

TEST REPORT

1. Applicant

Name : SAMSUNG ELECTRONICS CO., LTD.
Address : 416 Maetan3-Dong Yeongtong-gu, Suwon city,
Gyeonggi-Do, Korea 442-600

2. Products

Name : AT&T HomeManager
Model/Type : SMT-i8130
Manufacturer : SAMSUNG ELECTRONICS CO., LTD.

3. Test Standard : CFR 47 Part 15, Subpart C

4. Test Method : ANSI C63.4-2003

5. Test Result : Positive

6. Date of Application : January 14, 2008

7. Date of Issue : February 19, 2008

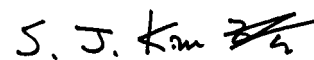
Tested by



Bum-Jong Kim

Telecommunication Team
Engineer

Approved by



Seok-Jin Kim

Telecommunication Team
Manager

The test results contained apply only to the test sample(s) supplied by the applicant, and this test report shall not be reproduced in full or in part without approval of the KTL in advance.

Korea Testing Laboratory

TABLE OF CONTENTS

1.	GENERAL INFORMATIONS	3
1.1.	Applicant (Client)	3
1.2.	Equipment (EUT).....	3
1.3.	Testing Laboratory.....	3
2.	SUMMARY OF TEST RESULTS	4
3.	TEST FACILITY	5
3.1.	Korea Testing Laboratory test location	5
4.	MEASUREMENT & RESULTS	6
4.1.	6dB Bandwidth.....	6
4.1.1.	Test Setup Layout	6
4.1.2.	Test Condition	6
4.1.3.	Test result.....	6
4.2.	Maximum Peak Power	10
4.2.1.	Test Setup Layout	10
4.2.2.	Test Condition	10
4.2.3.	Test result.....	10
4.3.	100 KHz Bandwidth of Frequency Band Edges	14
4.3.1.	Test Setup Layout	14
4.3.2.	Test Condition	14
4.3.3.	Test result.....	14
4.4.	Power Spectral Density	19
4.4.1.	Test Setup Layout	19
4.4.2.	Test Condition	19
4.4.3.	Test result.....	19
4.5.	Radiated Emissions (FCC Part15.209).....	23
4.5.1.	Test Procedure	23
4.5.2.	Limits	24
4.5.3.	Sample Calculation	25
4.5.4.	Photograph for the test configuration.....	25
4.5.5.	Test Results.....	26
4.6.	Conducted Emissions (FCC Part 15.207)	33
4.6.1.	Test Procedure	33
4.6.2.	Limits	34
4.6.3.	Sample calculation	34
4.6.4.	Photograph for the test configuration.....	34
4.6.5.	Test Results.....	35
5.	TEST EQUIPMENTS	39
APPENDIX.1	EUT PHOTO	40
APPENDIX.2	TEST SETUP PHOTO	41

1. GENERAL INFORMATION

1.1. Applicant (Client)

Name	SAMSUNG ELECTRONICS CO., LTD.
Address	Dong Suwon P.O.BOX 105, 416, Maetan-3dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 442-600
Contact Person	HagYoun Bae
Telephone No.	+82-31-279-4387
Facsimile No.	+82-31-279-0389
E-mail address	Hagyoun.bae@samsung.com

1.2. Equipment (EUT)

Type of equipment	WLAN 802.11b/g
Model Name	SMT-i8130
FCC ID	A3LSMT-I8130
Frequency Band	2412 ~ 2462 MHz
Type of Modulation	DSSS
Number of Channels	11 channels
Antenna Gain	Max 2.493 dB
Function Type	Transceiver
Power Source	Adaptor Input : AC 120V Output : DC 5V
Manufacturer Name	SAMSUNG ELECTRONICS CO., LTD.
Manufacturer Address	259, Gongdan-Dong, Gumi-City, Gyeongsangbuk-Do

1.3. Testing Laboratory

Testing Place	Korea Testing Laboratory (KTL) 1271-12, Sa-Dong Sangnok-Gu, Ansan-si Gyeonggi-Do, Korea
Test Engineer	Bum-Jong KIM
Telephone number	+82 31 5000 131
Facsimile number	+82 31 5000 159
E-mail address	temple@ktl.re.kr
Other Comments	-

2. SUMMARY OF TEST RESULTS

Testing performed for : SAMSUNG ELECTRONICS CO., LTD.

Equipment Under Test : SMT-i8130

Receipt of Test Sample : January 16, 2008

Test Start Date : January 21, 2008

Test End Date : February 14, 2008

The following table represents the list of measurements required under the FCC CFR47 Part 15.207, 15.247, and 15.209

WLAN 802.11 b/g mode

FCC Rules	Test Requirements	Result
15.247(a)(2)	6dB Bandwidth	Pass
15.247(b)	Maximum Peak Output Power	Pass
15.247(c)	100 KHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	Power Spectral Density	Pass
15.209(a)	Radiated Emission	Pass
15.207(a)	Conducted Emission	Pass

Note 1 : Test results reported in this document relate only to the items tested

Note 2 : The required tests demonstrated compliance as per client declaration of test configuration, monitoring methodology and associated pass/fail criteria

Note 3 : Test results apply only to the item(s) tested

* Modifications required for compliance

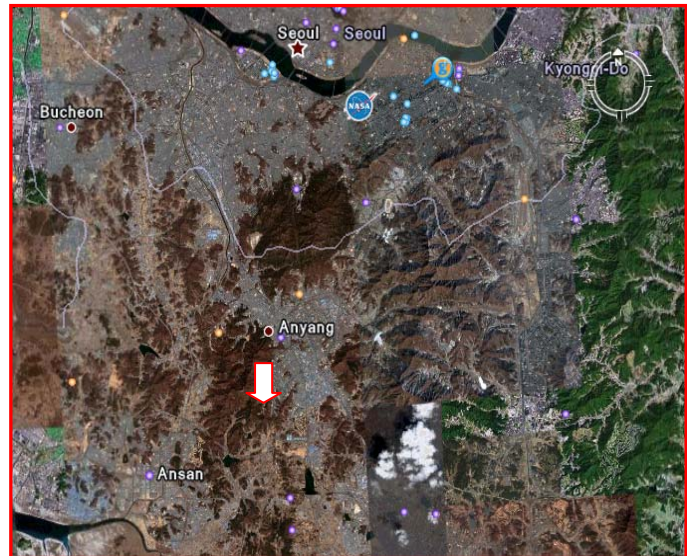
No modifications were implemented by KTL.

All results in this report pertain to the un-modified sample provided to KTL.

3. TEST FACILITY

3.1. Korea Testing Laboratory test location

All tests were conducted at Korea Testing Laboratory. The site address is 516 Hae-an-ro, Sa-dong, Sangnok -gu, Ansan-si, Gyeonggi-do, 426-901, KOREA. The radiated emission test site is a 10-meter semi-anechoic chamber. The chamber meets the characteristics of CISPR 16-1:1993 and ANSI C63.4: 1992. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters.

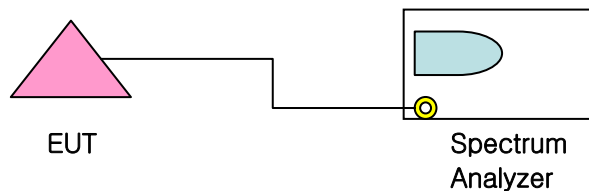


The FCC registration number is 408324. The Industry Canada filing number for this site is 6298.

4. Measurement & Results

4.1. 6dB Bandwidth

4.1.1. Test Setup Layout



4.1.2. Test Condition

- Set RBW of Spectrum analyzer to 100 kHz
- The 6dB bandwidth is defined as the frequency range where the power is higher than the peak power minus 6dB. Digitally modulated system is using 6dB.

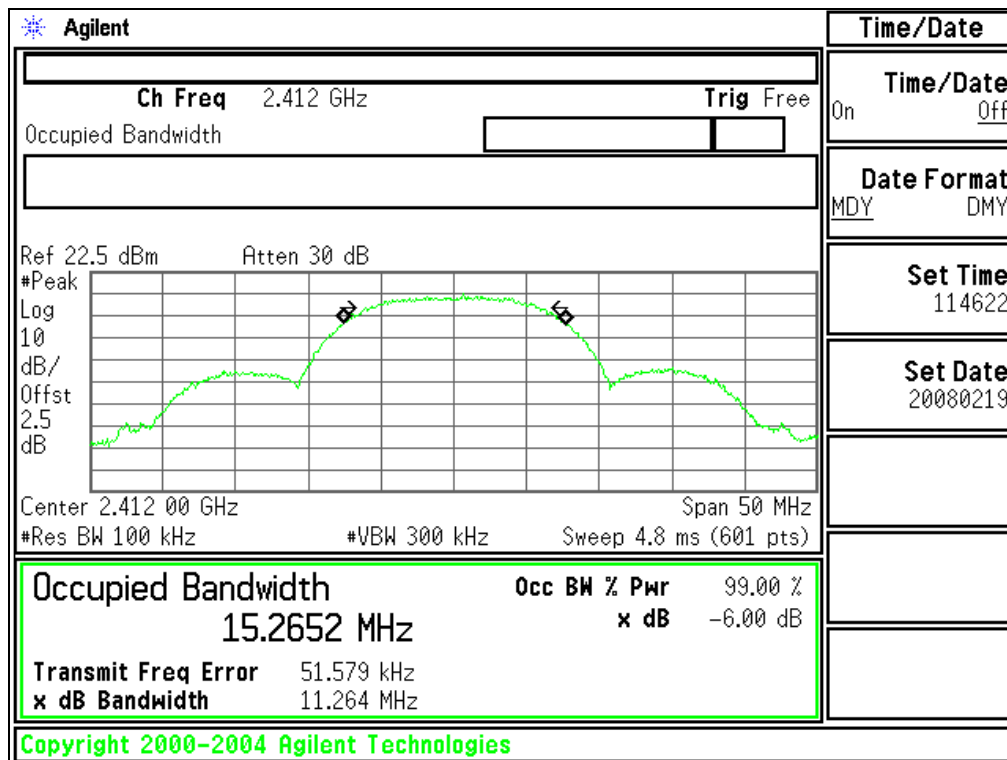
4.1.3. Test result

WLAN 802.11 b

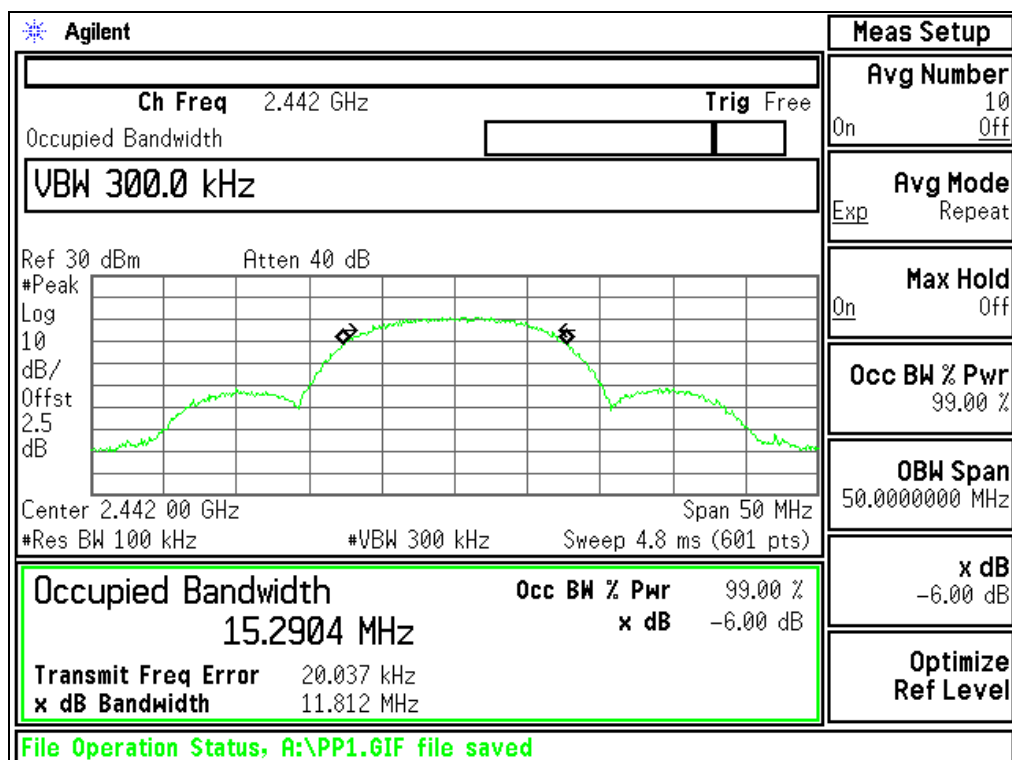
Channels	Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
1	2412	11.26	≥ 0.5	Pass
7	2442	11.81	≥ 0.5	Pass
11	2462	11.78	≥ 0.5	Pass

WLAN 802.11 g

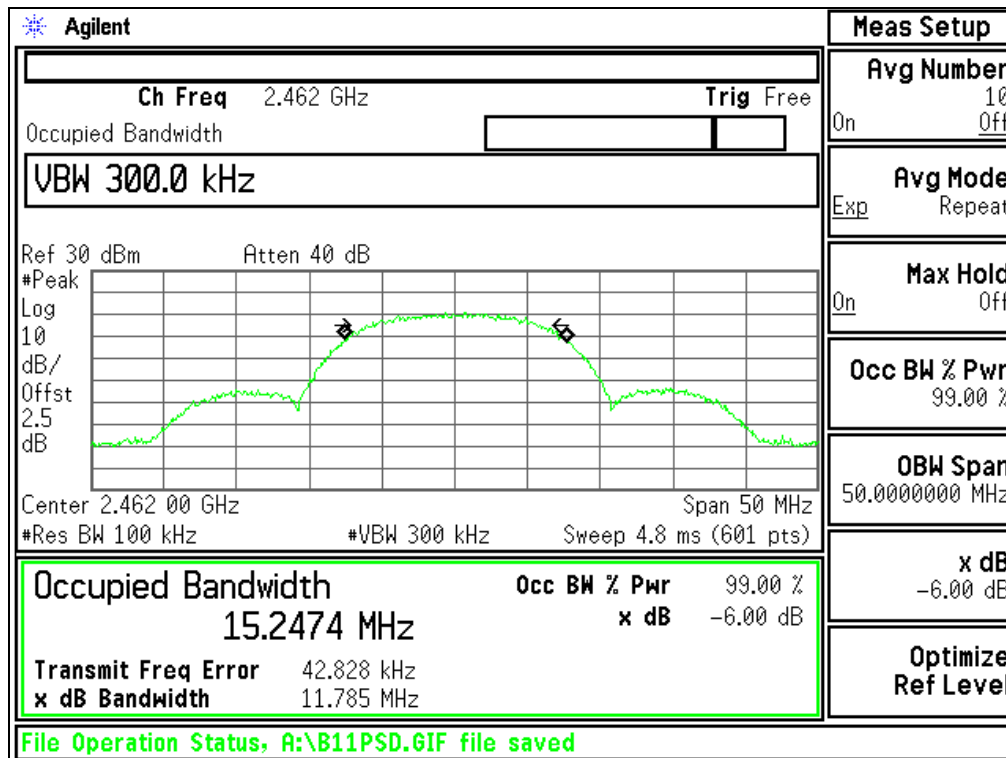
Channels	Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
1	2412	16.47	≥ 0.5	Pass
7	2442	16.53	≥ 0.5	Pass
11	2462	16.48	≥ 0.5	Pass



