



FCC RADIO TEST REPORT

Report Reference No. : ATS-2011NT0309023E

Compiled by (+ signature) : Jim He

Approved by (+ signature) : Bovey Yang

Date of issue..... : 2011-03-06

Applicant's name : Amphony Corp.

Address : 1006 S. Raven Rd., Shorewood, Illinois 60404, United States

Manufacture's Name : Amphony Corp.

Address : 1006 S. Raven Rd., Shorewood, Illinois 60404, United States.

Test specification:

Standard : FCC Part15.249

Test procedure : ANSI C63.4-2009

Test item description

Product name : 5.8 GHz Multi Channel Audio Transmitter

FCC ID

Trademark : Amphony

Model and/or type reference : Model 400

Rating(s) : DC 9V From Adapter AC 120V/60Hz

Testing

Date of receipt of test item : 01 Mar. 2011

Date (s) of performance of tests : 01 Mar. 2011 ~05 Mar. 2011

Date of Issue..... : 06 Mar. 2011

Test Result..... : **Pass**



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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.249)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
15.249	Occupied Bandwidth	Pass	

NOTE:

(1) " N/A" denotes test is not applicable in this Test Report.



1.1 TEST FACILITY

Asia Institute Technology (Dongguan) Limited
Add. : No.6 Binhe Road, Tianxin Village, Huangjiang, Dongguan, Guangdong, China.
FCC Registered No.: 248337

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95** %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	Radiated Emission Test	$\pm 3.17\text{dB}$
3	RF power,conducted	$\pm 0.16\text{dB}$
4	Spurious emissions,conducted	$\pm 0.21\text{dB}$
5	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	5.8 GHz Multi Channel Audio Transmitter	
Trade Name	Amphony	
Model Name	Model 400	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a 5.8 GHz Multi Channel Audio Transmitter	
	Operation Frequency:	5.7875 GHz
	Modulation Type:	ASK
	Antenna Designation:	Integrated omnidirectional
	Antenna Gain(Peak)	3 dBi
Channel List	Please refer to the Note 2.	
Power Source	DC Voltage supplied from Adapter AC 120V/60Hz	
Power Rating	DC 9V From Adapter AC 120V/60Hz	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	N/A	
EUT Modification(s)	N/A	

Note:

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



2.

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	5787.5						

3.

Table for Filed Antenna

Ant .	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Integrated omnidirectional	NA	3	Antenna



2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

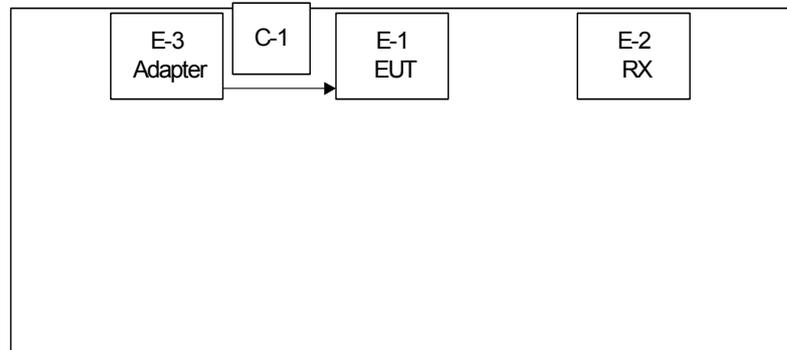
Pretest Mode	Description
Mode 1	CH1

For Conducted Emission	
Final Test Mode	Description
Mode 1	CH1

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH1



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	5.8 GHz Multi Channel Audio Transmitter	Amphony	Model 400	N/A	N/A	EUT
E-2	RX	Amphony	Model 400	N/A	N/A	N/A
E-3	Adapter	N/A	LK-DC 090025	N/A	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
C-1	YES	NO	120	N/A

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” means “shielded” or “with ferrite core”;”NO” means “unshielded” or”without ferrite core”

**2.4.1 EQUIPMENTS LIST FOR ALL TEST ITEMS**

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Due Date
1	Spectrum Analyzer	ADVANTEST	R3182	150900201	2011.04.16
2	EMI Measuring Receiver	Schaffner	SCR3501	235	2011.04.06
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2011.09.06
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2011.04.07
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2011.07.01
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	451	2011.07.14
7	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2011.09.06
8	EMI Test Receiver	R&S	ESCI	100124	2011.12.27
9	LISN	Kyoritsu	KNW-242	8-837-4	2011.04.06
10	LISN	Kyoritsu	KNW-407	8-1789-3	2011.04.06
11	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2011.09.06
12	Loop Antenna	ARA	PLA-1030/B	1029	2011.03.19



3. TEST RESULT

3.1 ANTENNA REQUIREMENT

3.1.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

3.1.2 EUT ANTENNA

The EUT antenna is integral Antenna. It comply with the standard requirement.



