APPLICATION FOR CERTIFICATION

On Behalf of

LG Electronics Inc.

Wireless Adapter Card

Model No.：R3

FCC ID : BEJ9QK-DMR3

IC: 2703H-DMR3

Brand : LG

Prepared for : LG Electronics Inc.
19-1, Cheongho-Ri, Jinwuy-Myeon,
Pyeongtaek-City, Gyeonggi-Do, 451-713,
Korea

Prepared by : AUDIX Technology Corporation
EMC Department
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New Taipei City 244, Taiwan, R.O.C.

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File Number	：	C1M1304105
Report Number	：	EM-F1020318
Date of Test	：	Apr. 15 ~ 24, 2013
Date of Report	：	Apr. 25, 2013

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TEST REPORT CERTIFICATION

Applicant	:	LG Electronics Inc.
Manufacturer	:	LG Electronics Inc.
Factory	:	NAMUGA (SUZHOU) TECHNOLOGIES CO., LTD.
EUT Description	:	Wireless Adapter Card
FCC ID	:	**BEJ9QK-DMR3**
IC	:	**2703H-DMR3**

(A) Model No.	:	R3
(B) Serial No.	:	N/A
(C) Brand	:	LG
(D) Power Supply	:	DC 5V (Powered by Notebook PC)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C & E, Oct. 2012
(FCC CFR 47 Part 15C & E, §15.205, §15.207, §15.209 and 15.407)
Industry Canada Rules and Regulations RSS-Gen (Issue 3), December 2010 and
RSS-210 (Issue 8), December 2010
(Canada RSS-210 §Annex 9)
AND ANSI C63.4:2003

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 C & E and Canada RSS-210 (Issue 8) Annex 9 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 requirements of FCC Part 15 and Industry Canada RSS-Gen, RSS-210 standards.

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: Apr. 15 ~ 24, 2013 Date of Report: Apr. 25, 2013

Producer: Tina Huang
(Tina Huang/Administrator)

Signatory: Leon Liu
(Leon Liu/Deputy General Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Wireless Adapter Card The frequency range of 5180MHz ~ 5240MHz was tested in this report. The frequency range of 2412MHz ~ 2464MHz、5736MHz ~ 5814MHz has been tested and the test data are reported in other report of EM-F1020317.
Model Number	:	R3
Serial Number	:	N/A
Brand	:	LG
FCC ID	:	BEJ9QK-DMR3
IC	:	2703H-DMR3
Applicant	:	LG Electronics Inc. 19-1, Cheongho-Ri, Jinwuy-Myeon, Pyeongtaek-City, Gyeonggi-Do, 451-713, Korea
Manufacturer	:	LG Electronics Inc. 19-1, Cheongho-Ri, Jinwuy-Myeon, Pyeongtaek-City, Gyeonggi-Do, 451-713, Korea
Factory	:	NAMUGA (SUZHOU) TECHNOLOGIES CO., LTD. 445, Suhong Middle Road, Suzhou Industrial Park, Suzhou, Jiangsu, China.
Fundamental Range	:	2412MHz ~ 2462MHz and 5180MHz ~ 5240MHz and 5736MHz ~ 5814MHz
Channel Number	:	2.4GHz: 3 Channel 5.2GHz: 3 Channel 5.8GHz: 3 Channel
Radio Technology	:	QPSK Modulation

Data Transfer Rate	:	22Mbps
Antenna Gain	:	2.4GHz: 1.0dBi (Peak) 5.2GHz: 3.0dBi (Peak) 5.8GHz: 4.6dbi (Peak)
Antenna Transmit Type	:	1T1R (can not support transmit simultaneously)
Antenna Type	:	PCB ANT (PIFA)
Date of Receipt of Sample	:	Apr. 10, 2013
Date of Test	:	Apr. 15 ~ 24, 2013

1.2. Tested Supporting System Details

1.2.1. NOTEBOOK PC

Model Number	:	N20A Series
Serial Number	:	WB200903001
Manufacturer	:	ASUS
USB Cable	:	Non-Shielded, Detachable, 1.8m
AC Adapter	:	ASUS, M/N SADP-65NB BB DC Cord: Non-Shielded, Undetachable, 1.8m Bonded a ferrite core
AC Power Cord	:	Non-Shielded, Detachable, 1.8m

1.2.2. JIG BOARD

Model Number	:	N/A
Serial Number	:	N/A
Brand	:	LG
Bus Cable	:	Non-Shielded, Detachable, 0.25m

1.2.3. LCD MONITOR

Model Number	:	P190S
Serial Number	:	MX-004K3T-74262-1AJ-23RL
Brand	:	DELL
D-Sub Cable	:	Shielded, Detachable, 1.8m Bonded two ferrite cores
AC Power Cord	:	Non-Shielded, Detachable, 1.8m

1.2.4. USB MOUSE

Model Number	:	AMU94APZ-CN
Serial Number	:	1109001101
FCC ID	:	FCC by DoC
Brand	:	Targus
D-Sub Cable	:	Non-Shielded, Undetachable, 1.8m

1.2.5. LASER PRINTER

Model Number	:	ML-1630
Serial Number	:	4561B1CP600023X
FCC ID	:	A3LML1630
BSMI ID	:	R33475
Brand	:	SAMSUNG
USB Cable	:	Shielded, Detachable, 1.8m
Power Cable	:	Non-Shielded, Detachable, 1.8m

1.3. Description of Test Facility

Name of Firm	:	**AUDIX Technology Corporation** EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C.
Test Site (C8/Semi-AC)	:	**No. 8 Shielded Room &** No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C. **Semi-Anechoic Chamber** No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan, R.O.C. May 14, 2009 Renewal on Federal Communication Commission Registration Number: 90993
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724

1.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150kHz~30MHz	± 1.73dB
Radiation Test (Distance: 3m)	30MHz~300MHz	± 2.91dB
	300MHz~1000MHz	± 2.74dB
	Above 1GHz	± 5.02dB

Remark：Uncertainty = $ku_c(y)$

Test Item	Uncertainty
26dB Bandwidth	± 0.2kHz
Maximum peak output power	± 0.33dBm
Power spectral density	± 0.13dB
Peak power Excursion	± 0.14dB

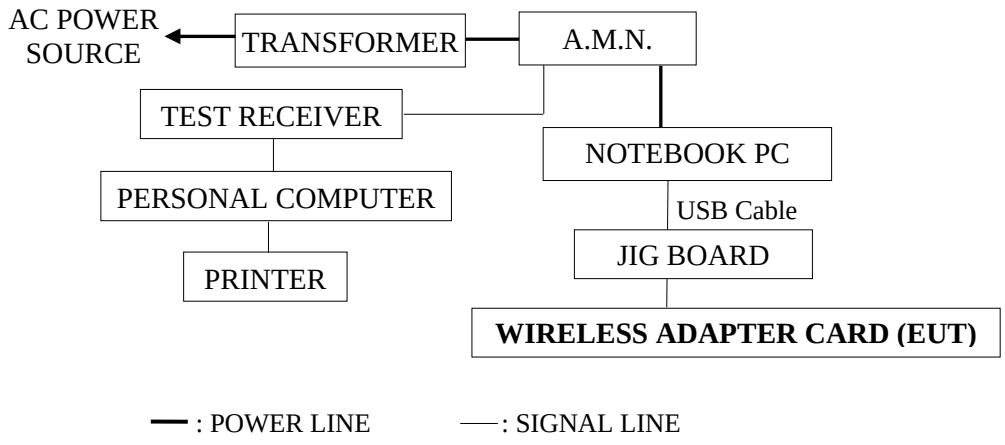
2. CONDUCTED EMISSION MEASUREMENT

2.1. Test Equipment

The following test equipment was used during the powerline conducted emission measurement: (No. 8 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCS30	100265	Aug. 24, 12'	Aug. 23, 13'
2.	A.M.N.	R&S	ESH2-Z5	100366	Mar. 19, 13'	Mar. 18, 14'

2.2. Block Diagram of Test Setup



2.3. Powerline Conducted Emission Limit [§15.207, Class B, RSS-Gen §7.2.2/Table 2]

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

Remark: 1. 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 equipment.

2.4.3. The Notebook PC was running test software "GUI_Demo_01.05.17_7828" to set EUT (Wireless Adapter Card) on transmitting and receiving during all testing.

