

F-242

IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 1969

VOL.21 No.2

Issued in May 1969

Prepared by

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

F - 242

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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.

	Latitude	Longitude	Site
Hiraiso	36°22.0'N.	140°37.5'E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_oF2	} The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_oF1	
f_oE	
f_oE_s	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
$f_{\circ}E_s$	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 $f_{\circ}E_s$.
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-H at frequencies near the regular E critical frequency. Type S is never used to determine f_oE_s and $h'E_s$. The slant trace is sometimes observed to start at f_oE without echoes clearly identifiable as E_s echoes being seen.

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

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 500 MHz at Hiraiso Branch. Antennas are two parabolic reflectors : 10 meter for 200 MHz and 5 meter for 500 MHz, each having the total power receiver. Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

The unit is $10^{-22} \text{ W} \cdot \text{m}^{-2} \text{ Hz}^{-1}$ 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 Hiraiso Branch. In order to avoid interferences with other standard frequency waves on the same frequency, the upper side-band of 440 Hz is picked up by the use of a narrow band pass filter with ± 40 Hz bandwidth.

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

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

Transmitter		
	WWV	WWVH
Location	Fort Collins, Colorado Long. 105°02' W Lat. 40°41' N	Maui, Hawaii Long. 156°28' W Lat. 20°46' N
Power	3 kW for the upper side-band	0.5 kW* for the upper side-band
Antenna	$\lambda/2$ 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 atmospheric.
- U: Inaccurate measurement influenced by interferences, atmospheric, 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.)

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

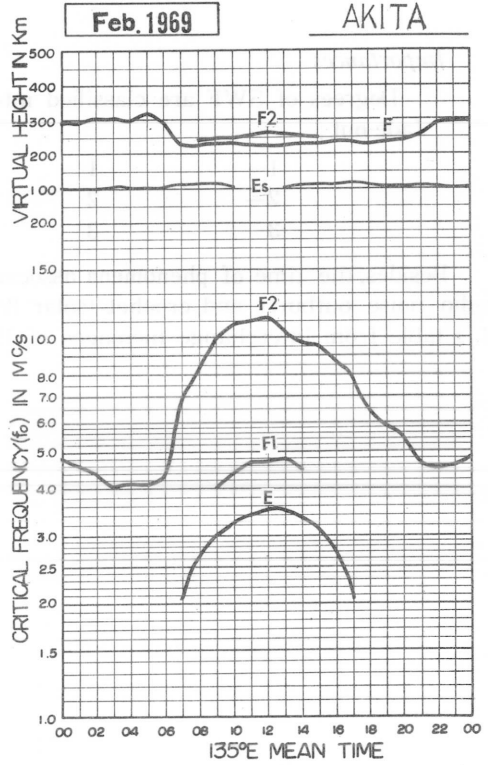
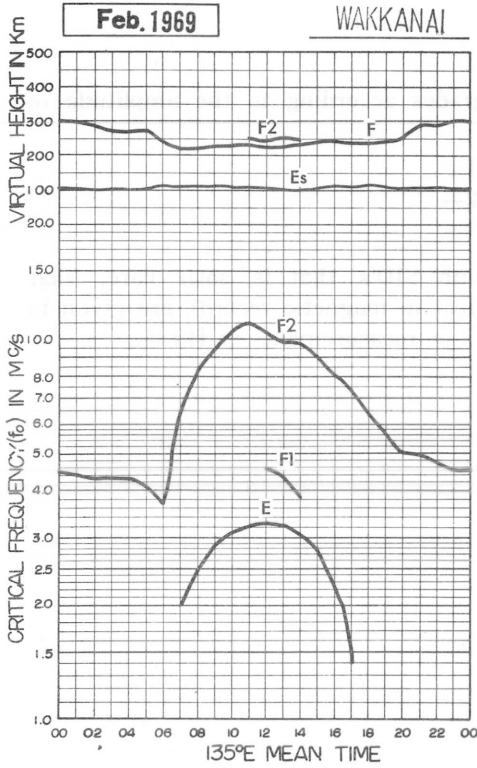
Importances

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

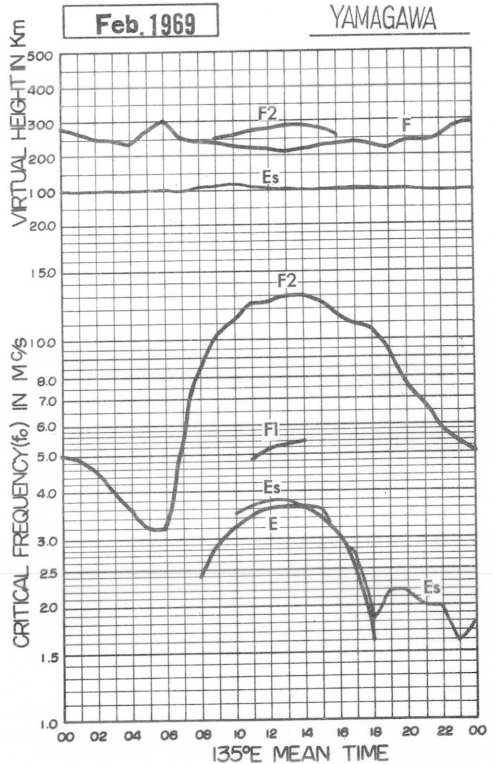
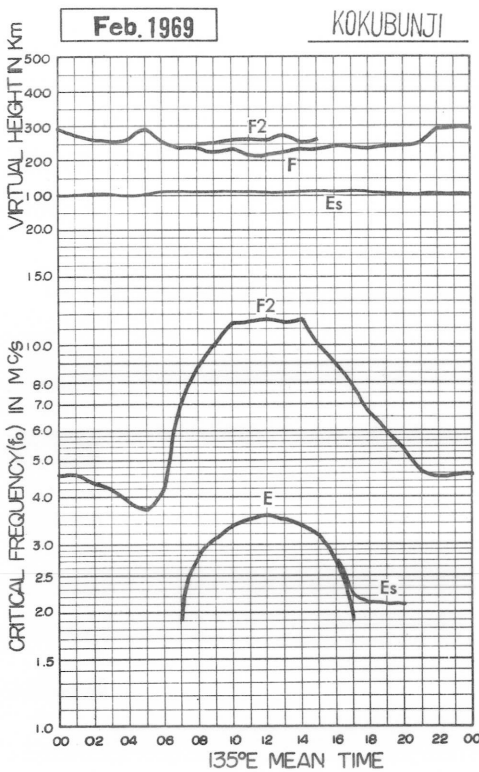
1-	1	1+
2-	2	2+
3-	3	3+

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.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

FEB. 1969

foF2 (0.1)

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

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

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	40	38	38	39	38	35	55	76	85	98	101	91	86	80	73	68	68	56	37	31	33	34	S ₃₆	
2	35	34	35	34	35	35	32	57	86	86	97	103	91	79	90	85	71	67	54	43	36	36	38	36	
3	34	32	33	34	29	F ₂₇	F ₃₀	F ₄₇	68	66	69	74	85	80	F ₈₀	81	74	F ₆₁	F	F ₄₄	U ₄₆	U ₄₃	U ₄₅	U ₃₃	
4	F ₃₄	F ₃₅	F ₃₁	22	17	17	A	C	C	C	C	C	C	C	87	C	72	C	52	43	U ₄₀	U ₄₅	U ₄₇	F	
5	F	F	F	F	F	F	F	53	78	89	92	106	93	99	90	80	79	63	61	53	37	36	36	36	
6	F ₃₆	F ₃₇	U ₃₈	F	U ₄₃	U ₄₃	U ₃₅	54	74	88	87	109	99	88	82	87	72	66	61	54	37	F ₃₉	42	U ₄₄	
7	F ₄₆	F ₄₂	F ₃₇	F ₃₈	F ₃₆	F ₃₅	F ₂₇	57	88	80	86	103	105	83	86	86	78	61	56	46	40	40	39	40	
8	39	40	40	S ₃₈	S ₃₈	U ₄₀	36	63	90	96	106	110	104	98	97	88	78	72	55	52	40	43	40	40	
9	41	40	40	40	39	40	33	60	90	89	93	101	103	91	87	93	75	69	53	43	37	40	41	43	
10	43	41	42	43	41	35	36	60	73	103	98	98	92	93	101	90	75	70	65	57	52	49	46	43	
11	45	42	41	43	47	50	46	63	83	97	110	121	101	100	103	88	81	76	76	63	56	51	47	45	
12	39	38	31	31	31	33	35	55	69	86	95	98	105	101	94	90	85	72	58	U ₅₅	F	F	F	F	
13	F	F	U ₂₈	F	F	F	F	53	I ₆₈	C	74	H ₉₈	103	96	96	105	88	80	73	55	52	41	40	38	
14	37	34	34	35	34	26	26	57	83	92	100	106	85	92	88	83	78	75	64	53	48	47	U ₄₆	F	
15	F	U ₅₁	F ₄₇	F ₄₅	F ₃₈	36	33	60	83	91	110	120	113	96	90	94	74	73	63	56	50	43	45	44	
16	43	43	43	43	45	U ₃₈	37	64	76	90	98	107	103	96	96	87	85	75	63	58	56	58	56	57	
17	U ₅₇	F ₅₆	F ₅₃	56	56	50	45	63	78	89	108	120	104	97	97	83	79	73	54	53	50	U ₅₄	U ₅₆	F	
18	F	U ₅₅	U ₅₅	F	U ₄₈	U ₄₆	U ₄₄	66	91	103	106	108	118	102	90	89	82	80	56	50	50	U ₅₀	U ₅₃	F	
19	U ₄₇	48	49	49	46	43	41	73	83	95	102	110	110	104	99	92	91	80	68	60	50	F ₅₀	U ₅₃	U ₄₈	
20	F ₅₀	F ₅₃	F ₅₀	54	51	47	46	70	95	114	133	124	120	118	103	103	103	95	81	60	53	50	48	48	
21	50	51	47	43	43	42	46	80	103	107	125	124	125	118	114	114	101	84	75	71	66	I ₅₀	50	48	
22	50	50	50	50	51	46	47	70	87	103	105	116	115	116	108	104	99	85	74	67	58	48	45	45	
23	I ₄₅	46	44	44	44	47	48	75	92	103	114	115	117	115	107	104	96	87	75	73	67	57	55	53	
24	55	58	61	51	50	C	C	C	C	C	C	C	C	C	C	C	C	C	81	72	67	57	54	53	
25	53	53	54	53	53	50	60	83	96	109	126	126	126	126	114	111	104	96	85	70	61	58	53	52	
26	50	50	50	48	46	44	53	81	97	108	109	118	117	110	113	113	111	98	78	68	65	58	54	53	
27	54	53	54	51	50	50	60	78	97	109	115	113	123	118	109	103	101	90	83	80	73	67	63	64	
28	61	56	53	52	53	55	65	76	88	117	124	133	132	124	115	110	104	96	91	78	67	64	63	61	
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	24	26	27	25	27	26	25	26	26	26	26	26	26	26	27	26	27	26	27	28	27	27	27	25	
MED	45	44	43	43	43	41	37	63	84	94	104	110	104	98	97	90	80	74	63	56	50	49	47	45	
UQ	50	53	50	50	49	47	46	73	91	103	110	120	117	115	106	103	98	85	76	68	60	56	54	52	
LQ	39	40	38	38	37	35	33	57	76	88	97	103	96	92	89	86	75	69	56	51	40	42	42	40	

IONOSPHERIC DATA

FEB. 1969

foF1 (0.01)

135° E Mean Time (G. M. T. + 9.5)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc 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														420										
2																								
3													U L 460	L	L									
4										C	C	C	C	C	370									
5												L		L										
6												U L 450	U L 460		400									
7										400		L		L	360									
8													U L 450											
9												L												
10																								
11													L											
12														L										
13													L		400									
14														U L 440										
15												L	L											
16																								
17													L	U L 430										
18																								
19																								
20																								
21																								
22																								
23																								
24											C	C	C	C										
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	1	3	3	4									
MED										400	450	460	430	385										
UQ												U L 460	U L 435	400										
LQ												U L 455	U L 425	365										

IONOSPHERIC DATA

FEB. 1969

foE (0.01)

135° E Mean Time (G. M. T. + 9^h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc 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								125	230	280	300	325	330	325	300	270	195	S						
2								S	250	290	315	315	330	330	300	280	A	A						
3								A	225	270	300	305	315	305	295	255	185	A						
4								C	C	C	C	C	C	C	295	C	185	C						
5								A	230	280	300	315	320	315	290	250	200	E						
6								A	230	285	300	310	320	305	285	250	200	E						
7								140	220	275	310	320	315	305	280	265	205	A						
8								S	230	I A 280	I A 310	320	310	B	B	270	200	S						
9								A	A	I A 295	310	320	330	320	300	270	B	140						
10								S	240	295	310	320	325	325	310	275	A	A						
11								S	235	290	300	320	330	320	305	285	220	S						
12								A	A	A	A	320	330	325	305	270	215	S						
13								A	C	290	310	315	320	320	300	270	210	S						
14								S	250	280	300	315	320	305	315	285	220	A						
15								180	230	280	305	320	320	315	305	270	A	A						
16								E S	225	I A 285	I A 310	325	325	320	305	280	215	S						
17								E	165	250	300	320	335	330	330	315	280	230	S					
18								E I A	195	265	290	320	330	335	325	300	290	240	S					
19								S	190	265	300	320	340	340	335	320	290	225	S					
20								E A	270	300	325	340	330	330	I C 320	290	235	140						
21								E	205	290	310	330	350	340	335	325	I C 290	240	S					
22								E	200	270	310	330	345	360	345	330	290	240	170	E				
23								E	200	280	305	325	340	355	340	340	310	255	170	E				
24								C	C	C	C	C	C	C	C	C	C	C						
25								S	210	A	B	350	360	360	350	330	300	250	A					
26								S	210	280	305	325	345	350	345	I B 335	310	255	180					
27								S	205	280	305	325	355	365	350	325	305	265	A					
28								E	210	A	A	I A 340	360	370	350	330	315	265	A					
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							8	13	21	23	25	26	26	25	26	26	23	7	2					
MED							E	200	250	290	310	322	330	325	305	280	220	140	E					
UQ							E	205	270	300	325	340	340	335	325	290	240	170						
LQ							E	180	230	280	305	320	320	320	300	270	202	E E 140						

IONOSPHERIC DATA

FEB. 1969

foEs (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	J X 23	J X 25	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E S 15	E S 16	E	E S 15	J X 24	22	J X 34			
2	J X 28	J X 25	J X 25	15	J X 23	19	E S 13	G	G	J X 33	G	G	24	34	G	G	23	23	J X 33	J X 53	J X 23	E S 15	J X 25	J X 34		
3	J X 25	J X 23	16	17	15	E S 17	E S 19	21	25	G	J X 111	31	27	G	G	28	24	19	J X 42	J X 20	J X 23	J X 23	J X 20	J X 24		
4	E S 15	E	20	E	E	E	J X 34	C	C	C	C	C	C	C	C	G	C	C	J X 27	E S 15	J X 20	21	24	J X 23		
5	E	E	E	E	E	E	E	J X 23	G	G	G	G	G	G	G	G	24	J X 34	E	E	E	E	E	E		
6	E S 15	22	E	J X 20	E	E	E S 12	26	G	G	G	G	G	G	G	G	21	J X 24	E S 14	E S 16	E S 11	E S 12	E	20		
7	E	E	E	18	E	E	E S 12	20	26	33	G	G	G	G	G	G	21	J X 27	E S 15	E S 12	E	J X 26	E S 15	E		
8	E S 15	E	E	E	E	E	E	16	22	38	34	G	G	E B 33	E B 32	29	24	E S 16	E S 18	22	E S 16	E S 16	E S 16	E		
9	E	E	E	E	E	E	E	20	27	J X 73	J X 61	33	G	G	G	G	E B 21	G	E	E S 15	E S 13	18	J X 23	E		
10	J X 23	15	J X 23	J X 25	J X 23	J X 24	18	20	G	G	G	G	G	G	G	G	30	J X 30	30	J X 24	E S 16	E	E S 15	E S 15		
11	E S 15	J X 23	J X 21	E	E	E	E	J X 21	G	30	G	G	G	G	G	G	20	E	J X 23	E S 16	E	J X 23	24			
12	E	E	E S 15	13	15	16	J X 53	J X 25	32	31	31	G	G	G	G	G	E S 16	E S 12	E	E	E	J X 24	19			
13	J X 21	15	E	E	E	E	E S 15	J X 23	C	G	G	G	G	G	G	G	24	E S 16	E	E	E	E S 15	E	E S 15		
14	E	J X 23	J X 23	19	J X 23	E	E	G	G	30	33	35	30	G	G	G	31	G	J X 27	E S 14	E S 15	E	E S 17	E S 15		
15	J X 35	J X 24	E	E	E	E	E	22	37	G	31	28	24	G	G	26	25	31	J X 31	J X 28	J X 21	20	E S 17	E S 15		
16	E S 15	E	E	E	E	E	E	E S 19	28	30	33	G	24	G	G	25	31	18	E S 15	E S 16	E	E S 17	E	E S 16		
17	E S 16	18	E	E	E	E	E	20	G	33	G	30	G	40	G	G	G	E S 16	E S 13	E	J X 24	E	E	E		
18	E	E	E	E	E	E	E	20	G	G	G	G	G	G	31	G	G	E S 17	E S 16	E	E	E	E S 15	E		
19	J X 21	J X 21	J X 21	E	E	E	E S 15	G	G	G	G	G	G	G	22	G	G	E S 17	E	E	E	J X 24	J X 23	E		
20	E	E	E	E	E	E	E	24	24	33	G	29	G	G	G	E C 32	19	G	G	E	E	E	E S 15	E S 15	E S 17	
21	16	19	E	E	E	E	E	G	G	G	29	29	23	24	G	G	24	E C 60	G	E S 16	E	J X 24	20	E S 15	23	J X 20
22	J X 21	J X 21	17	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E S 15	E S 15	E	E	
23	23	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E S 15	E S 17	
24	E	E	E	E	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E S 15	E S 15	
25	E	E	E	E	E	23	E S 15	G	31	E B 40	G	30	G	G	G	20	18	20	15	E S 15	J X 23	17	E	E		
26	E	E	E	E	E	E	E S 15	G	G	29	30	G	G	G	E B 43	G	G	G	16	J X 23	E	E	E	E	E	
27	E	E	E	E	E	E	E S 13	G	G	34	G	G	G	32	G	G	27	20	18	E	E	E	18	J X 30	J X 25	
28	18	14	16	E	E	E	E	G	31	40	36	G	G	G	G	G	26	29	22	18	E S 16	E S 12	E S 12	E S 15	E S 14	
29																										
30																										
31																										
CNT	28	28	28	28	28	27	27	26	25	26	26	26	26	26	27	26	27	26	28	28	28	28	28	28	28	
MED	E S 15	E S 14	E	E	E	E	E	20	G	30	G	G	G	G	G	G	18	17	E S 14	E S 14	E S 12	E S 15	E S 15	E S 15		
UQ	J X 21	J X 22	16	E S 13	E	E	E S 15	21	26	33	31	23	G	24	G	E S 24	G	24	23	16	20	18	18	23	20	
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E S 15	E	E	E	E	E	E	E	

IONOSPHERIC DATA

FEB. 1969

fbEs (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																		
1	E	16	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E	S	15	E	E	E	S	15	15	E	22															
2	20	14	15	E	E	15	E	S	13	G	G	24	G	21	G	G	G	22	20	30	19	17	E	S	15	14	23															
3	17	17	E	12	13	E	S	17	E	S	19	18	19	G	G	G	G	17	16	15	17	15	E	E	E	16																
4	E	S	15	E	12	E	E	E	A	C	C	C	C	C	C	C	G	18	C	17	E	S	15	16	E	E	15															
5	E	E	E	E	E	E	E	E	20	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E	E															
6	E	S	15	E	E	E	E	E	E	S	16	16	G	G	G	G	G	G	18	E	E	S	16	E	S	11	E	E														
7	E	E	E	E	E	E	E	E	E	S	12	G	G	G	G	G	G	G	17	E	S	15	E	S	12	E	18	E	S	15	E											
8	E	S	15	E	E	E	E	E	E	G	21	30	32	G	G	E	B	33	E	B	32	G	G	E	S	16	E	S	18	16	E	S	16	E	S	16	E					
9	E	E	E	E	E	E	E	E	18	26	40	25	29	G	G	G	G	E	B	21	G	E	E	S	15	E	S	13	16	16	E	E	E									
10	15	E	15	13	16	15	16	G	G	G	G	G	G	G	G	G	G	26	20	18	17	E	S	16	E	E	S	15	E	S	15	E	S	15	E	S	15					
11	E	S	15	E	E	E	E	E	20	G	26	G	G	G	G	G	G	E	S	15	E	22	E	S	16	E	16	19														
12	E	E	E	S	15	12	E	15	15	21	26	29	30	G	G	G	G	G	E	S	16	E	S	12	E	E	E	16	15													
13	16	11	E	E	E	E	E	S	15	18	C	G	G	23	G	G	G	G	G	E	S	16	E	E	E	E	S	15	E	S	15	E	S	15	E	S	15					
14	E	E	E	E	13	E	E	E	G	G	G	G	G	G	G	G	20	G	28	E	S	14	E	S	15	E	E	S	17	E	S	15	E	S	15	E	S	15				
15	13	13	E	E	E	E	E	E	G	35	G	29	G	28	G	23	G	23	G	20	22	24	21	21	17	E	E	E	E	E	E	E	E	E	E	E	E					
16	E	S	15	E	E	E	E	E	E	S	19	G	29	32	G	24	G	25	21	18	G	E	S	15	E	S	16	E	E	S	17	E	E	E	E	E	E	S	16			
17	E	S	16	E	E	E	E	E	E	G	G	G	G	28	G	G	G	G	E	S	16	E	S	13	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
18	E	E	E	E	E	E	E	E	20	G	G	G	G	G	G	24	G	G	E	S	17	E	S	16	E	E	E	E	E	S	15	E	E	E	E	E	E	E				
19	17	17	13	E	E	E	E	S	15	G	G	G	G	G	G	G	G	G	E	S	17	E	E	E	E	E	E	15	17	E	E	E	E	E	E	E	E					
20	E	E	E	E	E	E	E	E	21	G	23	28	26	G	G	G	E	C	32	19	G	G	E	E	E	E	E	S	15	E	S	15	E	S	15	E	S	17				
21	E	16	E	E	E	E	E	E	G	G	G	25	G	22	G	23	G	G	E	C	60	G	E	S	16	E	16	16	E	S	15	E	S	15	E	S	18	18				
22	E	S	17	12	13	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	S	15	E	S	15	E	E	E	E	E	E	E	E	E			
23	E	S	17	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
24	E	E	E	E	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
25	E	E	E	E	E	E	S	15	E	S	15	G	28	E	B	40	G	29	G	28	G	20	G	17	20	14	E	S	15	16	15	E	E	E	E	E	E	E	E			
26	E	E	E	E	E	E	E	S	15	G	G	G	G	G	G	G	E	B	43	G	G	G	E	15	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
27	E	E	E	E	E	E	E	S	13	G	G	24	G	G	G	31	G	G	G	27	20	E	R	18	E	E	E	16	20	20												
28	16	E	E	E	E	E	E	E	G	30	37	36	G	G	G	G	G	G	25	24	21	15	E	S	16	E	S	12	E	S	12	E	S	15	E	S	14	E	S	14		
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	28	28	28	28	28	27	27	26	25	26	26	26	26	26	27	26	27	26	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28			
MED	E	E	E	E	E	E	E	G	E	G	24	G	G	G	G	G	G	E	G	16	E	G	12	E	14	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
UQ	E	S	16	12	E	E	E	E	E	S	15	18	G	21	G	23	G	E	G	20	G	20	G	18	18	E	S	15	16	E	S	16	E	S	15	E	S	15	16	E	S	16
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	S	15	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		

IONOSPHERIC DATA

FEB. 1969

f-min (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E S ₁₅	E	E	E	E	E	E	E		12	17	15	16	17	15	15	14	12	E S ₁₅	E S ₁₆	E	E S ₁₅	E	E	E S ₁₆	
2	E	E	E	E	E	E	E S ₁₃	E S ₁₅		11	12	16	15	13	17	12	16	17	E S ₁₃	E	E	E S ₁₅	E	E		
3	E	E	E	E	E	E S ₁₇	E S ₁₉	E		11	11	18	20	22	21	19	17	12	E	E	E	E	E S ₁₅	E S ₁₅		
4	E S ₁₅	E	E	E	E	E	E	C	C	C	C	C	C	C	19	C	11	C	E	E S ₁₅	E	E S ₁₇	E S ₁₃	E		
5	E	E	E	E	E	E	E	E		11	16	18	17	17	18	17	13	12	E	E	E	E	E	E		
6	E S ₁₅	E	E	E	E	E	E S ₁₂	E		13	16	18	19	20	21	18	19	17	E	E S ₁₄	E S ₁₀	E S ₁₁	E S ₁₂	E S ₁₂		
7	E	E	E	E	E	E	E S ₁₂	E		17	19	16	20	22	22	22	21	17	E	E S ₁₅	E S ₁₂	E	E S ₁₆	E S ₁₅	E	
8	E S ₁₅	E	E	E	E	E	E	E S ₁₂		18	20	20	27	25	33	32	20	17	E S ₁₆	E S ₁₈	E S ₁₂	E S ₁₀	E S ₁₆	E S ₁₆	E	
9	E	E	E	E	E	E	E	E		18	20	20	21	25	24	23	20	21	E	E	E S ₁₅	E S ₁₃	E	E S ₁₅	E	
10	E	E	E	E	E	E	E	E S ₁₅		17	18	20	21	25	23	22	20	18	E	E S ₁₆	E	E S ₁₀	E	E S ₁₅	E S ₁₅	
11	E S ₁₅	E	E	E	E	E	E	E S ₁₃		20	21	20	26	26	21	23	21	20	E S ₁₅	E	E S ₁₇	E S ₁₆	E	E	E S ₁₈	
12	E	E	E S ₁₅	E	E	E	E	E		12	18	17	18	20	20	18	18	16	E S ₁₆	E S ₁₂	E	E	E	E	E	
13	E	E	E	E	E	E	E S ₁₅	E	C		17	19	22	20	26	20	20	17	E S ₁₆	E	E	E	E S ₁₅	E	E S ₁₅	
14	E	E	E	E	E	E	E	E S ₁₅		17	20	20	28	17	23	22	11	18	E	E S ₁₄	E S ₁₅	E	E S ₁₇	E S ₁₅	E	
15	E	E	E	E	E	E	E	E		12	14	17	18	20	18	17	17	12	E	E	E	E	E S ₁₇	E	E S ₁₅	
16	E S ₁₅	E	E	E	E	E	E	E S ₁₉		16	18	17	19	20	17	16	15	11	E S ₁₅	E S ₁₆	E	E S ₁₇	E	E	E S ₁₆	
17	E S ₁₆	E	E	E	E	E	E	E		11	12	17	16	17	16	20	17	16	16	E S ₁₆	E S ₁₃	E	E	E	E	
18	E	E	E	E	E	E	E	E		13	12	16	20	20	18	15	17	16	E S ₁₇	E S ₁₆	E	E	E	E S ₁₅	E	
19	E	E	E	E	E	E	E S ₁₅	E		11	12	15	17	17	20	13	19	18	12	E S ₁₇	E	E	E	E	E	
20	E	E	E	E	E	E	E	E		14	17	17	20	20	20	E C ₃₂	12	12	11	E	E	E	E S ₁₅	E S ₁₅	E S ₁₇	
21	E	E	E	E	E	E	E	E		12	12	18	17	16	12	18	12	E C ₆₀	15	E S ₁₆	E	E	E	E S ₁₅	E S ₁₅	E
22	E S ₁₇	E	E	E	E	E	E	E		11	12	12	15	17	20	20	17	16	12	E	E	E S ₁₅	E S ₁₅	E	E	
23	E S ₁₇	E	E	E	E	E	E	E		14	16	16	16	19	20	19	28	17	12	12	E	E	E	E S ₁₅	E S ₁₇	
24	E	E	E	E	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E S ₁₅	E S ₁₅	
25	E	E	E	E	E	E S ₁₅	E S ₁₅	E		12	16	40	20	17	20	17	18	12	11	E	E	E S ₁₅	E	E	E	
26	E	E	E	E	E	E	E S ₁₅	E		11	12	16	20	16	21	22	43	27	13	12	E	E	E	E	E	
27	E	E	E	E	E	E	E S ₁₃	E		12	12	18	22	20	16	18	18	15	E	E	E	E	E S ₁₅	E	E	
28	E	E	E	E	E	E	E	E		12	13	17	20	26	22	20	20	17	12	11	E	E S ₁₆	E S ₁₂	E S ₁₂	E S ₁₅	E S ₁₄
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	28	28	28	28	28	27	27	26	25	26	26	26	26	26	27	26	27	26	28	28	28	28	28	28	28	
MED	E	E	E	E	E	E	E	E	E	11	13	17	18	20	20	20	18	17	15	E	E	E	E	E	E	
UQ	E S ₁₅	E	E	E	E	E	E S ₁₂	E		12	16	18	20	21	22	22	22	20	17	E S ₁₆	E S ₁₄	E S ₁₄	E S ₁₂	E S ₁₅	E S ₁₅	
LQ	E	E	E	E	E	E	E	E		12	16	16	17	18	17	17	15	12	E	E	E	E	E	E	E	

IONOSPHERIC DATA

FEB. 1969

M(3000)F₂(0.01)

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc 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	255	245	255	245	255	275	290	320	345	320	325	335	325	330	320	330	300	310	310	335	290	265	275	270 ^S	
2	285	290	265	265	260	260	280	305	340	340	315	330	335	300	315	325	325	315	315	320	280	280	290	285	
3	285	280	255	280	250	210	225	315	340	295	275	285	305	300	285	305	325	290	F	F	290	U ^F 240	U ^F 265	U ^F 265	U ^F 265
4	255	270	315	320	235	230	A	C	C	C	C	C	C	C	315	C	335	C	315	325	U ^S 260	U ^F 280	U ^F 275	F	
5	F	F	F	F	F	F	F	315	350	325	310	330	325	320	320	325	325	285	295	310	295	280	305	280	
6	280	265	U ^F 245	F	U ^F 255	U ^F 260	U ^F 300	335	350	340	310	330	335	315	295	320	320	300	305	330	255	250	270	U ^F 250	
7	275	290	270	275	280	285	290	330	320	350	305	310	325	320	315	315	310	305	310	325	300	295	265	270	
8	265	275	280	285 ^S	285 ^S	U ^F 270	300	315	335	325	325	300	320	305	310	320	325	315	290	325	275	265	275	260	
9	270	265	270	260	255	275	295	335	320	320	310	325	330	315	315	310	305	320	285	300	270	255	265	280	
10	280	270	280	275	300	265	285	335	315	330	320	335	315	300	305	320	315	315	290	295	290	270	275	265	
11	275	275	265	260	290	295	350	335	325	320	300	315	300	290	315	315	310	305	305	285	275	260	245	240	
12	240	250	225	235	240	240	265	315	290	315	305	310	315	320	330	330	320	315	310	U ^F 310	F	F	F	F	
13	F	F	U ^F 255	U ^F 265	U ^F 265	U ^F 245	U ^F 275	320	I ^C 325	305	325 ^H	310	315	315	330	320	325	335	315	300	295	275	275	285	
14	275	265	270	265	295	280	280	330	335	350	340	340	320	325	320	320	335	305	315	310	290	275	U ^F 285	F	
15	F	U ^F 280	300	260	280	280	290	330	325	310	315	325	320	310	320	325	325	325	290	305	300	270	290	275	
16	280	275	280	265	290	U ^F 265	270	345	340	330	310	325	295	320	315	320	320	305	300	295	305	290	285	280	
17	U ^F 260	270	F	275	300	285	320	335	335	325	315	310	315	310	320	320	315	320	320	290	295	U ^F 265	U ^F 285	F	
18	F	U ^F 275	U ^F 270	F	U ^F 270	U ^F 260	U ^F 280	345	330	335	305	315	315	305	310	315	315	330	295	300	270	U ^F 280	U ^F 300	F	
19	U ^F 280	275	275	285	295	280	305	365	350	340	315	315	310	315	310	310	320	315	295	300	290	260	U ^F 255	U ^F 250	
20	260	265	275	280	290	290	315	330	320	315	315	320	305	305	300	300	300	305	330	290	285	280	270	245	
21	260	280	275	280	280	285	305	345	335	325	320	305	310	305	300	315	315	305	295	300	315	I ^C 280	265	270	
22	270	270	265	280	295	315	320	340	345	340	325	310	305	295	295	295	305	310	310	300	300	300	275	275	
23	260	260	270	265	280	285	315	345	350	320	310	305	300	270	290	300	315	305	295	290	305	290	270	245	
24	255	265	295	275	280	C	C	C	C	C	C	C	C	C	C	C	C	C	C	300	290	295	285	270	270
25	265	285	270	270	285	295	315	330	325	325	315	300	300	300	300	290	300	315	295	285	285	285	265	270	
26	260	275	280	275	265	275	300	340	350	315	310	305	295	280	285	290	290	305	295	275	275	285	260	260	
27	260	265	265	280	265	270	300	320	320	295	300	285	295	290	290	290	300	290	275	290	295	270	260	270	
28	260	235	235	235	245	275	290	315	305	310	290	280	290	290	285	280	290	290	285	290	270	265	265	265	
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	24	26	27	25	27	26	25	26	26	26	26	26	26	26	26	26	27	26	27	28	27	27	27	29	
MED	265	270	270	270	280	275	295	330	335	325	312	312	315	305	310	315	315	308	300	300	290	275	270	270	
UQ	278	275	278	280	290	285	305	340	345	335	320	325	320	315	318	320	325	315	310	310	295	282	280	275	
LQ	260	265	265	265	258	265	280	320	320	315	305	305	300	300	298	300	305	305	295	290	275	265	265	260	

IONOSPHERIC DATA

FEB. 1969

M(3000)F1(0.01)

135° E Mean Time (G. M. T. + 9^h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

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 395										
2																								
3													U L 360	L	L									
4										C	C	C	C	C	405									
5												L		L										
6												U L 380	U L 390		415									
7											410	L		L	415									
8													U L 380											
9												L												
10																								
11													L											
12														L										
13													L		395									
14														U L 385										
15												L	L											
16																								
17													L	U L 395										
18																								
19																								
20																								
21																								
22																								
23																								
24											C	C	C	C										
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	1	3	3	4									
MED											410	U L 380	U L 380	U L 395	410									
UQ													U L 385	395	415									
LQ													U L 370	U L 390	400									

IONOSPHERIC DATA

FEB. 1969

h'F2 (km)

135° E Mean Time (G. M. T. + 9^h)

Station **WAKKANAI** Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc 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										
2																								
3													290	290	265									
4										C	C	C	C	C	250									
5												250		255										
6												265	245		235									
7											235	250		245	245									
8													250											
9												250												
10																								
11													235											
12														255										
13													245		265									
14														265										
15												250	250											
16																								
17													245	250										
18																								
19																								
20																								
21																								
22																								
23																								
24											C	C	C	C										
25																								
26																								
27																								
28																								
29																								
30																								
31																								
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											1	5	7	7	5									
MED											235	250	245	255	250									
UQ											250	250	260	265										
LQ											250	245	250	245										

IONOSPHERIC DATA

FEB. 1969

h'F (km)

135° E Mean Time (G. M. T. + 9^h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc 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	290	325	325	320	290	270	235	225	220	225	240	235	225	225	210 ^H	225	235	240	245	210	275	305	300	320	
2	290	295	295	300	315	315	270	250	215	225	225	225	225	215	250	245	225	240	250	235	295	295	280	300	
3	295	315	325	265	385	495	440	215	210 ^H	215 ^H	230 ^H	250	255	245	250	255	245	245	255	270	310	295	285	315	
4	350	295	245	205	425	430	A	C	C	C	C	C	C	C	220	C	220	C	225	210	275	295	265	305	
5	300	300	275	280	290	295	250	220	225	230	225	220	215	235	235	230	235	220	250	230	245	270	280	305	
6	280	295	295	295	270	270	230	220	225	230	225	225	235	220	220	240	225	250	240	230	265	325	295	315	
7	265	240	245	270	260	250	250	220	220	225	215	220	215 ^H	220	215	250	230	215	240	220	255	295	300	300	
8	310	285	265	260	255	260	235	235	230	235	235	230	225	215	240	240	240	230	225	235	270	285	280	315	
9	300	300	275	290	300	275	225	220	225	225	225	220	220	230	230	250	240	225	220	240	285	325	325	285	
10	290	280	280	260	245	260	270	220	220	245	245	250	225	215	240	235	225	225	260	250	250	300	300	300	
11	300	295	300	300	260	240	215	215	235	225	210	250	220	245	250	240	245	235	250	260	275	320	350	395	
12	315	345	435	415	375	375	290	260	260	250	240	240	240	240	245	230	245	225	230	240	250	295	310	320	
13	325	305	305	310	300	340	305	235	I C 230	220	220 ^H	235	240	210	210	245	225	220	225	245	245	300	290	300	
14	290	315	310	310	265	230	270	225	245	245	215	245	225	220	240	240	245	225	230	245	250	295	280	315	
15	300	275	260	270	275	250	235	225	240	235	240	240	220	210	235	245	235	240	240	245	245	300	260	300	
16	305	295	285	300	260	300	270	220	215	210	235	230	225	230	225	240	245	225	240	245	245	260	275	295	
17	305	275	250	260	250	225	210	225	220	205	210	235	225	215	235	240	245	240	230	240	250	275	260	255	
18	275	250	270	285	260	280	245	230	215	240	210	235	210	225	220	245	230	220	220	250	270	275	250	250	
19	295	295	290	250	245	250	255	215	220	210	215	210	235	220	240	240	245	240	235	225	245	300	310	345	
20	320	300	290	260	250	250	225	215	230	235	215	225	225	225	225	245	245	240	220	230	250	280	300	350	
21	310	260	260	275	295	270	225	220	210	215	215	220	225	225	240	I C 240	240	240	240	245	240	250	300	305	
22	300	290	300	250	240	220	210	210	220	220	230	225	235	240	245	235	240	225	245	250	235	245	265	300	
23	315	310	280	300	260	260	200	220	210	215	210	210	240	230	240	240	250	240	235	245	240	260	280	340	
24	315	295	250	240	255	C	C	C	C	C	C	C	C	C	C	C	C	C	C	220	240	240	220	275	290
25	295	270	265	270	270	240	240	215	220	235	235	220	245	235	225	245	245	240	225	245	245	260	290	290	
26	300	285	270	250	260	290	220	215	220	225	225	240	250	240	250 ^B	250	245	235	225	260	260	245	300	300	
27	300	295	275	250	280	295	245	215	220	220	215	220	250	250	235	245	245	245	250	250	250	260	300	295	
28	300	345	360	360	315	260	220	220	230	245	220	240	260	245	245	240	245	240	240	240	240	280	295	290	
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	28	28	28	28	28	27	26	26	26	26	26	26	26	26	27	26	27	26	28	28	28	28	28	28	
MED	300	295	280	272	268	270	238	220	220	225	225	230	225	225	235	240	240	238	238	242	250	290	290	300	
UQ	310	302	300	300	298	295	270	225	230	235	235	240	240	240	242	245	245	240	245	248	270	300	300	315	
LQ	292	282	265	260	258	250	225	215	220	220	215	220	225	220	225	240	232	225	225	232	245	260	278	295	

IONOSPHERIC DATA

FEB. 1969

h'Es (km)

135° E Mean Time (G. M. T. + 9^h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc 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	E	E	E	E	E	G	G	G	G	105	G	105	G	G	G	S	S	E	S	105	105	105
2	105	105	100	100	105	100	S	G	G	110	110	105	105	G	G	G	115	115	110	110	110	S	105	100
3	105	100	100	100	115	S	S	110	105	G	115	110	110	G	G	135	115	115	110	110	110	105	105	105
4	S	E	105	E	E	E	110	C	C	C	C	C	C	C	G	C	115	C	110	S	105	105	105	105
5	E	E	E	E	E	E	E	105	G	G	G	G	G	G	G	G	125	110	E	E	E	E	E	E
6	S	100	E	105	E	E	S	110	G	G	G	G	G	G	G	G	125	115	S	S	S	S	E	110
7	E	E	E	100	E	E	S	150	140	125	G	G	G	G	G	G	150	105	S	S	E	110	S	E
8	S	E	E	E	E	E	E	120	110	110	105	G	G	B	B	145	125	S	S	115	S	S	S	E
9	E	E	E	E	E	E	E	110	110	110	110	105	G	G	G	G	B	G	E	S	S	110	110	E
10	105	100	100	100	100	100	100	160	G	G	G	G	G	G	G	G	105	100	105	105	S	E	S	S
11	S	105	105	E	E	E	E	115	G	110	G	G	G	105	G	G	G	110	E	100	S	E	110	110
12	E	E	S	140	120	120	115	115	110	115	110	G	G	G	G	G	G	S	S	E	E	E	110	110
13	105	105	E	E	E	E	S	115	C	G	110	G	G	G	G	G	150	S	E	E	E	S	E	S
14	E	105	105	110	105	E	E	G	G	140	125	125	105	G	G	100	G	100	S	S	E	S	S	E
15	105	105	E	E	E	E	E	145	120	G	110	110	110	G	100	105	105	100	100	100	100	S	E	S
16	S	E	E	E	E	E	E	S	115	110	110	G	105	G	105	105	105	S	S	E	S	E	E	S
17	S	105	E	E	E	E	E	115	G	120	105	G	100	G	G	G	G	S	S	E	105	E	E	E
18	E	E	E	E	E	E	E	115	G	G	G	G	G	G	100	G	G	S	S	E	E	E	S	E
19	105	105	100	E	E	E	S	G	G	G	G	G	G	105	G	G	G	S	E	E	E	105	105	E
20	E	E	E	E	E	E	E	110	105	105	105	G	G	G	C	105	G	G	E	E	E	S	S	S
21	105	100	E	E	E	E	E	G	G	110	105	100	100	G	100	C	G	S	E	105	105	S	105	100
22	100	100	100	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	S	S	E	E
23	105	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	S	S
24	E	E	E	E	E	C	C	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	S	S
25	E	E	E	E	E	100	S	G	110	B	G	110	G	110	G	105	105	105	100	S	100	100	E	E
26	E	E	E	E	E	E	S	G	G	110	110	G	G	G	B	G	G	G	110	110	E	E	E	E
27	E	E	E	E	E	E	S	G	G	100	G	G	110	G	G	110	110	110	E	E	E	105	100	100
28	105	105	105	E	E	E	E	G	110	110	110	G	G	G	G	110	110	105	105	S	S	S	S	S
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	11	14	9	7	5	4	3	14	10	14	14	8	8	4	4	9	14	12	8	8	7	8	10	9
MED	105	105	100	100	105	100	110	115	110	110	110	108	105	105	100	105	115	108	108	108	105	105	105	105
UQ	105	105	105	108	115	110	112	120	115	115	110	110	110	108	102	110	125	112	110	110	108	108	110	110
LQ	105	100	100	100	105	100	105	110	110	110	105	105	102	105	100	105	105	102	102	102	102	102	105	100

IONOSPHERIC DATA

FEB. 1969

Types of Es

135° E Mean Time (G. M. T. + 9^h)

Station **WAKKANAI** Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc 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 ₁	F ₁									L ₁		L ₁								F ₂	F ₁	F ₂			
2	F ₂	F ₁	F ₂	F ₁	F ₁	F ₁				L ₁	L ₁	L ₁	L ₁				L ₁	L ₁	F ₃	F ₂	F ₁		F ₁	F ₂		
3	F ₁	F ₁	F ₁	F ₁	F ₁			L ₁	L ₁		C ₁	L ₁	L ₁		H ₁		C ₁	L ₁	F ₂	F ₁	F ₁	F ₁	F ₁	F ₂		
4			F ₁				F ₇										L ₁		F ₂		F ₂	F ₁	F ₁	F ₁		
5								L ₁									C ₁	C ₁								
6		F ₁		F ₁				L ₁									C ₁	L ₁							F ₁	
7				F ₁				H ₁	H ₁	C ₁							H ₁	L ₁				F ₁				
8								C ₁	L ₁	L ₁	L ₁					H ₁	C ₁			F ₁						
9								L ₁	L ₁	L ₂	L ₁	L ₁										F ₁	F ₁			
10	F ₁	F ₁	F ₁	F ₁	F ₁	F ₁	F ₁	H ₁									L ₁	L ₁	F ₁	F ₁						
11		F ₁	F ₁					C ₁		L ₁				L ₁				L ₁		F ₁			F ₁	F ₁		
12				F ₁	F ₁	F ₂	L ₂	L ₁	L ₁	L ₁													F ₂	F ₁		
13	F ₁	F ₁						L ₁		L ₁								H ₁								
14		F ₁	F ₁	F ₁	F ₂					H ₁	C ₁	C ₁	L ₁			L ₁		L ₁								
15	F ₂	F ₂						H ₁	C ₂	L ₁	L ₁	L ₁	L ₁	L ₁	L ₁	L ₁	L ₁	L ₁	F ₁	F ₁	F ₁					
16								C ₁	L ₁	L ₁		L ₁		L ₁	L ₁	L ₁										
17		F ₁						C ₁		C ₁	L ₁		L ₁									F ₁				
18								L ₁											L ₁							
19	F ₂	F ₂	F ₁											L ₁									F ₁	F ₁		
20								L ₂	L ₁	L ₁	L ₁					L ₁										
21	F ₁	F ₁								L ₁	L ₁	L ₁	L ₁								F ₁	F ₁		F ₁	F ₁	
22	F ₁	F ₁	F ₁																							
23	F ₁																									
24																										
25						F ₁			L ₁		L ₁		L ₁		L ₁	L ₁	L ₁	L ₁	F ₁		F ₁	F ₁				
26										L ₁	L ₁									F ₁	F ₁					
27										L ₁			L ₁			L ₁	L ₁	L ₁					F ₁	F ₂	F ₂	
28	F ₁	F ₁	F ₁						L ₁	L ₁	L ₁					L ₁	L ₁	L ₁	F ₁							
29																										
30																										
31																										
CNT																										
MED																										
UQ																										
LQ																										

