A	S	I028A	J030S	J051S	070S	054	057	A	A	061S	J078S	S	J080S	087S	J084S	S	S	S	A	A
25	S	S	I032S	I030S	I029S	031	051S	A	A	A	A	I099A	062	I069S	I065S	I059C	057	064S	062S	A	S	S	A	S
26	S	A	S	S	I030S	032	052H	A	A	A	A	A	A	067S	I078S	J077S	S	C	C	S	053S	S	S	S
27	S	A	S	S	A	S	J042S	051S	A	A	A	A	A	A	S	A	083S	I090S	S	S	A	S	A	S
28	A	A	S	S	S	037S	051	I051S	057	050	A	A	A	A	A	I070S	J080S	082S	086	S	S	S	S	S
29	S	S	A	S	S	I034S	I048S	A	A	A	C	C	C	C	C	C	S	S	062S	059S	S	S	S	S
30	A	A	S	A	I032S	I035S	I052S	I058S	056	A	A	A	056	056	058	054	I053A	S	A	S	S	S	S	S
31	S	S	S	S	S	S	S	057S	I063S	I062S	I060S	I060A	S	S	S	S	I062S	S	S	S	S	S	S	S
No.	2	5	14	18	22	27	24	20	16	15	17	20	24	26	26	26	24	19	18	14	9	6	2	
Median	U042	U033	U034	U031	031	049	057	057	056	U056	U056	061	069	075	080	087	087	087	080	U080	060	U053	U037	
U.Q.		036	040	033	034	051	060	062	058	061	060	072	075	084	085	094	090	086	086	086	066	060		
L.Q.		030	032	029	029	045	054	054	052	053	053	058	062	065	070	067	065	065	062	064	059	049		
Q.R.		006	008	004	005	006	006	008	006	008	007	014	013	019	015	027	025	024	022	022	007	011		

foF2

May 1964

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

May 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	I460R	450	I450A	A	420	L						
2									A	A	A	A	A	A	I470R	430	410	L	L					
3									A	C	C	C	460	A	A	C	C	C	C					
4							C	C	C	C	460	450	A	A	A	A	430L	A						
5							L	A	L	A	460	450	460	470	470	I450R	410	A	A					
6								A	A	L	A	S	A	A	A	A	A	A	A					
7							L	A	A	A	A	A	A	R	470	450	420	400L	A					
8								A	470	I460A	480	I460A	470	A	A	A	A	A	C					
9								A	A	A	A	A	A	A	A	A	A	A	A					
10								A	A	A	A	I450A	450	460	460	440R	400	A	L					
11								A	A	A	A	A	A	R	R	I420R	400	380	L					
12							L	L	A	I430A	R	A	A	A	A	A	A	A	A					
13						L	A	A	A	A	A	460	A	A	A	A	A	A	A					
14							A	A	A	A	A	R	A	A	A	A	A	A	A					
15							A	A	A	A	A	A	A	A	A	A	A	A	A					
16							A	A	A	A	A	C	A	A	440	I420A	I400C	370	330					
17							A	A	A	A	A	A	C	C	I440C	450	400	L	L					
18							A	A	A	A	A	C	C	A	A	A	A	A	A					
19							A	A	A	A	A	A	A	C	I440C	A	A	A	A					
20							C	C	C	A	A	A	S	R	A	A	A	A	A					
21							A	A	A	A	A	A	A	A	C	A	A	380H	350	L				
22							L	A	A	A	A	A	A	A	A	A	A	A	A					
23							A	A	A	A	A	A	A	R	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	S	430	I430C	A	A	L					
26							A	A	A	A	A	A	A	A	A	A	A	C	C					
27							A	A	A	A	A	A	A	A	A	R	A	A	A					
28							A	L	420	A	A	A	A	A	A	I420R	410	380	L					
29							A	A	A	A	C	C	C	C	C	C	A	A	330					
30							L	S	A	A	A	A	R	R	I440R	A	A	A	A					
31							A	A	A	A	A	A	A	A	A	A	I420A	390H	A					
No.									1	3	5	4	6	5	10	9	11	6	3					
Median									390	420	460	450	460	460	440	I430	410	380	330					
U.Q.																								
L.Q.																								
G.R.																								

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

The Radio Research Laboratories, Japan

Y 2

foF1

Lat. 31°12'1" N
Long. 130°37'1" E

Yamagawa

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foE

May 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	240	280	I305H	310R	315R	R	R	R	R	295	250	205					
2							180	235	270	I300R	320R	R	R	R	R	R	280	250	195					
3							S	A	A	C	C	C	R	R	R	C	C	C	C					
4							C	C	C	C	320	340	R	A	A	A	R	260R	200					
5							S	250	280	I305E	R	R	R	R	R	I325R	300	260	195					
6							S	240	280	R	R	R	360	I355R	I340R	320R	290	260	S					
7							S	240	270	280	I325A	I360R	I350R	I340R	340R	320	300	265	200					
8							190	250	290	310R	I320R	A	R	R	R	R	C	260	C					
9							S	230	270	300	R	R	A	A	A	A	300	265	190					
10							S	250H	290	310	R	R	R	A	A	R	295	265	200					
11							S	220	280	I305R	320	R	R	R	A	R	280	260	200					
12							S	220	260	I285R	320R	320R	R	R	R	320R	290	260	200					
13							S	225	265	300	R	A	R	R	R	320R	290	260	S					
14							200	235	275	305	305R	315R	R	A	A	330	290	250	190					
15							S	230	270	300	I310R	320R	R	R	R	A	A	260	200					
16							S	220	270	300	315	C	A	A	A	C	295	250	190					
17							S	230	270	300	C	C	A	C	C	C	A	255	200					
18							S	220	270	I295C	C	C	C	C	C	C	290	250	A					
19							S	240	270	300	C	C	C	C	C	A	A	A	A					
20							C	C	C	300	315S	315	A	R	I330C	315	290	260	205					
21							S	230	265	280	I295C	300	C	C	I335C	310	290	255	200	S				
22							S	190	245	270	A	A	C	C	C	310	295	255	205					
23							205	240	280	I305R	320	I325R	330R	340R	I330R	310	290	265	210					
24							180	230	270	290	310	310	A	A	A	330	300	260	215					
25							S	240	270	290	I295R	I310R	R	A	A	C	A	255	210					
26							S	195	270	305S	310	R	A	A	A	A	A	C	C					
27							S	230	290	R	R	R	A	R	R	310	290R	260H	210					
28							S	250	270	300	R	A	R	R	A	R	290	260H	205					
29							S	200	250	275	290	C	C	C	C	C	A	260	220					
30							S	240	275	300R	R	R	R	A	R	325	290	260	205					
31							S	180	230	280	I310R	R	R	A	A	A	305	255	200					
No.							9	28	28	26	16	11	3	4	6	13	22	28	24					
Median							190	235	270	300	315	315	350	U340	U340	320	290	260	200					
U.Q.																								
L.Q.																								
Q.R.																								

foE

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

The Radio Research Laboratories, Japan

Y 3

Lat. 31°12'N
Long. 130°37'E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foEs

May 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	J023	J024	J024	J083	J021	S	019	029	J048	059	J058	J050	042	038	J054	043	G	028	J044	J110	D032S	J036	J031	J031	
2	051	J040	J024	J083	J084	J057	028	034	047	060	037	053	057	J056	G	G	G	G	G	S	019	J022	J024	J026	
3	J051	J061	J055	J053	J030	J027	021	J064	J055	C	C	C	040	045	055	C	C	C	C	C	C	C	C	C	
4	G	C	C	C	C	C	C	C	C	C	C	C	J047	060	048	050	043	051	J050	J054	J052	J026	S	S	
5	J032	S	S	S	S	S	024	029	037	J052	038	036	042	046	039	038	042	045	J051	J043	J027	J020	023	J021	
6	023	S	S	S	S	S	026	038	J047	040	046	039	047	060	047	J079	J072	J056	J054	J041	J030	J026	025	J023	
7	J024	C	J014S	S	S	S	018	027	044	J048	J052	062	053	045	040	J040	036	031	034	022	J026	028	032	J051	
8	J026	J019	J025	J025	J025	024	029	037	059	047	J052	046	050	047	048	061	J053	J084	G	C	J022	J029	024	J026	
9	J051	J026	J024	J018	013	S	026	J084	J084	J083	J054	061	J081	J084	J058	061	J139	J085	J115	J054	J026	J024	J026	J050	
10	J051	J051	J024	024	J019	J017S	022	036	044	J084	050	J078	034	J053	037	G	034	J053	J052	J053	J052	J051	J053	J052	
11	J040	J020	J051	J038	J024	J024	025	J049	046	042	048	046	J048	042	037	G	G	G	G	027	J031	J042	J061	J040	J079
12	S	J018	024M	S	J018S	021	024	040	040	055	J045	042	050	044	055	047	J089	J139	J109	J124	J084	J105	J060	J051	
13	J058	J020	S	S	J031	S	024	045	J051	060	050	045	039	050	J073	J114	J084	J079	J096	J125	J108	J054	J095	J051	
14	J030	J024	025M	J020	021	S	023	044	J052	086	J078	042	062	J084	047	J083	J138	J082	J084	J110	J083	J084	J058	J051	
15	J026	J030	030	D036S	J021	022	030	J054	J053	J083	J061	J080	J078	J081	J046	043	052	J084	J084	J110	J111	J084	J054	J051	
16	D057S	J050	J055	J054	J051	J032	J063	D090S	033	084	D090S	C	C	038	C	033	G	G	G	025	020	S	S	028M	032M
17	J024	024	030M	J084	J054	J051	031	048	J082	J052	054	J067	037	031G	039	031G	J032	021G	021G	J049	S	J024	026	J036	
18	J032	J021	J023	J030	026	J025	030	037	035	J084	053	C	C	043	053	060	072	J098	051	J054	J052	J030	026	J027	
19	J054	J061	J053	J051	J039	032	J061	059	J062	052	J052	054	J049	036	035	048	J053	J095	J080	J062	J051	J021	J024	021	
20	J024	J052	030M	030	G	C	C	C	C	J056	151M	142M	038	041	J051G	J051	D091S	J085	117M	D089S	J030	D031S	D031S	D067S	
21	D038S	D031S	030	031M	J024	S	027	J040	D067S	J087	J098	J100	D	G	042	J062	J054	030	026	019	J026	D031S	030	D031S	
22	J029	D035S	D038S	J025	024	J029	023	D067S	082M	J055	067M	059	067M	069	J078S	J066	072M	J061	J041	059M	035M	D031S	032M	030M	
23	J028	029M	S	J023	S	S	025	038	J052	J061	J064	J097	J053	038	J084	J127	J119	J126	J059	083M	J036	D035S	023	023M	
24	J058	D057S	D057S	J023	035M	J019	032	J063	050	J050	J082	J066	086M	J063	051	037	042	J054	J053	J078	J084	J051	J052	J051	
25	D031S	J019	J024	J020	J019	J025	031	J061	J106	J117	J099	J066	J056	036	037	G	053	058	041	J079	J026	J052	J079	J051	
26	J027	J051	J026	J026	J026	026	028	060	J087	J078	J086	J106	J100	J064	J075	J085	J062	C	C	J031	J030	S	030	J026	
27	J016S	J049	J026	031	J052	J051	040	044	J073	J106	J122	J095	J101	J068	078	040	085	050	J051	J053	J083	S	J083	D024S	
28	J051	J051	J024	J016	S	S	J050	J054	051	054	J082	J109	J061	060	J084	030G	025G	020G	024	J061	J051	J051	J051	J051	
29	J020	J051	J042	J023	J020	J015S	028	J062	054	J118	C	C	C	C	C	C	047	051	030	J026	J030	J031	J030	J029	
30	J051	D058S	J021	J050	021	J015S	023	032	J049	J058	J103	J115	038	040	039	051	J066	054	J084	D060S	J052	J033	J024	J030	
31	D059S	J037	J019	J019	J016	S	036	J042	058	J052	061	J083	J085	J085	J052	J054	061	027	J053	J051	J030	J022	S	J030	
No.	28	25	26	25	26	18	29	29	29	29	29	27	28	29	30	27	30	29	28	28	27	27	28	27	
Median	032	037	026	030	024	025	027	044	052	059	058	062	052	047	048	050	053	054	051	054	051	036	D031	030	032
U.Q.	051	051	D038	050	031	032	031	060	D070	084	084	095	072	064	055	062	072	084	082	083	052	052	053	051	
L.Q.	025	024	024	023	020	021	024	037	047	052	050	046	042	040	039	038	036	029	032	042	027	026	026	026	
Q.R.	026	027	D014	027	011	011	007	023	D023	032	034	049	030	024	016	024	036	055	050	041	025	026	027	025	

The Radio Research Laboratories, Japan

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

foEs

IONOSPHERIC DATA

Lat. 31°42.1'N
Long. 130°37.1'E

Yamagawa

0.1 Mc 135° E Mean Time (G.M.T. +9h)

fEs

May 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	023	A		018	S	G	029	047	A	A	046	E042R	037	053	043		G	A	A	A	A	A	A
2	A	A	A	A	A	018	024	029	045	A	035	A	050	050				C	C	S	019	020	020	025
3	A	A	A	020	020	018	G	A	A	C	C	C	040	E045R	055	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	039	041	045	058	048	046	039	050	045	054	052	A	S	S
5	019	S	S	S		S	024	029	037	048	E038R	E036R	042	046	039	E038R	040	043	046	E043S	027	020	A	020
6	E	S	S	S	018	S	S	037	045	038	046	E039R	047	057	047	A	E072S	052	052	035	030	026	020	A
7	A	C	S	S	S	S	G	G	044	047	A	A	051	E045R	040	040	035	030	034	021	025	022	A	A
8	A	A	019	025	024	E	E029S	034	A	043	047	046	A	046	047	E061S	052	083	C	C	E022S	A	021	A
9	A	A	019	018	E	S	S	054	A	A	051	052	A	A	058	061	A	A	A	C	020	020	020	A
10	A	A	018	019	017	E	E	034	043	052	045	A	E034R	038	037		G	049	029	A	045	A	A	A
11	A	A	019	019	017	019	023	A	046	040	A	A	A	E042R	E037R				026	030	A	A	A	A
12	S	018	E	S	E	020	024	036	038	A	044	046	046	044	046	046	A	A	A	A	A	A	A	021
13	A	019	S	S	020	S	020	044	045	A	A	A	038	046	E073S	A	072	055	A	A	A	A	A	A
14	A	A	021	018	S	S	G	039	051	A	A	A	A	A	046	A	A	065	A	A	A	A	A	A
15	A	A	A	A	019	E	E030S	047	046	A	A	A	A	076	046	043	050	A	A	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	A	C	C	C	035	C	E039C				S	S	018	018
17	A	E024S	021	A	A	A	A	046	A	044	A	A	E037C	E031C	037	031G	032	020G	E030C	034	S	024	A	A
18	A	021	022	020	A	A	A	028	034	A	A	C	C	A	053	A	A	A	E051S	E054S	E052S	A	A	A
19	A	A	A	A	A	A	A	A	A	048	048	049	A	E036C	E035C	043	E053C	A	A	E062S	A	A	E024S	021
20	021	E	021	A	A	C	C	C	C	A	A	A	E038S	040	C	046	A	A	A	A	E030S	A	A	A
21	A	A	A	A	A	C	S	026	A	A	A	A	A		C	056	046	030	024	019	026	029	028	A
22	029	033	A	025	019	020	022	A	A	055	A	A	A	A	A	053	E072S	E061S	041	A	E034S	019	A	A
23	028	E	S	020	S	S	024	037	A	A	A	A	E053S	E038R	A	A	A	A	018	040	E036S	A	E	A
24	A	A	A	019	A	E	E032S	061	044	046	A	A	A	054	048	035	041	045	E053S	E078S	A	A	A	A
25	A	019	020	A	A	A	022	028	A	A	A	A	053	E036R	037	C	050	048	033	A	A	A	A	A
26	A	A	A	A	A	A	020	026	A	A	A	A	A	059	A	052	A	C	C	030	E030S	S	A	019
27	E	A	A	A	A	A	A	043	A	A	A	A	A	A	A	E040R	A	045	E051S	052	A	S	A	A
28	A	A	020	S	S	S	024	A	037	034	A	A	A	A	A	E030R	024G	020G	024	A	A	A	A	A
29	A	A	A	019	017	S	S	026	A	A	C	C	C	C	C	G	046	046	028	022	A	A	A	A
30	A	020	021	A	018	S	S	032	046	A	A	A	E038R	040	E039R	046	A	A	A	A	051	E033S	A	029
31	A	A	018	019	E016S	S	A	E042S	A	046	A	A	051	A	050	050	A	023	053	050	A	022	S	A
No.																								
Median																								
U.Q.																								
L.Q.																								
Q.R.																								

fEs

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

The Radio Research Laboratories, Japan

Lat. 31°12'N
Long. 130°37.1'E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135°E Mean Time (G.M.T. +9h)

f-min

May 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	E017S	E018S	E018S	E017S	E017S	E017S	E017S	E017S	E018S	E018S	E018S	E018S	E018S	E018S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
2	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
3	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	E016S	E017S	S	E019S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S
6	E017S	E018S	E017S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S
7	E017S	C	E017S	E018S	S	E017S	E016S	E017S	E017S	E017S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S
8	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
9	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
10	E018S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
11	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
12	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
13	E016S	E017S	E019S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
14	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
15	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
16	E016S	E016S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
17	E019S	E018S	E018S	E018S	E017S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S
18	E019S	E019S	E018S	E018S	E018S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
19	E017S	E017S	E017S	E017S	E018S	E017S	E017S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S
20	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S	E018S
21	E017S	E016S	E018S	E016S	E018S	E020S	E017S	E017S	E018S	E019S	E020S	E020S	E019S	E019S	E020S	E020S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S
22	E017S	E017S	E017S	E017S	E017S	E017S	E016S	E016S	E018S	E020S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S	E019S
23	E017S	E017S	E018S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
24	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
25	E016S	E016S	E017S	E017S	E017S	E016S	E016S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
26	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
27	E016S	E017S	E017S	E016S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
28	E017S	E017S	E017S	E018S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
29	E016S	E017S	E016S	E017S	E017S	E016S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
30	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
31	E016S	E016S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S	E017S
No.	30	29	29	30	17	29	29	29	29	28	28	26	26	27	27	26	30	28	28	29	30	28	28	30
Median	E017	E017	E017	E016	E017	E017	E017	E017	E017	E019	E020	E020	E022	E021	E020	E020	E019	E018	E017	E017	E017	E017	E017	E017
U.Q.																								
L.Q.																								
G.R.																								

IONOSPHERIC DATA

May 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

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	I290S	280	I295S	290S	I370S	I380H	365S	I315S	I245S	270	J290S	325S	J300S	S	U350S	335S	I330S	A	S	S	S	S
2	A	S	S	A	A	A	I375S	380	345	I340A	335S	I300S	280S	J280S	290	I305S	I330S	J208S	I330S	I335S	305S	S	S	S
3	A	A	S	320S	I340S	370S	375	A	S	C	C	C	295S	295S	315	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	320S	310S	300	305	305	310S	320S	I340S	I335S	I340S	320	I310S	I285S	S
5	S	S	I305S	I335S	I330S	355	375S	355	375	350	320	310	325	320S	300S	285	325S	310	335	S	S	360	S	S
6	S	S	S	I290S	I280S	315S	J340S	345S	I340S	I340S	310	315S	305	295S	I310S	350S	I335S	I335S	I335S	350S	320	S	S	S
7	S	C	S	315S	I300S	305	345S	355	I360S	350	I310A	I295A	295	U285S	300	325S	340S	335	I335S	I350S	I340S	S	S	A
8	S	I315S	305S	I315S	310S	310S	355	355	I350S	310	330S	285	I290S	305	310	I320S	330S	S	C	C	S	S	S	S
9	A	S	S	305S	295S	I330S	J350S	I365S	A	A	335	280	I315A	I320A	305S	320S	A	A	I340A	365	I375S	355S	S	A
10	A	A	S	295	320S	S	350S	360	365	340S	I360S	A	295	315	305S	J290S	310	320	330	I350S	S	S	S	A
11	A	S	S	I350S	J355S	325F	I330S	I330S	330S	305	S	S	I255S	295	315S	310	285S	305	310S	J310S	S	S	S	A
12	S	S	S	S	S	310S	340S	360	365	I320A	265S	280S	I295S	310S	310S	J305S	A	A	A	A	A	A	A	S
13	A	S	S	S	S	F	300S	I365S	I380S	I335A	I300S	I280S	I290S	310	310	I310A	J325S	I320S	A	A	A	A	A	A
14	S	S	S	I310S	I255S	315	I330S	320	320	A	A	R	A	A	J290S	J290S	I305A	J315S	S	A	A	A	A	A
15	S	S	S	S	325	335S	340S	355	355S	A	S	A	A	J285S	305	285S	J300S	I320S	S	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	A	C	C	C	I290S	I305C	C	S	I335S	I315S	I320S	S	S	S
17	S	S	S	A	A	A	I325S	J285S	I360A	345	I325A	I285A	290	290C	315S	290S	I335S	I330S	305S	340	S	S	S	S
18	S	S	S	280	I295S	I315S	J315S	350S	370	A	C	I275C	300	I315C	310	I300C	I325A	I310A	I310S	325	S	S	S	S
19	A	A	S	A	A	310	I355A	I340S	I350S	355	320	295	J260C	290	290	290	J290S	A	S	365S	S	S	I305S	S
20	S	S	I295S	A	C	C	C	C	C	A	A	A	290	290	290	295S	A	A	A	A	S	330	I320S	S
21	S	S	S	S	S	I335S	360S	365S	S	A	A	A	A	I310S	320S	290	305	I320S	I325S	S	S	S	S	S
22	S	J325S	S	J315H	J310S	I330S	I335S	I365A	I365A	300	I320A	I295A	A	A	A	J285S	310	I320S	J310S	I325S	J340S	J335S	S	S
23	S	S	S	I320S	J340S	335	J345S	J360S	S	A	A	A	310	I300S	I310S	I310S	I315A	I315A	J300S	I330S	S	S	S	S
24	A	A	A	S	I335A	J335S	J350S	355S	380	355	A	A	A	275S	J300S	S	J280S	330S	J300S	S	S	S	A	A
25	S	S	I305S	I315S	I315S	330	335S	A	A	A	A	I295A	275	I290S	I305S	I290C	305	330S	340S	A	S	S	A	S
26	S	A	S	S	I310S	315	340H	A	A	A	A	A	A	285S	I305S	J320S	S	C	C	S	325S	S	S	S
27	S	A	S	S	A	S	J350S	345S	A	A	A	A	A	A	S	A	I315S	S	S	S	A	S	A	S
28	A	A	S	S	S	340S	355	I350S	365	360	A	A	A	A	A	I305S	J300S	310S	330	S	S	S	S	S
29	S	S	A	S	S	I325S	I340S	A	A	A	C	C	C	C	C	C	S	S	325S	320S	S	S	S	S
30	A	A	S	A	I305S	I320S	I330S	I355S	365	A	A	A	315	310	305	295	I305A	S	A	S	S	S	S	S
31	S	S	S	S	S	S	S	335S	I325S	I310S	I305S	I295A	S	S	S	S	I285S	S	S	S	S	S	S	S
No.	2	5	14	18	22	27	24	20	16	15	16	20	24	26	26	26	24	19	18	14	9	6	2	
Median	U320	U305	U315	U310	320	345	355	360	340	U320	U295	295	300	305	300	300	310	320	330	U340	325	U330	U295	
U.Q.																								
L.Q.																								
G.R.																								

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

The Radio Research Laboratories, Japan

Y 7

Lat. 31°12'N
Long. 130°37'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

M(3000)F1

0.01

May 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	1370R	360	1375A	A	355	L						
2									A	A	370L	A	A	A	350R	350	365	L	L					
3									A	C	C	C	355	A	A	C	C	C	C					
4							C		C	C	350	400	A	A	A	A	A	A	A					
5							L		L	A	395	400	A	A	360	1355R	A	A	A					
6									A	L	A	S	A	A	A	A	A	A	A					
7							L		A	A	A	A	A	R	350	355	360	365L	A					
8									A	360	A	A	A	A	A	A	A	A	C					
9									A	A	A	A	A	A	A	A	A	A	A					
10									A	A	A	1400A	400	370	365	375H	375	A	A	L				
11							A		A	A	A	A	A	A	R	1365R	355	350	L					
12							L		L	A	1365A	R	A	A	A	A	A	A	A					
13							A		A	A	A	A	385	A	A	A	A	A	A					
14							A		A	A	A	R	A	A	A	A	A	A	A					
15							A		A	A	A	A	A	A	A	A	A	A	A					
16							A		A	A	A	C	A	A	365	1360A	1365C	405	365					
17							A		A	A	A	C	C	C	1360C	345	375	L	L					
18							A		385	A	A	C	C	A	A	A	A	A	A					
19							A		A	A	A	A	A	C	1355C	A	A	A	A					
20							C		C	A	A	A	S	R	A	A	A	A	A					
21							A		A	A	A	A	A	A	380S	C	A	A	365H	345	L			
22							A		A	A	A	A	A	A	A	A	A	A	A					
23							A		A	A	A	A	A	R	A	A	A	A	A					
24							A		A	A	A	A	A	A	A	S	A	A	A					
25							A		A	A	A	A	A	S	355	1365C	A	A	A	L				
26							A		A	A	A	A	A	A	A	A	A	C	C					
27							A		A	A	A	A	A	A	A	A	A	A	A					
28							A		L	385	A	A	A	A	A	1375R	355	380	L					
29							A		A	A	C	C	C	C	C	C	A	A	A	375				
30							L		S	A	A	A	R	R	1360R	A	A	A	A					
31							A		A	A	A	A	A	A	A	A	1360A	360H	A					
No.									1	2	4	3	4	3	10	9	9	6	3					
Median									385	370	370	400	380	370	360	1360	360	365	365					
U.Q.																								
L.Q.																								
Q.R.																								

