

F-222

IONOSPHERIC DATA IN JAPAN

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THE RADIO RESEARCH LABORATORIES
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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.	Midori-cho, Wakkanai-shi, Hokkaido
Akita	39°43.5'N.	140°08.2'E.	Tegata Sumiyoshi-cho, Akita-shi, Akita-ken
Kokubunji	35°42.4'N.	139°29.3'E.	Nukuikita-machi, 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 Branch.

	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_bE_s	The lowest ordinary wave frequency at which the E_s layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f -min	The frequency below which no echoes are observed.
$M(3000)F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$	The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$	The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
$h'F$	The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.
$h'E_s$	The lowest virtual height of the trace used to give the f_oE_s .
h_pF2	The virtual height of the $F2$ layer measured on the ordinary

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

$ypF2$

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_oE . 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_oE . The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. (Usually a daytime type.)
- q* An E_s trace which is diffuse and non-blanketing over a wide frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)
- r* An E_s trace showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick E layer) by the lack of group retardation in the F layer traces at corresponding frequencies and the lack of complete blanketing.
- a* An E_s having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These

sometimes extend over several hundred kilometers of virtual height.

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

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

Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

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

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

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

Variability is expressed in the following four grades:

0=Quiet or no burst,

1=A few bursts,

2=Many bursts,

3=Very many bursts.

The number of bursts exceeding the flux level is counted.

c. Distinctive Events

The phenomena are picked up on the following criteria :

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

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

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

Descriptive type is denoted by the following symbols :

S = Simple rise and fall of intensity ;

C = Complex variation of intensity,

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

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

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

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

E = Steep rise of intensity of continuum background ;

p.i. = post-burst increase ;

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

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

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

C. RADIO PROPAGATION CONDITIONS

a. Field Intensities of WWV and WWVH

Field intensity observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at Hiraio Branch. In order to avoid interferences with other 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 with ± 40 c/s bandwidth.

The *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	Fort Collins, Colorado Long. 105°02' W Lat. 40°41' 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	9150 km	6270 km

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

Receiver

Antenna	4.5 m vertical rod
Bandwidth	± 40 c/s for the upper side-band
Calibration	every half an hour

The meaning of *Descriptive symbols* is 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.
- (): Inaccurate 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 Hamburg (commercial circuit), WWV (10, 15 and 20 Mc/s frequencies broadcast from Fort Collins, Colorado), San Francisco (commercial circuit) and WWVH (10 and 15 Mc frequencies broadcast from Hawaii), which are received at Hiraiso Branch (Lat. 36°22' N, Long. 140°38' E).

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

- N=normal
- U=unstable
- W=disturbed

The letter W expresses HF propagation disturbances which are expected to occur during the following 12 hours after issue. The letter U and N also means unstable and normal conditions, respectively.

Whole day radio quality indices stand for the averages of the 6-hourly indices of the circuits of Hamburg, WWV and San Francisco.

Start- and end-time of principal geomagnetic storms correlated with 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 records of field intensities at Hiraiso, of the following circuits. Start-time, Duration, Type and Importance are obtained from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10, 15 and 20 Mc/s are indicated by ('), (none), and ("), respectively. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensities

CO WWV 20, 15 and 10 Mc/s (Fort Collins, Colorado)
 SF Various frequencies of commercial circuit (San Francisco)
 HA WWVH 15 and 10 Mc/s (Hawaii)
 TO JJY 15 and 10 Mc/s (Tokyo)
 SH BPV 15 and 10 Mc/s (Shanghai)
 HB Various frequencies of commercial circuit (Hamburg)

Start-time and Duration

Types

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

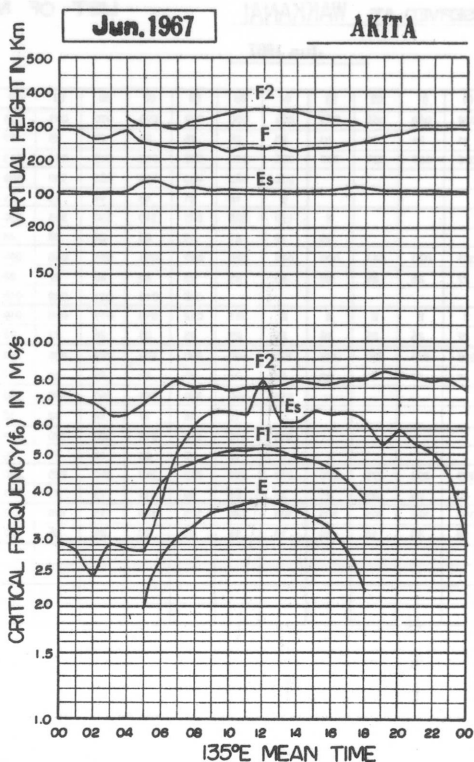
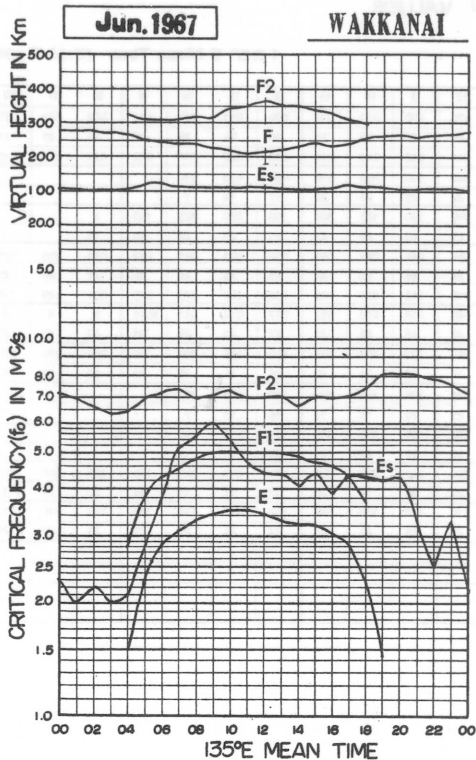
Importances

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

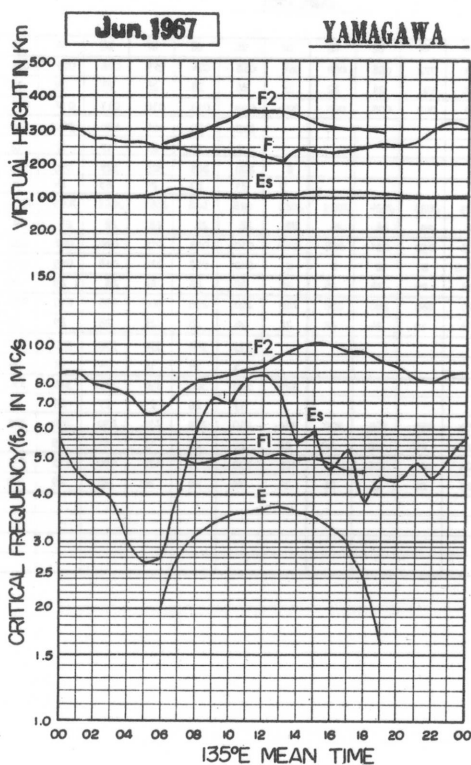
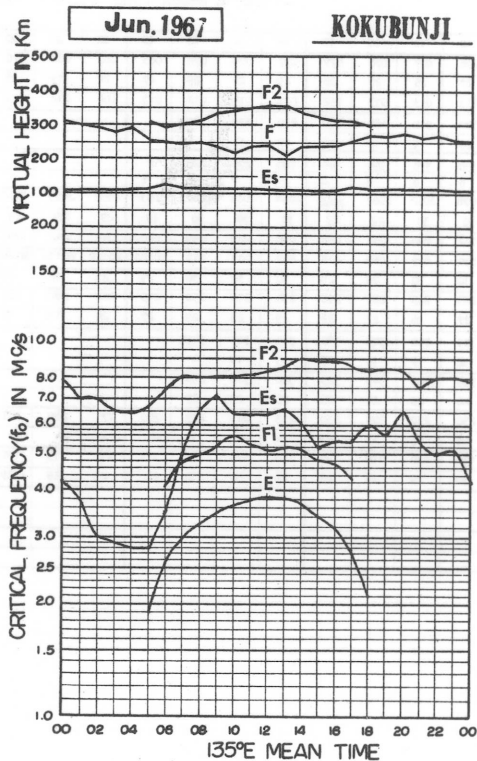
1-	1	1+
2-	2	2+
3-	3	3+

Besides, the time associated phenomena with 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 of IUWDS or measurements at Hiraiso.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

1 35° E Mean Time (G. M. T. +9h)

foF2

Jun. 1967

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	068	F	F	F	060	064	072	074	080	082	074	076	077	076	078	081	077	081	085	086	090	090	085	080F
2	F	078F	079	077	071	080	076	071	070H	071	079	078	077	077	079	083	082	1078C	084	082	081	083	086	086
3	078	078	071	070	066	064	071	076	074	070	070	070	068	072	074	073	076	076	082	088	088	082	078	073
4	072	072	067	070	075	085H	096	096	091	085	073	075	1078R	080	080	080	076	080	084	089	090	091	086	078
5	074	C	C	C	C	C	C	C	C	C	065	1068A	071	075	071	068	1070A	1072A	1080A	087	087	085	076S	074
6	075	073	071	064	065	069	076	083	078	076	077	086	079	080	063	061	056	056	066	066	074	064	058F	060F
7	F	F	F	F	F	072F	085F	088	084	093	084	087	092	097	091	087	083	074	082	086	083	076	075	072
8	063F	063F	057F	053F	053F	056	060	061	063	067	069	065	064	064	071	071	071	077	082	085	087	091S	080	083
9	067	065	066	063	062	070	063	096	062	058	063	062	060	062	062	065	066	069	067	074	081	1079S	080	075
10	075	058	056	054	061	063	060	056	063	063	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	064	064	068	070	065	056	061	069	071	071	073	072	073	073	070
12	066	063	062	060	056	057	063	068	075	078	073	061	066	073	068	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	070	077	074	073	1068A	1062A	063	067	1067A	073	083	081	076	076	076
14	072	066	064	063F	067F	071	070	066	066	1075A	1078A	1071A	068	070	074	075	070	063	065	071	076	083	080	071
15	072	067	066	062F	063	067	C	C	A	A	096	1095A	096	064	066	062	A	A	A	1078A	1073A	073	070F	A
16	F	F	F	F	F	070F	070	070A	063	1066A	069	060	065	064	065	065	065	071	070	077	082	081	082	078
17	074	072	069	070	070	078	079	070	070	071	067	070	063	065	067	070	069	068	073	074	075	076F	077F	078F
18	F	F	F	F	066F	076	070	A	099	063	064	066	069	068	064	066	066	066	066	066	073	080	081	078
19	SF	068	065	063	066	1073C	086	087	089	083	081	071H	068	069	070	075	083	076	076	086	089	078	073	072
20	070	068	066	063	063	066	070	072	068	076	074	072	071	C	C	070	1070A	070	073	083	087	090	086	077
21	066	060F	F	F	058	073	086	082	070	068	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	063H	067	071	072	1070A	068	070	076	077	083	093	087	078	067
23	SF	SF	F	F	062F	073F	086	083	084	C	A	068	066	063	067	070	070	073	079	085	083	077	079	080
24	077	073	071	066	067	074	081	087	086	084	083	080	074	1070C	1064C	1068C	070	C	C	C	F	090F	084	078
25	073	070	068	066	071	074	079	084	078	075	073	071	077	073	066	073	070	070	080	081	084	085	A	SF
26	070	070	068	071	067	074	083	086	073	069	1064A	W	062	058	056	053	059	1062A	1066A	073	073	073	072	072
27	071	069	064	064	064	073F	078F	067F	067	F	076F	076F	070F	078	083	083	078	080	080	074	080	085	084	089
28	080	075	068	058F	056	063	069	080	078	1076A	076	075	076	084	079	071	068	068	071	081	085	089	087	086
29	088	081	068	063	063	064	064	070	059	1064A	067	067	064	066	066	066	066	066	070	068	069	070	070F	073
30	071	069F	063F	060F	F	065	065	070	065	065	064	068	059	063	060	061	063	A	A	073	080	074	SF	071
31																								
Count	21	21	20	20	23	26	25	24	25	25	27	27	28	27	27	27	26	24	24	26	26	27	25	24
Median	072	069	066	063	064	070	072	073	070	071	073	070	070	070	067	070	070	071	074	081	082	081	078	076
U. Q.	075	073	068	068	067	074	082	084	079	077	077	075	075	076	074	075	076	076	081	085	087	087	084	079
L. Q.	069	066	064	061	061	064	067	069	064	066	064	067	064	064	064	065	066	066	070	073	076	076	074	072
G. R.	006	007	004	007	006	010	015	015	015	011	013	008	011	012	010	010	010	008	011	012	011	011	010	007

foF2

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

The Radio Research Laboratories, Japan

W 1

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G.M.T. +9h)

foF1

Jun. 1967

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						380L	440	470	500	510	510H	560H	530H	A	A	A	470L	L						
2						U400L	430	480	520	520L	520H	510H	560	570	U550L	500	L	C						
3						410	430	450	500	520L	520H	510H	530H	530	510	540H	480	A	A					
4							450L	A	A	500	540H	540	I530A	I510A	500	I470A	490	430	A					
5						C	C	C	C	C	A	A	I510A	500	A	A	A	A	A					
6						400L	430	460	470	A	A	490	470	480	480	450	430	U410L						
7						380L	L	500	I500A	500	500	500	500	480	470	480	430	430	A					
8						370L	430	430	460	480	470	480	520H	500H	480	460	450	430						
9						270	350	400	A	A	470	470	480	470	470H	460	430	410	A					
10						280L	L	400	I430A	450	A	C	C	C	C	C	C	C	C					
11						C	C	C	C	A	A	470	470	460	460	A	A	A	A					
12						L	420	440	450	460	470	A	A	A	A	C	C	C	C					
13						C	C	C	C	460	460	470	470	A	A	470	A	A	A					
14						400	400	A	A	A	I470A	I480A	I480A	480	470	450	430	L	L					
15						370	C	C	A	C	470	I470A	I470A	480	I470A	450	A	A	A					
16							430	A	A	A	A	A	490	500	490	470	470	430	390					
17						370	410	470	480	490	510	490	520	490	480	480H	440	430	380					
18						310	A	A	A	I490A	490	500	500	490	500	470	A	A	A					
19						1370C	440	450	I480A	510	I500A	500	500	520	510	480	450	430	360L					
20							460	A	550H	A	500	510	520H	C	C	A	A	420	370					
21						400	430	A	A	490	C	C	C	C	C	C	C	C	C					
22						C	C	C	C	C	490	510	500	510	I500A	I490A	480	430	A					
23							A	A	A	C	A	A	A	500	500H	500	460	440	A					
24							A	A	A	A	500	520	500	I510C	I520C	I520C	470	C	C					
25							440	450	470	500	500	510	I510A	A	A	A	A	A	A					
26						410	410	A	A	A	A	A	490	490	490	U460L	A	A	A					
27						360	400	A	A	A	500	I510A	530	490	500	470	460	U440L	370					
28						300	380L	450	480	A	A	510	I520A	520	490	510	460	430L	U400L					
29						250	360	I410A	440	490	I500A	500	500H	500	A	470	A	440	370L					
30							430L	I450A	460	I480A	I490A	480	500	490	490	480	460	A	A					
31																								
Count					5	16	21	15	14	15	21	23	26	23	21	22	17	14	7					
Median					280	380	430	450	480	500	500	500	500	500	490	470	460	430	370					
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

W2

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

1 3.5° E Mean Time (G.M.T. +9h)

f_oE

Jun. 1967

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	240	285	310	340	360	355	335	335	335	I345A	345	330	300	240	S				
2				E	A	A	295	325	350	375	390	390	395	380	350	I300A	I270C	245	155					
3				E	150	220	290	315	340	350	355	360	360	380	360	335	B	A	A	135				
4				E	130	225	285	315	335	350	355	345	345	330	315	A	A	A	215	S				
5				C	C	C	C	C	C	C	C	335	330	325	A	A	345	305	280	220	S			
6				E	150	220	285	300	325	345	340	335	335	330	315	I310A	I300A	275	220	120	S			
7				E	150	225	270	305	325	340	350	335	335	305	I325A	320	300	285	210	S	E			
8				E	140	220	265	300	320	335	340	340	335	320	305	320	305	270	220	140	E			
9				E	160	220	265	290	310	330	325	325	330	I320A	I335A	300	305	280	220	S	E			
10				E	120	215	270	295	310	335	C	C	C	C	C	C	C	C	C	C	C			
11				C	C	C	C	C	C	345	340	345	340	325	330	325	300	270	225	S	E			
12				E	120	210	265	295	315	330	330	330	305	300	300	C	C	C	C	C	C			
13				C	C	C	C	C	C	325	335	330	I340C	350	355	330	305	265	215	E	S			
14				E	A	225	275	310	325	335	350	340	320	310	I320A	320	300	280	230	A	E			
15				E	165	230	I270C	I310C	330	I335C	345	350	345	330	305	I310A	305	280	215	S	E			
16				E	A	A	A	310	330	345	360	350	360	325	310	280	290	290	235	S				
17				E	160	225	285	310	340	350	355	340	335	305	I305A	I315A	315	285	A	A	E			
18				E	A	225	290	315	335	345	340	370	340	325	350	340	320	I285A	225	150	E			
19				E	115	I225C	285	305	325	340	I350C	350	350	340	310	I310A	I280A	A	A	S				
20				E	140	230	285	310	335	340	355	360	A	C	C	320	I290A	280	235	S	E			
21				E	A	235	290	315	340	345	C	C	C	C	C	C	C	C	C	C	C			
22				C	C	C	C	C	C	C	315	A	365	370	360	330	315	285	215	A	S			
23				E	A	230	290	305	325	I345C	365	340	330	315	340	335	I305A	285	230	140	E			
24				E	145	245	295	310	335	350	345	360	370	I350C	I325C	I310C	320	C	C	C	E			
25				E	180	225	280	305	325	345	340	350	340	340	330	300	A	A	A	A	A			
26				E	A	A	A	305	320	345	350	355	360	355	335	310	310	I275A	230	155	E			
27				E	A	A	A	285	305	330	335	325	340	A	A	A	A	290	235	A	E			
28				E	165	225	280	310	330	355	365	375	365	340	325	300	I305A	I280A	240	170	E			
29				E	A	225	265	300	320	325	335	335	325	325	300	I310A	290	I260A	I230A	200	E			
30				E	A	A	A	305	325	340	350	360	345	340	320	310	300	290	220	S	E			
31																								
Count				25	15	21	23	26	26	28	28	27	27	25	25	25	23	23	22	10	16			
Median				E	150	225	285	310	330	345	350	350	340	330	325	320	305	280	225	145	E			
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_oE

W 3

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

1 3.5° E Mean Time (G. M. T. +9h)

foEs

Jun. 1967

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	J022	019	J023	021	023g	J033	040	050	J071	043	043	042	J065	J062	J053	g	037	J043	022	J051	J070	J023	J073
2	J030	J061	J033	J036	J030	J031	g	042	051	042	044	045	044	053	J076	J061	043	c	020	J041	J030	J023	017	
3	017	J021	J020	E	J027	g	g	039	039	047	045	043	043	048	041	040	037	J050	044	J025	J034	J073	J043	
4	E	E	E	E	021	027	037	049	J053	J053	045	046	099	J093	J062	J094	039	J048	J066	J063	J040	015	017	J025
5	J023	C	C	C	C	C	C	C	C	C	J080	J090	J071	043	058	J071	J102	J084	J090	J090	J070	J024	J023	J033
6	J051	E	018	014	014g	028	034	038	055	J060	J063	049	043	039	041	J048	033	025g	026	020	E0128	J022	J021	020
7	J023	017	J063	016	g	033	035	J053	J076	047	045	045	040	037	J061	g	g	036	J043	J061	J081	021	E0158	E
8	E	E	E	017	g	026	041	043	048	038	040	050	044	036	039	g	036	033	033	023	J028	J025	022	E0168
9	E	E	E	E0138	E	034	034	037	J062	J080	J063	040	038	040	040	035	g	040	J056	J051	J075	J050	023	J033
10	J023	J022	E	J020	021	028	037	J056	036	J063	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	J055	J060	039	038	045	J048	045	051	J063	J056	J043	J023	J033	J030	J043
12	J041	J025	J030	J023	g	029	036	J051	052	043	043	J058	J053	051	J050	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	g	040	g	037	J074	J070	040	J063	J103	J050	J041	E0158	022	018	J023
14	J035	020	J031	042H	J038	021g	041	J057	J063	J076	102	J090	J055	038	034	g	g	030	029	J030	J041	J023	020	E0148
15	E	J023	E	E	J030	028	g	g	J070	J119	056	J071	049	J053	J085	045	J066	J163	J121	J081	J092	J086	J103	J101
16	J060	J070	J050	J063	J061	J045	041	J073	J073	J090	J050	053	045	J053	038	J043	039	g	031	026	J044	016	J023	J053
17	J033	018	J025	020	g	028	034	J053	g	048	061	043	044	044	038	036	031g	045	036	043	J025	J024	J025	J033
18	J023	J021	J024	019	J023	021g	051	J081	J070	J060	047	042	041	041	g	J068	J080	053	038	026	J063	J024	J025	J043
19	E	E	E	E	019	g	041	041	J055	J055	J055	050	050	J050	040	043	033	033	037	031	J030	J034	J063	J043
20	E0158	E	E	E	g	g	J043	J073	041	064	g	041	J066	C	C	J101	J168	034	031	J063	J050	J073	J040	
21	J064	031	046	J023	035	033	042	J054	J071	J051	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	058	046	040	051	J088	J081	048	037	J043	J063	J130	J030	J023	J103
23	J073	J051	J073	J036	J030	g	051	J070	J074	C	168	J060	J059	050	g	g	040	043	J056	026	J035	J022	J066	J025
24	J025	018	J021	E	g	g	J048	J053	J068	J070	047	040	g	C	C	C	g	C	C	C	J073	J075	J053	E0138
25	E	E	E	018	015g	g	037	036	g	041	050	J066	J073	J060	J076	J069	J073	J093	J073	J060	J064	063	128	J060
26	J083	J063	J024	J065	J050	J051	040	J055	071	063	J075	050	043	040	038	040	053	140	J063	030	J043	090	J063	
27	E0178	J020	J043	J043	J044	J063	038	051	J060	J081	053	J074	J063	043	040	J053	038	033	033	J065	J030	J038	J030	J033
28	J030	E	015	J021	015g	g	033	040	J055	J140	J063	050	J071	g	040	033	030	030	g	023	J050	J052	019	023
29	024	J023	050	J023	031	g	J045	064	044	J130	040	048	J053	043	J060	053H	J063	J043	029	g	J044	J055	J056	019
30	J080	J063	J043	015	018	J033	030	048	047	051	J059	043	050	042	041	040	038	J101	J163	053	043	J103	J050	J073
31																								
Count	27	26	26	26	26	25	25	25	26	27	28	28	28	26	26	26	27	25	26	26	27	27	27	27
Median	023	020	022	020	021	028	037	051	055	060	054	047	044	044	041	044	039	043	043	042	043	033	025	033
U. Q.	041	025	043	023	030	033	042	056	070	076	062	056	057	053	062	061	063	074	056	061	064	052	056	053
L. Q.	E	E	E	E	g	g	034	040	047	047	044	043	042	040	039	036	031	033	031	026	030	023	022	020
Q. R.							008	016	023	029	018	013	015	013	023	025	032	041	025	035	034	029	034	033

The Radio Research Laboratories, Japan

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

foEs

W 4

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G.M.T. +9h)

f_oE_s

Jun. 1967

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		017	016	019	019	020G	020	G	G	G	G	G	G	057	058	048		G	G	G	040	018	018	050	
2	015	020	018	020	020	025		G	044	G	G	G	G	050	041	G	034	C	G	G	040	026	020	014	
3	015	013	E		G	G		G	G	G	044	G	G	G	G	G	050	050	042	050	018	024	020	028	
4					G	G	G	049	050	043	043	044	062	057	G	064	032	033	062	044	036	014	015	E	
5	016	G	C	C	C	C	C	C	C	C	052	A	067	041	052	064	A	A	A	031	042	022	021	024	
6	042		019	E	012G	G	G	G	045	058	060	048	G	G	G	036	032	023G	020G	G	S	015	015	016	
7	016	012	020	E		G	G	G	053	047	G	G	G	G	035		G	G	040	057	012	017	S		
8				E		G	035	040	043	G	G	044	G	G	G		G	G	G	G	023	022	S	S	
9			S			G	G	G	051	047	041	G	G	037	035	G		039	054	046	048	020	E015S	024	
10	020	016		012	G	G	G	G	051	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	052	053	G	G	043	042	045	045	060	050	032	020	012	E016S	020	
12	018	017	016	015		G	G	040	042	G	G	050	051	049	048	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	G	G	G	A	A	040	052	A	050	036	S	020	016	018	
14	017	015	026	040	027	020G	039	051	060	A	A	A	050	G	034			020	G	025	019	020	019	S	
15		E			012	015G	C	C	A	A	G	A	049	046	052	042	A	A	A	A	A	065	058	A	
16	018	016	040	024	033	035	040	A	059	A	055	050	044	G	G	G	G	G	G	023	020	016	015	022	
17	018	014	015	014		018G	G	G	045	048	G	G	G	G	036	035	028G	026	030	025	020	020	020	017	
18	016	014	015	012	017	020G	043	A	053	060	047	G	G	G		045	054	050	037	G	030	017	020	017	
19					G	C	G	G	050	048	053	046	047	G	G	040	033	032	030	030	016	030	030	017	
20	S						G	G	050	G			040	C	C	060	A	G	G	060	049	030	050	034	
21	E	028	017	012	025	G	040	051	066	044	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	C	042	042	G	G	A	052	041	G	040	054	055	030	019	017	
23	045	020	022	018	020	046	058	057	C	A	057	058	058	038			034	038	043	G	030	020	012	016	
24	025	011	011			045	052	067	062	G	G	G	C	C	C	C	C	C	C	C	042	027	035	S	
25					011	014G	G	G	G	G	046	G	055	053	051	051	051	054	048	040	047	026	A	016	
26	020	031	017	046	048	035	034	050	066	059	A	A	G	G	G	G	044	A	A	027	027	030	020	031	
27	S	017	033	035	021	023	G	050	056	066	G	057	G	037	037	039	032	G	020G	064	028	020	017	017	
28	018		013	017	013		G	G	042	A	058	047	056		G	G	030	028	G	G	025	018	017	E016S	
29	E016S	020	040	018	020		043	040	G	A	G	G	G	G	047	040	047	030	025		041	050	043	017	
30	013	017	026	E	018	024	029	046	045	049	051	G	G	G	G	G	G	A	A	044	043	022	040	E016S	
31																									
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

1335° E Mean Time (G.M.T. +9h)

f-min

Jun. 1967

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	017	019	020	019	020	016	016	020	016	012	012	011	EO15S	E	E	E	E
2	E	E	E	E	E	E	012	017	016	018	019	020	021	020	020	019	017	C	016	012	E	E	E	E
3	E	E	E	E	E	012	013	015	018	019	017	015	023	026	020	023	030	018	013	011	E	E	E	E
4	E	E	E	E	E	012	012	017	018	018	021	020	020	017	017	017	016	016	012	EO15S	E	E	E	EO12S
5	E	E	C	C	C	C	C	C	C	C	019	017	018	018	020	017	017	017	012	EO12S	E	E	E	E
6	E	E	E	E	E	013	012	013	017	017	016	019	017	017	016	017	018	012	012	E	EO12S	E	E	E
7	E	E	E	E	E	012	014	017	012	017	017	017	020	017	016	017	015	E	010	EO12S	E	E	EO15S	E
8	E	E	E	E	E	012	011	012	016	017	020	020	020	017	017	017	018	012	011	E	E	E	EO15S	EO16S
9	E	E	E	EO13S	E	013	017	015	017	017	017	017	018	018	020	017	015	016	017	EO15S	E	EO15S	EO15S	E
10	E	E	E	E	E	012	012	016	017	019	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	020	020	020	017	017	017	012	013	011	012	EO12S	E	E	EO16S	EO16S
12	E	E	E	E	E	011	011	012	017	016	017	017	017	017	017	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	017	022	023	EO33C	028	026	023	017	016	012	E	EO15S	E	E	EO14S
14	E	E	E	E	E	012	018	017	021	022	020	025	026	023	018	016	012	012	E	E	E	E	E	EO14S
15	E	E	E	E	E	011	C	C	019	EO70C	018	020	022	021	018	018	012	016	012	EO14S	E	EO16S	E	E
16	EO16S	E	E	E	E	012	012	012	018	020	018	020	020	020	019	020	017	016	012	EO14S	E	E	E	E
17	E	E	E	E	E	013	013	012	017	017	021	021	022	018	018	017	018	012	E	011	E	E	E	E
18	E	E	E	E	E	E	011	016	017	018	020	022	013	019	020	018	017	012	011	010	E	E	E	E
19	E	E	E	E	E	C	011	011	017	017	EO42C	020	023	017	020	017	017	016	011	E	EO12S	E	E	E
20	EO15S	E	E	E	E	013	013	018	018	020	020	020	017	C	C	013	013	012	012	EO15S	E	E	E	E
21	E	E	E	E	E	011	012	017	012	017	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	018	018	018	018	017	018	017	011	012	E	EO17S	EO15S	E	EO11S	
23	EO15S	E	E	E	E	E	E	011	017	C	023	023	020	020	021	020	019	016	E	E	E	E	E	E
24	E	E	E	E	E	E	012	012	017	017	020	020	020	C	C	C	018	C	C	C	E	E	E	EO13S
25	E	E	E	E	E	E	E	017	011	017	018	023	018	017	018	017	017	011	E	EO17S	EO15S	EO15S	EO15S	
26	EO12S	E	E	E	E	EO12S	011	012	018	018	018	021	020	018	018	018	017	010	010	011	E	E	E	EO15S
27	EO17S	E	E	E	E	E	E	012	017	018	020	020	018	019	017	017	018	011	E	EO12S	E	E	E	EO12S
28	EO11S	E	E	E	E	E	E	013	017	018	020	018	018	019	017	018	011	011	E	011	E	E	E	EO16S
29	EO16S	E	E	E	E	E	E	012	011	017	019	017	017	018	012	018	012	011	012	E	E	E	E	EO12S
30	E	E	E	E	E	011	E	018	011	017	012	018	020	017	017	016	017	017	011	EO16S	E	E	EO14S	EO16S
31																								
Count	27	26	26	26	26	25	25	25	26	27	28	28	28	26	26	26	27	25	26	26	27	27	27	27
Median	E	E	E	E	E	011	012	015	017	018	019	020	020	018	018	017	017	012	011	EO11	E	E	E	E
U. Q.																								
L. Q.																								
G. R.																								

The Radio Research Laboratories, Japan

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

f-min

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G.M.T. +9h)

M(3000) F2

Jun. 1967

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	F	F	F	290	280	270	275	275	310	300	290	295	290	280	300	295	290	275	280	280	280	280	265F
2	F	265F	280	285	275	300	290	295	275H	280	280	285	285	285	280	300	300	1300C	285	300	270	265	265	280
3	275	270	265	275	285	265	280	285	295	280	285	270	275	280	280	275	290	280	285	295	295	280	275	275
4	265	265	270	275	295	280H	290	295	280	330	275	280	U290R	295	295	305	300	290	290	290	300	285	300	280
5	260	C	C	C	C	C	C	C	C	C	280	1285A	280	295	305	1300A	1295A	1290A	1285A	285	280	295	285S	275
6	270	265	290	280	270	260	260	285	260	265	250	260	250	290	285	310	305	280	265	270	300	280	260F	265F
7	F	F	F	F	F	280F	305F	280	275	290	275	275	265	280	290	280	280	280	275	280	290	275	280	290
8	275F	285F	265F	275F	270F	290	285	305	315	315	315	325	285	280	300	295	300	295	300	295	275	290S	275	300
9	280	260	275	270	265	300	300	290	275	270	270	305	290	290	280	295	290	295	285	295	295	1285S	290	280
10	295	270	280	280	295	315	295	265	315	270	G	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	315	290	315	305	335	305	295	270	315	310	305	285	280	285	285
12	275	275	305	290	290	310	305	290	305	320	320	315	290	305	305	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	285	300	295	300	1310A	1290A	285	300	1300A	290	300	300	290	280	280
14	280	275	275	270F	300F	300	315	280	275	1290A	1305A	1295A	280	290	275	295	295	285	290	270	265	285	290	270
15	270	275	290	265F	260	270	C	C	A	A	255	1255A	275	275	290	300	A	A	A	1285A	1285A	275	270F	A
16	F	F	F	F	F	325F	295	1300A	270	1295A	320	285	290	295	290	290	290	300	290	290	285	285	275	285
17	275	280	275	275	270	280	320	300	285	310	285	315	275	300	300	290	305	300	305	295	275	285F	275F	280F
18	F	F	F	F	275F	325	300	A	290	285	265	290	275	285	270	295	290	305	290	290	285	280	295	F
19	SF	280	285	285	280	1275C	285	275	305	295	305	280H	270	265	270	295	295	290	290	285	295	285	275	265
20	270	265	265	275	270	275	295	315	355	295	295	280	285	C	C	290	1290A	285	280	270	300	285	295	295
21	280	265F	F	F	260	275	280	305	285	295	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	315H	285	285	280	1290A	275	275	280	285	275	295	285	300	270
23	SF	SF	F	F	280F	275F	290	300	290	C	A	280	275	280	270	275	290	290	295	300	270	265	280	280
24	275	275	285	290	275	290	280	295	290	280	290	290	295	1285C	1275C	1270C	275	C	C	C	F	285F	275	275
25	275	285	285	280	280	275	280	305	295	280	295	280	290	300	280	290	285	275	295	285	290	290	A	SF
26	270	270	270	280	285	255	235	295	255	275	1255A	W	260	275	285	315	275	1280A	1285A	290	290	275	265	265
27	270	275	270	270	265	265F	280F	265F	270	F	305F	295F	265F	280	275	285	280	290	295	270	260	260	275	280
28	285	270	280	300F	270	285	265	290	310	1310A	305	310	290	310	310	295	300	305	285	285	275	265	275	270
29	275	285	280	270	265	290	295	315	275	1285A	300	285	280	290	300	305	305	285	305	295	275	260	265F	280
30	280	285F	295F	265F	F	310	280	300	285	290	285	295	275	285	285	265	285	A	A	290	280	275	SF	270
31																								
Count	21	275	280	275	23	26	25	24	25	25	27	28	28	27	27	27	26	24	24	26	26	27	25	24
Median	275	275	280	275	275	280	290	295	285	290	290	285	280	290	285	295	290	290	290	290	290	280	275	280
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

W7

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G.M.T. +9h)

M(3000)F1

Jun. 1967

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						345L	350	345	350	360	375H	355H	375H	A	A	A	360L	L						
2						U350L	350	340		345	390	350L	335	A	U330L	350	L	C						
3						315	325	360	350	350L	I360A	375H	360H	330	335	320H	330	A	A					
4							355L	A	A	340	350H	335	I350A	I340A	350	I355A	345	350	A					
5						C	C	C	C	C	A	A	I340A	340	A	A	A	A	A					
6						315L	330	315	A	A	A	A	365	355	345	340	340	U345L						
7						340L	L	340	I345A	I350A	360	365	360	355	355	340	365	335	A					
8						345L	335	I335A	I370A	370	390	375	360H	370H	350	370	355	335						
9						335	345	350	A	A	365	385	375	380	390H	330	340	A	A					
10						335L	L	390	I360A	380	A	C	C	C	C	C	C	C	C					
11						C	C	C	C	A	A	A	395	385	A	A	A	A	A					
12						L	340	I355A	I365A	390	395	A	A	A	A	C	C	C	C					
13						C	C	C	C	390	380	390	390	A	A	335	A	A	A					
14							A	A	A	A	A	A	I380A	375	360	360	365	L	L					
15						340	C	C	A	C	405	I405A	I405A	A	A	A	A	A	A					
16							A	A	A	A	A	A	380	375	360	345	325	335	345					
17						350	365	360	375	I360A	I375A	390	370	385	380	355H	345	335	340					
18						325	340	A	A	A	A	380	385	375	345	A	A	A	A					
19						I365C	340	390	I350A	I345A	I365A	380	I365A	345	340	345	355	335	345L					
20							335	A	330H	A	380	390	365H	C	C	A	A	345	350					
21						330	A	A	A	A	C	C	C	C	C	C	C	C	C					
22						C	C	C	C	C	390	390	395	355	A	A	A	A	A					
23							A	A	A	C	A	A	A	380	380H	335	350	335	A					
24							A	A	A	A	395	370	390	I370C	I360C	I335C	345	C	C					
25							350	355	365	360	I370A	380	A	A	A	A	A	A	A					
26							A	360	A	A	A	A	365	360	350	U365L	A	A	A					
27							335	355	A	A	365	I365A	355	370	365	370	355	U365L	360					
28						335	370L	345	I360A	A	A	I375A	I375A	360	385	355	360	370	U370L					
29						A	335	I365A	I355A	365	I360A	380	385	390H	380	A	370	A	345	380L				
30							355L	A	A	A	A	395	380	375	365	355	350	A	A					
31																								
Count					4	15	18	14	12	12	18	21	25	20	18	19	16	13	7					
Median					335	340	350	355	360	360	380	380	375	370	360	350	350	345	350					
U. Q.																								
L. Q.																								
Q. R.																								

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

M(3000)F1

The Radio Research Laboratories, Japan

W8

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

Jun. 1967

f_oF₂

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						325	320	310	320	310	310	365	340	355	360	310	310	315						
2						290L	285	305	360	315	360	360	365	370	350L	310	295	C						
3						335	340	300	335	370	360	400	400	370	360	375	335	315	300					
4							310	285	300	295	370	375	I350A	350	320	I305A	320	300	A					
5						C	C	C	C	C	400	A	I365A	325	325	A	A	A						
6						365	400	320	400	A	440	375	440	325	360	320	345	350						
7						320	275	350	335	320	350	350	365	350	315	360	300	345	315					
8						315	345	320	315	320	315	300	390	375	325	320	310	305						
9					345	300	300	370	370	430	395	345	375	365	390	340	320	310	A					
10					290	255	300	465	305	400	C	C	C	C	C	C	C	C						
11						C	C	C	C	320	375	320	320	290	340	360	325	310	A					
12						260	310	340	295	275	290	300	370	320	320	C	C	C						
13						C	C	C	C	340	310	320	315	I320A	I315A	370	310	I305A	305					
14							250	360	A	I335A	A	A	370	345	360	300	280	300	275					
15						320	C	C	A	C	460	I465A	475	430	350	340	A	A						
16							290	A	A	A	305	350	360	360	350	345	350	315	290					
17						300	260	285	320	315	370	305	405	350	335	325	315	305	290					
18					325	260	285	A	A	I395A	360	360	385	350	400	335	350	305	295					
19						I285C	305	260	300	320	290	320H	370	400	360	325	310	295	290					
20							320	300	405	320	325	360	345	C	C	A	A	320	300					
21						320	310	285	A	310	C	C	C	C	C	C	C	C						
22						C	C	C	C	C	290H	370	345	365	I360A	370	360	325	290					
23							290	295	320	C	A	370	410	375	400	360	330	310	300					
24							300	310	A	315	310	320	325	I330C	I380C	I390C	360	C	C					
25							315	290	290	340	325	345	350	315	385	345	360	350	310					
26						320	320	310	A	A	A	W	450	440	410	315L	395	A	A					
27						355	315	370	405	I355A	320	340	400	370	350	325	345	310	275					
28					340	285	375	295	300	I315A	345	310	360	300	310	325	315	310	300					
29					325	300	300	310	410	I385A	360	360	350	365	345	315	325	335	295					
30							325	325	360	350	390	355	420	485	390	425	360	A	A					
31																								
Count					5	18	25	23	18	23	25	26	28	27	27	25	24	21	15					
Median					325	310	310	310	320	330	345	350	370	355	350	335	325	310	295					
U. Q.																								
L. Q.																								
Q. R.																								

f_oF₂

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

1 35° E Mean Time (G.M.T. +9h)

hF

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	290	295	280	260	270	260	245	240	240	220	215H	200H	195H	A	A	I255A	240	245	275	260	I280A	270	260	I295A	
2	290	300	280	270	260	235	240	250	265H	210	210	235	235	A	A	230	215	I250C	260	260	I275A	300A	300	265	
3	270	275	275	265	285	230	250	240	240	240	AE	215H	210H	275	250	240H	255	A	A	A	A	250	265	270	300
4	290	290	290	270	260	235H	245	A	A	290A	240H	260	I245A	I255A	250	I250A	240	260	A	A	A	260	245	245	
5	300	G	G	G	G	G	G	G	G	G	A	A	I240A	275	A	A	A	A	A	A	265A	260	260	280	
6	I305A	280	250	220	250	220	240	250	A	A	A	A	225	225	240	250	235	240	260	295	260	245	280	295	
7	310	300	310	285	260	260	250	250	I250A	I245A	245	210	210	225	225	225	245	250	I285A	I280A	260	265	270	260	
8	265	275	265	290	290	250	260A	I260A	I245A	210	210	250A	225H	200H	215	225	260	250	270	260	275	275	245	245	
9	250	300	290	295	280	260	245	235	A	A	250	215	215	210	215H	245	245	A	A	A	A	270	265	270	
10	250	250	275	285	270	250	240	I230A	200	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	G	G	G	G	G	G	G	G	C	A	A	200	220	A	A	A	A	A	A	A	A	260	260	270	
12	285	275	260	240	240	235	240	I230A	I245A	225	210	A	A	A	A	C	C	C	C	C	C	C	C	C	
13	G	G	G	G	G	G	G	G	C	200	220	220	220	A	A	260	A	A	A	I255A	245	250	250	270	
14	270	275	295	I270A	290A	235	A	A	A	A	A	A	I215A	210	215	215	230	235	250	285	275	270	260	265	
15	270	250	250	275	290	260	C	C	A	C	205	I205A	I200A	A	A	A	A	A	A	A	A	A	A	A	
16	260	275	I270A	270	270A	260A	A	A	A	A	A	A	240A	210	215	250	230	235	230	265	260	260	260	275	
17	270	275	265	270	260	240	235	250	200	I210A	I280A	210	200	200	200	210H	220	260	260	250	270	265	270	265	
18	250	275	260	265	270	245	A	A	A	A	A	210	205	210	215	A	A	A	I260A	275	285	260	250	245	
19	265	260	260	250	260	I245C	250	225	I240A	I250A	I230A	250A	I235A	240	220	250	225	220	250	275A	245	250A	290A	295	
20	295	300	295	275	250	240	230	A	235H	I225A	240	200	200H	C	C	A	A	A	235	245	A	A	A	A	
21	245	300A	290	265	300A	260	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
22	G	G	G	G	G	C	C	C	C	C	240	200	200	225	A	A	A	245	A	A	I265A	260A	230	250	
23	I300A	285	275	290	260	235	A	A	A	C	A	A	A	210	195H	225	230	265	I260A	265	265A	260	275	260	
24	280	260	250	255	250	240	A	A	A	215	210	200	200	I200C	I210C	I220C	225	C	C	C	A	260	300	270	
25	275	260	240	265	285	250	245	245	215	220	I215A	210	A	A	A	A	A	A	A	A	A	250	I260A	280	
26	280	I280A	295	A	A	I255A	260	A	A	A	A	A	225	225	215	225	A	A	A	A	I280A	265A	300A	300A	
27	275	280	I310A	I320A	290	245	260	A	A	A	220	I225A	225	210	225	245	230	240	250	A	310A	305	300	275	
28	275	260	255	260	280	260	225	260	I250A	A	A	I240A	A	230	225	215	225	235	240	265	275	295	280	275	
29	270	260	A	315	I305A	250	I245A	I240A	240	I245A	220	210	200H	220	I245A	250	A	240	245	250	A	A	A	275	
30	270	270	275	280	270	250	245	A	A	A	A	230	225	225	225	235	240	A	A	A	I270A	260	I280A	290	
31																									
Count	27	26	25	25	25	26	19	14	13	13	17	21	24	20	19	20	17	16	15	16	20	24	24	25	
Median	275	275	275	270	270	250	245	240	240	225	220	210	220	220	225	240	230	240	260	265	265	260	270	280	
U. Q.																									
L. Q.																									
G. R.																									

