

Certification of Compliance

CFR 47 Part 15 Subpart C

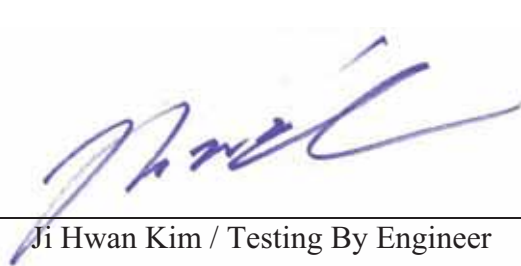
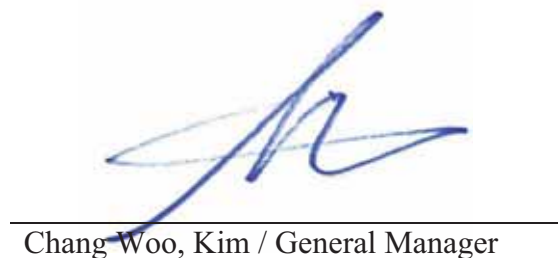
Order No. : STB13-2643
Test Report No. : W13WD-002
Applicant : Samsung SDS Co., Ltd.
Address of Applicant : 707-19, Youksam 2-dong, Kangnam-gu, Seoul, 135-918, Korea

Equipment Under Test (EUT)

Kind of Product : MiBUS OBE (BUS Management System)
Model Name : SMT-500P
FCC ID : P4YSMT-500P
Buyer Model(s) : N/A
Standards : FCC CFR Title 47 Part 15 Subpart C (15.247):2012
ANSI C63.4:2003, ANSI C63.10:2009

Date of Receipt : 27 September, 2013
Date of Test : 01 ~ 08 October, 2013
Date of Issue : 14 October, 2013

Test Result : ☒ **Positive** ☐ **Negative**


Ji Hwan Kim / Testing By Engineer
Chang Woo, Kim / General Manager

In the configuration tested, the EUT complied with the standards specified above.

Remarks :

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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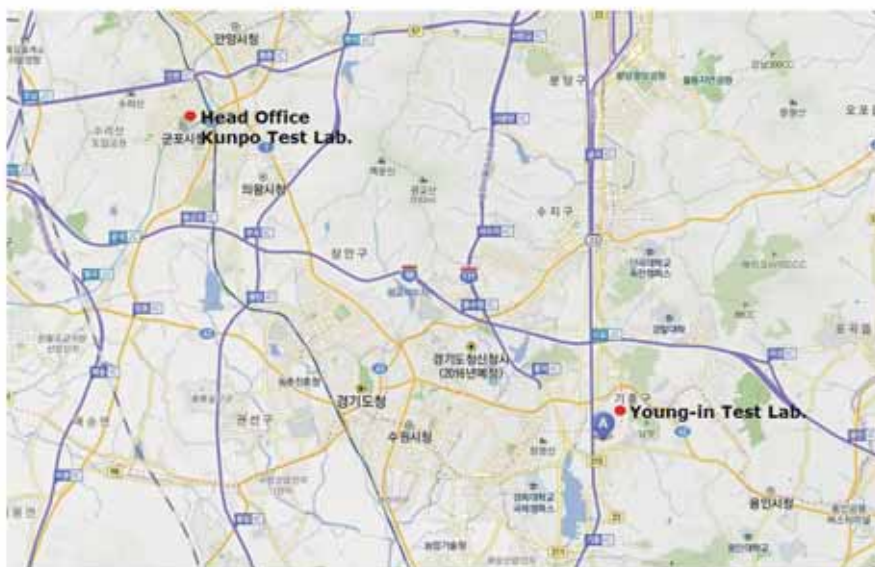
1. General Information

1.1 Information of Test Laboratory.

FCC E-Filing : Registration Number:323115

Name	:	Standard Bank Co.,Ltd.
Address Kunpo Test Lab. (Head Office)	:	#507,508 Dongyoung Central Tower, 847-2 Keumjeong-dong, Kunpo City, Kyunggi-Do, Korea
Yong-in Test Lab.	:	#390 Bora-dong, Giheung-gu, Young-in city, Kyunggi-Do, Korea
Radiated Emission (OATS)	:	#390 Bora-dong, Giheung-gu, Young-in city, Kyunggi-Do, Korea
Tel/Fax	:	+82-31-393-9394 ~ 5 / +82-31-393-9392, 9303

Web site : <http://www.standardbank.co.kr> E-mail : telecom@standardbank.co.kr



We , Standard Bank Co.,Ltd. are an independent EMC and RF and Safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025:

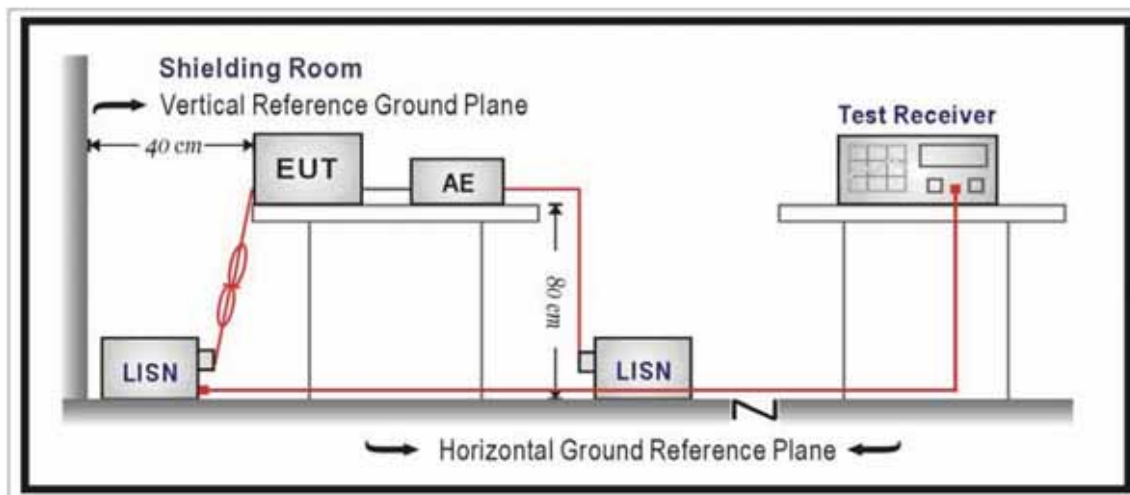
1.2 Description of Test

Conducted Emissions:

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 /50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/50 uH 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 on conducted measurement.

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



Limit Of Conducted Emission:

Test Specification

: According to FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency (MHz)	Limit (dBuV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56 *	56 to 46 *
0.5 to 5	56	46
5 to 30	60	50

- Note : * Decrease with the logarithm of the frequency

Radiated Emissions:

The measurement was performed over the frequency range of 30 MHz to 1 GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120 kHz.

Procedure of Test Preliminary measurements were made at 3 meter using bi-log antennas, and spectrum analyzer to determine the frequency producing the max. Emission in Semi-Anechoic Chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn-table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 MHz to 1000 MHz using bi-log antenna. Above 1 GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using bi-log antenna or horn antenna. The 3 m Full Chamber have been verified in regular for its normalized site attenuation. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120 kHz or 1 MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever determined the worst-case emission. (The bandwidth below 1 GHz setting on the field strength meter is 120 kHz and above 1 GHz is 1 MHz.)

Radiated Emissions Test, 9 kHz to 30 MHz(Magnetic Field Test):

1. The preliminary radiated measurements were performed to determine the frequency producing the maximum emissions at a distance of 3 meters according to Section 15.31(f)(2).
2. The EUT was placed on the top of the 0.8-meter height, 1 x 1.5 meter non-metallic table.
3. Emissions from the EUT are maximized by adjusting the orientation of the Loop antenna and rotating the EUT on the turntable. Manipulating the system cables also maximizes EUT emissions if applicable.
4. To obtain the final measurement data, each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector with specified bandwidth.

Limit Of Radiated Emission :

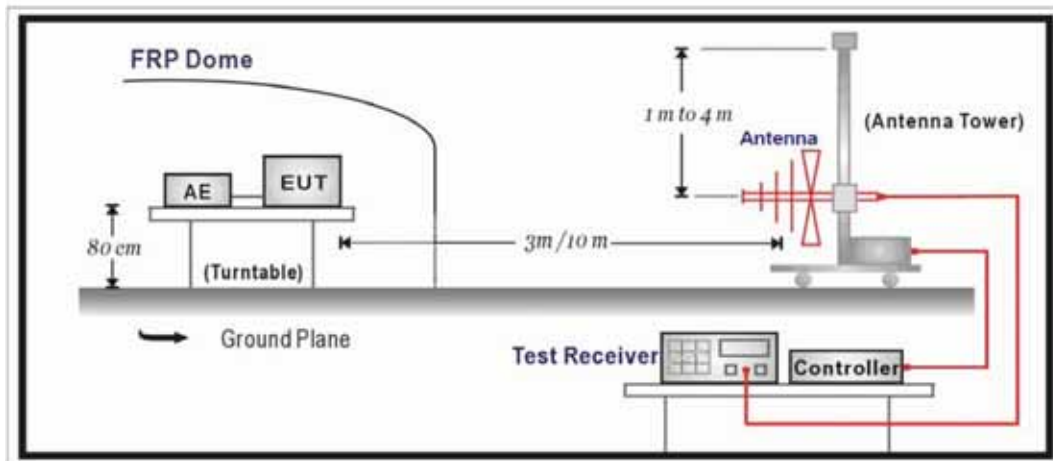
Test Specification

: According to FCC CFR Title 47 Part 15 Subpart C Section 15.209

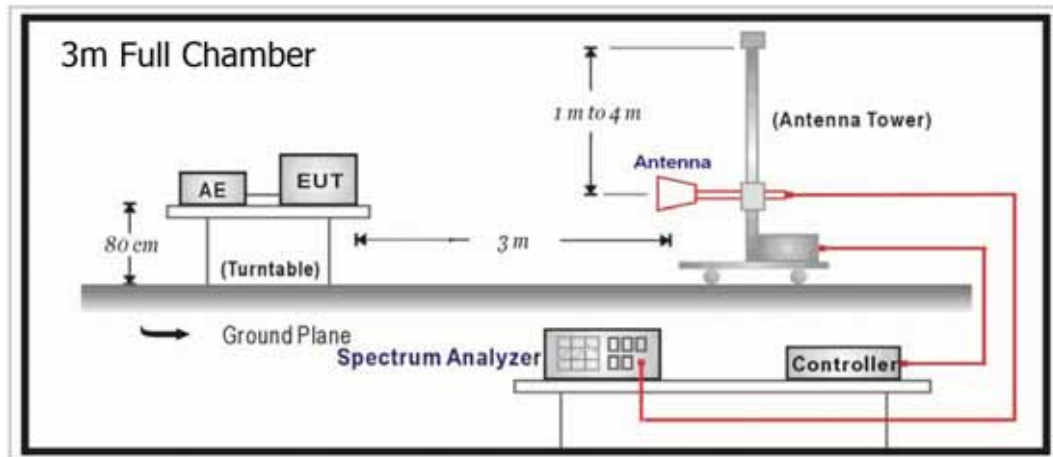
Limits		
Frequency (MHz)	uV/meter	dBuV/meter
30-88	100	40.00
88-216	150	43.52
216-960	200	46.02
Above 960	500	53.98

- Note :
1. $RF\ Voltage(dBuV) = 20 \log RF\ Voltage(uV)$
 2. In the Above Table, the tighter limit applies at the band edges.
 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.

Below 1GHz Test Setup:



Above 1GHz Test Setup:



1.3 Measurement Uncertainty Calculations

Conducted Emissions

Type	Contribution	Probability Distribution	Uncertainty	Remark
B	Receiver Level	normal (k=2)	±0.0577 dB	Rlevel
	LISN			
	Attenuation : LISN-receiver	normal (k=2)	±0.0577 dB	Aatt
	Voltage Division Factor	normal (k=2)	±0.1155 dB	Ddivision
	Cable	normal (k=2)	±0.025 dB	Ccable
	Receiver			
	Input Impedance	normal (k=2)	±0.0115 dB	Iimpedance
	QP Sine-Wave Voltage Accuracy	normal (k=2)	±0.0981 dB	Aaccuracy
	QP-Pulse Amplitude Sensibility	normal (k=2)	±0.5312 dB	Ssensitivity
	QP-Pulse Frequency Response	normal (k=2)	±0.0981 dB	Rresponse
	Random Noise	normal (k=2)	±0.0346 dB	Rrandom
	Mismatch	U-Shaped	+0.4041/-0.4619 dB	CISPR Theory
	AMN to Receiver			
A	System Repeatability	Std deviation	±0.0761 dB	Ssystem
	Cable loss	Std deviation	±0.0017 dB	CCL
Combined Standard Uncertainty		normal	± 1.6439 dB	
Expanded Uncertainty U		normal (k=2)	± 3.2878 dB	(k=2, 95 %)

Radiated Emission

Type	Contribution	Probability Distribution	Uncertainty	Remark
B	Antenna	normal (k=2)	±0.288 dB	Afactor
	Factor			Iinterpolation
	Frequency interpolation			
	Height variation	rectangular	±1.155 dB	Hheight
	Direcvalupsy difference	rectangular	±0.577 dB	Ddirect
	Phase center location	rectangular	±0.025 dB	Pphase
	Cable loss	normal (k=2)	±0.025 dB	Ccable
	Receiver			
	Input Impedance	normal (k=2)	±0.012 dB	Iimpedance
	QP Sine-Wave Voltage Accuracy	normal (k=2)	±0.098 dB	Aaccuracy
	QP-Pulse Amplitude Sensibility	normal (k=2)	±0.531 dB	Ssensitivity
	QP-Pulse Frequency Response	normal (k=2)	±0.098 dB	Rresponse
	Random Noise	normal (k=2)	±0.035 dB	Rrandom
	Mismatch : AMN – receiver $\left \Gamma_{\text{antenna}} \right = 0.33$ $\left \Gamma_{\text{receiver}} \right = 0.33$	U-Shaped	+0.520/-0.577 dB	CISPR Theory
	Site imperfection	Triangular	±1.633 dB	Ssite
	Table height	normal (k=2)	±0.058 dB	Stable
A	System Repeatability	Std deviation	±0.039 dB	Ssystem
Combined standard Uncertainty		normal	±2.335 dB	
Expanded Uncertainty U		normal (k=2)	± 4.67 dB	(k=2, 95 %)

1.4 Manufacturer Information

Manufacturer : Samsung SDS Co., Ltd.
 Address : 707-19, Youksam2-dong, Kangnam-gu, Seoul, 135-918, Korea

1.5 General Description of EUT

Name : Samsung SDS Co., Ltd.
 Model No. : 707-19, Youksam2-dong, Kangnam-gu, Seoul, 135-918, Korea
 FCC ID : P4YSMT-500P
 Serial No. : N/A

1.6 Details of EUT

Item		Specification
Wi-Fi (IEEE 802.11b/g)	Frequency Range	2412 ~ 2462 MHz
	Modulation Technique	DSSS/OFDM
	Number of Channel	11
	Antenna Type	Microstrip PCB Antenna
	Antenna Gain	2.5 dBi
Operating Voltage		DC 24.0 V

- Note : Please refer to user's manual.

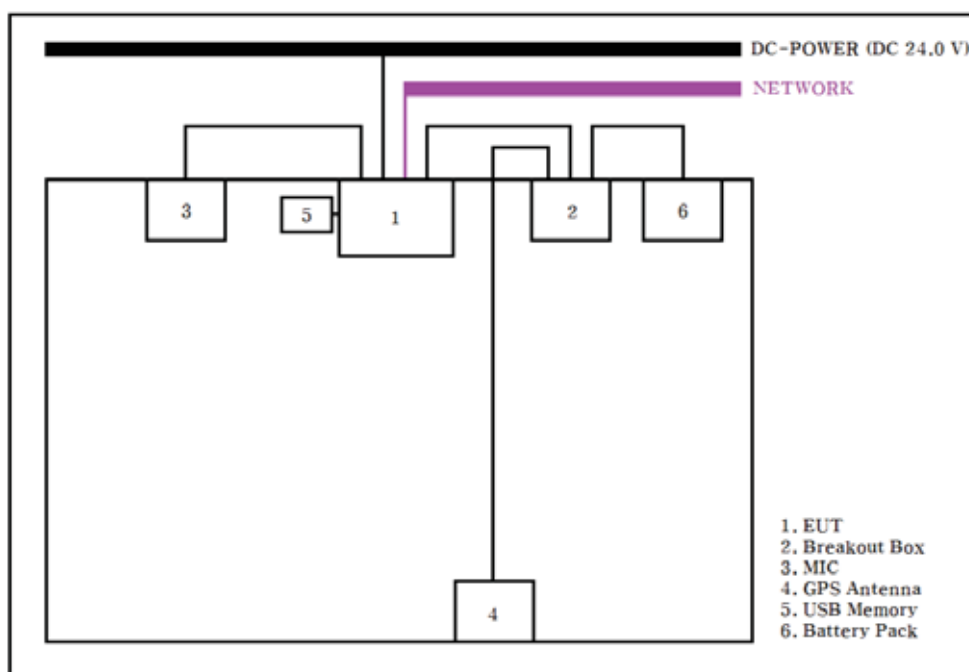
1.7 Description of Support Units

Product	Model No.	Serial No.	Manufacturer	Certification
Bus Information System	SMT-500T	N/A	Samsung SDS Co., Ltd.	EUT
Breakout Box	N/A	N/A	Samsung SDS Co., Ltd.	EUT
MIC	N/A	N/A	Samsung SDS Co., Ltd.	-
Battery Pack	N/A	N/A	Samsung SDS Co., Ltd.	EUT
GPS Antenna	KGM-610G	N/A	KND Global, Inc.	-

1.8 Cable List

Device Form		Device To		Cable Spec.	
Name	I/O Port	Name	I/O port	Length(m)	Shield
EUT	PIM (Multi Port)	Breakout Box	PIM (Multi Port)	1.2	Shielded
	USB	USB Memory	-	-	-
	MIC(RJ45)	MIC	-	1.5	Shielded
	LAN(RJ45)	NETWORK	LAN(RJ45)	-	Unshielded
Breakout Box	GPS	GPS Antenna	-	2.9	Shielded
	-	Battery Pack	POWER (2 PIN)	0.5	Unshielded
	DC-IN	DC Power Supply	DC-OUT	1.8	Unshielded

1.9 Test Set-Up Configuration



1.10 Test Methodology And Configuration

Wi-Fi(IEEE 802.11b/g/) all device activating state.

1.11 Standards Applicable for Testing

Table of tests to be carried out under FCC CFR 47 Part 15 Subpart C

Test Standards	Status
FCC CFR 47 Part 15 Subpart C	A
Deviation from Standard	No Deviation

- Note : A : Indicates that the test is applicable
 N/A : Indicates that the test is not applicable

2. SUMMARY

Test Descriptions

- Conducted Emission	N/A
- The EUT uses the DC power	
- Peak Power Output	PASS
- Test result	
- Radiated Emission	PASS
- Radiated Emission Result	
- Band Edge	PASS
- Test result	
- 6 dB Band	PASS
- Test Result	
- Power Density	PASS
- Test Result	
- Antenna Requirement	PASS
- Test Result	

- Note : * The EUT power use Bus's battery. Operating voltage is DC 24 V.

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

3. Equipment Under Test Condition

3.1 Peak Power Output

3.1.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next of Cal.
Power Meter	Aglient	E4416A	GB41050459	12/03/2013
Peak & Avg. Power Sensor	Aglient	E9327A	US40440771	12/03/2013
DC Power Supply	DIGITAL	DRP-303D	5070395	01/09/2014

- Note : 1. The calibration interval of the above test instrument is 12 month and the calibrations are traceable to RRA, KRISS, KTL and HCT.
2. The calibration interval of horn, Loop Ant. and bi-log Ant. is 24 months

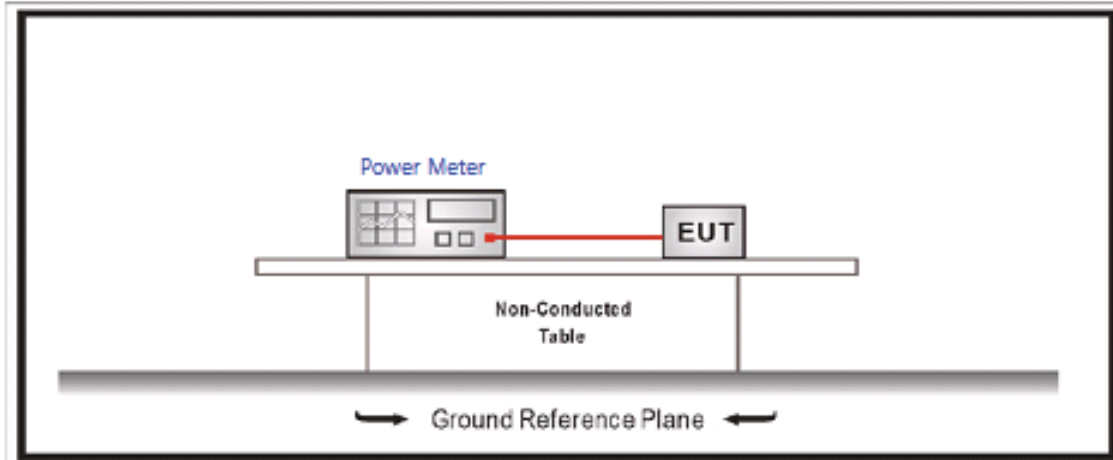
3.1.2 Limit

The maximum peak output power of the intentional radiator shall not exceed the following :

1. According to § 15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz : 1Watt.
2. According to § 15.247(b)(4), the conducted output power limit specified in paragraph(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph(c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs(b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi

3.1.3 Test Configuration

RF Conducted Measurement:



3.1.4 Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.3 PKPM1 Peak power meter method.

3.1.5 Peak Power Test Result

Test Item	Peak Power Output
Test Mode	IEEE 802.11b
Test Site	RF Shielded Room
Measurement Method	Conducted

Ch. No.	Freq. (MHz)	Average Power for difference Data Rate (Mbps)				Peak Power	Limit (dBm)	Result
		1	2	5.5	11	5.5		
		Measurement Level (dBm)						
01	2412	8.90	8.85	9.18	8.91	11.68	< 30	Pass
06	2437	9.10	9.07	9.42	9.23	12.03	< 30	Pass
11	2462	9.40	9.38	9.73	9.58	12.15	< 30	Pass

- Note : 1. Peak Power Output Value = Reading value on peak power meter + Cable loss
 2. 30 dBm = 1 watt.

Test Item	Peak Power Output
Test Mode	IEEE 802.11g
Test Site	RF Shielded Room
Measurement Method	Conducted

Ch. No.	Freq. (MHz)	Average Power for difference Data Rate (Mbps)								Peak Power	Limit (dBm)	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	8.40	8.32	8.29	8.33	8.14	8.12	8.14	7.97	14.89	< 30	Pass
06	2437	8.68	8.54	8.46	8.56	8.35	8.35	8.40	8.29	15.40	< 30	Pass
11	2462	9.00	8.90	8.76	8.97	8.71	8.70	8.76	8.66	15.69	< 30	Pass

- Note : 1. Peak Power Output Value = Reading value on peak power meter + Cable loss
 2. 30 dBm = 1 watt.