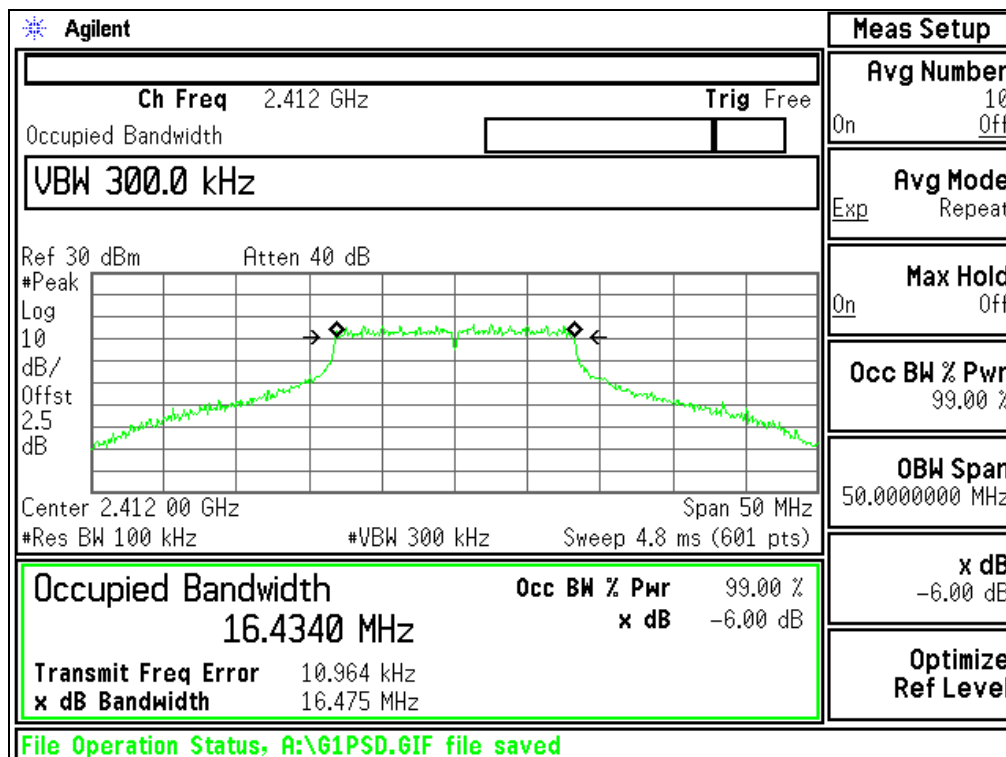
- 802.11b CH 1 -



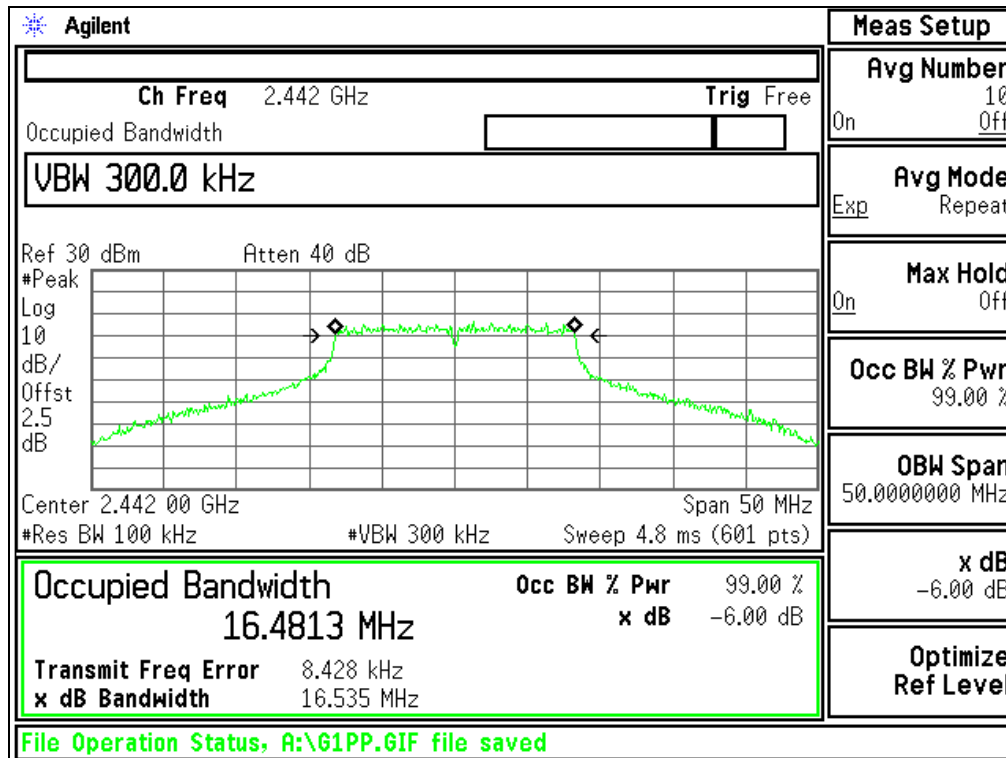
- 802.11b CH 7 -



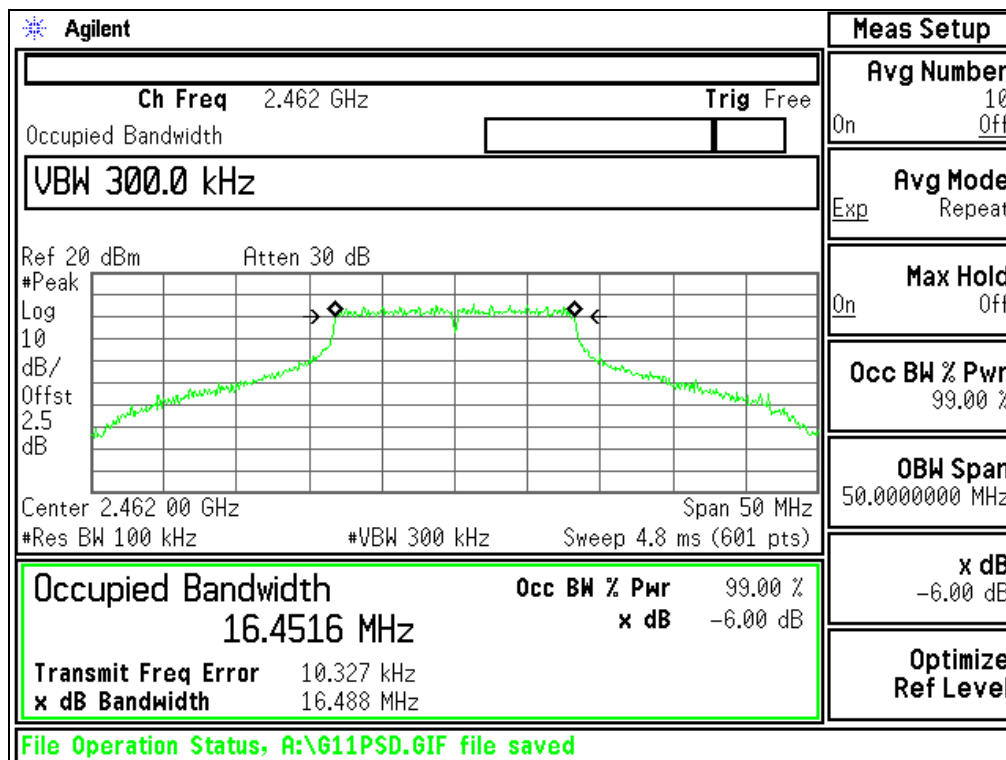
- 802.11b CH 11 -



- 802.11g CH 1 -



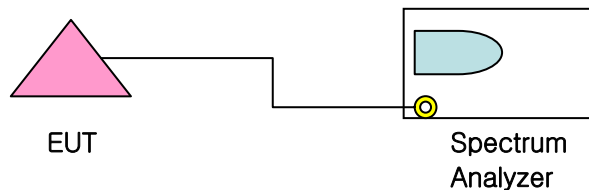
- 802.11g CH 7 -



- 802.11g CH 11 -

4.2. Maximum Peak Power

4.2.1. Test Setup Layout



4.2.2. Test Condition

- Set RBW of Spectrum analyzer to 1 MHz
- The Maximum Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.
- The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99 % bandwidth

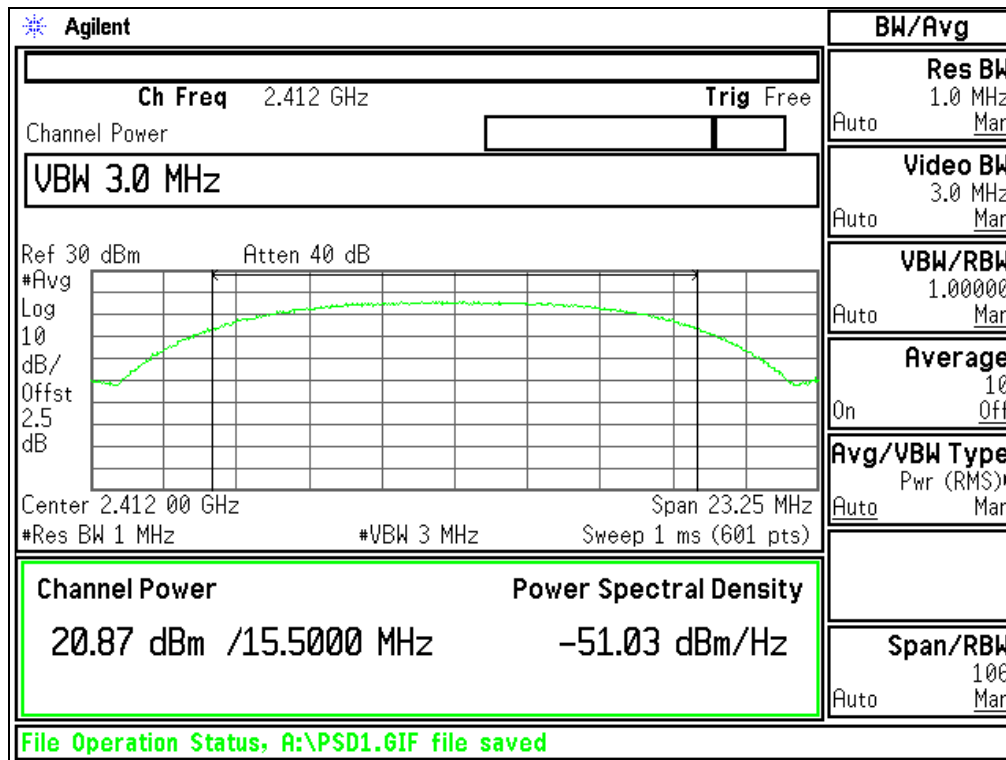
4.2.3. Test result

WLAN 802.11 b

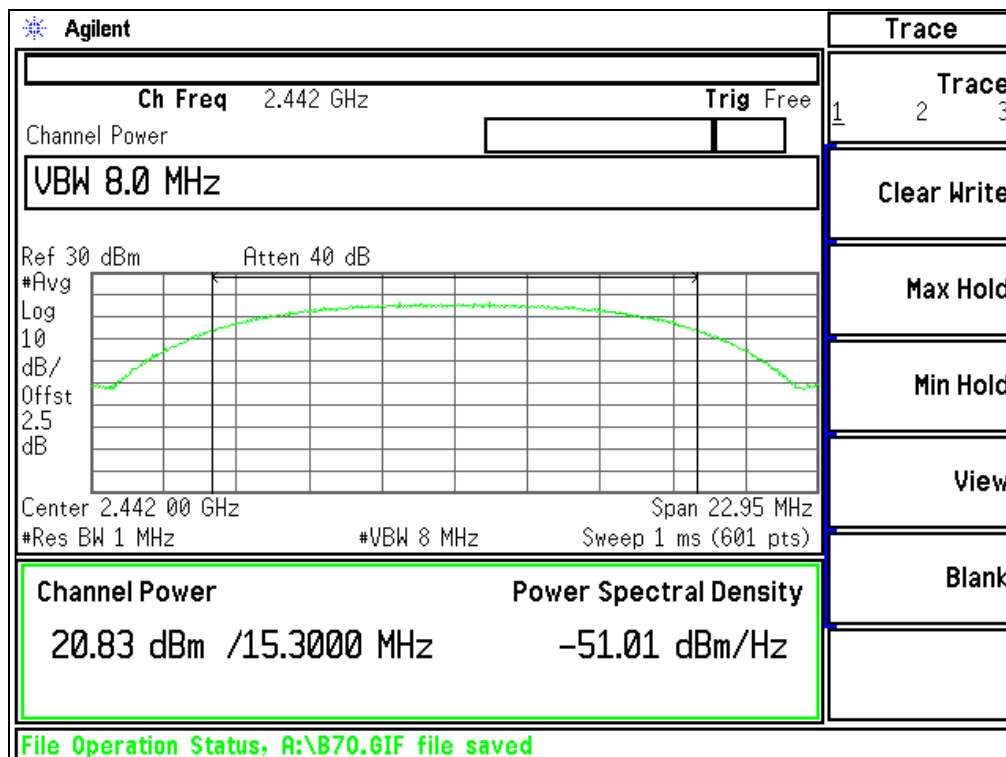
Channels	Frequency (MHz)	Result (dBm)	Limit (dB) 30dBm = 1W	Verdict
1	2412	20.87	≤ 30	Pass
7	2442	20.83	≤ 30	Pass
11	2462	20.32	≤ 30	Pass

WLAN 802.11 g

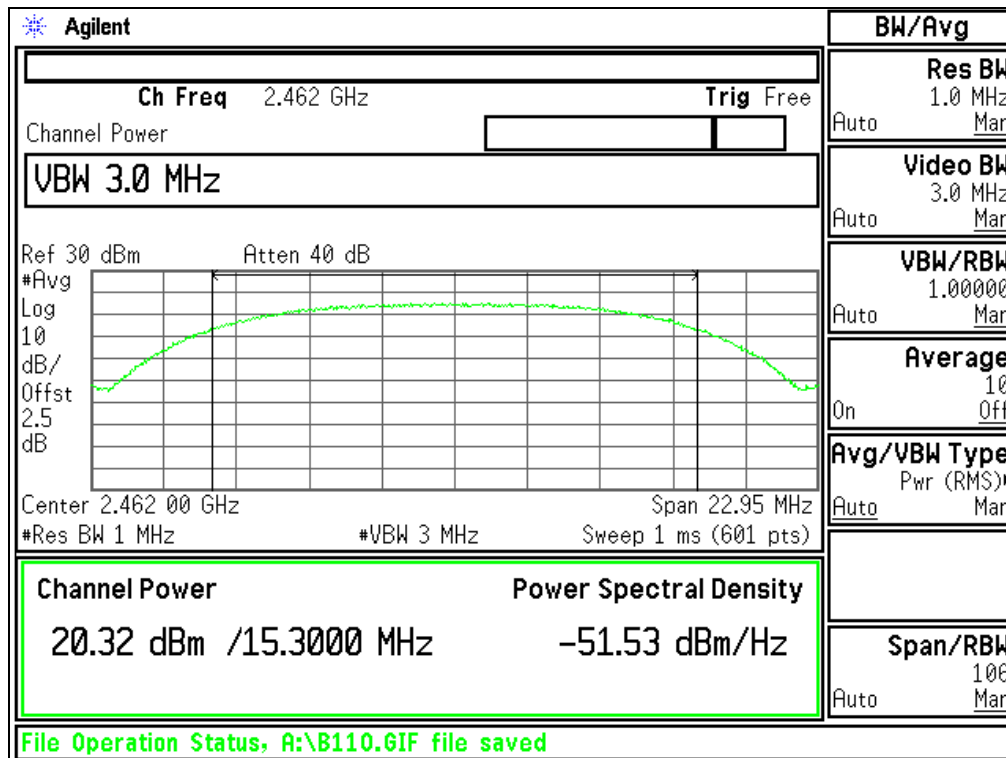
Channels	Frequency (MHz)	Result (dBm)	Limit (dB) 30dBm = 1W	Verdict
1	2412	17.12	≤ 30	Pass
7	2442	16.70	≤ 30	Pass
11	2462	16.03	≤ 30	Pass



