

F-250

IONOSPHERIC DATA IN JAPAN

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IONOSPHERIC DATA IN JAPAN

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

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SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAIISO 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_oF2	}	The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_oF1		
f_oE		
f_oE_s		The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_sE_s		The lowest ordinary wave frequency at which the E_s layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f -min		The frequency below which no echoes are observed.
$M(3000)F2$		The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$		The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$		The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
$h'F$		The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.
$h'E_s$		The lowest virtual height of the trace used to give the f_oE_s .
h_pF2		The virtual height of the $F2$ layer measured on the ordinary

$ypF2$ wave component at a frequency equal to $0.834f_0F2$.
 The semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at $0.969f_0F2$).

a. Descriptive Letters

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

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

b. Qualifying Letters

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

value on the monthly tabulation sheets.

D	greater than.
E	less than.
I	Missing value has been replaced by an interpolated value.
J	Ordinary component characteristic deduced from the extraordinary component.
O	Extraordinary component characteristic deduced from the ordinary component. (Used for x- characteristics only.)
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U	Uncertain or doubtful numerical value.
Z	Measurement deduced from the third magneto-ionic component.

c. 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 E_s

The eight standard types of E_s 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 E_s trace that does not correspond to any of the eight types.

- F An E_s trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat E_s traces observed in the daytime are classified according to their virtual height: H or L.
- L A flat E_s trace at or below the normal E layer minimum virtual height in the day or below the night E layer minimum virtual height at night.
- C An E_s trace showing a relatively symmetrical cusp at or below f_oE . This is usually continuous with the normal E trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)
- H An E_s trace showing a discontinuity in height with the normal E layer trace at or above f_oE . The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. (Usually a daytime type.)
- Q An E_s trace which is diffuse and non-blanketing over a wide

frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

- R An E_s trace showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick E layer) by the lack of group retardation in the F layer traces at corresponding frequencies and the lack of complete blanketing.
- A An E_s having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes extend over several hundred kilometers of virtual height.
- S A diffuse E_s trace which rises steadily with frequency and usually emerges from another type E_s trace. The rising trace alone is classified as 'S'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace such as E_s-L or E_s-F , at frequencies which greatly exceed the E layer critical frequency, whereas at low latitudes it usually rises from E_s-Q E_s-C or E_s-Hat frequencies near the regular E critical frequency. Type S is never used to determine f_oE_s and $h'E_s$. The slant trace is sometimes observed to start at f_oE without echoes clearly identifiable as E_s echoes being seen.
- N The designation 'N' is used to denote an E_s trace which cannot be classified into one of the standard types. When a trace appears to be intermediate between any two classes a choice should be made whenever possible even if it is uncertain. 'N' should be used sparingly.

e. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 200 and 500MHz 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 $10^{-22} \text{ W} \cdot \text{m}^{-2} \text{ Hz}^{-1}$ 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 Hiraio 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	$\lambda/2$ vertical	$\lambda/2$ vertical
Distance	9150 km	6270 km

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

Receiver	
Antenna	4.5 m vertical rod
Bandwidth	± 40 Hz 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) | 4=normal |
| 2=poor (disturbed) | 5=good |
| 3=rather poor (unstable) | |

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.

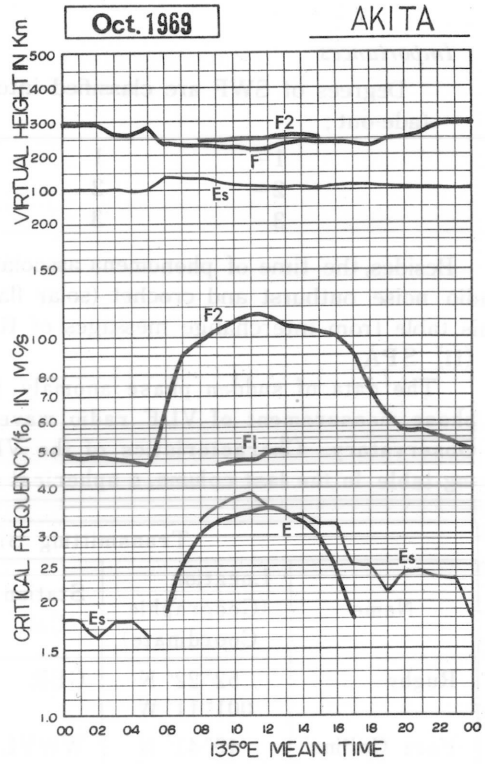
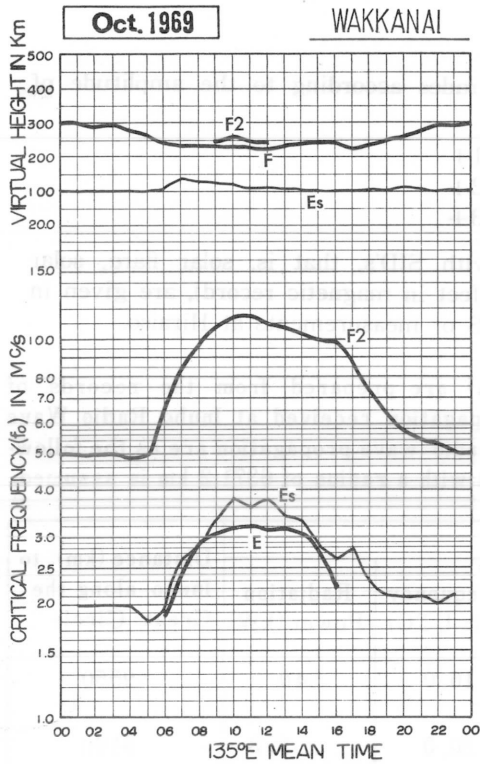
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52° 22' N 001° 11' W	GBR	16.0	40	9550
Fort Collins	40° 41' N 105° 03' W	WWVL	20.0	1.8	9190
Cutler	44° 39' N 067° 12' W	NAA	17.8	1000	10650
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	10.2	2	6100
		HA2	12.2		
		HA3	13.6		
Aldra	66° 25' N 013° 09' E	AL0	10.2	4	7820
		AL2	12.2		
		AL3	13.6		

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.

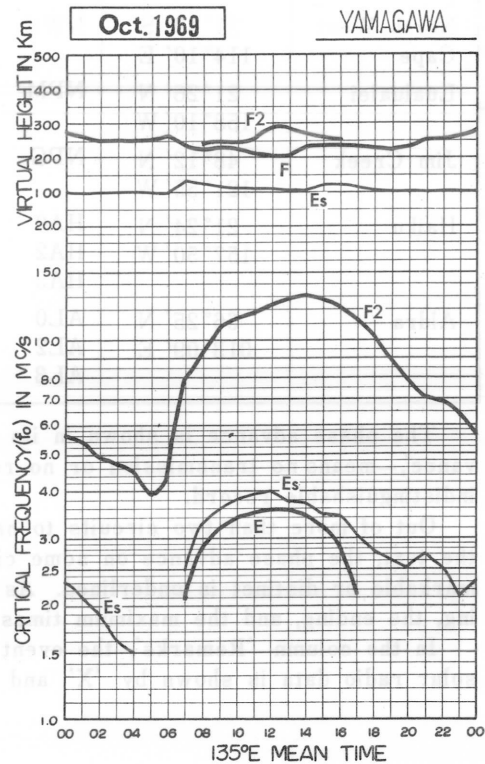
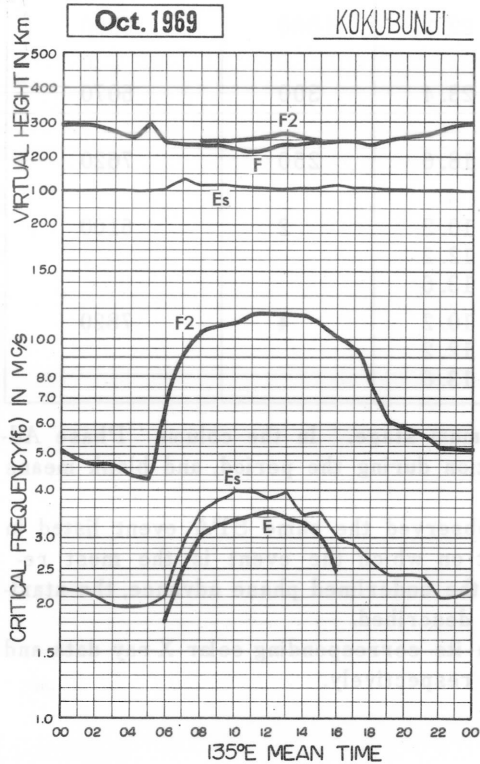
Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

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

OCT. 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	38	36	34	30	F	F	F ₄₈	67	75	83	92	89	82	89	90	80	80	77	73	66	53	53	50	47										
2	44	47	43	43	41	43	72	75	93	101	104	96	93	87	90	94	89	87	73	67	54	63	55	53										
3	46	47	43	41	39	41	44	52	58	68	77	81	81	83	76	77	79	83	65	58	52	45	43	40										
4	36	36	33	36	F ₃₇	F ₃₇	54	73	82	93	98	97	103	99	94	85	83	82	75	68	61	54	47	47										
5	44	45	43	I _A ₄₃	40	43	59	79	89	90	97	94	96	98	95	89	88	87	70	61	57	52	F ₅₀	F ₄₉										
6	F ₄₅	F ₄₆	47	47	45	43	67	80	98	104	A	98	97	92	90	98	98	96	75	66	63	58	56	F ₅₀										
7	F ₅₀	F ₅₃	U ₄₇	F ₅₀	F ₄₅	F ₄₄	63	91	99	105	102	106	111	107	103	100	101	96	73	57	56	52	54	54										
8	52	S ₅₃	52	50	49	50	71	90	99	108	101	110	102	98	101	96	103	94	69	63	57	57	U ₅₅	S ₅₁										
9	50	48	49	47	45	46	69	78	91	98	111	114	110	109	97	98	93	89	73	72	70	52	49	50										
10	50	50	52	50	50	46	66	S ₈₄	S ₉₆	117	103	U ₉₈	99	101	101	100	105	99	83	67	54	54	53	54										
11	53	52	51	48	49	49	F ₆₅	79	105	124	106	108	108	101	112	104	93	84	73	68	60	56	51	47										
12	46	S ₄₆	S ₄₇	53	46	40	61	U ₈₅	91	105	S ₁₂₁	S ₁₁₉	102	100	97	96	93	74	58	59	58	60	56	44										
13	42	43	43	43	44	44	64	77	S ₉₃	109	U ₁₁₁	113	108	89	85	89	83	73	63	63	51	51	53	50										
14	F ₄₉	F	F	F	F ₄₈	F ₅₀	66	I ₈₅	S	104	I ₁₀₂	100	104	104	88	94	97	69	54	54	53	51	52	54										
15	F ₅₄	F ₅₅	F ₅₀	53	50	50	69	S ₈₅	106	106	107	102	105	96	90	89	86	86	66	53	49	46	48	49										
16	49	50	50	53	49	48	60	78	96	101	101	S ₁₁₂	106	97	93	104	90	78	61	58	55	54	F ₅₆	U ₅₃										
17	F ₅₅	F ₅₅	F ₅₄	F ₅₁	F ₅₆	F	69	79	83	99	118	S ₁₁₁	U ₁₁₀	106	103	96	90	81	73	62	60	55	54	54										
18	53	I ₅₈	61	F ₆₃	62	53	67	83	94	117	120	114	110	116	101	95	99	90	72	63	U ₆₇	61	58	63										
19	63	63	62	F ₆₃	65	66	80	90	96	100	118	121	123	108	109	107	98	83	67	63	64	F ₅₉	F ₅₉	F										
20	F	F	F ₅₇	F ₄₉	F	F ₅₁	66	U ₉₈	93	112	111	119	115	109	114	112	91	76	63	53	56	56	54	53										
21	52	51	F ₅₁	F ₅₃	51	52	66	98	108	114	123	127	110	108	103	103	89	77	68	63	54	59	58	60										
22	56	54	53	53	53	57	70	S ₉₀	93	109	133	125	118	113	103	103	109	95	74	57	53	49	51	48										
23	50	53	53	53	53	52	63	101	107	115	120	116	122	113	114	110	113	93	70	62	58	53	50	49										
24	48	50	49	49	50	50	68	92	106	129	128	114	112	111	107	116	111	94	74	72	67	59	63	54										
25	57	57	53	54	54	54	70	106	116	124	123	126	124	115	121	124	119	101	77	69	63	53	53	51										
26	52	53	52	53	54	51	63	97	106	120	119	116	114	117	115	117	112	97	71	66	63	53	48	50										
27	45	47	46	47	48	46	63	93	105	118	123	121	112	113	111	109	100	97	69	60	57	57	56	50										
28	U ₄₃	50	48	49	49	49	63	93	123	124	133	130	120	123	123	114	106	88	79	71	70	68	65	60										
29	52	53	52	54	53	54	73	112	120	133	130	142	133	124	126	123	112	91	76	61	53	56	54	54										
30	50	50	50	50	51	50	63	106	114	108	123	119	120	113	H ₁₁₀	R ₁₁₃	107	77	67	60	54	51	51	50										
31	50	52	52	51	52	54	68	98	110	106	119	123	109	107	109	113	100	79	73	61	52	50	48	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	30	29	30	30	29	29	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	29										
MED	50	50	50	50	49	50	66	85	97	108	114	114	110	107	103	100	98	87	72	63	57	54	53	50										
UQ	52	53	52	53	53	52	69	95	106	117	123	120	114	113	110	111	106	94	74	66	62	58	56	54										
LQ	45	47	47	47	45	44	63	79	93	101	102	101	102	98	94	94	90	78	67	60	54	52	50	49										

OCT. 1969

FOF2 (0.1 MHz)

IONOSPHERIC DATA

OCT. 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 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										470	500	450												
2																								
3										440	470	490	L	L										
4																								
5																								
6											A	A	L	L										
7														L										
8										420	L		440	400										
9																								
10																								
11																								
12														L										
13										L	430			L										
14										L	C	U	U	U	U									
15										L	410		L		U	380								
16										L	L	U	L	L										
17												C												
18												L	L											
19												A												
20												400	L	U	440									
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
CNT										1	3	3	5	2	3	1								
MED										440	470	490	450	425	400	380								
UQ										470	495	450		420										
LQ										445	460	410		400										

OCT. 1969

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 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 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								195	250	300	310	A	A	A	A	305	285	I A	245	160						
2								190	250	295	315	320	325	305	A	A	A	A	A							
3						S		180	240	290	305	315	310	310	315	I A	295	230	150							
4						E		200	250	290	295	A	A	A	A	A	A	A	A							
5						E		160	250	295	305	320	315	310	300	A	A	A	S							
6						E		150	240	300	315	315	300	A	A	305	280	240	E							
7						A		260	295	315	315	300	300	A	A	A	A	225	A							
8						A		245	285	305	340	340	320	295	I A	310	285	230	A							
9						E		A	240	285	305	325	320	315	305	305	290	A	A							
10								200	260	285	305	320	U S	330	320	305	300	I A	255	205	A					
11						E		190	250	295	305	320	320	310	A	A	A	A	A							
12						A		245	290	310	320	325	310	305	300	290	230	S								
13						E		170	230	275	300	300	300	305	300	270	A	A	S							
14						S		235	290	300	I C	300	300	I A	300	320	300	270	200	A						
15						A		225	285	300	295	300	I A	295	295	A	A	225	A							
16								180	240	290	300	305	320	A	A	A	265	230	E							
17								190	230	270	300	300	C	A	A	A	A	A	A							
18						A		A	300	310	315	I A	320	I A	320	300	275	A	A							
19						A		230	295	305	325	320	305	A	A	A	A	200	S							
20						S		250	295	315	315	305	A	B	A	A	A	230	S							
21						S		240	290	320	S	320	I A	320	315	300	265	210	A							
22						S		220	290	305	305	315	315	320	I A	305	265	A	S							
23						S		235	295	300	300	I A	320	325	320	300	275	S	S							
24						S		210	270	I A	300	320	320	325	320	305	290	200	S							
25						S		225	300	300	320	320	I A	330	325	A	A	A	A							
26						S		230	290	305	305	315	S	A	A	315	270	A	A							
27						S		210	285	300	305	305	320	325	325	I A	260	180	S							
28						E		220	290	305	300	320	295	315	300	265	190	S								
29						A		220	290	310	315	310	A	A	A	275	A	E								
30						S		230	285	310	305	I A	305	305	305	305	260	160	S							
31						S		200	295	305	315	335	320	300	295	250	190									
		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	12	30	31	31	29	28	23	19	19	20	18	5							
MED						E		185	238	290	305	315	320	310	315	305	272	218	E							
UQ						E		192	250	295	310	320	320	320	320	305	285	230	150							
LQ						E		165	225	285	300	305	305	305	302	300	265	200	E							

OCT. 1969

FOE (0.01 MHz)

IONOSPHERIC DATA

OCT. 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

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 ₁₅	J ₂₃	J ₂₃	18	20	E	28	34	G	G	J ₃₈	J ₄₀	J ₄₃	J ₄₃	28	28	J ₂₈	29	J ₃₀	J ₂₅	J ₂₅	15	J ₂₀	E	
2	E	E	E	E	E	E	24	33	39	39	40	40	39	44	33	30	29	20	J ₂₃	E	17	J ₂₅	15	16	
3	E	E	E	E	E	E ₁₄	24	32	35	41	39	G	44	G	43	G	30	28	J ₃₆	J ₃₅	J ₃₄	J ₇₆	J ₇₆	28	
4	E	18	18	J ₃₄	J ₈₄	J ₅₁	36	40	J ₅₁	60	43	J ₄₃	41	J ₃₀	J ₄₃	J ₅₃	J ₅₅	J ₄₃	J ₄₀	J ₃₅	43	24	J ₂₅	J ₂₃	
5	J ₂₀	J ₄₀	J ₂₄	J ₇₃	J ₂₄	E	G	G	G	37	43	50	J ₆₀	J ₄₄	J ₃₈	J ₈₄	J ₃₈	30	J ₄₃	J ₅₄	J ₆₃	J ₂₃	23	J ₅₃	
6	J ₆₁	J ₄₁	J ₅₁	J ₂₂	J ₂₅	E	G	G	G	40	J ₁₂₀	J ₅₂	35	J ₄₁	G	G	J ₂₁	29	J ₂₀	18	J ₂₅	J ₂₄	J ₂₀	17	
7	J ₂₁	J ₂₅	J ₃₆	J ₅₀	J ₄₁	J ₂₁	J ₂₃	20	38	42	40	J ₅₁	J ₄₅	J ₄₄	J ₈₄	J ₄₂	G	J ₄₆	J ₂₂	J ₄₀	J ₂₁	J ₂₃	24	J ₂₁	
8	J ₁₈	21	23	J ₂₉	J ₄₁	J ₂₂	18	G	G	G	G	38	36	43	30	28	23	J ₂₂	30	25	J ₂₅	21	18	21	
9	21	18	20	20	21	19	21	27	G	36	40	G	37	G	G	G	30	21	E	E	20	20	E	E	
10	E	E	E	E	E	E	G	G	G	G	35	G	G	34	G	J ₃₅	G	J ₂₃	J ₂₃	20	20	20	E ₁₅	22	
11	E	E	E	20	J ₁₉	E	G	G	G	34	G	40	44	J ₄₅	J ₄₃	J ₃₄	J ₃₀	J ₄₄	J ₂₃	J ₂₃	E	20	J ₂₁	21	
12	E	J ₂₁	20	19	J ₁₈	J ₂₀	24	G	G	23	35	G	34	34	G	G	G	E ₁₅	E	E	20	18	E	E	
13	E	16	J ₁₈	J ₃₁	J ₂₂	21	J ₁₉	26	33	35	37	40	34	G	34	32	28	E ₁₄	J ₄₀	J ₂₀	20	21	J ₂₀	16	
14	20	15	E	14	E	E	G	29	G	33	C	34	J ₃₉	G	G	29	J ₂₁	J ₂₁	24	E	21	E ₁₂	22	J ₂₀	
15	21	18	J ₂₅	J ₂₃	J ₂₁	J ₂₁	21	23	G	M ₄₃	J ₄₁	38	34	36	J ₃₁	J ₃₀	J ₂₄	J ₂₃	J ₁₈	J ₂₁	E ₁₃	E	E ₁₃	E	
16	24	J ₂₀	J ₁₉	J ₂₀	J ₂₁	E	G	G	33	G	38	35	J ₄₂	J ₆₉	J ₄₁	G	26	J ₂₁	J ₃₅	J ₆₃	J ₆₃	J ₇₀	J ₅₁	J ₂₁	
17	J ₂₇	J ₂₈	J ₂₀	J ₁₉	J ₂₁	23	G	J ₃₄	40	42	J ₄₁	C	J ₄₈	J ₆₁	J ₅₂	J ₆₃	J ₅₃	J ₃₅	J ₂₃	J ₂₅	J ₃₀	J ₂₃	J ₂₁	20	
18	18	J ₈₁	J ₅₀	J ₃₀	J ₂₄	J ₂₃	J ₃₁	38	31	29	G	36	33	28	J ₃₃	23	21	J ₂₃	J ₂₃	J ₄₃	18	E	E	E	
19	E	J ₂₅	J ₂₀	J ₂₅	J ₂₀	18	20	28	G	G	40	J ₆₄	38	J ₄₃	J ₃₆	J ₄₄	G	J ₂₁	E	E	23	E ₁₅	E ₁₅	J ₆₁	
20	J ₃₅	J ₃₀	J ₂₃	J ₃₄	J ₂₉	J ₂₀	33	38	34	G	36	J ₃₂	42	34	38	J ₃₈	28	J ₃₀	J ₅₁	J ₆₂	42	J ₂₃	J ₁₉	J ₂₁	
21	E ₁₅	E ₁₆	23	J ₂₀	J ₂₀	J ₂₁	22	27	G	G	J ₅₃	G	J ₅₃	28	28	23	22	29	J ₂₁	J ₂₃	J ₂₁	J ₂₁	24	E ₁₅	
22	E ₁₆	E ₁₅	J ₂₁	21	E	E ₁₅	G	30	33	G	34	G	G	31	J ₃₄	30	J ₃₅	J ₂₅	J ₂₄	E ₁₅	20	E ₁₅	20	J ₂₁	
23	24	J ₂₂	J ₂₅	J ₃₀	E ₁₄	E	E ₁₇	G	G	J ₄₄	39	35	G	24	G	20	30	28	J ₂₈	J ₄₁	J ₂₃	J ₂₃	J ₃₀	J ₃₀	
24	E	E	21	J ₂₅	21	E	E ₁₆	26	G	33	G	G	28	30	G	G	29	J ₃₀	E ₁₈	E ₁₅	J ₃₁	24	E ₁₇	E ₁₆	
25	E ₁₅	E	E ₁₅	E ₁₅	E	J ₂₀	E ₁₇	28	G	G	G	J ₄₆	G	G	38	J ₅₃	29	J ₃₀	J ₄₃	J ₅₃	J ₃₃	J ₃₃	J ₂₁	J ₂₁	
26	J ₂₀	J ₂₀	20	J ₂₀	J ₄₃	J ₃₀	20	28	33	35	40	G	J ₄₄	J ₄₃	24	22	29	J ₃₃	21	20	J ₂₀	J ₂₃	J ₂₃	E ₁₆	
27	E ₁₅	20	E	E	E	E ₁₆	G	G	G	36	35	G	G	G	G	28	G	E ₁₄	E ₁₅	E	15	21	E	E ₁₅	
28	E ₁₆	J ₂₀	26	J ₂₁	20	E	E	G	G	G	40	G	35	G	G	G	G	E ₁₅	E ₁₃	E	20	E ₁₇	20	24	
29	E	E	E ₁₅	E	J ₂₀	J ₃₀	20	G	G	22	37	38	38	J ₄₃	J ₃₂	G	22	J ₃₀	J ₂₃	J ₂₁	E	E	E	21	
30	E ₁₅	20	23	21	E	J ₂₀	23	20	G	24	G	37	J ₄₀	29	25	33	18	23	J ₃₁	J ₂₅	J ₂₄	J ₃₀	J ₂₃	J ₃₃	24
31	J ₂₁	J ₂₁	E ₁₄	E	E	E	E ₁₇	G	G	G	G	G	40	43	J ₄₆	G	23	E ₁₅	E ₁₅	E ₁₇	J ₂₃	22	E ₁₅	J 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	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	
MED	E ₁₆	20	20	J ₂₀	J ₂₀	18	19	26	G	33	38	36	38	34	33	28	G	J ₂₈	J ₂₃	J ₂₁	21	21	20	21	
UQ	21	J ₂₂	J ₂₃	J ₂₇	J ₂₃	J ₂₁	23	30	33	38	40	40	42	J ₄₃	J ₄₀	J ₃₄	30	J ₃₀	J ₃₀	J ₃₅	J ₃₀	J ₂₃	J ₂₃	J ₂₂	
LQ	E	E ₁₅	15	16	E	E	G	G	G	G	35	G	34	24	29	G	21	21	19	E ₁₅	20	18	E ₁₅	16	

The Radio Research Laboratories, Japan

OCT. 1969

FOES (0.1 MHz)

IONOSPHERIC DATA

OCT. 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 ₁₅	17	20	14	E	E	G	G	G	G	34	35	35	34	29	29	25	G	22	25	22	12	16	E		
2	E	E	E	E	E	E	G	G	G	G	G	G	G	42	32	30	25	17	13	E	14	22	14	12		
3	E	E	E	E	E	E ₁₄	G	G	G	G	G	G	35	G	32	G	G	25	36	32	33	35	30	14		
4	E	15	E	18	14	23	G	35	48	45	33	35	33	33	33	33	24	25	27	28	30	22	23	20		
5	E	16	18	A	17	E	G	G	G	G	G	46	40	G	33	33	32	G	40	17	27	16	E	30		
6	30	16	20	E	20	E	G	G	G	G	A	48	36	33	G	G	20	17	E	E	E	17	E	E		
7	15	17	26	32	27	17	15	18	37	39	49	46	45	40	41	32	G	17	17	28	18	20	16	16		
8	17	17	14	22	30	17	23	G	G	G	G	G	G	38	31	22	17	21	17	16	E	E	E	E		
9	E	E	E	E	15	E	21	G	G	G	G	G	G	G	G	G	24	15	E	E	16	16	E	E		
10	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	28	G	20	18	17	15	17	E ₁₅	12		
11	E	E	E	E	14	E	G	G	G	G	G	G	G	40	37	28	24	27	12	18	E	E	17	E		
12	E	17	17	17	13	18	20	G	G	G ₂₃	G	G	G	G	G	G	G	E ₁₅	E	E	20	17	E	E		
13	E	13	16	22	18	16	13	G	G	G	G	G	G	G	G	30	23	E ₁₄	20	17	18	E	E	E		
14	17	E	E	E	E	E	G	G	G	G	C	G	34	G	G	21	18	15	E	E	E	E ₁₂	E	18		
15	E	E	21	16	E	14	18	20	G	40	37	36	33	33	31	29	18	16	15	16	E ₁₃	E	E ₁₃	E		
16	E	17	14	18	14	E	G	G	G	G	G	37	31	46	37	G	G	G	30	33	19	21	14	16		
17	17	16	13	E	E	E	G	G	35	G	G	C	46	40	46	33	35	30	13	17	23	21	19	17		
18	14	A	46	25	20	18	20	25	19	20	G	34	33	27	27	22	21	17	20	24	16	E	E	E		
19	E	17	12	16	13	12	20	20	G	G	G	55	G	41	35	35	G	E ₁₅	E	E	E	E ₁₅	E ₁₅	20		
20	18	E	18	26	22	18	30	37	G	G	G	G	46	G	33	30	18	22	48	46	30	21	17	18		
21	E ₁₇	E ₁₆	E	E	16	17	E ₁₇	17	G	G	G	G	38	27	25	20	G	17	E	20	20	17	E	E ₁₅		
22	E ₁₆	E ₁₅	16	E	E	E ₁₆	G	G	G	G	G	G	G	26	31	20	24	20	20	E ₁₅	E	E ₁₅	E	E		
23	E	16	25	25	E ₁₄	E	E ₁₇	G	G	G	G	34	G	G	20	G ₁₈	G	23	25	38	22	20	30	18		
24	E	E	E	16	E	E	E ₁₆	G	G	31	G	G	G	27	27	20	G	G	17	E ₁₈	E ₁₅	E	17	E ₁₇	E ₁₆	
25	E ₁₅	E	E ₁₅	E ₁₅	E	E	E ₁₇	G	G	G	G	41	G	G	32	34	27	25	38	30	30	30	19	E		
26	E	17	15	17	30	21	17	G	G	G	G	G	44	40	22	22	26	30	18	17	17	20	21	E ₁₆		
27	E ₁₅	E	E	E	E	E	E ₁₆	G	G	G	G ₂₀	G	G	G	G	G	28	G	E ₁₄	E ₁₅	E	E	20	E ₁₅		
28	E ₁₆	E	15	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E ₁₅	E ₁₃	E	E	E ₁₇	17	E		
29	E	E	E ₁₅	E	17	17	17	G	G	24	G	G	36	36	30	G	20	14	22	16	E	E	E	E		
30	E ₁₅	E	E	E	E	E	16	G	G	19	G	G	36	G	24	25	18	G	25	20	22	15	18	30	E	
31	18	E	E ₁₄	E	E	E	E ₁₇	G	G	G	G	G	G	G	G	G	G	E ₁₅	E ₁₅	E ₁₇	22	E	E ₁₅	20		
	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	30	30	31	31	31	31	31	31	31	31	31	31	31	31		
MED	E	E ₁₃	14	E ₁₄	13	E	E	G	G	G	G	G	G	G	27	27	27	22	18	17	18	17	16	17	E ₁₅	E ₁₂
UQ	15	16	18	18	17	17	17	E ₁₇	G	G	G	G	36	36	37	32	30	24	22	22	24	22	20	17	16	
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	15	E ₁₅	E ₁₅	E	E	E	E	

The Radio Research Laboratories, Japan

OCT. 1969

FBES (0.1 MHz)

IONOSPHERIC DATA

OCT. 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 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 ₁₅	E	E	E	E	E	E	E	11	11	11	15	16	12	11	E	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E ₁₅	12	15	16	16	16	17	12	13	11	E	E	E	E	E	E	E
3	E	E	E	E	E	E ₁₄	E	11	12	12	12	15	20	11	12	11	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	12	12	12	15	12	16	16	14	E	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	12	11	12	17	15	13	11	11	12	12	E ₁₃	E	E	E	E	E ₁₃	E
6	E	E	E	E	E	E	E	12	12	15	15	16	17	17	12	12	11	E	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
7	E	E	E	E	E	E	E	11	14	17	16	17	12	16	11	11	12	E	E ₁₂	E	E	E	E ₁₂	E
8	E ₁₄	E	E	E	E	E	E	11	11	16	18	17	16	15	17	12	11	11	E	E ₁₂	E	E ₁₃	E ₁₄	E ₁₃
9	E	E	E ₁₂	E	E	E	E	11	11	15	11	13	11	14	12	E	13	11	E	E	E	E	E	E
10	E	E	E	E	E	E	E	13	11	12	11	17	16	16	11	12	11	12	E	E	E	E	E	E
11	E	E	E	E	E	E	E	11	12	15	17	16	12	11	11	12	11	E	E	E	E	E ₁₅	E	E ₁₅
12	E	E	E	E	E	E	E	12	15	14	15	11	12	11	E	11	E ₁₃	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	17	11	14	12	11	12	E	E	E	E	E ₁₄	E	E	E	E ₁₅	E	E
14	E	E	E	E	E	E ₁₂	12	11	12	C	15	11	11	12	E	E	E	E	E	E	E	E ₁₂	E	E
15	E ₁₇	E	E	E	E	E	E	12	15	15	11	12	11	E	E	E	E	E	E ₁₂	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E
16	E ₁₆	E	E	E	E	E ₁₃	14	12	14	12	18	11	11	E	11	11	E	E	E	E	E	E	E	E ₁₅
17	E	E	E	E	E	E	12	12	13	15	15	C	17	11	11	11	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	E	13	12	16	13	11	12	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	11	11	12	11	11	17	16	17	16	E ₁₅	E	E	E	E ₁₆	E ₁₅	E ₁₅	E ₁₅
20	E ₁₅	E ₁₅	E ₁₅	E	E	E ₁₄	E ₁₆	15	17	17	18	19	17	31	18	15	14	E ₁₅	E ₁₅	E ₁₆	E ₁₅	E ₁₅	E ₁₆	E ₁₆
21	E ₁₇	E ₁₆	E ₁₅	E ₁₅	E	E ₁₆	E ₁₇	12	18	17	19	17	16	12	17	15	14	13	E ₁₅	E ₁₅	E ₁₆	E ₁₅	E ₁₅	E ₁₅
22	E ₁₆	E ₁₅	E ₁₅	E	E	E ₁₅	E ₁₅	13	12	16	17	17	20	18	15	15	E	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₇
23	E ₁₅	E	E	E	E ₁₄	E ₁₇	16	17	17	22	15	18	17	12	12	E ₁₈	E ₁₅	E ₁₅	E ₁₅	E	E ₁₅	E ₁₅	E ₁₅	E ₁₆
24	E	E	E ₁₅	E	E ₁₅	E ₁₆	17	16	17	16	17	17	17	17	16	18	E ₁₅	E ₁₆	E ₁₅	E ₁₅	E ₁₆	E ₁₅	E ₁₇	E ₁₆
25	E ₁₅	E	E ₁₅	E ₁₅	E	E	E ₁₇	15	17	17	17	17	16	15	16	11	13	14	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅
26	E ₁₅	E	E	E ₁₄	E	E	E ₁₄	16	16	18	16	24	17	12	11	12	E	E ₁₂	E	E	E	E	E	E ₁₆
27	E ₁₅	E	E	E	E	E	E ₁₆	14	15	17	12	17	18	17	16	16	14	E ₁₄	E ₁₅	E	E	E	E	E ₁₅
28	E ₁₆	E	E	E	E	E	E	15	12	17	17	16	17	16	16	15	16	E ₁₅	E ₁₃	E	E	E ₁₇	E	E
29	E	E	E ₁₅	E	E	E	E	15	11	17	17	18	17	17	13	15	12	E	E	E	E	E	E	E ₁₅
30	E ₁₅	E ₁₄	E	E	E	E	E ₁₅	11	12	20	15	15	17	17	12	11	11	E ₁₄	E ₁₅	E	E	E	E	E ₁₆
31	E ₁₅	E ₁₅	E ₁₄	E	E	E	E ₁₇	16	12	12	15	17	17	12	12	11	15	E ₁₅	E ₁₅	E ₁₇	E ₁₇	E ₁₆	E ₁₅	E 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	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	E	E	E	E	E	E	E	11	12	12	15	16	16	16	12	12	11	11	E	E	E	E	E	E ₁₂
UQ	E ₁₅	E	E ₁₂	E	E	E	E ₁₅	14	16	17	17	17	17	17	14	14	13	E ₁₄	E ₁₅	E ₁₂	E ₁₄	E ₁₅	E ₁₅	E ₁₅
LQ	E	E	E	E	E	E	E	11	12	12	14	15	12	12	11	11	E	E	E	E	E	E	E	E

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F=MIN (0.1 MHz)

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

IONOSPHERIC DATA

OCT. 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	245	265	275	265	F	F	F	290	320	320	290	305	300	315	310	320	315	325	325	300	305	275	270	255	255
2	275	265	265	280	265	275	335	320	320	315	330	315	310	310	300	315	315	320	300	285	250	270	260	270	
3	250	255	255	260	250	255	290	275	280	290	305	320	310	315	315	325	315	325	310	300	290	280	280	250	
4	255	250	265	260	270	F	F	325	335	325	330	320	310	310	320	320	320	320	320	310	290	280	280	265	
5	275	265	280	I A 275	255	280	310	315	325	335	320	310	300	305	315	315	310	310	315	295	290	275	265	265	
6	275	F 260	F 270	275	290	280	325	340	325	330	A	305	310	305	295	305	315	325	310	290	295	285	285	F 260	
7	260	U F 265	U F 255	250	235	F 245	300	310	325	335	315	290	305	300	300	300	315	325	325	290	285	280	270	270	
8	275	270	S 270	270	270	280	350	335	340	335	355	325	315	305	310	315	320	315	300	290	280	300	U S 290	S 280	
9	280	275	280	285	275	285	345	345	325	315	325	305	310	310	300	305	305	305	290	300	315	300	265	265	
10	265	260	270	280	290	285	335	325	315	S 325	325	U S 305	305	295	295	290	295	305	305	295	270	265	260	260	
11	275	265	270	255	265	255	230	F 285	295	325	320	295	305	290	305	310	310	320	300	295	285	295	285	270	
12	255	260	S 275	285	310	275	310	U S 330	320	310	S 315	S 325	305	310	300	315	330	340	295	285	285	295	320	290	
13	255	260	260	265	285	295	340	350	345	S 330	U S 325	320	325	290	315	315	315	315	290	300	295	275	270	270	
14	F 280	F 275	F 275	F 275	F 290	F 275	325	I 320	S 325	S 340	I 360	310	325	305	320	350	335	315	295	300	280	275	295		
15	F 280	F 295	F 280	F 290	280	265	320	330	S 330	330	330	335	310	325	325	325	320	315	330	320	315	290	275	275	265
16	270	285	285	285	290	295	315	335	S 335	335	335	300	S 325	320	315	300	330	335	325	295	300	310	285	285	F U F 285
17	F 280	F 275	F 275	F 275	F 275	F 335	330	335	325	310	S I C 310	U S 315	310	310	325	320	320	315	290	295	290	275	280	F	
18	280	I A 270	270	285	295	285	320	330	305	310	315	315	295	310	305	315	325	310	305	280	U S 300	285	295	285	
19	285	275	275	285	290	280	320	335	335	325	320	310	320	315	305	320	330	325	290	275	290	F 275	F 280	F	
20	F	F	F 280	F 265	F 280	F 310	U S 325	320	315	320	320	315	295	300	330	325	305	315	295	285	300	285	290		
21	275	280	F 285	F 285	285	280	315	345	335	325	315	315	295	320	310	325	315	315	295	295	280	275	280	290	
22	270	275	250	260	260	300	345	345	325	300	310	305	310	315	300	300	315	315	320	300	280	270	280	260	
23	270	270	265	270	265	275	310	345	340	315	315	300	310	300	305	310	320	310	300	290	290	300	280	265	
24	260	260	250	260	280	280	320	335	330	325	320	305	295	295	295	305	310	310	295	280	280	280	285	275	
25	265	280	260	265	270	275	325	335	330	315	285	300	295	295	285	300	305	315	310	275	290	285	265	275	
26	270	270	270	270	280	295	315	340	330	320	290	305	285	290	295	310	305	320	300	280	295	285	270	280	
27	275	260	265	260	285	305	300	325	325	315	310	315	285	290	305	305	310	330	315	280	280	295	285	290	
28	U S 265	260	250	255	265	285	300	305	325	320	300	300	275	300	300	300	300	300	290	295	285	290	285	280	
29	275	265	250	265	260	265	305	320	320	315	310	295	300	295	300	300	315	300	305	295	285	290	280	285	
30	280	285	265	270	285	280	295	345	335	325	315	305	310	300	H 300	R 300	300	320	305	300	300	300	285	285	280
31	280	275	285	295	280	295	310	345	345	335	320	315	305	310	305	320	310	305	320	310	275	290	265	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	30	29	30	30	29	29	31	31	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	29	
MED	275	265	270	270	280	280	315	330	325	325	315	310	310	305	305	315	315	315	305	295	290	285	280	275	
UQ	280	275	275	285	285	285	325	340	335	330	320	315	312	312	310	320	320	325	315	300	295	290	285	285	
LQ	265	260	260	260	265	275	308	320	320	315	310	305	300	295	300	305	310	310	298	288	280	275	270	265	

OCT. 1969

M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 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									380	U ^L	350	395												
2																								
3									U ^L	335	345	345	L	L										
4																								
5																								
6											A	A	L	L										
7														L										
8									395		L		400	410										
9																								
10																								
11																								
12														L										
13									L	395				L										
14									L	C	U ^L	390	415	U ^L	415									
15										L	415		L		U ^L	395								
16									L	L	U ^L	400	L											
17												C												
18												L	L											
19												A												
20											385		L	U ^L	400									
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	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	3	3	5	2	3	1									
MED									U ^L	335	380	350	395	408	U ^L	410	U ^L	395						
UQ									388	372	400		412											
LQ									362	348	390		405											

OCT. 1969

M(3000)F1 (0.01)

IONOSPHERIC DATA

OCT. 1969

H^oF₂ (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											265	275	265											
2																								
3									360	320	290	280	260											
4																								
5																								
6												A	250	250	245									
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
	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	6	6	8	11	4	1								
MED										360	250	258	248	245	245	245								
UQ											265	275	258	250	245									
LQ												250	245	242	242	242								

OCT. 1969

H^oF₂ (KM)

IONOSPHERIC DATA

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H^oF (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	340	305	325	315	350	300	275	250	225	205	205	210	210	225	245	235	245	245	250	250	265	275	325	300
2	300	290	270	280	290	300	245	230	245	245	235	225	220	245	235	240	250	240	235	260	300	300	300	260
3	300	300	285	295	315	315	275	295	250	240	225	200	225	230	240	250	245	240	260 ^A	275	290 ^A	350 ^A	350 ^A	330
4	350	350	300	340	275	345	240	240	240 ^I	245 ^A	215	220	210	225	240	250	245	240	245	265	275	280	290	310
5	295	305	300	310 ^A	310	285	240	235	245	235	240	250 ^A	245	215	240	250	250	225	260 ^A	250	270	265	300	320 ^A
6	340	305	310	275	275	280	245	230	225	240	A	A	205	220	240	245	250	240	220	245	250	270	270	295
7	300	330	350	355	400	340	240	225	235	245	250	245	255	250	250	235	240	225	215	265	265	300	300	295
8	285	290	295	315	325 ^A	285	230	225	230	225	230	225 ^H	210	225	210 ^H	235	240	220	235	235	245	260	270	285
9	290	295	275	270	275	275	225	220	240	225	240	230	220	220	230	250	245	235	230	245	245	240	295	300
10	300	300	290	250	245	225	230	235	235	240	225	220	220	210	235	250	245	235	220	225	250	295	305	300
11	260	275	265	300	300	320	235	245	240	240	230	235	240	250	250	245	245	230	240	250	235	245	260	300
12	320	325	295	265	220	270	225	220	230	230	225	235	210	215	235	240	225	210	235	255	280	260	245	240
13	300	320	340	350 ^A	300	250	220	235	240	240	220	235	215	220	225	250	245	225	250	250	240	275	295	270
14	300	265	260	280	275	275	225	235	235	230	230 ^I	225	215	220	215 ^H	245	240	210	220	240	250	265	300	285
15	275	280	295	265	245	300	245	225	240	250	230	200	215	235	225	240	235	220	215	215	250	265	300	290
16	305	300	260	270	240	255	225	230	240	220	235	220	230	255	235	255	230	215	250	290 ^A	255	290	265	255
17	280	305	290	300	270	260	225	220	220	240	235	235 ^I	250	250	255	240	235	240	230	245	265	260	270	280
18	275	A	A	285	240	235	250	225	225	240	240	220	215	235	240	250	245	225	240	260	250	250	250	260
19	250	260	260	275	250	250	225	220	230	230	230 ^I	240 ^A	210	230	250	245 ^A	230	230	240	250	250	290	275	300
20	320	290	265	295 ^A	275	250	245	235	225	235	235	230	225	250	245	245	225	215	285 ^A	A	305	275	270	290
21	275	270	260	280	275	280	250	235	220	220	230	225	240	245	240	245	230	225	260	250	270	290	275	265
22	260	275	340	320	305	270	215	225	220	220	230	235	215	225	235	245	250	215	230	225	265	275	280	300
23	310	290	315	300	290	260	220	235	220	240	235	225	215	230	250	245	240	220	225	265 ^I	260	250	300 ^A	290
24	300	300	320	325	290	250	230	215	225	240	210	230	235	245	245	250	240	225	245	240	255	255	275	270
25	280	265	290	285	280	275	240	225	225	230	220	245	235	240	245	250	240	225	250 ^A	275 ^A	265 ^A	275 ^A	300	300
26	300	300	270	280	305 ^A	265	235	225	225	230	230	240	240	250	250	260	240	225	225	260	250	260	315	280
27	275	295	280	300	260	250	250	225	230	235	225	230	240	240	250	250	230	235	230	245	260	270	265	255
28	315	300	300	310	300	260	210	225	240	225	225	220	235	225	245	245	240	220	250	250	260	250	250	240
29	265	295	295	300	300	295	250	230	225	225	225	225	240	230	245	245	225	210	230	225	250	260	275	265
30	275	275	275	270	265	250	245	230	225	225	220	220	225	225 ^H	240	240	220	230	240	250	250	285	300	265
31	290	275	275	270	270	245	245	220	225	220	245	240	240	235	250	245	225	215	225	225	280	270	305	350
	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	30	30	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	30	31	31	31	31
MED	300	295	290	295	275	270	240	230	230	235	230	228	225	230	240	245	240	225	235	250	260	270	290	290
UQ	302	305	300	310	300	290	245	235	240	240	235	235	240	245	248	250	245	235	250	260	268	232	300	300
LQ	275	275	270	275	268	250	225	225	225	225	225	220	215	225	235	242	230	220	228	240	250	260	270	265

The Radio Research Laboratories, Japan

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H^oF (KM)

IONOSPHERIC DATA

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H^oES (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	S	125	120	120	100	E	135	125	G	G	110	105	100	105	105	105	105	145	135	120	110	110	110	E
2	E	E	E	E	E	E	150	145	140	125	120	115	110	105	105	105	105	105	105	E	115	110	110	110
3	E	E	E	E	E	S	140	140	125	120	115	G	110	G	110	G	135	120	110	110	110	110	110	110
4	E	150	160	115	110	100	100	125	115	110	110	105	110	105	105	105	105	100	100	100	115	110	110	110
5	105	105	100	100	100	E	G	G	G	120	115	110	110	110	110	110	115	125	115	115	110	105	105	110
6	110	110	110	100	105	E	G	G	G	125	110	110	110	110	G	G	105	105	105	100	100	105	100	115
7	115	100	100	105	105	105	105	105	125	125	115	110	110	105	105	105	G	105	105	100	100	100	100	100
8	100	115	125	100	105	100	100	G	G	G	G	125	120	115	110	105	105	110	105	100	105	100	100	100
9	100	100	100	100	105	105	105	165	G	140	120	G	115	G	G	G	110	100	E	E	115	100	E	E
10	E	E	E	E	E	E	G	G	G	G	125	G	G	115	G	105	G	100	100	100	100	105	S	105
11	E	E	E	105	100	E	G	G	G	140	G	115	110	110	110	110	110	105	105	105	E	100	100	100
12	E	105	105	105	105	100	100	G	G	105	125	G	120	120	G	G	G	S	E	E	135	125	E	E
13	E	110	110	105	105	105	100	160	135	135	125	120	125	G	115	110	105	S	105	100	100	100	100	105
14	105	105	E	105	E	E	G	150	G	140	C	125	110	G	G	105	105	110	120	E	110	S	115	105
15	105	110	105	105	110	110	105	105	G	120	120	115	105	115	105	105	105	105	100	105	S	E	S	E
16	110	105	105	100	105	E	G	G	150	G	140	125	105	105	110	G	145	130	115	110	110	105	105	100
17	100	100	100	100	105	100	G	125	125	120	115	C	105	105	100	120	105	105	105	105	105	105	100	100
18	105	105	105	105	100	100	100	100	100	105	G	110	105	105	105	105	105	105	105	100	105	E	E	E
19	E	105	110	105	100	105	105	150	G	G	125	120	115	105	105	105	G	100	E	E	100	S	S	110
20	105	105	105	105	105	100	145	135	140	G	120	110	110	115	110	105	105	105	125	115	115	100	100	100
21	S	S	105	100	100	105	105	155	G	G	120	G	110	105	105	105	105	105	105	100	100	105	100	S
22	S	S	100	100	E	S	G	150	135	G	120	G	G	105	105	105	105	105	105	S	110	S	105	105
23	105	105	100	100	S	E	S	G	G	115	115	110	G	100	100	100	120	120	110	105	105	105	105	105
24	E	E	105	100	100	E	S	125	G	110	G	G	110	110	105	G	120	110	S	S	105	105	S	S
25	S	E	S	S	E	110	S	150	G	G	G	110	G	G	100	105	100	100	100	100	100	100	100	100
26	100	100	100	100	100	105	100	150	150	135	115	G	105	105	105	105	105	105	100	100	100	100	100	S
27	S	110	E	E	E	E	S	G	G	125	120	G	G	G	G	110	G	S	S	E	100	100	E	S
28	S	100	100	100	100	E	E	G	G	G	115	G	115	G	G	G	G	S	S	E	115	S	110	110
29	E	E	S	E	100	100	105	G	100	125	125	115	110	105	105	G	110	110	105	105	E	E	E	100
30	S	100	100	100	E	100	105	105	100	G	120	105	105	105	105	105	125	110	110	110	110	105	105	105
31	100	105	S	E	E	E	S	G	G	G	G	G	125	120	120	G	180	S	S	S	110	110	S	110
CNT	14	22	22	24	21	16	17	19	13	19	24	19	26	24	24	22	25	26	24	21	28	24	21	22
MED	105	105	105	100	105	102	105	140	125	125	120	110	110	105	105	105	105	105	105	105	108	105	100	105
UQ	105	110	110	105	105	105	105	150	140	130	122	118	115	112	110	105	115	110	110	110	110	108	110	110
LQ	100	100	100	100	100	100	105	125	115	118	115	110	105	105	105	105	105	105	105	100	100	100	100	100

OCT. 1969

H^oES (KM)