3.2 Radiated Emission

3.2.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next of Cal.
Horn Ant.	A.H. Systems	SAS-571	1559	05/08/2014
Double Ridge Horn Ant.	ETS	3116	00062504	05/27/2015
Bi-log Ant.	Schwarzbeck	VULB 9160	3292	04/11/2015
Loop Ant.	Rohde&Schwarz	HFH2-Z2	862077/017	10/26/2014
EMI Test Receiver	LIGNex1	ER-265	L0811B009	04/09/2014
Microwave Amplifier	Hewlett-Packard	8394B	3205A04032	12/03/2013
DC Power Supply	DIGITAL	DRP-303D	5070395	01/09/2014
True RMS Multimeter	FLUKE	87-V	14990137	12/03/2013

- Note : 1. The calibration interval of the above test instrument is 12 month and the calibrations are traceable to RRA, KRISS, KTL and HCT.
2. The calibration interval of horn, Loop Ant. and bi-log Ant. is 24 months

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable loss, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

$$\text{Peak} = \text{Reading} + \text{Corrected Factor}$$

Where

Corr. Factor = Antenna Factor + Cable loss - Amplifier Gain (if any)

3.2.2 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto shall not exceed the level of field strength specified below:

FCC Part 15 Subpart C paragraph 15.247(a) Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3 m)		Field Strength of Harmonics (3 m)		
	mV/m	dBuV/m		mV/m	dBuV/m
2400 - 2483.5	50	94 (Avg.)	114 (Peak)	500	54 (Avg.) 74 (Peak)

- Note :
1. RF Field Strength (dBuV) = $20 \log \text{RF Voltage}(\mu\text{V})$
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector

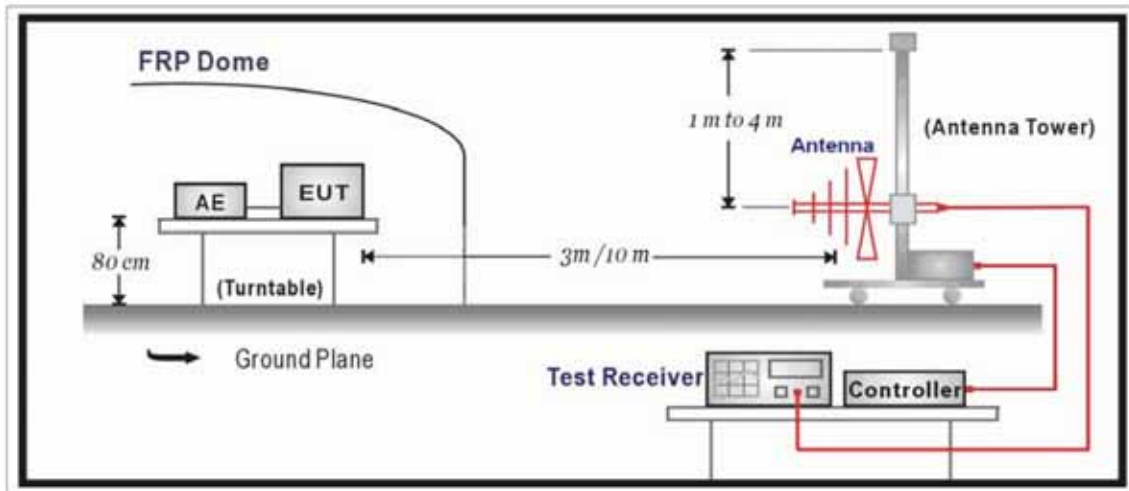
Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dBuV/m)
0.009-0.490	3	$20 \log 2400/F \text{ (kHz)} + 80$
0.490-1.705	3	$20 \log 24000/F \text{ (kHz)} + 40$
1.705-30	3	$20 \log 30 + 40$
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

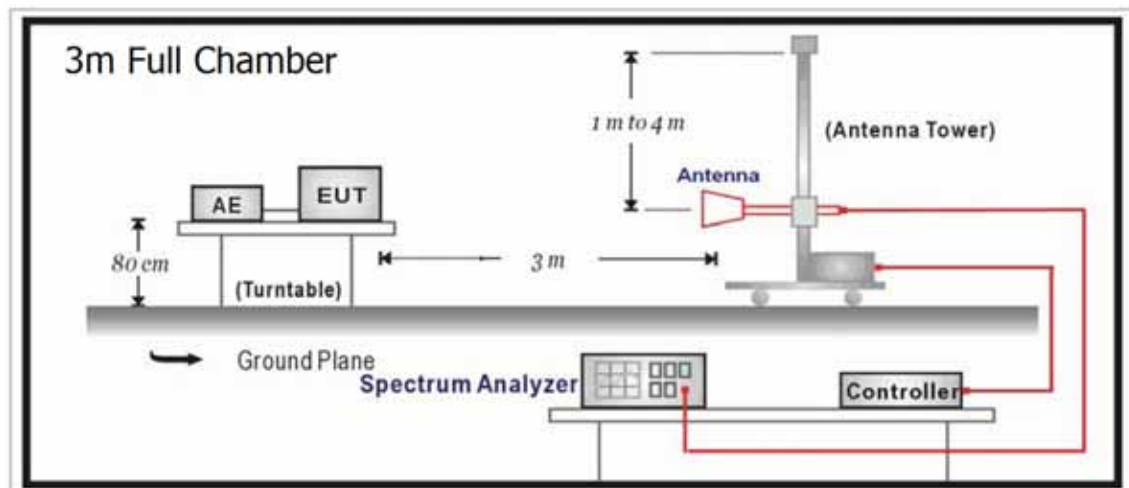
- Note :
1. RF voltage (dBuV) = $20 \log \text{RF Voltage}(\mu\text{V})$
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
 4. This device used to install a within vehicular. The location of EUT measurements has the Y-plane(Stand).
 5. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30 – 1000 MHz. As to 1 – 26.5 GHz, the final emission level got using PK and AV detector.
 6. If measurement is made at 3m distance.

3.2.3. Test Configuration

Below 1GHz Test Setup:



Above 1GHz Test Setup:



3.2.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2009 and tested according to DTS test procedure of ANSI C63.10: 2009 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: 2003 on radiated measurement.

The resolution bandwidth below 1 GHz setting on the field strength meter is 120 kHz and above 1 GHz is 1 MHz. Radiated emission measurements below 1 GHz are made using broadband Bilog antenna and above 1 GHz are made using Horn Antennas.

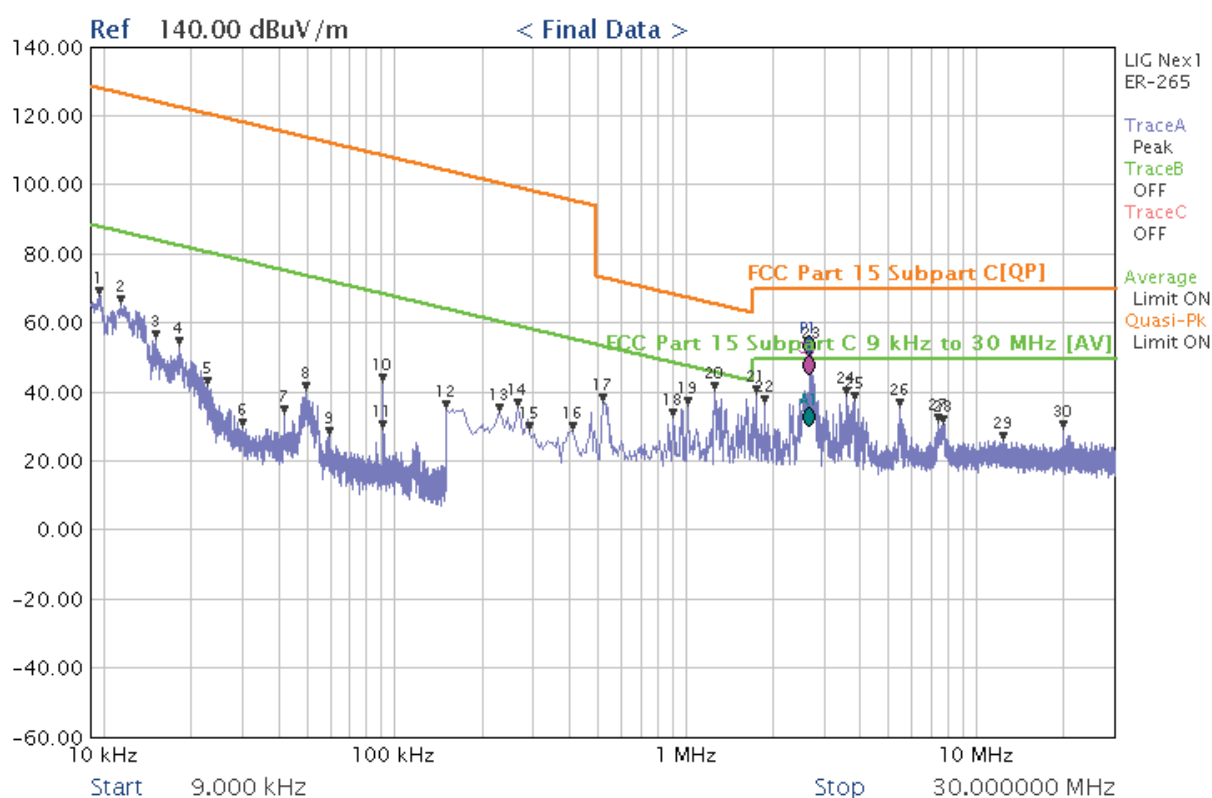
The measurement is divided into the Preliminary Measurement and the Final Measurement.

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

3.2.5 Radiated Emission Result

3.2.5.1 Radiated Emission Result (9 kHz to 30 MHz)

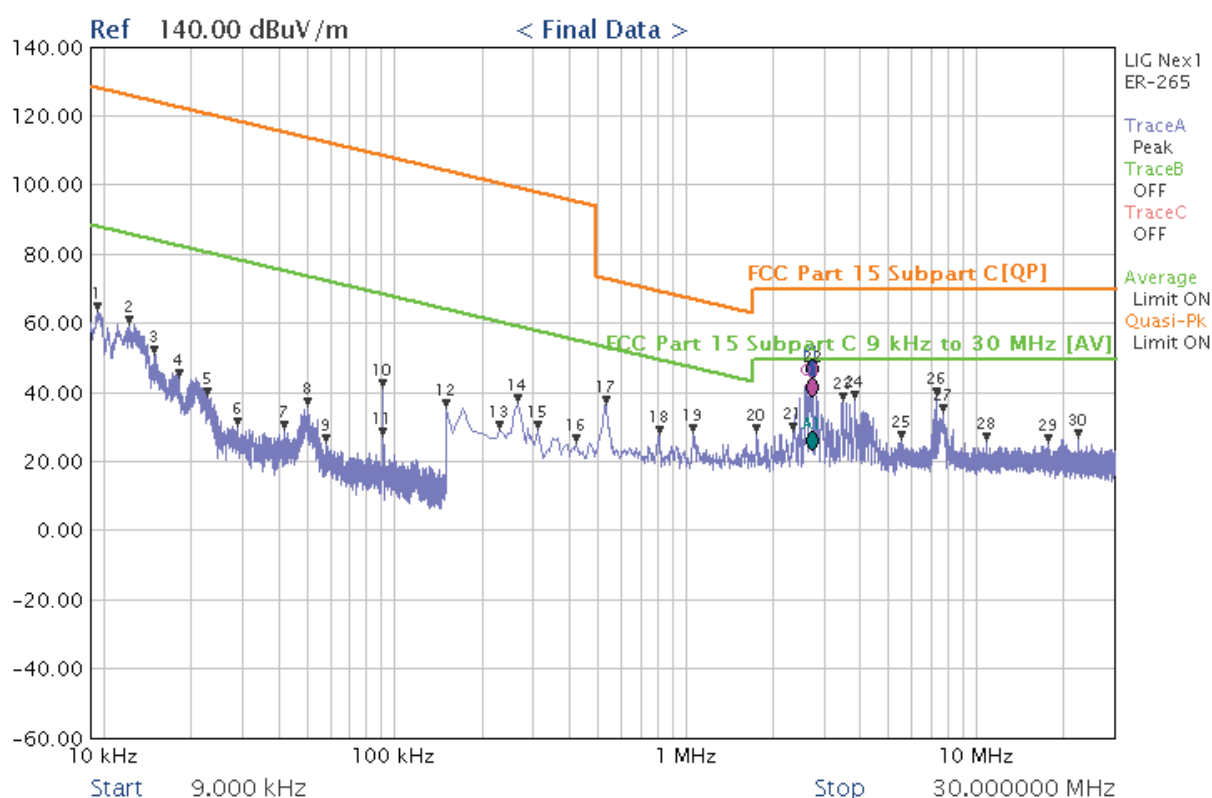
Test Item	Radiated Emission (9 kHz to 30 MHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1, 6, 11	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
1.265	19.22	H	21.02	0.23	-	45.59	40.47	5.12
1.743	17.94	H	21.23	0.25	-	49.50	39.42	10.08
2.667	25.45	H	21.65	0.25	-	49.50	47.35	2.15

- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
2. The location of EUT measurements has the Y-plane(Stand).

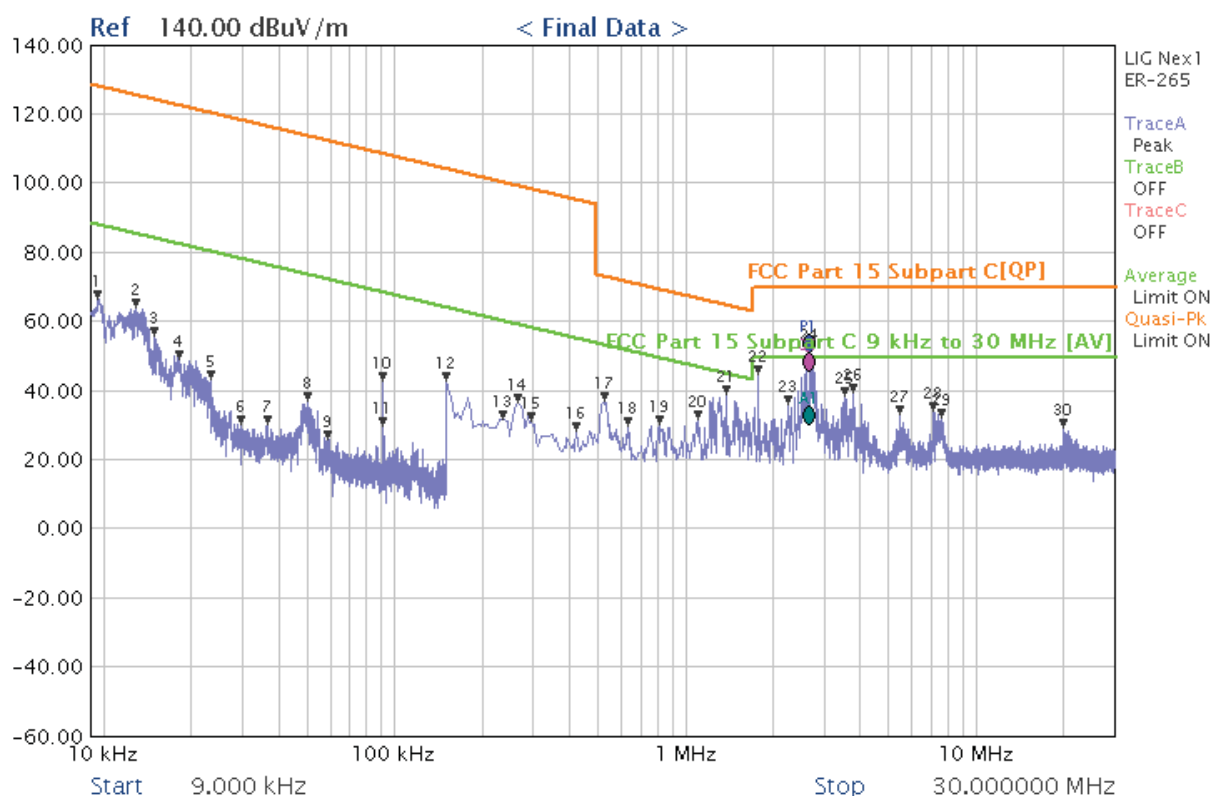
Test Item	Radiated Emission (9 kHz to 30 MHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1, 6, 11	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
2.728	19.22	V	21.68	0.25	-	49.50	41.15	8.35

- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
 2. The location of EUT measurements has the Y-plane(Stand).

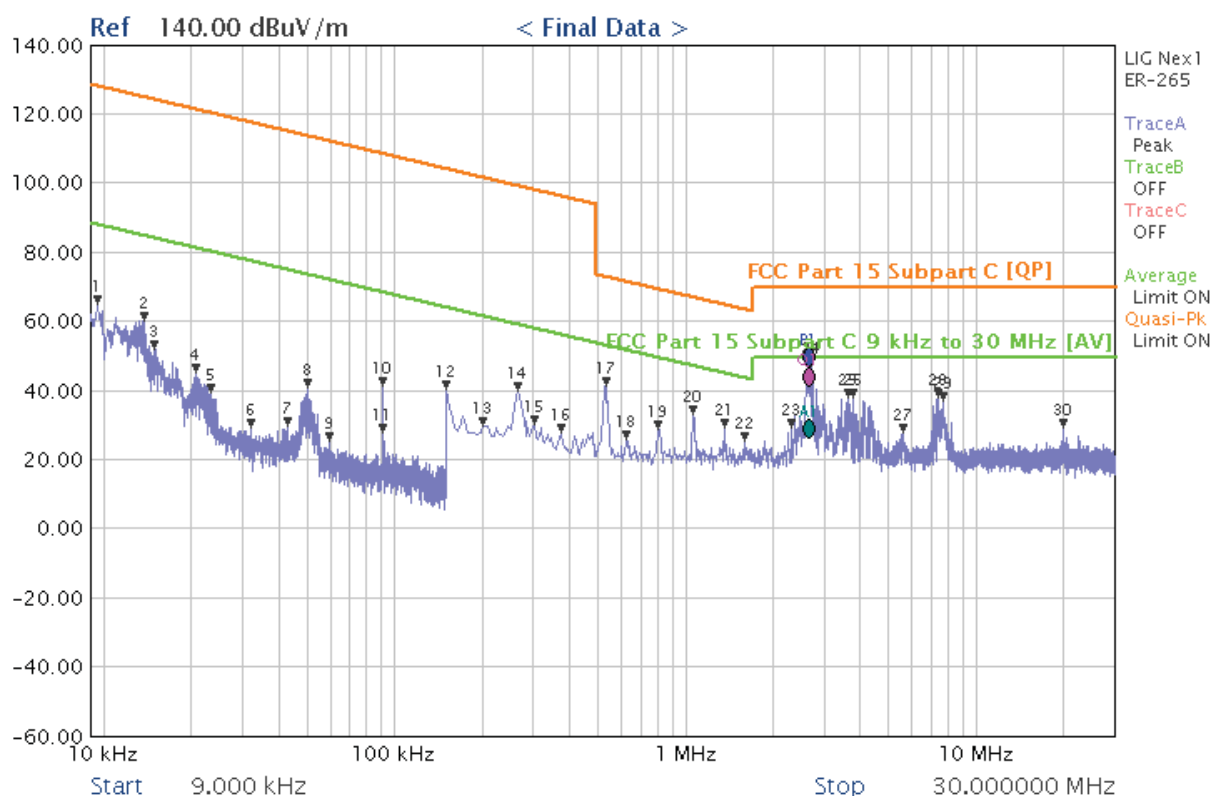
Test Item	Radiated Emission (9 kHz to 30 MHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1, 6, 11	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
1.374	17.35	H	21.07	0.24	-	44.87	38.66	6.21
1.772	23.20	H	21.25	0.25	-	49.50	44.70	4.80
2.668	25.55	H	21.65	0.25	-	49.50	47.45	2.05

- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
2. The location of EUT measurements has the Y-plane(Stand).

Test Item	Radiated Emission (9 kHz to 30 MHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1, 6, 11	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical

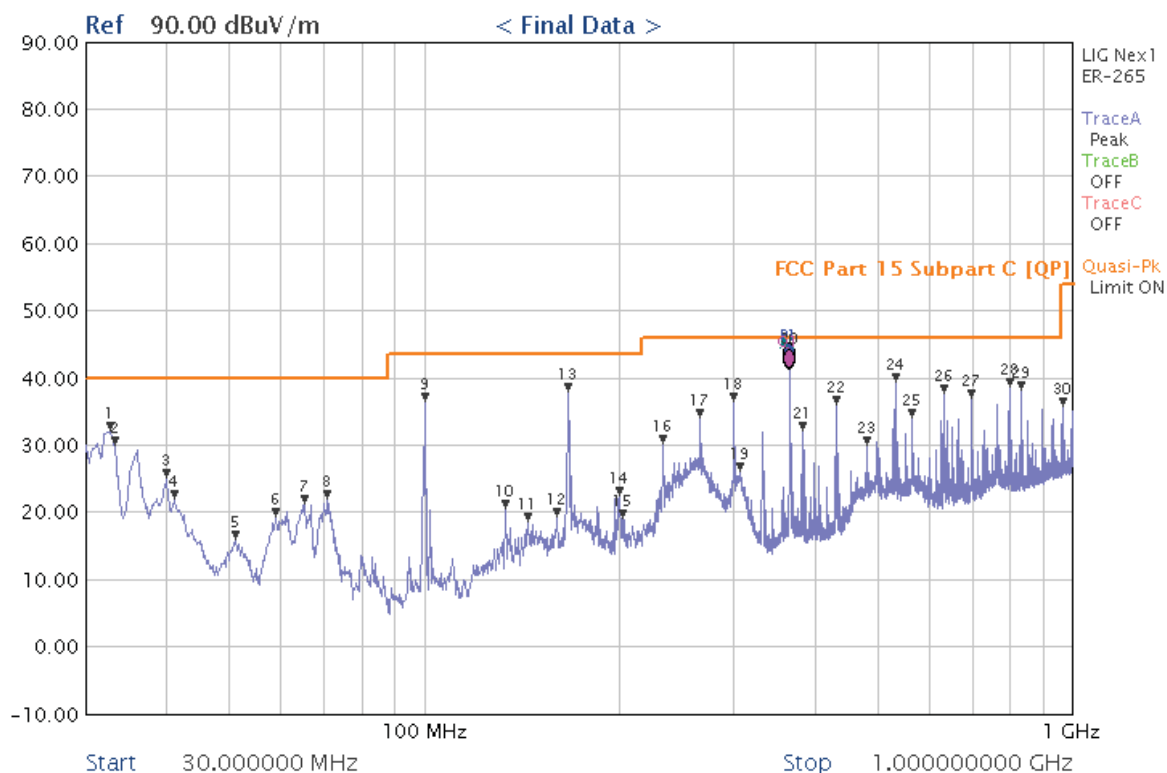


Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
2.678	21.52	V	21.65	0.25	-	49.50	43.42	6.08

- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
2. The location of EUT measurements has the Y-plane(Stand).

3.2.5.2 Radiated Emission Result (30 MHz to 1 GHz)

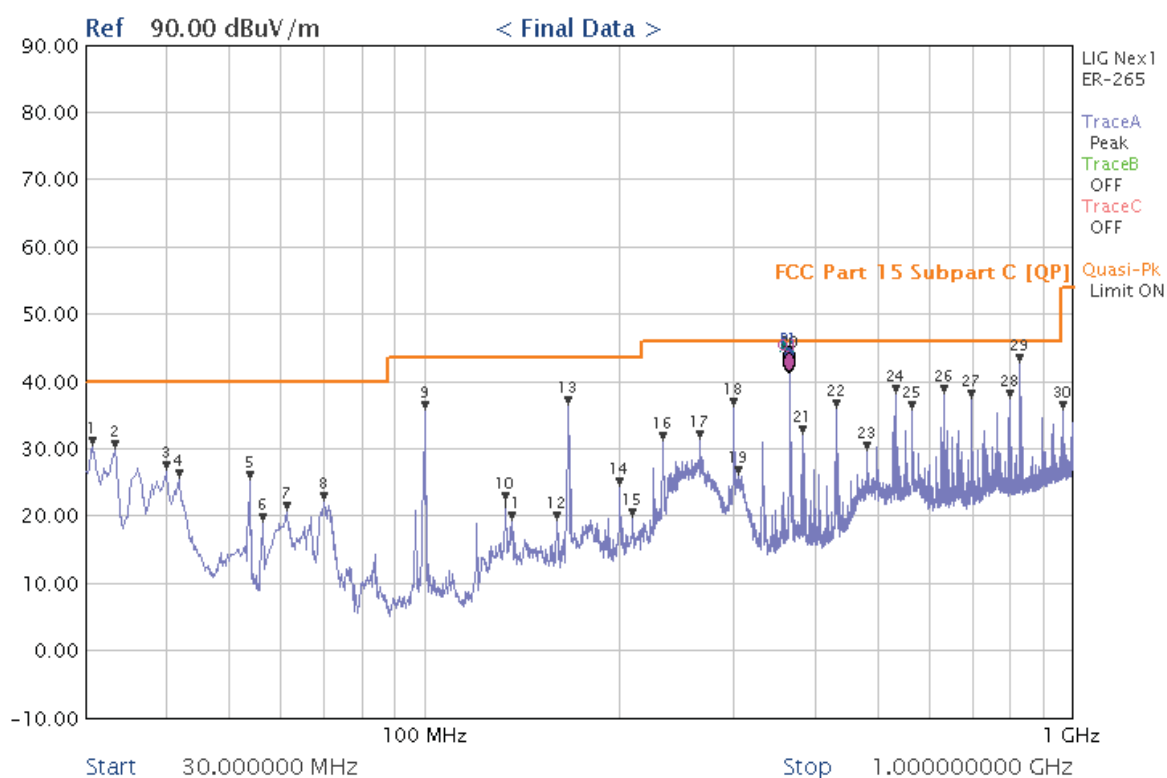
Test Item	Radiated Emission (30 MHz to 1 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal & Vertical



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
99.99	23.43	V	11.49	1.49	-	43.50	36.41	7.09
166.66	27.34	V	8.87	1.82	-	43.50	38.03	5.47
365.85	24.53	H	15.30	3.00	-	46.00	42.83	3.17

- Note : 1. RF voltage (dBuV) = $20 \log \text{RF Voltage } (\mu\text{V})$
 2. The location of EUT measurements has the Y-plane(Stand).

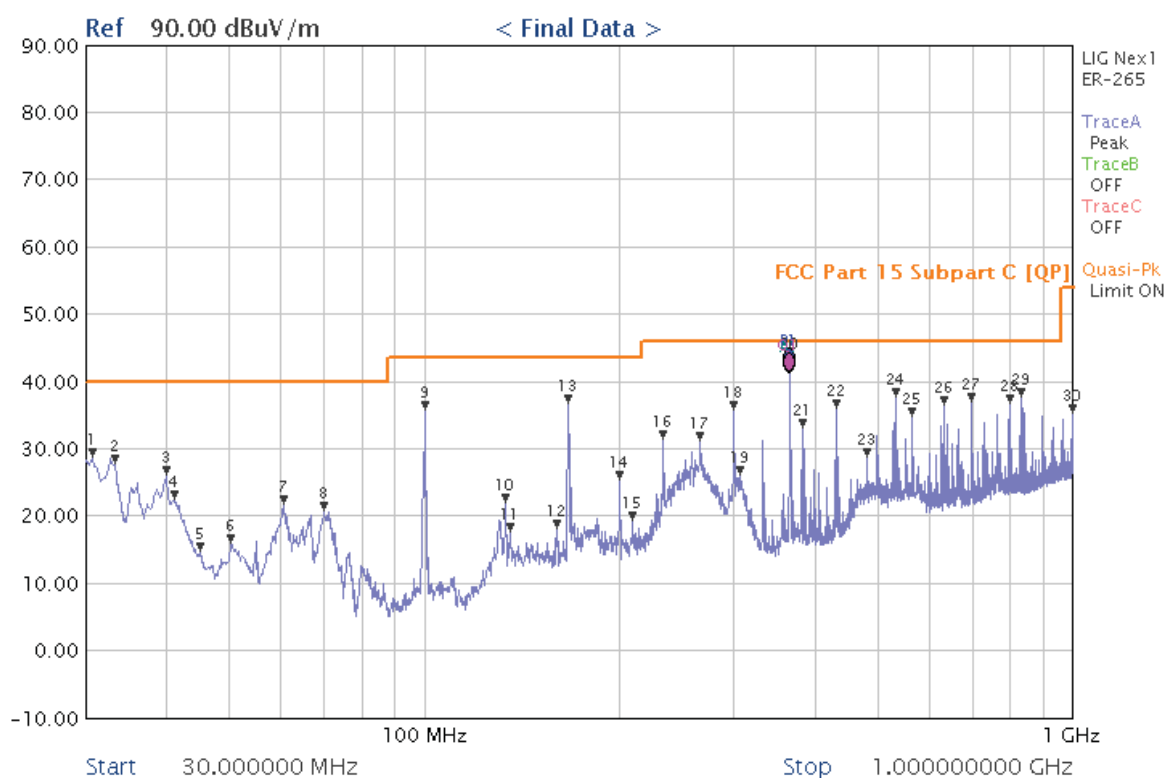
Test Item	Radiated Emission (30 MHz to 1 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 6 (2437 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal & Vertical



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
99.98	22.74	V	11.49	1.49	-	43.50	35.72	7.78
166.66	25.86	V	8.87	1.82	-	43.50	36.55	6.95
365.84	24.59	H	15.30	3.00	-	46.00	42.89	3.11
830.18	16.27	H	22.36	4.19	-	46.00	42.82	3.18

- Note :
1. RF voltage (dBuV) = 20 log RF Voltage (uV)
 2. The location of EUT measurements has the Y-plane(Stand).