3.2 CONDUCTED EMISSION MEASUREMENT

3.2.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5			66 - 56 *	56 - 46 *	CISPR
0.50 -5.0			56.00	46.00	CISPR
5.0 -30.0			60.00	50.00	CISPR

0.15 -0.5			66 - 56 *	56 - 46 *	LP002.
0.50 -5.0			56.00	46.00	LP002.
5.0 -30.0			60.00	50.00	LP002.

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

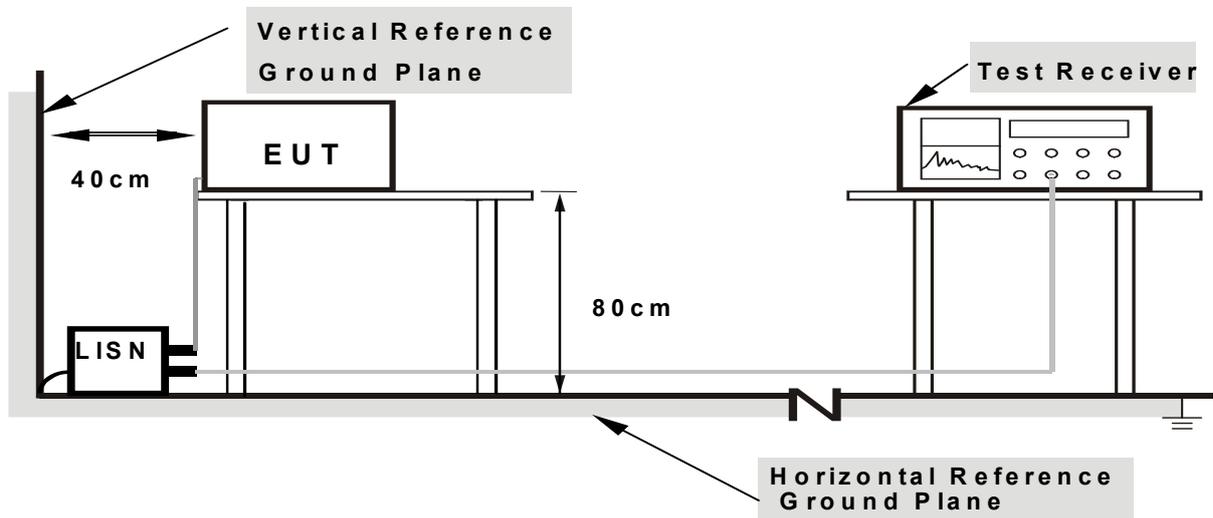
3.2.2 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 DEVIATION FROM TEST STANDARD

