FCC MEASUREMENT REPORT

CERTIFICATION OF COMPLIANCE

PRODUCT	:	**Wireless LAN Access Point**
MODEL/TYPE NO	:	**AAP-240G**
FCC ID	:	**V6J-AAP240G**
TRADE NAME	:	**ASPPEC**
APPLICANT	:	**ASPPEC Co., Ltd.** **4th FL-405, Plaza 2nd, #1496, Dujeong-dong, Cheonan-si, Chungcheonnam-do, Korea** **Jaegun-Han / Assistant Manager**
CLASSIFICATION	:	**DTS Part 15 Digital Transmission System**
RULE PART(S)	:	**FCC Part 15 Subpart C Section 15.247**
FCC PROCEDURE	:	**Certification**
DATES OF TEST	:	**March 13 to April 22, 2008**
DATES OF ISSUE	:	**April 22, 2008**
TEST REPORT No.	:	**BWS-08-RF-0004**
TEST LAB.	:	**BWS TECH Inc. (Registration No. : 553281)**

This WLAN AP AAP-240G has been tested in accordance with the measurement procedures specified in ANSI C63.4-2003 and ANSI/TIA-603-B-2002 at the BWS TECH/EMC Test Laboratory and has been shown to be complied with the electromagnetic radiated emission limits specified in FCC Rule Part 15.247.

I attest to the accuracy of data. All measurement herein was performed by me or were made under my supervision. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. The results of testing in this report apply to the product/system, which was tested only. Other similar equipment may not necessarily produce the same results due to production tolerance and measurement uncertainties.

April 22, 2008
(Date)

Tested by **HyunSup, Jin**

April 22, 2008
(Date)

Reviewed by **TaeHyun, Nam**

BWS TECH Inc.
www.bws.co.kr
#611-1 Maesan-Ri, Mohyeon-Myeon, Yongin-Si, Gyeonggi-Do, 449-853 Korea
TEL: +82 31 333 5997 FAX: +82 31 333 0017

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FCC TEST REPORT

Scope – *Measurement and determination of electromagnetic emission(EME) of radio frequency devices including intentional radiators and/or unintentional radiators for compliance with the technical rules and regulations of the U.S Federal Communications Commission(FCC)*

1. General Information

Applicant

Company Name	ASPPEC Co., Ltd.
Company Address	4th FL-405, Plaza 2nd, #1496, Dujeong-dong, Cheonan-si, Chungcheonnam-do, Korea
Phone/Fax	Phone : 82-2-6292-2371 Fax : 82-2-6292-2374

Manufacturer

Company Name	ASPPEC Co., Ltd.
Company Address	4th FL-405, Plaza 2nd, #1496, Dujeong-dong, Cheonan-si, Chungcheonnam-do, Korea
Phone/Fax	Phone : 82-2-6292-2371 Fax : 82-2-6292-2374

● **EUT Type**	Wireless LAN Access Point
● **Model Number**	AAP-240G
● **FCC Identifier**	V6J-AAP240G
● **S/N**	Prototype
● **FCC Rule Part(s)**	FCC Part 15 Subpart C Section 15.247
● **FCC Classification**	DTS / Part 15 Digital Transmission System
● **Freq. Range**	2400MHz ~ 2483.5MHz
● **Channel**	11 Channels
● **Modulation Method**	DSSS (CCK), OFDM (QAM)
● **Test Procedure**	ANSI C63.4-2003 and ANSI/TIA-603-B-2002
● **Dates of Tests**	March 13 to April 22, 2008
● **Place of Tests**	BWS TECH Inc.(FCC Registration Number : 553281) #611-1 Maesan-Ri, Mohyeon-Myeon, Yongin-Si, Gyeonggi-Do, 449-853 Korea TEL: +82 31 333 5997 FAX: +82 31 333 0017
● **Test Report No.**	BWS-08-RF-0004

2. Description of Test Facility

The measurement for radiated and conducted emission test were conducted at the open area test site of BWS TECH Inc. facility located at #611-1 Maesan-Ri, Mohyeon-Myeon, Yongin-Si, Gyeonggi-Do, 449-853 Korea. The site is constructed in conformance with the requirements of the ANSI C63.4-2000 and CISPR Publication 16. The BWS TECH measurement facility has been filed to the Commission with the FCC for 3 and 10-meter site configurations. Detailed description of test facility was found to be in compliance with the requirements of Section 2.948 FCC Rules according to the ANSI C63.4-2000 and registered to the Federal Communications Commission (Registration Number : 553281).

The measurement procedure described in American National Standard for Method of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C.63.4-2000) was used in determining radiated and conducted emissions from the ASPPEC Co., Ltd. WLAN AP Model : AAP-240G.

3. Product Information

3.1 Equipment Description

Wireless Access Point supports 802.11 wireless connectivity through the use of an 802.11a-compliant 5 GHz and 802.11b/g compliant 2.4 GHz radio technology.

Wireless Access Point provides a 54 Mbps data transfer rate on the IEEE 802.11a, IEEE 802.11g standard radio network and provides an 11Mbps data transfer rate on the IEEE 802.11b standard radio network.

Wireless LAN security is a primary concern. Wireless Access Point secures the enterprise network with a scalable and manageable system.

Based on the IEEE 802.1x standard for port-based network access, Wireless Access Point takes advantage of the Extensible Authentication Protocol (EAP) framework for user-based authentication.

Also Wireless Access Point provide RADIUS Authentication and Accounting for enterprise company and ISP (Internet Service Provider).

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3.2 General Specification

Items		Specifications
Wireless LAN Standards		802.11b, 802.11g
Frequency	802.11b/g	2.4 ~ 2.4835GHz
Radio Technology	802.11b/g	DSSS/ OFDM
Data Rates	802.11b	Up to 11Mbps
	802.11g	Up to 54Mbps
Transmit Power	802.11b	17dBm
	802.11g	54Mbps Mode : 14dBm All Mode except 54Mbps : 17dBm
Bandwidth	802.11b	26MHz Below
	802.11g	20MHz Below
Spectrum mask	802.11b	First Sidelobe : -30dBr
	802.11g	fc±11MHz : -20dBr Below fc±20MHz : -28dBr Below fc±30MHz : -40dBr Below
Receive Sensitivity	802.11b	11Mbps Mode : -84dBm Below(±3dBm)
	802.11g	54Mbps Mode : -68dBm Below 6Mbps Mode : -89dBm Below
Supported Channels	802.11b/g	11 Channels
Antenna	Direction	Omni Directional
	Connector	SMA male
	Input Impendence	50 Ω
	Gain	2dBi
Ethernet		10/100Mbps * 2 Port
Console		Serial Console(RJ-45 Type)

4. Summary of Test Results

4.1 Conducted Emission Measurement

Conducted emissions measurements were made in accordance with section 11, "Measurement of Information Technology Equipment" of ANSI C63.4-2003. The measurement were performed over the frequency range of 0.15MHz to 30MHz using a 50Ω/50uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 10KHz or for "quasi-peak" within a bandwidth of 9KHz.

The line-conducted emission test is conducted inside a shielded anechoic chamber room with 1m x 1.5m x 0.8m wooden table, which is placed 40cm away from the vertical wall, and 1.5m away from the sidewall of the chamber room. Two LISNs are bonded to the shielded room. The EUT is powered from the PMM LISN and the support equipment is powered from the LISN. Power to the LISNs is filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and these supply lines will be connected to the LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling (serpentine fashion) to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the Spectrum Analyzer to determine the frequency producing the max. Emission from the EUT. The frequency producing the max. Level was reexamined using the detector function set to the CISPR Quasi-Peak mode by manual, after scanned by automatic Peak mode from 0.45 to 30MHz. The bandwidth of the Spectrum Analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was maximized by switching power lines, varying the mode of operation or resolution, clock or data exchange speed, if applicable, whichever determined the worst-case emission. Each emission reported was calibrated using self-calibrating mode.

Photographs of the worst-case emission can be seen in photographs of conducted emission test setup.

4.2 Radiated Emission Measurement

Preliminary measurements were made at indoors 3-meter semi EMC Anechoic Chamber using broadband antennas, broadband amplifier, and spectrum analyzer to determine the emission frequencies producing the maximum EME.

Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configurations, mode of operation, turntable azimuth with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 to 1000MHz using bi-log antenna and above 1000MHz, linearly polarized double ridge horn antennas were used. Above 1GHz, linearly polarized double ridge horn antennas were used. The measurements were performed with three frequencies, which were selected as bottom, middle, and top frequency in the operating band. Emission level from the EUT with various configurations was examined on the spectrum analyzer connected with the RF amplifier and plotted graphically.

Final measurements were made outdoors open site at 3-meter test range using biconical and log periodic, Horn antenna. The output from the antenna was connected, via a preselector or a preamplifier, to the input of the EMI Measuring Receiver and Spectrum analyzer (for above 25GHz). The detector function was set to the quasi-peak or peak mode as appropriate. The measurement bandwidth on the Field strength receiver was set to at least 120kHz (1MHz for measurement above 1GHz), with all post-detector filtering no less than 10 times the measurement bandwidth. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

Each frequency found during preliminary measurement was examined and investigated as the same set up and configuration which produced the maximum emission The EUT, support equipment and interconnecting cables were configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8-meter high non-metallic 1m x 1.5 meter table. The turntable containing the system was rotated and the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission.

Varying the mode of operating frequencies of the EUT maximized each emission. The system was tested in all the three orthogonal planes and changing the polarity of the antenna. The worst-case emissions are recorded in the data tables. If necessary, the radiated emission measurement could be performed at a closer distance to ensure higher accuracy and the results were extrapolated to the specified distance using an inverse linear distance extrapolation factor (20dB/decade) as per section 15.31(f).

5. Test Condition

5.1 Test Configuration

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the EUT and the supported equipments were installed to meet FCC requirement and operated in a manner, which tends to maximize its emission level in a typical application.

Radiated Emission Test

Preliminary radiated emission tests were conducted using the procedure in ANSI C63.4/2000 Clause 8.3.1.1 to determine the worst operating condition. Final radiated emission tests were measured at 3-meter open field test site. To complete the test configuration required by the FCC, the EUT was tested in all three orthogonal planes.

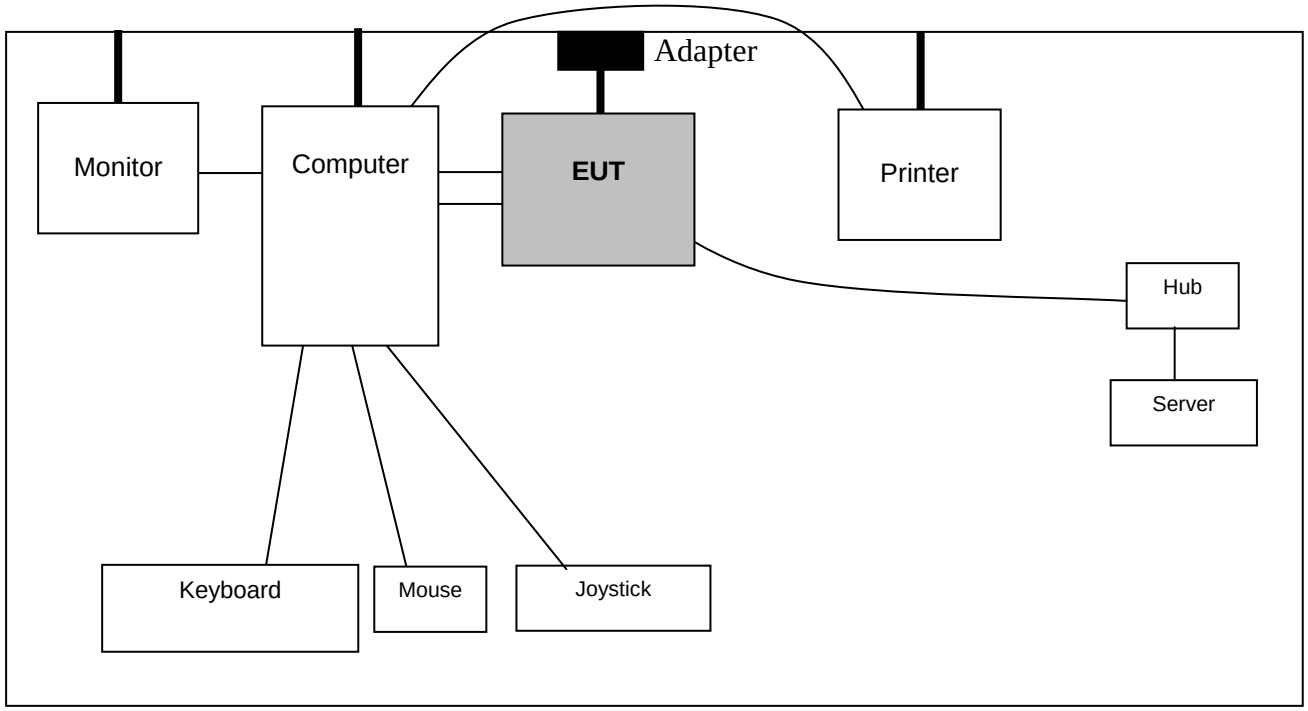
5.2 EUT operation

EUT was tested according to the operation modes provided by the specifications given by the manufacturer, and reported the worst emissions.

