FCC RADIO TEST REPORT

According to

CFR47 § 15.249

Applicant	:	Benq Corporation
Address	:	16 Jihu Road, Neihu, Taipei 114, Taiwan
Equipment	:	Active Pen
Model No.	:	TPY11
Trade Name	:	**BenQ**
FCC ID	:	JVPTPY11

I HEREBY CERTIFY THAT :

The sample was received on Mar. 24, 2020 and the testing was carried out on Apr. 06, 2020 at Cerpass Technology (SuZhou) Co., Ltd. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology (SuZhou) Co., Ltd. , the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

Contents

History of this test report

Report No.	Issue Date	Description
TEFI2004079	May 06, 2020	Original

Report Type		Description
■	Original report	NA
□	Derivative Report	NA

1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.4: 2014
FCC Rules and Regulations Part 15 Subpart C §15.249

FCC Rule	. Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. Conducted Emission	Pass
15.209	. Radiated Emission	Pass
15.215	. 20dB Bandwidth Measurement	Pass
15.249	. Band Edges Measurement Data	Pass

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Equipment	Active Pen
Model No.	TPY11
Model Discrepancy	N/A
Frequency	2.402GHz~2.480GHz
Number of Channel	40 channels
Spreading Method	GFSK
Power Supply	Active Pen: DC3.7V supplied by battery
	Charging base: DC 5V
Antenna Specification	FPC Antenna with 1.96dBi

2.2 Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
***00**	**2402**	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	***19**	**2440**	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	***39**	**2480**
12	2426	26	2454	--	--
13	2428	27	2456	--	--

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 C63.4.
b. The complete test system included EUT for the RF test.
c. Switch the frequency points by up and down keys to press the circular key for long to keep transmitting
d. The EUT had been tested under operating condition

. EUT staying in continuous transmitting mode was programmed.
Channel Low (2402MHz), Channel Mid (2440MHz) and Channel High (2480MHz) were chosen for full testing.

2.4 Description of Test System

No	Device	Manufacturer	Model No.	Description
1	Notebook	SONY	PCG-71811P	R33021

Use Cable:

No.	Cable	Quantity	Description
A	USB Cable	1	0.15m Non Shielding

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	
	FCC	TW1439, TW1079
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication test C-4663 for Conducted emission test 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
RF Conducted	RFCON01-NK	2020/04/06	26℃ / 55%	Nick Guan
Radiated Emissions	3M01-NK	2020/04/06	25℃ / 55%	Nick Guan
AC Power Line Conducted Emission	CON01-NK	2020/04/02	25℃ / 55%	Nick Guan

2.6 Measurement Uncertainty

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±1.60dB
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. 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	2019/09/24	2020/09/23
Active Loop Antenna	EMCO	6507	40855	2019/05/24	2020/05/23
Horn Antenna	EMCO	3115	31601	2019/10/7	2020/10/06
Horn Anrenna	EMCO	3116	31974	2019/09/17	2020/09/16
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2019/05/14	2020/05/13
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100219	2019/07/22	2020/07/21
Preamplifier	EM Electronics corp.	EM330	60660	2019/03/16	2021/03/15
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2019/09/20	2020/09/19
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2019/04/07	2020/04/06
Cable-3in1(30 M-1G)	HARBOUR INDUSTRIES	LL142	CCE1316	2019/09/20	2020/09/19
Cable-0.5m(1G -40G)	Rapidtek	40GHZ 50CM	38MS-38MS50 314	2019/04/09	2020/04/08
Cable-3m(1G-40G)	Rapidtek	40GHZ 300CM	38MS-38MS30 0314	2019/04/09	2020/04/08
Cable-8m(1G-40G)	Rapidtek	40GHZ 800CM	38MS-38MS80 0314	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	2019/07/22	2020/07/21
CAX Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2019/11/06	2020/11/05
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2019/04/07	2020/04/06
Attenuator	KEYSIGHT	8491B	MY39250703	2019/09/12	2020/09/11
TEMP & HUMI CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2019/08/28	2020/08/27
Power Sensor	Anritsu	MA2411B	1207295	2019/04/11	2020/04/10

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	100821	2019/09/16	2020/09/15
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127-740	2019/05/22	2020/05/21
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	101933	2019/09/11	2020/09/10
Cable-6m(9k~300M)	NA	CFD300-NL	NA	2020/03/11	2021/03/10
E3	AUDIX	v8.2014-8-6	RK-000536	NA	NA

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

No.	Antenna Type	Antenna Gain
1	FPC Antenna	1.96dBi

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 on the 120 VAC power and return leads of the EUT 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 as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

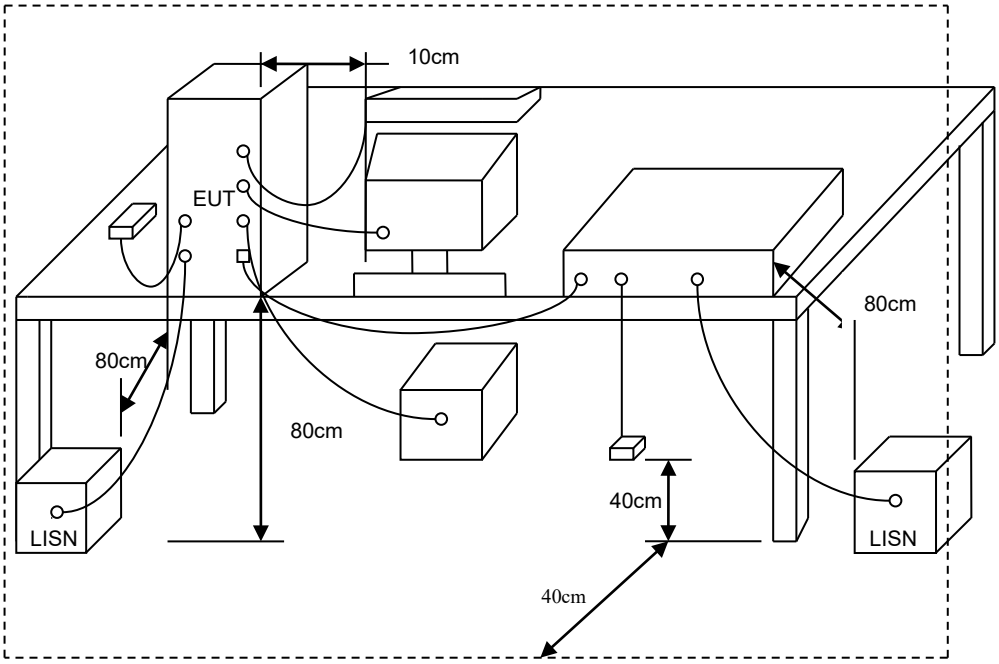
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*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.

