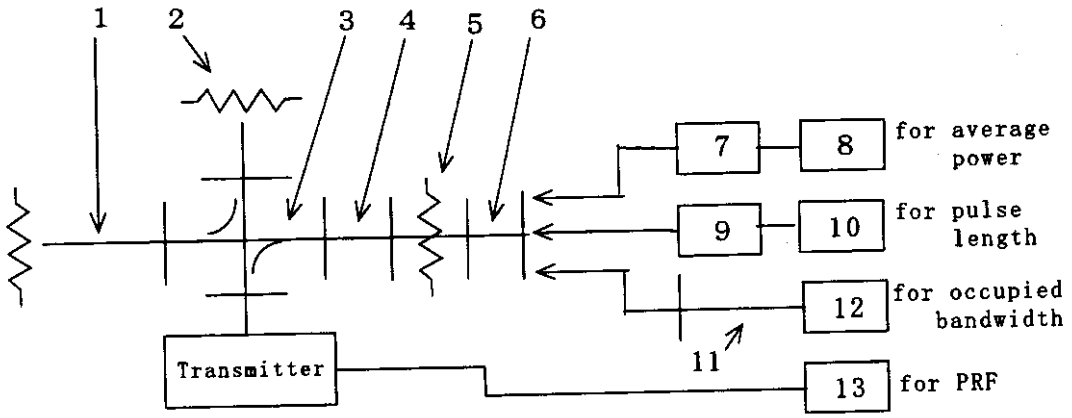
1.3 Load Impedance

(Sec. 2. 985) 1.0 RF Power Output

(Sec. 2. 989) 2.0 Occupied Bandwidth



1	Dummy Load	X910B	HP
2	high power Dummy Load	4D371A	Shimada
3	Directional Coupler	5D351	Shimada
	Coupling 30 dB		
	Directivity 30 dB		
4	Frequency Meter	X532B	HP
5	Attenuator	X382A	HP
6	Adaptor	X281A	HP
7	Power Sensor	8481A	HP
8	Power Meter	435A	HP
9	Crystal Detector	423B	HP
10	Oscilloscope	465B	SONY／Tectronix
11	Coaxial Cable	MI-04	Takeda Riken
12	Spectrum Analyzer	8563E	Hewlett Packard
13	Frequency Counter	5300A	HP

Measurement Point ; Transmitter Output

FCC Submittal Material Data

(Sec. 2.985) 1.0 RF Power Output

1.1 Peak Power	(at 0.25 n.m.)	14.2 KW
	(at 1.5 n.m.)	14.1 KW
	(at 3.0 n.m.)	14.6 KW
	(at 6.0 n.m.)	15.1 KW
	(at 24 n.m.)	15.2 KW
1.2 Average Power	(at 0.25 n.m.)	3.25 W
	(at 1.5 n.m.)	7.05 W
	(at 3.0 n.m.)	10.0 W
	(at 6.0 n.m.)	10.4 W
	(at 24 n.m.)	9.65 W

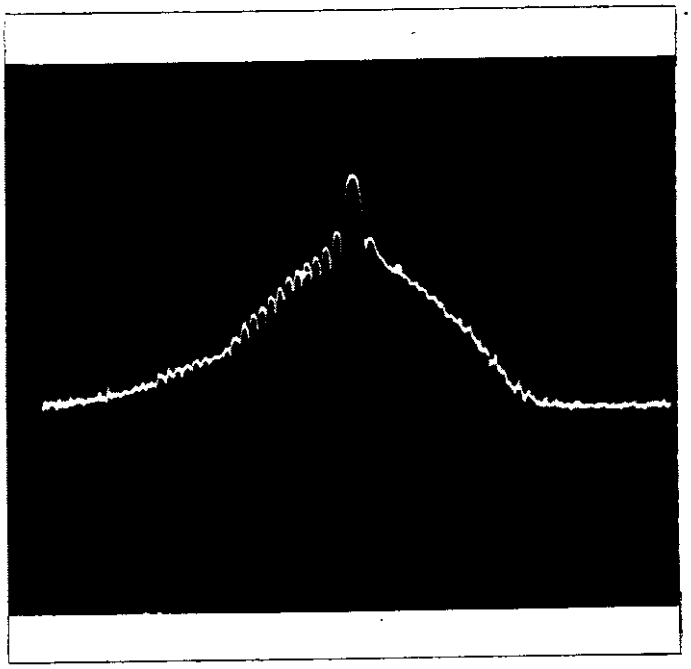
VSWR 1.05 at 9.4 - 9.5 GHz

Type 4D371A (Shimada co.)

(Sec. 2.989) 2.0 Occupid Bandwidth

2.1 Short Pulse PRF 2082 Hz

Short Pulse Length 0.11 μS



Scale
10dB/Div

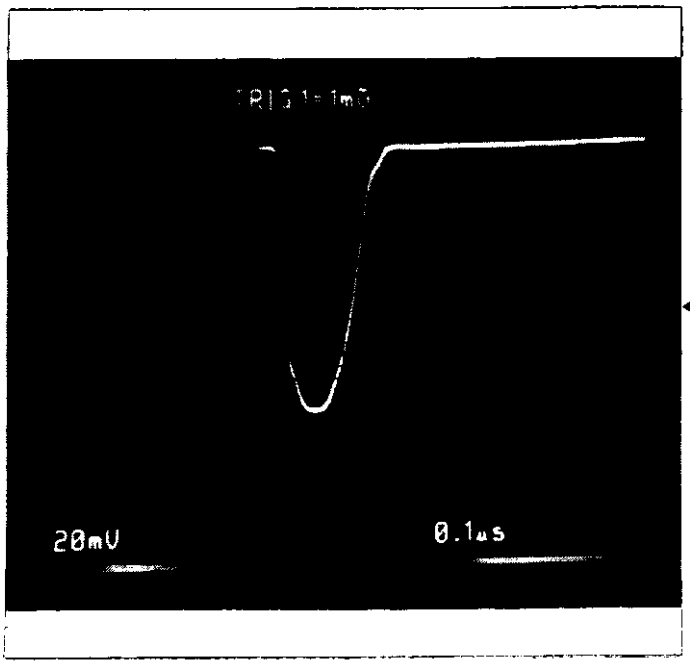
RF Spectrum
Short Pulse

OBW=61.3 MHz

Scale 40 MHz/ Div

Center Frequency 9418 MHz

(Sec. 2.987)



Scale
20mV/Div

← 3dB

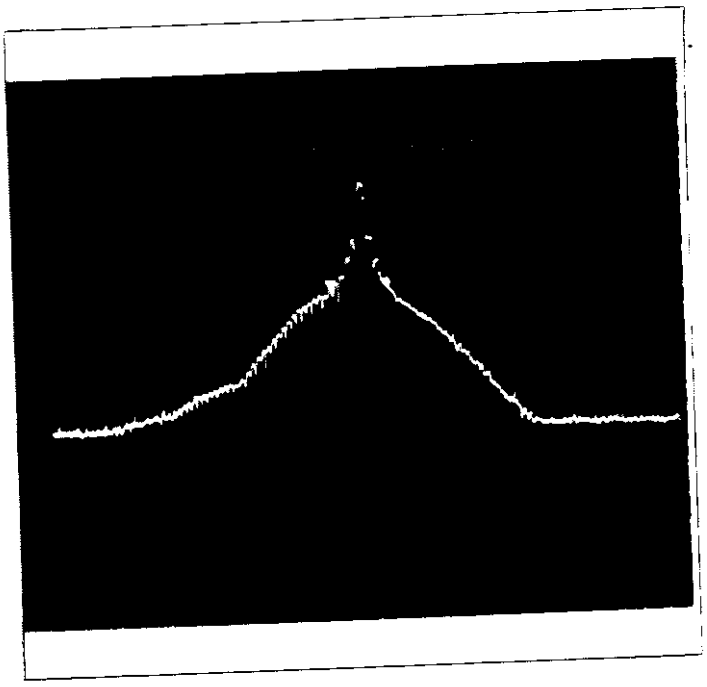
Detected RF
Pulse

Short Pulse

Scale 100nS/Div

(Sec. 2.989) 2.2 ShortMedium Pulse PRF 2082 Hz

ShortMedium Pulse Length 0.24 μS



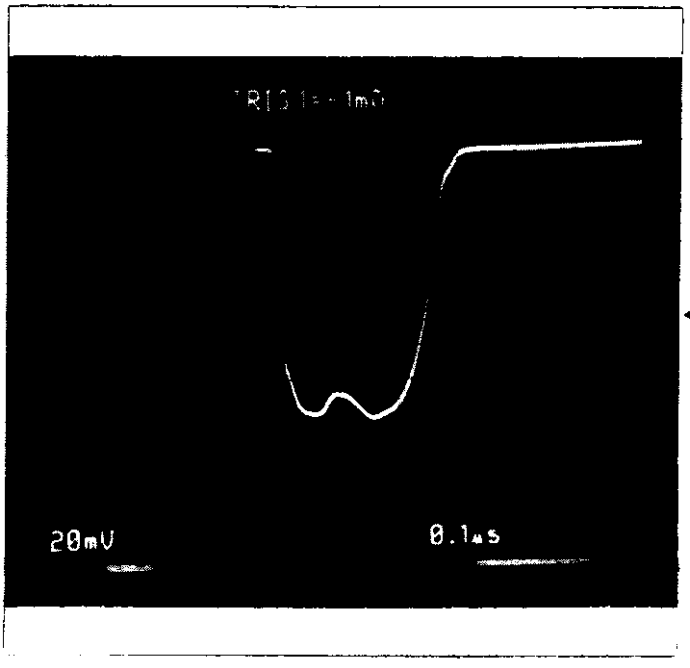
Scale
10dB/Div

RF Spectrum
ShortMedium Pulse

OBW=36.7 MHz

Scale 40 MHz/ Div
Center Frequency 9418 MHz

(Sec. 2.987)



Scale
20mV/Div

← 3dB

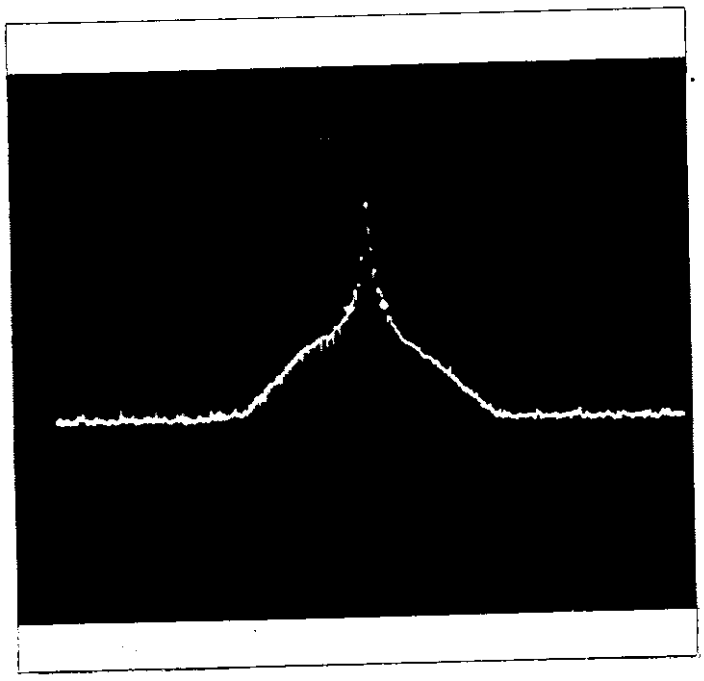
Detected RF
Pulse

Short Medium Pulse

Scale 100nS/Div

(Sec. 2.989) 2.2 Medium Pulse PRF 1562 Hz

Medium Pulse Length 0.44 μS



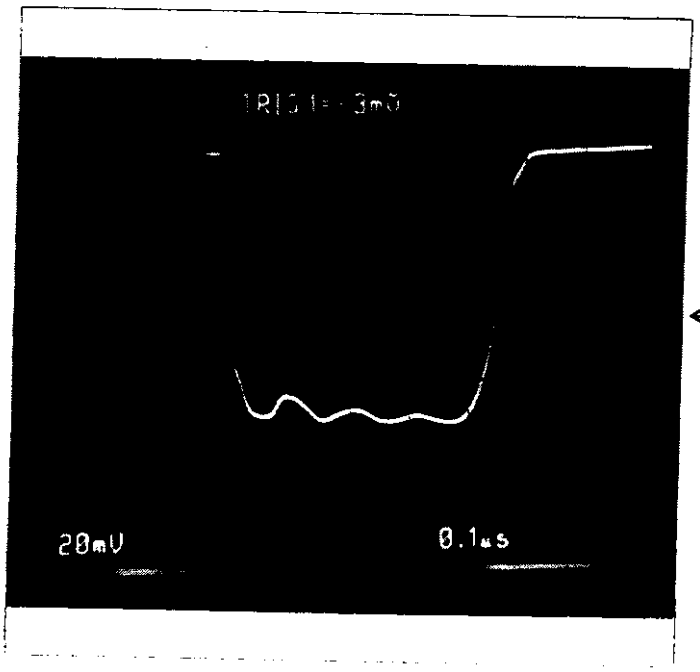
Scale
10dB/Div

RF Spectrum
Medium Pulse

OBW=22.0 MHz

Scale 40 MHz/ Div
Center Frequency 9418 MHz

(Sec. 2.987)



Scale
20mV/Div

← 3dB

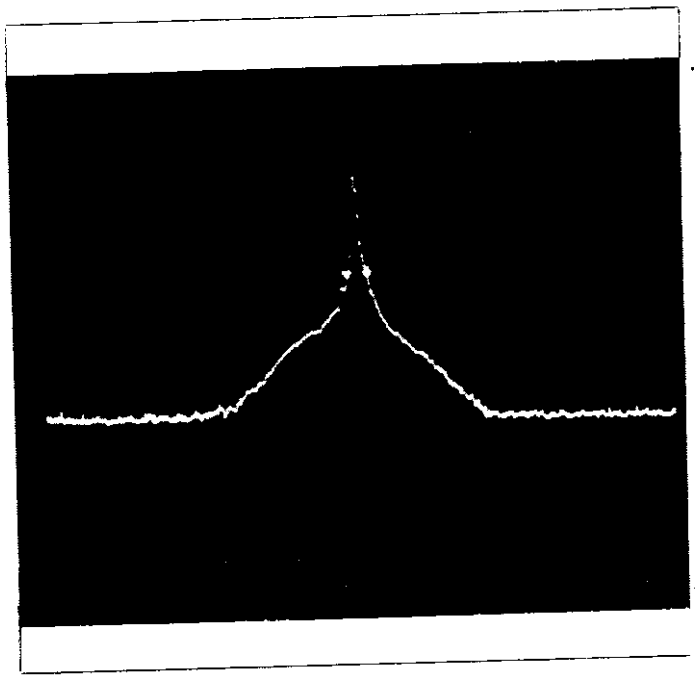
Detected RF
Pulse

Medium Pulse

Scale 100nS/Div

(Sec. 2.989) 2.3 Long Medium Pulse PRF 781 Hz

Long Medium Pulse Length 0.88 μS



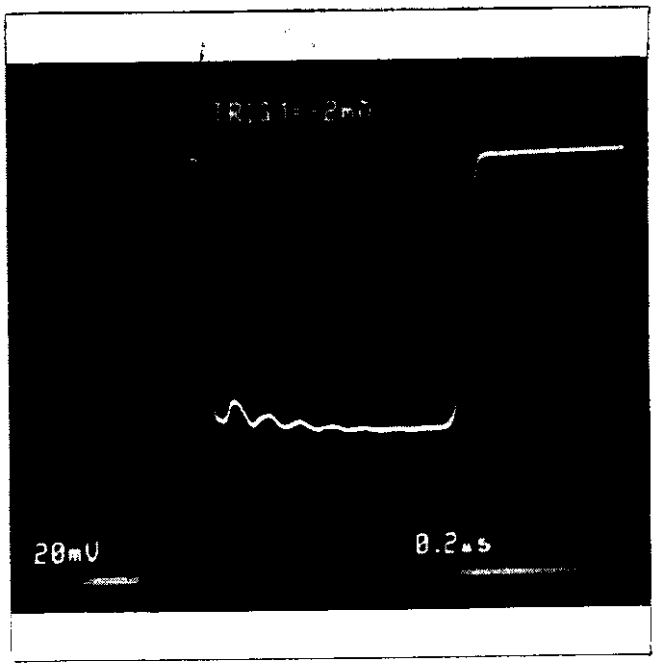
Scale
10dB/Div

RF Spectrum
Long Medium Pulse

OBW=12.7 MHz

Scale 40 MHz/ Div
Center Frequency 9418 MHz

(Sec. 2.987)



Scale
20mV/Div

← 3dB

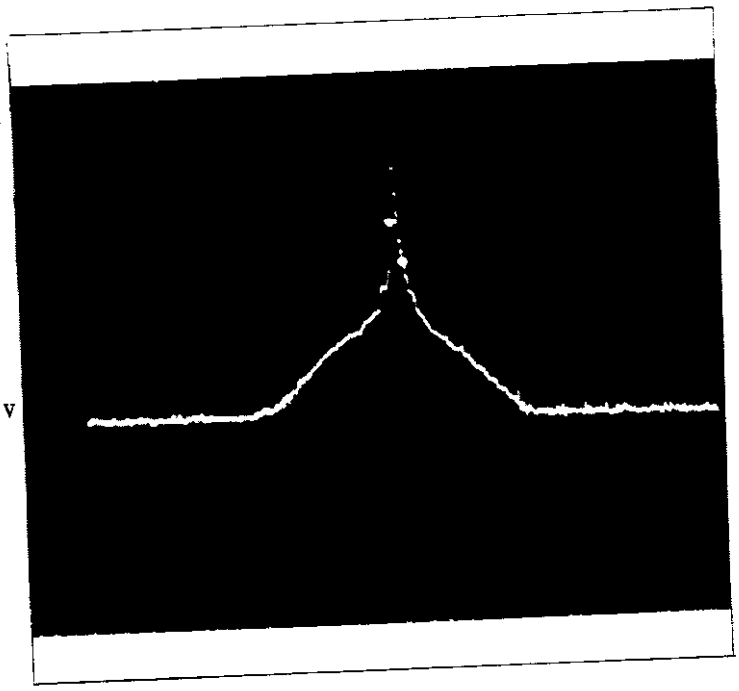
Detected RF
Pulse

Long Medium Pulse

Scale 200 nS/Div

(Sec. 2.989) 2.2 Long Pulse PRF 521 Hz

Long Pulse Length 1.22 μS



Scale
10dB/Div

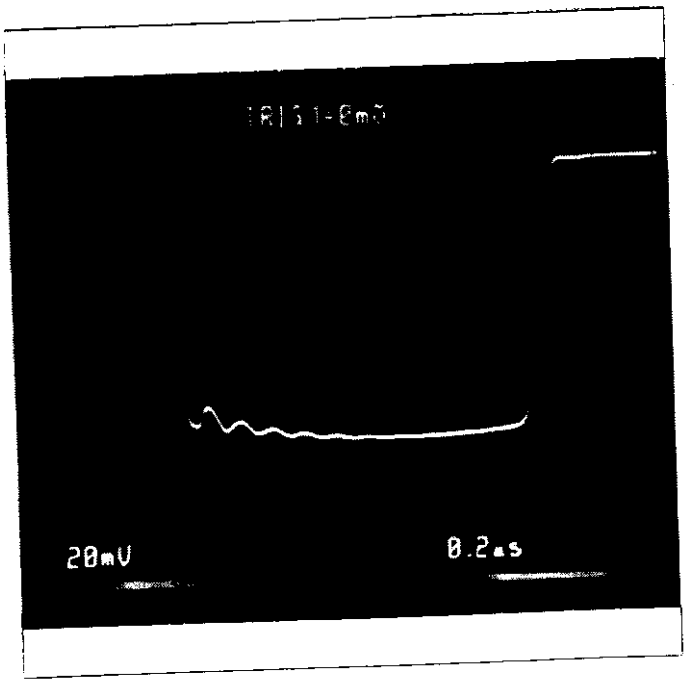
RF Spectrum
Long Pulse

OBW=8.0 MHz

Scale 40 MHz/ Div

Center Frequency 9418 MHz

(Sec. 2.987)



Scale
20mV/Div

← 3dB

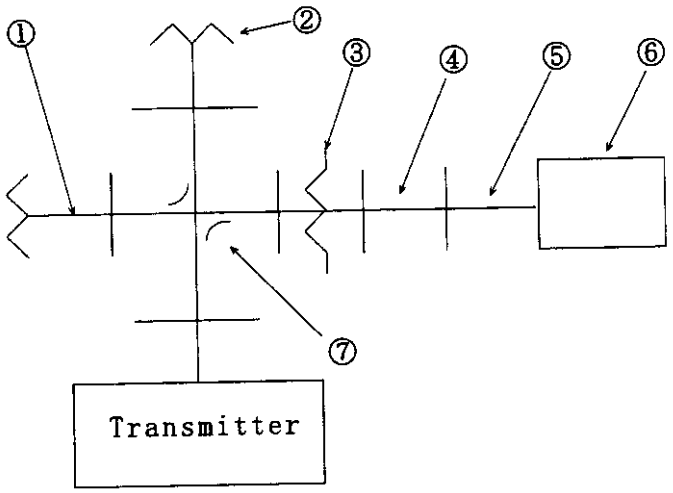
Detected RF
Pulse

Long Pulse

Scale 200nS/Div

(Sec. 2.991)　　3.0　Sprious signals at antenna port

Condition 1; 0 to 20 GHz

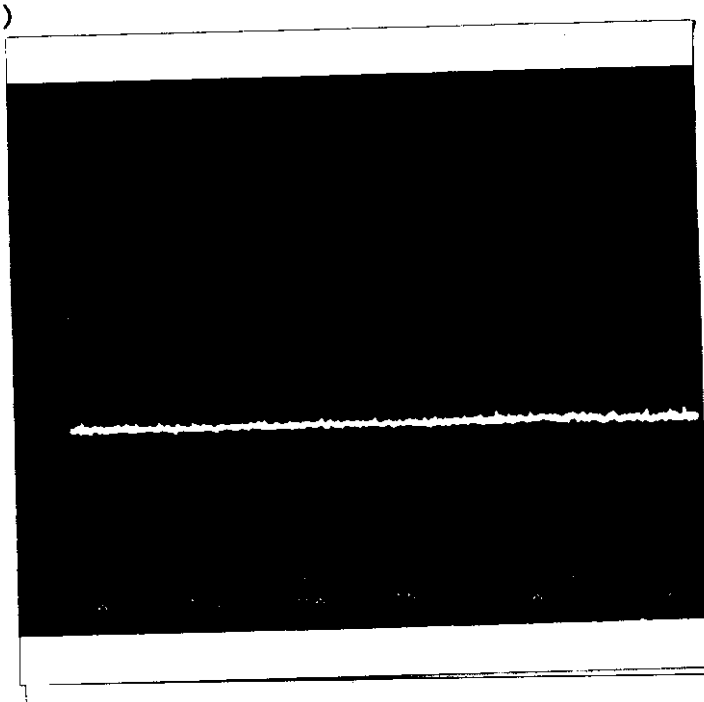


1	Dummy Load	X910B　HP
2	High power Dummy Load	4D371A　Shimada
3	Attenuator	X382A　HP
4	Adaptor	X281A　HP
5	Coaxial Cable	MI-04　Takeda Riken
6	Spectrum Analyzer	8563E　HP
7	Directional Coupler	R11421　Shimada
	Coupling　30 dB	
	Directivity　30 dB	

★ Attenuation　3　; 25dB

★ Measurement Point;Rotary Joint Output

(Sec. 2.991)



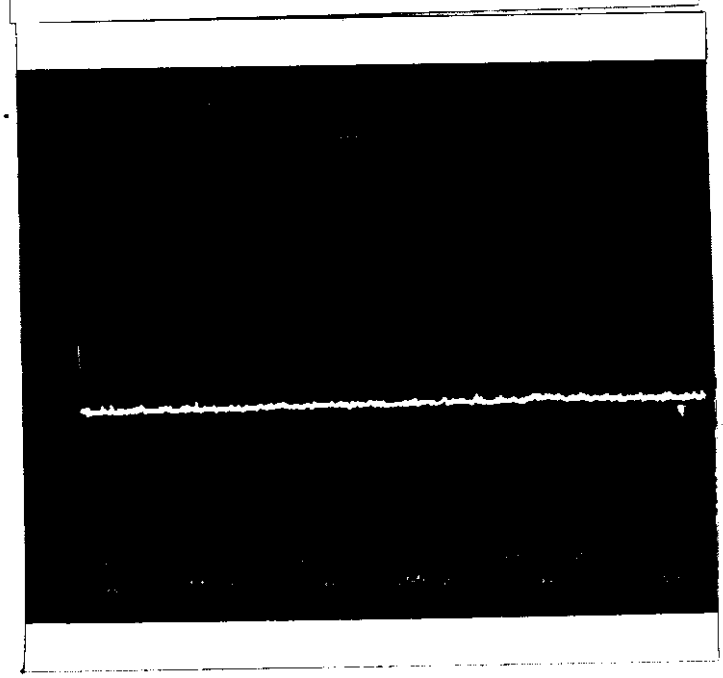
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

OFF

0 to 3.6 GHz



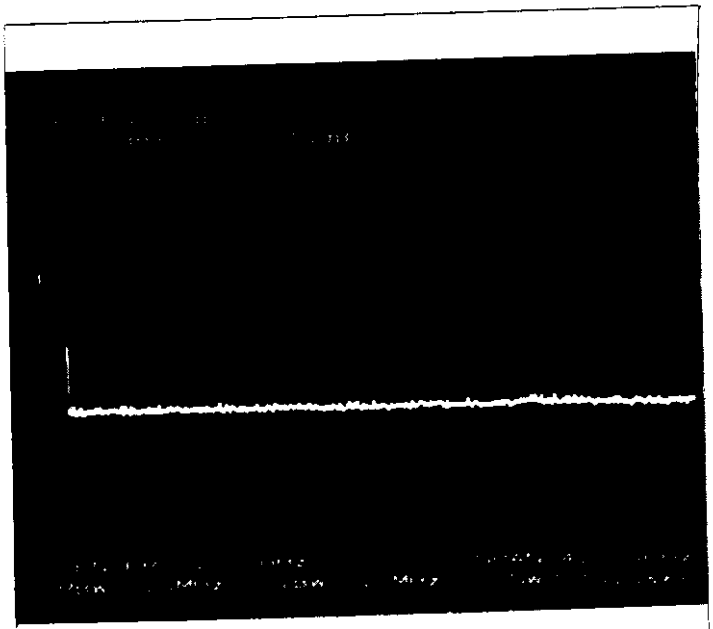
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

Stand-By

0 to 3.6 GHz



Scale
↑ 10dB/Div

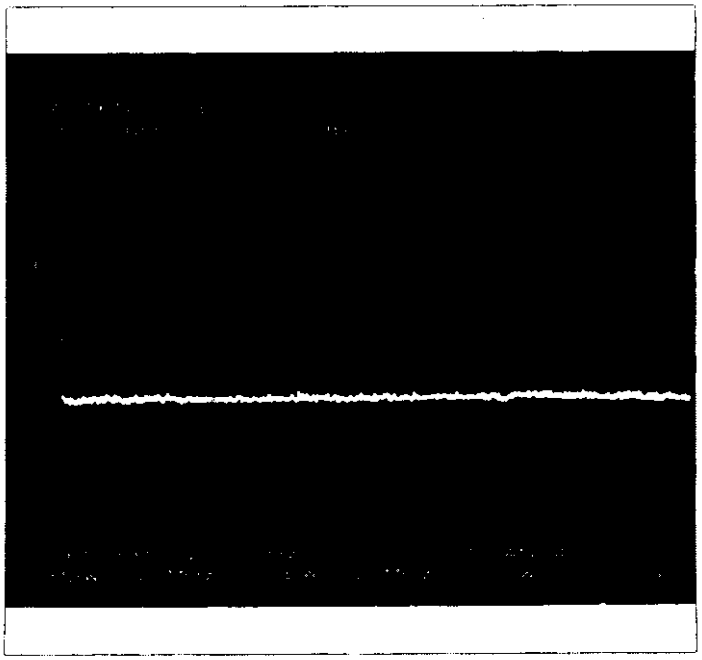
→400 MHz
/Div

Spurious
Signals

Short Pulse

0 to 3.6 GHz

(Sec. 2.991)



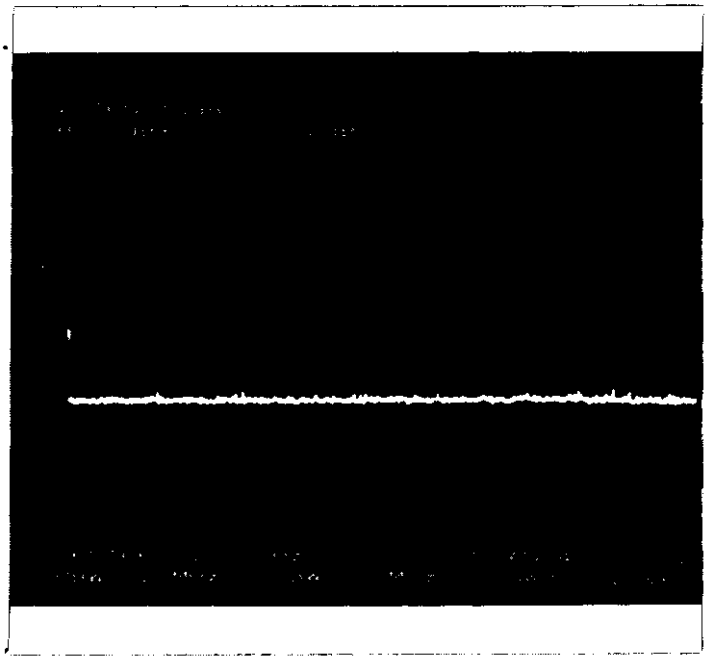
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

