

Test Report

FCC Part15 Subpart C

Product Name : DWAM83 Wireless Audio Module
Model No. : 1492549
FCC ID : AK81492549
IC : 409B-1492549

Applicant : Sony Corporation
Address : 1-7-1 Konan, Minato-ku, Tokyo 108-0075 Japan

Date of Receipt : Jan. 30, 2016
Test Date : Jan. 30, 2016~Mar. 07, 2016
Issued Date : Mar. 08, 2016
Report No. : 1612100R-RF-US-P06V01
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Test Report Certification

Issued Date : Mar. 08, 2016
Report No. : 1612100R-RF-US-P06V01



Product Name : DWAM83 Wireless Audio Module
Applicant : Sony Corporation
Address : 1-7-1 Konan, Minato-ku, Tokyo 108-0075 Japan
Manufacturer : Weifang GoerTek Electronics Co., Ltd
Address : Gaoxin 2 Road, Free Trade Zone, Weifang, Shandong,
261205, P.R. China
Model No. : 1492549
FCC ID : AK81492549
IC : 409B-1492549
EUT Voltage : DC 3.3V
Brand Name : Sony
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2014
ANSI C63.4:2014;
ANSI C63.10:2013;
KDB 558074 D01v03r04
KDB 662911 D01 Multiple Transmitter Output v02r01
Test Result : Complied
Performed Location : Quietek Corporation - Suzhou EMC Laboratory
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006,
Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Registration Number: 800392; IC Lab Code: 4075B

Documented By : Alice Ni
(Senior Adm. Specialist: Alice Ni)

Reviewed By : Jack Zhang
(Senior Engineer: Jack Zhang)

Approved By : Harry Zhao
(Engineering Manager : Harry Zhao)

Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC, TAF
USA	:	FCC
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://www.quietek.com/english/about/certificates.aspx?bval=5>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :

http://www.quietek.com/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.

TEL:+886-3-592-8858 / FAX:+886-3-592-8859

E-Mail : service@quietek.com

LinKou Testing Laboratory :

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.

TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789

E-Mail : service@quietek.com

Suzhou Testing Laboratory :

No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China

TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098

E-Mail : service@quietek.com

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1612100R-RF-US-P06V01	V1.0	Initial Issued Report	Mar. 08, 2016

1. General Information

1.1. EUT Description

Product Name	DWAM83 Wireless Audio Module
Brand Name	Sony
Model No.	1492549
EUT Voltage	DC 3.3V
Frequency Range	For 2.4G 2412 ~ 2464 MHz, For 5G 5180 ~ 5240 MHz, 5736 ~ 5814 MHz
Channel Number	For 2.4GHz Band 802.11b/g/n(20MHz): 11 802.11n(40MHz): 7
Type of Modulation	QPSK
Channel Control	Auto

1.2. Working Frequency of Each Channel:

2.4GHz Band Center Frequency			
Channel	2412MHz	2438MHz	2464MHz
5.2GHz Band Center Frequency			
Channel	5180MHz	5210MHz	5240MHz
5.2GHz Band Center Frequency			
Channel	5736MHz	5762MHz	5814MHz

1.3. Antenna information

Model No.	N/A					
Antenna manufacturer	TP-LINK					
Antenna Delivery	<input type="checkbox"/>	1*TX+1*RX	<input checked="" type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO				
	<input type="checkbox"/>	MIMO	<input type="checkbox"/>	Basic		
			<input type="checkbox"/>	CDD		
			<input type="checkbox"/>	Beam-forming		
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole		
	<input checked="" type="checkbox"/>	Internal	<input type="checkbox"/>	PIFA		
			<input checked="" type="checkbox"/>	PCB		
			<input type="checkbox"/>	Ceramic Chip Antenna		
			<input type="checkbox"/>	Metal plate type F antenna		
Antenna A Gain	1.57dBi for 2.4GHz, 2.82dBi for 5.2GHz, 3dBi for 5.8GHz					
Antenna B Gain	0.82dBi for 2.4GHz, 0.67dBi for 5.2GHz, 2.8dBi for 5.8GHz					

1.4. Mode of Operation

Test Mode
Mode 1: Transmit

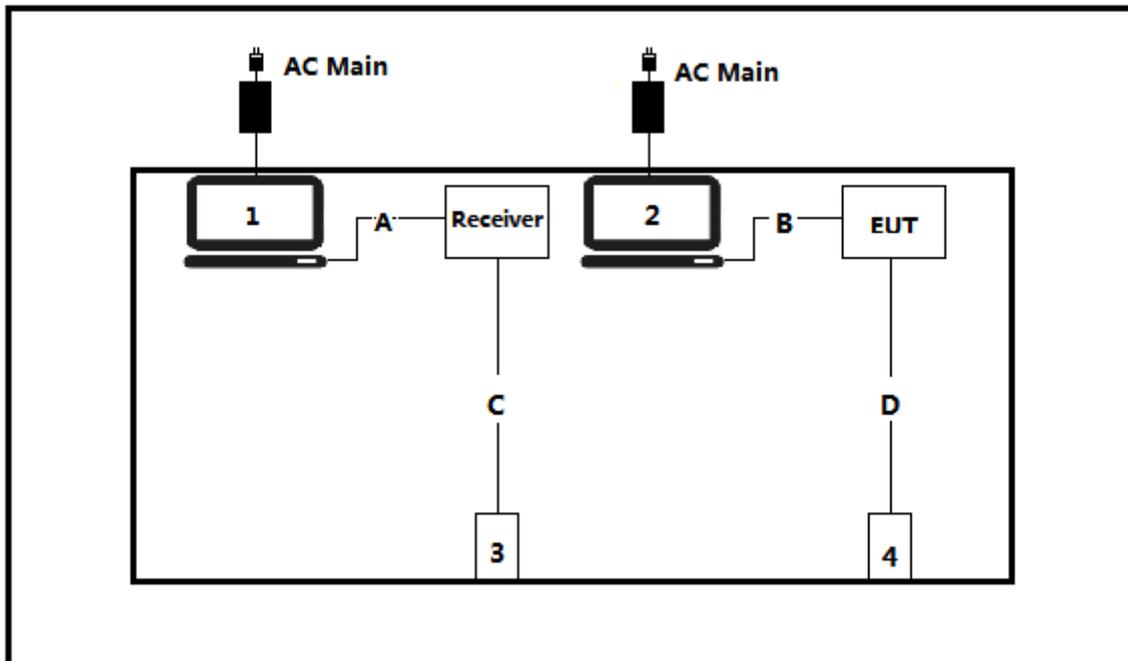
1.5. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

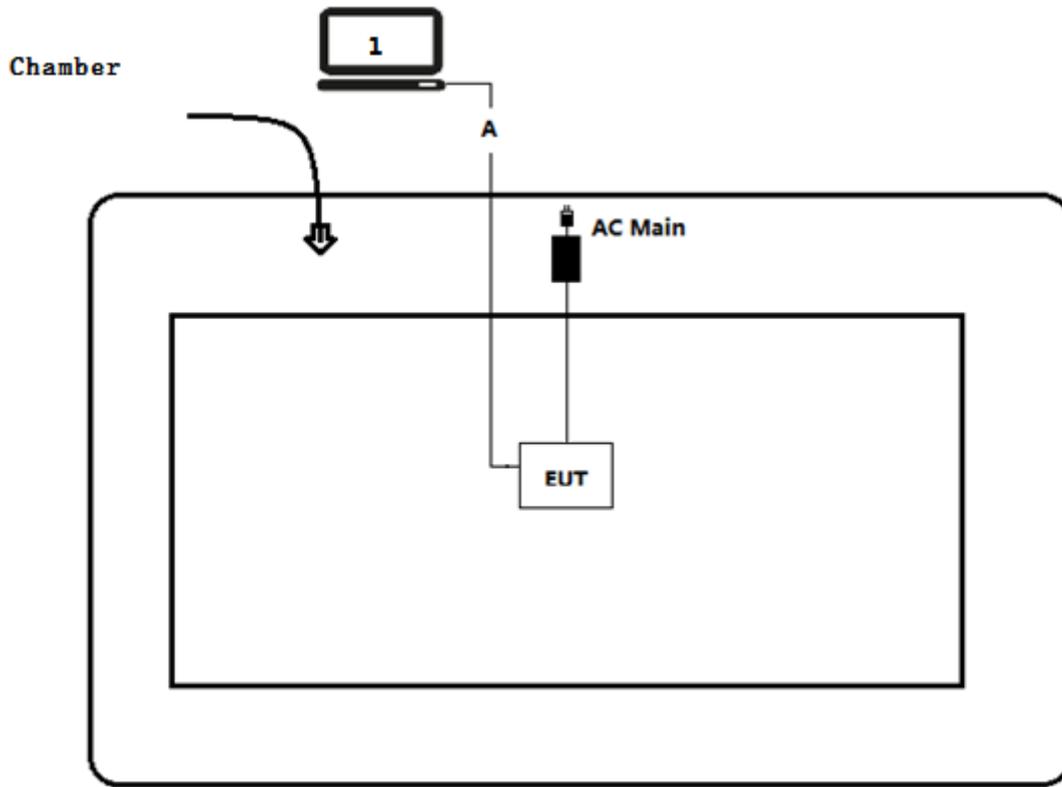
No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	ASUS	N80V	8BN0AS226971468	Non-Shielded, 1.8m
2	Notebook	Dell	PP19L	JH097A01	N/A
3	USB Mouse	DELL	MOC5UO	10D00JJL	N/A
4	USB Mouse	DELL	MOC5UO	10D00JJL	N/A

1.6. Configuration of Tested System

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 0.3m
B	USB Cable	Shielded, 0.3m
C	USB Cable	Shielded, 0.8m
D	USB Cable	Shielded, 0.8m

2. Technical Test

2.1. Summary of Test Result

For FCC				
Performed Test Item	Normative References	Worst case mode	Limit	Result
AC Power Line Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.207	802.11b	FCC 15.207	PASS
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.209	802.11b	FCC 15.209	PASS
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(d)	802.11b	$\geq 30\text{dBc}$	PASS
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2015 15.247(d)	802.11g	FCC 15.209	PASS
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(2)	802.11b	$\geq 500\text{kHz}$	PASS
Fundamental emission output power	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(b)(3)	802.11n(20MHz)	$\leq 30\text{dBm}$	PASS
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(e)	802.11b	$\leq 8\text{dBm}/3\text{kHz}$	PASS

For IC				
Performed Test Item	Normative References	Worse case mode	Limit	Result
Conducted Emission	RSS-Gen Issue 4 November 2014 Section 8.8	802.11b	RSS-Gen	PASS
Radiated Emission	RSS-247 Issue 1 May 2015 Section 5.5	802.11b	RSS-247	PASS
RF Antenna Conducted Spurious	RSS-247 Issue 1 May 2015 Section 5.5	802.11b	$\geq 30\text{dBc}$	PASS
Radiated Emission Band Edge	RSS-Gen Issue 4 November 2014 Section 8.10	802.11g	RSS-Gen	PASS
Occupied Bandwidth	RSS-Gen Issue 4 November 2014 Section 6.6 RSS-247 Issue 1 May 2015 Section 5.2	802.11b	$\geq 500\text{kHz}$	PASS
Power Output	RSS-247 Issue 1 May 2015 Section 5.4	802.11n(20MHz)	$\leq 30\text{dBm}$	PASS
Power Spectral Density	RSS-247 Issue 1 May 2015 Section 5.2	802.11b	$\leq 8\text{dBm/3kHz}$	PASS

2.2. Test Frequency configuration:

Channel	Frequency	Channel	Frequency	Channel	Frequency
Low CH.	2412MHz	Low CH.	2438MHz	Low CH.	2464MHz

2.3. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

2.4. Measurement Uncertainty

Test Items	Uncertainty
AC Power Line Conducted Emission	±2.02dB
Radiated Emission	Below 1GHz ±3.8 dB
	Above 1GHz ±3.9 dB
RF Antenna Port Conducted Emission	±1.27dB
Radiated Emission Band Edge	±3.9dB
Occupied Bandwidth	±1kHz
Power Spectral Density	±1.27dB