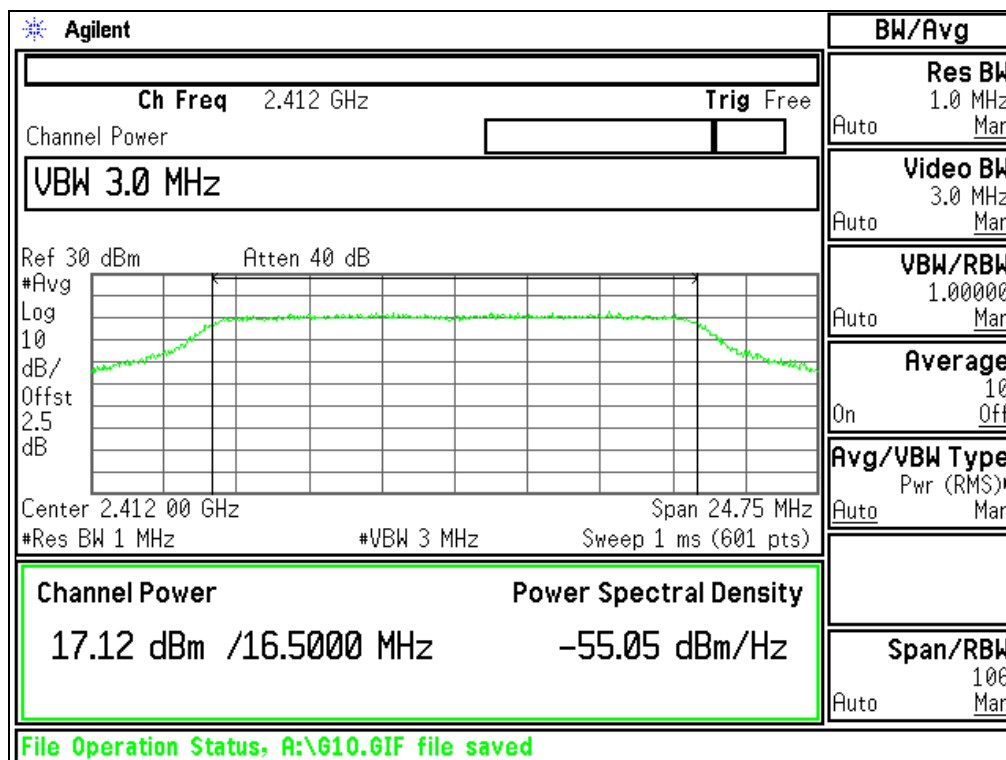
- 802.11b CH 1 -



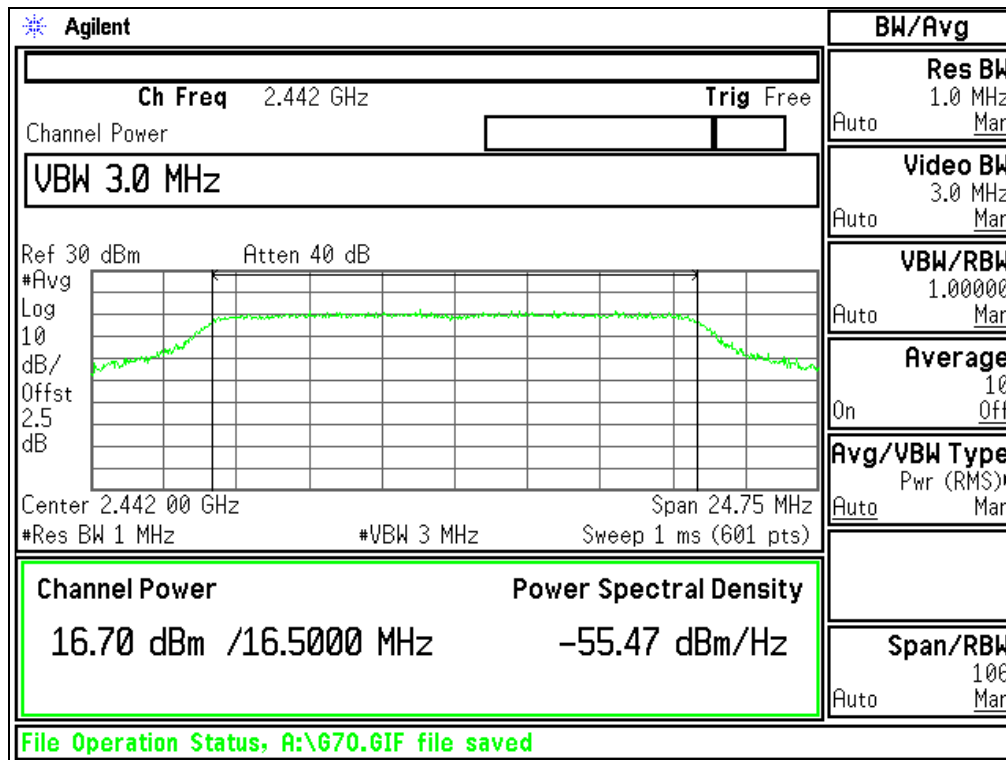
- 802.11b CH 7 -



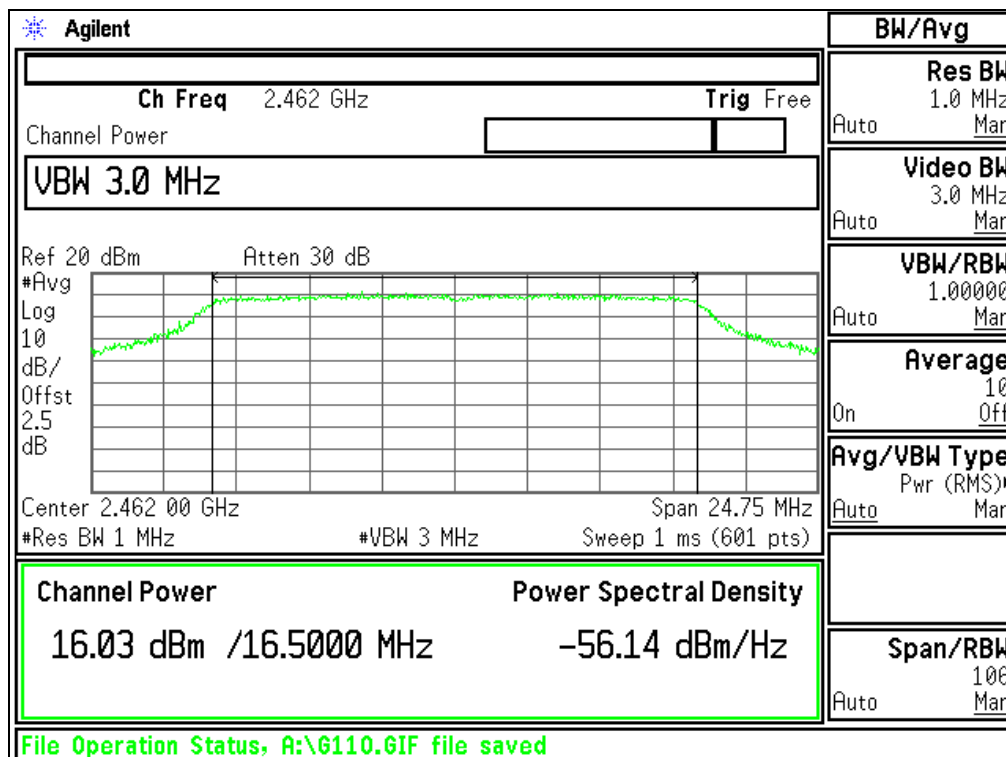
- 802.11b CH 11 -



- 802.11g CH 1 -



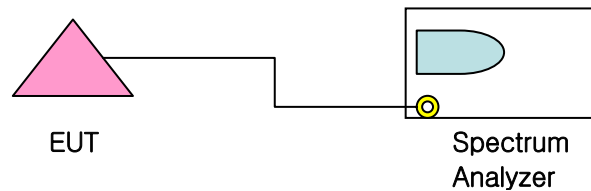
- 802.11g CH 7 -



- 802.11g CH 11 -

4.3. 100 KHz Bandwidth of Frequency Band Edges

4.3.1. Test Setup Layout



4.3.2. Test Condition

- Set RBW of Spectrum analyzer to 100 kHz
- 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.
- The maximum frequency range measuring with the spectrum from 30 MHz to 25 GHz is investigated with the transmitter

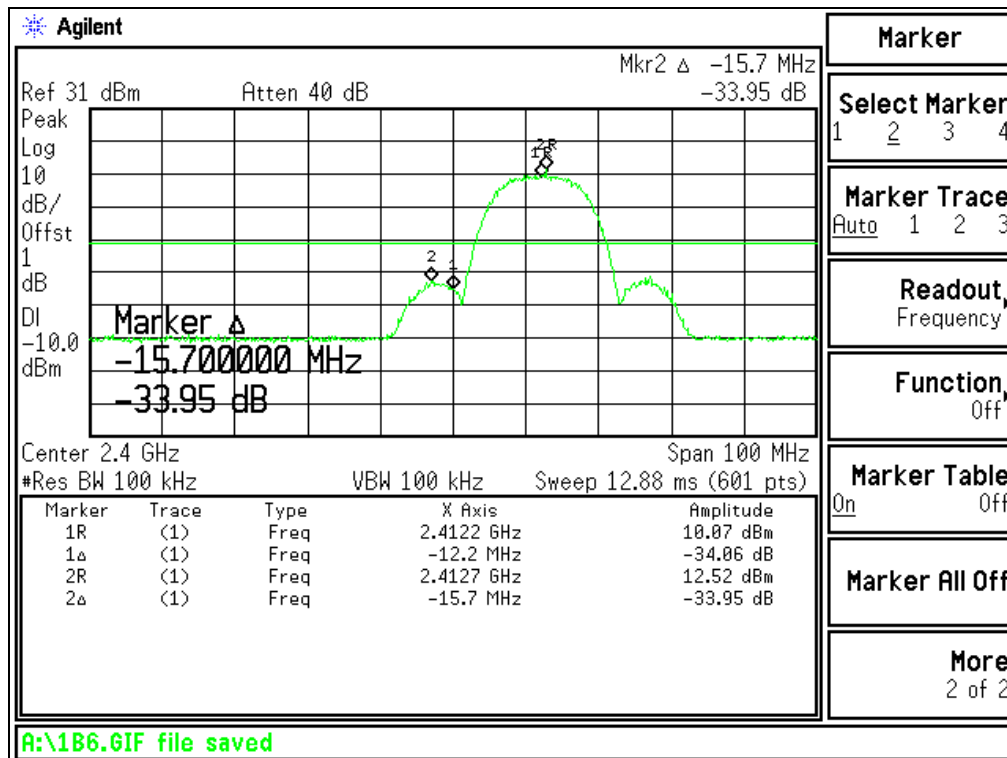
4.3.3. Test result

WLAN 802.11 b

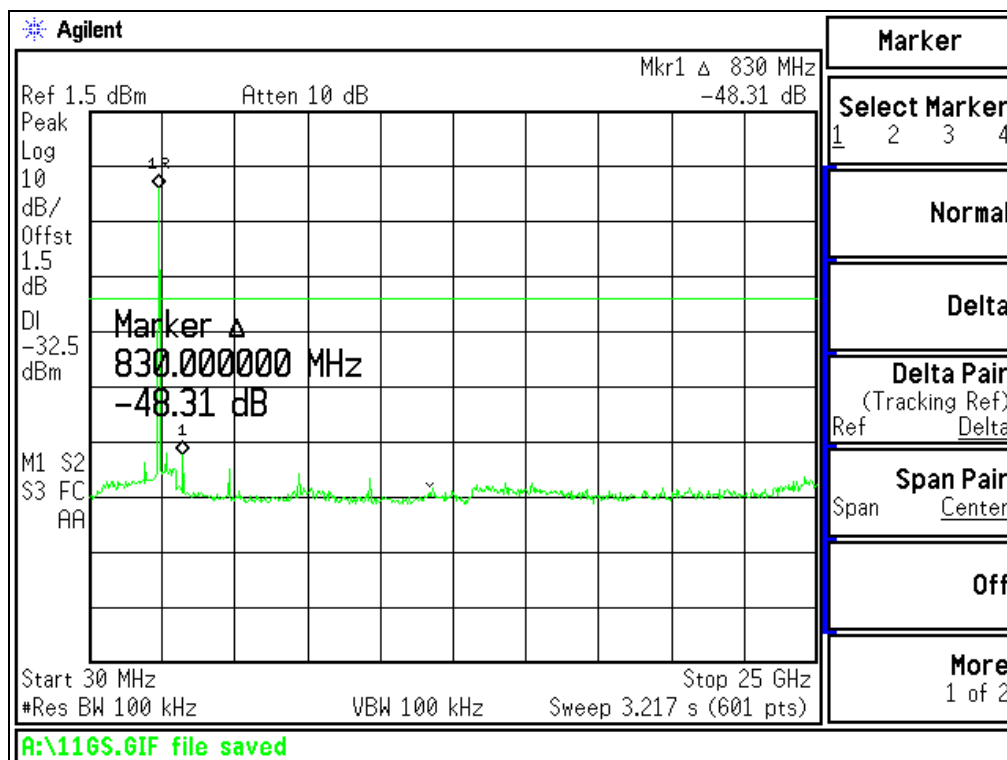
Channels	Frequency (MHz)	Result (dBc)	Limit (dBc)	Verdict
1	2412	-33.95	≥ -20	Pass
11	2462	-56.91	≥ -20	Pass

WLAN 802.11 g

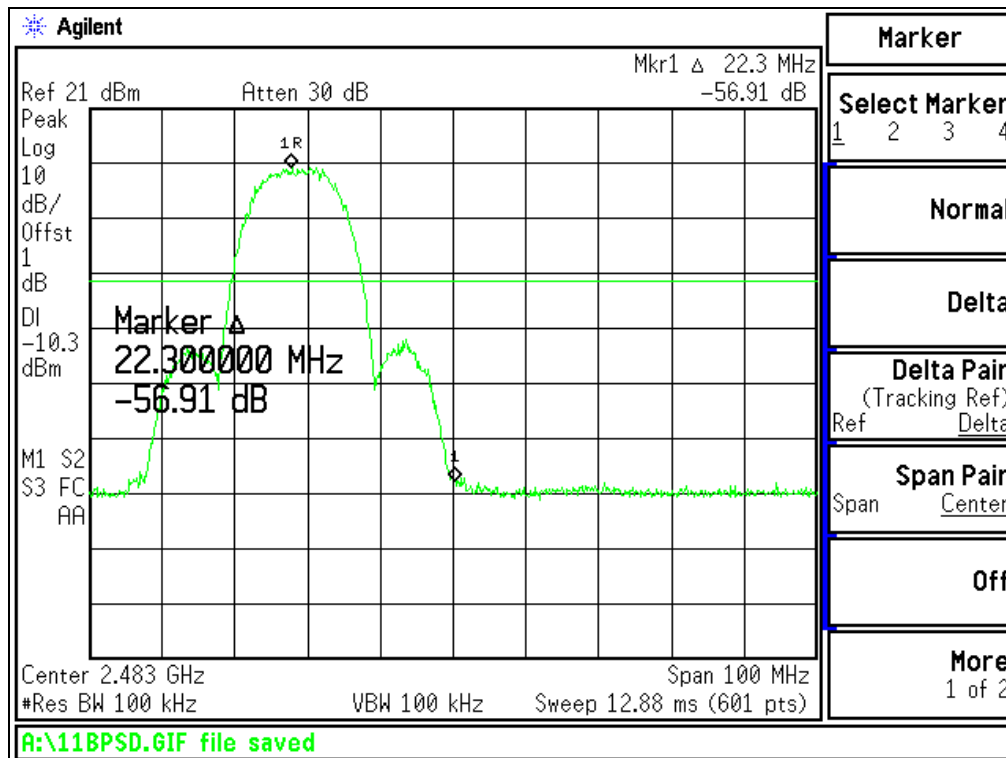
Channels	Frequency (MHz)	Result (dBc)	Limit (dBc)	Verdict
1	2412	-28.53	≥ -20	Pass
11	2462	-44.34	≥ -20	Pass



