APPLICATION FOR CERTIFICATION
On Behalf of
LG Electronics Inc.
Wireless Speaker
Model No.：(1)W93-R (2)UW93-R (3)ACC98WK-R
Brand: LG
FCC ID：BEJ9QK-W93-R

Prepared for : LG Electronics Inc.
19-1, Cheongho-Ri, Jinwuy-Myun,
Pyungtaek-City, Kyungki-Do, 451-713
Korea.

Prepared by : Audix Technology Corporation
EMC Department
No. 53-11, Tin-Fu Tsun, Lin-Kou,
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File Number	：	EM961655A
Report Number	：	EM-F960606
Date of Test	：	Dec. 17 ~ 20, 2007
Date of Report	：	Dec. 25, 2007

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TEST REPORT CERTIFICATION

Applicant	:	LG Electronics Inc.
Manufacturer #1	:	LG Electronics Inc.
Manufacturer #2	:	LG Electronics (Huizhou) Inc.
Manufacturer #3	:	SHEN ZHEN KWANG SUNG Electronics H.K. Co., Ltd.
Manufacturer #4	:	Huizhou Vision Electronics Factory
EUT Description	:	Wireless Speaker
FCC ID	:	BEJ9QK-W93-R

(A) MODEL NO.	:	(1)W93-R (2)UW93-R (3)ACC98WK-R
(B) SERIAL NO.	:	N/A
(C) BRAND	:	LG
(D) POWER SUPPLY	:	AC 120V~, 60Hz
(E) TEST VOLTAGE	:	AC 120V/60Hz

Measurement Procedure Used:

FCC Public Notice DA-00705
FCC RULES AND REGULATIONS PART 15 SUBPART B & C, Sep. 2007
AND ANSI C63.4/2003

(Receiver Unit with FCC CFR 47 Part 15B, §15.107 and §15.109)
(Transmitter Unit with FCC CFR 47 Part 15C, §15.207 and §15.209 and §15.247)

The device described above was tested by Audix Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart B and C limits.

The measurement results are contained in this test report and Audix Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology Corporation.

Date of Test: Dec. 17 ~ 20, 2007

Prepared by: Tina Huang Jan. 23, 2008
(Tina Huang/Assistant)

Test Engineer: Henning Chang Jan. 23, 2008
(Henning Chang/Supervisor)

Approved & Authorized Signer: Leon Liu Jan. 23 2008
(Leon Liu/Vice President)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Wireless Speaker
Model Number	:	(1)W93-R (2)UW93-R (3)ACC98WK-R (Above models are receiver units. There are transmit and receive functions.) Above models identical, the difference is in different buyer. The model W93-R is representative tested in this report.
FCC ID	:	BEJ9QK-W93-R
Brand Name	:	LG
Applicant	:	LG Electronics Inc. 19-1, Cheongho-Ri, Jinwuy-Myun, Pyungtaek-City, Kyungki-Do, 451-713 Korea.
Manufacturer #1	:	LG Electronics Inc. 19-1, Cheongho-Ri, Jinwuy-Myun, Pyungtaek-City, Kyungki-Do, 451-713 Korea
Manufacturer #2	:	LG Electronics (Huizhou) Inc. No. 1 Xingda Road, Huitai Industrial Park of Zhongkai Development Zone Huizhou City, Guangdong, China
Manufacturer #3	:	SHEN ZHEN KWANG SUNG Electronics H.K. Co., Ltd. Shi Tou Shan Industrial Zone, Zhuan Chang Village, Shiyan Town, Baoan District, Shenzhen City, Guang Dong Province, China
Manufacturer #4	:	Huizhou Vision Electronics Factory Ding Cun, Li Lin Zhen, Hui Cheng-Gu, Hui Zhou City, Guang Dong Province China
TX/RX Module	:	Eleven Engineering Incorporatec, M/N WHAM2-D
Fundamental Range	:	2400MHz ~ 2483.5MHz

Channel Number	:	20
Radio Technology	:	FHSS Modulation
Antenna Gain	:	3.3dBi
Power Cord	:	Non-Shielded, Undetachable, 2.0m (2 Pin)
Date of Receipt of Sample	:	Dec. 17, 2007
Date of Test	:	Dec. 17 ~ 20, 2007

1.2. Tested Supporting System Details

1.2.1. DVD PLAYER

Model Number	:	HT903TA-DP
Serial Number	:	N/A
Brand	:	LG
Manufacturer	:	LG Electronics Ltd.
USB Cable	:	Shielded, Detachable, 2.0m
Power Cord	:	Non-Shielded, Detachable, 1.5m

1.2.2. SPEAKER*2

Model Number	:	8 Ohm, 60W
Serial Number	:	N/A
Manufacturer	:	AUDIX
Audio Cable*2	:	Non-Shielded, Detachable, 3.6m

1.2.3. TRANSMITTER

Model Number	:	W93-T
Serial Number	:	N/A
Brand	:	LG
Manufacturer	:	LG Electronics Ltd.
TX/RX Module	:	Eleven Engineering Incorporatec, M/N WHAM2-D
Power Adapter	:	M/N FM080010-US Input: AC 100-240V, 50/60Hz Output: DC 7.5V, 1.0A Cord: Non-Shielded, Undetachable, 1.5m Bonded a ferrite core

1.2.4. SIMULATOR (POWER SOCKET)

AC Power Cord (2Pin)	:	Non-Shielded, Detachable, 1.8m

1.3. Description of Test Facility

Name of Firm	:	**Audix Technology Corporation** **EMC Department** No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei, Taiwan
Test Location & Facility (C2/R6/Semi-AC)	:	**No. 2 Shielded Room** No. 67-4, Tin-Fu Tsun, Lin-Kou, Taipei, Taiwan. **No. 6 Open Area Test Site** No. 67-7, Tin-Fu Tsun, Lin-Kou, Taipei, Taiwan. Federal Communication Commission Registration Number: 98448 Filing on June 13. 06, 2006 **Semi-Anechoic Chamber** No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei, Taiwan Federal Communication Commission Registration Number: 90993 Filing on May 19, 2006
NVLAP Lab. Code	:	200077-0

(NVLAP is a NATA accredited body under Mutual Recognition Agreement)

1.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150kHz~30MHz	±1.73dB
Radiation Test (Distance: 10m)	30MHz~300MHz	±2.99dB
	300MHz~1000MHz	±2.73dB
Radiation Test (Distance: 3m)	30MHz~300MHz	±2.91dB
	300MHz~1000MHz	±2.94dB
	Above 1GHz	± 5.02dB

Remark **:** Uncertainty = $ku_c(y)$

Test Item	Uncertainty
20dB Bandwidth	± 0.2kHz
Carrier Frequency Separation	± 0.2kHz
Time Of Occupancy	± 0.03sec
Maximum peak Output power	± 0.52dBm
Emission Limitations	± 0.13dB
Band Edges	± 0.13dB

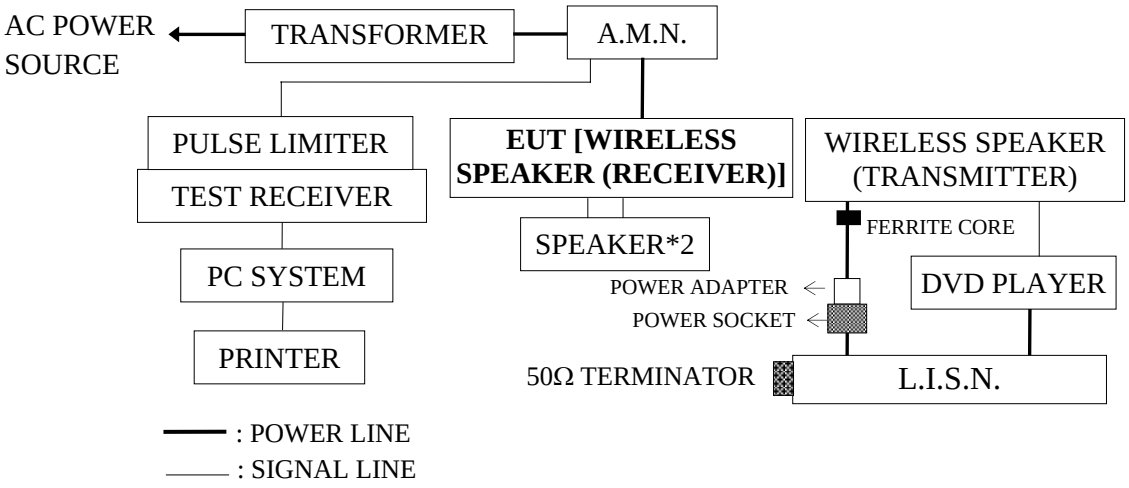
2. CONDUCTED EMISSION MEASUREMET

2.1. Test Equipment

The following test equipment were used during the conducted measurement:
(No. 2 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCS30	100265	Sep. 04, 07’	Sep. 03, 08’
2.	A.M.N.	R & S	ESH2-Z5	890485/023	Feb. 01, 07’	Jan. 31, 08’
3.	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	Apr. 10, 07’	Apr. 09, 08’
4.	Pulse Limiter	R&S	ESH3Z2	001	Mar. 10, 07’	Mar. 09, 08’

2.2. Block Diagram of Test Setup



2.3. Powerline Conducted Emission Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark1.: If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.
2.: The lower limit applies at the band edges.

2.4. Operating Condition of EUT

2.4.1. Setup the EUT and simulator as shown on 2.2.

2.4.2. Turn on the power of all equipments.

2.4.3. The DVD player sent 1kHz audio signal to Wireless Speaker (receiver) through Wireless Speaker (transmitter) and sent the sound to speaker.

2.5. Test Procedure

The EUT was put on table which was above the ground by 80cm and it's power cord connected to the power mains through a line impedance stabilization network (L.I.S.N. #1) and the other peripheral devices power cord were connected to the power mains through a line impedance stabilization network (L.I.S.N. #2) This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.) Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions simulators of the interface cables should be manipulated according to FCC ANSI C63.4 and FCC Public Notice DA-00705 during conducted measurement.

The bandwidth of the R&S Test Receiver ESCS30 was set at 9kHz.

The frequency range from 150kHz to 30MHz was checked.

All the final readings from Test Receiver were measured with the Quasi-Peak detector and Average detector. (Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

2.6. Conducted Emission Measurement Results

PASSED.
(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

EUT：Wireless Speaker M/N：W93-R

Test Date：Dec. 20, 2007 Temperature：23℃ Humidity：58%

Reference Test Data No.: Neutral: # 18 ; Line: # 17

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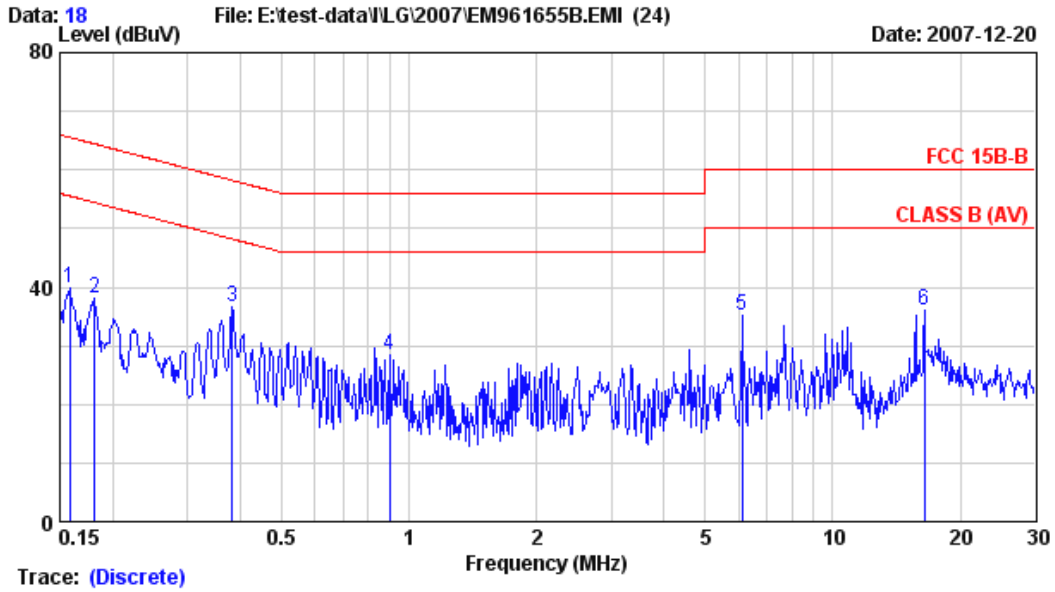

Site : No.2 Shielded room Data : 18
Condition : ESH2-Z5 Phase : NEUTRAL
Limit : FCC 15B-B
Env. / Ins. : 23*C,58%/ ESCS 30 Engineer: Alvin_Yang
EUT : Wireless Speaker M/N:W93-R
Power Rating : 120Vac/60Hz
Test Mode : operating

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.158	0.10	0.24	39.38	39.72	65.56	25.84	QP
2	0.182	0.10	0.25	37.73	38.08	64.42	26.33	QP
3	0.383	0.10	0.32	36.14	36.56	58.21	21.65	QP
4	0.899	0.19	0.39	27.88	28.46	56.00	27.54	QP
5	6.121	0.25	0.54	34.26	35.04	60.00	24.96	QP
6	16.486	0.43	0.70	34.79	35.92	60.00	24.08	QP

Remarks: 1.Emission Level= LISN Factor + Cable Loss + Reading.
2.If the average limit is met when using a quasi-peak detector ,the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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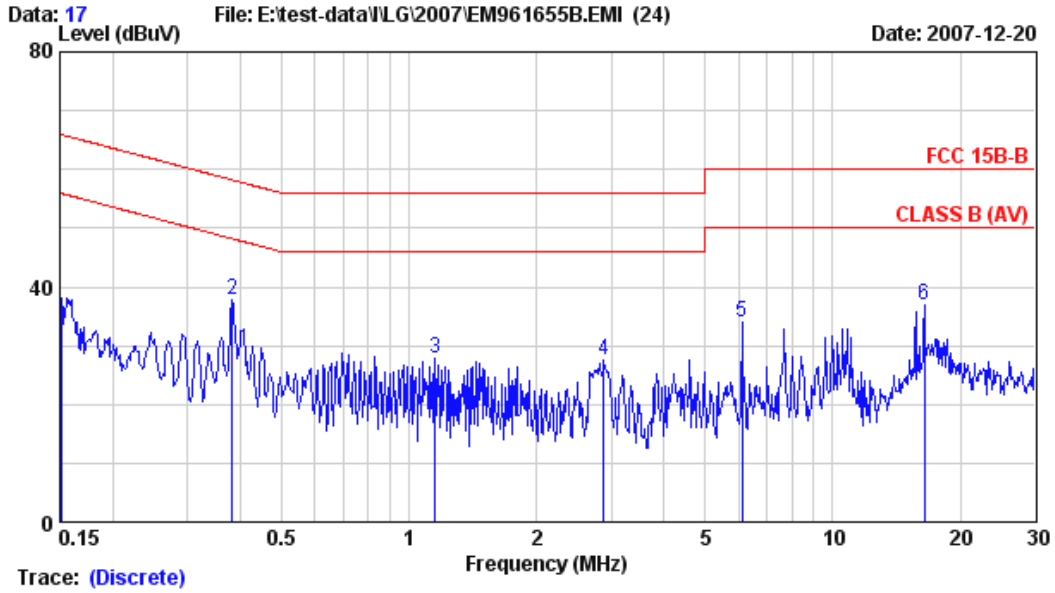


Site : No.2 Shielded room Data : 17
Condition : ESH2-Z5 Phase : LINE
Limit : FCC 15B-B
Env. / Ins. : 23*C,58%/ ESCS 30 Engineer: Alvin_Yang
EUT : Wireless Speaker M/N:W93-R
Power Rating : 120Vac/60Hz
Test Mode : operating

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.151	0.10	0.24	37.85	38.19	65.96	27.77	QP
2	0.383	0.10	0.32	37.48	37.90	58.21	20.31	QP
3	1.153	0.20	0.40	27.17	27.77	56.00	28.23	QP
4	2.884	0.20	0.40	26.81	27.41	56.00	28.59	QP
5	6.121	0.25	0.54	33.33	34.11	60.00	25.89	QP
6	16.486	0.49	0.70	35.80	37.00	60.00	23.00	QP

Remarks: 1.Emission Level= LISN Factor + Cable Loss + Reading.
2.If the average limit is met when using a quasi-peak detector ,the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

3.1.1. For Frequency 30MHz~1000MHz (at No. 6 Open Area Test Site)-For System Operating mode Use only

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY42000132	Jun. 05, 07’	Jun. 04, 08’
2.	Test Receiver	R & S	ESCS30	825442/020	Aug. 13, 07’	Aug. 12, 08’
3.	Pre-Amplifier	HP	8447D	2443A03938	N/A	N/A
4.	Bilog Antenna	Schaffner	CBL6112B	2818	Apr. 17, 07’	Apr. 16, 08’