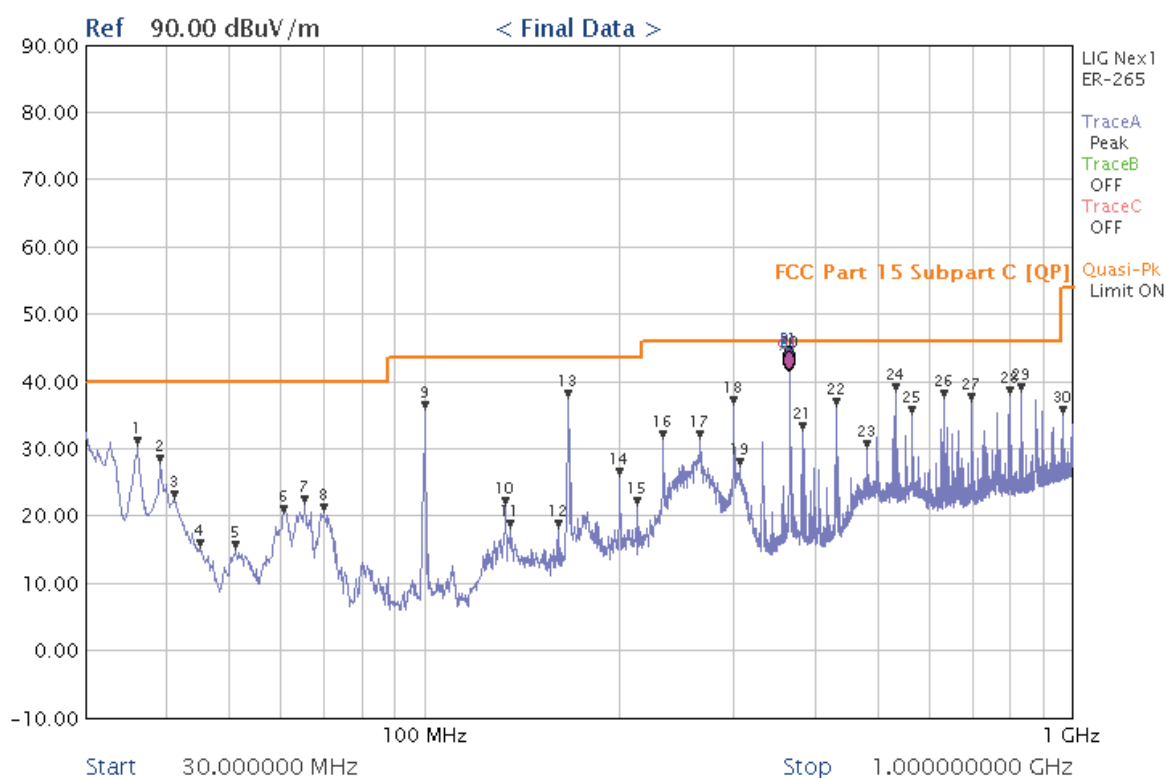
Test Item	Radiated Emission (30 MHz to 1 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal & Vertical



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
166.65	25.95	V	8.87	1.82	-	43.50	36.64	6.86
365.85	24.54	H	15.30	3.00	-	46.00	42.84	3.16

- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
2. The location of EUT measurements has the Y-plane(Stand).

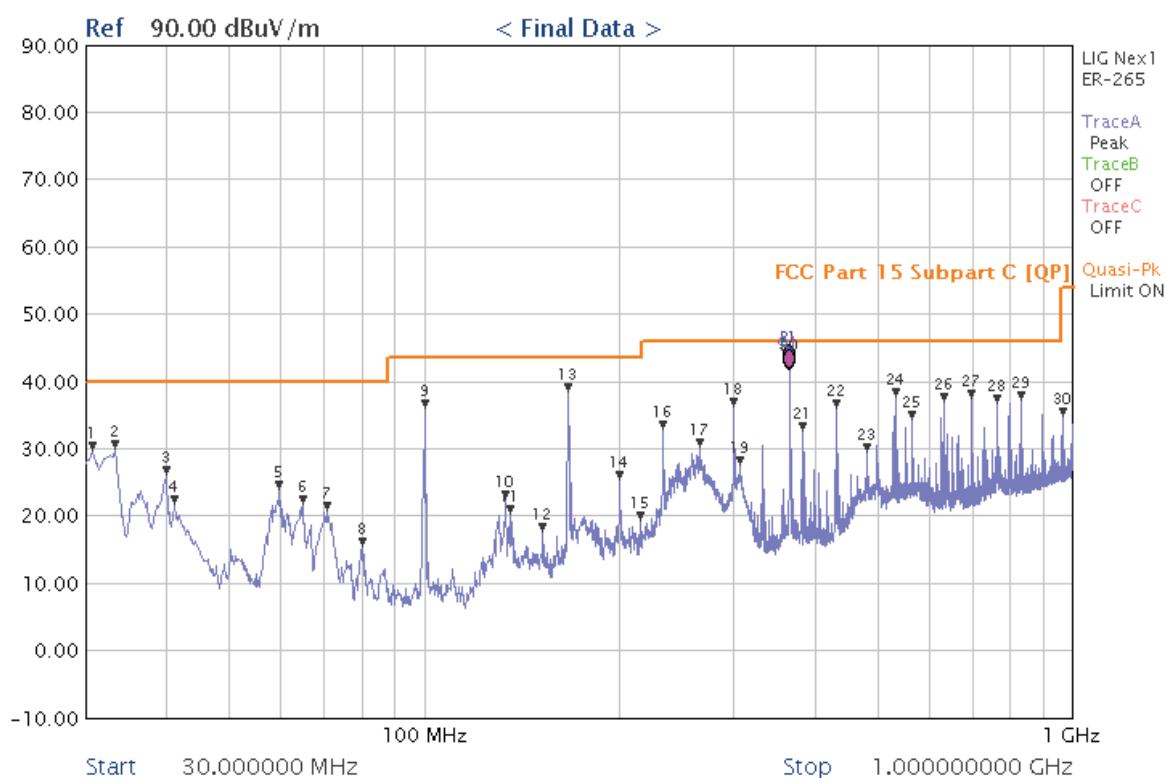
Test Item	Radiated Emission (30 MHz to 1 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal & Vertical



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
166.65	26.72	V	8.87	1.82	-	43.50	37.41	6.09
365.85	24.64	H	15.30	3.00	-	46.00	42.94	3.06

- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
2. The location of EUT measurements has the Y-plane(Stand).

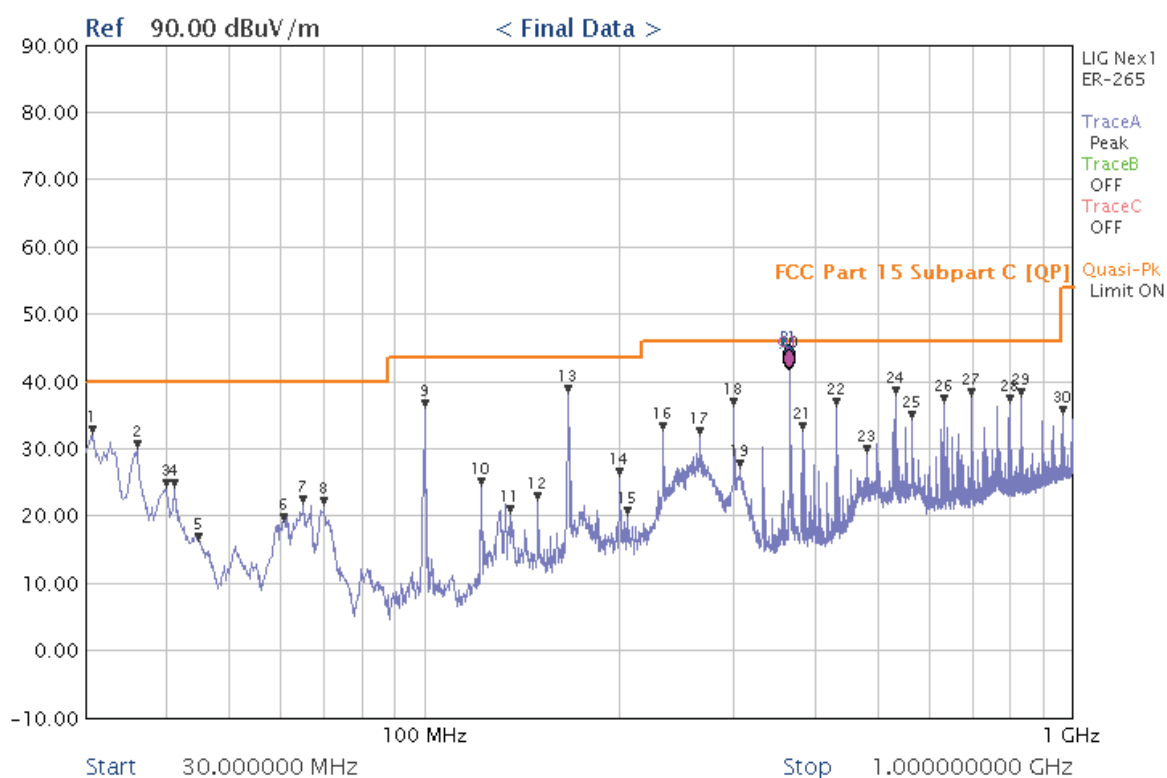
Test Item	Radiated Emission (30 MHz to 1 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 6 (2437 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal & Vertical



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
166.66	27.64	V	8.87	1.82	-	43.50	38.33	5.17
365.85	24.93	H	15.30	3.00	-	46.00	43.23	2.77

- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
2. The location of EUT measurements has the Y-plane(Stand).

Test Item	Radiated Emission (30 MHz to 1 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal & Vertical



Frequency (MHz)	Reading (dBuV/m)	Pol. (H/V)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Gain. (dB)	Limit (dBuV/m)	Total (dBuV/m)	Margin (dB)
99.99	23.06	V	11.49	1.49	-	43.50	36.04	7.46
166.66	27.57	V	8.87	1.82	-	43.50	38.26	5.24
365.85	24.95	H	15.30	3.00	-	46.00	43.25	2.75

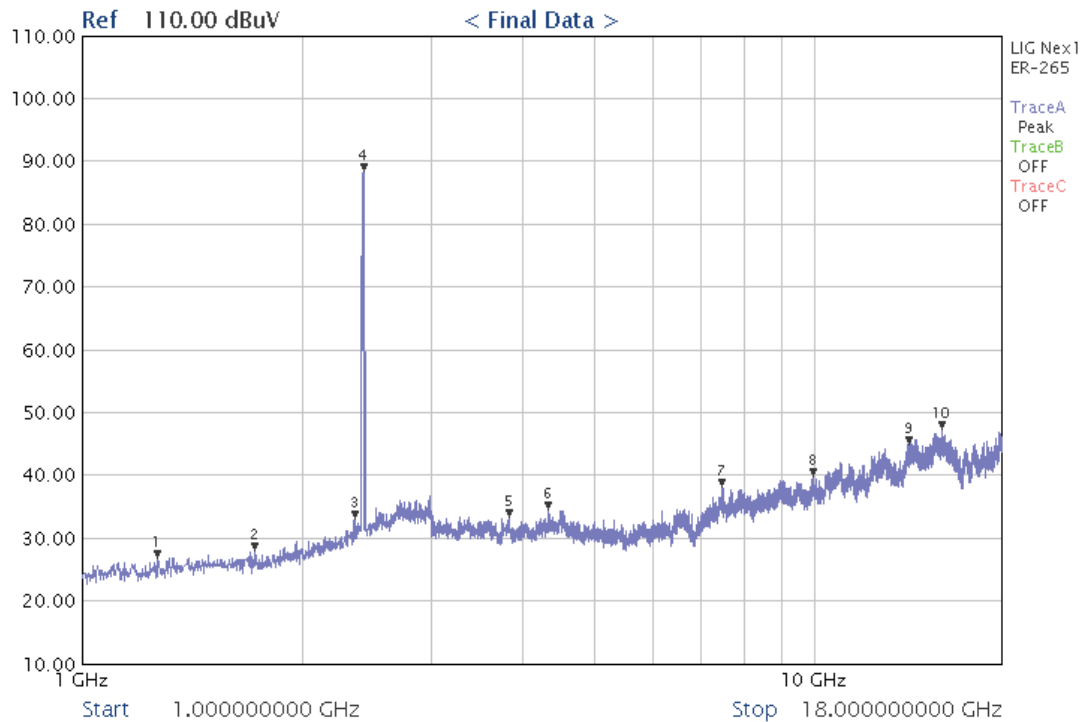
- Note : 1. RF voltage (dBuV) = 20 log RF Voltage (uV)
 2. The location of EUT measurements has the Y-plane(Stand).

3.2.5.3 Fundamental & Harmonics Radiated Emission Result(1 to 26.5 GHz)

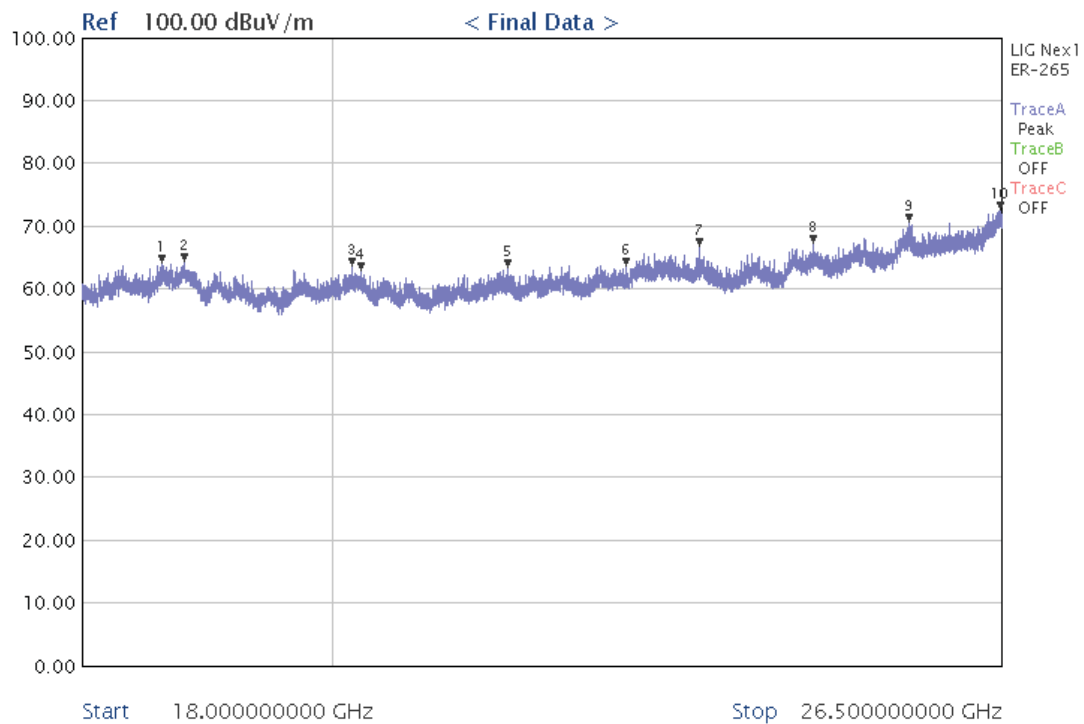
Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal

Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2415.5	Peak	88.31	114.00	25.69
2415.5	Avg.	77.54	94.00	16.46
18612.2	Peak	64.29	74.00	9.71
18612.2	Avg.	45.54	54.00	8.46
18788.8	Peak	63.60	74.00	10.40
18788.8	Avg.	44.52	54.00	9.48
20158.4	Peak	62.83	74.00	11.17
20158.4	Avg.	43.82	54.00	10.18
20240.4	Peak	62.83	74.00	11.17
20240.4	Avg.	43.95	54.00	10.05
21527.2	Peak	63.47	74.00	10.53
21527.2	Avg.	44.38	54.00	9.62
22626.1	Peak	63.69	74.00	10.31
22626.1	Avg.	44.64	54.00	9.36
23326.6	Peak	66.73	74.00	7.27
23326.6	Avg.	47.58	54.00	6.42
24481.6	Peak	68.27	74.00	5.73
24481.6	Avg.	49.12	54.00	4.88
25487.2	Peak	70.67	74.00	3.33
25487.2	Avg.	51.56	54.00	2.44
26487.5	Peak	71.54	74.00	2.46
26487.5	Avg.	52.40	54.00	1.60

- Note : 1. Measurement level = reading level + correct Factor
 2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)

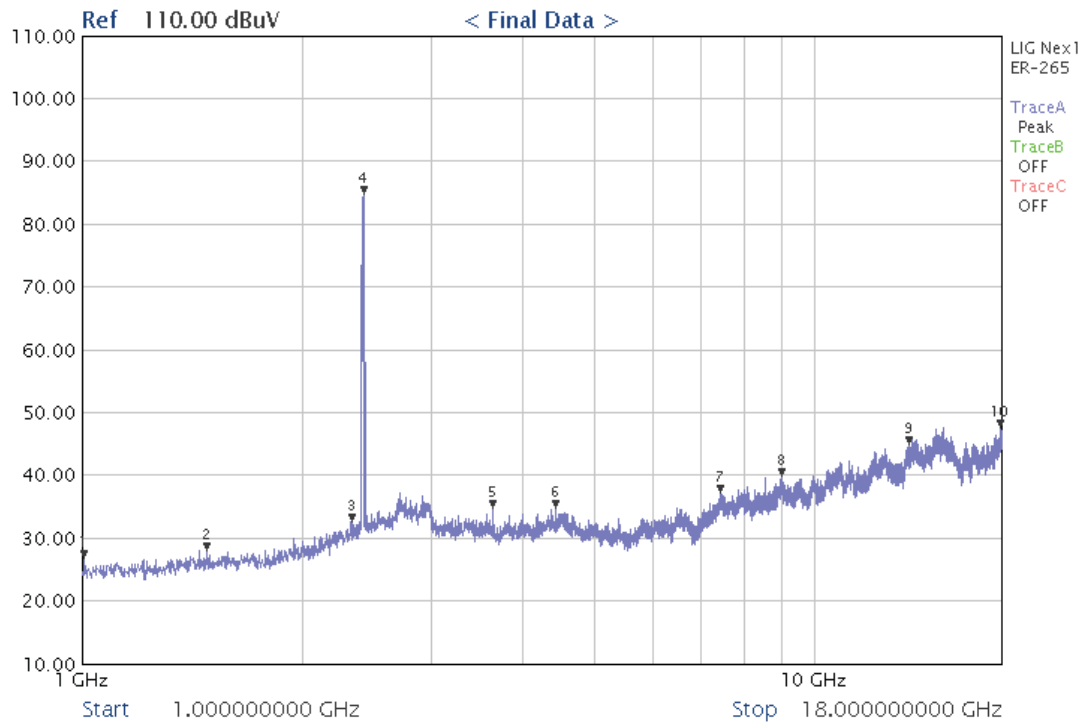


Test Plot (18 GHz to 26.5 GHz)

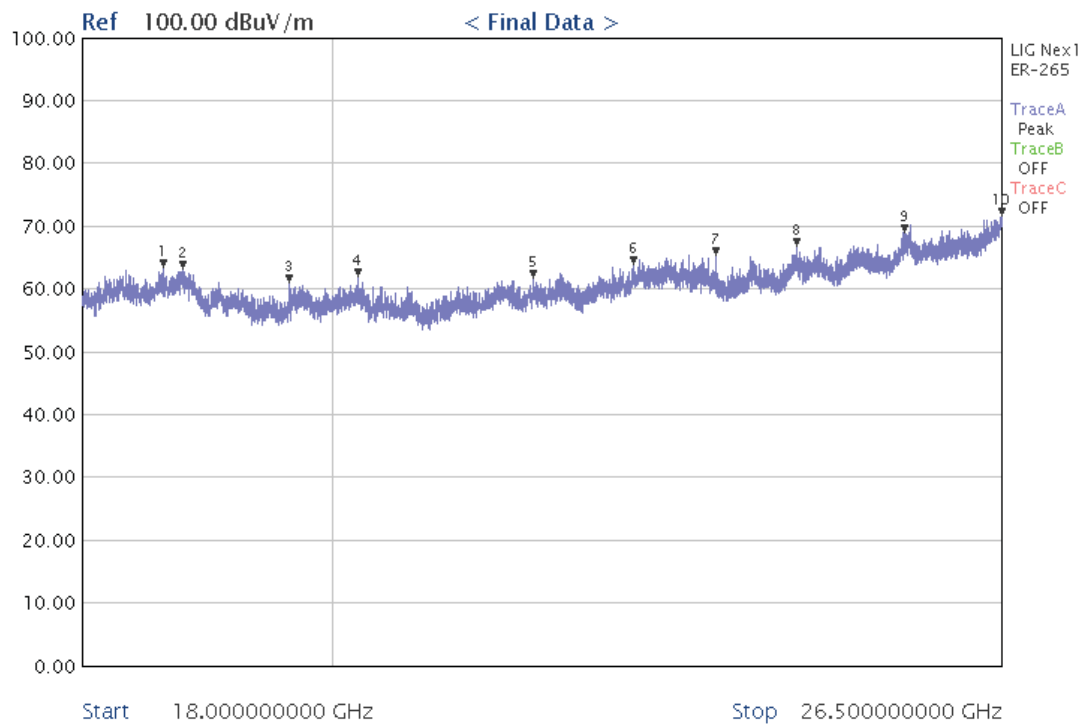
Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical

Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2417.5	Peak	84.79	114.00	29.21
2417.5	Avg.	71.41	94.00	22.59
18622.6	Peak	63.48	74.00	10.52
18622.6	Avg.	45.35	54.00	8.65
18780.3	Peak	63.05	74.00	10.95
18780.3	Avg.	44.86	54.00	9.14
19633.3	Peak	60.96	74.00	13.04
19633.3	Avg.	42.54	54.00	11.46
20217.6	Peak	61.94	74.00	12.06
20217.6	Avg.	43.55	54.00	10.45
21759.6	Peak	61.61	74.00	12.39
21759.6	Avg.	43.22	54.00	10.78
22700.8	Peak	63.86	74.00	10.14
22700.8	Avg.	46.21	54.00	7.79
23503.0	Peak	65.23	74.00	8.77
23503.0	Avg.	46.85	54.00	7.15
24306.3	Peak	68.73	74.00	5.27
24306.3	Avg.	48.38	54.00	5.62
25437.4	Peak	69.05	74.00	4.95
25437.4	Avg.	50.85	54.00	3.15
26500.0	Peak	71.56	74.00	2.44
26500.0	Avg.	52.89	54.00	1.11

- Note : 1. Measurement level = reading level + correct Factor
 2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)



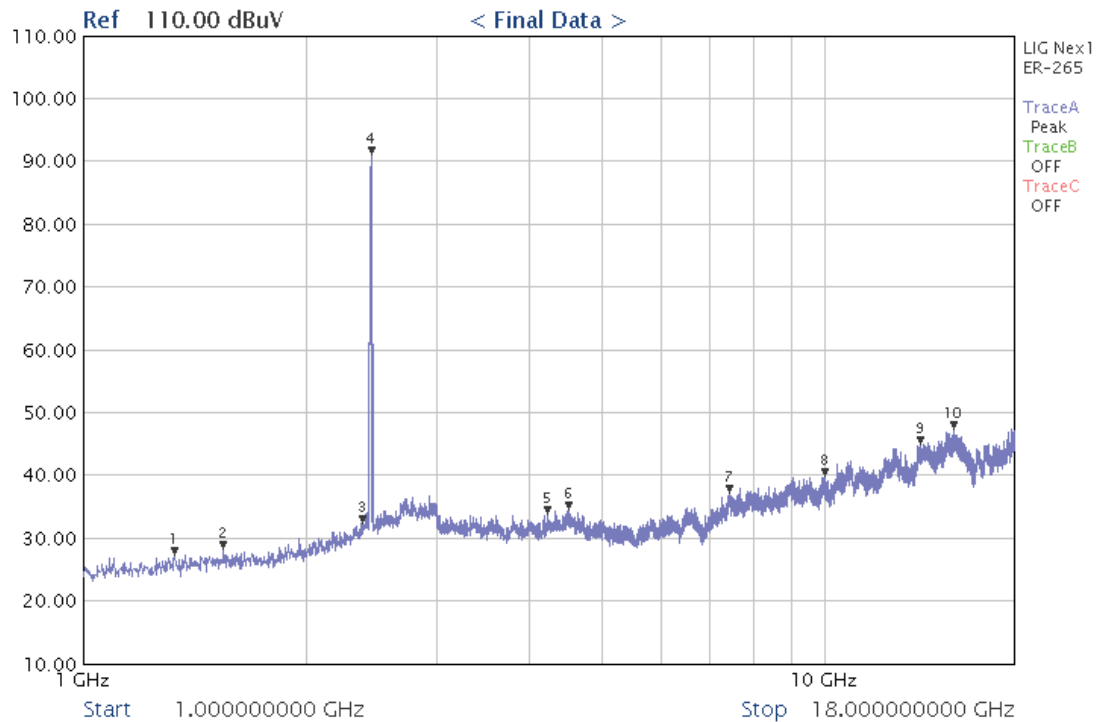
Test Plot (18 GHz to 26.5 GHz)

Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 6 (2437 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal

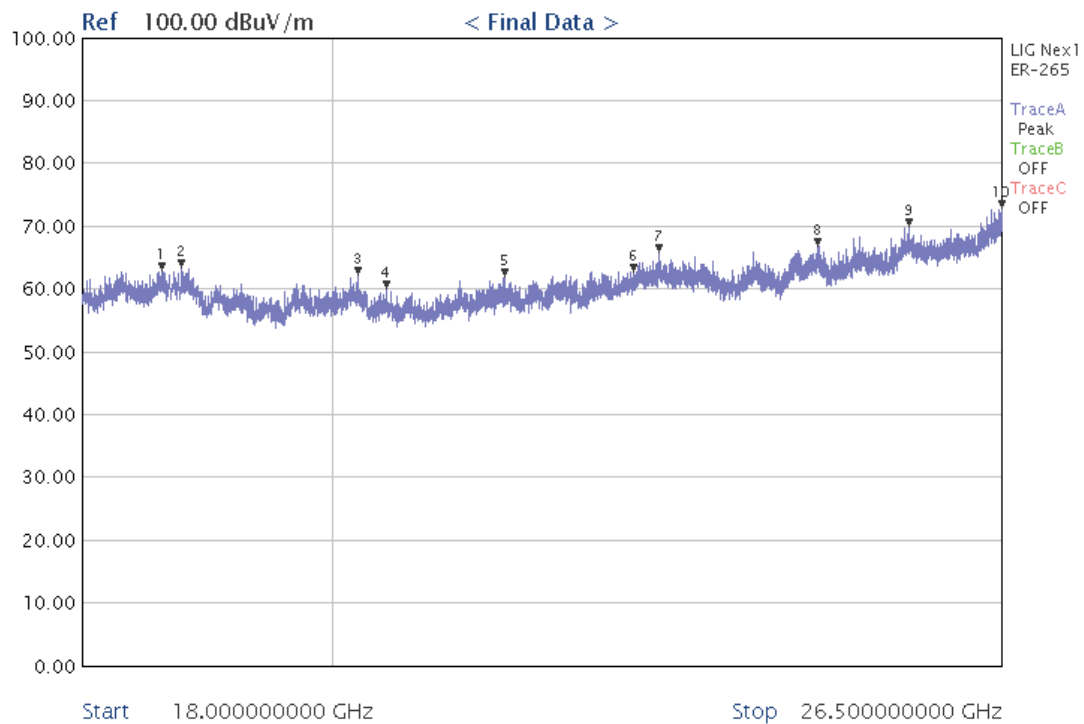
Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2440.4	Peak	90.92	114.00	23.08
2440.4	Avg.	79.39	94.00	14.61
18612.2	Peak	62.82	74.00	11.18
18612.2	Avg.	43.55	54.00	10.45
18768.9	Peak	63.29	74.00	10.71
18768.9	Avg.	44.05	54.00	9.95
20214.5	Peak	62.27	74.00	11.73
20214.5	Avg.	43.51	54.00	10.49
20460.4	Peak	60.08	74.00	13.92
20460.4	Avg.	40.81	54.00	13.19
21492.9	Peak	61.96	74.00	12.04
21492.9	Avg.	42.62	54.00	11.38
22700.8	Peak	62.79	74.00	11.21
22700.8	Avg.	43.49	54.00	10.51
22946.8	Peak	65.88	74.00	8.12
22946.8	Avg.	46.58	54.00	7.42
24520.0	Peak	67.86	74.00	6.14
24520.0	Avg.	48.62	54.00	5.38
25483.0	Peak	70.01	74.00	3.99
25483.0	Avg.	51.71	54.00	2.29
26500.0	Peak	72.77	74.00	1.23
26500.0	Avg.	52.58	54.00	1.42

- Note : 1. Measurement level = reading level + correct Factor

2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)



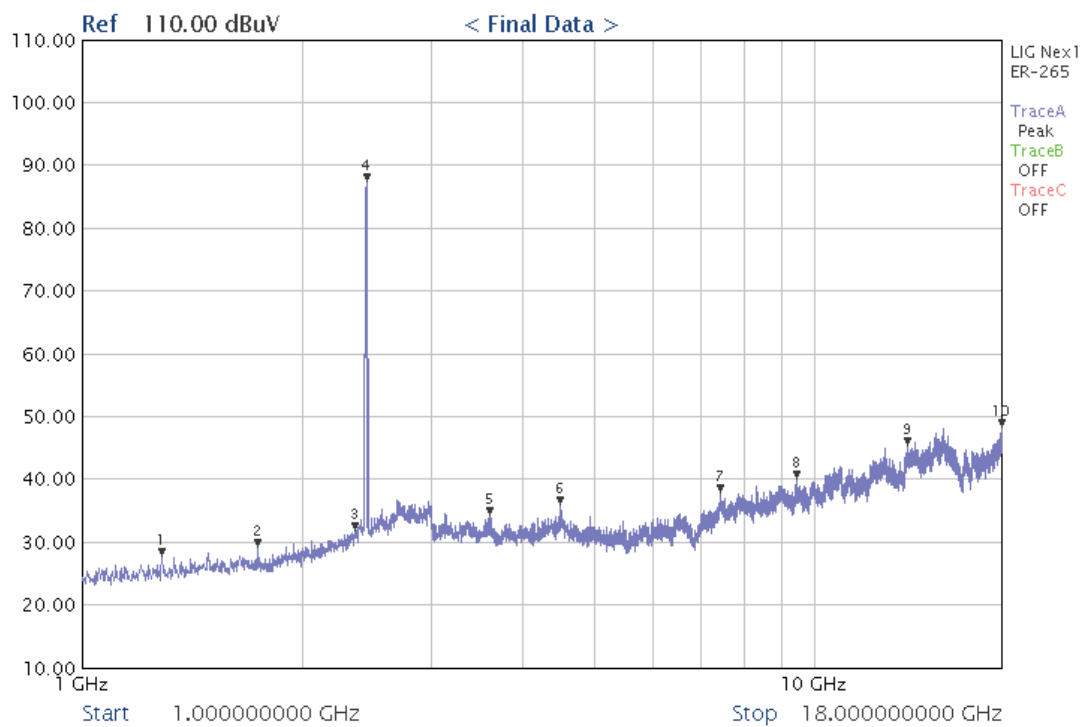
Test Plot (18 GHz to 26.5 GHz)

Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 6 (2437 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical

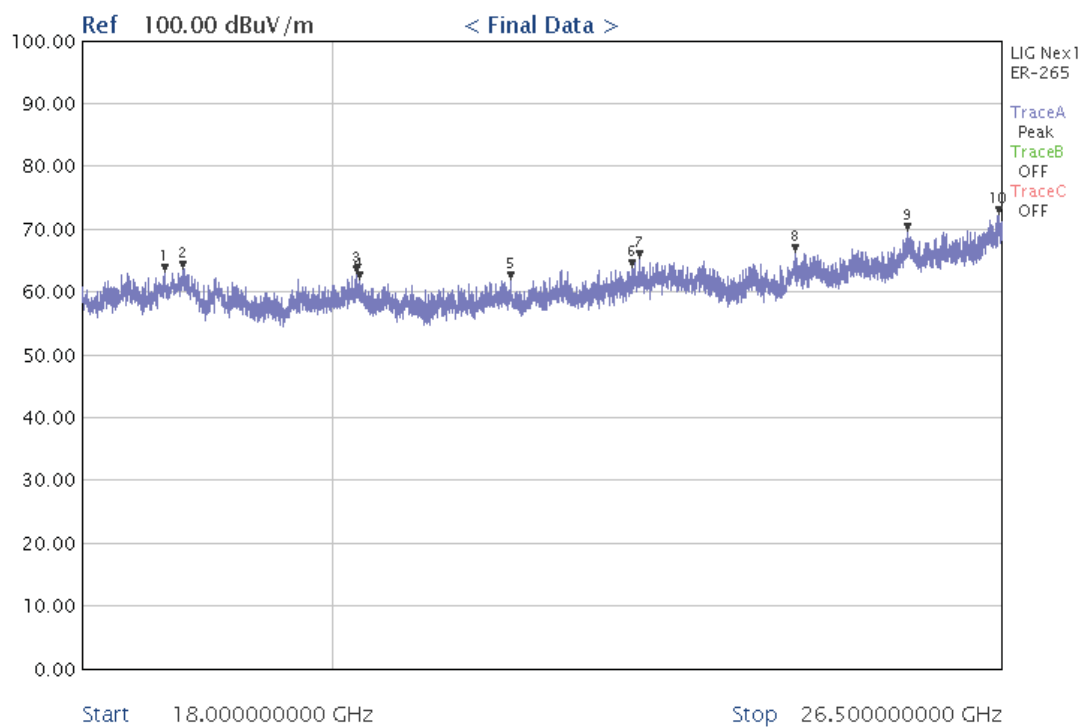
Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2442.4	Peak	87.37	114.00	26.63
2442.4	Avg.	74.69	94.00	19.31
18638.2	Peak	63.25	74.00	10.75
18638.2	Avg.	43.82	54.00	10.18
18778.2	Peak	63.69	74.00	10.31
18778.2	Avg.	44.21	54.00	9.79
20195.8	Peak	62.85	74.00	11.15
20195.8	Avg.	43.32	54.00	10.68
20223.8	Peak	62.07	74.00	11.93
20223.8	Avg.	42.55	54.00	11.45
21557.3	Peak	62.07	74.00	11.93
21557.3	Avg.	42.56	54.00	11.44
22675.9	Peak	63.93	74.00	10.07
22675.9	Avg.	44.33	54.00	9.67
22756.9	Peak	65.23	74.00	8.77
22756.9	Avg.	45.65	54.00	8.35
24300.0	Peak	67.19	74.00	6.81
24300.0	Avg.	48.65	54.00	5.35
25465.4	Peak	69.73	74.00	4.27
25465.4	Avg.	50.19	54.00	3.81
26467.8	Peak	72.41	74.00	1.59
26467.8	Avg.	52.67	54.00	1.33

- Note : 1. Measurement level = reading level + correct Factor

2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)



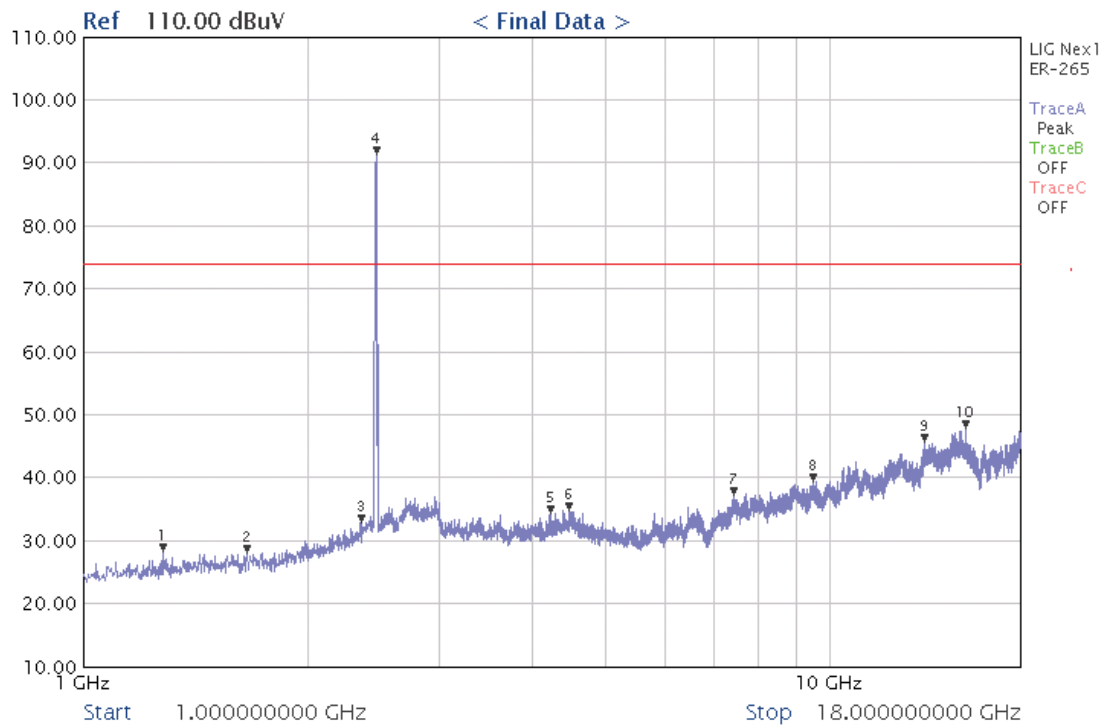
Test Plot (18 GHz to 26.5 GHz)

Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal

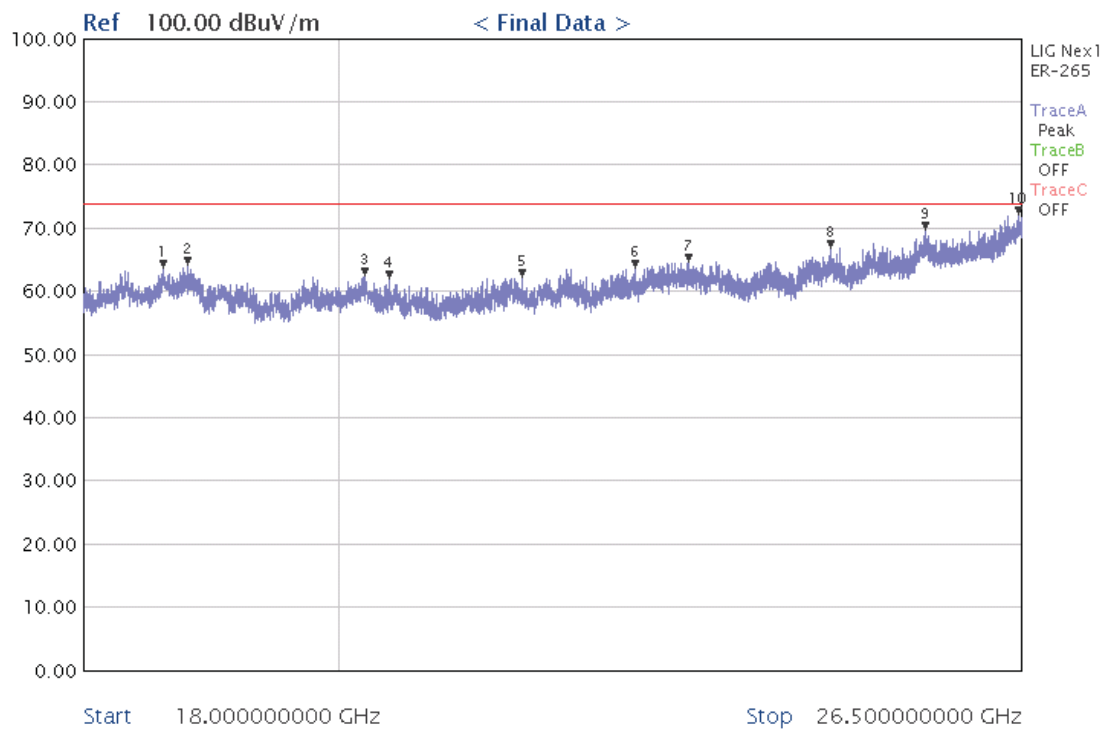
Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2469.4	Peak	91.38	114.00	22.62
2469.4	Avg.	77.63	94.00	16.37
18680.7	Peak	62.53	74.00	11.47
18680.7	Avg.	43.35	54.00	10.65
18754.4	Peak	63.61	74.00	10.39
18754.4	Avg.	44.50	54.00	9.50
20212.4	Peak	61.59	74.00	12.41
20212.4	Avg.	42.39	54.00	11.61
20236.2	Peak	62.32	74.00	11.68
20236.2	Avg.	43.19	54.00	10.81
21773.1	Peak	62.45	74.00	11.55
21773.1	Avg.	43.42	54.00	10.58
22418.6	Peak	63.82	74.00	10.18
22418.6	Avg.	44.72	54.00	9.28
22728.9	Peak	65.03	74.00	8.97
22728.9	Avg.	45.95	54.00	8.05
24513.8	Peak	67.98	74.00	6.02
24513.8	Avg.	48.07	54.00	5.93
25474.7	Peak	68.71	74.00	5.29
25474.7	Avg.	49.50	54.00	4.50
26349.5	Peak	72.80	74.00	1.20
26349.5	Avg.	52.59	54.00	1.41

- Note : 1. Measurement level = reading level + correct Factor

2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)

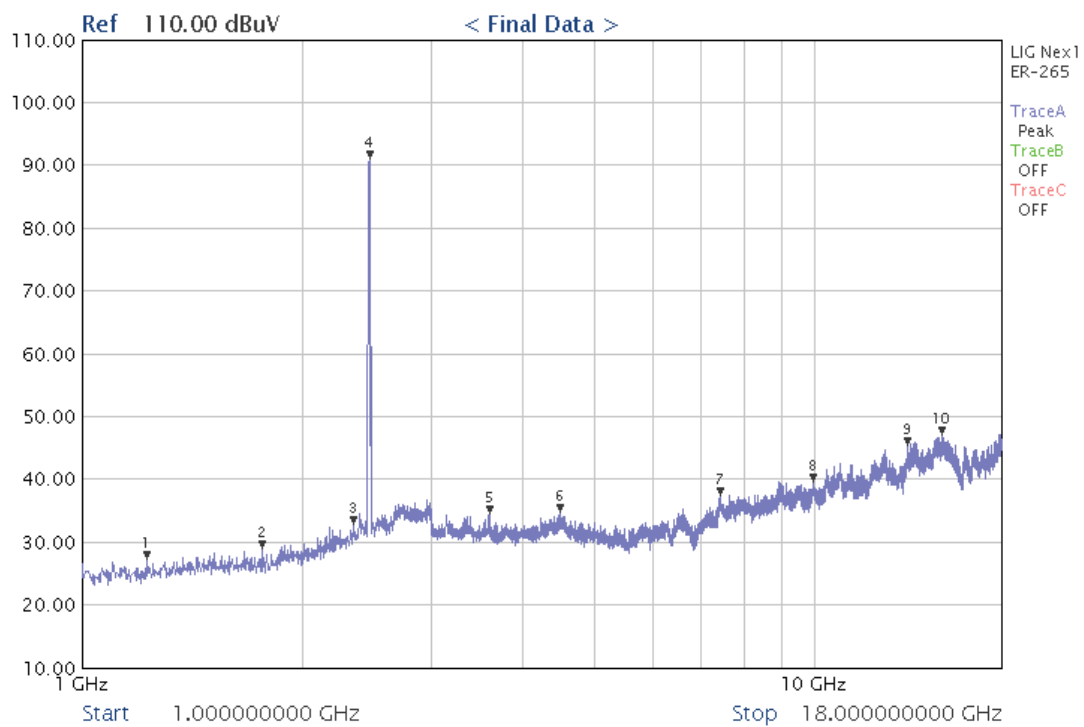


Test Plot (18 GHz to 26.5 GHz)

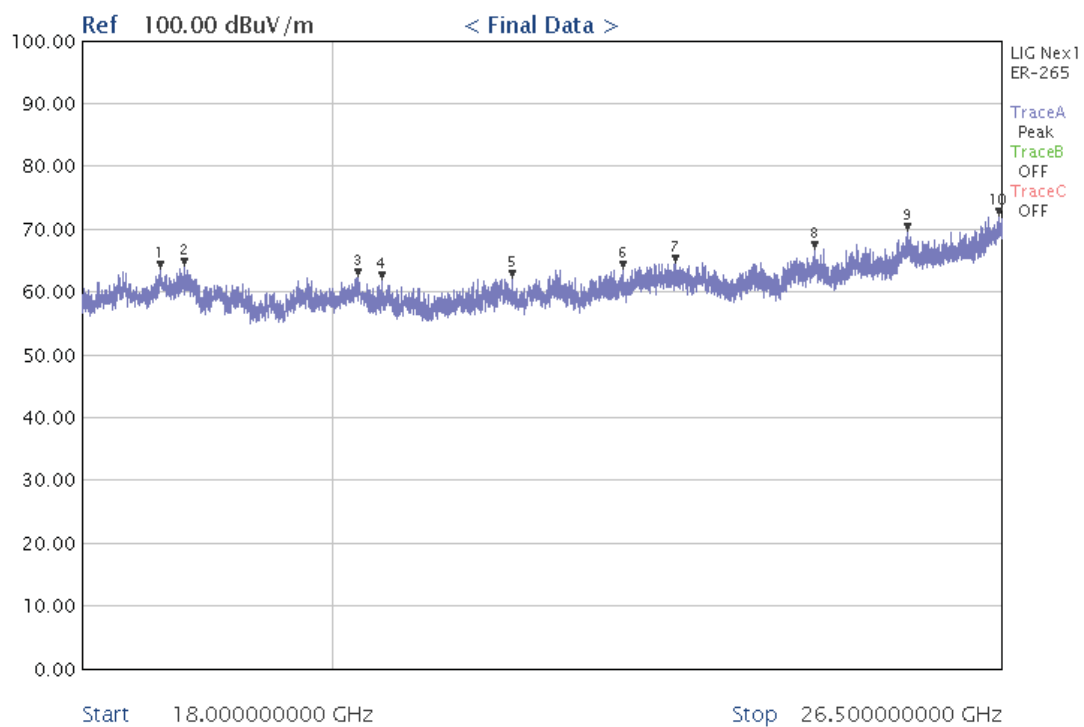
Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical

Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2469.4	Peak	91.09	114.00	22.91
2469.4	Avg.	77.57	94.00	16.43
18598.7	Peak	63.69	74.00	10.31
18598.7	Avg.	45.12	54.00	8.88
18782.4	Peak	64.03	74.00	9.97
18782.4	Avg.	45.42	54.00	8.58
20212.4	Peak	62.42	74.00	11.58
20212.4	Avg.	44.25	54.00	9.75
20415.8	Peak	62.02	74.00	11.98
20415.8	Avg.	43.38	54.00	10.62
21561.4	Peak	62.12	74.00	11.88
21561.4	Avg.	43.45	54.00	10.55
22596.0	Peak	63.75	74.00	10.25
22596.0	Avg.	45.02	54.00	8.98
23100.4	Peak	64.65	74.00	9.35
23100.4	Avg.	45.99	54.00	8.01
24494.1	Peak	68.70	74.00	5.30
24494.1	Avg.	49.01	54.00	4.99
25461.2	Peak	69.69	74.00	4.31
25461.2	Avg.	51.42	54.00	2.58
26461.6	Peak	72.00	74.00	2.00
26461.6	Avg.	52.82	54.00	1.18

- Note : 1. Measurement level = reading level + correct Factor
 2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)

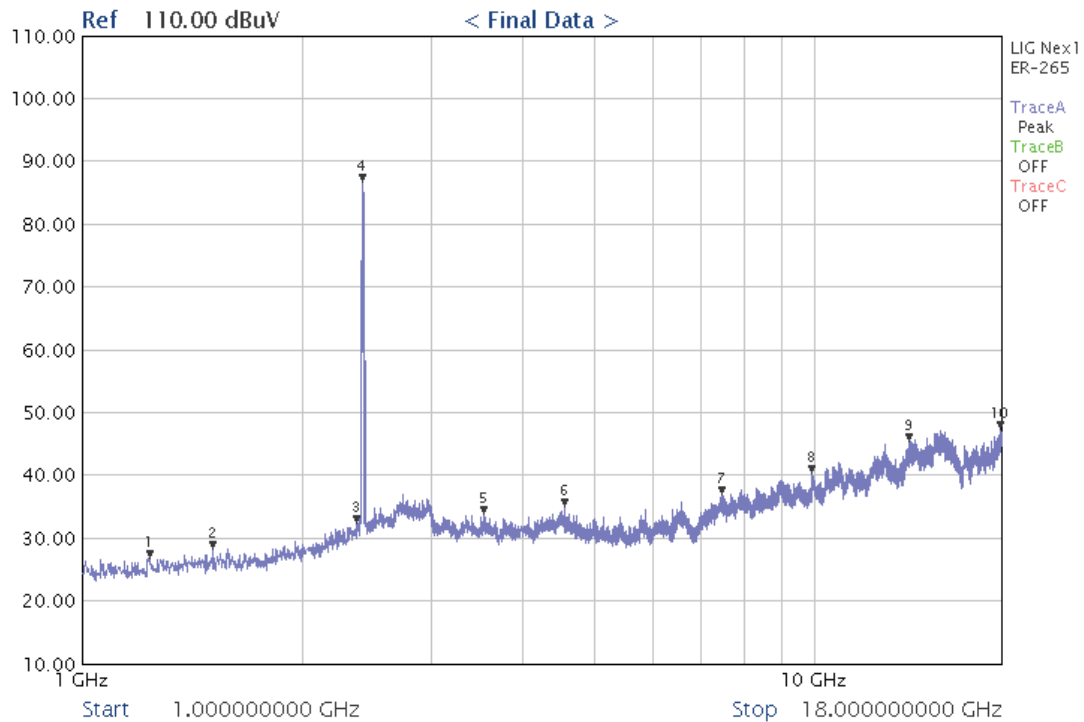


Test Plot (18 GHz to 26.5 GHz)