IONOSPHERIC DATA

FEB. 1969

foF2 (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station	AKITA																								
Lat. 39° 43.5' N. Long. 140° 8.2' E	Sweep 1.0 Mc to 20.0 Mc in 15 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	40	40	37	39	41	43	59	74	91	I ₉₅ C	I ₁₀₄ C	88	82	79	73	71	61	67	50	36	F	S ₃₇	40	
2	38	35	35	32	32	34	32	I ₆₂ R	80	93	104	103	89	81	81	89	83	66	56	46	37	38	39	36	
3	32	32	31	33	27	26	30	77	67	62	97	104	100	98	96	97	90	75	59	S ₅₆	57	F	F	F	
4	S ₄₈	F	F	F	F	18	22	68	86	91	112	92	89	91	88	86	84	65	56	48	F	F ₄₀	F ₃₈	F	
5	F	F	F	F	F	F	F	R	81	102	99	99	101	96	94	86	77	68	56	58	47	45	46	45	
6	F	44	39	39	38	40	42	56	80	88	93	93	I ₁₁₁ R	96	86	73	82	70	60	58	40	41	I ₄₂ R	46	
7	46	46	39	34	33	35	34	62	83	88	98	94	94	98	95	80	81	76	56	54	42	43	41	39	
8	39	39	43	36	34	34	35	69	89	106	109	110	102	104	99	92	79	78	61	54	42	38	40	40	
9	41	41	41	38	37	38	31	63	82	91	103	99	96	102	93	87	82	74	56	47	43	40	39	41	
10	44	47	43	40	34	30	29	68	77	86	107	107	94	90	97	98	78	71	61	60	56	45	I ₄₆ R	45	
11	44	43	41	40	41	41	36	62	73	90	113	110	100	87	104	95	82	80	75	74	57	47	44	44	
12	43	44	43	40	40	44	50	81	83	124	146	117	119	118	109	95	89	83	64	51	44	42	44	44	
13	R	F	F	F	S ₄₈	F	F	60	83	91	93	110	115	105	82	96	97	76	59	48	49	44	45	46	
14	48	43	42	40	35	32	32	64	75	100	109	91	108	80	88	83	81	79	67	56	51	48	44	47	
15	48	51	49	41	C	C	C	C	C	C	C	C	C	99	93	91	90	74	63	56	54	42	45	44	
16	46	45	45	42	42	40	44	81	87	82	101	107	109	101	94	91	84	77	65	61	57	51	55	53	
17	53	56	55	55	51	F	50	68	81	105	98	119	120	98	91	86	79	76	62	47	47	47	50	54	
18	56	48	F	F	F	F	F	83	100	101	120	I ₁₁₀ R	112	107	97	86	89	76	64	56	56	52	F	F	
19	S ₅₁	S ₅₁	S ₄₈	S ₄₈	47	43	45	79	84	100	I ₁₀₂ R	107	115	114	101	96	84	78	70	59	51	44	F	F	
20	S ₄₆	F	48	F	51	48	52	74	92	114	131	131	118	121	118	102	107	96	81	62	54	46	45	44	
21	48	54	46	42	39	41	47	79	98	108	112	125	125	121	111	102	I ₁₀₀ R	86	79	74	59	48	47	46	
22	49	49	51	51	54	41	42	68	89	104	I ₁₀₉ R	I ₁₁₂ R	121	121	119	114	100	91	77	65	60	48	45	44	
23	44	45	44	45	43	41	46	71	97	103	111	119	116	115	106	101	95	89	81	73	65	51	52	49	
24	53	53	60	47	48	46	48	85	107	112	121	126	127	121	I ₁₁₄ R	108	99	96	89	72	66	58	55	51	
25	53	52	51	52	50	48	50	82	103	112	125	129	127	121	I ₁₁₈ R	108	109	99	89	72	66	56	52	53	
26	51	52	50	49	47	45	51	74	95	103	106	110	120	116	111	111	110	100	85	62	60	61	59	55	
27	55	55	56	54	47	46	51	78	97	105	114	123	112	119	114	102	99	90	81	78	73	63	62	64	
28	59	C	C	C	C	C	C	C	C	C	C	C	C	C	I ₁₂₄ C	117	109	100	101	92	78	68	61	61	62
29																									
30																									
31																									
CNT	24	23	23	22	23	22	23	25	26	26	26	26	26	26	28	28	28	28	28	28	27	26	25	24	
MED	48	46	44	40	41	41	43	69	84	100	108	110	112	103	97	95	86	78	64	58	54	46	45	46	
UQ	52	52	50	48	48	44	49	79	95	105	113	119	119	118	111	102	99	90	80	68	60	51	52	52	
LQ	44	43	41	38	36	34	33	63	80	91	99	103	100	96	92	86	82	74	60	52	46	42	42	44	

IONOSPHERIC DATA

FEB. 1969

foF1 (0.01)

135° E Mean Time (G. M. T. + 9^h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 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	C	C	L	L	L									
2										L	L	L	L	L	L	L								
3										350	L	L	L	L	L	L								
4										L	400	L	480	L	L	L								
5										L	L	L	L	L	L	L								
6										L	L	L	L	U	L	L	L							
7										L	L	L	470	450	L	L								
8										L	L	L	L	450	400	L								
9										L	L	L	L	L	480	L	L							
10										L	L	L	470	440	L	L								
11										L	L	L	L	H	600	420	L							
12										L	L	L	L	L	L	L								
13										400	L	L	L	L	L	L								
14										L	L	L	L	460	L	L								
15										C	C	C	C	L	470	L								
16										L	L	450	U	500	U	480	L	L						
17										L	L	480	L	490	U	450	L							
18										L	L	460	440	L	450	L								
19										L	L	440	500	L	L	400								
20										L	L	L	L	L	L	L								
21										L	L	440	540	440	L	L	L							
22										L	L	L	L	L	L	L								
23										L	400	L	L	L	L	L								
24										L	L	470	500	500	L	L								
25										L	L	U	L	L	L	L								
26										L	400	440	L	U	570	L	L	450						
27										L	L	L	L	L	500	L	L							
28										C	C	C	C	C	C	L	L							
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	4	3	7	11	10	5	2							
MED										390	400	440	470	470	480	450	425							
UQ										400	440	500	500	500	450									
LQ										375	420	455	460	450	420									

IONOSPHERIC DATA

FEB. 1969

foE (0.01)

135° E Mean Time (G. M. T. + 9^h)

Station **AKITA** Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	250	295	I C 320	I C 335	340	345	I A 325	300	240	B						
2								200	260	300	320	340		355	355	330	310	270	B					
3								170	255	290	325	340	350	I A 345	A	325	A	A	A					
4								200	260	295	315	340	I A 345	A	A	I A 290	I A 235	170						
5								A	255	295	320	340		345	335	310	290	A	A					
6								B	255	290	315	335	335	330	315	280	245	A						
7							S	210	265	300	320	340	345	330	310	I A 285	R 245	190						
8							S	200	255	295	320	335	335	330	325	300	255	B						
9							S	205	270	305	I A 320	325	340	I A 340	325	300	250	190						
10							S	215	285	315	325	335	345	340	325	305	R 250	A						
11							S	190	255	300	I A 320	335	345	350	I A 330	300	A	A						
12							S	A	A	305	325	340	340	I A 340	330	310	260	190						
13							S	190	I A 260	305	325	345	355	340	320	300	260	B						
14							S	200	270	310	325	345	350	345	325	300	255	B						
15							C	C	C	C	C	C	C	345	330	310	265	A						
16							S	190	265	I A 300	320	I A 330	350	A	A	A	A	B						
17							S	210	I A 265	I A 300	330	345	355	350	335	310	260	210						
18							S	210	275	310	325	340	350	350	330	310	270	205						
19							S	200	265	310	I C 325	345	365	360	340	320	270	200						
20							S	200	285	310	330	350	355	365	340	320	285	205						
21							S	205	285	310	325	350	365	355	335	315	A 260	A						
22							S	215	285	I A 305	325	350	365	360	340	320	270	A						
23							S	220	285	315	335	355	365	350	I C 350	A	A	A						
24							S	230	290	I A 315	335	350	360	360	345	330	285	225						
25							S	225	285	315	340	365	370	360	340	320	285	220						
26							S	225	285	315	330	350	365	370	I B 355	325	I A 260	215	S					
27							S	225	I A 285	320	340	365	375	360	345	330	280	210	S					
28							C	C	C	C	C	C	C	I C 365	350	325	290	R 230	S					
29																								
30																								
31																								
CNT								22	25	26	26	26	26	26	26	25	23	13						
MED								205	265	305	325	340	350	350	330	310	260	205						
UQ								215	285	310	330	350	365	360	340	320	270	215						
LQ								200	260	300	320	335	345	340	325	300	252	190						

IONOSPHERIC DATA

FEB. 1969

foEs (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station AKITA Lat 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 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 ₁₄	E ₁₄	E ₁₄	E	J ₂₁	J ₂₀	J ₁₈	E ₁₇	G	33	C	C	G	G	J ₃₄	G	J ₄₃	E ₁₇	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
2	J ₂₁	E	E	E	J ₂₀	J ₂₀	J ₂₀	G	J ₃₀	G	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
3	E ₁₄	J ₃₃	J ₂₉	J ₁₄	J ₁₆	E	E ₁₄	G	J ₂₈	G	G	G	G	36	36	J ₃₉	J ₃₉	J ₃₀	J ₄₃	J ₄₁	J ₅₅	J ₃₉	J ₂₉	J ₂₇	
4	E ₁₄	E	E	E	E	E ₁₄	E ₁₃	G	G	33	G	G	J ₃₈	36	J ₄₁	J ₃₂	J ₃₃	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	J ₂₁	
5	J ₂₀	E	E	J ₁₃	J ₁₃	J ₁₆	J ₁₉	J ₂₆	J ₃₃	G	J ₃₁	G	G	40	J ₄₆	J ₄₁	J ₅₁	J ₄₀	J ₂₉	J ₂₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
6	E ₁₄	E	E	E	E	E	E ₁₄	E ₁₇	G	34	G	G	40	39	J ₄₀	G	G	22	J ₂₁	E ₁₄	E ₁₄	J ₁₈	E ₁₄	E ₁₄	
7	E ₁₄	E	E	E	J ₁₃	E	E ₁₄	G	G	31	G	G	G	G	G	J ₃₁	G	G	J ₂₉	J ₁₉	J ₂₆	M	E ₁₄	J ₂₀	
8	J ₃₀	J ₂₇	E ₁₄	E ₁₄	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
9	E ₁₄	J ₁₈	E	E	E	E	E ₁₄	G	J ₂₈	J ₃₁	34	G	J ₃₃	J ₄₃	J ₃₆	G	G	G	E ₁₄	E ₁₄	E ₁₄	J ₂₅	J ₂₃	J ₂₃	
10	J ₁₆	J ₂₃	J ₂₁	J ₂₃	J ₁₉	M	E ₁₄	G	J ₂₉	G	G	G	G	G	G	G	G	J ₂₂	E ₁₄	J ₂₉	J ₄₃	J ₃₅	J ₅₈	J ₂₃	
11	J ₂₅	J ₂₄	J ₁₉	J ₂₀	J ₁₈	E ₁₄	E ₁₄	G	G	G	J ₃₉	35	G	J ₄₇	J ₃₄	J ₂₇	J ₄₃	21	J ₃₀	J ₂₈	E ₁₄	J ₃₉	J ₂₉	J ₂₇	
12	J ₂₉	J ₂₀	E ₁₄	E	E	J ₁₄	J ₂₀	J ₅₀	G	G	G	G	G	J ₄₀	G	G	G	G	E ₁₄	M	E ₁₄	E ₁₄	E ₁₄	J ₂₁	
13	J ₆₂	J ₂₅	E	J ₂₈	J ₁₇	J ₂₀	J ₂₄	G	J ₃₀	G	G	G	G	G	G	G	G	E ₂₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
14	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	23	G	G	G	G	G	G	G	G	G	E ₁₉	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	
15	E ₁₄	J ₃₁	E ₁₄	E	C	C	C	C	C	C	C	C	C	J ₃₄	G	G	J ₂₉	J ₂₄	J ₂₄	J ₂₀	E ₁₄	J ₁₈	E ₁₄	E ₁₄	
16	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E	E ₁₄	G	G	J ₄₂	J ₃₅	J ₃₅	J ₃₀	J ₄₀	J ₄₉	J ₄₄	J ₃₈	E ₂₀	J ₂₀	J ₂₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
17	E ₁₄	E	E	E	J ₁₆	J ₁₄	J ₁₈	G	29	J ₄₄	J ₃₄	J ₂₇	G	J ₂₅	G	G	G	G	J ₂₀	E ₁₄	E ₁₄	E ₁₄	J ₁₉	E ₁₄	
18	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	20	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
19	E ₁₄	E	E	E	E	E	E ₁₄	G	G	G	E ₄₅	G	G	G	G	G	G	G	E ₁₄	J ₁₇	J ₂₃	M	E ₁₄	E ₁₄	
20	E ₁₄	E	J ₂₁	J ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₅	E ₁₈	E ₁₄	E ₁₄	E ₁₄	
21	E ₁₄	E ₁₉	E	E	E	E ₁₄	E ₁₂	G	G	G	G	G	G	G	G	G	J ₅₁	J ₇₁	J ₁₃₅	J ₈₅	J ₂₃	J ₂₅	E ₁₄	E ₁₄	
22	J ₁₈	E ₁₄	E	E	E	E	E ₁₄	G	32	35	G	G	G	G	G	36	32	28	J ₂₂	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
23	E ₁₄	E	E ₁₄	E	E	E	E ₁₄	G	G	G	G	G	G	G	E ₄₂	38	J ₃₈	J ₂₅	J ₃₉	J ₂₄	J ₃₆	J ₂₂	E ₁₄	E ₁₄	
24	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	G	G	36	36	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	J ₁₉	E ₁₄	E ₁₄	
25	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	G	G	G	35	G	G	G	G	G	G	G	E ₁₆	M	E ₁₄	E ₁₄	E ₁₄	E ₁₈	
26	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	G	G	G	G	G	G	33	E ₄₅	G	J ₃₀	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	J ₃₄	J ₁₉	
27	J ₂₉	J ₂₀	E ₁₄	E	E	E	E ₁₄	G	J ₃₃	30	G	G	G	G	G	G	G	G	J ₂₅	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
28	E ₁₄	C	C	C	C	C	C	C	C	C	C	C	C	C	J ₃₀	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	M	
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	28	27	27	27	26	26	26	26	26	26	25	25	26	27	28	28	28	28	28	28	28	28	28	28	28
MED	E ₁₄	E ₁₄	E	E	E	14	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
UQ	J ₁₉	J ₂₀	E ₁₄	E ₁₃	J ₁₆	14	E ₁₄	G	J ₂₉	33	G	G	G	G	36	J ₃₅	29	J ₃₆	22	J ₂₄	J ₂₁	E ₁₆	J ₂₁	E ₁₄	
LQ	E ₁₄	E	E	E	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	

IONOSPHERIC DATA

FEB. 1969

fbEs (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station	AKITA																				Lat. 39° 43.5' N. Long. 140° 8.2' E	Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation			
Time	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 ₁₄	E ₁₄	E ₁₄	E	14	15	E ₁₇	G		33	C	C	G	G	34	G	19	E ₁₇	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
2		15	E	E	E	E	E	E	22	G	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
3	E ₁₄	E ₁₄	16	E	E	14	E ₁₄	G	19	G	G	G	G	35	G	38	26	21	40	22	18	19	17	E	
4	E ₁₄	E	E	E	E	E ₁₄	E ₁₃	G	G	33	G	G	35	35	33	30	25	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	
5	E	E	E	E	E	14	E	22	19	G	G	G	G	37	34	37	31	19	E	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
6	E ₁₄	E	E	E	E	E	E ₁₄	E ₁₇	G	33	G	G	39	38	38	G	G	22	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
7	E ₁₄	E	E	E	E	E	E ₁₄	G	G	27	G	G	G	G	G	31	G	G	24	E	E	E	E ₁₄	E	
8	E	19	E ₁₄	E ₁₄	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
9	E ₁₄	15	E	E	E	E	E ₁₄	G	24	28	34	G	G	31	35	27	G	G	E ₁₄	E ₁₄	E ₁₄	E	E	E	
10	E	20	18	15	14	E	E ₁₄	G	22	G	G	G	G	G	G	G	G	21	E ₁₄	16	E	18	20	E	
11	E	16	E	14	14	E ₁₄	E ₁₄	G	G	G	36	30	G	29	34	26	29	21	21	20	E ₁₄	E	22	16	
12	18	15	E ₁₄	E	E	E	17	24	28	G	G	G	G	35	G	G	G	G	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	E	
13	34	15	E	15	14	14	E	G	29	G	G	G	G	G	G	G	G	E ₂₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
14	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	23	G	G	G	G	G	G	G	G	G	E ₁₉	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	
15	E ₁₄	25	E ₁₄	E	C	C	C	C	C	C	C	C	C	29	G	G	18	21	19	19	E ₁₄	E	E ₁₄	E ₁₄	
16	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E	E ₁₄	G	G	39	27	34	30	37	37	35	25	E ₂₀	17	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
17	E ₁₄	E	E	E	E	13	E	G	28	42	29	G	G	25	G	G	G	G	18	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	
18	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	18	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
19	E ₁₄	E	E	E	E	E	E ₁₄	G	G	G	E ₄₅	G	G	G	G	G	G	G	E ₁₄	E	E	E	E ₁₄	E ₁₄	
20	E ₁₄	E	16	14	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₅	E ₁₈	E ₁₄	E ₁₄	E ₁₄	
21	E ₁₄	E ₁₉	E	E	E	E ₁₄	E ₁₂	G	G	G	G	G	G	G	G	G	36	70	45	64	E	E	E ₁₄	E ₁₄	
22	E	E ₁₄	E	E	E	E	E ₁₄	G	G	34	G	G	G	G	G	34	32	26	21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
23	E ₁₄	E	E ₁₄	E	E	E	E ₁₄	G	G	G	G	G	G	E ₄₂	37	37	24	23	23	30	19	E ₁₄	E ₁₄		
24	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	G	G	35	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	18	E ₁₄	E ₁₄	
25	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	G	G	G	33	G	G	G	G	G	G	G	E ₁₆	E	E ₁₄	E ₁₄	E ₁₄	E ₁₈	
26	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	E ₄₅	G	30	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	25	E	
27	21	19	E ₁₄	E	E	E	E ₁₄	G	30	29	G	G	G	G	G	G	G	G	24	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
28	E ₁₄	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	
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	28	27	27	27	26	26	26	26	26	26	25	25	26	27	28	28	28	28	28	28	28	28	28	28	
MED	E ₁₄	E ₁₄	E	E	E	E ₁₃	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
UQ	E ₁₄	16	E ₁₄	E	E	E ₁₄	E ₁₄	G	22	33	U ₂₂	G	G	34	U ₃₁	28	26	21	20	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
LQ	E ₁₄	E	E	E	E	E	E ₁₃	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	

IONOSPHERIC DATA

FEB. 1969

f-min (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station **AKITA** Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 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 ₁₄	E ₁₄	E ₁₄	E	E	E	E ₁₄	17	15	16	C	C	15	15	18	14	14	17	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
2	E	E	E	E	E	E ₁₄	E ₁₄	15	14	15	15	17	18	16	16	16	16	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
3	E ₁₄	E	E	E	E	E	E ₁₄	E ₁₄	16	15	16	17	18	16	15	16	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃
4	E ₁₄	E	E	E	E	E ₁₄	E ₁₃	15	18	16	16	15	18	18	16	15	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
5	E ₁₄	E	E	E	E	E	E ₁₄	14	14	15	16	17	18	19	20	18	16	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
6	E ₁₄	E	E	E	E	E	E ₁₄	17	18	18	18	18	21	19	18	18	16	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
7	E ₁₄	E	E	E	E	E	E ₁₄	15	16	18	22	25	24	19	24	18	18	17	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
8	E ₁₄	E	E ₁₄	E ₁₄	E	E	E ₁₄	16	14	22	24	24	25	27	27	23	17	19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
9	E ₁₄	E	E	E	E	E	E ₁₄	14	16	17	19	20	18	18	18	19	17	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
10	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	16	14	19	19	22	21	24	22	19	20	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
11	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	14	18	23	21	22	23	22	18	18	18	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
12	E ₁₄	E	E ₁₄	E	E	E	E ₁₄	14	14	15	16	21	18	20	19	18	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
13	E ₁₄	E	E	E	E	E	E ₁₄	15	15	16	17	18	20	25	20	22	17	20	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
14	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	15	15	17	22	22	22	19	23	19	18	19	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄
15	E ₁₄	E	E ₁₄	E	C	C	C	C	C	C	C	C	C	19	19	20	16	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
16	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E	E ₁₄	15	16	18	18	24	18	24	15	15	15	20	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
17	E ₁₄	E	E	E	E	E	E ₁₄	14	16	18	19	19	19	18	21	20	16	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
18	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	16	15	16	21	25	21	20	22	18	16	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
19	E ₁₄	E	E	E	E	E	E ₁₄	15	16	18	E ₄₅	23	20	21	18	16	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
20	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	14	14	17	18	23	21	18	18	18	18	18	14	15	18	E ₁₄	E ₁₄	E ₁₄
21	E ₁₄	19	E	E	E	E ₁₄	E ₁₂	15	17	16	19	24	24	24	20	18	17	17	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
22	E ₁₄	E ₁₄	E	E	E	E	E ₁₄	16	18	19	24	22	21	18	16	17	16	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
23	E ₁₄	E	E ₁₄	E	E	E	E ₁₄	17	18	20	19	20	19	24	E ₄₂	16	18	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
24	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	15	18	17	21	23	23	24	18	17	16	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
25	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	15	16	29	20	24	23	18	20	17	15	15	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	18
26	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	14	17	17	19	20	24	24	45	26	17	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
27	E ₁₄	E ₁₄	E ₁₄	E	E	E	E ₁₄	15	18	16	20	23	18	19	15	23	18	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
28	E ₁₄	C	C	C	C	C	C	C	C	C	C	C	C	C	C	18	24	20	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
29																								
30																								
31																								
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	28	27	27	27	26	26	26	26	26	26	25	25	26	27	28	28	28	28	28	28	28	28	28	28
MED	E ₁₄	E	E	E	E	E	E ₁₄	15	16	17	19	22	20	19	18	18	16	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
UQ	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₄	16	18	18	21	23	23	24	21	20	18	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
LQ	E ₁₄	E	E	E	E	E	E ₁₄	14	15	16	18	19	18	18	18	16	16	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄

IONOSPHERIC DATA

FEB. 1969

M(3000)F₂(0.01)

135° E Mean Time (G. M. T. + 9^h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 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	275	270	265	275	285	310	345	325	335	I ¹ C	I ¹ C	330	325	330	330	325	335	345	320	305	F	S ² 295	305	
2	310	285	295	290	265	270	315	I ¹ R 315	345	335	335	330	330	340	295	330	340	335	310	330	315	295	305	310	
3	285	280	265	290	265	225	240	355	335	280	315	320	305	310	315	325	325	320	310	S ¹ 310	300	F	F	F	
4	S ¹ 270	F	F	F	F	250	275	340	350	340	340	340	335	335	330	335	340	345	335	315	F	F ² 275	F ¹ 290	F	
5	F	F	F	F	F	F	F	R	345	335	335	345	320	325	335	325	325	330	305	310	300	285	285	285	
6	F	295	275	260	265	275	295	355	355	360	335	325	I ¹ R 330	335	330	305	335	330	310	325	290	270	I ¹ R 270	285	
7	305	305	325	295	280	280	310	340	345	340	325	320	325	325	325	310	325	315	320	315	295	295	295	275	
8	285	285	305	295	285	280	305	340	340	335	340	325	305	320	315	325	320	320	315	315	295	295	280	275	
9	295	285	295	285	270	280	330	335	345	345	320	325	320	330	330	325	330	325	310	315	305	280	260	270	
10	275	300	305	315	325	275	310	340	340	315	325	335	340	310	310	330	330	320	305	310	305	280	I ¹ R 280	270	
11	275	280	285	275	285	295	315	355	345	315	315	320	330	295	310	325	320	305	310	320	300	255	265	245	
12	255	250	270	250	230	250	275	345	315	325	335	310	305	315	320	325	335	335	330	315	290	285	280	275	
13	R	F	F	F	S ¹ 300	F	F	340	340	335	310	320	315	330	305	315	335	330	340	310	315	275	275	295	
14	290	280	270	270	295	255	300	345	340	340	340	310	335	325	320	310	325	330	320	305	295	285	270	275	
15	285	290	320	300	C	C	C	C	C	C	C	C	C	C	315	315	310	325	325	310	290	300	280	290	270
16	275	280	295	285	305	265	295	340	340	320	305	320	315	310	325	320	325	310	310	310	305	280	275	275	
17	275	280	290	295	295	F	290	330	310	325	310	320	320	325	310	315	325	330	320	310	280	280	280	295	
18	320	285	F	F	F	F	F	335	340	335	320	I ¹ R 320	305	310	310	315	335	320	330	305	305	300	F	F	
19	S ¹ 290	S ¹ 290	S ¹ 305	S ¹ 295	300	305	295	350	335	340	I ¹ R 315	320	310	315	305	325	325	315	310	320	325	275	F	F	
20	S ¹ 260	F	295	F	310	315	310	345	325	315	310	305	300	295	305	290	315	315	315	310	305	285	275	250	
21	270	295	295	280	270	275	295	335	330	315	315	305	300	305	305	305	I ¹ R 310	315	310	295	335	285	270	265	
22	265	280	280	310	315	320	290	340	315	325	I ¹ R 310	I ¹ R 305	295	305	295	310	310	320	320	300	315	300	275	275	
23	270	265	265	275	280	290	330	325	340	310	315	310	300	295	300	305	305	315	310	305	330	325	270	260	
24	255	275	315	290	295	270	290	340	335	315	315	295	290	295	I ¹ R 290	305	305	300	305	295	300	295	285	275	
25	270	280	275	280	280	315	290	340	325	315	305	305	295	295	I ¹ R 295	300	310	315	305	300	305	280	280	275	
26	275	280	285	290	285	280	310	330	320	320	315	300	300	290	290	295	295	305	305	295	275	280	280	280	
27	275	265	285	300	295	285	295	330	320	310	310	310	295	295	300	295	310	305	285	290	290	285	275	285	
28	280	C	C	C	C	C	C	C	C	C	C	C	C	C	I ¹ C 265	290	300	300	315	305	295	290	280	290	
29																									
30																									
31																									
CNT	24	23	23	22	23	22	23	25	26	26	26	26	26	28	28	28	28	28	28	28	27	26	25	24	
MED	275	280	290	290	285	280	295	340	340	325	315	320	312	312	310	315	325	320	310	310	300	282	280	275	
UQ	288	288	300	295	298	290	310	345	345	335	335	325	330	325	322	325	330	330	320	315	305	295	285	285	
LQ	270	280	275	275	272	270	290	335	325	315	310	310	300	295	300	305	310	315	308	300	295	280	275	270	

IONOSPHERIC DATA

FEB. 1969

M(3000)F1(0.01)

135° E Mean Time (G. M. T. + 9^h)

Station **AKITA** Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Time of Day	Hour																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	C	C	L	L	L									
2										L	L	L	L	L	L	L								
3										400	L	L	L	L	L									
4										L	400	L	360	L	L	L								
5										L	L	L	L	L	L									
6										L	L	L	370	U L	365	L	L							
7										L	L	L	380	370	L	L								
8										L	L	L	L	380	405	L								
9										L	L	L	L	360	L	L								
10										L	L	L	375	385	L	L								
11										L	L	L	L	340	H	380	L							
12										L	L	L	L	L	L	L								
13										375	L	L	L	L	L	L								
14										L	L	L	370	L	L	L								
15										C	C	C	C	L	365	L								
16										L	L	380	U L	340	U L	355	L	L						
17										L	L	375	L	370	U L	380	L							
18										L	L	395	U L	390	L	355	L							
19										L	L	405	360	L	L	380								
20										L	L	L	L	L	L	L								
21										L	L	390	355	390	L	L	L							
22										L	L	L	L	L	L	L								
23										L	400	L	L	L	L	L								
24										L	L	385	365	365	L	L								
25										L	L	U L	365	L	L	L								
26										L	425	400	L	U L	335	L	L	360						
27										365	L	L	L	L	360	L	L							
28										C	C	C	C	C	C	L	L							
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	4	3	7	11	10	5	2								
MED									365	400	400	380	370	365	380	370								
UQ									412	400	390	378	370	380										
LQ									388	395	370	360	360	365										

IONOSPHERIC DATA

FEB. 1969

h'F2 (km)

135° E Mean Time (G. M. T. + 9^h)

Station **AKITA** Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Time 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	I C 255	I C 255	245	265	250									
2										250	255	245	250	250	255	250								
3										240	260	260	265	265	255									
4										240	240	235	250	250	245	240								
5										245	250	240	260	260	250									
6										235	250	250	250	255	250	240								
7										235	255	250	250	255	255	250								
8										250	255	250	280	245	250	255								
9										230	250	250	260	260	250	245								
10										250	255	255	250	250	255	250								
11										250	270	250	250	310	265	250								
12										250	245	245	270	255	250	250								
13										240	290	270	250	235	230	250								
14										245	240	240	245	250	255	240								
15										C	C	C	C	250	270	260								
16										230	255	250	250	260	250	250								
17										250	235	270	250	250	250	230								
18										235	240	255	250	255	250	245								
19										230	270	260	275	260	255	250								
20									230	250	250	255	270	280	255	255								
21									240	250	240	285	260	250	255	245								
22									240	245	250	260	280	270	270	250								
23									235	240	275	270	265	275	270	255								
24										250	235	250	280	255	270	270								
25										255	260	270	275	265	270	250								
26									240	230	245	265	290	265	265	270								
27									235	245	265	270	270	275	265	265								
28									C	C	C	C	C	I C 270	270	255								
29																								
30																								
31																								
CNT									6	26	26	26	26	28	28	25								
MED									238	245	252	255	260	258	255	250								
UQ									240	250	260	265	270	265	265	255								
LQ									235	235	245	250	250	250	250	245								

IONOSPHERIC DATA

FEB. 1969

h'F (km)

135° E Mean Time (G. M. T. + 9^h)

Station **AKITA** Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	270	295	310	315	310	290	245	215	220	230	I ₃₅ ^C	I ₃₅ ^C	235	225	225	230	240	230	225	235	240	280	275	270	
2	240	280	250	265	310	315	255	240	220	230	240	240	225	230	220	240	240	220	220	215	245	255	255	240	
3	270	310	315	260	255	470	390	200 ^H	230	210	240	235	230	230	230	240	240	230	I ₂₆ ^B	260	255	260	280	245	
4	290	250	200	250	E ₃₂₀ ^F	E ₄₁₀ ^S	300	225	230	230	210	225	205	215	210	235	230	220	225	240	250	275	270	290	
5	290	265	255	235	295	270	230	230	225	230	235	215	220	225	240	225	240	230	225	240	240	255	275	255	
6	255	245	255	285	275	290	230	225	220	235	230	220	230	225	235	230	245	225	240	255	250	270	310	270	
7	245	240	230	245	280	255	240	225	225	225	230	230	210	205	230	240	240	245	230	240	245	250	260	290	
8	290	290	245	240	265	275	240	230	225	240	230	230	215 ^H	215	205	230	230	240	225	220	235	270	290	295	
9	285	275	250	265	275	290	225	215	225	230	230	235	225	220	230	225	235	230	220	235	240	290	310	310	
10	290	275	260	245	230	290	260	230	235	235	230	235	220	200	230	240	235	230	230	245	235	255	305	290	
11	290	270	270	300	280	245	205	215	225	220	240	230	230	230 ^H	230	240	245	240	240	245	230	275	300 ^B	340	
12	330	330	290	290	400	335	290	240	240	230	230	220	230	235	230	230	230	230	225	215	255	265	270	280	
13	I ₃₀₅ ^A	280	280	290	245	250	255	225	230	205	210 ^H	210 ^H	230	225	215	230	235	225	210	230	230	260	280	270	
14	270	290	280	270	240	280	240	230	230	235	225	210	195	205 ^H	230	230	230	235	225	215	240	265	290	305	
15	280	280 ^A	240	240	C	C	C	C	C	C	C	C	C	C	220	205	230	240	230	235	240	245	240	295	
16	290	280	255	255	245	300	255	220	220	I ₂₁₀ ^B	230	220	225	225	230	I ₂₃₅ ^A	240	225	230	235	240	240	290	290	
17	285	270	240	250	240	240	240	220	205 ^H	I ₂₂₀ ^A	220	215	230 ^H	210	220	220	235	230	215	235	255	280	280	290	
18	235	230	270	270	245	270	240	225	230	225	240	225	200	225	210	235	240	230	220	240	245	240	305	250	
19	255	255	250	245	230	250	245	225	215	210	I ₂₀₀ ^C	210	220	230	230	225	230	230	225	225	230	280	325	340	
20	320	290	270	250	240	230	230	220	205	215	230	230	225	230	230	230	250	230	210	220	240	250	290	320	
21	305	280	240	255	290	275	225	220	225	215	200	200	205	230	225	215	250	I ₂₄₅ ^A	250	I ₂₅₀ ^A	220	240	280	295	
22	305	290	265	245	235	210	240	215	220	230	225	215	220	230	225	245	240	230	230	225	220	240	270	290	
23	305	290	290	280	240	250	215	210	205	200	220	230	230	230	230	230	240	230	230	245	240	255	280	310	
24	325	290	240	225	245	290	270	225	230	215	225	195	225	215	230	235	245	240	230	230	240	240	250	270	
25	290	275	265	265	255	235	220	225	230	230	220	220	230	230	245	240	250	240	225	225	230	230	265	290	
26	280	275	255	250	245	260	225	210	205	195	195	225	230	230	I ₂₃₀ ^B	230	245	235	215	225	265	250	280	270	
27	305	295	275	240	245	270	240	220	200	230	230	240	235	235	245	235	245	230	255	245	230	245	280	280	
28	270	C	C	C	C	C	C	C	C	C	C	C	C	C	I ₂₃₅ ^C	240	240	240	240	230	225	230	255	280	265
29																									
30																									
31																									
CNT	28	27	27	27	26	26	26	26	26	26	26	26	26	26	28	28	28	28	28	28	28	28	28	28	28
MED	290	280	255	255	248	271	240	225	225	228	230	225	245	225	230	230	240	230	225	235	240	295	280	290	
UQ	305	290	272	270	280	290	255	225	230	230	230	230	230	230	230	240	245	238	230	242	245	270	290	295	
LQ	270	270	248	245	240	250	230	215	220	215	220	215	220	218	222	230	235	230	222	225	230	242	270	270	

IONOSPHERIC DATA

FEB. 1969

h'Es (km)

135° E Mean Time (G. M. T. + 9^h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 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	S	S	E	105	105	105	B	G	170	C	C	G	G	115	G	100	B	S	S	S	S	S	S
2	105	E	E	E	100	100	100	G		G	G	G	G	G	G	G	G	B	S	S	S	S	S	S
3	S	100	100	110	110	E	S	G	100	G	G	G	G	130	130	110	120	110	110	110	105	105	100	100
4	S	E	E	E	E	S	S	G	G	E	G	G	G	115	115	110	110	105	G	S	S	S	S	100
5	100	E	E	110	110	110	105	105	105	G	100	G	G	140	130	120	115	115	105	110		S	S	S
6	S	E	E	E	E	E	S	B	G	155	G	G	140	140	130	G	G	140	120	S	S	100	S	S
7	S	E	E	E	105	E	S	G	G	110	G	G	G	G	G	105	G	G	110	110	105	105	S	100
8	100	100	S	S	E	E	S	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S	S
9	S	105	E	E	E	E	S	G		110	110	110	G	105	105	100	G	G	G	S	S	S	110	110
10	105	100	100	100	100	100	S	G	110	G	G	G	G	G	G	G	G	120	S	110	110	110	105	105
11	105	105	105	105	100	S	S	G	G	G	105	105	G	105	100	100	100	100	100	100	S	110	105	105
12	105	100	S	E	E	115	115	115	115	G	G	G	G	110	G	G	G	G	S	100	S	S	S	105
13	105	105	E	105	105	105	105	G	100	G	G	G	G	G	G	G	G	B	S	S	S	S	S	S
14	S	S	E	E	E	S	S	155	G	G	G	G	G	G	G	G	G	B	S	S	E	S	S	S
15	S	100	S	E	C	C	C	C	C	C	C	C	C	105	G	G	100	100	100	100	S	100	S	S
16	S	S	S	E	S	E	S	G	G	110	105	105	100	100	100	100	100	B	100	100	S	S	S	S
17	S	E	E	E	105	105	105	G	115	110	105	105	G	105	G	G	G	G	105	S	S	S	105	S
18	S	E	S	E	E	S	S	110	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S
19	S	E	E	E	E	E	S	G	G	G	C	G	G	G	G	G	G	G	S	105	105	105	S	S
20	S	E	100	100	E	S	S	G	G	G	G	G	G	G	G	G	G	G	B	B	B	S	S	S
21	S	B	E	E	E	B	S	G	G	G	G	G	G	G	G	G	130	115	115	110	110	105	S	S
22	100	S	E	E	E	E	S	G	140	120	G	G	G	G	G	155	150	130	120	S	S	S	S	S
23	S	E	S	E	E	E	S	G	G	G	G	G	G	G	C	140	120	115	110	105	105	110	S	S
24	S	S	E	E	E	S	S	G	G	115	105	G	G	G	G	G	G	G	S	S	S	110	S	S
25	S	E	E	E	E	S	S	G	G	G	115	G	G	G	G	G	G	G	B	105	S	S	S	B
26	S	E	S	E	E	S	S	G	G	G	G	G	G	105	B	G	110	G	S	S	S	S	110	100
27	100	100	S	E	E	E	S	G	110	110	G	G	G	G	G	G	G	G	155	S	S	S	S	S
28	S	C	C	C	C	C	C	C	C	C	C	C	C	C	105	G	G	G	S	S	S	S	S	100
29																								
30																								
31																								
CNT	9	9	4	6	9	7	6	4	10	10	7	3	4	11	9	8	11	9	12	12	6	11	6	9
MED	105	100	100	105	105	105	105	112	110	111	105	105	110	105	110	110	110	115	110	105	105	105	105	100
UQ	105	105	102	110	105	108	105	135	115	138	148	105	128	122	130	130	120	120	118	110	110	110	110	105
LQ	100	100	100	100	100	102	105	108	105	110	105	105	102	105	100	102	100	110	102	100	105	105	105	100

IONOSPHERIC DATA

FEB. 1969

Types of Es

135° E Mean Time (G. M. T. + 9^h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

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 ₂	F ₁	F ₁			H ₁					C ₂		L ₁								
2	F ₁				F ₁	F ₂	F ₂		L ₁																
3		F ₃	F ₂	F ₁	F ₂				L ₂					H ₁	H ₁	L ₂	C ₂	L ₂	F ₅	F ₃	F ₃	F ₃	F ₂	F ₁	
4									H ₁				C ₂	C ₂	L ₂	L ₂	LH ₁₁							F ₁	
5	F ₁			F ₁	F ₃	F ₁	F ₁	L ₃	L ₁		L ₁			H ₁	H ₁	C ₂	C ₂	C ₂	F ₁	F ₁					
6									H ₁					H ₁	H ₁	H ₁		H ₂	F ₁				F ₁		
7					F ₁				L ₁								L ₂		F ₂	F ₁	F ₂	F ₁		F ₁	
8	F ₁	F ₁																							
9		F ₁							L ₂	L ₂	L ₁		L ₁	L ₁									F ₁	F ₁	F ₁
10	F ₁	F ₃	F ₃	F ₁	F ₁	F ₁			L ₁									C ₁		F ₂	F ₂	F ₂	F ₂	F ₁	
11	F ₂	F ₁	F ₁	F ₁	F ₁						L ₂	L ₁		L ₁	L ₂	L ₁	L ₂	L ₁	F ₂	F ₁		F ₂	F ₃	F ₂	
12	F ₂	F ₂				F ₁	C ₁	C ₂	C ₂						L ₂					F ₁				F ₂	
13	F ₂	F ₁			F ₂	F ₂	F ₂	L ₁	L ₂																
14								H ₁																	
15		F ₂													L ₁			L ₁	L ₁	F ₁	F ₁		F ₁		
16										L ₂	L ₂	L ₂	L ₂	L ₂	L ₂	L ₂	L ₂		F ₁	F ₁					
17					F ₁	F ₁	L ₂		C ₂	L ₂	L ₂	L ₁		L ₁					F ₁					F ₂	
18									L ₁																
19																				F ₁	F ₂	F ₁			
20			F ₂	F ₂																					
21																		H ₂	C ₂	F ₃	F ₅	F ₁	F ₂		
22	F ₁								H ₁	C ₂						H ₁	H ₂	H ₂	F ₂						
23																H ₁	C ₂	C ₁	F ₂	F ₂	F ₃	F ₁			
24										C ₂	L ₁												F ₁		
25											L ₁										F ₁				
26															L ₁									F ₂	F ₂
27	F ₂	F ₂							L ₂	L ₂										H ₁					
28																L ₂									F ₁
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																									
MED																									
UQ																									
LQ																									