Short Medium
Pulse

0 to 3.6 GHz



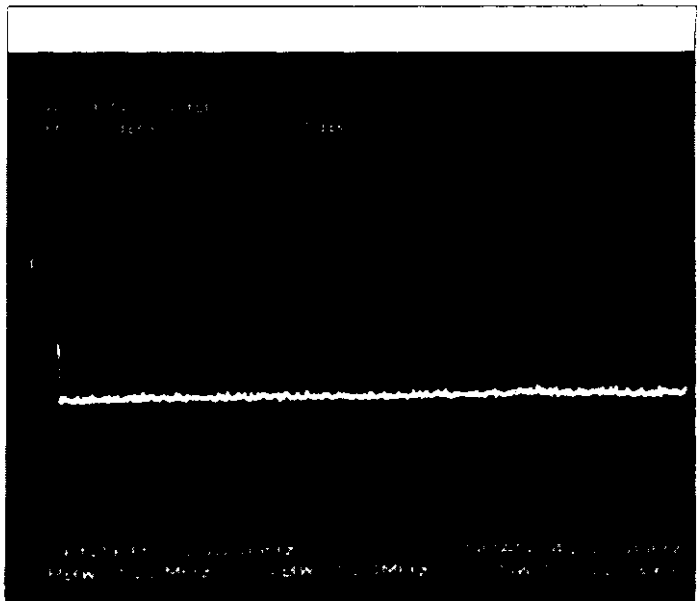
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

Medium Pulse

0 to 3.6 GHz



Scale
↑ 10dB/Div

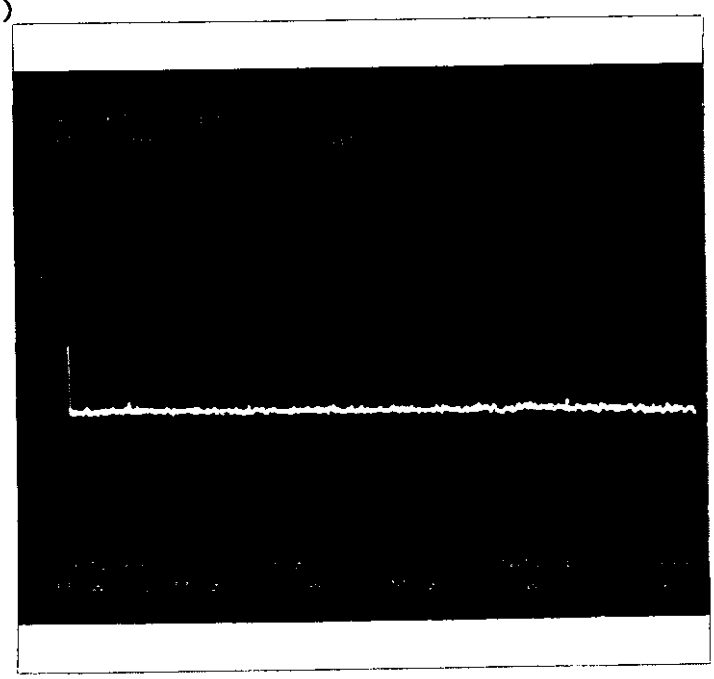
→400 MHz
/Div

Spurious
Signals

Long Medium Pulse

0 to 3.6 GHz

(Sec. 2.991)



Scale
↑ 10dB/Div

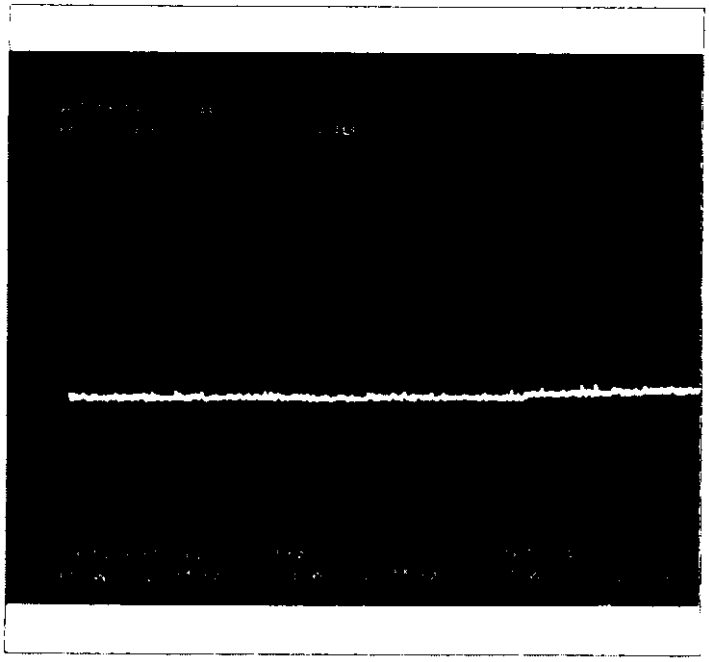
→400 MHz
/Div

Spurious
Signals

Long Pulse

0 to 3.6 GHz

(Sec. 2.991)



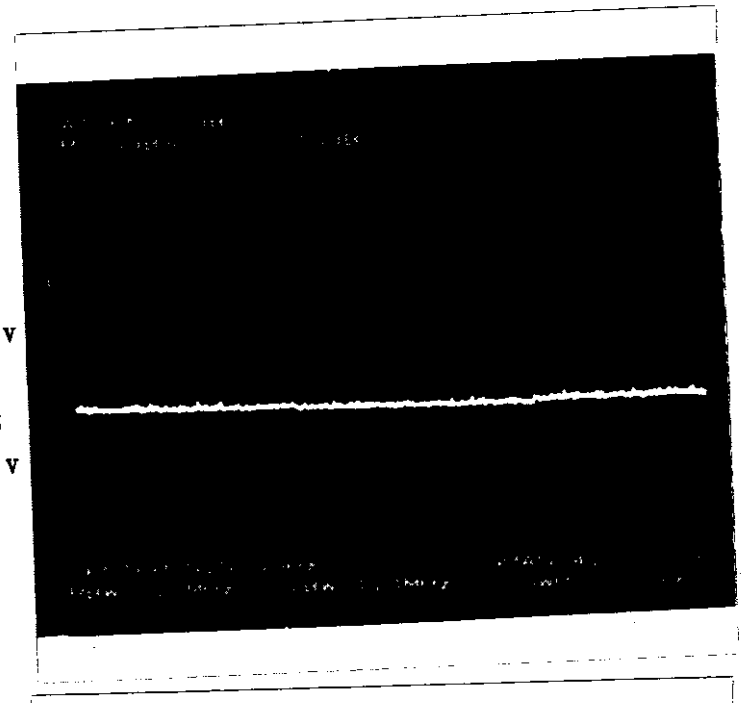
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

OFF

3.5 to 7.5 GHz



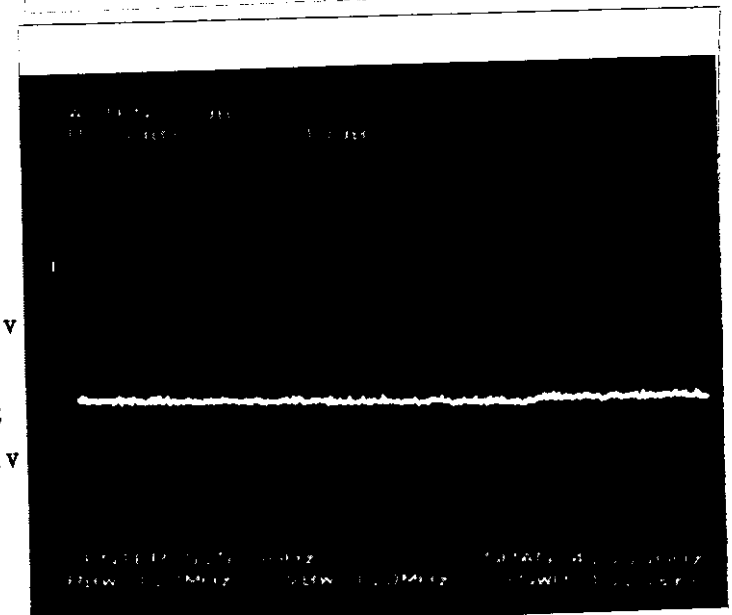
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

Stand-By

3.5 to 7.5 GHz



Scale
↑ 10dB/Div

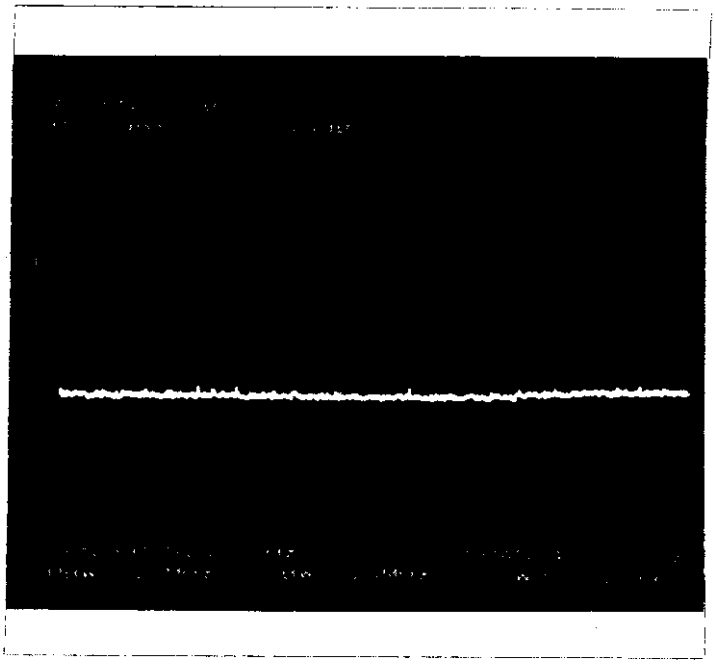
→400 MHz
/Div

Spurious
Signals

Short Pulse

3.5 to 7.5 GHz

(Sec. 2.991)



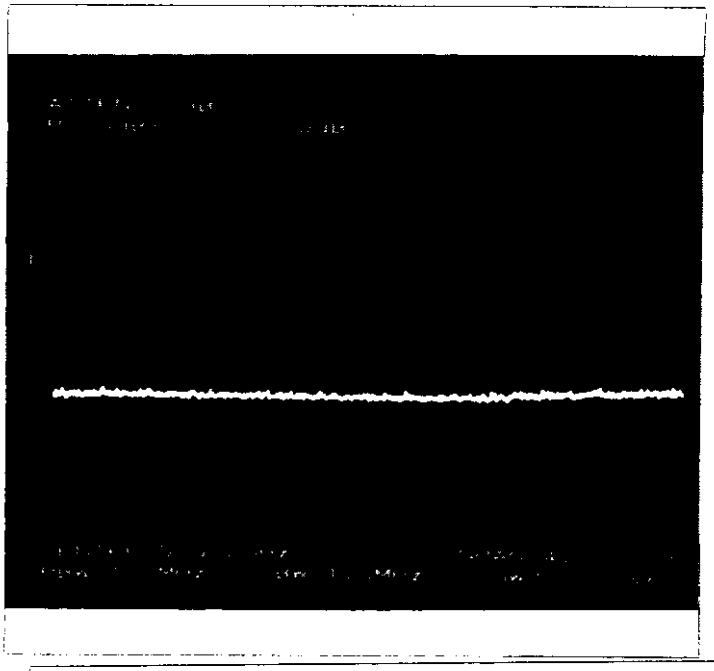
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

Short Medium
Pulse

3.5 to 7.5 GHz



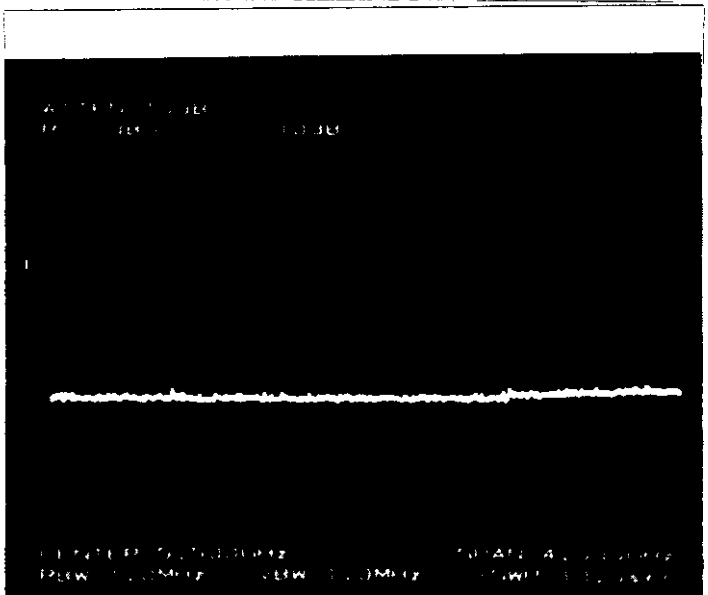
Scale
↑ 10dB/Div

→400 MHz
/Div

Spurious
Signals

Medium Pulse

3.5 to 7.5 GHz



Scale
↑ 10dB/Div

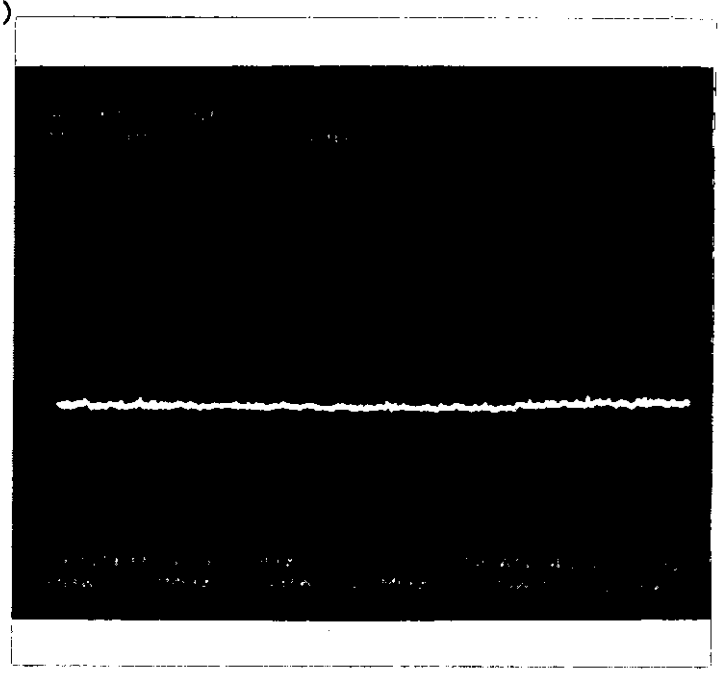
→400 MHz
/Div

Spurious
Signals

Long Mediam Pulse

3.5 to 7.5 GHz

(Sec. 2.991)



Scale
↑10dB/Div

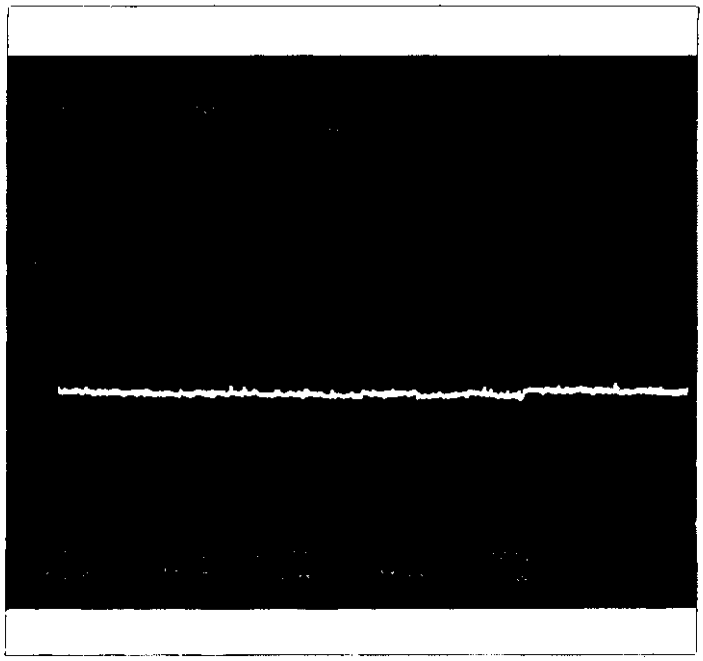
→400 MHz
/Div

Spurious
Signals

Long Pulse

3.5 to 7.5 GHz

(Sec. 2.991)



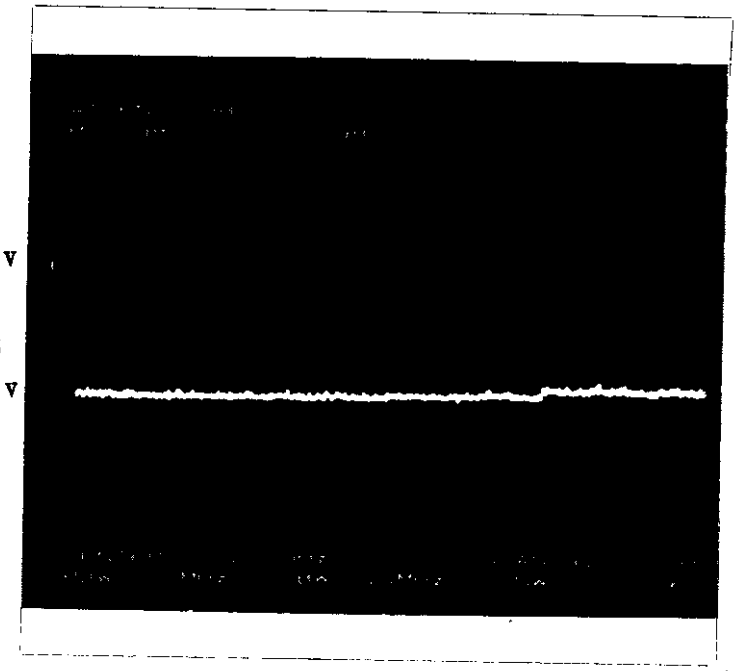
Scale
↑10dB/Div

→800 MHz
/Div

Spurious
Signals

OFF

7.2 to 15.2 GHz



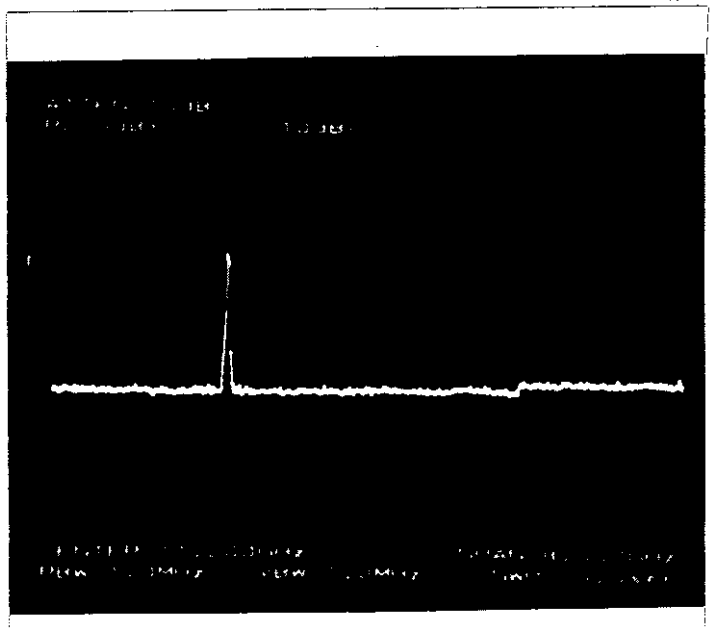
Scale
↑10dB/Div

→800 MHz
/Div

Spurious
Signals

Stand-By

7.2 to 15.2 GHz



Scale
↑10dB/Div

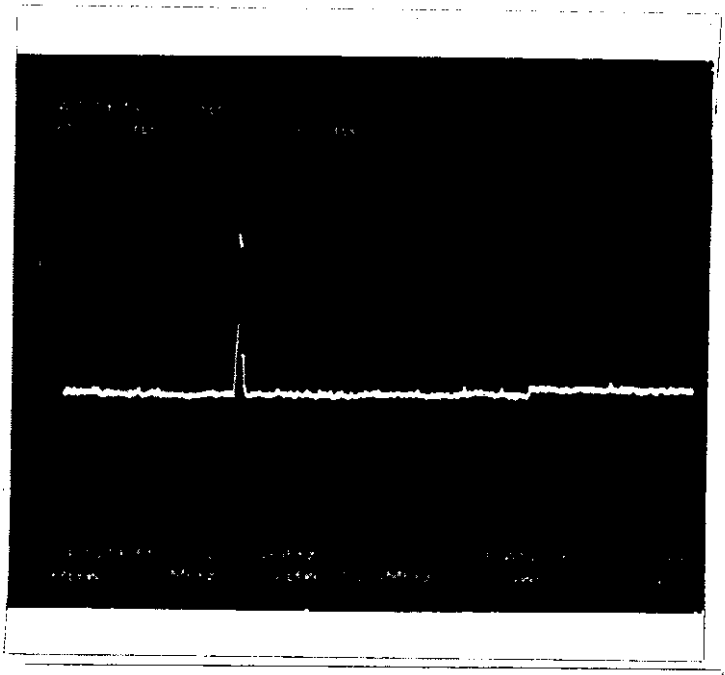
→800 MHz
/Div

Spurious
Signals

Short Pulse

7.2 to 15.2 GHz

(Sec. 2.991)



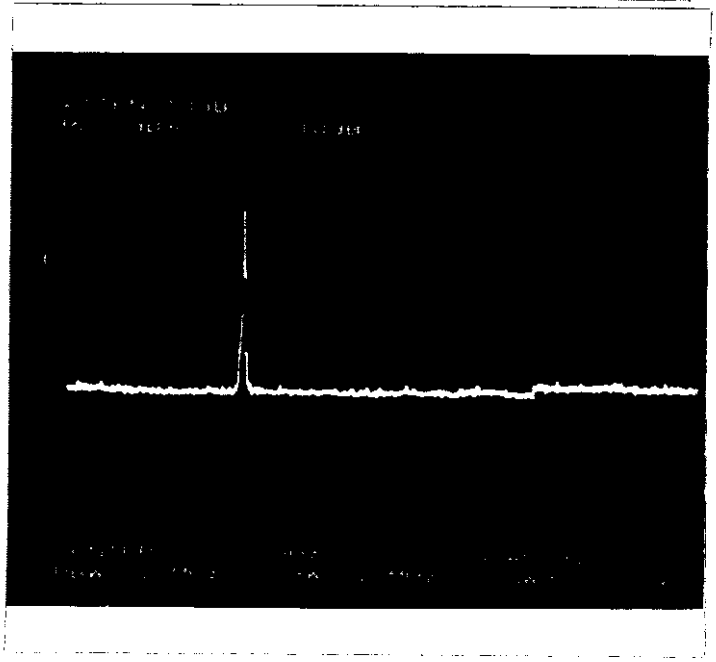
Scale
↑10dB/Div

→800 MHz
/Div

Spurious
Signals

Short Medium
Pulse

7.2 to 15.2 GHz



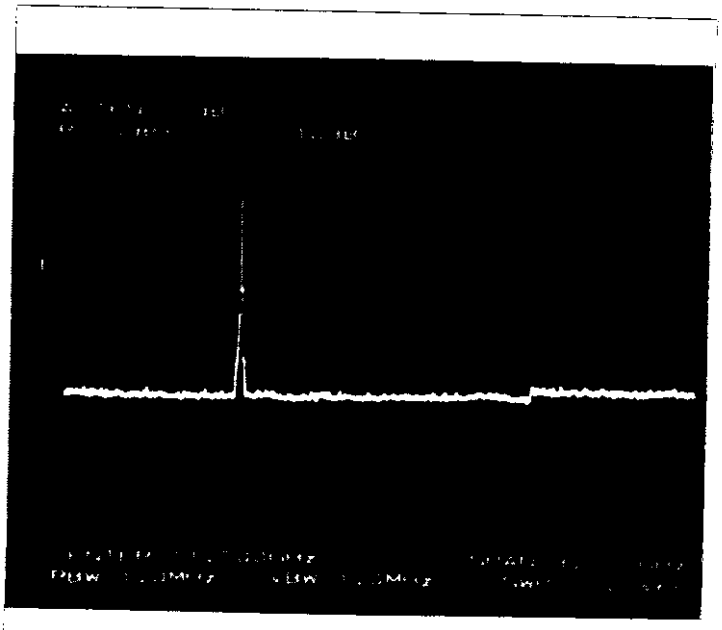
Scale
↑10dB/Div

→800 MHz
/Div

Spurious
Signals

Medium Pulse

7.2 to 15.2 GHz



Scale
↑10dB/Div

→800 MHz
/Div

Spurious
Signals

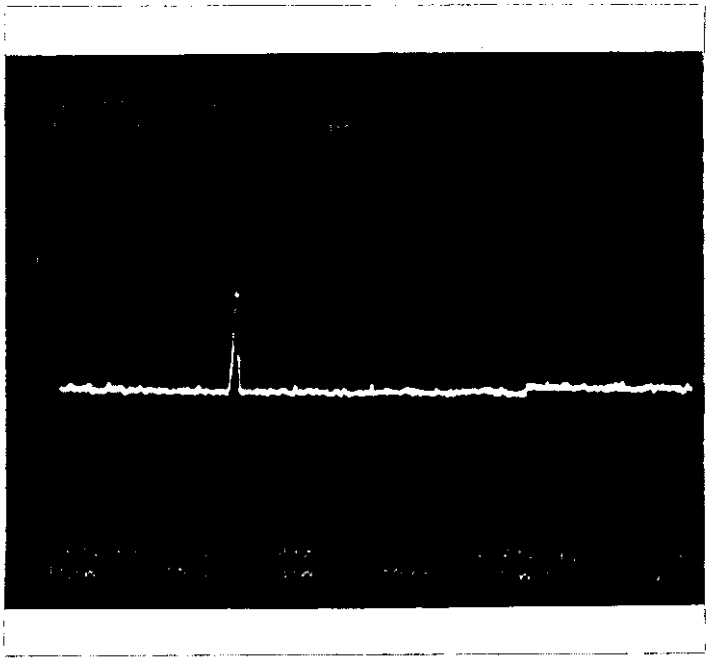
Long Medium Pulse

7.2 to 15.2 GHz

(Sec. 2.991)

Scale
↑10dB/Div

→400 MHz
/Div

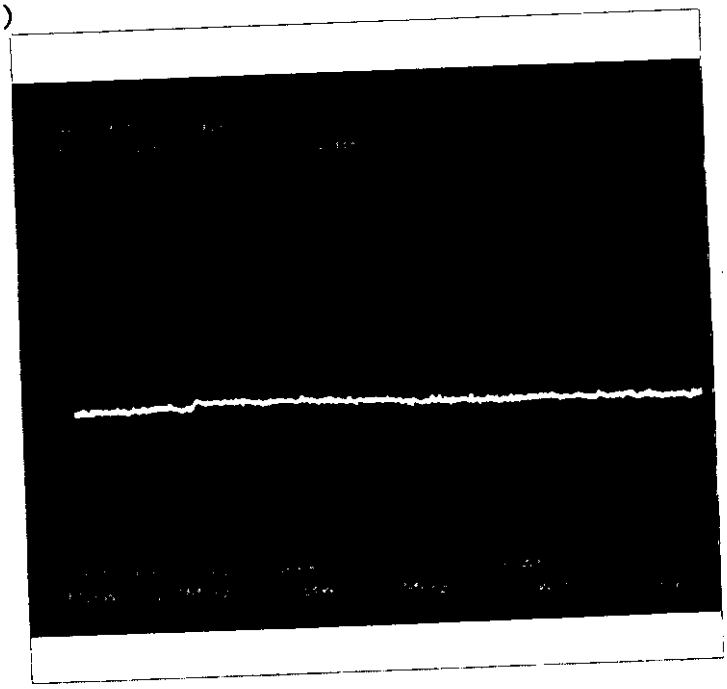


Spurious
Signals

Long Pulse

7.2 to 15.2 GHz

(Sec. 2.991)



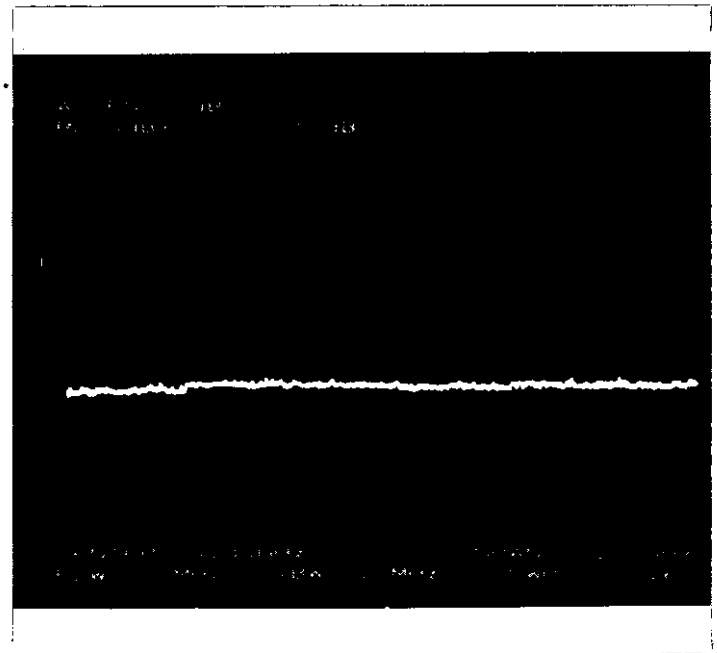
Scale
↑ 10dB/Div

→1.2 GHz
/Div

Spurious
Signals

OFF

10.9 to 20 GHz



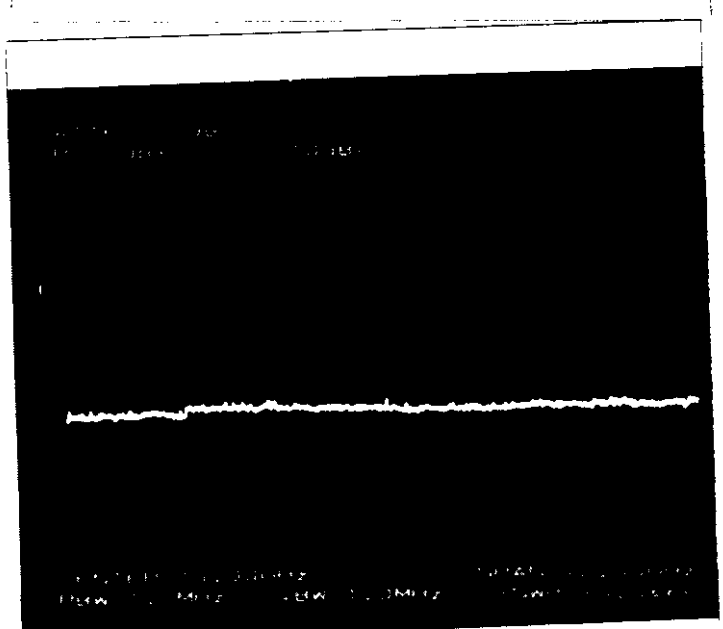
Scale
↑ 10dB/Div

→1.2 GHz
/Div

Spurious
Signals

Stand-By

10.9 to 20 GHz



Scale
↑ 10dB/Div

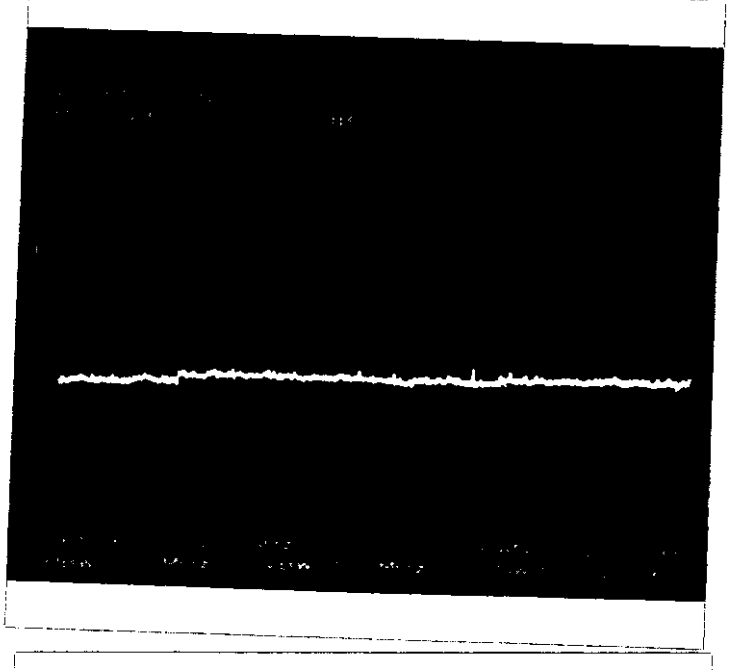
→1.2 GHz
/Div

Spurious
Signals

Short Pulse

10.9 to 20 GHz

(Sec. 2.991)



