



# FCC RADIO TEST REPORT

Applicant : Ubiquiti Inc.  
Address : 685 Third Avenue, New York, New York 10017,  
USA  
Equipment : UniFi G3 Touch Pro  
Model No. : UTP-G3-Touch-Pro  
Trade Name : UBIQUITI  
FCC ID : SWX-UG3TP

## I HEREBY CERTIFY THAT :

The sample was received on Aug. 23, 2023 and the testing was completed on Sep. 12, 2023 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





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### History of this test report

Report No.	Issued Date	Description
23080247-TRFCC05	Oct. 31, 2023	Original



## 1. Summary of Test Procedure and Test Results

### 1.1 Applicable Standards

#### ANSI C63.10:2013

Description of Test	Result
CO-LOCATION	PASS

\*The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement, measurement uncertainty evaluation is not considered.



## 2. Test Configuration of Equipment under Test

### 2.1 Feature of Equipment under Test

Operation Frequency Range	BT / BLE: 2400-2483.5MHz 802.11b/g/n: 2400-2483.5MHz 802.11a/n/ac: 5150-5250MHz, 5250-5350MHz, 5470-5725MHz, 5725-5850MHz
Center Frequency Range	BT / BLE: 2402-2480MHz 802.11b/g/n: 2412MHz~2462MHz 802.11a/n/ac: 5180-5240MHz, 5260-5320MHz, 5500-5720MHz, 5745-5825MHz
Modulation Type	BT: GFSK, $\pi/4$ -DQPSK, 8DPSK BLE: GFSK WLAN: 2.4GHz: 802.11b: CCK, DQPSK, DBPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM 5GHz: 802.11n/a: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM
Modulation Technology	FHSS, DTS, DSSS, OFDM
Data Rate	BT: GFSK: 1Mbps, $\pi/4$ -DQPSK: 2Mbps, 8DPSK: 3Mbps BLE: GFSK: 1Mbps WLAN: 2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS7, HT20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS7, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80
Antenna Type	ANT A :PIFA Antenna ANT B :Chip Antenna
Antenna Gain	2400MHz~2483.5MHz: ANT A :2.5dBi, For BLE 2400MHz~2483.5MHz: ANT B :1.8dBi .For BT / BLE 2400-2483.5MHz: ANT B: 1.8dBi 5150-5250MHz: ANT B: 3.00dBi 5250-5350MHz: ANT B: 3.00dBi 5470-5725MHz: ANT B: 3.00dBi 5725-5850MHz: ANT B: 3.00dBi

Note:

1. EUT support TPC Function.
2. BT and WLAN can simultaneously transmission.
3. EUT support Client Mode without radar detection.
4. For Chip: Nordic+ (Chip: nRF5340) Only Support BLE, use ANT A  
For Chip: WCN3680 Support BT and BLE and WLAN, use ANT B
5. For more details, please refer to the User's manual of the EUT.



## 2.2 Test Mode and Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- The complete test system included Notebook and EUT for RF test.
- An executive program, " nRF connect ver. v2.0.3" under Windows OS system was executed to transmit and receive data via Bluetooth.- For Chip:Nordic
- An executive program, " QRCT ver. 4.0.00201.0" under Windows OS system was executed to transmit and receive data via Bluetooth& WLAN.- For Chip:WCN3680
- The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	BT GFSK CH00 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
2	2.4G 11g CH01 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
3	5G 11ac 20 CH165 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
4	BT GFSK CH00 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 240V / 60Hz
5	2.4G 11g CH01 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 240V / 60Hz
6	5G 11ac 20 CH165 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 240V / 60Hz
caused "Test Mode 1~3" generated the worst case, it was reported as the final data.	
Radiation Emissions (BELOW 1GHz)	
Test Mode	Operating Description
1	BT GFSK CH00 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
2	2.4G 11g CH01 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
3	5G 11ac 20 CH165 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
4	BT GFSK CH00 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 240V / 60Hz
5	2.4G 11g CH01 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 240V / 60Hz
6	5G 11ac 20 CH165 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 240V / 60Hz
caused "Test Mode 1,3,5" generated the worst case, it was reported as the final data.	
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode	Operating Description
1	BT GFSK CH00 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
2	2.4G 11g CH01 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
3	5G 11ac 20 CH165 (WCN3680) + BLE GFSK CH19(Nordic),From POE, AC 120V / 60Hz
caused "Test Mode 1~3" generated the worst case, it was reported as the final data.	



### 2.3 Description of Test System

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
POE	UBIQUITI	GP-H480-050G	N/A	0.6m / NS
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Micro USB(Blue)	kolin	KEX-DLCP07	1m / NS	N/A
AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
POE	UBIQUITI	GP-H480-050G	N/A	0.6m / NS
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Micro USB(Blue)	kolin	KEX-DLCP07	1m / NS	N/A

**2.4 General Information of Test**

<input checked="" type="checkbox"/> Test Site	CerpPASS 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	
	FCC	TW1439, TW1079
	IC	4934E-1, 4934E-2
Frequency Range Investigated	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 40,000MHz	
Test Distance	The test distance of radiated emission from antenna to EUT is 3 M.	

Test Item	Test Site	Test period	Environmental Conditions	Tested By
Radiated Emissions	3M02-NK	2023/09/09	26°C / 43%	Leon Haung
AC Power Line Conducted Emission	CON02-NK	2023/09/12	23°C / 66%	Leon Haung





## 2.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

For BT /BLE/2.4G

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.28dB
Radiated Spurious Emission(9KHz~30MHz)	±3.5dB
Radiated Spurious Emission(30MHz~1GHz)	±5.1dB
Radiated Spurious Emission(1GHz~40GHz)	±5.2dB
Conducted Spurious Emission	±2.1dB
6dB Bandwidth	±5.4%
20dB Bandwidth	±4.4%
Occupied Bandwidth	±4.5%
Peak Output Power(Conducted Power Meter)	±1.1dB
Dwell Time / Deactivation Time	±7.6%
Power Spectral Density	±2.0dB
Duty Cycle	±3.5%

For 5G

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.28dB
Radiated Spurious Emission(9KHz~30MHz)	±3.5dB
Radiated Spurious Emission(30MHz~1GHz)	±5.1dB
Radiated Spurious Emission(1GHz~40GHz)	±5.2dB
6dB Bandwidth	±5.4%
26dB Bandwidth	±4.4%
Occupied Bandwidth	±4.5%
Peak Output Power(Conducted Power Meter)	±1.1dB
Power Spectral Density	±2.0dB
Duty Cycle	±3.5%
Frequency Stability	±0.23KHz



### 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	2022/11/18	2023/11/17
Active Loop Antenna	Schwarzbeck	FMZB 1513	414	2023/02/03	2024/02/02
Horn Antenna	EMCO	3115	31589	2023/03/23	2024/03/22
Horn Antenna	EMCO	3116	31970	2023/03/03	2024/03/02
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2023/07/05	2024/07/04
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2023/08/16	2024/08/15
Preamplifier	Agilent	8449B	3008A01954	2023/03/08	2024/03/07
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2022/11/11	2023/11/10
Preamplifier	EM Electronics corp.	EM330	60658	2022/10/04	2023/10/03
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130606	2023/03/13	2024/03/12
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2023/02/25	2024/02/24
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2023/03/07	2024/03/06
Cable-3m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2023/03/07	2024/03/06
Cable-8m(1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2023/03/07	2024/03/06
Cable-0.5m(30M-40G)	HUBER SUHNER	SUCOFLEX 102	28420/2	2023/03/07	2024/03/06
Cable-3m(10M-40G)	HUBER SUHNER	SF102	804619/2	2022/10/11	2023/10/10
High Pass Filter	Warison	WFIL-H3000-18000F-03	WRJ5CFWC2J1	2023/07/03	2024/07/02
Highpass Filter	Warison	WFIL-H7500-18000F	WRQ4BFWC2J1	2023/03/13	2024/03/12
Notch Filter	Warison	WFIL-N5925-7125F-04	WRQ4BFWC4M1	2023/03/13	2024/03/12
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA

Test Item	AC Power Line Conducted Emission				
Test Site	CON02-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2023/07/05	2024/07/04
TWO-LINE V-NETWORK	ROHDE & SCHWARZ	ENV216	102185	2023/08/29	2024/08/28
Cable-4m(9k-3G)	EMEC	RG-223	18274M	2023/07/31	2024/07/30
E3	AUDIX	v8.2014-8-6	RK-000536	NA	NA



## 4. Test of AC Power Line Conducted Emission

### 4.1 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 C63.10-2013. 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 $\mu$ V)	Average (dB $\mu$ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

