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IONOSPHERIC DATA IN JAPAN

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RADIO RESEARCH LABORATORIES

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CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

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.	Nukui-Kitamachi, 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. and Inubo Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0′N.	140°37.5′E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken
Inubo	35°42.2′N.	140°51.5′E.	9912 Tennodai, Choshi-shi, Chiba-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

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

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

f_bE_s — The lowest ordinary wave frequency at which the E_s layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

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

$M(3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$M(3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.

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

$hpF2$ — The virtual height of the $F2$ layer measured on the ordinary

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

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 $0.969 f_0F2$).

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 *Es*.

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. Definitions of the CNT, MED, UQ and LQ

Median count (CNT) is the number of values from which a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (MED) of a set of numbers is the middle value when the numbers are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the *lower quartile* (LQ) is the median value of the lower half.

d. Description of Standard Types of *Es*

The eight standard types of *Es* are identified by corresponding capital letters: *F*, *L*, *C*, *H*, *Q*, *R*, *A*, *S*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. The letter '*N*' is used to designate any *Es* trace that does not correspond to any of the eight types.

F	An *Es* 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 *Es* traces observed in the daytime are classified according to their virtual hight: *H* or *L*.
L	A flat *Es* 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 *Es* trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal *E* trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)
H	An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
Q	An *Es* 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 *Es* 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 *Es* 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 *Es* trace which rises steadily with frequency and usually emerges from another type *Es* 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 *Es* trace such as *Es-L* or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q* *Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine f_0Es and $h'Es$. The slant trace is sometimes observed to start at f_0E without echoes clearly identifiable as *Es* echoes being seen.

N The designation '*N*' is used to denote an *Es* 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.

e. **Multiple Reflections from *Es***

When the ionogram shows the presence of multiple reflections from *Es* 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 MHz at Hiraiso Branch. Antennas are two parabolic reflectors : 10 meter for 200 MHz and 5 meter for 500 MHz, 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} W·m^{-2}Hz^{-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 MHz 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.

Bracket means that observation time does not exceed one third of the period.

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 Strengths of WWV and WWVH

Field Strengths observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at Hiraiso Branch. In order to avoid interferences with other standard frequency waves on the same frequency, the upper side-band of 440 Hz is picked up by the use of a narrow band pass filter with ±40 Hz bandwidth.

The *tabulated field strength* 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	λ/2 vertical	λ/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	±40Hz 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.

U: Inaccurate measurement influenced by interferences, atmospherics, or non-propagational reasons.

E: 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)
2=poor (disturbed)
3=rather poor (unstable)
4=normal
5=good

The tabulated circuits contain Hamburg (commercial circuit), WWV (10, 15 and 20 MHz frequencies broadcast from Fort Collins, Colorado), Lima (commercial circuit) and WWVH (10 and 15MHz frequencies broadcast from Hawaii), which are received at Hiraiso Branch.

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 Lima.

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

c. Sudden Ionospheric Disturbances (S.I.D's.)

(i) SWF

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 MHz are indicated by (′), (none), and (″), respectively. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensities

C O .....WWV 20, 15 and 10 MHz (Fort Collins, Colorado)
L M .....Various frequencies of commercial circuit (Lima)
H A .....WWVH 15 and 10 MHz (Hawaii)
T O .....JJY 15 and 10 MHz (Tokyo)
S H .....BPV 15 and 10 MHz (Shanghai)
H B .....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 of phenomena associated 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.

(ii) SPA

The data of sudden phase anomaly (SPA) are prepared from the records of phase measurement of VLF radio wave propagation received at Inubo Radio Wave Observatory. Characteristics of the VLF radio wave propagation are as the following table. In the last column, a spherical earth with a radius of 6371.2 km is assumed.

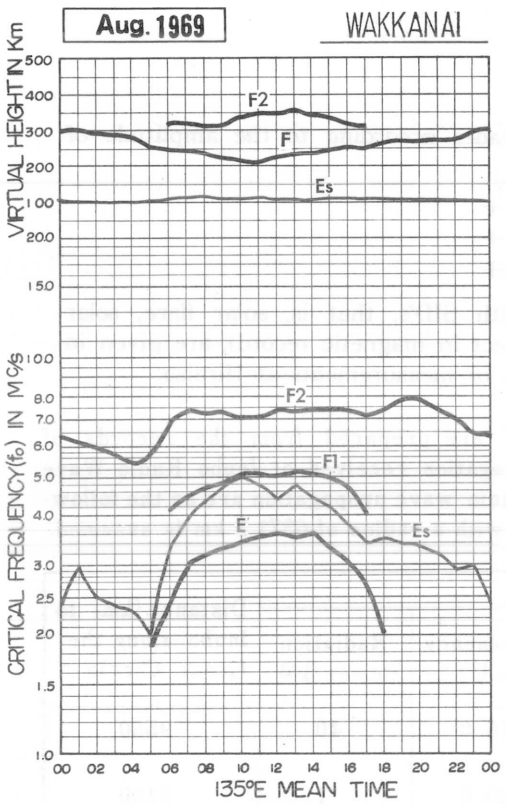
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52° 22′ N 001° 11′ W	GBR	16.0	40	9550
Fort Collins	40° 41′ N 105° 03′ W	WWVL	20.0	1.8	9190
Cutler	44° 39′ N 067° 12′ W	NAA	17.8	1000	10650
North West Cape	21° 49′ S 114° 10′ E	NWC	22.3	1000	6990
Lualualei	21° 26′ N 158° 10′ W	NPM	23.4	300	6070
Jim Creek	48° 12′ N 121° 55′ W	NPG	18.6	250	7620
Haiku	21° 24′ N 157° 50′ W	HA0 HA2 HA3	10.2 12.2 13.6	2	6100
Aldra	66° 25′ N 013° 09′ E	AL0 AL2 AL3	10.2 12.2 13.6	4	7820

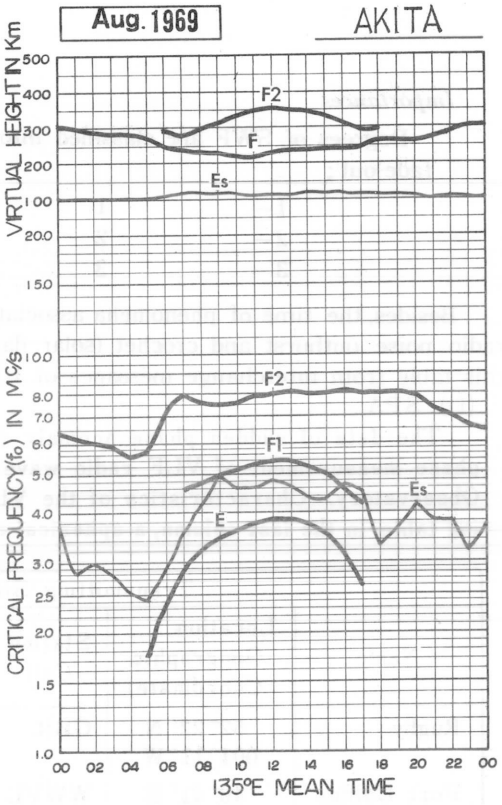
The phase advance is shown in its maximum stage. In the column 'Phase Advance',—means no transmission or no reception during the period, and blank means indistinguishable record.

Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

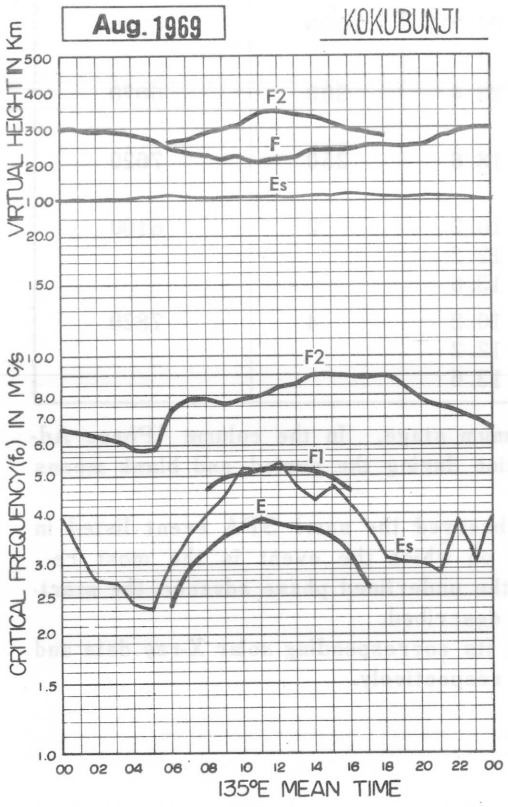
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

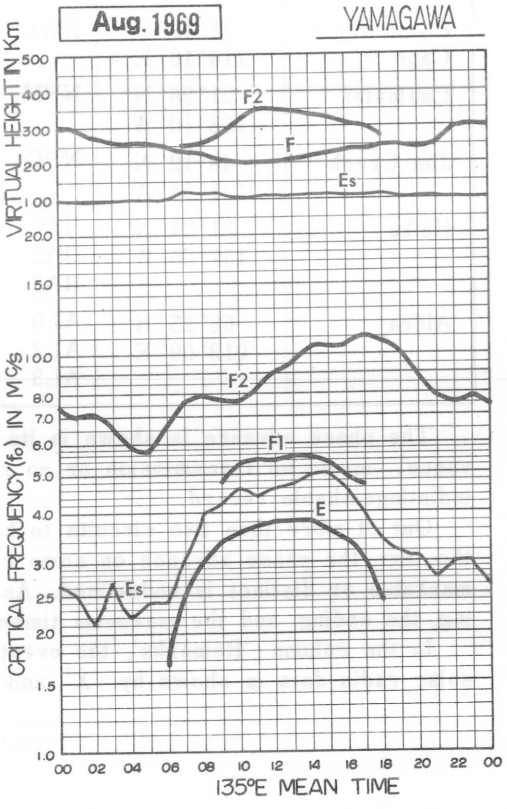
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Aug. 1969

135° E Mean Time (G.M.T. +9h)

CHAR \ HR		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	063	061	060	057	054	057	068	074	072	073	070	070	074	073	074	074	074	071	073	078	078	074	070	064
	CNT	22	22	21	25	24	28	29	29	28	26	27	28	28	28	29	28	27	28	28	29	30	29	29	22
	Q R	007	010	010	010	008	008	012	015	013	008	007	010	010	008	009	012	011	009	010	010	009	009	008	011
foF1	MED						320	410	440	475	485	510	505	500	515	505	500	470	400L						
	CNT						2	8	11	18	18	14	18	19	24	26	20	10	5						
foE	MED					E	188	242	300	315	330	340	348	365	348	365	330	305	262	200	E				
	CNT					7	12	26	26	27	26	24	22	14	12	11	13	16	16	11	6				
foEs	MED	J024X	J030X	J025X	J024X	J023X	020	033	039	043	048	050	J048X	044	J048X	044	042	038	034	J035X	J034X	J033X	J032X	J029X	J030X
	CNT	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	28	28	28	29	30	30	30	30
	Q R	015	012	010	014	012	013		020	023	020	017	021	013	020	013	015	D017	017	019	045	038	031	041	024
f-min	MED	E	E	E	E	E	E	E	011	016	017	018	018	019	018	017	017	012	011	E	E	E	E	E	E
	CNT	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	28	28	28	29	30	30	30	30
M (3000) F2	MED	265	265	270	265	270	280	300	300	302	300	285	285	285	282	290	288	290	295	290	285	275	280	275	265
	CNT	22	22	21	25	24	28	29	29	28	26	27	28	28	28	29	28	27	28	28	29	30	29	29	22
M (3000) F1	MED						355	340	350	358	365	362	365	360	350	350	345	340	335						
	CNT						2	7	11	18	17	12	15	19	23	26	18	10	4						
h'F2	MED						375	318	320	310	310	340	350	350	360	345	335	315	310						
	CNT						2	12	17	26	24	23	25	24	25	28	22	17	7						
h'F	MED	300	300	290	285	285	260	250	245	240	225	218	210	225	228	230	238	245	250	260	270	268	270	270	290
	CNT	25	25	25	28	28	26	26	24	23	20	18	20	23	24	26	24	24	25	23	24	26	28	27	25
h'Es	MED	105	105	105	105	105	112	110	120	115	110	110	110	110	110	105	110	110	110	110	110	110	110	110	105
	CNT	23	29	28	25	25	22	21	25	25	22	26	27	26	25	23	25	21	22	26	28	27	24	27	25
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Aug. 1969

135° E Mean Time (G.M.T. +9h)

CHAR \ HR		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	064	062	060	059	055	057	072	080	076	075	075	078	078	082	080	080	082	079	080	080	078	072	070	066
	CNT	30	30	28	30	30	29	30	28	28	29	30	30	30	29	27	27	26	27	28	28	28	27	27	28
	Q R	007	012	008	007	010	010	010	018	013	014	010	012	014	016	012	016	014	010	010	011	008	010	010	009
foF1	MED						340	420	455	475	500	510	530	540	540	515	500	460	420	390					
	CNT						1	4	10	24	26	27	26	27	27	24	26	17	8	1					
foE	MED					E	175	240	290	325	345	365	375	385	385	375	350	315	260	190	E				
	CNT					3	5	20	21	21	21	17	12	9	10	13	13	11	9	3	9				
foEs	MED	J037X	J028X	J030X	J028X	J025X	J024X	J029X	036	042	J050X	J046X	J046X	J048X	J046X	J043X	J043X	J047X	J045X	J033X	J037X	J042X	J038X	J040X	J032X
	CNT	30	30	30	30	30	30	29	28	28	29	30	28	30	29	25	27	26	27	27	28	28	28	28	28
	Q R	024	019	020	018	013	013	010	015	020	023	013	030	023	030	010	023	028	014	023	026	050	029	041	030
f-min	MED	E014S	E013S	E014S	E	E	013	014	014	015	017	017	018	018	018	017	015	014	013	013	E014S	E014S	E014S	E014S	E014S
	CNT	30	30	30	30	30	30	29	28	28	29	30	28	30	29	25	27	26	27	27	28	28	28	28	28
M (3000) F2	MED	268	270	275	275	278	280	295	305	302	300	290	285	280	285	285	290	292	295	295	290	285	280	275	270
	CNT	30	30	28	30	30	29	30	28	28	29	30	30	30	29	27	27	26	27	28	28	28	27	27	28
M (3000) F1	MED						295	320	348	360	362	370	358	360	345	350	350	345	340	335					
	CNT						1	4	10	22	24	27	26	27	27	24	26	17	8	1					
h'F2	MED						325	290	275	295	312	338	350	355	350	345	330	315	290	295					
	CNT						3	25	28	28	28	30	29	30	29	27	27	26	26	13					
h'F	MED	302	295	290	280	285	275	245	240	228	228	218	215	228	230	228	235	240	245	265	260	260	270	285	295
	CNT	30	30	30	30	30	30	29	25	22	22	26	24	26	23	22	20	21	23	25	26	27	28	27	28
h'Es	MED	105	105	105	105	105	105	112	122	120	120	115	115	115	115	120	115	118	115	115	110	110	105	110	108
	CNT	29	27	26	25	25	23	22	26	25	29	27	24	26	26	21	23	24	27	26	28	28	28	28	28
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Aug. 1969

135° E Mean Time (G. M. T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	066	064	063	062	058	058	074	079	079	076	078	080	084	086	090	090	089	088	090	085	077	074	072	068
	CNT	30	30	29	31	30	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	30	31	29	29
	Q R	009	009	010	008	009	010	014	014	013	015	009	012	022	018	019	014	014	013	013	012	012	010	011	011
foF1	MED							415	460L	465L	500L	500L	515L	520L	520L	510L	495L	460L	445L						
	CNT							2	3	12	18	13	18	18	14	20	16	7	2						
foE	MED						142	235	290	325	355	375	U390	380	370	370	350	320	262	200					
	CNT						6	19	20	17	13	11	7	11	9	13	18	14	12	5					
foEs	MED	J039X	J032X	J027X	J027X	J024X	J023X	030	035	040	J044X	J052X	051	J054X	047	043	047	J042X	J037X	J031X	J030X	J030X	J028X	J039X	J030X
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
	Q R	029	015	018	017	007	014	011	011	017	015	028	018	016	017	017	016	028	025	022	020	020	018	028	020
f-min	MED	012	011	011	010	010	011	013	014	016	016	024	026	026	026	018	016	015	012	012	012	U012	012	012	012
	CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	270	275	280	280	280	280	310	315	310	308	290	285	280	280	285	290	290	295	295	295	285	275	275	275
	CNT	30	30	29	31	30	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	30	31	29	29
M (3000) F1	MED							340	375L	365L	368L	375L	375L	362L	365L	355L	345L	345L	340L						
	CNT							2	3	12	18	13	16	18	13	19	15	7	2						
h'F2	MED						300	270	270	280	295	311	345	345	340	335	320	300	290	278					
	CNT						3	24	30	29	29	30	31	31	31	31	31	30	29	14					
h'F	MED	300	300	290	285	280	270	245	240	230	210	220	205	212	220	240	240	242	250	255	250	252	275	290	300
	CNT	30	31	31	31	31	31	30	29	25	23	21	23	24	23	24	22	24	26	27	29	31	31	29	30
h'Es	MED	105	100	100	105	100	105	115	115	110	110	110	110	110	110	115	110	120	115	110	110	110	110	110	105
	CNT	31	31	30	30	27	25	26	25	29	29	28	28	26	26	28	30	30	28	30	31	30	29	28	29
hpF2	MED	390	390	350	360	360	350	300	300	300	312	350	350	360	360	360	350	335	320	320	320	345	380	380	380
	CNT	30	30	29	31	30	31	31	31	29	30	30	29	31	29	31	31	30	30	30	31	30	31	29	29
ypF2	MED	090	100	100	100	090	100	085	080	090	095	098	095	100	100	100	095	100	100	098	100	100	100	100	100
	CNT	30	30	29	31	30	31	31	31	29	30	30	29	31	29	31	31	30	30	30	31	30	31	29	29

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Aug. 1969

135° E Mean Time (G. M. T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	074	070	071	066	058	057	067	077	078	077	077	082	090	096	104	104	105	110	107	100	087	078	075	077
	CNT	26	24	29	28	28	27	29	29	29	29	30	30	28	28	28	28	28	28	28	29	29	29	29	28
	Q R	014	014	010	007	011	015	014	013	010	010	009	010	016	020	016	015	018	028	017	013	017	012	012	017
foF1	MED									450L	480L	530L	545	535	550	550	530	490L	470L						
	CNT									4	15	17	18	24	21	19	17	14	12						
foE	MED						E	165	250	300	340	355	372	382	380	380	362	340	295	238					
	CNT						3	9	25	25	23	22	22	20	20	23	22	23	21	18					
foEs	MED	J026X	J025X	J021X	J027X	J022X	J024X	024	031	040	042	046	044	046	047	050	050	046	039	J034X	J032X	J031X	J027X	J030X	J030X
	CNT	28	29	29	29	29	29	29	29	29	29	30	30	29	28	28	28	28	28	28	29	29	28	29	29
	Q R	022	017	022	019	D010	D014	013	009	015	012	019	029	015	022	032	022	016	031	021	017	028	017	013	014
f-min	MED	E015S	E014S	012	012	E	E013E	E015S	014	015	015	016	018	019	018	018	017	016	014	014	E014S	E015S	E015S	E015S	E015S
	CNT	28	29	29	29	29	29	29	29	29	29	30	30	29	28	28	28	28	28	28	29	29	23	29	29
M (3000) F2	MED	268	270	280	285	285	290	315	330	325	310	295	278	278	275	275	280	285	292	300	305	290	265	265	268
	CNT	26	24	29	28	28	27	29	29	29	29	30	30	28	28	28	28	28	28	28	28	29	29	29	28
M (3000) F1	MED									362L	372L	365L	348	370	360	352	345	340L	335L						
	CNT									4	14	17	16	19	19	18	15	13	12						
h'F2	MED							300	248	255	280	312	350	350	345	330	328	310	300	270	262				
	CNT							1	22	27	28	30	27	29	28	26	28	28	27	27	4				
h'F	MED	300	300	272	265	255	260	250	230	230	211	205	202H	204	214	212	229	230	240	250	250	250	250	290	295
	CNT	28	28	29	29	29	28	29	28	27	24	23	23	22	20	19	18	18	20	22	26	29	29	28	29
h'Es	MED	100	100	100	100	100	100	100	125	120	120	110	110	115	110	115	115	115	110	110	105	105	105	105	102
	CNT	22	23	23	23	20	17	23	27	29	29	29	29	29	27	28	27	25	23	26	25	26	24	26	26
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

AUG. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	64	62	63	64	61	64	H 68	83	A	73	79	73	74	76	75	68	69	70	74	82	82	73	66	F
2	F	F	F	F	U F 56	F 57	73	80	79	81	67	69	73	71	71	69	70	70	73	73	81	79	77	73
3	F	F 68	F 67	F 67	F 66	69	78	74	69	71	73	75	78	78	74	83	78	77	76	78	85	83	I S 83	82
4	77	74	66	63	56	57	61	65	67	63	66	73	69	69	73	69	72	71	73	I S 79	84	78	73	75
5	73	71	66	63	61	62	75	I R 76	71	A	70	77	H 74	73	77	76	83	83	83	I A 78	82	84	83	80
6	80	78	71	66	69	76	74	75	79	71	71	H 71	74	78	77	77	76	70	72	80	78	78	74	F
7	F	F	F	F 67	F	60	68	74	72	78	83	79	82	84	83	82	79	79	79	87	83	79	76	71
8	70	70	67	F 61	U F 67	73	72	78	82	85	78	86	91	85	84	81	I A 80	78	78	87	83	83	78	68
9	67	66	68	63	F 60	F 63	80	88	76	77	73	73	73	74	80	82	84	84	72	76	77	76	70	73
10	64	60	60	57	57	60	83	87	81	I C 73	C	C	C	C	C	C	C	C	C	C	79	74	70	63
11	63	58	60	F 63	F	57	64	59	62	63	67	70	74	75	70	72	72	70	74	84	81	73	66	60
12	60	60	56	54	54	61	78	80	81	70	67	68	78	83	88	86	82	71	69	73	73	74	72	67
13	68	70	58	57	56	57	68	69	64	R	A	56	A	A	59	A	A	60	63	65	72	73	F 71	F
14	F 66	F 58	56	56	51	58	66	F 74	73	73	71	64	68	67	69	71	65	67	73	81	75	F 70	F 58	F
15	F	F 57	F	F	F 50	F 50	57	58	66	63	71	67	68	73	71	69	64	64	66	73	73	73	68	F
16	F	F	F	F	F 54	53	61	67	70	73	70	66	78	73	76	71	69	68	69	78	78	79	74	F
17	63	F 53	F 50	F 50	46	48	58	58	60	53	53	55	60	60	60	63	63	68	64	I A 68	68	66	67	63
18	54	52	53	49	50	54	65	83	77	77	67	65	74	73	69	70	73	70	73	84	72	64	60	57
19	F 50	F 50	F	F 53	F	F 43	54	61	63	70	70	74	75	79	80	78	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	78	73	68	F 68	F 60
21	56	F	F 56	52	F	57	60	68	70	A	65	60	60	57	66	67	65	67	65	73	74	73	F 64	F 50
22	F	F	F	F 53	F 50	56	69	64	63	69	I A 66	63	68	71	73	73	73	75	70	75	74	73	65	60
23	58	59	57	55	53	55	63	73	74	71	71	68	73	73	81	74	83	81	83	83	73	69	63	60
24	63	62	57	51	44	49	50	54	57	60	60	A	53	58	62	62	60	64	65	69	73	69	57	F 58
25	C	C	C	C	C	C	C	C	C	C	C	67	72	66	71	68	74	71	67	68	70	70	68	F
26	F	F	F	F	F	F	F 73	83	75	76	76	80	67	70	73	72	73	73	73	80	80	76	71	69
27	66	68	64	56	54	55	65	67	68	66	H 66	69	66	73	74	81	85	80	67	65	71	67	63	61
28	56	49	48	50	44	45	58	62	70	76	H 68	70	76	78	75	77	76	77	77	80	80	A	A	A
29	F 63	F 60	A	F 60	F 56	60	74	96	100	90	I A 84	89	I A 83	85	83	83	82	83	82	86	85	87	S 80	63
30	60	F	F 56	F 55	53	55	69	79	83	90	90	81	84	85	H 83	75	74	77	81	85	88	86	73	64
31	63	63	62	63	55	63	70	83	83	83	87	86	87	H 84	84	84	86	89	86	91	82	74	72	67
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	22	21	25	24	28	29	29	28	26	27	28	28	28	29	28	27	28	28	29	30	29	29	22
MED	63	61	60	57	54	57	68	74	72	73	70	70	74	73	74	74	74	71	73	78	78	74	70	64
UQ	67	68	66	63	58	62	73	80	79	77	74	76	78	78	80	81	81	78	78	83	82	79	74	71
LQ	60	58	56	53	50	54	61	65	66	69	67	66	68	70	71	69	70	69	68	73	73	70	66	60

AUG. 1969 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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								470	A	480	A	A	A	A	510	500	L	440						
2							A	A	A	A	A	520	540	530	530	U L 520	A	A						
3									A	A	540	A	A	530	530	530	L	L						
4							440	460	500	500	520	550	530	520	540	470	500	L						
5							440	A	L	A	540	540		560	560	550	510							
6							A	A	500	L 510	540		L	520	A	A								
7										530	A	A	A	550	I A 520	480	500							
8										510	520	530	520	L 520	530	U L 530	A	L 430						
9								A	490	510	570	530	A	530	530	500	L 480							
10								L	L 500	C	C	C	C	C	C	C	C	C						
11							420		480	510	A	530	530	510	530	520	480							
12							L		480	490	L	520	520	530	500	500	460							
13						L 330	410	410	A	A	A	A	A	A	480	A	A	L 400						
14								440	470	A	A	A	490	L 500	520	460	450							
15							390	440	440	470	480	490	520	500	480	500								
16								440	470	470	510	500	490	490	500	C	A							
17						310	370	A	440	460	480	490	480	480	480	450	A	400						
18							L 410	U L 430	460	470	500		A		L 500		L 440							
19									A	470	500	480	500	500	480	470	C							
20									C	C	C	C	C	C	C	C								
21									460	A	A	480	500	490	470	480	A	L 400						
22									450	460	A	A	500	480	500		L							
23									450	490		480	490	520	480	500	450							
24								430	440	460	A	A	500	490	490	480								
25									C	C	C	510	500	490	I A 500		450							
26								440	L	470	480	500		520	510	500								
27							400	L 470	480	500		520	530	510	510	480								
28							L	460	480	A			520	520	L 500									
29								A	A	A	A	A	A	500	A									
30									L	L	500	I A 500	540											
31									490		L 510	500	U 500		L 530	U 500								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	8	11	18	18	14	18	19	24	26	20	10	5						
MED						320	410	440	475	485	510	505	500	515	505	500	470	400						
UQ							430	460	490	510	540	530	525	525	530	510	500	430						
LQ							395	435	450	470	500	490	500	495	490	480	450	400						

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AUG. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					105	205	275	305	325	340	350	350	380	345	A	A	320	A	A	A				
2					A	205	290	315	335	355	360	365	A	A	A	365	330	300	200	E				
3					E	A	A	315	335	360	360	375	380	A	A	A	A	A	210	S				
4					E	195	270	310	345	370	370	350	360	350	375	350	325	290	205	120				
5					E	180	275	300	325	365	385	390	395	380	375	340	315	290	200	A				
6					A	200	270	300	335	360	390	A	A	A	A	A	A	A	A	A				
7					E	170	275	310	335	360	380	390	390	390	370	340	315	A	A	E				
8					A	160	240	300	315	335	370	345	385	I A 390	375	360	315	285	A	E				
9					A	A	260	305	325	365	370	350	310	A	A	320	A	A	A	A				
10					A	200	265	305	330	I C 370	C	C	C	C	C	C	C	C	C	C				
11					A	A	250	295	315	330	335	335	A	A	A	A	A	290	A	E				
12					E	A	265	300	315	345	350	330	A	A	A	A	A	A	200	A				
13					A	A	255	300	320	320	340	330	330	A	365	335	305	270	190	E				
14					E	A	235	290	315	320	340	350	345	345	345	I A 310	290	265	200					
15						195	240	290	300	320	330	350	330	320	320	315	300	A	170					
16						170	245	295	310	305	A	A	A	335	A	C	A	A	165					
17						A	230	280	300	310	320	310	A	340	330	A	A	250	S					
18						A	235	275	300	315	300	305	305	A	A	A	A	A	A					
19						A	230	285	310	325	330	335	A	A	305	315	C	C	C					
20						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
21						A	250	290	310	325	325	315	A	A	A	A	A	260	175					
22						170	230	285	300	320	320	A	A	A	A	320	300	235	A					
23						A	A	290	305	325	340	325	320	315	I A 330	A	A	A	A					
24						S	230	A	A	A	A	A	A	A	A	A	300	250	S					
25						C	C	C	C	C	C	A	A	A	A	A	295	255	A					
26						A	240	A	320	A	A	A	A	A	A	A	305	260	A					
27						S	A	A	A	A	A	A	A	A	A	A	305	255	S					
28						A	230	295	315	325	330	380	390	I A 365	A	A	A	A	A					
29						135	230	295	315	330	320	320	A	A	A	330	315	240	E					
30						A	240	300	310	320	335	325	A	A	A	A	A	A	A					
31						S	230	300	325	350	370	380	370	370	370	330	305	270	S					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					7	12	26	26	27	26	24	22	14	12	11	13	16	16	11	6				
MED					E	188	242	300	315	330	340	348	365	348	365	330	305	262	200	E				
UQ					E	200	265	305	325	360	370	365	385	375	372	340	315	288	200	E				
LQ					E	170	230	290	310	320	330	325	330	338	325	320	300	252	172	E				

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AUG. 1969 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45°23.6' N. Long. 141°41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	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	22	20	E	E	G	G	G	40	JX 118	JX 65	JX 143	JX 163	JX 82	JX 122	JX 63	JX 53	45	JX 36	JX 54	JX 34	30	JX 23	JX 25	JX 36
2	JX 73	JX 73	JX 83	JX 25	20	30	48	JX 53	JX 63	JX 67	50	JX 74	JX 61	JX 55	JX 53	51	JX 103	JX 165	JX 83	JX 140	JX 63	JX 20	JX 23	JX 53
3	E	JX 33	JX 24	JX 33	JX 25	28	JX 33	42	JX 53	JX 61	JX 58	JX 58	54	JX 60	JX 63	JX 70	40	JX 34	JX 130	JX 90	JX 64	JX 73	JX 83	JX 45
4	JX 31	JX 33	JX 20	JX 25	18	G	31	39	G	G	51	48	43	G	G	47	40	40	31	M 78	E	JX 38	JX 28	E S 15
5	E	JX 43	JX 53	JX 30	JX 60	JX 50	JX 51	JX 60	50	JX 115	JX 60	JX 118	50	JX 65	G	57	JX 50	JX 60	JX 33	M 80	JX 53	JX 54	JX 38	E
6	E	JX 22	JX 23	JX 18	30	33	JX 53	JX 66	JX 73	JX 103	JX 71	JX 54	41	40	JX 71	JX 71	JX 63	JX 54	JX 35	JX 34	JX 53	JX 73	JX 66	JX 51
7	JX 74	JX 53	JX 33	20	JX 54	JX 38	JX 51	JX 43	JX 63	JX 55	JX 53	JX 63	JX 73	48	JX 72	50	39	43	JX 29	22	JX 25	JX 24	19	E S 15
8	20	18	JX 60	JX 83	JX 45	JX 111	JX 90	JX 43	JX 53	48	43	JX 61	G	JX 73	G	JX 94	JX 111	JX 121	JX 53	JX 120	JX 25	E S 15	E	M 47
9	JX 33	JX 51	JX 43	JX 63	JX 43	83	JX 60	JX 65	JX 46	58	45	42	JX 59	JX 73	JX 41	41	38	JX 31	43	63	JX 70	JX 40	JX 65	JX 30
10	JX 23	JX 21	JX 23	18	JX 24	G 18	G	36	48	C	C	C	C	C	C	C	C	C	C	C	JX 23	JX 31	E	JX 24
11	JX 24	16	JX 21	15	JX 23	JX 33	33	G	38	41	JX 55	43	44	40	JX 53	40	33	G	JX 48	21	E S 15	JX 21	JX 25	JX 23
12	20	JX 30	JX 28	JX 33	18	JX 24	JX 53	38	38	G	47	48	48	42	JX 50	JX 53	JX 44	JX 34	JX 80	JX 25	JX 21	22	E S 15	JX 41
13	JX 45	JX 23	JX 23	JX 23	JX 23	21	JX 46	JX 43	JX 53	54	50	JX 54	JX 93	JX 73	51	JX 73	JX 73	JX 50	JX 33	JX 83	JX 38	JX 33	JX 81	JX 55
14	JX 68	JX 45	JX 51	JX 30	JX 23	20	JX 52	37	40	47	JX 60	JX 58	JX 51	JX 63	JX 44	43	G	G	G	JX 25	JX 43	18	JX 26	JX 21
15	JX 30	JX 25	20	20	JX 33	G	34	JX 73	38	G	38	45	41	38	JX 43	26	36	28	G	JX 33	JX 63	E	JX 64	JX 80
16	JX 33	JX 33	JX 24	E	E	G	G	38	G	JX 45	42	JX 40	40	G	JX 43	E C 50	JX 51	JX 33	JX 53	JX 25	E S 17	E	JX 25	JX 43
17	JX 24	JX 35	JX 25	JX 23	JX 21	21	36	JX 53	JX 61	JX 52	41	JX 44	38	G	G	33	JX 60	33	JX 43	M 72	JX 38	JX 40	JX 25	JX 20
18	E	JX 23	JX 21	JX 24	JX 43	JX 28	G	33	37	JX 50	JX 53	JX 51	JX 65	JX 50	JX 64	JX 49	JX 33	34	JX 30	JX 30	JX 33	JX 33	JX 23	JX 25
19	JX 30	JX 34	JX 33	JX 24	16	23	G	G	JX 60	40	JX 50	40	42	JX 44	G	G	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	JX 41	JX 53	JX 33	JX 73	JX 63
21	JX 51	JX 51	JX 41	JX 35	JX 24	20	G	40	41	JX 84	JX 53	40	40	41	40	40	JX 55	G	30	JX 43	JX 61	JX 63	JX 21	E
22	JX 20	JX 24	15	16	15	G	G	G	36	G	JX 110	JX 81	JX 43	JX 48	40	G	G	G	JX 45	JX 43	JX 24	JX 23	18	JX 31
23	JX 23	JX 23	JX 31	JX 32	JX 23	JX 31	JX 38	30	G	G	G	43	52	JX 55	JX 63	37	JX 38	34	23	20	18	E	18	JX 21
24	JX 30	JX 34	JX 24	E	E	E S 18	G 22	JX 33	JX 43	JX 45	JX 71	JX 91	JX 50	JX 37	42	40	G	JX 43	50	JX 70	JX 73	JX 51	JX 33	24
25	C	C	C	C	C	C	C	C	C	C	C	40	41	48	68	38	G	G	28	JX 28	JX 30	JX 33	JX 33	JX 31
26	E	JX 30	JX 33	JX 53	JX 23	20	G 23	31	33	40	40	43	JX 44	JX 50	JX 45	JX 34	38	31	30	24	JX 24	E S 16	JX 33	JX 23
27	JX 20	JX 23	15	E	20	17	29	30	38	JX 45	40	40	42	40	40	40	G	G 24	25	E S 20	18	E	J 3	E S 15
28	E	JX 25	JX 24	JX 24	18	19	30	JX 53	JX 60	JX 60	40	G	G	40	46	43	JX 40	43	JX 35	JX 25	JX 86	JX 93	JX 93	JX 113
29	JX 51	JX 73	JX 75	JX 83	JX 53	20	50	JX 61	JX 64	JX 78	JX 143	JX 70	JX 84	JX 70	50	42	G	JX 53	JX 35	50	JX 144	JX 141	JX 110	30
30	JX 40	JX 25	JX 25	JX 23	15	16	40	G	35	48	JX 50	JX 71	JX 53	JX 53	42	JX 60	JX 33	JX 36	JX 40	JX 23	JX 33	JX 23	JX 53	JX 30
31	JX 35	JX 21	JX 31	JX 23	E	E S 19	G	34	G	G	G	G	G	G	G	G	G	G	30	JX 40	23	JX 71	JX 43	JX 33
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	28	28	28	29	30	30	30	30
MED	JX 24	JX 30	JX 25	JX 24	JX 23	20	33	39	43	48	50	JX 48	44	JX 48	44	42	38	34	JX 35	JX 34	JX 33	JX 32	JX 29	JX 30
UQ	JX 35	JX 35	JX 33	JX 32	JX 30	30	JX 50	JX 53	JX 60	JX 60	JX 59	JX 63	JX 54	JX 60	JX 53	JX 53	JX 50	JX 43	JX 49	JX 70	JX 61	JX 51	JX 64	JX 45
LQ	20	JX 23	JX 23	18	18	17	G	33	37	40	42	42	41	40	40	38	E G 33	26	30	JX 25	JX 23	20	JX 23	JX 21

The Radio Research Laboratories, Japan

AUG. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	16	E	E	G	G	G	G	A	G	52	53	60	60	40	38	41	31	47	24	28	16	18	20
2	42	42	50	17	12	17	45	50	57	67	48	50	45	42	45	47	51	62	62	18	26	E	17	20
3	E	E	20	16	22	22	31	G	50	58	G	54	54	40	42	50	37	36	35	40	18	16	22	40
4	20	24	17	15	12	G	21	27	G	G	45	G	G	G	G	44	G	G	G	A	E	28	16	E S 15
5	E	20	E	18	20	50	36	A	48	A	49	50	49	50	G	G	38	37	30	A	30	30	31	E
6	E	16	17	17	21	15	50	54	45	50	G	44	39	40	57	60	42	35	26	30	42	50	48	42
7	40	42	17	E	25	36	36	G	46	47	50	54	72	45	60	G	G	30	22	20	23	18	16	E S 15
8	17	17	17	20	40	61	38	G	G	G	G	G	G	44	G	44	A	35	24	16	17	E S 15	E	42
9	28	43	43	29	25	47	60	52	G	G	G	G	50	45	40	G	35	31	40	50	42	22	23	28
10	20	13	16	16	15	G 14	G	G	44	C	C	C	C	C	C	C	C	C	C	C	13	30	E	21
11	23	12	16	E	11	21	18	G	G	G	51	G	40	38	38	34	33	G	40	20	E S 15	17	18	18
12	16	17	20	24	16	20	17	G	G	G	46	47	45	38	42	39	31	28	16	20	18	E	E S 15	30
13	16	17	16	17	15	20	G	G	46	E R 54	A	50	A	A	G	A	A	37	31	19	20	25	31	55
14	42	42	38	18	14	19	40	G	G	47	50	57	G	G	G	35	G	G	G	22	40	15	18	16
15	16	15	E	E	16	G	G	31	G	G	G	G	G	G	G	G	G	26	G	18	20	E	50	46
16	20	17	E	E	E	G	G	G	G	41	38	37	37	G	35	E C 50	46	27	46	25	E S 17	E	23	18
17	20	22	E	17	16	20	33	41	G	G	G	G	38	G	G	32	45	18	40	A	38	20	17	15
18	E	17	12	12	20	18	G	G	G	G	47	G	54	40	40	35	30	26	20	20	26	25	17	20
19	27	24	18	18	16	19	G	G	44	G	45	G	38	36	G	G	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	29	40	18	50	21
21	32	45	22	18	16	17	G	G	G	A	50	38	37	35	36	33	52	G	30	40	20	27	16	E
22	15	17	E	E	E	G	G	G	G	G	A	46	42	37	36	G	G	G	30	30	17	19	18	20
23	20	20	18	17	E	26	26	26	G	G	G	G	G	50	36	35	30	25	20	17	15	E	15	18
24	18	13	22	E	E	E S 18	G 20	30	34	36	48	A	40	37	35	33	G	36	40	65	20	23	21	16
25	C	C	C	C	C	C	C	C	C	C	C	38	39	44	68	34	G	G	25	18	16	E	20	16
26	E	16	17	18	12	18	G 20	31	30	38	40	39	40	38	40	35	26	21	20	20	16	E S 16	16	17
27	16	16	13	E	16	17	27	30	34	41	37	38	38	40	37	37	G	G 22	24	E S 20	17	E	16	E S 15
28	E	13	20	17	15	18	19	G	G	53	G	G	G	38	37	34	37	26	30	22	64	A	A	A
29	40	22	A	43	31	G	42	57	53	70	A	55	A	47	50	G	G	40	26	48	41	30	16	19
30	19	20	20	18	14	15	G	G	G	43	G	70	45	40	37	35	30	35	23	17	23	18	20	20
31	17	16	E	E	E	E S 19	G	G	G	G	G	G	G	G	G	G	G	G	25	24	20	20	20	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	28	28	28	29	30	30	30	30
MED	18	17	17	17	15	18	20	G	G	36	45	38	40	40	37	34	30	26	26	22	20	18	18	20
UQ	23	22	20	18	20	20	36	31	45	50	50	50	49	44	40	38	42	35	38	40	30	25	23	28
LQ	15	16	12	E	12	14	G	G	G	G	G	G	37	36	G	G	G	E G 18	21	20	17	E E 15	16	16

AUG. 1969 | FBES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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 S 16	E	E	E	E	13	12	17	16	18	18	20	29	20	18	20	19	11	E	E	E	E	E S 16	E
2	E	E	E	E	E	E	E	17	17	17	17	18	20	17	19	17	17	11	12	E	E	E S 15	E	E
3	E	E	E	E	E	E	17	17	18	18	17	20	25	17	17	17	16	E	E	E S 12	E S 12	E	E	E S 16
4	E	E	E	E	E	E	E	11	17	18	17	17	19	20	18	16	16	11	11	E	E	E	E S 14	E S 15
5	E	E	E	E	E	11	12	16	16	20	18	19	19	20	18	17	11	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	17	11	15	18	18	18	18	18	17	17	11	E	E S 16	E S 15	E	E S 15	E
7	E	E	E	E	E	E	11	11	11	12	17	18	20	18	18	16	11	17	E	E	E	E S 16	E	E S 15
8	E	E	E	E	E	11	11	11	16	20	20	17	20	20	17	17	12	13	E	E	E	E S 15	E	E
9	E	E	E	E	E	E	14	12	17	17	20	20	17	16	17	19	15	11	E	E	E	E S 15	E S 16	E
10	E S 12	E	E	E	E	E	11	E	16	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E
11	E	E	E	E	E	E	E	11	17	17	17	18	19	18	17	20	16	11	E	E	E S 15	E	E	E
12	E S 12	E	E	E	E	E	E	E	16	16	18	18	18	19	18	14	11	11	E	E	E S 17	E S 15	E S 15	E
13	E S 15	E	E	E	E	E	12	11	18	17	18	17	19	19	19	17	14	12	12	E	E	E	E S 15	E
14	E	E	E	E	E	E	14	16	18	18	20	20	20	19	17	17	E	11	14	E	E S 13	E	E S 14	E
15	E	E	E	E	E	E	E	E	E	18	17	18	19	17	19	18	12	E	E	E	E S 15	E	E S 16	E
16	E	E	E	E	E	E	E	E	12	17	17	18	15	18	17	E C 50	E	E	E	E	E S 17	E	E	E S 15
17	E	E	E	E	E	11	11	11	12	17	20	19	18	18	17	14	E	E	E S 16	E	E	E	E	E
18	E	E	E	E	E	E	E	11	11	16	16	19	19	17	17	15	16	15	E	E	E S 16	E	E	E
19	E	E	E	E	E	E	E	16	17	17	17	17	17	18	16	16	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E
21	E	E	E	E	E	E	E	E	12	16	18	20	19	17	17	18	E	E	E	E	E	E S 15	E	E
22	E	E	E	E	E	E	E	E	17	16	17	17	19	18	18	12	E	12	E	E	E	E	E	E S 15
23	E	E	E	E	E	E	E	16	11	18	17	18	19	17	18	27	11	12	E	E	E	E	E	E S 15
24	E S 16	E	E	E	E	E S 18	E	E	17	17	18	18	18	17	16	17	11	E	E S 12	E	E S 15	E	E	E S 15
25	C	C	C	C	C	C	C	C	C	C	C	18	18	17	17	15	12	11	E	E	E S 15	E	E	E
26	E	E	E	E	E	E	E	11	16	18	20	19	17	17	17	16	E	E	E	E	E	E S 16	E S 15	E S 16
27	E	E	E	E	E	E S 12	E	12	13	17	17	19	20	17	17	16	E	E	E S 15	E S 20	E	E	E	E S 15
28	E	E	E	E	E	E	11	12	15	17	17	20	20	22	19	18	12	13	E	E	E	E	E	E
29	E	E	E	E	E	E	11	11	17	16	17	20	18	19	18	17	16	12	E	E	E	E S 15	E	E
30	E	E	E	E	E	E	11	12	13	17	18	18	19	20	17	18	15	E	E	E	E	E	E S 16	E
31	E	E	E	E	E	E S 19	11	12	12	18	19	20	18	18	16	12	11	E	E S 15	E	E S 15	E	E	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	28	28	28	29	30	30	30	30
MED	E	E	E	E	E	E	E	11	16	17	18	18	19	18	17	17	12	11	E	E	E	E	E	E
UQ	E	E	E	E	E	E	11	16	17	18	18	20	20	19	18	18	16	12	E E 12	E	E S 15	E S 15	E S 15	E S 15
LQ	E	E	E	E	E	E	E	11	12	16	17	18	18	17	17	16	E E 11	E	E	E	E	E	E	E

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AUG. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	265	270	280	280	280	270 H	310	A	280	290	305	270	290	295	275	275	285	285	295	295	280	260	F
2	F	F	F	F	U F 265	F 265	290	280	295	305	270	280	290	275	280	270	300	285	290	270	275	280	270	265
3	F	F 260	F 255	F 270	F 275	290	310	295	305	280	260	275	280	280	255	275	285	290	290	270	270	265	I S 265	265
4	265	270	255	260	255	250	265	265	285	275	270	270	285	265	275	270	280	290	265	I S 270	275	275	260	255
5	260	265	275	260	260	260	305	I R 310	310	A	265	295	270 H	275	275	265	275	290	290	I A 275	255	260	265	260
6	270	275	265	260	270	275	325	280	285	270	270	265 H	270	280	290	285	290	290	280	275	275	270	255	F
7	F	F	F	F 280	F	285	300	300	265	290	295	280	280	285	280	295	290	290	290	285	280	275	275	270
8	255	255	270	F 265	U F 270	275	275	270	270	300	275	280	275	270	285	285	I A 290	290	280	285	275	275	290	265
9	265	255	270	260	F 265	F 265	265	275	290	290	275	285	260	280	285	295	295	305	290	285	275	275	270	260
10	265	265	265	265	265	250	280	300	305	I C 280	C	C	C	C	C	C	C	C	C	C	290	285	270	265
11	250	255	250	F 255	F	280	285	300	275	260	270	275	295	295	275	290	290	285	290	290	295	290	275	265
12	255	260	260	260	255	265	295	305	310	310	285	265	270	275	285	290	300	310	275	285	260	255	265	250
13	265	285	250	250	255	265	280	280	295	R	A	245	A	A	285	A	A	250	295	275	255	275	265 F	F
14	F 275	F 275	265	265	275	285	280	F 310	295	310	295	280	305	270	270	295	285	285	265	300	280	F 285	F 295	F
15	F	F 265	F	F	F 280	F 280	305	275	285	315	300	285	270	290	315	290	295	295	290	295	275	300	265	F
16	F	F	F	F	F 295	315	310	325	305	315	280	275	300	290	305	285	295	285	290	295	285	295	300	F
17	290	F 280	F 280	F 280	260	265	285	295	315	300	255	275	290	295	285	300	285	310	285	I A 280	270	275	280	290
18	280	275	285	285	280	295	290	320	330	325	330	285	310	300	300	270	305	305	300	305	310	280	295	280
19	F 255	F 260	F	F 245	F	F 300	320	300	340	315	295	310	280	300	305	310	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	295	275	280	F 285	F 285
21	270	F	F 285	290	F	315	315	285	310	A	290	315	285	290	290	285	295	310	310	290	295	300	F 295	F 290
22	F	F	F	F 265	F 290	305	335	305	315	335	I A 310	285	280	310	300	300	290	305	300	295	285	290	285	275
23	275	270	280	275	270	310	300	310	340	325	310	310	315	280	310	275	290	300	300	300	275	270	270	265
24	270	275	265	275	275	300	320	295	265	295	280	A	285	265	285	295	285	290	290	I A 280	285	290	280	F 265
25	C	C	C	C	C	C	C	C	C	C	C	285	310	275	295	280	305	315	300	280	275	285	295	F
26	F	F	F	F	F	F	F 315	325	310	300	315	325	285	295	305	290	300	300	290	280	285	275	280	260
27	260	270	280	270	270	270	305	315	295	290	275 H	290	260	260	275	270	290	305	300	265	265	265	265	280
28	270	265	275	260	260	265	295	290	300	305	280 H	285	305	305	290	310	305	300	305	290	275	A	A	A
29	F 265	F 265	A	F 245	F 265	290	290	315	315	320	I A 310	295	I A 280	295	290	290	295	295	290	275	265	300	S 290	275
30	265	F	F 265	F 275	265	305	305	315	300	300	300	320	285	295	295 H	305	295	295	300	275	295	305	300	275
31	255	260	270	285	290	290	315	315	315	300	300	280	285	280 H	290	285	290	295	290	295	280	285	280	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	22	21	25	24	28	29	29	28	26	27	28	28	28	29	28	27	28	28	29	30	29	29	22
MED	265	265	270	265	270	280	300	300	302	300	285	285	285	282	290	288	290	295	290	285	275	280	275	265
UQ	270	275	275	275	278	298	310	310	312	315	300	295	292	295	295	295	295	305	300	295	285	290	290	275
LQ	260	260	265	260	262	265	285	285	288	290	272	275	272	275	280	275	288	290	288	275	275	275	265	265

IONOSPHERIC DATA

AUG. 1969 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								355	A	395	A	A	A	A	355	355	L	340						
2							A	A	A	A	A	A	350	360	330	A	A	A						
3									A	A	360	A	A	345	340	A	L	L						
4							320	350	350	355	345	360	360	350	335	I A 350	325	L						
5							340	A	L	A	A	A		I A 330	330	320	335							
6							A	A	I A 350	I A 355	355		L	365	A	A								
7										A	A	A	A	330	I A 360	375	340							
8										375	365	365	365	L 365	340	U L 340	A	L 350						
9								A	345	355	335	360	A	360	340	360	L 345							
10								L	I A 360	C	C	C	C	C	C	C	C	C						
11							335		370	350	A	350	360	370	340	L 335	L 350							
12							L		355	350	L	A	345	340	360	335	L 350							
13						L 405	340	365	A	A	A	A	A	A	350	A	A	A						
14								365	355	A	A	A	330	L 360	330	365	335							
15							335	340	375	365	375	365	330	345	355	340								
16								365	355	I A 355	355	365	365	365	355	C	A							
17						305	A	A	365	370	385	355	375	360	345	365	A	330						
18							L 340	U L 350	365	365	A		A		L 350		L 340							
19									A	355	I A 350	365	360	345	350	360	C							
20									C	C	C	C	C	C	C	C								
21									350	A	A	355	360	345	360	345	A	L 325						
22									375	390	A	A	340	360	335		L							
23									360	365		375	370	I A 340	365	330	335							
24								345	390	390	A	A	340	365	345	345								
25									C	C	C	375	380	I A 350	I A 355		355							
26								380	L	385	395	405		365	355	345								
27							L 350	L 350	355	350		360	340	335	335	345								
28							L	350	355	A			345	345	L 360									
29								A	A	A	A	A	A	A	A									
30									L	L	390	I A 390	355											
31									365		L 370	400	U L 380		L 360	U L 360								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	7	11	18	17	12	15	19	23	26	18	10	4						
MED						355	340	350	358	365	362	365	360	350	350	345	340	335						
UQ							340	365	365	375	380	375	365	362	355	360	L 350	345						
LQ							335	350	355	355	352	360	342	345	340	340	335	328						

