FCC RADIO TEST REPORT

Applicant	:	Zone24x7 Incorporated.
Address	:	3150 Almaden Expressway, Suite 234, San Jose, California 95118, USA
Equipment	:	IoT Gateway module
Model No.	:	ZN1310
Trade Name	:	Zone24x7
FCC ID	:	2ATL9ZN1310

I HEREBY CERTIFY THAT :

The sample was received on May. 23, 2019 and the testing was carried out on Jun. 22, 2019 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

Contents

1. Summary of Test Procedure and Test Results 4
1.1 Applicable Standards 4
2. Test Configuration of Equipment under Test 5
2.1 Feature of Equipment under Test 5
2.2 Carrier Frequency of Channels 5
2.3 Test Mode and Test Software 6
2.4 Description of Test System 6
2.5 General Information of Test 7
2.6 Measurement Uncertainty 7
3. Test Equipment and Ancillaries Used for Tests 8
4. Antenna Requirements 9
4.1 Standard Applicable 9
4.2 Antenna Construction and Directional Gain 9
5. Test of AC Power Line Conducted Emission 10
5.1 Test Limit 10
5.2 Test Procedures 10
5.3 Typical Test Setup 11
5.4 Test Result and Data 12
5.5 Test Photographs 14
6. Test of Spurious Emission (Radiated) 15
6.1 Test Limit 15
6.2 Test Procedures 15
6.3 Typical Test Setup 17
6.4 Test Result and Data 18
6.5 Test Result and Data (9kHz ~ 30MHz) 24
6.6 Test Result and Data (30MHz ~ 1GHz) 24
6.7 Test Result and Data (1GHz ~ 10GHz) 30
6.8 Restricted Bands of Operation 36
6.9 20dB Bandwidth Measurement Data 37
6.10 Test Photographs (30MHz ~ 1GHz) 39
6.11 Test Photographs (1GHz ~ 10GHz) 40

History of this test report

Report No.	Issue Date	Description
TEFC1902109	Jun. 24, 2019	Original

1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.4:2014

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart C §15.247

FCC Rule	. Description of Test	Result
15.203	. Antenna Requirement	PASS
15.207	. AC Power Line Conducted Emission	N/A
15.249(a)	. Radiated Spurious Emission	PASS

*The principle of judgment is made according to the laboratory's reporting control and measurement uncertainty standard procedures.

*This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report(TEFV1902109).

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Frequency Range	902-928MHz
Modulation Type	GFSK
Antenna Type	Whip Antenna
Antenna Gain	3dBi

Note:
For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.2 Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
***0**	***902.2**	14	905.0	28	907.8	42	910.6
1	902.4	15	905.2	29	908.0	43	910.8
2	902.6	16	905.4	30	908.2	44	911.0
3	902.8	17	905.6	31	908.4	45	911.2
4	903.0	18	905.8	32	908.6	46	911.4
5	903.2	19	906.0	33	908.8	47	911.6
6	903.4	20	906.2	34	909.0	48	911.8
7	903.6	21	906.4	35	909.2	49	912.0
8	903.8	22	906.6	36	909.4	50	912.2
9	904.0	23	906.8	37	909.6	51	912.4
10	904.2	24	907.0	38	909.8	52	912.6
11	904.4	25	907.2	39	910.0	53	912.8
12	904.6	26	907.4	40	910.2	54	913.0
13	904.8	27	907.6	41	910.4	55	913.2

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
56	913.4	70	916.2	84	919.0	98	921.8
57	913.6	71	916.4	85	919.2	99	922.0
58	913.8	72	916.6	86	919.4	100	922.2
59	914.0	73	916.8	87	919.6	101	922.4
60	914.2	74	917.0	88	919.8	102	922.6
61	914.4	75	917.2	89	920.0	103	922.8
62	914.6	76	917.4	90	920.2	104	923.0
63	914.8	77	917.6	91	920.4	105	923.2
***64**	***915.0**	78	917.8	92	920.6	106	923.4
65	915.2	79	918.0	93	920.8	107	923.6
66	915.4	80	918.2	94	921.0	108	923.8
67	915.6	81	918.4	95	921.2	109	924.0
68	915.8	82	918.6	96	921.4	110	924.2
69	916.0	83	918.8	97	921.6	111	924.4

Channel	Frequency (MHz)	Channel	Frequency (MHz)
112	924.6	126	927.4
113	924.8	127	927.6
114	925.0	***128**	***927.8**
115	925.2	--	--
116	925.4	--	--
117	925.6	--	--
118	925.8	--	--
119	926.0	--	--
120	926.2	--	--
121	926.4	--	--
122	926.6	--	--
123	926.8	--	--
124	927.0	--	--
125	927.2	--	--

Note: Channels remarked * are selected to perform test.

2.3 Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.10.

b. The complete test system included Notebook and EUT for RF test.

c. An executive program, ” SmartRF_Studio Ver 2.13.1” under win7 was executed to transmit and receive data via Bluetooth.

d. The following test modes were performed for the test:
Test Mode 1. GFSK (1Mbps)

2.4 Description of Test System

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
USB cable	N/A	N/A	1m / NS	N/A
AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
USB cable	N/A	N/A	1m / NS	N/A

2.5 General Information of Test

Test Site	**Cerpass Technology Corporation Test Laboratory** Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582	
	FCC	TW1079, TW1061,TW1439
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication test C-4663 for Conducted emission test R-4399, R-4218 for Radiated emission test G-10812, G-10813 for radiated disturbance above 1GHz
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 25,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

Test Item	Test Site	Tested Date	Environmental Conditions	Tested By
Radiated Emissions	3M02-NK	2019/06/22	23℃ / 51%	Spree Yeh
RF Conduction	CON01-NK	2019/06/20	24℃ / 46%	Spree Yeh

2.6 Measurement Uncertainty

Measurement Item	Uncertainty
Radiated Spurious Emission(9KHz~30MHz)	±3.405dB
Radiated Spurious Emission(30MHz~1GHz)	±5.326dB
Radiated Spurious Emission(1GHz~25GHz)	±5.918dB
Conducted Spurious Emission	±2.156dB
6dB Bandwidth	±4.401%
20dB Bandwidth	±4.40%
Occupied Bandwidth	±4.41%
Peak Output Power(Conducted Power Meter)	±1.31dB
Dwell Time	±0.11%
Power Spectral Density	±2.146dB
Duty Cycle	±0.17%

3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2018/09/17	2019/09/16
Active Loop Antenna	EMCO	6507	40855	2019/05/24	2020/05/23
Horn Antenna	EMCO	3115	31589	2019/04/01	2020/03/31
Horn Anrenna	EMCO	3116	31974	2018/09/07	2019/09/06
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2019/05/14	2020/05/13
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100219	2018/07/03	2019/07/02
Preamplifier	EM Electronics corp.	EM330	60660	2019/03/11	2020/03/10
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2018/09/18	2019/09/17
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2019/04/07	2020/04/06
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1316	2018/09/12	2019/09/11
Cable-0.5m(1G-40G)	Rapidtek	40GHZ 50CM	38MS-38MS50314	2019/04/09	2020/04/08
Cable-3m(1G-40G)	Rapidtek	40GHZ 300CM	38MS-38MS300314	2019/04/09	2020/04/08
Cable-8m(1G-40G)	Rapidtek	40GHZ 800CM	38MS-38MS800314	2019/04/10	2020/04/09
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA

Test Item	RF Conducted				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100219	2018/07/03	2019/07/02
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2019/04/07	2020/04/06
Attenuator	KEYSIGHT	8491B	MY39250705	2018/09/04	2019/09/03
TEMP & HUMI CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2018/08/30	2019/08/29
Power Sensor	Anritsu	MA2411B	1207295	2019/04/11	2020/04/10

4. Antenna Requirements

4.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

4.2 Antenna Construction and Directional Gain

Antenna Type	Whip Antenna
Antenna Gain	3dBi

5. Test of AC Power Line Conducted Emission

5.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.4-2014. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

5.2 Test Procedures

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.

b. Connect EUT to the power mains through a line impedance stabilization network (LISN).

c. All the support units are connecting to the other LISN.

d. The LISN provides 50 ohm coupling impedance for the measuring instrument.