2.5. Test Procedure

The EUT (link Notebook PC) was placed on the table which was above the ground by 80cm and Notebook PC's adapter's power cord connected to the AC mains through an Artificial Mains Network (A.M.N.). 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 ANSI C63.4-2003, RSS-Gen and RSS-210 regulation 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. Powerline 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 Adapter Card M/N：R3

Test Date：Apr. 15, 2013 Temperature：23℃ Humidity：69%

Reference Test Data：Neutral # 2, Line # 1

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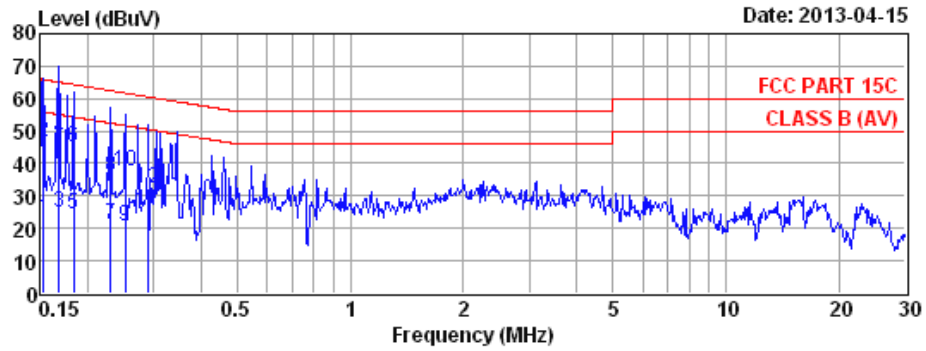
Data: 2 File: D:\test data\REPORT\2013\C1M1304XXX\C1M1304105-C-D.EM6 (2)



Site no. : No.8 Shielded Room
Dis. / Ant. : ESH2-Z5 366
Limit : FCC PART 15C
Env. / Ins. : 23*C / 69% ESCS (265)
EUT : R3
Power Rating : 120Vac/60Hz
Test Mode : Operating

Data no. : 2
Ant. pol. : NEUTRAL
Engineer : Jack_Wu

	Freq. (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.152	0.10	0.04	22.53	22.67	55.87	33.20	Average
2	0.152	0.10	0.04	46.72	46.86	65.87	19.01	QP
3	0.168	0.10	0.04	24.66	24.80	55.08	30.28	Average
4	0.168	0.10	0.04	47.64	47.78	65.08	17.30	QP
5	0.183	0.10	0.04	24.46	24.60	54.33	29.73	Average
6	0.183	0.10	0.04	44.80	44.94	64.33	19.39	QP
7	0.230	0.10	0.04	20.97	21.11	52.44	31.33	Average
8	0.230	0.10	0.04	36.05	36.19	62.44	26.25	QP
9	0.252	0.10	0.04	20.29	20.43	51.69	31.26	Average
10	0.252	0.10	0.04	37.46	37.60	61.69	24.09	QP
11	0.291	0.10	0.04	25.53	25.67	50.50	24.83	Average
12	0.291	0.10	0.04	32.42	32.56	60.50	27.94	QP

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

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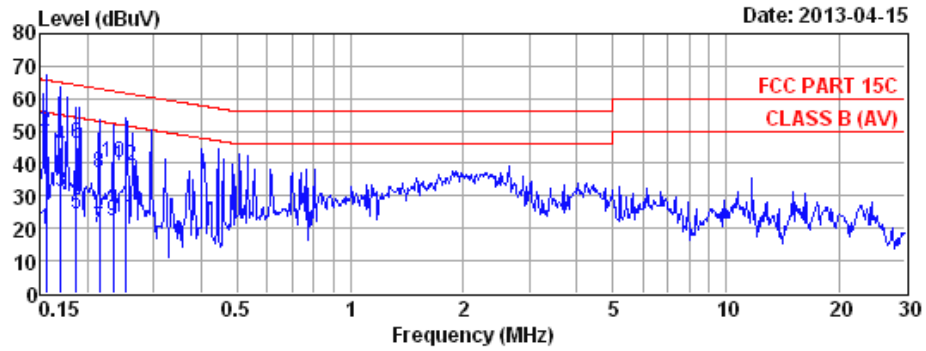
Data: 1 File: D:\test data\REPORT\2013\C1M1304XXX\C1M1304105-C-D.EM6 (2)



Site no. : No.8 Shielded Room
Dis. / Ant. : ESH2-Z5 366
Limit : FCC PART 15C
Env. / Ins. : 23*C / 69% ESCS (265)
EUT : R3
Power Rating : 120Vac/60Hz
Test Mode : Operating

Data no. : 1
Ant. pol. : LINE
Engineer : Jack_Wu

	Freq. (MHz)	AMN. Factor (dB)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.155	0.10	0.04	19.38	19.52	55.74	36.22	Average
2	0.155	0.10	0.04	49.89	50.03	65.74	15.71	QP
3	0.169	0.10	0.04	30.87	31.01	54.99	23.98	Average
4	0.169	0.10	0.04	44.89	45.03	64.99	19.96	QP
5	0.186	0.10	0.04	24.25	24.39	54.20	29.81	Average
6	0.186	0.10	0.04	45.72	45.86	64.20	18.34	QP
7	0.215	0.10	0.04	20.00	20.14	53.01	32.87	Average
8	0.215	0.10	0.04	37.11	37.25	63.01	25.76	QP
9	0.234	0.10	0.04	21.96	22.10	52.30	30.20	Average
10	0.234	0.10	0.04	40.07	40.21	62.30	22.09	QP
11	0.253	0.10	0.04	22.99	23.13	51.64	28.51	Average
12	0.253	0.10	0.04	39.18	39.32	61.64	22.32	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Reading.
2. If the average limit is met when useing 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 Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

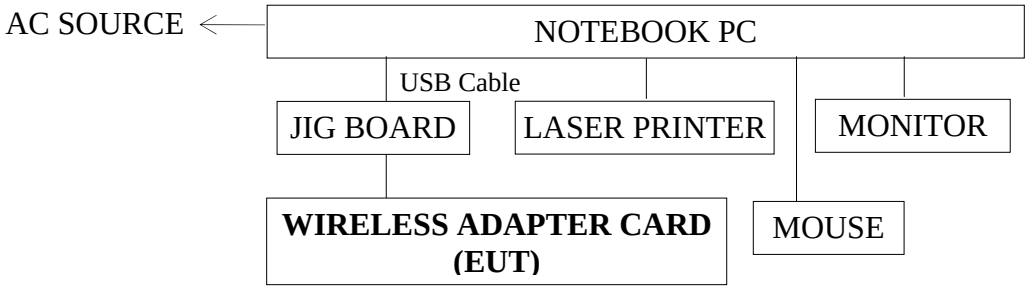
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 08, 12’	Aug. 06, 13’
2.	Test Receiver	R & S	ESCS30	100338	Jul. 04, 12’	Jul. 03, 13’
3.	Amplifier	HP	8447D	2944A06305	Feb. 19, 13’	Feb. 12, 14’
4.	Biconical Antenna	CHASE	VBA6106 A	1264	Mar. 02, 13’	Mar. 01, 14’
5.	Log Periodic Antenna	Schwarzbeck	UHALP9108-A	0810	Mar. 02, 13’	Mar. 01, 14’

3.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

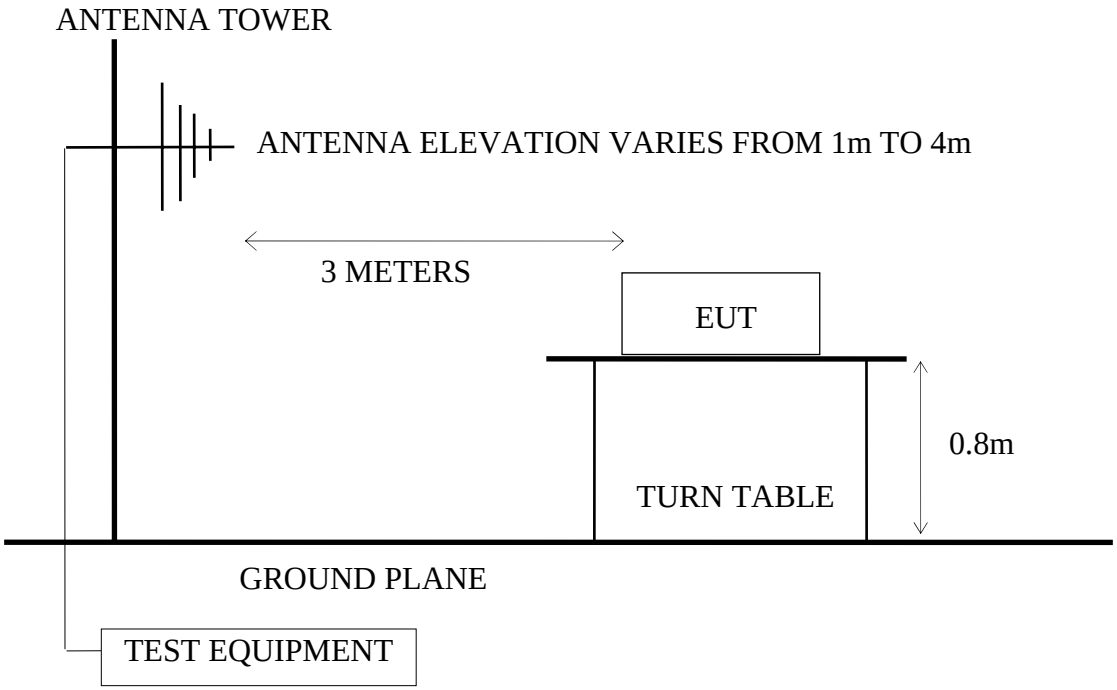
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 07, 12’	Aug. 06, 13’
2.	Pre-Amplifier	HP	8449B	3008A00529	Jan. 31, 13’	Jan. 30, 14’
3.	5G High Pass Filter	Microware Circuits	H1G013G1	459777	Dec. 13, 12’	Dec. 12, 13’
4.	5G Notch Filter	Microware Circuits	N0555983	459481	Dec. 31, 12’	Dec. 30, 13’
5.	5G Notch Filter	Microware Circuits	N0258771	459776	Jan. 03, 13’	Jan. 02, 14’
6.	Horn Antenna	EMCO	3115	9112-3775	May 09, 12’	May 08, 13’
7.	Horn Antenna	EMCO	3116	2653	Oct. 15, 12’	Oct. 14, 13’

