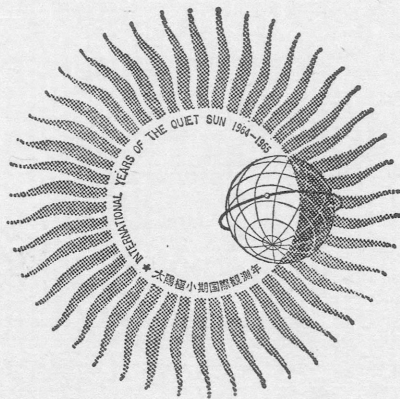


F-201

# IONOSPHERIC DATA IN JAPAN

FOR SEPTEMBER 1965

Vol. 17 No. 9



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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

$f_oF2$	}	The ordinary wave critical frequency for the $F2$ , $F1$ and $E$ layers, respectively.
$f_oF1$		
$f_oE$		
$f_oE_s$		The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
$f_oE_s$		The lowest ordinary wave frequency at which the $E_s$ layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
$f$ -min		The frequency below which no echoes are observed.
$M(3000)F2$		The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$		The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$		The minimum virtual height, $h'F2$ , refers to the highest, most stable stratification observed in the $F$ region and can only be scaled when such stratification is present.
$h'F$		The natural and most significant $F$ region virtual height parameter is that for lowest $F$ region stratification. This will be denoted by $h'F$ . Thus $h'F$ is identical with the current $h'F2$ when $F$ region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.
$h'E_s$		The lowest virtual height of the trace used to give the $f_oE_s$ .
$h_pF2$		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  $f_oE_s$  and  $h'E_s$ . The slant trace is sometimes observed to start at  $f_oE$  without echoes clearly identifiable as  $E_s$  echoes being seen.

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

#### d. Multiple Reflections from $E_s$

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

### B. SOLAR RADIO EMISSION

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

Antennas are a broadside array of  $6 \times 4$  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. Field Intensities of WWV and WWVH

Field intensity observations of WWV and WWVH transmitted from Washington D.C. and Hawaii, respectively, are carried out at Hiraio Radio Wave Observatory. In order to avoid interferences with several standard frequency waves on the same frequency, the upper side-band of 440 c/s is picked up by the use of a narrow band pass filter of  $\pm 40$  c/s bandwidth.

Tabulated *field intensity* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. The *duration* of observation is two minutes for WWV and three minutes for WWVH following the time indicated in universal time on the table.

Particulars of the transmitter and receiver are summarized in the following tables:

## Transmitter

	WWV	WWVH
Location	Washington, D.C. Long. 76°51' W Lat. 39°00' N	Maui, Hawaii Long. 156°28' W Lat. 20°46' N
Power	3 kW for the upper side-band	0.5 kW* for the upper side-band
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical
Distance	10050 km	6270 km

\* Reduced from the carrier power of 2 kW with amplitude modulation of 100%.

## Receiver

Antenna	4.5 m vertical rod
Bandwidth	$\pm 40$ c/s for the upper side-band
Calibration	each half hour

*Descriptive symbols* are as follows:

- C: Measurement influenced by, or impossible because of, any non-propagational reasons.
- S: Measurement influenced by, or impossible because of, interferences or atmospherics.
- ( ): Unaccurate measurement influenced by interferences, atmospherics, or non-propagational reasons.
- <: Less than the following figure.

**b. 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.

c. 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

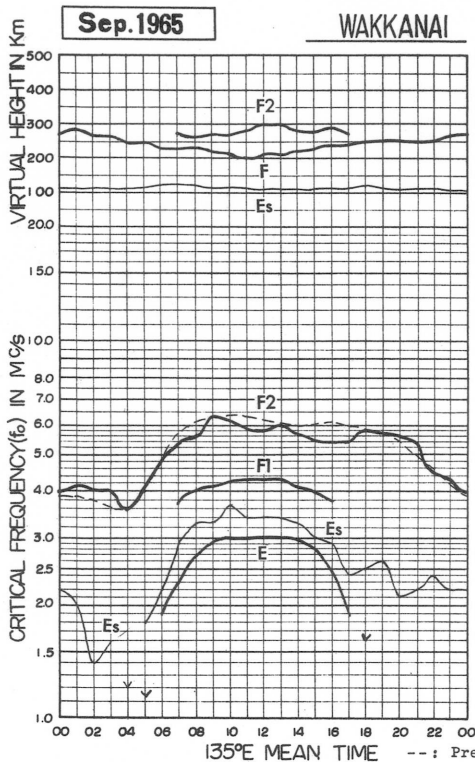
*Importances*

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

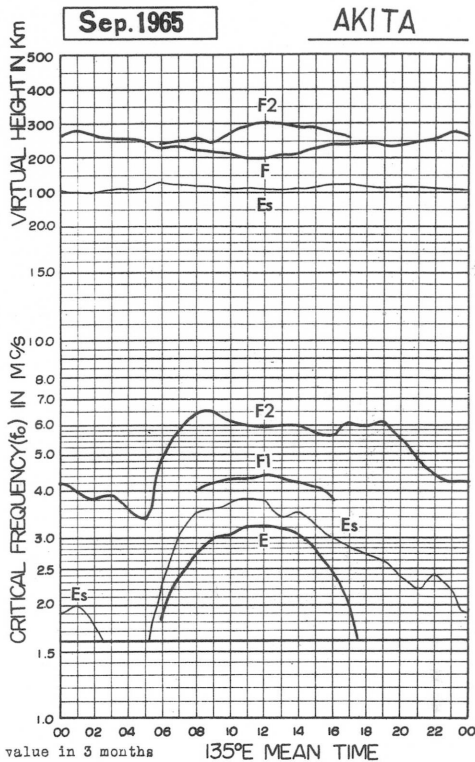
1-	1	1+
2-	2	2+
3-	3	3+

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.

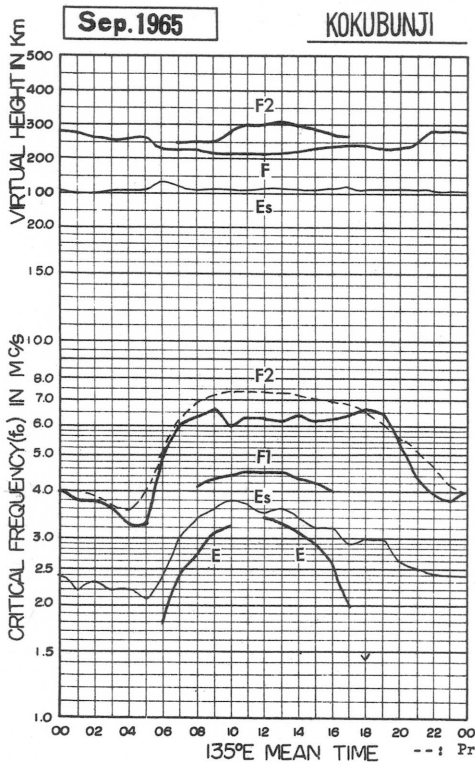
IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



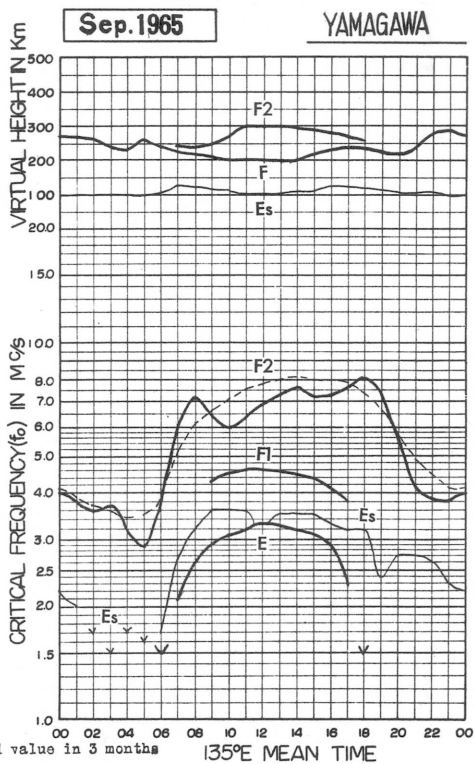
advance by R.R.L.



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



advance by R.R.L.



IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

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

f<sub>o</sub>F<sub>2</sub>

Sep. 1965

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	O44	O41	O40	O39	O36	O35	O40	O49	O50	O62	O63	O52	O50	IO52A	O55	O54	O56	O58	O63S	U070S	O54	O46	IO38S	O38F	
2	F	F	O40F	F	O34F	O41	O43	O50	O55	O55	O61	O57	O60	O66	O58	O54	O51	O50	O53	O60	O55	O54	O45S	O43	
3	F	F	O44F	O39F	O36	O40	O51	O55	O51	O58	O63	O60	O58	O52	O56	O57	O50H	O51	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	O64	IO62S	O58	O61	O55	O51	O50H	O53	O70	U080S	O76S	O53	O51	O44	
5	O44	O44	O41	O43	O26H	O34	O46	IO50A	O59	O60	O58	O57	O61	O64	O56	O55	O56	O53	O56	O63	O63	O56	O47	O43	
6	O43	O42	O41	O40	O36	O40	O44	O55	O48H	O51	O56	O53	IO52S	O53	O54	O50	O51	O53	O53	O57	O56	SF	O53F	SF	
7	SF	O43F	O42F	O41F	O43F	O45	O46H	O53	O54	O54	O60	O56	O55	O50	O55	O57	O53	O51	O53	O56	O54	O53	O54	O43	
8	O38	O37	O36	SF	O36F	O40F	O50	O58	O51	O54	O58	IO63S	O57	O52H	O56	O53	O49	IO52C	O56	O59	O59	O57	O49	O44	
9	O44S	O43	O45	O46	O46	O50	O54	O54	O59	O64	C	C	C	O54H	O56	O51	O56	O56	O63	O71	O60	O48	O41	O40	
10	IO39S	C	C	C	C	C	C	C	C	O69	O62	IO56C	IO53C	O54	O53	O50	O54	O58	O64	O63S	IO64S	O57S	O35S	O38S	
11	IO39C	O41S	IO42S	O44	O45	O50	O57H	O58	O63	O66	O58	O63	O57	O54	O55	O51	O50H	O48	O53	O59	O58	O56	O51	O43	
12	O41	O41	O41	O41	O44	O44	O44	O51	O58	O67	O72	O63	O63	O60	O63	O53	O53	O53	O51	O56	O58	O57	F	SF	
13	SF	SF	O43F	O44F	SF	SF	O53S	O55	O58	O66	O68	O62	O56	O60	O56	O54	O51	O53	O62	O64	O57	O57	O49	O38	
14	O38	O40	O39	O38	O36	O38	O51	O58	O52	O56	O61	O64	O68	O60H	O55	O50	O57H	O56	O52	O56	O55	O56	O51	O46	
15	O46	O45	O44	O40	SF	O40	O56	O57	O52H	O64	O61	O63	O63	O61	O56	O55	O53	O60	O65	O67	IO69S	O63	O60	O50	
16	O42	O35	O33	O32	O32	O31	O43	O50	O50	O61	O55	O63	O59	O63	O61	O55	O62	O53	O58	O67	O64S	O60	O51	O43	
17	O43	O45	O39	O38	O28	O31	O44	O44	O50	O60	O45H	O57	O53	O54	O56	O58	O57	O50	O57	O54	O56	O49	O45	O41	
18	O38	O37	O36	O34	O29	O34	O44	O52	O61	O67	O61	O58	O60	O58	O57	O56	O53	O59	O64	O57	O56	O48	O42	O37	
19	O36	O34	O33F	O33F	O33	O29	O36	O43	O46	O51	IO52A	O53	O53	O53	O53	O50	O52H	O54	O58	O55	O50	O41	O36	O36	
20	O34	O36	O36	O34	O34	O43	O43	O41	O47	O53	O54	O54	O54	O53	O56	O54	O50	O53	O58	O53	O55	O44	O40	O36	
21	O36	O38	O40	O41	O39	O41	O48	O51H	O55	O54	O57	O58	O54	O54	O57	O53	C	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	O66	IO65A	O56	O54	O58	O57	O55H	IO57C	O60	IO66S	O55	O51	O44	O36	SF	
23	SF	SF	O37F	O37F	SF	O39F	O57	O53	O66	O68	O64	O60	O60	O63	O58	O61	O60	O57	O51	O48	O51	O46	O40	O43	
24	O39	O40	O41	O40	O438	O44	O48	O53	O56	O65	O78	O69	O59	O67	O66	O61	O63	O67	IO64C	O58	O53	O53	O44	O45	
25	O46	O47	O49	O48	O49	O50	O53	O66	IO72A	O61	O66	O71	O70	O63	O63	O65	O63	O57	O62	O56	SF	SF	SF	SF	
26	F	O40F	O39F	O39F	SF	SF	O55	O59	O60	O67	O60	O64	O68	O71	O71	O57	O59	O53	O54	O53	O57	O51	SF	O44F	
27	O40F	O43	O44	O44	O40	O34	O49	IO67S	O66	O67	O72	O71	O64	O60	O60	O53	O54	O55	O55	O57	O57	O52	O41	IO35A	
28	A	A	O37	O37	O37	O38	O46	O57	O65	O73	O77	O57	O74	O65	O54	O70	O62	O71	O58S	SF	SF	F	F	F	
29	F	F	F	F	F	F	IO48S	O57	IO71S	O71	C	C	C	C	C	C	C	O57	O57	O57	F	F	O51F	SF	
30	O45F	SF	SF	F	F	F	SF	O58	O65	O75	O73	O71	O64	O63	O61	O59	IO61C	O63	O58	O53	O50F	F	F	F	
31																									
No.	20	20	25	23	21	23	26	27	27	29	28	28	28	29	29	29	28	29	28	27	25	22	23	21	
Median	O40	O41	O40	O40	O36	O40	O48	O54	O56	O64	O62	O59	O58	O60	O56	O54	O54	O54	O54	O58	O57	O56	O53	O45	O43
U. Q.	O44	O43	O42	O43	O43	O44	O53	O58	O63	O67	O66	O63	O63	O63	O59	O57	O58	O58	O53	O53	O60	O56	O51	O44	
L. Q.	O38	O38	O37	O37	O34	O34	O44	O50	O51	O56	O58	O56	O54	O54	O55	O52	O51	O52	O54	O55	O54	O48	O40	O38	
Q. R.	O06	O05	O05	O06	O09	O10	O09	O08	O12	O11	O08	O07	O09	O09	O04	O05	O07	O06	O09	O08	O06	O08	O11	O06	

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

The Radio Research Laboratories, Japan

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G.M.T. +9h)

foF1

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								A	400	A	420	430	430	I430A	420	400	380	I320A							
2									400	420	A	430	430	430H	420	410	380L								
3							320L		420	420	430	430	430	430	420	410H			C						
4							C	C	C	C	420	I420S	440	430	420H	400L		350	270L						
5							A	A	400	420	420	430	430	430	420	400	370								
6							370			I410A	I430A	430	I440S	430	430	400	380	330L							
7							380L		400	420	430	430H	430	430	410	390	380L								
8							360		360	410	430H	I430S	430H		420	400									
9							400		410	420	C	C	C	430	420	400	380								
10							C	C	C	410	420	I430C	I430C	430	420		380	340L							
11							380		410	430H	430	430	430	430H	410	400									
12									410	420	430	430	430	430H	410	400									
13							370L		400	420	420	430	430	430	400	400									
14									370	U410L	420	430	420	430	I	400L									
15									400	400	430	430	430	420	400	400	370L								
16									380	410	420	430	430	420	410	U400L									
17							370		400	400		420H	420	420	410	400	A	A							
18									380	410	420	430H	410	420	400	400									
19							370		380	400	I410A	A	430	410	400										
20										I400A	410	420	420	420	410	390L									
21									400	410	410	420	420	400	390		C	C							
22							C		C	A	A	A	A	I	400										
23									400	400	420	I420A	430L	420	400	380									
24									U390L	410	420	I430A	I430A	430	400L	U400L	A								
25									U350L	I390A	420	420	430	430	410	390									
26										A	420	420	430	440	430	380									
27									370	400	400	420	430	420	410	400									
28									400	410	410	400	420	410H	400L										
29									390L	400	400	C	C	C	C	C	C								
30									400	420	430H	430	420	410H	400L		C								
31																									
No.							1	12	24	27	25	26	27	27	28	22	8	4	1						
Median							320L	370	400	410	420	430	430	430	410	400	380	340L	270L						
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

foF1

W 2

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

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

f<sub>o</sub>E

Sep. 1965

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						E120S	A	255	290	300	300	300	300	A	A	R	A	A	E160S					
2						E140S	205	255	290	300	300	A	A	A	A	295	270	E240S	E160S					
3						E110S	200	265	290	E300A	310	320	E380S	305	300	295	265	A	C					
4						C	C	C	C	C	305	I305S	I310A	310	I300A	285	265	195	E150S					
5					E	E	190	230	285	295	A	A	A	A	305	I285A	255	195	E160S					
6						E	200	240	280	295	285	A	A	A	A	A	A	200	E120S					
7						130	E180B	225	255	270	I280R	I285R	305	305	295	290	255	200	E160S					
8						E	190	235	I285A	I290A	305	E430S	A	A	A	A	A	C	E170S					
9						E170S	195	235	280	290	C	C	C	E400C	300	295	260	E180S	E160S					
10						C	C	C	C	A	A	C	C	300	I300A	I285R	245	190	E110S					
11						E	I170A	235	I255A	I285A	I295A	305	320	310	300	290	245	A	E160S					
12						E120S	200	240	295	300	320	325	320	305	I285A	I270A	240	190	E110S					
13						E170S	200	260	260	I260A	270	300	300	I295A	I285A	265	250	195	E180S					
14						115	195	I230A	I265A	300	305	A	A	A	I290A	I280A	255	A	E180S					
15						E120S	A	255	285	300	I300A	295	300	300	300	290	A	A	E180S					
16						E160S	180	235	275	300	300	300	A	A	A	A	225	190	E180S					
17						E	160	220	A	285	300	300	300	I300A	295	280	215	185	E					
18						E120S	175	220	270	295	305	300	300	300	295	275	230	180	E170S					
19						E	190	220	260	295	300	300	300	300	285	260	225	175	E110S					
20						E120S	190	225	250	285	300	300	300	270	A	A	A	A	E130S					
21						E	160	220	260	290	295	295	300	I290A	I275A	255	C	C	C					
22						C	C	C	C	A	A	A	A	A	A	A	I225C	A	E180S					
23						E	A	235	270	295	300	300	300	290	A	A	A	A	A					
24						E120S	195	230	270	300	300	300	300	A	A	A	A	A	E150S					
25						E150S	E150S	215	255	300	I300A	A	A	A	295	280	220	E140S	E110S					
26						E	A	220	255	A	A	A	A	300	295	I255A	210	A	E120S					
27						E120S	A	220	A	A	A	A	A	295	285	275	210	A	E110S					
28						E	140	215	245	275	290	I300R	295	A	A	A	A	A	E120S					
29						E	150	215	250	295	C	C	C	C	C	C	C	C	A	E120S				
30						E	A	215	260	290	300	300	305	285	I275A	A	C	E150S	E170S					
31																								
No.	1		1		1	27	21	27	25	25	23	19	17	19	19	19	19	15	27					
Median	E120S		E		E	E115S	190	230	270	295	300	300	300	300	295	280	245	190	E160S					
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

f<sub>o</sub>E

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

0.1 Mc 135° E Mean Time (G.M.T. + 9h)

f<sub>o</sub>F<sub>2</sub>

Sep. 1965

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	E018S	E018S	E012S	E	E020	E025	E025	E041	E040	E042	E035	E035	E040M	E037	E038	E034	E034	E040	E038	E018S	E018S	E031	E033	E030
2	E027	E013S	E017S	E020	E012S	E014S	E	E030	E034	E033	E053	E037	E040M	E037	E038	E	E	E024S	E016S	E016S	E012S	E028	E024	E024
3	E023	E022	E017	E013S	E	E015	E027	E028	E035	E042M	E038	E034	E0388	E033	E	E	E	E039M	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	E017S	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
6	E033	E020	E	E016S	E	E026	E041	E040	E052	E083	E051	E073	E050	E050	E048	E031	E031	E	E	E	E	E	E	E
7	E037	E	E	E	E	E	E	E	E036	E034	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	E016S	E	E	E	E	E	E	E	E029	E030	E028G	E043S	E034	E037	E040	E063	E040	E	E030	E031	E020S	E030	E028	E017S
9	E018S	E019S	E020M	E028	E033	E017S	E	E025	E021G	E020G	E	E	E	E040G	E	E01G	E	E	E030	E031	E020S	E030	E028	E017S
10	E021	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	E033	E026	E028	E	E	E012S	E	E030	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
13	E026	E020	E021	E027	E024	E017S	E019	E023G	E033	E043	E040	E040	E	E	E	E	E	E	E	E	E	E	E	E
14	E022	E013	E015	E019	E	E	E	E	E033	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
15	E025	E025	E020	E033	E014	E021	E022	E023G	E032	E023G	E034	E033	E	E	E	E	E	E	E	E	E	E	E	E
16	E012S	E031	E013	E016	E013	E016S	E	E	E032	E	E035	E034	E034	E030	E032	E033	E028	E	E018S	E016S	E017S	E021	E017S	E015S
17	E016S	E012S	E015	E	E023	E027	E033	E030	E036	E	E045	E034	E	E038M	E034	E040	E040	E045	E035	E031	E025	E023	E027	E017S
18	E016S	E012S	E012S	E015	E	E012S	E	E028	E032	E034	E050	E044	E041	E037	E	E	E	E	E026	E016S	E012S	E012S	E012S	E012S
19	E015S	E013S	E	E016	E022	E	E	E022	E033	E053	E053	E055	E033	E038	E	E	E	E	E	E	E	E	E	E
20	E029	E026	E014	E021	E	E020	E	E030	E034	E052	E038	E038	E033	E038	E033	E030	E030	E023	E020	E030	E015	E012S	E012S	E015S
21	E023	E031	E021	E028	E021	E	E022	E028	E032	E033	E	E033	E	E034	E030	E020G	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	E035	E030	E015	E021	E015	E022	E030	E	E	E063	E082	E051M	E045	E043	E043	E033	E034M	E	E024	E035	E035	E063	E040	E031
24	E018S	E015S	E	E	E	E021	E	E028	E037	E037	E051M	E052	E042M	E040	E036	E043M	E033	E033	E036	E030	E022	E017S	E016S	E016S
25	E018S	E015	E015	E	E	E	E024	E025	E086	E036	E036	E033	E036	E035	E025G	E	E	E	E	E	E	E	E	E
26	E033	E023	E012S	E	E	E020	E043	E033	E037	E055	E035	E034	E039	E028G	E030	E030	E028	E021	E012S	E033	E028	E033	E051	E024
27	E022	E022	E	E020	E025	E028	E025	E033	E050	E050	E033	E033	E033	E	E	E	E	E	E	E	E	E	E	E
28	E035	E033	E040	E030	E025	E025	E038	E	E033	E	E	E	E035	E038M	E035	E034	E032	E021	E012S	E014S	E015S	E015	E020	E032
29	E025	E015	E020	E013	E	E	E	E	E033	E033	E	E	E	E	E	E	E	E	E	E	E	E	E	E
30	E021	E020	E	E	E025	E021	E020	E018G	E031	E	E	E	E025G	E028G	E033	E034	E	E	E	E	E	E	E	E
31																								
No.	27	27	27	27	27	27	27	27	27	29	28	26	27	29	29	29	26	28	28	28	28	28	28	28
Median	E022	E020	E014	E016	E012	E018	E022	E029	E033	E033	E037	E034	E034	E034	E033	E030	E029	E024	E025	E026	E021	E022	E024	E022
U. Q.	E029	E025	E020	E021	E022	E022	E030	E033	E042	E044	E043	E043	E039	E038	E037	E034	E033	E030	E030	E032	E030	E033	E030	E028
L. Q.	E018	E013	E	E	E	E	E012	E	E032	E	E030	E033	E	E	E	E	E	E	E020	E018	E017	E016	E016	E016
Q. R.	E011	E012				E010			E005	E014	E010							E010	E010	E014	E013	E017	E013	E012

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

f<sub>o</sub>F<sub>2</sub>

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 45° 23.8'N  
Long. 141° 41.1'E

Wakkanai

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

fbEs

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S	S	S		020	021	024	040	038	040	G	G		A	033	027	038	027	S	S	018	031	021	021	
2	020	S	S	017	S	S	G	G	G	G	037	033	035	033	032			S	S	S	S	C	C	020	
3	018	019	012	S		G	G	G	022G	034	025	026	S	G			026	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	G	S	033		031			G	G	BO15S	014	S	S	S	
5	S						028	A	G	G	040	035	033	028	030	030		G	G	BO17S	016	BO17S	025	018	
6	BO16S	017		S		023	039	035	G	047	050	040	S	034	035	030	030		026	032	020	025	021	020	
7	020						B	G	G	G	G						013G	S	S	S	S	S	S	023	
8	S	S				012			029	030	025G	S	034	036	036	033	027	C	020	025	028	S	S	S	
9	S	S	017	025	025	S		019	021G	020G	C	C	C	C	021G			G	025	020	S	020	027	S	
10	BO17S	C	C	C	C	C	C	C	C	031	035	C	C	024G	030			G	017	023	S	017	S	S	
11	C	BO15S	S	016	015	G	020	G	032	030	036		023G	025G	022G	018G	018G	BO20R	030	018	021	026	026	018	
12	032	022	027			S		G			G	G		G	030	030	G	G	028	021	017	022	020	018	
13	019	012	018	019	020	S	015G	020	G	036	G	G		035	039	020	016G	G	G	021	018	018	019	020	
14	BO18S	013	E	014			G	027	030		034	034	034	032	031	030		023	020	020	027	BO14S	S	BO16S	
15	020	020	013	017	012	018	020	020G	020G	022G	034	G		022G	024	026	026	021	020	S	S	S	S	S	
16	S	029	013	015	E	S			G	G	G	G	030	030	031	030	G	S	S	S	S	020	S	S	
17	S	S	012		023	025	030	G	028		033	G		032	G	018	040	040	032	020	017	018	BO17S	S	
18	S	S	S	012		S		G	G	G	G	G		G			020		G	020	S	S	S	S	
19	S	S		015	018		G	G	G	G	A	041	G	G	G	G	G	G	027	018	018	025	020	S	
20	017	020	013	016		017		G	017	050	G	G	G	G	030	030	025	019	G	019	015	S	S	S	
21	018	013	017	020	017		G	G	G	G	G	G		031	030	018G	C	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	057	A	043	043	040	030	027	C	020	020	035	034	032	014	020	
23	017	015	013	018	014	017	022		G	G	G	G	G	039	036	031	032	030	030	036	019	020	019	S	
24	S	S				017		G	G	G	G	047	045	033	038	032	037	030	019	030	021	020	S	S	
25	S	016	015			016	030	026	A		031	032	036	034	021G			G	020	040	030	030	030	032	
26	018	019	S			013	040	032	038	034	033	033	036	025G	027	028		020	S	030	027	020	024	BO17S	
27	015	019		020	020	020	020	029	032	032	031	033	033		020G			018	030	020	016	026	020	A	
28	A	A	019	020	011	019	035		G				G	031	030	028	025	018	S	S	S	012	017	019	
29	017	012	012	E			G	G	G	G	C	C	C	C	C	C	C	020	020	S	S	S	S	016	
30	018	015			E	015	019	015G	G			023G	024	024G	030	030	C	G	S	S	S	S	S	S	
31																									
No.																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

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

Sep. 1965

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	E0188	E0188	E0125	E	E	E0125	017	012	018	018	020	020	020	020	018	020	020	019	E0165	E0188	E0188	E0175	E0195	E0165	
2	E0155	E0135	E0175	E	E0125	E0145	013	017	018	018	020	018	017	018	018	018	019	E0245	E0165	E0155	E0125	E0125	E0125	E0185	
3	E0175	E	E	E0135	E	E0115	012	011	012	011	012	011	E0385	020	020	018	018	016	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	018	S	017	017	017	012	011	011	E0155	E0155	E	E0175	E0175	E0155	
5	E0175	E	E	E	E	E	012	013	017	018	017	017	017	017	012	011	012	011	E0165	E0155	E0205	E0175	E0175	E0175	
6	E0165	E	E	E0165	E	E	011	017	017	016	018	018	018	018	018	020	018	012	E0205	E0155	E	E0205	E	E	
7	E0165	E	E	E	E	E	018	017	019	020	019	027	016	017	019	018	015	011	E0165	E0165	E0175	E0195	E	E	
8	E0165	E	E	E	E	E	012	017	017	018	020	E0435	018	018	019	016	011	C	E0175	E0185	E0175	E0195	E0245	E0195	
9	E0185	E0195	E	E	E	E0175	017	017	018	017	C	C	C	E0400	020	018	016	E0185	E0165	E0115	E0205	E	E0155	E0175	
10	E0175	C	C	C	C	C	C	C	C	018	014	C	C	C	017	016	016	E0155	011	E0115	E0165	E0165	E0165	E0165	
11	C	E0155	E0165	E	E	E	011	017	017	018	017	017	017	016	012	011	011	011	E0165	E0175	E	E	E0165	E0125	
12	E0135	E	E	E	E	E0125	011	011	017	020	020	017	018	017	017	017	017	017	011	E0115	E0125	E0115	E0125	E0175	
13	E0165	E	E	E	E	E0175	011	011	017	012	016	018	018	017	017	012	011	011	E0185	E0205	E0115	E0175	E0155	E0125	
14	E0185	E	E	E	E	E	011	011	011	012	013	016	015	012	017	012	017	017	E0185	E0115	E0155	E0145	E0185	E0165	
15	E0175	E	E	E	E	E0125	011	011	012	017	018	017	018	013	013	013	011	011	E0185	E0145	E0185	E0155	E0165	E0175	
16	E0125	E0155	E	E	E	E0165	011	E	016	016	012	018	018	013	017	011	011	011	E	E0185	E0165	E0175	E0155	E0155	
17	E0165	E0125	E	E	E	E	011	011	011	012	016	012	015	012	011	011	011	011	E	E0115	E0155	E0175	E0175	E0175	
18	E0165	E0125	E0125	E	E	E0125	012	017	011	011	017	012	017	011	013	011	E	E0165	E0175	E0175	E0165	E0125	E0125	E0125	
19	E0155	E0135	E	E	E	E	E0135	010	011	017	012	017	018	016	011	016	012	E0155	E0115	E0135	E0125	010	E0115	E0185	
20	E0125	E	E	E	E	E0125	E0155	016	011	015	016	017	012	016	012	011	011	011	E0135	E0175	E0115	E0125	E0125	E0155	
21	E0175	E	E	E	E	E	012	012	018	018	018	012	018	011	016	012	C	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	017	018	018	020	017	017	012	C	012	E0185	E0165	E0185	E0165	E0135	E0155	
23	E0155	E	E	E	E	E	017	017	016	018	019	011	018	018	012	018	015	012	E	E0175	E0115	E0155	E0165	E0165	
24	E0185	E0155	E	E	E	E0125	012	014	017	017	017	013	012	019	012	012	011	011	E0155	E0155	E0185	E0185	E0175	E0165	
25	E0185	E	E	E	E	E0155	E0155	018	017	018	017	012	018	018	012	017	017	017	E0145	E0115	E0185	E0125	E0115	E0115	
26	E0145	E	E0125	E	E	E	E	012	017	018	018	018	012	012	017	012	011	E	E0125	E	E	E0125	E0155	E0175	
27	E0115	E	E	E	E	E0125	012	012	017	017	018	018	017	016	012	012	012	012	E0115	E0165	E0115	E0165	E	E0125	
28	E0125	E	E	E	E	E	E	012	011	017	017	018	018	017	011	012	012	011	E0125	E0145	E0155	E	E0125	E0125	
29	E	E	E	E	E	E	011	011	012	017	C	C	C	C	C	C	C	011	E0125	E0185	E0175	E0125	E0125	E0125	
30	E0125	E	E	E	E	E	015	011	012	017	021	013	012	015	011	011	C	E0155	E0175	E0125	E0175	E0145	E	E0125	
31																									
No.	27	27	27	27	27	27	27	27	27	29	28	26	27	29	29	29	26	28	28	28	28	28	28	28	28
Median	E0165	E	E	E	E	E	E	E	E	017	018	017	018	017	016	012	012	012	012	E0165	E0165	E0155	E0165	E0165	E0165
U. Q.																									
L. Q.																									
Q. R.																									

Sweep 1.0 Mc to 8.0 Mc in 40 sec in automatic operation

f-min

The Radio Research Laboratories, Japan

W 6



Lat. 45° 23.6'N  
Long. 141° 41.1'E

IONOSPHERIC DATA

Wakkanai

135° E Mean Time (G. M. T. +9h)

0.01

M(3000)F2

Sep. 1965

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	295	305	320	310	320	345	355	300	330	350	365	340	300	I315A	315	315	320	330	315S	U325S	330	325	I315S	295F
2	F	F	300F	F	345F	365	345	360	350	335	345	345	315	335	330	350	325	330	320	C	C	C	335S	305
3	F	F	320F	335F	320	325	350	360	340	315	350	355	315	345	340	320	340H	345	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	345	I345S	340	325	325	320	290H	305	295	U320S	330S	305	295	295
5	295	300	295	350	340H	325	330	I335A	335	340	345	315	315	330	340	320	355	315	310	315	315	320	305	300
6	300	285	295	300	305	315	340	365	335H	345	355	325	I320S	320	320	340	325	325	325	315	305	SF	315F	SF
7	SF	300F	295F	300F	300F	335	375H	335	350	335	345	345	325	325	325	335	325	335	320	315	305	300	315	325
8	300	310	315	SF	300F	340F	360	360	335	355	345	U335S	335	325H	310	330	325	I320C	320	315	310	320	320	300
9	310S	300	310	305	325	335	340	335	340	375	C	C	C	320	320	315	325	320	320	330	345	320	320	310
10	I305S	C	C	C	C	C	C	C	C	360	340	I350C	I320C	335	345	320	330	330	330	315S	I335S	350S	325S	315S
11	I310C	295S	I300S	320	315	330	335H	360	345	360	365	340	345	320	325	355	325H	335	320	320	320	330	335	300
12	300	295	305	300	340	340	360	325	350	330	350	335	310	335	335	340	340	335	320	310	305	F	SF	SF
13	SF	SF	300F	300F	SF	SF	345S	345	360	345	370	355	320	335	340	335	335	325	310	315	300	315	325	315
14	290	290	295	315	330	330	355	380	345	335	340	350	355	330H	325	330	335H	345	325	305	310	320	325	305
15	310	310	320	325	SF	300	355	365	345H	370	350	335	350	345	340	340	325	335	310	315	I320S	320	315	320
16	310	305	305	290	290	305	335	340	335	345	345	320	320	315	350	340	350	320	280	300	295S	310	320	280
17	285	310	305	320	295	300	340	345	320	365	355H	335	335	335	320	345	350	335	325	310	305	310	300	315
18	310	295	305	325	340	335	350	345	340	330	320	330	330	330	335	335	330	340	340	310	320	315	310	315
19	290	275	305F	290F	335	315	360	320	345	335	I325A	335	310	335	345	325	320H	340	330	310	320	300	305	300
20	295	285	305	320	325	320	355	365	340	355	345	340	335	330	320	350	345	320	330	315	330	340	315	305
21	310	310	300	310	310	315	355	365H	365	385	370	345	345	350	340	340	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	365	I370A	375	350	350	335	360H	I330C	335	I340S	320	335	330	325	SF
23	SF	SF	325F	320F	SF	335F	355	360	355	355	345	350	330	335	345	350	335	345	335	310	335	335	310	305
24	305	300	310	300	325S	325	375	360	355	355	340	335	320	320	330	330	335	345	I340C	320	320	320	320	315
25	310	320	310	320	325	320	345	355	I350A	345	350	340	325	330	340	340	335	335	325	340	SF	SF	SF	SF
26	F	300F	315F	300F	SF	SF	360	320	335	350	340	310	325	330	350	350	355	330	315	300	315	300	300	320F
27	295F	290	300	320	330	315	345	I350S	350	330	345	345	345	350	340	345	335	320	340	310	315	315	325	315
28	A	A	290	300	300	295	320	350	335	315	345	320	340	340	340	335	320	340	295S	SF	SF	F	F	I305A
29	F	F	F	F	F	F	U320S	335	I350S	335	C	C	C	C	C	C	C	350	315	300	F	F	F	F
30	310F	SF	SF	F	F	F	SF	360	360	335	350	350	350	345	325	320	I330C	335	330	305	305F	F	F	F
31																								
No.	20	20	25	23	21	23	26	27	27	29	28	28	28	29	29	29	28	29	28	27	25	22	23	21
Median	300	300	305	310	325	325	350	350	345	345	345	340	330	330	335	335	330	335	320	315	315	320	315	305
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

M(3000)F2

W 7

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G. M. T. +9h)

M(3000)F1 0.01

Sep. 1965

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	380	395	400	I380A	380	375	345	I365A						
2							370L	380	380	380	A	395	395	375H	380	375	395L							
3							C	395	380	380	395	395	375	370	365	365H			C					
4							C	C	C	C	410	I410S	385	375	380H	385L		345	370L					
5							A	375	375	405	I385A	400	395	370	380	375	395							
6							A	A	A	A	A	A	I380C	375	355	375	370	370L						
7							370L	375	390	390	375	380H	390	380	385	360	390L							
8							390	395	390	390H	I395S	I395S	370H		370	375								
9							350	370	380	C	C	C	C	C	355	375	370							
10							C	C	C	425	440	I400C	I395C	370	365		370	355L						
11							395	390	395H	410	420	395	380H	360H	375									
12								390	385	395	395	395	395	370H	365	375								
13							400L	400	380	390	390	395	395	I385A	375									
14								405	I410L	390	380	405	400	L	400L									
15								400	400	395	400	375	380	400	375	360L								
16							375L	390	365	380	370	370	375	370	370	U390L								
17							350	360	380		380H	380	380	375	370	375	A	A						
18								375	375	375	365H	390	380	385	375									
19							350	370	380	I380A	A	375	365	380										
20									I385A	390	375	365	375	370	385L									
21									395	395	410	420	380	400	385		C	C						
22							C	C	C	A	A	A	A	AL	380									
23								375	405	400	I380A	I380A	375L	I380A	I385A	380								
24								U395L	385	380	I395A	I380A	360	I375A	U380L	A								
25							U400L	I400A	385	380	395	390	375	385	385									
26									A	385	405	380	365	370	375	395								
27							A	400	400	385	385	375	380	390	385									
28								360	375	385	405	405	365	380H	375L									
29							385L	380	C	C	C	C	C	C	C	C	C							
30								385	375	375H	385	400	385H	400L			C							
31																								
No.							1	10	23	26	24	25	27	26	28	22	8	4	1					
Median							370L	380	385	385	390	395	380	375	380	375	370	360L	370L					
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

Sep. 1965

h'F2

km

135° E Mean Time (G. M. T. +9h)

Wakkanai

Lat. 45° 23.6'N  
Long. 141° 41.1'E

IONOSPHERIC DATA

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								360	300	275	255	310	350	I345A	335	325	310	270						
2								270	295	275	295	320	295	295	305	280	270L							
3							260	250	310	310	260	270	310	295	310	295			C					
4							C	C	C	C	I280S	300	320	280	285L			300	285					
5							I300A	295	290	295	345	300	285	300	285	325	255							
6							260	270	300	300	270	S	340	330	285	300	275							
7							300	270	310	300	295	280	320	310	295	290								
8							235	260	265	280	290	300	300	315	300									
9							300	275	240	C	C	C	C	320	315	320	285							
10							C	C	C	250	285	I285C	I315C	305	280		295	270						
11							245	270	250	250	280	300	300	325	310	275								
12								260	285	260	300	305	290	275	270L									
13							265	250	280	250	260	315	300	275	290									
14								250	260	270	275	270	280	280L	260									
15								240	250	265	275	270	265	265	280	295								
16							285	300	275	290	305	305	310	270	260									
17							310	335	250	250	300	300	295	310	270	260	295							
18								295	290	300	310	290	300	285	290									
19								350	300	305	I305A	300	350	310	295									
20									295	295	300	300	300	300	270									
21									245	245	260	275	285	280	280		C	C						
22							C	C	C	A	I260A	250	275	270	280									
23								250	260	255	I260A	300	280	270	265									
24								250	260	260	260	270	300	280	275	260								
25							245	I240A	270	250	270	285	295	275	270									
26								250	250	265	295	300	275	250	250									
27							250	235	265	250	260	260	265	265										
28								275	295	250	275	265	275	260										
29								245	270	C	C	C	C	C	C	C	C							
30								250	270	250	255	250	260L				C							
31																								
No.							1	14	25	28	27	28	27	28	29	22	10	5	1					
Median							260	275	260	270	265	280	300	300	280	280	290	275	285					
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

h'F

Sep. 1965

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	250	250	260	255	245	235	A	A	A	220	200	200	I200A	250	230	240	I250A	270A	235	220	240	I275A	300
2	280	285	270	265	235	215	220	250	240	210	I225A	200	200	190H	235	235	225	245	260	260	250	245	I245A	280
3	285	285	260	245	230	250	240	220	220	225	200	200	215	200	225	205H	245H	260	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	200	I200S	205	210	200H	220	235H	250	280	240	215	250	270	280
5	295	260	260	210	230H	260	265A	I250A	225	210	I230A	200	200	200	225	225	245	245	250	250	250	245	260	275
6	270	295	280	260	250	255	I250A	I225A	210H	A	A	A	I230S	205	245	240	250	245	250	I255A	275	305	250	260
7	300	260	295	265	225	235	215H	225	250	210	210	200H	210	200	200	225	240	240	250	245	255	270	250	250
8	270	250	260	280	250H	220	215	220	200	220	205H	I200S	210H	245H	250	250	230	I245C	250	265	275A	245	250	260
9	250	280	260	280	265	235	225	225	235	215	C	C	C	C	210	230	250	255	250	240	225	240	255	250
10	270	C	C	C	C	C	C	C	C	195	200	I205C	I195C	230	220	230	260	245	240	250	230	210	250	270
11	1270C	285	270	250	250	230	215H	230	210	210H	195	190	190	180H	200H	235	240H	245	265A	250	250	250	245	260
12	A	295	300A	250	240	220	220	220	235	210	205	210	215	240H	205	215	245	225	260	260	265	265	260	290
13	280	275	270	265	220	220	225	225	225	225	210	205	205	200	I240A	225	250	250	260	250	265	250	240	280
14	300	290	265	260	245	240	220	230H	190	230	205	225	195	205	210	210	260H	250	250	265	280	260	250	250
15	260	260	240	245	250	260	240	225H	210	200	200	210	215	210	200	225	225	250	255	260	245	245	230	250
16	245	I285A	285	300	280	260	240	250	210	220	225	225	215	210	245	240	250	245	300	270	255	260	245	280
17	280	260	270	240	A	380	I280A	250	220	240	220H	200H	215	235	240	260	A	A	A	265	250	245	275	270
18	275	290	275	260	205	220	225	240	225	220	250	210H	220	245	235	225	240	245	245	245	250	250	225	260
19	300	310	295	300	250	245	235	240	240	225	I215A	I210A	205	235	245	260	250H	250	250	250	245	275	295	300
20	300	325	260	260	250	265	235	235	250H	I245A	240	230	210	240	210	245L	245	260	240	245	245	225	225	260
21	275	270	275	300	265	245	230	240H	245	225	200	195	225	205	220	245	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	A	A	A	A	A	210	200H	I240C	240	235	I260A	I250A	I235A	250	270
23	290	260	250	250	245	250	235	225	230	215	215	I210A	205	I245A	I245A	250	I240A	I240A	I255A	250	250	250	255	
24	275	290	265	275	250	240	210	240	240	240	230	I220A	I205A	200	I245A	250	I250A	I245A	245	I235A	250	250	240	260
25	260	255	250	240	230	245	220	225	I225A	210	210	200	210	240	245	240	245	230	235	I245A	A	A	A	260
26	250	275	240	270	220	250	I225A	230	I235A	220	200	200	220	200	235	210	235	250	245	I285A	260	280	265	250
27	225	290	250	250	250	270	240	I240A	230	210	210	215	220	215	200	225	250	240	I255A	270	250	250A	250	I290A
28	A	A	295	300	270	280	I240A	235	290	220	210	210	210	200H	240	250	250	235	250	285	250	250	265	280
29	265	295	260	250	270	275	225	230	240	225	C	C	C	C	C	C	C	245	250	265	260	240	260	250
30	260	295	285	260	250	250	240	220	220	210	210H	210	210	200H	210	250	I245C	240	225	245	250	240	240	275
31																								
No.	26	26	27	27	26	27	27	26	26	26	26	26	27	27	29	29	27	28	27	28	27	27	27	28
Median	270	285	265	260	250	250	230	230	230	220	210	200	210	205	225	230	245	245	250	250	250	250	250	265
U. Q.																								
L. Q.																								
Q. R.																								