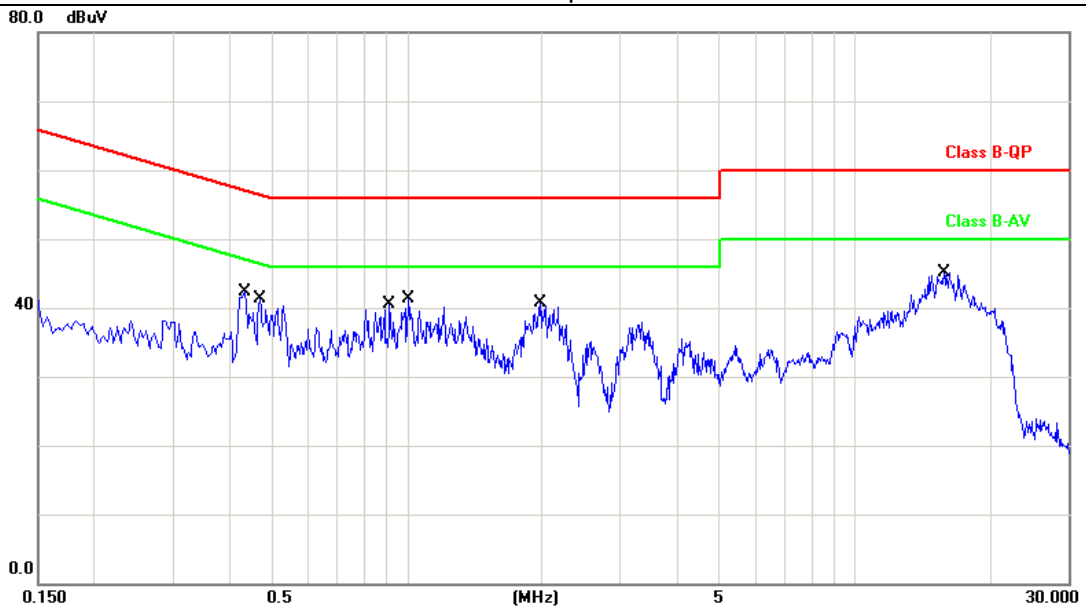
5.3 Typical Test Setup



5.4 Test Result and Data

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

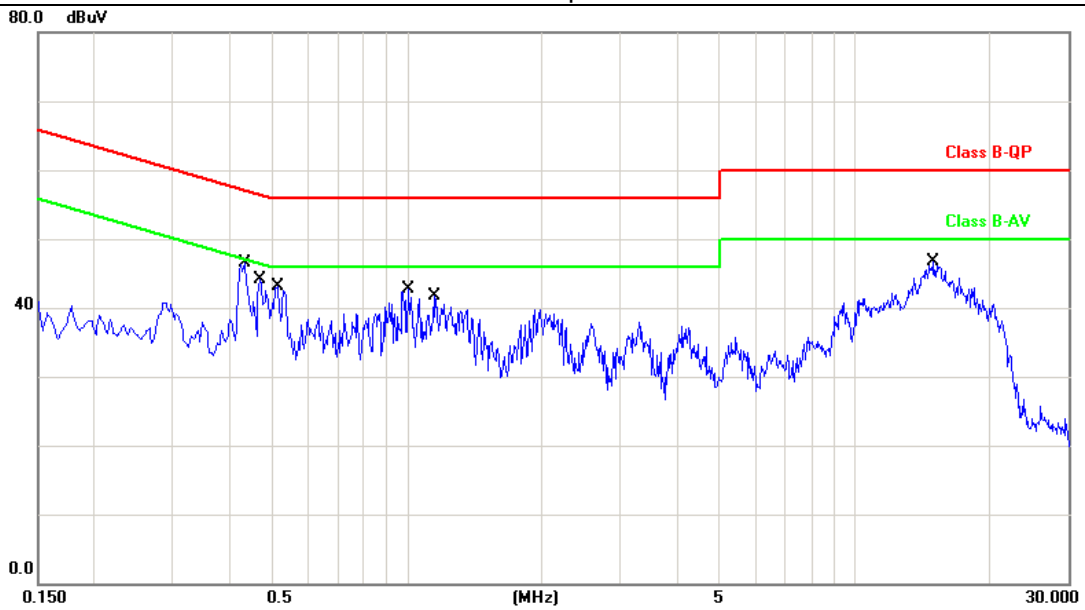
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.4340	9.84	30.53	40.37	57.18	-16.81	QP
2	0.4340	9.84	19.77	29.61	47.18	-17.57	AVG
3	0.4700	9.82	27.85	37.67	56.51	-18.84	QP
4	0.4700	9.82	16.93	26.75	46.51	-19.76	AVG
5	0.9140	10.02	24.21	34.23	56.00	-21.77	QP
6	0.9140	10.02	15.42	25.44	46.00	-20.56	AVG
7	1.0060	10.05	22.90	32.95	56.00	-23.05	QP
8	1.0060	10.05	17.01	27.06	46.00	-18.94	AVG
9	1.9860	10.96	25.53	36.49	56.00	-19.51	QP
10	1.9860	10.96	15.37	26.33	46.00	-19.67	AVG
11	15.8820	10.26	27.55	37.81	60.00	-22.19	QP
12	15.8820	10.26	18.63	28.89	50.00	-21.11	AVG

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

Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.4340	9.84	35.04	44.88	57.18	-12.30	QP
2	0.4340	9.84	23.36	33.20	47.18	-13.98	AVG
3	0.4700	9.82	32.31	42.13	56.51	-14.38	QP
4	0.4700	9.82	18.93	28.75	46.51	-17.76	AVG
5	0.5140	9.81	31.62	41.43	56.00	-14.57	QP
6	0.5140	9.81	18.52	28.33	46.00	-17.67	AVG
7	1.0100	10.04	26.94	36.98	56.00	-19.02	QP
8	1.0100	10.04	16.83	26.87	46.00	-19.13	AVG
9	1.1500	10.04	24.56	34.60	56.00	-21.40	QP
10	1.1500	10.04	16.77	26.81	46.00	-19.19	AVG
11	15.0300	10.23	29.41	39.64	60.00	-20.36	QP
12	15.0300	10.23	20.26	30.49	50.00	-19.51	AVG

6. Test of Spurious Emission (Radiated)

6.1 Test Limit

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2014. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions for unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance Meters	Radiated (μ V / M)	Radiated (dB μ V/ M)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

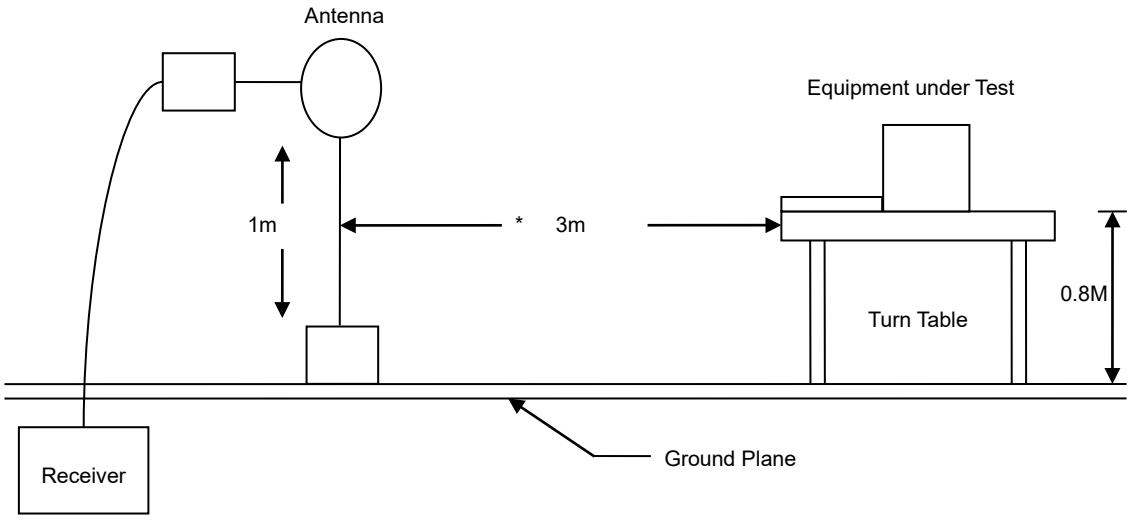
Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	**10**	**30**
230-1000	**10**	**37**

6.2 Test Procedures

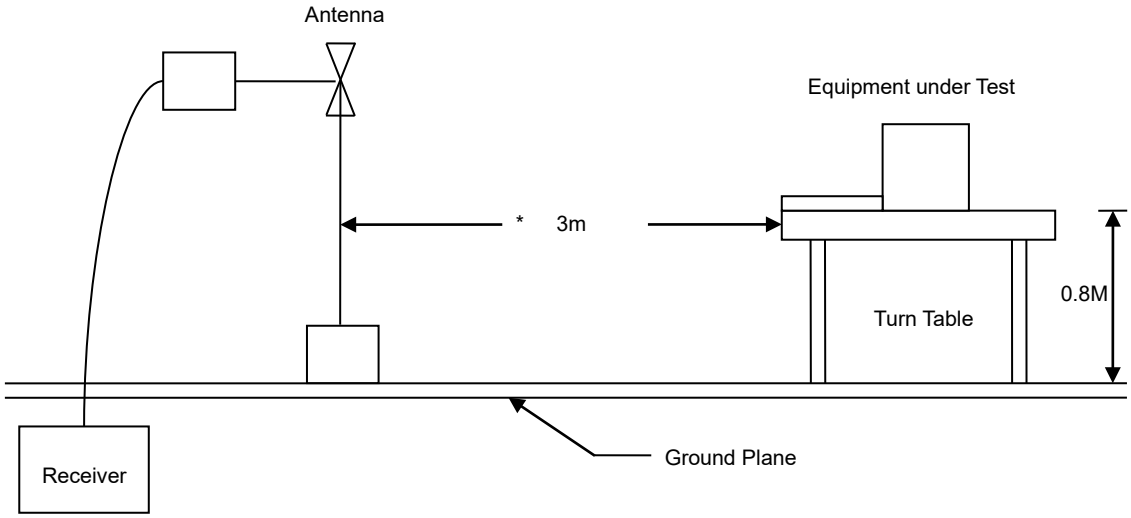
a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna 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.

6.3 Typical Test Setup

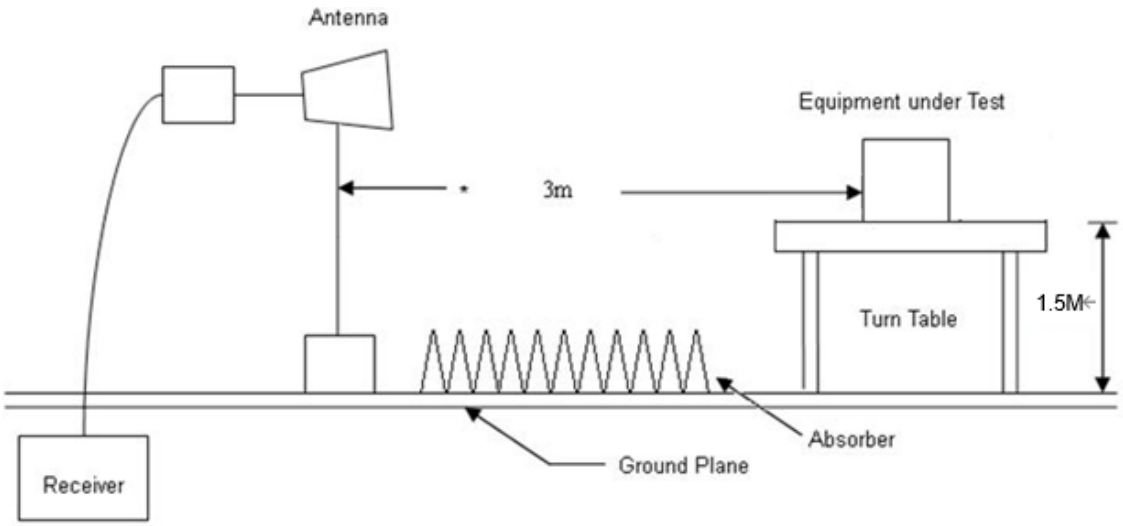
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