3.2. Test Setup

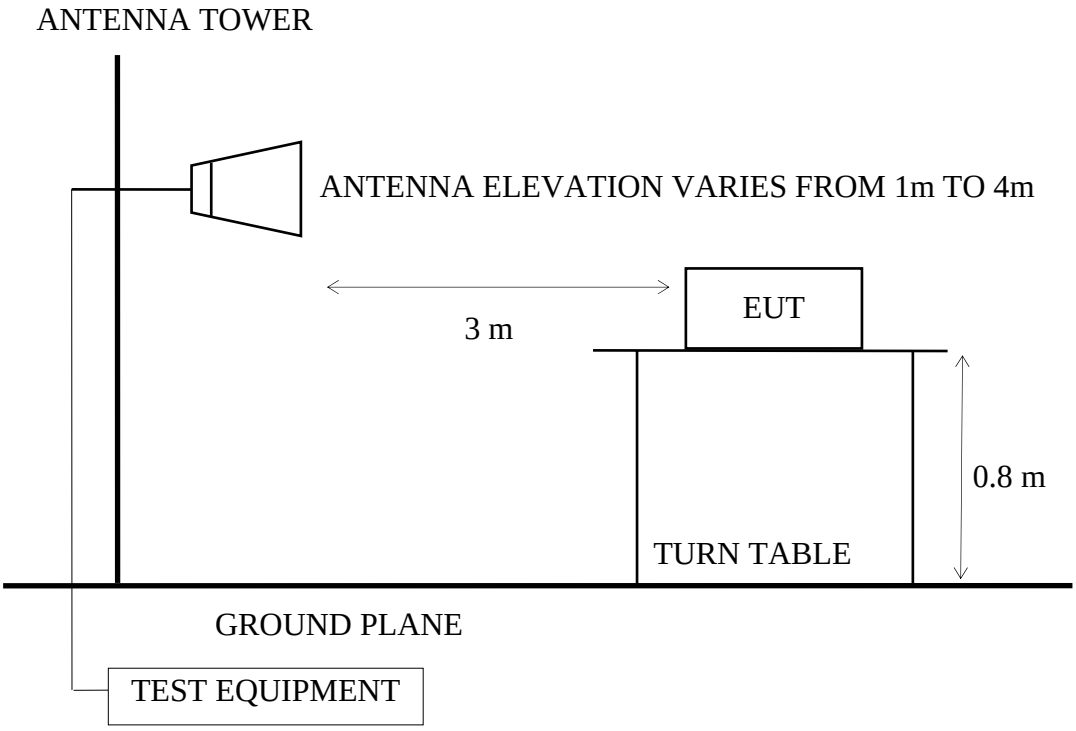
3.2.1. Block Diagram of connection between EUT and simulators



3.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz



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



3.3. Radiated Emission Limits (§15.209, RSS-210 §2.7/Table 2)

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

3.4.1. Set up the EUT (Wireless Adapter Card) via Notebook PC and simulator as shown on 3.2.

3.4.2. To turn on the power of all equipments.

3.4.3. The EUT was set the Notebook PC using test program "GUI_Demo_01.05.17_7828".

3.4.4. We performed pre-scan high, middle, low channels for each mode for spurious emission and listed the worst channel of each mode in test report.

The worst channel of each mode as following:

Channel	Channel Frequency
CH 1	5180MHz

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. EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antenna 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 ANSI C63.4-2003, RSS-Gen and RSS-210 regulation.

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 40GHz (Up to 10^{th} harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector. Pursuant to ANSI 4.2.2, peak detector is an alternate option for frequency from 30MHz to 1000MHz.

Above 1GHz was measured with peak and average detector. For frequency from 2.68GHz to 40GHz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

Pursuant to ANSI C63.4 8.3.1.2, when peak value complies with the average limit, we didn't perform measurement in average detector.

3.6. Test Results

PASSED.
(All emissions not reported for there is no emission be found.)

EUT：Wireless Adapter Card M/N：R3

Test Date：Apr. 24, 2013 Temperature：26℃ Humidity：61%

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.

Mode	Channel	Frequency	Test Mode	Reference Test Data	
				Horizontal	Vertical
1.	CH 1	5180MHz	Transmit	# 2	# 1

* Above all final readings were measured with Peak detector.

For Frequency above 1GHz:
The emissions (up to 40GHz) not reported for there is no emission be found.

For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 3.6.2. (The restricted bands defined in part 15.205(a))

Mode	Channel	Frequency	Test Mode	Reference Test Data	
				Horizontal	Vertical
1.	CH 1	5180MHz	Transmit	# 3, # 4	# 1, # 2

3.6.1. Frequency Range 30-1000MHz

Transmit, Frequency: 5180MHz

Site no. : A/C Chamber Data no. : 2
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 26℃/61% □jianlun_hung
EUT : R3
Power Rating : DC5V (VIA USB)
Test Mode : TX5180

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
37.290	21.58	1.20	13.05	35.84	40.00	4.16	Peak
62.400	12.28	1.60	21.74	35.62	40.00	4.38	Peak
86.430	14.98	1.90	15.54	32.42	40.00	7.58	Peak
160.140	20.80	2.70	10.13	33.63	43.50	9.87	Peak
264.090	24.60	3.67	12.14	40.41	46.00	5.59	Peak
337.800	15.09	4.25	10.13	29.47	46.00	16.53	Peak
703.900	23.56	6.60	1.12	31.28	46.00	14.72	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. : 1
Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL
Limit : FCC PART-15C
Env. / Ins. : E4446A 26℃/61% □jianlun_hung
EUT : R3
Power Rating : DC5V (VIA USB)
Test Mode : TX5180

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
37.830	21.58	1.20	13.30	36.08	40.00	3.92	Peak
62.130	12.28	1.60	21.53	35.42	40.00	4.58	Peak
87.240	15.21	2.00	3.87	21.08	40.00	18.92	Peak
160.680	20.82	2.70	3.63	27.16	43.50	16.34	Peak
337.800	15.09	4.25	9.68	29.02	46.00	16.98	Peak
360.900	16.24	4.43	7.58	28.25	46.00	17.75	Peak
416.900	16.95	5.08	6.16	28.18	46.00	17.82	Peak

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. Restricted Bands Measurement Results

Date of Test： Apr. 24, 2013 Temperature： 26℃

EUT： Wireless Adapter Card Humidity： 61%

Test Mode： Transmit, Channel: 1, Frequency: 5180MHz

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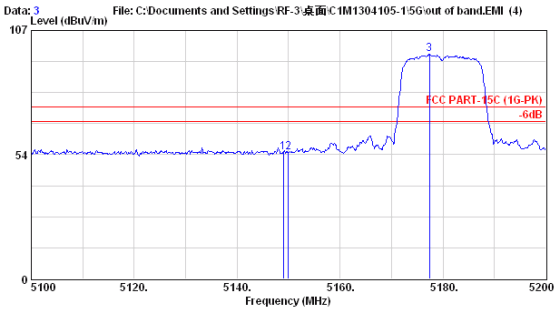


```
Site no.      : A/C Chamber                Data no.  : 3
Dis. / Ant.   : 3m   3115(4927)            Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 26℃/61%                       jianlun_hung
EUT           : R3
Power Rating  : DC5V (VIA USB)
Test Mode     : TX5180
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.000	33.64	9.43	11.50	54.57	74.00	19.43	Peak
2	5150.000	33.64	9.43	11.34	54.41	74.00	19.59	Peak
3	5177.400	33.69	9.46	53.81	96.96	74.00	-22.96	Peak

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

AUDIX TECHNOLOGY Corp. EMC Laboratory
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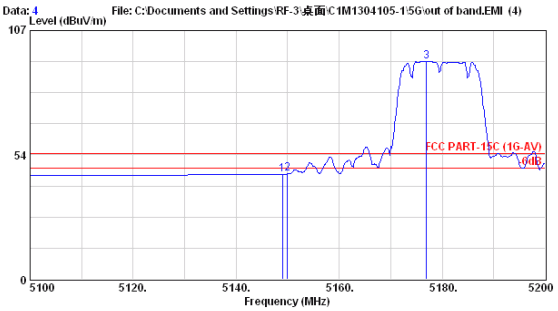
Email:ttemc@ttemc.com.tw




```
Site no.      : A/C Chamber                Data no.  : 4
Dis. / Ant.   : 3m   3115(4927)            Ant. pol. : HORIZONTAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 26℃/61%                       jianlun_hung
EUT           : R3
Power Rating  : DC5V (VIA USB)
Test Mode     : TX5180
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.000	33.64	9.43	1.97	45.04	54.00	8.96	Average
2	5150.000	33.64	9.43	2.27	45.34	54.00	8.66	Average
3	5176.900	33.69	9.46	50.69	93.84	54.00	-39.84	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：	Apr. 24, 2013	Temperature：	26℃
EUT：	Wireless Adapter Card	Humidity：	61%
Test Mode：	Transmit, Channel: 1, Frequency: 5180MHz		