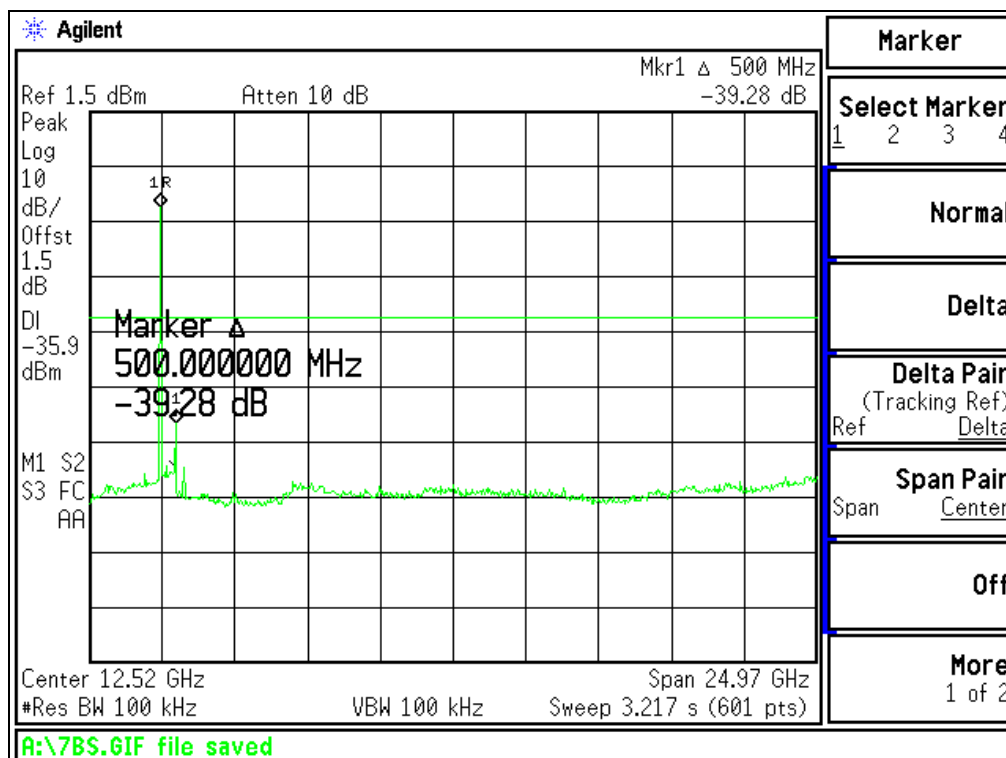
- 802.11b CH 1 -



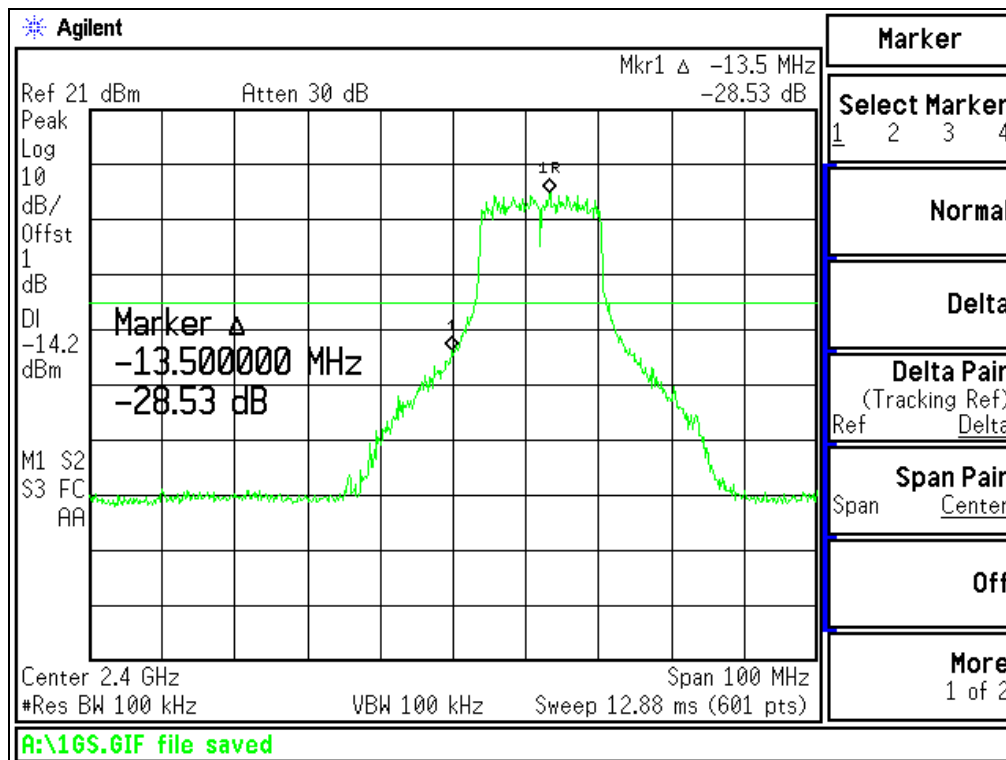
- 802.11b CH 1 -



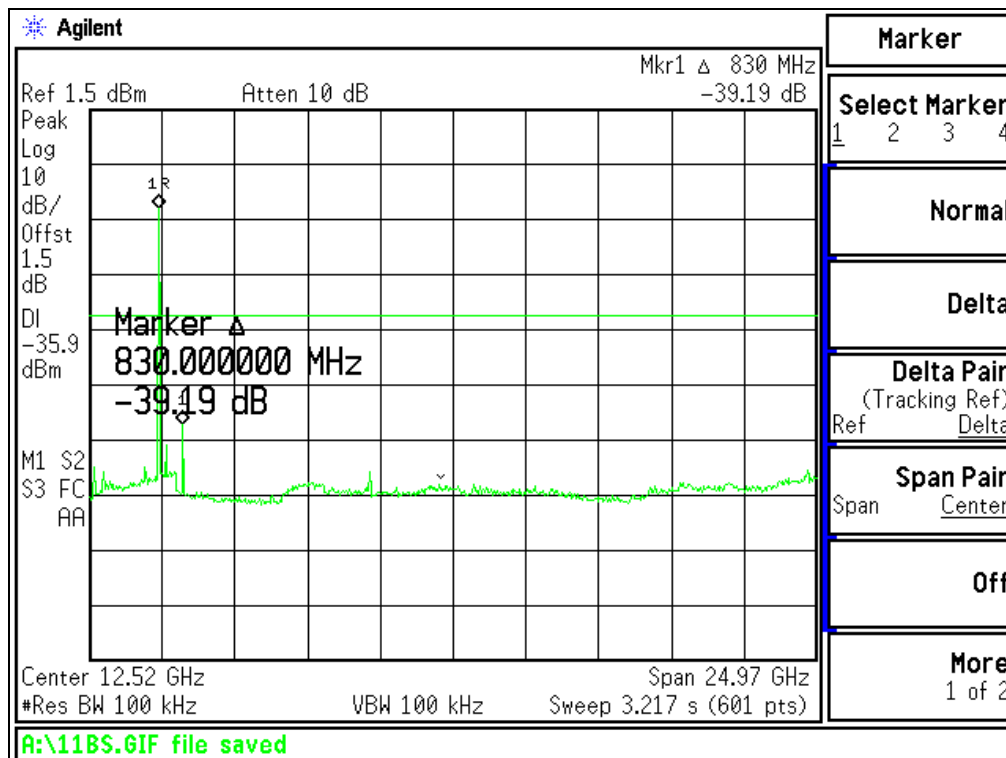
- 802.11b CH 11 -



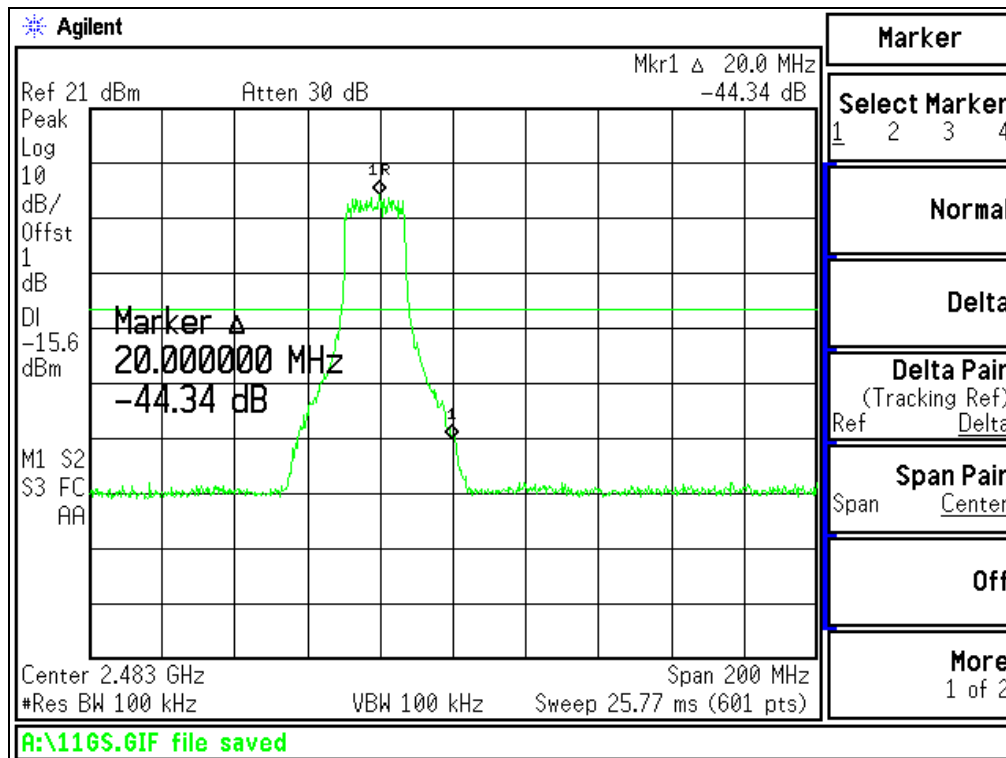
- 802.11b CH 11 -



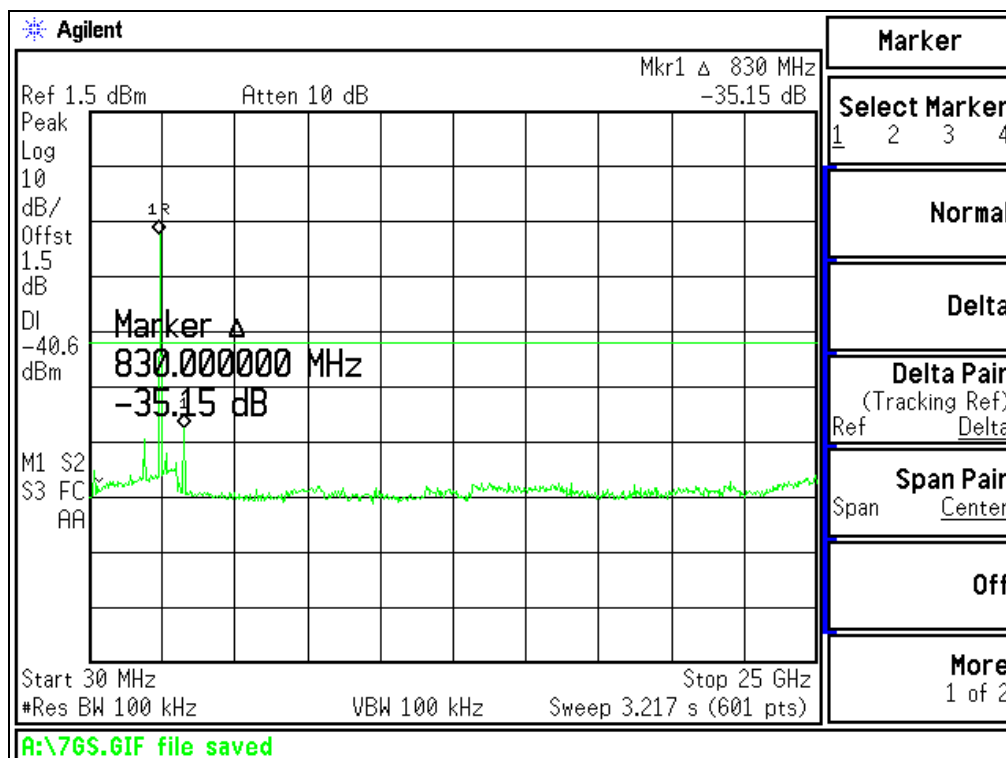
- 802.11g CH 1 -



- 802.11g CH 1 -



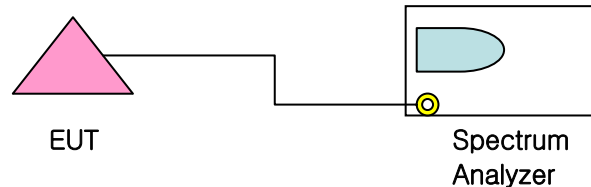
- 802.11g CH 11 -



- 802.11g CH 11 -

4.4. Power Spectral Density

4.4.1. Test Setup Layout



4.4.2. Test Condition

- Set RBW of Spectrum analyzer to 3 kHz and VBW > 3 kHz, Sweep time = span / 3 kHz.
- For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
- The PPSD is the highest level found across the emission in any 3 kHz band