IONOSPHERIC DATA

OCT. 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		F 6	F 3	F 2	F 1		H 2	C 1			L 2	L 2	L 2	L 2	L 2	L 1	L 2	H 2	F 2	F 2	F 6	F 1	F 2		
2							H 1	H 1	H 1	F 1	F 1	F 1	F 1	L 2	L 2	L 1	L 1	L 1	F 1		F 1	F 3	F 1	F 1	
3							H 2	H 2	F 1	F 1	F 1		F 1		L 1		H 1	S 2	F 6	F 3	F 5	F 3	F 4	F 1	
4		F 1	F 1	F 3	F 3	L 4	H 11	C 2	C 2	C 2	L 1	L 1	L 1	L 2	L 2	L 3	L 2	L 2	F 3	F 2	FF 11	FF 11	F 5	F 2	
5	F 1	F 2	F 2	F 4	F 2					F 1	F 1	C 2	C 2	F 1	L 2	L 2	L 3	F 1	F 6	F 2	F 3	F 2	F 1	F 4	
6	F 3	F 3	F 6	F 1	F 2					F 1	C 2	C 2	L 1	L 2			L 2	L 1	F 1	F 1	F 1	F 4	F 1	F 1	
7	FF 11	F 3	F 6	F 5	F 3	F 2	L 1	L 1	F 1	F 1	F 1	F 1	C 2	L 3	L 2	L 2	L 2	L 1	F 1	F 1	F 2	F 2	F 1	F 1	
8	F 1	FF 21	FF 11	F 2	F 3	F 2	L 1					F 1	F 1	C 2	L 1	L 1	L 2	FF 11	F 2	F 1	F 2	F 1	F 1	F 1	
9	F 2	F 1	F 1	F 1	F 1	L 1	L 1	H 1		H 1	F 1		F 1				L 1	L 1			F 1	F 1			
10											F 1			F 1		L 3		L 2	F 2	F 1	F 1	F 2		F 1	
11				F 1	F 2				H 1		F 1		L 2	L 3	L 2	L 2	L 4	L 3	F 2	F 2		F 1	F 2	F 1	
12		F 2	F 2	F 2	F 1	F 2	L 1			L 1	F 1		F 1	F 1							F 2	F 1	F 1	F 1	
13		F 1	F 2	F 7	F 3	L 1	L 1	H 1	H 1	H 1	F 1	F 1	F 1		F 1	L 2	L 2		F 2	F 1	F 1	F 1	F 1	F 1	
14	F 2	F 1		F 1				H 1		H 1		F 1	L 2			L 2	L 1	L 1	F 1		F 1		F 1	F 2	
15	F 1	F 1	F 6	F 3	F 1	F 2	L 2	L 1		F 1	F 1	F 1	L 1	F 1	L 2	L 2	L 3	L 2	F 1	F 1					
16	F 1	F 3	F 3	F 2	F 1				H 1		H 1	F 1	L 3	L 3	L 3		H 1	S 2	F 2	F 4	F 4	F 4	F 3	F 1	
17	F 2	F 2	F 2	F 1	F 1	F 1		F 1	S 2	F 1	F 1		L 2	L 2	L 2	FL 12	L 2	L 2	F 1	F 1	F 2	F 2	F 2	F 1	
18	F 1	F 4	F 6	F 5	F 2	F 2	L 3	L 1	L 1		L 1	L 1	L 1	L 2	L 2	L 2		L 1		F 2	F 2	F 1			
19		F 2	F 1	F 1	F 1	F 1	L 1	HL 1			F 1	C 2	F 1	L 2	L 2	L 2		L 1						F 2	
20	F 1	F 1	F 2	F 3	F 3	F 1	HL 1	HL 1	H 1		F 1	F 1	L 1	F 1	L 2	L 2	L 1	L 2	FF 22	FF 32	FF 14	F 2	F 2	F 1	
21			F 1	F 1	F 2	F 2	L 1	HL 1			F 1		L 2	L 1	L 1	L 2	L 1	L 1	F 1	F 2	F 1	F 2	F 1	F 1	
22			F 1	F 1				H 1	H 1		F 1		L 1	L 2	L 2	L 2	L 2	L 2	F 2		F 1	F 1	F 1	F 1	
23	F 1	F 2	F 4	F 4						F 1	F 1	L 1		L 1	L 1	L 1	S 2	S 2	F 2	F 3	F 2	F 2	F 3	F 1	
24			F 1	F 2	F 1			C 1		L 1			L 1	L 1	L 1		F 1	L 1			F 1	F 1			
25					F 1		H 1				L 2				L 1	L 2	L 2	L 3	F 2	F 2	F 2	F 2	F 1	F 1	
26	F 1	F 1	F 2	F 1	F 3	F 2	L 1	H 1	H 1	H 1	F 1		L 2	L 2	L 1	L 1	L 2	L 2	F 1	F 1	F 2	F 1	F 3		
27		F 1							F 1	FF 1					L 1						F 1	F 1			
28		F 2	F 1	F 1	F 1					F 1			F 1									F 1		F 1	F 1
29					F 2	F 2	L 1		L 1	FF 1	F 1	F 1	L 1	L 2	L 2		L 1	L 1	F 2	F 1				F 1	
30		F 1	F 1	F 1		F 1	L 1	L 1	L 1		F 1	L 2	L 1	L 1	L 1	L 1	F 1	L 2	F 2	F 2	F 1	F 2	F 4	F 1	
31	F 2	F 1											F 1	F 1	F 1		H 1				F 1	F 1		F 3	
	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																									

OCT. 1969

TYPES OF ES

IONOSPHERIC DATA

OCT. 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																							
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	43	47	39	28	26	31	53	85	83	88	89	93	94	92	90	91	83	86	78	I _R 66	53	I _A 51	47	49
2	46	I _A 48	48	46	46	45	74	96	91	106	I _R 113	102	89	100	94	101	92	89	76	I _R 72	I _R 60	61	56	55
3	52	52	50	50	45	49	I _R 88	81	90	I _R 96	102	94	95	91	86	89	91	91	A	A	I _A 56	I _A 50	46	45
4	40	41	37	39	35	39	66	73	94	96	100	I _R 98	103	103	99	95	92	I _R 92	88	63	61	57	I _R 58	53
5	90	46	46	47	42	42	64	91	I _R 94	94	98	I _R 100	102	105	102	99	94	93	82	58	53	56	61	57
6	51	46	52	51	45	45	63	91	89	106	102	107	I _R 105	99	96	98	I _R 100	94	86	68	63	56	54	51
7	51	50	50	48	44	46	65	I _R 82	I _R 98	I _R 104	112	108	112	111	110	102	I _R 103	102	81	55	58	56	49	56
8	56	55	55	55	55	54	78	I _R 92	I _R 95	101	109	114	111	103	101	101	100	98	78	66	59	55	55	54
9	51	51	52	46	44	47	67	86	I _R 96	I _R 100	104	109	120	109	102	93	99	I _R 97	86	72	65	52	46	48
10	90	47	47	47	48	42	62	83	91	111	106	98	101	96	106	102	I _R 106	I _R 100	88	64	54	49	51	53
11	54	47	48	46	46	44	76	86	R	R	R	106	111	106	106	I _R 109	I _R 104	90	69	71	71	56	54	49
12	47	49	51	52	47	37	63	89	I _R 100	I _R 110	I _R 113	114	108	100	108	102	I _R 98	86	57	60	I _R 59	61	58	38
13	37	38	38	39	41	45	66	I _R 88	I _R 95	I _R 100	104	I _R 114	103	91	I _R 94	93	I _R 92	83	61	59	56	46	45	44
14	44	44	46	44	44	44	68	89	I _R 97	105	108	I _R 114	116	101	105	101	94	82	55	52	54	53	51	I _R 54
15	56	55	54	51	49	52	76	R	R	I _R 108	110	103	I _R 100	98	103	96	98	80	69	54	46	46	48	52
16	52	51	53	51	45	46	63	93	I _R 100	101	108	114	109	96	104	96	99	83	62	56	49	48	52	49
17	50	I _A 48	51	53	53	50	64	91	I _R 97	102	I _R 102	106	108	111	118	104	94	80	71	74	56	54	53	54
18	93	49	51	54	59	36	61	87	96	99	I _R 121	132	106	101	106	103	100	86	75	62	63	58	58	53
19	61	61	59	59	56	59	78	I _R 92	I _R 103	I _R 104	107	121	113	109	110	I _R 116	100	80	67	66	66	66	67	I _R 62
20	59	61	65	57	52	56	71	R	R	101	120	114	123	109	119	121	91	79	68	59	55	58	57	58
21	57	56	56	56	54	53	68	R	R	112	121	126	121	110	116	102	100	82	62	58	54	56	57	56
22	55	52	46	48	50	53	68	91	I _R 96	110	116	I _R 128	123	116	111	I _R 112	105	99	64	54	49	49	48	46
23	47	50	48	49	47	46	72	90	I _R 104	119	I _R 118	128	122	106	106	112	R	R	74	56	57	54	47	44
24	44	44	44	42	46	46	74	91	111	111	119	121	114	106	106	114	114	I _R 96	69	70	I _R 64	59	60	54
25	54	56	54	49	49	48	75	93	I _R 103	113	113	119	126	120	116	118	I _R 115	I _R 100	77	59	62	56	54	52
26	53	52	48	52	51	47	64	I _R 92	I _R 100	I _R 105	111	116	116	116	119	116	116	99	71	62	65	53	49	48
27	49	48	46	47	47	41	61	I _R 94	I _R 100	I _R 109	111	118	116	119	113	102	I _R 95	I _R 87	70	57	56	58	58	50
28	45	46	46	47	47	C	C	C	C	C	R	123	114	112	115	109	I _R 102	94	71	74	70	69	I _R 64	53
29	50	45	47	49	47	49	72	R	R	R	I _R 131	128	I _R 128	126	124	123	I _R 112	I _R 94	75	I _R 69	56	56	55	53
30	50	47	45	44	47	41	59	99	R	R	R	I _R 111	113	116	114	111	99	87	I _R 68	64	52	46	48	45
31	46	48	47	48	48	49	64	R	R	R	I _R 112	115	112	106	106	I _R 106	I _R 101	86	71	I _R 64	46	48	45	46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ONT	31	31	31	31	31	30	30	25	23	26	28	31	31	31	31	31	30	30	30	30	31	31	31	31
MED	90	48	48	48	47	46	66	91	U _R 97	104	110	114	112	106	106	102	100	90	71	62	56	56	54	52
UQ	54	52	52	52	50	49	72	92	U _R 100	110	114	120	116	111	114	112	U _R 103	96	78	68	62	58	58	54
LQ	46	46	46	46	45	42	63	86	94	100	104	106	104	100	102	98	94	83	68	58	54	50	48	48

OCT. 1969

FOF2 (0.1 MHz)

IONOSPHERIC DATA

OCT. 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 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	470	470	600	H	500	L	L	420								
2									A	L	500	L	A	H	600	550	L	L							
3									L	L	L	L	L	500	470	L	L								
4									L	A	A	A	A	480	500	L	L								
5									L	L	470	L	L	L	L	L									
6									L	460	500	L	L	L	H	520	L	L							
7									L	L	500	L	L	500	460	L	L								
8									450	440	L	L	L	L	L	L									
9									L	L	L	500	L	L	L	L									
10									L	L	L	470	L	L	L										
11									L	L	L	L	470	L	L										
12									L	470	480	L	L	L	L										
13									L	H	600	H	500	L	L	A									
14									L	L	L	L	480	L	L										
15									L	L	460	L	L	L	L										
16									400	L	A	L	460	A	L										
17									L	A	A	L	L	L	L										
18									L	L	L	L	L	L	L										
19									L	L	L	L	L	L	L										
20									L	A	L	L	460	520	L	L									
21									L	450	H	800	L	L	L										
22									L	L	L	L	L	L	L										
23									L	L	A	L	L	L											
24									L	L	450	L	L	L											
25									L	L	L	L	L	L	L										
26									L	L	L	L	480	500	480										
27									L	L	L	L	L	L	L										
28									C	L	440	L	L	L											
29									L	L	L	L	L	L	L										
30									L	L	L	440	500	L	L										
31									L	L	L	L	L	L	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										5	8	11	11	6	1	1									
MED										460	470	470	500	500	480	420									
UQ										470	500	500	500	520											
LQ										450	460	450	480	470											

OCT. 1969

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 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 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						S	A	A	300	I A 325	345	I A 360	360	345	325	I A 300	245	A	S					
2						E	I A 220	260	300	335	A	A	A	I A 340	I A 325	310	A	A	S					
3						S	205	265	I A 305	I A 330	A	A	A	A	A	310	270	A	S					
4						E	200	265	300	A	A	A	A	A	A	A	A	190	S					
5						S	200	255	305	335	A	A	A	A	A	A	A	A	S					
6						S	200	265	315	335	A	A	365	355	330	A	A	A	S					
7						E	A	A	I A 300	335	345	I A 350	360	345	325	A	A	A	S					
8						S	195	260	R I S 300	335	340	350	A	A	A	A	A	A	S					
9						S	200	270	A	A	I A 350	I A 350	R	A	A	A	A	170	S					
10						S	I A 200	265	300	335	345	I A 360	360	A	A	A	250	A						
11						E	190	270	305	I A 325	340	345	A	A	A	A	A	A						
12						A	250	300	315	330	345	A	A	A	A	285	245	180						
13							175	250	290	325	335	I A 340	A	A	A	A	A	A						
14						E	A	245	290	325	I A 330	A	A	A	310	295	260	180						
15						A	A	I A 290	320	325	A	A	A	A	I A 310	285	A	A						
16							180	235	305	320	A	A	A	A	310	285	240	A						
17							175	245	A	A	A	A	A	320	I A 300	275	A	A						
18							175	I A 245	A	A	330	I A 335	340	340	A	A	A	A						
19							185	250	290	320	330	345	I A 350	340	325	295	240	A						
20							A	250	295	320	I A 330	I A 345	350	350	330	295	245	A						
21							A	255	295	320	I A 340	I A 345	355	345	I A 320	I A 275	235	A						
22							170	I A 240	300	A	A	A	355	350	345	285	A	A						
23							170	250	300	320	335	I A 350	355	345	330	300	A	A						
24						S	255	I A 290	320	I A 335	345	340	340	325	305	A	A							
25							170	245	295	I A 320	330	335	I A 340	355	340	305	240	A						
26							A	235	290	325	A	A	355	355	340	310	A	A						
27							155	250	300	320	I A 325	340	I A 350	345	335	295	240	A						
28						C	C	C	C		335	345	355	350	335	295	245	S						
29							A	250	295	325	I A 340	I A 350	I A 355	350	I A 325	285	235	155						
30						S	235	295	325	345	350	350	335	315	280	A	A							
31						S	235	295	325	340	345	350	345	I C 315	275	220	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						5	18	27	27	25	22	20	19	19	21	21	14	5						
MED						E	188	250	300	325	335	345	355	345	325	295	242	180						
UQ						E	200	260	300	330	340	U A 350	358	350	330	300	245	180						
LQ						E	175	245	295	320	330	345	350	340	315	285	240	170						

OCT. 1969

FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 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	J ₂₀ X ₁₈	J ₁₈ X ₂₄	J ₂₃ X ₂₃	E ₁₃ S ₁₄	E ₁₄ S ₂₄			35	34	37	G	40	G	J ₃₃ G	G	J ₃₂ X	32	25	J ₂₅ X	J ₃₆ X	J ₄₆ X	J ₇₁ X	J ₂₄ X	J ₃₆ X	
2	J ₄₅ X	J ₆₄ X	J ₃₄ X	J ₃₁ X	J ₁₉ X	J ₂₀ X		23	31	J ₄₄ X	G	J ₄₇ X	J ₈₁ X	J ₄₄ X	J ₄₀ X	J ₄₉ X	J ₃₂ X	J ₄₅ X	J ₄₅ X	J ₃₁ X	J ₃₉ X	J ₄₈ X	J ₄₄ X	J ₃₀ X	J ₄₈ X
3	J ₂₅ X	J ₁₇ X	J ₁₈ X	J ₁₄ X	J ₁₈ X	21	G	28	J ₄₂ X	41	J ₅₄ X	J ₄₉ X	J ₄₂ X	J ₅₄ X	J ₅₄ X	G	J ₄₈ X	J ₃₅ X	J ₆₆ X	J ₂₈ X	J ₈₅ X	J ₅₆ X	J ₃₃ X	J ₃₃ X	
4	J ₂₀ X	E ₁₄	E	E	J ₁₅ X	J ₂₅ X	G	30	33	J ₅₄ X	J ₈₀ X	J ₅₇ X	J ₃₈ X	J ₄₆ X	J ₅₀ X	J ₆₄ X	30	G	J ₁₇ X	J ₂₀ X	E ₁₄	E	E ₁₄	J ₄₅ X	
5	J ₂₈ X	J ₃₀ X	J ₂₅ X	J ₂₆ X	J ₂₈ X	J ₂₉ X	G	G	G	G	36	41	J ₆₂ X	J ₅₄ X	J ₅₁ X	J ₄₃ X	J ₅₃ X	J ₂₇ X	J ₃₈ X	J ₂₅ X	J ₅₃ X	J ₂₀ X	J ₁₈ X	J ₂₅ X	
6	J ₂₃ X	J ₂₁ X	E	J ₂₀ X	J ₁₃ X	J ₁₈ X	G	G	G	40	44	J ₄₈ X	G	J ₃₆ X	J ₃₀ X	J ₈₃ X	J ₆₅ X	J ₃₃ X	J ₂₅ X	J ₂₀ X	J ₂₁ X	J ₂₀ X	J ₂₀ X	J ₁₈ X	
7	J ₁₈ X	J ₁₉ X	J ₁₈ X	J ₄₆ X	J ₃₈ X	J ₃₃ X	J ₃₆ X	J ₂₉ X	J ₅₃ X	39	42	44	G	G	G	J ₄₂ X	J ₈₃ X	J ₄₅ X	J ₃₃ X	J ₄₅ X	J ₃₃ X	J ₃₉ X	J ₂₇ X	J ₂₇ X	
8	J ₂₅ X	J ₃₃ X	J ₃₇ X	J ₂₀ X	J ₂₂ X	E ₁₄ S	G	G	S	G	37	39	37	J ₃₇ X	J ₆₉ X	J ₄₄ X	J ₄₃ X	J ₃₂ X	J ₅₉ X	J ₃₅ X	J ₂₀ X	J ₂₀ X	J ₂₉ X	J ₂₃ X	
9	J ₁₈ X	J ₁₇ X	E ₁₄ S	E	J ₁₆ X	J ₂₀ X	G	G	33	36	37	39	G	37	36	J ₃₂ X	27	G	E ₁₄ S	J ₁₈ X	J ₂₃ X	J ₂₅ X	E ₁₄ S	J ₃₈ X	
10	J ₅₅ X	J ₂₃ X	E ₁₄ S	J ₂₃ X	E	E ₁₃ S	23	29	G	36	36	38	G	J ₃₆ X	35	J ₅₁ X	J ₂₉ X	J ₂₆ X	J ₂₅ X	J ₂₀ X	J ₂₃ X	J ₁₉ X	J ₂₆ X	J ₂₀ X	
11	E ₁₄ S	E ₁₃ S	E ₁₄ S	E ₁₃ S	E	J ₁₄ X	G	28	G	35	38	37	36	36	J ₃₇ X	J ₄₄ X	J ₃₈ X	J ₂₉ X	J ₂₅ X	J ₁₈ X	J ₃₅ X	J ₂₉ X	J ₁₈ X	J ₁₈ X	
12	J ₁₈ X	E	J ₁₆ X	J ₂₀ X	J ₂₃ X	J ₂₁ X	21	G	35	37	40	37	36	34	37	G	G	G	E ₁₄ S	J ₁₈ X	E ₁₄ S	J ₂₅ X	J ₂₃ X	E ₁₄ S	
13	J ₁₈ X	J ₂₀ X	J ₁₆ X	J ₁₇ X	J ₁₅ X	J ₁₇ X	G	27	31	37	36	40	43	J ₄₃ X	J ₅₇ X	J ₇₄ X	J ₈₀ X	20	J ₁₈ X	J ₂₀ X	J ₂₃ X	J ₂₈ X	J ₂₅ X	J ₄₄ X	
14	E ₁₄ S	E ₁₃ S	J ₂₂ X	E	E	E	J ₂₅ X	G	G	48	43	39	35	33	G	G	G	G	E ₁₄ S	J ₂₀ X	E ₁₄ S	E ₁₄ S	E ₁₄ S	E ₁₃ S	
15	E ₁₄ S	E ₁₄ S	E ₁₃ S	E	E	J ₂₁ X	20	28	35	J ₄₃ X	45	38	36	J ₄₄ X	33	G	29	J ₂₆ X	J ₂₆ X	J ₃₄ X	J ₂₄ X	J ₂₄ X	J ₄₀ X	J ₂₃ X	
16	J ₁₈ X	E ₁₄ S	E	E	J ₁₃ X	E ₁₄ S	G	G	G	G	36	J ₅₃ X	J ₃₉ X	J ₅₆ X	J ₃₀ X	G	G	17	J ₂₀ X	J ₁₇ X	J ₆₃ X	J ₇₆ X	J ₄₅ X	J ₄₉ X	
17	J ₄₄ X	J ₅₄ X	J ₃₄ X	J ₃₀ X	J ₃₇ X	J ₁₈ X	G	31	J ₄₆ X	J ₅₁ X	J ₉₆ X	J ₆₃ X	J ₅₈ X	28	J ₃₉ X	J ₄₀ X	J ₁₈ X	J ₆₅ X	J ₃₄ X	J ₃₈ X	J ₃₉ X	J ₃₃ X	J ₃₂ X	J ₂₅ X	
18	J ₁₈ X	J ₂₄ X	J ₁₄ X	J ₁₃ X	J ₁₈ X	J ₁₄ X	G	28	34	35	J ₄₇ X	J ₇₈ X	J ₄₅ X	J ₂₉ X	36	J ₄₄ X	J ₅₀ X	J ₇₀ X	J ₅₉ X	J ₄₅ X	J ₃₀ X	J ₃₃ X	J ₃₈ X	J ₂₆ X	
19	J ₂₅ X	J ₁₈ X	E ₁₄ S	J ₂₀ X	J ₂₃ X	J ₁₆ X	G	28	34	39	41	42	J ₄₈ X	J ₃₀ X	G	29	J ₂₈ X	J ₂₀ X	J ₂₄ X	J ₃₀ X	J ₄₃ X	E ₁₄ S	E ₁₄ S	E ₁₄ S	
20	E ₁₄ S	E ₁₄ S	E	J ₁₈ X	J ₂₀ X	J ₂₀ X	22	36	36	40	J ₇₅ X	37	G	G	J ₄₂ X	G	J ₃₄ X	J ₂₂ X	J ₃₈ X	E ₁₄ S	E ₁₄ S	E ₁₄ S	E ₁₄ S	E ₁₄ S	
21	J ₃₂ X	J ₄₅ X	J ₄₃ X	J ₄₅ X	J ₃₈ X	J ₄₈ X	J ₂₀ X	G	G	G	36	36	G	G	J ₃₄ X	J ₃₄ X	J ₃₃ X	J ₂₅ X	J ₂₀ X	E ₁₄ S	E ₁₄ S	J ₁₈ X	E ₁₃ S	E ₁₄ S	
22	E ₁₄ S	E ₁₄ S	J ₂₀ X	J ₁₅ X	E ₁₄ S	E ₁₃ S	G	30	J ₅₀ X	J ₆₈ X	38	J ₃₉ X	33	G	G	G	28	J ₄₄ X	J ₃₀ X	J ₃₀ X	J ₄₃ X	J ₆₅ X	J ₄₃ X	J ₂₃ X	
23	J ₄₃ X	J ₂₀ X	J ₁₉ X	E	E	E	G	G	34	38	G	J ₅₅ X	J ₃₃ X	J ₄₄ X	J ₃₀ X	33	J ₄₃ X	J ₃₅ X	J ₂₄ X	J ₃₈ X	J ₃₃ X	J ₄₄ X	J ₆₄ X	J ₃₉ X	
24	J ₂₃ X	J ₁₈ X	J ₂₄ X	J ₃₂ X	J ₂₈ X	J ₂₅ X	E ₁₄ S	G	30	G	36	G	G	G	38	J ₄₇ X	J ₃₂ X	J ₂₃ X	J ₂₄ X	E ₁₃ S	E ₁₄ S	J ₁₈ X	E ₁₄ S	E ₁₄ S	
25	J ₂₀ X	J ₂₀ X	E ₁₄ S	E ₁₃ S	J ₁₅ X	E ₁₄ S	G	G	33	34	G	G	J ₅₈ X	J ₃₃ X	J ₂₉ X	J ₂₆ X	G	J ₂₀ X	J ₂₈ X	J ₃₂ X	J ₂₁ X	E ₁₄ S	E ₁₄ S	E ₁₄ S	
26	J ₁₈ X	E ₁₄ S	E ₁₄ S	J ₂₃ X	J ₂₃ X	E	J ₂₀ X	29	33	35	J ₄₃ X	J ₄₇ X	33	J ₂₈ X	G	35	28	J ₂₀ X	J ₃₄ X	J ₃₃ X	J ₂₆ X	J ₂₀ X	E ₁₄ S	E ₁₄ S	
27	E ₁₃ S	E ₁₃ S	E ₁₃ S	J ₁₈ X	J ₁₈ X	J ₁₄ X	G	G	35	37	35	37	37	G	G	32	G	J ₁₉ X	J ₂₈ X	E ₁₄ S	J ₁₈ X	J ₁₈ X	J ₂₀ X	E ₁₄ S	
28	E ₁₄ S	E	J ₁₉ X	E	J ₁₄ X	C	C	C	C	C	G	G	G	G	G	G	G	E ₁₄ S	E ₁₄ S	J ₃₃ X	J ₂₆ X	J ₃₃ X	J ₂₈ X	E ₁₄ S	
29	E ₁₃ S	E ₁₄ S	E ₁₃ S	J ₂₀ X	E	E	J ₃₀ X	G	G	36	38	36	37	G	J ₃₄ X	G	G	G	E ₁₄ S	E ₁₄ S	E ₁₃ S	E ₁₄ S	E ₁₄ S	E ₁₄ S	
30	E ₁₄ S	E ₁₃ S	E	E	J ₁₈ X	E	E ₁₆ S	G	G	G	G	G	G	G	37	41	J ₄₁ X	J ₄₁ X	J ₂₆ X	J ₂₀ X	J ₂₁ X	J ₂₁ X	J ₂₃ X	E ₁₄ S	J ₂₉ X
31	J ₂₅ X	J ₂₃ X	J ₁₈ X	J ₁₉ X	J ₁₈ X	J ₁₈ X	E ₁₄ S	G	G	G	J ₃₅ X	G	G	G	C	32	G	E ₁₃ S	E ₁₄ S	E ₁₃ S	J ₃₀ X	J ₃₆ X	J ₄₃ X	J ₂₄ X	
	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	30	30	30	29	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31	
MED	J ₁₈ X	J ₁₈ X	J ₁₆ X	J ₁₈ X	J ₁₈ X	J ₁₆ X	G	E ₂₇ G	33	36	38	39	36	J ₃₃ X	34	J ₃₂ X	J ₃₂ X	J ₂₅ X	J ₂₅ X	J ₂₅ X	J ₂₁ X	J ₂₄ X	J ₂₄ X	J ₂₃ X	J ₂₃ X
UQ	J ₂₅ X	J ₂₂ X	J ₂₁ X	J ₂₃ X	J ₂₂ X	J ₂₁ X	21	29	35	40	44	J ₄₈ X	J ₄₀ X	J ₄₀ X	J ₃₉ X	J ₄₄ X	J ₄₄ X	J ₃₂ X	J ₃₂ X	J ₃₄ X	J ₃₇ X	J ₃₃ X	J ₃₁ X	J ₃₀ X	
LQ	E ₁₄ S	E ₁₄ S	E ₁₄ S	E ₁₃ S	E ₁₃ S	14	G	G	G	G	36	37	G	G	G	G	E ₂₇ G	18	J ₁₉ X	J ₁₉ X	J ₁₉ X	J ₁₉ X	E ₁₄ S	E ₁₄ S	

The Radio Research Laboratories, Japan

OCT. 1969
FOES (0.1 MHz)

IONOSPHERIC DATA

OCT. 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 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	14	E	20	16	E ₁₃	E ₁₄	24	30	34	36	G	38	G	G	G	32	29	24	18	20	29	A	18	30
2	28	A	33	15	14	15	23	30	42	G	44	75	39	36	35	24	38	23	22	31	35	34	24	36
3	18	14	E	E	E	E	G	G	36	36	46	39	42	43	38	G	43	31	A	A	A	A	30	21
4	E	E ₁₄	E	E	E	18	G	G	G	50	76	54	38	37	34	39	27	G	E	E	E ₁₄	E	E ₁₄	30
5	18	E	E	14	14	18	G	G	G	G	36	40	39	50	40	33	28	20	26	E	E	E	E	E
6	E	E	E	E	E	E	G	G	G	38	43	44	G	32	28	35	45	22	18	E	E	E	E	E
7	E	16	E	20	19	17	31	28	33	36	G	44	G	G	G	31	50	25	26	30	20	26	23	20
8	23	18	25	E	14	E ₁₄	G	G	S	G	37	37	37	36	38	34	40	23	35	24	18	19	19	E
9	E	E	E ₁₄	E ₁₄	E	E	G	G	32	35	37	38	G	37	34	30	25	G	E ₁₄	E	E	E	E ₁₄	22
10	24	15	E ₁₄	E	E	E ₁₃	23	29	G	35	36	38	G	36	33	30	20	18	E	15	19	14	18	E
11	E ₁₄	E ₁₃	E ₁₄	E ₁₃	E	14	G	28	G	35	37	36	35	35	35	40	32	21	21	16	30	22	15	E
12	E	E	E	16	15	18	20	G	35	37	38	37	36	34	35	G	G	G	E ₁₄	E	E ₁₄	19	E	E ₁₄
13	E	16	14	E	E	E	G	G	31	34	34	38	40	43	54	54	74	19	E	17	18	19	23	E
14	E ₁₄	E ₁₃	18	E	E	E	25	G	G	34	36	39	35	33	G	G	G	G	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	E ₁₃
15	E ₁₄	E ₁₄	E ₁₃	E	E	18	20	27	34	39	43	38	35	36	33	G	28	22	E	19	18	E	26	19
16	E	E ₁₄	E	E	13	E ₁₄	G	G	G	G	35	45	37	50	27	G	G	16	16	E	31	21	E	24
17	26	A	24	19	30	15	G	27	39	43	94	62	48	28	34	32	52	26	18	20	25	26	25	24
18	15	E	14	E	E	14	G	27	32	34	45	38	31	29	35	34	38	20	19	21	19	21	31	23
19	23	14	E ₁₄	E	14	E	G	28	33	34	38	40	36	29	G	G	19	18	E	17	17	E ₁₄	E ₁₄	E ₁₄
20	E ₁₄	E ₁₄	E	14	15	E	19	34	32	36	46	37	G	G	28	G	21	18	19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
21	23	20	29	40	26	24	18	G	G	G	36	36	G	G	33	30	20	18	E	E ₁₄	E ₁₄	E	E ₁₃	E ₁₄
22	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₃	G	28	G	34	36	35	G	G	G	G	25	34	E	E	18	32	35	18
23	26	17	16	E	E	E	G	G	G	36	G	52	30	31	28	32	32	30	21	23	30	29	39	27
24	E	15	E	19	14	15	E ₁₄	G	30	G	36	G	G	G	34	G	28	18	E	E ₁₃	E ₁₄	E	E ₁₄	E ₁₄
25	E	E	E ₁₄	E ₁₃	E	E ₁₄	G	G	31	34	G	30	37	28	26	20	G	18	18	19	E	E ₁₄	E ₁₄	E ₁₄
26	E	E ₁₄	E ₁₄	E	E	E	19	30	32	35	38	37	G	28	G	33	26	16	18	21	18	18	E ₁₄	E ₁₄
27	E ₁₃	E ₁₃	E ₁₃	E	E	E	G	G	34	37	35	36	36	G	G	32	G	16	23	E ₁₄	E	E	E	E ₁₄
28	E ₁₄	E	E	E	E	C	C	C	C	C	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E	E	19	19	E ₁₄
29	E ₁₃	E ₁₄	E ₁₃	E	E	E	18	G	G	36	36	36	36	G	32	G	G	G	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄
30	E ₁₄	E ₁₃	E	E	E	E ₁₆	G	G	G	G	G	G	G	G	35	32	25	19	19	E	E	E	E ₁₄	19
31	18	16	E	15	E	E	E ₁₄	G	G	G	30	G	G	G	C	30	G	E ₁₅	E ₁₄	E ₁₃	18	24	20	E
CNT	31	31	31	31	31	30	30	30	29	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	14	14	E ₁₃	E	E	14	G	G	31	35	36	38	35	30	33	30	26	18	18	14	18	18	14	14
UQ	18	16	14	14	14	15	19	28	33	36	40	40	37	36	35	32	35	22	20	20	20	23	23	22
LQ	E	E ₁₃	E	E	E	E	G	G	G	G	34	36	G	G	G	E	G	19	16	E ₁₄	E	14	E	E ₁₄

OCT. 1969

FBES (0.1 MHz)

IONOSPHERIC DATA

OCT. 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 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 ₁₃	E ₁₃	E	E	E ₁₃	E ₁₄	15	16	15	16	14	15	18	17	15	15	13	15	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃
2	E ₁₄	E	E	E	E	E	14	14	16	15	19	16	14	14	13	14	13	13	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃
3	E ₁₃	E	E	E	E	E ₁₃	14	14	14	16	16	17	19	16	18	16	15	15	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₃
4	E ₁₃	E ₁₄	E	E	E	E	14	14	15	17	16	17	18	17	16	16	13	14	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₃
5	E ₁₃	E	E ₁₃	E	E	E ₁₄	14	16	18	14	16	18	18	16	15	16	13	13	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄
6	E ₁₄	E ₁₃	E	E	E	E ₁₄	16	15	16	16	17	16	16	16	16	16	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃
7	E ₁₄	E	E ₁₃	E	E	E	14	15	15	16	15	16	16	15	14	16	13	13	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃
8	E ₁₄	E	E	E	E	E ₁₄	16	14	S	16	15	18	18	19	17	14	13	14	E ₁₄	E ₁₃	E ₁₃	E	E ₁₃	E ₁₄
9	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	14	14	15	15	16	15	16	16	16	14	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
10	E ₁₄	E	E ₁₄	E	E	E ₁₃	14	16	15	16	14	18	22	15	16	15	14	13	E ₁₄	E	E ₁₄	E	E	E ₁₄
11	E ₁₄	E ₁₃	E ₁₄	E ₁₃	E	E	15	15	15	15	14	16	15	15	18	16	14	14	E ₁₄	E ₁₃	E ₁₃	E ₁₃	E	E ₁₄
12	E ₁₄	E	E	E	E	E	14	15	16	18	15	18	16	15	16	15	14	13	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₃	E ₁₄
13	E ₁₄	E	E	E	E	E ₁₄	14	14	15	15	18	19	18	16	16	15	14	13	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄	E ₁₄
14	E ₁₄	E ₁₃	E	E	E	E	14	14	14	15	16	15	15	16	15	15	16	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃
15	E ₁₄	E ₁₄	E ₁₃	E	E	E	E ₁₄	13	15	15	15	15	16	16	18	15	14	13	E ₁₃	E	E ₁₃	E ₁₃	E ₁₃	E ₁₃
16	E ₁₃	E ₁₄	E	E	E	E ₁₄	14	14	12	14	15	16	16	16	16	16	14	12	E ₁₃	E ₁₄	E ₁₃	E ₁₃	E ₁₃	E ₁₃
17	E ₁₃	E	E	E	E	E	13	14	14	15	14	15	15	15	14	15	15	13	E ₁₃	E ₁₃	E ₁₃	E	E	E ₁₄
18	E ₁₄	E ₁₄	E	E	E	E	12	14	15	15	19	19	16	16	16	13	13	13	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃
19	E ₁₃	E	E ₁₄	E	E	E ₁₄	14	15	15	15	16	16	15	18	18	15	13	13	E ₁₄	E ₁₃	E	E ₁₄	E ₁₄	E ₁₄
20	E ₁₄	E ₁₄	E	E	E	E ₁₄	13	15	16	18	18	19	18	21	18	14	14	12	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
21	E ₁₃	E ₁₄	E	E	E	E	13	17	16	14	19	18	18	15	15	16	15	13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄
22	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₃	14	15	15	16	16	22	20	18	16	16	15	14	E ₁₃	E ₁₃	E ₁₃	E	E ₁₃	E ₁₃
23	E ₁₃	E ₁₃	E	E	E	E	14	15	16	17	18	16	18	15	15	15	13	13	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃
24	E ₁₃	E	E	E	E	E	E ₁₄	13	16	16	14	16	16	19	15	15	15	13	E ₁₃	E ₁₃	E ₁₄	E ₁₃	E ₁₄	E ₁₄
25	E ₁₃	E ₁₃	E ₁₄	E ₁₃	E	E ₁₄	13	15	13	15	16	16	15	18	15	14	14	13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
26	E ₁₄	E ₁₄	E ₁₄	E	E	E	E ₁₃	15	15	14	16	18	16	16	16	16	15	12	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄	E ₁₄
27	E ₁₃	E ₁₃	E ₁₃	E	E	E	14	14	15	15	14	13	19	16	16	16	15	13	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
28	E ₁₄	E	E	E	E	C	C	C	C	C	16	15	18	13	16	14	15	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄
29	E ₁₃	E ₁₄	E ₁₃	E	E	E	E ₁₄	15	15	14	17	18	17	17	14	16	16	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
30	E ₁₄	E ₁₃	E	E	E	E	E ₁₆	16	16	16	18	16	18	18	14	13	15	14	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
31	E ₁₃	E	E	E	E	E	E ₁₄	15	15	15	16	19	14	15	C	14	14	E ₁₃	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₄
	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	30	30	29	30	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	E ₁₄	E ₁₃	E	E	E	E	14	15	15	15	16	16	16	16	16	15	14	13	E ₁₃	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄
UQ	E ₁₄	E ₁₄	E ₁₃	E	E	E ₁₄	14	15	16	16	17	18	18	17	16	16	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
LQ	E ₁₃	E	E	E	E	E	14	14	15	15	15	16	16	15	15	14	13	13	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E ₁₃

The Radio Research Laboratories, Japan

OCT. 1969

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

OCT. 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	250	280	285	265	260	265	307	315	325	320	315	310	320	310	315	320	315	315	310	310	300	265	260	265
2	275	270	275	265	265	260	310	325	330	320	320	315	305	300	300	305	310	315	305	300	260	270	270	265
3	255	260	270	265	250	290	305	315	310	310	305	310	305	310	310	315	305	330	A	A	295	290	285	260
4	255	265	275	290	275	275	330	330	340	330	335	315	315	305	315	315	315	320	320	305	295	280	290	270
5	280	285	280	290	275	275	320	330	335	325	325	310	310	315	315	315	320	325	320	300	285	285	280	285
6	285	285	275	285	305	270	325	345	325	330	315	325	310	305	300	315	310	320	320	305	295	300	280	265
7	275	260	270	275	255	255	310	330	320	310	310	305	295	295	320	305	310	325	325	290	280	275	285	270
8	285	270	280	275	280	280	325	325	325	330	320	310	315	310	305	310	310	320	325	295	295	280	280	280
9	275	275	280	265	275	270	330	325	330	325	305	320	310	310	305	310	315	315	310	295	315	295	265	265
10	275	275	280	290	315	305	325	340	330	325	325	310	310	295	300	300	305	315	320	295	295	265	260	270
11	280	270	270	260	265	265	320	335	R	R	R	310	300	295	295	310	315	315	305	295	305	305	280	265
12	260	265	275	310	335	285	325	330	330	325	310	305	305	300	305	305	320	325	295	285	290	305	325	305
13	270	265	265	265	270	280	330	335	335	330	310	320	315	310	305	310	320	325	315	305	305	280	280	275
14	275	275	285	280	270	275	320	325	330	335	320	320	320	310	315	325	325	335	310	290	290	285	285	280
15	290	290	285	295	290	280	320	R	R	325	335	330	320	305	320	315	335	325	325	310	285	285	270	270
16	280	285	295	295	290	275	325	330	330	325	330	315	325	310	315	315	325	330	330	305	290	295	275	285
17	280	285	270	265	285	285	335	335	330	335	325	320	315	300	310	325	325	315	300	310	295	285	280	280
18	285	285	280	295	335	280	320	335	330	325	315	320	310	310	320	320	320	315	310	305	285	295	295	290
19	290	295	290	295	285	290	325	335	330	335	325	315	310	310	305	315	335	315	300	295	290	290	300	290
20	280	280	310	300	275	270	310	R	R	325	325	315	310	305	300	315	335	315	310	295	290	295	300	295
21	280	275	285	280	285	275	315	R	R	320	310	305	310	300	310	315	330	315	315	300	300	275	280	295
22	295	280	265	260	265	275	330	350	330	325	310	315	305	305	300	305	320	335	330	280	285	275	285	265
23	270	275	280	285	280	285	320	335	340	330	310	315	305	305	305	305	R	R	315	305	300	295	285	285
24	275	270	270	265	275	285	325	335	335	325	315	305	300	300	300	305	315	315	295	290	295	295	290	285
25	270	285	285	280	285	285	320	325	320	320	315	300	300	295	295	305	310	320	300	290	295	285	280	275
26	275	280	275	285	295	290	305	330	330	320	315	320	285	295	305	305	315	315	295	285	300	295	285	275
27	280	285	270	290	300	285	300	320	320	320	310	305	295	305	300	305	305	300	315	285	290	295	295	285
28	265	275	275	280	275	C	C	C	C	C	R	295	300	285	295	300	305	300	290	295	300	305	300	290
29	295	265	275	265	280	275	310	R	R	R	310	300	300	295	295	300	305	315	295	300	300	290	285	285
30	290	290	280	280	300	285	305	335	R	R	R	315	305	305	310	310	315	320	300	300	300	285	290	285
31	285	285	290	285	290	285	315	R	R	R	325	315	310	305	310	315	320	315	295	310	285	290	260	250
	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	30	30	25	23	26	28	31	31	31	31	31	30	30	30	30	31	31	31	31
MED	280	275	280	280	280	280	320	330	330	325	315	315	310	305	305	310	315	315	310	298	295	290	285	280
UQ	285	285	285	290	290	285	325	335	330	330	325	318	312	310	312	315	320	325	320	305	300	295	290	285
LQ	272	270	272	265	272	275	310	325	325	320	310	308	302	300	300	305	310	315	300	290	290	280	280	268

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M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 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 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	365	385	350	365	L	L	365								
2									A	L	L	A	355	355	L	L								
3									L	L	L	L	365	380	L	L								
4									L	A	A	A	375	360	L	L								
5									L	L	370	L	L	L	L	L								
6									L	380	375	L	L	370	L	L								
7										L	365	L	365	375	L	L								
8										395	390	L	L	L	L	L								
9										L	L	370	L	L	L									
10									L	L	L	385	L	L	L									
11										L	L	L	360	L	L									
12										L	365	375	L	L	L									
13										L	350	365	L	L	A									
14										L	L	L	365	L	L									
15										L	L	390	L	L	L									
16										400	L	A	380	A	L									
17										L	A	A	L	L	L									
18										L	L	L	L	L	L									
19										L	L	L	L	L	L									
20										L	A	370	365	L	L									
21										L	380	335	L	L	L									
22										L	L	L	L	L	L									
23										L	L	A	L	L										
24										L	L	400	L	L	L									
25										L	L	L	L	L	L									
26										L	L	L	360	365	355									
27										L	L	L	L	L	L									
28										C	L	410	L	L										
29										L	L	L	L	L	L									
30										L	L	390	360	L	L									
31										L	L	L	L	L	C									
CNT											5	8	11	11	6	1	1							
MED											380	372	375	365	368	355	365							
UQ											395	382	390	365	375									
LQ											365	365	368	360	360									

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M(3000)F1 (0.01)

IONOSPHERIC DATA

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H^oF₂ (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								280	260	255	255	295	265	255	255	255									
2									240	265	250	250	290	290	300	255									
3									280	260	280	255	270	270	255	260									
4									230	250	260	245	265	260	270	255									
5									245	250	255	265	270	270	260	250									
6									240	245	260	260	250	270	265	265									
7									240	270	250	255	265	270	250										
8									240	250	250	255	280	265	255										
9									245	270	260	260	245	255											
10									250	250	245	250	255	270	260										
11									245	250	260	265	260	265											
12									250	245	250	250	270	265											
13									240	290	255	250	250	265											
14									235	255	255	255	250	265											
15									240	245	245	250	280	260											
16									245	250	250	250	255	265											
17									235	250	260	260	255	255											
18									245	260	250	250	265	265											
19									245	250	255	255	240	265											
20									240	260	250	275	245	275											
21									230	245	320	250	265	255											
22									250	250	265	255	280	250											
23									235	290	255	255	270												
24									230	255	240	250	255	290											
25									245	235	255	255	255	260											
26									230	245	255	255	270	270											
27									250	235	265	270	285	270											
28									C	250	250	255	290												
29									240	240	245	265	255	250											
30									245	250	240	260	275	270											
31									235	245	250	250	250	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	7	30	31	31	31	31	28	8									
MED								280	245	245	250	255	255	265	265	255									
UQ									255	250	260	260	265	270	270	258									
LQ									240	240	245	250	250	255	258	252									

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H^oF₂ (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

OCT. 1969

H¹F (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	350	300	250	380	360	340	245	250	240	215	205	215	200	230	230	235	235	235	235	240	235	305	310	340
2	330	I A 335	I A 305	290	290	300	240	230	I A 230	225	I A 230	I A 240	215	220	230	I A 240	235	240	235	250	290	330	290	I A 300
3	290	315	285	265	305	270	240	240	240	240	I A 220	230	240	240	240	245	245	240	A	A	A	A	I A 290	310
4	340	320	290	260	240	295	230	225	235	A	A	A	215	230	230	I A 240	240	245	220	220	250	250	270	310
5	280	290	300	255	290	330	230	240	230	230	220	230	230	I A 240	I A 240	245	245	235	235	230	260	265	260	255
6	255	300	290	255	220	290	235	230	230	215	230	I A 240	220	205	245	250	250	235	230	230	245	240	280	260
7	295	305	290	300	300	345	235	235	225	230	220	245	220	200	245	240	250	240	220	270	270	290	310	300
8	290	290	310	295	270	270	230	225	I A 230	215	210	235	200	230	240	240	245	230	245	265	250	280	285	280
9	290	290	270	250	255	275	225	220	235	230	215	220	225	225	220	230	240	235	220	245	240	240	290	330
10	315	295	280	245	245	250	225	220	230	230	230	220	220	220	220	245	245	225	220	215	235	270	320	300
11	255	245	290	295	290	305	240	230	240	235	230	220	215	235	235	255	240	230	235	250	245	245	260	280
12	315	295	295	245	205	270	230	225	230	230	225	205	230	220	245	235	235	230	210	270	260	250	230	240
13	300	340	335	300	275	270	230	230	230	220	215	H 205	230	240	I A 245	265	I A 250	230	225	245	245	265	300	280
14	290	265	265	255	260	295	230	230	235	230	235	230	210	225	230	245	230	215	210	245	250	250	280	275
15	265	255	250	245	250	300	240	225	230	235	I A 220	215	190	H 220	230	245	240	220	220	240	245	270	I A 310	310
16	290	270	250	240	225	270	240	230	230	215	230	I A 230	210	I A 230	230	240	240	225	220	245	I A 250	270	295	290
17	305	I A 300	320	300	300	260	220	230	230	A	A	A	I A 230	225	240	245	250	230	230	245	255	290	295	305
18	270	250	270	245	215	230	240	225	235	220	I A 205	240	235	220	220	245	235	230	230	250	270	245	280	265
19	270	250	245	245	250	265	230	225	230	230	230	230	220	220	240	250	220	220	245	250	255	250	255	245
20	280	270	225	240	255	295	230	230	230	230	I A 240	215	230	245	230	240	220	220	235	245	250	270	265	255
21	285	270	295	I A 290	280	300	245	230	235	230	225	215	240	230	240	240	230	225	220	245	250	290	265	250
22	250	250	310	315	305	280	215	220	230	235	220	200	240	215	230	245	230	230	200	225	290	310	I A 300	300
23	310	290	290	265	260	290	230	215	225	230	210	H 220	220	215	H 240	240	245	230	210	245	280	270	A	290
24	290	290	295	330	295	275	240	215	230	215	200	200	190	235	235	250	240	225	230	240	250	245	255	270
25	290	255	255	280	260	280	245	220	230	230	225	210	230	235	240	240	240	230	215	230	250	245	280	275
26	290	260	250	255	245	250	230	220	230	225	225	230	215	230	230	250	240	220	220	255	255	245	255	290
27	270	265	285	280	245	250	245	240	235	230	225	205	H 225	H 240	245	240	240	215	230	240	260	260	250	240
28	290	280	290	270	290	C	C	C	C	C	230	205	230	230	245	245	230	230	220	255	250	245	245	240
29	250	265	290	300	260	280	245	220	230	240	225	225	230	235	230	235	240	225	225	230	240	245	250	255
30	260	260	255	250	250	245	245	230	225	230	230	225	220	240	240	240	235	225	245	240	240	255	275	280
31	285	280	255	270	255	255	220	225	230	230	230	230	220	230	I A 240	240	230	215	245	230	245	290	310	325
	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	30	30	30	30	28	29	29	31	31	31	31	31	31	30	30	30	30	30	31
MED	290	280	290	265	260	278	232	228	230	230	225	220	220	230	240	240	240	230	225	245	250	262	280	280
UQ	298	298	295	295	290	295	240	230	235	230	230	230	230	235	240	245	245	232	235	250	260	280	295	300
LQ	270	262	255	250	248	265	230	220	230	222	220	215	215	220	230	240	235	225	220	230	245	245	260	258

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H¹F (KM)

IONOSPHERIC DATA

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H⁺E^s (KM)

135 E Mean Time (G. M. T. + 9^h)

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	105	105	130	130	S	S	140	125	130	120	G	115	G	105	G	105	140	130	125	115	110	110	105	105	
2	105	105	105	105	105	105	150	145	130	G	115	110	105	105	105	105	100	110	120	110	110	105	105	105	
3	105	110	110	110	110	120	G	150	125	115	115	115	115	110	115	G	140	120	110	110	110	110	105	105	
4	105	S	E	E	110	105	G	140	130	115	105	105	105	105	105	105	125	G	120	115	S	E	S	105	
5	110	105	110	105	105	105	G	G	105	G	130	115	115	115	115	115	115	120	115	110	115	105	105	105	
6	105	110	E	100	110	110	G	G	G	125	115	115	G	110	110	105	105	105	100	105	105	100	100	100	
7	105	105	110	105	105	105	105	100	105	120	115	115	G	G	G	115	110	105	105	100	100	100	100	100	
8	105	105	110	105	105	S	G	G	S	G	135	130	115	115	110	110	105	105	105	100	100	100	110	110	
9	105	105	S	E	105	105	G	G	150	130	130	120	G	115	115	115	115	G	S	105	100	100	S	110	
10	110	105	S	100	E	S	150	155	G	145	140	130	G	120	115	110	110	110	105	105	100	100	100	105	
11	S	S	S	S	E	105	G	170	G	140	130	125	120	115	115	110	110	105	105	105	105	100	100	105	
12	100	E	110	105	105	105	150	G	130	140	125	130	130	130	115	G	G	G	S	140	S	110	105	S	
13	105	105	105	105	105	105	G	150	130	125	120	125	120	115	110	115	115	115	110	110	105	105	105	115	
14	S	S	105	E	E	E	105	G	G	125	120	120	120	115	G	G	G	G	S	110	S	S	S	S	
15	S	S	S	E	E	110	140	130	125	120	120	120	115	110	115	G	140	110	110	110	110	120	110	105	
16	105	S	E	E	100	S	G	G	G	G	120	115	115	105	110	G	G	140	120	115	115	110	110	105	
17	105	105	100	100	100	100	G	130	120	115	110	105	110	105	105	150	125	115	110	105	105	105	105	100	
18	105	105	100	100	100	100	G	150	120	120	115	110	105	105	130	115	110	110	105	105	105	105	100	100	
19	105	105	S	110	105	105	G	150	140	130	125	125	110	110	G	110	110	130	105	105	105	S	S	S	
20	S	S	E	100	100	100	140	140	130	125	115	120	G	G	110	G	100	105	100	S	S	S	S	S	
21	100	100	100	100	100	100	105	G	G	G	120	115	G	G	105	105	105	105	140	S	S	110	S	S	
22	S	S	100	105	S	S	G	150	120	115	125	105	110	G	G	G	130	115	115	110	105	110	105	105	
23	100	105	105	E	E	E	G	G	130	115	G	110	105	105	105	140	125	115	110	110	105	105	105	105	
24	105	105	100	100	100	100	S	G	120	G	115	G	G	G	140	130	125	115	115	S	S	105	S	S	
25	105	105	S	S	100	S	G	G	130	115	G	110	105	105	105	100	G	110	105	105	105	S	S	S	
26	105	S	S	115	100	E	100	140	140	150	115	115	110	100	G	140	130	120	105	105	105	100	S	S	
27	S	S	S	105	105	105	G	G	140	130	130	130	125	G	G	150	G	115	110	S	105	100	100	S	
28	S	E	100	E	100	C	C	C	C	C	G	G	G	G	G	G	G	S	S	105	105	100	100	S	
29	S	S	S	105	E	E	105	G	G	130	130	125	120	G	115	G	G	G	S	S	S	S	S	S	
30	S	S	E	E	100	E	S	G	G	G	G	G	G	G	G	130	135	125	115	110	110	105	105	S	100
31	100	105	100	105	105	105	S	G	G	G	110	G	G	G	C	140	G	S	S	S	100	100	100	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	22	18	17	21	23	19	11	15	20	22	26	27	20	21	22	22	23	24	25	25	24	25	20	20	
MED	105	105	105	105	105	105	140	145	130	125	120	115	115	110	112	115	115	115	110	110	105	105	105	105	
UQ	105	105	110	105	105	105	145	150	130	130	130	125	120	115	115	135	125	118	115	110	108	110	105	105	
LQ	105	105	100	100	100	102	105	135	120	115	115	112	108	105	105	105	110	108	105	105	105	100	100	102	