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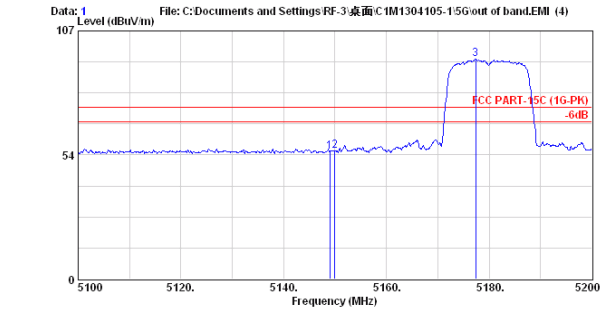


```
Site no.      : A/C Chamber                Data no.   : 1
Dis. / Ant.   : 3m   3115(4927)            Ant. pol.  : VERTICAL
Limit         : FCC PART-15C (1G-PK)
Env. / Ins.   : E4446A 26℃/61%                        □jianlun_hung
EUT           : R3
Power Rating  : DC5V (VIA USB)
Test Mode     : TX5180
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.000	33.64	9.43	11.93	55.01	74.00	18.99	Peak
2	5150.000	33.64	9.43	12.07	55.14	74.00	18.86	Peak
3	5177.400	33.69	9.46	51.82	94.97	74.00	-20.97	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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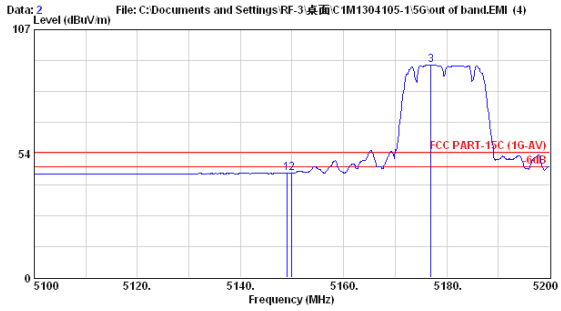



```
Site no.      : A/C Chamber                Data no.   : 2
Dis. / Ant.   : 3m   3115(4927)            Ant. pol.  : VERTICAL
Limit         : FCC PART-15C (1G-AV)
Env. / Ins.   : E4446A 26℃/61%                        □jianlun_hung
EUT           : R3
Power Rating  : DC5V (VIA USB)
Test Mode     : TX5180
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	5149.000	33.64	9.43	1.85	44.93	54.00	9.07	Average
2	5150.000	33.64	9.43	2.03	45.10	54.00	8.90	Average
3	5176.900	33.69	9.46	48.58	91.73	54.00	-37.73	Average

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

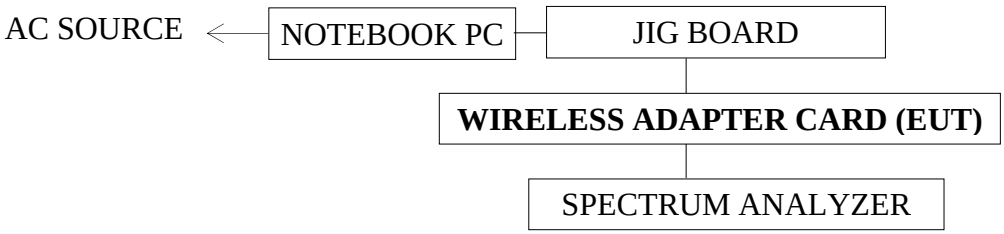
4. 26dB BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 17, 12’	Oct. 16, 13’

4.2. Block Diagram of Test Setup



4.3. Operating Condition of EUT

Test program GUI_Demo_01.05.17_7828 is used for enabling the EUT transmitting continuing.

4.4. Test Procedure

1. Set RBW=approximately 1% of the emission bandwidth.
2. Set the VBW>RBW
3. Detector=Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26dB down from the peak of the emission. Compare this with RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

The measurement guideline was according to KDB 789033 v01r03 C)

The measurement guideline was according to RSS-Gen.

4.5. Test Results

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

Test Date : Apr. 22, 2013 Temperature : 25℃ Humidity : 60%

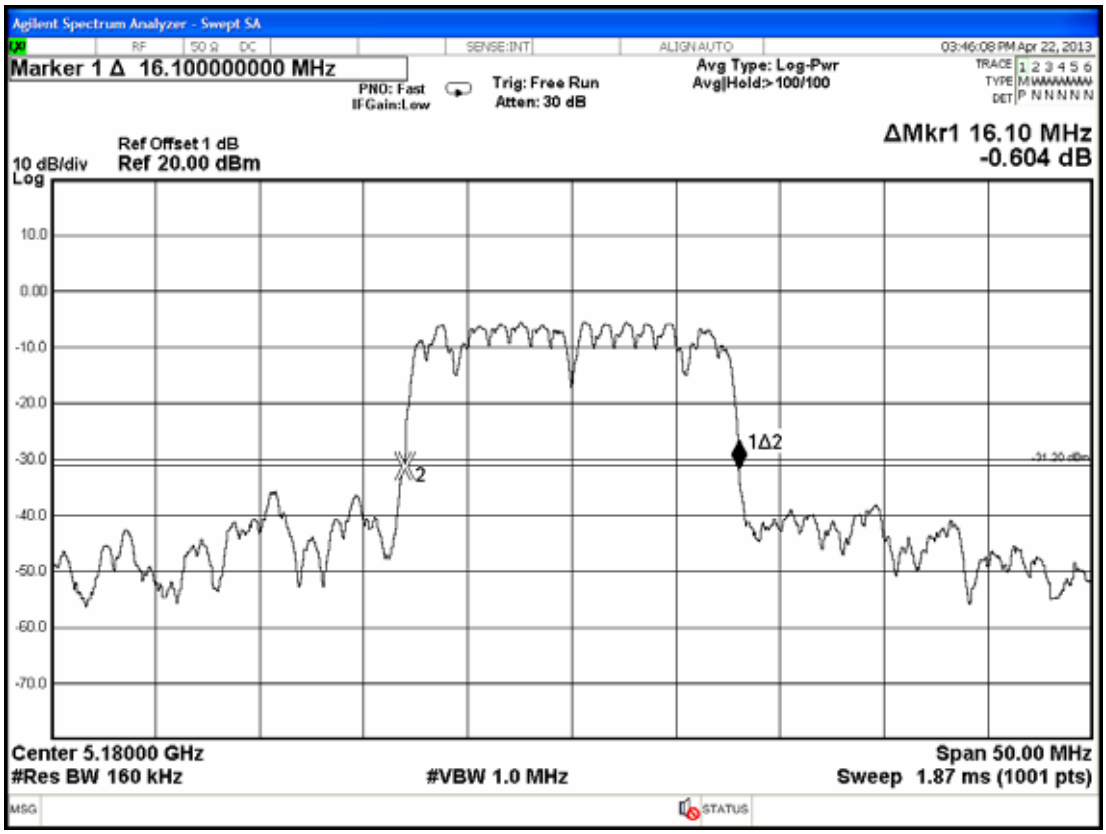
Mode	Channel	Frequency	**26dB Bandwidth**
1.	CH 1	5180MHz	**16.10MHz**
2.	CH 2	5210MHz	**16.10MHz**
3.	CH 3	5240MHz	**16.10MHz**

For demonstrating in compliance with 15.215

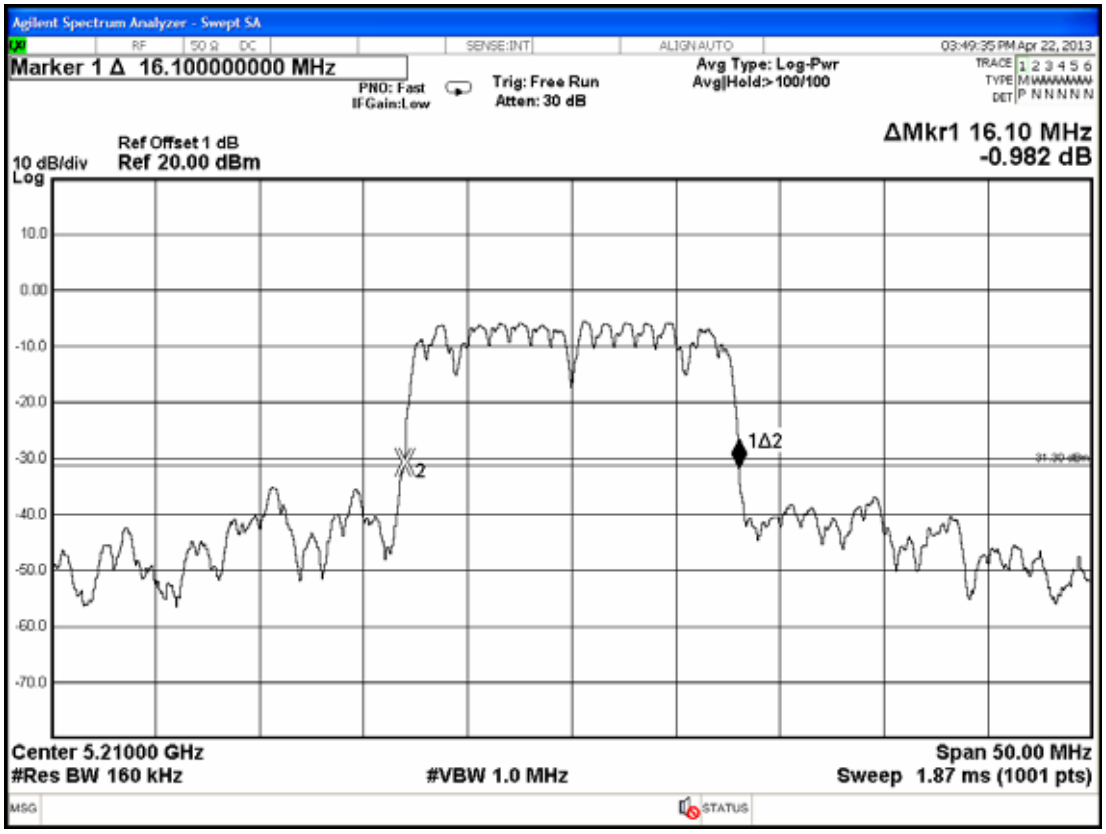
Mode	Channel	The Edge Frequency of 26dB	**Result**
1.	CH 1	5171.95	**Compliant**
2.	CH 3	5248.05	**Compliant**

The edge frequency is calculated from formula “centre frequency + 26dB BW/2”.