AUG. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JUL. 1969 | H'F2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	280	275	A	420	420	I A 365	385	400	350	340	A						
2							275	270	285	A	375	A	A	395	350		405		L 320					
3							300	305	325	295	330	370	370	360	395	410	360	325						
4								280	280	290	I A 370	360	400	400	360	360	385	315						
5								280	295	300	350	360	380	390	380	360	390	325						
6							310	285	275	290	360	350	370	350	360	325	350	340						
7							300	300	300	320	330	335	415	390	400	370	380	320						
8								350	315	310	320	450	360	350	350	370	A	325						
9								350	305	485	385	395	375	390	360	400	345	330						
10						295	340	350	335	A	A	A	A	A	340	350	350	320						
11						325	325	325	320	380	345	370	370	340	345	340	370	315						
12								320	300	345	425	350	420	370	360	345	325							
13							320	300	315	300	365	325	340	350	350	360	315	310						
14							I A 380	410	405	490	450	W	555	540	540	490	370	350						
15						380	370	330	410	A	410	550	600	W	550	520	415	370	345					
16							375	350	295	370	350	I A 390	350	390	370	390	350	340	310					
17							380	360	370	A	A	A	A	375	375	360	345							
18							285	325		415	400	380	370	360	350	320	320	300						
19							260	305	350	370	395	395	390	405	370	325	325							
20								320	370	345	320	335	360	325	355	380	320	300	280					
21						330	300	290	370	390	350	320	350	I A 345	345	I A 350	335	325						
22							350	345	290	370	440	325	400	410	350	325	315	340						
23							270	310	325	315	365	360	335	I A 320	350	350	330	310						
24							310	300	285	295	320	390	400	345	340	345	350	320						
25								325	300	290	315	410	395	350	325	350	310	300						
26							315	245	320	295	345	330	330	325	345	350	320	290						
27							C	C	C	C	350	A	375	345	325	330	305	I A 320						
28							285	280	295	290	315	380	400	345	325	335	310	290						
29							375	300	300	325	360	375	325	350	360	350	A	300						
30									320	345	300	360	360	345	325	350	325	315						
31							370	I A 350	330	350	A	410	380	350	A	A	A	275						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	22	29	29	25	28	27	28	30	30	29	28	26	4					
MED						328	318	310	315	325	355	370	372	355	352	350	342	320	315					
UQ						355	370	345	330	370	390	395	400	390	370	370	365	325	332					
LQ						310	300	290	295	295	338	350	360	345	345	345	320	300	295					

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JUL. 1969 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1969 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	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	285	300	295	265	290	240	240H	250	A	215	A	A	A	A	215	230	A	260	A	270	260	240	290	345
2	A	A	A	250	270	250	I A 260	A	A	A	A	A	245	230	265A	A	A	A	A	265	290	260	275	290
3	285	300	310	290	285	260	260	250	A	A	220	I A 210	A	215	250	A	250	275	290A	A	285	290	300	I A 300
4	295	300	300	305	315	275	265	240	240	240	250	225	215	225	205	I A 240	250	260	250	I A 290	265	290	290	300
5	290	295	250	295	320	A	290	A	A	A	A	A	A	A	230	240	270	I A 275	275	I A 290	I A 300	I A 300	310A	300
6	275	275	260	295	280	265	I A 260	I A 260	I A 240	I A 230	250	250H	200	215	A	A	I A 245	250	260	285	A	A	A	A
7	A	A	290	260	250	250	250	245	260	A	A	A	A	255	I A 245	235	225	240	260	275	250	270	270	265
8	310	300	290	300	A	A	260A	250	250	200	210	210	200	250	210	265A	I A 245	260	260	265	260	275	250	A
9	330A	A	A	335A	325	A	A	A	250	235	240	210	I A 245	250	215	240	250	250	I A 270	A	A	275	275	305A
10	325	285	310	265	310	260	260	240	I A 245	I C 240	C	C	C	C	C	C	C	C	C	C	240	280	260	290
11	340	310	310	300	300	265	250	230	210	225	I A 250	220	210	215	210	220	240	240	I A 270	270	250	245	250	300
12	310	305	320	340	330	260	250	235	215	210	I A 210	I A 210	260	235	215	245	240	235	260	260	290	295	295	350
13	305	280	255	325	330	285	250	250	A	A	A	A	A	A	290	A	A	A	295	270	305	275	305A	A
14	A	A	A	295	285	265	A	250	250	A	A	A	260	220	235	225	235	245	260	270	I A 265	250	260	300
15	300	300	300	280	275	270	265	245	215	210	200	240	250	215	250	240	250	225	250	260	275	250	A	A
16	310	310	270	260	250	260	225	240	210	I A 210	225	200	195	225	215	C	A	245	A	270	265	260	260	280
17	250	300	285	295	315	280	A	A	240	245	220	240	235	240	220	235	I A 245	260	A	A	315A	290	275	250
18	260	290	265	250	300	260	230	250	235	250	I A 220	215	I A 240	250	250	250	220	240	260	255	245	275	260	300
19	355	360	305	275	245	215	235	200	I A 230	215	I A 200	200	225	210	205	200	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	260	I A 275	270	I A 260	260
21	320A	I A 310	265	265	270	250	245	260	250	A	A	225	200	230	240	235	I A 240	240	265	I A 275	275	270	245	250
22	300	340	300	305	265	245	255	215	225	200	A	A	260	220	230	230	240	240	260	260	260	260	260	295
23	300	300	275	275	250	250	245	250	210	230	210H	210	200	I A 255	225	250	250	250	260	240	260	260	270	300
24	300	290	260	260	275	270	245	205	215	205	A	A	240	205	215	225	230	290A	A	A	285	270	300	295
25	C	C	C	C	C	C	C	C	C	C	C	195	210	A	A	220	250	255	260	260	270	270	275	265
26	295	295	300	275	250	275	235	230	240	210	200	190	215	205	240	225	250	250	265	270	260	270	275	290
27	300	295	265	250	295	280	250	240	225	250	205H	220	250	250	240	250	240	250	250	300	300	270	290	270
28	295	280	350	315	325	300	265	250	250	A	225H	205	205	240	240	240	260	245	270	270	A	A	A	A
29	A	315	A	A	340A	260	265	A	A	A	A	A	A	A	A	260	245	A	260	A	A	275A	250	265
30	305	340	320	295	270	260	245	220	225	250	215	I A 210	250	240	225H	225	245	270	270	260	270	250	260	270
31	315	310	290	250	250	250	245	245	240	225	200	200	200	225H	230	240	250	250	260	275	260	270	260	260
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	25	25	28	28	26	26	24	23	20	18	20	23	24	26	24	24	25	23	24	26	28	27	25
MED	300	300	290	285	285	260	250	245	240	225	218	210	225	228	230	238	245	250	260	270	268	270	270	290
UQ	310	310	305	300	315	270	260	250	248	240	225	222	248	245	240	242	250	260	270	275	285	275	290	300
LQ	295	295	265	262	268	250	245	232	220	210	205	202	202	215	215	225	240	240	260	260	260	260	260	265

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AUG. 1969 | H'F (KM)

IONOSPHERIC DATA

JUL. 1969 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	105	105	100	100	140	115	110	110	105	105	110	110	105	105	145	125	115	110	110	110	110	110	S
2	E	100	100	100	105	110	110	G	110	110	110	110	105	110	110	135	G	G	120	115	115	110	110	105
3	105	105	100	100	100	125	115	120	120	120	115	110	115	115	110	105	G	125	115	115	110	110	105	105
4	E	105	100	100	G	G	125	115	110	110	110	110	110	105	105	105	G	G	100	115	110	110	110	105
5	105	105	105	100	100	G	105	135	120	115	110	110	110	110	115	110	110	115	120	120	115	115	110	110
6	S	100	100	100	105	G	C	140	145	120	120	G	120	G	G	G	G	G	G	115	100	110	110	110
7	100	E	E	E	G	G	G	120	120	120	G	125	120	115	110	125	120	120	115	110	110	110	110	110
8	110	110	110	105	105	140	120	115	115	110	110	115	115	115	125	120	115	115	110	110	115	110	S	105
9	105	100	100	105	105	110	G	110	G	G	115	110	110	110	120	G	120	115	110	110	105	E	100	100
10	105	100	100	115	115	120	G	120	120	110	110	110	110	105	105	105	125	115	110	110	110	105	105	105
11	105	105	E	E	G	G	120	115	115	110	110	110	110	105	105	105	105	100	100	110	120	100	110	105
12	105	105	105	E	G	G	G	G	120	120	110	125	110	120	120	120	115	110	105	110	S	100	110	110
13	110	110	E	105	105	G	G	115	G	115	110	110	115	120	110	G	G	G	110	110	105	110	110	110
14	110	110	110	E	100	125	120	120	110	115	110	110	110	G	G	125	115	110	115	110	110	110	110	110
15	105	E	100	E	110	115	120	110	110	110	110	105	G	110	105	G	120	115	110	110	110	110	105	105
16	105	105	100	105	100	105	110	140	115	115	110	110	110	110	110	110	110	110	G	110	110	110	110	110
17	110	105	105	105	105	105	G	140	135	115	110	110	110	115	110	110	110	105	105	100	100	100	100	110
18	110	105	110	110	105	105	105	105	G	120	115	115	115	115	110	110	110	110	105	105	105	105	110	110
19	110	E	110	105	105	105	105	105	105	120	110	115	110	110	110	110	110	110	110	110	105	105	105	110
20	110	110	110	110	110	G	110	110	105	105	105	G	105	105	G	125	115	110	105	105	105	110	105	E
21	110	105	105	105	105	105	G	140	120	135	115	115	115	110	110	110	115	110	105	105	100	100	105	100
22	105	105	105	105	105	105	G	125	125	120	110	120	G	G	G	G	G	125	120	120	110	E	S	105
23	100	105	110	105	110	110	105	105	140	120	120	120	125	115	110	125	120	115	110	110	100	E	S	115
24	110	110	110	110	110	110	110	105	110	105	105	100	G	G	G	120	115	110	110	105	105	100	100	100
25	100	100	100	100	100	100	105	105	105	G	105	120	100	125	110	120	120	120	115	110	E	S	100	100
26	120	E	115	115	110	115	115	110	G	G	120	110	110	110	110	105	120	125	110	110	110	110	105	110
27	S	105	110	105	105	120	C	C	C	C	110	110	105	105	120	120	115	115	110	110	105	S	105	100
28	110	110	105	105	105	145	G	110	115	115	110	110	140	115	120	105	105	105	105	105	C	C	C	C
29	C	E	135	125	120	120	120	115	110	115	110	105	105	100	100	115	115	120	115	110	E	110	S	105
30	105	E	100	E	100	140	130	125	G	G	G	G	105	G	105	100	G	G	125	100	100	S	110	110
31	115	110	105	105	105	120	115	115	120	115	110	110	110	110	125	120	110	120	110	110	110	115	105	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	25	28	25	27	23	20	28	25	26	29	28	28	26	26	26	24	26	29	31	27	24	26	28
MED	105	105	105	105	105	115	115	115	115	115	110	110	110	110	110	112	115	115	110	110	110	110	108	105
UQ	110	110	110	105	108	122	120	122	120	120	110	115	115	115	115	120	120	120	115	110	110	110	110	110
LQ	105	105	100	100	102	105	108	110	110	110	110	110	110	105	105	105	110	110	105	110	105	105	105	105

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JUL. 1969 | H'ES (KM)

IONOSPHERIC DATA

AUG. 1969 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	F1	F1						C1	C3	C2	C2	C2	C2	C2	L2	L1	C2	L3	CL 33	L1	FF 22	F1	F1	F4
2	F4	F6	F6	F2	L1	HL 11	CL 11	C2	C2	C2	C1	C2	L1	L1	L1	H1	C3	C3	C3	C2	F2	F2	F2	F3
3		F2	F3	F2	L2	L1	L1	C1	C2	C2	C2	C2	C2	L1	L2	L2	L2	L2	C3	C2	F2	F1	F3	F4
4	F3	F4	F1	F2	L1		L1	L2			C1	C1	C1			C1	H1	C2	C2	C4		F2	F1	
5		F4	F1	F2	L2	C5	C3	C2	C1	C2	C1	C1	C1	C2		C1	C2	C2	C3	L7	F2	F5	F6	
6		F2	F2	F1	L1	CL 11	C3	C3	C2	C1	C2	L1	L1	L1	L2	L3	L2	L3	L2	L2	F5	F5	F3	F5
7	F5	F4	F2	F1	L3	C3	C2	C1	C3	C2	C2	C2	C2	C1	C2	C1	C1	L1	L2	C2	F4	F2	F1	
8	F1	F1	F2	F2	L3	C3	C3	C1	C2	C1	C1	C1		L1		C2	C2	C3	L2	C2	F2			F6
9	F4	F8	F5	F4	CL 22	CL 31	C4	C3	C2	C1	C1	C1	C2	L2	L2	C1	L2	L2	CL 23	CL 44	F6	F3	F3	F5
10	F2	F1	F2	F2	L2	L1		C1	C2												F1	F3		F3
11	F3	F1	F1	F1	L1	L1	L1		C1	C1	C2	C1	L1	L1	L1	L1	L2		CL 32	C2		F1	F2	F1
12	F1	F2	F2	F6	L1	L1	L1	C1	C1		C1	C2	L1	L1	L2	L2	L2	L2	L2	L2	F1	F1		F5
13	F2	F1	F2	F2	L1	L1	C1	C1	C2	C2	C2	C2	C3	L3	H1	C2	C2	C3	C3	C2	F3	F3	F5	F6
14	F4	F5	F3	F3	L2	L1	C4	C1	C1	C1	C2	C4	C1	C1	C1	L1				F2	F4	F1	F2	F2
15	F2	F1	F1	F1	F2		C1	C2	C1		C1	C1	C1	C1	C2	C1	C1	L1		F2	F2		F3	F4
16	F2	F2	F1					C1		C2	L1	L2	L1		L1		L3	L2	C4	F2			F2	F2
17	F2	F3	F1	F2	F2	L1	C2	C2	C1	C2	C1	C2	L1			L1	L3	CL 11	C3	F4	F7	F3	F2	F1
18		F2	F2	F2	F2	L1		C1	C1	C2	C2	C2	C2	L2	L2	L2	L2	L2	L2	F2	F2	F3	F2	F3
19	F3	F6	F2	F2	F1	CL 11			C2	C1	C2	C1	L1	L1										
20																				F7	F4	F2	F3	F2
21	F3	F3	F2	F3	F1	L1		C1	C1	C3	C2	C1	L1	L1	L2	L1	L3		C3	F4	F2	F2	F2	
22	F2	F2	F1	F1	F1				C1		C3	L2	L2	L2	L1				L3	F3	F2	F2	F1	F3
23	F2	F2	F2	F2	F1	L3	L3	L1				C1	C1	C2	L1	L1	L1	L1	L1	F1	F1		F1	F1
24	F2	F1	F1				L1	L1	L2	L3	L3	L3	L1	L1	L2	L1		C2	C4	F4	F2	F3	F2	F1
25												L1	L1	L1	CL 31	L1			CL 21	F2	F1	F1	F2	F1
26		F2	F2	F2	F2	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L1	L2	F1	F1		F2	F1
27	F1	F1	F1		F1	C1	L2	L1	L1	L2	L1	L1	L1	L1	L1	L2		L2	L3		F1		F2	
28		F1	F1	F1	F1	L1	HL 11	C2	C2	C3	C2			L1	L1	L1	L2	L2	L3	F2	F5	F5	F4	F3
29	F3	F2	F3	F3	F3	H1	C3	C2	C2	C4	C3	C3	L3	L2	L1	C1		C4	C3	FF 42	F3	F3	F2	F2
30	F2	F3	F3	F2	F1	L1	L1		C1	C2	C2	C3	L2	L2	L2	L2	L2	L3	L2	F1	F2	F1	F2	F2
31	F1	F1	F1	F1				H1											C2	F4	F2	F2	F3	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1969 | TYPES OF ES

IONOSPHERIC DATA

AUG. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43.5' N. | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Day \ Hour	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	64	64	60	64	62	62	I R 74	83	76	73	78	72	73	88	83	80	77	77	89	94	78	64	66	66
2	66	66	F	63	63	64	79	84	90	85	81	I A 78	75	75	79	I A 74	I A 73	75	75	80	79	77	77	77
3	75	74	67	69	67	66	78	85	75	72	75	82	88	I A 88	80	90	92	80	75	81	83	81	81	84
4	82	79	71	73	65	58	64	74	74	72	75	67	75	69	81	77	72	77	75	78	78	75	75	80
5	79	74	66	63	62	65	87	89	H 71	81	I A 75	84	I A 86	86	84	86	88	I A 91	86	76	77	83	87	I R 84
6	81	77	81	I R 72	68	75	84	88	84	88	81	88	89	88	91	92	81	76	80	84	80	77	76	72
7	73	74	74	76	62	61	67	80	76	76	79	82	87	94	97	93	87	87	85	89	91	80	76	76
8	71	72	70	68	61	64	75	88	89	86	86	87	100	102	95	94	88	80	88	87	I A 82	86	78	I R 71
9	69	66	65	66	63	63	83	89	89	92	78	81	88	83	87	96	99	I R 96	77	72	73	72	I R 70	68
10	65	70	58	56	55	64	87	106	88	72	79	83	94	95	88	80	84	82	84	88	85	74	71	68
11	62	61	60	62	61	61	70	69	61	I C 72	I C 73	I C 75	81	77	80	79	82	80	85	I R 89	I R 82	I R 64	61	59
12	I R 57	F 56	F	54	51	57	72	87	71	69	66	I C 74	84	92	C	C	C	74	79	79	67	F	F	I R 67
13	67	72	I R 60	59	59	56	I R 72	I R 72	63	A	A	A	64	I A 66	66	64	A	A	67	68	68	69	69	71
14	59	59	60	58	55	57	74	84	79	73	71	81	63	69	74	76	74	77	79	83	75	64	63	60
15	60	59	60	59	58	F	54	76	80	86	81	78	82	86	76	74	72	73	73	80	79	76	70	59
16	54	53	53	57	54	53	59	64	73	70	68	78	85	82	73	74	74	79	73	73	81	81	75	68
17	64	57	52	56	52	48	54	65	64	59	61	61	64	67	71	71	69	72	74	76	67	68	I R 66	63
18	60	56	53	49	48	50	I C 70	C	C	72	69	71	76	79	I C 76	74	79	79	84	87	81	61	63	63
19	I R 59	56	55	58	47	46	51	69	68	75	73	79	80	89	C	C	C	C	C	C	C	C	C	C
20	64	66	65	54	51	46	66	89	77	83	88	I C 84	73	I A 76	I C 82	83	I C 87	87	78	79	76	68	S 63	60
21	62	59	57	58	53	52	61	63	84	86	71	71	65	71	73	76	76	70	70	72	78	70	69	60
22	56	55	53	53	55	63	71	66	74	70	63	67	69	71	78	83	83	81	85	79	71	72	70	65
23	64	64	65	59	56	56	72	89	81	69	73	69	69	77	87	83	90	91	93	96	77	68	65	64
24	66	64	61	58	51	49	55	59	61	64	61	62	62	66	69	68	68	I C 74	I C 80	84	76	72	63	59
25	61	60	59	55	51	54	66	70	68	67	64	I A 69	74	72	74	75	80	78	71	72	69	70	64	58
26	58	57	59	56	53	56	76	C	C	C	73	74	74	74	79	81	79	75	76	79	I R 76	74	70	66
27	66	65	66	61	53	54	70	76	78	75	76	79	73	85	79	91	93	91	80	69	66	69	67	63
28	60	60	52	51	51	51	69	73	79	82	78	74	79	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	87	90	87	98	97	91	94	90	86	84	86	91	I R 86	76	66
30	66	61	62	61	59	64	76	86	96	93	89	83	90	98	100	89	85	86	91	89	89	89	71	64
31	60	58	61	62	55	56	77	79	87	91	85	86	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	28	30	30	29	30	28	28	29	30	30	30	29	27	27	26	27	28	28	28	27	27	28
MED	64	62	60	59	55	57	72	80	76	75	75	78	78	82	80	80	82	79	80	80	78	72	70	66
UQ	67	70	66	63	62	63	76	88	84	86	81	83	87	88	87	90	88	86	85	87	82	78	76	71
LQ	60	58	58	56	52	53	66	70	71	72	71	71	73	72	75	74	74	76	75	76	74	68	66	62

AUG. 1969 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	450	500	550H	480	530	550	510	550H	500	I A 490	I A 450	390					
2						L	L	490	I A 500	I A 520	A	A	A	540	510	I A 500	A	A	A					
3							L	A	530	I A 530	540	560	530	A	A	I A 520	L	410	L					
4						340	560	480	480	510H	520	570	540	560	520	I A 530	500	450	L					
5							L	I A 460	450	600	A	A	A	A	A	I A 510	A	A	A					
6							L	490	I A 490	I A 540	570	I A 550	540	550	540	530	A	A	L					
7							L	L	500	510	I A 540	520	560	I A 550	I A 530	510	500	L	L					
8							L	L	470	550	550	600H	560	I A 560	I A 540	I A 500	480	480	L					
9							A	A	A	A	510	I A 560	560	580	530	510	480	430	A					
10							L	A	L	560	550	580	I A 540	I A 530	520	500	A	A	L					
11							390	440	520	I C 520	I C 550	I C 530	520	560	520	500	470	L	A					
12							L	430	470	L 550	L	C	510	500	C	C	C	L						
13							I	A	A	A	A	A	480	I A 500	500	470	A	A						
14							L	A	470	490	510	500	560	540	500	470	450	400	L					
15							450	440	I A 460	500	490	480	530	490	490	490	460	L						
16							L	490	460	500	510	530	500	500	470	I A 480	490H	400	L					
17							A	A	I A 460	I A 470	490	490	510	510	490	470	440	400						
18							C	C	C	470	540	520	520	540	I C 490	500	450	L						
19							L	L	A	A	490	480	480	480	C	C	C	C						
20							L	L	430	490	500	I C 500	500	I A 500	C	A	C	L						
21								L	I A 470	I A 480	I A 480	I A 480	520	I A 500	500	480	430	A						
22								L	460	470	490	470	540H	500	470	450	450	L						
23							L	L	450	480	490	500H	560	500	500	490	460	L						
24							370	L	470	470	500	480	500	500	480	470	I A 460	C						
25							L	420	480	I A 500	500	A	A	550	500	470	450	L						
26								C	C	C	500	490	510	540	540	460	L	L						
27							L	L	510	500	560	540	560	540	540	510	L	L						
28							L	L	500	500	530	610	540	C	C	C	C	C						
29							C	C	C	A	560	620	550	570	570	480	460	L						
30								L	L 510	500	530	590H	590	570	530	540	L	L						
31								L	490	550	500	540	C	C	C	C	C	C						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	10	24	26	27	26	27	27	24	26	17	8	1					
MED						340	420	455	475	500	510	530	540	540	515	500	460	420	390					
UQ							505	490	500	540	540	560	555	550	535	510	480	450						
LQ							380	440	460	490	495	490	510	500	495	470	450	400						

The Radio Research Laboratories, Japan

AUG. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA | Lat. 39°43.5'N, Long. 140°08.2'E | Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	190	IA 245	IA 295	IA 340	IA 360	IA 375	390	400	IA 395	385	365	A	A	A	S				
2					E	A	255	310	340	355	IA 360	A	A	IA 390	375	350	330	295	A	A				
3					E	A	275	IA 310	345	355	IA 370	385	A	A	A	A	A	A	A	S				
4					E	185	255	305	IA 340	IA 360	IA 370	IA 380	IA 390	A	A	A	315	A	A	S				
5					S	A	A	305	325	350	365	385	390	390	375	A	A	A	A	S				
6						A	A	A	345	355	A	A	A	A	A	A	A	A	A	S				
7						A	IA 245	305	340	355	365	375	IA 380	390	390	360	A	A	A	S				
8						A	A	A	A	IA 350	A	A	A	A	375	355	325	300	A	S				
9						A	A	A	A	A	370	380	A	A	A	A	A	A	A	A				
10						A	A	305	335	355	365	375	385	A	A	A	A	A	A	S				
11						A	245	290	IA 320	IC 345	C	C	A	A	A	A	A	255	A	S				
12						S	245	285	315	345	360	C	A	A	C	C	C	A	A	S				
13						A	220	295	A	A	A	A	A	A	A	345	A	A	A	S				
14						A	235	A	A	A	A	A	A	A	A	A	A	A	A	S				
15						A	A	A	A	A	IA 365	375	A	A	A	340	305	IA 260	195	S				
16						A	230	IA 280	325	A	A	A	IA 380	IA 375	IA 365	A	A	A	A	S				
17						A	A	A	325	A	A	A	A	A	380	IA 340	A	A	A	S				
18						A	IC 240	C	C	340	A	A	A	A	IC 370	340	315	A	A	S				
19						A	A	A	A	A	A	A	A	380	C	C	C	C	C	C				
20						175	245	280	300	335	345	C	A	A	C	A	C	A	A	E				
21						A	235	280	315	A	A	A	A	A	A	340	IA 290	255	A	E				
22						B	235	290	A	A	A	A	A	IA 375	360	A	A	A	A	S				
23						A	A	285	325	340	350	A	A	A	A	A	A	A	A	E				
24						S	225	280	315	335	345	360	375	385	375	345	305	C	C	E				
25						A	A	285	320	335	A	A	A	A	A	A	315	A	A	E				
26						150	240	C	C	C	350	365	385	385	380	360	IA 325	270	A	E				
27						155	235	295	320	340	360	375	380	385	380	355	310	255	170	E				
28						A	240	285	320	340	355	IA 365	A	C	C	C	C	C	C	C				
29						C	C	C	C	340	A	A	A	A	370	350	310	255	A	E				
30						A	240	290	IA 330	IA 340	A	A	A	A	A	A	A	260	190	E				
31						A	250	295	325	345	365	A	C	C	C	C	C	C	C	C				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	5	20	21	21	21	17	12	9	10	13	13	11	9	3	9				
MED					E	175	240	290	325	345	365	375	385	385	375	350	315	260	190	E				
UQ					E	185	245	305	340	355	365	382	390	390	380	355	320	270	192	E				
LQ					E	155	235	285	320	340	355	370	380	380	370	340	308	255	180	E				

AUG. 1969 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39°43.5'N. Long. 140°08.2'E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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 S 14	E S 14	E	E	E S 14	G	28	37	43	38	42	G	G	J X 84	G	G	J X 54	J X 48	J X 31	J X 39	J X 20	J X 19	J X 20	J X 54
2	J X 49	J X 79	J X 61	J X 33	J X 53	J X 34	31	38	55	J X 60	J X 58	J X 143	J X 60	J X 45	47	J X 133	J X 76	J X 63	J X 73	J X 83	J X 88	J X 63	J X 65	J X 40
3	J X 33	J X 24	J X 18	J X 24	J X 20	23	38	J X 82	J X 69	J X 84	J X 40	G	J X 72	J X 98	J X 69	J X 87	J X 48	38	J X 64	J X 134	J X 81	J X 54	J X 64	J X 53
4	J X 40	J X 63	J X 40	J X 28	J X 22	G	G	35	J X 48	38	J X 53	J X 46	43	42	42	J X 60	J X 48	J X 43	J X 40	J X 38	J X 48	J X 24	J X 75	J X 85
5	J X 54	J X 33	J X 43	J X 39	J X 25	J X 42	J X 42	J X 79	J X 50	J X 113	J X 81	J X 80	J X 109	J X 64	J X 130	J X 158	J X 90	J X 89	J X 63	J X 110	J X 32	J X 50	J X 43	J X 74
6	J X 88	J X 40	J X 28	J X 29	J X 49	28	J X 84	J X 46	J X 60	J X 104	J X 95	J X 130	J X 80	J X 63	J X 78	J X 64	J X 91	J X 50	J X 33	J X 28	J X 27	J X 26	J X 38	J X 34
7	J X 48	J X 26	J X 24	J X 28	J X 20	J X 25	30	J X 65	J X 77	J X 54	J X 117	J X 49	J X 64	J X 73	J X 75	43	J X 85	J X 58	J X 25	J X 26	J X 18	J X 23	J X 25	J X 20
8	J X 25	J X 21	J X 23	J X 19	J X 30	25	J X 49	36	42	J X 57	45	J X 46	J X 49	J X 96	J X 66	J X 111	J X 46	J X 46	J X 40	J X 61	J X 94	J X 80	J X 73	J X 63
9	J X 50	J X 54	J X 44	J X 33	J X 25	J X 51	J X 64	J X 80	J X 94	J X 65	44	J X 73	J X 121	J X 63	J X 43	36	J X 60	J X 39	J X 88	J X 43	J X 20	J X 54	J X 65	J X 80
10	J X 39	J X 29	J X 30	J X 43	J X 40	J X 44	J X 30	J X 49	J X 45	46	46	44	62	J X 68	J X 50	J X 51	J X 62	J X 88	25	J X 24	J X 20	J X 18	J X 23	J X 20
11	J X 23	J X 24	J X 30	J X 30	J X 28	J X 22	G	33	36	C	C	C	J X 77	J X 74	J X 60	J X 55	J X 42	36	J X 63	J X 80	J X 79	J X 69	J X 28	J X 28
12	J X 40	J X 35	J X 34	J X 38	J X 33	J X 28	29	36	42	J X 78	J X 53	C	J X 48	J X 41	C	C	C	J X 50	J X 33	J X 41	J X 39	J X 30	J X 23	J X 30
13	J X 35	J X 28	J X 43	J X 28	J X 23	J X 20	J X 28	J X 50	J X 77	J X 98	J X 89	J X 149	J X 63	J X 73	49	J X 59	J X 94	J X 89	J X 43	J X 64	J X 66	J X 58	J X 83	J X 24
14	J X 40	J X 43	J X 35	J X 73	J X 43	J X 29	J X 33	J X 62	J X 42	J X 47	46	J X 50	J X 52	45	J X 40	J X 40	J X 39	J X 38	J X 25	J X 20	J X 49	J X 28	J X 47	J X 54
15	J X 24	J X 44	J X 36	J X 48	J X 38	J X 24	J X 26	34	J X 76	J X 44	38	J X 46	J X 53	44	J X 49	38	32	30	G	J X 21	J X 44	J X 20	J X 30	J X 25
16	J X 54	J X 39	J X 29	J X 22	J X 27	J X 20	J X 28	J X 30	G	39	J X 45	J X 44	J X 39	39	41	J X 42	J X 41	J X 43	J X 25	J X 50	J X 75	J X 35	J X 23	J X 23
17	J X 28	E S 14	J X 20	E S 14	J X 18	J X 20	J X 40	J X 41	J X 53	J X 68	J X 52	47	J X 43	J X 42	G	J X 41	J X 34	J X 39	J X 28	J X 20	J X 32	J X 54	J X 84	J X 28
18	J X 24	J X 24	J X 44	J X 45	J X 24	J X 25	C	C	C	36	40	J X 44	40	J X 50	C	G	G	J X 45	J X 45	J X 33	J X 54	J X 37	J X 19	J X 25
19	J X 28	J X 26	J X 28	J X 43	J X 27	J X 43	J X 43	J X 43	J X 64	J X 64	J X 51	J X 44	J X 41	G	C	C	C	C	C	C	C	C	C	C
20	J X 25	J X 26	J X 19	E	E	G	G	30	34	45	G	C	J X 57	J X 82	C	J X 61	C	J X 39	J X 34	J X 26	J X 80	J X 73	J X 67	J X 28
21	J X 53	J X 40	J X 43	J X 43	J X 19	J X 31	J X 26	32	J X 57	J X 56	J X 65	J X 66	J X 38	J X 66	J X 37	J X 33	33	J X 46	J X 52	J X 36	J X 24	J X 48	J X 54	J X 53
22	J X 30	J X 38	E	J X 23	E	E B 17	G	G	41	J X 42	40	J X 43	J X 60	46	43	43	38	J X 51	22	J X 34	J X 18	J X 19	J X 26	J X 55
23	J X 77	J X 44	J X 59	J X 36	J X 57	J X 48	J X 40	J X 34	G 29	G 32	39	40	40	39	40	39	J X 80	J X 55	J X 33	J X 27	J X 18	J X 21	J X 31	J X 29
24	J X 21	E	J X 20	E	E	E S 15	J X 36	G	G	36	G	38	G	G	G	36	J X 54	C	C	J X 24	J X 18	J X 44	J X 80	J X 21
25	J X 20	J X 18	J X 20	J X 20	J X 25	J X 21	J X 33	J X 38	J X 42	J X 68	J X 60	J X 81	J X 100	J X 75	J X 44	J X 39	G	30	21	J X 25	J X 20	J X 53	J X 67	J X 23
26	J X 44	J X 28	J X 19	J X 17	J X 29	G	G	C	C	C	G	G	G	G	G	G	J X 51	J X 53	J X 58	J X 30	J X 48	J X 38	J X 24	J X 38
27	J X 39	J X 26	E	E	E	G	J X 29	J X 33	G	43	J X 41	G	G	43	42	G	40	32	J X 30	J X 38	J X 33	J X 30	J X 34	J X 20
28	J X 25	J X 25	E	J X 21	J X 20	J X 28	G	34	38	J X 50	J X 48	J X 74	42	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	J X 52	J X 53	J X 70	J X 48	J X 42	41	45	34	39	J X 39	J X 55	J X 90	J X 55	J X 74	J X 54
30	J X 61	J X 46	J X 35	J X 34	J X 39	J X 34	J X 20	33	37	39	43	42	J X 45	42	J X 45	J X 80	J X 33	29	J X 25	J X 43	J X 45	J X 28	J X 30	J X 41
31	J X 25	J X 54	J X 39	J X 33	J X 28	J X 18	G	34	40	46	J X 51	J X 51	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	28	28	29	30	28	30	29	25	27	26	27	27	28	28	28	28	28
MED	J X 37	J X 28	J X 30	J X 28	J X 25	J X 24	J X 29	36	42	J X 50	J X 46	J X 46	J X 48	J X 46	J X 43	J X 43	J X 47	J X 45	J X 33	J X 37	J X 42	J X 38	J X 40	J X 32
UQ	J X 49	J X 43	J X 40	J X 38	J X 33	J X 31	J X 38	J X 48	J X 58	J X 65	J X 53	J X 72	J X 63	J X 73	J X 50	J X 60	J X 62	J X 52	J X 48	J X 52	J X 70	J X 54	J X 67	J X 54
LQ	J X 25	J X 24	J X 20	J X 20	J X 20	18	G 20	33	38	42	40	42	40	42	40	37	34	38	J X 25	J X 26	J X 20	J X 25	J X 26	J X 24

AUG. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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 S 14	E S 14	E	E	E S 14	G	28	35	41	38	42	G	G	48	G	G	54	47	29	24	E	E	E	21
2	40	E	E	E	19	23	29	38	53	59	58	A	60	44	44	A	A	61	64	40	67	36	44	30
3	24	E	E	16	15	21	33	53	47	62	40	G	44	A	63	70	45	35	34	68	69	30	48	18
4	19	18	19	24	19	G	G	35	37	37	45	42	43	42	42	60	40	36	30	19	17	E	40	E
5	22	23	32	20	E	34	33	54	37	44	A	68	A	64	66	65	62	A	62	55	30	32	25	59
6	53	37	25	20	24	26	34	34	60	77	46	80	45	46	47	44	64	44	28	22	E	E	19	19
7	E	20	E	23	16	20	28	40	39	45	69	45	49	66	71	40	40	42	23	23	E	20	E	18
8	20	19	17	E	20	21	34	36	41	48	41	42	46	71	64	84	35	34	38	54	A	31	39	50
9	38	38	27	29	17	45	56	63	74	64	44	66	47	43	41	36	38	33	54	23	E	21	59	25
10	24	28	21	31	25	41	29	48	45	44	45	44	62	68	49	44	58	62	25	E	18	E	19	E
11	E	18	E	E	18	20	G	32	35	C	C	C	46	42	43	39	35	30	45	76	55	55	20	23
12	29	17	23	27	16	23	26	35	39	47	50	C	41	38	C	C	C	38	28	22	18	28	16	28
13	17	16	34	20	18	21	26	50	52	A	A	A	42	A	48	44	A	A	38	61	50	35	48	E
14	24	19	19	30	34	18	27	54	39	39	44	49	50	38	38	36	32	29	19	17	40	26	31	19
15	E	E	18	19	17	17	25	32	62	38	38	G	39	41	38	37	G	30	G	17	19	E	E	E
16	23	22	E	17	20	17	19	30	G	39	41	40	39	39	40	54	33	31	20	27	64	18	18	19
17	E	E S 14	E	E S 14	15	16	40	41	50	54	38	39	41	40	G	35	32	29	28	18	24	18	45	E
18	18	E	E	21	13	19	C	C	C	36	39	44	39	39	C	G	G	27	28	27	45	17	E	E
19	E	E	E	25	19	24	26	32	47	53	37	40	40	G	C	C	C	C	C	C	C	C	C	C
20	E	E	E	E	E	G	G	30	33	44	G	C	44	A	C	58	C	34	31	20	25	25	24	21
21	30	18	20	28	E	19	18	30	52	55	54	55	38	54	37	32 G	33	44	49	24	17	20	24	30
22	24	E	E	E	E	E B 17	G	G	39	41	39	39	40	40	39	37	35	29	20	E	E	18	19	49
23	34	19	24	18	26	24	25	24	G 28	G 31	39	40	40	39	38	37	36	38	22	23	E	E	24	E
24	E	E	E	E	E	E S 15	20	G	G	36	G	38	G	G	G	G	50	C	C	15	E	E	E	15
25	15	E	E	14	15	18	24	26	34	60	45	A	60	46	38	35	G	28	20	21	17	26	54	E
26	19	E	E	E	E	G	G	C	C	C	G	G	G	G	G	G	36	36	58	20	23	17	20	21
27	26	E	E	E	E	G	18	25	G	38	39	G	G	42	40	G	36	G	25	19	20	24	21	17
28	E	16	E	E	14	16	G	32	38	48	44	54	42	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	51	47	52	45	42	40	44	34	36	31	52	24	22	20	E
30	E	22	24	17	20	18	G 17	32	35	38	43	42	44	40	44	42	32	G	17	24	21	18	19	21
31	E	42	19	20	18	15	G	33	38	45	48	44	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	28	28	29	30	28	30	29	25	27	26	27	27	28	28	28	28	28
MED	19	16	E	18	16	18	25	34	39	45	44	43	42	42	40	39	36	35	28	23	20	20	20	19
UQ	24	20	21	23	19	23	29	40	48	54	47	54	46	54	47	49	50	43	38	34	42	27	40	24
LQ	E	E	E	E	E E 13	16	G 17	30	35	38	39	39	39	39	38	35	33	30	22	19	E E 17	E E 17	18	E

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AUG. 1969 | FBES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43.5' N. | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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 S 14	E S 14	E	E	E S 14	14	15	13	18	23	18	24	19	19	24	19	15	14	14	E S 14	E S 14	E S 14	E S 14	E S 14
2	E S 14	E S 14	E S 14	E	E	14	13	16	14	17	19	18	23	19	19	15	15	14	14	14	E S 14	E S 14	E S 14	E S 14
3	E S 14	E S 14	E S 14	E	E	14	18	15	16	19	16	21	20	20	20	14	17	17	15	E S 14	E S 14	E S 14	E S 14	E S 14
4	E S 14	E S 14	E S 14	E	E	15	15	15	13	14	17	18	23	23	17	18	19	13	14	E S 14	E S 14	E S 14	E S 14	E S 14
5	E S 14	E	E S 14	E	E S 14	14	14	13	15	18	18	21	21	19	19	15	13	13	14	E S 14	E S 14	E S 14	E S 14	E S 14
6	E S 13	E S 14	E S 14	E S 14	E	14	14	14	14	16	18	15	22	18	15	14	14	12	E	E S 14	E S 14	E S 14	E S 14	E S 14
7	E S 14	E S 14	E	E	E	12	14	14	16	14	15	14	19	20	17	17	17	14	12	E S 14	E	E S 14	E S 14	E S 14
8	E S 14	E S 13	E S 13	E	E	14	15	13	16	18	19	21	26	22	16	16	14	14	14	E S 14	E S 13	E S 13	E S 14	E S 14
9	E S 14	E S 14	E S 14	E	E	E	14	14	16	17	18	19	18	23	19	18	16	14	12	E	E S 14	E S 14	E S 14	E S 14
10	E S 14	E S 13	E S 14	E	E S 14	13	15	15	16	19	18	19	19	18	18	17	16	14	14	E S 13	E S 14	E S 14	E S 14	E S 14
11	E S 14	E S 14	E S 14	E	E	14	14	13	14	C	C	C	18	16	16	14	15	13	13	E S 14	E S 14	E S 14	E S 14	E S 14
12	E S 14	E S 12	E	E	E	E S 14	15	14	15	14	19	C	18	17	C	C	C	14	13	E S 13	E S 13	E S 13	E S 13	E S 13
13	E S 13	E S 14	E S 13	E S 14	E	E S 12	13	13	14	17	17	17	17	24	18	15	15	14	16	E S 14	E S 14	E S 14	E S 14	E S 14
14	E S 14	E S 14	E S 14	E S 14	E	14	14	14	14	16	18	17	19	19	18	16	15	E	14	E S 14	E S 14	E S 14	E S 14	E S 14
15	E S 14	E S 13	E S 14	E S 14	E	13	14	13	14	17	18	21	18	17	15	15	15	15	14	E S 14	E S 14	E S 14	E S 14	E S 14
16	E S 14	E S 14	E S 14	E	E S 14	12	14	14	14	14	18	14	18	14	14	17	14	14	14	E S 14	E S 14	E S 14	E S 14	E S 14
17	E S 14	E S 14	E S 14	E S 14	E	13	14	15	14	16	15	19	19	18	14	15	16	13	13	E S 13	E S 14	E S 14	E S 14	E S 14
18	E S 14	E S 14	E S 14	E S 14	E	14	C	C	C	14	14	16	15	18	C	16	14	13	13	E S 13	E S 14	E S 14	E S 14	E S 14
19	E S 14	E S 14	E S 14	E	E S 14	12	14	13	15	17	16	14	17	18	C	C	C	C	C	C	C	C	C	C
20	E S 14	E	E	E	E	13	14	14	15	12	17	C	15	17	C	16	C	12	13	E	E	E	E S 13	E
21	E S 14	E	E	E	E	E	13	13	15	14	13	15	15	14	15	15	14	13	E	E	E	E S 13	E S 14	E S 14
22	E	E	E	E	E	17	17	13	13	14	14	16	15	15	17	15	14	13	13	E S 14	E S 14	E S 14	E S 14	E S 14
23	E	E	E	E	E	E	12	13	14	17	16	18	20	16	16	23	14	13	13	E	E	E S 13	E	E S 13
24	E	E	E	E	E	E S 15	13	14	14	15	15	15	14	15	15	15	14	C	C	E	E	E S 13	E S 13	E
25	E	E	E	E	E	E	12	15	15	17	15	16	15	15	15	14	14	14	13	E	E	E	E	E
26	E	E	E	E	E	12	14	C	C	C	18	18	18	17	20	18	14	E	13	E	E	E S 14	E S 13	E S 14
27	E	E	E	E	E	13	13	13	15	14	14	18	18	15	16	14	14	12	E	E	E S 14	E S 13	E	E
28	E S 14	E	E	E	E	E	13	14	16	15	15	18	18	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	18	17	20	25	23	15	16	15	13	14	E	E	E	E	E
30	E S 14	E	E S 14	E	E	E	13	14	15	18	19	16	20	18	17	E	14	13	13	E	E	E	E	E
31	E	E	E	E	E	E	13	14	15	18	19	19	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	28	28	29	30	28	30	29	25	27	26	27	27	28	28	28	28	28
MED	E S 14	E S 13	E S 14	E	E	13	14	14	15	17	17	18	18	18	17	15	14	13	13	E S 14	E S 14	E S 14	E S 14	E S 14
UQ	E S 14	E S 14	E S 14	E	E	14	14	14	16	18	18	19	20	19	18	17	15	14	14	E S 14	E S 14	E S 14	E S 14	E S 14
LQ	E S 13	E	E	E	E	12	13	13	14	14	15	16	17	16	15	15	14	13	13	E	E	E S 13	E S 13	E S 13

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AUG. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA | Lat. 39° 43.5' N. Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	275	270	275	270	290	295	I B 305	325	315	280	295	290	260	285	270	280	275	290	285	295	310	270	260	260
2	255	255	F	285	255	280	285	295	295	300	300	I A 285	270	280	280	I A 280	I A 290	290	295	280	285	275	270	280
3	275	280	285	280	285	280	310	325	295	305	280	275	275	I A 270	265	265	285	290	290	270	270	260	260	265
4	265	270	270	275	270	265	260	280	285	280	285	255	275	260	275	285	280	285	280	280	270	275	255	260
5	270	285	275	265	260	265	300	310	H 295	300	I A 290	275	I A 290	285	285	275	285	I A 295	305	275	270	265	270	I B 270
6	265	270	285	I B 275	285	295	310	305	290	270	270	265	280	275	285	290	295	290	285	285	275	275	270	265
7	265	275	275	305	280	285	295	300	285	275	285	280	275	280	285	290	280	285	280	290	295	270	275	270
8	265	275	275	275	285	315	285	305	295	295	280	260	280	285	275	290	290	280	290	290	I A 275	280	280	I B 270
9	260	275	265	255	270	265	280	305	275	295	285	275	275	265	270	285	295	I B 300	300	290	275	275	I B 270	265
10	255	270	260	265	260	255	295	300	310	280	275	265	285	290	285	290	295	280	290	305	290	285	270	275
11	255	265	260	270	270	280	290	315	250	I C 295	I C 280	I C 285	305	285	285	285	295	290	295	I B 300	I B 305	I B 300	265	260
12	I B 265	F 265	F	265	260	275	290	330	320	295	265	I C 270	275	290	C	C	C	280	290	300	265	F	F	I B 255
13	255	275	I B 260	270	265	255	I B 290	I B 310	300	A	A	A	265	I A 270	275	285	A	A	295	280	280	265	280	285
14	270	270	265	275	265	265	295	305	305	305	285	310	275	285	280	285	290	300	305	305	290	290	270	270
15	270	270	280	275	285	F	275	285	295	305	300	315	285	305	295	295	305	305	295	290	290	295	295	290
16	280	275	275	295	280	320	310	310	325	295	300	280	290	295	285	295	285	295	300	295	285	295	295	280
17	285	280	270	270	260	275	255	300	305	265	285	300	265	270	290	295	300	295	295	290	285	280	I B 275	275
18	280	280	285	285	275	285	I C 305	C	C	325	295	285	295	305	I C 290	285	305	305	305	300	295	275	275	270
19	I B 280	275	275	310	300	310	315	305	315	300	300	305	300	300	C	C	C	C	C	C	C	C	C	C
20	285	290	295	285	285	275	290	325	305	300	315	I C 320	315	I A 290	I C 295	290	I C 305	305	295	295	290	305	S 285	265
21	295	265	285	295	295	310	315	305	310	320	285	300	270	290	290	295	305	305	300	300	295	290	295	280
22	270	265	265	270	280	305	325	325	310	330	325	295	305	275	310	300	300	300	295	295	285	285	285	280
23	280	270	280	280	285	285	295	330	325	335	300	290	265	285	290	290	290	295	290	300	300	280	275	260
24	280	275	280	280	280	305	295	295	295	300	280	285	280	285	295	295	300	I C 300	I C 295	295	285	280	275	270
25	265	265	275	285	270	300	305	315	305	305	310	I A 295	280	280	295	285	290	315	300	295	280	285	290	270
26	270	265	265	285	280	280	305	C	C	C	300	295	295	285	285	300	305	300	300	290	I B 290	280	280	270
27	255	265	285	290	275	270	295	305	295	300	275	295	275	270	265	265	290	300	305	280	260	260	265	255
28	265	265	260	255	250	265	280	300	310	305	310	275	285	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	310	290	290	290	290	290	290	295	295	290	280	285	I B 285	280	275
30	265	250	260	260	275	290	305	315	300	305	305	270	280	275	290	285	285	290	285	290	280	295	285	270
31	265	260	265	285	280	285	315	310	305	305	295	275	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	28	30	30	29	30	28	28	29	30	30	30	29	27	27	26	27	28	28	28	27	27	28
MED	268	270	275	275	278	280	295	305	302	300	290	285	280	285	285	290	292	295	295	290	285	280	275	270
UQ	280	275	280	285	285	295	305	315	310	305	300	295	290	290	290	292	300	300	300	298	290	288	282	275
LQ	265	265	265	270	265	270	290	300	295	295	280	275	275	275	278	285	285	290	290	282	275	275	270	265

AUG. 1969 | M(3000)F2 (0.01)

IONOSPHERIC DATA

AUG. 1969 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	355	360	360H	435	380	365	375	330H	345	IA340	IA340	335					
2						L	L	345	A	A	A	A	A	350	345	IA360	A	A	A					
3							L	A	360	IA365	370	355	360	A	A	IA340	L	360	L					
4						295	285	335	365	365H	370	335	365	345	355	IA350	340	335	L					
5							L	IA370	385	335	A	A	A	A	A	IA345	A	A	A					
6							L	330	IA355	IA345	350	IA365	375	345	350	340	A	A	L					
7							L	L	345	355	IA360	385	340	IA345	IA355	355	345	L	L					
8							L	L	380	345	375	335H	340	IA340	IA335	IA360	355	335	L					
9							A	A	A	A	375	IA350	350	330	360	335	340	340	A					
10							L	A	L	345	340	325	IA340	IA350	350	350	A	A	L					
11							340	350	355	IC360	IC345	IC360	370	340	350	340	345	L	A					
12							L	375	375	340L	L	C	375	355	C	C	C	L						
13							L	A	A	A	A	A	380	IA340	IA350	365	A	A						
14							L	A	360	365	355	IA355	340	345	360	360	335	350	L					
15							305	345	IA360	360	395	400	345	375	365	350	350	L						
16							L	335	365	375	360	350	360	355	385	IA365	345H	350	L					
17							A	A	A	A	365	350	365	350	335	345	350	325						
18							C	C	C	370	350	340	350	335	IC360	340	335	L						
19							L	L	A	A	360	375	390	375	C	C	C	C						
20							L	L	365	365	360	IC370	325	IA350	C	A	C	L						
21								L	IA360	IA360	IA365	IA375	365	IA335	340	350	355	A						
22								L	370	385	380	375	365H	380	385	385	350	L						
23							L	L	375	375	385	380H	340	360	355	335	335	L						
24							335	L	335	385	375	405	360	380	370	360	IA340	C						
25							L	355	350	IA360	380	A	A	325	325	355	350	L						
26								C	C	C	400	410	380	350	335	375	L	L						
27							L	L	350	380	340	355	340	335	335	320	L	L						
28							L	L	360	IA365	370	335	345	C	C	C	C	C						
29							C	C	C	A	355	330	345	345	335	365	370	L						
30								L	355L	380	375	350H	335	335	345	340	L	L						
31								L	355	360	IA380	360	C	C	C	C	C	C						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	10	22	24	27	26	27	27	24	26	17	8	1					
MED						295	320	348	360	362	370	358	360	345	350	350	345	340	335					
UQ							338	355	365	372	378	375	365	355	360	360	350	350						
LQ							295	335	355	358	358	350	340	340	335	340	340	335						

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AUG. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

AUG. 1969 | H'F2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	315	265	290	345	335	340	400	355	355	335	370	330	300					
2						325	305	310	310	315	305	I A 360	390	390	365	I A 360	I A 360	330	335					
3							270	275	320	320	370	380	365	I A 350	390	380	375	300	300					
4						380	455	360	350	385	355	470	375	440	375	355	355	340	310					
5							290	270	H 255	350	I A 330	370	I A 335	330	375	355	325	I A 325	300					
6							270	310	315	400	360	I A 365	355	370	345	320	330	290	295					
7							275	310	290	305	I A 360	350	375	350	345	315	325	305	295					
8							320	275	305	300	345	390	340	340	340	I A 330	310	315	290					
9							315	270	I A 330	320	285	360	355	340	375	330	305	275	290					
10							290	270	290	340	370	390	340	330	330	320	330	320	295					
11							310	275	450	C	I C 360	I C 350	330	360	345	330	325	290	300					
12							270	260	280	345	L 380	I C 380	380	330	C	C	C	L 280						
13							260	270	365	A	A	A	415	I A 400	400	365	A	A						
14							300	290	295	320	350	300	430	390	370	345	315	295	280					
15							420	340	315	290	310	300	350	315	315	330	300	285						
16							265	305	280	330	340	375	330	315	305	340	325	290	290					
17							390	325	300	I A 335	385	350	410	390	350	315	320	295						
18							I C 290	C	C	280	345	350	340	340	I C 325	340	300	285						
19							275	285	295	305	290	310	330	310	C	C	C	C						
20							295	245	270	285	280	I C 280	310	I A 340	I C 325	320	I C 290	275						
21								300	290	290	345	310	450	350	350	320	300	280						
22								255	280	260	255	300	345	375	315	305	290	290						
23							265	255	265	275	300	295	395	330	325	325	305	275						
24							305	300	355	330	385	390	390	370	335	325	310	C						
25							270	270	290	I A 330	305	A	375	330	335	330	320	275						
26								C	C	C	295	290	310	350	355	310	290	280						
27							275	290	310	310	360	330	365	365	360	365	280	260						
28							320	290	300	300	310	400	310	C	C	C	C	C						
29							C	C	C	265	310	355	325	325	325	300	290	270						
30								260	295	275	275	350	350	350	315	315	315	290						
31								245	280	285	280	305	C	C	C	C	C	C						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	25	28	28	28	30	29	30	29	27	27	26	26	13					
MED						325	290	275	295	312	338	350	355	350	345	330	315	290	295					
UQ						352	315	302	315	332	360	375	390	370	362	342	325	305	300					
LQ						315	270	268	285	288	300	310	335	330	325	320	300	280	290					