The Radio Research Laboratories, Japan

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

hF

W 10

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E
Wakkanai

f'Es

Jun. 1967

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	E	110	105	105	105	105	105	120	125	110	110	110	110	110	105	110	g	135	110	110	110	110	110	105
2	105	100	100	100	100	110	g	125	125	125	120	115	115	110	110	110	105	C	g	145	110	110	110	105
3	110	110	110	E	105	g	g	120	125	115	110	110	110	110	115	115	110	105	115	110	110	110	105	105
4	E	E	E	E	125	135	140	125	115	110	110	110	110	110	105	105	105	105	105	110	110	110	110	110
5	110	C	C	C	C	C	C	C	C	C	110	105	110	145	110	115	110	110	115	110	110	110	105	105
6	105	E	100	100	100	135	140	120	115	110	110	110	110	110	105	g	g	125	115	110	110	105	S	E
7	105	105	100	100	g	140	140	125	115	110	110	110	115	115	110	g	145	125	115	120	110	105	105	S
8	E	E	E	100	g	145	120	115	110	115	115	110	115	110	110	g	125	115	115	120	110	110	105	105
9	E	E	S	E	g	100	120	120	110	110	110	115	110	110	110	110	g	125	115	110	110	110	105	105
10	105	105	E	105	135	125	125	115	125	115	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	110	110	115	115	110	110	140	125	120	115	110	110	110	105	105
12	105	105	100	105	g	140	115	115	110	115	110	110	105	105	105	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	g	115	g	115	120	125	150	120	115	115	110	S	110	110	105
14	105	100	100	100	100	105	125	125	115	110	110	110	110	110	105	g	g	105	125	105	110	110	110	S
15	E	105	E	E	105	140	C	C	110	110	115	110	110	110	110	125	115	110	110	115	115	110	110	110
16	110	105	105	100	100	105	125	115	110	110	110	110	110	110	110	105	110	g	135	115	110	110	110	105
17	105	100	105	105	g	125	120	115	g	115	110	110	110	115	105	105	105	120	120	120	100	100	105	105
18	100	105	105	100	100	110	125	115	100	110	110	110	110	110	g	115	115	120	115	115	110	110	110	110
19	E	E	E	E	135	C	115	115	115	110	110	110	110	105	105	105	105	125	100	110	115	110	110	110
20	S	E	E	E	g	g	125	115	120	110	g	115	105	C	C	110	105	110	125	115	115	120	110	110
21	110	140	140	100	135	125	120	115	110	115	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	110	110	125	125	115	115	125	120	110	110	110	110	105	110
23	105	105	105	105	105	g	125	115	115	C	110	110	110	110	g	g	105	125	115	115	110	110	110	110
24	105	105	105	E	g	g	120	115	115	110	110	115	g	C	C	C	g	C	C	C	110	110	110	S
25	E	E	E	105	105	g	125	125	g	125	115	110	110	110	110	110	110	110	100	100	120	115	115	110
26	110	110	105	105	105	105	140	125	125	125	110	115	120	125	125	120	135	120	120	125	115	110	110	105
27	S	110	105	105	105	105	135	120	120	115	125	115	110	110	110	110	105	105	105	115	120	110	105	110
28	110	E	110	110	105	g	135	135	125	115	115	115	115	g	115	110	110	110	g	140	125	115	115	110
29	115	110	105	105	105	g	120	115	120	110	120	110	115	110	110	110	110	110	110	g	120	115	120	110
30	110	110	110	105	105	105	110	125	125	125	115	115	115	115	115	115	120	120	115	115	115	115	110	110
31																								
Count	18	18	18	19	19	18	23	25	24	26	27	27	27	25	24	22	22	24	24	25	25	27	26	23
Median	105	105	105	105	105	120	125	120	115	110	110	110	110	110	110	110	110	110	120	115	110	110	110	110
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'Es

W11

IONOSPHERIC DATA

Lat. 45° 23.6'N
Long. 141° 41.1'E

Wakkanai

Types of Es
1 35° E Mean Time (G.M.T. +9h)

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f2	f2	f2	f2	12	1	1	c	c	c	c	c	c	e2	12	c		h	e2	c	f5	f2	f2	f5
2	f2	f2	f2	12	12	1		c	c	c	c	c	c	c	c	c2	1		h	c4	f7	f2	f2	f
3	f	f2	f		1			c	c	c	c	c	c	c	c	c	c	13	c4	c4	f2	f2	f2	f2
4					c	h	h	c3	c	c	c	c	c3	c2	c2	12	1	1	c5	c5	f3	f	f	f
5	f2									e2	e3	e2	c3	h1	1	c2	c2	c4	c6	c4	f4	f2	f2	f4
6	f3			1	h	h	h	c	e2	e2	e3	e2	c	c	c	12	1	1	e1	c	f	f	f	f
7	f2	f2	f2	1	h	h	h	c	e2	e2	c	c	c	c	c	1		c	e2	e2	e2	f2	f2	f
8			1		h	c3	c	c	c	c	c	c	c	c	c		h	c	c	c	e2	f2	f	
9					1	c	c	c	e2	e2	e2	e2	c	1	1	c		e2	c3	c6	c4	f2	f	f4
10	f	f2		1	h	c	c	e2	c	e2														
11									e2	e2	e2	c	c	c	e2	h	e2	e4	e5	e3	e2	f2	f2	f2
12	f2	f2	f2	12		h	c	e2	e2	c	c	e2	c2	e2	c2									
13																								
14	f2	f2	f2	13	13	1	c	c	c	e2	e2	e3	e2	c	h	c	c	c2	c2	c2	12	f2	f2	f2
15	f				1	h1			e2	e3	c	e2	c	e2	e2	c1	c	e2	e5	e6	c6	f6	f5	f7
16	f2	f2	f7	12	13	14	e1	c4	e3	e5	e2	e2	c	c	c	e2	c	h	e2	e2	f2	f	f	f
17	f2	f	f2	1	c1	c	c	e2	e2	e2	c	c	c	c	1	12	1	e1	c12	e1	12	f2	f2	f2
18	f	f	f2	12	12	1	e3	e2	1	c	e2	e2	c	c	c2	c2	c2	c2	e2	c	c4	f2	f2	f2
19					h		c	c	e2	e2	e2	e2	e2	e2	c	1	1	e1	13	e21	c	f4	f2	f
20							c	e2	c	e2	c	c	1		c3	c3	13	c	c	c6	c5	f5	f4	f5
21	f	f2f	f f	12	h3	1	c	e2	e3	c														
22										c	1	c	c	c	e2	c2	c	c	e4	e2	e3	f2	f2	f2
23	f4	f2	f2	12	12		e3	e2	e3		e3	e3	e2	c		c2	1	e2	e3	e2	e3	f	f2	f
24	f2	f2	f2				e2	e2	e2	e2	c	c									f2	f2	f2	f
25					1		c	c		c	e2	c	e2	e2	e2	e3	13	13	13	12	e212	f f3	f4	f2
26	f2	f4	f2	12	14	13	h1	e2	e3	c	e2	c	c	c	c	c	h	e212	e3	c	e3	f3	f6	f5
27	f2	f2	f6	13	12	12	h	e3	e2	e2	c	e2	e2	1	12	1	1	1	c1	16	e3	f2	f2	f
28	f2		f	12	1		h	h	e2	e2	e2	e2	e2	c	c	c	1	12	h	h	e5	f3	f	f
29	f	f2	f4	13	12		e3	e2	c	e3	c	c	c	c	c	1	e2	12	1	e4	e4	f4	f5	f
30	f2	f2	f2	1	1	1	1	e2	e3	e2	e2	c	e2	c	c	c	c	e2	e5	e2	e3	f2	f4	f2
31																								
Count																								
Median																								
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
W12

Types of Es

IONOSPHERIC DATA

Lat. 39° 43.5'N
Long. 140° 08.2'E

Akita

135° E Mean Time (G.M.T. +9h)

foF2

Jun. 1967

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	070	072	066	060	059	061H	076	082	086	084	080	078	085	085	085	085	082	086	086	092	092	092R	088	078
2	081	FS	084	082	078F	083	081	076	075	081	085	088R	087	088	095	096R	094	086	090	089	077	081	FS	085
3	081	075	077	071	067	072	073	083	080	072	070	076	077	079	088	081	083	086	087	093	082	079	FS	085F
4	086	083	079	075	072	081	094	097R	095	084	086	087	090	090A	089	091R	083	088	096R	092R	090R	086	FS	FS
5	FS	FS	FS	FS	061F	069	081A	086	077	073A	065	069	076A	081	081	075	073	080	081	RS	FS	FS	RS	RS
6	080R	079	075R	065	064	065	078	092	085	091	087A	092A	091A	099R	087	071	060	059	066	072	077	068	056	057R
7	057	057	057S	056F	FS	063S	082	078	081H	086	091	092	092	102R	111	102	098R	090	089	091	086	080	082	078
8	076	072	064	063	061	063	067	074	073	075	069	067	068	067	075	081	086	089	092	089	088	089S	088R	082
9	071	066	066	067	068	071	068	062	060A	059	064A	073A	069	072	073A	070	072	A	A	A	FS	FS	FS	FS
10	FS	083	074R	065A	FS	060	059H	071	069	068	067	073	070	A	A	072	077A	079	079	084	079	071S	FS	FS
11	FS	FS	056F	FS	055S	059	076	081	073	074	069	073	068	066	067	066	072	076	076	068A	072	072	073	FS
12	FS	FS	RF	060	061	061	067	080	082	073	065	060	064	077	085	083	073	074	081	088	087	076	078	075
13	069	069	071	060	061	067	072	063H	066	078	089	083	069	067	082	078	081	071	073	082	A	RS	A	FS
14	073	066	065	064	065	070	061Z	070	074	080A	072	074	075A	075A	081	086	077	068	069	071	076	FS	072	069
15	067	C	C	C	C	C	C	C	C	C	C	C	A	A	072	068	065A	062	068	078A	081	069A	A	A
16	A	A	FS	FS	FS	FS	065	067	070A	071	073	074	A	A	A	070A	073	076	078	083	078	FS	FS	FS
17	FS	073	072S	070	070	073	072H	066	071	073	073	071	068	069	075	076	076	071	070	074	077R	078	082R	FS
18	FS	071S	068	FS	FS	FS	062	065A	068A	071	078	071	072	073S	073	075	071	072	075	073	078	080	075S	072
19	069	068	066	064	062	068	082	084	083	077	076	076	074	079	086	091	091	085	084	088	084	077	077	075
20	073	068	067S	071	071	074	068V	072	074	076	078A	078A	077	079A	085A	084	083	078	076	086	086	FS	FS	FS
21	068S	FS	064	061S	056S	072	090	086	081	071	073	078	078	077	078	A	A	081	076	075	078	FS	A	FS
22	FS	FS	FS	FS	FS	066	087	087	076	072A	065	071	076	077	077	079	077	081	078	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	092	086	075	072	072A	071	078	088	083	084A	086	082	084	083	082
24	078	074	072	066	065	073	074	083	089	085	086	080	081	077	069	071	079	086	086	091	084R	FS	FS	FS
25	079S	073S	072	066	068	075	085	089	088	088	078	080	083	087	079	076R	081	082	087R	092R	089R	081	076R	076R
26	C	RS	068F	063F	063	063	079	090	079	079	A	A	A	A	066A	061A	061	063	069A	076R	A	A	FS	FS
27	FS	FS	064	062	063	069	077	067S	071	080	080	085	082A	083	094	091	084	081	079	076	083	086	084	082R
28	079	073F	071F	067F	065	065	075	091R	085	089	089	084	086	096	C	C	072	079	074	079	082	083	085	083
29	091R	077	071	062	063	066	065	062H	062A	064	073	073	073	077A	073S	073	071	068	076	081	071	071	072S	071S
30	FS	072	064	FS	FS	069	073	078	079	078	068	076	073	067	070A	072A	078	076	077	080R	FS	A	RS	FS
31																								
Count	18	19	24	22	22	26	28	28	28	29	28	28	27	26	27	28	29	29	29	27	24	19	15	15
Median	074	072	068	064	064	068	074	079	076	077	074	076	076	077	078	077	077	079	078	083	082	080	078	078
U. Q.	080	075	072	067	068	072	081	086	082	084	086	082	083	085	085	084	083	086	086	089	086	084	084	082
L. Q.	069	068	064	062	061	063	068	068	071	072	069	073	070	072	072	072	072	072	074	076	078	072	073	072
Q. R.	011	007	008	005	007	009	013	018	011	012	017	009	013	013	013	012	011	014	012	013	008	012	011	010

Sweep 1.0 Mc to 20.0 Mc in .15 sec in automatic operation

foF2

The Radio Research Laboratories, Japan

Lat. 39° 43.5'N
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

foF1

Jun. 1967

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							460L	490	520	500	530	560	560	560	570	490	520	460	L						
2							L	470	570	560	530	570	610H	570	540A	490	A	L	L						
3						340L	420	450	480	1520A	540	520A	550A	520	520	1500A	1480A	1430A	L						
4						L	A	A	A	1580A	520H	550	520	1510A	A	A	A	A	A						
5						340	A	A	A	A	A	520	1520A	A	A	A	1460A	450	A						
6						L	450	1460A	500H	A	A	A	A	500	480	450H	A	A	A						
7						L	L	440A	1480A	530	1510A	550	540	500	490	510L	470	L	380L						
8						L	410	430	480	480	570H	490H	510	510	520	470	A	L	L						
9						330	400A	A	A	A	A	1480A	480	490	1480A	1470A	1440A	A	A						
10						L	L	430	460	450A	1470A	490H	1500A	A	A	A	A	410L	L						
11						L	430	1430A	1460A	1480A	480	490	1510A	480	460	1440A	430	400	A						
12						L	L	430	480A	480	470	500L	480	480	480	1470A	450	430L	L						
13						L	L	440	A	A	480	1480A	500	500	490	450	440	1410A	A						
14						500	1450A	A	A	A	600	1490A	A	A	490A	A	A	A	A						
15						C	C	C	C	C	C	C	A	A	A	A	A	450	A						
16						L	L	A	A	A	A	490A	A	A	A	A	A	A	L						
17						L	390	510	1460A	1480A	1480A	1500A	1500A	500	480	470	460	A	A						
18						L	L	A	A	A	490	1500A	500	520	1490A	1470A	A	A	A						
19						L	450L	1460A	480	500	1500A	540	520	510	490	480	460	1420A	380L						
20						L	L	450L	490	530	A	A	A	A	A	470	460	430	L						
21						L	1470A	1490A	1520A	A	A	A	A	490A	A	A	A	A	A						
22						450L	410	500	470	1560A	500	510	520	520	530	480	460	430	400						
23						C	C	C	C	A	A	A	A	A	A	480	A	A	A						
24						L	L	470	1470A	520	1470A	520	540H	510	1500A	480A	480A	A	A						
25						L	410L	470	1470A	520	1470A	520	540H	510	1500A	480A	480A	A	A						
26						L	L	L	A	A	A	A	A	A	A	A	460	440	A						
27						L	L	420L	460L	A	A	1530A	1460A	520	490	480	A	A	A						
28						L	440	470	480	1500A	520A	520	1520A	500	C	470L	450	360	A						
29						320	410	480	A	A	560	1530A	A	A	A	490	540H	450	A						
30						L	420	460	1480A	1500A	1510A	510	520	A	A	A	A	A	A						
31						L	420	460	1480A	1500A	1510A	510	520	A	A	A	A	A	A						
Count	5	15	21	17	17	17	17	18	24	20	19	18	20	17	14	4									
Median	340	420	460	480	500A	510	510	520	510	490	480	480	480	460	430	380L									
U. Q.																									
L. Q.																									
G. R.																									

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

foF1

Lat. 39° 43.5'N
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

foE

Jun. 1967

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	205	275	315	A	A	A	A	385	I380A	370	350	325	A	A	S				
2					E	I210A	I270A	310	I340A	360	370	I380A	385	I385A	I375A	A	A	A	B					
3						A	265	A	A	360	370	A	A	A	A	A	A	A	A	S				
4						215	280	310	330	355A	365	375	385R	A	A	A	A	A	A	S				
5						190	255	305	325	350	A	A	A	370	355	I335R	I310S	275A	A					
6					A	A	A	I300A	325	350	A	A	A	A	A	A	A	A	A	S				
7					E	I195A	260	305	330A	I350A	I360A	375	I375A	365R	I350A	I340A	320	270	220	S				
8					E	180	255	300	325	335	I355A	365	A	A	A	A	I310A	265	A	S				
9					115	I190A	245	I290A	325	345A	A	A	A	A	A	A	A	A	A	S				
10						I180A	260A	300A	320	340	355	A	A	A	A	A	A	A	210	S				
11						185	255	300	325	I340A	A	A	A	A	340	320	300	265	A	A				
12					E	200	265	295	315	340A	A	A	A	A	A	A	A	265	215	S				
13						205	265	I310A	320	A	A	A	A	A	350	330	305	A	A	S				
14						220	275A	I300A	320	340	355	A	A	A	A	A	A	A	A	S				
15						C	C	C	C	C	C	C	350	I350A	355	340	310	A	A	S				
16						A	A	310	I330A	340	360	I370A	A	A	A	A	A	A	A	B				
17						190	260	305	325	345	360	370	A	A	A	A	A	A	A	S				
18						200	I265A	315	I330A	345	355	A	A	A	A	A	A	A	A	E				
19						175	255	I295A	320	345	I360A	365	A	A	A	A	A	A	A	E				
20					E	180	255	A	A	A	A	A	A	A	A	A	320	280	220	S				
21						200	260	I295A	325	345	I355A	365	A	A	A	345	325	280	A	S				
22						I180A	A	A	A	I340A	360A	I370A	I375A	375	365	345	320	A	A	C				
23						C	C	C	A	I350A	365	A	A	A	A	A	A	275	A	S				
24						215	I280A	I315A	330	350	360	A	A	A	A	A	A	A	A	E				
25						A	270	305	I330A	A	A	A	A	A	A	A	A	290	225A	E				
26						A	285	305	335	350	365A	A	A	A	A	A	325	290A	A	S				
27					140R	A	A	A	A	355A	375A	A	A	A	365	A	A	A	A	S				
28					A	A	A	315	350	360	370	390A	A	A	C	C	A	A	210	S				
29					E	215	I265A	I310A	330	350	I360A	365	A	A	A	A	A	A	A	B				
30						200	260	305	335	350	360	A	A	A	A	A	A	A	A	S				
31																								
Count					9	21	23	24	23	24	20	12	6	6	9	8	11	10	6	4				
Median					E	200	265	305	325	350	360	370	380	370	355	340	320	275	220	E				
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

A3

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

foE

Lat. 39° 43.5'N
Long. 140° 06.2'E

A k i t a

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

foEs

Jun. 1967

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	J081	J050	J012	J030	J017	021	G	036	047	046	J050	J049	J055	J060	055	J066	044	J083	J063	J050	J036	J042	J020	J053
2	J039	J038	J046	J055	J023	029	J042	039	042	042	041	J078	044	050	J058	J139	085	J073	J029	E018B	J025	J019	J042	J050
3	J024	J054	E	E	J027	J028	J033	J038	J043	J056	J055	J064	J058	050	047	J064	J079	J074	034	022	J032	J024	J042	J043
4	J028	J025	J028	J029	J039	037	J070	J064	J074	J067	054	041	051	J108	J059	J085	J084	J065	J084	J068	J083	J064	J053	J083
5	J078	J065	J064	J060	J030	028	J118	J082	J077	J078	J060	J084	J134	J057	J074	J067	J065	J053	J078	J088	J063S	J064	J036	
6	J023	J019	J018	J029	J028	J038	035	J083	040	J064	J153	J159	J107	J065	J046	J044	J050	J044	J049	J030	J051	J029	J032	
7	E016B	E	J020	E	E	J032	046	J072	J051	J067	J071	040	J044	G	043	035	035	J043	J033	J049	J064	J033	J020	
8	J018	J013	J021	J019	J029	023	028	041	038	037	038	040	J053	J044	J045	039	J061	J047	J039	J053	J040	J035	J030	J021
9	E018B	J017	J012	J016	G	027	J043	J053	J063	J059	J086	J089	J100	J085	J082	J074	J075	J086	J138	J086	J088	J053	J055	J058
10	J022	J044	J064	J078	J038	J059	J045	J048	J073	045	J075	J110	J139	J140	J168	J114	J145	J064	022	J028	J061	J079	J064	
11	J074	J023	J024	J029	J030	023	035	J070	J070	J065	J050	J073	J069	J045	J054	J053	039	J045	J060	J079	J052	J045	J033	J035
12	J044	J037	J034	J025	J022	028	040	045	J057	J050	045	J050	043	040	J077	J057	J052	030	J032	J040	J029	J055	J033	J020
13	J017	J016	J044	J035	J021	J025	030	J050	J070	J059	J045	J058	J075	040	040	G	036	J088	J085	J062	J085	J080	J084	J041
14	J032	J039	J039	J053	J037	J024	030	J053	J066	J038	J065	J060	J085	J083	J083	J073	J078	J079	J060	J039	J049	J029	J083	J024
15	E014S	J043	C	C	C	C	C	C	C	C	C	C	J119	J108	J066	J080	J108	J048	J065	J169	J135	J087	J088	J088
16	J114	J098	J063	J060	J053	J040	J044	J050	J079	J106	J084	J140	J138	D	J108	J130	J087	J055	J053	J051	J053	J083	J083	J018
17	J022	J019	J017	J017	J023	023	030	J046	J058	J067	J055	J065	J066	J075	J053	J042	J045	J119	J065	J061	J053	J043	J038	J064
18	J064	J023	J029	J042	J048	J024	045	J066	J083	J078	J055	J060	J059	J050	J062	J073	J064	J067	J087	J053	J035	J083	J083	J023
19	J030	J044	J021	J023	J033	024	033	J069	J052	J050	J110	J059	J056	J050	047	043	J054	J075	J044	J050	J031	J045	J050	J029
20	J025	J020	E	J019	E	025	J045	J054	J050	J076	J097	J149	J075	J158	J101	J074	G	030	036	J025	J063	J051	J050	J050
21	J080	J053	J024	J034	J031	040	J050	J059	J060	J082	J066	J082	J094	054	J076	J120	J162	J078	J077	J080	J058	J053	J094	J083
22	J121	J062	J042	J019	J031	026	037	J058	J062	J117	J060	J054	J083	047	050	043	J048	J046	J045	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	J083	J084	J075	J107	J077	J059	J073	J067	J087	J050	J083	J084	J020	J033
24	J024	J024	J025	J025	J024	025	039	J060	J065	J066	J065	J059	J083	045	J047	J053	J063	J071	J078	J083	J083	J085	J042	J053
25	J040	J020	J023	J023	J023	027	J044	J050	J058	046	042	J060	J058	J088	J061	J080	J173	J067	J083	J107S	J085	J078	J136	J081
26	C	J053	J041	J042	J043	J048	031	045	J065	J078	J091	J080	J118	J153	J078	D	J045	J042	J088	J078	J098	J080	J025	J056
27	J033	J028	J021	J031	G	028	J047	J053	J065	J082	J073	J079	J106	J076	G	J041	J066	J108	J061	J076	J051	J076	J062	J033
28	J020	J025	J021	J021	J025	030	032	J045	J050	J055	053	047	J081	J039	C	C	J059	J028	024	J031	J026	J028	J045	J016
29	J018	J021	J079	J061	J025	J061	J040	J052	J095	J151	J129	J074	J084	J087	J079	J065	J075	J053	J066	J070	J079	J042	J043	J078
30	J054	J053	J034	J075	J031	J029	033	042	J058	J064	J075	J064	J074	J074	J135	J098	J155	J063	J075	J084	J070	J085	J143	J059
31																								
Count	28	29	28	28	28	28	28	28	28	29	29	29	30	30	29	29	30	30	30	30	29	29	29	29
Median	J029	J028	J024	J029	J028	028	038	J051	J061	J065	J065	J064	J078	J062	J061	J066	J064	J064	J062	J053	J058	J053	J050	J043
U. Q.	059	052	042	048	032	034	044	060	070	078	084	081	100	087	078	082	084	075	078	080	083	080	083	062
L. Q.	021	020	021	020	022	024	032	045	050	050	052	056	058	047	047	044	048	046	039	040	038	038	033	026
Q. R.	038	032	021	028	010	010	012	015	020	028	032	025	042	040	031	038	036	029	039	040	045	042	050	036

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

foEs

The Radio Research Laboratories, Japan

A 4

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

A k i t a

1 3 5° E Mean Time (G.M.T. +9h)

f_oF₂

Jun. 1967

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	018	028	012	016	013	019	035	044	044	044	049	045	054	044	044	044	040	037	026	024	036	023	016	016	
2	034	018	014	026	016	023	030	034	038	041	040	055	042	047	054	045	055	042	027	B	021	017	025	E	
3	019	024			020	024	022	036	038	032	042	032	055	049	044	061	061	053	033	020	030	022	031	024	
4	018	017	020	019	027	G	058	056	058	059	043	041	050	A	054	082	062	060	084	060	021	024	042	020	
5	025	C:0	016	029	014	027	A	058	063	A	059	047	A	056	069	063	058	040	042	065	055	052S	034S	U036R	
6	018	015	013	015	017	025	033	062	039	056	A	A	A	041	043	036	048	044	042	027	036	024	020	028	
7	B		E			024	044	048	042	058	039	041	041	038	035	034	034	026	044	029	031	022	019		
8	017	013	016	015	E	023	028	040	038	037	038	039	043	043	044	039	057	041	033	021	030	031	023	019	
9	B	014	E	013		024	040	049	A	056	A	A	040	046	A	056	048	A	A	A	066	026	026	017	
10	018	021	018	A	020	028	033	037	039	045	055	037	056	A	A	056	A	034	022	018	039	018	018	039	
11	019	012	018	012	016	022	034	064	059	049	042	048	059	040	044	049	038	032	047	A	025	016	019	028	
12	021	024	020	012	016	025	036	039	048	047	044	043	040	039	045	052	037	039	032	034	028	022	020	017	
13	016	014	024	014	014	018	028	043	063	055	039	052	038	040	039		035	057	043	044	A	040	A	026	
14	022	028	017	034	031	018	030	047	064	A	051	052	A	A	049	052	054	066	039	038	041	023	024	019	
15	S	013	C	C	C	C	C	C	C	C	C	C	A	A	061	050	A	044	048	A	035	A	A	A	
16	A	A	E	018	031	036	038	048	A	052	068	049	A	A	A	A	069	052	034	041	020	042	058	016	
17	E	E	012	014	016	022	029	039	047	057	054	053	054	044	042	035	037	062	062	040	045	021	034	027	
18	028	018	016	029	032	017	042	A	A	064	048	050	041	047	053	058	047	062	048	040	027	022	016	016	
19	018	013	E	013	014	023	030	047	043	046	068	048	040	044	042	039	039	049	027	034	022	039	021	018	
20	023	014		E		024	039	041	041	047	A	A	063	A	A	038		030	028	018	039	028	030	021	
21	022	024	018	022	021	032	042	050	055	059	059	058	069	049	070	A	A	065	044	058	045	043	A	058	
22	024	016	017	012	015	023	031	043	043	A	043	049	047	040	042	042	039	035	032	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	065	064	066	053	A	064	047	063	057	A	048	068	016	016	017	
24	016	014	E	021	017	G	037	054	059	058	063	047	041	041	038	049	048	060	050	025	044	023	024	028	
25	023	014	015	014	017	026	013	043	058	040	042	052	057	073	042	045	038	050	055	076	050	035S	E016S	030	
26	C	020	023	028	020	028	030	043	060	070	A	A	A	A	A	A	034	035	A	066	A	A	024	050S	
27	021	013	E	012		022	035	040	057	062	060	057	A	049		037	058	050	055	038	E051R	017	018	024	
28	E016S	016	013	015	020	028	030	038	044	052	052	044	057	038	C	C	041	027	024	018	017	020	018	017	
29	E016S	016	018	E	013	017	020	033	A	055	049	059	056	A	068	048	034	035	042	042	036	022	033	038	
30	038	E	013	030	014	018	032	038	050	059	065	041	043	064	A	A	052	047	068	074	054	A	055	029	
31																									
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

f_oF₂

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

f-min

Jun. 1967

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	E013S	E	E	E	E	E	014	021	019	020	018S	020	023	022	019	018	017	017	017	E013S	E	E013S	E014S	E013S
2	E012S	E	E	E	E	E	E	014	015	019	024	018	022	020	022	018	018	016	018	E014S	E	E014S	E	018
3	E014S	E	E	E	E	E	012	017	020	020	019	021	024	022	024	022	021	019	016	E012S	E	016	E013S	017
4	016	E	E	E	E	E	012	018	019	021	023	022	021	021	019	019	021	018	017	E013S	016	E013S	E013S	E013S
5	016	E	E	E	E	E	012	018	019	020	021	020	023	019	019	021	E031S	017	E011S	016	E	016	016	017
6	016	E	E	E	E	E	011	019	020	022	019	023	021	019	025	022	021	018	014	E012S	E	E012S	E014S	E013S
7	016	E	E	E	E	E	015	019	021	019	024	025	036	026	026	020	021	019	014	E013S	E012S	E013S	E012S	017
8	E014S	E	E	E	E	E	014	018	020	026	020	019	023	021	026	020	018	018	017	E012S	E014S	017	E012S	E
9	018	E	E	E	E	E	013	014	019	018	019	020	017	017	019	020	016	017	013	E012S	E013S	017	E012S	017
10	E	E014S	E	E	E	E	013	018	019	019	019	021	021	019	019	019	017	017	012	E012S	E012S	E013S	E	E013S
11	E012S	E	E	E	E	E	E	012	019	018	019	020	019	019	020	019	018	014	014	012	017	E013S	E013S	017
12	018	E	E	E	E	E	014	018	020	018	018	018	020	017	016	014	014	014	012	E014S	E012S	E013S	E013S	E013S
13	E	E	E	E	E	E	E	013	018	019	017	021	020	019	021	018	014	013	012	E012S	E013S	E	E014S	018
14	E013S	E	E	E	E	E	012	019	018	019	019	020	019	020	022	020	018	013	012	E013S	016	E013S	E012S	E012S
15	E014S	E	C	C	C	C	C	C	C	C	C	C	C	C	019	021	018	018	012	E012S	E012S	017	E013S	E013S
16	E013S	E	E	E	E	E	E	012	019	021	019	022	018	019	021	017	013	013	011	016	E	E013S	016	E012S
17	E013S	E	E	E	E	E	013	021	018	019	019	022	017	016	018	016	016	013	013	012	E012S	E012S	E014S	E012S
18	E013S	E	E	E	E	E	011	013	019	021	017	022	021	021	021	018	017	E	012	E	E013S	E	E013S	E013S
19	E012S	E	E	E	E	E	012	018	018	021	019	021	022	018	018	019	018	013	013	E	E	E	E013S	017
20	E013S	E	E	E	E	E	014	019	018	018	020	018	021	018	017	017	016	017	012	E014S	E012S	016	016	E013S
21	016	E014S	E013S	E	E	E	012	015	018	018	013	018	018	018	019	017	017	017	017	E014S	E	E013S	018	E012S
22	E014S	E	E	E	E	E	012	015	018	017	016	020	018	018	021	017	017	017	013	E014S	E	E013S	018	E012S
23	C	C	C	C	C	C	C	C	C	C	014	020	013	019	019	018	017	017	013	C	C	C	C	C
24	016	E	E	E	E	E	E	016	017	017	018	018	019	018	018	017	017	014	012	E012S	E	016	016	E014S
25	E013S	E	E	E	E	E	E	013	014	017	013	018	022	021	017	017	014	017	013	E016S	E013S	E	E016S	E016S
26	C	E	E	E	E	E	012	017	017	018	017	022	018	020	017	016	017	016	013	E016S	E	E	E016S	E
27	E016S	E	E	E	E	E	E	018	019	018	019	017	020	021	019	020	019	018	014	E015S	E	E	E016S	E
28	E016S	E	E	E	E	E	011	017	017	015	018	018	019	018	C	C	016	012	011	E016S	E016S	E016S	E016S	E016S
29	E016S	E	E	E	E	E	E	012	017	017	017	020	020	019	018	018	018	017	012	017	017	017	E014S	E
30	E012S	E013S	E	E	E	E	011	013	019	019	019	022	020	020	018	018	018	017	016	E012S	E014S	E014S	E014S	E
31																								
Count	28	29	28	28	28	28	28	28	28	29	29	29	30	30	29	29	30	30	30	29	29	29	29	29
Median	E014S	E	E	E	E	E	012	017	019	018	019	020	020	019	019	018	017	017	013	E012S	E012S	E013S	E014S	E013S
U. Q.																								
L. Q.																								
G. R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

f-min

Lat. 39° 43.5'N
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

M(3000) F2

Jun. 1967

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	270	275	275	270	255H	275	290	290	305	280	280	295	280	285	295	280	290	280	285	280	1280R	285	275
2	270	FS	280	295	295F	290	295	300	280	285	285	285R	280	280	285	1280R	290	280	300	300	265	265	FS	270
3	270	255	275	275	265	290	285	285	300	290	285	290	290	290	285	285	290	295	290	300	280	265	FS	270F
4	270	270	270	285	280	285	300	290R	305	285	290	285	290	290	290	300R	290	295	1295R	1300R	1300R	295	FS	FS
5	FS	FS	FS	FS	265F	275	1270A	305	305	1295A	280	255	1285A	290	295	295	290	290	280	BS	FS	FS	BS	BS
6	1270R	285	1295R	265	280	275	270	285	245	255	1255A	1250A	1245A	275R	300	305	290	275	275	280	285	295	245	1255R
7	260	265	270S	275F	FS	295S	290	320	275H	255	275	260	255	260R	280	285	1290R	280	300	300	280	275	275	280
8	275	285	280	270	280	290	300	315	320	325	305	300	300	285	290	295	295	295	300	295	285	280S	1290R	280
9	270	260	275	270	275	290	305	305	1295A	250	1275A	1290A	305	285	1295A	285	295	295	A	A	FS	FS	FS	FS
10	FS	290	1290R	1295A	FS	295	290H	325	305	310	290	300	265	A	A	290	1300A	280	285	305	290	295S	FS	FS
11	FS	FS	285F	FS	290S	275	285	305	300	320	285	305	300	285	300	285	300	315	315	1250A	280	285	285	FS
12	FS	FS	RF	290	300	295	290	290	330	325	315	295	280	285	290	300	310	290	285	295	310	285	280	275
13	270	285	315	280	285	300	320	290H	285A	295	305	325	285	290	270	295	300	300	290	305	A	BS	A	FS
14	285	275	280	290	305	320	305Z	315	310	1305A	270	285	1290A	1285A	285	295	300	300	295	280	280	FS	275	280
15	275	C	C	C	C	C	C	C	C	C	C	C	A	A	300	295	1285A	280	280	1305A	300	1290A	A	A
16	A	A	FS	FS	FS	FS	FS	300	1295A	310	300	290	A	A	A	1295A	295	295	295	295	285	FS	FS	FS
17	FS	285	280S	285	300	305	285H	280	290	295	320	285	275	300	280	305	305	300	295	285	285R	270	280R	FS
18	FS	285S	285	FS	FS	FS	310	1315A	1290A	285	305	295	290	280S	280	295	300	295	300	290	290	285	305S	280
19	270	270	280	295	285	275	285	300	285	280	290	280	270	275	290	290	290	290	285	295	290	285	275	265
20	265	265	265S	280	285	325	285V	305	305	280	1290A	1275A	280	1275A	1275A	290	290	295	290	285	280	FS	FS	FS
21	280S	FS	280	275S	285S	280	300	310	295	275	290	285	295	290	290	A	A	300	300	285	280	FS	A	FS
22	FS	FS	FS	FS	FS	FS	260	290	1310R	315	1295A	295	285	290	285	285	275	275	270	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	295	300	285	280	1280A	270	280	290	290	1285A	295	280	280	280	280
24	280	285	280	285	280	285	285	280	295	285	290	280	285	285	280	265	280	280	295	300	1290R	FS	FS	FS
25	280S	280S	275	285	285	295	270	285	285	285	270	280	285	295	290	280R	275	270	1285R	1290R	1295R	290	1285R	275R
26	C	RS	280F	310F	300	285	240	265	260	280	A	A	A	A	1285A	1270A	275	280	1285A	295R	A	A	FS	FS
27	FS	FS	FS	270	270	280	295	255S	280	285	260	275	1270A	260	280	285	275	285	280	265	260	265	265	1280R
28	280	275F	280F	1275F	275	310	265	1300R	290	295	285	285	300	C	C	C	285	300	295	275	270	295	265	265
29	285R	280	270	280	265	295	310	295H	1305A	290	300	280	270	1300A	1315R	300	280	280	295	295	270	265	265S	265S
30	FS	285	290	FS	FS	290	265	305	295	285	1280A	280	280	275	1280A	1285A	290	295	295	1290R	FS	A	BS	FS
31																								
Count	18	19	24	22	22	26	28	28	28	29	28	28	27	26	27	28	29	29	29	27	24	19	15	15
Median	270	280	280	280	280	290	290	300	295	290	290	285	285	285	285	290	290	290	290	290	280	280	280	275
U. Q.																								
L. Q.																								
G. R.																								

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

M(3000) F2

A 7

IONOSPHERIC DATA

Lat. 39° 43.5'N
Long. 140° 08.2'E

Aki ta

135° E Mean Time (G.M.T. +9h)

M(3000) F1

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						330L	330	330	335	360	350	330	I360A	330	340	340	330	340	L					
2						L	360	345	340	345	I370A	315H	330	I340A	350	A	A	L	L					
3					415L	335	355	355	355	I350A	335	I335A	I345A	I345A	335	I320A	I350A	I345A	L					
4					L	A	A	A	A	A	350H	345	I350A	A	A	A	A	A	A					
5					340	A	A	A	A	A	A	325	A	A	A	A	A	355	A					
6					L	325	I325A	340H	A	A	A	A	A	340	340	355H	A	A	A					
7					L	I350A	I360A	330	I335A	325	320	335	345	320L	350	L	340L							
8					L	345	355	345	365	335H	375H	355	350	320	355	A	L	L						
9					355	A	A	A	A	A	I350A	360	345	I345A	I345A	A	A	A						
10					L	350	370	A	A	A	390	A	A	A	A	A	360L	L						
11					L	320	A	A	A	A	370	I345A	I340A	360	320	I340A	355	350	A					
12					L	L	335	I350A	I360A	375	375L	390	365	I355A	I365A	350	335L	L						
13					L	A	A	A	A	A	375	I365A	370	360	345	365	355	I350A	A					
14					340	I330A	A	A	A	A	315	A	A	A	A	A	A	A	A					
15					C	C	C	C	C	C	C	C	A	A	A	A	A	A	A					
16					L	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
17					L	370	350	I350A	I350A	I350A	I345A	I375A	355	370	365	345	A	A	A					
18					L	A	A	A	A	A	A	380	330	A	A	A	A	A	A					
19					L	340L	I350A	365	360	I370A	335	365	355	355	355	350	345	I345A	345L					
20					L	370L	345	335	A	A	A	A	A	A	A	365	350	350	L					
21					L	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
22					310L	365	I360A	370	I340A	380	I360A	330	355	340	360	345	345	350	345					
23					C	C	C	C	A	A	A	A	A	A	A	A	A	A	A					
24					L	A	A	A	A	A	A	370	355	335H	355	I350A	I350A	A	A					
25					L	370L	365	I365A	345	LH	A	A	A	A	350	I355A	335	A	A					
26					L	L	L	A	A	A	A	A	A	A	A	A	345	320	A					
27					L	L	320L	350L	A	A	A	I345A	I395A	I355A	345	350	A	A	A					
28					340	335	360	I355A	I350A	340	I355A	380	C	C	C	330L	345	350						
29					355	345	355	A	A	A	I350A	A	A	A	A	A	320H	375	A					
30					L	360	350	A	A	A	A	375	350	A	A	A	A	A	A					
31																								
Count					5	14	18	14	12	14	14	20	18	17	16	17	15	13	4					
Median					355	340	350	350	350	350	350	350	355	350	345	350	345	345	345L					
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

M(3000) F1

A 8

Lat. 39° 43.5'N
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

h'F2

Jun. 1967

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							330	330	320	300	315	345	330	355	345	320	345	305	285					
2							250	295	340	340	325	330	355	320	325	320	300	305	285					
3						295	325	315	300	335	355	370	355	345	340	350	340	300	290					
4						310	275	265	280	310	320	330	330	325A	325	315A	320	320	280A					
5						320	1325A	280	300A	A	A	400L	1355A	335	340	1330A	1330A	315	295					
6						325	340	330	345	330	1355A	1360A	A	325	310	315	310	1310A	320					
7						280	270	310	310	375	335	365	395	375	295	325	300	290	300					
8						290	300	290	285	285	330	300	325	345	350	325	320	290	280					
9						300	305	310	1330A	1355A	1375A	1345A	330	360	1340A	340	320	A	A					
10						280	275	290	330	325	330	340	350A	A	A	330A	1310A	300	295					
11						315	330	290	300A	285	345	310	340	335	345	360	315	290	270					
12						280	305	300	260	280	300	350L	395	345	315	290	315	310	285					
13							270	280H	1355A	325	300	280	355	370	380	315	300	290A	280					
14							380	290	315	1310A	400	350	1340A	1340A	335	305	310	1305A	300					
15							C	C	C	C	C	C	A	A	330	330	1340A	340	330					
16							285	310	1320A	320	1340A	340	A	A	A	A	A	310	295					
17							250	250	305	320	305	345	340	330	340	310	310	1290A	1280A					
18							290	A	A	A	315	330	355	365	350	325	315	330A	290					
19							290	305	300	305	1340A	360	375	370	335	315	305	285	295					
20							245	280	320	350	1350A	1350A	360A	1370A	1350A	320	320	290	300					
21							280	275	310	360A	340	355	340	345	A	A	A	310	270					
22							365	300	250	255	A	355	360	345	365	335	340	315	305					
23							C	C	C	310	305	370	370	1370A	1390A	360	325	310	1305A					
24							270	320	305	315	320	320	355	340	375	390	355	315	295					
25							270	280	310	320	330	320H	350	340A	325	370	345	325	320					
26							310		390A	A	A	A	A	A	A	A	410	370	1330A					
27							325	310	300	350L	350	375	1375A	390	340	320	325A	305	300					
28								340	280	270	315	335	340	320	C	C	310	310	290					
29							300	290	335H	1345A	375	325	355	340	A	A	330	370	345	280				
30							270	305	330	345	A	370	370	1380A	1360A	1350A	335	320	350A					
31																								
Count					1	17	26	27	27	25	26	28	26	25	24	26	28	29	29					
Median					325	300	300	290	315	325	330	350	350	345	340	325	320	310	295					
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

h'F2

Lat. 39° 43.5'N
Long. 140° 08.2'E

A k i t a

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

f_oF

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	300	300	290	265	280	250	235	250A	240	I215A	245	I230A	225H	240A	I235A	235	I245A	255	270	285	250	250	270	270	
2	315	320	280	255	255	225	235	220	220	225	I225A	205H	255A	A	A	A	I250A	280	245	260	285	310	285	285	
3	260	300	275	250	280	270	255	235	225	I245A	230	I240A	I240A	250A	A	A	A	I260A	265	245	285	330	295	295	
4	290	285	280	260	270	255	A	A	A	A	230	230	I235A	I245A	A	A	A	A	A	260A	270	255	305A	255	
5	315	I310A	290	I315A	315	280	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I280A	
6	315	275	250	225	300	225	255	I240A	I240A	A	A	A	A	230A	I230A	230	A	A	A	280	270	240	290A	345	
7	325	300	280	275	265	235H	245	I245A	I250A	240	I245A	230	225A	230	225	240	235	I250A	255	260	260	285	290	265	
8	280	250	255	290	290	255	230	I250A	240	225	225	205H	230	240A	I240A	240	A	A	A	255	280	275	270	255	
9	250	310	275	290	295H	250	A	A	A	A	A	I235A	225	A	A	A	A	A	A	A	A	340A	325	250	
10	270	280	250	I275A	275	255	I260A	250A	225	A	A	195H	A	A	A	A	A	230A	250	255	260A	240	255	I320A	
11	270	270	260	240	270	255	250A	A	A	A	230A	I225A	I240A	240	A	A	240	240	A	A	270	255	280	320	
12	280	280	250	260	250	245	A	A	A	A	240A	220	200	220	I215A	I225A	240	230	I255A	275	245	265	280	285	
13	290	275	250	270	280H	240	240	A	A	A	215	I230A	220	215	225	210	230	I245A	I255A	260	I265A	300A	I275A	275	
14	265	300	265	290	265	240	230	A	A	A	A	A	A	A	A	A	A	A	A	275	290	305	280	270	
15	305	270	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A	A	260	A	A	A	
16	A	A	250	300A	265	255	I250A	A	A	A	A	A	A	A	A	A	A	A	A	A	270	240	A	A	260
17	250	270	260	260	255	235	230	230	I270A	I260A	I250A	I250A	I220A	230A	225	215	225	A	A	285	280	285	270	295	
18	275	270	270	315	300	235	A	A	A	A	A	A	210	A	A	A	A	A	A	290	280	270	235	260	
19	290	275	250	240	275	255	230	I230A	230A	I215A	I205A	I215A	195	I210A	240	230	230	I245A	240	255	245	265	285	295	
20	295	300	285	270	255	240	240	I235A	230A	A	A	A	A	A	A	230	230	245	240	260	280	300	300	245	
21	270	320	270	300	305	270	I250A	A	A	A	A	A	A	A	A	230	230	A	A	I285A	300	300A	I305A	I310A	
22	275	260	265	275	300	245	230	A	A	I245A	205	I210A	I240A	225	225	230	235	235	A	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
24	270	265	250	255	285	240	240	A	A	A	A	A	A	A	A	A	A	A	A	270	I280A	275	265	270	
25	280	270	265	260	280	240	235	230A	A	A	A	A	210	195H	205	I230A	I240A	A	A	265	265	265	320	275	
26	I290C	290	300	265	250	250	250	I225A	220	210H	A	A	A	A	230	I240A	245	A	A	I280A	285A	265	275	I270A	
27	300	280	300	305	300	260	A	A	A	A	A	A	A	A	A	A	230	255A	A	A	A	A	285A	A	
28	265	295	275	250	295	245	245	250	A	A	A	I245A	I235A	225	230	I255A	I250A	I270A	310	I305A	290	290	280	280	
29	275	250	290	300	295	250	235	230	A	A	A	255	I245A	205H	C	C	A	240	240	280	275	315	300	300	
30	340	260H	260	300	290	240	240	250	A	A	A	I255A	A	A	A	A	230	240	I270A	275	290	320	315	330	
31																									
Count	28	28	28	28	28	28	22	15	11	9	13	18	18	16	13	13	14	14	12	23	27	24	25	27	
Median	280	280	265	270	280	250	240	235	230	240	225	230	230	230	225	230	235	245	255	270	275	280	285	280	
U. Q.																									
L. Q.																									
G. R.																									

f_oF

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

A 10

IONOSPHERIC DATA

Lat. 39° 43.5'N
Long. 140° 08.2'E

Akita

135° E Mean Time (G.M.T. +9h)

f^oF₂

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	120	105	105	100	105	105	G	155	120	120	115	115	120	115	120	115	130	115	115	110	110	105	105	105
2	105	100	105	100	105	125	115	130	120	125	125	135	125	125	120	110	110	105	110	B	120	115	105	115
3	105	100	E	E	105	100	105	100	105	115	120	115	110	115	115	110	110	105	125	115	115	115	115	115
4	115	110	105	105	125	140	125	120	115	115	125	140	125	115	110	105	155	105	125	115	125	110	110	110
5	105	105	105	100	110	135	120	115	115	120	110	110	105	140	125	125	125	125	120	110	115	115	110	105
6	105	105	105	100	100	130	125	120	125	120	115	110	105	G	115	115	140	125	130	115	115	105	105	105
7	B	E	105	E	E	115	G	125	120	125	125	120	115	115	115	130	135	130	125	115	115	110	105	105
8	105	105	105	100	100	145	145	125	120	125	125	120	115	115	115	130	135	130	125	115	115	110	105	105
9	B	105	105	105	G	140	125	115	115	115	110	105	105	110	105	105	105	120	115	115	110	115	115	115
10	105	105	130	100	100	120	120	120	115	120	115	115	140	110	140	110	110	150	155	120	120	115	110	115
11	110	105	105	110	100	155	130	115	115	115	120	110	115	125	135	130	140	135	125	115	110	110	105	105
12	105	105	125	125	130	135	130	120	115	115	120	115	120	115	110	105	110	140	125	115	115	115	115	110
13	110	105	105	105	105	105	155	125	115	110	110	130	125	130	130	G	140	115	115	110	115	115	115	110
14	105	100	100	100	100	105	155	130	120	115	115	110	105	105	105	105	105	105	130	120	115	115	115	105
15	S	120	C	C	C	C	C	C	C	C	C	C	110	110	135	130	125	120	115	110	110	110	115	110
16	110	105	125	105	105	105	130	125	120	120	115	110	110	105	105	105	105	105	125	105	130	115	110	110
17	105	105	105	100	105	155	140	125	120	115	115	110	110	110	110	115	130	110	125	105	105	105	110	110
18	105	105	105	105	100	120	130	120	115	115	120	115	115	115	105	110	105	105	105	105	105	130	110	105
19	110	140	100	100	105	135	130	115	125	120	115	115	110	105	150	140	105	105	105	100	105	110	110	110
20	110	110	E	110	E	155	130	120	120	115	110	110	110	110	110	110	G	140	130	130	120	115	105	105
21	105	105	105	105	105	130	125	120	120	115	115	115	110	140	130	120	120	120	120	120	120	120	120	115
22	110	105	105	105	105	125	125	115	115	115	120	115	120	135	130	130	125	120	115	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	110	115	110	110	105	130	130	125	120	115	115	105	140	140
24	105	105	110	105	105	140	130	120	120	115	115	115	115	120	105	110	105	110	110	110	110	110	115	110
25	105	110	105	105	105	130	105	125	125	120	125	110	110	105	105	120	125	130	120	120	115	115	115	105
26	C	105	105	105	105	105	E150G	130	125	120	120	115	110	110	110	110	110	130	120	120	120	115	110	105
27	105	105	105	105	G	140	125	125	120	120	110	110	110	110	G	115	110	115	125	120	120	115	110	105
28	100	100	100	105	105	140	140	130	125	125	125	120	115	110	C	C	105	105	145	105	105	120	110	110
29	110	115	110	110	110	105	105	125	125	115	110	110	110	110	110	110	105	105	105	105	105	100	100	105
30	105	110	105	105	105	105	140	130	125	120	115	110	110	110	110	110	110	155	110	110	110	115	115	110
31																								
Count	25	28	26	26	24	28	26	28	28	29	29	29	30	29	28	28	29	30	30	28	29	29	29	29
Median	105	105	105	105	105	130	130	120	120	115	115	115	110	110	110	110	110	120	120	115	115	115	110	110
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

f^oF₂

A 11

Lat. 39° 43.5'N
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Types of Es

Jun. 1967

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	f2f3	f3	f2	f2	12	1		h	e2	e2	e2	e2	e2	c	h2	h2	h2	e3	e2	14	f5	f3	f2	f3	
2	f4	f	f4	f3	1	e2	c	h	o	h	h e2	h	h	h	h2	e3h2	e3	13	13		f5	f2	f3	f2	
3	f2	f2			f3	13	1 h	13	13	h3	h2	e3	e2	e2	e2	e2	e2	13	h212	e2	f4	f3	f6	f5	
4	f6	f5	f4	f3	f2f4	h	h3	h3	h2	h2	h	h	h	h2	e2	12	h213	13	e3	e3	f4	f3	f2	f3	
5	f3	f4	f3	f6	f2	h3	e4	e3	e3	e4	e2	e2	e3	h2	h3	h2	h2	e3	e4	f4	f6	f6	f3	f5	
6	f2	f2	f	f3	12	e21	b2	e3	h	h2	e2	e2	e3	e2	e2	e2	e3	13	14	14	f4	f4	f2	f6	
7			f			e2	h2	h2	h2	e2	e2	h	e	e	e2	e	h	e2	h3	e4	f4	f3	f4	f2	
8	f2	f	f3	f2	1	h2	h2	b2	h	h	h2	h	e2	e2	e2	h21	h2	h3	e3	e6	f4	f3	f4	f3	
9	f	f	f	f2		h2	h3	e4	e4	h3	e3	e4	e2	e3	14	13	13	h314	e6	e5	f4	f4	f6	f4	
10	f3	f5	f2f2	f6	f3	e3	e3	h3	h2	h2	e3	e2	h212	e4	h3e3	e3	e3	h214	h	e	f4	f3	f2	f5	
11	f4	f4	f3	f	f f2	h	h2	e5	e3	e4	h2	e3	e3	h2	h2	h3	h2	h2	h3	e6	f3	f3	f3	f3	
12	f2	f4	f2f4	f2f3	e	h2	h3	h3	e3	e3	h2	e2	h2	e2	e3	e3	e3	h2	h4	e5	f5	f4	f4	f2	
13	f2	f2	f4	f3	f2	1	h 1	h2	e4	e3	e2	h2	h	h	h2	h	h2	e31	e3	13h2	f5	f5	f6	f4	
14	f4	f7	f3	f5	f4	1	h	h4	h3	h5	h3	e3	15	14	13	15	13	14	h213	e513	f3f2	f3	f5	f3	
15	f f											e4	e4h2	b2	h3	h3	h3	e4	e4	e4	f3	f4	f5	f6	
16	f6	f6	f f2	f3	f5	17	h212	h4	h3	h4	h3	e2	e4	13	14	14	16	14	h215	13	f f3	f6	f5	f	
17	f	f	f	f2	f2	h	h	h2	h3	h3	e3	e3	e3	e2	e3	e2	h212	e3	h415	14	f5	f4	f3	f5	
18	f4	f5	f3	f5	f5	1 h	h3	h3	e5	e3	h2	e2	e2	e2	e3	e3	13	15	15	16	f5	f5	f3	f2	
19	f2	f2f2	f	f	f2	h2	h2	e3	h4	h3	h3	h3	e2	12h	h 12	h212	h212	13h2	14h2	14	f3	f6	f3	f3	
20	f3	f2	f	f		h2	h2	e3	e	h3	e4	e4	e4	e3	e4	e2		h	h3	e2	f4	f5	f6	f4	
21	f5	f4	f3	f3	f4	h5	h4	h4	h4	h31	e3	e31	e5	h2e2	h2e2	h61	h41	h5	e5	e6	f5f2	f5	f6	f6	
22	f6	f3	f3	f3	f2	h2	h3	e3	e3	h512	h2	h2	h21	h	h2	h2	h21	e3	e5						
23																									
24	f3	f3	f2	f4	f3	h	h4	e3	h3	h3	h2	e2	c	h2	e2	h413	h613	e61	e4	f5	f4	f2	f2f2		
25	f4	f3	f2	f2	f3	h215	1 h3	h4	h2	h e2	h e2	e2	e3	e4	e2	h2	h2	h4	e4	e5	f6	f6	f4	f3	
26		f4	f4	f3	f3	13	h	h3	h6	h4	h4	h4	e31	e3	e4	e3	1 h	h3	e4	e5	f6	f6	f6	f6	
27	f5	f3	f2	f2	f2	h21	h3	h2	h3	h3	e3	e3	e31	e2	e2	e2	e4	13	e3	e2	f4	f3	f3	f4	
28	f	f3	f	f3	13	h3	h2	h3	h2	h2	h2	h2	e3	e3	e2	e4	e4	13	h 12	12	f2	f3f	f2	f	
29	f	f3	f2	f2	1	12	12	h2	h4	h4	h4	e3	e3	e21	e3	e3	12	13	14	15	f4	f3	f3	f4	
30	f6	f3	f2	f4	f2	12h	h212	h2	h4	h2	h4	e2	e2	e2	e4	e5	e4	h2e3	e6	e5	f4	f6	f4	f4	
31																									
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