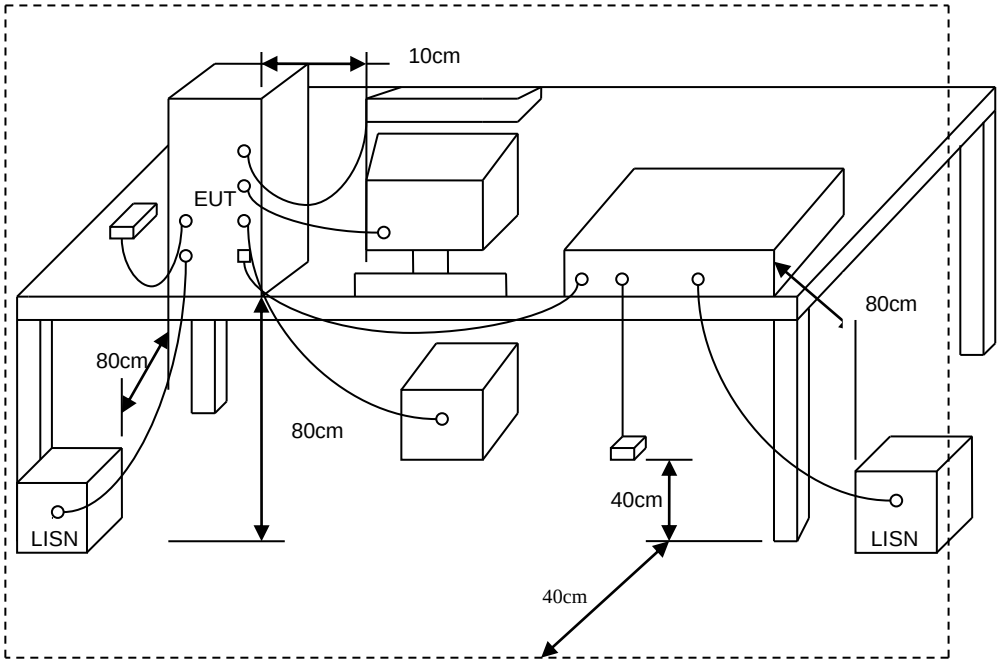
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.

f. Both sides of AC line were checked for maximum conducted interference.

g. The frequency range from 150 kHz to 30 MHz was searched.

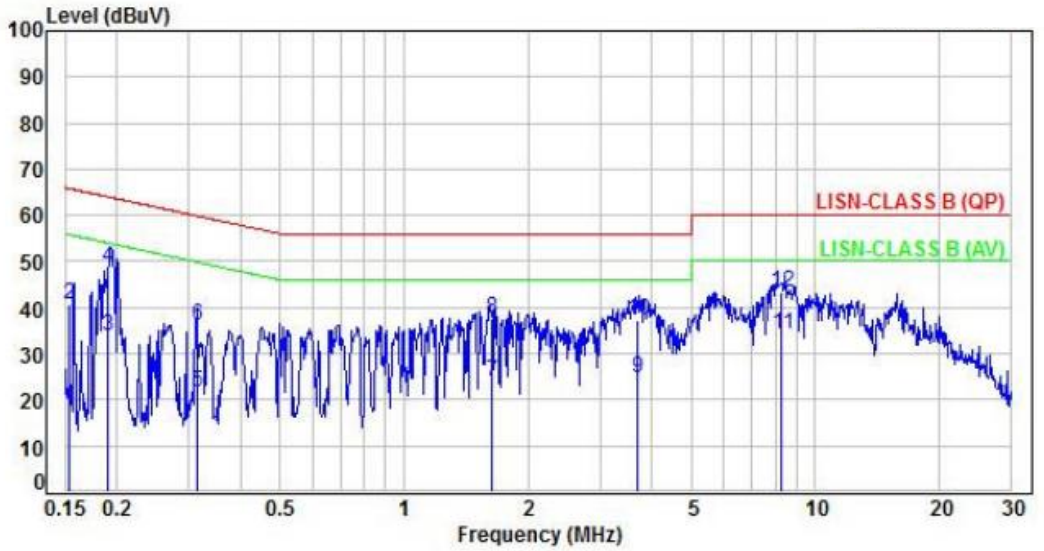
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.3 Typical Test Setup



5.4 Test Result and Data

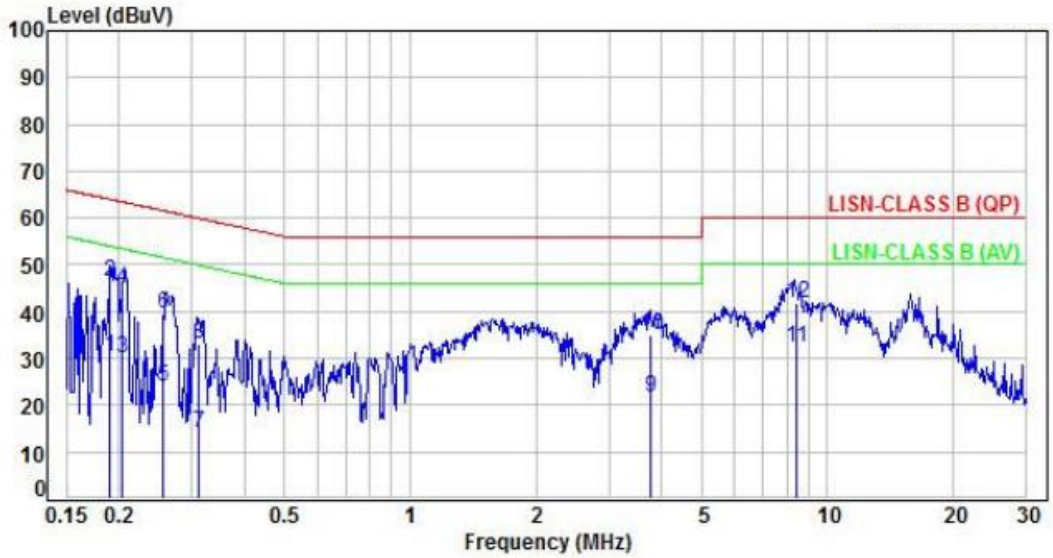
Power :	DC 5V from system	Pol/Phase :	LINE
Test Mode :	Mode 1	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.92	8.62	18.54	55.85	-37.31	Average	P
2	0.15	9.92	30.58	40.50	65.85	-25.35	QP	P
3	0.19	9.92	24.10	34.02	53.99	-19.97	Average	P
4	0.19	9.92	38.70	48.62	63.99	-15.37	QP	P
5	0.31	9.93	11.91	21.84	49.90	-28.06	Average	P
6	0.31	9.93	26.17	36.10	59.90	-23.80	QP	P
7	1.64	9.99	13.89	23.88	46.00	-22.12	Average	P
8	1.64	9.99	27.75	37.74	56.00	-18.26	QP	P
9	3.69	10.09	14.78	24.87	46.00	-21.13	Average	P
10	3.69	10.09	27.01	37.10	56.00	-18.90	QP	P
11	8.28	10.23	24.10	34.33	50.00	-15.67	Average	P
12	8.28	10.23	33.15	43.38	60.00	-16.62	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

Power :	DC 5V from system	Pol/Phase :	NEUTRAL
Test Mode :	Mode 1	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.19	9.95	20.62	30.57	54.04	-23.47	Average	P
2	0.19	9.95	36.51	46.46	64.04	-17.58	QP	P
3	0.20	9.95	20.01	29.96	53.49	-23.53	Average	P
4	0.20	9.95	35.03	44.98	63.49	-18.51	QP	P
5	0.25	9.95	14.12	24.07	51.60	-27.53	Average	P
6	0.25	9.95	29.63	39.58	61.60	-22.02	QP	P
7	0.31	9.95	4.22	14.17	49.92	-35.75	Average	P
8	0.31	9.95	23.01	32.96	59.92	-26.96	QP	P
9	3.78	10.11	11.64	21.75	46.00	-24.25	Average	P
10	3.78	10.11	24.72	34.83	56.00	-21.17	QP	P
11	8.41	10.26	22.03	32.29	50.00	-17.71	Average	P
12	8.41	10.26	31.57	41.83	60.00	-18.17	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