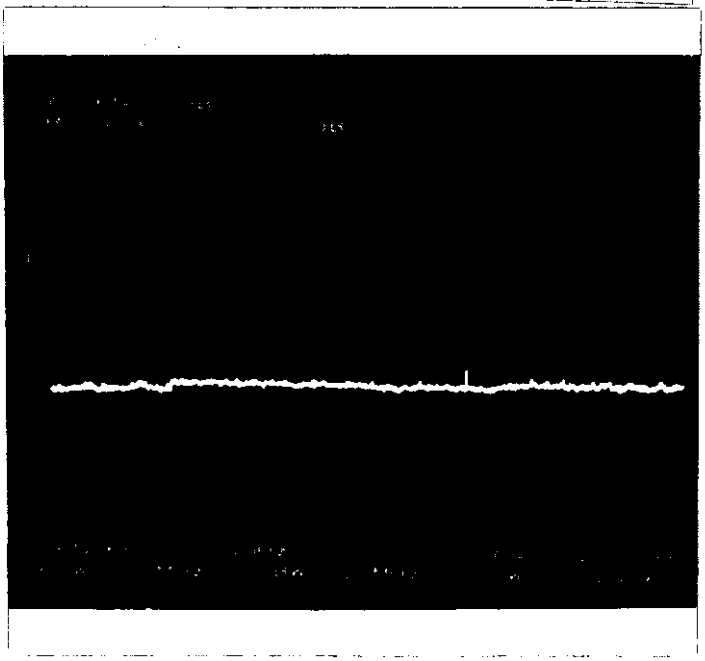
Scale
↑ 10dB/Div

→1.2 GHz
/Div

Spurious
Signals

Short Medium
Pulse

10.9 to 20 GHz

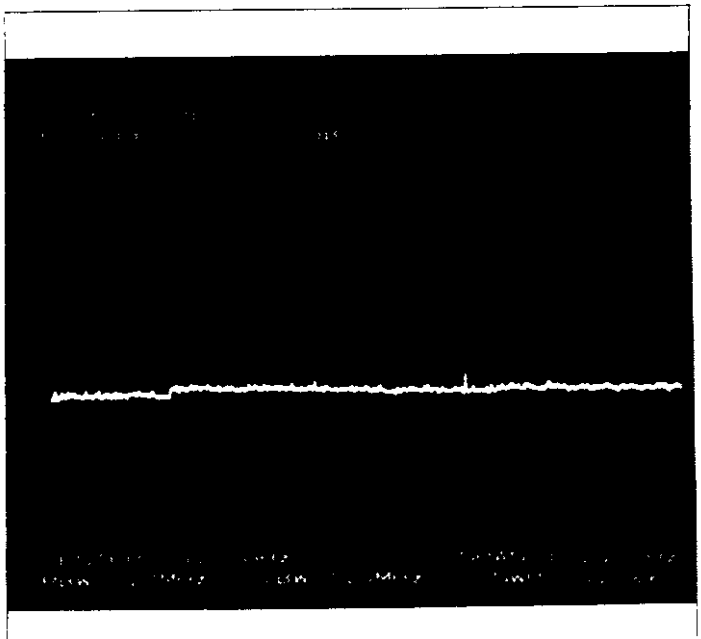


Scale
↑ 10dB/Div

→1.2 GHz
/Div

Spurious
Signals

Medium
Pulse
10.9 to 20 GHz



Scale
↑ 10dB/Div

→1.2 GHz
/Div

Spurious
Signals

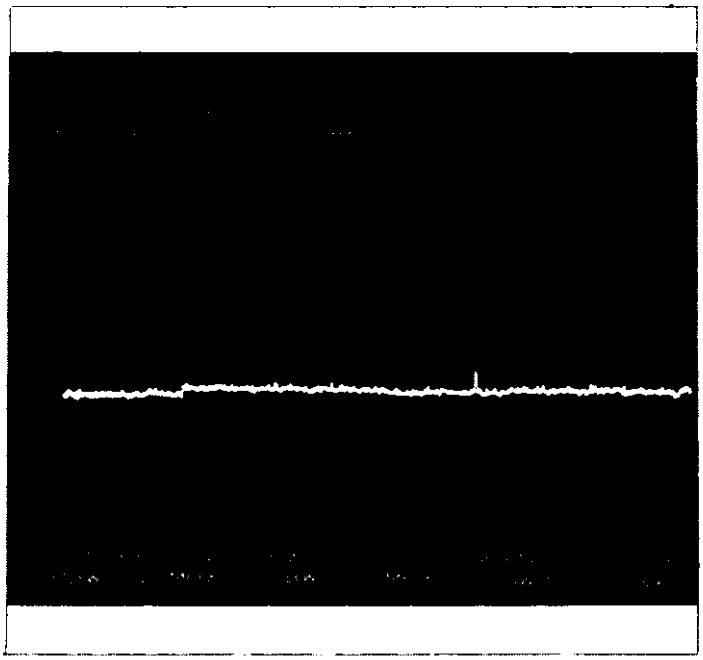
Long Medium Pulse

10.9 to 20 GHz

(Sec. 2.991)

Scale
↑10dB/Div

→400 MHz
/Div



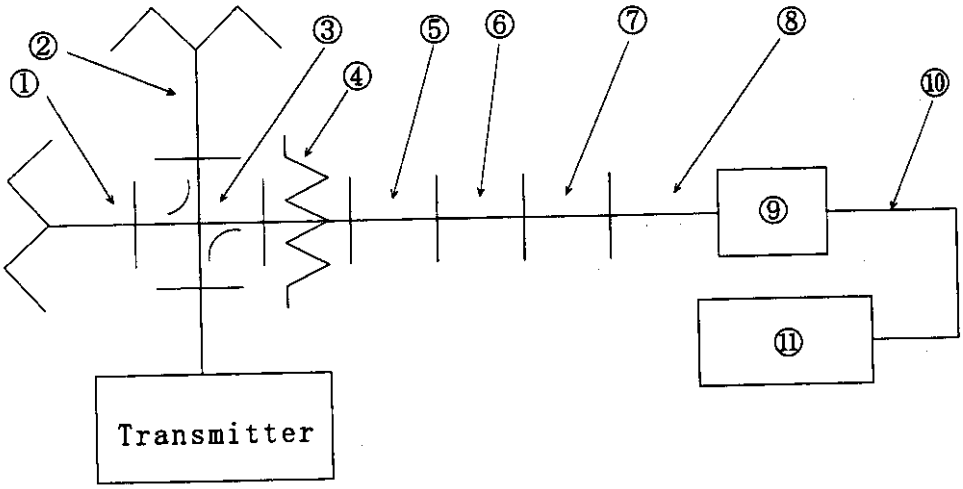
Spurious
Signals

Long Pulse

10.9 to 20 GHz

(Sec. 2.991)　　3.0　Sprious signals at antenna port

Condition　2;　12.4 to 40 GHz

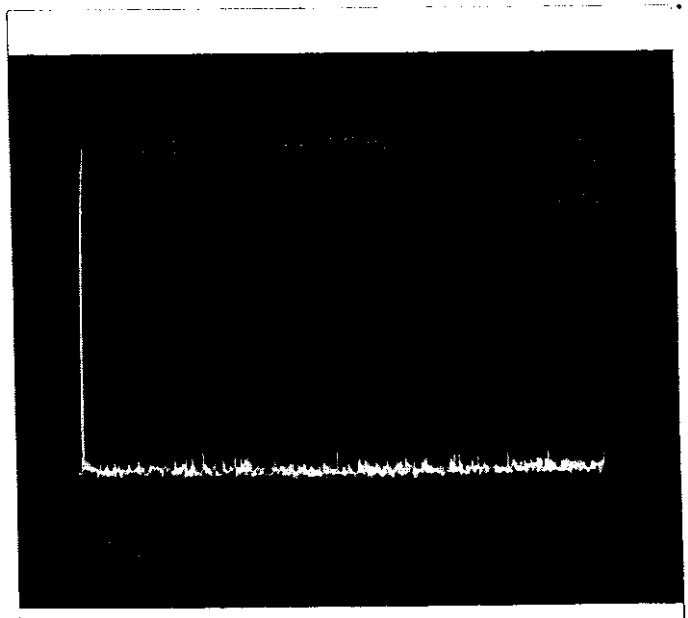


1	Dummy Load	X910B	HP
2	High power Dummy Load	4D371A	Shimada
3	Directional Coupler	R11421	Shimada
	Coupling　30 dB		
	Directivity　30 dB		
4	Attenuator	X382A	HP
5	Tapered W/G	195-X KU	AIRCOM
6	Tapered W/G	11818A	HP
7	Tapered W/G	11519A	HP
8	Tapered W/G	11520A	HP
9	External Mixer	11517A	HP
10	Coaxial Cable	10503A	HP
11	Spectrum Analyzer	TR4133B	Takeda Riken

★ Attenuation　on ATT4 ; 50dB

★ Measurement Point　;Rotary Joint Output

(Sec. 2.991)



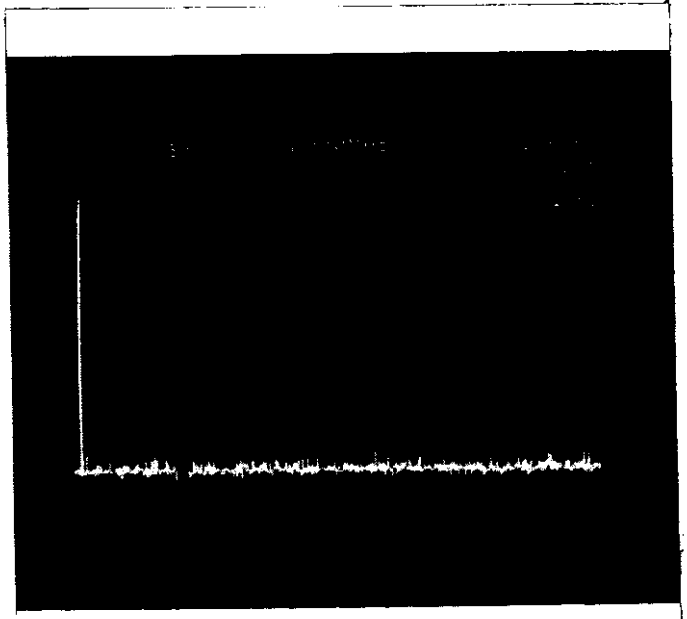
Scale
↑ 10dB/Div

→1.6 GHz
/Div

Spurious
Signals

OFF

12.4 to 28 GHz



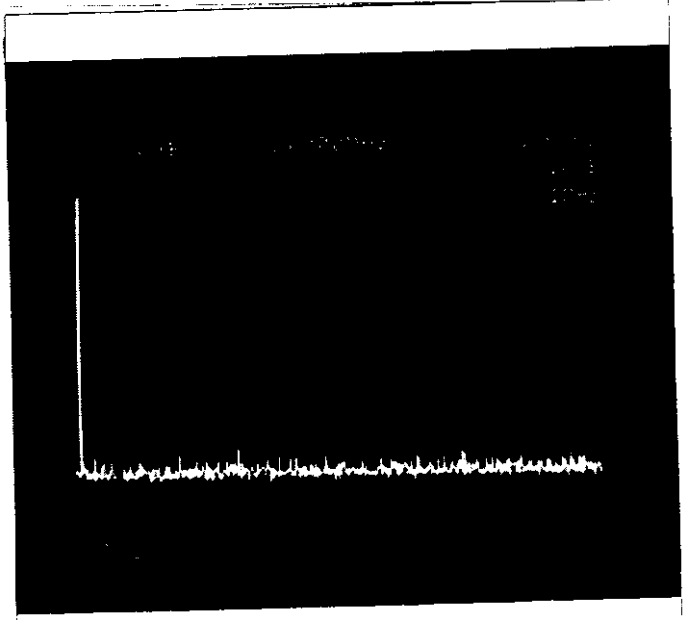
Scale
↑ 10dB/Div

→1.6 GHz
/Div

Spurious
Signals

Stand-By

12.4 to 28 GHz



Scale
↑ 10dB/Div

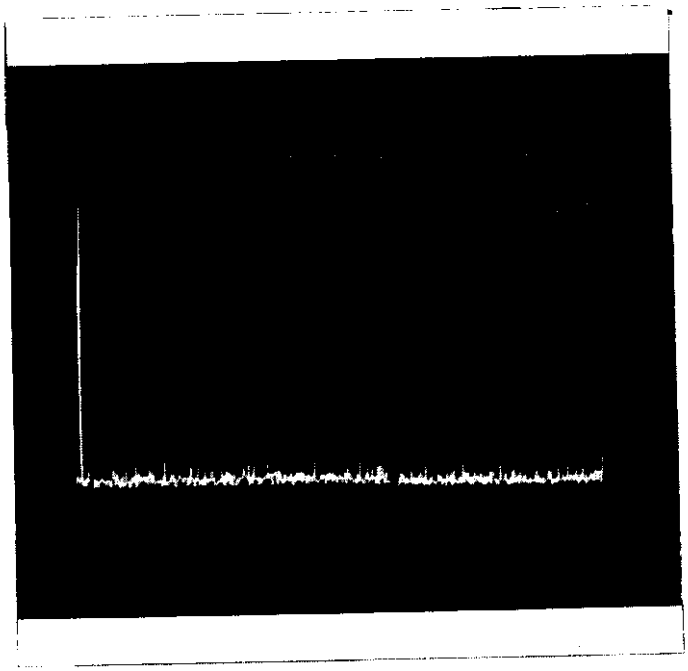
→1.6 GHz
/Div

Spurious
Signals

Short Pulse

12.4 to 28 GHz

(Sec. 2.991)



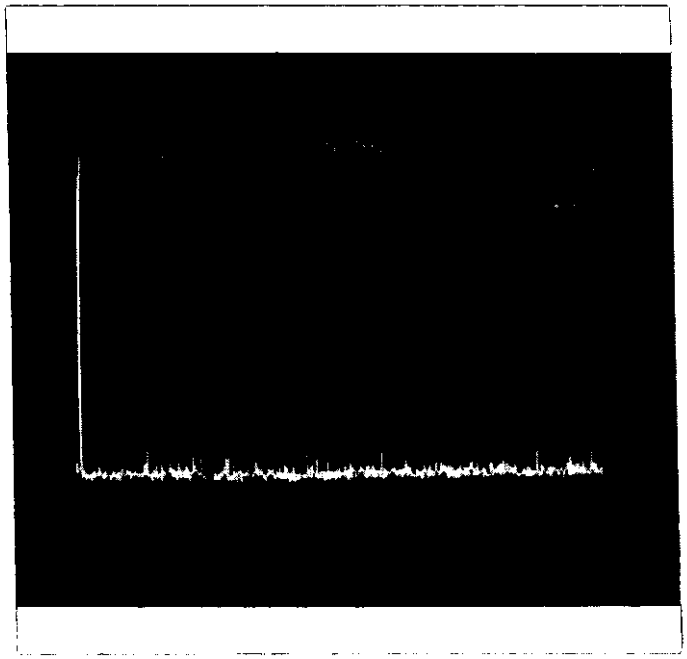
Scale
↑ 10dB/Div

→1.6 GHz
/Div

Spurious
Signals

Short Medium
Pulse

12.4 to 28 GHz



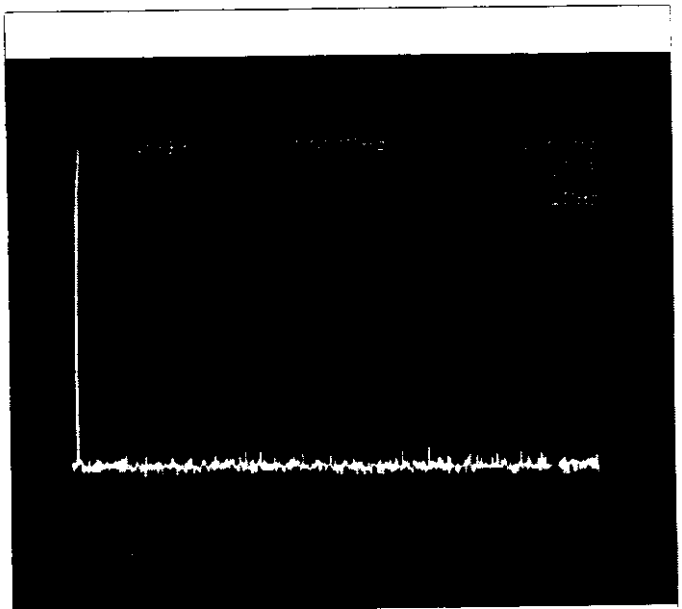
Scale
↑ 10dB/Div

→1.6 GHz
/Div

Spurious
Signals

Medium Pulse

12.4 to 28 GHz



Scale
↑ 10dB/Div

→1.6 GHz
/Div

Spurious
Signals

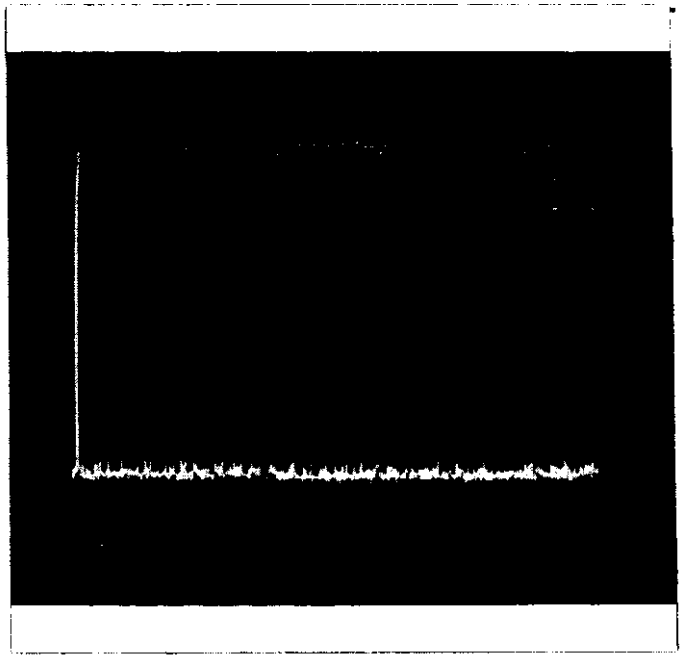
Long Medium Pulse

12.4 to 28 GHz

(Sec. 2.991)

Scale
↑ 10dB/Div

→ 400 MHz
/Div

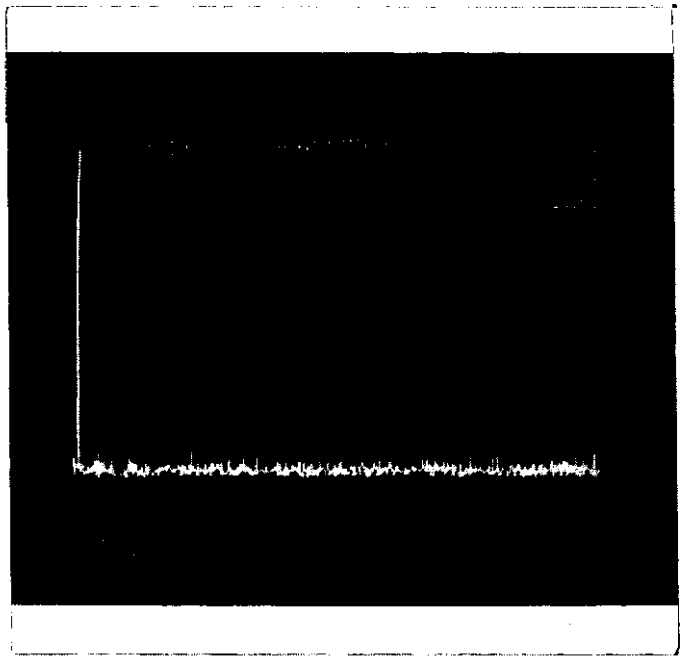


Spurious
Signals

Long Pulse

12.4 to 28 GHz

(Sec. 2.991)



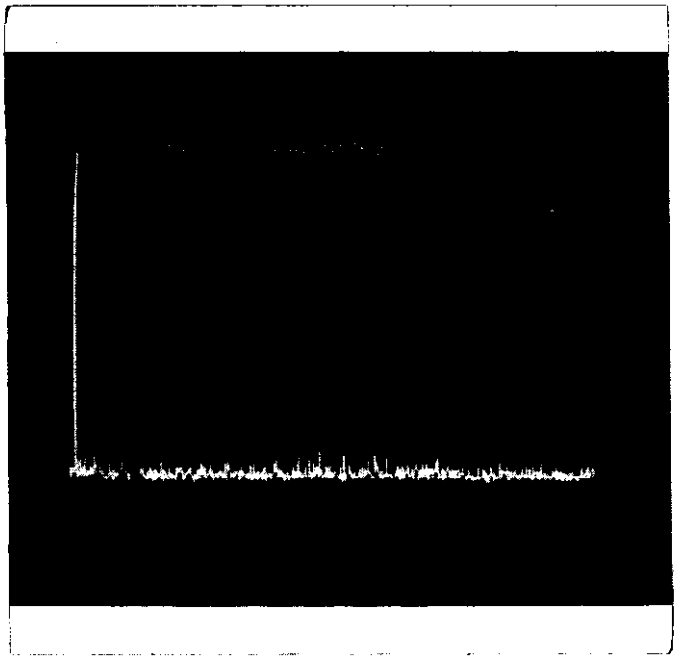
Scale
↑ 10dB/Div

→3.2 GHz
/Div

Spurious
Signals

OFF

28 to 60 GHz



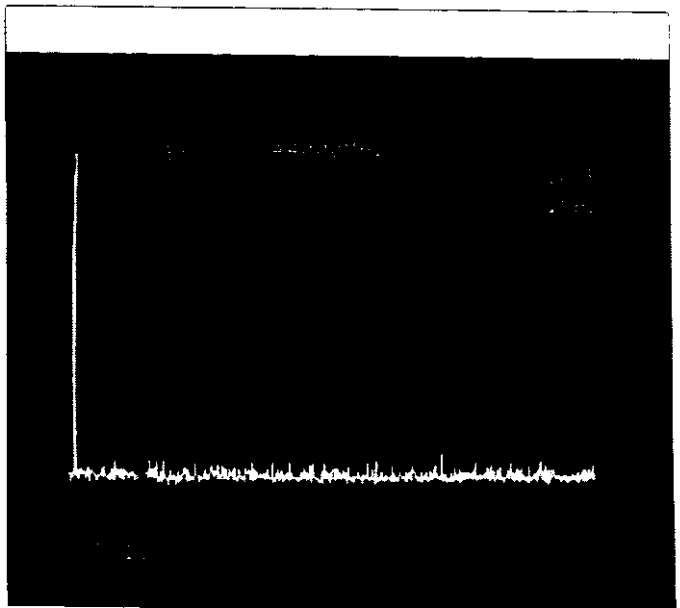
Scale
↑ 10dB/Div

→3.2 GHz
/Div

Spurious
Signals

Stand-By

28 to 60 GHz



Scale
↑ 10dB/Div

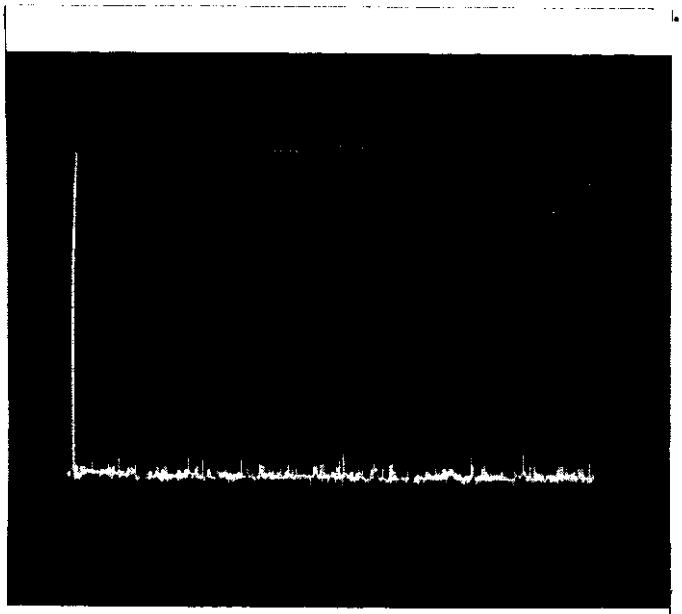
→3.2 GHz
/Div

Spurious
Signals

Short Pulse

28 to 60 GHz

(Sec. 2.991)



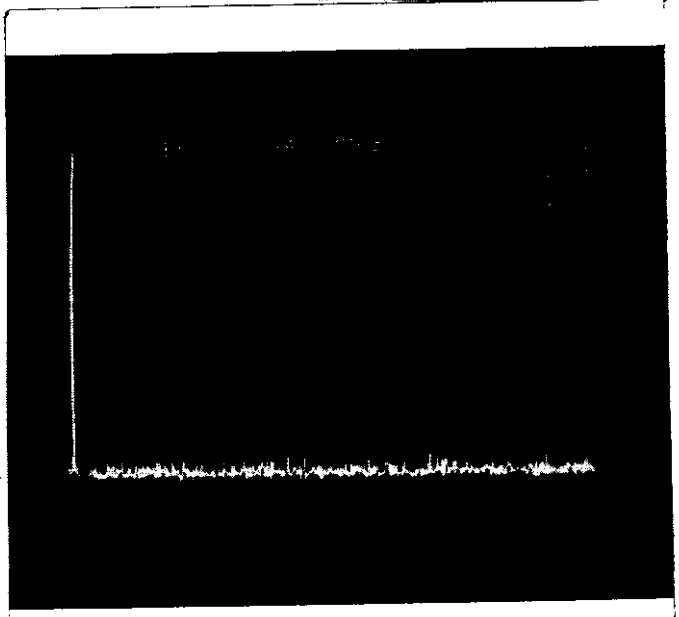
Scale
↑ 10dB/Div

→3.2 GHz
/Div

Spurious
Signals

Short Medium Pulse

28 to 60 GHz



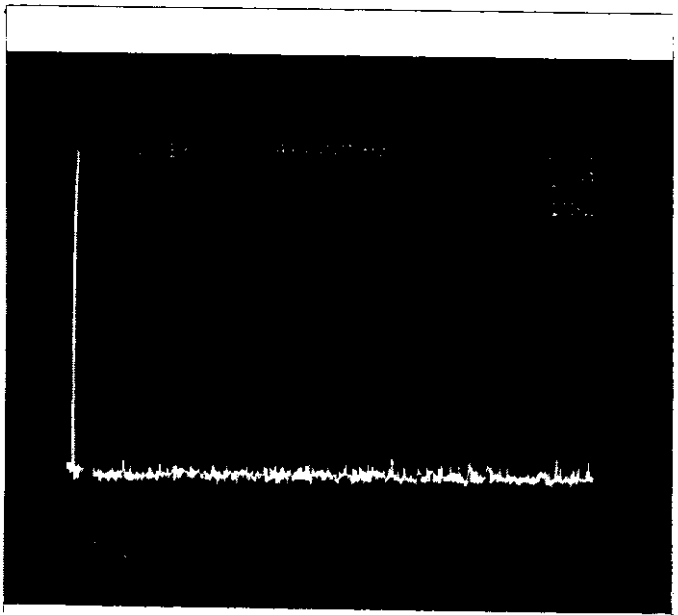
Scale
↑ 10dB/Div

→3.2 GHz
/Div

Spurious
Signals

Medium Pulse

28 to 60 GHz



Scale
↑ 10dB/Div

→3.2 GHz
/Div

Spurious
Signals

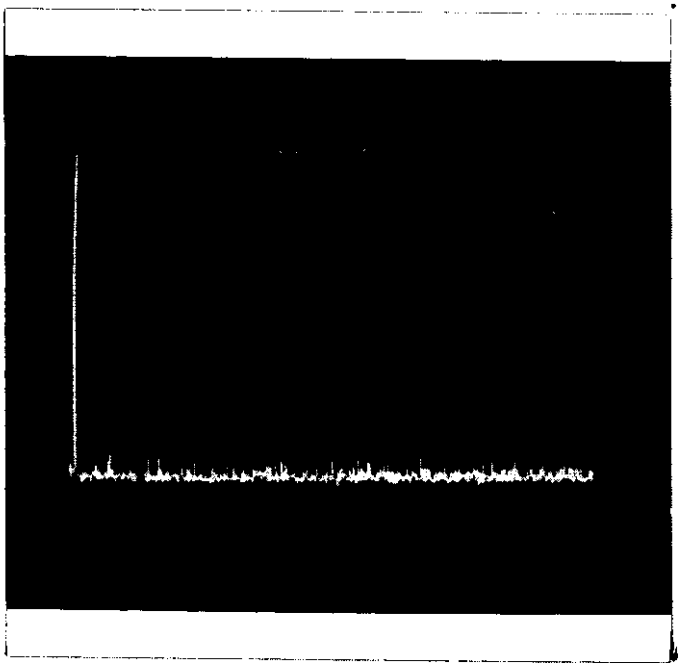
Long Medium Pulse

28 to 60 GHz

(Sec. 2.991)

Scale
↑ 10dB/Div

→3.2 GHz
/Div

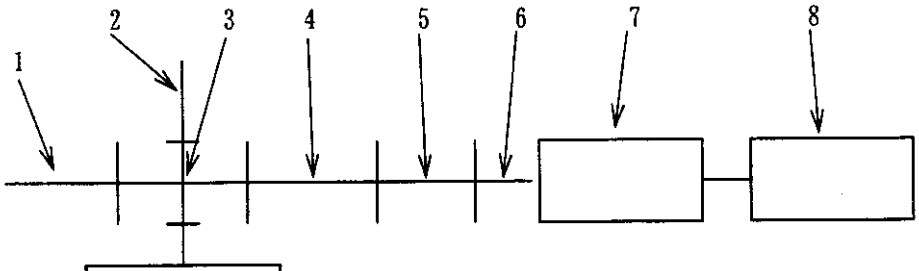


Spurious
Signals

Long Pulse

28 to 60 GHz

(Sec. 2. 995) 4. 0 Frequency Stability



Transmitter Measurement Point ; Antenna Pedestal Output

1 Dummy Load		X910B	HP
2 High Power Dummy Load		4D371A	Shimada
3 Directional Coupler		5D351	Shimada
Coupling	20 dB		
Directivity	20 dB		
4 Frequency Meter		X532B	HP
5 Attenuator		X382A	HP
6 Adapter		X281A	HP
7 Power Sensor		8481A	HP
8 Power Meter		435A	HP
Temperature Chamber			Onisi Netugaku

Measurement Procesure

1 The antenna pedestal and display unit were set up in the temperature chamber and the measurement equipment were set outside the temperature chamber.