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AUG. 1969 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1969 | H'F (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Day \ Hour	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	295	290	280	250	270	250	245	235	205H	200	215	220	200A	210H	215	250A	240A	275	255	230	245	290	330
2	335A	290	270	250	300	280	250	245	A	A	A	A	A	250	250	A	A	A	A	280	300A	310	330	310
3	310	290	280	270	290	240	240A	240A	220A	225A	200	205	225	A	A	A	A	245A	265A	280A	285A	300	335A	295
4	310	295	315	315	295	290	255	245	230	200H	230	210	225	230	225	240A	230	245	245	270	280	250	330A	310
5	290	280	295	305	310	300	245	230A	220	240	A	A	A	A	A	A	A	A	A	300	300	330	305	335A
6	350	305	290	280	290	275	240A	215	220A	235A	235	220A	230	250	245	215	A	A	270	270	270	260	290	305
7	315	300	290	265	235	255	240	245	240	245A	220A	235	260A	230A	230A	235	240	240A	255	280	250	255	275	280
8	310	295	285	260	270	245	265	245	220	210A	205	200H	230	A	A	A	235	240	270A	280	290A	295	295	320A
9	345	345	325	320	295	320A	A	A	A	A	230	220A	240	230	230	240	250	230	260A	270	270	290	295A	305
10	330	300	305	325	340	310A	245	245A	240A	245	235	240	240A	A	A	A	240A	240A	260	270	245	255	285	290
11	300	320	305	305	295	295	250	245	200	210C	235C	210C	230	230	230	255	245	245	A	A	255A	250A	290A	300
12	325A	330	305	330	335A	290	240	245	240	A	A	C	215	205	C	C	C	265A	290	255	280	330A	275	315A
13	330	280	285A	330	325	270	240	A	A	A	A	A	230	250A	250A	A	A	A	295	A	A	330	A	255
14	310	300	295	325	325	280	255	230A	230	235	235	230A	220A	230	205	235	240	250	260	255	260	280	320	305
15	300	310	300	290	260	240	230	205	240A	245	210	195	240	220	210	215	230	240	275	255	260	245	245	250
16	295	310	300	265	260	240	230	220	200	220	200	200	190	230	205	230A	205H	245	250	260	255A	270	255	255
17	250	250	290	305	300	290H	260A	A	A	A	200	235	230	240	230	230	215	230	280	265	265	295	300A	260
18	280	275	275	290	280	280	250C	C	C	230	200	220A	230	210	220C	220	230	240	275	250	250	275	290	290
19	300	300	280	275	230	245	220	225	A	A	220	205	230	225	C	C	C	C	C	C	C	C	C	C
20	280	260	245	255	260	250	230	245	225	235A	230	C	A	A	C	A	C	240A	245	245	255	250	255	320
21	295	280	295	280	235	245	240	235	A	A	A	A	290	230A	230	245	230	A	290	265	245	240	250	275
22	305	310	300	295	275	245	240	230	230	230	230	230	180H	215	200	225	245	240	255	240	250	275	265	325A
23	315	305	290	245	280	290	240	240	230	230	210	195H	210	210	230	240	245	255A	270	240	230	245	275	295
24	290	260	260	245	250	245	230	240	220	210	190	205	215	200	215	230	235A	245C	260C	250	250	245	270	290
25	310	295	290	260	295	270	255	225	220	215A	215	A	A	A	225	240	245	245	255	250	260	290	270A	250
26	300	295	290	250	245	275	245	C	C	C	195	190	185	205	220	220	245	250A	280A	255	255	270	270	305
27	340	295	255	245	270	290H	250	230	220	210	220	220	190	240	220	240	245	250	255	260	295	320	300	280
28	295	290	310	310	325	320	255	245	235	220A	210	220A	230	C	C	C	C	C	C	C	C	C	C	C.
29	C	C	C	C	C	C	C	C	C	A	240	230A	230	230	235	240A	240	250A	265	300	285	250	250	250
30	300	340	315	290	290	275	240	240	230	215	205	195H	220	225	245	250	245	250	265	255	255	245	245	275
31	295	310A	300	280	255	255	245	240A	225	245	230A	215	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	25	22	22	26	24	26	23	22	20	21	23	25	26	27	28	27	28
MED	302	295	290	280	285	275	245	240	228	228	218	215	228	230	228	235	240	245	265	260	260	270	285	295
UQ	315	310	300	305	300	290	250	245	235	235	230	225	230	230	230	240	245	250	275	270	280	295	298	310
LQ	295	290	285	260	260	245	240	230	220	210	200	202	215	212	215	222	230	240	255	255	250	250	268	275

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AUG. 1969 | H'F (KM)

IONOSPHERIC DATA

AUG. 1969 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA | Lat. 39° 43.5' N. | Long. 140° 08.2' E | Sweep 1 MHz to 20 MHz in 20 sec | in automatio operation

Day \ Hour	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	E	E	S	G	115	120	120	120	120	G	G	115	G	G	110	105	105	100	105	105	110	115
2	115	110	105	105	105	105	140	130	125	120	115	115	115	115	145	130	125	125	115	115	110	110	110	105
3	100	105	105	105	100	150	135	125	125	120	115	G	120	110	105	105	110	125	120	115	110	105	110	105
4	105	105	110	110	105	G	G	130	110	120	115	125	120	130	120	120	115	120	115	110	110	110	115	115
5	110	110	110	110	105	120	120	120	125	120	130	120	115	115	115	115	115	115	115	110	110	105	110	110
6	105	105	100	100	110	110	115	120	120	115	115	115	115	115	110	105	105	100	105	105	120	115	110	110
7	105	110	110	110	110	110	130	125	125	120	120	120	120	120	120	120	120	115	110	110	115	110	110	105
8	105	110	110	115	110	115	115	130	120	115	115	115	115	115	130	125	120	125	115	110	105	105	110	105
9	100	100	100	100	100	115	115	115	115	120	115	115	115	115	110	105	105	105	105	100	105	105	110	110
10	110	110	105	105	105	105	110	125	125	130	125	130	120	120	115	115	110	105	140	115	110	105	115	115
11	115	115	110	105	105	110	G	130	125	C	C	C	115	115	115	110	115	130	100	100	105	110	105	105
12	105	105	105	100	100	100	135	130	125	110	115	C	110	115	C	C	C	100	100	110	110	100	105	105
13	105	100	100	100	100	105	120	110	115	115	110	110	115	120	120	130	120	115	115	115	110	110	105	110
14	110	110	110	110	105	105	105	115	115	120	115	110	115	115	110	115	105	100	125	120	115	110	110	110
15	110	110	105	105	105	110	110	120	115	120	130	115	115	115	120	120	125	120	G	110	110	105	110	120
16	105	105	100	100	105	105	110	115	G	115	115	110	105	110	115	115	110	105	120	110	115	105	100	100
17	105	S	105	S	110	130	115	115	115	115	115	115	110	115	G	105	105	105	115	100	105	110	110	110
18	105	110	105	105	105	105	C	C	C	115	115	115	115	115	C	G	G	115	110	110	105	105	105	110
19	105	105	105	105	105	110	105	105	105	110	110	110	110	G	C	C	C	C	C	C	C	C	C	C
20	100	100	100	E	E	G	G	145	140	120	G	C	115	115	C	115	C	120	115	110	110	105	105	105
21	105	100	100	100	105	105	105	135	115	115	110	105	105	105	105	105	140	120	115	115	110	110	105	105
22	105	105	E	100	E	B	G	G	120	120	120	115	115	125	120	115	120	115	110	105	105	100	100	105
23	105	105	105	100	100	100	105	105	110	105	125	115	125	115	120	120	115	115	115	110	110	105	110	105
24	105	E	105	E	E	S	100	G	G	140	G	135	G	G	G	140	125	C	C	110	110	110	110	100
25	100	100	100	105	100	105	105	105	120	115	115	115	115	115	120	130	G	145	125	115	110	110	110	110
26	105	105	105	100	105	G	G	C	C	C	G	G	G	G	G	G	125	115	115	110	110	105	100	110
27	105	105	E	E	E	G	105	105	G	125	140	G	G	140	140	G	125	135	130	115	105	110	105	105
28	110	105	E	105	105	105	G	130	125	115	115	115	115	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	115	115	115	115	115	130	125	140	125	115	115	110	110	110	110
30	105	105	105	100	105	105	105	125	125	120	115	115	115	115	105	105	120	140	115	105	105	100	100	100
31	100	105	100	100	100	110	G	140	140	125	115	105	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	26	25	25	23	22	26	25	29	27	24	26	26	21	23	24	27	26	28	28	28	28	28
MED	105	105	105	105	105	105	112	122	120	120	115	115	115	115	120	115	118	115	115	110	110	105	110	108
UQ	105	110	105	105	105	110	120	130	125	120	120	115	115	115	120	122	125	125	115	115	110	110	110	110
LQ	105	105	100	100	100	105	105	115	115	115	115	112	115	115	110	108	110	105	110	108	105	105	105	105

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IONOSPHERIC DATA

AUG. 1969 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							C 2	H 2	C 2	C 1	C 1			C 2			C 2	L 3	L 3	L 3	F 1	F 1	F 2	F 2
2	F 3	F 2	F 3	F 2	L 2	L 2	H 2	H 2	H 2	C 1	C 2	C 3	C 2	C 1	H 1	H 2	H 3	H 2	C 3	C 2	F 3	F 4	F 4	F 4
3	F 4	F 1	F 1	F 2	L 2	H 1	H 2	H 3	H 2	C 2	C 1		C 1	L 2	L 3	L 2	L 2	H 2	C 4	C 3	F 2	F 3	F 4	F 3
4	F 2	F 2	F 3	F 4	L 4			HL 23	L 2	C 1	C 2	H 1	C 1	H 1	C 1	C 2	C 2	C 2	C 3	L 2	F 2	F 1	F 3	F 2
5	F 2	F 3	F 3	F 3	L 2	C 4	C 3	C 3	H 1	H 2	H 2	H 2	C 3	C 2	C 2	C 2	C 3	C 3	C 4	L 3	F 4	F 4	F 4	F 4
6	F 5	F 3	F 3	F 3	F 3	L 2	C 3	C 2	C 2	C 3	C 1	C 2	C 1	C 1	C 2	L 2	L 2	L 2	L 1	L 2	F 1	F 1	F 3	F 4
7	F 2	F 3	F 2	F 3	F 1	L 1	H 2	H 2	H 1	C 1	C 1	C 1	C 1	C 2	C 2	C 1	C 2	C 3	L 2	L 3	F 1	F 3	F 1	F 3
8	F 3	F 4	F 2	F 1	F 3	C 1	C 3	H 3	C 3	C 2	C 1	C 1	C 1	C 2	H 2	H 2	H 1	H 2	C 2	L 3	F 3	F 3	F 3	F 3
9	F 3	F 3	F 4	F 6	F 3	C 3	C 4	C 3	C 3	C 3	C 1	C 2	C 2	C 2	L 1	L 1	L 2	L 2	L 3	L 3	F 1	F 3	F 3	F 4
10	F 4	F 2	F 4	F 5	F 4	L 4	L 3	H 2	H 1	H 1	H 1	H 1	C 1	C 1	C 1	C 2	C 2	L 2	H 1	C 2	F 3	F 1	F 2	F 4
11	F 2	F 2	F 2	F 2	F 2	L 1		H 1	H 1				C 2	C 1	C 2	C 2	C 1	H 1	L 4	L 3	F 3	F 4	F 5	F 4
12	F 3	F 2	F 4	F 4	F 4	L 4	H 2	H 2	H 2	C 2	C 2		C 1	C 1				L 5	L 3	C 3	F 3	F 5	F 2	F 2
13	F 2	F 4	F 6	F 5	F 7	L 2	H 3	C 3	C 3	C 3	C 2	C 3	C 2	C 2	C 2	H 2	C 3	C 5	C 4	C 3	F 3	F 5	F 5	F 3
14	F 4	F 3	F 4	F 4	F 6	L 2	LH 12	C 3	C 2	C 1	C 2	C 2	C 2	C 1	L 1	C 2	L 2	L 2	C 1	C 1	F 5	F 3	F 4	F 3
15	F 2	F 2	F 2	F 3	F 2	L 1	L 2	C 2	C 3	C 2	H 1	C 1	C 1	C 2	C 1	C 1	H 1	C 1		L 2	F 3	F 2	F 2	F 2
16	F 3	F 3	F 3	F 3	F 3	L 1	L 1	C 1		C 2	C 1	L 1	L 1	L 1	C 1	C 3	L 2	L 2	C 2	C 2	F 3	F 3	F 2	F 2
17	F 2		F 2		F 2	H 1	C 3	C 4	C 2	C 2	C 1	C 1	L 1	C 1		L 2	L 2	L 1	C 3	L 2	F 3	F 3	F 3	F 2
18	F 2	F 2	F 2	F 3	F 2	L 2				C 1	C 1	C 1	C 1	C 1				C 2	L 3	L 3	F 4	F 3	F 2	F 2
19	F 2	F 2	F 2	F 4	F 3	L 2	L 2	L 2	L 3	L 1	L 2	L 1	L 1											
20	F 2	F 1	F 1					H 1	H 1	H 2			C 2	C 4		C 4		H 3	C 4	L 4	F 3	F 3	F 3	F 5
21	F 3	F 3	F 3	F 4	F 2	L 5	L 2	H 1	C 3	C 2	L 3	L 2	L 1	L 2	L 2	L 2	H 2	H 4	C 5	C 4	F 3	F 3	F 5	F 5
22	F 3	F 2		F 2					C 2	C 2	H 2	C 1	C 1	H 1	H 1	C 1	C 2	C 2	C 1	L 2	F 1	F 2	F 2	F 6
23	F 5	F 3	F 4	F 3	F 4	L 3	L 2	L 2	L 2	L 2	H 1	C 1	H 1	C 1	H 2	H 1	C 2	C 5	C 2	L 3	F 1	F 1	F 3	F 2
24	F 1		F 1				L 1			H 1		H 1				H 1	H 3			L 2	F 1	F 2	F 2	F 2
25	F 2	F 2	F 1	F 2	F 3	L 2	L 3	L 3	C 1	C 2	C 2	C 3	C 3	C 2	C 1	H 1		H 2	H 3	C 5	F 3	F 4	F 4	F 2
26	F 2	F 2	F 1	F 1	F 1												H 3	C 2	C 3	L 3	F 3	F 3	F 2	F 2
27	F 4	F 1					L 1	L 2		H 1	H 1			H 1	H 1		H 2	H 1	HL 31	CL 32	F 3	F 4	F 4	F 2
28	F 2	F 3		F 1	F 2	L 2		H 2	HL 22	C 2	C 1	C 2	C 1											
29										C 2	C 2	C 2	C 1	C 1	H 1	H 2	H 1	H 3	C 4	C 4	F 3	F 3	F 3	F 3
30	F 2	F 3	F 3	F 2	F 5	L 2	L 1	H 2	H 1	H 1	C 2	C 2	C 2	C 2	L 3	L 4	C 2	H 1	L 1	L 4	F 4	F 3	F 2	F 2
31	F 1	F 4	F 2	F 2	F 2	L 1		H 2	H 2	H 2	C 2	L 2												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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AUG. 1969 | TYPES OF ES

IONOSPHERIC DATA

AUG. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N. Long. 139°29.3'E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	66	68	66	67	61	64	76	72	78	72	80	I^{R}_{75}	80	92	95	91	90	93	102	99	69	69	I^{R}_{67}	68
2	J^{R}_{65}	I^{R}_{67}	I^{R}_{65}	$^{F}_{62}$	F	61	80	78	88	86	81	I^{A}_{81}	78	82	80	82	79	79	79	84	73	75	80	$^{F}_{79}$
3	78	J^{F}_{80}	69	71	68	69	78	79	80	I^{A}_{75}	71	87	92	96	93	99	97	88	81	87	83	83	F	F
4	F	$^{F}_{85}$	F	$^{F}_{74}$	69	59	70	79	75	76	74	74	80	74	83	I^{A}_{86}	80	82	85	80	75	81	79	80
5	83	I^{R}_{77}	70	63	68	75	87	J^{R}_{79}	76	I^{R}_{78}	81	84	93	90	90	96	99	99	91	88	I^{R}_{82}	85	92	85
6	82	83	81	72	69	72	81	86	$^{H}_{84}$	86	92	100	101	99	105	100	89	86	89	85	80	81	82	80
7	78	80	78	74	63	57	70	82	81	79	80	84	96	102	106	107	99	97	98	98	90	83	80	82
8	79	79	80	75	68	63	76	93	88	88	86	93	104	114	110	103	I^{A}_{93}	I^{A}_{93}	I^{A}_{95}	86	86	I^{R}_{84}	83	77
9	$^{R}_{76}$	68	69	62	60	60	84	96	I^{A}_{99}	94	86	88	97	99	102	114	115	103	90	74	75	75	$^{V}_{74}$	$^{F}_{77}$
10	76	J^{R}_{79}	60	61	62	67	87	99	87	80	79	92	104	106	102	94	88	95	97	92	84	77	78	72
11	68	62	63	62	61	65	73	71	67	74	79	77	86	84	88	90	90	96	101	101	R	63	I^{A}_{62}	$^{R}_{60}$
12	$^{R}_{57}$	F	J^{R}_{54}	56	50	58	84	83	68	63	70	80	89	98	100	95	86	93	93	83	71	71	77	69
13	70	69	$^{V}_{62}$	60	60	60	79	77	A	70	I^{A}_{76}	70	I^{C}_{71}	74	73	75	74	72	74	73	65	$^{F}_{64}$	A	A
14	62	64	60	58	53	55	74	84	76	72	74	79	69	70	79	83	87	84	85	83	69	60	$^{R}_{60}$	61
15	60	58	F	61	57	51	62	82	93	102	73	83	96	86	87	85	81	79	78	81	$^{R}_{83}$	72	66	64
16	58	54	54	54	53	51	56	J^{R}_{67}	74	74	72	90	84	89	83	77	81	82	79	81	82	80	$^{F}_{74}$	$^{F}_{75}$
17	69	60	55	55	54	48	55	65	62	59	I^{A}_{66}	64	68	78	78	77	73	74	80	79	J^{R}_{71}	69	64	61
18	62	60	54	51	49	49	72	82	74	68	70	78	84	84	86	90	87	91	90	84	71	64	66	66
19	60	60	59	50	44	44	58	65	75	73	81	78	84	92	90	98	89	88	84	79	74	73	72	69
20	68	69	65	53	50	47	66	91	73	90	84	71	72	80	86	87	90	90	83	80	86	63	56	I^{R}_{60}
21	60	59	60	$^{R}_{62}$	42	46	59	67	85	87	I^{A}_{73}	74	68	79	81	83	74	74	I^{R}_{78}	I^{R}_{83}	76	I^{R}_{62}	I^{R}_{63}	60
22	58	I^{R}_{56}	56	56	60	62	57	68	86	70	64	70	68	72	82	90	88	88	96	76	71	J^{R}_{70}	72	68
23	64	$^{F}_{62}$	I^{R}_{66}	60	58	57	80	85	72	69	75	72	70	82	90	88	95	95	93	97	80	70	69	68
24	69	67	67	62	49	47	60	65	66	69	67	68	72	J^{R}_{74}	72	74	77	76	86	92	74	72	70	60
25	61	60	62	57	56	56	73	66	72	66	70	70	76	81	78	80	84	81	83	77	73	$^{R}_{74}$	64	58
26	59	57	56	58	55	57	R	J^{R}_{77}	74	76	71	77	77	79	90	87	83	82	88	85	82	76	70	69
27	$^{F}_{66}$	$^{F}_{69}$	70	64	56	54	71	84	85	74	80	82	80	84	90	98	104	102	97	94	I^{A}_{69}	70	$^{R}_{66}$	65
28	62	61	56	55	55	58	71	90	90	80	78	84	89	I^{A}_{89}	91	93	89	88	97	91	81	74	72	$^{R}_{68}$
29	68	65	62	62	58	60	90	109	91	89	87	92	107	109	105	105	99	87	91	92	93	84	72	70
30	69	$^{F}_{64}$	65	65	65	70	80	89	100	93	88	$^{H}_{83}$	100	108	113	106	102	97	104	$^{S}_{99}$	94	87	74	67
31	63	61	69	64	57	58	80	78	83	85	89	92	96	105	110	110	106	99	98	85	78	74	69	69
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	31	30	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	30	31	29	29
MED	66	64	63	62	58	58	74	79	79	76	78	80	84	86	90	90	89	88	90	85	77	74	72	68
UQ	70	69	69	64	62	62	80	86	87	86	81	86	96	98	101	98	96	95	96	92	83	80	77	75
LQ	61	60	59	56	53	52	66	72	74	71	72	74	74	80	82	84	82	82	83	80	71	70	66	64

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AUG. 1969 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	460	530	550	550	A	A	520	R	A	490	440	L					
2						L	L	L	A	A	A	A	A	540	A	A	A	A	L					
3							L	L	L	A	L	570	I A 550	A	A	U L 520	490	U L 450	L					
4							420	L	A	540	L	570	A	A	550	A	A	A	L					
5							L		U L 550	A	A	A	A	L	580	550	A	L	A					
6							L	L	L	600	A	A	570	L	560	550	L	L						
7						L	L	L	L	A	A	A	A	L	550	A	A	A	A					
8							A	A	L	500	580	A	550	550	520	A	A	A	A					
9							L	A	A	A	A	580	550	A	A	A	A	L	L					
10								L	A	A	A	U L 570	A	A	L	L	A	A	L					
11							L	L	530	520	A	590	A	A	A	A	A	A	A					
12							L	L	610	510	A	A	A	A	510	R	A	L						
13							L	610	A	A	A	520	C	A	L	480	A	A	A					
14							L	L	A	500	500	510	A	A	510	480	440	L	L					
15						L	410	L	460	A	L	520	500	L	510	500	L	L						
16								L	470	U 520	550	530	500	520	480	520	480	L	L					
17							A	A	A	L	A	L	500	500	490	470	L	L	L					
18							L	L	L	480	500	500	500	500	520	450	L	L						
19								L	420	470	A	500	A	A	500	480	U L 460	L	L					
20							L	L	L	500	500	500	500	A	490	460	L	L						
21							L	L	460	A	A	A	A	R	A	A	L	A	A					
22							L	L	460	450	490	510	520	500	500	480	L	L	L					
23							L	L	L	480	500	490	500	500	500	490	L	L						
24								320	460	490	490	500	510	I R 500	510	510	450	A						
25								L	480	490	490	510 R	510	530	490 R	L	L	L						
26							L	L	L	510	510	510 R	520	510	510	510	L	A						
27							L	L	450	450	550	R	580	530	580	510	L	L						
28							L	L	L	L	L	L	A	A	A	L	L	L						
29							L	L	L	A	L	L	570	L	580	A	460							
30								L	L	U L 520	500	L	560	580	L	L	L	L						
31								L	L	L	L	U L 560	600	560	L	L	L	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	3	12	18	13	18	18	14	20	16	7	2						
MED							415	460	465	500	500	515	520	520	510	495	460	445						
UQ								535	530	520	550	570	560	540	550	515	485							
LQ								390	460	480	500	500	500	500	500	480	455							

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AUG. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A	A	A	A	A	B	A	A	A	R	290	A					
2						B	270	A	A	A	A	A	A	A	385	365	340	290	A					
3						A	270	315	350	370	375	A	A	A	A	A	330	300	A					
4					155	A	A	A	I A 355	375	I A 390	390	370	375	355	340	A	A						
5					170	260	305	360	375	380	400	400	400	385	365	A	A	A						
6						A	I R 260	A	A	A	A	A	400	A	A	A	350	290	A					
7						A	260	310	350	370	390	395	I A 400	400	385	350	A	A	A					
8						B	A	A	330	A	A	A	A	360	I R 365	I A 360	I A 330	A	A					
9						B	A	A	A	350	A	A	A	A	A	A	A	A	200					
10						A	A	305	345	370	385	395	395	A	A	A	A	A	220					
11						A	A	290	325	A	A	A	A	A	A	A	I A 320	A	B					
12						B	A	300	A	A	A	A	A	A	A	A	A	A	A					
13						B	A	A	A	A	A	A	C	A	365	I A 345	A	A	A					
14						A	240	285	A	A	A	A	A	A	A	A	A	I R 260	190					
15						B	A	A	A	A	A	A	A	A	R	340	305	A	A					
16						A	A	A	A	A	A	R	A	A	A	340	310	260	200					
17						A	230	275	310	325	A	A	R	R	A	340	A	A	A					
18						A	235	270	I A 310	A	A	R	350	A	A	A	A	A	A					
19					130	I A 220	R	A	A	A	A	A	A	A	350	340	300	255	180					
20						B	220	275	310	A	A	A	A	A	A	I A 330	300	A	A					
21						E	250	290	310	A	A	A	A	A	A	A	A	A	A					
22						B	235	I R 290	A	R	A	A	R	R	A	A	A	A	A					
23						A	240	290	A	A	360	I A 360	370	I R 365	355	A	A	A	A					
24					170	210	290	320	I A 340	R	R	I R 355	I R 375	370	345	I A 320	A	A						
25						E	210	280	320	345	355	I R 365	380	I A 365	365	350	A	A	A					
26						B	235	295	320	350	365	I R 365	I R 370	I R 380	380	370	A	A	A					
27						B	A	300	325	A	R	A	375	370	360	350	325	285	A					
28						B	A	A	325	365	I A 375	A	A	A	A	375	A	260	A					
29						A	I A 230	290	A	A	355	A	A	A	385	355	320	265	A					
30						A	240	300	330	350	370	A	A	A	A	A	A	260	A					
31						A	230	300	330	360	A	A	A	A	A	355	310	255	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						6	19	20	17	13	11	7	11	9	13	18	14	12	5					
MED						142	235	290	325	355	375	U 390	380	370	370	350	320	262	200					
UQ						170	255	300	330	370	378	395	398	380	385	360	330	290	200					
LQ						E	230	288	320	350	362	U 365	370	365	365	340	310	260	190					

AUG. 1969 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J X 29	20	E B 14	21	21	21	35	35	J X 43	48	43	59	57	47	40	J X 54	G 31	G	31	J X 29	J X 25	22	21	21
2	J X 26	J X 34	J X 56	J X 61	J X 43	J X 41	G	36	J X 53	J X 71	J X 128	D	J X 134	61	J X 63	J X 94	J X 53	J X 62	J X 42	J X 52	J X 40	J X 43	J X 39	J X 51
3	J X 55	J X 37	32	22	20	J X 24	J X 50	37	J X 53	M 110	42	42	J X 77	J X 54	J X 121	J X 56	J G 28	J X 37	J X 48	J X 46	J X 48	J X 74	J X 87	J X 79
4	J X 77	J X 54	J X 56	J X 60	J X 31	20	32	J X 47	J X 61	41	J X 52	J X 62	J X 62	60	J X 56	J X 117	J X 56	J X 75	J X 42	J X 30	M 20	E	J X 24	21
5	J X 42	J X 39	J X 25	M 20	20	G	J X 31	J X 51	G	J X 72	J X 64	J X 86	J X 55	J X 55	J X 58	J X 70	62	49	J X 112	J X 88	46	24	J X 35	J X 51
6	J X 53	J X 32	J X 24	J X 29	J X 35	20	G	J X 89	J X 83	J X 56	J X 56	J X 106	J X 53	J X 71	J X 42	48	G	G 18	24	J X 24	22	J X 46	J X 62	J X 29
7	J X 25	J X 35	J X 30	J X 30	J X 25	J X 18	31	35	42	J X 108	J X 88	J X 114	J X 65	J X 53	J X 60	J X 56	J X 71	J X 89	J X 71	J X 30	J X 24	M 30	J X 60	J X 34
8	J X 43	J X 40	J X 41	J X 51	J X 84	J X 39	J X 80	J X 72	47	J X 41	J X 109	J X 55	46	G	42	J X 61	J X 129	J X 124	J X 108	J X 84	J X 41	J X 24	J X 50	J X 29
9	J X 24	J X 24	J X 25	J X 24	J X 24	21	J X 43	J X 76	J X 119	J X 108	J X 118	J X 56	J X 61	J X 122	J X 109	J X 74	J X 84	J X 40	30	J X 30	J X 19	23	J X 29	J X 62
10	J X 54	J X 38	J X 35	J X 29	J X 42	J X 38	J X 33	41	J X 55	50	J X 67	J X 50	J X 56	J X 55	J X 43	48	J X 106	J X 70	G 21	J X 84	J X 32	23	24	21
11	J X 29	J X 40	J X 43	J X 31	23	J X 36	J X 34	J X 37	38	J X 42	J X 59	J X 55	J X 54	J X 71	J X 65	J X 61	76	J X 63	J X 50	J X 36	78	J X 84	J X 84	J X 29
12	J X 41	J X 41	J X 43	J X 41	J X 29	J X 37	J X 30	41	J X 55	J X 41	J X 53	57	J X 54	57	45	47	J X 71	J X 54	J X 67	J X 41	J X 43	J X 42	J X 41	J X 47
13	J X 24	J X 40	J X 51	J X 41	J X 24	J X 29	35	J X 51	J X 120	J X 146	J X 140	J X 62	C	J X 52	48	J X 39	J X 53	J X 53	J X 76	J X 80	J X 84	J X 54	J X 84	J X 84
14	J X 64	J X 30	J X 61	J X 42	J X 43	J X 30	G 20	33	J X 54	J X 42	47	47	55	57	J X 56	J X 43	J X 41	32	22	J X 30	J X 25	J X 29	J X 33	J X 31
15	J X 24	J X 55	J X 86	21	J X 26	23	J X 29	35	40	J X 55	J X 41	J X 89	43	41	G	48	36	J X 29	19	21	J X 24	J X 41	J X 29	J X 30
16	21	J X 26	J X 25	J X 24	E	J X 42	J X 35	34	36	J X 47	39	G 35	40	39	38	36	35	G 23	G	J X 23	M 32	J X 68	J X 60	J X 30
17	21	J X 17	J X 27	J X 35	21	24	J X 51	J X 54	J X 52	48	J X 126	48	G	G	J X 38	G 29	J X 45	J X 32	J X 26	J X 42	J X 85	38	J X 39	J X 84
18	J X 53	J X 53	J X 26	J X 18	24	J X 33	G 20	29	37	37	J X 37	G	40	39	39	39	J X 41	J X 37	J X 43	J X 53	J X 30	J X 31	J X 51	J X 30
19	J X 25	22	J X 25	J X 25	E B 14	G	23	G 24	J X 35	J X 49	J X 74	J X 51	J X 55	J X 56	G 25	G 19	G 16	G	G 17	19	E S 15	21	E B 12	24
20	21	21	M 21	E	E B 12	E B 13	25	35	40	37	42	43	J X 41	47	J X 41	J X 39	J X 42	J X 29	J X 30	23	J X 29	J X 28	J X 131	J X 22
21	J X 39	J X 25	21	21	21	21	G	G	37	J X 63	79	60	J X 54	47	J X 60	49	J X 42	J X 51	79	J X 92	J X 53	J X 54	J X 54	E S 16
22	J X 42	J X 30	J X 24	24	J X 25	22	G	G	36	G	41	43	G	G 34	42	40	J X 42	J X 37	J X 29	J X 40	21	E S 16	E S 16	24
23	J X 54	J X 29	J X 25	J X 39	J X 55	J X 35	J X 29	G	39	39	44	42	G	G	G	36	39	30	21	J X 25	J X 24	21	22	E B 13
24	J X 24	J X 24	24	21	E B 12	G	29	G	37	42	G	G	43	G 35	44	39	42	J X 61	35	J X 36	J X 38	J X 24	E S 15	J X 29
25	J X 34	22	J X 24	24	22	23	30	35	36	40	47	G	42	44	43	47	J X 108	34	J X 28	23	24	26	J X 30	J X 39
26	J X 43	J X 29	23	22	20	E B 15	G	G	G	G	G	G 31	42	G	G	G	39	J X 42	J X 33	J X 29	J X 41	J X 26	21	23
27	J X 71	J X 52	J X 36	J X 27	21	E B 16	29	G	34	36	G	49	G	G	39	42	35	G	25	J X 26	79	24	J X 43	J X 41
28	J X 28	J X 27	J X 38	J X 32	J X 25	J X 29	J X 36	J X 35	41	J X 44	44	J X 51	J X 84	J X 113	J X 93	G 35	J X 67	29	21	J X 16	J X 23	J X 30	J X 51	J X 35
29	J X 64	J X 64	J X 61	J X 42	22	J X 25	J X 36	J X 41	J X 51	J X 57	J X 56	46	60	J X 54	44	J X 54	36	J X 39	J X 37	20	J X 64	J X 83	J X 54	J X 52
30	J X 54	J X 42	24	J X 39	J X 25	J X 17	25	34	39	43	42	43	J X 41	J X 41	42	J X 41	J X 34	28	J X 25	J X 26	J X 25	J X 22	J X 37	J X 32
31	J X 32	J X 25	J X 33	J X 25	J X 25	J X 18	28	J X 32	36	43	J X 54	J X 81	J X 51	44	43	43	J X 43	31	J X 36	J X 28	J X 30	J X 25	J X 34	J X 28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	J X 39	J X 32	J X 27	J X 27	J X 24	J X 23	30	35	40	J X 44	J X 52	51	J X 54	47	43	47	J X 42	J X 37	J X 31	J X 30	J X 30	J X 28	J X 39	J X 30
UQ	J X 54	J X 40	J X 42	J X 39	J X 28	J X 32	J X 35	J X 41	J X 53	J X 56	J X 70	J X 61	J X 57	J X 56	J X 57	J X 55	J X 64	J X 54	J X 46	J X 44	J X 44	J X 42	J X 54	J X 44
LQ	J X 25	J X 25	J X 24	22	21	18	24	30	36	41	42	43	41	39	40	39	36	29	24	J X 24	J X 24	24	J X 26	24

The Radio Research Laboratories, Japan

AUG. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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 S 15	10	14	E S 15	10	12	15	16	16	26	25	26	39	28	26	26	16	13	12	10	13	E S 16	E S 16	E S 15
2	E S 16	11	12	10	11	11	12	15	17	20	15	17	26	26	19	16	12	12	12	E S 15	10	11	13	E S 15
3	12	10	11	10	10	10	13	15	16	26	18	26	26	26	26	16	14	12	12	11	14	12	13	13
4	13	10	10	10	10	12	15	14	12	19	16	22	26	25	16	15	15	15	10	10	E S 15	10	11	13
5	E S 15	12	10	10	10	12	14	15	15	16	19	28	26	26	16	15	12	11	13	E S 15	E S 15	E S 15	12	13
6	12	10	11	11	11	14	16	14	16	22	26	26	27	25	26	18	16	12	15	E S 15	E S 15	10	12	12
7	12	10	11	11	10	12	14	12	16	15	26	17	28	27	25	13	14	12	13	11	12	12	E S 15	13
8	12	12	11	10	10	14	16	14	16	26	26	26	26	25	18	26	15	16	14	E S 16	11	10	12	10
9	10	10	10	10	10	16	15	15	12	26	25	25	26	26	25	18	15	14	12	12	E S 15	12	E S 15	11
10	12	12	10	10	10	11	12	15	15	17	26	27	26	26	16	17	15	12	13	10	E S 15	12	10	E S 15
11	12	11	12	E	10	12	13	14	17	25	16	27	25	26	17	15	16	14	12	11	E S 15	E S 16	E S 16	E S 16
12	12	10	11	10	10	11	12	14	15	17	26	27	26	26	26	26	15	13	15	10	13	E S 15	12	E S 15
13	11	11	11	10	11	10	12	14	16	16	26	25	C	26	16	16	12	13	12	13	E S 15	12	13	E S 16
14	12	12	11	10	10	11	15	15	17	18	27	27	26	26	26	16	12	12	12	11	E S 16	13	12	12
15	12	11	10	12	10	11	10	12	15	18	26	26	26	16	26	15	15	11	10	E S 16	E S 15	E S 15	E S 16	E S 16
16	E S 16	11	11	10	10	10	10	12	13	15	19	26	20	27	17	15	13	12	15	14	13	12	E S 15	12
17	E S 15	10	11	10	10	11	15	12	14	16	16	27	28	26	18	15	12	12	14	13	E S 16	13	12	12
18	13	12	11	E	10	12	12	14	16	15	16	25	16	15	15	14	15	13	12	11	12	E S 16	E S 16	14
19	13	E S 16	11	11	14	11	13	15	18	14	19	18	20	17	16	15	12	11	13	E S 15	E S 15	E S 15	12	12
20	E S 15	E S 15	12	10	12	13	15	12	13	15	16	26	26	26	16	16	16	15	15	10	E S 15	11	E S 16	13
21	E S 16	11	11	E S 16	11	10	11	13	16	16	19	26	26	26	26	16	14	14	11	12	10	12	E S 16	E S 16
22	E S 15	10	10	10	10	11	12	14	15	16	16	26	26	26	18	15	12	11	12	12	14	E S 16	E S 16	E S 16
23	E S 15	12	14	10	E S 15	11	12	15	17	19	26	26	26	27	16	28	14	12	15	11	11	E S 16	12	13
24	12	E S 15	10	E S 15	12	14	12	15	15	16	16	18	29	27	27	18	16	14	12	13	12	11	E S 15	12
25	E S 15	13	11	10	10	10	13	16	16	16	26	26	25	27	16	14	15	16	16	10	13	E S 15	E S 15	13
26	E S 15	10	12	11	10	15	12	12	16	16	26	24	25	27	28	26	18	15	16	12	12	12	10	E S 16
27	12	12	11	11	13	16	15	14	16	16	26	26	25	26	26	16	15	15	14	12	E S 16	E S 16	E S 16	14
28	E S 16	E S 15	14	10	10	11	14	13	16	16	24	18	27	25	19	16	16	15	12	12	12	13	13	E S 15
29	E S 16	E S 15	12	12	10	11	12	13	15	26	26	18	26	26	18	14	14	12	12	E S 15	E S 15	E S 15	12	12
30	E S 15	12	11	10	10	10	11	12	14	18	19	22	26	19	25	15	15	12	14	10	11	11	13	13
31	12	12	10	12	10	10	14	14	16	16	20	22	25	27	16	14	12	12	12	10	E S 15	E S 15	12	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	12	11	11	10	10	11	13	14	16	16	24	26	26	26	18	16	15	12	12	12	U 12	12	12	12
UQ	E S 15	12	12	10	10	12	15	15	16	20	26	26	26	26	26	18	15	14	14	13	E S 15	E S 15	E S 16	E S 15
LQ	12	10	10	10	10	11	12	13	15	16	17	22	25	26	16	15	12	12	12	10	12	12	12	12

AUG. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	25	E	E B 14	E	E	19	28	32	41	44	42	56	55	45	E R 40	53	E R 31	G	26	16	E	E	E	E
2	E	16	35	26	20	26	G	34	50	65	68	A	65	53	63	63	53	56	22	37	27	28	30	35
3	32	16	15	15	E	17	28	37	46	A	40	42	58	53	74	45	G 28	25	25	42	32	16	18	24
4	18	16	31	45	20	20	27	32	50	40	51	50	60	55	51	A	55	48	25	16	E	E	15	E
5	19	16	15	E	E	G	29	51	G	58	63	76	54	45	46	46	53	34	51	80	43	E	17	30
6	18	25	16	18	19	19	G	38	45	50	55	70	45	53	41	39	G	G 18	24	E	E	17	16	16
7	16	16	15	19	12	15	27	33	39	56	65	74	55	53	46	52	54	52	56	15	19	22	38	25
8	27	25	28	44	54	27	53	54	44	38	41	52	43	G	42	53	A	A	A	55	16	E	16	20
9	16	16	16	16	16	18	30	47	A	75	75	55	43	75	73	62	54	28	25	21	E	16	16	33
10	17	25	20	16	28	29	27	35	49	50	64	49	55	54	43	45	75	54	G 19	35	22	17	16	E
11	26	25	31	13	14	32	26	25	37	40	56	51	51	55	55	61	73	55	48	32	A	26	A	22
12	20	26	28	26	25	36	28	40	55	40	51	55	53	55	40	E R 47	66	40	65	31	25	30	20	41
13	19	17	20	38	19	26	26	41	A	65	A	44	C	52	45	38	45	45	65	53	41	40	A	A
14	54	20	29	28	28	29	G 19	32	50	40	42	45	53	53	43	37	37	31	16	28	20	18	26	21
15	15	19	15	E	12	16	28	31	40	51	40	40	40	40	G	44	36	26	19	E	21	28	E	26
16	E	16	17	16	E	28	26	30	34	40	38	E R 35	40	39	37	35	33	G 23	G	16	20	28	39	16
17	E	14	12	25	16	15	44	46	51	44	A	40	G	G	38	G 27	42	30	25	33	30	15	15	40
18	16	39	25	12	14	14	G 15	29	36	35	37	G	40	E R 39	39	36	40	32	41	29	25	26	26	26
19	16	E	16	19	E B 14	G	22	E R 24	33	40	52	40	53	56	G 25	G 19	G 16	G	G 16	E	E S 15	E	E B 12	16
20	E	E	E	E	E B 12	E B 13	25	34	37	37	40	39	40	47	40	38	37	27	25	20	20	25	17	E
21	28	15	15	E	E	16	G	G	35	63	A	56	52	E R 47	56	47	40	46	A	32	30	40	E	E S 16
22	E	20	16	15	16	15	G	G	33	G	37	39	G	E R 34	40	39	40	33	20	27	E	E S 16	E S 16	19
23	25	16	25	35	41	18	16	G	37	37	43	40	G	G	G	36	38	30	21	25	26	E	15	E B 13
24	16	20	15	E	E B 12	G	27	G	37	41	G	G	42	E R 35	42	38	36	52	30	20	30	16	E S 13	16
25	E	E	14	16	13	16	26	33	35	39	33	G	42	E R 44	41	47	40	29	23	16	18	E	29	20
26	20	20	16	17	E	E B 15	G	G	G	G	G	E R 31	42	G	G	G	36	46	32	26	16	26	14	E
27	16	29	26	17	16	E B 16	26	G	28	35	G	E R 49	G	G	38	37	33	G	25	22	A	E	36	26
28	26	26	28	20	20	26	26	31	40	40	43	48	74	A	80	G 35	34	28	20	15	17	25	27	32
29	25	29	40	19	12	20	34	40	41	54	53	45	46	52	43	54	34	36	33	17	43	25	27	25
30	16	25	15	16	15	14	25	34	37	42	40	42	41	40	40	38	33	27	25	18	16	16	25	28
31	22	16	17	16	17	16	26	32	36	42	52	40	41	40	40	42	40	30	35	25	25	19	25	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	18	17	16	16	15	17	26	32	39	41	43	44	44	47	41	40	40	31	25	25	21	17	17	21
UQ	25	25	27	22	20	26	28	38	48	52	60	54	54	53	46	50	53	46	38	32	30	26	27	27
LQ	16	16	15	14	E E 12	14	20	27	36	40	40	40	40	E G 39	40	37	34	27	22	16	16	E E 15	15	16

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AUG. 1969 | FBES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4 N. Long. 139°29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	275	280	275	285	285	295	315	320	320	280	285	I,B 285	265	265	275	265	280	285	295	315	280	265	I,B 265	270
2	J,R 265	I,B 285	I,B 290	F 290	F	280	315	300	290	290	I,A 275	I,A 275	270	275	275	280	290	290	290	290	270	250	265	F 265
3	260	J,F 280	285	275	285	300	310	290	305	I,A 295	295	270	260	270	255	270	280	295	285	280	285	265	F	F
4	F	F 265	F	F 260	270	270	275	290	280	265	280	265	275	265	275	I,A 285	290	285	280	290	270	265	260	260
5	275	I,B 285	285	260	265	275	320	J,R 320	300	I,B 290	300	280	280	275	275	280	280	290	285	295	I,B 250	260	260	260
6	260	270	290	290	275	290	290	320	H 275	265	260	270	275	275	280	285	280	285	280	295	270	250	270	270
7	270	270	280	295	300	280	300	315	320	290	275	260	275	265	270	280	275	280	280	290	290	275	270	255
8	265	265	280	280	295	280	280	300	285	295	290	260	265	280	285	290	I,A 290	I,A 285	I,A 285	290	270	I,B 275	270	265
9	B 265	265	265	290	265	265	285	285	I,A 300	280	290	265	275	275	265	285	295	300	310	285	270	270	V 260	E 255
10	265	J,R 275	285	265	265	275	300	315	310	300	265	270	285	280	290	290	280	285	300	285	285	265	275	280
11	265	260	265	270	270	285	320	325	300	285	305	280	300	285	295	290	290	295	300	320	R	280	I,A 270	R 270
12	R 270	F	J,R 275	275	280	280	325	335	310	285	285	275	275	275	290	285	280	285	295	305	270	260	275	260
13	270	275	V 295	270	265	265	300	305	A	A	I,A 285	285	I,C 270	290	280	290	310	300	295	300	285	E 265	A	A
14	275	280	280	275	280	280	300	335	315	310	290	305	290	270	280	290	300	300	305	305	280	270	R 270	280
15	280	275	F	295	300	275	270	295	305	310	335	275	300	280	295	300	290	300	295	285	R 300	305	290	290
16	290	275	285	295	310	315	310	J,R 320	290	315	265	300	275	295	285	285	295	305	295	285	285	295	E 270	E 280
17	285	285	275	265	270	270	280	305	320	295	I,A 295	300	295	305	310	305	300	305	300	295	J,R 280	275	285	270
18	290	300	280	285	290	265	325	330	325	325	305	305	300	280	285	300	300	310	310	305	295	280	275	290
19	285	290	295	300	295	295	330	340	335	320	320	295	285	295	290	305	305	295	305	300	285	280	280	290
20	280	305	325	290	280	275	305	340	310	310	310	295	280	300	300	300	300	310	300	290	300	285	275	I,B 280
21	285	285	290	R 315	350	310	320	290	310	320	I,A 310	290	290	290	295	305	295	295	I,B 290	I,B 300	315	I,B 295	I,B 290	285
22	270	I,B 275	270	275	285	340	335	325	340	330	315	305	280	290	285	300	295	305	305	305	285	J,R 275	290	285
23	280	F 275	I,B 300	285	280	295	315	355	335	315	315	305	285	285	300	295	285	305	290	320	315	275	275	265
24	280	295	295	310	310	300	300	310	305	310	325	290	295	J,R 295	295	295	300	305	300	300	310	280	285	280
25	265	280	285	280	285	305	335	305	320	320	275	310	290	295	295	290	300	295	300	300	275	R 285	280	280
26	270	275	270	260	285	285	I,B 330	J,R 330	340	330	300	295	295	280	290	290	300	295	295	290	295	285	280	275
27	E 260	E 260	285	290	280	280	325	315	330	310	290	285	275	280	255	275	290	295	310	310	I,A 260	270	B 275	265
28	270	280	250	255	250	275	300	315	330	330	300	300	290	I,A 290	285	290	300	300	300	305	285	280	270	R 280
29	275	270	275	275	280	290	300	340	310	305	285	270	280	285	285	295	300	300	295	280	290	300	275	270
30	275	F 265	270	275	280	305	330	310	330	310	295	H 275	275	275	275	285	280	295	300	S 305	300	300	295	280
31	265	265	275	295	300	285	325	330	300	300	285	280	270	285	270	290	290	305	305	285	290	270	270	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	31	30	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	30	31	29	29
MED	270	275	280	280	280	280	310	315	310	308	290	285	280	280	285	290	290	295	295	295	285	275	275	275
UQ	280	285	290	290	295	295	325	330	325	315	305	298	290	290	292	295	300	302	300	305	295	282	280	280
LQ	265	270	275	272	270	275	300	305	300	290	285	272	275	275	275	285	282	290	290	290	270	265	270	265

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AUG. 1969 | M(3000)F2 (0.01)

IONOSPHERIC DATA

AUG. 1969 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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 375	L 360	L 345	L 360	A	A	370	R	A	L 335	L 340	L					
2						L	L	L	A	A	A	A	A	A	A	A	A	A	L					
3							L	L	L	A	L	350	I A 355	A	A	A	345	U L 340	L					
4							335	L	A	350	L	L 320	A	A	A	A	A	A	L					
5							L		U L 350	A	A	A	A	L	L 340	L 345	A	L	A					
6							L	L	L	L 335	A	A	L 330	L	L 340	L 345	L	L						
7						L	L	L	L	A	A	A	A	L	L 345	A	A	A	A					
8							A	A	L	L 365	L 350	A	L 360	L 360	L 365	A	A	A	A					
9							L	A	A	A	A	A	355	A	A	A	A	L	L					
10								L	A	A	A	A	A	A	L	L	A	A	L					
11							L	L	L 360	L 370	A	L 320	A	A	A	A	A	A	A					
12							L	L	L 345	L 370	A	A	A	A	L 355	R	A	L						
13							L	L 345	A	A	A	350	C	A	L	375	A	A	A					
14							L	L	A	L 355	365	L 375	A	A	L 350	L 340	L 340	L	L					
15						L	L 345	L	L 370	A	L	L 390	L 385	L	L 355	L 355	L	L						
16								L	L 365	U L 350	L 355	L 375	365	365	L 375	L 345	L 335	L	L					
17							A	A	A	L	A	L	380	365	355	360	L	L	L					
18							L	L	L	L 375	L 380	L 375	L 365	L 360	L 335	L 360	L	L						
19								L	L 405	405	A	L 360	A	A	360	L 335	U L 350	L	L					
20							L	L	L	L 360	L 375	L 380	365	A	L 345	L 370	L	L						
21							L	L	L 370	A	A	A	A	R	A	A	L	A	A					
22							L	L	L 350	400	390	390	L 360	L 380	365	340	L	L	L					
23							L	L	L	L 405	L 380	L 395	L 375	375	L 355	L 345	L	L						
24								L 440	L 365	L 350	L 375	380	370	I R 370	L 355	L 340	L 355	A						
25								L	L 370	L 365	L 390	R 380	L 390	L 345	R 365	L	L	L						
26							L	L	L	L 370	L 385	R 385	L 365	L 370	L 360	L 350	L	A						
27							L	L	L 400	L 420	L 345	R	L 340	L 360	L 315	L 335	L	L						
28							L	L	L	L	L	L	A	A	A	L	L	L						
29							L	L	L	A	L	L	L 340	L	L 335	A	L 370							
30								L	L	U L 375	L 395	L	360	L 335	L	L	L	L						
31								L	L	L	L	U L 360	L 335	L 340	L	L	L	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	3	12	18	13	16	18	13	19	15	7	2						
MED							340	375	L 365	L 368	375	375	L 362	L 365	355	345	345	340						
UQ								L 408	370	375	L 385	L 382	370	370	360	L 358	L 352							
LQ								360	355	350	360	355	355	360	L 342	340	L 338							

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AUG. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