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

h'F

The Radio Research Laboratories, Japan

W 10

IONOSPHERIC DATA

Wakkanai

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Sep. 1965

f<sub>o</sub>F<sub>2</sub>

135° E Mean Time (G. M. T. +9h)

km

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S	S	S	E	100	105	105	120	120	120	115	115	G	105	105	G	105	105	S	S	S	110	110	110	
2	105	S	S	100	S	S	G	160	140	125	115	110	105	105	105	G	G	S	S	S	S	S	105	105	
3	110	105	105	S	E	150	140	150	125	100	100	100	S	120	G	G	G	105	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	115	S	105	G	105	G	G	140	125	120	115	S	S	S	S
5	S	E	E	E	E	E	125	115	125	120	105	100	105	G	105	105	G	150	125	125	120	100	105	105	
6	135	100	E	S	E	135	125	120	110	110	110	110	105	105	105	105	105	G	120	120	115	115	105	105	
7	105	E	E	E	E	G	B	120	120	115	G	G	G	G	G	G	G	105	S	S	S	S	S	105	
8	S	E	E	E	E	105	G	110	105	105	105	S	105	105	105	105	105	C	105	105	105	S	S	S	
9	S	S	105	105	105	S	S	105	100	105	C	C	C	C	G	105	G	120	115	110	S	100	110	S	
10	100	C	C	C	C	C	C	C	C	105	100	C	C	100	105	G	G	125	120	110	S	100	S	S	
11	C	100	S	100	105	125	120	115	110	110	100	G	100	100	100	100	100	100	120	115	110	110	110	105	
12	105	100	100	E	E	S	G	140	G	G	G	G	G	115	110	110	120	135	120	110	110	110	110	110	
13	110	110	110	105	105	S	105	105	115	110	105	105	G	100	105	110	140	120	120	115	110	105	105	105	
14	105	105	105	100	E	G	150	100	100	G	G	105	100	105	100	105	G	105	105	105	105	105	105	100	
15	105	100	105	105	100	100	105	105	140	105	105	110	G	G	105	105	105	105	105	105	S	S	S	S	
16	S	105	105	105	105	S	G	G	115	G	115	115	110	105	105	105	145	G	S	S	S	110	S	S	
17	S	S	105	E	130	120	115	115	120	G	120	110	G	100	150	145	125	120	120	110	120	110	100	100	S
18	S	S	S	125	E	S	G	120	120	130	125	120	125	135	G	G	145	G	120	115	S	S	S	S	
19	S	S	E	105	105	E	150	120	125	120	115	110	120	115	G	140	150	135	125	120	120	120	115	S	
20	110	110	110	110	E	110	G	140	125	115	120	115	120	110	110	105	110	105	125	120	120	S	S	S	
21	110	105	105	105	105	E	120	150	135	120	G	120	G	105	105	105	0	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	105	105	105	105	105	105	105	C	105	115	115	115	115	115	110	
23	110	110	110	105	105	105	105	G	G	G	115	110	115	110	110	105	110	105	110	115	105	100	105	S	
24	S	S	E	E	E	E	105	G	140	125	115	110	110	110	110	110	105	105	110	110	105	100	S	S	
25	S	100	100	E	E	E	125	120	110	G	100	110	105	100	105	G	G	120	125	115	110	110	105	105	
26	105	100	S	E	E	125	115	120	115	110	110	105	105	105	105	100	G	105	S	115	115	115	110	110	
27	105	105	E	100	105	105	105	120	120	110	110	105	105	G	G	105	G	110	110	110	110	110	105	105	
28	105	100	105	105	105	120	120	G	120	G	G	G	120	105	105	105	110	110	S	S	S	115	115	110	
29	110	110	110	110	E	E	G	135	125	125	C	C	C	C	C	C	C	105	105	S	S	S	S	105	
30	105	105	E	E	110	105	105	105	120	G	G	100	100	100	100	100	C	145	S	S	S	S	E	S	
31																									
No.	17	17	14	15	13	15	17	23	25	21	22	21	19	23	23	21	15	24	22	20	17	19	16	15	
Median	105	105	105	105	105	110	120	120	120	110	110	110	105	105	105	105	110	110	120	115	115	110	110	105	
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<sub>o</sub>F<sub>2</sub>

W 11

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

Types of Es

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					f	1	1	c3	c2	c2	c	c		12	1		12	1	12			f	f	f2
2	f			f			h	h	h	c	c2	1	1	1	1								f2	f
3	f	f2	f			h	h	h	c1	12	1	1	c					1						
4										c		1	1					h	c	f				
5										c	12	1	1					h	c	f				
6	f	f			h	c3	c2	c2	c2	c2	12	1	1	12	12	1	1	1	c2	f	f2	f2	f	f
7	f							c	c	c								1						f2
8						1		1	1	1	1	1	1	1	12	12	12		1	f	f			
9			f	f2	f2			1	1	1						1		c	c3	f2			f	
10	f								1	1	12			1	1			c	c2	f2				
11		f		f	f2	c	1	c2	12	1	1		1	1	1	1	1	1	c	f	f	f2	f3	f
12	f2	f2	f2					h					1	1	1	12	c	h	c2	f2	f2	f2	f2	f
13	f2	f	f2	f2	f2		1	1	c	1	c	1		1	1	c1	h1	c	c	f2	f	f	f2	f2
14	f	f	f	f2		h	1	12	12	1	1	1	12	1	1	1	1	1	12	f2	f2	f2	f	
15	f2	f2	f	f2	f	1	1	1	h1	1	12	c		1	1	1	1	1	12	1				
16		f2	f	f2	f				c	c	c	c	1	1	1	1	h				f			
17			f		f	c2	c2	c2	c1	c	c	c	1	1	h	h1	c2	c3	c3	f2	f2	f		
18								c	c	h	c	c	c	h			h1		c	f2				
19				f3	f		h	c	c	c2	c2	c2	c	c		h	h	h	c	f	f	f3	f2	
20	f	f2	f	f2		1		h	c1	c2	c	c	c	c	12	12	1	1	c	f	f	f3	f2	
21	f2	f2	f2	f3	f2				h	h	c	c	1	1	12	1								
22										12	12	12	12	12	12	12		1	1	f2	f2	f3	f2	f2
23	f2	f	f	f	f	1	12			c	c2	c	c	c	12	12	12	13	12	f6	f	f2	f	
24						1		h	c	c	c	c2	c2	1	12	12	12	1	1	f2	f	f		
25		f	f			c	c2	c	c5	1	1	1	1	12	1			c	c	f2	f2	f2	f2	f2
26	f2	f2				c	13	c	c	1	1	1	12	1	1	12		1		f3	f2	f2	f2	f
27	f	f		f2	f2	1	1	c	1	1	1	1	1	1	1	1		1	c2	f2	f2	f2	f2	f2
28	f2	f5	f2	f2	f2	c3	c3	c	c	c	c	c	c	1	12	1	1	1		f	f	f	f	f2
29	f	f2	f2	f			h	c	c	c							1	1	1					f
30	f	f			f	12	1	1	c		1	1	1	1	1	1		h						f
31																								
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

Types of Es

Sweep 1.0 Mc tot8.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan  
W 12

# IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

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

foF2

Sep. 1965

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	050	042	041	037	036	038	046	050	I052A	061	057	053	049	054	060	065	064	063	060	071	050	042S	040	039F
2	F	FS	036	039S	031F	030	045	049	054	060	065	055	059	065	065	059	052	050	053	064	060	058	051	045
3	046	046	047	049S	036	036S	051	058	060	061	066	057	098	060	055H	054	051	053	052	061	067R	061	046	I036R
4	033	033	035S	031	031	032	053	057	061	067	057	061	057	059	063	056	051	056	072	I089R	070	043	042	041
5	042	044	041	044	FS	I030A	046	065	075	076	059	057	058	071	070	056	058	057	058	062	062	050	044	043
6	042	040	040S	039	036S	I040R	051	049	I053A	055	054	054	052	056	057	057	054	059	060	056	056	FS	RS	FS
7	FS	043	041S	040F	FS	FS	043	048	050	059	061	061	056	057	055	055	056	057	060	062	057	053	050	049
8	043	039	035	035	041F	038F	049	053	052H	059	055	060	057	057	059	054	054	047	057	066	055	049	044	044
9	041	038	037	040S	042	042F	050	059	071	064	052	052	053	057	054	056	055	065	065	I070R	056	045	034	039
10	I037R	FS	FS	FS	044F	046F	I054R	061	064S	066	060	053	054	056	056	051	053	063	066	069	059	044S	036S	FS
11	FS	FS	FS	037F	FS	FS	051S	056	059S	069	058H	055	055	051	053	056	050	050	055	060	053	051S	045S	FS
12	041S	041S	041S	040	040	035F	049	053	065	061	068	072	065	061	064	056	053	055	051	057	056	FS	FS	043F
13	FS	FS	FS	FS	FS	FS	047	058H	060	072	C	C	C	C	058	057	053	055	I064R	062	055	RS	FS	048F
14	038	035	035	035S	034	036F	049	055	0612	I062R	061	070	065	057	052	056	053	063	063	055	054	I052R	050	048
15	045	045	040	036	033	035	035	059	060	063	061	059	058H	061	062	053	056	063	074	I076R	075S	060	054	F
16	046S	038	035	034	031	034	044	054	064	060	058	062	069	069	066	059	059	055	053	066	065	060	044	042
17	043	046	041	039	030	031	045	I058R	050	059	054	057	050	057	057	056H	060	058	061	065	055	042S	041S	FS
18	040	038	036	037	036R	024	047	I059C	I066C	074	076	063	061	067	061	057	063S	067	062	060	049F	FS	A	FS
19	FS	033F	031F	FS	034F	028H	041	046	054	060	053	061	060	I056A	060	056	055	061	062	060	049	041	037	036
20	036	036	035	032	032	032	046	046	055	058	054	056	058	060	058	054	053	I059A	067	061	058	059	I030A	I033A
21	FS	I034R	035S	036	034	035F	045	053	062	065	055	053	050	055	058	055	058	063	066	068	061	043	036	035
22	036	036	FS	FS	I035A	033F	049	061	066	067	061	060	059	056	056	057	065	068	060	059	051	041	034	034S
23	FS	FS	039S	039	035	034	05C	I064R	067	077	061	053	063	065	066	059	061	065	058	I052A	048	049	036	039
24	038	038	041S	041F	044F	FS	050	054	066	069	062	054	060	060	075	075	065	080	065R	051	048	047	044	I046R
25	048	046	FS	046	046	044	05C	070	068	075	060	066H	074	068	064	065	070	080	061	056	043	039	FS	FS
26	FS	FS	037	032	033S	033F	047	057	067	072	065	070	072	081	069	060	056	058	054	055	053	052	045F	I042R
27	042S	040F	FS	044F	FS	033S	051	070	072	065	068	072	064	067	060	057	055	061	064	060	060	FS	I047R	043
28	036	035	035	037F	037	FS	050	065	067	073	091	062	068	064	065	066	065	072	058	061	055	060	055	049
29	052	046	049	045	044F	046F	057F	065	078	072	064	064	065	071	063	060	066	061	057	055	050	049	043	044
30	042	043	I042R	FS	FS	FS	054	069	065	069	075	071	065	066	062	062	061	069	068	056	044	041	039	037
31																								
No.	22	24	24	25	24	24	30	30	30	29	29	29	29	29	30	30	30	30	30	30	29	26	25	23
Median	042	040	038	039	036	034	049	058	064	065	061	060	059	060	060	057	056	061	060	061	055	049	044	042
U. Q.	045	044	041	040	040	038	051	061	067	072	066	064	065	066	064	059	061	065	065	066	060	060	046	045
L. Q.	038	036	035	036	033	032	046	053	055	061	056	055	056	056	057	056	053	056	057	057	050	042	036	037
Q. R.	007	008	006	004	007	006	005	008	012	011	010	009	009	010	007	003	008	009	008	008	009	010	010	008

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

foF2

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

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

foF1

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	A	A	A	420	430	440L	440	430H	410	L	L	L					
2							L	400	430	I430A	I430A	430	430	430	420	410	A	A						
3						L	L	410	420	420	430L	430L	440	440	420	400	L	L	L					
4						L	L	410L	420	430	430H	460	460	430	430	410	400L	L	L					
5						L	L	400	420	420	430H	450H	450H	430	420	410L	LH	L	L					
6						L	A	A	A	A	430	420	460	440	420	410L	370	L	L					
7						A	L	L	410	410	420	430	440	430	420	410L	L	A						
8						L	L	L	410	L	430	440	430	430	420	410L	L	L						
9						L	L	L	400	420	430	430	440	430	410	400	380L	L	L					
10						L	L	L	380	420	430	420	450	L	420	400L	380	L	L					
11						L	L	L	400	I420A	430H	440	L	L	420	400L	L	L						
12						L	L	L	400	420	440	430	440	430	420	L	L	L						
13						L	L	L	410	410	C	C	C	C	L	410L	L	L						
14								350	IH	420	430L	430	IH	420	420	390L	L	L						
15						L	L	L	L	420	420	430	430	IH	420L	400L	L	L						
16						L	L	L	400L	420	420	440	440	430	420L	L	L	L						
17						360	400L	420	430	430	450	420	420	430	I410A	L	L	A						
18						C	C	C	410	410	420L	430	430	420	420H	I410A	L	A						
19						A	L	A	L	410	430	420	430	I420A	400	380L	A	A						
20						A	A	A	A	410	420L	430L	420	430	I420A	A	A	A						
21						L	L	L	400	420	430	420	L	L	410L	L	L	L						
22						A	A	A	400L	420	420	L	I450A	I450A	410	400L	A	A						
23						L	L	L	400	420	420	430	420L	440L	A	A	A	A						
24						L	L	L	400L	420	430	430	430L	I420A	420	L	L	A						
25						L	L	L	420	420	L	440	450	420	L	L	L	L						
26						L	L	L	IH	L	I440A	450	450	430	410L	L	L	L						
27						L	L	L	410L	420	440	440	430	430	L	L	L	L						
28						L	L	L	L	430	420	430	L	IH	430L	L	L	L						
29						L	L	L	410L	420	420	L	L	L	430L	L	A	A						
30						L	L	L	L	420	L	450L	430L	440L	390L	IH	L	L						
31																								
No.							2	19	26	27	27	24	23	25	17	5								
Median							355	400	420	430	430	440	430	420	410L	380L								
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

foF1

A 2



Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

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

foE

Sep. 1965

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							195	A	A	A	A	A	A	320	310	295	I260A	210	E					
2							190	255	I290A	300	I310A	325	330	325	I305A	290	A	A	E					
3							190	255	285	A	A	A	A	320	305	280	250	190	E					
4							A	245	I275A	I300A	A	A	330	320	I310A	290	I245A	A	E					
5							A	A	A	A	A	325	330R	I320A	I310A	295	250	205	E					
6							A	A	A	A	A	A	A	A	A	A	A	205						
7							A	A	A	A	A	315H	320	I320A	315	300	255	A						
8							A	A	A	A	A	A	A	A	A	A	A	A						
9							190	240	A	A	A	A	A	A	A	A	A	A						
10							A	A	A	I305A	310	I320A	I320A	320	I300A	280	245	A						
11							A	A	A	A	A	305	I315A	320	315	305	A	A						
12							A	A	A	A	A	A	330	I320A	I305A	285	A	A						
13							A	A	A	A	C	C	C	C	A	A	I270A	A						
14							185	245	I280A	A	A	A	A	A	A	A	A	A	200					
15							A	245	280	I295A	I315A	I325A	I325A	I315A	295	285	I250A	A						
16							180	235	265	A	A	A	A	A	A	A	A	190						
17							A	220	I255A	290	RS	A	A	I320A	I300A	I270A	225	A						
18							A	I240C	C	A	A	A	305	I305A	A	A	A	A						
19							185	235	265	290	305	A	A	A	A	265	230	A						
20							A	I230A	260	I290A	305A	A	A	A	A	A	A	A						
21							E200S	215	255	A	A	A	A	A	A	I250A	220	E200S						
22							A	A	A	A	A	A	A	A	A	A	A	A						
23							200	A	A	300	305	320	320R	A	A	A	A	A						
24							185	24C	280	300	I305A	A	A	A	A	A	A	A						
25							185	A	A	A	A	A	A	310	300	270	240	A						
26							A	A	A	A	A	A	A	A	310	I270A	A	A						
27							E	A	A	A	A	A	310	305	I290A	270	A	A						
28							A	230	270A	290	I300A	305	A	A	A	265	245	A						
29							180	235	265	290A	305	310	I310A	305	290	270	A	A						
30							A	230	265	275	I300A	I310A	I310A	305	295	270	230	A						
31																								
No.							13	16	14	14	12	10	13	16	17	19	14	7	5					
Median							185	240	270	300	305A	320	320	320	305	280	245	200	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

ICNOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

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

Sep. 1965

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	J029	J018	J038	J013E	J013E	E	022	032	J057	J050	039	J046	J044	G	G	G	028	025	E	J014E	E	J021	J015E	J020
2	J031	J018	J018	J018	J017	J018	027	035	035	034	J052	029G	C28G	J032G	J033	J031	J050	J038	J030	J027	J016E	J013E	E	E
3	E	J025	J025	E	E	E	024	027	G	J033	036	J034	J033	G	035	G	028	028	021	J020	J024	J018	J025	J016E
4	J025	J023	E	E	E	E	025	030	035	040	J037	J038	032G	G	038	G	J031	J028	019	J028	J019	J018	J016E	J018
5	J019	J015E	E	E	E	J030	024	J037	J050	J045	J041	G	031G	J051	J033	032	G	028	J024	J024	J014E	J014E	J018	J018
6	J023	J023	E	E	J026	J020	J028	J051	J083	J052	J061	J047	J043	J040	J037	J035	J028	025	J029	J028	J029	J065	J057	J029
7	J018	J025	J020	J024	J022	J017	019	026	028	030G	035	J041	J041	J040	J035	J031	J034	J032	J029	J026	J018	J018	J018	J014E
8	E	E	E	J016E	J018	J020	J028	J028	034	033	J036	036	J043	J033	038	J034	030	030	J026	J030	J043	J050	J026	J024
9	J018	J015E	E	E	E	E	023	J028	030	J033	G	J034	J037	036	J035	J034	029	025	J023	J018	J020	J024	J033	J043
10	J025	J024	J018	J012E	E	E	026	J038	J031	J059	J038	J050	G	031G	037	032	J028	J029	J026	J020	J018	J050	J028	J038
11	J021	J028	J026	J019	J018	J013E	022	029	032	J033	033	035	G	J033	G	G	J028	027	J032	J029	J024	J059	J078	J056
12	J063	J050	J039	J028	J025	J031	J045	J032	J042	J045	C	C	C	C	036	036	028	J029	J035	J028	J025	J035	J018	J015E
13	J019	J024	J012E	E	J013E	J015E	G	G	029	J040	J038	J034	J040	J034	J040	J039	J036	025	019	J028	J023	J026	J024	J017
14	E	J013E	J014E	J018	J015E	J024	022	031	030	033	J033	038	038	J040	J031	033	030	J025	E	E	J050	J033	J035	J032
15	J050	J032	J023	J018	J015E	J016E	G	028	032	J034	J036	J035	037	J035	J033	J035	027	029	J034	J020	J017	J018	J023	J018
16	J013E	E	J013E	E	J013E	J017	027	J028	J039	037	J050	J046	038	035	J049	035	034	J029	J034	J026	J022	J016E	J026	J020
17	J030	J018	J015E	J017	J023	J017	023	C	C	035	033	035	G	030G	J050	J043	J034	J030	J028	J026	J054	J048	J052	J037
18	J019	J015E	J021	J012E	E	E	J039	J040	J042	J046	037	038	J061	J056	J134	034	J040	J055	J045	J023	J035	J018	J018	J026
19	J018	J029	J028	J036	J026	J030	020	J039	J043	044	J042	J047	J050	J039	J053	J069	J058	J057	J040	J056	J032	J015E	J050	J060
20	J018	J050	J038	J035	J018	J018	022	025	J038	036	037	035	J043	030	J028	J034	J027	E0208	J025	J026	J021	J016E	E	E
21	E	E	E	J049	J080	J036	J028	J042	J035	034	J050	J053	J053	J041	J035	J041	J039	J028	J028	J028	J045	J040	J037	J034
22	J027	J033	J019	J019	J020	J020	J023	028	J053	037	032	G	G	032	J051	J060	J050	J042	J041	J095	J053	J061	J028	J041
23	E	E	E	E	E	J013E	022	030	035	036	035	040	J040	J050	J042	J038	J031	J031	J024	J017	J018	J039	J050	J043
24	J057	J029	J026	J023	J025	J025	021	J040	J040	J066	J080	J051	J038	G	G	G	G	020	J024	J013E	E	J020	J023	J024
25	J018	J017	J013E	J015E	J019	J019	023	J035	J033	J037	J050	J056	J053	052	035	J029	J029	020	E	J028	J033	J052	J053	J053
26	J060	J025	J038	J013E	E	E	025	J033	035	J033	J040	J040	J031G	J033	033	G	028	020	E	E	J015E	J031	J050	J029
27	J028	J023	J017	J023	J014E	J013E	J018	029	037	035	037	033	032	050M	030	030	027	J028	J019	J033	J028	J023	J020	J018
28	E	E	E	J040	J018	J024	J016E	G	025	032	035	036	036	036	G	033	J038	J036	E	E	E	J018	J018	J018
29	E	E	E	J018	J016E	E	E	021	025	G	032	032	J036	035	G	025G	027	J023	J028	E	E	E	E	E
30	E	E	E	J018	J016E	E	E	021	025	G	032	032	J036	035	G	025G	027	J023	J028	E	E	E	E	E
31																								
No.	30	30	30	30	30	30	30	29	29	30	29	29	29	29	30	30	30	30	30	30	30	30	30	30
Median	J019	J020	J018	E	E	E	023	030	035	J036	J037	J038	J038	034	J035	033	J030	J028	J027	J026	J024	J022	J024	J022
U. Q.	028	025	026	023	022	020	027	036	041	044	042	046	043	040	038	036	035	031	032	028	032	040	037	037
L. Q.	E	E	E	E	E	E	021	028	032	033	034	034	G	G	031	G	028	025	019	018	018	018	018	017
Q. R.							006	008	009	011	008	012			007	007	007	006	013	010	014	022	019	020

Sweep 1.5 Mc to 20.0 Mc in 20 sec in automatic operation The Radio Research Laboratories, Japan

foEs

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

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

fbEs

Sep. 1965

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

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

fbEs

The Radio Research Laboratories, Japan

A 5

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

0.1 Mc 135° E Mean Time (G.M.T. + 9h)

Sep. 1965

f-min

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	E	E	017	018	017	017	017	017	017	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	017	E	017	017	017	017	017	F	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	017	E	017	017	017	018	017	E	017	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	E	E	017	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	E	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	E	E	017	017	017	017	017	E	017	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	017	E	E	018	017	017	E	E	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	E	017	017	E	017	017	017	E	E	017	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	017	017	017	017	017	017	E	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	E	E	C	C	C	C	E	E	E	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	E	E	E	017	017	017	017	E	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	017	E	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	017	E	017	E	017	018	017	017	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	E	018	E	017	017	017	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	C	017	E	017	E	E	E	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	017	017	017	017	E019S	E029S	E	017	017	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	017	017	017	017	017	017	E	E	017	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	017	017	E	017	E	018	017	E	E	E020S	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	017	E	E	E	017	017	017	E	E	017	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	017	017	017	E	017	017	E	E	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	E	E	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	E	017	017	017	017	E	E	E	017	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	018	017	017	017	017	017	017	017	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	017	017	017	017	018	017	017	E	E	E	E	E	E	E	E	E
31																								
No.	30	30	30	30	30	30	30	29	29	30	29	29	29	29	30	30	30	30	30	30	30	30	30	30
Median	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	E	E	E	E	E	E	E	E	E
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.5 Mc to 20.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

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

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	310	310	320	320	305	325	330	355	I335A	330	330	335	290	285	315	325	325	335	315	325	335	315S	305	310F
2	F	FS	300	330S	360F	330	350	345	350	345	345	335	315	315	335	335	320	320	320	310	315	315	305	300
3	305	290	300	325S	335	310S	335	350	345	325	360	320	330	315	325H	330	315	325	310	300	315R	345	345	I305R
4	305	305	295S	315	310	315	345	350	360	365	355	335	300	315	330	315	300	295	300	I330R	365	300	290	285
5	280	300	300	330	FS	I230A	330	345	340	355	325	315	295	315	335	340	320	340	315	320	330	325	300	295
6	295	285	295S	305	325S	I340R	360	360	I335A	335	350	335	295	320	315	335	320	340	335	325	325	FS	RS	FS
7	FS	FS	305	305S	315F	FS	370	375	335A	330	315	330	320	325	315	320	325	320	320	325	310	300	295	305
8	310	315	295	310	320F	350F	350	350	310H	365	335	340	315	325	320	335	330	320	315	330	335	325	300	300
9	315	310	310	305S	335	310F	320	345	355	375	360	310	300	320	320	325	320	335	325	I330R	340	345	330	285
10	I310R	FS	FS	FS	315F	335F	I330R	370	355S	375	345	330	300	300	315	320	315	335	325	345	340	325S	295S	FS
11	FS	FS	FS	305F	FS	FS	345S	350	350S	395	350H	335	295	320	335	330	335	320	330	330	325	325S	305S	FS
12	315S	305S	305S	310	335	330F	350	350	340	355	330	330	340	325	330	335	345	340	315	310	325	FS	FS	320F
13	FS	FS	FS	FS	FS	FS	345	355H	340	350	C	C	C	C	315	340	340	320	I335R	325	310	RS	FS	290F
14	310	295	290	305S	310	325F	355	365	345Z	I335R	365	335	350	335	315	330	320	335	345	305	300	I300R	295	295
15	315	315	330	315	310	335	345	365	365	340	345	350	340H	330	325	330	315	310	310	I315R	335S	305	300	F
16	320S	290	290	295	285	325	340	345	355	315	345	310	330	325	345	345	325	340	270	285	315	320	285	290
17	295	310	300	335	305	295	325	I350A	340	325	355	300	345	325	305	320H	335	330	315	335	335	330S	295S	FS
18	315	315	290	330	365R	305	335	I330C	I330C	330	335	340	315	340	340	325	345S	345	335	325	295F	FS	A	FS
19	FS	290F	295F	FS	325F	295H	320	335	320	360	300	315	340	I320A	355	340	335	320	330	330	320	315	295	280
20	295	305	315	290	290	305	355	350	360	355	350	330	320	335	330	I340A	340	I330A	340	330	345	350	I330A	I310A
21	FS	I300R	295S	310	310	305F	325	345	355	365	365	335	340	310	345	330	330	340	330	340	345	335	310	295
22	315	310	FS	FS	I330A	305F	340	345	360	375	360	365	340	325	325	325	350	345	335	325	340	325	325	310S
23	FS	FS	330S	325	340	320	345	I330R	345	375	355	365	335	325	345	340	335	340	345	I330A	315	335	325	285
24	305	295	305S	305F	310F	FS	355	350	355	365	350	355	335	290	335	345	340	350	345R	335	315	310	310	I300R
25	305	310	FS	325	325	325	365	365	345	395	360	305H	325	330	315	310	340	355	335	340	350	295	FS	FS
26	FS	FS	315	295	340S	335F	375	355	345	390	325	335	335	345	360	360	355	355	325	315	285	345	310F	I295R
27	320S	300F	FS	320F	FS	330S	350	360	365	345	340	340	345	335	325	335	340	330	330	310	FS	325	I330R	310
28	325	300	295	325F	305	FS	345	350	335	325	340	355	320	330	325	335	340	345	295	325	285	305	300	315
29	300	285	290	305	295F	305F	365F	350	350	360	345	350	330	350	320	335	345	350	325	320	300	310	300	300
30	300	295	I295R	FS	FS	FS	355	370	370	355	340	355	345	335	325	335	330	335	330	350	325	310	295	300
31																								
No.	22	24	24	25	24	24	30	30	30	30	30	29	29	29	30	30	30	30	30	30	29	26	25	23
Median	310	300	300	315	320	320	345	350	345	355	345	335	330	325	325	335	330	335	325	325	325	320	300	300
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

A 7

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

M(3000) F2

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

M(3000)F1 0.01

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	A	A	400	405	405L	380	355H	375	L	L	L					
2								L	380	375	1380A	405	395	395	355	365	A	A						
3							L	L	370	400	410	405L	400	385	360	385	L	L						
4							L	L	370L	380	405	425H	390	375	355	370	355L	L	L					
5							L	L	370	375	400	380H	380H	375	360	365L	LH	L						
6							L	A	A	A	1390A	1390A	390	390	375	365L	370	L						
7							A	A	L	415	405	405	375	375	355	345L	L	A						
8							L	L	375	L	395	355	405	400	360	360L	L							
9							L	L	375	380	400	405	370	400	375	365	350L	L						
10							L	L	405	415	415	430	375	L	375	375L	365	L						
11							L	L	380	1410A	425H	425	L	L	370	365L	L	L						
12							L	L	370	405	395	405	390	370	355	L	L							
13							L	L	370	1370A	C	C	C	C	L	360L	L	L						
14							405	LH	405	385L	420	LH	410	410	L	355	350L	L						
15							L	L	L	375	405	410	425	LH	360L	365L	L	L						
16							L	L	360L	365	380	380	360	360	360L	L	L							
17							365	C	375	360	1370A	355	395	355	1370A	L	L	A						
18							C	C	370	360L	395	375	375	360	375H	A	L	A						
19							A	A	L	A	370	380	395	A	A	370L	A	A						
20							A	A	A	A	380L	1370A	370	355	1360A	A	A	A						
21							L	L	380	375	395	415	L	L	365L	L	L	L						
22							A	A	380L	375	405	L	1370A	1360A	370	365L	A	A						
23							L	L	385	370	390	395	405L	350L	A	A	A							
24							L	L	365L	380	400	395	395L	A	A	L	L	A						
25							L	L	380	380	L	390	365	375	L	L	L							
26							L	L	LH	L	1390A	380	380	375	375L	L	L							
27							L	L	380L	405	385	390	385	375	L	L	L							
28							L	L	L	375	380	400	L	LH	355L	L	L							
29							L	L	375L	380	410	L	L	L	365L	L	A							
30							L	L	L	380	L	385L	380L	380L	385L	LH	L							
31																								
No.								2	19	24	27	27	24	21	23	16	5							
Median								385	375	380	395	395	390	375	360	365L	355L							
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

M(3000)F1

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

km

h'F2

Sep. 1955

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							250	1270A	295	280	300	370L	400	315	300	295	250	255						
2							245	265	290	285	330	335	310	290	290	270	255							
3							250	255	305	255	310	300	325	295	295	280L	275							
4							245	250	255	280	290	355	305	310	305	340	320	285						
5							265	260	240	300	310	390	300	285	290	300	255							
6							240	1250A	260	285	315	390	330	345	290	300	270							
7							220	245	290	300	290	330	300	310	325	295	280							
8							240	245	310	250	295	340	310	310	290	295								
9							250	255	255	240	270	300	355	315	320	300	260							
10							245	250	240	255	315	370	300L	325	300	310	270							
11							250	250	250	265	305	300L	295L	300	300	260	265L							
12							250	280	250	300	285	290	305	295	270	255								
13							250	265	255	C	C	C	C	310	280	275	285							
14							235	250	255	250	290	270	280	1295A	300	315	265							
15							240	250	265	275	280	280	300	295	290	290	280							
16							250	270	300	285	330	295	295	280	255	275								
17							255	280	315	280	360	295	305	1290A	265	275	255							
18							1275C	1275C	275	265	290	300	290	265	290	260	245							
19							270	300	260	370	295	295	1320A	285	280	275	1265A							
20							245	250	260	275	300	300	290	295	1285A	270	1260A							
21							255	260	245	265	290	265	305	280	280L	275	255							
22							235	250	240	250	250	290	1295A	295	300	255	245							
23							240	255	235	250	250	300	305	280	280	275								
24								250	250	280	255	280L	305	290	255	270	245							
25							230	280	245	250	300	290	295	280L	290	260								
26							240	260	250	250	285	295	250	250	245	250								
27							250	245	250	280	270	260	285	260L	260	260								
28							245	260	265	245	260	300L	275	305	260	245								
29							250	250	245	245	260	280	265	295	265	255								
30							240	235	245	255	245	255	285	265	260	255								
31																								
No.							7	29	30	29	29	29	29	29	30	30	30	20	2					
Median							245	250	260	250	275	295	300	300	295	290	275	260	270					
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 9

h'F2

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

km 135° E Mean Time (G. M. T. + 9h)

h'F

Sep. 1965

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	245	245	240	245	260	245	240	230	A	A	210	195	180	190	190	240	205	245	250	230	205	240	245	270
2	300A	290	285	245	205	230	245	240	225	200	I220A	200	205	200	235	235	A	A	260	250	240	245	240	250
3	270	295	270	225	245	250	235	230	220	205	190	200	200	195	220	190H	215	255	255	240	200	255	230	215
4	270	285	275	270	280	250	235	230	235	I210A	205	180	190H	200	215	230	240	240	255	240	200	255	290	295
5	300	265	275	225	250	I290A	250	240A	240	225	195	190	200	220	205	240	205	245	250	240	230	230	250	290
6	290	295	290	280	260	245	235	A	A	A	I210A	I200A	210A	195	205	230A	225	245	235	240	255	260	I275A	290
7	280	280	270	265	225	245	I200A	I220A	205	215	190	195H	215	205	205	220	A	A	275	245	245	245	255	245
8	245	245	285	285	255	210	215	230	200	225	220	I200A	220	220	230	220	I235A	240	255	235	235	240	275	270
9	255	260	270	250	225	245	205	235	225	185H	210	205	200	200	205H	230	235	I250A	240	245	215	215	240	285
10	270	280	255	255	245	240	235	230	200	195	190	185	185	220	215	200	205	245	245	225	225	215	A	280A
11	280	280	275	255	240	240	240	225	210	I190A	175	200	185H	195	220	200H	240	240	245	235	235	235	255	265A
12	250	290	275	270	235	240	240	235	220	210	195	195	195	195	185H	220	240	240	255	255	250	I250A	I245A	235
13	245	295A	260	270	315	295	245	240	235	I230A	C	C	C	C	200	245	245	I240A	245	220	245	245	245	230
14	255	290	290	280	260	255	215	205	195	210	I215A	205	I200A	220	I220A	225	210	250	240	240	270	280	255	275
15	240	245	240	240	255	250	235	240	245	220	195H	195	180	I210A	220	195	245	245	260	240	230	245	260A	290
16	I250A	I290A	295	295	310	250	235	240	245	225	215	205	220	210	235	235	235	240	310A	290	245	240	I260A	280
17	280	260	275	230	265	295	260	240	I225A	225	I240A	240	200	215	I230A	240	I250A	I255A	255	245	240	250	290	275
18	300A	270	295	245	215	E290E	245	I240C	I230C	205	225	215	205	220	225	A	A	A	225	230	235	I295A	I285A	I315A
19	280	305	310	290	270	220	A	A	A	A	220	195	225	A	A	245A	A	A	250	240	240A	235	280	320
20	290	280	280	I260A	I300A	290	240	A	A	A	A	I220A	230	240	I230A	A	A	A	225	240	220	210	I245A	I265A
21	285	A	I270A	I265A	255	265	245	245	230	230	200	195	I200A	180H	195	245	245	250	245	230	225	210	250	270
22	245	270	270	245	I245A	I250A	245	I230A	210	210	200	A	A	A	205	I230A	I240A	I240A	225	235	I235A	235	255	I270A
23	285A	290A	240	245	235	250	245	250	215	230	205	195	195	240	A	A	A	235	240A	1240A	250	I225A	240	I295A
24	265	295	275	270	255	210	215	240	240A	220	205	215	205	A	A	255	240	1240A	210	220	240	255	A	A
25	260A	250	270	245	245	240	220	230	200	230	235	200	205	200	190H	215	250	235	235	210	225	290	295	305
26	260	270	265	270	250	235	220	I230A	195H	230	I230A	I210A	I200A	225	210	235	210	230	225	255	290	245	I270A	I300A
27	245	300	270	245	235	250	240	I240A	235	205	195	180H	210	205	200H	215	245	245	235	245	255	250	I255A	255
28	I260A	285A	265	255	275	270	235	240	I240A	240	200	180H	200	195H	205H	245	240	245	240	255	295	255	250	240
29	255	275	280	260	290	265	235	240	230	215	200	200	225	200	220	205	I250A	240	235	240	255	245	270	270
30	265	280	285	290	270	255	230	240	230	215	205	200H	200	205	200	200H	245	245	245	220	240	245	265	275
31																								
No.	30	29	30	30	30	30	29	27	26	26	28	28	28	26	27	27	24	25	30	30	30	30	28	29
Median	265	280	275	260	255	250	235	240	225	215	205	200	200	205	210	230	240	245	245	240	240	245	255	275
U. Q.																								
L. Q.																								
Q. R.																								

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

h'F

The Radio Research Laboratories, Japan

A10



IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

h'Es

Sep. 1965

135° E Mean Time (G.M.T. +9h)

km

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	105	100	E	E	E	160	115	105	115	105	105	105	G	G	G	14.5	140	E	E	E	110	E	100
2	105	100	100	105	100	100	145	145	145	120	110	105	105	100	100	100	100	100	100	100	100	E	E	E
3	E	105	105	E	E	E	130	155	G	130	130	110	115	G	166	G	150	140	130	100	100	100	100	E
4	115	110	E	E	E	E	140	125	120	115	105	105	105	G	115	G	130	120	130	120	120	110	E	105
5	105	E	E	E	E	100	130	125	120	110	110	G	105	100	105	150	G	165	135	120	115	E	E	100
6	100	E	E	100	105	115	130	120	115	115	110	105	105	105	105	110	125	135	120	110	105	135	110	100
7	100	100	E	E	100	E	120	120	115	110	G	105	105	G	G	G	125	120	115	110	110	E	E	E
8	105	100	100	100	105	105	125	105	115	110	110	105	105	105	110	105	105	105	105	105	100	100	100	E
9	E	E	E	E	105	105	110	100	120	115	100	150	105	105	120	110	140	125	120	110	110	100	100	100
10	100	E	E	E	E	E	145	125	110	120	G	100	100	155	100	100	150	135	120	115	100	105	100	100
11	100	100	100	E	E	E	110	110	110	105	100	100	G	100	135	100	95	100	100	100	100	115	105	105
12	100	100	100	100	100	E	155	140	125	120	115	110	G	100	105	G	120	125	115	110	105	110	105	105
13	105	105	105	105	105	105	105	105	120	110	C	C	C	C	120	120	145	130	120	105	105	105	105	E
14	100	100	E	E	E	E	G	G	155	100	100	100	105	105	105	105	105	150	105	110	105	100	100	100
15	E	E	E	110	E	105	145	140	145	110	105	120	105	105	105	100	155	100	100	E	110	110	110	110
16	105	105	105	105	E	E	G	145	130	120	110	120	115	110	105	105	155	140	130	120	110	100	105	100
17	E	E	E	E	E	135	130	140	130	125	120	115	125	125	140	140	140	125	120	115	110	E	105	100
18	130	125	E	120	125	140	135	C	C	125	125	120	G	105	100	100	100	100	100	120	120	115	105	105
19	105	E	105	E	E	E	445	130	125	120	120	120	135	110	110	110	135	135	130	125	120	125	115	115
20	105	105	110	105	105	105	110	135	130	125	115	115	110	110	110	110	110	110	110	110	115	E	105	105
21	105	100	100	105	105	105	165	135	115	115	115	110	105	105	115	115	105	S	100	100	100	E	E	E
22	E	E	E	115	110	110	110	110	105	105	105	105	100	100	105	105	100	105	105	100	120	115	110	110
23	105	105	105	100	105	105	105	145	100	115	125	G	G	140	110	110	105	130	120	120	120	115	100	115
24	E	E	E	E	E	E	145	130	120	115	110	115	115	105	110	115	110	110	110	110	110	110	105	105
25	105	100	100	100	100	125	140	110	105	105	100	100	100	G	G	G	G	160	110	E	E	110	105	105
26	100	100	E	E	E	130	120	120	115	110	105	100	100	110	125	115	100	105	E	120	120	110	110	105
27	105	100	105	E	E	E	130	120	110	120	110	105	105	105	120	G	150	135	E	E	E	120	115	105
28	100	100	100	100	100	E	105	125	120	120	155	120	125	115	120	160	150	130	110	105	100	110	110	110
29	E	E	110	105	105	E	G	150	130	115	120	115	115	115	G	125	110	110	E	E	E	105	105	105
30	E	E	100	E	E	E	140	140	G	120	105	130	115	145	G	100	155	110	100	E	E	E	E	E
31																								
No.	22	19	17	15	14	15	27	28	27	30	27	27	25	24	25	23	28	29	25	24	24	23	23	23
Median	105	100	100	105	105	105	130	125	120	115	110	110	105	105	110	110	125	125	115	110	110	110	105	105
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

h'Es

A 11

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

135° E Mean Time (G. M. T. +9h)

Types of Es

Sep. 1965

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	f3	f2	f2				h	h2	e3	b3	e2	l2	l2				h	h2				f2		f2	
2	f3	f	f	f	f2	f	h2	h2	h2	h	h12	h3	l2	l2	l2	l2	l3	l2	l2	f2					
3	f2	f2	f2				h2	h		h1	h1	h	h	h	h		h1	c	h	h2	f	f	f2	f2	
4	f2	f2					h3	h2	h2	h2	e2	e2	l	l	h	h	h	h	h2	f	f				
5	f2					f2	h2	h2	h2	b3	e2	l	l	l2	e2	h	h	h2	f	f					
6	f2			f2			h3	h3	h6	h3	h2	e2	e3	l2	l2	e2	h2	h2	f3	f4	f5	f2	f2		
7	f	f2					h3	h3	h3	e2	l	l2	e2	e2	e2	h4	e2	f5	f4	f4	f2				
8	f2	f3	f2	f3	f2	f2	h2	e	h	l	l2	l2	e2	e2	e2	l3	l3	l3	f	f2	f	f	f	f	
9					f	f2	l	l2	h	h	h	h12	l2	l2	h	c	h2	l2	h3	f4	f	f	f3	f2	
10	f2						h2	h2	h2	h	l	l2	h	h	l2	h	h2	h2	l2	f	f	f	f3	f3	
11	f	f2	f2				c	e2	e2	l3	l2	l	l2	h12	l3	l	l	l2	f2	f2	f2	f2	f2	f2	
12	f2	f2	f2	f2			h	h2	h2	h2	h	c	l2	l	l	h	h	h3	f2	f3	f2	f5	f2	f2	
13	f2	f2	f4	f2	f2	f	l2	l2	h3	h3	h3				h	h2	l	h2	l2	f	f2	f2	f2	f2	
14	f2	f2							h	l3	l3	l2	l3	e2	e3	l4	l3	h	f	f2	f3	f4	f3	f	
15						f	h2	h2	l2	e2	c	h	l	l2	l2	l2	h	l2	h		f2	f3	f3	f4	
16	f2	f2	f2	f2			h2	h2	h2	h	h	h	h2	c	l2	l2	h12	h4	f7	f2	f2	f	f2	f	
17							b3	h2	h2	h2	h2	h3	h12	h12	h2	h2	h3	h3	f4	f4	f		f2	f2	
18	f2	f2		f	f3		h2	h2	h2	h2	h	h2	h12	l2	l3	l3	l4	l7	f5	f5	f	f5	f6	f3	
19	f2		f2				h2	h2	h2	h3	h	h2	h2	e2	e3	h2	h3	h6	f7	f	f5	f	f2	f2	
20	f	f2	f3	f5	f4	f2	e2	h3	h3	h3	h2	h2	h2	h2	e2	e2	e4	l4	f	f4	f				
21	f2	f3	f2	f4	f2	f	h	h	h3	h3	h2	h2	e2	e2	h	h	l2		f3	f2	f2				
22				f	f3	f7	l5	l3	l2	e3	e2	l4	l2	l3	l4	l4	l4	l3	f4	f4	f2	f2	f3	f3	
23	f2	f4	f2	f2	f2	f3	l2	h12	l3	h	h		h	h	e3	e3	e4	h13	f6	f6	f4	f2	f	f4	
24							h2	h2	h2	h2	e2	h2	h3	e4	e3	h3	e4	e3	f	f	f2	f2	f3	f3	
25	f3	f4	f3	f2	f3	f	h	e3	e2	e3	l3	l2	l2				h	h	f5		f2	f2	f2	f2	
26	f2	f				f	h2	h3	h2	e3	l2	l3	l3	c13	h	h	l3	l	f3	f3	f	f	f3	f3	
27	f2	f2	f2				h	h3	h2	h	e2	l2	l2	l	h	h	h	h			f5	f4	f3	f3	
28	f4	f5	f2	f2			c	h3	h3	h2	h	h2	h12	h2	h2	h	h2	h	f2	f4	f2	f2	f2	f2	
29							h	h	h2	h3	h2	h2	h2	h	h	h	l3	l4			f	f	f2	f2	
30							h2	h2		h2	e2	h	h	h	l	h	h	l	h	f	f				
31																									
No.																									
Median																									
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

Types of Es

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

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

f<sub>o</sub>F<sub>2</sub>

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	040	040	038	034	038	052	054	056	A	A	U056R	U054R	060	071	U076R	U076S	062	065	066S	054	041	040	038
2	040S	040	038	042	022	029	050	056	058	060	060	060	062	066	073	067	096	098	062	070	067S	U058S	057	U052S
3	U050S	F	F	042S	U028S	U030S	053R	061	065R	071	059	060	065	059	062	050	054	058	063	070	070	057	044	038
4	034	035	035	031	030	031	J054R	061R	064	073	057	057	059R	U061R	064R	059	056	060	U074S	089	063S	U045S	U046S	
5	U045S	044S	042S	U039S	027	028	048	C	C	C	068R	U063R	U067R	073	086	U070R	053R	055R	067	U068S	053	044	U045S	042
6	041	040	U041S	A	U040S	U031S	050	058R	060	U057R	A	U056R	059R	058	065	061	061	C	069	U066R	050	035R	F	F
7	F	U034F	U038S	U029F	U029F	025	048	048	054	059	058	059	057	061	057	057	059	062	068	070S	058	043	050	050
8	045S	038	034	035	037	049	054	054	059	064	056	064	057	062	061	064	063R	056	062	070	055	U040S	039	037
9	033	037	038	038	033	034	045	060	U076R	060	052	U053R	U057R	I059R	058R	057R	063	067	066R	U065R	U066R	046S	027	031
10	031F	031F	033F	U038S	042	040S	056	U074S	064	062	055R	R	062R	060	057	057	061	060	U067R	U075R	048R	037	034S	033
11	034	034	035	035	033S	033F	047	061	U070R	C	056	064	U058R	059	055	058	052R	055	063R	061	048	042	U039R	F
12	043S	040	U038S	035	036S	035	050	062	072R	069	066	080	U075R	070	067	065	055	053	057	057	056	047R	F	044
13	040S	036	038	034F	033S	030F	053	053	066	075	059	063	067	097	C	C	C	C	071S	070	U045R	A	038	034F
14	031F	U031F	F	030F	032F	F	051R	056	060	062	063	U071R	068	060	054	057	059	061	U072R	060	053R	047	043	044
15	042	042	025	036	032	034	U052R	057R	064R	059	064	064	062	062R	063	062	059	067	U076R	U087S	U075R	052	049	048
16	043	038	036	035	033	037	046R	062	067	066	065	064	076	065	076	068	055	059	054	U064R	064	052	037	039S
17	041	040	038	035	028	031	050	080R	055	C	065R	I060A	063	059	056	U057R	A	064	066	U070S	U050S	040	033S	U038F
18	U041S	C	C	036	030S	022	047	063	C	C	070R	I067C	064	068	066	062	I066C	073	063	065	042	039	F	043S
19	U044S	U040S	039S	U039S	038S	033S	049	053R	061	057	U053R	066	061	058R	053	063	A	057	070	061	055	042S	036	037
20	035	035R	037	032	032	032S	050	057	055R	I056A	058	055	C	C	C	C	C	U064R	U076S	070S	050S	U032R	I029A	029
21	035S	031S	032	033	031	032	045	064	066	063	060	056	053	058	064	056	066	072R	U077S	R	U066R	033	032	032
22	035	034	035	037	035	028	050	067R	U081R	066	I060R	062	I060R	059	061	060	070	U072R	U069S	037	I040R	U038S	037	034
23	035S	U035S	U041S	037	036	030	049	066	084	069	058	059	058	070R	070	065	067	071	068	055	A	A	035	U036S
24	A	036	037	038	040	040	J053R	055	067	U075R	U062R	061	061	064	072R	083	U081R	083R	U063R	043	041	041	C	U035F
25	040S	043S	037S	038	035S	034S	054	U063S	U075S	U076R	068	064	J071R	J081R	068	063	J074S	086	065	058	040	036	039	035
26	038	036	034	032	032	029	049	058	063	J075R	070	073R	086	J074R	068	066	062	065	J053R	053	J043R	050	F	039
27	J043F	041F	042	038	034	036	056	J080R	U080R	073	061	072	074	071	061	060	059	065	072S	066S	056	U045S	U043F	044
28	042S	040S	040S	036	033	037	050	072S	061	071	078	071	065	067	063	073	074	070	096	058	050	053	050	045
29	047	040	041	039	038	039	058	070S	085	J074S	063	067	067	068	069	061	062	073	065	I056S	046	045	038	039
30	040S	038	038	036	035	035	055	070	J085R	068	070	U077R	069	065	061	064R	061	U074S	U077S	U064S	039	035	036	036
31																								
No.	27	28	27	29	30	29	30	29	28	25	28	29	29	29	28	28	26	28	30	29	29	28	25	28
Median	040	038	038	036	033	033	050	061	064	066	060	063	063	062	064	062	062	064	066	065	053	043	039	038
U. Q.	043	040	040	038	036	036	053	066	074	073	066	067	068	068	068	066	066	072	071	070	058	048	044	044
L. Q.	035	035	035	035	031	030	049	056	060	060	058	058	059	059	060	058	059	060	060	058	047	038	036	035
Q. R.	008	005	005	003	005	006	004	010	014	013	008	009	009	009	008	008	007	012	008	012	011	010	008	009

The Radio Research Laboratories, Japan

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

f<sub>o</sub>F<sub>2</sub>

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)

foF1

Sep. 1965

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	A	A	460L	470L	450L	440L	410L	400L	L	L					
2							L	420L	440L	440L	440L	450A	440L	440L	440L	420L	410L	410L	L	L				
3							L	L	L	450	L	450	460	460L	440	L	L	430L	A	L				
4							L	L	L	L	450L	460S	460L	450L	460L	440L	400L	400L	1370S					
5							C	C	C	C	440L	450L	450	A	A	420L	400L	L	L					
6							A	A	A	A	A	A	A	A	430L	420L	A	C	C					
7							L	L	410L	420L	L	450L	450L	450L	420L	400L	400L	L	L					
8							L	LH	L	410	440	L	470L	440	440L	L	L	L	L					
9							L	L	410	L	450L	450L	440L	S	420L	R	L	L	L	A				
10							U380L	410	410	430	430L	440L	450R	450L	440L	L	380L	L	L					
11							L	L	420	C	L	440L	450	450L	430L	410L	L	L	L					
12							L	L	410L	430L	450	450L	450L	450L	430L	420L	400L	L	L					
13							L	L	410L	A	L	450	450	430	C	C	C	C	C					
14							LH	L	L	L	440L	460R	460L	460	440L	420L	L	L	L					
15							L	L	410L	L	440L	450	A	460L	460L	410L	LH	L	L					
16							L	L	L	440	450L	460	450	440L	430L	A	A	A	A					
17							L	L	L	C	A	A	450	430L	L	A	A	A	A					
18							L	L	C	C	L	C	450L	430L	L	420L	C	C	C					
19							L	L	A	L	A	440	440	420	420L	L	A	A	A					
20							L	L	A	A	A	440L	C	C	C	C	C	C	A					
21							L	L	L	L	440L	450	440L	450L	450L	L	A	L	L					
22							L	L	A	A	A	460L	450L	450L	440L	A	L	L	L					
23							L	L	L	420L	440L	430L	450L	440	420L	L	L	L	L					
24							L	L	L	430L	430L	450L	460L	450L	420L	420L	A	A	A					
25							L	L	L	440L	440L	L	460L	L	440	L	L	L	L					
26							L	L	L	LH	L	450	460	L	L	L	L	L	L					
27							L	L	L	430L	440L	450L	460L	450L	420L	LH	L	L	L					
28							L	L	L	450L	R	L	460L	450L	410	L	L	L	L					
29							L	L	L	L	L	L	L	L	4430L	LH	L	L	L					
30							L	L	L	L	L	440L	450L	L	L	440L	LH	L	L					
31							1	8	12	16	23	25	23	24	12	8	1							
No.							U380L	410L	430L	440L	450L	450L	450L	450L	435L	420L	400L	U370S						
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

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

foF1

The Radio Research Laboratories, Japan

K 2

IONOSPHERIC DATA

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

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

f<sub>o</sub>E

Sep. 1965

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							210	260	A	A	A	A	R	R	R	325	300	R	210	E150B				
2							185	R	R	A	A	A	R	A	R	290	A	R		E120B				
3							190	R	R	320	I340A	I345R	340R	355	I330A	I300A	270	230		E130B				
4							A	I245A	270	A	A	A	A	A	R	R	270	A		E120B				
5							190	C	C	C	A	A	R	A	A	290	I275R	205		E150B				
6							A	R	A	300	A	A	A	A	A	R	R	C		E140B				
7							A	A	A	A	A	A	A	A	A	330	315R	295	265	210	E150B			
8							A	250	I300R	A	A	A	A	A	A	A	A	A	A	E150B				
9					E130B	E150B	195	260	A	A	A	A	350	340	320	290	A	A	200	E150B				
10							A	235	R	A	A	A	330	I355R	A	A	A	A	A	E140B				
11							A	A	A	C	R	325	R	A	A	A	A	A	A	E150B				
12							A	245	R	300	A	A	A	A	A	A	A	A	A	E140B				
13							180R	A	A	A	A	A	A	I320A	C	A	C	C	C	E140B				
14							200	230	275	R	A	A	A	A	A	A	A	R	A	E160B				
15							A	A	290	310	R	R	A	A	A	A	A	A	A	E150B				
16							A	I250R	A	300	A	A	R	A	A	A	A	195		E140B				
17						E140B	E150B	240	270	C	A	A	A	325R	310	I285R	A	A	A	E140B				
18							R	R	C	C	A	C	R	A	A	A	C	A	E150B					
19							R	235	I270R	290	A	A	A	A	A	A	250R	A	E140B					
20							E150B	225	R	A	310	A	C	C	C	C	C	A	E140B					
21							E160B	A	R	A	A	A	A	A	A	A	A	A	E150B					
22							E150B	A	A	A	A	A	A	A	A	A	A	A	210	E150B				
23							E160B	R	I280A	I310A	R	R	R	I330R	300	I230R	R	190	E140B					
24							190	250	R	A	A	R	R	E	R	295	A	A	E150B					
25							A	A	A	320	A	A	340	325	300	230	A	A	E150B					
26							A	A	A	I310A	I325A	320	340R	340	I320A	280	A	A	E150B					
27							A	A	295	I315R	I330A	R	R	I330A	310	I270A	I240R	E170B	E130B					
28							E150B	A	R	R	A	A	U330R	I325A	I310R	275	I245R	180	E150B					
29							A	245R	270R	305	315	320	A	A	A	280	240	180	E120B					
30							E170B	230	290	R	A	A	R	330R	315R	290	255	E160B	E130B					
31																								
No.					1	2	15	14	10	12	5	4	6	12	11	15	9	12	30					
Median					E130B	E145B	180	245	270	310	U325A	320	340R	330	315	290	255	200	E145B					
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Reser-ch Laboratories, Japan