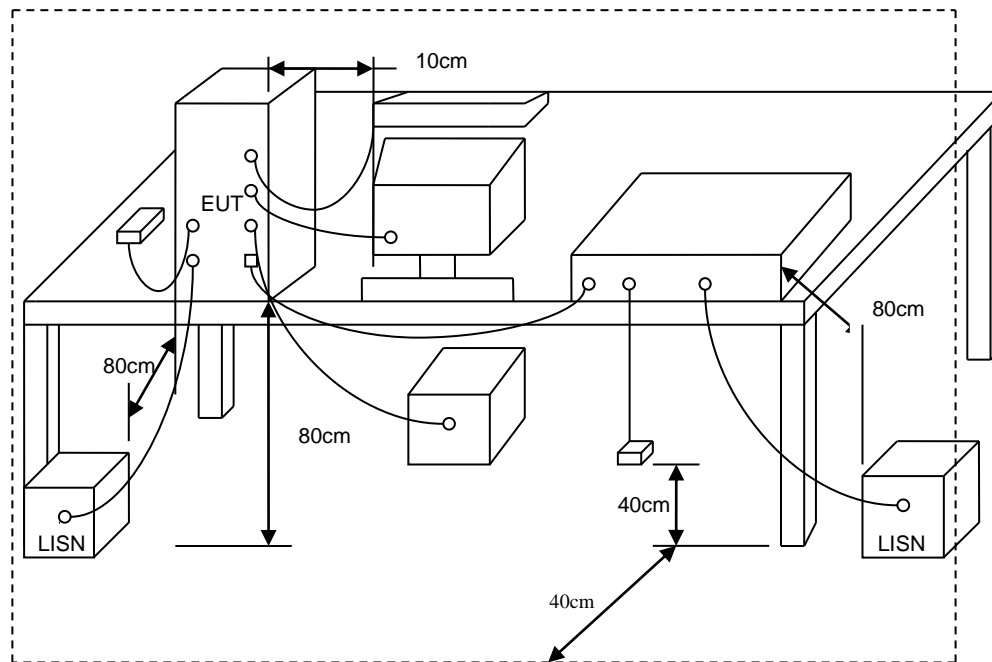
\*Decreases with the logarithm of the frequency.

### 4.2 Test Procedures

- 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.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



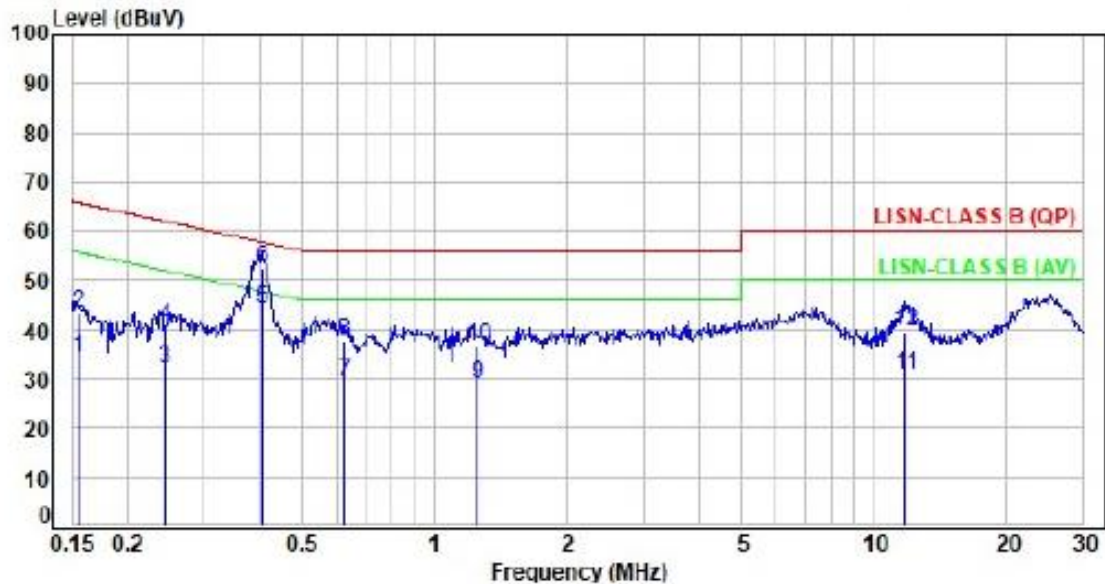
### 4.3 Typical Test Setup





#### 4.4 Test Result and Data

Power	: AC 120V / 60Hz	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	9.66	24.70	34.36	55.73	-21.37	Average	P
2	0.15	9.66	33.79	43.45	65.73	-22.28	QP	P
3	0.24	9.64	22.42	32.06	51.99	-19.93	Average	P
4	0.24	9.64	30.94	40.58	61.99	-21.41	QP	P
5	0.40	9.66	34.28	43.94	47.76	-3.82	Average	P
6	0.40	9.66	43.00	52.66	57.76	-5.10	QP	P
7	0.62	9.65	19.71	29.36	46.00	-16.64	Average	P
8	0.62	9.65	27.98	37.63	56.00	-18.37	QP	P
9	1.25	9.66	19.31	28.97	46.00	-17.03	Average	P
10	1.25	9.66	26.72	36.38	56.00	-19.62	QP	P
11	11.82	9.86	21.07	30.93	50.00	-19.07	Average	P
12	11.82	9.86	29.85	39.71	60.00	-20.29	QP	P

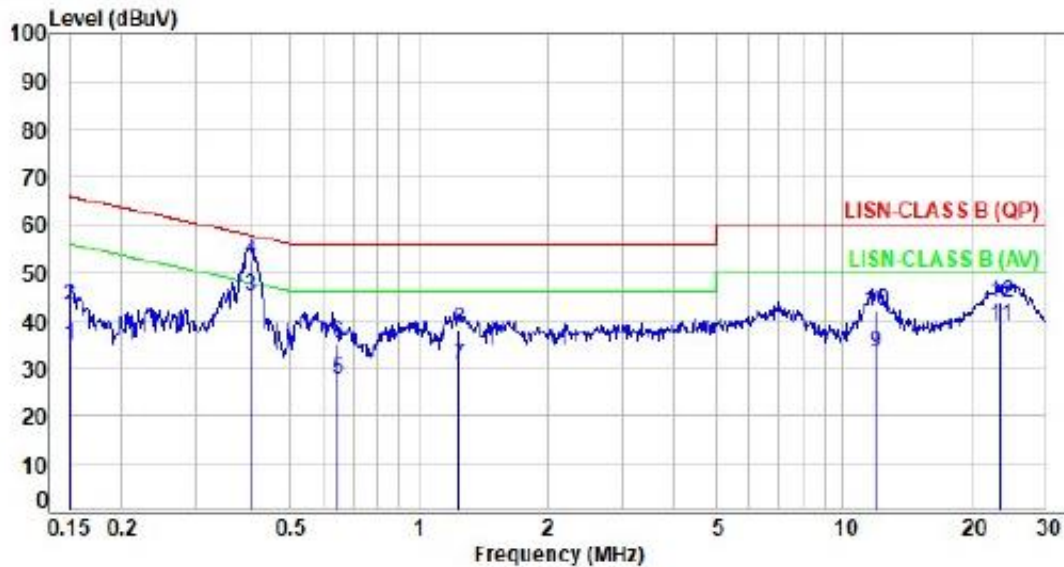
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISM or Current Probe)Factor + Cable Loss



Power	: AC 120V / 60Hz	Pol/Phase	: NEUTRAL
Test Mode	: Mode 1		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	P/F
1	0.15	9.56	24.93	34.49	55.96	-21.47	Average	P
2	0.15	9.56	33.39	42.95	65.96	-23.01	QP	P
3	0.40	9.57	35.13	44.70	47.83	-3.13	Average	P
4	0.40	9.57	42.88	52.45	57.83	-5.38	QP	P
5	0.64	9.58	17.76	27.34	46.00	-18.66	Average	P
6	0.64	9.58	25.28	34.86	56.00	-21.14	QP	P
7	1.24	9.60	20.95	30.55	46.00	-15.45	Average	P
8	1.24	9.60	28.50	38.10	56.00	-17.90	QP	P
9	11.93	9.84	23.35	33.19	50.00	-16.81	Average	P
10	11.93	9.84	32.00	41.84	60.00	-18.16	QP	P
11	23.37	10.02	28.74	38.76	50.00	-11.24	Average	P
12	23.37	10.02	33.75	43.77	60.00	-16.23	QP	P