AUG. 1969 | H'F2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N. Long. 139°29.3'E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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							275	280	310	385	355	325	395	390	340	350	330	325	280					
2						300	295	285	305	310	E A 350	I A 370	370	370	370	355	320	320	295					
3							250	270	300	A	300	380	340	345	E A 400	355	290	300	295					
4							350	300	300	395	320	390	370	400	370	I A 350	325	325	290					
5							255		310	310	320	A 380	350	330	350	340	320	300	280					
6							260	270	H 260	370	310	350	340	350	330	320	290	300						
7						250	270	280	280	340	A 350	I A 385	345	370	330	320	320	310	A 290					
8							325	270	325	295	310	380	350	340	310	310	A	A	A					
9							280	290	A	A 350	A 340	370	340	A 350	370	325	300	260	250					
10								270	270	290	390	355	325	320	310	310	I A 315	290	275					
11							255	270	340	365	310	395	340	315	345	330	A 340	300	290					
12							250	250	360	310	380	380	350	345	310	325	A 350	300						
13							280	350	A	A	I A 350	350	I C 385	350	345	340	305	300	A					
14							270	255	270	305	350	325	350	410	355	340	300	295	270					
15						310	290	300	285	295	255	390	300	310	310	320	300	275						
16								290	300	300	400	300	310	315	320	340	300	275	270					
17							370	310	300	350	A	300	320	320	310	295	290	300	270					
18							260	255	290	290	330	330	310	340	350	300	300	280						
19								250	260	290	290	325	320	310	325	300	270	260	250					
20							275	240	260	290	270	300	335	310	310	300	300	275						
21							250	300	280	290	I A 295	350	320	345	315	300	300	300	A					
22							250	265	250	285	315	340	390	350	350	310	300	290	260					
23							265	250	250	305	300	310	330	345	300	330	310	260						
24								260	310	300	300	350	350	325	345	325	300	290						
25								255	290	285	310	315	350	320	340	340	300	285						
26							250	250	250	295	300	345	345	340	345	300	300	290						
27							275	255	275	260	340	300	390	365	390	350	295	265						
28							285	275	265	255	280	320	A 350	I A 350	360	310	290	270						
29							260	245	230	275	350	330	320	320	305	300	280							
30								270	250	270	275	H 270	345	335	315	300	300	270						
31								225	260	260	290	305	350	320	305	300	280	270						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	24	30	29	29	30	31	31	31	31	31	30	29	14					
MED						300	270	270	280	295	311	345	345	340	335	320	300	290	278					
UQ						305	282	285	300	310	350	375	350	350	350	340	315	300	290					
LQ						275	255	255	260	290	300	318	328	320	310	300	295	275	270					

The Radio Research Laboratories, Japan

AUG. 1969 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1969 | H'F (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	275	285	295	255	250	245	220	250	230	225	205	205	230	245	250	225	245	255	245	245	295	295	300
2	300	295	310	300	325	280	250	245	A	A	A	A	A	A	A	A	A	A	250	270	255	340	320	315
3	310	285	270	280	250	250	205	230	245	A	195	205	215	A	A	A	225	225	250	290	270	290	300	305
4	300	300	315	320	290	270	250	240	250	205	205	A	A	A	A	A	A	A	255	255	255	275	310	300
5	275	260	250	300	310	255	245	220	205	A	A	220	240	220	240	250	240	245	A	A	340	305	290	300
6	300	290	270	255	290	255	220	240	220	205	A	A	245	225	225	230	210	210	255	250	255	300	300	300
7	290	300	255	250	220	210	250	225	220	A	A	A	A	A	230	A	A	260	270	270	250	260	320	310
8	310	300	290	305	270	270	265	255	240	210	230	210	200	215	240	A	A	A	A	295	285	255	285	300
9	300	300	300	260	300	295	250	A	A	A	A	A	205	A	A	A	250	240	250	250	270	260	300	360
10	300	290	255	300	320	290	240	230	A	A	A	A	A	A	245	280	240	255	255	275	250	270	260	275
11	305	320	340	290	300	300	250	220	205	200	190	290	235	240	A	A	A	A	A	250	255	300	A	310
12	350	340	350	310	340	300	240	240	245	235	A	A	210	205	245	A	A	270	300	275	300	350	300	370
13	300	290	260	350	340	300	230	240	A	A	A	250	240	235	250	210	A	A	A	A	300	350	A	A
14	A	300	300	300	310	280	240	240	A	250	230	230	A	235	250	230	250	250	260	250	250	280	340	300
15	300	300	310	250	250	230	245	210	240	240	240	200	200	200	225	230	220	240	250	250	250	250	250	290
16	250	300	300	260	250	260	245	245	230	200	200	180	220	220	220	200	220	210	255	250	255	270	310	250
17	255	250	270	320	300	270	A	A	A	270	A	200	200	200	230	225	245	240	260	260	280	270	270	340
18	270	290	255	270	280	275	245	240	205	210	200	200	210	210	250	240	250	250	250	250	250	290	300	290
19	280	295	270	245	240	250	250	240	200	205	200	210	220	230	205	205	225	205	240	240	245	260	260	255
20	275	250	220	245	275	275	250	250	220	210	240	200	230	220	250	245	250	240	255	245	250	255	270	300
21	300	290	255	250	210	255	230	245	250	A	A	A	A	A	A	A	250	290	295	280	300	300	250	250
22	300	310	300	305	290	260	225	225	220	200	190	200	245	210	240	240	240	250	255	245	250	290	280	290
23	300	315	300	305	340	290	250	235	230	210	230	200	200	220	220	240	250	245	260	250	240	255	290	300
24	290	255	260	245	240	270	250	200	250	245	200	225	240	230	240	245	250	255	280	250	250	275	250	310
25	305	300	295	250	255	270	250	240	225	200	220	200	200	270	235	245	250	250	265	245	260	255	265	300
26	310	310	290	275	250	290	245	200	245	210	200	195	230	215	240	245	245	260	260	255	250	280	285	275
27	325	310	290	250	295	300	250	240	240	200	220	240	200	240	240	240	240	240	250	245	345	305	310	300
28	300	300	350	350	350	310	250	240	240	210	220	250	A	A	A	225	240	255	260	240	250	260	300	300
29	300	350	340	300	270	300	250	245	225	240	260	220	240	225	245	255	225	260	270	250	270	270	260	300
30	300	350	300	300	260	250	240	230	220	210	200	200	200	195	210	230	245	250	260	250	245	240	250	280
31	320	320	290	260	245	260	240	225	205	210	260	195	200	205	235	250	250	250	250	240	250	250	300	290
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	30	29	25	23	21	23	24	23	24	22	24	26	27	29	31	31	29	30
MED	300	300	290	285	280	270	245	240	230	210	220	205	212	220	240	240	242	250	255	250	252	275	290	300
UQ	305	310	300	301	305	290	250	240	245	226	230	222	238	230	245	245	250	255	260	260	268	298	300	305
LQ	290	290	265	252	250	255	240	225	220	205	200	200	200	210	228	230	225	240	250	245	250	260	265	290

The Radio Research Laboratories, Japan

AUG. 1969 | H'F (KM)

IONOSPHERIC DATA

AUG. 1969 | H'ES (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	B	100	100	110	125	115	110	110	115	110	110	110	110	110	110	G	100	100	110	100	100	100
2	110	110	110	110	105	110	G	140	115	110	110	105	105	105	140	130	130	115	110	110	105	105	100	100
3	100	100	100	100	100	105	105	145	125	115	120	115	110	105	105	105	105	125	115	110	110	110	110	110
4	105	110	105	105	105	125	125	105	105	120	115	115	110	115	115	110	115	110	110	110	110	E	110	105
5	110	105	110	100	100	G	140	115	G	115	115	125	125	120	115	110	110	110	105	105	105	105	105	105
6	105	100	100	105	105	105	G	110	110	110	115	110	110	110	110	110	G	100	140	100	120	110	110	105
7	100	110	110	105	110	110	140	130	130	115	115	110	115	115	115	115	110	110	110	110	105	105	105	105
8	105	105	105	105	105	105	110	110	110	110	110	110	110	G	180	145	130	110	110	110	110	110	110	100
9	100	100	100	100	100	100	110	110	110	110	110	110	110	105	105	105	105	105	125	105	105	100	105	110
10	110	105	105	105	100	105	105	130	125	115	115	115	110	110	110	110	105	105	105	105	105	100	100	100
11	110	105	105	105	105	105	105	105	125	115	110	110	110	110	115	120	125	115	110	110	110	110	110	105
12	100	100	100	100	100	100	110	140	110	110	110	110	110	115	105	105	105	110	115	110	110	110	110	100
13	100	100	100	100	100	100	115	110	110	110	105	105	C	105	120	105	125	120	115	110	105	110	110	110
14	110	105	105	105	105	110	110	125	110	110	110	110	110	110	110	105	100	140	100	100	100	110	110	110
15	100	110	110	110	110	110	100	100	120	110	115	110	125	140	G	125	130	115	110	100	100	110	100	100
16	100	100	100	100	E	100	100	110	110	110	105	105	130	120	115	160	150	110	G	110	110	110	110	105
17	100	110	105	105	105	105	120	115	110	110	110	110	G	G	105	105	110	115	115	110	110	110	110	110
18	110	105	105	105	105	105	105	140	110	130	120	G	120	140	130	110	110	115	110	110	110	110	110	110
19	100	100	100	105	B	G	120	110	110	105	105	105	105	100	105	100	100	G	110	110	S	110	B	100
20	100	100	100	E	B	B	150	140	120	130	125	115	130	130	130	120	130	115	110	110	110	100	110	110
21	100	100	100	100	100	100	G	G	130	110	110	110	105	105	105	105	120	130	110	110	110	105	105	S
22	105	100	100	100	100	105	G	G	110	G	110	110	G	110	125	130	115	110	110	110	110	S	S	100
23	110	110	100	100	100	105	105	G	105	105	120	125	G	G	G	130	120	120	110	110	110	105	110	B
24	100	100	100	105	B	G	160	G	140	130	G	G	150	110	150	145	130	120	110	110	110	105	S	100
25	105	100	100	100	100	100	130	140	140	140	130	G	150	140	155	130	130	130	115	110	110	110	110	110
26	100	100	100	100	100	B	G	G	G	G	G	110	170	G	G	G	140	125	110	110	110	110	110	100
27	110	110	100	100	100	B	130	G	110	110	G	100	G	G	140	140	130	G	120	110	110	100	100	105
28	110	100	100	100	100	100	100	100	130	120	115	110	110	110	110	110	110	145	120	115	110	105	110	110
29	110	110	110	105	110	110	115	115	110	110	110	110	105	105	150	125	125	125	115	110	110	110	110	110
30	110	105	105	105	105	105	150	135	120	115	110	110	110	110	110	110	125	145	115	110	110	110	100	100
31	100	100	100	105	105	110	140	140	140	115	110	110	105	105	110	140	130	130	115	110	105	105	105	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	27	25	26	25	29	29	28	28	26	26	28	30	30	28	30	31	30	29	28	29
MED	105	100	100	105	100	105	115	115	110	110	110	110	110	110	115	110	120	115	110	110	110	110	110	105
UQ	110	108	105	105	105	110	130	140	125	115	115	110	125	115	130	130	130	125	115	110	110	110	110	110
LQ	100	100	100	100	100	100	105	110	110	110	110	110	110	105	110	105	110	110	110	110	105	105	105	100

AUG. 1969 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

AUG. 1969 | TYPES OF ES | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N. Long. 139°29.3'E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F1		F1	F1	L	H1	C1	C2	C2	C1	C1	C1	C1	C1	C2	L		L	F1	F1	F1	F1	F1
2	F2	F2	F3	F3	F3	L2		H1	C2	C2	C2	L3	L2	L3	H2	H2	H2	C3	C2	F4	F4	F4	F3	F4
3	F3	F2	F2	F2	F1	L2	H1	H2	H2	C2	C1	C1	C1	L2	L2	L2	L1	H2	C2	F5	F4	F2	F2	F3
4	F3	F3	F5	F6	F4	H2	C12	L3	L3	C12	C11	C1	C2	C1	C2	C3	C2	C3	L2	F2	F1		F1	F1
5	F3	F3	FF22	F1	F1		H2	C3		C2	C2	H2	H1	C1	C1	C2	C3	C3	L4	F4	F5	F2	F3	F6
6	F2	F3	F2	F2	F3	L		C2	C2	C2	C2	C3	C1	C2	C1	C1		L	H1	F1	F1	F4	F2	F2
7	F2	FF22	F3	F3	F1	L	H1	H1	H1	C2	C2	C2	C1	C1	C2	C2	C2	C2	C3	F3	F4	F3	F4	F4
8	F4	F2	F4	F4	F4	L3	C4	C3	C2	C1	C2	C1	C1		H1	H2	H3	C3	C4	F3	F2	F1	F2	F2
9	F2	F2	F2	F2	F2	L	C2	C3	C2	C2	C3	C2	C1	L2	L2	L3	L2	L2	HL11	F4	F1	F2	F3	F3
10	F3	F4	F3	F2	F4	L4	L	H2	H3	C2	C2	C1	C1	C1	C2	C2	L3	L3	L2	F4	F5	F3	F2	F2
11	F5	F5	F5	F2	F2	L3	L2	HL11	H1	C1	C2	C2	C2	C1	C2	H2	H2	C2	L4	F6	F3	F2	F4	F3
12	F3	F3	F3	F3	F5	L3	HL11	H2	C2	C1	C2	C2	C2	C1	L2	L2	L3	L3	C3	F3	F3	F4	F3	F3
13	F3	F3	F3	F5	F3	L3	C1	C2	C3	C2	L2	L2		L2	CL22	L2	HL33	HL44	CL44	FF44	F5	F3	F5	F4
14	F5	F4	F5	F4	F3	L2	L2	H2	C2	C1	C1	C1	C1	C2	C2	L2	L3	H1	HL11	F3	F1	FF22	FF21	F3
15	F2	F3	F2	F1	F1	L2	L2	L1	H1	C2	C1	C1	H1	H1		H2	H1	L1	L2	F1	F2	F2	F2	F2
16	F2	F2	F2	F2		L3	L2	L1	C1	C2	L2	L1	HL11	C1	C1	H1	H1	L2		F3	F4	F4	F4	F3
17	F1	F1	F2	F4	F3	L2	C4	C2	C2	CL31	C2	C1			L2	L1	C3	C1	C3	F5	F4	F2	F4	F4
18	F3	F4	F3	F2	F3	L2	L1	H1	C2	H1	H1		H1	H1	H1	C2	L2	L2	L3	F3	F3	F3	F3	F3
19	F2	F1	F2	F2			H1	L1	L1	L2	L2	L2	L2	L3	L1	L1	L1		L2	F1		F1		F2
20	F2	F2	F1				H1	H2	H1	H1	H1	C1	H1	H1	H1	H1	H1	C1	L2	F2	F2	F3	F2	F1
21	F3	F2	F2	F1	F1	L			H1	C2	C2	C2	L2	L2	L2	L3	H1	H2	L3	F3	F3	F3	F2	
22	F2	F3	F2	F2	F2	L			L		L	L		L	H1	H1	C2	C2	L2	F3	F1			F2
23	F2	F2	F3	F3	F4	L2	L		L	L	H1	H1				H1	H1	H2	L2	F2	F2	F1	F2	
24	F2	F2	F2	F1			H1		H1	H1			H1	L	H1	H1	H1	H3	L3	F2	F4	F2		F2
25	F2	F1	F1	F1	F1	L2	H1	HL11	HL11	HL11	H1		H1	H1	H1	H1	H2	H1	L2	F2	F2	F1	F3	F2
26	F2	F2	F2	F2	F2							L	H1				H1	H2	L3	F3	F2	F3	F2	F2
27	F3	F3	F2	F2	F1		H1		L	L		L2			H1	H1	H1		H2	F3	F4	F2	F3	F3
28	F3	F3	F3	F3	F2	L3	L2	L	HL11	CL22	CL21	C1	L2	C2	C3	L	L2	H1	C2	F1	F2	F4	F3	F4
29	F4	F4	F4	F4	F2	L4	C3	C3	C2	C2	C2	C2	L2	L2	H1	H2	H1	H2	C3	F1	F3	F4	F4	F4
30	F2	F4	F1	F3	F3	L2	HL11	HL12	CL11	CL22	C2	C2	C1	C1	C1	C2	C1	H1	C4	F5	F2	F3	F4	F4
31	F2	F1	F2	F2	F3	L2	H1	H1	H1	C2	C2	C1	L	L	L2	HL22	H2	H2	C4	F6	F5	F2	F4	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1969 | TYPES OF ES

IONOSPHERIC DATA

AUG. 1969 | HPF2 (KM) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4 N, Long. 139° 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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	400	395	390	375	365	330	295	295	G	385	365	I R 375	400	400	380	390	360	360	340	300	350	400	I R 405	405
2	J R 410	I R 360	I R 355	F 360	F	370	300	350	360	330	A	I A 380	380	370	370	360	330	340	325	320	380	415	390	E 385
3	390	J F 355	345	370	330	300	300	315	320	I A 330	320	380	380	370	405	385	350	325	330	355	350	400	F	F
4	F	F 400	F	F 370	380	370	370	325	350	400	350	395	375	400	375	I A 360	350	350	350	330	385	390	410	400
5	360	I R 360	350	410	400	370	290	J R 275	320	I R 350	330	A	360	355	370	360	360	340	340	I A 350	I R 405	410	395	380
6	405	370	335	340	360	340	305	300	H 355	390	380	380	360	375	360	355	350	350	340	320	370	405	370	390
7	380	390	350	330	310	350	325	300	300	350	370	A	360	395	360	355	365	350	350	350	345	370	380	400
8	390	390	350	355	330	360	350	305	355	315	350	400	400	380	360	350	A	A	A	340	380	I R 390	400	400
9	R 400	400	400	360	400	400	330	360	I A 330	360	I A 370	390	360	375	400	355	320	305	300	340	370	370	V 395	E 420
10	380	J R 355	350	400	400	360	320	300	300	305	395	380	360	355	350	350	360	340	320	350	330	380	350	355
11	380	400	405	380	385	350	280	290	340	365	320	400	350	355	350	350	350	350	330	315	R	390	I A 400	R 400
12	B 400	F	J R 400	400	390	360	290	270	300	360	380	400	380	380	350	360	370	350	340	300	400	410	380	410
13	400	390	V 360	400	410	400	330	350	A	A	I A 365	350	I C 390	350	360	350	310	320	I A 315	320	345	F 400	A	A
14	390	360	350	355	355	355	310	270	290	315	360	335	360	G	380	350	330	310	315	300	370	400	R 400	380
15	390	390	F	310	330	400	400	330	310	315	280	400	340	360	340	340	340	310	330	340	R 315	330	350	360
16	350	400	380	360	330	300	300	J R 300	310	305	400	320	340	330	350	355	320	300	310	330	330	320	E 380	E 355
17	350	355	370	370	390	380	370	320	300	355	I A 360	320	320	320	310	305	310	310	305	310	J R 350	370	360	380
18	355	340	350	350	350	350	285	270	290	290	330	310	340	360	360	330	330	310	300	300	320	380	400	350
19	370	370	350	330	330	300	290	270	270	295	295	330	330	330	350	315	300	310	305	310	345	355	355	340
20	355	315	275	330	360	375	300	255	300	300	300	340	370	330	330	320	330	300	310	340	320	350	400	I R 390
21	380	380	350	B 290	250	300	290	350	300	295	I A 335	350	340	350	350	315	320	330	I R 355	I R 330	290	I R 350	I R 350	380
22	400	I B 400	400	400	380	260	270	290	270	290	325	340	390	360	370	335	325	320	320	310	350	J R 380	340	370
23	380	F 400	I R 325	360	390	350	300	250	265	320	310	310	350	360	330	360	350	310	330	300	310	390	395	400
24	360	340	350	300	300	320	300	300	315	300	300	350	350	J R 340	350	345	335	310	315	310	310	360	380	400
25	400	400	350	350	350	325	265	310	290	295	395	335	350	340	350	350	330	325	315	330	360	B 350	365	375
26	400	400	380	370	355	340	I R 275	J B 250	255	290	310	350	350	350	350	340	335	315	320	340	315	360	390	385
27	E 440	E 400	350	340	390	400	290	300	295	310	350	335	400	385	440	385	340	335	310	310	I A 400	400	B 400	400
28	400	390	410	430	440	390	330	300	290	280	305	325	355	A	360	330	315	310	320	300	340	360	370	B 370
29	370	400	380	380	355	370	320	260	295	305	360	360	360	350	350	330	310	305	330	350	320	305	350	380
30	380	E 400	390	380	360	305	260	305	260	300	305	H 400	370	370	360	350	355	320	325	S 310	315	300	320	350
31	400	400	360	340	305	340	280	255	305	310	350	350	370	355	380	345	340	310	305	320	320	360	380	370
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	31	30	31	31	31	29	30	30	29	31	29	31	31	30	30	30	31	30	31	29	29
MED	390	390	350	360	360	350	300	300	300	312	350	350	360	360	360	350	335	320	320	320	345	380	380	380
UQ	400	400	380	380	390	370	322	312	320	350	365	380	378	375	370	358	350	340	330	340	370	400	400	400
LQ	370	360	350	340	330	328	290	270	290	300	310	335	350	350	350	338	320	310	310	310	320	358	360	370

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AUG. 1969 | HPF2 (KM)

IONOSPHERIC DATA

AUG. 1969 | YPF2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N. Long. 139°29.3'E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	95	110	105	95	110	65	65	G	95	95	I R 95	100	100	110	110	140	120	100	100	110	100	I R 100	95
2	J R 90	I R 100	I R 100	F 100	F	110	90	100	120	115	A	I A 90	90	100	100	90	75	75	90	95	105	115	100	F 75
3	100	J F 85	70	85	75	95	70	110	55	I A 85	120	90	180	130	120	100	100	95	95	100	95	100	F	F
4	F	F 95	F	F 110	75	100	110	80	110	95	130	95	100	100	85	I A 105	110	100	95	120	90	105	85	100
5	100	I R 95	95	80	95	105	60	J R 80	100	I R 110	85	A	90	115	110	110	100	105	105	I A 105	I R 100	90	110	90
6	90	100	90	105	90	105	100	55	H 140	120	140	120	115	120	95	115	150	110	110	100	115	115	115	100
7	90	80	75	75	90	95	85	60	60	95	125	A	120	105	100	120	130	110	120	100	110	100	80	100
8	100	105	105	105	95	110	100	100	105	145	100	100	100	100	120	100	A	A	A	100	110	I R 100	100	100
9	R 100	100	100	100	100	100	130	100	I A 115	90	I A 105	110	135	115	110	90	85	105	95	105	100	90	V 100	F 85
10	90	J R 115	105	90	90	110	85	60	90	95	80	115	115	120	100	105	95	110	85	105	90	110	90	90
11	80	100	95	100	90	100	75	60	60	85	80	100	60	135	90	130	90	100	110	85	R	110	I A 95	R 100
12	R 100	F	J R 100	100	110	120	70	80	110	120	80	90	110	100	100	120	110	130	100	100	100	90	110	90
13	100	90	V 120	100	90	100	110	60	A	A	I A 90	100	I C 100	75	110	70	65	85	I A 85	80	80	F 100	A	A
14	100	95	105	115	100	100	90	55	65	85	100	75	100	G	100	100	110	120	95	100	130	100	R 100	110
15	110	100	F	180	80	100	100	110	100	95	100	80	100	100	110	90	100	100	120	100	R 105	80	110	120
16	100	100	120	130	80	90	100	J R 90	90	65	100	130	130	90	100	95	80	80	90	95	110	85	F 120	F 100
17	75	100	85	100	100	90	80	80	100	65	I A 70	80	125	80	85	90	90	85	85	90	J R 95	100	80	110
18	70	80	105	100	90	95	65	70	50	90	100	100	100	120	100	80	120	100	100	90	90	100	100	100
19	90	120	90	110	100	100	100	70	70	65	65	95	90	110	90	85	100	95	95	85	80	85	95	80
20	90	80	65	90	85	95	80	85	60	100	110	70	120	110	70	90	110	100	120	100	120	90	110	I R 95
21	110	110	100	R 110	100	100	110	100	100	95	I A 130	100	110	100	100	95	120	110	I R 110	R 100	70	I R 90	I R 90	110
22	100	I R 95	100	100	100	90	130	70	70	70	65	80	60	80	80	105	115	100	110	130	90	J R 110	90	100
23	80	F 110	I R 105	130	100	90	80	80	85	90	70	80	110	60	110	90	100	110	110	100	100	100	95	90
24	120	90	90	100	80	90	100	110	115	100	125	110	60	J R 100	60	85	105	100	95	100	90	80	100	100
25	90	100	100	90	100	85	85	90	70	95	95	75	90	90	90	90	80	85	95	80	100	R 90	115	85
26	90	100	110	70	105	100	I R 85	J R 110	85	70	80	60	90	110	110	100	65	95	110	100	95	100	90	105
27	F 70	F 100	90	90	90	90	70	80	65	130	90	105	90	75	100	95	100	105	100	100	I A 100	100	R 100	100
28	100	100	90	90	100	110	110	90	70	70	95	70	135	A	80	90	95	90	85	100	100	95	100	R 85
29	80	70	80	80	90	55	90	85	100	95	85	140	100	105	100	80	95	100	110	105	90	75	100	90
30	75	F 100	80	75	80	65	85	65	90	80	145	H 150	100	120	120	110	140	105	85	S 70	90	100	85	100
31	90	90	100	80	90	105	60	85	90	110	105	140	130	115	135	100	110	70	90	130	100	110	90	90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	31	30	31	31	31	29	30	30	29	31	29	31	31	30	30	30	31	30	31	29	29
MED	90	100	100	100	90	100	85	80	90	95	98	95	100	100	100	95	100	100	98	100	100	100	100	100
UQ	100	100	105	105	100	105	100	95	100	100	110	110	118	115	110	105	110	110	110	100	105	100	100	100
LQ	90	90	90	90	90	90	78	68	70	85	80	80	90	100	90	90	90	95	90	95	90	90	90	90

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AUG. 1969 | YPF2 (KM)

IONOSPHERIC DATA

AUG. 1969 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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 79	F 76	F 71	F 66	67	64	F 68	I S 74	79	79	71	66	80	97	109	117	J S 120	123	R 124	100	78	S 77	S 79	S 78
2	78	S 73	71	63	57	F	F 67	84	84	73	75	79	85	83	85	95	90	87	91	S 88	S 73	S 73	S 73	78
3	77	79	75	I S 76	F 75	65	67	77	77	69	74	81	91	95	96	S 102	103	93	R 93	I S 97	S 88	I S 90	J S 90	I S 86
4	S 84	I S 88	S 95	F	I S 72	68	75	89	82	C 80	80	I A 82	84	C 84	87	100	R 102	S 97	U S 95	89	U S 84	U S 93	U S 93	89
5	C	C	71	J S 65	65	70	S 80	70	77	81	83	88	J C 97	J C 100	103	107	104	100	102	J C 103	C 88	C 90	C 93	I C 90
6	I C 88	I C 92	90	U S 73	70	U S 61	73	76	74	84	84	97	102	108	I A 106	I A 102	I A 106	112	111	I A 100	C 87	86	C 91	C 93
7	91	U C 99	C 92	79	F 66	J S 62	71	77	H 78	78	78	84	99	112	115	115	112	117	J R 127	C 118	I C 102	I C 108	I C 116	I C 123
8	I C 120	113	I C 104	92	76	65	70	84	82	74	81	82	99	106	S 115	108	106	112	R 111	94	J C 90	86	84	C 78
9	74	C 74	C 75	F 67	F 58	F 56	F 67	86	94	73	79	90	102	106	118	131	128	125	S 116	106	I C 108	I C 101	I C 92	83
10	F	F	F 73	F 68	F 65	J S 64	F 82	100	F 78	77	79	97	109	S 119	116	109	120	125	113	105	C 95	C 94	I C 94	81
11	70	64	62	63	66	60	63	73	75	72	78	84	90	101	104	110	S 116	126	S 116	S 103	S 80	S 75	S 72	S 69
12	I S 72	F	S 80	S 74	F 59	F 61	90	79	66	69	78	I A 94	98	R 102	I A 104	S 106	117	128	S 116	S 96	79	S 78	I S 82	S 88
13	80	78	F 72	60	F	F	F 71	S 99	73	76	I A 94	R 96	86	88	99	96	86	94	102	88	S 75	65	J S 64	65
14	66	65	59	S 57	56	F 57	69	66	66	68	80	78	83	93	J S 101	98	104	I A 104	J S 101	82	63	59	58	F 58
15	S 62	F	F 60	61	46	43	52	77	90	87	71	85	100	108	110	S 116	109	105	J R 102	J S 104	U S 96	S 86	72	S 65
16	65	67	69	65	51	48	56	66	77	70	77	84	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	H 67	67	80	88	88	82	82	82	84	78	70	65	58	F 59
18	62	F 56	F 59	50	46	45	55	71	68	65	69	77	79	84	99	105	S 115	S 112	U R 110	J S 92	S 76	71	73	77
19	74	60	62	64	54	48	S 55	J S 64	72	77	77	75	81	84	99	104	100	S 94	S 98	88	83	76	73	70
20	67	66	67	45	46	46	55	77	70	83	H 71	75	83	88	104	104	J S 102	S 99	J S 100	J S 95	S 87	65	S 60	J S 62
21	F 62	I S 61	F 66	F 69	F 46	F 31	50	71	88	70	70	I A 70	84	92	97	96	93	I A 92	I S 98	I S 92	I A 79	S 64	J S 61	F
22	C	F	66	68	S 71	48	57	S 74	74	H 65	70	H 72	C	C	C	C	C	C	C	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	101	C 96	I C 78	76	I C 76
24	C 76	C 83	C 78	62	54	44	54	68	83	88	74	81	97	86	85	88	89	94	J C 101	108	C 94	C 80	C 72	65
25	65	66	C 71	69	60	52	57	62	H 72	67	72	82	90	85	S 87	J C 88	84	89	J S 86	S 87	75	S 74	62	58
26	S 60	S 60	60	60	57	56	64	73	69	71	68	83	82	84	87	92	95	103	110	S 105	J S 96	79	S 75	76
27	73	S 71	73	67	56	51	J S 61	82	85	77	80	82	87	88	98	103	110	112	104	U S 96	U S 73	S 74	71	S 63
28	61	S 60	58	55	56	57	63	U S 90	84	80	76	80	100	105	104	101	102	112	117	106	U S 86	77	U S 72	S 68
29	67	66	65	63	58	S 59	77	92	78	79	83	93	109	118	S 121	S 119	S 113	109	S 118	J S 123	108	U S 85	81	I S 82
30	S 81	S 77	74	72	J S 74	U S 66	65	S 95	J S 102	84	77	87	107	123	131	S 136	136	137	136	J S 139	J S 121	U S 108	I S 83	77
31	J S 74	69	68	66	U S 56	54	J S 75	78	79	83	87	95	109	121	121	121	119	125	J R 125	S 114	J S 90	80	S 77	81
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	24	29	28	28	27	29	29	29	29	30	30	28	28	28	28	28	28	28	29	29	29	29	28
MED	74	70	71	66	58	57	67	77	78	77	77	82	90	96	104	104	105	110	107	100	87	78	75	77
UQ	79	78	75	69	66	63	71	84	83	80	80	88	100	107	112	112	116	124	116	105	C 95	86	84	82
LQ	65	64	65	62	55	48	57	71	73	70	71	78	84	87	96	97	98	96	99	S 92	S 78	74	72	65

AUG. 1969 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	530	520	H 520	540	490	470	L	A				
2								L	L	U L 560	L 570	H 540	540	540	560	520	A	A	A	A				
3								L	L	L	L	H 550	L 530	L 550	H 560	H 510	500	L 490	A	A				
4								L	L	U L 520	L 570	A	A	530	I A 550	530	510	U L 510	L					
5								L	L	A	580	620	560	H 550	550	530	A	L	A	A				
6								L	L 440	L 550	560	L 570	L 570	I A 550	A	A	A	L	A					
7										L 530	U L 530	H 590	H 530	560	R 570	I A 540	L	A	A					
8								L	U L 480	L	540	L	530	550	H 550	L	L 550	U L 500	L					
9							L	L	L	L	L 580	L	540	A	A	A	L	L	L					
10									A	A	A	A	A	A	530	L	480	L	A					
11								L	L	H 540	H 550	A	L 590	A	A	A	L 510	L 470	L					
12								A	A	L 590	A	A	A	A	A	A	L 540	L 470	L					
13								L	L	L	A	R 520	L 520	550	520	L 500	L	L 460	L					
14								L	A	A	A	500	H 530	530	H 490	510	L 480	I A 450	L					
15								L	L	H 460	L	510	R 500	L	530	H 510	460	L 420	L					
16								L	L 460	L 480	470	H 480	C	C	C	C	C	C	C					
17								C	C	C	H 480	H 500	H 510	490	A	A	L 460	L 430	A					
18								L	L	L 460	L	U L 530	H 510	510	A	A	A	A	A					
19									L	L 440	L 460	L	H 510	510	490	L 520	L 470	L	L					
20								L	L	L 440	L 430	L 560	L 490	A	A	L	L 470	L	L					
21								L	U L 430	L	A	A	A	A	A	U L 510	A	A	A					
22									L	U 450	C	L 540	L	C	C	C	C	C	C					
23								C	C	C	C	C	C	C	C	C	C	C	C					
24									L	L 480	L	L	H 510	L 520	U L 530	510	L	L	L					
25								L	L	L	A	H 510	L 540	L 600	H 500	A	L	L	L					
26								L	L	L 480	530	U L 560	L 550	L 540	560	L 530	L 490	L 460	L					
27								L	L	L	U L 510	L	L 580	L 530	L 570	U L 580	L	L	L					
28								L	L	L	U L 530	L 600	L 580	L 580	L 570	A	L	L	L					
29									L	L	L	U L 670	L 600	580	U L 570	570	L	L	L					
30								L	L	U L 510	L 520	L	L 600	U L 610	580	L 530	U L 500	U L 490	L					
31											L 590	U L 600	U L 600	560	L	L 550	A	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	15	17	18	24	21	19	17	14	12						
MED									L 450	480	530	545	535	550	550	530	490	470						
UQ									470	L 535	570	590	L 575	560	565	540	510	490						
LQ									L 435	460	510	510	515	530	525	510	470	L 455						

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AUG. 1969 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	180	250	300	330	355	I A 370	390	380	370	360	350	310	260	A				
2						E	A	270	310	335	R	R	R	R	R 390	370	355	320	260	A				
3						B	165	I A 265	A	A	A	380	390	A	A	A	350	310	A	A				
4						E	A	260	310	350	365	380	405	400	380	350	A	A	240	S				
5						C	C	270	325	350	380	I C 390	400	C 410	390	380	345	I A 310	260	A				
6						B	A	A	H 315	350	I A 370	380	I A 400	400	390	370	350	A	A	A				
7						S	170	I A 265	320	350	385	395	400	R 400	390	380	340	A	A	A				
8						E	A	280	A	A	A	380	R 370	370	380	380	350	310	250	B				
9						S	A	270	A	A	A	380	A	A	A	A	A	A	I A 240	A				
10						S	A	270	320	350	370	390	R 390	375	380	A	A	A	A	A				
11						B	200	260	I A 305	335	355	I A 380	I A 380	K 380	I A 370	375	350	310	240	S				
12						B	A	240	300	340	A	A	A	A	A	A	340	300	240	B				
13						S	A	A	300	A	A	A	A	A	370	I A 355	H 335	300	A	A				
14						A	A	250	I A 295	A	A	A	A	370	370	360	330	290	240	S				
15						B	A	A	A	A	I A 345	360	370	375	370	360	320	280	230	S				
16						S	S	250	290	325	340	R 370	C	C	C	C	C	C	C	C				
17						C	C	C	C	C	340	355	370	360	A	A	A	A	A	S				
18						S	160	240	285	320	340	350	360	I A 355	350	340	320	285	A	S				
19						S	S	H 240	300	330	I A 345	I A 360	I A 370	I A 380	I A 365	340	I A 320	270	220	S				
20						S	S	200	290	320	330	350	370	370	360	A	A	290	A	S				
21						S	160	240	290	320	335	A	A	A	A	I A 370	I A 355	300	220	S				
22						B	S	240	290	335	I C 355	I C 375	C 390	C	C	C	C	C	C	C				
23						C	C	C	C	C	C	C	C	C	C	C	C	C	C	B				
24						B	S	250	300	330	350	A	A	C	C 380	360	335	290	210	A				
25						A	A	250	300	340	365	C 370	I C 385	I C 375	360	350	335	300	A	S				
26						S	140	260	310	340	360	C 360	375	380	I C 380	375	345	I A 290	235	S				
27						S	155	250	305	345	360	C 370	C 380	C 385	385	365	335	295	230	S				
28						B	S	260	310	340	365	I C 380	I A 390	I A 390	I A 380	365	I A 360	A	A	B				
29						B	170	245	290	345	I A 365	A	A	390	390	363	335	290	225	B				
30						B	A	A	310	345	A	A	A	A	370	360	345	290	225	B				
31						B	S	240	310	330	I A 350	I A 365	I A 370	370	380	350	320	I A 280	200	S				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	9	25	25	23	22	22	20	20	23	22	23	21	18					
MED						E	165	250	300	340	355	372	382	380	380	362	340	295	238					
UQ						E	170	265	310	345	365	380	390	390	382	370	350	310	240					
LQ						E	160	240	295	330	345	360	370	370	370	355	335	290	225					

AUG. 1969 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J X 44	20	20	J X 36	22	E B 13	29	35	J X 50	J X 49	J X 65	J X 69	42	G	40	G	G	G 23	G	25	J X 24	20	J X 23	E S 15
2	E S 15	E B 13	J X 44	J X 51	J X 60	J X 34	18	31	35	45	43	44	46	49	J X 49	42	J X 63	51	J X 44	J X 39	J X 31	J X 24	J X 25	J X 36
3	J X 38	J X 61	J X 34	J X 28	J X 26	J X 28	24	J X 37	J X 40	J X 50	40	42	43	J X 48	45	44	G 31	G	J X 61	J X 40	J X 26	J X 33	J X 54	J X 34
4	J X 40	J X 40	J X 40	J X 46	J X 72	J X 53	J X 46	J X 62	J X 51	42	45	J X 90	J X 58	49	J X 74	J X 101	J X 64	J X 49	J X 37	J X 29	J X 49	J X 49	J X 22	19
5	E S 15	E C 19	E S 15	E C 55	E C 16	E C 23	21	31	J X 70	J X 85	J X 53	45	J X 69	47	48	50	J X 59	J X 43	J X 55	J X 47	J X 85	23	J X 36	J X 33
6	J X 26	J X 25	J X 19	E S 15	E B 11	J X 29	24	30	44	48	53	53	M 56	J X 84	J X 174	J X 160	J X 149	J X 100	J X 161	J X 162	J X 85	J X 25	E S 13	J X 24
7	J X 63	J X 52	J X 33	J X 49	J X 29	J X 29	22	J X 42	J X 47	40	49	50	53	51	J X 86	J X 73	47	J X 55	J X 52	J X 37	J X 26	J X 27	E S 15	E S 15
8	E S 15	J X 28	E	J X 34	J X 20	J X 24	21	G	40	42	39	42	44	40	G 29	42	G	G	31	E B 15	E S 14	E S 12	E S 15	J X 25
9	J X 26	23	18	J X 26	22	E S 12	J X 25	G 26	J X 60	J X 102	58	J X 105	J X 86	153	J X 114	J X 84	J X 54	J X 51	J X 34	24	J X 50	J X 27	J X 36	22
10	50	J X 64	J X 43	J X 30	J X 35	J X 34	J X 40	42	J X 66	J X 88	J X 76	J X 58	J X 78	J X 76	42	45	J X 48	J X 40	44	J X 36	J X 51	J X 52	J X 32	J X 69
11	J X 64	E B 14	J X 35	J X 73	J X 86	E B 17	J X 41	35	J X 49	41	49	J X 53	J X 65	J X 100	J X 74	J X 65	48	G	28	J X 38	J X 46	J X 54	J X 28	32
12	J X 31	J X 30	J X 86	J X 62	J X 74	J X 62	J X 74	J X 49	J X 53	J X 85	J X 84	124	J X 96	J X 96	D	J X 77	G	G	G	E B 17	J X 37	J X 98	J X 91	J X 38
13	J X 85	J X 38	J X 69	J X 66	J X 35	J X 47	J X 40	J X 38	36	J X 62	J X 136	J X 110	J X 89	J X 50	40	J X 58	36	G 21	26	J X 34	J X 36	J X 34	J X 44	J X 102
14	J X 64	J X 37	J X 30	23	J X 26	J X 26	J X 32	32	J X 50	J X 62	J X 79	J X 78	40	G 30	G 29	39	42	J X 106	J X 39	28	J X 51	J X 53	J X 62	J X 40
15	J X 24	J X 24	J X 21	24	J X 21	E B 15	J X 30	J X 38	50	J X 40	J X 40	G	42	46	45	38	G 23	G 15	26	E S 15	22	J X 25	J X 36	J X 34
16	J X 25	J X 22	E B 14	22	J X 23	24	20	27	34	36	J G 31	G 36	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	46	43	44	45	J X 109	J X 62	J X 50	38	J X 38	J X 29	20	20	J X 21	54
18	J X 53	J X 34	J X 44	J X 31	J X 22	J X 22	J X 24	26	30	36	39	40	44	43	73	50	J X 61	75	J X 51	J X 32	J X 20	J X 34	J X 22	23
19	20	E B 15	J X 17	J X 22	J X 24	E S 13	E S 15	G	G 27	G 30	35	40	42	J X 40	J X 37	J X 39	J X 40	34	24	22	E S 15	E S 15	J X 32	E S 15
20	E S 15	18	E B 14	22	E B 17	E S 14	E S 15	29	36	38	36	J X 104	48	J X 75	J X 63	J X 96	36	33	25	20	J X 29	J X 37	J X 26	J X 50
21	J X 35	43	J X 24	E B 15	25	24	J X 24	28	33	43	60	J X 93	77	117	71	J X 52	J X 74	J X 110	91	M 68	145	103	J X 34	J X 70
22	C	J X 33	J X 21	J X 22	J X 20	J X 24	J X 34	J X 31	34	39	G 33	C 43	43	C	C	C	C	C	C	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	J X 23	15	C	J X 24	J X 23
24	19	E B 12	20	17	E B 12	E B 12	E S 15	28	39	39	43	36	40	G 26	41	42	46	43	26	J X 114	43	J X 31	J X 40	J X 20
25	23	E B 13	E	E	E	E	19	29	43	38	57	G 35	46	46	43	49	46	J X 49	J X 34	J X 21	E S 13	E S 15	J X 49	J X 30
26	E S 15	J X 24	J X 20	E B 11	E B 11	E S 15	G	27	G 27	36	G 31	G 33	46	46	51	49	40	34	J X 28	J X 51	J X 31	J X 24	20	J X 28
27	J X 20	23	E B 16	E B 12	E B 12	E S 13	G	28	34	36	G	G 30	44	47	42	42	J X 49	33	J G 23	E S 15	21	J X 21	J X 29	J X 20
28	J X 36	J X 37	J X 51	J X 30	E B 15	E B 15	21	30	37	35	40	43	J X 54	J X 57	M 56	J X 63	J X 51	J X 40	J X 50	J X 33	J X 38	J X 37	24	J X 32
29	E S 15	J X 36	J X 33	J X 23	J X 23	J X 23	G	J X 36	J X 42	J X 44	50	46	48	44	J X 52	J X 50	44	G	33	19	19	18	J X 36	J X 29
30	J X 38	J X 25	J X 49	J X 34	J X 26	J X 34	J X 31	J X 37	38	J X 49	47	J X 44	44	39	40	40	40	G 20	J X 41	J X 84	M 55	E S 15	J X 30	J X 22
31	J X 24	J X 24	20	46	E B 13	J X 31	16	33	43	J X 62	J X 62	J X 42	42	45	J X 68	J X 46	J X 54	J X 52	J X 32	J X 35	J X 33	J X 29	J X 42	J X 35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	29	29	29	29	30	30	29	28	28	28	28	28	28	29	29	28	29	29
MED	J X 26	J X 25	J X 21	J X 27	J X 22	J X 24	24	31	40	42	46	44	46	47	50	50	46	39	J X 34	J X 32	J X 31	J X 27	J X 30	J X 30
UQ	J X 42	J X 37	J X 40	J X 41	J X 26	J X 29	J X 31	J X 37	J X 50	J X 50	58	J X 69	J X 58	J X 66	J X 74	J X 64	J X 54	J X 51	J X 47	J X 39	J X 49	J X 37	J X 36	J X 36
LQ	20	20	18	22	E B 16	E S 15	18	28	35	38	39	40	43	44	42	42	38	G 20	26	22	21	20	J X 23	J X 22

AUG. 1969 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	36	E	E	17	12	E B 13	26	29	34	40	43	45	E R 42	G	40	G	G	G 23	G	25	24	E	E	E S 15
2	E S 15	E B 13	16	17	24	25	15	G	34	42	42	43	45	48	49	41	53	49	44	37	31	20	18	20
3	31	31	23	15	15	23	15	29	37	41	40	E R 42	E R 43	47	44	41	G 30	G	58	36	24	25	24	20
4	18	24	36	27	26	27	43	23	27	42	44	A	58	48	71	47	40	38	32	20	49	30	20	15
5	E S 15	E C 19	E S 15	E C 55	E C 16	E C 23	21	30	38	61	48	E C 45	55	46	48	49	54	E C 40	53	47	52	17	20	22
6	19	18	E	E S 15	E B 11	17	20	28	38	44	47	51	52	83	A	A	A	49	46	A	64	E	E S 13	E
7	26	20	15	20	23	17	G	29	40	G	45	49	46	48	52	57	45	52	50	18	17	E	E S 15	E S 15
8	E S 15	20	E	E	14	16	19	G	37	40	E R 39	E R 42	44	E R 40	G 29	G	G	G	29	E B 15	E S 14	E S 12	E S 15	16
9	E	E	E	15	E	E S 12	18	G 25	33	46	50	48	51	60	86	60	47	40	31	18	32	16	26	E
10	25	19	21	20	22	21	18	41	40	69	71	56	77	68	42	42	43	36	27	34	51	25	20	50
11	45	E B 14	14	12	26	E B 17	G	G	36	39	44	51	47	80	61	54	47	G	G	34	46	28	25	E
12	E	26	53	42	35	50	53	46	51	51	70	A	70	93	A	73	G	G	G	E B 17	24	38	51	27
13	19	26	48	28	23	40	25	28	E R 36	46	A	45	42	42	G	44	G	G 20	25	24	25	32	24	23
14	24	27	18	15	15	20	25	30	45	51	65	47	40	G 30	G 29	G	40	A	32	24	25	22	24	27
15	17	18	E	17	14	E B 15	21	27	37	34	38	G	40	42	44	G	G 23	G 15	G	E S 15	E	E	22	21
16	E	17	E B 14	14	E	S	17	G	G	G	G 29	E G 36	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	43	41	41	41	64	62	40	36	28	27	16	E	19	28
18	48	E	15	16	14	S	14	G	G	G	38	40	40	42	50	49	53	67	36	18	E	E	18	E
19	E	E B 15	E	17	13	E S 13	E S 15	G	G 26	G 29	35	E R 40	42	40	E R 37	30	37	31	24	S	E S 15	E S 15	18	E S 15
20	E S 15	E	E B 14	E	E B 17	E S 14	E S 15	G	36	36	G	42	43	60	52	38	33	31	24	20	19	22	23	33
21	25	E S 43	17	E B 15	E	16	G	G	G	43	57	A	54	67	53	39	61	A	E S 91	55	A	50	E	32
22	C	20	E	20	16	16	26	20	G	39	E C 33	43	43	C	C	C	C	C	C	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	22	15	C	20	21
24	E	E B 12	E	E	E B 12	E B 12	E S 15	G	37	37	42	E R 36	E R 40	G 26	41	42	45	41	26	59	25	E	20	E
25	E	E B 13	E	E	E	E	16	G	42	G	54	G 32	46	46	43	49	44	43	32	16	E S 13	E S 15	24	23
26	E S 15	19	E	E B 11	E B 11	E S 15	G	G	G 25	G	G 31	G 33	46	46	49	49	40	32	21	43	22	24	E	20
27	18	E	E B 16	E B 12	E B 12	E S 13	G	G	G	G	G	G 30	43	47	42	42	43	G	G 21	E S 15	E	20	19	17
28	23	24	32	28	E B 15	E B 15	20	G	34	G	G	43	53	52	53	59	46	37	27	25	33	28	E	30
29	E S 15	28	21	18	17	17	G	32	41	41	47	43	47	43	47	49	42	G	29	15	19	17	20	28
30	23	24	42	22	22	29	25	28	36	46	45	44	44	E R 39	E R 40	40	38	G 20	28	84	54	E S 15	17	19
31	E	15	E	20	E B 13	22	16	32	41	46	43	42	42	44	41	41	54	47	27	33	29	28	28	21
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	27	29	29	29	29	30	30	29	28	28	28	28	28	28	28	29	28	29	29
MED	18	18	E E 15	16	14	16	17	23	36	40	43	43	44	46	48	43	42	35	28	24	24	18	20	20
UQ	24	24	21	20	22	22	21	29	38	46	48	48	51	56	53	52	47	45	33	36	33	26	24	27
LQ	E E 15	E E 13	E	E E 14	E E 12	E S 14	15	G	26	G 29	36	U 36	42	42	41	40	35	G 18	24	18	16	E E 12	17	15

AUG. 1969 | FBES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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_{S}^{14}	E_{S}^{14}	14	E	E	13	E_{S}^{14}	12	14	16	18	17	29	19	17	18	17	15	15	E	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
2	E_{S}^{15}	13	11	E	E	E	13	11	15	15	17	20	21	19	18	17	16	15	11	E_{S}^{13}	E_{S}^{15}	E_{S}^{14}	E_{S}^{15}	E_{S}^{14}
3	E_{S}^{14}	14	15	13	E	11	E_{S}^{13}	14	16	16	18	22	24	25	17	17	15	14	14	15	E_{S}^{15}	E_{S}^{14}	E_{S}^{15}	E_{S}^{13}
4	E_{S}^{15}	E_{S}^{12}	14	E	E	E	E_{S}^{15}	14	14	E_{C}^{25}	18	22	24	20	21	17	16	16	15	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{13}	E_{S}^{14}
5	E_{S}^{15}	E_{C}^{19}	E_{S}^{15}	E_{C}^{55}	E_{C}^{16}	E_{C}^{23}	E_{C}^{18}	16	16	17	E_{C}^{24}	E_{C}^{32}	E_{C}^{25}	18	19	19	15	16	15	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
6	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	11	12	E_{S}^{15}	E_{S}^{15}	16	16	18	17	18	17	21	19	17	15	11	13	E_{S}^{15}	E_{S}^{15}	E_{S}^{13}	E_{S}^{15}
7	E_{S}^{15}	E_{S}^{15}	E_{S}^{14}	14	13	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	15	15	15	17	20	21	19	17	17	14	14	14	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
8	E_{S}^{15}	11	E	14	E	E	14	15	15	15	15	17	24	17	16	17	18	15	14	15	E_{S}^{14}	E_{S}^{12}	E_{S}^{15}	E_{S}^{11}
9	E_{S}^{13}	14	13	E	E	E_{S}^{12}	E_{S}^{11}	15	14	15	18	17	17	18	16	17	15	15	15	15	E_{S}^{15}	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}
10	E_{S}^{15}	E_{S}^{15}	15	11	E	E_{S}^{15}	E_{S}^{15}	16	15	15	17	19	22	18	18	16	15	14	E	15	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
11	E_{S}^{11}	14	E	E	E	17	13	13	15	15	15	16	18	18	16	15	14	15	15	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
12	E_{S}^{15}	11	13	12	E	11	E_{S}^{15}	14	15	16	16	17	16	17	17	16	15	16	15	17	E_{S}^{15}	E_{S}^{15}	E_{S}^{12}	E_{S}^{14}
13	E_{S}^{15}	11	11	15	E	E_{S}^{13}	E_{S}^{15}	14	15	15	15	18	18	19	17	15	15	11	14	E_{S}^{12}	E_{S}^{14}	E_{S}^{15}	E_{S}^{14}	E_{S}^{15}
14	E_{S}^{14}	E_{S}^{15}	14	E	E	11	E_{S}^{13}	14	15	18	17	18	20	20	16	16	16	12	E_{S}^{11}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
15	E_{S}^{14}	12	12	12	13	15	E_{S}^{14}	14	14	17	15	15	18	16	18	15	14	11	14	E_{S}^{15}	E_{S}^{13}	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}
16	E_{S}^{14}	E_{S}^{14}	14	E	E	E_{S}^{15}	E_{S}^{15}	14	14	15	15	18	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	17	16	17	17	15	15	15	14	14	E_{S}^{13}	E_{S}^{14}	E_{S}^{15}	E_{S}^{13}	E_{S}^{15}
18	E_{S}^{13}	E_{S}^{13}	E	E	E	E_{S}^{15}	E_{S}^{11}	11	15	13	15	16	16	17	16	17	15	11	11	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}	E_{S}^{14}	E_{S}^{15}
19	E_{S}^{15}	15	15	12	E	E_{S}^{13}	E_{S}^{15}	E_{S}^{15}	15	15	16	17	18	18	15	17	15	14	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
20	E_{S}^{15}	E_{S}^{15}	14	13	17	E_{S}^{14}	E_{S}^{15}	13	11	15	16	16	18	18	17	17	15	15	13	E_{S}^{15}	E_{S}^{15}	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}
21	E_{S}^{15}	E_{S}^{12}	E_{S}^{14}	15	12	E_{S}^{15}	E_{S}^{13}	12	15	15	14	17	17	20	18	17	15	11	E_{S}^{16}	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
22	C	15	15	13	12	12	E_{S}^{15}	15	14	16	E_{C}^{28}	E_{C}^{24}	E_{C}^{31}	C	C	C	C	C	C	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	12	E_{S}^{13}	C	E_{S}^{13}	E_{S}^{15}
24	E_{S}^{15}	12	E_{S}^{13}	11	12	12	E_{S}^{15}	14	14	15	E_{C}^{19}	E_{C}^{18}	E_{C}^{20}	E_{C}^{22}	E_{C}^{24}	E_{C}^{18}	E_{C}^{20}	13	11	E	13	E_{S}^{15}	E_{S}^{12}	E_{S}^{13}
25	E_{S}^{15}	13	E	E	E	E	14	14	15	15	E_{C}^{21}	E_{C}^{22}	E_{C}^{24}	20	22	20	17	12	12	E_{S}^{15}	E_{S}^{13}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
26	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	11	11	E_{S}^{15}	E_{S}^{13}	E_{S}^{15}	17	E_{C}^{20}	17	21	20	20	E_{C}^{25}	E_{C}^{23}	E_{C}^{20}	16	15	E_{S}^{13}	E_{S}^{12}	E_{S}^{12}	E_{S}^{15}	E_{S}^{15}
27	E_{S}^{15}	E_{S}^{15}	16	12	12	E_{S}^{13}	E_{S}^{15}	E_{S}^{15}	14	15	17	20	E_{C}^{22}	E_{C}^{22}	20	E_{C}^{24}	16	15	13	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
28	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	12	15	15	E_{S}^{15}	E_{S}^{15}	15	17	20	E_{C}^{22}	21	E_{C}^{23}	20	20	17	11	15	14	E_{S}^{13}	12	E_{S}^{15}	E_{S}^{15}
29	E_{S}^{15}	13	E_{S}^{15}	11	12	12	E_{S}^{15}	14	15	20	20	20	E_{C}^{24}	E_{C}^{24}	21	20	16	12	E_{S}^{15}	12	12	13	E_{S}^{13}	14
30	E_{S}^{15}	12	E_{S}^{15}	12	12	13	E_{S}^{13}	14	12	16	20	21	E_{C}^{22}	19	20	18	16	15	11	12	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
31	E_{S}^{15}	E_{S}^{13}	E_{S}^{13}	12	13	12	E_{S}^{15}	14	15	16	16	21	E_{C}^{24}	22	19	19	16	15	13	E_{S}^{13}	E_{S}^{13}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	29	29	29	29	30	30	29	28	28	28	28	28	28	29	29	28	29	29
MED	E_{S}^{15}	E_{S}^{14}	12	12	E	E_{S}^{15}	E_{S}^{15}	14	15	15	16	18	19	18	18	17	16	14	14	E_{S}^{14}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
UQ	E_{S}^{15}	E_{S}^{15}	15	12	12	E_{S}^{15}	E_{S}^{15}	15	15	16	18	20	U_{22}	20	20	18	16	15	15	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
LQ	E_{S}^{14}	12	E_{E}^{13}	E	E	12	E_{S}^{13}	14	14	15	15	17	18	18	16	16	15	12	12	E_{S}^{13}	E_{S}^{13}	E_{S}^{14}	E_{S}^{14}	E_{S}^{14}