No deviation

3.2.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes



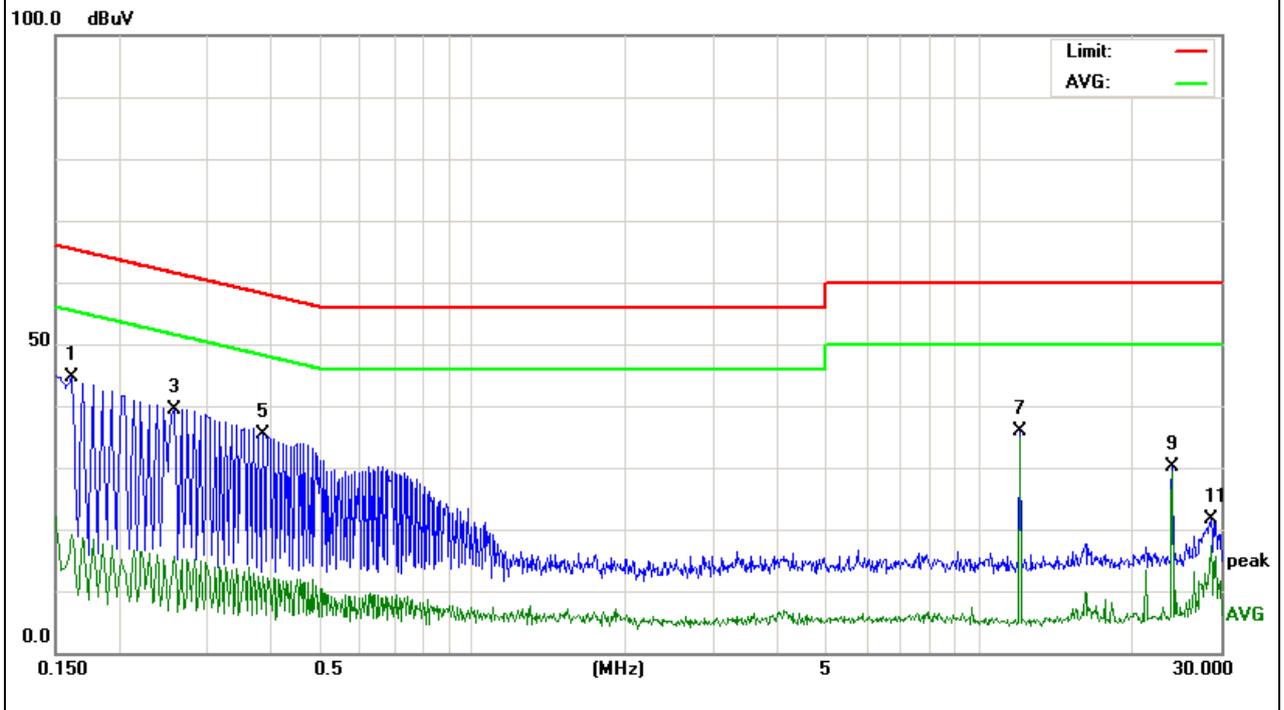
3.2.5 TEST RESULT

EUT :	5.8 GHz Multi Channel Audio Transmitter	Model Name. :	Model 400
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2011-03-04
Test Mode :	Running	Phase :	L
Test Voltage :	DC 9V From adapter AC 120V/60Hz		

Frequency (MHz)	Factor (dB)	Meter Reading (dBμV)		Emission Level (dBμV)		Limits (dBμV)		Margin (dB)	
		QP	Average	QP	Average	QP	Average	QP	Average
0.1620	11.68	33.01	7.48	44.69	19.16	65.36	55.36	-20.67	-36.20
0.2580	10.87	28.51	4.80	39.38	15.67	61.49	51.49	-22.11	-35.82
0.3860	10.56	24.89	1.91	35.45	12.47	58.15	48.15	-22.70	-35.68
12.0099	10.32	25.62	24.45	35.94	34.77	60.00	50.00	-24.06	-15.23
24.0180	10.55	19.69	18.73	30.24	29.28	60.00	50.00	-29.76	-20.72
28.6859	10.76	10.91	6.54	21.67	17.30	60.00	50.00	-38.33	-32.70