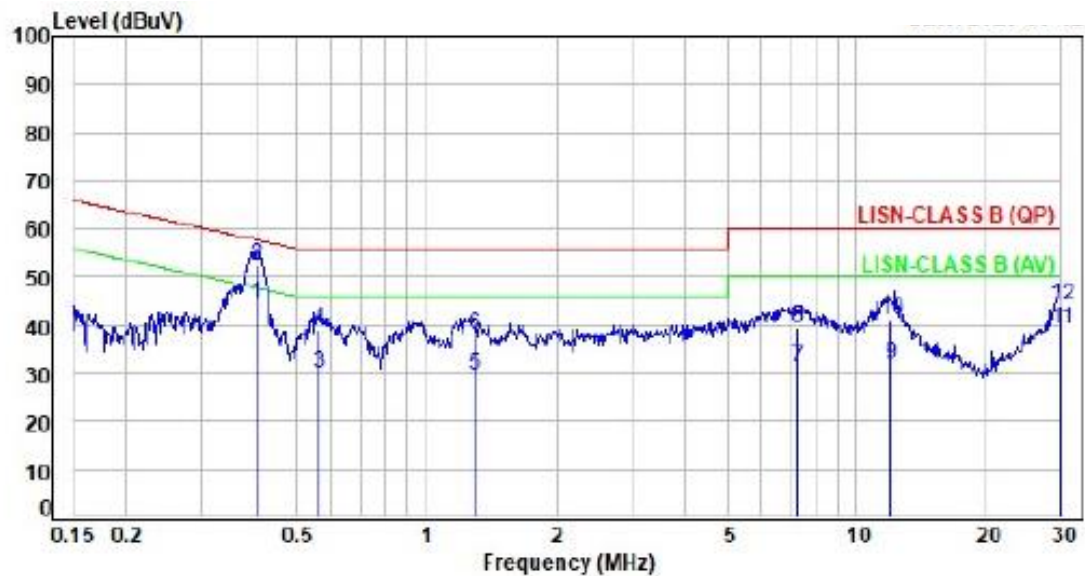
Note: Level=Reading+Factor

Margin=Level-Limit

Factor={LISN or ISN or Current Probe}Factor + Cable Loss



Power	: AC 120V / 60Hz	Pol/Phase	: LINE
Test Mode	: Mode 2		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.40	9.66	34.91	44.57	47.80	-3.23	Average	P
2	0.40	9.66	42.94	52.60	57.80	-5.20	QP	P
3	0.56	9.65	20.46	30.11	46.00	-15.89	Average	P
4	0.56	9.65	29.50	39.15	56.00	-16.85	QP	P
5	1.29	9.66	19.99	29.65	46.00	-16.35	Average	P
6	1.29	9.66	28.20	37.86	56.00	-18.14	QP	P
7	7.26	9.79	21.37	31.16	50.00	-18.84	Average	P
8	7.26	9.79	29.57	39.36	60.00	-20.64	QP	P
9	12.04	9.87	21.95	31.82	50.00	-18.18	Average	P
10	12.04	9.87	31.21	41.08	60.00	-18.92	QP	P
11	29.83	9.95	29.25	39.20	50.00	-10.80	Average	P
12	29.83	9.95	34.33	44.28	60.00	-15.72	QP	P

Note: Level=Reading+Factor

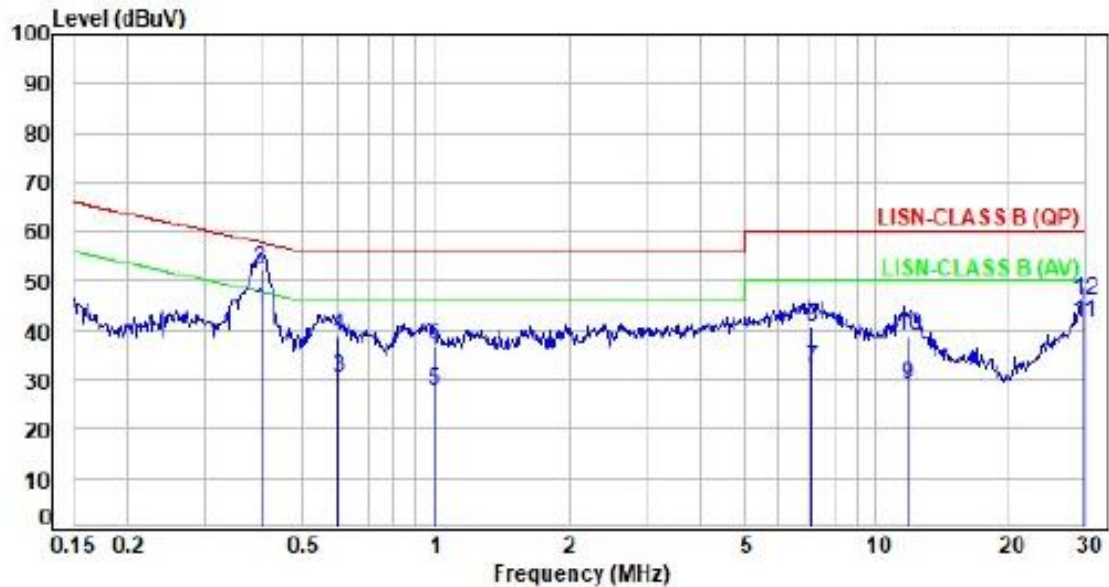
Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss





Power	: AC 120V / 60Hz	Pol/Phase	: NEUTRAL
Test Mode	: Mode 2		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	P/F
1	0.40	9.57	34.50	44.07	47.66	-3.79	Average	P
2	0.40	9.57	42.76	52.35	57.66	-5.51	QP	P
3	0.60	9.58	20.72	30.30	46.00	-15.70	Average	P
4	0.60	9.58	29.18	38.76	56.00	-17.24	QP	P
5	0.99	9.60	18.22	27.82	46.00	-18.18	Average	P
6	0.99	9.60	27.19	36.79	56.00	-19.21	QP	P
7	7.17	9.76	22.66	32.42	50.00	-17.58	Average	P
8	7.17	9.76	30.77	40.53	60.00	-19.47	QP	P
9	11.81	9.84	19.22	29.06	50.00	-20.94	Average	P
10	11.81	9.84	29.06	38.90	60.00	-21.10	QP	P
11	29.68	10.09	31.44	41.53	50.00	-8.47	Average	P
12	29.68	10.09	36.04	46.13	60.00	-13.87	QP	P

Note: Level=Reading+Factor

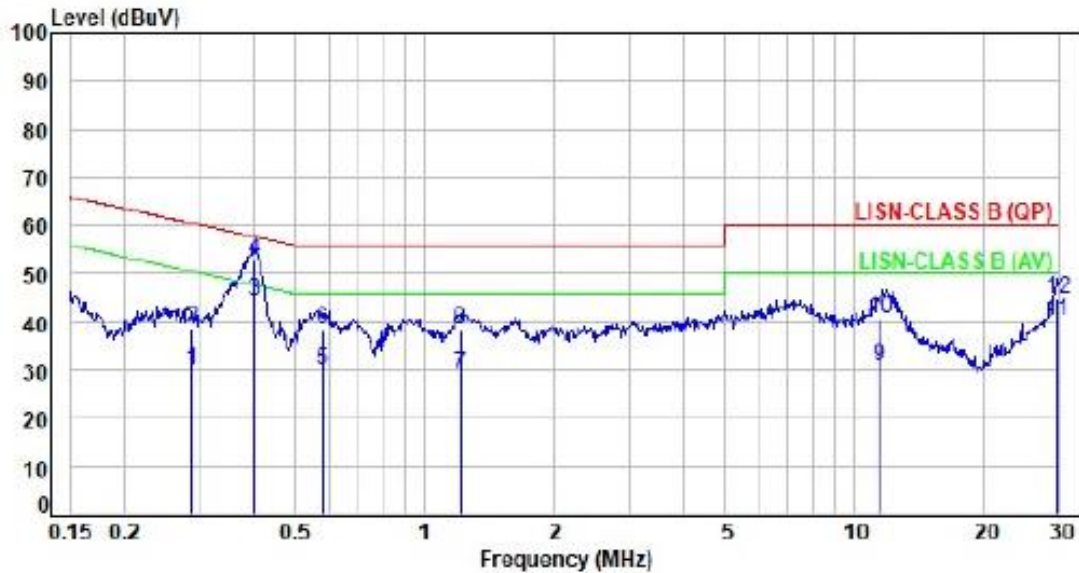
Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss





Power	: AC 120V / 60Hz	Pol/Phase	: LINE
Test Mode	: Mode 3		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.29	9.65	20.56	30.21	50.56	-20.35	Average	P
2	0.29	9.65	29.00	38.65	60.56	-21.91	QP	P
3	0.40	9.66	34.95	44.61	47.82	-3.21	Average	P
4	0.40	9.66	43.08	52.74	57.82	-5.08	QP	P
5	0.58	9.65	20.58	30.23	46.00	-15.77	Average	P
6	0.58	9.65	28.93	38.58	56.00	-17.42	QP	P
7	1.21	9.66	19.65	29.31	46.00	-16.69	Average	P
8	1.21	9.66	28.64	38.30	56.00	-17.70	QP	P
9	11.48	9.86	20.98	30.84	50.00	-19.16	Average	P
10	11.48	9.86	30.70	40.56	60.00	-19.44	QP	P
11	29.68	9.95	30.31	40.26	50.00	-9.74	Average	P
12	29.68	9.95	35.05	45.00	60.00	-15.00	QP	P