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H⁺E^s (KM)

IONOSPHERIC DATA

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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 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	F2	F2	F3	F2			H1	H2	H1	H1		S		F		F	H1	H3	H2	F2	F4	F2	F2	F4	
2	F4	F5	F4	F3	F2	F2	H2	H2	H2		S	S	F	F	F	F	F	F	S	F3	F3	F4	F3	F3	
3	F3	F2	F1	F1	F1	S		H1	H2	F	S	F	S	S	S		H2	S	F	F3	F3	F4	F4	F3	
4	F2				F2	F		H1	H1	S	F	F	F	F	F		H1		F	F1				F4	
5	F4	F3	F2	F2	F2	F2			F2	H1	F	F	F	S	S	S	S	S	S	F	F2	F1	F1	F1	
6	F2	F2		F1	F1	F				H2	S	S	S		F	F	F	F	F	F1	F2	F2	F2	F2	
7	F1	F2	F2	F4	F3	F	F	F	F	H2	F	F			S	F	F	F	F	F3	F3	F4	F4	F5	
8	F3	F3	F6	F2	F2					H1	H1	S	S	F	F	F	F	F	F	F3	F2	F1	F4	F2	
9	F2	F2			F2	F			H1	H2	H2	S	S	S	S	S	S			F1	F1	F1		F2	
10	F3	F2		F1			H2	H1		H2	H1	H1		F	S	F	F	F	F	F1	F2	F1	F2	F1	
11						F		H1		H1	H1	H1	H2	S	S	S	S	F	F	F2	F4	F4	F2	F2	
12	F2		F1	F3	F6	F4	H2		H2	H1	H1	H1	H1	H1	S					F1		F3	F1		
13	F2	F2	F2	F1	F2	F2		H1	H1	H1	H1	H1	H2	S	S	S	S	S	F	F3	F2	F2	F4	F1	
14			F2				F			H1	H1	S	F	F						F1					
15					F2	H2	H2	H2	H2	S	S	S	S	F	F	S		H2	F	F	F2	F4	F1	F3	F2
16	F2				F1						S	S	S	F	F			H1	F1	F1	F4	F3	F2	F4	
17	F4	F5	F5	F4	F4	F1		H2	S	S	S	S	F	F	F	H1	H4	S	F	F3	F5	F6	F3	F4	
18	F2	F1	F2	F1	F1	F1		H2	S	S	S	S	F	F	H2	S	F	F	F2	F2	F3	F4	F4	F3	
19	F5	F2		F2	F2	F2		H2	H2	H2	H2	H1	F	F		F	F	H2	F	F3	F2				
20				F2	F3	F1	H1	H2	H2	H2	S	F			F		F	F	F2						
21	F3	F3	F4	F6	F6	F4	F				F	F			F	F	F	F	F			F1			
22			F2	F1				H2	H1	F	H1	F	F	F			H2	S	F2	F2	F2	F4	F4	F2	
23	F4	F2	F2						H1	S		F	F	F	F	H2	H2	S	F5	F4	F3	F4	F3	F3	
24	F2	F2	F2	F2	F2	F1			S		F				H1	H1	H2	S	F			F1			
25	F1	F1			F1				H1	F		F	F	F	F			F	F	F3	F1				
26	F1			F1	F1		F	H2	H1	H1	S	F	F	F		H2	H1	F	F2	F3	F2	F1			
27				F1	F1	F1			H2	H2	H1	H1	F			H1		F	F2		F2	F2	F1		
28			F2		F1															F2	F2	F4	F3		
29				F1			F			H1	H1	H1	F		F										
30					F1										H3	H2	S	S	F2	F1	F2	F4		F3	
31	F2	F2	F2	F1	F1	F2					F					H1					F2	F2	F2	F1	
CNT																									
MED																									
UQ																									
LQ																									

OCT. 1969

TYPES OF ES

IONOSPHERIC DATA

OCT. 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	46	50	41	32	30	31	59	C	C	C	C	C	C	C	C	C	C	87	81	68	55	48	I ₅₀ ^R	I ₅₀ ^A
2	48	47	47	46	45	45	75	93	J ₁₀₂ ^R	96	116	101	93	101	101	105	98	90	83	J ₇₉ ^R	68	I ₅₈ ^A	A	A
3	A	A	53	51	49	58	80	96	104	108	106	110	100	98	96	95	J ₁₀₅ ^R	93	I ₇₈ ^R	55	58	55	48	47
4	44	43	45	42	38	38	69	81	J ₁₀₅ ^R	95	97	108	105	C	C	C	C	J ₁₀₄ ^{UR}	90	66	60	56	57	51
5	52	46	48	47	40	42	J ₆₆ ^R	R ₈₄	J ₁₀₀ ^R	97	98	102	112	114	105	103	98	104	83	55	54	56	57	56
6	52	47	49	51	43	41	66	89	94	97	104	116	116	116	115	J ₁₀₅ ^R	J ₁₀₄ ^R	102	92	71	60	57	50	51
7	52	50	50	48	44	43	R	95	97	101	110	120	120	115	115	111	106	101	82	56	58	59	55	56
8	57	55	56	52	51	55	76	93	J ₁₀₇ ^R	97	J ₁₀₅ ^R	114	116	110	J ₁₀₈ ^R	J ₁₀₄ ^R	J ₁₀₅ ^R	109	90	63	60	53	J ₅₅ ^R	55
9	53	50	50	46	44	43	61	84	101	103	98	116	124	114	110	107	106	J ₁₀₄ ^R	90	67	59	52	46	47
10	50	48	47	47	45	39	61	75	98	101	103	101	105	105	117	116	120	118	86	68	59	51	52	56
11	57	47	46	45	45	44	73	92	J ₁₀₄ ^R	97	114	109	104	114	124	122	108	97	75	75	73	55	48	48
12	48	48	50	53	45	37	61	87	108	108	111	108	120	119	116	108	104	93	68	58	61	60	50	37
13	36	36	37	36	38	40	70	101	113	95	105	112	109	111	103	100	97	89	68	56	54	47	43	45
14	42	44	41	39	36	37	66	91	J ₁₀₄ ^R	100	J ₁₀₄ ^R	120	117	110	114	108	92	82	51	47	50	50	50	51
15	55	52	51	50	46	47	71	J ₁₀₆ ^R	107	110	102	105	102	107	109	104	100	86	64	51	44	45	48	50
16	50	51	51	51	43	44	64	87	J ₁₀₄ ^R	100	114	122	114	110	115	96	100	90	62	52	50	49	48	45
17	46	45	I ₄₅ ^C	46	46	47	64	89	109	109	103	106	113	123	116	113	96	85	71	70	52	51	50	50
18	I ₅₄ ^C	50	50	54	46	33	56	84	97	112	116	132	118	107	110	109	99	I ₈₄ ^R	74	60	60	60	57	54
19	J ₅₃ ^R	50	50	45	43	42	62	93	101	107	110	116	106	106	113	118	J ₁₀₄ ^R	83	66	61	61	I ₆₃ ^R	62	60
20	57	60	65	50	49	50	71	J ₁₀₄ ^R	115	116	115	114	117	121	111	114	102	85	66	60	55	56	59	53
21	I ₅₁ ^R	50	I ₅₂ ^R	51	53	49	I ₇₀ ^R	103	128	135	112	125	120	120	122	110	100	R ₈₆	65	57	60	57	59	J ₅₅ ^R
22	56	52	46	48	47	50	71	87	102	J ₁₀₇ ^R	113	131	135	120	126	120	J ₁₀₈ ^R	91	72	55	51	53	50	I ₄₈ ^R
23	46	47	49	50	43	44	R ₇₁	87	100	114	120	134	126	110	110	111	110	108	R ₈₉	66	55	57	50	45
24	44	43	43	42	43	44	69	86	110	120	115	121	124	117	116	114	113	97	75	70	64	70	59	56
25	51	54	51	46	44	43	70	94	115	120	117	128	134	134	122	114	116	J ₁₀₅ ^R	83	64	60	59	56	53
26	54	49	47	51	45	38	62	86	97	104	121	127	125	130	125	120	114	101	78	65	64	64	57	52
27	53	48	47	48	45	35	59	94	117	115	116	129	129	131	120	110	110	101	68	60	60	61	57	49
28	44	44	45	46	44	42	57	93	112	129	123	121	120	120	123	113	111	96	J ₇₆ ^R	I ₇₆ ^R	77	R ₇₄	62	51
29	50	42	44	45	45	44	68	93	112	131	135	126	127	134	132	127	116	J ₁₀₆ ^R	86	72	I ₆₆ ^R	57	56	54
30	54	48	45	46	43	38	56	96	113	114	110	118	116	127	125	116	106	92	69	61	59	50	47	46
31	42	42	42	41	43	41	62	90	J ₁₀₄ ^R	120	106	108	111	115	115	106	106	95	64	61	58	45	45	45
	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	31	31	31	31	30	30	30	30	30	30	30	29	29	29	29	31	31	31	31	31	30	30
MED	51	48	47	47	44	43	66	92	104	108	110	116	116	115	115	110	105	95	75	61	59	56	51	51
UQ	54	50	50	50	46	44	71	94	112	115	116	123	124	120	122	114	110	103	83	68	60	59	57	54
LQ	46	45	45	45	43	38	61	87	101	100	104	108	109	110	110	105	100	88	68	56	55	51	48	47

OCT. 1969

FOF2 (0.1 MHZ)

IONOSPHERIC DATA

OCT. 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 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							C	C	C	C	C	C	C	C	C	C	C							
2									L	L	A	A	L	L	L	L	L							
3									L	A	L	L	L	L	L									
4									L	L	L	L	L	C	C	C	C							
5											L	L	L	L	L	L								
6									L	L	L	L	L	L	L	L	L							
7									L	L	L	L	L	L	L	L								
8									L	L	L	L	L	L	L	L								
9								L	L	L	L	L	L	L	L	L								
10									L	L	L	L	L	L	A	L								
11									L	L	L	L	L	L	L	L								
12									L	L	L	L	L	L	L	L								
13								L	L	L	L	L	L	L	L	L								
14								L	L	L	L	L	L	L	L	L	L	300						
15									L	L	L	A	A	L	L	L	A	A						
16									L	L	L	L	L	L	L	L								
17									L		L	L	L	L	L	L								
18									L	L	L	L	A	L	L	L								
19									L	L	L	L	L	L	L	L								
20										L	L	A	L	L	L	L								
21									L	L	L	510	L	L	L									
22										L	L	L	L	L	L	L								
23									L	L	L	L	L	L	L									
24									L	L	L	L	L		L									
25									L	L	L	L	L	L	L									
26											L	L	L	L		A								
27									L			L	L	L	L									
28									L	L	L	L	L	L	L	L								
29									L	L	L	L	L	L	L									
30										L	L	L	430	L	L									
31									L	L	L	L	L	L	L									
CNT												1	1				1							
MED											510	430				300								
UQ																								
LQ																								

OCT. 1969

FOF1 (0.01 MHz)

IONOSPHERIC DATA

OCT. 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 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								A	C	C	C	C	C	C	C	C	C							
2								A	I A	305	325	A	A	A	A	R	A	185	A					
3								A	A	305	325	I A	335	A	R	A	A	310	A	A				
4								A	250	I A	290	330	330	R	R	C	C	C	C					170
5								B	250	300	320	330	330	I A	340	I A	330	325	A	A	A			
6								180	270	305	330	345	A	A	A	R	A	A	A					
7								A	A	A	A	A	A	A	340	R	300	250	A	A				
8								190	I R	270	315	345	350	360	R	340	335	A	A	A				
9								210	250	A	330	340	350	I A	345	A	A	A	A	A				
10								B	I A	245	320	I R	330	340	350	350	A	A	A	A	A			
11								185	250	300	320	330	335	A	A	A	A	A	A	B				
12								170	260	310	I A	335	335	A	A	A	A	300	I R	240	175			
13								210	250	A	A	325	330	A	A	A	A	A	A	A				
14								185	A	A	310	335	335	A	A	325	300	250	B					
15								A	A	A	325	330	340	A	A	A	A	245	A					
16								160	255	A	A	A	R	I R	340	330	I R	315	I A	280	245	145		
17								B	A	A	A	A	A	A	A	A	320	290	A	A				
18								150	A	A	A	A	A	A	A	A	A	A	A	A				
19								185	A	300	I A	330	340	I A	345	I A	350	A	A	A	A			
20								A	R	A	A	A	A	A	A	B	R	I R	295	250	A			
21								A	A	A	A	A	A	R	345	I R	325	305	R	A				
22								B	245	A	A	A	A	A	A	A	330	300	A	A				
23								B	A	A	A	A	A	A	A	A	340	300	A	A				
24								A	250	A	330	I R	345	355	370	360	330	305	240	B				
25								160	250	I A	290	305	I A	335	350	365	350	340	300	I R	235	B		
26								A	255	315	325	350	355	380	370	350	310	A	A					
27								170	250	305	R	325	340	A	A	A	335	I A	295	230	A			
28								B	A	A	A	I R	355	345	350	A	A	A	A	A				
29								B	220	300	325	A	A	R	R	A	A	R	B					
30								B	225	300	I A	320	330	R	R	R	I R	325	285	A	A			
31								B	A	A	A	335	A	R	R	R	I A	285	210	B				
	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							12	18	15	19	20	13	9	8	14	16	11	4						
MED							182	250	305	325	335	345	350	342	330	300	245	172						
UQ							188	255	308	330	342	350	365	355	335	302	250	180						
LQ							165	250	300	322	330	335	U A	345	335	325	292	238	158					

OCT. 1969

FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 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 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 ₂₄ ^X	J ₃₆ ^X	J ₂₄ ^X	J ₂₀ ^X	22	E ₁₅ ^S	25	C	C	C	C	C	C	C	C	C	C	24	23	J ₂₄ ^X	J ₃₅ ^X	J ₃₅ ^X	J ₆₁ ^X	J ₆₉ ^X	
2	J ₃₃ ^X	J ₃₇ ^X	22	21	E	E ₁₅ ^S	32	32	G	J ₄₂ ^X	J ₆₄ ^X	51	J ₄₅ ^X	J ₄₂ ^X	J ₂₉ ^G	35	G	21	E ₁₅ ^S	J ₃₆ ^X	J ₉₀ ^X	J ₈₄ ^X	J ₈₆ ^X	J ₉₀ ^X	
3	J ₈₄ ^X	J ₉₀ ^X	J ₂₆ ^X	J ₅₅ ^X	J ₅₁ ^X	J ₄₀ ^X	J ₅₄ ^X	J ₄₁ ^X	35	J ₅₀ ^X	J ₄₃ ^X	J ₄₁ ^X	G	40	39	35	J ₄₃ ^X	J ₅₈ ^X	J ₆₄ ^X	J ₇₉ ^X	J ₅₄ ^X	J ₅₄ ^X	J ₃₉ ^X	22	
4	J ₂₄ ^X	21	E ₁₅ ^S	E ₁₅ ^S	E ₁₂ ^B	21	J ₄₂ ^X	30	35	40	43	30	G	C	C	C	C	J ₂₃ ^X	36	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	21	E ₁₈ ^S	
5	E ₁₅ ^S	J ₅₄ ^X	J ₂₆ ^X	J ₂₄ ^X	J ₄₂ ^X	J ₁₈ ^X	20	J ₂₇ ^X	32	36	40	40	J ₄₀ ^X	J ₄₂ ^X	J ₃₈ ^X	36	J ₄₂ ^X	J ₂₇ ^X	17	J ₂₅ ^X	J ₂₄ ^X	J ₂₄ ^X	J ₂₆ ^X	J ₂₅ ^X	
6	20	22	21	30	J ₂₈ ^X	31	M ₂₆ ^X	31	37	36	40	40	J ₄₁ ^X	J ₄₁ ^X	33	J ₃₅ ^X	J ₂₉ ^X	J ₄₁ ^X	J ₈₉ ^X	J ₆₀ ^X	J ₄₁ ^X	J ₂₉ ^X	20	21	
7	J ₄₃ ^X	22	J ₂₄ ^X	22	J ₂₉ ^X	J ₂₉ ^X	J ₂₉ ^X	34	J ₃₆ ^X	38	37	40	37	G	G	G	30	J ₃₆ ^X	J ₂₅ ^X	J ₄₃ ^X	J ₂₉ ^X	J ₂₆ ^X	J ₂₅ ^X	J ₂₆ ^X	
8	22	23	23	J ₅₄ ^X	J ₂₂ ^X	J ₂₄ ^X	G	G	J ₂₉ ^G	G	G	G	31	40	37	36	35	J ₂₄ ^X	22	22	22	J ₂₄ ^X	20	21	
9	J ₂₄ ^X	21	20	E ₁₃ ^B	E ₁₂ ^B	21	J ₁₇ ^G	G	35	38	40	40	38	J ₃₈ ^X	39	35	J ₂₇ ^X	19	M ₂₀ ^X	M ₂₀ ^X	19	J ₁₉ ^X	21	M ₂₁ ^X	
10	M ₂₁ ^X	M ₂₁ ^X	J ₄₀ ^X	M ₂₁ ^X	J ₁₅ ^X	J ₁₆ ^X	E ₁₄ ^B	25	34	G	37	40	40	J ₄₉ ^X	J ₈₈ ^X	J ₅₂ ^X	J ₅₀ ^X	J ₂₉ ^X	J ₃₅ ^X	J ₂₄ ^X	J ₄₁ ^X	J ₃₅ ^X	J ₄₀ ^X	J ₂₅ ^X	
11	21	22	20	E ₁₃ ^B	20	20	G	27	38	36	39	39	36	37	34	32	J ₂₉ ^X	J ₃₃ ^X	J ₂₇ ^X	23	J ₂₃ ^X	E	22	J ₂₅ ^X	
12	J ₂₉ ^X	21	J ₂₃ ^X	J ₁₈ ^X	J ₁₆ ^X	J ₁₇ ^X	G	19	36	J ₄₃ ^X	J ₄₃ ^X	49	J ₇₁ ^X	J ₄₂ ^X	38	G	G	G	E ₁₂ ^B	19	21	J ₂₉ ^X	J ₂₄ ^X	22	
13	21	17	21	23	J ₂₇ ^X	22	G	G	36	41	36	36	41	41	39	J ₄₃ ^X	J ₅₄ ^X	55	J ₃₉ ^X	J ₃₀ ^X	J ₂₇ ^X	J ₂₄ ^X	20	E ₁₅ ^S	
14	23	J ₂₉ ^X	J ₂₄ ^X	23	J ₁₇ ^X	20	22	30	35	39	J ₄₃ ^X	J ₄₀ ^X	37	47	G	36	G	E ₂₀ ^B	22	J ₂₄ ^X	22	20	21	20	
15	20	E ₁₂ ^B	20	E ₁₂ ^B	E ₁₂ ^B	E ₁₂ ^B	22	30	J ₃₉ ^X	37	40	50	67	J ₅₀ ^X	J ₄₂ ^X	J ₄₀ ^X	J ₄₂ ^X	J ₆₄ ^X	J ₉₂ ^X	J ₆₇ ^X	J ₃₈ ^X	J ₃₉ ^X	M ₂₁ ^X	E ₁₃ ^B	
16	J ₃₀ ^X	J ₂₆ ^X	J ₄₁ ^X	J ₂₉ ^X	E	E ₁₃ ^B	G	G	J ₃₇ ^X	J ₄₂ ^X	J ₄₁ ^X	35	G	31	30	J ₃₉ ^X	G	20	21	21	22	J ₁₈ ^X	J ₂₈ ^X	J ₂₈ ^X	
17	34	35	C	J ₃₀ ^X	J ₂₄ ^X	M ₂₁ ^X	22	J ₃₃ ^X	J ₃₇ ^X	J ₅₁ ^X	J ₄₂ ^X	J ₄₁ ^X	J ₄₃ ^X	42	39	35	36	J ₃₀ ^X	J ₄₁ ^X	J ₄₁ ^X	J ₃₆ ^X	J ₂₉ ^X	J ₃₆ ^X	J ₂₅ ^X	
18	C	J ₂₁ ^X	22	E ₁₃ ^B	E	18	G	31	35	38	38	J ₅₄ ^X	J ₅₁ ^X	38	J ₆₅ ^X	35	J ₃₆ ^X	J ₄₁ ^X	J ₂₉ ^X	J ₂₉ ^X	J ₂₅ ^X	J ₂₆ ^X	J ₂₆ ^X	J ₃₇ ^X	
19	J ₂₈ ^X	J ₂₇ ^X	21	21	E ₁₅ ^S	E ₁₂ ^B	G	30	35	41	43	42	38	41	J ₃₇ ^X	34	34	J ₅₁ ^X	J ₂₅ ^X	J ₄₂ ^X	J ₂₉ ^X	J ₃₀ ^X	22	E ₁₅ ^S	
20	E ₁₅ ^S	E ₁₂ ^B	E ₁₅ ^S	E	21	21	23	G	J ₄₂ ^X	J ₁₁₄ ^X	J ₄₂ ^X	J ₅₅ ^X	J ₄₁ ^X	E ₄₀ ^B	G	G	J ₂₆ ^X	J ₂₉ ^X	J ₂₉ ^X	21	21	22	E ₁₅ ^S	J ₂₄ ^X	
21	J ₂₁ ^X	J ₃₆ ^X	20	20	20	21	21	J ₂₉ ^X	36	36	42	42	32	G	37	G	G	J ₅₁ ^X	J ₂₆ ^X	20	J ₂₁ ^X	22	21	E ₁₅ ^S	
22	E ₁₅ ^S	E ₁₂ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	22	E ₁₈ ^B	30	J ₄₁ ^X	J ₄₂ ^X	J ₄₂ ^X	43	J ₄₂ ^X	41	J ₃₂ ^G	G	J ₄₃ ^X	J ₃₇ ^X	J ₄₂ ^X	J ₂₄ ^X	J ₄₁ ^X	J ₂₆ ^X	20	20	
23	J ₂₁ ^X	J ₄₄ ^X	42	J ₂₃ ^X	J ₂₄ ^X	21	21	35	39	J ₄₂ ^X	J ₃₆ ^X	J ₄₂ ^X	J ₃₉ ^X	J ₄₁ ^X	G	40	72	J ₄₅ ^X	J ₆₄ ^X	J ₅₁ ^X	J ₂₄ ^X	E ₁₂ ^B	21	J ₂₄ ^X	
24	J ₃₆ ^X	J ₂₇ ^X	J ₅₄ ^X	J ₅₁ ^X	J ₅₄ ^X	J ₅₁ ^X	J ₃₀ ^X	G	35	G	31	G	G	38	G	37	30	21	21	21	M ₂₁ ^X	J ₂₄ ^X	M ₂₀ ^X	M ₂₁ ^X	
25	19	M ₂₁ ^X	24	J ₅₄ ^X	M ₂₁ ^X	E ₁₅ ^S	24	G	33	J ₃₃ ^X	J ₃₇ ^X	31	J ₂₉ ^X	29	21	G	28	E ₁₇ ^B	J ₃₇ ^X	J ₂₄ ^X	18	E ₁₃ ^B	E ₁₂ ^B	E ₁₄ ^B	
26	E ₁₃ ^B	21	J ₁₅ ^X	E	20	J ₁₇ ^X	21	31	27	36	G	G	G	21	G	J ₅₉ ^X	J ₄₁ ^X	J ₅₄ ^X	J ₂₆ ^X	J ₄₂ ^X	J ₂₅ ^X	24	J ₂₄ ^X	22	
27	24	M ₂₀ ^X	J ₁₆ ^X	J ₁₅ ^X	E	E ₁₃ ^B	21	G	38	J ₄₉ ^X	J ₅₆ ^X	J ₄₄ ^X	42	42	G	35	30	J ₂₄ ^X	21	22	22	21	20	E ₁₂ ^B	
28	20	21	E ₁₂ ^B	20	E	E ₁₅ ^S	E ₁₃ ^B	35	35	36	G	G	G	41	41	35	J ₃₆ ^X	J ₃₃ ^X	J ₂₅ ^X	J ₄₁ ^X	J ₃₆ ^X	E ₁₆ ^S	20	J ₂₅ ^X	
29	J ₂₆ ^X	J ₂₇ ^X	E ₁₅ ^S	E ₁₂ ^B	E ₁₆ ^S	E ₁₅ ^S	E ₁₇ ^B	G	31	37	38	42	G	G	35	35	G	E ₁₆ ^S	E ₁₅ ^S	J ₂₄ ^X	J ₂₆ ^X	J ₂₁ ^X	E ₁₂ ^B	E ₁₆ ^S	
30	E ₁₆ ^S	E ₁₂ ^B	E ₁₃ ^B	E ₁₃ ^B	21	20	E ₁₅ ^S	G	G	35	G	G	G	G	G	J ₆₁ ^X	34	J ₄₂ ^X	J ₂₉ ^X	J ₂₉ ^X	J ₂₁ ^X	E ₁₅ ^S	E ₁₆ ^S	21	
31	E ₁₆ ^S	22	21	J ₁₉ ^X	22	22	22	28	38	40	G	41	G	G	G	33	25	E ₁₆ ^S	E ₁₅ ^S	21	20	J ₂₇ ^X	J ₃₅ ^X	J ₂₅ ^X	
CNT	30	31	30	31	31	31	31	30	30	30	30	30	30	29	29	29	29	29	31	31	31	31	31	31	31
MED	22	22	21	20	20	20	21	28	35	38	40	40	38	40	34	35	30	J ₂₉ ^X	J ₂₆ ^X	J ₂₄ ^X	J ₂₄ ^X	J ₂₄ ^X	21	22	
UQ	J ₂₈ ^X	J ₂₈ ^X	J ₂₄ ^X	J ₂₄ ^X	J ₂₃ ^X	22	24	31	37	J ₄₂ ^X	J ₄₂ ^X	42	J ₄₁ ^X	42	39	37	J ₄₁ ^X	J ₄₂ ^X	J ₃₆ ^X	J ₄₁ ^X	J ₃₆ ^X	J ₂₉ ^X	J ₂₆ ^X	J ₂₅ ^X	
LQ	20	21	16	E ₁₃ ^B	E ₁₄ ^B	E ₁₅ ^S	E ₁₄ ^B	G	34	36	36	35	G	G	30	G	33	26	21	21	22	21	20	20	19

The Radio Research Laboratories, Japan

OCT. 1969

FOES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 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	19	28	20	E	E	E ₁₅	24	C	C	C	C	C	C	C	C	C	C	20	15	20	30	33	38	A	
2	25	32	15	E	E	E ₁₅	25	30	G	40	60	49	43	40	G ₂₇	32	G	20	E ₁₅	20	30	A	A	A	
3	A	A	18	15	21	29	45	28	32	48	40	40	G	40	35	34	41	55	40	40	25	40	32	E	
4	20	E	E ₁₅	E ₁₅	E ₁₂	E	25	26	30	40	40	G ₂₈	G	C	C	C	C	23	34	E ₁₅	E ₁₅	E ₁₅	E	E ₁₈	
5	E ₁₅	26	23	15	16	16	16	22	32	34	40	40	39	40	37	30	38	20	15	25	16	21	16	E	
6	E	16	15	24	23	22	14	30	36	35	40	38	39	38	E ₃₃	33	26	25	88	55	30	25	E	E	
7	25	16	19	15	25	14	26	27	33	36	37	38	E ₃₇	G	G	G	27	29	16	22	20	E	17	19	
8	15	15	15	15	15	15	G	G	G ₂₆	G	G	G	E ₃₁	40	36	32	29	20	17	E	E	22	E	E	
9	16	E	13	E ₁₃	E ₁₂	E	G ₁₅	G	33	37	40	39	38	37	37	33	26	16	E	E	17	E	E	E	
10	E	E	25	13	E	E	E ₁₄	E ₂₅	34	G	37	40	40	48	87	40	46	22	20	20	40	34	33	25	
11	18	E	E	E ₁₃	E	E	G	26	36	35	39	39	36	36	34	32	26	28	27	16	E	E	E	25	
12	25	16	13	E	14	E	G	G ₁₉	35	40	41	49	46	40	37	G	G	G	E ₁₂	E	E	25	22	15	
13	E	E	E	13	15	12	G	G	30	32	36	35	40	40	33	35	45	50	35	25	22	18	E	E ₁₅	
14	E	15	16	19	12	E	19	27	32	39	40	40	37	45	G	34	G	E ₂₀	E	E	18	16	E	E	
15	E	E ₁₂	E	E ₁₂	E ₁₂	E ₁₂	20	25	37	36	40	50	65	46	35	30	40	64	53	24	26	17	E	E ₁₃	
16	26	25	16	14	E	E ₁₃	G	G	34	39	40	29	G	G	E ₃₀	34	G	18	18	15	16	15	16	25	
17	25	30	C	26	20	15	22	30	33	44	40	40	43	39	36	33	26	25	20	25	29	20	25	E	
18	C	16	15	E ₁₃	E	E	G	26	32	34	37	41	51	28	45	31	21	26	16	25	19	20	25	30	
19	25	25	E	E	E ₁₅	E ₁₂	G	27	33	37	42	40	37	36	33	31	25	27	E	25	18	19	E	E ₁₅	
20	E ₁₅	E ₁₂	E ₁₅	E	E	E	21	G	35	40	40	55	40	E ₄₀	G	G	19	25	25	E	E	E	E ₁₅	17	
21	19	22	E	E	E	E	18	25	34	35	38	40	E ₃₂	G	36	G	G	40	19	E	E	16	E	E ₁₅	
22	E ₁₅	E ₁₂	E ₁₅	E ₁₅	E ₁₅	E	E ₁₈	28	40	40	40	38	40	40	27	G	35	30	22	22	30	25	E	E	
23	16	32	38	19	23	16	G	27	34	40	36	40	37	38	G	37	69	41	55	22	16	E ₁₂	E	15	
24	34	20	17	27	26	25	18	G	32	G	G ₃₁	G	G	38	G	35	28	16	E	E	17	15	E	15	
25	E	E	16	E	E	E ₁₅	G	G	33	33	38	31	G ₂₈	G ₂₂	G ₂₁	G	28	E ₁₇	21	21	15	E ₁₃	E ₁₂	E ₁₄	
26	E ₁₃	E	E	E	E	E	18	28	34	35	G	G	G	E ₂₁	G	59	40	49	20	18	20	16	19	15	
27	17	E	E	E	E	E ₁₃	G	G	37	40	55	44	40	38	G	32	26	18	15	E	16	E	E	E ₁₂	
28	E	E	E ₁₂	E	E	E ₁₅	E ₁₅	28	32	35	G	G	G	37	36	30	25	25	22	22	35	E ₁₆	E	17	
29	22	20	E ₁₅	E ₁₂	E ₁₆	E ₁₅	E ₁₇	G	31	37	38	40	G	G	34	30	G	E ₁₆	E ₁₅	20	22	20	E ₁₂	E ₁₆	
30	E ₁₆	E ₁₂	E ₁₃	E ₁₃	E	E	E ₁₅	G	G	34	G	G	G	G	G	40	26	40	28	25	16	E ₁₅	E ₁₆	16	
31	E ₁₆	16	13	16	15	E	G	25	34	33	G	35	G	G	G	30	24	E ₁₆	E ₁₅	16	E	25	28	19	
CNT	30	31	30	31	31	31	31	30	30	30	30	30	30	29	29	29	29	31	31	31	31	31	31	31	31
MED	16	16	15	E ₁₅	E ₁₂	E ₁₂	E ₁₅	25	33	36	40	40	37	38	33	32	26	25	19	20	18	17	E ₁₂	E ₁₅	
UQ	25	24	16	15	16	15	20	27	34	40	40	40	40	40	36	34	35	30	26	24	26	24	20	18	
LQ	E ₁₅	E	E ₁₂	E	E	E	G	G	32	34	36	G ₃₁	G	G	G	30	21	18	15	E ₁₅	16	E ₁₅	E	E ₁₂	

OCT. 1969

FBES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 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	12	15	13	12	E ₁₅ ^S	E ₁₅ ^S	15	C	C	C	C	C	C	C	C	C	C	13	10	11	12	12	13	E ₁₅ ^S
2	13	14	10	E ₁₅ ^S	10	E ₁₅ ^S	15	16	13	15	25	16	25	16	15	15	14	15	E ₁₅ ^S	12	12	E ₁₅ ^S	E ₁₆ ^S	12
3	14	12	12	12	12	E ₁₅ ^S	11	13	15	15	15	25	25	16	15	15	13	15	E ₁₅ ^S	12	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S
4	12	13	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	12	15	12	15	25	25	20	C	C	C	C	16	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₈ ^S
5	E ₁₅ ^S	13	E ₁₅ ^S	12	12	13	15	15	15	14	15	16	16	15	16	14	13	13	12	13	13	13	13	11
6	14	10	10	10	E	12	12	14	15	16	26	25	25	16	15	15	13	12	E ₁₅ ^S	12	11	E ₁₅ ^S	E ₁₅ ^S	13
7	13	11	10	10	10	10	10	13	13	13	15	18	16	15	15	13	11	15	E ₁₅ ^S	13	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S
8	12	10	10	10	12	12	15	15	15	15	16	26	25	19	15	13	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S
9	12	E ₁₅ ^S	10	13	12	12	12	12	13	14	16	15	25	15	13	15	13	11	13	12	E ₁₅ ^S	13	12	E ₁₅ ^S
10	E ₁₅ ^S	12	12	10	10	10	14	12	14	16	16	19	25	25	15	14	12	13	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S	12	12
11	E ₁₅ ^S	13	12	13	12	E ₁₅ ^S	12	13	16	15	16	18	16	16	19	19	12	15	13	13	12	10	E ₁₅ ^S	E ₁₅ ^S
12	E ₁₅ ^S	10	10	12	10	13	14	13	13	25	17	16	25	25	15	15	12	15	12	E ₁₅ ^S	E ₁₅ ^S	13	11	12
13	E ₁₆ ^S	E ₁₅ ^S	12	10	10	12	15	11	13	16	16	16	15	15	15	15	12	13	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
14	E ₁₅ ^S	12	12	10	10	13	15	13	12	13	13	15	15	26	16	13	15	20	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	10	E ₁₆ ^S	E ₁₅ ^S
15	E ₁₅ ^S	12	E ₁₅ ^S	12	12	12	15	12	13	16	13	15	15	15	13	13	14	13	E ₁₅ ^S	13	13	E ₁₆ ^S	E ₁₅ ^S	13
16	12	12	12	10	10	13	13	14	13	14	15	14	16	18	15	14	14	13	13	13	12	12	13	E ₁₅ ^S
17	13	13	C	10	10	12	13	12	12	14	15	15	16	16	19	15	15	13	13	12	12	12	12	E ₁₆ ^S
18	E ₁₆ ^S	12	12	13	10	E ₁₅ ^S	13	15	12	15	25	16	25	25	17	15	13	13	11	E ₁₅ ^S	E ₁₅ ^S	12	12	13
19	13	12	13	E ₁₅ ^S	E ₁₅ ^S	12	15	15	13	13	18	15	16	27	25	18	15	15	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S
20	E ₁₅ ^S	12	E ₁₅ ^S	10	10	E ₁₅ ^S	13	15	15	18	20	25	26	40	25	15	12	12	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S
21	12	11	E ₁₅ ^S	10	E ₁₅ ^S	E ₁₅ ^S	12	12	15	15	15	15	15	12	13	15	12	15	12	E ₁₆ ^S	E ₁₅ ^S	12	E ₁₆ ^S	E ₁₅ ^S
22	E ₁₅ ^S	12	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	18	15	15	25	16	15	25	25	15	13	16	15	12	12	12	12	E ₁₅ ^S	E ₁₆ ^S
23	10	12	12	12	10	E ₁₅ ^S	15	14	15	25	25	25	25	18	25	15	15	13	E ₁₅ ^S	12	12	12	E ₁₅ ^S	12
24	E ₁₆ ^S	12	13	11	12	12	12	13	16	16	18	23	27	15	16	16	15	15	E ₁₅ ^S	E ₁₅ ^S	12	13	13	12
25	14	E ₁₅ ^S	11	11	11	E ₁₅ ^S	14	14	16	15	17	16	15	15	16	15	15	17	13	13	13	13	12	14
26	13	10	12	10	10	11	13	14	15	15	18	25	25	15	13	18	15	15	10	13	10	12	10	10
27	10	E ₁₅ ^S	10	10	10	13	14	15	15	15	16	25	27	15	17	15	15	12	12	12	12	E ₁₅ ^S	E ₁₅ ^S	12
28	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	10	E ₁₅ ^S	15	15	18	15	16	15	23	25	15	15	15	13	12	12	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	12
29	12	13	E ₁₅ ^S	12	E ₁₆ ^S	E ₁₅ ^S	17	16	15	25	25	25	25	25	15	13	14	16	E ₁₅ ^S	14	12	12	12	E ₁₆ ^S
30	E ₁₆ ^S	12	13	13	12	E ₁₅ ^S	15	15	12	15	23	25	26	26	16	15	15	12	12	12	11	E ₁₅ ^S	E ₁₆ ^S	12
31	E ₁₆ ^S	10	10	11	10	E ₁₅ ^S	16	15	13	14	15	16	15	15	15	15	15	16	E ₁₅ ^S	13	12	12	14	E ₁₆ ^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	31	31	30	31	31	31	31	30	30	30	30	30	30	29	29	29	29	31	31	31	31	31	31	31
MED U	12	12	11	11	10	12	14	14	14	15	16	16	25	16	15	15	14	13	E ₁₅ ^S	12	12	12	E ₁₅ ^S	E ₁₅ ^S
UQ	E ₁₅ ^S	12	12	12	12	E ₁₅ ^S	15	15	15	16	20	25	25	25	16	15	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
LQ	12	12	10	10	10	12	12	13	13	14	15	15	16	15	15	14	13	13	12	12	12	12	12	12

The Radio Research Laboratories, Japan

OCT. 1969

F=MIN (0.1 MHZ)

IONOSPHERIC DATA

OCT. 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	260	285	340	260	275	270	335	C	C	C	C	C	C	C	C	C	C	320	310	300	295	275	I ₂₉₀ ^R	I ₂₇₅ ^A
2	275	275	290	285	285	275	340	345	J ₃₃₅ ^R	315	320	320	300	300	305	300	325	310	315	J ₃₀₅ ^R	310	I ₂₈₀ ^A	A	A
3	A	A	285	295	265	295	325	325	320	320	300	320	310	315	315	310	J ₃₂₀ ^R	330	I ₃₃₅ ^B	290	305	300	290	275
4	245	265	275	285	285	285	340	345	J ₃₂₅ ^R	325	310	325	315	C	C	C	C	U ₃₁₅ ^B	335	295	300	295	290	305
5	305	280	290	310	275	270	J ₃₃₅ ^R	340	350	330	320	305	300	315	305	310	315	330	335	315	295	295	300	300
6	310	275	290	315	310	280	335	335	340	325	290	305	300	295	305	J ₃₀₅ ^B	J ₃₁₅ ^R	310	A	320	290	305	285	295
7	285	280	285	290	270	255	R	325	320	310	300	305	300	295	300	310	310	315	320	290	290	295	285	290
8	305	290	285	295	295	290	330	335	J ₃₂₀ ^R	325	J ₃₁₀ ^R	305	305	305	J ₃₀₀ ^R	J ₃₀₅ ^R	J ₃₁₅ ^R	320	310	320	300	290	J ₂₇₅ ^R	295
9	290	305	300	285	285	265	330	320	325	330	320	300	305	305	290	300	310	J ₃₁₅ ^R	325	325	305	310	280	275
10	280	300	300	305	325	325	350	340	335	325	330	305	300	285	295	295	300	315	320	310	305	275	290	280
11	300	320	265	275	275	275	300	345	J ₃₂₅ ^R	310	315	310	285	300	305	310	325	325	315	300	315	310	295	280
12	270	270	295	315	310	305	330	320	335	325	315	285	300	295	300	310	315	320	325	295	310	320	320	290
13	280	260	265	285	275	290	330	325	345	315	315	315	310	310	300	315	320	335	335	305	300	320	285	285
14	285	280	315	290	285	290	325	345	J ₃₁₅ ^R	330	J ₃₀₅ ^R	305	310	305	315	325	325	355	320	300	295	300	300	300
15	300	310	315	295	285	275	325	J ₃₄₀ ^R	325	345	335	325	300	300	310	315	330	335	330	330	295	285	275	285
16	295	295	305	335	300	295	340	340	J ₃₃₅ ^R	320	315	310	305	300	315	315	325	335	340	315	310	310	315	295
17	285	285	I ₂₈₅ ^C	285	300	305	345	325	340	325	330	290	300	300	310	310	325	320	310	330	310	300	300	290
18	I ₃₀₀ ^C	305	300	315	350	275	325	335	320	325	310	320	315	305	310	320	310	R	310	295	300	315	300	300
19	J ₃₀₀ ^B	315	300	300	285	285	325	340	335	325	330	315	300	290	305	315	J ₃₂₅ ^R	330	305	290	285	I ₂₉₀ ^R	320	300
20	280	285	330	320	265	280	325	J ₃₂₅ ^R	340	335	315	305	310	305	300	315	325	320	305	315	295	290	295	310
21	I ₃₀₀ ^B	315	I ₃₁₅ ^R	315	310	300	I ₃₀₀ ^R	325	315	335	315	300	290	300	305	315	310	330	325	300	290	285	305	J ₂₉₅ ^R
22	300	310	280	265	285	280	335	335	320	J ₃₁₀ ^R	305	300	310	285	300	310	J ₃₂₀ ^R	310	320	295	280	310	315	I ₂₈₅ ^R
23	280	290	290	300	285	280	340	355	310	305	310	305	305	300	295	300	305	320	310	310	290	305	315	295
24	295	285	285	280	275	275	325	335	325	325	295	300	300	285	295	305	310	320	310	290	300	310	290	290
25	280	305	325	285	280	280	325	340	320	315	300	290	290	295	295	295	310	J ₃₁₅ ^R	315	320	290	295	295	295
26	295	290	280	315	330	280	335	340	340	305	300	300	290	290	290	310	310	315	310	295	295	310	300	275
27	290	305	295	315	335	280	320	320	310	315	300	285	290	290	285	300	305	325	310	285	285	310	320	300
28	305	255	280	300	275	265	300	335	305	310	300	300	285	285	295	300	305	310	J ₃₀₅ ^R	I ₃₀₀ ^R	310	I ₃₁₀ ^B	320	315
29	305	245	280	265	275	275	315	335	310	305	305	295	285	290	290	300	305	J ₃₁₀ ^R	305	305	I ₂₉₅ ^B	300	290	300
30	300	300	295	300	325	280	315	330	325	325	310	305	285	290	295	315	300	315	315	310	320	305	300	300
31	295	295	290	295	305	295	340	335	J ₃₃₅ ^R	330	320	305	295	295	295	290	310	325	315	310	325	300	275	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	30	30	31	31	31	31	30	30	30	30	30	30	30	29	29	29	29	30	30	31	31	31	30	30
MED	295	290	290	295	285	280	330	335	325	325	310	305	300	300	300	310	315	320	315	305	300	300	295	295
UQ	300	305	300	312	308	290	335	340	335	325	320	310	305	305	305	315	325	330	325	315	308	310	305	300
LQ	280	280	285	285	275	275	325	325	320	315	300	300	290	290	295	300	310	315	310	295	292	292	290	285

OCT. 1969

M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 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							C	C	C	C	C	C	C	C	C	C	C								
2									L	L	A	A	L	L	L	L	L								
3									L	A	L	L	L	L	L										
4									L	L	L	L	L	C	C	C	C								
5										L	L	L	L	L	L	L									
6									L	L	L	L	L	L	L	L	L								
7									L	L	L	L	L	L	L	L									
8									L	L	L	L	L	L	L	L									
9								L	L	L	L	L	L	L	L	L									
10									L	L	L	L	L	L	A	L									
11										L	L	L	L	L	L	L									
12											L	L	L	L	L	L									
13								L	L	L	L	L	L	L	L	L									
14								L	L	L	L	L	L	L	L	L	L	410							
15									L	L	L	A	A	L	L	L	A	A							
16									L	L	L	L	L	L	L										
17									L		L	L	L	L	L	L									
18									L	L	L	L	A	L	L	L									
19									L	L	L	L	L	L	L	L									
20										L	L	A	L	L	L	L									
21									L	L	L	390	L	L	L										
22										L	L	L	L	L	L	L									
23									L	L	L	L	L	L	L										
24									L	L	L	L	L	L	L										
25									L	L	L	L	L	L	L										
26											L	L	L	L		A									
27									L			L	L	L	L										
28									L	L	L	L	L	L	L	L									
29									L	L	L	L	L	L	L	L									
30										L	L	L	395	L	L										
31										L	L	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												1	1				1								
MED												390	395				410								
UQ																									
LQ																									

OCT. 1969

M(3000)F1 (0.01)

IONOSPHERIC DATA

OCT. 1969

H¹F² (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							C	C	C	C	C	C	C	C	C	C								
2									250	250	285	245	290	280	275	255	250							
3									250	250	255	255	255	275	270									
4									250	250	235	250	275		C	C	C	C						
5										250	245	250	250	260	250	255								
6									230	250	260	280	290	290	290	260	250							
7									240	250	260	280	270	290	290	250								
8									250	250	250	250	255	255	250	250								
9								250	250	240	250	285	260	255	260	250								
10									250	250	250	250	265	260	315	280								
11										230	260	255	300	290	280	255								
12										250	250	255	290	290	270	250								
13								250	250	240	255	255	250	270	255	255								
14								250	250	250	250	270	250	255	260	250	240							
15									250	240	240	240	300 ^A	275	260	250	245	250 ^A						
16									240	240	255	255	250	270	260									
17									245		250	260	275	270	260	250								
18									250	250	260	260	255	260	290	250								
19									250	250	250	255	255	260	270	250								
20										250	250	250	280	260	250	245								
21									250	250	240	290	250	260	265									
22										250	250	270	270	250	280	250								
23									250	250	250	300	255	245	260									
24									250	240	240	250	260		275									
25									250	250	250	250	280	275	250									
26											255	250	300	290		260								
27									250			255	280	280	250									
28									260	250	250	255	250	250	290	250								
29									250	250	250	250	280	265	260									
30										245	250	285	250	280	260									
31										250	245	250	250	270	250									
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
CNT								3	22	27	29	30	30	28	28	19	4	1						
MED								250	250	250	250	255	260	270	260	250	248	250 ^A						
UQ								250	250	250	255	270	280	280	278	255	250							
LQ								250	250	248	250	250	250	260	258	250	242							

OCT. 1969

H¹F² (KM)

IONOSPHERIC DATA

OCT. 1969

H^oF (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	340	340	230	340	320	340	240	C	C	C	C	C	C	C	C	C	C	240	240	240	250	350	320	I ^A ₃₅₅
2	330	350	295	295	280	300	240	240	240	240	A	A	240	240	245	250	245	250	240	240	255	A	A	A
3	A	A	295	295	350	295	255	245	240	I ^A ₂₃₅	240	240	205	220	240	250	250	250	250	310	270	305	320	300
4	340	330	300	255	250	290	240	240	240	215	200	210	225	C	C	C	C	250	230	250	250	250	275	275
5	270	300	300	250	300	325	200	230	230	220	210	210	210	235	220	230	245	245	210	210	270	280	260	255
6	250	300	300	270	245	320	240	220	225	240	210	200	240	240	240	245	245	240	E ^A ₃₄₀	290	290	260	290	290
7	330	300	295	290	305	340	250	240	240	230	220	205	250	205	245	240	250	240	220	250	280	260	290	300
8	290	285	290	290	300	290	240	230	240	240	205	200	240	240	240	240	250	245	230	220	245	290	300	295
9	295	290	260	250	250	300	240	230	245	225	220	200	220	210	225	225	245	245	215	210	220	250	280	310
10	300	280	300	250	225	225	225	220	230	230	240	220	240	I ^A ₂₄₅	I ^A ₂₄₅	250	260	240	230	220	290	355	380	310
11	280	230	300	300	300	300	250	240	230	220	225	225	220	220	230	230	240	230	220	250	220	220	270	310
12	350 ^A	310	280	230	220	245	240	220	230	240	215	240	240	240	245	240	240	230	210	255	255	250	250	255
13	305	350	340	305	300	280	250	240	240	230	205	200	220	240	230	240	250	245	240	260	250	240	290	300
14	290	280	250	280	300	300	240	240	240	240	240	235	220	250	240	240	205	220	220	250	270	260	300	300
15	270	250	240	240	255	300	240	240	230	210	210	I ^A ₂₄₀	I ^A ₂₄₀	I ^A ₂₆₀	I ^A ₂₃₀	245	A	A	280	240	I ^A ₂₈₀	290	300	300
16	300 ^A	300	250	240	220	280	230	220	220	220	230	190 ^H	225	200	220	240	245	225	210	250	240	255	260	300
17	310	320 ^A	C	310	270	270	210	225	240	240	240	240	250	250	240	245	240	240	240	250	240	290	310	300
18	I ^C ₂₈₀	255	260	245	210	250	240	240	240	240	240	250	I ^A ₂₄₀	240	250	240	250	230	240	255	290	260	270	290
19	290	280	250	250	250	290	240	240	240	240	240	205	210	240	230	240	240	240	245	300	290	290	250	260
20	300	275	245	200	240	310	240	240	240	240	220	I ^A ₂₂₀	205	240	220	240	230	220	230	250	255	280	260	260
21	290	290	260	250	250	285	250	240	240	240	210	200	240	210	240	250	240	240	230	250	270	290	260	260
22	260	245	300	315	295	295	240	220	245	245	210	210	230	240	240	240	240	240	240	255	305	300	255	290
23	295	350	340 ^A	290	290	300	240	210	220	230	220	205 ^H	240	240	240	250	260	240	250	255	250	250	250	295
24	340 ^A	300	350	340	325	330	250	220	230	225	200	185	240	240	240	250	245	220	210	255	250	245	245	280
25	290	260	240	260	245	290	240	220	240	220	210	210	220	230	225	245	245	225	210	230	260	260	255	290
26	270	250	260	250	210	275	240	220	225	225	205 ^H	230	225	230	245	I ^A ₂₅₀	250	250	210	245	250	240	250 ^A	290
27	290	255	260	255	225	275	250	230	240	245	240	240	200 ^H	245	240	245	250	240	205	245	255	260	245	245
28	275	300	290	290	290	305	250	240	240	230	220	205	205	240	240	245	250	240	250	290	290	240	245	250
29	270	300	300	310	270	295	250	230	240	240	240	230	210	240	240	245	230	240	210	240	240	255	250	260
30	255	245	260	260	250	295	245	230	240	240	240	210	200	245	240	250	240	250	240	255	240	250	280	275
31	260	265	270	290	250	275	240	210	240	230	210	205	225	240	245	250	250	210	210	245	235	295 ^A	345	345
	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	31	31	31	31	30	30	30	29	29	30	29	29	29	28	30	31	31	31	30	30	30
MED	290	290	285	270	255	295	240	230	240	232	220	210	225	240	240	245	245	240	230	250	255	260	270	290
UQ	305	300	300	295	300	300	250	240	240	240	240	230	240	240	240	250	250	245	240	255	275	290	300	300
LQ	270	260	260	250	245	280	240	220	230	225	210	205	210	230	230	240	240	230	210	240	248	250	250	260

The Radio Research Laboratories, Japan

OCT. 1969

H^oF (KM)