IONOSPHERIC DATA

FEB. 1969

foF2 (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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	35	C	C	C	C	C	40	60	68	89	101	104	94	C	C	C	72	65	58	59	46	I ₄₆ ^R	45	46	
2	42	35	37	32	30	32	34	60	84	78	103	106	91	89	79	90	88	76	58	56	56	U ₅₂ ^S	I ₅₄ ^R	51	
3	40	34	30	32	24	26	29	65	56	62	128	119	98	107	109	J ₁₀₇ ^R	104	80	62	I ₅₈ ^R	I ₆₀ ^R	58	I ₅₄ ^R	I ₅₇ ^R	
4	J ₅₆ ^R	R ₅₆ ^U	R ₄₄ ^U	25	J ₂₆ ^F	R ₁₈ ^R	23	I ₇₀ ^R	91	96	110	114	88	91	92	93	83	70	51	50	46	42	35	R ₃₈ ^R	
5	38	37	35	30	30	30	29	67	80	99	97	106	96	96	96	90	I ₇₇ ^R	J ₇₇ ^R	58	I ₅₁ ^A	50	45	I ₄₅ ^R	45	
6	43	J ₄₀ ^R	33	33	31	U ₃₇ ^F	J ₄₁ ^R	J ₆₇ ^R	R ₈₀ ^R	85	101	103	J ₁₀₁ ^R	92	81	78	81	73	58	53	45	44	42	46	
7	44	41	40	30	30	32	34	65	R ₇₉ ^R	90	98	109	94	95	96	90	86	73	I ₆₈ ^R	53	50	45	44	40	
8	42	42	44	28	30	30	33	I ₇₆ ^R	93	J ₉₈ ^R	115	121	116	128	118	110	103	79	75	58	48	38	40	42	
9	44	45	41	38	34	36	39	64	J ₇₅ ^S	99	100	104	97	J ₁₀₆ ^R	101	84	83	73	60	50	47	40	37	41	
10	46	J ₅₆ ^R	44	36	26	26	28	68	R ₈₃ ^R	84	109	110	90	94	J ₁₀₂ ^R	R ₉₈ ^R	86	73	64	61	62	49	44	46	
11	45	48	44	R ₄₀ ^R	40	39	38	66	J ₇₆ ^R	89	117	120	97	85	106	104	83	82	83	J ₇₈ ^R	60	45	46	43	
12	45	40	44	42	40	46	57	R ₈₂ ^R	92	132	135	113	120	125	120	99	97	89	63	50	48	47	I ₄₃ ^R	44	
13	46	A	42	43	J ₃₉ ^R	39	37	66	I ₈₀ ^R	91	97	109	124	120	96	90	96	89	62	47	46	R ₄₂ ^R	43	45	
14	45	42	41	43	33	39	J ₃₉ ^R	R	85	102	J ₁₀₀ ^R	100	94	96	89	90	83	73	64	60	53	43	43	45	
15	48	J ₅₄ ^R	49	44	34	36	41	R ₇₀ ^R	R ₈₆ ^R	98	112	126	126	108	102	R ₉₇ ^R	94	84	64	56	J ₅₃ ^R	46	45	44	
16	46	44	46	40	35	35	44	R	85	86	J ₁₀₄ ^R	112	114	102	97	88	86	78	74	61	56	49	52	52	
17	U ₅₄ ^R	58	59	J ₅₈ ^R	39	38	41	J ₇₄ ^R	91	J ₁₀₄ ^R	119	112	126	114	89	H ₈₆ ^H	82	J ₇₆ ^R	63	41	42	R ₃₉ ^R	43	47	
18	42	40	40	39	38	45	50	73	103	112	119	122	117	120	J ₁₀₄ ^R	97	87	J ₇₆ ^R	65	58	J ₅₃ ^R	45	R ₄₄ ^R		
19	46	U ₄₅ ^R	R ₄₄ ^R	J ₄₃ ^R	R ₄₆ ^R	R ₄₂ ^R	R ₄₃ ^R	R ₇₄ ^R	89	96	105	111	121	125	115	106	86	81	72	59	J ₅₃ ^R	43	43	37	
20	R ₄₄ ^R	46	48	49	43	36	R ₄₇ ^R	74	J ₉₇ ^R	115	129	137	137	142	143	121	116	108	92	67	59	48	45	48	
21	49	I ₅₆ ^R	56	41	39	38	46	R	93	101	119	124	128	124	112	J ₁₀₂ ^R	96	95	81	J ₇₀ ^R	61	47	46	47	
22	45	48	47	56	50	30	36	C	C	110	I ₁₂₀ ^C	121	129	133	129	129	114	J ₁₀₆ ^R	J ₈₅ ^R	69	62	J ₅₂ ^R	48	J ₄₇ ^R	
23	46	46	45	46	45	37	46	D ₇₀ ^C	90	112	113	120	122	124	I ₁₁₅ ^C	108	C	96	86	C	C	52	C	J ₄₅ ^R	
24	47	50	C	44	39	39	46	U ₈₂ ^R	98	124	128	I ₁₂₉ ^C	130	I ₁₂₈ ^C	123	115	106	105	94	72	69	62	58	50	
25	50	J ₅₀ ^R	49	I ₅₀ ^R	47	45	48	U ₈₀ ^R	95	114	125	129	128	128	126	118	113	108	97	79	72	62	54	I ₅₂ ^R	
26	55	J ₅₁ ^R	51	51	45	J ₄₀ ^R	47	J ₇₆ ^R	89	104	108	114	118	116	115	112	112	107	96	65	59	64	64	59	
27	I ₅₇ ^R	59	60	58	46	39	45	U ₈₁ ^R	94	106	112	122	116	113	113	110	102	94	81	69	J ₇₅ ^R	64	64	64	
28	64	R ₅₄ ^R	52	52	52	53	62	92	119	121	133	115	121	Y ₁₂₉ ^Y	126	116	105	105	95	I ₈₁ ^R	S ₇₄ ^S	63	63	64	
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	28	26	26	27	27	27	28	24	27	28	28	28	28	27	27	27	27	28	28	27	27	28	26	28	
MED	46	46	44	42	39	37	41	70	89	99	112	114	116	114	106	99	88	80	66	59	53	46	45	46	
UQ	48	R ₅₄ ^R	49	48	44	39	46	R ₇₇ ^R	93	111	120	122	125	125	116	110	104	96	84	68	60	52	54	50	
LQ	44	41	41	34	30	32	35	66	80	90	102	109	96	96	96	90	83	74	62	53	48	44	43	44	

IONOSPHERIC DATA

FEB. 1969

foF1 (0.01)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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	U L 500	L	C	C	C								
2										L	L	L	L	L	L	L								
3										L	L	L	L	L	L									
4										L	L	L	L		L									
5											L	L	L	L	L	L	A							
6										L	L	L	A		L	L								
7										L	L	L	L	L	L									
8										L	L	L	L	L	L	L								
9										L	L	L	L	L	L									
10										L	L	L	L	L	L									
11										L	L	L	L	L	L									
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L	L								
14										L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L	L							
16									L	L	L	L	L	L	L	L								
17									L	L	L	L	L	L	L									
18									L	L	L	L	L	L	L	L	L							
19									L	L	L	L	L	L	L	L	L	L						
20									L	L	L	L	L	L	L	L								
21									L	L	L	L	L	L	L									
22									C	L	C	L	L	L	L	L								
23										L	L	L	L	L	C	L	C							
24										L	L	C	L	C	L	L								
25											L	L	L	L	L	L	L							
26										L	L	L	L	L	B	L								
27										L	L	L	L	L	L									
28									L	L	L	L	L	L	L									
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												
MED											U L 500													
UQ																								
LQ																								

IONOSPHERIC DATA

FEB. 1969

foE (0.01)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Time Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	260	310	340	355	365	C	C	C	260	I A						
2								190	270	315	345	355	365	350	340	A	A	B						
3								185	A	A	A	R	360	350	A	A	A	B						
4								185	I R	300	325	A	A	A	A	A	A	B						
5								200	I R	310	330	I A	355	I R	340	320	A	A	B					
6								B	I R	300	320	I A	I A	340	340	R	315	260	A					
7								B	A	A	A	A	350	R	R	R	R	170						
8								B	A	310	335	U R	345	355	350	I R	A	A	A					
9								170	A	290	A	A	345	345	335	310	R	B						
10								A	A	A	A	350	350	355	I A	340	320	I A	B					
11								190	I R	I A	330	I R	I A	350	355	335	305	A	B					
12								A	A	A	A	340	355	350	340	315	260	B						
13								185	R	A	A	I R	350	355	350	340	310	270	200					
14								180	260	320	A	360	360	360	340	320	I R	B						
15								190	270	I A	335	I A	I A	350	350	340	305	A	A					
16								170	280	310	A	345	350	350	340	310	250	R	B					
17								195	I A	A	A	345	360	350	I R	I R	260	195						
18								190	285	315	I R	330	340	360	350	340	315	I R	180					
19								180	275	310	330	345	360	I R	360	350	320	270	190					
20								220	290	320	335	360	365	360	360	335	280	A						
21								225	285	I A	I A	345	360	360	350	320	260	B						
22								C	C	A	C	A	R	I R	I R	I R	280	200						
23								210	295	335	I R	350	365	375	380	I C	R	C	190					
24								205	300	320	A	C	B	C	360	A	290	B						
25								220	285	B	A	A	375	I R	360	I R	280	B						
26								220	290	320	I R	A	385	A	B	B	290	A						
27								210	290	330	360	I R	I A	385	350	365	330	290	A					
28								240	300	A	A	A	R	A	I R	360	345	290	230					
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								21	20	19	15	19	24	22	22	18	18	9						
MED								190	278	310	335	350	360	350	340	318	268	190						
UQ								210	290	320	340	355	365	360	360	320	280	200						
LQ								185	262	308	330	345	350	350	340	310	260	180						

IONOSPHERIC DATA

FEB. 1969

foEs (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₆	C	C	C	C	C	21	E ₁₆	G	G	36	G	G	C	C	C	G	20	J _X ₁₈	23	J _X ₂₉	J _X ₂₄	22	E ₁₅	
2	20	E ₁₅	E ₁₅	M ₂₂	E ₁₃	E ₁₄	E ₁₅	G	G	G	36	G	G	G	35	J _X ₂₇	E ₁₆	21	E ₁₆	19	E ₁₅	E ₁₅	E ₁₆		
3	E ₁₅	M ₁₉	20	M ₂₀	21	E ₁₃	E ₁₅	21	J _X ₂₉	35	35				36	J _X ₄₈	J _X ₆₃	J _X ₂₉	J _X ₅₁	J _X ₂₄	23	J _X ₅₁	J _X ₂₇	22	
4	21	E ₁₆	E ₁₅	E ₁₇	E ₁₆	E ₁₆	21	20	22	G	G	36	36	38	J _X ₄₂	35	J _X ₃₇	J _X ₂₄	23	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	
5	E ₁₆	E ₁₆	19	E ₁₆	21	30	21	23	G	J _X ₂₉	G	30	36			35	J _X ₇₁	J _X ₆₄	21	J _X ₂₄	J _X ₅₃	J _X ₂₉	23	E ₁₆	E ₁₆
6	E ₁₆	E ₁₆	E ₁₅	19	E ₁₅	E ₁₅	20	E ₁₆	29	G	36	G	J _X ₅₄	J _X ₄₁	G	35	31	26	J _X ₅₁	21	E ₁₆	E ₁₆	21	21	
7	22	E ₁₅	E ₁₆	E ₁₅	E ₁₂	E ₁₆	E ₁₅	E ₁₆	35	31	35	45	G	G	31	33	31	25	G	J _X ₂₃	J _X ₅₁	31	J _X ₂₁	21	21
8	21	E ₁₆	E ₁₇	E ₁₆	E ₁₆	E ₁₆	E ₁₆	18	28	G	G	G	G	G	G	32	30	J _X ₂₆	57	J _X ₄₇	20	J _X ₂₂	E ₁₅	19	
9	J _X ₂₄	19	M ₂₁	20	E ₁₂	E ₁₄	E ₁₆	J _X ₂₈	J _X ₂₆	J _X ₂₈	34	42	G	G	G	G	G	21	E ₁₆	E ₁₆	E ₁₆	E ₁₆	J _X ₂₄		
10	J _X ₂₄	J _X ₂₃	21	E	E	21	E ₁₅	23	35	J _X ₄₂	36	G	G	G	J _X ₄₄	G	J _X ₂₇	E ₁₆	J _X ₅₇	M ₃₆	43	E ₁₅	24	J _X ₄₆	
11	22	M ₃₀	J _X ₂₄	J _X ₂₅	21	21	22	G	G	32	21	30	J _X ₃₈	J _X ₂₉	G	G	J _X ₂₈	J _X ₃₀	22	E ₁₅	21	E ₁₅	J _X ₃₈	J _X ₃₆	
12	J _X ₃₅	34	23	21	E ₁₂	E ₁₄	23	26	J _X ₄₂	J _X ₃₆	36	G	G	G	G	G	G	E ₁₈	E ₁₅	E ₁₆	21	E ₁₆	E ₁₆	23	
13	21	J _X ₄₃	J _X ₄₃	J _X ₂₇	J _X ₂₅	22	21	G	G	J _X ₃₆	36	G	G	G	G	G	G	G	21	J _X ₂₃	20	21	E ₁₆	E ₁₆	
14	E ₁₆	E ₁₆	E ₁₆	E	E	21	21	G	G	J _X ₃₆	35	G	G	G	G	G	G	E ₂₅	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	21	
15	E ₁₆	E ₁₂	E ₁₆	20	20	22	E ₁₆	G	G	34	G	36	36	J _X ₃₀	G	34	J _X ₂₉	J _X ₃₆	J _X ₂₉	M ₂₈	21	J _X ₁₉	22	E ₁₅	
16	M ₂₁	E ₁₅	E ₁₅	E ₁₂	M ₂₁	18	E ₁₅	G	G	G	J _X ₅₂	G	30	G	29	G	24	J _X ₂₈	20	J _X ₃₆	22	J _X ₂₅	E ₁₅	E ₁₅	E ₁₅
17	E ₁₅	E ₁₂	E ₁₂	E ₁₁	E	E ₁₃	20	J _X ₂₄	J _X ₂₆	J _X ₃₃	J _X ₃₃	G	G	G	G	G	G	G	E ₁₆	23	J _X ₂₅	22	22	E ₁₆	
18	20	E ₁₅	E ₁₅	E ₁₂	E ₁₆	E ₁₆	E ₁₆	G	G	G	G	G	G	G	G	G	G	G	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	
19	E ₁₆	E ₁₅	E ₁₅	E ₁₅	E ₁₂	E ₁₆	E ₁₆	G	G	G	J _X ₃₆	G	G	G	G	G	G	18	E ₁₆	19	E ₁₆	E ₁₆	E ₁₆	E ₁₆	
20	22	21	E ₁₅	E ₁₅	E	E ₁₅	E ₁₆	G	G	G	G	31	G	G	G	G	30	24	E ₁₆	E ₁₆	E ₁₆	21	J _X ₁₈	E ₁₆	
21	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₆	G	G	31	35	G	G	G	43	J _X ₅₇	J _X ₄₃	23	E ₁₅	E ₁₆	J _X ₂₃	J _X ₂₂	J _X ₂₉	J _X ₂₁	
22	E ₁₆	E ₁₆	E ₁₅	E ₁₄	E ₁₆	E ₁₆	E ₁₆	C	C	35	C	43	G	G	32	32	30	31	23	E ₁₅	22	J _X ₂₁	J _X ₁₈	E ₁₆	E ₁₅
23	E ₁₅	E ₁₃	E ₁₆	E	E ₁₂	E ₁₄	C	G	G	36	G	G	41	41	C	G	C	22	E ₁₆	C	C	J _X ₂₅	C	J _X ₄₀	
24	E ₁₇	E ₁₃	C	E ₁₂	E ₁₂	E ₁₄	E ₁₆	G	G	G	35	C	E ₅₃	C	G	35	J _X ₂₅	J _X ₃₁	J _X ₃₆	22	21	E ₁₅	E ₁₆	E ₁₆	
25	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₅	E ₁₆	G	G	E ₄₀	36	43	42	G	G	G	30	J _X ₂₅	J _X ₂₉	E ₁₅	E ₁₅	E ₁₅	E ₁₆	E ₁₆	
26	E ₁₅	E ₁₅	E ₁₆	E	E ₁₅	E ₁₅	E ₁₅	G	G	G	J _X ₃₆	42	43	M ₄₃	E ₅₅	E ₅₂	33	25	22	E ₁₆	19	E ₁₆	18	E ₁₆	
27	E ₁₆	22	20	E ₁₅	E ₁₅	E ₁₆	E ₁₅	G	G	G	G	42	43	G	40	G	36	24	J _X ₂₁	M ₂₁	M ₃₁	42	E ₁₆	E ₁₆	
28	E ₁₆	E ₁₅	E ₁₆	E	E ₁₅	E ₁₅	E ₁₆	G	G	J _X ₃₀	J _X ₃₉	38	39	G	J _X ₃₈	G	G	G	E ₁₆	21	J _X ₂₆	E ₁₅	20	19	
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	28	27	26	27	27	27	27	27	27	28	27	27	28	26	26	27	27	28	28	27	27	28	27	28	
MED	E ₁₆	E ₁₆	E ₁₆	E ₁₅	E ₁₅	E ₁₆	E ₁₆	G	G	29	35	G	G	G	G	G	27	22	21	21	21	E ₁₆	E ₁₇	E ₁₆	
UQ	21	19	20	20	E ₁₆	17	20	19	27	36	36	36	36	32	34	34	31	J _X ₂₆	J _X ₂₆	24	24	J _X ₂₂	22	21	
LQ	E ₁₆	E ₁₅	E ₁₅	E ₁₂	E ₁₂	E ₁₄	E ₁₆	G	G	G	E ₂₁	G	G	G	G	G	G	E ₁₇	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	

IONOSPHERIC DATA

FEB. 1969

fbEs (0.1)

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

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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	ES ₁₆	C	C	C	C	C	E	EB ₁₆	G	G	ER ₃₆	G	G	C	C	C	G	19	15	20	17	18	E	ES ₁₅	
2	E	ES ₁₅	ES ₁₅	E	EB ₁₃	EB ₁₄	ES ₁₅	G	G	G	33	G	G	G	G	32	26	EB ₁₆	E	ES ₁₆	E	ES ₁₅	ES ₁₅	ES ₁₆	
3	ES ₁₅	E	E	13	E	EB ₁₃	ES ₁₅	G	25	30	34	G	G	G	36	44	45	29	26	E	E	26	17	E	
4	E	ES ₁₆	ES ₁₅	ES ₁₇	ES ₁₆	ES ₁₆	E	ER ₂₀	ER ₂₂	G	G	ER ₃₆	ER ₃₆	38	33	33	28	20	E	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	
5	ES ₁₆	ES ₁₆	E	ES ₁₆	E	26	E	17	G	G	21	25	ER ₃₆	G	G	35	65	56	ER ₂₁	19	A	26	E	ES ₁₆	
6	ES ₁₆	ES ₁₆	ES ₁₅	E	ES ₁₅	ES ₁₅	E	EB ₁₆	28	G	35	G	52	40	G	ER ₃₅	30	25	29	E	ES ₁₆	ES ₁₆	E	E	
7	E	ES ₁₅	ES ₁₆	ES ₁₅	ES ₁₂	ES ₁₆	ES ₁₅	EB ₁₆	31	31	35	39	G	ER ₃₁	ER ₃₃	ER ₃₁	ER ₂₅	G	19	41	25	E	E	E	
8	E	ES ₁₆	ES ₁₇	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ER ₁₈	26	G	G	G	G	G	G	30	28	25	54	37	E	16	ES ₁₅	19	
9	17	18	E	E	EB ₁₂	EB ₁₄	ES ₁₆	16	26	G	ER ₃₄	40	G	G	G	G	G	21	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	E	E	
10	E	21	E	E	E	ES ₁₅	23	29	33	35	G	G	G	G	27	39	G	26	EB ₁₆	29	27	40	ES ₁₅	15	25
11	E	16	16	18	14	E	E	G	G	32	ER ₂₁	G	30	37	29	G	G	25	25	E	ES ₁₅	E	ES ₁₅	30	19
12	19	25	17	16	EB ₁₂	EB ₁₄	16	25	33	31	33	G	G	G	G	G	G	EB ₁₈	ES ₁₅	ES ₁₆	E	ES ₁₆	ES ₁₆	E	
13	E	26	38	19	16	E	E	G	G	32	35	G	G	G	G	G	G	G	17	18	E	E	ES ₁₆	ES ₁₆	
14	ES ₁₆	ES ₁₆	ES ₁₆	E	E	E	E	G	G	25	ER ₃₅	G	G	G	G	G	EB ₂₅	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	E	
15	ES ₁₆	E	EB ₁₂	ES ₁₆	E	E	E	ES ₁₆	G	G	32	G	36	ER ₃₆	G	ER ₂₃	26	26	25	19	20	E	E	ES ₁₅	
16	E	ES ₁₅	ES ₁₅	EB ₁₂	E	E	ES ₁₅	G	G	G	46	G	27	G	30	G	G	20	33	E	19	ES ₁₅	ES ₁₅	ES ₁₅	ES ₁₅
17	ES ₁₅	EB ₁₂	EB ₁₂	EB ₁₁	E	EB ₁₃	E	16	26	33	32	G	G	G	G	G	G	G	ES ₁₆	E	E	E	E	ES ₁₆	
18	E	ES ₁₅	ES ₁₅	EB ₁₂	ES ₁₆	ES ₁₆	ES ₁₆	G	G	G	G	G	G	G	G	G	G	G	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₇	ES ₁₆	
19	ES ₁₆	ES ₁₅	ES ₁₅	ES ₁₅	EB ₁₂	ES ₁₆	ES ₁₆	G	G	G	30	G	G	G	G	G	G	17	ES ₁₆	E	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	
20	E	E	ES ₁₅	ES ₁₅	E	ES ₁₅	ES ₁₆	G	G	G	G	30	G	G	G	G	30	22	ES ₁₆	ES ₁₆	ES ₁₆	E	ES ₁₆	ES ₁₆	
21	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₅	ES ₁₆	ES ₁₆	G	G	ER ₃₁	ER ₃₅	G	G	G	42	54	30	23	ES ₁₅	ES ₁₆	E	E	29	E	
22	ES ₁₆	ES ₁₆	ES ₁₅	EB ₁₄	ES ₁₆	ES ₁₆	ES ₁₆	C	C	34	C	38	G	G	32	G	28	29	23	ES ₁₅	E	E	E	ES ₁₆	ES ₁₅
23	ES ₁₅	EB ₁₃	ES ₁₆	E	EB ₁₂	EB ₁₄	C	G	G	36	G	G	41	40	C	G	C	21	ES ₁₆	C	C	17	C	25	
24	ES ₁₇	EB ₁₃	C	EB ₁₂	EB ₁₂	EB ₁₄	ES ₁₆	G	G	G	35	C	EB ₃₃	C	G	33	G	25	31	20	E	E	ES ₁₅	ES ₁₆	ES ₁₆
25	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₅	ES ₁₆	G	G	EB ₄₀	ER ₃₆	40	41	G	G	G	25	24	20	ES ₁₅	ES ₁₅	ES ₁₅	ES ₁₆	ES ₁₆	
26	ES ₁₅	ES ₁₅	ES ₁₆	E	ES ₁₅	ES ₁₅	ES ₁₅	G	G	G	G	36	ER ₄₂	41	EB ₅₅	EB ₅₂	30	25	16	ES ₁₆	E	ES ₁₆	E	ES ₁₆	
27	ES ₁₆	E	E	ES ₁₅	ES ₁₅	ES ₁₆	ES ₁₅	G	G	G	G	41	43	G	40	G	36	22	20	E	25	38	ES ₁₆	ES ₁₆	
28	ES ₁₆	ES ₁₅	ES ₁₆	E	ES ₁₅	ES ₁₅	ES ₁₆	G	G	28	37	37	ER ₃₉	G	ER ₃₈	G	31	G	G	ES ₁₆	E	25	ES ₁₅	E	E
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	28	27	26	27	27	27	27	27	27	28	27	27	28	26	26	27	27	28	28	27	27	28	27	28	
MED	ES ₁₆	ES ₁₅	ES ₁₅	ES ₁₃	ES ₁₄	ES ₁₅	ES ₁₅	G	G	U	24	U	29	G	G	G	G	25	22	16	16	ES ₁₅	ES ₁₅	ES ₁₆	ES ₁₆
UQ	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₅	ES ₁₆	ES ₁₆	ES ₁₆	26	32	34	34	U	32	30	32	30	30	25	20	18	ES ₁₆	ES ₁₆	ES ₁₆	ES ₁₆
LQ	E	E	E	ES ₁₅	E	E	ES ₁₃	E	G	G	G	ES ₂₁	G	G	G	G	G	E	G	ES ₁₆	ES ₁₅	E	E	E	E

IONOSPHERIC DATA

FEB. 1969

f-min (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat 35° 42.4' N. Long 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₆ ^S	C	C	C	C	C	E ₁₅ ^S	16	16	12	16	16	26	C	C	C	16	15	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
2	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	10	13	14	E ₁₅ ^S	14	16	16	16	18	26	18	16	15	15	16	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	
3	E ₁₅ ^S	12	12	10	14	13	E ₁₅ ^S	16	16	16	15	26	26	26	18	16	16	15	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
4	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₇ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	16	16	16	15	25	26	15	17	16	16	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
5	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	12	E ₁₅ ^S	E ₁₆ ^S	16	15	11	15	16	26	25	16	16	15	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
6	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	16	16	16	15	26	26	26	26	18	16	17	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
7	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	12	E ₁₆ ^S	E ₁₅ ^S	16	16	19	19	19	26	25	23	25	16	15	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	
8	E ₁₆ ^S	E ₁₆ ^S	E ₁₇ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	16	16	19	25	26	26	26	26	26	18	16	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	
9	E ₁₅ ^S	E ₁₅ ^S	14	12	12	14	E ₁₆ ^S	14	15	16	19	18	18	16	19	18	17	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
10	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	10	10	E ₁₆ ^S	E ₁₅ ^S	15	15	15	18	19	16	15	16	19	16	16	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	14	E ₁₅ ^S	
11	E ₁₅ ^S	13	13	E ₁₅ ^S	10	14	E ₁₅ ^S	16	16	16	19	25	19	18	26	25	16	16	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	
12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	10	12	14	E ₁₅ ^S	16	15	16	16	26	24	25	26	25	17	18	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
13	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	14	12	E ₁₅ ^S	E ₁₆ ^S	16	16	16	14	25	16	26	16	16	16	16	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
14	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	10	10	E ₁₆ ^S	E ₁₆ ^S	16	16	16	25	26	25	26	27	19	18	25	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
15	E ₁₆ ^S	12	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	16	16	15	16	18	18	20	16	16	15	12	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	
16	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	12	10	E ₁₅ ^S	E ₁₅ ^S	16	15	16	15	25	25	17	18	16	14	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
17	E ₁₅ ^S	12	12	11	10	13	14	15	14	14	16	25	24	26	21	18	16	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
18	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	16	15	16	16	25	26	26	16	16	16	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₇ ^S	E ₁₆ ^S	
19	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₆ ^S	E ₁₆ ^S	16	16	16	16	25	16	26	26	17	16	15	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
20	E ₁₆ ^S	12	E ₁₅ ^S	E ₁₅ ^S	10	E ₁₅ ^S	E ₁₆ ^S	16	16	16	16	25	28	18	16	16	18	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	
21	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	16	16	16	25	26	25	26	18	16	16	16	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
22	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	14	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	C	C	16	C	22	26	18	16	16	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	
23	E ₁₅ ^S	13	E ₁₆ ^S	10	12	14	E ₂₅ ^S	15	15	15	16	18	19	25	C	18	C	17	E ₁₆ ^S	C	C	E ₁₅ ^S	C	E ₁₅ ^S	
24	E ₁₇ ^S	13	C	12	12	14	E ₁₆ ^S	15	14	16	16	C	53	C	26	18	15	15	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	
25	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	16	16	40	26	28	26	26	16	16	16	14	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	
26	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	10	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	16	12	16	23	25	25	26	55	52	16	15	12	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
27	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	16	15	15	19	26	19	25	20	18	17	15	E ₁₅ ^S	14	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
28	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	10	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	14	16	16	25	32	26	26	16	21	15	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	
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	28	27	26	27	27	27	28	27	27	28	27	27	28	26	26	27	27	28	28	27	27	28	27	28	
MED	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	U ₁₂	11	E ₁₅ ^S	E ₁₆ ^S	16	16	16	16	25	26	25	18	18	16	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
UQ	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	16	16	16	19	26	26	26	26	19	16	16	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
LQ	E ₁₅ ^S	E ₁₃ ^S	E ₁₅ ^S	10	12	14	E ₁₅ ^S	16	15	16	16	19	19	18	16	16	16	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	

IONOSPHERIC DATA

FEB. 1969

M(3000)F₂(0.01)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N Long. 139°29.3'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	C	C	C	C	C	310	335	340	325	325	325	330	C	C	C	320	325	310	325	310	I ^R 290	285	305
2	320	290	275	280	265	275	295	340	345	335	320	320	330	315	310	310	330	340	325	325	300	U ^S 295	300	300
3	285	295	270	280	315	220	245	370	350	320	320	320	300	300	295	J ^R 300	300	320	310	I ^R 295	I ^R 290	305	I ^R 290	I ^R 275
4	J ^R 285	R ^U 290	U ^R 360	265	F	R ^U 265	295	I ^R 320	340	325	315	320	325	315	315	310	315	325	300	300	290	310	290	290
5	270	290	315	300	260	275	310	345	325	335	330	325	310	305	300	320	I ^R 320	J ^R 340	325	I ^A 305	300	300	I ^R 270	300
6	310	J ^R 320	310	295	295	U ^F 270	J ^R 315	J ^R 320	R ^U 350	335	295	320	J ^R 305	325	275	310	295	330	315	310	295	295	260	285
7	320	295	320	295	260	280	330	325	R ^U 340	325	320	330	310	305	330	310	300	320	I ^R 315	310	305	305	275	290
8	275	305	335	285	275	290	285	I ^R 320	335	J ^R 320	320	340	295	295	295	300	305	305	330	320	310	265	275	285
9	295	310	295	290	275	275	335	345	J ^S 345	335	330	310	305	J ^R 310	310	310	315	320	320	305	320	285	270	270
10	285	J ^R 305	325	310	315	275	295	325	R ^U 325	325	320	325	320	310	J ^R 310	R ^U 315	335	330	310	315	310	305	300	265
11	285	300	300	R ^U 275	290	290	325	335	J ^R 330	305	310	325	310	290	295	315	320	305	305	J ^R 310	350	265	280	245
12	260	245	270	250	240	250	285	R ^U 330	310	310	320	310	300	300	310	325	310	315	320	300	300	280	I ^R 270	285
13	305	A	285	280	J ^R 280	R ^U 275	295	325	I ^R 340	330	320	310	305	315	335	290	315	330	325	300	310	R ^U 280	280	295
14	300	275	270	305	285	280	J ^R 280	R ^U	340	325	J ^R 330	330	310	325	300	320	315	325	300	305	325	280	260	255
15	290	J ^R 300	310	305	275	280	295	R ^U 330	R ^U 325	315	305	310	315	305	R ^U 305	J ^R 300	310	325	325	300	J ^R 300	295	280	280
16	285	295	290	315	270	275	300	R ^U	340	325	J ^R 305	310	315	315	310	320	325	320	315	315	305	290	285	280
17	U ^R 275	295	325	J ^R 315	340	290	270	J ^R 325	340	J ^R 320	330	305	310	325	305	H ^U 315	315	J ^R 330	335	315	295	R ^U 280	280	300
18	335	280	280	280	280	290	R ^U 305	345	330	315	305	320	310	300	J ^R 300	320	325	J ^R 340	325	310	J ^R 320	320	R ^U	R ^U 275
19	300	U ^R 305	R ^U 335	J ^R 305	R ^U 320	R ^U 305	310	R ^U 340	335	335	320	295	300	295	295	320	315	320	320	310	J ^R 315	300	275	260
20	R ^U 270	285	310	320	340	315	R ^U 300	325	J ^R 310	305	305	300	295	295	300	290	295	305	310	300	310	290	290	275
21	280	I ^R 300	305	290	290	270	305	R ^U	325	315	295	290	295	290	300	J ^R 305	300	300	310	J ^R 300	330	295	285	270
22	275	290	290	305	350	335	280	C	C	310	I ^C 320	300	285	295	290	295	300	J ^R 310	J ^R 310	310	310	J ^R 300	280	J ^R 280
23	275	285	275	285	300	300	305	C	310	320	300	290	295	300	I ^C 295	290	C	310	300	C	C	300	C	J ^R 270
24	265	270	C	325	295	260	295	U ^R 345	305	315	290	I ^C 310	300	I ^C 290	280	290	295	300	310	305	285	295	295	280
25	265	J ^R 300	280	I ^R 300	275	315	290	U ^R 325	310	305	300	300	290	285	280	295	290	305	300	315	R ^U 295	300	280	I ^R 285
26	275	J ^R 295	290	300	315	J ^R 285	305	J ^R 325	315	310	305	300	290	295	290	285	295	300	315	290	270	280	295	290
27	I ^R 280	270	295	315	305	275	290	U ^R 320	330	310	295	295	295	285	285	300	295	305	300	300	J ^R 300	275	270	275
28	295	R ^U 250	250	255	260	275	290	315	310	305	325	295	275	V ^U 280	285	290	285	305	300	I ^R 300	R ^U 295	285	280	285
29																								
30																								
31																								
CNT	28	26	26	27	26	27	28	23	27	28	28	28	28	27	27	27	27	28	28	27	27	28	26	28
MED	285	295	295	295	288	275	295	325	330	320	320	310	305	300	300	310	310	320	312	305	305	295	280	280
UQ	298	300	315	305	315	290	308	340	340	325	320	322	310	312	310	315	318	328	322	312	310	300	290	290
LQ	275	285	280	280	275	275	290	R ^U 325	320	310	305	300	295	295	292	295	298	305	308	300	295	280	275	272

IONOSPHERIC DATA

FEB. 1969

M(3000)F1(0.01)

135° E Mean Time (G. M. T. + 9^h)

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N**, Long. **139° 29.3' E** Sweep **1.0 Mc to 20.0 Mc** 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	U L 380	L	C	C	C								
2										L	L	L	L	L	L	L								
3										L	L	L	L	L	L									
4										L	L	L	L		L									
5											L	L	L	L	L	A								
6										L	L	L	A		L	L								
7										L	L	L	L	L	L									
8										L	L	L	L	L	L	L								
9										L	L	L	L	L	L									
10										L	L	L	L	L	L									
11										L	L	L	L	L	L									
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L	L								
14										L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L	L							
16									L	L	L	L	L	L	L	L	L							
17									L	L	L	L	L	L	L	L								
18										L	L	L	L	L	L	L	L							
19									L	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								
22									C	L	C	L	L	L	L	L								
23										L	L	L	L	L	C	L	C							
24										L	L	C	L	C	L	L								
25											L	L	L	L	L	L	L							
26										L	L	L	L	L	B	L								
27										L	L	L	L	L	L									
28									L	L	L	L	L	L	L									
29																								
30																								
31																								
CNT												1												
MED												U L 380												
UQ																								
LQ																								

IONOSPHERIC DATA

FEB. 1969

h'F2 (km)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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										240	255	255	250	C	C	C								
2										240	255	255	250	275	250	270								
3										250	260	265	260	250	250									
4										250	250	250	240		250									
5											250	250	250	250	250	A 260								
6										250	260	260	250		240	260								
7										240	255	260	250	260	255									
8										240	270	250	300	260	250	255								
9										250	250	250	250	275	250									
10										245	260	255	250	260	260									
11										250	260	250	255	310	270									
12										260	250	250	260	255	250	250								
13										235	250	265	270	260	245	305								
14										250	245	250	260	275	280	250								
15										245	260	270	250	250	255	255	240							
16									240	240	290	260	260	260	260	250								
17									250	260	250	275	260	250	250									
18										245	260	250	260	275	240	255	250							
19									240	235	265	275	285	275	260	250	240							
20									250	260	265	265	280	295	275	250								
21									245	260	285	275	280	260	250									
22									C 270	I 260	C 275		285	290	255	270								
23									250	255	285	270	290		C 275		C							
24									265	250	I 275	C 275	275	I 275	C 270	265								
25										290	260	275	290	265	265	250								
26										275	265	275	285	290	275	285								
27										255	260	260	260	275	260									
28									250	245	255	250	305	280	270									
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									6	26	28	28	28	25	26	17	4							
MED									248	250	260	260	260	275	255	260	245							
UQ									250	260	262	272	278	280	265	270	250							
LQ									240	240	250	250	250	260	250	250	240							

IONOSPHERIC DATA

FEB. 1969

h'F (km)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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	290	C	C	C	C	C	250	240	230	230	240	220	210	C	C	C	225	220	225	230	245	255	260	260
2	250	255	255	275	345	320	270	230	230	220	230	220	220	220	230	230	245	215	205	220	245	250	250	230
3	255	275	310	295	240	500	400	200	205	210	240	230	230	240	240	250	250	240	250	250	250	270	290	275
4	285	250	210	360	320	490	350	250	235	235	230	210	230	245	200	230	230	215	210	250	245	250	250	280
5	300	290	250	260	320	I ^A ₃₀₅	285	240	240	250	240	245	210	230	220	I ^A ₂₅₀	I ^A ₂₄₀	240	230	A	260	255	290	265
6	250	250	250	300	300	300	250	240	240	230	235	240	I ^A ₂₂₅	250	230	250	250	240	240	240	250	260	300	295
7	250	250	245	250	300	310	245	220	240	215	240	245	220	245	220	250	250	245	240	300 ^A	250	250	290	270
8	290	265	245	250	300	310	295	240	230	210 ^H	225	230	210	225	205	210	245	225	250 ^A	250 ^A	240	245	300	300
9	280	270	260	255	290	310	215	220	220	220	240	240	235	235	230	235	240	230	220	245	250	250	320	320
10	300	250	245	235	200	335	290	235	235	230	230	220	205	200	240	245	230	220	250	250 ^A	I ^A ₂₄₅	230	275	315
11	280	270	260	315	270	250	220	220	225	200 ^H	205	225	205	210	230	240	245	245	230	240	215	290	I ^A ₃₀₀	355
12	350	400 ^A	290	350	400	360	290	230	250	240	225	210	215	240	235	235	240	235	200	240	255	260	310	285
13	265	310	I ^A ₃₀₅	310	290	285	260	235	235	205	235	220	235	235	230	205 ^H	245	235	210	250	255	260	290	290
14	265	300	300	250	200	270	250	245	245	245	220	215	210	200	245	235	245	230	210	245	235	250	335	340
15	300	295	275	245	210	270	250	240	240	205 ^H	220	225	225	210	215	230	I ^A ₂₄₀	240	230	250	250	250	300	300
16	290	285	250	245	210	295	260	220	210	205	I ^A ₂₀₀	210	205	220	210	230	245	230	230	240	240	255	290	295
17	300	270	245	240	210	270	270	240	205 ^H	210	240	220	235	200	210	200 ^H	245	240	235	215	280	295	300	260
18	240	255	275	270	275	275	250	250	245	220	210	195 ^H	210	210	210	230	240	230	230	250	240	245	285	310
19	290	265	250	250	235	250	250	240	225	205	200	200 ^H	210	220	235	225	225	245	240	230	245	260	295	360
20	345	300	250	250	220	240	260	240	230	230	240	210	200	225	245	220	250	240	235	235	235	260	295	320
21	320	260	245	220	290	295	250	230	240	245	210	210 ^H	225	225	235	250 ^A	250	245	240	240	240	275	300	315
22	320	305	275	250	210	215	260	C	C	200	I ^A ₂₄₀	220	220	205 ^H	240	225	240	245	210	230	240	240	295	300
23	300	295	290	260	250	240	E ^C ₂₅₀	215	240	235	210	210	230	250	I ^C ₂₂₀	220 ^H	C	245	230	C	C	250	C	E ^A ₃₇₀
24	345	310	C	240	225	300	290	225	230	215	220	I ^A ₂₁₀	230	I ^C ₂₃₅	240	240	250	250	245	240	250	245	250	275
25	300	295	285	265	265	250	225	230	240	250	230	245	230	240	240	240	240	250	220	230	240	245	285	295
26	295	270	275	255	250	260	245	230	240	240	240	240	250	220	B	R	250	240	220	210	265	290	260	265
27	285	300	260	245	245	280	295	250	245	240	225	210	245	240	235	255	240	240	240	245	255	I ^A ₂₅₅	285	285
28	270	300	360	355	340	280	270	245	245	230	240	230	230	220	220	245	245	250	220	240	250	250	290	270
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	28	27	26	27	27	27	28	27	27	28	28	28	28	27	26	26	27	28	28	26	27	28	27	28
MED	290	275	260	255	265	285	260	235	235	225	230	220	222	225	230	235	245	240	230	240	245	252	290	294
UQ	300	300	285	285	300	310	288	240	240	238	240	230	230	240	240	245	248	245	240	250	250	260	300	314
LQ	268	262	250	250	222	265	250	228	230	210	220	210	210	215	220	225	240	230	220	230	240	250	285	272

IONOSPHERIC DATA

FEB. 1969

h'Es (km)

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

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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	C	C	C	C	C	105	B	G	G	190	G	G	C	C	C	G	130	130	105	105	100	105	S
2	110	S	S	115	B	B	S	G	G	G	110	G	G	G	G	110	110	B	110	S	110	S	S	S
3	S	130	100	100	100	B	S	105	130	135	120	G	G	G	140	115	110	110	110	105	105	100	100	100
4	100	S	S	S	S	S	150	160	120	G	G	135	130	125	110	110	110	100	100	S	S	S	S	S
5	S	S	130	S	110	110	110	110	G	110	105	135	G	G	140	120	110	115	110	105	105	100	S	S
6	S	S	S	110	S	S	110	B	180	G	165	G	140	140	G	200	150	150	110	100	S	S	100	100
7	105	S	S	S	B	S	S	B	115	110	110	110	G	110	110	110	110	G	110	105	105	105	105	100
8	100	S	S	S	S	S	S	110	110	G	G	G	G	G	G	120	115	115	110	105	100	105	S	105
9	105	110	105	110	B	B	S	100	110	110	110	105	G	G	G	G	G	175	S	S	S	S	110	105
10	100	100	100	E	E	100	S	160	110	115	110	G	G	105	105	G	110	B	115	110	110	S	105	105
11	105	105	105	100	105	105	105	G	G	105	105	105	105	105	G	G	100	100	100	S	100	S	105	105
12	105	105	100	100	B	B	120	115	110	110	110	G	G	G	G	G	G	B	S	S	105	S	S	105
13	105	100	100	100	100	100	100	G	G	115	105	G	G	105	G	G	G	G	100	100	100	100	S	S
14	S	S	S	E	E	100	100	G	G	105	120	G	G	G	G	G	G	B	S	S	S	S	S	105
15	S	B	S	100	100	100	S	G	G	120	G	115	110	105	105	100	100	100	100	100	100	100	100	S
16	100	S	S	B	100	110	S	G	G	G	110	105	105	105	105	105	105	105	105	100	S	S	S	S
17	S	B	B	B	E	B	120	105	110	110	110	G	105	G	G	G	G	S	110	100	100	100	S	
18	100	S	S	B	S	S	S	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S
19	S	S	S	S	B	S	S	G	G	G	110	G	G	G	G	G	G	110	S	110	S	S	S	S
20	105	100	S	S	E	S	S	G	G	G	110	G	G	G	G	G	140	110	S	S	S	140	110	S
21	S	S	S	S	S	S	S	G	G	110	110	G	G	G	150	140	130	110	S	S	110	100	100	100
22	S	S	S	B	S	S	S	C	C	120	C	110	G	105	105	105	175	170	S	110	110	105	S	S
23	S	B	S	E	B	B	C	G	G	190	G	G	155	150	C	G	C	130	S	C	C	110	C	105
24	S	B	C	B	B	B	S	G	G	G	110	C	B	C	G	120	110	105	100	110	105	S	S	S
25	S	S	S	S	S	S	S	G	G	B	120	110	145	G	G	G	105	100	110	S	S	S	S	S
26	S	S	S	E	S	S	S	G	G	G	110	160	110	B	B	140	120	110	S	105	S	100	S	
27	S	105	100	S	S	S	S	G	G	G	G	115	105	G	150	G	140	150	115	145	115	105	S	S
28	S	S	S	E	S	S	S	G	110	110	110	105	110	110	105	G	G	G	S	100	105	S	105	105
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	12	8	8	8	6	7	9	8	10	15	20	12	11	12	11	12	18	19	17	16	18	13	13	12
MED	105	105	100	100	100	100	110	110	110	110	110	110	110	108	110	112	110	110	110	105	105	100	105	105
UQ	105	108	105	110	105	108	120	138	120	118	115	115	142	148	140	120	140	130	110	110	110	105	105	105
LQ	100	100	100	100	100	100	105	105	110	110	110	105	105	105	105	108	110	105	100	100	100	100	100	100

IONOSPHERIC DATA

FEB. 1969

Types of Es

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1						F1				H1							C1	F1	F2	F2	F2	F2				
2	F1			F1						L1					L1	L1		F1		F1						
3		F1	F2	F1	F1			L1	H1	H1	H1			H1	C3	L2	L2	F2	F2	F3	F3	F2	F2			
4	F1					F2	H1	L1		H1	H1	H1	H1	H1	C2	L1	L2	L2	F1							
5			F1		F1	F2	F2	LH11		L1	L1	H1			H1	H2	L2	L1	F2	F3	F2	F2				
6				F1		F1			H1		H1		H2	H1		H1	HL11	H1	F2	F1			F1	F1		
7	F1								L1	L1	L1	L1		L1	L1	L1	L1		F1	F3	F2	F1	F1	F1		
8	F1							L1	L1							C1	C1	L1	F4	F3	F1	F2		F3		
9	F3	F2	F1	F1				L1	L1	L1	L1	L1						H1					F2	F2		
10	F2	F2	F1			F1		H1	LH11	L1	L1			L1	L2		L1		F3	F3	F2		F1	F3		
11	F1	F2	F3	F3	F1	F1	F2			L1	L1	L1	L2	L1			L1	L2	F1		F1		F3	F3		
12	F3	F3	F2	F1			F1	L2	L3	L1	L1										F1			F1		
13	F1	F2	F3	F2	F2	F2	F1			C1	L1			L1					F1	F2	F1	F1				
14						F1	F1			L1	H1													F1		
15				F1	F1	F1				C1		C1	L2	L1	L1	L1	L2	L2	F2	F3	F1	F1	F2			
16	F1				F1	F1					L2	L1	L1	L1	L1	L1	L1	L3	F1	F2						
17						F1	L1	L1	C1	C1			L1								F1	F2	F1	F1		
18	F1																									
19											L1							L1		F1						
20	F2	F1									L1						H1	L1				F1	F1			
21										L1	L1				H1	H2	H1	L2			F1	F2	F1	F1		
22										C1		C1		L1	L1	L1	H1	H1		F1	F1	F1				
23										H1			H1	H1					H1				F2		F2	
24											L1					H1	L1	L2	F2	F1	F1					
25										H1	L1	H1					L1	L2	F1							
26											L1	H1	L1				H1	H1	F1		F1		F1			
27		F1	F1								C1	L1		H1		H1	HL11	F3	F1	F3	F4					
28									L1	L2	L1	L1	L1	L1	L1					F2	F3		F1	F1		
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																										
MED																										
UQ																										
LQ																										