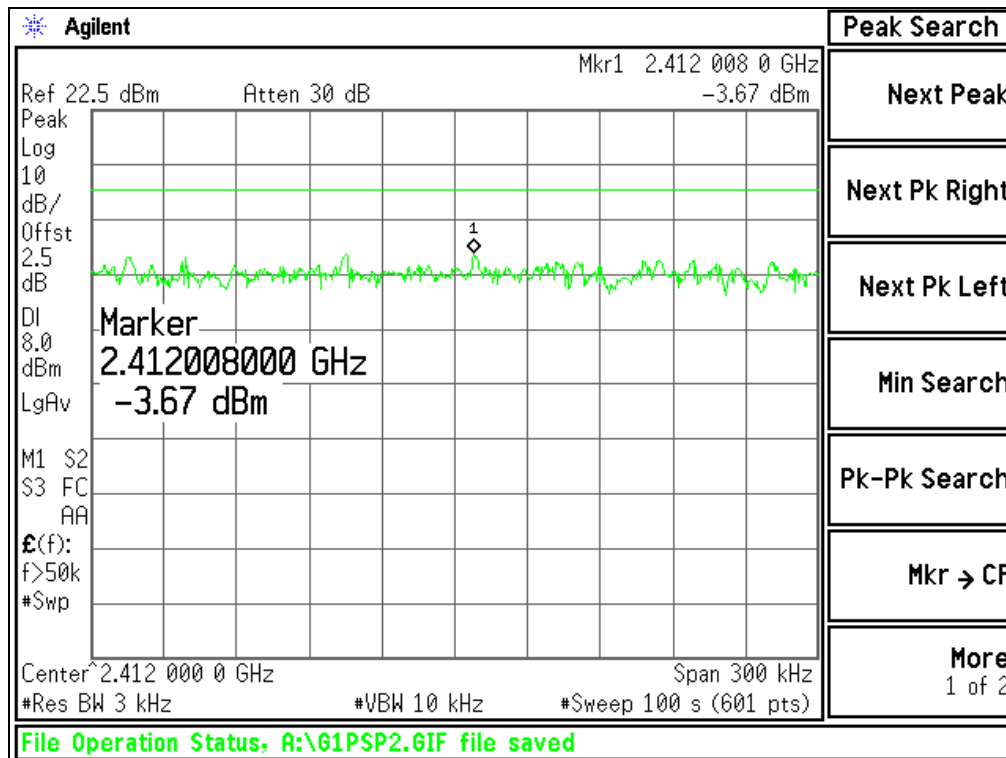
4.4.3. Test result

WLAN 802.11 b

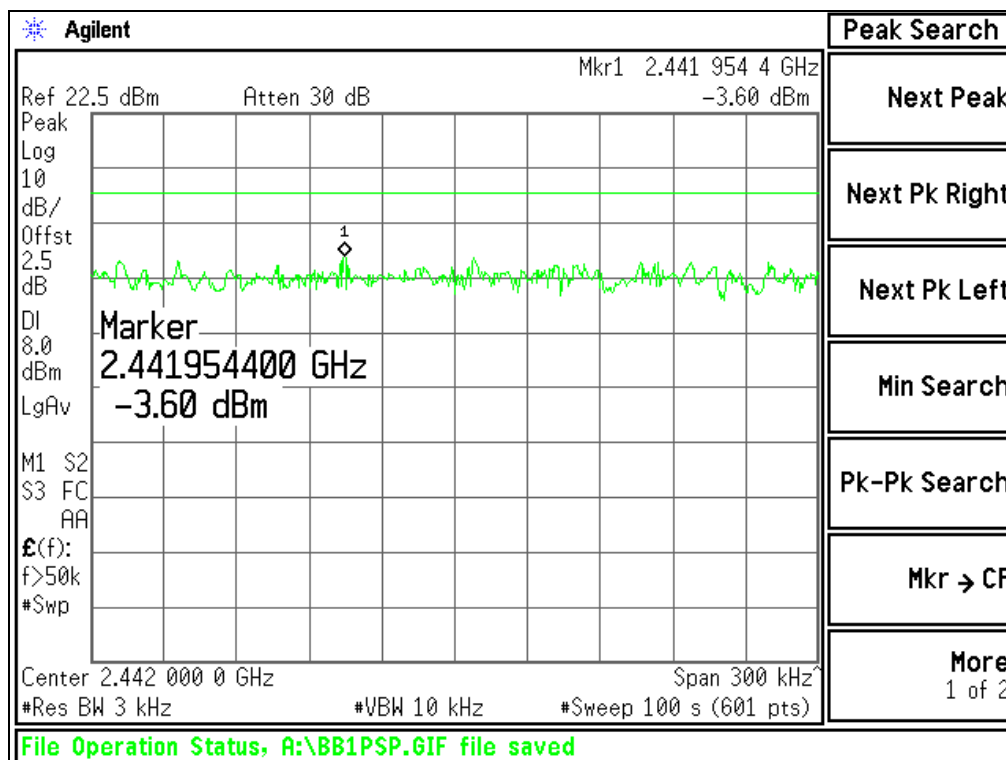
Channels	Frequency (MHz)	Result (dBm)	Limit (dBm)	Verdict
1	2412	- 3.67	≤ 8	Pass
7	2442	- 3.60	≤ 8	Pass
11	2462	- 4.00	≤ 8	Pass

WLAN 802.11 g

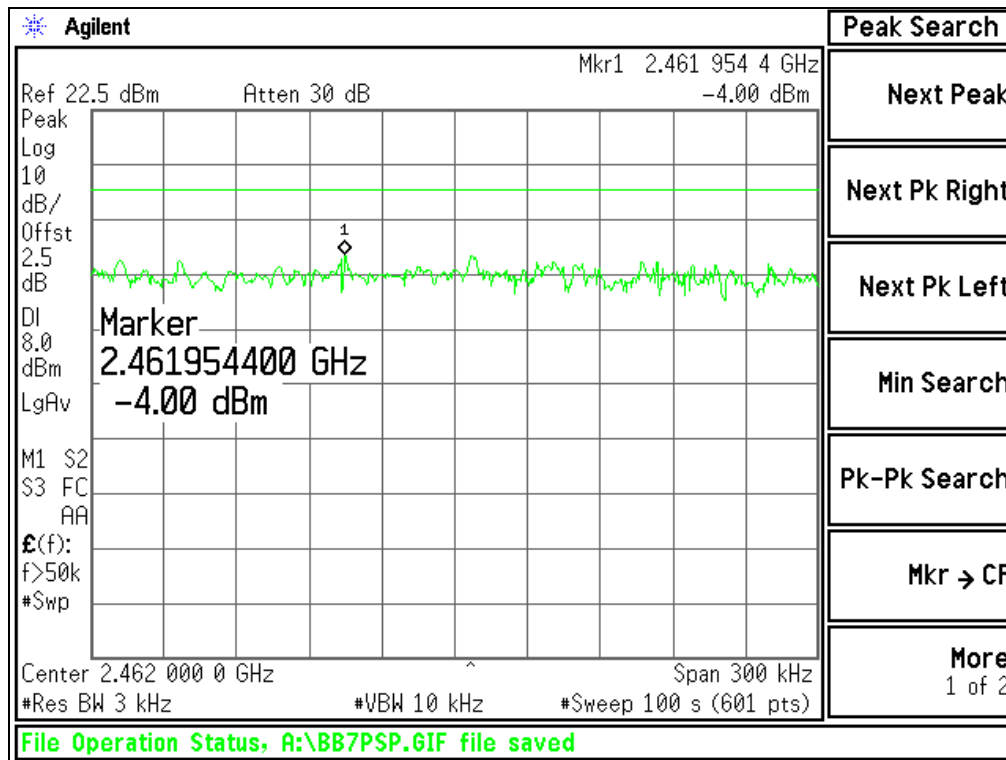
Channels	Frequency (MHz)	Result (dBm)	Limit (dBm)	Verdict
1	2412	- 16.01	≤ 8	Pass
7	2442	- 15.41	≤ 8	Pass
11	2462	- 15.99	≤ 8	Pass



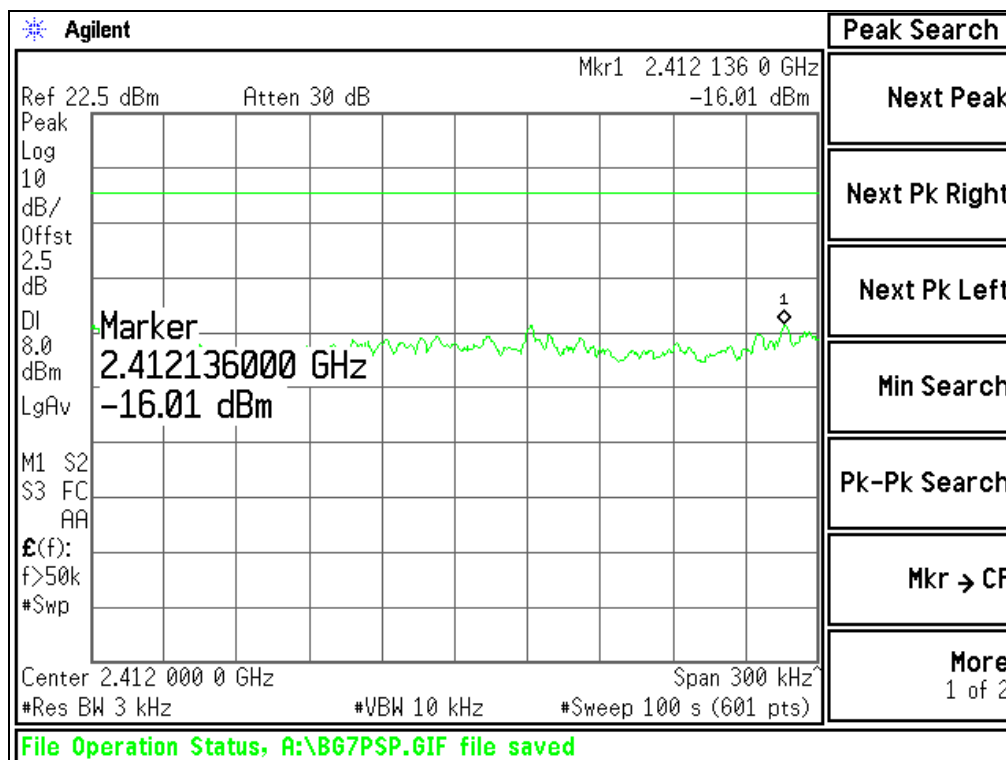
- 802.11b CH 1 -



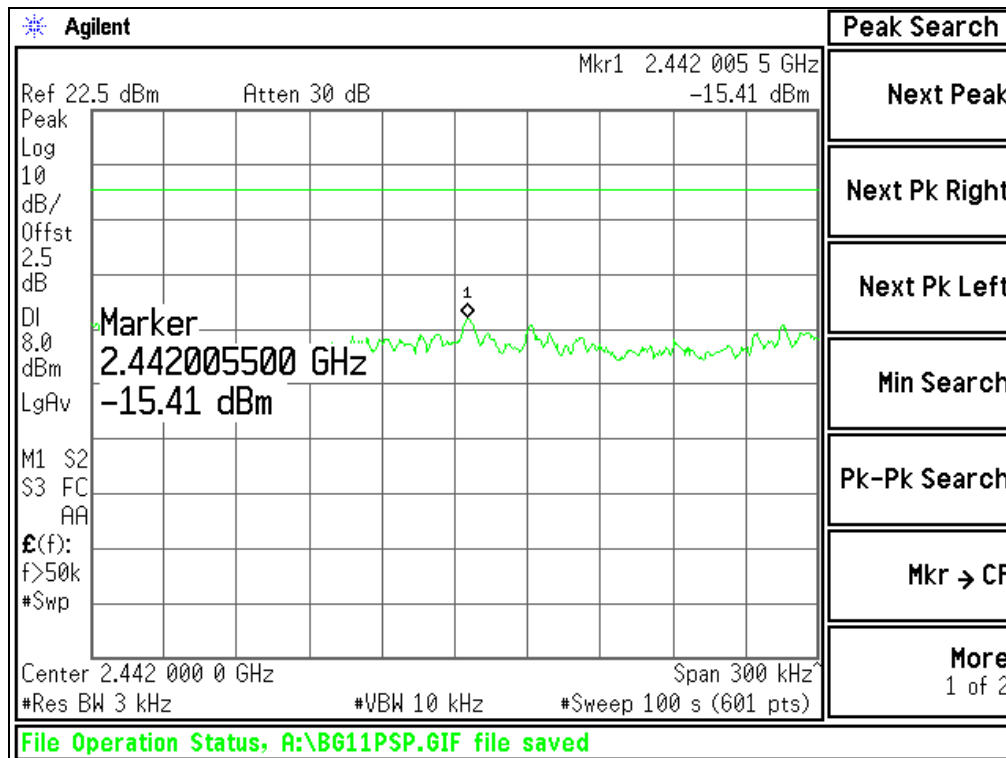
- 802.11b CH 7 -



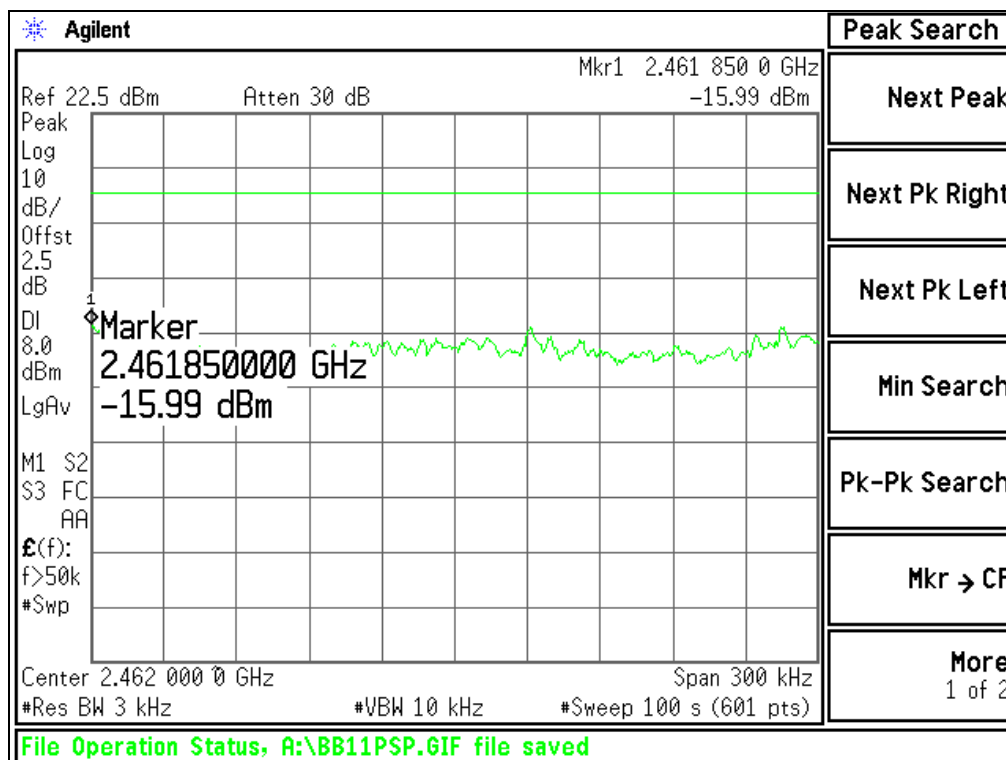
- 802.11b CH 11 -



- 802.11g CH 1 -



- 802.11g CH 7 -



- 802.11g CH 11 -

4.5. Radiated Emissions (FCC Part15.209)

4.5.1. Test Procedure

4.5.1.1 Preliminary Testing for Reference

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. Receiving antenna (Biconi-Log antenna : 30 to 1000 MHz or Horn Antenna : 1 to 18 GHz) was placed at the distance of 1 meter from the EUT.

An attempt was made to maximize the emission level with the various configurations of the EUT. Emission levels from the EUT with various configurations were examined on a spectrum analyzer connected with a RF amplifier and graphed by a plotter.

4.5.1.2 Final Radiated Emission Test at an Absorber-Lined Room

The final measurement of radiated field strength was carried out in a KTL Absorber-Lined Room that was listed up at FCC according to the "Radiated Emissions Testing" procedure specified by ANSI C63.4.

Based on the test results in preliminary test, measurement was made in same test set up and configuration which produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver.

Turntable was rotated through 360 degrees and receiving antenna height was varied from 1 to 4 meters above the ground plane to read maximum emission level. Receiving antenna polarization was changed vertical and horizontal. The worst value was recorded.

If necessary, the radiated emission measurements could be performed at a closer distance than specified distance to ensure higher accuracy and their results were extrapolated to the specified distance using an inverse linear distance extrapolation factor (20 dB/decade) as per Section 15.31(f).

