

FC

Test Report

Product Name	IEEE 802.11b/g/n WIFI/ BT Combo slim module
Model No	AW-NB086
FCC ID.	TLZ-NB086

Applicant	Azurewave Technologies. Inc.
Address	8F.,No.94, Baozhong Rd.,Xiandian,Taipei,Taiwan 231

Date of Receipt	July 28, 2011
Issue Date	Aug. 11, 2011
Report No.	118059R-RFUSP42V01
Report Version	V1.0

The test results relate only to the samples tested.

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Test Report Certification

Issue Date: Aug. 11, 2011

Report No.: 118059R-RFUSP42V01



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name	IEEE 802.11b/g/n WIFI/ BT Combo slim module
Applicant	Azurewave Technologies. Inc.
Address	8F.,No.94, Baozhong Rd.,Xiandian,Taipei,Taiwan 231
Manufacturer	Azurewave Technologies. Inc.
Model No.	AW-NB086
FCC ID.	TLZ-NB086
EUT Rated Voltage	DC 3.3V
EUT Test Voltage	AC 120V/60Hz
Trade Name	 AzureWave Technologies, Inc.
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2009
Test Result	Complied



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Testing Laboratory

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TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description	7
1.3. Tested System Details.....	8
1.4. Configuration of Tested System	8
1.5. EUT Exercise Software	8
1.6. Test Facility	9
2. Conducted Emission.....	10
2.1. Test Equipment.....	10
2.2. Test Setup	10
2.3. Limits	11
2.4. Test Procedure	11
2.5. Uncertainty	11
2.6. Test Result of Conducted Emission.....	12
3. Peak Power Output	14
3.1. Test Equipment.....	14
3.2. Test Setup	14
3.3. Limits	14
3.4. Test Procedure	14
3.5. Uncertainty	14
3.6. Test Result of Peak Power Output.....	15
4. Radiated Emission.....	19
4.1. Test Equipment.....	19
4.2. Test Setup	20
4.3. Limits	21
4.4. Test Procedure	22
4.5. Uncertainty	22
4.6. Test Result of Radiated Emission.....	23
5. RF antenna conducted test.....	39
5.1. Test Equipment.....	39
5.2. Test Setup	39
5.3. Limits	39
5.4. Test Procedure	39
5.5. Uncertainty	40
5.6. Test Result of RF antenna conducted test.....	41
6. Band Edge	65
6.1. Test Equipment.....	65
6.2. Test Setup	66
6.3. Limits	66
6.4. Test Procedure	67
6.5. Uncertainty	67
6.6. Test Result of Band Edge	68

7.	Occupied Bandwidth.....	84
7.1.	Test Equipment.....	84
7.2.	Test Setup	84
7.3.	Limits	84
7.4.	Test Procedure	84
7.5.	Uncertainty	84
7.6.	Test Result of Occupied Bandwidth	85
8.	Power Density	97
8.1.	Test Equipment.....	97
8.2.	Test Setup	97
8.3.	Limits	97
8.4.	Test Procedure	97
8.5.	Uncertainty	97
8.6.	Test Result of Power Density	98
9.	EMI Reduction Method During Compliance Testing	110
Attachment 1:	EUT Test Photographs	
Attachment 2:	EUT Detailed Photographs	

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	IEEE 802.11b/g/n WIFI/ BT Combo slim module
Trade Name	 AzureWave Technologies, Inc.
Model No.	AW-NB086
FCC ID.	TLZ-NB086
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	PIFA Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1.	INPAQ	WA-M-LA-03-007	PIFA Antenna	3.59 dBi for 2.4 GHz
2.	ACON	APP6P-700597	PIFA Antenna	2.92 dBi for 2.4 GHz
3.	ACON	APP6P-700598	PIFA Antenna	2.39 dBi for 2.4 GHz
4.	INPAQ	WA-F-LA-04-001	PIFA Antenna	3.38 dBi for 2.4 GHz
5.	INPAQ	WA-F-LA-04-002	PIFA Antenna	3.22 dBi for 2.4 GHz