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case



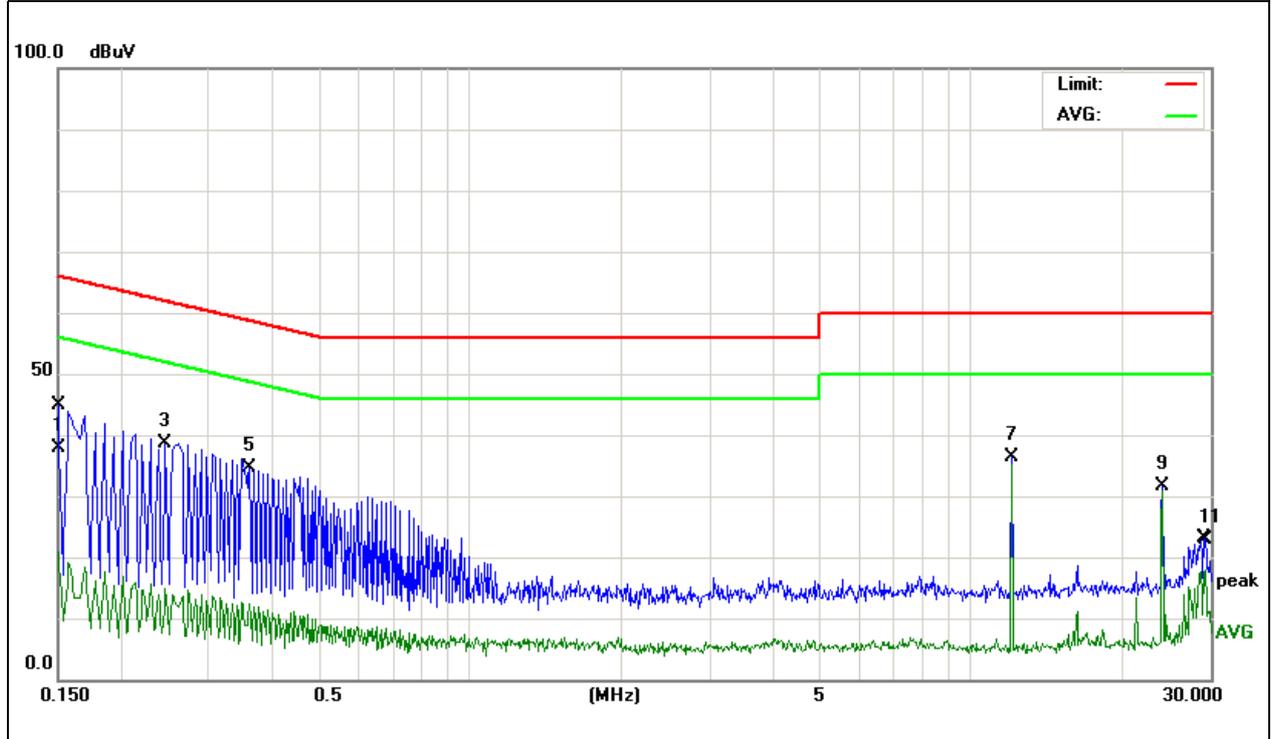


EUT :	5.8 GHz Multi Channel Audio Transmitter	Model Name. :	Model 400
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2011-03-04
Test Mode :	Running	Phase :	N
Test Voltage :	DC 9V From adapter AC 120V/60Hz		

Frequency (MHz)	Factor (dB)	Meter Reading (dBμV)		Emission Level (dBμV)		Limits (dBμV)		Margin (dB)	
		QP	Average	QP	Average	QP	Average	QP	Average
0.1500	11.94	26.01	9.04	37.95	20.98	65.99	55.99	-28.04	-35.01
0.2459	10.90	27.84	4.08	38.74	14.98	61.89	51.89	-23.15	-36.91
0.3618	10.61	24.09	1.69	34.70	12.30	58.69	48.69	-23.99	-36.39
12.0099	10.32	26.17	24.89	36.49	35.21	60.00	50.00	-23.51	-14.79
24.0180	10.55	21.16	20.22	31.71	30.77	60.00	50.00	-28.29	-19.23
29.2378	10.79	12.00	7.17	22.79	17.96	60.00	50.00	-37.21	-32.04

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case





3.3 RADIATED EMISSION MEASUREMENT

3.3.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (microrvolts/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

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.249)

Frequency of Emission (MHz)	Field Strength of fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
5725 - 5875	50	500

Notes:

- (1) 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.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



3.3.2 TEST PROCEDURE

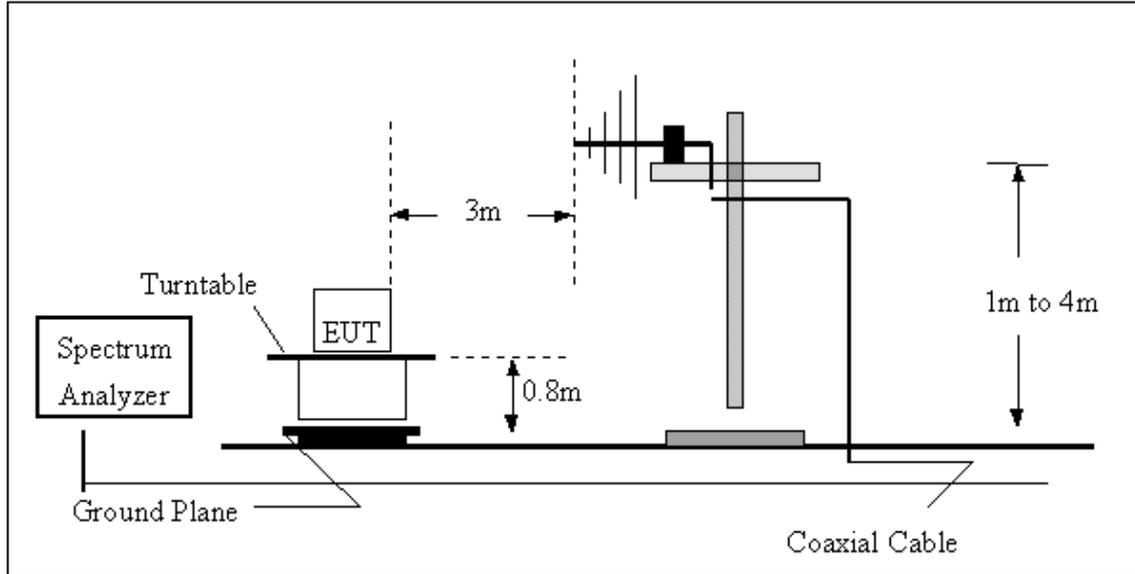
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement. performed pretest to three orthogonal axis.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3.3 DEVIATION FROM TEST STANDARD