2 With power removed, the temperature was decreased to 30 and permitted to stabilize for three hours. Power was applied and measured warm up time. After 30 minutes place the radar in X MIT, mesured frequency at 21. 6V, 24V, 26. 4V

3 With power off, the temperature was raised in 10 steps. The sample was permitted to stabilize at each step for at least three hours. Power was applied and measured warm up time. After 30 minutes place the radar in X MIT, measured frequency at 21. 6V, 24V, 26. 4V

Temperature	Operating Frequeny MHz									Warm Up Time
	Short Pulse			Medium Short Puls			Medium			
	21. 6V	24. 0V	26. 4V	21. 6V	24. 0V	26. 4V	21. 6V	24. 0V	26. 4V	
-30	9423	9424	9425	9428	9428	9425	9425	9426	9425	3' 04"
-20	9423	9423	9424	9423	9424	9424	9423	9425	9424	3' 04"
-10	9421	9422	9422	9423	9422	9422	9421	9422	9422	3' 04"
0	9421	9422	9421	9422	9421	9421	9419	9422	9421	3' 04"
+10	9421	9421	9420	9421	9420	9420	9420	9420	9420	3' 04"
+20	9421	9420	9419	9421	9420	9419	9421	9419	9419	3' 05"
+30	9419	9419	9419	9419	9419	9419	9420	9418	9419	3' 05"
+40	9418	9419	9419	9418	9419	9419	9420	9418	9419	3' 05"
+50	9418	9419	9419	9418	9419	9419	9419	9418	9419	3' 05"
+55	9417	9419	9419	9417	9419	9419	9417	9417	9419	3' 05"

Temperature	Operating Frequeny MHz						Warm Up Time
	Medium Long Puls			Long Pulse			
	21.6V	24.0V	26.4V	21.6V	24.0V	6.4V	
-30	9424	9425	9424	9424	9424	9424	3'04"
-20	9423	9424	9423	9423	9423	9423	3'04"
-10	9421	9422	9421	9421	9421	9421	3'04"
0	9419	9421	9419	9419	9419	9419	3'04"
+10	9420	9420	9419	9419	9419	9419	3'04"
+20	9421	9419	9417	9417	1917	9417	3'05"
+30	9419	9419	9417	9417	9417	9417	3'05"
+40	9418	9418	9417	9417	9417	9417	3'05"
+50	9417	9418	9417	9416	9417	9417	3'05"
+55	9416	9417	9417	9416	9417	9417	3'05"

SECTION 5

TEST: Spurious Emissions Field Strength

EQUIPMENT: JMA-3925 S/N LS 5 4 9 6 6

FCC SPECIFICATION: Sections 2.993 and 80.211.

MINIMUM STANDARD: Mean power of emissions originating in equipment lowest generated frequency to at least 40 GHz shall be attenuated below the mean power of the transmitter by at least 43 plus 10 log (mean power in watts) decibels. Since transmitter mean power is 9.14 watts maximum (long pulse) or 39.61 dBm:

Emissions $\leqq$ 39.61dBm - [43 + 10 log(9.14)] dBm
$\leqq$ -13.0 dBm

TEST RESULTS: No spurious emissions observed above minimum standard.

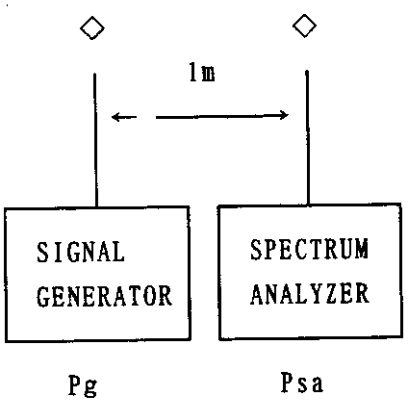
TEST CONDITIONS: Tamb = 20℃ to 25℃ RHamb = 40% ～ 60%
Euut input = 24 VDC
Stabiliazation: UUT energized for 10 minutes minimum.

TEST EQUIPMENT: JRC Original - Shielded Room
Other equipment - see test set-ups.

DATE: 9 - 10 OCT. 1998

TEST ENGINEER: K. YUASA.

CALIBRATION OF TESTS 1～5 (0～1 GHz)



A signal source of known amplitude was used as a calibrating signal with identical antennas on the generator and the spectrum analyzer.
From previous testing in the shielded room, the antenna factors are considered much greater than path loss.
Hence half of the difference in signals Pg and Psa is due to each antenna.

The calibrating signal on the analyzer is therefore:

$$Pcal = Psa - (Psa - Pg) / 2 = (Psa + Pg) / 2 \text{ dBm.}$$

The log ref level on the analyzer is adjusted so as to read other signals directly:

$$LRL \text{ (adjusted)} = LRL \text{ (set)} + Pcal - Psa \text{ dBm.}$$

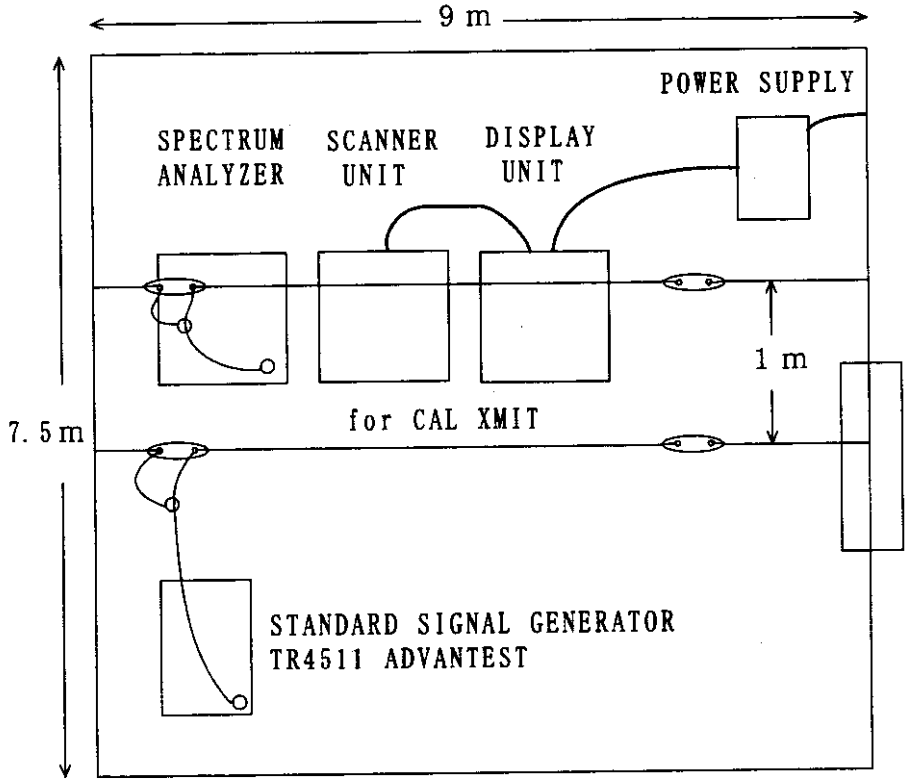
The calibrating signal used was selected on the basis of best average amplitude over the frequency range of interest.

TEST	CAL sig	Psa	Pg	Pcal	LRL(set)	LRL(adj)
1	250 KHz	-68	0	-34.0	-10	24.0
2	2.5 MHz	-47	0	-23.5	-10	13.5
3	25 MHz	-36	0	-18.0	-10	8.0
4	250 MHz	-28	0	-14.0	-10	4.0
5	500 MHz	-22	0	-11.0	-10	1.0

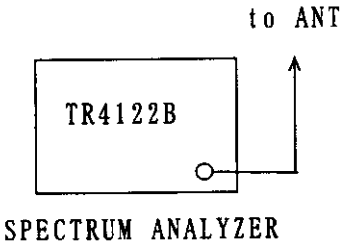
RFI TEST

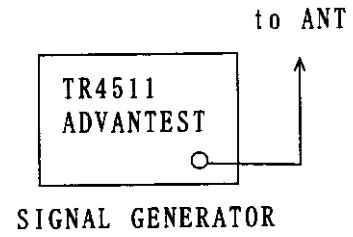
TEST SET-UP #1(0～50MHz)

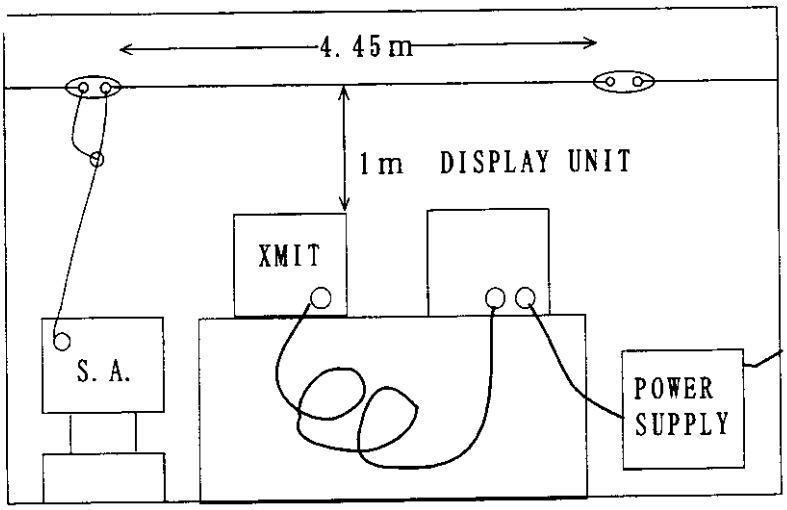
TEST #1 0～500 KHz
TEST #2 0～ 5 MHz
TEST #3 0～ 50 MHz

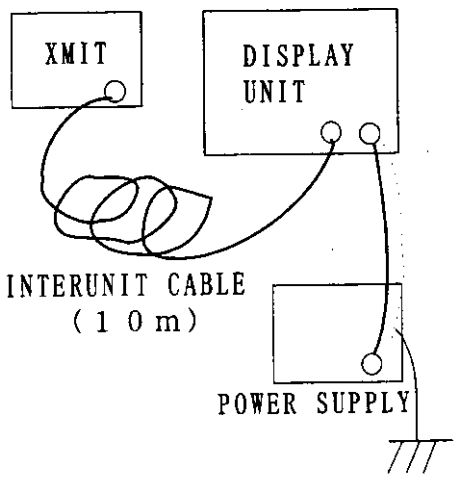


TEST EQUIPMENT









JRC ORIGINAL
RF ANECHOIC CHAMBER:SIDE VIEW

CABLE

TEST SET UP #2 (50MHz－40GHz)

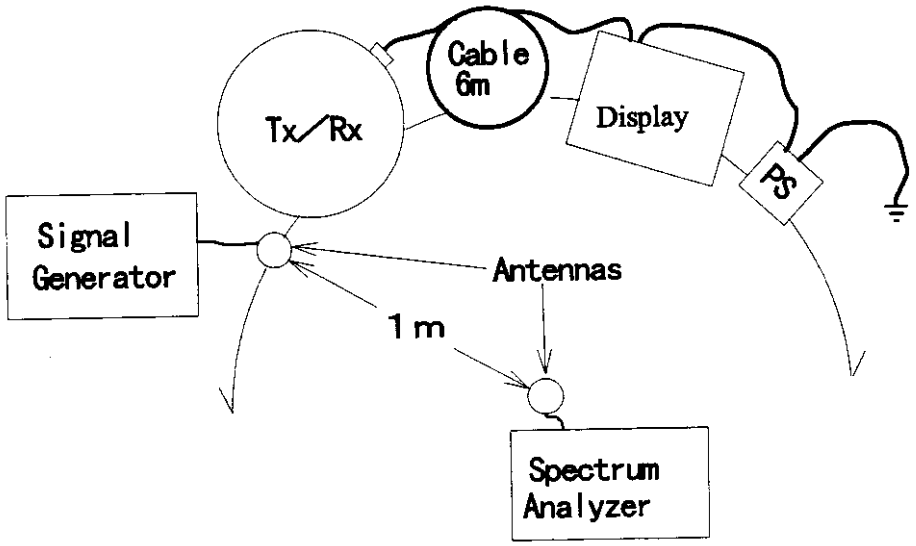


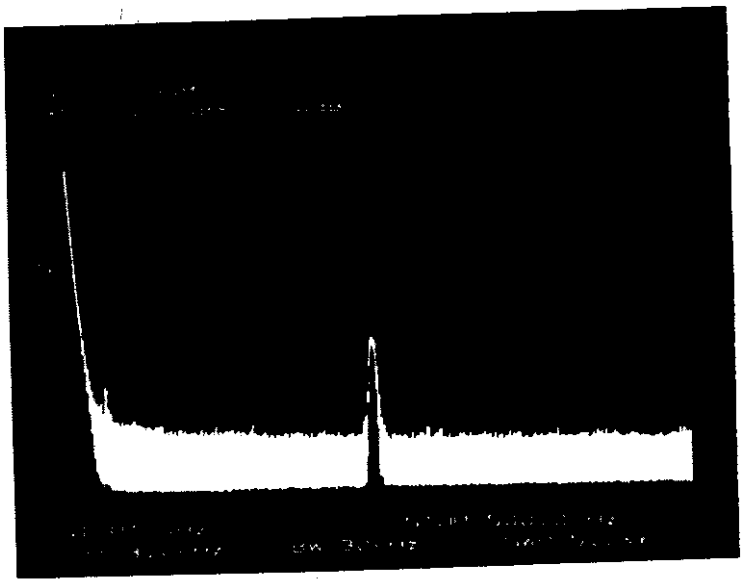
TABLE OF TEST EQUIPMENT USED

Frequency	Test Antenna	Spectrum Analyzer	Signal Generator	Misc.
0－10000MHz	1/2 Coaxial (Untuned)	TAKEDA RIKEN TR4133B	ADVANTEST TR4511	—
1－18GHz	AILTECH 94612-1 Log Peliodic	〃	NA	—
18－26GHz	AILTECH 94626-1 HP-11519A	〃	NA	—
26－40GHz	AILTECH 94627-1 HP-11519A	〃	NA	—