5.3 Test System layout on EUT and peripherals

Interface cable_____ Power cable ▬▬▬

Conducted Emission and Radiated Emission



5.4 Peripherals / Support Equipment Used

Following peripheral devices and interface cables were connected during the measurement:

Type of Peripheral Equipment Used:

Description	Model Name	Serial No.	Manufacturer	FCC ID
EUT	AAP-240G	prototype	ASPPEC CO.,Ltd.	V6J-AAP-240G
Computer	DX7300	CNG7040709	HP	N/A
Monitor	PE1233	CNC4140S12	HP	N/A
Printer	MJC-650G	H3AH703638	SAMSUNG	N/A
Keyboard	RT2300	7668200800660	Microsoft	N/A
Mouse	SMOP5000WX	06090061375	SAMSUNG	N/A
Joystick	Side Winder Game Pad USB	prototype	Microsoft	N/A

Type of Cables Used:

Device from	Device to	Type of Cable	Length(m)	Type of shield
Computer	Monitor	Video	1.8	Shielded
Computer	Keyboard	PS/2	2.0	Unshielded
Computer	Mouse	PS/2	1.8	Unshielded
Computer	Joystick	USB	1.8	Unshielded
Computer	Printer	PARALLEL	1.9	Shielded
Computer	Power Socket	Inlet	1.5	Unshielded
EUT	Adapter	Inlet	1.5	Unshielded
EUT	Computer	RJ-45	1.5	Unshielded
EUT	Computer	RJ-45	1.5	Unshielded
EUT	Hub	RJ-45	15.0	Unshielded

6. Test Results

Summary of Test Results

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum emission of the EUT are reported.

APPLIED STANDARD : 47 CFR Part 15, Subpart C			
FCC Rule	**Description of Test**	**Limit**	**Result**
15.207	Conducted Emission	Various	Pass
15.247(a)(2)	6dB Bandwidth	More than 1MHz	Pass
15.247(b), (c)	Maximum Peak Output Power	Less than 30dBm	Pass
15.247(d)	Conducted Emission & 100kHz Bandwidth of Frequency Band Edges	More than 20dBc	Pass
15.239(d), 15.209	Radiated Emission	Various	Pass
15.247(d)	Power Spectral Density	Less than 8dBm	Pass
15.203	Antenna Requirement	Less than 6dBi	Pass

7. Test Procedure & Measurement Data

7.1 Conducted Emissions

EUT : AAP-240G

Test Standard : FCC Part15 Subpart C Section 15.207

Test Date : April 07, 2008

Operating Condition : The EUT was operated at transmitting condition continuously during the test.

Environment Condition : 24 °C/ 43 %

Result : Passed by -16.44 dB (AV)

The following table shows the highest levels of conducted emissions on both phase of Hot and Neutral line.

Tabulated Conducted Emission Test Data

Detector Mode ; CISPR Quasi Peak mode (6dB Bandwidth : 9kHz).

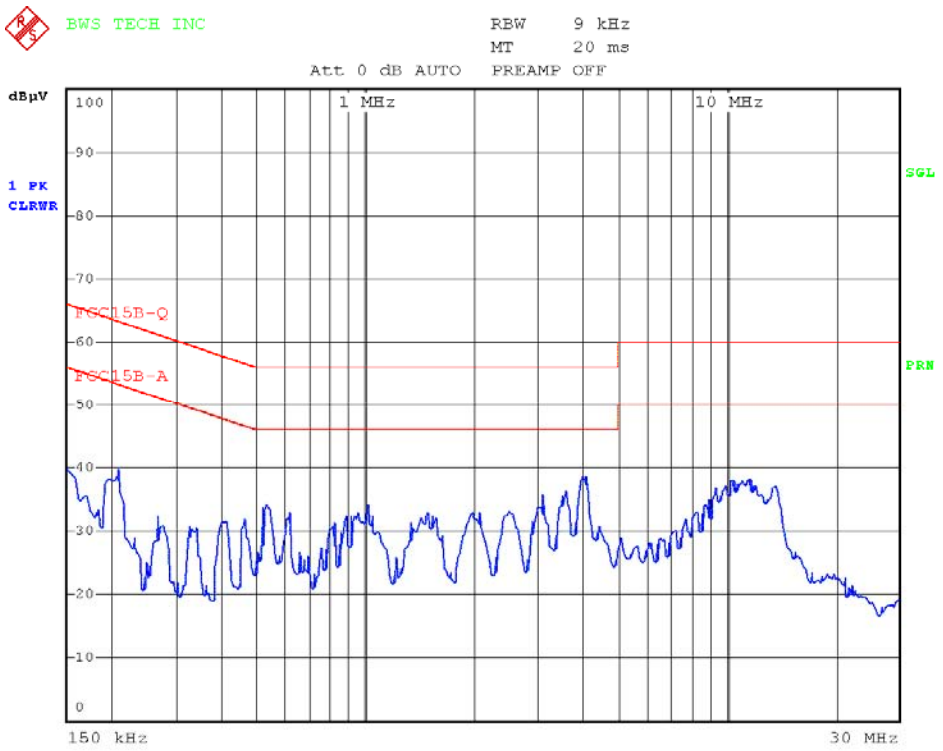
Test data sheets follow

Freq [MHz]	Correcton		Phase [H/N]	Quasi-Peak Mode				Average Mode			
	AMN	C.L		Limit	Reading	Emission Level	Margin	Limit	Reading	Emission Level	Margin
				[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.150	0.06	0.03	H	66.00	39.75	39.84	-26.16	56.00			
0.194	0.06	0.03	N	64.90	39.88	39.97	-24.93	54.90			
0.206	0.07	0.10	N	64.40	40.37	40.54	-23.86	54.40			
0.262	0.07	0.16	N	62.90	33.13	33.36	-29.54	52.90			
0.326	0.08	0.22	H	61.00	30.96	31.26	-29.74	51.00			
0.462	0.07	0.28	H	57.10	31.85	32.20	-24.90	47.10			
0.530	0.07	0.30	N	56.00	34.32	34.69	-21.31	46.00			
0.602	0.07	0.30	N		34.30	34.67	-21.33				
0.954	0.04	0.38	H		33.05	33.47	-22.53				
3.094	0.04	0.61	H		35.70	36.35	-19.65				
3.606	0.03	0.70	H		36.34	37.07	-18.93				
4.070	0.03	0.77	H		38.76	39.56	-16.44				
7.730	0.05	0.99	H	60.00	32.01	33.05	-26.95	50.00			
8.720	0.06	1.00	H		34.08	35.14	-24.86				
10.040	0.08	1.03	H		36.44	37.55	-22.45				
11.240	0.04	1.09	H		37.50	38.63	-21.37				
12.450	0.04	1.16	H		35.99	37.19	-22.81				
13.690	0.06	1.20	H		37.20	38.46	-21.54				

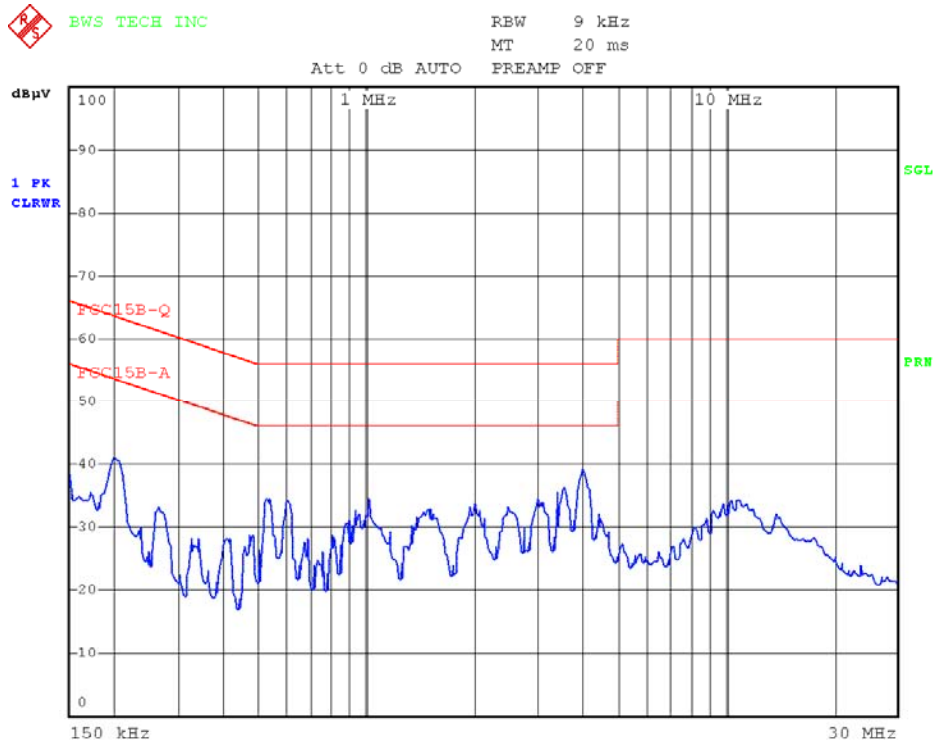
NOTES:
1. H : Hot Line , N :Neutral Line
2. Emission Level = Reading + Correction Factor
3. Margin = Emission Level – Limit
4. Measurement uncertainty estimated at ±1.38 dB.
   The measurement uncertainty is given with a confidence of 95.45 % with the coverage factor, k=2.

Plots of Conducted Emission Test

1. Hot Line



2. NEUTRAL Line



7.2 6 dB Bandwidth

EUT : AAP-240G
Test Standard : FCC Part15 Subpart C Section 15.247(a)(2)
Test Date : March 17 to April 18, 2008
Operating Condition : The EUT was operated at transmitting condition continuously during the test.
Environment Condition : 24 °C/ 43 %
Result : Passed

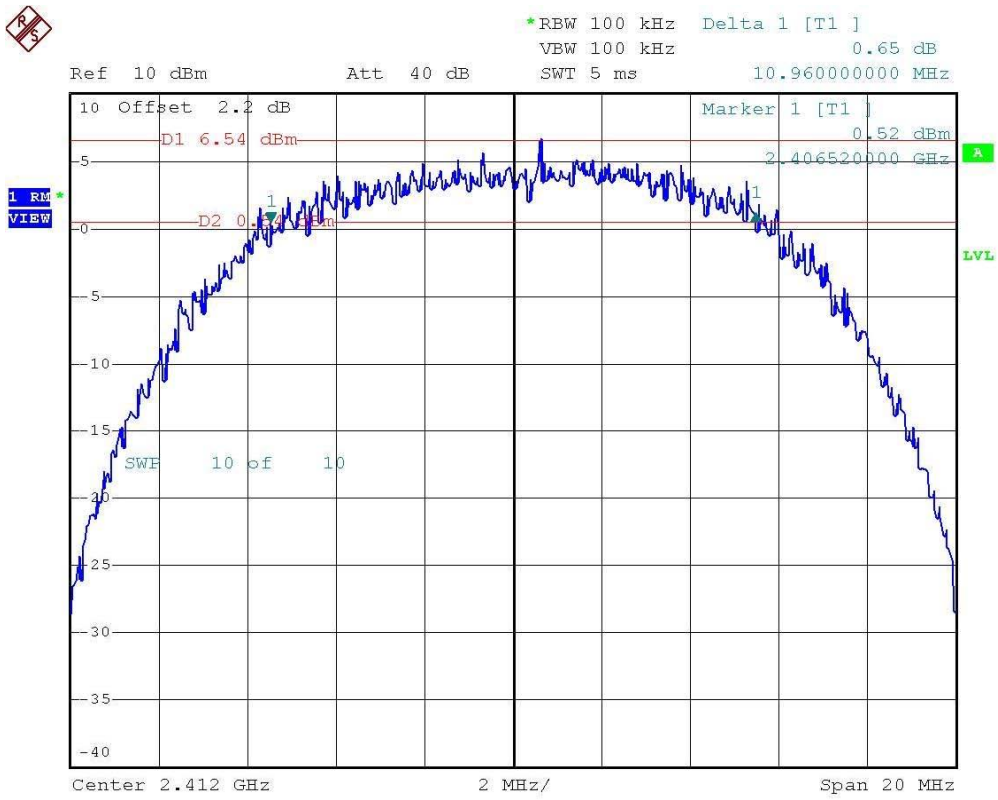
6 dB Bandwidth Test Data

Mode	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit
802.11b	2412	10.96	More than 500 kHz
	2437	10.96	
	2462	10.70	
802.11g	2412	16.56	
	2437	16.48	
	2462	16.48	