IONOSPHERIC DATA

OCT. 1969

H^oES (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	100	100	100	S	140	C	C	C	C	C	C	C	C	C	C	130	110	110	110	110	110	100
2	105	100	100	100	E	S	150	150	G	120	110	110	110	110	110	110	G	150	S	110	110	110	110	100
3	100	100	110	110	100	105	105	105	130	120	115	110	G	130	130	150	130	110	110	105	105	105	100	100
4	100	100	S	S	B	105	105	140	120	120	120	105	G	C	C	C	C	135	120	S	S	S	120	S
5	S	105	100	100	100	100	100	105	130	125	120	115	120	120	120	115	110	115	110	105	105	105	105	105
6	105	100	100	100	100	105	100	150	140	145	130	110	110	110	110	110	110	105	100	100	100	100	100	100
7	105	100	105	105	100	105	105	105	100	130	125	120	125	G	G	G	140	120	105	105	105	105	100	100
8	100	100	100	105	105	100	G	G	110	G	G	G	145	130	130	125	120	110	100	100	100	100	100	100
9	105	100	100	B	B	100	105	G	105	140	125	125	125	120	115	115	115	110	110	105	105	100	100	100
10	100	100	100	105	105	100	B	110	150	G	140	130	130	115	115	120	110	110	110	105	105	105	100	105
11	105	115	100	B	105	100	G	160	130	140	125	125	115	110	110	110	110	115	110	110	110	E	100	100
12	100	100	105	105	105	105	G	105	130	130	130	115	110	115	130	G	G	G	B	110	105	105	100	105
13	100	100	105	105	105	105	G	G	115	120	140	135	130	110	105	110	110	105	105	105	105	105	100	S
14	100	100	100	100	100	100	185	135	130	140	120	120	120	115	G	140	G	B	100	100	110	100	100	100
15	100	B	100	B	B	B	150	140	130	115	120	110	110	110	110	110	130	120	120	115	110	110	100	B
16	105	100	100	105	E	B	G	G	115	110	110	105	G	105	105	105	G	145	125	110	110	105	105	100
17	100	100	C	100	100	100	145	125	115	110	110	110	110	110	150	150	145	120	110	105	105	105	100	100
18	C	100	100	B	E	100	G	130	120	130	125	110	110	120	110	130	110	105	100	100	100	100	100	100
19	100	100	100	100	S	B	G	150	150	140	130	125	130	130	130	120	110	110	115	105	100	100	100	S
20	S	B	S	E	100	100	150	G	125	120	125	110	110	B	G	G	105	100	100	100	100	100	110	S
21	100	100	100	100	100	100	100	100	115	115	115	110	110	G	110	G	G	100	100	100	100	100	100	S
22	S	B	S	B	S	100	B	145	120	120	110	110	110	110	110	G	130	115	110	110	100	100	100	100
23	100	100	100	100	100	100	100	130	130	110	110	110	110	100	G	140	120	110	110	110	100	B	100	100
24	100	100	100	100	100	100	100	G	115	G	105	G	G	160	G	140	125	100	105	105	105	105	105	100
25	100	100	100	100	100	S	140	G	115	120	105	105	105	100	105	G	115	B	105	105	105	105	B	B
26	B	100	100	E	100	100	140	150	140	145	G	G	G	105	G	125	115	110	100	105	100	100	100	100
27	100	100	100	100	E	B	100	G	140	140	120	120	120	110	G	110	135	120	110	105	100	100	100	B
28	100	100	B	100	E	S	B	110	110	110	G	G	G	130	110	110	130	110	110	105	100	S	100	100
29	100	100	S	B	S	S	B	G	165	130	130	115	G	G	110	110	G	B	S	100	100	100	B	S
30	S	B	B	B	100	100	B	G	G	110	G	G	G	G	G	130	145	110	105	105	105	S	S	100
31	S	100	100	100	100	100	100	125	120	110	G	110	G	G	G	110	150	B	S	110	100	100	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	24	27	24	21	20	22	19	20	28	27	25	25	21	23	20	23	23	26	27	30	30	25	27	23
MED	100	100	100	100	100	100	105	130	122	120	120	110	110	110	110	115	120	110	110	105	105	105	100	100
UQ	102	100	100	105	102	105	142	148	130	135	125	120	120	120	125	130	130	120	110	110	105	105	100	100
LQ	100	100	100	100	100	100	107	108	115	115	110	110	110	110	110	110	110	110	102	105	100	100	100	100

OCT. 1969

H^oES (KM)

IONOSPHERIC DATA

OCT. 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 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	F3	F3	F2	F2	F1		H1											H1	F2	F2	F3	F3	F3	F4	
2	F3	F4	F2	F2			H1	H1		H1	S2	S2	S2	L2	L1	L1		H1	F2	F2	F3	F3	F3	F3	
3	F3	F4	F2	F3	F4	F4	L3	L2	H1	H2	S2	S2		H1	H1	H1	H2	S3	F3	F3	F3	F4	F5	F2	
4	F4	F1				F1	H1	H1	H1	H1	L1	L1						H2	F2					F1	
5		F2	F2	F3	F2	F1	L1	L1	H1	H1	H1	L1	H1	H1	H2	L1	C4	C4	F1	F4	F2	F2	F2	F1	
6	F1	F2	F2	F4	F6	F4	L1	H2	H2	H1	H1	L1	L1	L2	L1	L2	L2	L2	F3	F3	F2	F2	F1	F1	
7	F3	F2	F3	F2	F3	F3	L3	L1	L2	H1	H1	H1	H1				H1	H2	F1	F2	F2	F2	F2	F3	
8	F2	F2	F2	F2	F3	F2			L1				L1	H1	H1	H1	H1	L2	F1	F1	F1	F2	F1	F1	
9	F2	F1	F1			F1	L1		L1	H1	H1	H1	H1	H1	L1	L2	L1	L1	F1	F1	F1	F1	F1	F1	
10	F1	F1	F3	F2	F1	F1		L1	H1		H1	H1	H1	S2	S3	H2	S3	L3	F2	F4	F4	F6	F4	F4	
11	F6	F1	F1		F1	F1		H1	H1	H1	H1	H1	L1	S2	L1	L2	S2	S2	F4	F2	F1		F2	F4	
12	F4	F2	F2	F1	F2	F1		L1	H2	H1	H1	L1	S2	S2	H1				F1	F1	F4	F3	F1	F1	
13	F1	F1	F1	F2	F2	F2			L1	H1	H1	H1	H1	L1	L2	L2	S3	L4	F4	F4	F4	F2	F1		
14	F2	F2	F2	F4	F2	F1	H1	H1	H1	H1	H1	H1	H1	S2					F1	F2	F2	F1	F1	F1	
15	F1		F1				H1	H1	H2	H2	H1	S2	S2	S2	S2	L1	H3	H3	F3	F4	F4	F4	F2		
16	F5	F5	F4	F2					S3	S3	S3	L1		L2	L1	L3		H1	F2	F2	F1	F2	F5	F3	
17	F4	F4		F4	F3	F1	H3	H3	S2	S2	S2	L1	S2	L1	H1	H1	H1	H2	F2	F4	F3	F3	F3	F2	
18		F2	F2			F1		H1	H1	H1	H1	S2	S2	H1	S2	H1	L2	L2	F1	F3	F3	F3	F3	F3	
19	F5	F5	F1	F1				H1	H1	H1	H1	H1	H1	H1	H1	H1	L2	L2	F1	F2	F2	F3	F2		
20					F1	F2	H1		H1	H1	H1	L1	L1				L1	L2	F2	F2	F1	F1		F3	
21	F2	F3	F1	F1	F1	F1	L1	L3	L1	L1	L1	L1	L1		L1			L3	F2	F1	F1	F1	F1	F1	
22						F2		H1	H1	H2	L1	L1	L1	L1	L1			H2	L3	F3	F6	F5	F4	F1	F1
23	F2	F4	F8	F3	F3	F1	L1	H1	H1	L1	L1	L1	S2	L1			H3	L4	F4	F4	F2		F2	F2	
24	F3	F3	F2	F3	F3	F4	L1		L1					H1			H2	L1	F1	F2	F1	F2	F1	F2	
25	F1	F2	F2	F1	F1		L1		L1	L1	L2	L1	L1	L1	L1			L1	F3	F4	F2				
26		F1	F1		F1	F1	H2	H1	H2	H1				L1		H3	S3	C4	F3	F3	F4	F2	F3	F1	
27	F2	F1	F1	F1			L1		H1	H1	H2	H2	H1	L1	L1		L1	H1	H2	F1	F1	F1	F1	F1	
28	F1	F1		F1				L1	L1	L1				H1	S2	L1	H1	L4	F5	F4	F3		F1	F2	
29	F3	F3							H1	H1	H1	L1			L1	L1				F2	F3	F2			
30					F1	F1				L1							H2	H1	L3	F3	F4	F2		F1	
31		F2	F2	F2	F2	F2	L1	H1	H1	L1		L1				L1	H1		F1	F1	F1	F3	F3	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																									

OCT. 1969

TYPES OF ES

IONOSPHERIC DATA

OCT. 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	370	280	420	400	400	280	C	C	C	C	C	C	C	C	C	C	300	300	300	340	400	I ^R 375	I ^A 395
2	390	400	360	380	380	400	270	260	J ^R 260	300	300	290	310	330	310	325	290	300	300	J ^R 300	310	A	A	A
3	A	A	380	360	410	350	290	290	290	290	310	300	300	300	310	300	J ^R 300	290	I ^R 275	370	310	320	370	390
4	410	400	390	380	380	380	280	250	J ^R 290	280	300	295	300	C	C	C	C	U ^R 280	260	325	320	340	345	340
5	330	380	355	310	375	400	J ^R 275	260	J ^R 260	290	290	310	310	300	300	300	290	270	260	290	350	350	320	320
6	320	390	365	310	300	370	280	255	260	290	320	310	310	340	320	J ^R 310	J ^R 310	300	A	300	350	310	375	360
7	380	390	360	370	400	440	R	290	280	300	320	310	350	350	340	310	300	300	300	350	360	340	380	370
8	340	370	380	360	350	370	290	290	J ^R 290	290	J ^R 300	310	300	310	J ^R 300	J ^R 310	J ^R 300	300	300	300	300	370	J ^R 380	360
9	360	340	340	360	350	400	290	270	290	270	290	305	305	300	320	315	300	J ^R 295	280	290	300	320	370	380
10	380	340	340	320	290	290	250	250	280	290	290	300	340	350	350	340	310	300	290	300	300	400	370	400
11	330	300	400	400	390	390	310	260	J ^R 295	300	300	300	355	320	300	305	280	280	295	315	295	300	350	370
12	400	400	355	300	305	300	280	280	260	290	300	340	330	330	310	300	300	290	280	350	310	300	300	350
13	390	400	405	380	390	330	290	290	260	320	310	300	310	310	325	300	300	270	260	310	310	300	380	380
14	360	350	310	350	360	370	290	250	J ^R 290	290	J ^R 300	315	310	320	310	290	290	250	300	350	360	355	350	350
15	330	320	320	330	380	390	290	J ^R 260	280	250	270	270	330	310	305	295	280	260	280	285	320	355	380	365
16	355	350	320	280	330	340	255	280	J ^R 270	290	300	305	305	310	300	290	290	270	270	310	300	315	310	330
17	360	350	I ^C 365	360	330	320	255	280	260	280	260	340	330	330	310	300	270	290	300	290	300	330	350	360
18	I ^C 345	320	350	300	260	340	290	260	300	295	305	300	300	315	310	295	290	R	300	350	360	310	330	310
19	J ^R 310	310	340	340	340	360	285	260	275	290	290	305	330	340	330	300	J ^R 290	280	310	350	360	I ^R 360	300	310
20	390	370	290	300	410	390	290	J ^R 290	280	280	300	315	310	300	300	310	275	300	310	300	360	360	350	330
21	I ^R 345	310	I ^R 320	310	320	350	I ^R 305	280	295	280	300	300	330	320	310	300	300	290	I ^R 290	350	350	350	I ^R 325	J ^R 350
22	350	310	390	410	380	380	280	285	290	J ^R 300	310	325	305	350	320	300	J ^R 300	310	290	350	360	330	320	I ^R 380
23	380	360	360	350	350	390	270	240	300	310	300	330	300	320	340	310	310	300	300	310	370	310	310	360
24	360	370	370	390	390	360	290	260	290	270	320	310	340	340	340	305	300	290	300	345	320	310	350	355
25	370	330	300	350	350	350	290	255	295	300	320	340	350	340	330	320	300	J ^R 300	290	300	350	340	350	350
26	350	345	370	305	290	350	280	255	260	305	305	340	350	340	340	305	300	290	290	345	340	310	320	380
27	340	335	350	310	265	350	290	280	290	300	310	350	350	350	360	325	310	290	300	370	350	320	300	350
28	340	400	360	350	400	400	330	285	305	300	310	330	350	350	350	330	315	305	J ^R 300	I ^R 335	305	300	300	315
29	305	410	390	400	370	390	300	270	305	305	300	330	350	350	350	350	300	J ^R 315	300	310	I ^R 320	340	350	340
30	350	340	350	350	290	360	300	270	290	280	300	310	370	340	340	300	310	300	300	310	300	320	360	350
31	350	350	350	340	320	350	280	260	J ^R 260	290	300	305	330	330	320	340	300	290	300	310	290	350	395	400
	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	31	31	31	31	30	30	30	30	30	30	30	29	29	29	29	30	30	31	31	30	30	30
MED	352	350	355	350	350	370	290	265	290	290	300	310	330	330	320	305	300	290	300	310	320	330	350	358
UQ	380	390	370	375	385	390	290	280	290	300	310	330	350	340	340	315	300	300	300	350	350	350	370	380
LQ	340	335	340	310	320	350	280	260	260	280	300	300	305	310	310	300	290	280	280	300	302	310	320	340

OCT. 1969

HPF2 (KM)

IONOSPHERIC DATA

OCT. 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 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	80	110	80	80	90	70	C	C	C	C	C	C	C	C	C	C	90	100	90	100	100	105 ^R	105 ^R
2	100	90	130	110	110	100	80	60	J ^R ₈₀	100	60	60	100	70	90	85	70	90	90	J ^R ₉₀	90	A	A	A
3	A	A	120	100	100	100	100	70	90	100	90	90	90	80	80	90	J ^R ₉₀	70	110 ^R	130	80	130	110	100
4	100	110	110	120	110	110	70	65	J ^R ₉₀	60	50	55	90	C	C	C	C	U ^R ₇₀	50	65	80	110	105	70
5	70	60	65	90	75	60	J ^R ₄₅	R ₄₀	R ₄₀	50	65	85	90	90	80	75	70	70	60	160	95	95	80	90
6	80	80	50	85	95	80	65	70	60	70	90	90	90	90	80	J ^R ₈₀	J ^R ₈₀	80	A	90	100	80	85	100
7	120	100	100	110	100	100	R	100	80	90	80	80	60	90	70	90	100	90	90	100	120	80	110	110
8	100	110	120	R ₉₀	90	120	100	70	J ^R ₇₀	60	J ^R ₉₀	100	100	90	J ^R ₁₀₀	J ^R ₁₀₀	J ^R ₉₀	80	90	90	90	80	J ^R ₈₀	100
9	130	100	80	100	100	100	60	70	60	70	70	70	90	90	90	90	55	J ^R ₆₀	75	70	85	85	80	70
10	90	60	60	80	70	70	65	50	45	90	60	90	100	100	100	100	100	80	100	100	100	100	100	100
11	90	90	100	100	100	110	90	60	J ^R ₈₅	95	70	70	100	80	80	90	75	80	80	80	65	55	95	85
12	90	90	85	75	95	95	75	75	60	90	90	110	80	100	90	100	90	60	110	100	90	90	90	100
13	110	100	95	110	100	80	100	60	80	90	80	90	80	80	65	80	80	90	90	100	100	100	110	110
14	90	90	80	90	90	120	100	60	J ^R ₉₀	100	J ^R ₉₀	85	90	90	80	70	70	70	90	100	130	95	100	100
15	90	90	90	80	100	100	100	J ^R ₈₀	100	60	50	85	75	85	80	65	60	80	80	70	90	90	80	80
16	90	90	85	75	75	70	65	75	J ^R ₅₀	60	65	75	90	95	70	70	50	70	80	85	100	80	50	65
17	85	95	I ^C ₈₀	85	80	80	55	75	50	80	90	90	80	90	90	90	90	70	100	70	90	90	100	90
18	I ^C ₉₀	100	100	90	90	100	100	80	90	65	85	90	90	85	90	95	100	R	100	100	90	80	80	90
19	J ^R ₉₀	90	110	100	100	90	65	90	75	60	60	85	80	100	80	90	J ^R ₁₀₀	70	90	100	90	I ^R ₇₅	90	90
20	90	90	100	90	100	100	100	J ^R ₉₀	70	60	90	85	90	90	90	80	75	90	100	100	90	90	100	100
21	I ^R ₉₀	90	I ^R ₁₁₀	100	100	100	I ^R ₁₁₀	100	65	70	90	100	100	100	100	100	90	60	100	90	90	100	85	J ^R ₈₀
22	100	100	100	90	110	100	60	65	60	J ^R ₉₀	100	75	85	100	90	100	J ^R ₉₀	100	100	90	90	110	90	I ^R ₁₀₀
23	110	90	120	110	100	100	80	90	90	90	100	70	100	90	90	90	90	90	100 ^R	100	120	100	100	90
24	100	90	90	100	100	100	100	90	100	80	100	95	75	105	80	95	95	70	70	65	80	80	95	100
25	100	70	70	105	100	95	65	65	60	60	120	55	70	65	90	100	85	J ^R ₆₀	70	60	95	65	95	95
26	95	100	85	90	65	95	65	65	65	90	100	100	95	100	75	90	80	70	100	65	60	80	80	100
27	100	70	90	60	60	105	65	75	55	90	90	70	100	90	120	95	90	60	100	100	90	80	100	140
28	110	100	100	100	100	100	110	65	85	90	90	110	100	100	100	130	95	95	J ^R ₉₀	I ^R ₉₅	85	100 ^R	100	85
29	95	90	100	100	80	100	100	80	85	95	100	110	100	100	90	70	110	J ^R ₁₀₅	100	90	I ^R ₉₅	100	90	100
30	90	110	100	100	100	100	100	80	70	110	100	100	80	90	90	90	110	90	90	90	90	120	90	90
31	80	100	100	70	90	80	110	80	J ^R ₉₀	100	90	95	110	110	120	100	100	90	100	100	100	100	95	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	30	30	31	31	31	31	30	30	30	30	30	30	30	29	29	29	29	30	30	31	31	30	30	30
MED	92	90	100	90	100	100	80	72	72	90	90	88	90	90	90	90	90	80	90	90	90	90	95	100
UQ	100	100	105	100	100	100	100	80	90	90	90	95	100	100	90	100	95	90	100	100	100	100	100	100
LQ	90	90	85	85	85	90	65	65	60	60	70	75	80	90	80	80	75	70	80	82	90	80	85	90

The Radio Research Laboratories, Japan

OCT. 1969

YPF2 (KM)

(193) 5794 9813 122

IONOSPHERIC DATA

OCT. 1969

FOF2 (0.1 MHz)

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

Station	YAMAGAWA				Lat.	31 12' N				Long.	130 37' 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	S ₆₂	S ₅₆	S ₆₄	S ₄₄	S ₃₆	S ₃₄	S ₄₅	S ₈₆	S ₁₀₀	S ₁₀₃	S ₁₀₁	S ₁₁₄	S ₁₂₄	S ₁₁₆	S ₁₀₂	S ₁₀₂	S ₁₀₃	S ₁₀₀	S ₉₁	S ₇₈	S ₆₇	S ₆₆	S ₆₉	S ₆₂	
2	S ₅₈	S ₅₂	S ₄₉	S ₄₇	S ₄₆	S ₄₅	S ₅₅	S ₈₈	S ₁₀₀	S ₁₁₆	S ₁₀₈	S ₁₀₈	S ₁₀₇	S ₁₁₁	S ₁₂₃	S ₁₁₉	S ₁₁₄	S ₁₀₇	S ₁₀₉	S ₁₀₃	S ₈₉	S ₆₈	S ₆₈	S ₆₀	
3	S ₅₇	S ₄₈	S ₄₈	S ₅₀	S ₄₈	S ₄₆	S ₅₉	S ₁₀₂	S ₁₀₂	S ₁₀₈	S ₁₁₁	S ₁₁₆	S ₁₁₅	S ₁₂₀	S ₁₁₉	S ₁₂₀	S ₁₀₇	S ₁₁₀	S ₉₉	S ₇₄	S ₇₉	S ₈₄	S ₇₃	S ₆₅	
4	S ₆₂	S ₆₃	S ₅₄	S ₅₇	S ₆₁	S ₅₂	S ₅₆	S ₈₄	S ₈₉	S ₁₀₀	S ₁₀₁	S ₁₀₂	S ₁₁₈	S ₁₁₇	S ₁₁₂	S ₁₁₀	S ₁₁₁	S ₁₀₉	S ₁₁₂	S ₉₄	S ₆₉	S ₆₇	S ₆₄	S ₆₄	
5	S ₅₇	S ₅₃	S ₄₈	S ₄₆	S ₃₈	S ₃₈	S ₄₈	S ₇₄	S ₈₅	S ₁₀₁	S ₁₀₂	S ₁₀₄	S ₁₂₀	S ₁₂₇	S ₁₁₈	S ₁₁₅	S ₁₁₂	S ₁₁₂	S ₉₉	S ₇₇	S ₆₄	S ₆₃	S ₆₄	S ₅₈	
6	S ₅₄	S ₄₇	S ₄₇	S ₄₇	S ₄₅	S ₃₆	S ₄₁	S ₈₆	S ₉₉	S ₉₀	S ₁₀₄	S ₁₂₄	S ₁₃₀	S ₁₄₀	S ₁₄₄	S ₁₃₆	S ₁₂₄	S ₁₂₀	S ₁₂₁	S ₁₀₄	S ₈₂	S ₆₉	S ₆₃	S ₆₁	
7	S ₅₆	S ₅₇	S ₅₃	S ₅₀	S ₄₃	S ₄₃	S ₄₈	S ₈₁	S ₉₃	S ₁₀₁	S ₁₁₅	S ₁₁₈	S ₁₃₁	S ₁₂₄	S ₁₂₈	S ₁₂₆	S ₁₁₄	S ₉₆	S ₉₀	S ₇₆	S ₆₇	S ₆₃	S ₆₂	S ₆₂	
8	S ₆₁	S ₅₇	S ₅₃	S ₅₁	S ₄₈	S ₄₇	S ₅₄	S ₈₄	S ₉₃	S ₁₁₀	S ₁₀₂	S ₁₁₄	S ₁₁₄	S ₁₂₁	S ₁₁₉	S ₁₁₈	S ₁₂₀	S ₁₂₃	S ₁₂₄	S ₁₀₂	S ₇₇	S ₇₇	S ₈₀	S ₆₉	
9	S ₆₅	S ₆₄	S ₆₃	S ₅₇	S ₅₁	S ₄₀	S ₄₆	S ₇₆	S ₉₂	S ₉₉	S ₁₀₁	S ₁₀₇	S ₁₁₅	S ₁₁₈	S ₁₁₄	S ₁₂₆	S ₁₂₈	S ₁₁₈	S ₁₁₂	S ₈₅	S ₆₈	S ₇₃	S ₆₇	S ₆₀	
10	S ₅₆	S ₅₇	S ₅₈	S ₅₅	S ₄₉	S ₄₁	S ₃₇	S ₆₇	S ₉₃	S ₁₁₃	S ₁₀₂	S ₁₀₀	S ₁₁₁	S ₁₂₂	S ₁₃₃	S ₁₃₄	S ₁₃₃	S ₁₃₄	S ₁₂₅	S ₉₄	S ₆₈	S ₆₇	S ₆₅	S ₇₄	
11	S ₆₆	S ₆₆	S ₅₁	S ₅₀	S ₅₁	S ₄₉	S ₅₆	S ₈₄	S ₈₂	S ₉₇	S ₁₀₂	S ₁₀₂	S ₁₁₅	S ₁₂₆	S ₁₃₁	S ₁₂₉	S ₁₁₄	S ₁₀₂	S ₁₀₃	C	C	C	C	C	
12	S ₄₈	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	S ₁₃₅	S ₁₄₄	S ₁₄₁	S ₁₃₀	S ₁₁₆	S ₁₁₃	C	C	C
13	S ₄₄	C	C	C	C	C	C	C	C	S ₁₁₀	S ₁₀₈	S ₁₀₆	S ₁₁₅	S ₁₂₈	S ₁₃₈	S ₁₃₅	S ₁₂₉	S ₁₂₆	S ₁₁₃	S ₉₃	S ₇₈	S ₇₀	S ₅₈	S ₄₇	
14	S ₅₁	S ₅₄	S ₄₃	S ₃₅	S ₃₅	S ₃₄	S ₄₁	S ₇₅	S ₈₅	S ₁₀₀	S ₁₀₅	S ₁₂₁	S ₁₃₄	S ₁₃₀	S ₁₃₂	S ₁₂₄	S ₁₁₁	S ₉₈	S ₈₂	S ₆₁	S ₅₈	S ₅₆	S ₅₁	S ₄₈	
15	S ₅₀	S ₅₀	S ₄₅	S ₄₄	S ₄₂	S ₄₁	S ₄₄	S ₈₀	S ₁₀₀	S ₁₁₀	S ₈₅	S ₁₀₃	S ₁₁₀	S ₁₁₆	S ₁₂₆	S ₁₂₂	S ₁₁₁	S ₁₀₂	S ₈₄	S ₆₁	S ₅₃	S ₅₄	S ₅₄	S ₅₂	
16	S ₅₂	S ₅₁	S ₄₆	S ₄₅	S ₃₉	S ₄₁	S ₄₅	S ₇₇	S ₉₁	S ₁₀₄	S ₁₁₆	S ₁₂₄	S ₁₂₆	S ₁₃₄	S ₁₃₁	S ₁₂₆	S ₁₀₉	S ₁₀₈	S ₁₀₁	S ₅₈	S ₅₃	S ₅₅	S ₅₅	S ₄₈	
17	S ₄₇	S ₄₅	S ₄₄	S ₄₄	S ₄₆	S ₃₉	S ₄₀	S ₇₆	S ₉₅	S ₁₀₈	S ₁₀₁	S ₉₆	S ₁₁₂	S ₁₃₄	S ₁₃₅	S ₁₂₉	S ₁₁₅	S ₁₀₉	S ₁₀₀	S ₆₉	S ₆₄	S ₆₂	S ₅₅	S ₅₁	
18	S ₅₃	S ₅₂	S ₄₉	S ₄₄	S ₃₆	S ₃₀	S ₃₄	S ₆₇	S ₉₄	S ₁₀₅	S ₁₂₃	S ₁₂₀	S ₁₂₅	S ₁₂₄	S ₁₃₅	S ₁₃₄	S ₁₂₄	S ₁₁₅	S ₉₅	S ₈₇	S ₇₈	S ₇₅	S ₆₇	S ₆₈	
19	S ₆₇	S ₆₅	S ₅₄	S ₄₂	S ₃₇	S ₂₉	S ₃₆	S ₈₁	S ₉₃	S ₁₀₄	S ₁₀₇	S ₁₀₄	S ₉₈	S ₁₁₅	S ₁₂₆	S ₁₂₁	S ₁₁₅	S ₁₀₄	S ₈₀	S ₆₇	S ₆₆	S ₆₅	S ₆₄	S ₆₃	
20	S ₅₅	S ₅₆	S ₅₄	S ₃₈	S ₃₁	S ₃₃	S ₃₇	S ₇₈	S ₁₁₀	S ₁₂₀	S ₁₂₅	S ₁₁₉	S ₁₁₂	S ₁₂₄	S ₁₁₇	S ₁₀₄	S ₁₁₉	S ₁₀₉	S ₉₃	S ₇₈	S ₇₀	S ₆₃	S ₅₈	S ₅₂	
21	S ₄₉	S ₅₀	S ₄₈	S ₄₉	S ₄₈	S ₄₂	S ₄₄	S ₈₂	S ₁₁₄	S ₁₃₃	S ₁₃₄	S ₁₀₉	S ₁₁₇	S ₁₂₇	S ₁₂₈	S ₁₂₆	S ₁₂₅	S ₁₁₀	S ₈₃	S ₇₀	S ₇₃	S ₇₅	S ₇₀	S ₇₀	
22	S ₅₆	S ₅₂	S ₄₇	S ₄₄	S ₄₂	S ₄₀	S ₄₃	S ₇₇	S ₁₀₁	S ₁₁₀	S ₁₁₄	S ₁₂₄	S ₁₃₄	S ₁₄₂	S ₁₅₁	S ₁₄₃	S ₁₂₃	S ₉₇	S ₉₂	S ₈₃	S ₈₀	S ₇₀	S ₇₆	S ₇₁	
23	S ₆₃	S ₆₀	S ₆₀	S ₅₆	S ₄₈	S ₃₉	S ₄₄	S ₇₀	S ₉₄	S ₁₁₂	S ₁₂₆	S ₁₂₄	S ₁₃₄	S ₁₃₃	S ₁₂₆	S ₁₂₆	S ₁₁₆	S ₁₁₃	S ₁₁₉	S ₉₈	S ₈₆	S ₈₃	S ₈₃	S ₆₈	
24	S ₆₀	S ₅₃	S ₄₇	S ₄₈	S ₄₅	S ₄₁	S ₄₃	S ₇₉	S ₁₀₁	S ₁₁₄	S ₁₂₂	S ₁₂₂	S ₁₂₈	S ₁₂₈	S ₁₂₉	S ₁₂₆	S ₁₂₁	S ₁₁₂	S ₁₀₇	S ₉₈	S ₉₃	S ₉₀	S ₇₃	S ₆₃	
25	S ₆₂	S ₆₉	S ₆₉	S ₅₀	S ₄₀	S ₃₅	S ₄₀	S ₈₁	S ₁₀₇	S ₁₂₅	S ₁₂₇	S ₁₃₃	S ₁₅₀	S ₁₆₂	S ₁₅₄	S ₁₃₃	S ₁₂₆	S ₁₂₀	S ₁₁₀	S ₈₇	S ₈₂	S ₈₇	S ₇₉	S ₆₈	
26	S ₆₃	S ₅₄	S ₅₂	S ₅₄	S ₅₅	S ₃₂	S ₃₇	S ₈₀	S ₉₂	S ₁₀₄	S ₁₂₁	S ₁₂₉	S ₁₃₈	S ₁₄₇	S ₁₄₅	S ₁₄₂	S ₁₂₇	S ₁₂₁	S ₁₁₂	S ₉₈	S ₉₇	S ₁₀₄	S ₈₈	S ₆₈	
27	S ₆₂	S ₆₃	S ₅₆	S ₅₂	S ₄₇	S ₃₀	S ₃₅	S ₇₈	S ₁₁₁	S ₁₁₁	S ₁₂₄	S ₁₃₁	S ₁₃₇	S ₁₄₅	S ₁₄₅	S ₁₃₅	S ₁₂₅	S ₁₁₂	S ₁₀₀	S ₉₀	S ₉₁	S ₈₃	S ₇₄	S ₆₃	
28	S ₅₃	S ₄₄	S ₄₇	S ₄₅	S ₄₂	S ₃₉	S ₄₅	S ₈₅	S ₁₀₇	S ₁₂₇	S ₁₃₄	S ₁₁₇	S ₁₂₃	S ₁₃₁	S ₁₃₂	S ₁₂₈	S ₁₂₆	S ₁₂₂	S ₁₀₇	S ₁₀₅	S ₁₀₅	S ₉₆	S ₈₆	S ₆₄	
29	S ₅₄	S ₄₈	S ₄₆	S ₄₃	S ₄₈	S ₄₃	S ₄₅	S ₇₄	S ₁₀₀	S ₁₂₅	S ₁₃₅	S ₁₃₁	S ₁₂₆	S ₁₄₂	S ₁₄₆	S ₁₃₉	S ₁₃₀	S ₁₃₂	S ₁₂₄	S ₁₀₄	S ₉₃	S ₉₃	S ₇₄	S ₆₇	
30	S ₆₀	S ₅₅	S ₅₂	S ₅₃	S ₅₄	S ₃₃	S ₃₅	S ₈₀	S ₁₀₈	S ₁₀₇	S ₁₂₃	S ₁₂₃	S ₁₂₈	S ₁₄₄	S ₁₄₅	S ₁₃₉	S ₁₂₉	S ₁₂₁	S ₁₁₅	S ₉₈	S ₈₉	S ₈₂	S ₇₃	S ₅₉	
31	S ₅₆	S ₅₁	S ₄₄	S ₄₂	S ₄₅	S ₃₇	S ₄₂	S ₈₀	S ₉₄	S ₁₀₃	S ₁₁₃	S ₁₁₁	S ₁₁₁	S ₁₂₉	S ₁₃₁	S ₁₂₅	S ₁₂₁	S ₁₁₉	S ₉₅	S ₇₅	S ₈₃	S ₆₂	S ₆₀	S ₅₁	
	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	29	29	29	29	29	29	29	29	31	30	30	30	31	31	31	31	31	31	29	29	29	29	29	
MED	56	54	49	47	45	39	44	80	95	108	112	116	122	128	131	126	121	112	103	87	78	70	68	63	
UQ	62	57	54	51	48	42	46	84	101	112	123	124	130	134	141	134	126	120	112	98	86	82	75	68	
LQ	53	51	47	44	40	34	40	76	93	103	102	106	114	122	124	122	114	108	94	75	67	63	62	58	

OCT. 1969

FOF2 (0.1 MHz)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

OCT. 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							S	220	280	325	330	I ^A 340	I ^A 360	I ^A 370	I ^A 355	340	290	240						
2							S	230	300	320	340	I ^A 345	350	360	I ^A 345	I ^A 330	300	240		S				
3							S	230	I ^A 290	335	I ^A 345	I ^A 350	350	R	350	345	330	310		A	S			
4							S	215	280	320	I ^A 330	340	I ^A 345	360	I ^A 340	320	290	230			B			
5							S	215	290	320	335	350	350	350	335	310	290	I ^A 225		S				
6							S	210	295	320	350	355	360	I ^A 350	340	340	300		A	B				
7							S	230	H	280	325	345	355	I ^A 355	350	340	320	300	230		S			
8							S	200	I ^A 280	330	340	I ^A 350	360	360	345	320	290	I ^A 215		B				
9							S	220	H	280	315	340	345	345	345	330	320	275		A	S			
10							S	215	290	I ^A 310	330	I ^A 350	I ^A 350	I ^A 355	345	320	290	200		A				
11							S	220	280	310	335	340		A	A	355	325	290	220		S			
12							C	C	C		C	C		C	360	340	I ^A 325	I ^A 285	220		S			
13							C	C	C		305	I ^A 325	I ^A 340	345	I ^A 345	340	325	290		A	S			
14							S	H	200	280	315	330		A	A	A	A	320	I ^A 275	210		A		
15							S	210	280	310	335	I ^A 340	340	335	340	315	280	215		S				
16							S	205	275	305	330		A		340	335	320	I ^A 275		A	S			
17							S	210	270	305	325	330	I ^A 345	350	335	315	280		A	S				
18							S	210	I ^A 280	320		A	A	A	A	360	330	I ^A 285	200		S			
19							S	205	285	330	350	I ^A 350	I ^A 360	I ^A 360	350	325	275		A	S				
20							S	195	285		A	A	A	A	A		I ^A 360	I ^A 330	I ^A 290		A	S		
21							S	200	I ^A 280	I ^A 320	335	350	360	340		A	A	280		A	S			
22							S	H	190	290	325	340	345		A	A	A	A	280	210		S		
23							S	210	280	320	325	I ^A 345	360	365	355	325	285		A	S				
24							S	230	295	320	340	360	370	375	H	360	330	R	R		A	S		
25							S	H	215	270	315	335	340	370	380	360	335	280		A	S			
26							S	180	280	320	345	365	370	365	360	340	I ^A 285		A	S				
27							S	200	280	320	345	355		A	A	360	330	280		A	S			
28							S	230	290	320	350	360	R	360	370	350	H	330	280	190		B		
29							S	180	290	320	350	360	350	355	350	330	290	180			S			
30							S	190	275	325	340	355	355	370	H	350	320	280	200		S			
31							S	180	280	320	I ^A 340	360	360	360	340	320	265		A	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								29	29	30	28	26	23	25	28	29	31	16						
MED								210	280	320	340	350	355	360	345	325	285	215						
UQ								220	290	320	345	355	360	365	355	330	290	228						
LQ								200	280	315	330	340	350	350	340	320	280	200						

OCT. 1969

FOE (0.01 MHz)

IONOSPHERIC DATA

OCT. 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	E ₁₅	E	E ₁₁	E	E ₁₅	E ₁₅	J ₂₈	29	38	42	38	38	37	47	40	G ₂₅	G ₂₁	28	24	J ₂₇	J ₂₂	22	E ₁₂	J ₂₁	
2	J ₂₁	J ₃₄	J ₃₉	J ₂₂	18	21	E ₁₅	27	J ₃₇	44	37	38	G ₃₁	G ₃₁	35	J ₄₅	G ₂₉	30	26	J ₂₁	J ₄₄	J ₃₂	J ₃₀	E ₁₃	
3	J ₅₁	J ₂₉	J ₄₃	J ₆₈	J ₉₃	J ₅₂	J ₅₂	26	J ₆₅	J ₉₅	46	J ₄₉	49	31	G ₃₀	34	32	J ₃₇	J ₃₀	J ₄₁	J ₃₃	J ₅₁	J ₄₉	J ₄₂	
4	J ₂₃	21	E ₁₃	E	E ₁₁	E ₁₅	E ₁₅	27	J ₃₅	G ₃₂	J ₃₈	J ₃₄	J ₆₂	J ₄₀	J ₄₁	J ₂₉	J ₃₅	27	16	15	23	J ₃₀	J ₂₆	J ₂₉	
5	24	E ₁₃	22	E	J ₂₇	J ₃₁	25	J ₂₆	31	36	39	39	41	J ₄₆	39	J ₄₄	J ₃₄	25	E ₁₅	E ₁₅	J ₂₈	J ₃₁	24	J ₂₅	
6	J ₂₀	22	J ₁₈	22	E	E ₁₂	J ₂₈	G	31	35	44	45	G ₃₃	J ₄₉	39	36	33	35	J ₄₉	J ₃₃	J ₂₅	J ₃₄	J ₃₂	J ₂₉	
7	24	22	36	J ₅₀	J ₂₉	J ₂₂	23	J ₃₄	33	36	37	37	37	34	J ₃₅	37	48	J ₅₀	J ₅₁	J ₄₆	J ₂₁	J ₂₄	23	E ₁₅	
8	J ₂₄	J ₂₀	J ₃₆	J ₂₉	E ₁₁	J ₁₉	E ₁₅	G	J ₆₁	36	J ₃₅	J ₃₆	39	39	G ₂₉	35	31	25	E ₁₅	E ₁₅	18	25	E ₁₂	E ₁₅	
9	E ₁₆	J ₅₀	E ₁₃	E ₁₁	24	22	E ₁₅	G	30	34	38	43	40	38	40	36	36	J ₃₀	J ₂₄	J ₂₄	J ₁₉	E ₁₅	E ₁₅	E ₁₅	
10	E ₁₅	E ₁₁	J ₄₆	J ₂₁	E	E ₁₂	E ₁₅	25	G	40	34	J ₃₇	J ₃₉	J ₄₁	37	37	34	25	22	J ₂₅	J ₂₉	26	21	E ₁₁	
11	J ₃₁	E ₁₃	E ₁₁	E ₁₁	20	E ₁₄	E ₁₄	25	36	38	40	43	J ₄₄	36	G ₂₉	J ₅₁	36	J ₆₂	J ₇₃	C	C	C	C	C	
12	J ₃₃	C	C	C	C	C	C	C	C	47	C	C	C	G	36	E ₁₂₂	E ₃₈	24	E ₁₆	20	C	C	C	C	
13	J ₂₃	C	C	C	C	C	C	C	C	34	C	C	41	J ₅₀	G	37	33	34	J ₃₁	J ₂₃	23	J ₃₀	E ₁₅	J ₂₂	
14	J ₂₅	J ₃₄	J ₂₉	J ₂₄	J ₁₈	E ₁₃	E ₁₅	23	34	42	36	38	40	37	41	35	J ₃₃	J ₂₆	J ₂₆	J ₃₀	J ₃₈	J ₃₇	J ₄₀	J ₂₄	
15	J ₂₁	J ₂₀	J ₂₆	J ₂₈	22	24	E ₁₅	25	31	36	40	38	J ₆₀	J ₅₃	40	48	36	32	J ₁₅	J ₂₃	J ₄₃	J ₄₀	J ₅₁	E ₁₅	
16	E ₁₅	E ₁₂	22	22	E	E ₁₃	E ₁₅	26	33	34	J ₅₇	J ₇₄	J ₄₀	37	G ₃₀	G	30	28	J ₂₇	J ₂₆	J ₂₆	J ₂₁	J ₄₈	J ₃₀	
17	J ₃₀	E ₁₆	E ₁₆	J ₂₃	J ₂₁	E ₁₅	E ₁₅	25	J ₃₇	J ₅₃	J ₄₈	38	J ₄₁	G ₃₃	39	36	J ₄₈	J ₄₉	35	J ₆₇	J ₆₅	J ₃₂	J ₂₄	J ₃₅	
18	J ₃₅	J ₃₇	J ₂₆	J ₂₅	24	E ₁₂	20	J ₃₁	J ₃₀	J ₃₆	40	38	39	J ₃₈	G	G	J ₄₁	22	E ₁₅	J ₁₉	19	E ₁₅	22	J ₂₆	
19	J ₃₂	J ₂₂	21	19	E	E ₁₂	E ₁₅	24	33	G	G	38	39	39	J ₄₄	37	J ₄₄	J ₃₇	J ₃₁	J ₂₃	J ₆₂	J ₃₂	J ₂₉	J ₂₉	
20	J ₃₂	J ₃₃	J ₁₉	22	20	20	19	J ₂₉	J ₅₆	J ₃₆	43	42	J ₄₁	40	J ₃₉	39	J ₅₇	J ₃₃	J ₃₀	J ₂₉	E ₁₅	J ₃₂	J ₄₁	E ₁₅	
21	E ₁₅	E ₁₁	E ₁₂	E ₁₄	19	J ₂₀	22	23	J ₃₄	34	38	40	39	37	36	33	J ₃₆	25	E ₁₅	J ₃₃	J ₃₀	J ₁₉	E ₁₅	E ₁₅	
22	E ₁₅	E ₁₈	E ₁₄	E ₁₂	E ₁₃	E ₁₅	J ₁₇	25	J ₃₉	39	37	40	37	37	J ₃₈	34	36	J ₅₉	J ₈₇	J ₃₃	23	J ₂₆	J ₂₀	E ₁₅	
23	J ₂₉	J ₂₆	24	E ₁₆	E ₁₁	E ₁₅	E ₁₅	23	J ₃₆	J ₄₇	J ₄₇	J ₅₂	G ₃₆	37	G ₃₅	36	32	J ₄₈	J ₅₁	J ₂₉	J ₂₈	J ₂₉	J ₃₃	J ₃₂	
24	J ₃₅	22	23	E ₁₃	E ₁₅	E ₁₂	E ₁₅	G ₂₀	G ₂₉	G ₂₅	37	G ₂₆	42	G	39	41	40	37	J ₂₅	23	J ₂₂	24	J ₂₅	E ₁₅	
25	23	22	20	E ₁₂	33	E ₁₅	E ₁₅	22	34	38	37	40	G ₃₆	G ₃₆	G	38	37	J ₅₁	J ₄₉	J ₂₈	J ₂₄	J ₃₄	25	19	
26	E ₁₅	E ₁₅	E ₁₂	E ₁₅	E ₁₁	23	E ₁₅	25	31	39	39	46	J ₅₂	44	43	J ₄₆	J ₃₃	J ₅₁	J ₂₆	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
27	E ₁₅	20	E ₁₃	E ₁₃	E	E ₁₁	E ₁₅	23	30	35	39	43	44	42	G	J ₆₃	J ₁₁₇	J ₂₅	J ₁₀₅	J ₄₃	J ₂₁	22	J ₂₆	21	
28	E ₁₅	E ₁₅	E ₁₂	E ₁₁	E	E ₁₅	E ₁₅	J ₂₁	34	34	J ₃₁	G	G ₂₇	J ₃₄	J ₃₄	J ₂₇	39	29	J ₃₅	J ₄₀	J ₃₄	J ₃₁	J ₃₄	J ₂₇	
29	E ₁₅	23	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	24	31	37	40	40	43	40	37	J ₃₅	31	J ₃₁	J ₄₂	J ₂₆	J ₂₅	22	J ₃₁	J ₂₅	
30	J ₂₁	21	E ₁₅	20	E ₁₂	E ₁₁	E ₁₅	G	G	34	39	39	39	G	46	43	G	G	E ₁₄	J ₃₆	J ₂₆	J ₂₇	E ₁₅	J ₂₉	
31	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₅	23	E ₁₅	23	30	J ₆₁	35	35	G ₃₅	J ₃₇	J ₃₅	J ₂₉	G ₂₂	23	J ₂₈	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E 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	31	29	29	29	29	29	29	29	29	31	29	29	30	31	31	31	31	31	31	31	30	29	29	29	29
MED	J ₂₃	21	19	16	15	E ₁₅	E ₁₅	25	33	36	38	39	40	37	37	36	34	30	J ₂₇	J ₂₆	J ₂₅	J ₂₇	J ₂₅	J ₂₁	
UQ	J ₃₀	J ₂₃	J ₂₆	J ₂₂	21	21	19	26	J ₃₆	41	40	43	42	40	40	41	38	J ₃₇	J ₃₈	J ₃₃	J ₃₀	J ₃₂	J ₃₃	J ₂₉	
LQ	E ₁₅	E ₁₅	E ₁₃	E ₁₂	E ₁₁	E ₁₃	E ₁₅	23	31	34	37	38	37	G ₃₅	G ₃₂	34	32	25	19	J ₂₁	21	22	E ₁₅	E ₁₅	

The Radio Research Laboratories, Japan

OCT. 1969

FOES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1969

FBES (0.1 MHZ)

135 E Mean Time (G. M. T. + gh)

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 ₁₅	E ₁₁	E ₁₁	E ₁₅	E ₁₅	S	27	37	41	37	37	37	37	38	39	G ₂₄	G ₁₈	27	22	24	19	E ₁₂	E ₁₂	20	
2		17	29	26	15	11	E ₁₅	E ₁₅	G	G	42	G	38	31	31	35	36	G ₂₂	G	18	19	25	17	E ₁₃	E ₁₃	
3		E	18	E ₄₃	A	A	30	35	19	41	92	44	40	49	30	30	G	G	29	21	24	27	34	44	25	
4		16	E	E ₁₃	E	E ₁₁	E ₁₅	E ₁₅	G	G	29	35	32	43	31	39	G ₂₆	21	G	15	14	E	E	E	17	
5		E	E ₁₃	E	E	E	16	17	17	G	G	G	39	40	38	37	37	G	24	E ₁₅	E ₁₅	24	26	E	19	
6		E	E	16	14	E	E ₁₂	S	G	G	G	40	42	G ₃₂	40	G	G	G	29	42	15	15	31	29	E	
7		E	E	E	23	15	12	S	16	G	G	G	G	37	31	35	36	40	46	48	28	E	E	E ₁₅	E ₁₅	
8		18	16	16	17	E ₁₁	15	E ₁₅	G	47	27	30	E ₃₆	G	38	G ₂₇	G	G	23	E ₁₅	E ₁₅	E	E	E ₁₂	E ₁₅	
9		E ₁₆	18	E ₁₃	E ₁₁	E	14	E ₁₅	G	G	G	36	41	39	37	40	35	34	25	17	16	E	E ₁₅	E ₁₅	E ₁₅	
10		E ₁₅	E ₁₁	30	16	E	E ₁₂	E ₁₅	G	G	39	G	37	38	37	36	35	31	G	20	19	24	18	E	E ₁₁	
11		17	E ₁₃	E ₁₁	E ₁₁	E	E ₁₄	E ₁₄	G	34	37	39	41	43	36	G ₂₅	39	35	61	72	C	C	C	C	C	
12		26	C	C	C	C	C	C	C	46	C	C	C	G	G	E ₁₂₂	E ₃₈	G	E ₁₆	E	C	C	C	C	C	
13		E	C	C	C	C	C	C	C	C	G	C	C	41	42	G	36	G	34	26	20	E	21	E ₁₅	18	
14		17	18	18	15	E	E ₁₅	E ₁₅	G	31	38	E ₃₆	37	38	36	38	31	29	17	19	18	28	25	32	16	
15		17	E	16	E	E	14	E ₁₅	23	G	36	39	38	53	50	39	43	31	31	S	E	20	27	33	E ₁₅	
16		E ₁₅	E ₁₂	18	E	E	E ₁₃	E ₁₅	23	30	33	54	41	36	G	G ₂₈	G	G	30	28	27	24	20	17	48	18
17		18	E ₁₆	E ₁₆	19	18	E ₁₅	E ₁₅	G	29	49	45	37	39	31	37	36	29	21	19	24	33	28	17	20	
18		28	26	18	17	15	E ₁₂	S	G	28	30	38	37	37	37	G	G	33	G	E ₁₅	16	E	E ₁₅	E	20	
19		27	19	E	E	E	E ₁₂	E ₁₅	G	32	G	G	38	38	37	39	35	43	35	29	20	18	17	17	21	
20		20	18	15	13	13	E	S	27	32	33	39	42	40	E ₄₀	33	37	31	18	S	29	E ₁₅	27	18	E ₁₅	
21		E ₁₅	E ₁₁	E ₁₂	E ₁₄	E	15	S	G	C ₂₈	33	G	38	39	36	35	32	26	23	E ₁₅	26	18	E	E ₁₅	E ₁₅	
22		E ₁₅	E ₁₈	E ₁₄	E ₁₂	E ₁₃	E ₁₅	S	G	34	37	G	37	37	37	36	33	G	25	32	E	E	20	16	E ₁₅	
23		25	18	17	E ₁₆	E ₁₁	E ₁₅	E ₁₅	22	31	39	40	41	G ₃₃	36	G ₃₄	35	G	35	51	19	19	26	30	26	
24		26	14	E	E ₁₃	E ₁₅	E ₁₂	E ₁₅	G ₂₀	G ₂₈	G ₂₃	27	G ₂₆	41	G	38	41	40	36	18	E	19	E	21	E ₁₅	
25		17	E	E	E ₁₂	E	E ₁₅	E ₁₅	G	33	37	37	38	G ₃₆	G ₃₆	G	38	35	46	20	17	20	23	16	E	
26		E ₁₅	E ₁₅	E ₁₂	E ₁₅	E ₁₁	E	E ₁₅	23	31	38	39	46	48	41	41	44	32	23	S	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
27		E ₁₅	E	E ₁₃	E ₁₃	E	E ₁₁	E ₁₅	G	G	34	39	43	44	42	G	61	102	21	A	36	18	E	23	E	
28		E ₁₅	E ₁₅	E ₁₂	E ₁₁	E	E ₁₅	E ₁₅	G	G	G	G	G	G ₂₇	G ₂₈	G ₂₁	G ₂₀	38	23	32	20	19	25	31	19	
29		E ₁₅	17	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	G	G	35	37	40	42	39	37	32	25	17	27	20	22	E	E	20	
30		20	E	E ₁₅	E	E ₁₂	E ₁₁	E ₁₅	G	G	G	G	G	39	G	44	37	G	G	E ₁₄	28	20	23	E ₁₅	E	
31		E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E	E ₁₅	G	G	G	35	35	G ₃₃	30	31	17	G ₂₁	G ₁₈	26	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E 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		31	29	29	29	29	29	27	29	29	31	29	29	30	31	31	31	31	31	31	28	30	29	29	29	29
MED		16	E ₁₅	E ₁₅	E ₁₅	E ₁₁	E ₁₄	E ₁₅	G	28	33	36	38	38	36	35	35	29	23	20	19	19	17	15	15	
UQ		18	18	16	15	E ₁₅	E ₁₅	E ₁₅	19	32	38	39	41	41	38	38	37	34	30	30	24	20	25	23	19	
LQ		E ₁₅	E	E ₁₂	E ₁₁	E	E ₁₂	E ₁₅	G	G	G	G	37	36	31	G ₂₆	G ₂₅	E ₁₈	18	16	15	15	E	E ₁₂	E ₁₅	