M(3000)F1

Lat. 31°12.1'N
Long. 130°37.1'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

R'F2

May 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	A	A	410	380	330	310	295	245	270						
2									280	A	305	I335A	400	355	345	305	255	255	245					
3									A	C	C	C	290	340	305	C	C	C	C					
4							C		C	C	305	340	305	310	305	295	270	245						
5									240	275	335	345	300	310	345	310	290	280	280					
6									265	295	275	355	300	375	355	I345A	300	255						
7							250		255	255	A	I380A	375	370	340	300	265	260	275					
8									I270A	335	300	380	I355S	310	310	300	280	290	C					
9									A	A	E330A	E420A	I335A	I310A	330	325	A	A	A					
10									265	300	280	I360A	355	320	345	345	300	290	255					
11								A	310	410	A	A	A	360	325	340	350	335	295					
12								255	245	A	440	420	I365A	320	310	300	A	A						
13							295		250	A	I350A	I420A	350	305	E375S	I310A	300	265						
14								305	300	A	A	R	A	A	330	A	A	300						
15							255		E250A	A	A	A	A	I365A	325	350	305	I270A						
16								A	A	A	A	C	A	350	325	300C	350	300	260					
17								330	I265A	270	A	A	A	385	355	325	330	295	325					
18								260	250	A	A	C	350	I330A	330	I340A	I305A	I315A	325					
19								I265A	I270A	280	340	E400A	I420A	350	355	350	330	A						
20							C	C	C	A	A	A	400	395	375	340	A	A	A					
21								250	A	A	A	A	A	A	325	305	E400A	325	300	290	250			
22							260		A	A	E420A	A	A	A	A	340	E360S	E295S	280					
23								250	A	A	A	A	375	350	A	A	A	A	A	270				
24								260	240	280	A	A	A	420	325	360	360	265	E330S					
25								A	A	A	A	A	400	350	335	I350C	350	300	270					
26								A	A	A	A	A	A	370	I340A	300	A	C	C					
27								275	A	A	A	A	A	A	A	345	I310A	280	290					
28								A	255	270	A	A	A	A	A	340	305	295	255					
29								A	A	A	C	C	C	C	C	C	305	275	285					
30							255	250	245	A	A	A	350	340	340	380	I330A	A	A					
31							290	I280A	295	I310A	I365A	340	I315A	295	315	I350A	300	290						
No.							3	14	19	11	10	11	20	26	25	26	23	22	16	1				
Median							260	260	260	280	310	365	355	345	330	335	305	285	280	250				
U.Q.																								
L.Q.																								
Q.R.																								

Y 9

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

R'F2

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'F

May 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	E320A	I305A	295	E345A	340	245	210H	A	A	A	A	A	210	I230A	I230A	245	225	A	A	A	A	A	A	
2	A	A	A	A	A	275	220	240	I215A	I235A	210	A	A	A	250	255	250	225	235	245	240	265	280	300	
3	I305A	I290A	I260A	245	240	240	220	A	A	C	C	C	205	A	A	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	245	210	A	A	A	A	A	A	A	E270A	E300A	I260A	I275S	300	
5	290	280	I285S	250	240	270	240	230	240	I240A	200	215	A	A	225	I250A	A	A	A	250	225	205	I280A	305	
6	290	300	280	250	290	295	245	230	A	245	A	A	A	A	A	A	A	A	255	240	215	250	275	I300A	
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8	I270A	I295A	270	250	E300A	285	250	250	A	250	I210A	I240A	I250A	A	A	A	A	A	A	C	G	G	A	A	
9	A	I300A	280	265	270	260	240	250	A	A	A	A	A	A	A	A	A	A	A	A	230	205	240	A	
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13	I290A	335	295	250	E300A	E300S	245	A	A	A	A	A	195	A	A	A	A	A	A	A	A	A	A	A	
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18	A	290	E280A	E340A	A	I260A	250	I235A	225	A	A	C	C	A	A	A	A	A	A	260	220	I310A	A	A	
19	A	A	A	A	A	E300A	A	A	A	A	A	A	A	245	I225C	A	A	A	A	250	A	A	E350S	E290A	
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22	290	255	I270A	270H	270	240	250	A	A	A	A	A	A	A	A	A	A	A	A	A	250	220	A	A	
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Median	290	295	285	260	265	260	245	235	240	U240	210	U220	205	245	230	240	245	225	245	245	245	240	250	U275	300
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

R'F

IONOSPHERIC DATA

Lat. 31°12.1'N
Long. 130°37.1'E

Yamagawa

135° E Mean Time (G.M.T. +9h)

km

R'ES

May 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	
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3	110	110	110	105	105	105	150	105	105	C	C	C	155	145	140	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	105	110	105	140	130	135	135	135	130	125	120	120	S	S	
5	110	S	S	S	E	S	145	140	130	120	125	125	155	145	150	145	135	125	115	110	110	120	115	110	
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7	105	C	S	S	S	S	130	140	120	105	100	130	125	135	130	125	130	130	115	115	110	110	110	105	
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9	105	105	105	105	105	S	125	115	110	110	110	105	105	105	100	135	125	115	110	110	110	110	110	110	
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27	S	105	105	100	100	100	125	125	115	110	105	105	105	105	110	125	110	125	110	105	105	S	110	110	
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Median	105	105	105	100	100	105	130	125	120	110	110	110	105	110	120	130	125	120	115	110	110	110	110	105	
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

R'ES

Y 11

Lat. 31°12.1' N
Long. 130°37.1' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Types of Es

May 1964

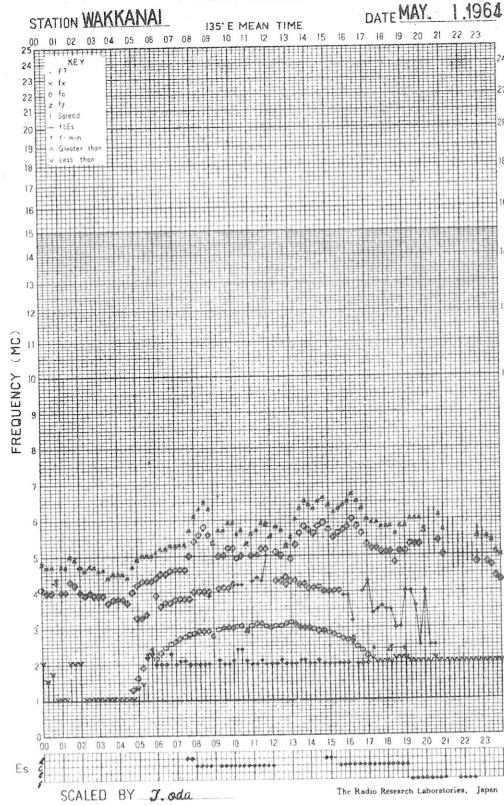
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No.																									
Median																									
U.Q.																									
L.Q.																									
Q.R.																									

The Radio Research Laboratories, Japan
Y 12

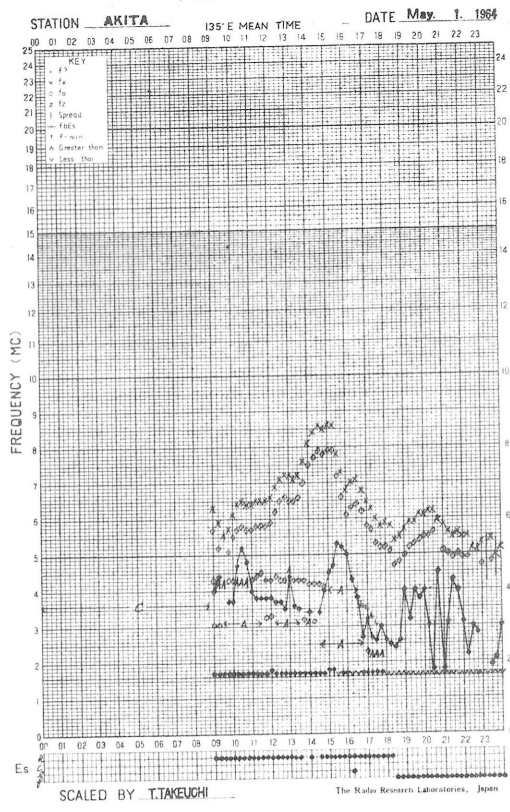
Sweep 0.55 Mc to 17.0 Mc in 20 sec in automatic operation

Types of Es

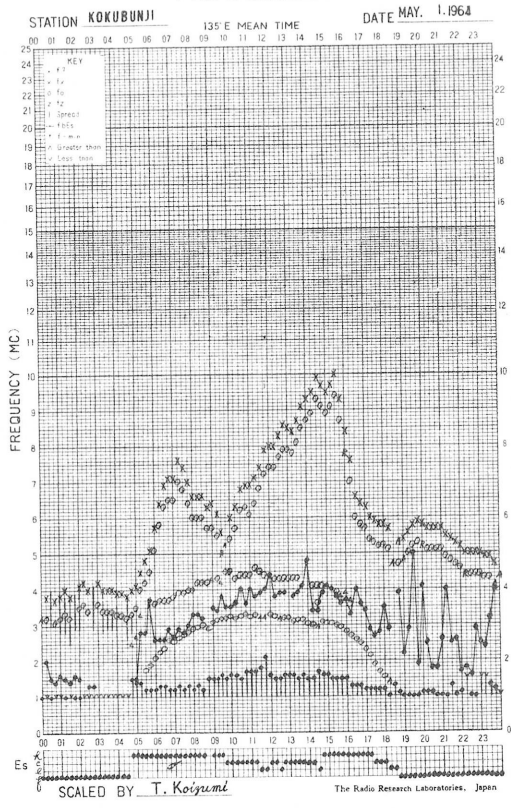
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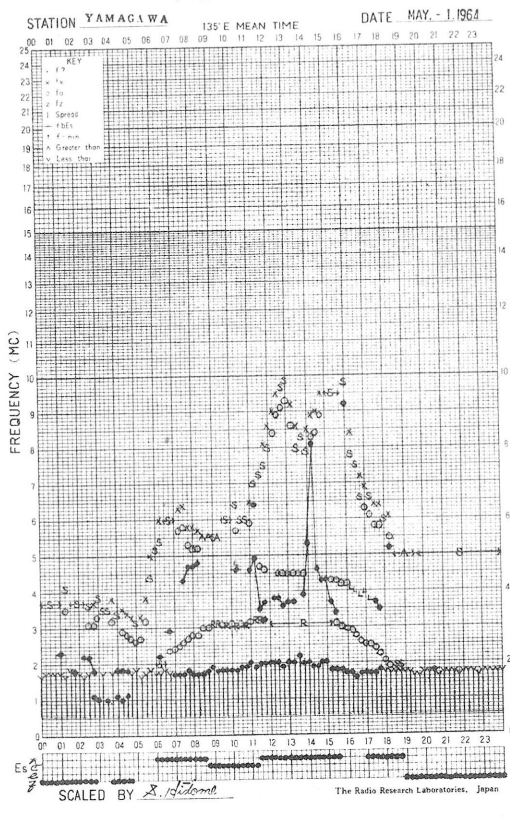
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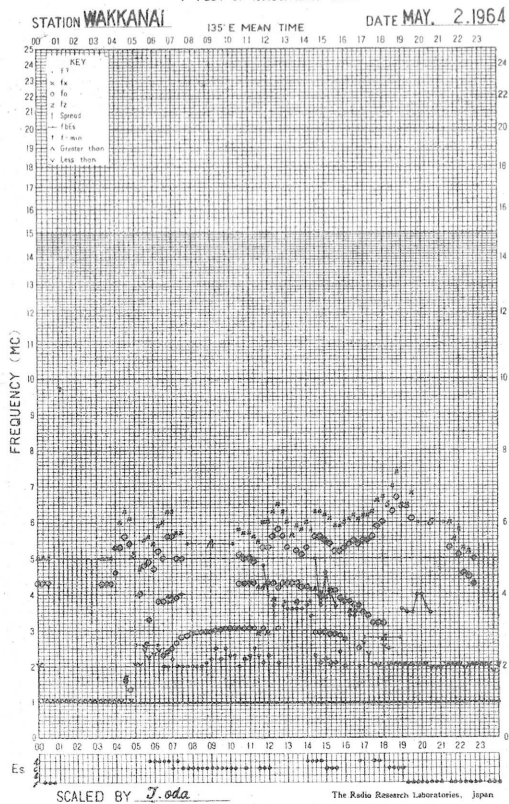
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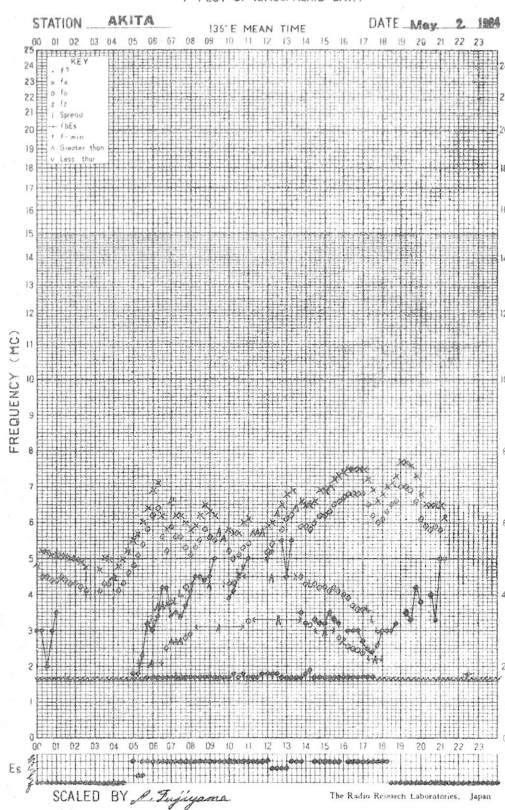
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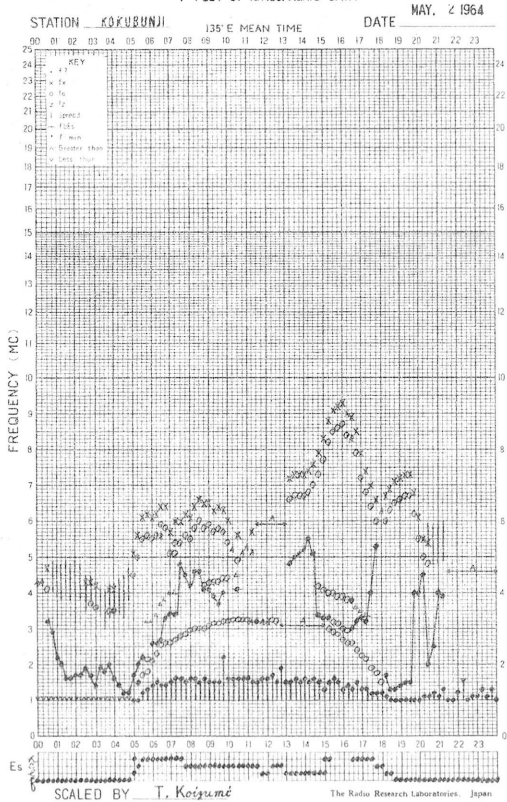
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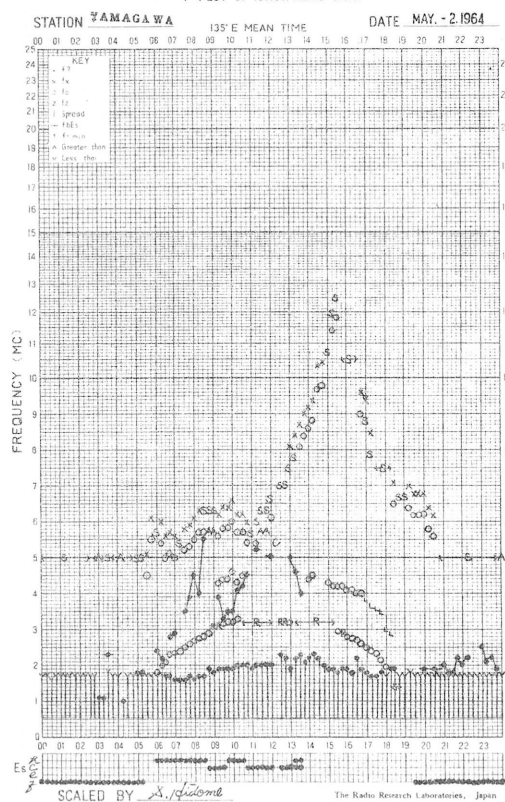
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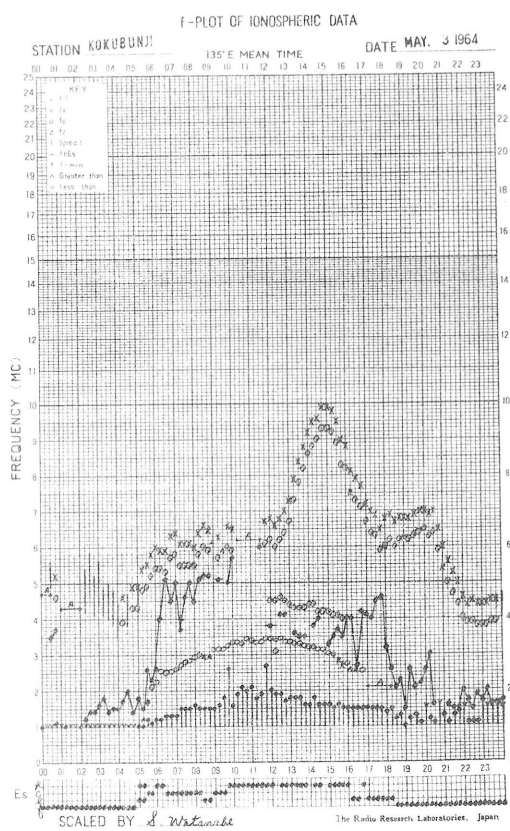
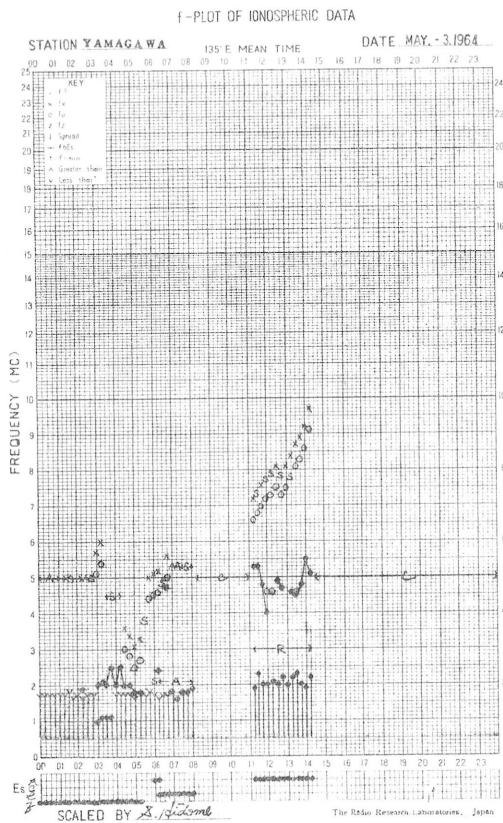
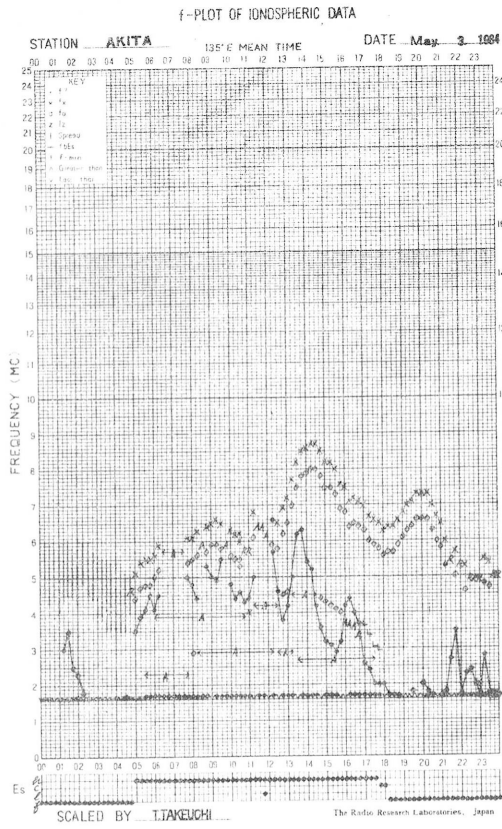
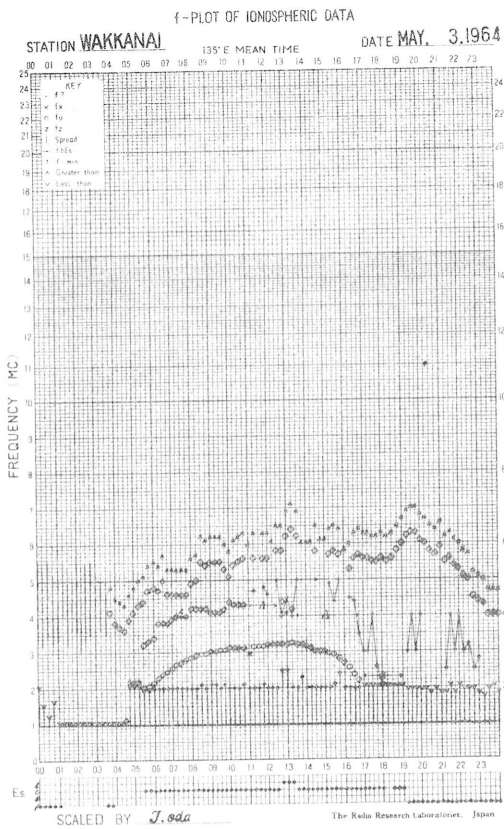


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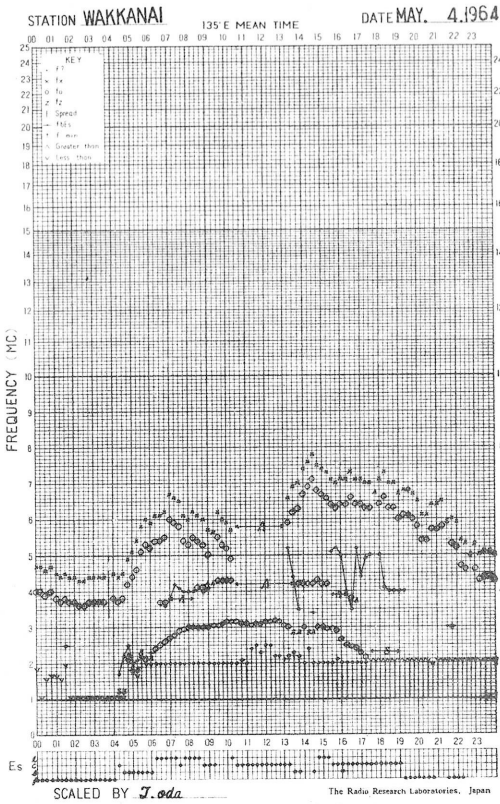


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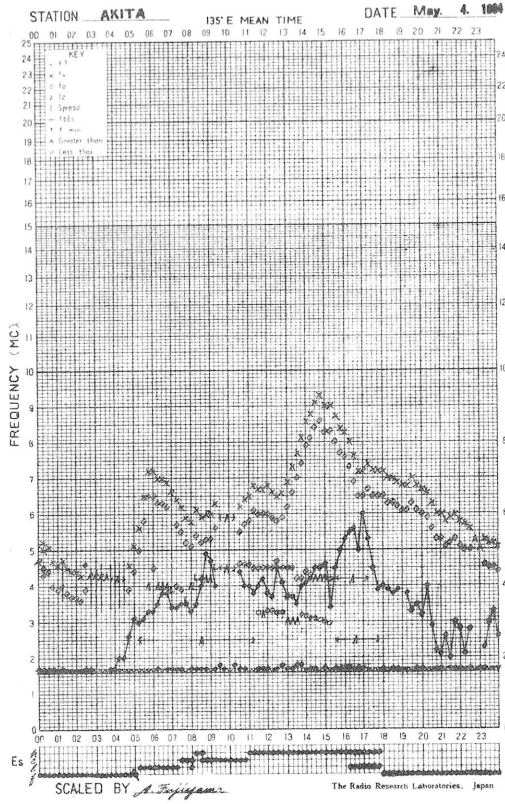