K 3

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

f<sub>o</sub>E

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)

foEs

Sep. 1965

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	J040	024	J025	J024	020	E012B	G	G	J040	J064	J065	J054	G	G	034	G	J027	028	021	J027	J026	022	020	025	
2	019	E012B	024	J019	J027	024	028	040	031	J032	J032	J051	G	036	032	031	J027	G	J025	J038	J022	022	E015B	E0158	
3	022	E012B	E011B	020	J018	J018	025	034	034	G	037	G	G	C	034	032	G	J038	J030	J030	023	J025	025	J027	
4	J019	024	J022	E014B	E012B	021	028	J030	J034	J038	J042	J041	J040	J039	G	G	034	J033	J025	J019	J019	024	020	J028	
5	J029	024	J028	E0132	J026	024	026	C	C	C	037	J037	J054	J058	G	032	033	G	J039	J055	J064	J029	J025	021	
6	J024	J024	J061	J055	J027	J024	J041	J042	J055	J055	J076	J049	J046	J042	J052	037	J053	C	J030	J031	J052	J074	025	J033	
7	020	J027	J024	J023	J023	019	023	J031	J042	J037	J044	048	J041	032G	J026G	020G	032	028	J029	J027	J032	J027	023	J021	
8	021	021	022	022M	J013	022M	023	028	035	021G	036	037	J040	J038	034	J038	J034	024	022	022	034M	J023	J024	023	
9	021	J022	020M	E016B	J012	E015B	024	030	032	033	034	035	J042	043	G	J037	J041	J030	J052	J043	J030	J028	J030	J026	
10	J021	019	019	018	E015B	020	033	030	032	036	J036	J037	036	037	035	J039	J026	J026	J030	023	J026	J030	J026	J024	
11	J031	J021	E014B	020	023	025	J032	J030	J029	C	033	G	J030G	J041	J042	J041	J041	J030	J026	024	J026	023	J029	J025	
12	J023	J020	J020	J020	J019	022	023	032	J037	J030	J042	J040	J042	J033	J036	033	J036	J029	J028	J029	J036	024	J053	J042	
13	J026	J027	024	020	J028	J023	025	J042	J034	J043	J042	J041	J042	J041	C	C	C	C	J038	J037	J042	J042	J030	022M	
14	J030	J030	024M	022M	022	019	025	028	032	036	J035	J040	J033	J038	J032	J032	032	J029	E016B	J023	J026	J025	024	019	
15	022	J027	J023	023	J030	J023	025	J030	031	035	035	J036	J043	J033	J040	J031	J029	022	J030	J029	J026	J019	E016S	020	
16	E015S	020	E014B	J028	J020	024	J021	030	035	J043	038	J036	G	J043	J036	J058	J028	J036	J033	J041	J047	J025	022	024	
17	024	022	018	020	E014B	J014B	021	030	035	C	J049	J039	038	037	039	J048	J061	J042	J027	J041	J029	J028	022	J028	
18	021	C	C	J030	021	021	024	031	C	C	J041	C	G	J034	J037	J030	C	J031	J030	J030	J018	024	021	J052	
19	J031	J022	J030	J020	024	E015B	022	J037	J051	J041	048M	033	034	035	J030G	J039	J074	J051	J030	J053	J054	J027	J019	022	
20	J025	J021	024	J030	J030	J036	J027	032	J044	J037	048	048	C	C	C	C	C	J054	020	J033	J061	J029	J041	J041	
21	J026	J020	J022	J022	J024	022	023	026	036	J041	J041	033	035	J039	036	J034	J043	J041	J034	J030	J025	023	J028	J020	
22	023	J022	024	E015B	021	E015B	021	025	J041	J051	J049	036	J041	J040	J041	J042	J028	J025	J030	J030	J029	J030	J030	023	
23	J030	J030	J025	J031	J027	J023	J025	033	035	035	G	G	037	037	039	032	034	029	J033	J021	J054	J058	J029	J028	
24	J085	J043	E013B	020	020	020	022	030	038	J040	036	036	036	036	035	032	J040	J051	J029	J041	025	022	C	020	
25	J027	022	019	023	022	J021	J039	J029	035	036	J042	J041	024G	026G	021G	G	J029	J029	J052	J036	023	E015S	E014B	J031	
26	J032	024M	024	020	J016	J017	022	J032	J034	J031	J034	J041	J029G	G	034	J029	J028	021	022	J057	J041	J042	J022	029M	
27	J041	023	023	022	J016	J016	021	029	J028G	J029G	J040	037	036	J036	G	J031	029	026	J019	J026	J025	J037	J031	J021	
28	J026	J019	023	021	023	021	024	J032	034	J038	J039	037	027G	034	020G	031	031	J030	022	022	E014B	J023	E014B	E015S	
29	E011B	E0158	E013B	E011B	J041	J030	J025	029	032	035	037	036	035	036	032	G	032	031	J037	J034	E015S	E014B	E015S	J021	
30	019	019	E011B	J028	J018	021M	025	028	G	033	036	033	G	035	G	G	028	023	J019	J037	J024	J018	020	E013B	
31																									
No.	30	29	29	30	30	30	30	29	28	26	30	29	29	29	28	28	27	28	30	30	30	30	29	30	
Median	J024	J022	023	022	J022	021	024	030	034	J036	J038	037	035	036	034	J032	J032	J029	J030	J030	J026	J025	024	J024	
U. Q.	030	024	024	024	026	023	026	032	038	041	042	041	040	040	038	038	040	034	033	038	041	029	029	028	
L. Q.	021	020	018	020	018	019	022	029	032	033	036	036	G	034	G	030	028	026	022	026	024	023	020	021	
Q. R.	009	004	006	004	008	004	004	003	006	008	006	005	006	006	006	008	012	008	011	012	017	006	009	007	

Sweep 1.0 Mc to 20.0Mc in 20 sec in automatic operation The Radio Research Laboratories, Japan

foEs

K 4

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

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

fbEs

Sep. 1965

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	019	E	E	E	E	B			039	A	A	041			033		025	025	019	025	026	E	E	015	
2	E	B	E	015	017	015	025	027	030	029	E032R	050		034	032	030	026		016	031	018	E	S	S	
3	E	B	B	E	E	E	023	032	033	038	036	039			033	032		038	026	028	E	E	016	017	
4	E	E	018	B	B	E	025	030	033	038	044	039	037	039			030	032	021	E055S	051	019	018	E	
5	024	016	025	026	020	015	020	C	C	C	036	E037R		043	055	030	030	032	032	E055S	051	020	016	E	
6	015	015	018	A	014	E	033	040	052	052	A	E049R	045	041	038	036	050	C	020	E031R	027	025	017	017	
7	E	E	016	015	016	E	022	030	033	037	043	041	037	025G	026G	020G	031	025	025	025	023	017	E	017	
8	E	E	E	E	E	E	022	027	033	E021R	035	037	038	037	034	035	031	024	021	019	027	019	017	018	
9	E	015	E	B	G	B	024	029	032	E033R	E034R	E035R	040	040		E037R	029	025	048	035	026	016	018	017	
10	017	E	015	E	B	E	022	028	030	033	E036R	035	036	037	034	031	E026R	023	022	E	E	022	017	E	
11	020	017	B	E	E	E	026	026	E029R	C	E033R		E030R	041	034	033	028	025	018	017	016	019	019	E	
12	017	017	E	E	016	E	021	028	024	028	042	038	036	033	034	030	025	023	025	017	017	017	019	021	
13	017	017	016	015	018	016	025	028	029	042	038	038	039	038	C	C	C	C	025	029	035	A	016	016	
14	017	019	E	016	E	E	021	026	030	031	035	E040R	033	038	E032R	032	028	025	B	016	017	021	015	E	
15	E	016	016	014	015	E	021	027	031	033	035	E036R	043	033	034	030	027	027	019	019	016	E	S	016	
16	S	016	B	025	015	016	020	029	034	041	036	033	033	039	033	052	028	020	026	040	040	E	E	E	
17	016	E	E	E	B	G	020	028	E035R	C	049	A	033	037	037	047	A	040	025	038	025	E	E	017	
18	E	C	C	023	E	E	023	028	C	C	039	C	033	033	034	E030R	C	E031R	026	023	017	019	E	E	
19	027	017	017	015	016	B	022	034	051	040	042	E033R	E034R	032	E030R	037	A	040	E030R	053	038	023	018	E	
20	E	015	016	022	026	021	025	029	040	A	044	037	C	C	C	C	C	C	054	G	017	038	026	A	
21	020	E	019	018	021	E	022	026	030	037	040	E033R	033	038	033	031	038	027	026	022	E	E	026	E	
22	E	018	022	B	E	B	021	025	041	050	E049A	035	033	039	040	041	027	016	028	028	E029R	026	018	017	
23	027	027	020	025	025	016	020	028	030	032	037	035	037	037	036	032	030	025	029	E	A	A	026	016	
24	A	E	B	E	E	E	022	030	029	037	035	E036R	E036R	E036R	E035R	030	040	045	026	025	017	E	C	E	
25	022	017	E	E	E	E	017	030	026	030	G	041	E024R	026G	E021R		027	026	040	029	E	S	B	E	
26	020	E	015	E	E	E	019	020	029	031	034	026	026G		034	026	026	021	022	025	021	035	019	017	
27	018	016	E	E	E	E	020	026	027G	E029G	037	037	036	034		028	026	020	017	022	017	024	022	018	
28	016	014	E	013	E	E	016	028	033	037	037	035	025G	033	020G	030	027	025	018	E	B	020	B	S	
29	B	S	B	B	013	017	019	026	032	035	035	036	035	033	032		031	031	033	028	S	B	S	017	
30	E	E	B	015	016	E	023	027		033	034	033		035			027	018	017	016	E	015	E	B	
31																									
No.																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

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

The Radio Research Laboratories, Japan

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

Sep. 1965

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	E015S	014	E015S	013	013	012	014	014	017	014	015	017	016	015	014	013	012	013	015	013	011	E015S	E015S	013
2	013	013	011	011	013	014	013	014	013	016	015	017	018	015	016	013	014	014	012	E015S	E015S	E015S	E015S	
3	E014S	012	011	013	011	014	013	014	015	016	015	016	021	020	019	014	016	013	013	E015S	E015S	E015S	E015S	
4	E015S	E015S	E015S	014	012	015	015	014	015	014	015	015	016	015	015	014	013	012	012	013	E014S	E015S	E015S	
5	E015S	013	013	010	011	013	014	C	C	C	016	015	016	017	017	014	014	013	015	E015S	011	E015S	E014S	
6	013	014	014	013	011	015	013	014	015	015	017	017	016	016	016	017	017	C	014	E016S	E015S	E015S	E016S	
7	E014S	E015S	E015S	014	014	015	014	015	016	016	017	017	017	016	016	015	015	015	015	E015S	E015S	E014S	E014S	
8	E015S	014	014	014	014	015	013	015	016	015	016	017	019	016	016	017	016	014	015	014	014	E015S	E015S	014
9	E015S	013	E015S	016	013	015	014	016	015	017	021	016	015	017	016	017	016	014	015	014	E015S	E015S	E015S	
10	E015S	014	014	013	015	015	015	015	015	016	016	021	026	016	017	016	015	014	014	E016S	E016S	E015S	E015S	
11	E015S	014	014	014	015	014	015	015	016	C	016	016	018	016	017	015	014	015	015	E015S	014	E015S	E015S	E016S
12	E016S	E015S	E015S	015	014	014	015	015	016	016	017	019	019	017	016	015	014	015	014	E015S	014	E016S	E015S	E015S
13	E016S	014	E015S	014	014	015	015	015	015	016	016	016	015	015	C	C	C	C	C	014	014	E015S	E015S	E015S
14	E015S	E015S	E015S	014	014	013	014	014	015	015	015	015	017	018	015	015	015	014	016	014	013	014	013	E015S
15	E015S	014	014	013	014	014	014	015	015	016	016	016	017	016	015	015	015	014	015	E015S	014	014	E016S	E015S
16	E015S	E015S	014	014	014	013	014	015	016	016	016	016	016	016	016	016	015	014	014	014	014	E015S	014	E015S
17	014	014	E015S	014	014	014	015	014	015	C	016	016	016	016	014	017	015	016	014	E015S	E015S	E015S	014	E015S
18	E015S	C	C	013	014	016	015	015	C	C	016	C	017	017	016	015	C	C	015	015	014	E015S	014	E015S
19	E015S	E015S	014	014	015	015	015	016	016	016	017	016	017	018	016	017	015	016	014	014	E016S	E015S	014	E016S
20	E015S	014	014	014	014	014	015	015	016	016	017	017	C	C	C	C	C	014	014	014	E016S	014	E015S	014
21	E017S	E015S	014	014	014	015	016	015	017	016	016	018	016	017	025	017	016	016	015	E015S	E016S	E016S	E017S	E017S
22	E017S	E015S	014	015	015	015	015	016	015	016	019	018	018	017	017	016	014	014	015	E015S	E015S	E016S	E017S	E015S
23	E016S	E015S	E015S	014	014	013	016	015	015	017	016	017	016	016	016	016	016	015	014	014	E015S	E016S	014	E015S
24	014	E015S	013	015	015	014	015	014	015	016	031	017	017	016	016	016	015	014	015	C	E015S	E015S	C	E015S
25	E016S	E015S	014	014	014	014	014	015	017	016	016	016	016	016	016	016	015	015	015	E015S	E015S	E015S	014	014
26	014	014	014	014	014	014	014	015	016	016	015	015	015	019	019	015	015	014	015	E015S	E015S	014	E015S	E015S
27	E015S	E015S	E015S	015	014	014	014	014	014	017	019	018	017	016	016	015	017	017	013	E015S	E015S	E015S	014	E015S
28	013	010	E015S	010	013	013	015	014	013	015	015	018	015	017	017	013	014	015	015	014	014	014	014	E015S
29	011	E015S	013	011	010	012	012	014	016	018	019	020	022	018	018	016	016	016	012	011	E015S	014	E015S	011
30	012	013	011	012	011	015	017	016	017	017	018	018	018	016	017	017	015	016	013	013	E015S	011	E014S	013
31																								
No.	30	29	29	30	30	30	30	29	28	26	30	29	29	29	28	28	27	28	30	29	30	30	29	30
Median	E015S	013	014	014	014	014	014	015	015	016	016	017	017	016	016	016	015	014	014	E015S	E015S	E015S	E015S	E015S
U. Q.																								
L. Q.																								
Q. R.																								

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

f - min

The Radio Research Laboratories, Japan

K 6



IONOSPHERIC DATA

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

0.01 135° E Mean Time (G. M. T. + 9h)

M(3000) F2

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	300	310	315	295	300	350	350	355	A	A	U290R	U265R	275	295	U310R	U320S	320	320	315S	320	300	295	295
2	300S	275	285	320	295	300	310	350	335	325	320	315	305	295	295	320	290	310	305	300	325S	U295S	300	U290S
3	U270S	F	F	320S	U305S	U295S	345R	335	350R	340	320	310	340	330	320	300	295	310	300	310	340	325	315	315
4	285	290	300	315	310	305	J335R	345R	335	335	325	305	300R	U290R	295R	295	305	290	U310S	325	330S	U300S	U275S	U290S
5	U265S	285S	280S	U310S	310	280	300	C	C	C	330R	U315R	U300R	290	310	U330R	310R	325R	310	L315S	330	300	U280S	265
6	275	275	U270S	A	U295S	U295S	340	335R	350	U355R	A	I280R	310R	295	310	310	320	C	305	U305R	330	335R	F	F
7	F	U275F	U305S	U295F	U330F	320	365	365	315	320	310	310R	330	320	325	310	310	315	320	325S	325	305	290	300
8	315S	315	295	300	320	335	365	350	360	345	325	300	300	310	315	325	330R	320	320	345	345	U305S	235	295
9	310	310	305	325	325	300	320	335	R	355	335	U255R	U325R	I300R	320R	305R	325	335	325R	U315R	I350R	340S	295	295
10	285F	290F	305F	U315S	320	310S	325	U360S	365	365	340R	R	320R	330	305	315	320	335	U330R	U350R	350R	290	305S	290
11	310	295	295	325	330S	335F	330	340	U350R	C	320	330	U310R	320	305	315	315R	330	330R	335	335	300	U280R	F
12	300S	305	U305S	305	315S	305	350	340	320R	340	305	335	U315R	315	320	340	305	330	320	305	315	320R	F	300
13	315S	305	310	290F	275S	295F	330	320	345	350	330	325	330	330	C	C	C	C	C	330S	345	U315R	A	315
14	305F	U275F	F	300F	285F	F	355R	355	350	365	325	U335R	335	305	315	310	330	320	U335R	325	305R	290	290	300
15	300	320	315	310	295	305	U355R	345R	345R	335	325	325	320	310R	310	320	315	300	U315R	U320S	U335R	310	300	315
16	315	305	290	290	290	310	350R	350	345	330	340	315	335	300	320	340	330	330	280	U295R	310	315	295	285S
17	290	300	310	325	320	275	315	345R	355	C	330R	I310A	325	325	320	U340R	A	315	310	U330S	U320S	315	275S	U280F
18	U305S	C	C	335	350S	285	320	335	C	C	330R	I325C	315	320	330	315	I320C	335	325	330	335	305	F	290S
19	U295S	U280S	285S	U305S	305S	290S	365	340R	340	335	U300R	325	325	345R	315	315	A	315	330	325	310	295S	295	290S
20	280	285R	310	295	285	290S	340	365	355R	I345A	340	325	C	C	C	C	C	U320R	U325S	345S	340S	U320R	I290A	290
21	290S	300S	295	315	300	305	335	345	360	345	355	345	305	310	320	320	325	320R	U325S	R	U370R	310	290	290
22	290	310	310	305	340	310	330	350R	U360R	350	I340R	315	U335R	315	315	320	325	U350R	U345S	345	R	U295S	310	295
23	285S	U305S	U300S	325	325	300	330	325	360	355	355	325	305	315R	325	320	325	335	330	335	A	A	305	U275S
24	A	305	295	315	315	345	J365R	350	325	U350R	U355R	310	305	305	305R	325	U335R	360R	U380R	325	305	320	C	U275F
25	300S	305S	305S	330	330S	330S	350	U325S	U335S	J340R	350	320	J325R	R	320	315	J325S	340	345	360	355	290	280	310
26	300	300	290	310	330	320	365	350	340	J345R	325	320R	345	J335R	330	335	345	345	J330R	320	J315R	350	F	295
27	J300F	295F	305	325	305	330	J350R	U375R	335	330	315	320	330	320	320	325	325	315	325S	310S	330	U290S	U260F	295
28	235S	295S	295S	315	285	290	330	320S	370	310	315	320	300	320	310	310	330	330	315	310	295	290	295	295
29	295	295	290	280	280	285	340	345S	355	J365S	350	330	330	325	345	325	320	340	335	I330S	300	310	285	285
30	285S	295	275	295	295	305	345	360	J355R	345	335	U330R	330	345	325	305R	325	U325S	U330S	U345S	310	285	285	285
31																								
No.	27	28	27	29	30	29	30	29	27	25	28	29	29	28	28	28	26	28	30	29	28	28	25	28
Median	295	300	300	315	310	305	340	345	350	345	330	320	320	315	320	320	320	325	325	325	325	330	305	290
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

K 7

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

Sep. 1965

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	A	A	395L	355L	355L	340L	365L	355L	L	L					
2								L	L	360L	355L	360L	360L	365L	345L	340L	345L	L	L					
3								L	L	L	380	380	375	370L	365	L	330L	A						
4								L	L	L	355L	360S	365L	355L	330L	335L	345L	335S						
5								C	C	C	375L	365L	370	A	A	340L	350L	L						
6								A	A	A	A	A	A	330L	345L	345L	A	C						
7								L	L	385L	L	385L	365L	355L	375L	375L	355L	L						
8								L	LH	L	395	380	365L	365	365L	L	L	L						
9								L	L	L	365	L	365L	375L	S	375L	R	L	L	A				
10								U385L	385	390	410L	395L	360R	350L	375L	L	370L	L						
11								L	L	C	L	405L	395	355L	375L	360L	L	L						
12								L	L	375L	380L	380	370L	385	370L	365L	360L	L						
13								L	L	375L	A	L	380	390	C	C	C	C						
14								LH	L	L	400L	385R	360L	370	375L	375L	L	L						
15								L	L	U350L	L	390L	380	A	365L	350L	365L	LH	L					
16								L	L	L	345	355L	350	360	345L	350L	A							
17								L	L	L	C	A	A	355	345L	L	A	A						
18								L	L	C	C	L	C	355L	350L	L	345L	C						
19								L	L	A	L	A	370	365	360	355L	L	A	A					
20								L	L	A	A	A	375L	C	C	C	C	A						
21								L	L	L	L	380L	365	355L	360L	350L	L	A	L					
22								L	L	A	A	360L	360L	355L	360L	355L	A	L						
23								L	L	L	370L	365L	370L	355	350L	L	L	L						
24										375L	365L	360L	355L	350L	355L	350L	A	A						
25								L	L	385L	385L	L	375L	L	365	L	L	L						
26								L	L	LH	L	380	370	L	L	L	L	L						
27								L	L	L	360L	365L	360L	355L	350L	345L	LH	L	L					
28								L	L	L	360L	R	L	350L	355L	345	L	L						
29								L	L	L	L	L	L	L	L	U360L								
30								L	L	L	L	355L	350L	L	L	345L	LH	L						
31																								
No.								1	8	12	16	23	25	23	24	12	8	1						
Median								U385L	370L	380L	370L	370L	365L	355L	355L	355L	350L	U335S						
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

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

M(3000)F1

# IONOSPHERIC DATA

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G. M. T. +9h)

km **h'F2**

**Sep. 1965**

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							250	260	A	A	350	440	375	325	305	270	260	265						
2							255	260	300	305	310	325	330	305	275	320	280							
3						260	275	260	300	300	280	300	300	305	325L	300	300							
4						250	270	250	280	305	315	360	330	310	310	315	310							
5						C	C	C	C	265	310	340	330	295	260	300	260							
6						255	260	230	A	A	R	325	360	310	320	300	C							
7							235	290	290	300	325	280	310	300	305	300	275							
8						220	250	260	300	330	355	310	305	295	275	275								
9							260	250	245	275	375	310	330	310	330	275	250	260						
10							230	230	250	260	335	300	280	320	310	275	255							
11							250	250	C	275	280	330	305	305	305	300	260							
12							260	255	250	330	275	290	300	300	260	300								
13							295	250	260	270	300	290	300	C	C	C	C							
14							240	260	230	295	285	275	325	300	320	260	275							
15							230	255	255	270	285	300	325	315	275	300	295							
16							235	260	275	265	300	280	295	280	255									
17							280	250	C	280	A	295	305	280	300	A	265							
18								260	C	C	270	C	300	280	265	290	C							
19							265	270	265	310	300	300	275	310	300	A	270							
20							230	250	A	270	295	C	C	C	C	C	C							
21							290	235	250	245	260	320	330	280	280	275	260							
22							235	230	250	R	300	280	325	310	275	275								
23							265	230	230	250	280	300	310	275	280	260	250							
24									250	250	285	310	320	315	275	250	235							
25									250	260	255	315	295	295	290	275	235							
26									260	250	275	290	260	265	250	270	250							
27							235	240	240	260	300	290	275	275	270	265	270							
28							235	225	300	280	260	300L	300	280	280	255								
29							255	250	230	250	290	300	280	275										
30							240	250	255	275	265	280	275	300	295	260								
31																								
No.							4	26	27	24	27	27	29	29	28	27	23	20	2					
Median							260	250	250	250	275	300	300	300	305	290	275	270	260					
U. Q.																								
L. Q.																								
Q. R.																								

**h'F2**

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*

Sep. 1965

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	250	260	250	240	260	255	240	225	E250A	A	A	E260A	180	220	230	225	225H	245	260	230	225	250	260	280
2	285	280	280	230	340	275	250	235	210	210	220	I240A	225	200	205	230	215	245	255	260	230	245	255	275
3	275	285	260	210	260	285	245	235	225	210	210	210	200	200	200	230	225	I255A	250	250	225	225	250	250
4	290	300	300	255	260	290	240	230	210	220	230	210	205	225	205	235	255	255	220	225	210	255	300	305
5	335	295	305	280	255	300	260	C	C	C	210	215	210	A	A	245	255	200	260	I255H	E285A	265	300	300
6	305	315	365	A	260	265	A	A	A	A	A	A	E300A	E250A	E250A	250	A	C	275	230	245	255	330	305
7	275	280	260	260	220	270	220	210	205	200	E290A	E260A	210	230	205	215	235	255	250	235	235	255	275	265
8	240	250	290	240	245	230	205	200H	230	205	210	210	210	210	200	250A	250A	250A	250	225	220	250	300	290
9	275	260	255	240	225	255	225	220	225	205	230	235	E250A	E260A	220	I240R	240	230	I250A	260	230	215	285	305
10	305	300	270	255	225	250	240	220	215	200	220	175	220	240	225	200	230	240	235	210	205	300	260	305
11	275	275	265	250	225	220	235	225	205	C	220	190	220	230	200	225	230	245	235	215	220	275	315	285
12	270	265	265	255	255	255	230	225	225	E280A	210	215	200	215	215	235	210	230	235	265	250	225	275	270
13	250	280	260	265	345	305	250	215	225	I220A	230	230	220	225	C	C	C	C	250A	225	E250A	A	250	230
14	290	300	300	290	270	260	210	200H	210	230	205	I205R	180	220	215	210	230	240	230	220	235	295	285	255
15	250	235	230	250	250	260	210	205	220	220	205	215	A	200	230	230	210H	245	260	235	215	220	275	255
16	230	270	270	305	310	265	210	230	240	E265A	215	225	205	E250A	225	I240A	245	250	300A	E310A	E275A	215	250	255
17	245	260	255	230	250	305	225	245	250	C	A	A	200	230	255	A	A	A	255	250A	245	245	305	305
18	260	C	C	250	225	330	255	240	C	E260A	I240C	240	210	210	230	235	C	240	230	230	210	270	300	330
19	310	310	320	255	260	270	220	E260A	A	E265A	A	200	220	190	205	E270A	A	A	255	E295A	E265A	250	270	285
20	310	280	255	280	E365A	305	230	240	A	A	A	215	C	C	C	C	C	A	230	215	260A	275	A	330
21	280	295	290	260	300	260	225	245	230	245	E250A	200	180	E260A	205	210	A	250	250	225	200	225	345A	300
22	280	270	260	245	220	255	245	230	A	A	A	200	180	E250A	E285A	I235A	225	230	225	225	I270R	285	250	275
23	E335A	310	275	260	240	260	230	235	240	210	200	200	235	240	245	230	250	E250A	230	225	I240A	I250A	290	290
24	A	275	270	255	255	210	220	230	255	230	205	220	220	225	255	235	A	A	210	240	255	230	C	305
25	290	260	255	245	220	240	245	220	225	210	245A	E250A	200	200	205	225	240	E240A	E250A	220	210	290	300	275
26	290	260	260	250	250	240	210	240	205	180H	220	205	210	200	225	200	220	240	225	260	275	240A	270	260
27	290	290	250	225	250	250	240	240	205	210	220	210	225	205	225	195H	255	255	230	245	245	305	330	270
28	305	255	255	230	275	260	230	245	230	235	E255R	205	210	210	210	255	255	250	230	255	270	250	260	260
29	260	255	275	280	295	300	250	240	230	225	210	200	200	230	230	230	250A	250	250A	250A	245	250	260	300
30	275	290	290	285	280	255	240	235	230	225	220	210	230	230	210	210H	255	250	230	225	255	265	300	275
31																								
No.	29	29	29	29	30	30	29	28	24	22	24	28	27	28	27	27	27	22	24	30	30	29	28	30
Median	280	265	255	255	255	260	230	230	225	215	215	210	220	220	220	230	230	240	245	230	235	250	280	280
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

*R'F*

K 10

IONOSPHERIC DATA

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G. M. T. + 9h)

km **R'ES**

**Sep. 1965**

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	100	100	100	B	G	G	110	110	110	110	G	E1708	G	110	130	115	110	110	110	110	110	110
2	105	B	110	100	110	105	140	130	150	110	110	105	G	110	110	E1800	110	G	100	100	100	100	S	S
3	110	B	B	130	110	105	140	130	130	G	120	G	G	G	105	110	130	115	110	110	110	100	100	100
4	100	105	105	B	B	100	125	110	110	110	110	110	110	110	G	G	130	110	110	110	110	110	110	110
5	105	100	100	100	105	105	125	C	C	C	110	110	G	110	110	115	125	G	115	110	115	110	110	110
6	110	105	105	105	105	125	120	115	110	110	110	110	100	100	110	145	125	C	115	110	110	110	105	110
7	100	100	100	100	100	110	175	110	110	105	105	100	100	100	100	100	125	120	110	110	110	110	110	105
8	105	105	105	100	105	105	130	125	110	100	115	110	110	105	110	105	105	130	115	100	100	100	100	100
9	100	100	100	B	130	B	155	150	110	155	110	105	130	135	G	130	110	120	110	110	110	110	105	100
10	100	100	100	125	B	105	130	125	130	110	110	110	165	155	150	100	105	100	100	100	110	110	105	105
11	100	100	B	100	105	110	110	110	110	C	105	G	100	100	100	100	100	100	100	105	110	110	110	110
12	105	100	100	105	105	100	130	125	115	110	110	105	110	105	105	105	110	110	110	105	110	105	105	105
13	105	105	100	100	100	105	150	105	105	110	110	110	110	110	C	C	C	C	110	110	105	105	100	100
14	100	100	100	100	100	100	130	115	115	120	100	100	110	110	110	110	115	110	B	105	100	105	100	100
15	100	105	110	110	110	110	130	105	155	150	135	165	105	105	100	100	170	155	110	100	100	110	S	100
16	S	100	B	105	100	100	105	130	110	110	105	105	G	105	105	110	105	125	120	110	110	110	110	105
17	100	100	100	130	B	B	130	130	120	C	110	110	105	150	130	125	115	110	120	110	110	110	110	110
18	100	C	C	115	120	165	145	125	C	C	110	C	G	105	105	105	C	C	110	110	105	105	105	105
19	105	130	125	120	100	B	145	120	115	120	115	110	110	105	110	150	125	115	115	120	115	110	110	110
20	105	100	105	105	105	110	145	125	120	115	115	115	C	C	C	C	C	110	115	110	110	110	110	105
21	105	100	100	100	105	100	160	175	115	110	110	105	105	105	105	105	100	105	100	100	105	105	110	100
22	100	100	100	B	100	B	160	120	110	105	100	105	105	105	105	105	100	105	100	100	100	105	110	100
23	110	110	105	105	105	105	110	130	110	105	G	G	180	175	150	145	130	125	120	110	110	110	105	105
24	110	110	B	105	105	105	125	120	120	110	110	110	115	115	115	160	125	120	110	105	105	105	C	105
25	105	100	100	110	110	110	110	110	110	155	100	100	100	100	100	G	115	110	105	105	105	S	B	100
26	100	100	100	100	100	125	115	115	110	105	105	100	100	G	105	100	100	100	100	110	110	110	105	100
27	105	100	100	100	100	100	115	110	110	115	110	175	180	110	G	105	160	130	105	105	105	120	120	110
28	105	105	105	105	105	105	135	105	125	120	110	110	100	110	100	160	130	130	125	105	B	110	B	S
29	B	S	B	B	110	105	110	150	125	115	115	120	115	115	110	G	145	140	110	110	S	B	S	110
30	105	100	B	105	100	100	140	145	G	120	115	110	G	180	G	G	180	145	130	115	105	110	110	B
31																								
No.	28	26	23	26	27	25	29	28	27	25	29	26	22	26	24	23	26	26	29	30	28	28	24	27
Median	105	100	100	105	105	105	130	120	110	110	110	110	110	110	110	110	115	120	110	110	110	110	110	105
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

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

**R'ES**

K 11

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Sep. 1965

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	f3	f2	f2	f	f				l2	l3	l3	l2			h		l	h	l3	f3	f3	f	f	f2	
2	f	f2	f2	f2	f3	f	h2	h	h	l	l2	l2		l	h		l	h2	l2	f4	f3	f2			
3	f			f	f2	f	h2	h2	h		h				l		h2	l2	o3	f4	f	f2	f3	f2	
4	f	f2	f2		f	f	h3	l2	c2	l	l2	l2	l2	l2		h2	l2	l2	l2	f	f	f	f	f2	
5	f2	f2	f2	f2	f4	f2	h2			l	l	l		l2	l5	c	h		l3	f6	f4	f5	f2	f	
6	f2	f2	f2	f3	f2	f	l4	c3	l3	c2	l3	c2l	l2	l2	l2	h	h		l3	f6	f4	f3	f2	f2	
7	f	f	f2	f2	f2	f	h13	l2	l3	l2	l3	l3	l2	l	l	l	h2	c2	l4	f4	f2	f3	f2	f2	
8	f2	f2	f2	f	f	f2	h1	h2l2	c3	l	l	c1	c2	l2	l2	l2	l2	h2l2	l3	f	f4	f3	f2	f2	
9	f2	f2	f2		h		h2	h2	c2	h1	l	l	h	h		h	l	e	l4	f4	f4	f	f2	f2	
10	f	f2	f2	f		f	h2	h	h12	l2	l2	l2	h	h	h1	l	l	l3	l4	f	f	f3	f2	f2	
11	f2	f2	f2	f	f	f	l3	l2	l2	l	l	l	l	l	l	l2	l2	l2	l	f	f	f	f2	f2	
12	f2	f2	f2	f2	f2	f	h	h	c	c	l2	l2	l	l	l2	l2	l2	l2h	l4	f2	f3	f	f2	f2	
13	f2	f2	f2	f2	f2	f	h2	l2	l	c1	e	c1	c2l	c12			e1	l2	l2	l4	f3	f3	f2	f2	
14	f3	f3	f2	f2	f	f	e	c2	c2	c1	l2	l	l2	l2	l2	l2	h1	l2	f	f	f3	f2	f		
15	f	f2	f4	f2	f2	f2	h3l	l	h	h1	h1	h	l2	l3	l2	l3	h1	h12	l3	f2	f	f	f	f2	
16	f	f		f5	f2	f2	l2	h3l2	l2	c3	l2	l		l2	l2	l3	l2	h	o5	f6	f6	f	f	f2	
17	f	f	f	f		h	h2	h2	c3		l3	l2	l	h	h1	h	l2	l5	l4	f3	f4	f3	f2	f5	
18	f			f4	f	f	h2	h2	c2	c2	l	l		l	l4	l3	h5	l6	l5	f3	f3	f5	f2	f4	
19	f2	f5f2	f2f2	ff	f		h2	c3	c2	c2	l	l	l	l	l2	h13	h5	l5	l5	f6	f3	f5	f2	f2	
20	f2	f2	f2	f4	f6	f2	h2	h2l2	c2	c2	c	l					l3	l3	l	f	f3	f4	f3	f5	
21	f5	f3	f6	f4	f4	f2	hh	h1	c2	l2	l2	l	l2	l2	l	l	l3	l3	l5	f2	f	f4	f6	f2	
22	f2	f2	f2		f	f2	h1	c2	l3	l2	l3	l2	h	h	h	h	h3	h2	l6	f6	f2	f	f2	f2	
23	f2	f7	f4	f5	f6	f2	l2h2	h2	l	l			h	h	h	h	h2	h2	l6	f6	f2	f	f2	f2	
24	f3	f2		f2	f2	f	c2	c3l2	h2l2	l2	l	c	c	c	c2	h	h2	c12	l2	f3	f2	f	f	f	
25	f2	f	f	f	f	f2	l4	l2	l	h	l2	l3	l	l	l	l	c	l3	l4	f4	f			f3	
26	f2	f2	f2	f	f	f	l2	l2	l	l	l	l	l	l	l	l2	l2	l	l	f2f2	f3	f3	f2	f3	
27	f2f2	f2	f2	f	f	f	l2	l2	l	c	l2	h	h1	l2	l	l	h	h	l	f2	f	f2f	f2f	f2	
28	f2	f2	f2	f2	f2	f	h	l3	h2l2	c2	l	l2	l	l	l	h1	h12	h2	h1	f		f		f	
29					f2	f2	l	h	h2	c	c	c	c	c2	c		h2	h3	l4	f4				f	
30	f	f		f	f	f	h2	h2		c	l	l	h	h		h	h	h	h	f	f	f	f	f2	
31																									
No.																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

Types of Es

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

The Radio Research Laboratories, Japan

K 12

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

km  $f_oF_2$

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F	315	300	290	320	320	255	250	260	A	A	U350R	G	375	340	U310R	U290S	290	290S	290S	290	320	335	340	
2	340S	370	345	285	340	320	295	265	265	300	305	310	325	330	340	290	335	300	315	330	285S	U355S	320	U340S	
3	U360S	F	F	285S	U300S	U355S	260R	270	275R	265	300	305	280	300	305	G	G	305	310	310	265	280	300	300	
4	330	340	315	300	310	305	U260R	250R	280	260	290	310	320R	U365R	330R	330	325	345	U310S	285	260S	U320S	U355S	U340S	
5	U390S	350S	350S	U300S	310	350	320	C	C	C	275R	U310R	U350R	355	305	U280R	305R	285R	300	I280S	A	325	U345S	370	
6	355	370	U370S	A	U355S	U330S	265	265R	A	A	A	R	325R	360	310	325	300	C	320	U300R	265	265R	F	F	
7	F	U340F	U315S	U335F	U270F	300	230	240	290	290	300	325R	230	310	300	310	305	300	290	275S	275	320	340	335	
8	285S	295	340	330	300	275	230	260	255	260	300	330	355	310	305	300	290R	300	300	255	250	U315S	340	335	
9	320	310	320	290	290	310	290	270	R	245	G	G	U310R	U340R	310R	330R	285	265	275R	U285R	I250R	245S	340	345	
10	350F	335F	320F	U300S	290	300S	275	U240S	240	250	260R	R	300R	280	325	310	285	265	U275R	U255R	240R	335	305S	340	
11	310	310	340	290	255S	270F	275	260	U255R	C	280	285	U330R	305	320	305	300R	275	265R	260	255	335	U355R	F	
12	310S	310	U320S	325	295S	305	255	270	270R	260	330	280	U300R	C	300	265	310	270	280	325	300	280R	F	325	
13	300S	330	310	330F	375S	340F	270	295	250	260	280	300	295	300	C	C	C	C	290S	250	U290R	A	300	300F	
14	300F	U390F	F	325F	340F	F	250R	250	260	235	295	U285R	280	325	300	320	275	290	U270R	275	305R	345	350	325	
15	310	275	290	300	335	305	U230R	245R	260R	275	275	295	300	325R	320	230	300	320	U300R	U285S	U260R	300	335	300	
16	285	315	330	335	350	310	240R	245	260	285	265	300	280	325	295	265	260	270	360	U340R	300	290	330	350S	
17	340	325	300	285	285	370	295	250R	250	C	280R	A	300	305	290	A	A	300	305	U285S	U280S	285	375S	U345F	
18	U320S	C	C	260	255S	350	285	275	C	C	280R	I2950	300	290	275	295	I290C	265	280	280	255	325	F	345S	
19	U340S	U350S	365S	U305S	305S	355S	235	275R	270	270	U310R	305	300	275R	310	300	A	295	285	A	290	315S	335	345	
20	370	350R	300	350	365	340S	255	240	260R	I260A	270	295	C	C	C	C	C	A	U270S	250S	260S	U285R	A	A	
21	350S	325S	325	295	325	305	255	260	240	250	250	260	G	330	295	300	295	275R	U275S	R	U225R	285	350	340	
22	340	305	300	295	255	315	265	245R	U245R	250	R	300	U280R	325	315	295	290	U250R	U255S	260	R	U335S	300	335	
23	360S	U315S	U305S	285	280	310	270	285	240	235	250	290	305	310R	295	295	280	260	270	265	A	A	A	320	U360S
24	A	330	335	305	295	250	U230R	250	270	U250R	U250R	300	320	320	325R	290	U265R	240R	U220R	280	300	285	C	U360F	
25	350S	310S	315S	275	270S	290	U280S	270S	U260S	U270R	260	320	J295R	R	300	305	J300S	250	260	250	240	340	360	305	
26	330	325	325	305	280	290	290	250	270	J260R	300	300R	270	J280R	260	280	260	260	J275R	295	J305R	250	F	330	
27	J340F	340F	305	290	305	280	270	J250R	U245R	250	265	305	305	285	285	295	285	300	285S	300S	295	U330S	U395F	335	
28	350S	335S	325S	300	345	325	285	275S	225	310	300	285	330	300	305	305	270	270	295	305	335	345	335	350	
29	330	330	330	360	360	335	265	260S	250	J245S	250	290	300	300	280	300	300	280	270	I285S	310	305	340	355	
30	345S	340	355	335	335	310	255	250	J250R	260	280	U275R	295	275	300	320R	230	U230S	U275S	U255S	300	335	350	330	
31																									
No.	27	28	27	29	30	29	30	29	26	24	26	26	27	27	28	26	25	27	30	28	27	28	24	27	
Median	330	330	320	300	305	310	260	260	260	260	280	300	300	310	305	300	290	280	280	280	280	320	340	340	
U. Q.																									
L. Q.																									
Q. R.																									

K 13

$f_oF_2$

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

ypF2

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	075	060	060	070	080	045	050	040	A	A	U053R	G	065	060	U060R	U065S	060	060	050S	060	060	055	060
2	060S	050	055	050	065	075	050	045	055	035	045	050	070	060	055	045	055	055	055	065	060S	U060S	050	U060S
3	U055S	F	F	065S	U075S	U065S	053R	050	045R	045	045	045	030	050	045	G	G	075	030	080	045	065	050	060
4	070	060	085	050	065	055	J050R	053R	030	065	045	055	035R	U050R	065R	060	060	060	U060S	060	080S	U050S	U050S	U060S
5	U070S	060S	050S	U055S	060	065	040	C	C	C	065R	U040R	U050R	050	065	U055R	060R	060R	050	U060S	A	070	U055S	055
6	065	050	U055S	A	U065S	U060S	055	053R	A	A	A	R	030R	035R	040	045	050	C	050	U045R	060	040R	F	F
7	F	U070F	U065S	U055F	U080F	050	050	050	050	050	045	035R	060	040	045	040	045	045	045	060	055S	050	055	065
8	060S	050	060	065	055	080	065	040	040	045	030	065	035	045	070	050	055R	055	055	055	050	U085S	085	070
9	075	045	065	065	070	060	055	055	R	040	G	G	U040R	U045R	040R	030R	050	050	050R	U050R	U055R	055S	065	055
10	055F	060F	040F	U050S	050	045S	050	U050S	050	045	045R	R	045R	060	060	040	060	060	U055R	U065R	060R	065	055S	060
11	055	050	050	055	055S	060F	045	040	U045R	C	065	050	U040R	045	060	040	050R	055	055R	045	050	040	U050R	F
12	040S	040	U040S	075	060S	055	045	040	035R	040	040	055	U040R	C	050	050	045	045	055	045	050	045R	F	050
13	050S	040	040	065F	050S	065F	055	050	045	040	050	050	045	045	C	C	C	C	055S	060	U060R	A	075	055F
14	055F	U060F	F	075F	065F	F	050R	045	055	060	050	U055R	040	055	045	045	055	060	U055R	065	055R	055	060	065
15	055	065	040	060	045	050	U050R	050R	045R	050	055	055	045	055R	040	065	055	060	U050R	U055S	U070R	050	060	050
16	055	060	055	070	050	040	045R	050	055	055	045	050	065	075	055	055	055	055	060	U060R	060	055	070	060S
17	065	050	060	050	065	050	055	050R	045	C	050R	A	045	045	055	A	A	045	045	U050S	U055S	060	065S	U065F
18	U060S	C	C	055	050S	065	055	050	C	C	065R	U050C	045	055	055	055	U050C	U050C	055	045	055	045	F	060S
19	U060S	U060S	050S	U055S	050S	055S	060	050R	050	040	U055R	045	045	035R	035	050	A	055	060	A	045	060S	075	065
20	070	090R	065	060	065	065S	065	040	050R	U055A	045	045	C	C	C	C	C	C	U075S	070S	065S	U070R	A	A
21	070S	070S	070	055	075	060	050	040	050	050	050	040	G	035	050	045	050	075R	U060S	R	U070R	045	050	060
22	060	050	050	055	050	065	065	035R	U050R	050	R	045	U050R	055	045	050	060	U045R	U045S	040	R	U065S	050	065
23	065S	U055S	U065S	050	040	050	055	045	055	060	045	055	055	050R	055	050	065	060	060	050	A	A	055	U075S
24	A	065	075	045	060	055	J060R	050	055	U050R	U045R	045	055	050	055R	050	U055R	050R	U045R	040	050	065	C	U050F
25	050S	055S	060S	050	040S	045S	050	U045S	U045S	J050R	040	055	J025R	R	050	070	J050S	050	050	050	060	055	085	070
26	070	070	075	090	060	055	050	050	050	J045R	060	050R	050	J040R	075	045	050	050	J050R	055	J085R	060	F	070
27	J065F	060F	090	060	090	070	075	J050S	U050R	020	080	065	050	065	055	050	065	050	065S	040S	055	U075S	U070F	070
28	065S	070S	050S	045	085	070	065	050S	065	045	055	050	045	050	045	045	060	060	055	055	050	060	065	065
29	060	040	070	060	060	060	060	045S	045	J050S	050	035	040	040	030	050	050	040	050	I050S	070	055	070	050
30	060S	060	070	065	065	060	045	045	J050R	040	045	U065R	055	050	045	050R	060	U050S	U055S	U050S	055	075	060	080
31																								
No.	27	28	27	29	30	29	30	29	26	24	26	26	27	27	28	26	25	27	30	28	27	28	24	27
Median	060	060	060	055	060	060	050	050	050	050	045	050	045	050	050	050	055	055	055	050	060	060	060	060
U. Q.																								
L. Q.																								
Q. R.																								