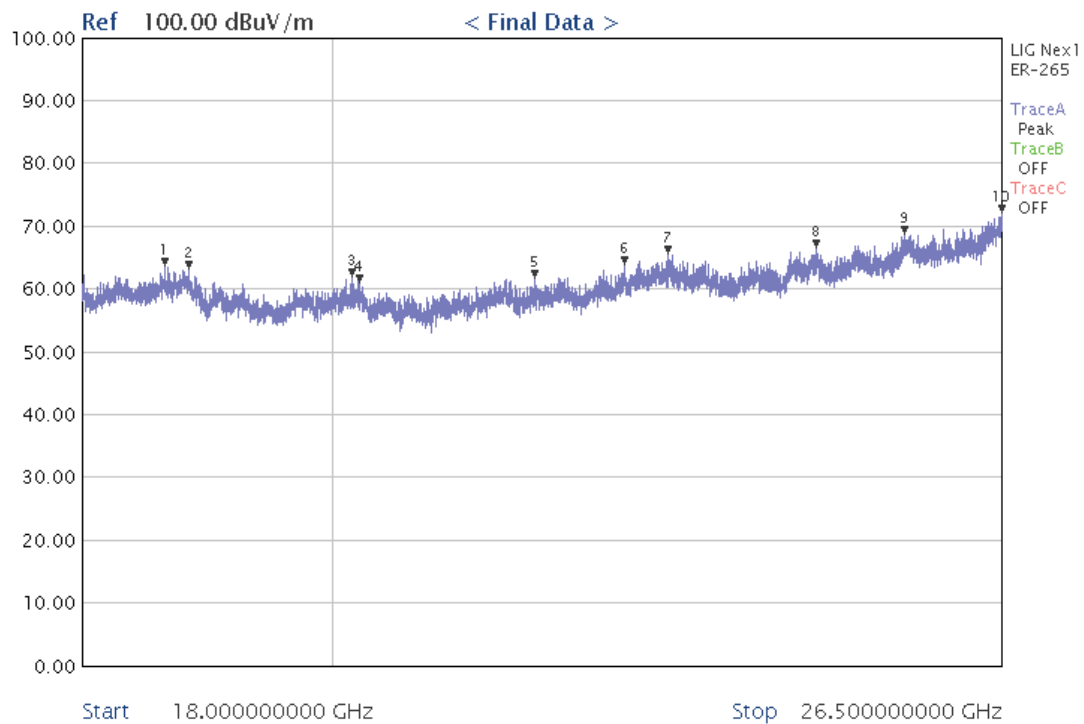
Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal

Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2415.4	Peak	86.74	114.00	27.26
2415.4	Avg.	71.80	94.00	22.20
18636.1	Peak	63.77	74.00	10.23
18636.1	Avg.	44.72	54.00	9.28
18829.1	Peak	63.13	74.00	10.87
18829.1	Avg.	44.11	54.00	9.89
20163.6	Peak	61.91	74.00	12.09
20163.6	Avg.	42.78	54.00	11.22
20219.6	Peak	60.93	74.00	13.07
20219.6	Avg.	42.02	54.00	11.98
21765.9	Peak	61.83	74.00	12.17
21765.9	Avg.	42.89	54.00	11.11
22610.6	Peak	63.93	74.00	10.07
22610.6	Avg.	44.99	54.00	9.01
23028.8	Peak	65.52	74.00	8.48
23028.8	Avg.	46.60	54.00	7.40
24508.6	Avg.	67.44	74.00	6.56
24508.6	Peak	48.24	54.00	5.76
25435.3	Avg.	68.60	74.00	5.40
25435.3	Peak	49.58	54.00	4.42
26491.7	Avg.	72.13	74.00	1.87
26491.7	Peak	51.01	54.00	2.99

- Note : 1. Measurement level = reading level + correct Factor
 2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)

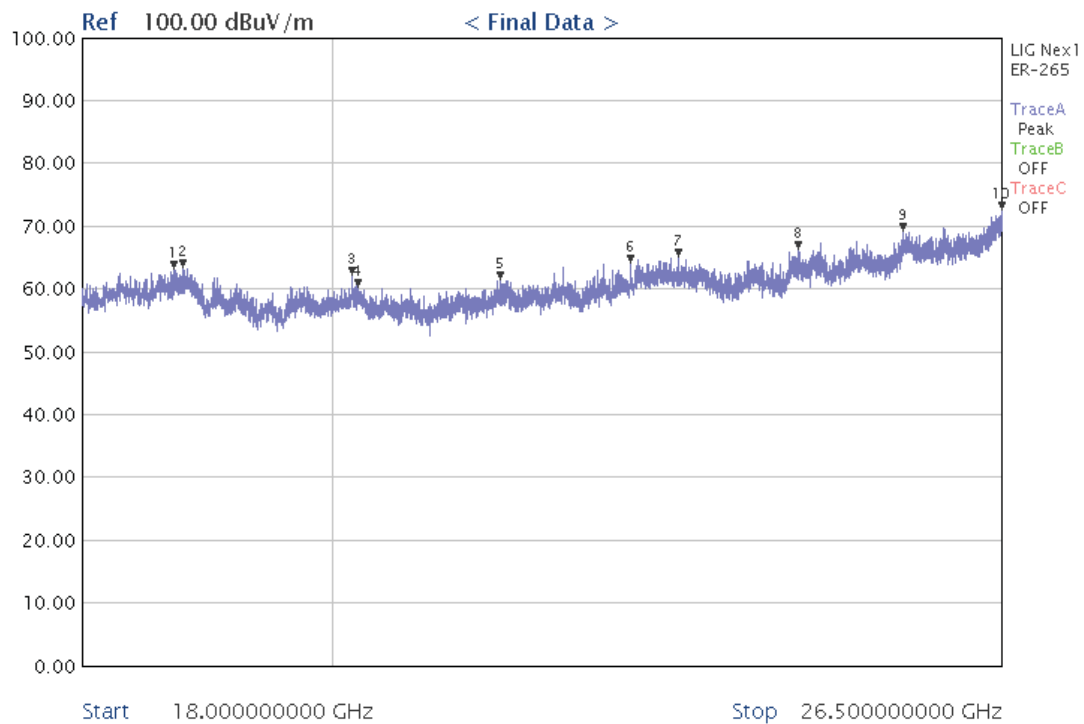
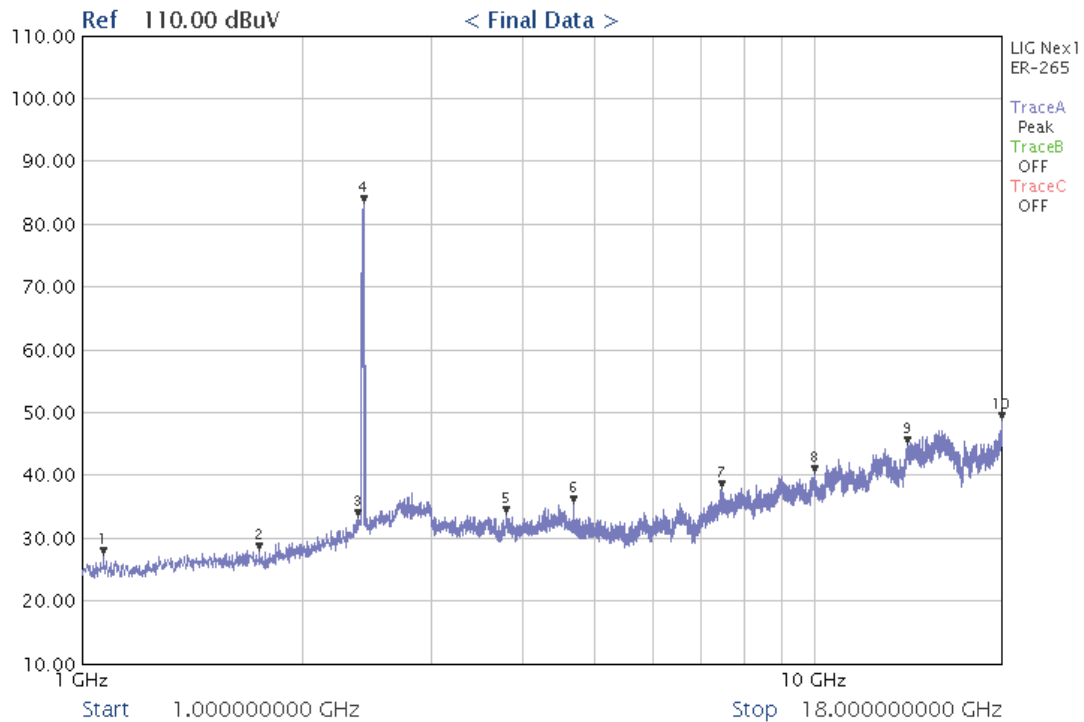


Test Plot (18 GHz to 26.5 GHz)

Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical

Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2417.5	Peak	83.34	114.00	30.66
2417.5	Avg.	67.96	94.00	26.04
18702.5	Peak	63.07	74.00	10.93
18702.5	Avg.	44.20	54.00	9.80
18771.0	Peak	63.33	74.00	10.67
18771.0	Avg.	44.38	54.00	9.62
20165.7	Peak	62.08	74.00	11.92
20165.7	Avg.	43.19	54.00	10.81
20217.6	Peak	60.21	74.00	13.79
20217.6	Avg.	41.29	54.00	12.71
21462.8	Peak	61.35	74.00	12.65
21462.8	Avg.	42.52	54.00	11.48
22670.7	Peak	64.15	74.00	9.85
22670.7	Avg.	45.32	54.00	8.68
23134.6	Peak	65.14	74.00	8.86
23134.6	Avg.	46.24	54.00	7.76
24330.1	Peak	67.20	74.00	6.80
24330.1	Avg.	48.31	54.00	5.69
25418.7	Peak	69.32	74.00	4.68
25418.7	Avg.	50.43	54.00	3.57
26500.0	Peak	72.70	74.00	1.30
26500.0	Avg.	52.85	54.00	1.15

- Note : 1. Measurement level = reading level + correct Factor
 2. Other emissions don't exceed the level of 20 dB below the applicable Limit.

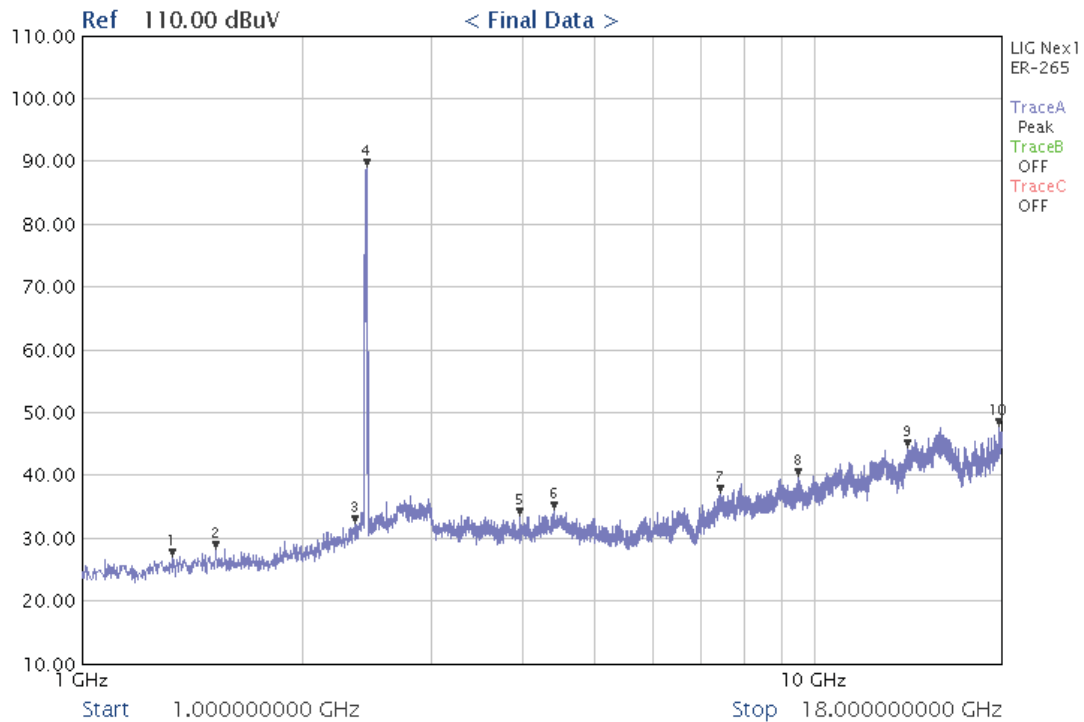


Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 6 (2437 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal

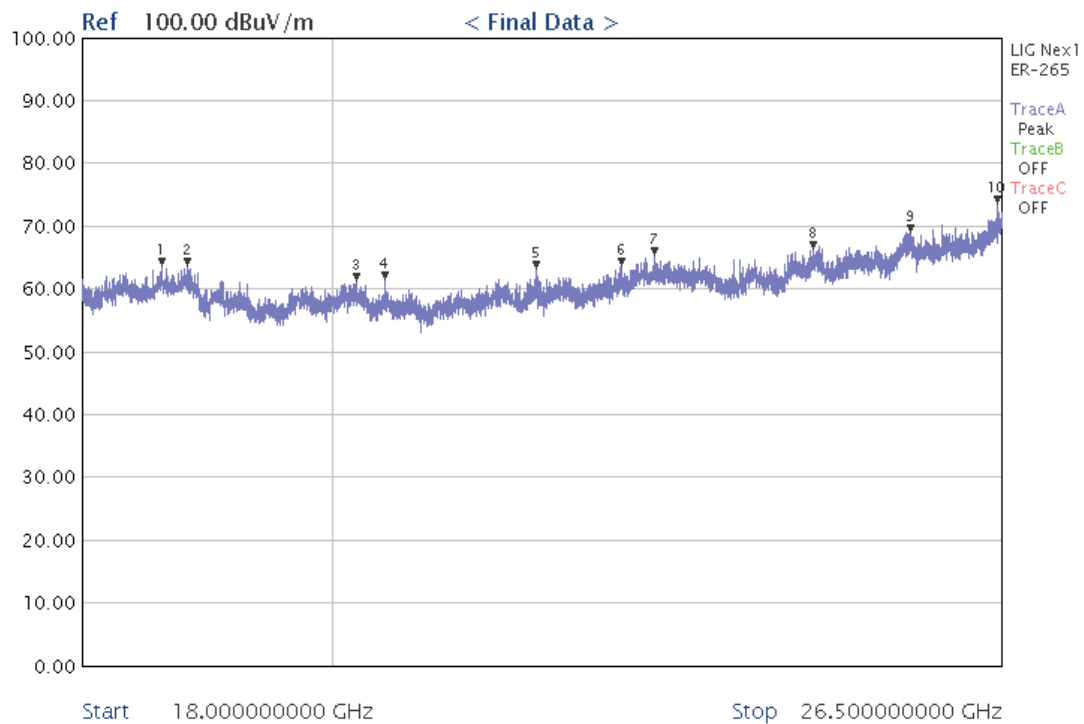
Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2417.5	Peak	89.08	114.00	24.92
2417.5	Avg.	73.85	94.00	20.15
18614.3	Peak	63.70	74.00	10.30
18614.3	Avg.	44.58	54.00	9.42
18816.6	Peak	63.61	74.00	10.39
18816.6	Avg.	44.52	54.00	9.48
20197.9	Peak	61.12	74.00	12.88
20197.9	Avg.	41.95	54.00	12.05
20445.9	Peak	61.51	74.00	12.49
20445.9	Avg.	42.36	54.00	11.64
21781.4	Peak	63.14	74.00	10.86
21781.4	Avg.	43.92	54.00	10.08
22584.6	Peak	63.66	74.00	10.34
22584.6	Avg.	43.55	54.00	10.45
22894.9	Peak	65.36	74.00	8.64
22894.9	Avg.	46.20	54.00	7.80
24483.7	Peak	68.21	74.00	5.79
24483.7	Avg.	48.03	54.00	5.97
25493.4	Peak	68.90	74.00	5.10
25493.4	Avg.	49.75	54.00	4.25
26452.3	Peak	72.53	74.00	1.47
26452.3	Avg.	52.60	54.00	1.40

- Note : 1. Measurement level = reading level + correct Factor

2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)



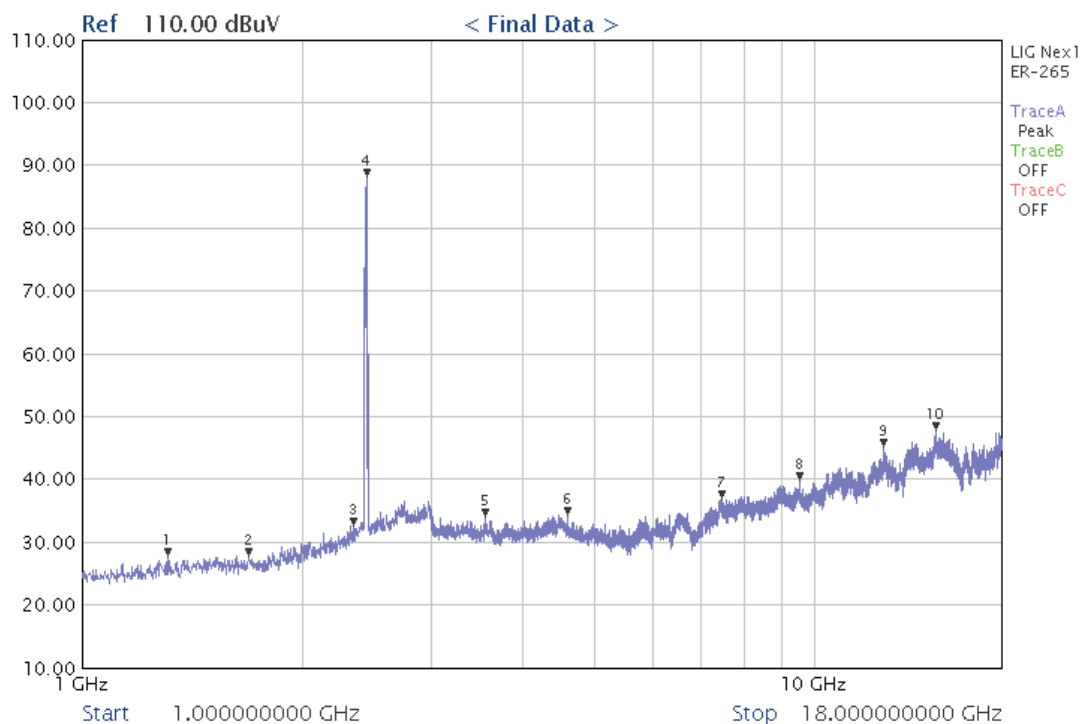
Test Plot (18 GHz to 26.5 GHz)

Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 6 (2437 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical

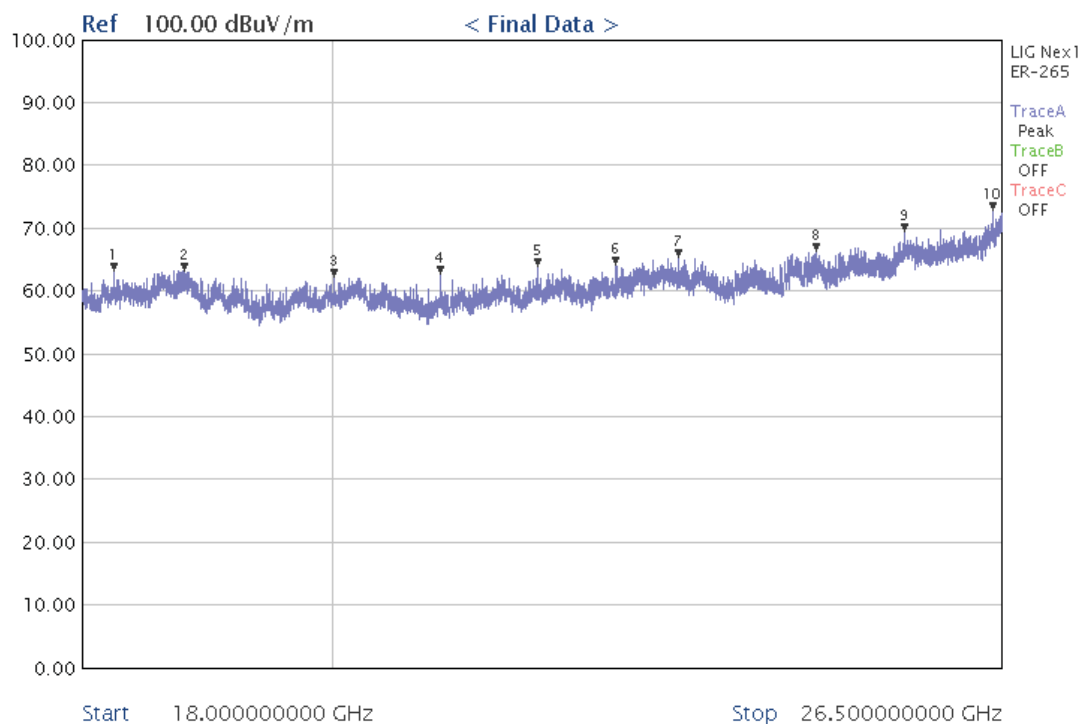
Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2443.9	Peak	88.14	114.00	25.86
2443.9	Avg.	73.47	94.00	20.53
18234.5	Peak	63.11	74.00	10.89
18234.5	Avg.	43.52	54.00	10.48
18786.5	Peak	63.26	74.00	10.74
18786.5	Avg.	43.78	54.00	10.22
20010.0	Peak	62.15	74.00	11.85
20010.0	Avg.	43.20	54.00	10.80
20924.3	Peak	62.57	74.00	11.43
20924.3	Avg.	43.21	54.00	10.79
21793.9	Peak	63.87	74.00	10.13
21793.9	Avg.	44.35	54.00	9.65
22522.4	Peak	64.05	74.00	9.95
22522.4	Avg.	44.58	54.00	9.42
23128.4	Peak	65.41	74.00	8.59
23128.4	Avg.	45.89	54.00	8.11
24508.6	Peak	67.25	74.00	6.75
24508.6	Avg.	47.72	54.00	6.28
25435.3	Peak	69.51	74.00	4.49
25435.3	Avg.	49.98	54.00	4.02
26400.4	Peak	72.73	74.00	1.27
26400.4	Avg.	52.61	54.00	1.39

- Note : 1. Measurement level = reading level + correct Factor

2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)



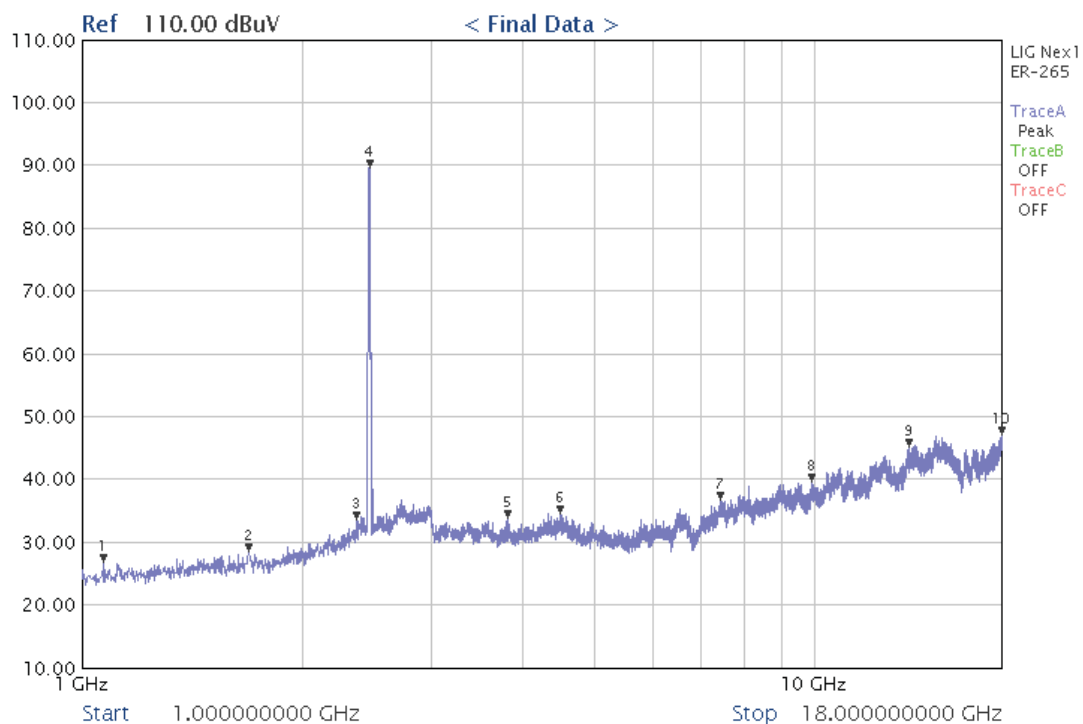
Test Plot (18 GHz to 26.5 GHz)

Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal

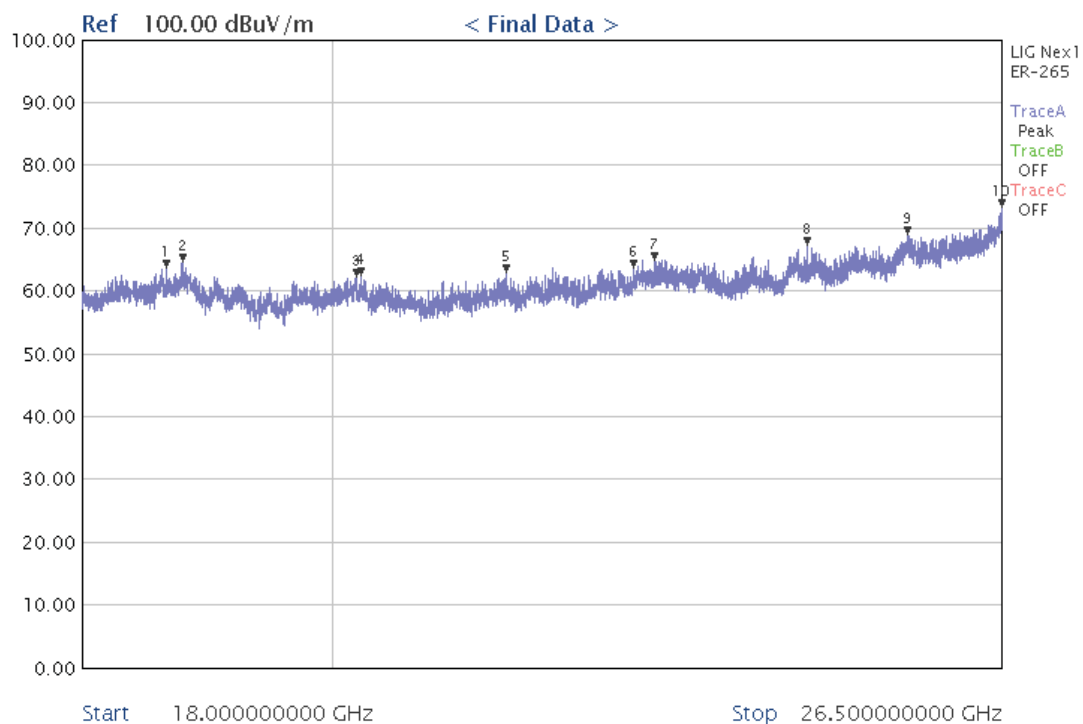
Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2467.3	Peak	89.62	114.00	24.38
2467.3	Avg.	75.12	94.00	18.88
18650.6	Peak	63.58	74.00	10.42
18650.6	Avg.	48.23	54.00	5.77
18771.0	Peak	64.70	74.00	9.30
18771.0	Avg.	45.62	54.00	8.38
20204.1	Peak	62.09	74.00	11.91
20204.1	Avg.	43.25	54.00	10.75
20240.4	Peak	62.38	74.00	11.62
20240.4	Avg.	43.48	54.00	10.52
21509.5	Peak	62.89	74.00	11.11
21509.5	Avg.	43.95	54.00	10.05
22690.5	Peak	63.65	74.00	10.35
22690.5	Avg.	44.75	54.00	9.25
22890.7	Peak	64.92	74.00	9.08
22890.7	Avg.	44.03	54.00	9.97
24414.2	Peak	68.35	74.00	5.65
24414.2	Avg.	49.41	54.00	4.59
25476.8	Peak	68.92	74.00	5.08
25476.8	Avg.	49.98	54.00	4.02
26497.9	Peak	72.88	74.00	1.12
26497.9	Avg.	52.93	54.00	1.07

- Note : 1. Measurement level = reading level + correct Factor

2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)



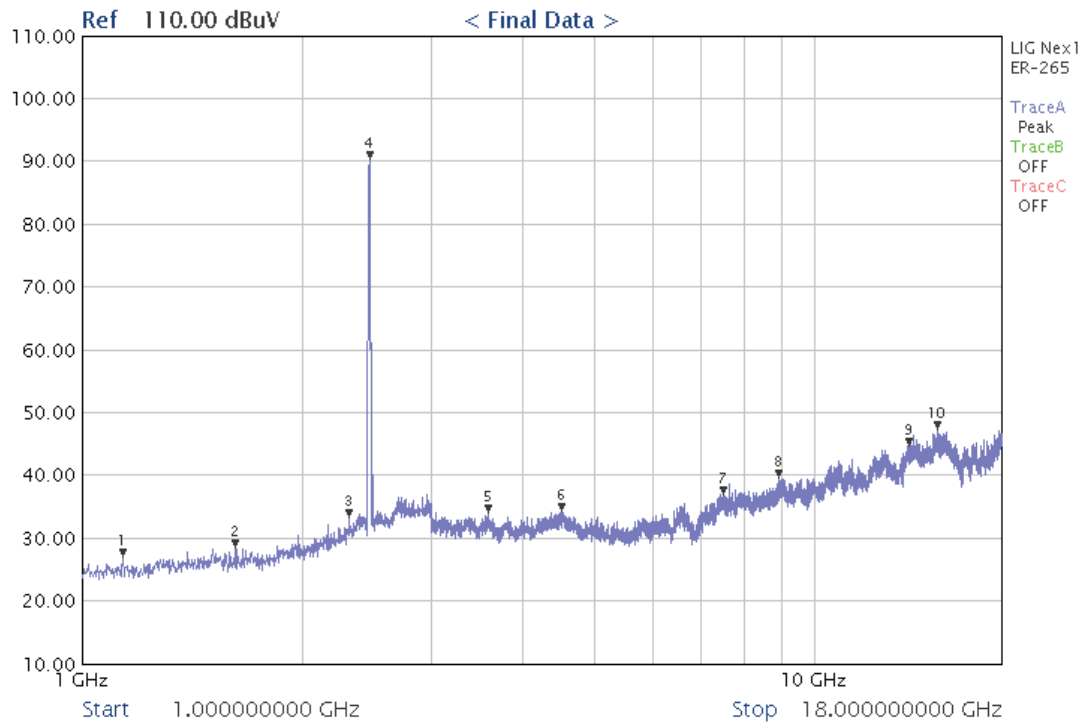
Test Plot (18 GHz to 26.5 GHz)

Test Item	Fundamental & Harmonics Radiated Emission (1 to 26.5 GHz)		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical

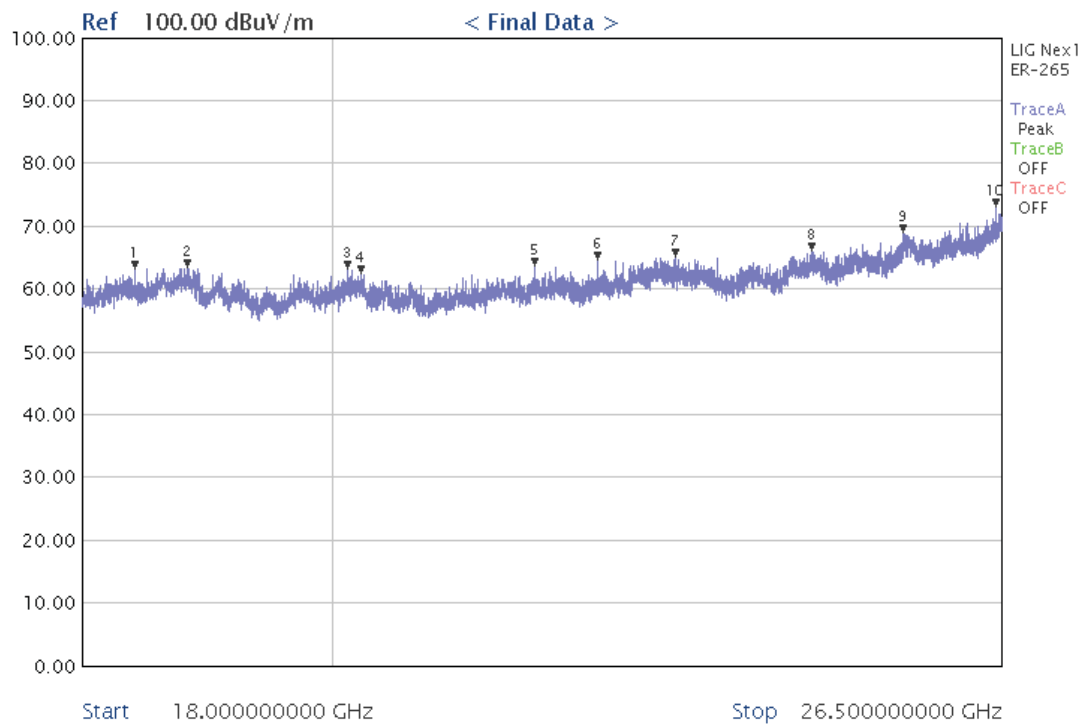
Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2469.4	Peak	90.40	114.00	23.60
2469.4	Avg.	76.04	94.00	17.96
18404.7	Peak	63.21	74.00	10.79
18404.7	Avg.	43.56	54.00	10.44
18812.5	Peak	63.40	74.00	10.60
18812.5	Avg.	43.58	54.00	10.42
20128.3	Peak	63.16	74.00	10.84
20128.3	Avg.	45.06	54.00	8.94
20232.1	Peak	62.45	74.00	11.55
20232.1	Avg.	48.32	54.00	5.68
21771.0	Peak	63.74	74.00	10.26
21771.0	Avg.	44.65	54.00	9.35
22354.2	Peak	64.72	74.00	9.28
22354.2	Avg.	45.08	54.00	8.92
23095.2	Peak	64.99	74.00	9.01
23095.2	Avg.	45.51	54.00	8.49
24457.8	Peak	67.52	74.00	6.48
24457.8	Avg.	48.05	54.00	5.95
25420.8	Peak	68.88	74.00	5.12
25420.8	Avg.	49.26	54.00	4.74
26426.3	Peak	73.03	74.00	0.97
26426.3	Avg.	53.18	54.00	0.82

- Note : 1. Measurement level = reading level + correct Factor

2. Other emissions don't exceed the level of 20 dB below the applicable Limit.



Test Plot (1 GHz to 18 GHz)



Test Plot (18 GHz to 26.5 GHz)

3.3 Band Edge

3.3.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next of Cal.
Horn Ant.	A.H. Systems	SAS-571	1559	05/08/2014
EMI Test Receiver	LIGNex1	ER-265	L0811B009	04/09/2014
Microwave Amplifier	Hewlett-Packard	8394B	3205A04032	12/03/2013
DC Power Supply	DIGITAL	DRP-303D	5070395	01/09/2014
True RMS Multimeter	FLUKE	87-V	14990137	12/03/2013

- Note : 1. The calibration interval of the above test instrument is 12 month and the calibrations are traceable to RRA, KRISS, KTL and HCT.
2. The calibration interval of horn, Loop Ant. and bi-log Ant. is 24 months

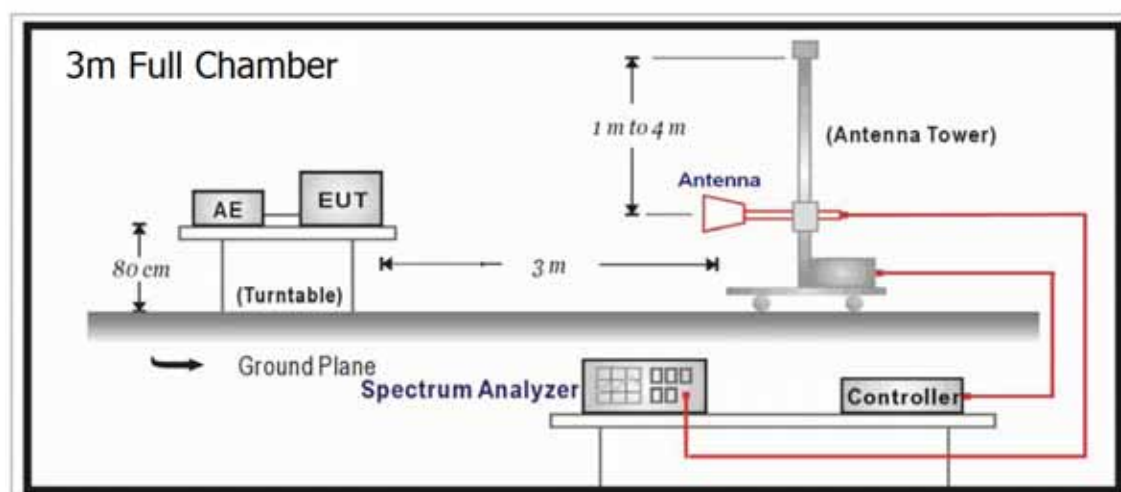
3.3.2 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio Frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz 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 emission which fall in the 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)).

3.3.3 Test Configuration

Above 1GHz Test Setup:



3.3.4 Test Procedure

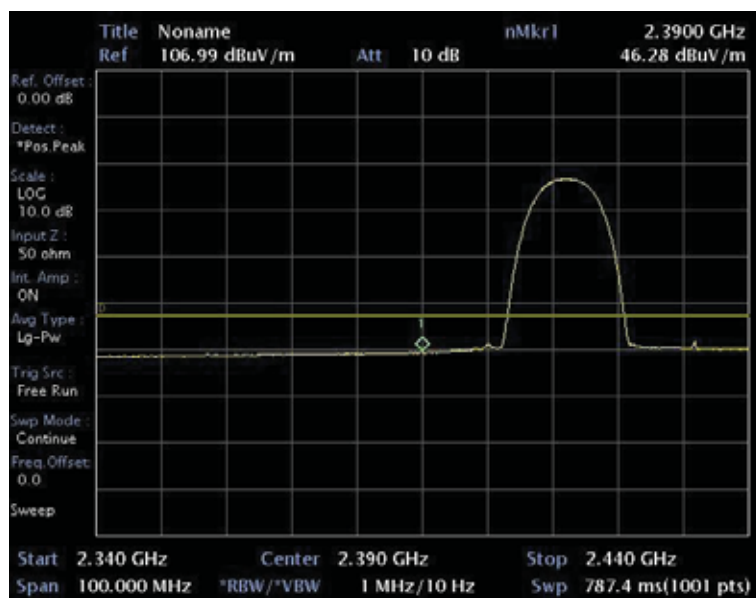
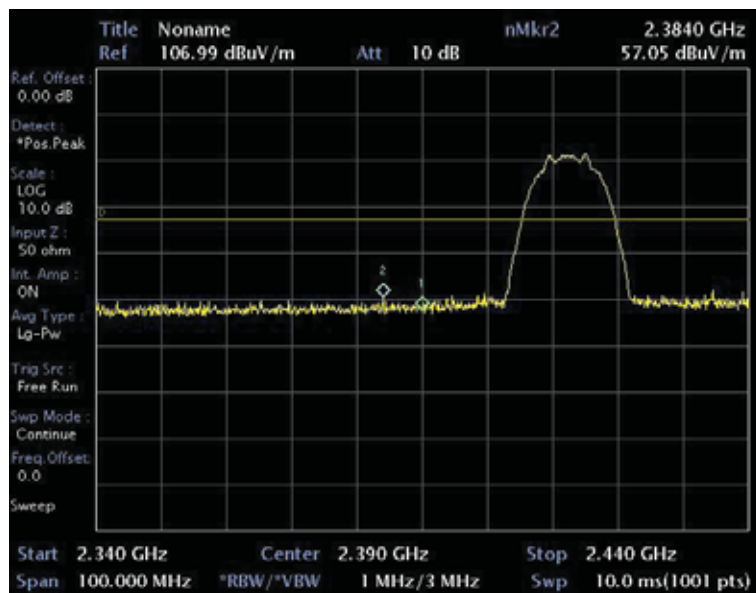
The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna can move up and down between 1 meter and 4 meters to fine out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

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

3.3.5 Band Edge Test Result

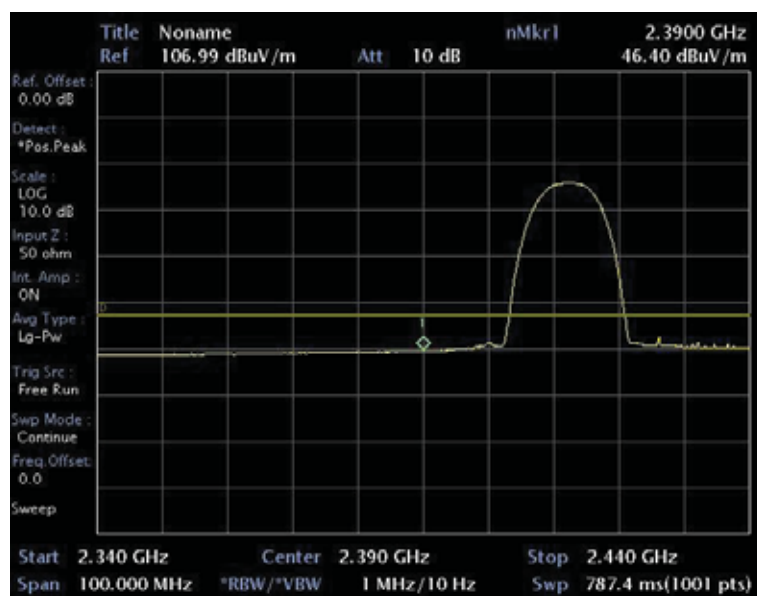
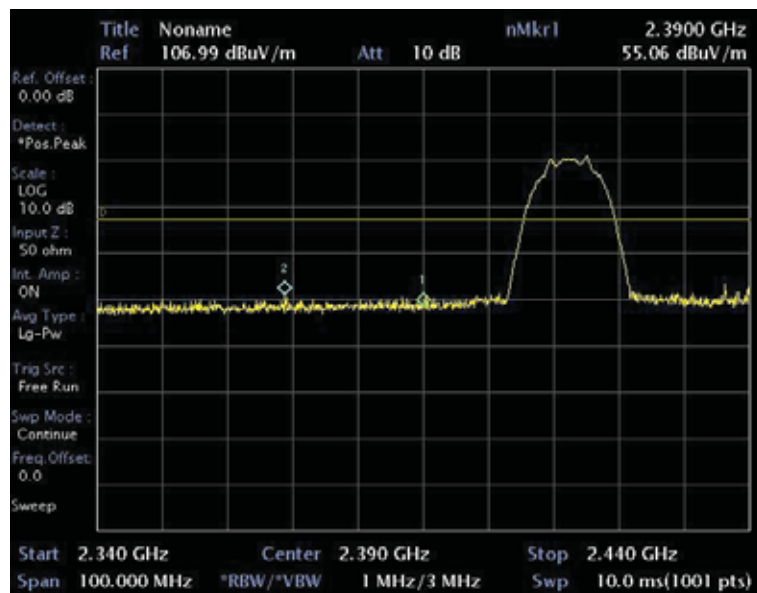
Test Item	Band Edge		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2384	Peak	57.05	74.00	16.95
2390	Peak	54.34	74.00	19.66
2390	Avg.	46.28	54.00	7.72

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

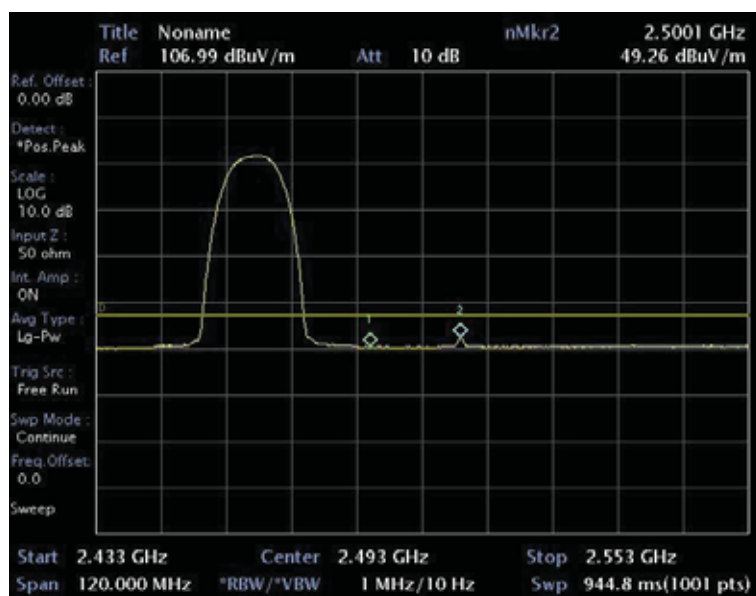
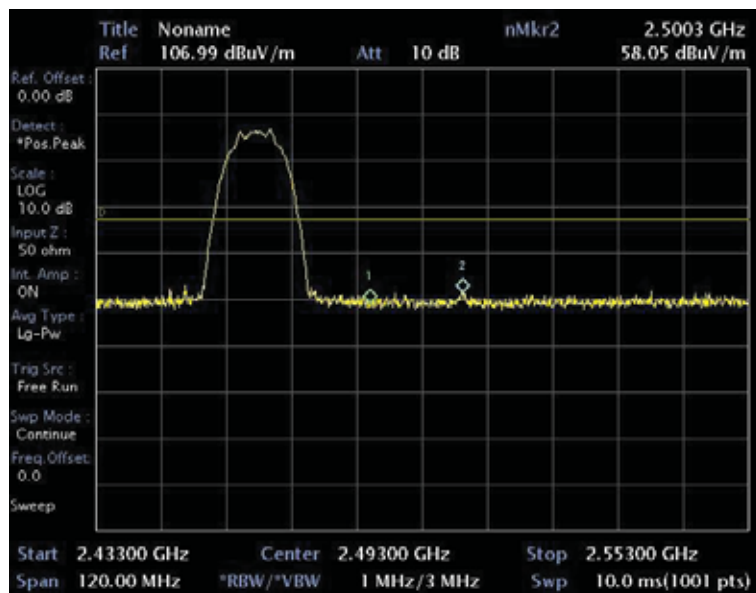
Test Item	Band Edge		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2368.8	Peak	57.51	74.00	16.49
2390	Peak	55.06	74.00	18.94
2390	Avg.	46.40	54.00	7.60

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

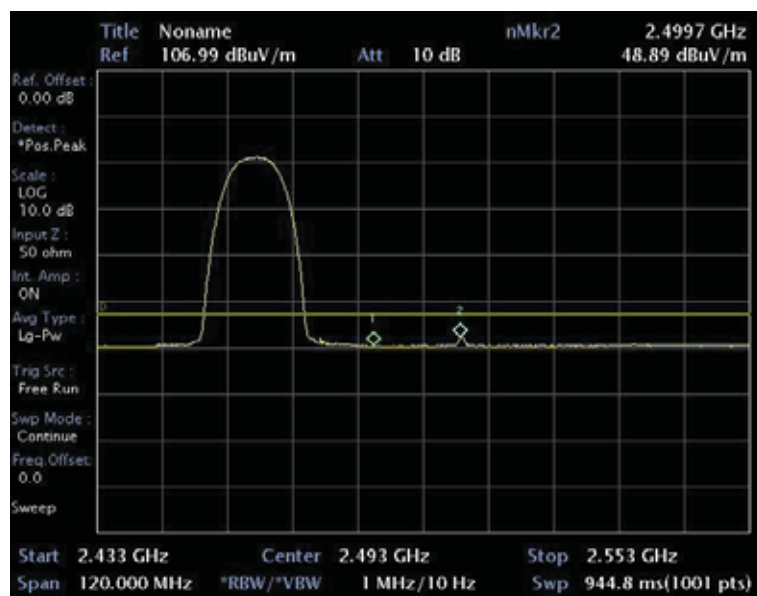
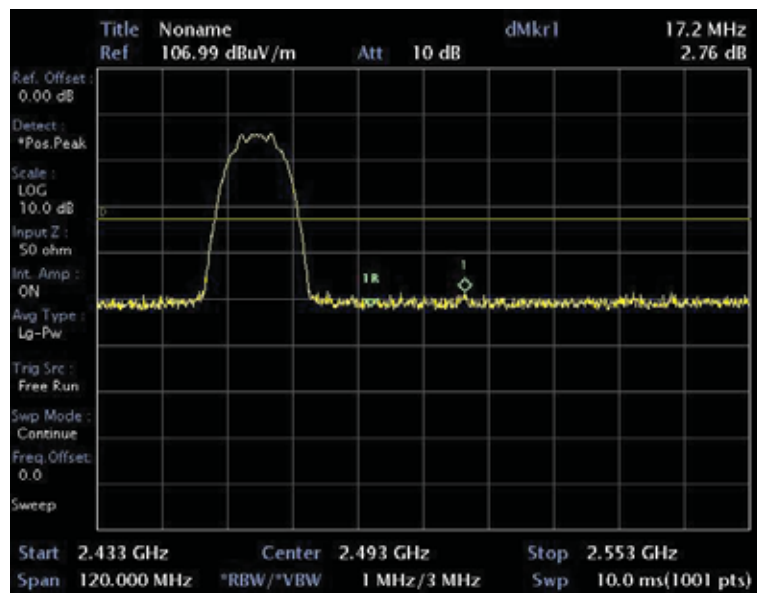
Test Item	Band Edge		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2483.5	Peak	55.86	74.00	18.14
2483.5	Avg.	47.20	54.00	6.80
2500.1	Avg.	49.26	54.00	4.74
2500.3	Peak	58.05	74.00	15.95