Note:

1. The antenna of EUT is conform to FCC 15.203.
2. Only the higher gain antenna was tested and recorded in this report.

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2422 MHz	Channel 02:	2427 MHz	Channel 03:	2432 MHz	Channel 04:	2437 MHz
Channel 05:	2442 MHz	Channel 06:	2447 MHz	Channel 07:	2452 MHz		

Note:

1. The EUT is an IEEE 802.11b/g/n WIFI/ BT Combo slim module with a built-in 2.4GHz WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps 、802.11g is 6Mbps 、802.11n(20M-BW) is 7.2Mbps and 、802.11n(40M-BW) is 15Mbps)
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

1.2. Operational Description

The EUT is an IEEE 802.11b/g/n WIFI/ BT Combo slim module, This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps and the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11g).

The device provided of eight kinds of transmitting speed 7.2,14.4,21.7,28.9,43.3,57.8,65 and 72.2Mbps in 802.11n(20M-BW) mode and 15,30,45,60,90,120,135 and 150Mbps(40M-BW) the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n), The IEEE 802.11n is Multiple In, Single Out” (MISO) technology and one antennas to support 1(Transmit) * 2(Receive) MISO technology.

This IEEE 802.11b/g/n WIFI/ BT Combo slim module, compliant with IEEE 802.11b and IEEE 802.11g/n, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM) radio transmission, the IEEE 802.11b/g/n WIFI/ BT Combo slim module Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11g/n network.

The Main antenna is for WLAN with TX/RX mode, the Aux antenna is for WLAN RX mode and BT TX/RX function.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

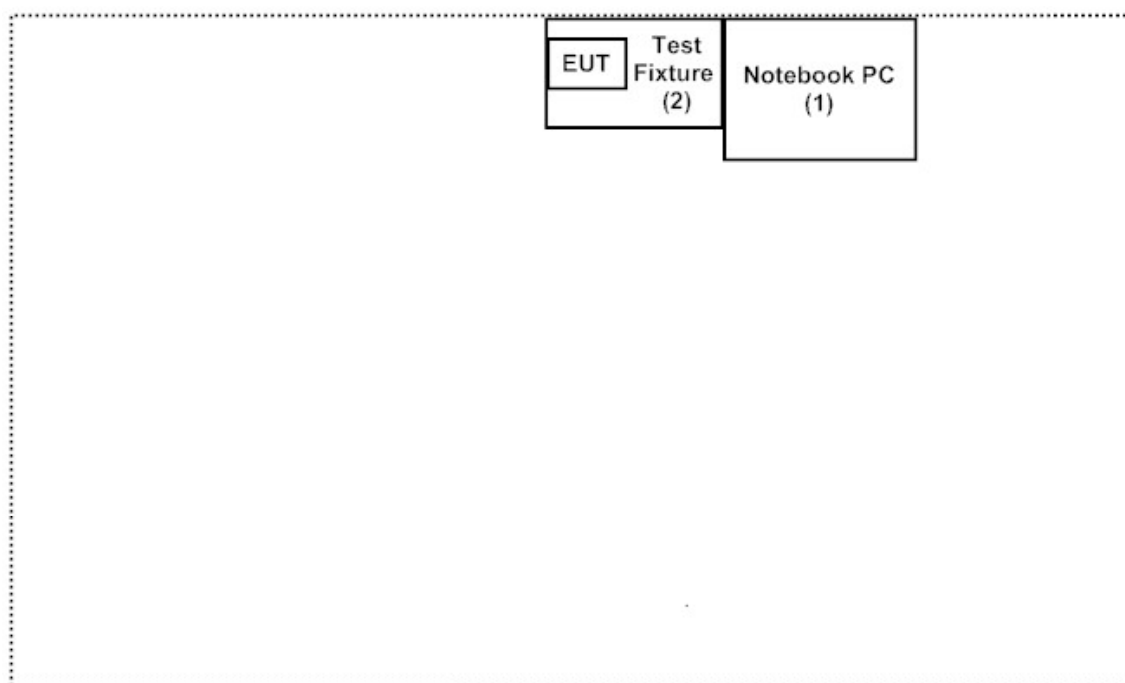
1.3. Tested System Details

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

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	Lenovo	2767	L3AZW4N	Non-Shielded, 1.8m
2	Test Fixture	Azurewave	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
N/A	N/A