The Radio Research Laboratories, Japan

Types of Es

A 12

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G. M. T. +9h)

foF2

Jun. 1967

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	067	070S	068	061	057	062	U072S	086	091	080	084	090	087	093	090	089	092	092	091	096	I096S	093S	088S	U084S
2	U086S	084	087S	084	081	U082R	078	078	080	086	093	095	099R	102	106	110	106	U101R	100	U086S	U086S	U087S	088S	088S
3	085	I079S	U075S	070S	071S	073S	074	087	081	072	070	080	090	088	092	093	095	U099S	097S	U078S	U076A	U076S	U085S	U085S
4	U082S	I085S	084S	U076S	075S	U084S	I093S	I094A	095	092	096	I098A	092	095	100	096	098	U092R	I100A	103	U092S	088	U084S	081
5	077S	U069S	U071S	066S	068S	U070S	089	081	083	072	064	070	075	085	090	089	J084R	086	088	U077S	U074S	J079S	U078S	U078S
6	J084R	088	069	065	061	068	080	090	090	101	091	100	095R	114	104	U077R	067	064	070S	078	077S	060	055	056
7	097	096	094	094	096	098	069	071	U067R	078	089	U092S	I097A	I105R	I120A	110	U05R	095	I095A	A	U093S	086S	084	U085S
8	084S	U076S	071S	067S	067	072	073R	078	075	085	081	066	076R	070	080	088	096	A	093	U088S	089	U088S	088S	084S
9	074S	U068S	070	070S	070S	073S	071	067	I058A	059	066	081	080	083	087	081	I076A	A	A	A	A	A	S	F
10	U087S	S	U084S	U075S	U071S	067S	068	I075A	I076A	I072A	I070A	A	A	082	082	082	088	I095A	093S	090	070	U061S	U068S	A
11	U069S	U065S	U060S	U058F	051F	057	074	083	080	081	080	A	A	070	082	086	080	081R	A	063	A	A	U069S	067S
12	S	I064S	U060F	058	056	062	067	090	091	I072A	I062A	060	062	079	096	092	082	078	081	088	085S	071S	074S	F
13	U078S	074	U075S	053	057F	066S	062S	061	072R	A	A	A	067	068	082R	101	090	I084A	069	U074S	U071S	065	U072S	U068F
14	U066S	U063S	065	062	060F	060	062	067	A	079	I072A	I074A	A	A	A	A	084	076	074	072S	070	A	A	A
15	062F	064S	U069F	U065F	F	U069S	072S	A	A	A	A	A	062	A	A	076	A	A	072	U082R	A	058F	U059S	A
16	A	U063S	U066S	I062F	A	059	064	070	071	A	C	083	073	073R	I076C	I080A	I084C	085	I088C	U085S	S	I072S	U075S	S
17	A	U070F	U077S	072F	I066C	066	063	071	072	A	A	075	077	077	U081R	081	082S	073	077	I075C	074S	C	C	C
18	S	C	U066S	C	U070S	065	I064C	062	I070A	C	A	C	C	A	A	A	083	U085S	078S	079	U081S	C	A	A
19	F	F	U062F	061S	059	060	077	U077R	078	A	C	079	086	093	U103R	U105R	097	U102S	094S	U083S	080S	084S	U078S	U078S
20	U076S	U076S	U078F	C	C	C	C	C	C	A	079	I085A	084	091	101	106	097S	089	081S	082	084S	U072S	F	F
21	F	U070S	U065F	062S	U064S	S	U088R	082S	078	073	082	085	085	I088A	091	095	I096S	088	077	077S	079S	U084S	U083F	J082S
22	F	A	U063F	F	U050S	064S	088	098S	070	063	A	076	079	082	082	090	085	087	086	095	097S	094	082	070
23	I065A	063	A	U066F	065	072	087	085	086	090	081	078	078	078	079R	088	095S	091	A	A	U087S	I085A	U078S	U078S
24	079S	073	073S	069	066S	072S	075	083	088	085	087	084	087	084	I080A	083	092	093R	I094A	096S	086	084S	083S	U088S
25	U086S	U079S	U070F	067S	066S	071	089	092	095	090	086R	085	090	094	092	086	088	091	096	104S	U094S	074S	U075S	U076S
26	U078S	U069F	U071S	U070S	U063F	058	065	091	093	088	A	A	A	A	075	070	064	067	074S	U072S	A	064S	U068S	U066S
27	A	F	U064S	061	061F	068	065	072S	078	I082A	085	091	097S	095S	I101A	101S	094S	084	083S	U084S	U083S	U088S	085	087S
28	078S	074S	072S	072S	068S	066	079	095S	088	092	098S	098S	098S	098S	U104S	089	086	088	I080S	078	083S	U083S	I084S	I084S
29	I084S	082S	U069S	I065A	U062S	068	061	064	U065R	065	A	I079R	I082A	I086A	A	074R	075	071	I081R	U083S	A	U070S	071S	068
30	F	U059F	U071S	056F	U053F	067S	074S	081R	085	083	079	077	084R	I081A	083	084	087	085	080R	086	A	J078R	S	S
31																								
Count	21	25	29	27	27	28	29	28	27	23	21	24	25	26	26	28	29	28	27	27	22	27	24	20
Median	U078S	U070S	U070S	065	064	067	074	081	080	081	081	082	084	086	090	088	088	088	083	085	U083S	076S	U080S	U080S
U. Q.	084	076	074	070	068	072	080	088	088	088	088	090	091	094	101	096	096	092	094	095	089	086	084	084
L. Q.	068	064	065	061	059	062	065	071	072	072	071	076	076	079	082	082	082	080	077	078	077	070	072	069
Q. R.	016	012	009	009	009	010	015	017	016	016	017	014	015	015	019	014	014	012	017	017	012	016	012	015

foF2

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

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 23.3'E

Kokubunji Tokyo

foF1
135° E Mean Time (G.M.T. +9h)

foF1

Jun. 1967

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	520L	560	530	620L	550	R	A	A	A	A					
2							L	570	520L	A	560	A	570	530L	550L	A	A	L						
3							L	480L	480	600	560	550	R	A	B	500	480L	A						
4							A	A	A	A	A	A	A	A	510L	530L	A	A	A					
5							410L	A	A	A	540	520L	530	A	510	U500L	U460L	A						
6						A	A	L	L	520	A	A	L	A	490L	460L	L	L	L					
7							L	L	A	A	530	A	A	A	A	A	A	L	A					
8							L	L	L	470L	L	520L	490	A	L	470L	A	A	A					
9							400L	A	A	A	A	A	490L	U480L	A	A	A	A	A					
10							A	A	A	A	A	A	A	A	500	A	450L	A	A					
11							L	A	A	470	A	A	A	A	A	460L	A	A	A					
12							410L	A	A	A	A	A	500	470	470	460	A	L	A					
13							A	A	A	A	A	A	U500R	A	A	460	A	A	A					
14							L	A	A	A	A	A	A	A	A	A	A	L	A					
15							A	A	A	A	A	A	A	A	A	A	A	A	A					
16							L	A	A	A	C	A	A	A	C	A	C	A	C					
17							L	A	A	A	A	A	A	A	A	A	A	A	C					
18							C	A	A	A	A	C	C	A	A	A	A	A	C					
19							410L	L	L	A	C	A	R	500L	A	A	A	A	A					
20							C	C	C	A	A	A	A	A	A	490	470L	L	A					
21							A	L	A	A	A	A	A	A	A	480	A	A	A					
22							420L	L	A	A	A	A	1520A	520	520	480	U520L	450L	L					
23							A	A	L	A	A	A	A	A	A	L	A	A	A					
24							L	A	A	A	A	A	A	A	A	A	A	A	A					
25							L	L	L	A	A	A	A	1540A	1520R	1480A	480	430L	A					
26							L	L	A	A	A	A	A	A	1510A	480L	470L	420L	L					
27							L	A	470	A	A	A	A	A	A	480L	A	A	A					
28							L	A	530L	L	A	540L	510	520R	S	A	A	A	L					
29							L	480	500L	550	A	A	A	A	A	A	A	A	A					
30							L	L	A	A	A	A	A	A	A	A	L	420L	A					
31																								
Count							5	3	5	6	5	5	9	8	10	14	7	5						
Median							410L	480	500L	520	560	530L	510	520	510	480L	470L	430L						
U. Q.																								
L. Q.																								
G. R.																								

The Radio Research Laboratories, Japan

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

foF1

K2

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

foE

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	R	A	A	A	I390R	I400R	I395R	I395R	385	365	325	290	A					
2					A	R	300	355	360	I370R	I380B	385		R	A	A	A	A	A					
3					A	A	A	R	360	I370R	R	R	R	B	B	R	R	R	A					
4					A	260	305	320	350	I360R	I365R	I370R	R	R	R	R	A	A	A					
5					165	250	280	320	335	350	A	R	R	380	370	330	315	270	A					
6					195	265	320	325	360	365	A	A	A	A	A	A	A	A	A					
7					A	240	A	A	A	A	A	A	A	A	A	A	A	275	A					
8					185	R	I280A	I310R	I330R	A	A	A	A	A	A	340	315	265	190					
9					A	245	285	320	330	A	A	A	A	A	A	A	A	A	A					
10					B	I230R	275	320	I330R	A	A	A	A	A	A	A	A	A	A					
11					180	245	280	315	335	350	360	365	375	I350R	325	305	270	195						
12					200	240	290	I320A	325	335	A	R	R	A	A	A	320	265	A					
13					A	A	A	A	315	A	A	A	R	B	350	305	260	190						
14					A	260	285	315	330	R	A	A	A	A	A	A	A	270	205					
15					A	R	280	330	340	A	R	R	R	R	R	340	320	R	A					
16					A	A	A	A	A	A	A	A	A	A	A	A	C	A	C					
17					A	R	300	R	A	A	A	A	A	A	A	A	A	A	A					
18					A	C	C	C	R	R	C	C	C	A	A	A	A	A	C					
19					A	A	A	A	R	A	C	A	A	A	A	A	A	A	A					
20					C	C	C	C	C	A	A	A	A	A	A	R	320	I270A	I215A					
21					A	R	A	R	A	A	A	R	A	A	A	A	A	285	220					
22					A	R	A	R	390	380	385	390	390	375	355	325	290	200	B					
23					180	270	320	330	330	A	R	A	A	R	R	I345R	315	275	A					
24					I200R	I260R	300	325	350	I365R	A	A	A	A	A	A	320	290	215					
25					200	I255R	305	A	A	A	A	A	A	A	R	345	320	290	215					
26					A	260	300	325	350	A	A	R	A	A	R	B	325	285	220					
27					A	245	310	335	355	I365A	R	A	A	A	A	R	A	285	B					
28					A	255	305	330	360	R	R	R	A	A	A	A	A	A	A					
29					A	A	A	330	345	A	R	R	R	A	A	A	320	285	A					
30					A	A	R	325	A	A	A	A	A	A	A	335	330	A	A					
31																								
Count	8	15	18	19	18	10	5	5	4	5	10	14	16	10										
Median	190	255	300	325	350	1365	1380	385	385	370	340	320	275	210										
U. Q.																								
L. Q.																								
G. R.																								

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

The Radio Research Laboratories, Japan

foE

K3

IONOSPHERIC DATA

foEs

Jun. 1967

1 35° E Mean Time (G. M. T. +9h)

Kokubunji Tokyo

Lat. 35° 42.4'N
Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J054	020	J042	J025	J029	J028	J031	J037	J039	042	042	048	049	049	048	J053	J053	J068	J108	J036	J023	J024	J027	J027
2	J041	J025	J054	J029	J046	J030	g	J050	043	J071	J055	J054	J053	g	042	J066	J110	J042	J035	J046	J027	J024	J029	021
3	J029	J029	J029	J021	J021	J027	J031	J039	g	040	g	g	g	g	060	B053B	043	J048	J051	J038	J038	J084	J036	J041
4	J036	J042	J039	J041	J029	J028	J066	J097	J114	114M	J110	J143	J066	J080	J051	047	J055	J089	J128	J078	J074	J051	J064	J084
5	J055	J029	J024	J028	B011B	J030	J036	J064	J066	J064	040	J061	g	072	045	g	J053	J042	056M	058	J068	J068	J058	J058
6	030M	028	J024	J029	J029	048	J061	047	J060	J053	J061	071	046	J061	J061	J041	035	J037	J052	J032	J032	J061	J028	J024
7	J017	J036	J016	020	J023	J033	g	J036	063	076	048	J088	J121	J119	126	126	056	J037	J144	083	J107	J063	J036	022
8	029	023	J016	J028	J016	021	031	044	046	045	042	043	042	054	J051	045	060	126	J108	069	042	J041	035	J028
9	024	021	J024	B013B	B012B	022	033	055	066	J058	054	J054	044	043	J060	067	114M	J129	J144	J128	J108	J109	J025	J051
10	071	J051	J039	J053	J028	053	J054	J119	144	J111	077	101	094	J090	045	J066	J041	J095	060	J080	J053	J039	J041	067
11	J053	J084	024	J042	J025	022	J036	J056	J070	042	J121	096	149	059	067	040	047	066	J107	J029	J077	068	J054	J041
12	053	J074	J038	J019	J027	025	036	047	066	J084	J084	057	J056	045	045	043	062	036	055	057	J051	J056	J053	J062
13	J051	J021	J016	J018	J029	J029	J039	J049	J068	J089	J144	J144	048	J054	072	038	J054	J088	J060	J040	J028	J036	J049	J075
14	J084	J070	J055	J028	J026	J025	032	J055	086M	J066	J113	J112	100M	J158	J137	J123	J081	031	J038	057	J061	J055	J123	J088
15	J029	J041	J066	J054	J055	J043	J042	J107	J088	076M	J060	064	057	J114	J118	061	J121	J083	J088	J033	J089	J088	J084	J108
16	J095	J051	J087	J083	J088	J041	J041	057	J070	J076	g	060	J060	J054	g	J091	g	080	g	068	059	047	J051	059
17	J086	J036	J025	J017	J021	022	034	041	060	123M	J138	058	J084	J073	J087	J109	J083	068	082	D067C	g	J054	J026	g
18	J054	J051	J055	D037C	J029	D032C	g	J054	J074	D065C	D092C	g	g	g	J137	J144	080M	D042C	J107	J107	J070	g	J085	J084
19	043	J041	J036	J038	J042	J043	J030	034	J042	J102	g	J089	047	J061	J065	J085	J109	057	J055	032	J076	J029	J035	J053
20	J053	J051	J026	g	g	g	g	g	g	J104	J064	J144	J088	069	057	g	g	J037	J039	018	J053	J053	J053	J056
21	J041	J042	J030	J051	J055	J050	J038	J059	J066	J075	J059	J070	J085	J145	J079	044	067	J061	J106	055	J108	044	J053	J070
22	060	J087	J061	J036	J029	J022	032	J048	J062	J069	086	J060	058	042	039	g	g	037	J034	J015	J026	J036	J036	J054
23	J074	J119	J058	J036	J029	J039	J049	J086	J056	J076	J061	J071	J065	J056	044	044	J054	J054	J089	J105	J112	J084	J128	J024
24	J030	J029	J028	J025	J015	g	032	056	J077	061	J068	J060	J082	J079	J116	J055	J053	J145	108M	J088	J088	J084	J064	047
25	J036	J035	J029	J020	J024	024	037	J050	068	J057	063	064	J064	J093	g	J123	g	035	J038	031	032	J036	J058	J037
26	J036	J041	J032	J084	J052	J036	033	J053	064	J075	103M	J105	J095	J145	J069	B040B	042	035	J029	J025	J094	J051	J053	J086
27	061	021	J030	J038	J016	021	J035	J053	047	J095	J065	068	J084	J085	J171	J037	059	J070	J042	J041	J065	057	J055	022
28	J029	J016	B013B	020	J023	022	J041	J049	J048	J048	J051	J058	042	043	043	J052	057	047	J028	J029	031	J025	030	J024
29	J036	J025	J035	J083	J056	J055	035	J038	037	J054	J146	J122	J106	J138	J134	J080	J051	047	061	J061	J087	J052	J041	J051
30	035	J050	J024	J025	J020	J028	J030	J041	J066	J065	067	058	J066	J129	J065	J065	J053	J036	056	053	J066	057	032	J041
31																								
Count	30	30	30	29	29	29	28	29	29	30	28	29	29	30	29	30	29	30	29	30	29	29	30	29
Median	J042	J038	J030	J029	J028	J028	J035	J050	J066	J072	J064	J064	J064	J066	J061	J052	054	J054	J060	J056	J065	J053	J050	J051
U. Q.	055	051	042	0044	036	041	040	056	070	0086	0102	098	086	114	102	080	074	082	106	0074	088	066	058	068
L. Q.	030	025	024	023	021	022	032	042	048	057	054	058	048	054	045	041	044	037	040	033	037	038	035	028
Q. R.	025	026	018	0021	015	019	008	014	022	0029	0048	040	038	060	057	039	030	045	066	0041	051	028	023	040

foEs

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

The Radio Research Laboratories, Japan

K4

IONOSPHERIC DATA

Kokubunji Tokyo

135° E Mean Time (G. M. T. +9h)

f_oE_s

Jun. 1967

Lat. 35° 42.4'N
Long. 139° 29.3'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	015	013	032	023	020	026	029	035	039	042	041	047	045	047	047	051	052	066	063	025	016	015	015	024	
2	015	015	020	017	028	025	040	040	039	033	049	053	051	041	041	064	074	041	032	044	026	018	014	024	
3	026	014	025	017	019	025	029	039		039	B	043		060	B	043	046	046	030	026	023	A	025	031	
4	027	033	024	039	027	023	062	A	088	082	054	A	058	079	042	045	041	084	A	032	016	039	053	016	
5	016	015	012	014	B	027	032	061	065	063	040	046		070	044		041	039	052	052	046	041	046	045	
6	027	020	018	016	016	041	050	040	054	041	058	068	045	059	040	037	033	033	028	052	030	026	024	020	
7	014	024	012	014	019	028		032	058	056	043	085	A	075	A	106	053	034	A	A	065	043	016	016	
8	023	017	013	026	015	020	029	038	041	043	040	041	041	052	046	042	059	A	086	067	041	016	029	025	
9	018	015	B	B	B	022	032	051	A	053	053	050	040	040	055	062	A	A	A	A	A	052	016	040	
10	065	032	022	033	015	037	052	A	A	A	A	A	A	052	040	065	040	A	054	051	040	025	040	A	
11	039	045	014	016	017	020	032	052	048	039	055	A	A	053	066	037	044	063	A	025	041	A	016	026	
12	050	034	021	016	022	024	032	043	062	A	A	055	044	040	040	039	057	033	050	054	041	051	025	053	
13	040	017	015	016	024	025	035	045	064	A	A	A	045	053	068	036	046	054	050	032	020	025	028	044	
14	053	018	025	024	015	022	030	052	A	056	A	A	A	A	A	A	065	028	037	053	050	033	A	A	
15	016	015	055	040	052	027	041	A	A	A	A	A	052	A	A	058	A	046	064	028	A	051	018	A	
16	A	033	017	027	A	029	032	051	061	A	C	055	057	052	C	A	C	079	C	064	053	045	028	054	
17	A	020	018	016	017	020	033	040	054	A	A	053	055	055	065	065	058	062	052	C	C	040	015	C	
18	040	026	039	C	020	022	C	051	A	A	A	C	C	A	A	A	074	032	050	053	064	C	A	A	
19	039	027	030	033	040	025	028	033	041	A	C	065	B047R	042	064	079	065	054	053	029	041	016	033	029	
20	016	015	016	C	C	C	C	C	C	A	058	A	073	055	053			036	038	017	037	052	027	041	
21	032	041	025	025	026	046	033	056	064	053	055	055	070	A	078	040	063	042	040	050	040	040	052	067	
22	055	016	040	016	014	020	031	040	045	050	A	058	053	040	039			034	032	014	020	030	025	052	
23	A	040	A	029	018	035	045	078	044	075	052	057	055	052	043	043	052	050	A	A	A	016	A	016	
24	021	015	025	016	013	030	051	070	070	056	067	056	080	074	A	054	052	088	A	040	054	040	054	043	
25	033	025	018	016	020	022	033	044	062	054	062	060	058	065		075		030	037	025	027	028	047	016	
26	018	016	024	052	041	020	032	051	063	075	A	A	A	A	066	B	039	032	026	020	A	046	051	018	
27	A	B	013	028	014	020	033	052	043	A	058	064	068	077	A	037	055	054	040	033	052	054	019	019	
28	015	015	B	016	016	021	036	045	046	047	050	047	041	042	040	048	052	045	025	025	026	017	029	018	
29	028	016	017	A	048	031	033	037	036	042	A	069	A	A	A	063	049	046	056	055	A	038	041	025	
30	032	038	016	014	015	025	028	040	058	062	064	056	064	A	050	061	046	034	051	050	A	054	026	041	
31																									
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

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

f_oE_s

The Radio Research Laboratories, Japan

K5

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

1 35° E Mean Time (G.M.T. +9h)

f-min

Jun. 1967

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	013	011	E015S	013	014	014	013	017	026	026	029	033	034	026	028	026	019	023	014	011	013	013	013	E015S
2	013	012	011	011	013	013	014	016	027	027	018	040	027	027	032	025	018	017	012	011	013	E015S	011	014
3	014	012	013	011	012	011	013	016	025	025	026	027	033	040	033	027	031	018	013	012	012	E015S	011	013
4	012	011	011	011	011	013	015	019	016	018	020	023	024	022	019	026	018	017	016	E015S	E015S	013	014	014
5	014	014	011	011	011	013	016	016	016	025	026	026	028	028	025	025	020	020	016	014	E015S	E016S	E016S	013
6	011	012	015	011	010	016	014	016	017	025	026	026	027	027	018	026	019	016	012	013	013	E015S	E015S	013
7	012	013	011	011	011	013	015	016	025	017	025	026	026	019	026	027	018	015	016	012	E015S	E015S	014	013
8	E016S	011	011	011	010	012	014	014	019	018	027	022	017	027	019	018	017	016	011	013	014	E015S	014	013
9	012	013	012	013	012	014	014	014	016	024	025	026	022	025	018	017	013	015	014	013	013	E015S	013	013
10	012	014	010	011	011	016	013	015	016	017	026	026	027	026	026	018	016	016	013	014	013	014	E016S	E015S
11	E016S	013	012	012	012	011	012	012	014	019	024	026	024	027	025	026	017	016	014	012	E016S	013	014	014
12	013	013	014	010	011	014	013	013	016	016	026	026	026	017	025	025	015	014	013	012	E015S	E016S	E016S	016S
13	013	011	011	010	012	012	013	012	016	016	017	029	026	028	025	016	016	016	013	011	011	014	E015S	013
14	012	013	014	011	011	011	013	015	017	019	027	026	027	027	018	013	012	017	016	E015S	014	013	013	E016S
15	012	011	012	010	011	012	014	014	022	019	020	025	026	026	024	019	016	017	014	013	E016S	E016S	E015S	E016S
16	013	011	E015S	011	010	013	014	015	017	020	026	026	026	026	019	020	C	017	C	012	E015S	E015S	014	E015S
17	E016S	E016S	011	011	014	013	015	018	019	026	E030C	028	027	029	025	016	025	E029C	014	011	C	014	014	C
18	E028C	012	013	011	013	012	C	E040C	E034C	020	026	C	C	030	025	018	017	016	013	013	E016S	C	013	E017S
19	014	013	013	011	012	013	012	013	013	017	C	026	026	018	026	019	017	014	013	013	014	014	013	014
20	014	013	012	C	C	C	C	C	C	018	026	026	026	027	017	016	016	015	013	E015S	E016S	013	014	014
21	013	013	011	013	010	013	014	013	016	016	027	026	027	020	026	025	016	018	016	014	014	013	E016S	E016S
22	E015S	014	013	011	011	013	015	016	017	019	019	026	026	026	018	019	025	016	012	013	013	012	014	E015S
23	E015S	E015S	010	E	010	014	016	012	016	026	027	025	019	025	022	019	017	015	014	013	E015S	014	E015S	014
24	E015S	012	014	011	010	013	013	017	017	018	026	026	025	026	026	019	019	016	013	013	013	014	014	E015S
25	E015S	014	012	011	012	012	014	013	016	017	026	027	025	025	025	026	016	016	015	013	013	014	E015S	014
26	E015S	014	013	011	011	013	013	015	017	019	019	025	026	019	018	040	018	016	015	014	013	014	E016S	E016S
27	E015S	013	011	011	011	015	013	016	013	020	018	026	025	027	026	024	025	025	016	014	013	014	E015S	014
28	013	013	013	013	011	016	015	015	016	018	026	020	027	025	024	018	016	014	011	013	E015S	E015S	014	E015S
29	013	011	013	011	011	012	014	013	015	016	024	026	026	026	019	018	025	015	013	013	014	014	014	E015S
30	013	013	011	011	011	013	014	013	017	018	016	026	026	027	027	027	017	016	015	012	E016S	E015S	E015S	E015S
31																								
Count	30	30	30	29	29	29	28	29	29	30	29	29	29	30	30	30	29	30	29	30	29	29	30	29
Median	012	013	012	011	011	013	014	015	016	019	026	026	026	026	025	020	017	016	014	013	014	014	014	014
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

f-min

K6

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

M(3000) F2

Jun. 1967

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	265	270S	295	280	260	275	U300S	280	295	290	285	280	270	280	285	280	280	290	275	280	I280S	280S	285S	U265S
2	U265S	270	285S	300	295	U305R	320	305	270	285	275	286	275R	275	285	290	290	U280R	295	U300S	U270S	I260S	I260S	265S
3	280	I280S	U285S	275S	285S	300S	285	295	335	290	255	270	290	280	290	290	285	285	U310S	295S	300	U295S	I285A	U275S
4	U285S	I290S	295S	U290S	290S	U280S	I295S	I290A	285	275	280	I295A	270	285	295	285	285	290R	I295A	305	U305S	275	U275S	295
5	260S	U255S	I275S	280S	275S	U285S	315	305	295	290	250	255	270	280	290	295	U290R	300	295	305	U300S	275S	I275S	U290S
6	J280R	290	310	300	285	280	275	255	265	265	290	240	290R	290	305	U320R	320	295	295S	280	290S	315	245	255
7	265	260	275	275	315	295	310	310	U320R	255	265	U260S	I260A	265R	I290A	A	290R	285	I280A	A	U290S	275S	285	U280S
8	285S	U290S	295S	280S	285	305	325R	305	300	315	315	290	300R	295	290	285	300	A	300	U300S	280	I295S	280S	290S
9	285S	U265S	275	280S	U290S	310S	310	325	I300A	270	270	300	300	290	295	295	I300A	A	A	A	A	A	S	F
10	U300S	S	U310S	U295S	U305S	315S	310	I320A	I290A	I285A	A	A	A	290	295	280	290	I290A	300S	310	305	U280S	U280S	A
11	U300S	U290S	U300S	U305R	295R	290	295	295	305	305	315	A	A	275	295	310	305	315R	A	290	A	A	U300S	295S
12	S	I305S	U300F	295	305	320	305	320	340	I350A	I310A	290	265	285	295	310	305	300	295	305	305S	310S	280S	F
13	U280S	295	U335S	295	280F	335S	330S	290	305R	A	A	A	295	270	280R	300	315	I320A	305	U325S	U295S	275	U290S	U280F
14	U285S	U295S	305	295	300F	355	300F	295	A	330	A	A	A	A	A	A	305	305	300	305S	U305R	275	A	A
15	275F	280S	U270F	U290F	F	U335S	315S	A	A	A	A	A	270	A	A	310	A	285	295	U305R	A	300F	U280S	A
16	A	U280S	U300S	I300F	A	300	300	305	305	A	C	300	295	295R	I290C	I290A	I290C	295	I300C	U310S	S	I290S	U285S	S
17	A	U295F	U305S	305F	I310C	305	315	320	315	A	A	290	305	285	U310R	295	295S	310	295	I300C	I295C	295S	C	C
18	S	C	U290S	C	U300S	345	I320C	310	I290A	C	A	C	C	A	A	A	300	U300S	290S	305	U295S	C	A	A
19	F	F	U280F	295S	290	290	315	U310R	325	A	C	270	265	265	U290R	U295R	285	285	U305S	315S	U295S	275S	275S	U280S
20	U285S	U280S	U285F	C	C	C	C	C	C	A	A	280	I265A	265	260	280	295S	300	300S	285	295S	U290S	F	F
21	F	U290S	U275F	275S	U290S	S	U330R	295S	295	280	280	295	285	I290A	285	280	I295S	305	295	290S	295S	U285S	U295F	J285S
22	F	A	U300F	F	U285S	290S	300	330S	295	350	A	280	290	290	275	290	280	285	280	A	310S	310	275	285
23	I280A	280	A	U290F	305	315	310	305	300	290	285	280	275	285	290R	280	300S	300	A	A	A	U290S	I290A	U305S
24	290S	285	295S	295	285	300S	305	290	300	290	290	275	275	U275A	275	285	R	I290A	295S	280	285S	280S	U275S	
25	U290S	U290S	U300F	300S	285S	295	285	290	285	280	300R	270	270	275	270	285	275	275	300S	300S	U315S	290S	U275S	U280S
26	I285S	U275F	U290S	U300S	U315F	295	285	265	260	285	A	A	A	A	305	290	280	280	300S	U305S	A	265S	U270S	U275S
27	A	F	U280S	265	280F	310	290	280S	275	I270A	270	270	280S	260S	I270A	275S	290S	275	275S	U275S	U265S	280	270S	
28	305S	275S	280S	290S	285S	275	290	290S	285	280	300S	295S	290S	275S	U300S	310	295	305	300S	285	290S	U265S	I275S	I275S
29	I290S	295S	U300S	I285A	U280S	300	305	320	U305R	275	A	I300R	I295A	I300A	A	300R	310	290	I300R	U295S	A	U275S	280S	280
30	F	U255F	U285S	305F	U275F	280S	295S	315R	300	300	285	285	285R	I280A	275	270	300	300	295R	295	A	R	S	S
31																								
Count	21	25	29	27	27	28	29	28	27	23	20	25	25	26	26	27	29	27	27	27	22	26	24	20
Median	U285S	U280S	U295S	295	290	300	305	305	300	290	280	280	275	280	290	290	295	295	295	300	U295S	280S	U280S	U280S
U. Q.																								
L. Q.																								
Q. R.																								

IONOSPHERIC DATA

Lat. 36° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

M(3000) F1

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	L						L	L	L	L	365L	350	375	320L	R	R	A	A	A					
2							L	L	L	L	A	360	A	350	365L	335L	A	A	L					
3							L	L	L	L	325	345	355	R	A	B	350	365L	A					
4							A	A	A	A	A	A	A	A	A	345L	335L	A	A	A				
5							335L	A	A	A	A	370	345L	355	A	350	U340L	U350L	A					
6						A	A	L	L	L	340	A	A	L	A	365L	360L	L	L	L				
7							L	L	L	L	A	330	A	A	A	A	A	L	A	A				
8							L	L	L	L	400L	L	365L	370	A	L	340L	A	A	A				
9							340L	A	A	A	A	A	A	390L	U390L	A	A	A	A	A				
10							A	A	A	A	A	A	A	A	A	360	A	330L	A	A				
11							L	A	A	A	375	A	A	A	A	A	330L	A	A	A				
12							335L	A	A	A	A	A	A	355	365	355	355	A	L	A				
13							A	A	A	A	A	A	A	U335R	A	A	360	A	A	A				
14							L	A	A	A	A	A	A	A	A	A	A	A	L	A				
15							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
16							L	A	A	A	A	C	A	A	A	C	A	C	A	C				
17							L	A	A	A	A	A	A	A	A	A	A	A	A	C				
18							C	A	A	A	A	C	A	C	A	A	A	A	A	A				
19							360L	L	L	L	A	C	A	R	375L	A	A	A	A	A				
20							C	C	C	C	A	A	A	A	A	A	345	340L	L	A				
21							A	L	A	A	A	A	A	A	A	A	350	A	A	A				
22							350L	L			A	A	A	U350A	365	355	370	U335L	320L	L				
23							A	A	A	L	A	A	A	A	A	335	L	A	A	A				
24							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
25							L	L	L	A	A	A	A	A	U350A	U350R	U355A	345	350L	A				
26							L	A	A	A	A	A	A	A	A	U360A	370L	355L	345L	L				
27							L	A	A	A	A	A	A	A	A	A	355L	A	A	A				
28							L	A	A	L	A	A	A	A	R	S	A	A	A	L				
29							L	350	360L	355	A	A	A	A	A	A	A	A	A	A				
30							L	L	A	A	A	A	A	A	A	A	A	L	350L	A				
31																								
Count							5	3	5	6	5	5	9	6	10	14	7	5						
Median							340L	345	360L	360	350	355L	355	365L	350	350L	345L	345L						
U. Q.																								
L. Q.																								
G. R.																								

The Radio Research Laboratories, Japan

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

M(3000) F1

K8

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

h'F2

Jun. 1967

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						280	320	285	315	340	330	375	345	325	330	315	315	330						
2						275	320	310	330	335	325	310	335	330	310	320	320	320						
3						275	310	275	385	460	390	330	365	330	320	325	280							
4						285	A	E415A	410	325	A	330	360	310	325	310	E350A	A						
5						280	315	340	330	410	390	380	E360A	325	320	300								
6					310	320	300	360	330	365	435	410	330	295	290	290	290	315	310					
7						275	260	300	380	350	E450A	I385A	E400A	I320A	E430A	280	300	A						
8						270	285	280	275	275	335	330	345	355	310	305	A	E365A						
9						300	295	A	445	425	325	315	325	315	325	I320A	A	A						
10						315	A	I270A	A	I355A	A	A	330	320	340	320	I290A	280A						
11						305	285	280	300	A	A	410	350	300	300	280	290	A						
12						325	270	250	A	A	E400A	455	355	320	280	310	310	295						
13							340	360	A	A	A	330	425	375	305	265	285	300						
14							285	310	A	270	A	A	A	A	A	310	280	275						
15								A	A	A	A	445	A	A	315	A	340	E365A						
16						280	315	340	A	C	325	325	350	I340C	I380A	I375C	305	C						
17							285	305	A	A	A	330	330	375	320	340	330	320	290					
18						I260C	300	I340A	C	A	C	A	C	A	A	A	350	315	315					
19							275	270	275	A	C	390	375	365	330	325	300	310	280					
20							C	C	C	A	335	I355A	E425A	390	335	320	280	280	275					
21						305	260	280	330	355	315	360	I350A	370	320	310	275	270						
22							280	250	280	A	370	335	350	360	325	340	320	325						
23							275	A	280	340	330	360	380	365	355	340	310	275	A					
24							260	325	310	315	320	375	E420A	405	I395A	355	330	E435A	I340A					
25						280	285	270	320	305	285	370	365	330	375	355	320	295						
26							310	305	355	375	A	A	A	A	335	360	375	355	305					
27							305	380	360	A	370	345	360	E395A	A	310	305	325	300					
28							310	275	330	355	315	320	315	310	275	320	275	275						
29							290	310	350	385	A	320	I370A	I340A	A	350	310	305	295					
30							275	265	320	320	360	365	350	A	375	325	315	305	295					
31																								
Count						3	26	25	25	20	19	22	25	25	25	28	29	28	21					
Median						305	280	300	315	330	340	350	355	355	330	320	315	310	295					
U. Q.																								
L. Q.																								
G. R.																								

h'F2

Lat. 35° 42' N
Long. 139° 28' E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

h'F

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	320	285	295A	280	325	275	235	220H	260	230	220	225	255	E270A	270	A	A	A	A	275	265	265	260	325	
2	310	305	275	255	260	230	225	230	215	A	265	I245A	E275A	205	210H	A	A	265	275	250	280	330	325	285	
3	280	300	285	270	280	265	250	255	230	215H	220	215	I230R	I225A	I220B	I245R	245	I270A	280	260	255	I290A	325	340	
4	315	280	275	275	290	260	A	A	A	A	A	A	A	A	265	275	A	A	A	270	235	275	E335A	290	
5	315	330	305	310	320	275	260	I245A	A	A	200	E300A	225	A	235A	245	E260A	I265A	290A	280	300A	380	360A	350A	
6	305	260	225	270	290	I270A	I250A	270	A	230	A	A	E290A	A	215	230	230	245	270	320	265	230	340	340	
7	320	330	290	275	260	235	235	245	A	A	260	A	A	A	A	A	A	280	A	A	325	315	330	280	
8	285	260	255	310	275	265	250	240	235	225	220H	225	200H	A	245	295	A	A	A	330	300	260	280	275	
9	255	320	305	290	280	255	255	A	A	A	A	A	215H	190H	A	A	A	A	A	A	A	310	320	305	
10	320	260	260	300	270	255	A	A	A	A	A	A	A	A	235	A	295	A	A	260	270	305	335	A	
11	305	305	270	255	265	255	265	A	A	225	A	A	A	A	A	285	A	A	A	290	355	I340A	275	280	
12	310	275	290	265	255	250	260	A	A	A	A	A	255	215	240	250	A	255	A	270	270	305	310	330	
13	315	270	225	255	320	250	230	A	A	A	A	A	315	A	A	255	I240A	A	A	250	250	325	310	335	
14	265	290	285	270	250	215	230	A	A	A	A	A	A	A	A	A	A	230	A	300	300	305	A	A	
15	300	255	E405A	330	325	235	275	A	A	A	A	A	A	A	A	A	A	A	A	270	A	E350A	325	A	
16	A	345	275	285	A	255	250	A	A	A	C	A	A	A	C	A	C	A	C	295	275	315	325	315	
17	A	280	265	260	250	230	230	250	A	A	A	A	A	A	A	A	A	A	C	C	C	310	275	C	
18	285	320	295	C	280	210	I235C	A	A	A	A	C	C	A	A	A	A	280	I275A	280	320	C	A	A	
19	310	305	315	275	325	250	225	220	250	A	C	A	R	225	A	A	A	A	A	235	275	275	330	305	
20	310	300	295	C	C	C	C	C	C	A	A	A	A	A	A	220	230H	250	I260A	255	270	E325A	310	325	
21	300	305	320	325	310	A	250	A	A	A	A	A	A	A	A	230	A	A	A	310	280	305	325	365	
22	355	270	295	275	305	255	235	250	265	I260A	A	A	I250A	210	210	240	240	290	E290A	280	255	245	275	E350A	
23	I320A	E350A	A	300	250	270	A	A	A	A	A	A	A	A	250	240	A	A	A	A	A	A	315	I310A	260
24	270	275	275	265	275	250	230	A	A	A	A	A	A	A	A	A	A	A	A	260	325	310	320	325	
25	285	285	270	275	285	250	250	265	A	A	A	A	A	I275A	I220R	I210A	225H	230	A	260	230	245	350	280	
26	280	315	275	280	260	250	255	A	A	A	A	A	A	A	I230A	215	235	225	255	265	A	380	375	275	
27	A	270	280	350	300	260	255	A	290	A	A	A	A	A	A	225	A	A	A	285	330	385	280	280	
28	240	280	275	275	270	230	255	A	275	290	I230A	230	220	200	215	I245A	A	I275A	265	268	280	305	320	300	
29	270	255	270	I320A	365	275	230	225	210	210	A	A	A	A	A	A	A	A	A	285	A	335	330	325	
30	325	325	300	250	305	255	250	250	A	A	A	A	A	A	A	A	A	A	230	275	A	325	315	350	
31																									
Count	27	30	29	28	28	28	26	13	10	8	7	6	11	9	14	16	9	14	9	26	23	29	28	25	
Median	305	290	280	275	280	255	250	245	250	230	220	230	240	210	230	240	240	260	270	275	275	310	320	310	
U. Q.																									
L. Q.																									
Q. R.																									

The Radio Research Laboratories, Japan

K10

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

h'F

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

1 35° E Mean Time (G.M.T. +9h)

h'Es

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	115	110	110	110	110	110	110	115	115	115	115	125	125	125	125	125	120	120	115	115	110	110	115	110
2	110	110	110	105	105	110	g	120	120	120	120	120	g	120	g	115	110	115	110	110	110	105	120	120
3	110	110	105	105	105	105	110	105	g	125	g	g	g	120	B	115	g	110	110	115	115	115	115	115
4	115	115	115	110	110	110	125	120	115	115	115	115	120	120	120	130	130	120	115	125	120	115	125	120
5	115	115	120	125	B	130	125	115	120	115	110	110	g	125	140	g	120	120	115	115	110	110	110	110
6	105	100	100	100	125	120	120	120	115	125	115	115	115	110	115	115	115	110	110	110	110	115	115	115
7	115	110	115	115	110	115	g	120	115	115	115	115	115	115	115	115	110	130	115	120	115	115	115	115
8	110	110	110	105	110	170	130	125	120	120	120	110	115	110	115	155	130	125	120	115	120	115	110	110
9	110	105	125	B	B	130	125	120	115	115	115	115	115	115	110	110	110	110	120	115	115	115	115	110
10	110	110	110	110	110	125	120	120	115	115	115	115	115	115	110	110	110	110	110	120	115	110	120	115
11	115	115	115	115	115	135	125	120	115	125	115	115	115	130	125	130	130	120	120	115	120	120	115	110
12	115	110	110	110	110	130	120	120	115	115	115	115	115	110	115	120	125	125	120	115	115	115	115	115
13	110	110	110	105	105	105	105	125	115	110	110	110	130	130	125	160	120	115	115	115	115	120	115	110
14	110	110	105	100	105	110	135	125	120	115	115	115	110	110	110	110	110	110	120	115	115	115	115	115
15	110	110	110	110	110	115	125	115	120	115	115	115	130	120	130	130	120	120	115	115	115	115	115	115
16	115	110	110	110	110	110	110	125	120	115	g	115	115	115	c	115	c	110	c	110	105	105	110	115
17	110	120	100	100	105	140	135	130	125	115	115	115	115	115	110	110	110	110	110	g	g	115	115	g
18	115	110	110	105	105	110	c	125	125	120	115	c	g	115	110	110	110	110	110	110	110	c	110	110
19	110	105	105	105	105	105	110	140	130	110	c	115	115	110	115	110	115	110	105	105	105	110	115	115
20	115	115	110	c	c	c	c	c	c	115	115	115	115	115	110	g	g	115	125	130	120	115	115	110
21	110	110	110	110	130	125	120	115	120	115	115	115	120	110	115	135	125	125	120	120	115	125	120	115
22	115	115	115	110	115	115	130	125	125	125	120	120	140	145	150	g	g	120	115	110	110	110	105	105
23	105	100	100	100	100	130	120	115	115	110	115	110	115	115	130	130	130	120	115	115	115	115	115	110
24	110	110	110	110	110	g	125	120	115	115	115	115	110	110	110	110	115	115	115	115	115	115	110	110
25	110	110	105	105	110	150	130	120	115	115	110	110	110	110	g	125	g	135	120	115	115	115	115	110
26	110	110	110	110	110	115	130	125	120	120	115	115	115	115	125	B	130	125	125	120	120	115	115	110
27	110	110	110	105	110	130	125	125	125	115	115	115	110	110	110	130	115	125	115	120	110	115	115	110
28	110	110	B	110	110	130	125	120	120	120	115	120	115	110	110	110	110	105	105	105	105	105	105	110
29	115	110	110	115	110	110	115	110	130	120	110	115	115	115	115	115	130	125	110	110	105	110	115	115
30	115	115	110	110	110	110	110	125	120	110	120	115	110	115	115	115	115	110	110	115	115	115	110	110
31																								
Count	30	30	29	28	27	28	26	29	28	30	27	28	27	29	27	26	25	30	29	29	29	29	30	29
Median	110	110	110	110	110	115	125	120	120	115	115	115	115	115	115	115	115	120	115	115	115	115	115	110
U. Q.																								
L. Q.																								
G. R.																								