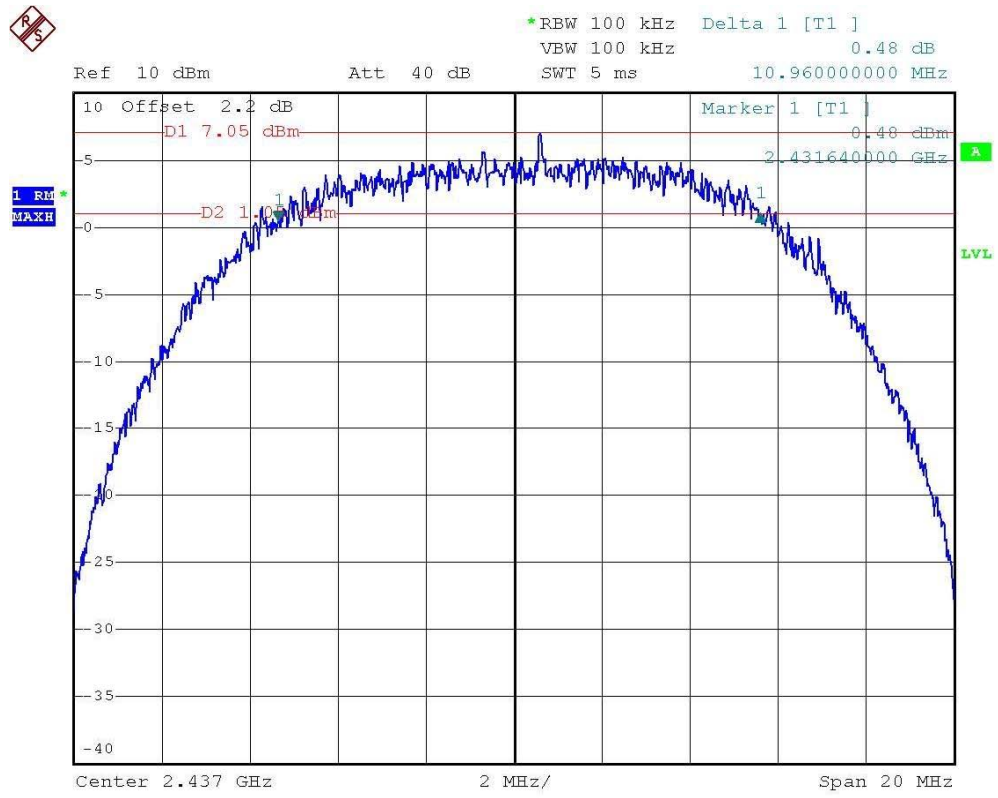
NOTES:
1. Measure conducted 6 dB bandwidth of relevant channel using Spectrum Analyzer.
2. RBW 100kHz, VBW 100kHz, Sweep Time 5ms.
3. 6 dB less than both bandwidth than maximum peak power.

Plots of 6 dB Bandwidth

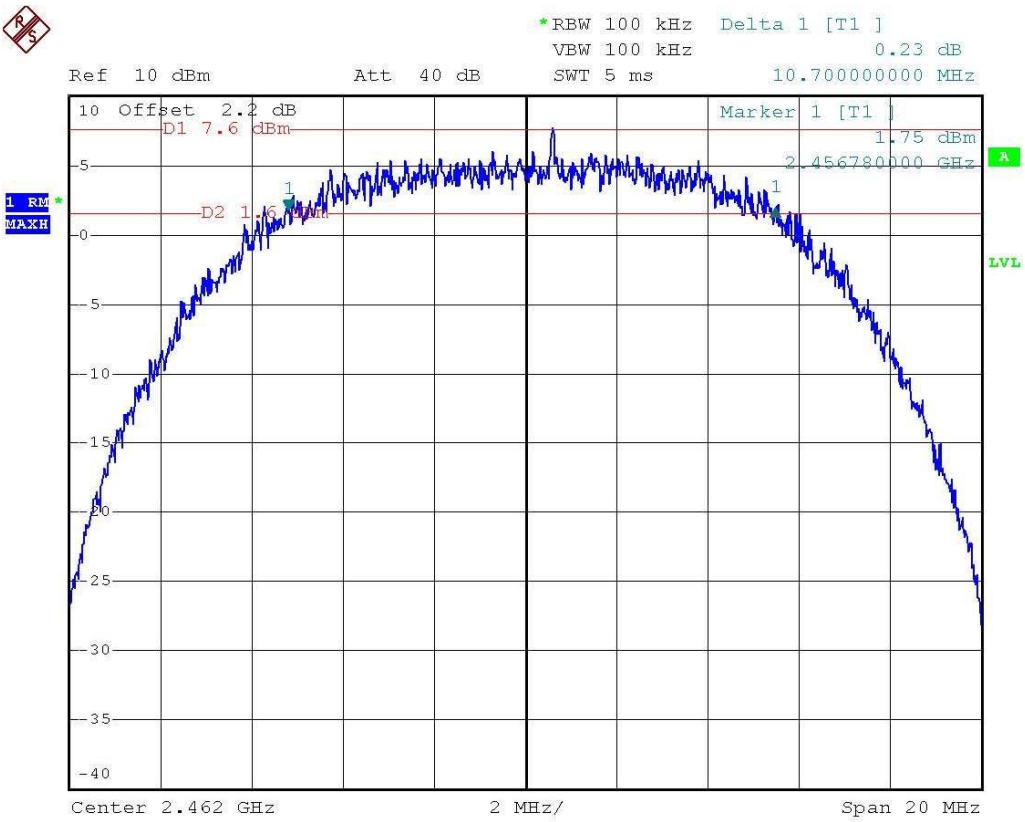
1. 802.11b, 2412 MHz / 10.96 MHz



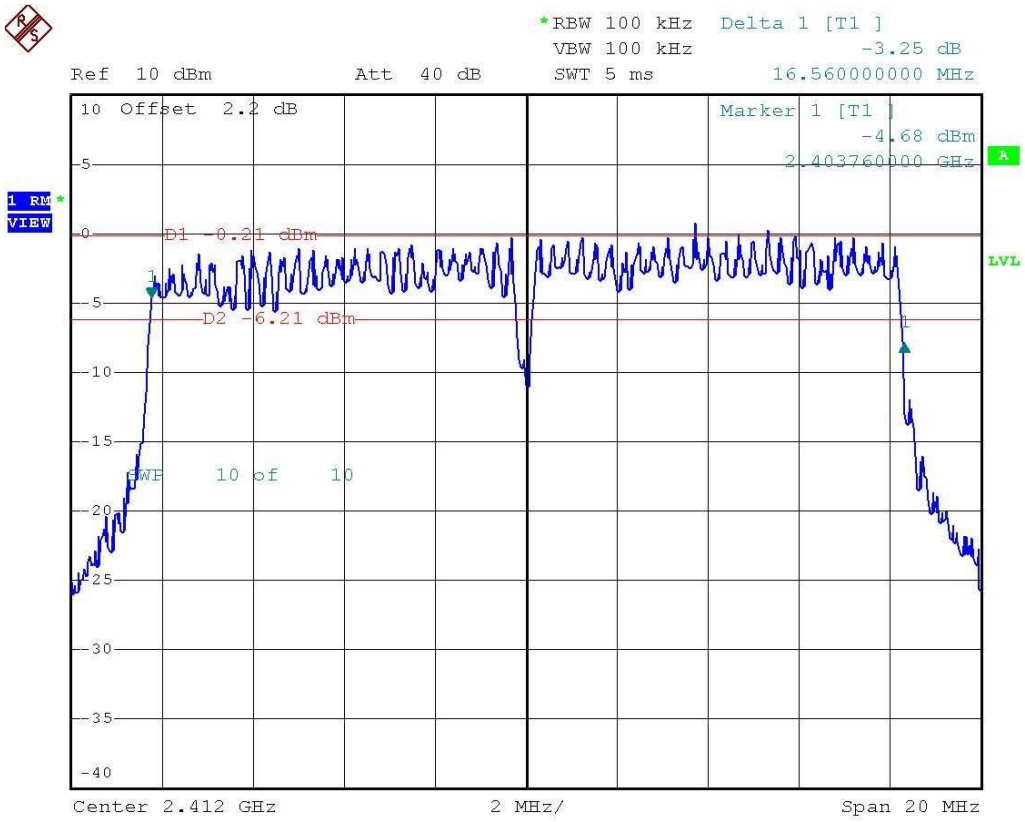
2. 802.11b, 2437 MHz / 10.96 MHz



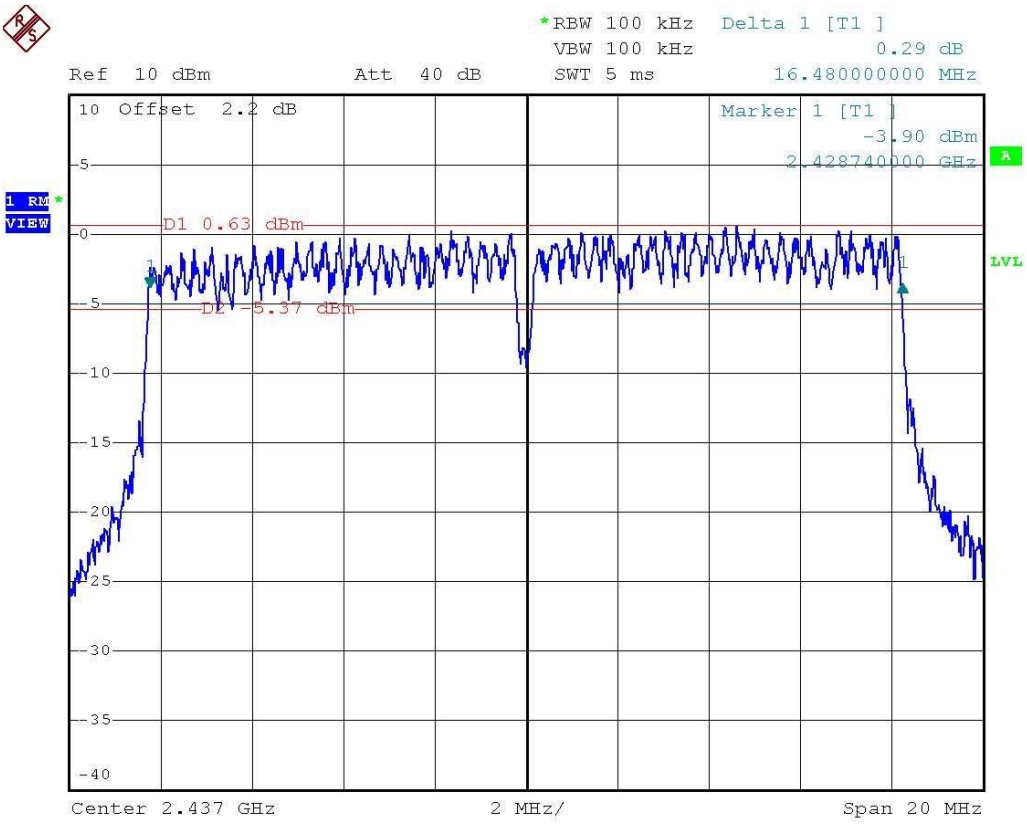
3. 802.11b, 2462 MHz / 10.70 MHz



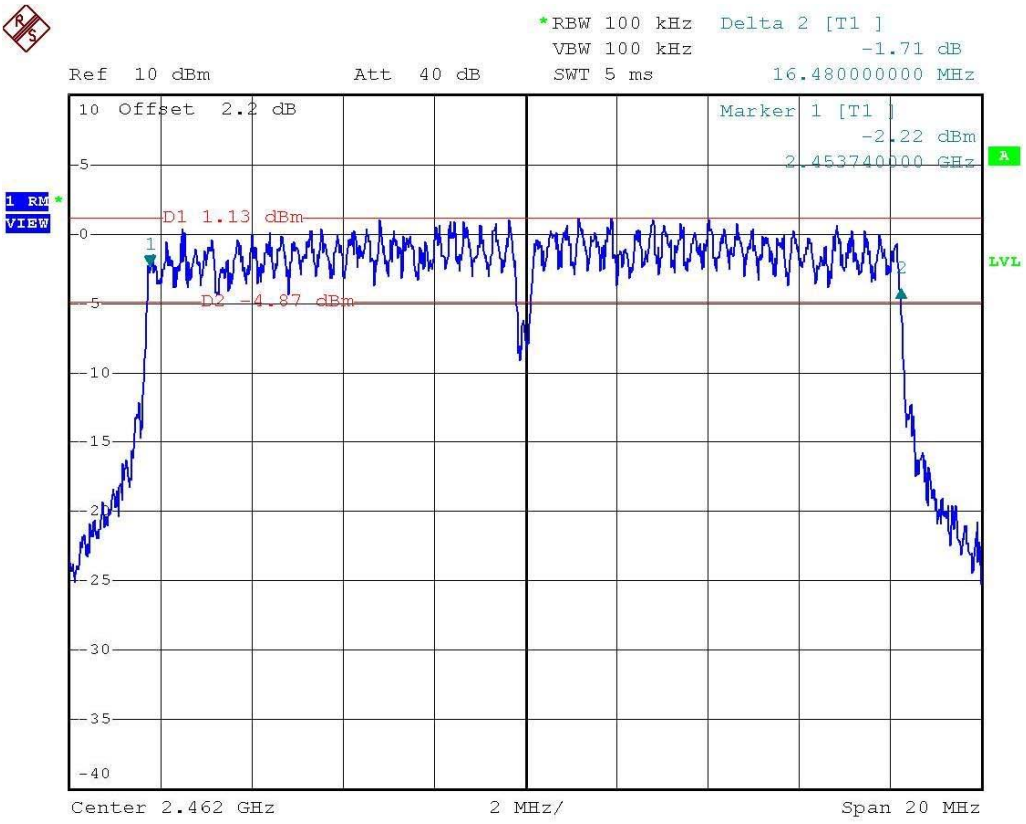
4. 802.11g, 2412 MHz / 16.56 MHz



5. 802.11g, 2437 MHz / 10.70 MHz



6. 802.11g, 2422 MHz / 16.56 MHz



7.3 Maximum Peak Output Power

EUT : AAP-240G
Test Standard : FCC Part15 Subpart C Section 15.247(b)(3)
Test Date : March 17 to April 18, 2008
Operating Condition : The EUT was operated at transmitting condition continuously during the test.
Environment Condition : 24 °C/ 43 %
Result : Passed