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

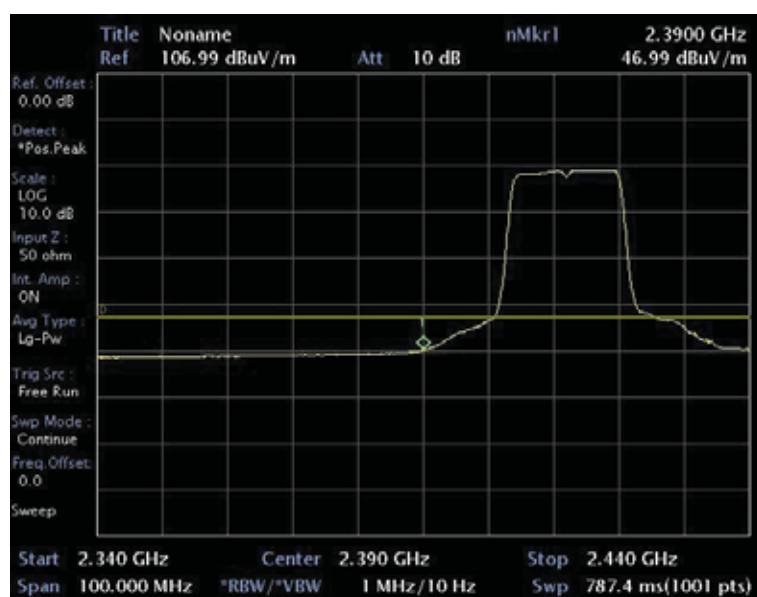
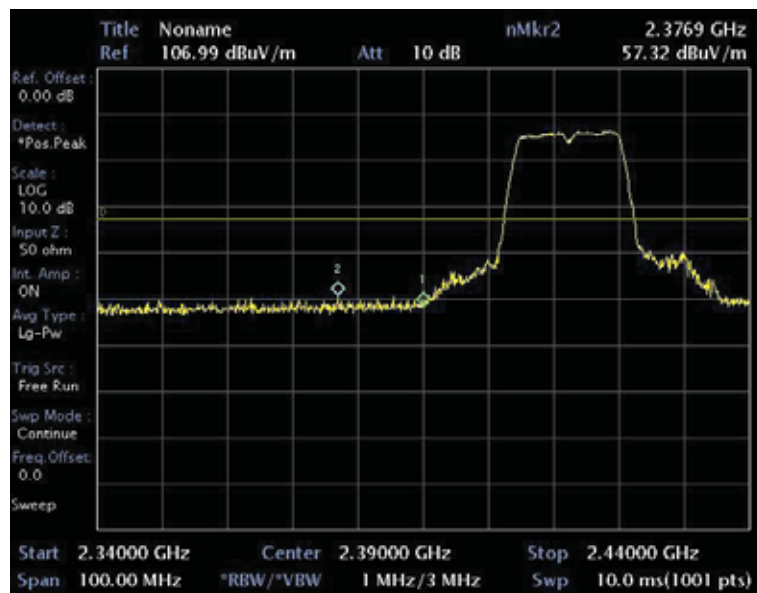
Test Item	Band Edge		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2483.5	Peak	55.41	74.00	18.59
2483.5	Avg.	47.21	54.00	6.79
2499.7	Avg.	48.89	54.00	5.11
2500.1	Peak	58.16	74.00	15.84

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

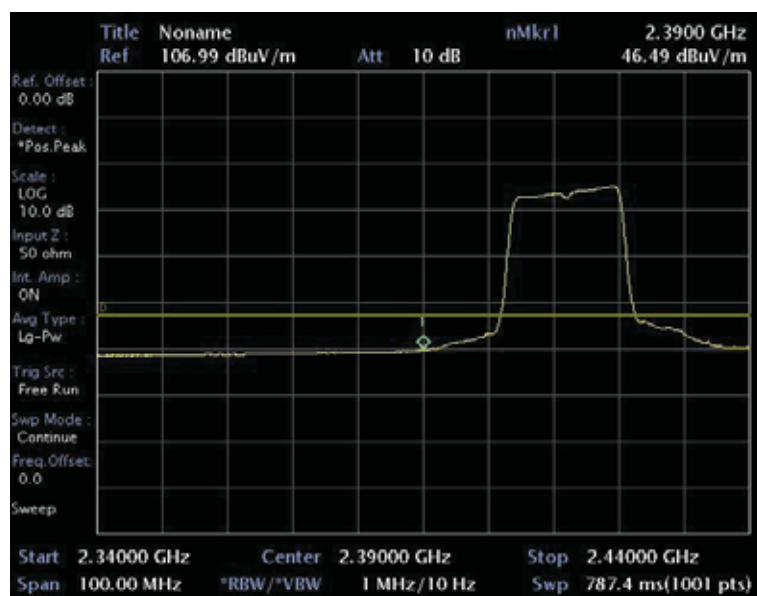
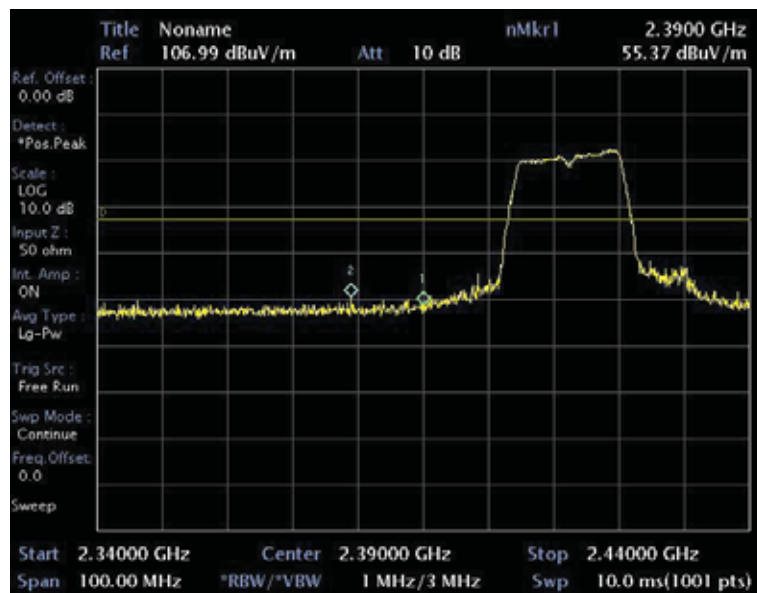
Test Item	Band Edge		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2376.9	Peak	57.32	74.00	16.68
2390	Peak	55.18	74.00	18.82
2390	Avg.	46.99	54.00	7.01

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

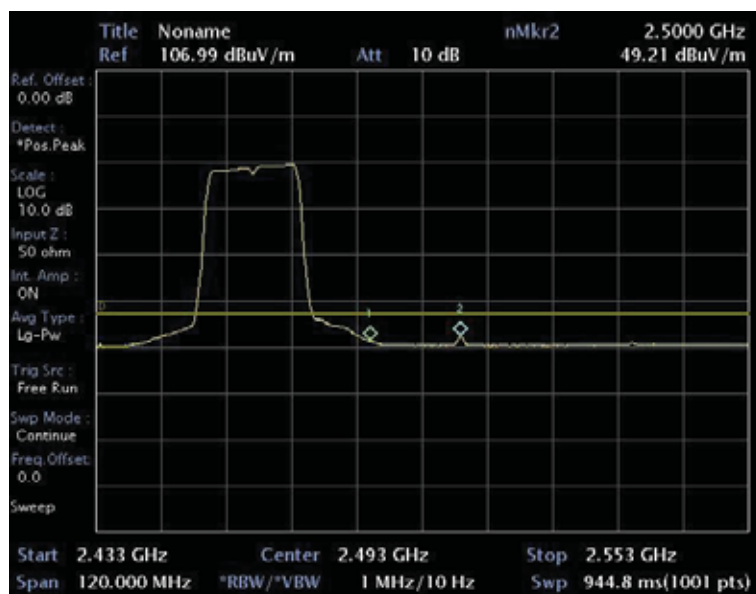
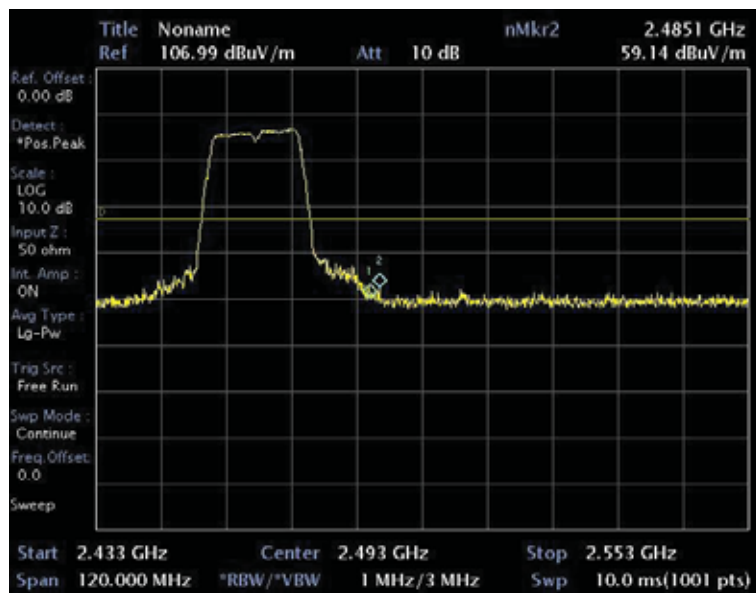
Test Item	Band Edge		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1 (2412 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2378.9	Peak	57.03	74.00	16.97
2390	Peak	55.37	74.00	18.63
2390	Avg.	46.49	54.00	7.51

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

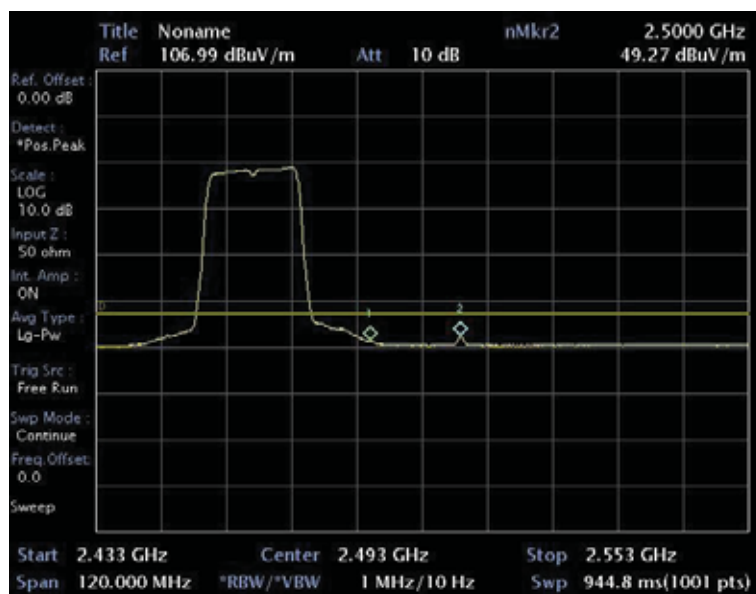
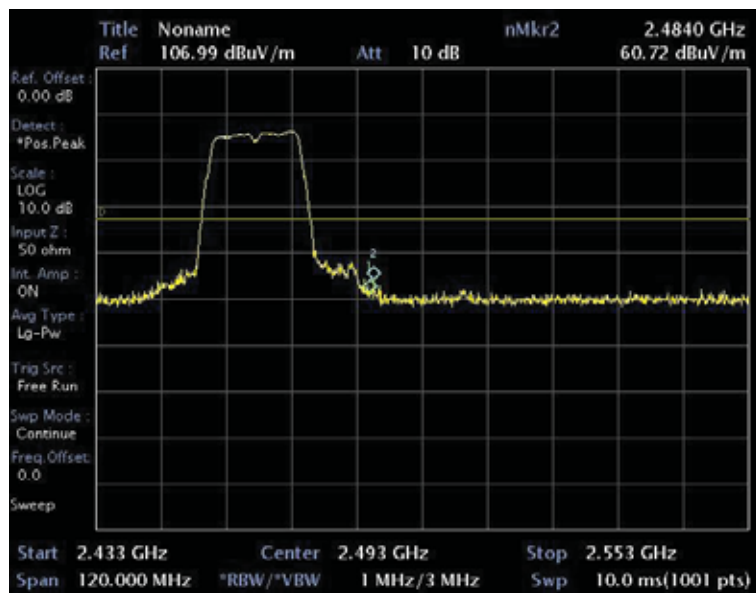
Test Item	Band Edge		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Horizontal



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2483.5	Peak	56.97	74.00	17.03
2483.5	Avg.	48.08	54.00	5.92
2485.1	Peak	59.14	74.00	14.86
2500.0	Avg.	49.21	54.00	4.79

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

Test Item	Band Edge		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 11 (2462 MHz)	Test Site	3 m Semi-Anechoic Chamber
Meas.Method	Radiated	Polarization	Vertical



Frequency (MHz)	Detector (Peak/Avg.)	Result Emission (dBuV/m)	Limits (dBuV/m)	Margin (dB)
2483.5	Peak	57.84	74.00	16.16
2483.5	Avg.	48.16	54.00	5.84
2484	Peak	60.72	74.00	13.28
2500.0	Avg.	49.27	54.00	4.73

- Note : 1. Result Emission (dBuV/m) = Reading Level (dBuV/m)+Correction Factor (dB)

3.4 6 dB Band

3.4.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next of Cal.
Spectrum Analyzer	Aglient	E4440A	MY45304577	03/05/2014
DC Power Supply	DIGITAL	DRP-303D	5070395	01/09/2014

- Note : 1. The calibration interval of the above test instrument is 12 month and the calibrations are traceable to RRA, KRISS, KTL and HCT.
2. The calibration interval of horn, Loop Ant. and bi-log Ant. is 24 months

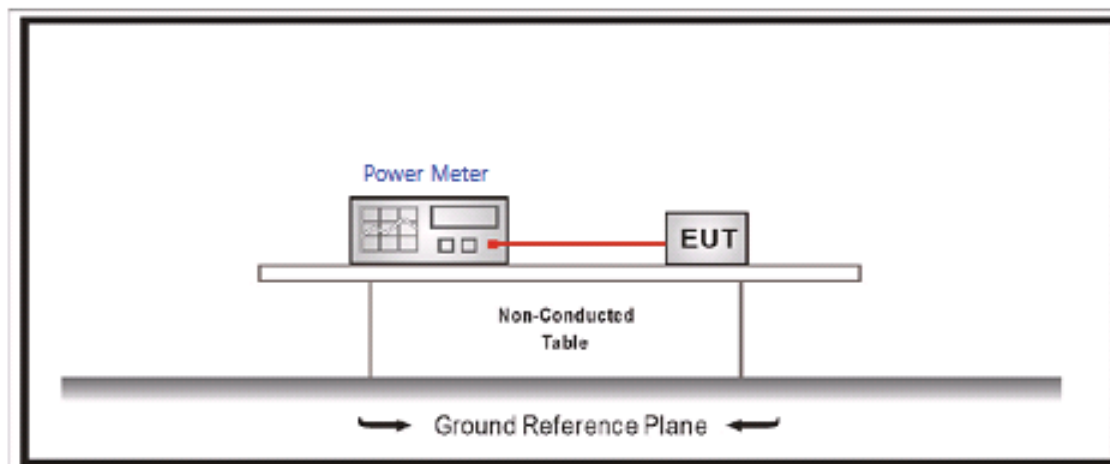
3.4.2 Limit

(a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions :

(2) systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

3.4.3 Test Configuration

RF Conducted Measurement:



3.4.4 Test Procedure

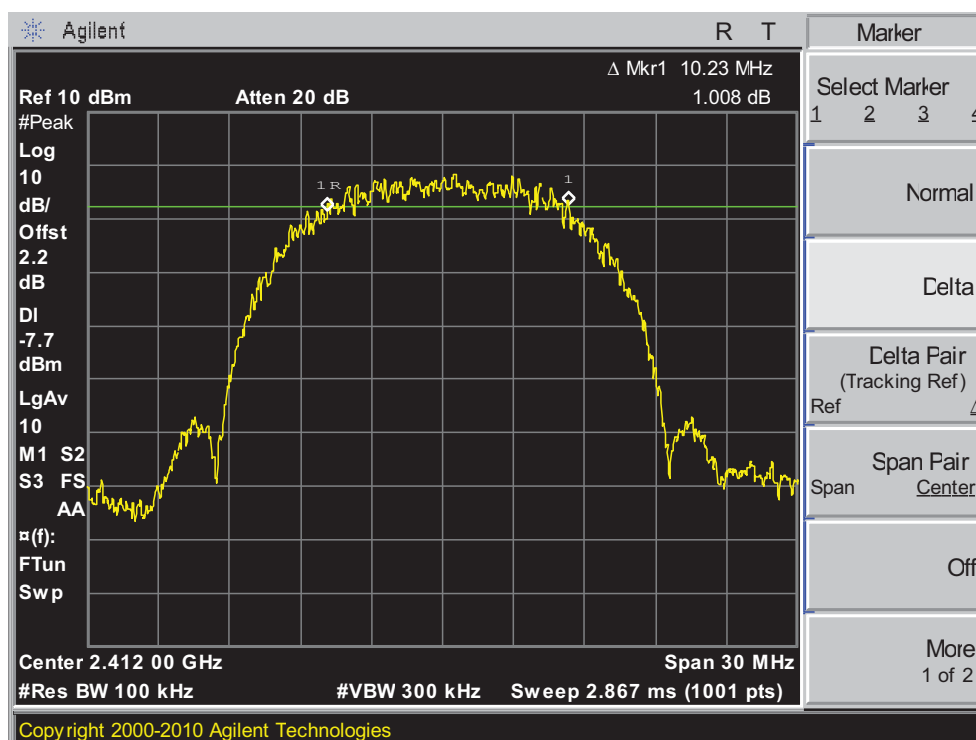
The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the 6dB Band.

3.4.5 6 dB Band Test Result

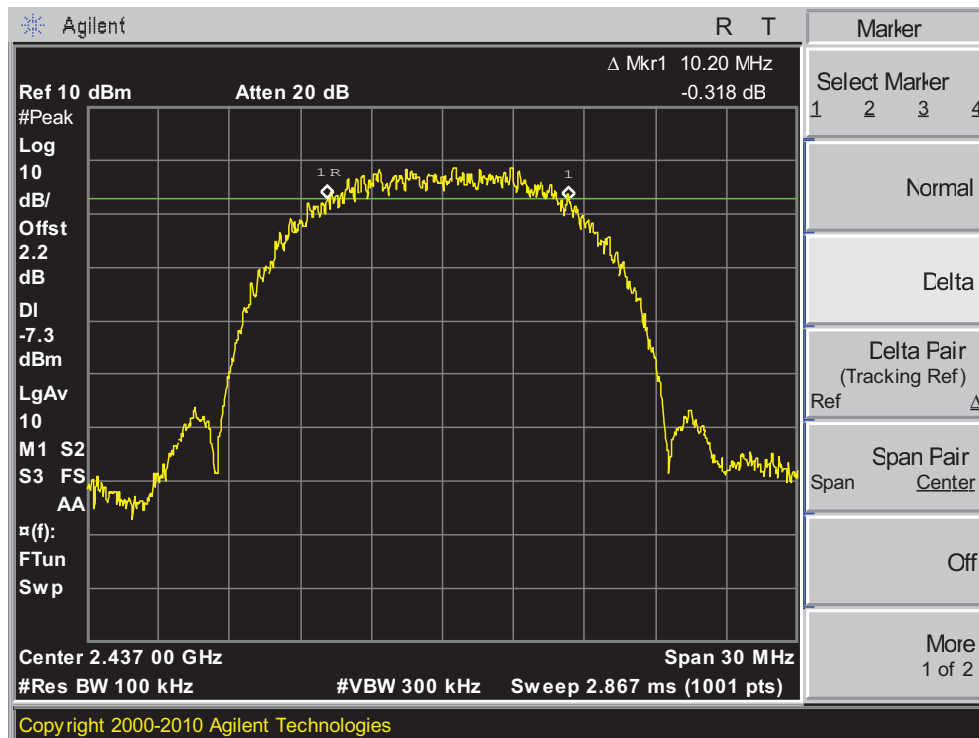
Test Item	6 dB Bandwidth		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1, 6, 11	Test Site	RF Shielded Room
Meas.Method	Conducted	Polarization	N/A

Channel No.	Frequency (MHz)	Measure level (kHz)	Limit (kHz)	Result
1	2412	10230	> 500	Pass
6	2437	10200	> 500	Pass
11	2462	10230	> 500	Pass

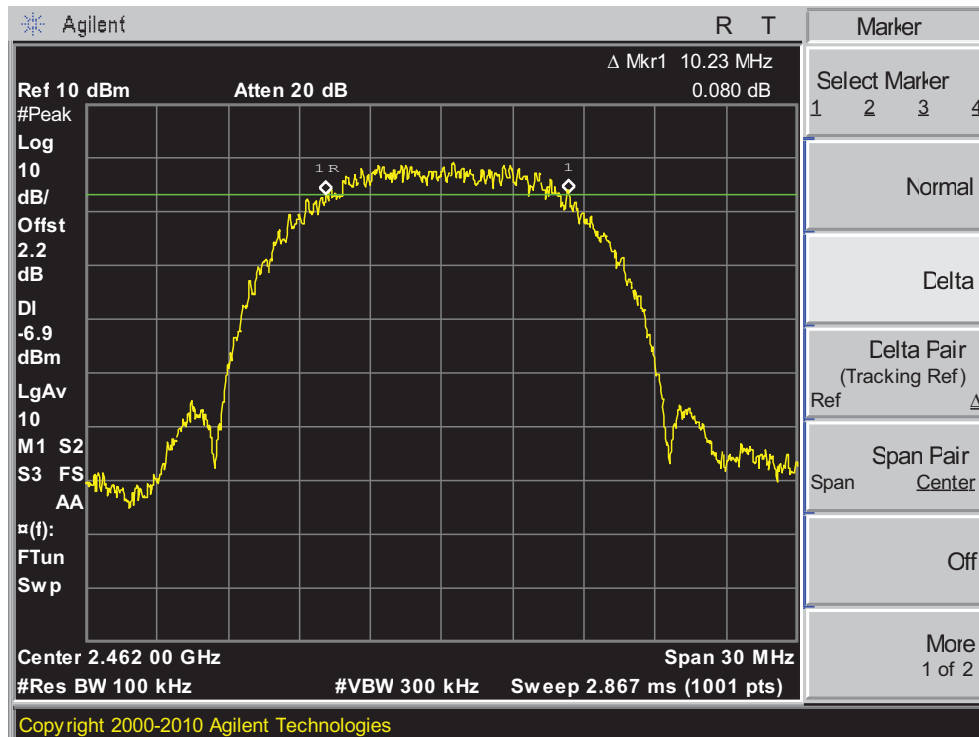
Channel 1. (2412 MHz)



Channel 6. (2437 MHz)



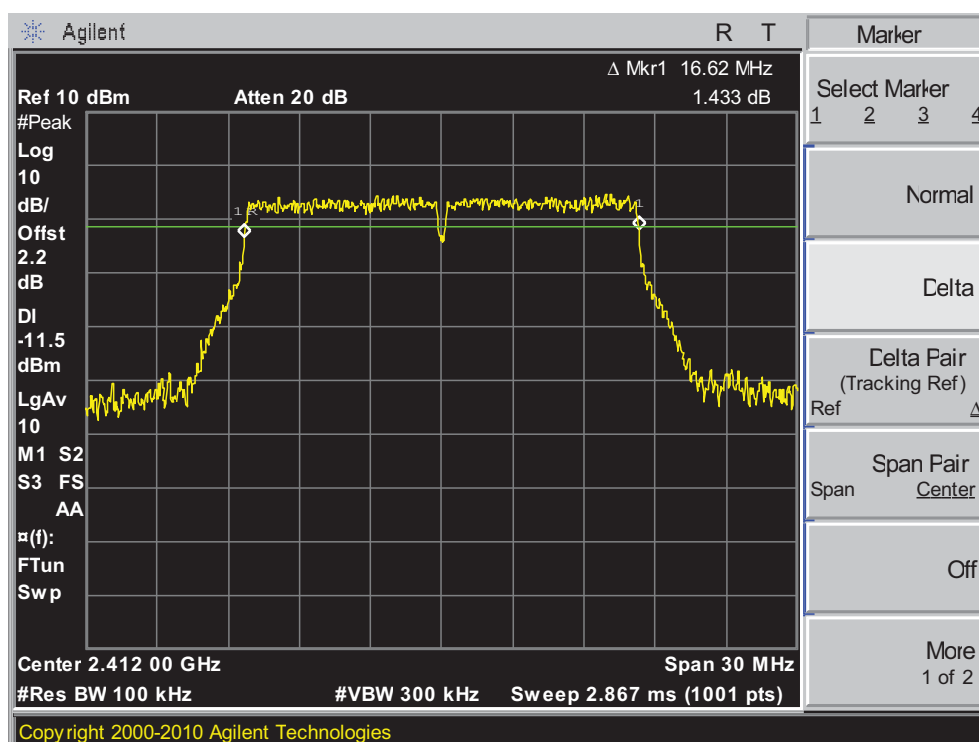
Channel 11. (2462 MHz)