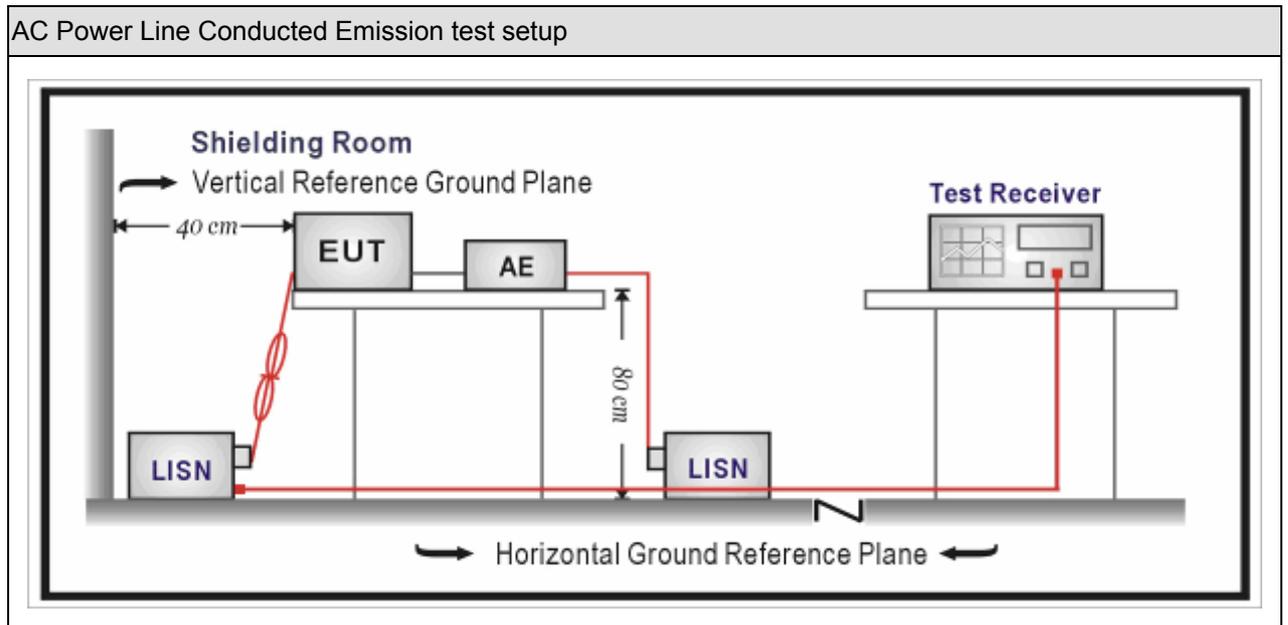
3. AC Power Line Conducted Emission

3.1. Test Equipment

AC Power Line Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2015.03.29	2016.03.28
Two-Line V-Network	R&S	ENV216	100043	2015.03.29	2016.03.28
Two-Line V-Network	R&S	ENV216	100044	2015.09.17	2016.09.16
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2016.03.02	2017.03.01
50ohm Termination	SHX	TF2	07081401	2015.09.17	2016.09.16
Temperature/Humidity Meter	zhichen	ZC1-2	TR1-TH	2016.01.04	2017.01.03

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

Frequency of Emission (MHz)	Conducted Limit	
	Quasi-peak (dB μ V)	Average (dB μ V)
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Note 1: The lower limit shall apply at the transition frequencies.
 Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

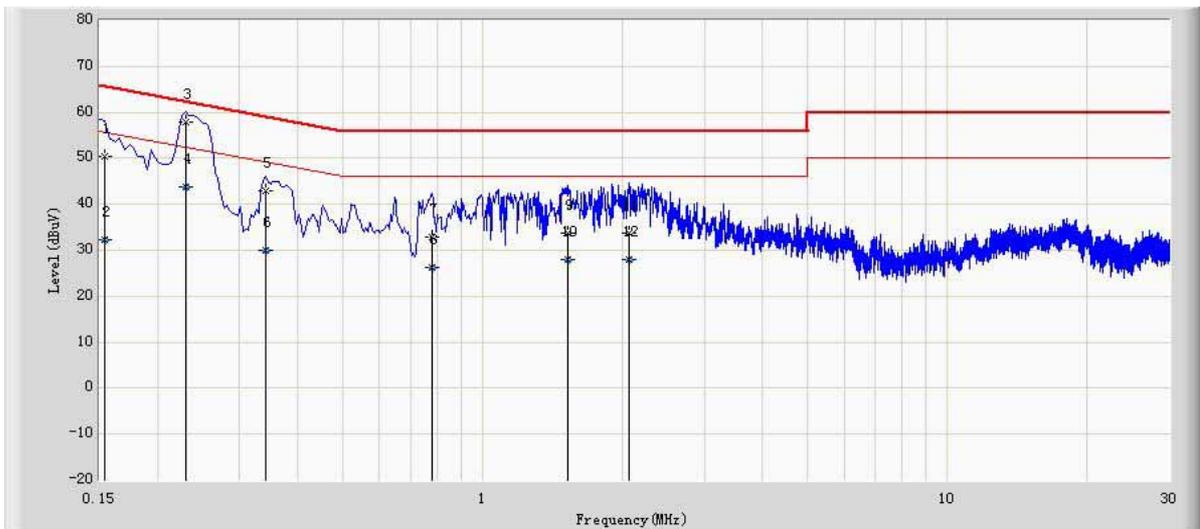
Test Method			
	References Rule	Chapter	Item
<input checked="" type="checkbox"/>	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices
<input checked="" type="checkbox"/>	ANSI C63.4-2014	7	AC power-line conducted emission measurements

3.5. Test Result

Product Name	: DWAM83 Wireless Audio Module	Polarity	: Line
Test Item	: AC Power Line Conducted Emission	Power	: AC 120V/60Hz
Test Site	: TR1	Test Mode	: Mode 1

No	Frequency (MHz)	Measure Level (dB μ V)	Reading Level (dB μ V)	Over Limit (dB)	Limit (dB μ V)	Probe (dB)	Type
1	0.158	50.020	40.175	-15.548	65.568	9.846	QP
2	0.158	30.804	20.958	-24.765	55.568	9.846	AV
3	0.230	58.000	48.136	-4.449	62.450	9.864	QP
4	0.230	43.799	33.935	-8.650	52.450	9.864	AV
5	0.366	41.565	31.683	-17.026	58.591	9.883	QP
6	0.366	28.529	18.646	-20.063	48.591	9.883	AV
7	0.646	37.132	27.274	-18.868	56.000	9.859	QP
8	0.646	34.795	24.937	-11.205	46.000	9.859	AV
9	1.258	29.385	19.586	-26.615	56.000	9.799	QP
10	1.258	20.505	10.706	-25.495	46.000	9.799	AV
11	1.922	34.638	24.844	-21.362	56.000	9.793	QP
12	1.922	29.088	19.295	-16.912	46.000	9.793	AV

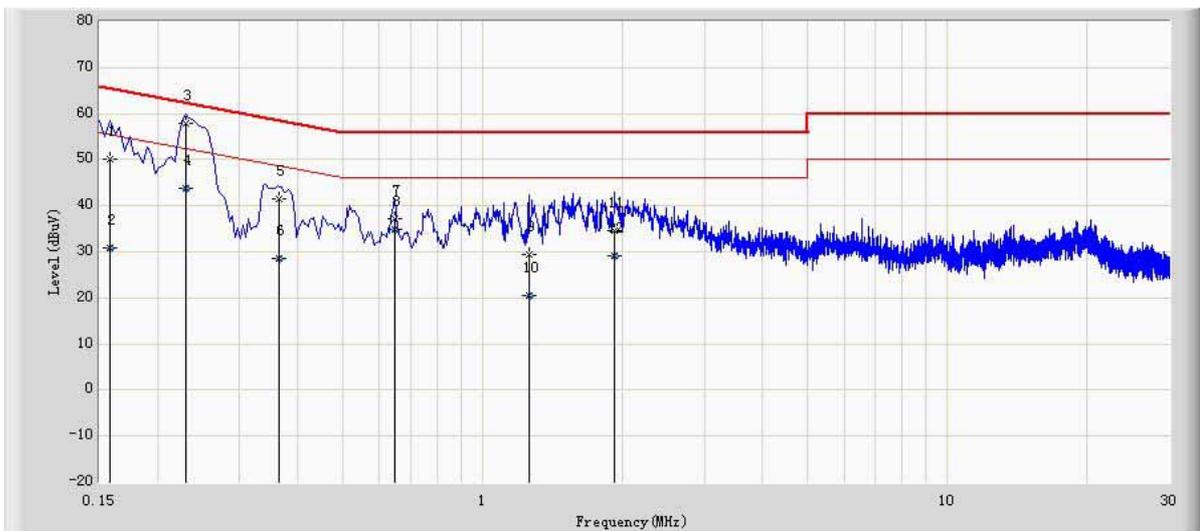
Polarity: Line



Product Name	: DWAM83 Wireless Audio Module	Polarity	: Neutral
Test Item	: AC Power Line Conducted Emission	Power	: AC 120V/60Hz
Test Site	: TR1	Test Mode	: Mode 1

No	Frequency (MHz)	Measure Level (dB μ V)	Reading Level (dB μ V)	Over Limit (dB)	Limit (dB μ V)	Probe (dB)	Type
1	0.154	50.282	40.435	-15.500	65.781	9.846	QP
2	0.154	32.306	22.460	-23.475	55.781	9.846	AV
3	0.230	57.775	47.910	-4.675	62.450	9.864	QP
4	0.230	43.867	34.003	-8.582	52.450	9.864	AV
5	0.342	42.962	33.082	-16.193	59.155	9.879	QP
6	0.342	30.077	20.198	-19.078	49.155	9.879	AV
7	0.778	32.778	22.949	-23.222	56.000	9.829	QP
8	0.778	26.276	16.446	-19.724	46.000	9.829	AV
9	1.526	33.726	23.928	-22.274	56.000	9.799	QP
10	1.526	27.912	18.113	-18.088	46.000	9.799	AV
11	2.070	33.791	24.001	-22.209	56.000	9.790	QP
12	2.070	28.081	18.291	-17.919	46.000	9.790	AV

Polarity: Neutral



4. Emissions in restricted frequency bands

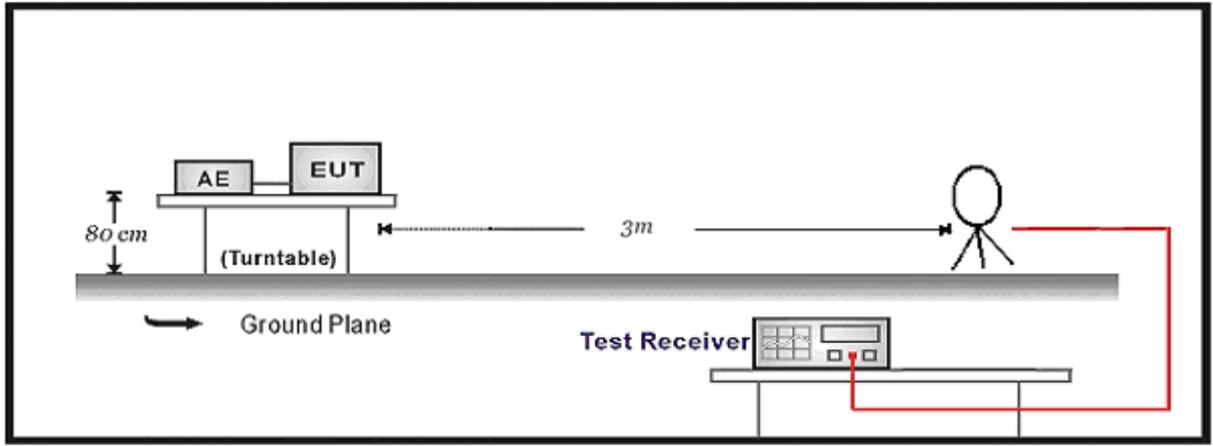
4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2015.03.29	2016.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2015.11.16	2016.11.17
Bilog Chainenna	Teseq GmbH	CBL6112D	27611	2015.10.16	2016.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2016.03.02	2017.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2016.01.04	2017.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

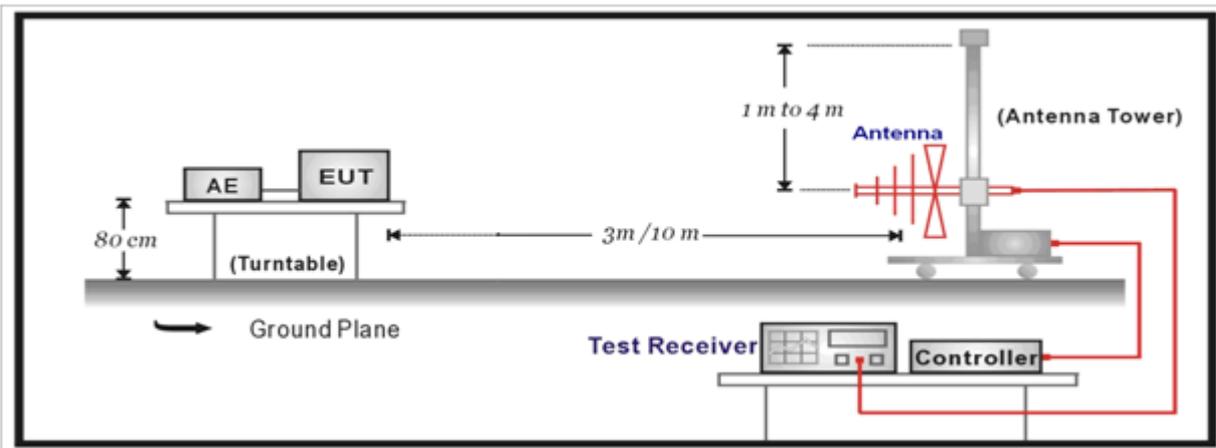
Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2015.05.06	2016.05.05
Preamplifier	Quietek	AP-040G	CHM-0906001	2015.05.06	2016.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2016.01.22	2017.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2014.11.25	2015.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.02	2017.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2015.06.10	2016.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.04	2017.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