OCT. 1969

FBES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 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 15	E	11	E	15	15	E 15	13	11	15	15	16	18	17	15	15	12	12	12	E 15	E 13	E 15	E 15	E 15	
2	12	13	13	E	E 15	E 15	E 15	E 15	14	15	15	16	20	18	16	15	14	E 12	E 12	E 14	E 15	E 15	E 15	13	
3	15	11	E	E	E	E	E 15	11	12	15	17	15	26	17	16	17	15	12	E 14	E 15	E 15	E 15	E 15	E 15	
4	E 15	15	13	E	11	E 15	E 15	14	15	15	14	15	16	16	15	14	12	11	12	13	E 15	E 15	15	13	
5	E 15	13	13	E	E	E	E 15	13	15	18	17	17	17	18	18	17	15	11	E 15	E 15	E 15	E 15	E 15	E 15	
6	E 15	13	11	11	E	12	E 15	E 15	15	15	19	17	19	18	17	15	14	14	15	11	12	14	15	15	
7	15	13	13	E	E	11	E 15	11	15	16	17	18	18	19	17	16	15	15	E 15	E 15	E 15	E 15	E 15	E 15	
8	11	12	12	E	11	11	E 15	E 15	15	15	17	18	18	19	17	15	14	14	15	15	14	E 15	12	E 15	
9	16	13	13	11	13	E	E 15	13	12	15	16	17	18	18	18	15	15	15	E 14	E	E 15	E 15	E 15	E 15	
10	E 15	11	12	13	E	12	E 15	E 15	15	15	16	18	19	17	17	17	11	13	E	11	E 15	14	15	11	
11	14	13	11	11	15	14	E 15	14	15	16	17	19	19	18	17	17	14	15	E 15	C	C	C	C	C	
12	12	C	C	C	C	C	C	C	C	17	C	C	C	16	15	E 15	E 15	E 15	E 15	E 15	C	C	C	C	
13	E 15	C	C	C	C	C	C	C	C	15	C	C	17	17	16	18	11	12	E 15	E 15	E 15	E 15	E 15	E 15	
14	E 15	12	12	E	12	15	E 15	E 15	12	13	16	15	20	16	15	16	11	E 15	E 15	E 15	11	E 15	15	12	
15	E 15	12	E	12	12	E	E 15	E 15	11	15	16	18	14	17	16	15	11	E 15	E 15	E 15	E 15	E 15	E 15	E 15	
16	E 15	12	15	15	E	13	E 15	13	12	15	15	17	16	17	15	15	15	11	E 15	E 15	E 15	E 15	E 15	16	
17	E 15	16	16	16	11	E 15	E 15	E 15	12	17	16	16	17	16	18	15	15	11	E 15	E 15	E 15	E 15	E 15	E 15	
18	E 15	14	13	E	12	12	E 15	E 15	12	15	16	19	18	16	17	17	15	15	E 15	E 15	E 15	E 15	E 15	E 15	
19	E 15	13	15	11	E	12	E 15	E 15	14	15	15	17	19	19	18	18	16	E 15	E 15	11	E 15	E 15	E 15	E 15	
20	E 15	11	12	E	E	15	E 15	E 15	15	16	18	25	21	32	20	17	15	E 15	E 15	E 15	E 15	E 15	E 15	E 15	
21	E 15	11	12	14	E	E 15	E 15	E 15	15	15	17	16	18	16	16	16	16	15	E 15	E 15	E 15	E 15	E 15	E 15	
22	E 15	18	14	12	13	15	E 15	E 15	16	17	18	17	17	19	18	16	15	15	E 15	E 15	E 15	E 15	E 15	E 15	
23	E 15	12	12	16	11	15	E 15	E 15	16	19	20	18	18	17	18	19	16	15	E 15	E 15	12	11	E 15	E 15	
24	E 15	12	14	13	15	12	E 15	E 15	16	15	15	21	24	22	18	15	14	12	E 15	E 15	12	E 15	E 15	E 15	
25	E 15	15	13	12	16	15	E 15	E 15	16	15	19	20	20	19	19	17	15	E 15	E 15	E 15	E 15	E 15	E 15	E 15	
26	E 15	15	12	15	11	E	E 15	E 15	15	18	18	19	18	18	18	18	15	15	E 15	E 15	E 15	E 15	E 15	E 15	
27	E 15	E 15	13	13	E	11	E 15	E 15	15	17	17	19	20	19	18	16	15	E 15	E 15	E 15	E 15	E 15	E 15	E 15	
28	E 15	15	12	11	E	15	E 15	E 15	15	15	16	19	19	19	16	15	15	E 15	15	E 15	14	E 15	E 15	E 15	
29	E 15	15	15	14	15	15	E 15	E 15	15	17	17	21	18	20	21	19	16	15	E 15	E 15	E 15	E 15	E 15	E 15	
30	15	17	15	15	12	11	E 15	E 15	15	14	17	17	17	17	15	16	15	E 15	E 15	15	15	12	E 15	E 15	
31	E 15	15	15	13	15	13	E 15	E 15	15	15	16	18	18	17	15	16	15	15	E 15	E 15	E 15	E 15	E 15	E 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	31	29	29	29	29	29	29	29	29	31	29	29	30	31	31	31	31	31	31	31	30	29	29	29	29
MED	E 15	13	13	11	11	12	E 15	E 15	15	15	17	18	18	18	17	16	15	14	E 15	E 15	E 15	E 15	E 15	E 15	
UQ	E 15	15	14	13	13	15	E 15	E 15	15	16	17	19	19	19	18	17	15	15	E 15	E 15	E 15	E 15	E 15	E 15	
LQ	E 15	12	12	E	E	11	E 15	12	12	15	16	17	17	17	16	15	14	12	E 15	E 15	E 15	E 15	E 15	E 15	

The Radio Research Laboratories, Japan

OCT. 1969

F-MIN (0.1 MHz)

IONOSPHERIC DATA

OCT. 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	25 ^S	260	305	275	250	240	275	325	340 ^S	335	305 ^S	305	310	310	305	310	315	325 ^S	320	325	280	275	295 ^S	270 ^S					
2	290	280 ^S	280 ^S	285	270	280 ^S	300	350 ^S	345 ^S	320 ^S	320	305	300	280	295	295	300	305	310	310	305	275	275	270 ^S					
3	285	250	250 ^S	275 ^S	265 ^S	265	305 ^S	310 ^S	325 ^S	330	315	295 ^S	295	295 ^S	290 ^S	305 ^S	310	325	335 ^S	290 ^S	285	315	290 ^S	285					
4	280 ^S	250 ^S	260 ^S	270 ^S	300 ^S	290 ^S	305 ^S	335	340	340	320	305	300 ^S	305	295	300	305	320	325 ^S	310	320	285	280	280					
5	280 ^S	285	285	285	275	265	280 ^S	335	325	325	330	295	305 ^S	305	300 ^S	310	310	280	325 ^S	325	285 ^S	290	300 ^S	295					
6	305 ^S	290	275	300 ^S	335 ^S	300 ^S	270 ^S	335 ^S	345 ^S	290	300	305 ^S	290	290	290	295	300	300	310 ^S	325 ^S	280 ^S	270	270	270					
7	275	280	270	280 ^S	255	245	275 ^S	335	310 ^S	310	320 ^S	300 ^S	290	290	295 ^S	305	315	310	315	310	295	285 ^S	280 ^S	285 ^S					
8	295	285	280	285	285	285	315 ^S	355 ^S	335 ^S	325	315	300	300	290	295	290	290	310	320	325	285	275 ^S	270 ^S	275 ^S					
9	270 ^S	275 ^S	285	300	315	260	280	320 ^S	325 ^S	330 ^S	320 ^S	310	295	295 ^S	290	295	310	320 ^S	325 ^S	335	275	280 ^S	270	255 ^S					
10	275	290	300	300	330	335 ^S	295	330	315 ^S	320	325	300	270	280	285	290	300	315	320 ^S	310	270	255	260	270					
11	290	290 ^S	275	270	275	285	295	335 ^S	330	320 ^S	310	295 ^S	290 ^S	295	295	305	310 ^S	305 ^S	315	C	C	C	C	C					
12	270 ^S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
13	250	C	C	C	C	C	C	C	C	330 ^S	325 ^S	300 ^S	295	295	300	300 ^S	315	310 ^S	335 ^S	325 ^S	280 ^S	285 ^S	255 ^S	270					
14	265 ^S	310 ^S	335 ^S	305	285	280	295 ^S	350 ^S	340	320 ^S	315	295 ^S	315	295	305	300	315	325	320 ^S	295	275	280 ^S	290	275					
15	280 ^S	280	290	295	295	295	280 ^S	335	330 ^S	350	350	305	300 ^S	290	310	310	320	335	335	325	280	275 ^S	285	285					
16	295 ^S	295	300	310	305	285	310	335	335 ^S	320	315	315	305	300	305 ^S	310 ^S	305	320	340 ^S	310 ^S	285 ^S	295	320	305					
17	295 ^S	275 ^S	270	285 ^S	300 ^S	315 ^S	300	325 ^S	325 ^S	345 ^S	335	300	280	320	295 ^S	305	305	320	330	305	305	265 ^S	275	270 ^S					
18	255	305 ^S	325	330	320	325	295	335	335	315	325	305 ^S	310	295	295	305	300 ^S	315	315	300 ^S	285	305 ^S	285	295					
19	315	305	345	315	330	275	290	340	320 ^S	340	325	330	290	295	305	305 ^S	310 ^S	325	310	295	295	290	290	315					
20	280	290	315	315	285	260	290	320	335	325 ^S	320	320	305	305	305	290	310 ^S	320	315	300	305	305	305	300					
21	280	295	310	300	315	290	290	320	330 ^S	335	325	330 ^S	300	290	295	300	310	325	315	285 ^S	285 ^S	285	300 ^S	305 ^S					
22	305	290	285	270	285	280	295	330 ^S	330 ^S	325	300	305 ^S	290	285	295 ^S	305	320 ^S	305 ^S	295 ^S	310 ^S	290 ^S	275	290	300 ^S					
23	285 ^S	290 ^S	300	305	335	275	315	335	320 ^S	315	305	285 ^S	295	295	295	295	305	305 ^S	315 ^S	315 ^S	275 ^S	295 ^S	300 ^S	310 ^S					
24	290	280	290 ^S	290	315	295	315	345	325	320	310 ^S	290 ^S	290	275	280	285	295 ^S	305	300	300 ^S	290 ^S	295 ^S	295	250 ^S					
25	265 ^S	285	300 ^S	300 ^S	320	275	270	320 ^S	320 ^S	310	300	280 ^S	280 ^S	285 ^S	285 ^S	280	290	300 ^S	305 ^S	310	270	250 ^S	290	280					
26	285 ^S	280	290	310	340	285	305	325 ^S	325 ^S	305	300 ^S	295	285	285	285	290	290	300 ^S	305 ^S	295 ^S	270 ^S	280 ^S	300 ^S	270					
27	275 ^S	295 ^S	310	315	340	290	285	310	330 ^S	310	305	295	285	285	285	280	295 ^S	300 ^S	300 ^S	290 ^S	295	290 ^S	300 ^S	290 ^S					
28	305	280	265	300	290	270	290 ^S	325 ^S	325	315	310	295 ^S	275	275	280	280	290	290 ^S	290 ^S	285 ^S	295 ^S	290 ^S	280	280					
29	275	280	265	255	275	280	290	350	320	275	310	305	275	280	285	290	290	295 ^S	310	310	290 ^S	300 ^S	290	280					
30	290 ^S	300	295 ^S	305	345	315	290 ^S	325 ^S	340	325	310	295 ^S	280	275	290	295	290	295 ^S	310	300 ^S	285 ^S	290 ^S	295	290					
31	285	295 ^S	295	285	310	280	295 ^S	335	330 ^S	330	325	315	295	290	290 ^S	295	295 ^S	325 ^S	315	295	305 ^S	285 ^S	275 ^S	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	31	29	29	29	29	29	29	29	29	31	30	30	30	31	31	31	31	31	31	31	29	29	29	29					
MED	280	285	290	300	300	280	295	335	330 ^S	325	315	300	295	290	295	300	305	310	315	310	285	285 ^S	290	280					
UQ	290	295	300	305	320	290	300	335	335 ^S	330	325	305	300	295	300	305	310	320	322	315	295	290	295	295					
LQ	275	280	275	285	285	275	285	325	325 ^S	315	310	295	285	285	290	290	295	300 ^S	310	295 ^S	280	275 ^S	275	270					

The Radio Research Laboratories, Japan

OCT. 1969

M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 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 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	L	L	L	L	L	L	L								
2									L	L	L	L	L	L	L	L	L								
3										A	L	L	L	L	L	L	L								
4									L	L	L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L	L								
6										L	L	L	L	L	L	L	L								
7										L	L	L	L	L	L	L	L								
8									A	L	L	L	L	L	L	L	L								
9										L	L	L	L	L	L	L	L								
10										L	L	L	L	L	L	L	L								
11										L	L	L	L	L	L	L	L								
12									C	L	C	C	C	L	L	C	L								
13									C	L	C	C	L	A	L	L	L								
14									L	L	L	L	L	L	L	L	L								
15										L	L	L	L	A	L	L	L								
16										L	A	L	L	L	L	L	L								
17									L	A	A	L	L	L	L	L	L								
18									415	L	L	L	L	L	L	L	L								
19										L	L	L	L	L	L	L	L								
20									L	L	L	L	L	L	L	L	L								
21									L	L	L	L	L	L	L	L	L								
22									L	L	L	L	L	L	L	L	L								
23										L	L	L	L	L	L	L	L								
24										L	L	L	L	L	L	L	L								
25										L	L	L	L	L	L	L	L								
26										L	L	L	L	L	L	L	L								
27									L	L	L	L	L	L	L	L	L								
28										L	L	L	L	L	L	L	L								
29									L	L	L	L	L	L	L	L	L								
30										L	L	L	L	L	L	L	L								
31										L	L	L	L	L	L	L	L								
CNT									1		1	8	3	3	1		2								
MED									415		390	385	370	360	390		402								
UQ											392	375	395												
LQ											365	365	350												

OCT. 1969

M(3000)F1 (0.01)

IONOSPHERIC DATA

OCT. 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 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									225	245	240	255	255	255	250	280	250							
2									240	245	240	245	270	300	280	260	255							
3									E A 280	260	290	265	250	300	265	250								
4									230	240	240	250	260	275	270	250	260							
5									255	250	270	275	275	255	255	255								
6									225	250	275	255	290	265	275	255								
7									255	255	250	295	240	290										
8									240	245	275	265	275	270	260	300	255							
9									250	255	260	250	285	260	290	260								
10									255	240	280	300	300	270	280	270								
11									250	250	250	305	295	290	260									
12									C 245		C	C	C	285	295	E C 300	250							
13									C 250	I C 250		C	300	255	275	270	255							
14									230	250	265	270	270	265	260	240	245							
15									230	225	270	280	270	275	260	240								
16									250	255	260	270	280	265	255									
17									240	240	240	300	270	275	280	255	250							
18									235	240	260	250	270	290	255	255	250							
19									240	250	250	300	290	265	260	250								
20									250	250	255	250	250	260	255	300	260							
21									250	250	250	235	285	255	275	250								
22									245	250	240	260	285	300	275	255	245							
23									255	255	240	280	280	265	270									
24									240	240	300	290	305	295										
25									260	250	250	315	295	265	250									
26										255	270	300	290	290	280									
27									250	235	240	280	295	305	290	275	E A 320							
28									250	250	250	300	270	285		260								
29									225	255	255	245	315	310	275	250								
30									230	255	250	300	280		275									
31										250	245	250	310	260	255									
	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									12	29	30	29	30	31	30	28	20							
MED									240	250	250	255	280	280	272	260	254							
UQ									248	250	255	270	300	295	285	276	259							
LQ									230	240	240	250	270	270	260	255	250							

OCT. 1969

H'F2 (KM)

IONOSPHERIC DATA

OCT. 1969

H^oF (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	300	300	250	200 ^H	315	350	290	245	230	235	215	205	205	215	220	215	240	240	230	225	245	275	260	255
2	270	300 ^{E A}	300 ^{E A}	290	260	300	280	220	235	230	225	210	200 ^H	200 ^H	210 ^H	240	245	240	240	230	225	260	245	250
3	255	290	A	A	A	550 ^{E A}	290	230	235	A	245 ^{E A}	230 ^H	220 ^H	215	235	240	240	250	220	230	260	255	290	275
4	280	295	290	255	230	225	255	225	220	215	215	205	215	200	225	240	240	230	235	215	205	255	250	275
5	255	250	255	250	250	350	255	215	225	220 ^H	215	215	200 ^H	205 ^H	220 ^H	235	235	240	230	215	250	280	255	255
6	250	270	305	255	215	255	295	235	230	225	230	230	200	220 ^H	225	240	240	245	245	210	205	270	290	285
7	295	260	280	280	270	370	290	220	225	225	225	205	200	200	230	250	255	240	250	250	235	250	255	270
8	270	270	280	285	260	265	260	220	220 ^H	220 ^H	220 ^H	240	215	200 ^H	200 ^H	220 ^H	235	245	230	205	210	245	230	260
9	280	275	250	245	210	280	270	230	230	225	220	230	200	200 ^H	250	225	245	240	230	205	215	235	250	290
10	300	275	275	250	205	215	235	215	235	230	220	205 ^H	205 ^H	205 ^H	210	225 ^H	250	240	220	200	230	275	310	270
11	250	240	225 ^H	290	265	260	275	210	215	235	230	220	225	215 ^H	250	255	245	260	270	C	C	C	C	C
12	325	C	C	C	C	C	C	C	C	A	C	C	C	190 ^H	230	230	220	235	225	205	C	C	C	C
13	300	C	C	C	C	C	C	C	C	230	225 ^C	210 ^C	200 ^H	190 ^H	240	245	245	240	225	205	220	235	270	300
14	300	255	225	255	260	305	265	220	225	240	200 ^H	200	210	200 ^H	225	225	215 ^H	230	215	240	275	290	300	295
15	295	270	250	265	245	245	255	225	225	230	215	205	260 ^{E A}	A	240 ^H	260	240	225	215	210	280	300	310	300
16	280	260	250	250	225	270	250	220	225	230	A	205	190 ^H	200 ^H	200 ^H	225	225	240	215	220	275	260	310	255
17	285	270	300	305	255	220	230	235	235	230	225	200	200 ^H	210	240	245	235	240	220	225	250	270	270	300
18	320	275	245	240	230	235	260	220	225	235	230	210	235	225	225	205 ^H	240	240	220	225	230	225	255	275
19	255	250	225	225	220	240	280	230	225	235	230	210	205 ^H	205 ^H	235	220	240	225	225	240	260	255	270	255
20	280	275	215	210	250	335	275	230	240	245	240	230	220	230	240	240	250	240	225	220	235	255	250	260
21	265	270	250	255	240	250	265	235	225	235	225	220	210	200 ^H	225 ^H	220	240	225	210	250	260	265	250	235
22	250	270	275	310	255	250	255	230	235	230	220	205 ^H	190 ^H	200 ^H	240	230	230	215	250	225	225	270	255	255
23	275	270	250	255	225	290	230	215	225	235	230	225	195 ^H	215 ^H	240	230	240	250	250	215	220	260	250	255
24	275	255	265	275	250	250	245	230	230	220	205	195 ^H	225	230 ^H	250	250	250	245	240	225	245	235 ^H	225	275
25	310	260	225	245	230	280	300	240	240	235	230	225	210	225 ^H	245	240	240	250	240	220	255	290	255	255
26	255	255	250	250	230	220	275	225	220	230	225	250 ^{E A}	250 ^{E A}	240	245	250	230	250	220	220	235	245	225	250
27	275	260	245	240	215	250	285	240	240	225	220	210	220	230	235	250 ^{I A}	240	235	230	255	240	230	250	240
28	250	300	275	250	260	275	250	245	235	230	230	210	200 ^H	220	220	245	245	240	240	240	245	235	240	250
29	250	255	290	325	280	245	255	240	225	235	225	230	220 ^H	205 ^H	225	235	230	240	235	220	240	225	255	265
30	270	260	250	260	220	225	290	240	235	230	230	220	220 ^H	220 ^H	250	240	240	250	225	225	230	240	240	255
31	250	250	250	275	250	250	245	230	225	230	210	205	205	200	240	240	245	240	215	225	235	220	255	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	31	29	28	28	28	29	29	29	29	29	29	30	30	30	31	31	31	31	31	30	29	29	29	29
MED	275	270	250	255	248	252	265	230	225	230	225	210	206	205 ^H	235	240	240	240	230	222	235	255	255	260
UQ	295	275	276	278	260	285	280	235	235	235	230	225	220	220	240	245	245	245	240	230	250	270	270	275
LQ	255	255	248	248	225	245	255	220	225	225	220	205	200 ^H	200 ^H	225	225	235	238	220	215	225	235	250	255

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H^oF (KM)

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H^oES (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	S	E	B	E	B	B	100	130	125	115	120	115	105	105	100	100	100	150	120	110	105	105	S	100																												
2	100	100	100	100	100	100	S	150	125	115	110	100	100	100	100	100	100	150	120	110	100	100	100	B																												
3	105	100	100	100	100	100	100	145	100	115	115	110	110	105	105	140	155	105	105	105	105	100	100	100																												
4	100	105	B	E	B	S	S	145	115	105	100	100	100	100	100	100	100	145	125	100	105	105	100	100																												
5	100	B	100	E	100	100	100	100	150	140	130	120	120	115	115	115	120	115	S	S	105	105	105	100																												
6	100	100	100	100	E	B	130	G	150	150	120	110	100	105	125	125	125	110	105	100	100	100	100	100																												
7	100	100	105	100	100	100	100	100	125	125	125	125	115	110	100	160	140	125	115	105	110	105	105	S																												
8	105	105	105	100	B	105	S	G	100	100	100	100	150	140	100	160	125	115	B	B	100	100	B	S																												
9	B	100	B	B	100	100	S	G	150	150	130	120	115	120	115	120	115	110	105	105	105	S	S	S																												
10	S	B	100	100	E	B	S	150	G	105	110	100	100	100	145	130	115	115	105	100	100	100	100	B																												
11	100	B	B	B	100	B	S	140	125	125	120	115	110	110	100	105	140	120	115	C	C	C	C	C																												
12	100	C	C	C	C	C	C	C	C	115	C	C	C	G	130	C	C	170	S	100	C	C	C	C																												
13	100	C	C	C	C	C	C	C	C	130	C	C	115	105	G	150	155	140	120	105	105	105	S	100																												
14	100	100	100	100	100	B	S	145	125	120	120	110	105	105	105	105	120	100	100	115	100	100	100	100																												
15	100	100	100	100	100	100	S	150	145	110	115	110	105	105	155	130	125	125	S	105	105	105	105	S																												
16	S	B	100	100	E	B	S	150	135	140	115	110	100	125	100	G	165	130	120	110	105	100	100	100																												
17	100	B	B	100	100	S	S	150	115	110	110	110	110	105	115	150	120	105	105	105	100	100	100	100																												
18	100	100	100	100	100	B	100	100	105	105	105	105	105	105	G	G	110	150	S	100	100	S	105	100																												
19	100	100	100	100	E	B	S	150	140	G	G	120	115	105	115	120	110	105	105	105	105	105	105	100																												
20	100	100	100	100	100	100	100	120	115	115	115	120	115	120	105	100	125	110	115	105	S	105	105	S																												
21	S	B	B	B	100	100	100	100	110	105	115	120	120	115	110	105	105	150	S	100	100	100	S	S																												
22	S	B	B	B	B	B	100	135	125	120	120	115	105	105	105	105	140	125	115	105	100	100	100	S																												
23	100	100	100	B	B	B	S	125	115	115	110	105	105	105	105	140	130	110	105	105	100	100	100	100																												
24	100	100	100	B	B	B	S	120	110	100	100	105	120	G	165	140	130	125	100	105	100	100	100	S																												
25	100	100	100	B	100	B	S	100	120	115	120	115	105	105	G	125	115	100	105	100	100	100	100	100																												
26	S	B	B	B	B	100	S	145	140	120	130	120	120	120	145	120	115	105	105	S	S	S	S	S																												
27	S	100	B	B	E	B	S	140	130	130	125	120	115	115	G	125	115	110	105	105	105	100	100	100																												
28	S	B	B	B	E	B	S	110	140	165	105	G	100	100	100	100	120	115	105	105	100	100	100	100																												
29	S	95	B	B	B	B	S	135	140	125	130	125	120	125	125	110	110	105	100	100	100	100	100	100																												
30	100	100	B	100	B	B	S	G	G	150	130	125	130	G	145	130	G	G	S	100	100	100	S	100																												
31	S	B	B	B	B	100	S	145	150	100	100	105	100	100	100	100	100	145	100	S	S	S	S	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	20	18	16	14	13	11	9	25	27	30	28	28	30	28	27	28	29	30	24	26	26	25	21	17																												
MED	100	100	100	100	100	100	100	140	125	115	115	112	110	105	105	120	120	115	105	105	100	100	100	100																												
UQ	100	100	100	100	100	100	100	145	140	130	122	120	115	115	125	135	130	140	115	105	105	105	105	100																												
LQ	100	100	100	100	100	100	100	120	115	110	110	105	105	105	100	105	110	110	105	100	100	100	100	100																												

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IONOSPHERIC DATA

OCT. 1969

TYPES OF ES

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

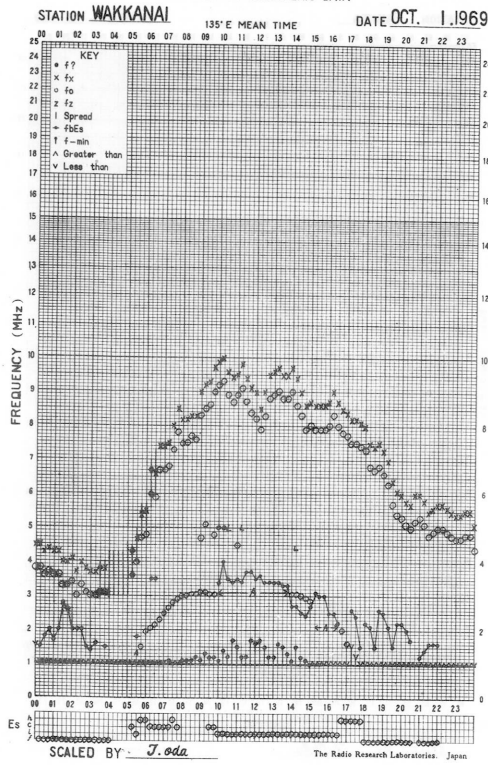
Station YAMAGAWA Lat. 31 12.1 N. Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

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							H3	H3	C1	C1	C1	L1	L1	L1	L2	L2	HL23	CL22	FF31	F3	F2		F2		
2	F2	F3	F5	F3	F1	F1	H2	H2	C2	C1	L2	L1	L1	L2	L3	L2	H5	C6	F2	F6	F3	F1			
3	F2	F4	F7	F4	F6	F7	L8	HL24	HL22	CL33	CL22	CL12	CL11	L1	L1	H1	H1	HL41	L3	F4	F6	F6	F4	F4	
4	F2	F1					H2	C2	L2	L2	L2	L4	L2	L2	L2	L3	HL21	H1	F1	F1	F2	F1	F1		
5	F1		F1		F2	F4	L5	L3	HL11	H1	H1	CL11	CL11	CL12	CL11	CL21	C2	CL21		F6	F6	F2	F5		
6	F1	F1	F2	F1			HL11		HL12	H1	HL11	CL12	L1	CL11	HL11	HL11	H1	C5	L6	F1	F1	F5	F3	F2	
7	F1	F1	FF12	F6	F2	F3	L2	LH22	HL22	H2	H1	H1	CL12	LL11	LL11	HL11	H3	H3	C6	F3	F2	F1	F1		
8	F5	F2	F4	F2		F2			L4	L1	L2	L2	HL11	HL11	L1	HL11	HL22	C2		F1	F1				
9		F3			F1	F2			H2	H1	H1	C1	C1	CL11	CL11	C2	C2	L3	L3	F1	F1				
10			F5	F1				HL21		C1	C1	L1	L2	L2	HL11	HL11	C2	C4	L2	F3	F7	F4	F1		
11	F2				F1			H2	H2	H2	C1	CL11	C2	C1	L1	HL11	HL31	C4	C4						
12	F6										CL21				HL11		H1			F1					
13	F1										HL21		C1	L2		H2	HL21	HCL53	HL22	F3	F2	F4	F1		
14	F3	F4	F3	F1	F1			H3	H3	HL22	CL12	CL11	HL11	LL11	LL11	L1	CL11	L3	L4	FFF34	F5	F3	F4	F1	
15	F2	F1	F3	F1	F2	F1		H2	H1	C2	C1	C1	C3	C2	HL11	HL11	HL11	H3	C1	F1	F4	F3	F4		
16			F1	F1				H1	H2	H1	C2	C2	L2	HL11	L2		HCL11	HL23	HL21	FF21	F2	F1	F3	F2	
17	F2			F2	F2			H2	C3	C3	C3	C1	C2	L1	C1	H2	C2	L3	L4	F4	F4	F4	F2	F2	
18	F3	F3	F3	F3	F2		L1	HL11	L1	L1	L2	L1	L1	L1			L2	H1		F2	F1		F1	F5	
19	F6	F3	F2	F1				H1	H2			C1	C1	L1	C1	C1	C2	L3	L4	F4	F3	F3	F3	F5	
20	F4	F4	F2	F1	F1	F1	L1	C3	C3	C1	C1	C1	C1	C1	L2	L1	HL13	HL11	L1	F3		F2	F5		
21					F1	F2	L1	L1	L2	L1	CL11	C1	C1	C1	C2	L2	L4	HL12		F4	F3	F2			
22						L1	H2	H3	C2	C1	C1	L1	L1	L2	L1	L1	H3	C5	F1	F1	F3	F3			
23	F4	F3	F1				H2	C2	C2	C2	L2	L1	L1	L1	H1	H2	L4	L3	F3	F4	F4	F4	F3		
24	F4	F2	F1				L1	L2	L1	L2	L1	C1		H1	HL11	HL21	HLL42	L2	F1	F2	F1	F2			
25	F1	F1	F1		F1		L1	C3	C1	C1	C1	L1	L1		H1	C3	L5	L6	F1	F3	F5	F2	F1		
26					F1		H2	H2	C2	H1	C1	C2	C1	HC11	C2	C2	L3	L2							
27		F1					H3	H2	H2	H1	C1	C1	C1		H1	C6	L2	L4	F4	F4	F1	F6	F1		
28						L1	H1	H1	L1		L1	L1	L1	L1	C2	C3	L5	F5	F3	F5	F5	F1			
29		F2					H2	H3	H2	H1	H1	C1	C1	H1	L1	L1	L2	L3	F3	F2	F1	F2	F2		
30	F1	F1		F1					HL12	H1	H1	H1	H1	H1	H3				F6	F6	F6		F2		
31					F1		HL31	H1	CL11	L2	L1	L1	L2	L2	L2	L2	L2	HL12	L3						
	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																									

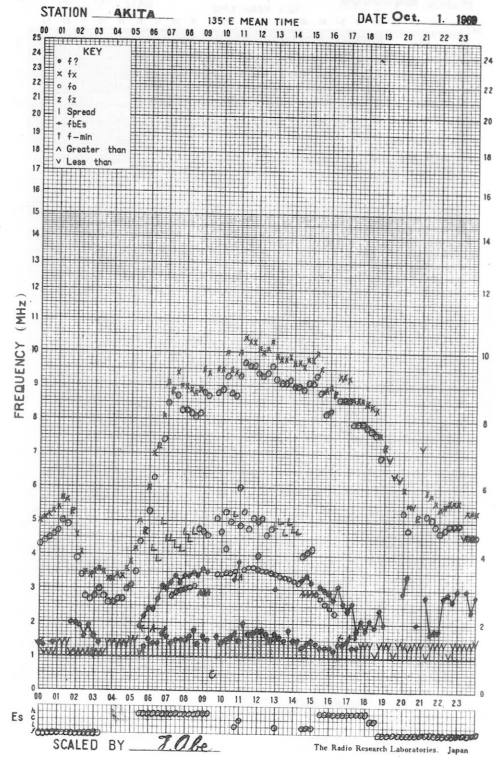
OCT. 1969

TYPES OF ES

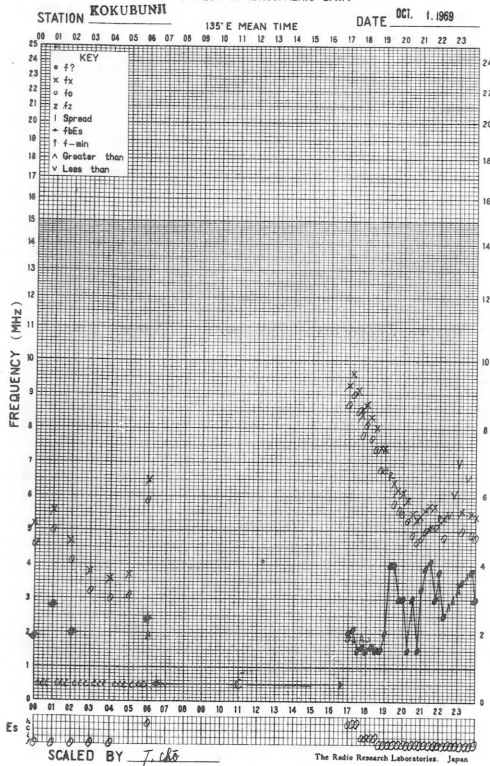
f-PLOT OF IONOSPHERIC DATA



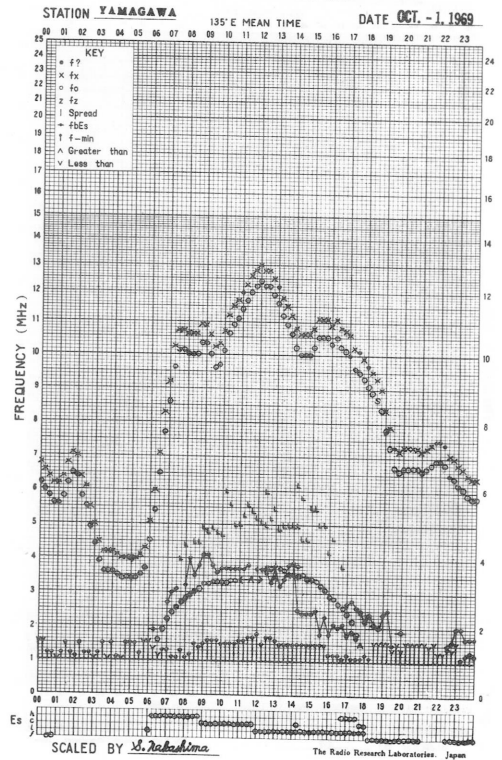
f-PLOT OF IONOSPHERIC DATA

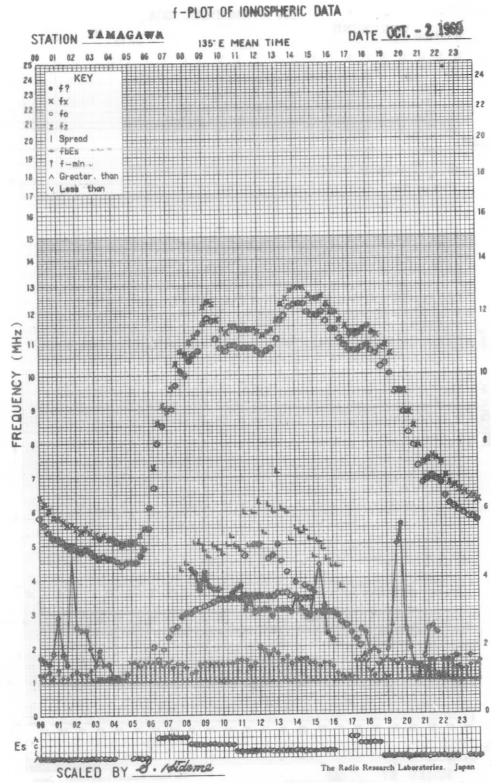
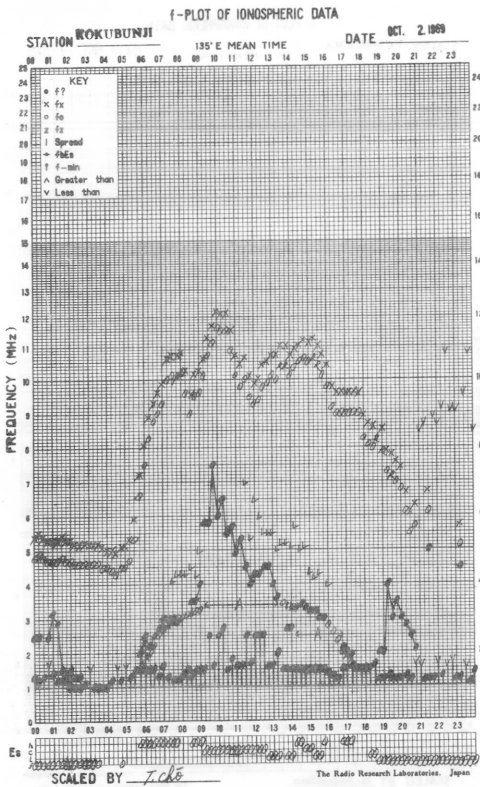
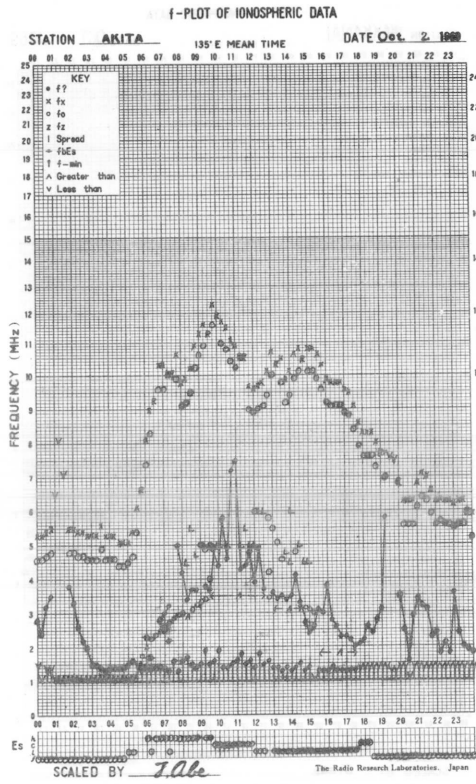
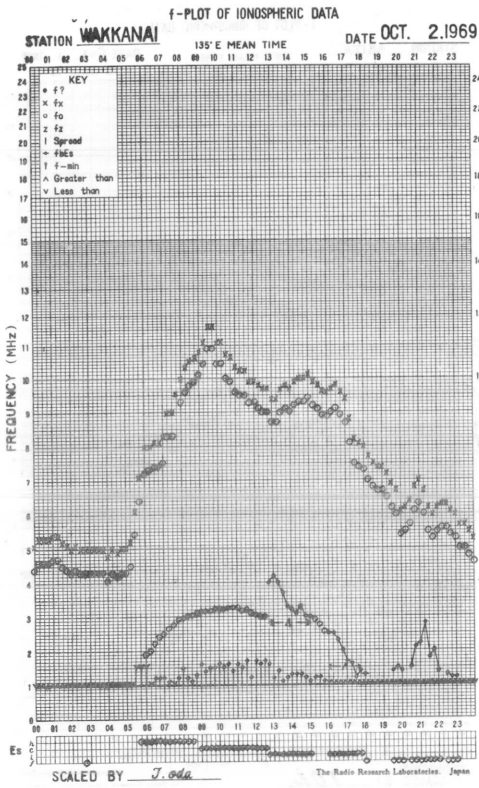


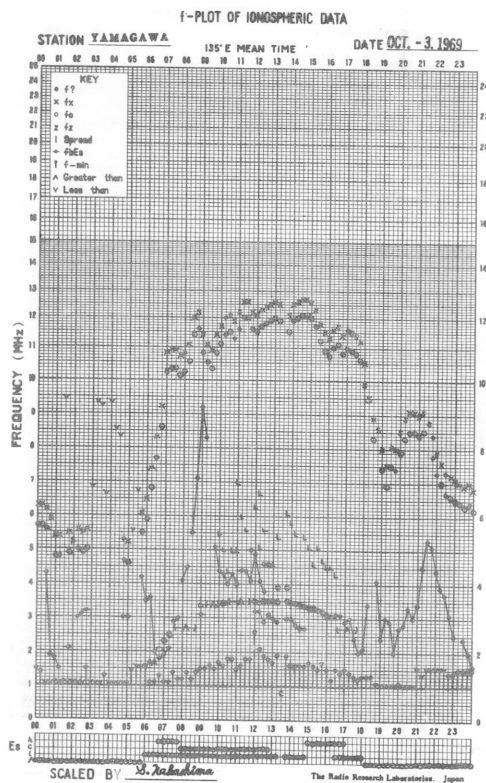
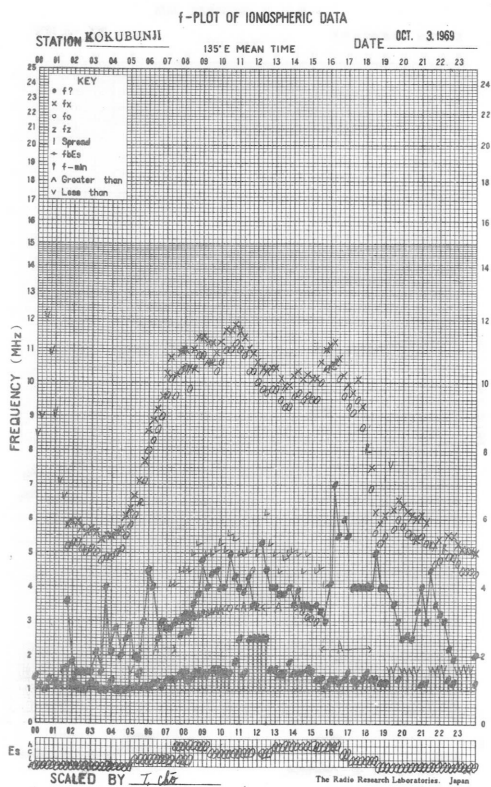
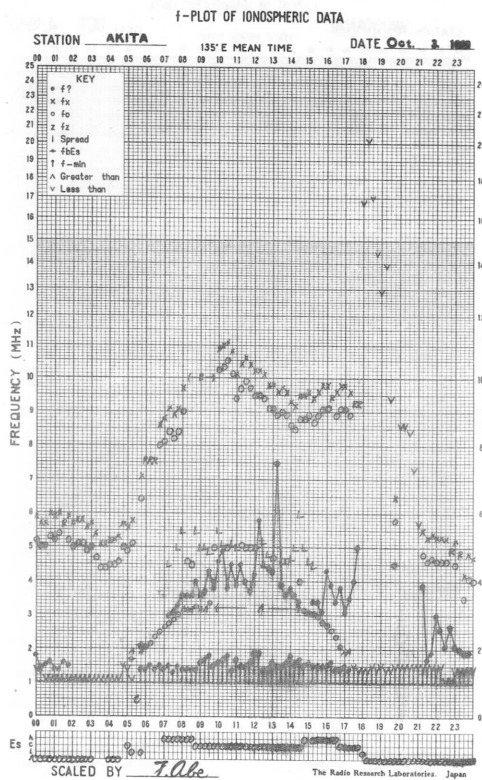
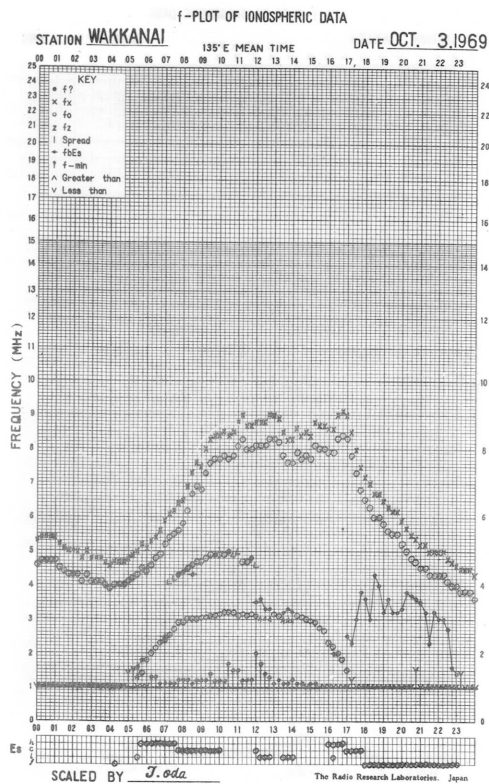
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

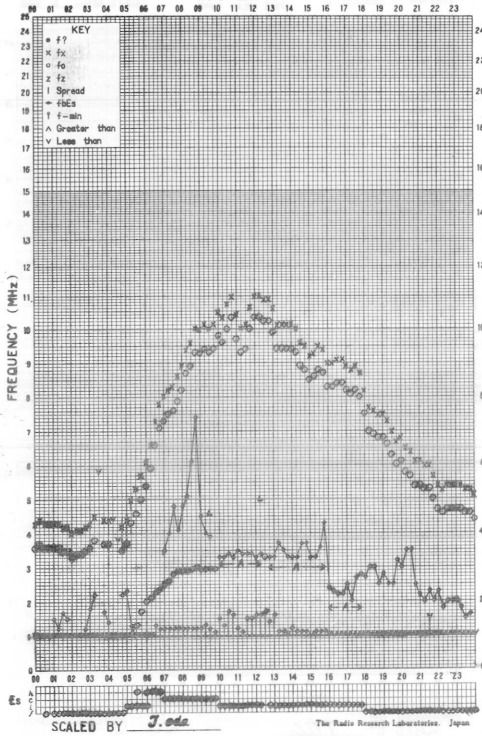






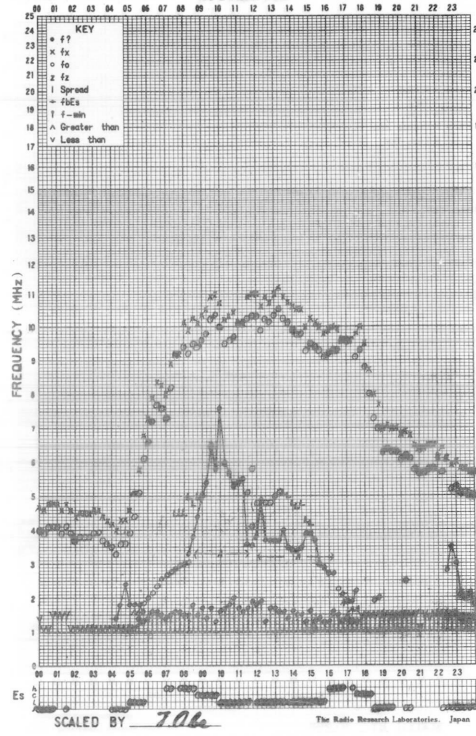
f-PLOT OF IONOSPHERIC DATA

STATION **WAKKANAI** 135° E MEAN TIME DATE **OCT. 4, 1969**



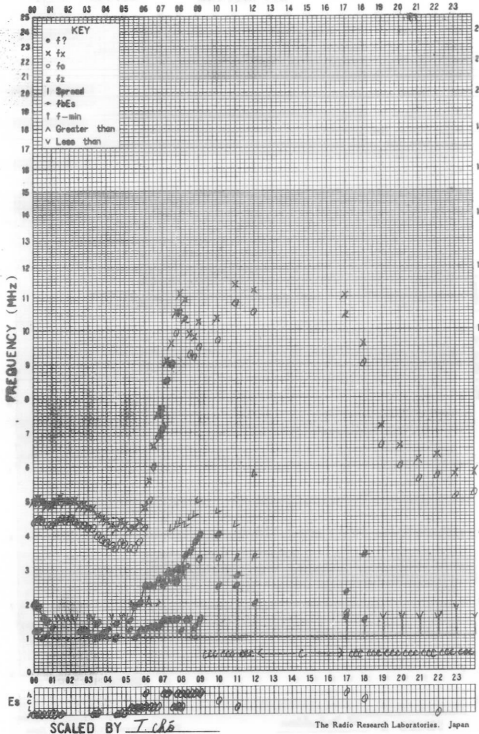
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STATION **AKITA** 135° E MEAN TIME DATE **OCT. 4, 1969**



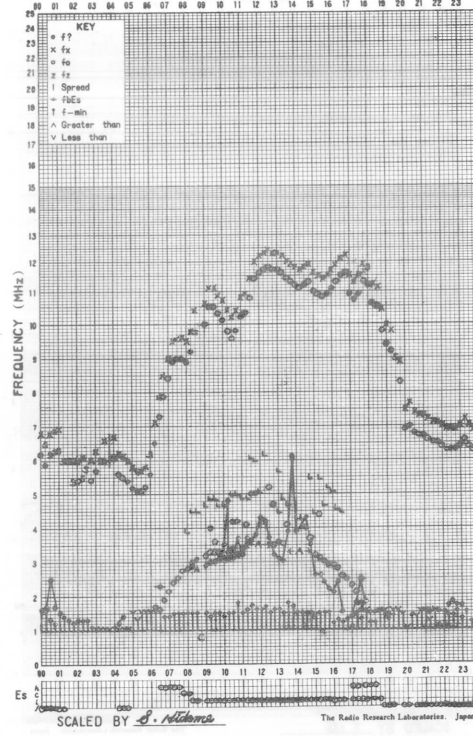
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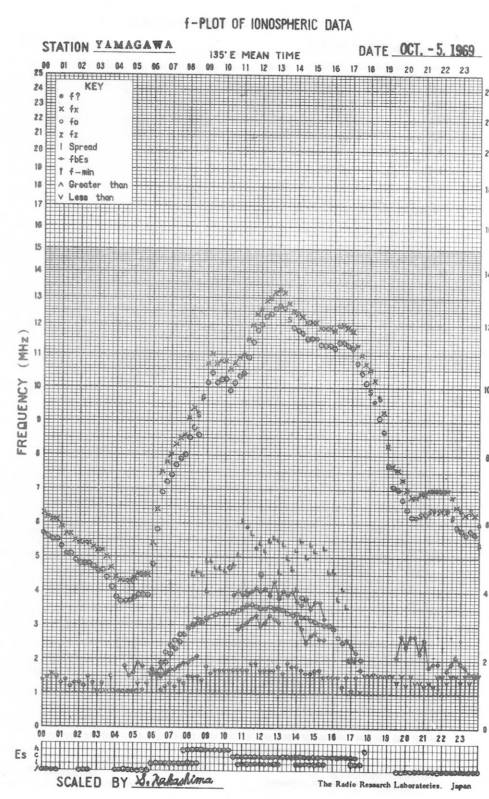
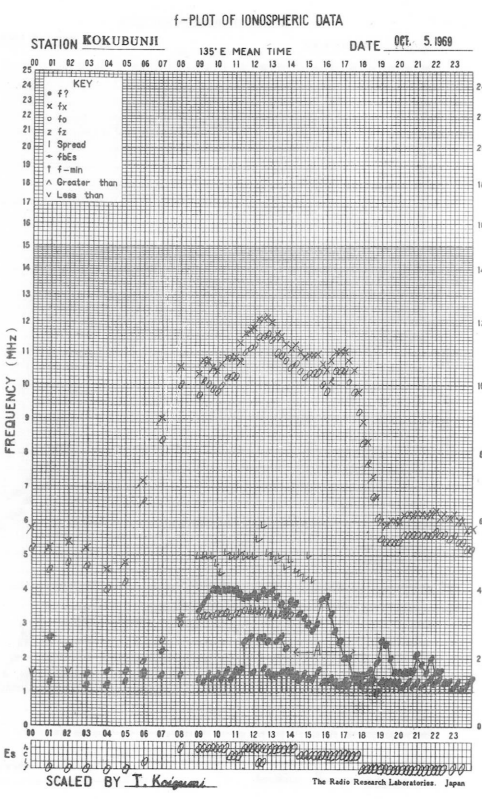
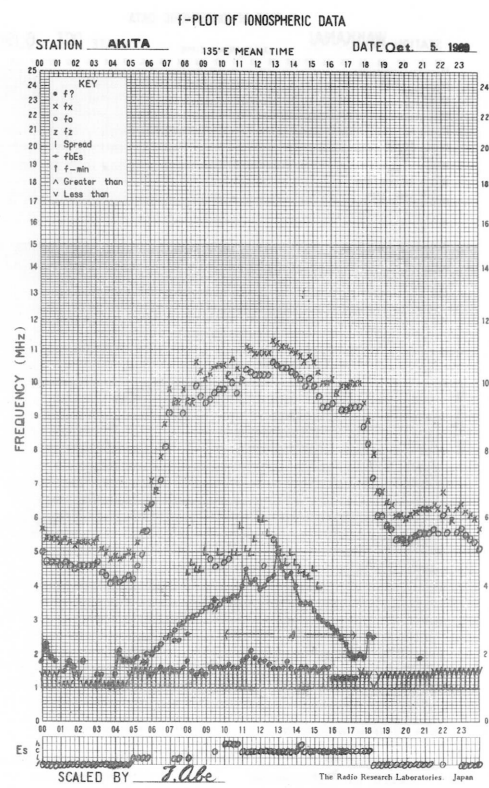
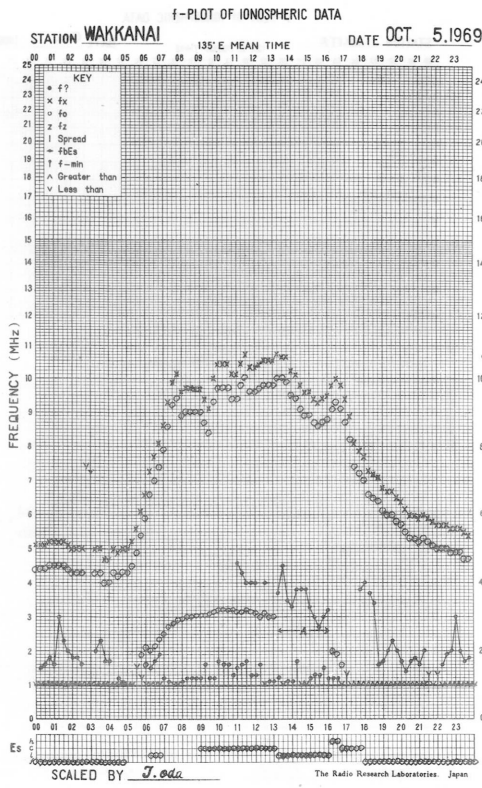
STATION **KOKUBUNJI** 135° E MEAN TIME DATE **OCT. 4, 1969**