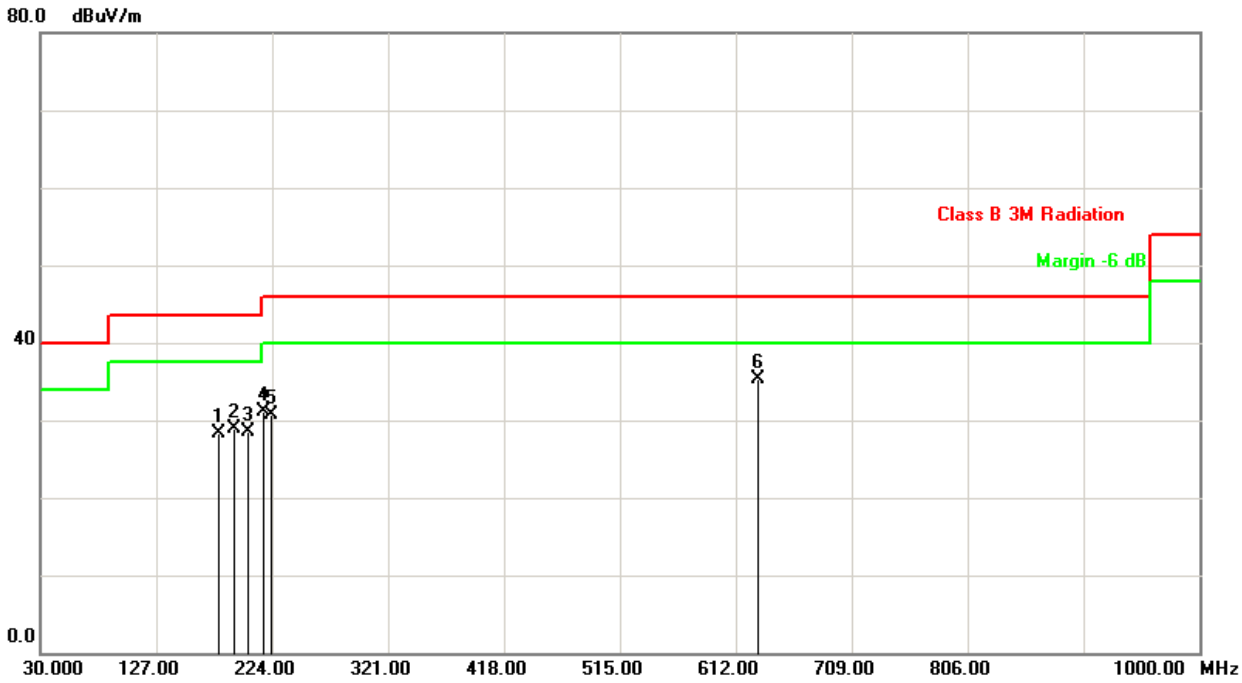
6.4 Test Result and Data (9kHz ~ 30MHz)

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

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

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

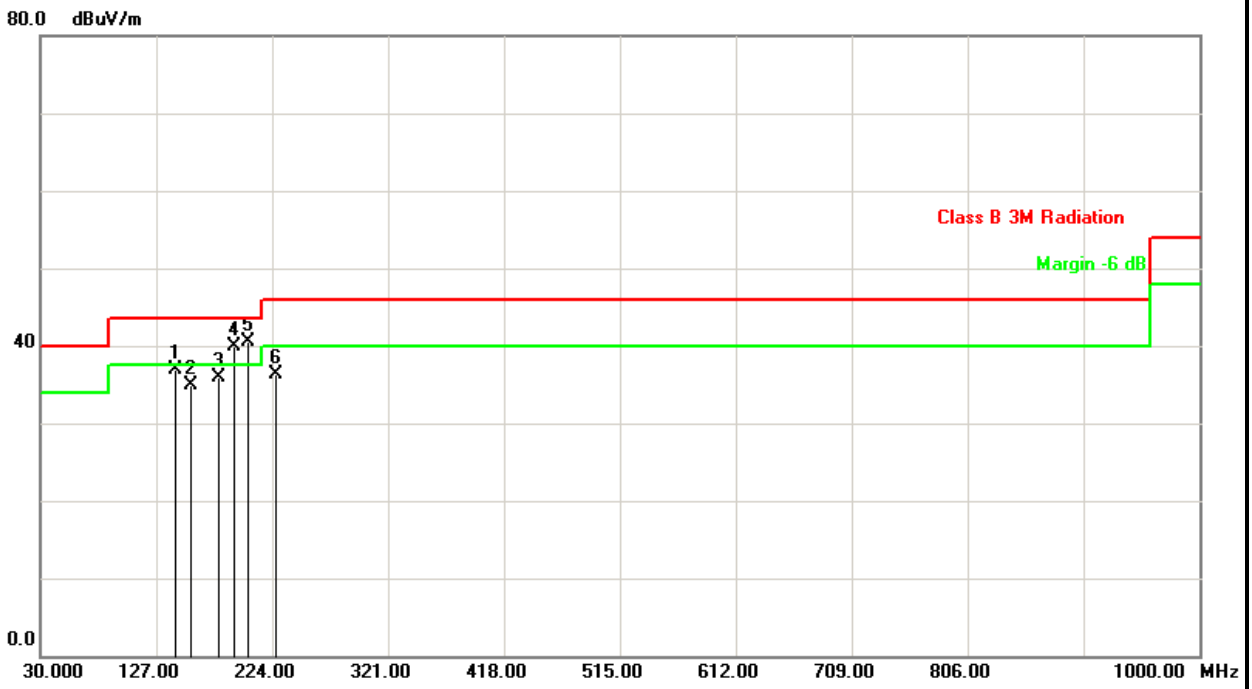
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 9KHz -30MHz spurious emission is under limit 20dB more



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	179.3799	-13.91	42.19	28.28	43.50	-15.22	peak	100	96
2	191.9900	-12.31	41.29	28.98	43.50	-14.52	peak	100	103
3	203.6299	-11.68	40.28	28.60	43.50	-14.90	peak	100	244
4	217.2100	-11.65	42.72	31.07	46.00	-14.93	peak	100	18
5	223.0300	-11.61	42.22	30.61	46.00	-15.39	peak	100	0
6	630.4299	-2.18	37.49	35.31	46.00	-10.69	peak	100	36

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

Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 9KHz -30MHz spurious emission is under limit 20dB more

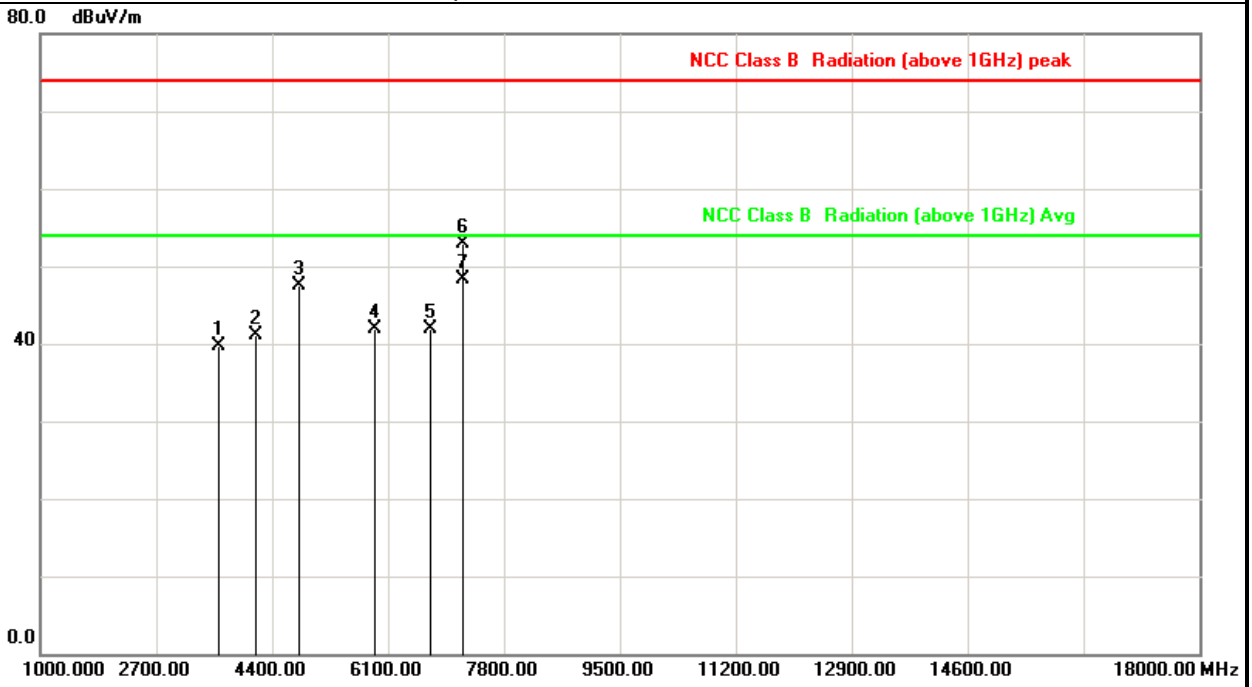


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	143.4900	-12.97	49.83	36.86	43.50	-6.64	QP	143	63
2	156.0999	-13.94	48.80	34.86	43.50	-8.64	peak	100	214
3	179.3799	-13.91	49.86	35.95	43.50	-7.55	QP	152	5
4	191.9900	-12.31	52.27	39.96	43.50	-3.54	QP	137	102
5	203.6299	-11.68	52.19	40.51	43.50	-2.99	QP	156	338
6	227.8799	-11.58	47.94	36.36	46.00	-9.64	peak	200	19