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT and peripherals as shown in Section 1.4
- (2) Execute “ART2 (Ver2.2)” on the Notebook.
- (3) Configure the test mode, the test channel, and the data rate to start the continuous transmit
- (4) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from

Quietek Corporation's Web Site: <http://www.quietek.com/tw/ctg/cts/accreditations.htm>

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

<http://www.quietek.com/>

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Accreditation on NVLAP
NVLAP Lab Code: 200533-0



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FCC Accreditation Number: TW1014



2. Conducted Emission

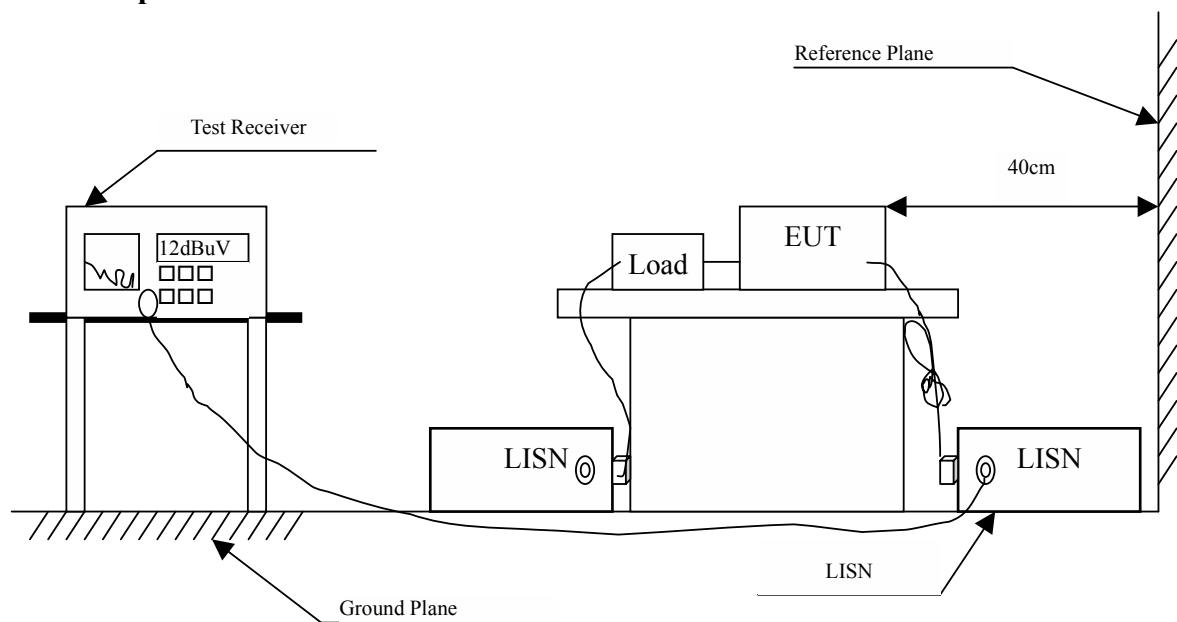
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2011	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2011	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2011	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2011	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
Line 1					
Quasi-Peak					
0.154	9.760	36.180	45.941	-19.945	65.886
0.209	9.701	30.360	40.061	-24.253	64.314
0.310	9.650	31.740	41.390	-20.039	61.429
0.408	9.647	31.340	40.987	-17.642	58.629
0.697	9.630	25.100	34.730	-21.270	56.000
16.021	9.991	21.640	31.631	-28.369	60.000
Average					
0.154	9.760	18.770	28.531	-27.355	55.886
0.209	9.701	18.520	28.221	-26.093	54.314
0.310	9.650	20.740	30.390	-21.039	51.429
0.408	9.647	20.340	29.987	-18.642	48.629
0.697	9.630	17.680	27.310	-18.690	46.000
16.021	9.991	15.040	25.031	-24.969	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.170	9.743	33.160	42.903	-22.526	65.429
0.279	9.667	34.000	43.667	-18.647	62.314
0.345	9.658	26.400	36.058	-24.371	60.429
0.466	9.640	25.520	35.160	-21.811	56.971
0.697	9.650	24.120	33.770	-22.230	56.000
17.650	10.010	21.080	31.090	-28.910	60.000
Average					
0.170	9.743	14.110	23.853	-31.576	55.429
0.279	9.667	20.610	30.277	-22.037	52.314
0.345	9.658	8.300	17.958	-32.471	50.429
0.466	9.640	12.410	22.050	-24.921	46.971
0.697	9.650	15.410	25.060	-20.940	46.000
17.650	10.010	14.450	24.460	-25.540	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Equipment