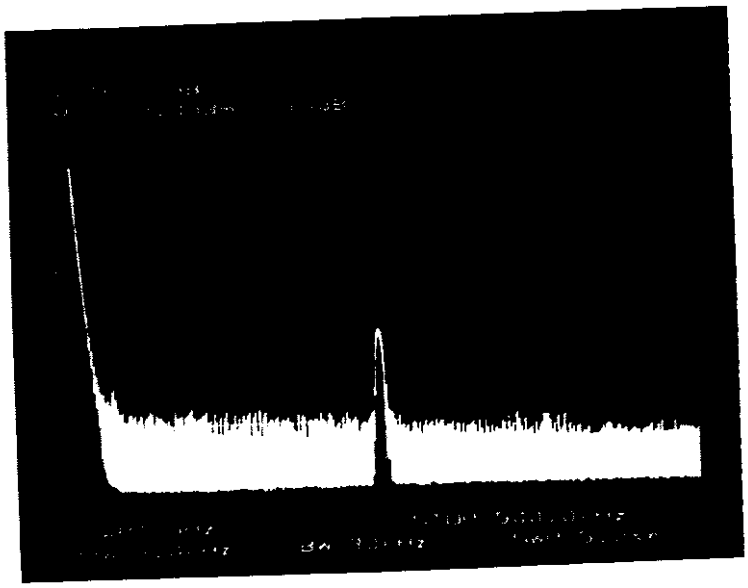
TEST #1

Frequency Band: 0～500 KHz

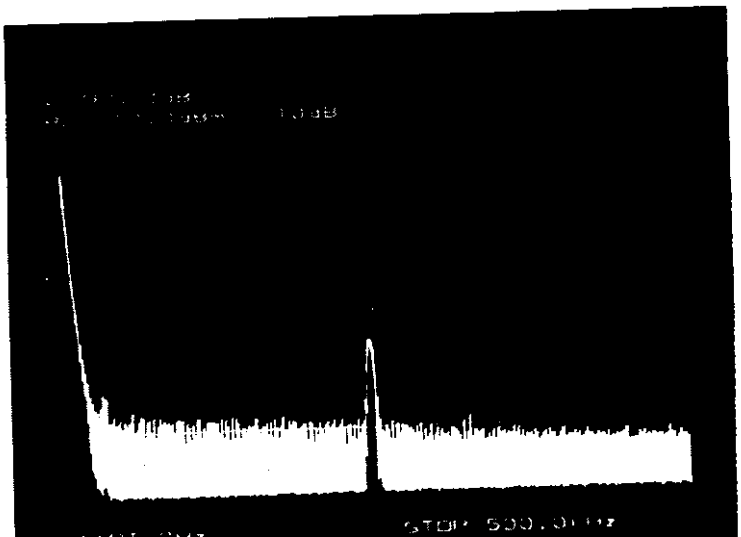
Log Ref. Level: 24.0 dBm



Amdient



Stand-By

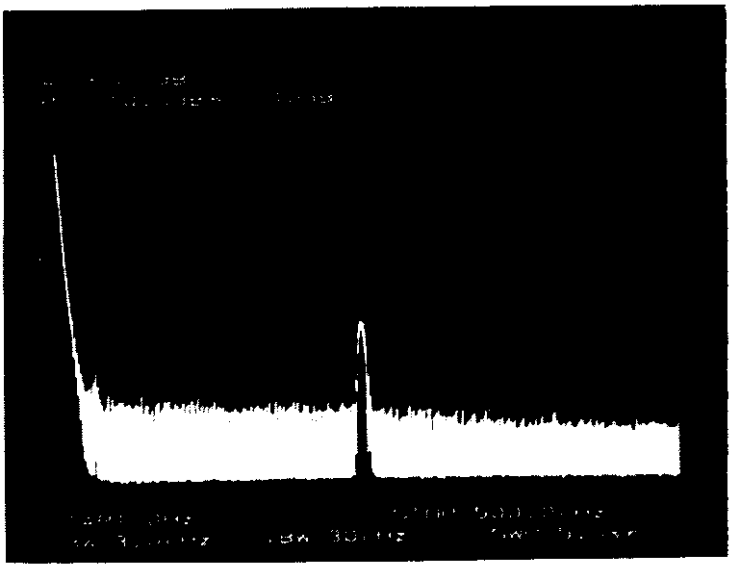


Short Pulse

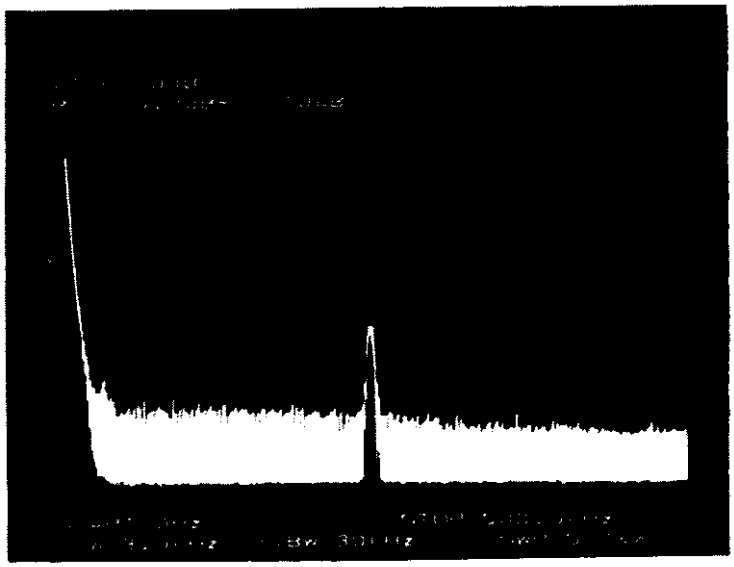
TEST #1

Frequency Band: 0～500 KHz

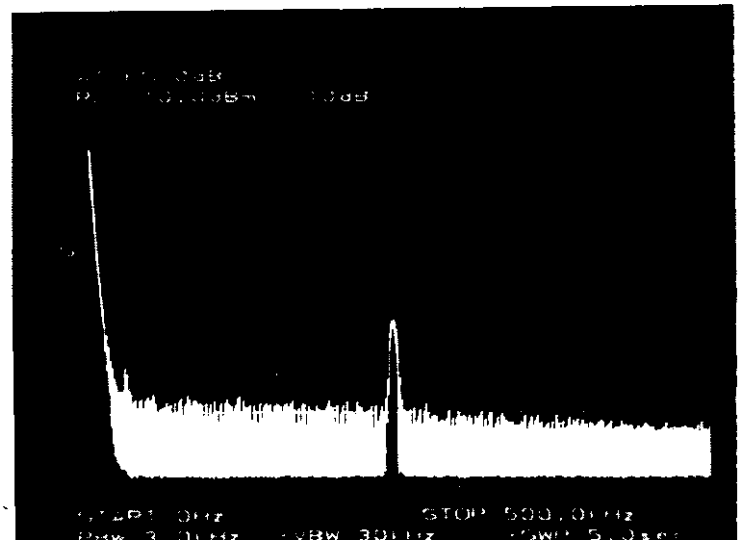
Log Ref. Level: 24.0 dBm



Medium
Short Pulse



Medium Pulse

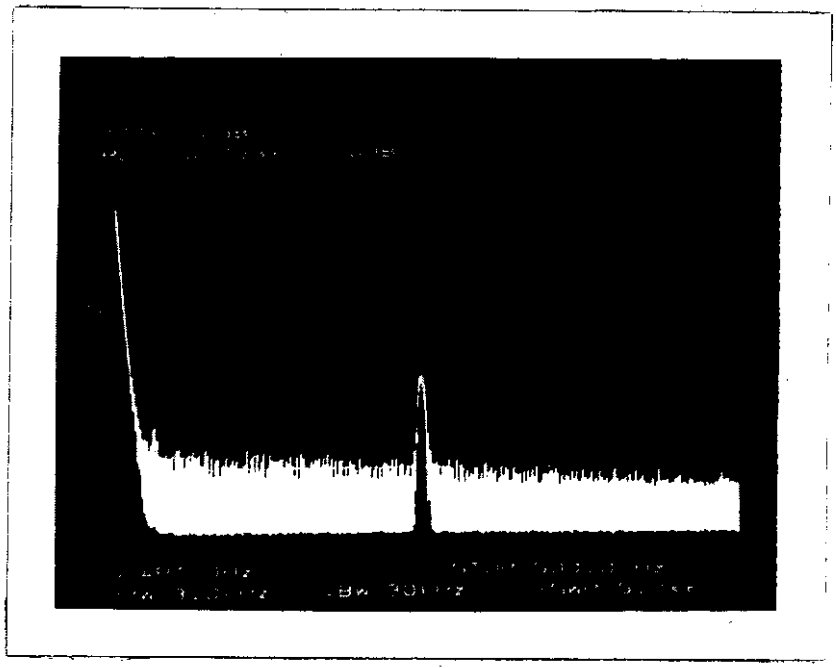


Medium
Long Pulse

TEST #1

Frequency Band: 0～500 KHz

Log Ref. Level: 24.0 dBm

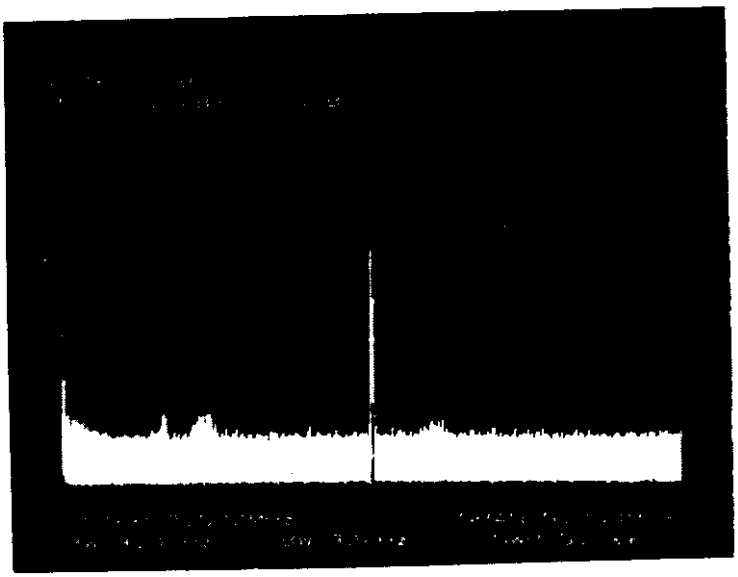


Long Pulse

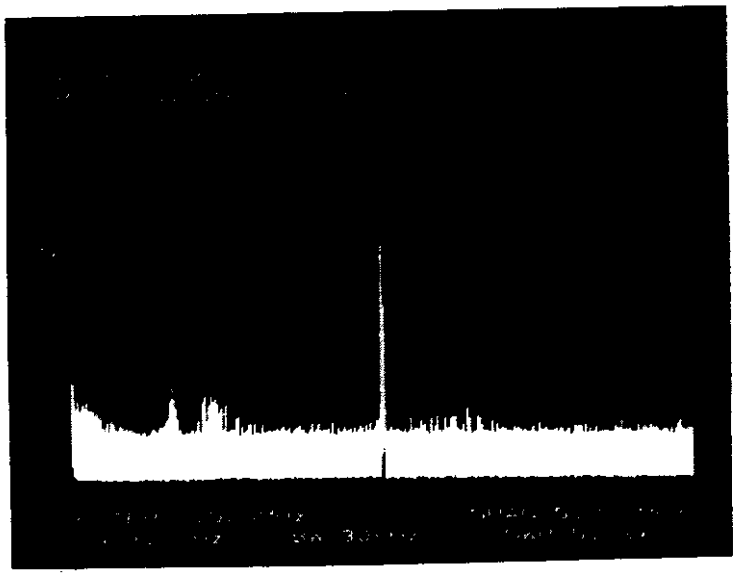
TEST #2

Frequency Band: 0～5 MHz

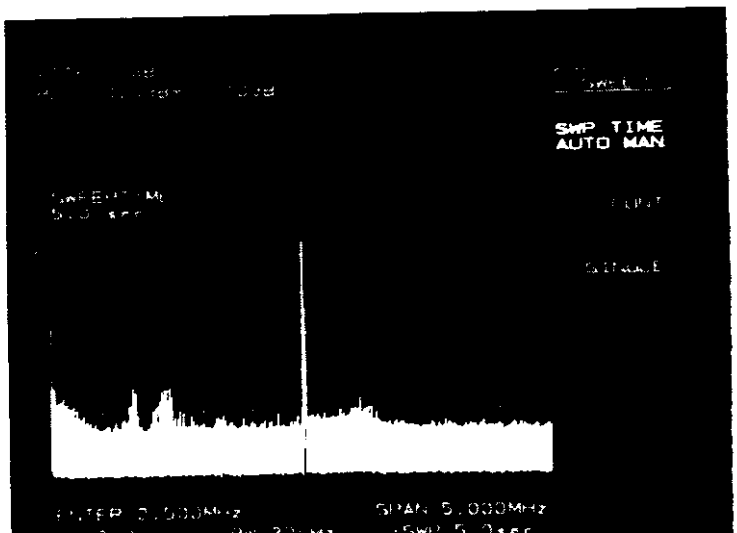
Log Ref. Level: 13.0 dBm



Ambient



Stand-By

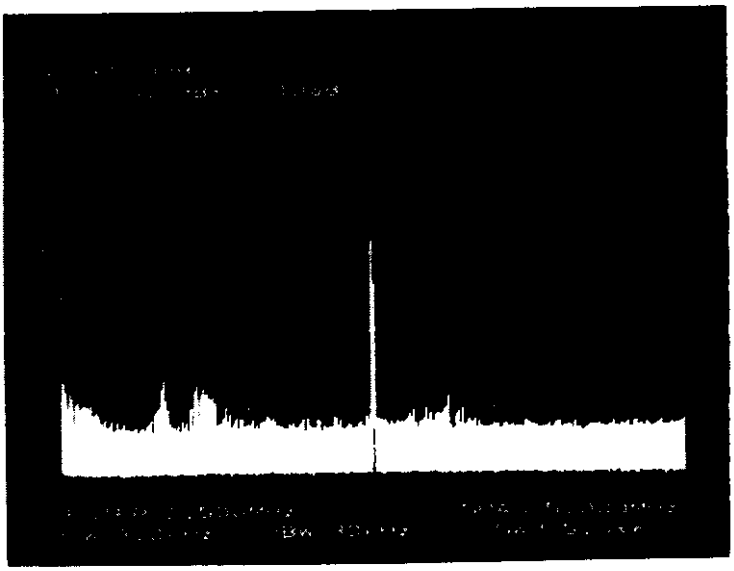


Short Pulse

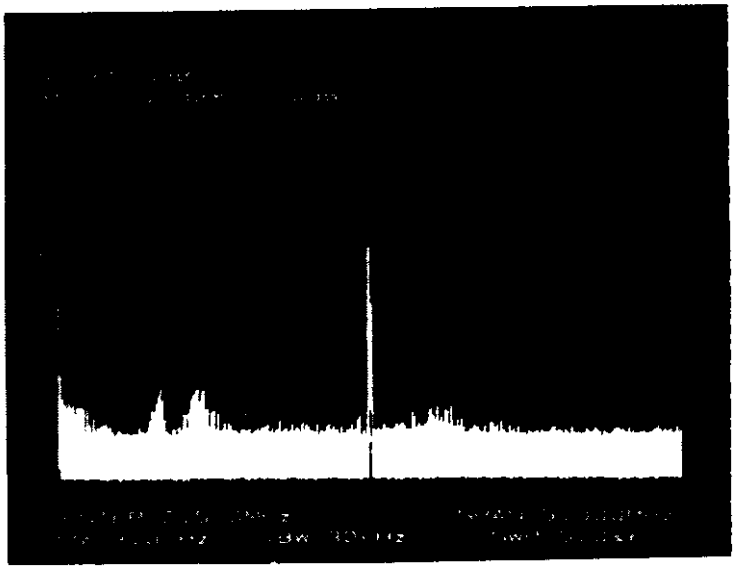
TEST #2

Frequency Band: 0～5 MHz

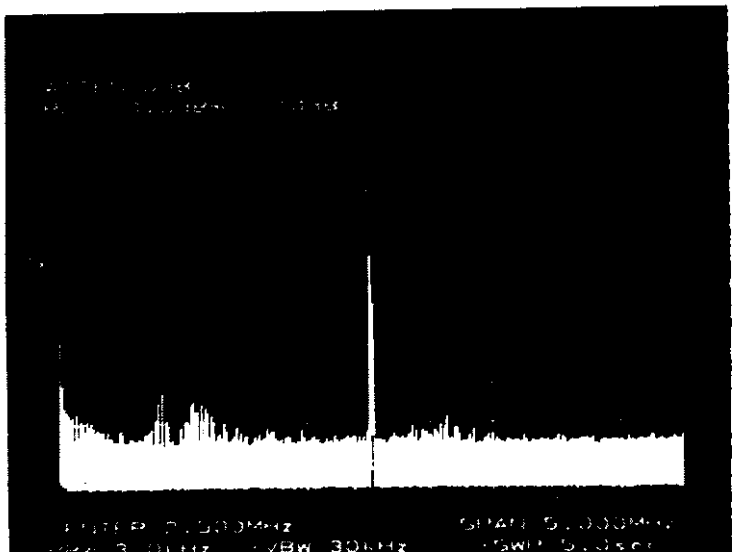
Log Ref. Level: 13.0 dBm



Medium
Short Pulse



Medium Pulse

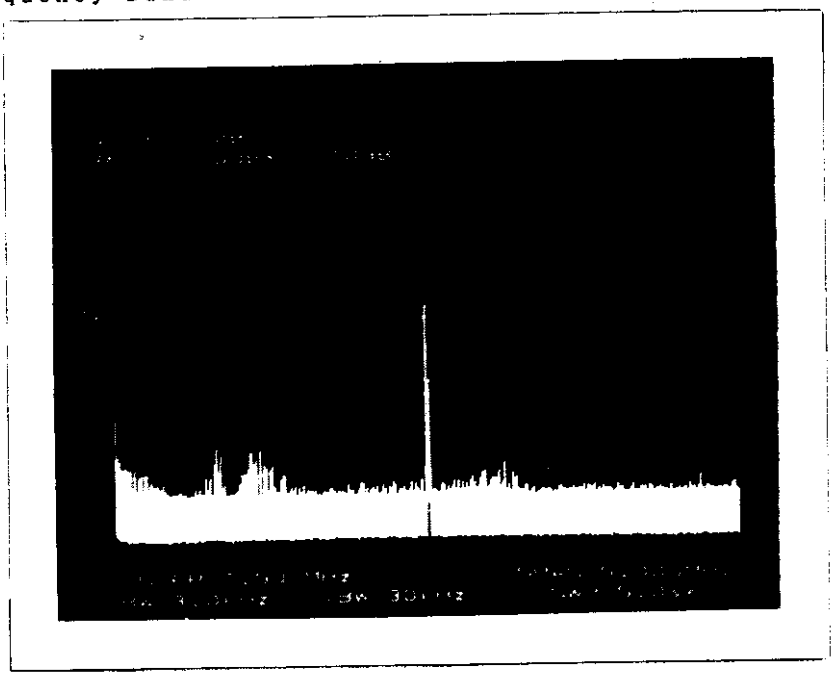


Medium
Long Pulse

TEST #2

Frequency Band: 0～5 MHz

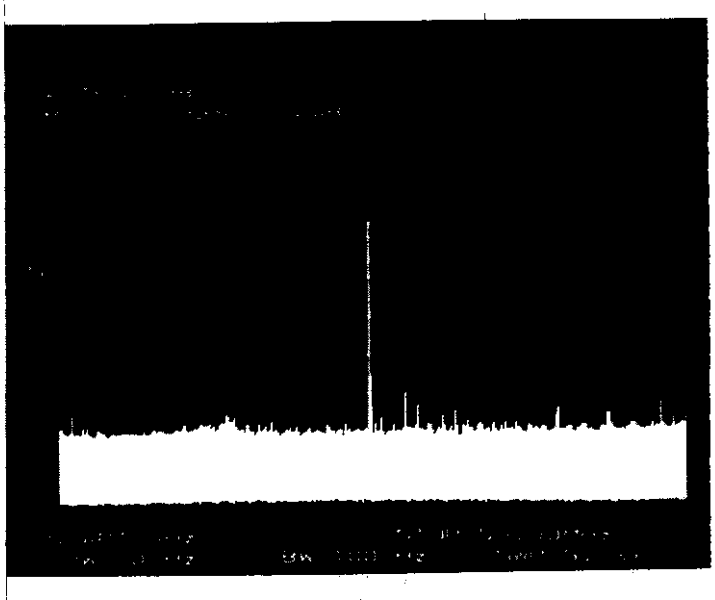
Log Ref. Level: 13.0 dBm



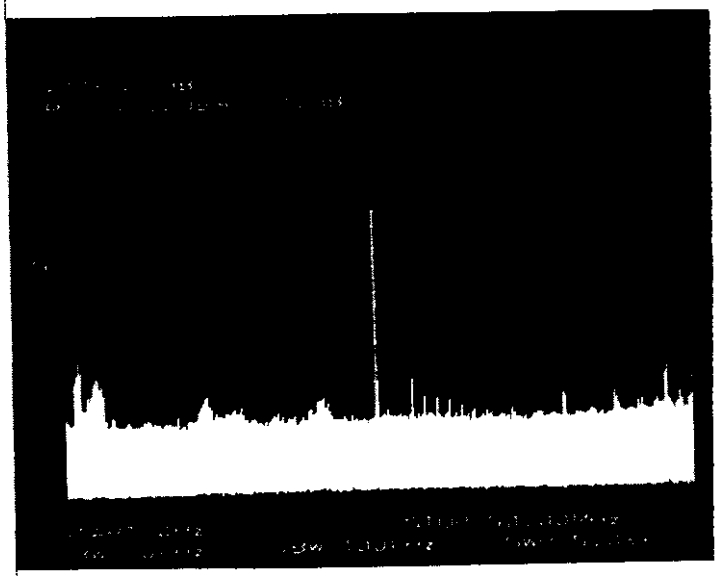
Long Pulse

TEST #3

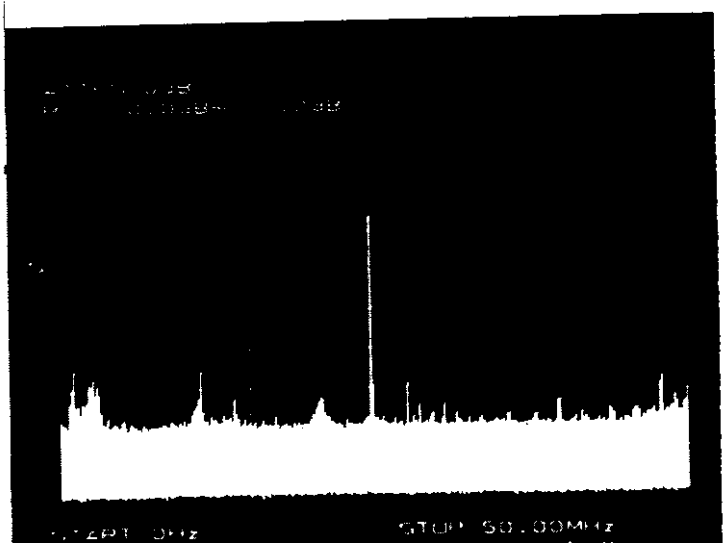
Frequency Band: 0～50 MHz Log Ref. Level: 7.5 dBm



Ambient



Stand-By

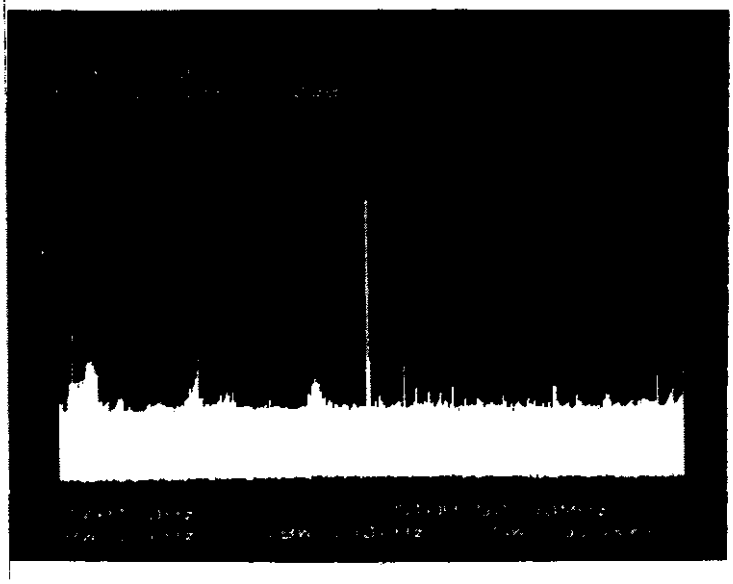


Short Pulse

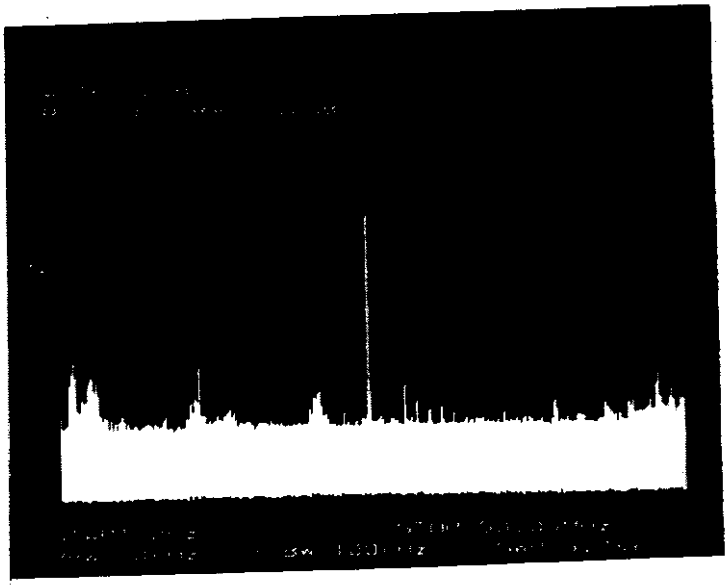
TEST #3

Frequency Band: 0～50 MHz

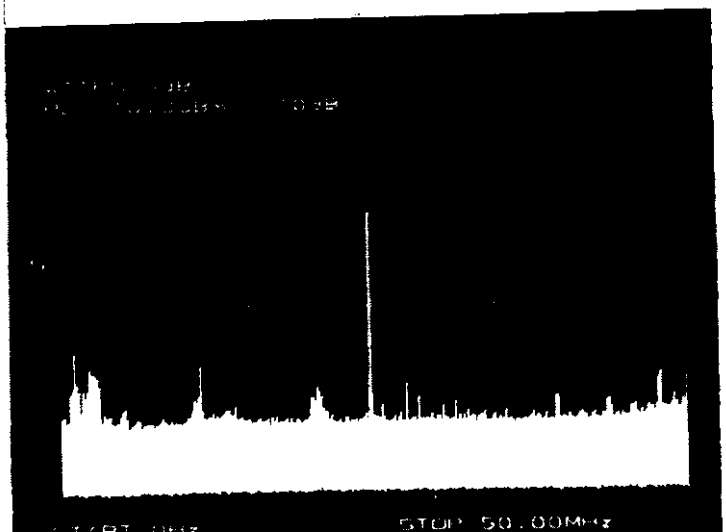
Log Ref. Level: 7.5 dBm



Medium
Short Pulse



Medium Pulse

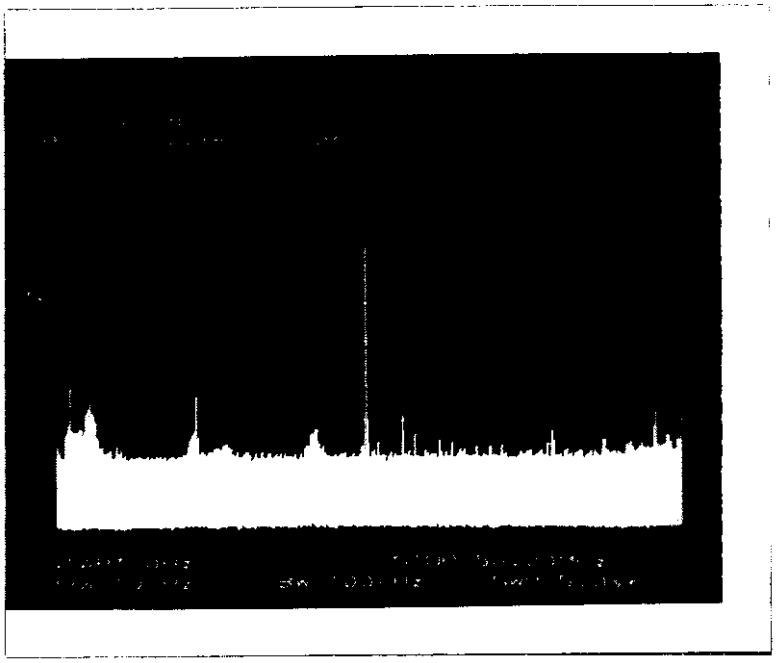


Medium
Long Pulse

TEST #3

Frequency Band: 0～50 MHz

Log Ref. Level: 7.5 dBm

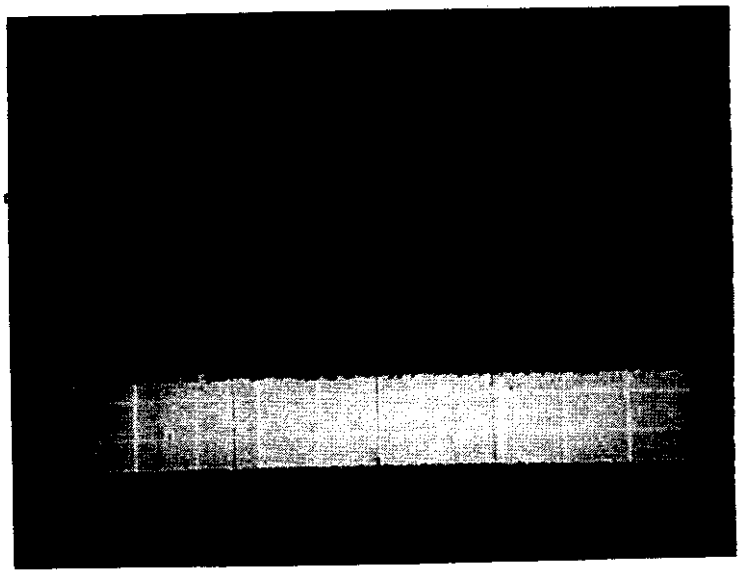


Long Pulse

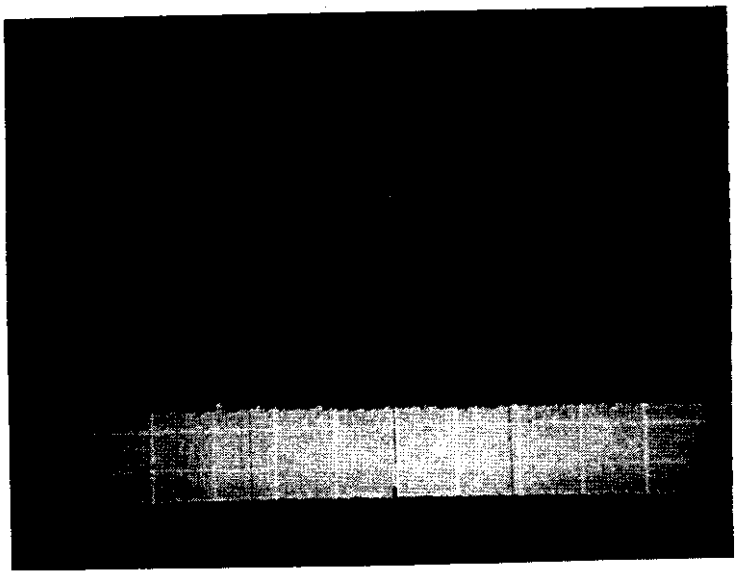
TEST #4

Frequency Band: 0～500 MHz

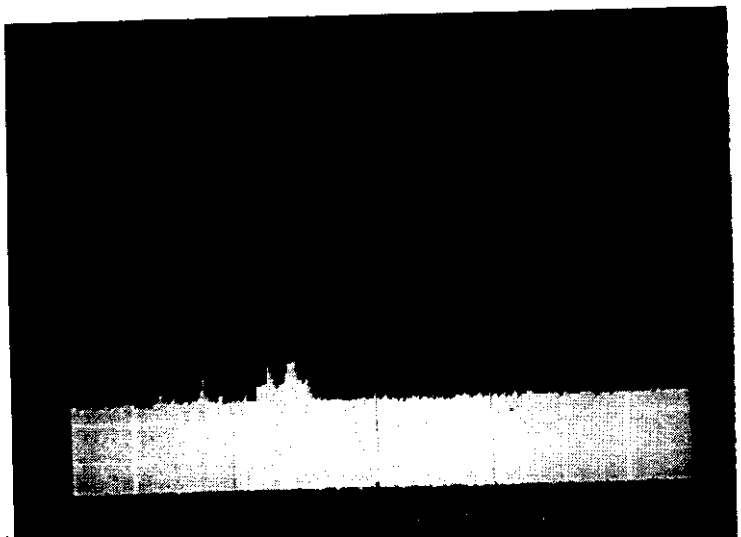
Log Ref. Level: 4.0 dBm



Ambient



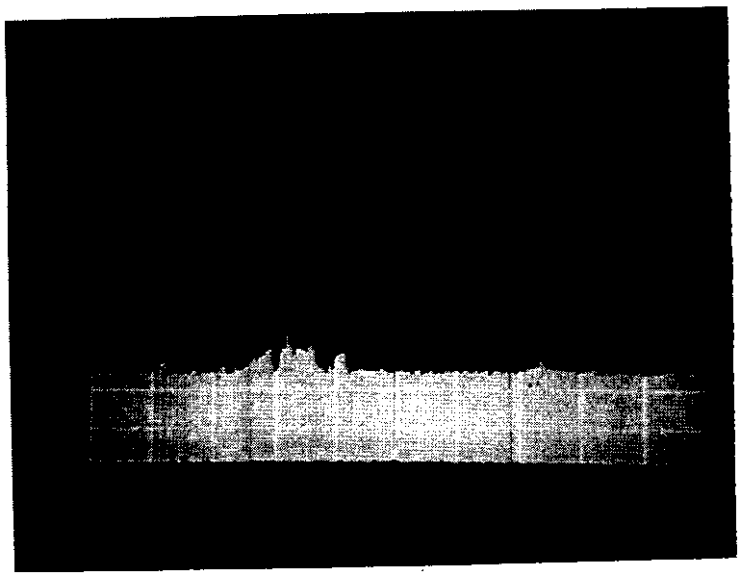
Stand-By



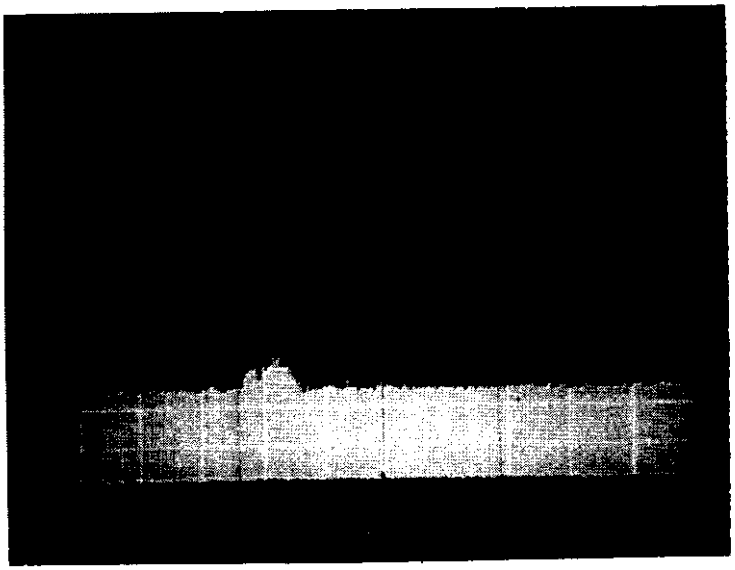
Short Pulse

TEST #4

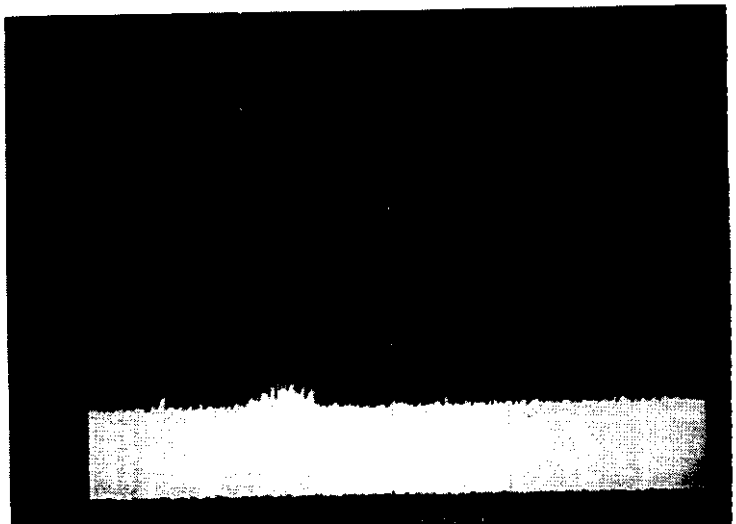
Frequency Band: 0～500 MHz Log Ref. Level: 4.0 dBm