6.6 Test Result and Data (1GHz ~ 25GHz)

Power	DC3.7V	Pol/Phase	VERTICAL
Test Mode	Mode 1, CH 00	Operation mode	TX

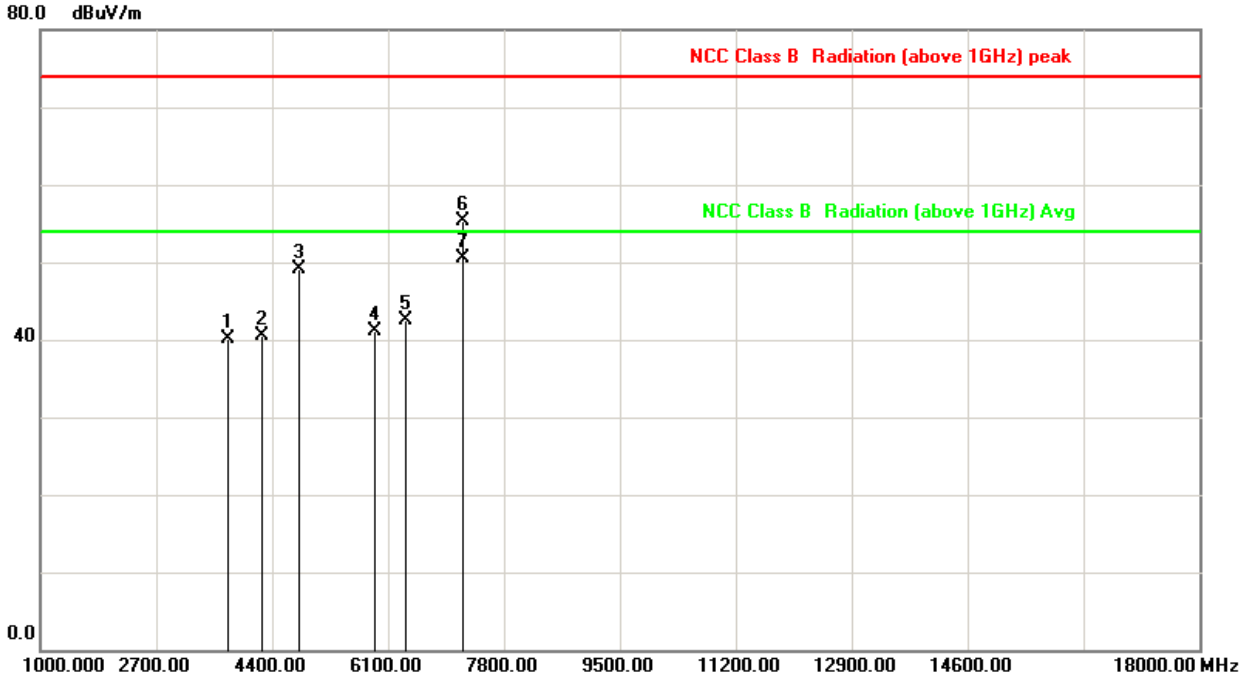
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 25000MHz spurious emission is under limit 20dB more.



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3606.667	-3.24	42.99	39.75	74.00	-34.25	peak
2	4173.333	-1.01	42.12	41.11	74.00	-32.89	peak
3	4804.000	1.23	46.21	47.44	74.00	-26.56	peak
4	5901.667	3.02	38.87	41.89	74.00	-32.11	peak
5	6723.333	4.18	37.66	41.84	74.00	-32.16	peak
6	7206.000	5.88	47.12	53.00	74.00	-21.00	peak
7	7206.000	5.88	42.39	48.27	54.00	-5.73	AVG

Power	DC3.7V	Pol/Phase	HORIZONTAL
Test Mode	Mode 1, CH 00	Operation mode	TX

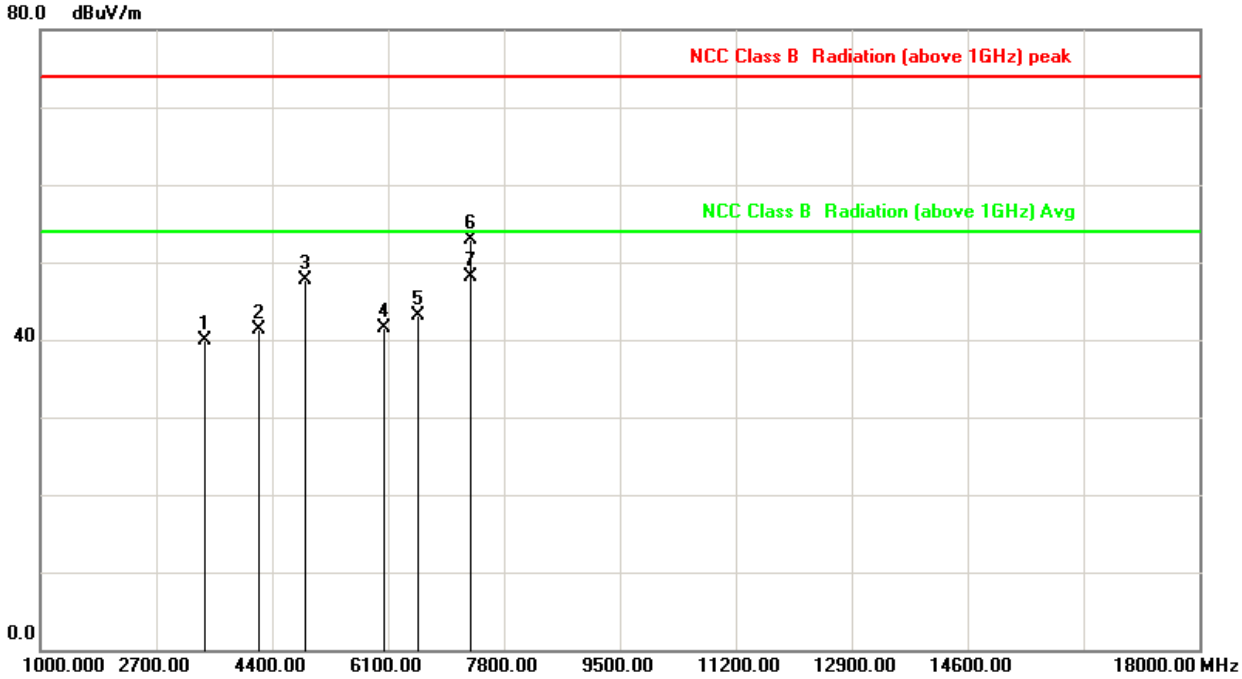
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 25000MHz spurious emission is under limit 20dB more.



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3748.333	-2.75	42.92	40.17	74.00	-33.83	peak
2	4258.333	-0.57	41.07	40.50	74.00	-33.50	peak
3	4804.000	1.23	47.89	49.12	74.00	-24.88	peak
4	5901.667	3.02	38.00	41.02	74.00	-32.98	peak
5	6355.000	3.40	39.12	42.52	74.00	-31.48	peak
6	7206.000	5.88	49.39	55.27	74.00	-18.73	peak
7	7206.000	5.88	44.57	50.45	54.00	-3.55	AVG