The Radio Research Laboratories, Japan

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

h'Es

K11

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

Types of Es

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	f2	f2	f7	f4	f7	f2	12	c	1	1	1	h	h	h	h	h	c	e2	c4	f2	f2	f2	f2	f3	
2	f2	f	f3	f2	f3	12h		c	c	e2	c	1	c		1	12	12	13	13	f2	f3	f3	f3f	f	
3	f4	f2	f3	f2	f2	14	12h	12	h	h				1	c			1	12	f3	f2	f4	f2	f4	
4	f4	f3	f4	f3	f4	12	h3	e2	e2	e2	c	e2	c	e2	c	h1	h1	13	13	f5	f	f4	f4	f2	
5	f2	f2	f2	f3	h2	h2	h2	e2	e2	e2	c	c	c	h	h	h	h2	e2	e4	f5	f3	f4	f3	f6	
6	f4	f2	f2	f2	ff2	e3	e3	e2	e2	h	e2	12	12	12	1	12	12	12	12	f2	f4	f2	f4	f3	
7	f2	f4	f2	f	f7	13	1	1	12	12	12	12	12	12	12	12	12	12	13	f4	f3	f2	f2	f2	
8	f	f2	f2	f2	f	h	h2	b2	c	c	1	1	1	1	12	h	h2	h2	e4	f3	f3	f3	f4	f5	
9	f3	f2	f		h2	h3	h3	e4	e3	e2	1	12	1	1	13	12	13	12	13	f3	f2	f	f3	f5	
10	f4	f3	f7	f4	f2	h3	e3	e2	e3	e2	12	12	12	12	1	12	12	12	14	f2f3	f2	f2	f3	f5	
11	f3	f3	f2	f2	f4	h	h2	e2	c	h	e2	e2	e3	h	h	h	h2	e2	e3	f5	f6	f7	f3	f5	
12	f4	f3	f2	f3	f5	h2	e3	e2	13	e2	e3	12	e2	1	12	1	h3	h	13	f6	f3	f3	f2	f2	
13	f4	f2	f2	f3	f3	13	12	h21	e2	12	13	12	h	h	h2	h	e2	e2	e2	f3	f2	f5	f4	f4	
14	f5	f2	f3	f3	f2	12	h2	h3	e2	e2	e2	12	12	13	14	12	12	1	e4	f2	f2	f3	f4	f3	
15	f2	f3	f4	f4	f3	13	h4	e2	e2	e2	c	c	h	e2	h2	h2	e3	e3	13	f4	f2	f3	f2	f6	
16	f7	f3	f2	f3	f4	14	12	h2	12	12		1	1	1	13	13		13		f3	f2	f4	f2	f3	
17	f3	f3f	f3	f	f2	h12	h	h2	h2	h2	13	1	1	12	12	12	12	12	12		f6	f			
18	f3	f3	f3	f4	f2	1		h2	h2	c	c			13	13	12	13	12	12	f3	f3	f3	f4	f3	
19	f3	f3	f3	f2	f3	f2	1	h	h	12	12	12	12	12	1	12	12	12	13	12	f3	f3	f4	f3	
20	f2	f2	f2							12	1	12	12	12	12	12	12	12	h2	f	f2	f3	f2	f5	
21	f4	f3	f5	f3	f2f3	h5	e2	12	e2	12	12	1	c	14	12	h1	h2	h2	e2	f3f2	f3	f6	f5	f3	
22	f4	f6	f3	f3	f2	1h	h2	h	h	h2	e2	h	h	h	h			c	e4	1	f2	f3	f6	f3	
23	f4	f3	f3	f4	f2	h3	h3	e3	e2	13	e2	12	1	e2	h	h	h3	e3	13	f5	f3	f3	f2	f2	
24	f4	f2	f3	f3	f	h	h	e2	e2	c	e2	12	12	12	12	13	12	12	e4	f5	f2	f2	f3	f3	
25	f5	f6	f7	f3	f5	h2	h2	c	12	1	1	12	1	1	h2	h2		h	e3	f3	f7	f4	f3	f3	
26	f3	f2	f4	f2	f4	12	h2	h2	c	c	12	12	12	12	h	h	h	h	h	f3	f6	f3	f3	f2	
27	f4	f2	f	f3	f2	h	h2	h2	h	e2	1	e2	12	12	12	h	12	h	14	f3	f5	f7	f3	f	
28	f	f2	f	f	f2	h	h2	e2	e2	e2	c	c	c	1	1	13	13	14	14	f2	f3	f2	f	f2	
29	f3	f2	f2	f4	f3	13	14	12	h	c	13	c	e2	12	1	1	h3	h2	13	f3	f3	f3	f3	f2	
30	f6	f6	f2	f2	f	14	12h	h2	e3	12	1	1	1	13	12	c	e2	12	13	f3	f4	f2	f6	f3	
31																									
Count																									
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

K12

IONOSPHERIC DATA

Lat. 35° 42.4'N
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

h p F2

Jun. 1967

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	415	375S	340	370	420	385	U335S	365	315	335	365	355	400	370	355	370	360	340	375	360	I365S	360S	370S	U425S
2	U415S	395	355S	325	20	U305R	305	330	380	360	380	370	380R	375	365	350	345	U360R	330	U330S	I410S	I410S	295S	
3	370	I380S	U360S	370S	370S	325S	365	335	285	g	460	405	340	375	350	340	360	U325S	330S	320	U340S	I365A	U405S	U395S
4	U365S	I350S	340S	U320S	365S	U365S	I325S	I330A	A	A	370	I340A	380	360	330	360	350	350R	I330A	325	U325S	365	U385S	365
5	415S	U425S	I380S	380S	420S	U360S	300	325	365	A	g	295	370	370	350	340	U340R	330	320	300	U320S	390S	J370S	J360S
6	J370R	350	310	340	355	350	350	410	400	380	425	475	455R	360	315	U305R	315	345	340S	350	335S	300	445	430
7	410	415	375	370	315	325	315	280	A	430	295	A	I420A	430R	I365A	A	345R	350	I360A	A	U350S	380S	370	U370S
8	370S	U340S	365S	375S	365	320	300R	320	325	285	350	350	330R	360	360	350	330	A	A	U335S	340	I350S	355S	360S
9	365S	U415S	385	370S	U355S	305S	325	310	I330A	A	425	335	330	330	335	335	I325A	A	A	A	A	A	S	F
10	U330S	S	U325S	U330S	U330S	300S	320	I300A	I290A	I340A	I355A	A	A	355	335	360	335	I330A	330S	300	325	U375S	U370S	A
11	U345S	U365S	U330S	U325F	335F	350	335	325	320	310	315	A	A	410	350	315	315	305R	A	340	A	A	U330S	340S
12	S	I320S	U350F	335	350	300	340	285	265	A	A	A	R	360	335	305	330	340	335	310	325S	325S	380S	F
13	U370S	330	U280S	340	375F	280S	280S	365	A	A	A	A	330	425	375R	335	300	I290A	325	U295S	U340S	380	U355S	U375F
14	U370S	U365S	330	330	330F	245	325	340	A	280	A	A	A	A	A	A	315	335	325	325S	U325S	375	A	A
15	370F	335S	U415F	U360F	F	U275S	315S	A	A	A	A	A	A	A	A	320	A	365	A	U310R	A	A	U390S	A
16	A	U375S	U330S	I330F	A	320	325	330	A	A	C	330	330	350R	I350C	A	C	A	I330C	U315S	S	I360S	U370S	S
17	A	U350F	U330S	325F	I315C	300	300	305	315	A	A	355	330	375	A	345	340S	320	325	I330C	I335C	350S	C	C
18	S	C	U340S	C	U340S	275	I280C	300	A	C	A	C	C	A	A	A	A	U325S	335S	320	U325S	C	A	A
19	F	F	U355F	330S	370	330	295	U310R	280	A	C	395	400	385	U365R	S	345	355	U325S	300S	U325S	370S	380S	U370S
20	U370S	U370S	U380F	C	C	C	C	C	C	A	365	I390A	A	415	365	355	335S	315	320S	350	325S	U350S	F	F
21	F	U340S	U380F	380S	U370S	S	U280R	330S	330	370	370	330	360	I350A	A	360	I330S	305	320	335S	345S	U370S	U370F	J380S
22	F	A	U325F	F	U370S	350S	310	275S	330	A	A	A	345	350	375	350	360	350	360	350	320S	310	360	360
23	I350A	385	A	U350F	315	300	305	A	310	340	350	370	385	370	365R	365	330S	310	A	A	A	U335S	I360A	U330S
24	340S	365	340S	340	360	325S	300	345	320	330	330	375	A	A	A	375	375	R	I340A	325S	370	370S	350S	U375S
25	U350S	U355S	U330F	330S	355S	335	340	335	350	350	315R	380	380	360	380	A	360	360	375	325S	U295S	340S	U380S	U370S
26	I365S	U375F	U340S	U315S	U280F	330	350	385	410	A	A	A	A	A	A	365	375	370	390S	U315S	A	400S	U400S	U370S
27	A	F	U375S	410	375F	310	335	395S	385	I385A	385	375	365S	400S	I370A	370S	335S	375	375S	U370S	U400S	U415S	360	385S
28	325S	380S	375S	365S	345S	355	340	325S	360	370	330S	330S	345S	360S	U330S	305	330	305	330S	360	360S	U390S	I400S	I385S
29	I350S	335S	U355S	I365A	U370S	325	325	315	U350R	400	A	I320R	A	A	A	A	325	345	I335R	U325S	A	U380S	375S	385
30	F	U410F	U365S	325F	U375F	375S	325S	300R	330	330	360	375	355R	I380A	390	395	335	320	325R	325	A	R	S	S
31																								
Count	21	25	29	27	27	28	29	27	22	16	18	20	20	24	22	23	27	26	25	27	22	25	24	20
Median	U370S	U365S	U350S	340	355	325	325	325	330	345	365	370	360	370	360	350	335	340	330	325	U335S	370S	U370S	U370S
U. Q.																								
L. Q.																								
O. R.																								

h p F2

Lat. 35° 42.4'N
Long. 139° 28.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Jun. 1967

ypF2

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	075	070S	080	075	080	095	1070S	085	090	095	075	090	065	065	090	105	095	110	100	090	1075S	085S	095S	1095S
2	1065S	070	075S	080	090	1085R	070	100	090	070	090	105	080R	100	080	100	100	1075R	080	1095S	1085S	1090S	1090S	090S
3	080	1090S	1080S	065S	080S	080S	080	085	080	g	070	070	085	080	080	090	085	1065S	085S	095	1075S	1095A	1095S	1070S
4	1075S	1075S	060S	1075S	065S	1075S	1115S	1100A	A	A	095	1080A	095	080	095	070	090	080R	1075A	055	1075S	110	1085S	080
5	100S	1100S	1080S	080S	085S	1105S	085	085	055	A	g	055	060	080	095	075	1075R	070	080	070	095S	080S	1080S	1060S
6	1080R	070	070	060	085	100	105	110	100	100	115	100	090R	070	090	1065R	055	080	070S	095	095S	080	110	095
7	080	095	080	105	080	075	075	075	A	150	110	A	1105A	090R	1065A	A	105R	085	1090A	A	1070S	075S	075	1080S
8	065S	1080S	065S	075S	075	095	070R	075	080	105	080	090	080R	065	065	070	090	A	A	A	1080S	075	1070S	070S
9	080S	1065S	080	070S	1085S	080S	070	065	1070A	A	070	070	095	085	080	095	1090A	A	A	A	A	A	S	F
10	1080S	S	1060S	1100S	1070S	095S	075	1080A	1080A	1070A	1060A	A	A	070	080	080	085	1090A	065S	080	075	1090S	1090S	A
11	1090S	1065S	1075S	1085R	095R	075	090	090	075	075	075	A	A	065	070	065	070	065R	A	085	A	A	1060S	075S
12	S	1060S	1080F	090	050	065	060	080	065	A	A	A	R	070	085	080	065	060	070	075	065S	065S	085S	F
13	1090S	070	1070S	090	095R	080S	060S	055	A	A	A	A	095	050	080R	075	085	1075A	065	1065S	1075S	080	1060S	1065R
14	1060S	1050S	065	070	080F	085	075	090	A	075	A	A	A	A	A	A	075	075	070	075S	1075S	070	A	A
15	080F	070S	1065R	1070F	F	1065S	060S	A	A	A	A	A	A	A	A	065	A	065	A	1075R	A	A	1055S	A
16	A	1055S	1065S	1070F	A	080	065	065	A	A	C	065	095	075R	1070C	A	C	A	1085C	1075R	S	1070S	1070S	S
17	A	1080F	1065S	070F	1065C	080	100	070	060	A	A	A	075	070	A	075	070S	050	075	1080C	1080C	055S	C	C
18	S	C	1070S	C	1070S	060	1075C	110	A	C	A	C	C	A	A	S	075	075	1060S	075S	1090S	100S	075S	1060S
19	F	F	1075R	090S	060	080	065	1075R	070	A	C	100	100	100	1060R	S	0708	090	065S	075	080S	1085S	F	F
20	1060S	1070S	1080F	C	C	C	C	C	C	A	080	1085A	A	100	070	085	1080S	090	095	080S	070S	1065S	1060F	1070S
21	F	1070S	1080F	070S	1060S	S	1075R	085S	075	070	085	070	075	1075A	A	080	1080S	090	095	080S	070S	1065S	1060F	1070S
22	F	A	1075R	F	1075S	070S	080	070S	085	A	A	A	065	095	090	100	100	095	090	080	090S	065	090	085
23	1080A	060	A	1070F	085	070	095	A	100	090	085	075	070	065	065R	075	085S	085	A	A	A	1075S	1060A	1055S
24	090S	065	070S	065	065	075S	080	080	075	085	095	080	A	A	A	085	065	R	1080A	085S	095	080S	120S	1085S
25	1075S	1075S	1095R	075S	075S	070	090	090	085	110	085R	090	100	095	100	A	090	095	070	080S	1065S	090S	1090S	1080S
26	1070S	1080F	1070S	1085S	090R	095	095	095	095	A	A	A	A	A	A	060	055	060	065S	1065S	A	075S	1080S	1080S
27	A	F	1075S	075	070F	065	080	060S	080	1095A	075	105	080S	080S	1090A	085S	090S	085	085S	1085S	1110S	1085S	070	090S
28	070S	080S	065S	065S	080S	105	085	105S	070	080	060S	075S	080S	080S	1080S	090	085	090	1075S	085	070S	1085S	1065S	1070S
29	1070S	075S	1065S	1070A	1085S	075	070	070	1055R	065	A	1080R	A	A	A	A	060	075	1080R	1100S	A	1095S	070S	070
30	F	1070F	1070S	065F	1070F	080S	075S	070R	070	080	090	065	085R	1065A	070	075	065	075	080R	060	A	R	S	S
31																								
Count	21	25	29	27	27	28	29	27	22	16	18	20	20	24	22	23	27	26	25	27	22	25	24	20
Median	1080S	1070S	1070S	075	080	080	075	080	080	080	080	080	080	080	080	080	080	085	075	080	1075S	080S	1080S	1080S
U. Q.																								
L. Q.																								
G. R.																								

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

ypF2

The Radio Research Laboratories, Japan

K 14

IONOSPHERIC DATA

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

13.5° E Mean Time (G. M. T. +9h)

foF2

Jun. 1967

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	079	S	S	066	074S	091	090	080	089	088	097	099	096	108	104	096	093S	102S	I100S	090	094S	I093S
2	I096S	100	097	093	I078S	063	067H	077	080	086	093	096	107	112	116	110	111	108	102	099S	I100S	I096S	091S	087S
3	I089S	090F	J086S	086	I076S	066S	075	081	082	074	080	C	G	G	C	G	C	G	G	C	G	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	I080S	J077S	J074S	J074S	068F	U068S	U075S	070S	079	068V	064R	077	084	088	100	103	100S	097S	J096S	093S	079	S	S	S
6	S	FS	083F	F	F	060	065	079	091S	101S	092	094	108	122	117	097R	085	080	086R	091	087S	062F	I065A	S
7	FS	F	064	061F	057	053	061	068S	069V	069R	082	086	094	102	119	122	119	118	095S	U098S	J094S	I083S	082	FS
8	U091S	I092S	086	086S	080	082	081S	080	080	082	088	079	084	088	098	I109A	A	A	097	101	091	078	076S	I081S
9	J085S	S	S	F	080S	075S	071	056	059	064	074	081	088	096	100	089	085	088S	093	091S	089	085S	077S	I079S
10	079	080S	I069S	062	064	060F	066F	075	074	073	I071A	074	087	095	095	096	105	117	105	J090S	069	066S	056F	056
11	S	S	S	F	F	F	063S	J078S	093	083	A	A	A	080	095	100	093	A	A	065	073S	I074S	S	S
12	A	I070S	061F	F	F	F	I070S	085	084	I067A	059	058	069	089	098	105	105	103	I097S	I090S	078	068S	J074S	084
13	S	S	067	F	F	F	F	055	065	065	093	C	C	C	C	110	C	C	C	076S	C	C	C	C
14	C	C	C	F	F	047F	060	068	080	I081A	I079A	087	I084A	I080A	090	J103R	108	096S	J088R	085S	I077S	I075S	067	S
15	A	S	I062S	059F	056F	J053S	058	070S	080	I064A	I062A	I061A	I063A	067	078	086	091	094	088	090S	088H	I063A	A	S
16	A	FS	F	S	F	042F	051	059	073S	084	086	079	I075A	078	085	093	096	094S	093S	I090S	I087S	I084S	I081S	I083S
17	J084S	081S	I087S	I077S	F	058F	063S	073	078	080	079	083	086	084	081	087	091	095S	098	I096S	090	I085S	082	080
18	079	S	S	F	F	I076S	069S	069S	079	090	085	072	I078A	087	093	098	101	101	097	090S	I085A	U081S	070S	S
19	S	A	S	F	F	F	066S	063	072	I069A	070	080	089	096S	108	102	103S	107	102	091	073S	I081S	086S	J085S
20	I090S	U092S	S	S	S	077S	068S	J080S	082	I089A	097S	F	105	110	119	120	116	107	097	J100S	U093S	080	J071S	I069S
21	U070S	I078S	I078S	077S	078F	U074S	077S	090	079S	088S	090	087	092C	102	104V	101	098	087	086	088	087S	084	084	I087S
22	J086S	FS	F	S	FS	F	I074S	F	066	064	076	076	085	090	093	096	100	102	103	J109S	108	098S	086S	I084S
23	J080S	J080S	J080S	I081S	081	J075S	073S	074S	077	083	078	I077C	081	093	101	104	096	086S	083	081S	085S	S	S	S
24	A	S	FS	FS	FS	FS	064S	081F	090	093S	090	I088C	I087A	094	I104A	I111A	109	102	101	097S	092S	093	088S	084
25	090	090	I092S	088	072S	065	J078S	085	089S	087	091	I086A	091	100	106	106	105	099S	100	109	U094S	083S	080S	I078A
26	FS	FS	FS	J075S	F	F	051	079	115	D080W	D079W	086	091	099	J097S	082	073	079	077	080	070S	U070S	S	S
27	A	FS	F	F	F	056F	061S	065	071	083	084	087	098	096	101	100	094	093S	J097S	088	086S	088S	S	S
28	S	S	S	F	S	066S	069	083S	J085S	089	097S	106	C	C	C	099	095	J098S	U093R	087	089	083	I085S	085
29	088R	087S	077S	J078S	070S	066S	060	060	073S	065	083	094	099	092	I088A	085	087	081	079	I081S	083	079S	087S	086S
30	085S	086S	S	F	F	FS	073S	066	085	087	087	086	I091A	094	104	108	106	091	I081A	085	085	J083S	J079S	085S
31																								
Count	15	13	16	13	12	21	29	28	29	29	28	26	26	27	27	29	27	26	27	29	28	26	22	18
Median	085S	086S	078S	077S	074	066	067S	074	080	082	084	086	088	088	094	098	101	100	096	096	090S	087S	080S	084S
U. Q.	090	091	086	086	079	074	074	080	085	088	090	088	096	100	104	108	105	103	100	098	092	085	086	085
L. Q.	080	079	068	068	066	057	061	067	073	069	077	077	084	088	093	096	093	091	088	086	081	075	074	080
Q. R.	010	012	018	018	013	017	013	013	012	019	013	011	012	012	011	012	012	012	012	012	011	010	012	005

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

The Radio Research Laboratories, Japan

foF2

IONOSPHERIC DATA

Lat. 31° 12' N
Long. 130° 37' E

Yamagawa

135° E Mean Time (G.M.T. +9h)

foF1

Jun. 1967

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	LH	LH	520L	LH	560	540	590	530	LH	LH	L						
2							L	L	L	L	L	570H	L	A	A	A	L	A	A	L					
3							L	L	L	LH	A	C	C	C	C	C	C	C	C	C					
4							C	C	C	C	A	520	LH	500	570H	550	490	L	A						
5							L	L	LH	500H	570H	A	A	A	540H	500	480	450L	A						
6							L	L	L	A	L	L	A	A	A	A	A	L	L						
7							L	L	L	L	L	A	A	A	530	490	500H	LH	L						
8							L	L	L	LH	500	540H	520	A	A	A	A	A	A						
9							LH	LH	L	480	490	490	1490A	1490A	480	1490A	1480A	440L	L						
10							L	L	L	A	A	LH	1510A	1470A	510H	A	1460A	1430A	L						
11							A	A	A	A	A	A	A	1480A	A	460	A	A	A						
12							A	A	A	A	A	540H	510	470	490	A	1470A	A	A						
13							L	L	A	A	C	C	C	C	C	470	C	C	C						
14							L	L	A	A	A	A	A	A	490	1470A	450H	430H	L						
15							A	A	A	A	A	A	1500A	490H	490	1470A	470	430	A						
16							L	L	A	A	A	A	A	1510A	1510A	470	A	A	L						
17							L	L	1480A	1530A	A	A	500	A	A	A	A	A	L						
18							LH	LH	1480A	A	A	A	A	530H	500H	490H	1470A	540	L						
19							L	L	A	A	540	1510A	1520A	A	480	A	A	A	L						
20							A	A	A	A	1600A	LH	A	A	A	490H	480H	470L	L						
21							LH	L	L	L	1510A	510H	500	510H	510	500H	490	460	LH						
22							A	A	A	L	510	520	500	510	490H	580H	470H	490	LH						
23							L	L	A	490	A	C	A	A	A	A	A	A	A						
24							LH	LH	A	A	500	C	A	A	A	A	510H	460H	L						
25							L	L	A	490L	510	A	A	510	520H	500	480H	A	A						
26							500L	500L	A	L	530	540	A	A	510	520	490	460L	L						
27							A	A	510L	480	500	A	A	520H	A	A	470	500L	L						
28							L	L	A	U530G	A	A	C	C	C	L	U490L	A	A						
29							L	L	470L	L	540L	A	A	A	A	520	470H	520H	460H						
30									L	A	A	A	A	A	A	A	460	A	A						
31																									
Count							1	4	7	13	9	10	15	16	17	19	13	1							
Median							500L	U480A	490	510	520	500	510	500	500	480	460	460H							
U. Q.																									
L. Q.																									
Q. R.																									

foF1

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

The Radio Research Laboratories, Japan

Y2

IONOSPHERIC DATA

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

135° E Mean Time (G.M. T. +9h)

foE

Jun. 1967

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	320	360	I390A	390	A	A	A	A	350	320	265	B				
2							220	280	330	350	365	380	390	380	I365A	345	A	A	A	B				
3							190	270H	320	350H	360	C	C	C	C	C	C	C	C	C				
4							C	C	C	C	I355A	A	A	A	375R	360	345	325H	300	A	B			
5							200	260	300	320	A	A	A	A	370R	365	350	330H	295	240	B			
6							A	265	315	330	A	A	A	A	A	A	A	A	A	A	B			
7							160	260	300	330	A	A	A	A	A	355	340	325H	295H	240	S			
8							A	A	A	345	350	350	360	I380A	390	350	330	290	230	B				
9							200	270	300	330	340	A	A	R	355	340	315	290	240	B				
10							210H	260	300	330	345	A	A	A	360	350	340	320H	290	235	B			
11							A	265	300	A	A	A	A	A	360R	350	I340A	290	240	B				
12							210H	260	295	320	335	350R	355	350	345	340	315	285	I235R	B				
13							A	I250A	I295A	325H	C	C	C	C	C	C	C	C	C	B				
14							210R	260H	310	320	335	345	A	A	A	A	330	285	240	B				
15							A	270	310	330	355	360R	360R	360R	360	345	330	305	250	B				
16							190	270	310	340	350	355	A	A	A	A	A	A	A	B				
17							210	270	310	340	355	360	A	A	A	A	350	A	A	B				
18							A	280	310	340	350	370	I370A	I370A	370H	355	330	295	245	B				
19							210	260H	305	335	A	A	A	A	A	A	A	I290A	I250A	B				
20							A	I270A	310	335	350H	350	A	A	A	A	A	A	300	230	A			
21							205	270	315	340	350	360	I375A	380	370R	360	335H	305	260	B				
22							B	A	A	350	360	370	380	380	380	360	330	300	255H	B				
23							200	270	315	330	345	I355C	A	A	A	A	A	I315A	250	A				
24							220	270	320R	A	A	C	A	A	A	A	A	340	305H	250H	B			
25							A	280	320	335	A	A	A	A	A	380	360	340	300	250	B			
26							190	260	305	335	355	360	I365R	370R	360R	355R	340	305	230	B				
27							190	265	315	325	360	360	360	360	350	A	A	A	A	B				
28							200	280	315	340	360	355	C	C	C	A	A	A	A	B				
29							170	275H	315	335	360	380H	380	365	355	350	330	305	250	160				
30							A	270	310	335	350H	350	I360A	355	360	350	325	300	230	B				
31																								
Count	18	26	27	27	27	27	27	27	27	27	22	18	11	15	18	19	19	22	21	1				
Median	200	270	310	335	350	360	365	370	360	350	330	300	240	160										
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan
Y 3

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

foE

IONOSPHERIC DATA

Lat. 31° 12' 1"N
Long. 130° 37' 1"E

Yamagawa

135° E Mean Time (G.M.T. +9h)

foEs

Jun. 1967

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J025	J028	J034	J034	J064	J074	J063	J051	G	04.0	04.1	04.6	04.7	J060	J064	04.0	03.8	03.8	03.5	J035	J054	J051	091	J032
2	J057	J042	J035	J043	J025	J024	02.5	03.0	03.8	J077	J055	08.2	J1.02	J094	1.06	J097	J058	1.07	07.3	J041	J024	J031	J041	J044
3	J051	J051	J029	J037	02.1	E01.5B	G	G	03.5	03.9	J074	G	G	G	G	G	G	G	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	J088	J045	04.3	04.9	J055	05.3	03.8	03.8	06.3	J057	J04.3	J029	J051	J051
5	J080	J042	J030	J052	J051	J029	J028	02.9	04.0	J056	J053	J056	07.1	J074	J099	J080	07.6	J055	J053	J063	J04.3	J026	J052	J088
6	J104	J063	J027	J041	J029	J026	J026	G	04.4	06.8	J054	J077	J082	J090	J062	03.6	G	G	06.4	J031	J04.8	J051	J052	J088
7	J099	04.2	J034	J023	J025	E01.4B	G	02.7	04.2	05.4	05.1	05.9	05.0	06.0	11.7	J174	J174	D	09.3	J060	J04.3	J026	J052	J088
8	039	E01.5B	02.0	01.9	J015	02.1	02.7	03.0	05.2	J054	05.1	04.2	J083	04.2	04.5	05.5	J059	03.5	03.4	J030	J04.2	J026	J026	J026
9	J053	J053	J04.0	J029	J026	J022	02.0	03.0	04.0	J067	1.09	J098	1.70	05.1	03.7	J055	J062	04.8	03.2	01.6	02.0	01.8	02.0	J099
10	J025	J033	J04.3	J031	J030	J021	02.5	04.0	04.0	J083	J1.21	08.7	J075	05.1	05.1	04.4	J064	J087	J1.04	06.8	J063	J084	J061	J084
11	J060	J110	J056	J024	J021	J026	02.7	J063	J055	J083	D	J1.06	05.4	04.0	04.1	06.3	J059	05.8	J1.55	11.0	J024	02.0	E01.5B	02.0
12	1.80	J041	J084	J063	J04.8	J052	J061	04.5	J055	05.3	G	G	G	G	G	05.3	G	G	G	J04.2	G	G	G	G
13	J054	J055	04.5	06.2	J056	04.5	04.0	03.4	J059	08.4	J1.74	J085	1.28	J110	05.9	J114	02.36	01.66	02.9	02.0	J047	J051	J060	06.5
14	G	G	G	J039	J030	E01.4B	02.6	03.8	J059	07.6	09.6	09.8	J1.01	04.8	04.2	J076	G	J051	04.6	J044	J061	J096	J088	J063
15	J079	05.2	07.7	J052	J052	J04.0	J027	04.5	05.9	07.0	09.6	09.8	J1.01	04.8	04.2	J076	G	J051	04.6	J044	J061	J096	J088	J063
16	J085	06.4	J045	J074	J045	02.6	02.8	03.4	J060	J073	1.42	07.9	J114	J079	J061	J061	J066	J079	J029	J030	J091	05.7	J039	J04.3
17	J037	J042	J045	J065	J024	02.0	G	03.2	J061	J078	J065	08.5	1.42	J1.27	J071	J060	J099	J075	J088	J054	J050	J034	J053	J083
18	J031	J054	J066	J034	J022	J026	03.0	03.0	J065	J1.05	J099	09.5	1.45	J1.78	04.5	06.0	J080	J077	03.0	J054	J1.66	J054	J04.6	J062
19	J075	J081	J060	J040	J029	02.1	02.4	03.1	J069	1.03	J1.10	06.6	J076	J079	05.2	J077	J085	J062	03.8	J053	J029	J041	J050	J053
20	J083	J078	J084	J1.21	J062	J054	03.4	J052	09.3	D	J1.19	J054	1.07	J1.10	J074	J062	03.6	03.00	02.9	02.5	J039	J052	J027	J025
21	J051	03.5	J035	J037	02.9	J037	02.8	J04.3	J060	J1.38	J1.26	1.03	05.0	04.7	04.3	04.0	04.6	05.2	03.3	02.7	J030	J026	J027	J077
22	J069	J063	J065	J051	J084	J060	07.0	J087	J04.8	G	05.0	J053	05.2	04.7	G	G	G	G	02.8	J056	J024	J024	J029	J032
23	J029	J028	J030	J034	02.1	J028	J055	J053	J073	J070	J061	G	1.44	08.3	J1.29	J085	J081	J081	07.1	1.70	J148	J073	J145	J063
24	J096	J021	J034	J023	J032	J027	02.6	05.0	J082	J072	05.8	G	1.04	1.02	J1.07	1.43	03.5	03.9	03.8	J029	J039	J061	J033	J044
25	J044	J057	J060	J030	J035	J041	J041	J044	J061	04.7	04.6	J114	J084	J085	G	05.0	04.3	J066	J068	J054	J044	J079	J088	J081
26	J059	J054	J066	J041	J042	J030	02.2	03.4	J059	J072	J070	J1.28	J056	J080	06.0	04.9	04.0	03.2	02.8	02.2	J018	J051	J061	J078
27	078M	J062	05.8	J051	J04.2	02.5	J031	J055	J063	J086	J060	J118	J088	05.3	05.3	J060	04.0	03.7	02.6	02.0	J021	J085	J041	J034
28	J055	J030	J028	J04.6	J030	02.1	02.5	04.0	J055	J051	J055	J075	G	G	G	04.4	04.8	J084	06.1	J053	J041	J044	J031	J027
29	J043	J026	J026	02.1	J015	J018	G	03.5	034	J056	04.8	06.0	J067	09.0	J1.20	05.0	G	03.7	03.3	J078	J028	J031	J027	J027
30	J079	J042	J026	J054	J076	J062	J036	J052	J058	06.8	07.2	J062	J1.08	1.76	J078	J059	J052	J058	J092	08.0	J057	J04.3	J052	J044
31																								
Count	28	28	28	29	29	29	29	29	29	29	29	26	27	27	27	29	28	28	28	28	29	28	28	28
Median	J056	J04.6	J04.2	J039	J030	J026	02.7	04.0	J059	J072	J070	J082	08.4	07.4	05.5	05.9	04.7	05.2	03.8	J044	J04.3	J04.8	J044	J050
U. Q.	079	06.0	06.0	05.2	05.0	04.0	03.8	05.0	06.4	08.5	1.08	09.8	1.08	09.4	07.8	07.6	06.5	07.6	07.0	05.8	05.9	05.6	06.1	07.8
L. Q.	04.1	03.4	03.0	03.0	02.4	02.1	02.5	03.2	04.5	05.4	05.4	05.9	05.6	04.9	04.2	05.0	03.7	03.7	03.0	02.8	02.8	02.8	02.9	03.2
G. R.	038	02.6	03.0	02.2	02.6	01.9	01.3	01.8	01.9	03.1	05.4	03.9	05.2	04.5	03.6	02.6	02.8	03.9	04.0	03.0	03.1	02.6	03.2	04.6

The Radio Research Laboratories, Japan

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

foEs

Y 4

IONOSPHERIC DATA

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

135° E Mean Time (G.M.T. +9h)

fbEs

Jun. 1967

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 017	E 017	E 017	017	031	040	039	034		G	040	044	045	050	045	039	G	037	034	034	035	027	022	019	
2	036	024	025	023	020	015	G	G	036	039	042	042	052	090	065	094	042	099	055	028	021	028	030	031	
3	018	022	019	023	016	B			035	037	071	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	055	042	043	041	044	044	037	037	048	028	034	024	025	023	
5	055	025	015	023	024	019	018	G	034	036	038	056	067		039	044	042	036	064	030	029	038	033	041	
6	041	040	017	021	021	018	022	024	042	096	048	055	065	072	057	074	067	041	035	037	034	022	A	024	
7	023	025	025	022	016	B		031	041	046	046	058	075	043	039	G			027	023	061	028	046	042	
8	027	B	E	015	014	015	023	032	041	G	046	044	046	060	093	A	A	A	084	048	054	032	023	030	
9	028	041	033	015	018	012	035	G	038	037	039	043	054	041	041	050	056	030	034	G	042	025	015	019	
10	018	016	025	025	024	014	025	036	036	067	A	044	076	051	G	046	061	046	030	016	E	E	E	018	
11	034	025	023	E	014	021	023	060	044	058	A	A	A	A	050	043	060	A	A	055	063	036	046	033	
12	A	023	018	044	025	012	056	040	070	A	050	050	G	039	041	048	052	053	062	078	E	E	B	E	
13	020	046	025	036	034	031	025	029	049	049	C	C	C	C	G	041	G	G	G	033	C	C	C	C	
14	C	C	C	025	014	B	G	034	050	A	A	084	A	A	044	096	0296	0166	G	E020R	047	026	043	055	
15	A	E	044	022	034	025	024	042	058	A	A	A	A	A	042	040	075	042	042	040	050	A	A	043	
16	A	025	033	034	030	018	018	032	058	072	072	069	A	063	050	037	065	072	027	019	060	021	031	034	
17	029	035	040	024	021	016	022	G	061	069	062	072	045	067	050	055	064	051	039	025	027	025	031	024	
18	018	040	022	024	017	019	022	G	054	073	064	061	A	043	043	042	060	050	030	025	A	025	026	042	
19	042	A	017	024	024	015	G	028	054	A	049	055	055	051	045	062	066	060	033	049	026	026	037	029	
20	047	039	023	033	036	024	028	045	072	A	082	048	078	101	053	036	035	0276	G	024	030	027	019	018	
21	E	018	016	023	013	014	028	032	034	043	066	040	047	044	G	G	040	042	029	E027S	E030S	E	021	054	
22	038	041	014	026	041	028	024	043	043		047	046	044	045		055			028	054	018	022	027	027	
23	018	016	013	017	012	016	053	045	052	044	057	C	072	057	050	055	055	059	068	075	022	042	041	041	
24	A	017	015	014	014	023	G	038	049	059	046	C	A	072	A	A	G	034	036	028	039	045	018	021	
25	022	024	025	019	019	025	023	036	056	043	043	A	059	043		045	039	063	063	E054S	040	079	052	A	
26	022	024	028	026	029	022	022	031	049	057	046	051	056	078	047	043	G	E032R	028	E022R	017	025	E061S	053	
27	A	041	041	024	025	015	024	043	042	047	041	054	085	041	049	057	036	034	E026R	G	019	016	025	024	
28	018	022	E	022	017	E	G	033	047	045	053	070	G	C	C	044	048	064	046	041	030	037	024	024	
29	021	019	019	011	015	017		034	G	050	043	051	049	071	A	044		033	030	E078S	018	027	015	016	
30	022	E	017	024	040	022	029	042	049	060	067	055	A	071	054	058	045	054	A	076	036	016	026	022	
31																									
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

Y5

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

fbEs

The Radio Research Laboratories, Japan

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

1 35° E Mean Time (G.M. T. +9h)

f - min

Jun. 1967

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	013	011	013	E	E	E	015	014	016	022	022	023	023	023	023	022	022	018	015	015	015	014	015	E015S
2	015	012	014	E	E	E	014	015	017	022	024	024	026	022	025	022	016	015	014	013	E	C	014	014
3	014	014	014	E	E	E	015	014	016	016	021	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	024	024	023	022	023	023	018	017	019	014	E015S	E015S	E015S	E015S
5	014	015	011	014	E	E	013	014	018	018	022	022	023	024	023	016	014	017	012	012	014	016	015	E015S
6	E015S	012	011	E	E	E	012	012	016	018	023	018	023	023	023	024	018	017	017	011	E014S	E015S	E015S	E015S
7	014	012	011	E	011	014	014	015	012	015	017	024	023	025	024	018	018	015	017	E015S	E015S	E015S	E015S	013
8	E015S	015	012	E	E	011	012	015	015	015	016	021	021	022	023	023	017	017	014	013	012	E014S	015	014
9	012	011	E	E	014	E	012	014	014	017	017	023	024	021	022	016	014	014	014	014	015	014	014	E015S
10	014	E	E	E	E	E	012	014	017	017	022	017	022	023	021	022	016	015	016	013	014	014	E015S	E014S
11	015	014	E	E	E	E	012	012	014	014	016	016	021	021	022	016	014	014	015	014	015	014	014	015
12	014	012	E	E	E	E	014	013	015	018	022	022	018	018	017	018	017	015	017	015	E015S	016	015	014
13	014	014	E	E	E	011	012	012	014	015	C	C	C	C	C	017	C	C	C	C	C	C	C	C
14	C	C	C	E	E	014	014	013	014	016	018	024	026	025	019	018	016	014	015	016	016	016	E015S	E015S
15	E015S	014	E	E	E	015	012	014	019	017	017	023	017	021	022	016	016	015	015	013	015	013	015	015
16	E015S	014	E	E	E	014	012	014	014	017	023	023	023	022	022	021	021	015	017	012	E014S	015	E015S	012
17	E014S	011	014	015	E	015	014	015	015	016	022	021	023	023	024	022	017	014	014	011	014	E015S	014	014
18	E015S	014	E	E	E	014	014	014	014	016	016	024	022	022	017	021	016	014	015	011	E	E014S	E014S	E
19	E014S	E	E	E	E	E	011	014	014	016	018	017	023	022	025	019	017	016	014	014	014	014	E015S	E015S
20	E015S	015	011	E	011	014	013	015	015	022	017	023	024	023	022	024	018	015	014	012	E015S	E015S	E015S	E015S
21	E015S	014	E	E	E	E	014	014	015	015	022	022	022	023	021	017	014	015	017	015	015	E014S	015	E014S
22	014	012	E	E	E	E	014	014	015	016	018	022	022	022	024	022	015	015	016	014	011	013	014	014
23	015	011	E	E	E	013	013	013	015	012	024	C	022	022	021	023	016	014	015	014	E014S	014	E014S	E015S
24	015	013	E	E	E	014	012	015	015	016	022	C	021	021	021	022	015	014	014	014	E014S	015	011	E013S
25	014	E	E	E	E	E	011	013	015	015	016	022	024	022	022	018	017	013	013	013	015	E015S	E015S	E014S
26	015	011	E	E	E	E	015	014	015	020	023	026	023	025	021	021	019	019	018	014	E015S	E015S	E015S	012
27	E015S	011	011	E	E	E	E015S	012	014	016	021	022	023	022	021	022	016	015	018	014	015	E014S	E015S	E014S
28	E015S	E015S	015	E	E	015	013	014	017	018	023	023	C	C	C	021	018	016	014	014	011	E015S	E015S	E015S
29	E014S	012	014	E	E	E	012	015	014	020	022	022	024	024	022	017	016	014	015	014	E014S	011	014	012
30	014	014	013	E	E	E	014	013	014	014	016	022	021	022	023	015	017	014	014	012	015	012	E014S	012
31																								
Count	28	28	28	29	29	29	29	29	29	29	29	26	27	27	27	29	28	28	28	29	28	28	28	28
Median	014	012	E	E	E	E	013	014	015	016	022	022	023	022	022	021	016	015	015	014	013	E015S	E015S	E014S
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

f - min

Y6

IONOSPHERIC DATA

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

Jun. 1967

M(3000)F2

135° E Mean Time (G.M.T. +9h)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	280	S	S	260	285S	295	300	255	280	260	265	275	250	275	290	270	270S	285S	I275S	265	265S	I260S
2	I265S	285	290	305	I310S	385	390H	300	300	280	280	260	270	280	285	280	270	A	285	275S	I265S	270S	260S	
3	I270S	265F	J290S	290	I305S	315S	295S	285	295	285	240	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	280	290	280	290	270	275	275S	290	290R	315S	U305S	I260S	J255S	265
5	I260S	J255S	J265S	J260S	270F	U280S	U295S	315S	325	300V	315R	280	275	270	285	290	295S	295S	J300S	310S	310	S	S	S
6	S	FS	315F	F	F	305	305	260	270S	265S	270	220	255	275	300	305R	305	290	285R	300	320S	260F	I260A	S
7	FS	F	280	295F	300	300	315	325S	290V	300R	255	245	245	250	275	285	285	305	275S	U275S	J285S	I270S	245	FS
8	U260S	I270S	280	280S	275	300	310S	300	300	305	325	290	285	275	A	A	A	A	290	300	300	270	260S	I265S
9	J270S	S	S	F	290S	300S	310	305	280	270	270	285	280	280	285	280	280	285S	290	285S	290	280S	275S	I265S
10	270	300S	I300S	275	295	285F	320F	305	295	275	I275A	245	275	285	280	270	285	315	325	J310S	280	290S	270F	255
11	S	S	S	F	F	F	285S	J285S	325	325	A	A	A	270	295	310	310	A	A	275	275S	I290S	S	S
12	A	I290S	280F	F	F	F	I310S	320	335	I345A	320	230	250	275	290	290	300	300	I305S	I310S	315	280S	J265S	270
13	S	S	355	F	F	F	325	295	U280S	305	C	C	C	C	C	310	C	C	285S	C	C	C	C	C
14	C	C	C	F	F	F	300F	320	310	I305A	I285A	A	I285A	I255A	270	J280R	305	295S	J285R	295S	I275S	I280S	280	S
15	A	S	I285S	295F	305F	J320S	310	325S	340	A	I285A	I280A	I280A	280	280	290	285	295	285	290S	330H	I275A	A	S
16	A	FS	F	S	F	F	310F	320	295	300S	285	295	290	A	270	280	320	290S	285S	I290S	I280S	I280S	I270S	
17	J280S	270S	I290S	I300S	F	F	265F	290S	305	295	310	290	280	280	290	270	270	275S	280	I290S	290	I290S	270	280
18	280	S	S	F	F	F	I300S	320S	285S	290	290	305	290	A	270	275	285	290	295	300S	I285A	U300S	255S	S
19	S	A	S	F	F	F	F	335S	285	I285A	255	250	265	265S	280	285	285S	295	295	300	290S	I260S	265S	J260S
20	I275S	U285S	S	S	S	S	305S	300S	J280S	285	I255A	255S	F	265	270	285	300	305	290	J295S	U290S	310	J275S	I275S
21	U270S	I270S	280S	280F	U310S	290S	300	285S	265S	270	265	270C	265	270C	265	270V	290	295	280	270	270	280S	285	255
22	J275S	FS	F	S	FS	F	I295S	F	310	280	290	275	270	265	260	260	270	265	270	265	270	275S	295	I290S
23	J275S	J275S	I290S	I290S	310	J295S	315S	310S	310	300	295	I280C	255	260	275	290	300	300	300S	280	A	295S	S	S
24	A	S	FS	FS	FS	FS	285S	290F	300	290S	290	I270C	I255A	270	I265A	I280A	285	285	285	280S	285S	280	285S	275
25	265	280	I305S	300	295S	280	J310S	330	295S	280	285	I265A	250	260	265	275	275	275S	270	295	U295S	A	265S	I260A
26	FS	FS	FS	J310S	F	F	275	265	330	W	W	245	255	285	J310S	295	280	295	290	295	285S	U260S	S	S
27	A	FS	F	F	F	F	280F	285S	275	250	270	260	265	260	265	280	265	260S	J270S	275	265S	250S	S	S
28	S	S	S	F	S	275S	285	255S	J270S	265	280S	300	C	C	C	295	280	260S	J270S	275	265S	250S	S	S
29	280R	295S	280S	J280S	285S	290S	290	300	320S	270	280	300	305	280	I290A	290	300	310	285	1280S	275	285	265	1260S
30	280S	295S	S	F	F	FS	305S	305	295	280	295	250	I250A	255	275	295	305	300	310	285	1280S	275	265S	275S
31																								
Count	15	13	16	13	12	21	29	28	29	28	28	25	24	27	26	28	27	25	27	27	28	25	22	18
Median	270S	280S	280S	290S	295	300	305S	300	300	280	280	270	270	270	275	285	285	290	285	290S	290S	275S	265S	265S
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

M(3000)F2

Y7

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M. T. +9h)

M(3000)F1

Jun. 1967

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	LH	LH	365L	LH	340	A	325	340	LH	LH	L						
2								L	L	L	L	350H	L	A	A	A	L	A	A	L					
3							L	L	LH	A	A	C	C	C	C	C	C	C	C	C					
4							C	C	C	A	370	LH	405	325H	325	345	345	L	A						
5							L	L	LH	370H	330H	A	A	335H	365	350	350	350	340L	A					
6							L	L	L	A	L	L	A	A	A	A	A	L	L						
7							L	L	L	L	L	A	A	320	365	335H	335L	LH	L						
8							L	L	L	LH	A	350H	A	A	A	A	A	A	A	A					
9							LH	L	L	355	365	365	A	365H	355	A	I335A	325L	L						
10							L	L	L	A	A	LH	I350A	A	350H	A	A	A	L	L					
11							A	A	A	A	A	A	A	I380A	A	A	A	A	A	A					
12							A	A	A	A	A	AH	355	395	355	A	A	A	A	A					
13							L	A	A	A	C	C	C	C	C	360	C	C	C	A					
14							L	A	A	A	A	A	A	A	345	I345A	355H	350H	L	L					
15							A	A	A	A	A	A	A	375H	365	A	345	A	A	A					
16							L	A	A	A	A	A	A	I360A	I330A	365	A	A	L	L					
17							L	A	A	A	A	A	380	A	A	A	A	A	L						
18							LH	A	A	A	A	A	A	325H	360H	345H	A	A	L						
19							L	A	A	A	335	A	A	A	375	A	A	A	L	A					
20							A	A	A	A	A	LH	A	A	A	A	350H	330L	L	L					
21							LH	L	L	L	A	390H	A	335H	355	355H	350	A	LH	R					
22							A	A	A	L	335	350	380	375	385H	310H	380H	325	LH	A					
23							L	A	A	A	C	A	A	A	A	A	A	A	A	A					
24							LH	A	A	A	380	C	A	A	A	A	330H	340H	L	A					
25							L	A	A	365L	355	A	A	390	345H	340	355H	A	A	A					
26							310L	A	L	L	360	A	A	A	A	365	365	350L	L						
27							A	310L	A	A	360	A	A	365H	A	A	360	320L	L	L					
28							L	A	A	A	A	A	C	C	C	L	A	A	A						
29							L	L	350L	L	350L	A	A	A	A	335	365H	365H	365H						
30							L	L	L	A	A	A	A	A	A	A	A	A	A	A					
31																									
Count							1	2	4	10	6	5	13	15	14	14	14	9	1						
Median							310L	330L	370	360	360H	355	365	355	345	350	350	340L	365H						
U. Q.																									
L. Q.																									
G. R.																									