IONOSPHERIC DATA

FEB. 1969

hpF2 (km)

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

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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	360	C	C	C	C	C	310	280	265	270	290	290	270	C	C	C	280	280	310	280	300	I ₃₂₀	340	320	
2	290	315	345	360	405	385	315	265	250	255	295	290	280	300	295	300	280	250	290	280	320	U ₃₂₅	315	315	
3	340	340	395	360	315	540	455	235	240	300	300	300	320	315	325	J ₃₁₅	315	300	300	J ₃₅₀	I ₃₅₅	340	I ₃₆₀	400	
4	J ₃₆₅	R ₃₆₀	U ₂₅₀	410	F	R	360	I ₂₉₀	260	290	300	260	260	300	300	300	295	285	320	320	340	320	330	R ₃₂₀	
5	380	350	300	350	400	A	310	250	275	275	290	280	300	300	320	300	I ₂₉₅	J ₂₈₀	290	I ₃₂₀	A	350	350	I ₃₆₀	350
6	310	J ₃₀₀	290	350	360	U ₄₀₀	J ₃₂₀	J ₂₈₀	255	R ₂₇₅	340	300	J ₃₁₅	280	360	300	340	270	300	300	320	320	400	380	
7	300	310	300	350	400	375	280	260	260	R ₂₉₀	300	285	310	310	290	300	300	290	I ₃₀₀	310	300	310	360	340	
8	340	320	280	380	390	365	340	I ₂₉₀	285	J ₂₉₅	300	275	340	310	320	315	300	295	270	290	300	340	360	355	
9	340	310	315	325	365	365	255	250	J ₂₅₀	280	280	300	300	J ₃₀₀	300	300	290	300	300	300	300	340	400	390	
10	385	J ₃₂₀	295	300	300	380	340	285	265	R ₂₈₀	300	290	280	305	J ₃₀₀	R ₂₉₅	260	265	300	300	305	290	315	385	
11	365	330	320	365	340	315	270	255	J ₂₇₀	300	300	295	300	340	330	300	280	300	300	J ₃₀₀	250	370	375	430	
12	410	450	370	430	480	455	365	265	R ₂₉₅	315	300	300	310	340	300	290	300	285	280	325	335	360	I ₃₈₀	350	
13	340	A	I ₃₇₀	380	J ₃₆₀	375	320	280	I ₂₆₀	275	285	310	300	300	260	350	300	275	285	330	330	350	R ₃₆₀	350	
14	350	390	390	320	310	360	J ₃₃₀	R	255	285	J ₂₇₅	285	300	290	325	300	285	275	300	330	290	360	400	420	
15	360	J ₃₂₀	290	310	380	360	330	275	R ₂₉₀	300	315	305	300	305	J ₃₀₅	R ₃₁₅	300	275	285	315	J ₃₂₀	330	375	365	
16	360	345	305	300	355	370	310	R	250	275	J ₃₁₀	305	300	300	305	290	280	290	295	300	300	350	360	365	
17	U ₃₈₀	330	295	J ₂₈₀	260	340	350	J ₂₈₀	275	J ₂₉₀	280	310	310	290	300	H ₃₀₀	290	J ₂₇₀	270	300	330	R ₃₅₅	370	330	
18	280	360	355	350	370	360	320	260	280	300	300	280	340	330	J ₃₃₀	300	290	J ₂₆₀	290	310	J ₃₀₀	300	R ₃₇₀		
19	350	R	280	J ₃₁₀	300	320	R ₃₀₀	260	260	275	300	335	330	330	325	300	290	290	280	300	J ₃₀₀	320	390	440	
20	400	R ₃₈₀	330	300	270	300	340	280	J ₃₀₀	310	320	320	330	340	330	340	330	300	300	310	300	360	370	400	
21	400	I ₃₃₀	300	335	370	380	330	R	290	300	340	330	340	330	315	J ₃₀₀	320	310	300	J ₃₁₀	270	320	380	400	
22	390	360	340	310	240	260	360	C	C	305	I ₂₉₅	315	340	335	340	320	310	J ₃₀₀	J ₂₉₀	295	300	J ₃₁₀	365	J ₃₈₀	
23	380	355	370	350	310	295	300	C	290	290	310	345	320	320	I ₃₄₅	350	C	300	300	C	C	310	C	J ₃₈₀	
24	395	390	C	265	295	380	345	U ₂₅₀	300	300	340	I ₃₂₀	320	I ₃₄₀	350	345	335	320	300	310	350	340	340	390	
25	400	J ₃₅₀	370	I ₃₄₀	350	300	350	U ₂₈₀	300	310	330	330	340	350	350	335	330	310	310	300	R ₃₄₀	340	360	I ₃₆₅	
26	390	J ₃₄₀	350	320	300	J ₃₄₀	310	J ₂₇₀	300	310	315	310	350	340	340	350	340	310	300	320	400	360	350	360	
27	I ₃₈₀	380	330	300	310	360	360	U ₂₉₀	290	305	330	320	320	355	335	315	320	300	310	305	J ₃₁₅	360	365	370	
28	345	425	R ₄₇₀	450	435	380	350	285	300	305	290	320	370	V	355	335	330	325	310	310	I ₃₁₀	S ₃₁₅	350	385	350
29																									
30																									
31																									
CNT	28	25	26	27	26	25	28	23	27	28	28	28	28	27	27	27	27	28	28	27	27	28	26	28	
MED	362	345	325	340	352	365	340	275	275	292	300	302	310	315	325	300	300	290	300	310	315	340	362	368	
UQ	388	360	370	360	380	380	350	R ₂₈₀	290	302	315	320	330	340	335	325	320	300	300	318	332	352	380	390	
LQ	340	320	295	310	300	340	310	260	260	278	292	290	300	300	300	300	290	275	290	300	300	320	360	350	

IONOSPHERIC DATA

FEB. 1969

YpF2 (km)

135° E Mean Time (G. M. T. + 9^h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc 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	130	C	C	C	C	C	80	100	95	75	65	55	50	C	C	C	75	75	75	75	95	I ₈₀ R	105	75	
2	65	85	100	95	95	70	80	50	60	85	60	60	75	65	90	65	65	60	65	75	80	U ₇₅ S	R ₈₅	95	
3	105	60	100	95	80	110	90	40	60	100	100	90	120	85	105	J ₁₂₅ R	125	100	100	I ₁₀₀ R	I ₁₂₀ R	100	I ₉₀ R	100	
4	J ₉₅ R	120	U ₉₀ R	100	F	R	130	I ₁₀₀ R	80	100	100	90	90	90	90	100	65	75	80	120	90	80	70	I ₁₀₀ R	
5	120	60	90	70	110	A	90	90	115	75	100	80	100	100	80	100	I ₈₅ R	J ₈₀ R	110	I ₈₀ A	90	90	I ₈₀ R	70	
6	90	J ₁₀₀ R	70	100	80	U ₉₀ F	J ₁₀₀ R	J ₁₁₀ R	R ₈₅	75	60	90	J ₈₅ R	120	100	90	90	80	120	100	90	90	90	60	
7	90	90	90	110	110	85	60	90	I ₁₀₀ R	90	80	75	100	100	130	110	100	110	I ₉₅ R	90	110	90	130	70	
8	100	80	110	120	110	85	90	I ₁₁₀ R	65	J ₆₀ R	55	70	85	105	125	90	115	70	75	65	90	105	95	80	
9	65	70	80	80	80	80	50	55	J ₅₀ S	70	100	130	60	J ₆₀ R	90	100	100	80	100	100	100	100	90	100	
10	105	J ₁₅₀ R	105	110	90	80	100	115	I ₁₁₅ R	65	55	55	90	80	J ₉₀ R	R ₅₅	85	80	70	65	80	80	80	110	
11	85	65	80	R ₇₅	75	85	45	65	J ₇₅ R	85	95	60	65	75	115	95	75	95	70	J ₆₀ R	55	100	95	75	
12	85	95	100	85	70	90	80	60	60	85	60	100	110	60	110	70	100	115	100	95	105	130	I ₁₀₀ R	90	
13	60	A	I ₁₂₀ A	80	J ₁₀₀ R	115	80	110	I ₉₀ R	105	75	90	100	100	100	90	90	85	75	110	110	I ₁₁₀ R	120	110	
14	90	90	110	100	130	120	J ₁₁₀ R	R	95	105	J ₈₅ R	85	100	80	105	100	105	85	100	130	90	90	100	80	
15	100	J ₉₀ R	100	85	100	130	80	R ₈₅	R ₇₀	5	80	85	75	95	95	J ₈₀ R	80	80	70	80	J ₈₀ R	75	90	85	
16	85	70	90	70	100	90	90	R	60	80	J ₉₀ R	65	65	95	60	70	75	65	65	60	95	95	85	75	
17	U ₉₀ R	70	50	J ₄₀ R	50	60	55	J ₄₀ R	50	J ₉₀ R	80	90	90	90	100	H ₁₀₀	70	J ₉₀ R	80	100	80	I ₁₀₅ R	80	90	
18	70	100	125	110	80	90	90	100	80	100	100	100	100	80	J ₇₀ R	80	70	J ₈₀ R	80	80	J ₇₀ R	100	R	R ₉₀	
19	70	R	80	J ₁₀₀ R	R ₉₀	R ₈₀	90	90	80	75	120	95	80	80	95	80	100	90	70	100	J ₉₀ R	90	100	60	
20	R ₉₀	100	90	100	90	100	80	80	J ₁₀₀ R	90	80	80	80	80	80	110	80	110	110	90	140	120	120	90	
21	90	I ₉₀ R	90	95	130	100	100	R	100	90	80	90	80	90	75	J ₁₀₀ R	100	70	100	J ₉₀ R	110	80	110	100	
22	90	90	100	100	40	110	130	C	C	90	I ₇₀ C	85	95	85	105	85	105	J ₉₅ R	J ₇₀ R	60	70	J ₈₅ R	90	J ₆₅ R	
23	75	90	100	95	90	90	100	C	60	75	85	80	100	90	I ₉₀ C	95	C	85	95	C	C	85	C	J ₇₀ R	
24	75	70	C	80	100	115	60	U ₄₅ R	75	100	100	I ₈₀ C	90	I ₉₀ C	130	95	105	100	120	100	100	80	80	100	
25	110	J ₆₀ R	90	I ₈₅ R	110	100	100	U ₉₀ R	100	100	80	80	100	100	100	75	110	110	90	I ₁₁₀ R	80	110	90	I ₈₀ R	
26	100	J ₈₀ R	110	90	100	J ₈₀ R	90	J ₁₂₀ R	100	90	95	100	80	70	110	90	80	100	90	120	90	90	90	80	
27	I ₈₅ R	80	80	100	100	130	100	U ₇₀ R	80	85	90	90	100	90	110	110	90	95	85	85	J ₈₅ R	95	80	75	
28	70	R ₇₅	80	95	65	90	95	85	100	95	60	85	120	90	120	115	120	90	100	I ₈₀ R	S ₈₅	95	65	65	
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	28	25	26	27	26	25	28	23	27	28	28	28	28	27	27	27	27	27	28	28	27	27	28	26	28
MED	90	85	90	95	92	90	90	90	80	88	80	85	90	90	100	95	90	85	88	90	90	90	90	80	
UQ	100	90	100	100	100	110	100	100	100	98	98	90	100	95	110	100	102	98	100	100	100	100	100	98	
LQ	75	70	80	82	80	85	80	62	62	75	68	78	80	80	90	80	78	80	72	78	80	82	80	72	

IONOSPHERIC DATA

FEB. 1969

foF2 (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station YAMAGAWA Lat 31° 12.1' N. Long 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc 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	32	31	32	32	34	36	32	41	80	90	97	104	95	84	85	89	95	J ^S 84	67	69	75	S	61	55														
2	58	47	37	30	28	30	29	46	83	86	103	113	111	113	108	105	114	S	117	105	J ^R 91	U ^R 89	S	86	80													
3	60	49	38	33	27	27	28	61	50	85	U ^S 161	114	92	113	114	109	105	101	84	67	69	F	46	F	50													
4	F	F	F	F	F	F	S	S	88	89	127	130	125	120	122	120	111	93	75	56	62	64	55	45														
5	39	40	38	30	27	29	30	49	93	J ^S 105	S	115	102	100	107	109	104	97	95	J ^S 65	57	57	47	S	50													
6	44	42	40	29	30	31	32	I	51	79	89	105	114	110	111	96	94	90	97	73	63	61	58	45	46													
7	46	44	42	34	32	F	36	F	54	74	92	97	112	111	107	119	132	J ^S 128	J ^S 114	108	I	90	74	F	54	48												
8	46	49	36	F	F	F	F	F	48	100	98	116	135	143	171	166	152	142	135	U ^S 121	S	96	U ^S 79	70	63	53												
9	49	42	38	38	35	36	40	50	79	102	112	R	124	S	130	142	138	114	S	108	97	93	I	90	S	70	S	57										
10	56	56	43	36	34	27	27	50	88	C	C	C	C	C	C	C	C	C	C	C	C	S	84	J	89	J	79	53	47									
11	45	43	39	37	38	34	27	47	75	88	125	116	96	92	114	120	99	105	111	R	J	101	85	I	77	68	69											
12	53	49	46	35	39	S	44	S	57	74	S	I	86	118	J	131	119	110	132	134	134	122	107	86	61	57	S	46	J	S	48							
13	J	S	52	50	47	38	32	31	48	83	82	97	115	123	125	119	S	105	104	118	S	J	106	U	72	J	S	67	J	S	53							
14	50	40	39	41	39	32	32	S	52	88	106	104	102	105	111	104	110	S	97	85	83	69	66	55	46	S	44											
15	45	S	49	46	32	S	F	52	87	U	S	106	116	129	146	J	S	156	170	173	167	148	J	R	J	S	98	79	70	J	S	74						
16	70	J	S	58	41	31	30	33	J	S	82	83	105	125	125	121	116	106	93	88	79	65	60	54	J	S	51	S										
17	51	55	S	S	35	28	29	49	90	108	121	J	H	129	135	144	143	120	104	H	95	84	62	50	45	46	47											
18	49	45	38	35	31	31	S	S	53	88	107	109	124	139	160	U	S	178	U	S	160	J	S	98	83	78	61	58	45	42								
19	42	S	44	S	39	44	30	S	51	76	96	108	121	U	S	178	U	R	188	I	166	130	109	J	104	J	92	76	67	58	S	56						
20	54	J	S	S	56	S	49	28	26	51	82	108	I	C	126	140	154	174	183	S	180	168	147	131	J	R	J	125	J	S	105	J	S	88	74	S	74	
21	63	70	63	40	36	34	32	52	86	112	124	125	135	138	129	120	100	106	S	111	98	66	58	50	48													
22	48	49	47	57	60	H	29	24	54	J	S	81	100	110	124	135	147	144	142	134	J	S	125	J	S	126	J	100	I	S	86	91	67	J	S	61		
23	61	J	S	52	52	48	37	34	58	88	104	116	125	132	140	146	142	138	124	J	R	122	J	102	76	63	51	50										
24	49	S	50	54	53	43	36	37	64	J	S	97	114	126	129	135	141	149	144	137	131	128	106	I	S	J	S	92	U	S	83	I	S	68				
25	J	H	J	S	J	S	51	44	45	S	36	62	88	107	129	134	140	138	143	144	138	133	J	R	I	130	S	S	S	S	113	U	S	85				
26	71	S	60	56	54	55	41	37	63	84	98	107	119	123	130	130	125	125	123	J	R	121	112	U	S	95	J	S	90	J	S	89	73					
27	68	64	64	58	51	37	S	35	63	90	102	111	J	S	122	121	116	S	121	118	112	109	J	R	104	U	S	96	S	96	J	S	86	S	73			
28	74	55	51	51	52	55	51	J	S	74	109	129	135	132	129	139	144	138	J	S	U	S	120	112	J	S	102	94	84	S	76							
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	28	27	27	28	27	27	26	27	28	27	27	27	27	27	27	27	27	27	27	27	28	27	26	28	28													
MED	50	49	45	40	36	32	32	52	86	102	112	124	125	130	130	125	114	S	109	105	92	S	76	67	S	58	S	53										
UQ	60	56	52	52	44	36	36	S	60	88	107	126	129	135	142	145	143	132	124	121	100	S	S	89	S	S	S	S	71									
LQ	46	44	38	34	32	30	29	50	80	90	105	115	110	113	115	110	104	98	84	68	63	58	48	48														

IONOSPHERIC DATA

FEB. 1969

foF1 (0.01)

135° E Mean Time (G. M. T. + 9^h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc 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							
2											L	L	L	L	L	L	L							
3										L	L	L	L	L	L	L	L							
4										L	L	L	L	L	L	L	L							
5											L	L	L	A	L	L	L							
6										L	L	L	L	L	L	L	L							
7										L	L	L	L	L	540	L	L							
8										350	L	L	L	L	L	L	L							
9										L	L	L	L	L	L	L	L							
10										C	C	C	C	C	C	C	C	C	C					
11										L	L	L	L	L	L	L	L							
12										A	L	L	L	L	L	L	L							
13										L	L	L	L	L	L	L	L							
14										L	L	L	L	L	L	L	L							
15										L	L	L	L	L	L	L	L							
16										L	L	L	L	L	L	L	L							
17										L	L	L	L	L	L	L	L							
18										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							
21										L	L	L	L	L	L	L	L							
22										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										350	L	L	L	L	L	L	L							
28										L	L	L	L	L	L	L	L							
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										2	1	4	3	3	4			1						
MED										350	470	485	520	530	540			360						
UQ											520	525	555	565										
LQ											470	520	525	540										

IONOSPHERIC DATA

FEB. 1969

foE (0.01)

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

Station **YAMAGAWA** Lat. **31° 12.1' N**, Long. **130° 37.1' E** Sweep **1.0 Mc to 20.0 Mc** 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	210	275	315	330	I ^A 345	360	340	325	285	I ^A 215	A					
2								S	H 240	280	310	350	370	370	340	I ^A 340	I ^A 305	I ^A 235	A					
3								S	230	290	320	340	R 350	350	360	340	295	A	A					
4								S	240	290	320	345	355	355	345	320	A	A	S					
5								S	I ^A 210	I ^A 290	320	340	350	350	340	320	290	A	S					
6								S	230	290	320	335	345	345	H 340	H 330	300	240	S					
7								S	230	275	A	A	A	360	A	A	290	230	S					
8								S	230	280	325	350	H 360	360	350	330	I ^A 290	230	S					
9								S	240	280	300	A	350	355	345	330	300	230	B					
10								S	240	C	C	C	C	C	C	C	C	C	C					
11								S	230	280	I ^A 310	340	370	360	350	330	290	240	S					
12								S	A	275	I ^A 315	I ^A 345	350	360	350	340	300	240	B					
13								S	H 240	280	320	330	355	I ^A 350	350	330	295	230	A					
14								S	240	290	315	330	360	365	360	330	300	240	B					
15								S	245	300	320	I ^A 345	360	360	355	340	310	250	S					
16								S	225	290	320	I ^A 335	350	360	350	335	305	240	S					
17								S	250	300	325	340	370	365	360	340	310	240	150					
18								S	240	290	310	350	I ^A 365	370	360	340	H 300	250	S					
19								S	H 250	300	340	350	R 360	370	370	350	310	I ^A 245	S					
20								S	260	305	340	360	380	H 380	375	350	320	250	S					
21								S	260	310	335	350	380	380	H 375	350	315	I ^A 260	A					
22								S	250	A	A	A	380	380	370	350	320	I ^A 265	A					
23								S	260	310	350	370	380	380	I ^A 370	360	H 320	270	160					
24								S	250	310	330	370	370	385	380	350	320	250	A					
25								S	260	330	H 350	H 350	I ^A 370	390	380	360	320	270	160					
26								S	H 260	H 320	H 340	H 365	380	380	I ^B 385	I ^U 370	330	H 280	A					
27								S	270	320	A	A	390	I ^A 390	I ^A 380	365	310	270	180					
28									165	250	320	A	A	A	390	385	375	320	A	A				
29																								
30																								
31																								
CNT								1	27	26	23	22	25	27	26	26	26	23	4					
MED							165	240	290	320	345	360	365	360	340	335	240	160						
UQ								250	310	332	350	370	380	375	350	320	255	170						
LQ								230	280	315	340	350	360	350	330	295	238	155						

IONOSPHERIC DATA

FEB. 1969

foEs (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc 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	22	19	E ₁₂	E ₁₃	E ₁₃	E ₁₂	E ₁₅	J ₁₅	23	29	33	35	42	38	36	36	G ₂₇	J ₃₁	J ₂₃	J ₂₄	J ₃₇	J ₂₄	J ₂₅	J ₂₂	
2	21	J ₂₃	J ₂₈	24	E ₁₂	J ₂₄	E ₁₁	E ₁₅	G	34	35	38	40	G	37	37	32	J ₂₈	J ₂₅	43	J ₂₁	J ₂₂	24	E ₁₅	
3	E ₁₄	E ₁₁	E ₁₁	E	E	E ₁₅	E ₁₅	E ₁₅	G	32	40	47	J ₄₁	42	G	G	35	26	15	J ₁₄	J ₁₅	J ₂₁	J ₂₆	J ₂₆	
4	J ₃₈	J ₂₂	J ₁₈	J ₁₈	E ₁₃	E ₁₄	E ₁₄	J ₂₉	G	G	G	40	37	G	42	J ₄₇	J ₆₁	J ₃₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₄	E ₁₄	
5	E ₁₅	E ₁₃	E ₁₃	E ₁₂	E ₁₁	E	E ₁₅	19	J ₃₄	J ₅₃	35	36	44	47	36	G	G	25	20	E ₁₄	E ₁₂	E ₁₅	E ₁₄	J ₂₂	
6	J ₂₈	J ₁₉	J ₁₉	J ₃₃	J ₂₄	23	J ₂₁	J ₉₂	J ₃₆	G	37	37	39	49	39	35	G ₂₅	G	E ₁₆	J ₂₉	34	E ₁₅	19	J ₁₆	
7	E ₁₁	E ₁₂	E ₁₂	E	E	E ₁₃	E ₁₅	17	26	34	36	37	38	37	37	39	G	25	E ₁₆	J ₂₂	J ₂₁	J ₃₃	J ₃₁	J ₂₄	
8	J ₂₆	23	20	J ₁₉	E	E ₁₁	E ₁₅	20	G	29	29	29	G ₂₃	J ₂₇	G ₂₅	G ₃₆	32	31	30	E ₁₅	J ₆₄	J ₃₃	J ₂₆	J ₂₉	
9	E ₁₃	E ₁₄	15	E ₁₁	E	E ₁₅	E ₁₅	E ₁₃	G ₂₃	G	33	37	J ₃₄	41	35	J ₃₈	G ₂₀	G	E ₁₆	26	24	20	18	E ₁₄	
10	23	J ₃₀	J ₂₉	J ₂₀	J ₂₅	E ₁₂	E ₁₄	E ₁₅	G	C	C	C	C	C	C	C	C	C	C	29	32	J ₂₁	21	19	
11	J ₆₅	E ₁₅	J ₃₇	J ₃₇	J ₂₅	E ₁₁	24	E ₁₅	G	30	36	34	G ₂₆	J ₂₈	G ₂₁	G ₂₀	G	G	J ₂₂	23	22	18	E ₁₅	J ₂₀	
12	J ₂₁	J ₄₀	J ₃₉	J ₄₅	J ₃₄	J ₂₅	J ₂₇	24	J ₄₀	J ₆₆	J ₆₃	J ₄₀	G ₃₅	J ₄₀	G ₃₅	J ₃₈	J ₃₂	J ₂₅	E ₁₆	23	25	25	J ₂₉	J ₂₆	
13	23	J ₂₈	23	E ₁₅	E ₁₅	24	E ₁₅	28	G	30	37	42	G ₃₅	38	J ₃₈	J ₂₉	J ₂₈	J ₃₀	J ₂₃	J ₂₂	22	E ₁₄	20	E ₁₅	
14	E ₁₃	E ₁₃	E ₁₂	E	E	20	23	23	G	G	33	35	G	G	G	35	G	J ₂₉	E ₁₇	E ₁₅	E ₁₄	E ₁₄	E ₁₂	E ₁₅	
15	20	22	E ₁₂	E ₁₁	E	E ₁₁	E ₁₅	23	G	34	40	J ₃₇	38	37	G ₃₂	J ₃₀	43	J ₂₆	J ₂₅	J ₃₀	26	25	20	27	
16	E ₁₅	24	20	E ₁₃	E ₁₃	E ₁₃	E ₁₅	23	G	G	G ₃₂	40	J ₄₃	G ₃₂	G ₂₉	G ₂₆	G ₂₂	J ₂₇	E ₁₅	20	26	24	23	18	
17	E ₁₃	E ₁₄	E ₁₃	E	E	E ₁₂	E ₁₅	E ₁₅	G	G	G	J ₃₃	J ₃₁	G ₂₆	G ₂₁	G	G	G	G	23	20	E ₁₃	E ₁₅	E ₁₅	
18	E ₁₄	E ₁₂	E	E	E	E ₁₂	16	22	25	31	35	G ₃₄	37	35	G ₃₆	G	G	G	E ₁₃	20	E ₁₅	E ₁₄	E ₁₅	E ₁₄	
19	E ₁₄	E ₁₄	E ₁₃	E	E	E ₁₁	E ₁₅	E ₁₅	G	G	G	41	37	J ₄₆	J ₃₉	G ₃₄	34	J ₄₃	22	J ₁₉	J ₁₆	E ₁₃	E ₁₃	E ₁₃	
20	J ₁₈	E ₁₄	E ₁₅	E	E	E ₁₅	E ₁₅	E ₁₃	G ₂₅	J ₃₃	J ₃₆	J ₃₄	G ₃₅	G	G	G ₃₀	G ₃₁	G ₂₄	E ₁₅	E ₁₅	E ₁₅	J ₁₉	J ₁₉	17	
21	E ₁₅	E ₁₁	E ₁₂	E	E ₁₁	E ₁₃	E ₁₅	J ₁₈	G	G	35	37	40	43	52	44	J ₄₉	J ₃₃	17	22	23	E ₁₃	19	E ₁₃	
22	J ₃₃	17	J ₂₄	J ₂₃	E	E ₁₁	E ₁₅	E ₁₅	G	31	38	J ₄₇	J ₅₄	45	44	40	J ₃₁	J ₄₁	J ₃₄	J ₆₉	J ₅₂	J ₂₄	E ₁₅	E ₁₅	
23	E ₁₄	E ₁₄	E ₁₁	E ₁₂	E	E ₁₅	E ₁₅	E ₁₄	28	35	40	G ₃₅	51	50	41	37	G	28	G	E ₁₅	J ₃₁	J ₅₂	22	E ₁₃	
24	18	E ₁₂	E ₁₁	J ₁₉	E ₁₂	E ₁₂	E ₁₅	E ₁₄	G	J ₃₉	35	G	39	G	G	G ₃₄	G ₂₇	G	18	J ₂₀	20	E ₁₅	J ₃₀	J ₂₁	
25	J ₁₇	E ₁₄	E ₁₁	E ₁₁	E	E ₁₁	E ₁₅	E ₁₄	G	G	40	42	J ₄₇	G ₃₈	42	J ₄₄	G	G	G	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
26	E ₁₄	E ₁₃	E ₁₁	E	E	E ₁₁	E ₁₅	E ₁₄	G	G	39	40	G ₃₂	44	53	53	J ₆₇	72	J ₇₂	J ₃₇	23	20	22	E ₁₄	
27	E ₁₅	E ₁₅	E	E ₁₂	E	E ₁₂	20	J ₁₈	G	G	37	40	J ₆₀	J ₅₃	45	J ₅₃	35	J ₃₁	G	20	J ₁₇	J ₁₈	19	23	
28	J ₃₄	J ₂₆	J ₂₄	E ₁₂	E	E ₁₂	E ₁₅	G	G	G ₂₄	35	38	J ₅₂	J ₄₁	J ₅₄	39	34	28	25	J ₃₈	21	23	23	23	
29																									
30																									
31																									
CNT	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	27	27	28	28	28	28	28	
MED	18	E ₁₄	E ₁₃	E ₁₂	E	E ₁₂	E ₁₅	15	G	29	35	37	38	38	36	36	G ₂₈	27	17	22	22	20	20	16	
UQ	J ₂₃	22	J ₂₂	J ₁₉	E ₁₃	E ₁₅	E ₁₅	22	24	34	38	40	42	44	42	39	34	J ₃₁	23	J ₂₈	26	J ₂₄	24	J ₂₂	
LQ	E ₁₄	E ₁₅	E ₁₂	E	E	E ₁₁	E ₁₅	E ₁₄	G	G	33	35	G ₃₅	G ₃₀	G ₂₇	G ₃₀	G	E ₂₄	E ₁₅	E ₁₅	16	E ₁₅	E ₁₅	E ₁₄	

IONOSPHERIC DATA

FEB. 1969

fbEs (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station	YAMAGAWA				Lat. 31° 12.1' N. Long. 130° 37.1' E		Sweep 1.0 Mc to 20.0 Mc 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	16	E	E _B ₁₂	E _B ₁₃	E _B ₁₃	E _B ₁₂	E _S ₁₅	S	G	G	G	G	40	G	34	32	29	G	28	20	19	E _S ₁₇	19	18	E	
2	E	E	15	E	E _B ₁₂	E	E _B ₁₁	E _S ₁₅	G	31	34	34	34	G	G	36	31	25	23	26	16	E	E	E _S ₁₅		
3	E _S ₁₄	E _B ₁₁	E _B ₁₁	E	E	E _S ₁₅	E _S ₁₅	E _S ₁₅	G	G	35	40	38	39	G	G	33	24	14	S	S	E	E	22		
4	25	16	E	E	E _B ₁₃	E _B ₁₄	E _S ₁₄	G	G	G	G	38	G	G	42	G	30	31	E _S ₁₅	E _S ₁₄	E _S ₁₅	E _S ₁₅	E _S ₁₄	E _S ₁₄		
5	E _S ₁₅	E _S ₁₃	E _B ₁₃	E _B ₁₂	E _B ₁₁	E	E _S ₁₅	G	25	32	G	G	44	45	G	G	G	25	16	E _S ₁₄	E _S ₁₂	E _S ₁₅	E _S ₁₄	E		
6	16	13	17	17	14	E	E	22	18	G	37	24	G	G	45	37	23	G	G	E _S ₁₆	E	E _S ₁₅	E	E		
7	E _B ₁₁	E _S ₁₂	E _B ₁₂	E	E	E _B ₁₃	E _S ₁₅	G	21	31	34	35	35	34	35	36	G	G	E _S ₁₆	22	E	19	15	18		
8	E	E	E	15	E	E _B ₁₁	E _S ₁₅	G	G	26	G	28	G	G	G	25	30	30	28	E _S ₁₅	26	20	E	16		
9	E _S ₁₃	E _B ₁₄	14	E _B ₁₁	E	E _B ₁₅	E _S ₁₅	E _S ₁₃	G	G	G	35	G	31	26	29	G	G	E _B ₁₆	E	E	E	E _S ₁₄			
10	E	17	14	11	14	E _B ₁₂	E _S ₁₄	E _S ₁₅	G	C	C	C	C	C	C	C	C	C	C	20	20	15	19	E		
11	E	E _S ₁₅	27	24	E	E _B ₁₁	E _S ₁₅	G	23	33	32	26	G	G	G	G	G	G	E	E	E	E	E _S ₁₅	E		
12	E	25	33	26	23	16	16	17	37	51	32	35	G	33	24	27	24	G	E _B ₁₆	E	E	17	25	17		
13	E	17	16	E _B ₁₅	E _B ₁₅	E	E _S ₁₅	S	G	G	G	G	G	32	37	31	29	G	17	17	17	15	E _S ₁₄	20	E _S ₁₅	
14	E _B ₁₃	E _B ₁₃	E _B ₁₂	E	E	E	E	S	G	G	G	G	G	G	G	G	G	17	E _B ₁₇	E _S ₁₅	E _S ₁₄	E _S ₁₄	E _B ₁₂	E _S ₁₅		
15	E	E	E _B ₁₂	E _B ₁₁	E	E _B ₁₁	E _S ₁₅	E _S ₁₅	G	33	34	35	30	33	29	25	28	19	17	19	17	E	E	E		
16	E _S ₁₅	14	E	E _B ₁₃	E _B ₁₃	E _B ₁₃	E _S ₁₅	16	G	G	G	31	37	34	G	G	29	G	26	G	21	E _S ₁₅	E	E	E	
17	E _S ₁₃	E _S ₁₄	E _B ₁₃	E	E	E _B ₁₂	E _S ₁₅	E _S ₁₅	G	G	G	G	G	G	G	G	G	G	G	E	E	E _S ₁₃	E _S ₁₅	E _S ₁₅		
18	E _S ₁₄	E _B ₁₂	E	E	E	E _B ₁₂	E	S	G	G	G	G	G	33	37	34	34	G	E _S ₁₃	16	E _S ₁₅	E _S ₁₄	E _S ₁₅	E _S ₁₄		
19	E _S ₁₄	E _S ₁₄	E _B ₁₃	E	E	E _B ₁₁	E _S ₁₅	E _S ₁₅	G	G	G	34	34	34	35	31	30	28	G	E	E	E _S ₁₃	E _S ₁₃	E _S ₁₃		
20	E	E _B ₁₄	E _B ₁₅	E	E	E _S ₁₅	E _S ₁₅	E _S ₁₃	G	25	29	32	G	G	G	30	G	G	E _S ₁₅	E _S ₁₅	E _S ₁₅	E	15	E		
21	E _S ₁₅	E _B ₁₁	E _B ₁₂	E	E	E _B ₁₁	E _B ₁₃	E _S ₁₅	G	G	G	E _R ₃₇	G	42	51	41	44	29	17	E	E	E _S ₁₃	E	E _S ₁₃		
22	16	E	16	E	E	E _B ₁₁	E _S ₁₅	E _S ₁₅	G	E _R ₃₁	37	46	35	32	30	26	G	28	25	37	51	19	E _S ₁₅	E _S ₁₅		
23	E _S ₁₄	E _S ₁₄	E _B ₁₁	E _B ₁₂	E	E _B ₁₅	E _S ₁₅	E _S ₁₄	G	21	29	G	34	44	49	E _R ₄₁	33	G	G	E _S ₁₅	E	36	E	E _S ₁₃		
24	E	E _B ₁₂	E _B ₁₁	E	E _B ₁₂	E _B ₁₂	E _S ₁₅	E _S ₁₄	G	G	E _R ₃₅	E _R ₃₉	G	G	G	34	G	G	E _R ₁₈	17	E	E _S ₁₅	17	21		
25	E	E _S ₁₄	E _B ₁₁	E _B ₁₁	E	E _B ₁₁	E _S ₁₅	E _S ₁₄	G	G	G	40	41	G	36	34	34	G	G	E _S ₁₄	E _S ₁₅	E _S ₁₅	E _S ₁₅	E _S ₁₅		
26	E _S ₁₄	E _S ₁₃	E _B ₁₁	E	E	E _B ₁₁	E _S ₁₅	E _S ₁₄	G	G	G	32	32	43	52	53	66	65	70	23	19	E	E	E _S ₁₄		
27	E _S ₁₅	E _S ₁₅	E	E _B ₁₂	E	E _S ₁₂	E	G	G	G	36	39	35	43	44	32	G	17	G	15	E	15	E	E		
28	33	21	16	E _B ₁₂	E	E _B ₁₂	E _S ₁₅	G	G	G	35	E _R ₃₈	41	35	36	G	G	27	24	35	E	E	E	E		
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	28	28	28	28	28	28	28	24	28	27	27	27	27	27	27	27	27	27	27	27	27	27	28	28	28	
MED	E _S ₁₄	E _S ₁₄	E _S ₁₂	E _S ₁₁	E	E _B ₁₂	E _S ₁₅	E _S ₁₄	G	G	E _G ₂₆	34	34	34	30	G	G	19	E _G ₁₆	15	E _S ₁₄	E _S ₁₄	E _S ₁₄	E _S ₁₄		
UQ	E _S ₁₅	E _S ₁₄	15	E _B ₁₂	E _B ₁₂	E _B ₁₃	E _S ₁₅	E _S ₁₅	G	28	34	36	37	38	36	32	30	28	18	19	16	15	15	E _S ₁₅		
LQ	E	E	E _B ₁₂	E _B ₁₁	E	E	E _B ₁₁	E _S ₁₄	G	G	G	G	G	G	G	E _G ₂₀	G	G	E	E	E	E	E	E		

IONOSPHERIC DATA

FEB. 1969

f-min (0.1)

135° E Mean Time (G. M. T. + 9^h)

Station **YAMAGAWA** Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

Time Day	Hour																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₅ ^S	E ₁₄ ^S	12	13	13	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	14	14	15	15	15	15	14	E ₁₄ ^S	E ₁₃ ^S	E ₁₃ ^S	E ₁₃ ^S	E ₁₃ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
2	E ₁₄ ^S	13	12	12	12	E ₁₄ ^S	11	E ₁₅ ^S	E ₁₄ ^S	11	14	15	16	17	17	15	14	E ₁₅ ^S	13	12	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
3	E ₁₄ ^S	11	11	E	E	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	14	14	15	16	15	16	15	E ₁₄ ^S	11	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S		
4	E ₁₅ ^S	12	13	14	13	14	E ₁₄ ^S	E ₁₅ ^S	15	15	18	15	16	14	14	15	11	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₄ ^S	
5	E ₁₅ ^S	E ₁₃ ^S	13	12	11	E	E ₁₅ ^S	E ₁₅ ^S	15	13	15	15	15	16	15	15	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₂ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₃ ^S		
6	E ₁₃ ^S	11	11	E	E	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	15	15	15	14	15	15	14	E ₁₄ ^S	E ₁₆ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S		
7	11	E ₁₂ ^S	12	E	E	13	E ₁₅ ^S	E ₁₃ ^S	E ₁₄ ^S	14	15	15	15	16	16	16	15	E ₁₄ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₃ ^S		
8	E ₁₄ ^S	E ₁₅ ^S	14	E	E	11	E ₁₅ ^S	E ₁₄ ^S	14	14	18	17	21	17	20	15	18	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	
9	E ₁₃ ^S	14	12	11	E	15	E ₁₅ ^S	E ₁₃ ^S	E ₁₄ ^S	14	14	15	16	18	18	15	15	E ₁₄ ^S	16	E ₁₄ ^S	E ₁₄ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	
10	E ₁₄ ^S	13	11	E	E	12	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	C	C	C	C	C	C	C	C	C	E ₁₆ ^S	12	11	E ₁₄ ^S	12		
11	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	12	13	11	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	15	14	15	16	17	16	15	15	14	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	
12	E ₁₅ ^S	12	14	E	E	13	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₆ ^S	11	15	17	16	16	16	14	E ₁₆ ^S	16	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
13	E ₁₅ ^S	11	15	15	15	14	E ₁₅ ^S	E ₁₅ ^S	14	14	11	15	16	16	15	15	14	11	11	E ₁₅ ^S	11	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	
14	13	13	12	E	E	13	E ₁₄ ^S	E ₁₄ ^S	15	15	16	15	16	16	16	16	16	E ₁₅ ^S	17	E ₁₅ ^S	E ₁₄ ^S	E ₁₄ ^S	12	E ₁₅ ^S	
15	E ₁₅ ^S	12	12	11	E	11	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	16	14	15	17	17	17	16	14	E ₁₄ ^S	E ₁₄ ^S	12	11	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	
16	E ₁₅ ^S	11	E ₁₄ ^S	13	13	13	E ₁₅ ^S	E ₁₅ ^S	13	15	14	12	15	19	16	14	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₄ ^S	13	E ₁₅ ^S	E ₁₅ ^S	
17	E ₁₃ ^S	E ₁₄ ^S	13	E	E	12	E ₁₅ ^S	E ₁₅ ^S	13	14	14	15	17	16	17	15	14	15	E ₁₃ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^S	E ₁₅ ^S	E ₁₃ ^S	
18	E ₁₄ ^S	12	E	E	E	12	E ₁₅ ^S	E ₁₅ ^S	15	12	15	15	16	16	16	14	14	14	E ₁₃ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	
19	E ₁₄ ^S	E ₁₄ ^S	13	E	E	11	E ₁₅ ^S	E ₁₅ ^S	14	15	14	14	16	15	15	15	15	14	E ₁₃ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₃ ^S	E ₁₃ ^S	E ₁₃ ^S	
20	E ₁₃ ^S	14	15	E	E	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^S	14	13	15	15	15	15	15	15	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₁ ^S	E ₁₅ ^S	
21	E ₁₅ ^S	11	12	E	11	13	E ₁₅ ^S	E ₁₅ ^S	14	15	15	16	16	17	16	16	11	13	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^S	E ₁₅ ^S	E ₁₅ ^S	
22	E ₁₅ ^S	E ₁₅ ^S	12	11	E	11	E ₁₅ ^S	E ₁₅ ^S	15	11	13	14	15	15	15	15	13	11	E ₁₃ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	
23	E ₁₄ ^S	E ₁₄ ^S	11	12	E	15	E ₁₅ ^S	E ₁₄ ^S	15	14	11	15	14	17	30	15	15	13	E ₁₃ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₃ ^S	
24	E ₁₃ ^S	12	11	11	12	12	E ₁₅ ^S	E ₁₄ ^S	E ₁₄ ^S	14	15	15	22	18	16	20	15	14	E ₁₂ ^S	E ₁₁ ^S	E ₁₃ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	
25	E ₁₅ ^S	E ₁₄ ^S	11	11	E	11	E ₁₅ ^S	E ₁₄ ^S	14	22	15	15	16	18	16	16	15	15	E ₁₄ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
26	E ₁₄ ^S	E ₁₃ ^S	11	E	E	11	E ₁₅ ^S	E ₁₄ ^S	14	15	14	16	18	15	42	28	15	14	E ₁₁ ^S	11	E ₁₃ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₄ ^S	
27	E ₁₅ ^S	E ₁₅ ^S	E	12	E	E ₁₂ ^S	E ₁₅ ^S	E ₁₄ ^S	14	14	16	16	16	15	15	18	14	13	E ₁₄ ^S	E ₁₃ ^S	E ₁₅ ^S	E ₁₁ ^S	E ₁₄ ^S	E ₁₄ ^S	
28	E ₁₃ ^S	E ₁₄ ^S	11	12	E	12	E ₁₅ ^S	E ₁₄ ^S	15	15	15	22	18	19	16	17	15	14	E ₁₄ ^S	E ₁₄ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
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	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	27	27	27	27	28	28	28	28	
MED	E ₁₄ ^S	12	12	11	E	12	E ₁₅ ^S	E ₁₅ ^S	14	14	14	15	16	16	16	15	15	12	E ₁₄ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₄ ^S	E ₁₅ ^S	E ₁₅ ^S	
UQ	E ₁₅ ^S	E ₁₄ ^S	13	12	12	14	E ₁₅ ^S	E ₁₅ ^S	15	15	15	15	16	17	16	16	15	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
LQ	E ₁₃ ^S	12	11	E	E	11	E ₁₅ ^S	E ₁₄ ^S	14	14	14	15	15	15	15	15	14	14	E ₁₃ ^S	E ₁₄ ^S	E ₁₃ ^S	E ₁₄ ^S	E ₁₄ ^S	E ₁₄ ^S	

IONOSPHERIC DATA

FEB. 1969

M(3000)F₂(0.01)