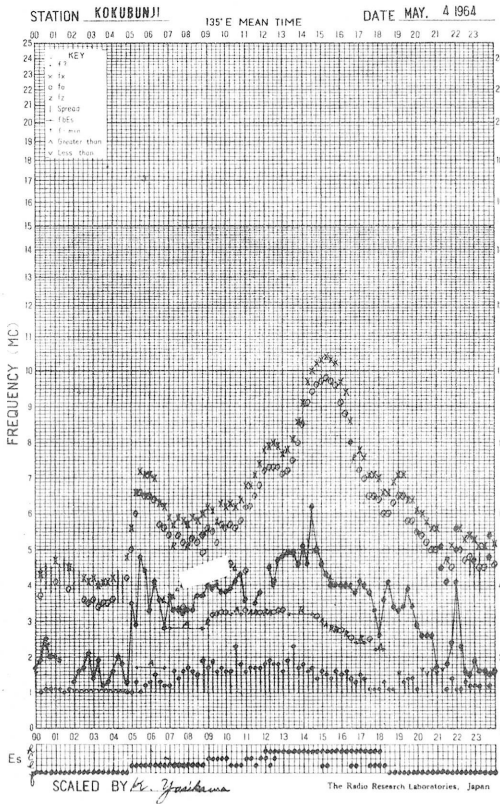
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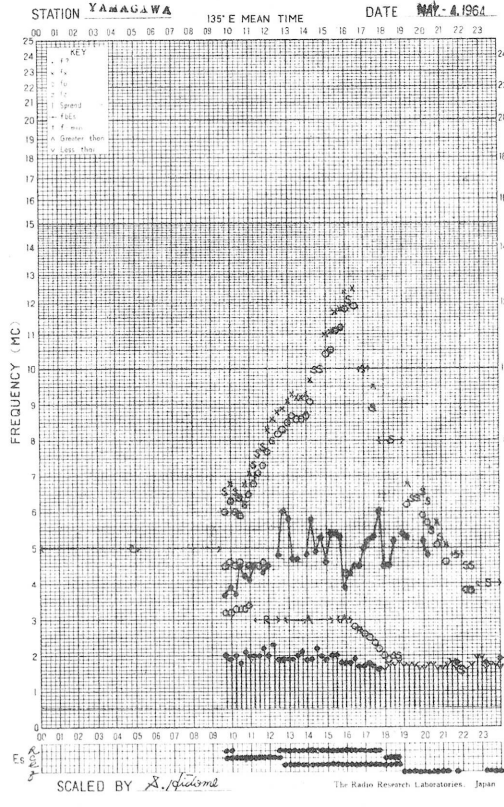
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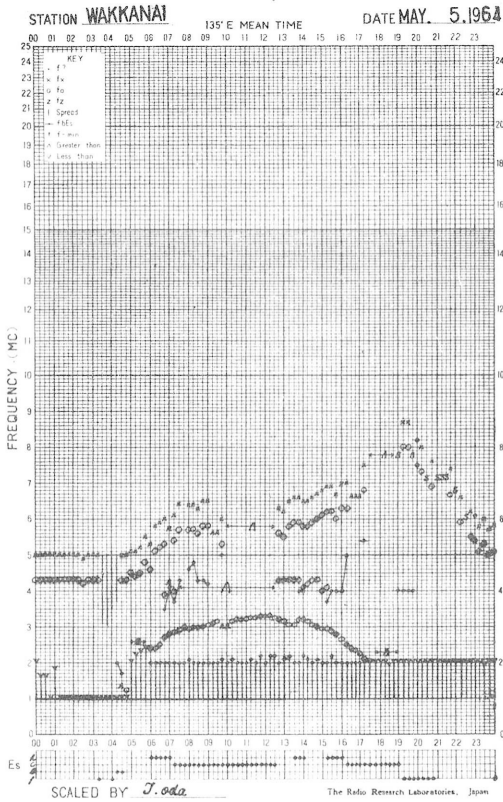
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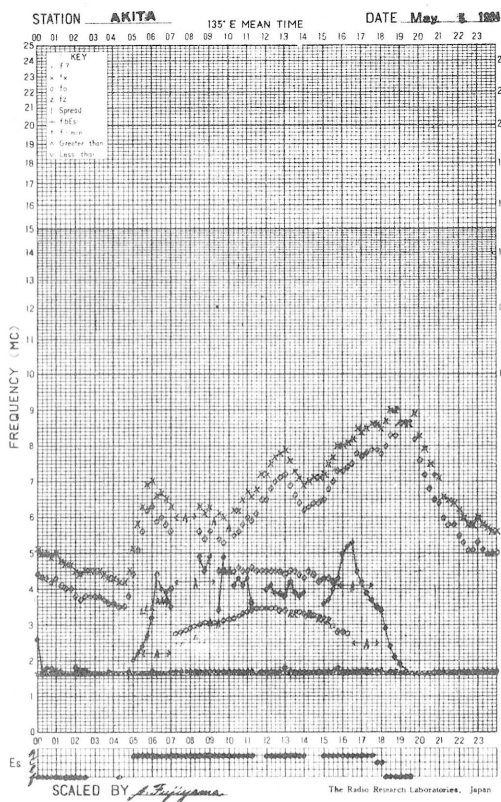
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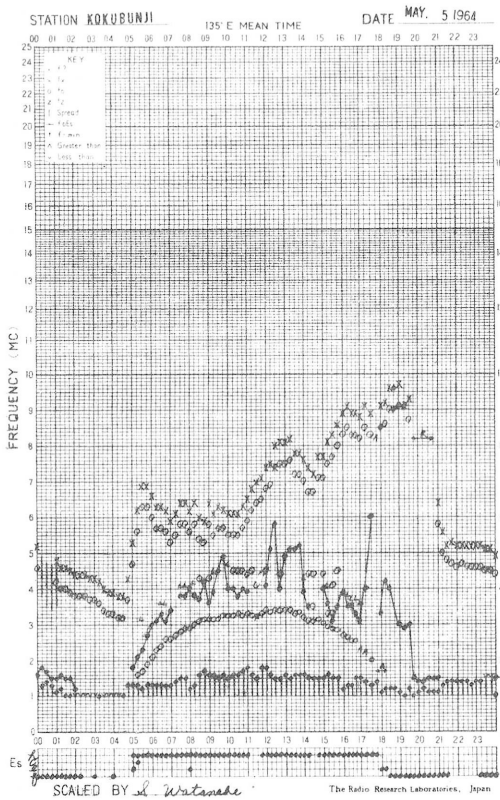
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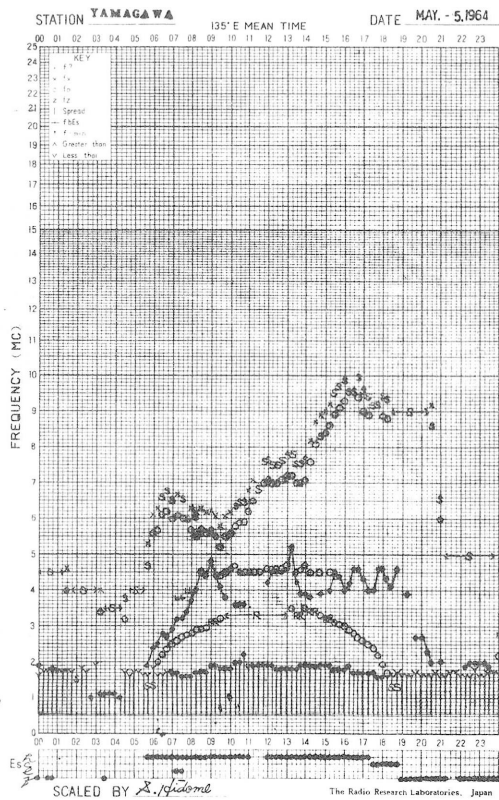
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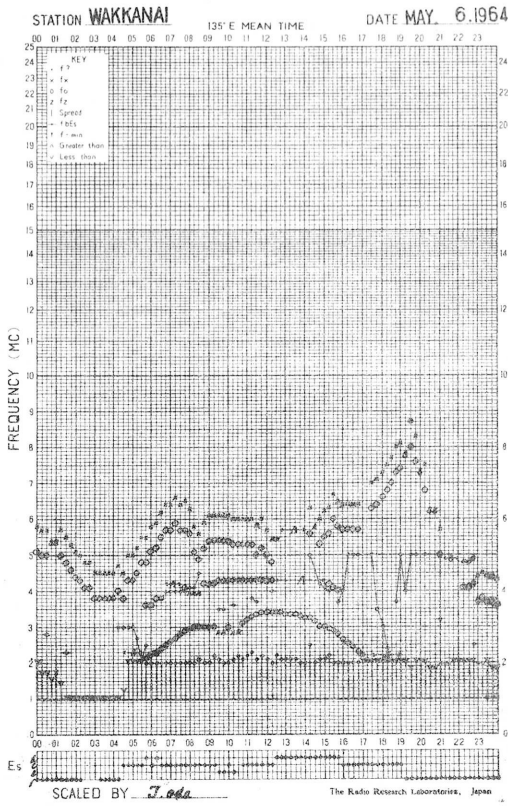
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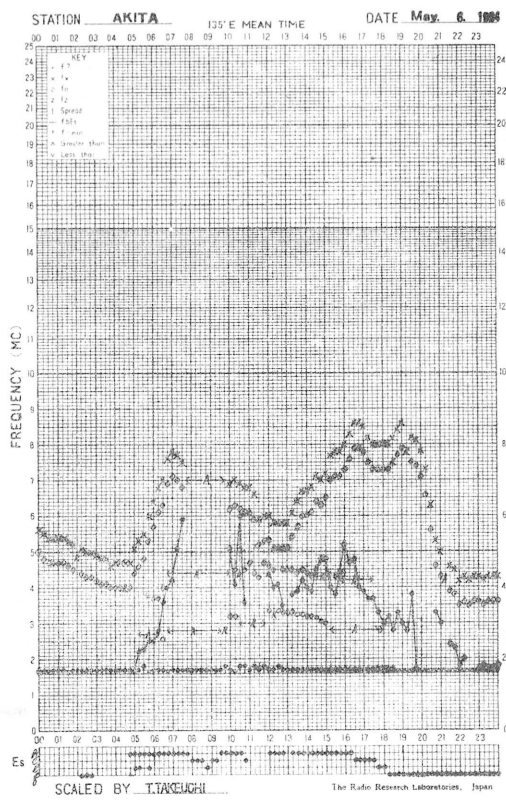
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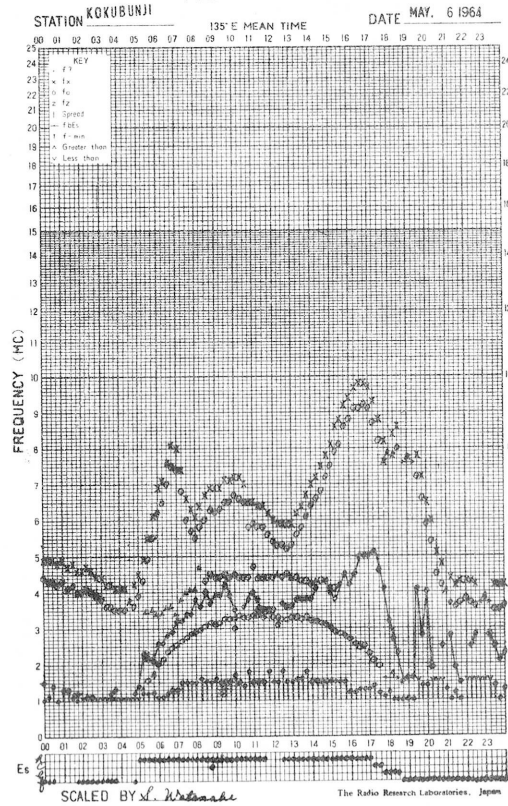
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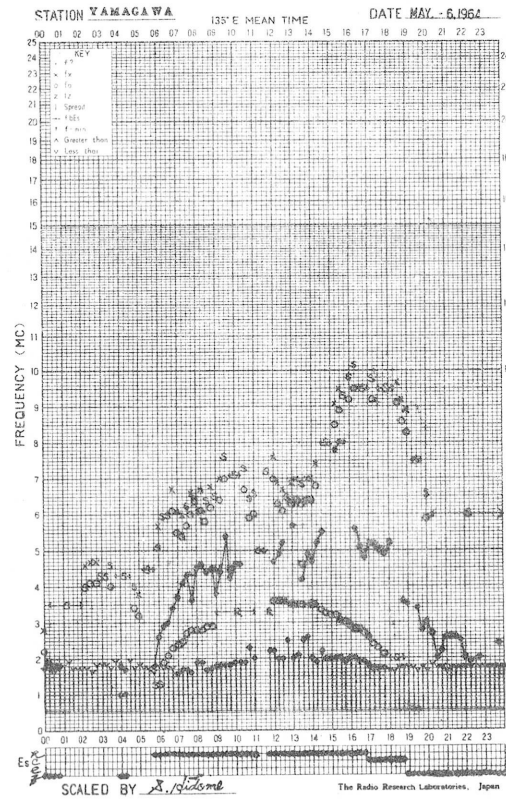
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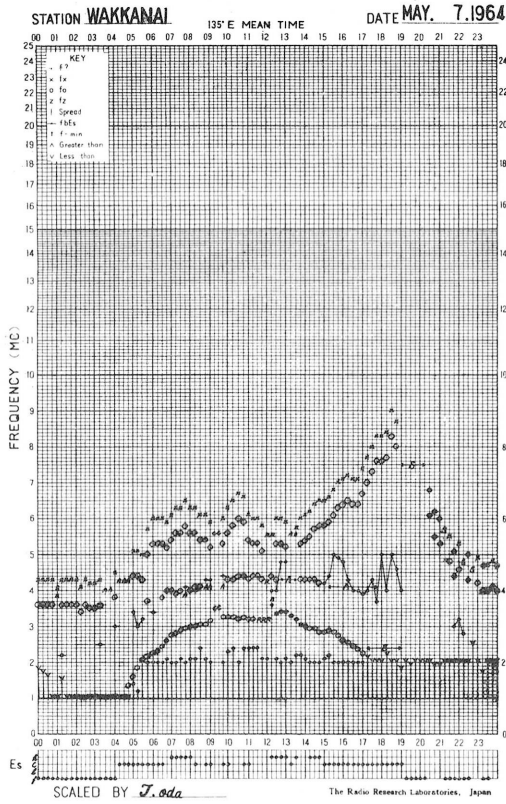
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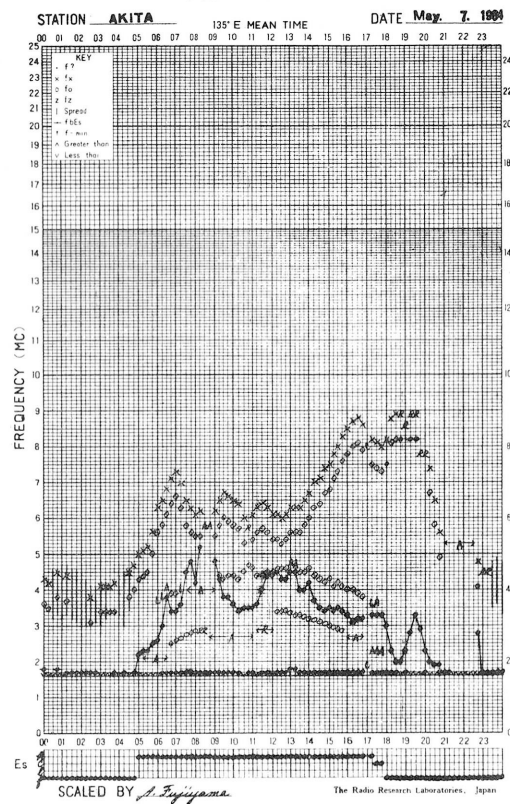
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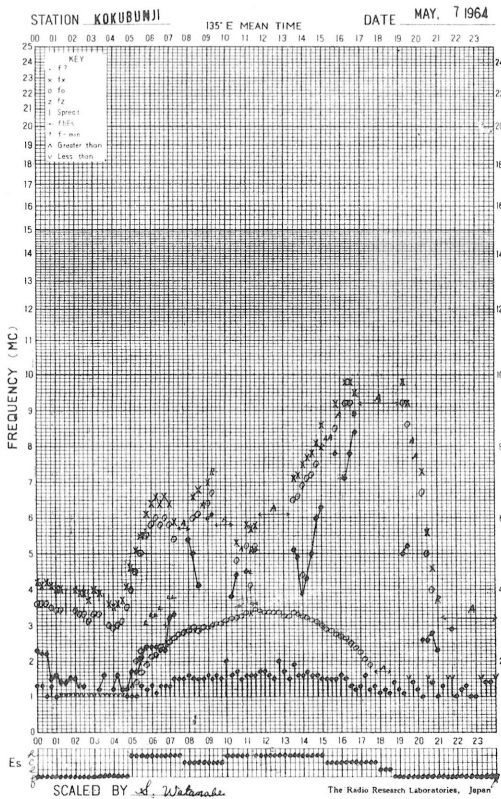
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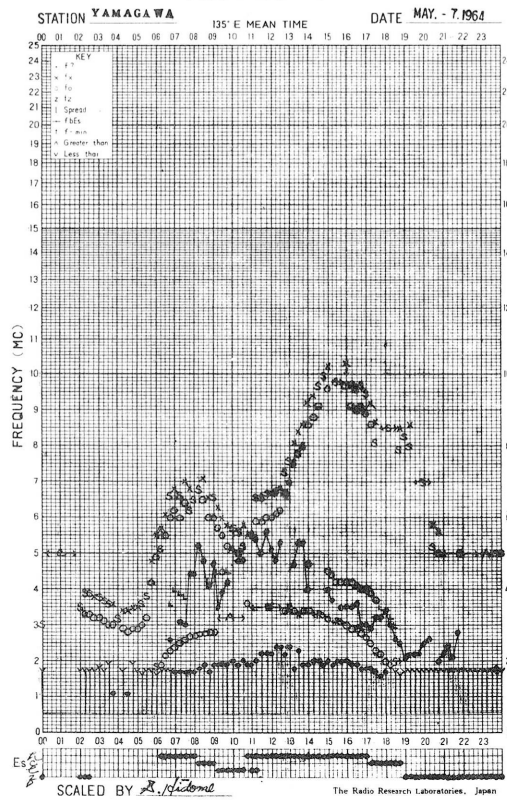
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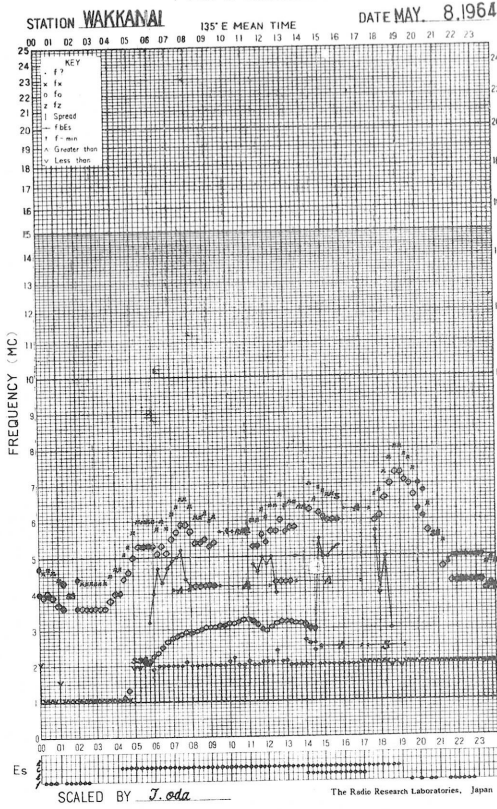
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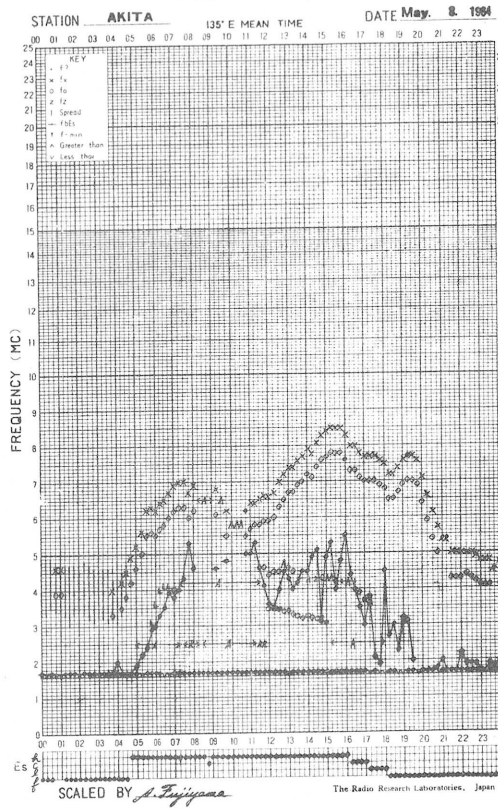
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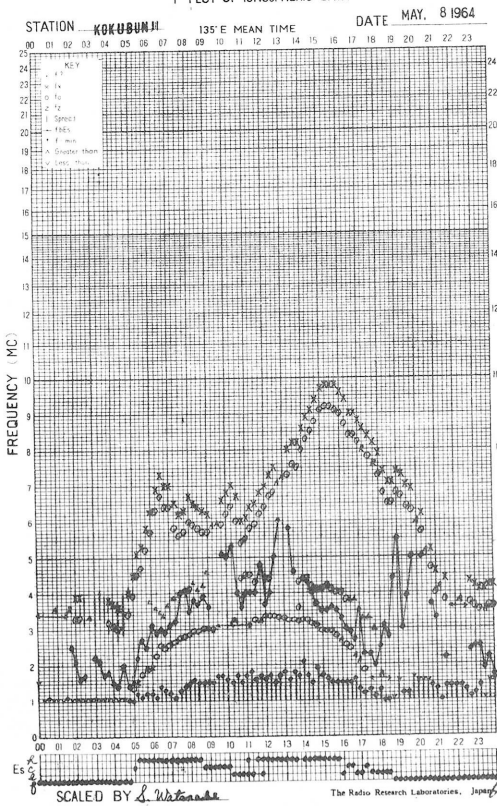
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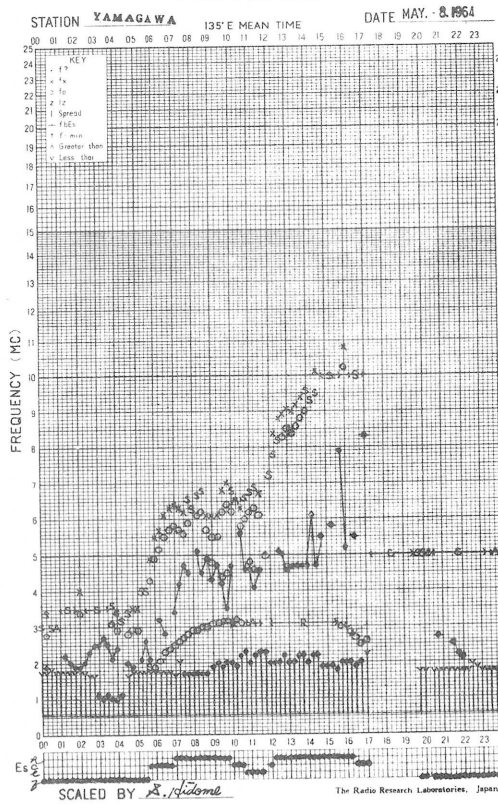
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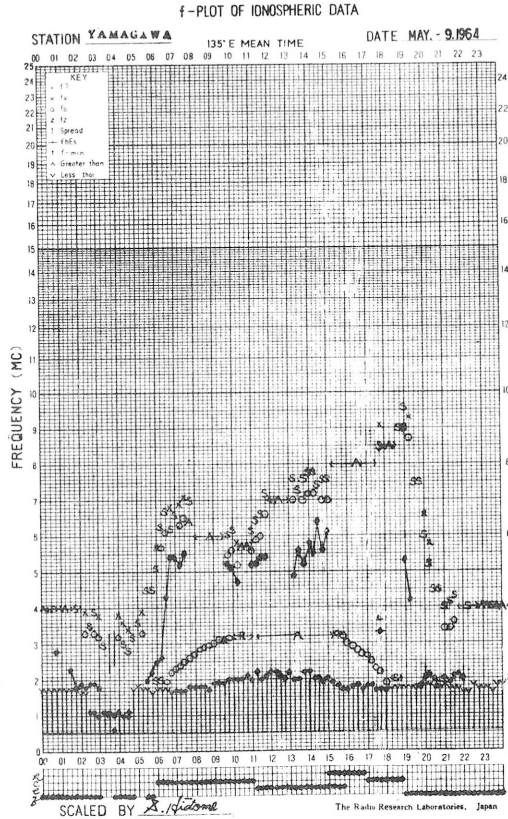
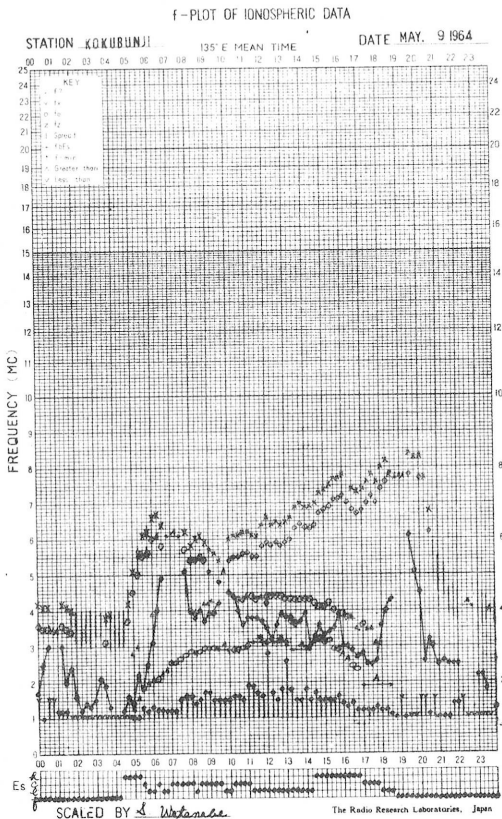
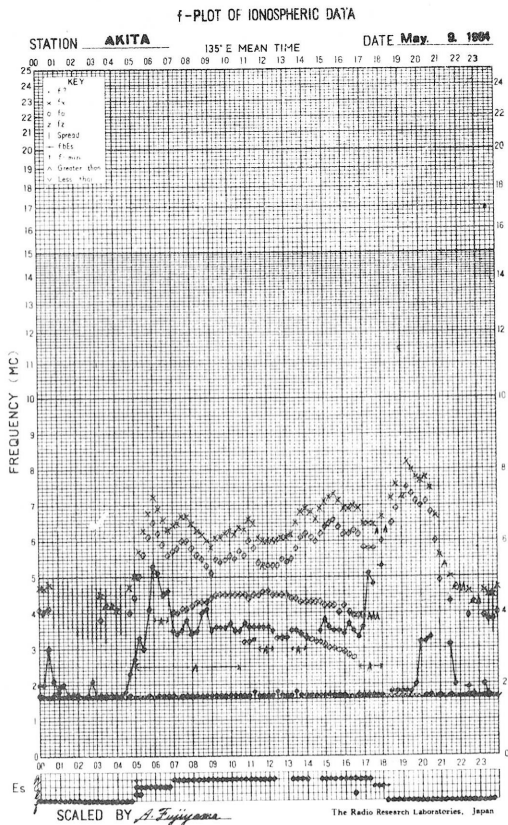
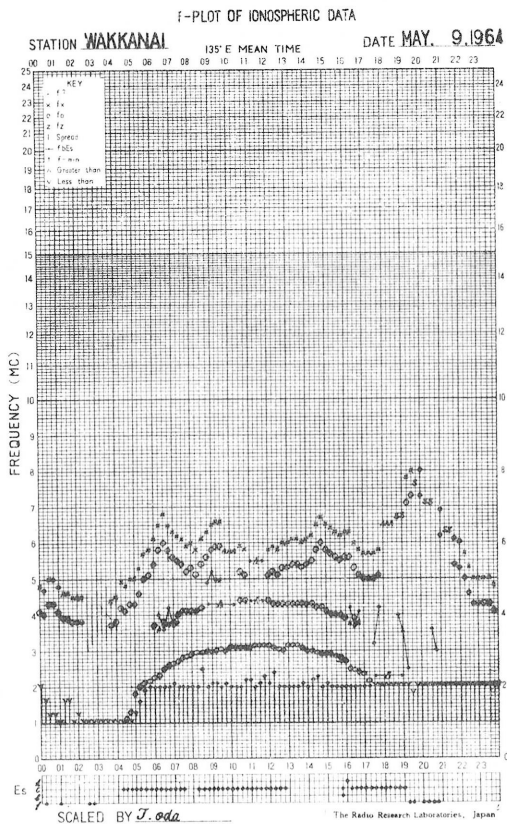