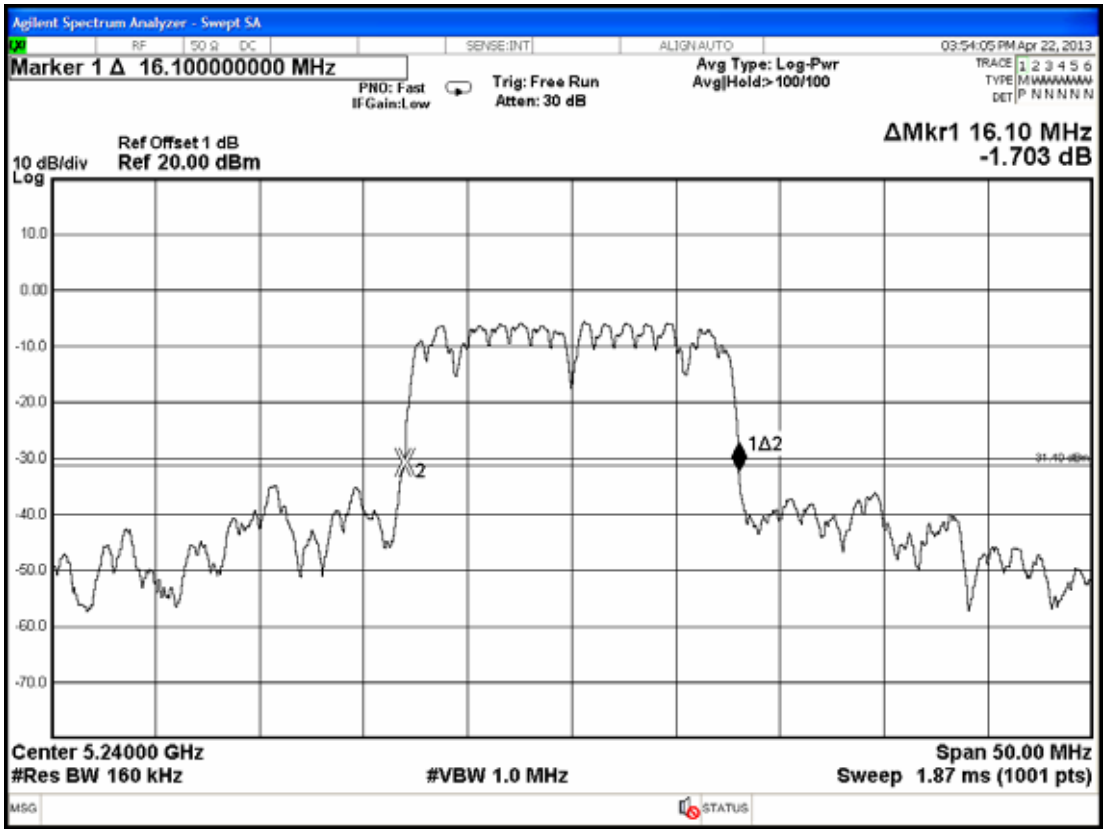
Frequency: 5180MHz



Frequency: 5210MHz



Frequency: 5240MHz



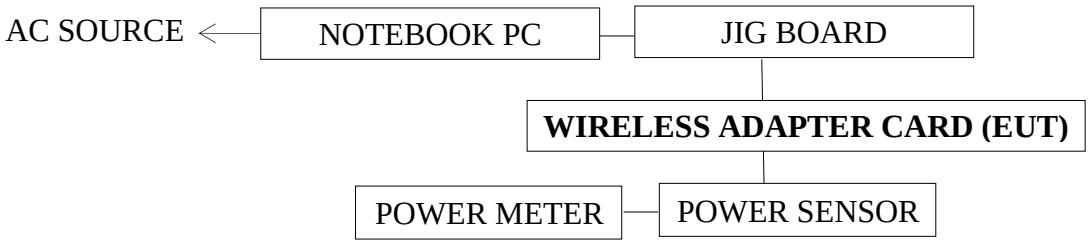
5. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

5.1. 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	ML2495A	1145008	Oct. 30, 12’	Oct. 29, 13’
2.	Power Sensor	Anritsu	MA2411B	1126096	Oct. 30, 12’	Oct. 29, 13’

5.2. Block Diagram of Test Setup



5.3. Specification Limits [§15.407(a)-(1), RSS-210 A9.2 (1)]

Frequency	Limit 1	Limit 2 (4dBm+10log B)
5150~5250MHz	50mW (17dBm)	16.05dBm

Remark: B= 26dB Bandwidth

5.4. Operating Condition of EUT

Test program GUI_Demo_01.05.17_7828 is used for enabling the EUT transmitting continuing.

5.5. Test Procedure

The EUT connected to power meter and sensor and record the average value

The measurement guideline was according to KDB 789033 v01r03 E) 3) a)

The measurement guideline was according to RSS-Gen.

5.6. Test Results

PASSED. All the test results are listed below.

Test Date : Apr. 22, 2013 Temperature : 25℃ Humidity : 60%

Mode	Channel	Frequency	**Maximum Output Power (dBm)**	Power Setting	
				Addr	Value
1.	CH 1	5180MHz	13.78	171	0
2.	CH 2	5210MHz	13.27	171	0
3.	CH 3	5240MHz	13.50	171	0

6. POWER SPECTRAL DENSITY MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 17, 12'	Oct. 16, 13'

6.2. Block Diagram of Test Setup

The same as section.4.2.

6.3. Specification Limits [§15.407(a)-(1), RSS-210 A9.2 (1)]

For the band 5.15-5.25GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

6.4. Operating Condition of EUT

Test program GUI_Demo_01.05.17_7828 is used for enabling the EUT transmitting continuing.

6.5. Test Procedure

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW=1MHz
3. Set VBW≥3MHz
4. Detector=RMS (i.e., power averaging), if available, Otherwise, use sample detector mode.
5. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
6. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.

The measurement guideline was according to KDB 789033 v01r03 F)

The measurement guideline was according to RSS-Gen.

Pursuant to KDB 662911, we performed conducted tests for both antenna chains and submit test data measured on chain 0 as worse performance.

6.6. Test Results

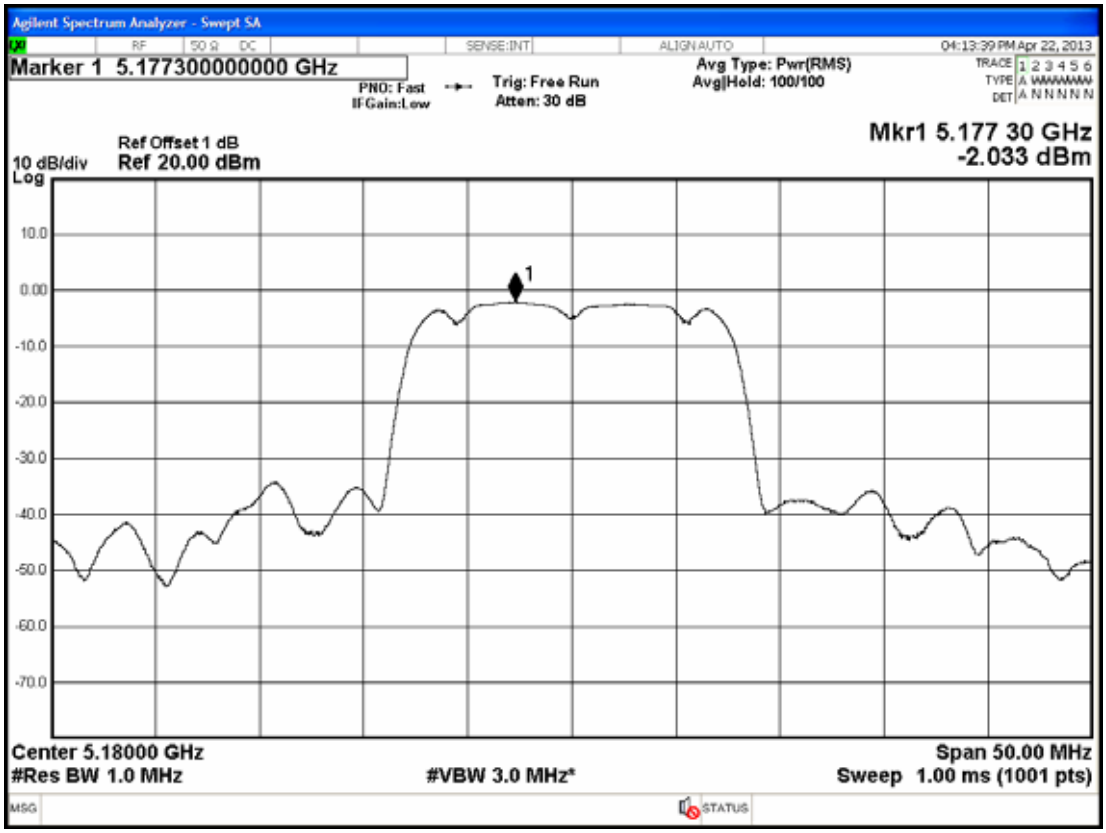
PASSED. All the test results are attached in next pages.