Power	DC3.7V	Pol/Phase	VERTICAL
Test Mode	Mode 1, CH19	Operation mode	TX

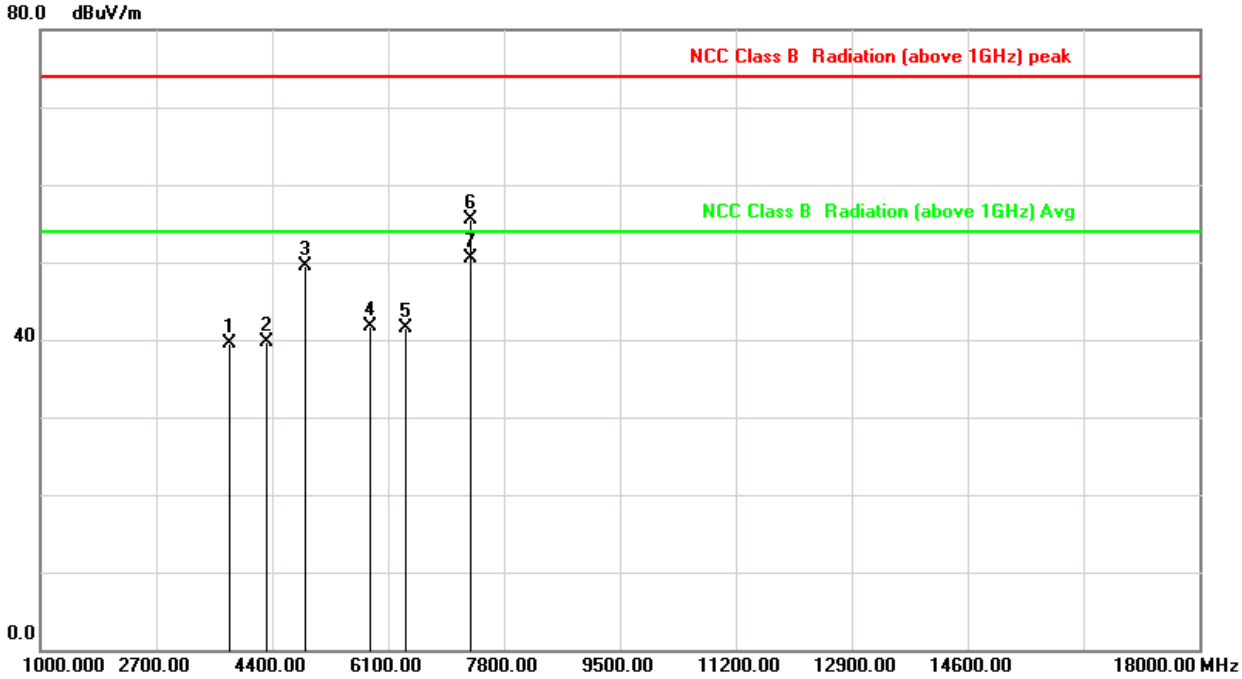
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 25000MHz spurious emission is under limit 20dB more.



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3408.333	-4.08	44.04	39.96	74.00	-34.04	peak
2	4201.667	-0.86	42.17	41.31	74.00	-32.69	peak
3	4880.000	1.37	46.38	47.75	74.00	-26.25	peak
4	6043.333	3.28	38.32	41.60	74.00	-32.40	peak
5	6553.333	3.63	39.45	43.08	74.00	-30.92	peak
6	7320.000	6.33	46.52	52.85	74.00	-21.15	peak
7	7320.000	6.33	41.78	48.11	54.00	-5.89	AVG

Power	DC3.7V	Pol/Phase	HORIZONTAL
Test Mode	Mode 1, CH19	Operation mode	TX

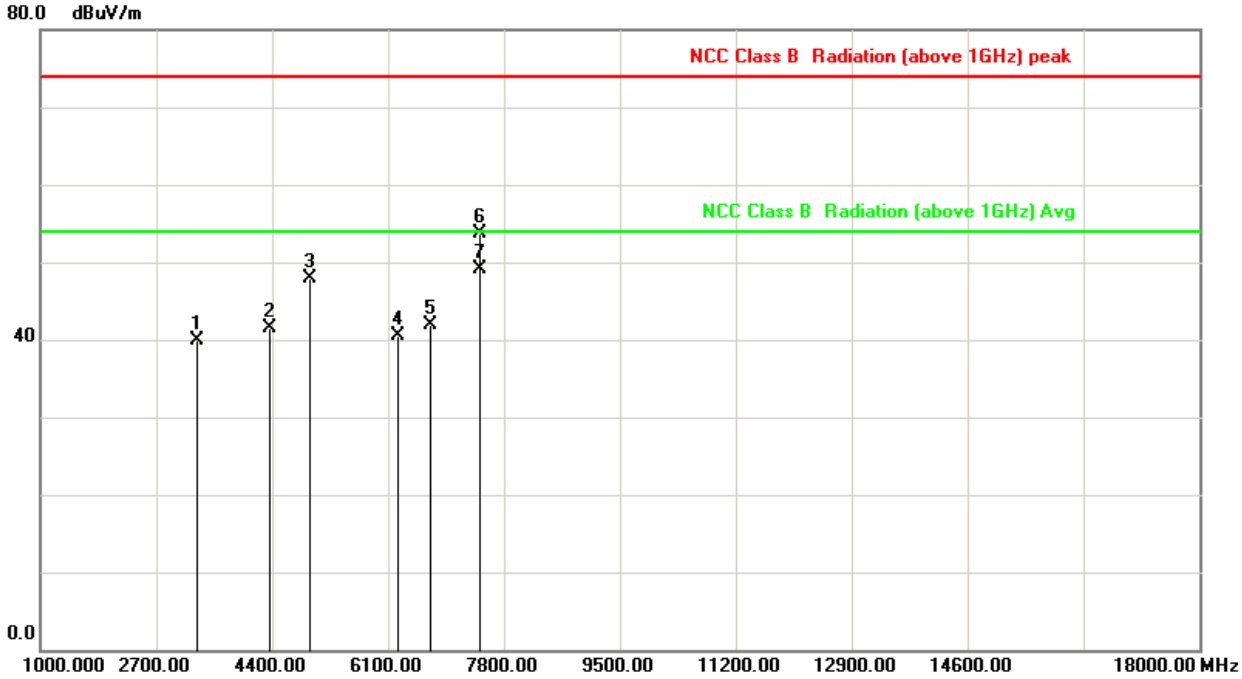
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 25000MHz spurious emission is under limit 20dB more.



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3776.667	-2.65	42.22	39.57	74.00	-34.43	peak
2	4315.000	-0.28	40.08	39.80	74.00	-34.20	peak
3	4880.000	1.37	48.16	49.53	74.00	-24.47	peak
4	5845.000	2.88	38.88	41.76	74.00	-32.24	peak
5	6355.000	3.40	38.12	41.52	74.00	-32.48	peak
6	7320.000	6.33	49.24	55.57	74.00	-18.43	peak
7	7320.000	6.33	44.26	50.59	54.00	-3.41	AVG

Power	DC3.7V	Pol/Phase	VERTICAL
Test Mode	Mode 1, CH39	Operation mode	TX

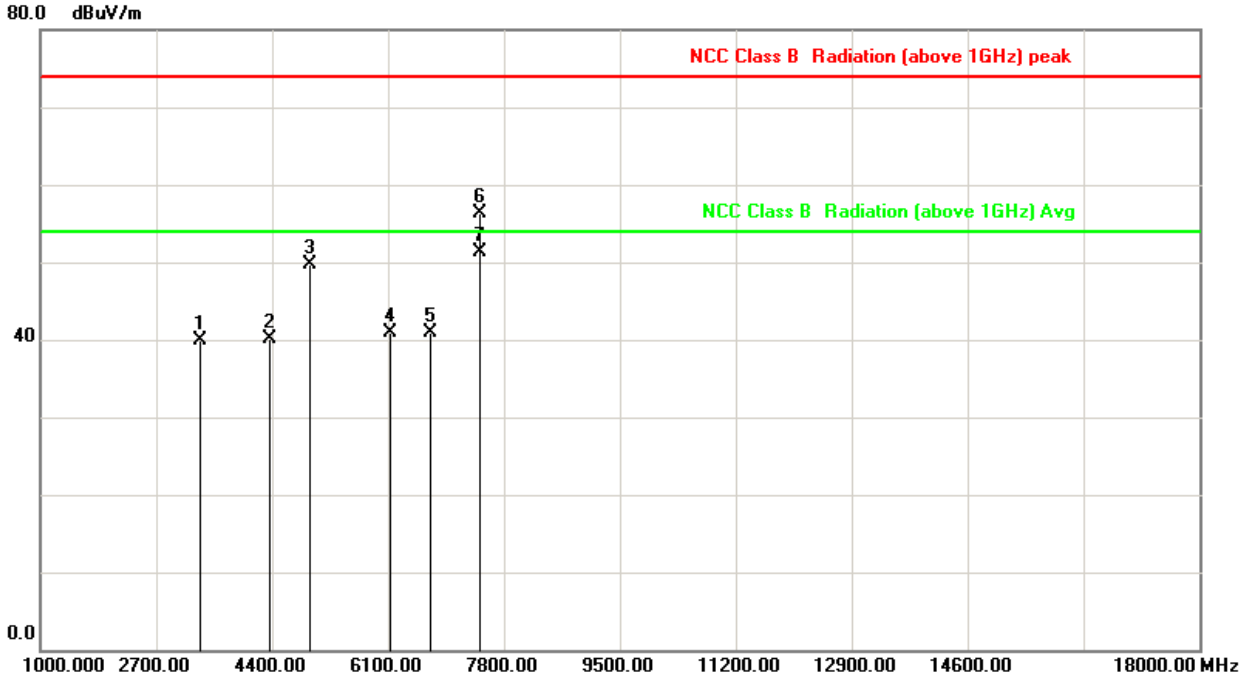
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 25000MHz spurious emission is under limit 20dB more.



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3295.000	-4.68	44.58	39.90	74.00	-34.10	peak
2	4371.667	0.01	41.54	41.55	74.00	-32.45	peak
3	4960.000	1.52	46.32	47.84	74.00	-26.16	peak
4	6241.667	3.36	37.23	40.59	74.00	-33.41	peak
5	6723.333	4.18	37.66	41.84	74.00	-32.16	peak
6	7440.000	6.80	46.92	53.72	74.00	-20.28	peak
7	7440.000	6.80	42.38	49.18	54.00	-4.82	AVG

Power	DC3.7V	Pol/Phase	HORIZONTAL
Test Mode	Mode 1, CH39	Operation mode	TX

Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor
The 18000MHz - 25000MHz spurious emission is under limit 20dB more.