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

Station YAMAGAWA Lat. 31 12.1' N. Long. 130 37.1' E Sweep 1.0 Mc to 20.0 Mc 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	335	275	275	265	280	300	295	310	340	345	330	330	330	320	310	305	325	J S	320	300	320	300	300	275	285		
2	305	310	325	300	250	265	275	300	355	335	310	325	300	310	295	285	295	S	320	330	J R	285	U R	285	295		
3	285	280	290	280	320	215	200	380	340	260	U S	315	325	275	275	290	295	305	315	310	270	300	310	265	275		
4	295	F	F	325	F	F	F	S	S	350	325	310	315	310	285	280	290	305	315	320	295	275	295	315	275		
5	270	280	300	285	265	260	270	S	S	305	335	315	315	320	315	290	290	300	310	315	J S	275	280	300	295	280	
6	295	290	300	290	265	260	265	I S	300	335	325	315	315	300	305	290	295	S	300	320	S	315	300	285	295	270	280
7	295	300	310	280	280	255	275	F	335	335	325	330	310	315	295	285	305	J S	J S	310	I S	300	270	275	285	275	
8	280	295	310	300	F	F	260	F	290	350	310	310	310	285	290	275	290	290	300	U S	315	305	U S	290	270	240	285
9	285	285	290	290	265	265	300	S	310	335	335	325	S	320	290	290	295	H	S	S	300	310	I S	300	290	280	250
10	280	305	315	285	295	265	265	300	340	C	C	C	C	C	C	C	C	C	C	C	300	J S	J S	295	265	275	
11	280	290	300	265	300	325	285	315	335	305	305	320	290	280	290	300	295	290	305	R	J S	310	295	I S	260	265	
12	245	265	265	230	230	230	250	S	310	I S	295	J C	310	275	295	300	305	310	320	325	295	300	305	290	J	260	
13	J S	290	320	325	330	280	260	320	340	340	320	305	310	310	320	305	R	290	S	J S	330	U H	J S	265	J S	J S	
14	310	275	270	290	330	295	275	315	315	330	335	335	310	315	300	300	320	S	310	315	320	300	290	260	265		
15	270	S	325	335	305	250	F	S	305	325	U S	320	310	310	J S	R	290	295	305	J S	315	J S	290	285	J S	270	
16	265	J S	310	340	275	285	270	J S	305	345	315	305	310	305	305	300	315	310	325	330	310	305	295	J S	275	S	
17	S	290	S	S	330	265	260	300	335	335	315	J H	295	295	290	295	285	H	S	S	320	315	280	270	255	275	
18	295	300	290	295	285	265	280	310	330	325	300	290	295	285	S	U S	U S	J S	S	S	305	320	310	310	255	265	
19	265	S	295	S	340	300	280	S	335	330	320	315	295	U S	J R	U R	I S	285	290	295	J S	310	290	S	285	255	250
20	240	J S	S	S	320	290	320	275	295	315	295	I C	295	285	280	275	285	285	300	S	295	J R	J S	J S	245	S	
21	S	265	315	300	285	270	280	295	305	310	315	290	295	290	285	295	290	295	S	305	320	285	275	265	250	S	
22	275	270	275	315	350	275	260	315	J S	325	280	290	285	285	285	280	290	J S	J S	J S	I S	280	265	260	J S	245	
23	255	J S	275	290	310	285	275	305	330	310	300	295	290	280	275	270	275	280	J R	J S	305	290	285	265	260	S	
24	245	S	295	310	325	275	255	295	J S	305	295	295	290	275	280	280	285	280	295	295	I S	270	J S	U S	I S	S	
25	J H	J S	J S	295	295	295	275	S	305	320	300	300	290	285	280	280	285	280	285	J R	I R	S	S	260	U S	270	
26	S	265	285	285	310	295	265	310	320	315	300	295	285	285	285	280	280	285	J R	S	285	U S	J S	J S	290	285	
27	265	280	295	310	345	230	245	S	310	335	305	295	J S	290	270	275	280	285	275	J R	U S	285	J S	255	265	S	
28	290	270	240	245	235	270	255	J S	300	310	305	290	280	275	280	280	J S	U S	U S	U S	J S	J S	275	250	S	275	
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	28	27	27	28	27	27	26	27	28	27	27	27	27	27	27	27	27	27	27	27	28	27	26	28	28
MED	280	280	295	290	295	270	270	305	335	315	310	310	290	290	285	290	290	300	310	300	290	285	265	275	275
UQ	292	290	312	310	322	290	275	312	340	325	318	318	308	295	295	298	302	315	318	310	300	295	282	278	278
LQ	S	270	285	282	278	260	260	300	320	308	300	295	285	280	280	282	285	290	298	292	S	280	270	255	262

IONOSPHERIC DATA

FEB. 1969

M(3000)F1(0.01)

135° E Mean Time (G. M. T. + 9^h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc 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								
2											L	L	L	L	L	L	L								
3										L	L	L	L	L	L	L	L								
4										L	L	L	L	L	L	L	L								
5											L	L	L	A	L	L	L								
6										L	L	L	L	L	L	L	L								
7										L	L	L	L	L	340	L	L								
8										425	L	L	L	L	L	L	L								
9										L	L	L	L	L	L	L	L								
10										C	C	C	C	C	C	C	C	C	C						
11										L	L	L	L	L	L	L	L								
12										A	L	L	L	L	L	L	L	395							
13										L	L	L	L	L	L	L	L								
14										L	L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L	L								
16										L	L	L	L	L	365	L	L	L							
17										L	L	L	L	L	L	L	L	L							
18										L	L	L	L	L	L	L	L	L							
19									L	L	L	L	L	L	L	L	L	L							
20										L	L	L	L	L	L	L	L	L							
21										L	L	L	L	L	A	L	A	L							
22										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	B	A	A							
27										415	L	L	L	L	L	L	L	L							
28										L	L	L	L	L	L	L	L								
29																									
30																									
31																									
CNT											2	1	4	3	3	4			1						
MED										420	385	388	365	350	340			395							
UQ											390	365	358	340											
LQ											372	362	348	338											

IONOSPHERIC DATA

FEB. 1969

h'F2 (km)

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

Station	YAMAGAWA			Lat. 31° 12.1' N. Long. 130° 37.1' E			Sweep 1.0 Mc to 20.0 Mc 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										240	260	250	250	250	270	275	260							
2											275	260	280	260	275	290	260							
3										375	255	240	250	275	270	255	245							
4										240	255	245	255	280	250	280	250							
5											255	250	250	255	275	250	255							
6										240	270	255	255	265	250	250	275							
7										245	245	270	260	270	300	270	250							
8										230	255	260	275	275	245	280	260							
9										245	255	260	280	280	285	255	240							
10										C	C	C	C	C	C	C	C	C						
11										250	280	245	255	325	300	260	245							
12										275	245	250	300	300	270	275	250	240						
13										225	250	280	265	260	270	250	280							
14										245	250	255	275	280	280	275	245							
15										260	260	275	285	265	290	280	260							
16										250	275	275	255	270	285	255	250							
17										255	275	260	275	280	260	255	255	245						
18										255	275	275	275	290	275	260	250							
19									230	260	255	275	295	280	280	255	250							
20										270	275	280	295	300	295	280	260	245						
21										255	265	295	280	275	260	255	245	260						
22										255	280	280	295	305	280	290	275							
23										250	255	275	275	305	295	275	275							
24										270	265	275	300	305	305	300	275							
25										250	275	280	275	300	295	285	255							
26										250	250	280	305	300	290	290	285							
27										245	255	280	270	310	295	300	255							
28										255	275	280	270	330	295	290								
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	25	27	27	27	27	27	27	26	4						
MED									230	250	260	275	275	280	280	275	255	245						
UQ										255	275	280	282	300	295	282	260	252						
LQ										245	255	255	255	270	270	255	250	242						

IONOSPHERIC DATA

FEB. 1969

h'F (km)

135° E Mean Time (G. M. T. + 9^h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc 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	325	310	340	290	255	275	270	245	230	215	210	225	220	210	225	230 ^H	230	210	255	250	230	240	270	
2	250	230	240	250	340	350	325	260	235	220	210	205 ^H	230	225	220	210	240	245	210	230	235	225	235	240	
3	245	265	280	280	210	505	500	200	220	255 ^H	250	225	220	230	230	230	240	245	225	225	245	225	250	305	
4	280	245	205	E ^A ₂₅₀	345	355	350	250	230	230	220	205	205 ^H	215 ^H	240	230 ^H	235	230	210	220	250	245	240	250	
5	290	265	250	250	E ^B ₃₀₀	300	305	250	240	240	225	210	230	I ^A ₂₃₅	215	210	205 ^H	240	230	200	260	250	230	265	
6	250	255	245	E ^A ₂₅₅	300	300	320	250	235	230	240	I ^A ₂₂₅	225	I ^A ₂₂₀	205	210	230	245	220	220	255	250	260	280	
7	250	250	235	250	250	325	295	230	225	230	230	215	200 ^H	210	205	230 ^H	230	230	235	225	215	245	250	290	
8	270	250	245	E ^A ₃₀₀	240	330	340	270	240	200	180 ^H	225	205 ^H	200 ^H	210	200 ^H	240	245	215	210	250	230	265	270	
9	250	250	260	255	255	305	250	230	230	200 ^H	225	210	200 ^H	195 ^H	210	215	230	235	225	210	210	220	220	270	
10	270	255	240	250	250	E ^S ₃₀₅	260	245		C	C	C	C	C	C	C	C	C	C	C	245	250	210	260	275
11	260	275	300	360	260	240	E ^S ₂₇₅	250	240	230	220	225	220	205 ^H	230	220	225	250	240	225	225	245	255	275	
12	320	E ^A ₂₉₀	E ^A ₃₅₅	A	430	400	325	230	250	I ^A ₂₅₀	225	225	210 ^H	200 ^H	225	225 ^H	225	230	220	210	250	245	295	310	
13	285	290	250	235	215	305	E ^S ₃₅₅	250	230	210	200 ^H	200 ^H	205 ^H	205 ^H	215	220	205	250	215	205	260	235	250	255	
14	250	270	300	275	210	260	295	255	240	235	230	215 ^H	200 ^H	205 ^H	215	220	225 ^H	240	240	225	235	230	300	310	
15	290	255	235	230	200	325	310	260	245	240	225	210	200	205	205	220	230	230	220	200	235 ^H	225	280 ^H	270 ^H	
16	255	280	240	225	225	295	300	260	225	200 ^H	200 ^H	240	220 ^H	210	210	225	225	235	230	230	240	245	275	300	
17	305	290	230	230	200	E ^B ₂₇₅	345	265	250	240	190 ^H	200 ^H	230	205 ^H	210 ^H	210	215 ^H	220	225	210	240	270	300	295	
18	255	240	250	245	225	250	E ^S ₂₉₀	255	240	225	225	220	205	195 ^H	225	225	225	240	230	220	220	215	275	290	
19	300	290	255	240	230	210	E ^S ₂₉₀	240	205 ^H	195 ^H	200 ^H	230	195 ^H	200 ^H	225 ^H	225	220 ^H	240	240	215	220	225	240	300	
20	325	300	250	220	200	240	E ^S ₃₀₅	255	240	225 ^H	215	205	205 ^H	205	220	225	230	235	230	220	210	235	275	300	
21	300	275	230	245	250	265	250	250	240	250	220 ^H	225	215 ^H	250	I ^A ₂₅₀	240	I ^A ₂₃₅	240	250	225	210	240	275	305	
22	300	295	280	250	220	205	E ^S ₃₅₀	250	235	240	200 ^H	I ^A ₂₃₅	230	235	220	225	225	245	245	240	I ^A ₂₅₀	240	250	300	
23	300	275	280	250	225	225	300	250	245	235	230	220	250	250	250 ^H	230	230 ^H	240	240	215	220	275	255	305	
24	325	305	250	245	230	305 ^H	325	250	235	195 ^H	205 ^H	200 ^H	260	225 ^H	220 ^H	240 ^H	225 ^H	240	245	220	245	230	230	250	
25	275	275	260	270	250	250	250	250	240	245	245	230	230	220 ^H	225	230	230	240	240	225	205	220	230	250	
26	250	275	270	255	245	230	285	245	230	205 ^H	235	220	220 ^H	230 ^H	I ^B ₂₅₅	A	A	E ^A ₂₈₀	E ^A ₂₇₀	235	245	275	245	250	
27	275	255	255	240	220	E ^H ₂₉₀	350	255	235	230	230	225	230 ^H	215 ^H	255 ^H	250 ^H	230	245	230	240	245	240	255	280	
28	290	250	365	350	345	275	300	255	240	245	230 ^H	230 ^H	220	215 ^H	240	240	245	240	250	245	230	240	250	280	
29																									
30																									
31																									
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	28	28	28	27	28	28	28	28	28	27	27	27	27	27	26	26	26	27	27	28	28	28	28	28	
MED	278	270	250	250	238	276	302	250	240	230	225	220	220 ^H	215 ^H	220	225	230	240	230	222	240	238	252	280	
UQ	300	290	278	258	266	315	328	258	240	240	230	225	230	225	230	230	230	245	240	230	250	245	275	300	
LQ	252	252	240	241	220	248 ^U	276	250	230	215	208 ^H	210	205 ^H	205 ^H	210	220	225	235	220	212	220	225	240	268	

IONOSPHERIC DATA

FEB. 1969

h'Es (km)

135° E Mean Time (G. M. T. + 9^h)

Station **YAMAGAWA** Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

(Hour Day)	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	B	B	B	B	S	S	120	130	125	120	105	170	160	100	105	100	100	100	110	130	100	100
2	100	100	100	100	B	100	B	S	G	110	110	105	105	G	110	105	105	105	100	100	100	100	100	S
3	S	B	B	E	E	S	S	S	G	135	125	125	120	120	G	G	115	110	105	S	S	105	100	100
4	100	95	95	100	B	B	S	100	G	G	G	130	130	G	125	125	115	110	S	S	S	S	S	S
5	S	S	B	B	B	E	S	130	115	110	150	150	125	120	130	G	G	120	110	S	S	S	S	100
6	125	100	100	100	100	100	105	100	105	G	150	145	130	140	155	150	100	G	S	110	105	S	100	100
7	B	S	B	E	E	B	S	130	105	110	105	105	105	105	120	110	G	150	S	105	105	100	100	100
8	100	100	95	95	E	B	S	115	G	120	105	100	100	100	100	125	115	125	115	S	105	105	105	100
9	S	B	100	B	E	B	S	S	100	G	120	105	105	105	100	100	100	G	B	100	100	100	100	S
10	100	100	100	100	100	B	S	S	G	C	C	C	C	C	C	C	C	C	C	C	105	100	100	100
11	100	S	100	100	100	B	105	S	G	125	120	115	105	100	100	100	G	G	100	100	100	100	S	100
12	100	100	95	95	95	95	95	120	115	110	110	100	100	105	100	100	100	100	B	105	100	100	100	100
13	95	100	100	B	B	100	S	100	G	130	110	110	100	100	100	100	100	100	95	95	95	S	105	S
14	B	B	B	E	E	100	100	100	G	G	130	120	105	G	G	120	G	100	B	S	S	S	B	S
15	100	100	B	B	E	B	S	100	G	120	110	105	105	105	105	100	100	100	100	100	100	100	100	100
16	S	95	100	B	B	B	S	100	G	G	105	100	105	105	105	105	100	S	105	100	100	100	100	
17	S	S	B	E	E	B	S	S	G	G	G	105	100	100	100	G	G	G	G	105	105	S	S	S
18	S	B	E	E	E	B	100	100	135	125	120	100	105	105	105	G	G	G	S	100	S	S	S	S
19	S	S	B	E	E	B	S	S	G	G	G	155	105	105	105	105	105	105	105	105	105	S	S	S
20	100	B	B	E	E	S	S	S	105	105	105	105	105	G	G	105	105	105	S	S	S	105	100	100
21	S	B	B	E	B	B	S	100	G	G	E G 140	125	E G 175	150	125	130	120	110	110	105	105	S	100	S
22	100	100	100	100	E	B	S	S	G	115	105	105	105	100	100	150	100	95	95	105	100	100	S	S
23	S	S	B	B	E	B	S	S	165	150	150	105	145	130	110	105	G	155	G	S	105	105	105	S
24	100	B	B	100	B	B	S	S	G	105	120	G	120	105	G	105	105	G	110	105	105	S	100	100
25	100	S	B	B	E	B	S	S	G	G	170	115	115	105	105	105	G	G	G	S	S	S	S	S
26	S	S	B	E	E	B	S	S	G	G	125	140	105	155	140	130	125	120	110	105	100	100	100	S
27	S	S	E	B	E	S	100	100	G	G	115	105	105	100	170	100	155	100	G	110	105	100	100	100
28	100	100	100	B	E	B	S	G	G	105	125	110	105	105	100	140	125	110	105	105	105	105	100	100
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	15	12	12	9	4	5	6	13	9	16	24	26	27	23	23	23	19	20	14	20	21	17	19	15
MED	100	100	100	100	100	100	100	100	115	118	120	108	105	105	105	105	105	105	105	105	105	100	100	100
UQ	100	100	100	100	100	100	105	115	120	128	126	125	114	120	125	125	115	115	110	105	105	105	100	100
LQ	100	100	98	100	98	100	100	100	105	110	110	105	105	102	100	100	100	100	100	100	100	100	100	100

IONOSPHERIC DATA

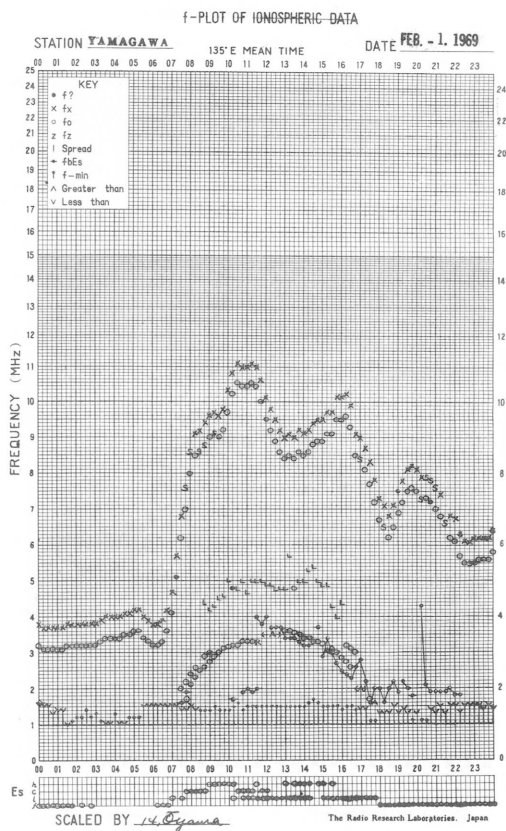
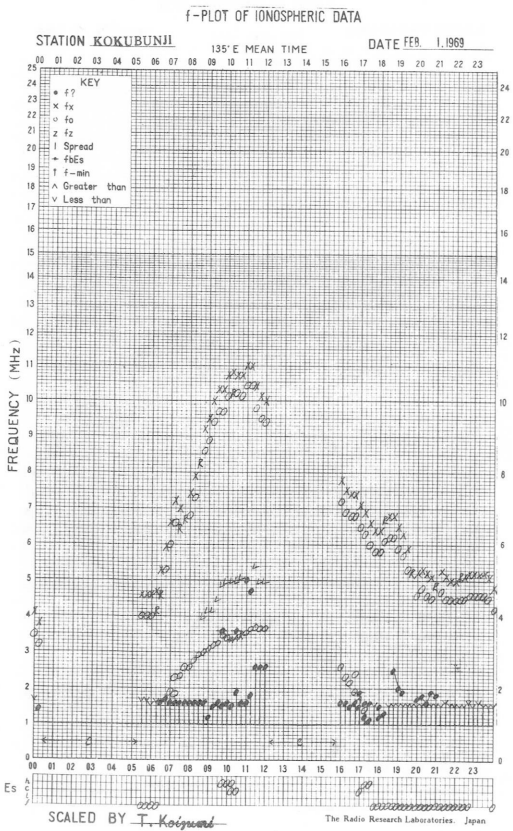
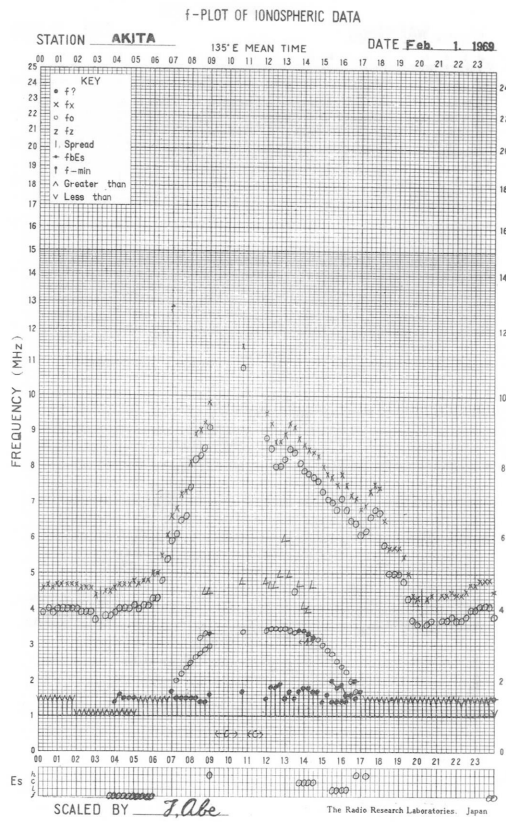
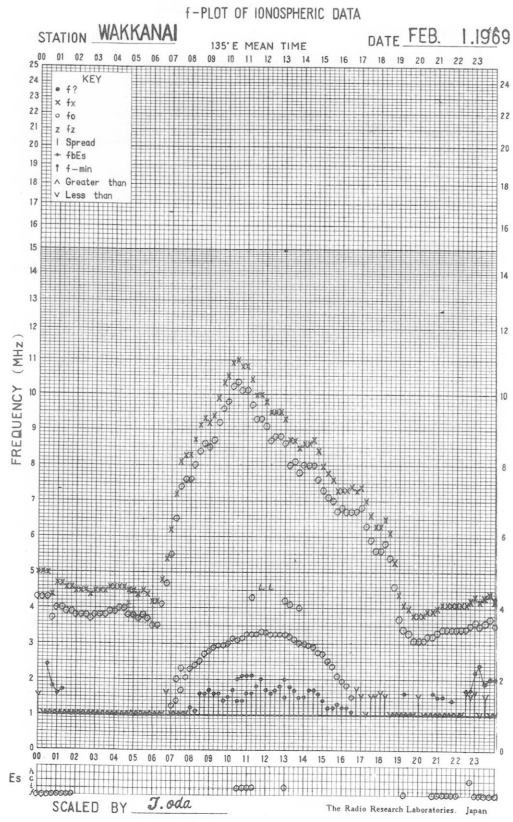
FEB. 1969

Types of Es

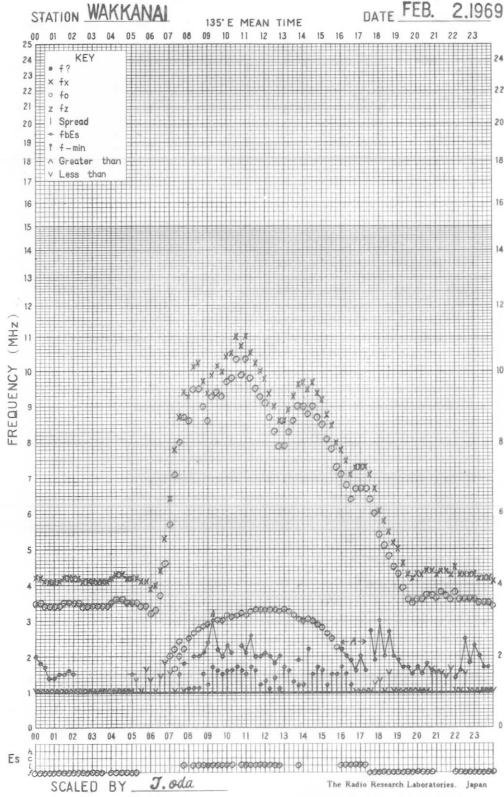
135° E Mean Time (G. M. T. + 9^h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

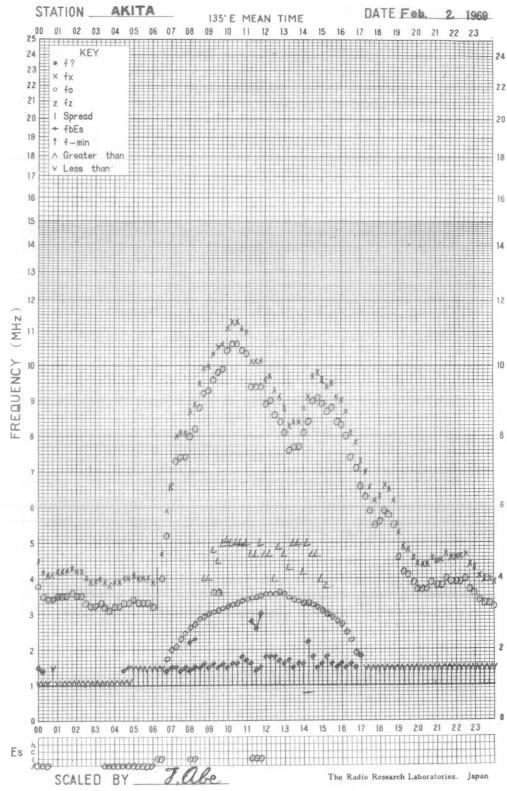
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F1	F2					L1	C2	H2	H1	CL11	CL11	HL11	HL12	LH21	L2	L3	L3	F8	FF55	FF12	F1	F1		
2	F1	F1	F1	F1		F2				C3	C2	L1	L2		C1	L2	L3	L4	L1	F6	F2	F2	F1		
3									H2	H2	H1	C1	C1				C4	L3	L1	F1	F1	F5	F3	F4	
4	F8	F4	F2	F1			L1			H1	H1		H1	H2		C4	C4								
5							H1	C3	C2	H1	H1	HL11	C2	H1			C3	L2						F1	
6	FF21	F2	F6	F3	F2	F2	F2	L7	L4	H1	HL12	HL11	HH11	H1	HL11	L1			F1	F6		F1	F1		
7							H1	L1	C2	L2	L1	L1	L1	C1	C2			H2		F3	F1	F5	F3	F5	
8	F3	F1	F1	F2			L1		C1	L1	L1	L1	L1	L1	HL11	C1	H4	C4		F3	F3	F2	F3		
9			F1					L1		C1	L2	L1	L2	L1	L1	L1				F1	F1	F1	F1		
10	F1	F2	F1	F1	F2															F3	F3	F1	F2	F1	
11	F2		F2	F3	F1		F1			HL13	CL12	C1	L1	L1	L1	L1		L2	F1	F1	F1	F1	F1		
12	F2	F4	F6	F4	F4	F3	F2	CL31	C4	C3	C1	L1	L1	L2	L1	L2	L1		F1	F1	F1	F3	F1		
13	F1	F2	F1			F1		L1		H2	C1	C1	L1	L2	L1	L1	L1	L2	L1	F2	F2		F2		
14						F1	F2	L1			H1	C1	LL11			C1		L1							
15	F1	F1						L1		C2	C2	L1	L1	L1	L1	L2	L2	L2	L2	F3	F2	F2	F1	F1	
16		F2	F1					L1		L1	L2	L2	L1	L1	L1	L1	L1	L2		F1	F1	F1	F1	F1	
17												L1	L1	L1	L1					FF11	F1				
18						F1	L1	H1	H2	H1	L1	L1	L1	L1						F2					
19											HL11	L2	L2	L2	L2	L2	L3	L4	LH11	F1	F1				
20	F1							L2	L2	L2	L1	L1				L1	L2	L2				F2	F2	F1	
21								L1		H2	H1	H1	H1	H2	H2	C2	L4	L2	F1	F1		F1			
22	F2	F1	F2	F1					C2	L2	L2	L2	L2	LH21	LH21	HL21	L2	L4	L3	FF33	F4	F2			
23								HC12	HL21	H2	L2	H1	HL21	L1	L2		H2			F1	F5	F1			
24	F1			F1					C1	C1		C1	L1		L1	L1		L1	F4	F1		F3	F2		
25	F1									HH11	C1	C1	L1	L2	L2										
26										H2	HL11	L1	HH11	HH11	H1	H4	C5	L2	FF34	F3	F1	F1			
27						F1	L1			C1	L2	L1	L2	HL11	LH11	HL11	L1		F1	F1	F1	F2	F2		
28	F6	F4	F2					L2	H1	CL11	L1	L2	L2	H1	HL22	CL22	L3	F5	F1	F1	F2	F2	F2		
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																									
MED																									
UQ																									
LQ																									



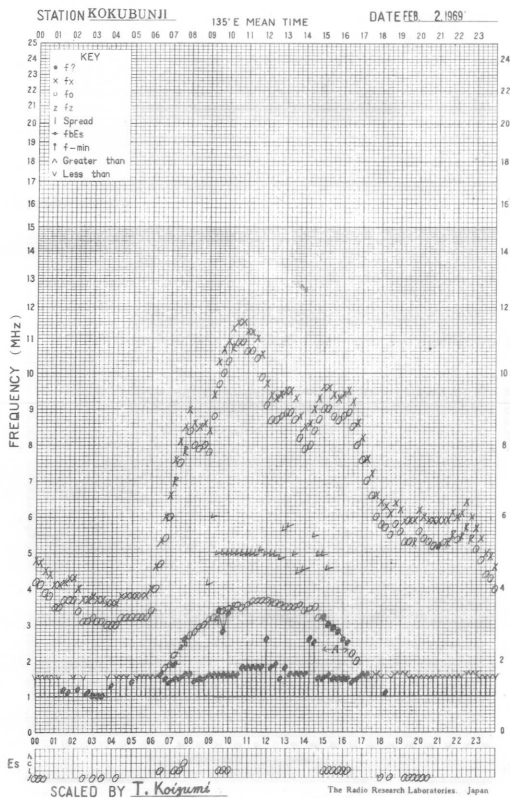
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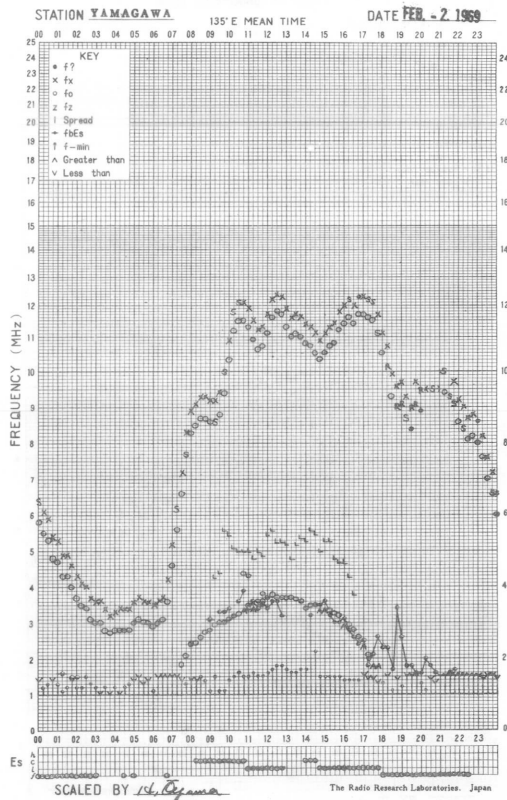
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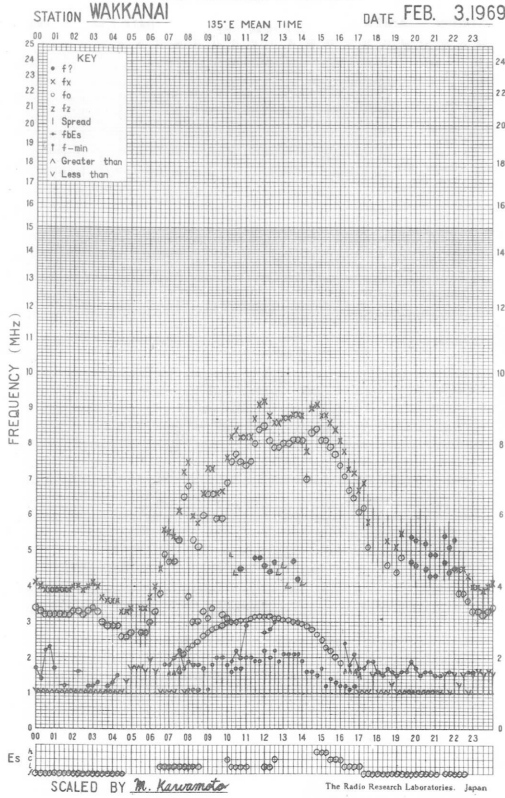
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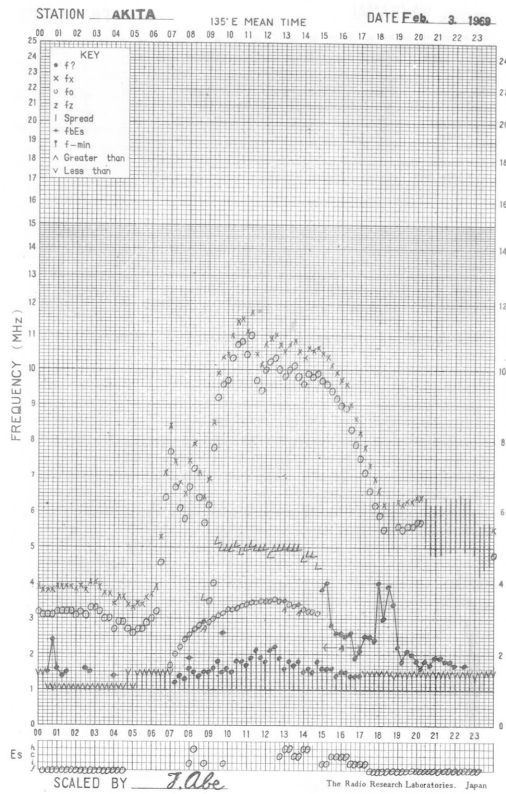
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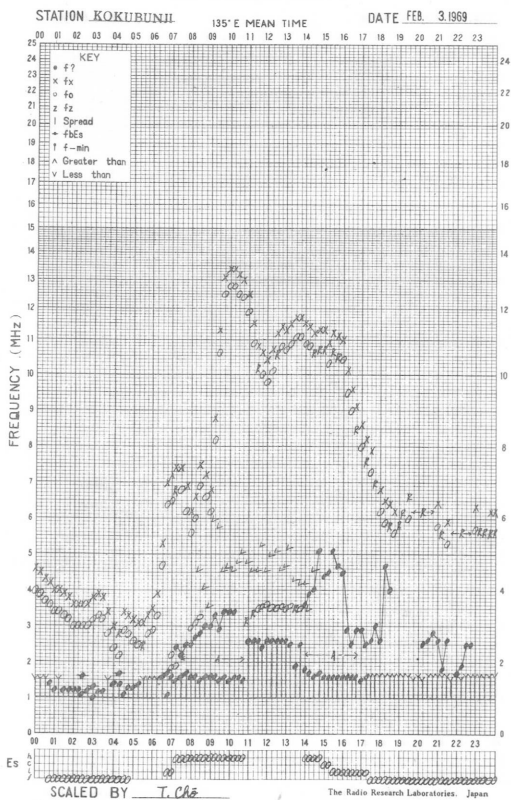
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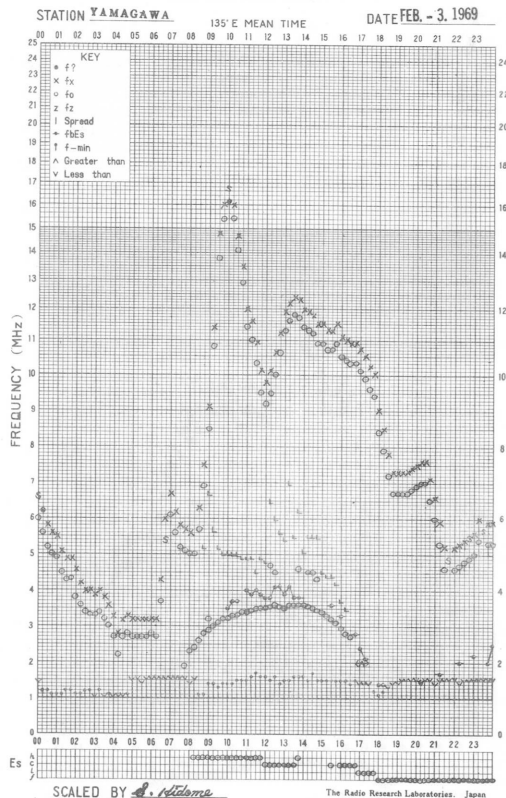
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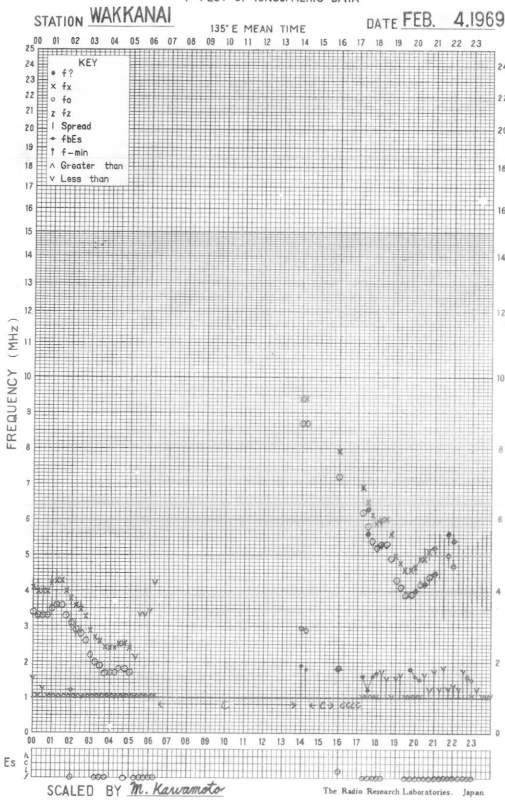
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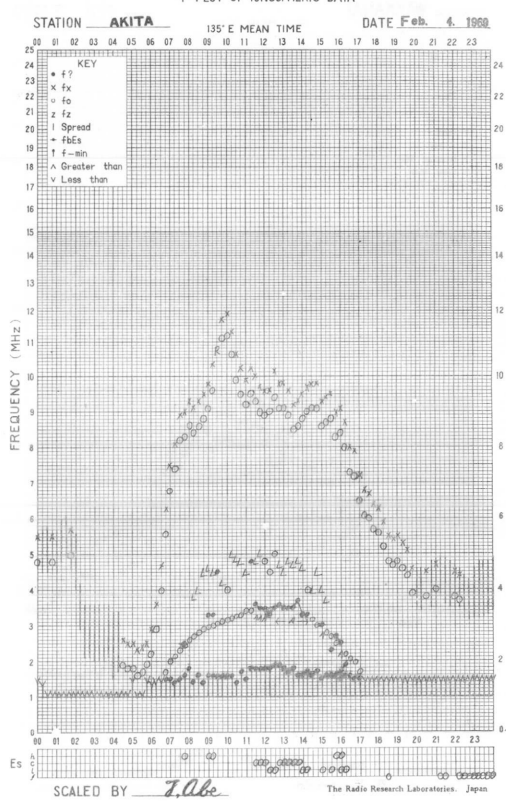
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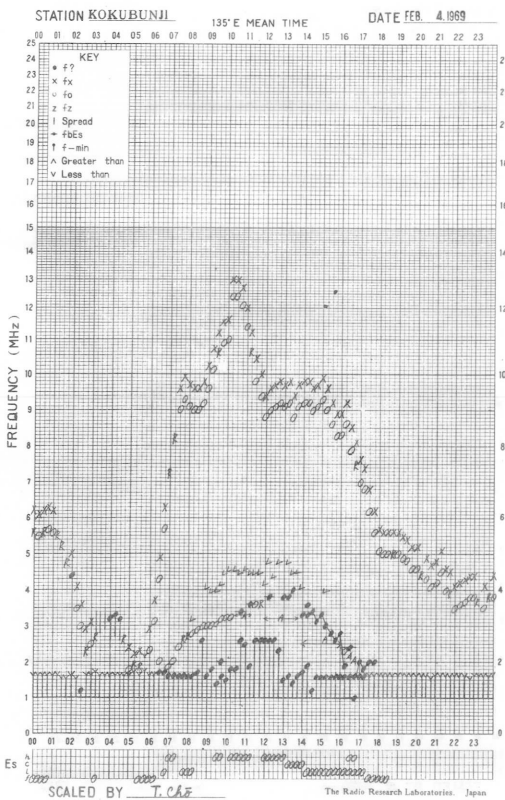
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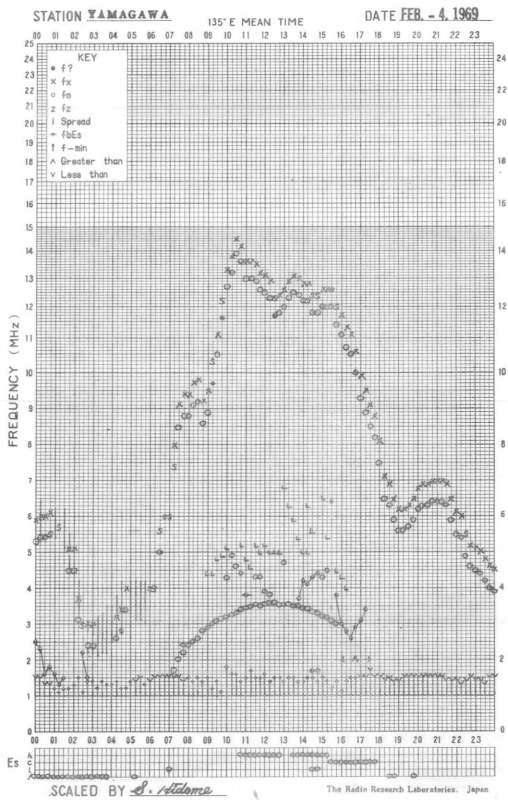
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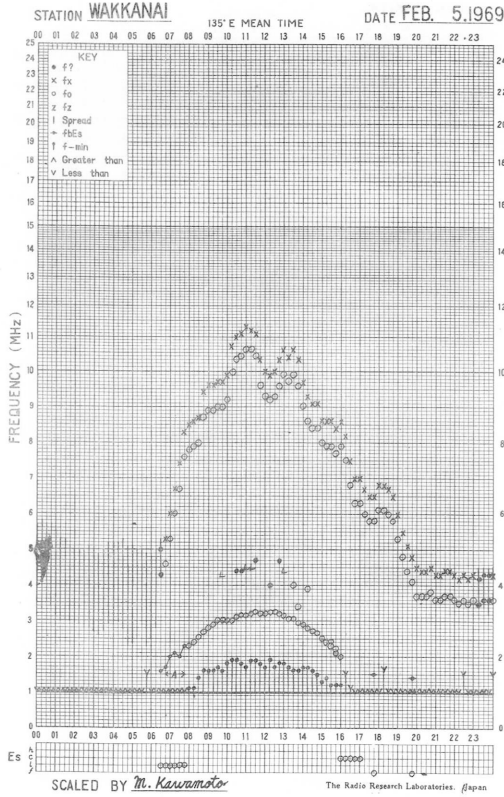
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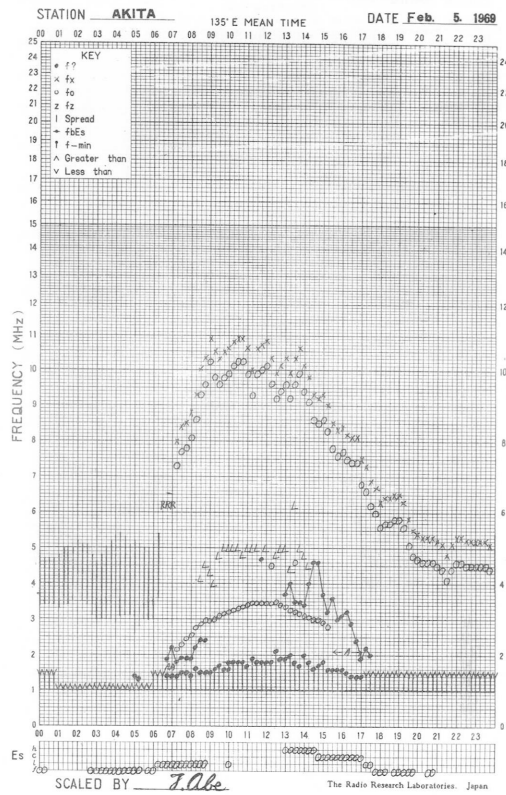
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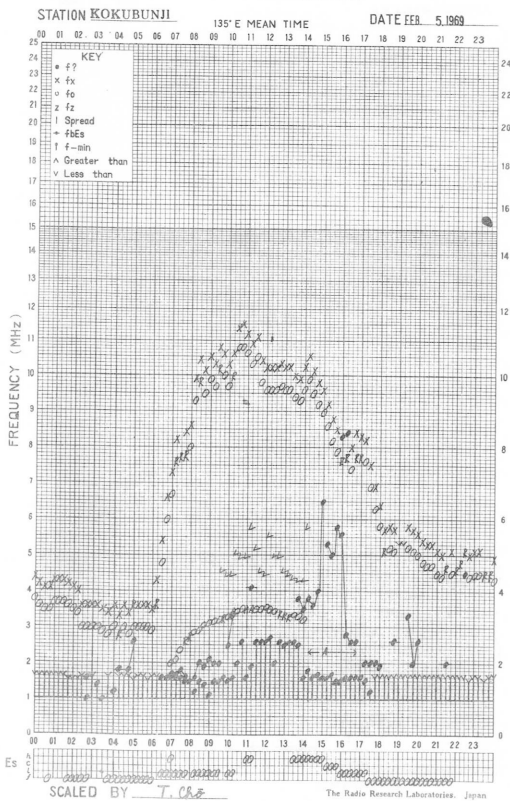
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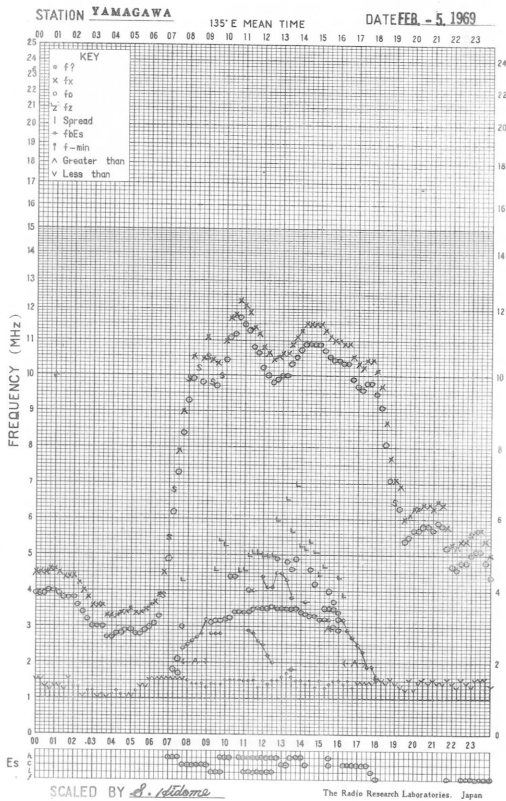
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f-PLOT OF IONOSPHERIC DATA