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

Tested in x, y, z axis and worst case results are reported

The maximum frequency range measuring with the spectrum from 30 MHz to 25 GHz is investigated with the transmitter

4.5.2. Limits

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency Field Strength Measurement Distance (MHz) (microvolts/meter) (meters)

30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200**	3
above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

4.5.3. Sample Calculation

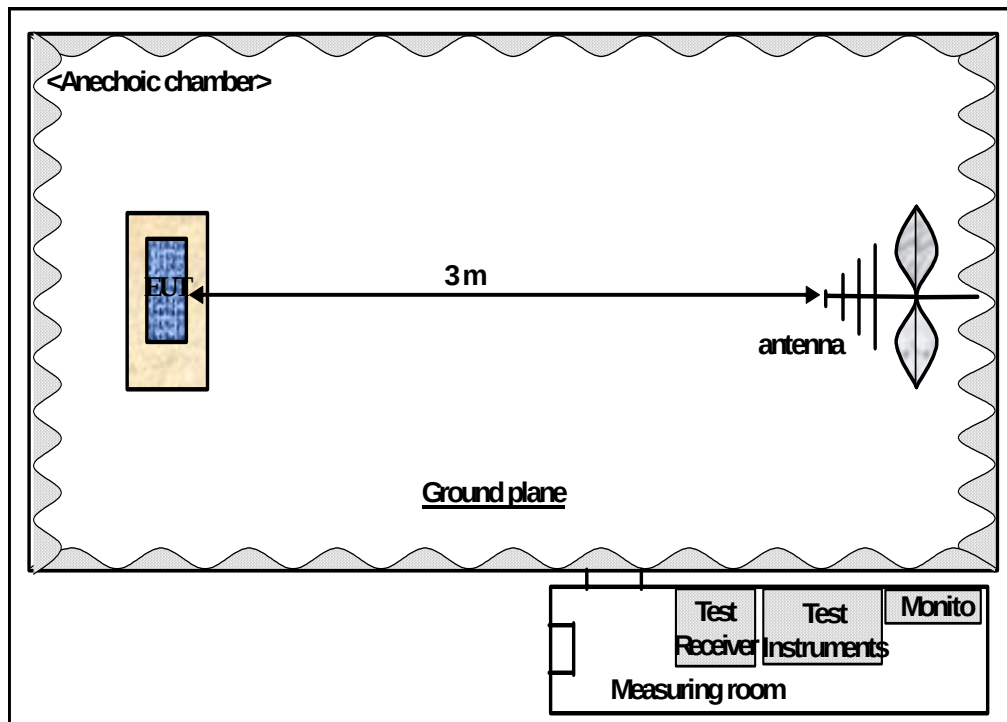
The emission level measured in decibels above one microvolt ($\text{dB}\mu\text{V}$) was converted into microvolt per meter ($\mu\text{V}/\text{m}$) as shown in following sample calculation.

For example :

Measured Value at <u>4824 MHz</u>	33.9 $\text{dB}\mu\text{V}$
Antenna Factor & Cable loss	45.0 dB
- Preamplifier	-30.0 dB
- Distance Correction Factor *	0.0 dB
= Radiated Emission	48.9 $\text{dB}\mu\text{V}/\text{m}$

* Extrapolated from the measured distance to the specified distance by an inverse linear distance extrapolation.

4.5.4. Photograph for the test configuration



4.5.5. Test Results

4.5.5.1 Intentional Spurious Emission (15.209)

- Measurement mode : **WLAN 802.11 b**
- Resolution Bandwidth : x CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
Peak&Average (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement channel : Ch1, Ch7, Ch11
- Measurement Distance: 3 Meter
- The worst case is X axes

Frequency (MHz)		* D.M.	* A.P.	Measured Value (dB μ V)	* A.F. + C.L. (dB/m)	* A.G. (dB)	* D.C.F. (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	** Margin (dB)
CH 1	3844	P	V	53.8	43.0	-30	0	66.83	74	-7.2
	3844	A	V	33.1	43.0	-30	0	46.05	54	-8.0
	4824	P	V	46.7	45.0	-30	0	61.7	74	-12.3
	4824	A	V	33.9	45.0	-30	0	48.9	54	-5.1
CH 7	3844	P	V	53.2	43.0	-30	0	66.2	74	-7.8
	3844	A	V	33.1	43.0	-30	0	46.1	54	-7.9
	4884	P	V	52.4	45.0	-30	0	67.4	74	-6.6
	4884	A	V	37.5	45.0	-30	0	52.5	54	-1.5
CH 11	3844	P	V	53.6	43.0	-30	0	66.6	74	-7.4
	3844	A	V	35.7	43.0	-30	0	48.7	54	-5.3
	4926	P	V	55.2	45.3	-30	0	70.5	74	-3.5
	4926	A	V	37.2	45.3	-30	0	52.5	54	-1.5

Note

The observed Spectrum Analyser(E4448A) noise floor level was 2.0 dB μ V. And all other emissions not reported on data were more than 25 dB below the permitted level.

- * D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
- A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
- A.F. : Antenna Factor
- C.L. : Cable Loss
- A.G. : Amplifier Gain
- D.C.F. : Distance Correction Factor
- < : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

- Measurement mode : **WLAN 802.11 g**
- Resolution Bandwidth : x CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
Peak & Average (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement channel : Ch1, Ch7, Ch11
- Measurement Distance: 3 Meter
- The worst case is X axes

Frequency (MHz)		* D.M.	* A.P.	Measured Value (dB μ V)	* A.F. + C.L (dB/m)	* A.G. (dB)	* D.C.F. (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	** Margin (dB)
CH 1	3216	P	V	53.8	43.0	-30	0	66.8	74	-7.2
	3216	A	V	39.8	43.0	-30	0	52.8	54	-1.2
	4824	P	V	45.2	45.0	-30	0	60.2	74	-13.8
	4824	A	V	32.0	45.0	-30	0	47	54	-7.0
CH 7	3848	P	V	53.0	43.0	-30	0	66	74	-8.0
	3848	A	V	33.6	43.0	-30	0	46.6	54	-7.4
	4896	P	V	47.9	45.0	-30	0	62.9	74	-11.1
	4896	A	V	34.8	45.0	-30	0	49.8	54	-4.2
CH 11	3284	P	V	51.6	43.0	-30	0	64.6	74	-9.4
	3284	A	V	37.7	43.0	-30	0	50.7	54	-3.3
	4928	P	V	51.6	45.3	-30	0	66.9	74	-7.1
	4928	A	V	37.7	45.3	-30	0	53	54	-1.0

Note

The observed Spectrum Analyser(E4448A) noise floor level was 2.0 dB μ V. And all other emissions not reported on data were more than 25 dB below the permitted level.

- * D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
- A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
- A.F. : Antenna Factor
- C.L. : Cable Loss
- A.G. : Amplifier Gain
- D.C.F. : Distance Correction Factor
- < : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

4.5.5.2 Radiated Emission (Receiving mode)

- Measurement mode : **WLAN 802.11 b/g**
- Resolution Bandwidth : x CISPR Quasi-Peak (6dB Bandwidth : 120kHz for below 1GHz)
Peak (3dB Bandwidth : 1MHz for above 1GHz)
- Measurement channel : Ch1, Ch 7, Ch 11
- Measurement Distance: 3 Meter
- The worst case is X axes

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dB μ V)	* A.F. + C.L. (dB/m)	* A.G. (dB)	* D.C.F. (dB)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	** Margin (dB)
43.8	Q	V	22.0	13.9	0.0	0.0	35.9	40.0	-4.1
45.3	Q	V	18.4	14.1	0.0	0.0	32.5	40.0	-7.5
47.8	Q	V	22.2	14.3	0.0	0.0	36.5	40.0	-3.5
50.5	Q	V	19.3	14.4	0.0	0.0	33.7	40.0	-6.3
66.3	Q	V	21.6	12.6	0.0	0.0	34.2	40.0	-5.8
69.0	Q	V	21.4	12.1	0.0	0.0	33.5	40.0	-6.5
151.5	Q	V	12.1	14.3	0.0	0.0	26.4	43.5	-17.1
166.5	Q	V	26.4	13.9	0.0	0.0	40.3	43.5	-3.2
216.0	Q	V	15.8	11.9	0.0	0.0	27.7	43.5	-15.8
250.0	Q	V	26.5	13.3	0.0	0.0	39.8	46.0	-6.2
321.4	Q	H	12.0	15.6	0.0	0.0	27.6	46.0	-18.4
325.0	Q	H	14.9	15.7	0.0	0.0	30.6	46.0	-15.4
400.0	Q	H	9.2	17.6	0.0	0.0	26.8	46.0	-19.2
500.0	Q	H	14.7	20.0	0.0	0.0	34.7	46.0	-11.3

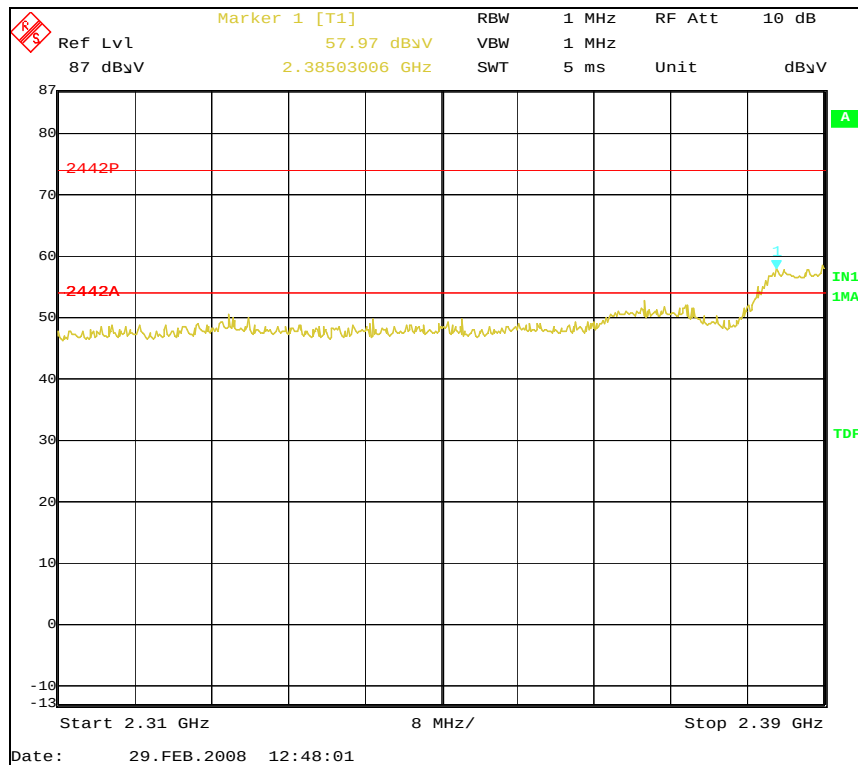
Note

The observed EMI receiver(ESVS30) noise floor level was 2.0 dB μ V. And all other emissions not reported on data were more than 25 dB below the permitted level.

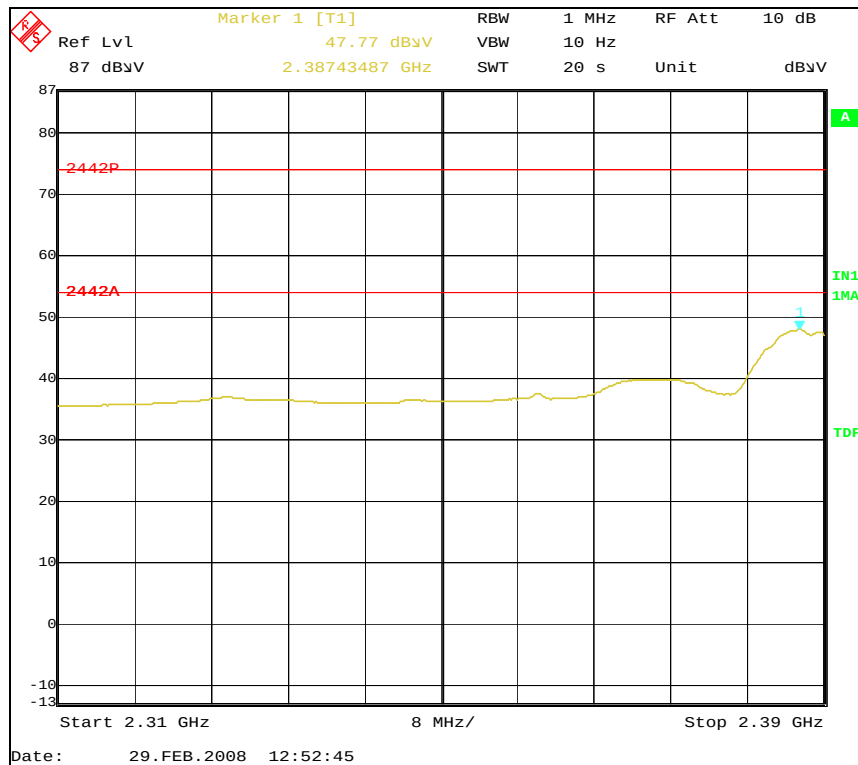
- * D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
- A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
- A.F. : Antenna Factor
- C.L. : Cable Loss
- A.G. : Amplifier Gain
- D.C.F. : Distance Correction Factor
- < : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