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3351.667	-4.38	44.27	39.89	74.00	-34.11	peak
2	4371.667	0.01	40.10	40.11	74.00	-33.89	peak
3	4960.000	1.52	48.24	49.76	74.00	-24.24	peak
4	6128.333	3.31	37.64	40.95	74.00	-33.05	peak
5	6723.333	4.18	36.66	40.84	74.00	-33.16	peak
6	7440.000	6.80	49.53	56.33	74.00	-17.67	peak
7	7440.000	6.80	44.48	51.28	54.00	-2.72	AVG

7. 20dB Bandwidth Measurement Data

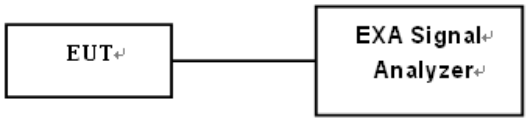
7.1 Test Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

7.2 Test Procedure

a. The transmitter output was connected to the spectrum analyzer.
b. Set RBW of spectrum analyzer to 30 KHz and VBW to 100KHz.
c. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

7.3 Test Setup Layout

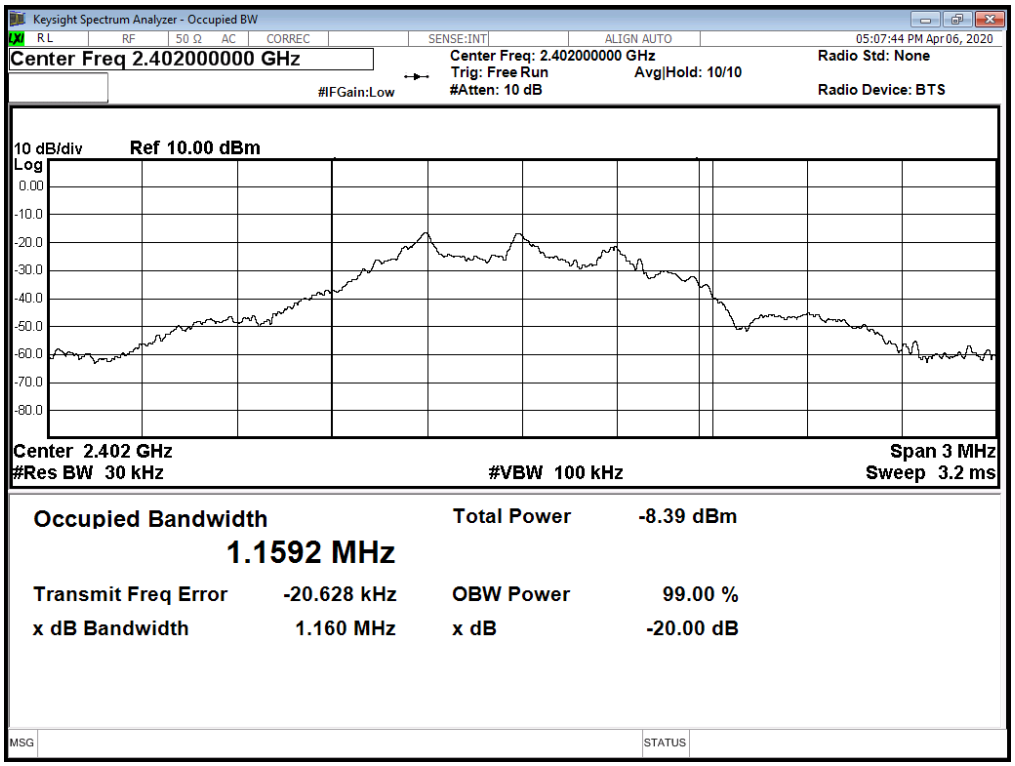


7.4 Test Result and Data

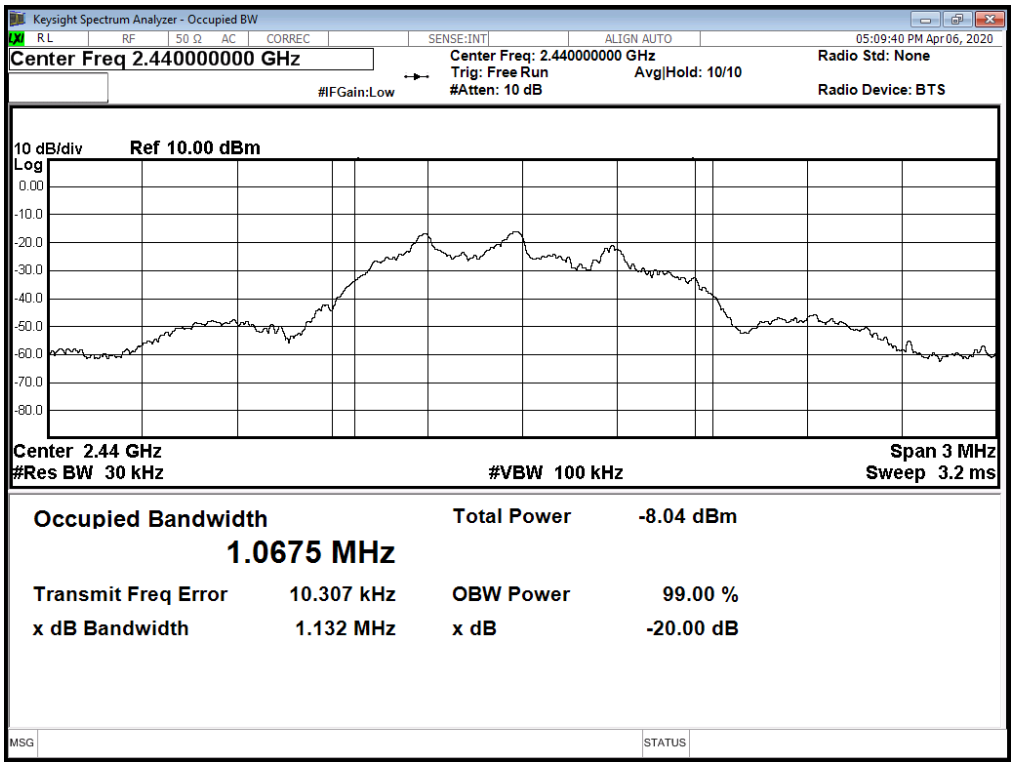
Power :	DC 3.7V	Temperature :	24 °C
Test Mode	TX-Mode	Humidity :	54 %
Test date :	Apr. 06，2020		

Channel	Frequency (MHz)	20dB Bandwidth (KHz)
Low	2402	1160.00
Mid	2440	1132.00
High	2480	1143.00