6. Test of Spurious Emission (Radiated)

6.1 Test Limit

the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)	Measurement Distance (meters)
902-928 MHz	50	500	3
2400-2483.5 MHz	50	500	3
5725-5875 MHz	50	500	3
24.0-24.25 GHz	250	2500	3

6.2 Test Procedures

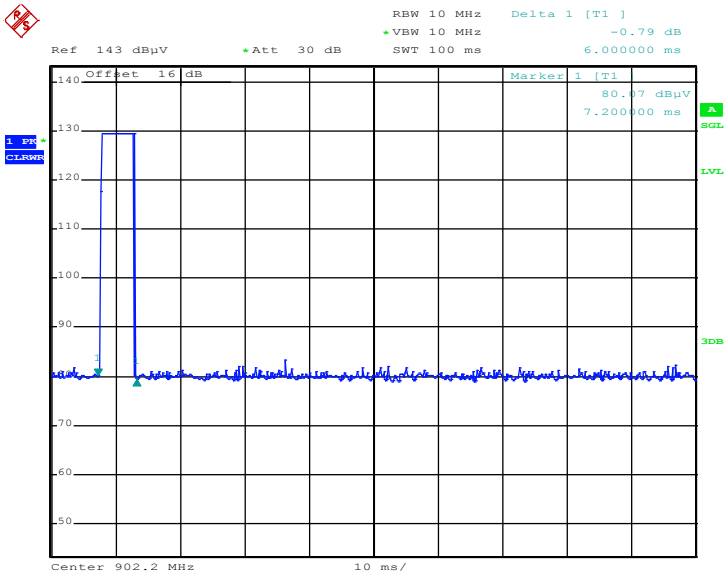
a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

NOTE:

1. The Average value = Peak value + 20log(Duty cycle)
2. Duty Factor = 20log(total duty / period of pulse train)
   = 20log[(Pulse Time) / period of pulse train]
   = 20log[(1 * 6ms) / 100ms]
   = -24.43

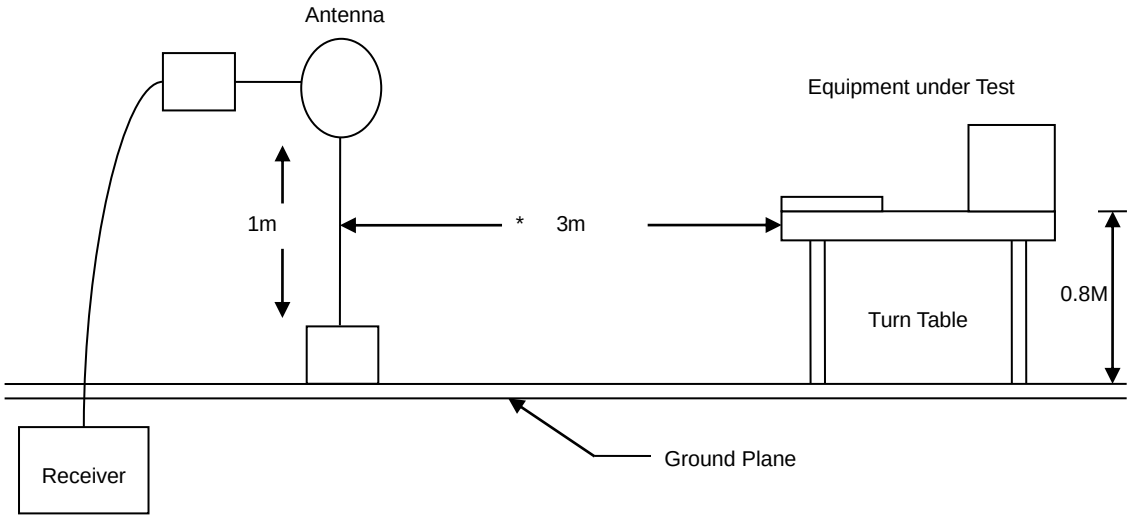
Power :	DC 5V from system		
Test Mode :	Mode 1, 902.2MHz	:	