3.1.2. For Frequency 30MHz~1000MHz (at Semi-Anechoic Chamber)-For Transmitting and Receiving modes Use only

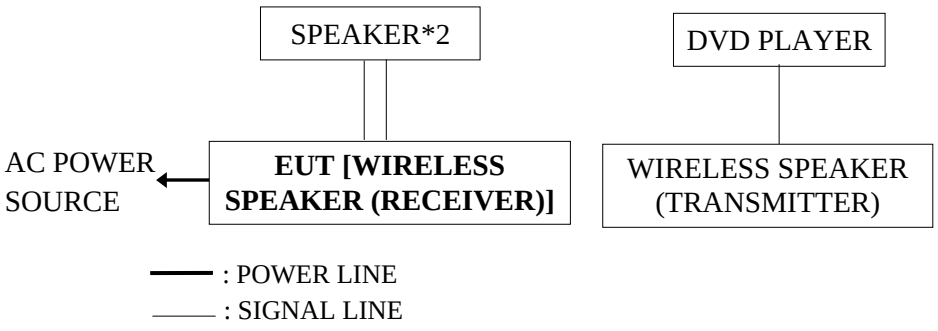
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY42000134	Jun. 27, 07’	Jun. 26, 08’
2.	Test Receiver	R & S	ESCS30	100265	Sep. 04, 07’	Sep. 03, 08’
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar. 03, 07’	Mar. 02, 08’
4.	Biconical Antenna	CHASE	VBA6106A	1264	Apr. 11, 07’	Apr. 10, 08’
5.	Log Periodic Antenna	Schwarzbeck	UHALP9108-A	0139	Apr. 11, 07’	Apr. 10, 08’

3.1.3. For Frequency Above 1GHz (at Semi-Anechoic Chamber) -For Transmitting and Receiving modes Use only

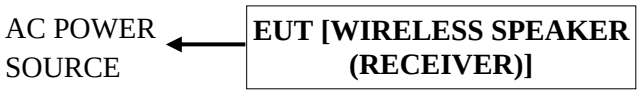
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY42000134	Jun. 27, 07’	Jun. 26, 08’
2.	Pre-Amplifier	HP	8449B	3008A01284	Jun. 22, 07’	Jun. 21, 08’
3.	2.4GHz Notch Filter	EWT	EWT-14-0070	G2	Dec. 07, 07’	Dec. 06, 08’
4.	Horn Antenna	EMCO	3115	9112-3775	May 23, 07’	May 22, 08’
5.	Horn Antenna	EMCO	3116	2653	Oct. 04, 07’	Oct. 03, 08’

3.2. Test Setup

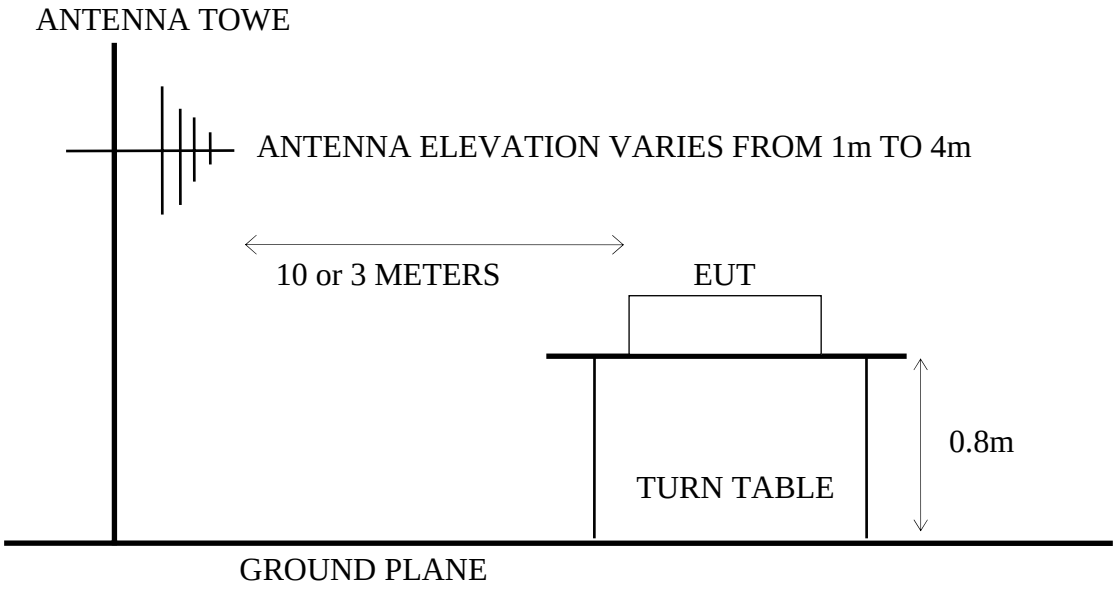
3.2.1. For System Operating mode



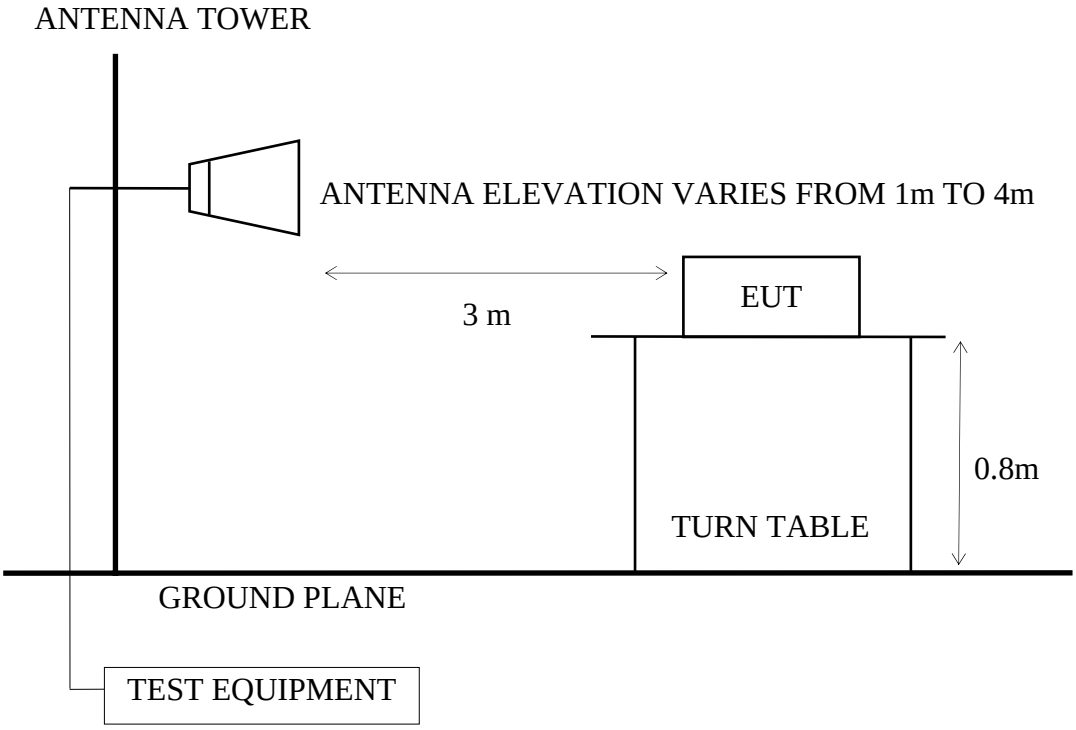
3.2.2. For Transmitting and Receiving modes



3.2.3. Open Area Test Site (10m) or Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz



3.2.4. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz



3.3. Radiated Emission Limits

3.3.1. §15.109/CISPR 22, Class B Radiated Emission Limits

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/m)
30 ~ 230	10	30
230 ~ 1000	10	37

Note： (1) The tighter limit applies at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the E.U.T.

3.3.2. §15.209/§15.109 Class B Radiated Emission Limits

Frequency MHz	Distance Meters	Field Strengths Limits	
		μV/m	dBμV/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
Above 1000	3	74.0 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark： (1) Emission level (dBμV/m) = 20 log Emission level (μV/m)
(2) The tighter limit applies at the edge between two frequency bands.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
(5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

3.4. Operating Condition of EUT

Test Mode: Operation

3.4.1. Setup the EUT (Wireless Speaker) and simulator as shown on 3.2.1.

3.4.2. Turn on the power of all equipment.

3.4.3. The DVD player sent 1kHz audio signal to Wireless Speaker (receiver) through Wireless Speaker (transmitter) and sent the sound to speaker.

Test Mode: Transmitter & Receiver

3.4.4. Setup the EUT (Wireless Speaker) and simulator as shown on 3.2.2

3.4.5. Turn on the power of all equipment.

3.4.6. The EUT (Wireless Speaker) was on normal function status (transmitting and receiving) during all testing.

3.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. For 30MHz to 1000MHz frequency ranges, EUT was set 3 or 10 meters and for above 1GHz frequency ranges, EUT was set at 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antennas (bilog antenna or broadband and log periodical or horn antenna) were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4 and FCC Public Notice DA-00705 regulation.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.
The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10^{th} harmonics from fundamental frequency) was checked.

3.6. Radiated Emission Measurement Results

PASSED. All the emissions not reported below are too low against the official limits.

EUT：Wireless Speaker M/N：W93-R

Test Date：Dec. 17, 2007 Temperature：25℃ Humidity：51%
Test Date：Dec. 18, 2007 Temperature：21℃ Humidity：65%

For Frequency Range 30MHz~1000MHz:

The EUT with following test modes were performed during this section testing and all the test results are listed in section 3.6.1.

No.	Test Unit	Test Mode and Frequency		Reference Test Data No.	
				Horizontal	Vertical
1.	System	Operation		# 6	# 5
2.	Transmitter	Transmitting	2403.328MHz (CH0)	# 5	# 6
3.			2442.240MHz (CH19)	# 8	# 7
4.			2479.104MHz (CH37)	# 6	# 5
5.	Receiver	Receiving	2442.240MHz (CH19)	# 7	# 8

* Above all final readings were measured with Quasi-Peak detector.

For Frequency above 1GHz:

The EUT with following test modes were performed during this section testing and all the test results are listed in section 3.6.2.

No.	Test Mode and Frequency	
1.	Transmitting	2403.328MHz (CH0)
2.		2442.240MHz (CH19)
3.		2479.104MHz (CH37)
4.	Receiving	2442.240MHz (CH19)

* Above all final readings were measured with Peak detector and Average detector.

For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 3.6.3. (The restricted bands defined in part 15.205(a))

No.	Test Mode and Frequency		Reference Test Data No.	
			Horizontal	Vertical
1.	Transmitting	2403.328MHz (CH0)	# 2, # 3	# 1 , # 4
2.		2479.104MHz (CH37)	# 8, # 5	# 7, # 6

3.6.1. 30MHz~ 1000MHz Frequency Range Measurement Result

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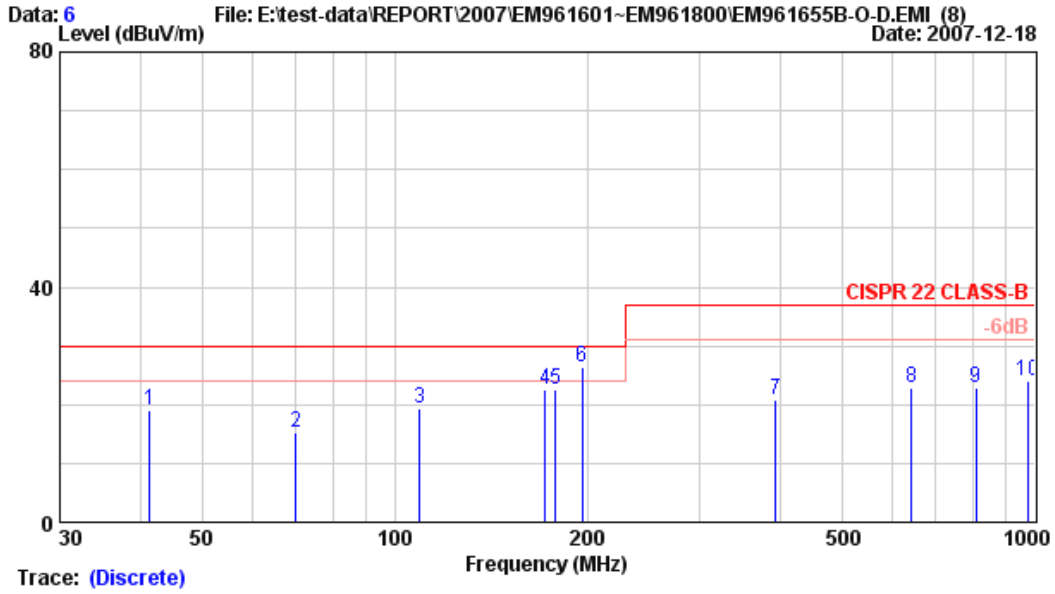


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Site no.      : NO.6 OPEN SITE              Data no.   : 6
Dis. / Ant.   : 10m  CBL6112B(2818)2007     Ant. pol.  : HORIZONTAL
Limit         : CISPR 22 CLASS-B
Env. / Ins.   : 21*C / 65%  ESCS30          Engineer   : Allen Hsia
EUT           : Wireless Speaker M/N: W93-R
Power Rating  : 120Vac / 60Hz
Test Mode     : Play Music (Link)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	41.455	12.32	0.72	6.10	19.14	30.00	10.86	
2	70.034	6.97	1.20	7.12	15.29	30.00	14.71	
3	109.491	12.32	1.35	5.54	19.20	30.00	10.80	
4	172.030	10.00	1.71	10.75	22.45	30.00	7.55	
5	178.177	9.76	1.74	10.97	22.47	30.00	7.53	
6	196.615	9.38	1.83	15.14	26.35	30.00	3.65	*
7	393.211	15.80	2.58	2.35	20.72	37.00	16.28	
8	641.997	19.07	3.37	0.34	22.78	37.00	14.22	
9	809.042	20.37	3.81	-1.34	22.84	37.00	14.16	
10	976.086	20.95	4.07	-0.91	24.11	37.00	12.89	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 196.615MHz with corrected signal level of 26.35dBµV/m (limit is 30.0dBµV/m) when the antenna was at horizontal polarization and was at 4m high and the turn table was at 10˚.

4. 0˚was the table front facing the antenna. Degree is calculated from 0˚clockwise facing the antenna.

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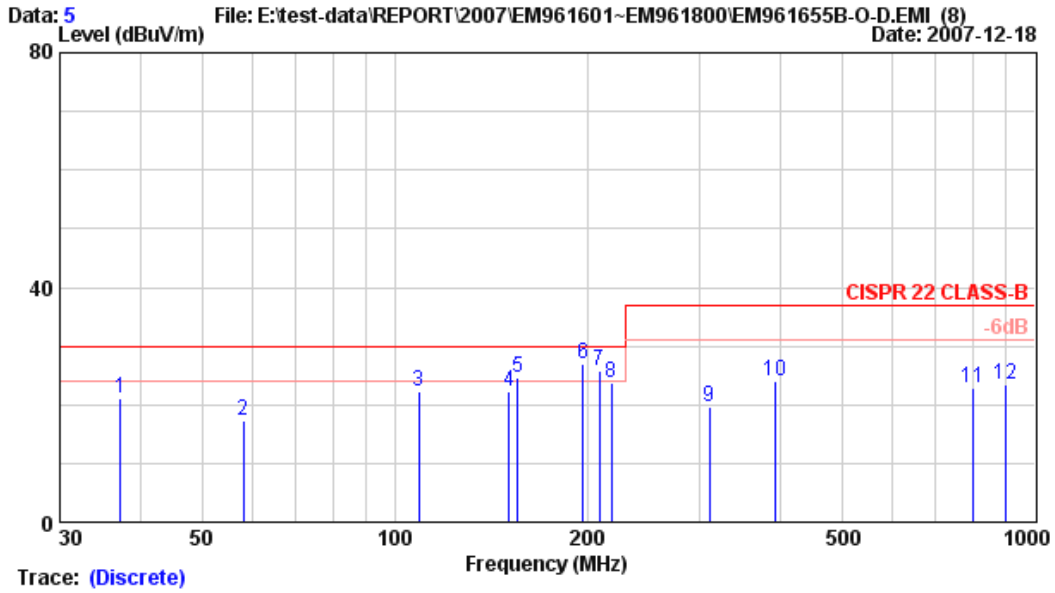


```
Site no.      : NO.6 OPEN SITE                Data no.   : 5
Dis. / Ant.   : 10m  CBL6112B(2818)2007       Ant. pol.  : VERTICAL
Limit         : CISPR 22 CLASS-B
Env. / Ins.   : 21*C / 65%  ESCS30            Engineer   : Allen Hsia
EUT           : Wireless Speaker M/N: W93-R
Power Rating  : 120Vac / 60Hz
Test Mode     : Play Music (Link)
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	37.280	14.05	0.68	6.28	21.01	30.00	8.99	
2	58.026	5.14	0.99	11.13	17.26	30.00	12.74	
3	109.100	12.30	1.35	8.59	22.23	30.00	7.77	
4	151.151	10.75	1.56	9.88	22.19	30.00	7.81	
5	155.901	10.45	1.62	12.44	24.52	30.00	5.48	
6	196.629	9.38	1.83	15.68	26.89	30.00	3.11	*
7	208.897	9.45	1.86	14.49	25.80	30.00	4.20	
8	218.113	9.74	1.88	12.21	23.83	30.00	6.17	
9	310.275	13.73	2.27	3.70	19.71	37.00	17.29	
10	393.233	15.80	2.58	5.57	23.94	37.00	13.06	
11	800.051	20.29	3.77	-1.25	22.80	37.00	14.20	
12	900.250	20.44	4.03	-1.15	23.32	37.00	13.68	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 196.629MHz with corrected signal level of 26.89dBµV/m (limit is 30.0dBµV/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 315˚.

4. 0˚was the table front facing the antenna. Degree is calculated from 0˚clockwise facing the antenna.

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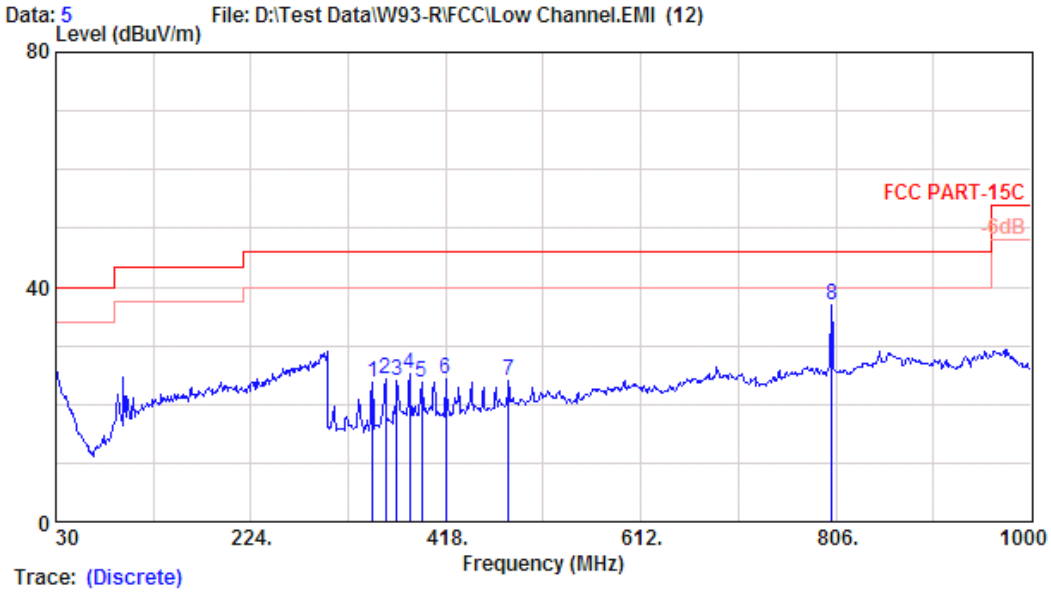