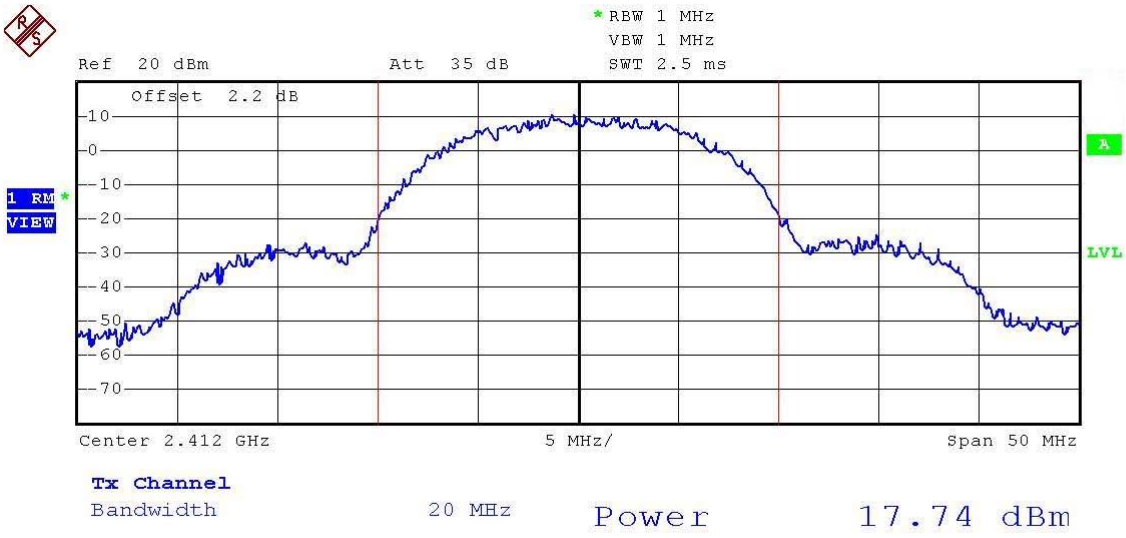
Maximum Peak Output Power Test Data

Mode	Frequency (MHz)	Output Power (dBm)	Limit
802.11b	2412	17.74	Less than 30 dBm
	2437	17.09	
	2462	16.87	
802.11g	2412	12.58	
	2437	13.49	
	2462	13.24	

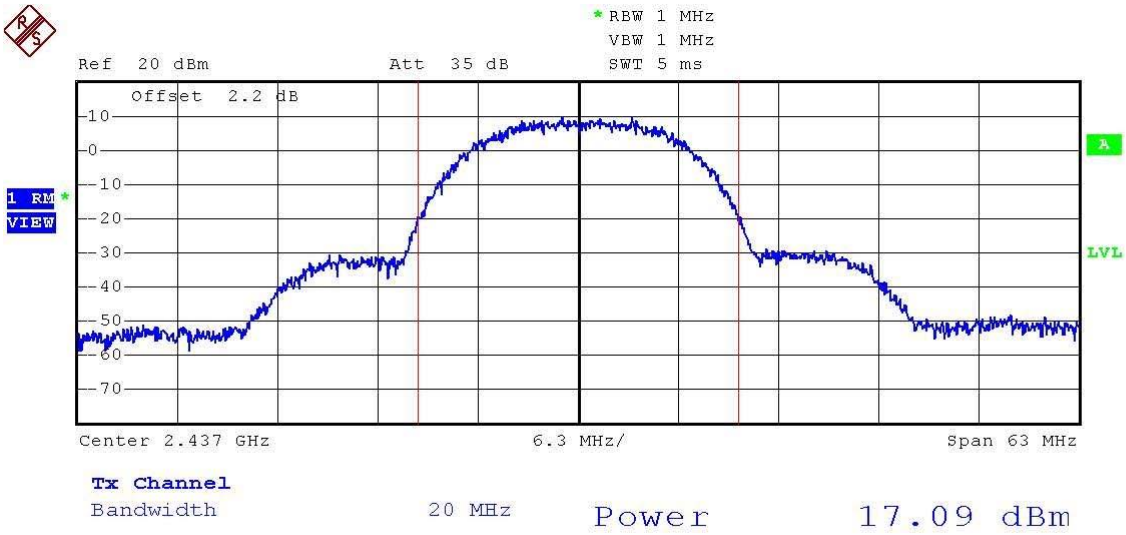
NOTES:
1. Measure conducted Maximum Peak Output of relevant channel using Spectrum analyzer.
2. RBW 1MHz, VBW 1MHz, Channel Power.

Plots of Maximum Peak Output Power

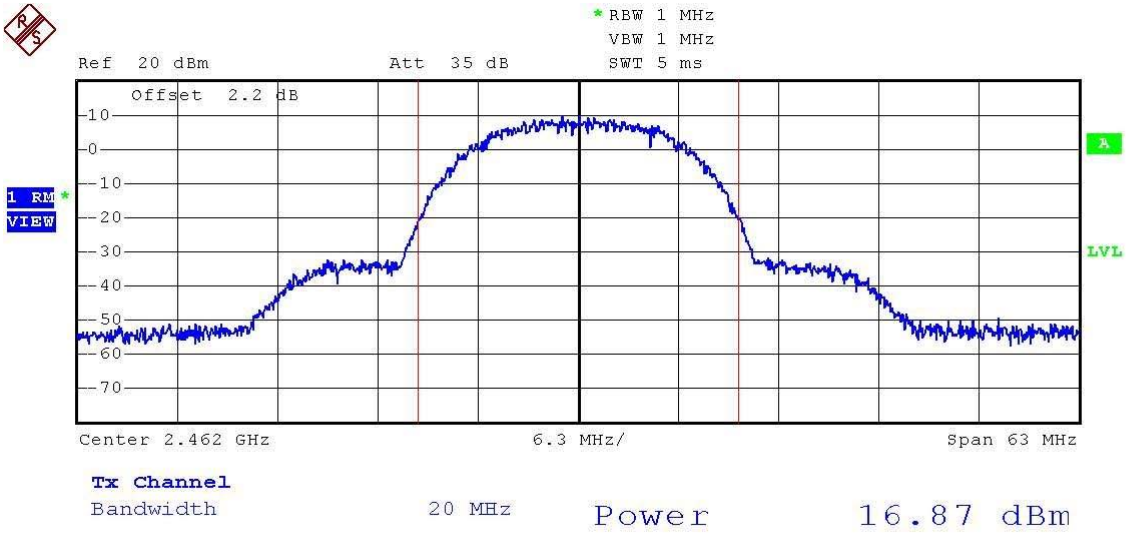
1. 802.11b, 2412 MHz / 17.74 dBm



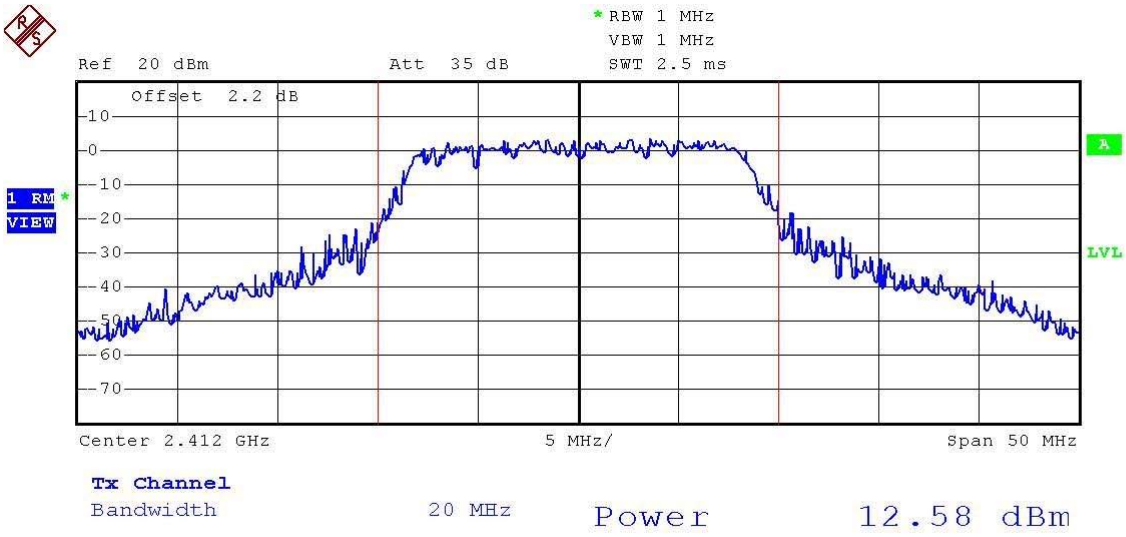
2. 802.11b, 2437 MHz / 17.09 dBm



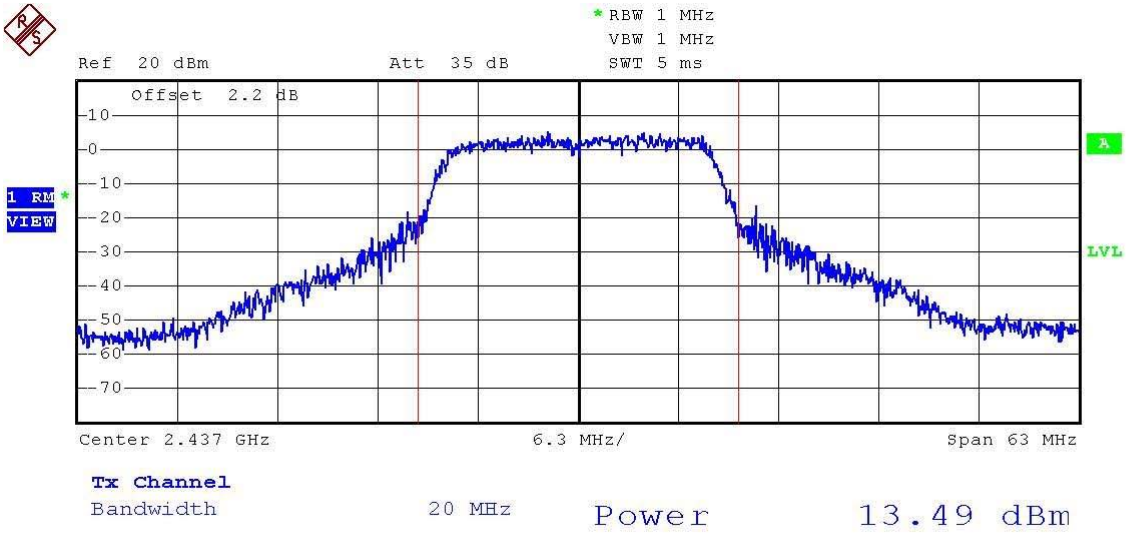
3. 802.11b, 2462 MHz / 16.87 dBm



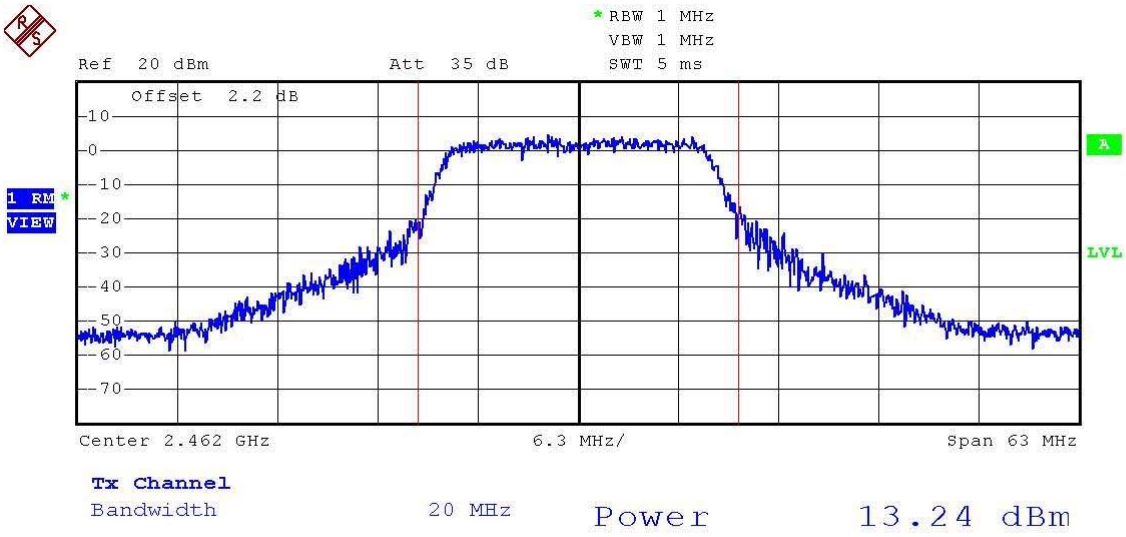
4. 802.11g, 2412 MHz / 12.58 dBm



5. 802.11g, 2437 MHz / 13.49 dBm



6. 802.11g, 2422 MHz / 13.24 dBm



7.4 Conducted Emission & 100 kHz Bandwidth of Frequency Band Edges

EUT	:	AAP-240G
Test Standard	:	FCC Part15 Subpart C Section 15.247(c)
Test Date	:	March 17 to April 18, 2008
Operating Condition	:	The EUT was operated at transmitting condition continuously during the test.
Environment Condition	:	24 °C/ 43 %
Result	:	Passed