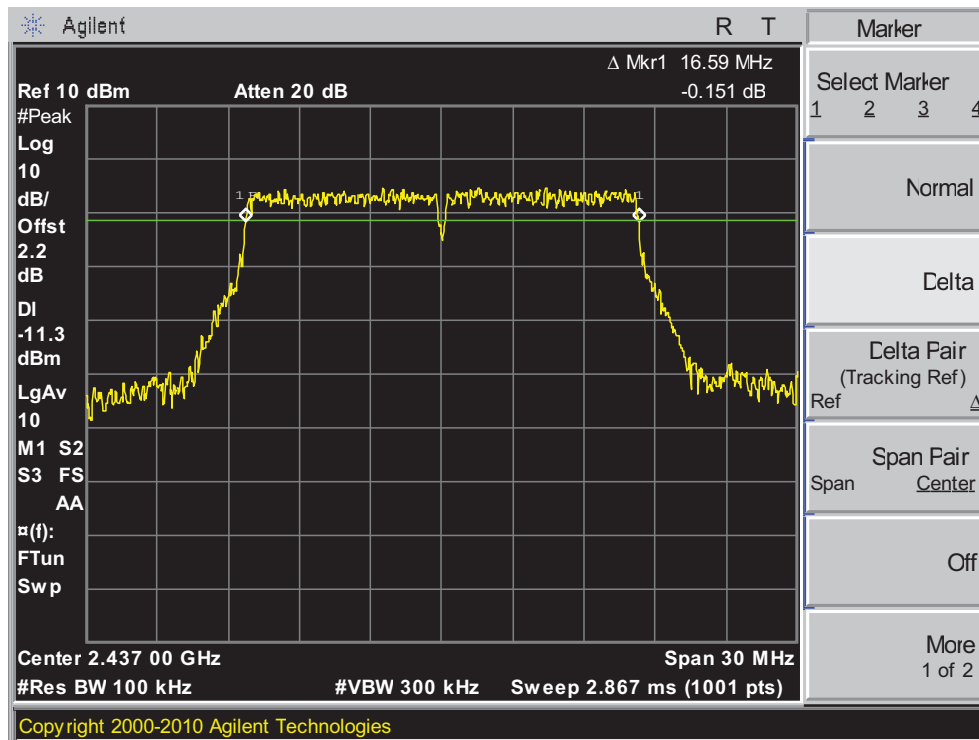
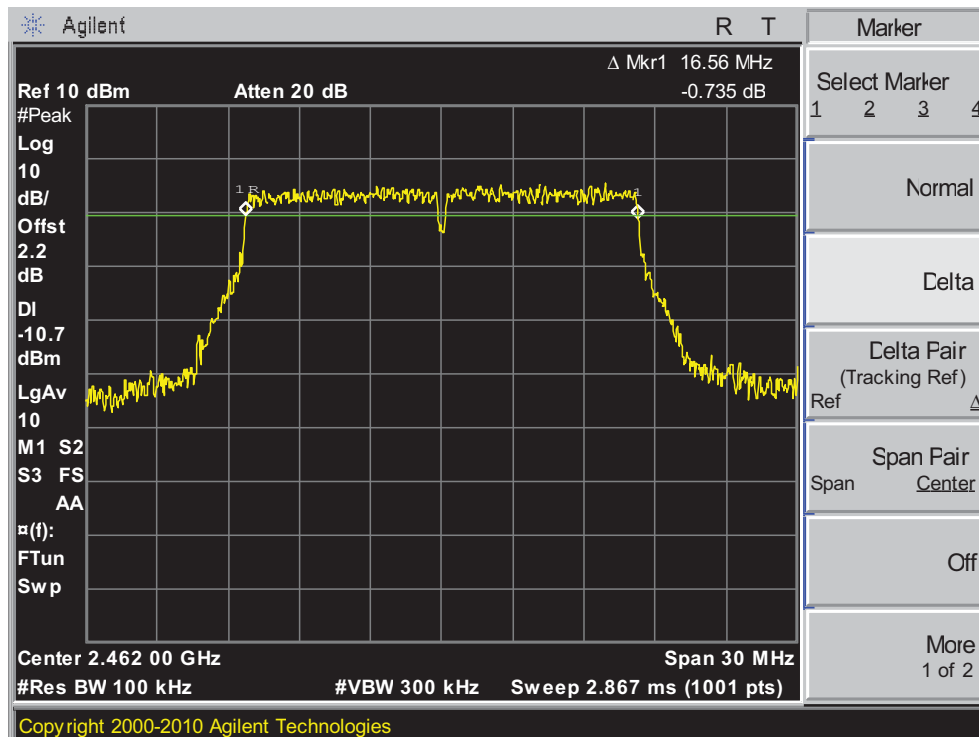


Test Item	6 dB Bandwidth		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1, 6, 11	Test Site	RF Shielded Room
Meas.Method	Conducted	Polarization	N/A

Channel No.	Frequency (MHz)	Measure level (kHz)	Limit (kHz)	Result
1	2412	16620	> 500	Pass
6	2437	16590	> 500	Pass
11	2462	16560	> 500	Pass

Channel 1. (2412 MHz)



Channel 6. (2437 MHz)

Channel 11. (2462 MHz)


3.5 Power Density

3.5.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next of Cal.
Spectrum Analyzer	Aglient	E4440A	MY45304577	03/05/2014
DC Power Supply	DIGITAL	DRP-303D	5070395	01/09/2014

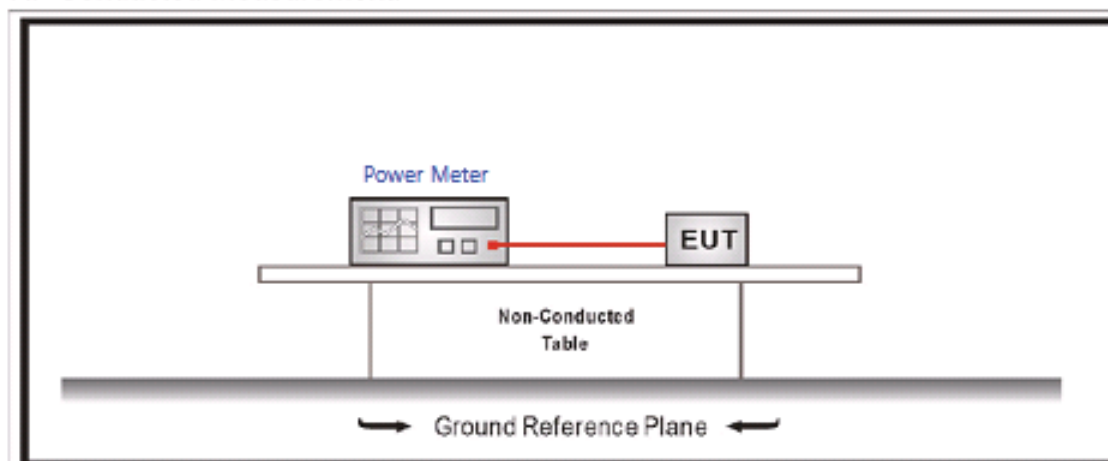
- Note : 1. The calibration interval of the above test instrument is 12 month and the calibrations are traceable to RRA, KRISS, KTL and HCT.
2. The calibration interval of horn, Loop Ant. and bi-log Ant. is 24 months

3.5.2 Limit

Section 15.247 (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (v) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

3.5.3 Test Configuration

RF Conducted Measurement:



3.5.4 Test Procedure

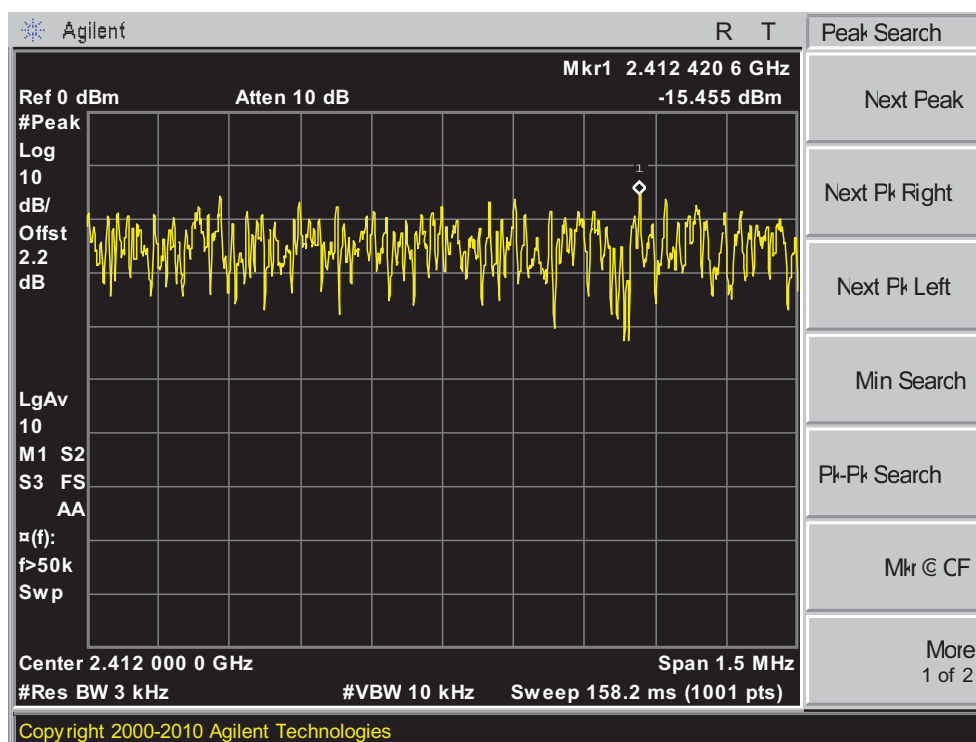
The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the Power Density.

3.5.5 Power Density Test Result

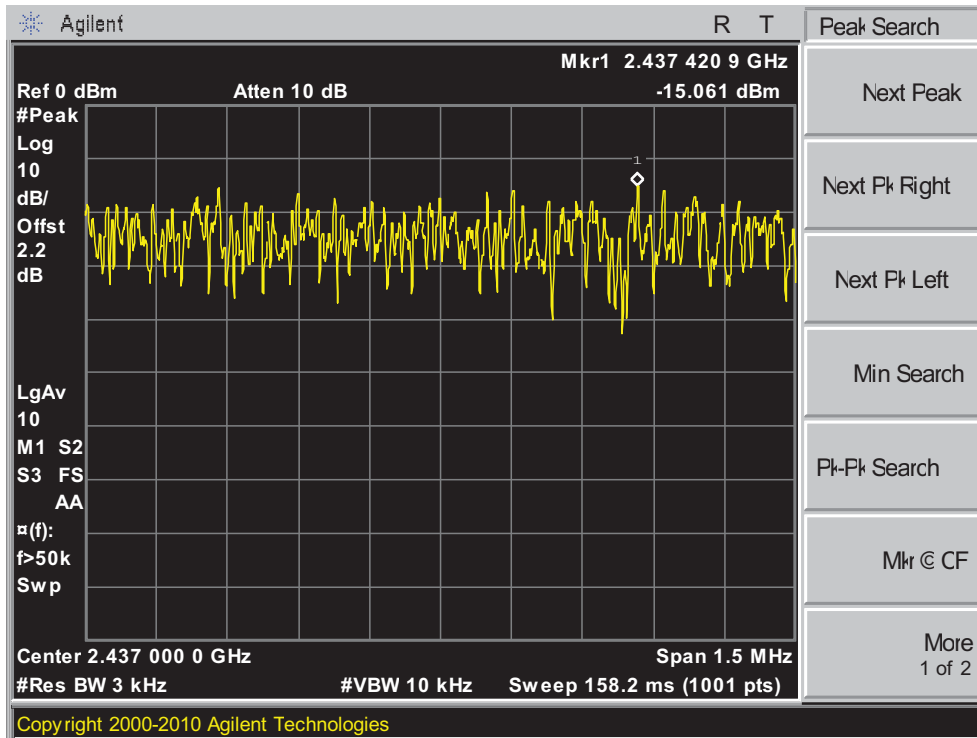
Test Item	Power Density		
Test Mode	IEEE 802.11b	Test Data Rate	5.5 Mbps
Test Channel	Channel 1, 6, 11	Test Site	RF Shielded Room
Meas.Method	Conducted	Polarization	N/A

Channel No.	Frequency (MHz)	Measure level (dBm)	Limit (dBm)	Result
1	2412	-15.455	< 8	Pass
6	2437	-15.061	< 8	Pass
11	2462	-14.321	< 8	Pass

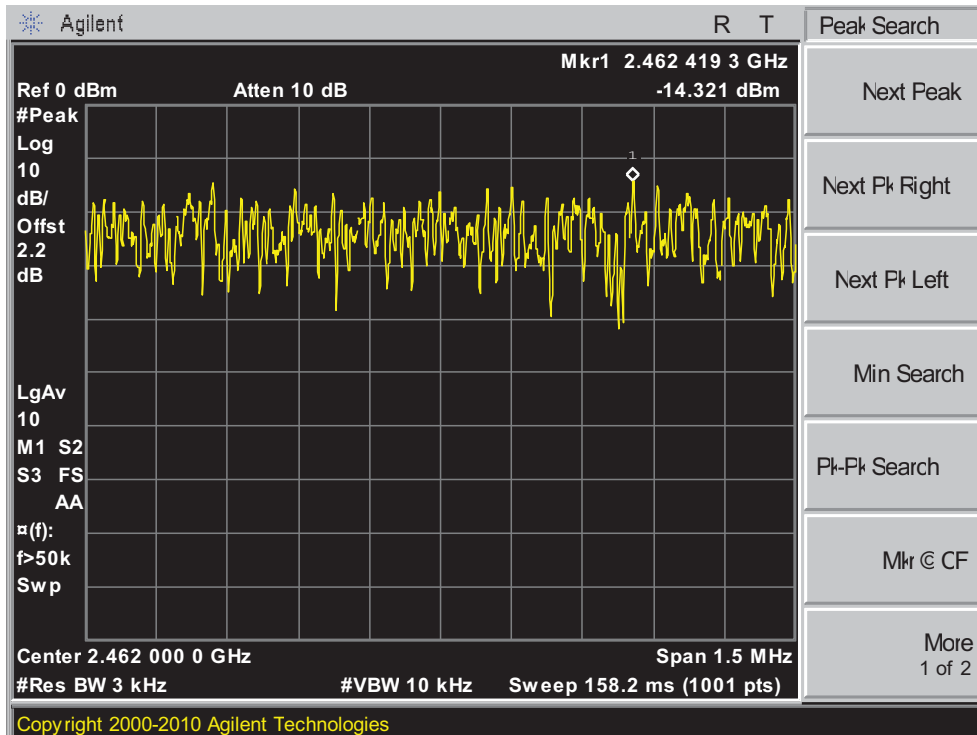
Channel 1. (2412 MHz)



Channel 6. (2437 MHz)



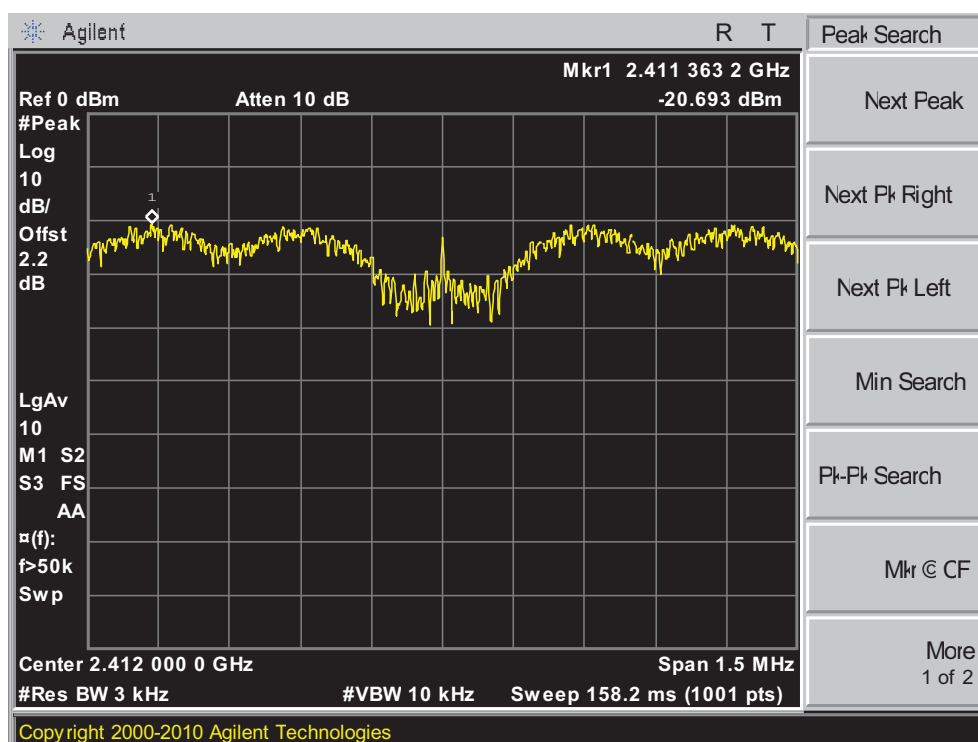
Channel 11. (2462 MHz)



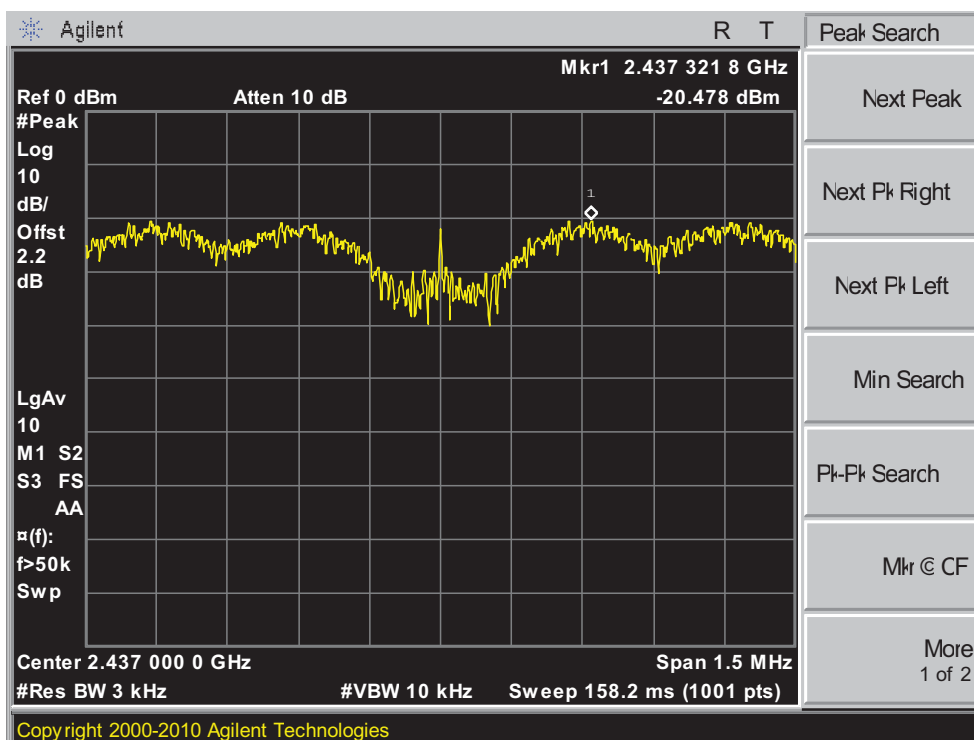
Test Item	Power Density		
Test Mode	IEEE 802.11g	Test Data Rate	6 Mbps
Test Channel	Channel 1, 6, 11	Test Site	RF Shielded Room
Meas.Method	Conducted	Polarization	N/A

Channel No.	Frequency (MHz)	Measure level (dBm)	Limit (dBm)	Result
1	2412	-20.693	< 8	Pass
6	2437	-20.478	< 8	Pass
11	2462	-20.217	< 8	Pass

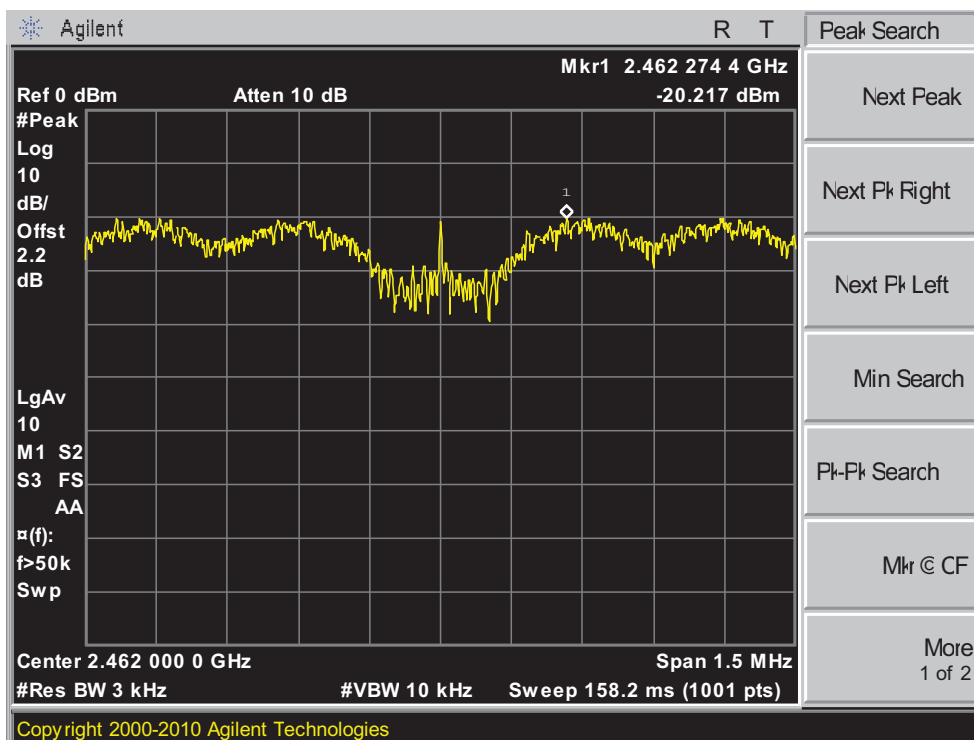
Channel 1. (2412 MHz)



Channel 6. (2437 MHz)



Channel 11. (2462 MHz)



4.0 RF Exposure

4.1 Test Instruments

Description	Manufacturer	Model No.	Serial No.	Next of Cal.
Power Meter	Aglient	E4416A	GB41050459	12/03/2013
Peak & Avg. Power Sensor	Aglient	E9327A	US40440771	12/03/2013
DC Power Supply	DIGITAL	DRP-303D	5070395	01/09/2014

- Note : 1. The calibration interval of the above test instrument is 12 month and the calibrations are traceable to RRA, KRISS, KTL and HCT.
- 2. The calibration interval of horn, Loop Ant. and bi-log Ant. is 24 months

4.2 Limit

According to §15.247(b)(4) and §1.1307(b)(1), Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. According to §1.1310 and §2.1093 RF exposure is calculated.

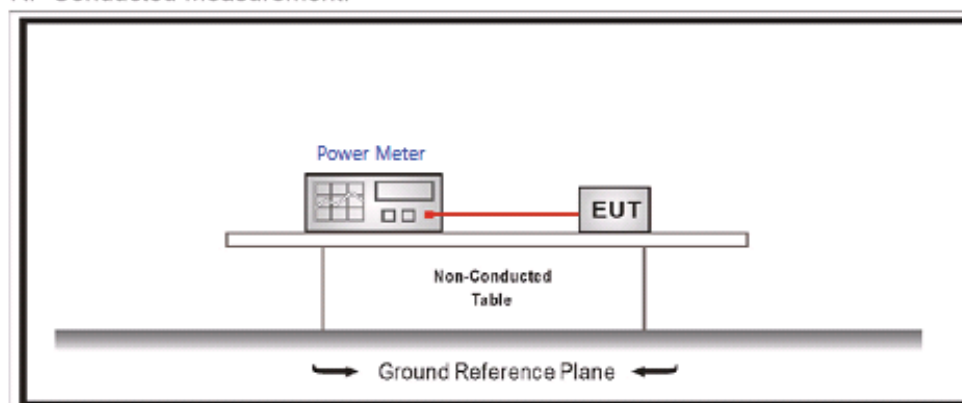
Limits for Maximum permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/MHz)	Averaging Time (min.)
Limits for General Population/Uncontrolled Exposure				
0.3 – 1.34	614	1.63	*(100)	30
1.34 – 30	$824/f$	$2.19/f$	$*(180/f^2)$	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	$f/1500$	30
1500 – 15000	/	/	1.0	30

- Note : 1. f = frequency in MHz
- 2. * = Plane – wave equipment power density

4.3 Test Configuration

RF Conducted Measurement:



4.4 Test Result

EUT	SMT-500P
Frequency Range	2412 ~ 2462 MHz
Device category	Base station equipment (< 20 cm separation)
Exposure Classification	General population/Uncontrolled exposure (S = 1 mW/cm ²)
Max. Output power	15.69 dBm (37.07 mW)
Antenna Gain (Max.)	2.50 dBi (numeric gain : 1.778)
Evaluation applied	MPE evaluation

- Note : 1. The Maximum output power is 15.69 dBm (37.07 mW) at 2462 MHz (numeric gain : 1.585)

2. For mobile or fixed location transmitters, no SAR consideration applied.

The minimum separation generally be used is at least 20cm, even if the calculations indicate that the MPE distance would be lesser.

$$S = PG/4\pi R^2$$

* S = Power density

* P = Power input to antenna

* G = power gain of the antenna in the direction of interest relative to an isotropic radiator

* R = Distance to the center of radiation of the antenna

EUT	SMT-500P
Maximum peak output power at antenna input terminal (dBm)	15.69
Maximum peak output power at antenna input terminal (mW)	37.07
Antenna Gain (typical)(dBi)	2.50
Maximum antenna gain (numeric)	1.778
Prediction distance (cm)	20
Predication frequency (MHz)	2462
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1
Power density at predication frequency (mW/cm ²)	0.013120

Note : The power density at 20 cm does not exceed the 1mW/cm² limit. Therefore, the exposure condition is compliant with FCC rules.

5.0 ANTENNA REQUIREMENT

5.1 Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.2 Applicable Construction

The antenna is permanently mounted on PCB, no consideration of replacement.
the Maximum gain of the antennas is 2.5 dBi.

5.3 Test Result

Pass

Appendix A. The Photo of Test Setup

- Front View of Radiated Emission (9 kHz to 30 MHz)



- Rear View of Radiated Emission (9 kHz to 30 MHz)



- Front View of Radiated Emission (30 MHz to 1 GHz)



- Rear View of Radiated Emission (30 MHz to 1 GHz)



- Front View of Radiated Emission (Above 1 GHz : 1 GHz to 18 GHz)



- Rear View of Radiated Emission (Above 1 GHz : 1 GHz to 18 GHz)



- Front View of Radiated Emission (Above 1 GHz : 18 GHz to 26.5 GHz)



- Rear View of Radiated Emission (Above 1 GHz : 18 GHz to 26.5 GHz)



Appendix B. The Photo of Equipment Under Test

- Front View of EUT



- Rear View of EUT



- Inner View of EUT