Period of Pulse Train

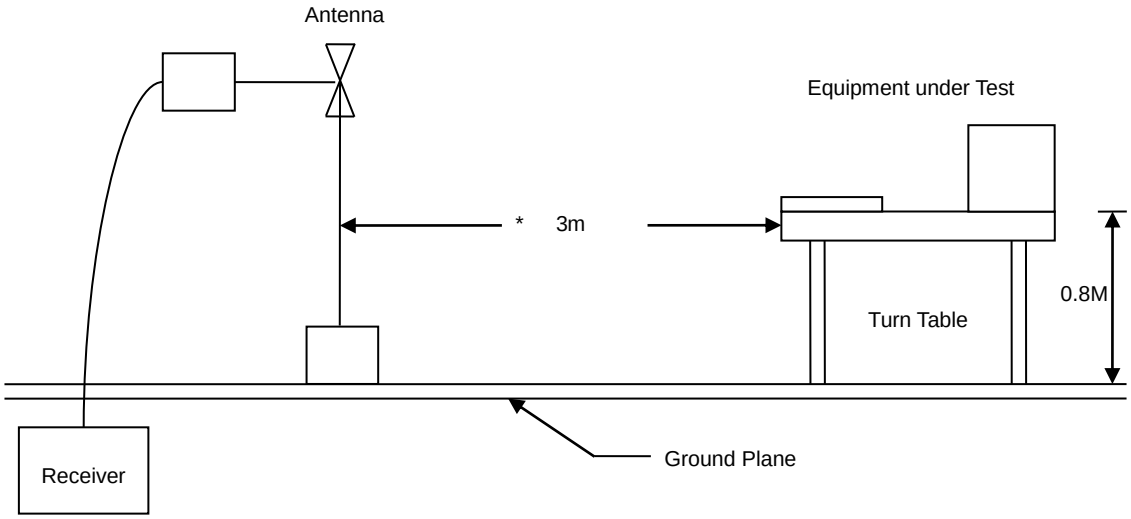


6.3 Typical Test Setup

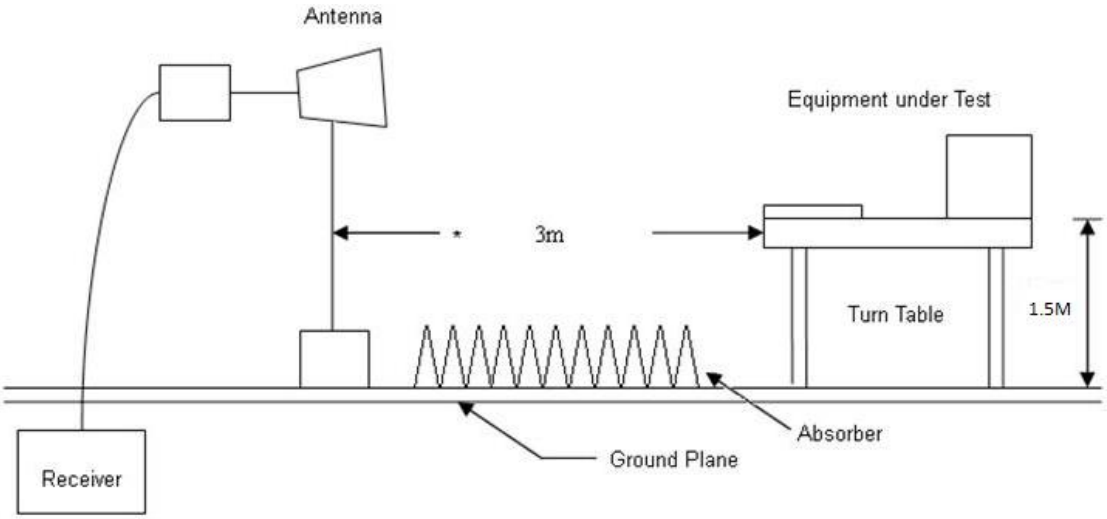
Below 30MHz test setup



30MHz- 1GHz Test Setup



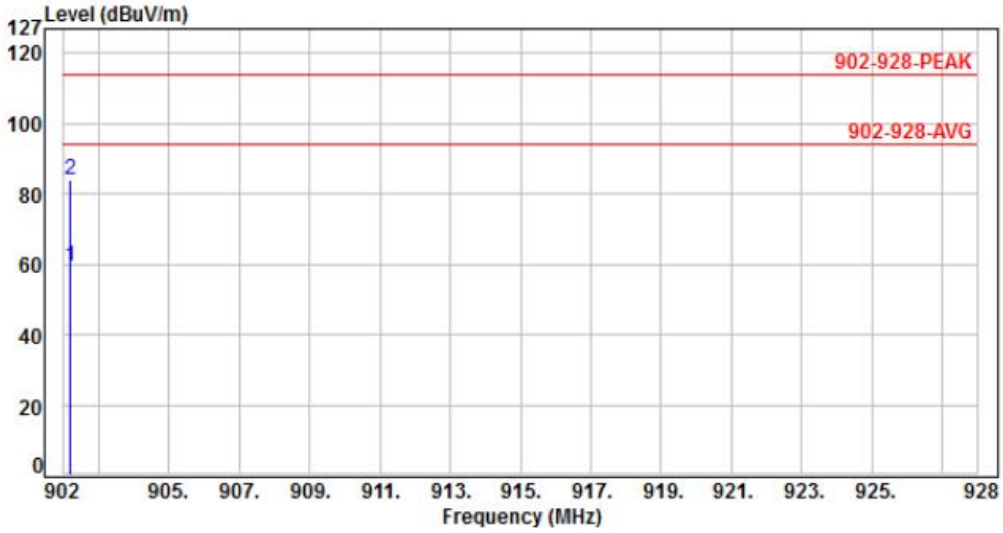
Above 1GHz Test Setup



6.4 Test Result and Data

6.4.1 Test Result of Fundamental Emission

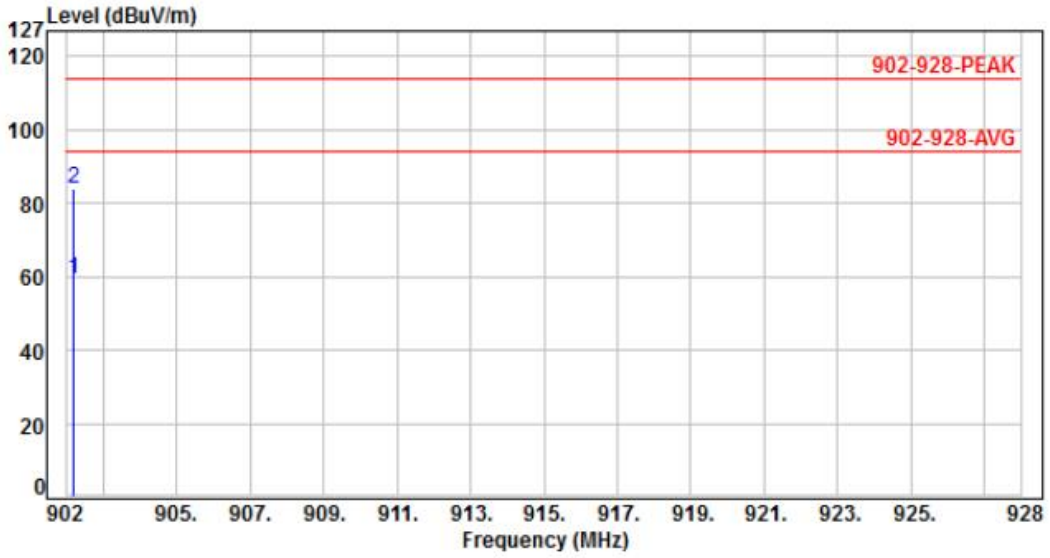
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 902.2MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	902.20	2.68	56.88	59.56	94.00	-34.44	Average	138	88	P
2	902.20	2.68	81.31	83.99	114.00	-30.01	Peak	138	88	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

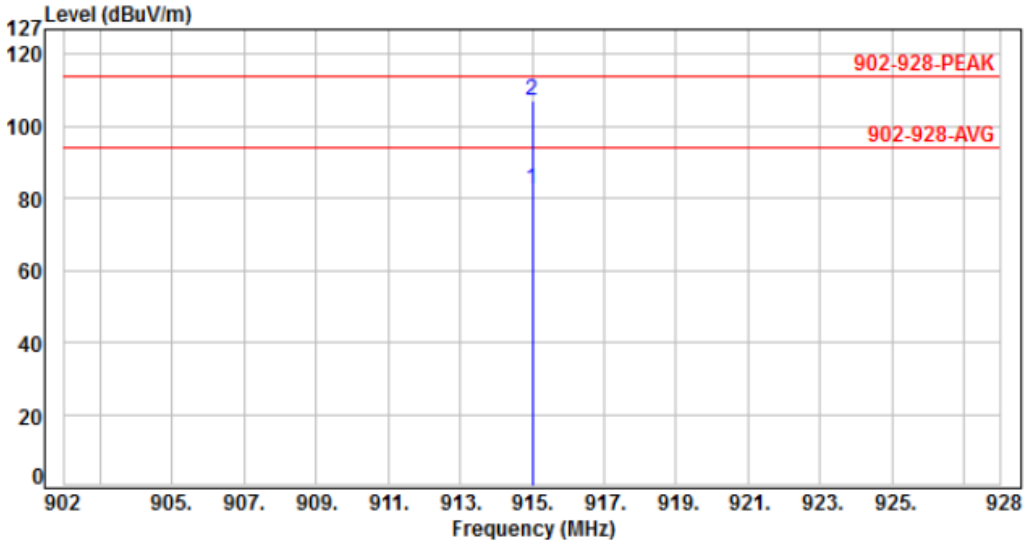
Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 902.2MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	902.20	2.68	56.78	59.46	94.00	-34.54	Average	150	260	P
2	902.20	2.68	81.21	83.89	114.00	-30.11	Peak	150	260	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

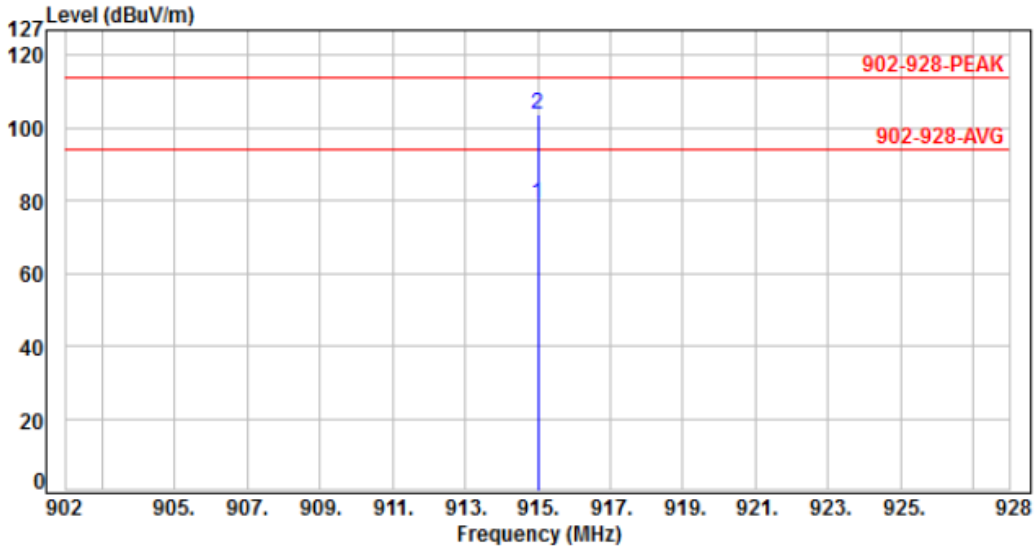
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 915MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	915.00	3.00	79.57	82.57	94.00	-11.43	Average	140	302	P
2	915.00	3.00	104.00	107.00	114.00	-7.00	Peak	140	302	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