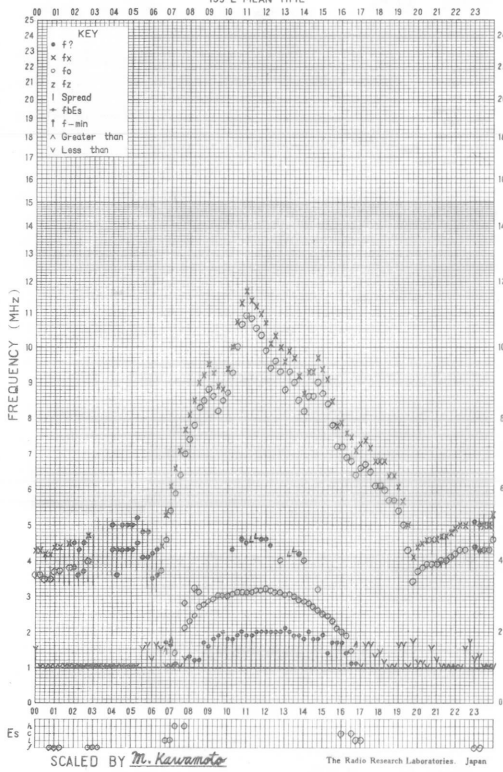


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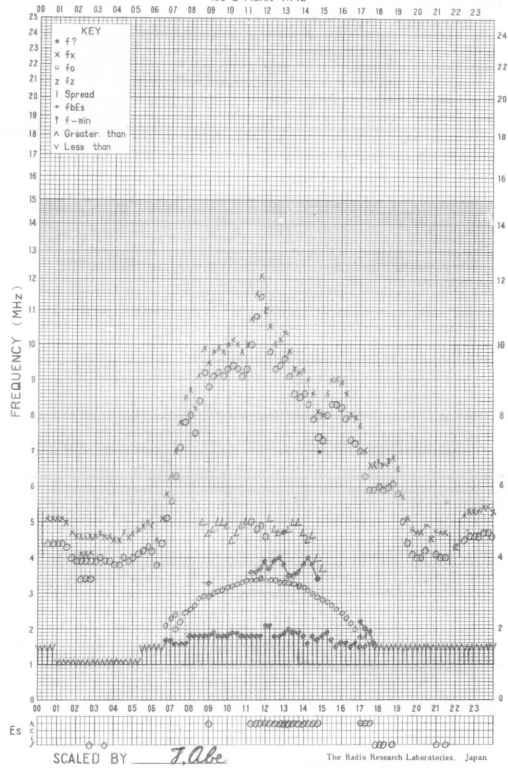
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STATION WAKKANAI 135°E MEAN TIME DATE FEB. 6 1969



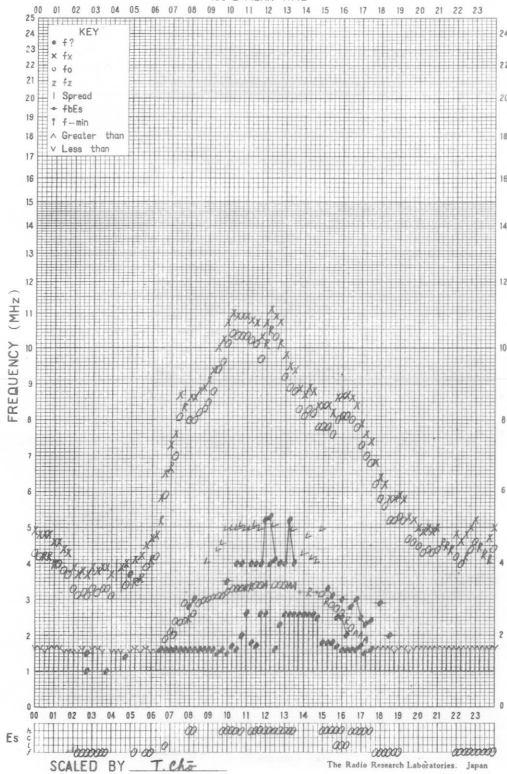
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STATION AKITA 135°E MEAN TIME DATE Feb. 6 1969



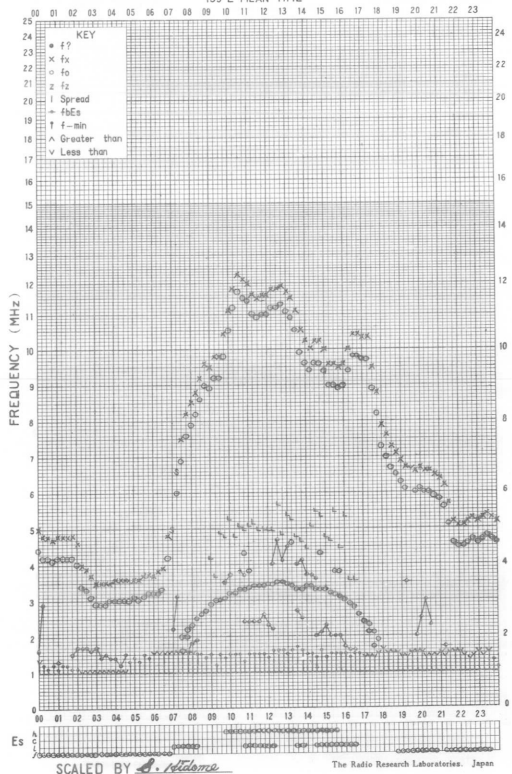
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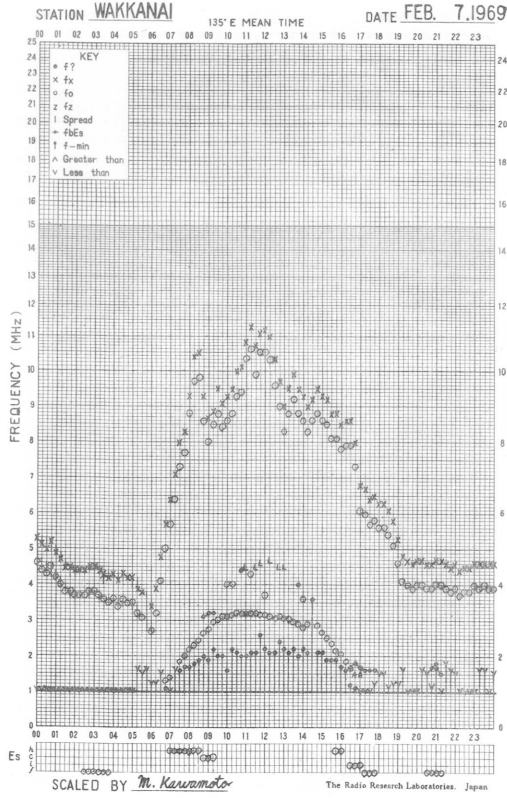


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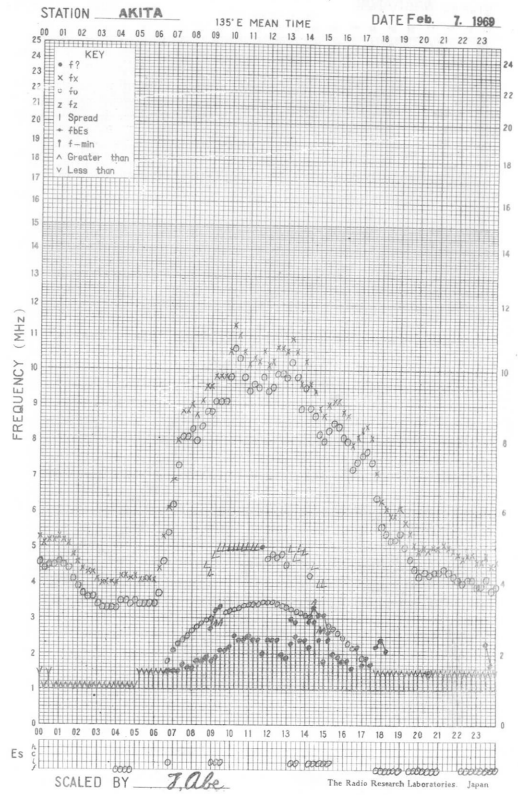
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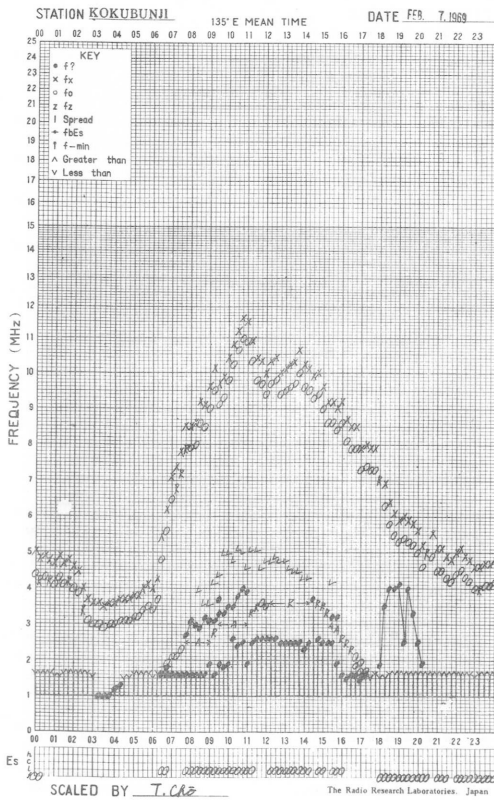
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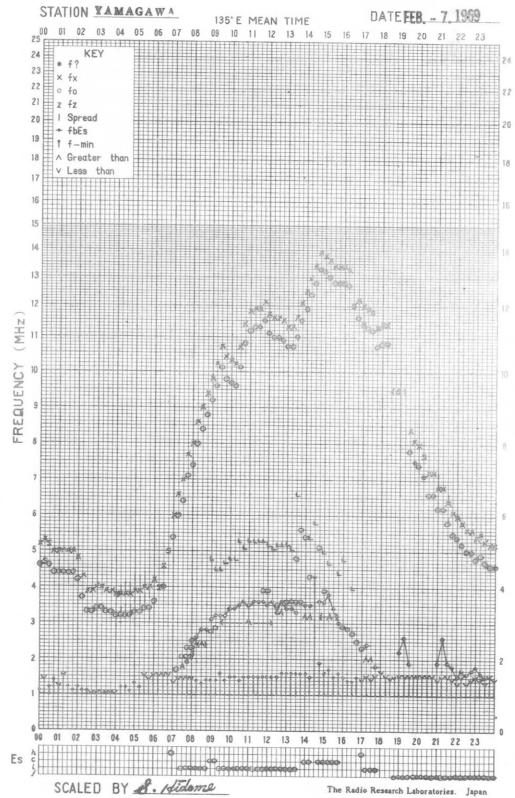
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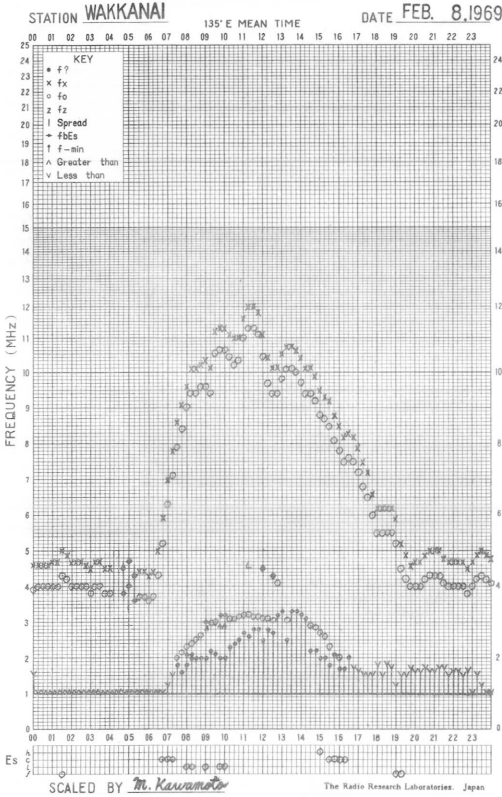
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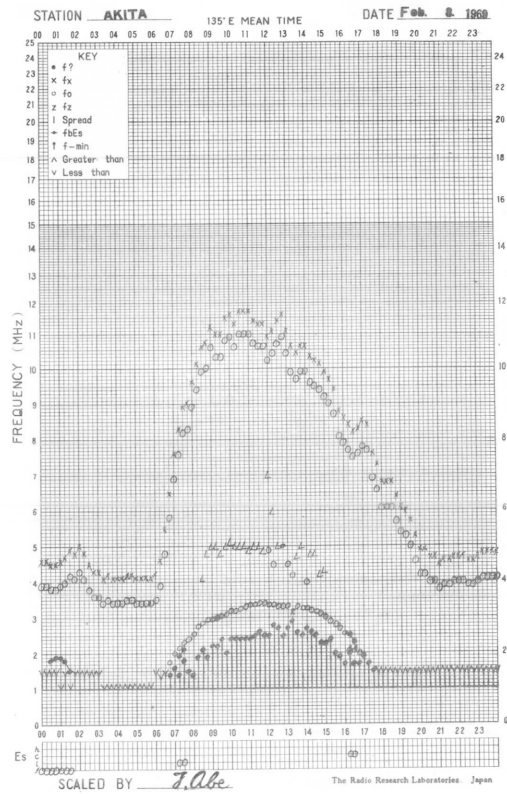
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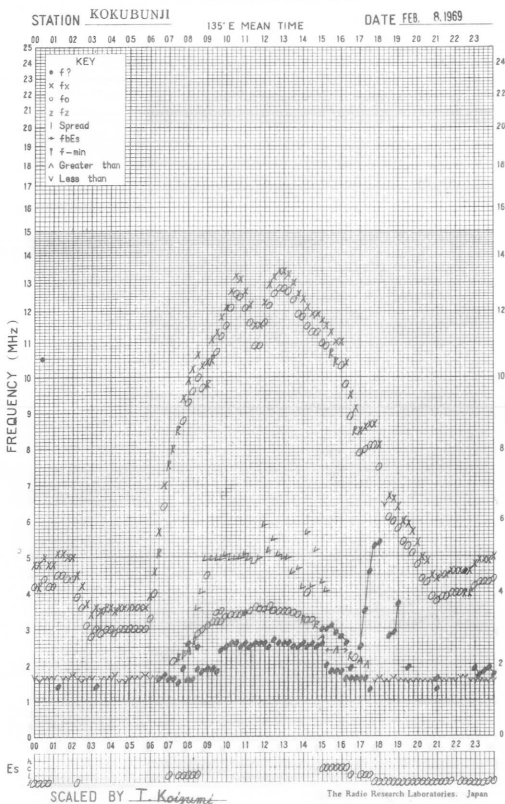
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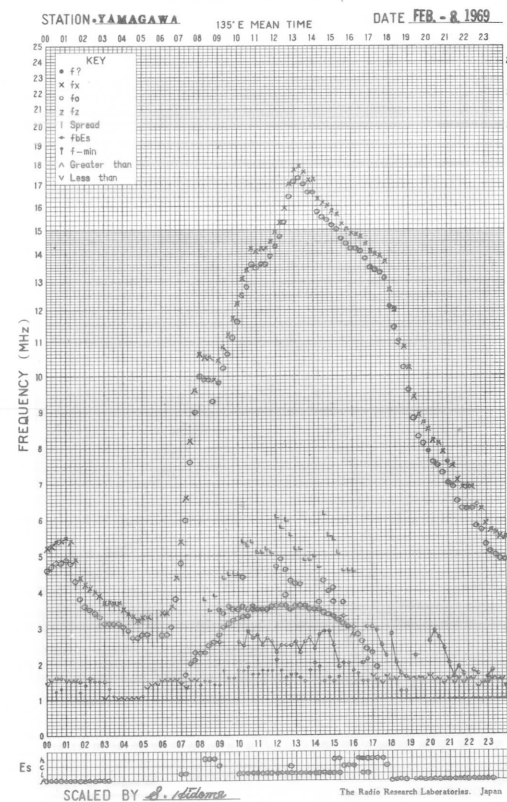
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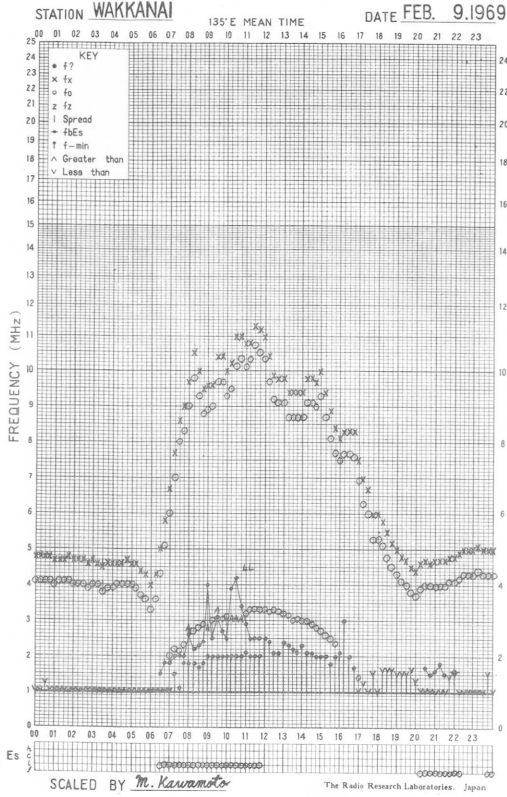
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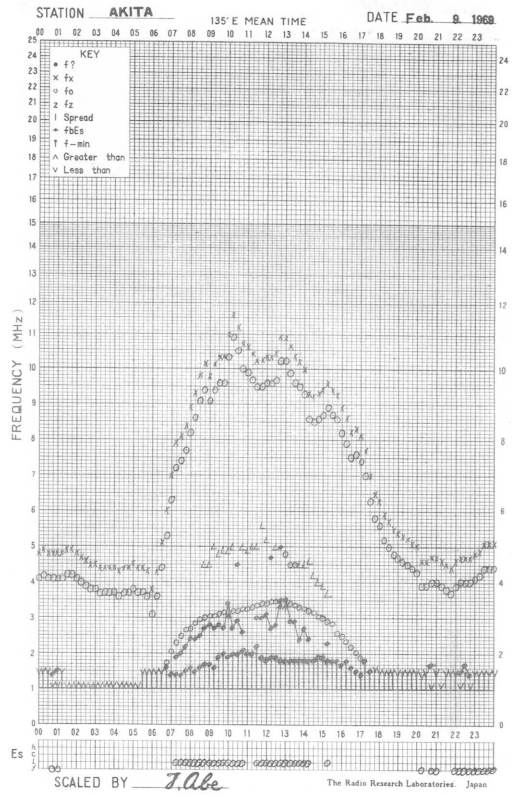
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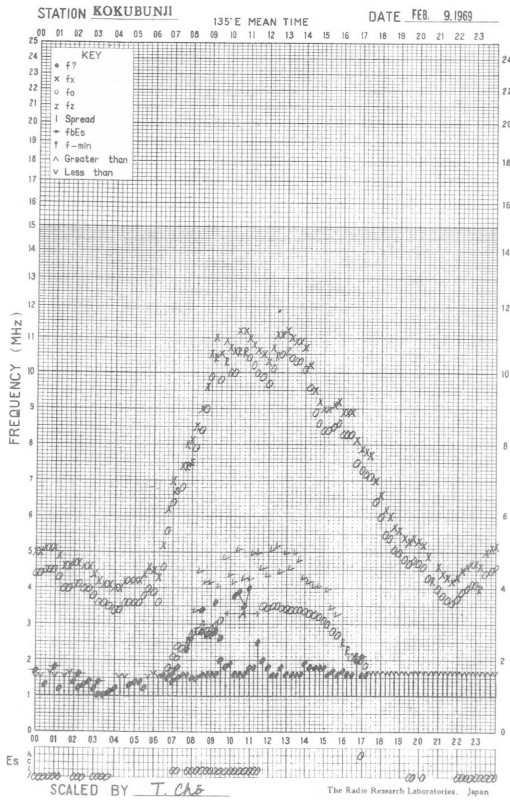
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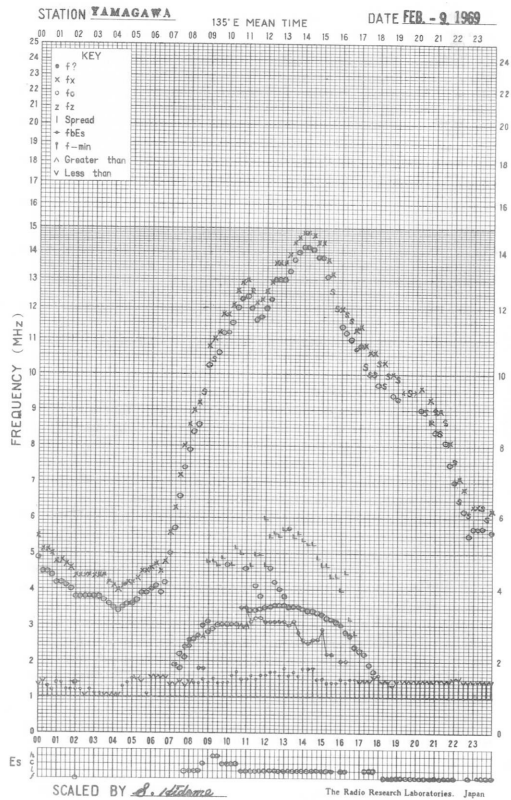
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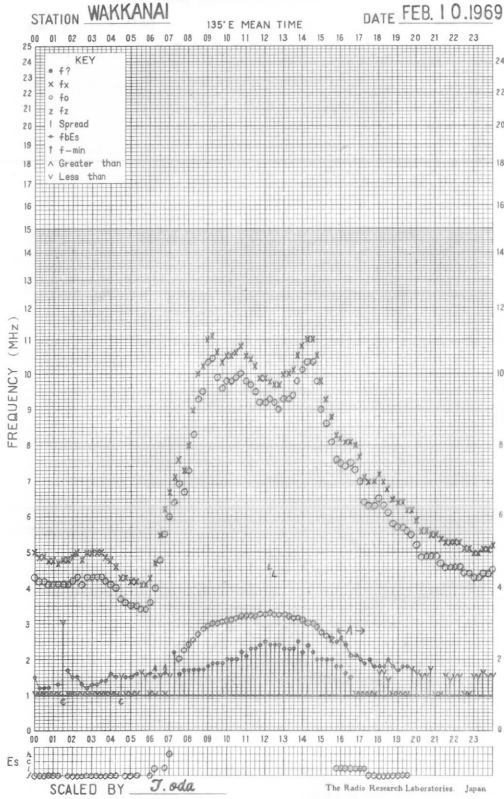
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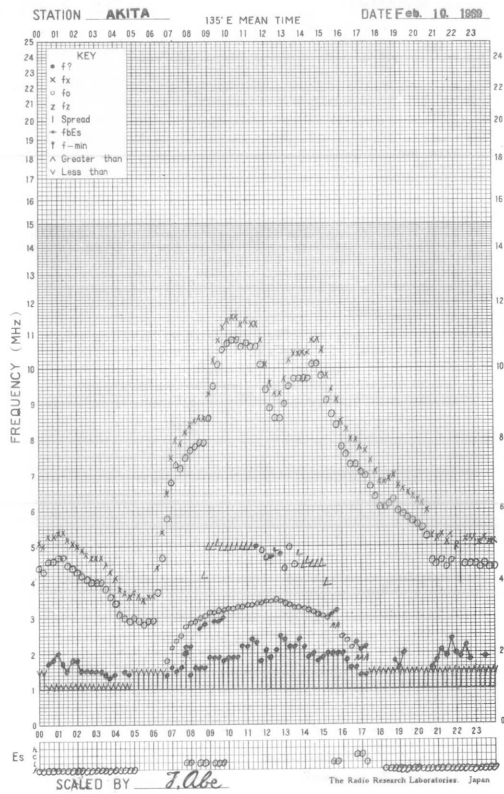
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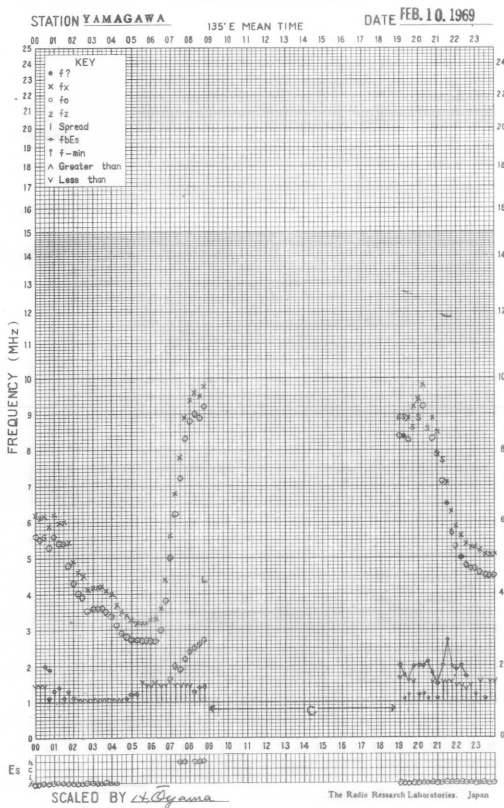
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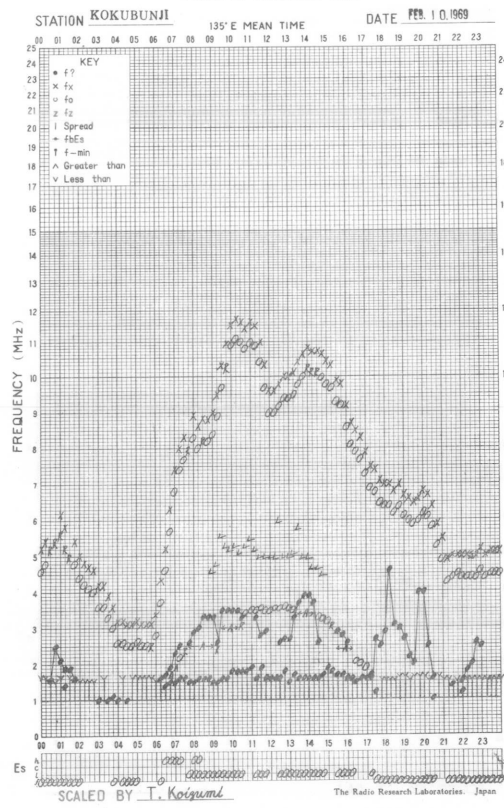
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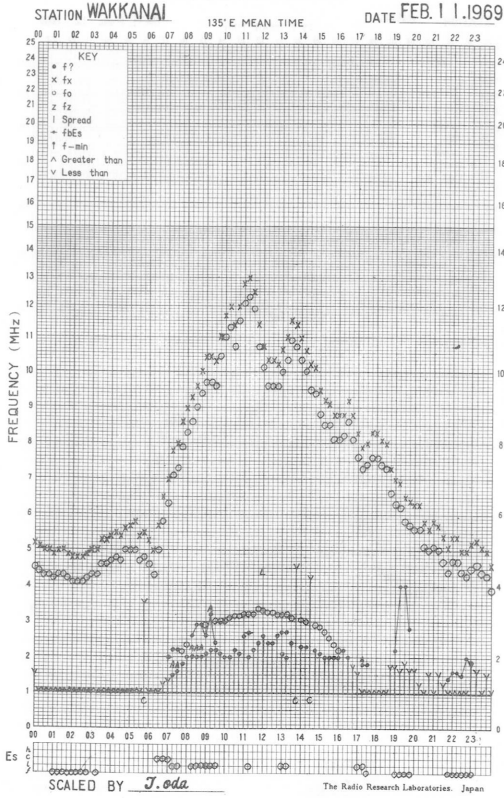
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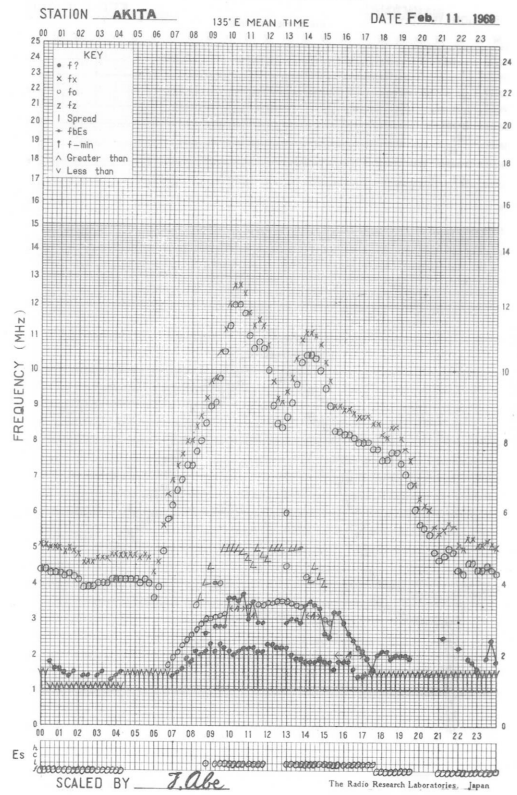
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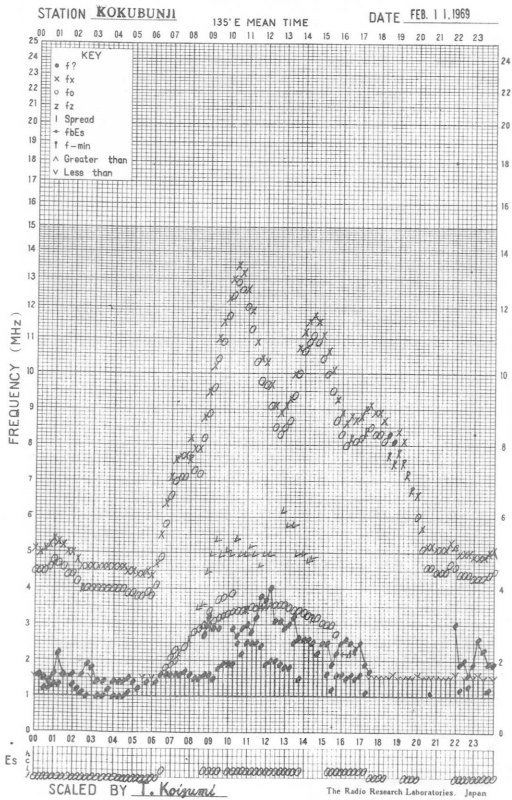
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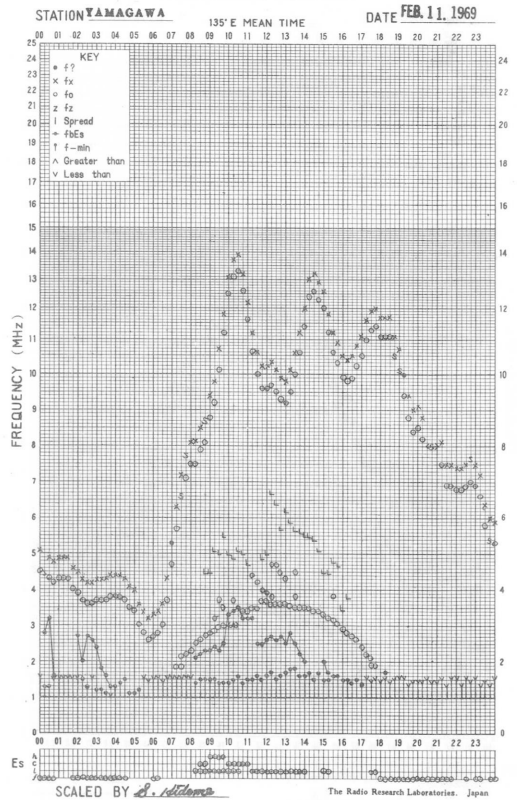
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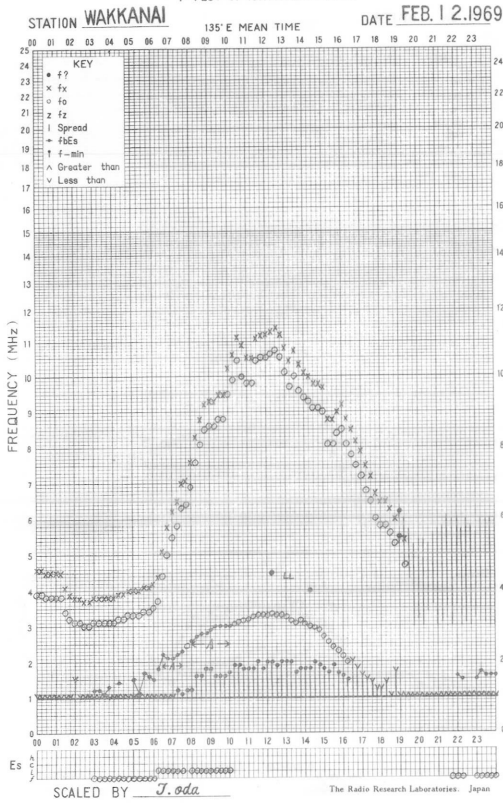
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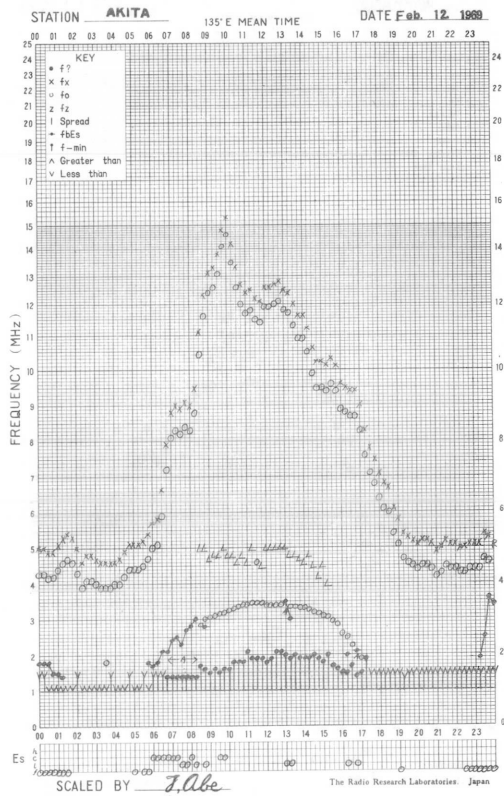
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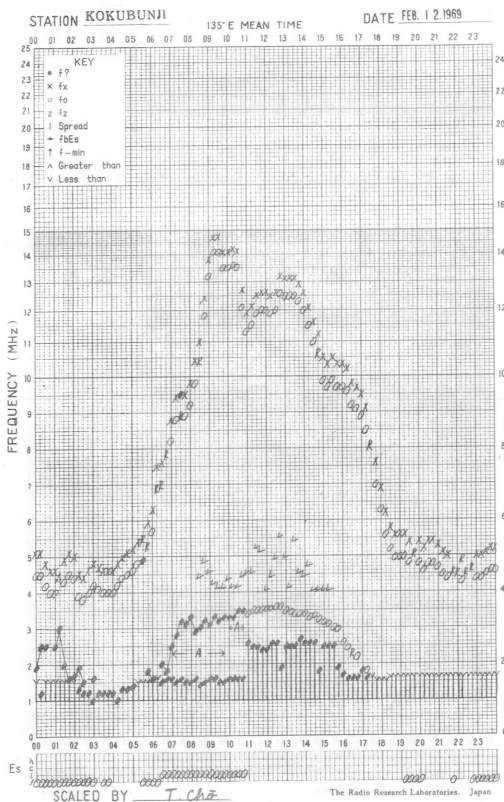
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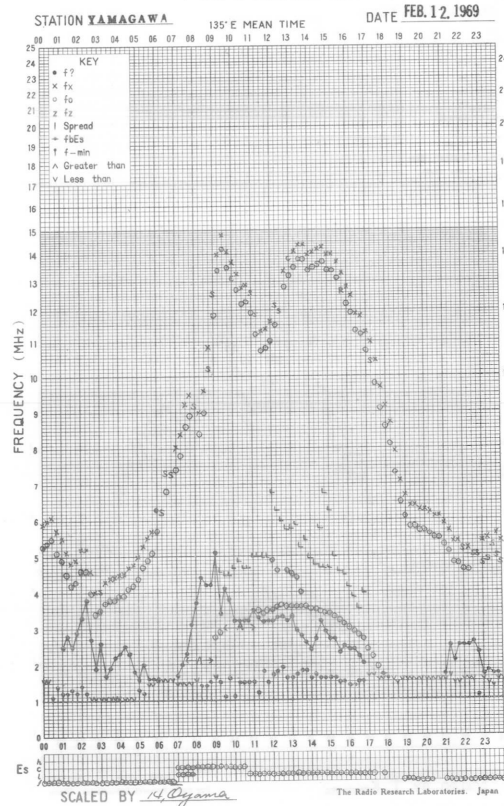
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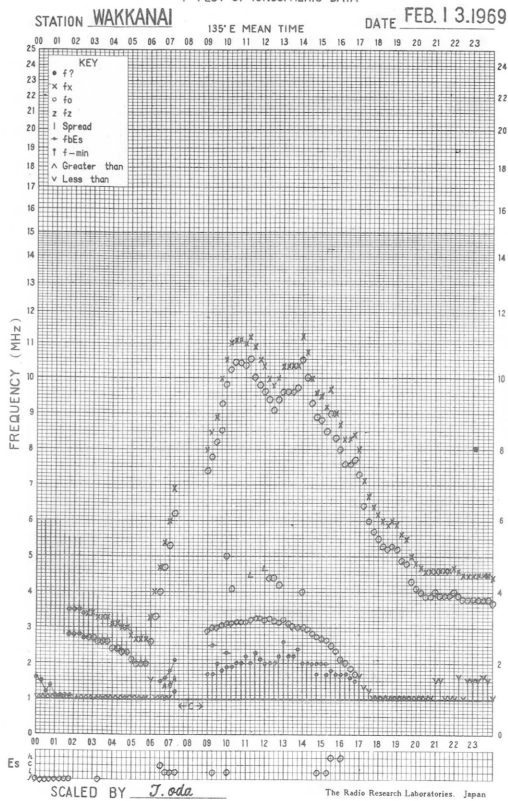
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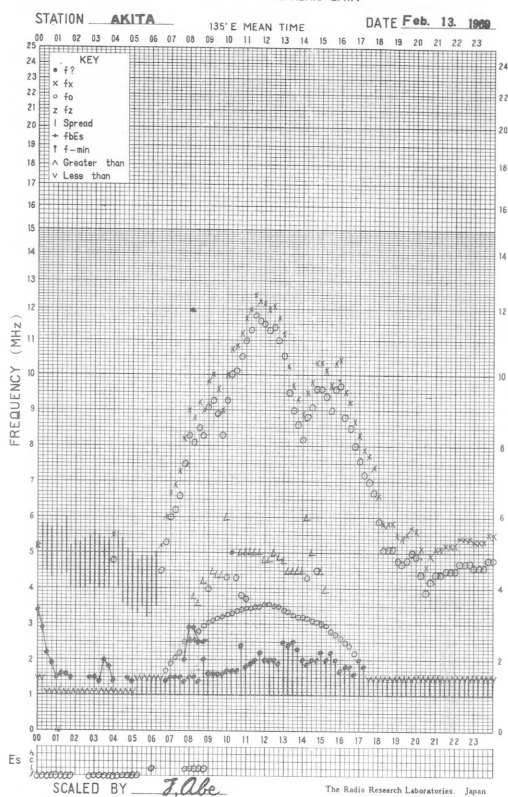
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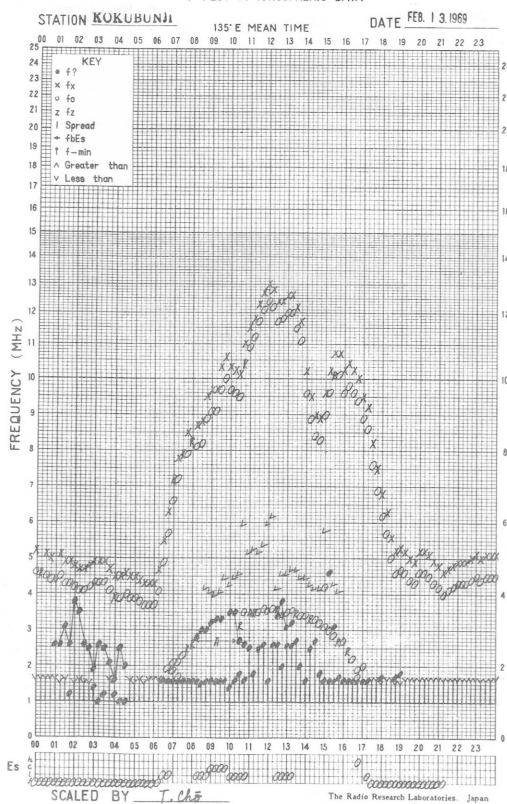
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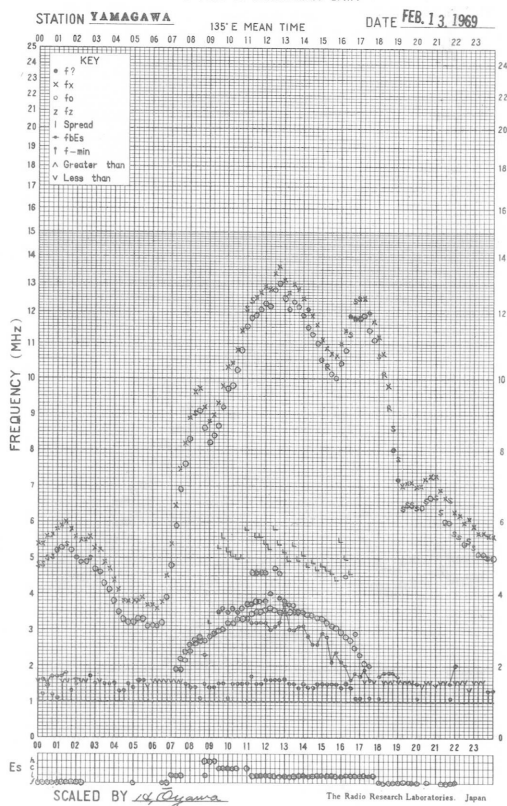
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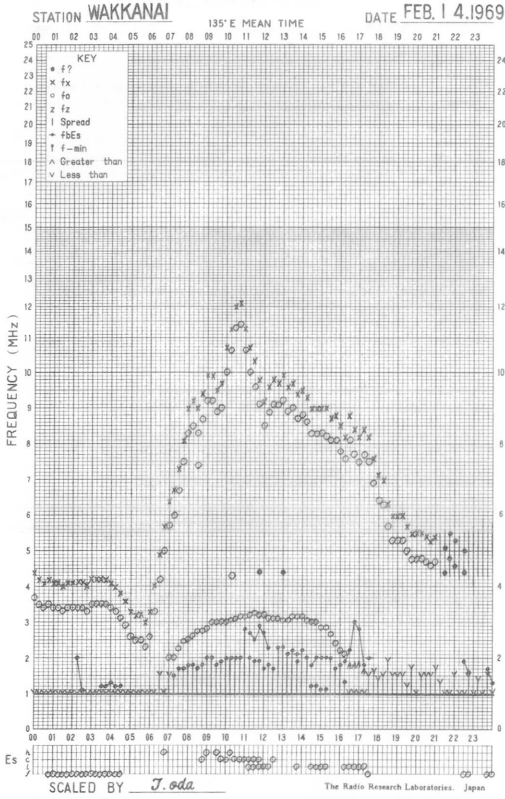
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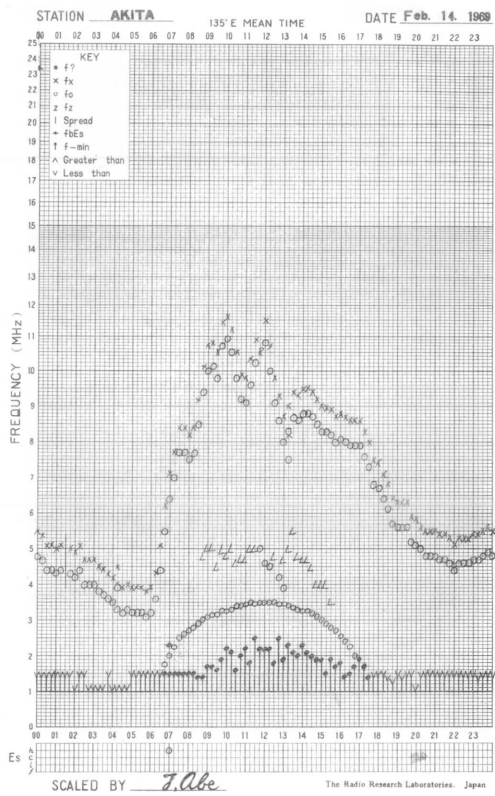
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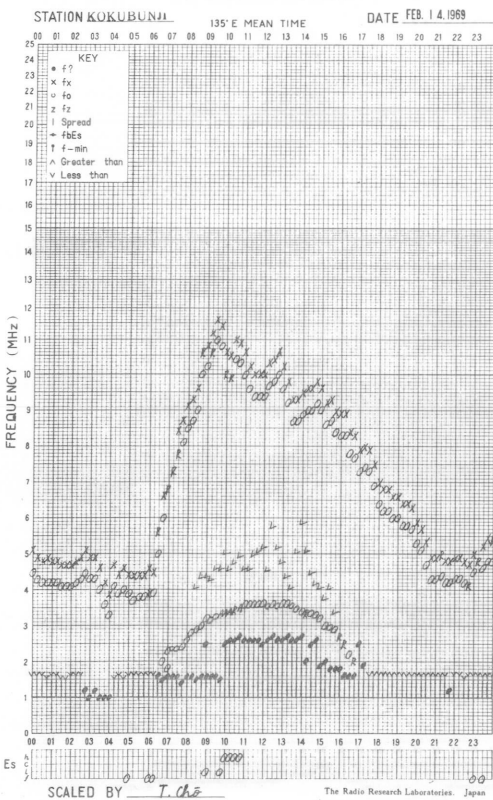
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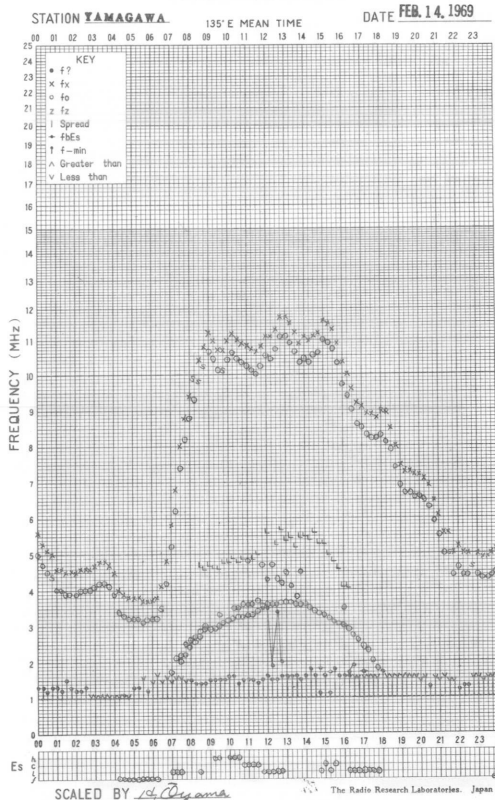
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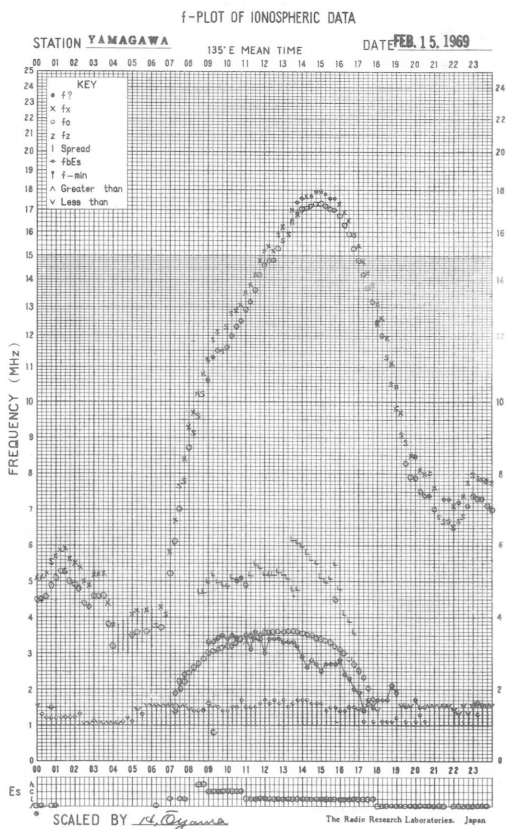
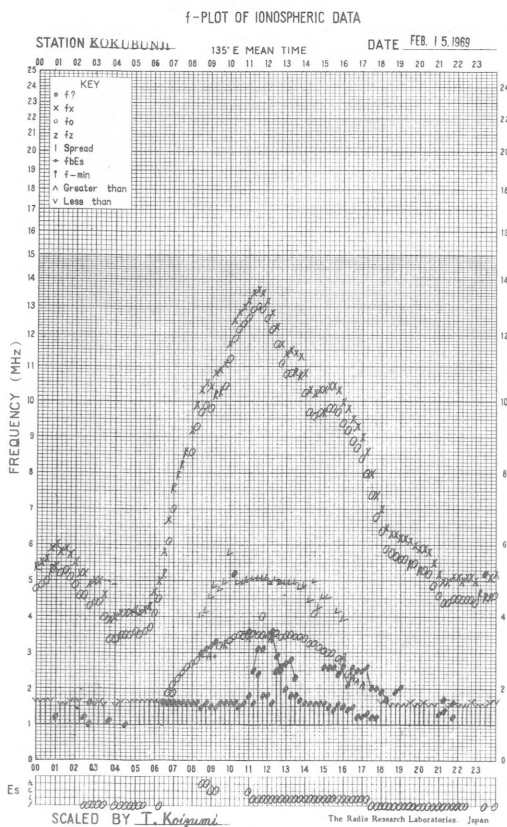
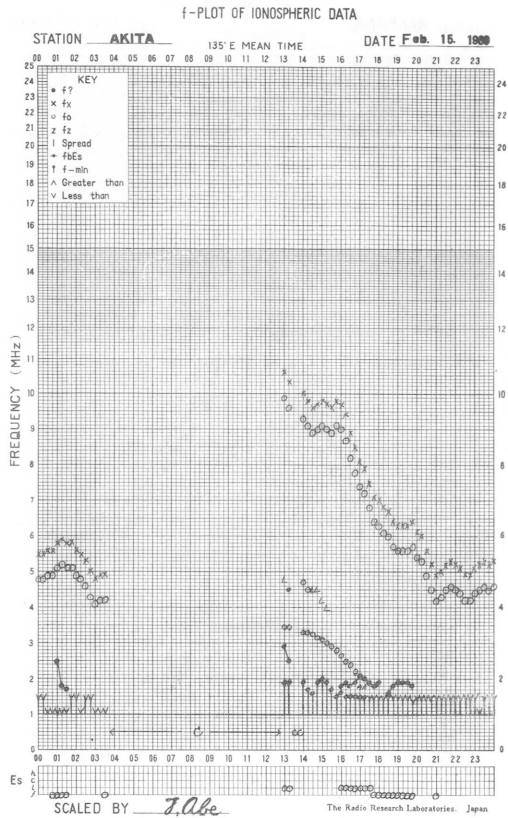
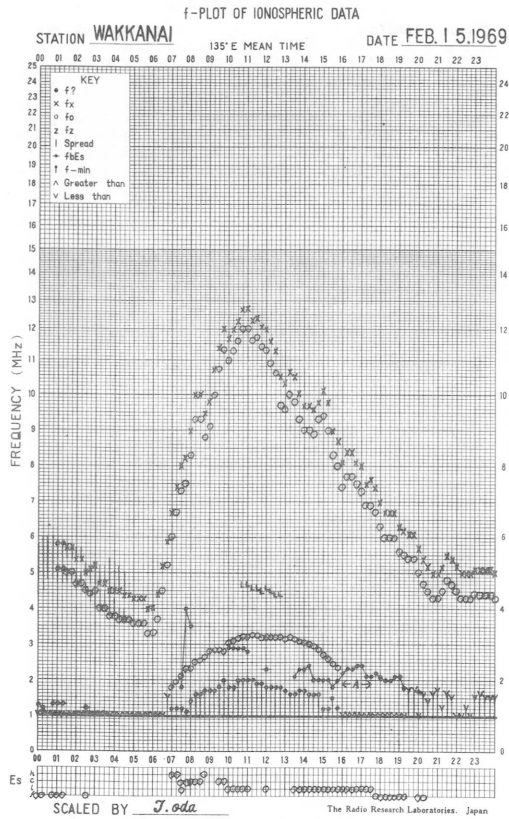