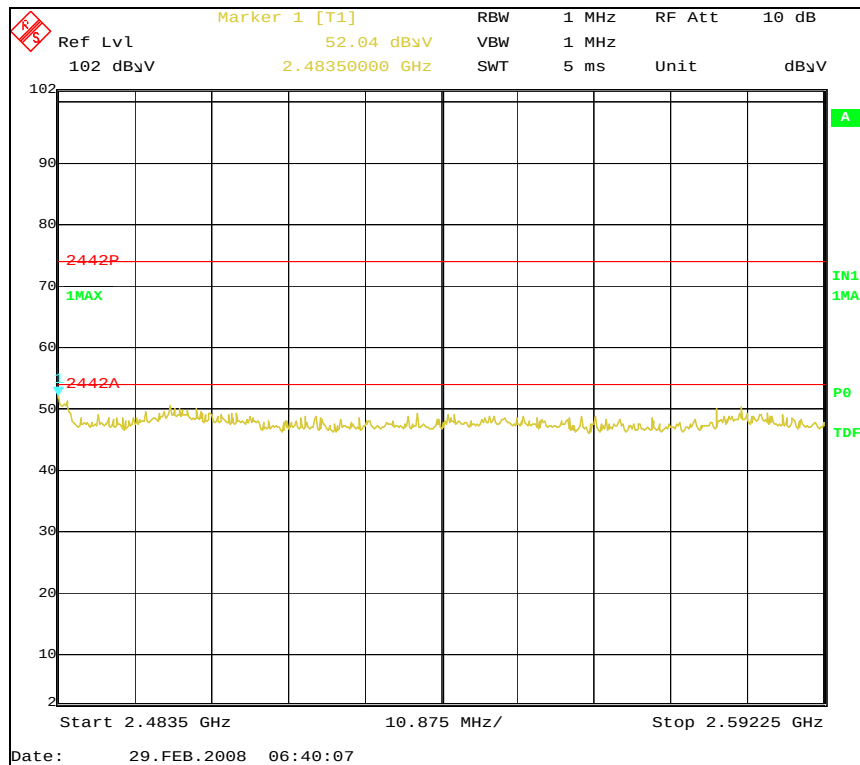
RESTRICTED BANDEDGE



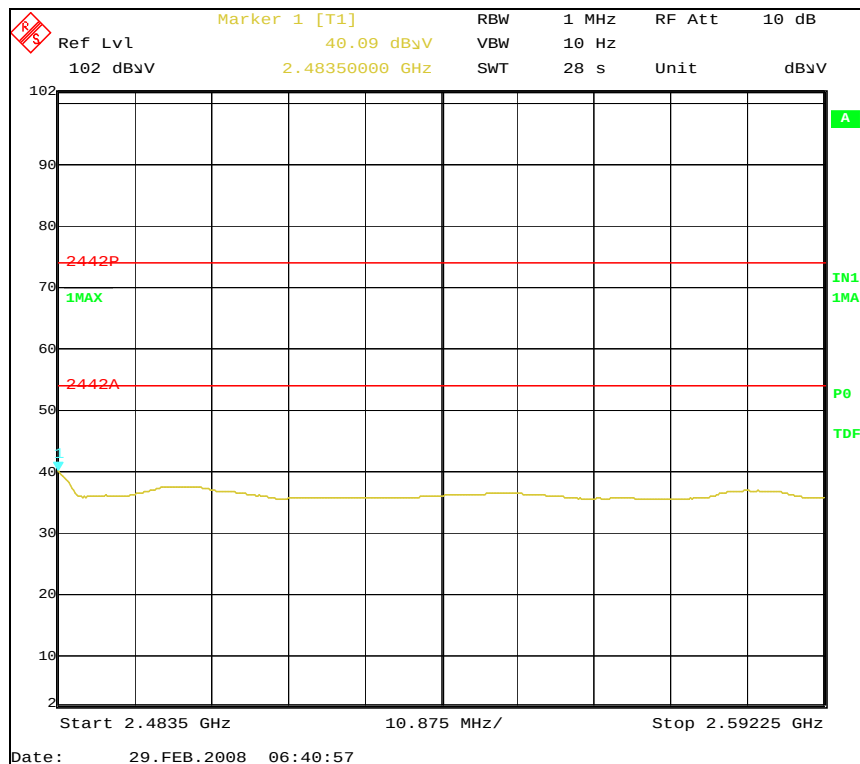
- 802.11b CH 1 Peak -



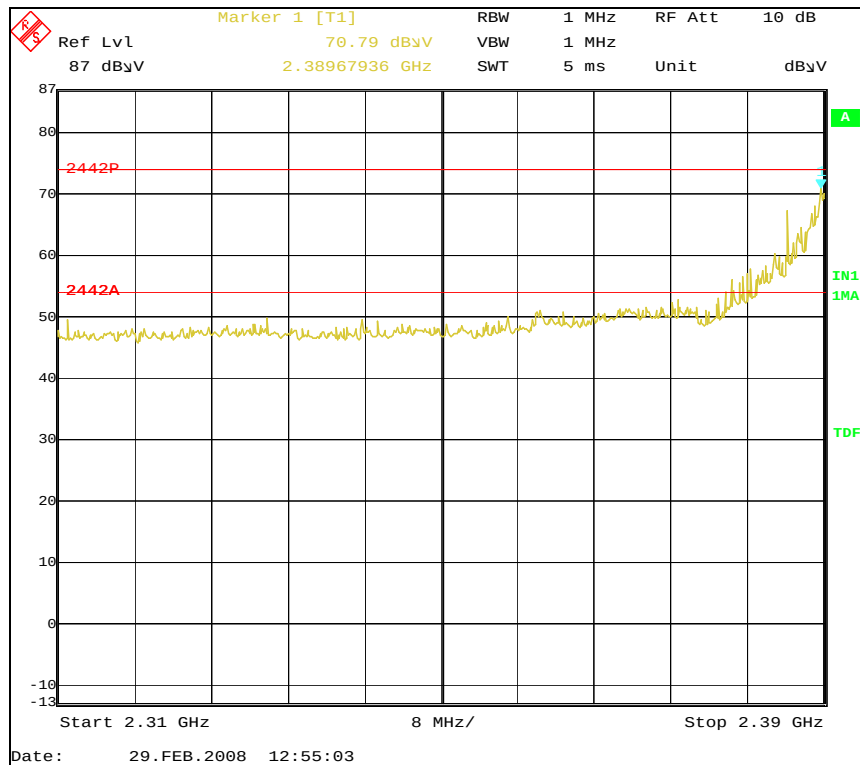
- 802.11b CH 1 AVG -



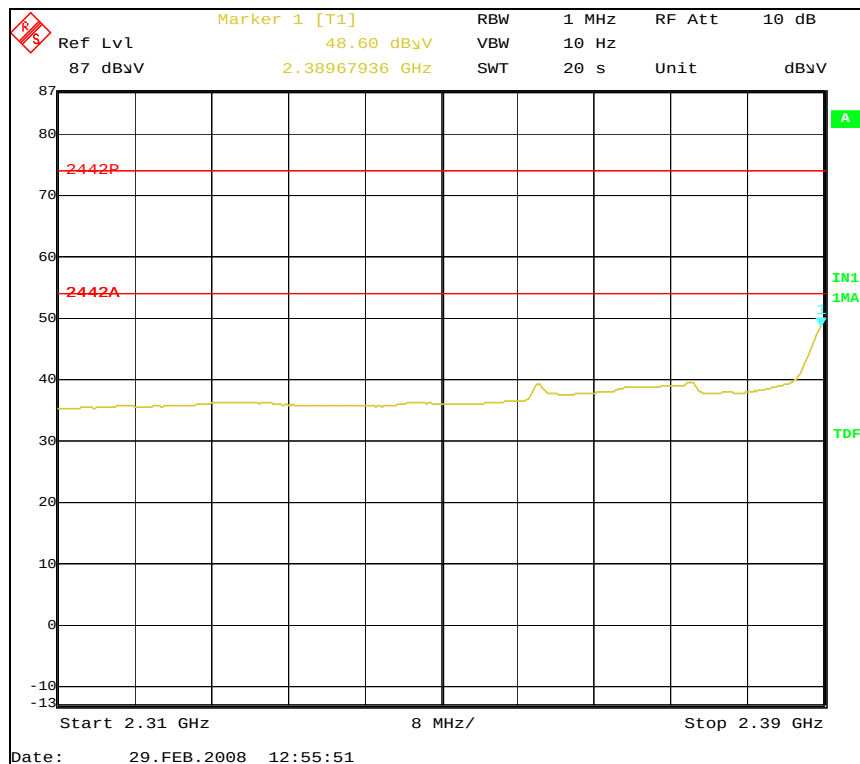
- 802.11b CH 11 Peak -



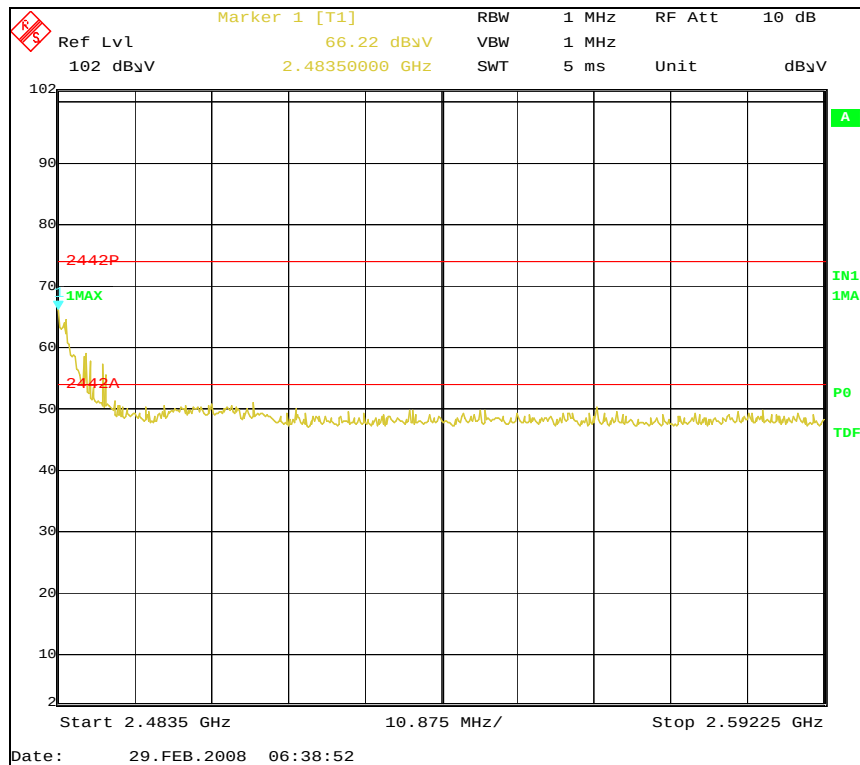
- 802.11b CH 11 AVG -



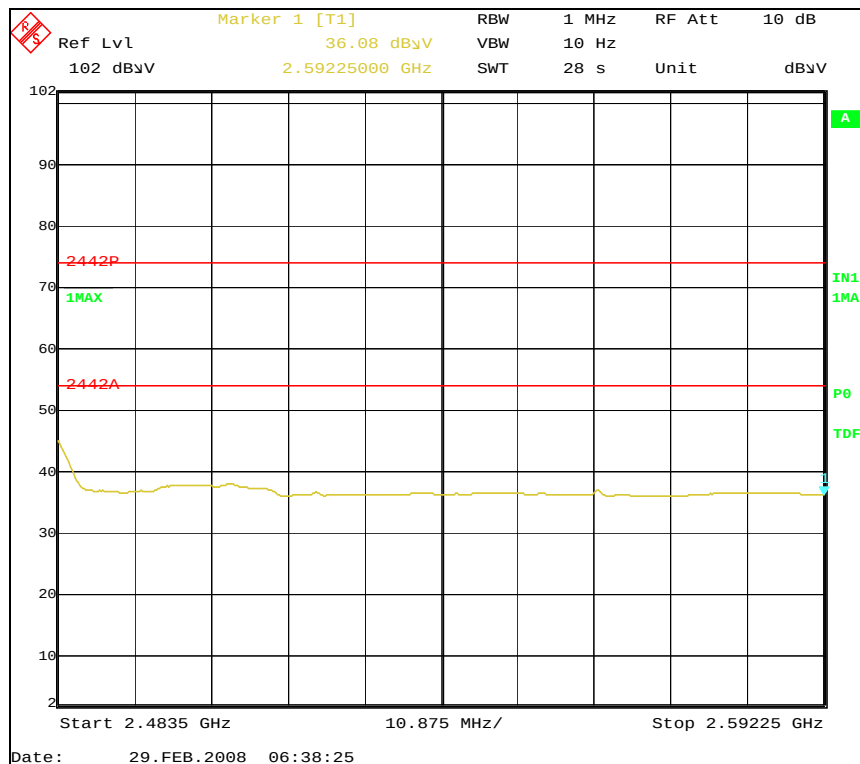
- 802.11g CH 1 Peak -



- 802.11g CH 1 AVG -



- 802.11g CH 11 Peak -



- 802.11g CH 11 AVG -

4.6. Conducted Emissions (FCC Part 15.207)

4.6.1. Test Procedure

Conducted emission measurements on the EUT were performed by "AC Power Line Conducted Emissions Testing" procedure as per ANSI C63.4. The EUT was set up on a wooden table 0.8 meters height, 1.0 by 1.5 meters in size, placed in the shielded enclosed with a side of wall of which constituted a vertical conducting surface of 2.2 m x 3.1 m in size to maintain 40 cm from the rear of EUT

LISN(Line Impedance Stabilization Network, ROHDE & SCHWARZ, ESH3-Z5, 50 ohm / 50 μ H) was installed and electrically boned to the conducting ground plane. The EUT was connected to the LISN using a typical power adapter.

One of two 50 ohm output terminals of the LISN was connected to the EMI Receiver (ROHDE & SCHWARZ, ESI, 9 kHz to 3 GHz) and the other was terminated in 50 ohms. Measurements were again performed after interchanging such a connection oppositely.

The frequency range from 150 kHz to 30 MHz was examined and the remarkable frequencies were measured with Quasi-peak and Average values using the EMI receiver instrument (ROHDE & SCHWARZ, ESI, 9 kHz to 3 GHz ; Detector Function ; CISPR Quasi-Peak & Average). The 6 dB bandwidth of the Receiver was set to 9 kHz

The position of connecting cables of the EUT was changed to find the worst case configuration during measurements. The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

The test mode is three types.

1. Charging mode
2. Call mode (handset, base and frame are connected by UPCS)
3. Operating by WLAN mode

4.6.2. Limits

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

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

* Decreases with the logarithm of the frequency.

4.6.3. Sample calculation

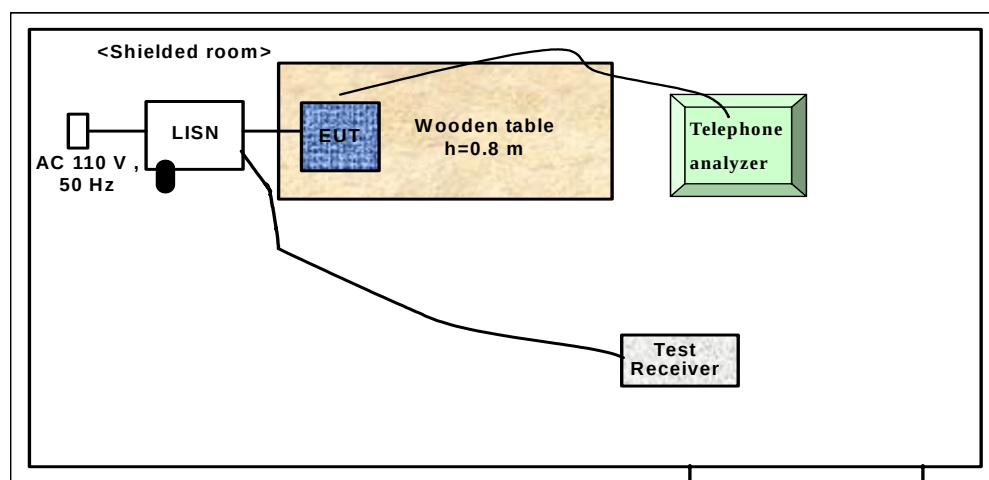
The emission level measured in decibels above one microvolt (dB μ V) was converted into microvolt (μ V) as shown in following sample calculation.

For example :

Measured Value at	0.19 MHz	52.0 dB μ V @ Q-Peak mode
+ Correct factor *		9.8 dB
= Conducted Emission		63.8 dB μ V

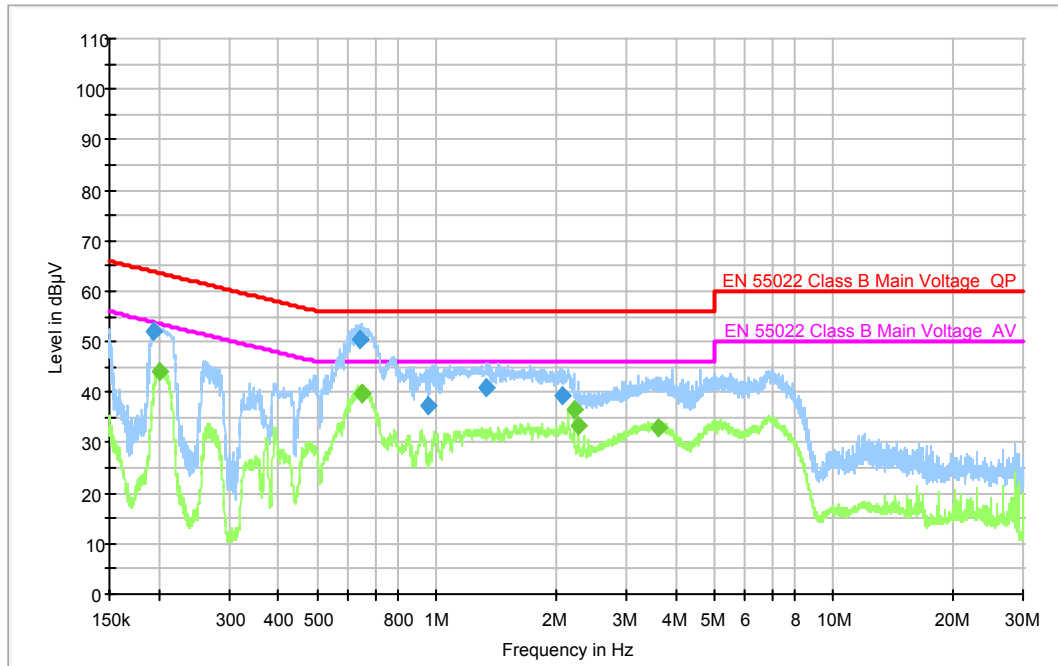
* Correct factor is adding RF cable loss and Attenuation