The Radio Research Laboratories, Japan

AUG. 1969 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1969 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / 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 265	F 275	F 280	F 260	275	300	F 310	I S 305	325	290	315	230	255	260	260	265	J S 280	285	R 300	310	270	S 250	S 250	S 255
2	270	S 280	285	290	265	F	F 300	325	325	315	280	270	270	270	270	275	280	275	285	S 305	S 265	S 250	S 260	260
3	255	255	265	I S 275	F 285	295	315	325	325	305	270	275	265	265	250	S 265	270	275	R 270	I S 270	S 275	I S 260	J S 255	I S 255
4	S 260	I S 250	S 255	F	I S 265	265	280	315	295	C 285	285	I A 280	275	C 275	270	280	R 295	S 280	U S 285	300	U S 275	U S 260	U S 265	265
5	C	C	275	J S 265	270	300	S 350	315	320	305	280	275	J C 280	J C 270	275	280	285	280	285	J C 300	C 300	C 265	C 275	I C 270
6	I C 275	I C 280	300	U S 300	285	U S 290	320	320	310	295	270	270	280	270	I A 275	I A 260	I A 270	285	300	A	C 275	265	C 270	C 270
7	280	U C 305	C 310	305	F 300	J S 270	310	310	H 290	280	310	255	265	265	270	270	260	265	J R 290	C 290	I C 270	I C 255	I C 260	I C 270
8	I C 270	275	I C 270	295	265	280	295	345	305	295	285	255	260	270	S 270	275	265	275	R 280	265	J C 270	255	260	C 255
9	255	C 270	C 255	F 270	F 265	F 250	F 270	300	340	315	260	255	255	255	265	280	290	305	S 290	265	I C 255	I C 260	I C 260	265
10	F	F	F 260	F 250	F 260	J S 265	F 295	320	F 335	290	280	270	275	S 275	275	260	275	295	290	285	C 275	265	I C 280	275
11	270	250	260	255	275	285	300	315	335	300	275	275	280	275	270	275	S 285	300	S 310	S 310	S 290	S 255	S 265	S 260
12	I S 250	F	S 265	S 270	F 255	F 245	335	330	335	280	270	I A 290	265	R 275	I A 265	S 255	270	305	S 300	S 300	265	255	I S 250	S 255
13	265	270	F 290	255	F	F	F 280	S 345	310	275	I A 290	R 295	300	280	285	300	280	295	310	310	S 295	260	J S 265	260
14	270	275	280	S 270	255	F 300	335	335	320	285	315	295	265	265	J S 265	275	290	I A 290	J S 315	305	285	260	260	F 275
15	S 260	F	F 275	300	305	260	290	325	310	310	300	270	270	270	265	S 285	300	295	J R 295	J S 290	U S 300	S 300	270	S 275
16	270	270	290	310	315	290	320	335	325	315	295	300	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	H 295	290	295	305	290	295	285	305	305	310	285	285	265	F 260
18	280	F 270	F 295	285	280	280	325	350	325	325	305	295	305	275	285	275	S 295	S 315	U R 320	J S 320	S 290	270	260	280
19	285	285	290	295	300	290	S 320	J S 330	335	325	325	280	300	275	295	290	300	S 295	S 305	295	290	290	285	275
20	275	295	330	285	270	285	300	335	330	350	H 310	295	285	285	290	280	J S 295	S 285	J S 300	J S 305	S 315	270	S 255	J S 260
21	F 285	I S 270	F 295	F 335	F 350	F 290	320	335	335	355	300	I A 275	295	285	290	290	295	I A 300	I S 305	I S 320	I A 325	S 265	J S 280	F
22	C	F	260	280	S 335	290	335	S 335	350	H 325	285	H 280	C	C	C	C	C	C	C	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	295	C 315	I C 280	260	I C 255
24	C 265	C 300	C 295	310	315	295	335	325	315	340	300	285	300	305	295	285	285	295	J C 285	305	C 310	C 280	C 265	260
25	255	260	C 280	290	305	310	335	325	H 320	315	290	280	290	290	S 295	J C 295	295	300	J S 315	S 305	295	S 300	285	275
26	S 265	S 270	275	285	295	305	325	350	340	325	305	305	300	290	285	290	285	290	305	S 305	J S 305	280	S 260	270
27	265	S 270	290	330	290	280	J S 305	330	360	310	300	285	280	265	270	270	280	310	315	U S 305	U S 285	S 275	275	S 270
28	265	S 265	250	250	255	275	285	U S 335	335	315	315	280	285	285	290	290	285	290	310	310	U S 315	280	U S 275	S 275
29	270	265	265	275	285	S 270	320	350	365	300	300	265	275	285	S 305	S 310	S 295	280	S 295	S 310	315	U S 290	270	I S 265
30	S 285	S 275	265	275	J S 295	U S 320	315	S 335	J S 345	330	315	275	270	275	275	S 280	280	290	295	J S 300	J S 260	U S 295	I S 270	270
31	J S 265	260	280	285	U S 315	300	J S 335	325	325	305	285	275	270	275	285	285	275	295	J R 290	S 315	J S 290	275	275	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	24	29	28	28	27	29	29	29	29	30	30	28	28	28	28	28	28	28	28	29	29	29	28
MED	268	270	280	285	285	290	315	330	325	310	295	278	278	275	275	280	285	292	300	305	290	265	265	268
UQ	275	278	290	298	302	298	325	335	335	325	305	290	292	285	290	290	295	300	308	S 310	S 300	280	275	272
LQ	265	265	265	270	265	272	300	320	320	295	280	270	268	270	270	272	278	282	290	295	275	260	260	260

AUG. 1969 | M(3000)F2 (0.01)

IONOSPHERIC DATA

AUG. 1969 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	380	405	H 385	335	365	330	L	A				
2								L	L	U L 340	L 325	H 370	360	360	325	360	A	A	A	A				
3								L	L	L	L	H 365	395	L 345	H 340	H 370	340	L 335	A	A				
4								L	L	U L 355	L 350	A	A	375	I A 350	325	335	U L 325	L					
5								L	L	A	340	315	A	H 370	355	365	A	L	A	A				
6								L	L 385	L 350	370	A	A	A	A	A	A	L	A					
7										L 360	U L 360	H 325	H 370	355	R 345	I A 350	L	A	A					
8								L	U L 355	L	360	L	375	370	H 365	L	L 325	U L 320	L					
9							L	L	L	L	L 345	L	A	A	A	A	L	L	L					
10									A	A	A	A	A	A	360	L	355	L	A					
11								L	L	H 370	H 365	A	L 320	A	A	A	A	L 330	L					
12								A	A	L 315	A	A	A	A	A	A	L 315	L 340	L					
13								L	L	L	A	R 375	L 375	345	365	L 340	L	L 335	L					
14								L	A	A	A	A	H 360	370	H 380	335	L 335	I A 340	L					
15								L	L	H 390	L	395	R 410	L	345	H 355	350	L 355	L					
16								L	L 350	L 375	415	H 415	C	C	C	C	C	C	C					
17								C	C	C	H 365	H 380	H 375	380	A	A	L 350	L 350	A					
18								L	L	L 380	L	U L 320	H 350	370	A	A	A	A	A					
19									L	L 410	L 390	L	H 375	L 375	385	L 325	L 345	L	L					
20								L	L	L 385	L 405	L 340	L 390	A	A	L	340	L	L					
21								L	U L 370	L	A	A	A	A	A	U L 335	A	A	A					
22									L	U L 400	C	L 350	L	C	C	C	C	C	C					
23								C	C	C	C	C	C	C	C	C	C	C	C					
24									L	L 355	L	L	H 385	L 345	U L 355	355	L	L	L					
25								L	L	L	A	H 390	A	H 330	380	A	L	L	L					
26								L	L	L 375	375	U L 345	L 345	L 335	340	A	L 340	L 345	L					
27								L	L	L	U L 380	L	L 345	360	L 330	U L 320	L	L	L					
28								L	L	L	U L 370	L 335	A	A	A	A	L	L	L					
29									L	L	L	U L 315	L 335	345	U L 335	A	L	L	L					
30								L	L	A	L 390	L	L 335	U L 315	L 335	L 355	U L 355	U L 335	L					
31											L 355	U L 340	U L 330	350	L	L 345	A	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	14	17	16	19	19	18	15	13	12						
MED									L 362	L 372	L 365	348	370	360	352	345	L 340	L 335						
UQ									L 378	L 385	L 380	H 378	378	370	365	355	350	L 342						
LQ									L 352	L 355	L 355	L 330	L 345	345	340	L 335	L 335	L 330						

AUG. 1969 | M(3000)F1 (0.01)

IONOSPHERIC DATA

AUG. 1969 | H'F2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatio operation

Hour / 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	280	355	290	575	410	390	360	340	325	300	275	240				
2								260	260	320	375	365	375	375	410	345	335	335	300	250				
3								250	265	270	370	355	385	355	390	350	325	305	315	290				
4								260	300	300	360	A	360	370	395	350	315	320	290					
5								270	255	340	355	365	355	350	350	345	305	310	310	275				
6								240	240	350	370	355	340	365	A	I A 360	I A 345	315	275					
7										300	300	415	355	350	340	345	325	330	295					
8								230	260	260	345	400	360	325	345	310	340	310	280					
9							300	250	245	265	390	330	365	375	370	320	295	285	255					
10									235	E A 350	E A 390	360	340	330	310	350	330	290	275					
11								250	250	340	380	300	355	350	350	330	310	290	250					
12								240	250	405	E A 400	A	E A 350	E A 400	A	355	345	280	260					
13								235	295	315	I A 310	315	300	345	325	305	325	300	270					
14								245	280	345	310	300	355	355	310	330	310	I A 285	260					
15								255	275	280	280	350	345	340	340	320	280	290	270					
16								245	270	280	340	290	C	C	C	C	C	C	C					
17								C	C	C	310	365	340	300	305	335	300	290	260					
18								245	270	275	300	335	315	350	330	325	295	275	250					
19									255	280	290	350	325	350	320	310	295	290	260					
20								245	250	250	255	350	325	340	325	325	285	290	270					
21								245	255	240	325	A	340	325	325	305	300	A	A					
22									230	250	365	355	320	C	C	C	C	C	C					
23								C	C	C	C	C	C	C	C	C	C	C	C					
24									255	260	250	320	295	280	325	320	305	300	280					
25								225	270	300	350	355	325	315	320	320	320	305	280					
26								240	240	270	280	310	330	340	355	330	320	300	270					
27								250	240	250	270	305	350	360	355	360	300	290	250					
28								250	240	280	285	350	340	330	325	305	315	285	265					
29									220	340	300	390	350	330	315	315	305	300	290					
30								250	240	255	255	360	355	340	330	315	305	300	265					
31											320	350	350	335	320	325	300	300	265					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	22	27	28	30	27	29	28	26	28	28	27	27	4				
MED							300	248	255	280	312	350	350	345	330	328	310	300	270	262				
UQ								250	270	335	360	362	355	356	355	345	325	305	280	282				
LQ								240	240	262	290	325	328	330	320	318	300	290	260	245				

AUG. 1969 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1969 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	340	290	270	295	265	245	230	225	210H	210H	235H	225	200	190	190H	250	230	225	245	240IA	250	275	295	300
2	300	260	250	250	300	300	245	235	225H	220	200H	190H	215	240IA	215IA	225	A	A	A	A	275	300	300	330
3	305	320	290	290	245	250	225	210	240	215	200H	200H	205	225IA	220H	220H	225	240	235IA	270IA	255	295	300	275
4	310	310	305	270	260	305	300	245	230	220	220	A	A	250EA	A	250EA	235	255	260	265	300	325	305	290
5	270	260	300	400EC	305	270	225	200H	225	A	250EA	C	220IA	205H	255EA	280EA	A	240EC	A	A	320EA	300	300	275
6	300	275	255	230	260	250	245	220	225	230	230	220IA	A	A	A	A	A	A	A	A	330EA	275	295	295
7	300	275	250	255	230	265	255	240	240	220	240EA	250EA	215H	240	245IA	250IA	A	A	A	250	245	250	275	255
8	250	255	250	245	235H	260	250	240	220	225	200	205H	210	200	190H	230H	220H	230	235	250	265	250	275	280
9	300	295	280	250	295	300	205H	230	220	250	250EA	250	A	A	A	A	240IA	250EA	250EA	240	280	255	270	285
10	345	300	290	300	300	300	250	245	245IA	A	A	A	A	A	230	230H	250EA	250H	250	250	300	275	260	310EA
11	340	305	305	300	300	260	240	230	225	205H	210H	A	250EA	A	A	A	A	240	240	240	255	250	300	295
12	305	310	345	300	350	A	250	A	A	A	A	A	A	A	A	A	230H	205H	240	240	260	310	A	310
13	300	300	290EA	350	340	350	250	230	250	270EA	A	210	190H	225	205	220IA	215H	220H	240	240	250	300	295	300
14	305	295	265	270	295	250	240	230	A	A	A	A	200H	205	200H	235	250	240IA	230IA	245	240	300	330	350
15	300	300	290	250	225	300	265	240	240	200H	225H	200	180	180H	240	200H	225	240H	230H	260	240	240	250	280
16	295	300	255	240	225	245	240	230H	210	200	195	180H	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	250EA	200H	200H	210	A	A	250EA	250	255IA	250	250	250	300	340
18	340EA	300	250	270	260	270	250	235	225H	210	200H	200H	200H	210	A	A	A	A	A	230	230	250H	300	270
19	265	280	295	250	230	245	245	225	200H	180H	200	255H	205H	200H	200	205H	210IA	235	230H	245	245	240	265	260
20	280	245	230	230	300	255	250	240	230	210	180H	220H	205	225IA	225IA	225H	225	230H	240H	250	230	225	305	305
21	290	A	260	220	215	280	250	230	205H	A	A	A	A	A	A	215H	A	A	A	255	250IA	240IA	250	325
22	C	320	300	285	230	240	225	235	215	210	195IC	250H	250	C	C	C	C	C	C	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	250	230	240IC	300	300
24	300	250	245	215	225	220	240	230	240	205	240	200H	200H	C	215	230	A	A	250	265	240	225	255	295
25	310	300	260	250	230	245	230	230	230	205H	A	200H	A	245EA	245EA	A	270EA	A	270	255	255	250	250	300
26	305	310	300	270	255	250	250	230	220	210	205	200H	250	250EA	280EA	A	250	245	250	260	250	250	300	305
27	300	290	265	230	230	260	260	240	240	220	220	210H	220	255EA	230	255	270EA	240	250	245	250	270	285	270
28	305	320	355EA	370	320	300	260	245	230	215H	205	210	225IA	A	A	A	A	250	255	250	255	255	270	305
29	300	335	325	275	255	300	255	230	230	210H	A	205H	245EA	225	270EA	A	255EA	250	255	250	235	215	260	300
30	290	300	350EA	300	255	250	250	240	230	240EA	215	200H	200	195H	205	255	235	250	260	275	255	225	245	280
31	280	300	275	260	225	275	240	225	240	250	205H	195	200H	220	220H	230	A	A	250	245	230	260	285	295
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	29	29	29	28	29	28	27	24	23	23	22	20	19	18	18	20	22	26	29	29	28	29
MED	300	300	272	265	255	260	250	230	230	211	205	202H	204	214	212	229	230	240	250	250	250	250	290	295
UQ	305	308	298	292	300	300	250	240	240	221	225	218	218	232A	232A	242	250EA	250	255	255	258	275	300	305
LQ	292	278	255	250	230	250	240	230	220	208	200	200H	200H	202	205	220H	225	231	238	245	240	240	262	280

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AUG. 1969 | H'F (KM)

IONOSPHERIC DATA

AUG. 1969 | H'ES (KM) | 135 E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31 12.1 N. Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	110	100	100	B	125	115	120	110	105	105	115	G	120	G	G	100	G	130	120	100	115	S
2	S	B	105	105	100	105	105	150	150	130	140	140	150	140	140	145	125	125	110	105	105	105	105	100
3	100	100	100	100	100	100	110	105	100	100	110	130	115	105	100	100	100	G	100	110	110	105	105	105
4	100	100	105	100	105	100	100	100	100	125	120	125	125	125	110	110	120	115	115	105	105	105	105	105
5	S	C	S	C	C	C	155	125	120	115	125	130	120	125	120	120	115	110	115	105	105	105	100	100
6	100	100	100	S	B	105	100	110	130	125	125	125	110	115	115	110	105	105	105	100	100	100	S	105
7	115	105	105	105	105	105	130	115	130	150	125	125	125	115	110	110	115	105	100	100	100	100	S	S
8	S	95	E	100	100	100	100	G	100	105	100	130	120	130	100	155	G	G	130	B	S	S	S	100
9	100	95	100	100	100	S	100	105	110	105	100	105	100	100	100	100	100	100	100	110	100	100	100	100
10	100	100	100	100	100	100	100	125	115	115	110	105	105	105	110	105	100	100	100	100	110	100	115	105
11	105	B	100	100	100	B	100	125	100	120	110	100	100	110	125	125	125	G	125	105	105	100	100	110
12	115	100	100	100	95	95	115	115	110	110	100	100	100	100	100	100	G	G	G	B	100	115	120	105
13	105	100	100	100	100	100	100	100	140	100	100	100	100	100	145	100	130	100	120	95	95	105	105	105
14	105	100	100	100	100	100	100	125	100	115	105	100	100	100	100	150	135	115	115	110	105	105	105	100
15	105	100	105	95	100	B	105	105	100	100	100	G	125	125	115	130	100	100	125	S	95	105	100	100
16	100	100	B	100	100	100	155	160	130	125	100	100	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	120	125	115	110	105	105	105	105	105	105	105	110	105	105
18	100	100	100	100	100	100	100	150	150	140	125	125	125	125	115	115	110	110	105	105	105	105	100	100
19	100	B	95	100	100	S	S	G	100	100	100	100	100	100	100	100	100	120	130	110	S	S	100	S
20	S	125	B	100	B	S	S	145	125	125	140	115	125	110	100	105	105	110	110	105	100	100	100	100
21	100	95	100	B	100	100	100	150	140	115	105	105	100	100	100	140	125	115	110	105	100	100	110	105
22	C	100	100	95	95	100	100	100	150	145	100	155	150	C	C	C	C	C	C	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	105	105	C	100	100
24	100	B	100	100	B	B	S	140	130	130	125	110	110	100	150	140	115	110	105	105	100	105	100	100
25	100	B	E	E	E	E	150	150	125	150	125	100	160	150	150	135	125	120	110	100	S	S	110	105
26	S	105	105	B	B	S	G	150	100	150	100	105	155	155	140	140	135	110	110	110	105	105	105	105
27	105	105	B	B	B	S	G	E G 170	150	150	G	105	145	140	135	130	120	140	115	S	110	105	105	100
28	100	100	100	100	B	B	135	150	135	150	125	120	110	110	110	110	110	105	105	105	105	105	110	105
29	S	105	105	105	105	105	G	120	120	120	115	120	115	130	120	115	120	G	130	115	110	105	100	100
30	105	105	100	100	100	100	100	100	125	115	110	110	105	105	115	120	150	100	135	110	105	S	105	105
31	105	105	105	105	B	105	155	125	120	115	110	110	120	115	115	115	130	115	115	105	105	105	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	23	23	20	17	23	27	29	29	29	29	29	27	28	27	25	23	26	25	26	24	26	26
MED	100	100	100	100	100	100	100	125	120	120	110	110	115	110	115	115	115	110	110	105	105	105	105	104
UQ	105	105	105	100	100	105	128	149	130	130	125	125	125	125	122	132	125	115	120	110	105	105	105	105
LQ	100	100	100	100	100	100	100	108	100	110	100	105	105	102	100	105	105	102	105	105	100	100	100	100

The Radio Research Laboratories, Japan

AUG. 1969 | H'ES (KM)

IONOSPHERIC DATA

AUG. 1969 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

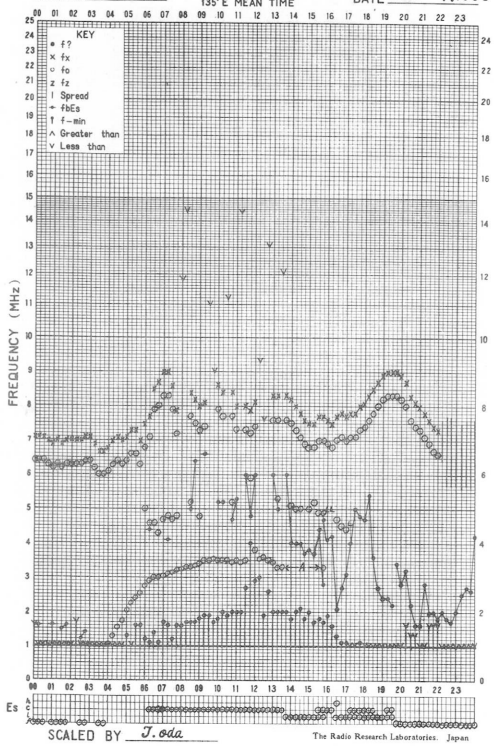
Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 7	F 2	F 2	F 2	F 1		H 5	C 3	C 2	C 1	C 2	L 1	C 1		C 1			L 1		HL 31	FF 51	F 1	F 1	
2			F 3	F 4	F 5	L 7	L 2	H 5	H 2	H 1	HL 11	HL 11	H 1	H 1	H 1	H 1	H 3	H 2	CL 51	L 6	F 6	F 3	F 5	F 4
3	F 5	F 6	F 5	F 2	F 1	L 2	LH 11	L 2	L 3	L 2	C 1	H 1	C 1	L 1	L 1	L 2	L 1		L 4	CL 23	FF 32	FF 22	FF 31	F 3
4	F 2	F 3	F 5	F 4	F 5	L 4	L 5	LH 32	LH 31	H 1	H 1	H 3	H 1	H 1	C 2	C 2	C 1	C 2	C 2	L 2	F 4	F 3	F 4	F 2
5							H 1	H 2	C 2	C 2	C 1	H 1	H 1	H 1	C 1	C 2	C 2	C 2	C 3	L 4	F 5	F 2	F 3	F 3
6	F 2	F 2	F 1			L 3	LH 11	L 2	H 1	H 1	HL 11	H 1	C 1	C 4	C 3	C 2	C 3	C 4	L 3	L 4	F 3	F 2		F 3
7	FF 13	FF 22	F 2	F 2	F 3	L 2	H 1	CH 21	H 2	H 1	H 1	H 1	H 1	C 1	C 2	C 3	C 2	C 3	L 3	L 3	F 2	F 1		
8		F 4		F 3	F 2	L 4	L 2		L 2	L 2	L 1	HL 11	HL 11	HL 11	L 1	H 1			H 2					F 2
9	F 1	F 1	F 1	F 2	F 1		L 2	L 2	C 2	L 2	C 1	C 2	L 2	L 2	L 3	L 3	L 2	L 4	L 4	CL 21	F 4	F 3	F 3	F 2
10	F 6	F 3	F 4	F 6	F 3	L 3	LH 32	H 3	C 3	C 3	C 6	C 3	C 3	C 3	C 1	L 2	L 3	L 4	L 4	L 6	FF 55	F 3	FF 22	FF 32
11	FF 33		F 2	F 2	F 3		LH 33	HL 32	LH 11	HL 12	C 2	L 2	L 2	C 3	HC 21	H 2	HL 31		H 1	L 7	F 6	F 7	F 5	FF 21
12	F 1	FF 71	F 7	F 6	F 3	L 6	C 5	C 4	C 3	C 3	C 3	C 4	L 4	LL 31	L 3	LL 41					F 5	FF 24	FF 24	F 5
13	F 3	F 5	F 5	F 3	F 4	L 2	L 4	L 3	HL 21	L 3	L 5	L 3	L 1	L 1	HL 11	L 2	HL 12	L 2	HL 12	L 5	F 4	F 4	FF 41	FF 22
14	FF 22	F 5	F 4	F 3	F 2	L 4	L 6	HL 32	L 4	CL 22	CL 32	L 2	L 1	L 1	L 1	HL 11	HL 21	CL 53	CL 22	CL 33	F 4	F 3	FF 42	F 2
15	F 2	F 2	F 1	F 2	F 1		L 5	L 4	L 4	L 2	LH 21		H 1	HL 11	CL 11	HL 11	L 1	L 1	H 1		F 2	F 2	F 3	F 3
16	F 2	F 2		F 1	F 1	L 1	H 2	HL 12	HL 22	HL 11	L 1	L 1												
17											CL 11	HL 11	CL 11	CL 11	C 3	C 2	C 3	C 3	C 3	L 4	F 3	F 1	F 3	F 6
18	F 5	F 3	F 4	F 2	F 2	L 1	L 1	HL 21	HL 12	HL 12	HL 12	HL 11	HL 12	HL 12	CL 21	CL 11	CL 21	CL 51	C 4	L 2	F 1	F 1	F 2	F 1
19	F 1		F 1	F 3	F 2				L 2	L 2	L 1	L 2	L 2	L 1	L 3	LH 22	LH 21	CL 12	H 1	C 1			F 3	
20		F 1		F 1				H 2	H 2	H 1	H 1	C 2	H 1	C 2	C 2	C 2	C 1	C 2	C 2	L 2	F 5	F 3	F 4	F 4
21	F 4	F 3	F 3		F 2	L 1	L 2	H 2	H 2	CL 11	CL 31	C 4	L 3	L 4	L 2	HL 12	HL 32	C 5	C 6	L 4	F 5	F 5	F 2	F 4
22		F 4	F 2	F 1	F 1	L 2	L 6	L 2	HL 11	HL 11	L 1	H 1	HL 11											
23																				L 2	F 1		F 3	F 1
24	F 1		F 1	F 1				H 2	H 2	HL 11	HL 11	CL 11	CL 11	L 1	H 1	H 1	C 1	C 2	C 2	L 4	F 2	F 1	F 2	F 1
25	F 1						H 1	H 3	HL 21	HL 11	HL 21	L 1	HL 11	HL 11	HL 11	H 1	H 1	C 2	C 2	L 1			F 3	F 2
26		F 2	F 1					H 1	L 1	HL 11	L 1	L 1	HL 11	H 1	H 1	H 1	H 2	C 2	L 1	C 5	F 4	F 3	F 1	F 3
27	F 2	F 2						H 2	H 1	H 1		L 1	HL 11	HL 11	H 1	H 1	C 2	C 1	L 1		F 1	F 2	F 3	F 2
28	F 2	F 2	F 3	F 3			H 2	H 1	H 2	HL 11	HL 11	C 1	C 1	C 2	C 2	C 3	C 2	L 3	L 2	L 4	F 4	F 4	F 1	F 3
29		F 3	F 2	F 2	F 2	L 3		C 3	CL 22	CL 11	CL 11	CL 11	CL 11	H 1	C 1	C 1	C 1		H 1	C 1	F 2	F 1	F 2	F 2
30	F 2	F 2	F 3	F 3	F 1	L 3	L 3	L 4	HL 23	CL 22	CL 22	C 1	L 1	L 1	C 1	C 1	HL 11	L 1	HL 21	CL 62	FF 41		F 2	F 3
31	F 2	F 2	F 1	F 3		L 3	H 1	H 3	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 1	HC 22	C 3	C 2	L 5	F 5	F 4	F 4	F 2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1969 | TYPES OF ES

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 1.1969

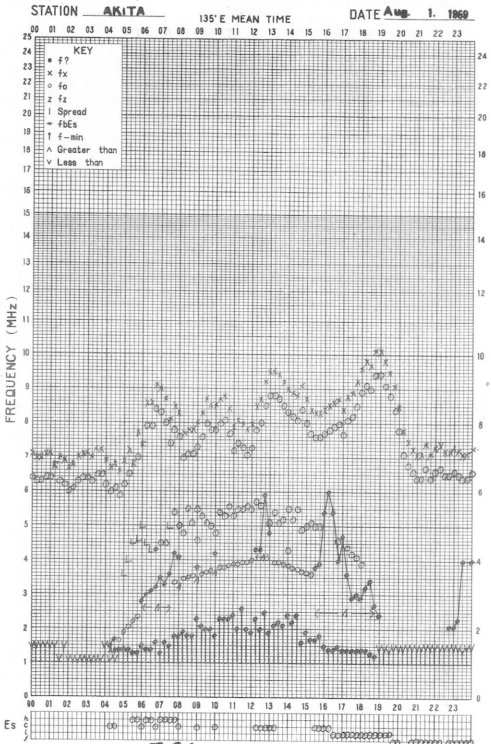


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Aug. 1. 1969

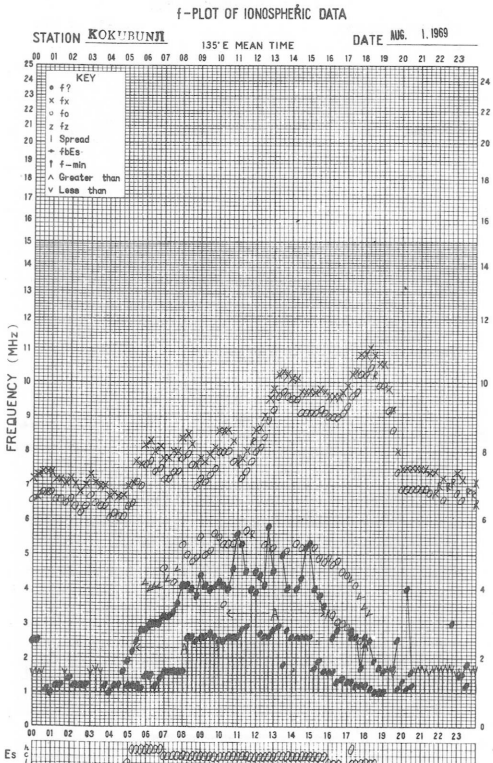


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE AUG. 1. 1969

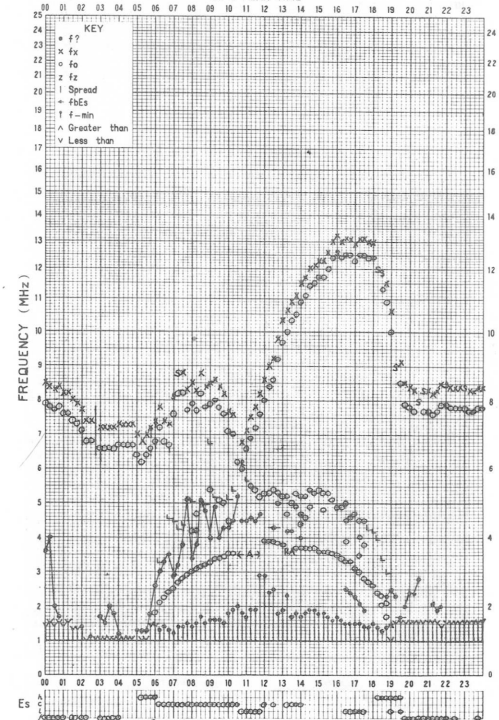


SCALED BY T. Ito

The Radio Research Laboratories. Japan

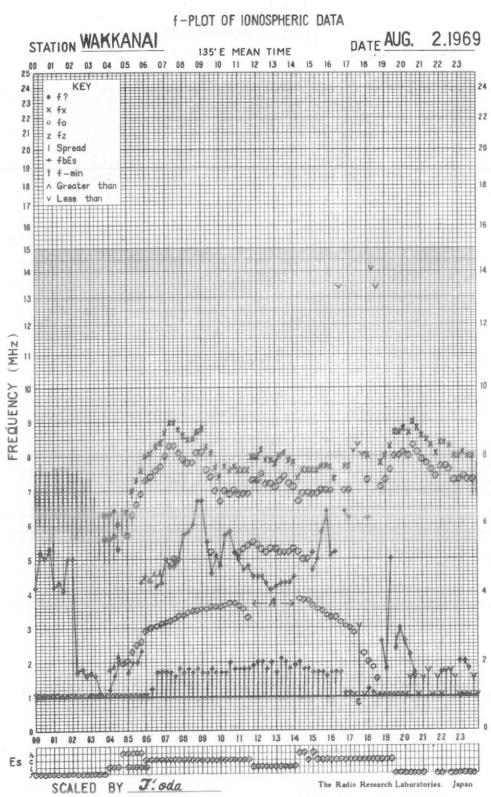
f-PLOT OF IONOSPHERIC DATA

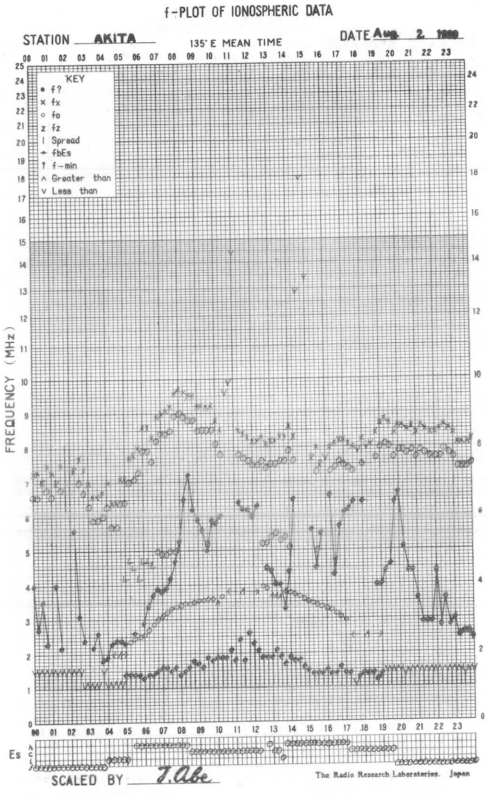
STATION YAMAGAWA 135°E MEAN TIME DATE AUG. - 1. 1969



SCALED BY S. Nitadori

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE AUG. 2.1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
KEY
FREQUENCY (MHz)
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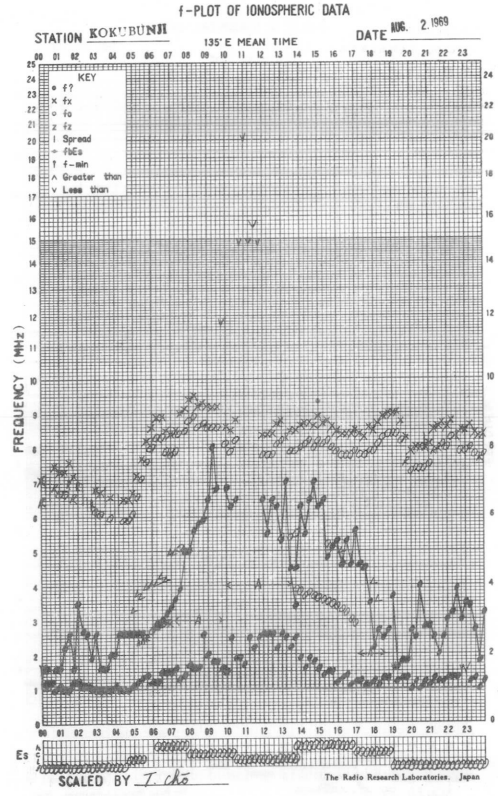
SCALED BY T. Abe
The Radio Research Laboratories. Japan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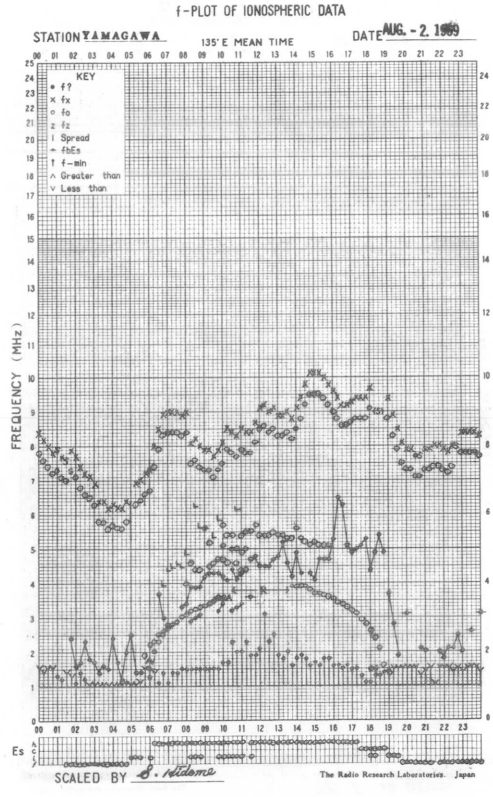
SCALED BY T. Ichō
The Radio Research Laboratories. Japan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DATE AUG. 2. 1969
KEY
FREQUENCY (MHz)
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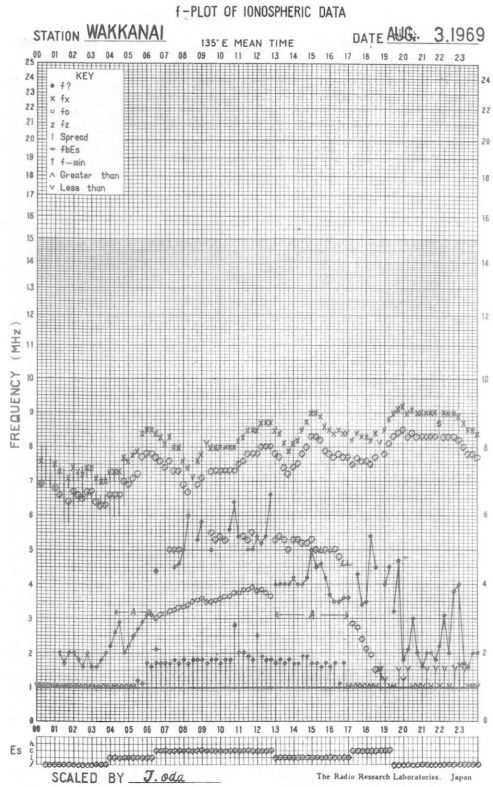
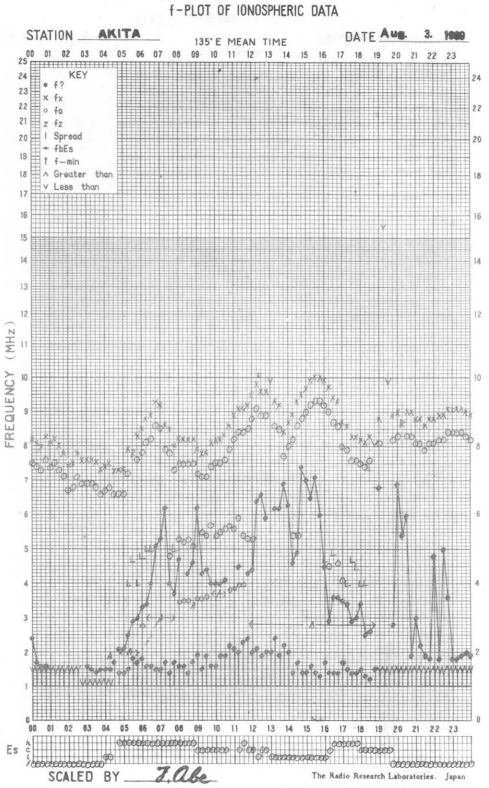
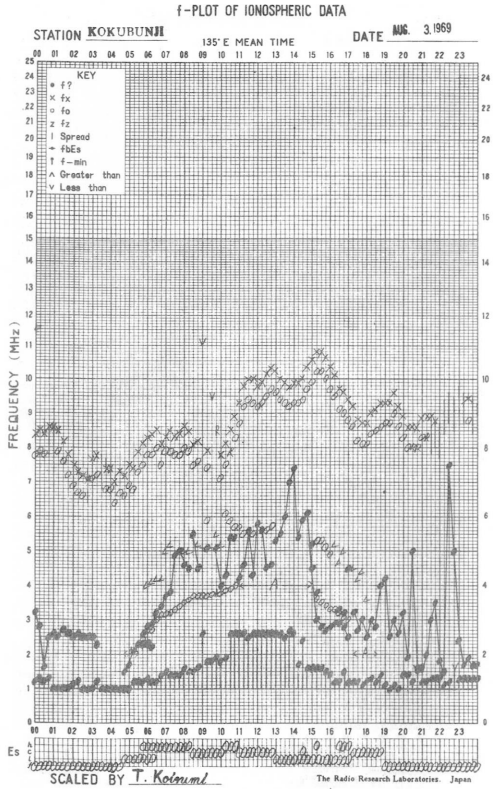
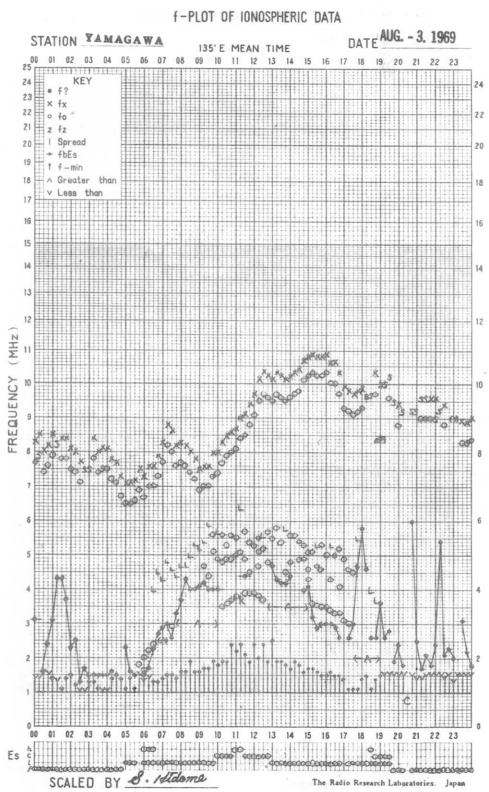
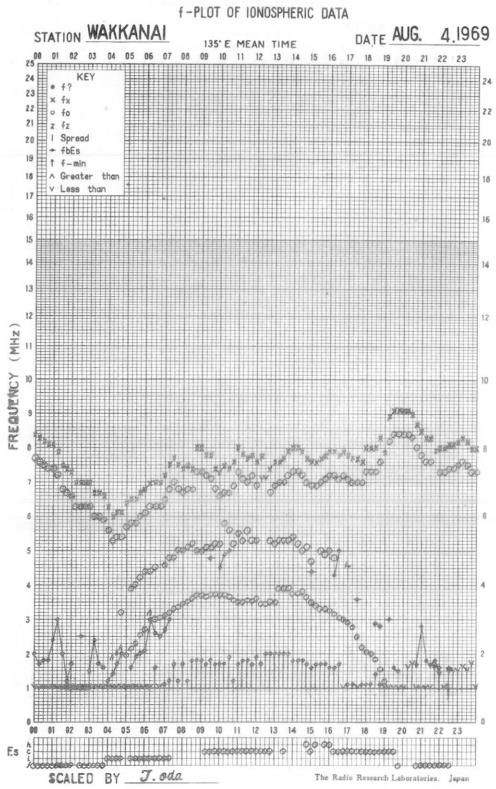
SCALED BY S. Nidome
The Radio Research Laboratories. Japan

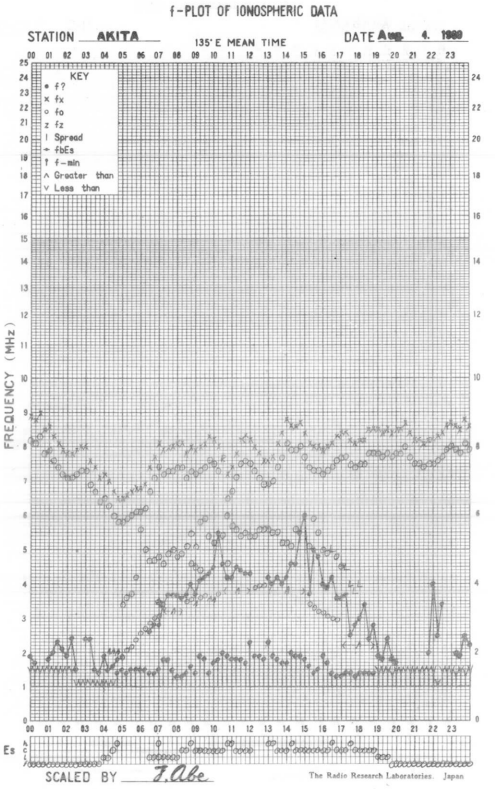

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE AUG. 3.1969
KEY
* f?
X fx
o fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

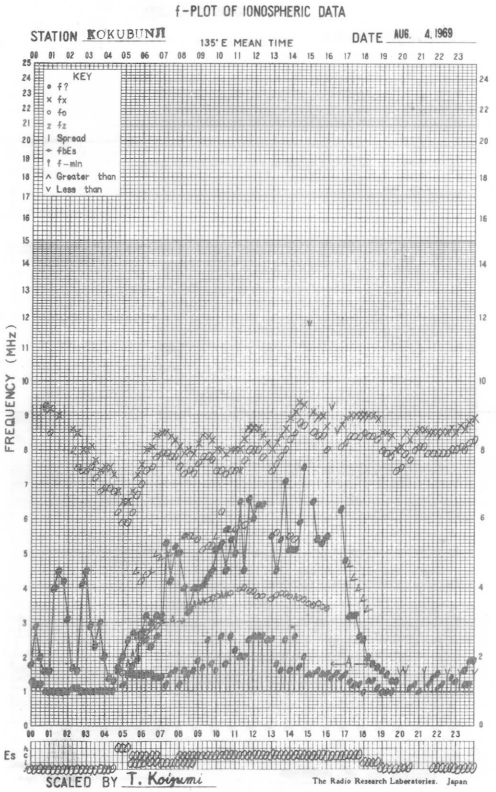

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Aug. 3. 1969
KEY
* f?
X fx
o fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan

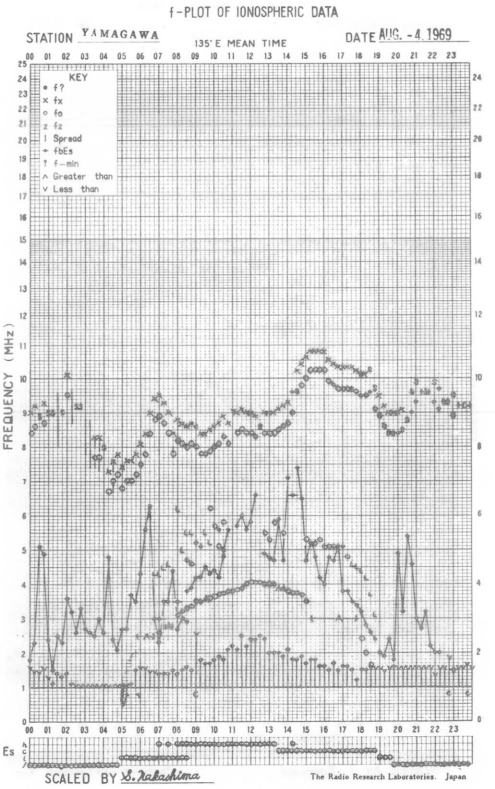

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE AUG. 3.1969
KEY
* f?
X fx
o fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koinumi
The Radio Research Laboratories. Japan

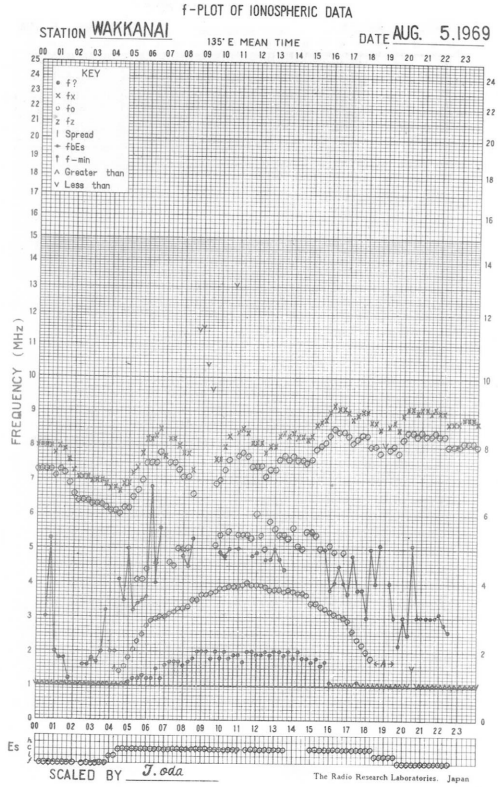

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE AUG. - 3. 1969
KEY
* f?
X fx
o fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Ichidomo
The Radio Research Laboratories. Japan

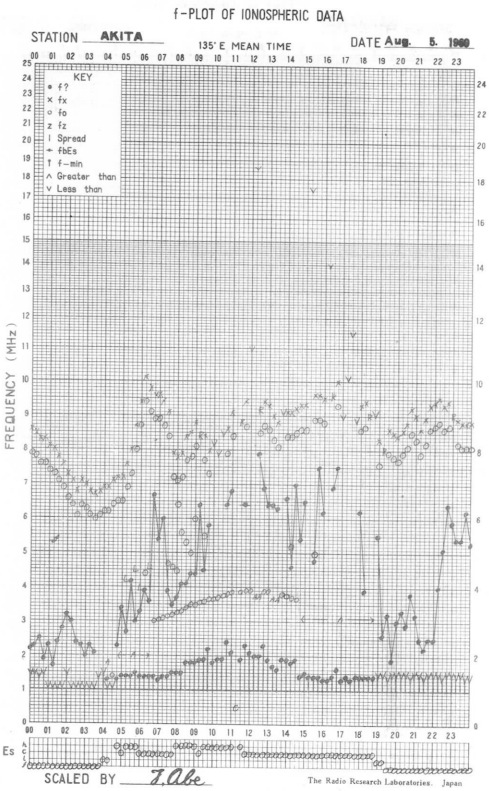

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE AUG. 4, 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