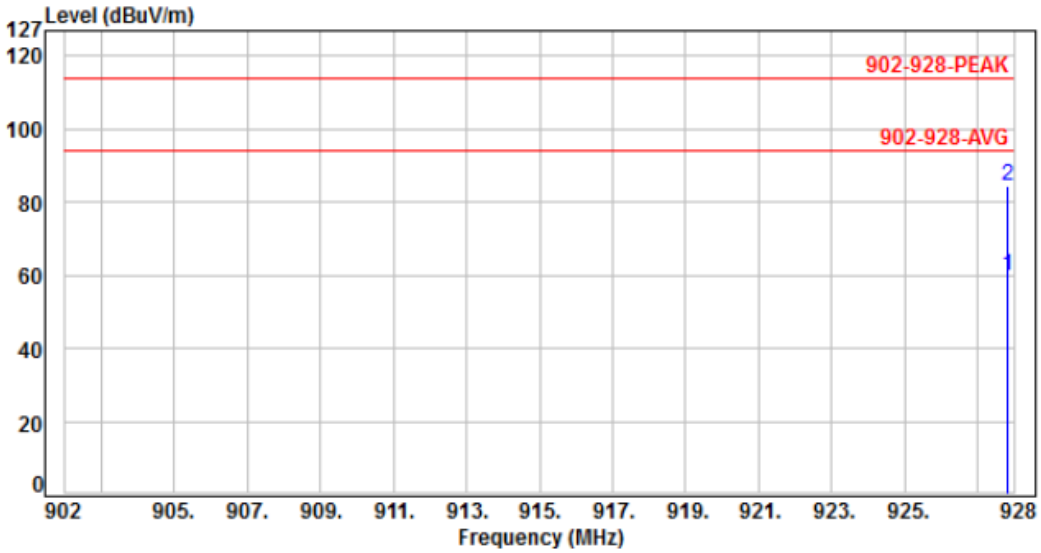
Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 915MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	915.00	3.00	76.27	79.27	94.00	-14.73	Average	168	270	P
2	915.00	3.00	100.70	103.70	114.00	-10.30	Peak	168	270	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

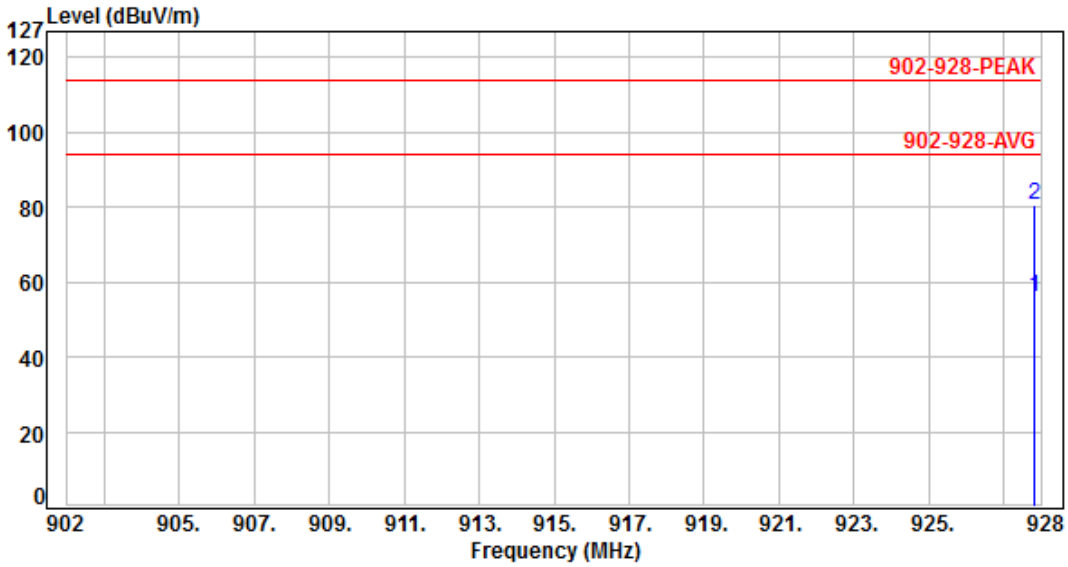
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 927.8MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	927.80	3.32	56.76	60.08	94.00	-33.92	Average	130	300	P
2	927.80	3.32	81.19	84.51	114.00	-29.49	Peak	130	300	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 927.8MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	927.80	3.32	52.76	56.08	94.00	-37.92	Average	167	260	P
2	927.80	3.32	77.19	80.51	114.00	-33.49	Peak	167	260	P

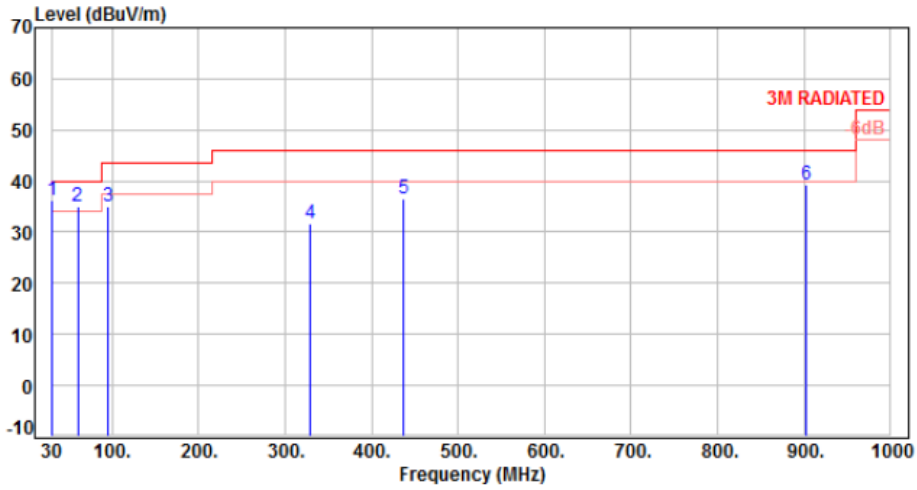
Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

6.5 Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

6.6 Test Result and Data (30MHz ~ 1GHz)

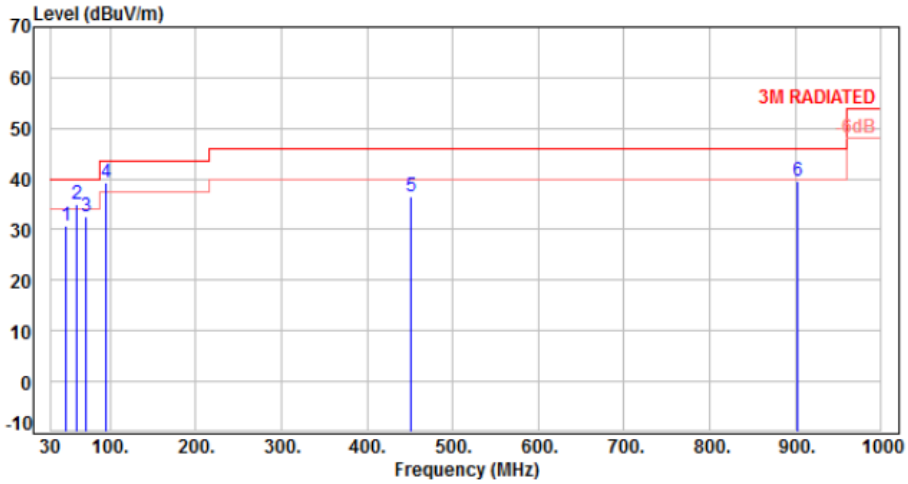
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 902.2MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.58	-10.55	46.72	36.17	40.00	-3.83	Peak	400	0	P
2	60.11	-10.16	45.32	35.16	40.00	-4.84	QP	260	241	P
3	94.55	-15.45	50.46	35.01	43.50	-8.49	Peak	400	0	P
4	328.74	-7.81	39.60	31.79	46.00	-14.21	Peak	400	0	P
5	437.52	-5.07	41.65	36.58	46.00	-9.42	Peak	400	0	P
6	902.00	2.68	36.61	39.29	46.00	-6.71	QP	138	88	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