7.4.1 Conducted Emission Test

Result : Please refer to the attached Plots for details :

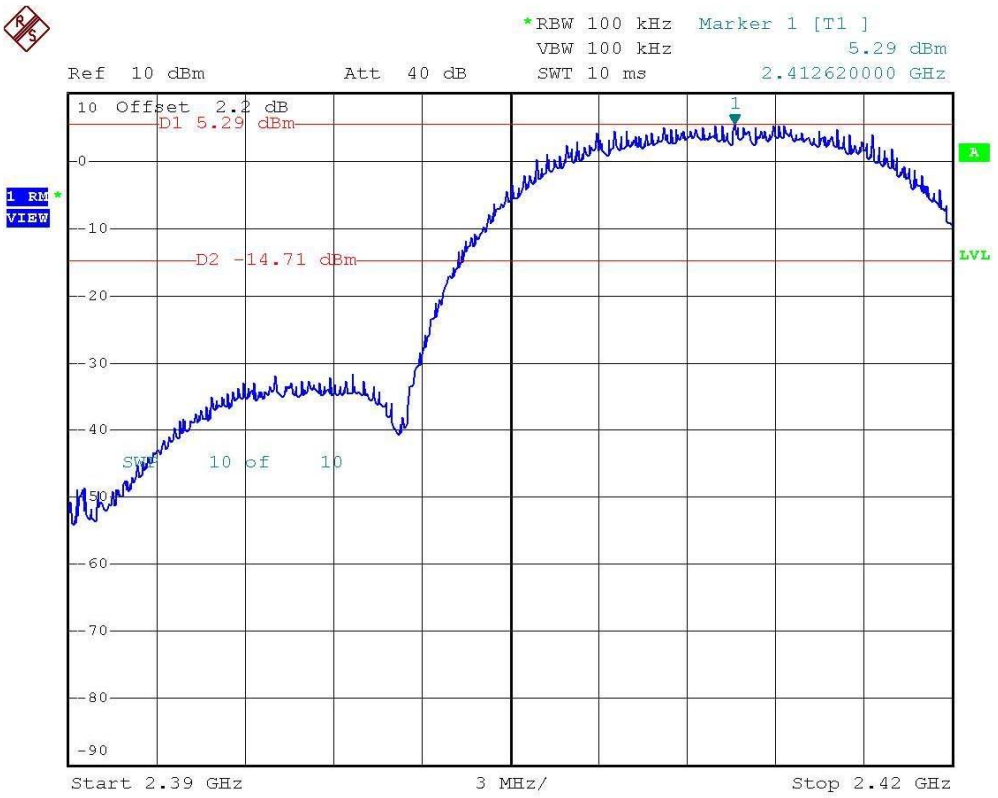
7.4.2 100 kHz Bandwidth of Frequency Band Edges

The test was performed to make a direct field strength measurement at the bandedge frequencies. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209. There is a restricted band starting at 2483.5 MHz and another restricted band from 2310 - 2390 MHz.

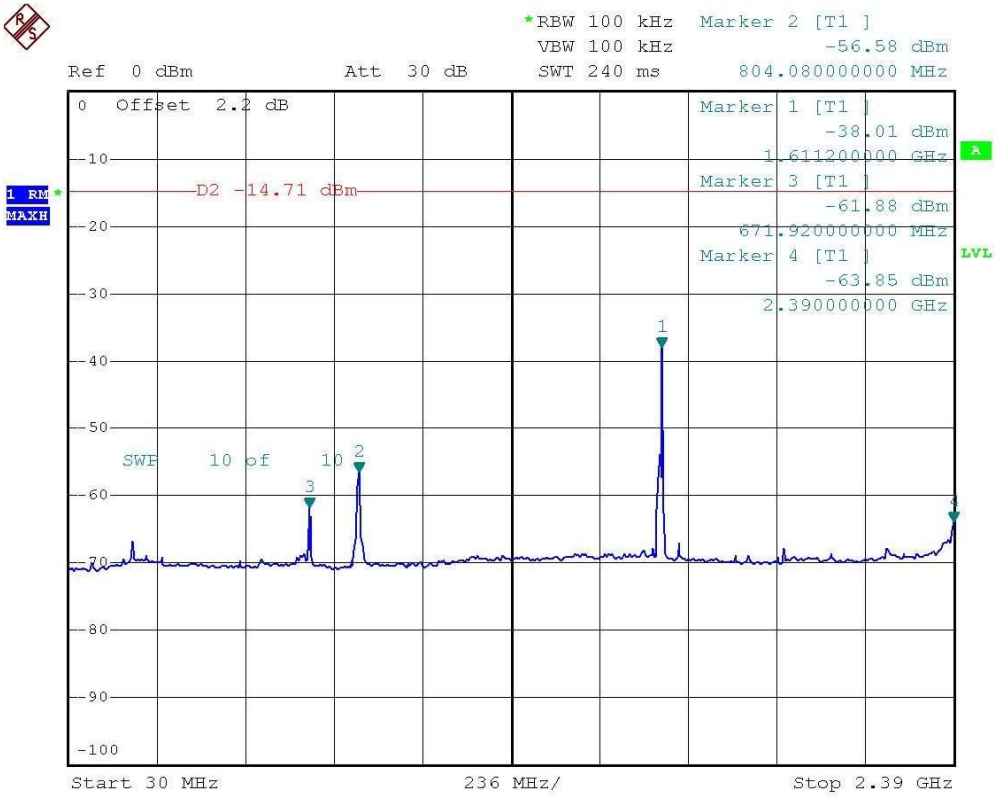
All emissions below noise floor of 7 dBuV/m.

Plots of Conducted Emission / 802.11b, 2412 MHz

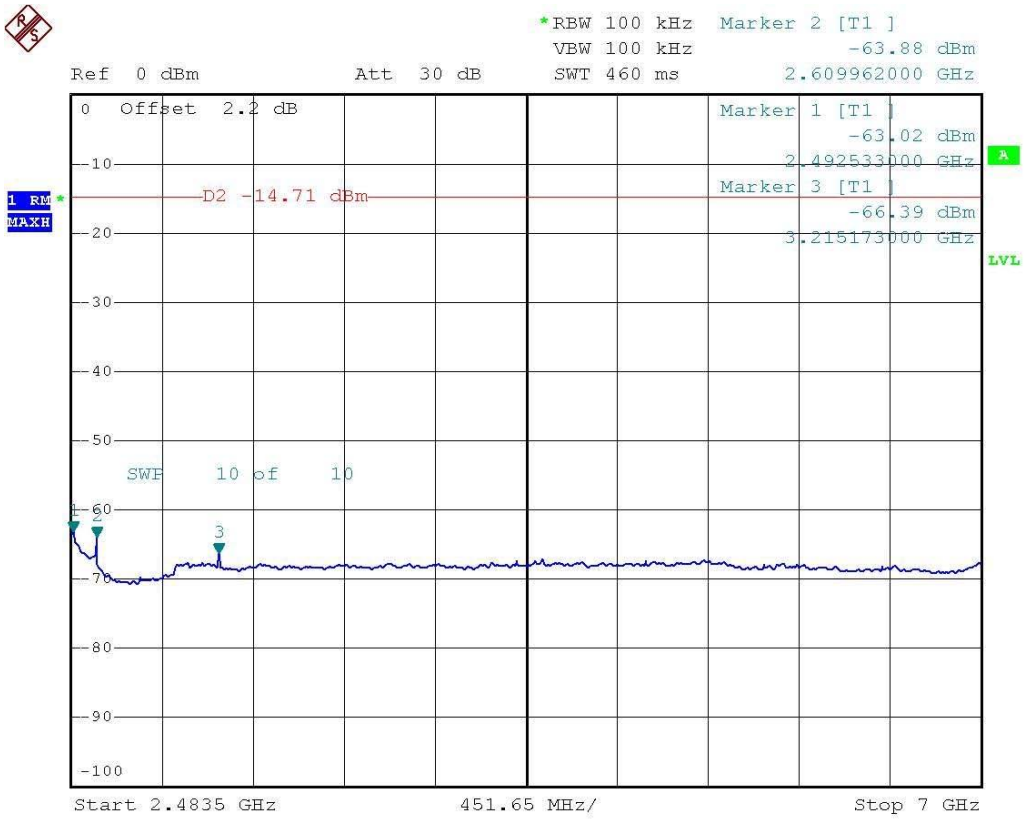
1. Band Edge (2390 MHz ~ 2400 MHz) / « 20dBc