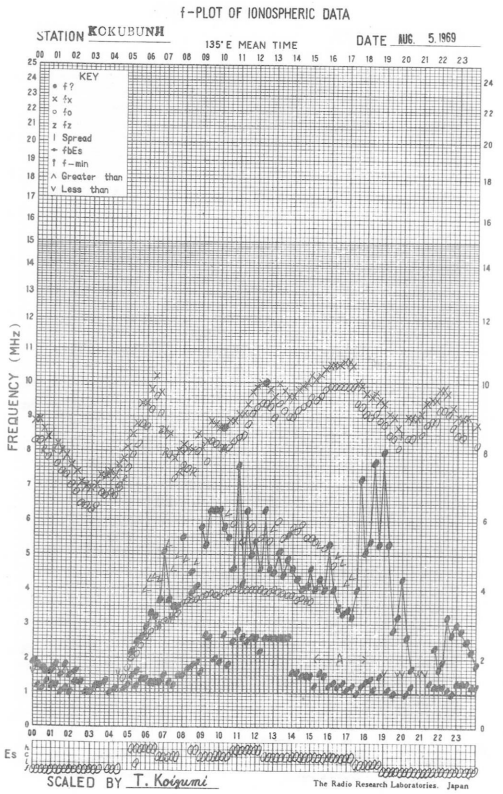

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Aug. 4, 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan

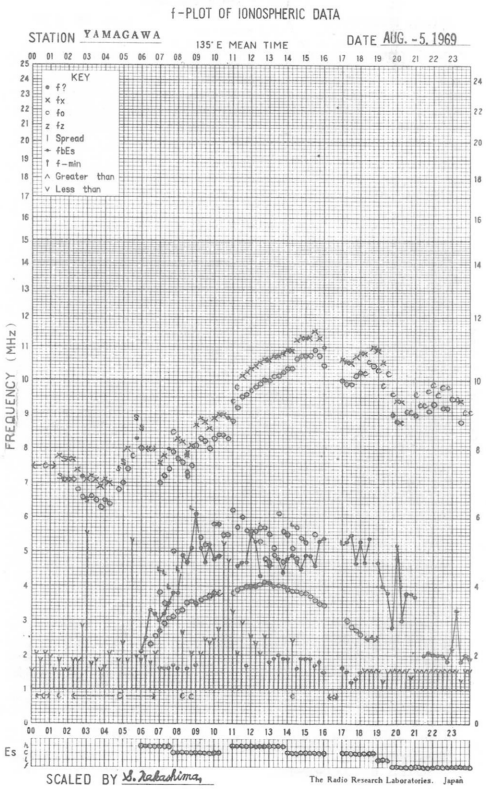

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE AUG. 4, 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE AUG. 4, 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE AUG. 5. 1969
KEY
* f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Aug. 5. 1969
KEY
* f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE AUG. 5. 1969
KEY
* f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135° E MEAN TIME
DATE AUG. -5. 1969
KEY
* f?
× fx
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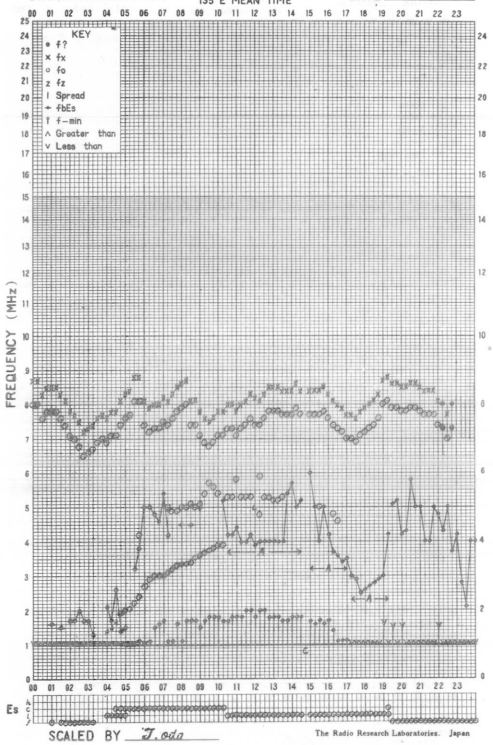
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 6.1969



SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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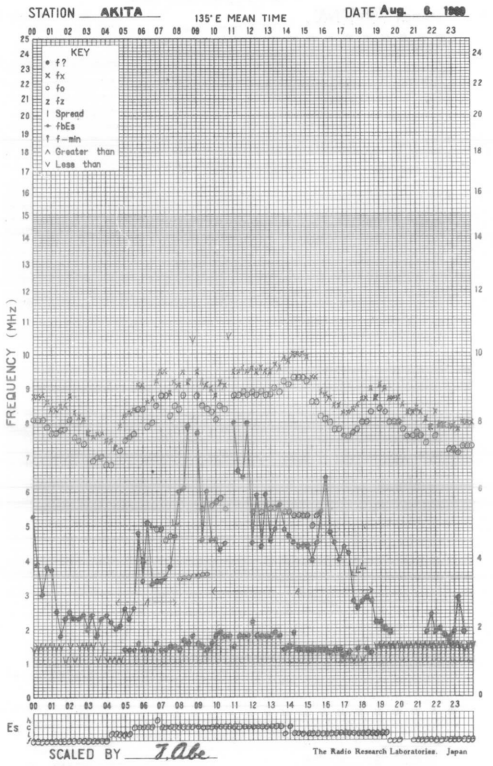

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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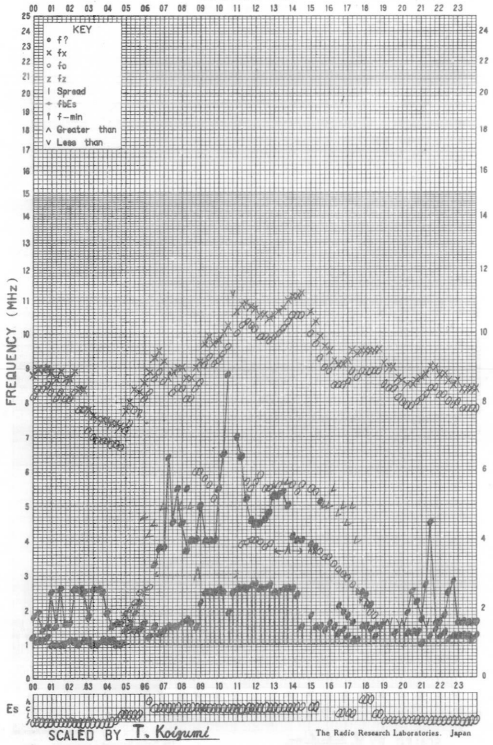

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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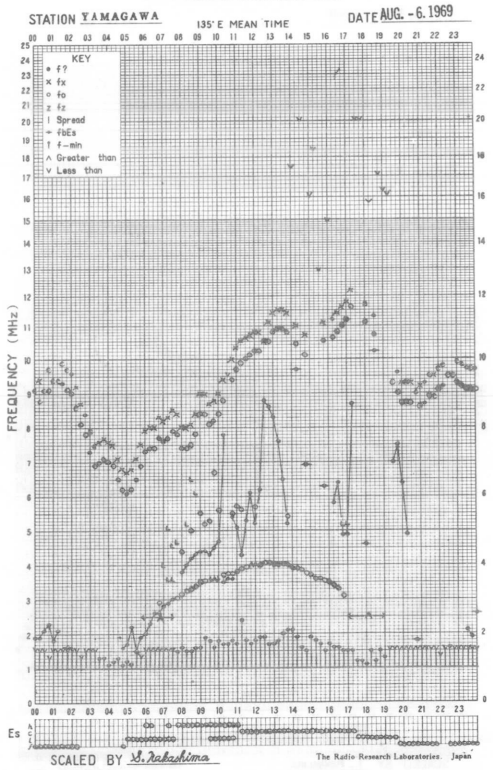
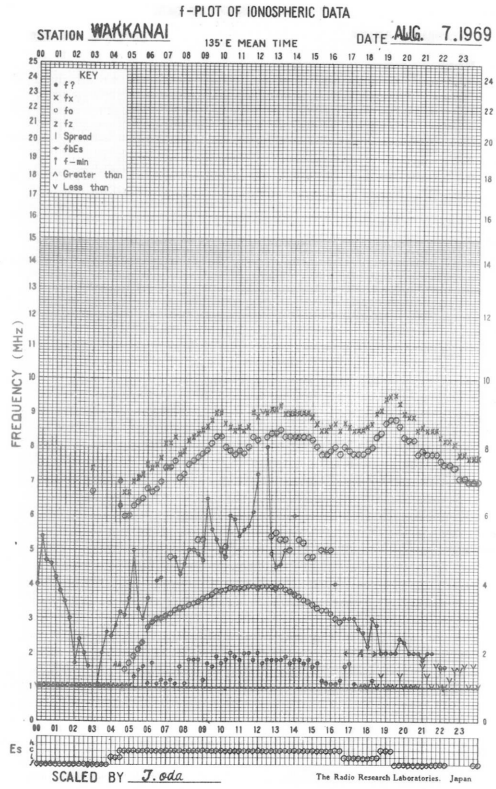


SCALED BY S. Takashima

The Radio Research Laboratories. Japan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DATE AUG. 7.1969
KEY
FREQUENCY (MHz)
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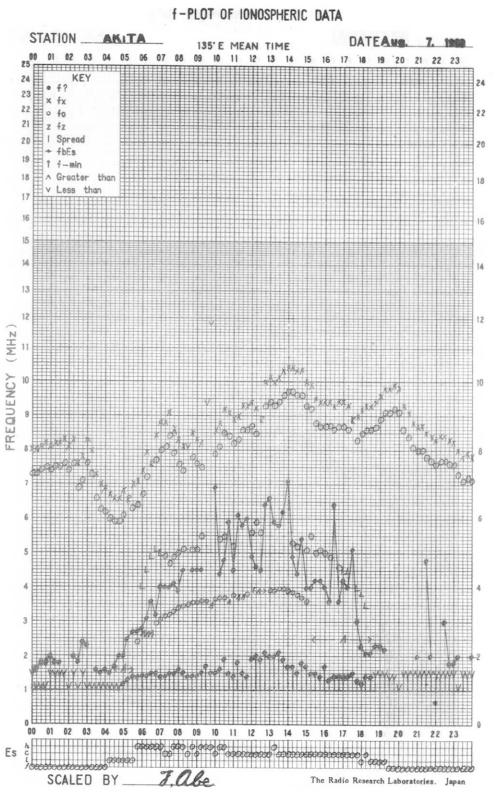
SCALED BY J. oda
The Radio Research Laboratories. Japan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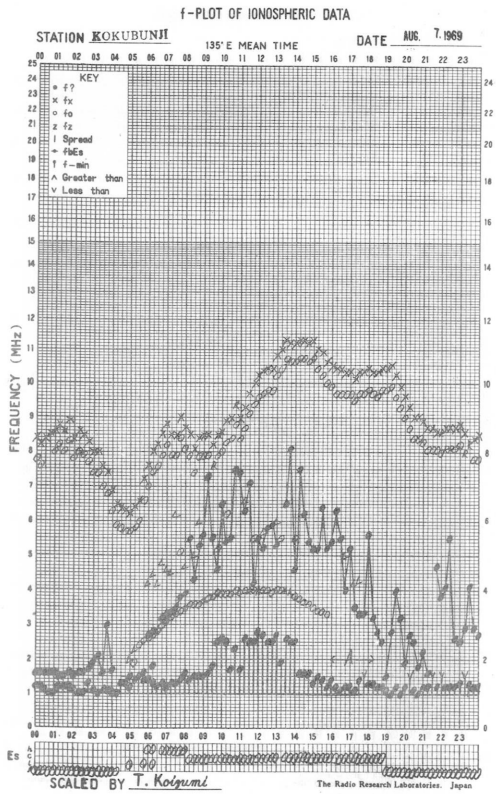
The Radio Research Laboratories. Japan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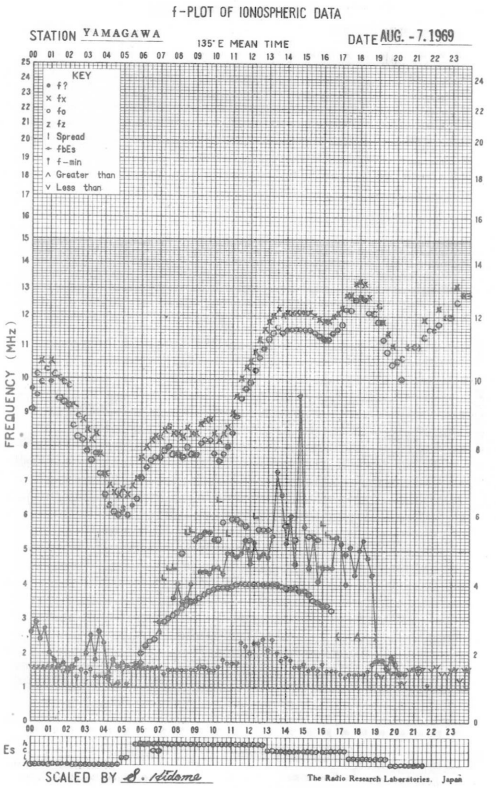
The Radio Research Laboratories. Japan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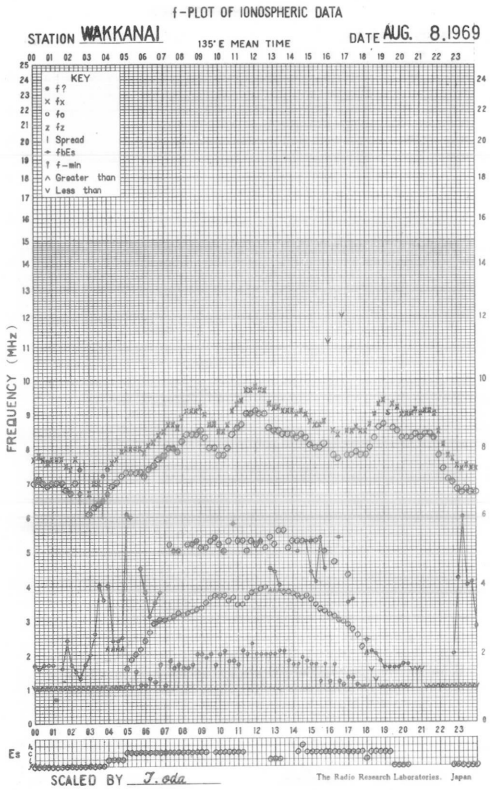
SCALED BY S. Kitsuma
The Radio Research Laboratories. Japan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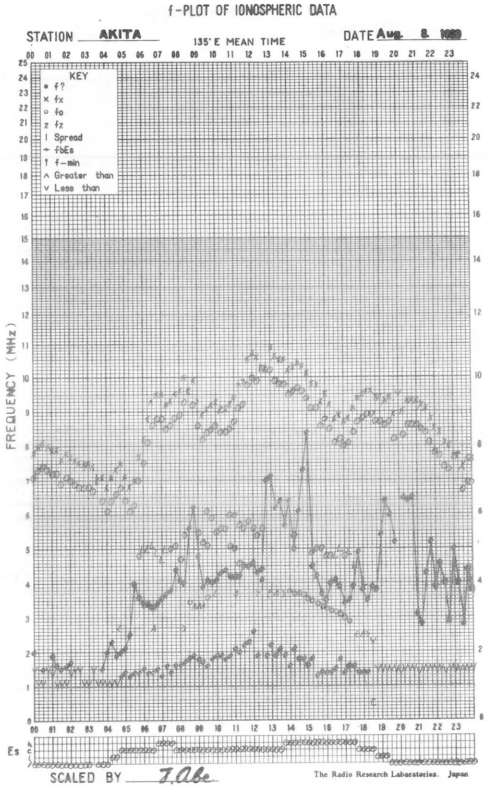
SCALED BY T. Oda
The Radio Research Laboratories. Japan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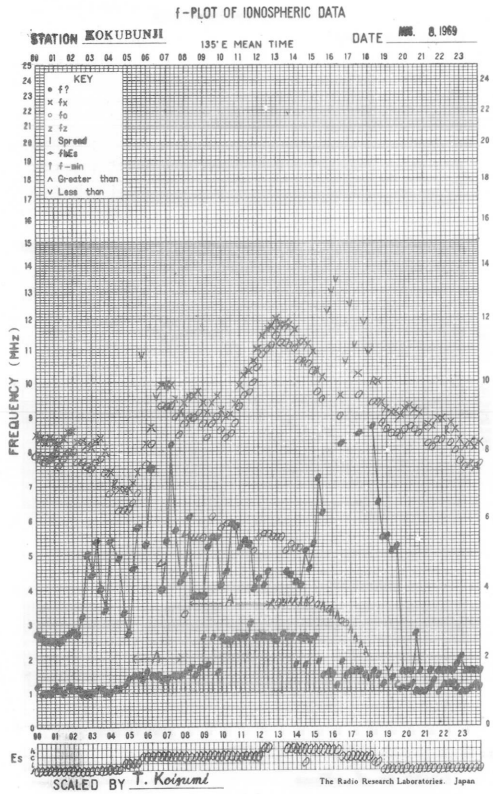
The Radio Research Laboratories. Japan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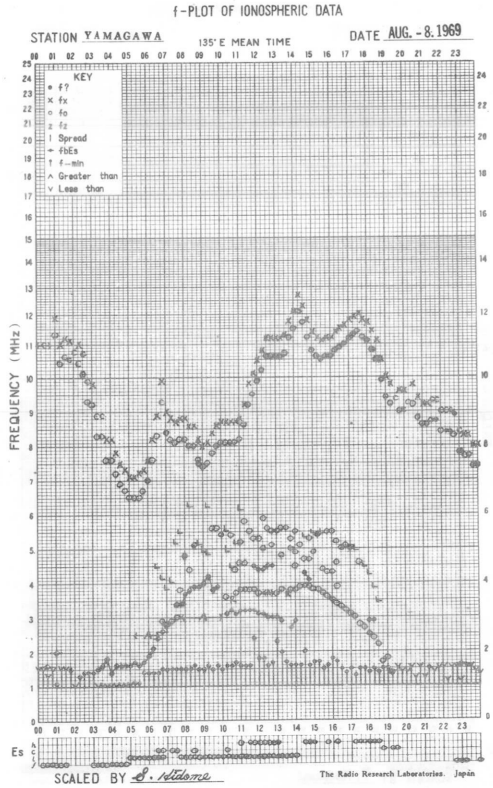
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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KEY
FREQUENCY (MHz)
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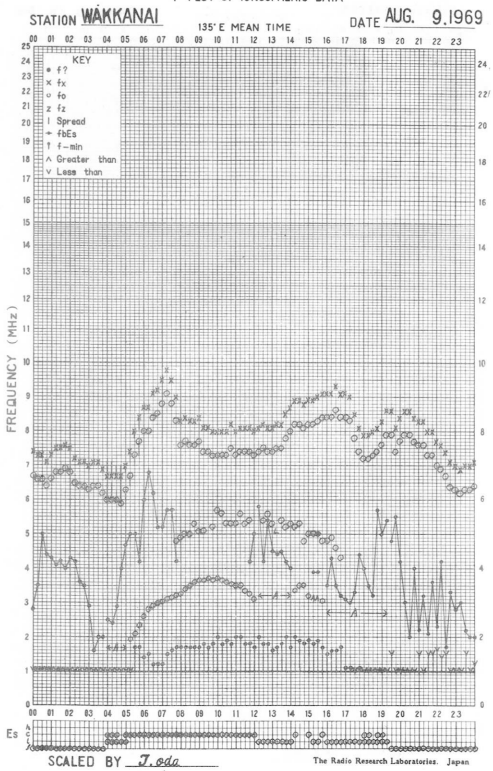
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 9.1969



SCALED BY T. Oda

The Radio Research Laboratories. Japan

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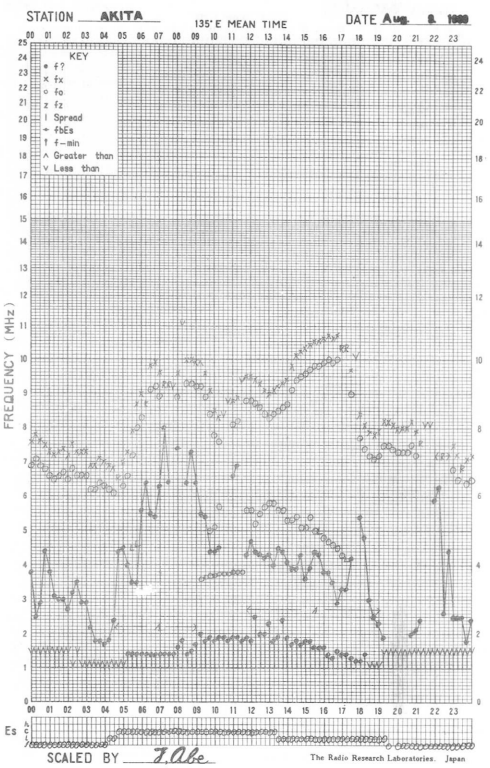

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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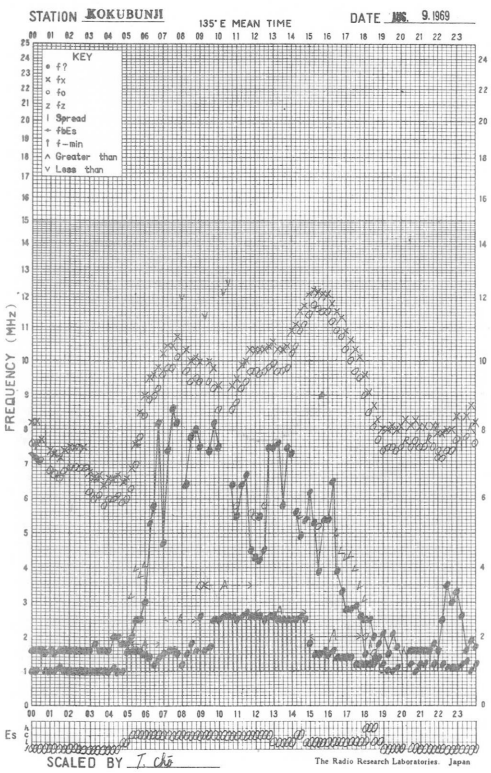

SCALED BY T. Cho

The Radio Research Laboratories. Japan

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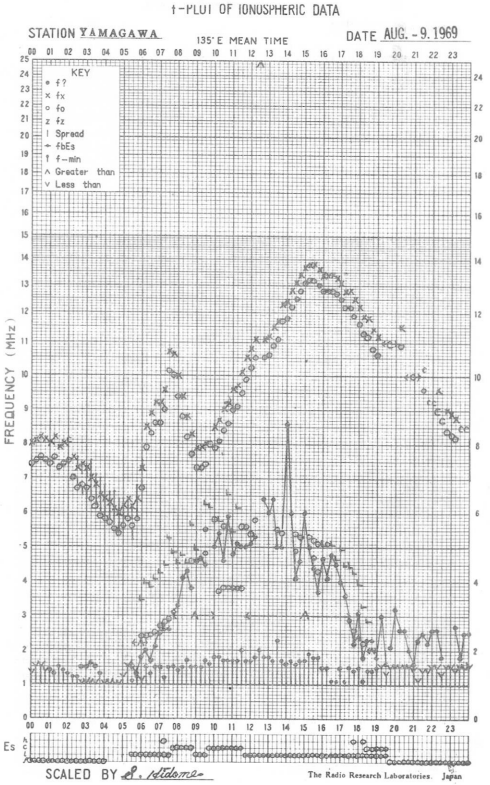

SCALED BY S. Nidome

The Radio Research Laboratories. Japan

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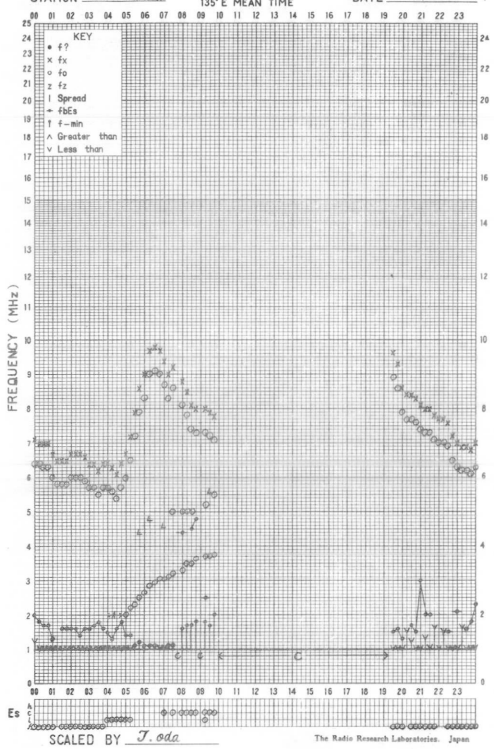

SCALED BY T. oda

The Radio Research Laboratories. Japan

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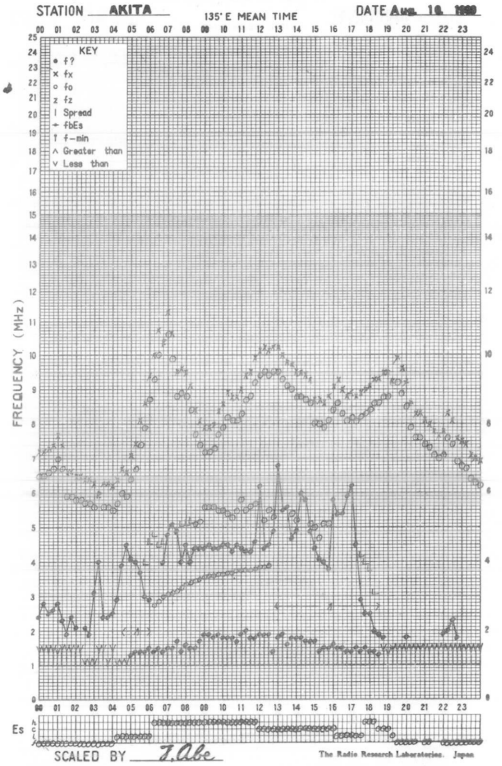

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The Radio Research Laboratories. Japan

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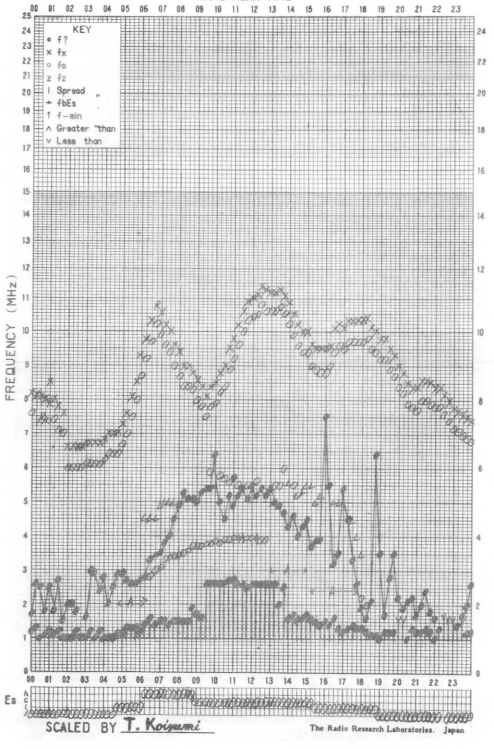

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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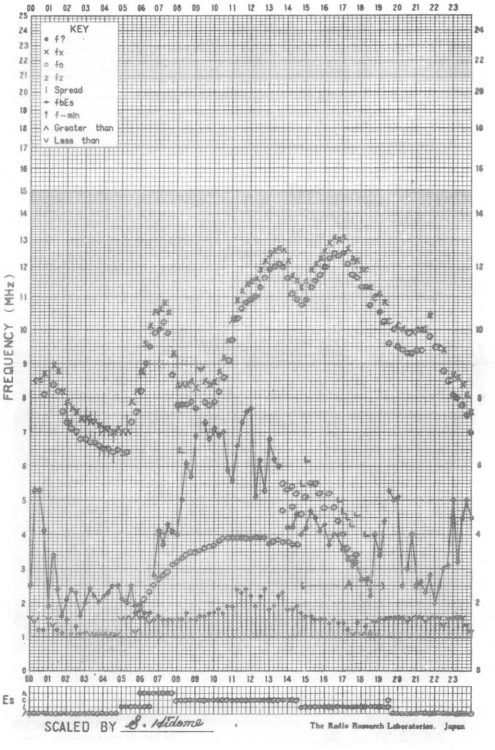
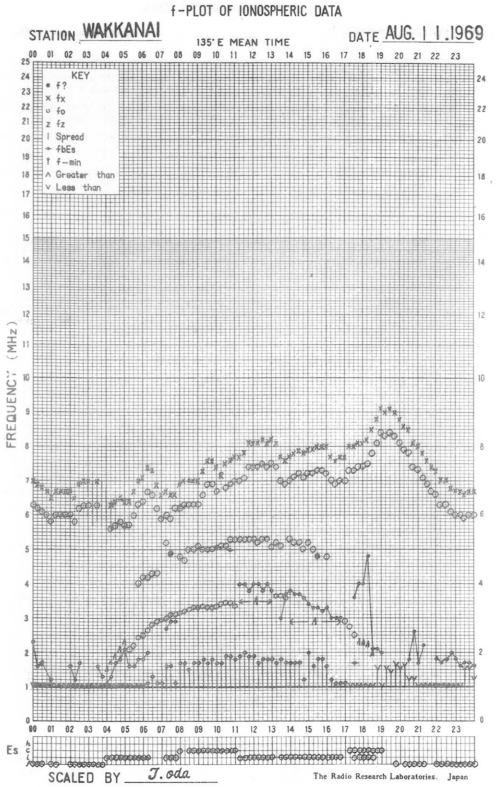


SCALED BY S. Akiyama

The Radio Research Laboratories. Japan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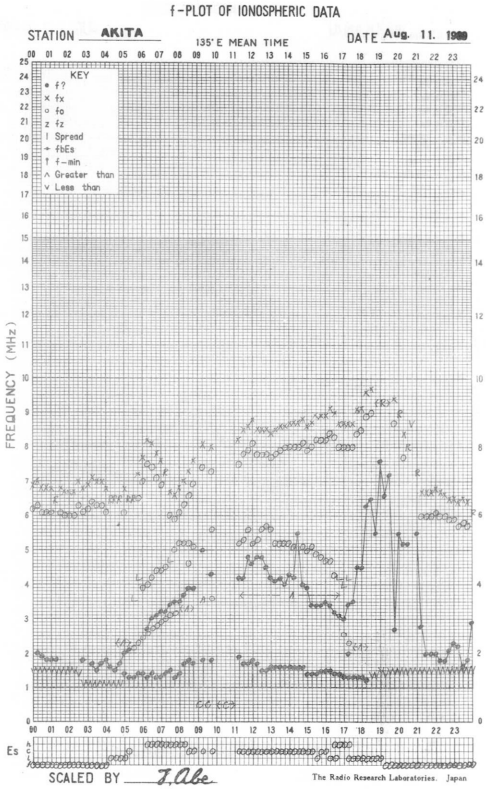
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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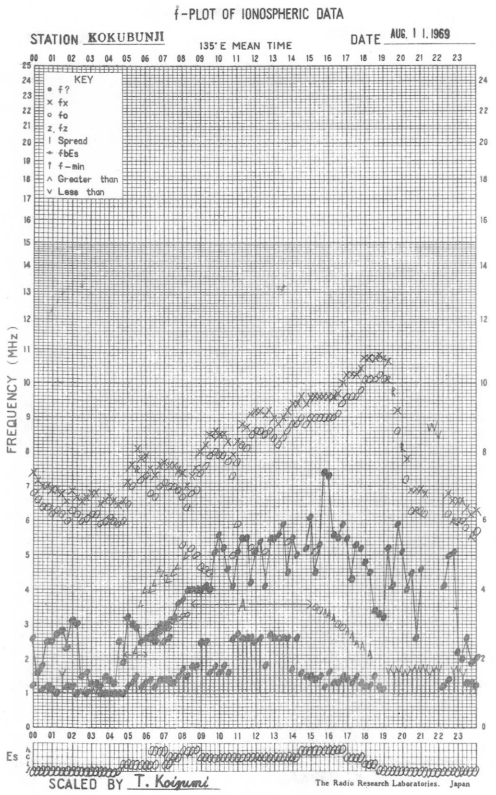
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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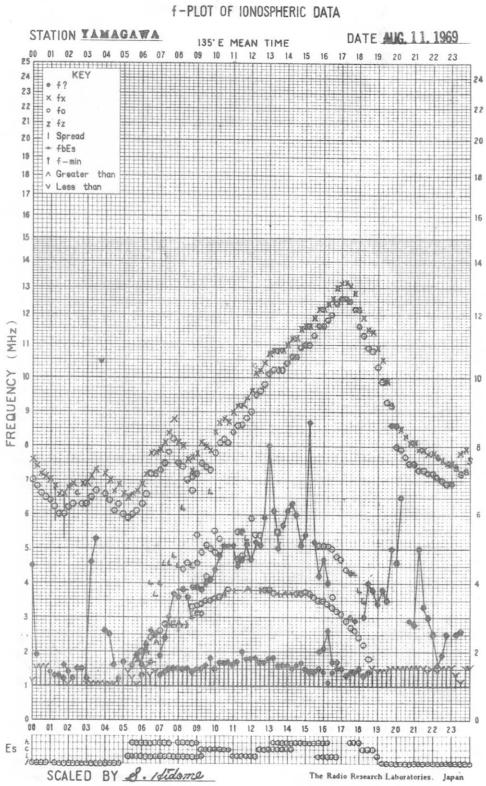
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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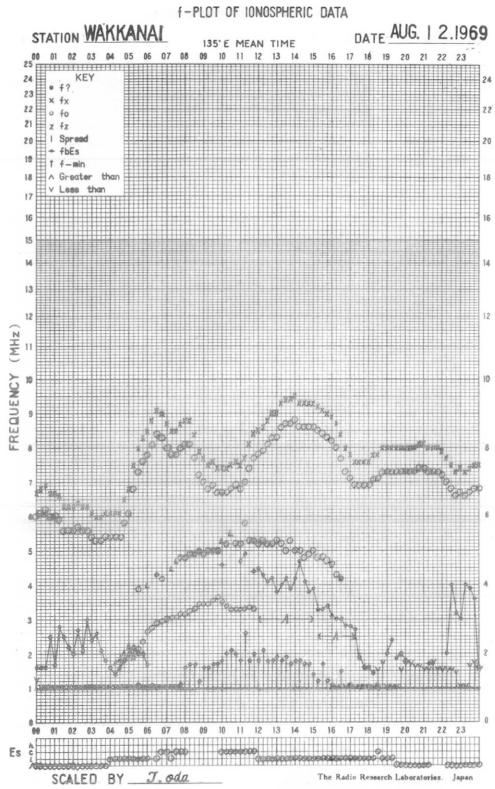
The Radio Research Laboratories. Japan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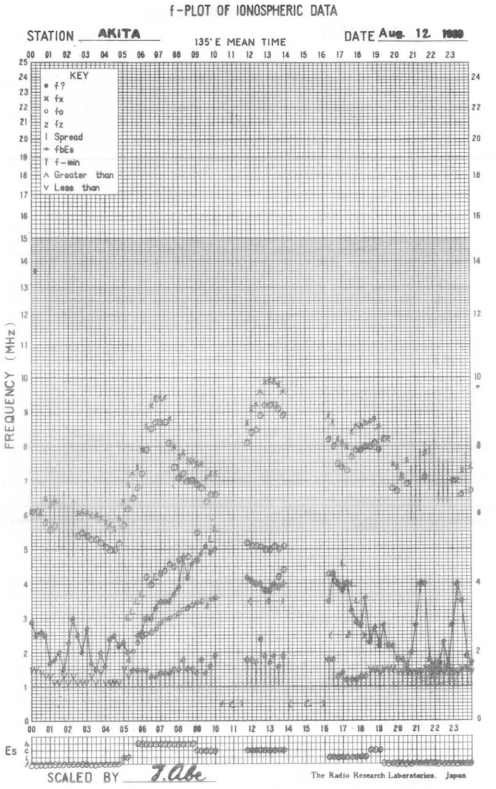
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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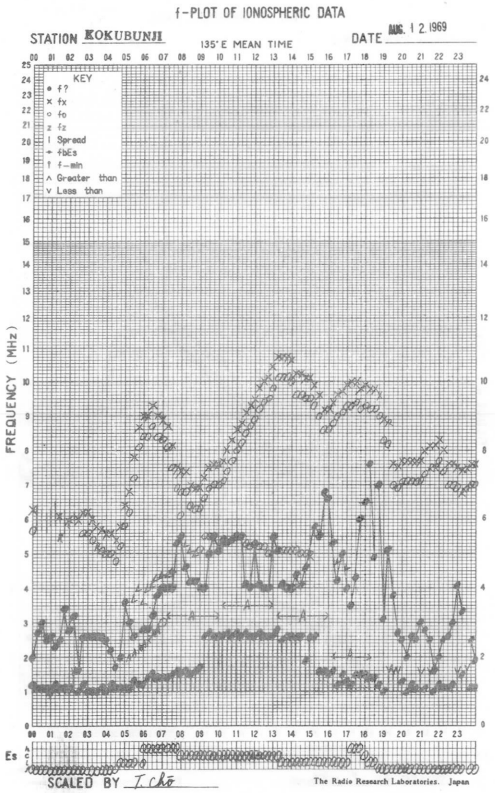
SCALED BY T. Abe
The Radio Research Laboratories. Japan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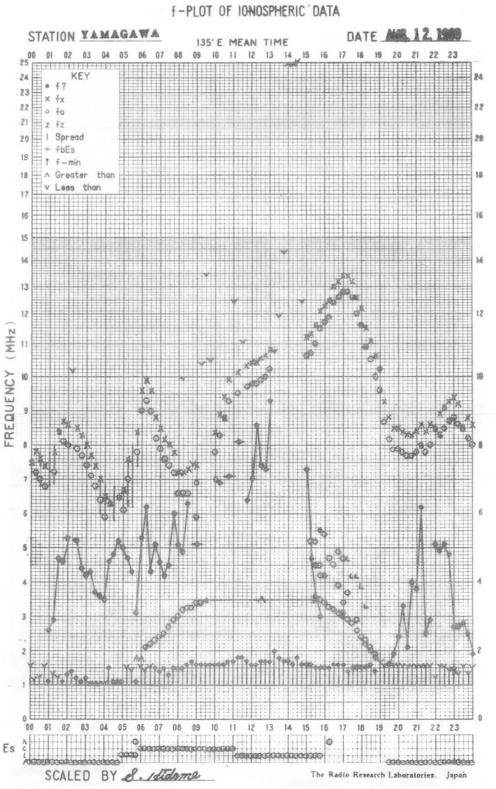
SCALED BY I. Chō
The Radio Research Laboratories. Japan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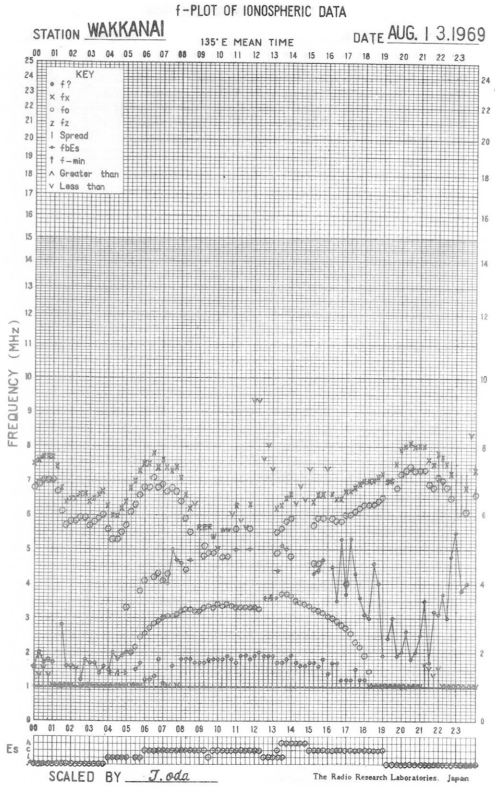
The Radio Research Laboratories. Japan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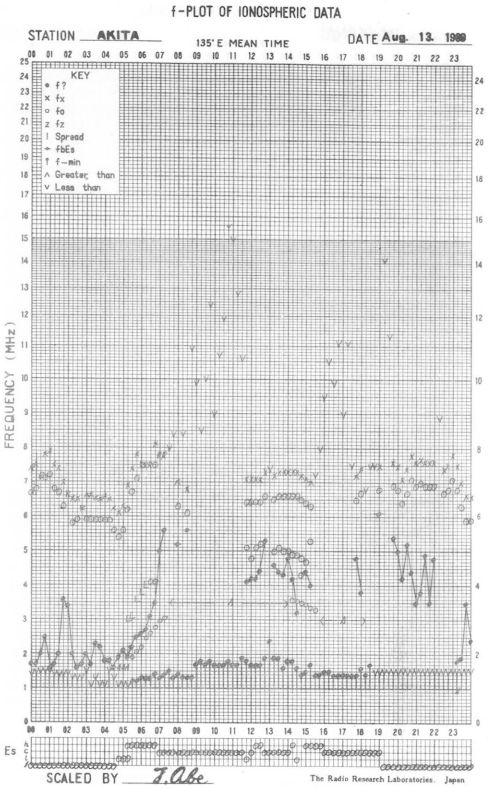
SCALED BY T. oda
The Radio Research Laboratories. Japan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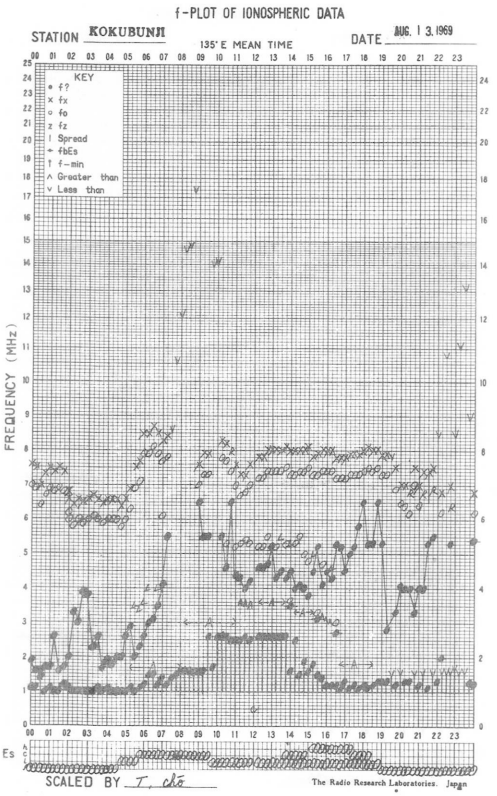
The Radio Research Laboratories. Japan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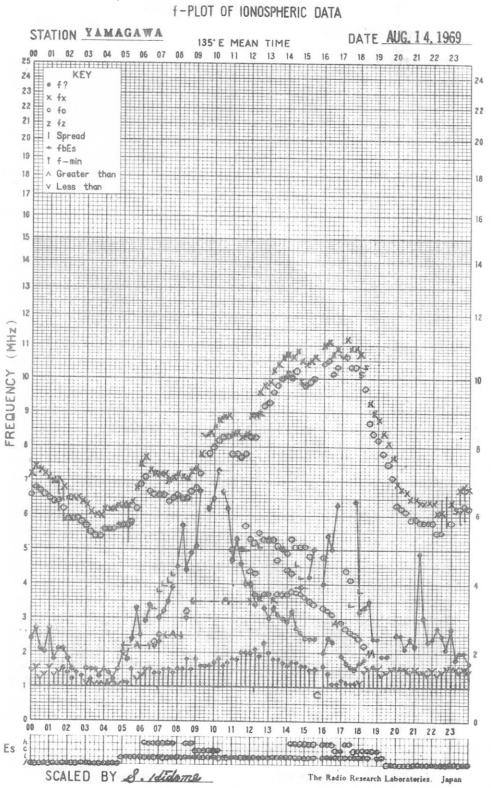
SCALED BY T. oda
The Radio Research Laboratories. Japan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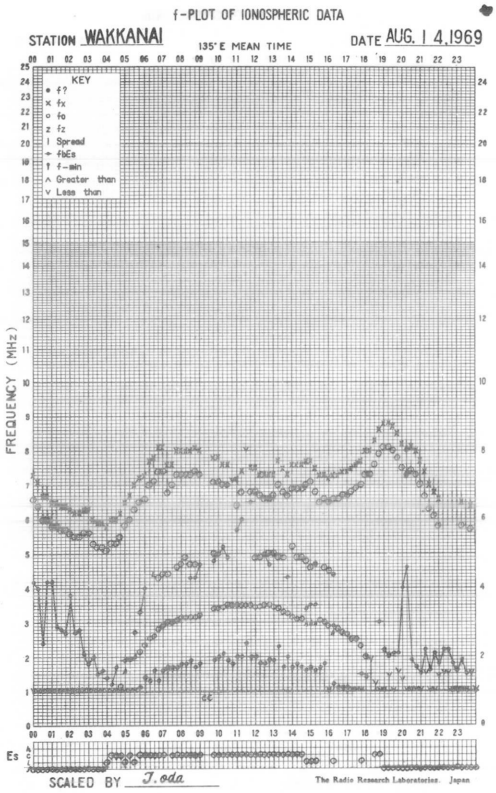
SCALED BY S. ishitomo
The Radio Research Laboratories. Japan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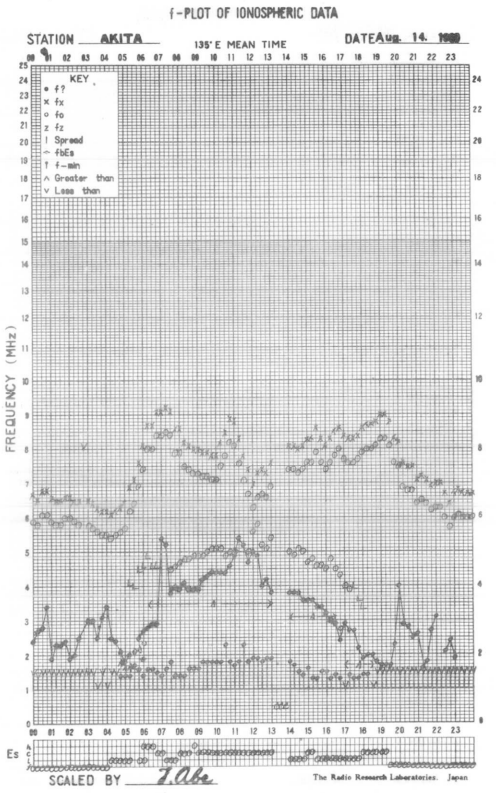
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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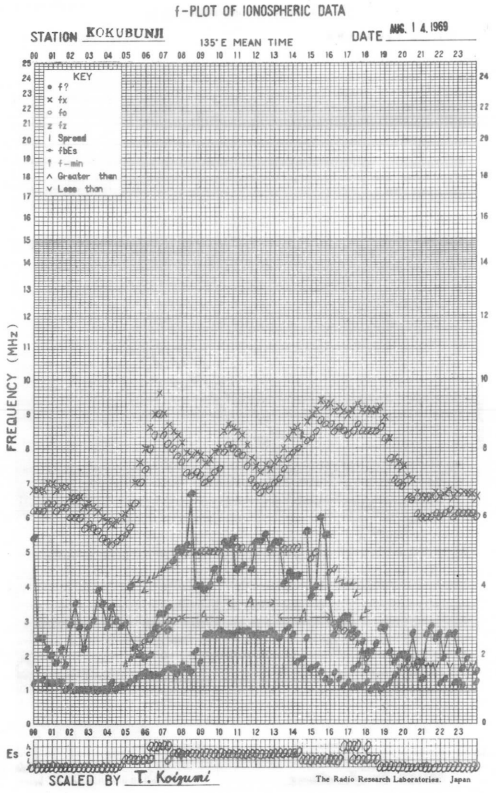
SCALED BY T. Abe
The Radio Research Laboratories. Japan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v Less than
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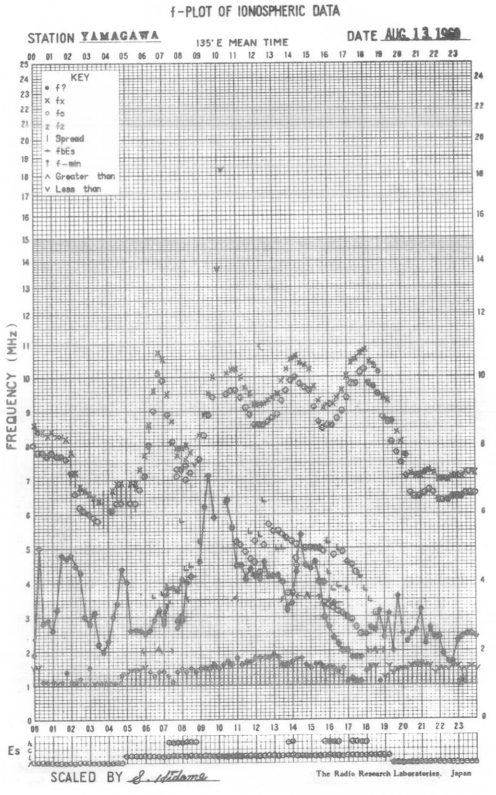
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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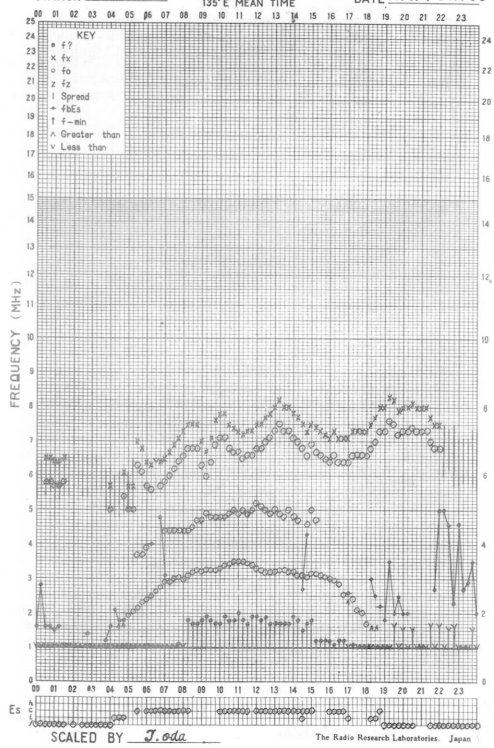
SCALED BY S. Ishidama
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 15.1969