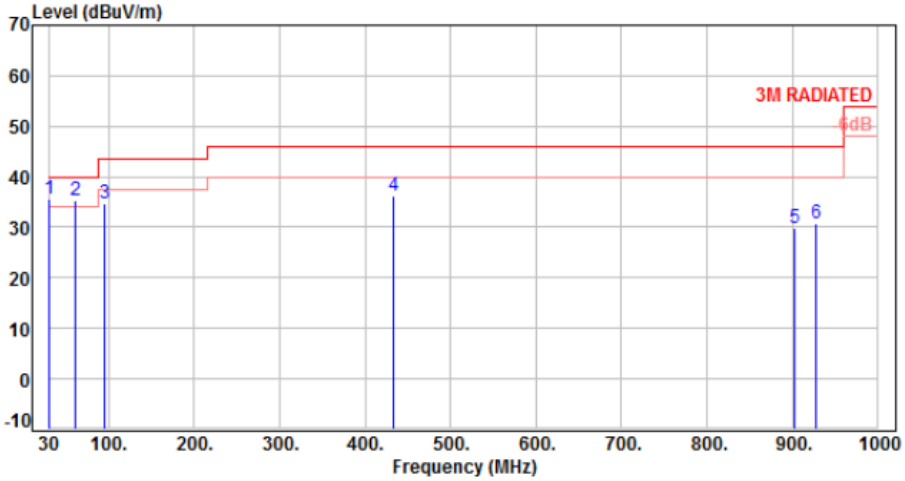
Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 902.2MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	47.56	-9.39	40.12	30.73	40.00	-9.27	QP	202	143	P
2	60.15	-10.17	45.28	35.11	40.00	-4.89	QP	210	300	P
3	71.85	-11.93	44.60	32.67	40.00	-7.33	QP	244	306	P
4	94.89	-15.41	54.66	39.25	43.50	-4.25	Peak	400	0	P
5	450.63	-4.78	41.26	36.48	46.00	-9.52	QP	142	263	P
6	902.00	2.68	37.02	39.70	46.00	-6.30	QP	150	260	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

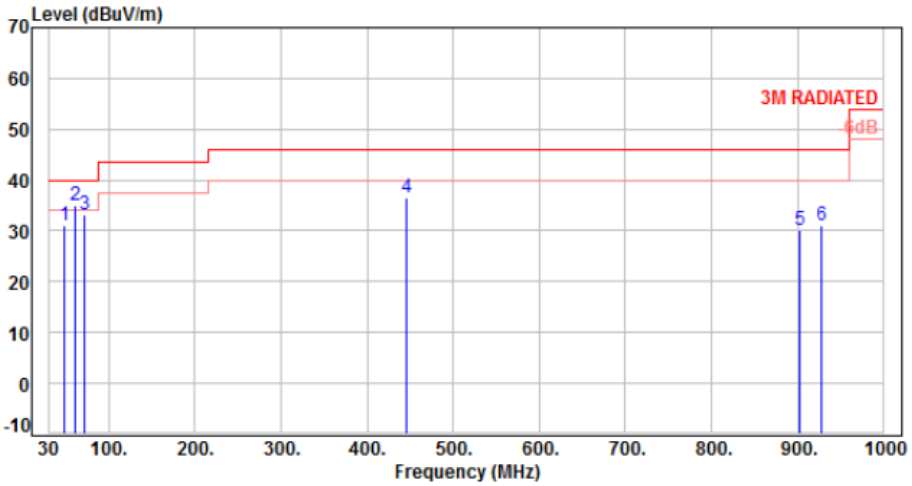
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 915MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	31.22	-10.59	46.26	35.67	40.00	-4.33	Peak	400	0	P
2	60.43	-10.23	45.44	35.21	40.00	-4.79	QP	228	264	P
3	94.75	-15.42	50.11	34.69	43.50	-8.81	Peak	400	0	P
4	432.66	-5.18	41.48	36.30	46.00	-9.70	Peak	400	0	P
5	902.00	2.68	27.21	29.89	46.00	-16.11	QP	140	302	P
6	928.00	3.32	27.54	30.86	46.00	-15.14	QP	140	302	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

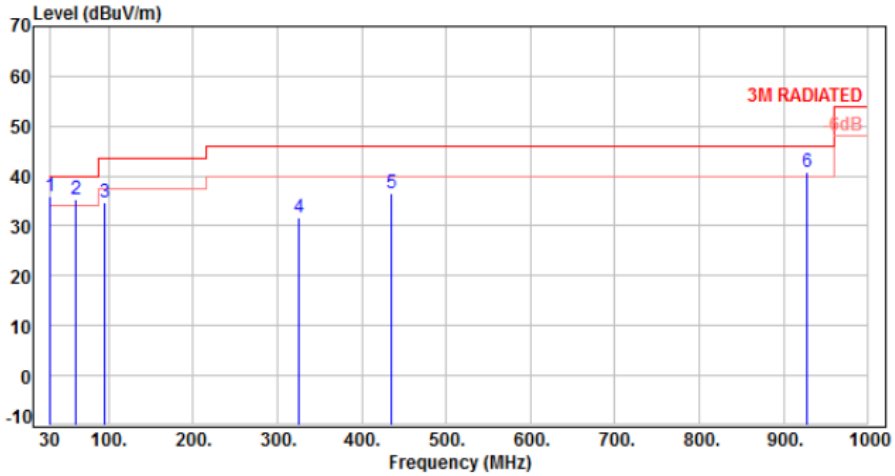
Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 915MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	47.88	-9.42	40.46	31.04	40.00	-8.96	QP	225	201	P
2	61.33	-10.37	45.40	35.03	40.00	-4.97	QP	200	293	P
3	71.46	-11.90	45.11	33.21	40.00	-6.79	QP	206	311	P
4	445.88	-4.88	41.36	36.48	46.00	-9.52	QP	138	271	P
5	902.00	2.68	27.52	30.20	46.00	-15.80	QP	168	270	P
6	928.00	3.32	27.65	30.97	46.00	-15.03	QP	168	270	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

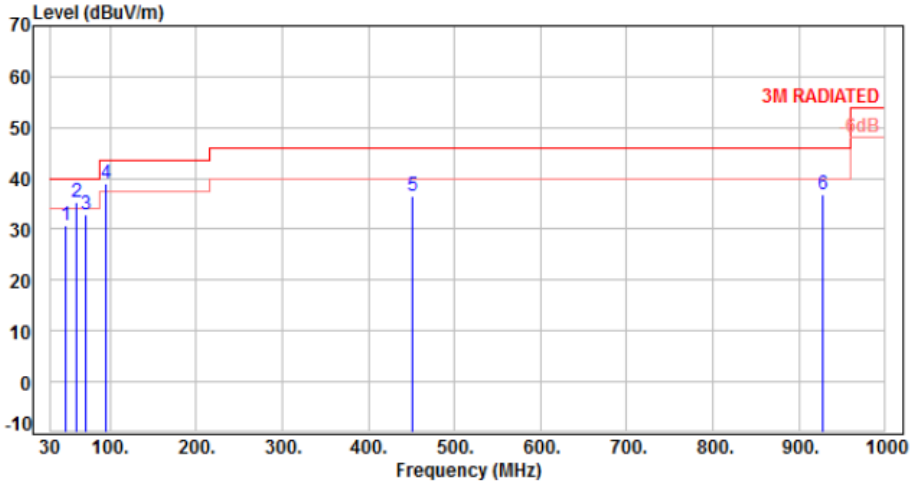
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 927.8MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.65	-10.55	46.57	36.02	40.00	-3.98	Peak	400	0	P
2	60.42	-10.22	45.41	35.19	40.00	-4.81	QP	227	258	P
3	94.63	-15.44	50.12	34.68	43.50	-8.82	Peak	400	0	P
4	325.69	-7.95	39.74	31.79	46.00	-14.21	Peak	400	0	P
5	434.52	-5.14	41.61	36.47	46.00	-9.53	Peak	400	0	P
6	928.00	3.32	37.59	40.91	46.00	-5.09	QP	130	300	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 927.8MHz	:	