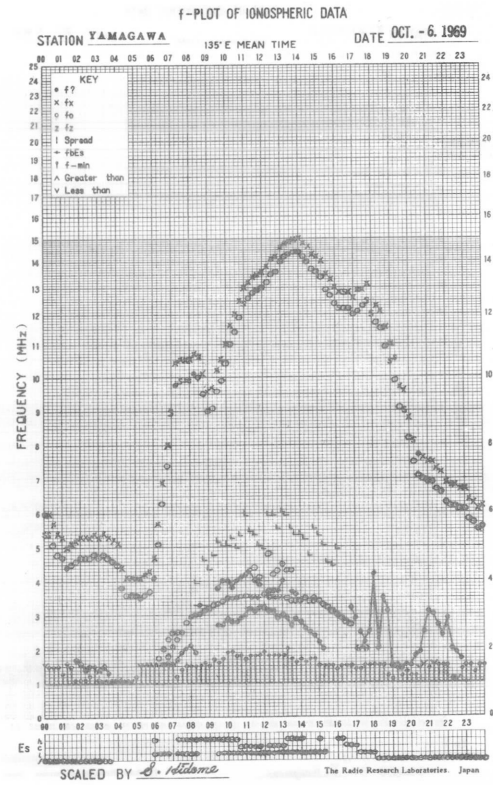
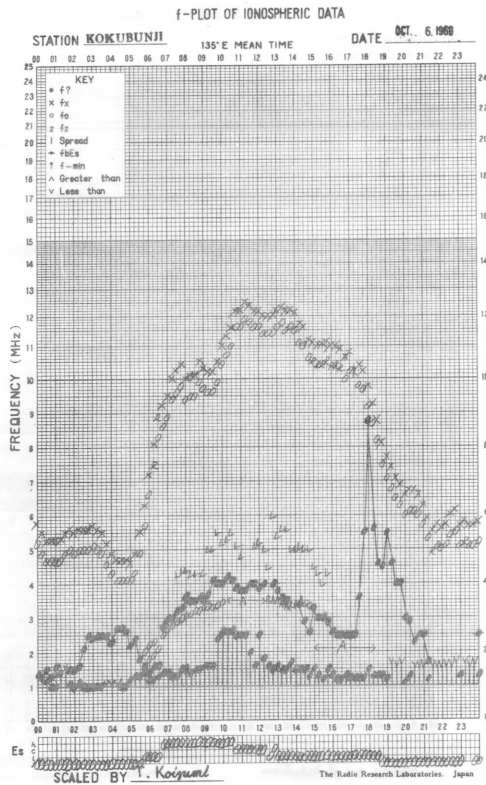
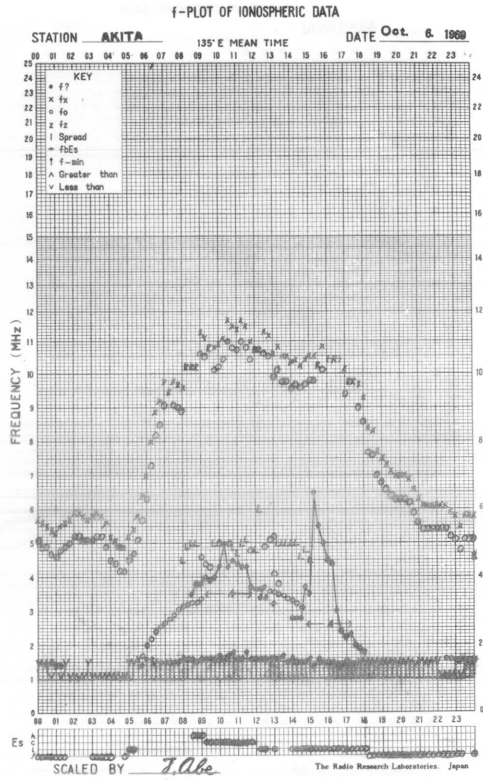
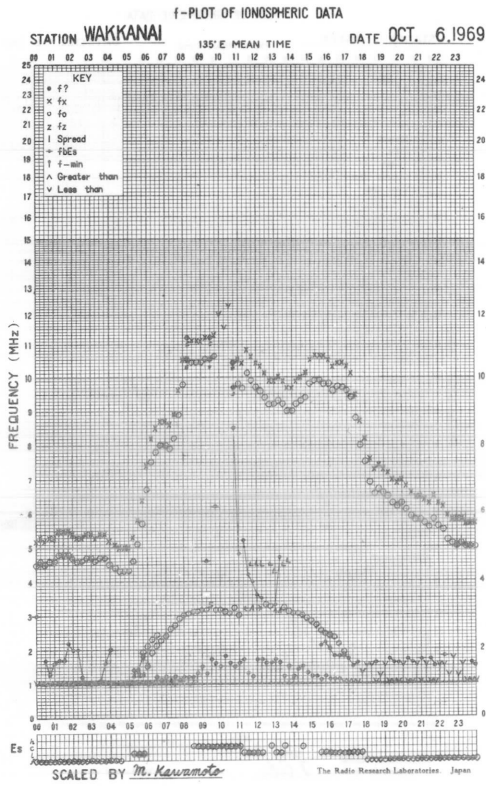


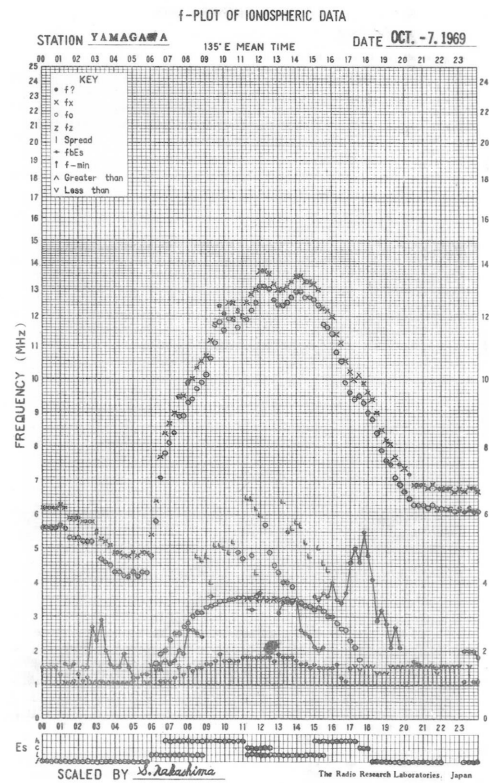
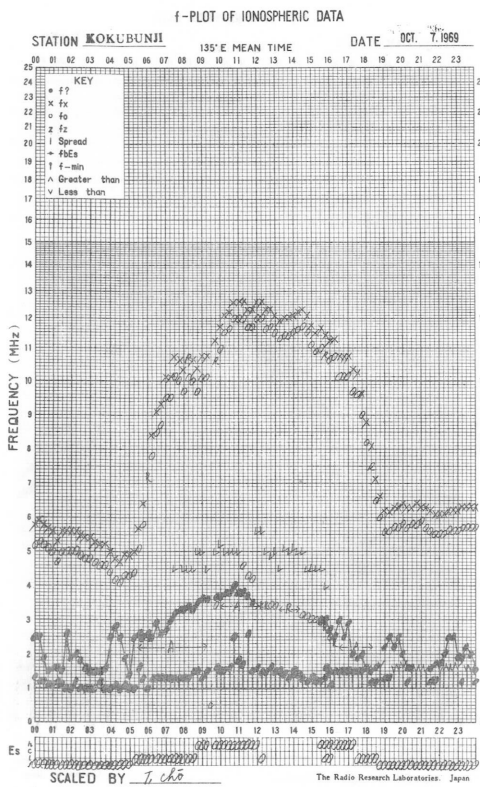
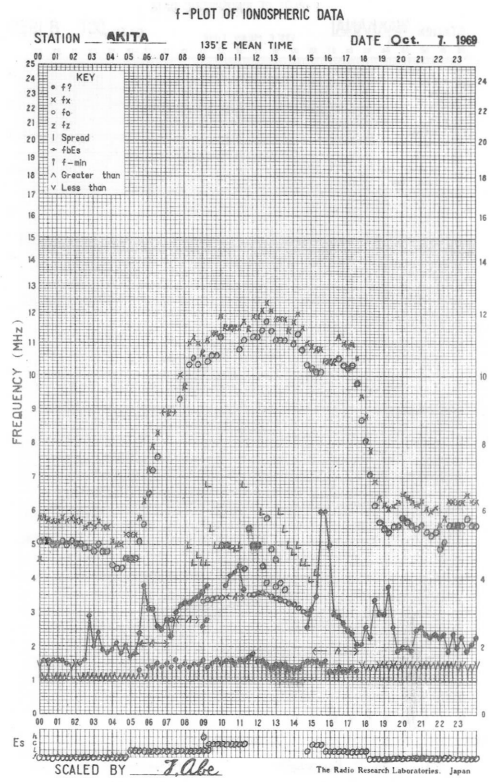
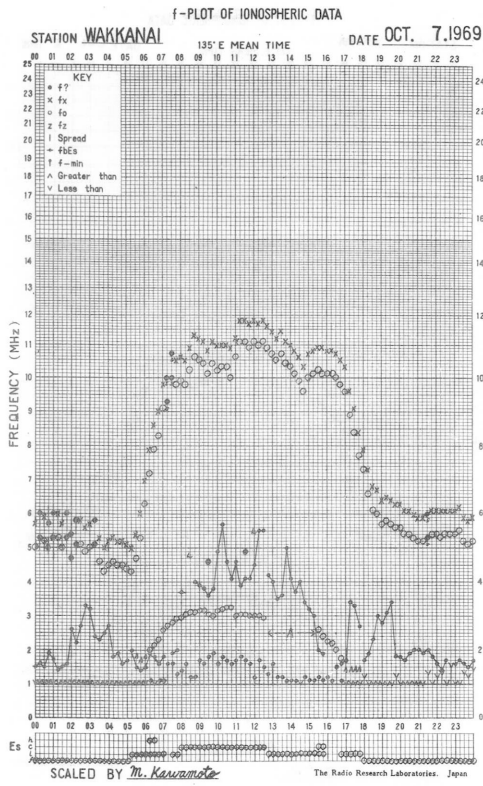
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STATION **YAMAGAWA** 135° E MEAN TIME DATE **OCT. 4, 1969**

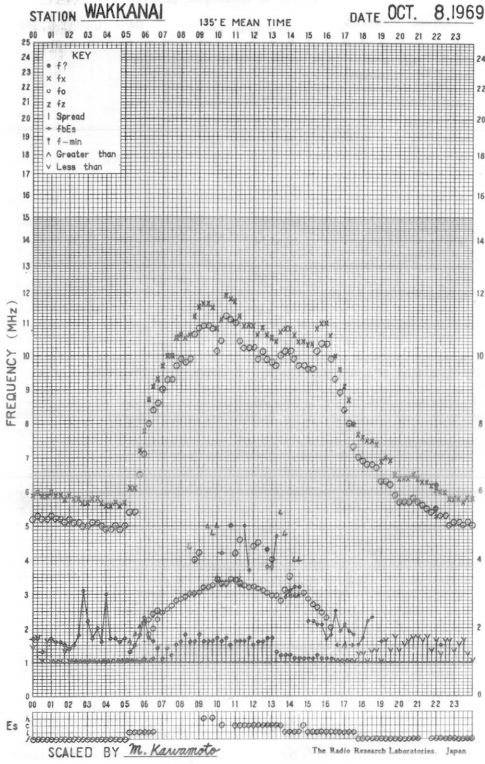




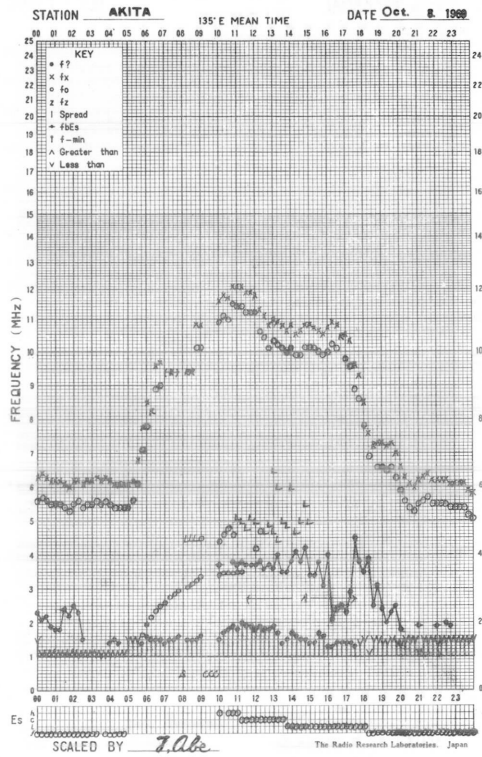




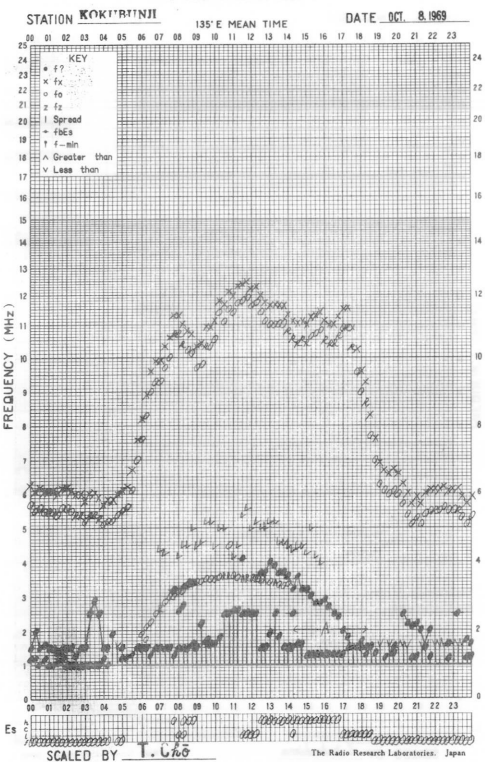
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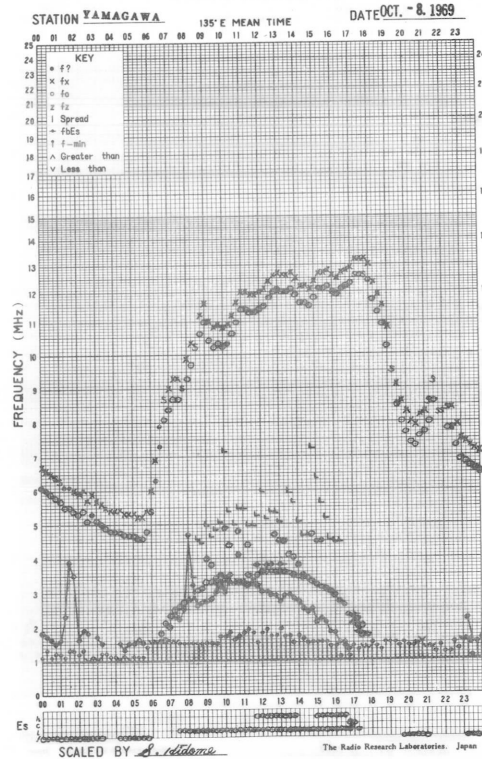
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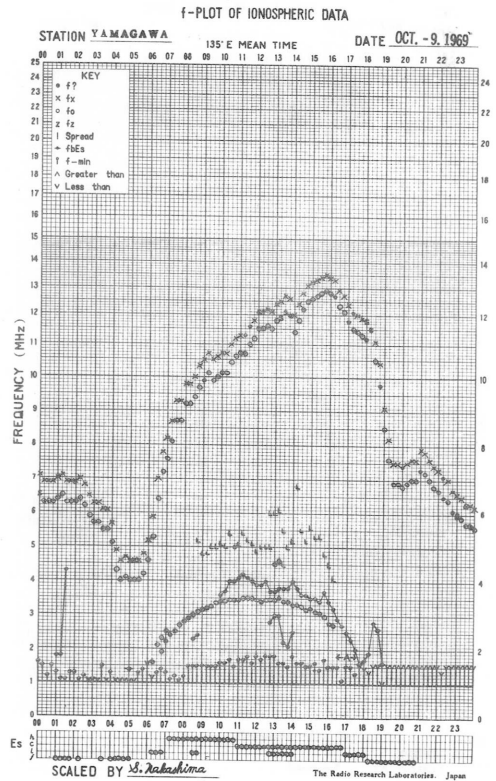
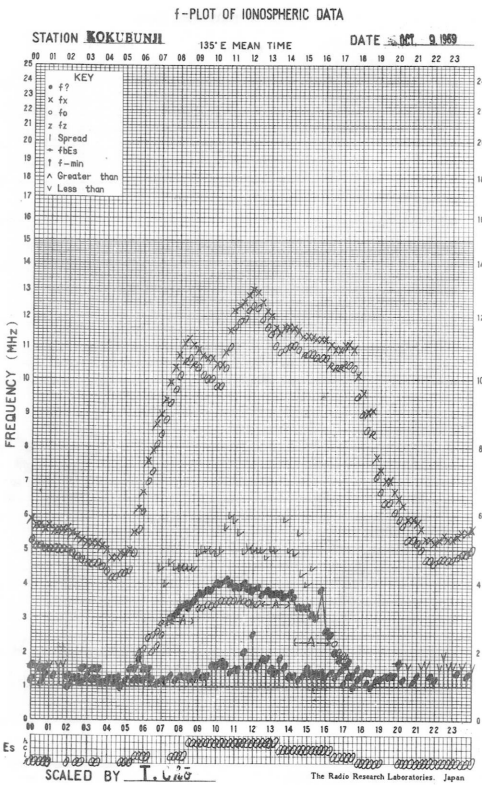
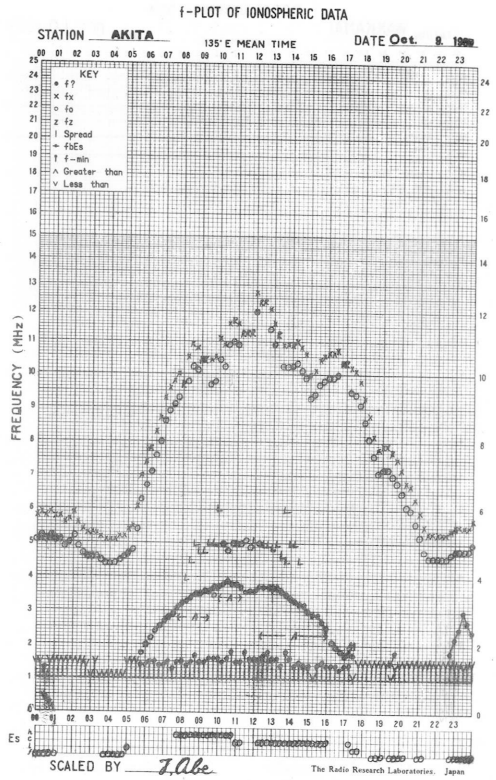
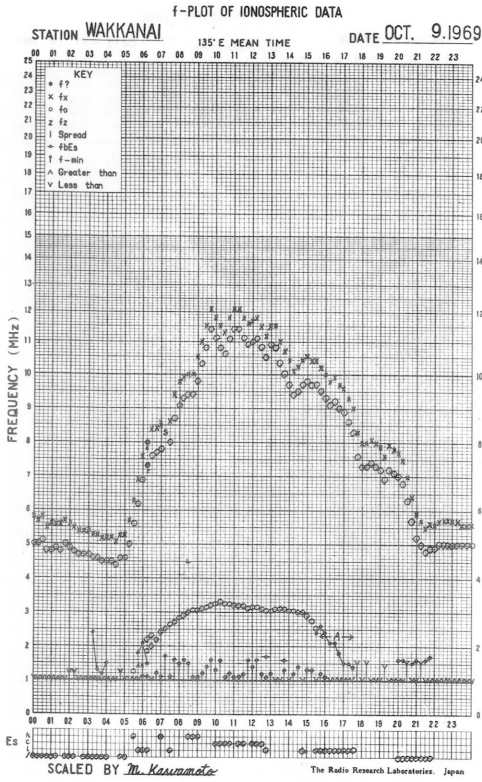


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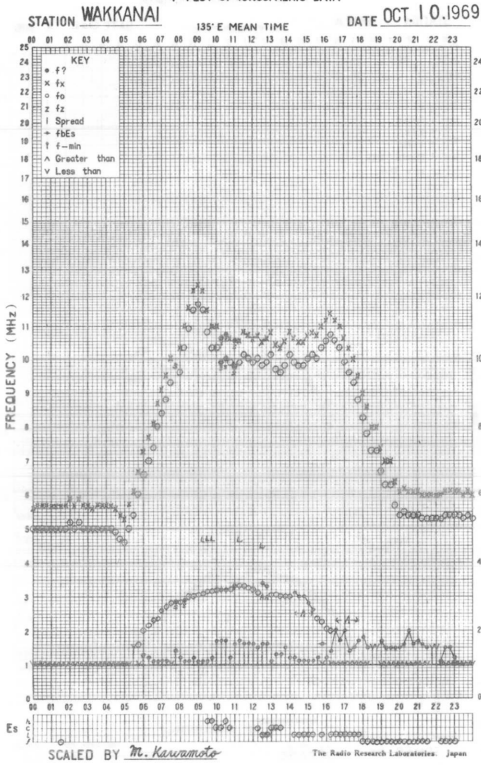


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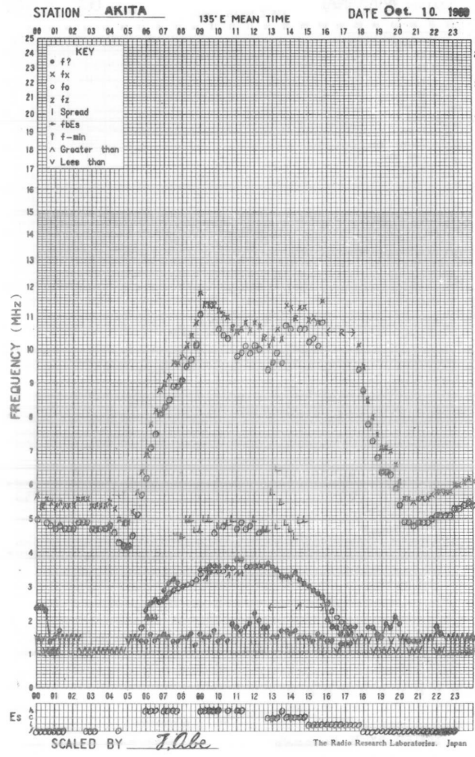




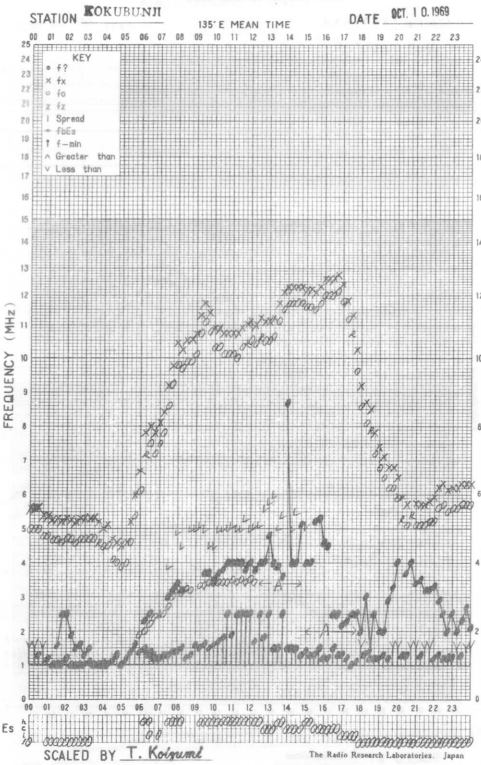
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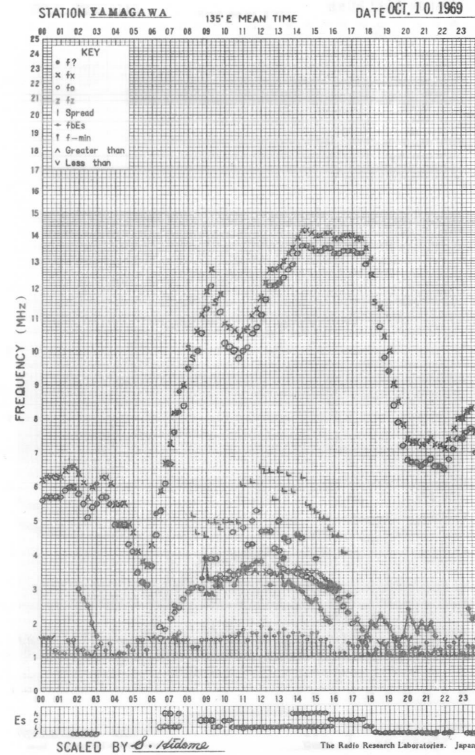
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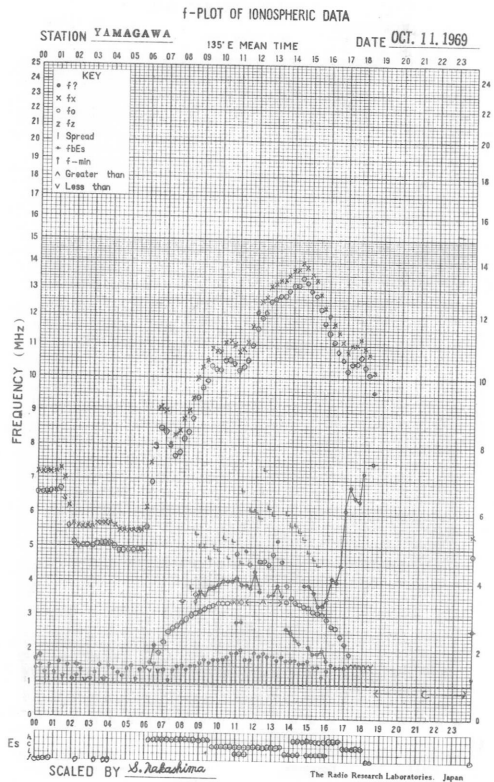
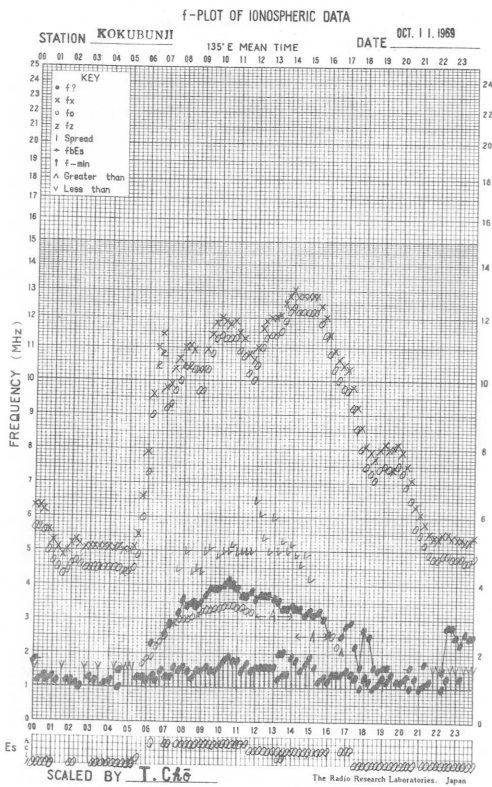
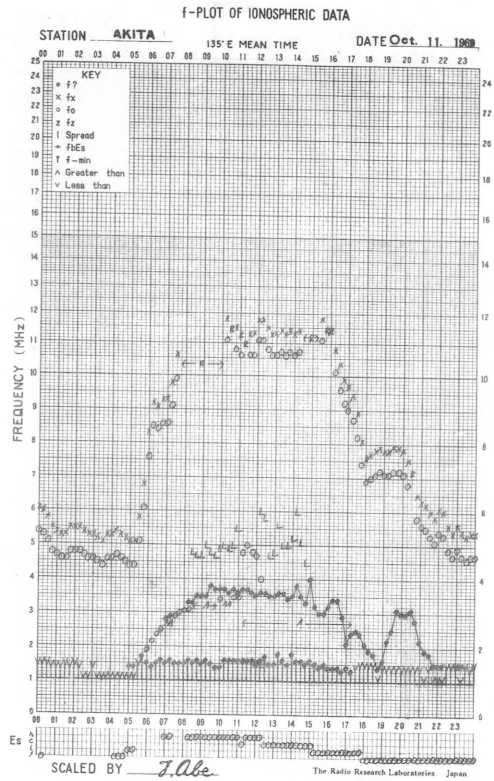
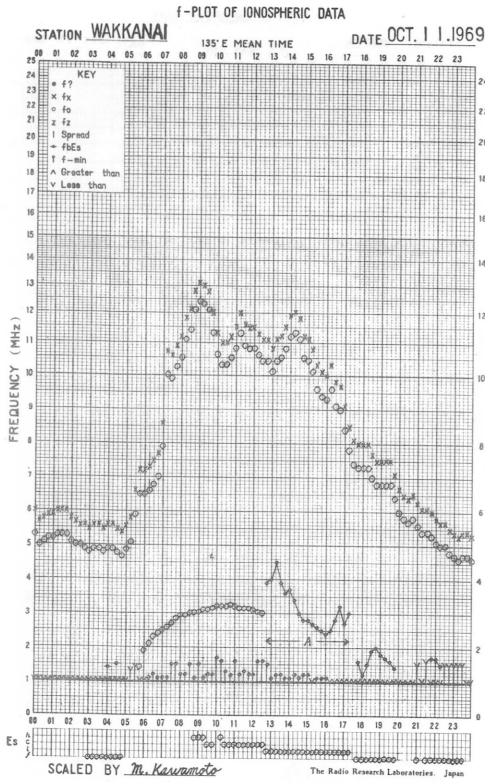


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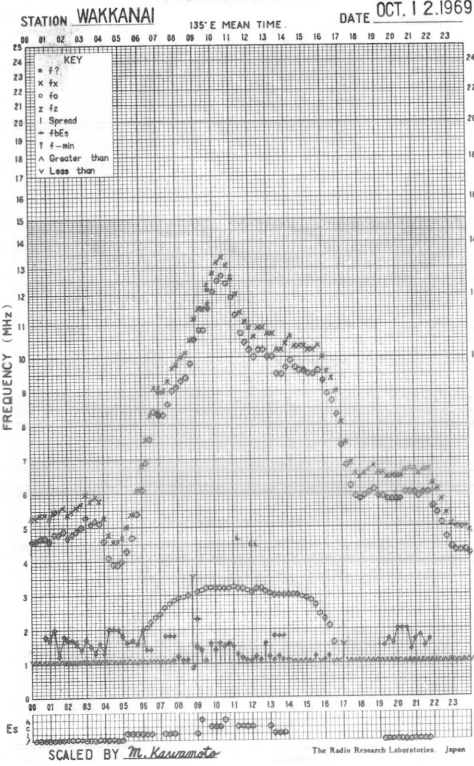


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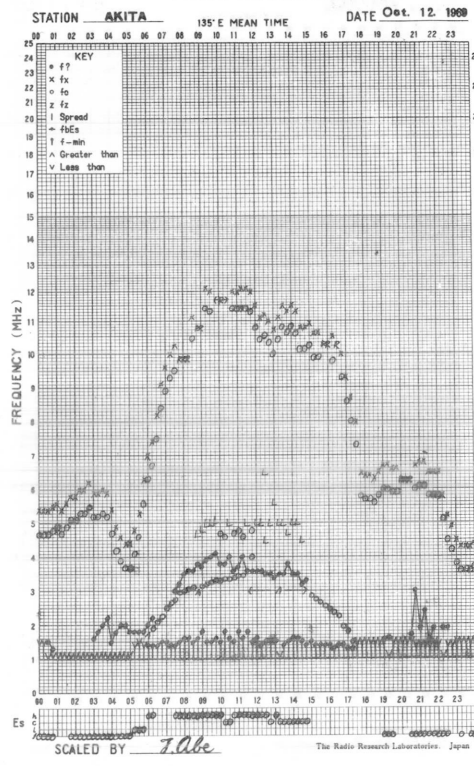




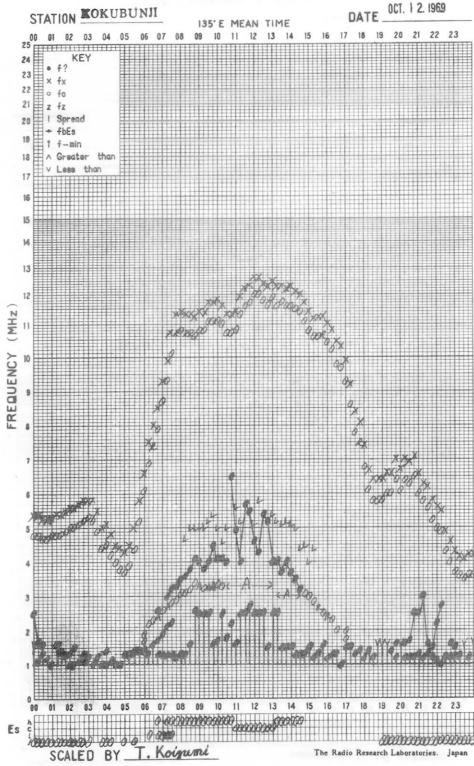
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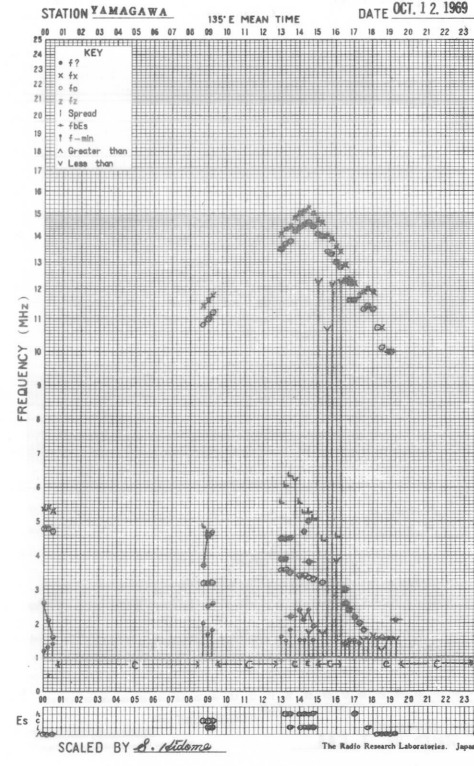
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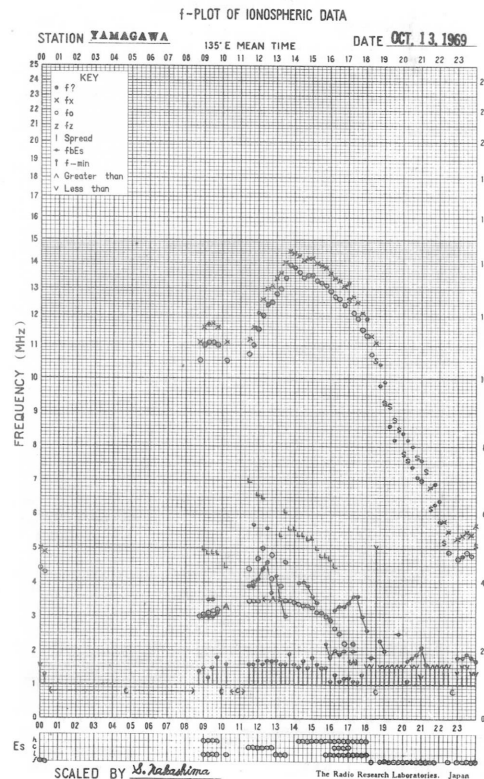
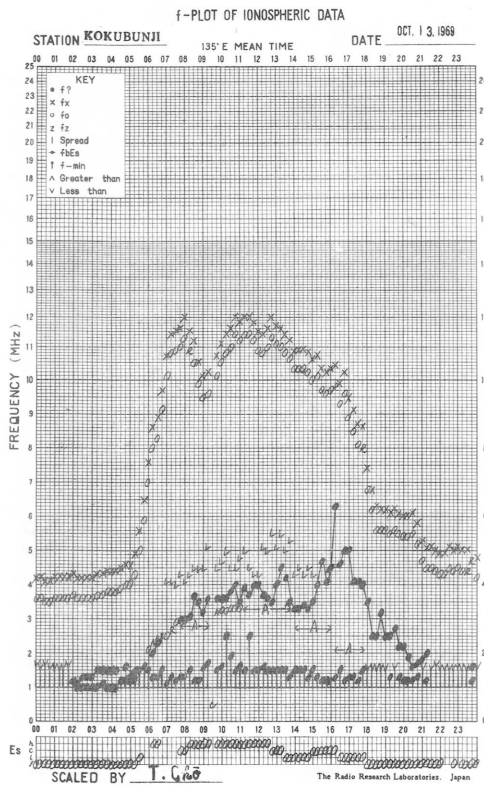
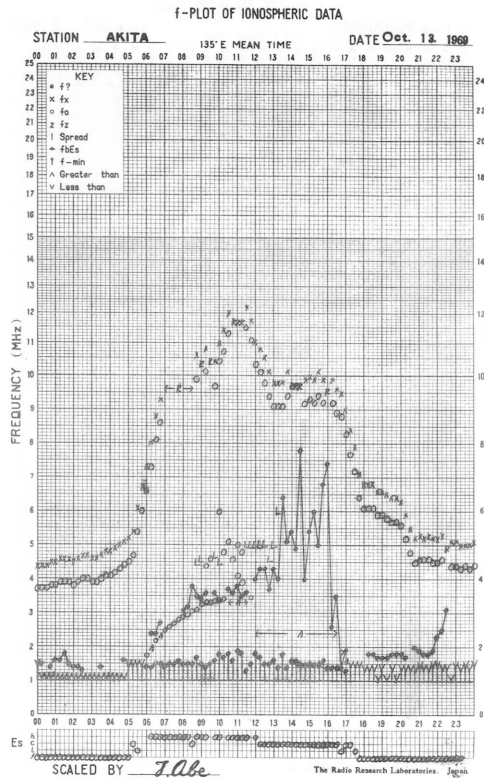
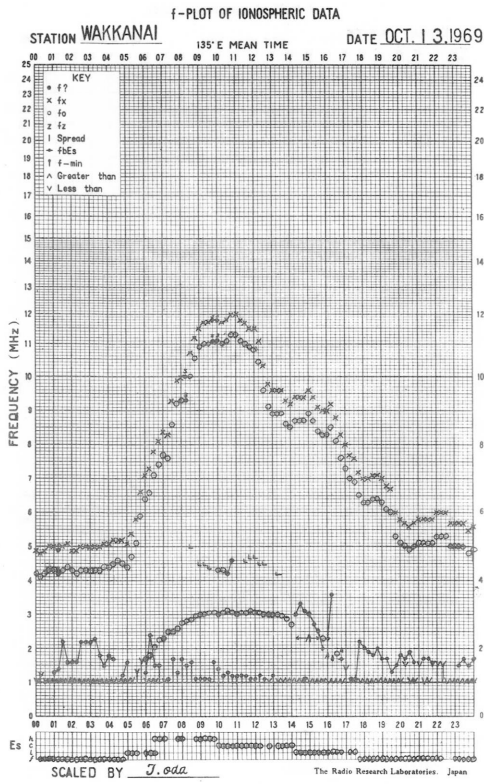


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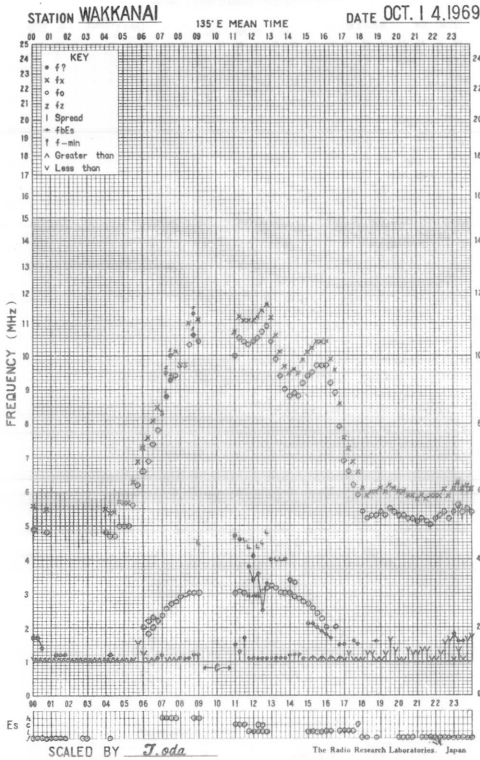


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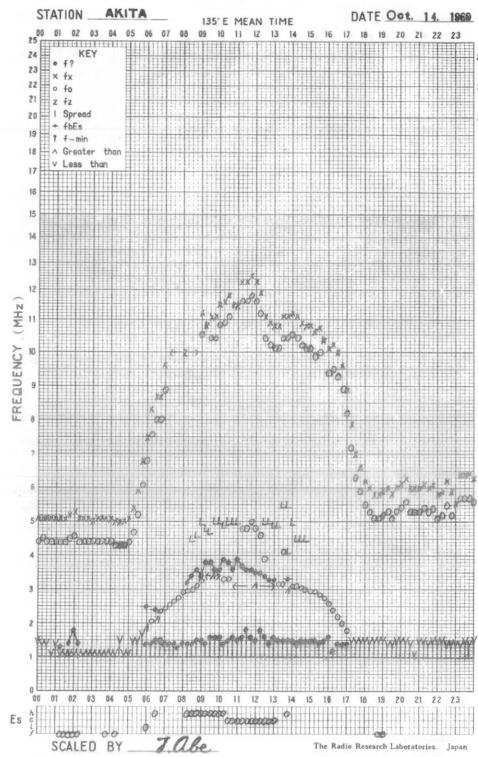




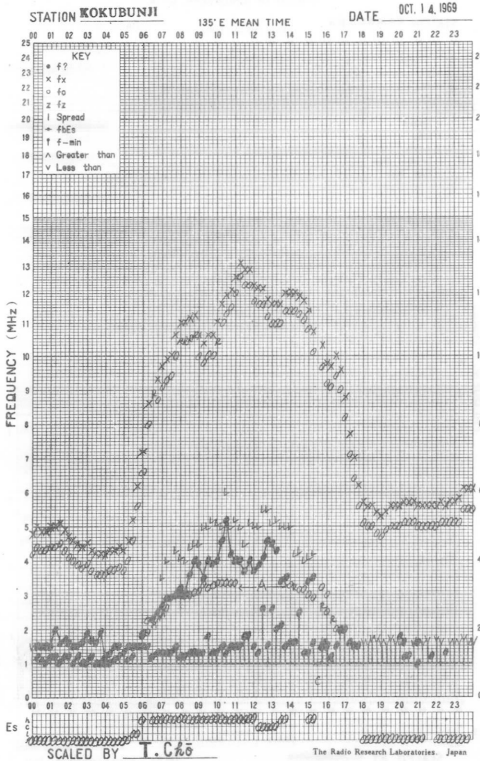
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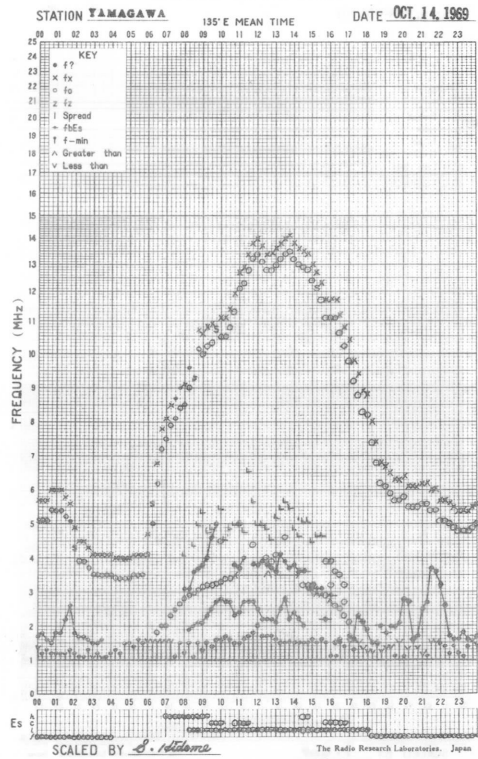
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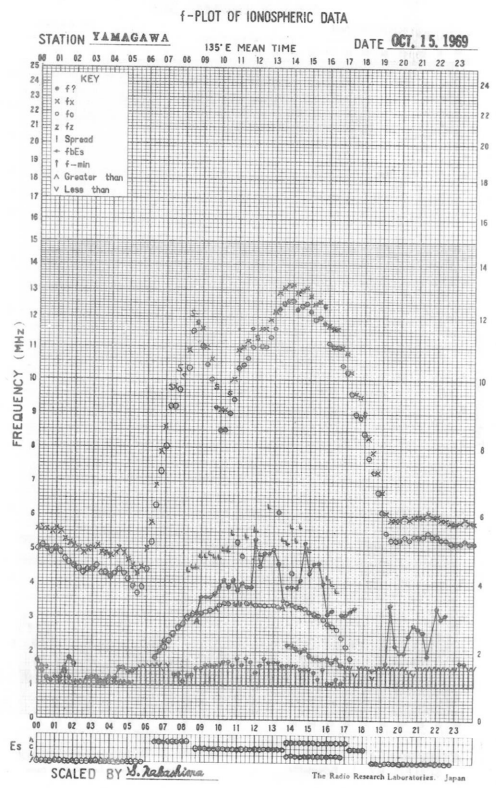
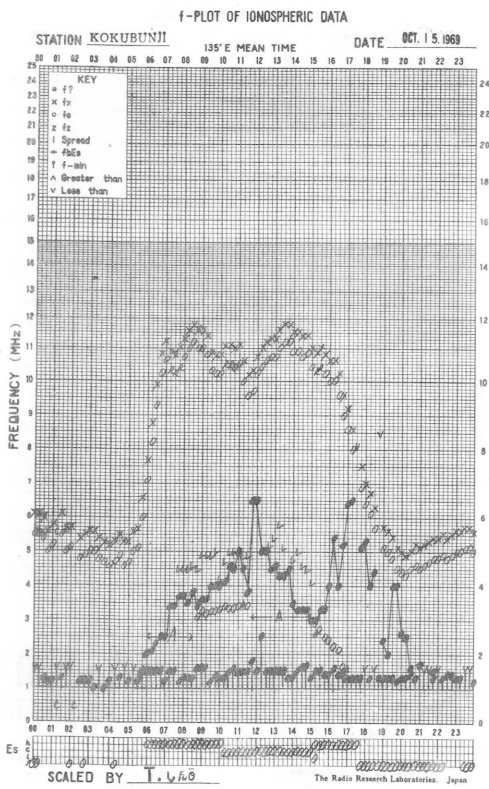
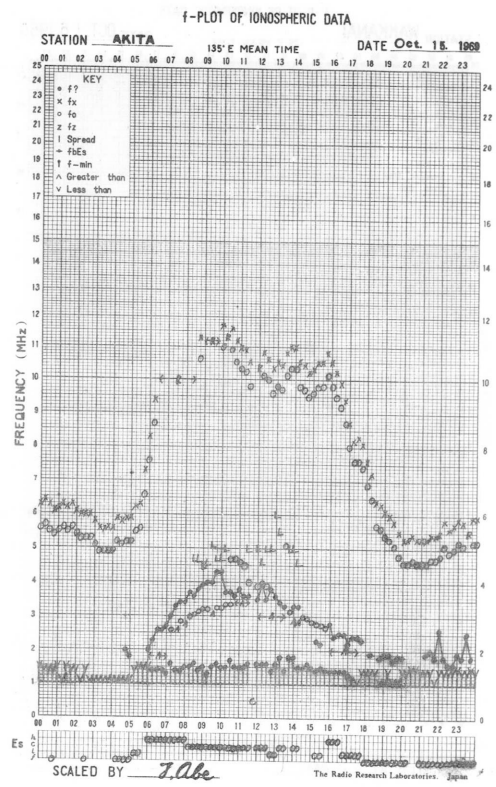
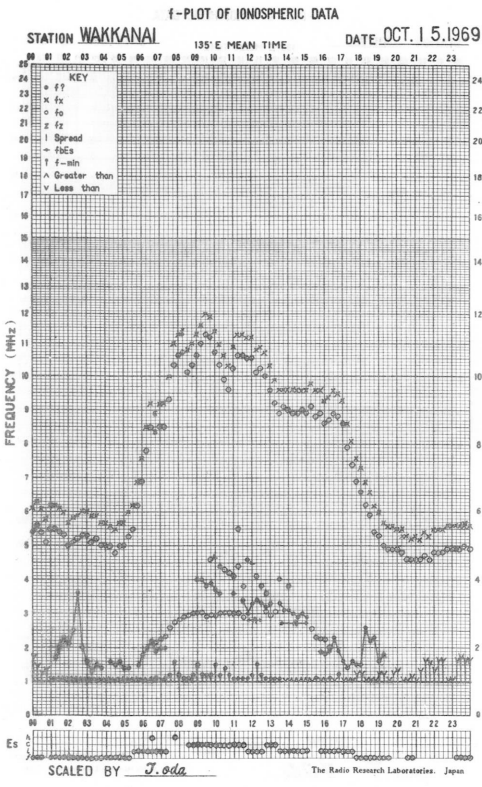