4.2. Test Setup

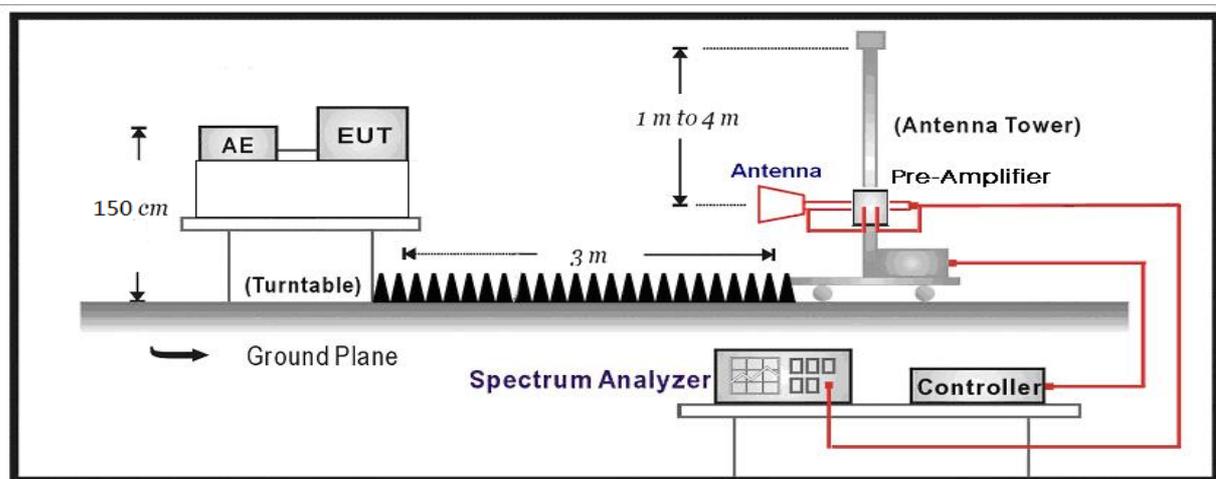
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

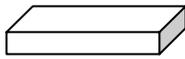
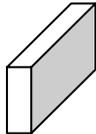
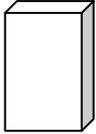
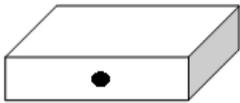
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input type="checkbox"/>	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
	<input type="checkbox"/> ANSI C63.10	11.11.2	Reference level measurement
	<input type="checkbox"/> ANSI C63.10	11.11.3	Emission level measurement
<input checked="" type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
	<input checked="" type="checkbox"/> ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
	<input checked="" type="checkbox"/> ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	<input checked="" type="checkbox"/> ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
<input type="checkbox"/>	ANSI C63.10	11.12.2	Antenna-port conducted measurements
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

4.5. EUT test Axis definition

Item	Emissions in non-restricted frequency bands			
Device Category	<input type="checkbox"/>	Fixed position use		
	<input checked="" type="checkbox"/>	Mobile position use		
Test mode	Mode 1, Mode 2, Mode 3, Mode 4			
Test method	<input checked="" type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input checked="" type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input type="checkbox"/>	Conducted		
	<input type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
		Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				
	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	

4.6. Test Result

Product Name	: DWAM83 Wireless Audio Module	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: AC-5

Chain	Freq.	Antenna	Frequency (MHz)	Reading Level (dB μ V/m)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
Ant A	2412	H	4824.0	44.5	-8.3	36.2	54(note3)	-17.8	PK
		V	4825.0	47.8	-8.4	39.4	54(note3)	-14.6	PK
		H	7236.0	41.0	-3.4	37.6	54(note3)	-16.4	PK
		V	7236.0	41.3	-3.4	37.9	54(note3)	-16.1	PK
		H	9648.0	35.7	2.6	38.3	54(note3)	-15.7	PK
		V	9648.0	35.7	2.6	38.3	54(note3)	-15.7	PK
	2438	H	4876.0	50.9	-8.3	42.6	54(note3)	-11.4	PK
		V	4876.0	46.5	-8.3	38.2	54(note3)	-15.8	PK
		H	7314.0	43.6	-3.3	40.3	54(note3)	-13.7	PK
		V	7314.0	43.3	-3.3	40.0	54(note3)	-14.0	PK
		H	9752.0	36.8	2.7	39.5	54(note3)	-14.5	PK
		V	9752.0	38.2	2.8	41.0	54(note3)	-13.0	PK
	2464	H	4928.0	44.2	-8.4	35.8	54(note3)	-18.2	PK
		V	4928.0	43.7	-8.3	35.4	54(note3)	-18.6	PK
		H	7392.0	40.7	-3.0	37.7	54(note3)	-16.3	PK
		V	7392.0	41.1	-3.0	38.1	54(note3)	-15.9	PK
		H	9856.0	34.4	3.1	37.5	54(note3)	-16.5	PK
		V	9856.0	34.5	3.2	37.7	54(note3)	-16.3	PK

Note: 1. Measure Level = Reading Level + Factor.

Note: 2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

Note: 3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Note: 4. The RBW set up , see Clause 6.6..

Product Name	: DWAM83 Wireless Audio Module	Power	: AC 120V/60Hz
Test Mode	: Mode 1	Test Site	: AC-5

Chain	Freq.	Antenna	Frequency (MHz)	Reading Level (dB μ V/m)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
Ant B	2412	H	4825.0	51.4	-8.3	43.1	54(note3)	-10.9	PK
		V	4825.0	49.1	-8.4	40.7	54(note3)	-13.3	PK
		H	7236.0	43.1	-3.4	39.7	54(note3)	-14.3	PK
		V	7236.0	42.6	-3.4	39.2	54(note3)	-14.8	PK
		H	9648.0	37.1	2.6	39.7	54(note3)	-14.3	PK
		V	9648.0	38.1	2.6	40.7	54(note3)	-13.3	PK
	2438	H	4876.0	50.8	-8.3	42.5	54(note3)	-11.5	PK
		V	4876.0	48.5	-8.3	40.2	54(note3)	-13.8	PK
		H	7314.0	43.4	-3.3	40.1	54(note3)	-13.9	PK
		V	9752.0	36.7	2.7	39.4	54(note3)	-14.6	PK
		H	7314.0	42.8	-3.3	39.5	54(note3)	-14.5	PK
		V	9752.0	38.4	2.8	41.2	54(note3)	-12.8	PK
	2464	H	4928.0	44.3	-8.4	35.9	54(note3)	-18.1	PK
		V	4928.0	44.0	-8.3	35.7	54(note3)	-18.3	PK
		H	7392.0	40.8	-3.0	37.8	54(note3)	-16.2	PK
		V	7392.0	40.2	-3.0	37.2	54(note3)	-16.8	PK
		H	9856.0	34.1	3.1	37.2	54(note3)	-16.8	PK
		V	9856.0	35.3	3.2	38.5	54(note3)	-15.5	PK

Note: 1. Measure Level = Reading Level + Factor.

Note: 2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

Note: 3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

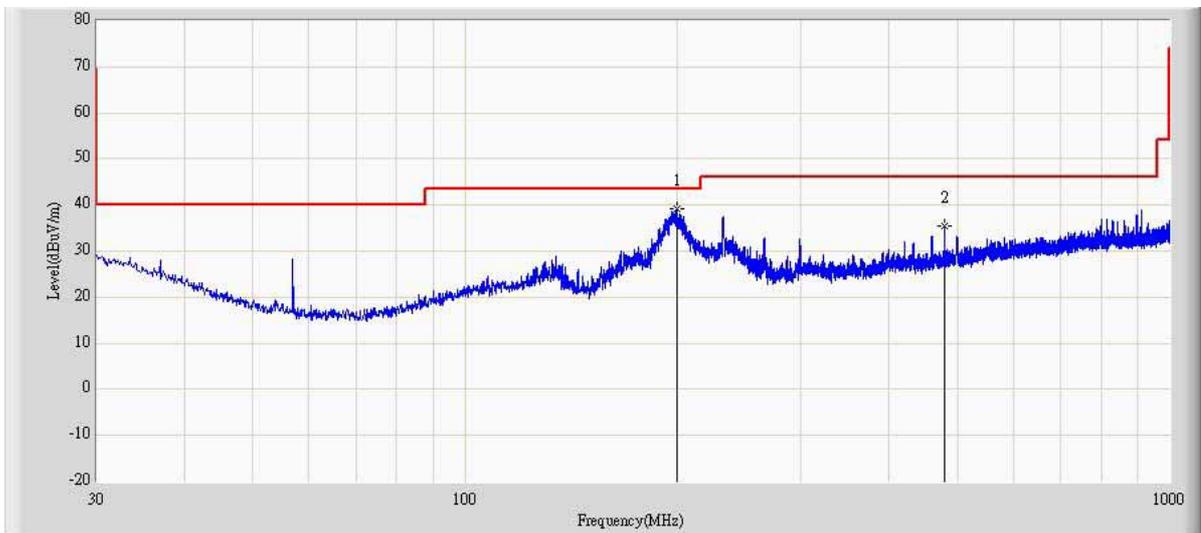
Note: 4. The RBW set up , see Clause 6.6..

The worst case of Radiated Emission below 1GHz:

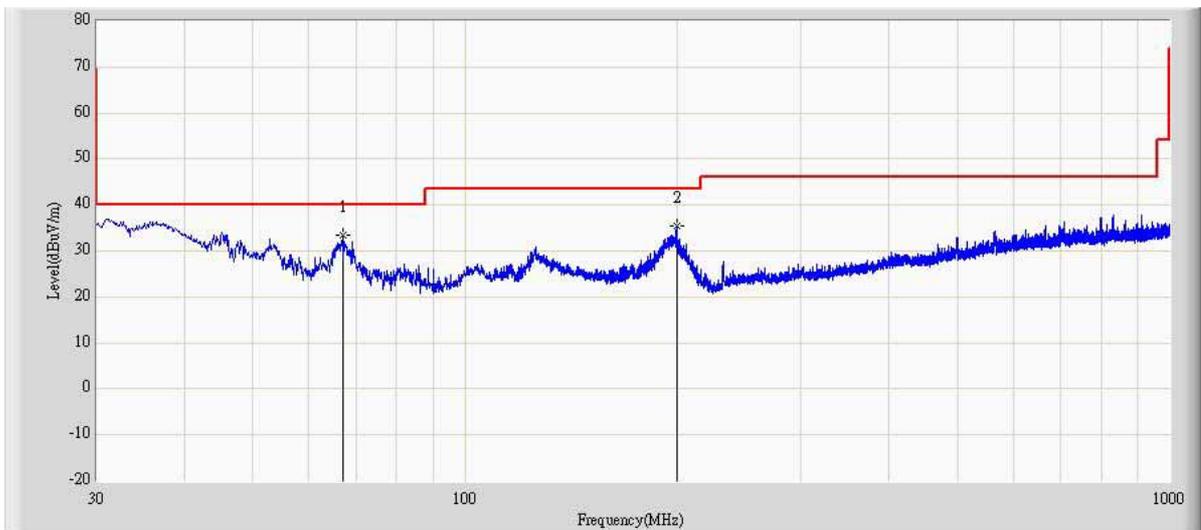
Chain	CH	Antenna	Frequency (MHz)	Reading Level (dB μ V/m)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
Ant A	1	H	199.8	23.1	16.1	39.2	43.5	-4.3	QP
		H	480.1	10.4	25.2	35.6	46.0	-10.4	QP
		V	67.0	21.7	11.7	33.4	40.0	-6.6	QP
		V	199.9	19.3	16.1	35.4	43.5	-8.1	QP

Note 1: The worst case of Radiated Emission below 1GHz:

Polarity: Horizontal



Polarity: Vertical



5. Emissions in non-restricted frequency bands

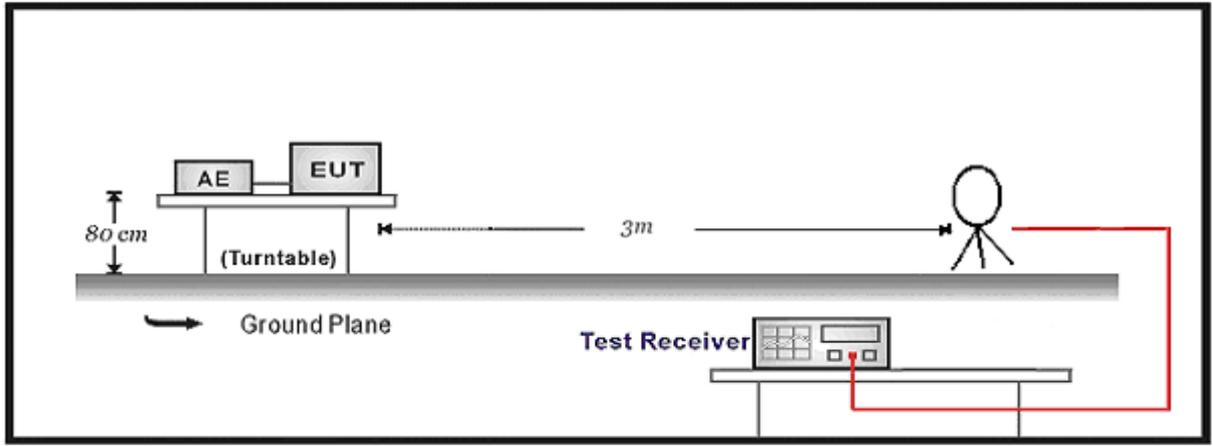
5.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2015.03.29	2016.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2015.11.16	2016.11.17
Bilog Chainenna	Teseq GmbH	CBL6112D	27611	2015.10.16	2016.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2016.03.02	2017.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2016.01.04	2017.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