Medium
Short Pulse



Medium Pulse

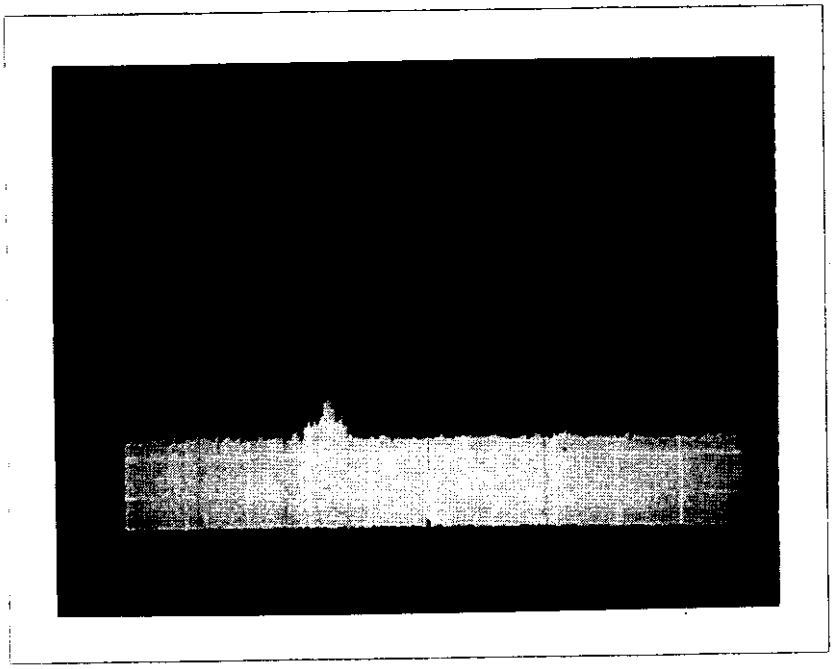


Medium
Long Pulse

TEST #4

Frequency Band: 0～500 MHz

Log Ref. Level: 4.0 dBm

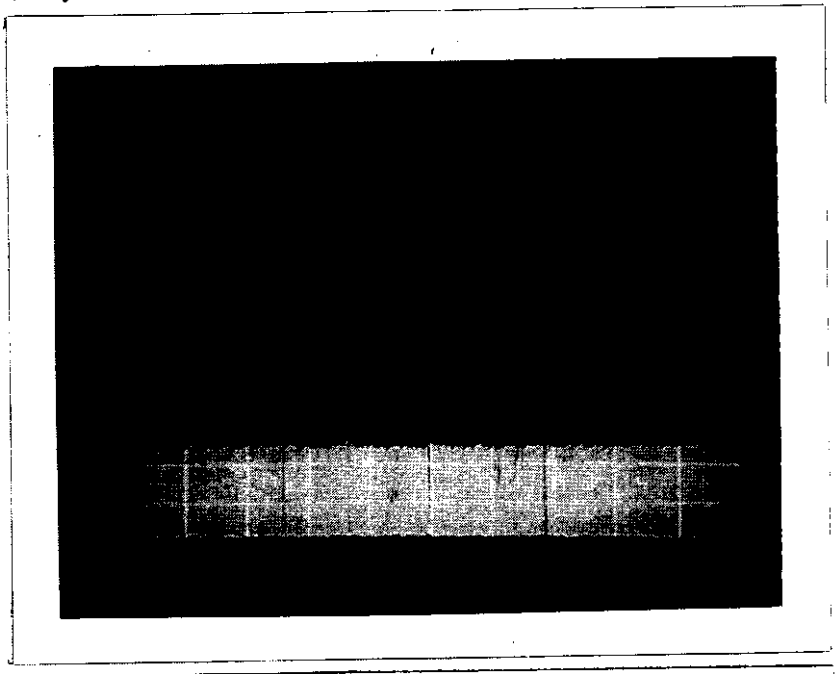


Long Pulse

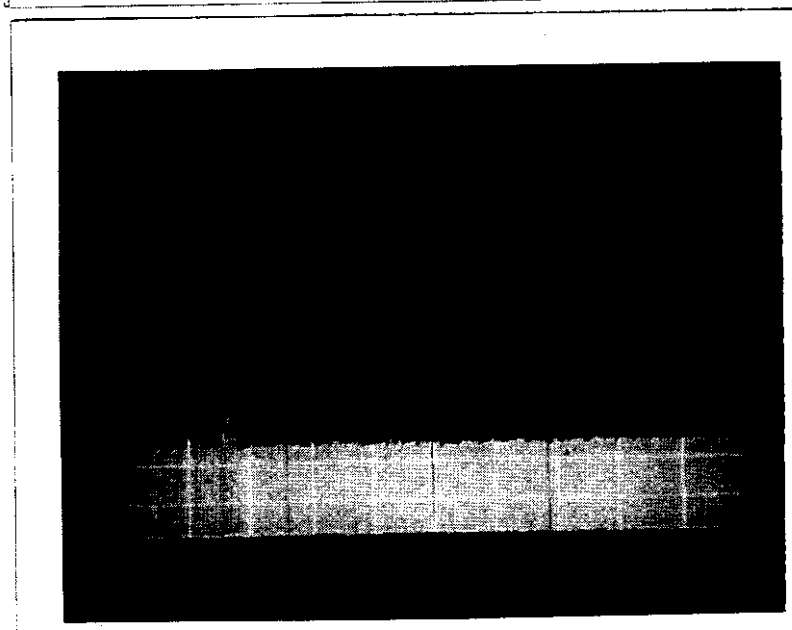
TEST #5

Frequency Band: 0～1 GHz

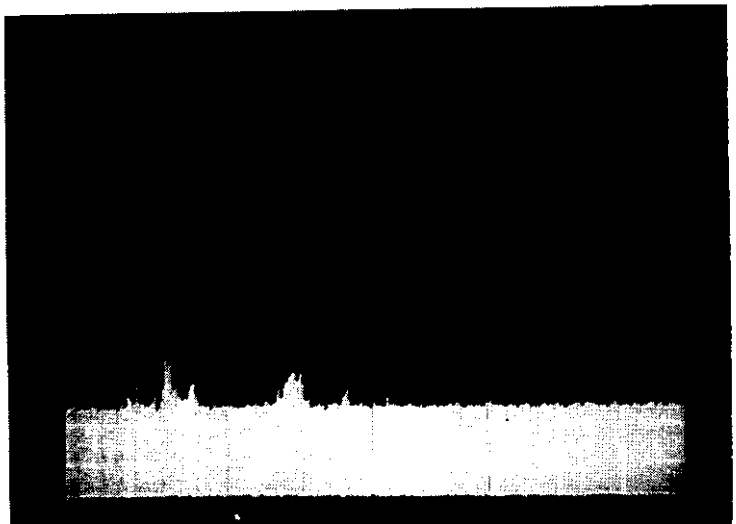
Log Ref. Level: -4.0 dBm



Ambient



Stand-By

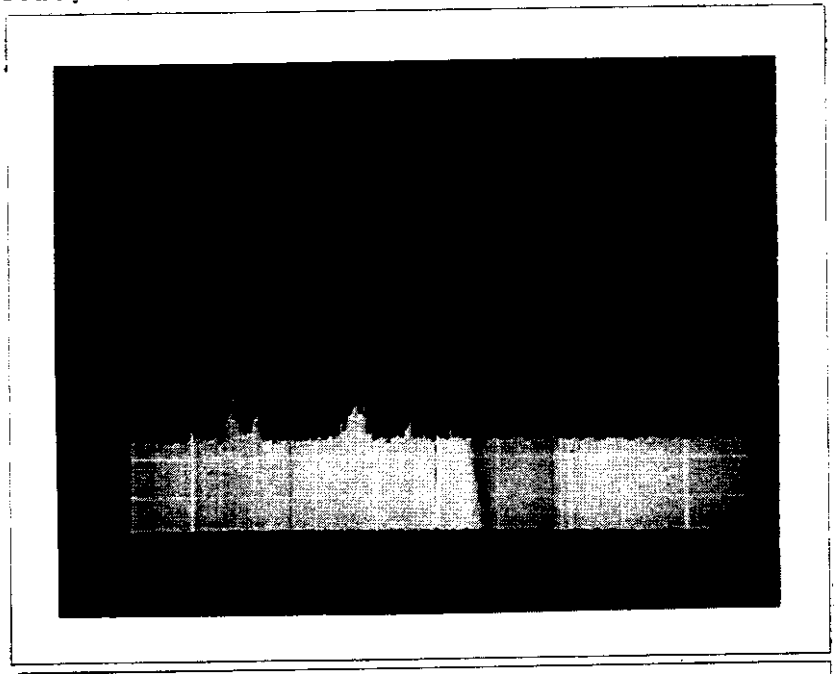


Short Pulse

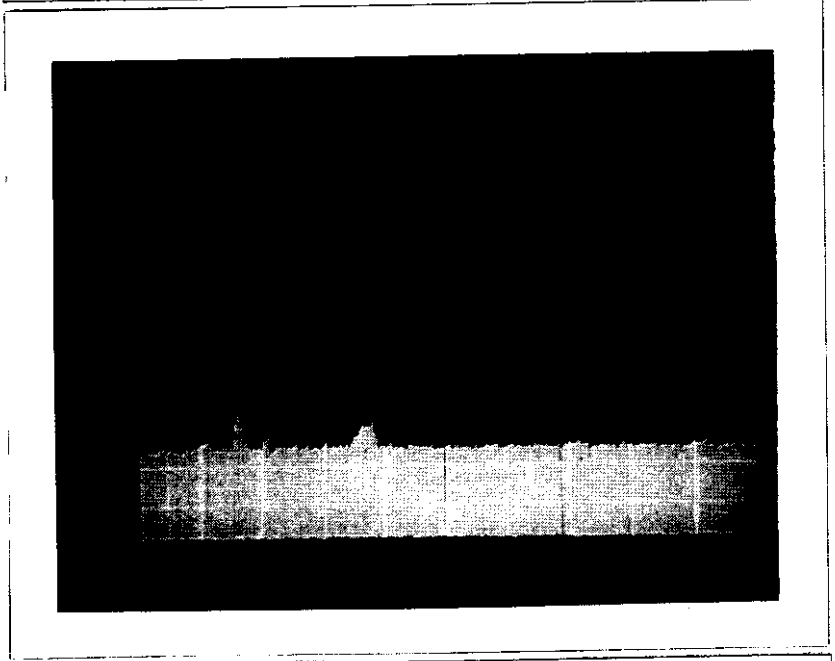
TEST #5

Frequency Band: 0～1 GHz

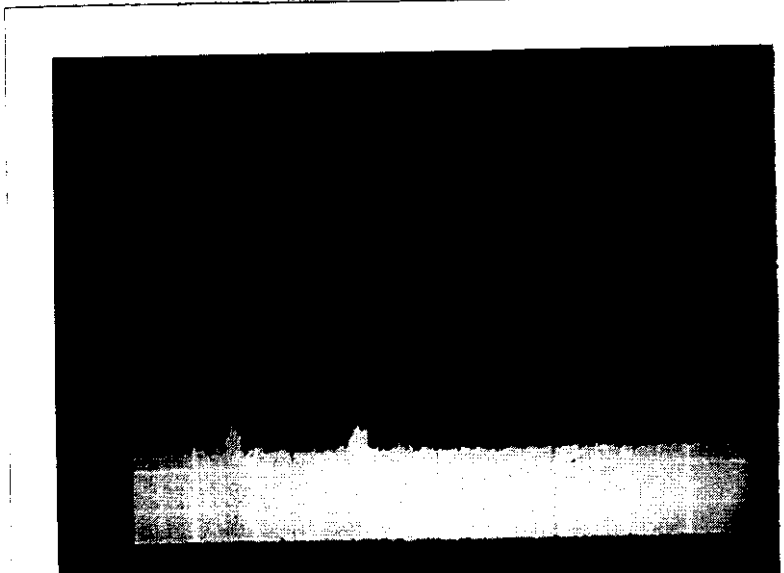
Log Ref. Level: -4.0 dBm



Medium
Short Pulse



Medium Pulse

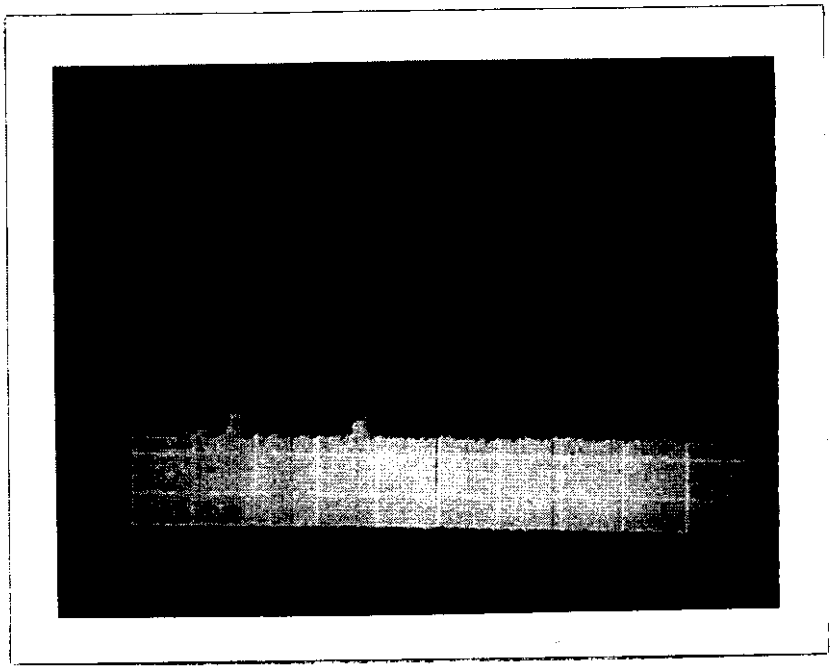


Medium
Long Pulse

TEST #5

Frequency Band: 0～1 GHz

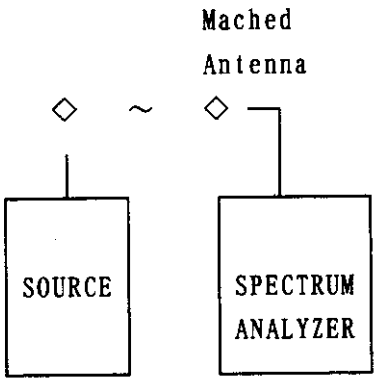
Log Ref. Level: -4.0 dBm



Long Pulse

CALIBRATION OF TESTS 6 ~ 13 (1 ~ 60 GHz)

Instead of using a signal souce of known amplitude to calibrate the receiveing system, the path and antenna characteristics were computed.



A half wave dipole was assumed to be the transmitting antenna. (FCC 2.993)

The power density at distance R is: $P = \frac{1.64\ Pt}{4\pi R2}$

Where Pt is power transmitted.

The power to the analyzer is: $Psa = PAr = \frac{PG\lambda 2}{4\pi}$

Where G is the receiving antenna gain and Ar is the effective area of the receiving antenna

$$\text{Hence } Psa = \frac{1.64\ Pt}{4\pi R2} \times \frac{PG\lambda 2}{4\pi} = \frac{1.6\ G\lambda 2}{16\pi 2} \times Pt \quad \text{at 1 meter}$$

$$\text{and } Pt = \frac{16\pi 2 Psa}{1.64\ G\lambda 2} = \frac{96.3\ Psa}{G\lambda 2}$$

$$= Psa\ (dBm) + 19.8\ (dB) - G\ (dB) - 20 \log\lambda\ (dB)$$

TEST	HORN GAIN (AVG) dB		WAVELENGTH (dB)		Pt - Psa		LOG REF LEVEL
	LOA	HI	LO	HI	LO	HI	
6	6		-10.5	-24.4	24.3	38.2	0 dBm
7	6		-23.5	-29.0	37.3	42.8	0 dBm
8	6		-29.0	-32.4	42.8	46.5	0 dBm
9	6		-32.0	-34.5	46.2	48.3	0 dBm
10	6		-34.0	-36.0	45.8	49.7	0 dBm
11	23.3	24.9	-35.6	-38.8	32.1	33.7	0 dBm
12	24.7	23.7	-38.4	-39.7	33.5	35.8	0 dBm
13	23.6	25.1	-39.4	-46.0	35.6	37.2	0 dBm

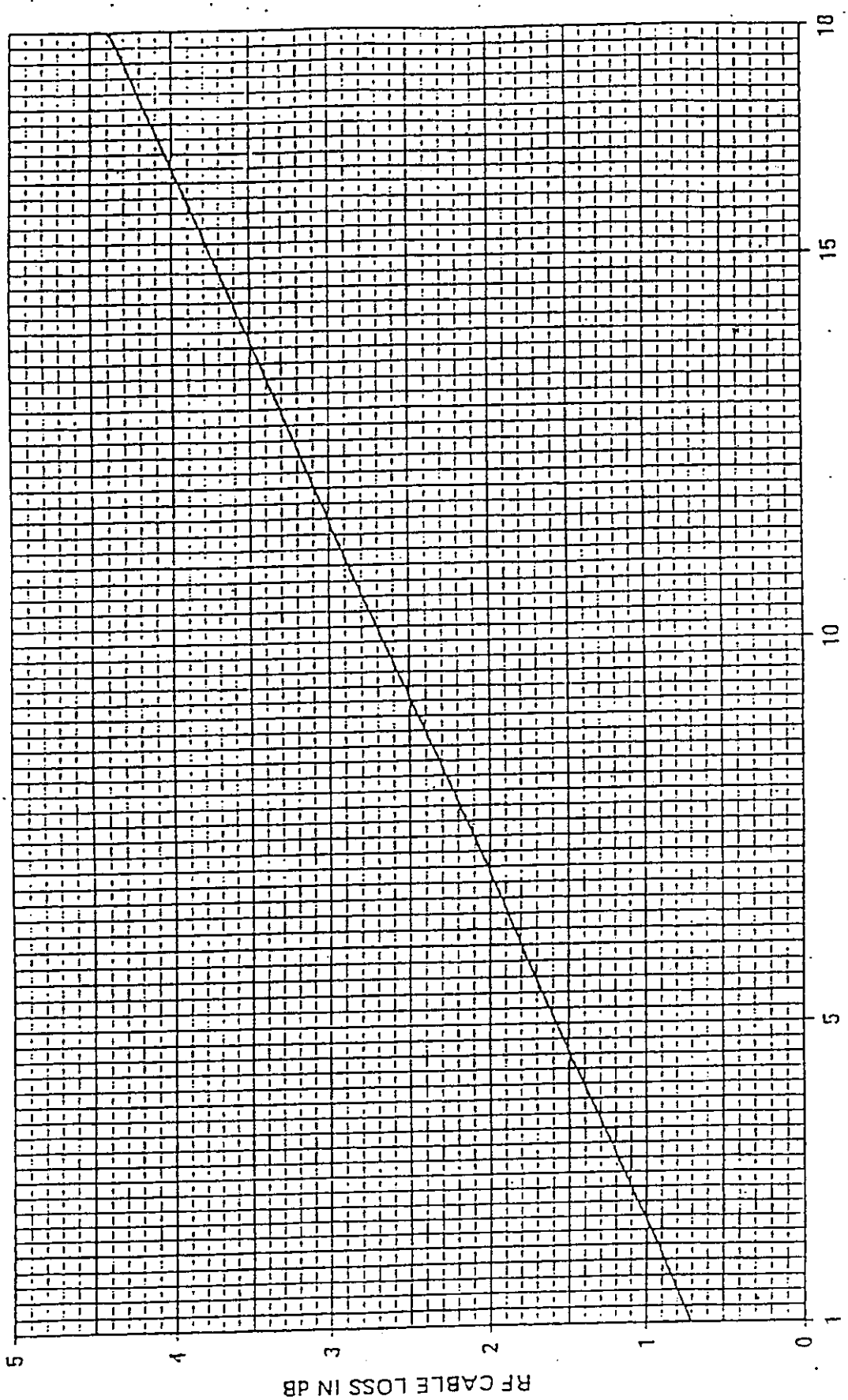


Figure 4-2. Model 94615-1 RF Cable Loss Chart

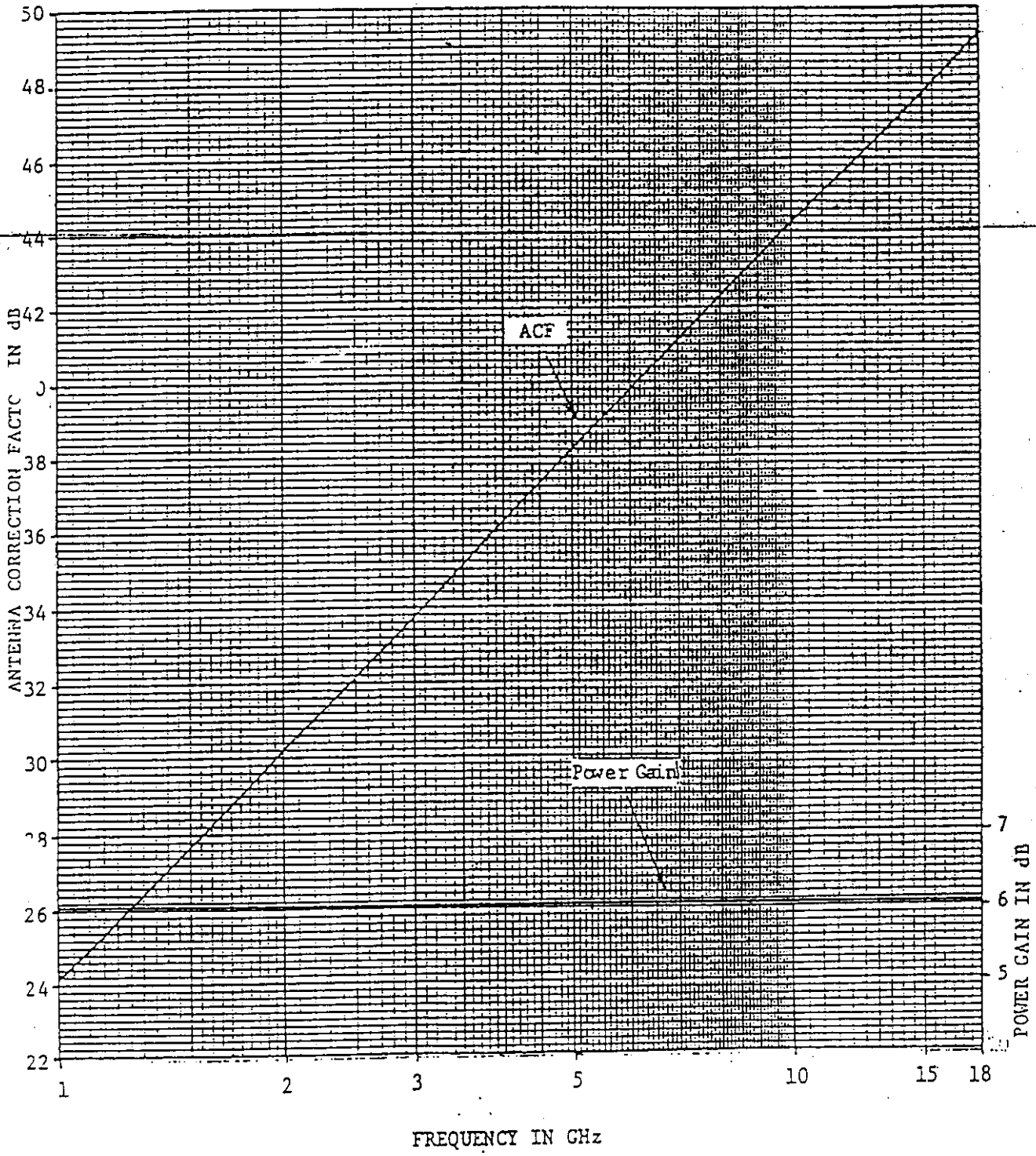


Figure 4-1. Antenna Correction Factor and Power Gain, Model 94612-1 Antenna

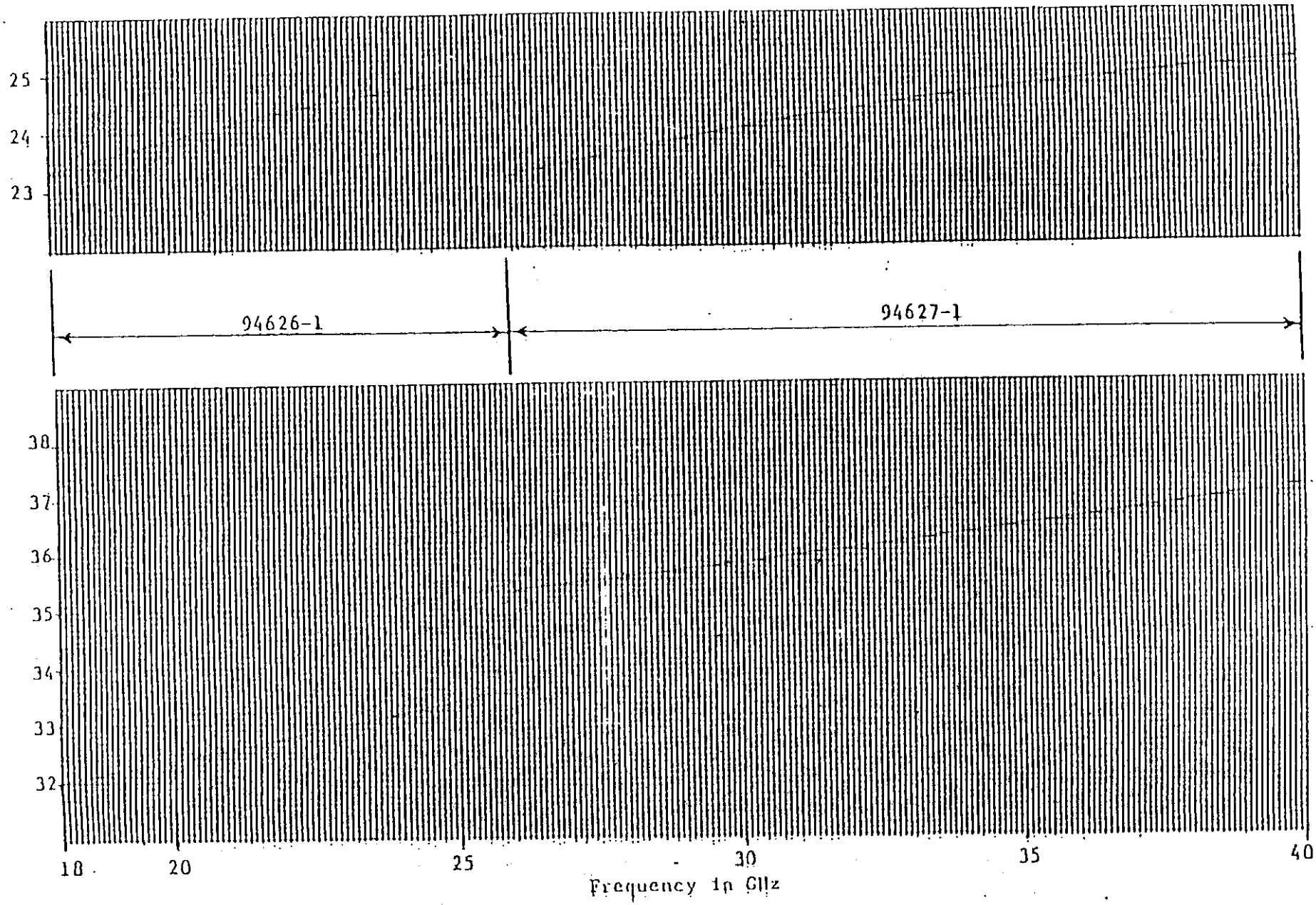


Figure 1-1. Antenna Correction Factor and Power Gain for Horn Antennas

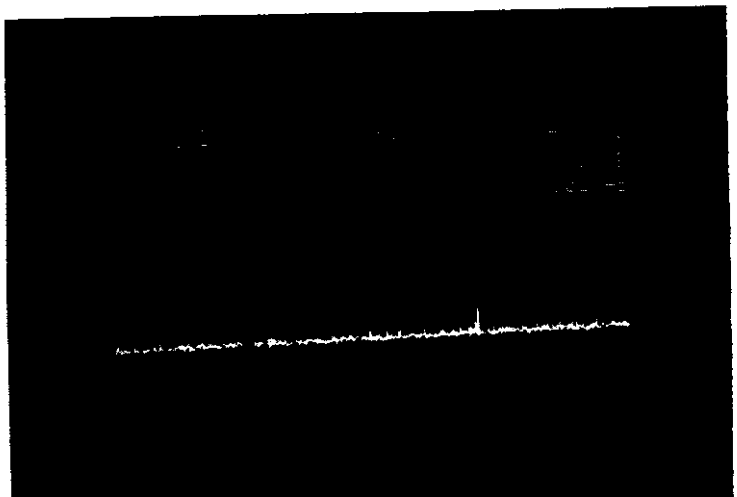
TEST #6

Frequency Band: 1～5GHz
Maximum Sprious Signal Observed:

Log Ref. Level: 0 dBm
(See Calibration Procedure for Test 6～13)

Ambient

Stand-By



Short Pulse

TEST #6

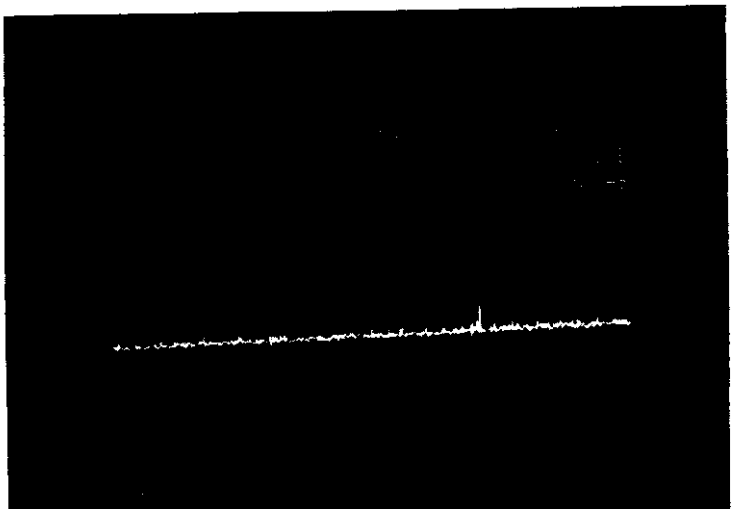
Frequency Band: 1～5 GHz

Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

Short-Medium Pulse

Medium Pulse



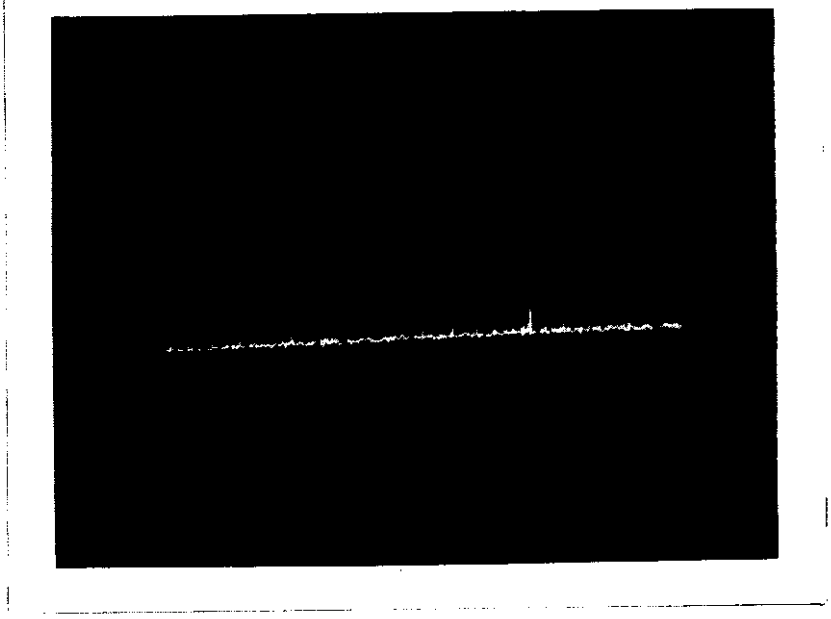
Medium-Long Pulse

TEST #6

Frequency Band: 1～5 GHz

Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

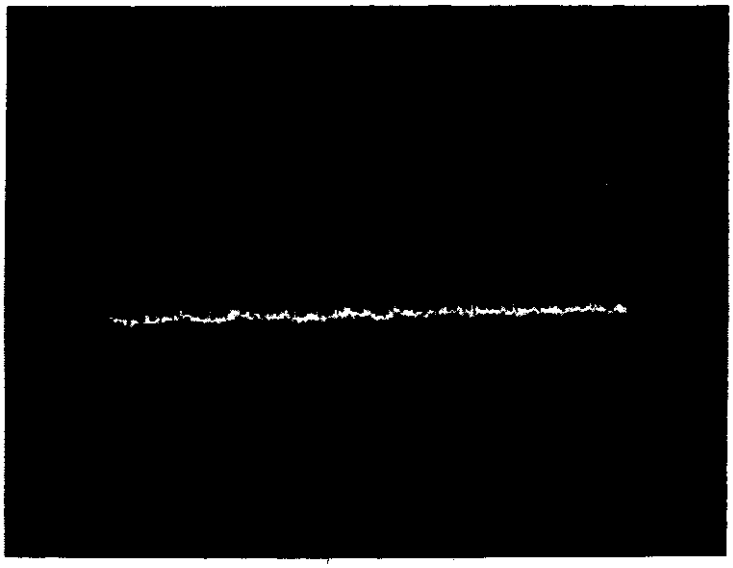


Long Pulse

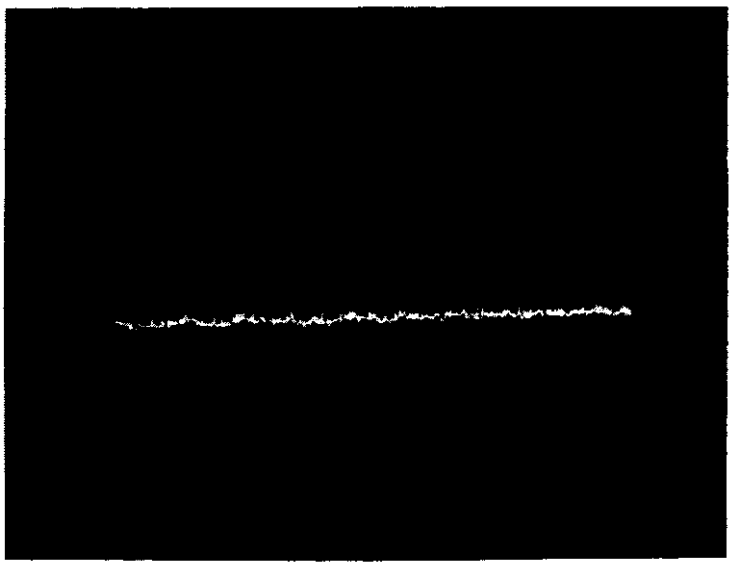
TEST #7

Frequency Band: 4.5～8.5 GHz Log Ref. Level: 0 dBm

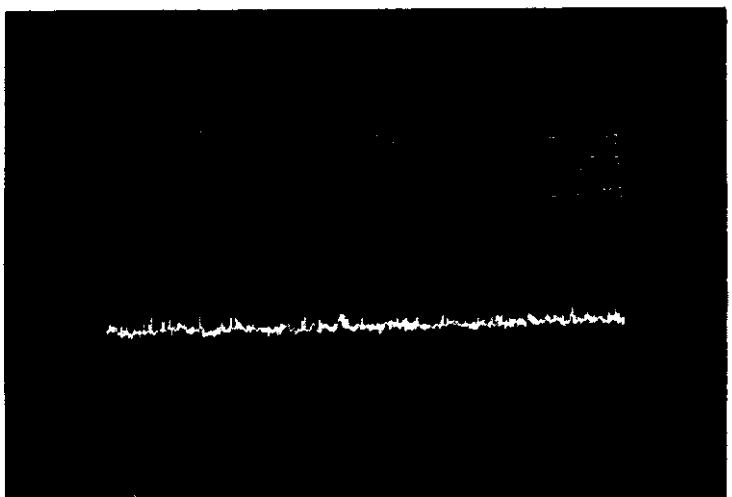
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Ambient