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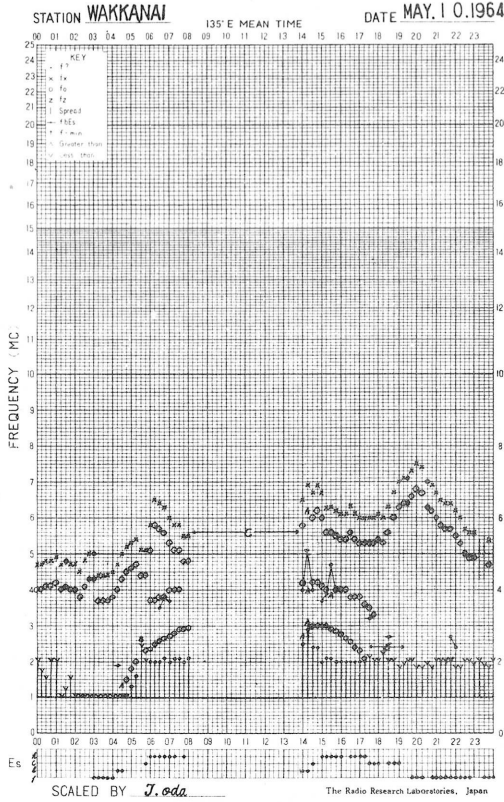


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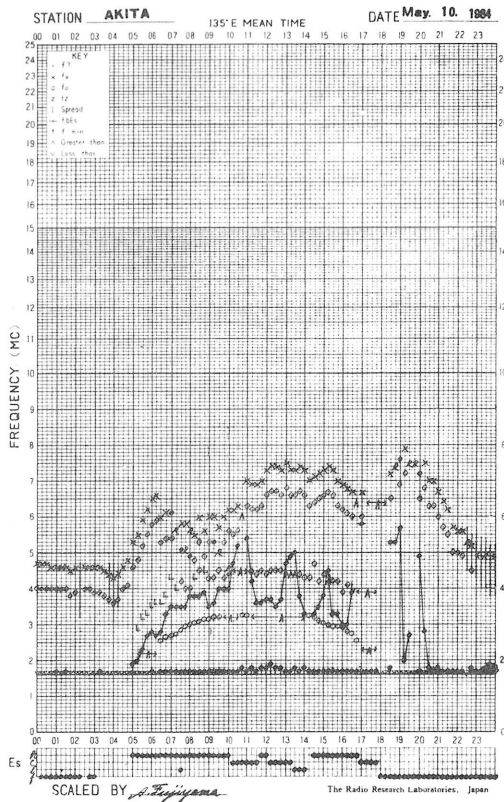




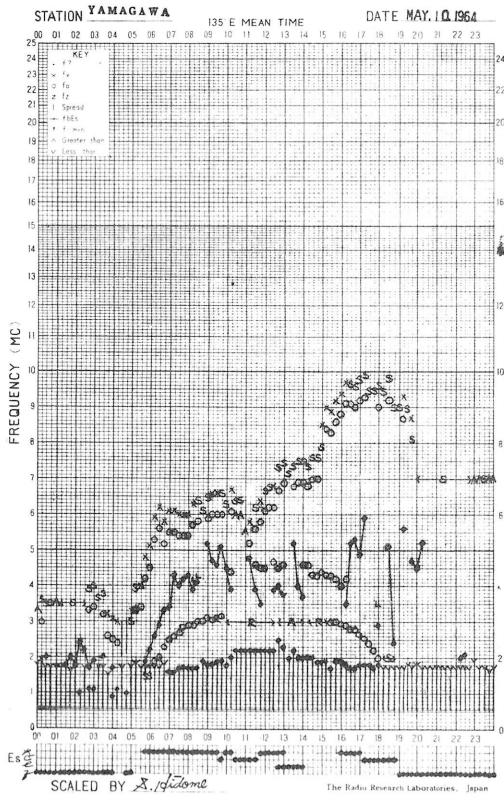
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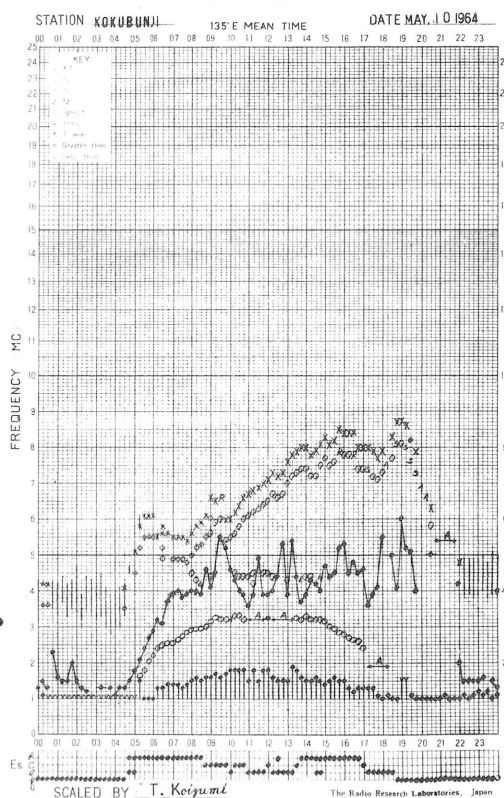
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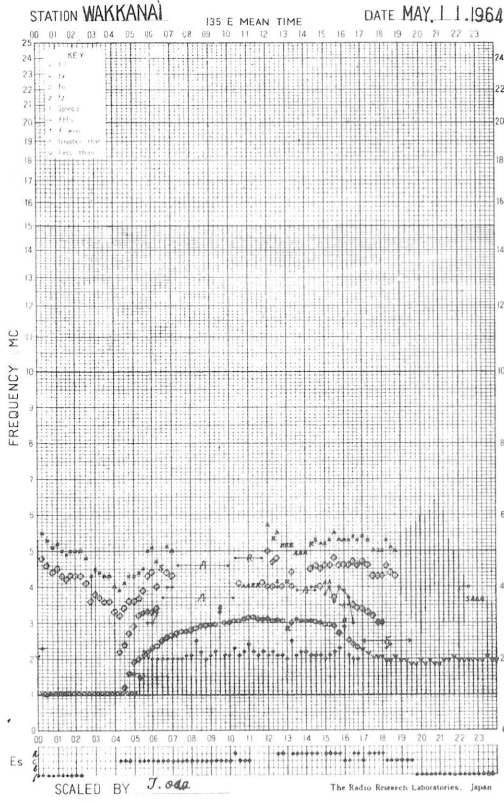
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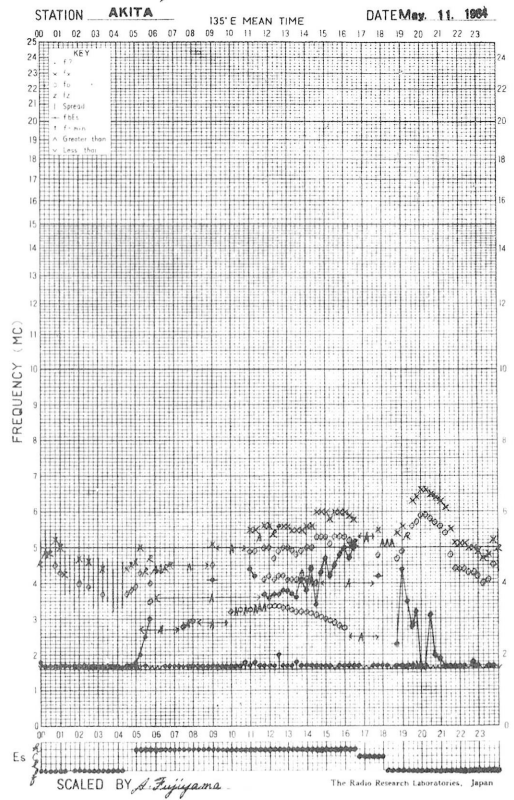
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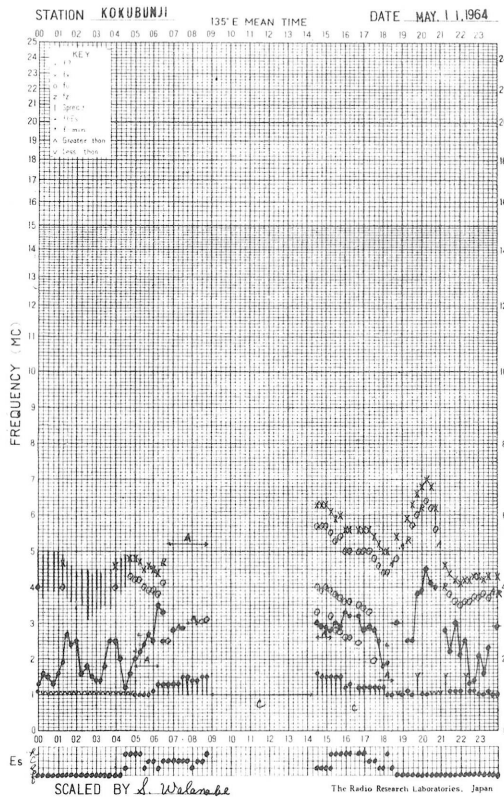
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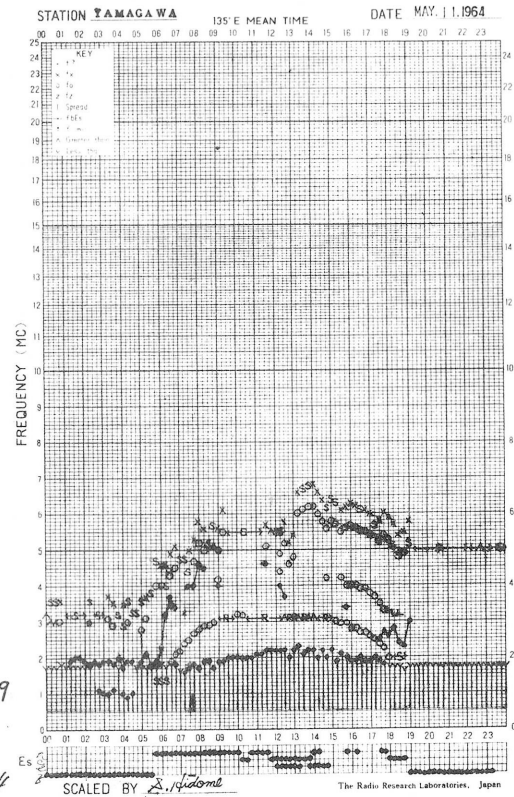
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f-PLOT OF IONOSPHERIC DATA