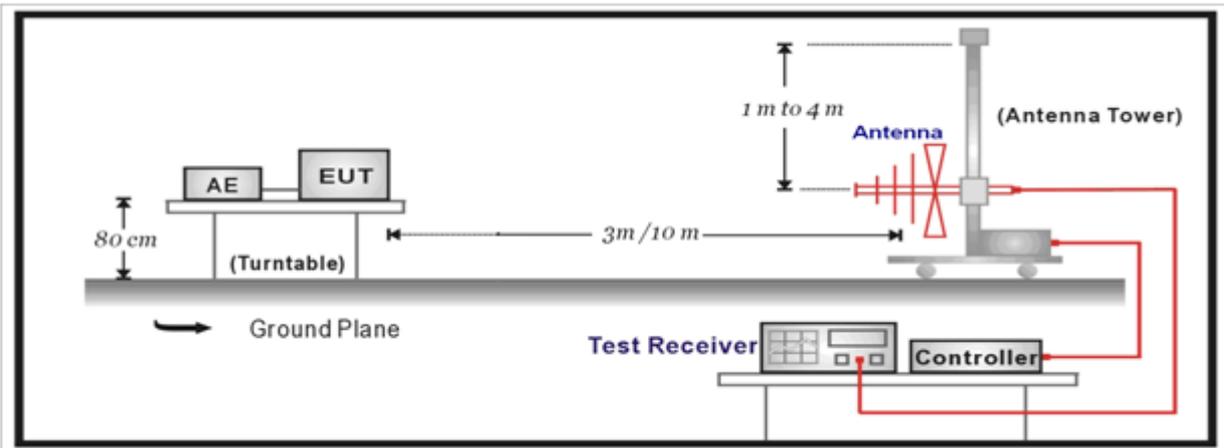
Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2015.03.29	2016.03.28
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2015.05.06	2016.05.05
Preamplifier	Quietek	AP-040G	CHM-0906001	2015.05.06	2016.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2016.01.22	2017.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2014.11.25	2015.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.02	2017.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2015.06.10	2016.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.04	2017.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

5.2. Test Setup

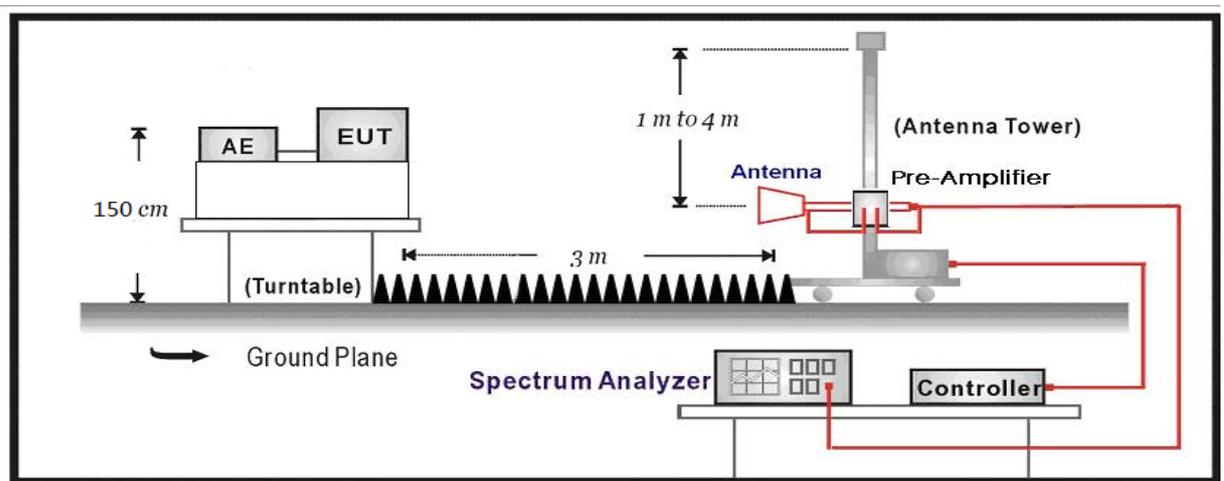
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



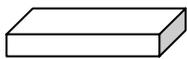
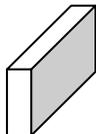
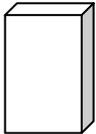
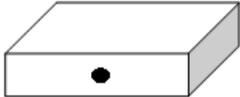
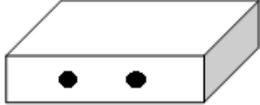
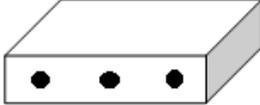
5.3. Limit

Un-Restricted Band Emissions Limit	
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30c(Note1)
RF Output power(PK detector)	20c(Note2)
<p>Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).</p> <p>Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).</p>	

5.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.2	Reference level measurement
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.3	Emission level measurement
<input type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
<input checked="" type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	<input type="checkbox"/> ANSI C63.10	11.12.2	Antenna-port conducted measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
	<input type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

5.5. EUT test Axis definition

Item	Emissions in non-restricted frequency bands			
Device Category	<input type="checkbox"/>	Fixed position use		
	<input checked="" type="checkbox"/>	Mobile position use		
Test mode	Mode 1, Mode 2, Mode 3, Mode 4			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input type="checkbox"/>	Chain 1		
				
	<input checked="" type="checkbox"/>	Chain 1	Chain 2	
				
		Worst Chain A <input checked="" type="checkbox"/>	Worst Chain B <input type="checkbox"/>	
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				
	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	

5.6. Test Result

Product Name	:	DWAM83 Wireless Audio Module	Test Power	:	AC 120V/60Hz
Test Site	:	TR1			

Antenna A								
Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	Low	2412	0.09	2339.60	-55.51	55.60	>20	Pass
1	High	2464	-1.09	2513.70	-56.49	55.40	>20	Pass

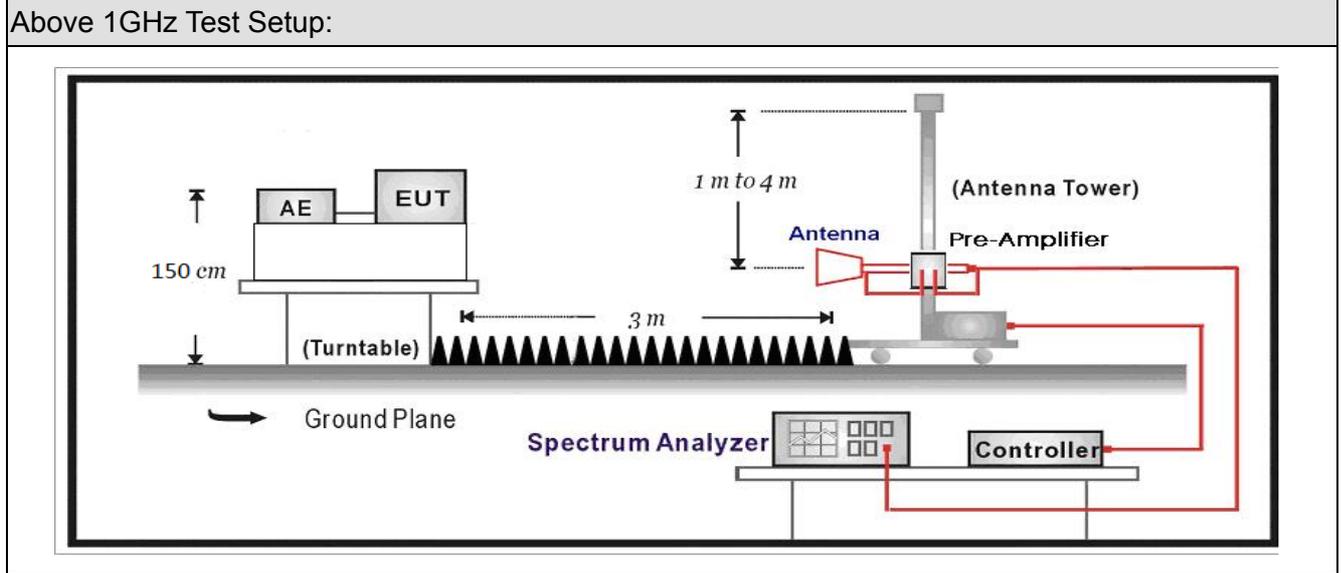
Antenna B								
Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	Low	2412	0.02	2338.74	-57.4	57.42	>20	Pass
1	High	2464	-1.32	2505.5	-58.7	57.38	>20	Pass

6. Radiated Emission Band Edge

6.1. Test Equipment

Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2015.05.06	2016.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2015.05.06	2016.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2016.01.22	2017.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2014.11.25	2015.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.03.02	2017.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016.03.02	2017.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2015.06.10	2016.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.04	2017.01.03
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

6.2. Test Setup



6.3. Limit

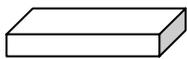
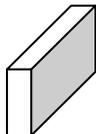
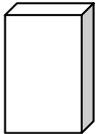
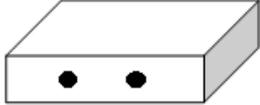
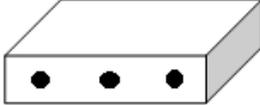
Band edge Limit				
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
2483.5-2500	AV	54	1	3

Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.

6.4. Test Procedure

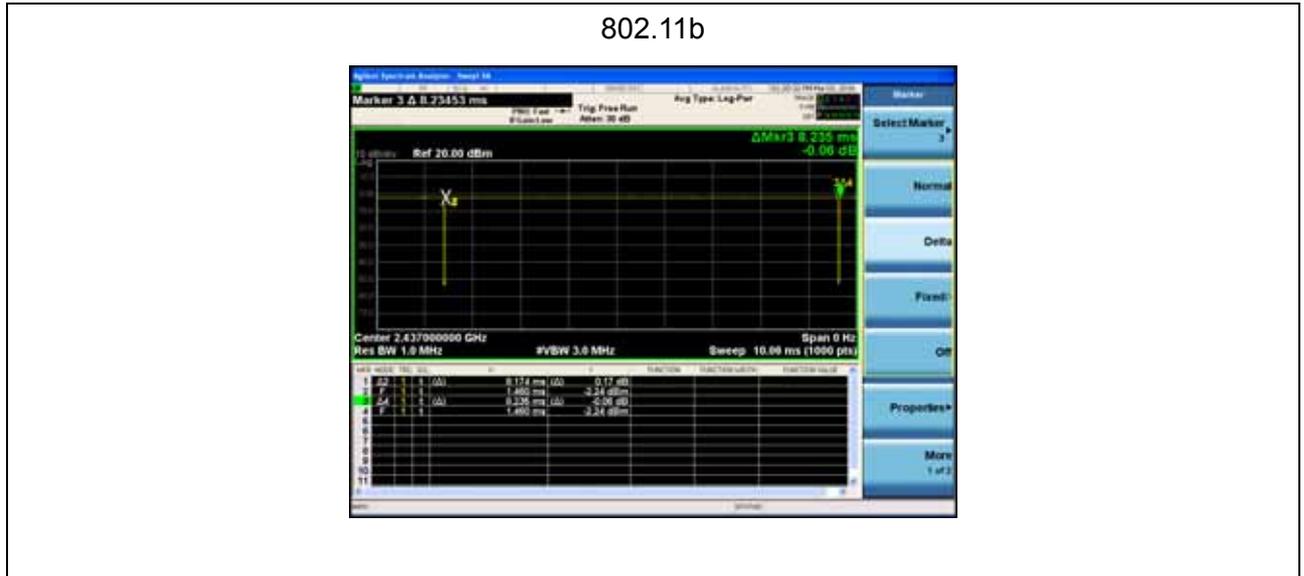
Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	6.10	Band-edge testing
	<input type="checkbox"/> ANSI C63.10	6.10.5	Restricted-band band-edge measurements
	<input checked="" type="checkbox"/> ANSI C63.10	6.10.6	Marker-delta method
<input checked="" type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
<input type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	<input type="checkbox"/> ANSI C63.10	11.12.2	Antenna-port conducted measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

6.5. EUT test definition

Item	Emissions in non-restricted frequency bands			
Device Category	<input type="checkbox"/>	Fixed position use		
	<input checked="" type="checkbox"/>	Mobile position use		
Test mode	Mode 1, Mode 2, Mode 3, Mode 4			
Test method	<input checked="" type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input checked="" type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input type="checkbox"/>	Conducted		
	<input type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
		Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				
	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	