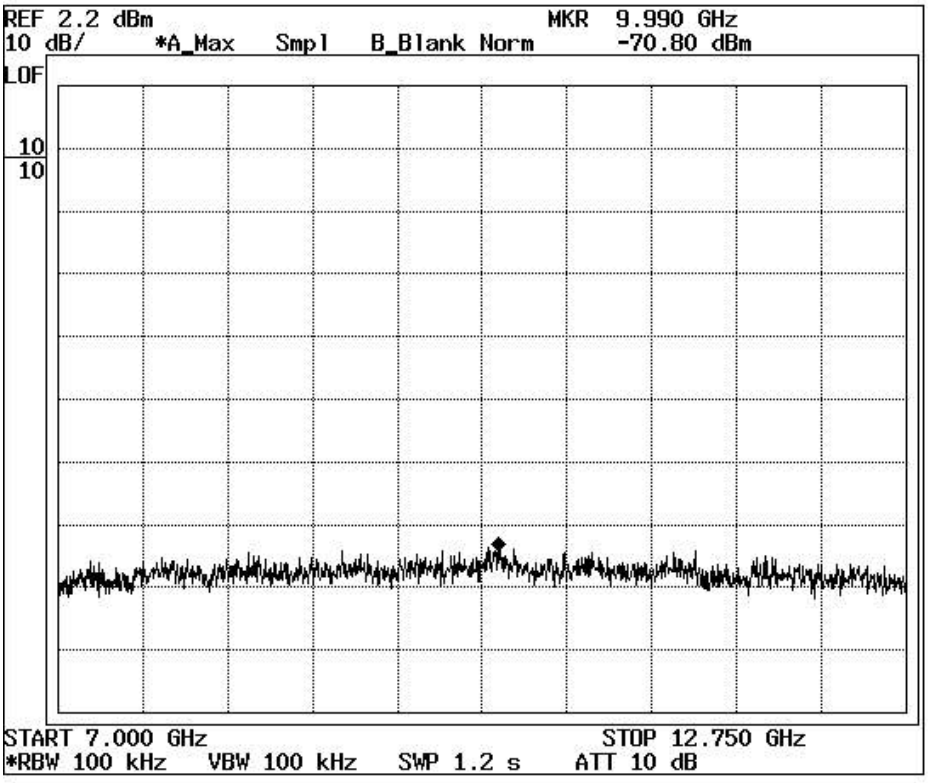
2. 30 MHz ~ 2.39 GHz / « 20dBc



3. 2483.5 MHz ~ 7 GHz / « 20dBc

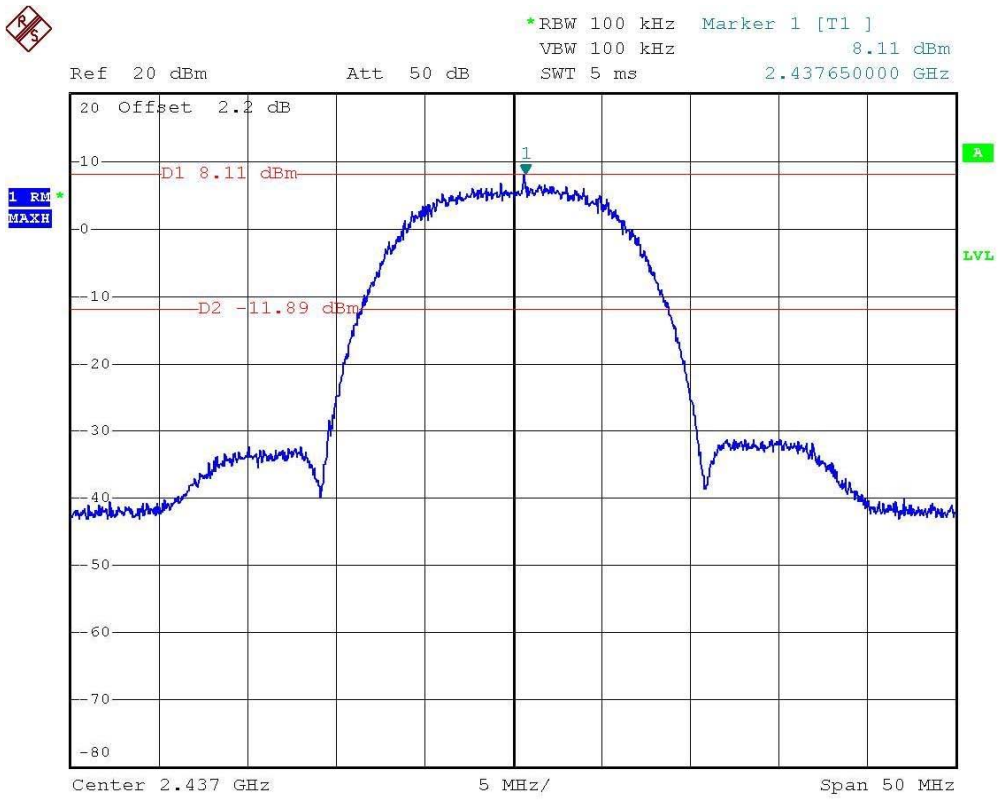


4. 7 GHz ~ 12.75 GHz / « 20dBc

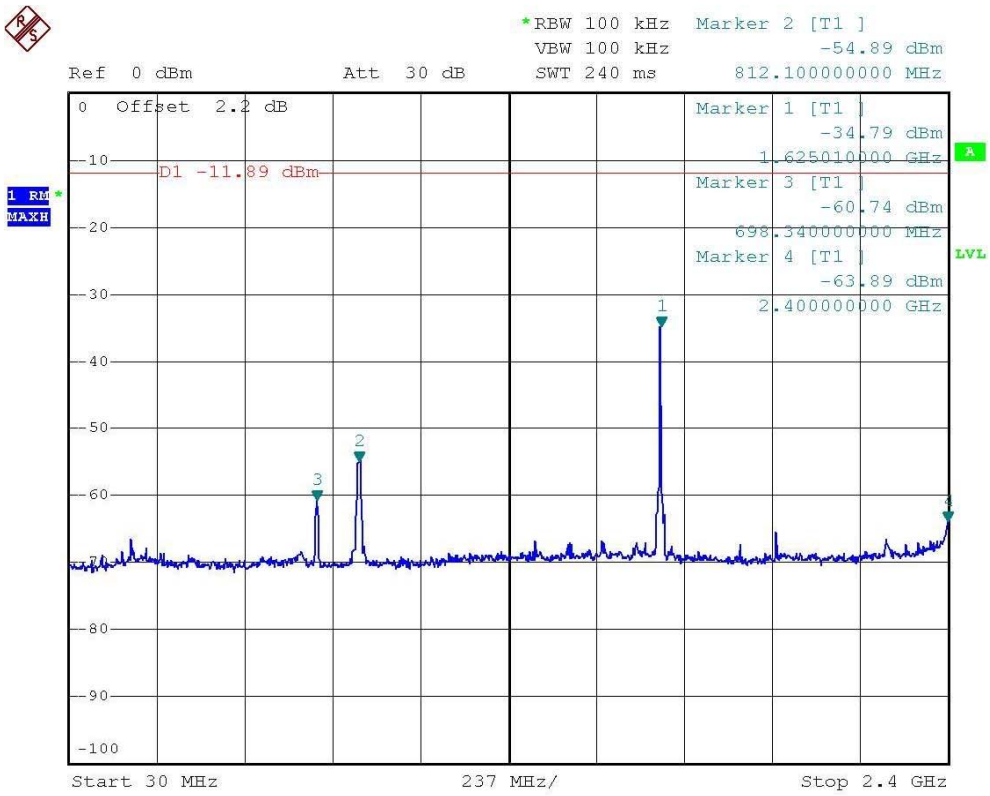


Plots of Conducted Emission / 802.11b, 2437 MHz

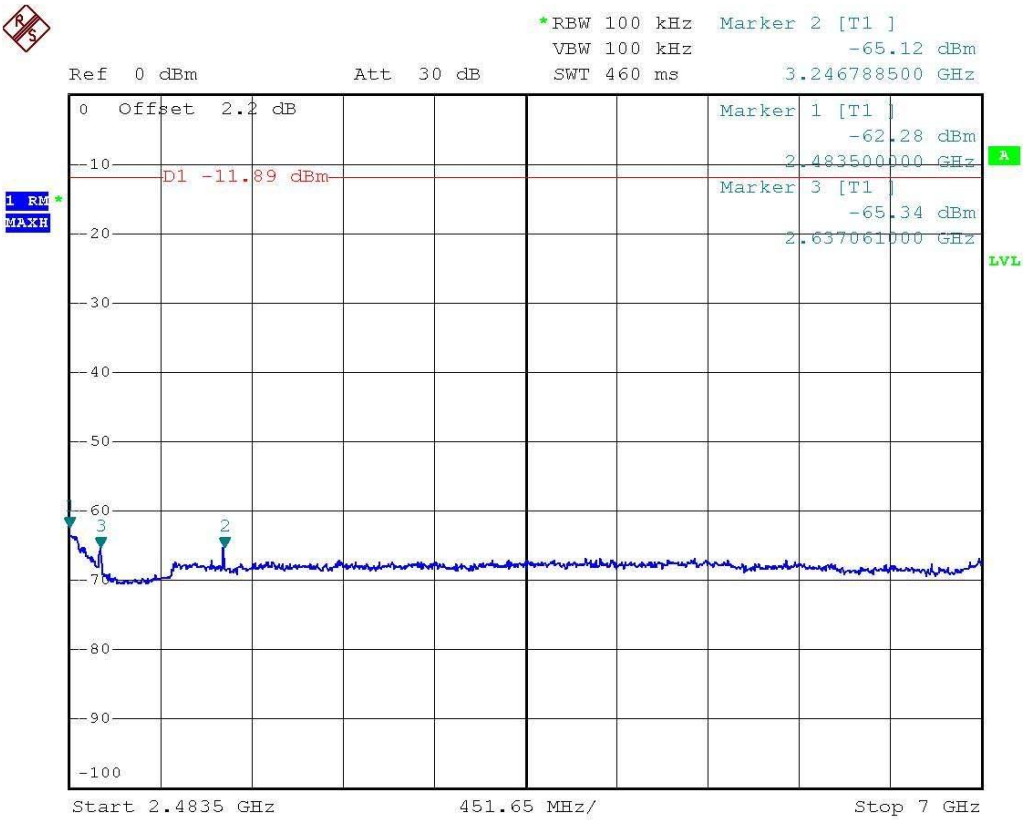
1. Band Edge / « 20dBc