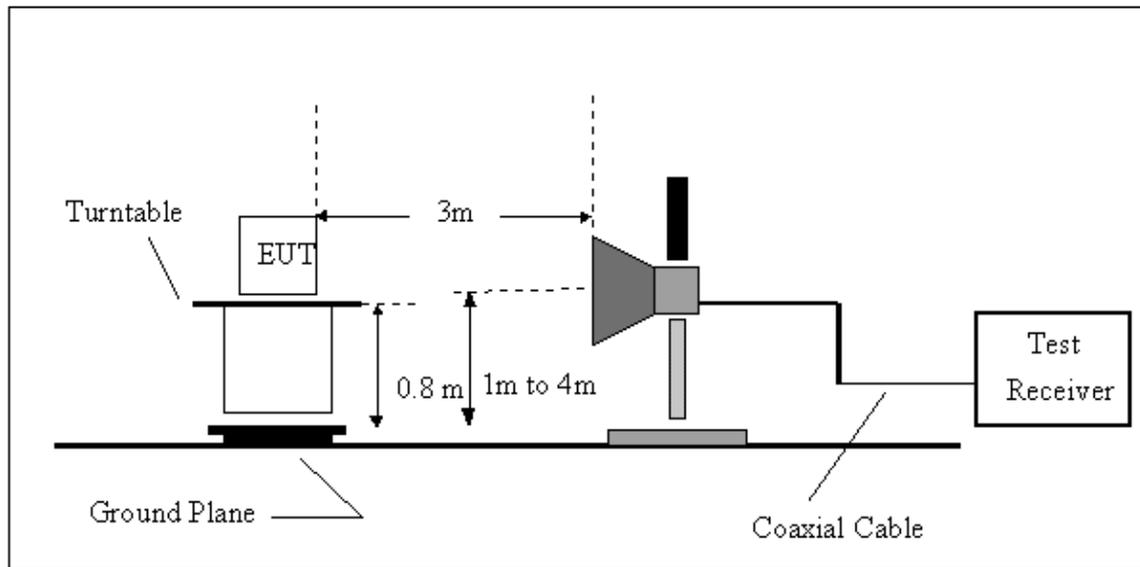
No deviation

3.3.4 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz





3.3.1 TEST RESULTS (BLOW 30MHz)

There is no detected blow 30MHz

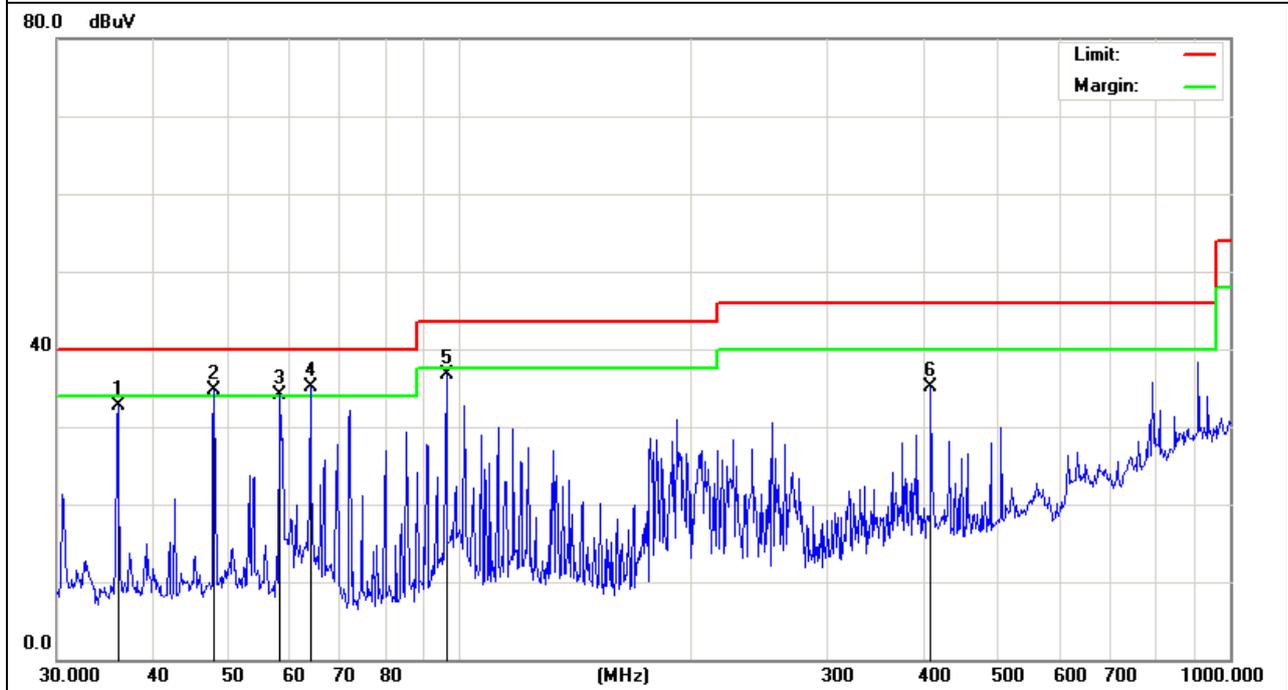
3.3.1.1 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	5.8 GHz Multi Channel Audio Transmitter	Model Name :	Model 400
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-03-03
Test Mode :	TX	Polarization :	Horizontal
Test Power :	DC 9V From adapter AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type
36.00	47.05	-14.25	32.80	40.00	-7.20	Quasi-Peak
47.99	48.21	-13.48	34.73	40.00	-5.27	Quasi-Peak
58.40	48.25	-14.15	34.10	40.00	-5.90	Quasi-Peak
63.98	50.63	-15.45	35.18	40.00	-4.82	Quasi-Peak
96.10	53.04	-16.41	36.63	43.50	-6.87	Quasi-Peak
408.95	42.59	-7.57	35.02	46.00	-10.98	Quasi-Peak