6.6. Duty Cycle

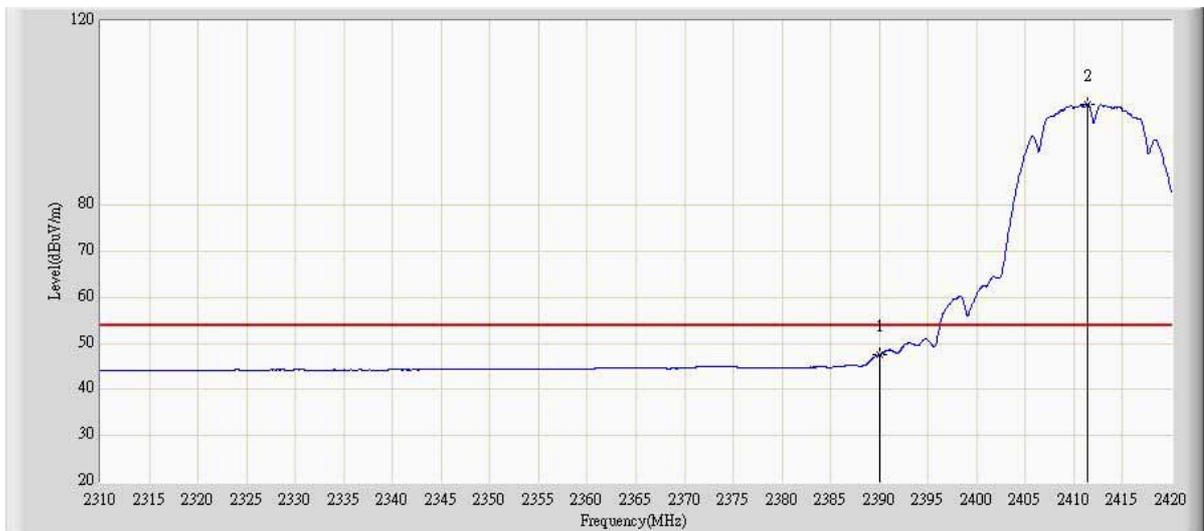
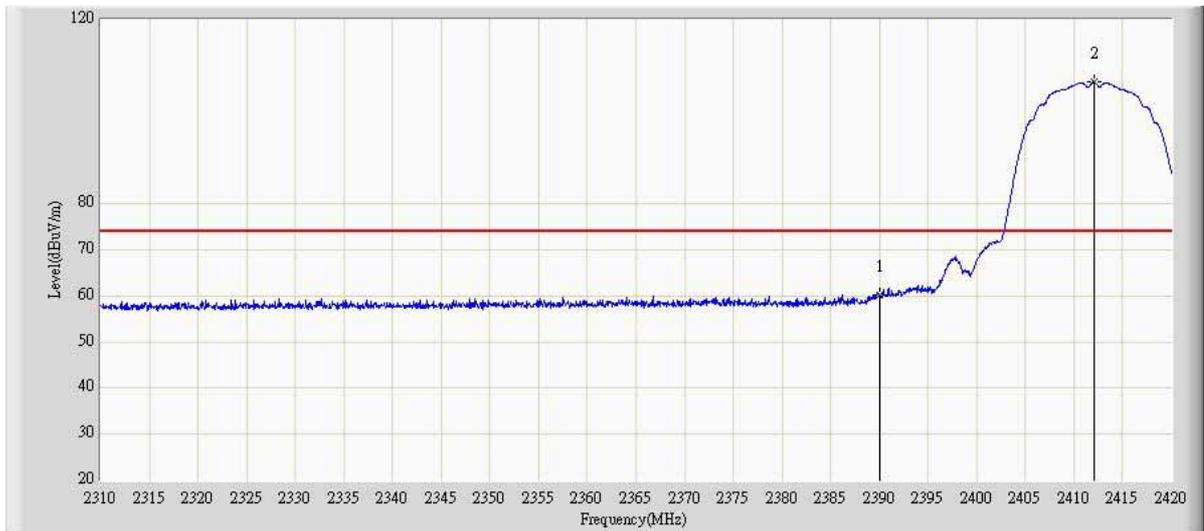
Test Mode	Tx On (ms)	Tx Off (ms)	VBW	Tx On + Tx Off (ms)	Duty Cycle
1	0.905	0.94	1.2kHz	1.04	96.28%



6.7. Test Result

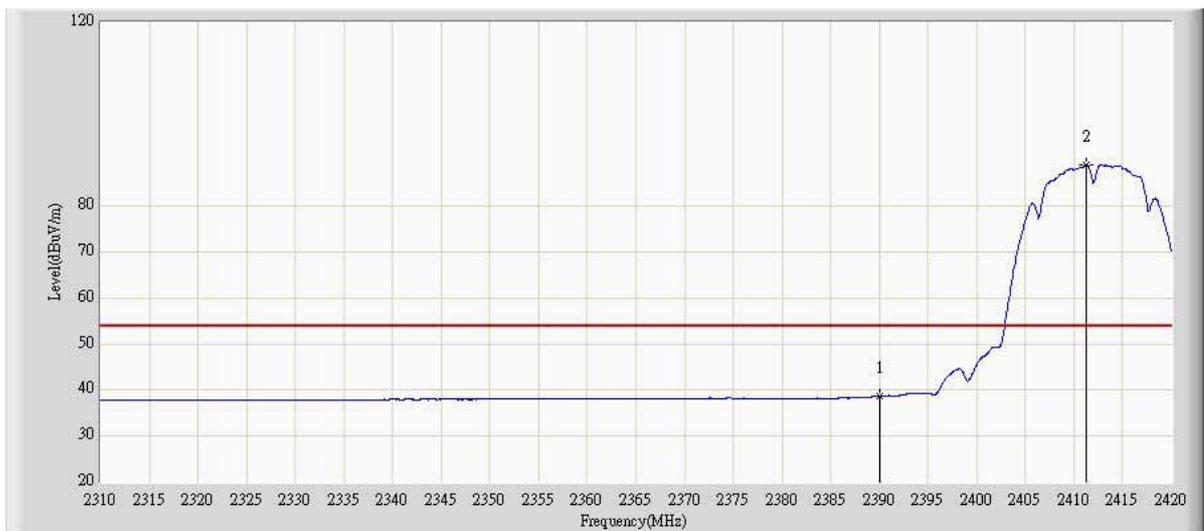
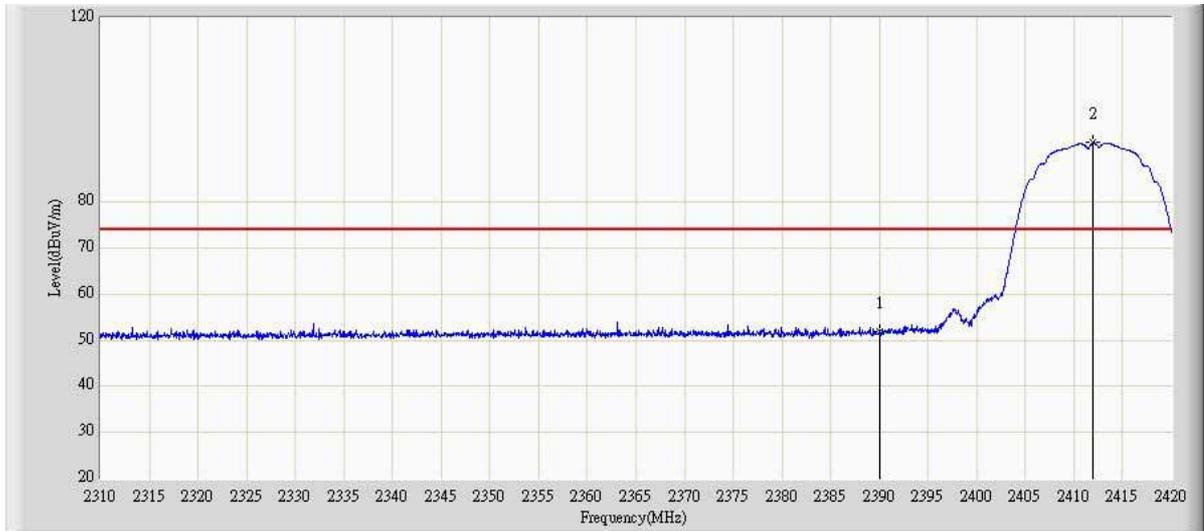
Product Name	: DWAM83 Wireless Audio Module	Polarity	: Horizontal
Test Mode	: Mode 1 with Antenna A	Power	: AC 120V/60Hz
Test CH/Freq	: CH01/2412MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	Factor (dB)	Type
1	2390.000	60.251	23.950	-13.746	74.000	36.302	PK
3	2412.060	106.396	69.913	N/A	N/A	36.483	PK
1	2390.000	47.531	11.230	-6.470	54.000	36.302	AV
3	2411.321	102.022	65.545	N/A	N/A	36.477	AV



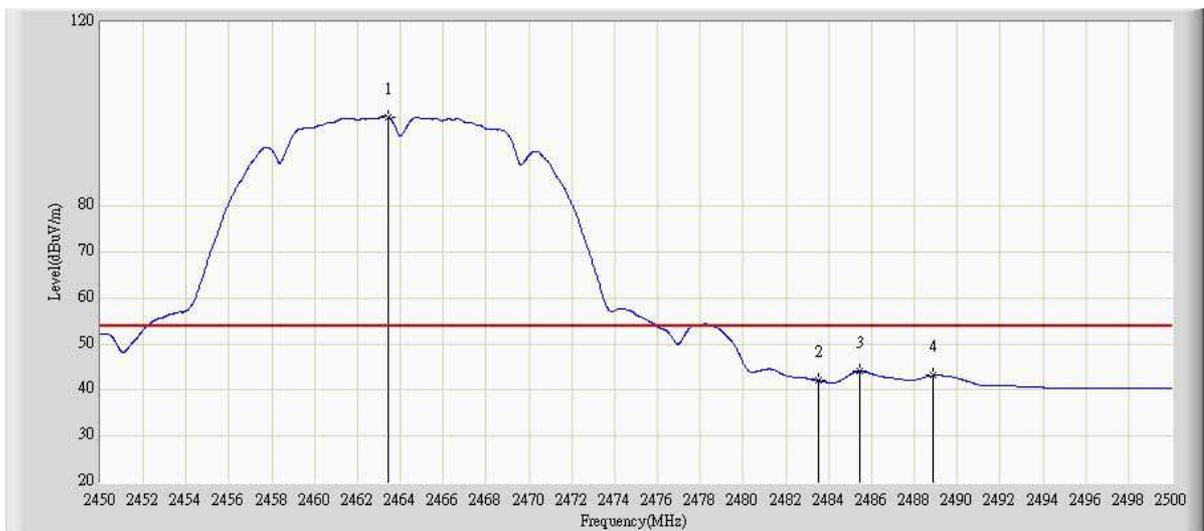
Product Name	: DWAM83 Wireless Audio Module	Polarity	: Vertical
Test Mode	: Mode 1 with Antenna A	Power	: AC 120V/60Hz
Test CH/Freq	: CH01/2412MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	Factor (dB)	Type
1	2390.000	51.768	16.127	-22.233	74.000	35.642	PK
2	2411.880	92.882	57.147	N/A	N/A	35.734	PK
1	2390.000	38.621	2.980	-15.380	54.000	35.642	AV
2	2411.220	88.973	53.242	N/A	N/A	35.731	AV



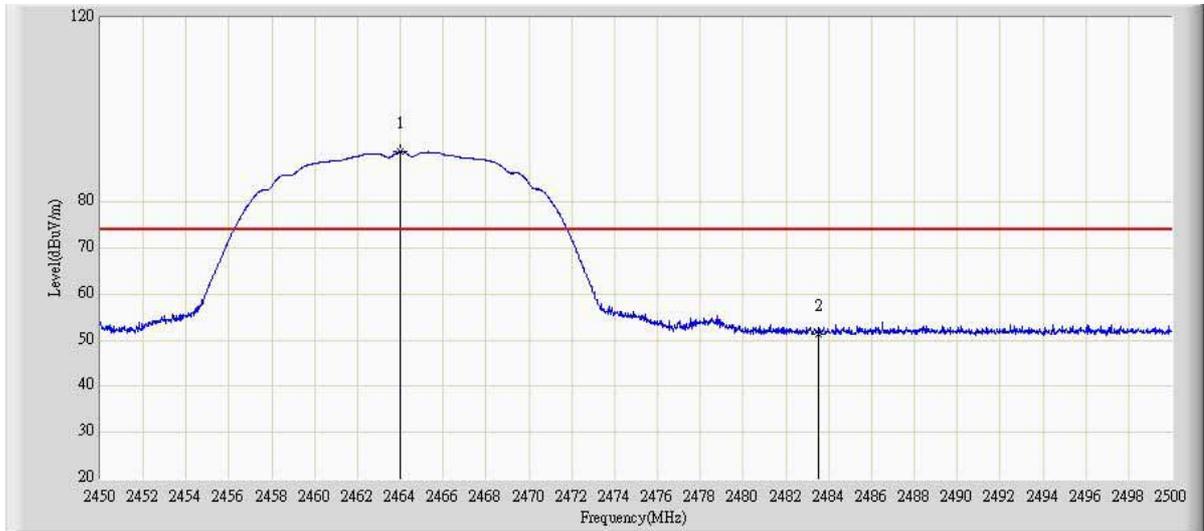
Product Name	: DWAM83 Wireless Audio Module	Polarity	: Horizontal
Test Mode	: Mode 1 with Antenna A	Power	: AC 120V/60Hz
Test CH/Freq	: CH11/2462MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	Factor (dB)	Type
1	2463.735	103.235	66.308	N/A	N/A	36.927	PK
2	2483.500	54.036	16.946	-19.963	74.000	37.089	PK
1	2463.421	99.401	62.478	N/A	N/A	36.923	AV
3	2485.422	44.040	6.931	-9.961	54.000	37.107	AV