The Radio Research Laboratories, Japan

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

M(3000)F1

Y8

Jun. 1967

h'F2

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Yamagawa

Lat. 31° 12.1'N
Long. 130° 37.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							300	295	295	450L	335	380	375	340	400	350	310	300	300						
2							250	280	340	310	350	345	E360A	E360A	335	E365A	330	A	280	300					
3							275	300	310	E455A	G	G	G	G	G	G	G	G	G	G					
4							G	G	G	G	340	315	330	315	355	350	310	300	300						
5							260	270	280	290	540	385	380	375	340	305	300	300	295						
6							255	350	290	A	310	560	380	350	270	305	320	315	300						
7							290	245	260	340	380	360	E425A	410	335	315	305	280	275						
8							250	250	280	280	290	330	330	350	A	A	A	A	E350A	280					
9							300	360	375	375	330	330	345	330	305	305	325	310	295						
10							270	310	E400A	A	450	E400A	325	330	330	335	320	280	250	260					
11							E320A	260	280	A	A	A	375	325	300	300	285	A	A						
12							250	275	A	300	605	440	355	325	315	315	300	300	270						
13							300	300	290	G	G	G	G	G	G	280	G	G	G	275					
14							275	280	I305A	A	A	I340A	A	355	E425A	275	285	295	270						
15							260	255	A	A	A	I395A	395	355	E350A	320	305	300	275						
16							275	325	E350A	E350A	E350A	A	400	350	335	335	320	330	300	275					
17							275	310	E320A	340	E375A	340	E335A	340	340	380	380	335	310						
18							330	300	E350A	300	E350A	A	380	345	330	315	325S	280							
19							250	360	310	A	420	430	360	370	330	320	325	310	260	260					
20							275	E360A	A	E425A	400	380	E440A	330	315	295	300	290	280						
21							275	255	325	350	345	350C	35C	325	325	305	295	300	300	300					
22							255	245	400	355	325	365	370	350	380	380	345	340	330	300					
23							275	290	290	305	G	E450A	375	350	305	305	300	300	E345A	A					
24							305	300	310	320	G	A	350	I395A	A	A	320	300	290	270					
25							280	290	300	305	A	400	370	350	345	320	315	335	280						
26							375	275	450	500	430	400	350	300	330	360	320	290							
27							315	430	345	380	430	E420A	370	350	350	325	345	355	320	290					
28							280	290	300	325	310	G	G	G	G	300	310	325	295						
29							330	300	280	440	345	305	295	350	I340A	330	300	290	325						
30																									
31																									
Count							7	28	29	24	25	22	22	26	26	27	27	25	27	14					
Median							260	275	290	315	330	360	365	360	340	320	315	300	295	280					
U. Q.																									
L. Q.																									
Q. R.																									

h'F2

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

The Radio Research Laboratories, Japan

Y9

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

f'F

Jun. 1967

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	300	270	275	300	340	290	250	230H	215H	220	230H	230	A	250	225	230H	245H	275	290	285	285	305	320
2	335	300	270	240	225	250	230	230	230	220H	230	215H	A	A	A	A	255	A	A	255	275	300	310	320
3	305	300	290	270	245	250	240	240	225	220H	A	C	C	C	C	C	C	C	C	C	C	C	C	C
4	G	G	G	G	C	C	C	C	C	C	1235A	210	210H	200	250H	260	250	240	1250A	260	240	250	330	320
5	365	350	290	320	320	280	245	245	215H	200H	220H	A	A	A	A	E250A	E260A	250	255	255	250	360	370	350
6	355	300	250	255	285	250	240	230	270	A	A	A	A	A	A	A	A	A	A	265	250	270	1360A	350
7	350	350	310	275	245	240	250	240	A	E280A	E250A	A	A	270	240	215H	235	230H	240	270	E310A	260	E400A	350
8	290	280	265	275	265	260	245	230	E255A	215H	1220A	230H	A	A	A	A	A	A	A	A	275	270	320	350
9	315	350	300	275	260	230	250	225H	E250A	220	210	240	1225A	215H	250	1265A	1250A	225	275	270	290	265	280	310
10	300	250	260	305	280	270	240	250	235	A	A	255H	A	1195A	200H	1250A	A	1235A	250	250	225	245	280	340
11	350	300	250	225	275	290	255	A	A	A	A	A	A	1230A	1240A	A	A	A	A	A	1305A	270	360	320
12	1280A	300	300	350	300	280	E305A	A	A	A	A	AH	220	205	235	A	A	A	A	A	225	255	310	310
13	305	305	260	325	325	280	245	220	A	A	C	C	C	C	C	E245A	C	C	C	A	C	C	C	C
14	G	C	C	250	225	255	245	250	A	A	A	A	A	A	E280A	A	205H	210H	235	260	250	300	300	E400A
15	A	275	A	260	275	240	230	A	A	A	A	A	A	220H	240	1250A	230	A	A	A	250	1315A	A	400
16	1350A	330	330	260	250	275	260	225	A	A	A	A	A	A	A	225	A	A	250	250	270	275	290	305
17	320	300	295	250	245	275	235	240	A	A	A	A	E250A	A	A	A	A	A	A	250	255	270	300	290
18	250	300	295	330	295	250	240	235H	A	A	A	A	A	E260H	230H	E250H	A	A	250	255	1255A	255	280	350
19	365	1340A	230	250	300	250	240	225	A	A	A	A	A	A	E265A	A	A	A	A	A	250	300	330	340
20	350	290	275	305	250	240	240	A	A	A	A	AH	A	A	A	210H	215H	215	230	275	240	245	260	275
21	310	295	295	290	255	250	245	205H	215	E250A	A	195H	A	215H	240	220H	E240A	A	235H	1280A	275	255	290	315
22	300	330	295	280	340	280	240	250A	1235A	250	1230A	250	225	230	205H	215H	200H	225	225H	1290A	250	240	275	290
23	300	300	275	275	250	245	250	250	1250A	E245A	A	C	A	A	A	A	A	A	A	A	270	340	250	340
24	A	250	245	260	270	285	250	255H	A	A	E240A	C	A	A	A	A	220H	235H	275	1265A	290	290	270	290
25	320	290	255	230	260	275	250	250	A	E245A	235	A	A	200	275H	E300A	245H	A	A	A	250	A	350	1345A
26	340	300	255	230	225	280	250	250	A	A	A	A	A	A	A	240	225	250	240	265	250	300	S	A
27	A	340	350	325	310	260	240	1255A	1250A	1245A	230	A	A	200H	A	A	225	240	250	285	295	325	290	300
28	275	290	295	280	275	300	245	245	A	A	A	A	C	C	C	E250A	A	A	A	280	285	325	325	325
29	300	250	275	265	265	275	255	250	215	250	220	A	A	A	A	255	210H	225H	240H	1260A	255	320	310	285
30	300	260	245	280	E350A	E300A	245	250	A	A	A	A	A	A	A	A	A	A	A	A	300	255	340	345
31																								
Count	25	28	27	29	29	29	29	25	13	13	14	8	6	13	15	17	16	13	16	20	28	27	26	27
Median	310	300	275	275	270	265	245	245	230	1230	230	230H	220	210	240	1235	230	235	250	265	255	270	305	320
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Y10

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

f'F

Lat. 31° 12.1'N
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Jun. 1967

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	f	f2	f	f3	f4	f4	16	13		h	e	e h	e h	12	12	h 12	h 1	b21	e31	e5	f7	f3	f2	f3	
2	f3	f2	f3	f3	f3	f	h	h	b2	e	e	e2	e2	e3	e3	e31	e21	e51	131	1212	f f3	f3f2	f4	f4	
3	f2	f3	f2	f2	f2				b2	h	e2														
4										e3	e3	1 h	h 1	h	e2	h3	h	e2	13	12	f2	f2	f2	f2f2	
5	f3	f4	f2	f3	f4	f	12h	b2	b2	e2	e	e2	13	h	h	h	b2	e3	e4	13	f4	f4	f3	f3	
6	f3	f3	f2	f3	f2	f2f2	h 1	12h	e2	o4	12	13	13	13	13	13	14	12	13b3	14	f3	f3	f3	f3	
7	f3	f3	f2	f2	f2	f2		e2	e4	e3	13	13	13	13	h	h			b2	e	f3f	f2f2	f3f	f4	
8	f3	f	f	f	f	f	1	h312	e2	e	e3	e2	e	h21	h4	h3	h5	e7	e7	e6	f4	f5f	f5	f7	
9	f5	f5	f5	f3	f4	f	e4	b2	b2	e2	e	12	13	h	h	e3	e4	h2	e3	e	f4	f2	f4	f4	
10	f6	f2	f4	f3	f4	f	h3	b3	h3	e4	e3	12	13	e2	h	b2	e3	h3	b2	e	f f	f	f2	f2f3	
11	f3f2	f3	f5	f	f2	f3	h 12	o6	o4	o4	14	13	13	h	b2	b212	b512	e7	o4	o6	f7	f5	f6	f3	
12	f3	f5	f2	f6	f4	f3	e4	o4	e3	e4	h e2	h	h h	h	h	b2	b2	b2	h4	o4	f	f	f	f	
13	f3	f4	f3	f4	f3	f4	13	h 13	h312	b2						h				e3					
14				f3	f		h31	h3	o6	e2	e3	e2	e3	h 13	13	13	1	1	h	h	f2f	f3f	f2	f6	
15	f5	f2	f4	f2	f3	f3	12h	h3	h3	h3	h3	h3	h3	h	h	b2		b3	o4	o7	f5	f4f	f4	f5	
16	f3	f4	f5	f4	f3	f	12h2	b2	h3	h4	o4	o4	o6	e3	12	12	14	14	12	1	f5	f3	f4	f4	
17	f3	f6	f4	f4	f2	f		h	e3	e3	o4	e3	e3	13	12	e3	14	14	13	12	f3	f2	f f3	f2f2	
18	f2f	f3	f2	f2	f	f2	12h	h	e5	e3	o4	e3	e4	12	h	e2	e3	e3	e31	14	f4	f3	f3	f5	
19	f5	f5	f2	f3	f3	f2	b21	b2	o4	e3	e2	e3	e3	e2	e h	h312	h312	b413	h 13	b412	f3	f3f2	f5f2	f2	
20	f3	f3	f3	f3	f4	f4	b212	h313	o4	o4	e3	e2	13	14	12	1	1	12	h 1	h 1	f2f	f3f2	f2f2	f f	
21	f2f2	f3	f2f2	f4	f2	f3	b2	h	h	b2e	e3	e	h2e	h	h 1	h 1	b2	b2	h	o3	f4	f	f	f	
22	f4	f4	f2	f5	f5	f6	14	15	e3	b2	b2	b2	b2	h	h	h 1	b2	h	h	o4	f2	f4	f4	f3	
23	f2	f2f2	f2	f3f	f2	f f	o4	e3	e5	e3	e2		12	e3	e2	e3	15	b413	e512	e7	f3	f6	f3	f3	
24	f4	f3	f2f	f2f2	f2	f	h 12	e3	o4	13	13		14	14	15	15	h 1	b2	o4	o3	f7	f3	f2	f3f	
25	f2	f4	f2	f3	f3	f3	b413	b4	o4	e2	12	12	13	h 1	h 1	b2	b2	o4	o5	e7	f7f	f6f	f2f3	f3	
26	f2	f4	f7	f5	f4	f3	h	b2	e3	e2	e2	h e2	h3	b2	b2	h	h	h	h	e	f	f2	f3	f4	
27	f6	f5	f3	f3	f3	f2	h	e3	e3	e3	e2	e2	e3	e2	e2	e3	e	o4	1	h 1	f2	f2f2	f2	f2	
28	f2	f4	f	f4	f	f	h	b2	e3	e3	e3	e2				12	13	14	13	14	f5	f4	f2	f2	
29	f f	f f	f2f2	f f	f	f	h	h	h	e31	e2	e3	e2	e3	h2e2	h	b2	b4	b4	o5	f2	f3	f2	f2	
30	f2	f3	f2	f3	f3	f2	b4e2	b5	h3	e3	e2	e4	e3	o4	o2	o2	o2	o6	e2	e6	f5	f2	f3	f4	
31																									
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

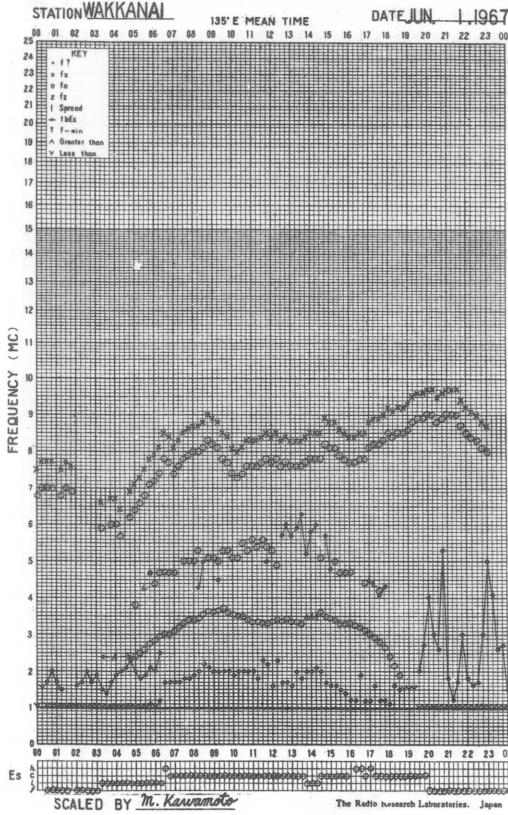
Types of Es

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

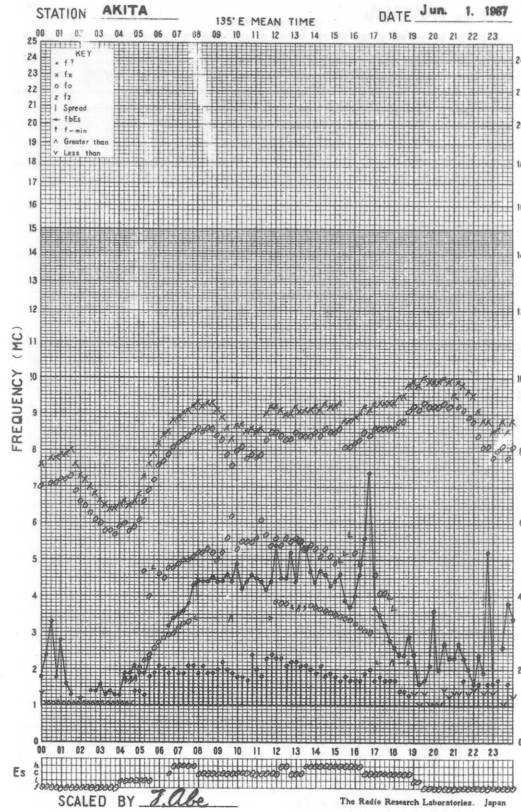
The Radio Research Laboratories, Japan

Y12

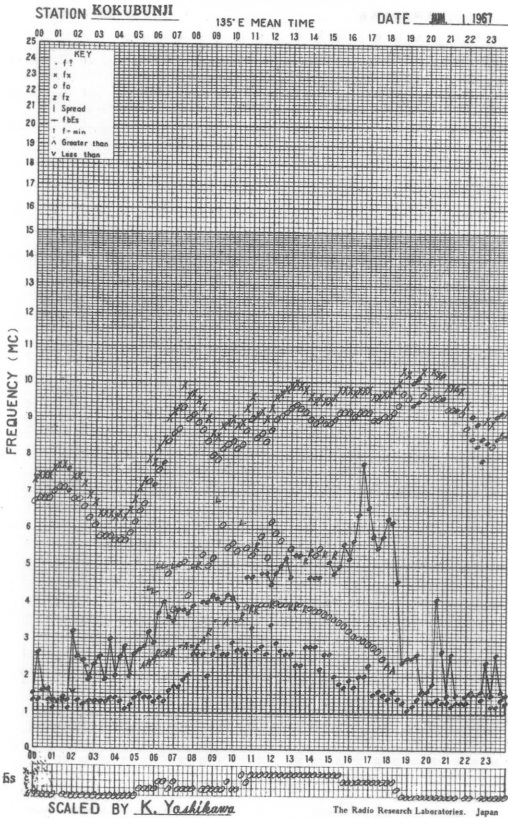
f-PLOT OF IONOSPHERIC DATA



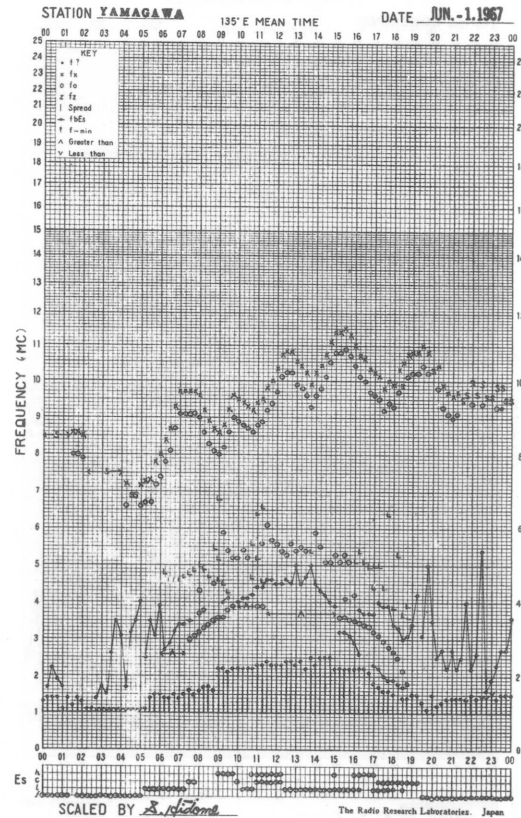
f-PLOT OF IONOSPHERIC DATA



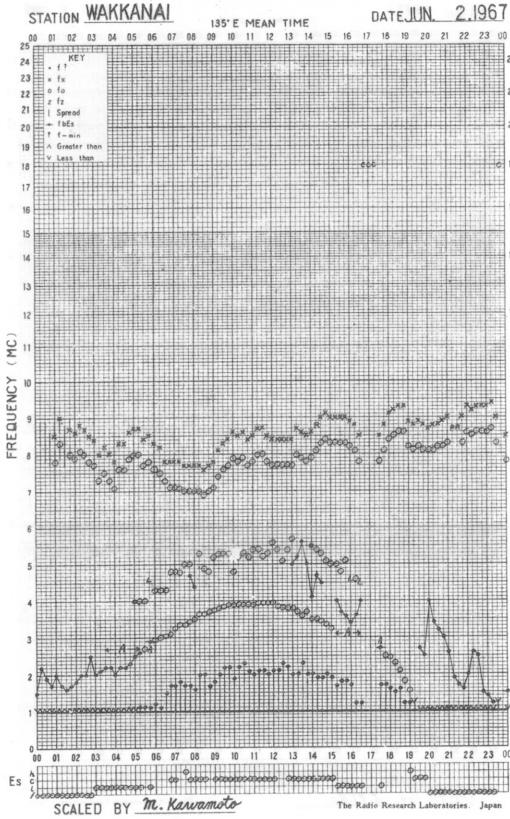
f-PLOT OF IONOSPHERIC DATA



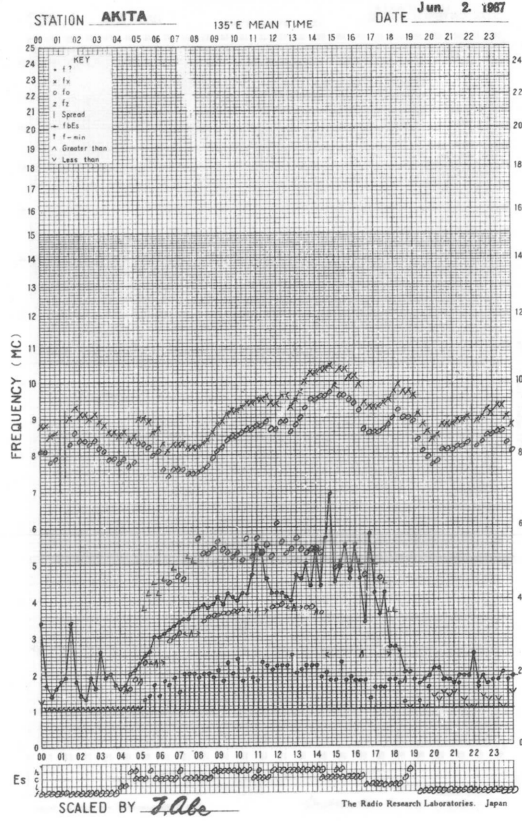
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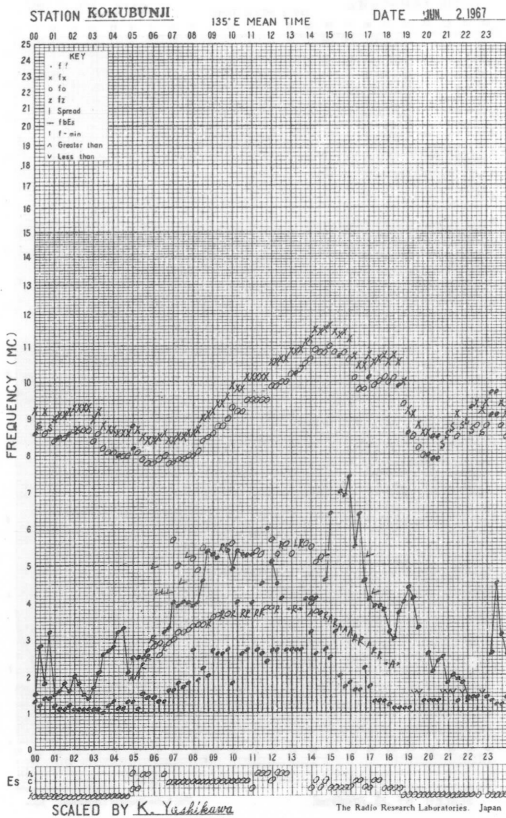
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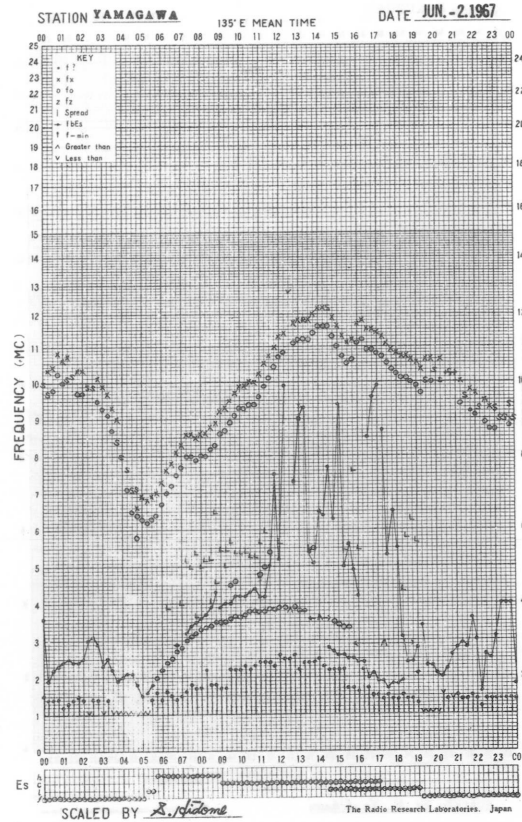
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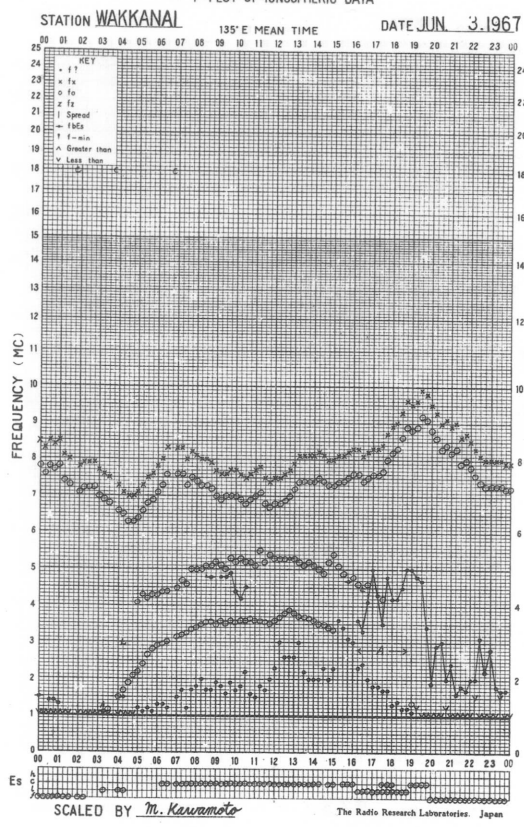
f-PLOT OF IONOSPHERIC DATA