```
Site no.      : A/C Chamber                    Data no.   : 5
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A       Ant. pol.  : HORIZONTAL
Limit         : FCC PART-15C
Env. / Ins.   : E7405A  25*C/51%               Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2403.328MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	345.250	15.05	1.29	7.49	23.83	46.00	22.17	
2	357.860	15.90	1.30	7.04	24.23	46.00	21.77	
3	369.500	16.93	1.38	5.84	24.15	46.00	21.85	
4	382.110	17.29	1.36	6.51	25.16	46.00	20.84	
5	393.750	17.56	1.39	4.88	23.83	46.00	22.17	
6	418.000	16.93	1.36	6.08	24.38	46.00	21.62	
7	480.080	18.68	1.53	3.82	24.04	46.00	21.96	
8	802.120	24.17	2.00	10.63	36.79	46.00	9.21	

```
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
         2. The emission levels that are 20dB below the official
            limit are not reported.
```

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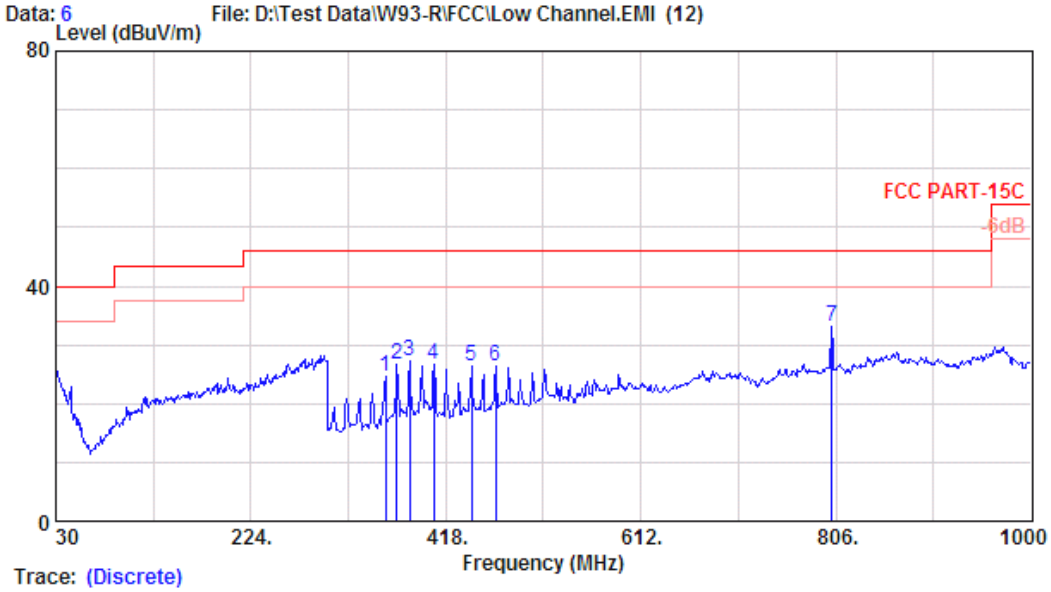


```
Site no.      : A/C Chamber                    Data no.   : 6
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A       Ant. pol.  : VERTICAL
Limit         : FCC PART-15C
Env. / Ins.   : E7405A  25*C/51%               Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2403.328MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	357.860	15.90	1.30	7.54	24.74	46.00	21.26	
2	369.500	16.93	1.38	8.45	26.76	46.00	19.24	
3	382.110	17.29	1.36	8.55	27.19	46.00	18.81	
4	406.360	17.35	1.36	8.10	26.80	46.00	19.20	
5	443.220	17.62	1.57	7.09	26.28	46.00	19.72	
6	467.470	18.21	1.47	6.67	26.35	46.00	19.65	
7	802.120	24.17	2.00	6.96	33.12	46.00	12.88	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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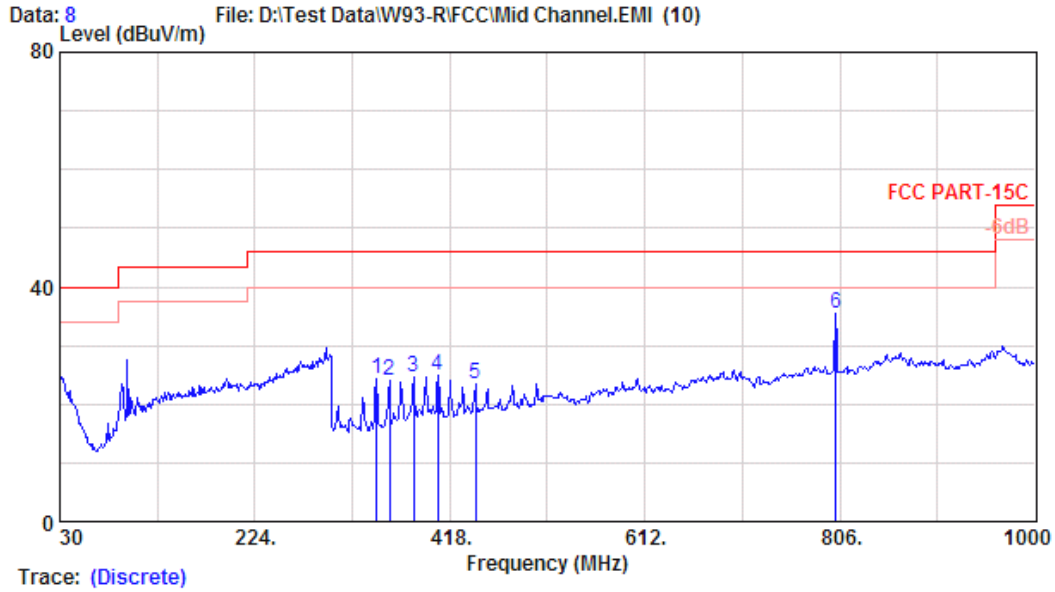


```
Site no.      : A/C Chamber                    Data no.   : 8
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A       Ant. pol.  : HORIZONTAL
Limit         : FCC PART-15C
Env. / Ins.   : E7405A  25*C/51%               Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2442.240MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	345.250	15.05	1.29	8.12	24.46	46.00	21.54	
2	357.860	15.90	1.30	6.98	24.17	46.00	21.83	
3	382.110	17.29	1.36	5.83	24.47	46.00	21.53	
4	406.360	17.35	1.36	6.21	24.92	46.00	21.08	
5	443.220	17.62	1.57	4.36	23.54	46.00	22.46	
6	802.120	24.17	2.00	9.32	35.49	46.00	10.51	

```
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
         2. The emission levels that are 20dB below the official
            limit are not reported.
```

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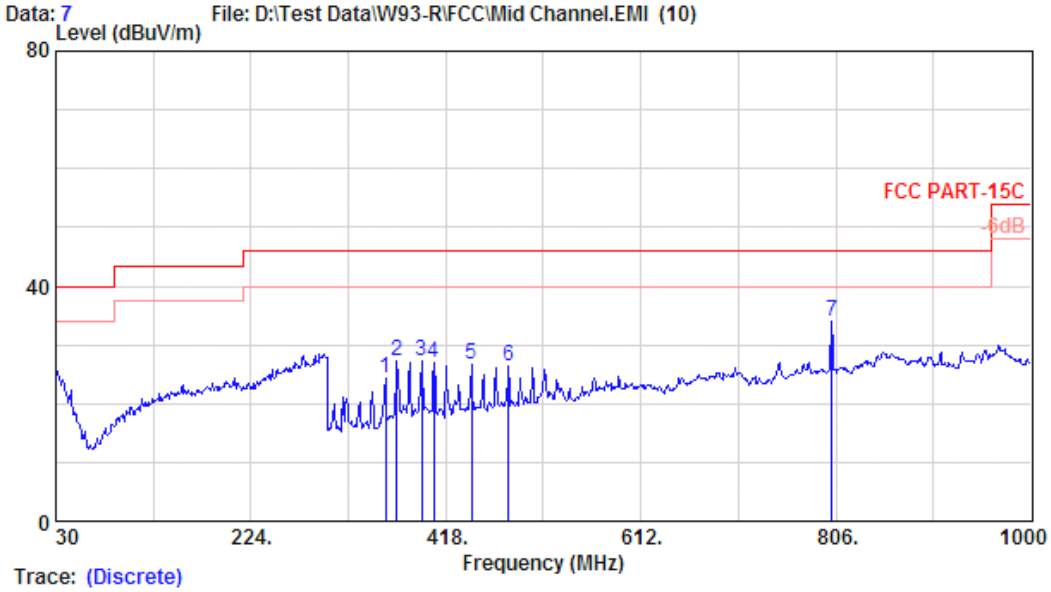

Site no. : A/C Chamber Data no. : 7
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
Limit : FCC PART-15C
Env. / Ins. : E7405A 25*C/51% Engineer : Jarwei Wang
EUT : Wireless Speaker M/N:W93-R
Power Rating : 120Vac/60Hz
Test Mode : TX2442.240MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	357.860	15.90	1.30	7.20	24.40	46.00	21.60	
2	369.500	16.93	1.38	9.00	27.31	46.00	18.69	
3	393.750	17.56	1.39	8.22	27.17	46.00	18.83	
4	406.360	17.35	1.36	8.21	26.91	46.00	19.09	
5	443.220	17.62	1.57	7.56	26.74	46.00	19.26	
6	480.080	18.68	1.53	6.27	26.49	46.00	19.51	
7	802.120	24.17	2.00	7.84	34.01	46.00	11.99	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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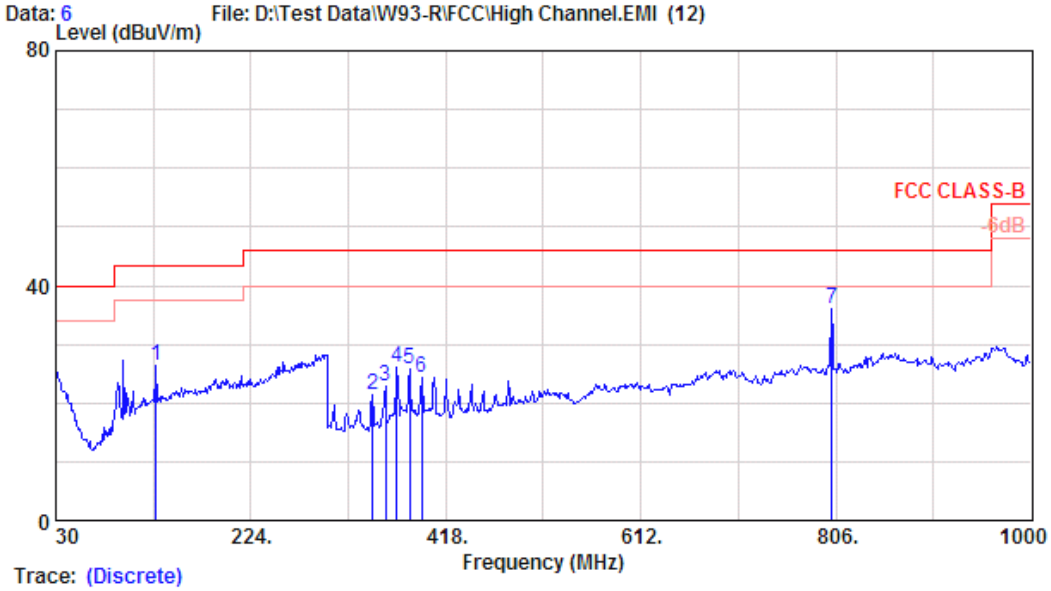


```
Site no.      : A/C Chamber                    Data no.   : 6
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A       Ant. pol.  : HORIZONTAL
Limit         : FCC CLASS-B
Env. / Ins.   : E7405A  25*C/51%               Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2479.104MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	129.910	19.73	0.74	5.86	26.33	43.50	17.17	
2	345.250	15.05	1.29	5.01	21.35	46.00	24.65	
3	357.860	15.90	1.30	5.65	22.84	46.00	23.16	
4	369.500	16.93	1.38	7.88	26.18	46.00	19.82	
5	382.110	17.29	1.36	7.17	25.82	46.00	20.18	
6	393.750	17.56	1.39	5.45	24.39	46.00	21.61	
7	802.120	24.17	2.00	9.76	35.93	46.00	10.07	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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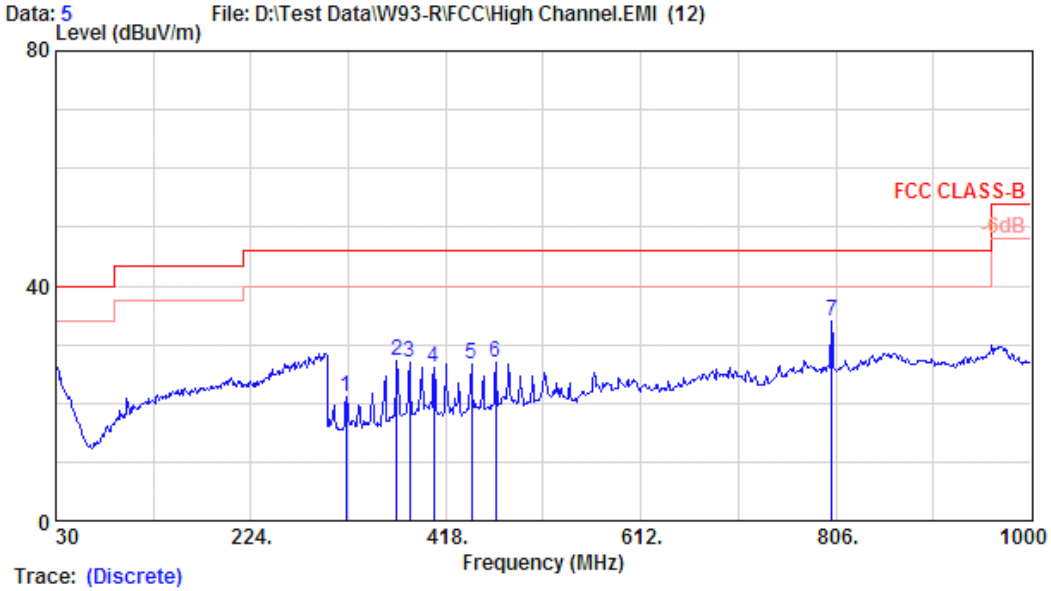


```
Site no.      : A/C Chamber                    Data no.   : 5
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A       Ant. pol.  : VERTICAL
Limit         : FCC CLASS-B
Env. / Ins.   : E7405A  25*C/51%               Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2479.104MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	319.060	14.93	1.20	5.09	21.21	46.00	24.79	
2	369.500	16.93	1.38	8.99	27.30	46.00	18.70	
3	382.110	17.29	1.36	8.33	26.98	46.00	19.02	
4	406.360	17.35	1.36	7.50	26.21	46.00	19.79	
5	443.220	17.62	1.57	7.52	26.70	46.00	19.30	
6	467.470	18.21	1.47	7.15	26.83	46.00	19.17	
7	802.120	24.17	2.00	7.81	33.97	46.00	12.03	

```
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
         2. The emission levels that are 20dB below the official
            limit are not reported.
```