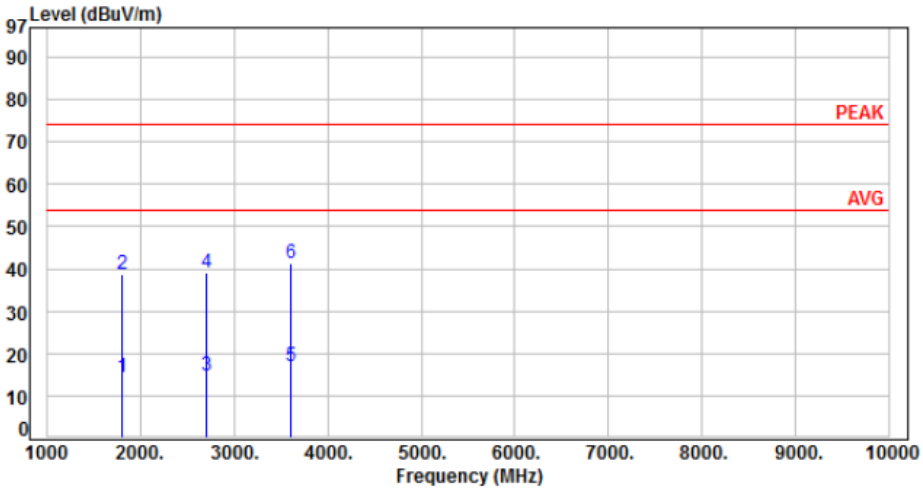


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	47.66	-9.40	40.04	30.64	40.00	-9.36	QP	211	150	P
2	60.35	-10.21	45.62	35.41	40.00	-4.59	QP	207	325	P
3	72.12	-11.97	44.80	32.83	40.00	-7.17	QP	243	328	P
4	95.12	-15.38	54.36	38.98	43.50	-4.52	Peak	400	0	P
5	450.72	-4.78	41.44	36.66	46.00	-9.34	QP	133	257	P
6	928.00	3.32	33.59	36.91	46.00	-9.09	QP	167	260	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

6.7 Test Result and Data (1GHz ~ 10GHz)

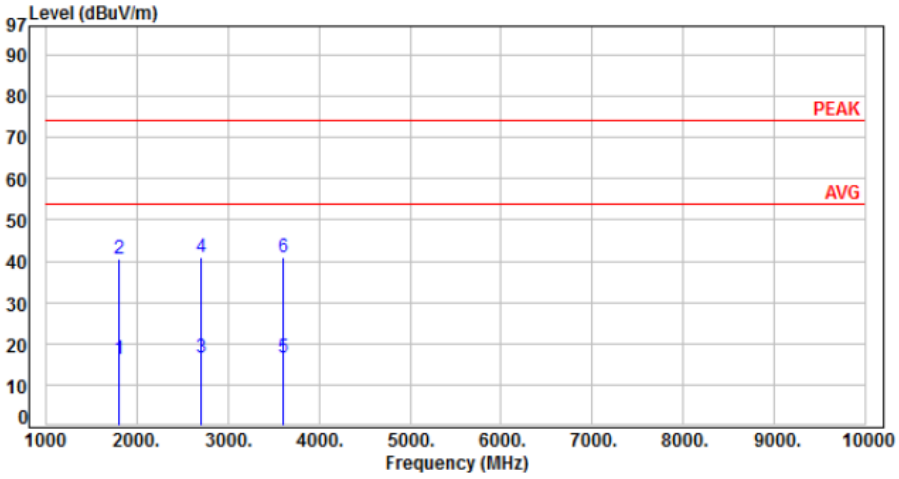
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 902.2MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1804.40	-20.17	34.49	14.32	54.00	-39.68	Average	400	0	P
2	1804.40	-20.17	58.92	38.75	74.00	-35.25	Peak	400	0	P
3	2706.60	-17.27	32.09	14.82	54.00	-39.18	Average	400	0	P
4	2706.60	-17.27	56.52	39.25	74.00	-34.75	Peak	400	0	P
5	3608.80	-14.17	31.02	16.85	54.00	-37.15	Average	400	0	P
6	3608.80	-14.17	55.45	41.28	74.00	-32.72	Peak	400	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

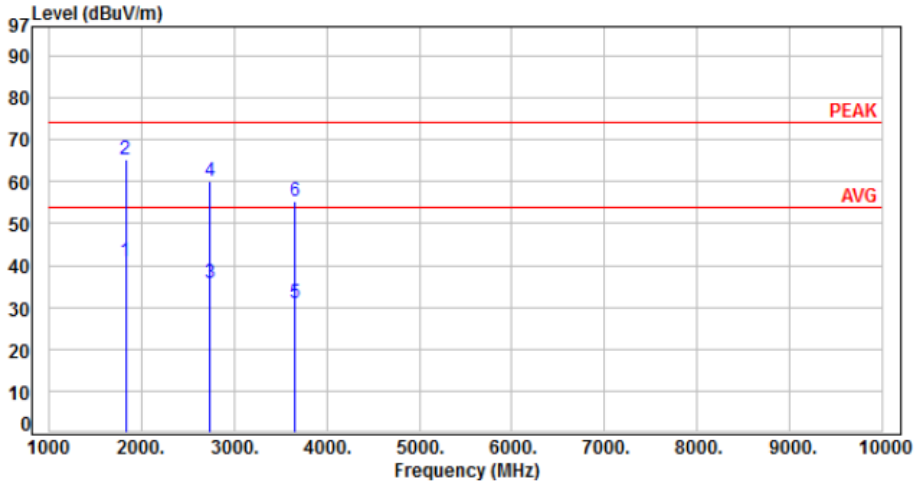
Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 902.2MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1804.40	-20.17	36.46	16.29	54.00	-37.71	Average	400	0	P
2	1804.40	-20.17	60.89	40.72	74.00	-33.28	Peak	400	0	P
3	2706.60	-17.27	33.77	16.50	54.00	-37.50	Average	400	0	P
4	2706.60	-17.27	58.20	40.93	74.00	-33.07	Peak	400	0	P
5	3608.80	-14.17	30.86	16.69	54.00	-37.31	Average	400	0	P
6	3608.80	-14.17	55.29	41.12	74.00	-32.88	Peak	400	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

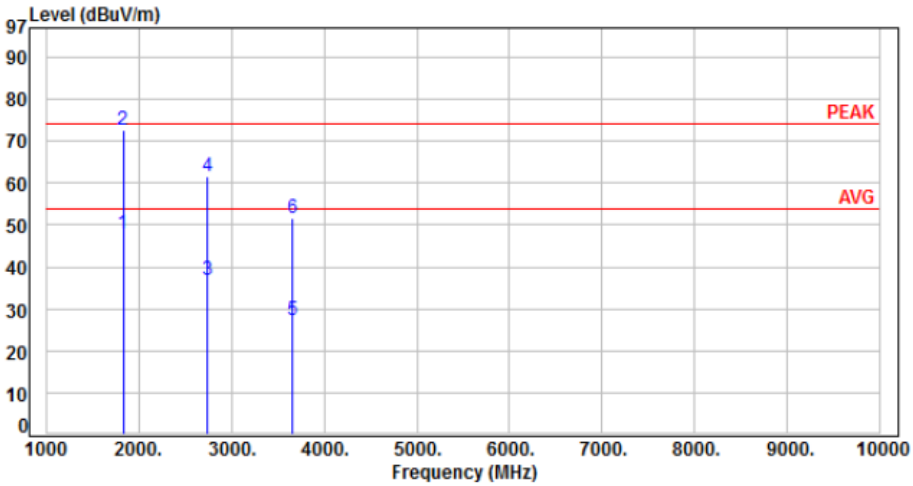
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 915MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1830.00	-19.95	60.77	40.82	54.00	-13.18	Average	100	301	P
2	1830.00	-19.95	85.20	65.25	74.00	-8.75	Peak	100	301	P
3	2745.00	-17.24	53.07	35.83	54.00	-18.17	Average	100	213	P
4	2745.00	-17.24	77.50	60.26	74.00	-13.74	Peak	100	213	P
5	3660.00	-13.88	44.77	30.89	54.00	-23.11	Average	100	200	P
6	3660.00	-13.88	69.20	55.32	74.00	-18.68	Peak	100	200	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