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

ypF2

The Radio Research Laboratories, Japan

K 14



Lat. 31° 12' N  
Long. 130° 37' E

Yamagawa

IONOSPHERIC DATA

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

foF2

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	J037S	J032S	J035S	J054S	053	054	060	053	057	0630	068	087	I092C	088	084	068	070S	067S	048	039	039
2	040	041	J046S	J038S	028	027	J057S	058	058	060	057	J064S	069	086	J081S	I077C	J079S	J079S	J081S	087	I092S	I077S	J061S	060S
3	J063S	J064S	052S	J056S	J032S	028	033	066S	087S	070	058	059	063	059	060	055	060	I066C	I076S	I084S	I087S	J064S	J044S	037S
4	036	034S	034	I034S	J033S	027	J038S	J055S	J076S	066	058	061	064	064	066	075	I072S	071	082S	I088S	069	052S	049	S
5	S	048	044	042S	031	028	J034S	I072S	083	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	058	056	059	072	072	076	079	J079S	J079S	082S	I069A	I056S	A	A	S
7	046S	I044S	041S	I041S	I033S	029S	034	048	056	057	061S	063	072S	080	073	070	069	072	070	I073S	070S	051	I053S	I050S
8	047	041	038S	033	033	030	043	058	061	I057C	055	060	070	084	-080	075S	080	085	083S	J082S	I071S	037	J033S	034
9	J036S	037	036S	037S	030	023	033	062	I074S	055	053S	066	I073S	066	064S	072S	082	J076S	061S	I065S	I069S	I054S	I033A	027
10	028	I029A	029	028	031S	025	035S	056	J082S	073S	052	052S	064	J065S	074S	077S	064	075S	084S	J073S	053	I044S	I042S	J043S
11	045S	039S	J036S	J040S	I032S	026	I036S	062S	I076S	062	056	066	065	074S	072S	061	066	088	I088S	I075S	053	039	I038S	038S
12	038S	036	J035S	J036S	032	I032S	035S	059	076S	069	064	073S	084	071	069S	J075S	J071S	I082S	I072A	J082S	061S	I040S	S	S
13	C	S	C	C	C	C	C	C	C	C	C	C	078S	078S	076	071S	I069S	I072A	J082S	I075A	C	C	C	C
14	S	S	S	043	039S	036	044	058S	060	064	059	068	069	I065C	060	061	062S	069	081	082S	C	C	C	C
15	038S	037	035	035	035	030S	I036S	027S	058	059	065	064	071S	I071S	072	074S	066	070S	082S	I091S	086	047	040S	040
16	041	041	034S	032S	I031S	034S	048	049	056	061	J077S	064	062S	069	091S	080S	059	059	070S	I073S	073S	060	047	048
17	I049S	047	046	036S	034	031S	039	J066S	057	064S	071	063	066	073S	C	C	C	C	080	I073S	060	039	040S	J039S
18	I041S	040	037	042	022S	020	032S	061	J078S	079	069	065	061	063S	082	068	070S	085	085	I070S	044S	I042S	041S	040
19	040S	035S	J036S	035	I031S	026	033S	056	065	060	058	069	A	S	064	067	075S	064S	073S	J073S	060	050	S	S
20	J043S	043	J041S	I036S	035	J036S	J042S	055	061S	059	-060	063	070S	078S	080	072	J078S	079S	I086S	I072S	J041A	I027A	I028A	I030S
21	030S	I030S	S	S	A	A	035	099S	I071S	059	061	056	055	064S	067	065	066	084	091S	I084S	062S	037	030S	031S
22	I032S	I035S	035S	035S	027	025	I035S	062S	072S	071S	061	060	059	066	077	069	I076S	079S	I072S	057	I099S	030S	I071S	I034S
23	I035S	I033S	J035S	035	I031S	023F	032	063S	084S	J068S	060	059	061	079	079	071S	073S	076S	091S	I069S	048S	I033A	I033A	I034S
24	I035S	I034S	I036S	I035S	I035A	J034S	039S	057S	061	082S	058	061	077S	086	089	J097S	I097S	J078S	J077S	056	043S	040	039	038S
25	039S	038S	038S	I040S	030	024	037	062S	072S	068	066	068	085	092S	073	075	083S	093S	J077S	058	048	I039S	038S	040S
26	042S	038	035	038S	031S	029	041S	061S	I069S	073S	082	092	101	081	077	079	072	065	067S	056	047S	I040S	I038S	033S
27	I035S	U037S	037S	033S	J032S	J035S	I045S	I064S	U077S	076S	065	069	092	096S	085	071S	062	066	085	087S	050	039	039	040S
28	037	037	I038S	040	032	I034S	I042S	S	069S	063	072	084	069	082	J077S	067	U076S	I075S	I074S	062S	053	052S	J052S	047
29	045S	045S	041S	041S	039	038	046	067S	088	J100S	069S	064	082S	089	082H	U075S	U075S	068S	072S	I069S	I056S	048S	S	S
30	042	U043S	036S	038S	038	030	037S	062S	J078S	C	C	C	C	C	C	C	065	080	087S	I072S	I047S	I032A	032S	033S
31																								
No.	25	26	25	27	27	27	28	27	28	27	27	27	27	27	27	27	28	28	28	28	27	26	23	22
Median	040S	038S	036S	037S	032	029	037S	059S	072S	064	060	064	064	069	073	075	072S	076S	081S	U073S	056S	041	039S	038S
U. Q.	044	043	041	040	034	034	042	062	078	071	066	068	077	082	081	077	078	080	084	082	069	051	044	040
L. Q.	036	035	035	035	031	026	034	056	060	059	057	060	063	066	069	068	066	070	072	069	048	039	033	034
Q. R.	008	008	006	005	003	008	008	006	018	012	009	008	014	016	012	009	012	010	012	013	021	012	011	006

Sweep 1.0 Mc to 12.5 Mc in 20 sec in automatic operation

foF2

The Radio Research Laboratories, Japan

Y 1

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

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

foF1

Sep. 1965

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	430	L	460	A	C	460	U4400	420	A	A					
2									L	430	460	460	460	450	450	U4400	410	390	L					
3							L		L	430	450	450	460	450	450	450	L	C	A					
4									400	430	450	470	460	470	470	450	430	A	L					
5							L		L	C	C	C	C	C	C	C	C	C	C					
6							C		C	440H	A	A	A	A	440	430	410	A	A					
7							180		L	U420A	430	460	U450A	450	450	A	410	L	L					
8								L	L	U4300	L	460	470	450	440	440	410	380	L					
9							L		L	430L	470H	440	U450A	450	U450A	410	A	L	A					
10									L	420	L	460	450	450	440	430	A	A	A					
11								L	L	420	460	450	450	460	460	L	400	360	A					
12								L	L	430	450	460	450	460	460	440	L	L	C					
13							C		C	C	C	C	460	460	450	440	A	A	A					
14									L	430	L	460	450	U4700	440	440	L	370	L					
15								L	L	410	440	460	450	470	460	430	420	U380L	L					
16										U430L	450	450	U450L	470	440	430	L	L	A					
17								L	L	420	450	450	L	460	C	C	C	C	A					
18								L	L	400	440	450	460	U480L	450	U430A	420L	L	A					
19									A	L	L	U470A	A	A	A	A	400	A	A					
20									L	U420A	430	450	450	460	440	430	410	L						
21									L	430L	430	L	L	A	A	440	L	L						
22								L	L	430	U440A	U460L	470H	L	450	430	400	L						
23									L	420	430	460	460	460H	440	420	400	L						
24									L	U420L	U450L	U450L	460	460	450	430	390	L						
25									L	440	460	L	470	460	L	L	L	L						
26									L	430	450	460	440	460	480	450	L	L						
27								L	L	U430L	440	460	470	470	450	450		L						
28									L	A	L	460	L	L	440	L	L	L						
29								L	L	430	440	L	470	460	L	450	L	L						
30								L	L	C	C	C	C	C	C	C	L	A						
31																								
No.							1		1	25	20	23	22	22	23	22	14	5						
Median							180		400	430	450	460	460	460	450	440	410	380						
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

foF1

Y 2

Sep. 1965

foE

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

IONOSPHERIC DATA

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							E170S 215	260	290	A	A	A	A	A	C	C	300R	255	180					
2							E160S 230	270	300	315	I320A	I325R	330	330	330	I320G	300	260	210H					
3							E150S 205	280H	I300R	315	I325R	330	I330R	I325R	I315R	300	I255G	170						
4							E150S 220	275	295	310	320	I320A	330	I330A	315	300	245	170						
5							E150S 220	280	G	G	C	C	C	C	C	C	G	C	C					
6							C	G	285	295R	305	315	320	320	310	295	245	150						
7							E150S 215	250	285	295	A	A	A	A	A	A	295	250	A					
8							E150S 210	260	I290G	305	325	330	325	I315A	I305A	290	240	180						
9							E140S 210	255	I290A	310	320R	335R	340	330	315	300	255	165						
10							E150S A	A	A	A	A	A	A	A	A	310	290	230	150					
11							E150S A	A	R	R	R	330	330	335	320	310R	295R	240	160					
12							E150S 205H	250	275	I305A	I330R	I325R	I315R	310	285	I265A	I220A	C						
13							C	C	G	G	C	A	I325A	320	315	290	230	E150S						
14							E150S 220	260	290	I320R	I340A	335R	I330G	330R	I325R	290H	245	E150S						
15							E150S 220	280	300	320	330R	I340R	330	330	320	290	230	E150S						
16							E150S 220H	260	300R	315	320	A	A	A	A	A	A	E150S						
17							E150S 205H	260	295	315	315	315	310R	C	C	C	C	E150S						
18							E150S 220	260	300	315	325	R	A	A	A	300	270	A	E160S					
19							E160S 200	250	295H	300	310	310	A	A	A	A	260	230H	E150S					
20							E150S 200	255	295	300	320	320	A	R	A	A	270	220	E150S					
21							E160S I205A	235	275	I290R	300	A	A	A	A	A	A	230H	E140S					
22							E150S 230	A	A	A	R	I335R	I325R	I310R	300R	280	240	A						
23							E150S A	275	300	R	320	R	R	330R	320	280	230	E150S						
24							E150S 210	270	300	315	320	330	330	320	305	275	230H	E120S						
25							E150S 205	270	A	A	A	I330R	330	325R	I305R	I275R	A	A						
26							E160S 190	240	A	A	A	I330R	330	I320R	310	280	220	E150S						
27							E150S A	A	300R	310	I325R	330R	I330R	325	I305R	280R	220	E140S						
28							E150S 230H	260	285	310	I320A	330R	I320R	I300R	260	220	E150S							
29							E150S 190	260	295	315	320	I330R	I325R	I320R	R	280	230H	E150S						
30							E150S 215H	R	C	C	C	C	C	C	C	R	215	E150S						
31																								
No.							28	24	23	22	20	21	20	19	19	20	25	25	25					
Median							E150S	210	260	295	310	320	330R	330	320	310	290	230	E150S					
U. Q.																								
L. Q.																								
Q. R.																								

foE

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

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

foEs

Sep. 1965

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	J036	040M	051	J029	J022	E0138	J0168	J032	J042	038	J043	036	J054	J043	028G	C	042	J048	J039	J022	021M	020M	J026	022	
2	020M	E0158	E0158	E	E0168	E0118	022	026	031	035	034	029G	024G	024G	024G	G	G	G	024	J017	J022	J022	E0158	022M	
3	E0158	E0158	E0158	E	E0128	E0128	J022	028	032	029G	033	024G	0228	0228	G	G	034	G	033	J024	J022	J019	E0158	E0158	
4	E0158	E0158	E0148	E0148	E0158	E0158	018	029	032	042	042	053	034	031G	039	040	J061	J059	J033	J021	J028	J040	E0158	J033	
5	020M	020M	E0158	018M	018M	J0148	J0178	J033	J045	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
6	G	G	G	G	G	G	G	G	G	033	J051	J053	J054	J052	040	J043	J054	J084	071M	127M	J062	062M	J096	J023	
7	022M	J024	J024	E	E	E0178	J0178	J034	J063	J056	040	040	J050	037M	J044	J050	J033	J030	J032	J053	J029	J056	J028	J034	
8	E0158	E0158	E0158	021M	021M	022M	E0158	025	032	G	034	036	035	034	033	031	G	028	020	023	023M	J023	J027	E0158	
9	023M	J019	021M	E	J022	021M	J022	029	J030	J033	034	036	062	042	048	J050	J064	J060	J053	J062	060M	J055	J040	J029	
10	J028	J042	J020	J023	J019	020M	J018	027	029	033	035	J040	027G	J040	J037	040	J047	J052	J046	022	J038	J037	J030	J032	
11	J032	J023	J018	020	J021	J020	E0158	026	029	028G	028G	028G	035	039	036	022G	032	031	030	030	J022	018	J030	J032	
12	J030	J031	J036	J023	J024	020M	018	027	034	036	035	026G	032G	034	035	035	030	028	G	G	G	G	G	G	
13	G	G	G	G	G	G	G	G	G	G	G	G	J040	040	J054	J087	J076	091M	058M	128M	J061	J033	029M	J040	
14	023M	J020	E0148	E	E	E0168	E0158	024	030	031	031G	035	031G	G	G	035	032	036	J034	018	G	G	G	G	
15	E0158	E0158	E0148	E0158	E0158	E0148	E0158	028	032	034	036	025G	G	035	035	021G	021G	J0418	J030	J0198	022	E0158	E0158	E0158	
16	J018	E0158	E0188	E0138	J023	J023	023	J030	035	036	J050	040	038	035	037	039	J052	J032	J034	J030	J027	J024	J033	J018	
17	J018	J019	E0158	E0128	019M	J0138	017	030	035	037	041	038	042	038	G	G	G	J039	J033	J039	029M	J029	036M	J023	
18	J022	020M	E0148	E0128	E0158	E0158	J017	027	030	G	038	035	031G	039	J033	J064	J039	034	J041	J054	J042	J041	052M	047M	
19	J029	J019	E0168	E	E0168	019	022	025	J045	039	J045	J053	083	J061	J059	J052	029	034	019	J054	J027	J054	059M	J023	
20	J0168	E0168	E0158	J030	E0158	023M	J0158	027	J045	J047	J054	037	J053	J039	J047	J045	033	030	019	J027	J054	059M	037M	J023	
21	J023	J025	021	J029	J037	J031	023	027	J036	038	035	041	J043	J048	J054	J043	037	032	J032	J026	E0158	J022	J021	J019	
22	J023	J025	J023	021M	E0128	E0158	J0158	J024	J052	J054	J051	J031G	028G	0264	0264	035	033	029	029	024	J019	J027	J047	J046	
23	E0168	029	029M	J050	J030	J022	J027	J036	030	032	J031G	035	021G	G	036	036	035	030	025	J023	035M	J043	J044	E0168	
24	J028	J025	J033	J027	J035	022M	E0158	026	029	J036	J042	036	025G	025G	028G	027G	G	J040	J042	J022	E0158	034M	J020	J022	
25	J024	J019	J020	022M	021M	E0168	E0158	025	029	J036	J042	036	025G	025G	028G	027G	G	J033	J040	J042	J022	E0158	E0158	E0168	
26	E0158	E0148	E0158	E	E	E0158	E0168	J036	J043	J043	029G	036M	0328	025G	G	020G	025G	J028	025	J023	J033	047M	J033	J052	
27	J036	J020	J020	J019	J020	E0158	E0158	023	028	G	029G	029G	024G	024G	0266	029G	030	027	J020	J020	025M	021M	022M	J043	
28	024M	022M	022M	E	E	E0138	E0158	G	J038	049M	042	041	029G	024G	031G	028G	G	026	020	E0158	021M	E0158	E0168	E0158	
29	E0158	E0148	E0158	E	E0118	E0158	E0158	024	031	034	035	034	G	G	G	030G	031	027	025	J023	J022	J022	J018	E0168	
30	E0168	E0158	E0158	E0158	E0168	E0158	J0168	025	025G	G	G	G	G	G	G	G	033	033	J036	J044	J034	033M	J020	E0168	
31																									
No.	28	28	28	28	28	28	28	28	28	26	27	27	27	27	27	25	28	27	28	28	27	27	27	27	
Median	J022	020	E0178	E015	E017	E0168	0178	027	032	036	036	036	G	035	035	035	033	032	032	J024	J027	J027	J026	J023	
U. Q.	026	024	022	022	022	020	022	030	040	039	042	040	042	040	044	040	041	040	041	040	042	035	041	033	034
L. Q.	016	015	015	E	014	014	014	015	030	033	034	034	G	G	G	G	030	028	025	022	022	022	021	018	016
Q. R.	010	009	007		008	006	007	005	010	006	008	006					010	013	015	020	013	020	015	018	

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

foEs

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E  
Yamagawa

Sep. 1965

fbEs

0.1 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	030	019	023	015	017	S	S	026	042	035	042	036	050	E043C	E028B	G	040	044	038	016	E	E	016	E
2	E	S	S		B	S	G	G	G	033	035	E034R	E029R	024G	022G	G			024	E	018	018	S	E
3	S	S	S		B	S	020	027	G	024G	E033R	024G	023G	E022R			032	G	033	022	E	019	S	S
4	S	S	S	S	B	S	017	029	031	040	040	039	E034R	031G	037	037	035	040	026	019	027	020	S	026
5	E	E	S	015	015	E	G	028	035	G	C	C	G	G	G	G	G	G	G	C	C	C	C	G
6	G	C	C	C	G	G	C	G	G	032	048	051	052	048	039	037	033	045	067	A	036	A	A	E
7	E	021	020		S	S	S	033	037	043	038	038	050	037	039	044	024	020	030	039	E029S	017	E	031
8	S	S	S	017	S	E	S	025	031	G	G	G	035	G	033	E031R		028	E020R	022	E	021	019	S
9	021	017	E		016	E	015	026	023	031	G	G	035	057	040	039	044	032	038	042	E	E055S	A	017
10	016	A	016	017	013	E	016	024	029	032	034	036	E027R	039	037	037	046	050	045	E	018	022	018	023
11	023	017	E	014	015	E	3	026	E029R	028G	E028R	028G	E035R	039	035	018G	G	030	029	020	018	E	019	017
12	016	019	018	017	022	017	G	025	033	035	035	E026R	E032R	034	034	033	030	025	G	C	C	C	C	C
13	C	C	C	C	C	C	C	G	C	C	G	G	037	038	035	037	049	A	050	A	020	019	017	018
14	E	016	S			S	S	024	E030R	E031R	E031R	035	031G	G		035	031	032	034	016	G	C	C	C
15	S	S	S		B	S	S	028	031	033	G	023F	G	035	033	021G	020G	030	019	S	E	S	S	S
16	E	S	S	B	015	019	020	025	033	035	037	038	036	035	033	037	031	028	032	E	023	020	019	E
17	E	017	S	B	E	S	G	029	031	036	039	037	039	038	G	C	C	C	042	E	017	E	019	E
18	E	E	S	B	S	S	016	G	030	E031R	037	033	034	030	058	034	034	030	037	027	027	E036S	E	E
19	021	E	S		S	E	G	024	042	035	040	050	A	E061S	057	050	029	034	040	043	034	017	E	017
20	E	S	S	022	S	E	S	026	041	045	035	036	044	035	035	040	030	027	019	E027S	A	A	A	E023S
21	016	020	E	E	A	A	G	025	034	037	035	039	041	047	052	042	032	032	030	026	S	019	019	018
22	022	019	E	015	B	S	S	020	036	040	047	E031R	E031R	E028R	026G	G	031	G	020	E	019	020	018	023
23	S	E	017	019	018	E	017	025	G	G	E031R	035	E021R		036	035	034	027	025	021	033	A	016	S
24	020	021	020	018	A	027	019	026	032	038	037	036		019G	021G	019G	032	029	021	016	S	022	017	E
25	E	E	E	E	E	S	S	026	G	032	039	035	E025R	021G	E028R	023G		031	035	040	018	S	S	S
26	S	S	S			S	S	U035A	037	032	E029R	034	E032R	025G		017G	022G	020	020	020	031	030	022	018
27	021	019	020	018	014	S	S	020	028	019G	E029R	024G	024G	026G	E029R	020	G	G	017	E	E	E	E	030
28	E	E	E			S	S	S	035	042	042	040	029G	E024R	E031R	E028R		025	019	S	E	S	S	S
29	S	S	S		B	S	S	G	031	G	034	E034R				E030R	G	G	025	021	017	016	E	S
30	S	S	S	B	B	S	S	025	E025R	C	C	C	C	C	G	C	G	037	029	E044S	034	A	E	S
31																								
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5Mc in 20 sec in automatic operation

fbEs

Y 5

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

f - min

Sep. 1965

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	E012S	E	E	E	E013S	E017S	015	015	016	016	018	E020C	E024C	E017C	C	012	E015S	E	E015S	E015S	E015S	E015S	E015S
2	E015S	E015S	E	E	016	E011S	E016S	E015S	015	015	015	016	017	015	015	C	015	015	012	E016S	E015S	E015S	E015S	E015S
3	E015S	E015S	E	E	012	E012S	E015S	E015S	012	015	015	015	019	015	016	015	015	C	E015S	E015S	E015S	E015S	E015S	E015S
4	E015S	E015S	E014S	E014S	015	E015S	E015S	E015S	015	015	015	015	015	015	015	015	015	E015S	E015S	E015S	E015S	E015S	E015S	E015S
5	E015S	E015S	E014S	E	E	E015S	E015S	013	013	C	C	C	C	C	C	C	C	E015S	E015S	E015S	E015S	E015S	E015S	E015S
6	C	C	C	C	C	C	C	C	C	017	016	016	016	018	017	015	015	013	014	E015S	E015S	E015S	E015S	E015S
7	E015S	E015S	E	E	E	E017S	E015S	E014S	015	015	015	015	016	018	015	015	015	015	E015S	E015S	E015S	E015S	E015S	E015S
8	E015S	E015S	E	E	E	E015S	E015S	015	015	C	017	020	016	017	023	016	015	015	015	E015S	E015S	E015S	E015S	E015S
9	E015S	E015S	E	E	E	E015S	E014S	015	014	015	015	017	015	016	016	015	015	015	015	E015S	E015S	E015S	E015S	E015S
10	E015S	E015S	E	E	E	E015S	E015S	015	015	015	015	015	015	015	018	015	015	012	E014S	E015S	E015S	E015S	E015S	E015S
11	E015S	E015S	E017S	E	E	E015S	E015S	015	015	016	016	016	015	015	016	016	015	015	015	E015S	E015S	E015S	E015S	E015S
12	E015S	E015S	E	E	E	E015S	E015S	E015S	015	015	015	019	018	016	016	016	015	014	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	E015S	E015S	E014S	E	E	E016S	E015S	015	015	015	015	017	018	017	019	019	015	015	E015S	E015S	E015S	E015S	E015S	E015S
15	E015S	E015S	E014S	015	015	E014S	E015S	E015S	015	015	015	017	019	016	016	015	015	015	E015S	E015S	E015S	E015S	E015S	E015S
16	E015S	E015S	E018S	013	E	E015S	E015S	012	013	015	015	015	016	015	015	015	015	014	E015S	E015S	E015S	E015S	E015S	E015S
17	E015S	E015S	E015S	012	013	E015S	E015S	015	015	015	016	016	015	016	C	C	C	C	E015S	E015S	E015S	E015S	E015S	E015S
18	E015S	E015S	E014S	012	E015S	E015S	E015S	E015S	015	015	016	015	018	016	015	015	015	015	015	E016S	E015S	E015S	E015S	E015S
19	E016S	E015S	E016S	E	E016S	E015S	E016S	015	015	015	015	015	017	015	018	016	015	E015S	E015S	E015S	E015S	E015S	E015S	E015S
20	I J15S	E016S	E015S	E	E015S	E016S	E015S	E015S	013	015	015	016	017	016	015	015	015	015	015	E015S	E015S	E015S	E015S	E015S
21	E015S	E015S	E015S	011	E	E015S	E016S	E015S	014	015	015	015	016	015	015	015	015	015	E014S	E015S	E015S	E015S	E015S	E015S
22	E015S	E015S	E015S	E	012	E015S	E015S	E015S	015	015	015	015	018	015	015	015	013	015	E015S	E015S	E015S	E015S	E015S	E015S
23	E016S	E015S	E016S	E	014	E015S	E015S	E014S	014	015	016	015	017	016	016	015	015	015	E015S	E015S	E015S	E015S	E015S	E015S
24	E015S	E015S	E015S	E	E	E015S	E015S	015	015	015	015	016	015	015	015	015	014	015	E012S	E015S	E015S	E015S	E015S	E016S
25	E016S	E015S	E016S	015	015	E016S	E015S	015	015	016	016	015	015	016	017	015	016	015	E014S	E016S	E015S	E015S	E015S	E016S
26	E015S	E014S	E015S	E	E	E015S	E016S	E016S	012	015	018	017	017	017	020	015	014	E015S	E015S	E015S	E015S	E015S	E015S	E015S
27	E015S	E015S	E015S	E	E	E015S	E015S	015	015	015	015	015	016	019	015	015	015	015	E014S	E015S	E015S	E015S	E015S	E015S
28	E015S	E015S	E015S	E	E	E013S	E015S	012	015	016	015	016	015	020	015	018	015	015	E015S	E015S	E015S	E015S	E015S	E015S
29	E015S	E014S	E015S	E	011	E015S	E015S	015	016	015	017	015	024	020	024	016	015	E015S	E015S	E015S	E015S	E015S	E015S	E016S
30	E016S	E015S	E015S	015	016	E015S	E015S	015	015	C	C	C	C	C	C	C	017	016	E015S	E015S	E015S	E015S	E015S	E016S
31																								
No.	28	28	28	28	28	28	28	28	28	26	27	27	28	27	27	25	28	27	28	28	27	27	27	27
Median	E015S	E015S	E015S	E	E	E015S	E015S	014	015	015	015	016	016	016	016	015	015	015	E015S	E015S	E015S	E015S	E015S	E015S
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

f - min

Y 6

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

M(3000) F2 0.01

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	325S	315S	J315S	J370S	375	370	355	360	305	290S	280	300	I315C	320	325	340	320S	330S	345	290	280
2	295S	J295S	J310S	J305S	305	295	325	J340S	360	365	315	J315S	300	315	J310S	I315C	J280S	J305S	J315S	320	I330S	I330S	J285S	295S
3	J290S	J295S	320S	J340S	J305S	305	305	335S	355S	360	320	320	330	335	315	310	295	I315C	I310S	I320S	I345S	J345S	J315S	295S
4	295	320S	310	I315S	J340S	320	J330S	J345S	J370S	375	350	310	330	305	290	320	I315S	310	320S	I340S	350	310S	280	S
5	S	295	300	335S	315	290	J300S	I350S	365	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	365	340	310	290	295	295	305	315S	J330S	390S	I345A	I335S	A	A	S
7	305S	I300S	295S	I305S	I310S	370S	325	355	355	350	330S	310	305S	325	305	310	305	325	320	I330S	330S	295	I290S	I300S
8	310	295	290S	305	305	315	370	360	360	I340C	310	285	285	310	315	295S	305	320	325S	J330S	I350S	280	J275S	295
9	J270S	295	310S	305S	335	315	320	355	I370S	355	285S	320	U325S	305	295S	305S	330	J340S	330S	I300S	I330S	I360S	I320A	265
10	285	I280A	285	320	330S	295	305S	355	J355S	375S	365	280S	315	J290S	310S	325S	315	325S	340S	J335S	340	I325S	I300S	J285S
11	290S	295S	J305S	J315S	U320S	310	I320S	355S	I360S	405	320	320	300	300S	320S	295	305	325	I345S	I350S	360	310	I290S	290S
12	275S	295	J310S	J285S	320	U295S	320S	340	350S	350	315	305S	335	340	295S	J305S	J290S	320S	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	I305A	I315S	I335A	I300S	S
14	S	S	S	320	305S	320	340	370S	350	350	310	340	320	I320C	310	310	305S	320	335	350S	C	C	C	C
15	295S	300	295	320	315	315S	U320S	370S	360	355	330	315	325S	U295S	295	310S	305	305S	305S	I325S	350	340	275S	280
16	295	270	300S	295S	I275S	295S	355	370	355	340	J350S	330	305S	295	325S	340S	340	315	305S	U290S	315S	335	280	290
17	I305S	300	330	290S	295	290S	315	J355S	370	335S	340	320	305	330S	C	C	C	C	C	U325S	350	280	275S	J295S
18	I300S	305	300	340	275S	270	315S	345	J345S	360	360	325	315	300S	340	325	315S	330	340	U330S	330S	I300S	285S	290
19	305S	285S	J265S	290	U320S	290	310S	355	370	355	330	315	A	S	315	315	340S	315S	310S	J320S	320	280	S	S
20	J285S	295	J295S	I295S	285	J285S	J335S	365	355S	355	335	315	315S	320S	330	305	J315S	330S	I345S	I355S	I355A	I300A	I270A	I285S
21	I295S	S	S	S	A	A	305	355S	I365S	395	345	340	315	315S	315	325	315	335	340S	U355S	355S	345	275S	290S
22	I290S	I310S	345S	345S	335	310	I320S	340S	360S	355S	375	325	310	310	325	320	I330S	345S	I355S	360	I345S	290S	I280S	I290S
23	I295S	I280S	J295S	325	I340S	305F	315	350S	355S	J360S	360	320	280	325	315	310S	330S	315S	340S	I350S	355S	I320A	I295S	I290S
24	I290S	I280S	I290S	I315S	I285A	J325S	335S	370S	345	380S	335	295	300S	305	305	J320S	I340S	J345S	J375S	375	290S	275	285	275S
25	265S	290S	295S	I330S	350	295	325	355S	350S	340	350	305	305	320S	305	295	325S	J335S	J335S	350	315	U305S	285S	280S
26	310S	315	305	315S	340S	310	315S	360S	I345S	340S	330	325	335	310	310	310	310	355	345S	350	335S	I300S	I285S	275S
27	I285S	U280S	310S	305S	J280S	J300S	I310S	I345S	U365S	360S	340	305	325S	320	325S	320	325S	325	320	330	370S	340	295	285
28	285	285	I300S	330	315	U320S	I310S	S	360S	335	300	335	310	310	J320S	330	U330S	I330S	I340S	315S	305	290S	J310S	300
29	290S	290S	290S	295S	310	290	325	350S	340	I380S	370S	310	310S	325	295S	U310S	U320S	340S	320S	I335S	I335S	295S	S	S
30	295	U305S	290S	290S	315	315	325S	355S	J340S	C	C	C	C	C	C	C	325	325	345	I355S	I340S	I300A	285S	280S
31																								
No.	25	26	25	27	27	27	28	27	28	27	27	27	27	27	27	27	28	28	28	28	27	26	23	22
Median	295S	295S	300S	315S	315	305	320S	355S	360S	355	335	315	310	310	310	310	315S	325S	335S	U335S	340S	300	285S	290S
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 19.5 Mc in .20 sec in automatic operation

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 31° 12' N  
Long. 130° 37' E

Yamagawa

135° E Mean Time (G. M. T. + 9h)

0.01 M(3000) F1

Sep. 1965

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	380	A	405	A	C	350	I360C	A	A	A						
2									L	370	375	390	390	385	380	I385C	380	360	L						
3								L	395	405	410	415	400	395	355		L	C	A						
4								375	A	380	380	390	380	365	340		345	A	L						
5								L	C	C	C	C	C	C	C	C	C	C	C						
6								C	C	385H	A	A	A	A	365	360	365	A	A						
7								410	A	A	370	380	I390A	360	360	A	355	L	L						
8								L	L	I390C	L	380	370	375	380	365	345	350	L						
9								L	L	385L	370H	395	I370A	380	A	390	A	L	A						
10								L	L	380	L	415	400	375	385	350	A	A	A						
11								L	L	405	395	390	400	370	375	L	365	360	A						
12								L	L	395	380	390	400	370	355	365	L	L	C						
13								C	C	C	C	C	385	375	375	365	A	A	A						
14									L	375	L	390	410	I370G	385	350	L	355	L						
15								L	L	375	385	390	375	345	350	370	355	U345L	L						
16									U370L	360	380	U375L	350	365	365	L	L	A							
17								L	L	360	355	375	L	365	C	C	C	C	A						
18								L	L	385	375	375	370	U355L	360	I360A	345L	L	A						
19								A	L	L	A	A	A	A	A	A	350	A	A						
20								L	A	A	395	390	A	365	365	A	345	L							
21								L	L	395L	405	L	L	A	A	A	L	L							
22								L	L	A	I390A	U390L	375H	L	355	370	345	L							
23									L	395	400	370	390	370H	365	360	360	L							
24								L	L	U370L	U380L	U375L	375	370	360	350	370	L							
25								L	L	380	370	L	360	370	L	L	L	L							
26									L	370	370	370	410	370	355	355	L	L							
27								L	L	U370L	385	370	365	350	360	360	L								
28									L	A	L	370	L	L	365	L	L	L							
29								L	L	375	390	L	360	370	L	360	L	L							
30								L	L	C	C	C	C	C	C	C	L	A							
31																									
No.									1	21	20	22	21	22	22	20	13	5							
Median								410	375	380	380	385	385	370	365	360	355	355							
U. Q.																									
L. Q.																									
Q. R.																									

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

M(3000) F1



IONOSPHERIC DATA

Lat. 31° 12' N  
Long. 130° 37' E

Yamagawa

km **h'F2**

135° E Mean Time (G. M. T. + 9h)

**Sep. 1965**

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									240	250	255	370	360	360	I2900	285	265	240							
2									250	250	330	320	325	295	I2950	305	280	260							
3								255	240	240	290	300	290	295	330	325	I3000	280							
4									245	230	260	330	290	330	355	290	290	255							
5									240	G	G	G	G	G	G	G	G	0	0	0					
6									G	240	280	335	370	330	305	300	290	275	260						
7									240	230	255	295	320	300	285	295	300	275	260						
8									240	I2700	340	370	350	300	290	320	300	270	250						
9									245	235	255	400	320	280	310	345	275	250							
10									240	230	250	430	325	345	315	270	305	265	240						
11									240	245	220	330	300	330	300	275	350	270	240						
12									255	235	255	300	300	260	270	340	290	280	270	G					
13									G	G	G	G	G	G	G	G	G	I290A	275						
14									230	250	330	290	295	I3200	305	320	290	280	255						
15									240	240	280	300	290	315	310	300	300	290	265						
16										275	250	280	300	345	280	250	250	275	270						
17									240	235	265	275	280	315	280	G	G	G	250						
18									255	250	240	240	285	305	330	270	E300A	295	255	225					
19									230	245	290	295	A	A	320	295	255	250							
20									240	250	265	300	295	295	270	295	275	255							
21									230	260	270	290	320	315	295	290	295	265							
22									230	240	240	295	330	320	280	280	260	240							
23								250	240	240	250	300	375	295	270	285	270	270							
24									250	230	265	300	300	300	290	285	245	240							
25									245	255	255	320	290	275	290	320	270	245							
26									245	255	270	290	250	270	300	290	250	235							
27									230	240	255	305	295	275	265	280	280	280							
28								235	240	255	280	265	300	290	270	270	260	260							
29									255	230	230	260	280	280	290	290	275	245							
30									240	G	G	G	G	G	G	G	280	265							
31																									
No.																									
Median								1	11	27	27	27	27	27	27	27	27	28	17						
U. Q.								240	245	240	250	270	300	300	300	295	290	285	270	255					
L. Q.																									
Q. R.																									

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

**h'F2**

IONOSPHERIC DATA

Lat. 31° 12' 1"N  
Long. 130° 37' 1"E

Yamagawa

135° E Mean Time (G. M. T. + 9h)

km  
h'F

Sep. 1965

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	305	250	255	240	220	240	210	210	1220A	215	I230A	190	A	A	E260C	C	A	A	A	240	215	200	280	295	
2	290	275	250	195	255	270	245	235	220	210	200	200	190	180	220	I205C	200H	245	250	240	220	200	250	280	
3	280	250	235	200	225	255	255	245	225	210	200H	200H	190	205	220	215	235	C	A	245	215	200	225	260	
4	290	260	265	250	235	250	235	230	220	I220A	E230A	220	205	200	205	E250A	255	I250A	245	230	210	240	280	295	
5	275	265	250	225	255	300	250	240	240	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
6	C	C	C	C	C	C	C	C	C	195	A	A	A	A	E250A	245	240	A	A	A	260	I280A	I280A	250	
7	240	310	285	240	205H	225	195	I210A	I245A	I230A	200	195	I195A	250	E245A	I225A	240	E245A	A	250	230	235	275	E275A	
8	255	260	285	290	280	240	235	235	220	I200C	200	200	190	190	220	200	220	245	240	230	200	E240A	340	300	
9	305	280	260	240	225	E2708	250	240	230	210	195H	180	A	E250A	A	E250A	A	A	A	E305A	220	I205A	A	325	
10	295	I315A	305	290	230	265	235	220	220	205H	210	190	195	220	215	235	A	A	A	A	220	200	225	270	300
11	280	275	275	240	205	260	230	230	225	205	195	190	200	200	195	195	225	E250A	A	210	200	245	305	265	
12	295	290	270	265	275	260	250	230	220	205	200	190	200	195	195	225	220	245	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	210	205	200	240	A	A	A	A	200	250	275	275	
14	260	280	270	225	220	240	230	215H	225	220H	190	180H	195	I190C	200	220	225H	E270A	I245A	215	C	C	C	C	
15	265	240	260	245	230	235	235	220	225	225	210	190	190H	255	230	225	225	E245A	250	235	215	195	275	275	
16	260	250	270	255	330	295	220	220	230	225	245	210	200	215	200	E240A	230	240	I255A	270	230	225	290	300	
17	265	255	230	270	240	275	245	235	230	230	E250A	210	225	240	C	C	C	C	A	230	200	265	300	295	
18	265	260	280	220	330	E3508	255H	250	240	215	230	205	200	205	200	A	240	250	I235A	235	225	A	290	280	
19	275	280	305	250	210	E2908	250	240	I240A	220	E250A	A	A	A	A	A	225	A	A	250	240	235	250	270	
20	265	260	230	E275A	285	275	240	220	A	A	205	200	I195A	200	205	A	240	245	240	220	A	A	A	I315A	
21	290	E300A	285	250	A	A	250	225	230	210	200	220	E230A	A	A	A	250	E260A	235	220	200	210	305	325	
22	E315A	265	235	215	205	250	250	240	A	A	I195A	185	200H	180	220H	225	235	230	220	205	230	E300A	290	E340A	
23	270	315	270	250	230	E3008	250	235	220	200	195	195	210	210	245	235	250	245	230	215	230	A	305	300	
24	350	325	300	255	I280A	270	230	220	230	E240A	210	200	200	195	195	230	230	230	220	205	240	300	295	305	
25	300	280	265	230	220	E275S	240	230	220	200	240	200	195	200	205	200	240	A	225	E240A	240	245	280	290	
26	250	240	260	240	195	270	240	225	I225A	220	205	200	200	190	200H	205	225	235	235	205	245	E255A	275	300	
27	E310A	290	265	230	260	255	240	230	220	205	200	195	195	190H	200H	220	210H	240	245	205	205	250H	275	E315A	
28	260	300	275	230	230	240	250	225	I230A	A	A	220	185	190H	230	230	230	250	230	240	240	285	250	255	
29	290	260	260	270	240	270	245	240	240	220	205	200	230	190H	200H	205H	235	245	245	230	225	255H	255	280	
30	270	250	260	270	240	215	230	230	220	C	C	C	C	C	C	C	245	I250A	235	E245S	E240A	A	290	300	
31																									
No.	28	28	28	28	27	27	28	28	26	24	25	25	24	24	24	22	24	20	18	26	26	23	25	27	
Median	275	270	265	240	230	260	240	230	225	210	200	200	200	200	200	200	230	240	240	230	220	240	280	290	
U. Q.																									
L. Q.																									
Q. R.																									

h'F

Sweep 1.0 Mc to 19.5Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 10

IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.1'N  
Long. 130° 37.1'E

135° E Mean Time (G. M. T. +9h)

km f<sup>o</sup>F<sub>2</sub>

Sep. 1965

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	100	100	100	S	S	125	120	115	110	100	100	100	100	C	135	125	120	120	100	100	100	105
2	105	S	S	E	B	S	110	150	140	125	120	100	100	100	100	C	G	G	155	105	120	100	S	100
3	S	S	S	E	B	S	130	130	130	105	130	100	100	100	G	G	175	C	120	110	105	105	S	S
4	S	S	S	S	B	S	140	130	120	110	110	100	100	100	145	135	125	115	110	110	110	105	S	100
5	100	100	S	100	100	S	S	120	120	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	115	110	105	105	110	110	115	130	120	115	110	105	105	100	100
7	100	100	100	E	E	S	S	115	115	110	110	105	100	100	100	100	095	095	125	120	095	115	120	100
8	S	S	S	100	100	100	S	125	120	C	120	120	120	130	110	105	G	145	125	120	110	100	100	S
9	100	100	100	E	100	105	105	140	100	100	100	125	125	145	140	135	125	125	120	110	110	105	110	110
10	110	105	105	100	105	105	100	105	105	105	100	105	100	100	100	120	130	125	120	120	105	105	105	100
11	100	100	100	105	105	105	S	120	145	100	100	100	125	125	140	100	170	140	120	110	105	105	105	105
12	100	105	100	100	100	100	115	115	110	110	105	100	100	120	120	115	110	110	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	110	110	115	115	110	110	110	110	100	100	115	100
14	100	100	S	E	E	S	S	150	115	120	100	110	105	C	G	155	145	130	120	120	C	C	C	C
15	S	S	S	B	B	S	S	140	150	140	150	100	G	130	130G	100	100	115	110	S	105	S	S	S
16	110	S	S	B	100	100	100	100	135	125	100	110	110	120	115	115	110	110	105	105	105	105	110	105
17	100	100	S	B	105	S	130	125	130	120	125	120	120	125	C	C	C	G	115	115	110	105	105	105
18	100	100	S	B	S	S	150	135	130	G	125	130	105	115	100	110	115	100	100	100	105	105	105	100
19	100	100	S	E	S	100	100	140	125	120	115	110	105	105	105	100	120	135	130	120	115	115	115	100
20	100	S	S	100	S	115	S	130	120	120	120	125	115	105	110	100	125	115	130	120	110	105	105	105
21	100	100	100	100	100	100	105	140	110	110	110	105	105	105	100	105	115	140	125	115	S	100	100	100
22	100	100	100	100	B	S	S	110	100	100	100	100	100	100	100	150	140	130	100	100	100	110	110	115
23	S	115	110	100	100	105	100	100	150	145	100	140	100	G	150	150	140	140	125	110	105	105	110	S
24	105	105	105	100	100	100	100	120	120	120	120	120	G	100	100	100	150	135	120	120	S	105	100	100
25	100	100	100	100	100	S	S	130	140	110	105	105	100	100	100	100	G	115	110	105	105	S	S	S
26	S	S	S	E	E	S	S	115	110	105	105	105	100	G	100	100	100	100	100	100	110	110	110	105
27	110	095	095	095	095	S	S	110	105	G	100	100	100	100	100	100	100	140	100	100	100	100	100	110
28	100	100	100	E	E	S	S	G	120	115	115	115	100	100	115	110	G	150	130	S	100	S	S	S
29	S	S	S	E	E	B	S	145	125	140	120	120	G	G	G	110	170	145	125	120	100	100	100	S
30	S	S	S	B	B	S	S	145	115	C	C	C	C	C	C	C	160	135	120	115	110	105	100	S
31																								
No.	20	18	13	13	14	11	13	27	28	24	27	27	25	25	23	24	24	26	28	26	25	24	21	19
Median	100	100	100	100	100	100	105	125	120	115	110	105	105	105	110	110	125	125	120	110	105	105	105	100
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5Mc in 20 sec in automatic operation

f<sup>o</sup>F<sub>2</sub>

U. Q.  
L. Q.  
Q. R.

IONOSPHERIC DATA

Lat. 31° 12' N  
Long. 130° 37' E

Yamagawa

135° E Mean Time (G. M. T. + 9h)

Sep. 1965

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	f3	f3	f5	f2	f2		1	c3	e2	e2	c1	1	1	1	1		h212	h3	e21	f f	f	f	f	f	
2	f						1	h 12	h 12	h 12	h	1	1	1	1		h	h 1	f	f	f	f3		f	
3							h21	h2	h 12	1	h	1	1	1					e2	f3	f f3	f f2			
4							h	h2	h	e2	e	1	1	1	h 1	h 12	h2	e3	e4	f3	f3			f4	
5	f	f2		f	f	f	e	e3	e2								h2	e3	e3	f2	f2	f3	f3	f2	
6	f2	f2	f2	f	f		e	e3	e2	e2	e2	12	12	1	12	12	1	12h	e213	f2f4	f2	f f	f	f2	
7								e2	e	e1	e1	e1	1	1			h3	h2	e2	f2	f2	f6	f3		
8							1	h21	12h	12	h 1	h 1	h21	h 1	h21	h2	h3	h2	e2	f3	f2	f2	f f3	f2f	
9	f	f2	f	f3	f2	f	1	14	13	12	12	12	1	1	12	h 1	h3	h41	e2	f	f2	f2	f2	f2	
10	f2f	f3	f2	f	f	f2	1	e213	h 1	1	1	1	h 1	h 1	1	1	h 1	h 1	e2	f3	f2	f	f3	f2	
11	f3	f2	f	f	f3	f	e	e2	e2	e2	1	1	1	1	h 1	1	1	1							
12	f2	f2	f3											1 1	c 1	e 2	e3	e3	e5	f3	f3	f3	f2f2	f2	
13														1 1	c 1	e 1	h	h	e3	f	f				
14	f	f						h	e2	c	1	1	1	h	h	1	1	e2	1	f	f				
15								h2	h 12	h 1	h 1	1	1	h	h	1	1	e2	1	f	f				
16	f2				f2	f2	17	14h3	h21	h	1 c	e2	c	c 1	c 1	e2	12	13	12	12	f5	f2	f3	f2	
17	f2	f2	f2		f		e	e2	h	h2	h	h 1	h 1	h	1	1			e3	f	f2	f2	f3	f2	
18	f3	f					h	h3	h	h	h 1	1	1	c 1	1	e312	e313	15	15	f4	f2f3	f f2	f	f2	
19	f3	f2					12	h2	h3	e21	e21	e21	e2	e4	13	12	e	h2	e3	f7	f3	f2	f5	f3	
20	f						h	h2	h3	h2	h2	h	e	1	1	12	h	e2	e	f5	f4	f2	f2	f3	
21	f2	f7	f2	f2	f4	f2	1	h e3	e21	e412	e	e2	121	13	121	131	12	h	e6	f4	f2	f	f	f2	
22	f2	f2	f2	f			1	12	13	13	13	1	1	1	1	h 12	h 13	h212	12	f	f	f f2	f2f	f2	
23		f	f	f3	f2	f	12	13	h 12	h 12	h 1	h 1	1	h	h 1	h 1	h	h213	e31	f4	f3	f6	f3		
24	f5	f6	f5	f3	f6	f5	13	e4	e2	h2	h2	h	1	1	1	1	h 1	h2	e2	f2	f2	f2	f		
25	f2	f2	f	f				h	h 12	12	12	1 1	1	1	1	1	1	e2	12	f3	f2				
26								e4	e3	1	1	1	1	1	1	1	1	13h	12	f2	f2	f2f2	f3	f2f	
27	f2f	f2	f2	f2	f		15	15	12	1	1	12	1	1	1	12	12	h21	1 e	f	f	f	f	f2	
28	f	f	f					h3	h3	e3	e1	e1	1	1	1 1	1	1	h	h2		f				
29								h2	h212	h	e	c 1	1	1	1	1	h 1	h2	e4	f2f	f2	f2	f		
30																1	h 1	h2	e3	f5	f3	f4	f		
31																	h 1	h2	e3	f5	f3	f4	f		
No.																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

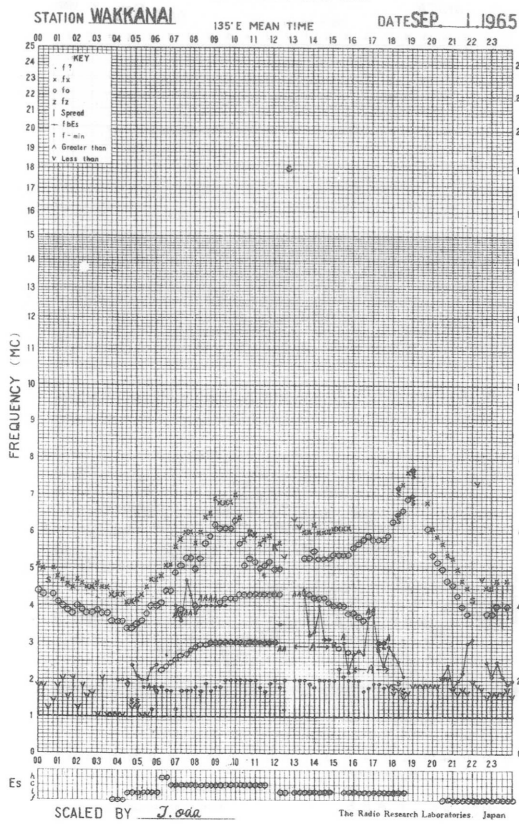
Sweep 1.0 Mc to 19.5Mc in 20 sec in automatic operation