Test Date : Apr. 22, 2013 Temperature : 25℃ Humidity : 60%

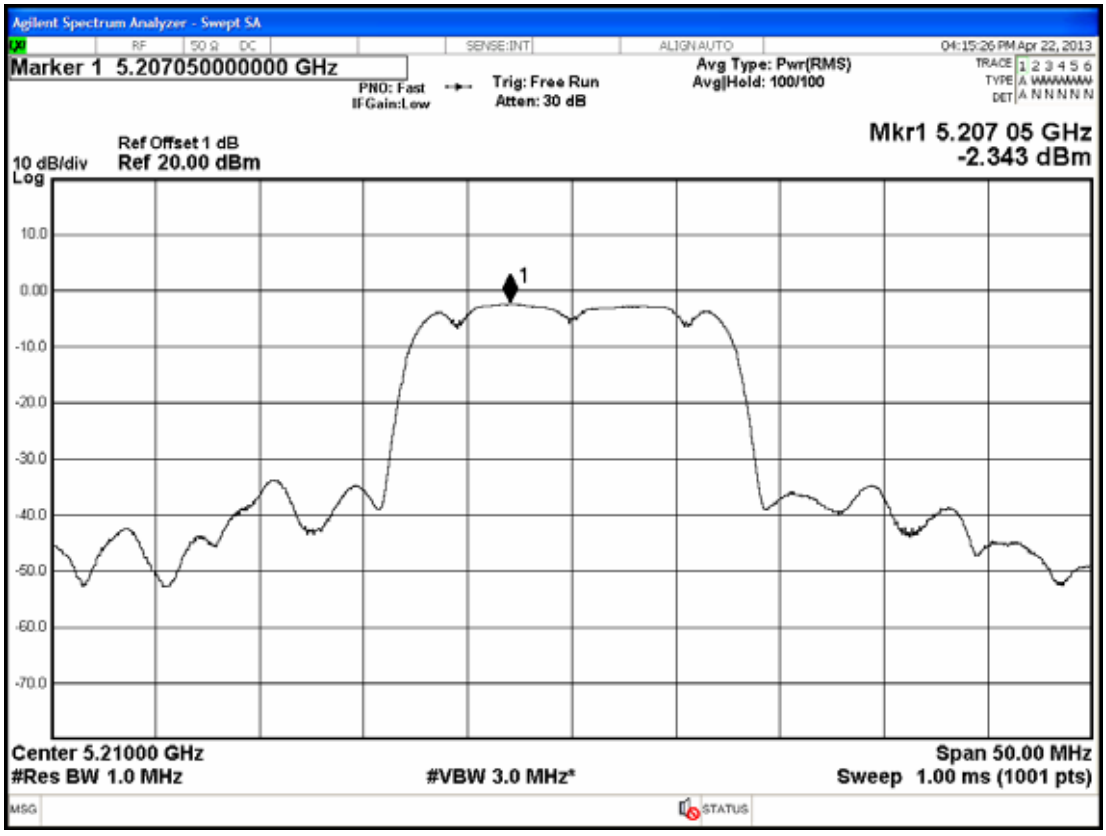
Mode	Channel	Frequency	**Power Spectral Density (dBm)**
1.	CH 1	5180MHz	**1.912**
2.	CH 2	5210MHz	**1.618**
3.	CH 3	5240MHz	**1.842**

[Limit: 4dBm]

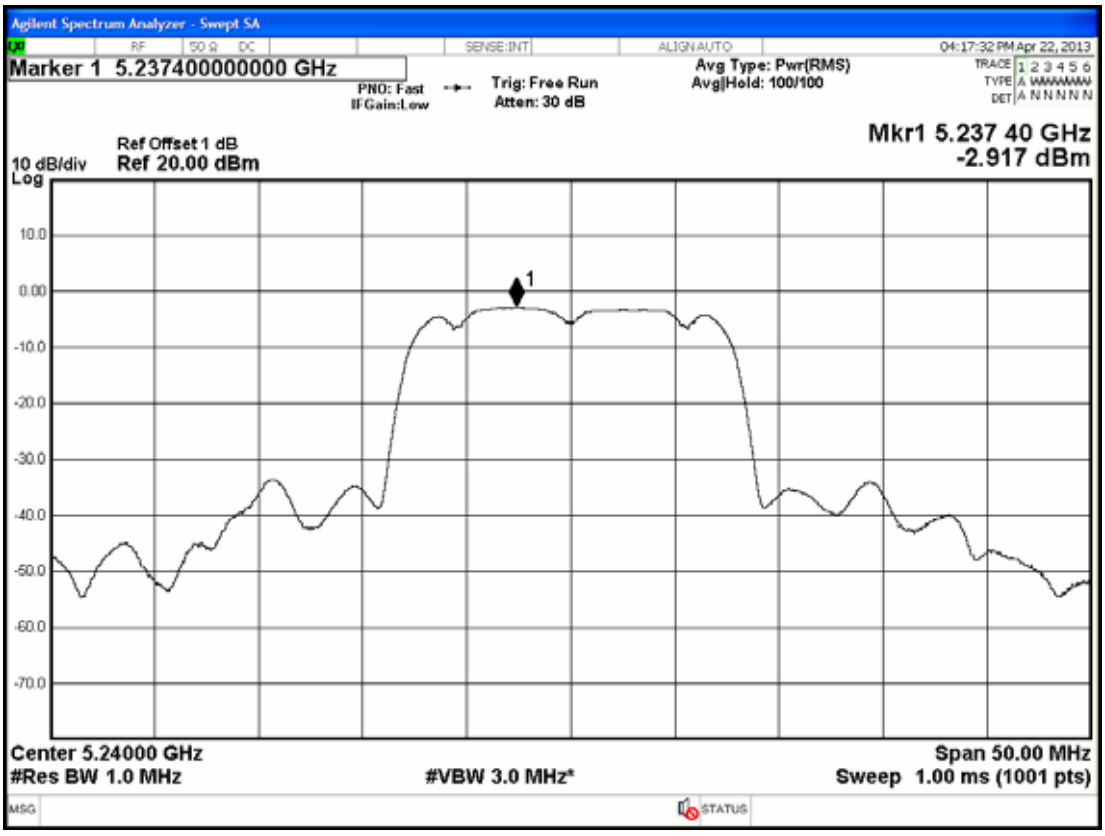
Frequency: 5180MHz



Frequency: 5210MHz



Frequency: 5240MHz



7. PEAK POWER EXCURSION MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 17, 12'	Oct. 16, 13'

7.2. Block Diagram of Test Setup

The same as section.4.2.

7.3. Specification Limits (§15.407(a)-(6))

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less.

7.4. Operating Condition of EUT

Test program GUI_Demo_01.05.17_7828 is used for enabling the EUT transmitting continuing.

7.5. Test Procedure

For 1st trace:
Find the maximum of the peak-max-hold spectrum.

1. Set RBW=1MHz
2. Set VBW≤3MHz
3. Detector=peak.
4. Trace mode=max-hold.
5. Allow the sweeps to continue until the trace stabilizes.
6. Use the peak serch function to find the peak of the spectrum.

For 2st trace:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW=1MHz
3. Set VBW≥3MHz
4. Detector=RMS (i.e., power averaging), if available, Otherwise, use sample detector mode.
5. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
6. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.

The measurement guideline was according to KDB 789033 v01r03 G)
The measurement guideline was according to RSS-Gen.