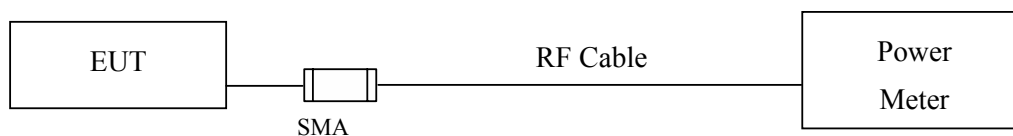
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2011
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2011

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

Conducted Measurement



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11			
		Measurement Level (dBm)				1		
01	2412	15.01	--	--	--	17.21	<30dBm	Pass
06	2437	15.24	15.23	15.23	15.2	17.37	<30dBm	Pass
11	2462	15.46	--	--	--	17.61	<30dBm	Pass

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	14.93	--	--	--	--	--	--	--	21.92	<30dBm	Pass
06	2437	16.26	16.23	16.23	16.2	16.18	16.14	16.14	16.13	22.66	<30dBm	Pass
11	2462	14.64	--	--	--	--	--	--	--	21.35	<30dBm	Pass

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2			
		Measurement Level (dBm)										
01	2412	14.42	--	--	--	--	--	--	--	21.55	<30dBm	Pass
06	2437	15.32	15.31	15.28	15.27	15.24	15.24	15.22	15.2	21.86	<30dBm	Pass
11	2462	13.92	--	--	--	--	--	--	--	20.96	<30dBm	Pass

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150			
		Measurement Level (dBm)										
01	2422	12.56	--	--	--	--	--	--	--	20.81	<30dBm	Pass
04	2437	15.25	15.24	25.24	25.23	15.21	15.18	15.19	15.17	21.87	<30dBm	Pass
07	2452	12.47	--	--	--	--	--	--	--	20.27	<30dBm	Pass