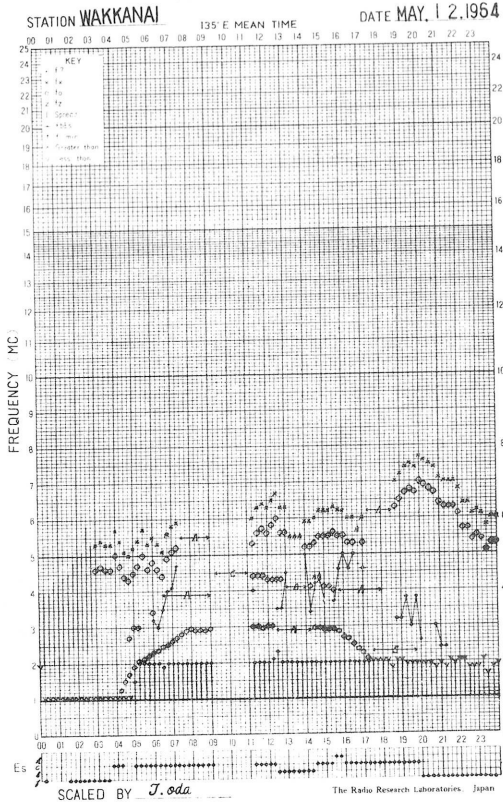
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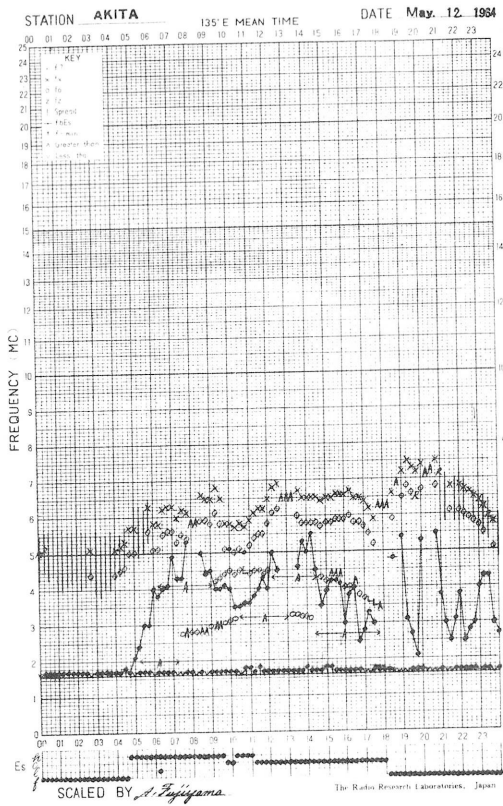
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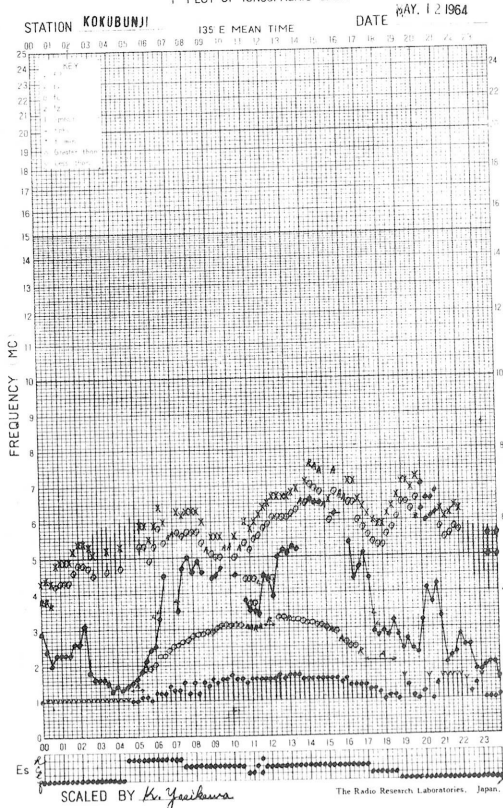
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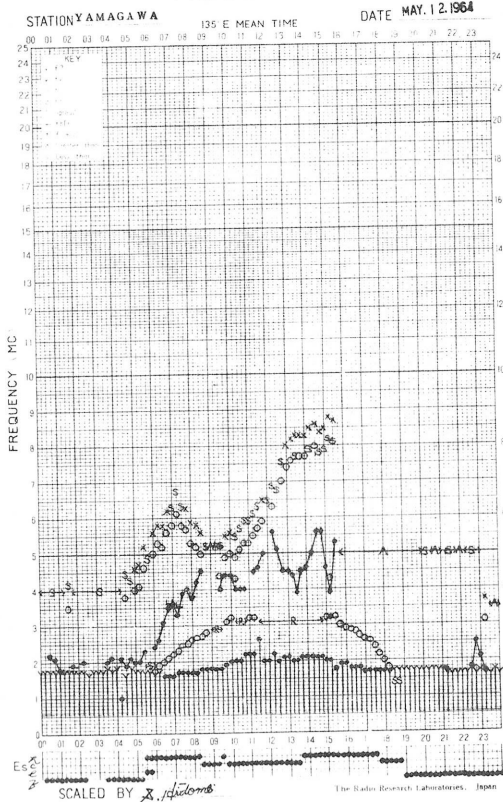
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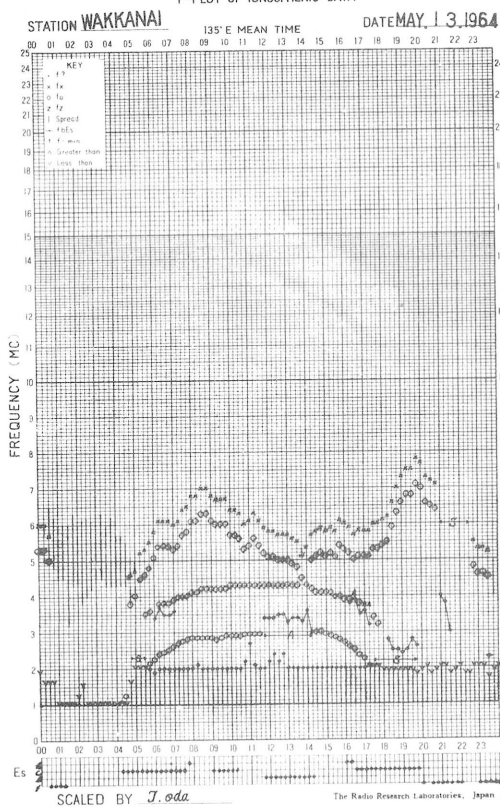
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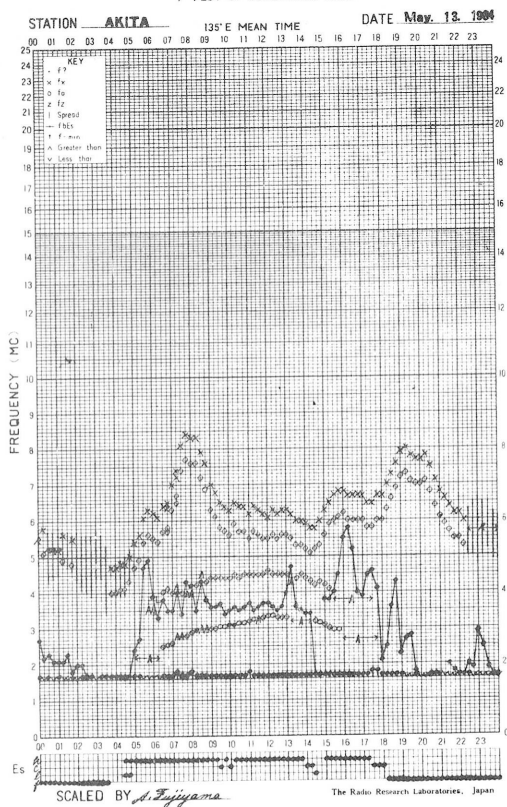
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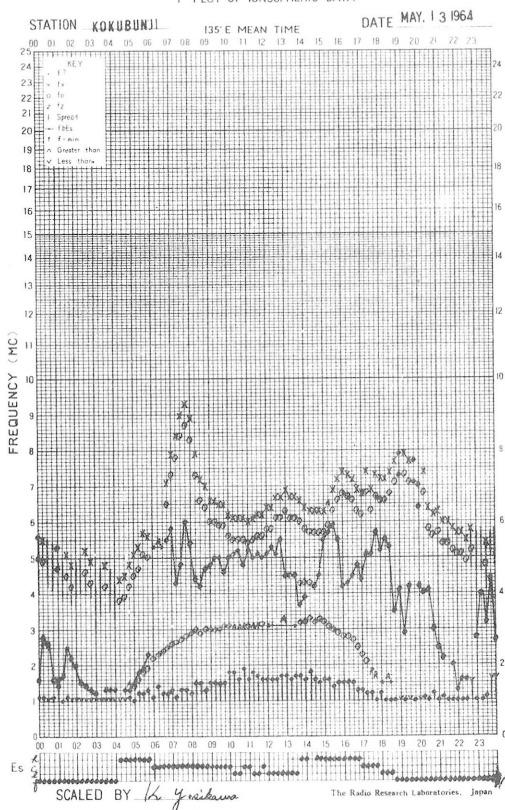
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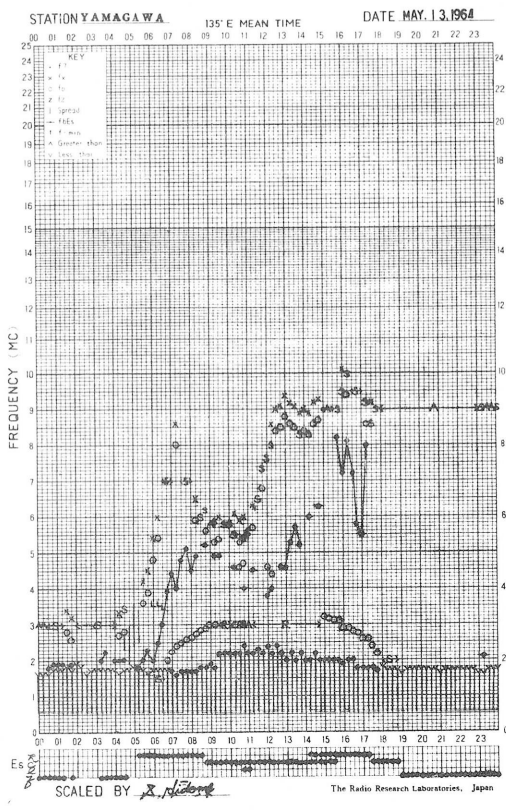
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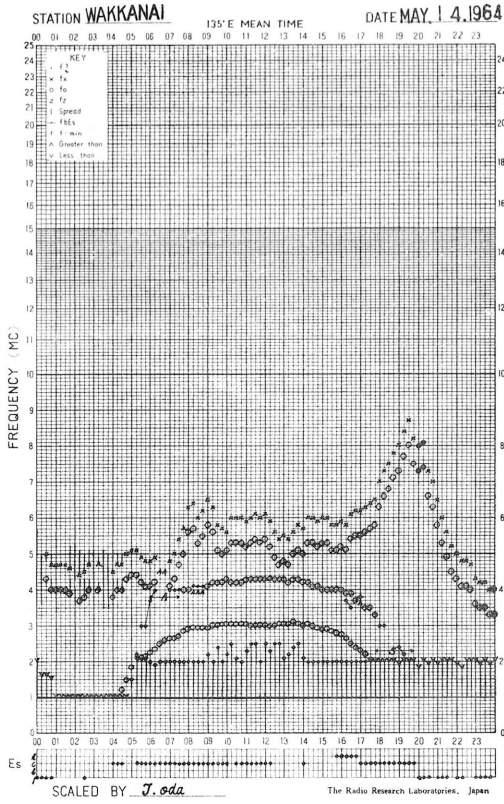
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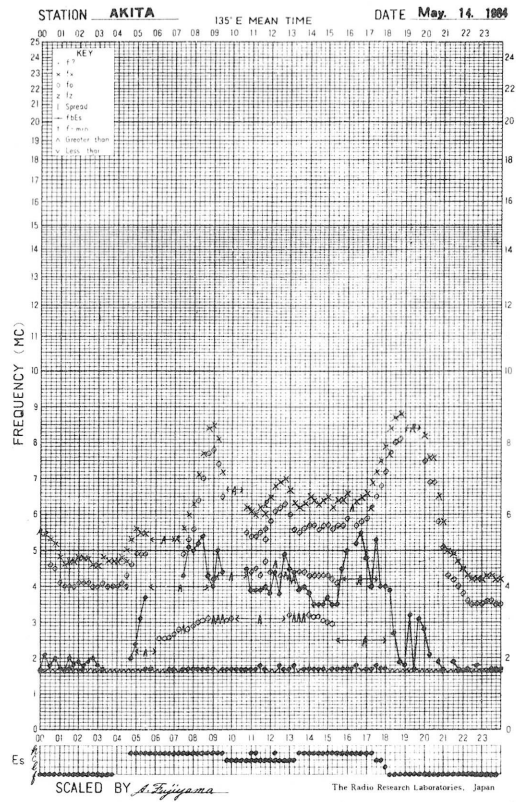
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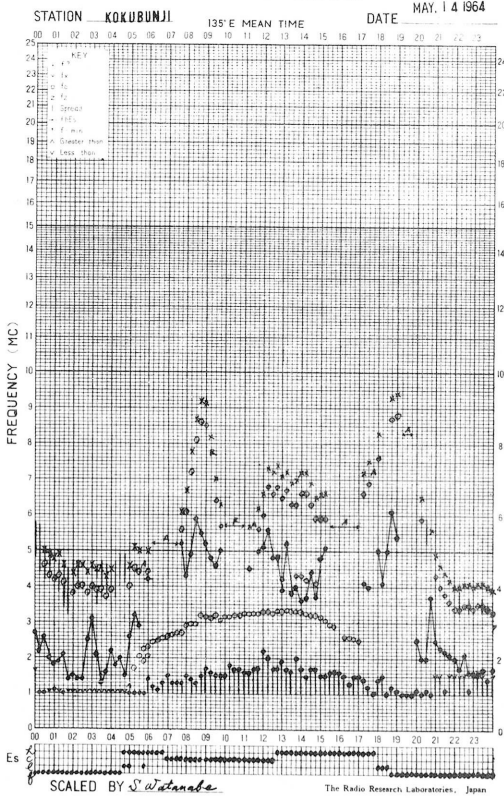
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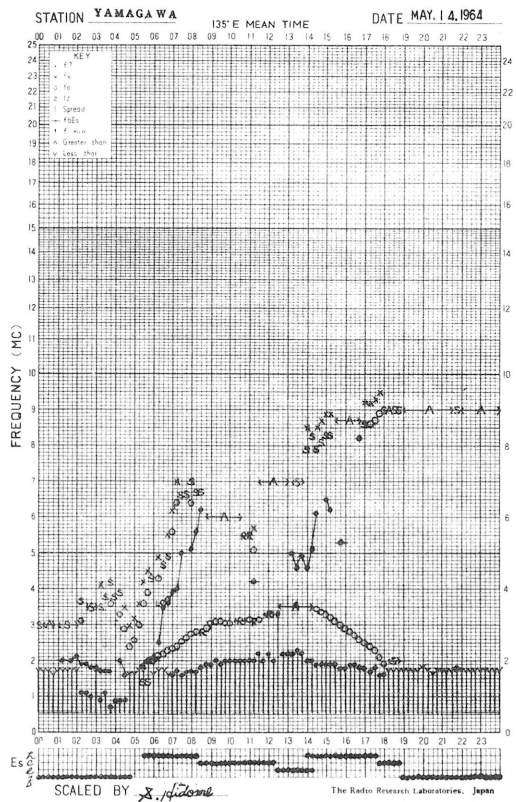
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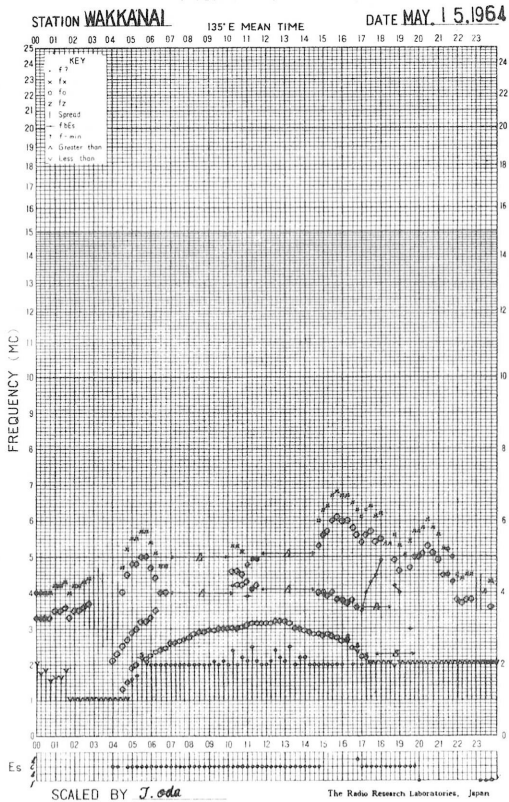
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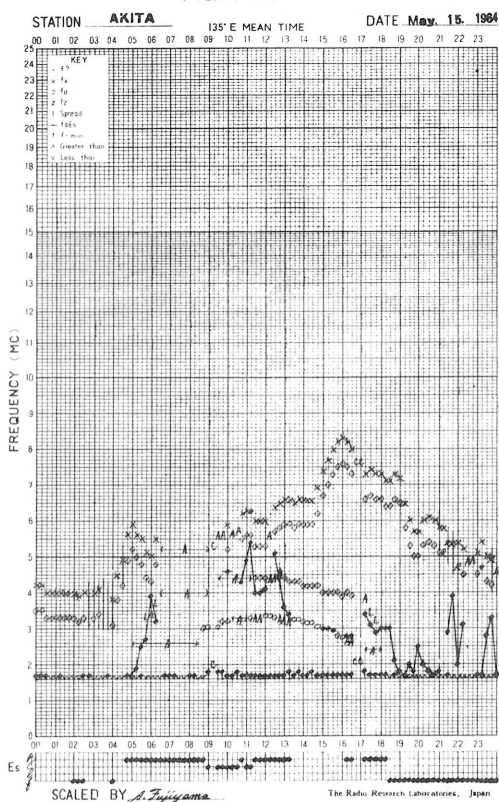
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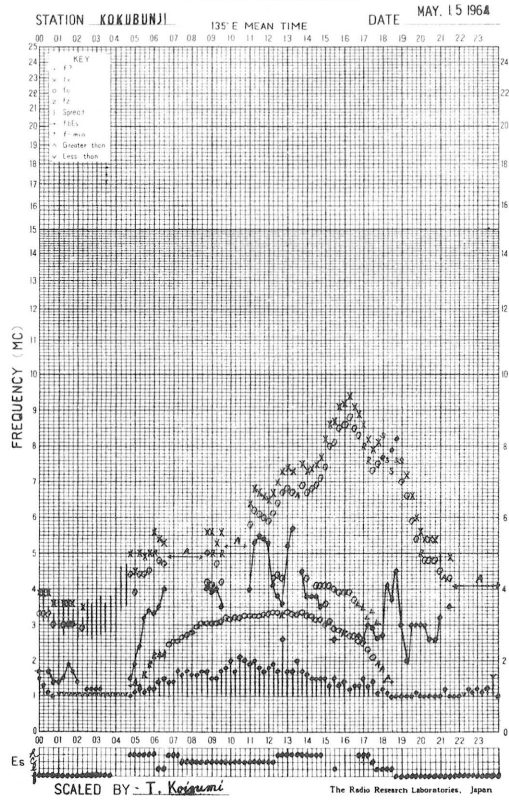
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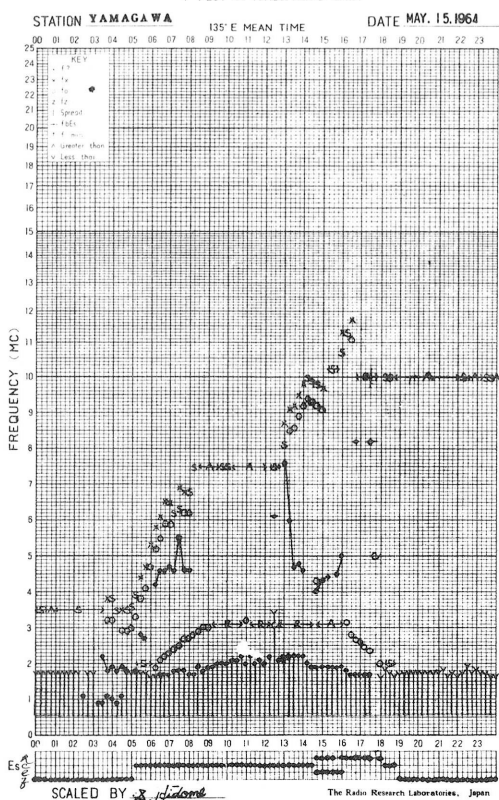
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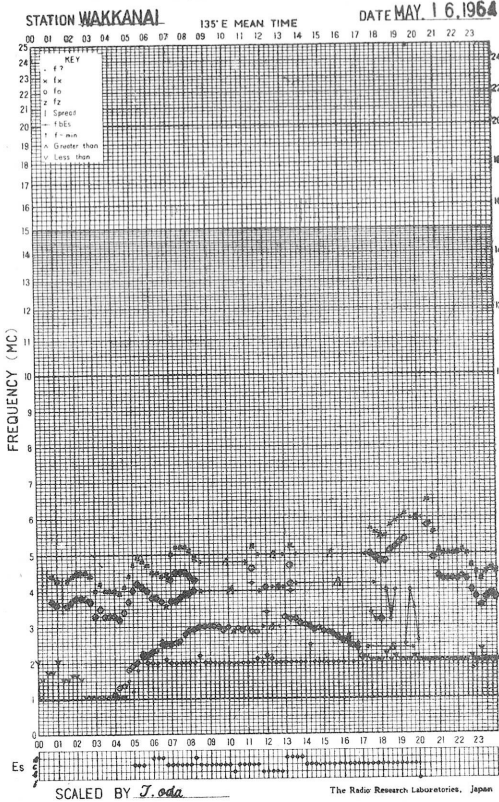
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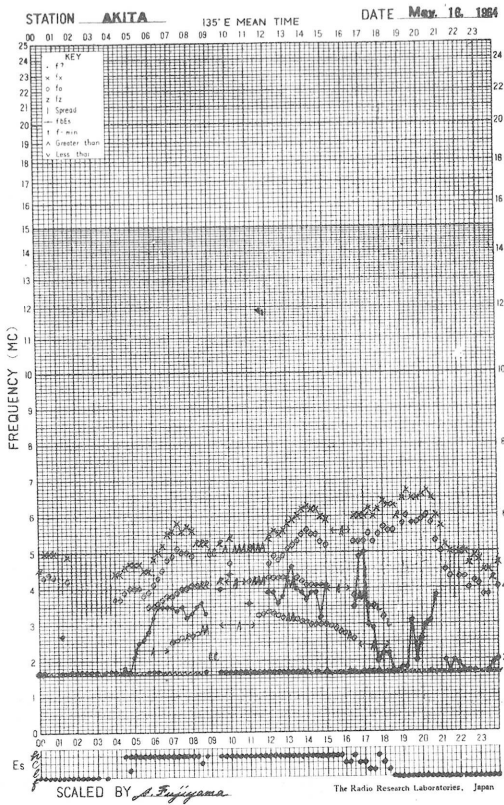
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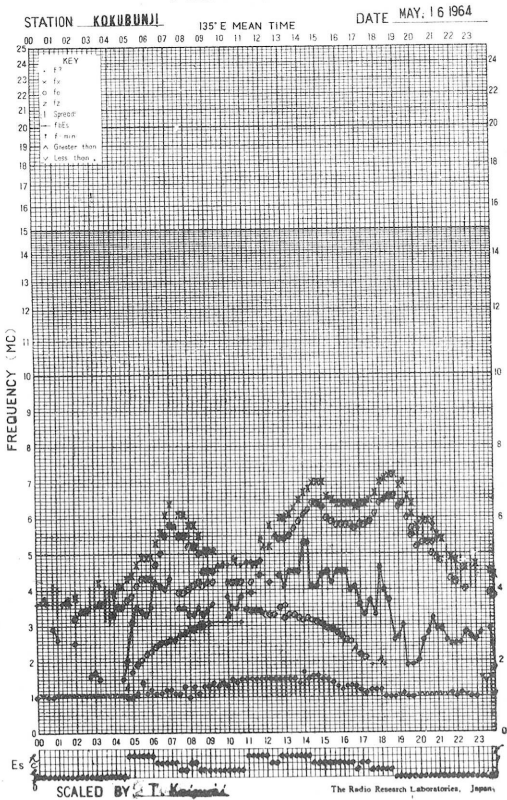
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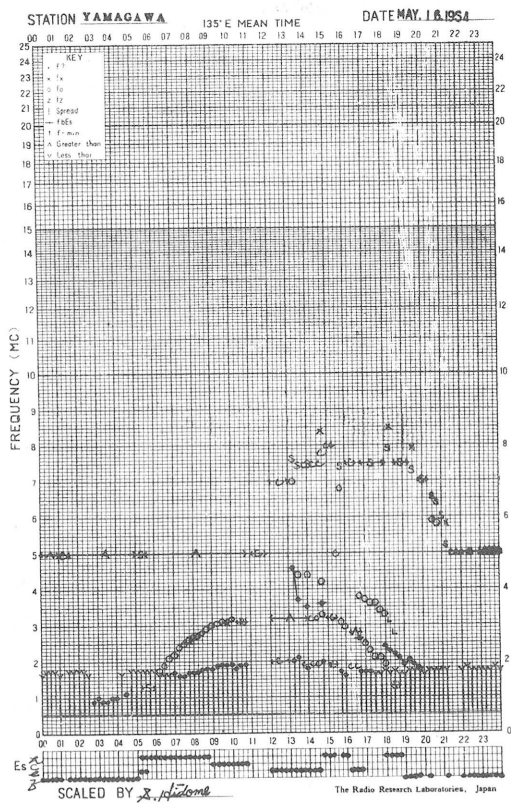
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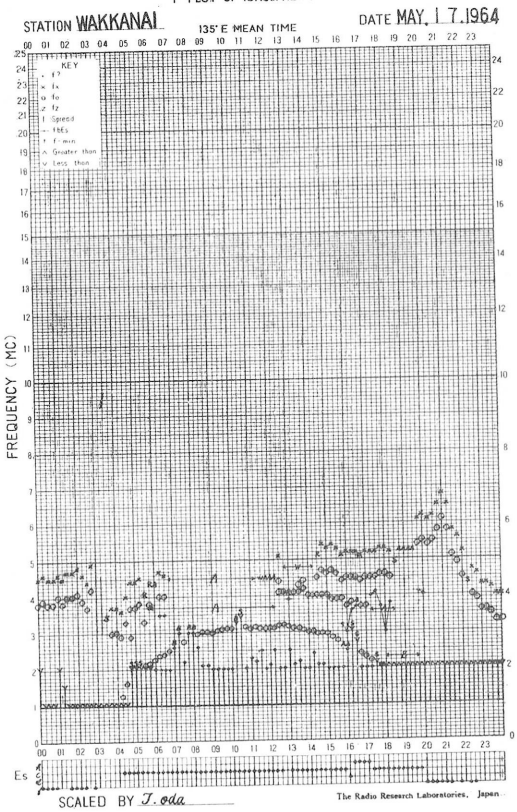
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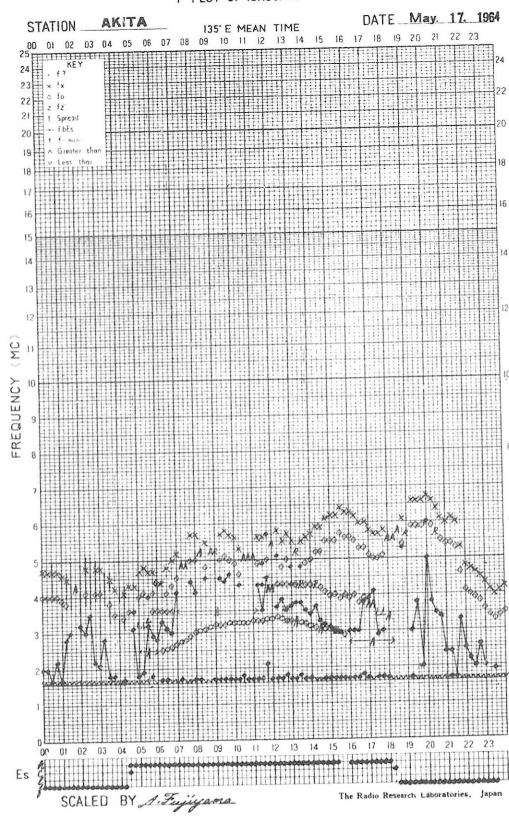
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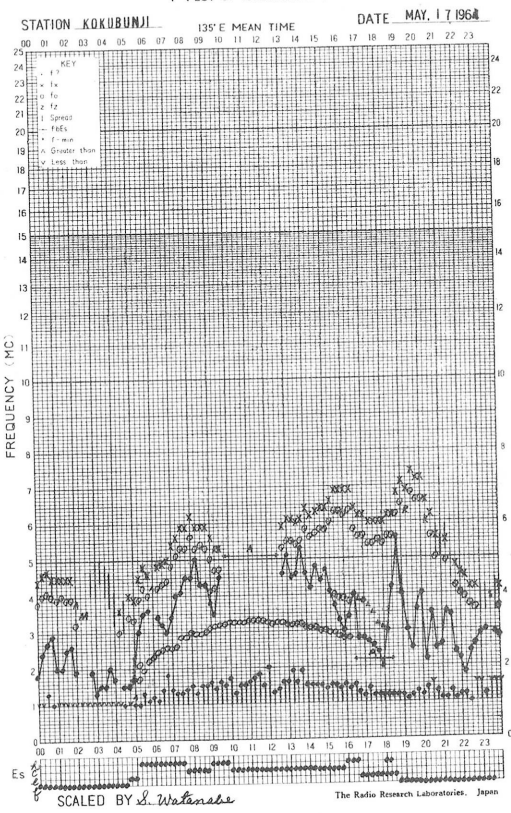
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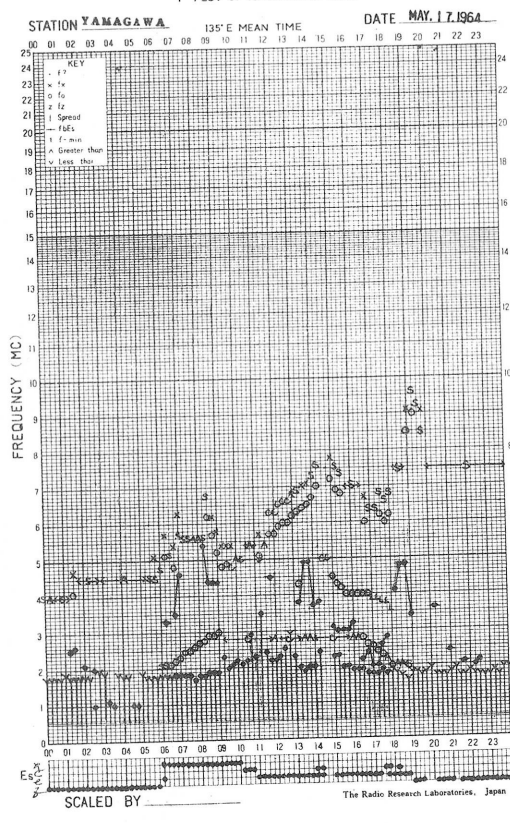
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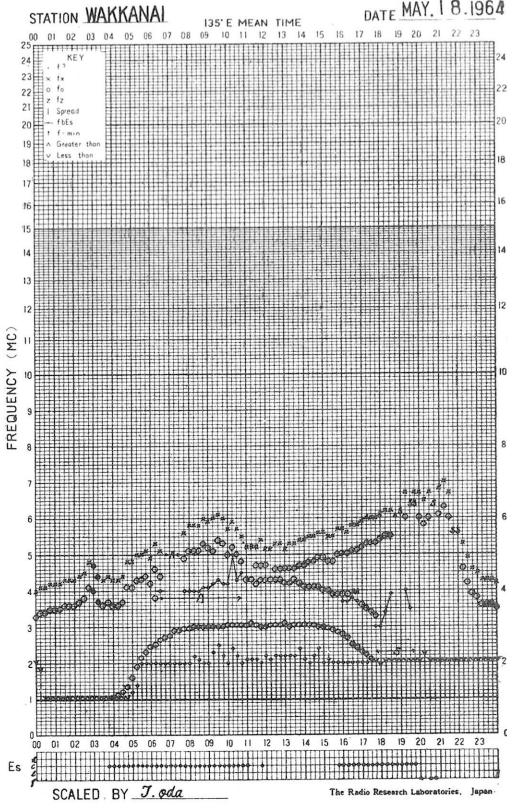
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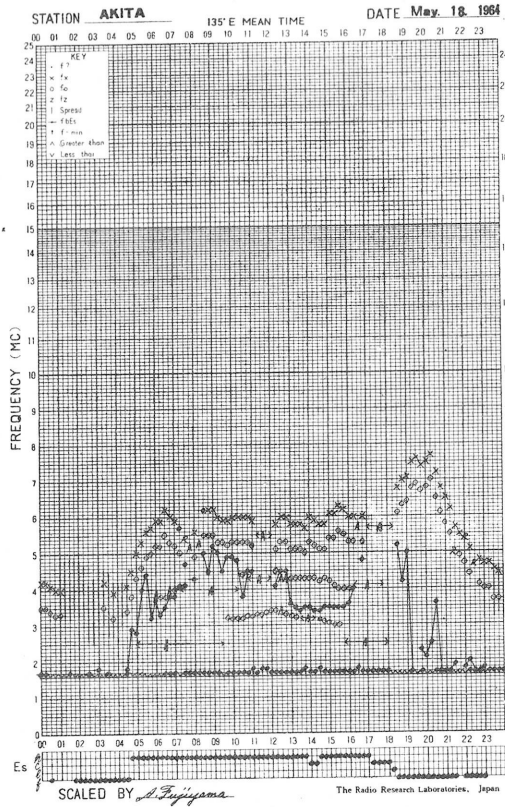
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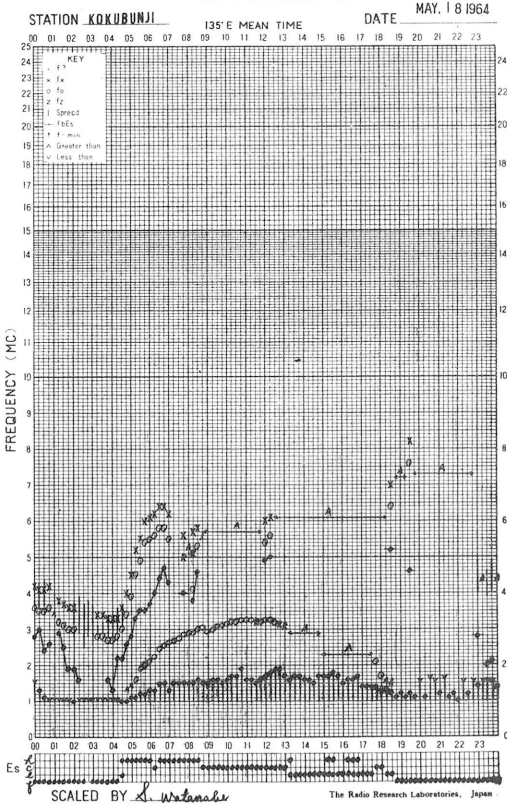
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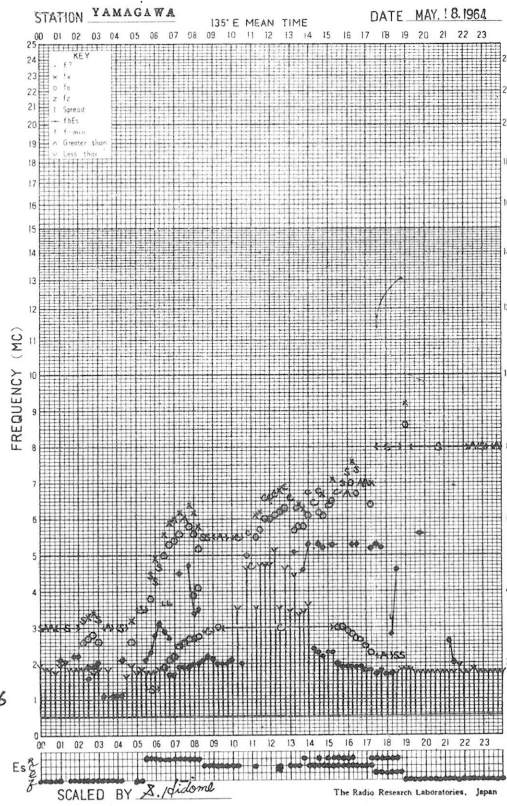
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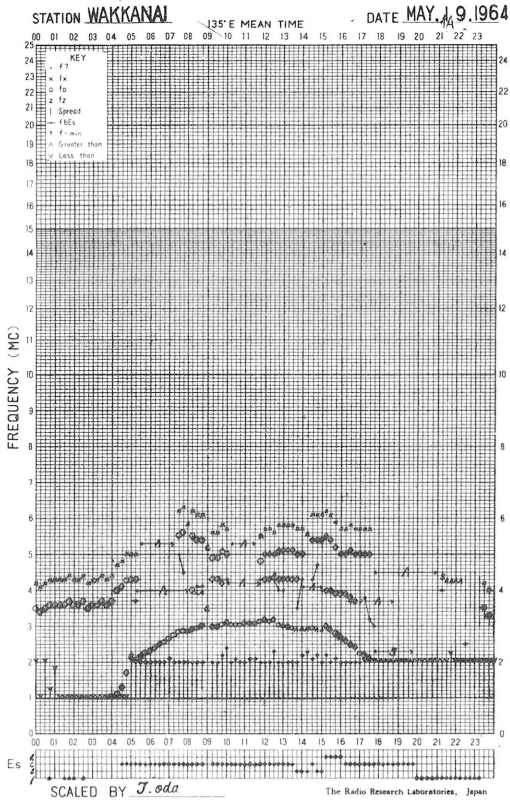
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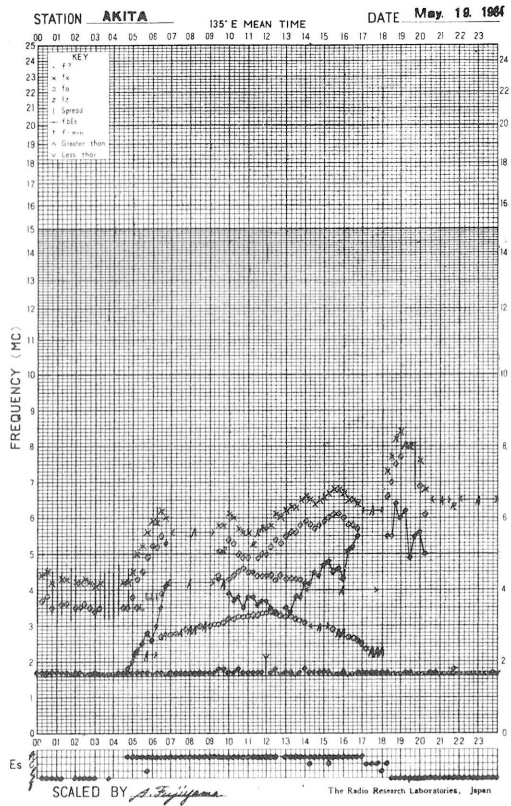
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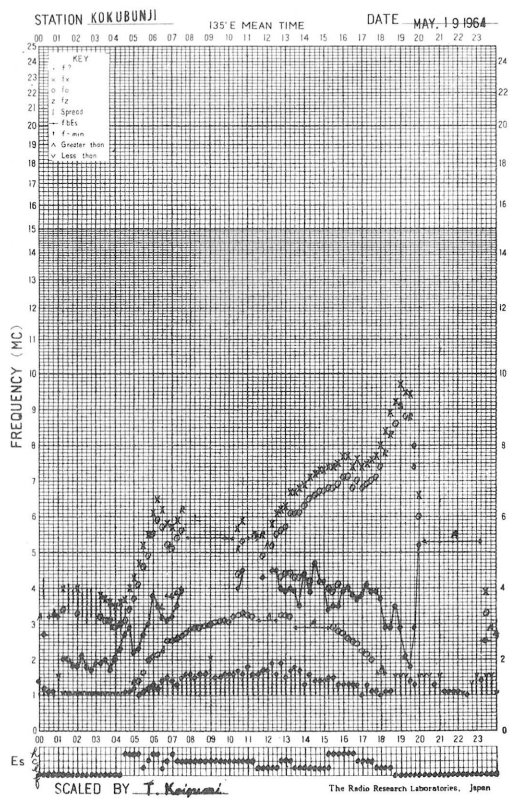
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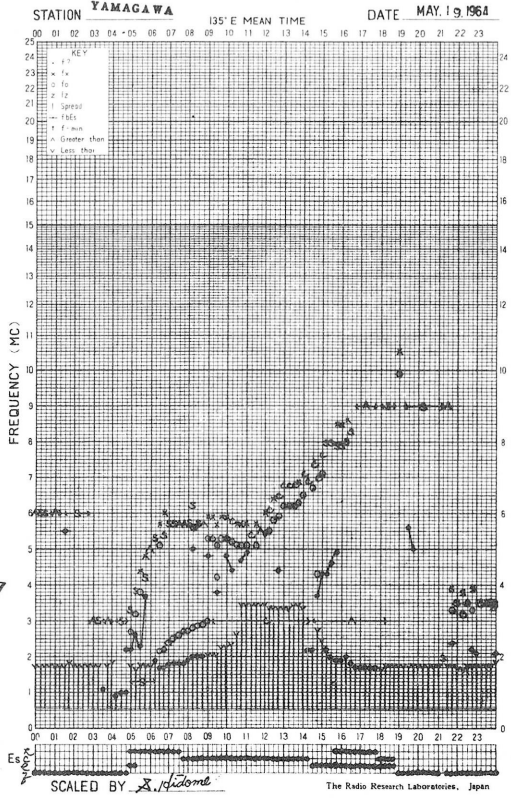
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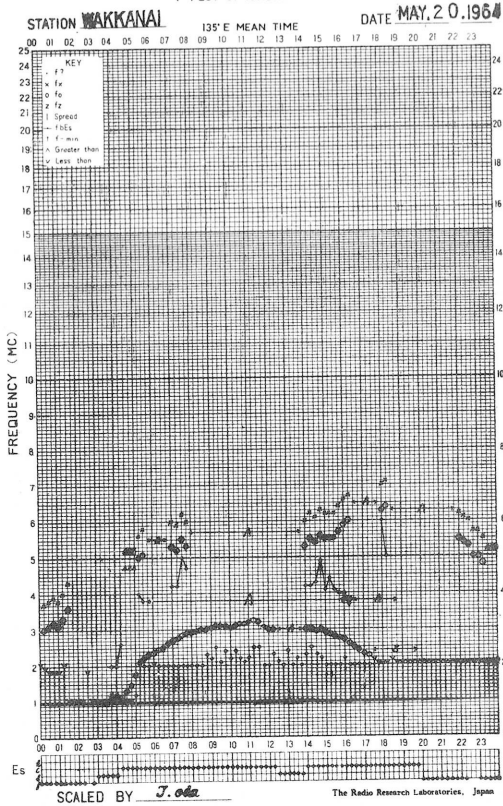
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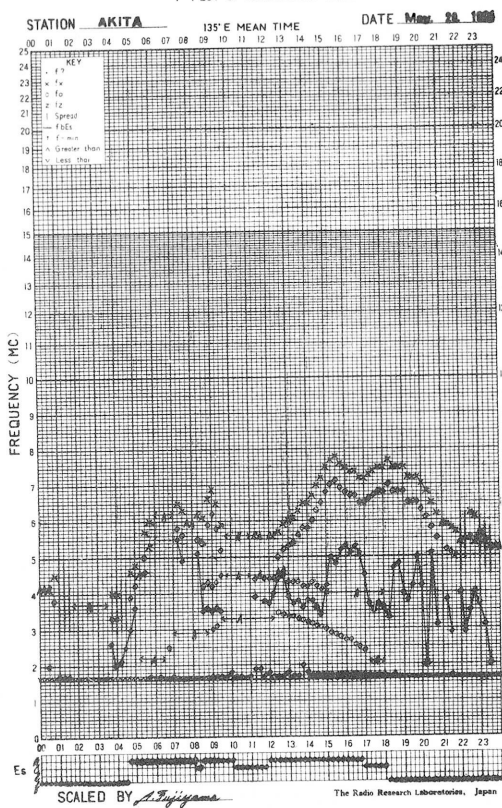
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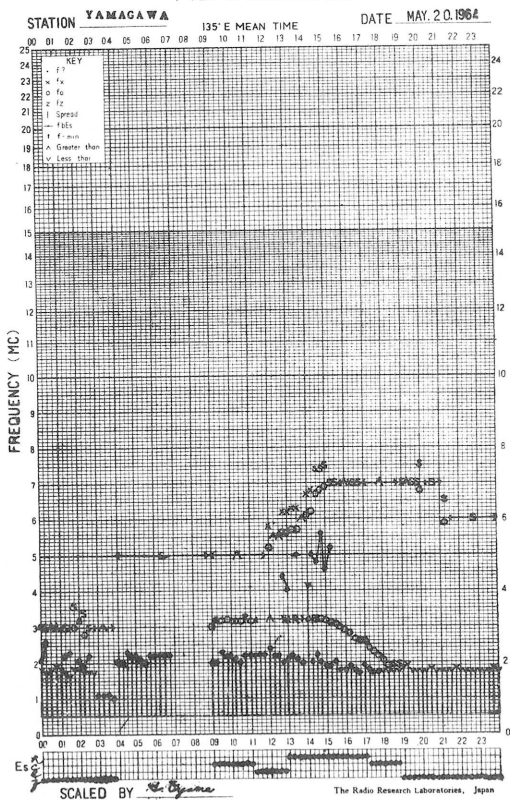
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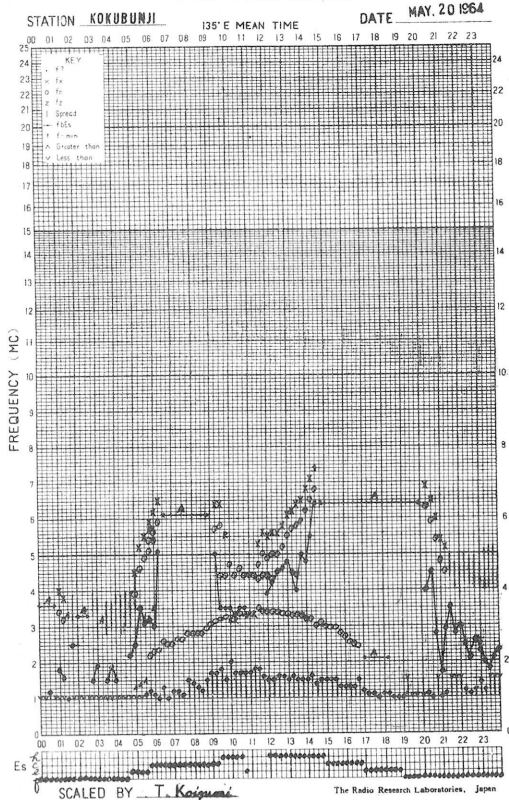
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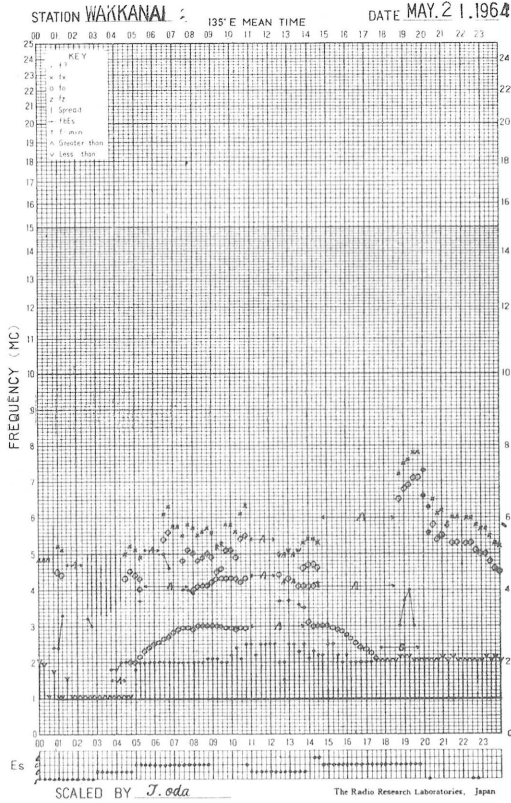
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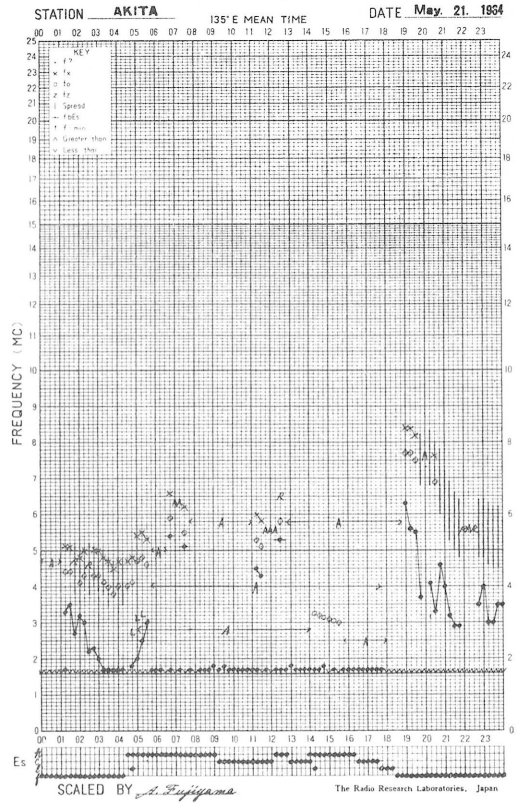
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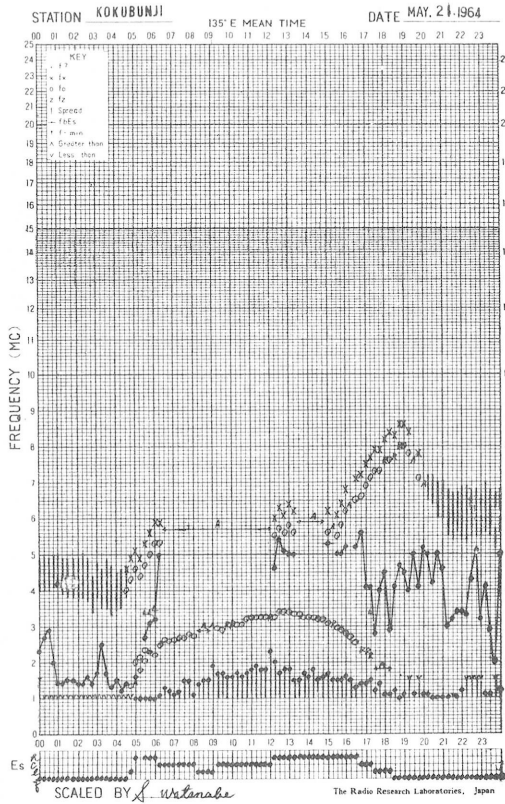
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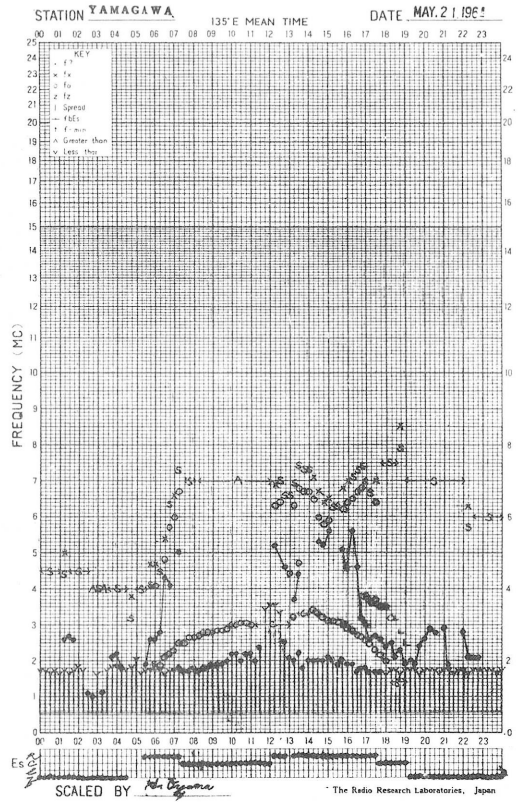
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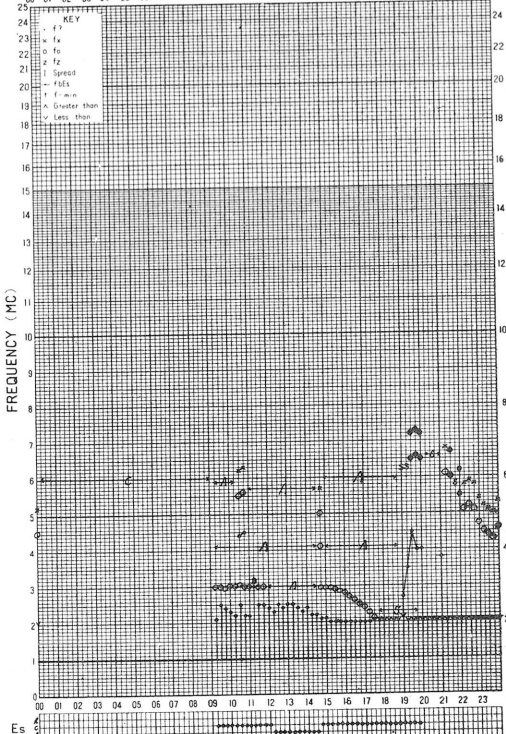