7.6. Test Results

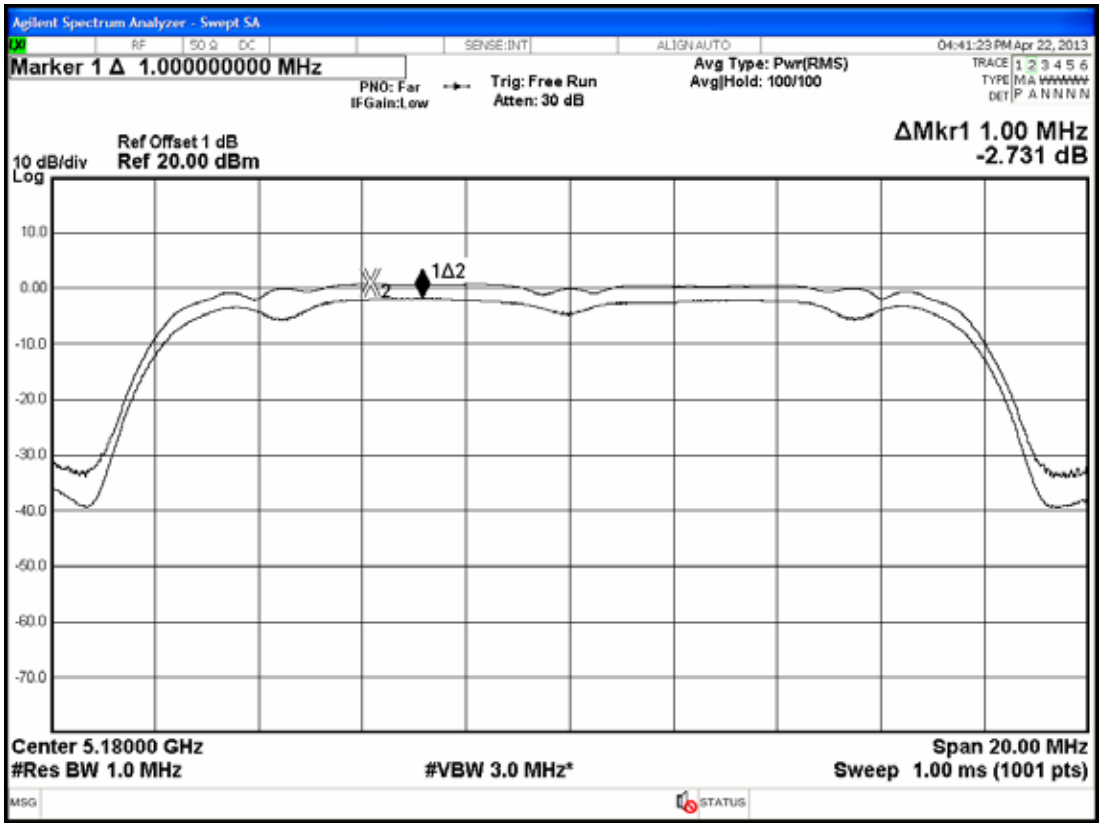
PASSED. All the test results are attached in next pages.

Test Date : Apr. 22, 2013 Temperature : 25℃ Humidity : 60%

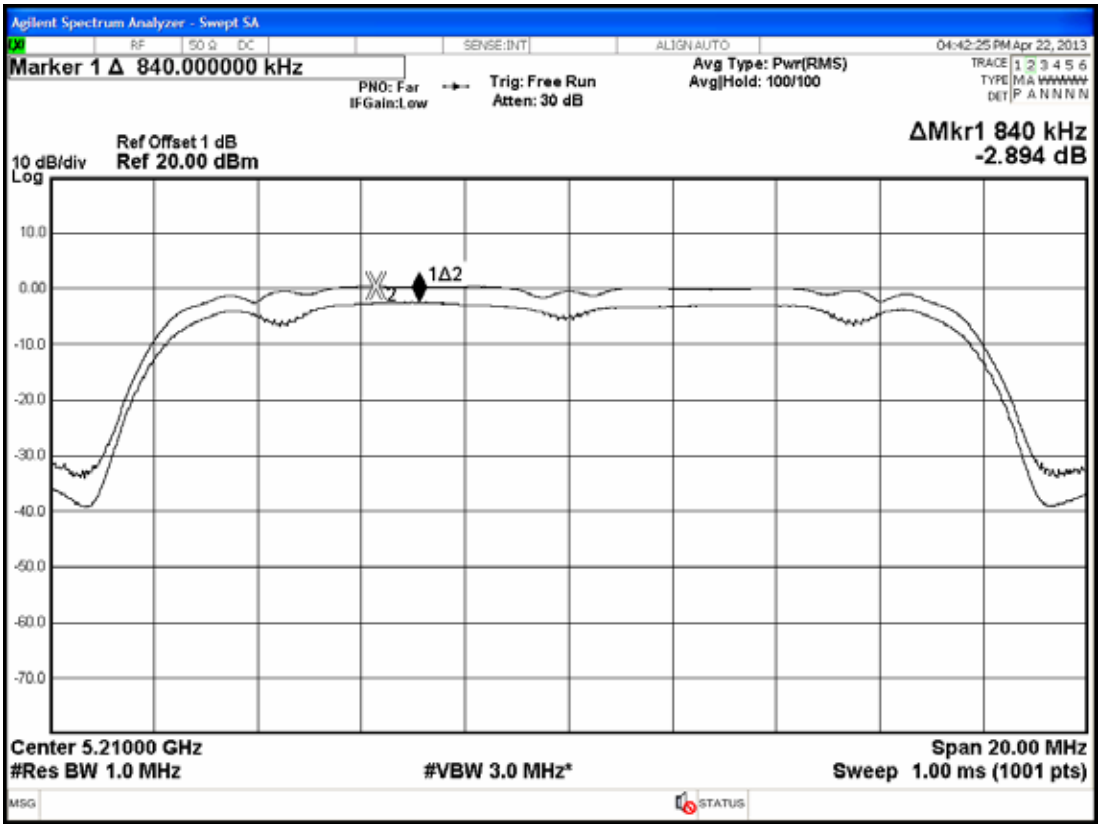
Mode	Channel	Frequency	**Peak Power Excursion**
1.	CH 1	5180MHz	**-2.731dB**
2.	CH 2	5210MHz	**-2.894dB**
3.	CH 3	5240MHz	**-2.978dB**

[Limit: 13dB]

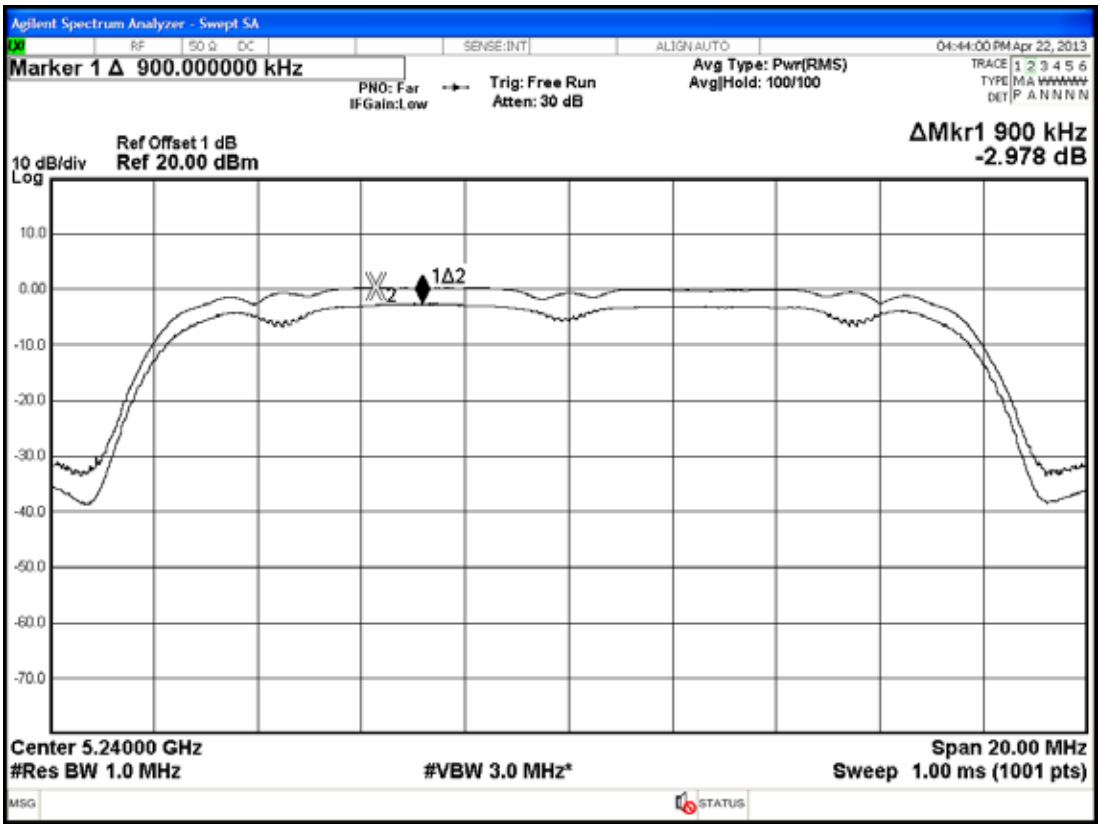
Frequency: 5180MHz



Frequency: 5210MHz



Frequency: 5240MHz



8. OCCUPIED BANDWIDTH 99% POWER MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the occupied bandwidth 99% power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Oct. 17, 12’	Oct. 16, 13’

8.2. Block Diagram of Test Setup

The same as section.4.2.

8.3. Specification [RSS-Gen §4.6.1]

The emission bandwidth may be taken as the bandwidth within which is 99% of the transmitter output power. The 20 dB bandwidth may also be used instead, when the spectral density has decreased by 20 dB from the in band spectral density. For the determination of the 20 dB bandwidth, the measurement bandwidth should be in the order of 1.0% of the emission bandwidth and VBW=3 times RBW.

8.4. Operating Condition of EUT

Test program GUI_Demo_01.05.17_7828 is used for enabling the EUT transmitting continuing.

8.5. Test Procedure

The RF output of EUT was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using 20kHz RBW and 62kHz VBW, set span = 15MHz and RBW close to 1% of span, VBW= 3*RBW span encompass complete evenlope.

The measurement guideline was according to RSS-Gen.