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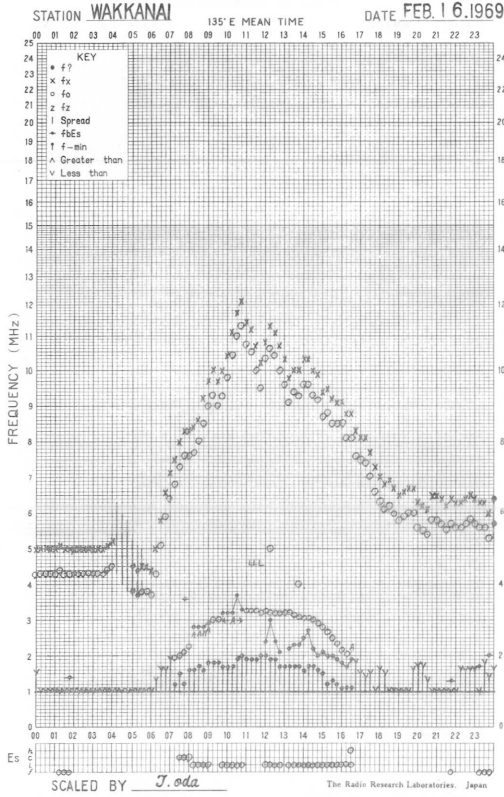


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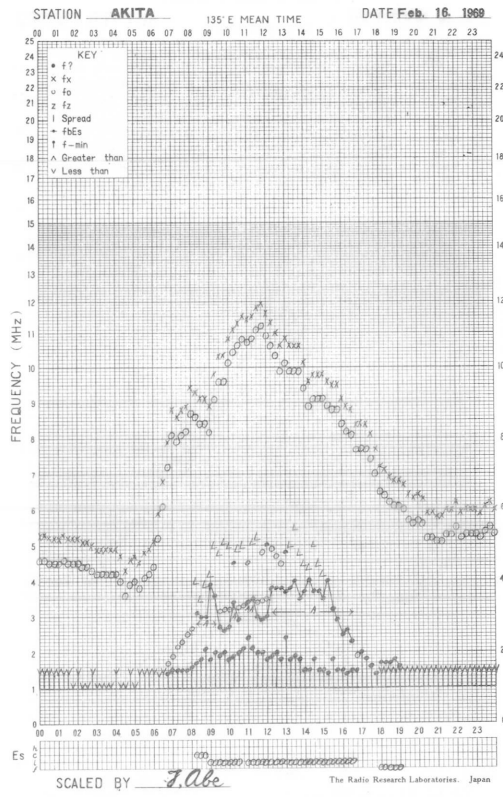




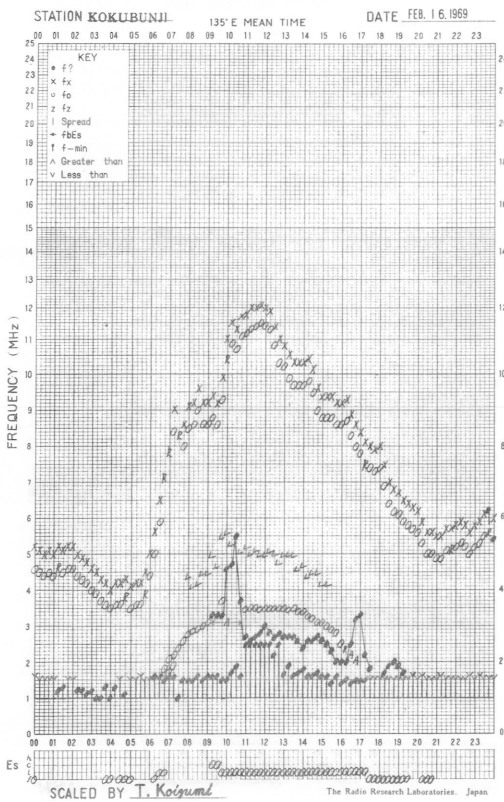
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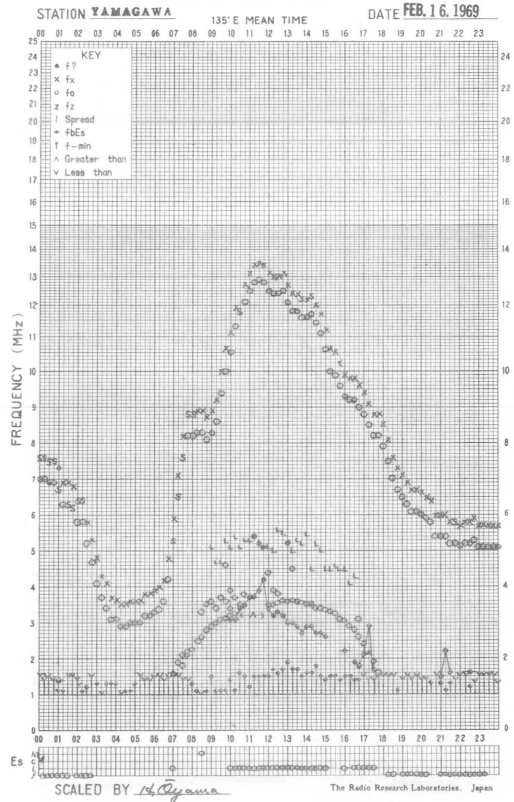
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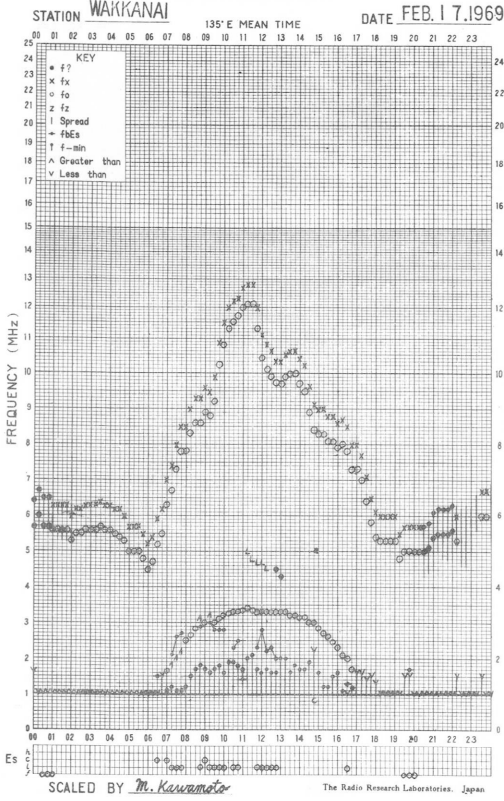
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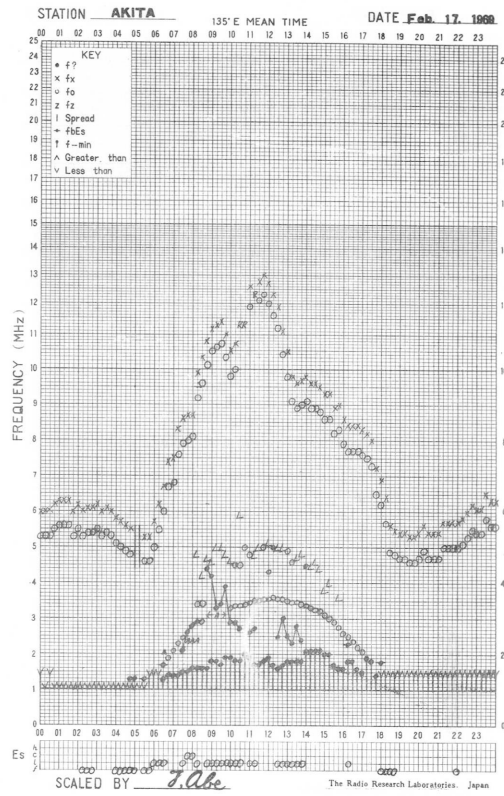
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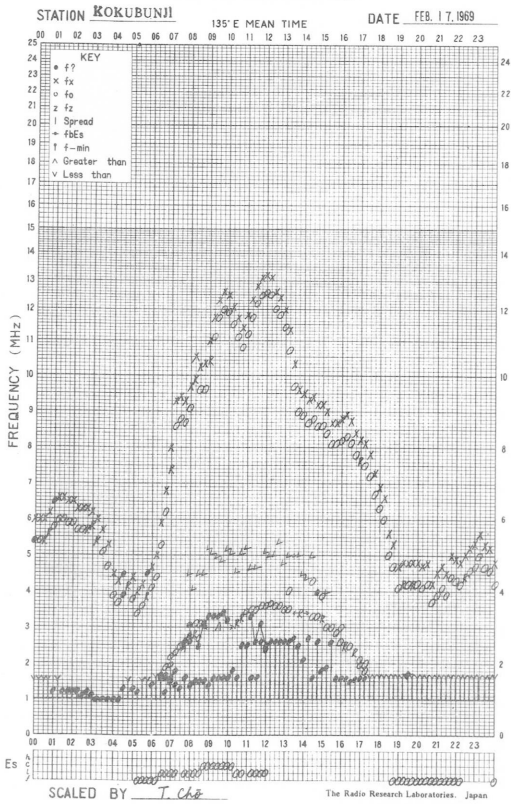
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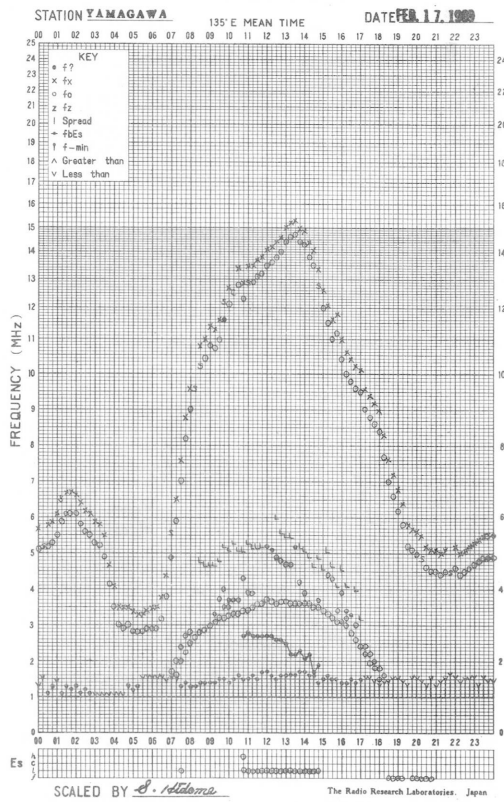
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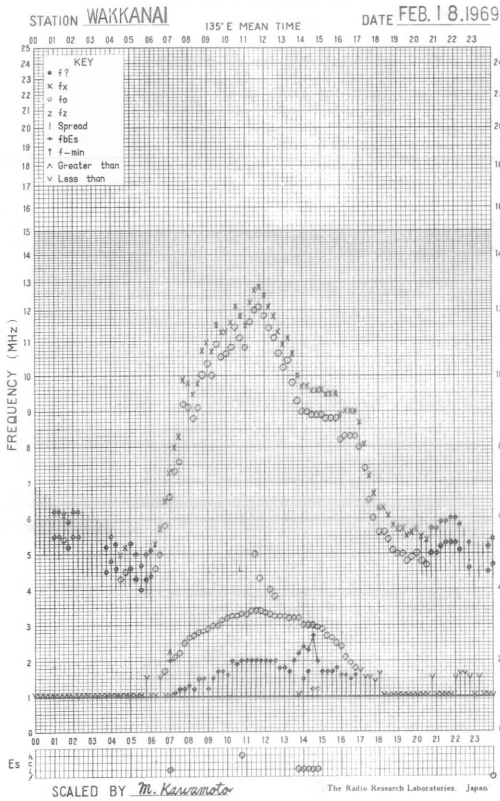
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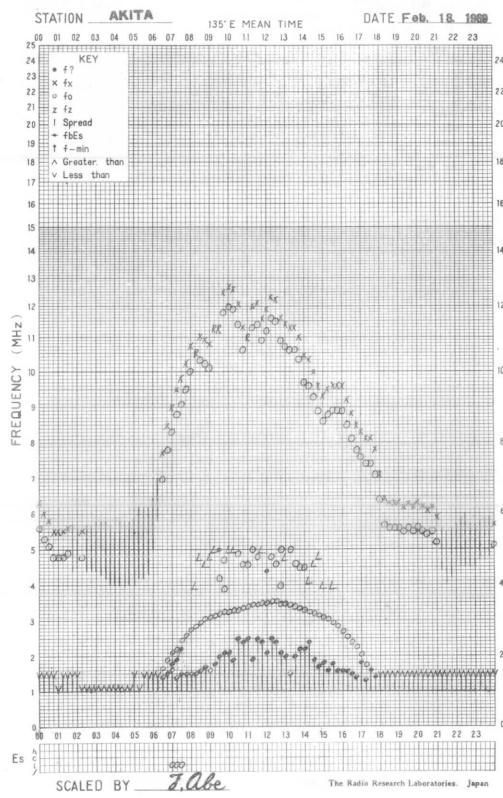
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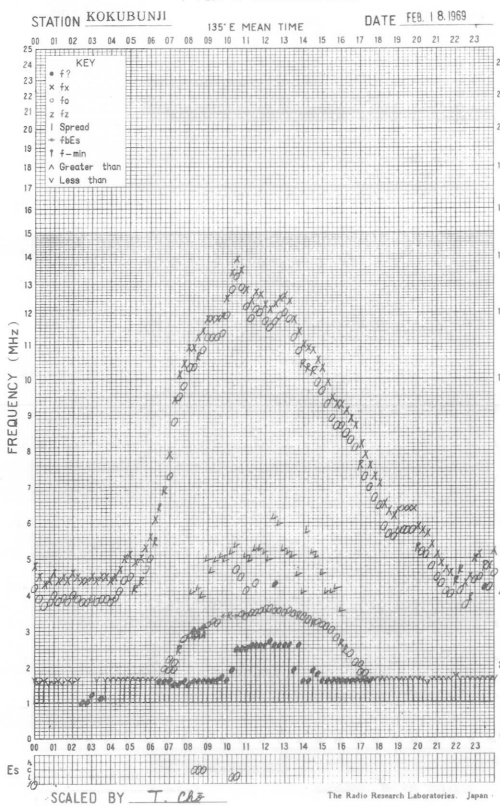
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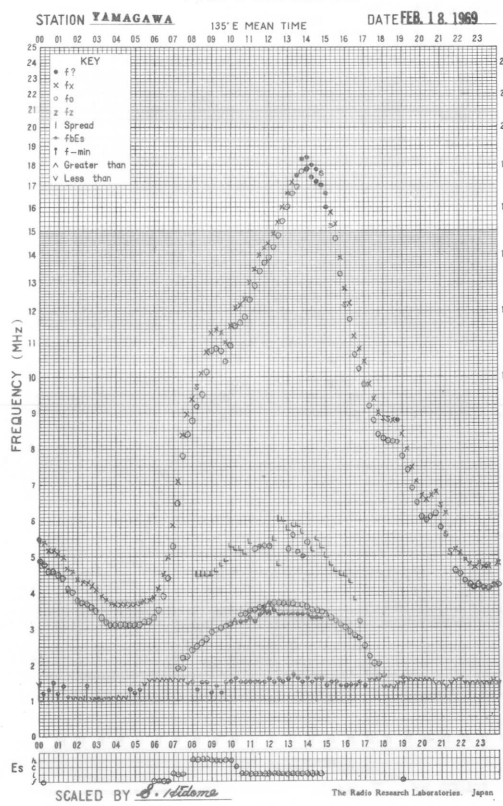
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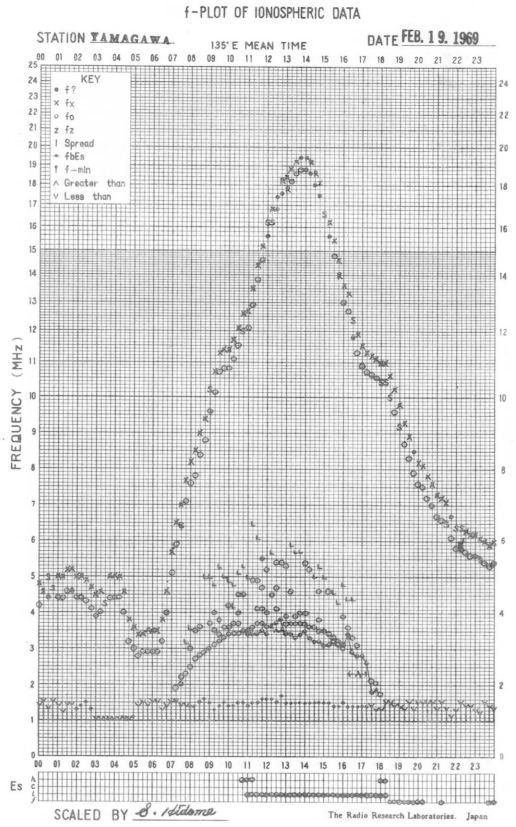
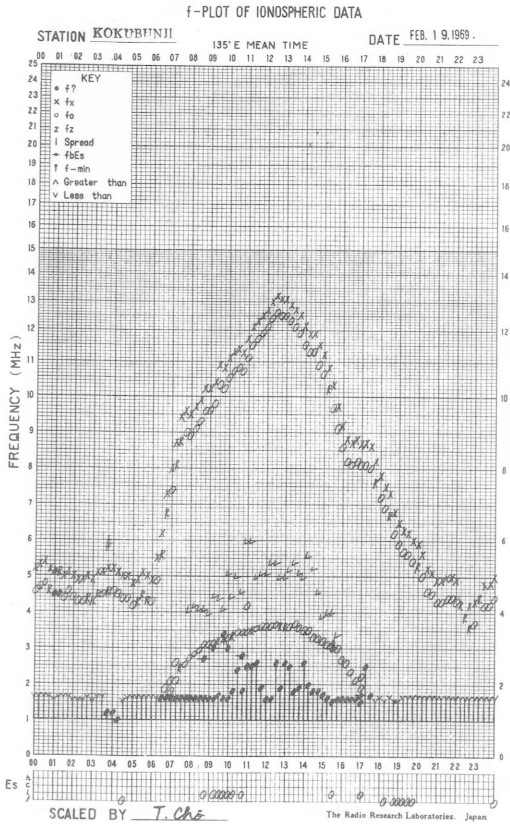
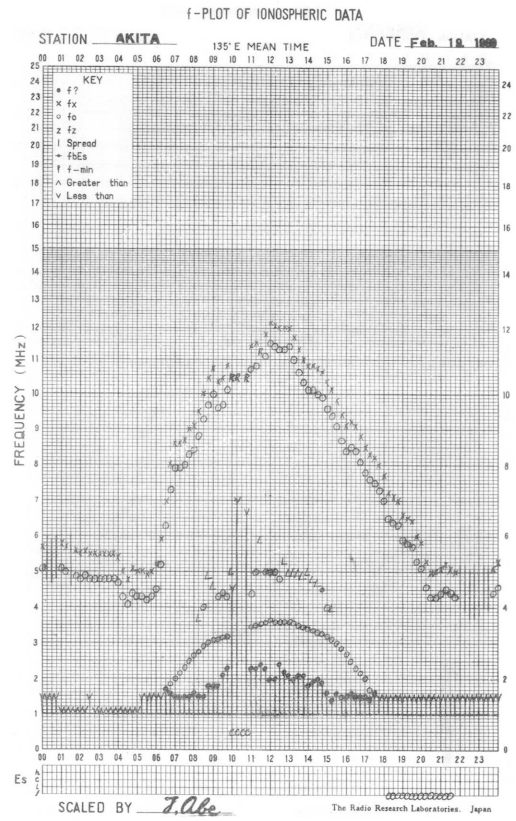
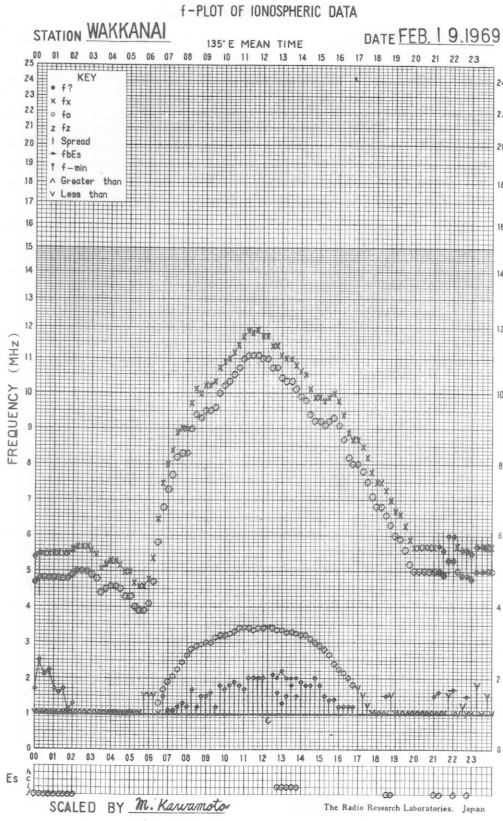


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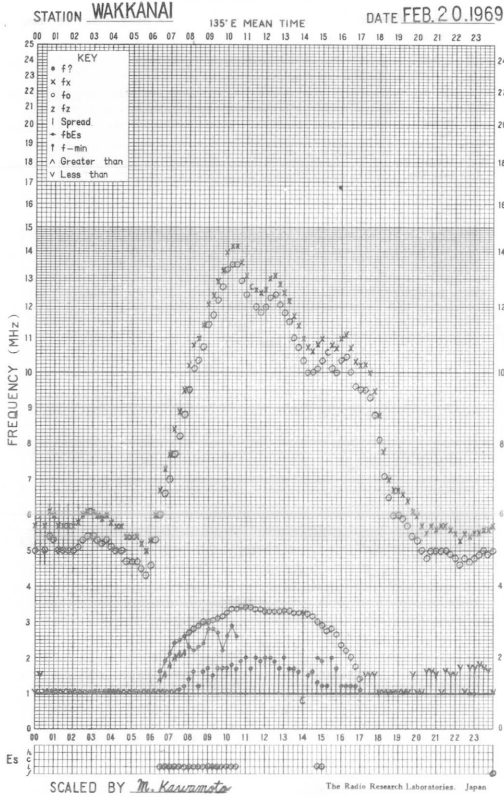


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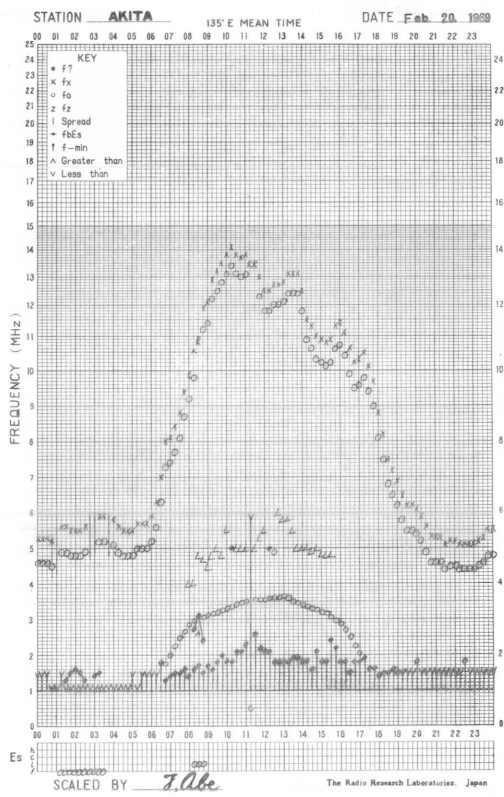