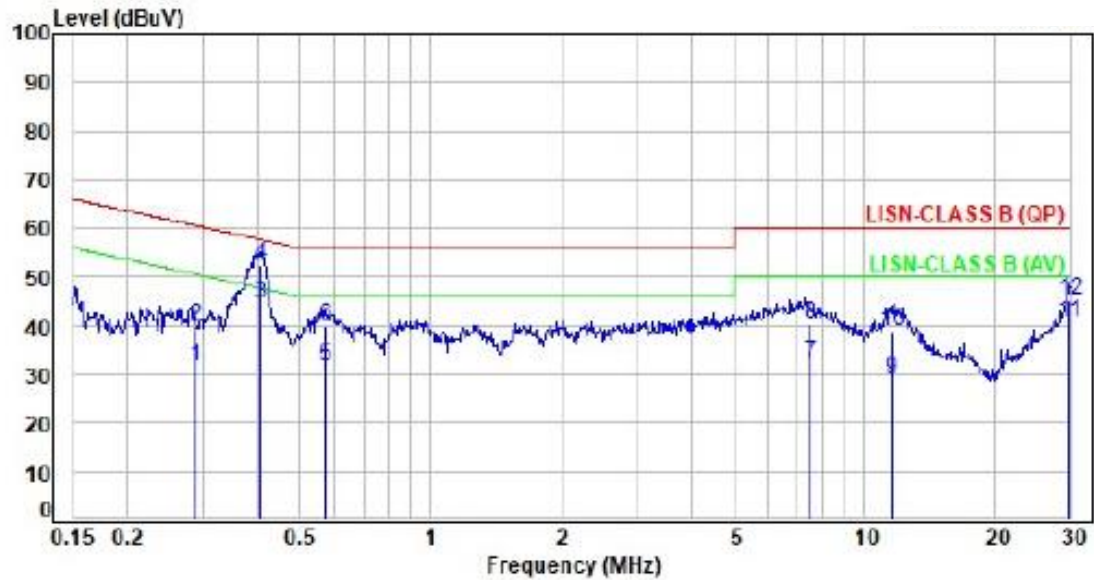
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 120V / 60Hz	Pol/Phase	: NEUTRAL
Test Mode	: Mode 3		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.29	9.57	22.08	31.65	50.61	-18.96	Average	P
2	0.29	9.57	30.32	39.89	60.61	-20.72	QP	P
3	0.40	9.57	35.08	44.65	47.77	-3.12	Average	P
4	0.40	9.57	42.90	52.47	57.77	-5.30	QP	P
5	0.57	9.58	22.06	31.64	46.00	-14.36	Average	P
6	0.57	9.58	30.51	40.09	56.00	-15.91	QP	P
7	7.46	9.76	22.49	32.25	50.00	-17.75	Average	P
8	7.46	9.76	30.58	40.34	60.00	-19.66	QP	P
9	11.60	9.84	19.06	28.90	50.00	-21.10	Average	P
10	11.60	9.84	20.77	30.61	60.00	-21.39	QP	P
11	29.68	10.09	30.42	40.51	50.00	-9.49	Average	P
12	29.68	10.09	35.29	45.38	60.00	-14.62	QP	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISM or Current Probe)Factor + Cable Loss



## 5. Test of Spurious Emission (Radiated)

### 5.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

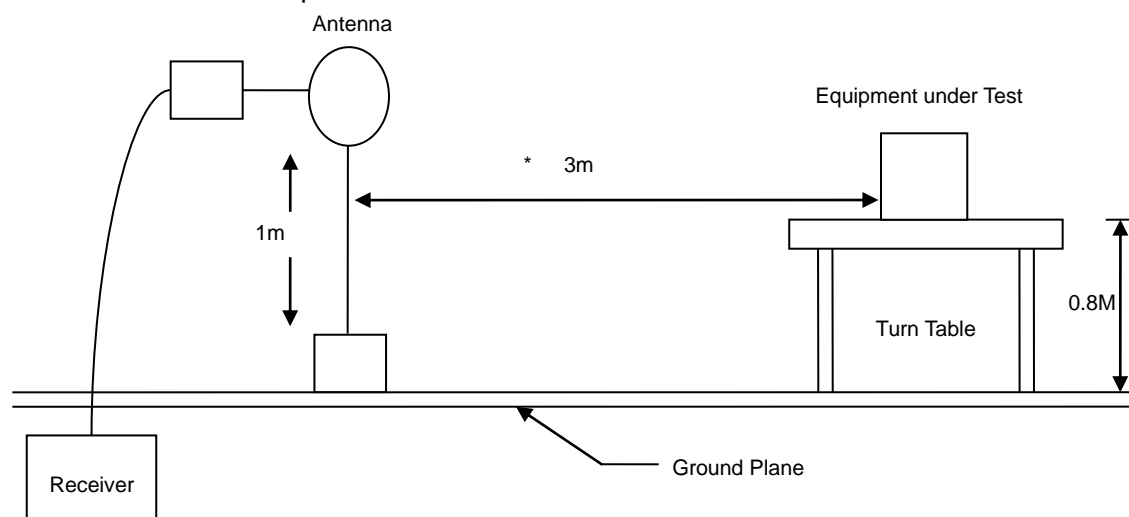


## 5.2 Test Procedures

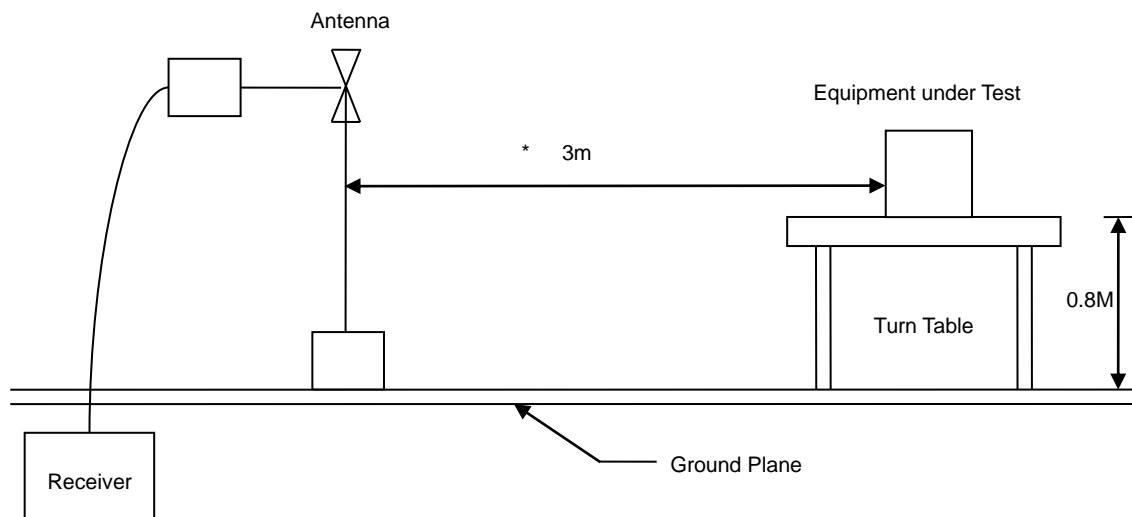
- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna 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.
- 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.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- 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.
- 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.
- "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

## 5.3 Typical Test Setup

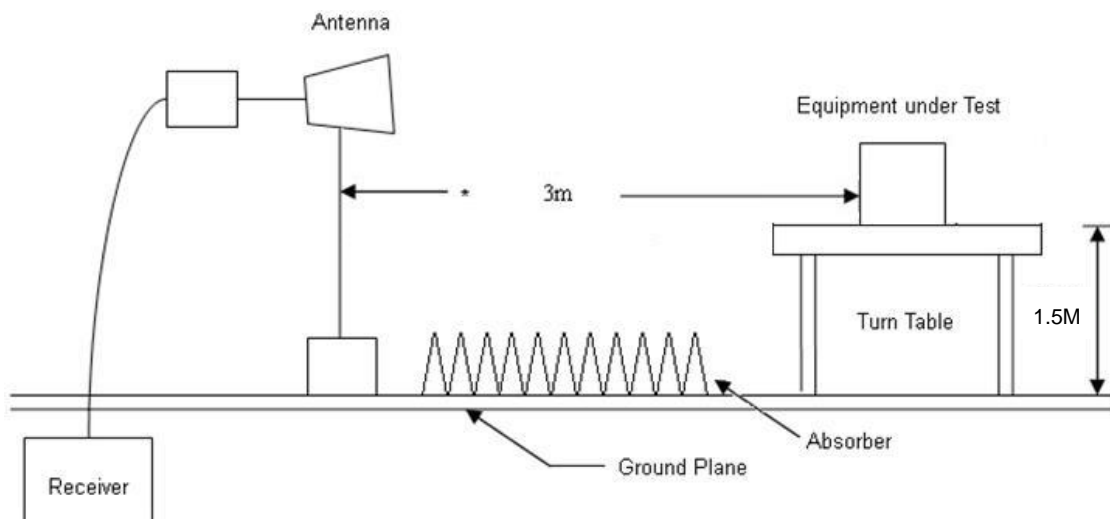
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