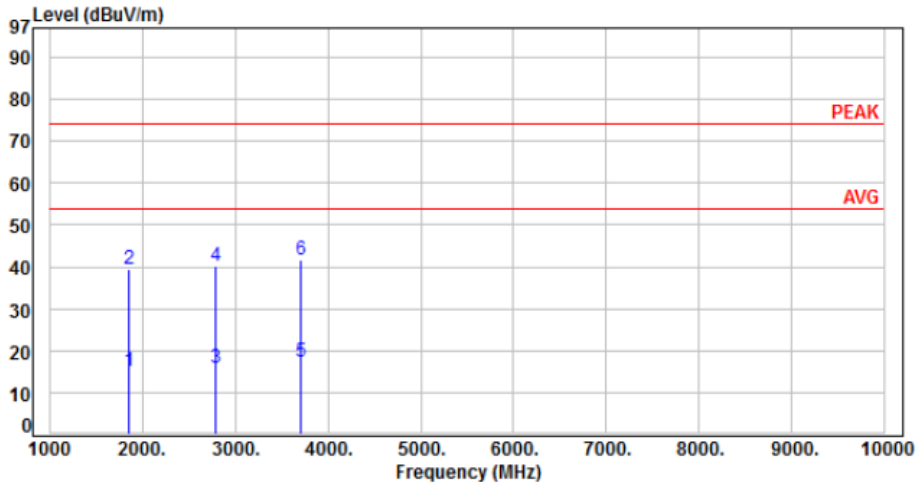
Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 915MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1830.00	-19.95	68.07	48.12	54.00	-5.88	Average	160	316	P
2	1830.00	-19.95	92.50	72.55	74.00	-1.45	Peak	160	316	P
3	2745.00	-17.24	54.27	37.03	54.00	-16.97	Average	100	328	P
4	2745.00	-17.24	78.70	61.46	74.00	-12.54	Peak	100	328	P
5	3660.00	-13.88	41.17	27.29	54.00	-26.71	Average	158	163	P
6	3660.00	-13.88	65.60	51.72	74.00	-22.28	Peak	158	163	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

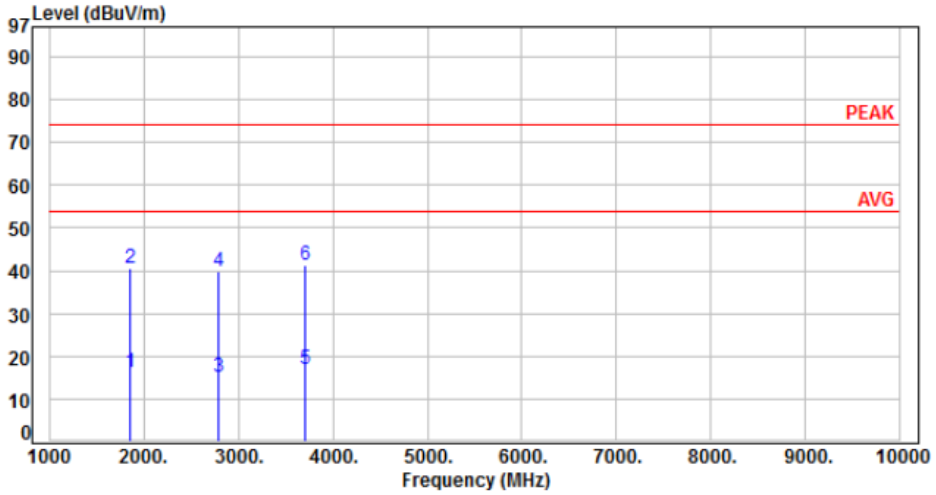
Power :	DC 5V from system	Pol/Phase :	VERTICAL
Test Mode :	Mode 1, 927.8MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1855.60	-19.74	34.84	15.10	54.00	-38.90	Average	400	0	P
2	1855.60	-19.74	59.27	39.53	74.00	-34.47	Peak	400	0	P
3	2783.40	-17.15	32.98	15.83	54.00	-38.17	Average	400	0	P
4	2783.40	-17.15	57.41	40.26	74.00	-33.74	Peak	400	0	P
5	3711.20	-13.37	30.59	17.22	54.00	-36.78	Average	400	0	P
6	3711.20	-13.37	55.02	41.65	74.00	-32.35	Peak	400	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Power :	DC 5V from system	Pol/Phase :	HORIZONTAL
Test Mode :	Mode 1, 927.8MHz	:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1855.60	-19.74	35.91	16.17	54.00	-37.83	Average	100	0	P
2	1855.60	-19.74	60.34	40.60	74.00	-33.40	Peak	100	0	P
3	2783.40	-17.15	32.38	15.23	54.00	-38.77	Average	100	0	P
4	2783.40	-17.15	56.81	39.66	74.00	-34.34	Peak	100	0	P
5	3711.20	-13.37	30.20	16.83	54.00	-37.17	Average	100	0	P
6	3711.20	-13.37	54.63	41.26	74.00	-32.74	Peak	100	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

6.8 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

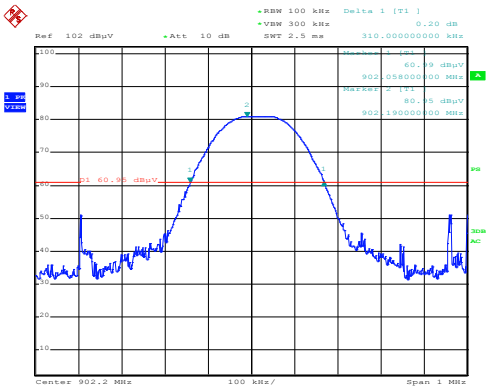
MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

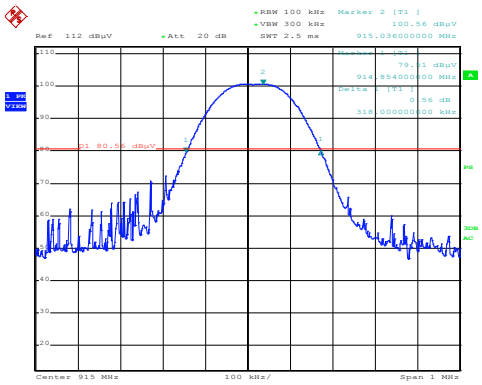
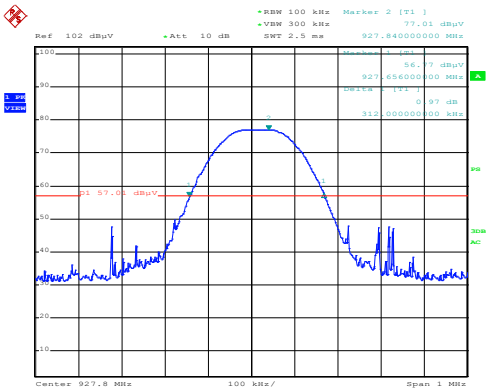
6.9 20dB Bandwidth Measurement Data

Frequency (MHz)	20dB Bandwidth (MHz)	Frequency range MHz (20dB Down) fL ＞ 902 MHz	Frequency range MHz (20dB Down) fH ＜ 928 MHz
902.200	0.310	902.0580	-
915.000	0.318	-	-
927.800	0.312	-	927.9680

20dB Bandwidth
902.2 MHz



915 MHz



927.8 MHz