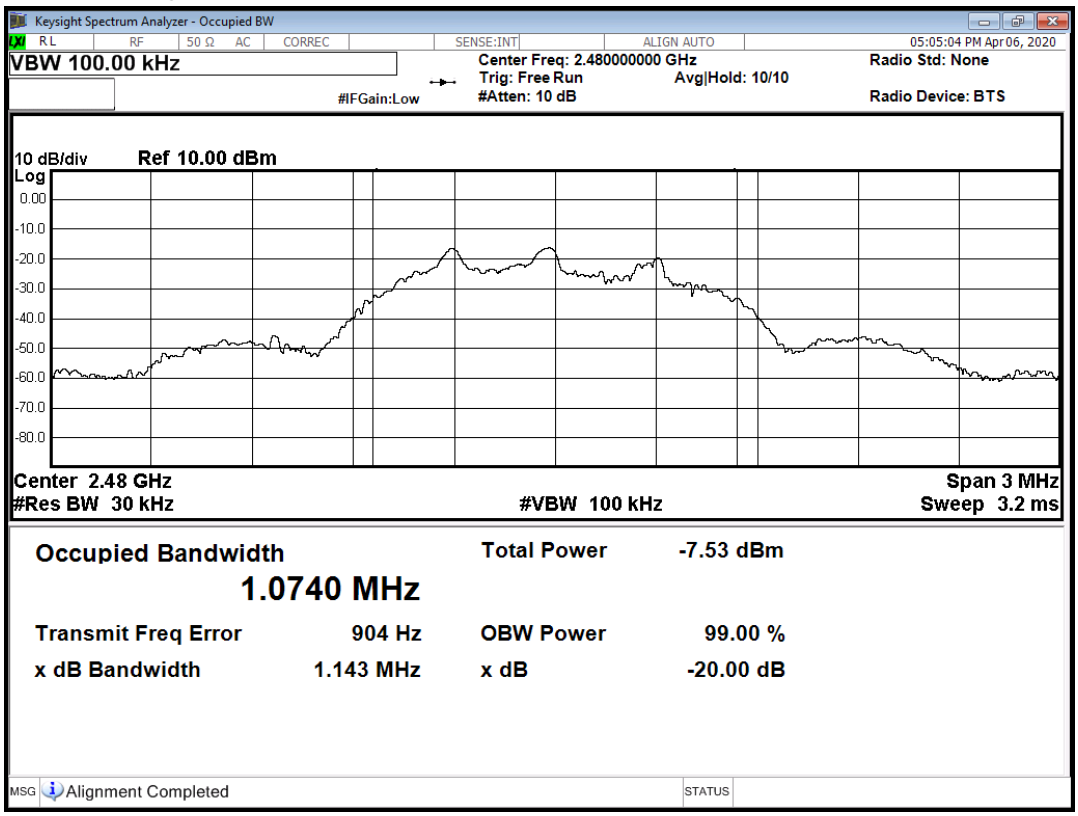
Channel: Low



Channel: Mid



Channel: High



8. Band Edges Measurement

8.1 Test Limit

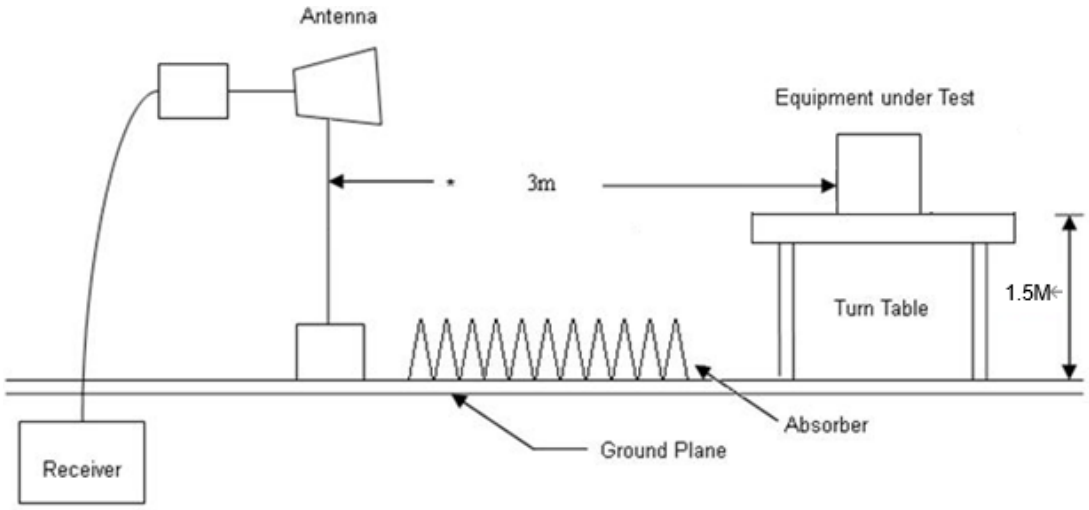
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

8.2 Test Procedure

a) The EUT was placed on a rotatable table top 1.5 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 resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1GHz.
e) The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
f) The band edges was measured and recorded.

8.3 Test Setup Layout

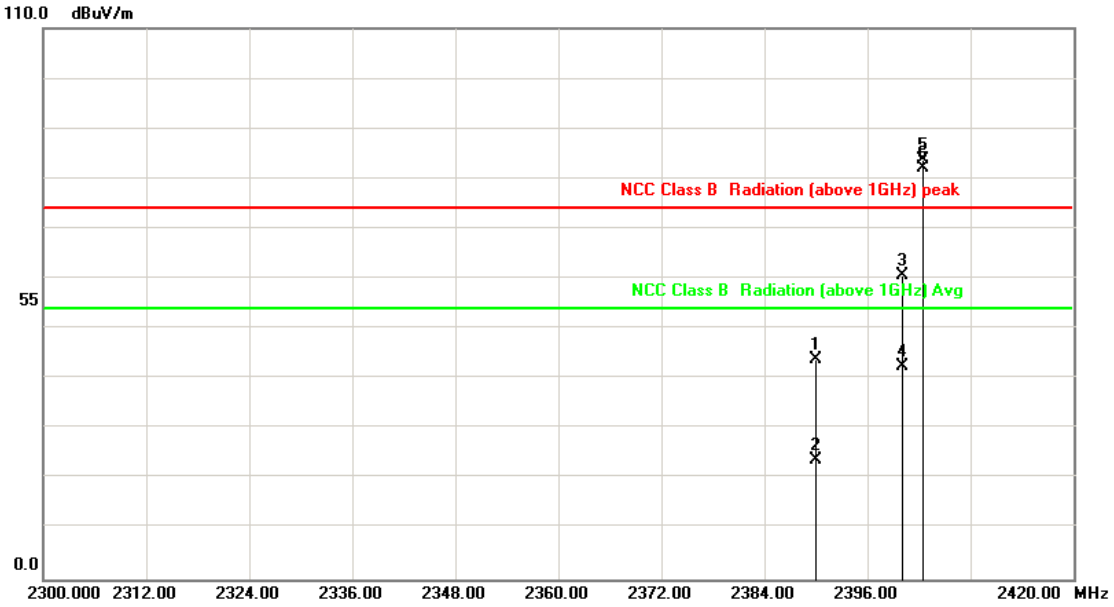
Above 1GHz Test Setup



8.4 Restrict band emission Measurement Data

Power	DC3.7V	Pol/Phase	VERTICAL
Test Mode	CH00		

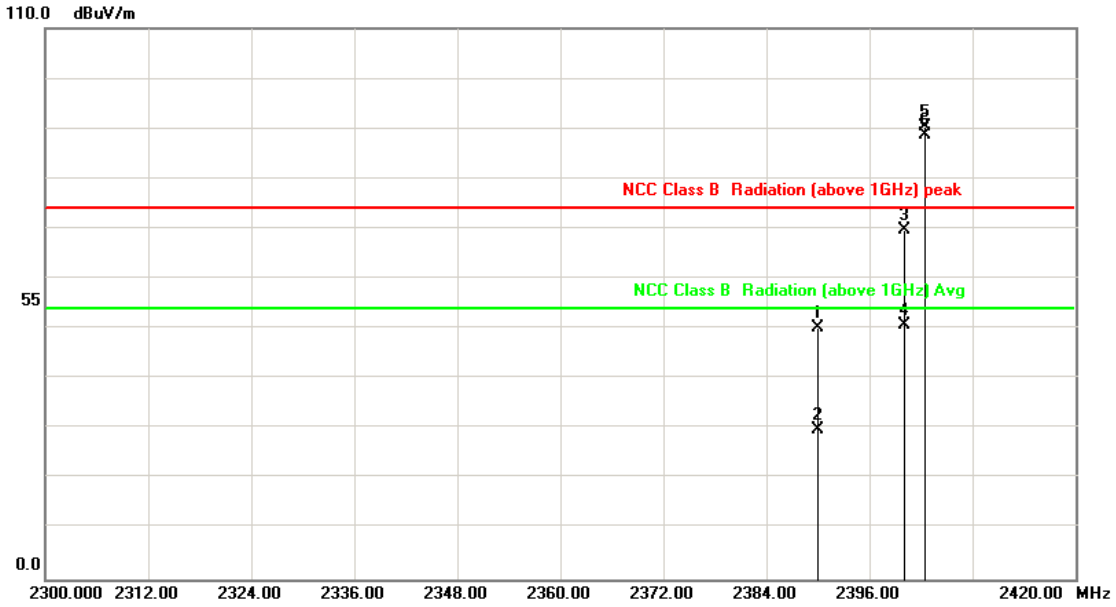
Note : Level = Reading + Factor
Margin = Level – Limit



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	-10.05	53.95	43.90	74.00	-30.10	peak
2	2390.000	-10.05	33.74	23.69	54.00	-30.31	AVG
3	2400.000	-10.01	70.53	60.52	74.00	-13.48	peak
4	2400.000	-10.01	52.42	42.41	54.00	-11.59	AVG
5	2402.400	-10.00	93.68	83.68	114.00	-30.32	peak
6	2402.400	-10.00	92.18	82.18	94.00	-11.82	AVG

Power	DC3.7V	Pol/Phase	Horizontal
Test Mode	CH00		

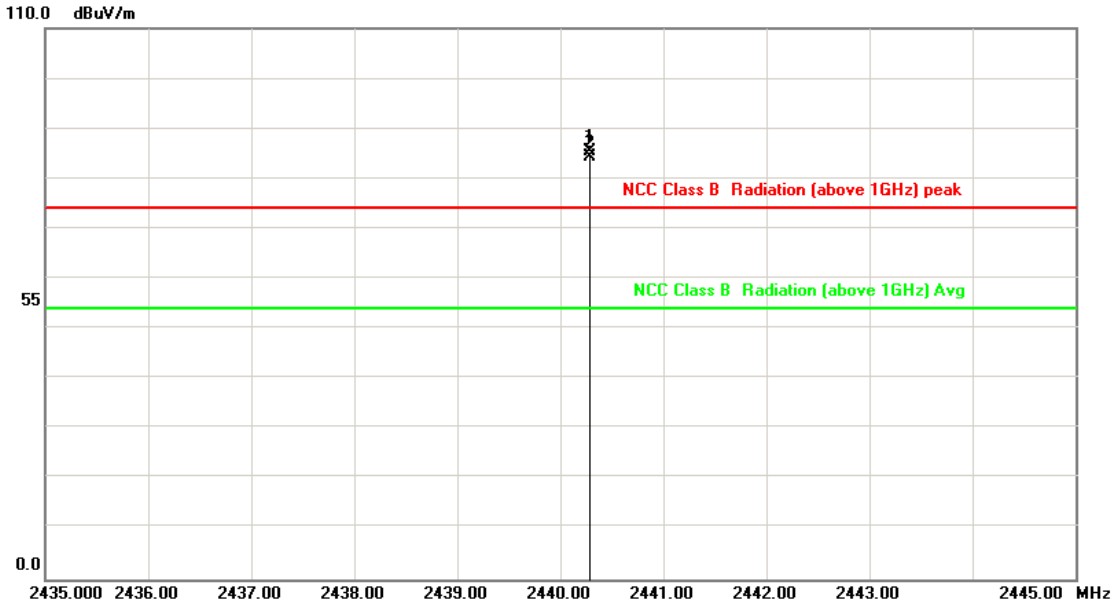
Note : Level = Reading + Factor
Margin = Level – Limit