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



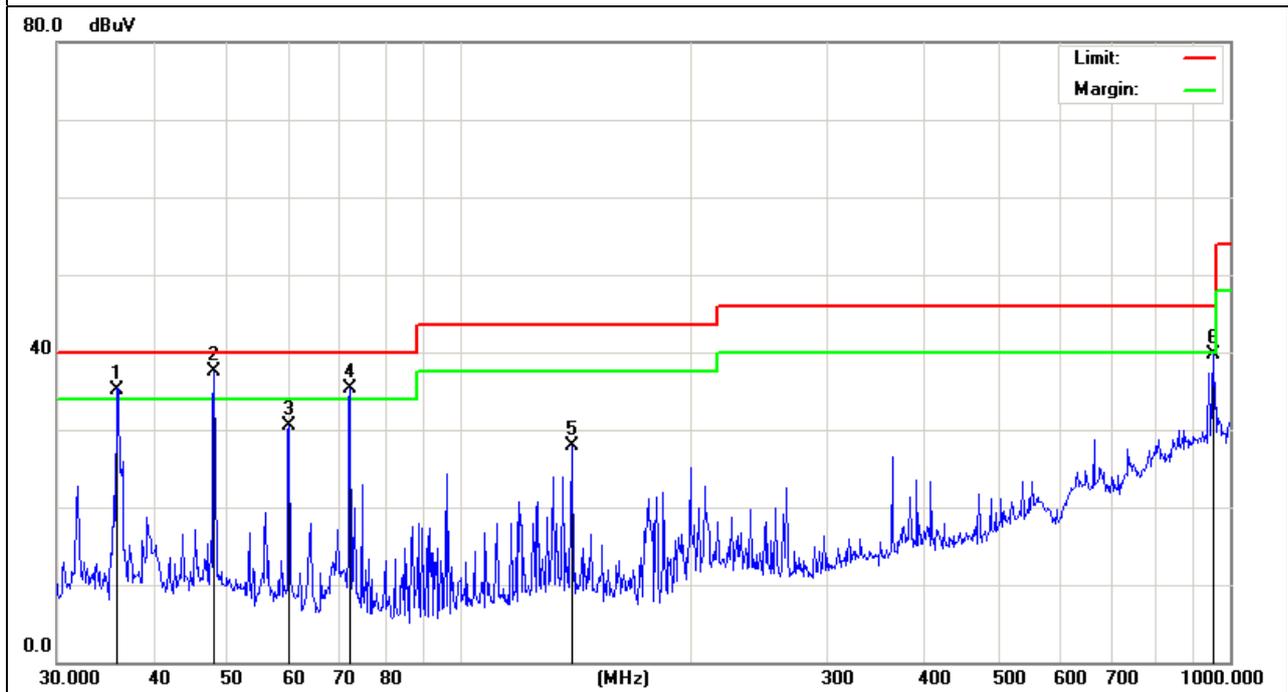


EUT :	5.8 GHz Multi Channel Audio Transmitter	Model Name :	Model 400
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2010-03-03
Test Mode :	TX	Polarization :	Vertical
Test Power :	DC 9V From adapter AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
35.87	49.46	-14.26	35.20	40.00	-4.80	Quasi-Peak
47.99	50.96	-13.48	37.48	40.00	-2.52	Quasi-Peak
60.07	44.89	-14.31	30.58	40.00	-9.42	Quasi-Peak
72.08	52.43	-17.08	35.35	40.00	-4.65	Quasi-Peak
139.85	40.53	-12.67	27.86	43.50	-15.64	Quasi-Peak
952.09	34.05	5.61	39.66	46.00	-6.34	Quasi-Peak

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.





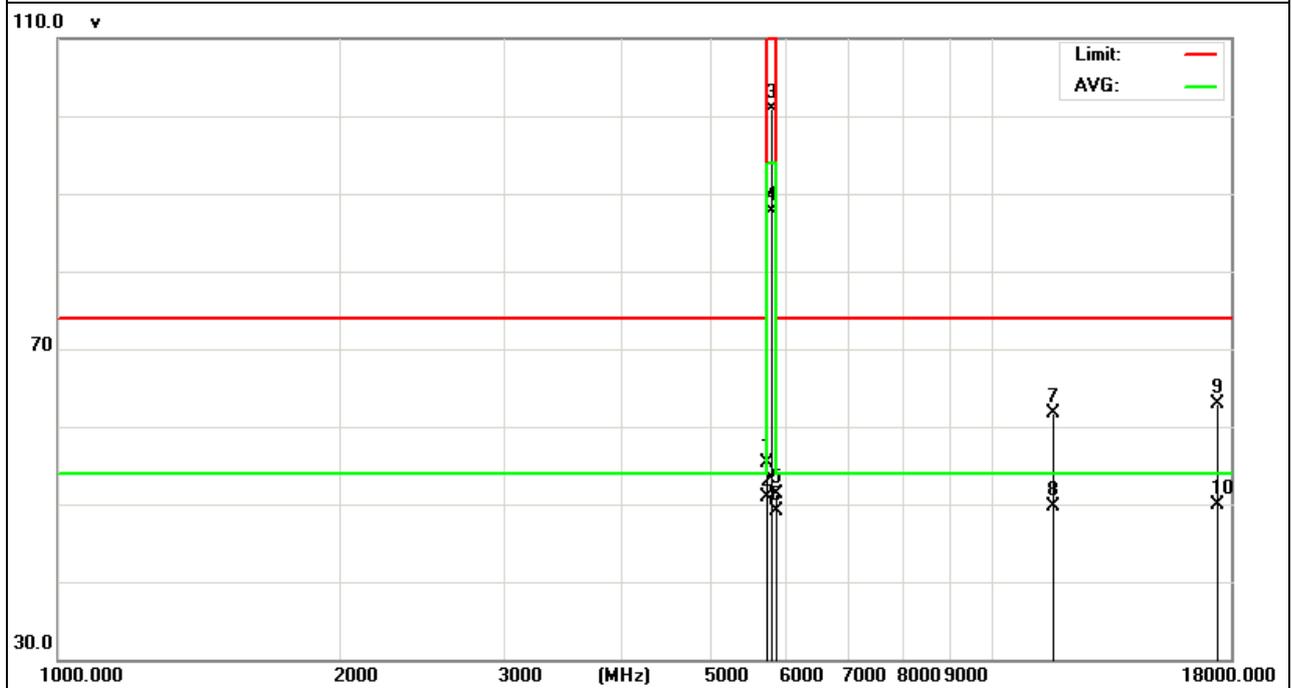
3.3.1.2 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	5.8 GHz Multi Channel Audio Transmitter	Model Name :	Model 400
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-03-04
Test Mode :	TX	Polarization :	Horizontal
Test Power :	DC 9V From adapter AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type
5725.00	49.23	6.02	55.25	74.00	-18.75	peak
5725.00	44.90	6.02	50.92	54.00	-3.08	AVG
5787.50	94.87	6.08	100.95	114.00	-13.05	peak
5787.50	81.62	6.08	87.70	94.00	-6.30	AVG
5875.00	45.16	6.17	51.33	74.00	-22.67	peak
5875.00	42.90	6.17	49.07	54.00	-4.93	AVG
11575.00	39.18	22.60	61.78	74.00	-12.22	peak
11575.00	27.15	22.60	49.75	54.00	-4.25	AVG
17362.00	35.26	27.59	62.85	74.00	-11.15	peak
17362.00	22.32	27.59	49.91	54.00	-4.09	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