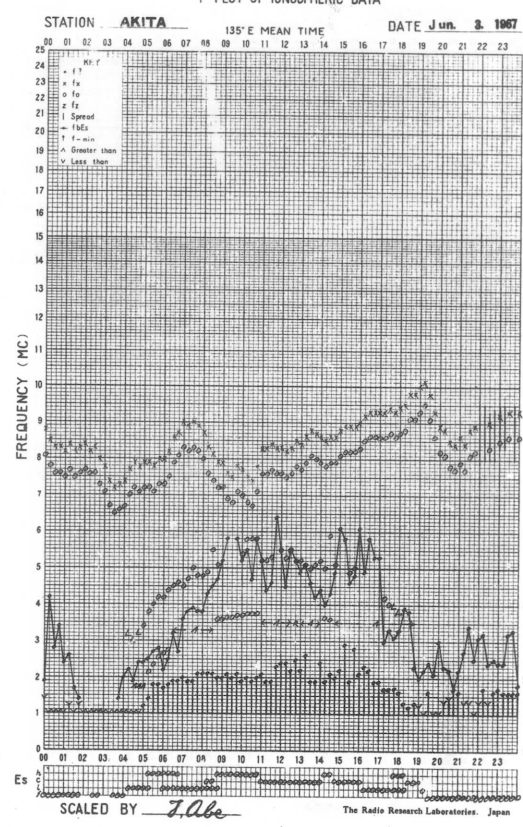
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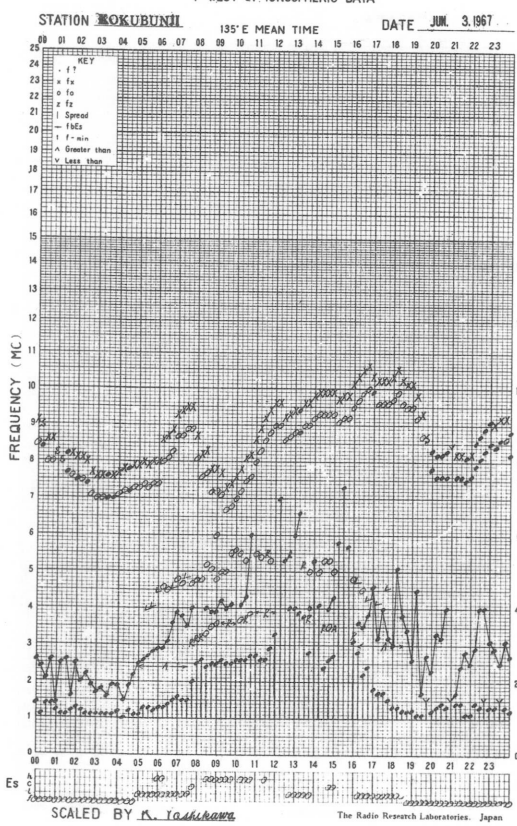
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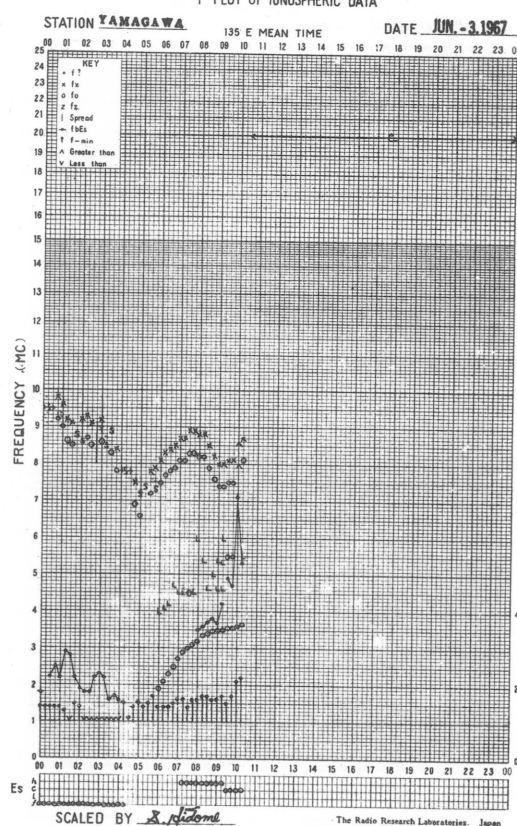
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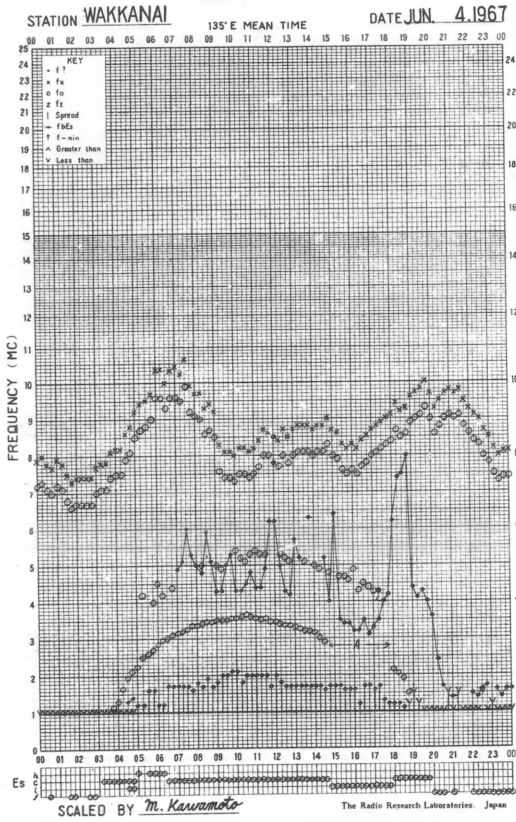
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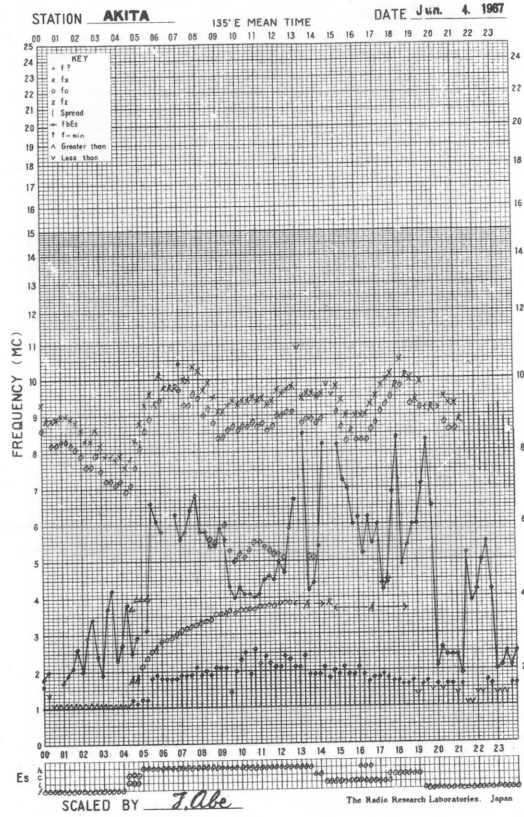
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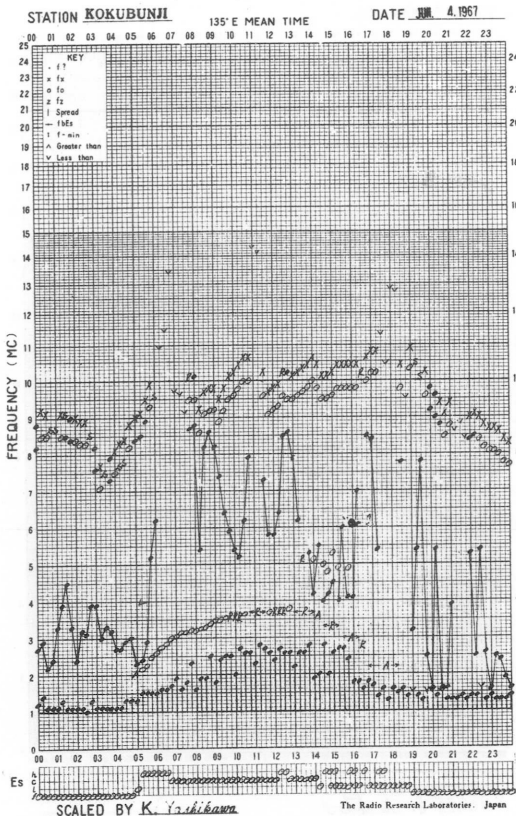
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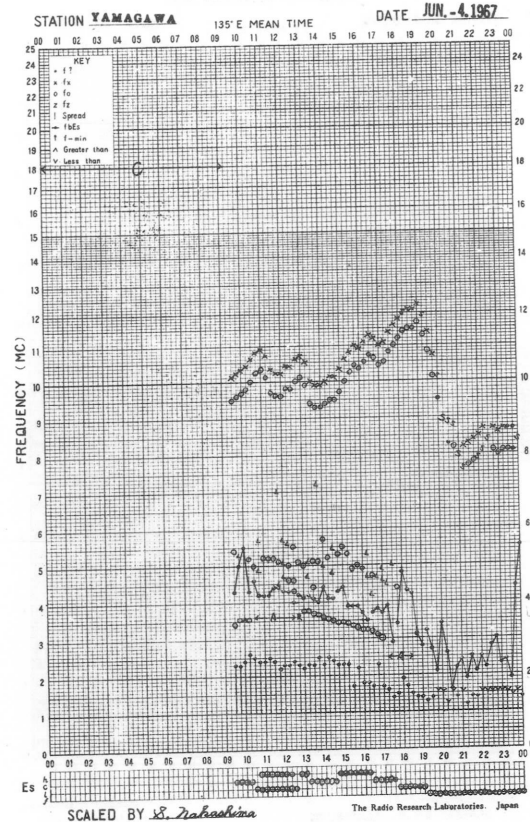
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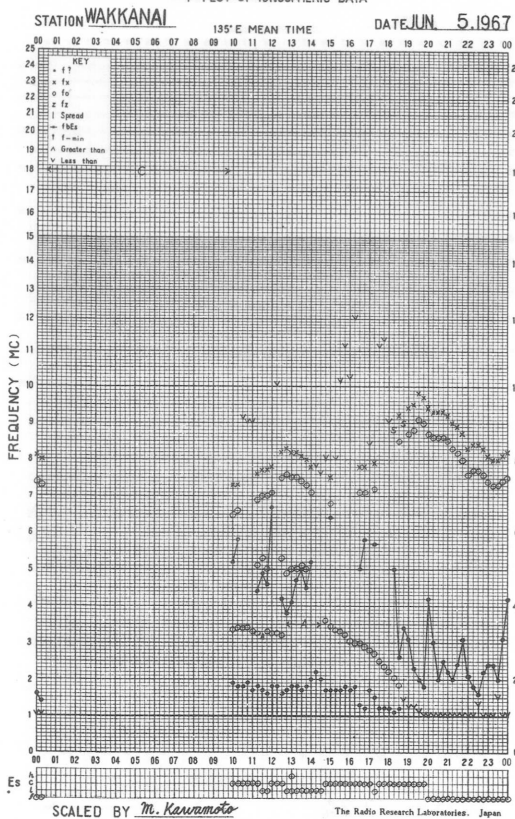
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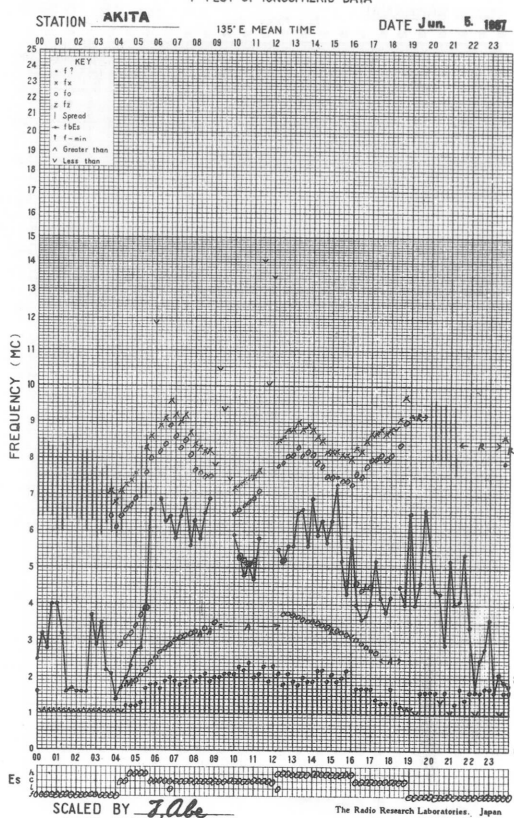
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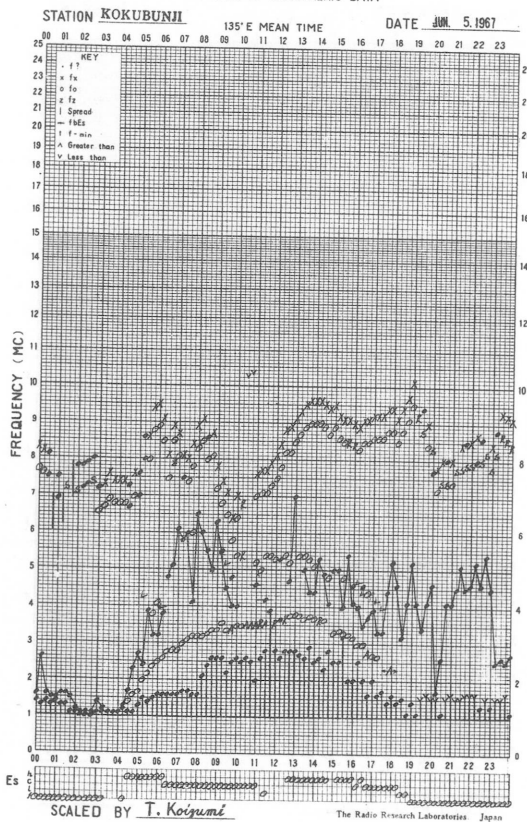
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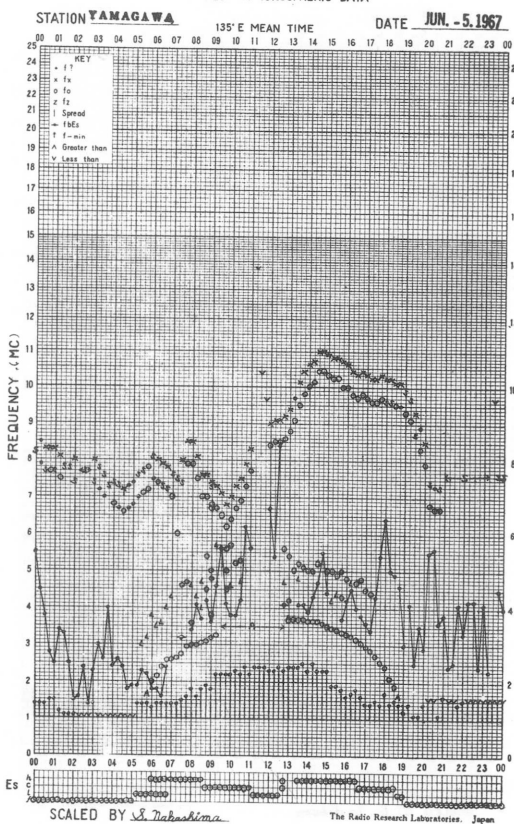
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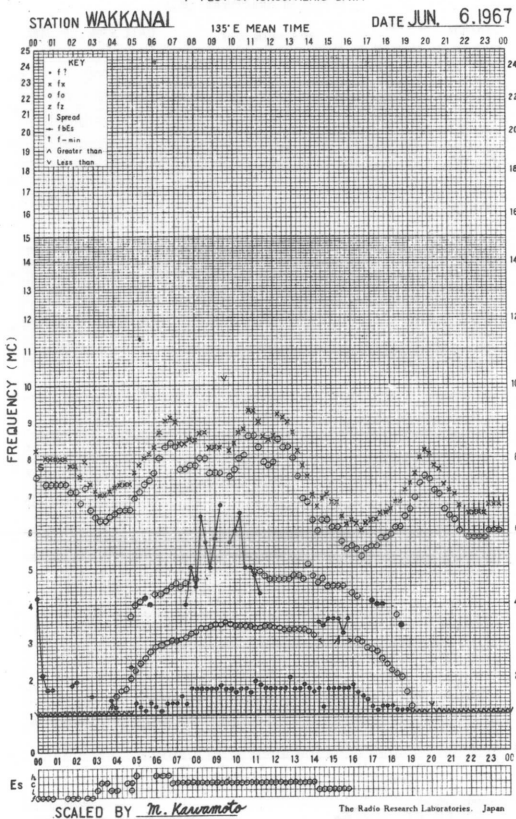
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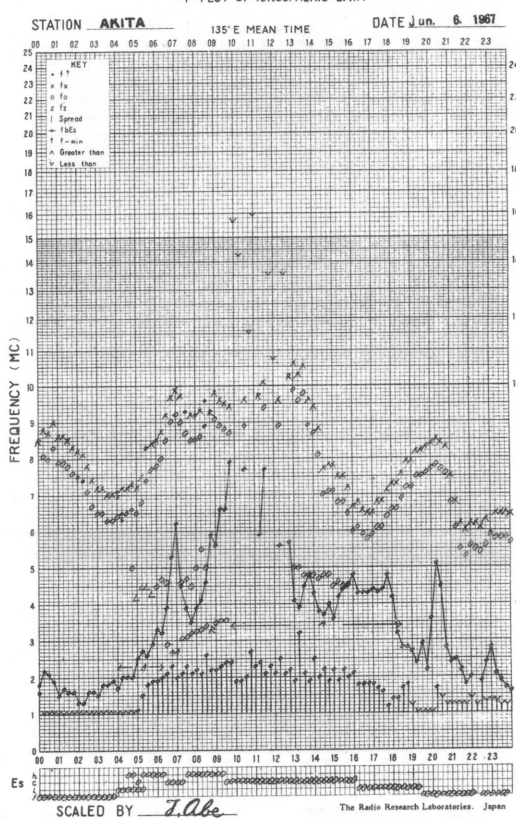
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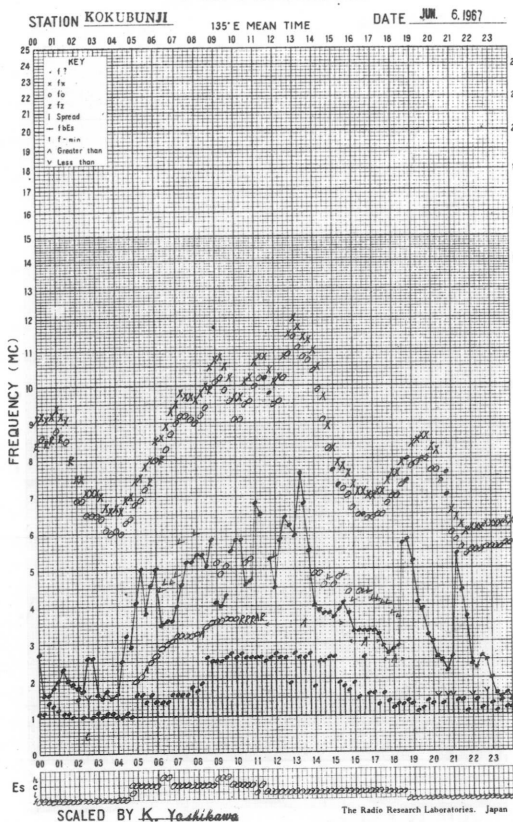
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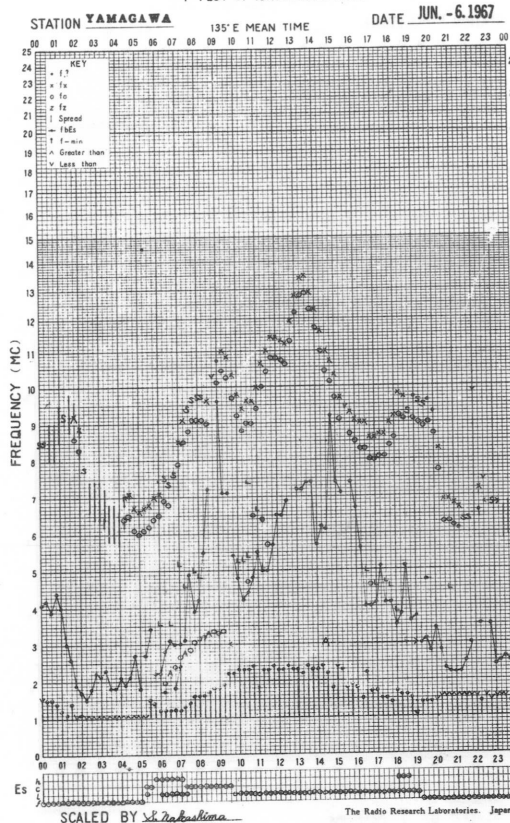
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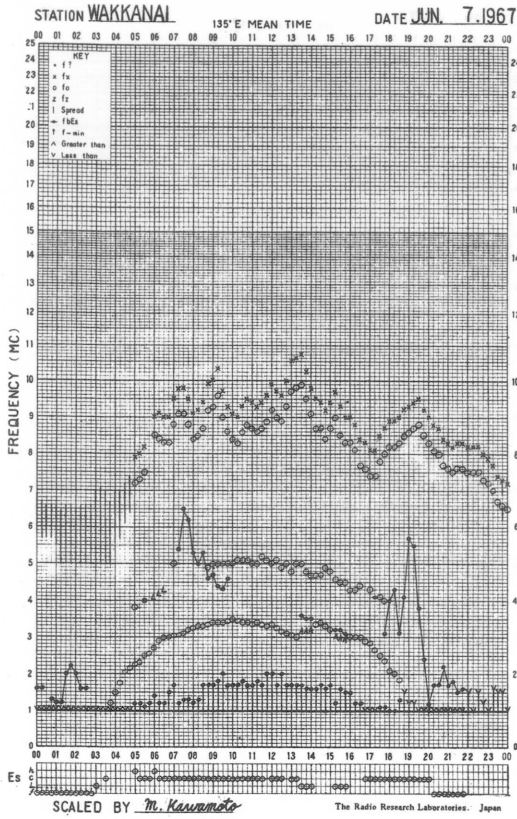
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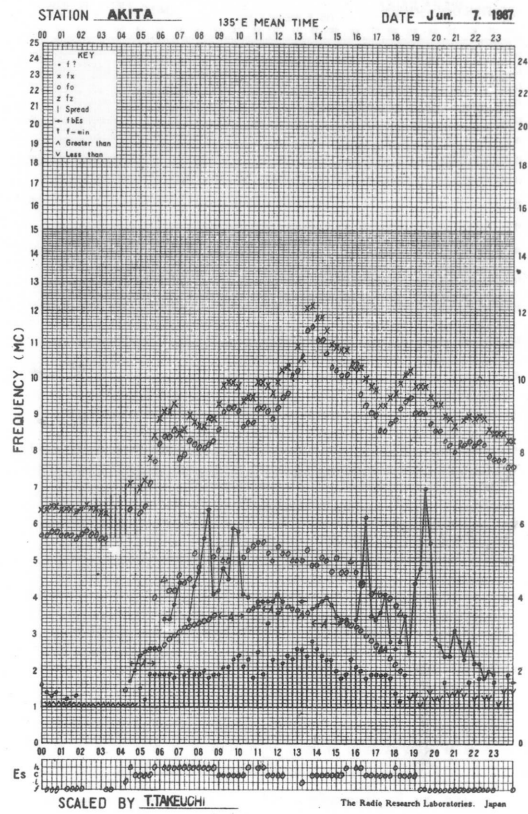
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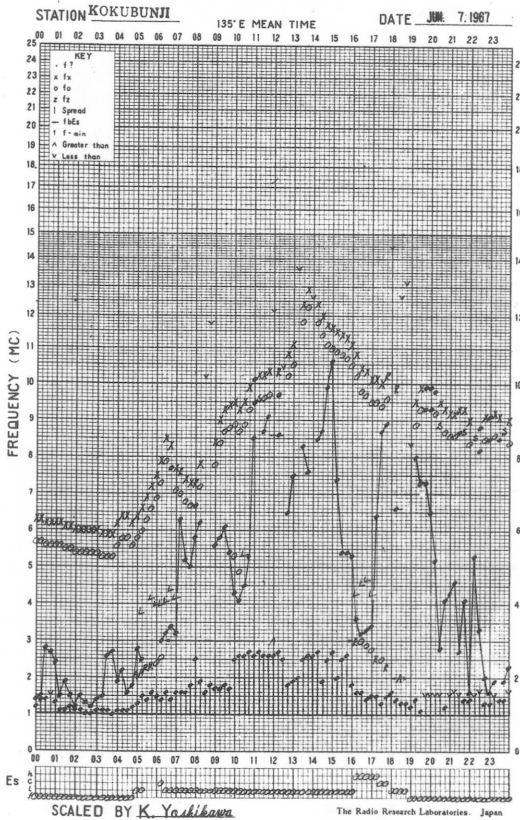
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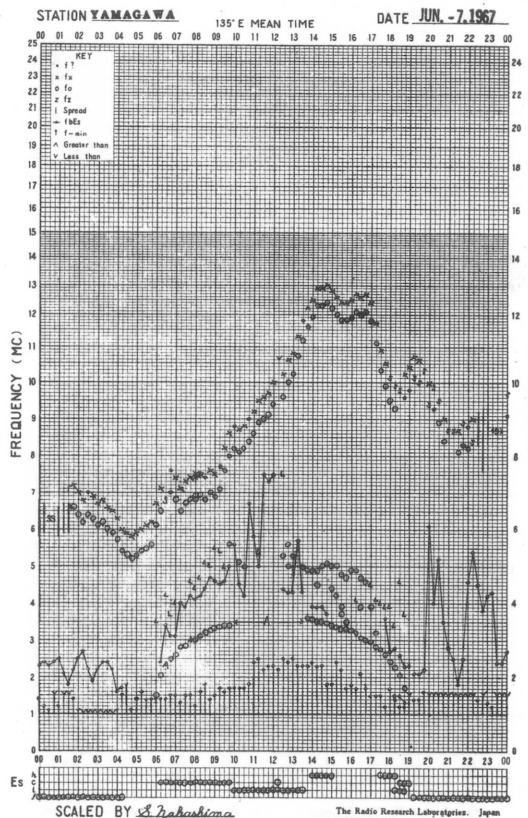
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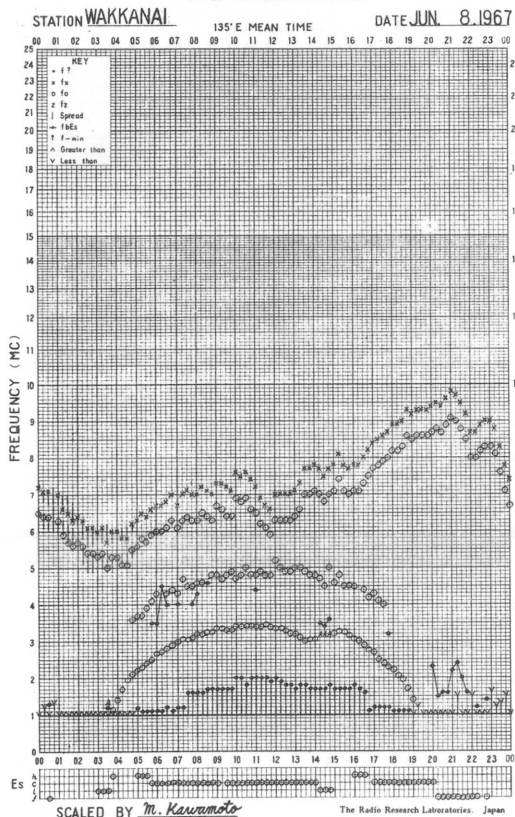
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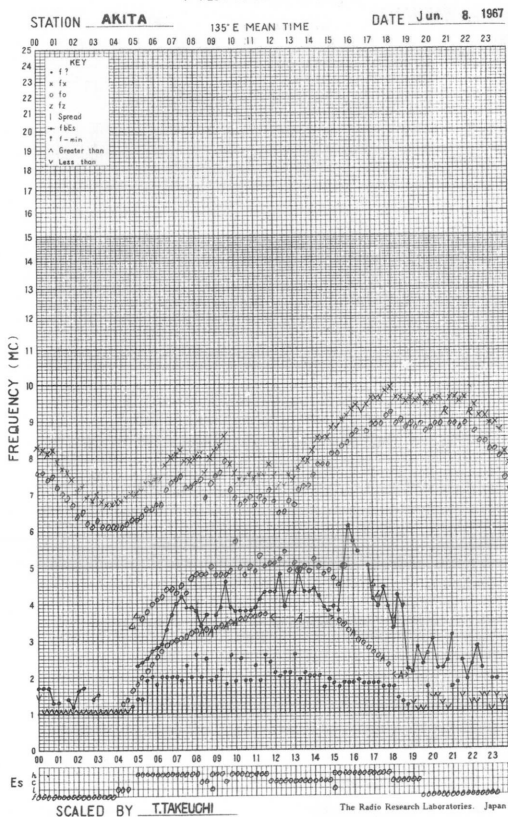
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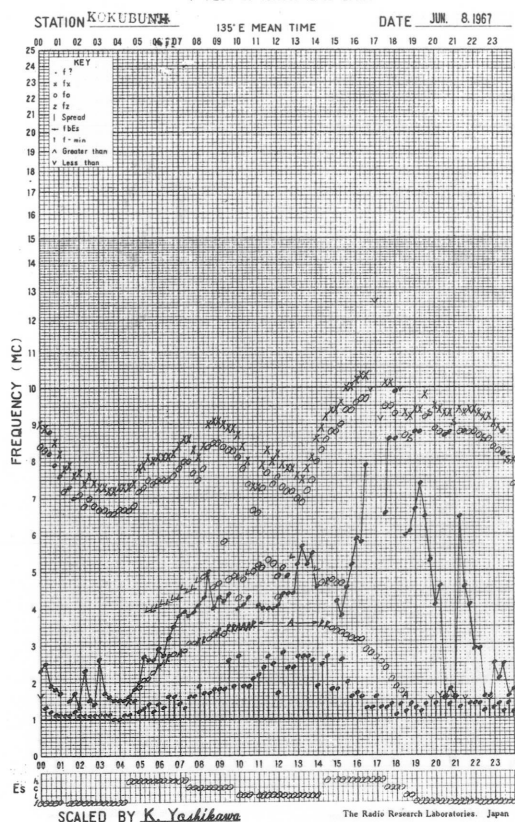
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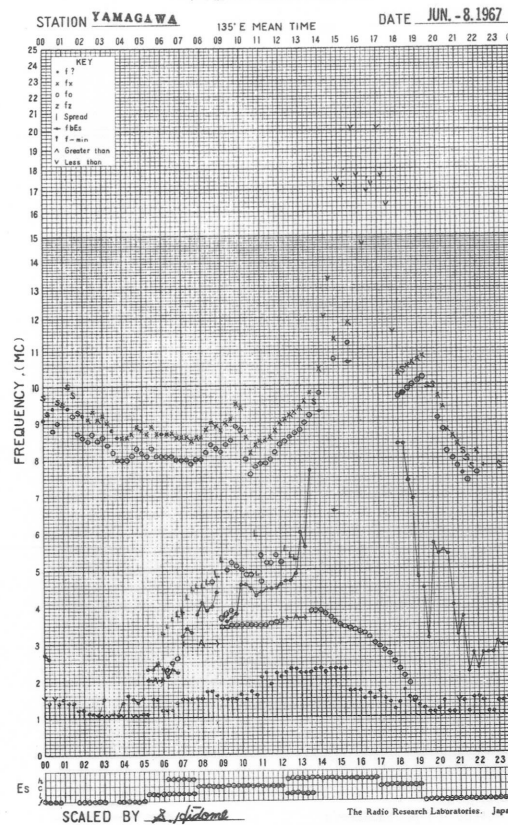
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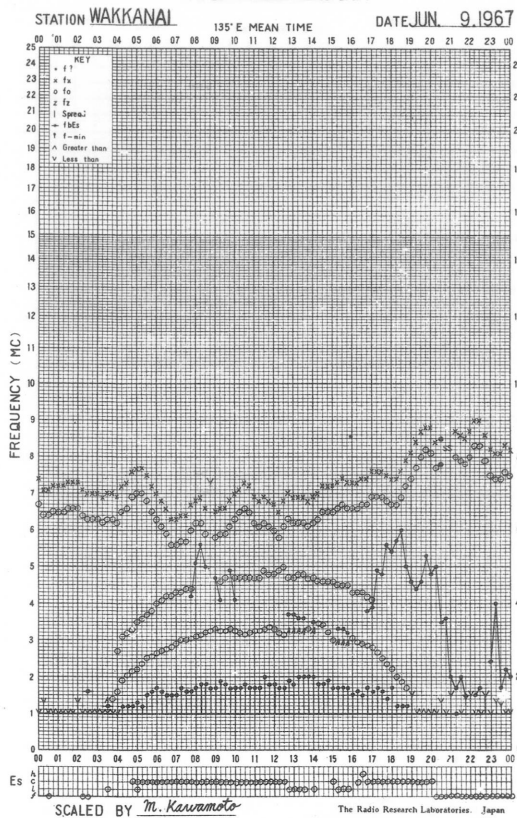
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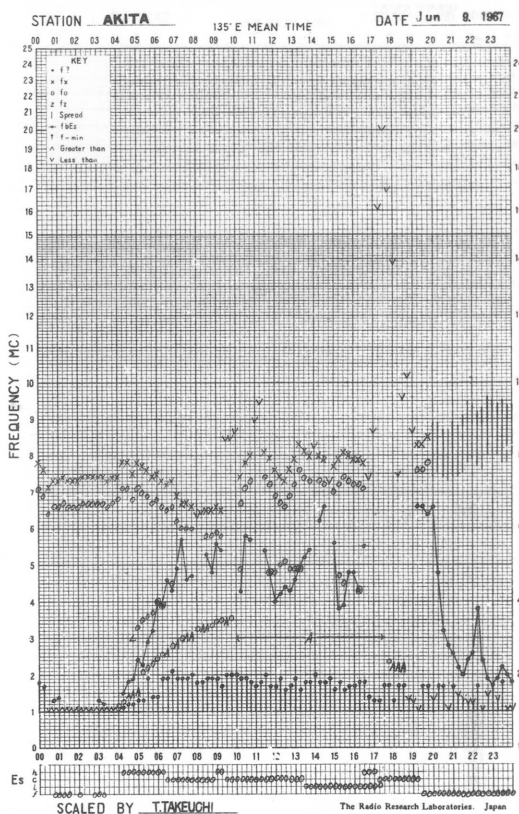
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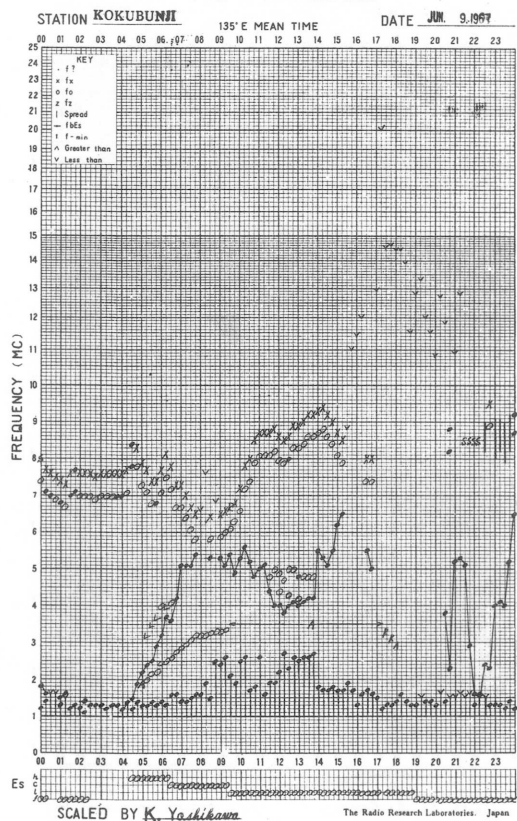
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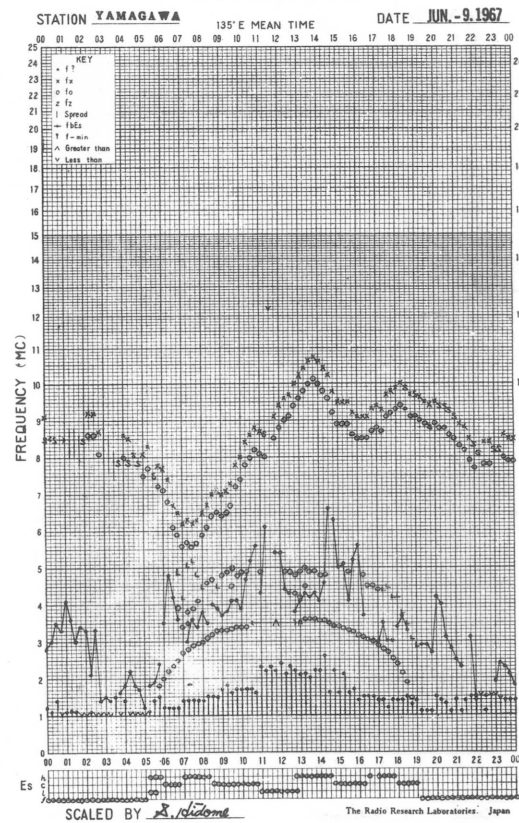
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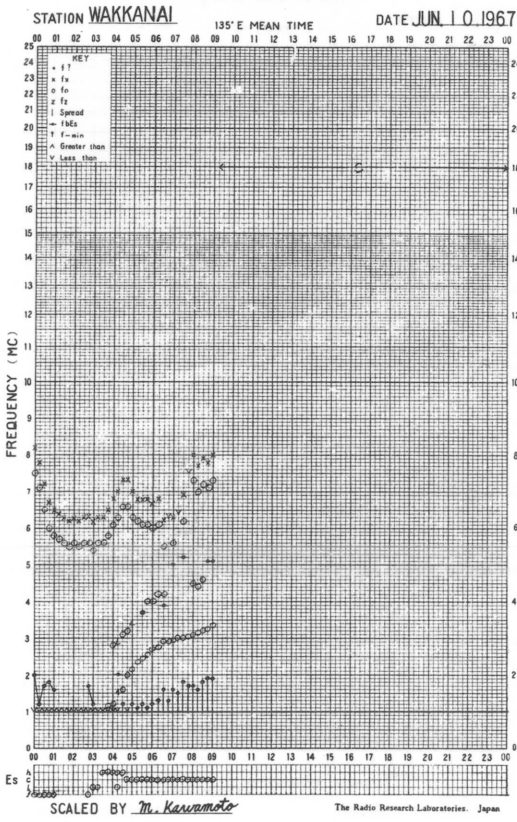
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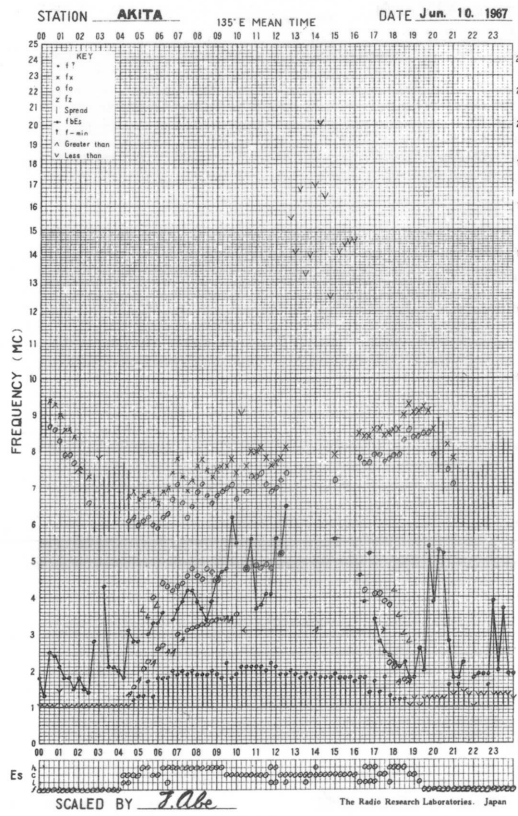
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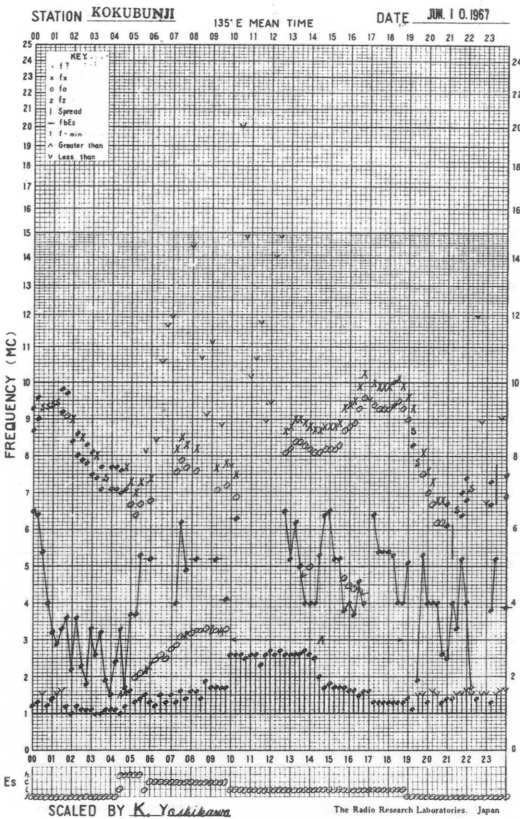
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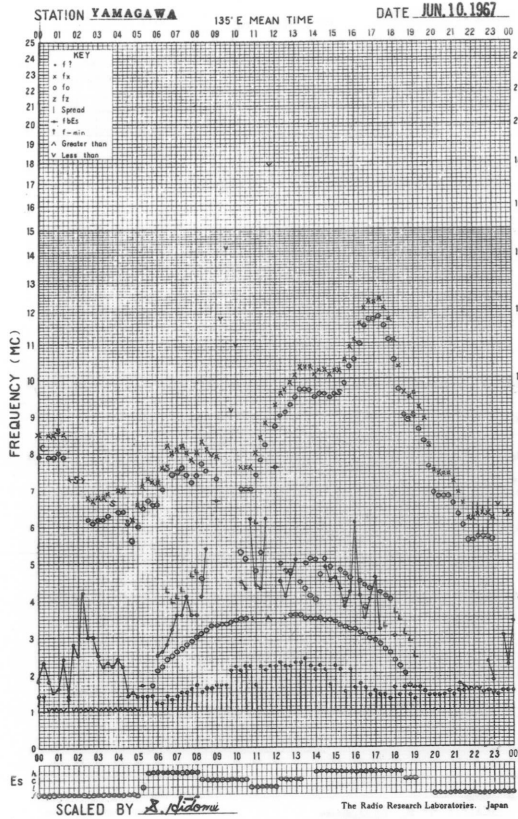
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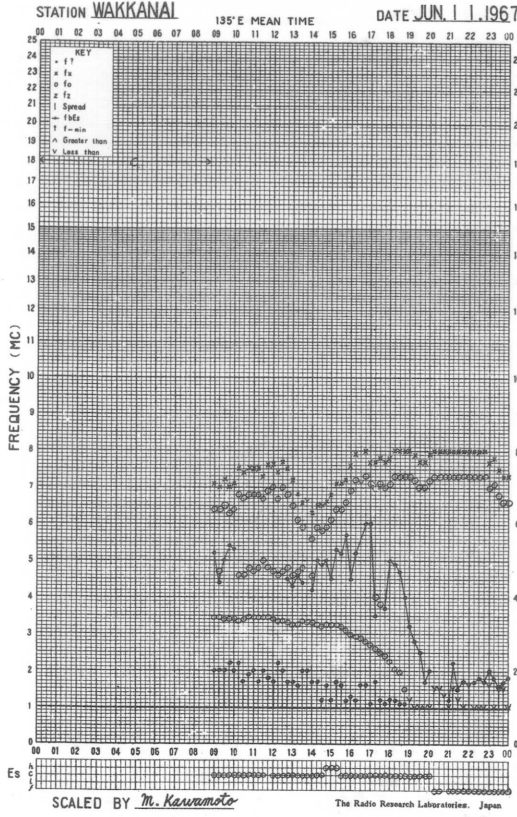
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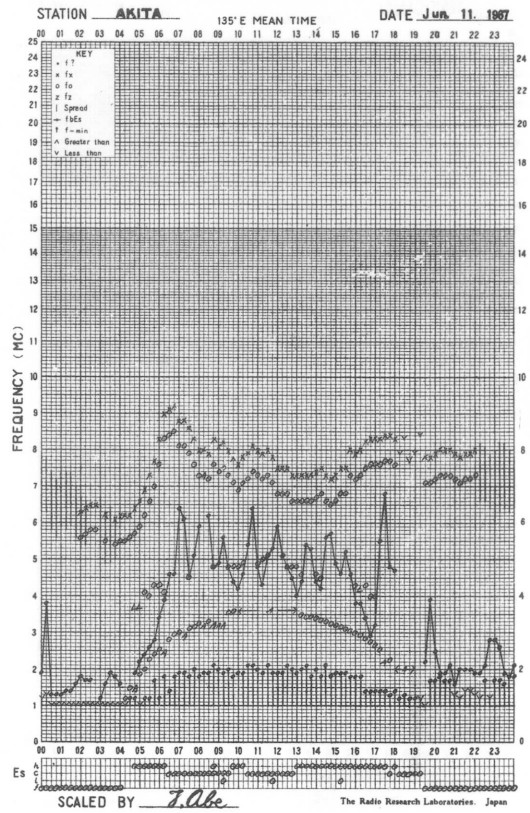
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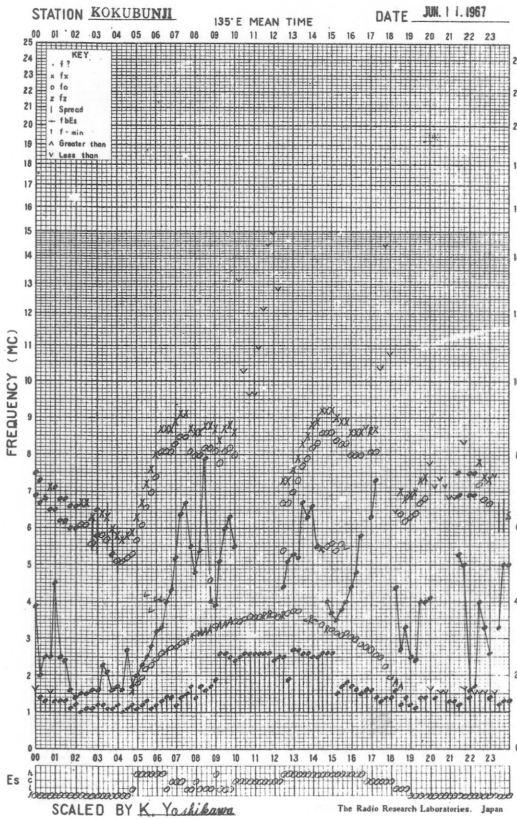
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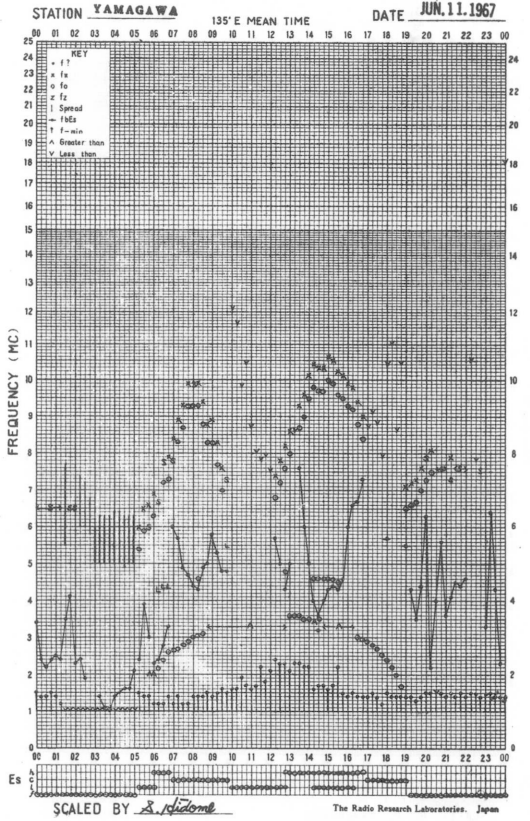
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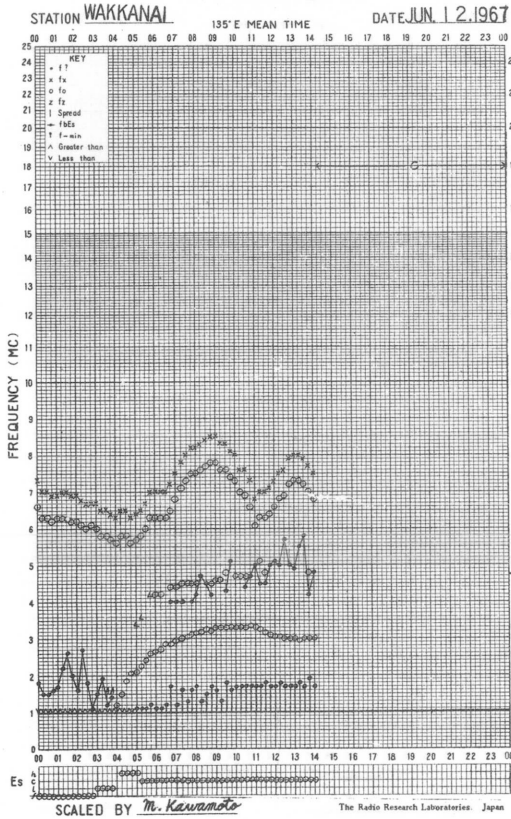
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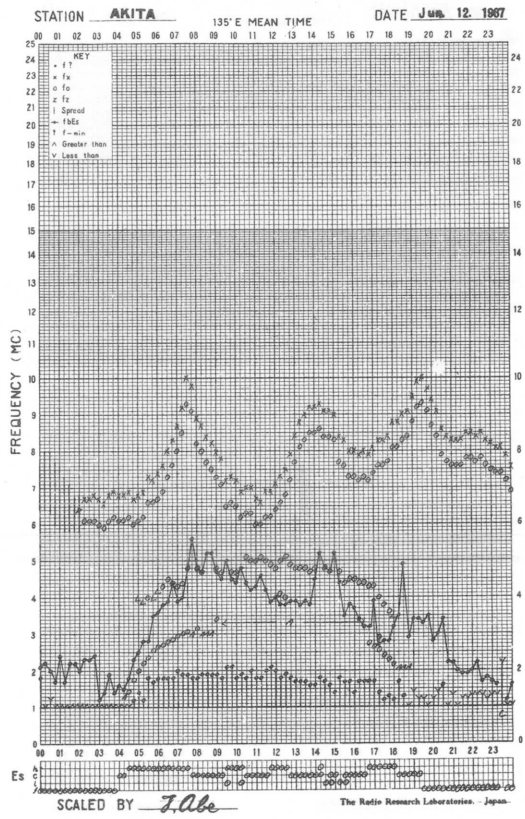
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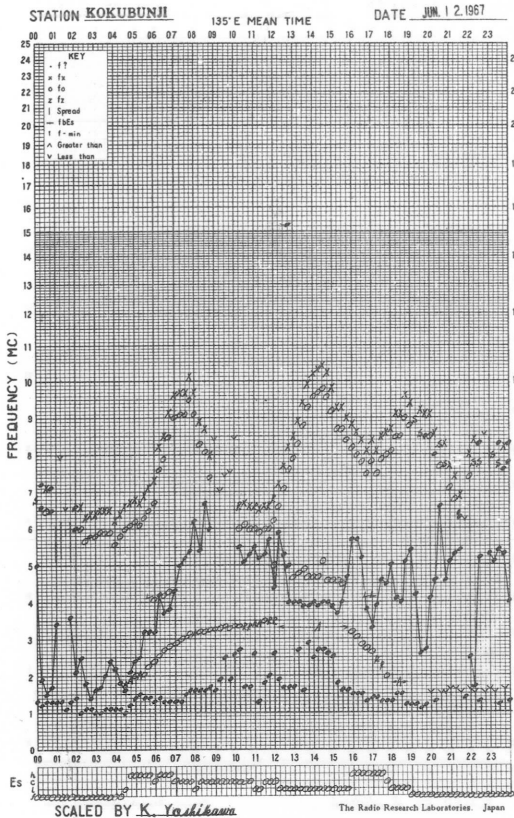
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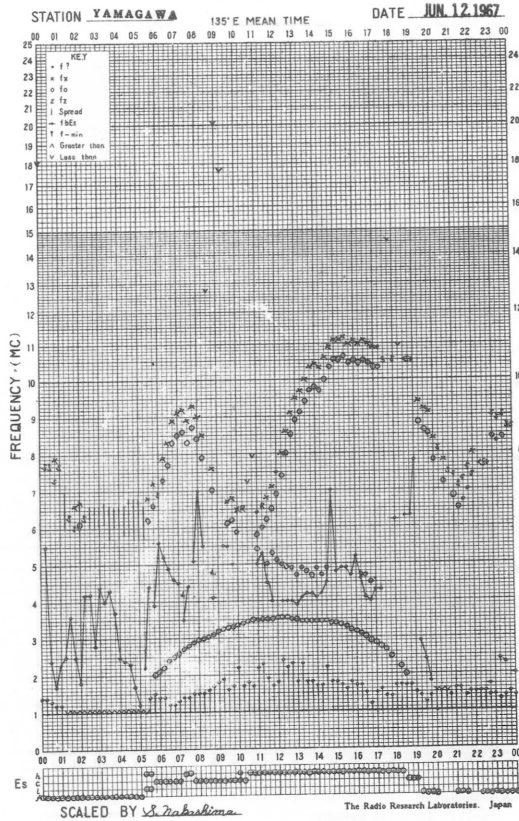
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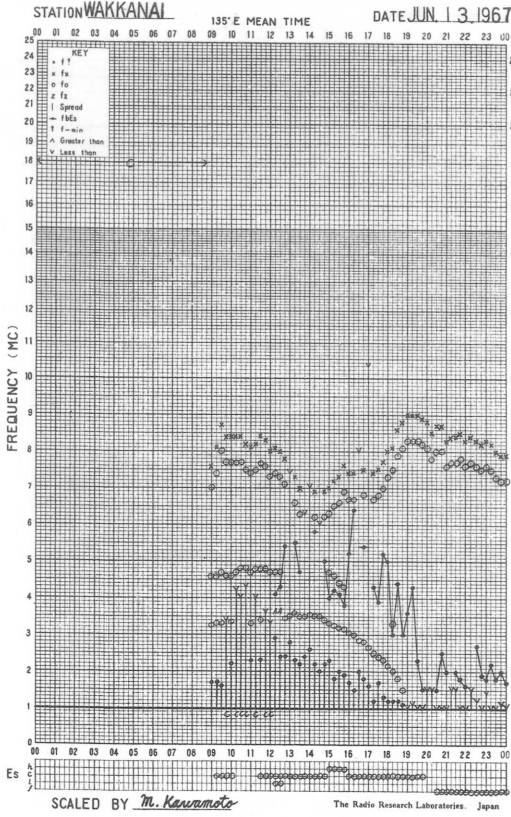
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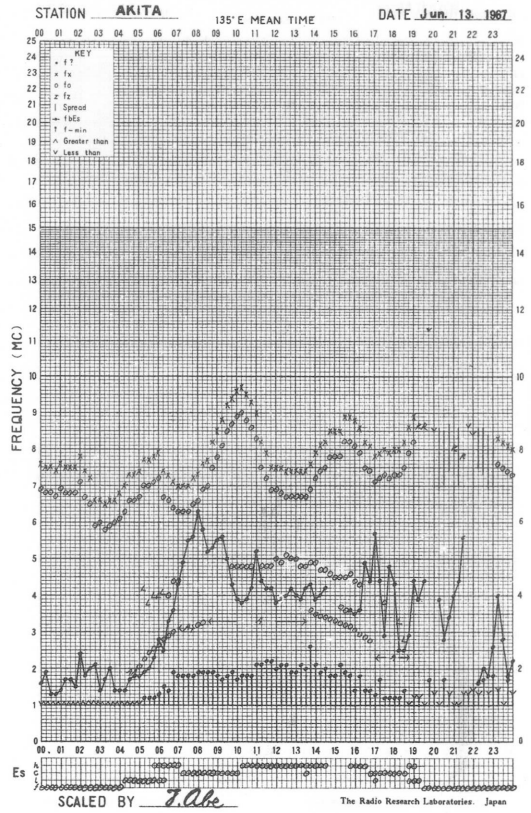
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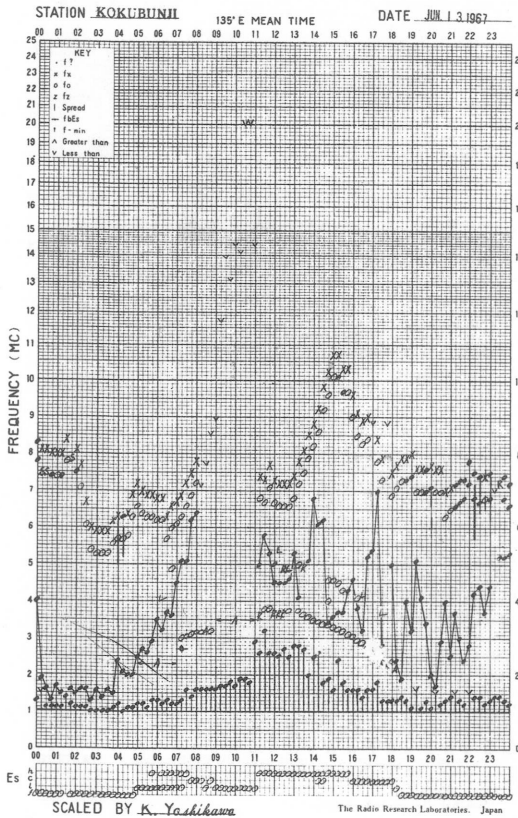
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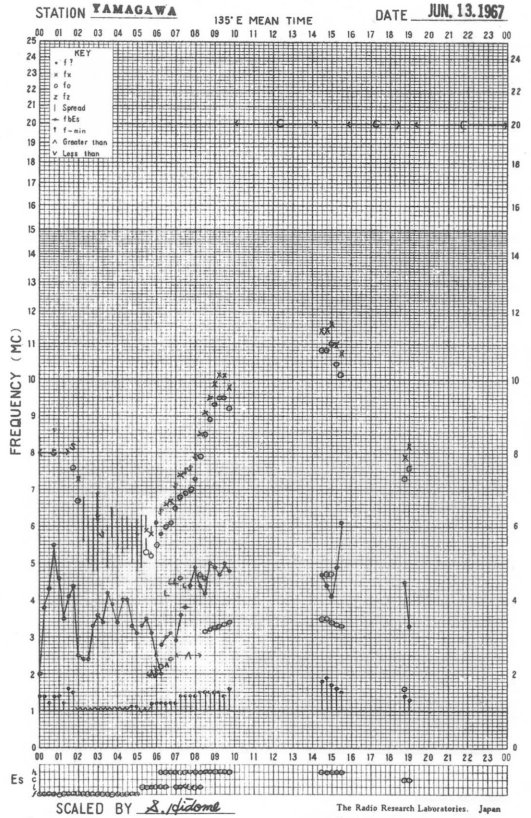
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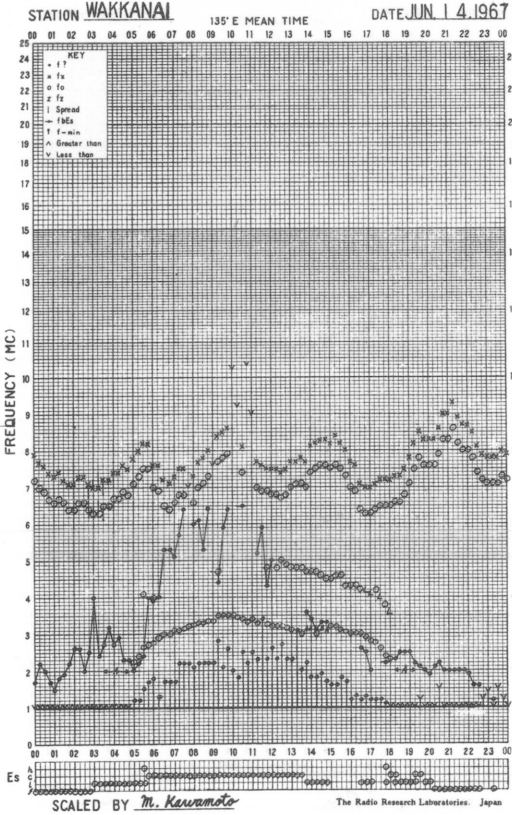
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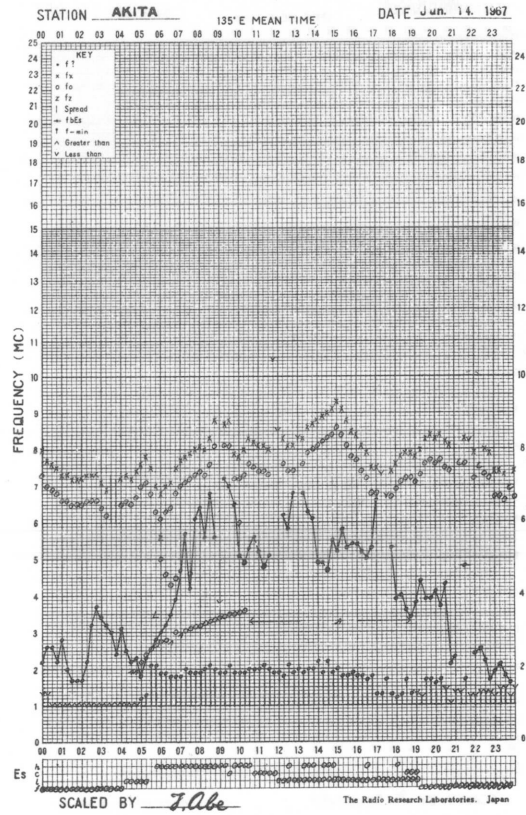
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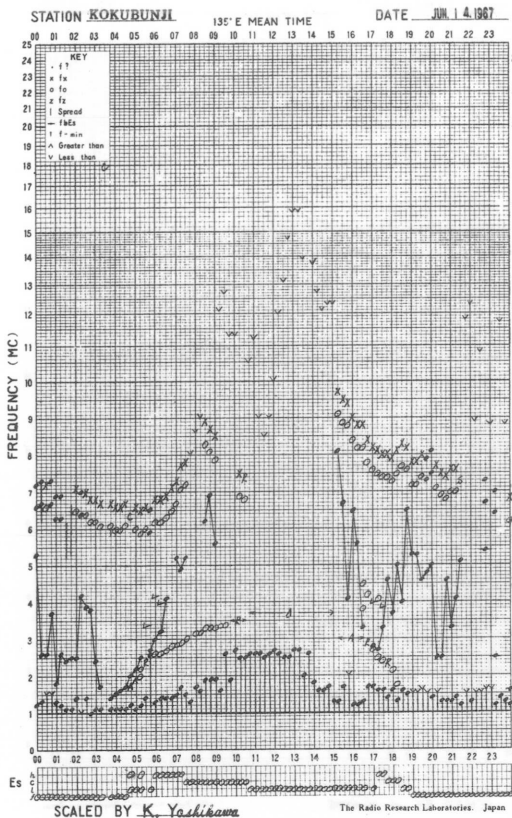
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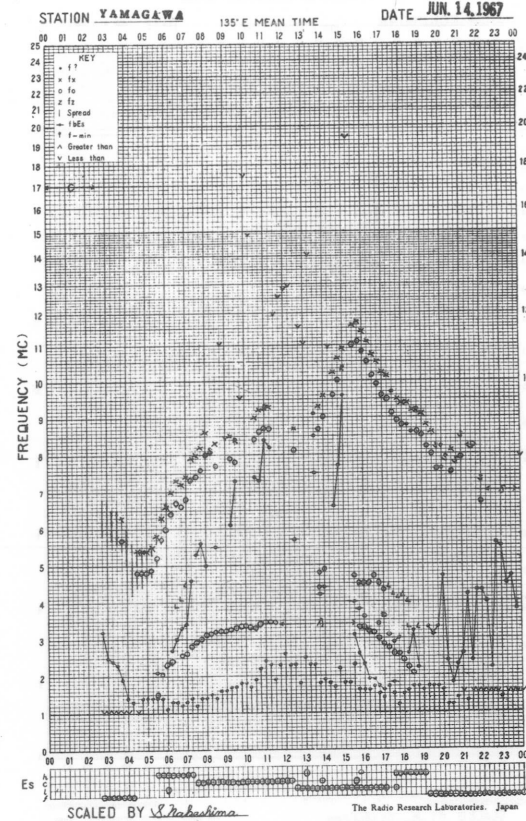
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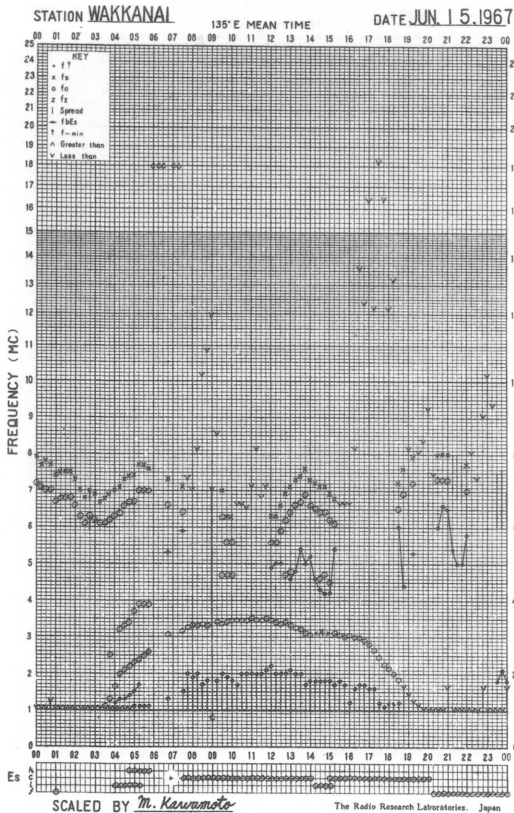
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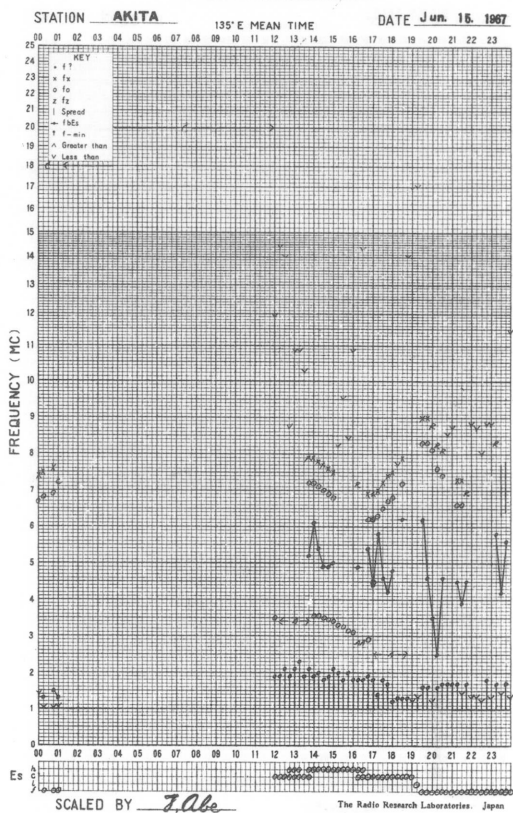
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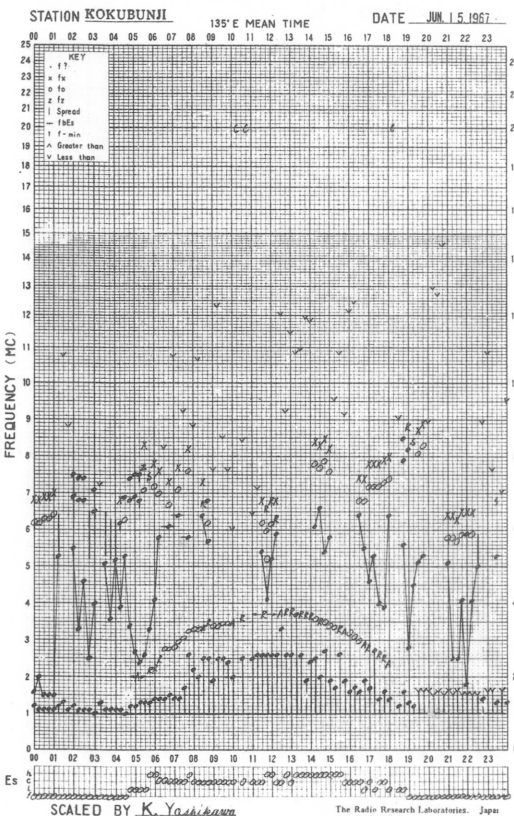
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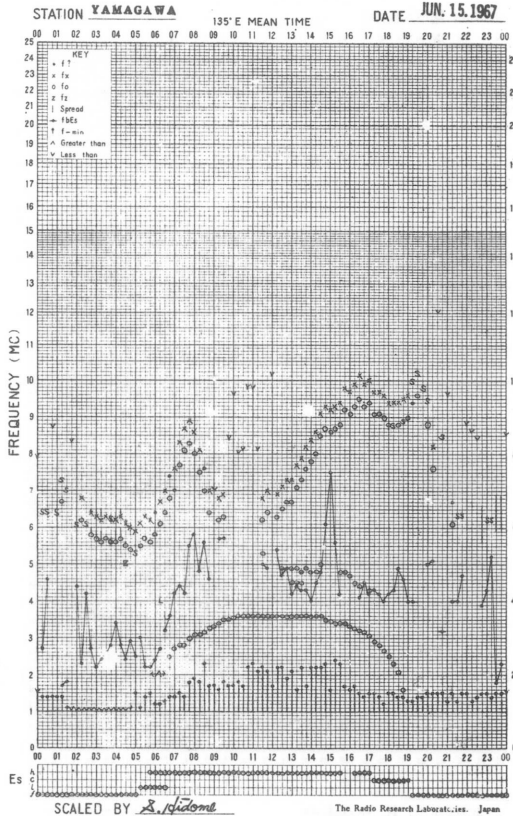
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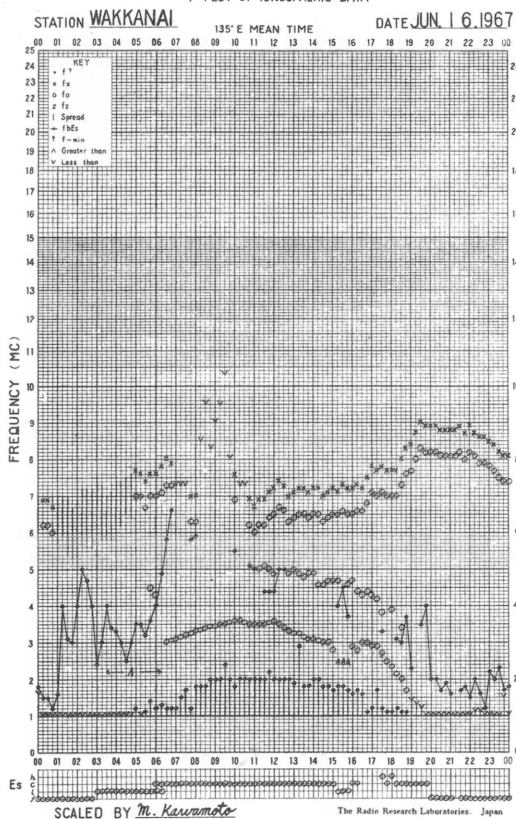
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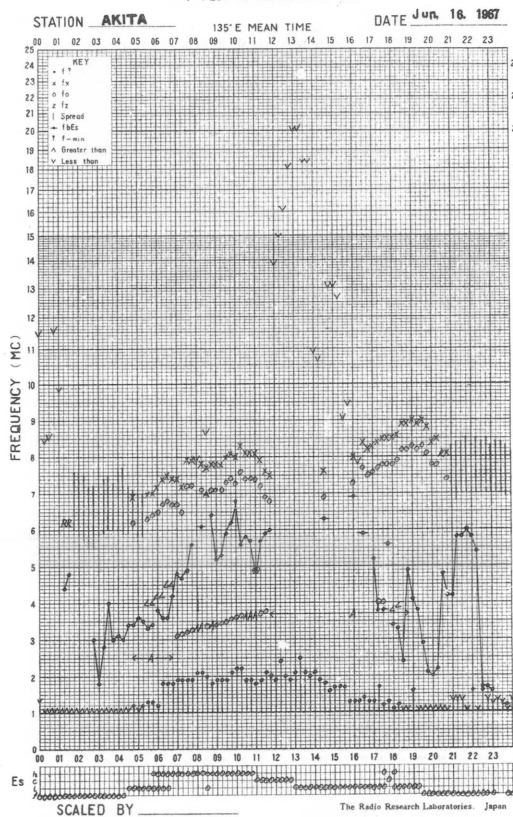
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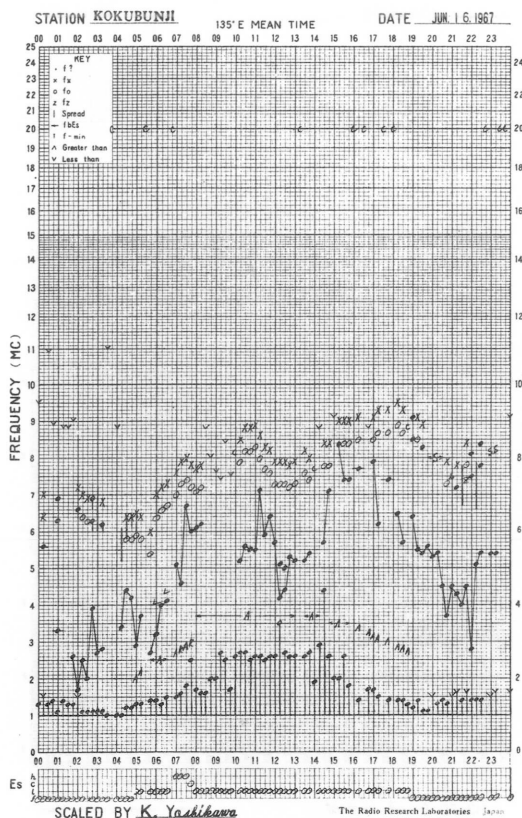