Types of Es

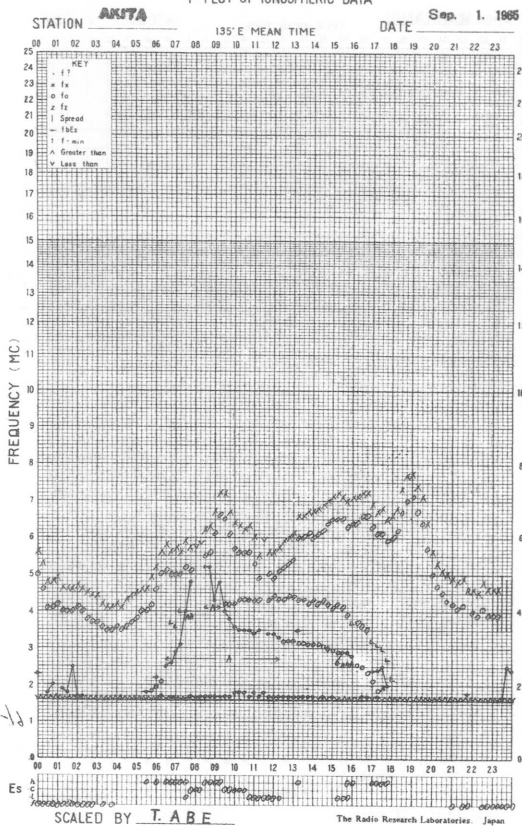
The Radio Research Laboratories, Japan

Y 12

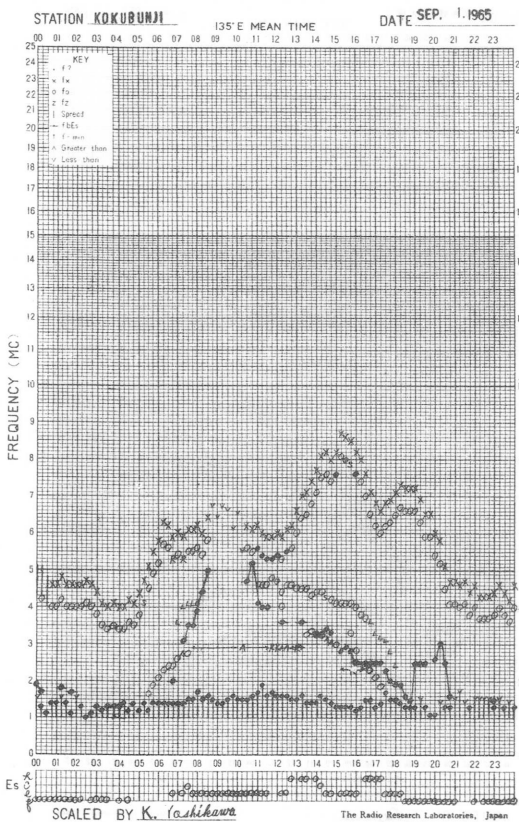
f-PLOT OF IONOSPHERIC DATA



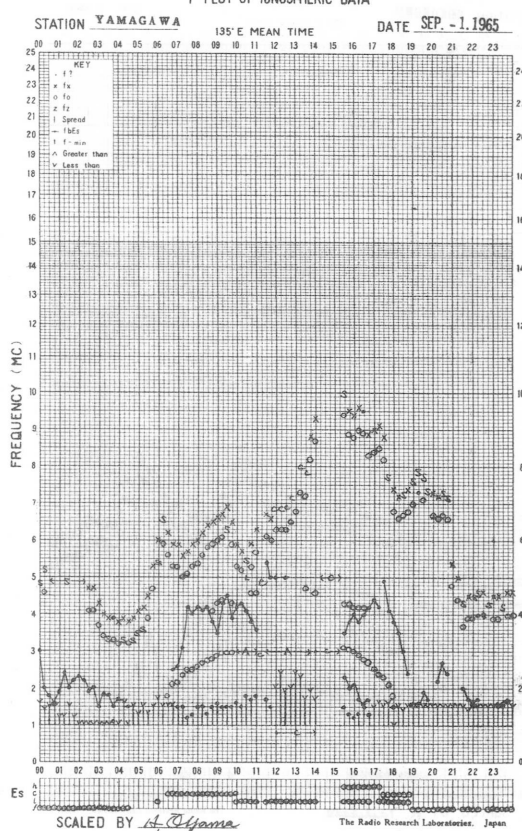
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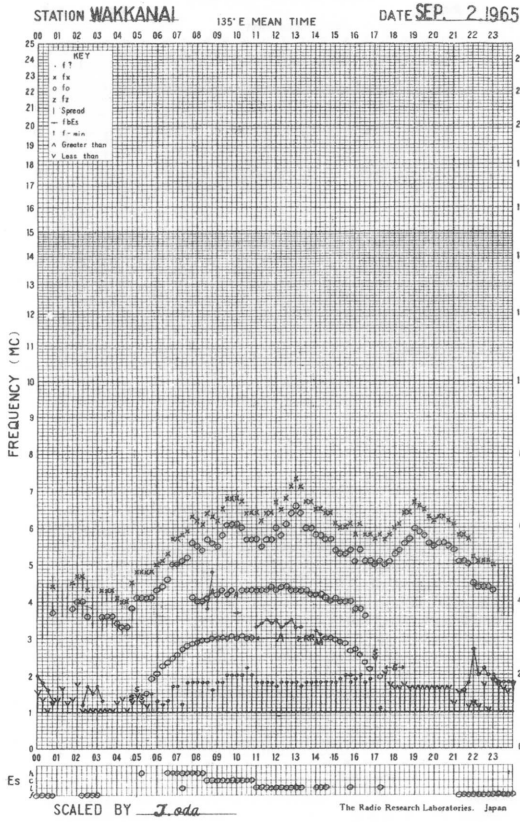
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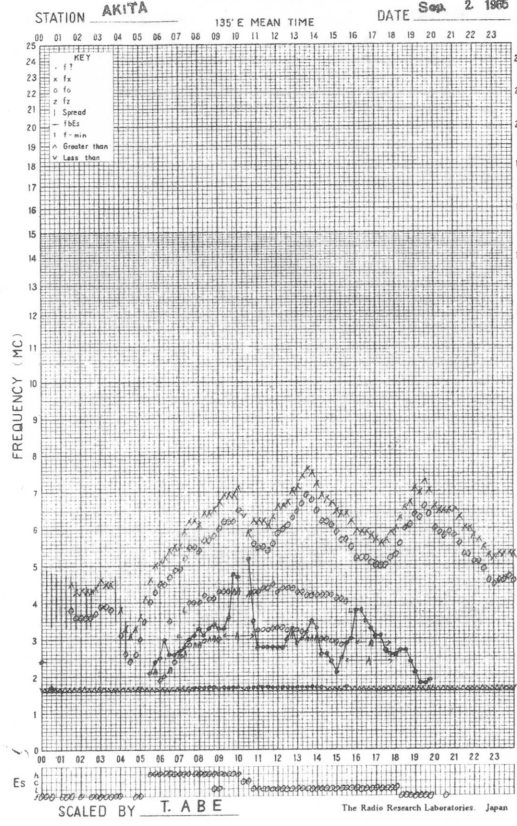
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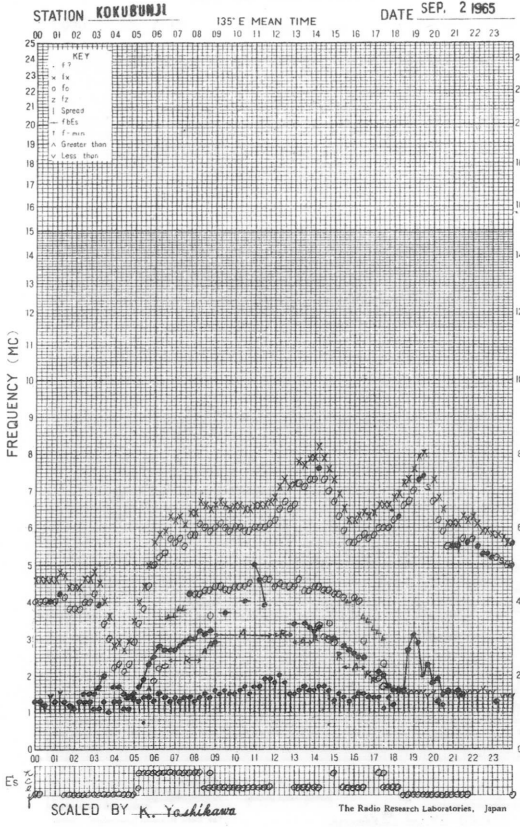
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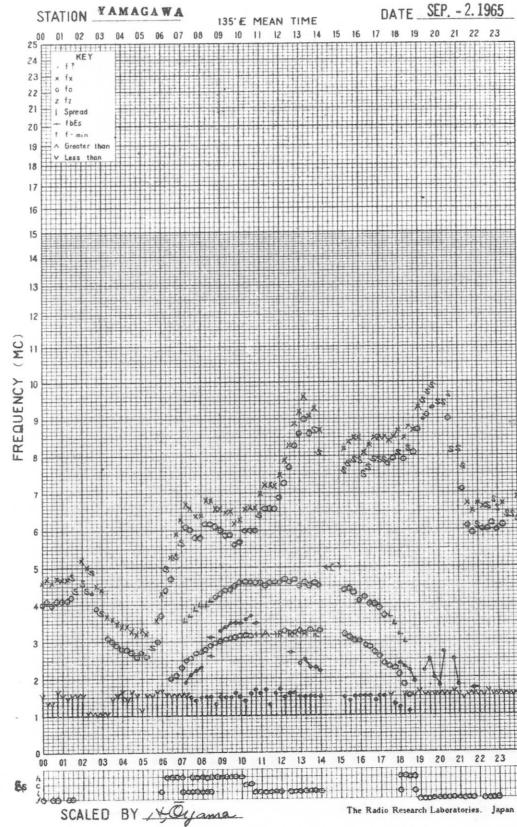
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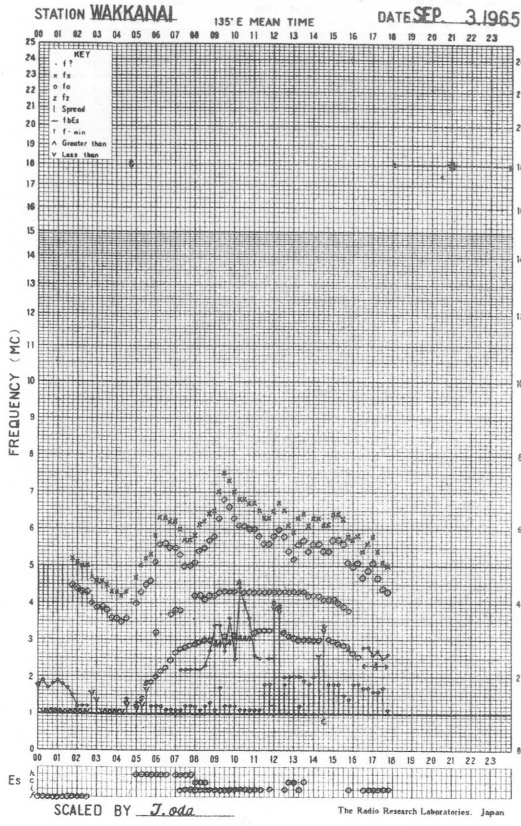
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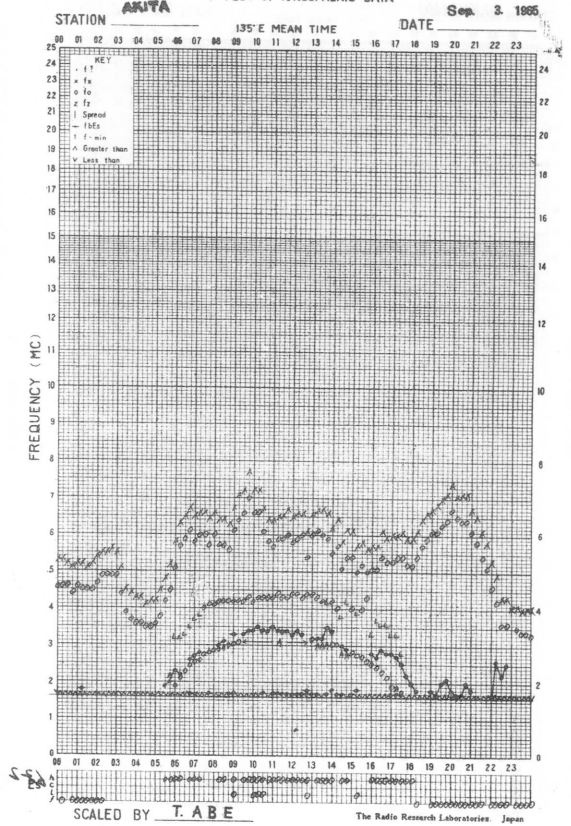
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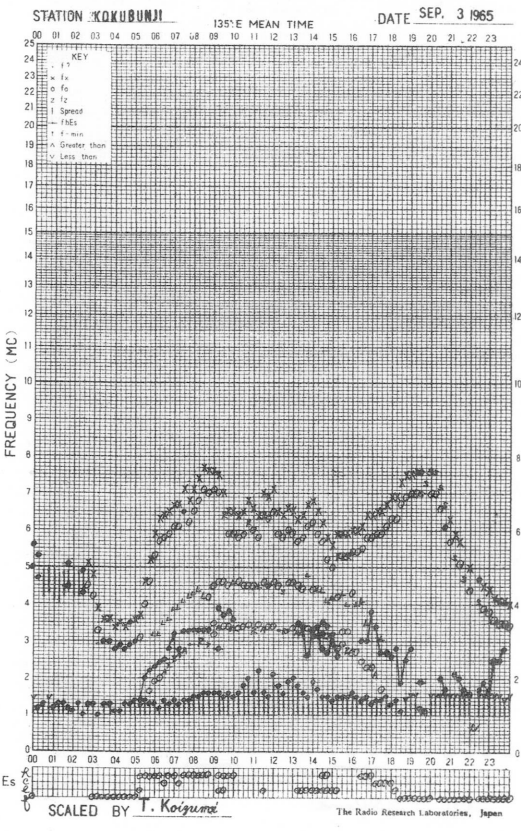
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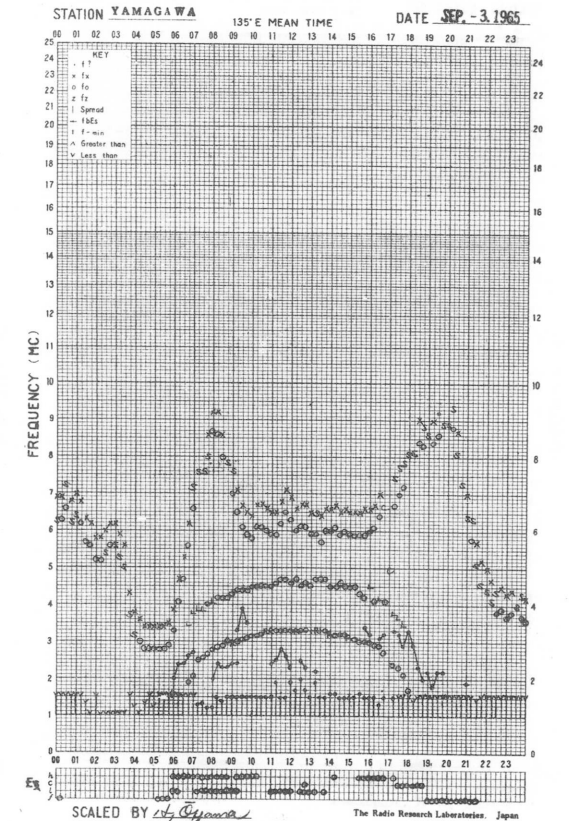
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

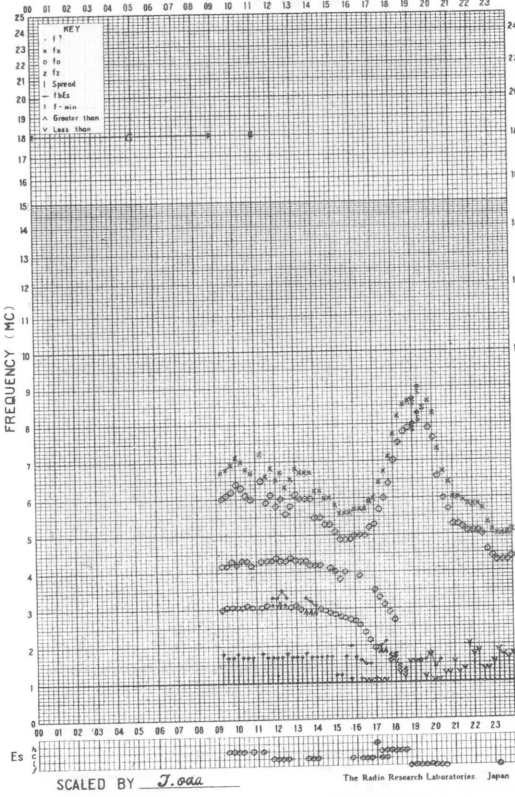


f-PLOT OF IONOSPHERIC DATA



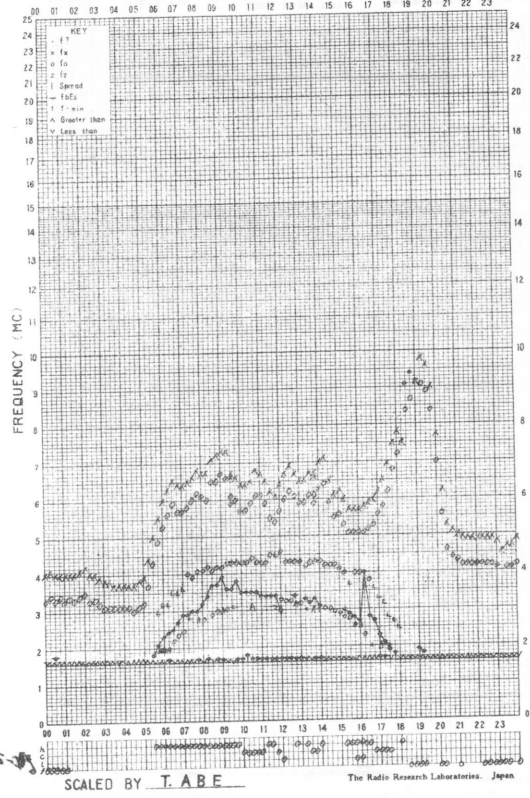
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI DATE SEP. 4 1965



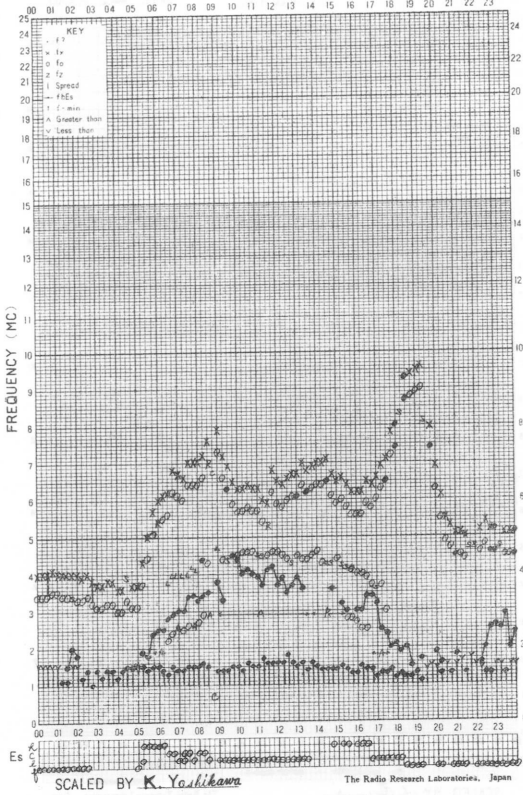
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STATION AKITA DATE Sep. 4 1965



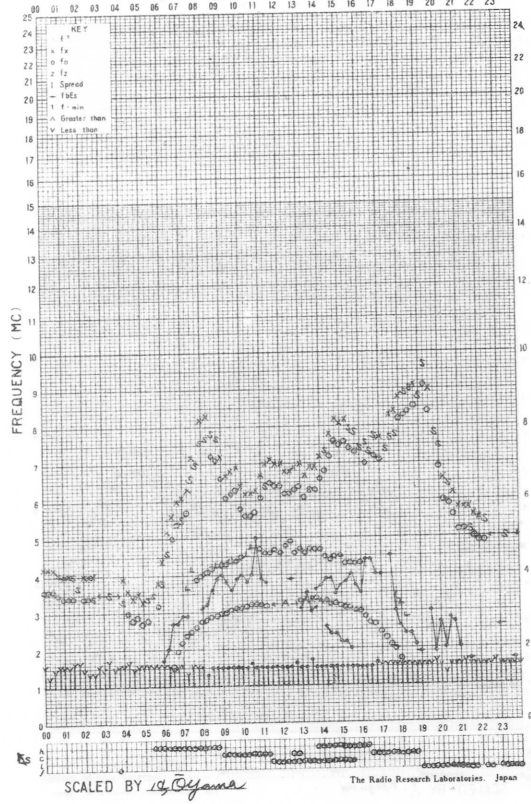
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STATION KOKUBUNJI DATE SEP. 4 1965



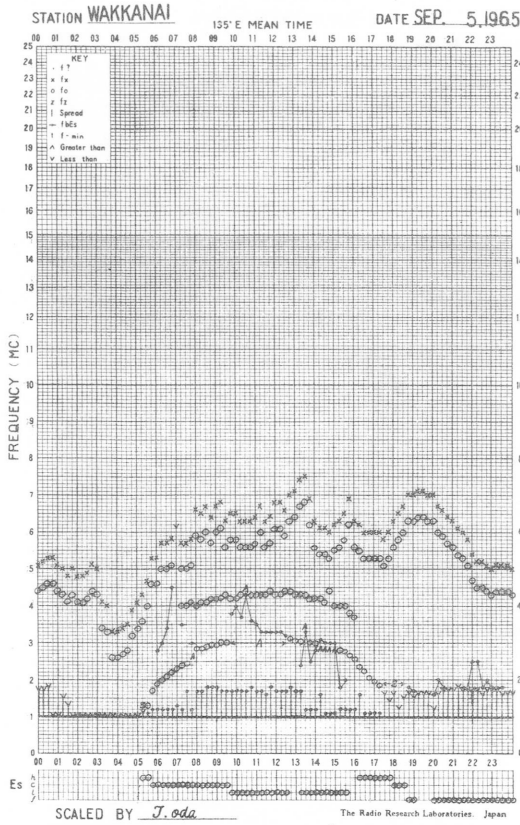
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STATION YAMAGAWA DATE SEP. -4.1965

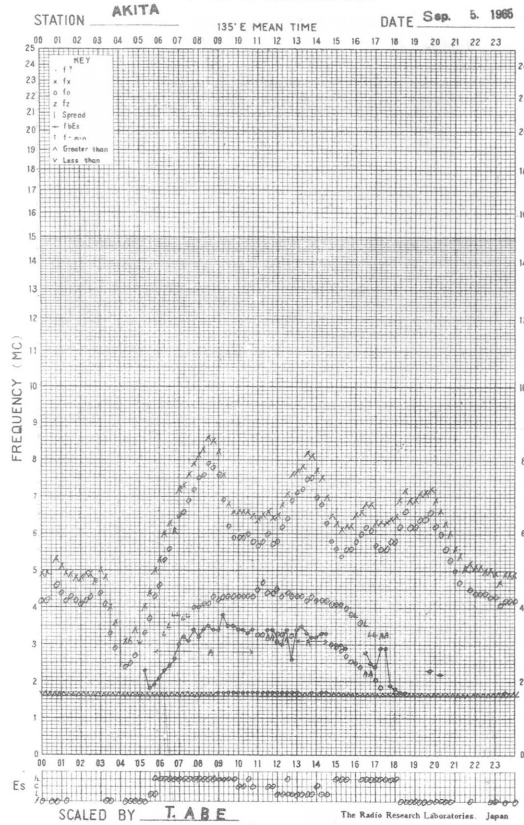




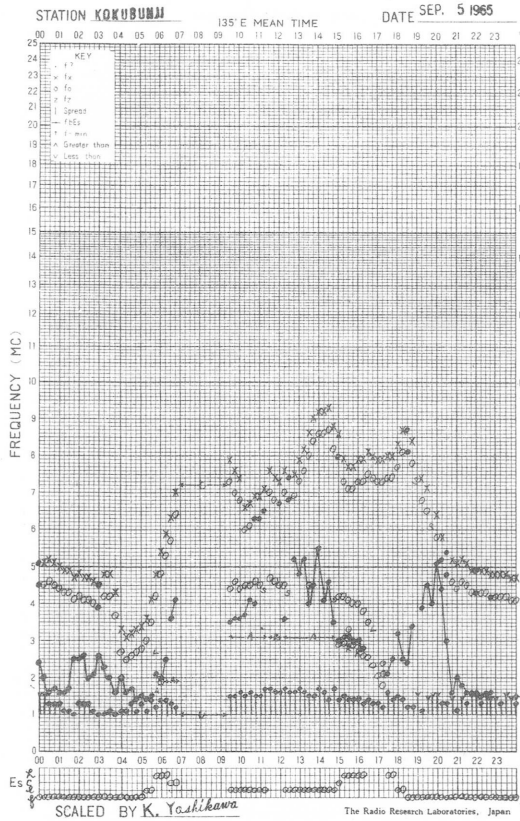
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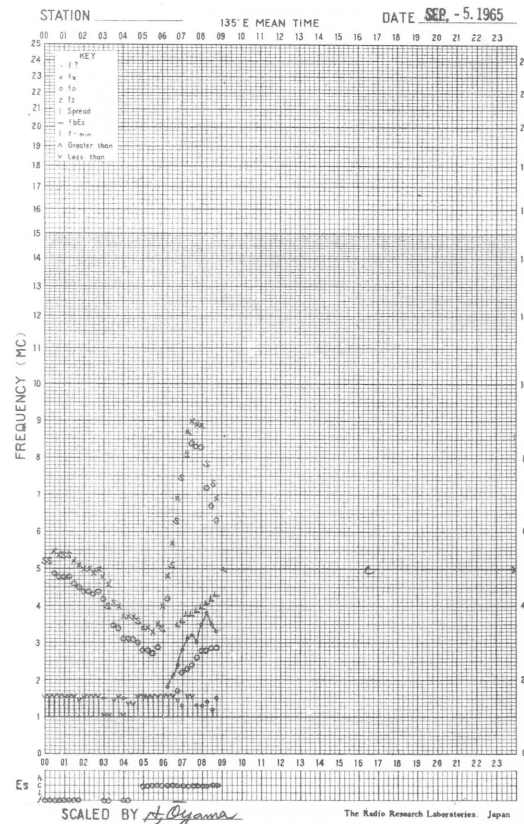
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

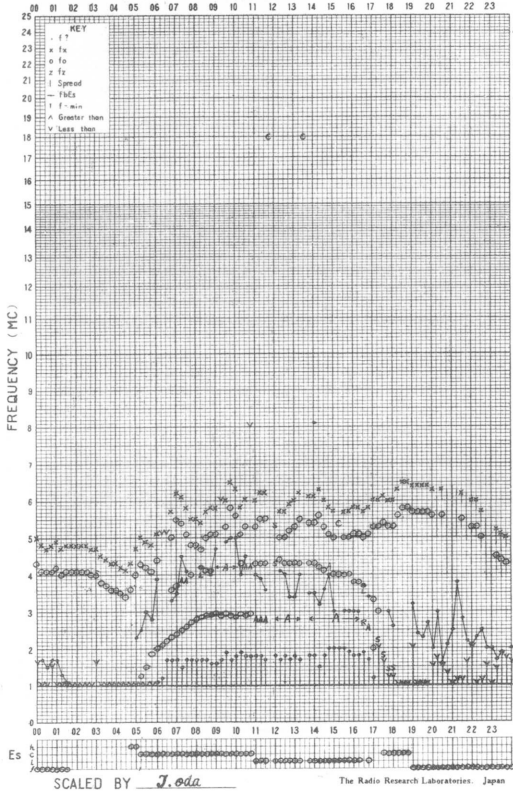


f-PLOT OF IONOSPHERIC DATA



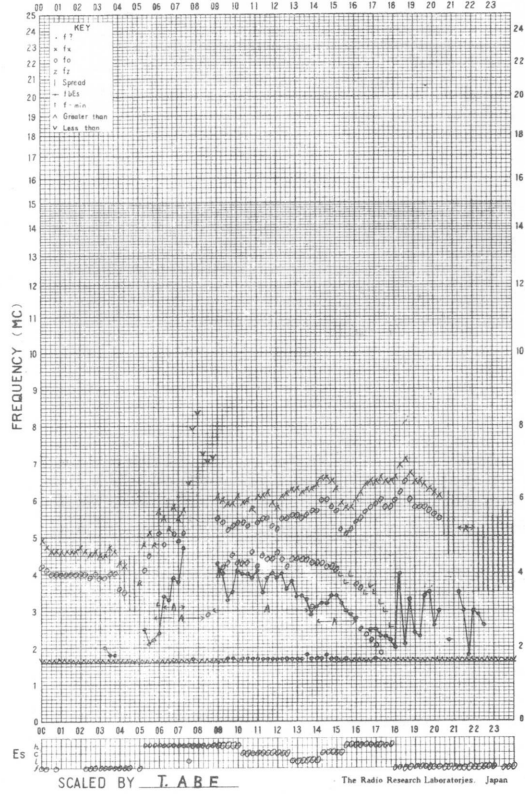
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STATION **WAKKANAI** 135°E MEAN TIME DATE **SEP. 6 1965**



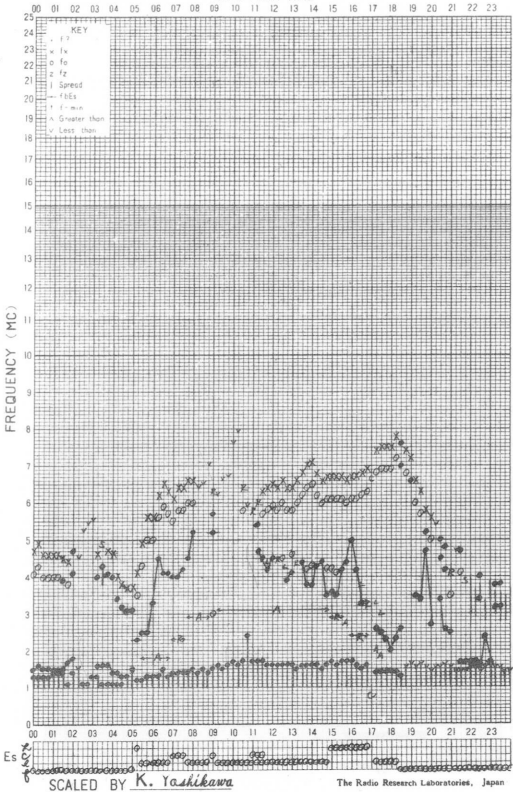
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STATION **AKITA** 135°E MEAN TIME DATE **SEP. 6 1965**



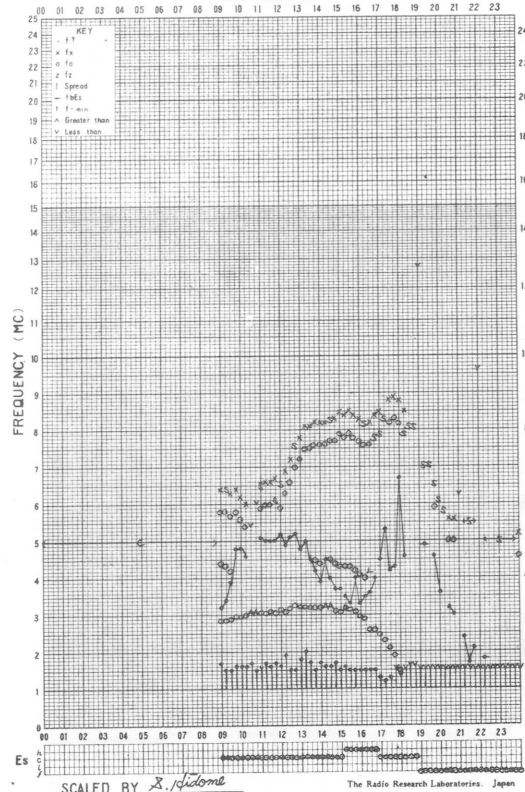
f-PLOT OF IONOSPHERIC DATA

STATION **KOKUBUNJI** 135°E MEAN TIME DATE **SEP. 6 1965**



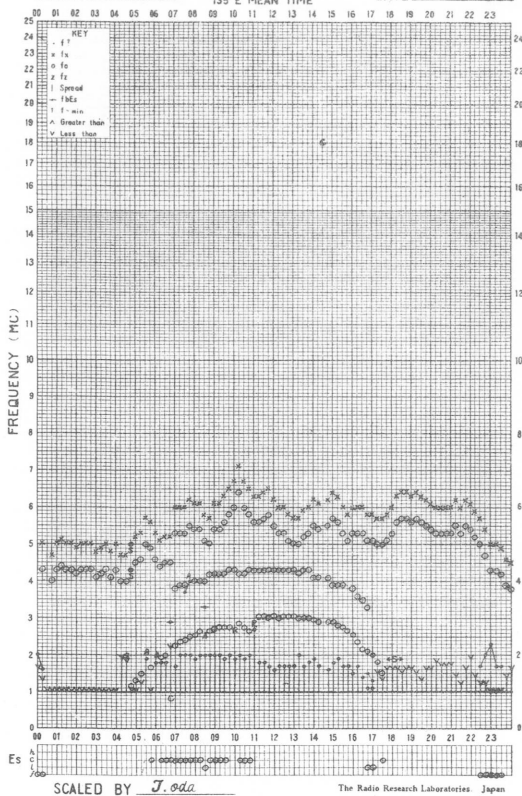
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STATION **YAMAGAWA** 135°E MEAN TIME DATE **SEP. -6 1965**



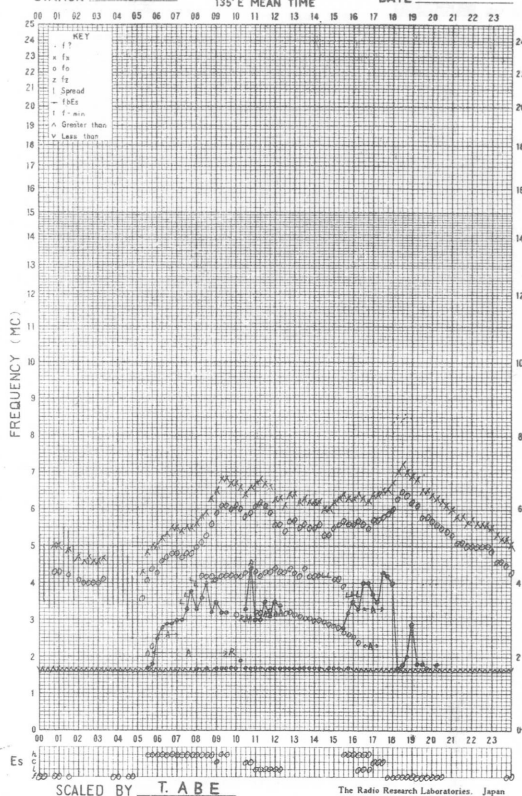
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STATION WAKKANAI 135° E MEAN TIME DATE SEP. 7 1965



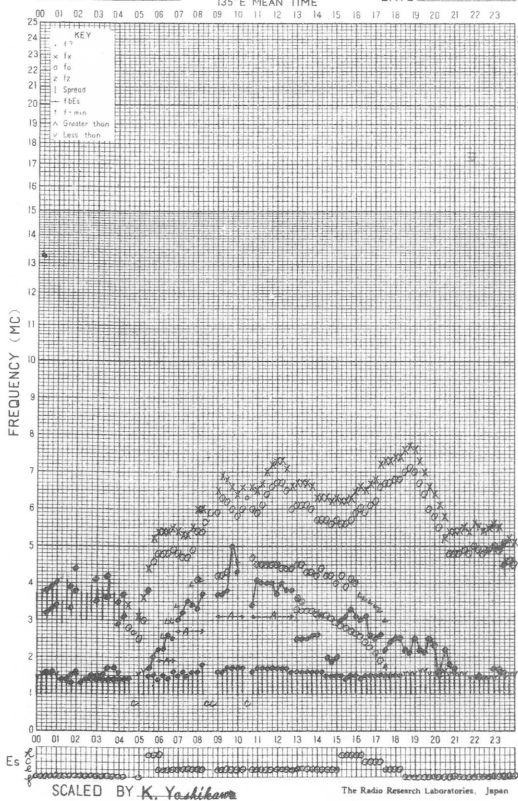
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STATION AKITA 135° E MEAN TIME DATE SEP. 7 1965



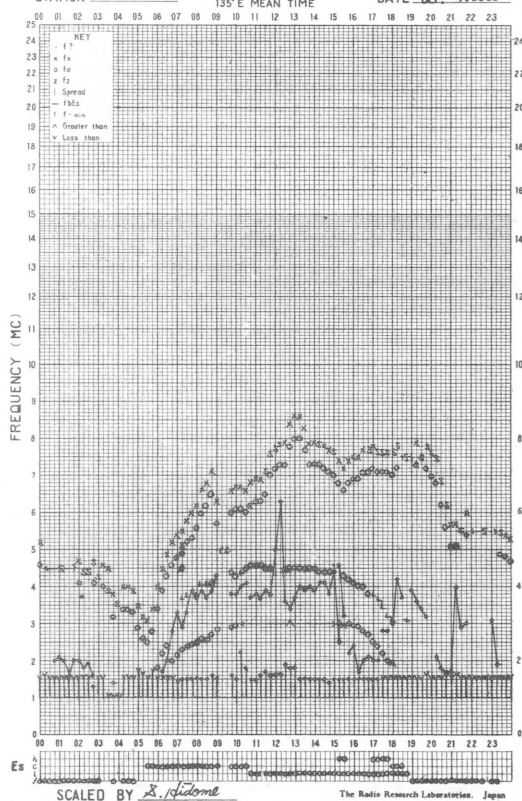
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STATION KOKUBUNJI 135° E MEAN TIME DATE SEP. 7 1965

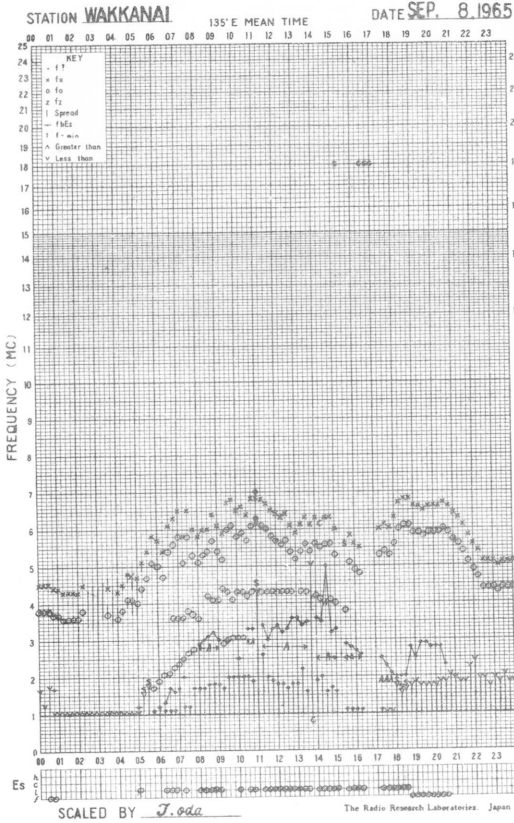


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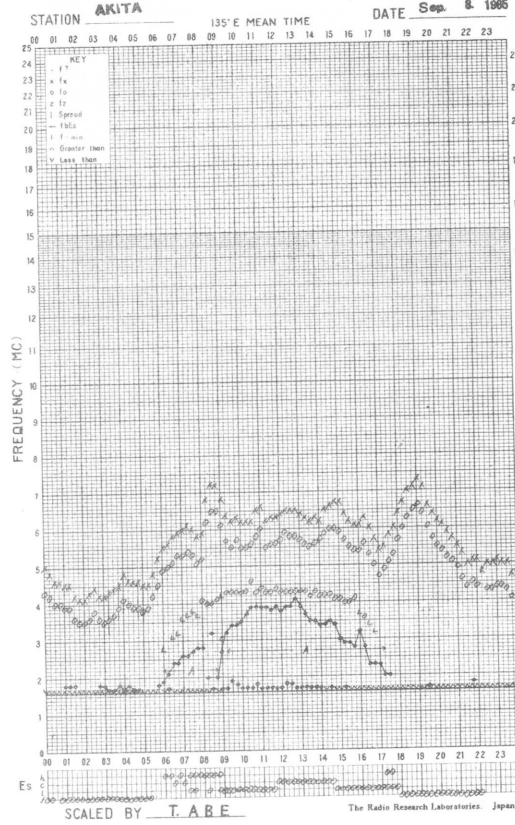
STATION YAMAGAWA 135° E MEAN TIME DATE SEP. 7 1965



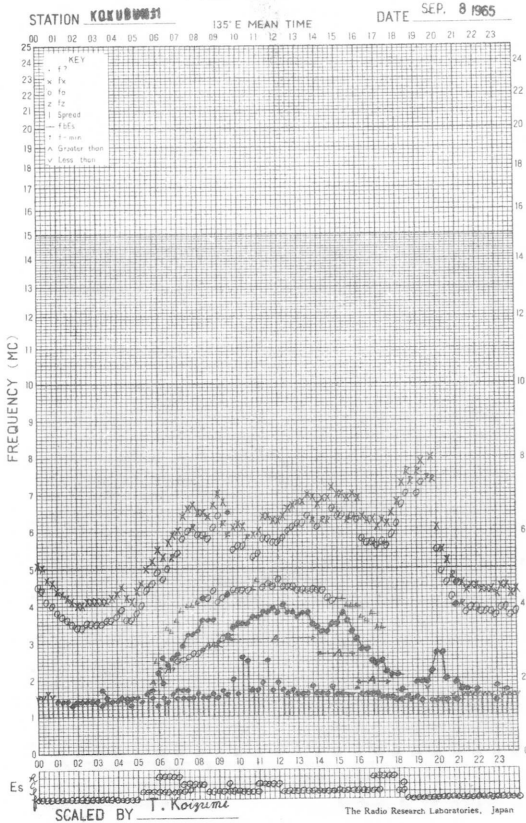
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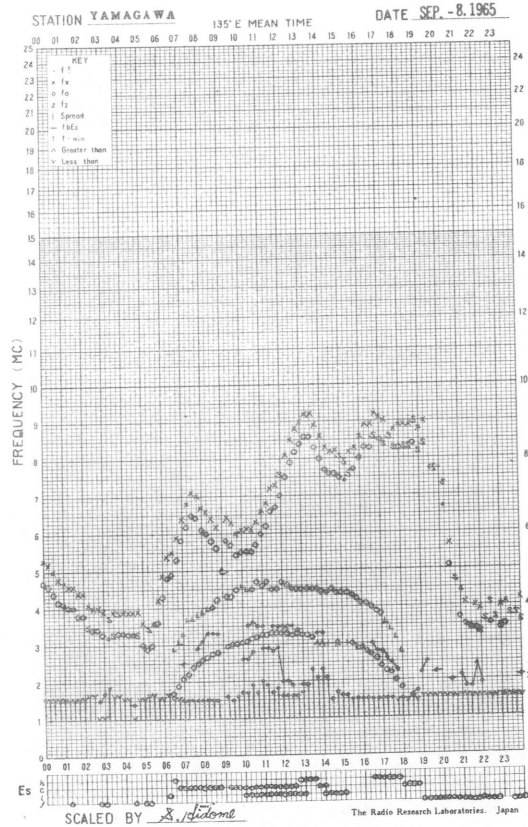
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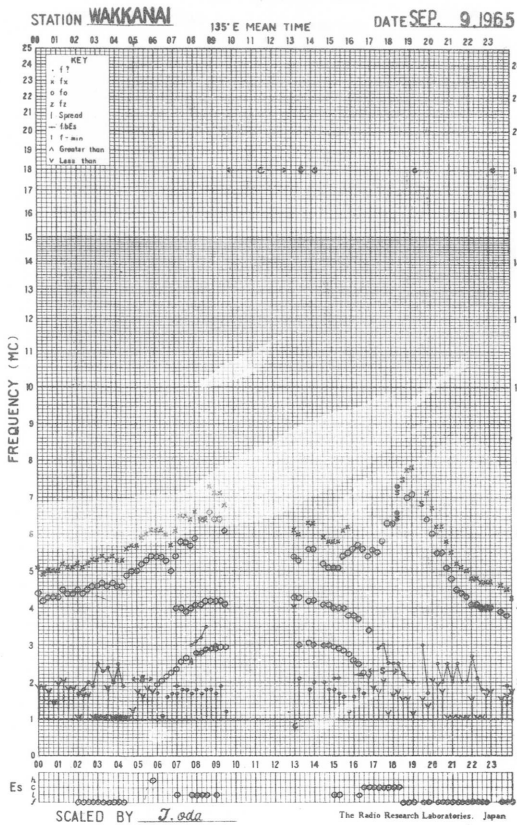
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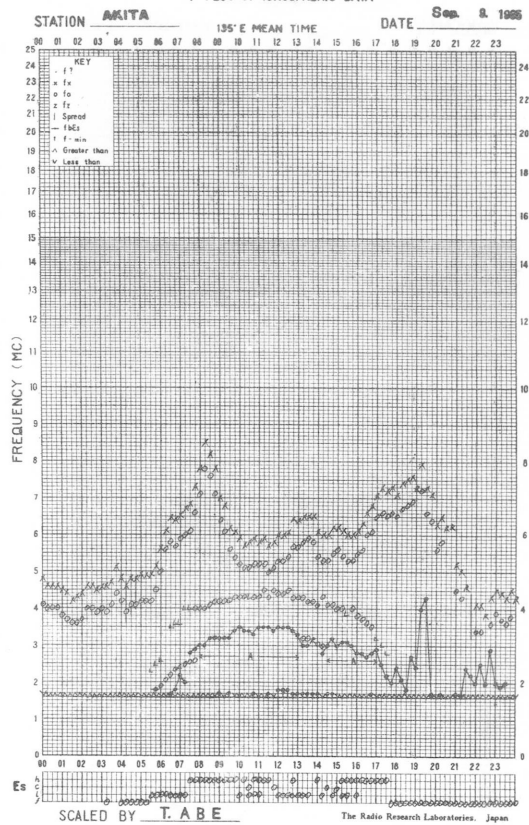
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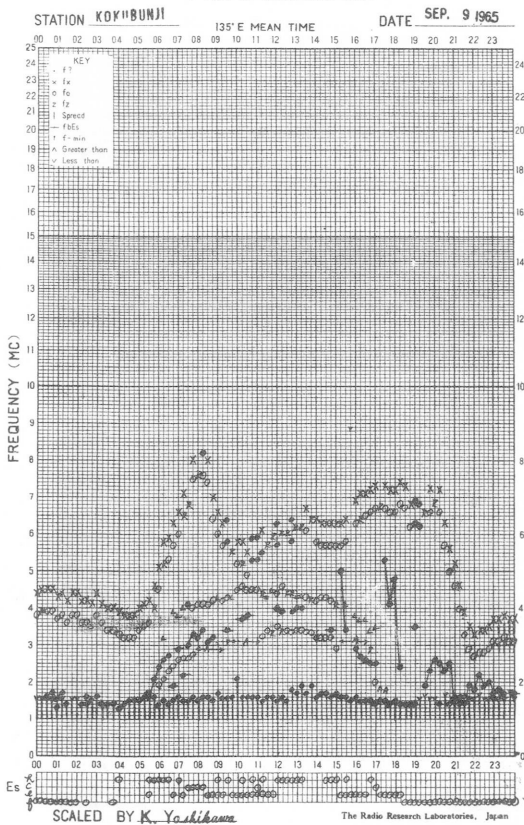
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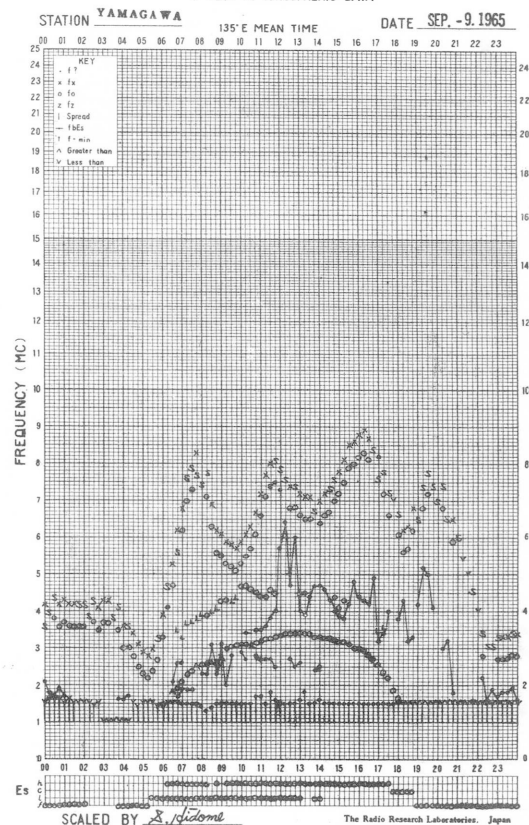
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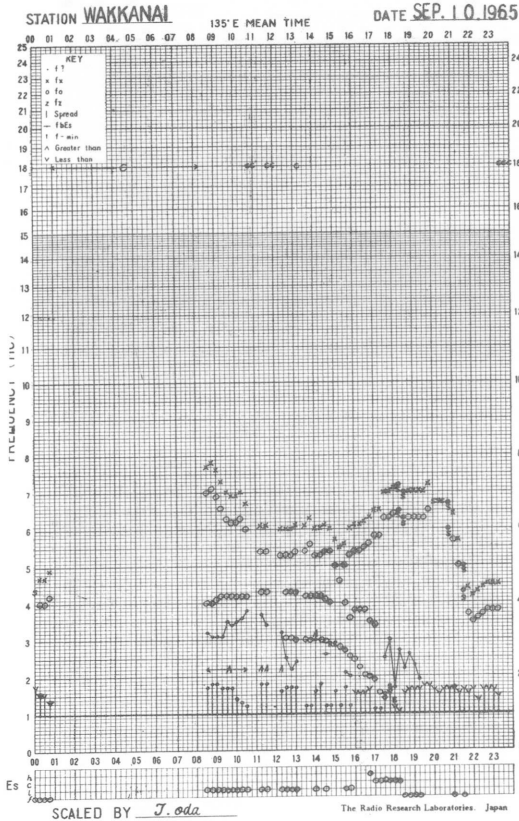
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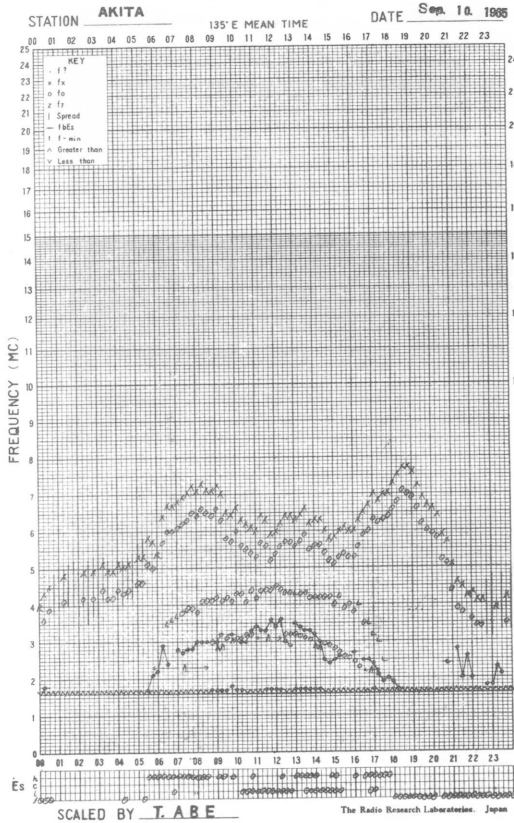
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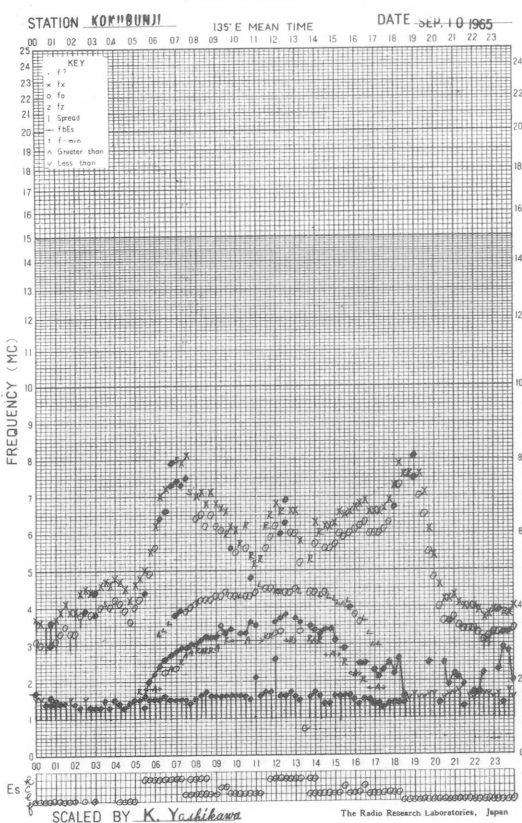
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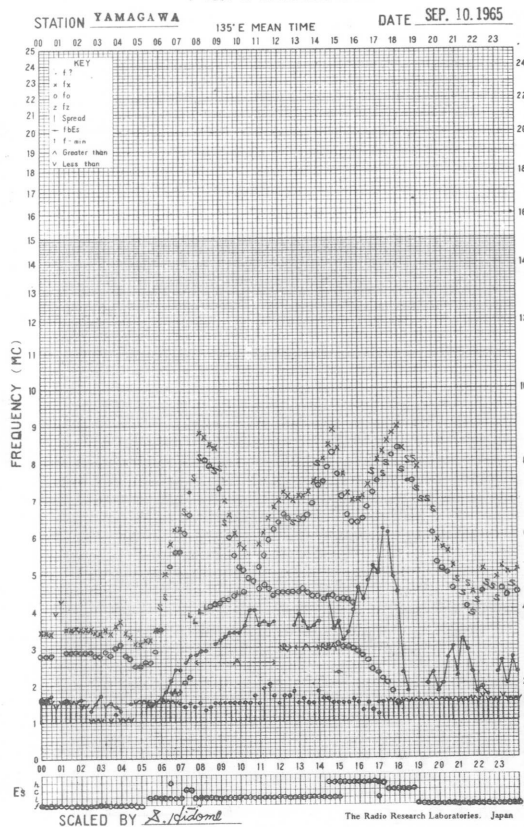
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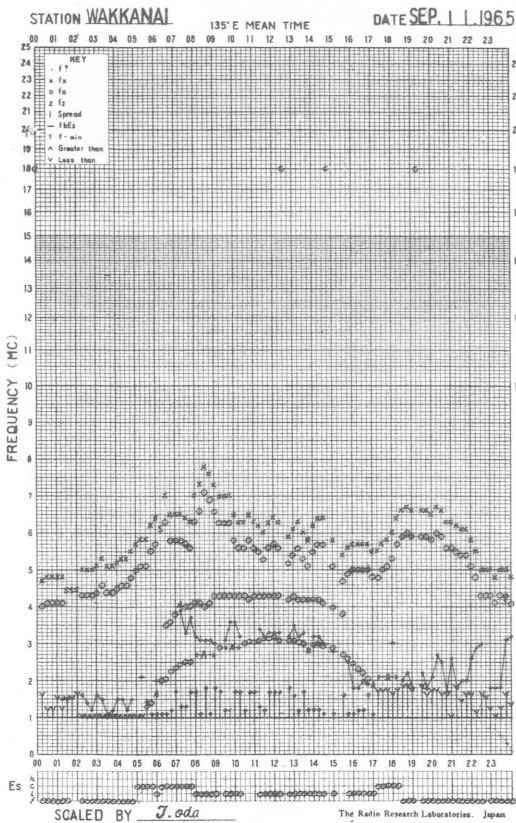
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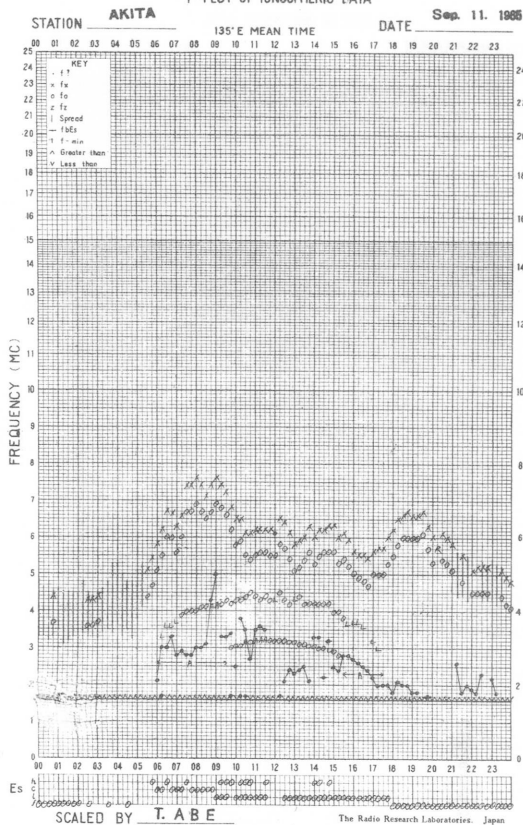
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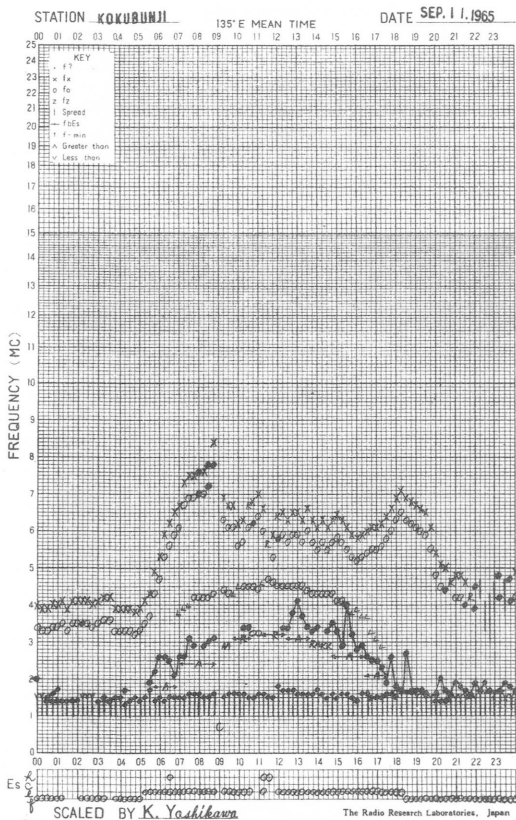
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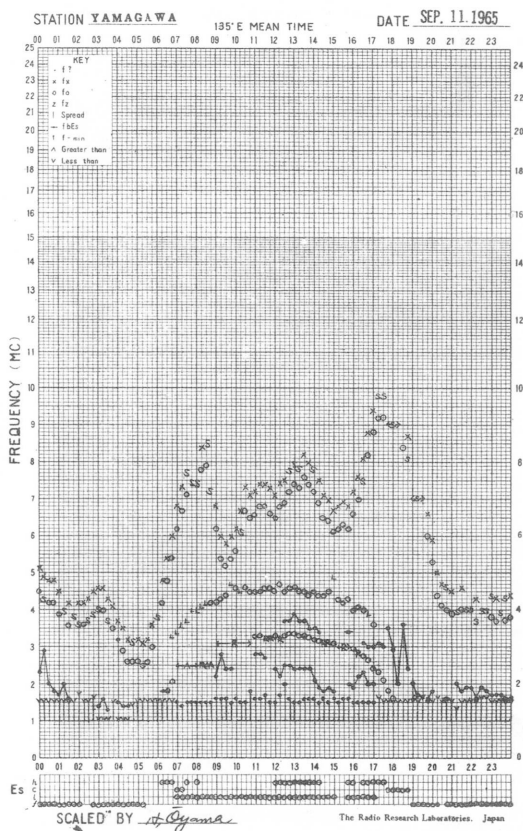
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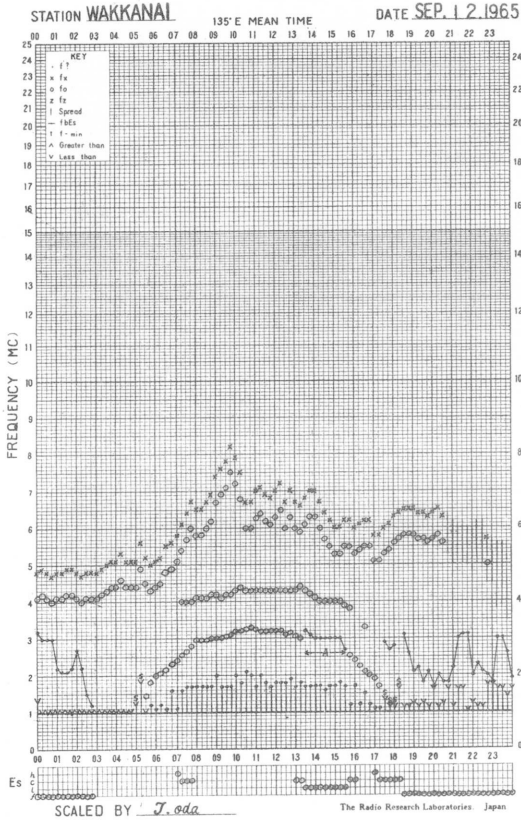
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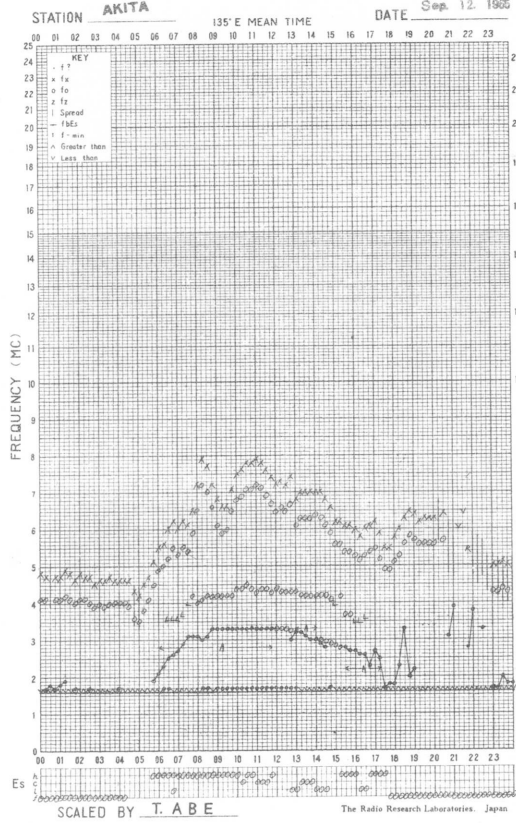
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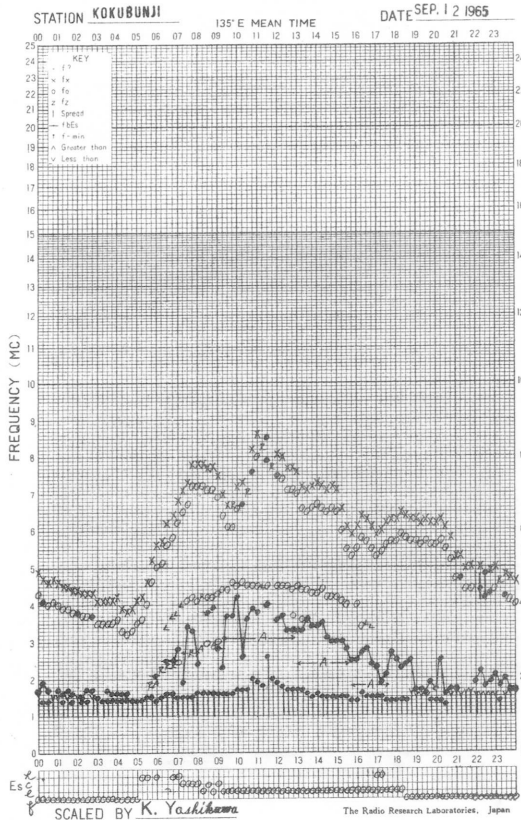
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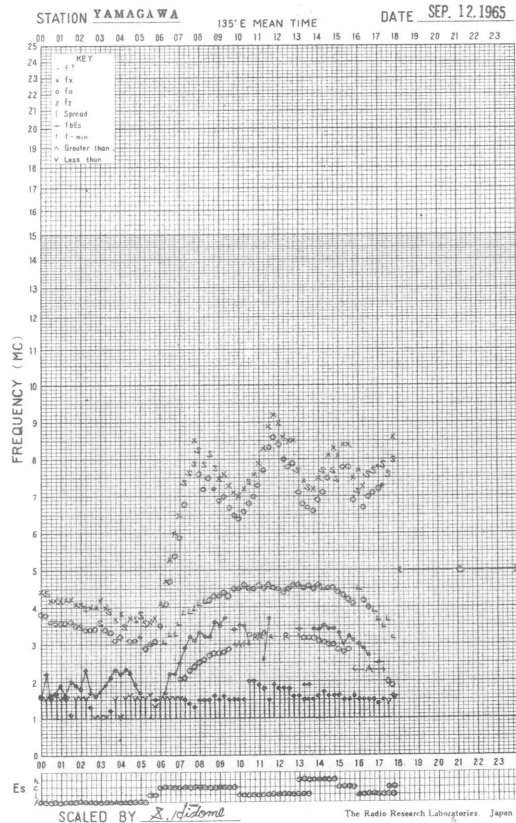
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f- PLOT OF IONOSPHERIC DATA