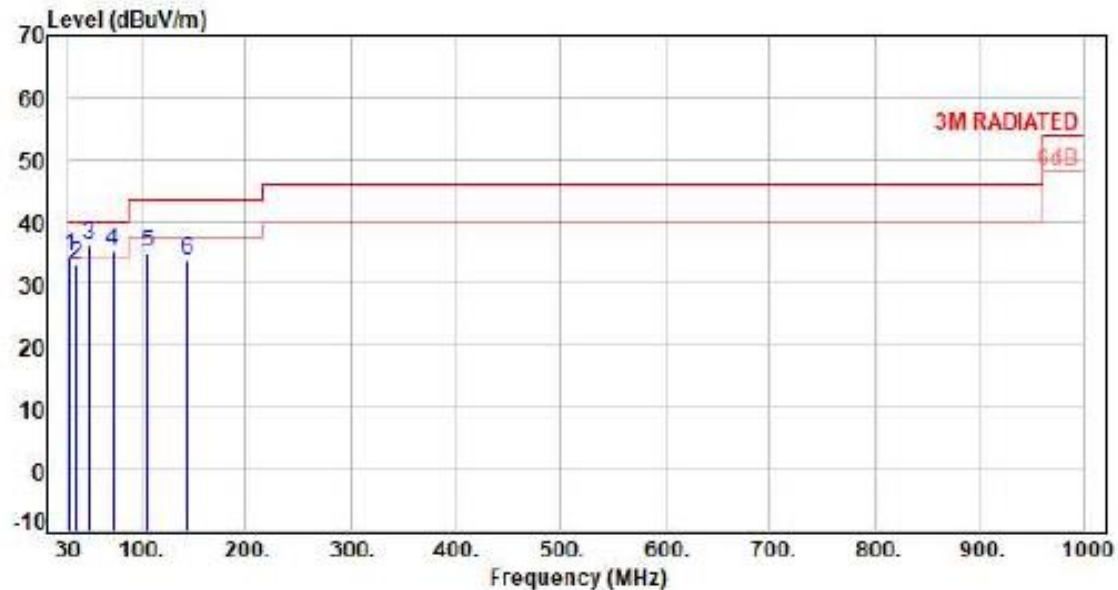


#### 5.4 Test Result and Data (9kHz ~ 30MHz)

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

#### 5.5 Test Result and Data (30MHz ~ 1GHz)

Power	:	AC 120V / 60Hz	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	31.94	-12.27	46.71	34.44	40.00	-5.56	Peak	400	0	P
2	37.75	-11.60	44.94	33.34	40.00	-6.66	Peak	400	0	P
3	49.40	-10.61	46.97	36.36	40.00	-3.64	Peak	400	0	P
4	72.68	-13.80	49.21	35.41	40.00	-4.59	Peak	400	0	P
5	106.63	-14.55	49.45	34.91	43.50	-8.59	Peak	400	0	P
6	144.45	-10.91	44.82	33.91	43.50	-9.59	Peak	400	0	P

Note: Level=Reading+Factor

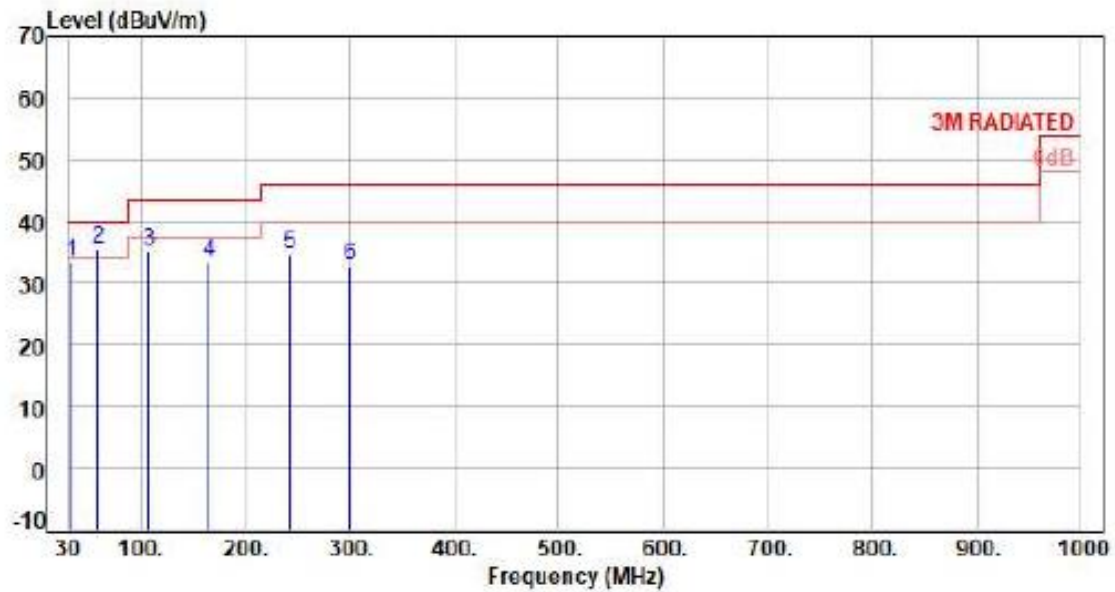
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor





Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	33.88	-12.29	45.75	33.46	40.00	-6.54	Peak	400	0	P
2	59.10	-11.33	46.95	35.62	40.00	-4.38	Peak	400	0	P
3	107.60	-14.43	49.63	35.20	43.50	-8.30	Peak	400	0	P
4	165.80	-11.10	44.58	33.48	43.50	-10.02	Peak	400	0	P
5	243.40	-12.24	46.89	34.65	46.00	-11.35	Peak	400	0	P
6	299.66	-10.18	43.07	32.89	46.00	-13.11	Peak	400	0	P

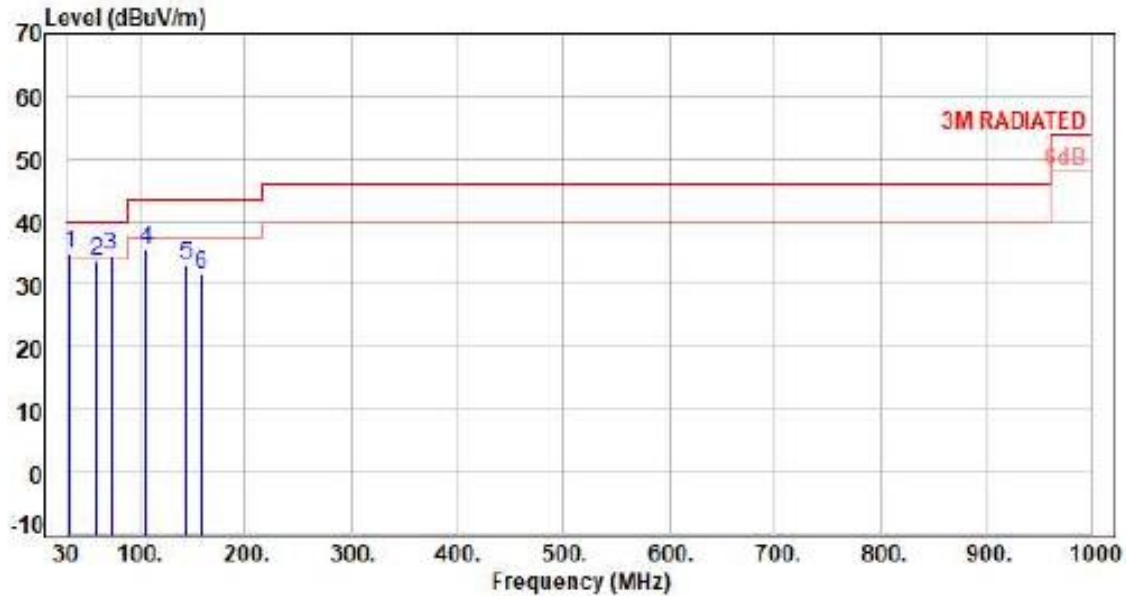
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 3		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	33.88	-12.29	47.44	35.15	40.00	-4.85	Peak	400	0	P
2	59.10	-11.33	45.13	33.80	40.00	-6.20	Peak	400	0	P
3	72.68	-13.80	48.57	34.77	40.00	-5.23	Peak	400	0	P
4	105.66	-14.75	50.45	35.70	43.50	-7.80	Peak	400	0	P
5	144.46	-10.91	43.99	33.08	43.50	-10.42	Peak	400	0	P
6	158.04	-10.77	42.31	31.54	43.50	-11.96	Peak	400	0	P