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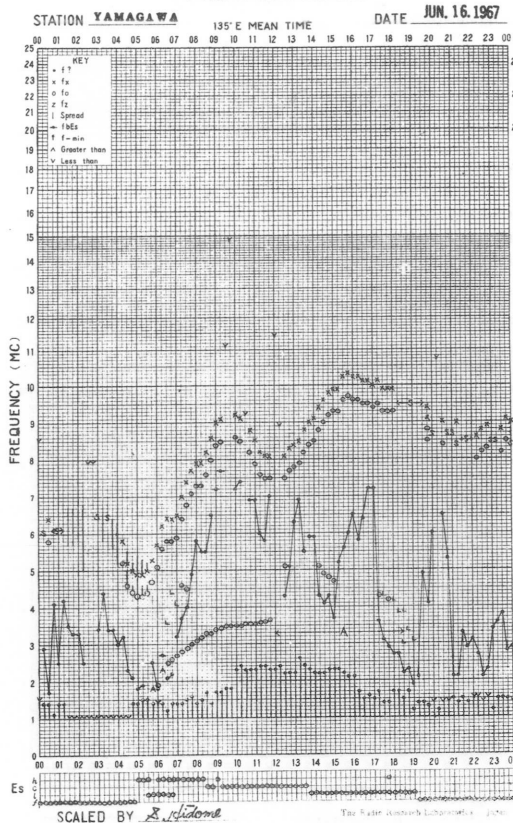
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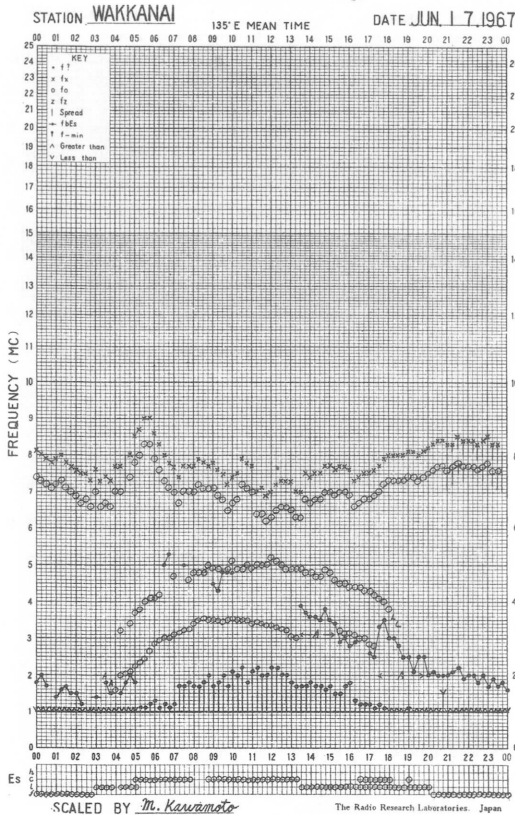
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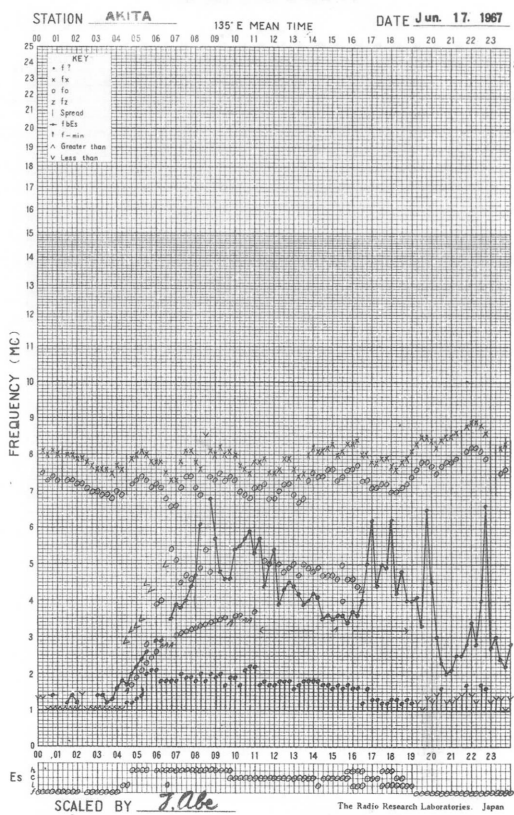
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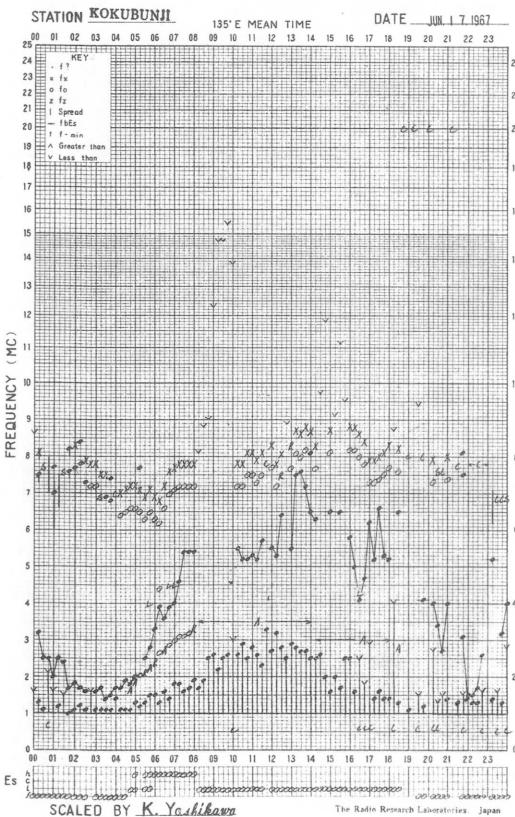
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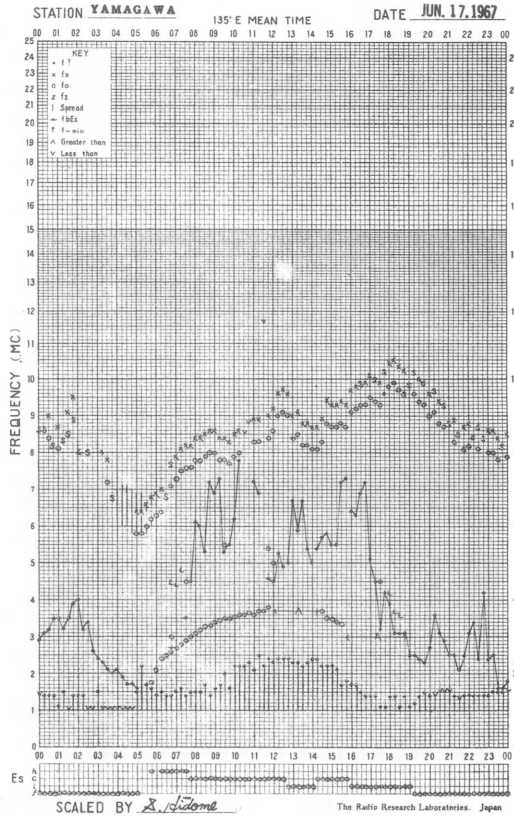
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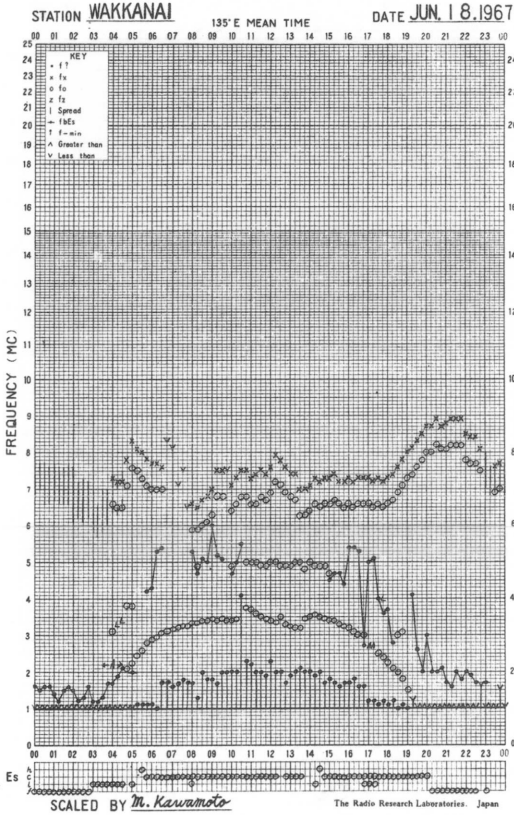
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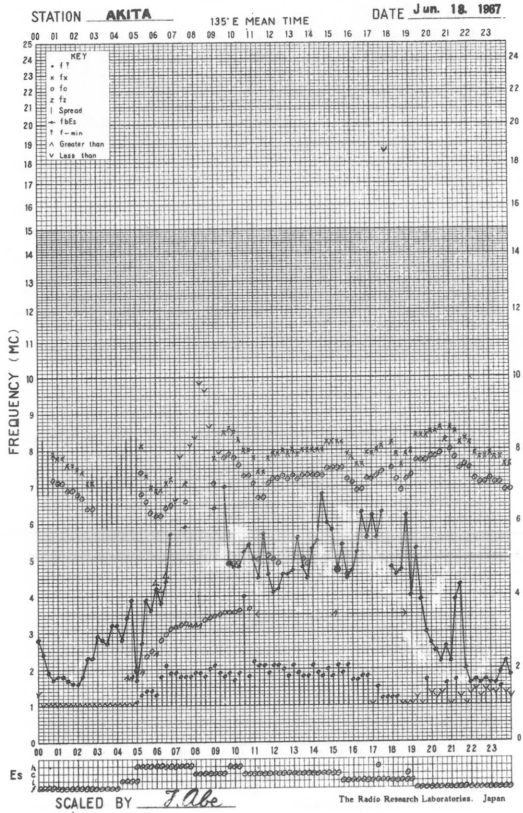
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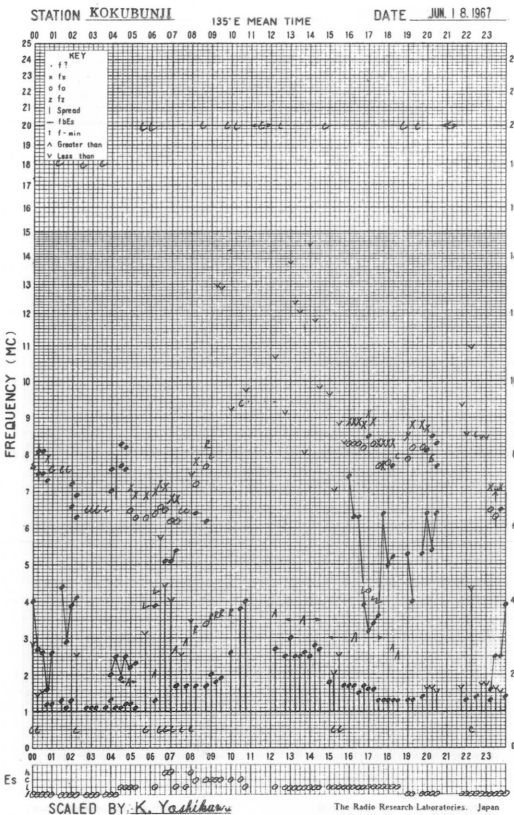
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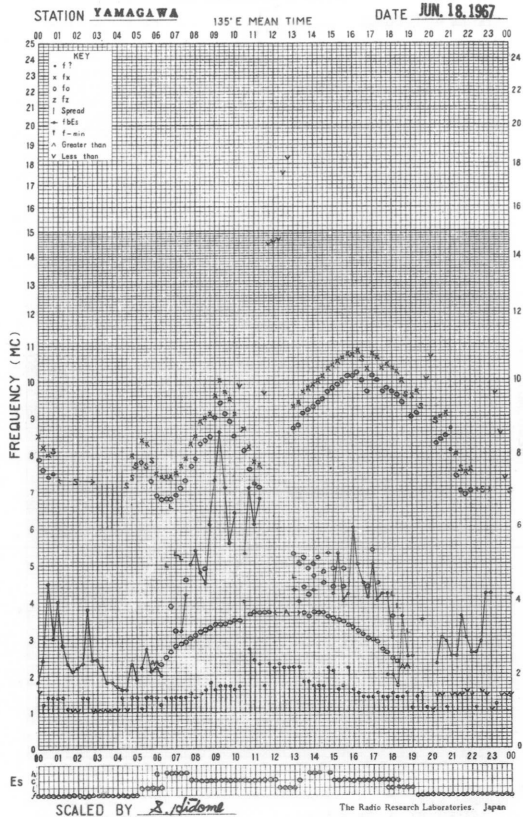
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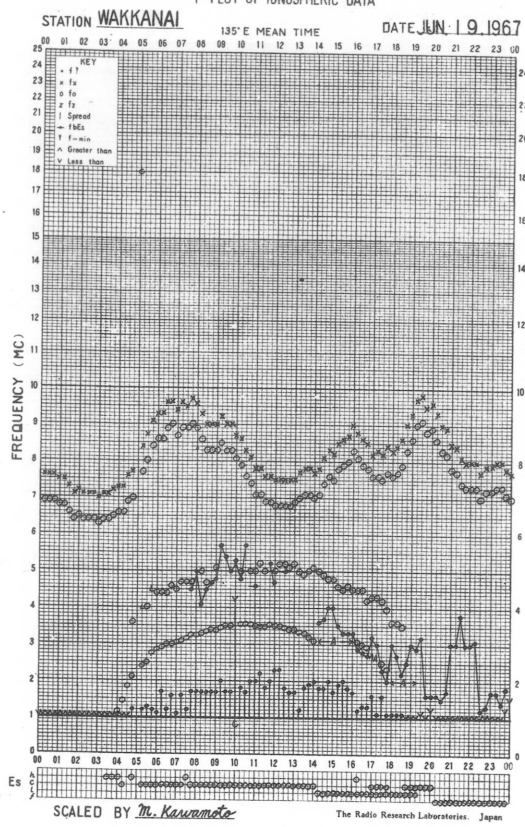
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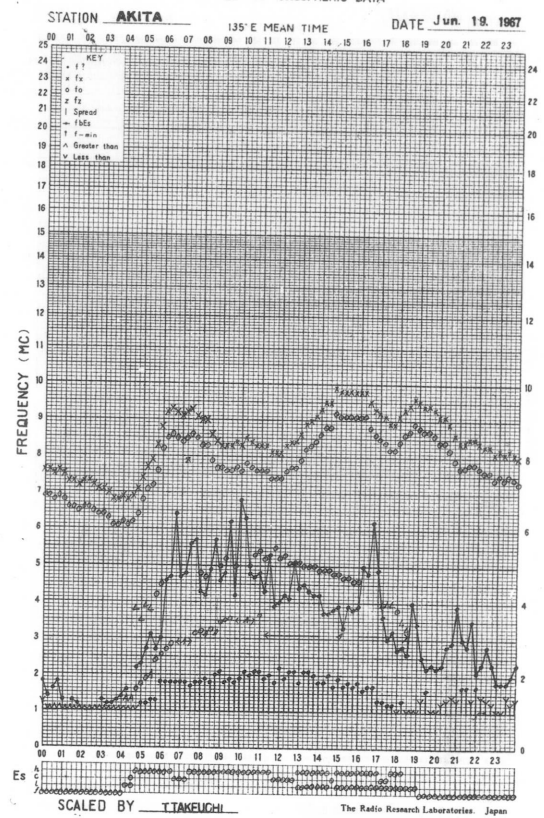
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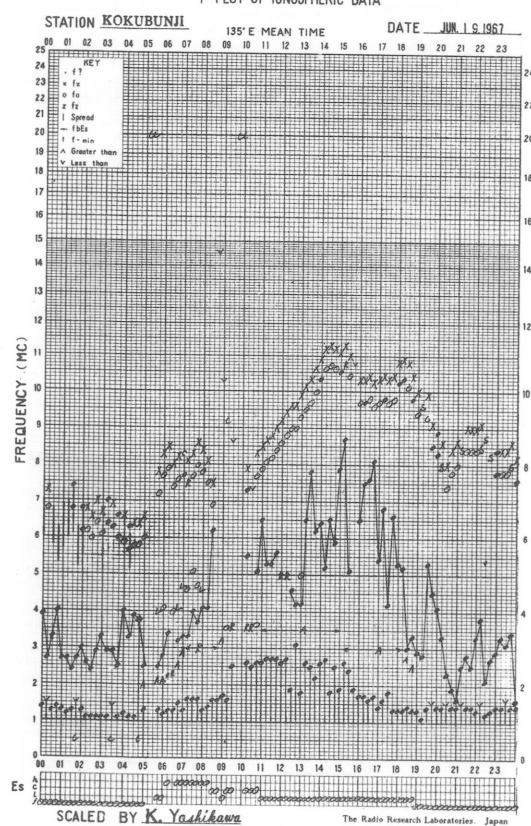
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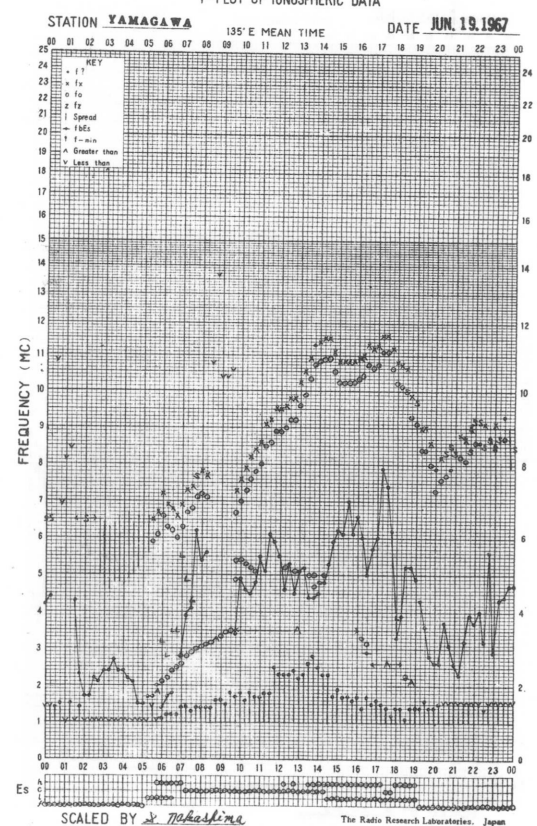
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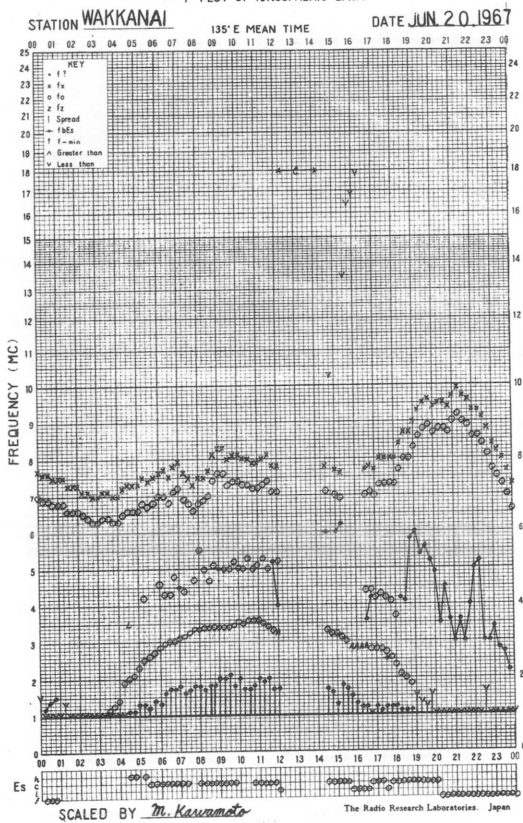
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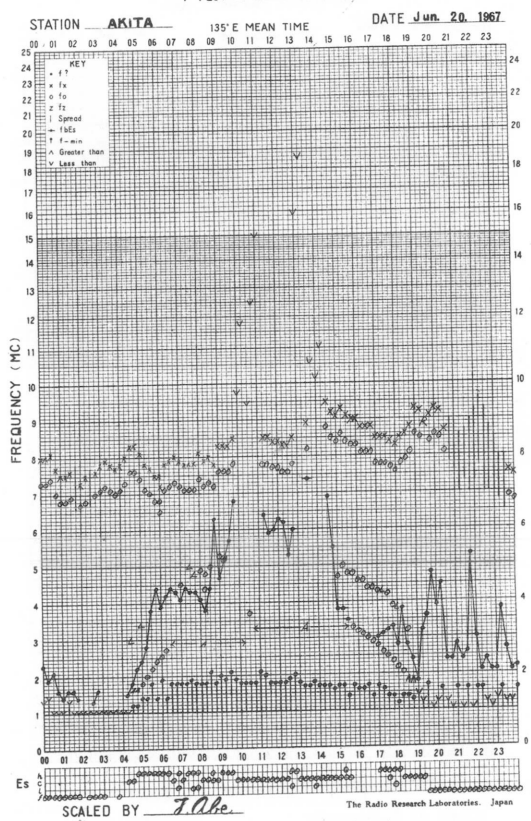
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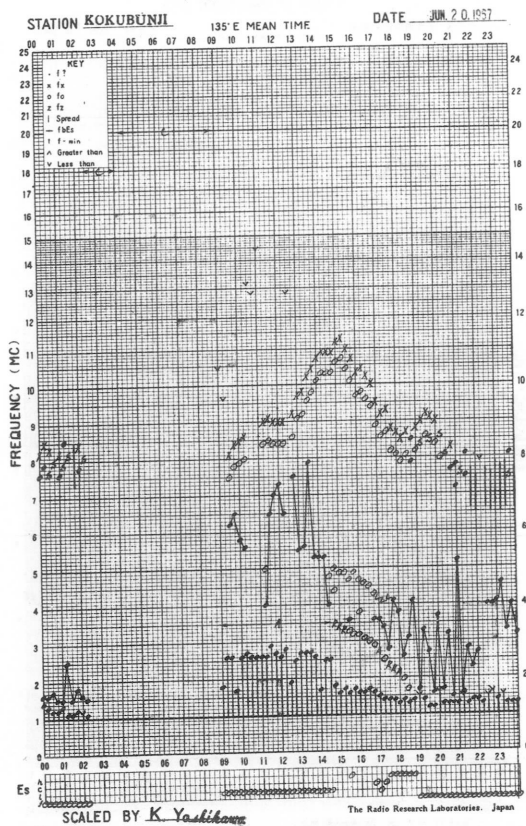
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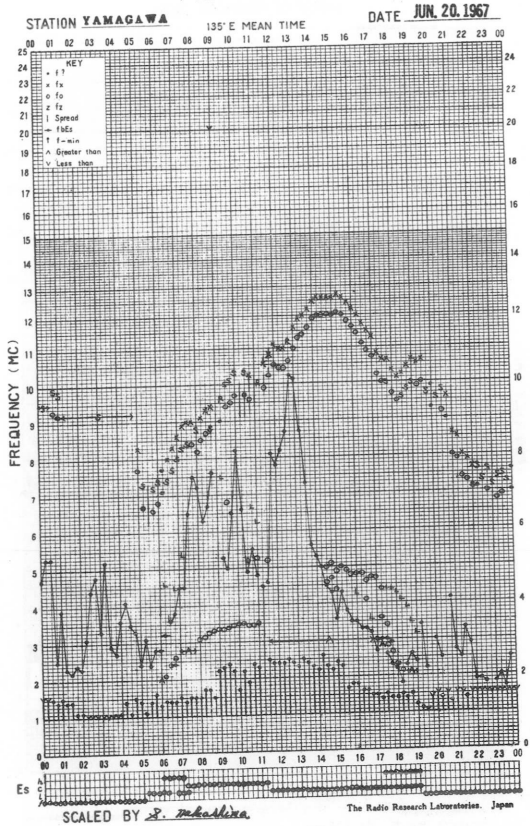
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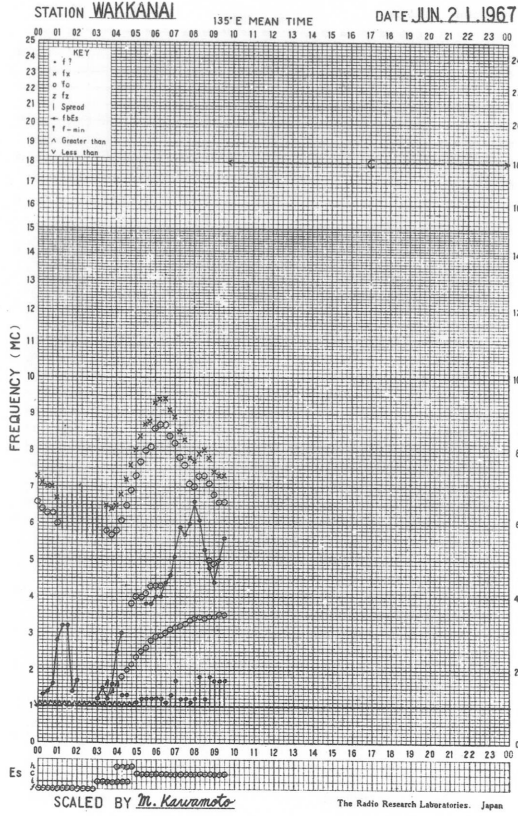
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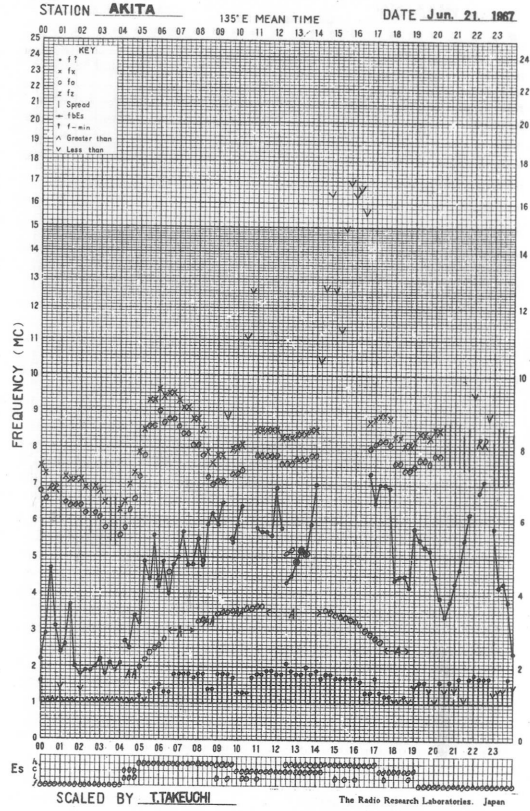
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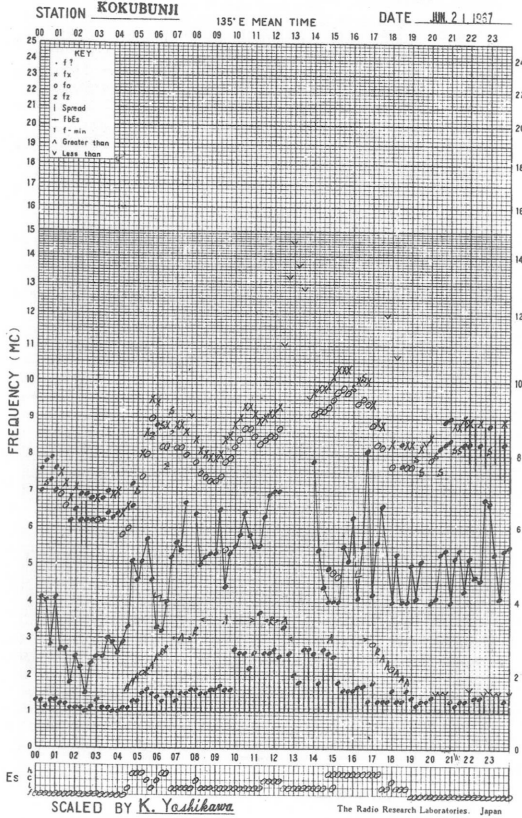
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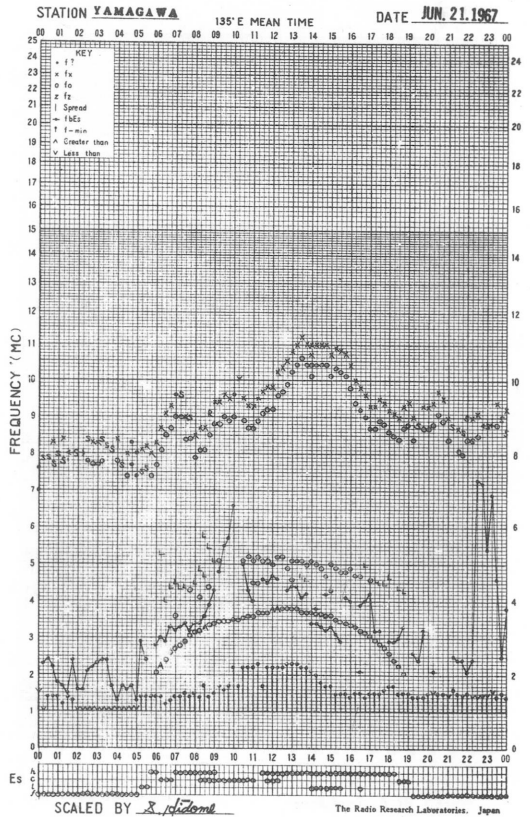
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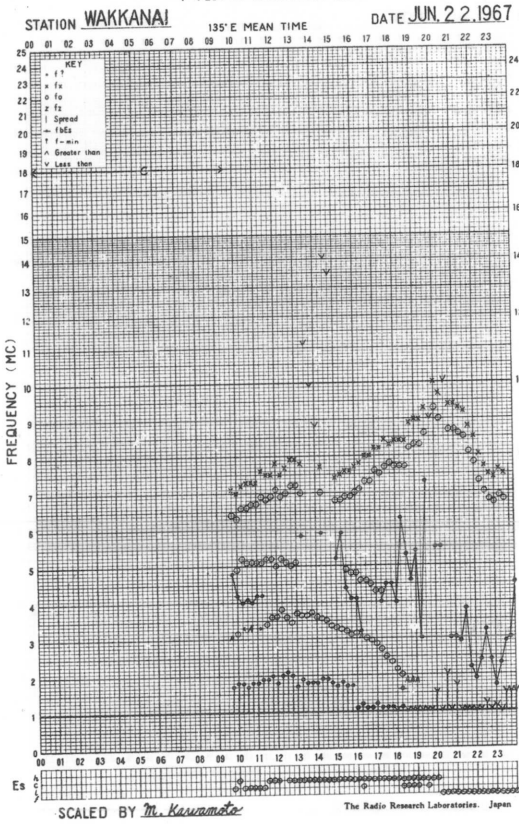
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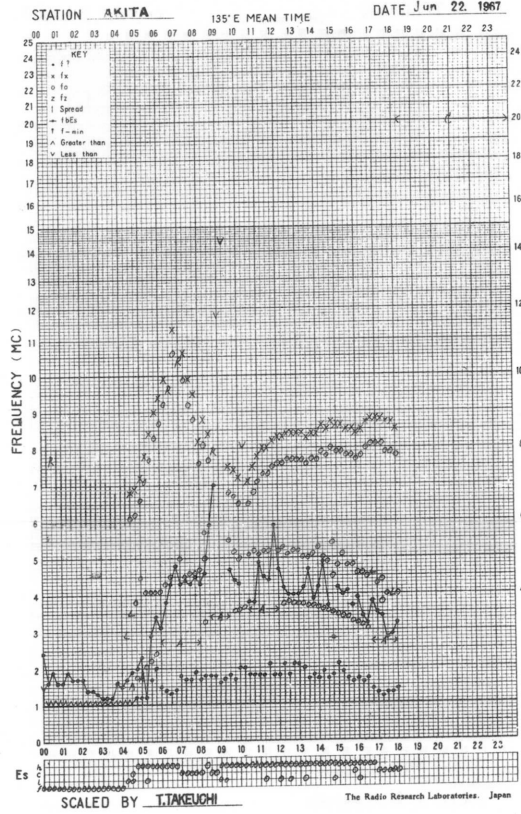
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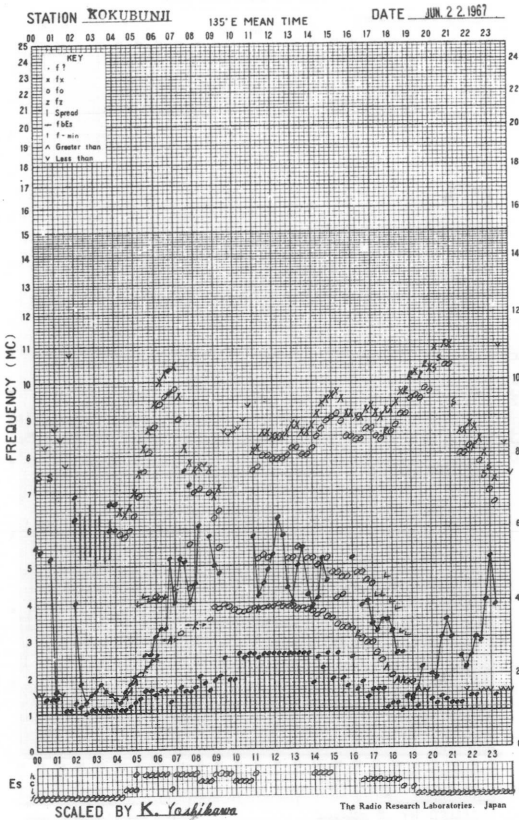
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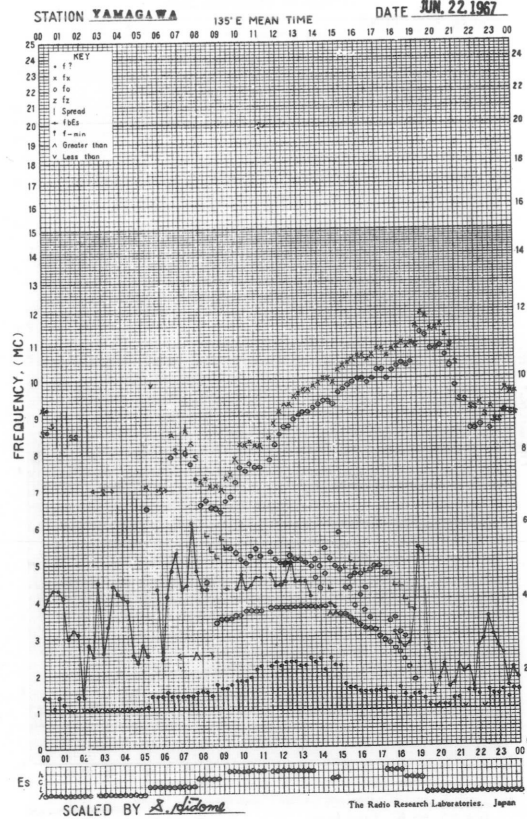
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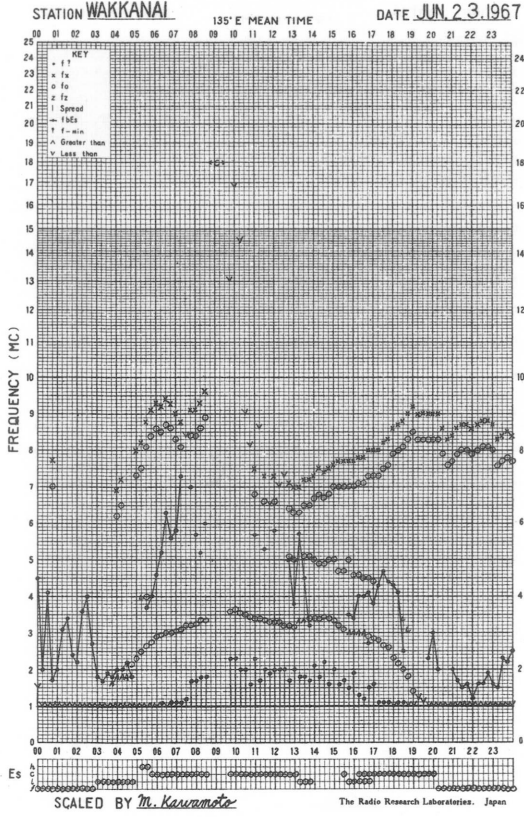
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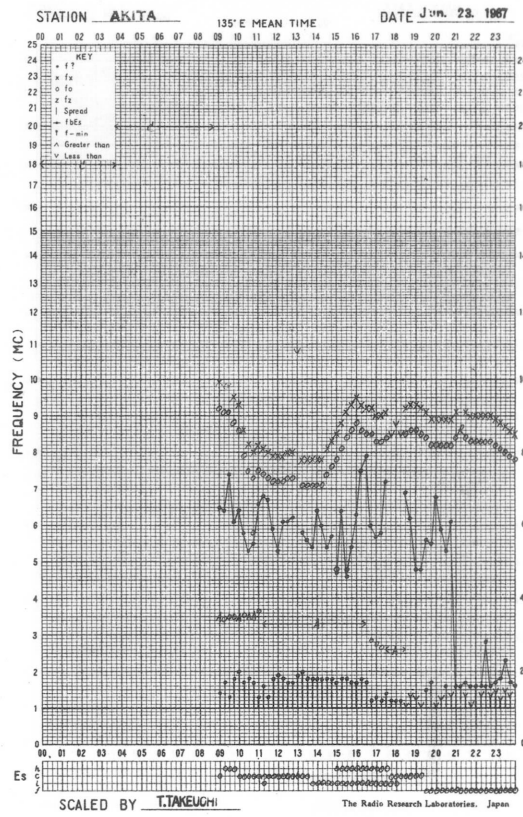
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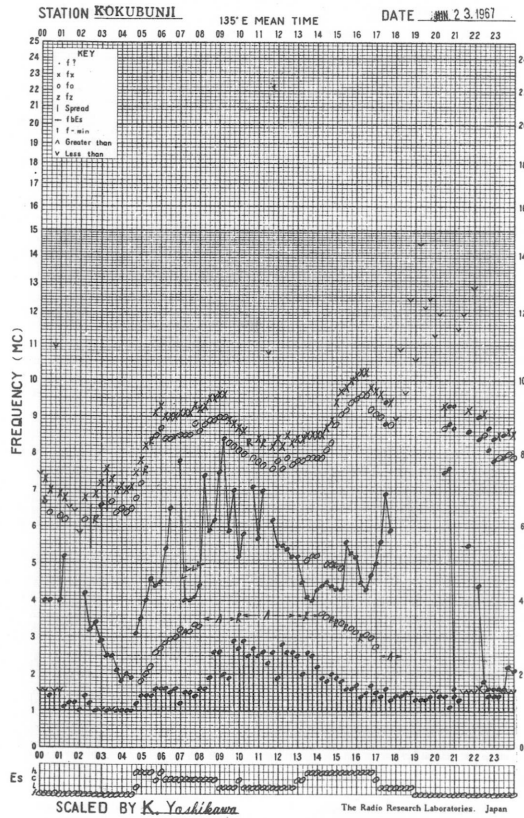
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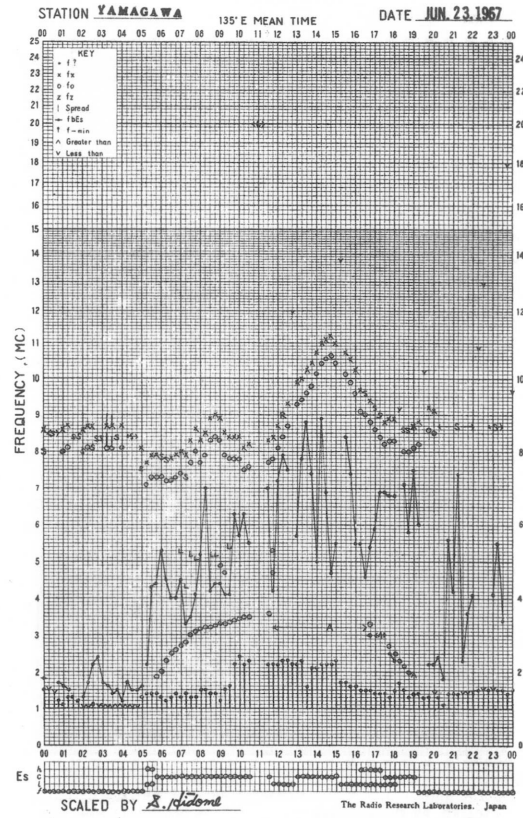
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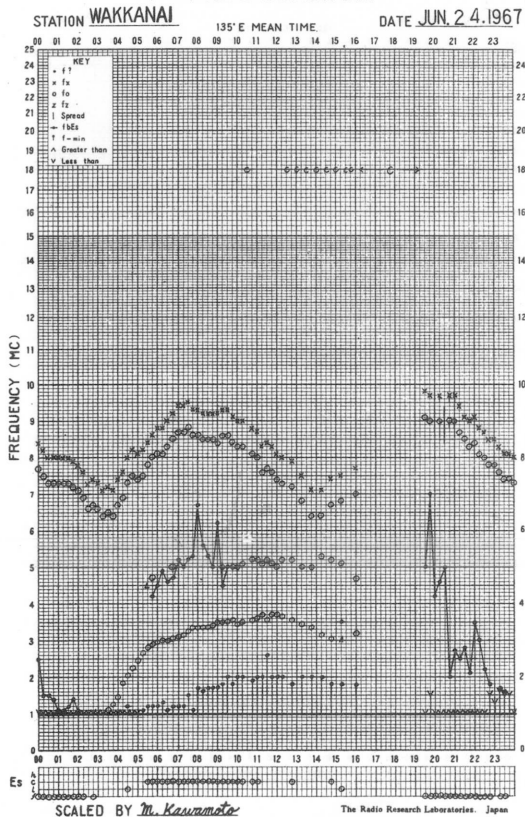
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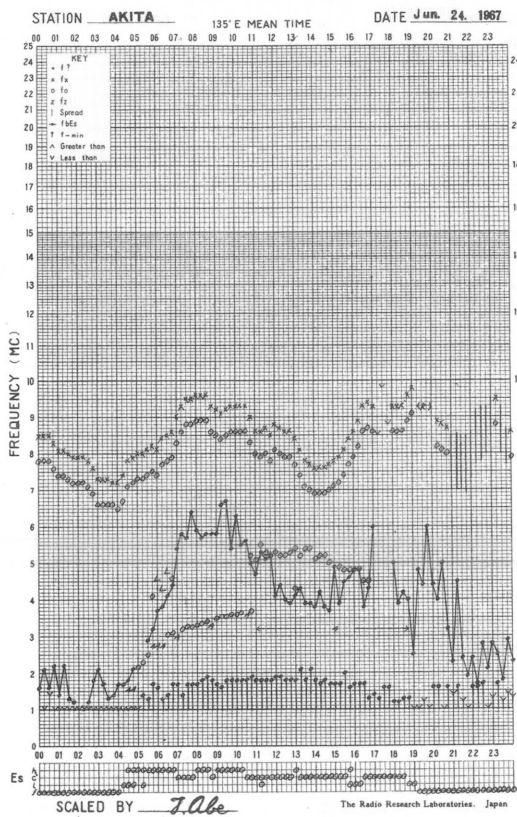
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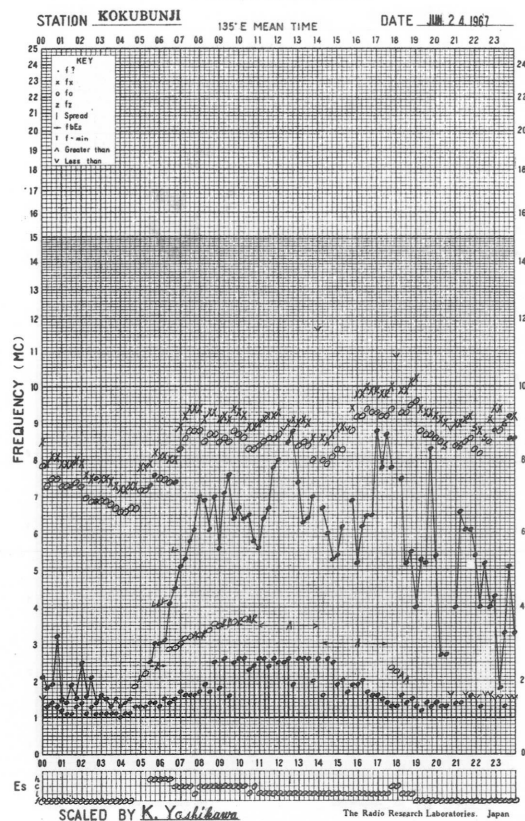
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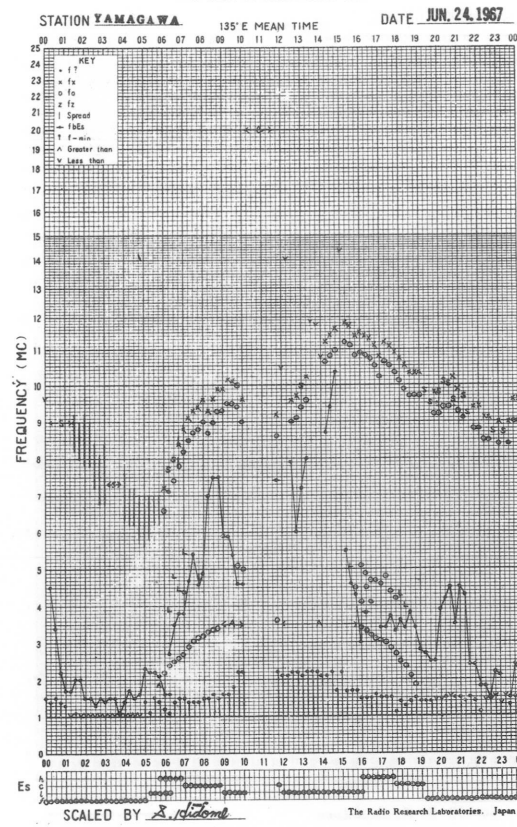
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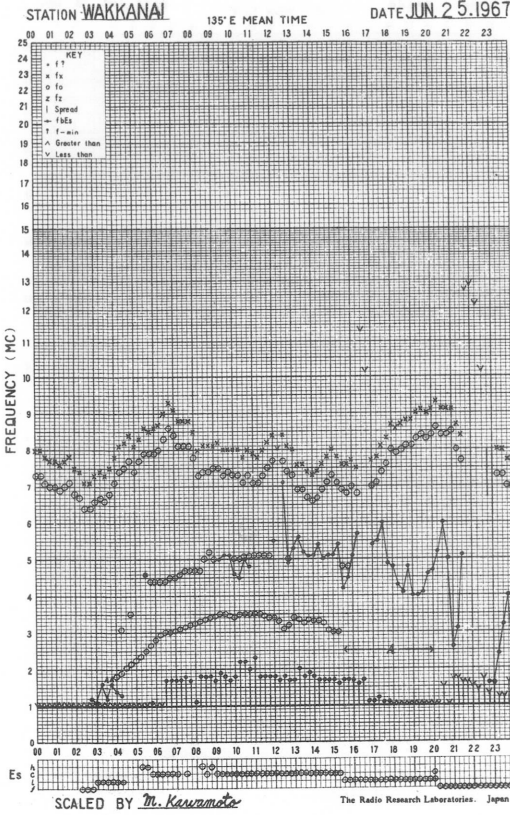
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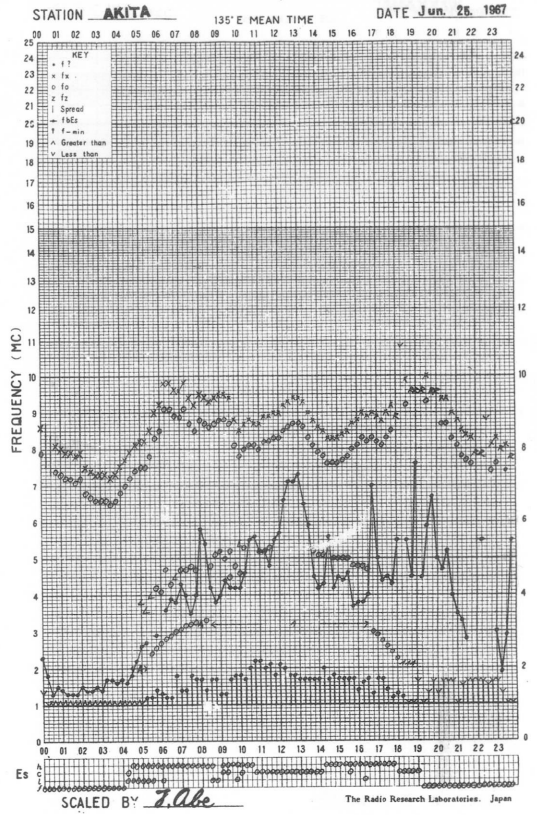
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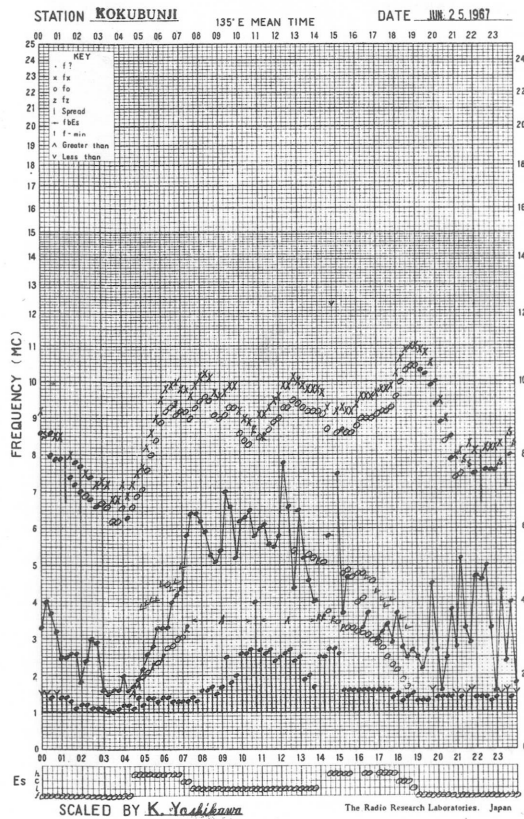
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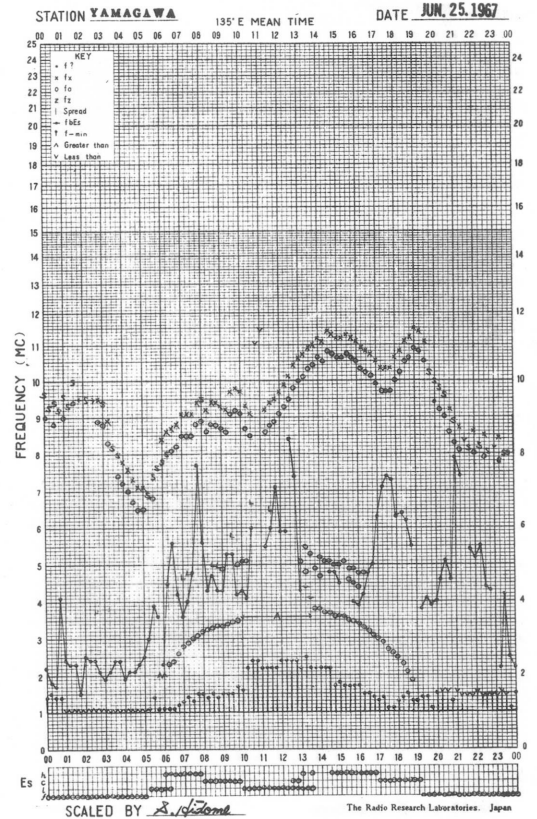
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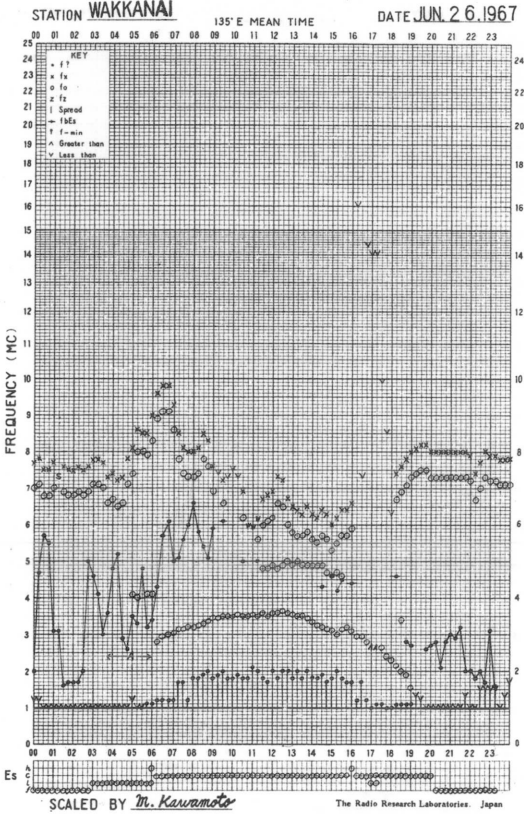
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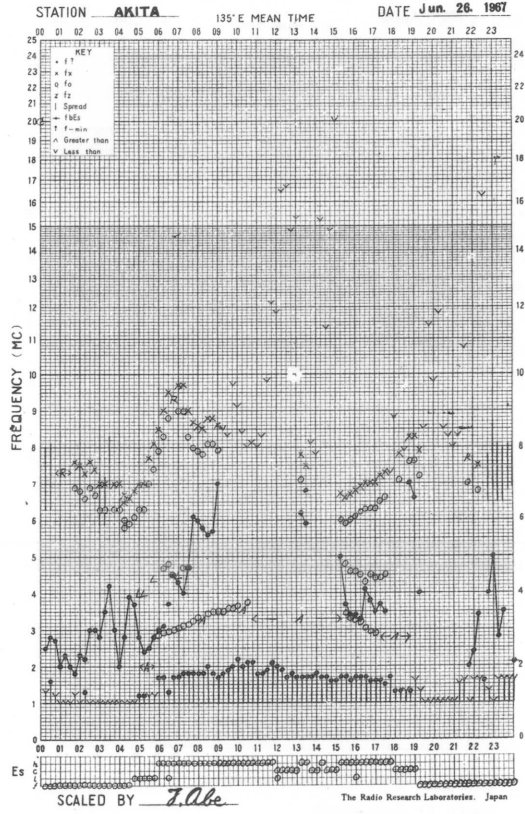
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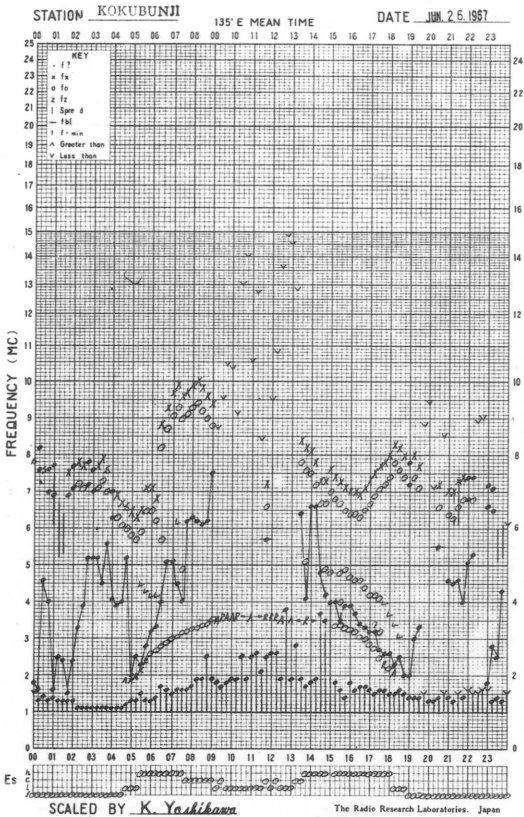
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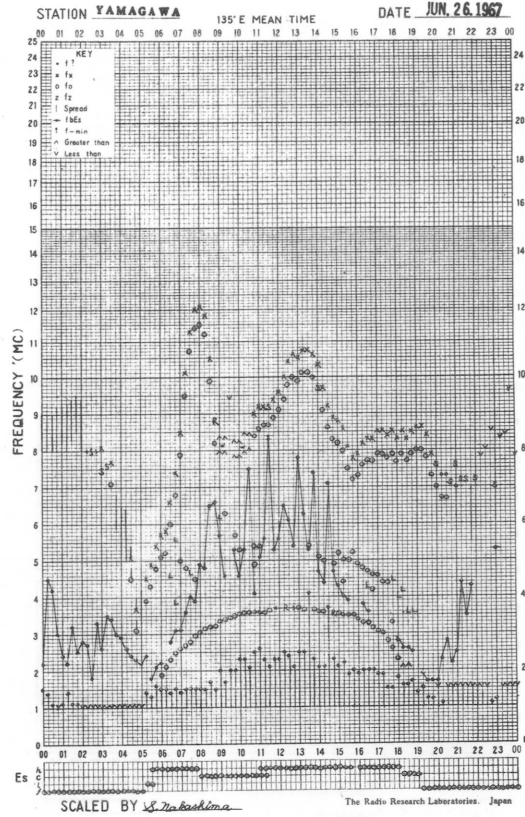
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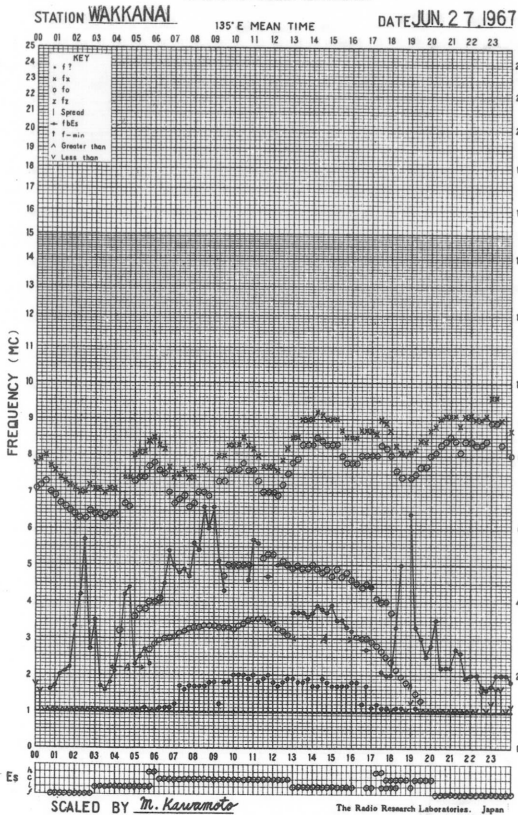
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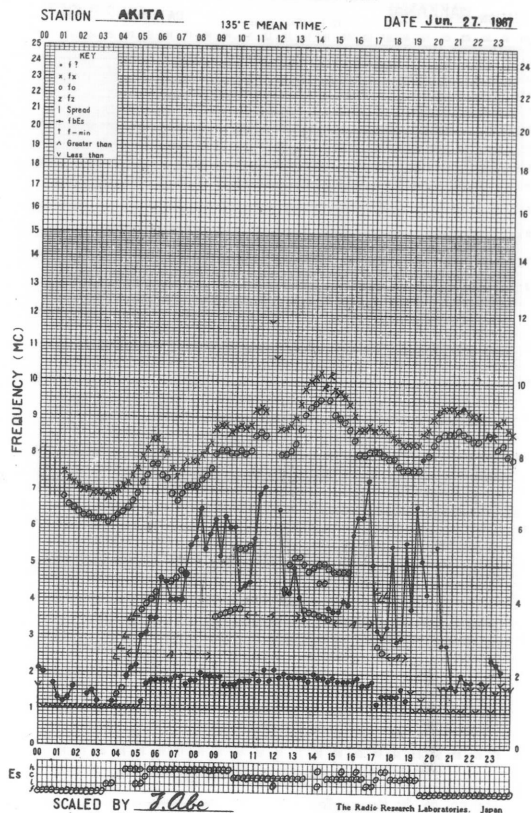
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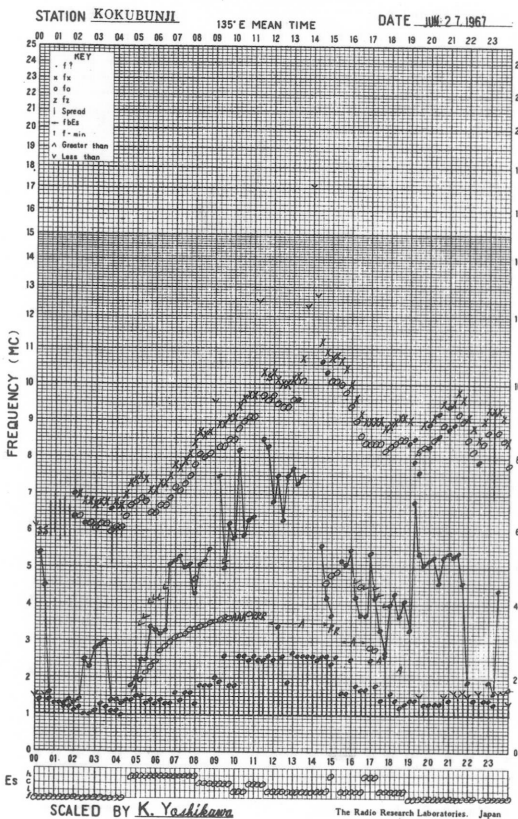
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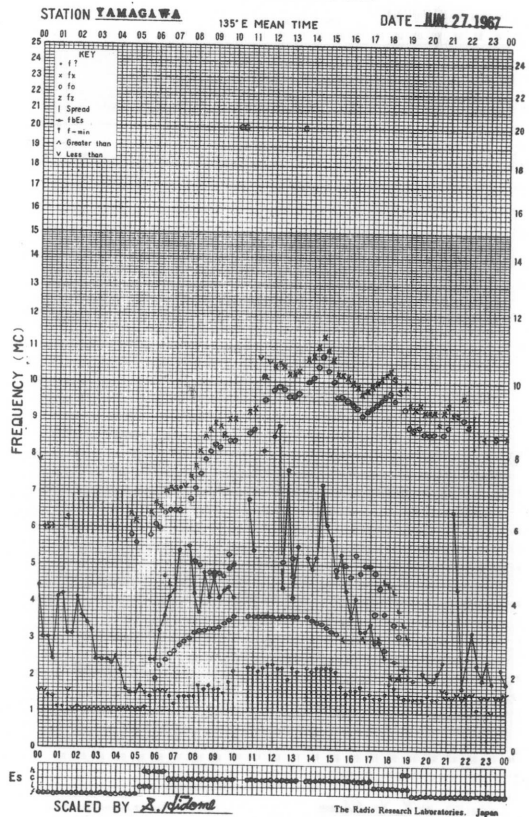
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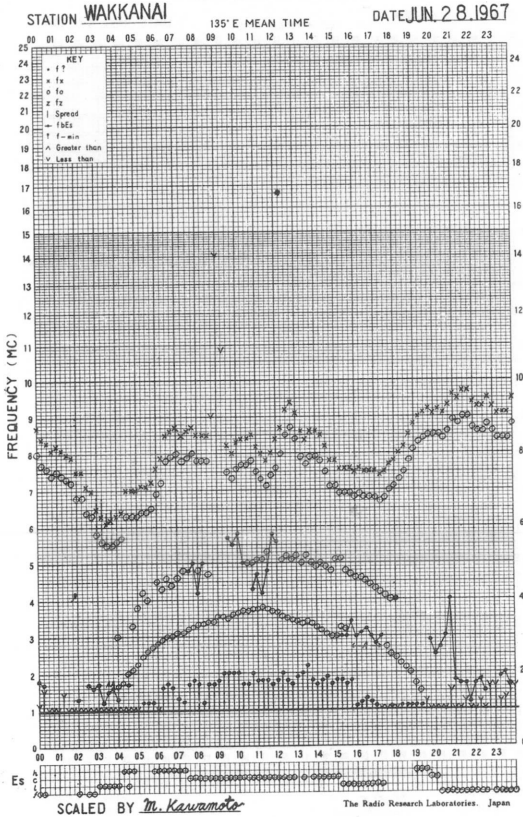
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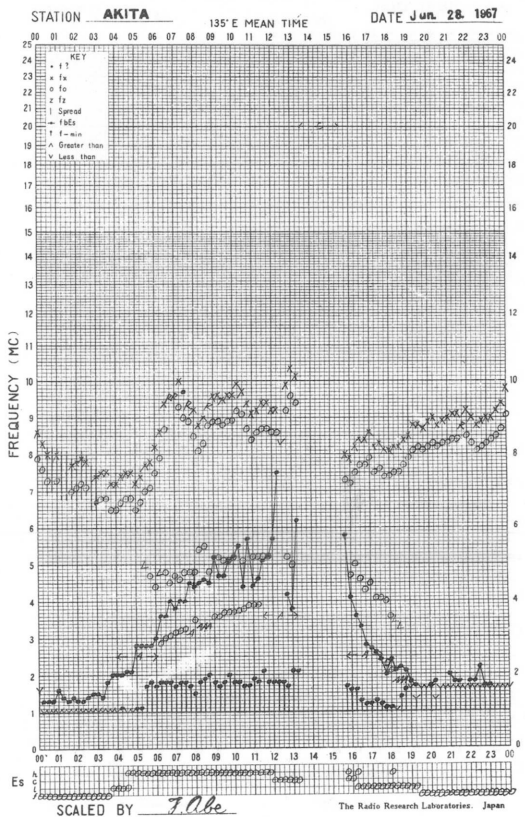
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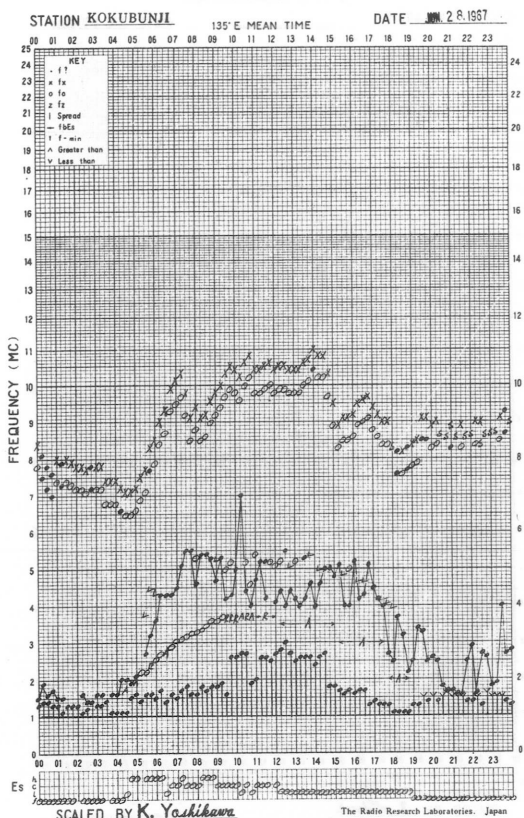
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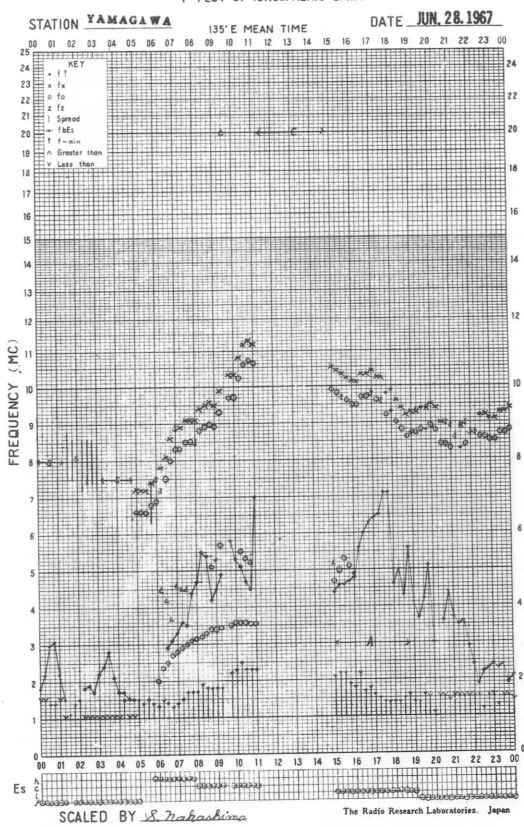
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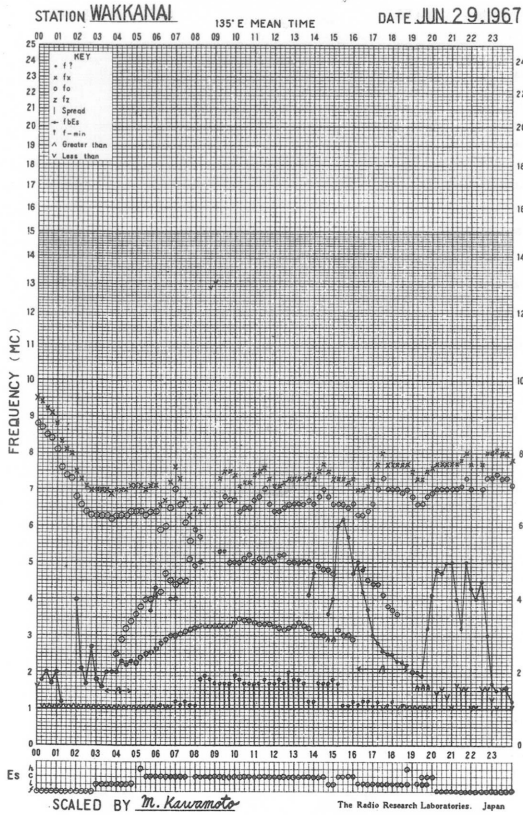
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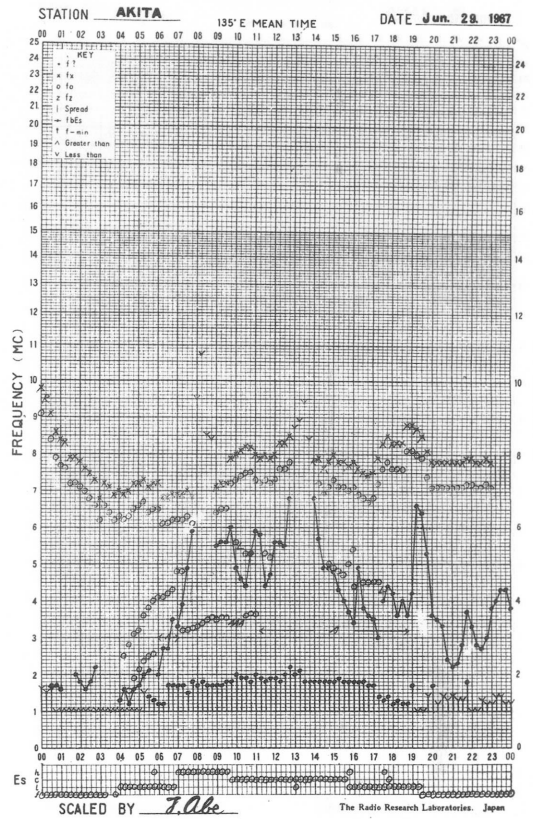
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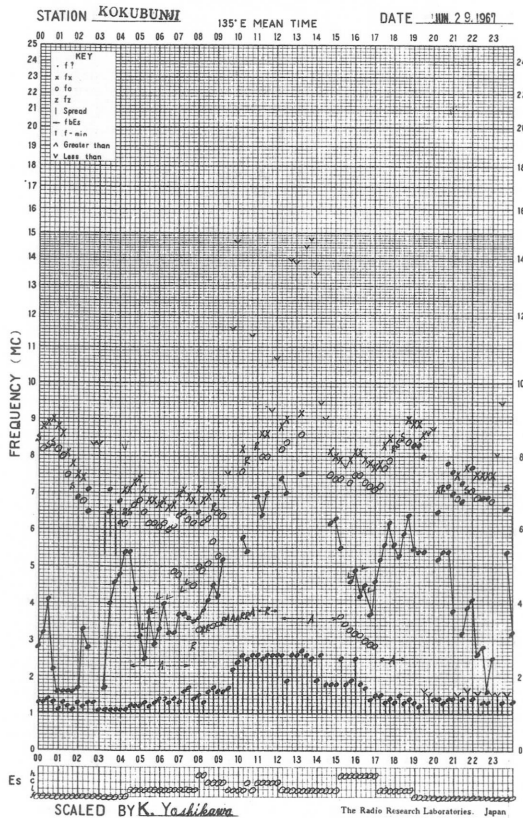
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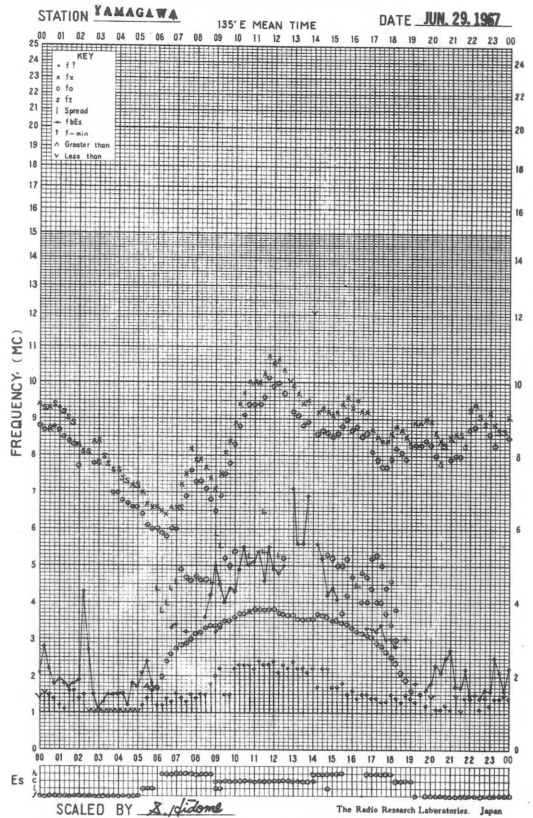
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f-PLOT OF IONOSPHERIC DATA