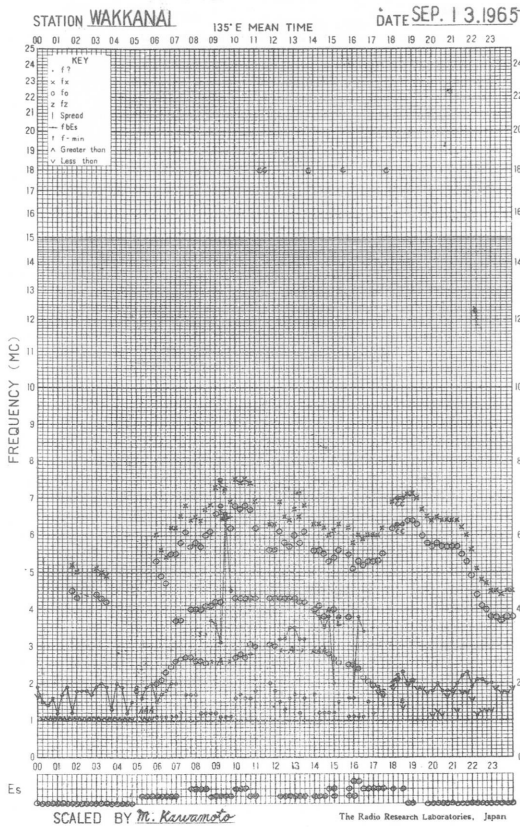


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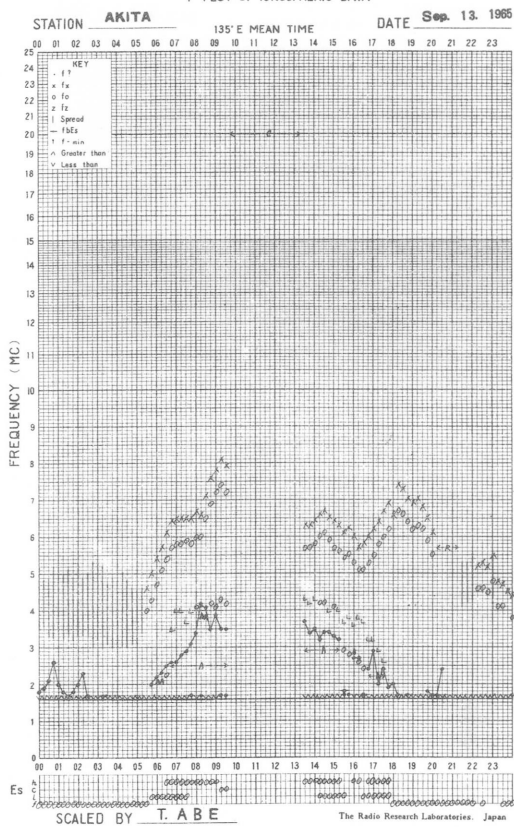




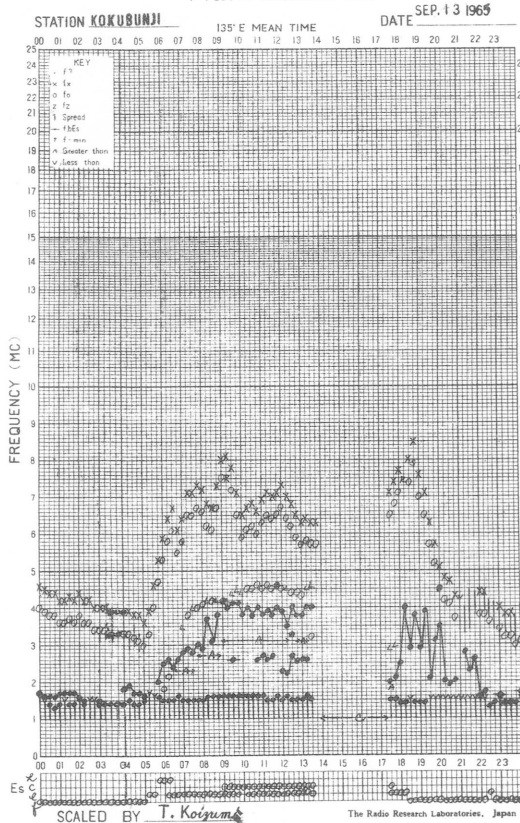
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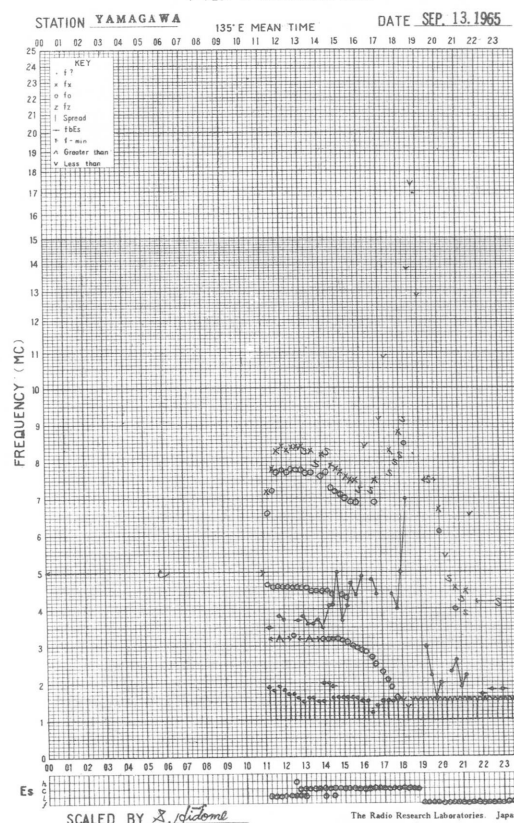
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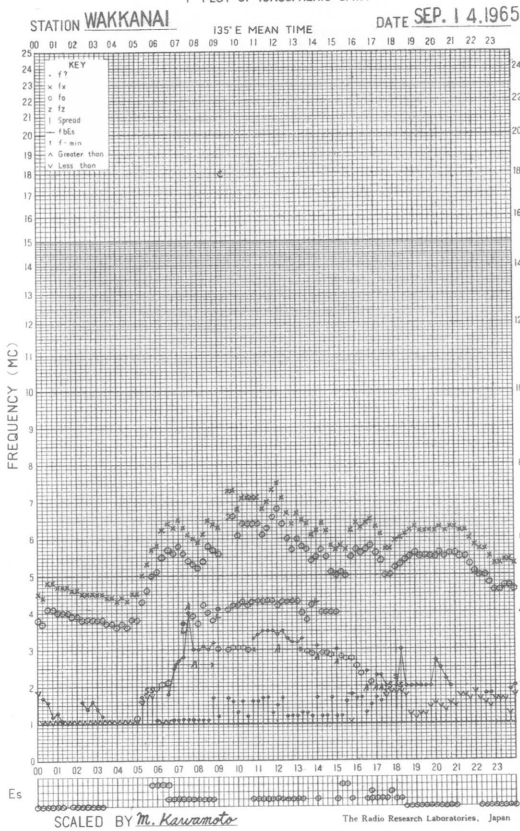
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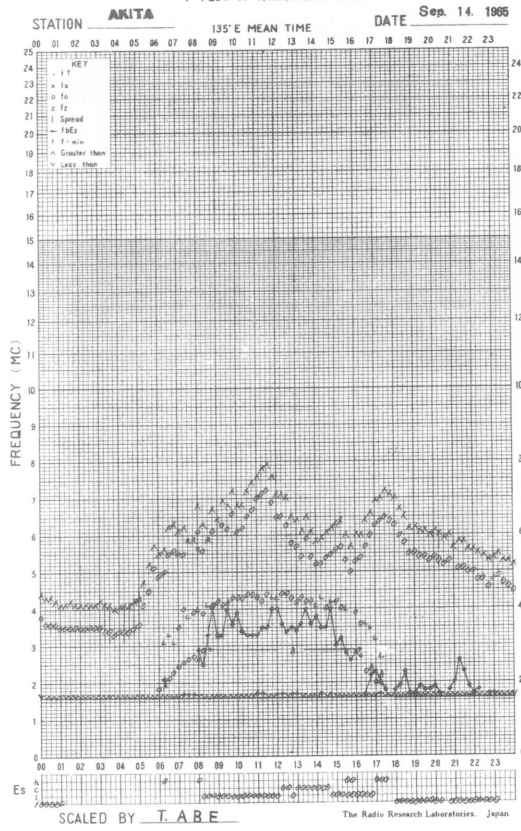
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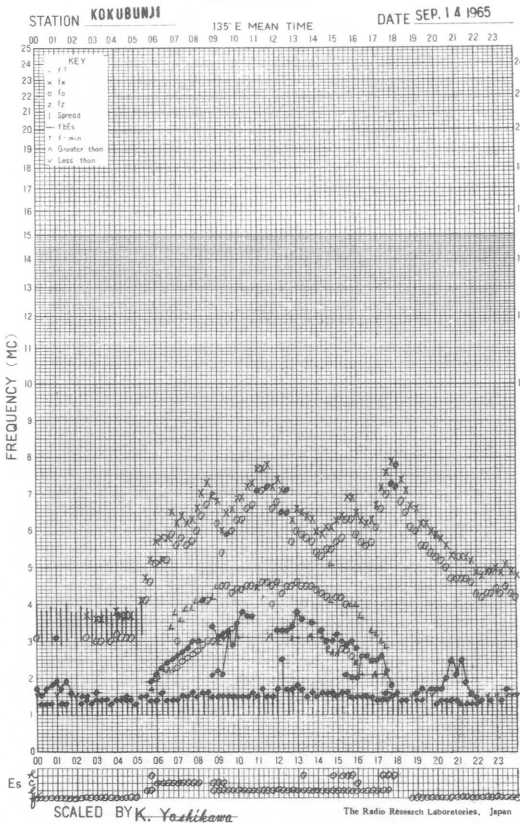
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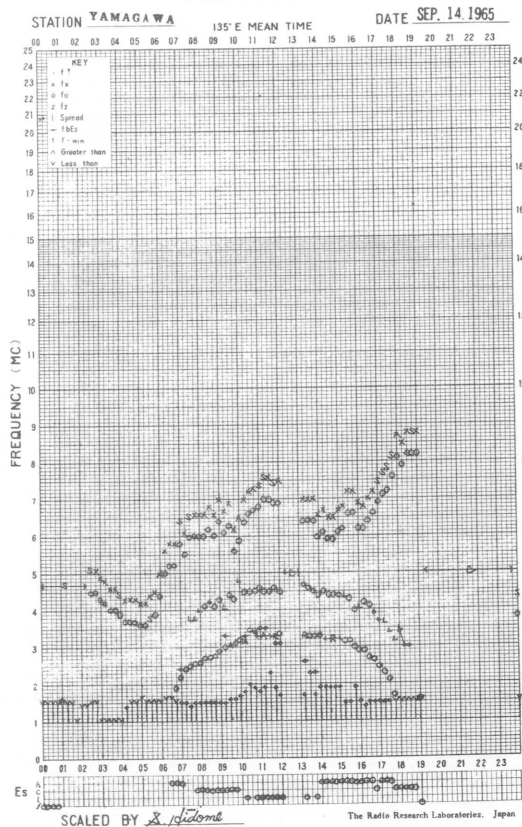
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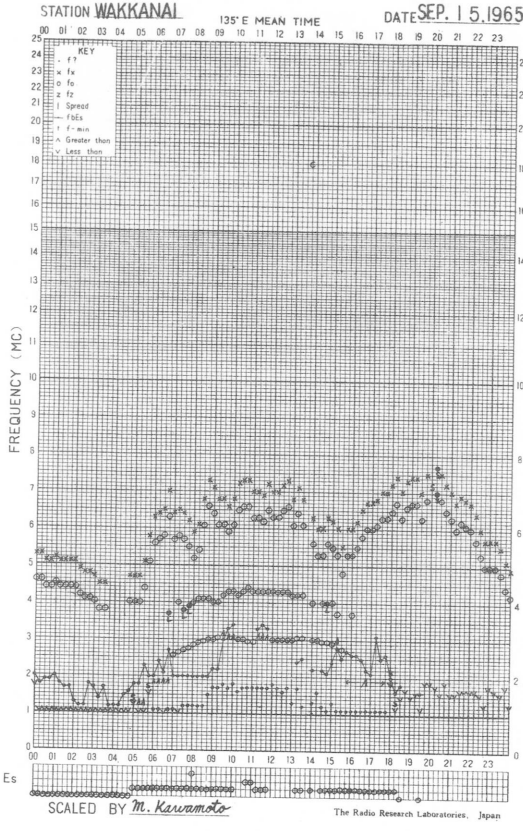
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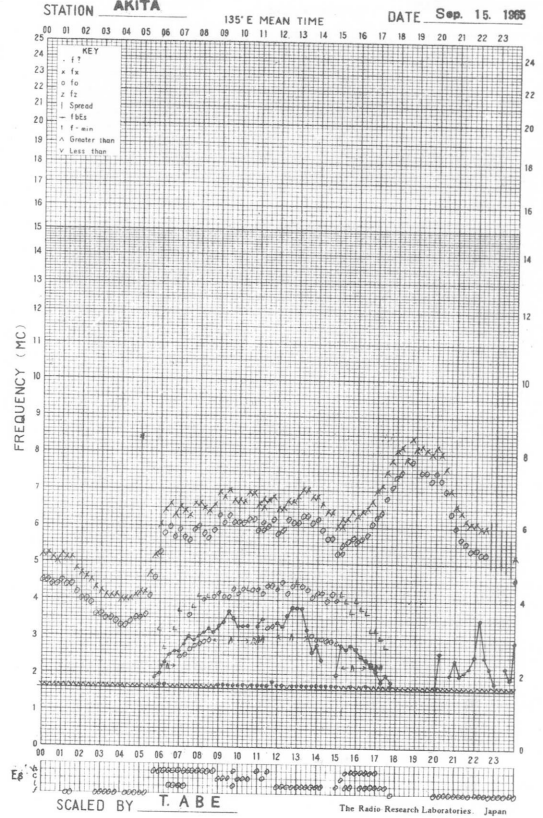
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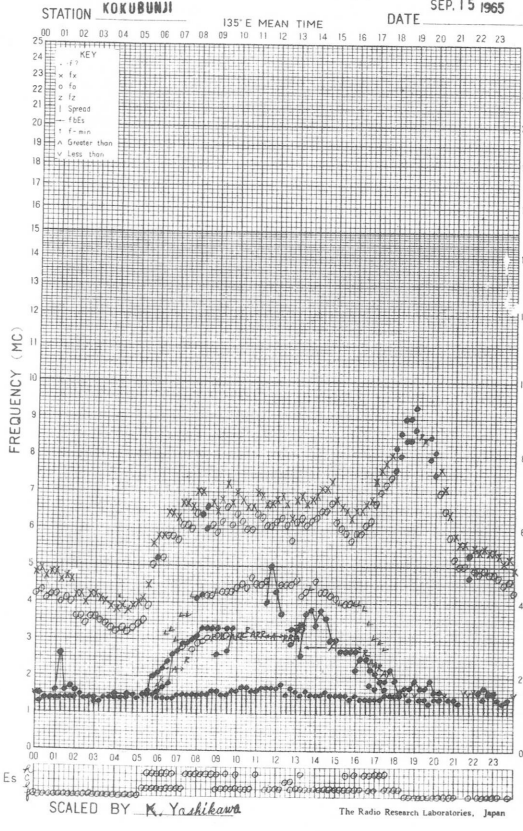
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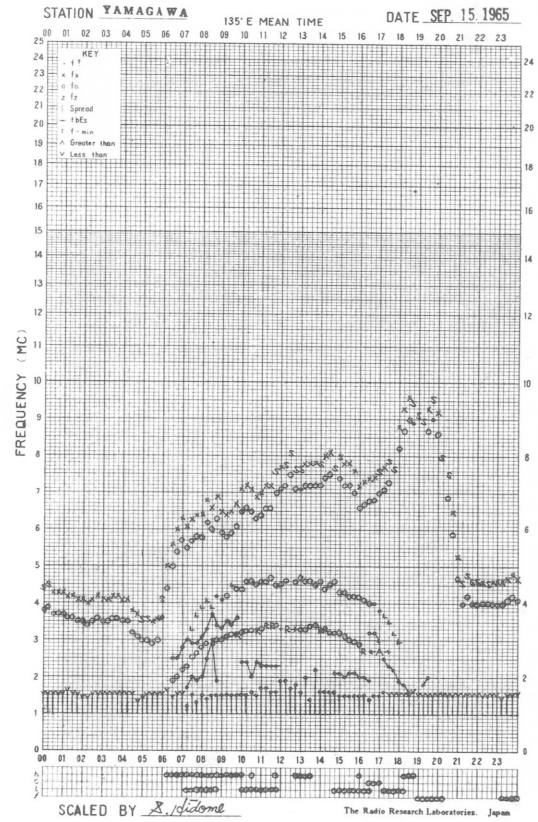
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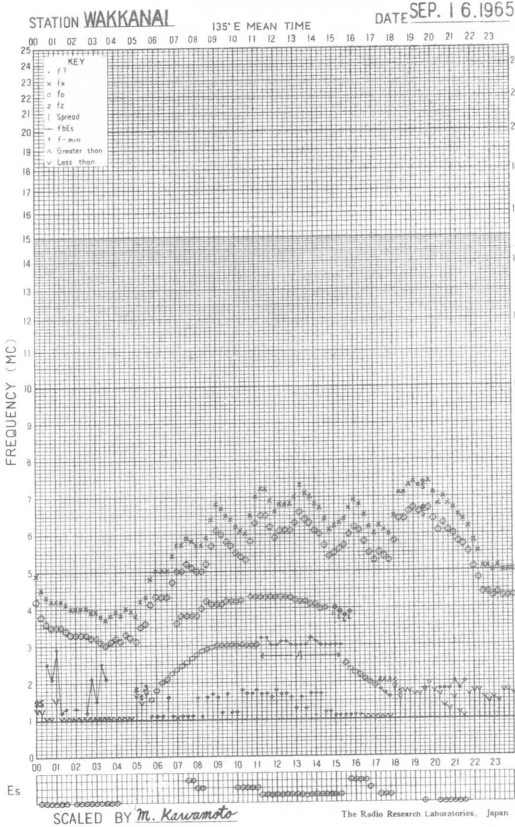
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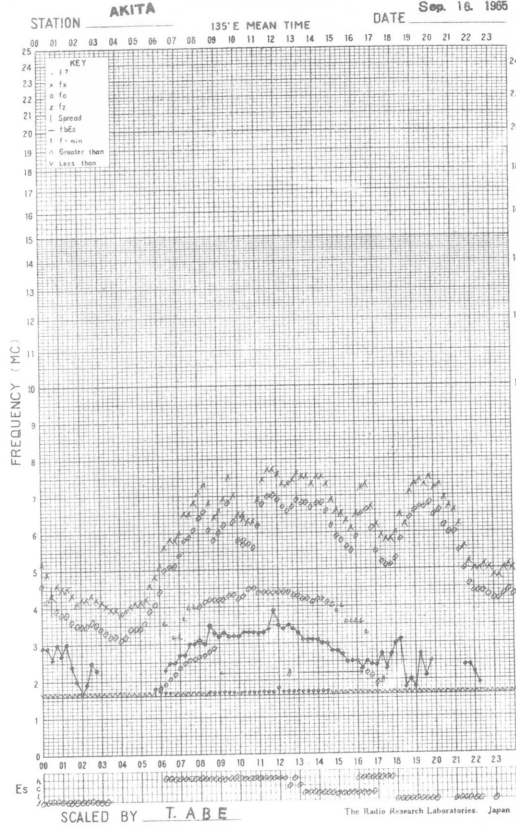
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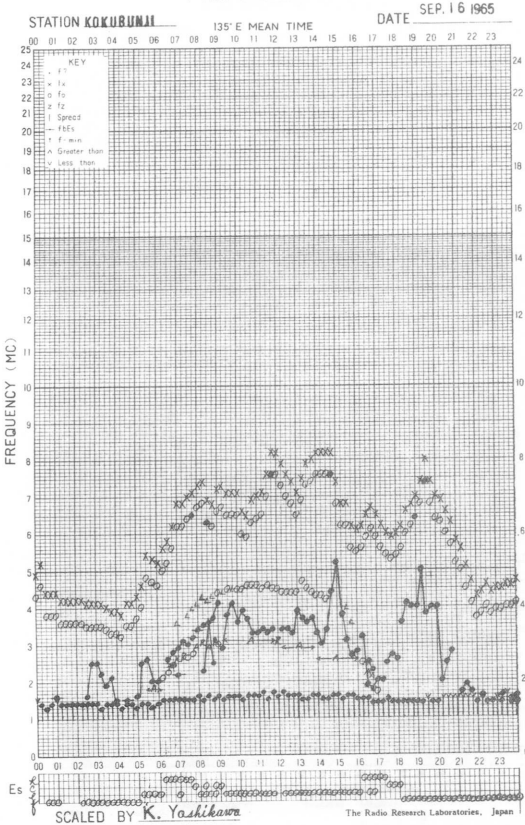
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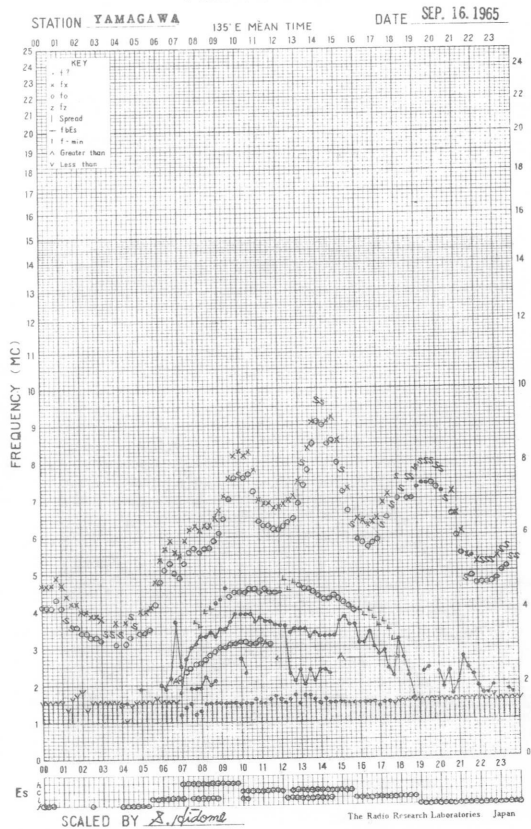
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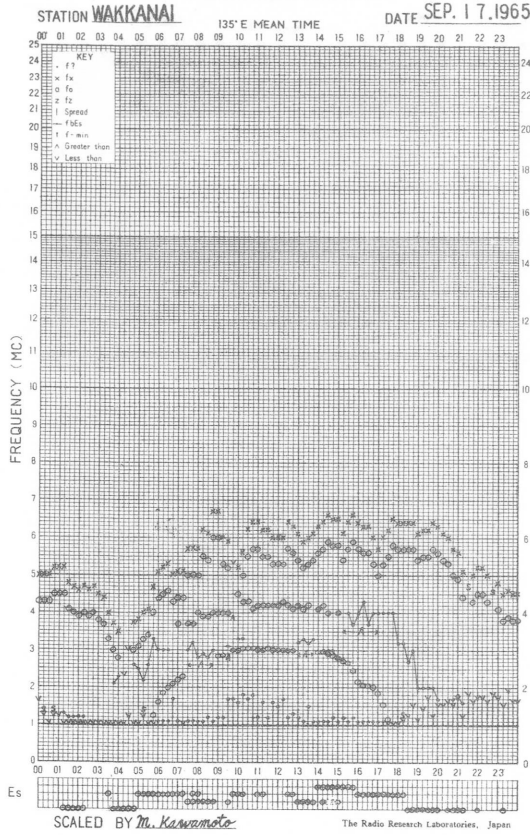
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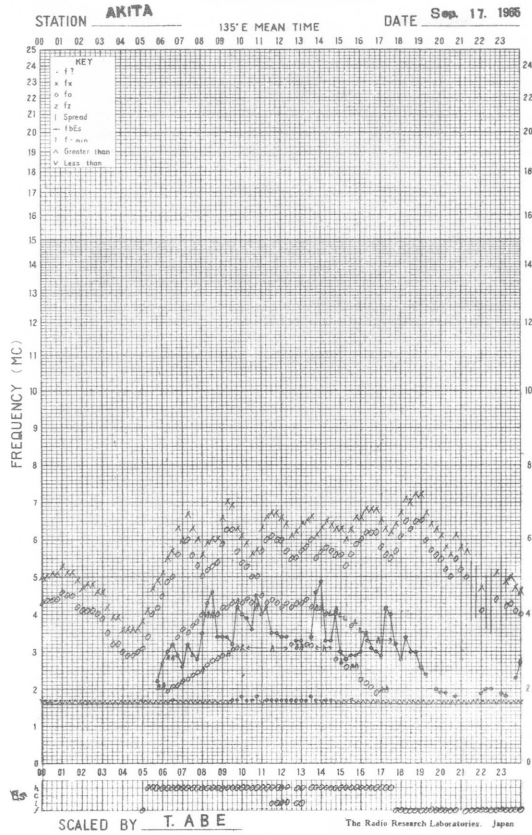
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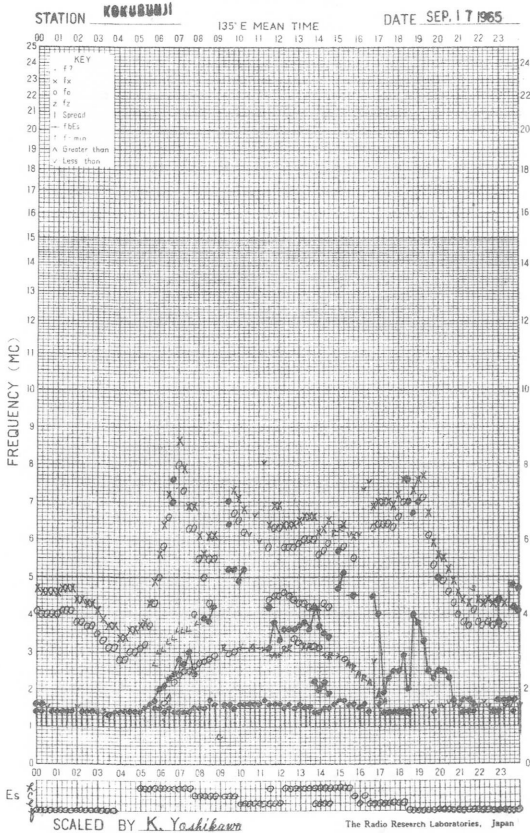
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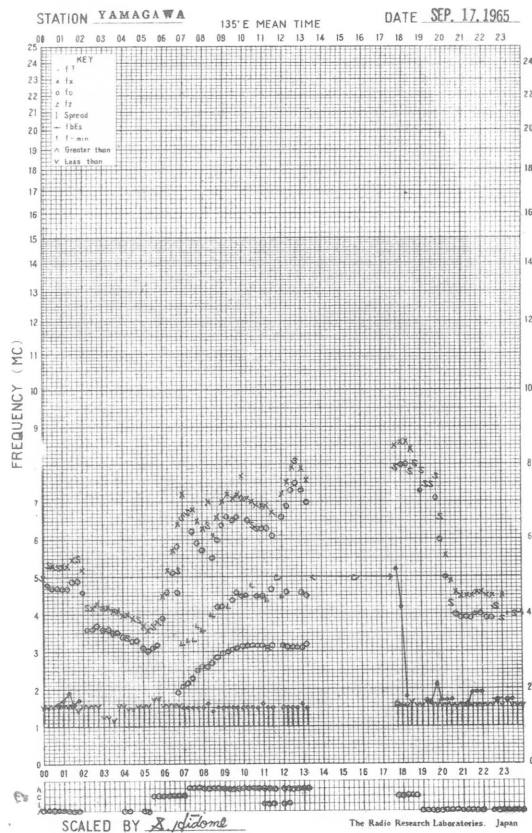
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f-PLOT OF IONOSPHERIC DATA

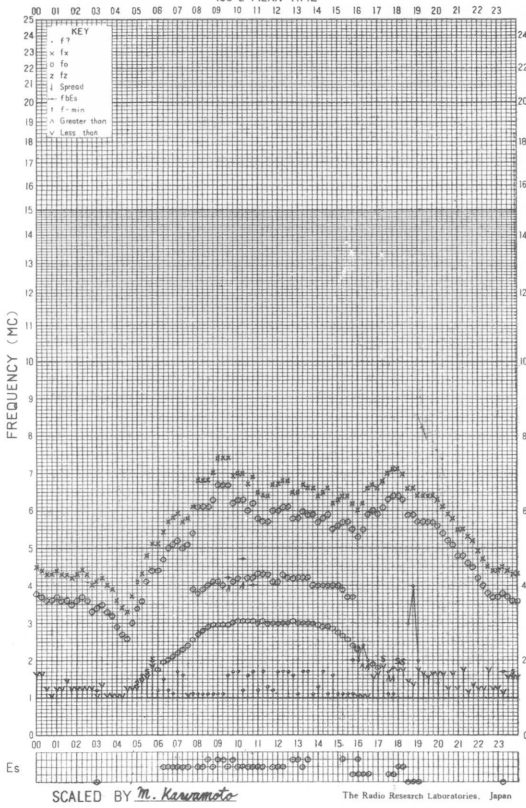


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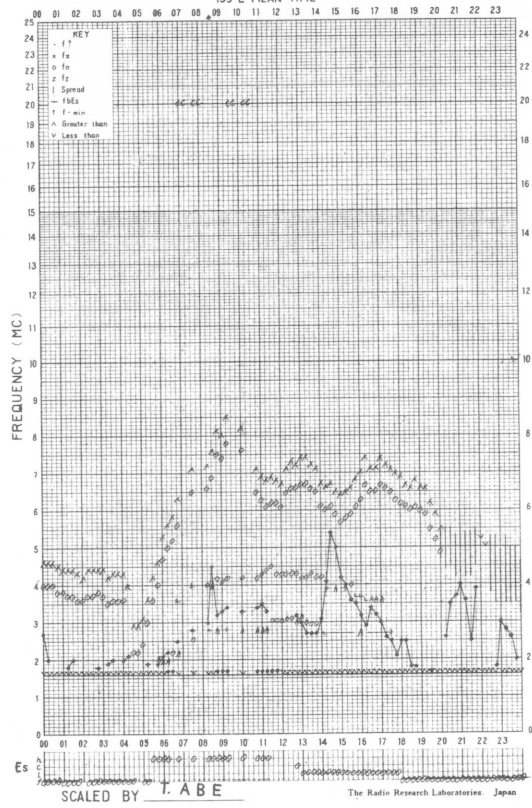
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STATION **WAKKANAI** 135° E MEAN TIME DATE **SEP. 18 1965**



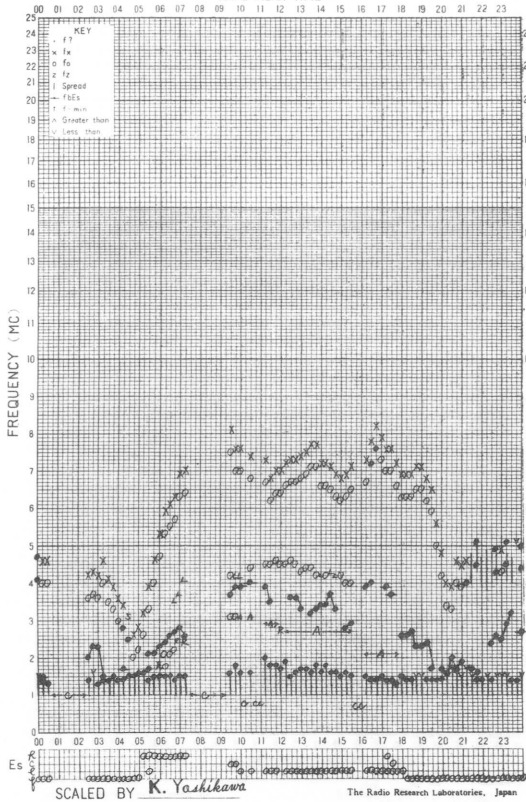
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STATION **AKITA** 135° E MEAN TIME DATE **Sep. 18 1965**



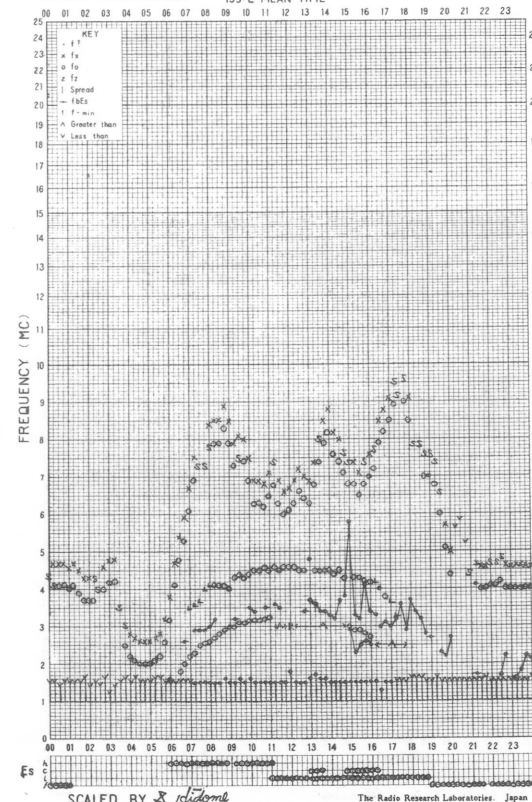
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STATION **KOKUBUNJI** 135° E MEAN TIME DATE **SEP. 18 1965**

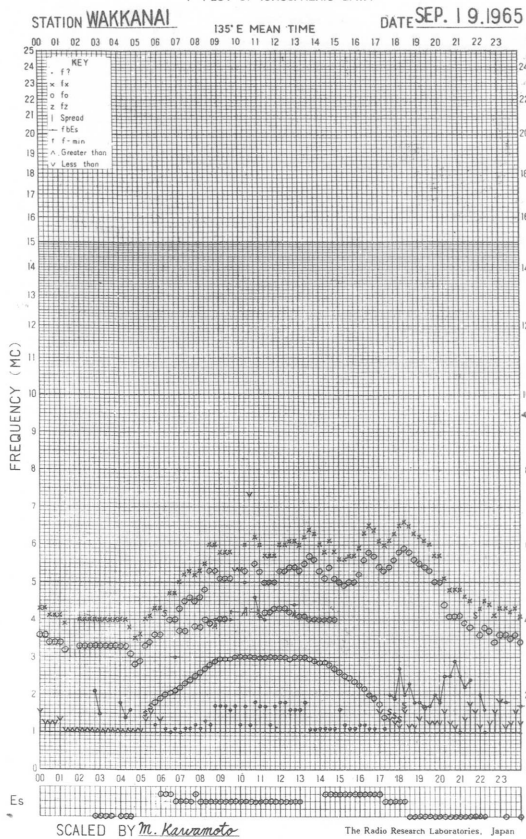


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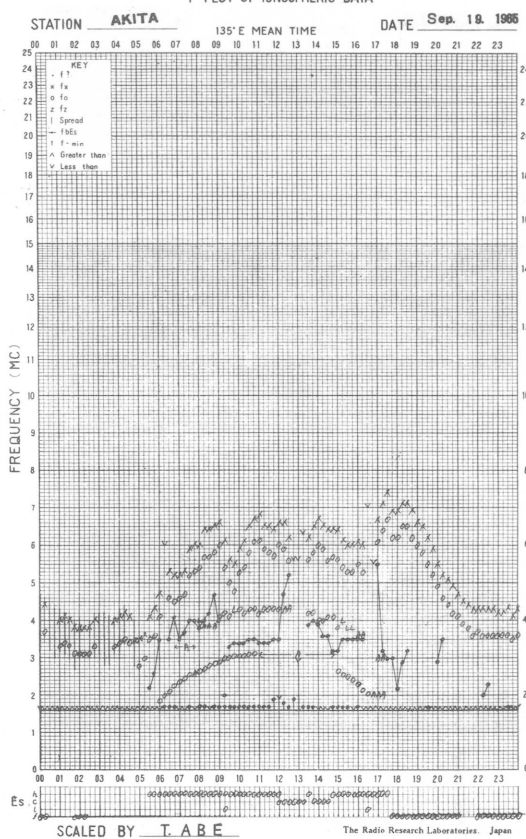
STATION **YAMAGAWA** 135° E MEAN TIME DATE **SEP. 18 1965**