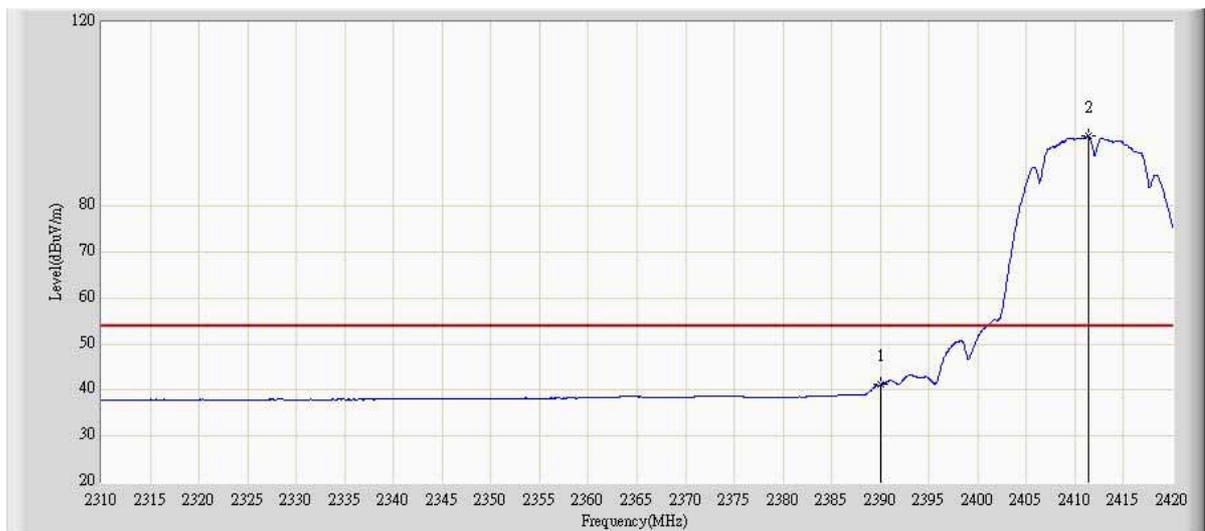
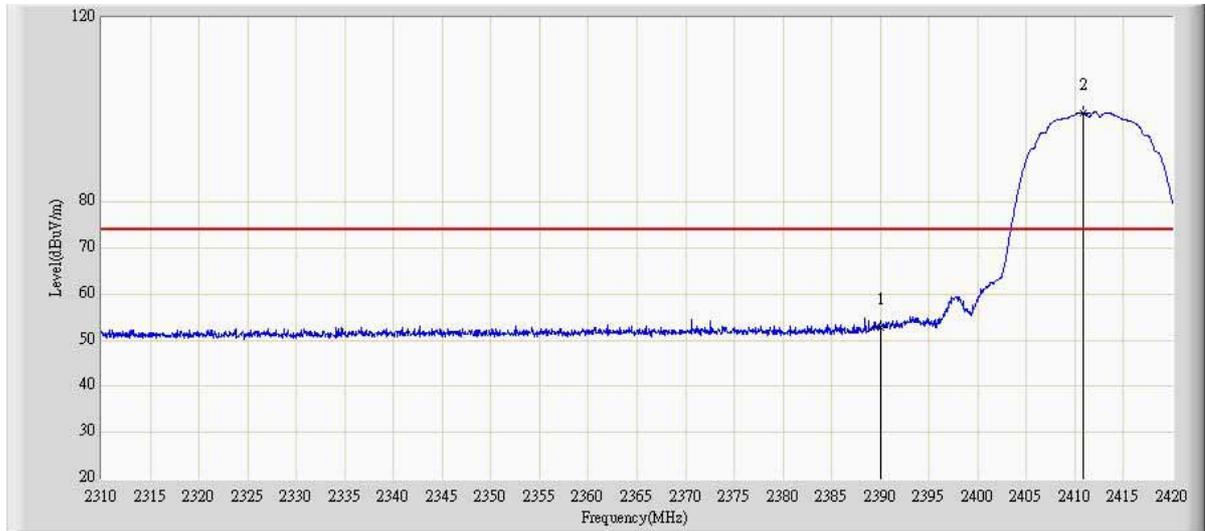
Product Name	: DWAM83 Wireless Audio Module	Polarity	: Vertical
Test Mode	: Mode 1 with Antenna A	Power	: AC 120V/60Hz
Test CH/Freq	: CH11/2462MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	Factor (dB)	Type
1	2463.975	90.912	54.941	N/A	N/A	35.971	PK
2	2483.500	51.231	15.175	-22.768	74.000	36.055	PK
1	2463.275	87.252	51.284	N/A	N/A	35.969	AV
2	2483.500	38.949	2.893	-15.052	54.000	36.055	AV



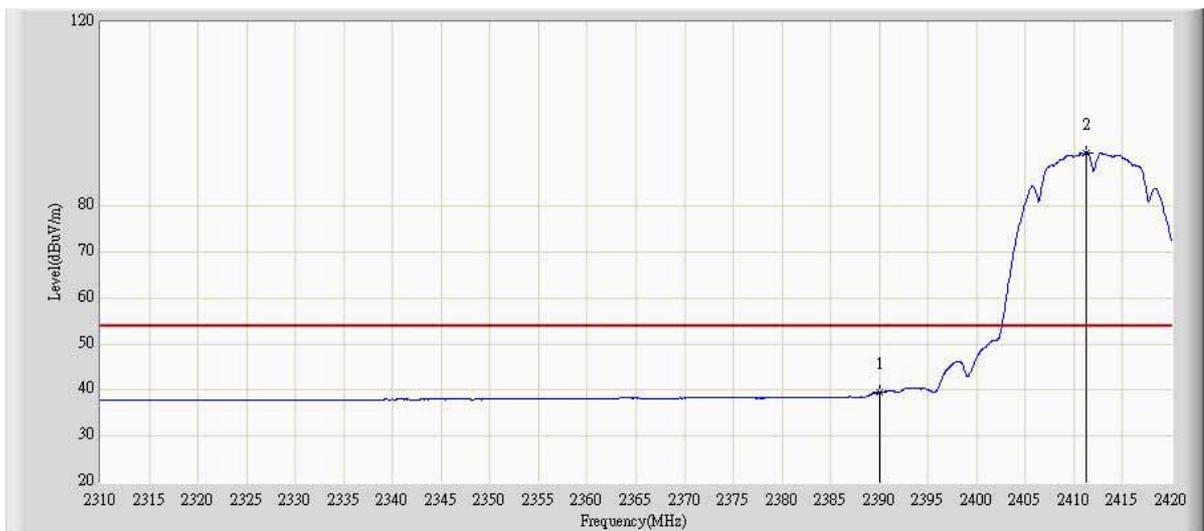
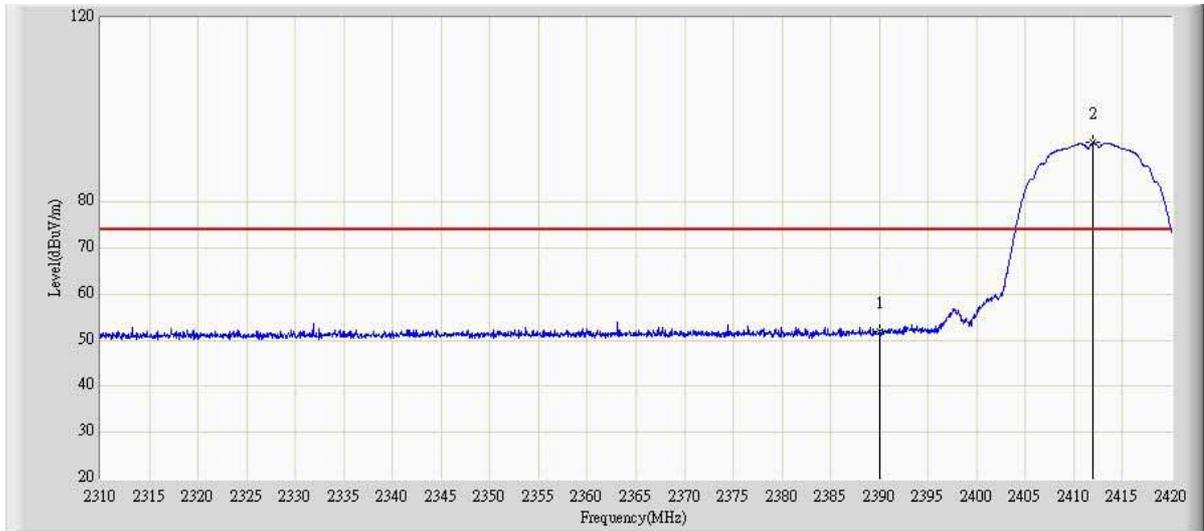
Product Name	: DWAM83 Wireless Audio Module	Polarity	: Horizontal
Test Mode	: Mode 1 with Antenna B	Power	: AC 120V/60Hz
Test CH/Freq	: CH01/2412MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	Factor (dB)	Type
1	2390.000	41.128	4.827	-12.871	54.000	36.302	PK
3	2411.444	95.201	58.724	N/A	N/A	36.477	PK
1	2390.000	51.699	16.058	-22.300	74.000	35.642	AV
3	2412.083	95.275	59.540	N/A	N/A	35.735	AV



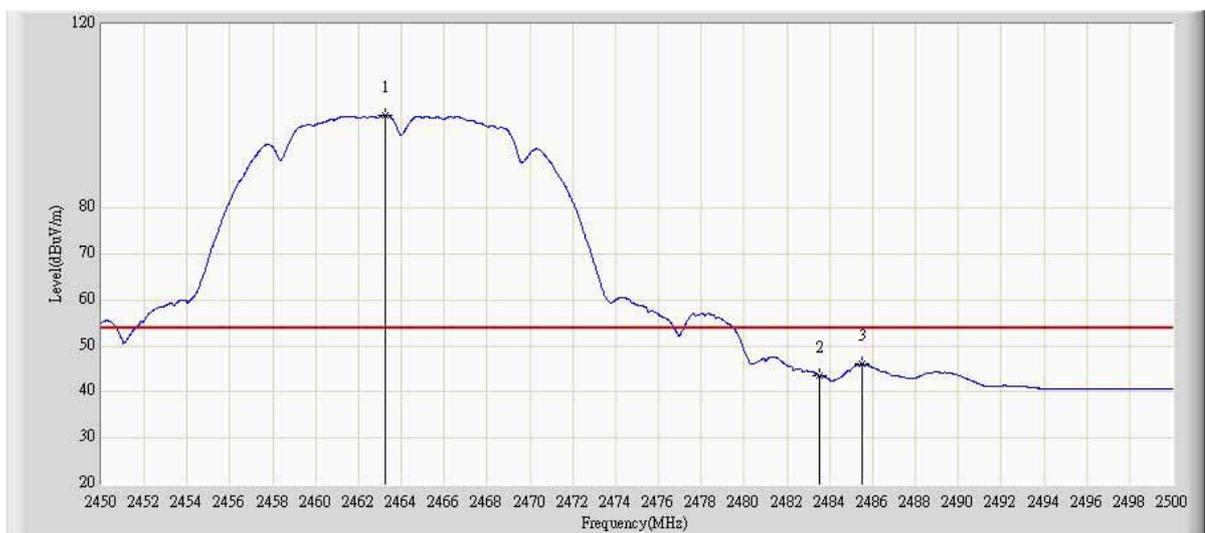
Product Name	: DWAM83 Wireless Audio Module	Polarity	: Vertical
Test Mode	: Mode 1 with Antenna B	Power	: AC 120V/60Hz
Test CH/Freq	: CH01/2412MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	Factor (dB)	Type
1	2390.000	51.701	16.060	-22.300	74.000	35.642	PK
2	2412.043	95.278	59.543	N/A	N/A	35.735	PK
1	2390.000	39.460	3.819	-14.541	54.000	35.642	AV
2	2411.120	91.679	55.948	N/A	N/A	35.731	AV