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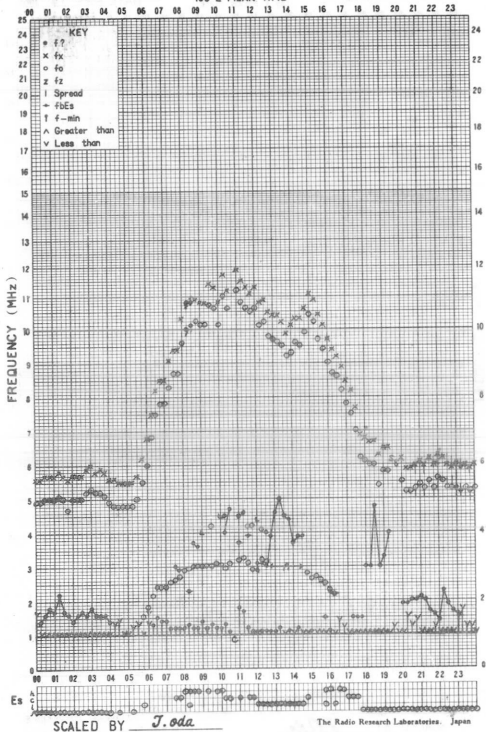
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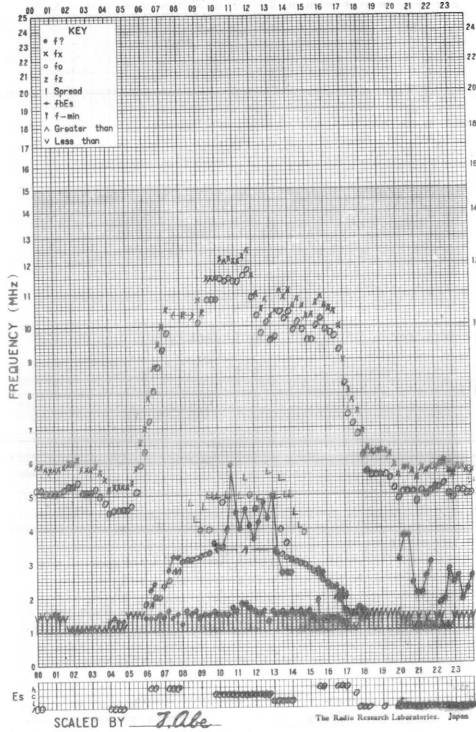
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STATION WAKKANAI 135°E MEAN TIME DATE OCT. 16, 1969



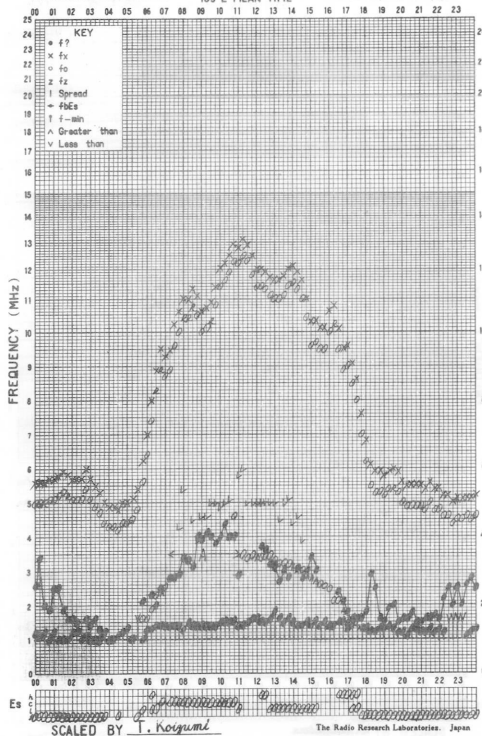
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STATION AKITA 135°E MEAN TIME DATE Oct. 18, 1969



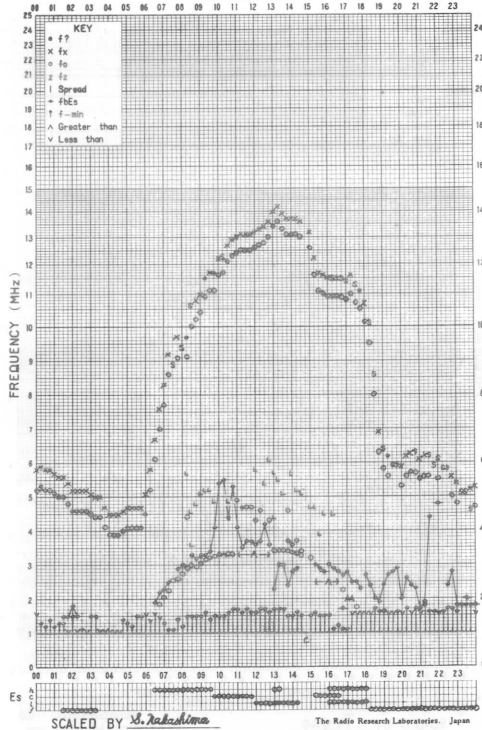
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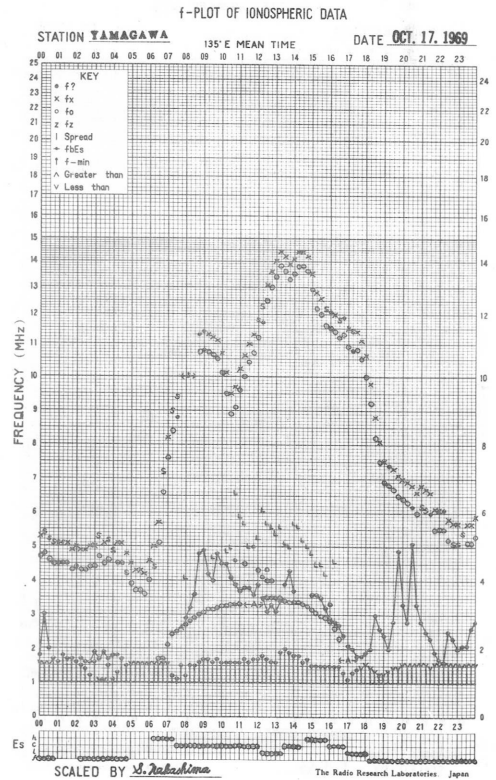
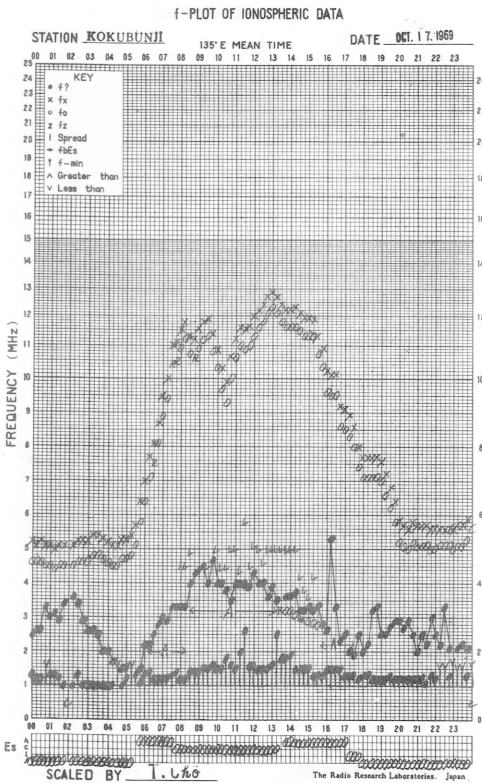
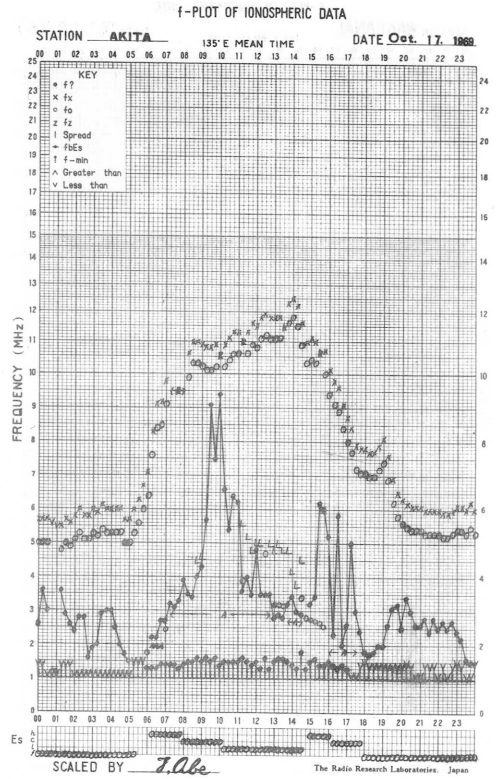
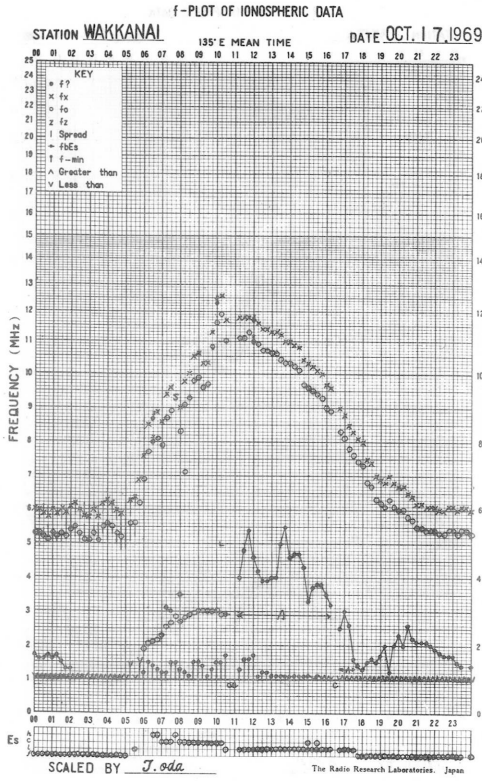
STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 16, 1969



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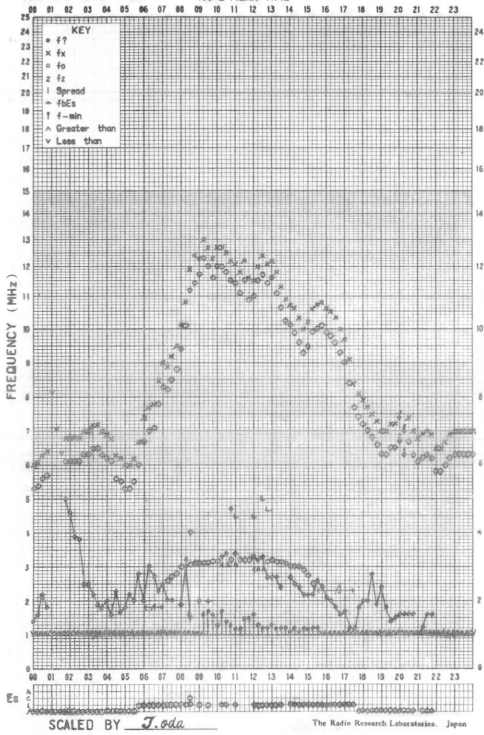
STATION TAMAGAWA 135°E MEAN TIME DATE OCT. 16, 1969





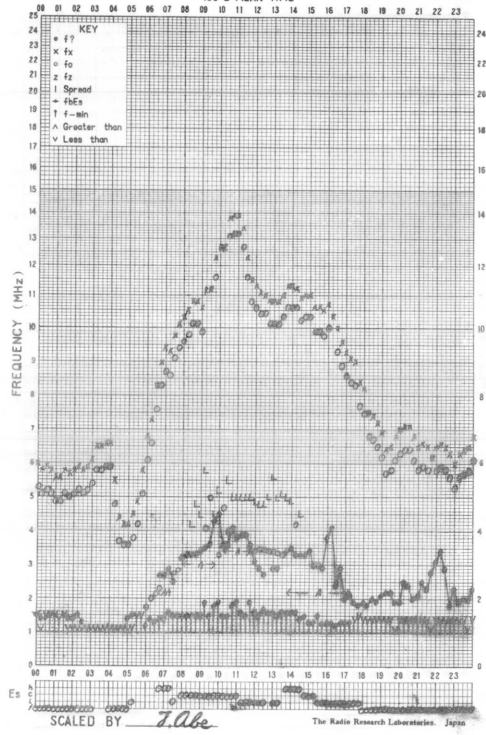
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STATION WAKKANAI 135° E MEAN TIME DATE OCT. 18, 1969



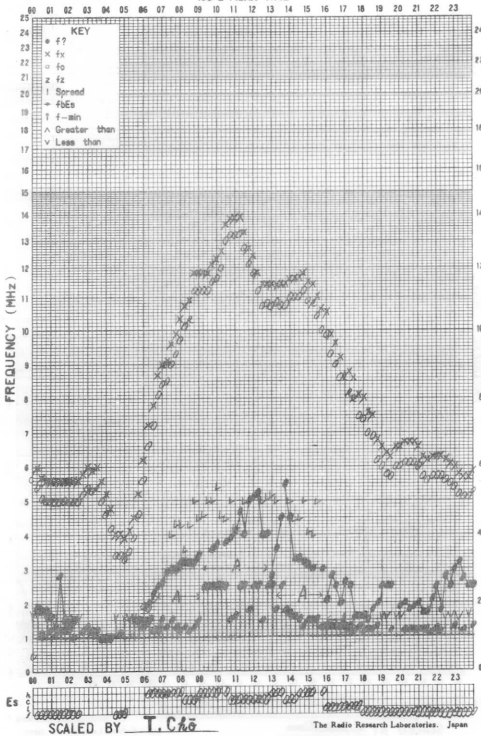
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STATION AKITA 135° E MEAN TIME DATE Oct. 18, 1969



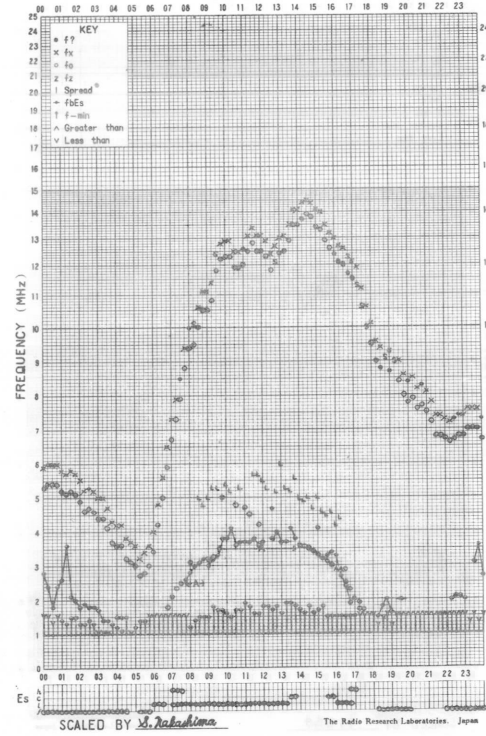
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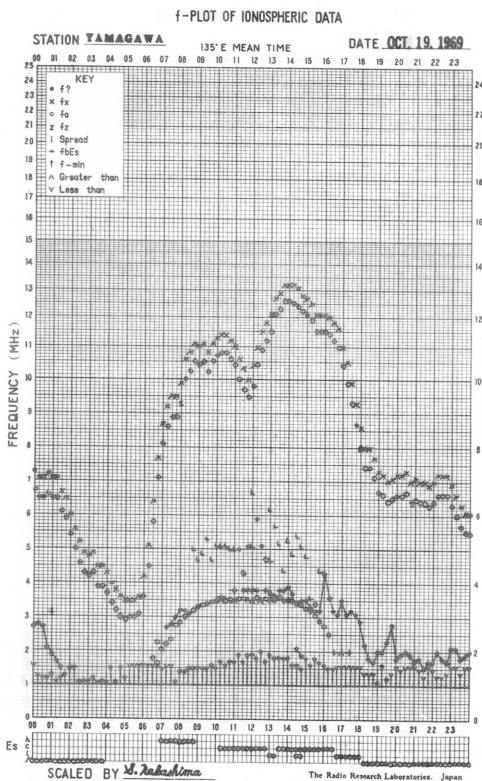
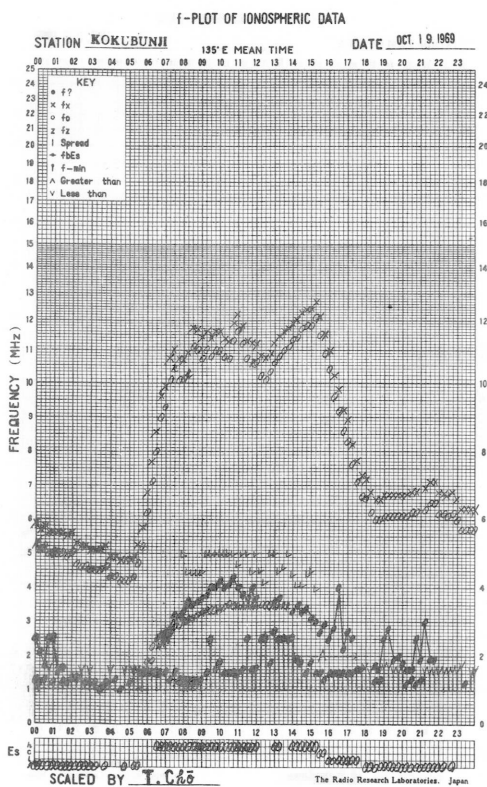
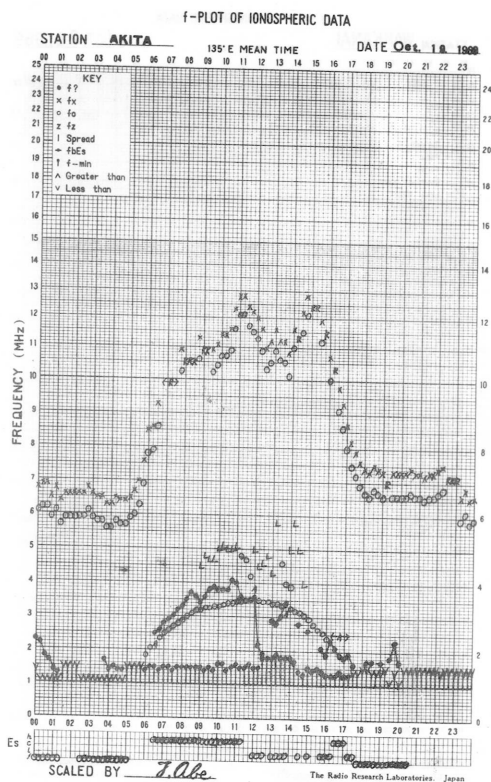
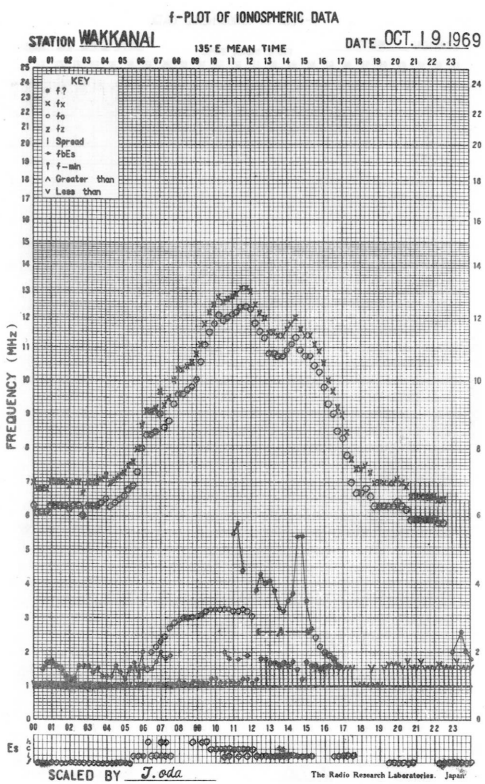
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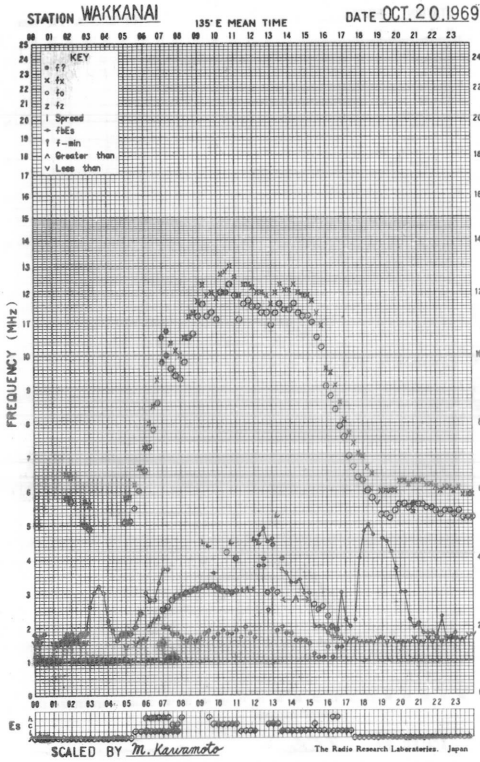
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STATION YAMAGAWA 135° E MEAN TIME DATE OCT. 18, 1969

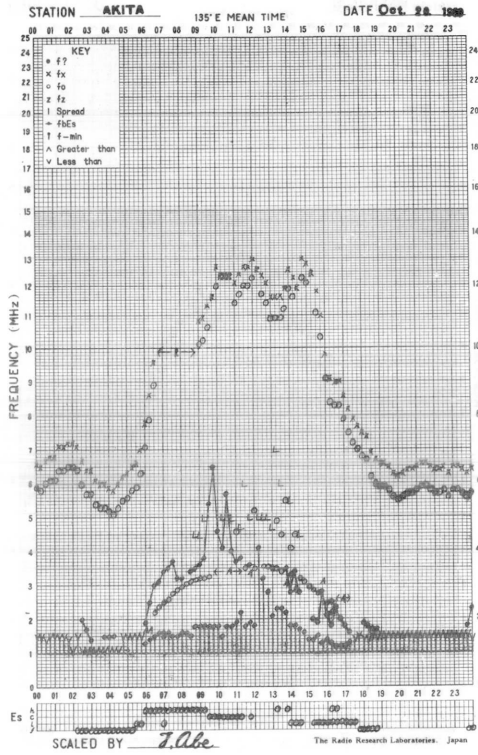




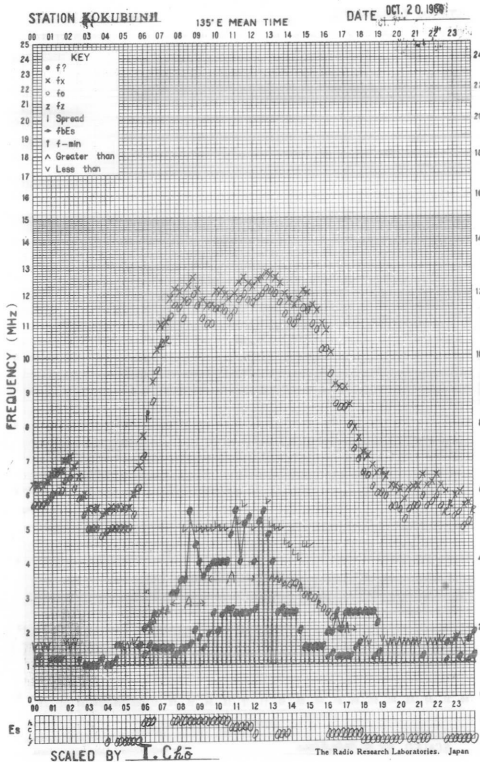
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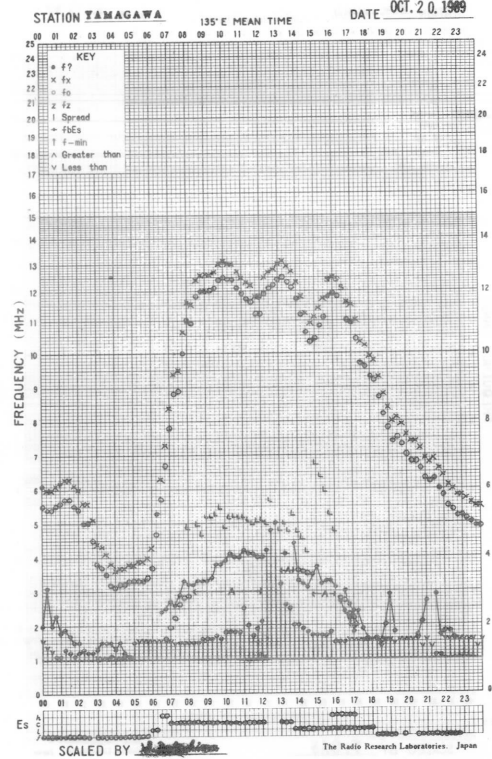
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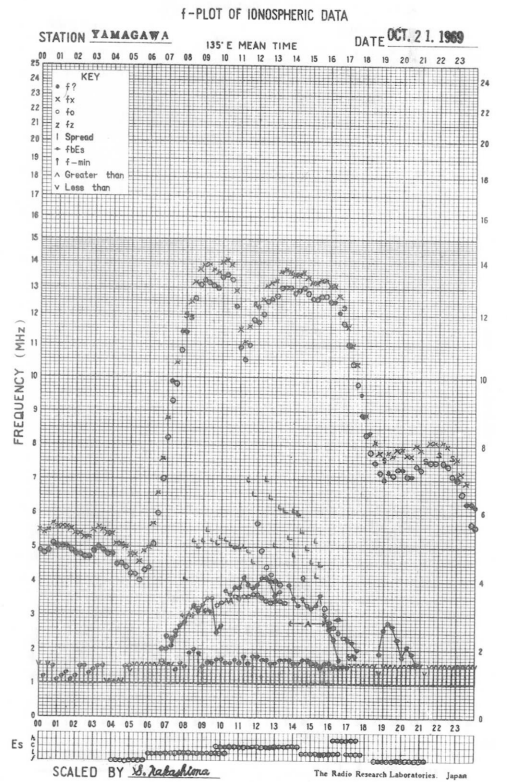
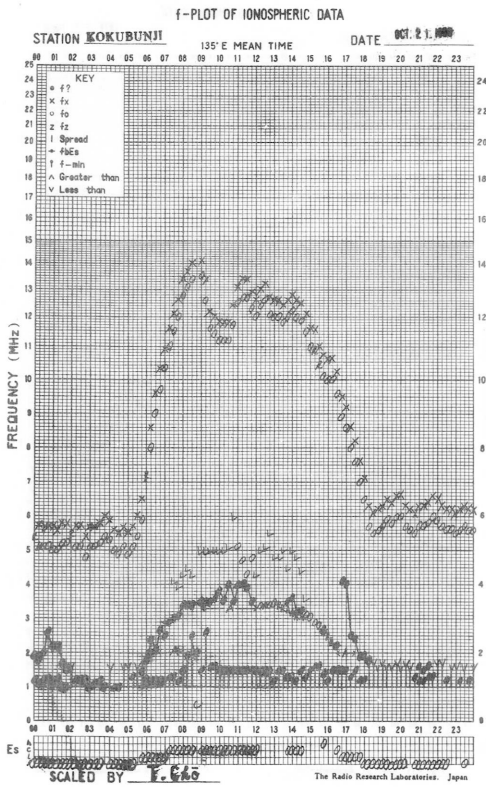
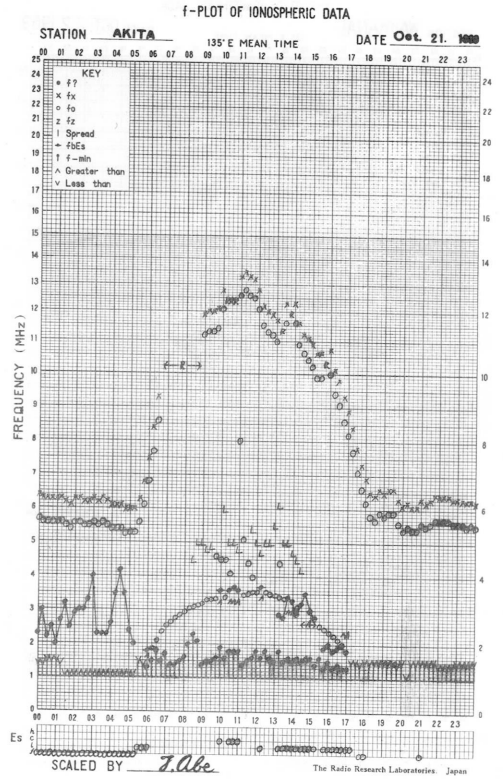
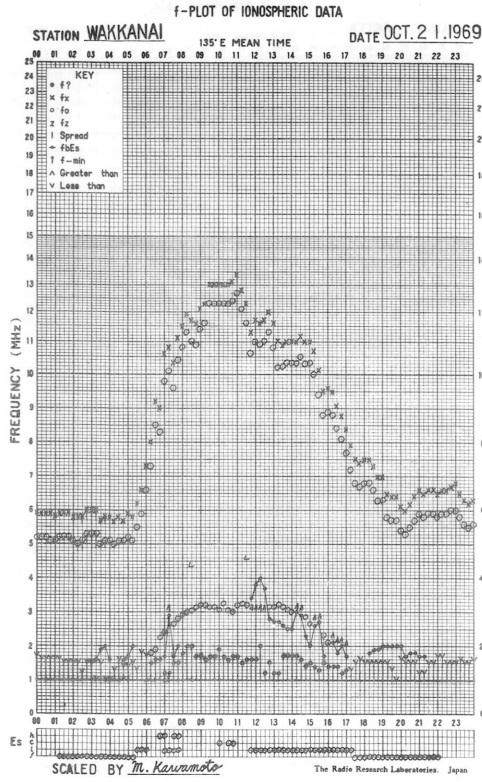


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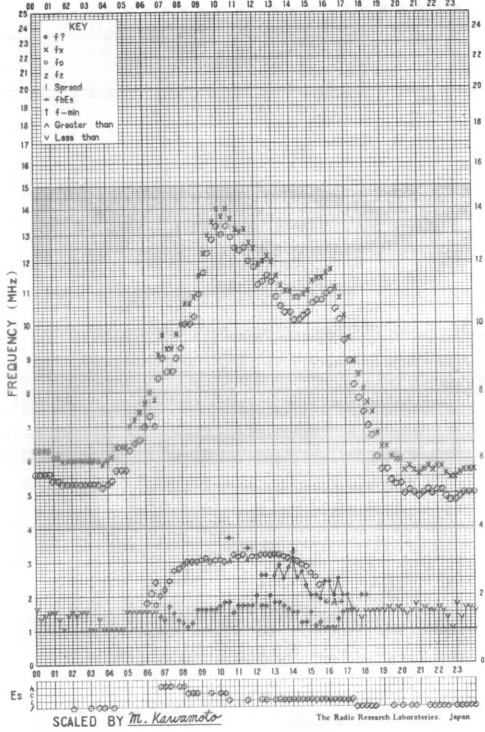
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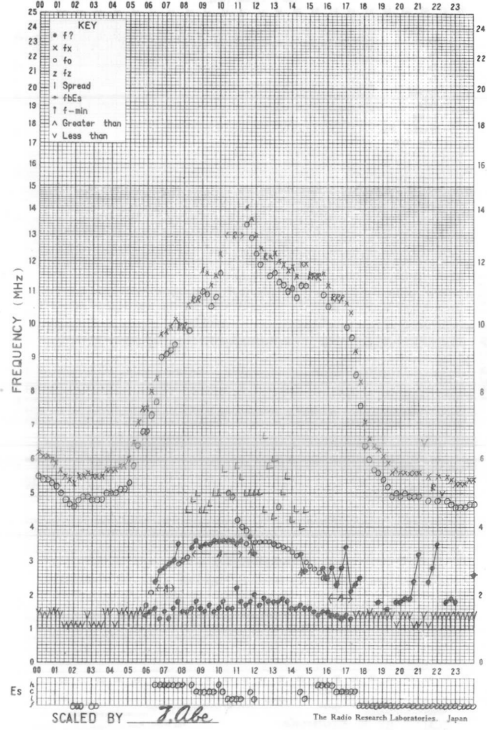
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STATION WAKKANAI 135°E MEAN TIME DATE OCT. 22, 1969



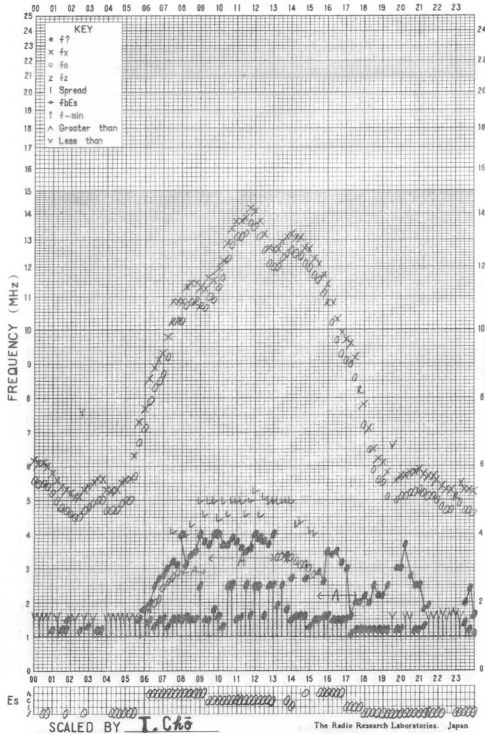
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STATION AKITA 135°E MEAN TIME DATE Oct. 22, 1969



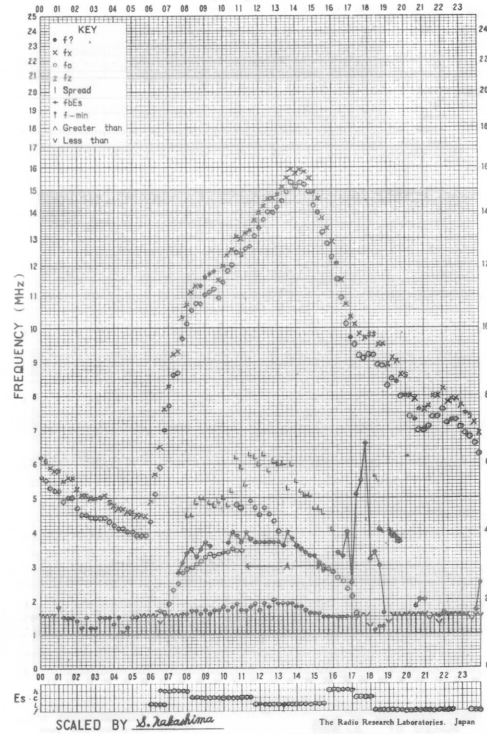
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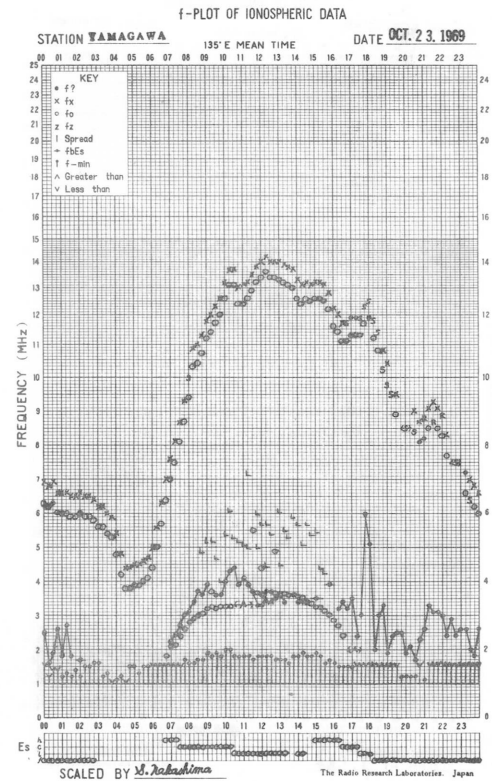
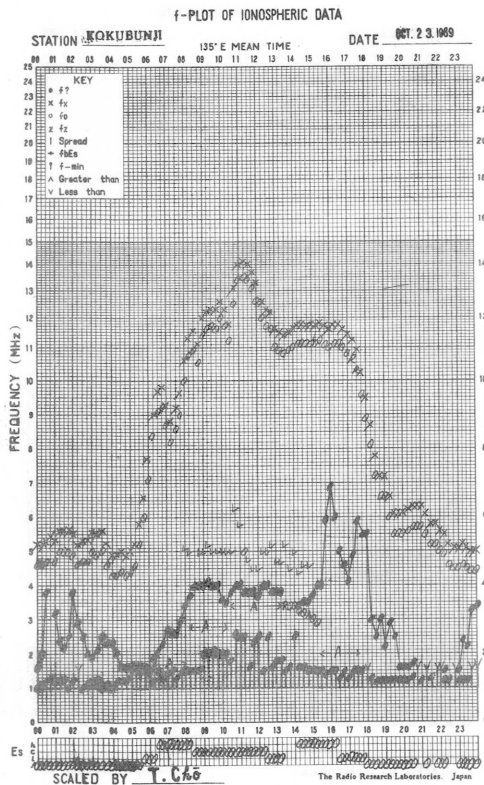
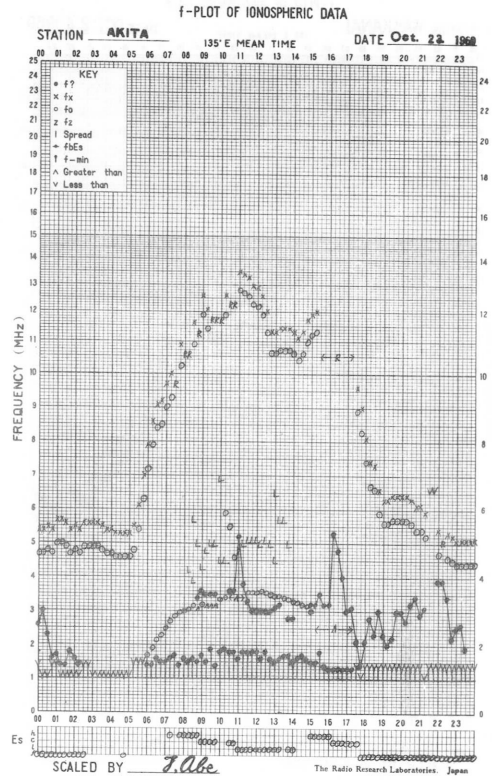
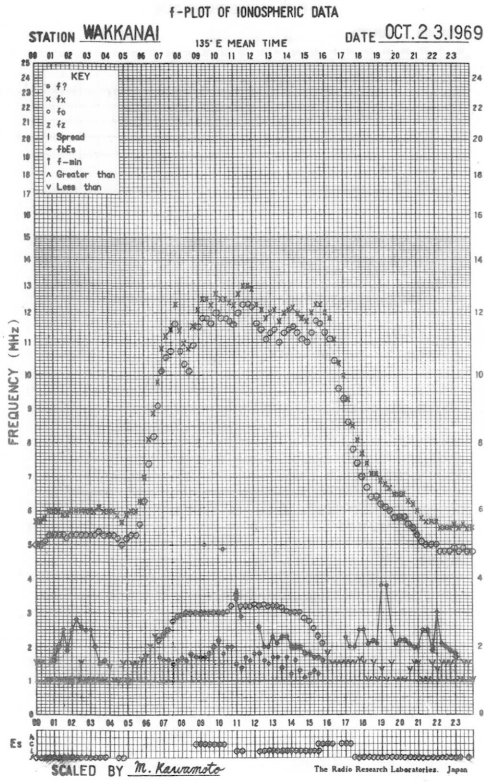
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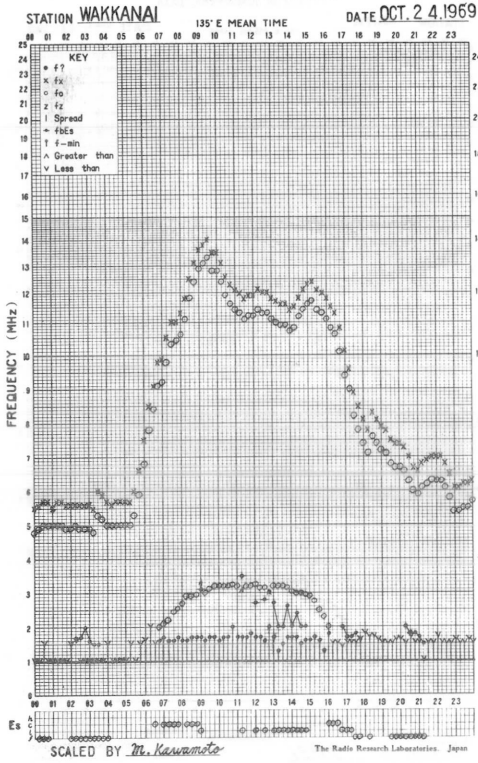
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STATION YAMAGAWA 135°E MEAN TIME DATE OCT. 22, 1969

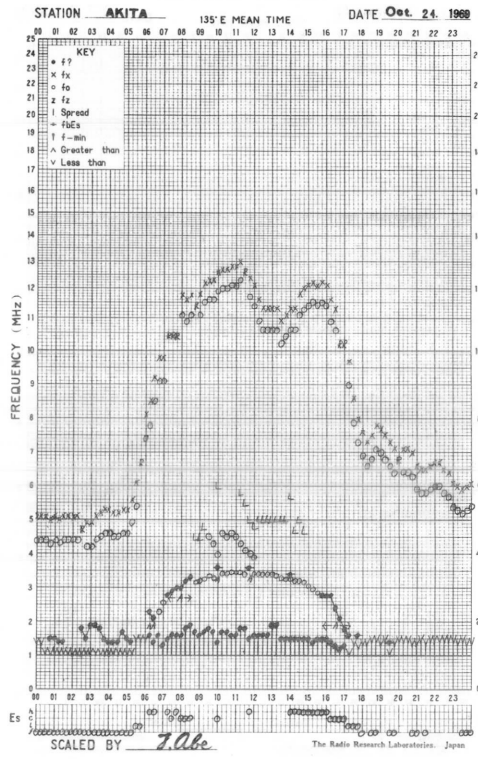




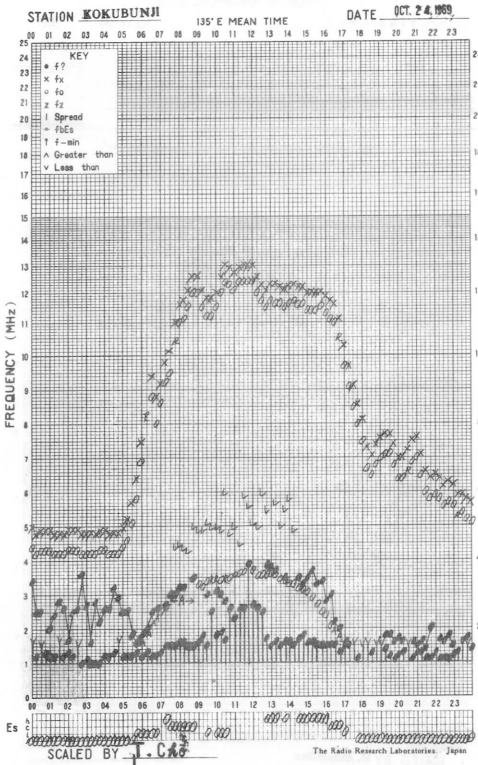
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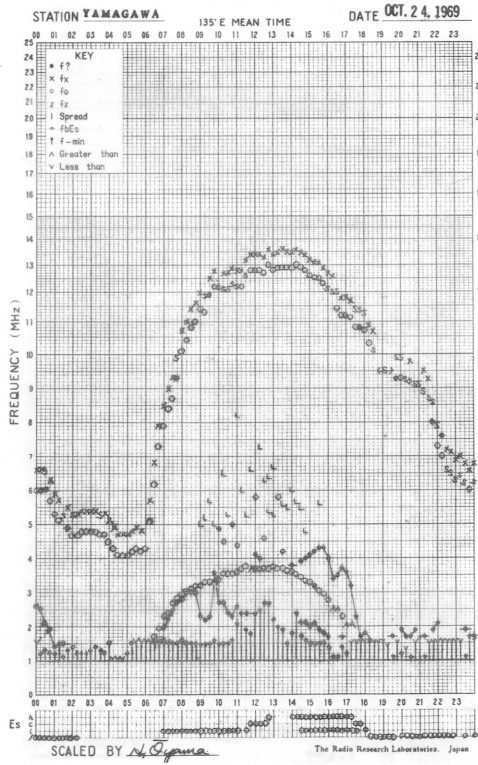
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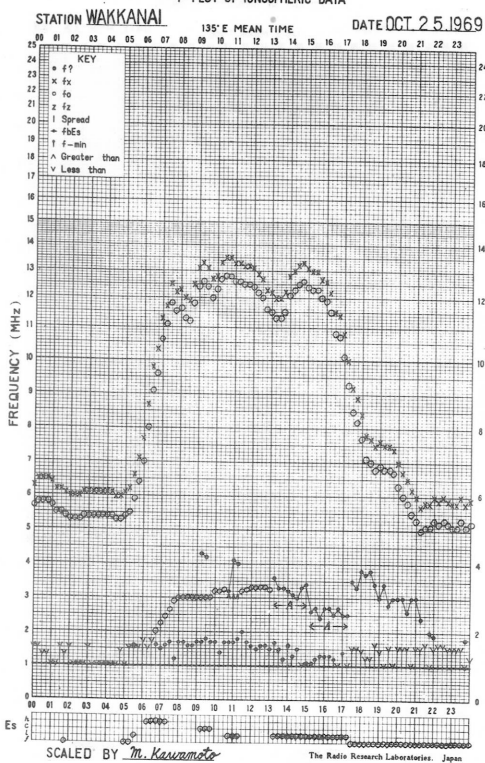
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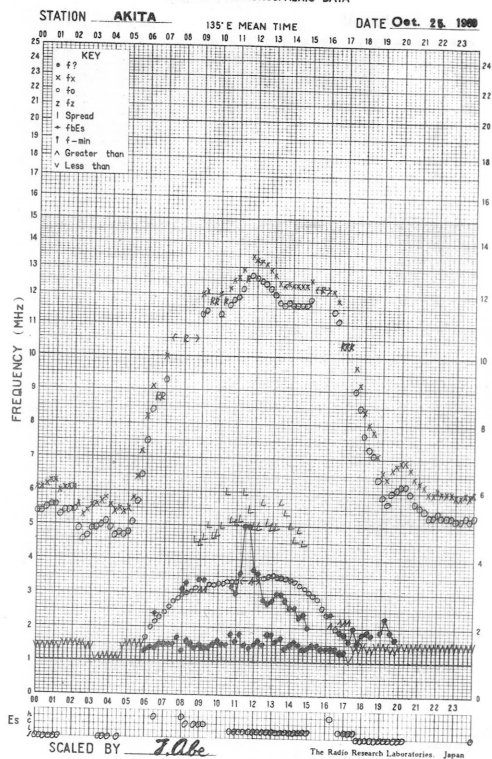
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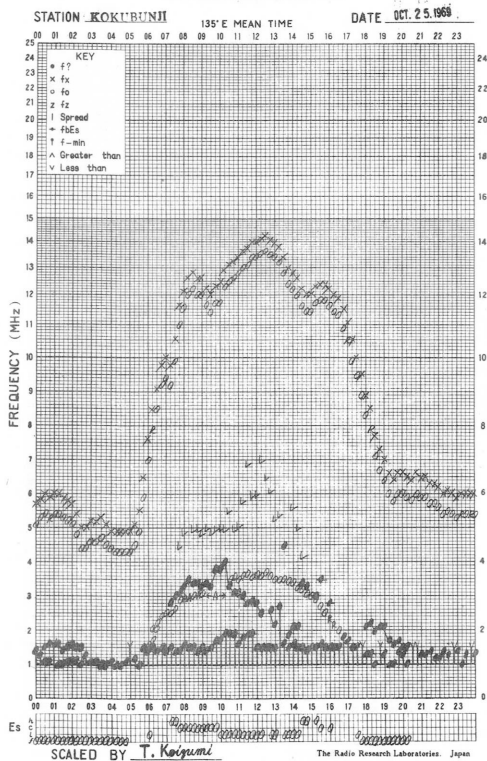
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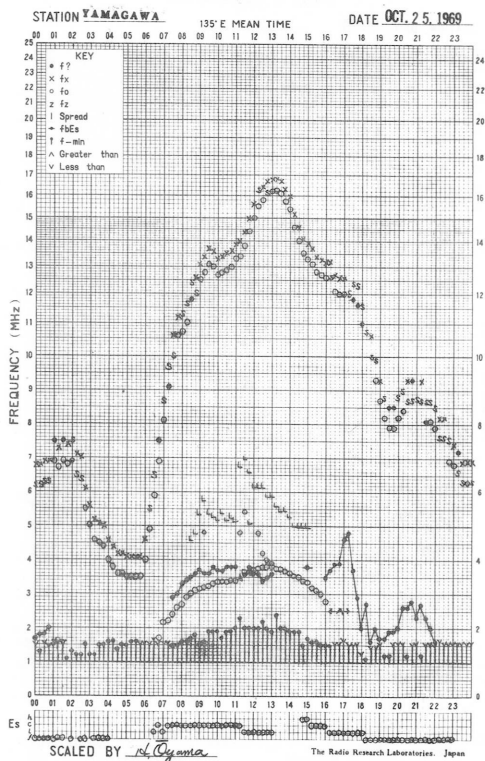
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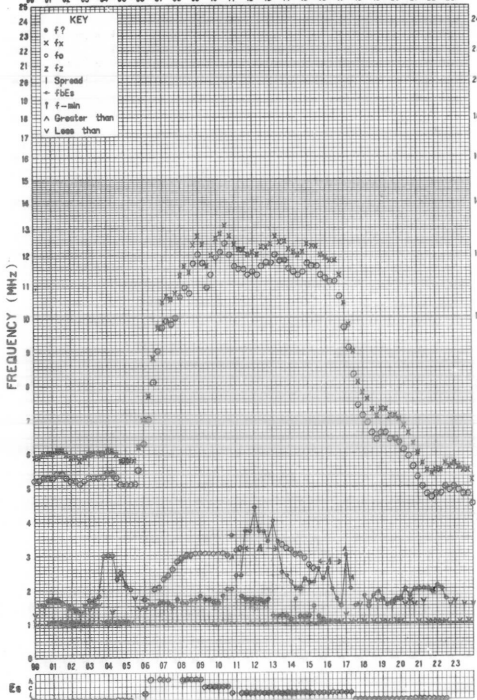


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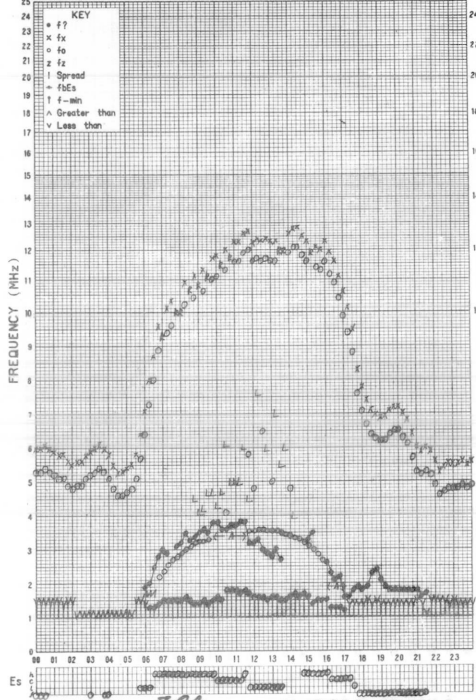
STATION WAKKANAI 135°E MEAN TIME DATE OCT. 26 1969