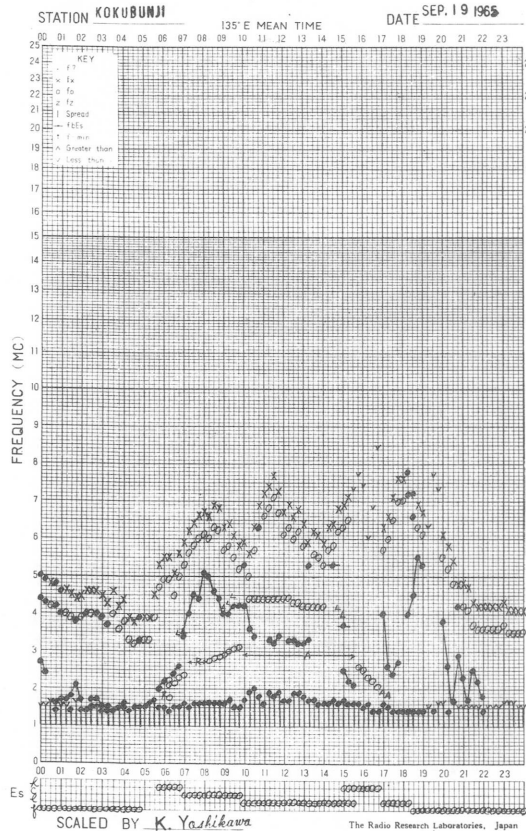
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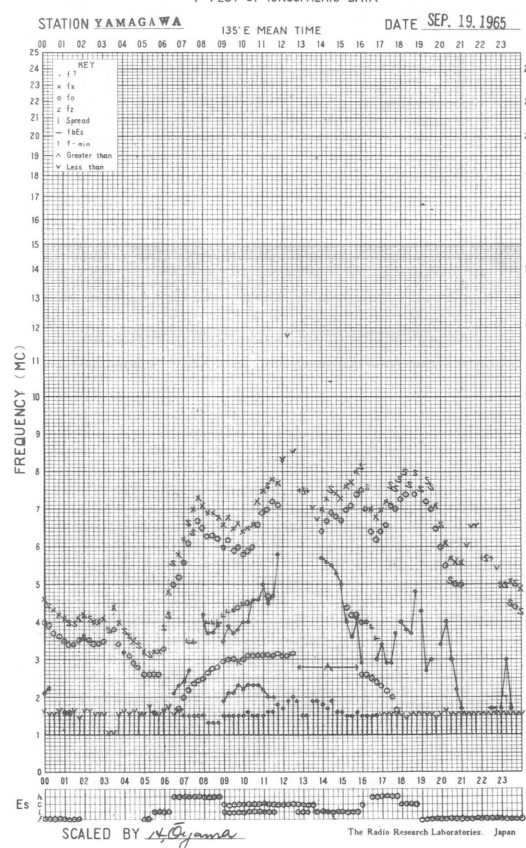
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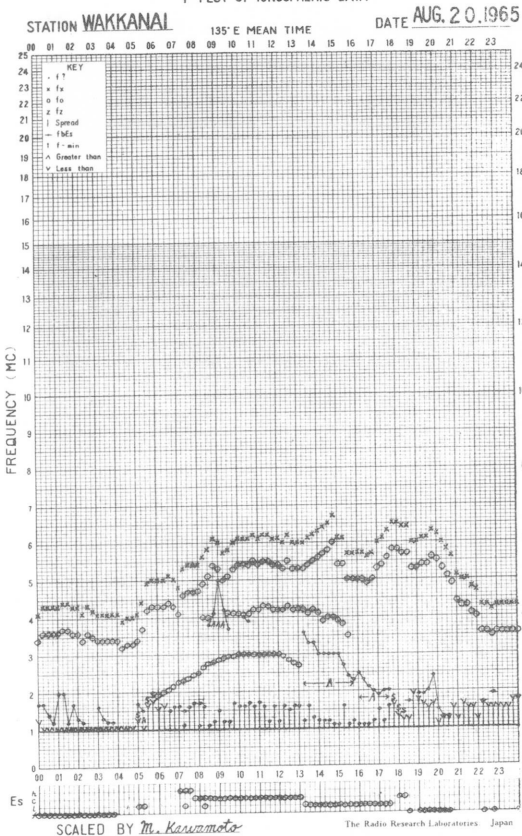
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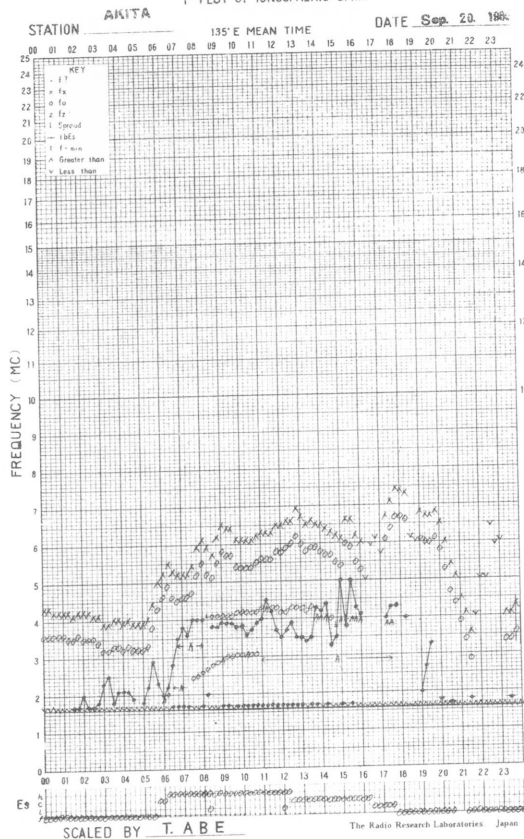
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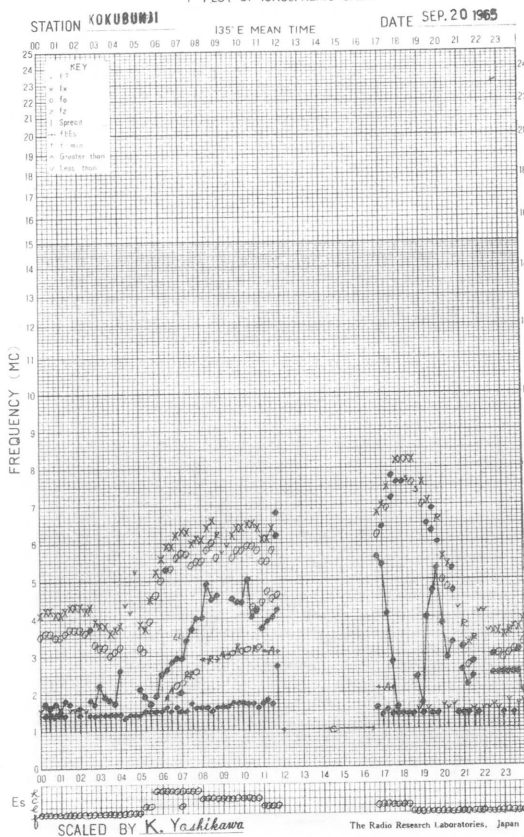
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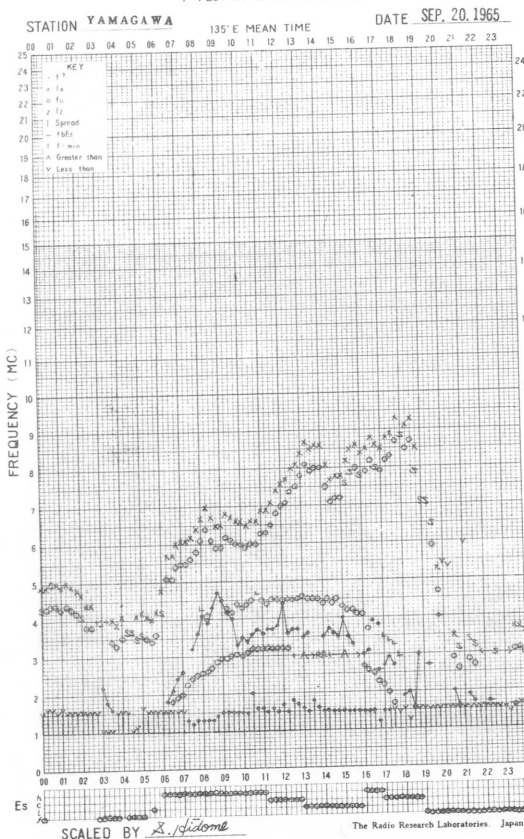
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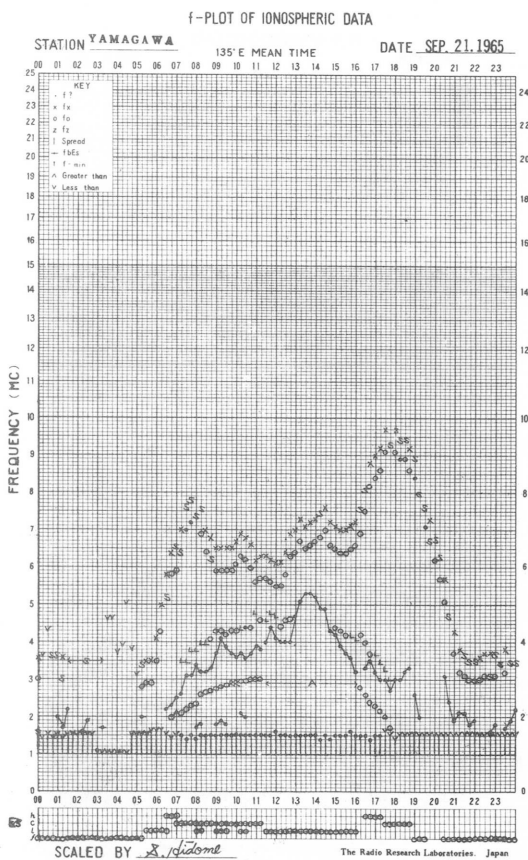
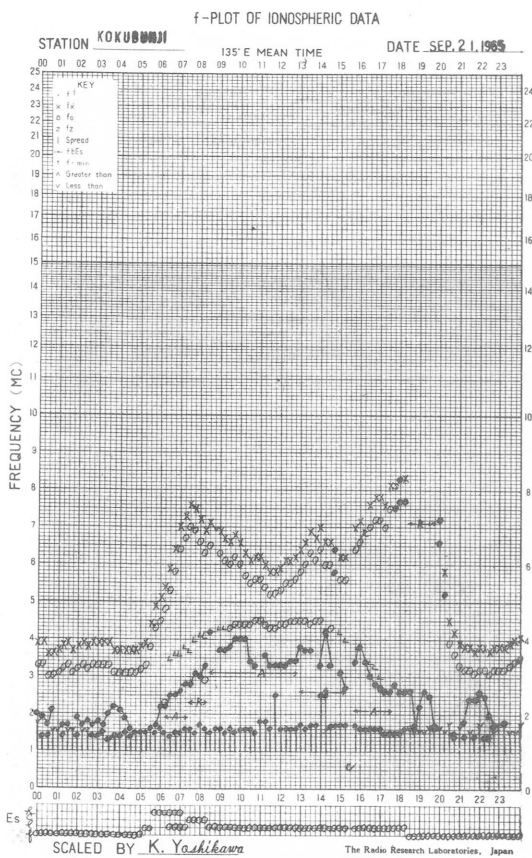
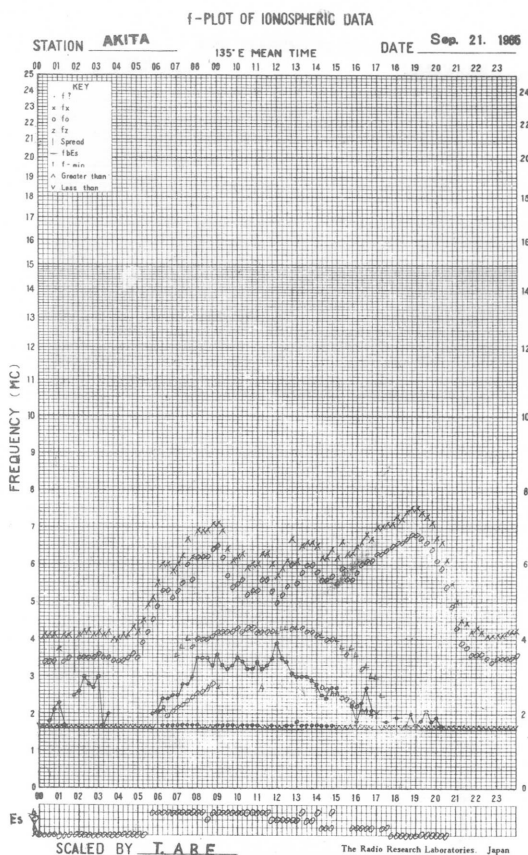
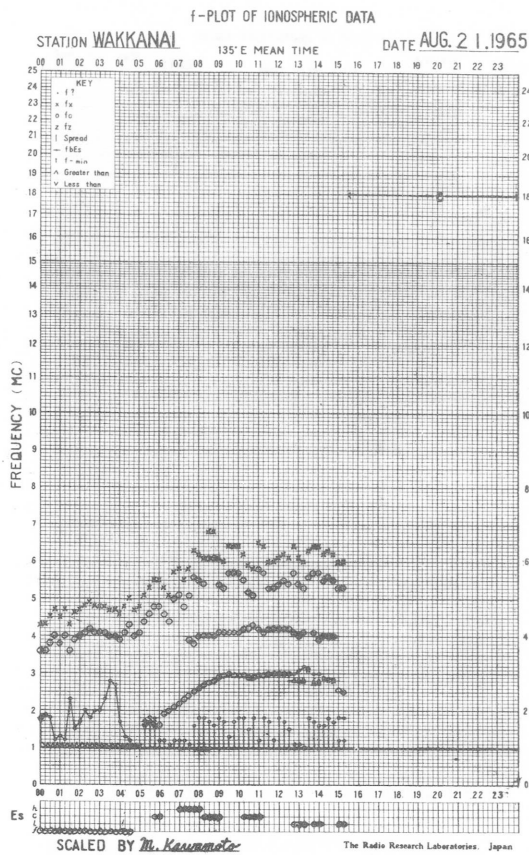
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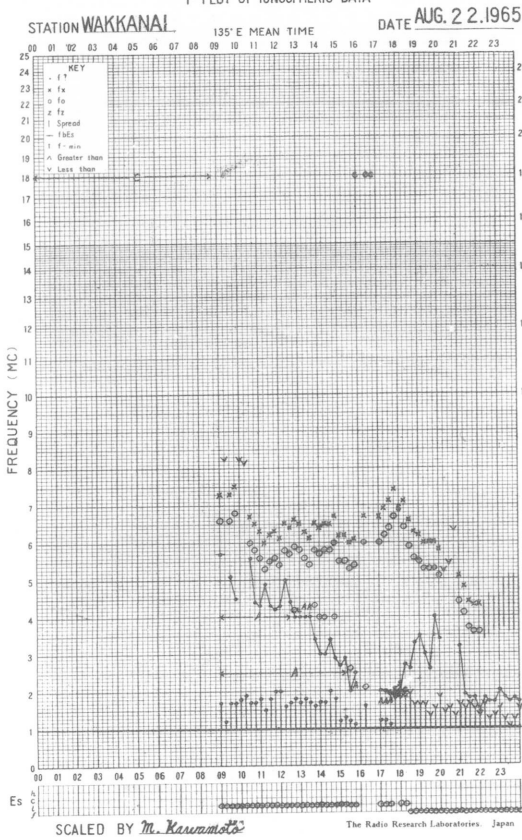
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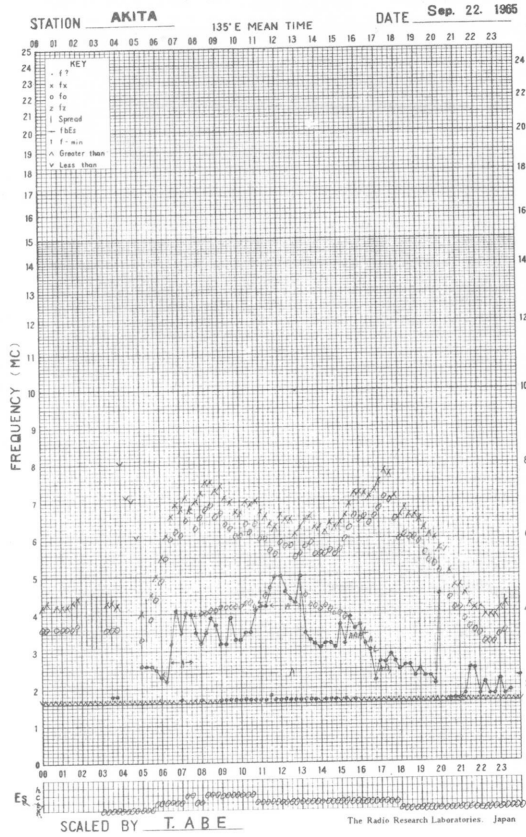




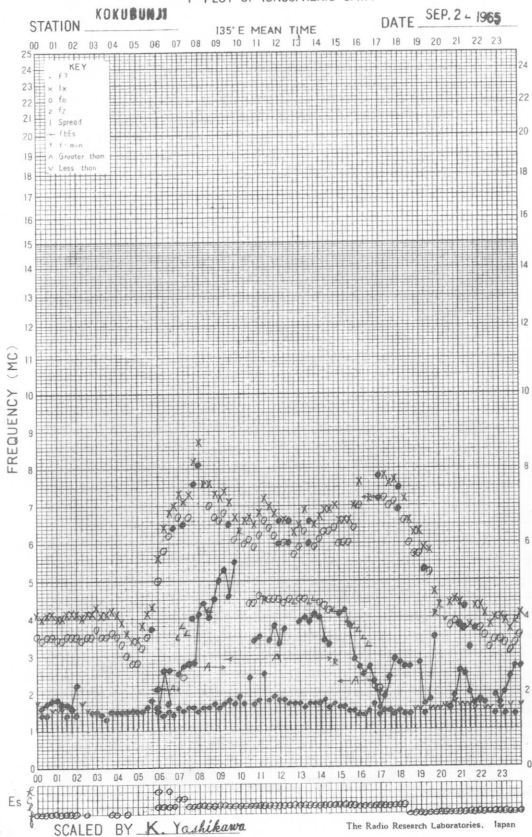
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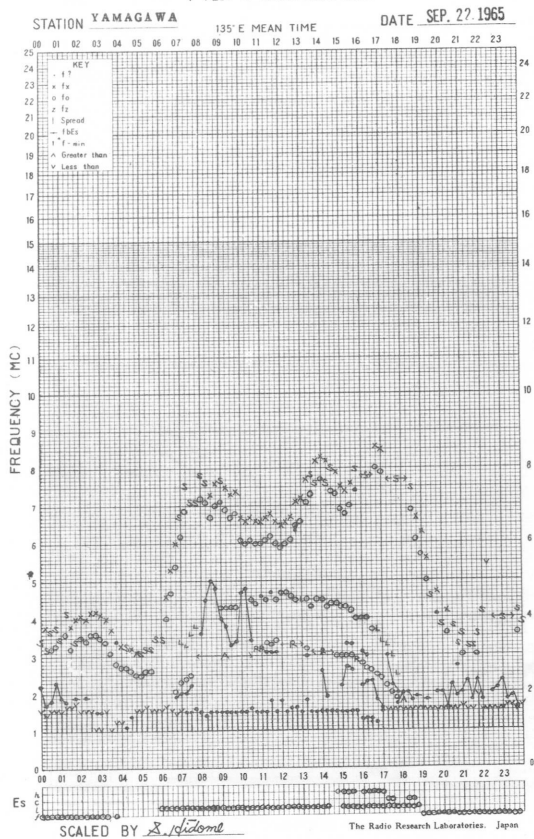
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f- PLOT OF IONOSPHERIC DATA

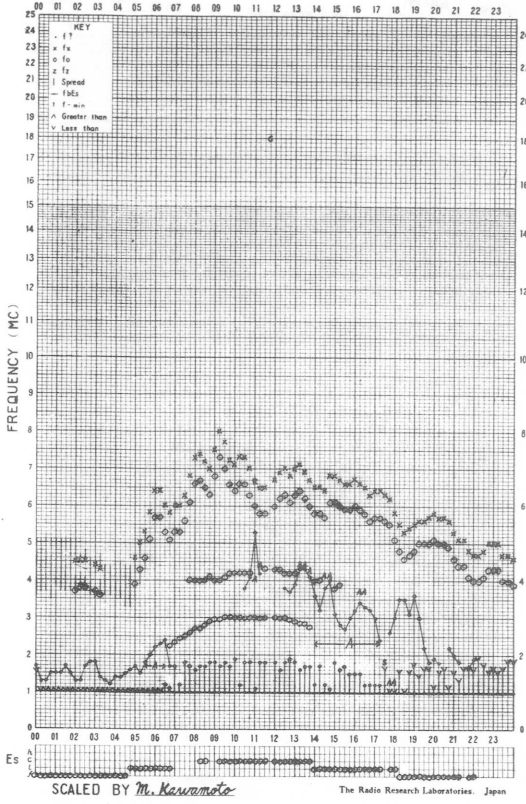


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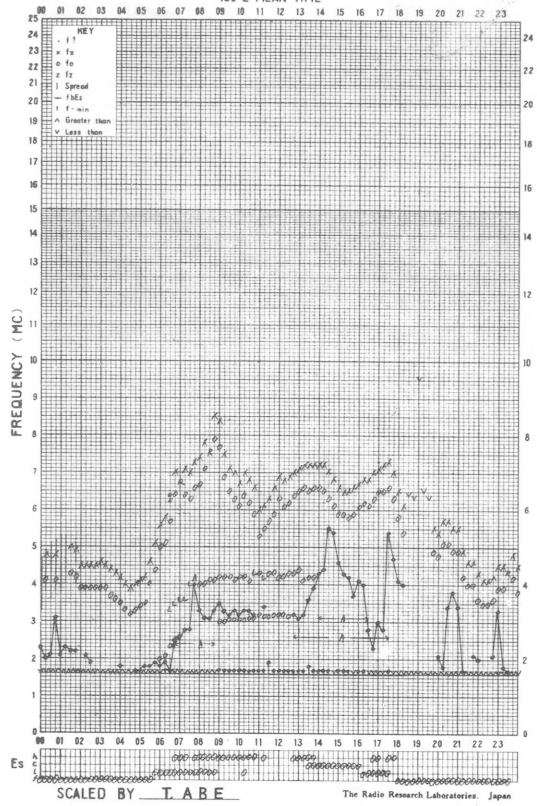
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STATION **WAKKANAI** 135°E MEAN TIME DATE **AUG. 23, 1965**



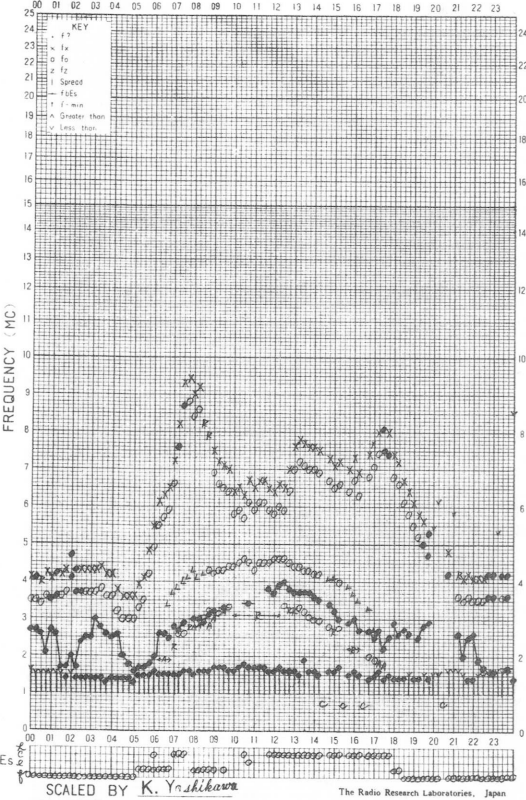
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STATION **AKITA** 135°E MEAN TIME DATE **Sep. 23, 1965**



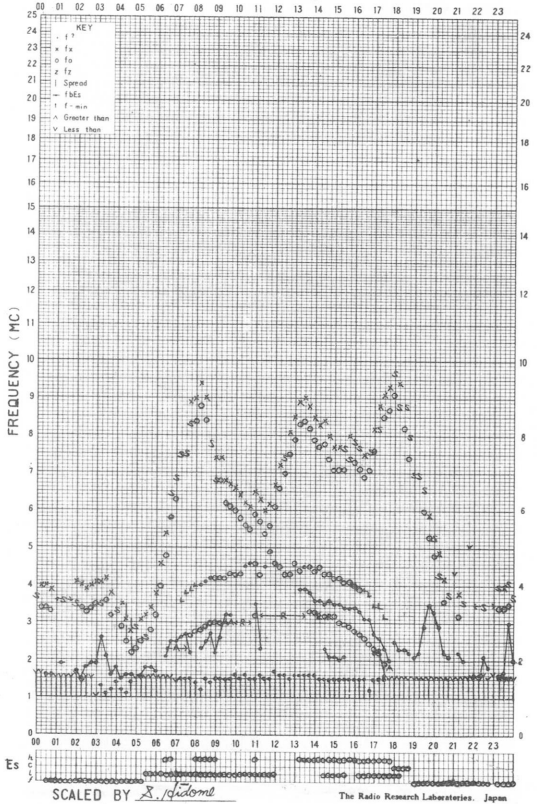
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STATION **KOKUBUNAI** 135°E MEAN TIME DATE **SEP. 23, 1965**

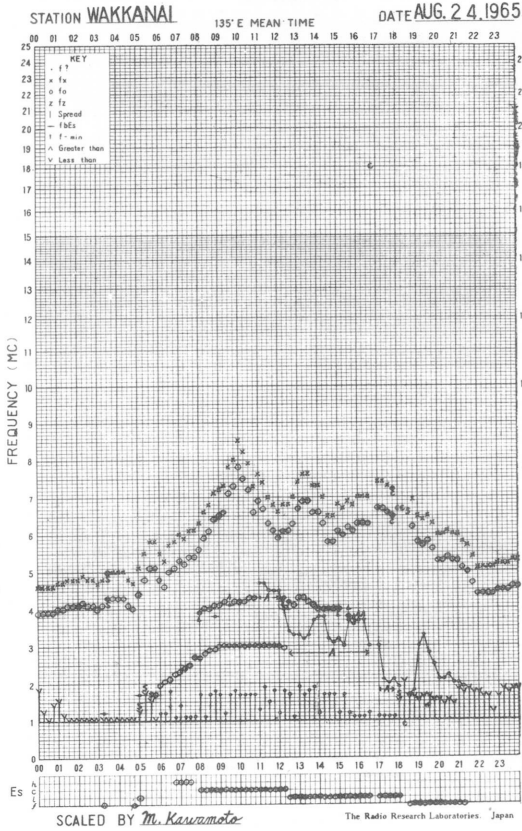


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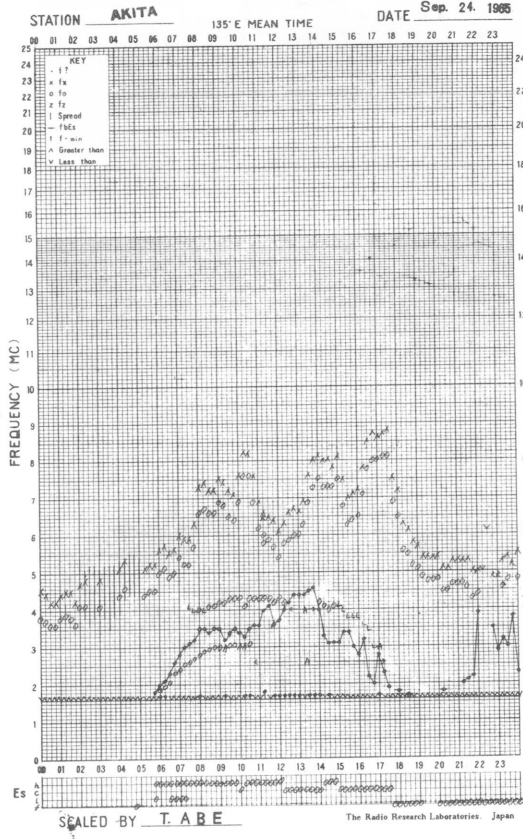
STATION **YAMAGAWA** 135°E MEAN TIME DATE **SEP. 23, 1965**



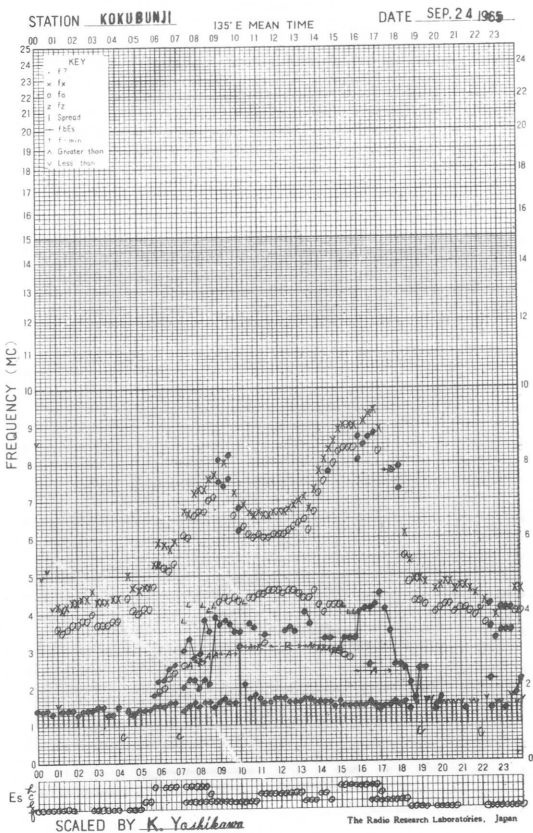
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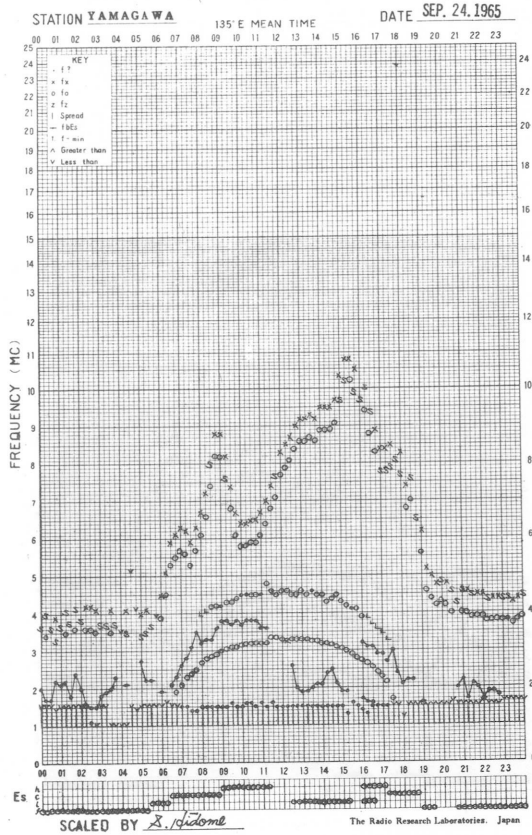
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f-PLOT OF IONOSPHERIC DATA

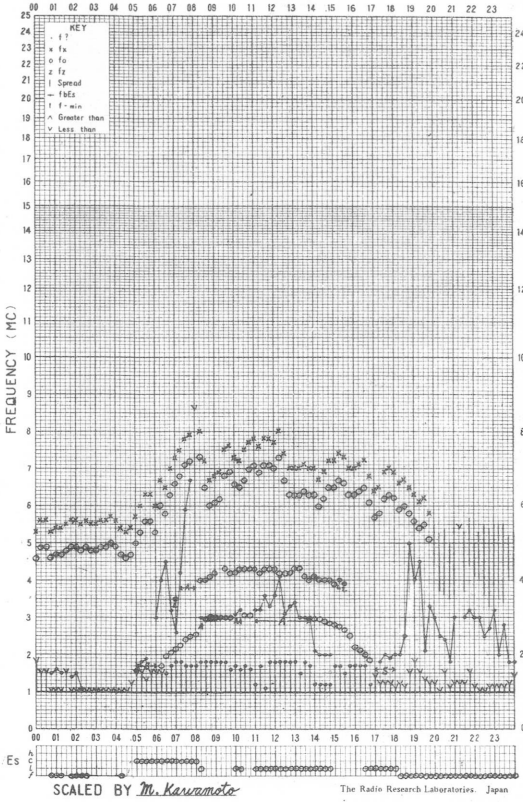


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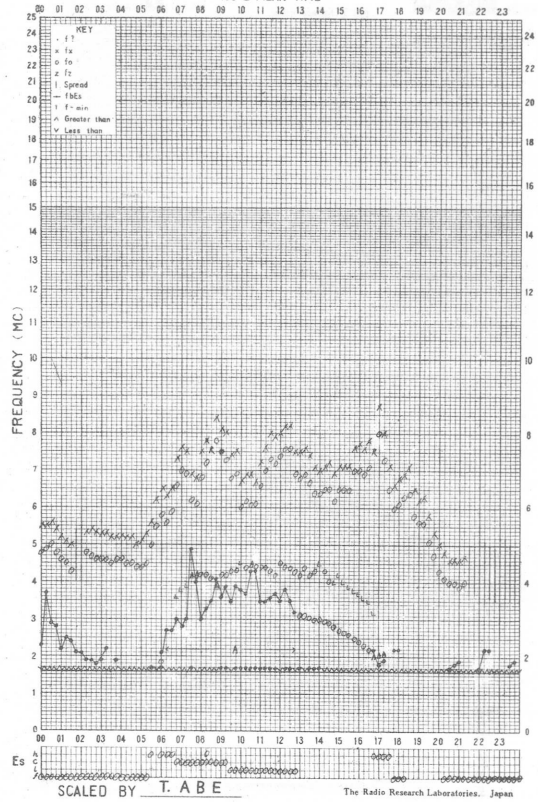
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STATION WAKKANAI 135°E MEAN TIME DATE AUG. 25, 1965



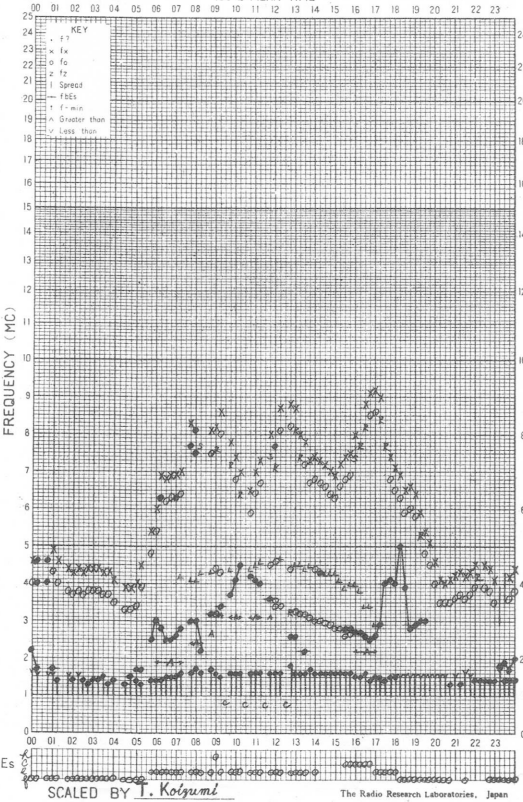
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STATION AKITA 135°E MEAN TIME DATE SEP. 25, 1965



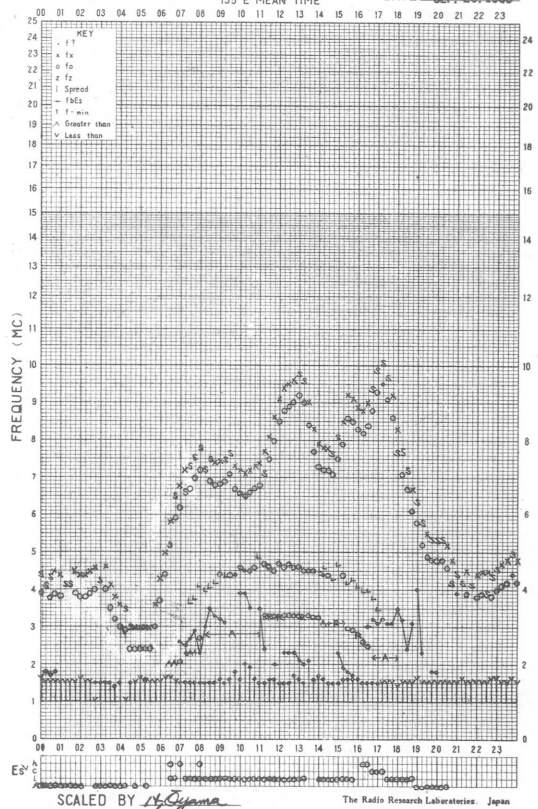
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STATION KOKUBUNJI 135°E MEAN TIME DATE SEP. 25, 1965

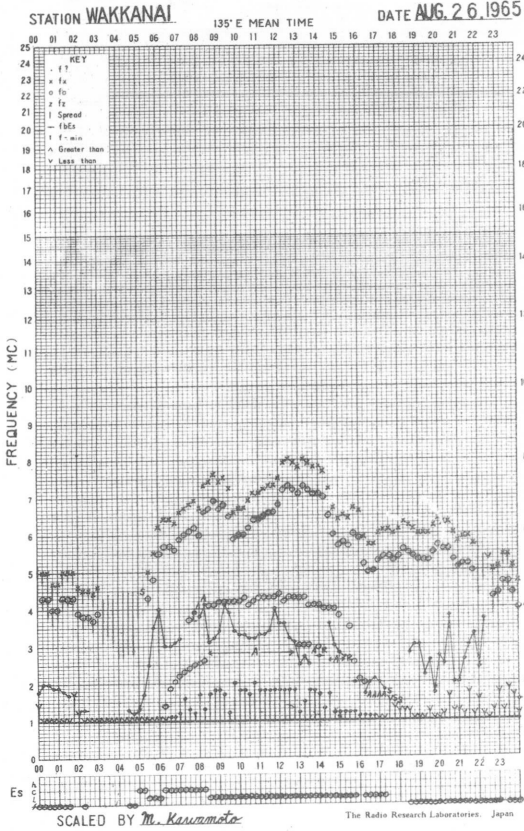


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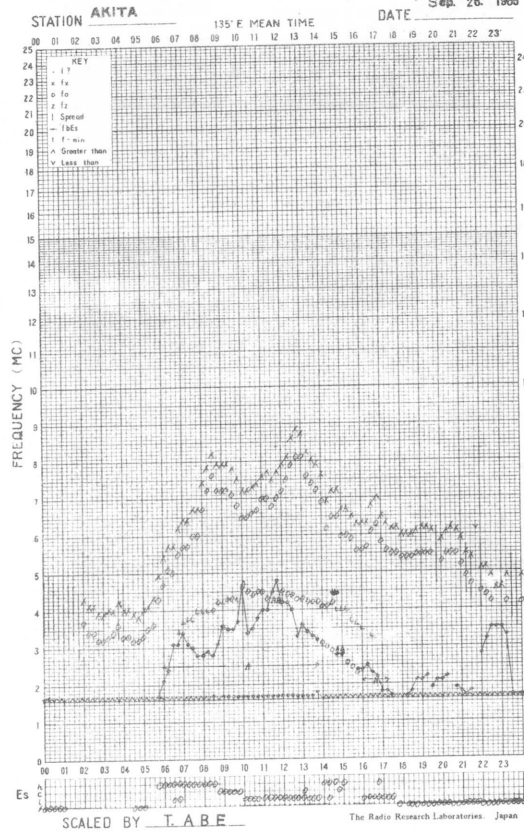
STATION YAMAGAWA 135°E MEAN TIME DATE SEP. 25, 1965



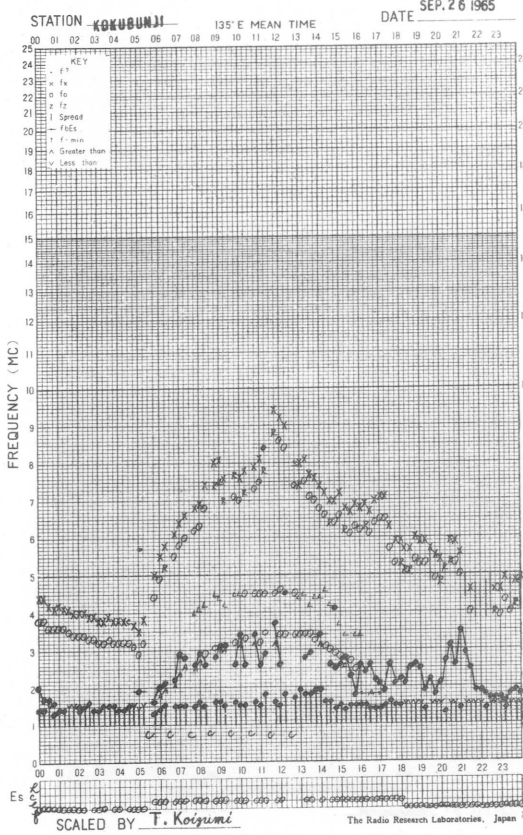
f- PLOT OF IONOSPHERIC DATA



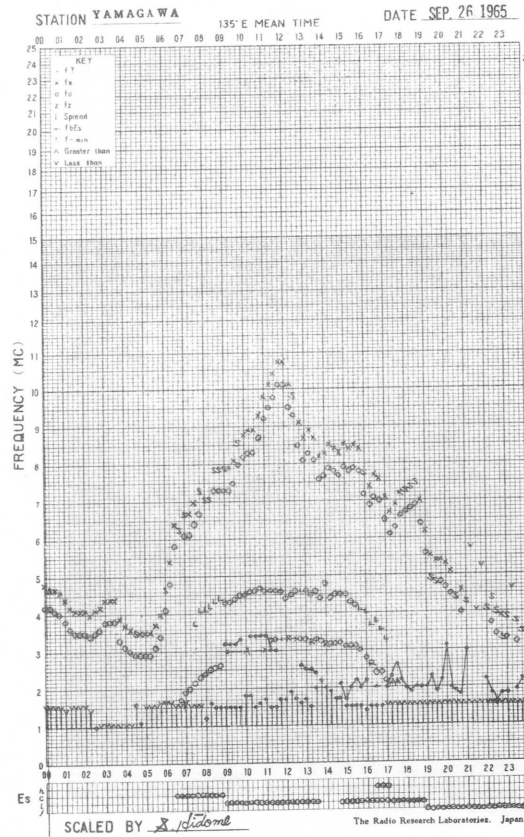
f- PLOT OF IONOSPHERIC DATA



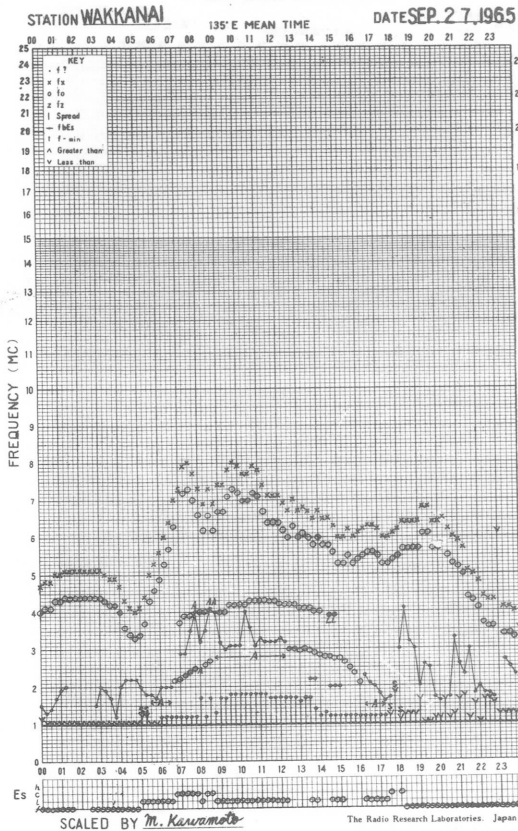
f- PLOT OF IONOSPHERIC DATA



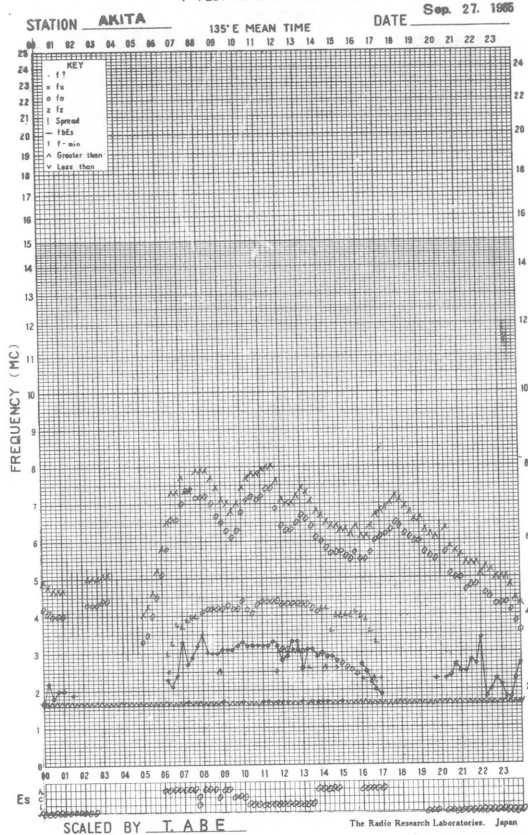
f- PLOT OF IONOSPHERIC DATA



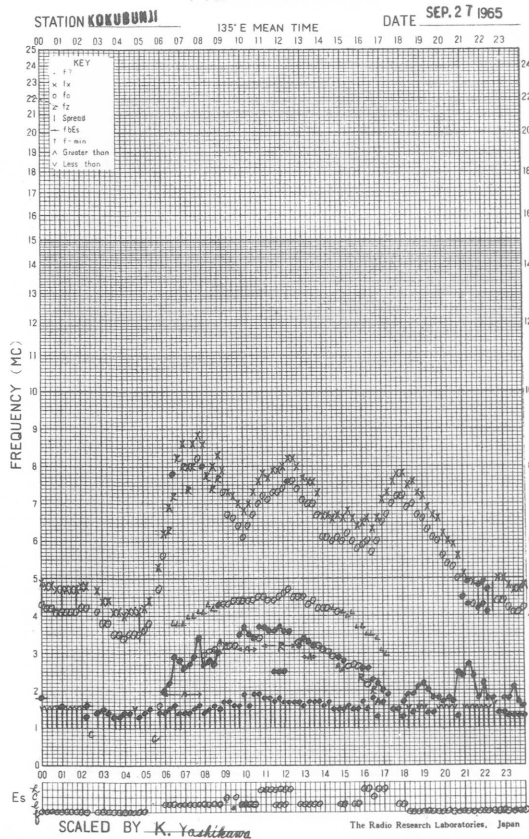
f-PLOT OF IONOSPHERIC DATA



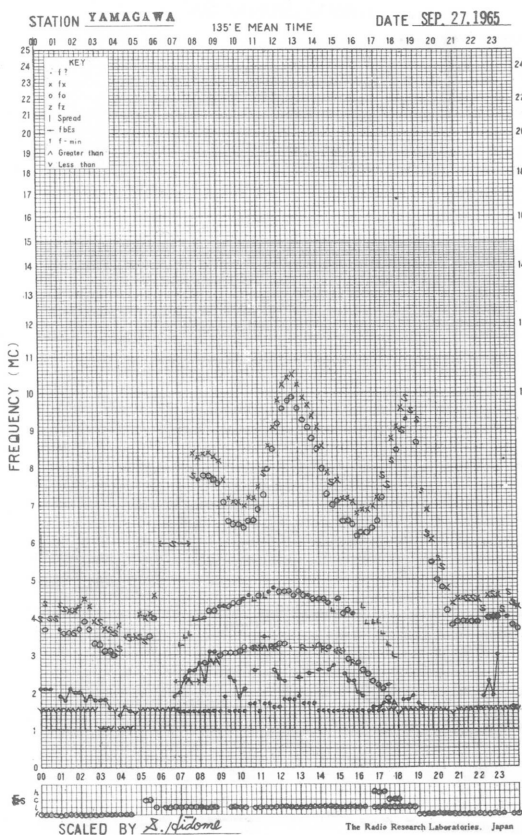
f-PLOT OF IONOSPHERIC DATA



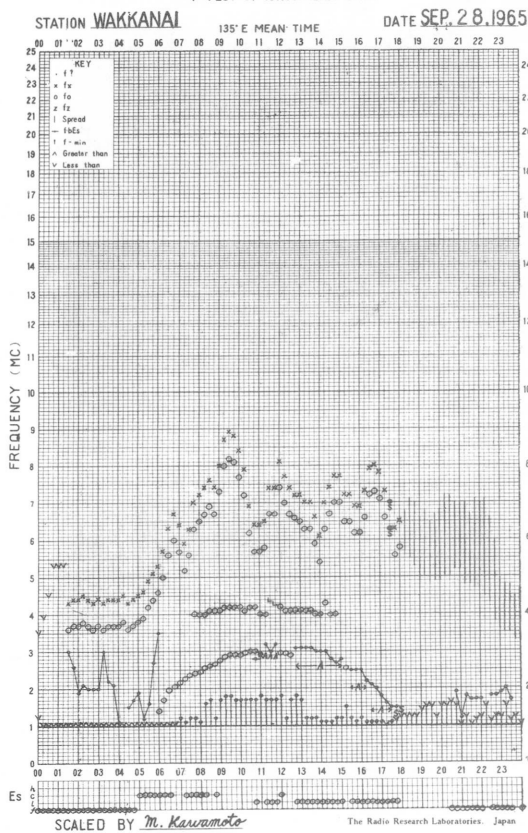
f-PLOT OF IONOSPHERIC DATA



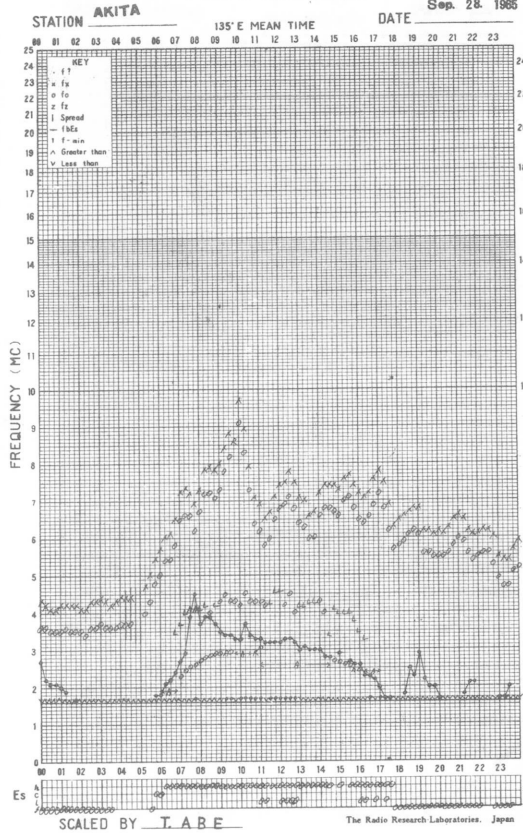
f-PLOT OF IONOSPHERIC DATA



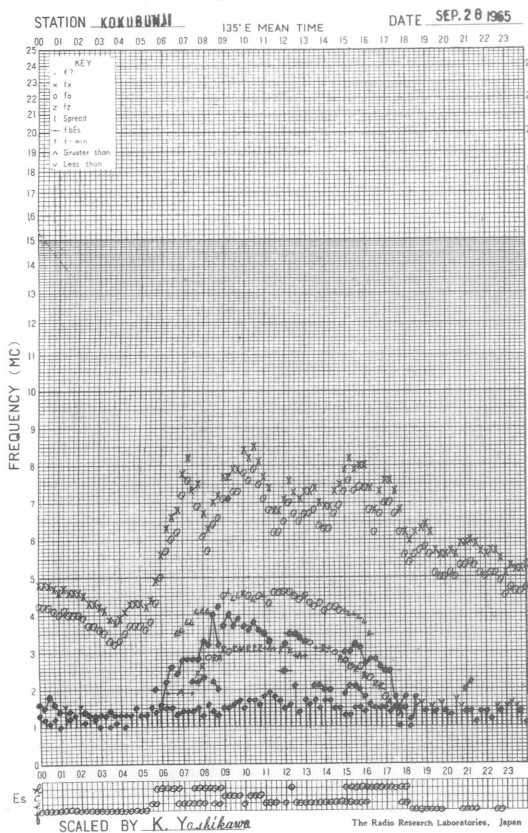
f- PLOT OF IONOSPHERIC DATA



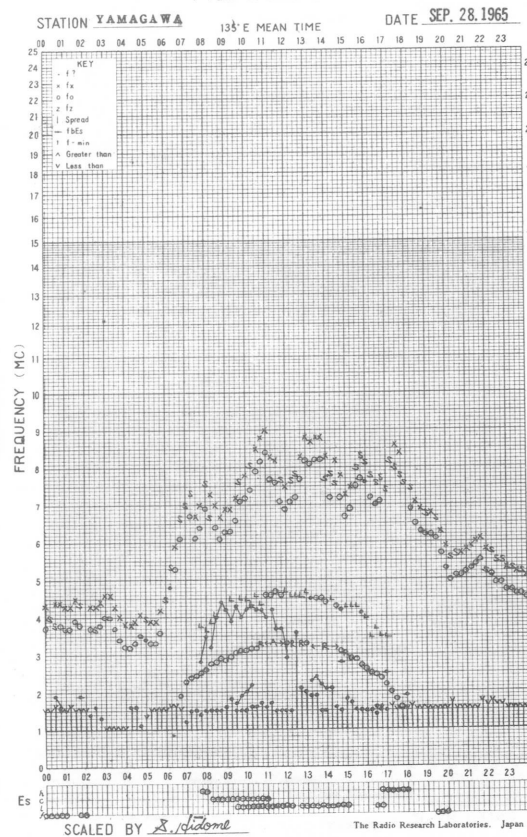
f- PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA