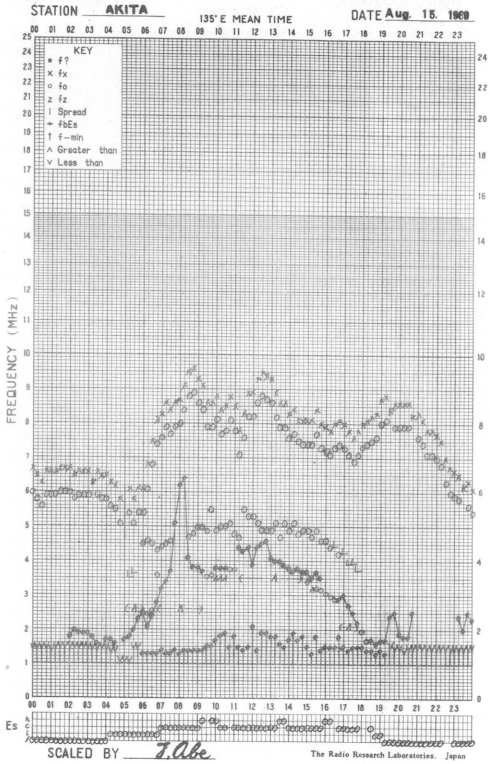


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Aug. 15. 1969

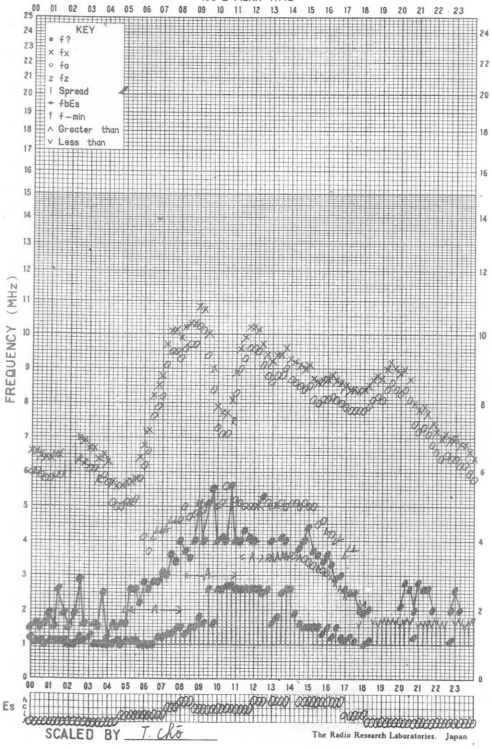


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE AUG. 15.1969

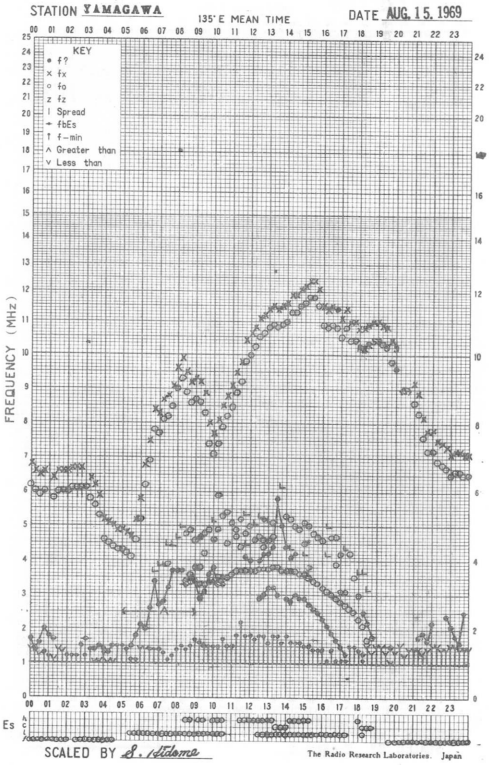


SCALED BY T. Cho

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE AUG. 15. 1969



SCALED BY S. Kitamura

The Radio Research Laboratories. Japan

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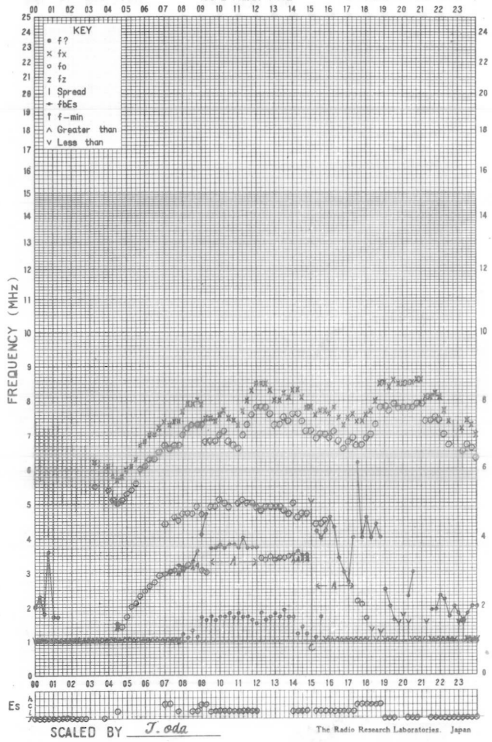

SCALED BY J. oda

The Radio Research Laboratories. Japan

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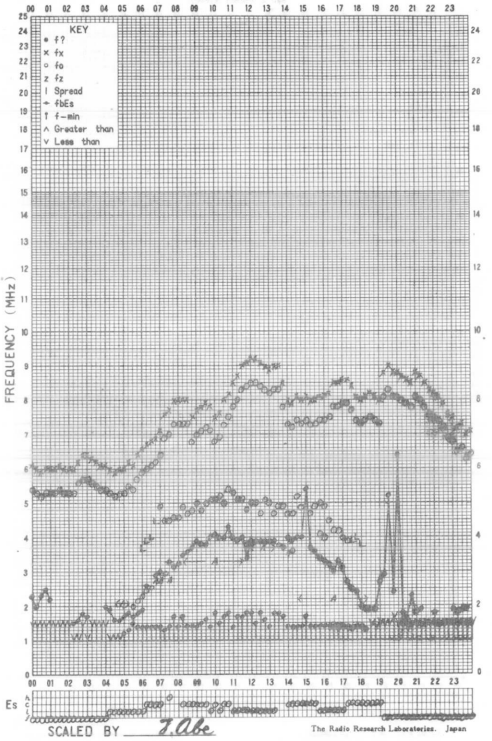

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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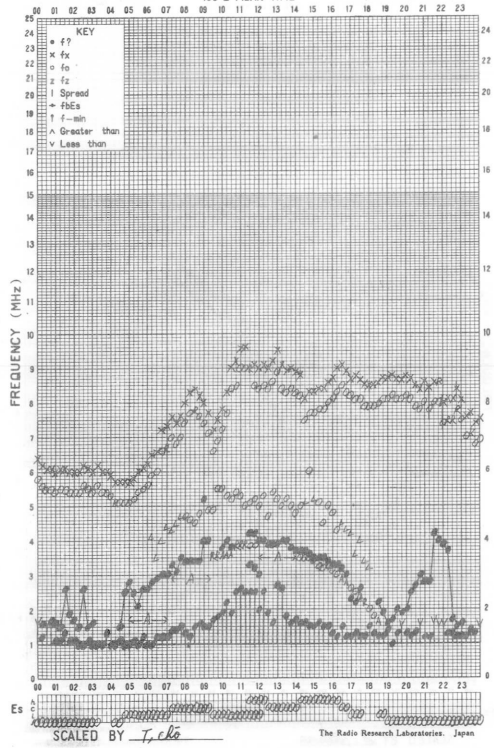
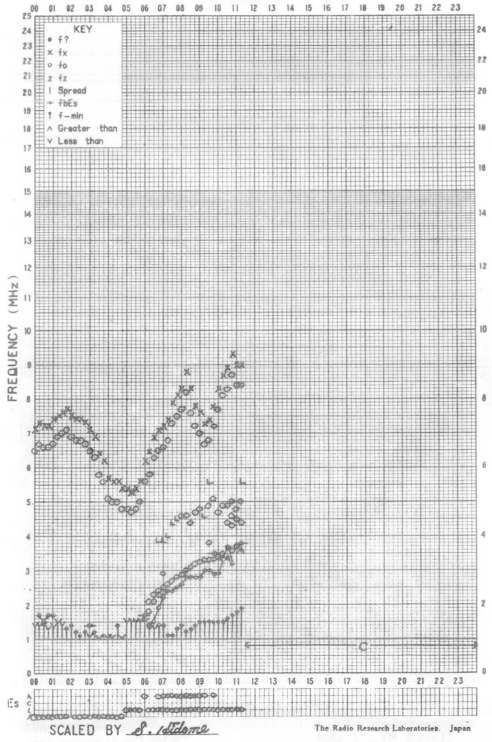


SCALED BY T. Oko

The Radio Research Laboratories. Japan

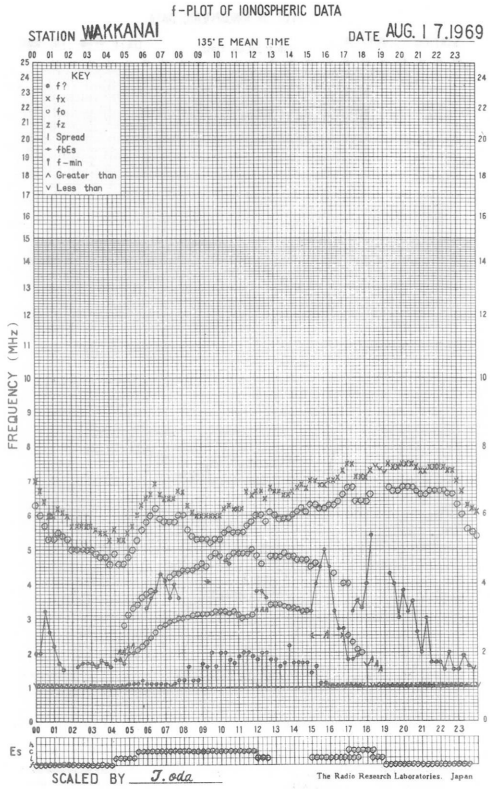
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE AUG. 16. 1969



SCALED BY S. Yoshioka

The Radio Research Laboratories. Japan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STATION WAKKANAI
135°E MEAN TIME
DATE AUG. 17.1969
KEY
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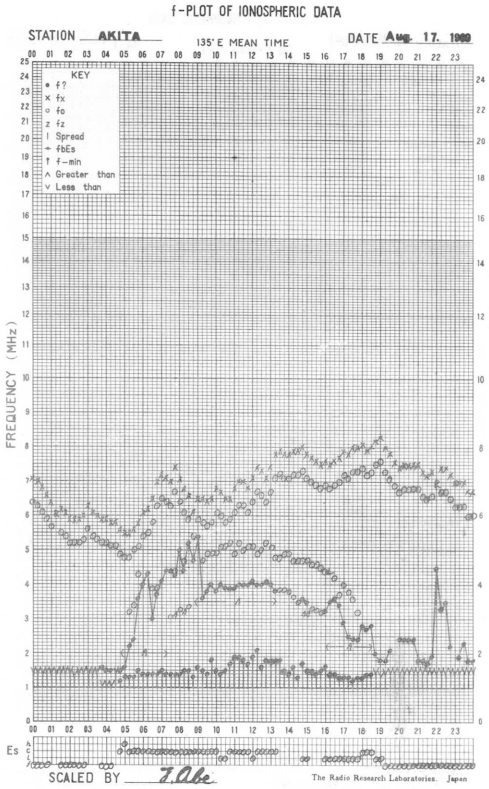
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan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DATE Aug. 17. 1969
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FREQUENCY (MHz)
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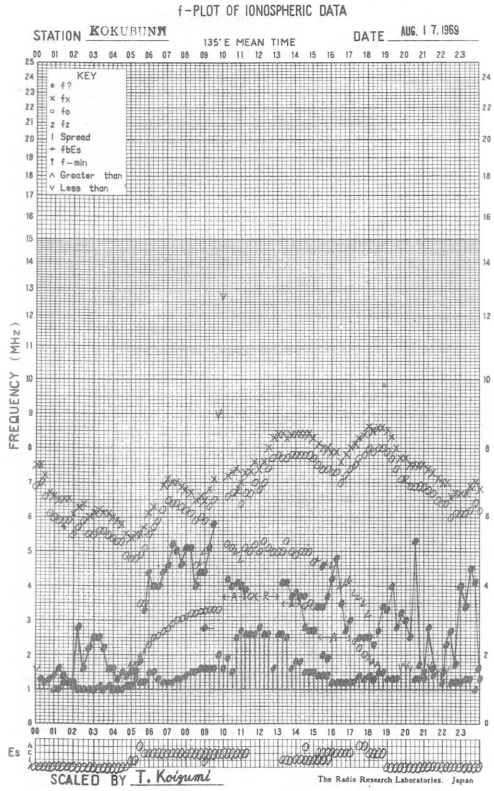
SCALED BY T. Abe
The Radio Research Laboratories. Japan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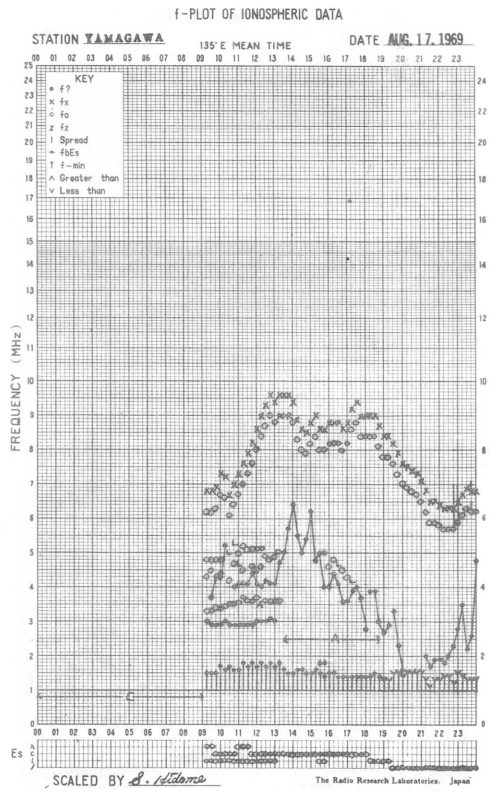
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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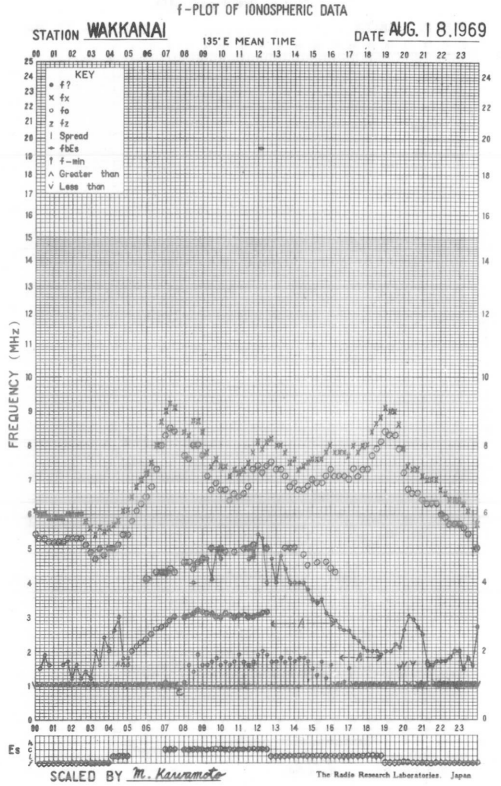
SCALED BY S. Iidoma
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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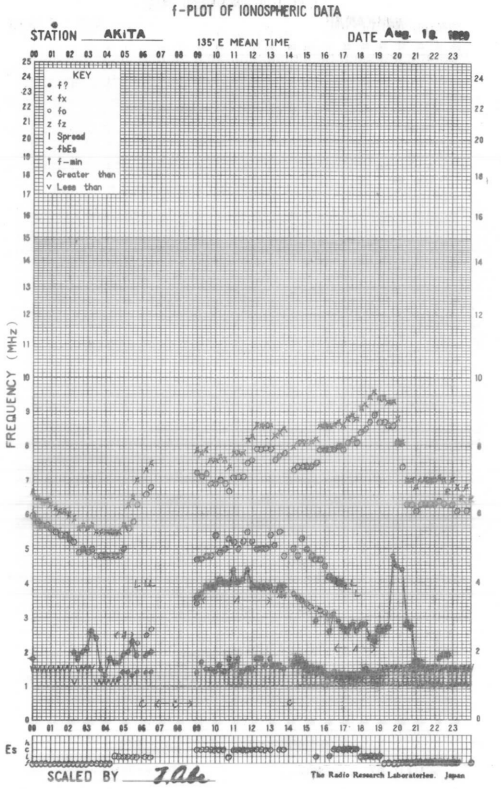
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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DATE Aug. 18. 1969
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FREQUENCY (MHz)
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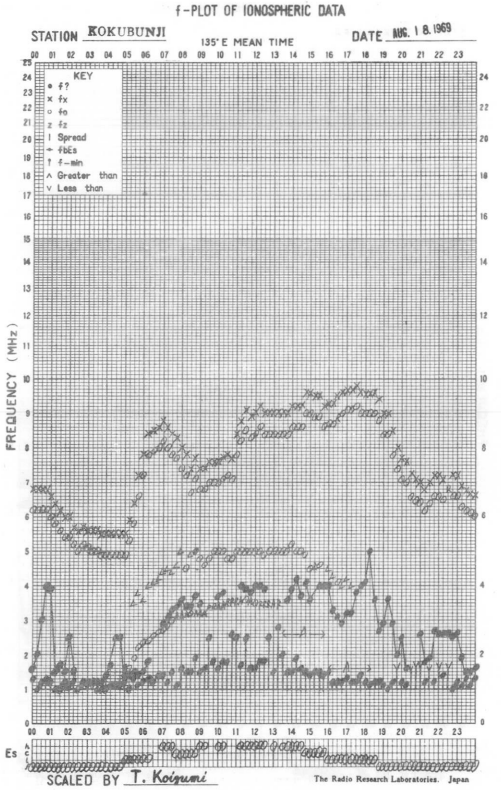
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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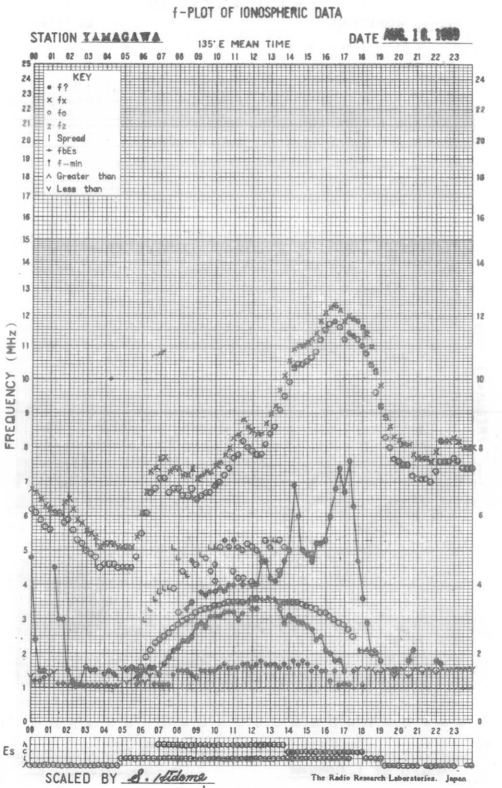
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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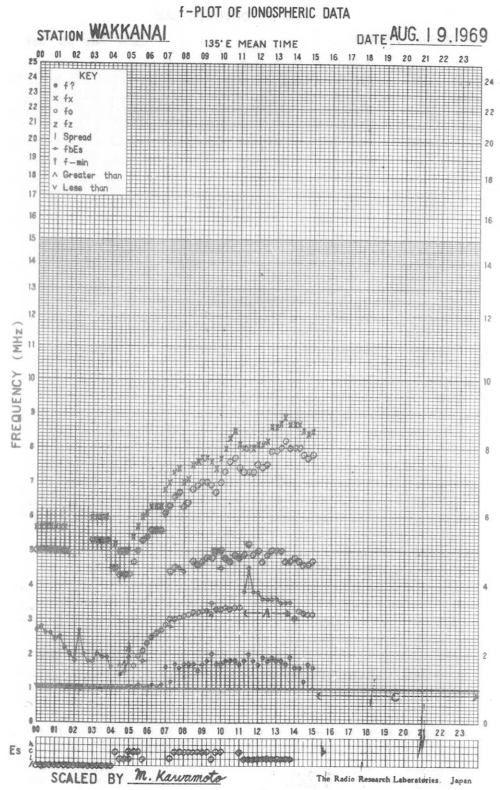
SCALED BY S. Hidaka
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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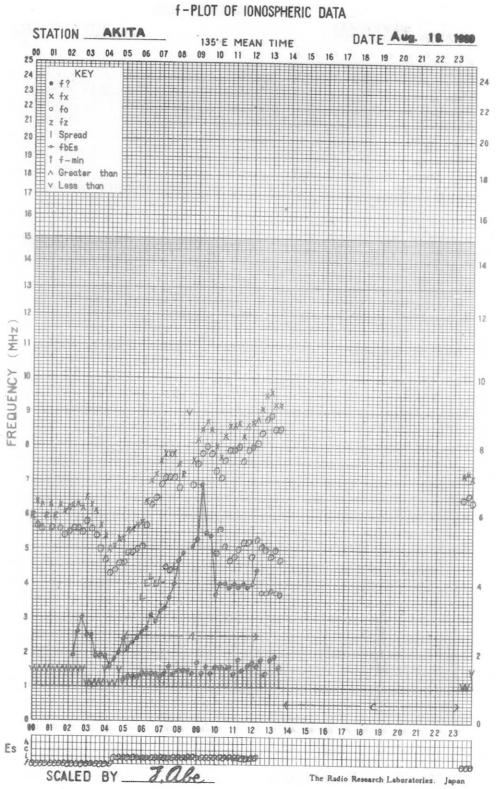
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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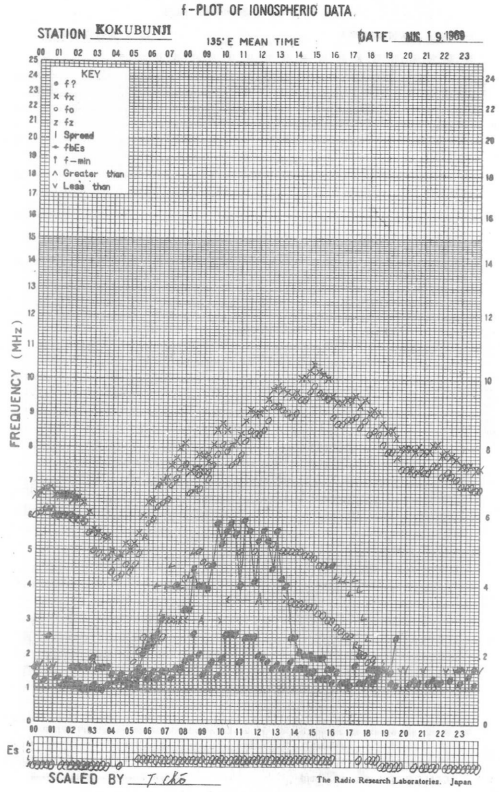
SCALED BY T. Abe
The Radio Research Laboratories. Japan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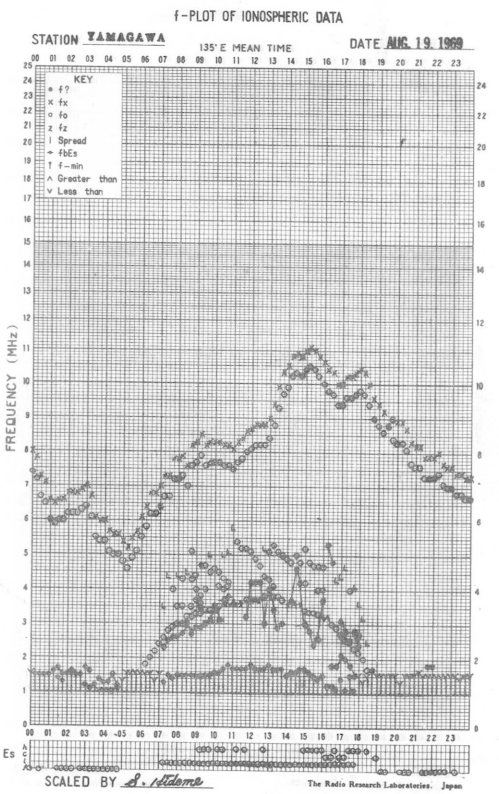
SCALED BY T. Ichō
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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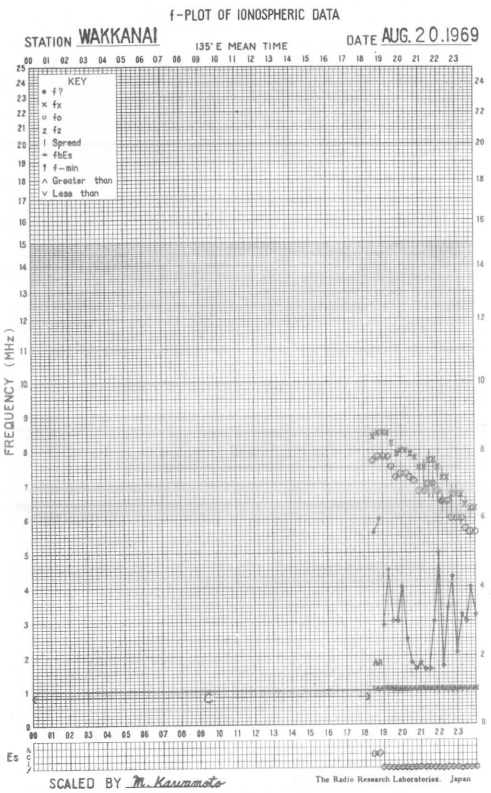
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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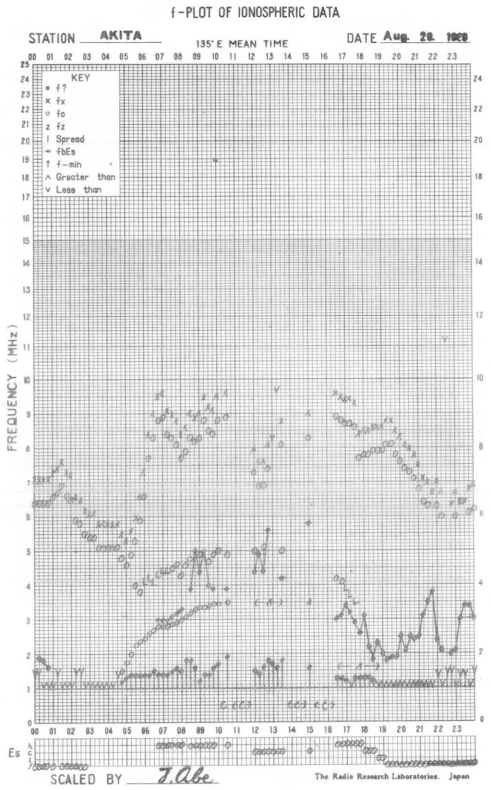
SCALED BY M. Kazumoto
The Radio Research Laboratories. Japan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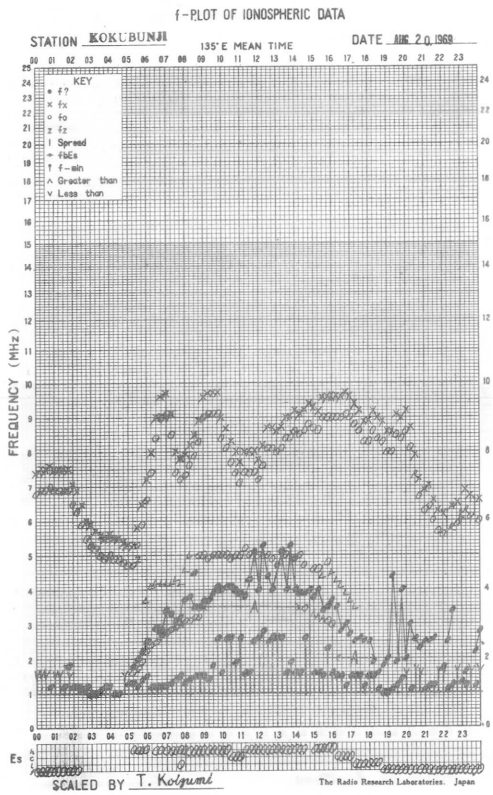
SCALED BY T. Abe
The Radio Research Laboratories. Japan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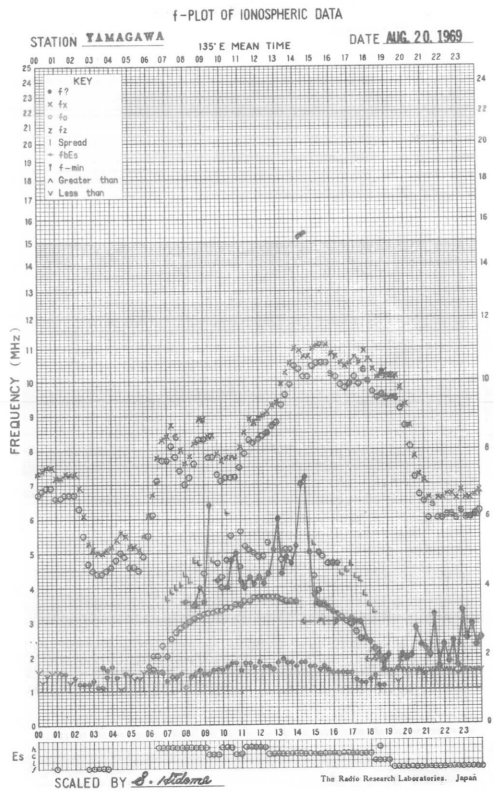
SCALED BY T. Kotyuni
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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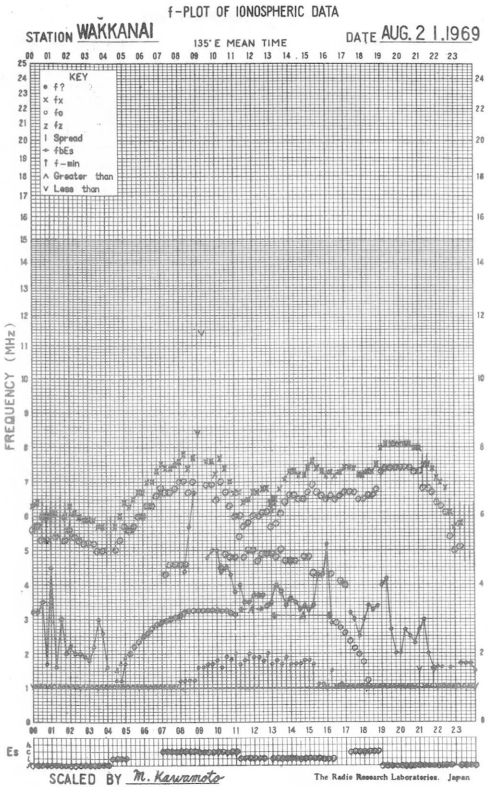
SCALED BY S. Kidoma
The Radio Research Laboratories. Japan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DATE AUG. 2 1, 1969
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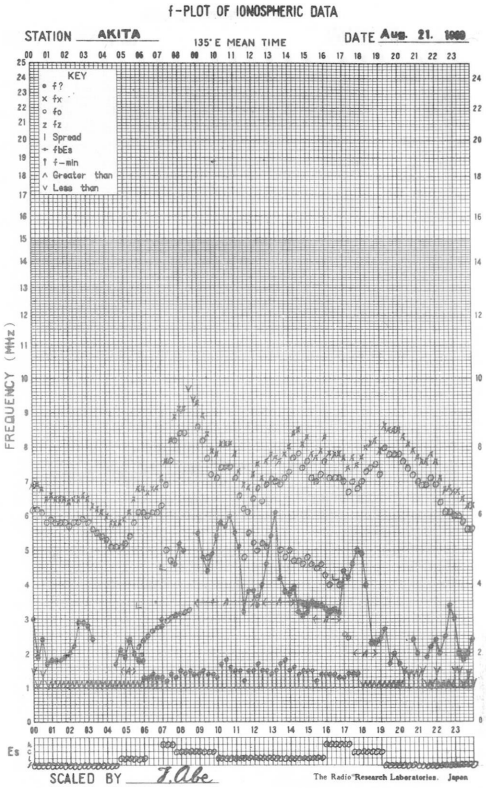
The Radio Research Laboratories. Japan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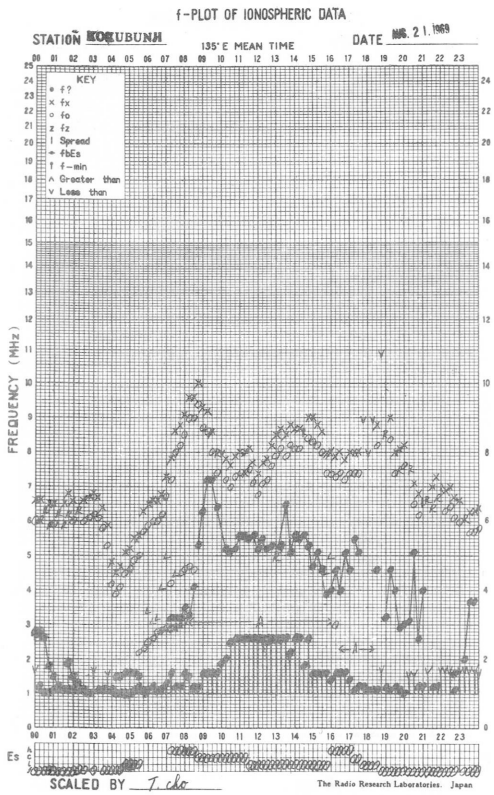
SCALED BY T. Abe
The Radio Research Laboratories. Japan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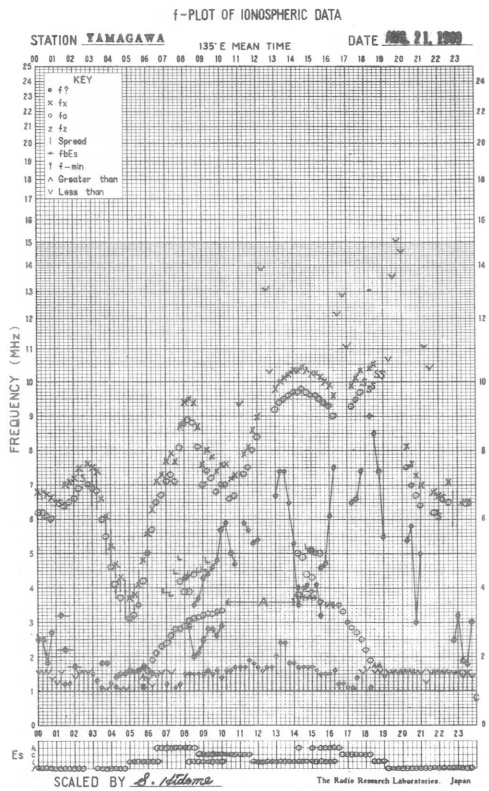
The Radio Research Laboratories. Japan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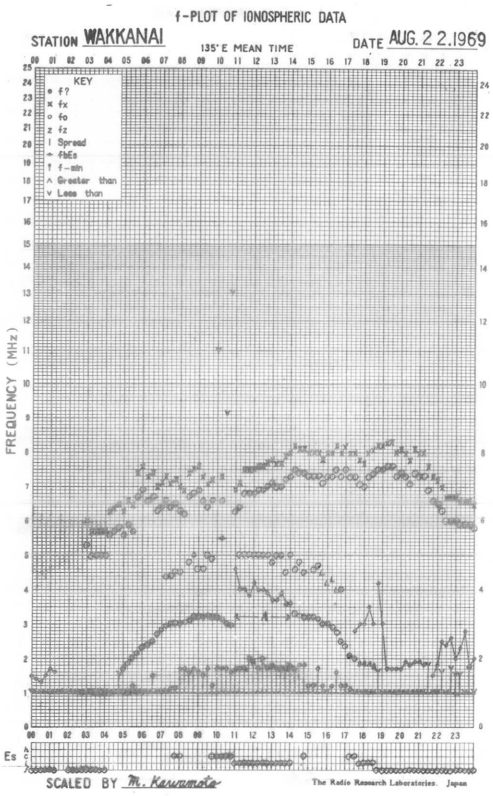
The Radio Research Laboratories. Japan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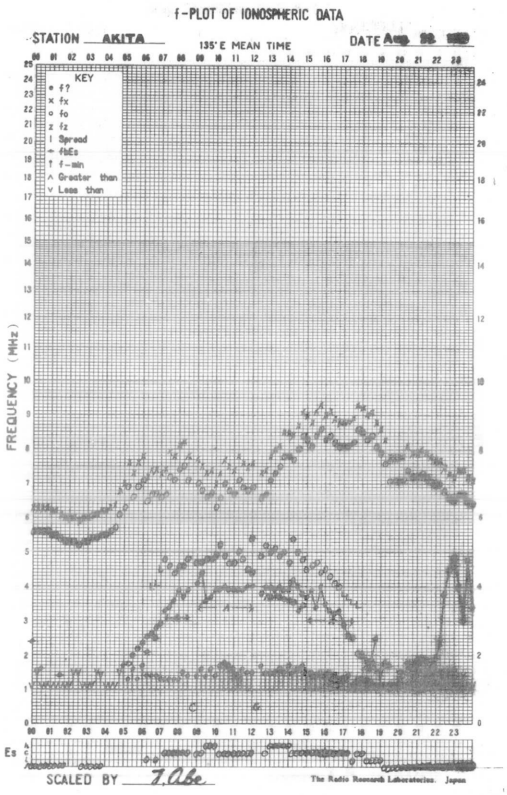
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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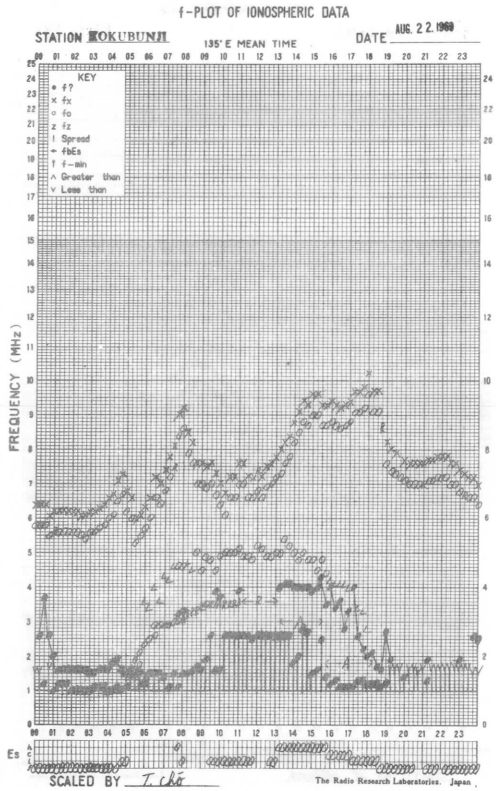
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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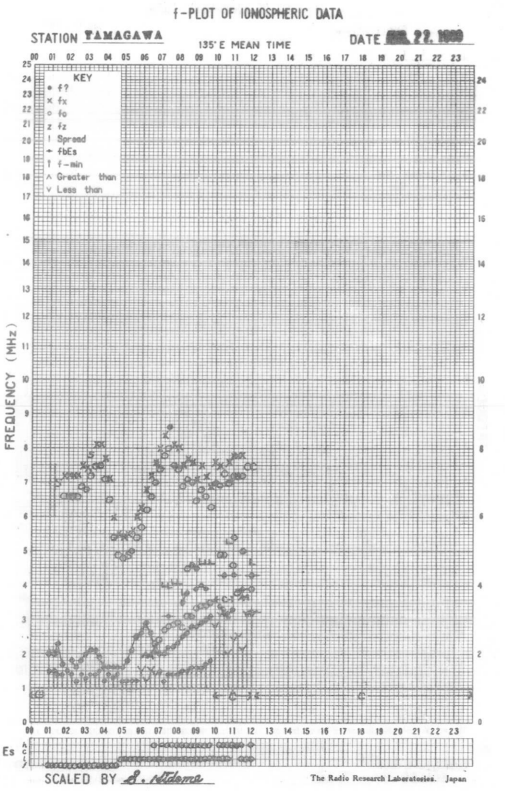
SCALED BY T. Ichi
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135°E MEAN TIME
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FREQUENCY (MHz)
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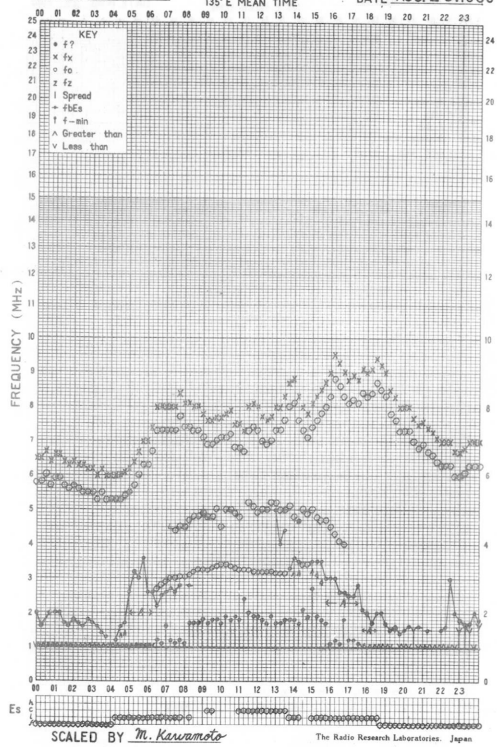
SCALED BY A. Ikema
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

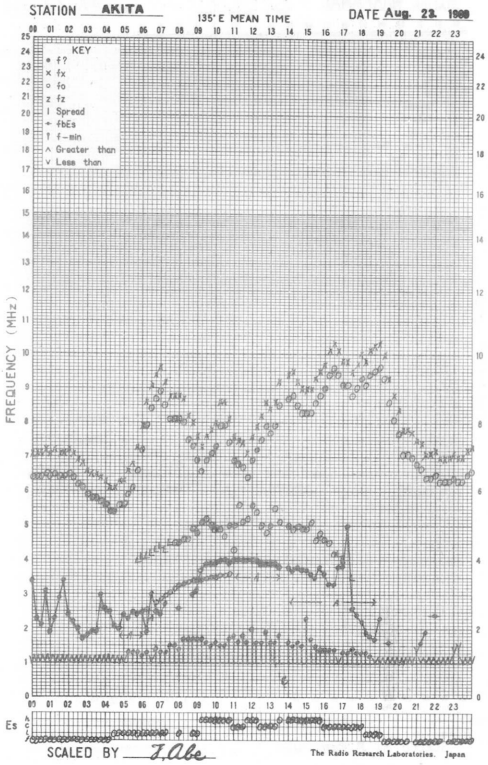
STATION WAKKANAI 135° E MEAN TIME DATE AUG. 23. 1969



SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Aug. 23. 1969



SCALED BY T. Abe The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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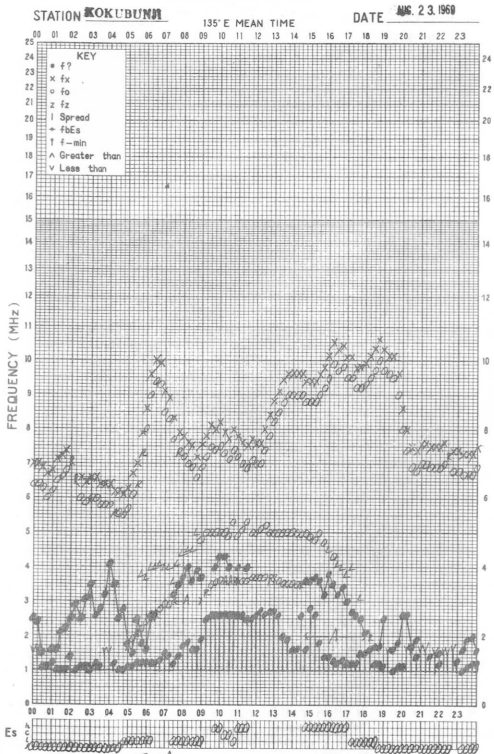

SCALED BY T. Cho The Radio Research Laboratories. Japan

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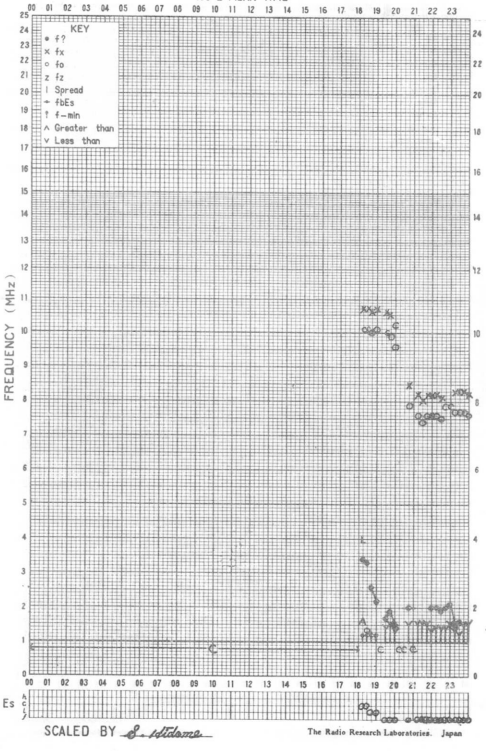
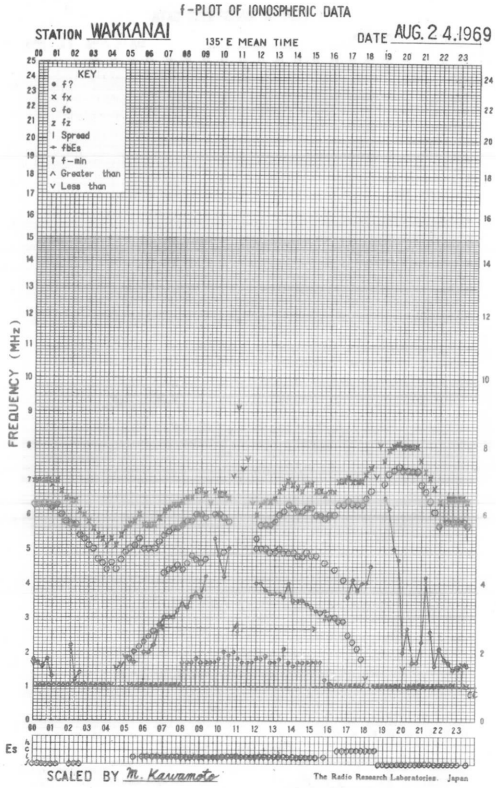


SCALED BY S. Ishidome The Radio Research Laboratories. Japan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135° E MEAN TIME
DATE AUG. 24, 1969
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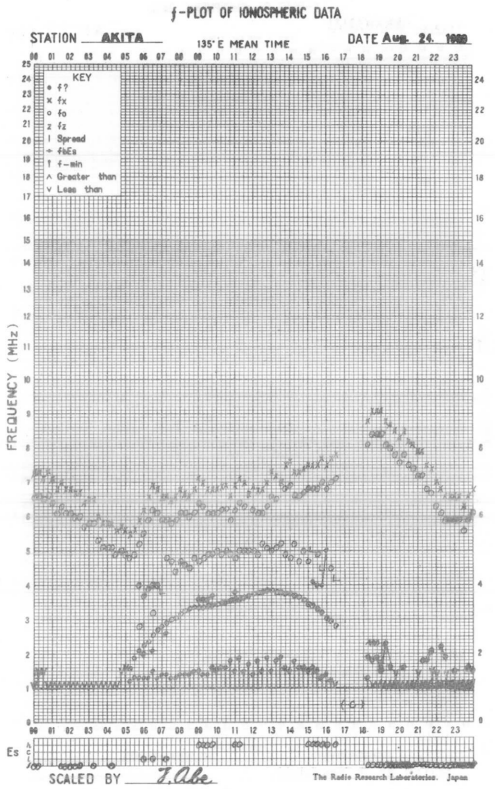
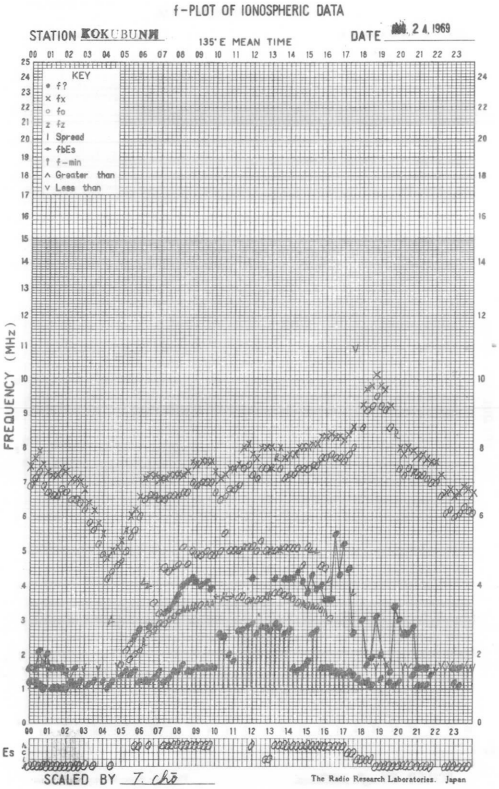
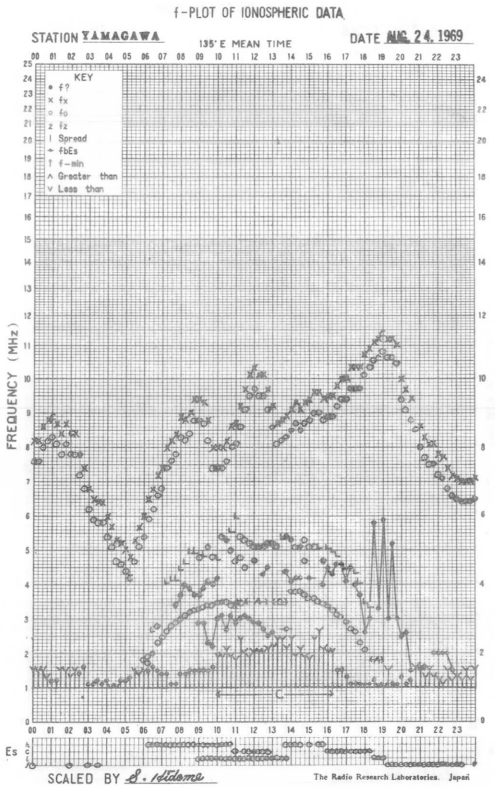
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Aug. 24, 1969
KEY
* f?
× fx
○ fo
z fz
I Spread
⇥ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE AUG. 24, 1969
KEY
* f?
× fx
○ fo
z fz
I Spread
⇥ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ichō
The Radio Research Laboratories. Japan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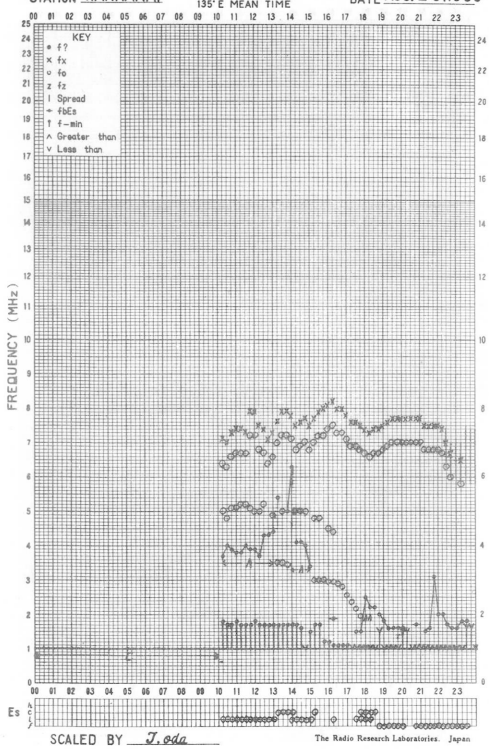
STATION YAMAGAWA
135° E MEAN TIME
DATE AUG. 24, 1969
KEY
* f?
× fx
○ fo
z fz
I Spread
⇥ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Ishidome
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 25.1969

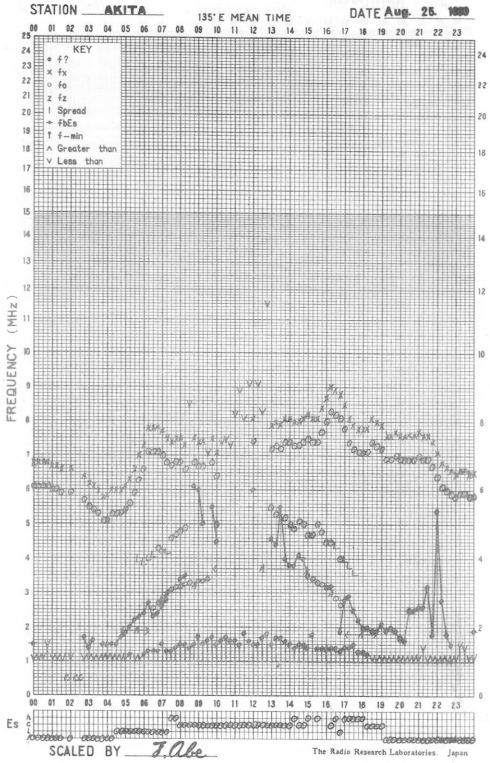


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Aug. 25. 1969



SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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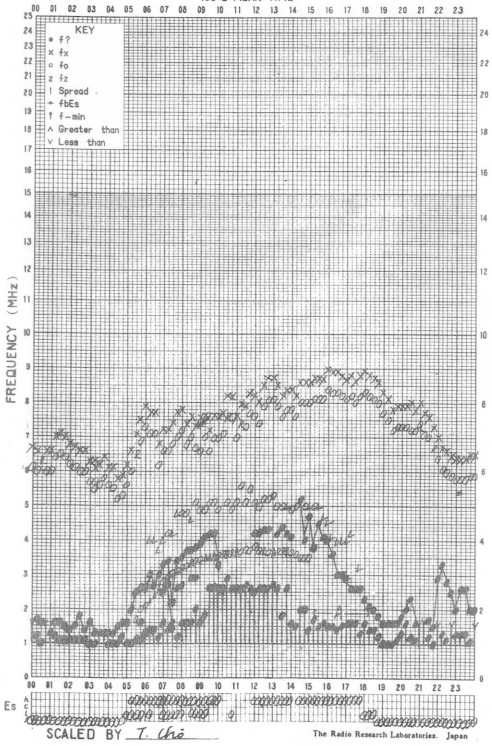