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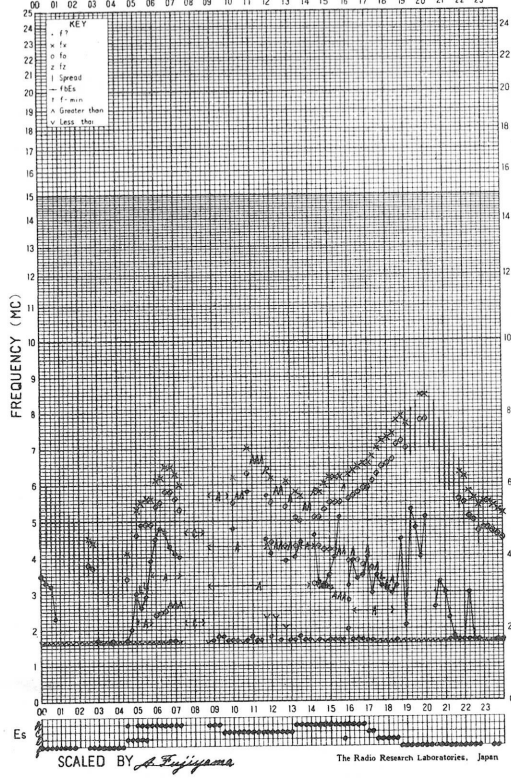
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STATION WAKKANAI 135° E MEAN TIME DATE MAY 22 1964



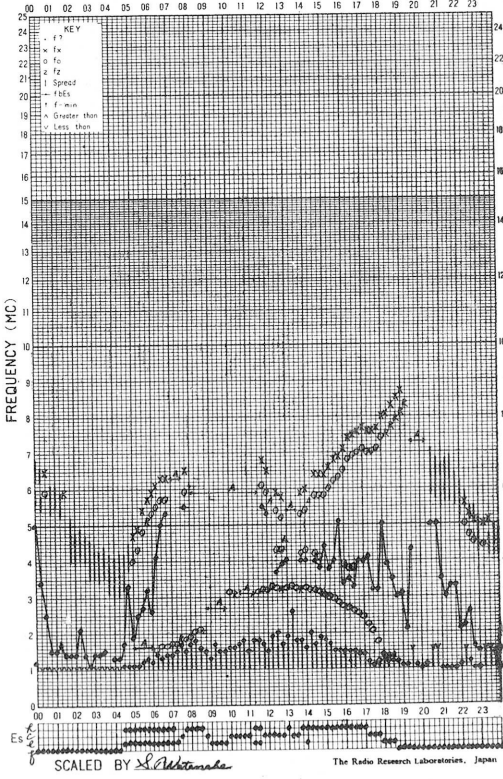
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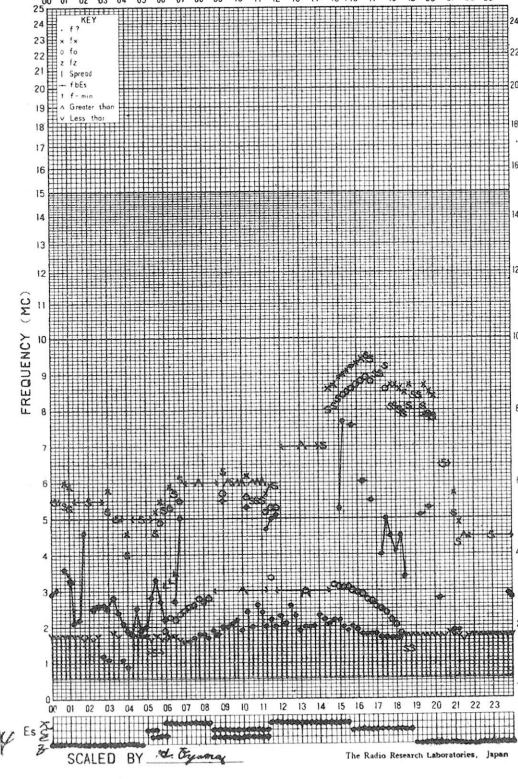
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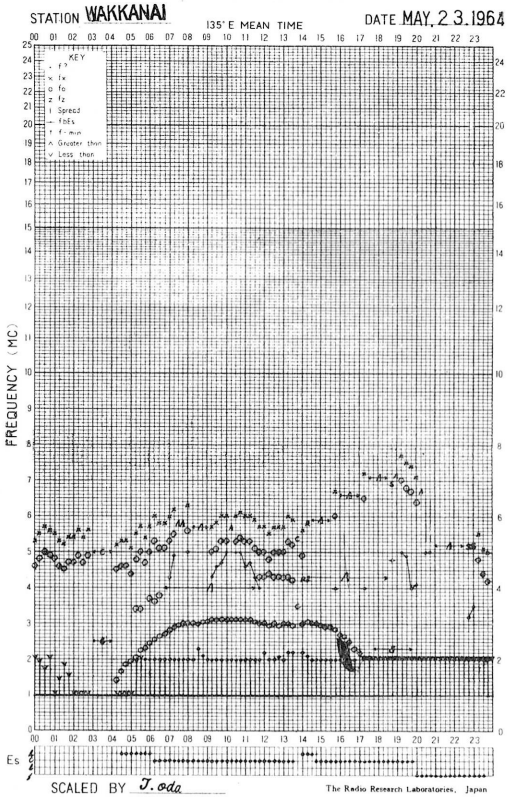