Stand-By



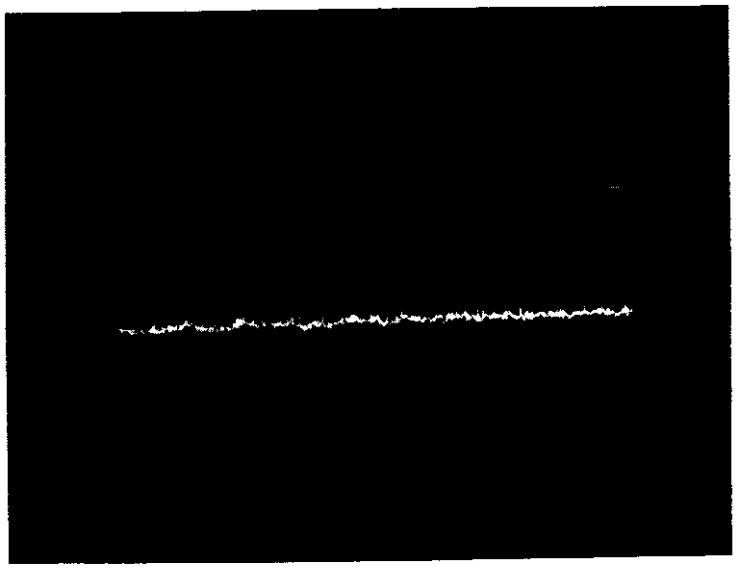
Short Pulse

TEST #7

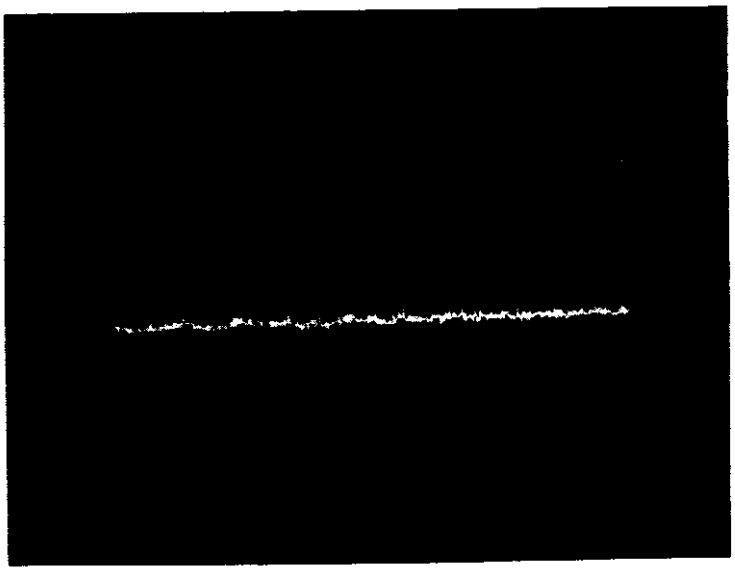
Frequency Band: 4.5～8.5 GHz

Log Ref. Level: 0 dBm

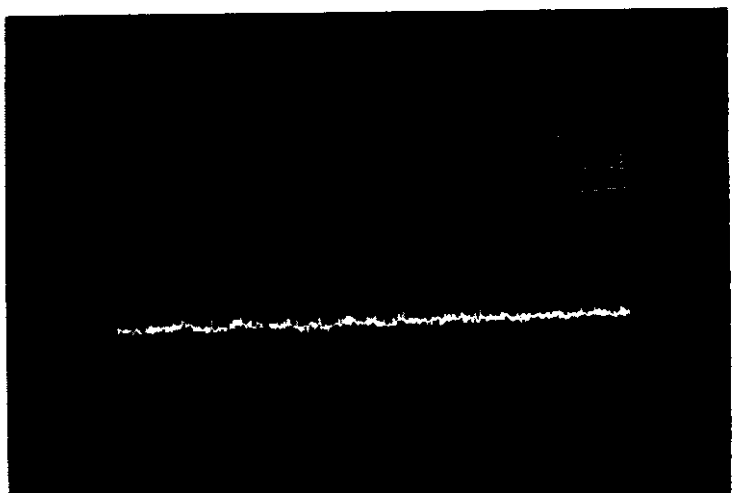
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Short-
Medium Pulse



Medium Pulse



Medium-
Long Pulse

TEST #7

Frequency Band: 4.5～8.5 GHz

Log Ref. Level: 0 dBm

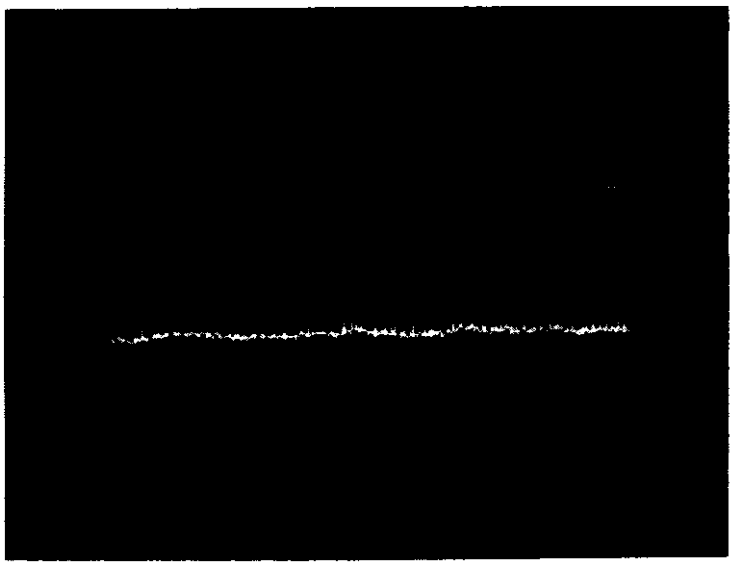
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

Long Pulse

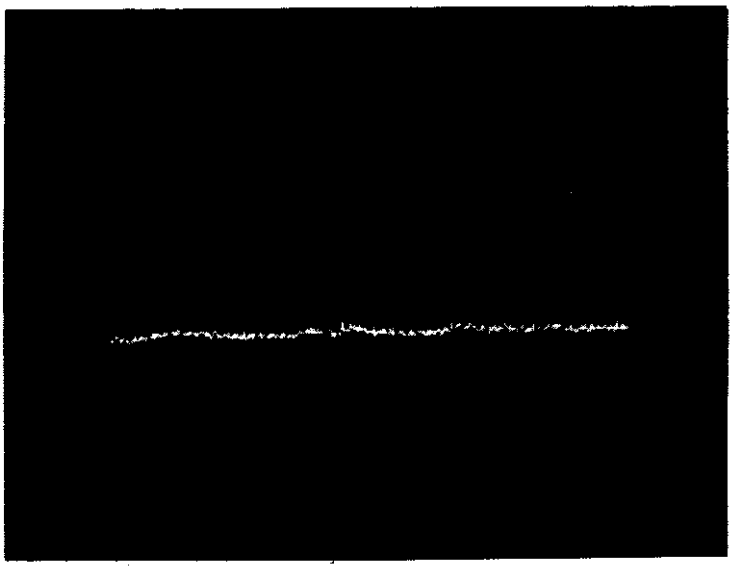
TEST #8

Frequency Band: 8.5～12.5 GHz Log Ref. Level: 0 dBm

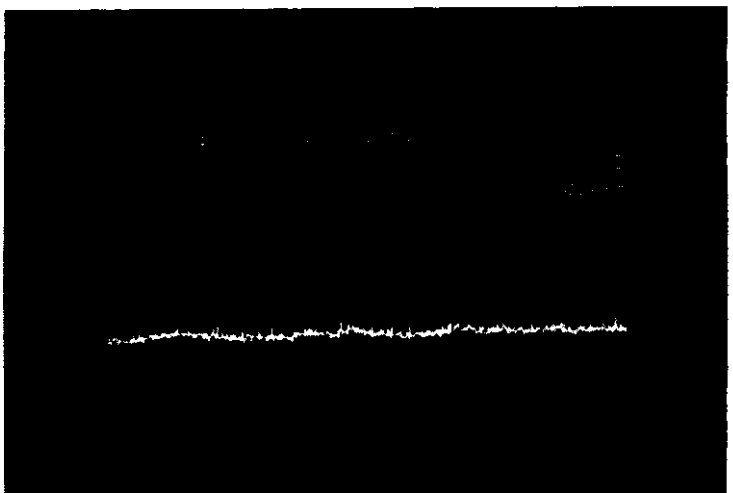
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Ambient



Stand-By

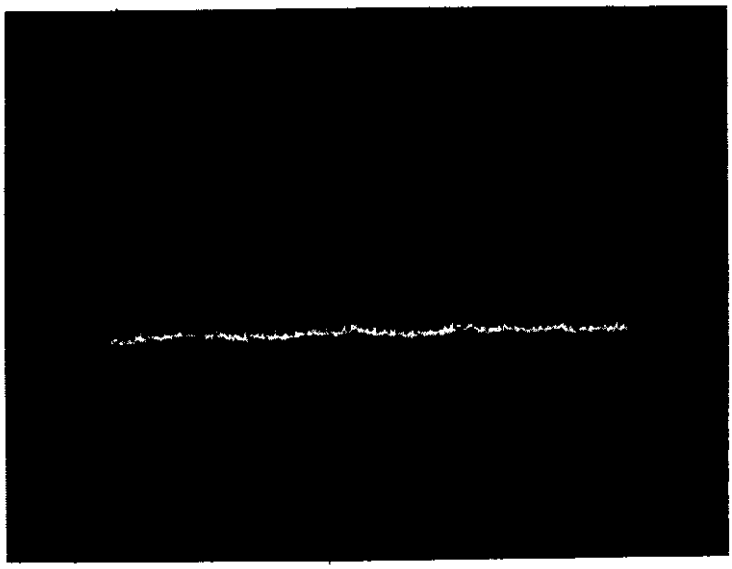


Short Pulse

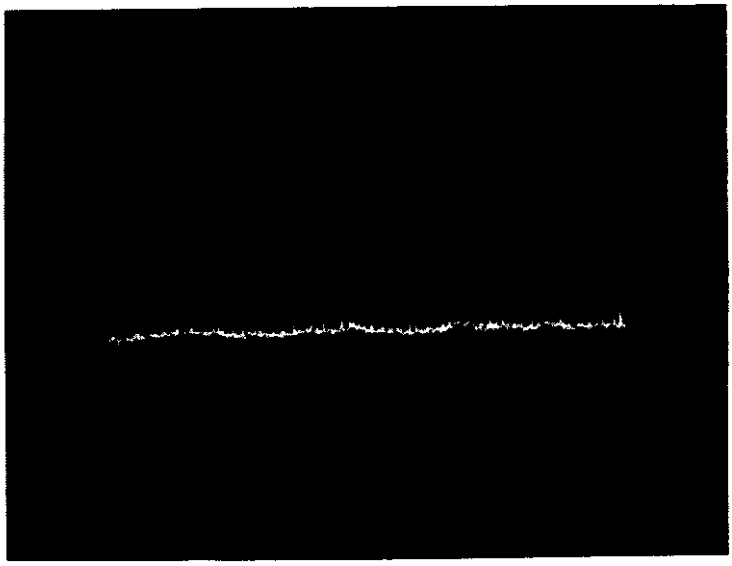
TEST #8

Frequency Band: 8.5～12.5 GHz Log Ref. Level: 0 dBm

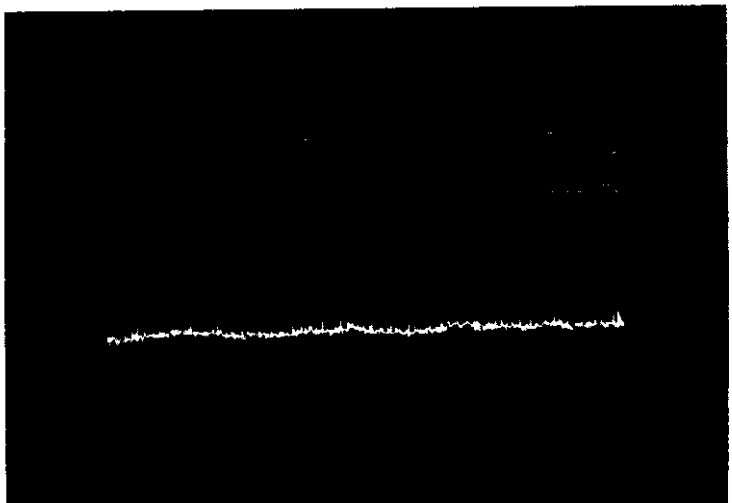
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Short-Medium Pulse



Medium Pulse

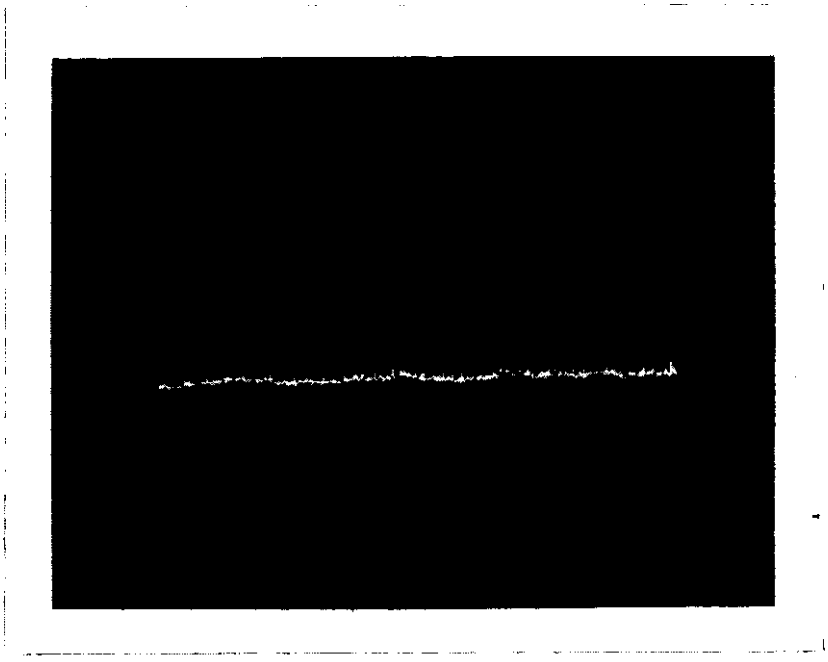


Medium-Long Pulse

TEST #8

Frequency Band: 8.5～12.5 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

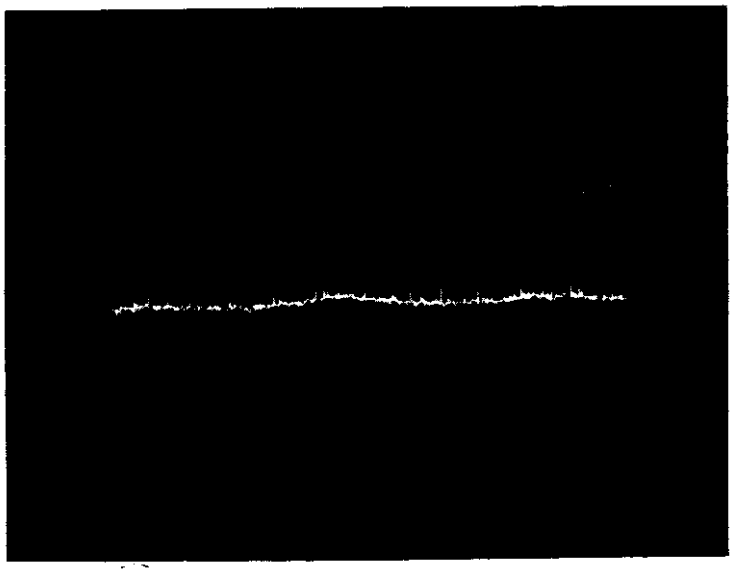


Long Pulse

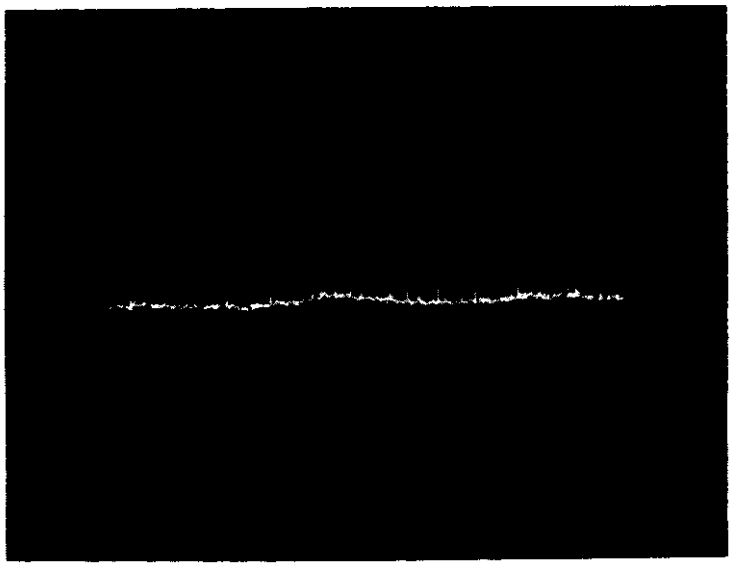
TEST #9

Frequency Band: 12～16 GHz Log Ref. Level: 0 dBm

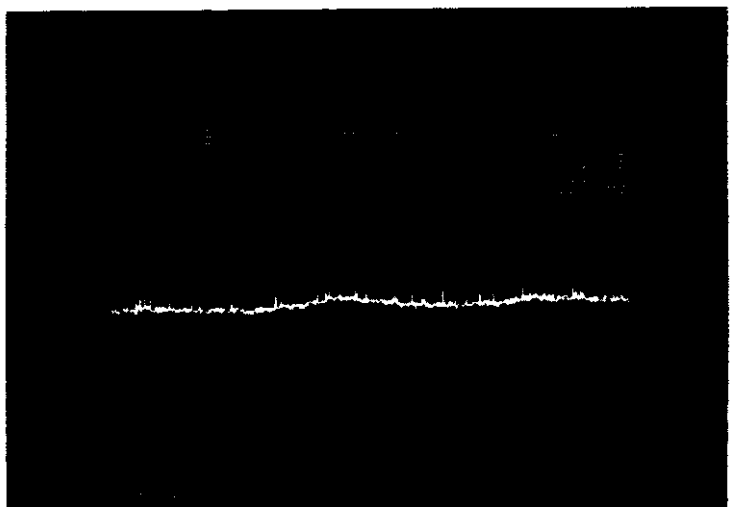
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Ambient



Stand-By

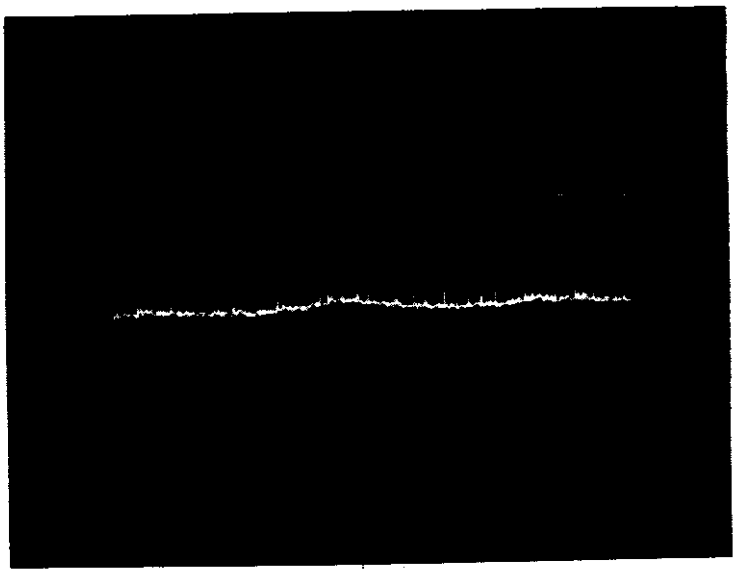


Short Pulse

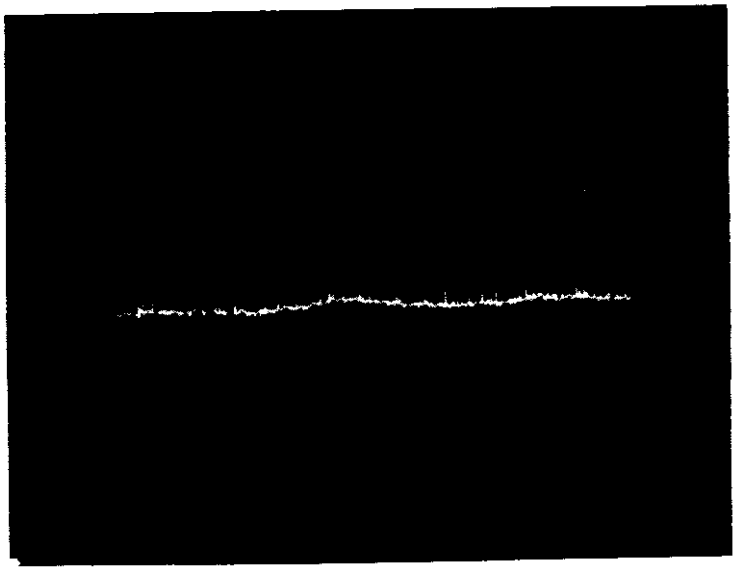
TEST #9

Frequency Band: 12～16 GHz Log Ref. Level: 0 dBm

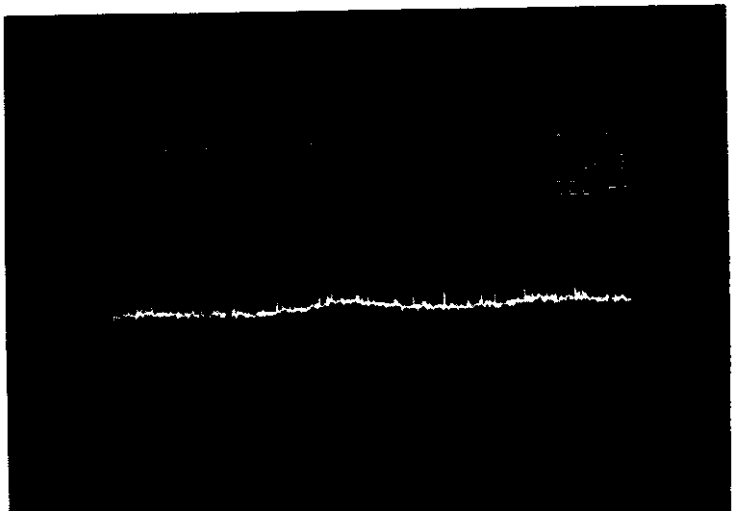
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Short-Medium Pulse



Medium Pulse



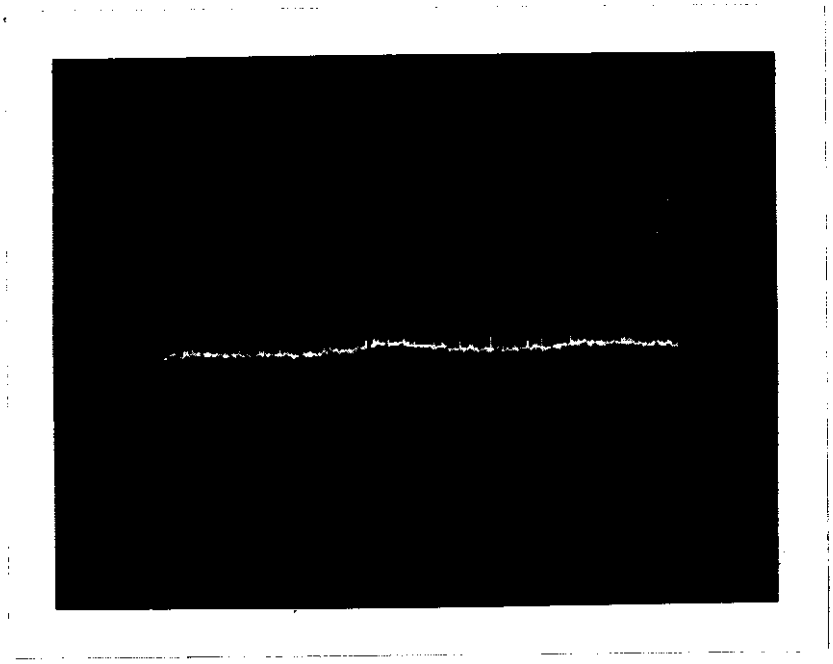
Medium-Long Pulse

TEST #9

Frequency Band: 12～16 GHz

Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



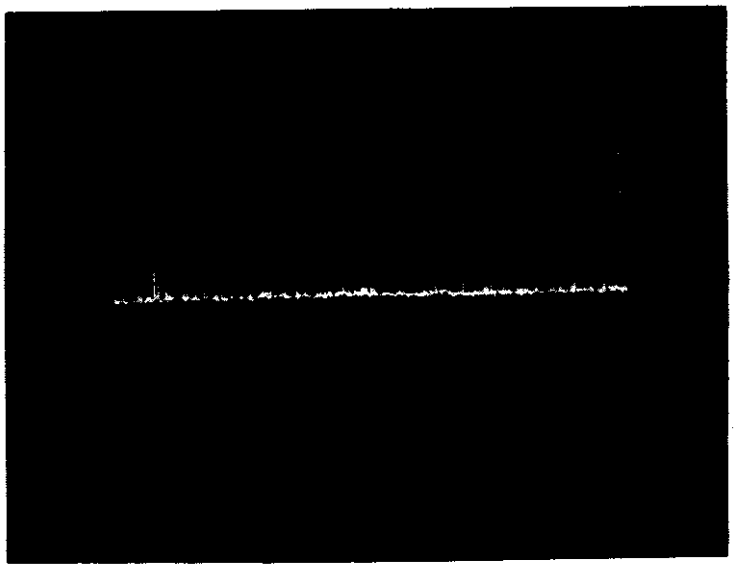
Long Pulse

TEST #10

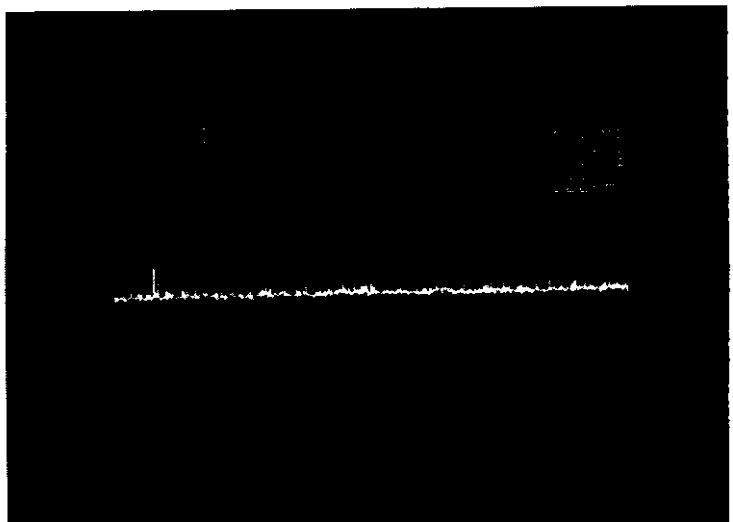
Frequency Band: 15～19 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

Ambient



Stand-By

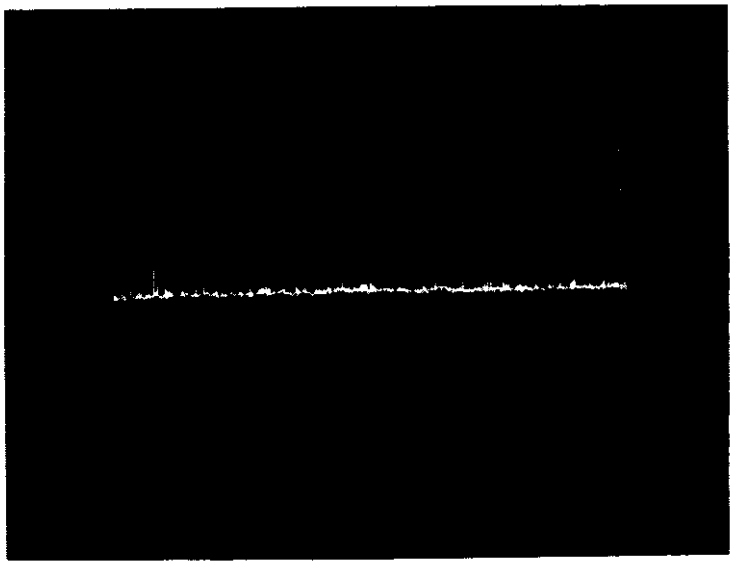


Short Pulse

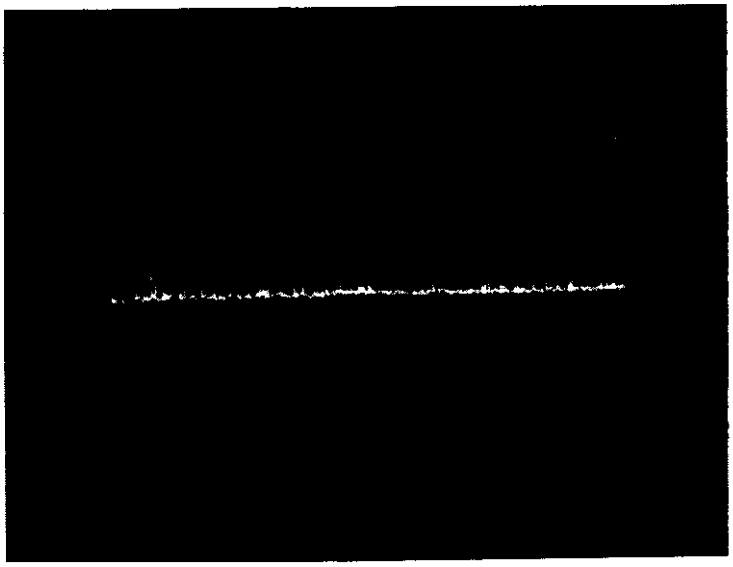
TEST #10

Frequency Band: 15～19 GHz Log Ref. Level: 0 dBm

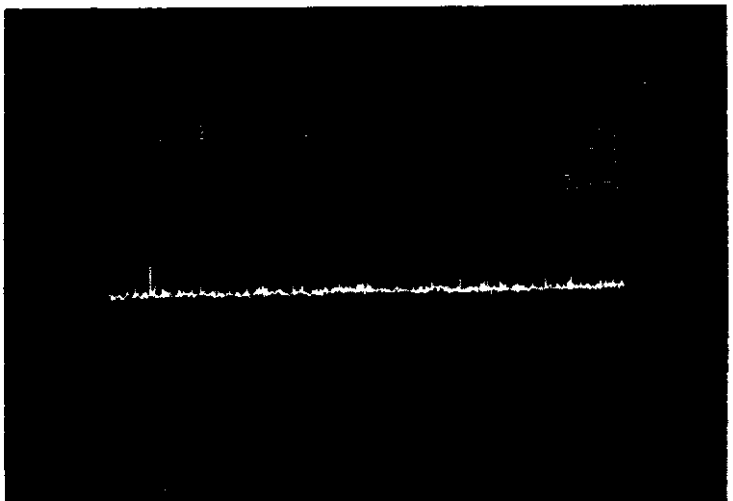
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Short-Medium Pulse