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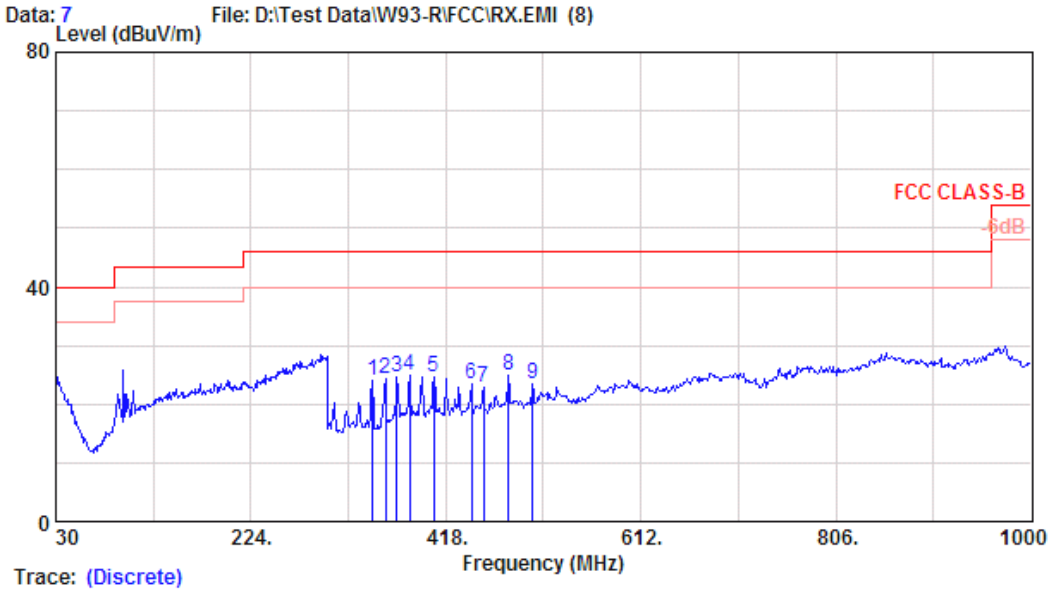


```
Site no.      : A/C Chamber                    Data no.   : 7
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A       Ant. pol.  : HORIZONTAL
Limit         : FCC CLASS-B
Env. / Ins.   : E7405A  25*C/51%               Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : RX2442.240MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	345.250	15.05	1.29	7.64	23.98	46.00	22.02	
2	357.860	15.90	1.30	7.07	24.27	46.00	21.73	
3	369.500	16.93	1.38	6.42	24.73	46.00	21.27	
4	382.110	17.29	1.36	6.28	24.93	46.00	21.07	
5	406.360	17.35	1.36	5.94	24.65	46.00	21.35	
6	443.220	17.62	1.57	4.16	23.34	46.00	22.66	
7	455.830	17.75	1.48	3.56	22.79	46.00	23.21	
8	480.080	18.68	1.53	4.76	24.98	46.00	21.02	
9	504.330	19.02	1.58	2.96	23.56	46.00	22.44	

```
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
         2. The emission levels that are 20dB below the official
            limit are not reported.
```

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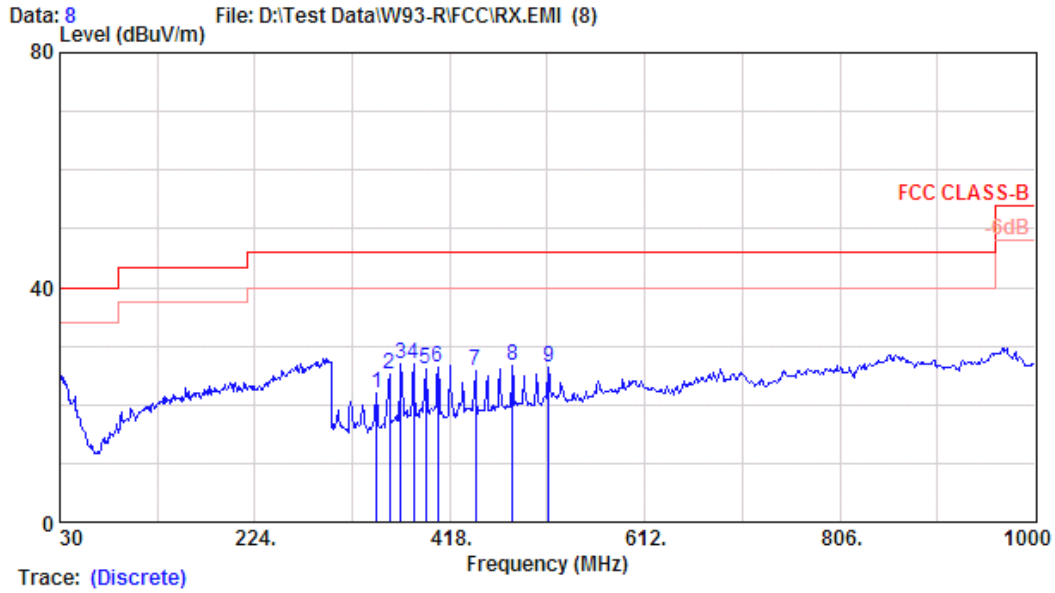


```
Site no.      : A/C Chamber                    Data no.   : 8
Dis. / Ant.   : 3m   VBA6106A/UHALP9108A       Ant. pol.  : VERTICAL
Limit         : FCC CLASS-B
Env. / Ins.   : E7405A  25*C/51%               Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : RX2442.240MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	345.250	15.05	1.29	5.50	21.84	46.00	24.16	
2	357.860	15.90	1.30	8.05	25.24	46.00	20.76	
3	369.500	16.93	1.38	8.79	27.10	46.00	18.90	
4	382.110	17.29	1.36	8.37	27.02	46.00	18.98	
5	393.750	17.56	1.39	7.24	26.18	46.00	19.82	
6	406.360	17.35	1.36	7.76	26.47	46.00	19.53	
7	443.220	17.62	1.57	6.74	25.92	46.00	20.08	
8	480.080	18.68	1.53	6.58	26.79	46.00	19.21	
9	515.970	19.98	1.60	4.78	26.37	46.00	19.63	

```
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
         2. The emission levels that are 20dB below the official
            limit are not reported.
```

3.6.2. Above 1GHz Frequency Range Measurement Results

Date of Test： Dec. 17, 2007 Temperature： 25℃

EUT： Wireless Speaker (Receiver) Humidity： 51%

Test Mode： Transmitting Mode, Frequency: 2403.328MHz (CH0) Test Voltage： AC 120V/60Hz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Horizontal dBμV/m	Emission Level Horizontal dBμV/m	Limits dB	Margin
Peak	2325.520	28.48	6.26	7.84	42.58	74.00	31.42
	4806.280	33.61	9.14	10.12	52.87	74.00	21.13
Average	2325.520	28.48	6.26	1.75	36.49	54.00	17.51
	4806.280	33.61	9.14	4.53	47.28	54.00	6.72

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Vertical dBμV/m	Emission Level Vertical dBμV/m	Limits dB	Margin
Peak	2330.560	28.49	6.26	6.47	41.22	74.00	32.78
	4806.280	33.61	9.14	9.85	52.60	74.00	21.40
Average	2330.560	28.49	6.26	2.54	37.29	54.00	16.71
	4806.280	33.61	9.14	5.53	48.28	54.00	5.72

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test： Dec. 17, 2007 Temperature： 25℃

EUT： Wireless Speaker (Receiver) Humidity： 51%

Test Mode： Transmitting Mode, Frequency: 2442.240MHz (CH19) Test Voltage： AC 120V/60Hz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Horizontal dBμV/m	Emission Level Horizontal dBμV/m	Limits dB	Margin
Peak	3258.100	31.29	7.40	8.44	47.13	74.00	26.87
	4885.240	33.82	9.15	9.36	52.33	74.00	21.67
Average	3258.100	31.29	7.40	3.78	42.47	54.00	11.53
	4885.240	33.82	9.15	6.18	49.15	54.00	4.85

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Vertical dBμV/m	Emission Level Vertical dBμV/m	Limits dB	Margin
Peak	3255.280	31.28	7.40	6.94	45.62	74.00	28.38
	4885.240	33.82	9.15	7.98	50.95	74.00	23.05
Average	3255.280	31.28	7.40	2.61	41.29	54.00	12.71
	4885.240	33.82	9.15	3.32	46.29	54.00	7.71

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test： Dec. 17, 2007 Temperature： 25℃

EUT： Wireless Speaker (Receiver) Humidity： 51%

Test Mode： Transmitting Mode, Frequency: 2479.104MHz (CH37) Test Voltage： AC 120V/60Hz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Horizontal dBμV/m	Emission Level Horizontal dBμV/m	Limits dB	Margin
Peak	2330.560	28.49	6.26	5.83	40.58	74.00	33.42
	2389.360	28.59	6.34	3.25	38.18	74.00	35.82
	3306.040	31.38	7.47	9.42	48.27	74.00	25.73
	4958.560	33.99	9.10	10.23	53.32	74.00	20.68
Average	2330.560	28.49	6.26	5.64	40.39	54.00	13.61
	2389.360	28.59	6.34	3.26	38.19	54.00	15.81
	3306.040	31.38	7.47	5.00	43.85	54.00	10.15
	4958.560	33.99	9.10	5.68	48.77	54.00	5.23

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Vertical dBμV/m	Emission Level Vertical dBμV/m	Limits dB	Margin
Peak	2389.360	28.59	6.34	3.80	38.73	74.00	35.27
	3306.040	31.38	7.47	7.19	46.04	74.00	27.96
	4958.560	33.99	9.10	7.71	50.80	74.00	23.20
Average	2389.360	28.59	6.34	4.65	39.58	54.00	14.42
	3306.040	31.38	7.47	2.35	41.20	54.00	12.80
	4958.560	33.99	9.10	2.29	45.38	54.00	8.62

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

Date of Test：	Dec. 17, 2007	Temperature：	25℃
EUT：	Wireless Speaker (Receiver)	Humidity：	51%
Test Mode：	Receiving Mode, Frequency: 2442.240MHz (CH19)	Test Voltage：	AC 120V/60Hz

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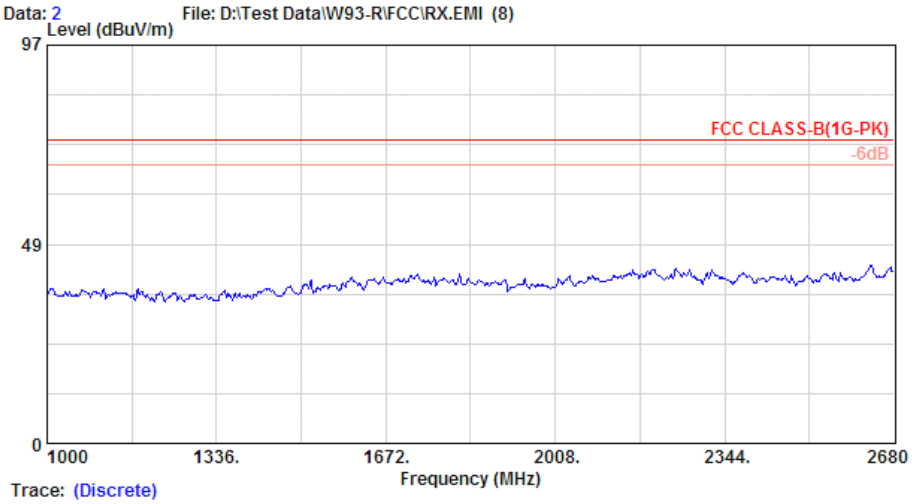
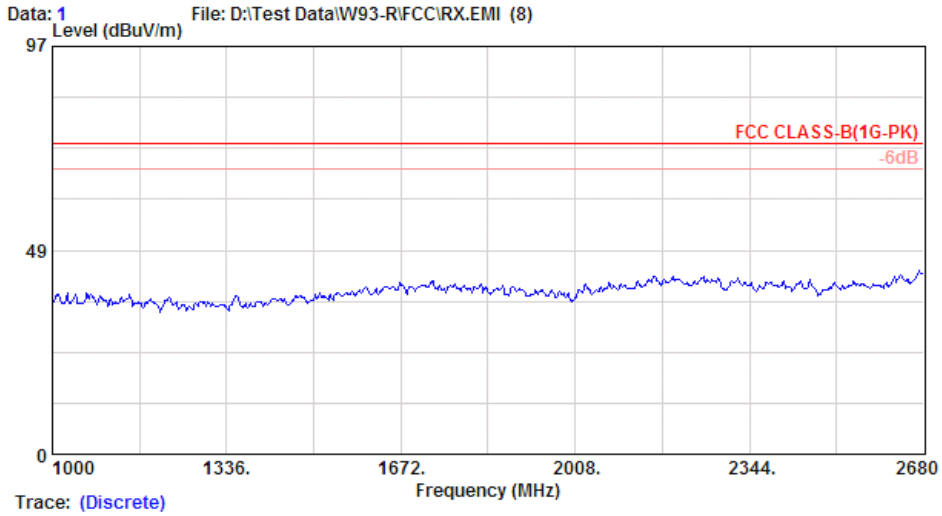
Email:ttemc@ttemc.




```
Site no.      : A/C Chamber                  Data no.   : 2
Dis. / Ant.   : 3m    3115                   Ant. pol.  : HORIZONTAL
Limit         : FCC CLASS-B(1G-PK)
Env. / Ins.   : E7405A  25*C/51%             Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : RX2442.240MHz
```




```
Site no.      : A/C Chamber                  Data no.   : 1
Dis. / Ant.   : 3m    3115                   Ant. pol.  : VERTICAL
Limit         : FCC CLASS-B(1G-PK)
Env. / Ins.   : E7405A  25*C/51%             Engineer   : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : RX2442.240MHz
```

Remark ： Measurement was up to 25GHz, but the emissions level were too low against the official limit and not report.

3.6.3. Restricted Bands Measurement Results

Date of Test：	Dec. 17, 2007	Temperature：	25℃
EUT：	Wireless Speaker (Receiver)	Humidity：	51%
Test Mode：	Transmitting Mode, Frequency: 2403.328MHz (CH0)	Test Voltage：	AC 120V/60Hz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Horizontal dBμV/m	Emission Level Horizontal dBμV/m	Limits dB	Margin
Peak *	2389.440	28.59	6.34	8.68	43.61	74.00	30.39
Average *	2389.440	28.59	6.34	-2.19	32.74	54.00	21.26

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2310-2390MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.

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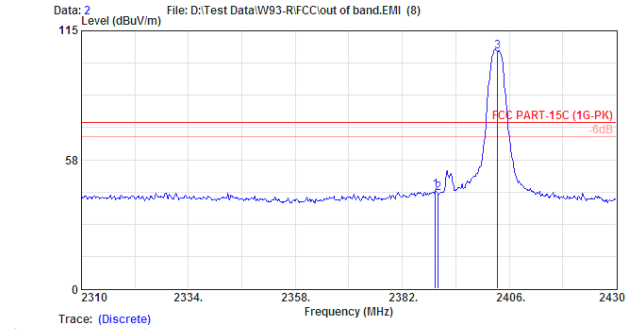

Site no. : A/C Chamber Data no. : 2
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART-15C (1G-PK)
Env. / Ins. : E7405A 25*C/51% Engineer : Jarwei Wang
EUT : Wireless Speaker M/N:W93-R
Power Rating : 120Vac/60Hz
Test Mode : TX2403.328MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2389.440	28.59	6.34	8.68	43.62	74.00	30.38	Peak
2	2390.040	28.59	6.34	7.55	42.49	74.00	31.51	Peak
3	2403.360	28.62	6.36	70.87	105.85	74.00	-31.85	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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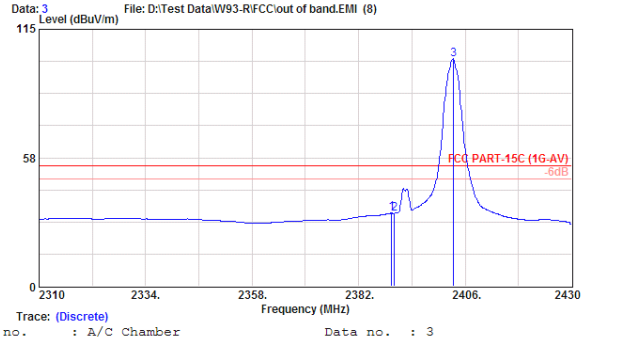
Email:ttemc@ttemc.



Site no. : A/C Chamber Data no. : 3
Dis. / Ant. : 3m 3115 Ant. pol. : HORIZONTAL
Limit : FCC PART-15C (1G-AV)
Env. / Ins. : E7405A 25*C/51% Engineer : Jarwei Wang
EUT : Wireless Speaker M/N:W93-R
Power Rating : 120Vac/60Hz
Test Mode : TX2403.328MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2389.440	28.59	6.34	-2.19	32.74	54.00	21.26	Average
2	2390.040	28.59	6.34	-2.32	32.61	54.00	21.39	Average
3	2403.360	28.62	6.36	66.42	101.40	54.00	-47.40	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Date of Test：	Dec. 17, 2007	Temperature：	25℃
EUT：	Wireless Speaker (Receiver)	Humidity：	51%
Test Mode：	Transmitting Mode, Frequency: 2403.328MHz (CH0)	Test Voltage：	AC 120V/60Hz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Vertical dBμV/m	Emission Level Vertical dBμV/m	Limits dB	Margin
Peak *	2385.480	28.59	6.33	7.42	42.34	74.00	31.66
Average *	2386.440	28.59	6.33	-4.46	30.46	54.00	23.54

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2310-2390MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.

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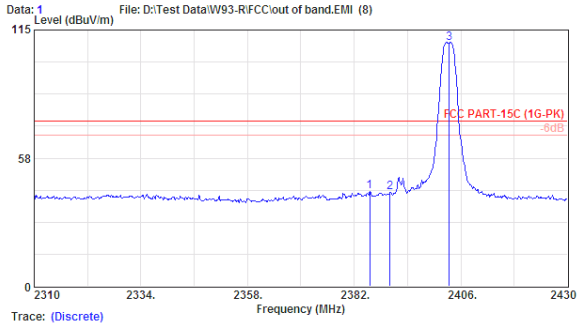
Email:ttemc@ttemc.