Note: Peak Power Output Value = Reading value on peak power meter + cable loss

4. Radiated Emission

4.1. Test Equipment

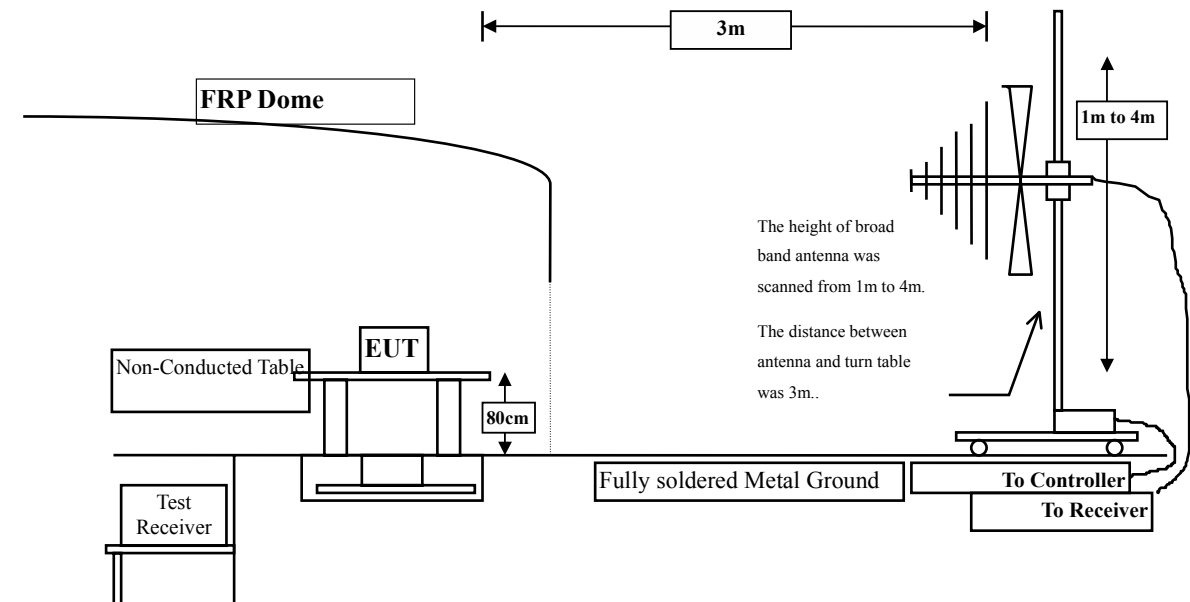
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2011
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2010
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2011
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2010
	X	Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2011
	X	Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

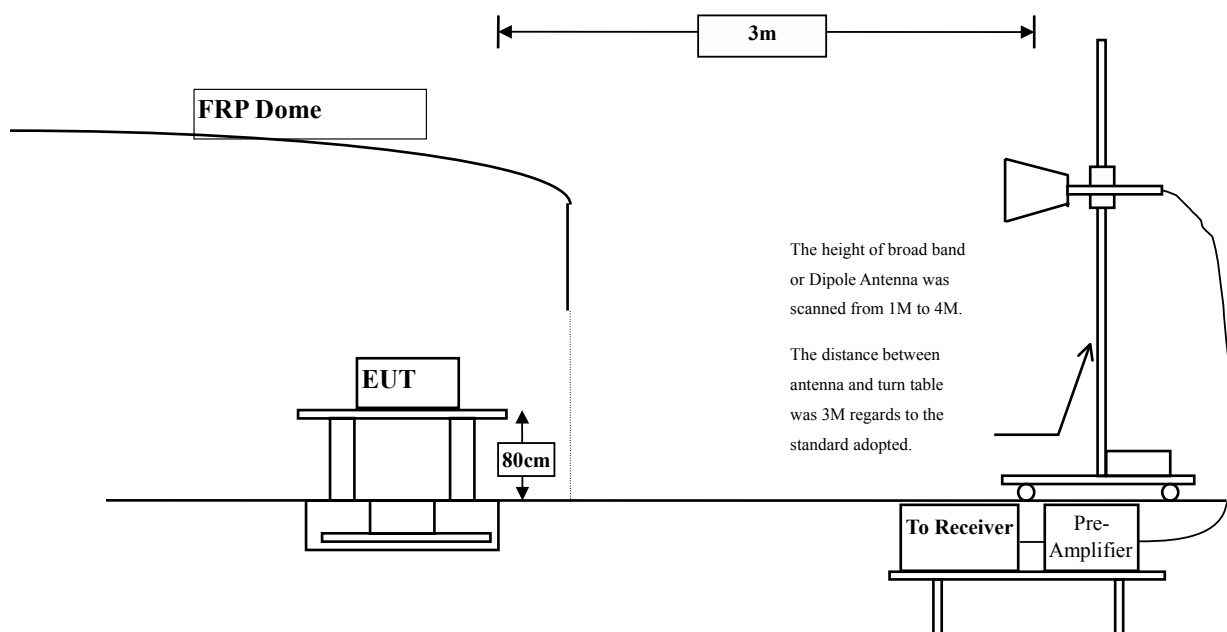
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The frequency range from 30MHz to 10th harmonics is checked.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	39.640	42.901	-31.099	74.000
7236.000	10.650	36.530	47.180	-26.820	74.000
9648.000	13.337	35.640	48.976	-25.024	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	46.100	52.521	-21.479	74.000
7236.000	11.495	35.780	47.275	-26.725	74.000
9648.000	13.807	36.950	50.756	-23.244	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	39.440	42.477	-31.523	74.000
7311.000	11.795	35.410	47.204	-26.796	74.000
9748.000	12.635	36.800	49.435	-24.565	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	45.410	51.221	-22.779	74.000
7311.000	12.630	35.650	48.279	-25.721	74.000
9748.000	13.126	37.390	50.516	-23.484	74.000
Average Detector:					
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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	40.550	43.407	-30.593	74.000
7386.000	12.127	35.890	48.018	-25.982	74.000
9848.000	12.852	37.300	50.153	-23.847	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	46.610	52.130	-21.870	74.000
7386.000	13.254	34.700	47.954	-26.046	74.000
9848.000	13.367	36.730	50.097	-23.903	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4824.000	3.261	39.860	43.121	-30.879	74.000
7236.000	10.650	36.690	47.340	-26.660	74.000
9648.000	13.337	36.690	50.026	-23.974	74.000