SCALED BY T. Iché

The Radio Research Laboratories. Japan

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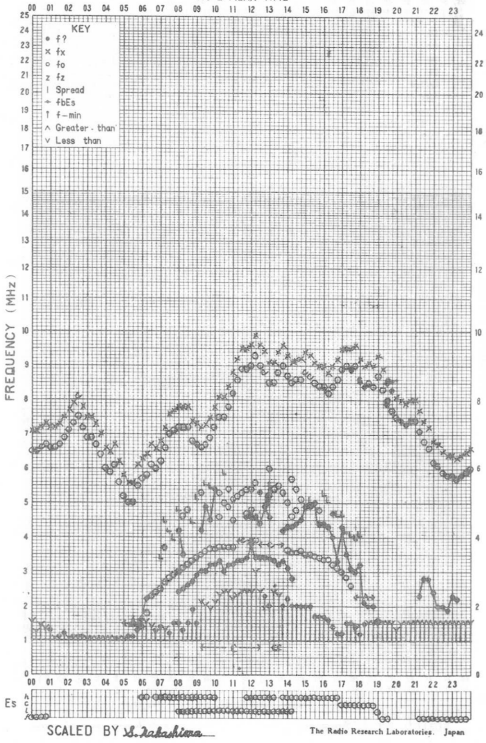
STATION YAMAGAWA 135°E MEAN TIME DATE AUG. 25. 1969

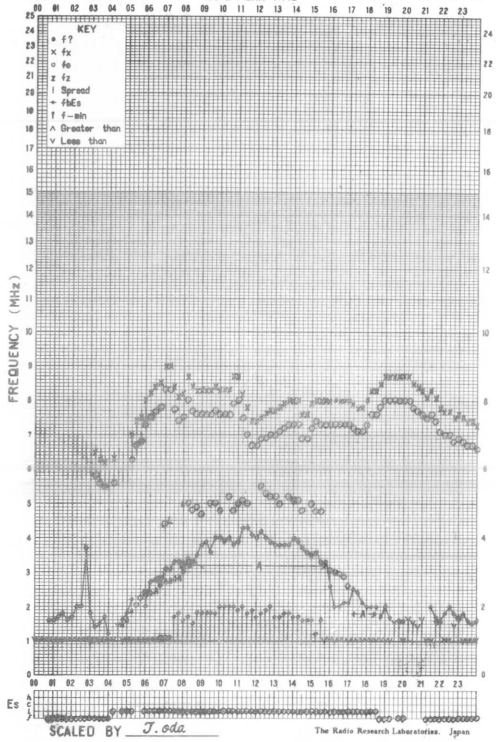


SCALED BY S. Takashima

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 26. 1969

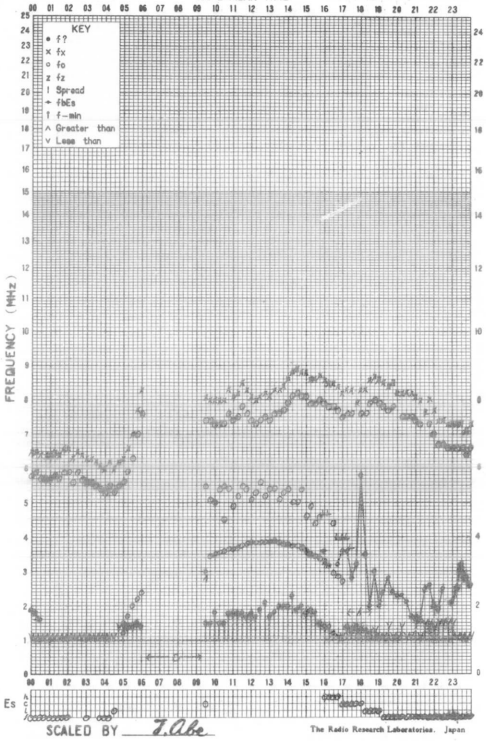


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Aug. 26. 1969

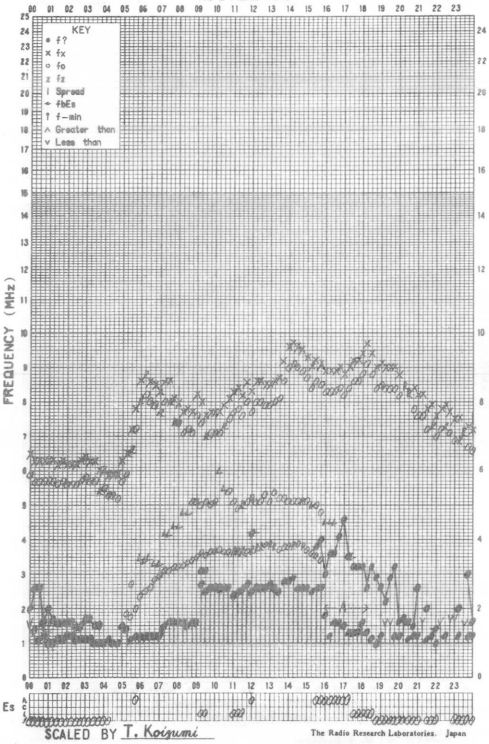


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE AUG. 26. 1969

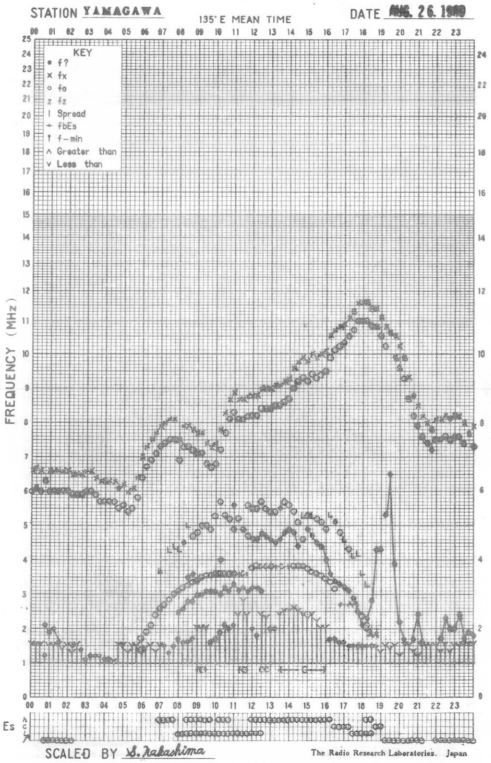


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE AUG. 26. 1969

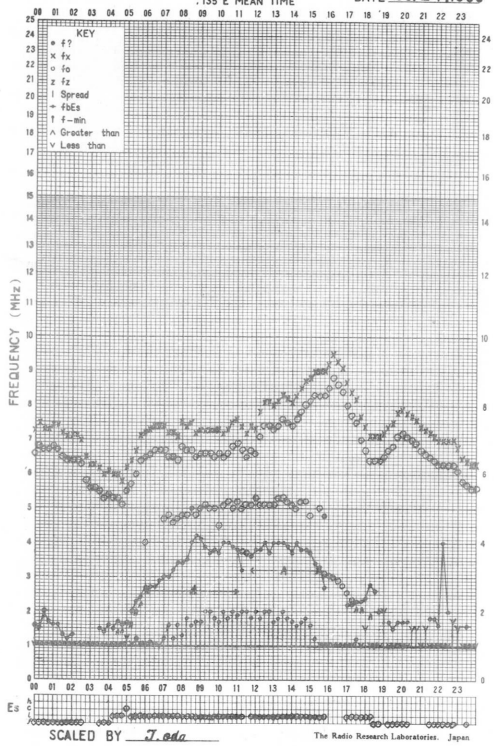


SCALED BY S. Takashima

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE AUG. 27, 1969

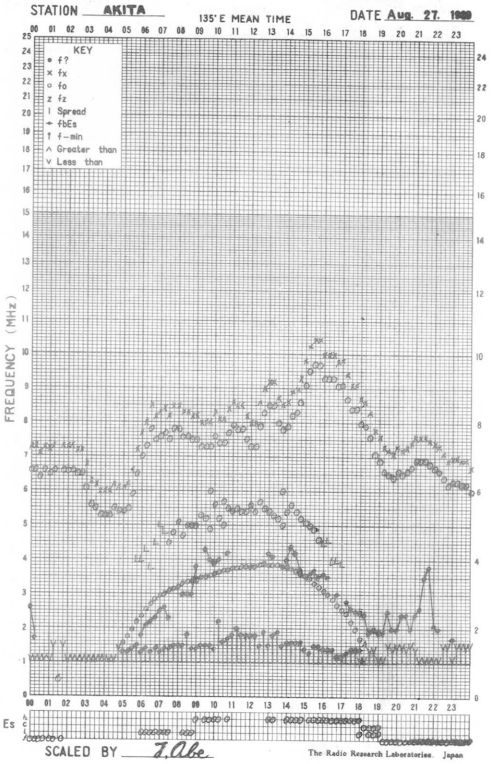


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Aug. 27, 1969

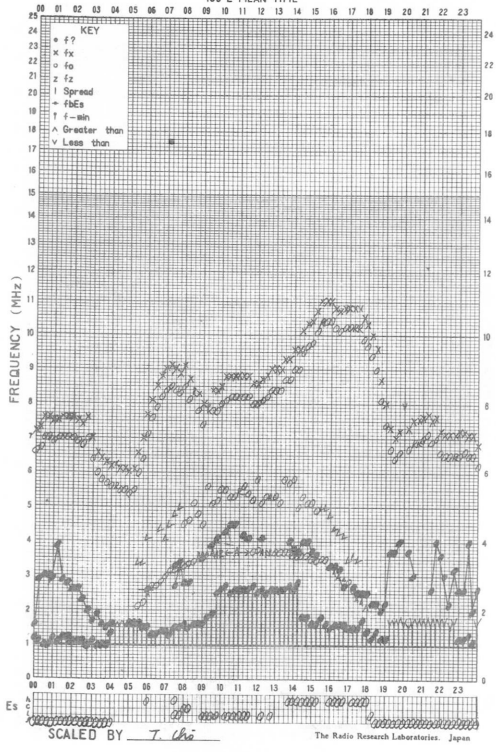


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE AUG. 27 1969

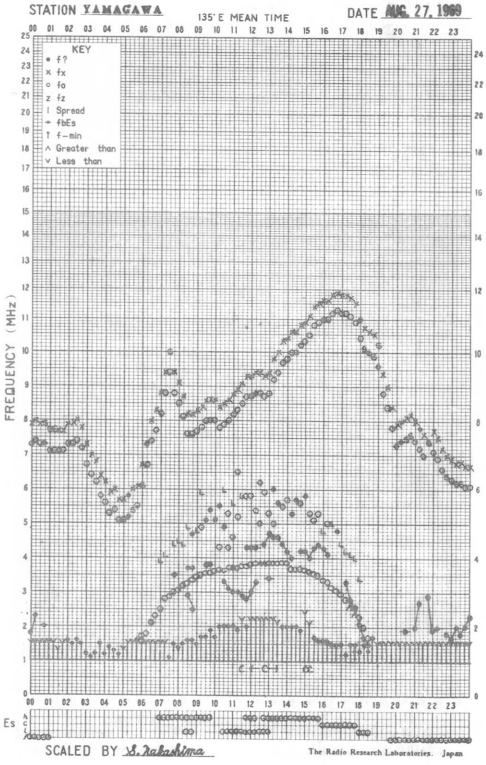


SCALED BY T. Oka

The Radio Research Laboratories. Japan

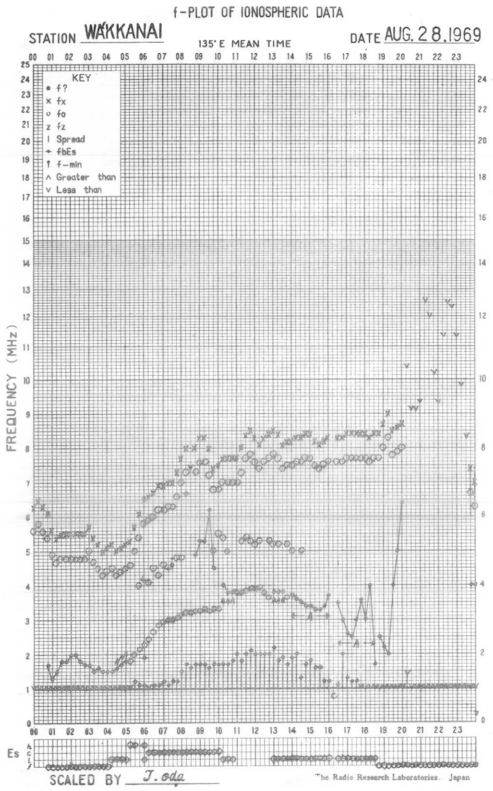
f-PLOT OF IONOSPHERIC DATA

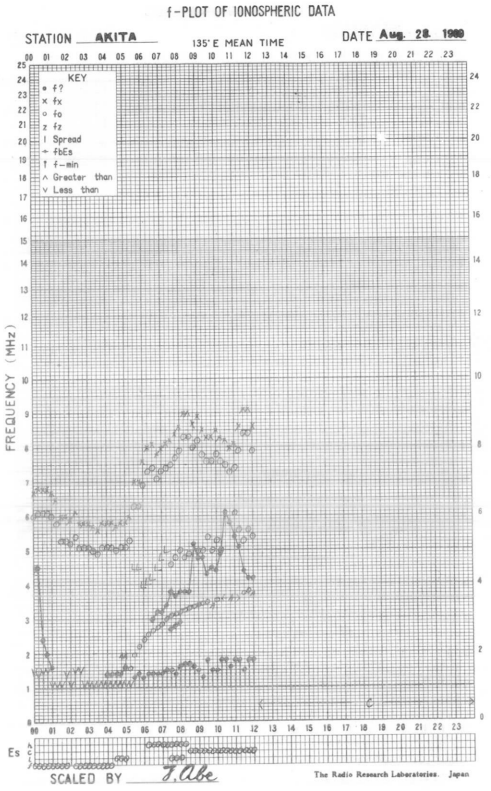
STATION YAMAGAWA 135°E MEAN TIME DATE AUG. 27, 1969

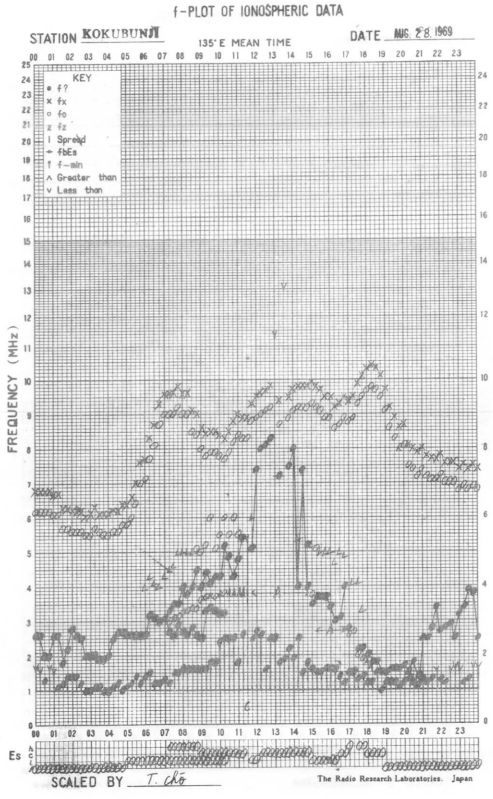


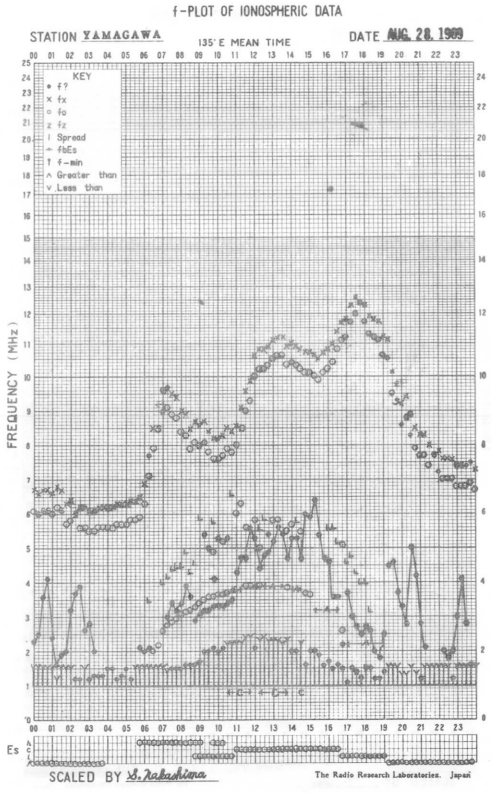
SCALED BY S. Nakashima

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE AUG. 28, 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Aug. 28. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY J. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE AUG. 28 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan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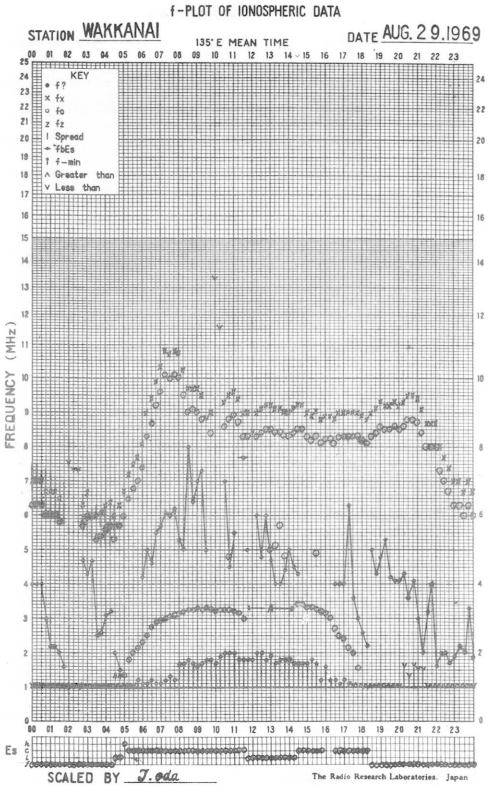
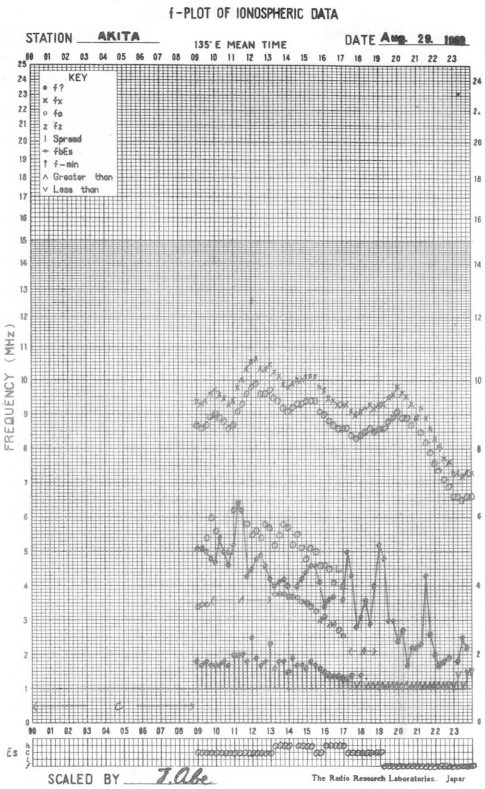
135°E MEAN TIME
DATE AUG. 28. 1969
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE AUG. 29, 1969
KEY
FREQUENCY (MHz)
SCALED BY T. Oda
The Radio Research Laboratories. Japan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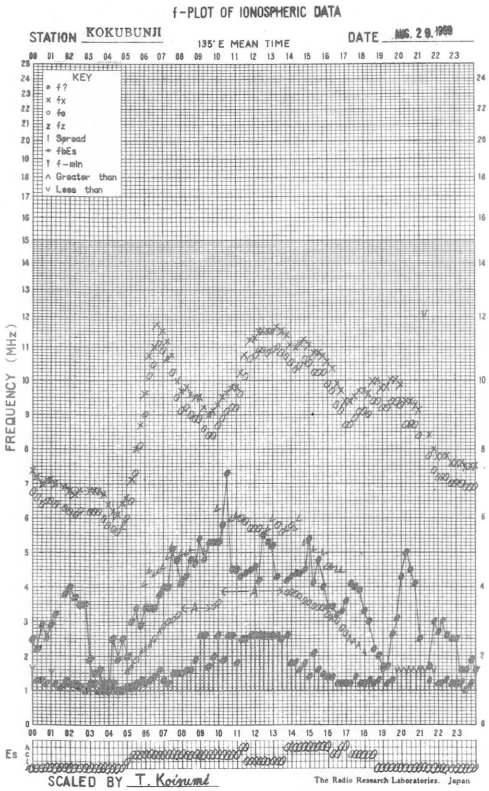
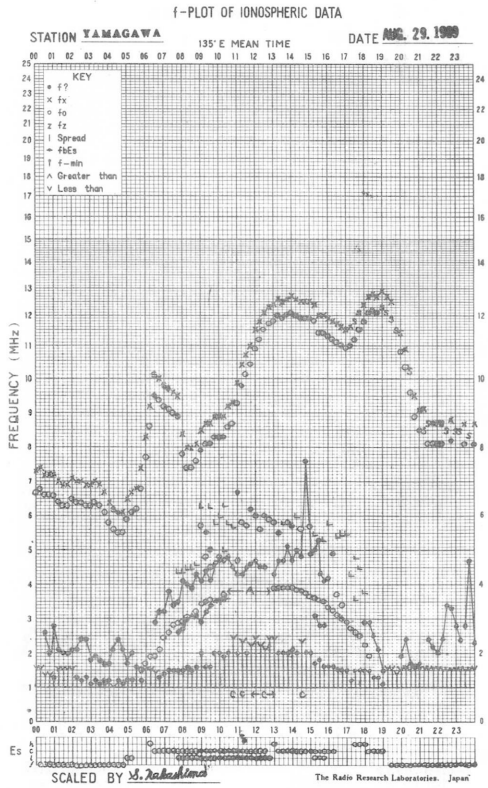
STATION AKITA
135°E MEAN TIME
DATE Aug. 29. 1969
KEY
FREQUENCY (MHz)
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE AUG. 29, 1969
KEY
FREQUENCY (MHz)
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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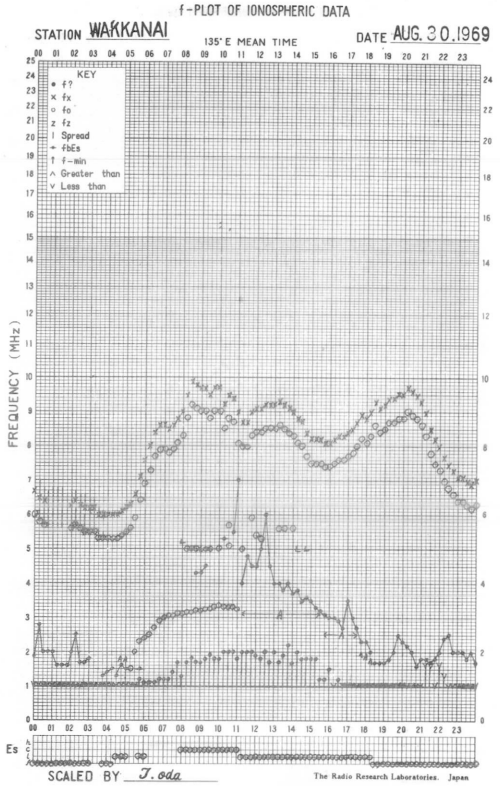
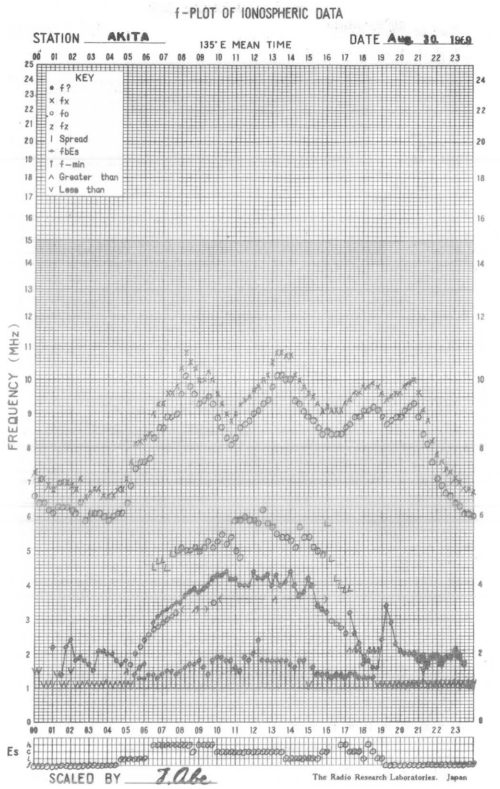
135°E MEAN TIME
DATE AUG. 29, 1969
KEY
FREQUENCY (MHz)
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE AUG. 30. 1969
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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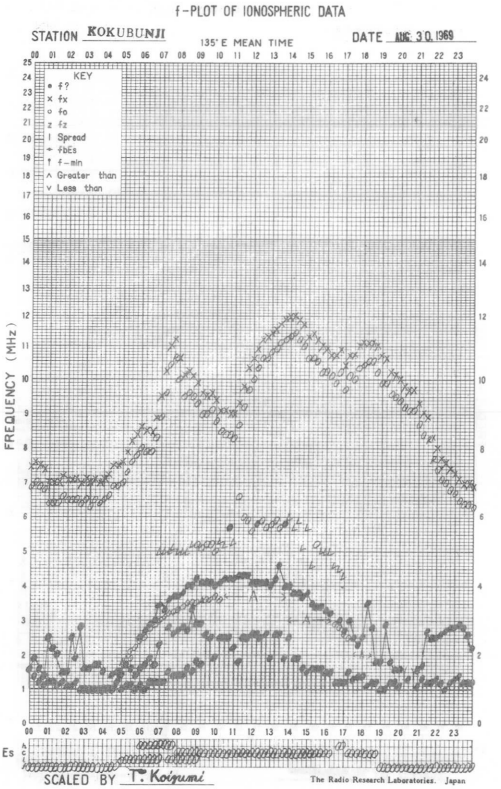
STATION AKITA
135° E MEAN TIME
DATE Aug. 30. 1969
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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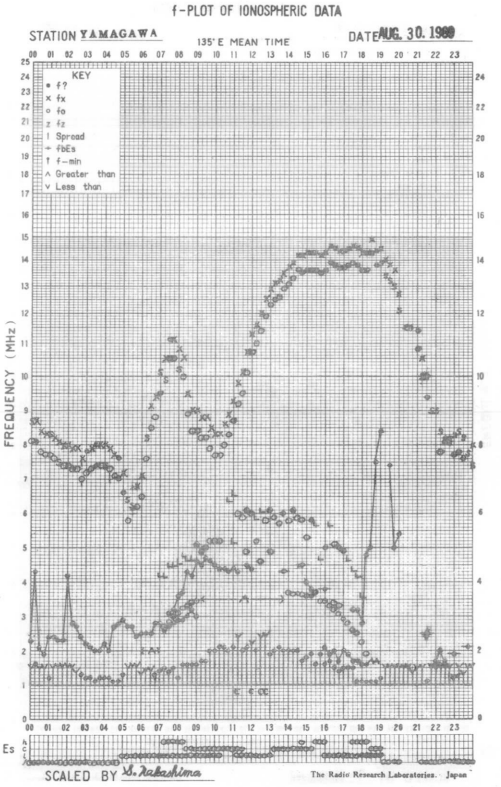
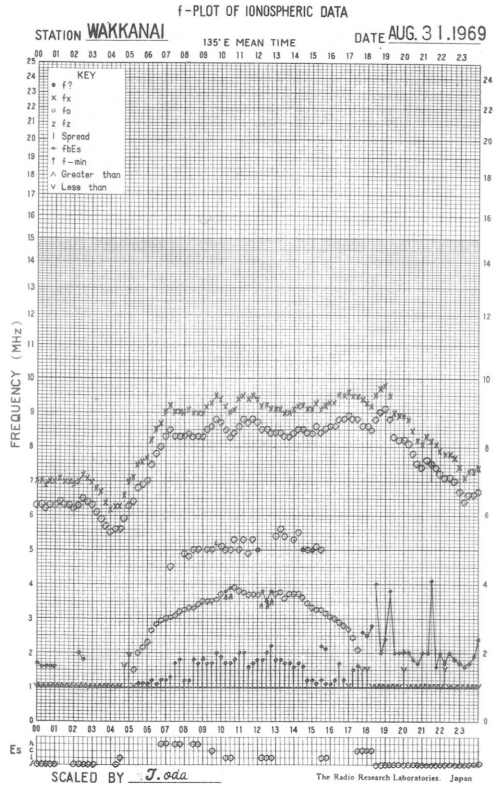
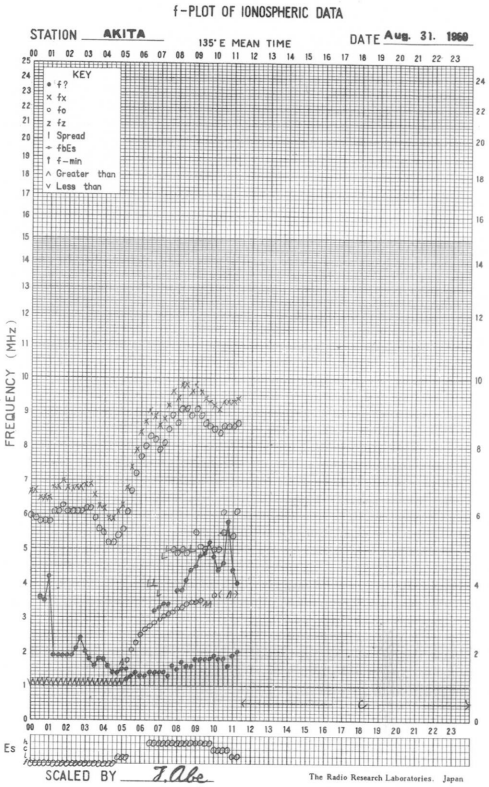
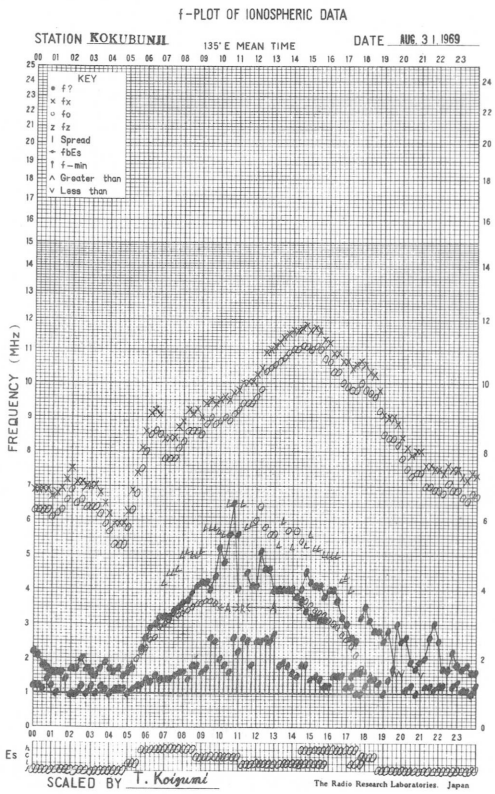
STATION KOKUBUNJI
135° E MEAN TIME
DATE AUG. 30. 1969
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koigumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE AUG. 30. 1969
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE AUG. 31.1969
KEY
* f?
× fx
○ fo
z fz
! Spread
⊣ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Aug. 31. 1969
KEY
* f?
× fx
○ fo
z fz
! Spread
⊣ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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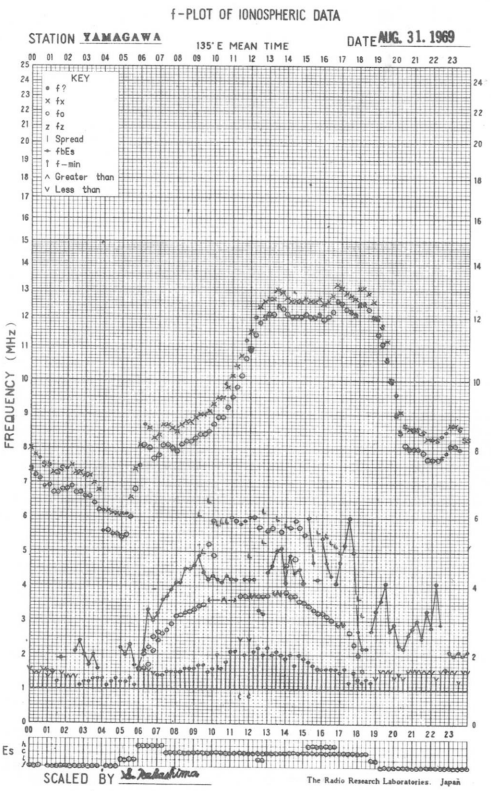
STATION KOKUBUNJI
135°E MEAN TIME
DATE AUG. 31.1969
KEY
* f?
× fx
○ fo
z fz
! Spread
⊣ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE AUG. 31. 1969
KEY
* f?
× fx
○ fo
z fz
! Spread
⊣ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: August 1969
Observing station: Hiraiso — Frequency: 200 MHz

	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$					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	18	16	13	8	16	0	1	1	0	0
2	19	20	19	17	17	1	0	0	1	0
3	10	9	9	8	11	0	1	0	1	1
4	9	12	10	8	10	1	1	0	1	1
5	(8)	-	7	7	7	(1)	-	1	1	1
6	9	11	21	6	12	1	1	1	0	1
7	6	7	10	7	7	0	1	1	0	1
8	6	6	5	6	6	0	0	0	0	0
9	5	6	5	5	5	0	0	0	0	0
10	5	5	5	q	5	0	0	0	0	0
11	5	5	5	6	5	0	0	1	0	0
12	5	5	5	-	5	0	0	0	-	0
13	4	5	5	5	5	0	0	0	0	0
14	5	5	6	5	5	0	0	0	0	0
15	6	6	6	6	6	0	0	0	0	0
16	6	6	6	6	6	0	0	0	0	0
17	6	6	6	6	6	0	0	0	0	0
18	6	-	-	-	(6)	0	-	-	-	(0)
19	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-
21	-	-	-	5	-	-	-	-	0	-
22	5	5	5	5	5	0	0	0	0	0
23	-	-	-	-	(5)	-	-	-	-	(0)
24	5	5	5	8	5	0	0	0	0	0
25	8	-	-	6	(8)	0	-	-	1	(0)
26	5	5	5	6	5	0	0	1	0	1
27	6	6	6	6	6	0	0	0	0	0
28	6	7	6	6	6	0	0	0	0	0
29	5	5	5	6	5	0	0	0	0	0
30	6	13	9	7	8	0	1	1	1	1
31	6	5	6	7	6	0	0	0	0	0

Note No observations during the following periods:

1st	2230-		2400	18th	0200-	21st	0930
5th	0100-		0700	23rd	0000-		2330
5th	2330-	6th	0010	24th	2300-		2400
12th	1950-		2400	25th	0300-		0930

"q" means quiet level, radiometer being unstable.

SOLAR RADIO EMISSION

Flux Density

Month: August 1969
Observing station: Hiraiso Frequency: 500 MHz

Flux density 10^{-22} $Wm^{-2}(Hz)^{-1}$

UT	00-03	03-06	06-09	21-24	Day
Date					
1	31	30	31	31	31
2	32	32	30	33	31
3	34	34	32	33	33
4	32	32	30	34	32
5	35	34	31	33	33
6	33	34	34	31	34
7	31	29	31	32	31
8	32	30	31	32	31
9	30	30	30	30	30
10	29	29	29	29	29
11	28	30	29	29	29
12	29	30	28	30	29
13	29	29	29	27	29
14	27	27	26	24	27
15	25	25	25	25	25
16	25	25	25	25	25
17	24	24	24	23	24
18	24	24	24	-	24
19	24	25	25	25	24
20	25	24	24	-	24
21	q	26	26	26	26
22	27	27	27	27	27
23	-	-	-	-	(27)
24	30	29	29	30	30
25	30	30	-	31	30
26	31	29	29	31	30
27	31	32	32	30	31
28	30	33	30	30	31
29	33	33	34	32	32
30	34	35	32	31	33
31	35	34	34	36	34

Note No observations during the following periods:

18th 0800- 19th 0010
20th 1950- 21st 0100
23rd 0010- 2400
25th 0500- 0800

"o" means quiet level, radiometer being unstable.

Distinctive Events

No Distinctive Event was observed during August, 1969.

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

AUG 1969 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 15M	01H 15M	02H 15M	03H 15M	04H 15M	05H 15M	06H 15M	07H 15M	08H 15M	09H 15M	10H 15M	11H 15M	12H 15M	13H 15M	14H 15M	15H 15M	16H 15M	17H 15M	18H 15M	19H 15M	20H 15M	21H 15M	22H 15M	23H 15M
1	-4	-3	-5	-5	-3	8	7	2	-4	-8	-6	ES -3	-12	5	17	5	15	8	7	-2	1	-7	-4	-2
2	-9	-7	-9	-6	3	10	16	8	-1	-3	-1	-13	-1	16	9	7	5	-3	6	-7	1	1	0	0
3	-3	-3	-6	6	8	12	19	19	19	14	-3	-1	3	19	24	5	9	9	2	-6	-2	7	1	1
4	-9	-14	-12	-15	-4	1	-2	5	-1	-3	ES -3	ES -10	-9	6	16	11	3	5	-1	-2	4	-1	-5	0
5	ES -2	-4	-7	8	8	8	3	-8	-5	-2	-1	2	2	15	23	17	5	2	0	6	6	4	2	-1
6	-5	-3	-7	-4	5	10	8	3	-1	-4	-2	1	11	17	12	18	16	8	10	5	5	-1	-4	-4
7	ES 3	-9	-11	-3	-3	13	22	12	-2	-3	-4	-9	12	20	13	1	3	10	6	1	3	2	1	-2
8	-4	-1	0	7	6	9	6	9	2	-3	ES -6	-4	2	18	9	8	13	4	-2	1	6	3	3	2
9	-3	-7	-3	7	8	4	11	2	-2	-7	ES -7	ES -20	ES -6	ES -18	-2	4	13	3	0	3	C	C	C	C
10	-12	-9	4	-13	4	11	8	12	12	-3	-6	-6	ES -5	4	13	7	11	9	5	-1	2	0	-5	-6
11	-2	-6	ES 0	0	2	4	2	-7	0	0	-2	-8	-5	16	9	10	3	9	-1	3	5	1	-1	-11
12	-7	-13	-4	0	6	8	18	10	-7	-7	1	ES -5	-12	ES -5	-8	14	5	-1	-14	-25	-5	2	-4	2
13	-11	-16	-1	6	C	6	2	4	-3	-8	-3	ES -5	ES -8	2	4	6	12	6	2	1	2	-3	2	-5
14	-4	-6	-2	-3	8	10	-2	ES -8	ES -12	-11	ES -13	ES -12	ES -17	-6	8	6	5	-2	-6	ES -32	5	3	2	7
15	-2	0	3	3	11	13	20	11	10	0	6	-2	ES -1	10	12	10	9	10	3	0	0	-1	-5	-1
16	2	4	2	8	11	13	11	-11	-10	-4	ES -5	ES -17	ES -10	-6	-5	-6	1	-11	ES -32	ES -32	-3	-2	-1	-5
17	-9	-5	-1	-3	7	8	9	-10	-1	-5	-10	-10	-15	0	7	-5	4	4	1	4	3	-2	1	-4
18	-4	2	4	4	7	9	7	5	3	-14	ES -17	ES -17	ES -24	-8	3	12	6	2	3	4	2	3	1	-3
19	-2	1	-3	2	8	8	5	6	11	-4	ES -9	ES -8	ES -13	-5	6	7	6	9	6	6	6	8	4	1
20	C	C	C	C	C	C	-3	-9	ES -9	C	C	C	C	ES -9	2	-2	12	9	5	-7	2	0	-1	-5
21	-2	-3	-8	0	C	7	3	-4	ES -4	-6	-8	-6	ES 0	8	0	6	1	4	ES -8	0	1	1	-1	1
22	1	1	7	-1	6	9	7	1	3	7	5	ES -18	6	4	5	8	18	18	6	-4	2	6	0	0
23	-4	5	-4	2	8	14	-5	-4	-9	-9	-4	-6	-1	-3	-6	0	7	14	2	-3	-2	2	6	0
24	-1	-1	1	6	19	7	-8	-7	-7	-8	ES 6	ES -4	ES -2	5	9	-1	8	4	-1	2	-2	-8	-7	-7
25	-8	-5	-5	4	10	C	C	C	-15	-12	-4	ES -10	ES -5	14	ES 0	1	-1	4	6	-2	-4	-3	-3	-6
26	-12	-12	-9	3	4	6	5	1	-4	-8	-14	7	-3	1	4	-7	-2	0	8	-19	-3	6	1	-3
27	-7	-8	13	8	8	ES -29	-14	-4	-5	-20	ES -20	ES -29	ES -18	ES -15	-2	-2	12	ES -33	ES -33	1	-8	-4	3	-8
28	-13	-9	0	-6	2	-3	ES -34	ES -34	-19	ES -34	ES -34	ES -13	ES -10	0	8	0	-2	1	-10	ES -32	-6	ES -14	-11	-15
29	ES -13	0	-3	2	6	2	1	-7	-10	-11	-12	ES -11	ES -4	17	2	4	-3	-3	-1	-7	-8	-12	S	-10
30	-8	-4	-2	3	9	13	15	4	13	8	1	-1	-2	22	6	3	-3	1	2	-7	-4	4	-9	-4
31	-5	-8	-1	1	10	8	23	13	1	-1	-7	-5	-5	23	11	3	8	7	3	5	0	3	-1	-3
CNT	30	30	30	30	28	29	30	30	31	30	30	30	30	31	31	31	31	31	31	31	30	30	29	30
MED	US -4	-4	US -2	2	7	8	6	2	-2	-4	ES -4	ES -7	ES -5	5	7	5	6	4	2	-1	1	1	-1	-3
UD	ES 1	2	4	8	11	13	20	12	12	7	ES 5	1	6	20	17	14	15	10	7	5	6	6	3	2
LD	ES -12	-13	ES -9	-6	-3	1	-8	ES -10	ES -12	-14	ES -17	ES -18	ES -17	ES -9	ES -5	-5	-2	-3	ES -14	ES -32	-6	-8	-7	-10

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

AUG 1969 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M
1	-12	-13	ES -36	-3	5	11	7	10	21	22	22	7	15	15	11	8	10	12	3	5	-4	-7	-12	-9
2	ES -17	ES -8	ES -19	-10	1	9	13	13	15	17	14	14	20	13	8	8	2	8	1	0	-12	ES -18	-6	ES -4
3	-20	ES -3	-6	3	5	12	18	20	19	19	19	16	18	18	18	21	12	9	7	-2	-5	-5	-11	-4
4	-17	-18	-18	-9	-3	5	10	13	12	22	10	15	13	13	18	3	11	14	12	5	2	-2	-9	-9
5	ES -9	-3	-5	0	1	8	13	16	17	19	18	18	16	8	17	7	14	10	-4	1	11	-1	-7	-9
6	ES -16	ES -13	-16	-4	7	7	12	16	C	-12	-10	20	22	16	13	3	5	10	6	-3	-4	-3	-8	-8
7	ES -2	ES -36	-24	-15	-1	12	18	17	18	17	8	13	7	5	0	2	8	8	-3	0	-8	-1	-12	-5
8	-5	-3	-3	4	2	5	9	12	17	18	12	13	14	16	12	12	8	12	ES -33	-4	-3	-1	-8	-19
9	-12	-5	-3	-2	2	6	12	15	15	15	11	12	18	18	14	ES -27	-2	-18	-15	ES -27	C	C	C	C
10	-12	ES -27	-13	0	6	9	8	12	18	12	2	5	15	13	-2	ES -14	-8	0	10	-6	-6	-6	-11	-13
11	ES -25	-12	-9	-8	4	2	6	8	22	17	17	13	10	7	4	1	0	11	-1	-1	-2	-3	-9	-16
12	-12	-15	-9	-1	3	8	10	10	15	19	16	15	3	1	-8	-7	7	7	ES -30	0	0	0	-5	-16
13	-6	ES -11	-5	-2	C	2	6	14	10	18	10	11	10	7	ES -3	ES -25	1	8	-5	-3	0	4	-8	ES -25
14	ES -19	-16	-8	-3	1	11	7	10	6	8	7	8	4	6	9	ES -21	0	10	2	-11	1	0	-2	ES -17
15	-7	-7	-6	-1	US 7	14	11	19	14	11	16	13	12	12	4	-6	-5	-1	-23	-5	-3	-5	-5	-5
16	-11	0	2	3	11	11	11	15	14	13	13	10	14	18	-1	ES -23	ES -32	-11	ES -32	-6	-3	-5	-6	-11
17	-19	-10	-2	-3	4	8	10	16	15	14	11	9	9	10	ES -10	ES -23	ES -32	-2	-11	-4	-2	-15	-4	-10
18	-15	-5	-3	4	7	13	16	16	21	12	16	11	11	8	6	ES -26	-2	20	1	2	1	-3	-20	-14
19	-8	-10	-3	1	5	8	11	20	12	15	ES -3	ES -2	-2	6	7	ES -21	13	ES -26	ES -31	-2	5	1	-14	-6
20	C	C	C	C	C	5	13	9	ES -9	C	C	C	C	7	1	-11	-2	8	5	-7	-9	0	-1	-10
21	-12	-17	-11	0	1	8	10	16	17	20	18	-1	21	7	ES -10	ES -14	ES -14	ES 0	ES -14	ES 1	-6	-3	ES -13	-10
22	-20	-6	ES -14	1	6	9	UC 13	13	12	13	17	ES -13	ES -6	2	ES -8	ES -19	6	12	4	-6	-5	-7	-8	-17
23	-11	-5	-5	1	6	9	11	19	19	17	17	10	13	9	6	12	9	-1	-3	-8	-7	-3	-13	-12
24	-14	-8	-6	1	6	7	14	16	17	18	6	9	14	9	0	ES -8	0	18	ES -17	-5	-7	-5	ES -12	ES -2
25	-18	ES -21	-9	2	5	C	C	C	12	12	8	9	11	12	ES 0	ES -10	ES -13	-1	ES -34	-12	-2	-8	-4	ES -13
26	ES -19	-7	-9	-3	-1	16	12	12	17	15	13	7	-6	-12	-7	-8	3	10	-22	-25	-2	-11	-10	-19
27	ES -29	ES -29	-14	5	7	12	10	18	12	8	ES -8	-8	13	-1	ES -4	8	-7	ES -33	ES -33	-2	-4	-12	-16	ES -24
28	ES -34	ES -34	ES -34	-19	-8	-3	8	12	16	8	11	13	11	15	6	ES -23	-6	13	-23	-1	-10	-7	ES -15	ES -32
29	ES -34	-12	-13	-6	1	3	10	18	17	12	17	13	18	13	9	-25	-25	5	-8	2	-6	-12	-13	-19
30	ES -25	-22	-12	ES 6	6	10	10	14	18	16	17	16	24	14	19	ES -20	1	7	1	-2	-9	-11	-14	ES -21
31	-20	-16	-14	1	3	12	10	25	6	3	1	14	16	14	ES 5	ES -5	6	12	ES -10	0	-2	-3	ES -33	-13
CNT	30	30	30	30	29	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	30	30	30	30
MED	ES -16	ES -12	-9	US 0	4	8	10	15	16	15	12	12	13	10	US 5	US -8	1	8	-5	US -2	-4	-4	-10	US -12
UD	ES -6	-3	-3	ES 4	7	13	16	20	21	20	18	16	21	18	18	12	12	14	7	2	2	0	-4	ES -4
LD	ES -29	ES -29	ES -24	ES -10	-1	2	7	10	6	8	ES -3	ES -2	-2	1	ES -8	ES -25	ES -25	ES -18	ES -33	ES -12	-9	-12	ES -16	ES -24

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Aug. 1969	Whole Day Index	H B 06 12 18 / 12 18 24	W W V 00 06 12 18 / 06 12 18 24	L M 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4o	4 4 4	3 4 (4)(4)	C C C C	4 4 (4) C	N N N N			
2	4+	4 5 4	(4)(4) C (5)	C C C C	4 (4)(4)(4)	N N N N			
3	5-	5 (5) C	5 (5) 4 4	C C C C	4 (4) 5 4	N N N N			
4	4o	4 5 4	4 4 (4) C	C C C C	4 4 4 (4)	N N N N			
5	4o	4 4 5	3 4 4 (4)	C C C C	4 4 4 C	N N N N			
6	4+	4 4 4	4 4 5 5	C C C C	4 5 5 5	N N N N			
7	4o	4 4 4	5 4 (4)(4)	C C C C	(4) 4 4 4	N N N N			
8	4-	4 C C	(4)(4)(4)(3)	C C C C	5 4 4 3	N N N N			
9	4-	4 4 4	(3)(4)(3)(3)	C C C C	4 4 (3) C	N N N N			
10	4-	4 3 (4)	(3)(4) 4 4	C C C C	(4)(4)(4) 4	N N N N			
11	4o	5 4 4	4 4 4 (4)	C C C C	(4) 4 4 (4)	N N N N			
(12)	4-	4 4 3	5 4 3 3	C C C C	4 4 4 3	N N N N			
(13)	4-	4 4 C	3 3 4 4	C C C C	(4) 4 4 4	N N N N			
(14)	3+	4 3 4	(3) 3 3 4	C C C C	4 4 4 4	N N N N			
15	5-	5 5 4	5 5 4 (5)	C C C C	4 4 4 4	N N N N			
16	3+	C C C	5 3 3 3	C C C C	4 4 3 (3)	N N N N			
17	4o	C C C	4 4 4 4	C C C C	4 4 (3)(3)	N N N N			
18	4-	C C C	4 3 4 4	C C C C	4 4 4 4	N N N N			
19	4-	4 4 4	3 3 4 4	C C C C	4 3 4 4	N N N N			
20	4o	(4)(4)(4)	C (4) 4 4	C C C C	C C (4) 4	N N N N			
21	4-	4 4 4	4 3 3 5	3 3 - 4	4 4 3 (3)	N N N N			
22	4o	4 5 4	4 4 4 4	4 4 - 4	4 4 3 3	N N N N			
23	4-	4 3 3	4 3 4 4	4 4 - -	4 4 4 4	N N N N			
24	4-	5 3 4	4 3 4 (4)	(3) - - -	4 4 4 4	N N N N			
25	4o	(4)(4) 4	(5) 4 4 4	(4) - - (4)	(4)(4) 4 (3)	N N N N			
26	4o	4 4 3	4 4 4 4	(4)(4) - C	(4) 4 3 (3)	N N N N	04.35	---	99γ
27	3+	3 3 3	C 3 3 C	(4) 4 - 3	4 3 3 3	N N U U	---	20xx	
28	3+	3 4 3	C 3 4 C	(4) 4 - (3)	3 4 4 3	U N N N			
29	4o	4 C (4)	4 4 4 4	4 4 - (4)	4 4 4 3	N N N N			
30	5-	4 4 4	5 5 4 5	5 5 - -	4 4 4 4	N N N N			
31	4+	4 4 4	5 5 4 C	(4) - - -	4 4 4 4	N N N N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = COSMIC EVENT

( ) = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Aug. 1969	S W F												Correspondence		
	Drop-out Intensities (db)						Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	CO	LM	HA	TO	HB	SH							
1	20						02.25	30	Slow	1+	x		

INUBO

1969 Aug.	S P A								Remarks
	Phase Advance (degrees)					Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	AL2	Start	End	Maximum	
1	50	36	38	72	35	0231	0357	0244	X
1		29	29			2116	2206	2130	X
2				16		0147	0356	0205	
2		22				1915	2000	1930	
2		22				2029	2154	2058	X
3		22	16	32		0137	0241	0152	
8				8		0419	0459	0424	
11	45				34	0942	1019	0947	X
11				16		2307	2357	2315	X
12				16		0357	0443	0407	X
21				12		0353	0504	0410	
22			22	28		0236	0312	0244	
23				16		0209	0237	0215	
23			29	16		0321	0416	0335	
23			29			0416	0511	0434	
23				48	24	0527	0710	0604	
24				36		0416	0550	0433	X
24				32		0618	0728	0635	X
25				16		0610	0640	0614	
26				12		0129	0152	0136	X
26				16		0200	0240	0207	

IONOSPHERIC DATA IN JAPAN FOR AUGUST 1969

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1969年12月25日 発 行

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