Trace: (Discrete)

```
Site no.      : A/C Chamber                Data no.  : 1
Dis. / Ant.   : 3m   3115                  Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E7405A  25*C/51%           Engineer  : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2403.328MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2385.480	28.59	6.33	7.42	42.35	74.00	31.65	Peak
2	2390.040	28.59	6.34	7.01	41.95	74.00	32.05	Peak
3	2403.360	28.62	6.36	74.17	109.15	74.00	-35.15	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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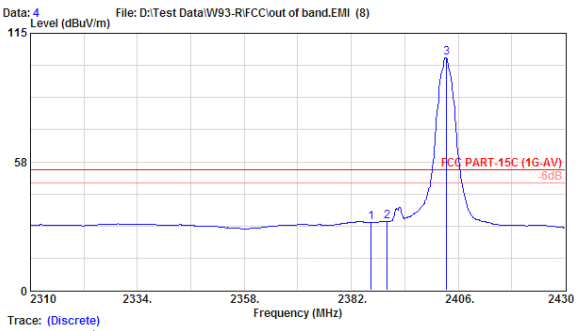

Trace: (Discrete)

```
Site no.      : A/C Chamber                Data no.  : 4
Dis. / Ant.   : 3m   3115                  Ant. pol. : VERTICAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E7405A  25*C/51%           Engineer  : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2403.328MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2386.440	28.59	6.33	-4.46	30.46	54.00	23.54	Average
2	2390.040	28.59	6.34	-4.24	30.70	54.00	23.30	Average
3	2403.360	28.62	6.36	68.95	103.93	54.00	-49.93	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
2. The emission levels that are 20dB below the official limit are not reported.

Date of Test：	Dec. 17, 2007	Temperature：	25℃
EUT：	Wireless Speaker (Receiver)	Humidity：	51%
Test Mode：	Transmitting Mode, Frequency: 2479.104MHz (CH37)	Test Voltage：	AC 120V/60Hz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Horizontal dBμV/m	Emission Level Horizontal dBμV/m	Limits dB	Margin
Peak *	2484.430	28.77	6.45	14.49	49.71	74.00	24.29
Average *	2483.590	28.77	6.45	6.59	41.81	54.00	12.19

Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.

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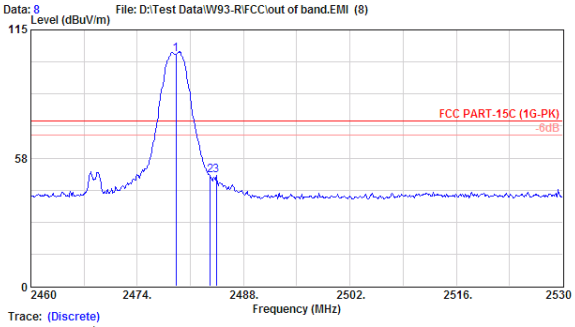

Trace: (Discrete)

```
Site no.      : A/C Chamber                Data no.  : 8
Dis. / Ant.   : 3m   3115                  Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E7405A  25°C/51%           Engineer  : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2479.104MHz
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2479.110	28.76	6.44	68.94	104.14	74.00	-30.14	Peak
2	2483.590	28.77	6.45	14.40	49.63	74.00	24.37	Peak
3	2484.430	28.77	6.45	14.49	49.71	74.00	24.29	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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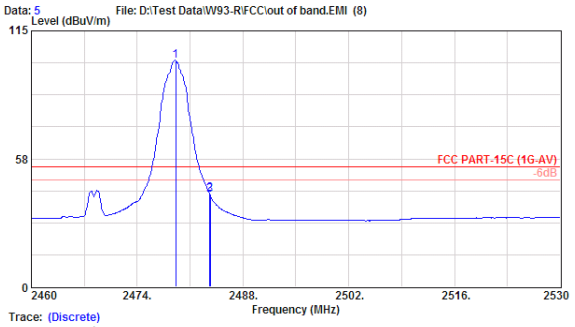
Email:ttemc@ttemc.



Trace: (Discrete)