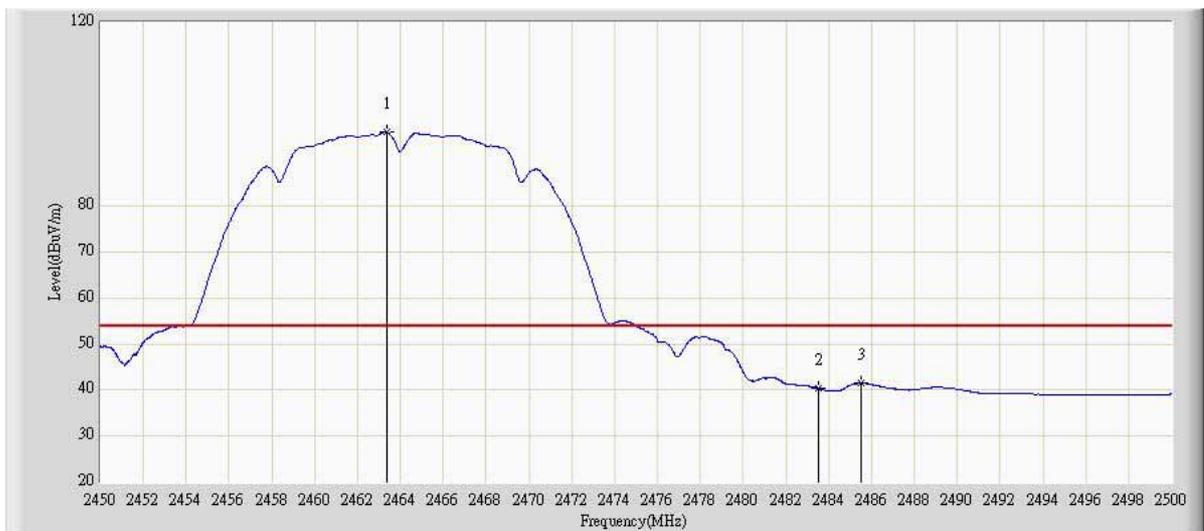
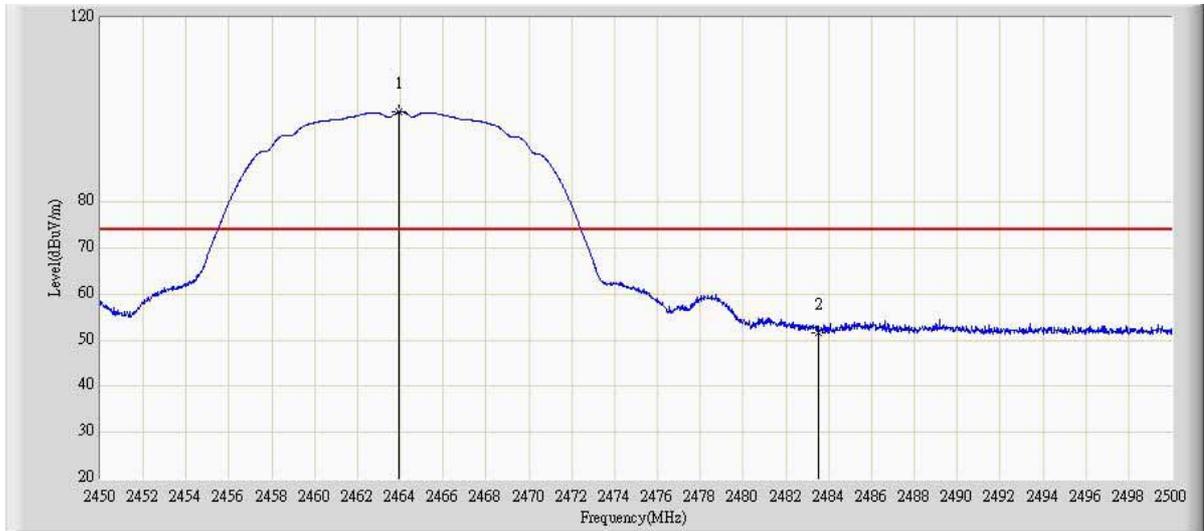
Product Name	: DWAM83 Wireless Audio Module	Polarity	: Horizontal
Test Mode	: Mode 1 with Antenna B	Power	: AC 120V/60Hz
Test CH/Freq	: CH11/2462MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dB μ V)	Over Limit (dB)	Limit (dB μ V/m)	Factor (dB)	Type
1	2464.000	104.328	67.401	N/A	N/A	36.927	PK
2	2483.500	56.826	19.736	-17.175	74.000	37.089	PK
1	2463.275	100.245	63.324	N/A	N/A	36.922	AV
3	2485.500	46.031	8.924	-7.970	54.000	37.108	AV



Product Name	: DWAM83 Wireless Audio Module	Polarity	: Vertical
Test Mode	: Mode 1 with Antenna B	Power	: AC 120V/60Hz
Test CH/Freq	: CH11/2462MHz	Test Site	: AC5

No	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Over Limit (dB)	Limit (dBμV/m)	Factor (dB)	Type
1	2463.926	99.529	63.558	N/A	N/A	35.971	PK
2	2483.500	51.493	15.437	-22.508	74.000	36.055	PK
1	2463.443	96.030	60.061	N/A	N/A	35.969	AV
2	2485.500	41.536	5.471	-12.465	54.000	36.066	AV



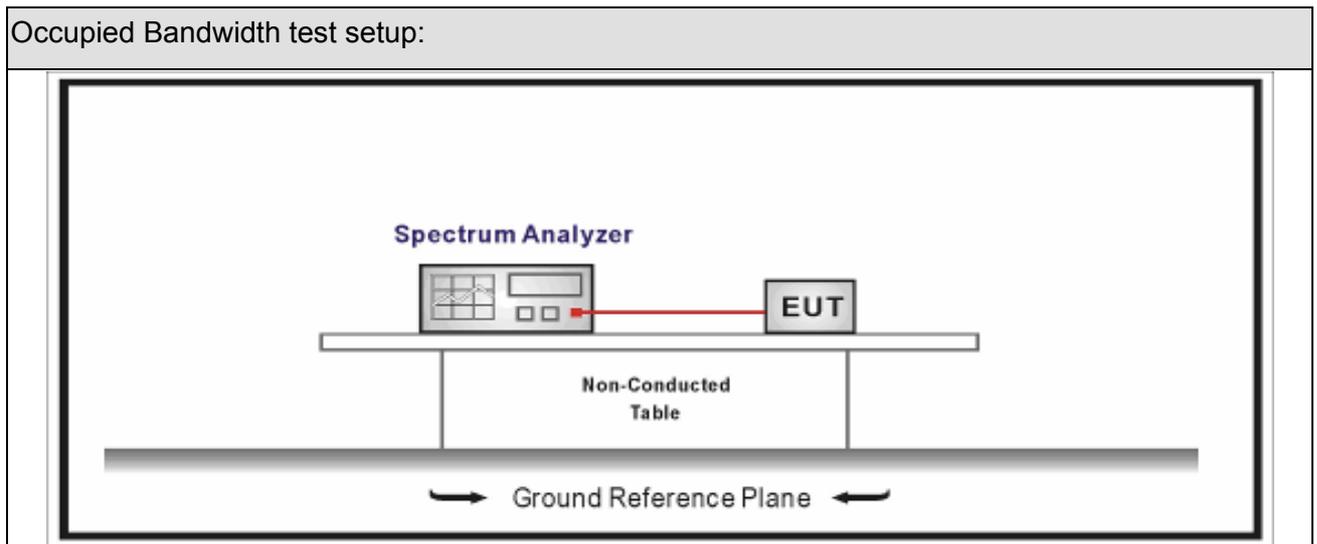
7. Occupied Bandwidth

7.1. Test Equipment

Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.11	2017.03.10
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2015.04.10	2016.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup



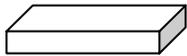
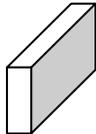
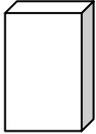
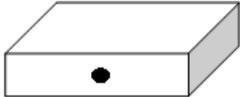
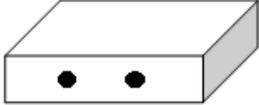
7.3. Limit

Occupied Bandwidth
Systems using digital modulation techniques operate in the 2400-2483.5 MHz. The minimum 6 dB bandwidth shall be at least 500 kHz

7.4. Test Procedure

Test Method			
	Reference Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.8	DTS bandwidth
	<input type="checkbox"/> ANSI C63.10	11.8.1	Option 1
	<input checked="" type="checkbox"/> ANSI C63.10	11.8.2	Option 2

7.5. EUT test definition

Item	Occupied Bandwidth			
Device Category	<input checked="" type="checkbox"/>	Fixed position use		
	<input type="checkbox"/>	Mobile position use		
Test mode	Mode 1, Mode 2, Mode 3, Mode 4			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
		Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				
	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	

7.6. Test Result

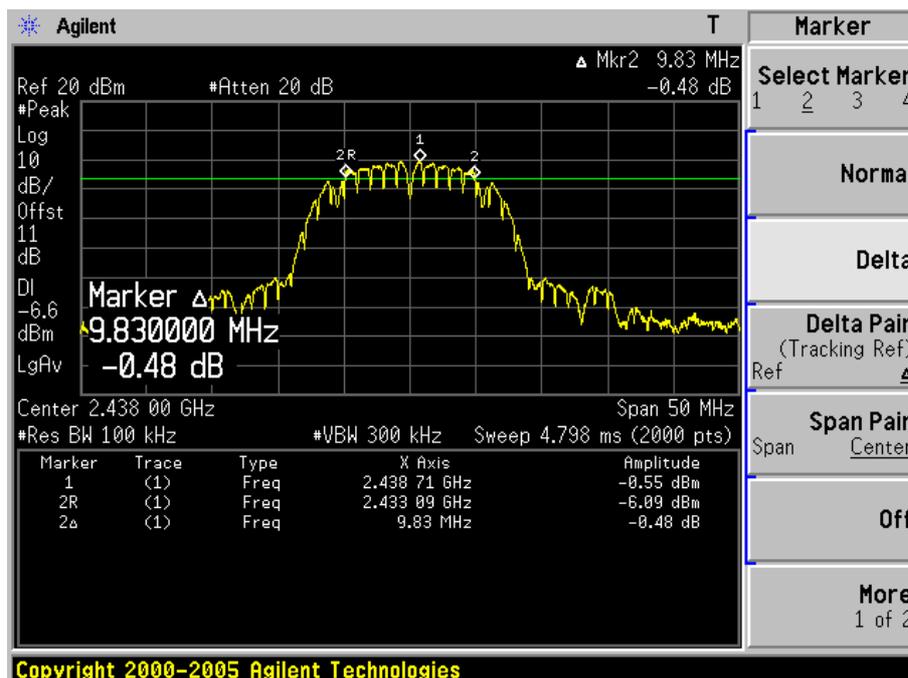
Product Name	: DWAM83 Wireless Audio Module	Test Power	: AC 120V/60Hz
Test Site	: TR-8		

Antenna A						
Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	Low	2412	13757.5	9850	>500	Pass
1	Mid	2437	13757.1	9850	>500	Pass
1	High	2464	13760.7	9830	>500	Pass

Antenna B						
Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	Low	2412	13763.7	9830	>500	Pass
1	Mid	2437	13759.9	9830	>500	Pass
1	High	2464	13759.1	9830	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

Mode 1 CH06 (2462MHz)



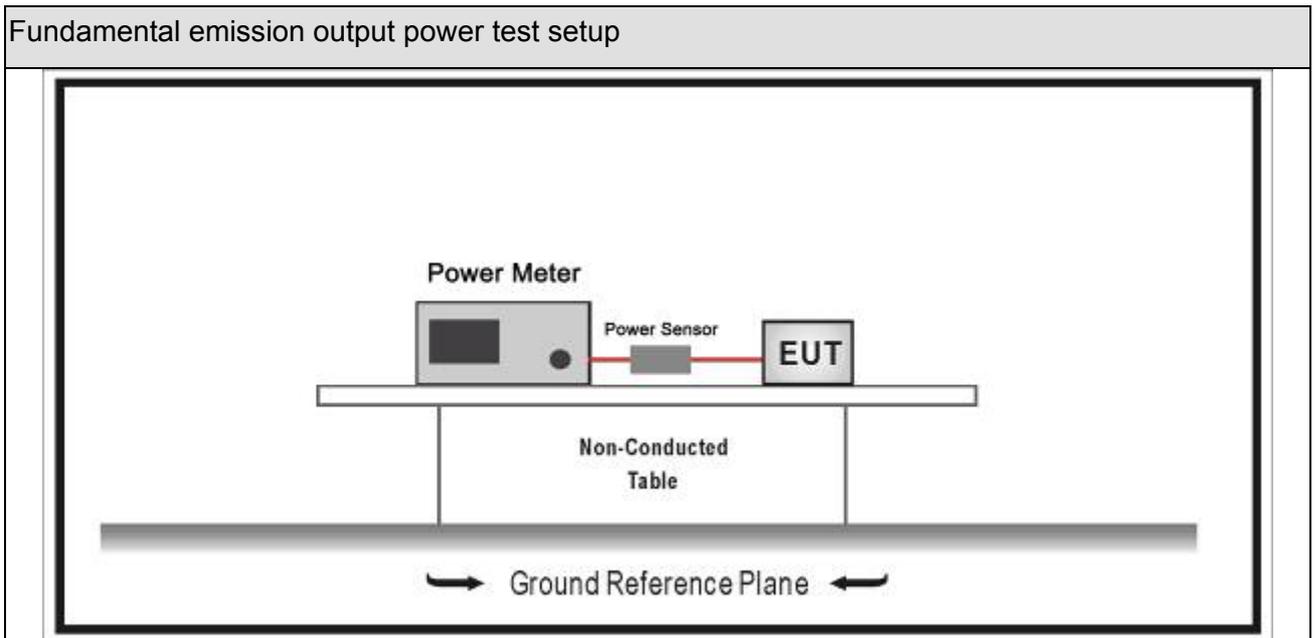
8. Fundamental emission output power

8.1. Test Equipment

Fundamental emission output power/ TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.03.11	2017.03.10
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2015.11.11	2016.11.10
Power Sensor	Anritsu	MA2411B	0846014	2015.11.11	2016.11.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2015.04.10	2016.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup



8.3. Limit

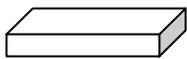
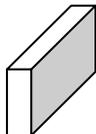
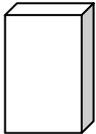
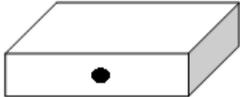
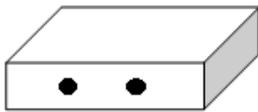
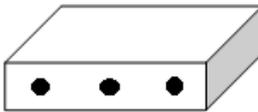
Fundamental emission output power Limit		
<input checked="" type="checkbox"/>	$G_{TX} < 6\text{dBi}$	$P_{out} \leq 30\text{dBm}$
<input type="checkbox"/>	$G_{TX} > 6\text{dBi}$	
<input type="checkbox"/>	Non-Fix point-point	$P_{out} \leq 30 - (G_{TX} - 6)$
<input type="checkbox"/>	Fix point-point	$P_{out} \leq 30 - [(G_{TX} - 6)]/3$
<input type="checkbox"/>	Point-to-multipoint	$P_{out} \leq 30 - (G_{TX} - 6)$
<input type="checkbox"/>	Overlap Beams	$P_{out} \leq 30 - [(G_{TX} - 6)]/3$
<input type="checkbox"/>	Aggregate power transmitted simultaneously on all beams	$P_{out} \leq 30 - [(G_{TX} - 6)]/3$
<input type="checkbox"/>	single directional beam	$P_{out} \leq 30 - [(G_{TX} - 6)]/3 + 8\text{dB}$
<p>Note 1 : G_{TX} directional gain of transmitting antennas.</p> <p>Note 2 : P_{out} is maximum peak conducted output power .</p>		