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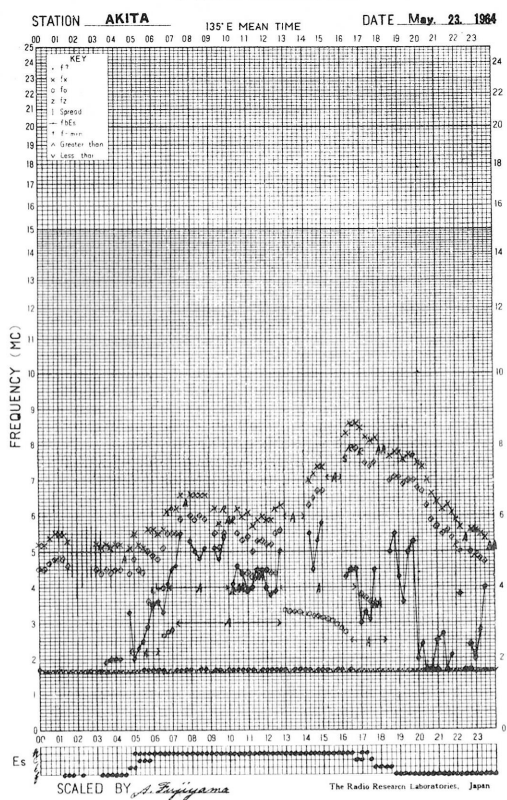
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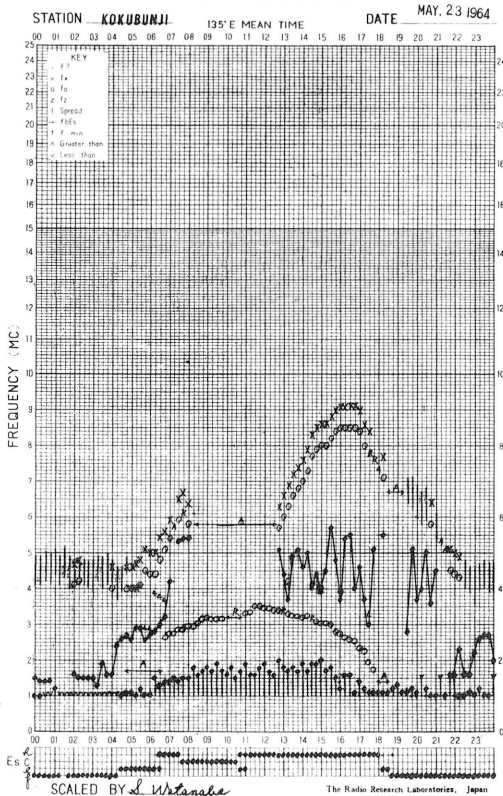
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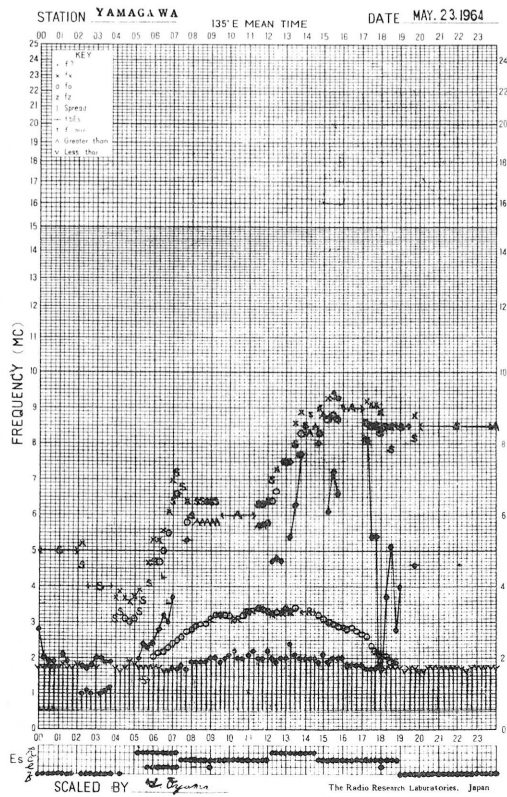
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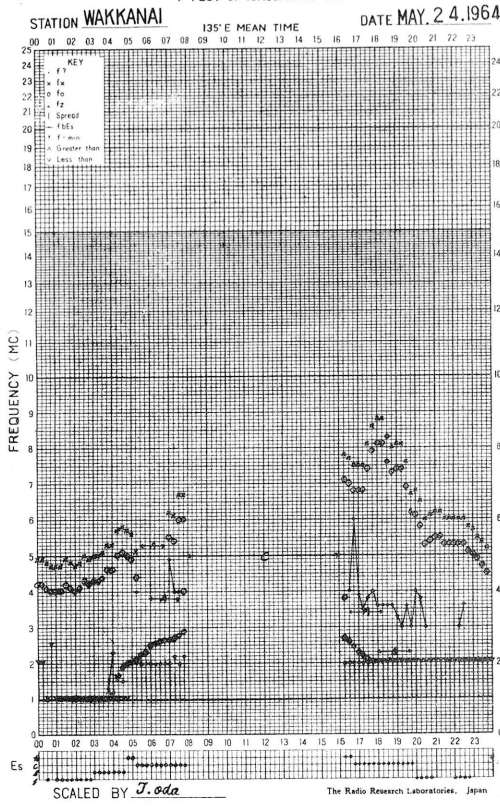
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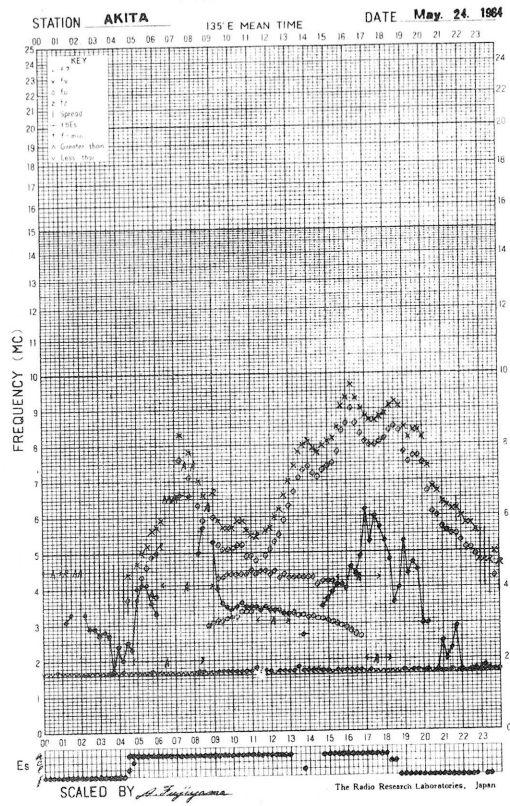
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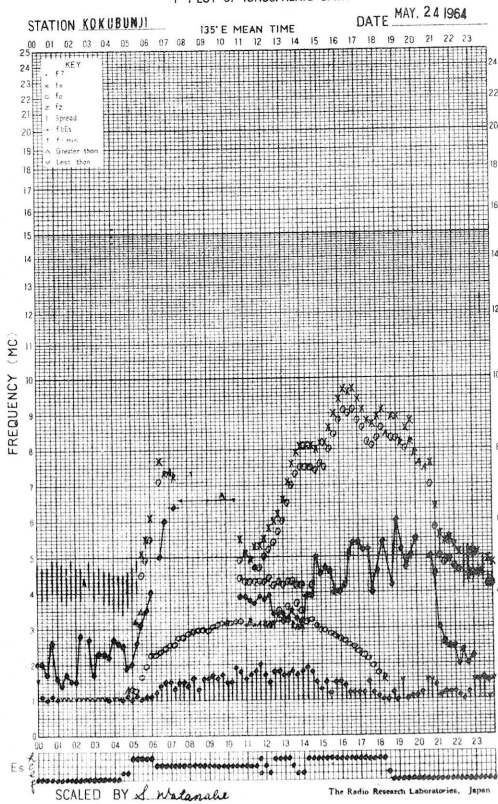
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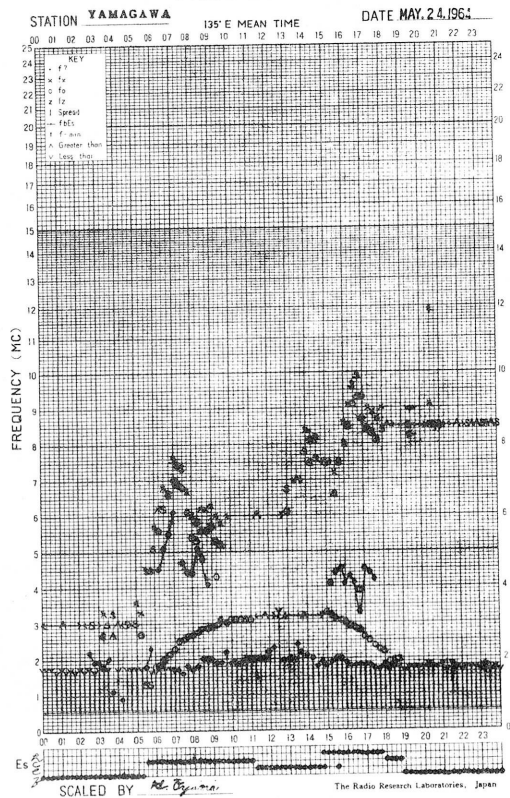
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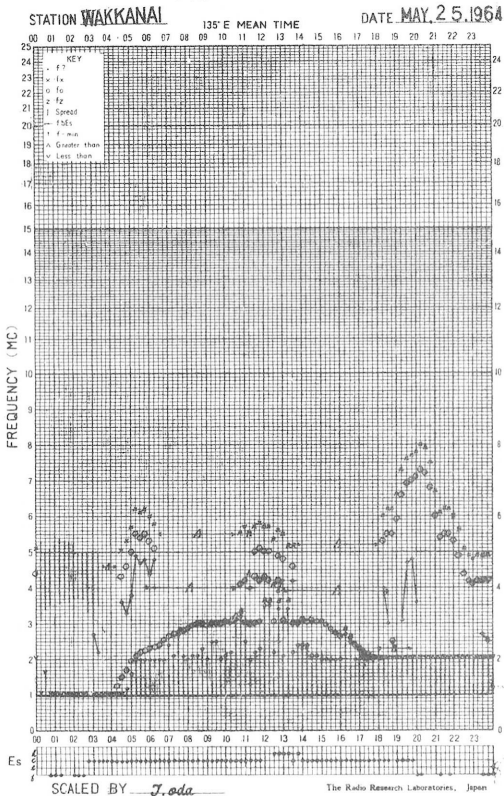
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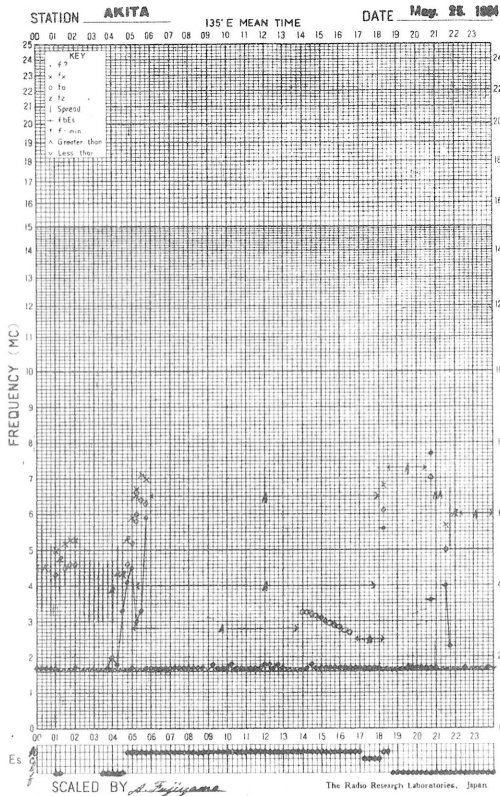
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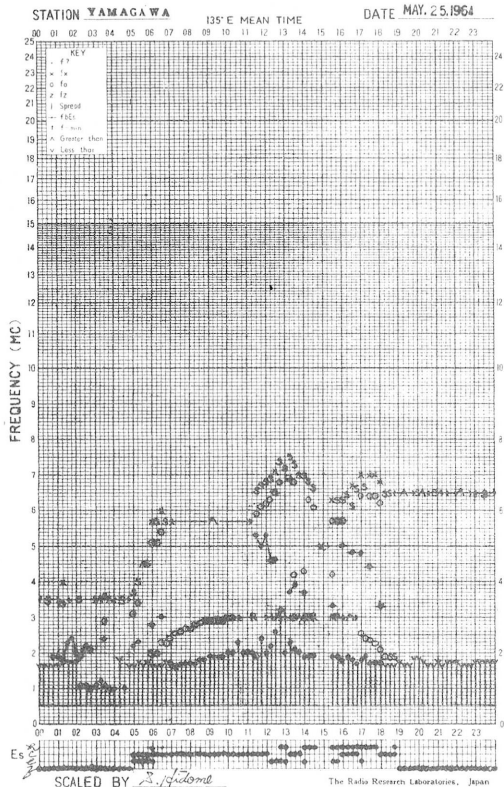
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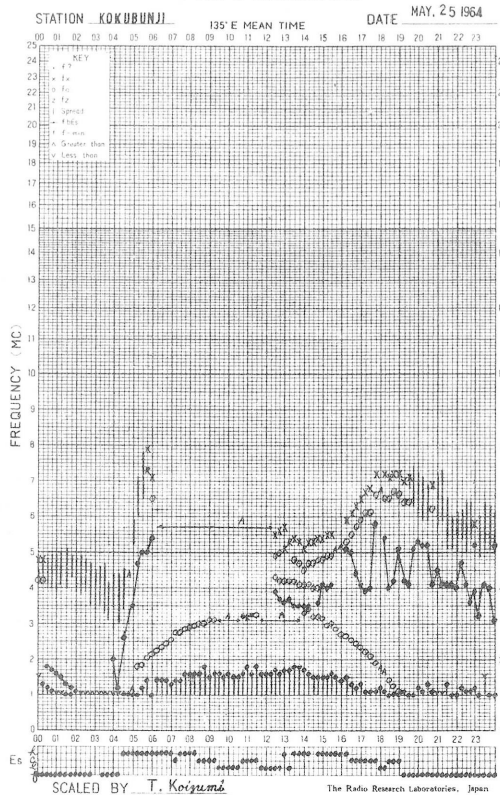
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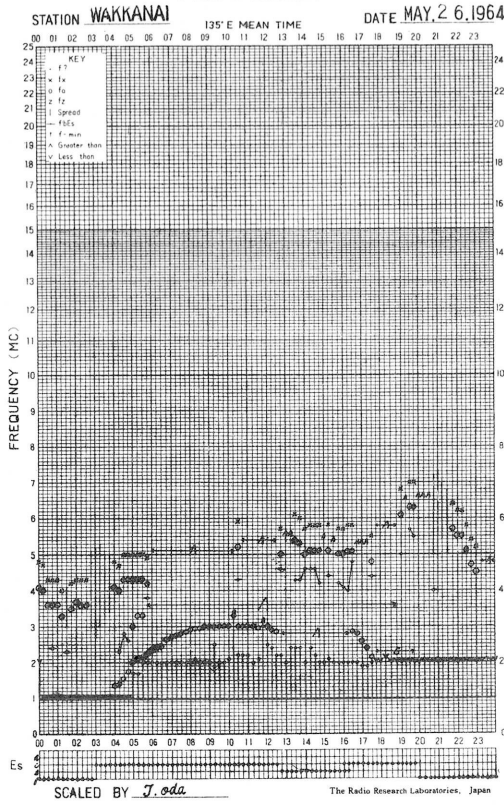
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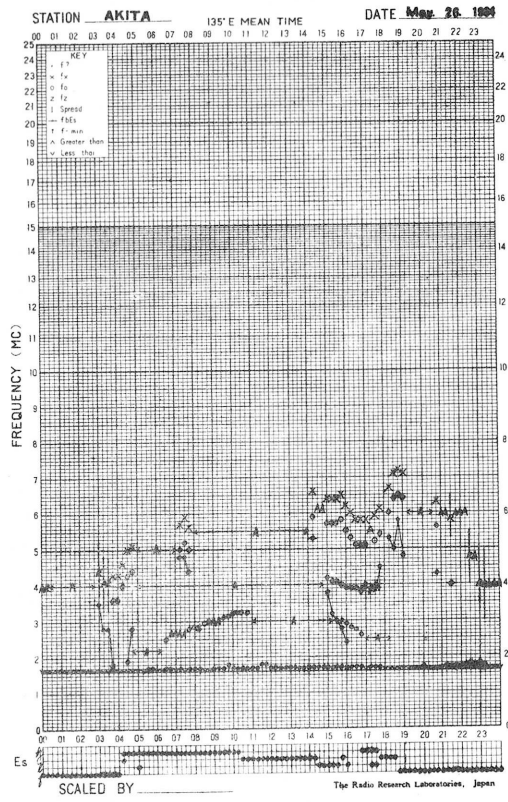
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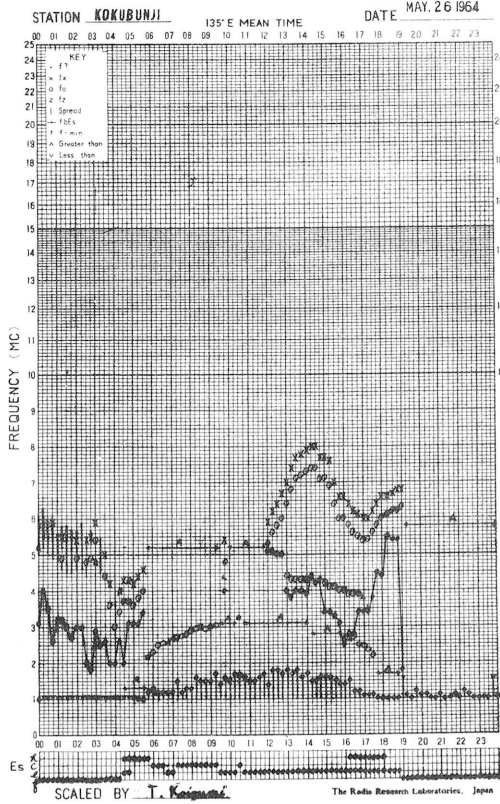
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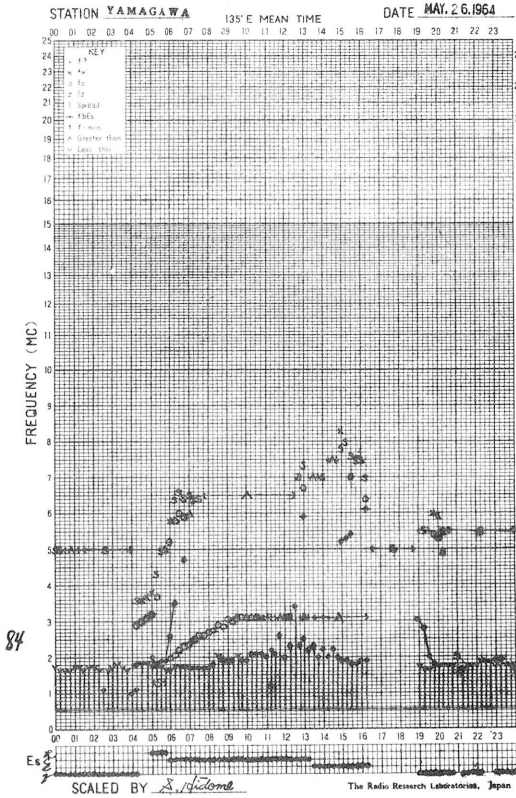
f- PLOT OF IONOSPHERIC DATA