```
Site no.      : A/C Chamber                Data no.  : 5
Dis. / Ant.   : 3m   3115                  Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E7405A  25°C/51%           Engineer  : Jarwei Wang
EUT           : Wireless Speaker  M/N:W93-R
Power Rating  : 120Vac/60Hz
Test Mode     : TX2479.104MHz
```

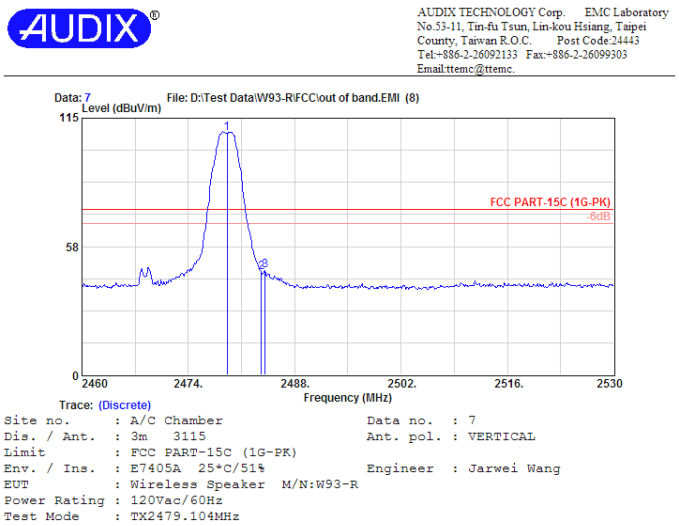
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2479.110	28.76	6.44	66.51	101.72	54.00	-47.72	Average
2	2483.590	28.77	6.45	6.59	41.81	54.00	12.19	Average
3	2483.660	28.77	6.45	5.90	41.13	54.00	12.87	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Date of Test：	Dec. 17, 2007	Temperature：	25℃
EUT：	Wireless Speaker (Receiver)	Humidity：	51%
Test Mode：	Transmitting Mode, Frequency: 2479.104MHz (CH37)	Test Voltage：	AC 120V/60Hz

	Emission Frequency MHz	Antenna Factor dB/m	Cable Loss dBμV	Meter Reading Vertical dBμV/m	Emission Level Vertical dBμV/m	Limits dB	Margin
Peak *	2484.080	28.77	6.45	11.45	46.67	74.00	27.33
Average *	2483.590	28.77	6.45	3.64	38.86	54.00	15.14

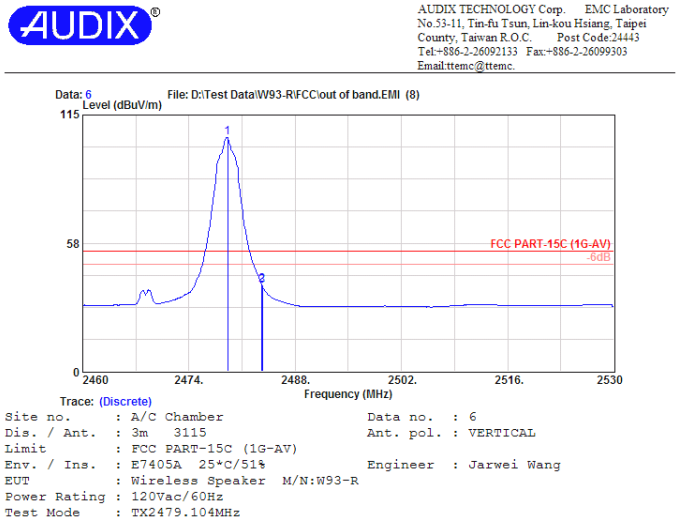
Remark ： 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
2. Low frequency section (spurious in the restricted band 2483.5-2500MHz).
3. '*' The field strength of emission appearing within Part 15.205(a) shall not exceed the limits shown in section 15.209.



Site no. : A/C Chamber Data no. : 7
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART-15C (1G-PK)
Env. / Ins. : E7405A 25*C/51% Engineer : Jarwei Wang
EUT : Wireless Speaker M/N:W93-R
Power Rating : 120Vac/60Hz
Test Mode : TX2479.104MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2479.110	28.76	6.44	73.07	108.28	74.00	-34.28	Peak
2	2483.590	28.77	6.45	10.67	45.89	74.00	28.11	Peak
3	2484.080	28.77	6.45	11.45	46.68	74.00	27.32	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : A/C Chamber Data no. : 6
Dis. / Ant. : 3m 3115 Ant. pol. : VERTICAL
Limit : FCC PART-15C (1G-AV)
Env. / Ins. : E7405A 25*C/51% Engineer : Jarwei Wang
EUT : Wireless Speaker M/N:W93-R
Power Rating : 120Vac/60Hz
Test Mode : TX2479.104MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	2479.110	28.76	6.44	69.52	104.72	54.00	-50.72	Average
2	2483.590	28.77	6.45	3.64	38.86	54.00	15.14	Average
3	2483.660	28.77	6.45	3.03	38.25	54.00	15.75	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

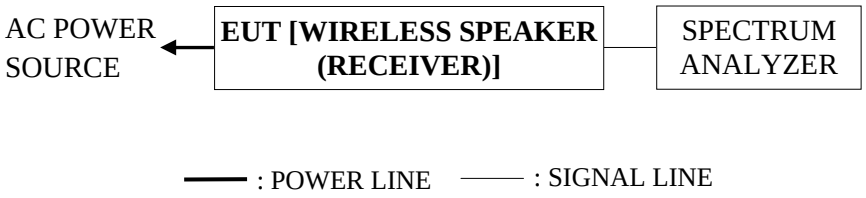
4. 20dB BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the 20dB bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 13, 07'	Aug. 12, 08'

4.2. Block Diagram of Test Setup



4.3. Specification Limits (§15.247(a)(1))

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown on 4.2.

4.4.2. Turn on the power of all equipment.

4.4.3. EUT [Wireless Speaker (Receiver)] was on transmitting frequency function during the testing.

4.5. Test Procedure (DA-00705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.6. Test Results

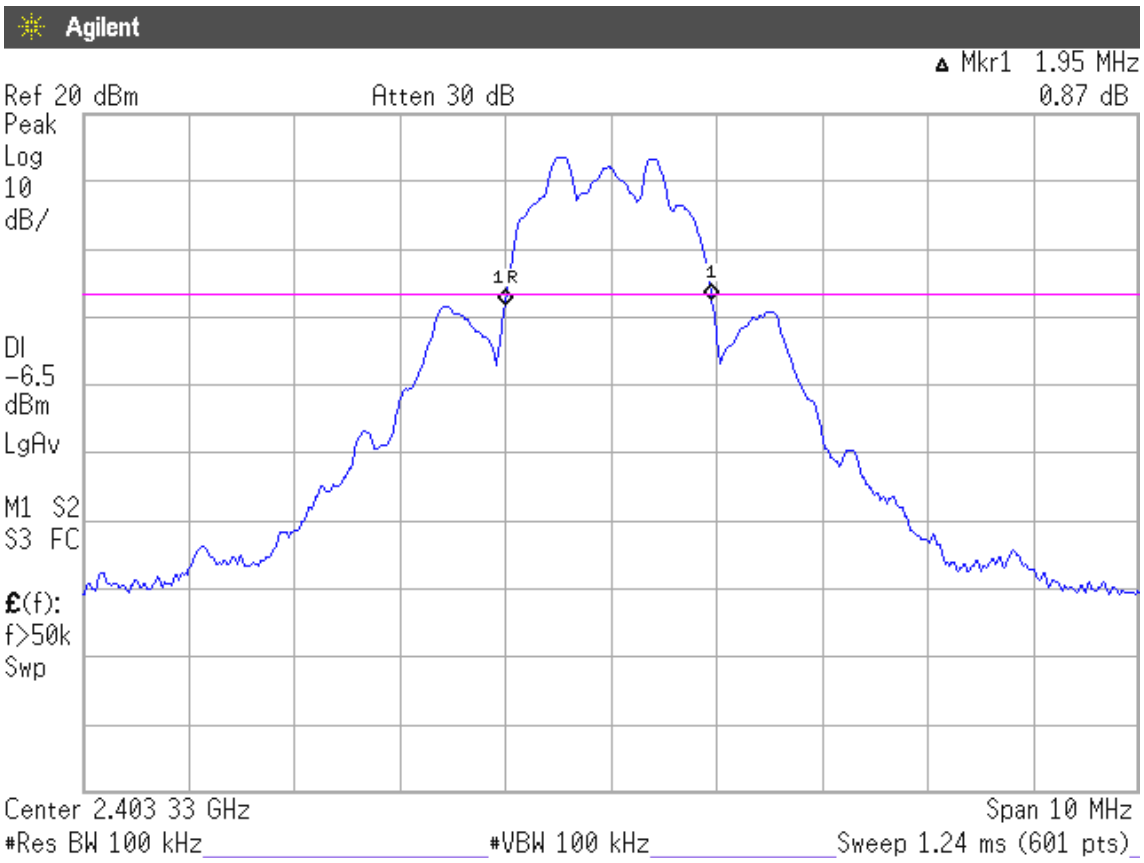
PASSED. All the test results are attached in next pages.

Test Date : Dec. 17, 2007 Temperature : 25 ℃ Humidity : 54 %

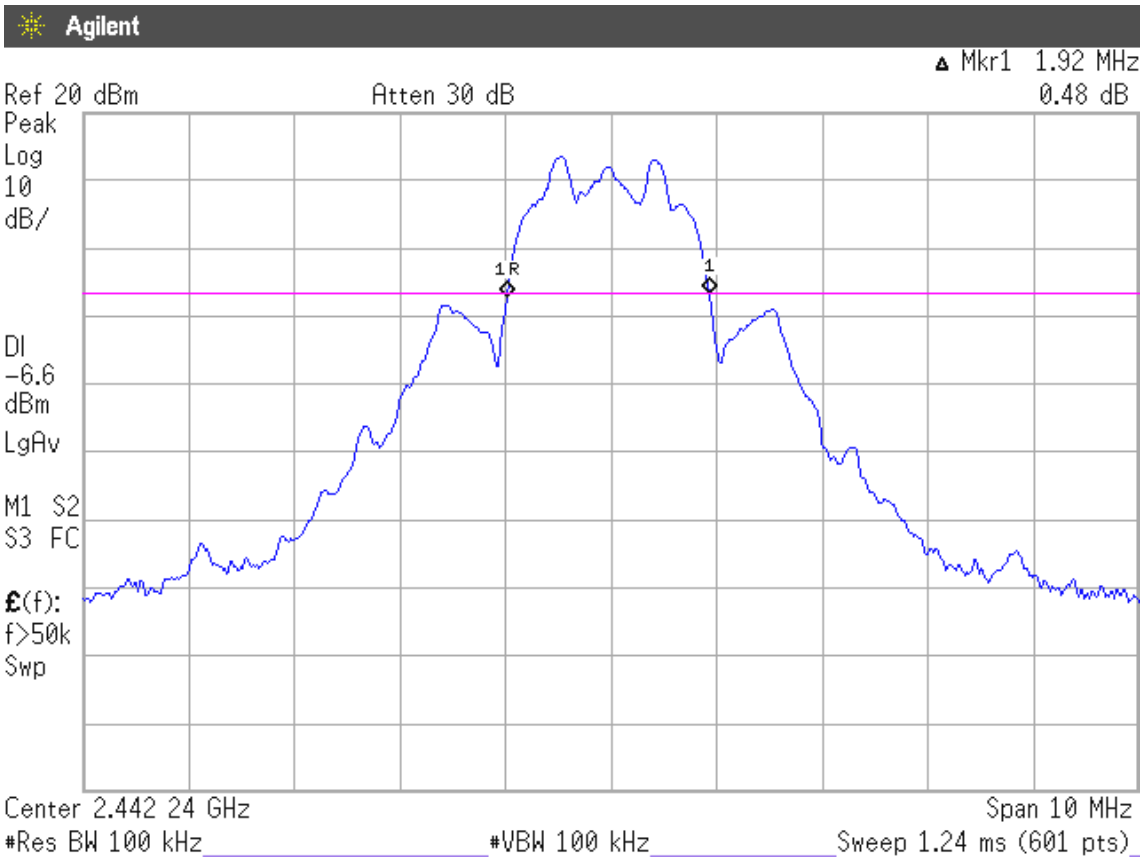
No.	Channel	Test Frequency	**20dB Bandwidth**	**2/3 (20dB Bandwidth)**
1.	0	2403.328MHz	**1.95MHz**	**1.300MHz**
2.	19	2442.240MHz	**1.92MHz**	**1.280MHz**
3.	37	2479.104MHz	**1.92MHz**	**1.280MHz**

The maximum two-thirds of the 20dB bandwidth shall be at maximum 1.287MHz.

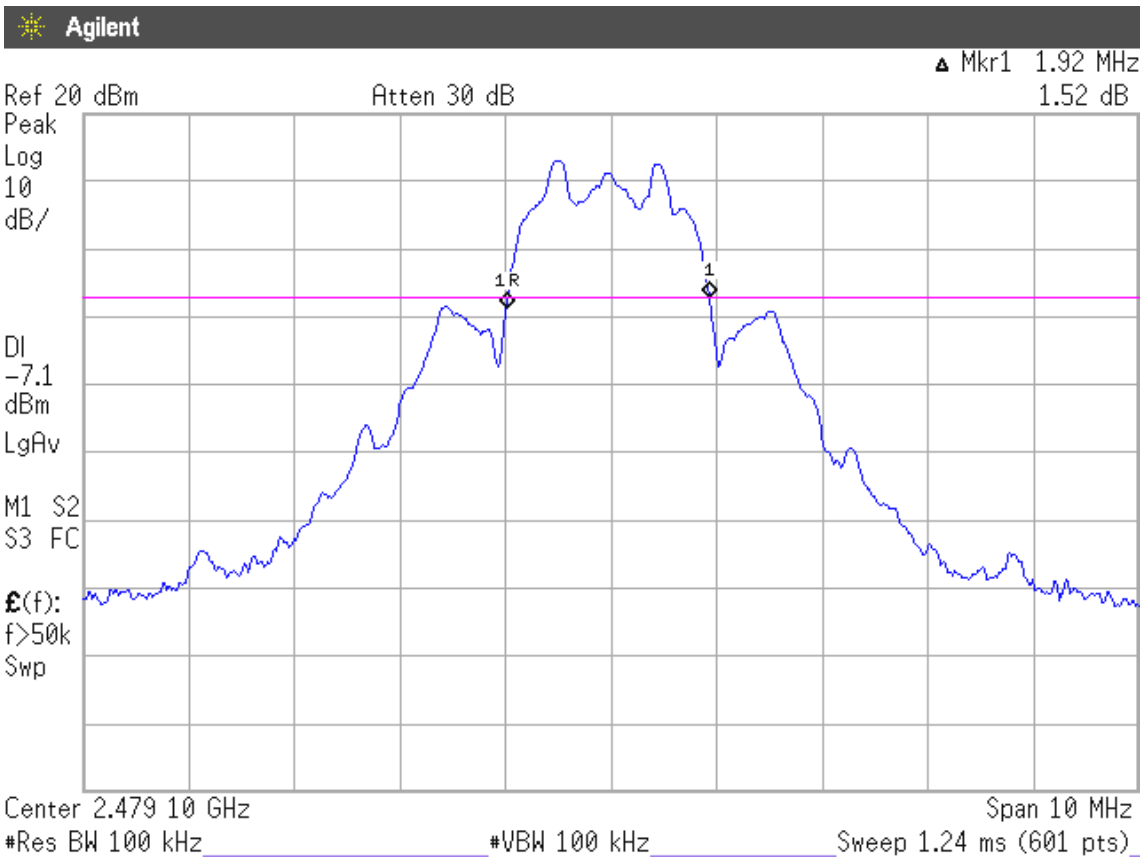
4.6.1. Channel 0, Frequency: 2403.328MHz



4.6.2. Channel 39, Frequency: 2442.240MHz



4.6.3. Channel 78, Frequency: 2479.104MHz



5. CARRIER FREQUENCY SEPARATION MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the carrier frequency separation measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 13, 07’	Aug. 12, 08’

5.2. Block Diagram of Test Setup

The same as section.4.2.