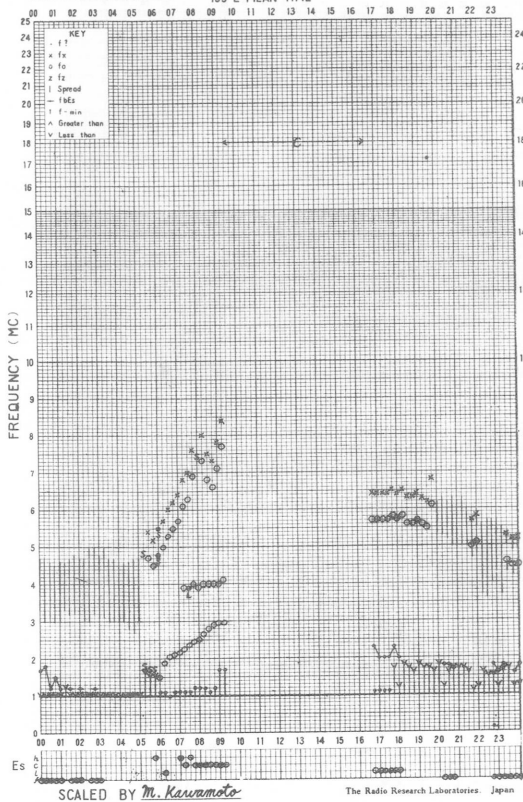
f- PLOT OF IONOSPHERIC DATA





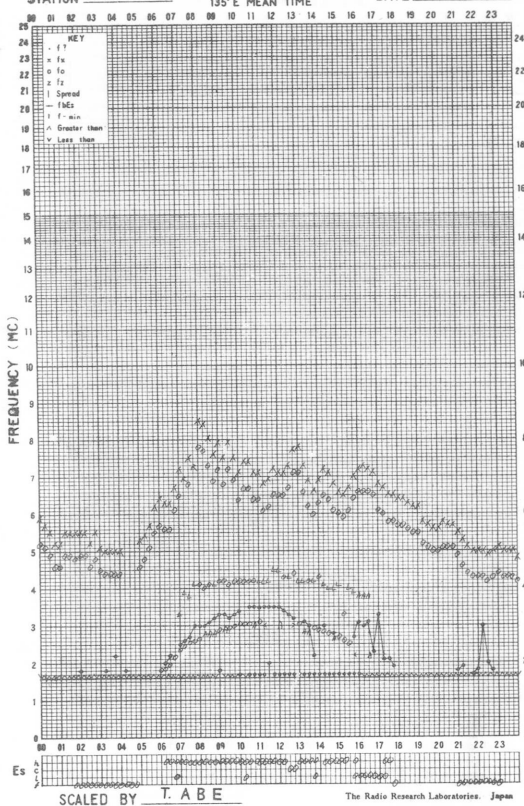
f- PLOT OF IONOSPHERIC DATA

STATION **WAKKANAI** 135° E MEAN TIME DATE **SEP. 29, 1965**



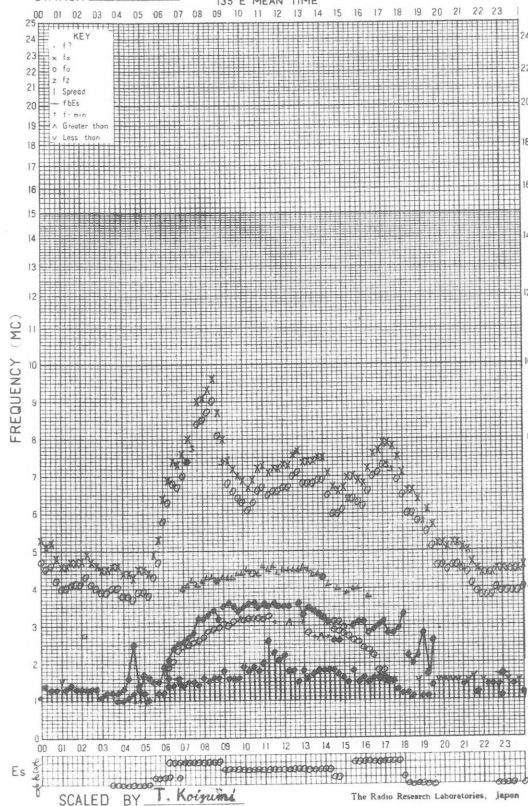
f- PLOT OF IONOSPHERIC DATA

STATION **AKITA** 135° E MEAN TIME DATE **SEP. 29, 1965**



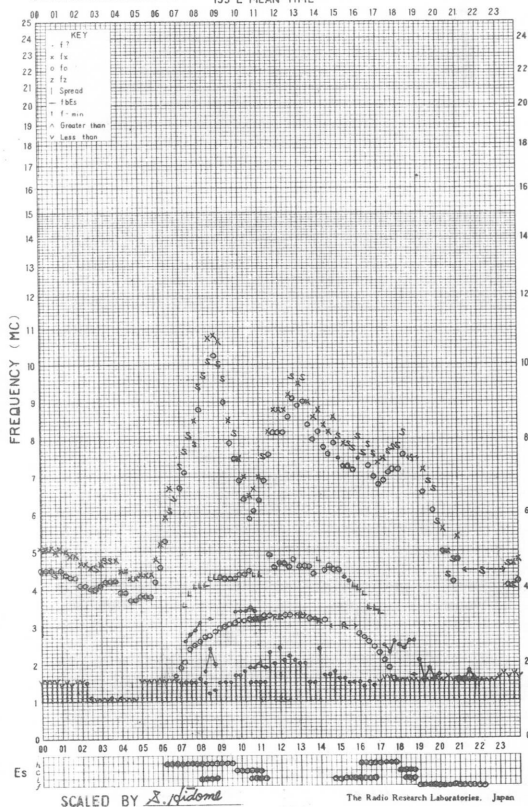
f- PLOT OF IONOSPHERIC DATA

STATION **KOKUBUNJI** 135° E MEAN TIME DATE **SEP. 29, 1965**

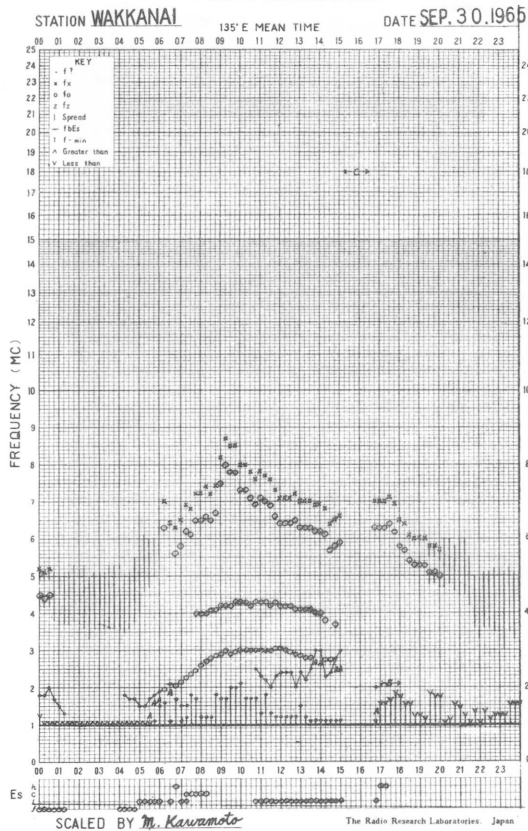


f- PLOT OF IONOSPHERIC DATA

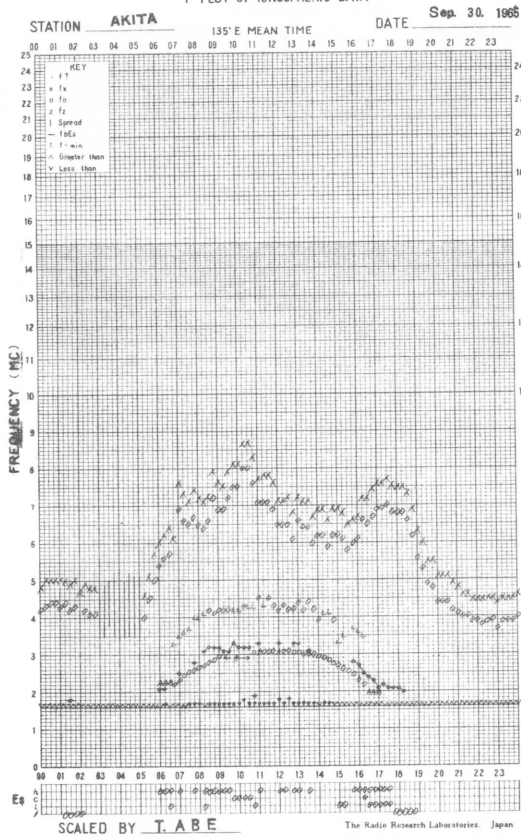
STATION **YAMAGAWA** 135° E MEAN TIME DATE **SEP. 29, 1965**



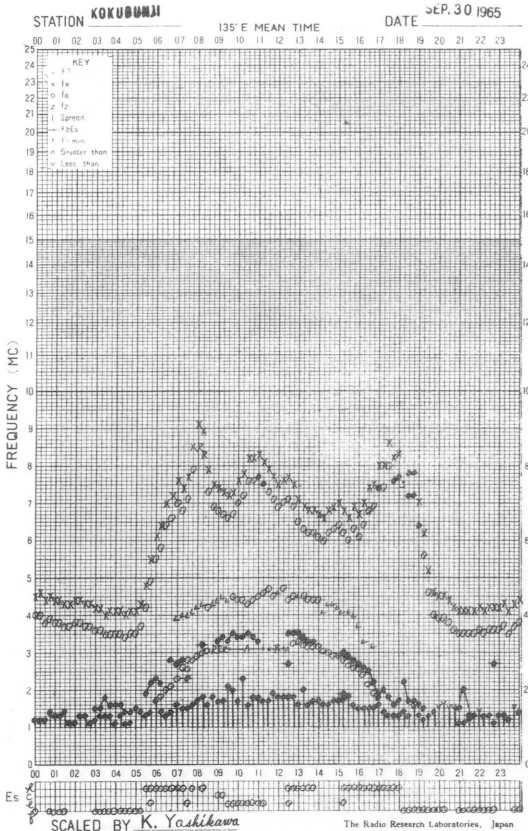
f- PLOT OF IONOSPHERIC DATA



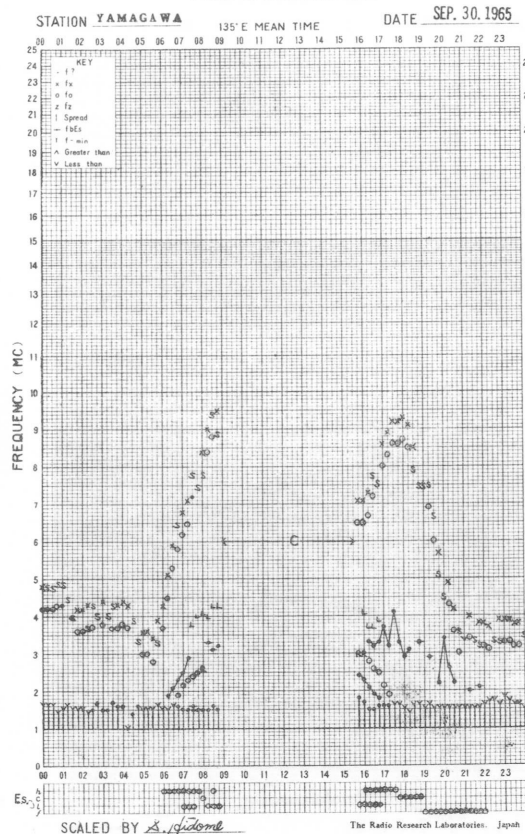
f- PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA



## SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: September 1965						Frequency: 200 Mc/s				
Observing station: Hiraiso										
Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$						Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	6	-	5	-	6	0	-	0	-	0
2	5	7	-	-	6	0	0	-	-	0
3	6	5	(6)	-	6	0	0	(0)	-	0
4	(6)	6	6	6	6	(0)	0	0	0	0
5	6	6	6	-	6	0	0	0	-	0
6	6	6	7	6	6	0	0	0	0	0
7	6	6	6	7	6	0	0	0	0	0
8	9	7	10	13	8	1	0	1	2	1
9	14	21	14	11	16	2	2	2	2	2
10	10	9	10	7	10	1	2	2	1	2
11	7	10	-	-	9	1	1	-	-	1
12	(7)	8	7	-	7	(0)	0	0	-	0
13	7	(6)	-	6	(7)	0	(0)	0	0	(0)
14	6	7	-	-	6	0	0	-	-	0
15	9	9	9	-	9	0	0	0	-	0
16	6	6	6	9	6	0	0	0	0	0
17	6	(6)	(7)	-	6	0	(0)	(0)	-	0
18	5	5	5	-	5	0	0	0	-	0
19	(6)	7	6	-	7	(0)	0	0	-	0
20	6	6	6	7	6	0	0	0	0	0
21	7	-	7	-	7	0	-	0	-	0
22	6	7	7	(8)	7	0	0	0	(0)	0
23	8	8	8	-	8	0	0	0	-	0
24	(11)	11	-	9	(11)	(0)	0	-	0	(0)
25	8	6	6	7	7	0	0	0	0	0
26	7	8	7	10	8	0	0	0	0	0
27	(10)	9	(9)	-	9	(0)	0	(0)	-	0
28	7	8	(9)	-	8	0	0	(0)	-	0
29	7	(7)	8	-	7	0	(0)	0	-	0
30	8	(8)	8	(9)	8	0	(0)	0	(0)	0

## SOLAR RADIO EMISSION

Flux Density					
Month: September 1965			Frequency: 500 Mc/s		
Observing station: Hiraiso					
Flux density $10^{-22} \text{Wm}^{-2} (\text{c/s})^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	25	25	24	25	25
2	24	23	24	25	24
3	25	25	25	(27)	25
4	25	25	(24)	27	25
5	26	-	-	27	26
6	26	26	26	26	26
7	26	26	24	26	26
8	27	27	28	27	27
9	28	28	26	25	28
10	27	29	30	(26)	28
11	25	24	23	26	25
12	25	24	24	25	25
13	25	23	23	27	24
14	25	24	23	27	25
15	25	24	24	28	25
16	24	23	24	28	25
17	25	23	24	-	25
18	26	26	25	26	26
19	25	24	25	25	25
20	25	24	24	23	24
21	24	24	24	23	24
22	23	23	23	23	23
23	23	23	24	22	23
24	24	24	25	23	24
25	24	23	23	23	23
26	24	24	24	22	24
27	25	24	24	25	24
28	24	25	26	25	25
29	25	24	25	24	25
30	25	25	25	24	24

Note No observations during the following periods:

3rd	2020-	2300
4th	0700-	0850
5th	0300-	0850
10th	2020-	2300
17th	2020-	2400

Distinctive Event

(single-frequency observations)

Month: September 1965

Observing station: Hiraiso

Normal observing period: 2020 - 0850 (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	
8	200	2020	-	750	storm			
9	200	2020	-	750	storm			

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

1st	0310-	0600	19th	2020-	2350
1st	2020-	2400	21st	0230-	0630
2nd	0500-	2400	21st	2020-	2400
3rd	0700-	2400	22nd	2020-	2300
5th	2020-	6th 0100	23rd	2020-	24th 0200
11th	0600-	12th 0200	24th	0500-	0850
12th	2020-	2400	27th	0000-	0200
13th	0400-	0850	27th	0700-	2400
14th	0450-	2400	28th	0700-	2350
15th	2020-	2400	29th	0340-	0600
17th	0345-	0700	29th	2020-	2350
17th	2020-	2400	30th	0330-	0600
18th	2020-	19th 0140	30th	2020-	2300

Measurement of H.F. Field Strength (Upper Side-band of WWV)  
 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraio

Aug. 1965

UT Date	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215	2315	
1	-16	-18	-10	-13	-5	<16s	<20s	-25	-17	<15s	<16s	-6	8	-3	-8	-15	-13	-20	-15	-24	-13	-15	-5	-8	
2	<18s	-19	-22	-9	-14	-15	-2	-5	-8	<4s	-14	<13s	<21s	1s	<17s	<19s	<12s	<34s	<29s	-35	-26	<31s	<27s	-25	
3	-22	<30s	<31s	<31s	<30s	<23s	<31s	-23	<27s	<30s	<25s	8	<21s	8	8	<15s	-6	-32	-9	<32s	-24	-14	<24s	<20s	
4	-9	-6	-18	<25s	<22s	-23	-20	-11	-19	<11s	-23	-18	-8	-18	<20s	-19	-22	-19	-23	-14	-4	-4	-10	-8	
5	-9	-22	-8	-21	<29s	<22s	<5s	-19	<9s	<2s	<17s	-11	<7s	-5	-6	-18	-6	-5	-25	-23	-11	-11	0	0	
6	-18	-13	-19	<24s	<24s	-18	<19s	<4s	0	0	4	0	0s	-6	-9	-10	-12	-18	-21	-21	3	-6	-13	-14	
7	-17	-21	-11	-16	<24s	<24s	<22s	<20s	-14	<16s	<19s	10	<8s	-3	-3	-13	-2	-14	<15s	-20	5	9	-7	-8	
8	-14	-21	-15	<20s	<15s	<20s	<19s	<20s	<16s	<9s	8	<12s	<7s	-4	-10	<17s	-26	-30	<30s	-22	-11	-15	-20	-14	
9	<19s	<20s	-21	<26s	0	<13s	<21s	<15s	<6s	<5s	<7s	<8s	8	7	<15s	<17s	-23	<27s	-19	-22	-8	-4	-5	-17	
10	-19	-26	0	<24s	<24s	<24s	<4s	0	0	0	<17s	0	<23s	-9	-15	<18s	0	-15	-17	-15	-11	-7	-20	-25	
11	-22	-13	-14	<34s	<16s	<15s	<21s	<19s	<20s	<17s	<15s	<12s	8	1	-2	-8	-6	-22	-25	-25	-25	-9	-10	-14	
12	-18	-18	-15	-17	<20s	<33s	<35s	<20s	<21s	<21s	<7s	<9s	0	5	-1	-8	-22	-21	-12	-21	-13	-3	-9	-15	
13	-20	-25	-17	-17	0	<22s	<10s	<20s	<19s	<16s	-14	-8	7	4	<9s	<16s	<25s	<27s	-25	-14	-11	-8	-9	-9	
14	-15	-17	-18	<23s	<21s	<22s	<18s	<21s	<18s	<19s	<12s	<14s	<4s	<11s	<10s	-17	-18	0	-4	-29	-25	2	-12	<25s	
15	<24s	-25	-20	<31s	<31s	<24s	<12s	<20s	<24s	<14s	<19s	<13s	8	-11	<10s	<24s	<30s	<30s	<30s	-22	-8	-8	-8	-19	
16	<24s	<24s	-16	<27s	<25s	<17s	<22s	<24s	<22s	<19s	<11s	<7s	8	5	-11	-7	<27s	-19	-23	<30s	-17	-11	-7	0	
17	-19	-13	-9	0	<25s	<22s	8	<20s	<19s	<19s	<17s	<12s	8	<17s	<18s	<18s	<24s	<36s	<29s	-24	-4	<10s	-12	-21	
18	-20	-19	-25	<29s	<41s	<14s	<26s	<25s	-22	<22s	<23s	<22s	-4	-4	<12s	-11	-17	-25	-7	-10	-4	0	0	0	
19	-23	-25	-22	<33s	<14s	<22s	<30s	<22s	<21s	<13s	<5s	<18s	<4s	0	0	0	0	0	0	0	0	0	0	0	
20	<27s	0	-26	-19	<24s	<8s	8	-24	-18	<18s	<9s	<6s	<3s	-17	<17s	<18s	<34s	<34s	<26s	<34s	<34s	<23s	<34s	<33s	
21	<23s	<28s	<23s	<33s	<16s	<25s	<20s	<22s	<22s	<18s	<21s	<16s	8	<20s	<17s	<22s	<31s	<31s	<31s	<31s	<20s	<27s	<31s	<31s	
22	-21	-22	<25s	<23s	<31s	<20s	<30s	<24s	<24s	<18s	<17s	<14s	8	8	<16s	<22s	<28s	<28s	<44s	<44s	-28	-9	-8	-16	
23	-24	-10	-14	<34s	<24s	<30s	-13	<26s	<23s	<17s	<13s	<6s	8	<19s	<17s	<24s	-24	-24	<27s	<45s	-16	-12	-7	-13	
24	-14	-16	-20	-27	<23s	-20	<21s	<20s	<20s	<13s	<16s	<17s	8	<23s	<34s	<30s	-25	-25	<33s	<22s	-21	-21	-5	-11	
25	<14s	-19	<21s	<32s	-24	-4	-3	<19s	<4s	<13s	<18s	<14s	8	<18s	<17s	-21	-8	-14	<29s	-18	-19	8	<20s	<21s	
26	-22	-8	-15	<35s	-19	-20	8	<24s	<24s	<19s	<13s	<8s	8	<12s	<19s	<33s	<33s	<42s	<42s	<42s	-7	-9	-14	-19	
27	-10	-8	-4	<22s	<20s	<14s	8	<25s	<25s	<16s	<10s	<6s	8	<29s	<12s	<40s	<40s	<40s	<40s	<40s	-8	<8s	-17	-21	
28	-18	-19	-15	<25s	-22	-20	0	-18	<17s	-15	<18s	<18s	8	-5	9s	<29s	<22s	<32s	<35s	-6	12	12	-11	-11	
29	-17	-16	-16	<30s	<24s	<15s	8	<17s	<18s	<14s	<12s	-9	8	8s	<7s	-17	-11	-7	<27s	-11	-11	-14	-14	-14	
30	-18	-15	-20	<24s	<24s	-14	3	-17	<20s	-11	<10s	<12s	8	-12	<17s	<25s	<40s	<29s	<28s	-14	-12	-10	-10	-11	
31	-19	-17	-19	<21s	<23s	<21s	8	<23s	-23	<19s	<17s	<12s	<7s	<13s	<18s	<17s	<39s	<30s	<30s	-22	-15	-16	-16	-11	
Median	<19s	-19	<17s	<25s	<23s	<20s	<20s	<20s	<20s	<16s	<16s	<12s	0s	<10s	<12s	<17s	<25s	<26s	<24s	-24	-14	<9s	-12	-16	
Med. Count	31	30	30	29	31	22	30	29	29	29	28	30	16	28	29	30	29	30	30	29	28	26	24	23	23
Upper decile	-10	-8	-9	-16	<14s	<13s	-2	<11s	<8s	<5s	<7s	<6s	<8s	<4s	-6	-10	-6	-7	-9	-15	-5	2	-5	-8	
Lower decile	<24s	<26s	<25s	<34s	<31s	<25s	<31s	<25s	<24s	<21s	<25s	<18s	<21s	<19s	<30s	<30s	<39s	<36s	<40s	<42s	<31s	<21s	<27s	<31s	

Measurement of H.F. Field Strength (Upper Side-band of WWV)  
 Frequency: 15 Mc/s, Bandwidth:  $\pm 40$  c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraiso

Sept. 1965

UT Date	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215	2315
1	-14	<-17s	<-27s	<-27s	<-27s	<-27s	<-28s	<-23s	<-22s	<-23s	<-18s	<-22s	<-25s	<-15s	<-20s	<-37s	<-37s	<-37s	<-19s	<-39s	-12	-11	-15	-12
2	-21	-16	<-30s	<-30s	<-21	<-16s	<-27s	<-22s	<-23s	<-21s	<-23s	<-14s	<-20s	<-20s	<-26s	<-26	<-29	<-36s	<-38s	<-36s	-11	-12	-6	-20
3	-22	-13	<-32s	<-32s	<-17s	<-24s	<-32s	<-24s	<-17s	<-24s	<-15s	<-22s	<-14s	<-14s	<-21	<-22s	<-38s	<-38s	<-38s	<-38s	-21	-13	-8	-7
4	-10	-12	<-19	<-15s	<-20s	<-22s	<-22s	<-20s	<-14s	<-12s	<-1s	<-8s	<-20s	<-17	<-23s	<-20s	<-27s	<-35s	<-28s	<-38s	<-20	-20	-12	-22
5	-17	-4	<-31s	<-22s	<-24s	<-24s	<-28s	<-19s	<-18s	<-17s	<-15s	<-15s	<-18s	<-16	<-19s	<-39s	<-39s	<-27	-9	-22	-15	-12	-17	-18
6	<-17s	-11	<-10	<-20s	<-18s	<-17s	<-23s	<-23s	<-19s	<-17s	<-13s	<-13s	<-12s	<-14s	<-20	<-36s	<-36s	<-14	-9	-21	-13	-13	-17	-9
7	<-17s	-14	<-29s	<-30s	<-30s	<-37s	<-37s	<-34s	<-28s	<-28s	<-28s	<-28s	<-15s	<-13s	<-22s	<-32s	<-32s	<-32s	<-33s	<-22	<-15c	-9	-8	-22
8	<-17s	-7	-12	<-27s	<-16s	<-16s	<-25s	-23	-23	-23	<-14s	<-23s	<-15s	<-20s	<-36s	<-35s	<-35s	-24	-11	-16	-6	-3	-11	-11
9	-14	-13	<-17s	<-27s	<-21s	<-24s	<-19s	<-23s	<-17s	<-17s	<-16s	<-12s	<-9s	<-12s	<-15s	<-28	<-22	<-27	-14	-10	-7	-6	-6	-6
10	-15	-14	-9	<-37s	<-12s	<-19s	<-20s	<-20s	<-20s	<-19s	<-20s	<-20s	<-7s	<-36s	<-20s	<-23	<-24	<-24	-14	-18	-12	-8	-9	-15
11	-9	-14	-13	<-26s	<-21s	<-20	<-24s	<-19s	<-21s	<-18s	<-15s	-20	<-14s	s	<-11s	<-41s	<-40s	<-42s	<-33s	-1	-11	<-8c	-2	-4
12	-9	-13	-15	<-29s	<-13s	<-11s	<-11s	<-16s	<-16s	<-14s	<-12s	<-12s	<-8s	s	-8	-6	-15	-20	-10	-20	-14	-11	-10	-13
13	-9	-9	-13	<-25s	<-14s	<-18s	<-18s	<-22s	<-16s	<-12s	<-12s	<-12s	<-13s	s	<-17s	<-16s	<-39s	-28	-13	-27	-11	-8	-8	-12
14	-15	-5	-22	<-33s	<-6s	<-18s	<-8s	<-19s	<-18s	<-15s	<-10s	<-17s	<-13s	<-10s	<-27s	<-27s	<-19	-6	-16	-13	-5	0	-4	-10
15	-11	-4	-19	<-16s	<-3s	<-4s	<-25s	<-16s	<-13s	<-15s	<-10s	<-6s	<-14s	<-26s	<-14s	<-36s	<-36s	<-36s	<-36s	<-36s	<-36s	<-23	<-20s	<-16
16	-20	<-21s	-23	<-24s	<-33s	-15	<-29s	<-17s	<-18s	<-23s	<-15s	<-14s	<-25s	s	<-17s	<-19s	<-35s	<-35s	<-35s	<-18s	<-16s	<-11	-12	-12
17	<-16s	<-20s	<-20s	<-35s	<-21s	<-21s	<-25s	<-14s	<-15s	<-13s	<-13s	<-8s	<-9s	<-21s	c	c	c	c	c	c	c	c	c	c
18	<-21s	<-23s	<-24s	<-30s	<-9s	<-16s	<-18s	<-12s	<-13s	<-14s	<-15s	<-4s	<-6s	<-10s	<-16s	<-35s	<-34s	<-36s	<-36s	<-10	-16	-7	-7	-7
19	<-23s	<-23s	<-23s	<-31s	c	<-31s	<-26s	<-18s	<-18s	<-20s	<-10s	<-22s	<-14s	<-25s	<-27s	<-34s	<-34s	<-35s	<-35s	<-32s	<-32s	<-28	<-28	<-32s
20	<-23s	<-23s	<-23s	<-31s	<-22s	c	<-22s	<-18s	<-17s	<-11s	<-14s	<-7s	<-4s	<-25s	<-9s	<-26s	<-37s	<-31s	<-38s	<-10	-12	-13	-19	-19
21	-14	-7	-24	<-23s	-15	-14	s	-18	<-20s	<-13s	<-9s	<-11s	<-1s	<-15s	<-19s	<-28s	<-29s	<-29s	<-23s	<-21s	<-28s	<-23s	<-18s	<-19s
22	-18	-15	<-17s	<-33s	<-22s	<-10s	s	<-16s	<-15s	<-12s	<-13s	<-13s	<-10s	<-16s	<-19s	<-36s	-25	-21	-24	0	3	0	2	2
23	-4	1	-10	-17	<-19s	-10	<-12s	<-19s	<-16s	<-10s	<-15s	<-4s	<-4s	<-15	<-26s	<-37s	<-37s	<-37s	<-16	-21	-9	-17	-13	-13
24	-10	<-21s	<-26s	<-32s	-15	<-16s	<-20s	<-13s	<-14s	<-10s	<-14s	<-14s	<-1s	<-8s	<-12s	<-28s	-21	-7	-6	-12	-2	c	-6	-6
25	2	-10	<-20s	<-22s	<-20s	<-13s	<-22s	<-17s	<-18s	<-19s	<-17s	<-19s	<-17s	<-18s	<-12s	<-37s	<-37s	<-37s	<-37s	<-29	-16	-9	-11	-11
26	-11	-7	<-29s	<-24s	<-19s	<-15s	<-20s	<-20s	<-28s	<-20s	<-17s	<-14s	<-3s	<-4s	<-8s	<-39s	<-39s	<-39s	<-39s	-16	-13	-10	-8	-8
27	-7	-22	<-21s	<-32s	<-18s	<-21s	<-22s	<-21s	<-21s	<-17s	<-12s	<-13s	<-2s	<-16s	<-19s	<-36s	<-36s	<-36s	<-36s	c	c	c	c	c
28	-11	<-23s	<-23s	<-32s	<-19s	<-20s	<-19s	<-20s	<-18s	<-20s	<-15s	<-23s	<-8s	<-16s	<-30s	<-30s	<-30s	<-30s	<-17	<-37s	<-26	-4	-18	<-29s
29	<-21s	-25	-37	-26	<-22s	<-15s	s	<-22s	<-16s	<-19s	<-15s	<-26s	<-16s	<-16s	<-14s	<-34s	<-36s	<-36s	<-36s	<-28	-16	-10	-15	-15
30	<-23s	<-20s	<-24s	<-33s	<-18s	<-21s	<-24s	-17	<-24s	<-21s	<-18s	<-21s	<-17s	<-22s	<-37s	<-37s	<-37s	<-37s	<-34	-21	<-3s	-13	-13	-13
Median	-14	<-24s	<-19s	<-18s	<-19s	<-17s	<-15s	<-14s	<-18s	<-17s	<-15s	<-15s	<-12s	<-16s	<-19s	<-19s	<-30s	<-30s	<-30s	-15	-12	-10	-12	-12
Med. Count	29	29	29	29	29	29	29	30	29	29	29	29	29	29	29	29	29	29	28	28	25	24	24	24
Upper decile	-7	-4	-10	<-17s	<-9s	<-10s	<-12s	<-14s	<-14s	<-12s	<-10s	<-7s	<-20s	<-21	<-10	-9	-5	-3	-2	-4	-5	-3	-2	-4
Lower decile	<-22s	<-23s	<-31s	<-33s	<-24s	<-23s	<-23s	<-23s	<-24s	<-23s	<-23s	<-23s	<-25s	<-25s	<-29s	<-37s	<-39s	<-38s	<-38s	<-32s	<-32s	<-23s	<-20s	<-22s

Measurement of H.F. Field Strength (Upper Side-band of WWVH)  
 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraio

UT Date	0045	0145	0245	0345	0445	0545	0645	0745	0845	0945	1045	1145	1245	1345	1445	1545	1645	1745	1845	1945	2045	2145	2245	2345	
1	-1	-3	1	4	13	12	13	16	12	14	-11	<13s	<-10s	<10s	<6s	-24	1	-1	1	-3	-11	-7	0	-12	
2	-8	-3	-5	4	14	14	16	21	31	19	3	-1	2	<2s	<8s	3	<-25s	-28	-8	-8	-11	-7	4	-1	
3	-12	-7	-10	-1	4	12	15	12	-8	-15	-8	-8	-25	8	<0s	<19s	-28	-10	-28	6	3	-1	-5	-5	
4	-9	-8	7	7	8	12	14	6	7	2	-4	-20	-18	<14s	<12s	<20s	<-31s	-23	-20	-14	8	0	-2		
5	-6	-1	4	3	7	8	14	15	12	12	-3	15	15	<14s	9	<16s	-29	-14	-19	10	0	0	0	0	
6	-5	5	3	2	11	9	21	22	0	0	0	11	10	<6s	<6s	-17	-11	-2	-2	5	4	3	4	-8	
7	-9	-2	4	3	12	12	12	19	11	22	11	22	22	13	5	<19s	-11	-14	<20s	12	7	-5	2	2	
8	-2	-3	4	10	17	16	16	19	22	28	33	12	4	<8s	<17s	<23s	<30s	-7	<20s	6	5	6	4	4	
9	-5	4	0	7	9	13	17	21	18	18	9	13	-4	9	<4s	<19s	-2	-7	-15	-16	0	0	-1	-1	
10	-3	-3	6	2	11	11	0	20	20	(18s)	10	3	-6	-17	<15s	<22s	<16s	0	-4	-2	3	1	-5	-5	
11	-1	2	2	7	16	10	16	17	-4	15	4	<10s	(4s)	<11s	<2s	<12s	0	0	-20	4	-3	1	4	-10	
12	-7	-4	4	3	13	12	17	17	16	10	15	20	15	0	6s	-28	<34s	-3	-9	3	2	-3	4	-3	
13	-1	-2	5	4	5	10	23	9	13	8	11	<8s	1	-2	<4s	-20	<35s	-10	-23	3	4	1	-3	-7	
14	-2	-1	4	11	12	14	19	14	9	12	19	17	14	2	<0s	<27s	<29s	-2	-11	8	-2	4	3	3	
15	-7	0	7	9	14	18	15	15	13	15	10	2	(-2s)	(-9s)	-1	<30s	-29	-5	-1	5	3	-2	-7	-9	
16	-5	-1	-2	0	14	15	20	16	15	(4s)	2	-8	-5	<19s	<25s	-16	-14	-12	(-29s)	-13	3	1	4	0	
17	-2	-2	4	6	12	14	18	18	17	8	18	14	10	-1	-3	0	-9	-4	0	0	1	-5	-3	-3	
18	-5	-2	4	4	12	13	16	18	12	-7	-4	0	-24	-13	<15s	<25s	<33s	-2	-7	4	1	3	-3	-7	
19	-7	-7	0	4	12	13	13	18	19	21	15	12	0	0	0	0	0	0	0	0	0	0	0	-1	
20	-3	2	7	9	14	15	14	1	-8	-2	<14s	<8s	-6	<4s	<17s	<30s	<34s	-23	<33s	3	3	4	5	-2	
21	-8	-1	2	3	11	13	12	12	7	2	11	<16s	<23s	<17s	<12s	<27s	<31s	-17	-29	-12	-1	1	3	2	
22	-2	-10	-3	8	-4	7	7	<24s	<28s	<16s	<16s	<16s	<17s	<17s	<14s	<28s	<28s	<28s	-11	-11	1	5	-3	-1	
23	-2	-3	-3	-8	7	11	13	7	-15	<22s	<14s	<3s	<14s	<12s	<21s	-24	<27s	0	11	0	0	-7	-4	-4	
24	1	-11	5	3	16	15	14	3	12	16	<17s	<17s	4	-11	<34s	-21	<30s	<26s	-2	5	3	-3	-1	-1	
25	0	0	1	11	12	13	1	-5	<3s	0	1	-5	<6s	<8s	<13s	-2	2	2	5	7	8	-13	-15	-2	
26	-2	2	2	4	7	-14	7	-16	1	-1	-8	<9s	<7s	<7s	<10s	<33s	<42s	<42s	-4	3	0	0	-2	6	
27	-7	2	5	7	15	15	12	4	18	1	-1	-1	<26s	<25s	<16s	<40s	<40s	<40s	-15	8	0	1	6	-6	
28	-6	-5	0	11	4	0	13	17	-13	-1	-1	<1s	-7	-3	8s	<25s	<26s	-23	-28	-6	-1	11	-5	-4	
29	-1	-9	-1	4	5	11	11	9	-7	<13s	-7	<12s	3	<9s	6s	(19s)	<24s	4	-2	-4	2	-2	-6	-6	
30	-4	-2	-2	3	8	6	14	13	6	3	<8s	<3s	8	<7s	<11s	-25	<40s	1	-9	4	3	-1	-2	-4	
31	-5	-1	0	4	6	14	15	18	16	12	-14	1	<9s	-4	<17s	<39s	<30s	-28	<30s	-25	4	1	-10	-2	
Median	-5	-2	2	4	13	14	15	15	11	9	1	(-1s)	(-3s)	(-9s)	<22s	<22s	<28s	-8	-11	3	2	0	-3	-3	
Upper decile	31	31	30	29	31	30	30	31	30	30	30	30	31	31	30	30	30	30	30	30	30	30	30	29	29
Lower decile	-9	-9	-5	2	4	7	7	-5	<15s	<13s	<16s	<16s	<15s	9	<0s	-2	<40s	<28s	<31s	-15	-8	-7	-7	-9	



Measurement of H.F. Field Strength (Upper Side-band of WWVH)  
 Receiving Antenna: Rod (4.5 m) Measured at Hiraio  
 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Sept. 1965

UT Date	0045	0145	0245	0345	0445	0545	0645	0745	0845	0945	1045	1145	1245	1345	1445	1545	1645	1745	1845	1945	2045	2145	2245	2345
1	0	3	3	6	10	12	19	13	13	-18	<-20s	<-26s	<-27s	<-10s	<-25s	<-37s	<-37s	<-27	-28	5	4	-3	-7	-1
2	-3	-6	3	4	13	10	14	-14	<-18s	-11	-5	-4	<-20s	<-36s	<-38s	<-38s	<-38s	-19	<-38s	-6	3	-4	-4	0
3	0	-2	3	4	13	10	15	9	0	3	-2	-6	<-18s	<-22	<-27s	<-20s	<-38s	<-38s	-1	0	0	-2	-1	-3
4	-4	-2	-1	5	10	15	14	11	1	5	9	0	-18	-16	-19	<-16s	<-29s	5	4	0	0	-1	-4	-7
5	-1	2	5	8	10	17	-2	-7	-8	-1	-6	-14	<-23s	<-22s	<-28s	<-39s	-4	-2	-1	-4	-3	-2	-7	5
6	-6	-4	1	5	3	-7	14	18	-11	<-12s	<-14s	<-8s	< 0s	<-6s	<-11s	<-36s	<-36s	-17	-16	-12	-1	-1	-8	9
7	7	0	1	6	9	(19s)	13	<-27s	9	<-27s	2	-14	< 8s	-12	<-38s	<-31s	<-32s	-20	-19	6	3	-1	-2	-4
8	-2	-4	2	1	4	12	13	4	-18	<-15s	<-16s	<-9s	< 3s	<-21s	<-41s	<-32s	<-33s	-15	11	-19	1	5	-9	-7
9	-5	-2	0	10	7	13	14	3	<-12s	<-11s	<-7s	< 4s	<-16s	<-9s	<-17s	<-37s	<-37s	-1	-10	1	2	-2	-4	<-13s
10	-7	-7	-1	(4s)	11	17	-7	-16	-18	0	<-15s	<-12s	<-14s	<-19s	<-21s	<-36s	-24	-25	-17	0	3	1	0	-3
11	-1	-1	5	10	10	15	12	-1	7	-7	-5	<-22s	-9	<-16s	<-18s	<-41s	<-40s	-19	8	1	0	3	-2	-1
12	-3	-3	8	17	10	16	7	-10	-13	-7	<-15s	<-10s	< 1s	<-2s	<-10s	<-35s	<-36s	-3	-1	7	1	2	-4	0
13	-1	-2	9	6	7	16	-9	-16	<-7s	<-4s	<-7s	<-8s	-9	<-12s	<-10s	<-21s	<-39s	-21	0	1	3	5	-2	-1
14	-4	1	4	7	11	16	19	-13	<-6s	<-15s	<-16s	<-16s	< 3s	<-37s	<-22s	27	<-37s	<-37s	-2	2	5	3	3	6
15	-1	1	9	13	(2s)	15	1	<-10s	<-14s	<-3s	-5	-9	<-22s	<-6s	<-1s	<-36s	<-36s	<-36s	-3	4	4	0	3	6
16	4	6	7	0	17	11	(-17s)	<-20s	<-21s	<-8s	<-10s	< 8s	<-15s	<-35s	<-25s	<-35s	<-35s	-5	-19	6	6	5	4	2
17	-3	1	6	10	17	20	15	7	9	15	-4	<-7s	<-29s	<-21s	0	0	0	0	0	0	0	0	0	0
18	4	1	4	9	17	14	12	12	1	<-12s	<-6s	<-12s	< 2s	<-5s	<-35s	<-36s	<-36s	-19	-19	7	-1	2	-5	0
19	0	0	0	0	0	-10	-14	(-17s)	<-14s	-8	-8	-6	<-33s	<-33s	<-39s	<-34s	<-34s	-10	-3	-4	-1	-6	-5	-8
20	0	-2	-2	10	2	13	-13	-13	<-11s	<-9s	<-11s	< 6s	< 7s	<-17s	<-38s	<-25s	<-38s	-17	-17	-4	0	2	-4	-1
21	2	-1	3	15	13	11	7	-10	-9	9	6	<-7s	<-11s	<-11s	<-24s	<-27s	<-29s	<-24s	-17	5	2	1	0	3
22	0	0	0	6	10	4	-6	-13	-5	-10	<-12s	< 0s	< 6s	<-17s	<-14s	<-38s	<-37s	<-34s	-28	-13	-12	-4	-13	<-2s
23	-1	6	1	12	16	14	-15	<-14s	<-10s	<-13s	< 0s	< 1s	<-24s	<-36s	<-37s	<-37s	<-36s	-14	-14	-1	2	1	2	2
24	-2	5	3	5	10	17	14	-1	<-16s	<-14s	<-15s	<-38s	< 7s	< 7s	<-36s	<-37s	<-37s	-22	-3	6	6	0	0	1
25	-2	4	2	10	12	12	22	15	14	(-16s)	<-12s	<-38s	<-18s	<-11s	<-15s	<-37s	<-37s	(-27s)	-16	3	7	3	8	1
26	1	1	3	8	11	14	6	8	-3	12	<-13s	< 7s	< 6s	< 2s	<-15s	<-39s	<-39s	-22	<-39s	-1	4	7	-1	-1
27	1	3	4	15	14	11	-17	<-22s	<-21s	<-16s	<-7s	< 0s	< 3s	< 7s	<-22s	<-36s	<-36s	0	0	0	4	7	-1	-1
28	8	5	0	6	(21s)	-11	-3	-12	<-17s	<-20s	<-25s	<-21s	<-16s	< 1s	<-36s	<-36s	<-36s	-32	<-25s	-16	4	5	0	-5
29	0	2	3	8	15	12	12	-12	<-12s	<-18s	<-26s	<-17s	<-12s	<-18s	<-14s	<-31s	<-36s	<-36s	-3	-3	4	1	3	-5
30	-3	0	2	14	12	7	-13	-13	-17	<-20s	<-8s	<-8s	<-18s	<-30s	<-37s	<-37s	<-37s	-15	<-29s	-5	-1	-2	-1	-7
Median	-1	1	3	8	11	13	12	(-10s)	(-11s)	<-11s	<-8s	<-9s	<-9s	<-13s	<-22s	<-36s	<-37s	-21	-17	-1	3	1	-2	<-2s
Med. Count	27	28	29	29	30	30	30	30	29	29	30	30	30	30	29	29	29	28	27	28	28	27	26	28
Upper decile	4	5	8	15	17	19	14	9	9	2	< 4s	< 2s	<-2s	<-10s	<-21s	<-29s	-3	0	6	6	5	4	2	2
Lower decile	-5	-4	-1	4	3	-7	-15	<-20s	<-18s	<-20s	<-22s	<-27s	<-33s	<-38s	<-38s	<-38s	<-39s	<-38s	-16	-16	-1	-3	-8	<-8s

## RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Sept. 1965	Whole Day Index	L. N.			W W V			S. F.			W W V H			Warning			Principal magnetic storms						
		06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	4 <sub>o</sub>	C	C	C	4	-	-	4	4	4	4	4	4	5	(4)	4	N	N	N	N			
2	4 <sub>o</sub>				4	-	-	4	4	4	4	4	4	4	(4)	4	N	N	N	N			
3	4 <sub>o</sub>				4	-	-	4	4	4	4	4	4	5	(4)	4	N	N	N	N			
4	4 <sub>o</sub>				4	-	-	3	5	5	4	4	4	5	(5)	5	N	N	N	N			
5	4 <sub>o</sub>				4	-	-	4	4	5	4	4	4	4	(3)	5	N	N	N	N			
6	4 <sub>o</sub>				4	-	(4)	5	4	4	4	4	4	4	-	4	N	N	N	N			
7	4+				4	-	-	4	5	5	4	4	4	4	-	4	N	N	N	N			
8	4+				4	-	-	5	4	5	4	4	4	4	-	4	N	N	N	N			
9	5-				5	-	(4)	5	4	5	4	5	4	5	-	4	N	N	N	N			
10	4 <sub>o</sub>				5	-	(4)	4	4	(4)	4	4	4	(4)	(4)	N	N	N	N				
11	4 <sub>o</sub>				4	-	-	5	3	4	4	4	4	4	-	4	N	N	N	N			
12	4+				5	-	(5)	5	4	4	4	4	4	4	-	5	N	N	N	N			
13	4-				4	-	-	4	4	3	4	4	4	(4)	-	4	N	N	N	N			
(14)	4 <sub>o</sub>				4	-	(4)	5	3	3	4	4	4	4	-	4	N	N	N	N			
(15)	4-				4	-	-	2	4	5	C	C	4	4	-	4	N	N	N	N	1453	---	119 <sup>Y</sup>
(16)	3-				2	-	-	(2)	4	3	C	C	4	(3)	-	C	N	U	U	U	---	---	
17	3+				(2)	-	-	C	4	4	C	C	4	5	-	C	U	N	N	N	---	21xx	
18	3 <sub>o</sub>				(2)	-	-	4	3	3	3	(3)	5	4	-	(4)	N	N	N	N			
19	3 <sub>o</sub>				(3)	-	-	3	C	C	3	3	(4)	4	-	4	N	N	N	N			
20	4-				(3)	-	-	4	3	4	4	4	4	4	-	4	N	N	N	N			
21	3+				(4)	-	-	2	4	3	4	4	4	4	-	4	N	N	N	N			
22	4-				3	-	-	4	4	4	4	4	4	(4)	-	4	N	N	N	N			
23	4 <sub>o</sub>				5	-	-	4	4	4	4	(4)	(4)	4	-	4	N	N	N	N			
24	4+				4	-	(4)	5	4	5	5	3	4	(4)	4	5	N	N	N	N			
25	4 <sub>o</sub>				4	-	-	4	4	4	C	C	4	4	-	(4)	N	N	N	N			
26	4+				4	-	-	4	4	4	5	5	4	5	-	4	N	N	N	N			
27	4 <sub>o</sub>				(4)	-	-	(4)	4	3	4	5	4	(4)	-	C	N	N	N	N			
28	4 <sub>o</sub>				(4)	-	-	4	3	4	4	5	4	5	(5)	4	N	N	N	N			
29	4-				(3)	-	-	4	4	4	4	4	5	(4)	-	4	N	N	N	N			
30	4-	C	C	C	(4)	-	-	4	4	3	4	3	4	4	-	4	N	N	N	N			

## IQSY GEOALERT and ADALERT (Western Pacific Region)

\* = MAGSTORM

◦ = MAGCALME

△ = 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 September, 1965.

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IONOSPHERIC DATE IN JAPAN FOR SEPTEMBER 1965

第 17 卷 第 9 号

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1965年12月25日 発 行 (不許複製非売品)

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