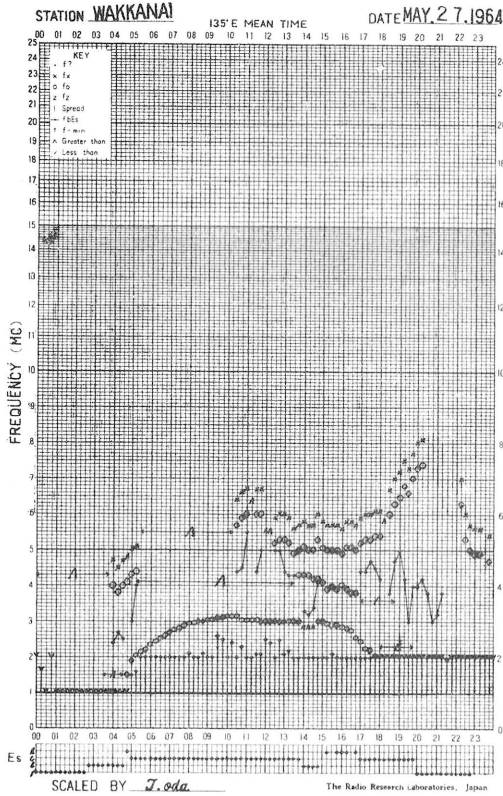
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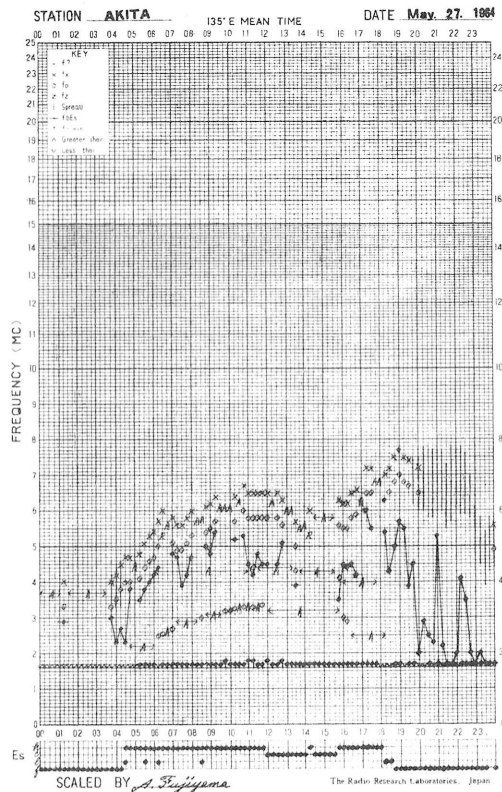
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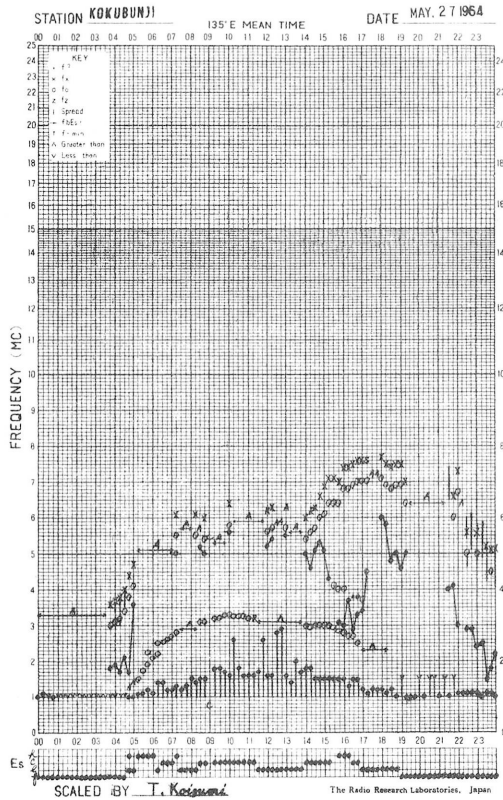
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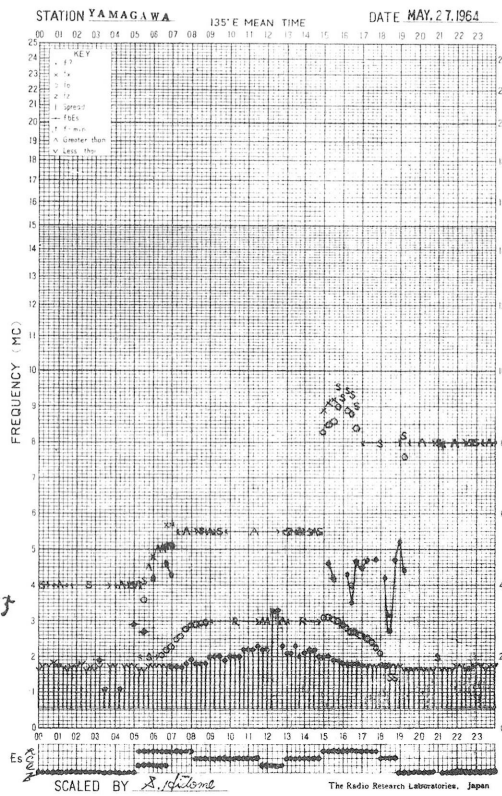
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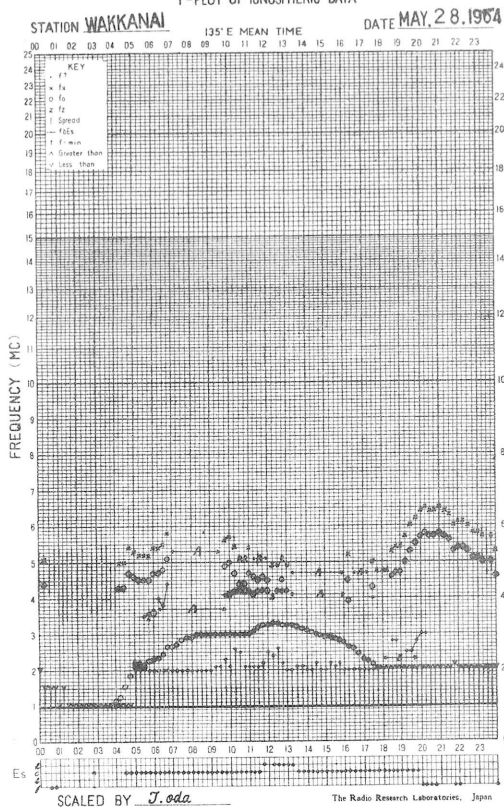
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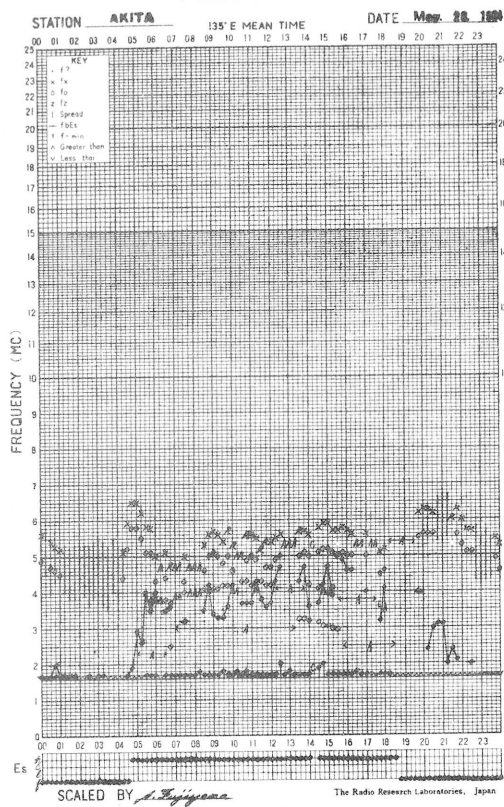
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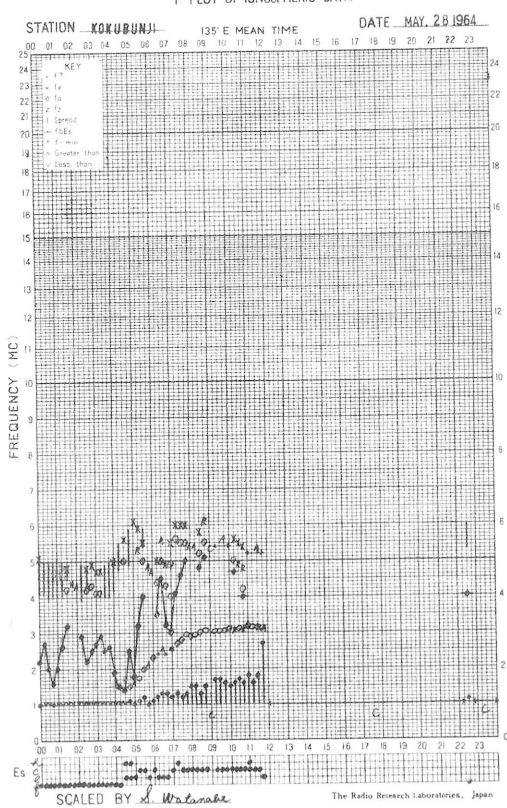
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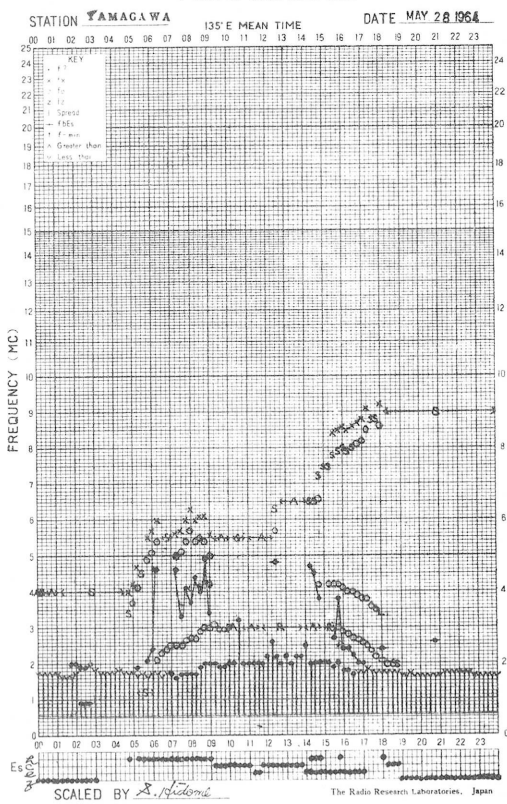
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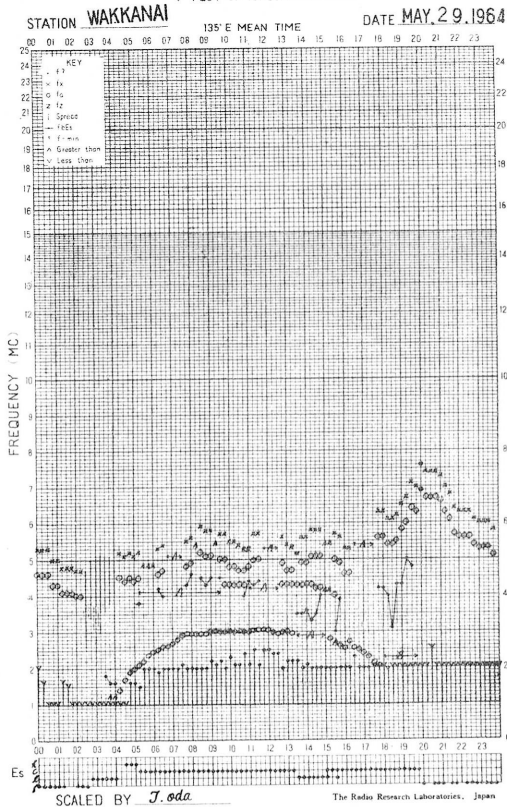
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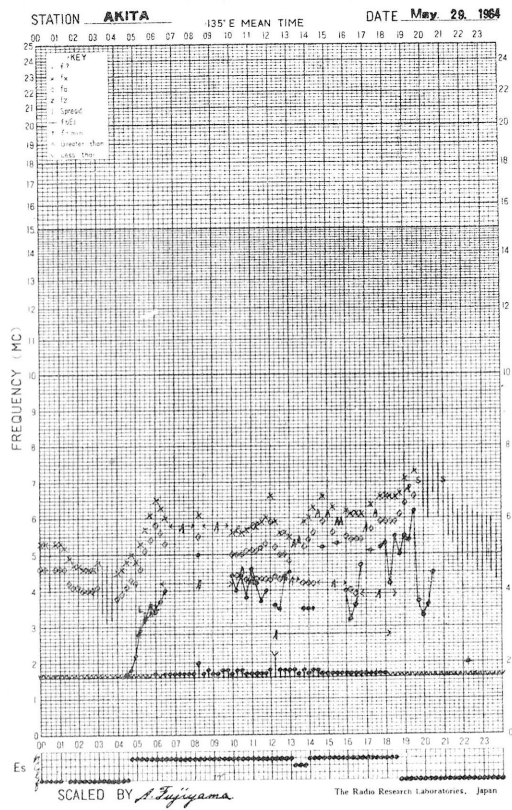
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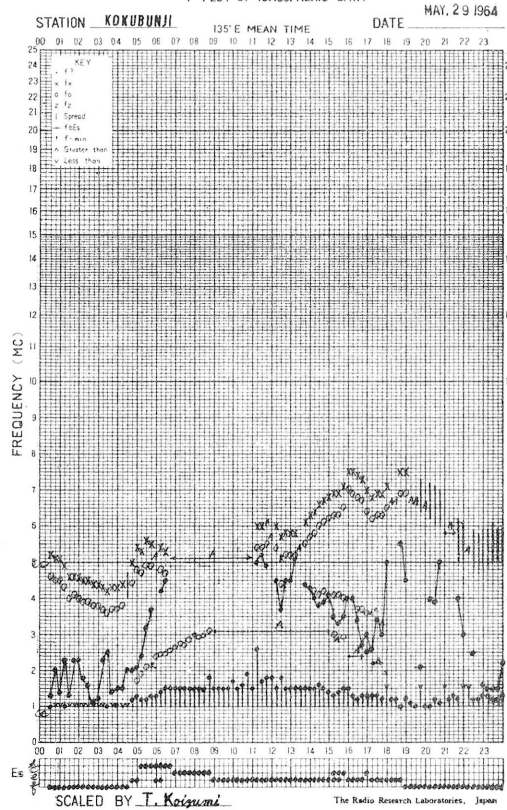
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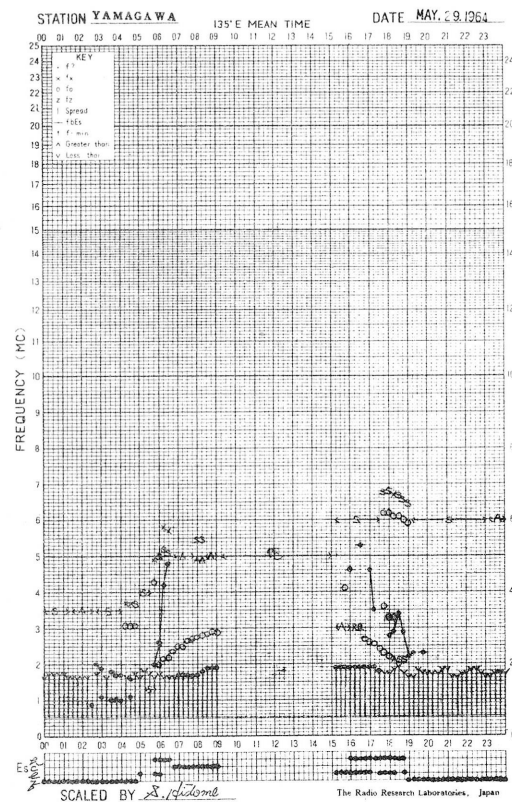
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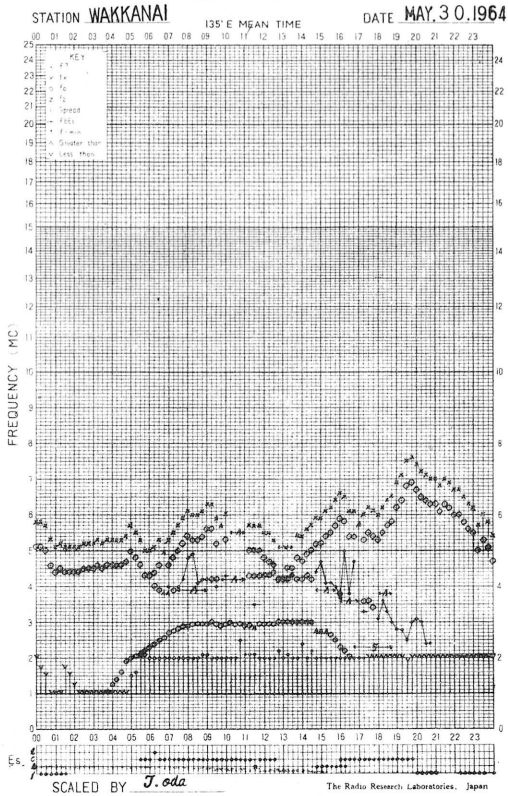
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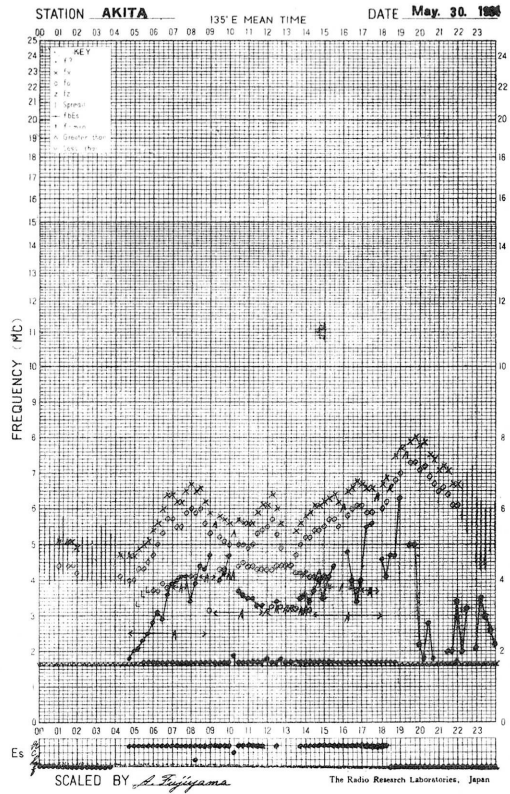
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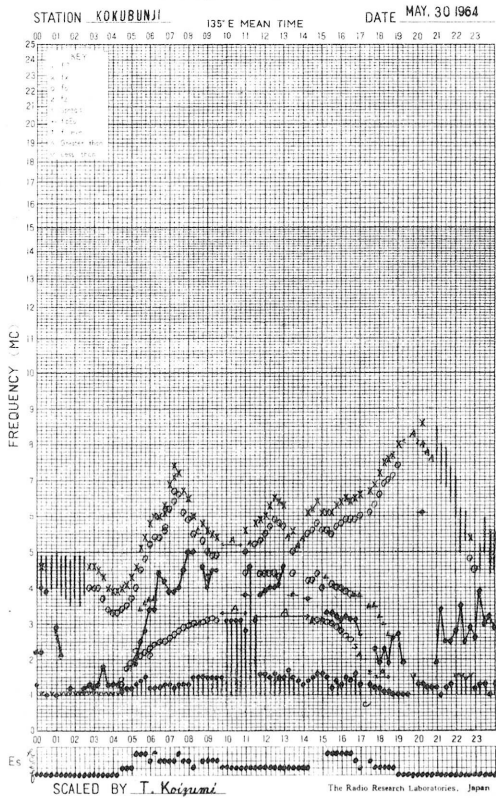
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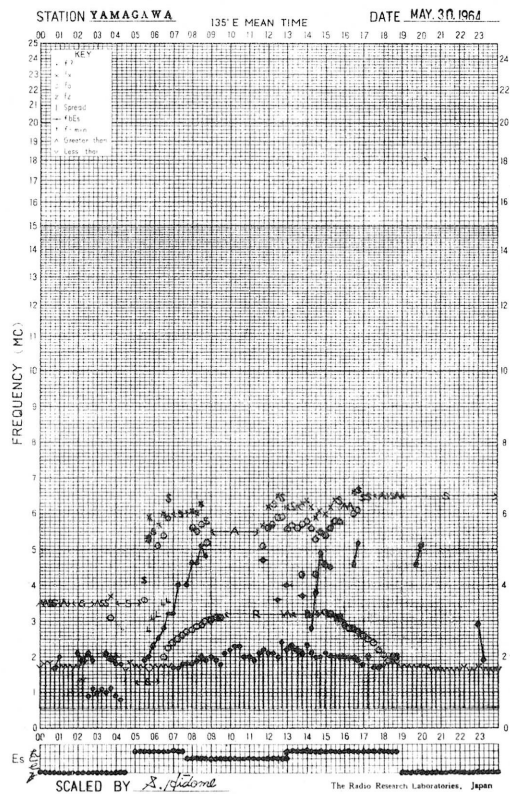
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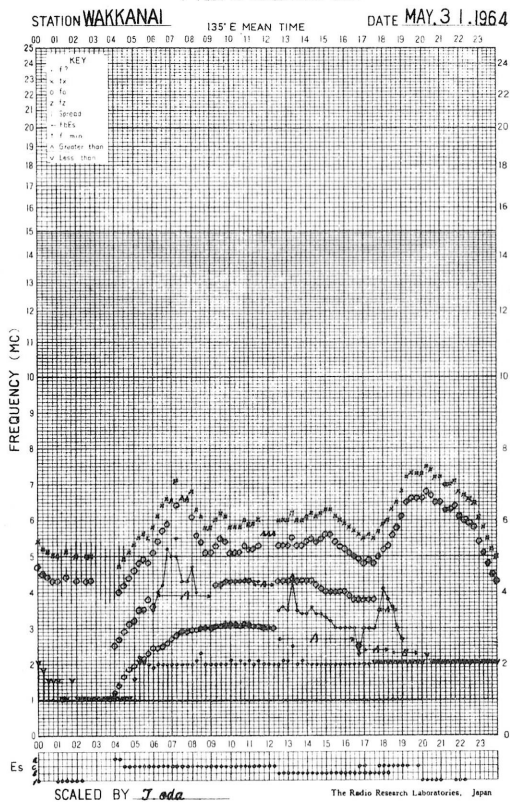
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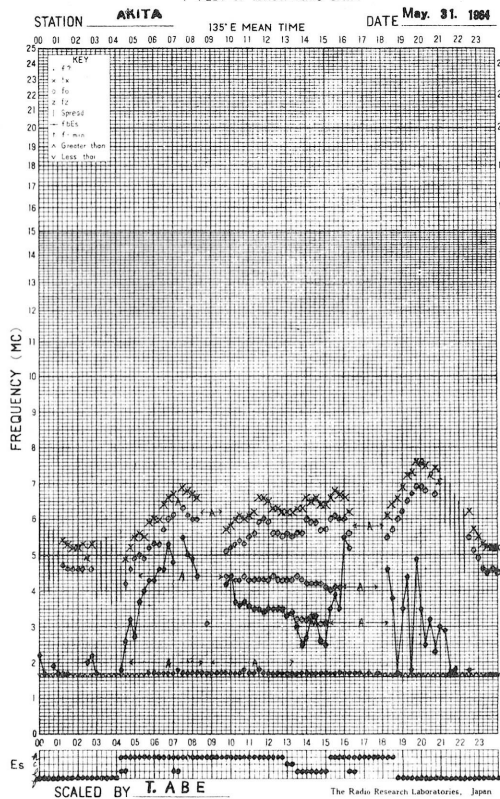
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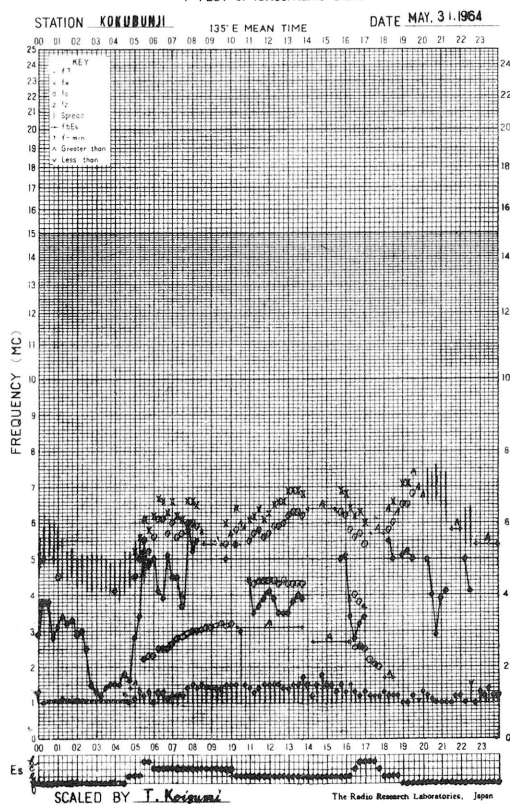
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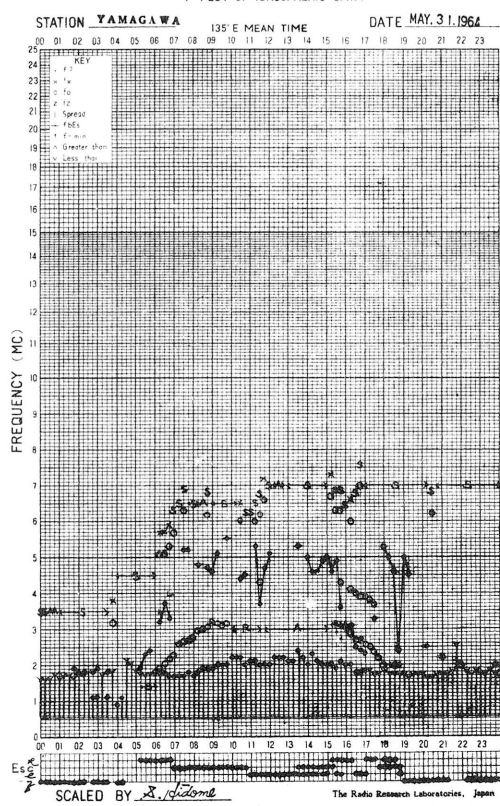
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: May 1964.						Frequency: 200 Mc/s				
Observing Station: Hiraiso										
Flux density $10^{-22} \text{Wm}^{-2} (\text{c/s})^{-1}$						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	9	9	-	-	8	0	0	-	-	0
2	8	8	8	7	8	0	0	0	0	0
3	7	7	(5)	8	7	0	0	(0)	0	0
4	8	8	8	6	8	0	0	0	0	0
5	9	6	6	6	7	0	0	0	0	0
6	8	8	8	7	7	0	0	0	0	0
7	7	7	7	7	7	0	0	0	0	0
8	8	8	(6)	7	7	0	0	(0)	0	0
9	6	8	7	(8)	7	0	0	0	(0)	0
10	6	7	6	6	7	0	0	0	0	0
11	6	(7)	6	-	6	0	(0)	0	-	0
12	7	8	8	6	7	0	0	0	0	0
13	6	7	7	7	7	0	0	0	0	0
14	7	6	6	6	7	0	0	0	0	0
15	(6)	-	-	7	(6)	(0)	-	-	0	0
16	9	-	-	7	(8)	0	-	-	0	(0)
17	8	11	9	-	9	0	0	0	-	0
18	7	7	7	(5)	7	0	0	0	(0)	0
19	7	6	(6)	-	6	0	0	(0)	-	0
20	7	7	(7)	8	7	0	0	(0)	0	0
21	7	6	6	8	7	0	0	0	0	0
22	8	7	6	-	8	0	0	0	-	0
23	7	7	7	8	7	0	0	0	0	0
24	8	8	8	8	8	0	0	0	0	0
25	(10)	-	-	-	(9)	(0)	-	-	-	(0)
26	6	7	6	7	7	0	0	0	0	0
27	(7)	-	-	-	(7)	(0)	-	-	-	(0)
28	7	7	6	8	6	0	0	0	0	0
29	8	7	-	-	8	0	0	-	-	0
30	-	-	-	8	-	-	-	-	0	-
31	8	-	-	-	8	0	-	-	-	0

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: May 1964.					
Observing Station: Hiraiso			Frequency: 500 Mc/s		
Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	21	21	21	17	20
2	20	21	21	19	20
3	22	22	22	19	21
4	21	22	22	19	21
5	20	22	22	19	21
6	21	21	21	18	20
7	21	22	22	-	21
8	(22)	22	(29)	20	23
9	(23)	21	20	18	21
10	19	20	20	-	19
11	-	-	-	-	-
12	-	-	-	-	-
13	-	-	-	21	-
14	22	21	21	19	21
15	20	20	19	-	20
16	22	21	21	-	22
17	21	21	20	20	21
18	21	21	21	20	21
19	21	22	22	21	21
20	21	21	19	20	21
21	21	21	20	-	21
22	19	21	20	19	20
23	21	22	21	20	21
24	21	21	20	20	21
25	21	20	20	20	20
26	21	21	21	21	21
27	21	21	20	20	21
28	21	21	20	20	20
29	21	20	20	-	20
30	21	22	20	-	21
31	(22)	23	21	21	22

Note No observations during the following periods:

7th	1920-	8th	0200	16th	1920-	17th	0100
8th	0600-		0800	21st	1920-		2400
9th	0100-		0300	29th	1920-		2400
10th	1920-	13th	0950	30th	1920-	31st	0200
15th	1920-	16th	0100				

Distinctive Event

No Distinctive Event was observed during May, 1964.

Addenda: The following Distinctive Event should be added.

<u>Distinctive Event</u> (single-frequency observations)								
Month: April 1964.								
Observing Station: Hiraiso								
Normal observing period: 2000 - 0910 (sunrise to sunset)								
Date	Frequency	Starting time	Time of Maximum	Duration	Type	Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$		Remarks
	Mc/s	UT	UT	minutes		peak	mean	
15	200	0420	0421.5	3	C	225	31	
15	500	0420.0	0420.5	0.7	C	35	4	

Note No observations during the following periods, at 200 Mc/s:

1st	0500-	0950	15th	0100-	0950
1st	1920-	2400	16th	0200-	0950
2nd	1920-	2200	16th	1920-	2200
3rd	0700-	0950	17th	1920-	2400
6th	0800-	0950	18th	1920-	2300
6th	1920-	2200	19th	1920-	20th 0100
7th	1920-	2200	20th	0700-	0950
8th	0600-	0800	21st	1920-	2200
8th	1920-	2200	22nd	1920-	2400
9th	1920-	2300	23rd	1920-	2200
11th	0210-	0500	25th	0035-	26th 0030
11th	0800-	0950	27th	0020-	28th 0100
11th	1920-	12th 0100	29th	0600-	30th 0950
12th	0530-	0605	31st	0220-	0950
13th	0230-	0400			

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

May 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	30	2	3	2	(4)	-	-	1	4	4	3	3	4	4	5	4	N	N	N	N			
2	30	3	4	3	-	-	-	1	3	3	4	3	4	5	5	4	U	U	U	U			
3	4-	3	4	4	(3)	-	(4)	2	(4)	4	5	5	4	4	5	4	N	N	N	N			
4	4+	4	4	4	-	-	(4)	5	5	5	4	4	4	4	5	5	N	N	N	N			
5	4+	5	4	5	(3)	-	-	3	4	(5)	4	(5)	5	5	5	4	N	N	N	N			
6	4+	5	5	5	(3)	-	(3)	4	5	5	4	4	5	5	5	4	N	N	N	N			
7	4+	4	(4)	4	(5)	-	-	5	(4)	4	4	(4)	4	5	5	4	N	N	N	N			
8	5-	0	0	0	(4)	-	(5)	5	4	5	4	5	5	5	5	4	N	N	N	N			
9	4+	5	4	3	(5)	-	(4)	5	4	5	5	4	4	4	5	(4)	N	N	N	N			
10	3+	5	3	2	-	-	-	(3)	4	(5)	3	3	4	(5)	4	(3)	N	N	N	N	0034	---	104 ^y
11	30	2	2	1	-	-	-	1	3	4	5	5	4	5	5	5	U	U	U	U	---	17xx	
12	4+	5	5	5	(4)	-	(4)	4	4	4	4	(4)	4	5	4	4	U	N	N	N			
13	4-	5	4	3	(5)	-	(3)	3	4	3	3	3	5	5	4	4	N	N	N	N	08.7	---	111 ^y
14	3+	3	4	4	-	-	-	2	4	3	3	3	5	5	4	3	N	U	U	U	---	---	
15*	3-	3	3	4	-	-	-	1	3	3	3	2	4	5	4	4	U	U	U	U	---	---	
16*	3-	3	3	4	-	-	-	2	3	0	2	2	4	4	3	3	U	U	N	N	---	24xx	
17	30	4	4	4	(3)	-	-	1	3	(3)	2	2	3	3	4	4	N	N	N	N			
18	3-	3	4	4	-	-	(3)	1	2	3	2	2	4	5	4	4	N	N	N	N			
{19}	4-	4	4	3	(4)	-	(3)	4	2	4	4	4	4	4	5	4	N	N	N	N			
{20}	4-	5	5	(5)	-	-	(3)	2	3	4	4	3	4	5	5	4	N	N	N	N			
{21}	40	4	5	5	-	-	(4)	5	3	4	4	3	4	4	5	5	N	N	N	N			
22	4+	5	4	5	(4)	-	(4)	4	4	5	4	4	5	5	5	4	N	N	N	N			
23	4+	4	5	5	(5)	-	(5)	5	4	4	4	3	4	4	(4)	4	N	N	N	N	2229	---	82 ^y
24	3-	3	2	2	(5)	-	-	1	3	3	3	2	4	5	4	3	N	U	U	U	---	23xx	
25	30	4	4	(4)	-	-	-	1	2	3	3	(3)	4	4	3	3	U	U	U	U			
26	4-	4	5	(5)	-	-	(3)	2	3	4	3	(4)	4	5	5	4	U	U	N	N			
27	3+	4	3	3	(3)	-	-	2	4	4	(3)	0	4	5	4	4	N	N	N	N			
28	3+	3	3	3	-	-	(3)	0	(3)	3	4	4	4	5	5	(4)	N	N	N	N			
29	40	3	4	4	-	-	(4)	5	(3)	4	4	4	4	4	4	5	N	N	N	N			
30	4-	4	3	3	(5)	-	-	3	4	5	4	3	5	5	4	4	N	N	N	N			
31	40	4	5	5	(4)	-	(3)	4	4	5	3	3	4	5	4	3	N	N	N	N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = COSMIC EVENT

{ } = Regular World Day

C = artificial accident

- = impossible to evaluate

--- = continuing magnetic storm

() = inaccurate

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbance was observed during May, 1964.

IONOSPHERIC DATA IN JAPAN FOR MAY 1964

第 16 卷 第 5 号

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