5.3. Specification Limits (§15.247(a)(1))

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

5.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

5.5. Test Procedure (DA-00705)

The transmitter output was connected to the spectrum analyzer. The channel separation was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW. The video bandwidth not to be smaller than resolution bandwidth, the peak was mark on adjacent bandwidth, the between of peak is carrier frequency separation.

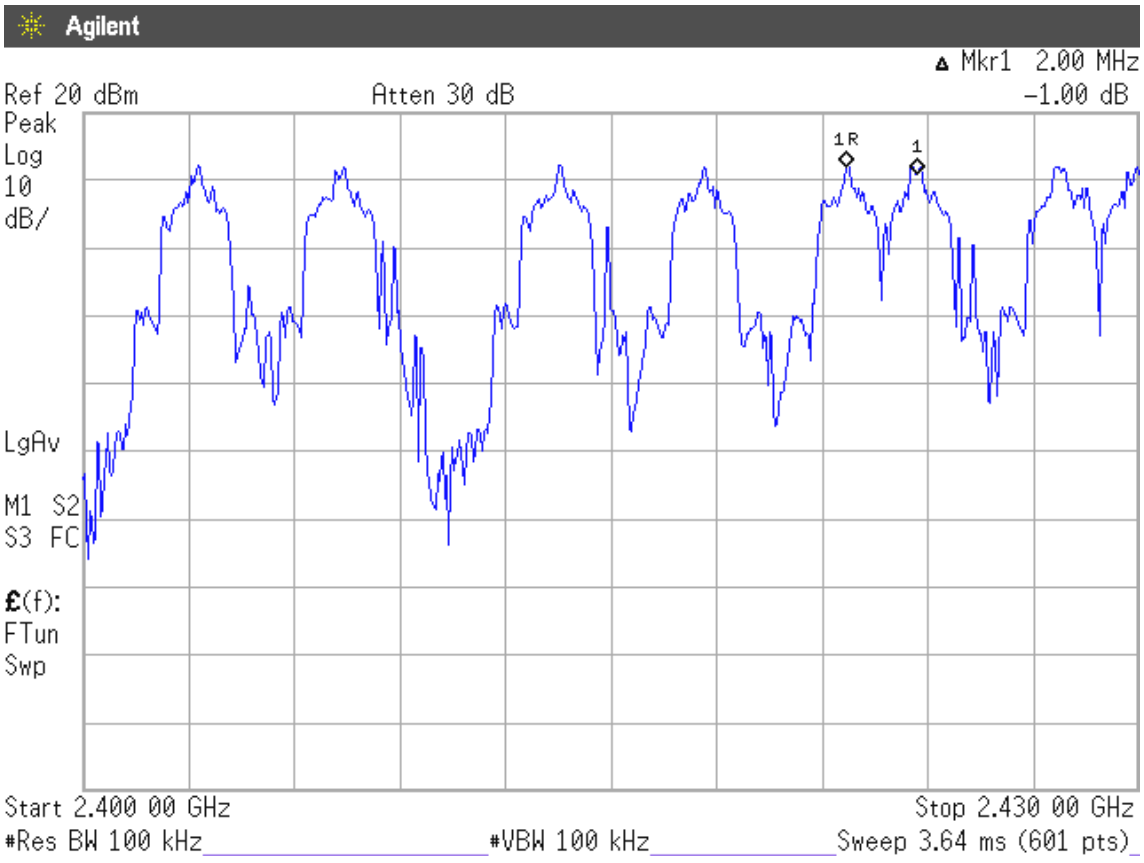
5.6. Test Results

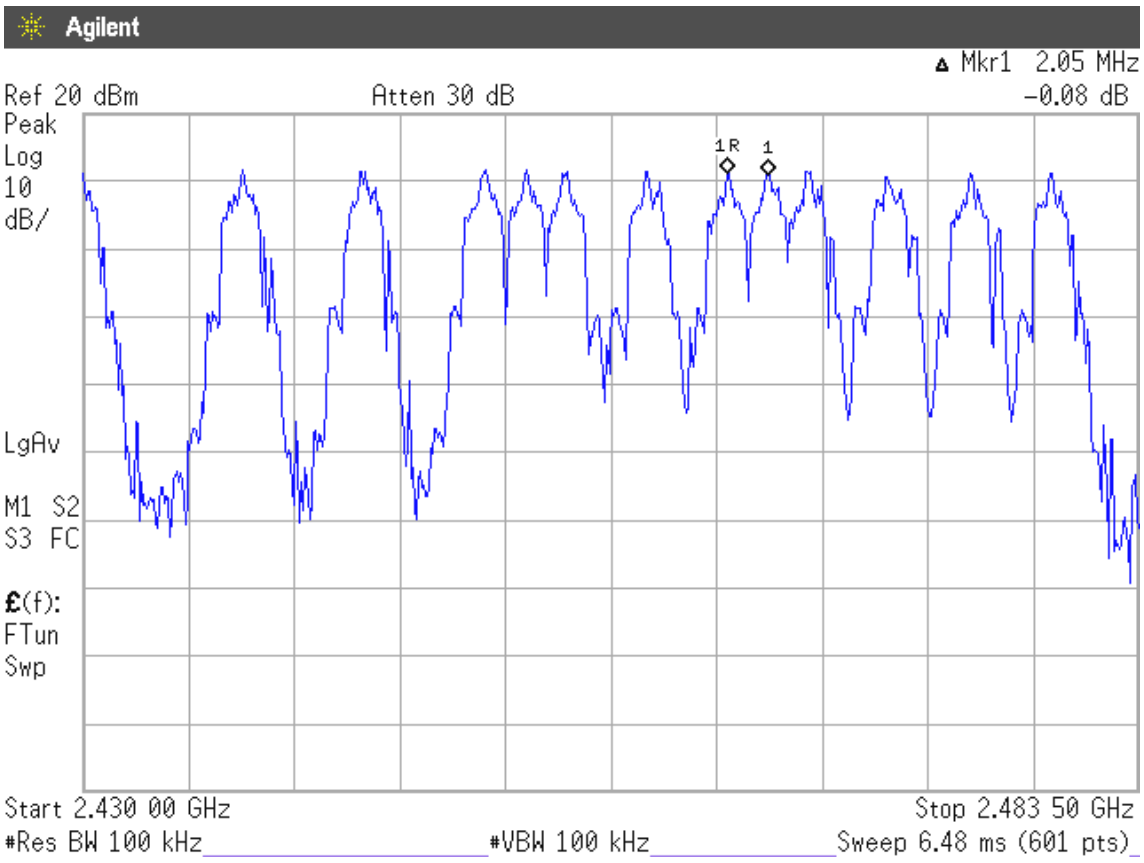
PASSED. All the test results are attached in next pages.

Test Date : Dec. 17, 2007 Temperature : 25 ℃ Humidity : 54 %

The minimum adjacent channel carrier frequency separation: 2.00MHz。

[Above values have met the requirement as specified in section 4.3: frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.]


Agilent
Mkr1 2.00 MHz
Ref 20 dBm
Atten 30 dB
-1.00 dB
Peak
Log
10
dB/
1R
1
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Start 2.400 00 GHz
Stop 2.430 00 GHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 3.64 ms (601 pts)


Agilent
Mkr1 2.05 MHz
Ref 20 dBm
Atten 30 dB
-0.08 dB
Peak
Log
10
dB/
1R
1
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Start 2.430 00 GHz
Stop 2.483 50 GHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 6.48 ms (601 pts)

6. TIME OF OCCUPANCY MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the time of occupancy measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 13, 07’	Aug. 12, 08’

6.2. Block Diagram of Test Setup

The same as section.4.2.

6.3. Specification Limits (§15.247(a)(1)(iii))

Frequency hopping systems in the 2400-2483.5MHz shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by number of hopping channels employed.

6.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

6.5. Test Procedure (DA-00705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 1MHz RBW and 1MHz VBW. VBW≥RBW ; Span=zero span.
Centered on a hopping channel sweep=as necessary to capture the entire dwell time per hopping channel ; Detector function=peak ; Trace=Max hold

6.6. Test Results

PASSED. All the test results are attached in next pages.

Test Date : Dec. 17, 2007 Temperature : 25 ℃ Humidity : 54 %

Duty cycle: 20 channels*0.4 seconds = 8 seconds

Test Frequency: 2403.328MHz

For per second of 9 channels appearance, the longest time of occupancy for each of 8 seconds is:

9 channels*8 seconds* 4.650ms = 334.800ms (<400ms)

Test Frequency: 2442.240MHz

For per second of 9 channels appearance, the longest time of occupancy for each of 8 seconds is:

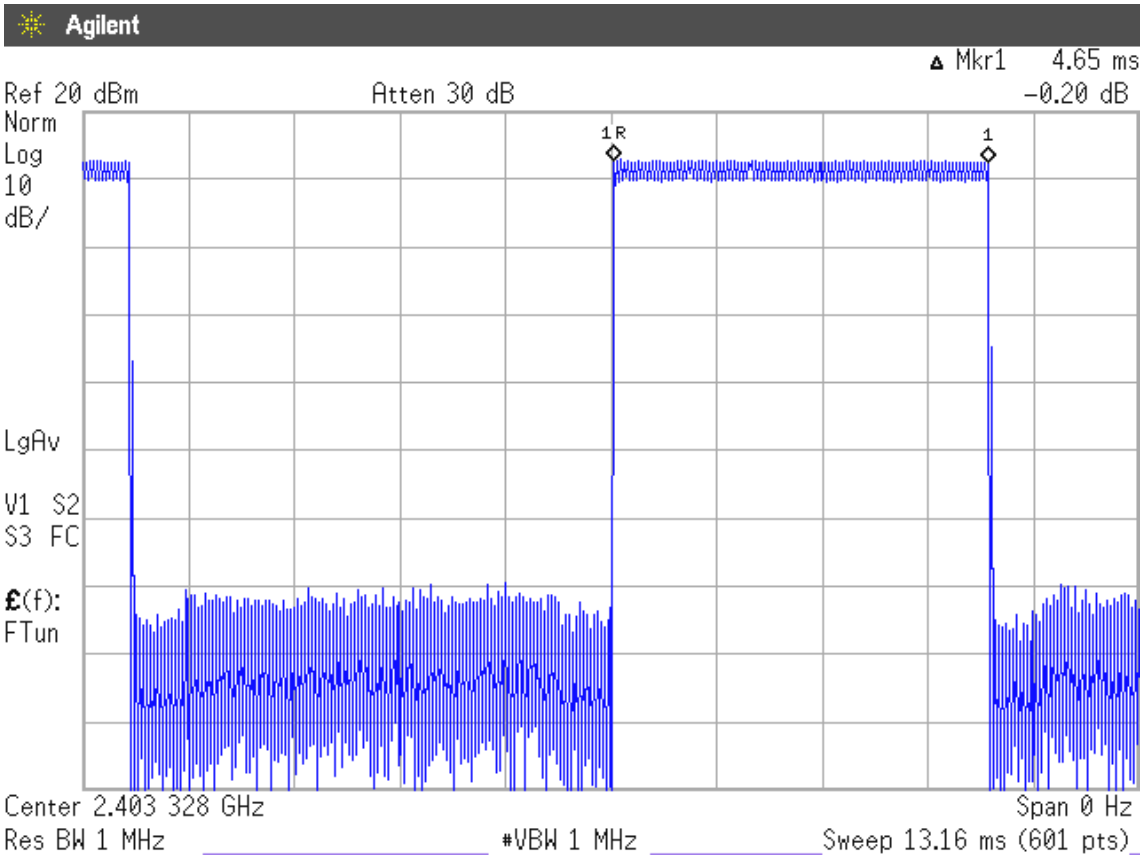
9 channels*8 seconds* 4.562ms = 328.464ms (<400ms)

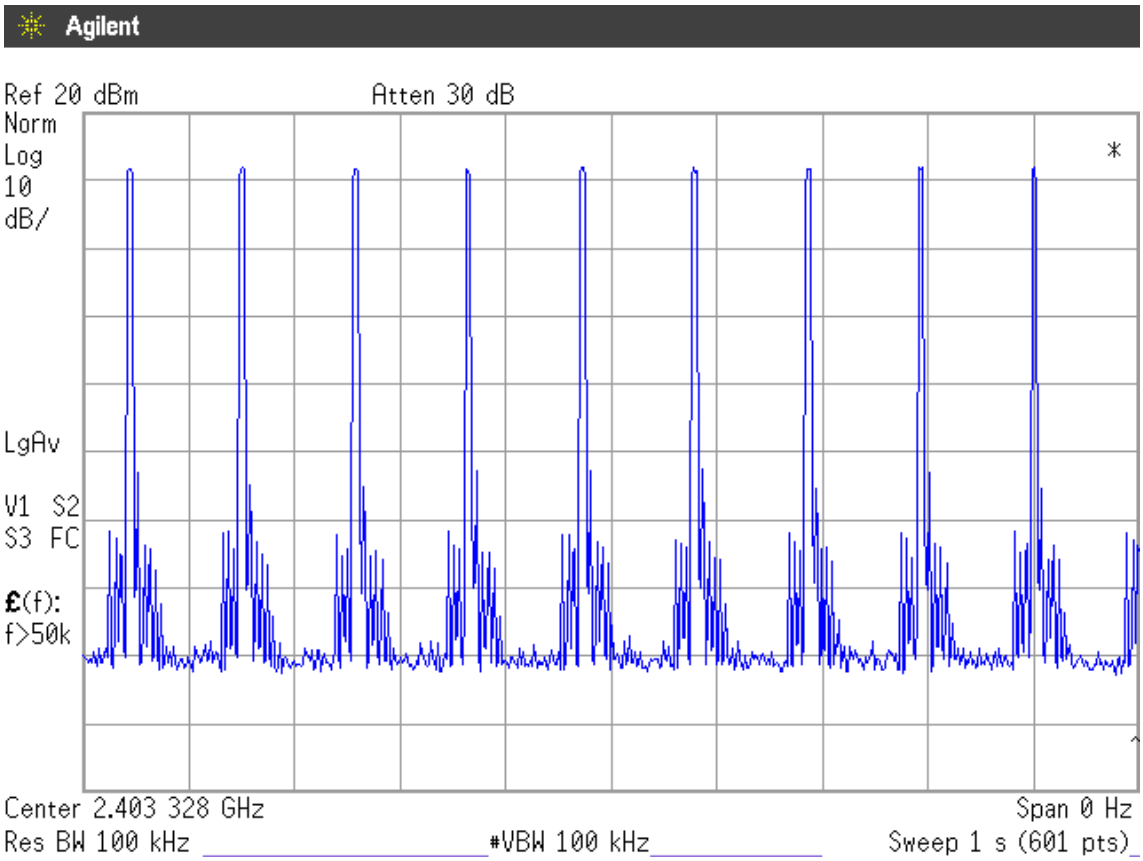
Test Frequency: 2479.104MHz

For per second of 9 channels appearance, the longest time of occupancy for each of 8 seconds is:

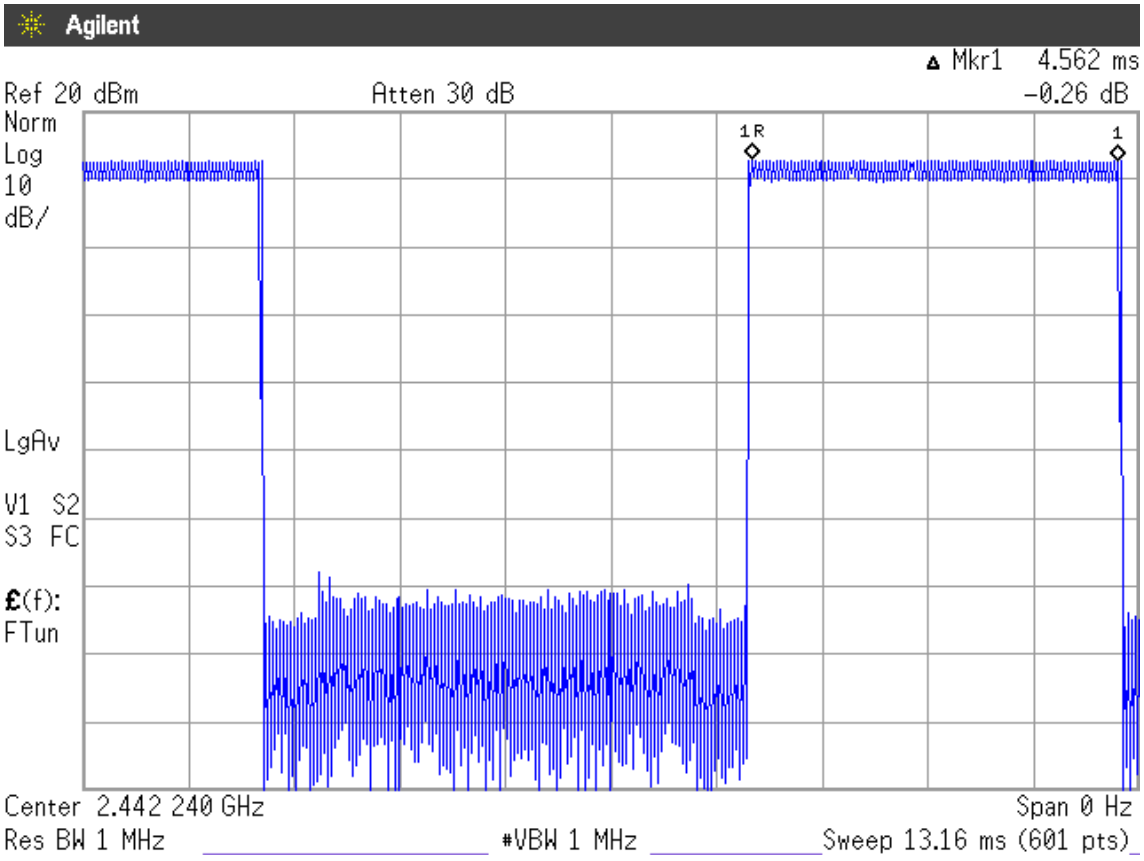
9 channels*8 seconds*4.606ms = 331.632ms (<400ms)

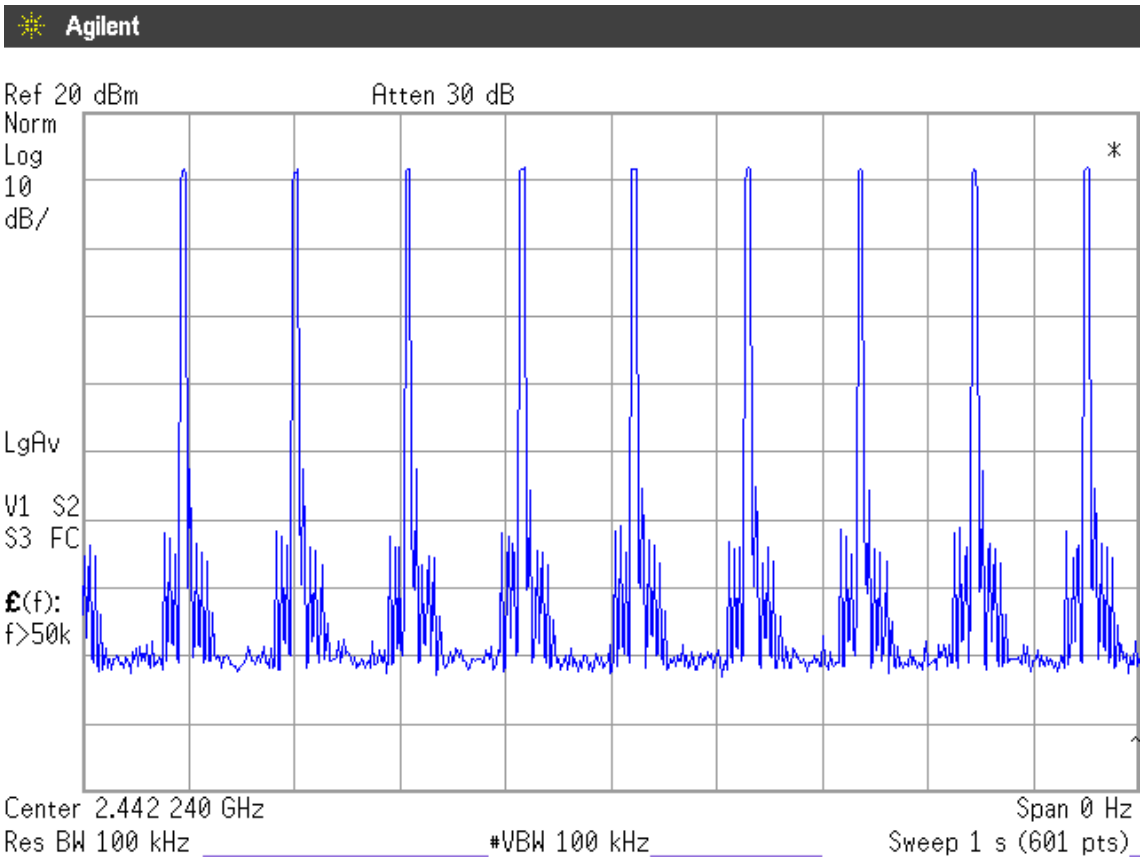
6.6.1. Channel 0, Test Frequency: 2403.328MHz



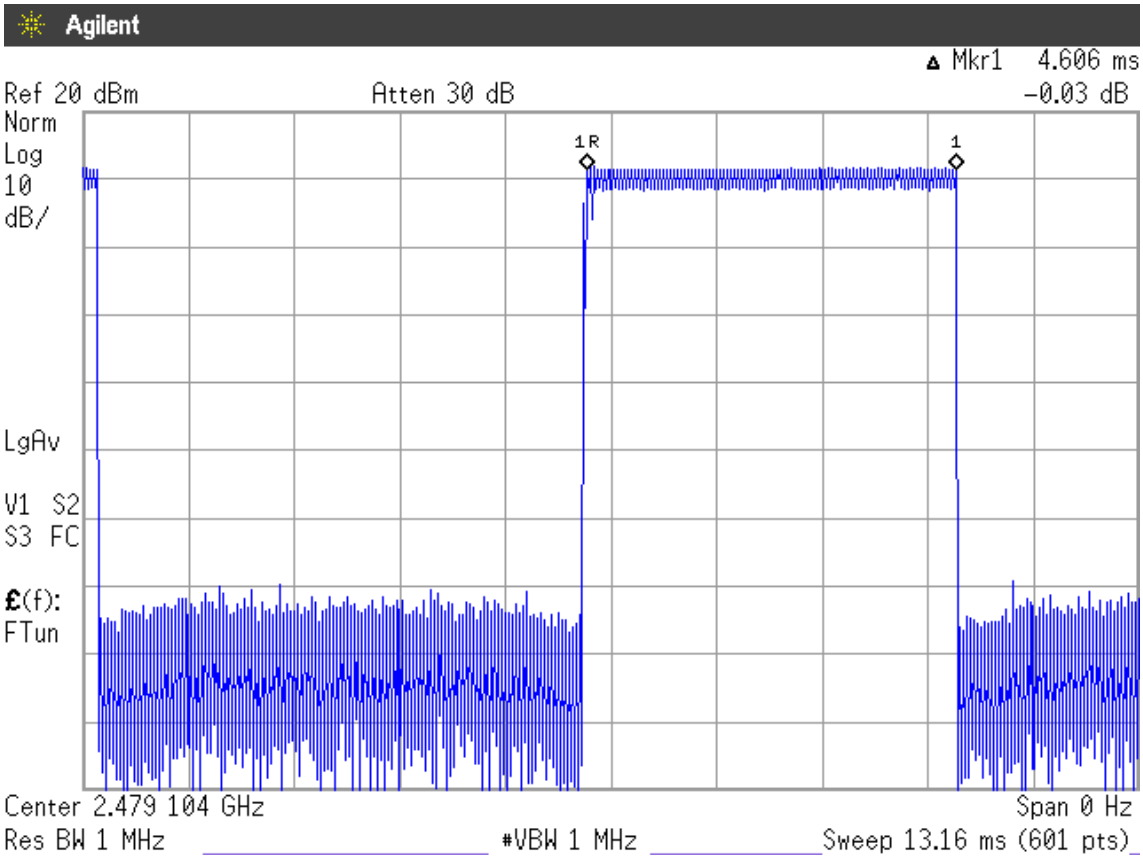


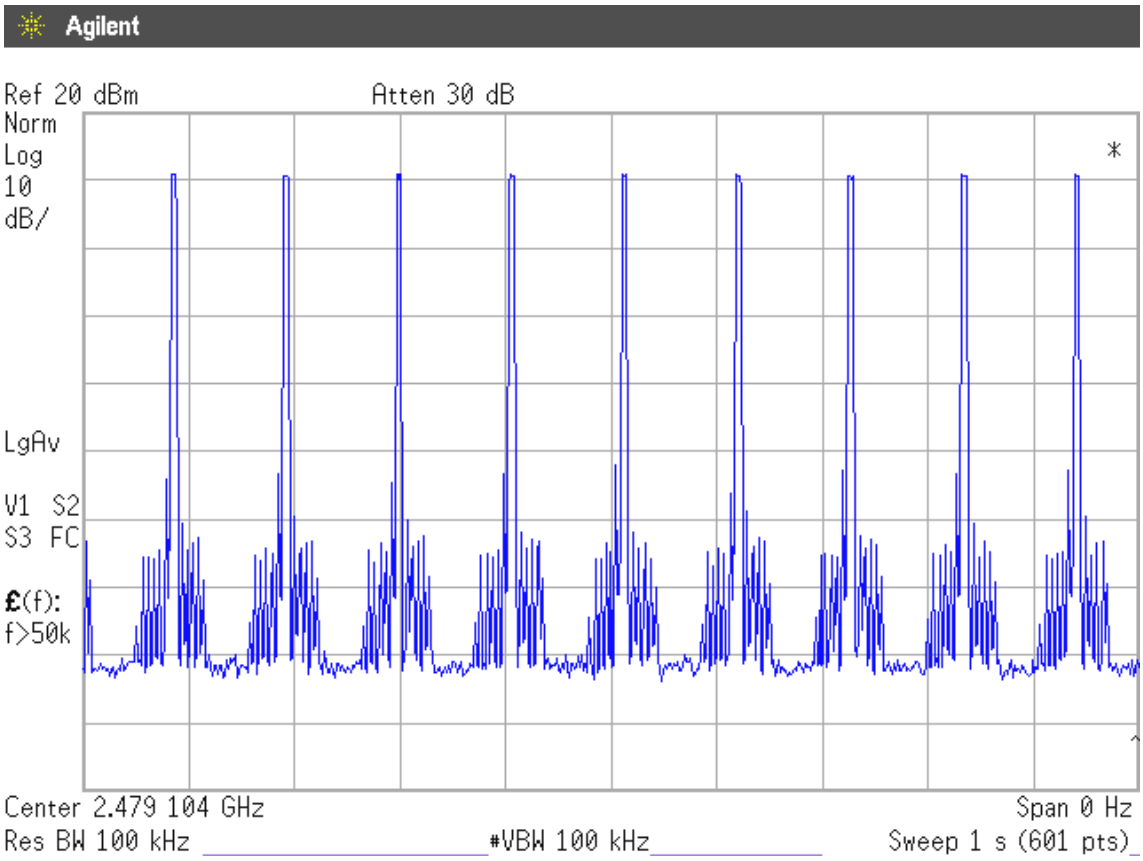
6.6.2. Channel 19, Test Frequency: 2442.240MHz





6.6.3. Channel 37, Test Frequency: 2479.104MHz





7. NUMBER OF HOPPING CHANNELS MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the number of hopping channels measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 13, 07'	Aug. 12, 08'

7.2. Block Diagram of Test Setup

The same as section.4.2.

7.3. Specification Limits (§15.247(a)(1)(iii))

Frequency hopping systems which use fewer than 20 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels.

7.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

7.5. Test Procedure (DA-00705)

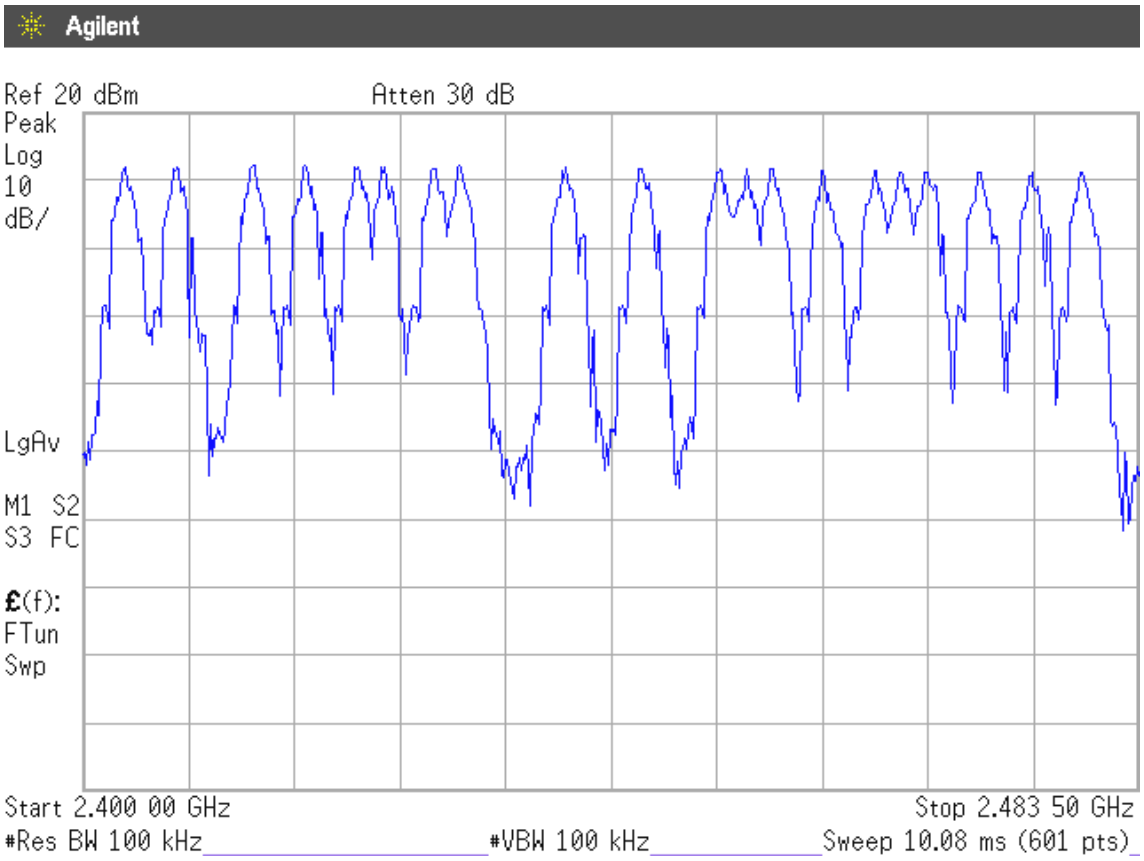