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2390.000	-10.05	60.35	50.30	74.00	-23.70	peak
2	2390.000	-10.05	39.86	29.81	54.00	-24.19	AVG
3	2400.000	-10.01	79.68	69.67	74.00	-4.33	peak
4	2400.000	-10.01	60.86	50.85	54.00	-3.15	AVG
5	2402.400	-10.00	100.29	90.29	114.00	-23.71	peak
6	2402.400	-10.00	98.75	88.75	94.00	-5.25	AVG

Power	DC3.7V	Pol/Phase	VERTICAL
Test Mode	CH19		

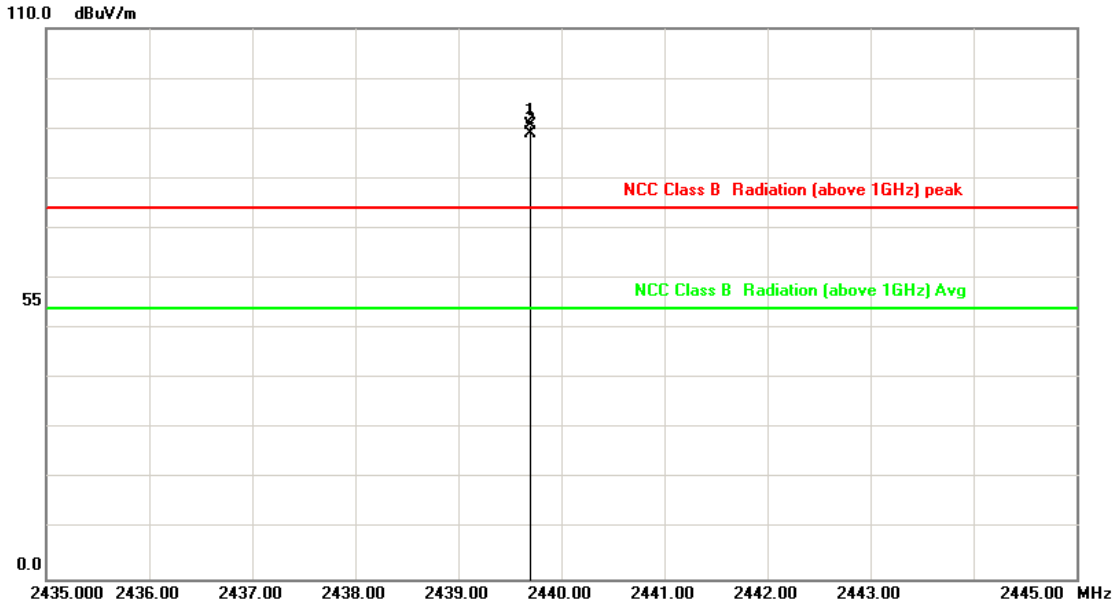
Note : Level = Reading + Factor
Margin = Level – Limit



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2440.283	-9.84	95.23	85.39	114.00	-28.61	peak
2	2440.283	-9.84	94.13	84.29	94.00	-9.71	AVG

Power	DC3.7V	Pol/Phase	Horizontal
Test Mode	CH19		

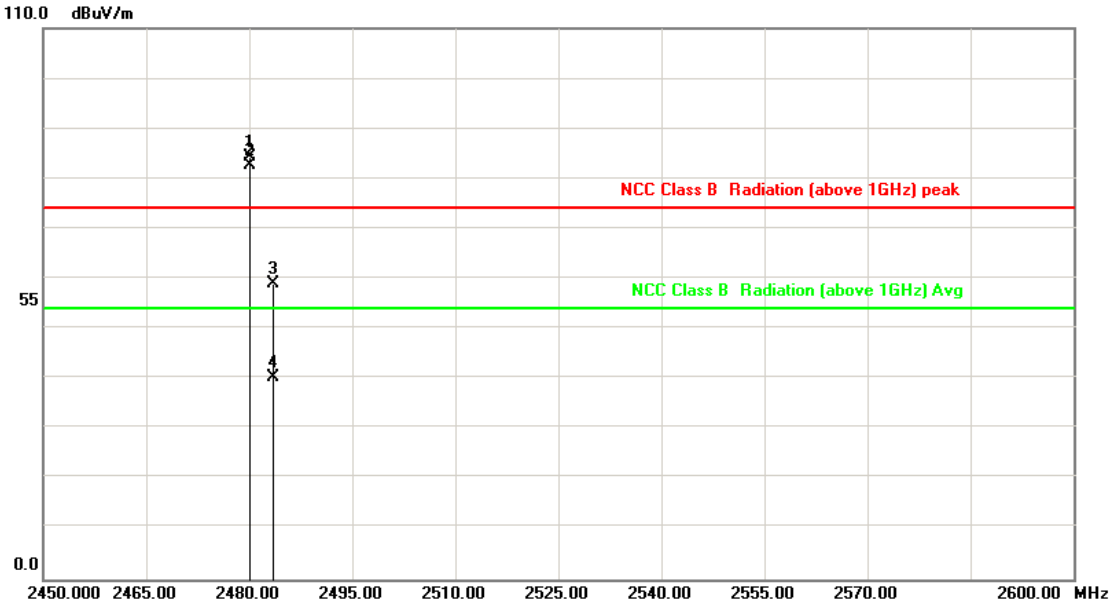
Note : Level = Reading + Factor
Margin = Level – Limit



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2439.700	-9.84	100.59	90.75	114.00	-23.25	peak
2	2439.700	-9.84	98.73	88.89	94.00	-5.11	AVG

Power	DC3.7V	Pol/Phase	VERTICAL
Test Mode	CH39		

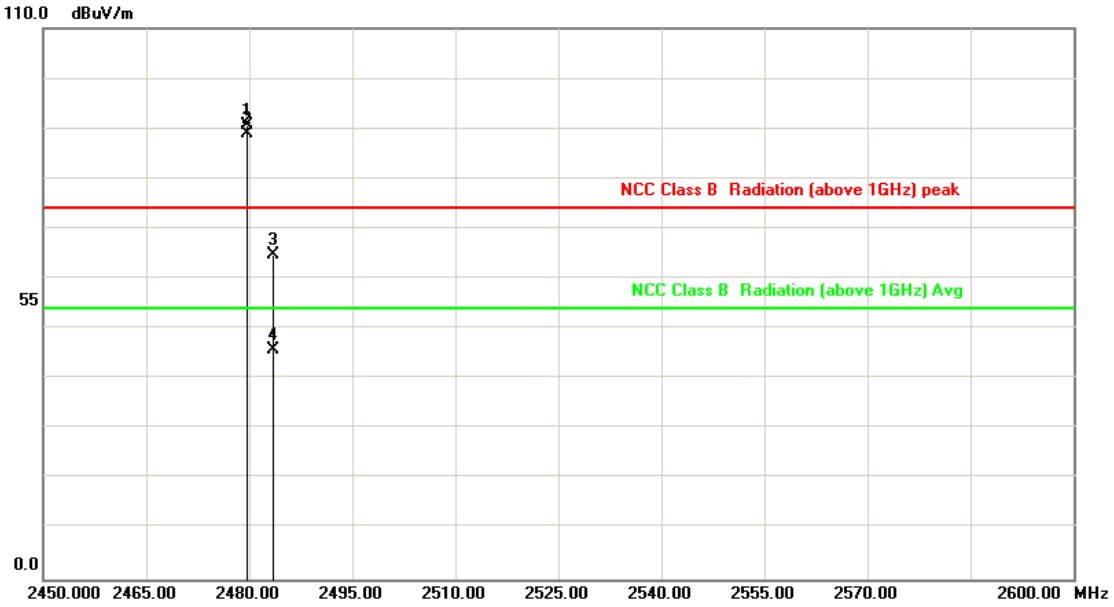
Note : Level = Reading + Factor
Margin = Level – Limit



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2480.000	-9.67	93.83	84.16	114.00	-29.84	peak
2	2480.000	-9.67	92.31	82.64	94.00	-11.36	AVG
3	2483.500	-9.65	68.51	58.86	74.00	-15.14	peak
4	2483.500	-9.65	49.82	40.17	54.00	-13.83	AVG

Power	DC3.7V	Pol/Phase	Horizontal
Test Mode	CH39		

Note : Level = Reading + Factor
Margin = Level – Limit



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2479.750	-9.67	100.39	90.72	114.00	-23.28	peak
2	2479.750	-9.67	98.67	89.00	94.00	-5.00	AVG
3	2483.500	-9.65	74.29	64.64	74.00	-9.36	peak
4	2483.500	-9.65	55.46	45.81	54.00	-8.19	AVG

9. 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

9.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.