Note: Level=Reading+Factor

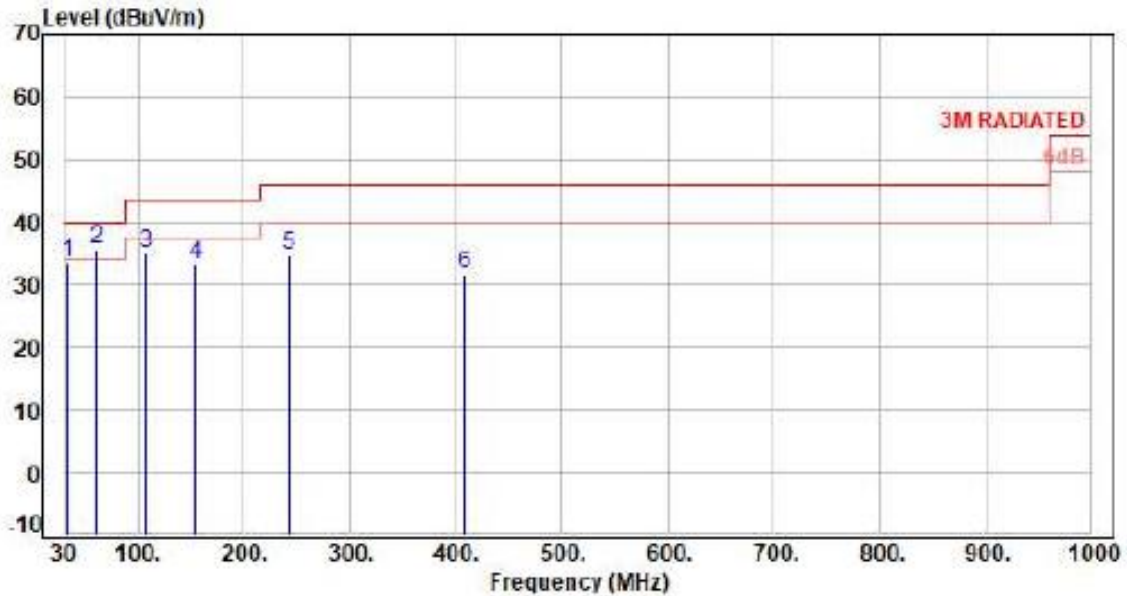
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor





Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	33.88	-12.29	45.76	33.47	40.00	-6.53	Peak	400	0	P
2	61.04	-11.70	47.22	35.52	40.00	-4.48	Peak	400	0	P
3	107.60	-14.43	49.35	34.92	43.50	-8.58	Peak	400	0	P
4	155.13	-10.65	43.78	33.13	43.50	-10.37	Peak	400	0	P
5	243.40	-12.24	47.06	34.82	46.00	-11.18	Peak	400	0	P
6	408.30	-7.39	39.10	31.71	46.00	-14.29	Peak	400	0	P

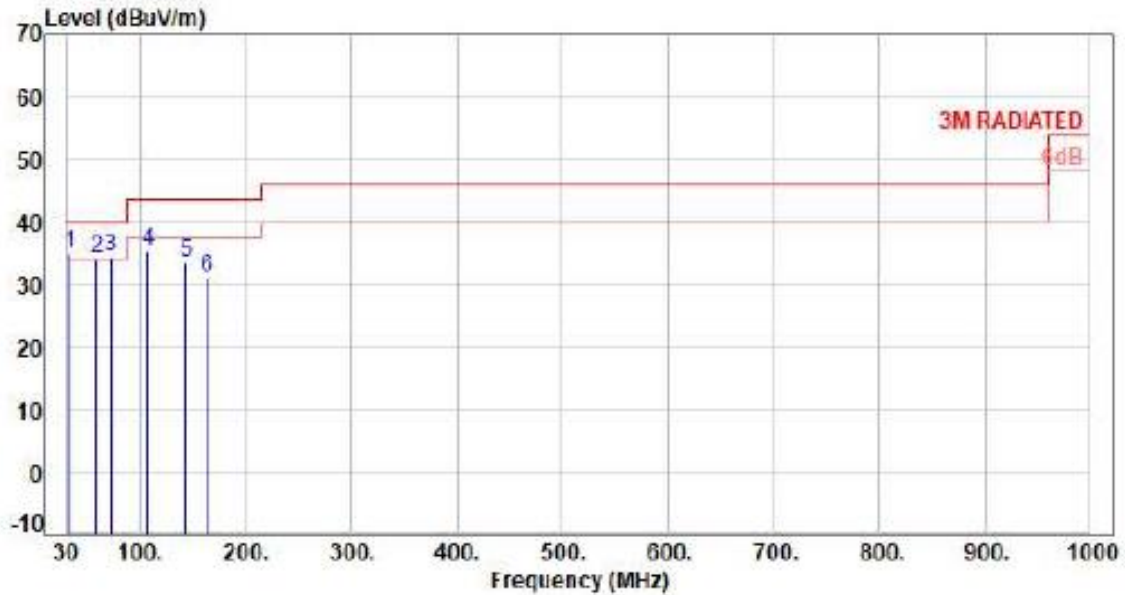
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	AC 240V / 60Hz	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 5		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	33.88	-12.29	47.23	34.94	40.00	-5.06	Peak	400	0	P
2	59.10	-11.33	45.29	33.96	40.00	-6.04	Peak	400	0	P
3	72.68	-13.80	48.22	34.42	40.00	-5.58	Peak	400	0	P
4	107.60	-14.43	49.71	35.28	43.50	-8.22	Peak	400	0	P
5	144.46	-10.91	44.47	33.56	43.50	-9.94	Peak	400	0	P
6	163.86	-10.99	42.17	31.18	43.50	-12.32	Peak	400	0	P

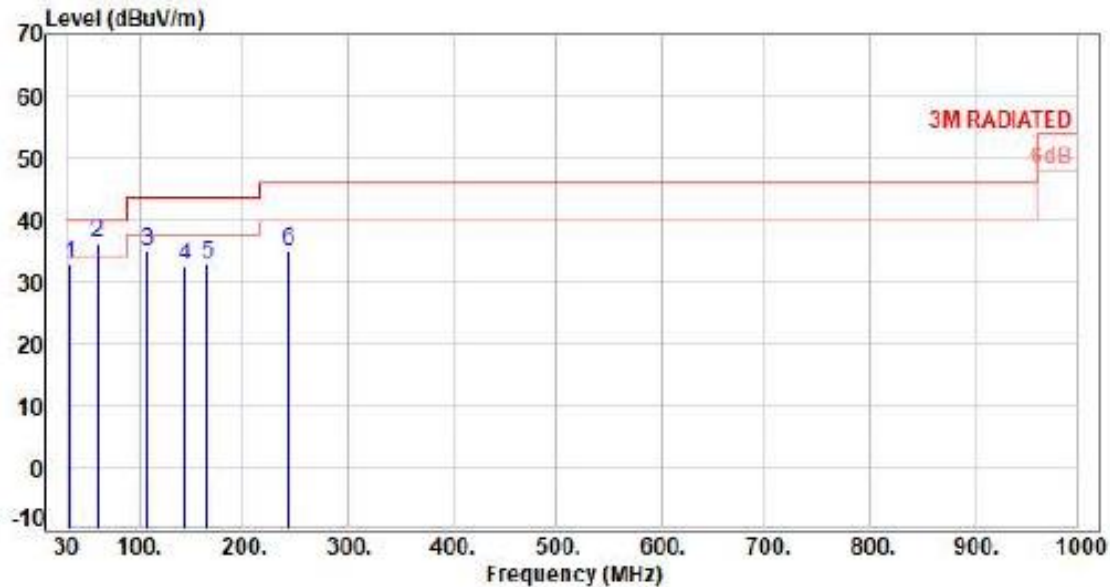
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 240V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 5		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	33.88	-12.29	45.12	32.83	40.00	-7.17	Peak	400	0	P
2	60.07	-11.31	47.43	36.12	40.00	-3.88	Peak	400	0	P
3	107.60	-14.43	49.32	34.89	43.50	-8.61	Peak	400	0	P
4	144.46	-10.91	43.49	32.58	43.50	-10.92	Peak	400	0	P
5	165.80	-11.10	44.05	32.95	43.50	-10.55	Peak	400	0	P
6	243.40	-12.24	47.30	35.06	46.00	-10.94	Peak	400	0	P