The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW. Sweep=Auto ; Detector function=peak ; Trace=Max hold

7.6. Test Results

PASSED. All the test results are attached in next page.

Test Date : Dec. 17, 2007 Temperature : 25 ℃ Humidity : 54 %

The number hopping channel is 20.


Agilent
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Start 2.400 00 GHz
Stop 2.483 50 GHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 10.08 ms (601 pts)

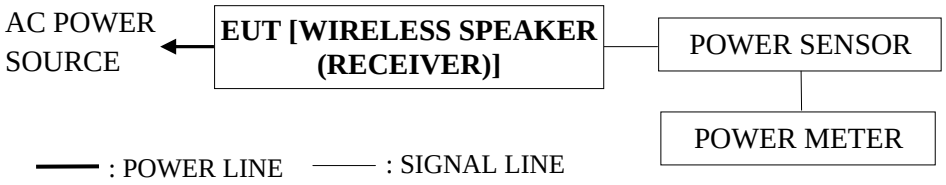
8. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Power Meter	Anritsu	ML2487A	6K00005406	Jan. 10, 07’	Jan. 09, 08’
2.	Power Sensor	Anritsu	MA2491A	030873	Jan. 10, 07’	Jan. 09, 08’

8.2. Block Diagram of Test Setup



8.3. Specification Limits (§15.247(b)-(1))

The Limits of maximum Peak Output Power for frequency hopping systems in 2400-2483.5MHz is: 0.125Watt. (21dBm)

8.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in 4.4 except the test set up replaced by section 8.2.

8.5. Test Procedure (DA-00705)

The transmitter output was connected to the power sensor and record the reading of power meter.

8.6. Test Results

PASSED. All the test results are listed below.

Test Date : Dec. 17, 2007 Temperature : 25 ℃ Humidity : 54 %

No.	Channel	Test Frequency	**Peak Output Power**	Limit
1.	0	2403.328MHz	**14.13dBm**	21dBm
2.	19	2442.240MHz	**13.67dBm**	21dBm
3.	37	2479.104MHz	**13.31dBm**	21dBm

9. EMISSION LIMITATIONS MEASUREMENT

9.1. Test Equipment

The following test equipment was used during the emission limitations measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Monitor	Agilent	E4446A	US44300366	Aug. 11, 06’	Aug. 10. 07’

9.2. Block Diagram of Test Setup

The same as section.4.2.

9.3. Specification Limits (§15.247(c))

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(※ This test result attaching to §3.6.3)

9.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

9.5. Test Procedure (DA-00705)

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with frequency range from 30MHz to 25GHz.

9.6. Test Results

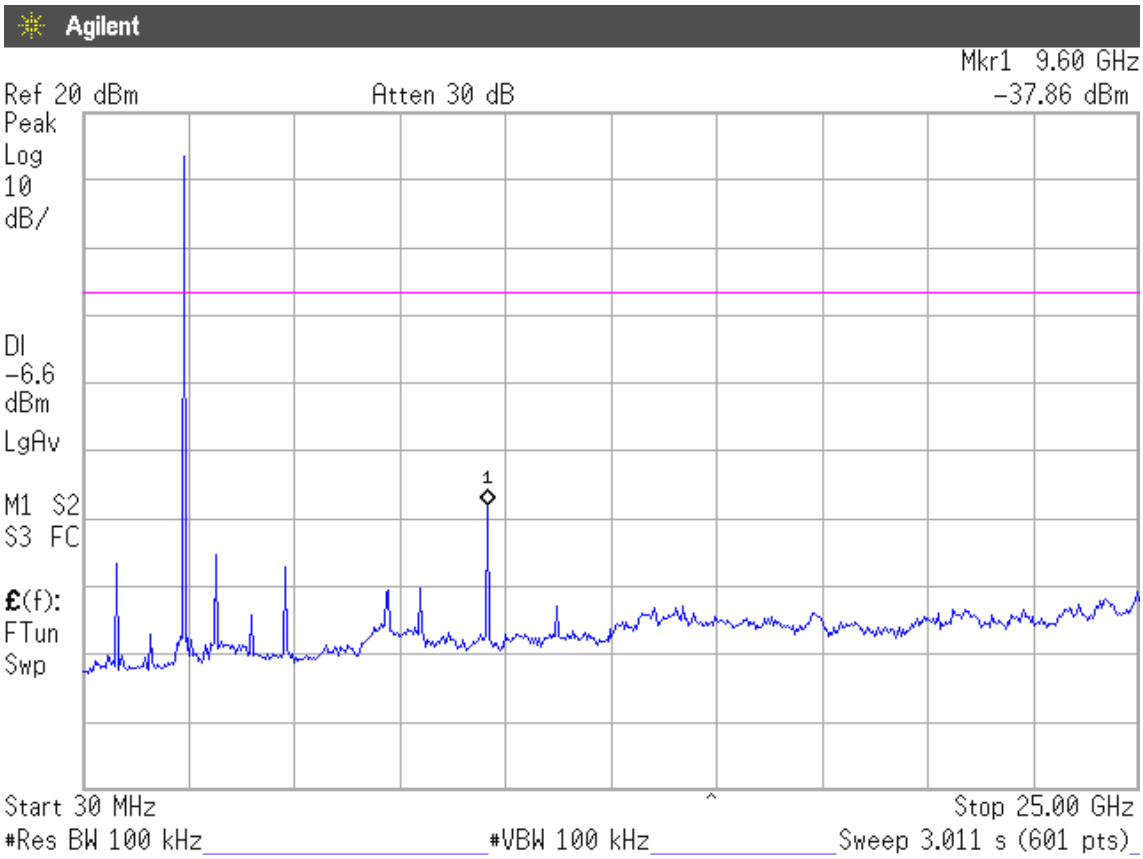
PASSED. All the test results are attached in next pages.

Test Date : Dec. 17, 2007 Temperature : 25 ℃ Humidity : 54 %

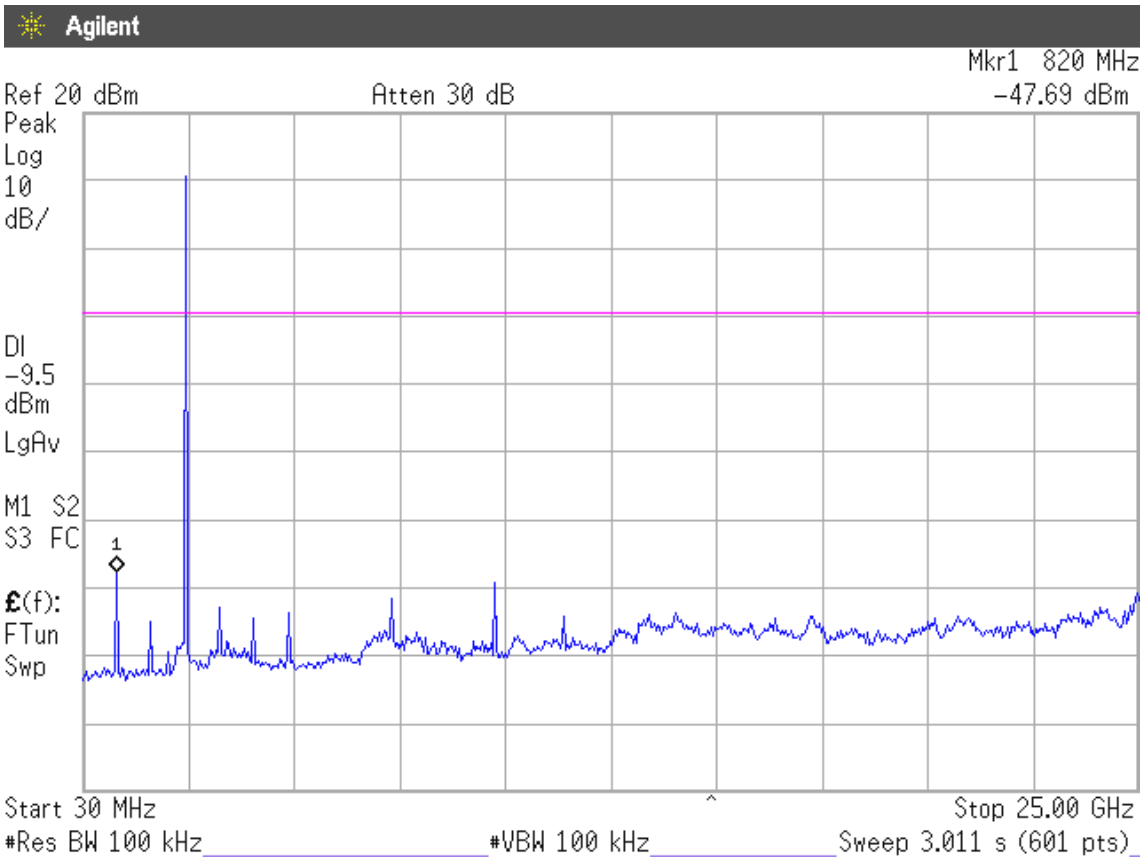
1. 2403.328MHz: During 30MHz~25GHz bandwidth. In the 2.4GHz, the –37.86dBm is max value that is lower than 20dB of primary channel.
2. 2442.240MHz: During 30MHz~25GHz bandwidth. In the 2.4GHz, the –47.69dBm is max value that is lower than 20dB of primary channel.
3. 2479.104MHz: During 30MHz~25GHz bandwidth. In the 2.4GHz, the –46.68dBm is max value that is lower than 20dB of primary channel.

Note: The peak above the limit line is the carrier frequency.

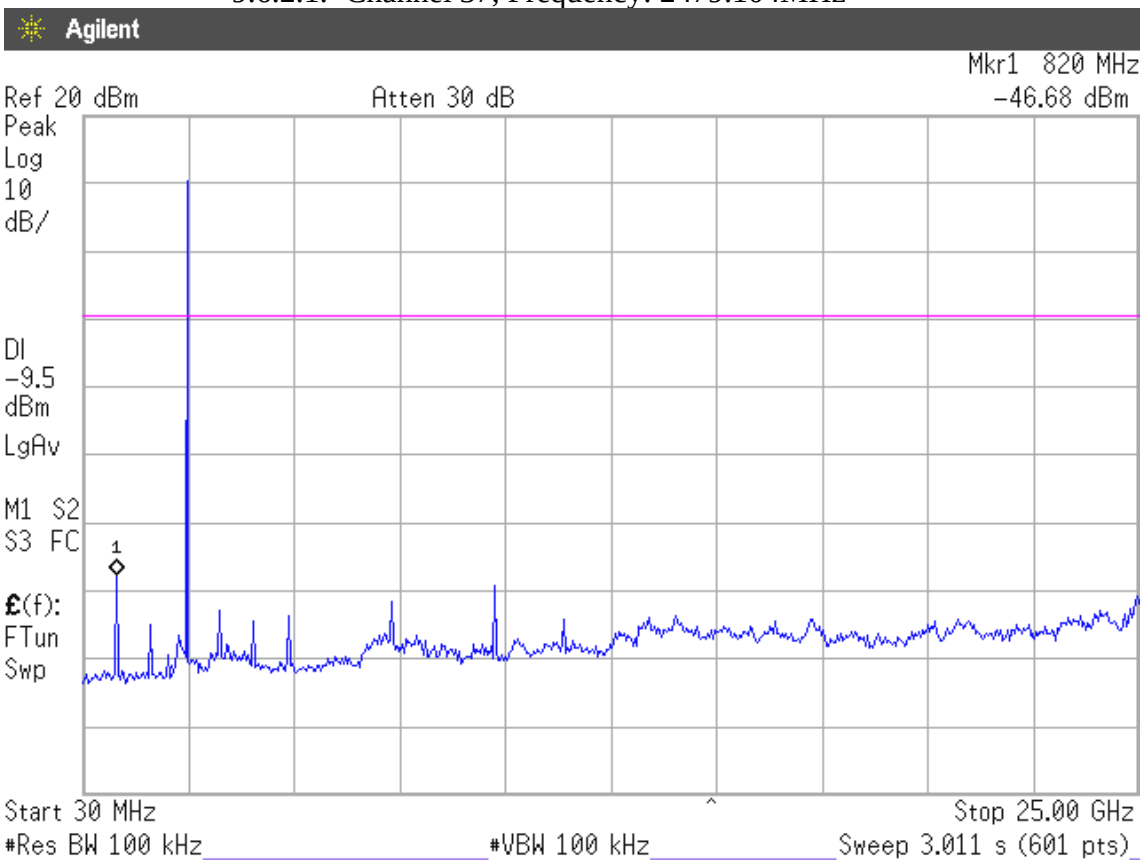
9.6.1. Channel 0, Frequency: 2403.328MHz



9.6.2. Channel 19, Frequency: 2442.240MHz



9.6.2.1. Channel 37, Frequency: 2479.104MHz



10. BAND EDGES MEASUREMENT

10.1. Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 13, 07'	Aug. 12, 08'

10.2. Block Diagram of Test Setup

The same as section.4.2.

10.3. Specification Limits (§15.247(c))

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)). (※ This test result attaching to §3.6.3)

10.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

10.5. Test Procedure (DA-00705)

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge.

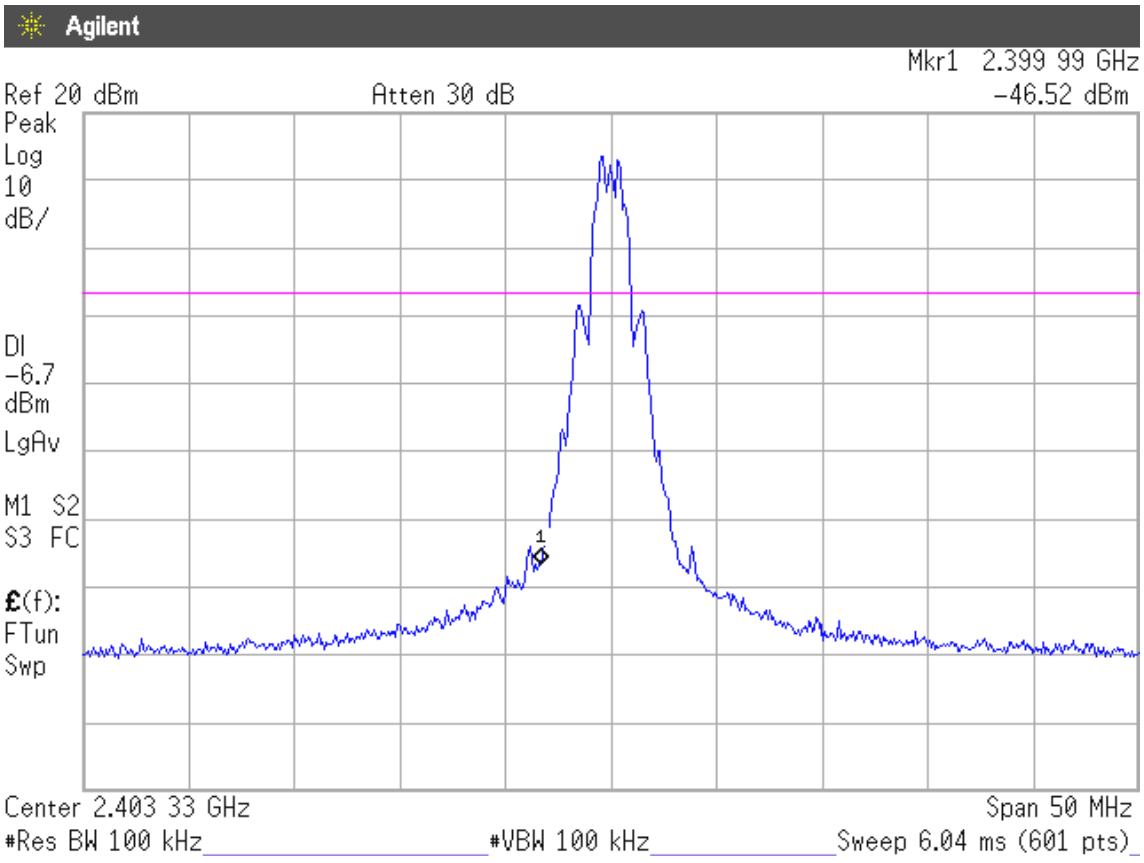
10.6. Test Results

PASSED. The testing data was attached in the next pages.

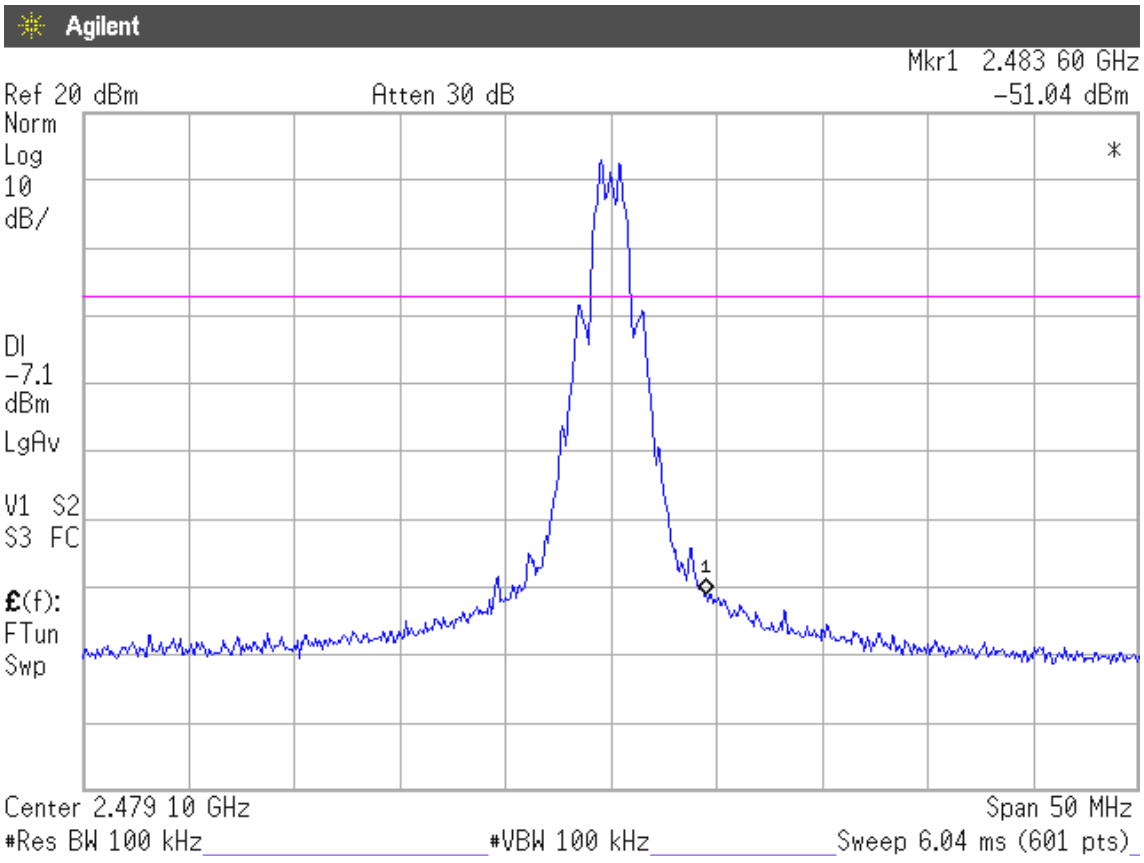
Test Date : Dec. 17, 2007 Temperature : 25 ℃ Humidity : 54 %

1. Upper Band edge : The highest emission level is – 46.52dBm on 2.39999GHz。
2. Below Band edge: The highest emission level is – 51.04dBm on 2.48360GHz。

10.6.1. Below Band edge



10.6.2. Upper Band edge



11. DEVIATION TO TEST SPECIFICATIONS

【NONE】