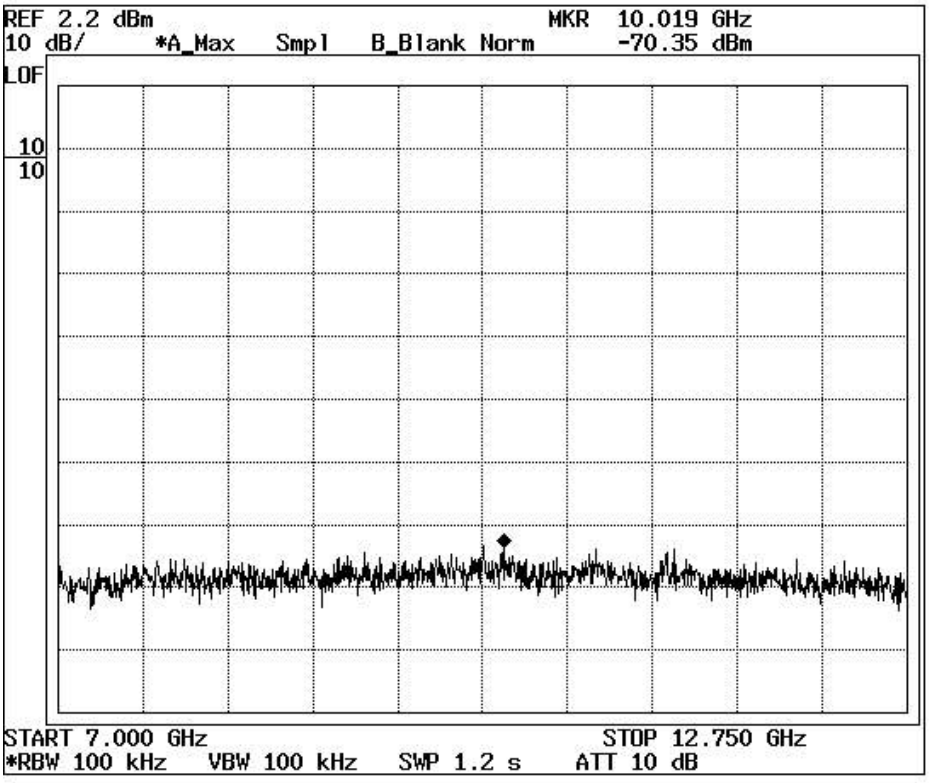
2. 30 MHz ~ 2.4 GHz / « 20dBc



3. 2483.5 MHz ~ 7 GHz / « 20dBc

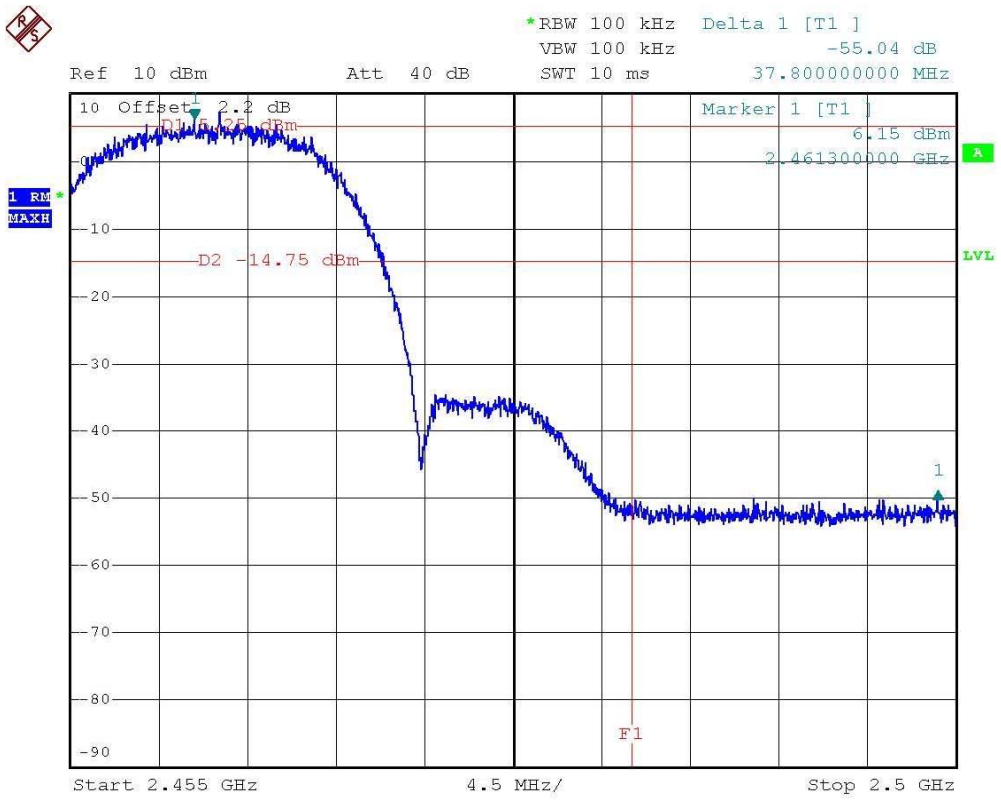


4. 7 GHz ~ 12.75 GHz / « 20dBc

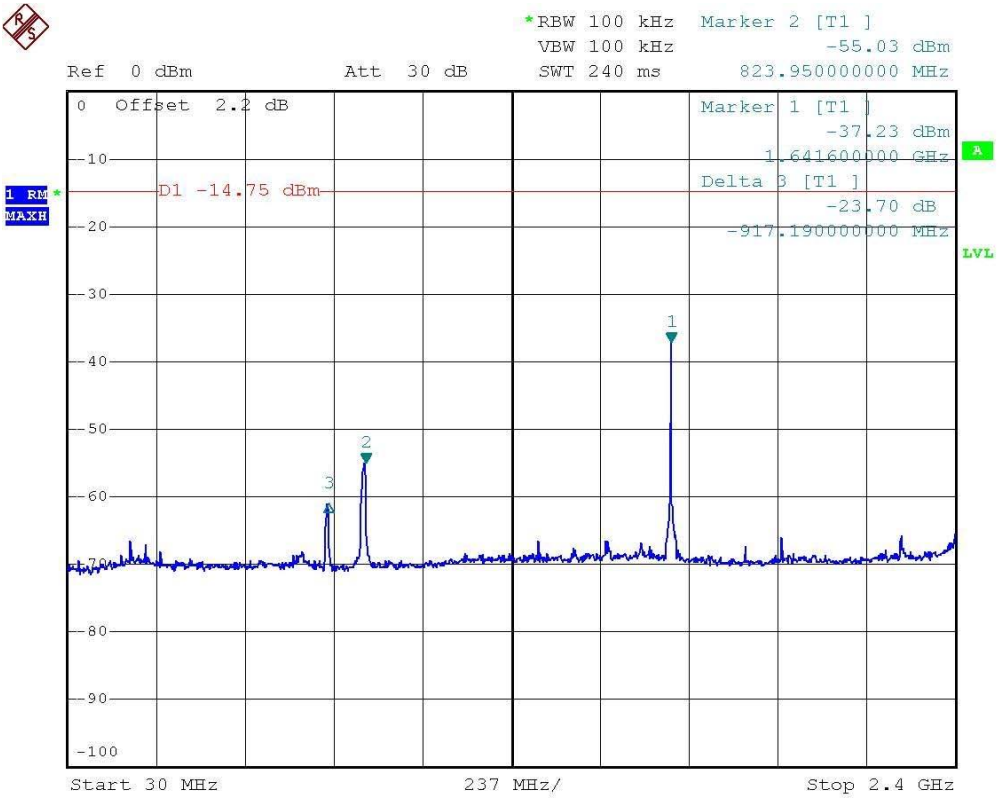


Plots of Conducted Emission / 802.11b, 2462 MHz

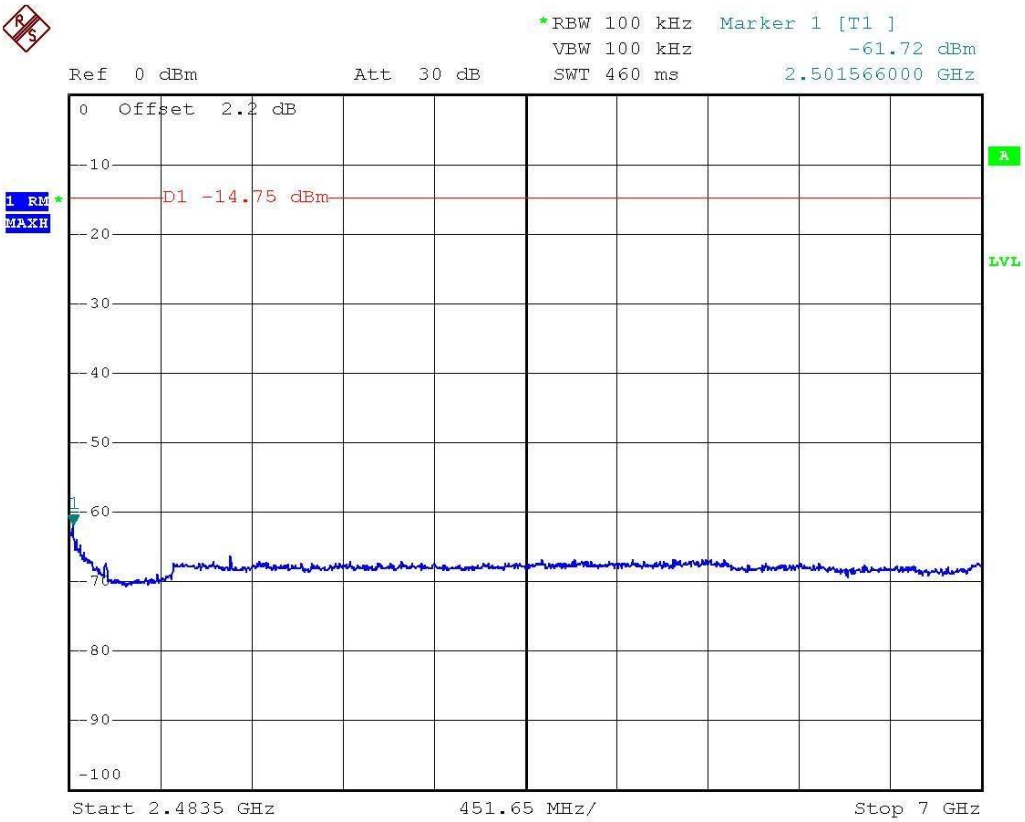
1. Band Edge (2483.5 MHz ~ 2500 MHz) / « 20dBc