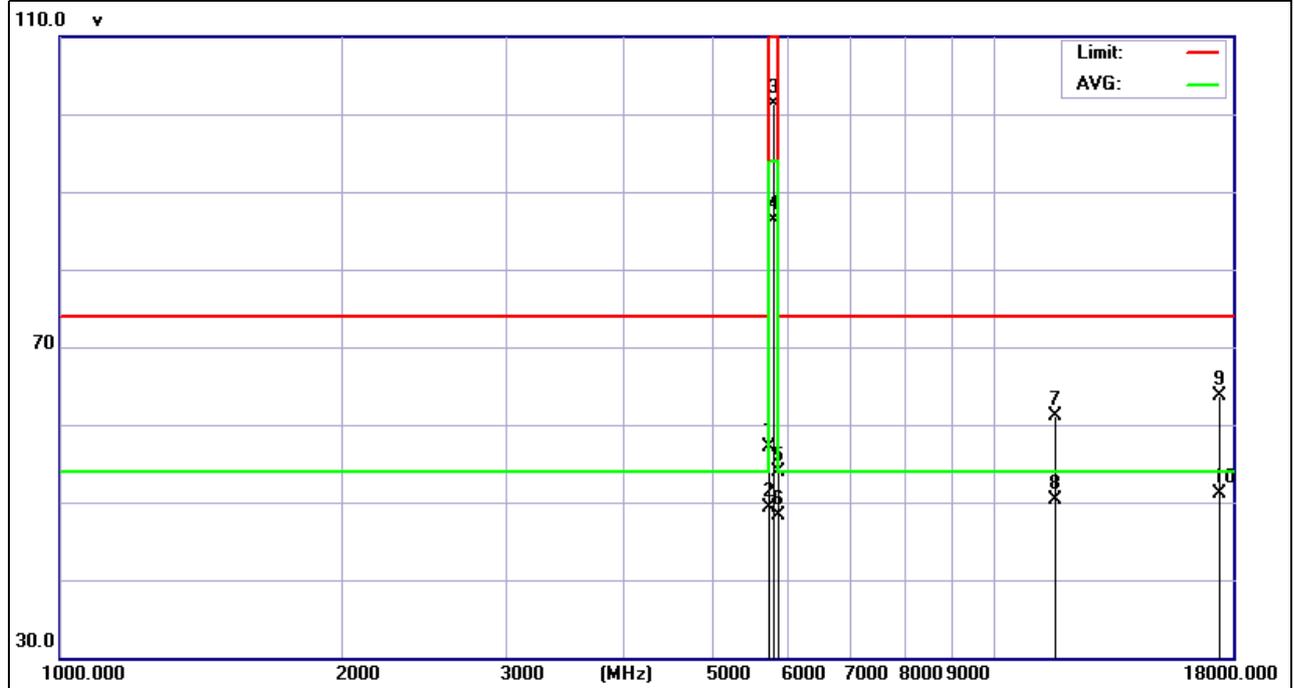


EUT :	5.8 GHz Multi Channel Audio Transmitter	Model Name :	Model 400
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2011-03-04
Test Mode :	TX	Polarization :	Vertical
Test Power :	DC 9V From adapter AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type
5725.00	51.11	6.02	57.13	74.00	-16.87	peak
5725.00	43.25	6.02	49.27	54.00	-4.73	AVG
5787.50	95.22	6.08	101.30	114.00	-12.70	peak
5787.50	80.23	6.08	86.31	94.00	-7.69	AVG
5875.00	47.65	6.17	53.82	74.00	-20.18	peak
5875.00	42.16	6.17	48.33	54.00	-5.67	AVG
11575.00	38.54	22.60	61.14	74.00	-12.86	peak
11575.00	27.65	22.60	50.25	54.00	-3.75	AVG
17362.00	36.11	27.59	63.70	74.00	-10.30	peak
17362.00	23.55	27.59	51.14	54.00	-2.86	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.





4. BANDWIDTH TEST

4.1 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 100KHz, VBW \geq RBW, Sweep time = Auto.

4.2 DEVIATION FROM STANDARD

No deviation.

4.3 TEST SETUP





4.4 TEST RESULTS

EUT :	5.8 GHz Multi Channel Audio Transmitter	Model Name :	Model 400
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1020 hPa	Test Power :	DC 9V From adapter AC 120V/60Hz
Test Mode :	TX		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)
CH01	5787.5	94.6