Note: Level=Reading+Factor

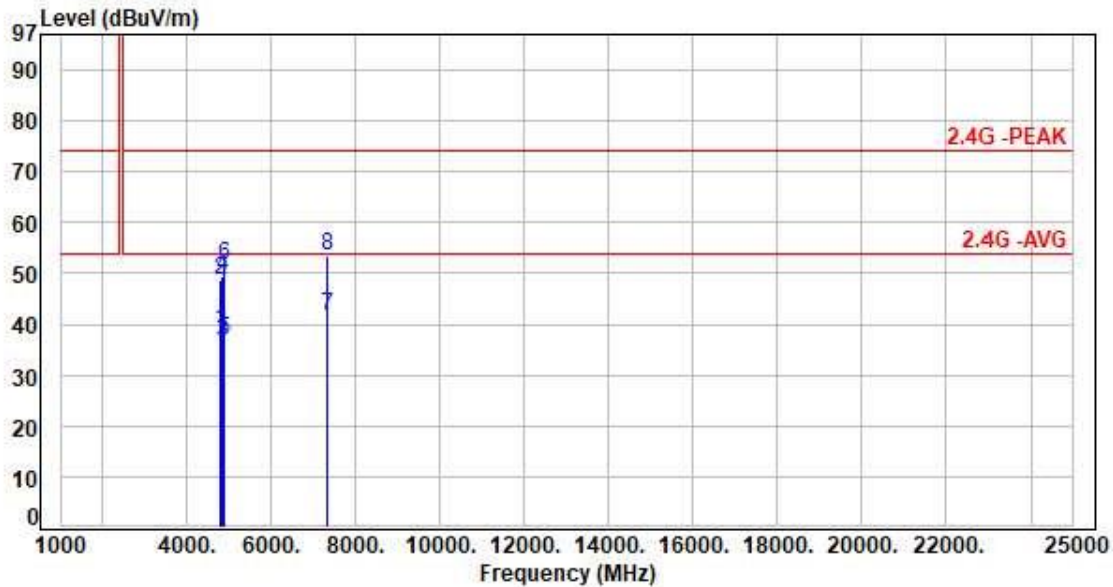
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



## 5.6 Test Result and Data (1GHz ~ 40GHz)

Power	:	AC 120V / 60Hz	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4804.00	5.93	32.85	38.78	54.00	-15.22	Average	100	121	P
2	4804.00	5.93	42.61	48.54	74.00	-25.46	Peak	100	121	P
3	4842.00	6.22	30.36	36.58	54.00	-17.42	Average	100	285	P
4	4842.00	6.22	43.13	49.35	74.00	-24.65	Peak	100	285	P
5	4880.00	6.38	30.55	36.93	54.00	-17.07	Average	100	320	P
6	4880.00	6.38	45.36	51.74	74.00	-22.26	Peak	100	320	P
7	7320.00	11.44	30.40	41.84	54.00	-12.16	Average	100	119	P
8	7320.00	11.44	41.90	53.34	74.00	-20.66	Peak	100	119	P

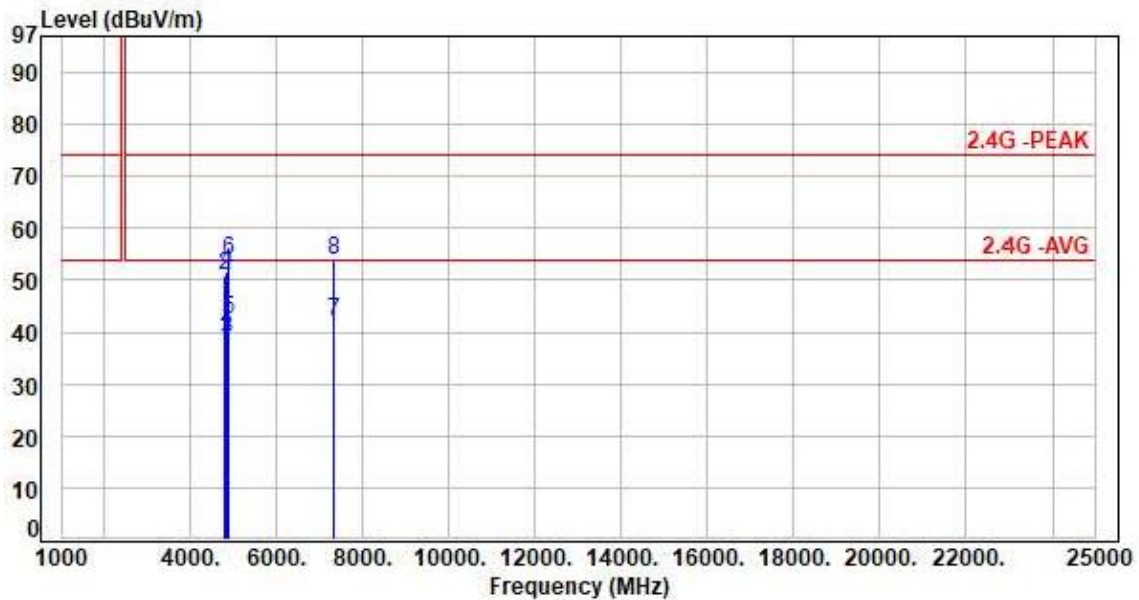
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4804.00	5.93	32.89	38.82	54.00	-15.18	Average	100	314	P
2	4804.00	5.93	45.11	51.04	74.00	-22.96	Peak	100	314	P
3	4842.00	6.22	32.33	38.55	54.00	-15.45	Average	100	2	P
4	4842.00	6.22	45.40	51.62	74.00	-22.38	Peak	100	2	P
5	4880.00	6.38	36.22	42.60	54.00	-11.40	Average	100	62	P
6	4880.00	6.38	47.34	53.72	74.00	-20.28	Peak	100	62	P
7	7320.00	11.44	30.47	41.91	54.00	-12.09	Average	100	164	P
8	7320.00	11.44	42.50	53.94	74.00	-20.06	Peak	100	164	P

Note: Level=Reading+Factor

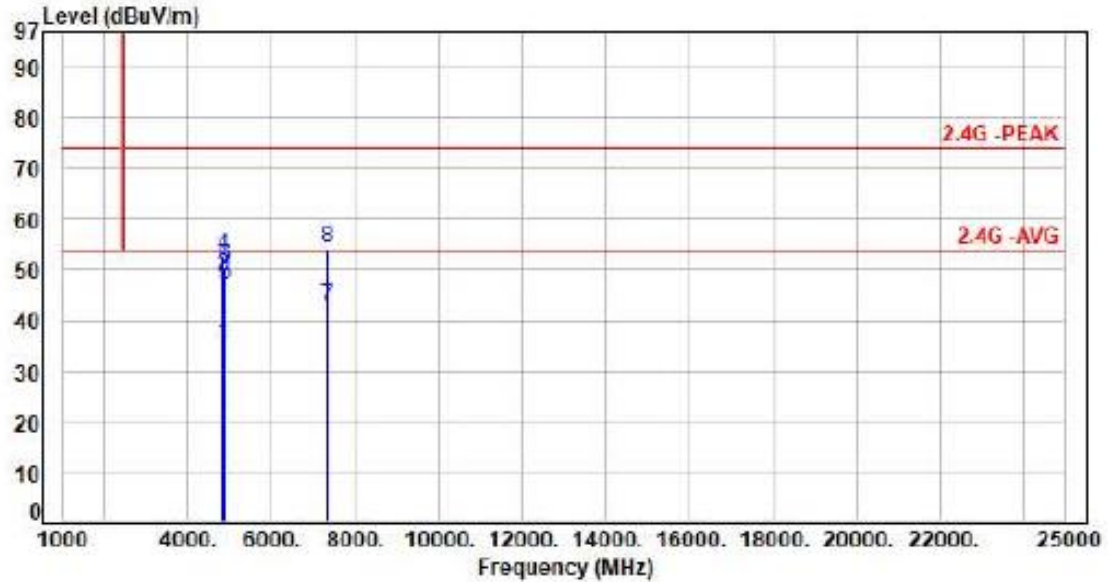
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor





Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 2		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4824.00	6.09	28.85	34.94	54.00	-19.06	Average	100	182	P
2	4824.00	6.09	42.49	48.58	74.00	-25.42	Peak	100	182	P
3	4852.00	6.29	42.56	48.85	54.00	-5.15	Average	100	262	P
4	4852.00	6.29	46.30	52.59	74.00	-21.41	Peak	100	262	P
5	4880.00	6.38	40.49	46.87	54.00	-7.13	Average	100	262	P
6	4880.00	6.38	44.11	50.49	74.00	-23.51	Peak	100	262	P
7	7320.00	11.44	31.48	42.92	54.00	-11.08	Average	100	119	P
8	7320.00	11.44	42.87	54.31	74.00	-19.69	Peak	100	119	P