Average Detector:

--

Vertical

Peak Detector:

4824.000	6.421	44.270	50.691	-23.309	74.000
7236.000	11.495	36.330	47.825	-26.175	74.000
9648.000	13.807	36.310	50.116	-23.884	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4874.000	3.038	38.930	41.967	-32.033	74.000
7311.000	11.795	35.840	47.634	-26.366	74.000
9748.000	12.635	36.310	48.945	-25.055	74.000

Average Detector:

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Peak Detector:

4874.000	5.812	46.690	52.501	-21.499	74.000
7311.000	12.630	35.330	47.959	-26.041	74.000
9748.000	13.126	37.250	50.376	-23.624	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	40.260	43.117	-30.883	74.000
7386.000	12.127	35.140	47.268	-26.732	74.000
9848.000	12.852	36.300	49.153	-24.847	74.000
Average Detector:					
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Vertical					
Peak Detector:					
4924.000	5.521	46.770	52.290	-21.710	74.000
7386.000	13.254	34.830	48.084	-25.916	74.000
9848.000	13.367	36.150	49.517	-24.483	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.261	37.730	40.991	-33.009	74.000
7236.000	10.650	36.570	47.220	-26.780	74.000
9648.000	13.337	36.000	49.336	-24.664	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.421	43.040	49.461	-24.539	74.000
7236.000	11.495	36.440	47.935	-26.065	74.000
9648.000	13.807	36.590	50.396	-23.604	74.000
Average Detector:					
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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4874.000	3.038	37.790	40.827	-33.173	74.000
7311.000	11.795	35.550	47.344	-26.656	74.000
9748.000	12.635	36.940	49.575	-24.425	74.000

Average Detector:

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Vertical

Peak Detector:

4874.000	5.812	44.350	50.161	-23.839	74.000
7311.000	12.630	35.450	48.079	-25.921	74.000
9748.000	13.126	36.790	49.916	-24.084	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4924.000	2.858	38.880	41.737	-32.263	74.000
7386.000	12.127	35.430	47.558	-26.442	74.000
9848.000	12.852	36.690	49.543	-24.457	74.000

Average Detector:

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Vertical

Peak Detector:

4924.000	5.521	44.650	50.170	-23.830	74.000
7386.000	13.254	35.460	48.714	-25.286	74.000
9848.000	13.367	37.080	50.447	-23.553	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IEEE 802.11b/g/n WIFI/ BT Combo slim module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4844.000	3.171	38.510	41.681	-32.319	74.000
7266.000	11.162	36.270	47.432	-26.568	74.000
9688.000	12.964	38.400	51.365	-22.635	74.000

Average Detector:

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Vertical

Peak Detector:

4844.000	6.178	40.280	46.458	-27.542	74.000
7266.000	11.982	36.220	48.202	-25.798	74.000
9688.000	13.507	37.540	51.048	-22.952	74.000

Average Detector:

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Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.