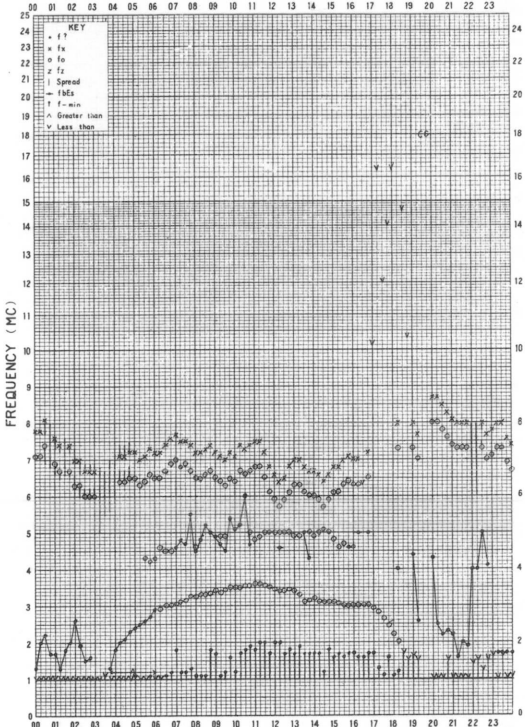


f-PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JUN. 30. 1967

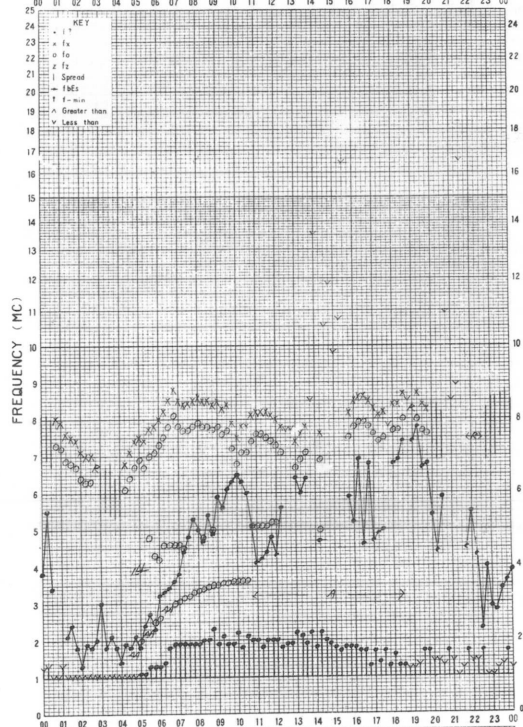


SCALED BY M. Kawamoto

The Radio Research Laboratories, Japan

f- PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE JUN. 30. 1967

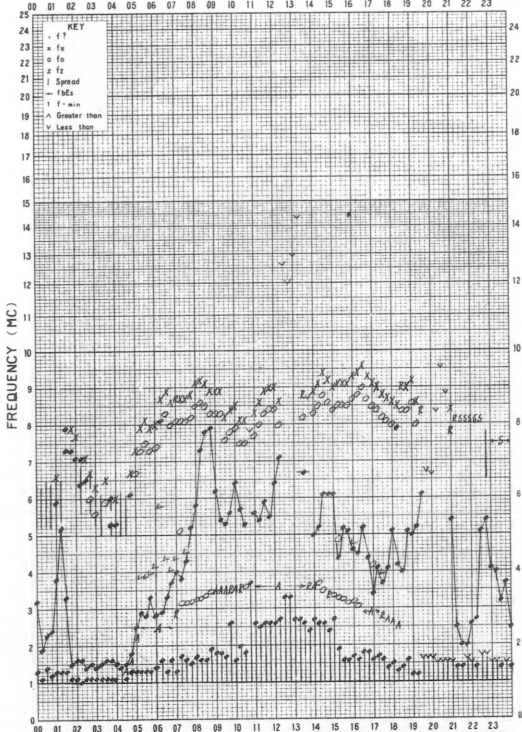


SCALED BY T. Abe

The Radio Research Laboratories, Japan

f- PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JUN. 30. 1967

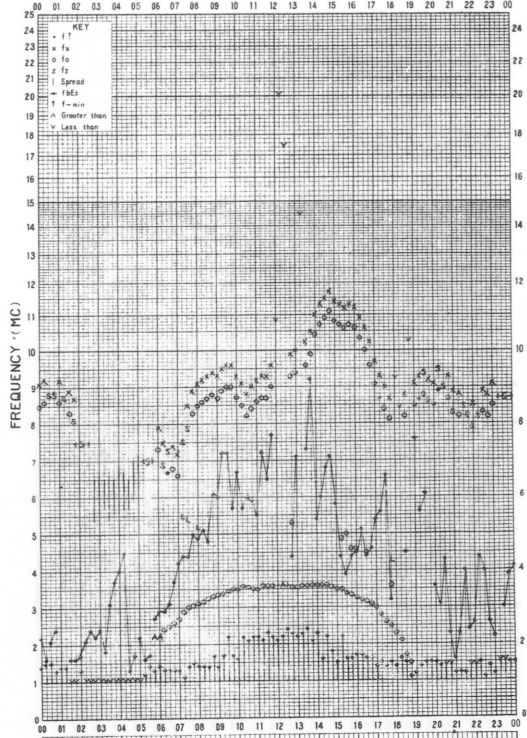


SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f- PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JUN. 30. 1967



SCALED BY A. Sidome

The Radio Research Laboratories, Japan

SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: June 1967						Frequency: 200 MHz				
Observing station: Hiraiso										
Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$						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	10	8	11	11	9	1	0	0	0	0
2	11	7	10	8	9	0	0	0	1	0
3	17	71	23	20	39	2	2	1	2	2
4	20	27	36	-	26	1	1	1	-	1
5	-	82	(80)	28	82	-	1	(1)	1	1
6	67	39	26	-	40	2	1	1	-	1
7	21	33	36	11	31	0	2	2	0	2
8	15	15	19	19	15	0	0	1	1	0
9	39	16	18	-	23	2	1	1	-	1
10	15	9	(10)	(14)	12	0	0	(0)	(0)	0
11	10	9	9	9	10	0	0	0	1	0
12	11	11	10	7	10	0	0	0	0	0
13	10	8	(7)	8	8	0	0	(0)	0	0
14	10	8	8	(9)	8	0	0	0	(0)	0
15	12	10	-	-	11	0	0	-	-	0
16	11	8	9	7	9	0	0	0	0	0
17	13	10	8	6	10	0	0	0	0	0
18	14	8	10	8	10	0	0	0	0	0
19	9	13	(11)	8	10	0	0	(0)	0	0
20	11	9	11	7	10	1	0	0	0	0
21	11	9	9	10	9	0	0	0	1	0
22	15	10	14	7	12	0	1	1	1	1
23	11	11	12	9	11	1	1	0	1	1
24	10	9	11	7	10	1	1	1	0	1
25	10	11	11	10	10	0	0	0	0	0
26	11	16	19	35	14	0	1	1	1	1
27	65	30	(21)	-	42	2	1	(0)	-	1
28	25	52	54	98	44	1	1	1	2	1
29	102	70	58	14	83	2	1	1	1	2
30	19	21	18	16	18	1	1	1	1	1

Note No observations during the following periods:

1st	0400-	0500	14th	1920-	2300
2nd	0400-	0500	15th	0600-	2400
4th	2140-	5th 0300	16th	0200-	0300
5th	0600-	1000	16th	2300-	2400
6th	1920-	7th 0100	19th	0700-	1000
9th	1920-	2400	20th	0400-	0500
10th	0700-	2300	26th	2300-	2400
12th	0700-	1000	27th	0700-	2400
14th	0200-	0300	29th	0500-	0600

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: June 1967					
Observing station: Hiraiso			Frequency: 500 MHz		
Flux density $10^{-22} \text{ Wm}^{-2} (\text{Hz})^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	37	34	32	34	34
2	33	32	30	35	32
3	36	39	37	34	37
4	33	38	35	35	35
5	33	30	27	33	31
6	30	35	32	-	35
7	37	38	38	35	38
8	36	36	44	-	38
9	-	-	31	-	(31)
10	-	30	29	28	(29)
11	27	27	28	28	28
12	29	28	27	27	28
13	28	27	29	28	28
14	28	29	27	28	28
15	27	30	27	29	28
16	30	30	29	29	30
17	30	29	29	32	29
18	30	31	30	33	31
19	30	29	29	-	31
20	32	30	30	32	31
21	30	30	30	34	31
22	33	31	30	34	32
23	32	33	30	35	32
24	33	31	31	-	32
25	32	32	33	37	33
26	35	36	35	(35)	36
27	36	33	30	35	33
28	32	33	30	42	33
29	-	-	-	37	(42)
30	32	34	31	33	34

Note No observations during the following periods:

6th 1920-	7th 0100	19th 1920-	2400
8th 1920-	9th 0700	24th 1920-	2400
9th 1920-	10th 0300	26th 1920-	2300
10th 0500-	0700	29th 0000-	1000

<u>Distinctive Events</u>								
(single-frequency observations)								
Month: June 1967								
Observing station: Hiraiso								
Normal observing period: 1920 - 1000 (sunrise to sunset)								
Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
1	200	0015	0015.5	1.0	C	360	130	
2	500	0828	0829.4	7.0	C	15	3	
3	500	0242	0246.5	108.0	C	70	10	
	500	0548	0548	2.0	C	3500	700	
4-5	200	1920	(SR) ~ 2142,	0235 ~ 0730				noise storm
6	500	0215	0241.5	85.0	C	100	10	
	500	0526	0532.3	22.0	C	40	2	
5-6	200	1920	(SR) ~ 1000	(SS)				noise storm
8	200	0600	0601	2.0	C	> 300	> 90	
	200	0705	0710	25.0	F	300	-	
	200	0742	0743.2	2.0	C	300	160	
20	200	0237	0237	3.0	C	260	60	
	200	0252	0252	1.0	C	340	70	
21	200	2203.5	2204	1.5	C	1000	230	
22	200	0543	0543	0.7	C	340	100	
	200	0721	0721.5	1.0	C	1000	200	
	200	2257	2257.5	1.5	C	210	50	
23	200	0033	0033	1.0	C	500	120	
	500	0038.5	0039	12.5	C	70	30	
	200	0038	0039	2.0	C	1600	640	
	500	0311	0312	6.0	C	50	37	
	200	0310	0310.3	2.0	C	300	80	
	500	0449	0449.5	3.0	C	45	40	
	200	0451	0452.5	2.0	C	100	30	
	200	1920	1921	1.5	C	650	80	
	200	2115	2116	1.5	C	260	150	
	200	2117	2118	2.0	C	840	130	
	24	200	0140	0141	1.5	C	240	90
200		0143	0144	2.0	C	720	120	
500		0208	0208.5	3.0	C	50	43	
200		0206.5	0208	3.0	C	300	115	
200		0306	0306.5	0.7	C	960	220	
26-27	200	1920	(SR) ~ 0700					noise storm
28	200	0000 ~ 0900						noise storm
28-29	200	1920	(SR) ~ 1000	(SS)				noise storm
29-30	200	1920	(SR) ~ 0900					noise storm

Measurement of H.F. Field Strength (Upper Side-band of WWV)
 Frequency: 15 MHz, Bandwidth: ±40 Hz, Receiving Antenna: Rod (4.5 m) Measured at Hiraibo

June 1967

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	-12	-13	-3	-1	1	7	4	8	7	9	0	0	17	26	19	7	6	-4	-4	1	12	13	8	5	
2	-10	-7	-1	-3	2	9	10	15	12	20	15	10	9	17	14	12	6	-4	-7	1	0	4	4	-4	
3	-15	-14	<-18s	-16	-14	-3	-11	-1	2	6	9	8	7	15	17	13	20	11	-2	2	0	-1	-15	-7	
4	-5	-4	-5	-5	-2	3	3	6	6	11	-1	-3	22	21	14	12	6	5	2	2	-6	-5	-12	-8	
5	-2	-13	-20	-16	-3	4	9	1	-2	-2	5	-3	11	6	7	9	9	9	6	1	-11	1	7	14	
6	0	-7	-9	-9	-10	-9	-20	-10	-11	-3	-4	-6	0	-9	-1	3	0	-4	-4	1	12	13	8	5	
7	-8	-2	-2	-9	-14	<-18s	-13	<-12s	-4	<-6s	<-9s	<-9s	-5	0	<-	-4	-3	-8	-7	1	0	4	4	-5	
8	-6	-7	-2	1	3	8	12	5	-3	-10	<-8s	6	13	13	21	6	-6	10	-11	2	1	4	-3		
9	-3	-6	-8	-8	-5	-13	-9	3	10	4	5	-3	-6	3	11	8	1	-10	-14	-9	-10	-10	2	-16	
10	-10	-4	-8	-10	-1	4	0	1	10	10	9	-3	-2	7	14	14	14	14	-4	-1	0	1	0	-8	
11	4	-3	5	0	4	11	12	16	-5	<-8s	<-5s	-9	-4	13	24	7	7	10	-2	-1	0	0	-3	-3	
12	-2	-4	-4	-1	1	4	9	8	1	-3	<-6s	-3	-4	8	1	-2	14	10	0	2	8	2	-1	-5	
13	-4	5	0	-2	-2	-1	1	2	-10	-7	-7	-6	<-2s	15	21	4	4	11	5	11	3	2	1	-7	
14	-4	-3	0	1	8	11	16	11	-8	-5	-4	-2	10	16	6	1	7	7	-5	16	6	2	<-13s	-3	
15	-6	-11	-26	-10	4	-4	3	6	0	6	2	6	-5	12	5	11	11	4	-4	-4	0	10	-4	-5	
16	-1	0	6	0	-4	5	11	14	7	<-8s	-4	0	2	14	7	8	10	7	10	12	1	-6	-4	0	
17	-2	-9	-8	-3	4	5	12	18	12	5	-5	-3	1	10	14	14	12	4	15	6	4	2	-4	-5	
18	-10	-5	-9	-1	3	7	13	6	-7	-7	17	<-6s	10	18	11	7	10	5	6	2	4	1	-5	-4	
19	<-14s	0	-2	-1	8	11	16	11	-10	-7	-7	15	13	4	9	11	9	8	6	4	9	-4	-4	-7	
20	-6	-6	<-8s	-2	4	11	17	17	19	16	17	15	10	24	23	9	10	9	4	6	4	-1	-2	-3	
21	<-6s	-5	-2	2	3	9	11	15	19	20	20	13	22	24	23	18	12	9	3	3	6	4	2	-4	
22	-9	-11	-9	3	6	7	10	16	16	22	24	19	22	22	20	18	13	10	5	7	9	4	-2	-6	
23	-5	-5	-7	0	0	7	11	20	17	17	15	13	20	27	22	11	15	9	3	-3	3	3	-4	-6	
24	-10	-6	-7	-4	2	5	14	12	15	19	20	11	21	23	18	26	9	8	6	4	9	-4	-4	-7	
25	-3	-5	-5	-4	4	11	9	3	-5	-2	<-4s	-2	<8s	16	14	13	1	10	5	3	-7	1	-1	-2	
26	4	-9	-13	-11	0	7	7	4	11	5	11	1	7	18	17	2	10	11	7	11	8	5	-4	-2	
27	-5	-3	3	2	7	5	-8	-6	-5	-5	-6	-5	<-1s	0	16	-1	4	-6	-3	4	-2	2	4	0	
28	-1	-9	1	3	10	11	14	-15	-11	8	8	9	4	20	14	10	0	4	-8s	-9	-3	-3	-1	3	
29	5	-9	-1	-4	7	12	11	0	-3	0	-2	3	4	17	16	20	13	10	-6	9	12	9	-1	5	
30	0	1	2	-3	2	9	8	11	8	-1	5	-4	<3s	26	21	9	-7	2	14	6	5	-3	-12	-6	
Median	-5	-5	-4	-3	2	7	10	8	6	5	2	0	6	16	14	11	9	8	4	2	2	1	-2	-4	
Median Count	30	29	30	30	30	30	29	30	30	30	29	29	29	30	30	30	29	30	30	30	30	30	30	30	30
Upper decile	0	2	3	2	7	11	14	17	19	20	20	15	22	26	23	18	15	11	10	11	9	9	4	5	
Lower decile	<-12s	-13	<-19s	-11	-10	-9	-11	-6	-8	<-8s	<-7s	<-8s	<-3s	1	1	-1	-3	-8	-7	<-5s	-8	-7	-12	-12	

Median
 Median Count
 Upper decile
 Lower decile

June 1967
 Measurement of H.F. Field Strength (Upper Side-band of WWVH)
 Frequency: 15 MHz, Bandwidth: ±40 Hz, Receiving Antenna: Rod (4.5 m)
 Measured at Hiraíso

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	<-19s	-13	-11	-4	4	9	14	21	21	20	6	16	11	-2	7	0	0	7	7	9	1	-2	-3	0	
2	-6	-5	-4	-4	4	14	17	20	24	22	19	23	14	20	12	20	19	16	14	8	-1	2	-7	<-17s	
3	-10	-9	-15	-9	4	11	20	18	18	19	15	14	15	18	23	22	23	14	9	6	-2	4	-6	<-15s	
4	-5	-9	-4	2	-8	8	16	16	6	16	20	18	13	24	19	19	13	19	2	2	-3	-3	<-10s	<-15s	
5	<-9s	-8	-3	2	7	15	13	12	13	18	17	16	16	16	14	13	17	8	2	2	2	-2	-10	-8	
6	-1	-6	1	1	8	9	14	8	8	6	16	11	-2	11	7	14	17	12	6	0	0	6	0	-1	
7	-6	-1	-6	3	12	14	17	20	20	22	19	23	13	16	7	0	0	7	7	9	1	-2	-3	0	
8	-6	-7	-7	-3	6	14	20	18	18	22	19	18	13	24	12	13	23	14	8	-1	2	-7	-7	<-17s	
9	-6	-7	-6	1	11	14	18	18	21	8	20	15	14	15	14	14	10	-10	9	6	-2	0	-6	-3	
10	-6	-3	-6	1	9	11	13	17	20	23	17	13	7	13	15	<-10s	15	8	9	7	7	0	0	-5	
11	-4	-1	3	6	13	14	18	17	21	26	18	18	13	10	<-6s	<-14s	17	3	10	2	2	4	4	-2	
12	-8	-1	-3	<4s	9	13	13	18	18	19	20	19	19	13	16	6	22	16	7	9	5	-1	-3	-6	
13	-6	-4	-4	1	11	13	17	16	18	20	16	0	11	11	12	13	11	10	8	11	2	-2	-6	-9	
14	-6	-1	-4	2	10	10	17	27	20	17	17	13	12	12	13	16	9	11	6	6	5	-2	<-14s	-5	
15	-3	-5	-7	1	9	10	12	15	17	15	19	16	15	10	11	11	17	9	2	0	-1	-3	-3	-6	
16	-4	-1	-1	-1	10	10	15	19	20	30	22	21	16	16	10	8	14	11	2	5	-3	-5	-4	-7	
17	-7	-3	-6	-3	6	13	14	15	18	18	22	20	18	18	21	18	15	11	3	11	3	-11	-12	-9	
18	-7	<-20s	-6	-2	10	16	16	20	20	20	20	21	20	17	15	7	13	6	7	8	8	2	-5	-2	
19	-6	-6	-2	-2	6	12	18	18	19	19	19	13	15	14	17	15	11	12	14	8	3	-4	-5	-6	
20	-4	-3	-5	-2	10	15	19	18	22	18	20	18	16	16	11	8	15	11	6	11	5	-5	-5	-1	
21	-8	-8	-5	5	5	16	18	22	22	19	20	20	20	14	17	20	16	8	2	4	6	0	<-8s	-11	
22	-8	-6	-2	2	8	15	15	19	22	26	24	22	24	21	21	15	20	20	12	11	4	-3	-5	-6	
23	<-11s	-4	-2	-1	4	10	16	17	17	20	16	20	19	17	15	5	16	8	4	1	1	3	-1	-6	
24	-9	-1	-1	1	6	10	19	17	19	20	20	17	14	19	18	21	14	9	11	9	7	-3	-2	-1	
25	-6	-8	-3	5	9	12	15	20	23	22	22	19	18	16	13	12	13	12	7	1	0	-4	0	-9	
26	<-16s	-11	-10	-2	10	14	17	16	15	18	17	19	20	14	18	9	8	4	6	6	3	0	-4	-4	
27	-4	-4	0	0	8	13	10	16	22	20	20	21	19	20	21	3	18	14	8	3	-4	0	-7	-4	
28	C	-8	-1	3	8	12	16	21	20	23	18	17	17	18	21	10	17	10	8	8	-1	-7	-7	-3	
29	-6	-6	-1	-2	7	11	19	20	15	24	17	17	17	-5	0	-5	14	10	5	5	0	-1	-2	-4	
30	-3	-6	-1	-1	7	11	13	17	18	16	19	18	18	-8	16	-18	13	18	9	0	-1	-5	-12	<-9s	
Median	-6	-5	-3	1	8	12	16	18	20	20	19	18	17	16	15	13	15	11	7	7	1	-2	-5	-6	
Median Count	29	30	30	30	30	29	30	30	29	29	29	29	30	30	30	29	29	30	30	30	30	30	30	30	30
Upper decile	-2	-1	1	-4	11	15	19	21	22	26	22	22	20	21	21	20	19	18	11	6	6	4	<2s	-1	
Lower decile	<-11s	-13	-10	-4	4	9	12	15	15	15	16	13	11	10	7	-5	10	4	2	1	-3	-7	-12	<-12s	

RADIO PROPAGATION QUALITY FIGURES

Time in U.T.

HIRAISO

June 1967	Whole Day Index	H B		T H		W W V		S F		W W V H		Warning		Principal magnetic storms		
		06 12 18 12 18 24	06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	00 06 12 18 06 12 18 24	Start	End	ΔH		
1	40	3	4	4	4	3	4	3	4	3	4	N	N	1914	---	202Y
2	4+	4	4	4	4	5	4	4	4	4	4	N	N	---	---	
3	40	3	4	4	4	5	4	4	4	4	4	N	N	---	---	
4	4+	4	4	4	4	5	4	4	4	4	4	N	N	---	---	
5	4-	3	4	4	3	3	4	4	4	4	4	N	N	---	---	
6	3+	(3)	3	-(2)	2	3	3	4	4	4	4	U	U	---	---	
7	3+	(3)	3	-(3)	3	3	3	3	3	4	4	U	U	---	15xx	
8	4-	4	3	-(3)	3	4	3	4	4	4	4	N	N	---	---	
9	4-	(4)	4	-(4)	4	4	4	4	4	4	4	N	N	---	---	
10	4-	3	4	-(4)	4	4	4	3	3	4	4	N	N	---	---	
11	40	4	4	-(4)	4	4	4	4	4	4	4	N	N	---	---	
12	40	4	4	4	4	4	4	4	4	4	4	N	N	---	---	
{13}	4+	4	5	-(4)	4	4	4	4	4	4	4	N	N	---	---	
{14}	40	4	4	-(4)	4	4	4	4	4	4	4	N	N	---	---	
{15}	4-	3	5	-(2)	2	3	4	4	4	4	4	N	N	---	---	
16	4-	4	4	-(2)	2	3	4	4	4	4	4	N	N	---	---	
17	4-	4	4	-(2)	2	4	4	4	4	4	4	N	N	---	---	
18	4-	3	4	-(4)	4	3	4	4	4	4	4	N	N	---	---	
19	5-	4	(4)	-(5)	5	5	4	4	4	4	4	N	N	---	---	
20	5-	5	5	-(5)	5	4	5	5	5	4	4	N	N	---	---	
21	5-	4	4	-(5)	4	5	5	4	4	4	4	N	N	---	---	
22	4+	4	4	-(2)	2	5	5	4	4	4	4	N	N	---	---	
23	4+	4	4	-(4)	4	4	5	4	4	4	4	N	N	---	---	
24	4+	4	4	-(5)	5	4	5	4	4	4	4	N	N	---	---	
25	40	4	4	-(4)	4	4	4	4	4	4	4	N	N	0222	---	117Y
26	40	3	3	-(4)	4	4	5	4	4	4	4	N	N	---	---	
27	4-	3	3	-(2)	2	3	3	4	4	4	4	N	N	---	---	
28	4-	4	4	-(5)	4	4	4	4	4	4	4	N	N	---	17xx	
29	40	3	4	-(4)	4	4	4	4	4	4	4	N	N	---	---	
30	4-	3	4	-(4)	4	4	4	4	3	4	4	N	N	---	---	

IQSY GEOALERT and ADALERT
(Western Pacific Region)

- * = MAGSTORM
- = MAGCALME
- = COSMIC EVENT

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

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Jnue 1967	S W F						Correspondence					
	Drop-out Intensities (db)						Start- time	Dura- tion	Type	Imp.	Flare	Solar Noise
CO	SF	HA	TO	HB	SH							
3	16	<u>23</u>			17	05.48	85	G	2 x		x	
18		25	-			01.20	41	S	2- x	x		
23	15	<u>20</u>	-	15'	16	00.40	23	Slow	1+		x	

data tel

IONOSPHERIC DATA IN JAPAN FOR JUNE 1967

第 19 卷 第 6 号

1967年 9月20日 印 刷
1967年 9月25日 發 行

(不許複製非売品)

編 集 兼
發 行 人

越 智 文 雄

東京都小金井市貫井北町4の573

發 行 所

郵 政 省 電 波 研 究 所

東京都小金井市貫井北町4の573

電話 國分寺(0423)(21)1211(代)

印 刷 所

太 洋 印 刷 社

東京都新宿区筑士八幡町8

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