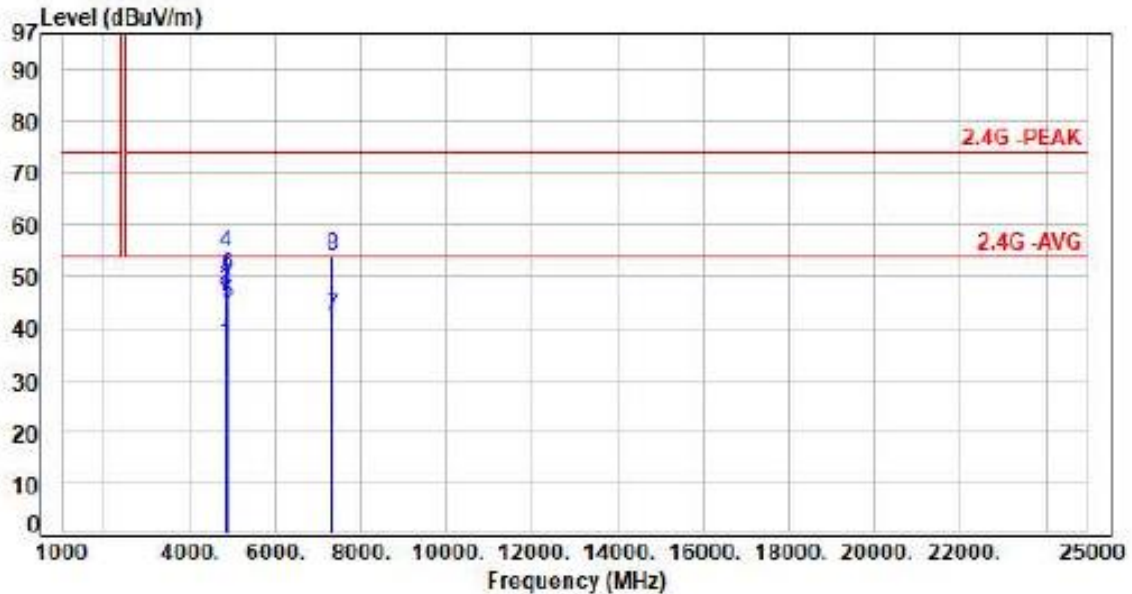
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4824.00	6.09	30.74	36.83	54.00	-17.17	Average	100	207	P
2	4824.00	6.09	41.94	48.03	74.00	-25.97	Peak	100	207	P
3	4852.00	6.29	40.72	47.01	54.00	-6.99	Average	100	84	P
4	4852.00	6.29	40.30	54.59	74.00	-19.41	Peak	100	84	P
5	4880.00	6.38	38.29	44.67	54.00	-9.33	Average	100	84	P
6	4880.00	6.38	43.93	50.31	74.00	-23.69	Peak	100	84	P
7	7320.00	11.44	30.48	41.92	54.00	-12.08	Average	100	166	P
8	7320.00	11.44	42.53	53.97	74.00	-20.03	Peak	100	166	P

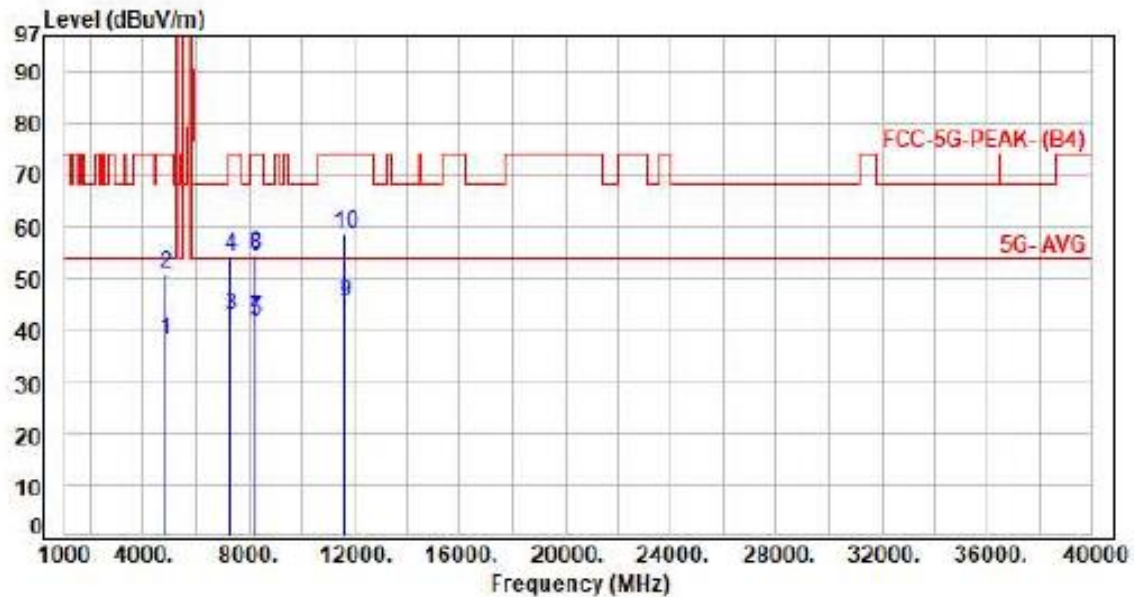
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 3		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4880.00	6.38	31.55	37.93	54.00	-16.07	Average	100	324	P
2	4880.00	6.38	44.36	50.74	74.00	-23.26	Peak	100	324	P
3	7320.00	11.44	31.40	42.84	54.00	-11.16	Average	100	118	P
4	7320.00	11.44	42.90	54.34	74.00	-19.66	Peak	100	118	P
5	8227.00	12.66	28.96	41.62	54.00	-12.38	Average	100	185	P
6	8227.00	12.66	41.68	54.34	74.00	-19.66	Peak	100	185	P
7	8265.00	12.76	29.11	41.87	54.00	-12.13	Average	100	262	P
8	8265.00	12.76	41.74	54.50	74.00	-19.50	Peak	100	262	P
9	11650.00	16.86	28.50	45.36	54.00	-8.64	Average	100	94	P
10	11650.00	16.86	41.67	58.53	74.00	-15.47	Peak	100	94	P

Note: Level=Reading+Factor

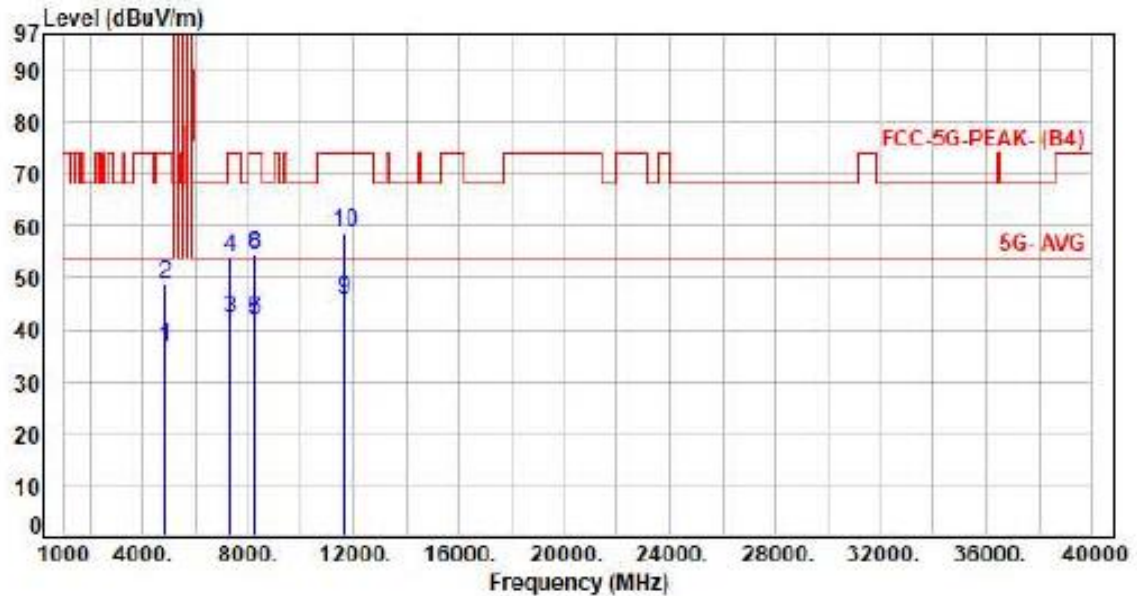
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor





Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4880.00	6.38	30.07	36.45	54.00	-17.55	Average	100	92	P
2	4880.00	6.38	42.28	48.66	74.00	-25.34	Peak	100	92	P
3	7320.00	11.44	30.47	41.91	54.00	-12.09	Average	100	164	P
4	7320.00	11.44	42.50	53.94	74.00	-20.06	Peak	100	164	P
5	8227.00	12.66	29.16	41.82	54.00	-12.18	Average	100	314	P
6	8227.00	12.66	41.38	54.04	74.00	-19.96	Peak	100	314	P
7	8265.00	12.76	28.79	41.55	54.00	-12.45	Average	100	2	P
8	8265.00	12.76	41.86	54.62	74.00	-19.38	Peak	100	2	P
9	11650.00	16.86	28.74	45.60	54.00	-8.40	Average	100	62	P
10	11650.00	16.86	41.86	58.72	74.00	-15.28	Peak	100	62	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



## 5.7 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