4.6.4. Photograph for the test configuration



4.6.5. Test Results

Test mode : Charging mode



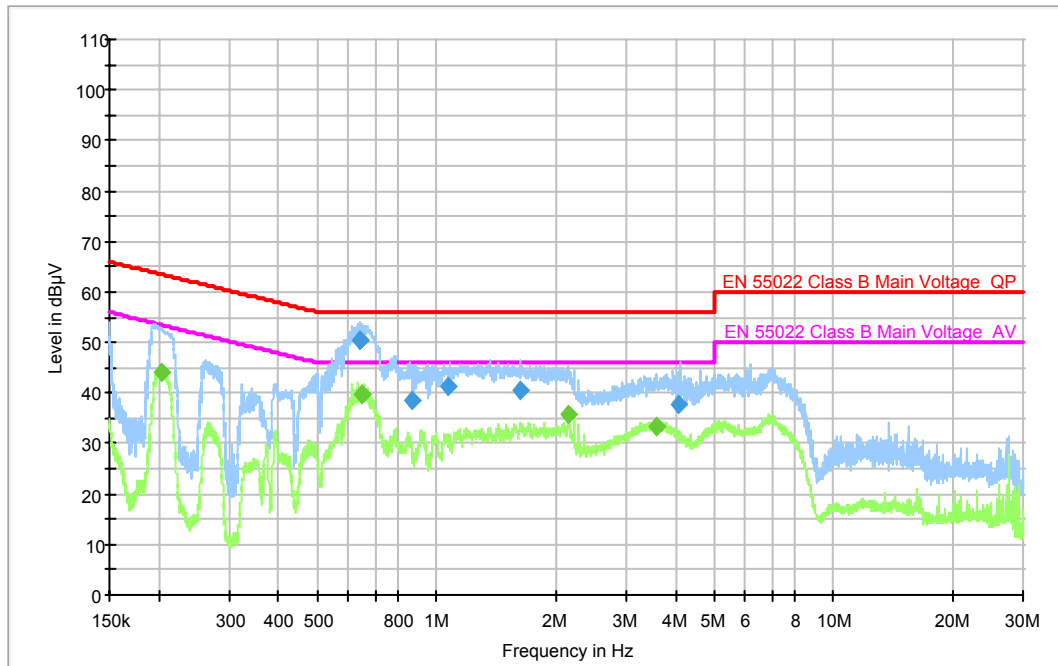
Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.194648	52.0	N	9.8	11.8	63.8
0.643268	50.3	N	9.9	5.7	56.0
0.643552	50.3	N	9.9	5.7	56.0
0.954376	37.3	N	10.0	18.7	56.0
1.330250	40.8	L1	9.8	15.2	56.0
2.078438	39.4	L1	9.8	16.6	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.200270	44.1	N	9.8	9.5	53.6
0.649742	39.9	N	9.9	6.1	46.0
0.650562	39.9	N	9.9	6.1	46.0
2.216825	36.4	N	9.8	9.6	46.0
2.283276	33.5	L1	9.8	12.5	46.0
3.622419	33.0	N	9.9	13.0	46.0

Test mode : Call mode



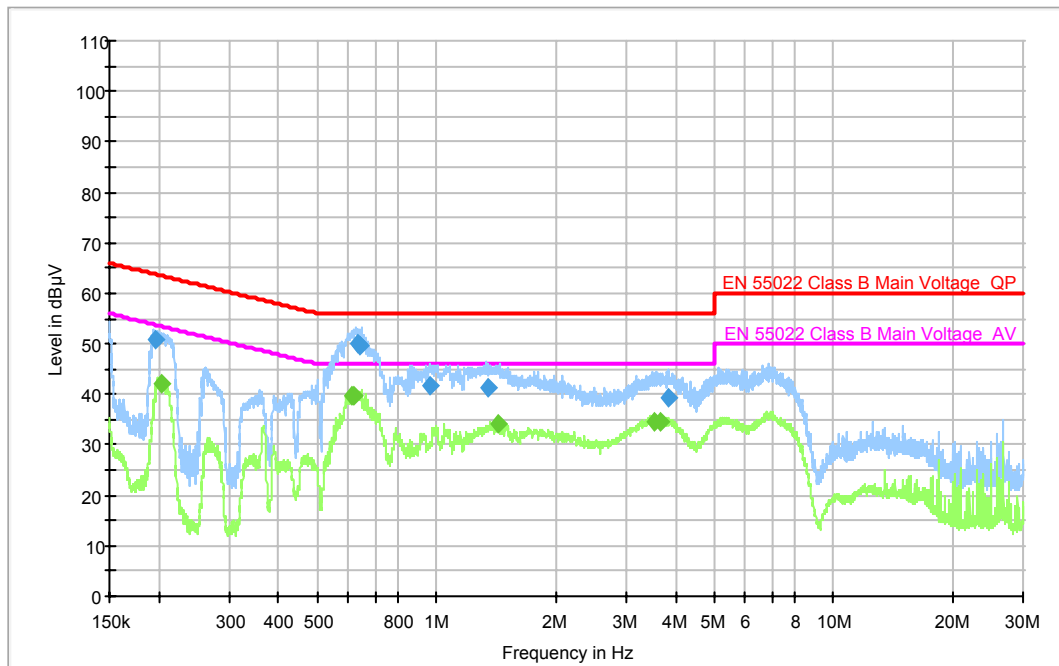
Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.640812	50.3	N	9.9	5.7	56.0
0.643359	50.6	N	9.9	5.4	56.0
0.868489	38.5	L1	9.8	17.5	56.0
1.074198	41.1	L1	9.8	14.9	56.0
1.632825	40.6	L1	9.8	15.4	56.0
4.084946	37.5	L1	9.8	18.5	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.202684	43.9	N	9.8	9.6	53.5
0.647238	39.8	N	9.9	6.2	46.0
0.649822	39.8	N	9.9	6.2	46.0
2.152354	35.8	N	9.8	10.2	46.0
3.585541	33.2	L1	9.8	12.8	46.0
3.585990	33.2	L1	9.8	12.8	46.0

Test mode : Operating by WLAN 802.11 g



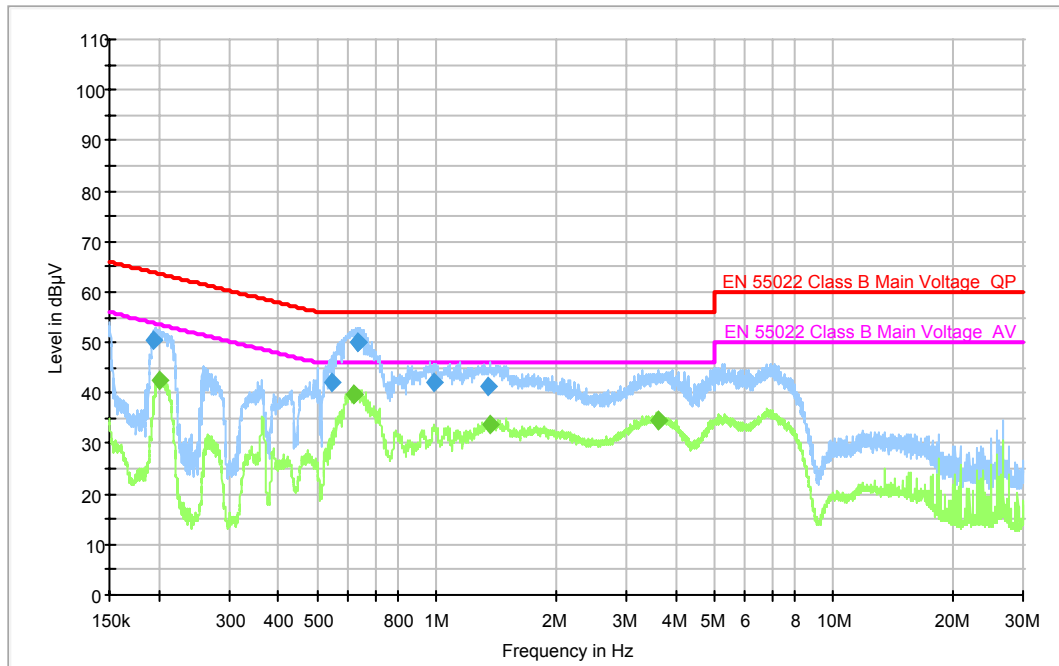
Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.195222	50.7	L1	9.7	13.1	63.8
0.631167	50.1	L1	9.8	5.9	56.0
0.644079	49.8	L1	9.8	6.2	56.0
0.961489	41.7	N	10.0	14.3	56.0
1.352372	41.1	L1	9.8	14.9	56.0
3.821326	39.3	L1	9.8	16.7	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.202332	42.3	L1	9.7	11.2	53.5
0.614319	39.6	L1	9.8	6.4	46.0
0.617857	39.6	L1	9.8	6.4	46.0
1.433592	34.1	L1	9.8	11.9	46.0
3.516908	34.4	N	9.9	11.6	46.0
3.659133	34.6	N	9.9	11.4	46.0

Test mode : Operating by WLAN 802.11 b



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.194471	50.4	L1	9.7	13.4	63.8
0.544100	42.1	N	9.9	13.9	56.0
0.631234	49.9	L1	9.8	6.1	56.0
0.632883	50.1	N	9.9	5.9	56.0
0.982186	42.2	N	10.0	13.8	56.0
1.352191	41.2	N	9.9	14.8	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.201274	42.3	N	9.8	11.3	53.6
0.618535	39.7	N	9.9	6.3	46.0
0.621285	39.7	N	9.9	6.3	46.0
1.363005	33.9	N	9.9	12.1	46.0
3.600599	34.7	N	9.9	11.3	46.0
3.632642	34.6	L1	9.8	11.4	46.0

5. TEST EQUIPMENTS

No.	Equipment	Manufacturer	Model	S/N	Effective Cal.Duration
1	EMI Receiver (20 MHz ~ 1 GHz)	R&S	ESVS30	830516002	03/15/2007 ~ 03/15/2008
2	EMI Receiver (9 kHz ~ 3 GHz)	R&S	ESCI	100076	03/28/2007 ~ 03/28/2008
3	Spectrum Analyzer (100 Hz ~ 26.5 GHz)	Agilent	E4407B	US41443316	12/01/2007 ~ 12/01/2008
4	Spectrum Analyzer (3 Hz ~ 50 GHz)	Agilent	E4448A	MY43360322	02/26/2007 ~ 02/26/2008
5	Test Receiver (9 kHz ~ 30 MHz)	R&S	ESH3	860905001	06/18/2007 ~ 06/18/2008
6	Pre-Amplifier (100 kHz ~ 3 GHz)	H.P.	8347A	2834A00543	05/19/2007 ~ 05/19/2008
7	Pre-Amplifier (1 GHz ~ 26.5 GHz)	H.P.	8449B	3008A00302	06/14/2007 ~ 06/14/2008
8	LISN(50 Ω , 50 μ H) (10 kHz ~ 100 MHz)	R&S	ESH3-Z5	826789009	07/05/2007 ~ 07/05/2008
9	Biconi-Log Ant. (30 MHz ~ 1000 MHz)	Schwarzbeck	VULB9168	9168-168	08/16/2007 ~ 08/16/2008
10	Horn Ant. (1 GHz ~ 18 GHz)	EMCO	3115	--	05/09/2007 ~ 05/09/2008
11	Active Loop Ant. (9 kHz ~ 30 MHz)	EMCO	6502	2532	06/08/2007 ~ 06/08/2008
12	Shielded Room (5.0 m x 4.5 m)	SIN-MYUNG	--	--	--
13	Signal Generator (250 kHz ~ 20 GHz)	Agilent	E8257D	MY44320379	01/02/2007 ~ 01/02/2008
14	DC Power Supply	Agilent	E4356A	MY41000296	09/28/2007 ~ 09/28/2008
15	Power Splitter	H.P.	11667A	21063	10/09/2007 ~ 10/09/2008
16	Power Meter	Agilent	E4417A	GB4129075	09/17/2007 ~ 09/17/2008
17	Attenuator	Weinschel	56-20	N8257	01/13/2007 ~ 01/13/2008
18	Oscillator	Kenwood	AG-203D	10040568	10/23/2007 ~ 10/23/2008
19	Telephone Analyzer	Credix	DD-5601CID	520010268	05/18/2007 ~ 05/18/2008

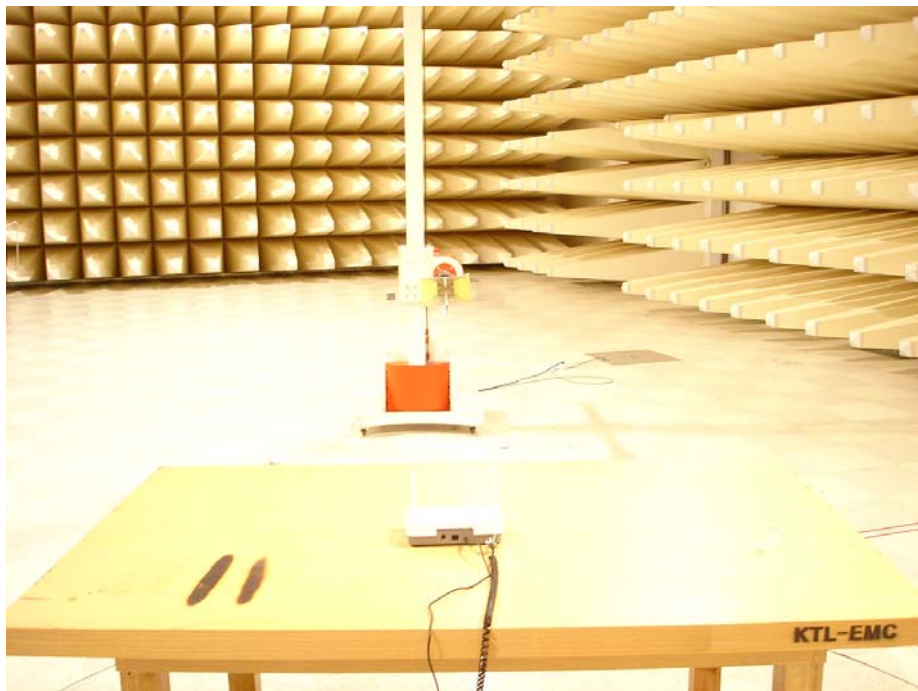
Appendix.1 EUT photo



Appendix.2 Test setup photo



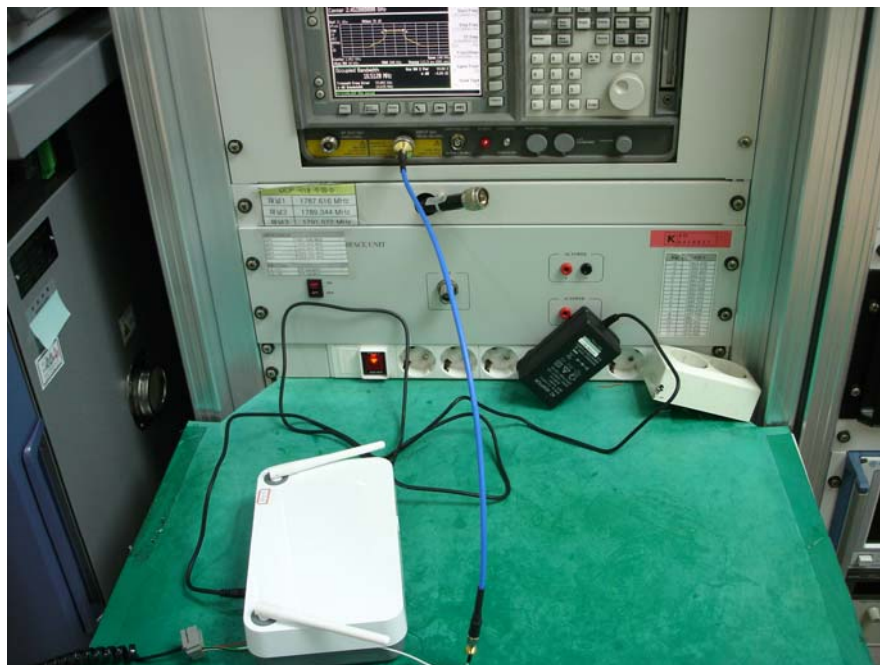
<Radiated Emission>



<Radiated Emission>



<Conducted Emission>



<RF Conducted TEST>