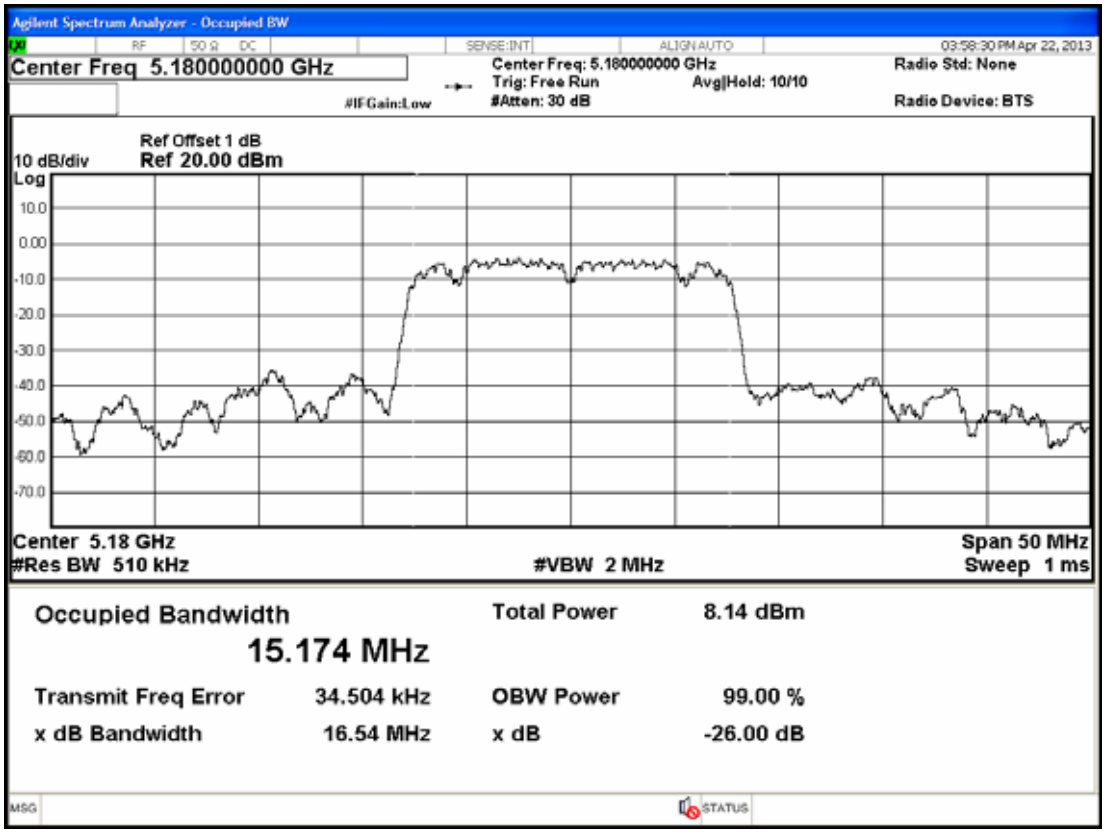
8.6. Test Results

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

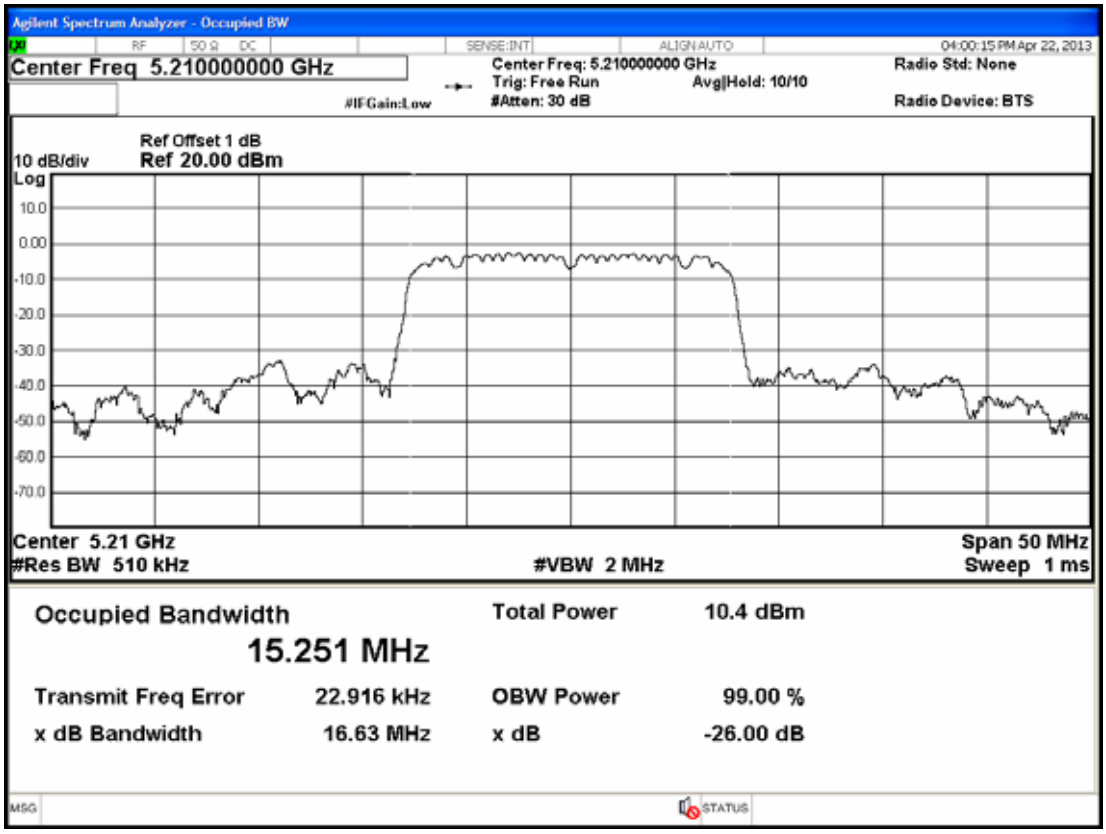
Test Date : Apr. 22, 2013 Temperature : 25℃ Humidity : 60%

Mode	Channel	Frequency	**Occupied Bandwidth**
1.	CH 1	5180MHz	**15.174MHz**
2.	CH 2	5210MHz	**15.251MHz**
3.	CH 3	5240MHz	**15.239MHz**

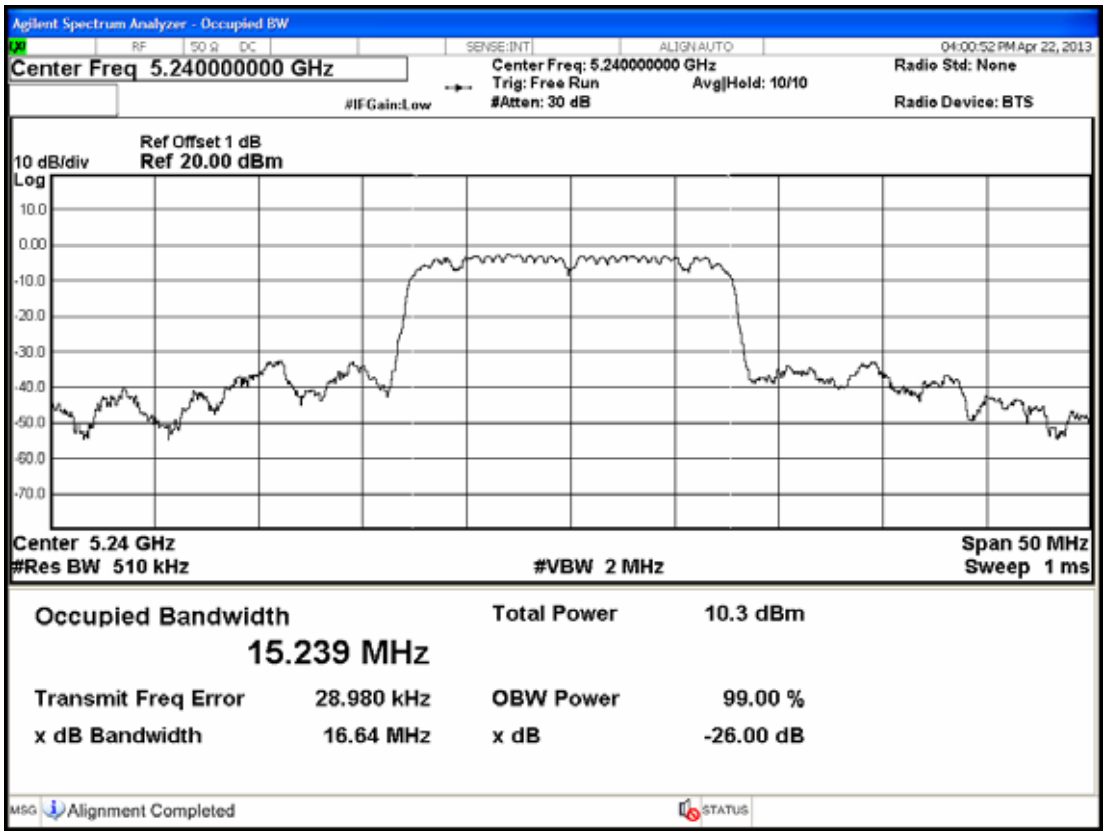
Frequency: 5180MHz



Frequency: 5210MHz



Frequency: 5240MHz



9. DEVIATION TO TEST SPECIFICATIONS

【NONE】