Medium Pulse



Medium-Long Pulse

TEST #10

Frequency Band: 15～19 GHz

Log Ref. Level: 0 dBm

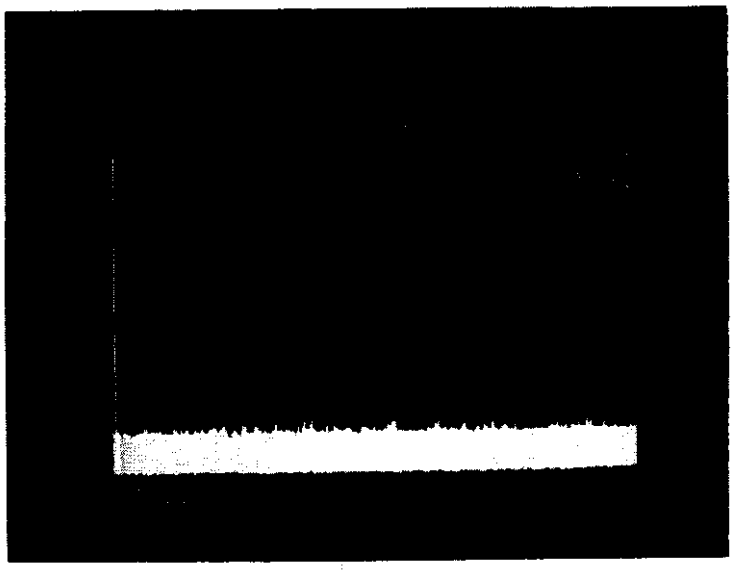
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

Long Pulse

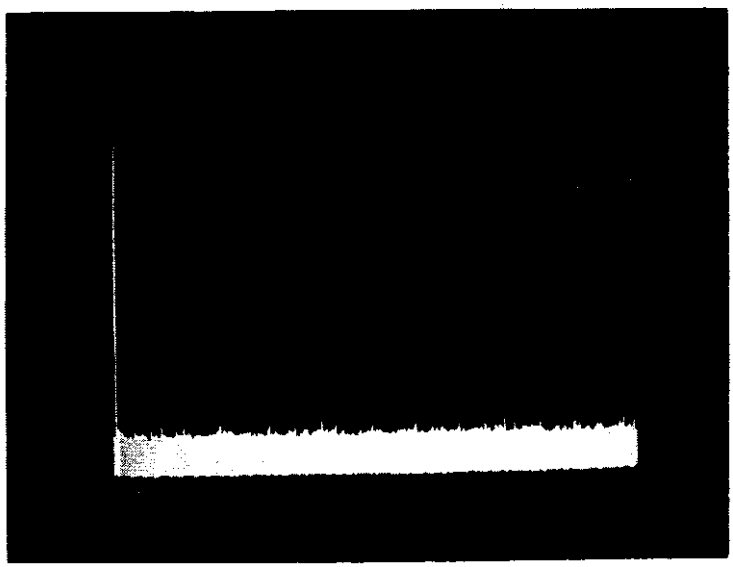
TEST #11

Frequency Band: 12.4～28 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Ambient



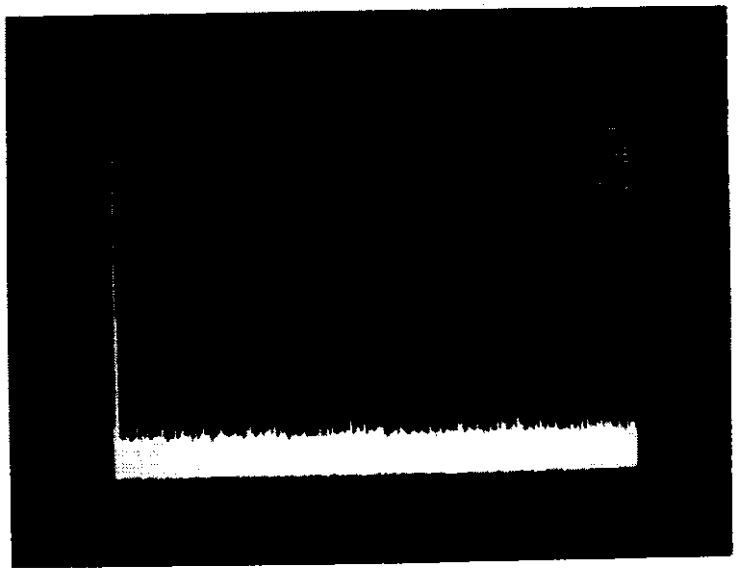
Stand-By

Short Pulse

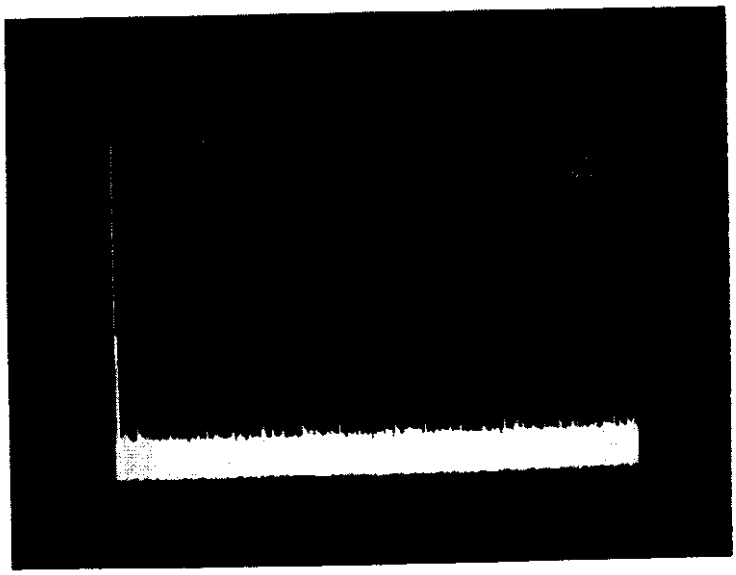
TEST #11

Frequency Band: 12.4～28 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Short-Medium Pulse



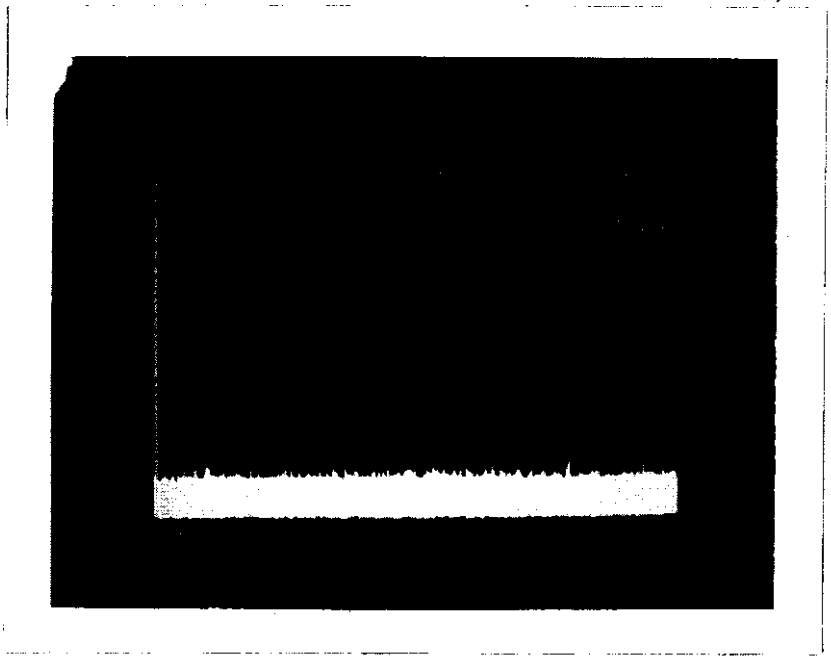
Medium Pulse

Medium-Long Pulse

TEST #11

Frequency Band: 12.4～28 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

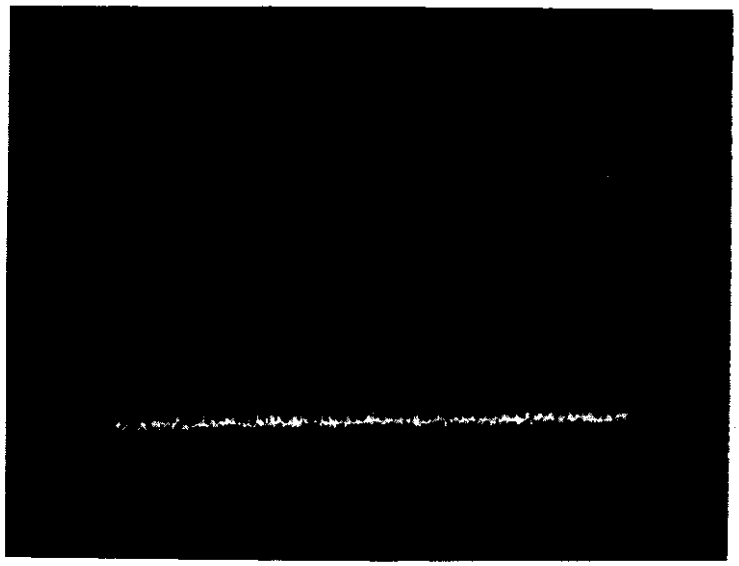


Long Pulse

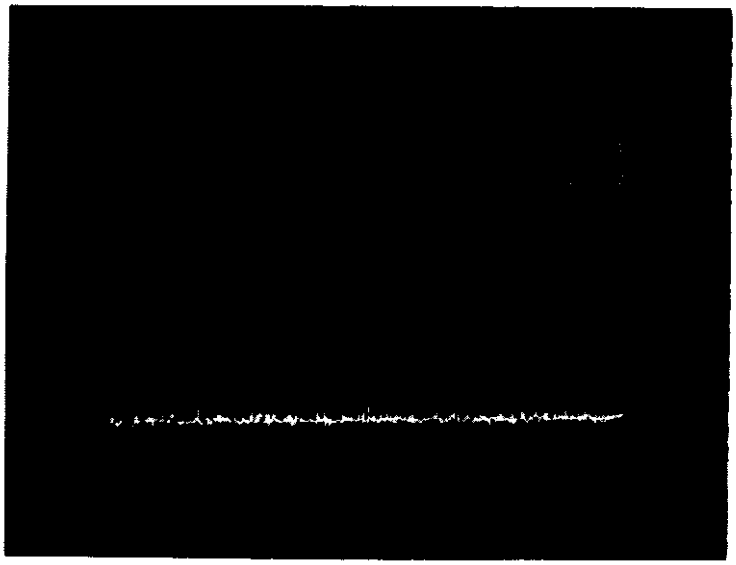
TEST #12

Frequency Band: 25～29 GHz Log Ref. Level: 0 dBm

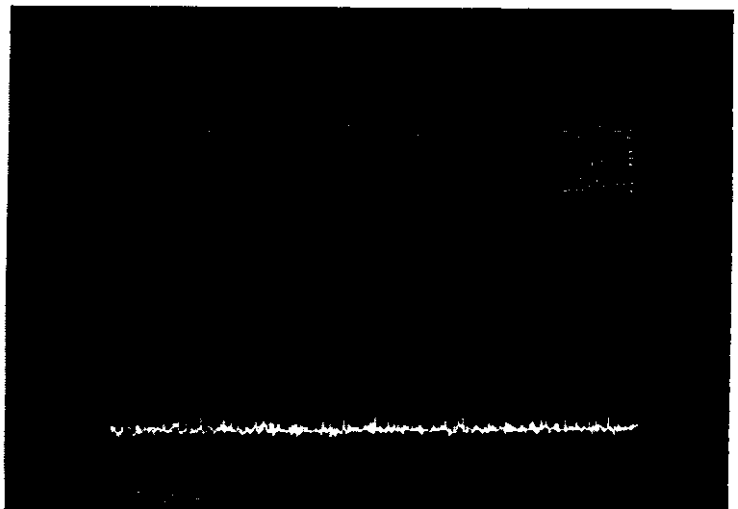
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Ambient



Stand-By

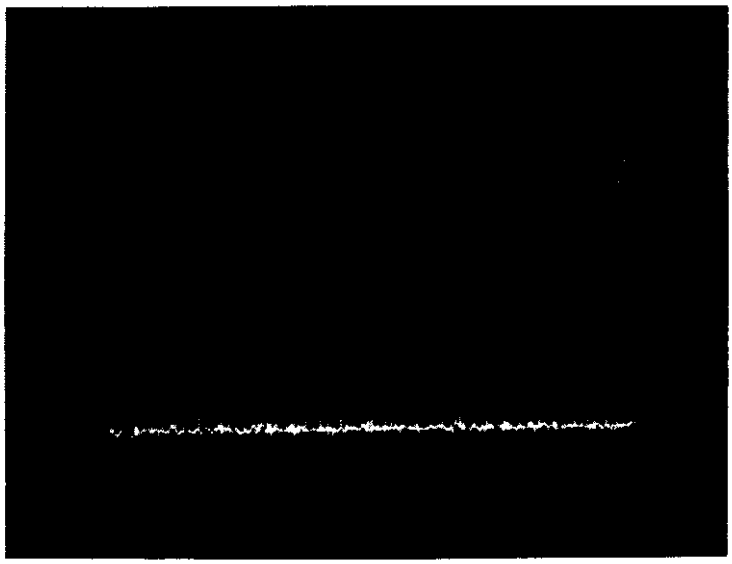


Short Pulse

TEST #12

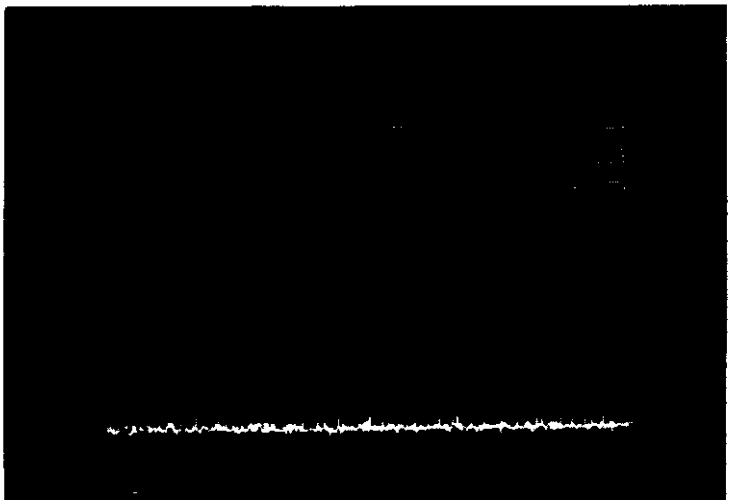
Frequency Band: 25～29 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Short-Medium Pulse

Medium Pulse

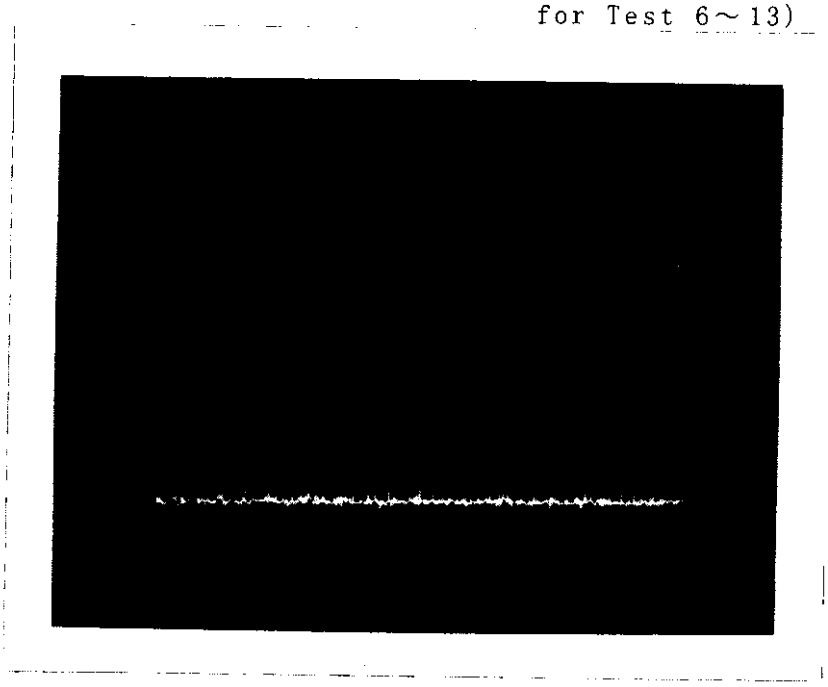


Medium-Long Pulse

TEST #12

Frequency Band: 25～29 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)

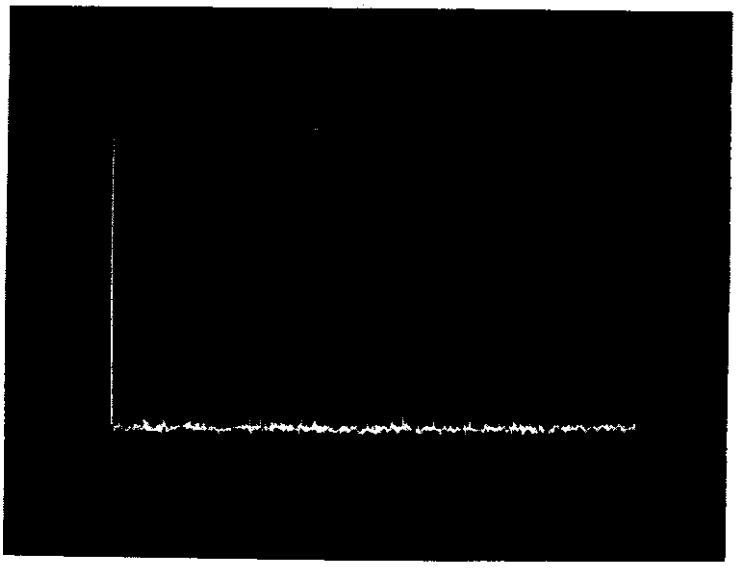


Long Pulse

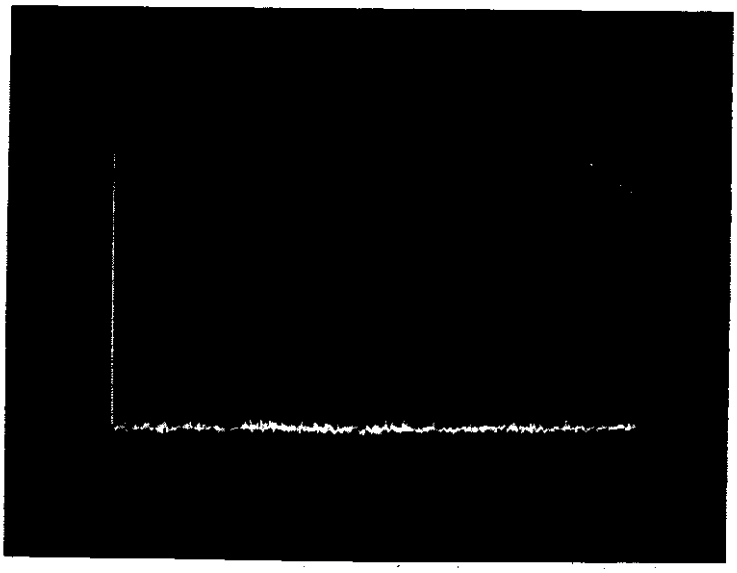
TEST #13

Frequency Band: 28～60 GHz Log Ref. Level: 0 dBm

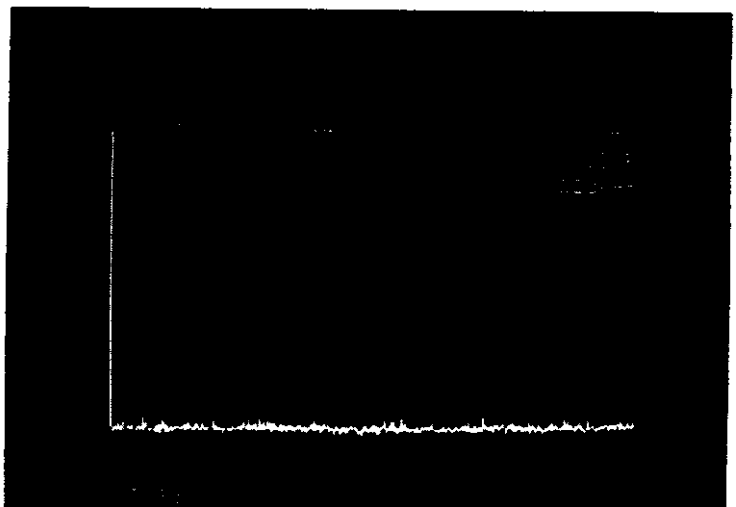
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Ambient



Stand-By

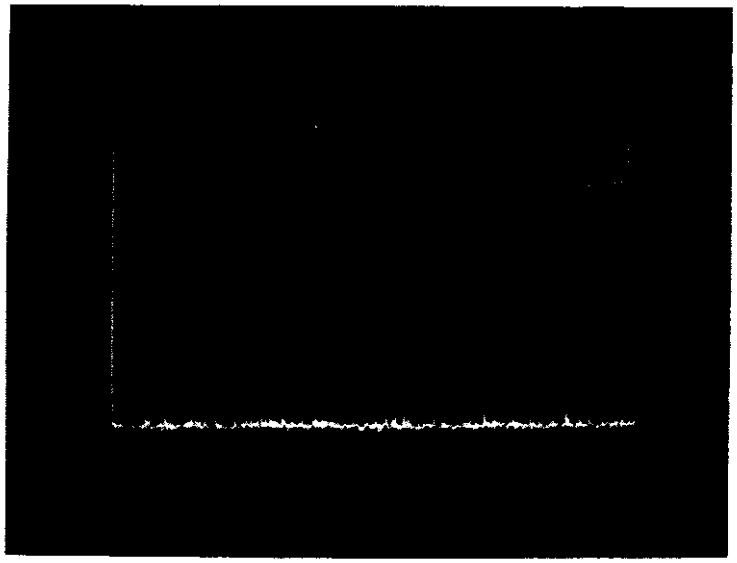


Short Pulse

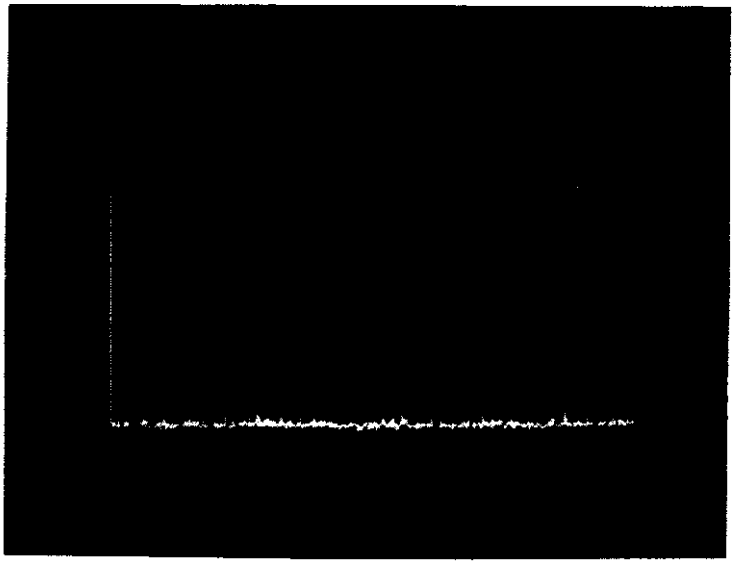
TEST #13

Frequency Band: 28～60 GHz Log Ref. Level: 0 dBm

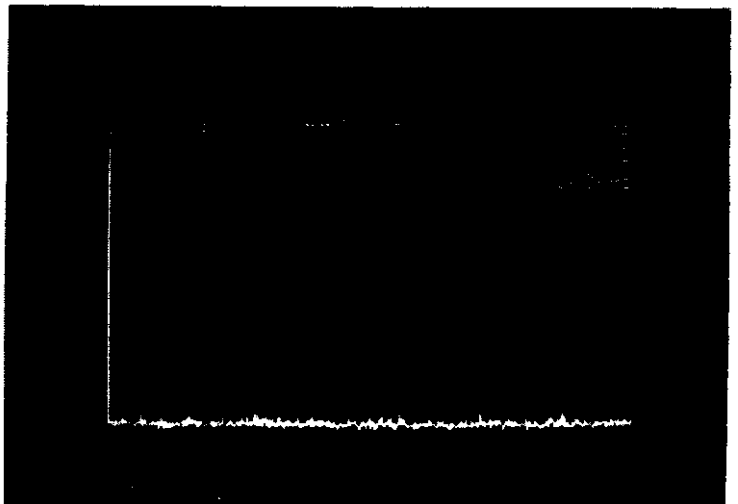
Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Short-
Medium Pulse



Medium Pulse

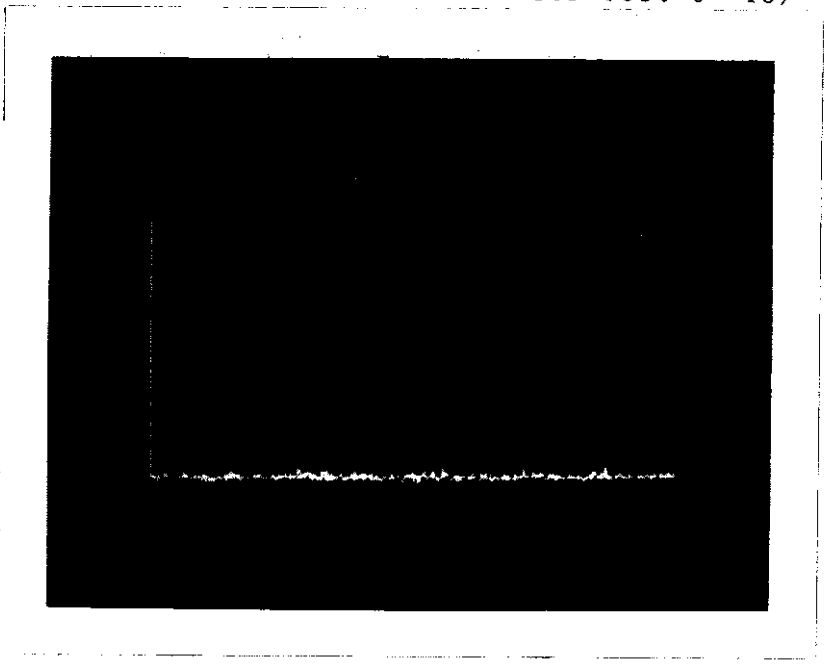


Medium-
Long Pulse

TEST #13

Frequency Band: 28～60 GHz Log Ref. Level: 0 dBm

Maximum Sprious Signal Observed: (See Calibration Procedure for Test 6～13)



Long Pulse

·CKEJMA3925

NAME OF TEST: RECEIVER RADIATED EMISSIONS

PARAGRAPHS:

15.109: RADIATION INTERFERENCE LIMITS
15.231(b): FIELD STRENGTH OF EMISSIONS FROM INTENTIONAL RADIATORS
15.33: FREQUENCY RANGE OF RADIATED MEASUREMENTS
80.217: SUPPRESSION OF INTERFERENCE ABOARD SHIPS

GUIDE: SEE MEASUREMENT PROCEDURE BELOW

TEST CONDITIONS: STANDARD TEMPERATURE & HUMIDITY

TEST EQUIPMENT: AS PER ATTACHED PAGE

SEARCH ANTENNAS:

1GHz - 18 GHz: LOGPERIODIC ANTENNA 94612-1
18GHz - 26.5 GHz: HORN ANTENNA 94626-1
26.5GHz - 40 GHz: HORN ANTENNA 94627-1

MEASUREMENT PROCEDURE

1. At first, bench tests were performed to locate the spurious emissions at the antenn a terminals.

2. In the field, tests were conducted over the range shown. The test sample was set u p on a wooden turntable above ground, and at a distance of three meters from the a ntenna connected to the Spectrum Analyzer.

3. In order to obtain the maximum response at each frequency, the turntable was rotate d, and the search antennas were raised and lowered. The E.U.T. was also adjusted for maximum response. Tests conducted in Horizontal & Vertical polarization modes.

4. The field strength was calculated from:

$$E \cdot V/m \ @ \ 3 \ m = \mathrm{LOG10}^{-1}\frac{(dBm + 107 + A.F. + C.L.)}{20}$$

5. MEASUREMENT RESULTS: ATTACHED FOR WORST CASE CONDITIONS.

·CKEJMA3925

MEASUREMENT RESULTS: RECEIVER RADIATED EMISSIONS

SPECTRUM SEARCHED	= 0 to 10 x Fc
WORST CASE	= V
LIMITS	= 15.109(a)
RESTRICTED BAND MEASUREMENTS	= 15.205
ALL OTHER EMISSIONS	= ≥ 20 dB BELOW LIMIT

TESTS WERE CONDUCTED WITH:

a. All controls and switches operated.
b. Half-wave dipole antenna or manufacturer/applicant supplied antenn a.

SAMPLE CALCULATION:

EMISSION FREQUENCY, MHz =Less then noise level

$$\text{LEVEL} = \text{LOG10-1}\ \frac{(-66 + 107 + 45)}{20}$$

LEVEL, ·V/m @ 3 m = 19952.6
LEVEL, ·V/m @ 1 N.M. = 32.3

RESULTS

RADIATED RECEIVER SPURIUS EMISSIONS

All other emissions in the range specified by rule 15.33 (b) were that 20dB below the limits of 15.109(a).

TUNED, MHz	EMISSION, MHz	PEAK	RBW, kHz	VBW, kHz	METER, dBμV	A.F,C.L dB	μV/m @3m	μV/m @1N.M.
9405	9384	P	30.0	30.0	36.1	45	19952.6	32.3