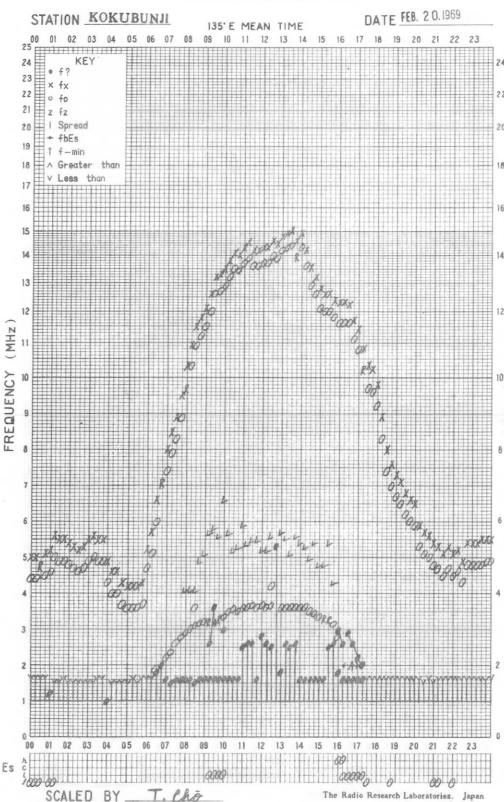
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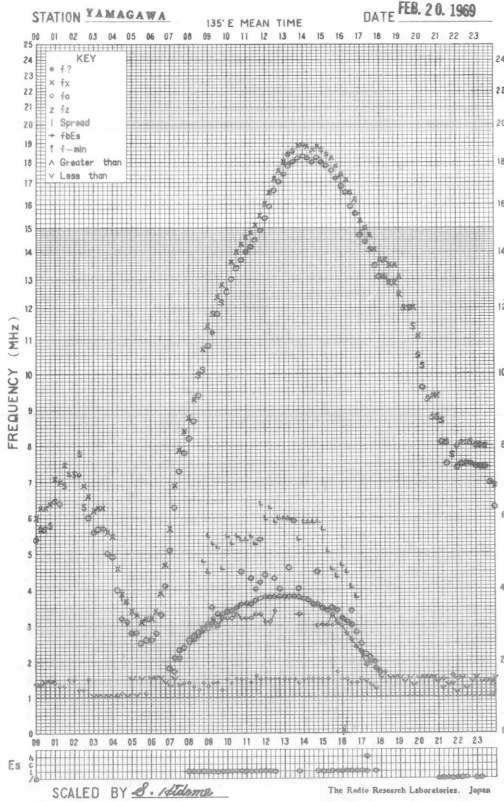
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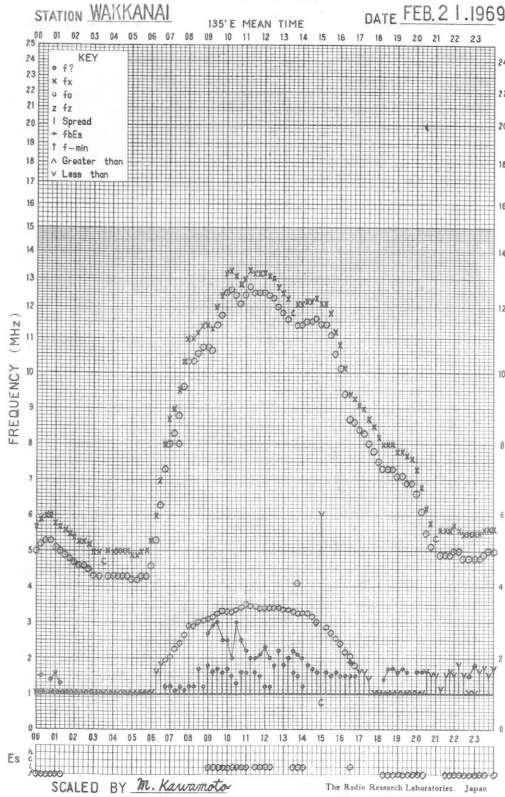
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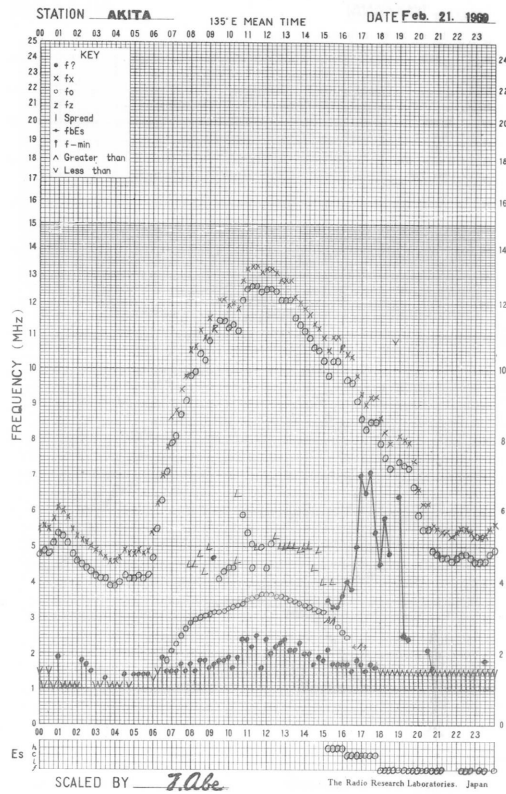
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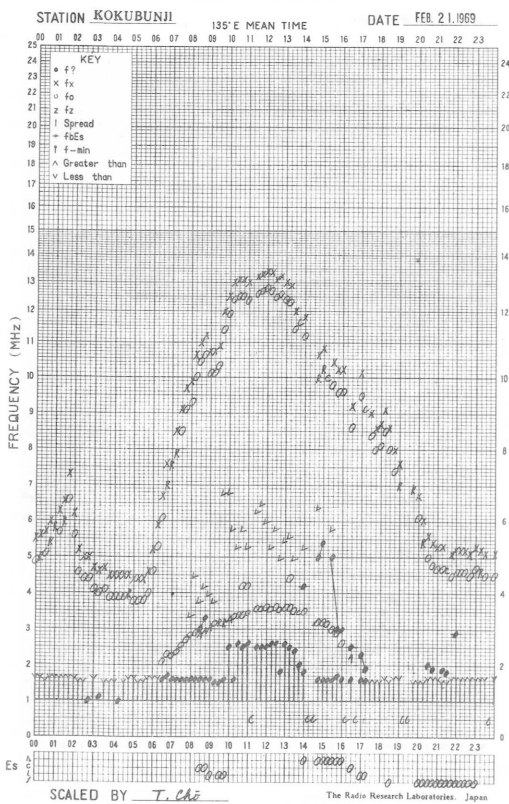
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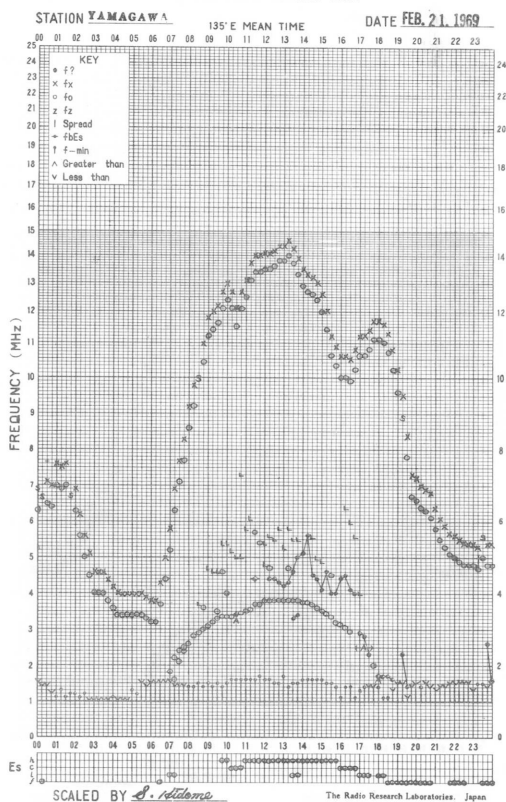
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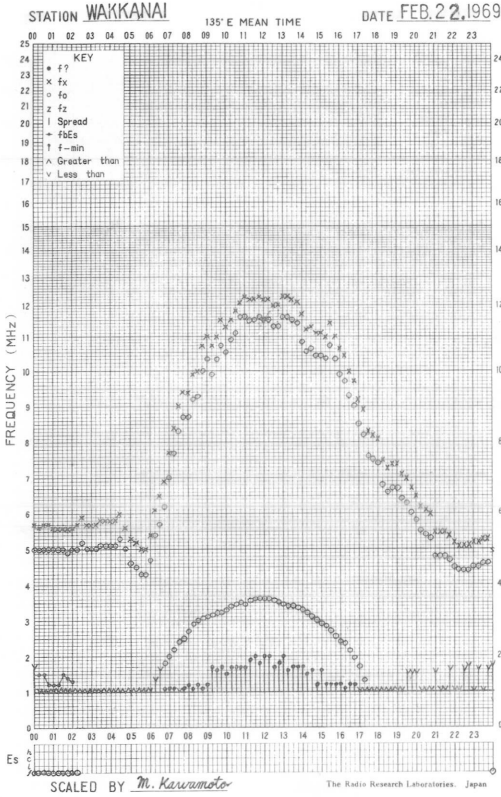
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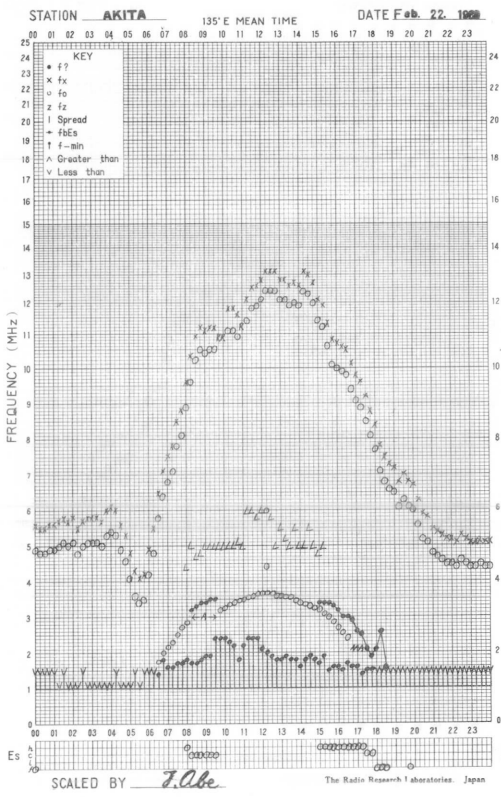
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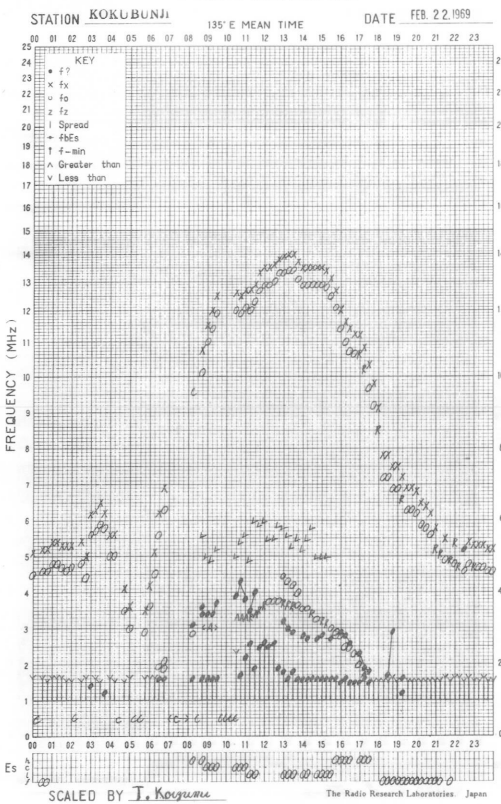
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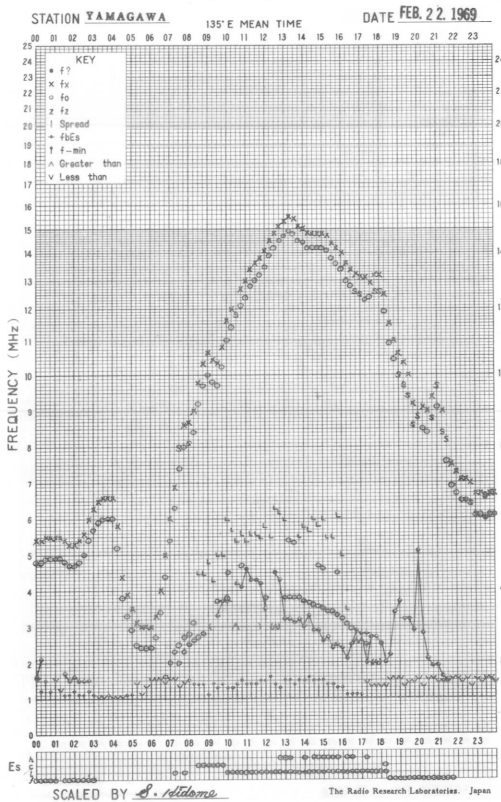
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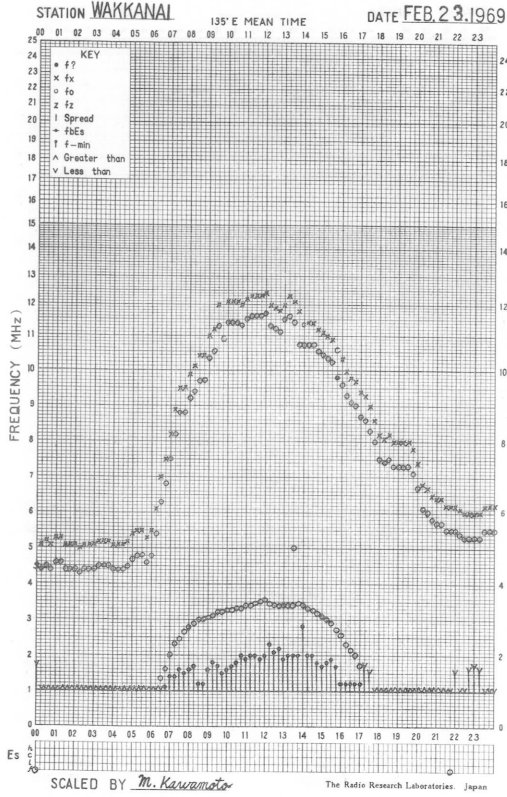
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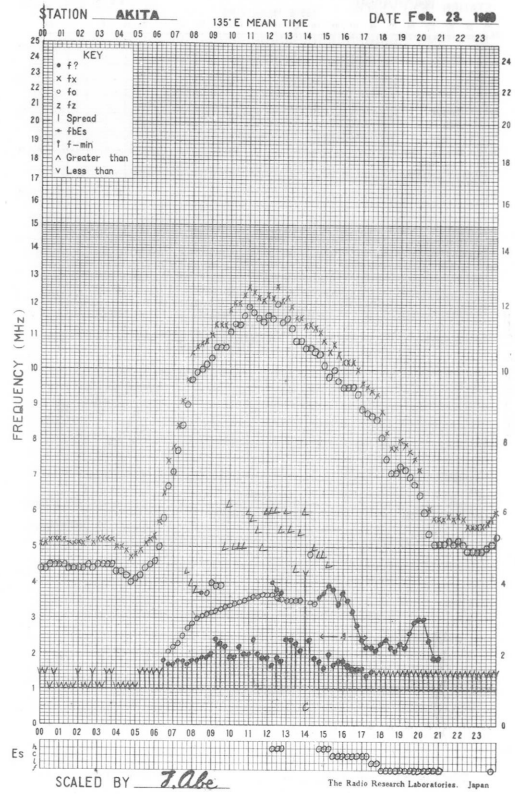
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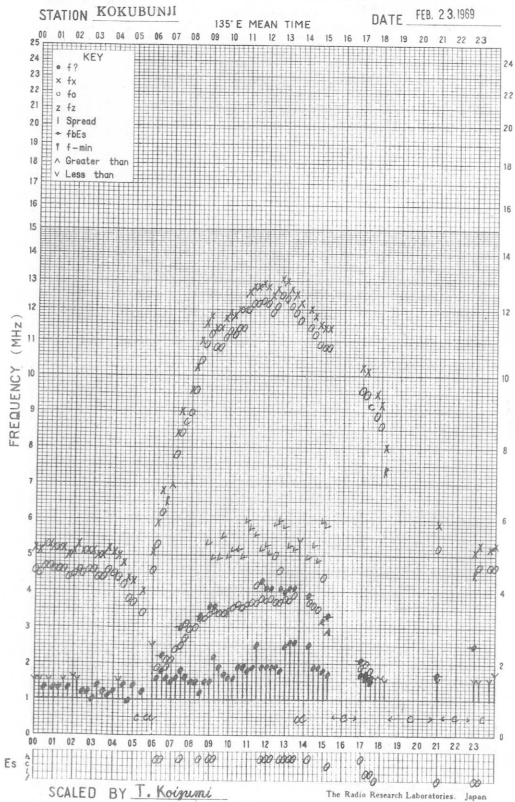
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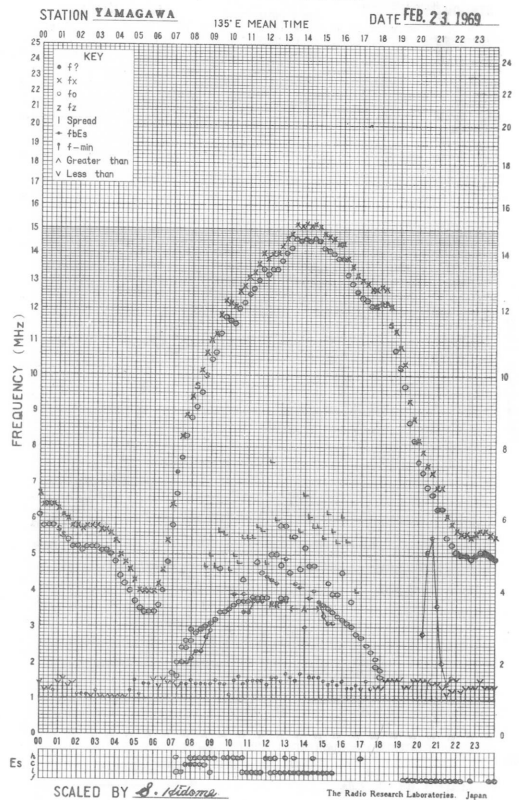
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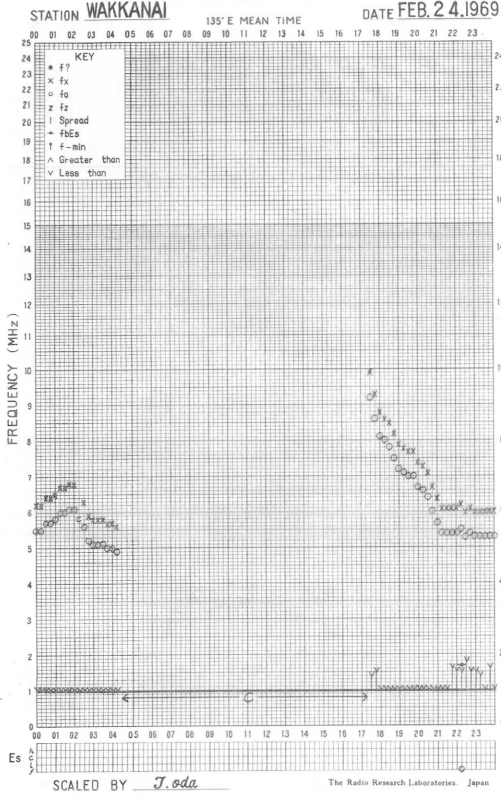
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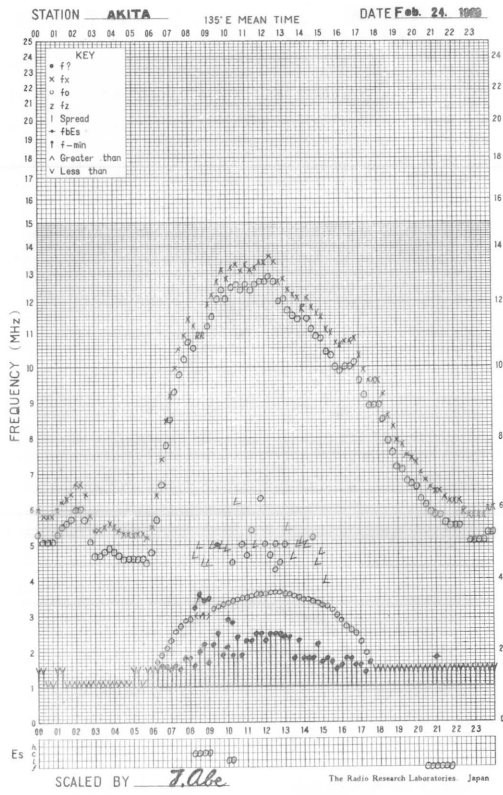
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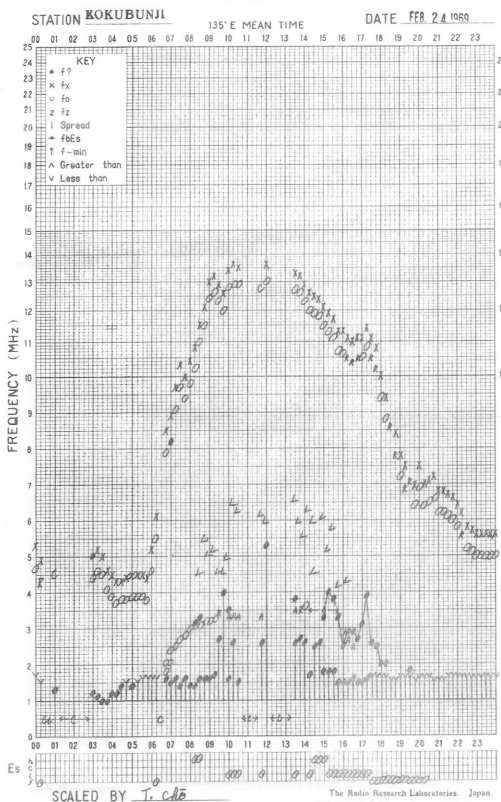
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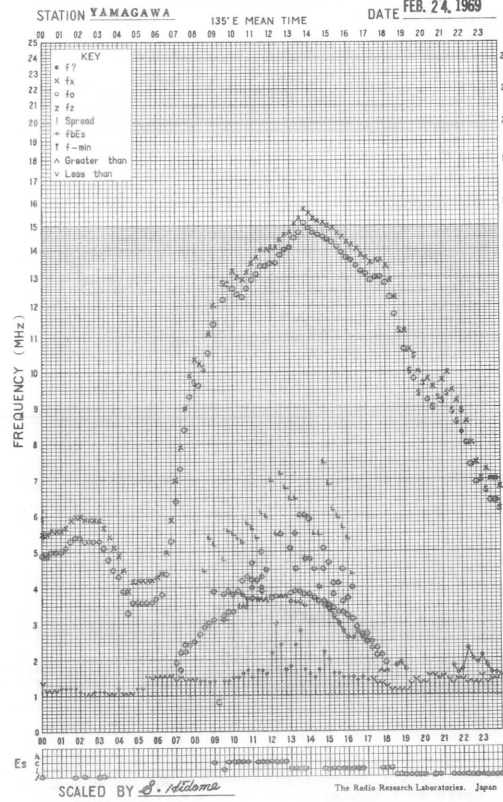
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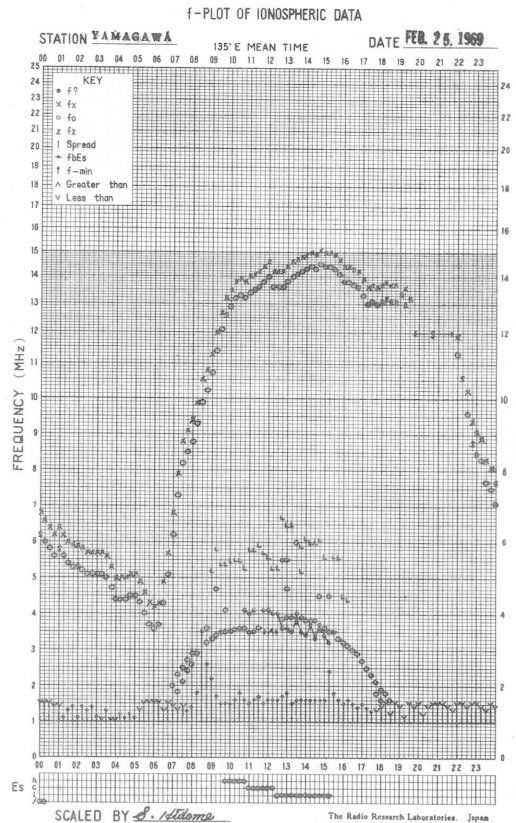
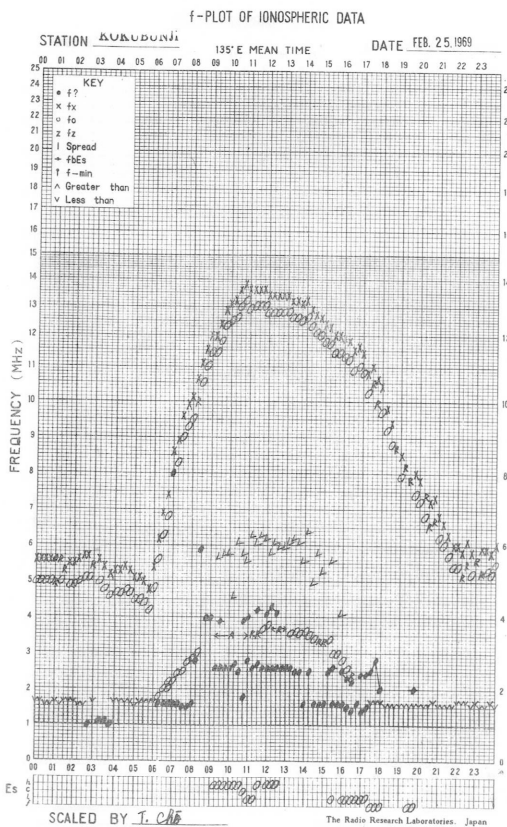
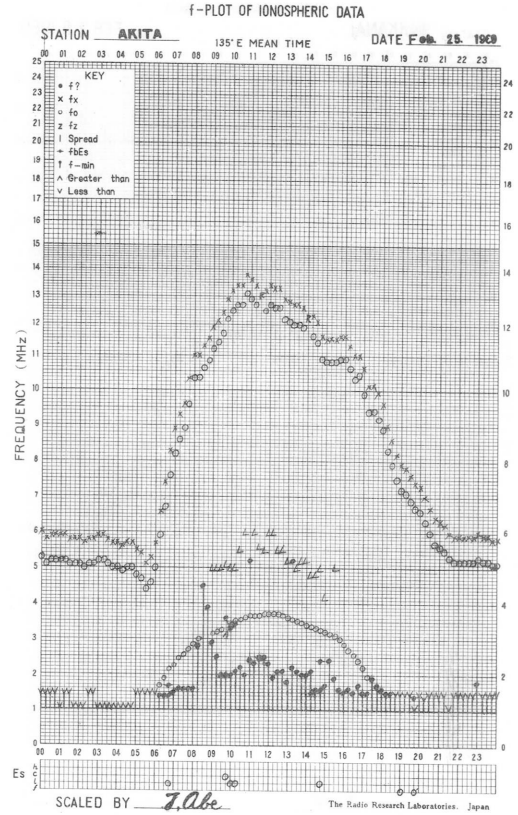
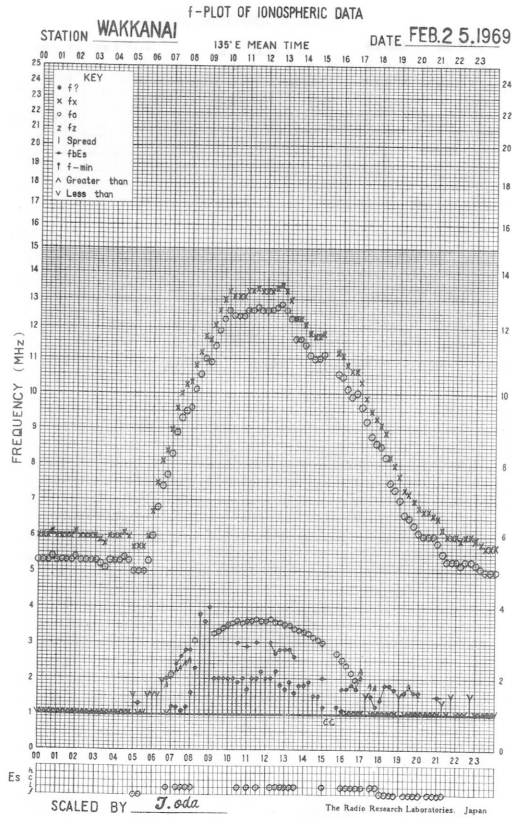


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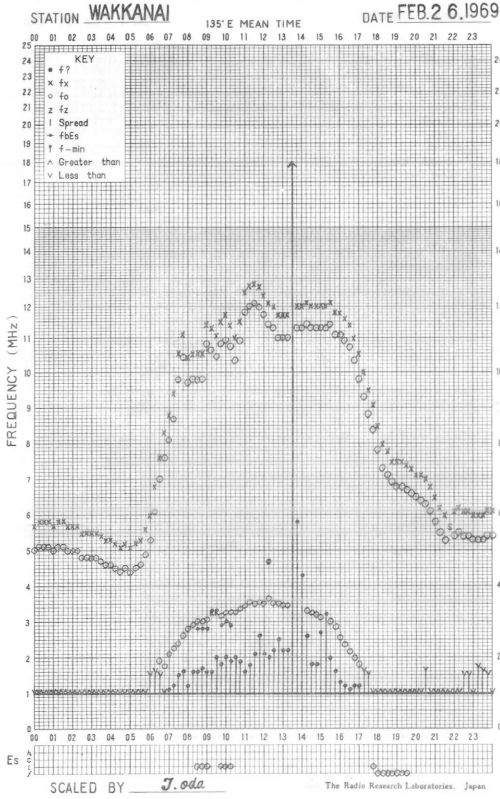


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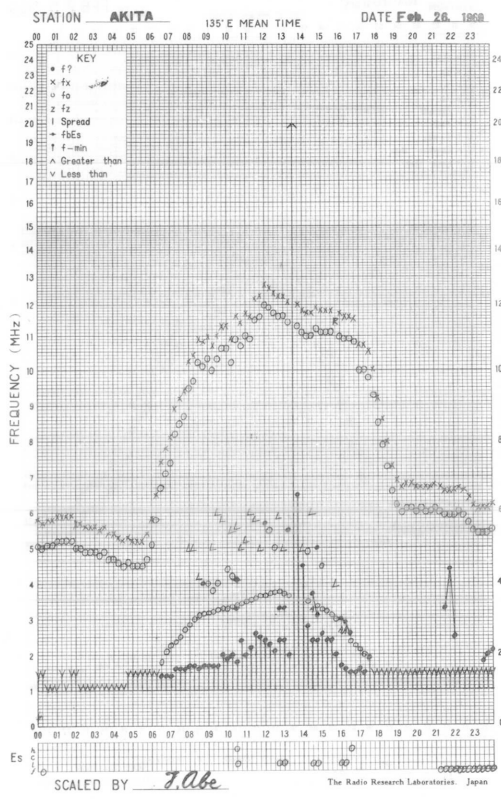




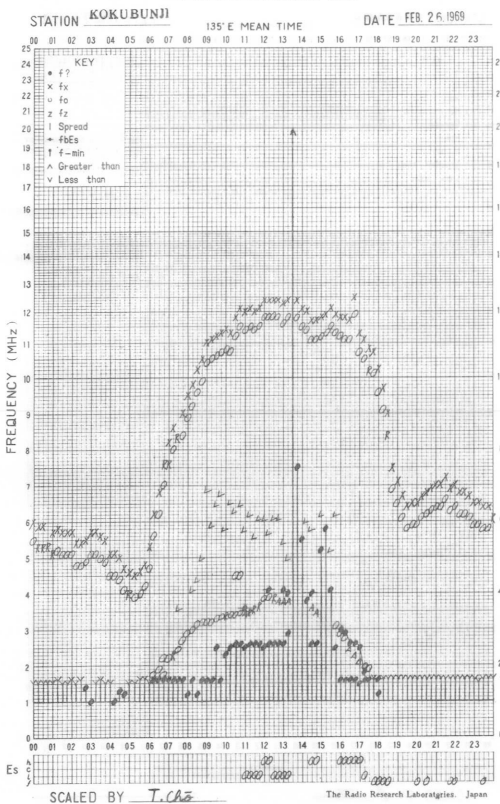
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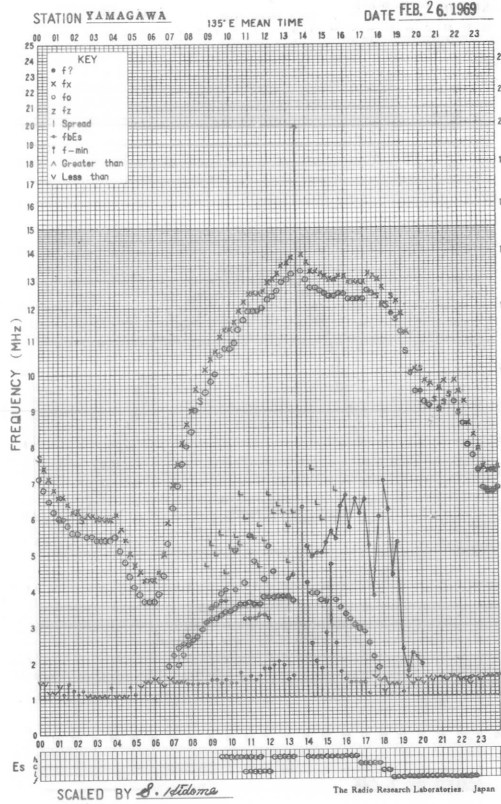
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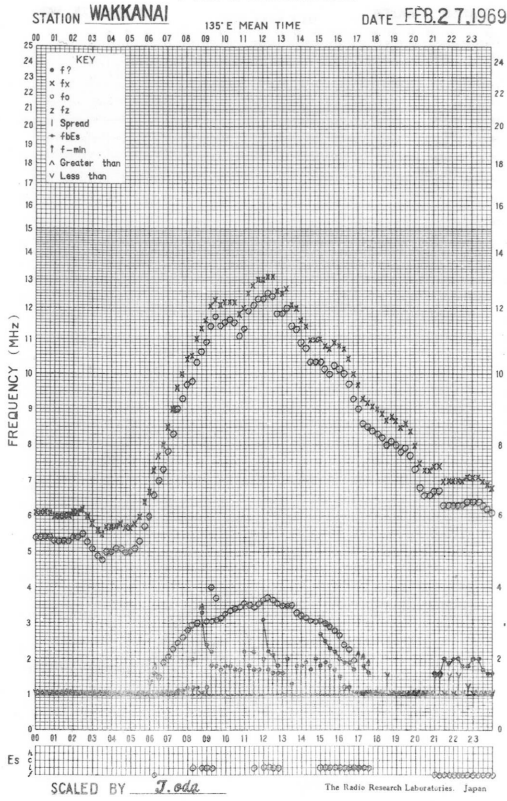
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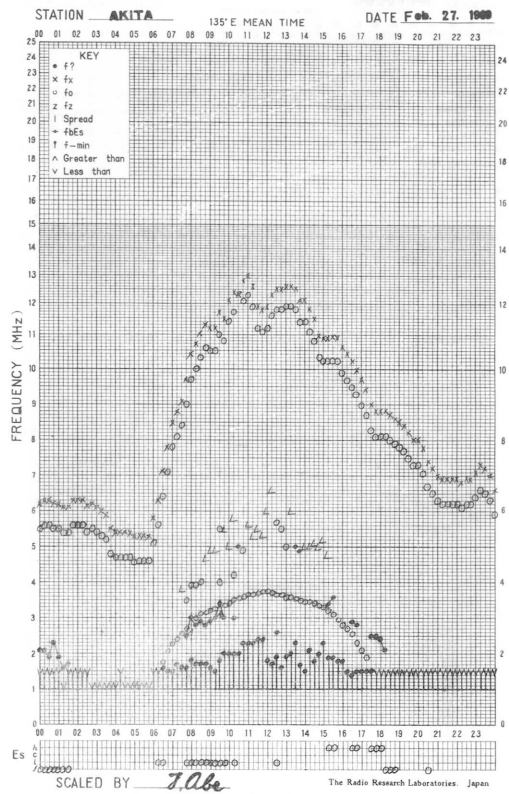
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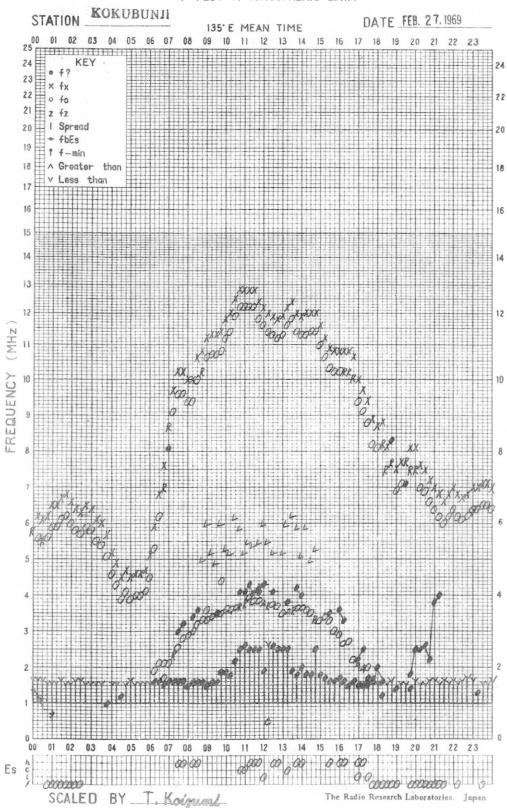
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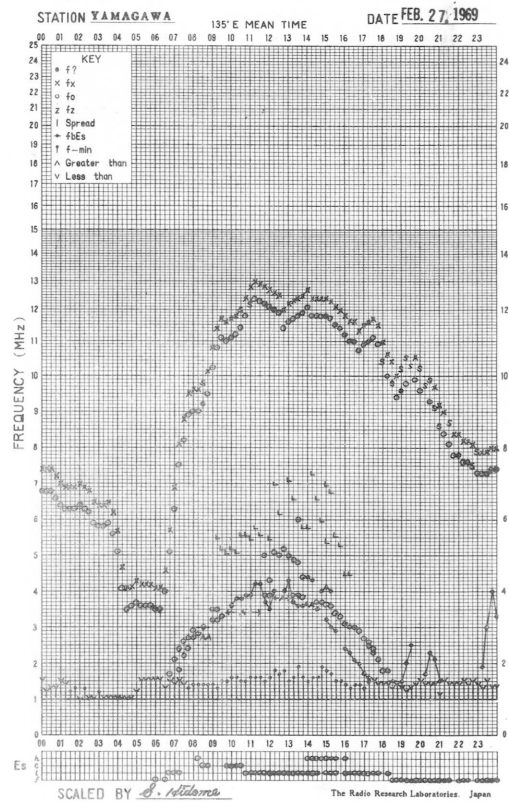
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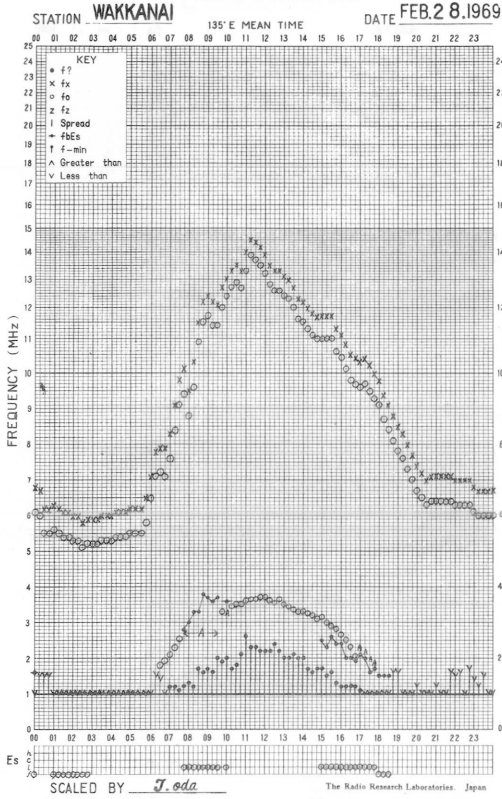
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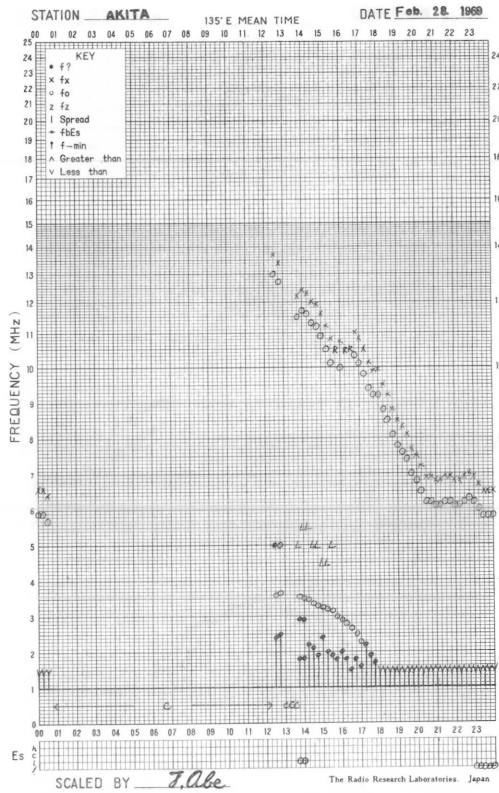
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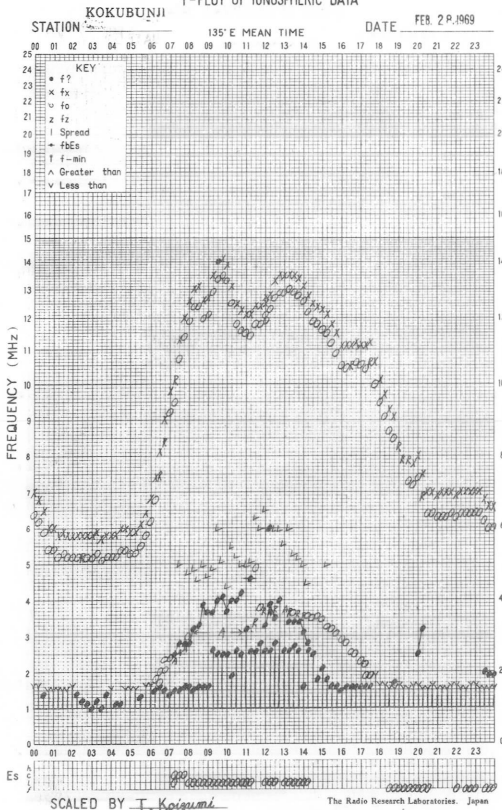
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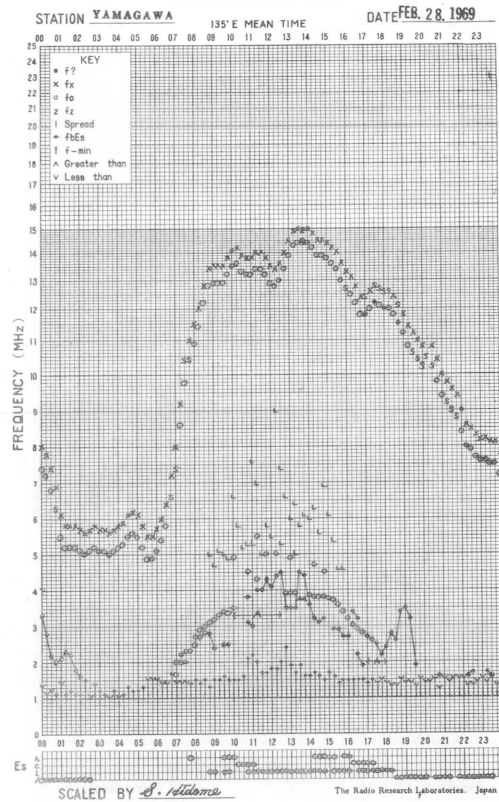
f-PLOT OF IONOSPHERIC DATA



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f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: February 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	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	7	8	(8)	6	8	0	1	(0)	1	1
13	(6)	7	(7)	6	6	(0)	0	(0)	1	0
14	7	7	(8)	7	7	0	0	(1)	0	0
15	8	8	(8)	9	8	0	1	(1)	1	1
16	11	11	(11)	7	10	1	1	(1)	1	1
17	7	7	(8)	9	7	1	0	(1)	1	1
18	10	11	(10)	7	10	1	1	(1)	1	1
19	8	8	(7)	6	8	1	1	(0)	1	1
20	6	7	-	-	7	0	1	-	-	0
21	7	7	(6)	6	7	1	1	(0)	0	1
22	6	6	(6)	12	6	0	1	(1)	1	0
23	16	10	(11)	22	13	1	1	(1)	2	1
24	27	51	(59)	52	38	2	2	(2)	2	2
25	34	18	(20)	12	31	0	1	(1)	1	1
26	10	17	(17)	6	14	1	1	(2)	1	1
27	6	8	(8)	6	7	0	1	(1)	1	0
28	8	6	(6)	7	7	1	1	(1)	1	1

Note No observations during the following periods:

1st 0000- 12th 0100
 13th 0100- 0300
 20th 0500- 2400
 21st 0500- 0600

SOLAR RADIO EMISSION

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

Note No observations during the following periods:

1st 0000-	12th 0400	14th 2120-	2400
13th 0100-	0245	22nd 2120-	23rd 0030
13th 0500-	0715	23rd 2120-	24th 0500

"q" means quiet level, when radiometer is unstable.

Distinctive Events
(single-frequency observations)

Month: February 1969

Observing station: Hiraiso

Normal observing period: 2120 - 0820 (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	
23	500	0439.5	0440.5	18.0	C	460	40	
	200	0439.0	0449.0	37.5	C	760	50	
24	500	2307.5	2313.6	66.5	C	730	140	
	200	2306.0	2315.0	120.4	C	1040	170	
26	500	0422.5	0426.0	136.5	C+	6020	140	
			0517.4			650		
	200	0423.0	0425.5	197.0	C+	> 1360	> 130	
			0529.1			560		
28	200	0220.5	0229.0	21.0	C	25	5	

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

FEB 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	8	ES 18	13	7	ES -8	ES -9	ES -9	ES -9	ES -10	ES 3	ES -15	ES -18	ES -23	ES -23	ES -33	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	4	9	8
2	8	11	13	11	ES -4	ES -11	ES -1	ES -3	ES -1	ES -4	ES 4	ES -8	ES -16	ES -11	-20	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-1	5	6
3	4	0	C	ES -8	ES -2	ES 2	ES -1	ES -5	ES -3	ES -6	ES -1	ES -3	ES -8	ES -15	ES -31	ES -12	ES -18	ES -18	ES -18	ES -18	ES -18	ES -18	3	8	9
4	7	9	14	5	ES -6	ES 20	ES -2	ES 0	ES -13	ES -11	ES -13	ES -12	ES -23	ES -21	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	5	7	2
5	8	7	9	13	11	ES -2	ES -8	ES -8	ES -5	ES -7	ES -6	ES -1	ES -1	ES -17	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	3	7	1
6	7	8	14	4	ES 7	ES -12	ES -6	ES -9	-6	ES -7	ES -11	ES -14	ES -18	ES -24	-13	-16	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	3	9	11
7	-5	8	7	8	ES -5	ES -1	ES -13	ES -10	ES -5	ES -7	ES -14	ES -15	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	ES -30	-3	6	7
8	3	1	8	C	ES	ES	ES	ES	ES -7	ES -8	ES -10	ES -15	ES -14	ES -19	ES -18	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-2	3	6
9	1	9	5	11	2	C	ES -7	ES -2	ES -5	ES -7	ES -22	ES -23	ES -20	ES -26	ES -25	-18	-8	0	-1	-18	ES -33	-2	-1	-2	
10	1	4	5	9	ES -2	ES -10	ES 0	ES -19	ES -12	ES -2	ES -8	ES -10	ES -7	ES -21	-14	5	-9	14	12	3	-2	-4	-7	-6	
11	-1	5	2	9	19	-4	ES -13	ES 4	ES -18	ES 2	ES 2	ES -11	ES -23	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-2	-1	-3	
12	6	-2	ES -11	ES -5	ES -6	ES -5	ES -7	ES -11	ES -8	ES -4	ES -13	ES -21	ES -36	ES -21	ES -30	ES -26	ES -5	ES -24	ES -30	ES -30	ES -33	-6	-3	2	
13	-3	11	3	C	C	ES -7	ES -9	ES -9	ES -7	ES -5	ES -30	-14	ES -31	ES -31	ES -31	ES -31	ES -31	ES -31	ES -31	ES -31	ES -31	-2	-5	-5	
14	-4	-3	C	C	C	C	ES 11	ES -7	ES -1	ES 4	ES -13	ES -14	ES -7	ES -8	ES 8	6	ES -10	-20	ES -32	-5	5	4	2		
15	-2	3	10	8	-4	ES -4	ES -3	ES -9	ES -10	ES -7	ES -22	ES -22	-9	ES -32	ES -20	ES -16	-6	ES -22	-17	ES -32	ES -32	8	3	5	
16	4	3	5	14	20	ES -5	ES -6	ES -5	ES -8	ES 1	ES -16	ES -16	ES -9	ES -7	ES -10	3	3	7	13	-23	2	4	8	7	
17	6	9	13	18	-1	ES -5	ES -15	ES -2	ES -5	ES -2	ES -24	ES -28	ES -32	ES -22	-1	-6	1	9	ES -32	ES -32	-22	3	4	8	
18	4	5	11	14	10	ES -6	C	ES -7	ES -4	ES -6	ES -3	ES -7	ES -5	ES -2	-9	-23	ES -33	ES -33	-3	ES -33	-23	3	6	10	
19	7	9	9	17	ES -4	ES -1	ES -2	ES 4	ES 2	ES -1	ES -1	ES -1	ES -2	ES -2	ES -2	-22	8	4	11	-14	1	6	8	8	
20	6	9	18	13	ES 19	-3	ES -6	ES -5	-1	-4	ES -7	ES -15	ES -9	ES -19	-17	-15	-5	ES -32	ES -32	ES -32	-4	10	14	14	
21	11	12	13	19	15	ES 4	ES -11	ES -8	ES -4	ES -9	ES -7	ES 3	ES -6	ES -12	-16	-6	-10	13	19	8	-2	9	9	10	
22	8	12	13	14	17	15	ES -2	ES -6	ES -5	ES -6	ES -6	ES -12	ES -10	ES -21	-15	-18	ES -15	ES -15	ES -33	ES -33	2	7	11	15	
23	1	9	12	9	ES -33	18	-2	ES -14	ES -8	ES -8	ES -6	ES -14	ES -10	-7	-7	10	1	8	-8	-13	-6	14	12	20	
24	12	14	11	11	20	13	0	8	-2	ES -5	ES 2	ES -15	ES -8	5	-1	9	-5	-18	-1	10	8	9	ES -23		
25	1	13	18	16	23	31	16	-11	ES -9	ES -18	-6	ES -5	ES -23	ES 9	2	-12	-17	-18	ES -33	ES -33	-12	8	8	12	
26	8	11	9	9	18	21	-12	-6	0	3	ES -1	ES -4	-8	-8	8	7	1	20	22	4	2	2	8	10	
27	10	8	10	18	13	15	-7	ES -7	ES -7	2	3	ES 3	ES 8	ES -7	5	14	-14	ES -33	ES -33	ES -33	5	6	7	10	
28	4	8	9	12	24	17	-9	-10	-2	-5	ES -1	ES -4	ES -7	ES -10	4	10	8	15	-17	ES -33	-2	4	7	3	
CNT	28	28	26	25	25	25	25	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	5	US 8	10	11	US 7	ES -2	ES -6	ES -7	ES -6	ES -5	ES -6	ES -12	ES -12	ES -18	ES -16	ES -16	ES -12	ES -20	US -29	ES -30	US -20	4	7	7	
UD	10	ES 13	14	18	20	ES 20	ES 0	ES 4	ES 0	ES 2	ES 3	ES 2	ES -2	ES -2	5	10	8	14	13	3	2	9	11	14	
LD	-3	ES 0	3	4	ES -6	ES -10	ES -13	ES -11	ES -12	ES -10	ES -22	ES -22	ES -31	ES -31	ES -31	ES -32	ES -33	ES -33	ES -33	ES -33	ES -33	-3	-3	-5	

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

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

MEASURED AT HIRAISO

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

CNT	28	27	27	25	25	26	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	1	US 3	5	10	17	19	19	18	US 8	5	ES -1	ES -6	ES -8	ES -8	ES -21	ES -22	ES -26	ES -22	ES -30	ES -30	6	6	3	2
UD	4	ES 6	8	13	22	23	25	29	22	24	26	17	3	ES 0	ES -5	ES -10	ES -9	ES -14	ES -7	ES -4	9	10	7	6
LD	ES -2	ES -2	-1	5	11	8	3	ES 3	ES -4	ES -7	ES -10	ES -15	ES -20	ES -32	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-1	2	-2	-7

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Feb. 1969	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	06	12	18	24	Start	End	ΔH
		12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	4o	4	(4)	3	(4)	-	4	4	(4)	(4)	-	-	4	4	-	4	N	N	N	N							
2	4-	4	(3)	3	(4)	(4)	4	(3)	C	-	-	-	4	C	-	3	N	N	N	U	15.02	---	---			203 ^Y	
3*	4-	3	(3)	3	(3)	(5)	4	4	4	C	-	(4)	4	5	-	4	U	U	U	U	---	---	---				
4*	4o	4	4	4	4	-	4	4	4	4	-	C	4	4	-	4	N	N	N	N	---	---	---				
5	4o	C	C	C	4	-	4	4	C	C	-	(4)	4	4	-	4	N	N	N	N	---	---	---				
6	4-	4	(3)	3	4	(4)	3	4	4	C	-	(4)	4	4	-	4	N	N	N	N	---	13xx	---				
7	4-	3	C	C	4	-	4	4	3	C	-	C	4	4	-	4	N	N	N	N							
8	4o	4	(4)	4	4	-	4	4	4	4	-	-	4	5	-	4	N	N	N	N							
9	4o	4	4	4	4	-	4	4	C	-	-	-	4	4	-	4	N	N	N	N							
10	4+	5	4	4	4	-	5	5	4	4	-	(4)	4	4	-	4	N	N	N	N							
11*	4-	4	(3)	C	5	(4)	4	3	4	3	-	(3)	4	5	-	4	N	N	U	U							
12	4-	4	C	C	3	-	3	3	4	4	-	4	4	3	-	4	U	N	N	N							
13	3+	4	3	3	(3)	-	(3)	(3)	4	4	-	4	4	(4)	-	C	N	N	N	N							
14	4o	4	4	4	(4)	-	(4)	4	5	4	-	4	C	(4)	-	4	N	N	N	N							
15	4o	4	4	4	4	(4)	4	4	4	4	-	-	4	4	-	4	N	N	N	N							
16	4+	4	5	(4)	4	(4)	5	4	(4)	-	-	-	4	4	-	4	N	N	N	N							
17	4+	4	4	4	4	-	5	4	4	4	-	5	4	4	-	5	N	N	N	N							
18	4o	(5)	(4)	4	4	-	3	4	4	(4)	-	4	4	4	-	4	N	N	N	N							
19	4o	5	(4)	4	4	-	4	4	4	4	-	4	4	3	-	4	N	N	N	N							
20	4o	4	4	5	4	4	4	4	4	4	-	C	4	4	-	4	N	N	N	N							
21	4+	4	4	5	4	4	4	5	4	4	-	4	4	4	-	4	N	N	N	N							
22	4+	5	5	5	4	4	4	4	4	5	-	-	4	4	-	4	N	N	N	N							
23	4+	5	(4)	(4)	5	5	4	4	(4)	-	-	-	4	5	(4)	4	N	N	N	N							
24	4+	5	(4)	4	4	5	4	4	4	(4)	-	4	4	4	-	4	N	N	N	N							
25	4+	4	(4)	4	5	4	4	4	4	5	-	4	4	5	(4)	4	N	N	N	N							
26	5-	4	4	5	4	4	5	5	5	5	-	4	4	4	(4)	4	N	N	N	N							
27	4o	C	C	4	4	4	4	4	4	(4)	-	4	5	5	(4)	4	N	N	N	N							
28	4+	4	C	(4)	4	5	5	4	4	5	-	C	4	5	(4)	4	N	N	N	N							

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = COSMIC EVENT

() = Regular World Day

- = impossible to evaluate

() = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Feb. 1969	Drop-out Intensities (db)						S W F				Correspondence		
	CO	LM	HA	TO	HB	SH	Start-time	Dura- tion	Type	Imp.	Flare	Solar Noise	Mag.
1	>35		>30			15	21.35	25	S	3	x		
2	-		-				05.13	37	S	2	x		
7			20'				05.25	18	S	2-			
20			18'				06.20	20	S	2-	x	x	
23			12	-	20		04.43	20	G	1+	x	x	
24	34	32	20	-'	13'		23.10	61	S	2+	x	x	
25						26	09.10	60	S	2	x	x	
26	40	45	-	-'	-		04.24	23	S	3	x	x	

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 1969

第 21 卷 第 2 号

1969年5月20日 印 刷
1969年5月25日 發 行 (不許複製非売品)

編 集 兼
發 行 人

越 智 文 雄

東京都小金井市貫井北町4丁目2-1

發 行 所

郵 政 省 電 波 研 究 所

184 東京都小金井市貫井北町4丁目2-1

電話 国分寺(0423) (21) 1 2 1 1 (代)

印 刷 所

有限会社 研 文 社

160 東京都新宿区四谷3丁目6

電話 (353) 8 3 5 8 ・ (351) 0 0 4 6