SCALED BY M. Kawamoto The Radio Research Laboratories, Japan

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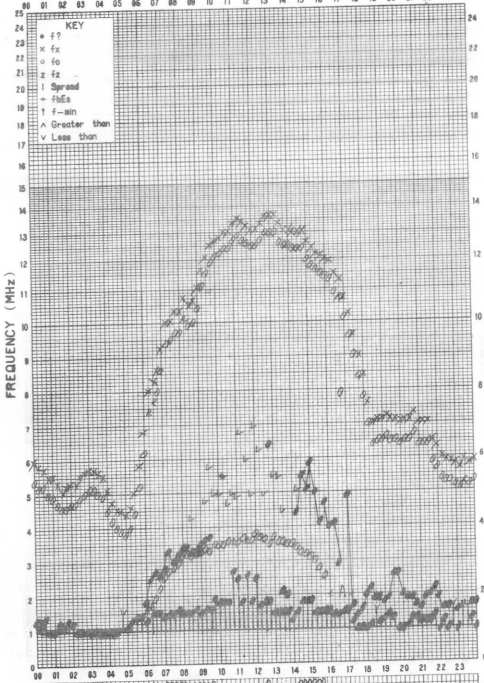
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SCALED BY T. Abe The Radio Research Laboratories, Japan

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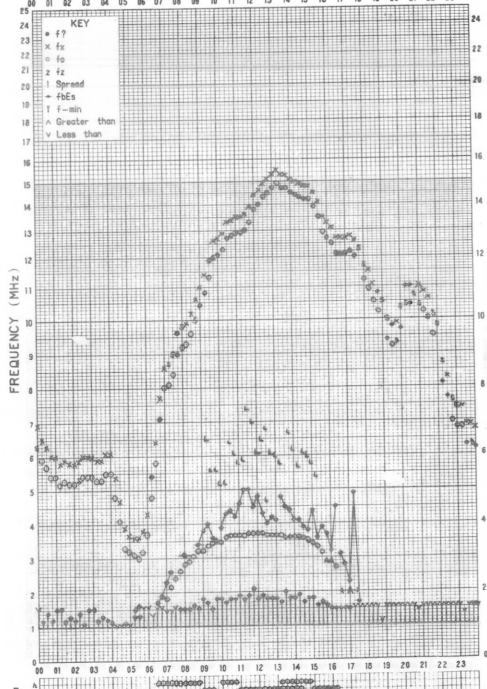
STATION KOKUBUNJI 135°E MEAN TIME DATE OCT. 26 1969



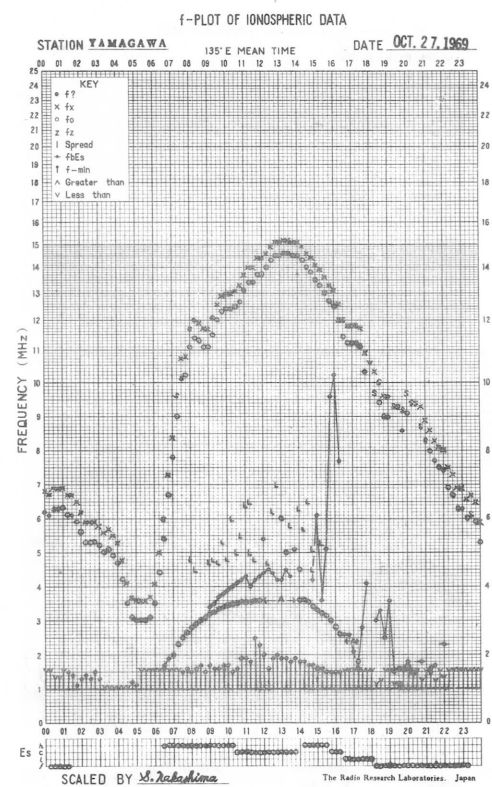
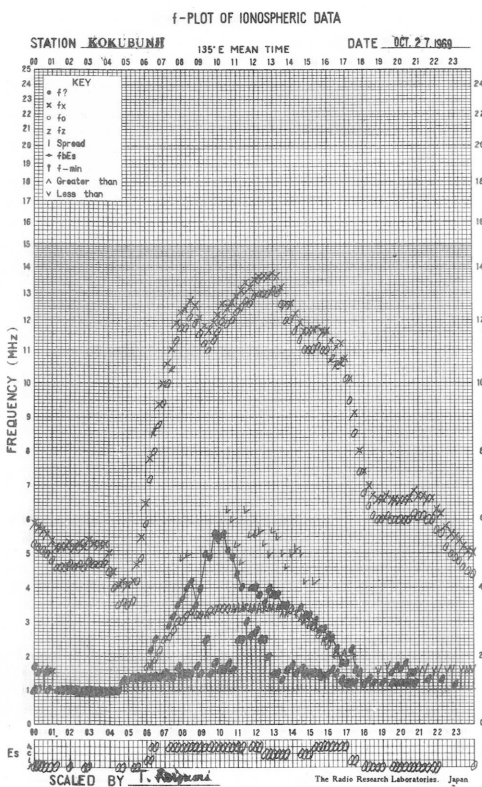
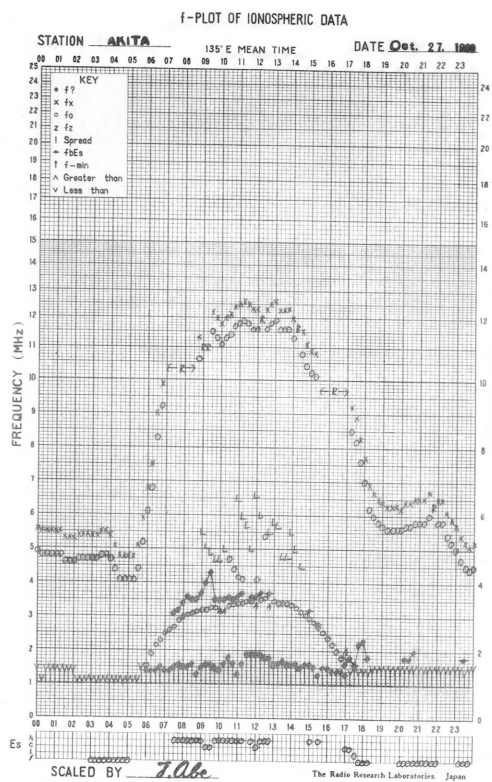
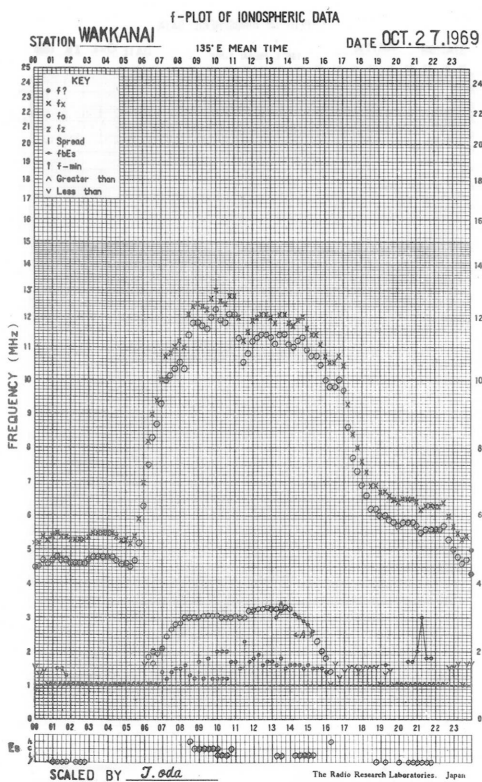
SCALED BY T. Kawamoto The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

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

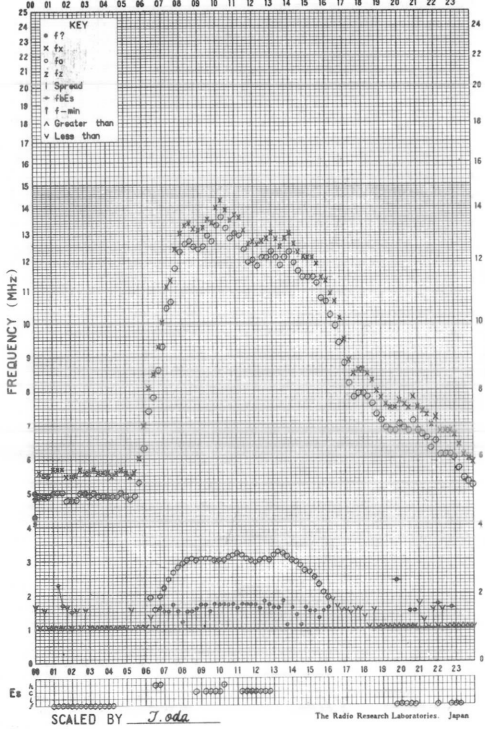


SCALED BY X. Takahama The Radio Research Laboratories, Japan



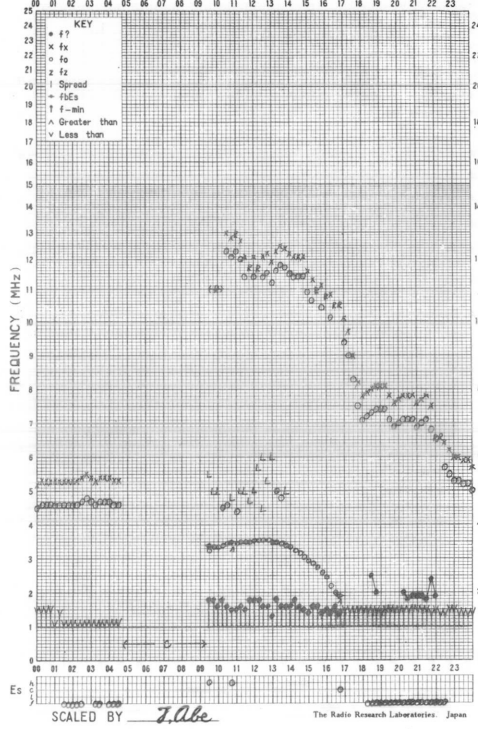
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STATION **WAKKANAI** 135°E MEAN TIME DATE **OCT. 28. 1969**



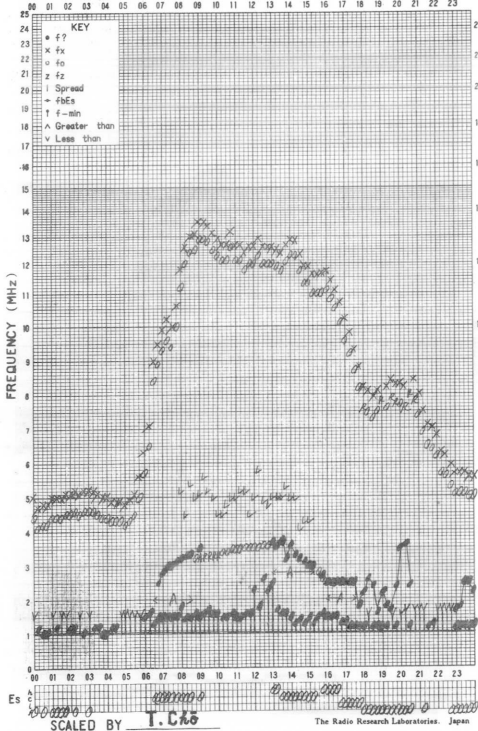
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STATION **AKITA** 135°E MEAN TIME DATE **Oct. 28. 1969**



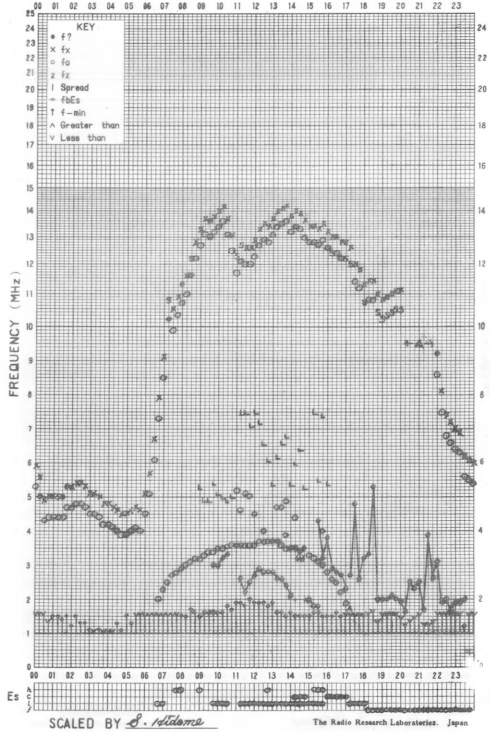
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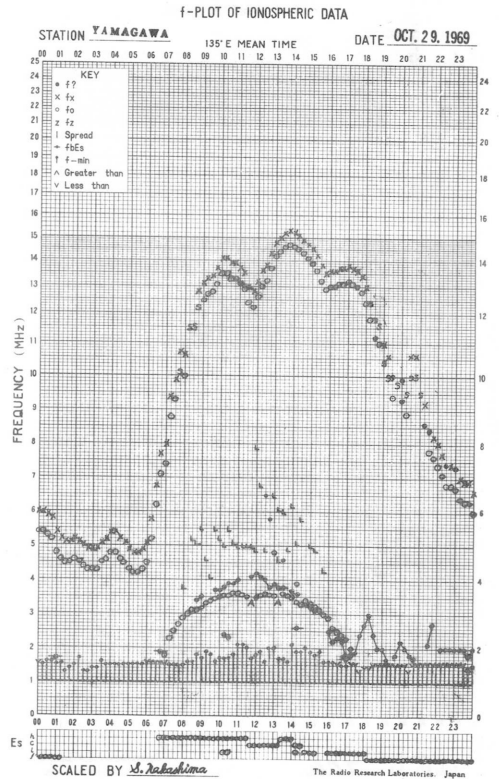
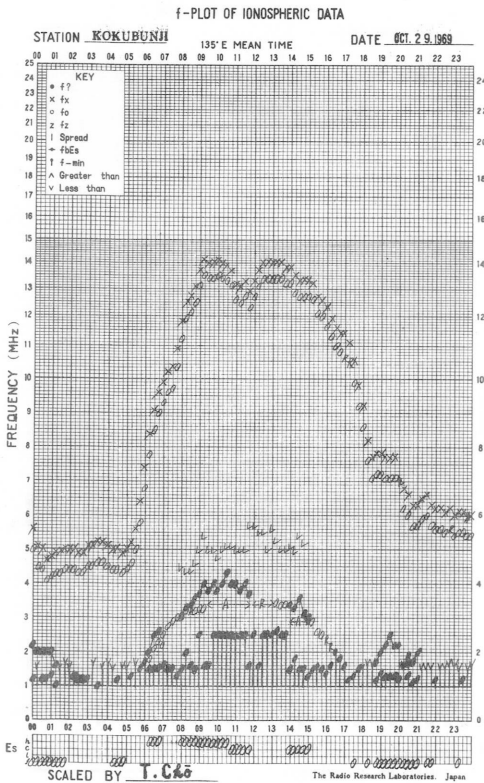
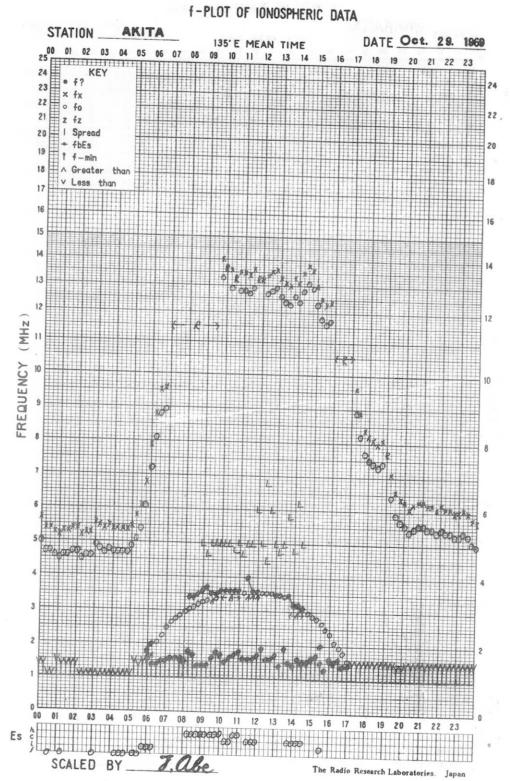
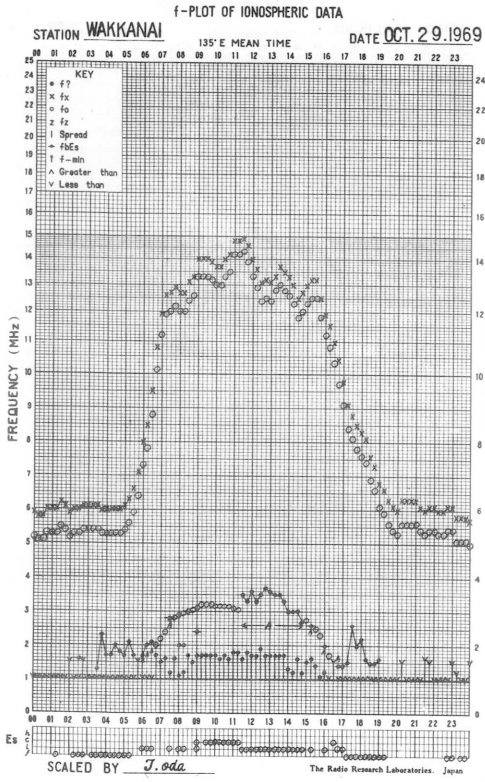
STATION **KOKUBUNJI** 135°E MEAN TIME DATE **OCT. 28. 1969**



f-PLOT OF IONOSPHERIC DATA

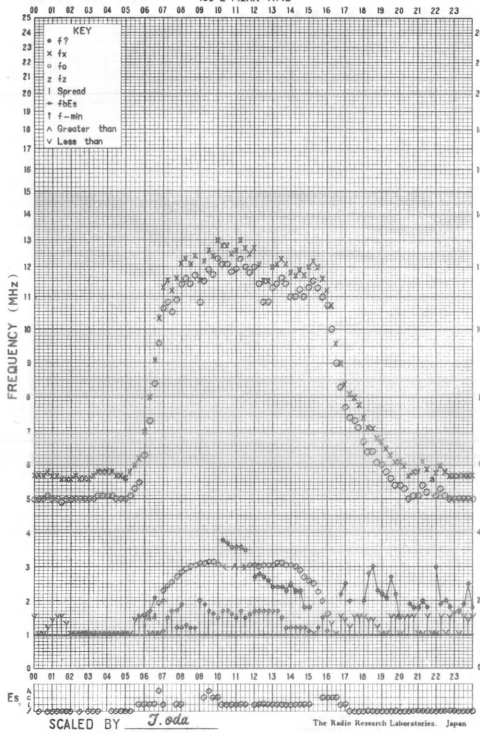
STATION **YAMAGAWA** 135°E MEAN TIME DATE **OCT. 28. 1969**





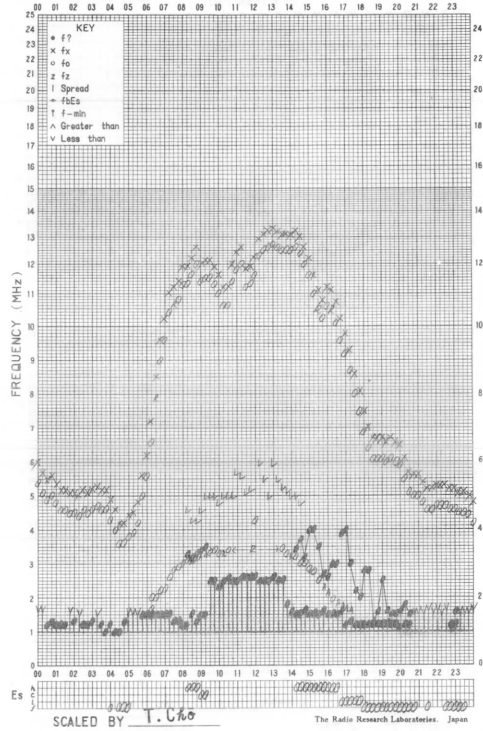
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STATION WAKKANAI 135° E MEAN TIME DATE OCT. 30. 1969



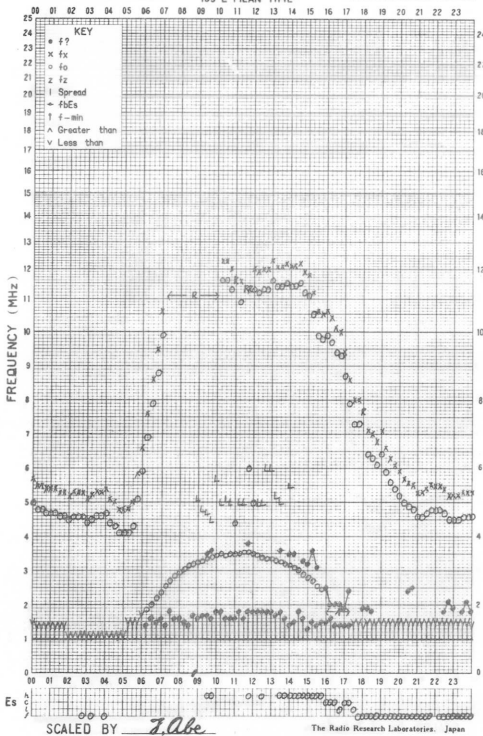
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STATION KOKUBUNJI 135° E MEAN TIME DATE OCT. 30. 1969



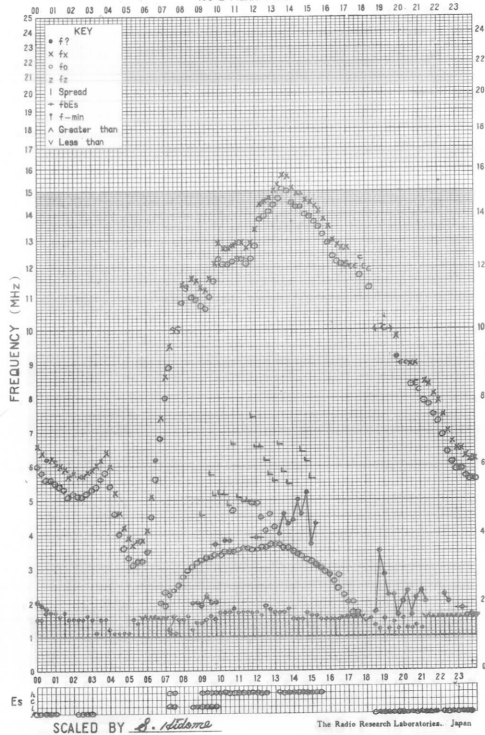
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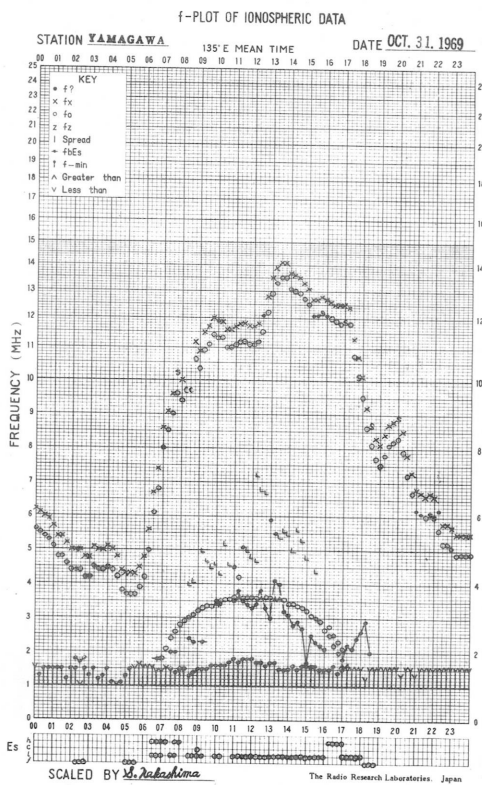
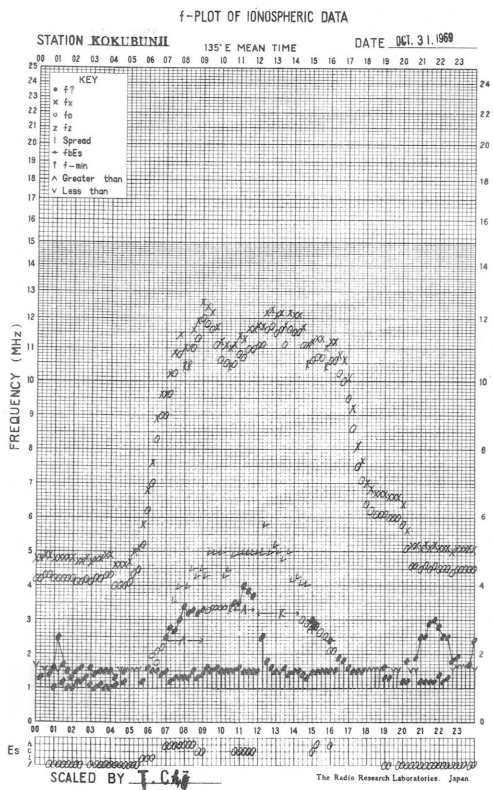
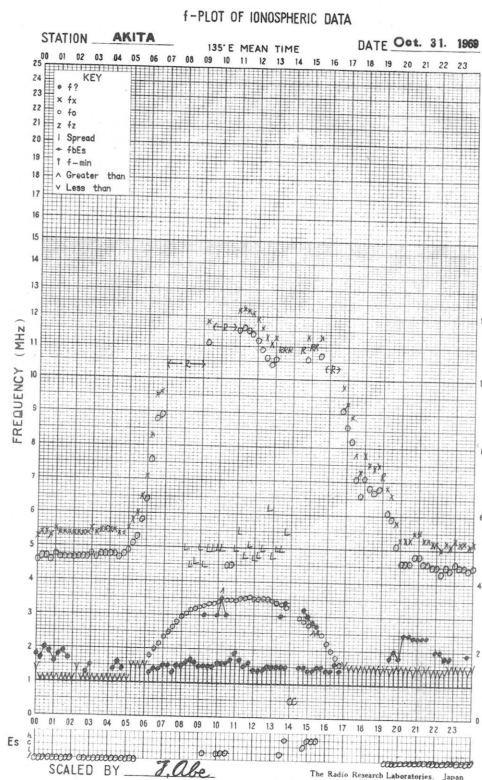
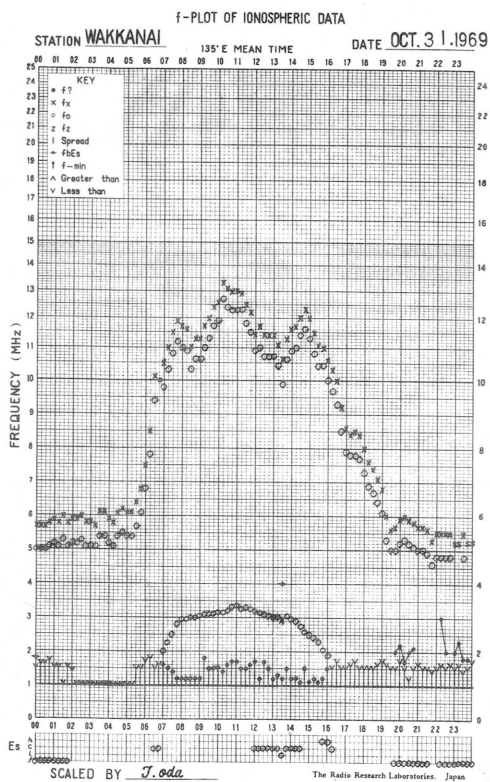
STATION AKITA 135° E MEAN TIME DATE OCT. 30. 1969



f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE OCT. 30. 1969





SOLAR RADIO EMISSION

Flux Density and Variability										
Month: October 1969						Frequency: 200 MHz				
Observing station: Hiraiso										
Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$						Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	q	q	5	6	5	0	0	0	0	0
2	6	8	9	16	7	1	1	1	3	1
3	17	14	19	8	16	2	2	2	0	2
4	7	9	8	11	8	0	1	1	1	1
5	9	8	10	9	10	1	1	1	1	1
6	(8)	13	14	8	11	(1)	1	1	1	1
7	7	8	6	9	7	1	0	1	1	1
8	7	8	7	6	8	1	1	1	0	1
9	6	7	6	7	6	0	1	0	1	0
10	8	9	10	8	8	1	1	1	1	1
11	8	8	8	8	8	1	1	1	1	1
12	6	7	7	7	7	1	1	1	1	1
13	7	6	8	8	7	1	1	1	0	1
14	8	7	(7)	6	8	0	0	(0)	0	0
15	7	7	(7)	6	7	0	0	(0)	0	0
16	6	6	(6)	7	6	0	0	(0)	0	0
17	6	-	(5)	-	6	0	-	(0)	0	0
18	5	6	(7)	5	6	0	0	(0)	0	0
19	5	5	(6)	-	5	0	0	(0)	-	0
20	8	10	(11)	7	9	0	0	(0)	0	0
21	7	6	(7)	7	7	0	0	(0)	0	0
22	8	9	(11)	7	8	0	0	(0)	0	0
23	9	9	(10)	8	9	1	1	(0)	1	1
24	8	8	(9)	12	8	0	1	(1)	1	1
25	18	14	(20)	10	15	2	1	(1)	1	1
26	9	10	(11)	-	10	1	1	(1)	-	1
27	9	6	(6)	7	7	*	*	(0)	1	*
28	7	10	(9)	66	8	0	1	(1)	1	1
29	64	55	(36)	8	59	1	1	(1)	1	1
30	11	7	(7)	6	8	2	0	(1)	1	1
31	5	7	(9)	16	8	1	1	(1)	1	1

Note No observations during the following periods:

6th 0110- 0245
 17th 0300- 0600
 17th 2100- 18th 0030
 19th 2050- 2400
 26th 2050- 2400

q: means quiet level, when radiometer is unstable.

*: interference by atmospherics.

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: October 1969					
Observing station: Hiraiso			Frequency: 500 MHz		
Flux density $10^{-22} \text{Wm}^{-2} (\text{Hz})^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	34	34	32	31	33
2	31	31	32	36	31
3	37	37	37	33	36
4	31	30	30	31	31
5	29	28	29	28	29
6	30	32	31	32	30
7	31	31	32	30	31
8	32	31	29	29	31
9	28	28	28	30	28
10	30	30	30	30	30
11	31	33	33	36	32
12	36	36	35	34	36
13	35	34	33	34	34
14	32	32	(33)	33	33
15	33	32	(32)	29	33
16	31	31	(31)	30	30
17	31	31	(32)	31	31
18	31	31	(32)	31	31
19	32	32	(32)	31	32
20	33	34	(35)	36	33
21	36	37	(38)	34	37
22	35	37	(39)	35	36
23	39	38	(38)	38	38
24	39	39	(39)	41	39
25	41	40	(41)	41	41
26	39	39	(38)	-	39
27	40	38	(37)	39	39
28	42	41	(40)	55	41
29	44	40	(39)	44	44
30	44	41	(41)	41	43
31	40	43	(40)	40	41

Note No observations during the following periods:

26th 2200- 27th 0020

<u>Distinctive Events</u>								
(single-frequency observations)								
Month: October 1969								
Observing station: Hiraiso								
Normal observing period: 2050 - 0810 (sunrise to sunset)								
Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
3	100	0257.5	0303.0	15.5	C	> 230	70	
6	100	2310.0	2311.0	2.0	C	> 340	> 250	
8	500	0118.0	0118.2	1.5	C	100	5	
	200	0118.0	0118.5	1.5	C	> 1290	> 250	
	500	0132.5	0136.6	4.5	C	745	10	
	200	0132.0	0132.0	1.0	C	300	90	
	200	0136.0	0136.5	1.5	C	> 1290	> 50	
	500	0725.0	0725.8	5.5	C	485	10	
	200	0725.0	0725.5	1.0	C	> 1220	> 260	
	100	0733.0	0734.0	2.0	C	> 100	40	
9	200	0430.0	0431.5	3.0	C	> 1330	310	
	100	0430.5	0432.0	4.5	C	> 220	150	
	200	0435.5	0435.5	1.0	C	410	140	
	100	0436.0	0436.4	1.0	C	> 220	90	
	100	0438.4	0440.0	4.0	C	> 220	180	
10	500	2357.0	-	3.0	C	> 850	> 90	
13	100	0041.0	0042.0	5.0	C	> 210	> 210	
14	100	0541.0	-	16.0	C	> 210	> 210	
26	500	0223.0	0224.4	2.5	C	45	5	
	200	0224.0	0226.0	4.0	C	680	90	
	100	0222.5	0226.5	5.5	C	> 220	50	

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

OCT	1969	FREQUENCY 15 MHZ															BANDWIDTH 80 HZ					RECEIVING ANTENNA ROD 4.5 M					MEASURED AT HIRAI SO				
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	2	3	0	ES -14	ES -12	ES -11	ES 2	ES -3	ES 2	ES -4	ES -4	-18	-13	ES -8	1	ES -1	ES -3	ES -3	ES -3	ES -11	-8	7	2	-1							
2	8	4	2	-2	-13	-13	ES -12	ES -10	ES -7	ES -12	ES -7	ES -16	ES -12	ES -9	ES -7	ES -3	ES -3	ES -3	ES -29	ES -34	-15	-2	-4	-5							
3	7	3	10	4	ES -14	ES -16	ES -14	-2	-4	ES -4	ES -3	ES -7	ES -14	ES -17	ES -12	ES -35	ES -35	-11	-10	-20	-4	-4	4	0							
4	-1	2	2	-10	-6	ES -12	ES 0	ES 2	ES -3	-4	ES -5	ES -22	ES -12	ES -10	ES -23	ES -10	ES -13	-10	-11	-10	-3	-1	3	0							
5	4	-1	5	5	-1	ES -12	ES -7	ES -1	ES -6	ES -7	ES 0	ES -6	ES -8	ES -9	ES 2	ES 7	ES -4	-9	-8	-22	ES -4	0	1	-1							
6	-2	-1	8	10	7	ES -17	ES -4	ES -7	ES 0	ES -7	ES -11	ES -11	ES -8	ES -8	-15	-11	-24	0	-15	-7	4	3	2	1							
7	1	5	10	10	5	ES -10	-6	ES -15	-11	ES -3	ES -11	ES -11	ES -3	ES -9	-6	ES -9	-4	C	ES -35	ES -35	-1	0	1	2							
8	ES 3	7	12	13	8	-4	ES 0	ES 0	ES 0	ES -4	ES -5	ES -26	ES -10	ES -5	-5	ES -25	ES -25	ES -25	ES -34	ES -34	-1	4	11	4							
9	ES 16	3	7	7	8	-6	ES -3	ES -3	ES -3	-7	ES -12	ES -6	ES -4	ES -1	-12	-3	2	7	4	0	1	-2	2	2							
10	6	9	20	15	11	ES 2	ES -10	ES 3	ES 3	ES 11	ES -2	ES -8	ES -4	ES 0	C	17	ES 2	17	ES -12	ES -5	6	8	10	5							
11	12	11	7	16	1	-9	-1	ES -9	ES -4	-5	ES -4	ES 1	ES -5	ES -4	ES -11	ES -4	-7	10	8	-2	6	9	5	7							
12	3	10	18	16	13	ES -7	ES -4	ES -2	ES -3	ES -4	ES -1	ES -8	ES -7	ES -4	-23	ES -34	ES -34	-14	-20	-4	10	7	8	10							
13	13	11	15	16	-9	ES -8	ES -3	ES -3	ES -4	ES -9	ES -3	ES -5	ES -11	ES -17	1	-7	-13	ES -34	ES -34	ES -34	3	8	11	13							
14	11	8	14	14	2	ES 3	ES -23	ES -14	ES -10	ES -2	ES -14	ES -12	ES -8	ES -34	1	2	5	7	6	ES -34	1	4	6	3							
15	ES 10	9	20	20	18	ES 2	ES 0	ES 0	ES -3	ES -10	ES 8	ES -12	ES -3	ES -3	14	5	-2	6	5	0	4	8	9	9							
16	10	13	19	20	4	-6	ES -12	ES -7	ES -6	ES -12	ES -16	ES -12	ES -10	ES 0	-1	7	7	5	9	-3	5	10	13	10							
17	10	11	13	19	21	5	ES -1	ES -7	ES -6	ES 0	ES -1	ES 0	ES -5	ES -12	6	5	7	14	5	5	1	6	12	9							
18	4	12	12	22	20	7	ES -16	ES -11	ES -16	ES 0	ES 0	ES -4	ES 0	ES 5	-2	0	4	9	8	6	5	5	8	5							
19	9	13	20	23	23	20	ES 11	ES -16	1	ES -1	ES -4	ES -8	ES -7	5	13	10	9	11	11	-18	4	6	10	5							
20	11	13	13	9	3	-8	ES -4	ES -5	-4	ES -6	ES -4	ES -6	ES -20	-6	1	11	5	-2	-2	-9	3	11	9	-9							
21	5	11	11	16	17	9	3	ES -12	ES -16	ES -2	ES -16	-12	-7	-7	14	12	-2	ES -34	ES -34	ES -34	8	6	7	7							
22	4	12	15	24	27	9	5	-5	4	ES -7	ES -18	ES -7	ES -3	-2	-4	7	-10	6	-30	4	7	11	7								
23	4	17	18	17	21	ES 8	6	17	4	ES -8	ES -17	ES -16	ES -3	ES -9	-7	-3	0	ES -29	ES -29	ES -29	2	6	8	6							
24	-3	13	12	17	14	ES -8	ES -3	ES 2	-2	-6	-1	2	-5	3	12	8	9	3	10	-4	3	4	10	6							
25	9	13	18	17	15	5	0	ES 1	ES -1	ES 2	ES -9	ES -4	ES -5	ES -1	-3	-3	-4	3	9	-4	8	11	13	10							
26	7	9	11	14	12	-1	ES -13	ES -8	ES -5	ES 1	ES 1	ES -4	ES -9	ES -8	-5	-15	-9	ES -9	ES -3	ES -16	ES 4	11	13	10							
27	10	10	13	20	15	14	ES -1	ES -4	ES -3	ES -1	ES -5	ES -10	ES -1	0	13	-12	-6	-10	ES -12	ES -7	4	4	10	9							
28	9	10	14	13	22	10	-8	-3	ES 7	ES 1	ES 1	ES 2	ES 3	ES 5	5	6	-6	ES 7	-6	-7	9	12	10	9							
29	7	12	16	19	18	5	ES -3	ES 10	ES 5	ES 1	ES 1	-4	ES -3	ES 0	5	3	3	-3	10	-7	3	11	12	9							
30	15	17	19	25	ES 16	ES 10	ES 4	ES 3	ES 4	ES -6	ES 9	0	-6	-6	C	C	C	C	C	C	C	C	C	C							
31	C	C	13	9	-3	ES -4	ES 0	ES 1	-1	ES 2	ES 3	ES 9	ES -2	ES -4	1	-10	-11	-5	0	ES -11	1	9	10	8							
CNT	30	30	31	31	31	31	31	30	31	31	31	31	31	31	29	30	30	29	30	30	30	30	30	30							
MED	US 7	10	13	16	US 11	ES -4	ES -3	ES -3	ES -3	ES -4	ES -4	ES -8	ES -6	ES -0	US -1	US -3	US -3	US -3	US -3	US -10	US 3	6	9	6							
UD	ES 13	13	20	23	22	14	ES 6	ES 3	ES 4	ES 2	ES 3	ES 1	ES -1	ES 5	13	11	7	11	10	0	8	11	13	10							
LD	-1	2	2	-2	ES -12	ES -13	ES -14	ES -14	ES -11	ES -10	ES -16	ES -18	ES -13	ES -17	ES -15	ES -25	ES -25	ES -29	ES -34	ES -34	ES -4	-2	1	-1							

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

OCT 1969		FREQUENCY 15 MHZ										BANDWIDTH 80 HZ										RECEIVING ANTENNA ROD 4.5 M										MEASURED AT HIRAI SO									
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	-3	-3	0	4	20	14	18	11	21	-3	ES 2	ES -8	ES -14	ES -3	1	ES -3	ES -3	ES -3	ES -3	-3	-1	-3	1	-3																	
2	-3	-6	-1	3	8	13	14	0	2	11	23	-4	-2	-2	ES -3	ES -3	ES -3	-12	-17	-2	2	-6	-10	-2																	
3	-3	1	0	7	14	18	20	14	17	-2	ES -9	ES -4	ES -12	ES -17	ES -6	ES -35	ES -35	ES -35	-31	-4	4	-1	-3	-3																	
4	-5	-8	2	9	10	12	ES 15	-3	ES 2	-4	ES -11	-8	ES -8	ES -4	ES -2	ES -10	ES -35	-5	0	-1	3	-1	1	-2																	
5	-2	-5	-1	9	7	11	19	19	6	0	ES -6	ES -10	ES -3	ES 2	ES 2	ES 0	ES -9	ES -7	-21	-3	ES 9	-5	-5	-6																	
6	-7	-5	0	4	8	15	18	16	19	20	9	ES -11	-1	ES -10	ES -25	ES -18	ES -35	-21	-5	0	1	-5	-3	-1																	
7	ES 0	-4	6	7	11	19	21	13	6	ES -10	-11	ES -11	ES -9	-10	ES -11	ES -5	ES -35	0	ES -35	-4	-1	0	-6	ES -1																	
8	-2	0	3	8	9	17	20	17	18	6	4	-9	-4	-2	ES -18	ES -25	ES -25	-16	ES -34	-2	11	1	1	1																	
9	ES 16	-3	2	7	9	14	11	11	17	9	16	ES -12	ES -4	ES -4	ES -6	ES -34	ES -34	21	7	2	2	-2	1	ES 2																	
10	ES -7	2	4	10	11	19	24	18	ES 17	ES 11	ES -2	ES -8	ES -4	ES 0	C	ES -2	ES -5	ES -26	ES -12	ES -1	2	0	-6	-2																	
11	ES 2	-3	2	6	12	15	17	3	4	1	ES 0	ES 1	ES -5	ES -8	ES -4	ES -9	ES -7	16	1	-4	2	-4	-2	ES -6																	
12	ES -34	0	4	6	11	15	17	7	ES -1	ES -4	ES 1	-4	ES -7	ES -13	ES -34	ES -34	ES -34	-4	-14	0	5	-3	0	0																	
13	1	1	5	11	15	19	17	15	2	-2	ES -9	ES -17	ES -25	ES -34	-23	ES -25	ES -34	-2	ES -34	6	6	-2	0	-1																	
14	-2	1	5	12	11	18	15	18	ES -8	ES -6	ES 2	ES -11	ES -19	ES -34	ES -34	ES -34	-20	-17	ES -34	-1	2	-2	-6	ES -3																	
15	ES 10	4	6	10	14	15	2	13	6	9	ES -20	ES -12	ES -5	ES -7	ES -31	ES -31	ES -22	ES -31	ES -31	2	2	3	0	ES 1																	
16	1	2	5	5	12	15	14	9	ES -6	-3	1	ES -7	ES -5	ES -14	ES -15	ES -25	ES -35	1	-24	-4	12	0	4	2																	
17	-2	0	4	2	5	19	-1	9	15	5	ES -1	ES -18	ES -5	ES -12	ES -5	ES -22	ES -12	10	4	2	-1	4	0	0																	
18	0	-1	9	9	15	16	20	12	15	14	6	ES -6	ES -5	ES -5	ES -10	ES -15	-6	16	8	0	2	-3	-5	-1																	
19	1	1	3	10	16	20	ES 21	14	29	21	ES -5	ES -5	ES -4	ES -13	1	1	ES -34	1	-4	-5	1	-1	-4	-2																	
20	-3	1	2	-7	12	17	20	17	13	11	-2	ES -3	ES -20	ES -14	ES -34	ES -26	ES -34	-12	-1	-1	1	-1	-9	ES -14																	
21	0	-1	1	7	12	17	13	21	17	17	11	-12	-5	-11	-22	ES -34	ES -34	ES -34	ES -34	-1	2	-6	-7	ES -11																	
22	ES -9	-5	10	19	27	23	11	ES -1	20	5	ES -13	ES -18	ES -9	ES -5	ES -27	ES -5	ES -10	ES -21	ES -24	1	7	-1	-6	ES 3																	
23	-3	1	2	17	18	18	18	14	18	ES -8	ES -16	ES -16	ES -3	ES -12	ES -33	ES -29	ES -29	ES -29	ES -29	-1	0	-8	-4	-8																	
24	-3	-3	3	4	-3	17	17	11	12	6	12	1	-7	ES -25	ES -25	ES -11	-11	ES -32	ES -32	-1	6	-2	-4	-1																	
25	0	1	6	8	13	20	19	13	13	21	-6	ES -7	ES -2	ES -8	ES -23	ES -32	-23	17	ES -23	6	5	-1	-1	ES 3																	
26	-4	-1	3	11	11	16	15	17	19	17	4	ES -8	ES -7	ES -7	-21	ES -21	ES -15	ES -9	ES -4	-1	ES 4	-1	-1	ES -2																	
27	ES -8	1	0	9	19	14	22	23	22	18	9	-7	ES 8	4	-6	ES -18	ES -18	ES -18	ES -12	-2	8	-5	-7	ES 3																	
28	-4	-4	4	10	19	20	19	20	22	17	13	15	27	ES -10	ES -4	ES -7	ES -7	ES -7	ES -7	-2	6	-5	-5	-6																	
29	-6	-4	-2	9	16	21	24	24	23	23	14	-4	ES -4	-9	ES -6	0	ES -14	ES -14	ES -18	4	-1	1	6	-3																	
30	-1	5	22	21	27	21	24	22	29	14	ES 15	0	-6	ES -15	C	C	C	C	C	C	C	C	C	C																	
31	C	-3	7	9	17	16	13	22	23	12	ES 3	ES -7	ES 3	ES -11	-10	-15	-11	-11	-2	-4	4	3	-4	-4																	
CNT	30	31	31	31	31	31	31	31	31	31	31	31	31	31	29	30	30	30	30	30	30	30	30	30																	
MED	ES -2	-1	3	9	12	17	US 18	14	US 17	US 9	ES 1	ES -8	ES -5	ES -10	ES -11	ES -18	ES -21	ES -10	ES -16	-1	US 2	-2	-4	ES -2																	
UD	ES 2	2	9	17	20	21	24	22	23	21	ES 15	ES 1	ES 3	ES 0	ES 1	ES 0	ES -5	16	4	4	ES 9	3	1	ES 3																	
LD	ES -8	-5	-1	3	7	13	ES 11	0	ES -1	ES -6	ES -13	ES -17	ES -19	ES -34	ES -34	ES -34	ES -35	ES -32	ES -34	ES -4	ES -1	-6	-7	ES -8																	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Oct. 1069	Whole Day Index	H B			W W V				L M			W W V H				Warning				Principal magnetic storms			
		06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1*	3+	3	4	(3)	2	3	3	4	3	3	-	4	4	3	(4)	4	U	U	U	U	00.7	---	71 ^Y
2	3+	(3)	3	4	3	4	(4)	2	4	3	-	3	5	4	(4)	4	N	N	U	U	---	21xx	
3	3+	3	3	3	3	3	3	3	4	4	-	4	5	4	-	4	U	N	N	N			
4	3+	3	4	4	3	3	3	4	4	(3)	-	-	4	3	-	4	N	N	N	N			
5	4-	4	4	4	4	3	3	4	(4)	-	-	-	4	4	-	3	N	N	N	N			
6	4-	4	3	(4)	4	4	3	4	4	4	-	4	4	4	-	4	N	N	N	N			
7	4o	4	4	4	4	4	4	4	4	3	-	4	4	3	-	4	N	N	N	N			
8	4-	4	4	4	4	3	3	4	4	3	-	4	4	4	-	4	N	N	N	N			
9	4o	4	4	3	5	3	4	5	4	3	-	4	4	4	-	5	N	N	N	N	16.39	---	74 ^Y
10	4+	(4)	(4)	(4)	4	5	4	4	5	5	-	4	4	3	-	(4)	N	N	N	N	---	24xx	
11	4o	4	4	4	4	4	4	4	4	3	-	-	4	4	-	4	N	N	N	N			
12	4o	4	3	(4)	4	4	4	4	(4)	-	-	-	4	4	-	4	N	N	N	N			
13	4o	4	4	4	4	4	4	4	4	3	-	(4)	4	4	-	4	N	N	N	N			
(14)	4-	3	4	5	4	3	4	4	(3)	4	-	4	4	4	-	4	N	N	N	N			
(15)	4-	4	4	4	4	3	4	4	4	3	-	4	4	4	-	4	N	N	N	N			
(16)	4o	4	4	4	4	3	4	4	4	4	-	4	4	4	-	4	N	N	N	N			
17	4o	4	4	3	5	4	5	5	4	3	-	4	4	4	-	5	N	N	N	N			
18	4o	4	4	4	4	4	5	5	4	3	-	-	5	4	-	5	N	N	N	N	20.28	---	61 ^Y
19	4+	4	4	(4)	5	4	5	4	(4)	-	-	-	4	4	-	4	N	N	N	N	---	21xx	
20	4+	4	5	4	4	4	5	4	4	4	-	C	4	4	-	4	N	N	N	N			
21	4+	4	4	5	5	4	4	4	C	C	-	C	4	5	-	4	N	N	N	N			
22	4+	4	5	5	(4)	4	4	4	C	5	-	C	4	(4)	-	4	N	N	N	N			
23	4+	5	4	5	5	4	4	4	C	4	-	C	4	3	-	3	N	N	N	N			
24	4+	4	4	5	(4)	5	5	4	(4)	5	-	4	4	4	-	4	N	N	N	N	01.42	---	38 ^Y
25	5-	4	5	4	5	5	5	4	4	5	-	-	4	4	-	4	N	N	N	N	---	08xx	
26	4+	4	5	5	(4)	4	4	4	C	-	-	-	4	4	-	4	N	N	N	N			
27	4+	4	4	4	5	5	4	4	4	4	-	4	4	5	-	4	N	N	N	N			
28	5-	5	5	5	5	5	4	4	4	4	-	4	4	5	-	4	N	N	N	N			
29	4+	4	4	4	5	4	5	4	5	4	-	4	4	4	-	4	N	N	N	N			
30	4o	4	5	4	4	4	4	4	4	4	-	(4)	4	4	-	4	N	N	N	N			
31	4+	5	4	5	4	5	4	4	4	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

C = artificial accident

- = impossible to evaluate

--- = continuing magnetic storm

() = inaccurate

INUBO

1969	S P A						Time (U. T.)			Remarks
Oct.	Phase Advance(degrees)					Time (U. T.)				
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum		
2				8	—	0330	0420	0340		
3			13	<u>52</u>	—	0117	0219	0121		
3			13	<u>60</u>	—	0257	0411	0305		
5				<u>32</u>	—	0217	0315	0229	X	
7			—	16	—	0036	0130	0046		
8			—	16	—	0205	0240	0213	X	
8			—	12	—	0247	0312	0253		
8			—	16	—	0727	0810	0733	X	
9			—	8	—	0226	0250	0230		
9			—	8	—	0322	0345	0325		
9			—	32	—	0433	0543	0440	X	
10			—	16	—	0254	0330	0300		
11				16	—	0222	0250	0228		
11				28	—	0457	0557	0524	X	
11		43	32	<u>64</u>	—	2328	0045	2340	X	
17				16	—	0705	0750	0713		
18		25	35	<u>48</u>	51	0003	0110	0013	X	
18				16	—	0420	0512	0430		
19				36	—	0434	0558	0444	X	
20					40	0155		0203	X	
20	35	18	<u>35</u>	88	77	0301	0430	0330	X	
20		<u>72</u>	29	56	83	2252	0057	2327	X	
21				<u>16</u>	20	2343	0004	2355	X	
22					29	2237		2258	X	
22					31	2350	0200	0036	X	
23				24	—	0026	0104	0043	X	
23		<u>25</u>		16	37	2301	2348	2318	X	
24				12	—	0505	0553	0515		
24		—		56	—	0738	0840	0758	X	
24					37	2113	2150	2125		
25				<u>32</u>	18	0409	0513	0418		
27	<u>40</u>		38	—	53	0213	0330	0230	X	
27					55	2055	2210	2111	X	
28				16	—	0554	0624	0605		
29	20	11	16	<u>48</u>	24	0159	0310	0205	X	
31			16	<u>24</u>	29	0003	0100	0012	X	
31			13	<u>24</u>	12	0151	0232	0200		

IONOSPHERIC DATA IN JAPAN FOR OCTOBER 1969

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