8.4. Test Procedure

Fundamental emission output power Test Method					
	References Rule		Chapter	Description	
<input checked="" type="checkbox"/>	ANSI C63.10		11.9	Fundamental emission output power	
	<input checked="" type="checkbox"/>	ANSI C63.10		11.9.1	Maximum peak conducted output power
	<input type="checkbox"/>	ANSI C63.10	11.9.1.1	RBW \geq DTS bandwidth	
	<input type="checkbox"/>	ANSI C63.10	11.9.1.2	Integrated band power method	
	<input checked="" type="checkbox"/>	ANSI C63.10	11.9.1.3	PKPM1 Peak power meter method	
	<input type="checkbox"/>	ANSI C63.10		11.9.2	Maximum conducted (average) output power
	<input type="checkbox"/>	ANSI C63.10		11.9.2.2	Measurement using a spectrum analyzer (SA)
	<input type="checkbox"/>	ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle \geq 98%)	
	<input type="checkbox"/>	ANSI C63.10	11.9.2.2.3	Method AVGSA-1A(Duty cycle \geq 98%)	
	<input type="checkbox"/>	ANSI C63.10	11.9.2.2.4	Method AVGSA-2(Duty cycle \leq 98%)	
	<input type="checkbox"/>	ANSI C63.10	11.9.2.2.5	Method AVGSA-2A(Duty cycle \leq 98%)	
	<input type="checkbox"/>	ANSI C63.10	11.9.2.2.4	Method AVGSA-3	
	<input type="checkbox"/>	ANSI C63.10	11.9.2.2.5	Method AVGSA-3A	
	<input type="checkbox"/>	ANSI C63.10		11.9.2.3	Measurement using a power meter (PM)
	<input type="checkbox"/>	ANSI C63.10	11.9.2.3.1	Method AVGPM	
<input type="checkbox"/>	ANSI C63.10	11.9.2.3.2	Method AVGPM-G		

Directional Gain Calculations for In-Band test method			
References Rule		Chapter	Description
<input checked="" type="checkbox"/>	KDB 662911	F2)a)	Basic methodology with NANT transmit antennas
	<input type="checkbox"/> KDB 662911	F2)a) (i)	transmit signals are correlated
	<input checked="" type="checkbox"/> KDB 662911	F2)a) (ii)	transmit signals are uncorrelated
<input type="checkbox"/>	KDB 662911	F2)b)	Sectorized antenna systems.
<input type="checkbox"/>	KDB 662911	F2)c)	Cross-polarized antennas
	<input type="checkbox"/> ANSI C63.10	F2)c) (i)	Cross-polarized antennas with NANT = 2.
	<input type="checkbox"/> ANSI C63.10	F2)c) (ii)	Multiple antennas
<input type="checkbox"/>	KDB 662911	F2)d)	Sectorized antenna systems.
	<input type="checkbox"/> KDB 662911	F2)d) (i)	transmit signals are correlated
	<input type="checkbox"/> KDB 662911	F2)d) (ii)	transmit signals are uncorrelated
<input type="checkbox"/>	KDB 662911	F2)e)	Sectorized antenna systems.
	<input type="checkbox"/> KDB 662911	F2)e) (i)	Antennas have the same gain
	<input type="checkbox"/> KDB 662911	F2)e) (ii)	Antenna have the different gain with one spatial stream
	<input type="checkbox"/> KDB 662911	F2)e) (iii)	Antenna have the different gain with more than one spatial stream
<input type="checkbox"/>	KDB 662911	F2)f)	Cyclic Delay Diversity (CDD)
	<input type="checkbox"/> KDB 662911	F2)f) (i)	Antennas have the same gain
	<input type="checkbox"/> KDB 662911	F2)f) (ii)	Antenna have the different gain with one spatial stream
	<input type="checkbox"/> KDB 662911	F2)f) (ii)	Antenna have the different gain with more than one spatial stream

8.5. EUT test definition

Item	Fundamental emission output power			
Device Category	<input type="checkbox"/>	Fixed position use		
	<input checked="" type="checkbox"/>	Mobile position use		
Test mode	Mode 1, Mode 2, Mode 3, Mode 4			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				
	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	

8.6. Test Result

Product Name	:	DWAM83 Wireless Audio Module	Test Power	:	AC 120V/60Hz
Test Site	:	TR1			

Mode	Channel	Test Frequency (MHz)	Measurement Power Output (dBm)		Limit (dBm)	Result
			Ant A	Ant B		
1	01	2412	18.64	18.74	30	Pass
1	06	2437	18.17	18.27	30	Pass
1	11	2462	18.52	18.23	30	Pass

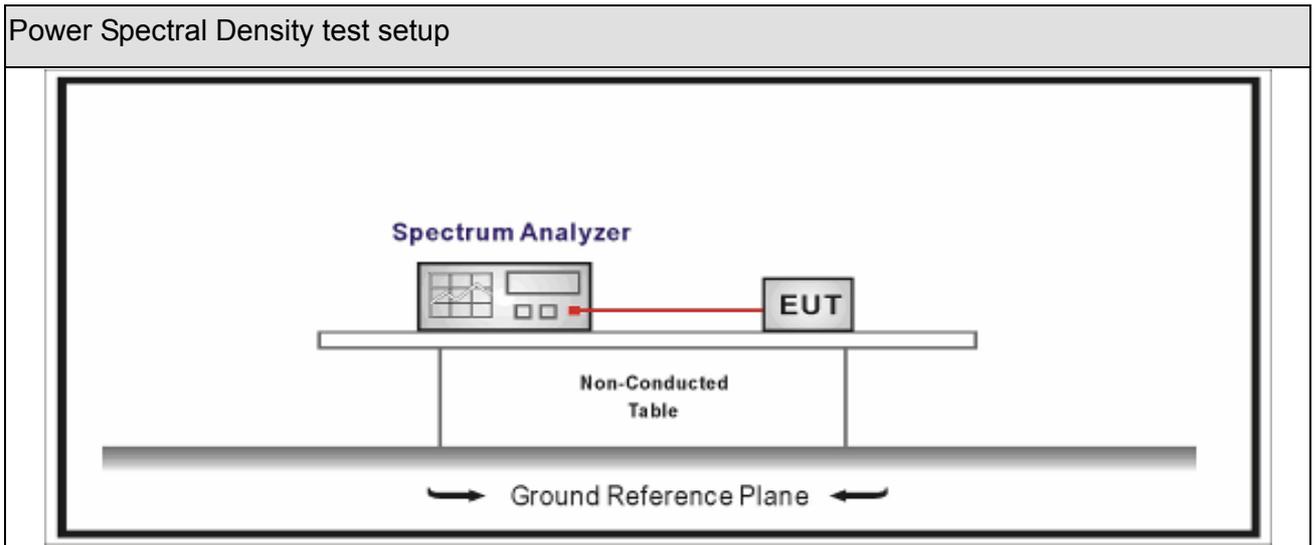
9. Power Spectral Density

9.1. Test Equipment

Power Spectral Density / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.03
Spectrum Analyzer	Agilent	N9010A	MY48030494	2015.03.11	2016.03.10
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2015.04.10	2016.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

9.2. Test Setup



9.3. Limit

Power Spectral Density Limit

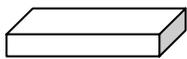
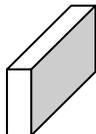
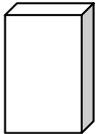
Power Spectral Density $\leq 8\text{dBm}/3\text{kHz}$

9.4. Test Procedure

Power Spectral Density Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.10	Maximum power spectral density level in the fundamental emission
<input checked="" type="checkbox"/>	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
<input type="checkbox"/>	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle $\geq 98\%$)
<input type="checkbox"/>	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle $\geq 98\%$)
<input type="checkbox"/>	ANSI C63.10	11.10.5	Method AVGPSD-2(Duty cycle $< 98\%$)
<input type="checkbox"/>	ANSI C63.10	11.10.6	Method AVGPSD-2A(Duty cycle $< 98\%$)
<input type="checkbox"/>	ANSI C63.10	11.10.7	Method AVGPSD-3
<input type="checkbox"/>	ANSI C63.10	11.10.8	Method AVGPSD-3A

Directional Gain Calculations for In-Band test method			
	Referred Rule	Chapter	Description
<input checked="" type="checkbox"/>	KDB 662911	F2)a)	Basic methodology with NANT transmit antennas
	<input type="checkbox"/> KDB 662911	F2)a) (i)	transmit signals are correlated
	<input checked="" type="checkbox"/> KDB 662911	F2)a) (ii)	transmit signals are uncorrelated
<input type="checkbox"/>	KDB 662911	F2)b)	Sectorized antenna systems.
<input type="checkbox"/>	KDB 662911	F2)c)	Cross-polarized antennas
	<input type="checkbox"/> ANSI C63.10	F2)c) (i)	Cross-polarized antennas with NANT = 2.
	<input type="checkbox"/> ANSI C63.10	F2)c) (ii)	Multiple antennas
<input type="checkbox"/>	KDB 662911	F2)d)	Sectorized antenna systems.
	<input type="checkbox"/> KDB 662911	F2)d) (i)	transmit signals are correlated
	<input type="checkbox"/> KDB 662911	F2)d) (ii)	transmit signals are uncorrelated
<input type="checkbox"/>	KDB 662911	F2)e)	Sectorized antenna systems.
	<input type="checkbox"/> KDB 662911	F2)e) (i)	Antennas have the same gain
	<input type="checkbox"/> KDB 662911	F2)e) (ii)	Antenna have the different gain with one spatial stream
	<input type="checkbox"/> KDB 662911	F2)e) (iii)	Antenna have the different gain with more than one spatial stream
<input type="checkbox"/>	KDB 662911	F2)f)	Cyclic Delay Diversity (CDD)
	<input type="checkbox"/> KDB 662911	F2)f) (i)	Antennas have the same gain
	<input type="checkbox"/> KDB 662911	F2)f) (ii)	Antenna have the different gain with one spatial stream
	<input type="checkbox"/> KDB 662911	F2)f) (ii)	Antenna have the different gain with more than one spatial stream

9.5. EUT test definition

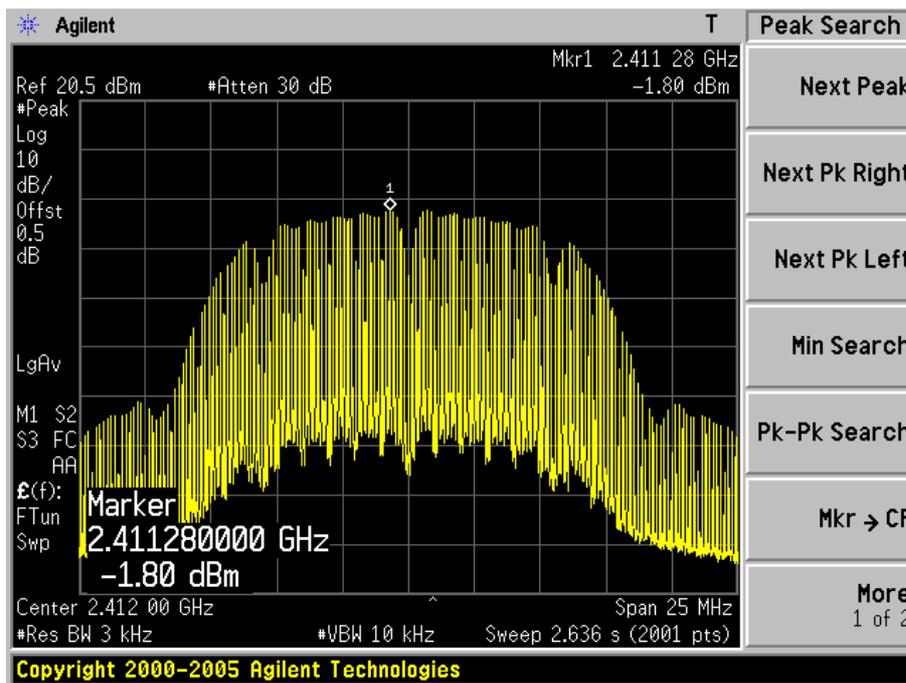
Item	Power Spectral Density Test Method			
Device Category	<input checked="" type="checkbox"/>	Fixed position use		
	<input type="checkbox"/>	Mobile position use		
Test mode	Mode 1, Mode 2, Mode 3, Mode 4			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
		Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				
	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	Worst Chain <input type="checkbox"/>	

9.6. Test Result

Product Name	:	DWAM83 Wireless Audio Module	Test Power	:	AC 120V/60Hz
Test Site	:	TR8			

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm)		Limit (dBm)	Result
			Ant A	Ant B		
1	Low	2412	-1.80	-2.01	30	Pass
1	Mid	2437	-2.55	-2.61	30	Pass
1	High	2464	-3.19	-3.23	30	Pass

Mode 1 CH6(2462MHz)



The End