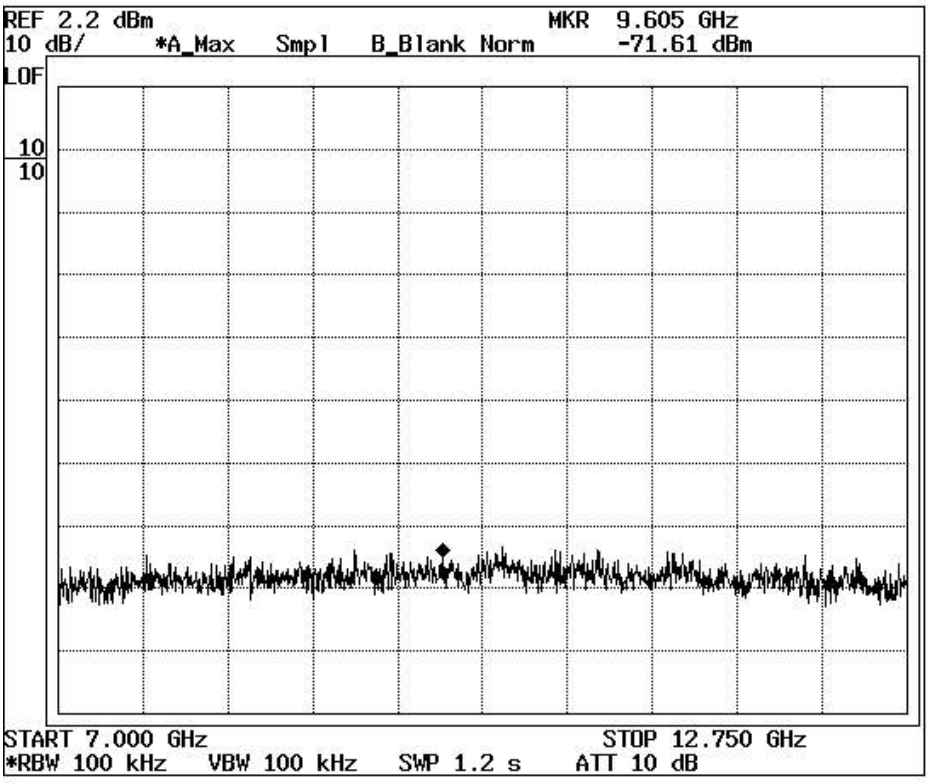
2. 30 MHz ~ 2.4 GHz / « 20dBc



3. 2483.5 MHz ~ 7 GHz / « 20dBc

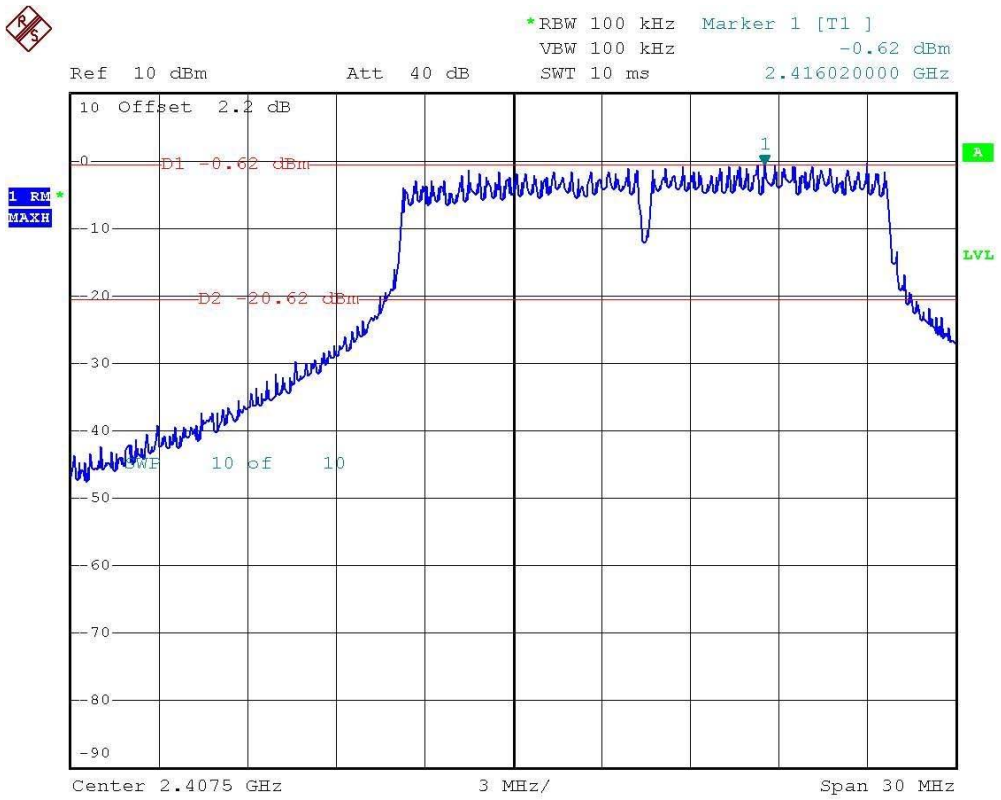


4. 7 GHz ~ 12.75 GHz / « 20dBc

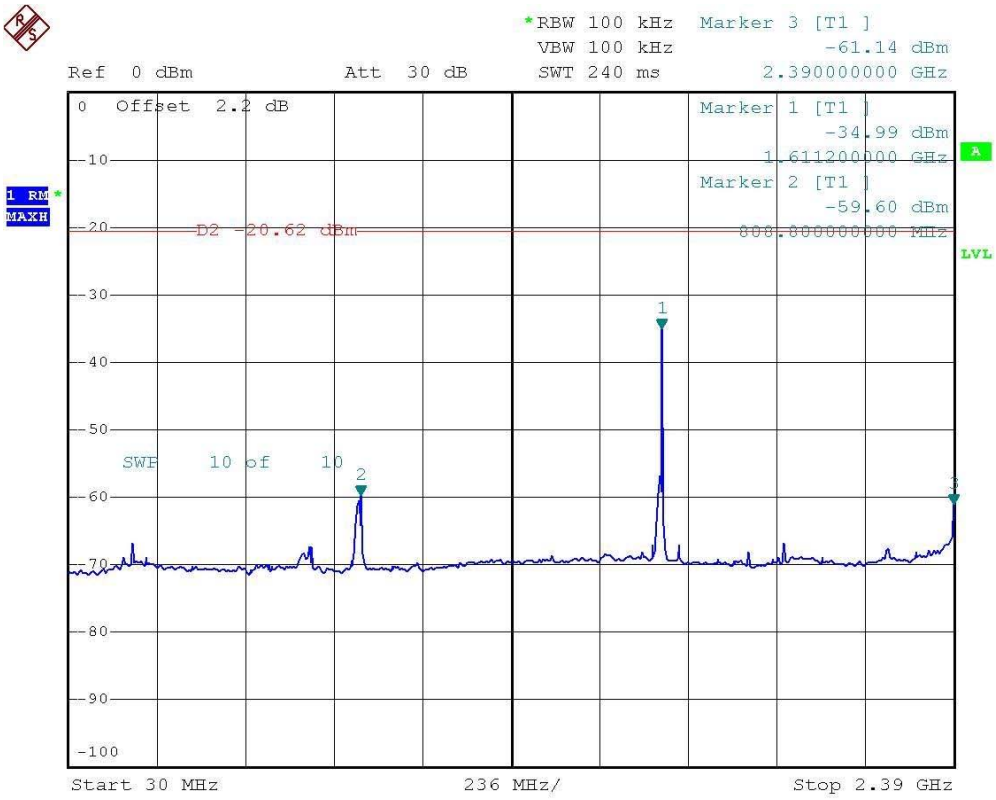


Plots of Conducted Emission / 802.11g, 2412 MHz

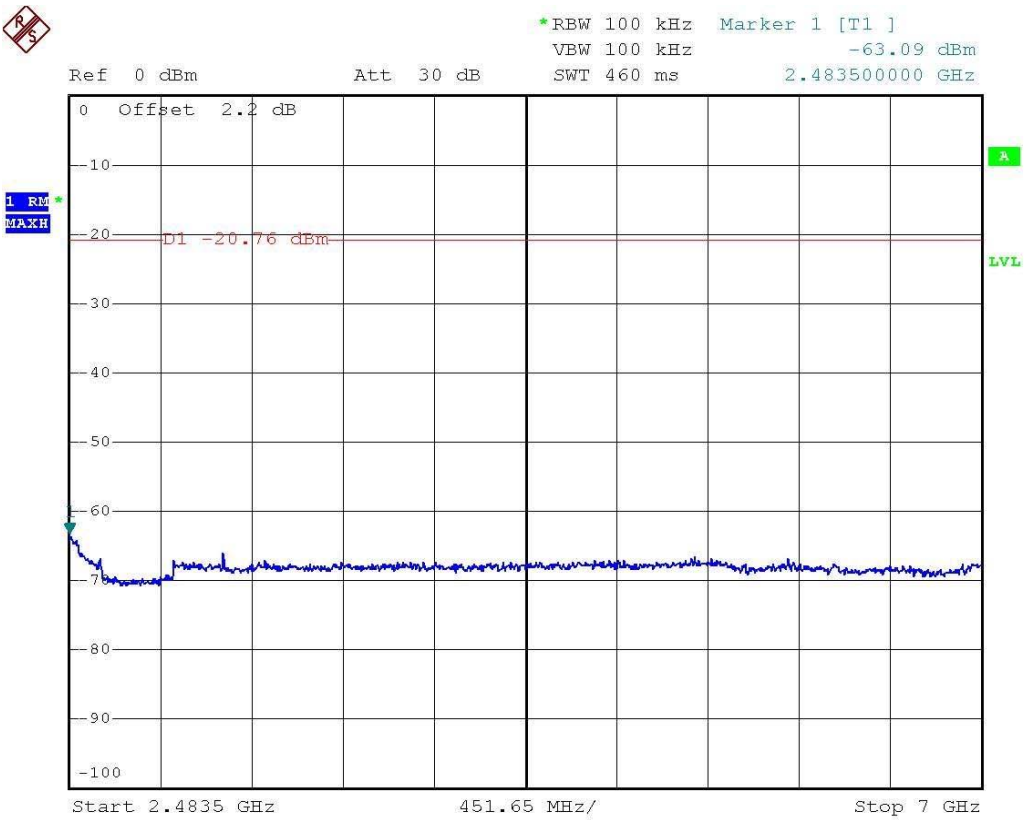
1. Band Edge (2390 MHz ~ 2400 MHz) / « 20dBc



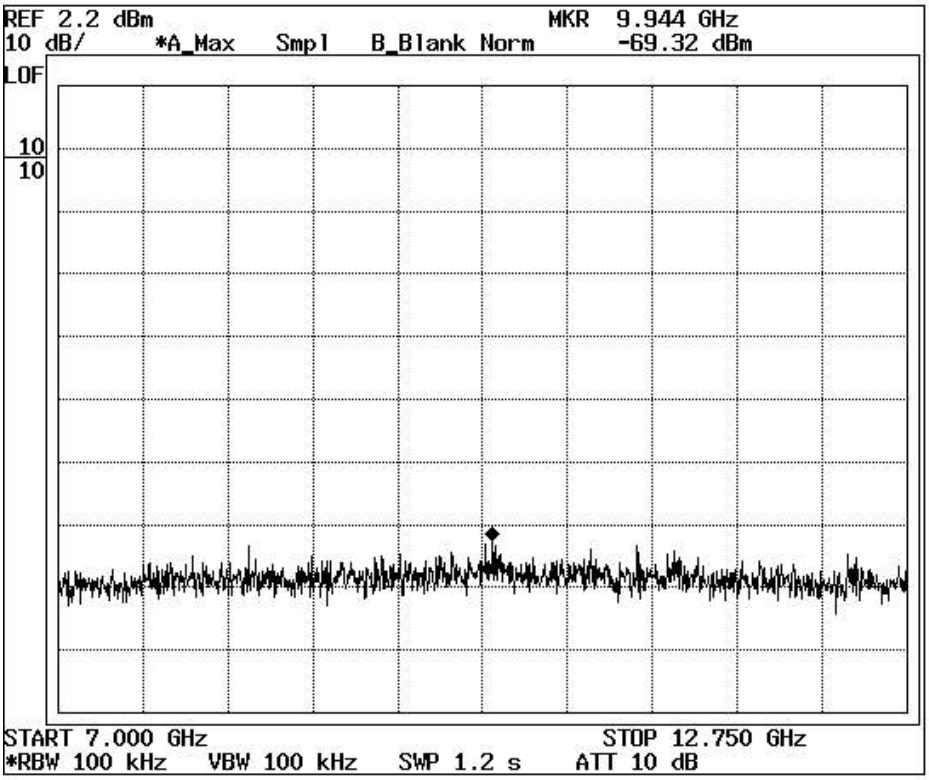
2. 30 MHz ~ 2.39 GHz / « 20dBc



3. 2483.5 MHz ~ 7 GHz / « 20dBc

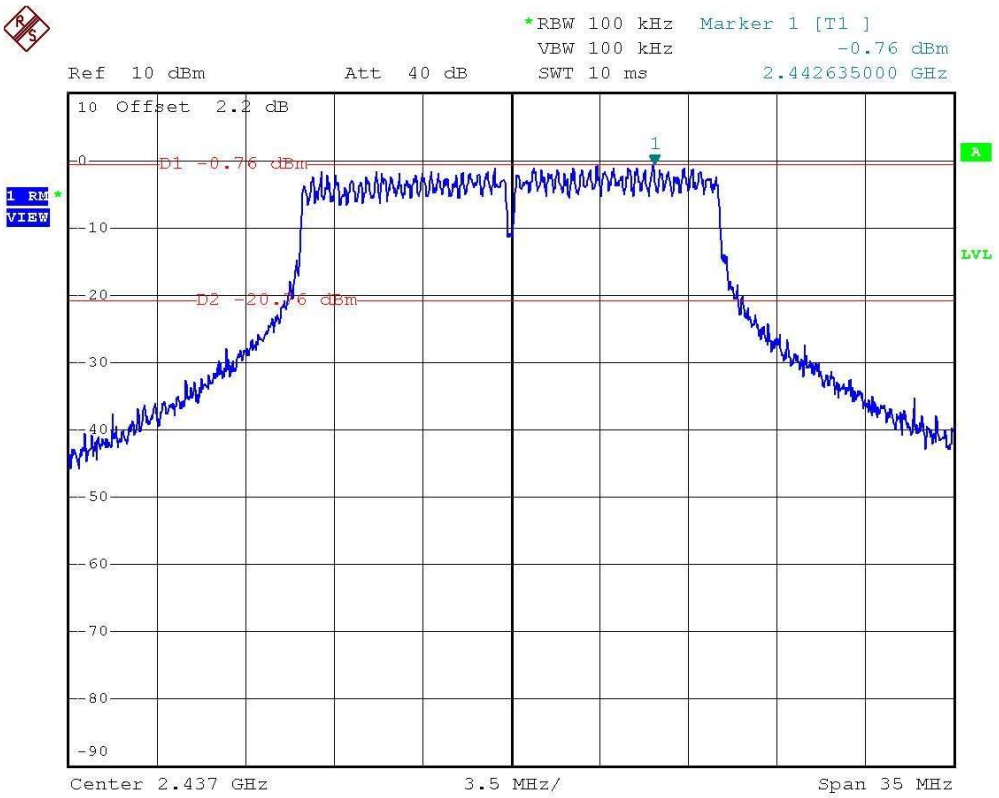


4. 7 GHz ~ 12.75 GHz / « 20dBc

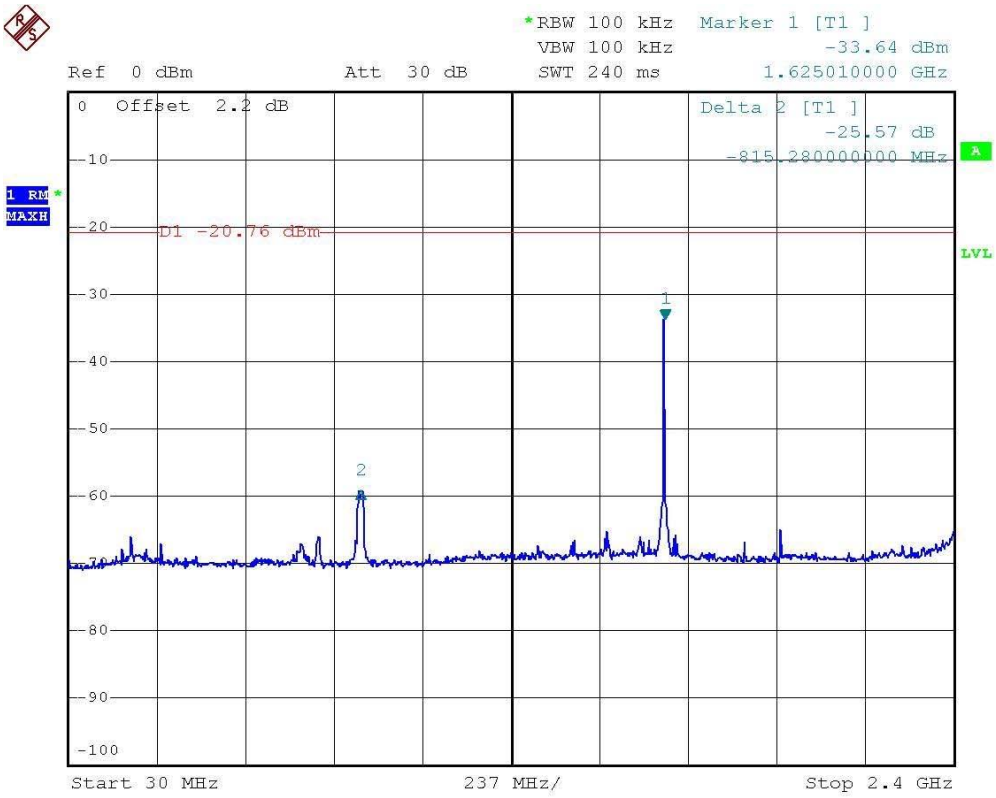


Plots of Conducted Emission / 802.11g, 2437 MHz

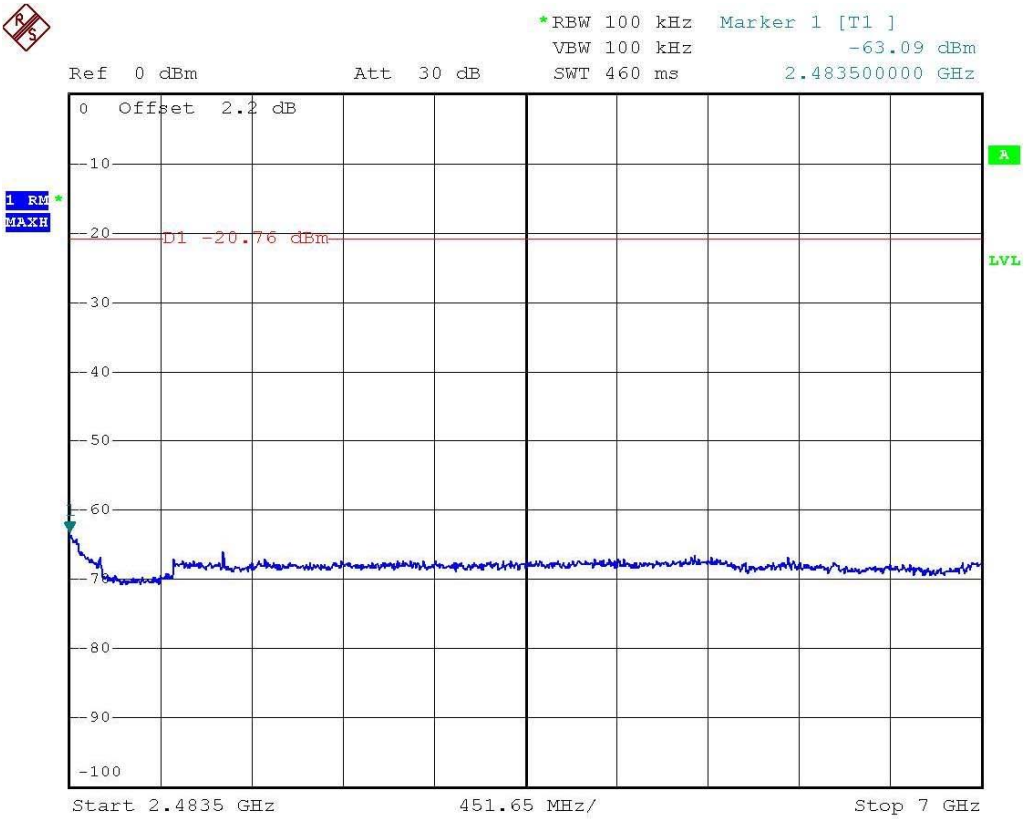
1. Band Edge / « 20dBc



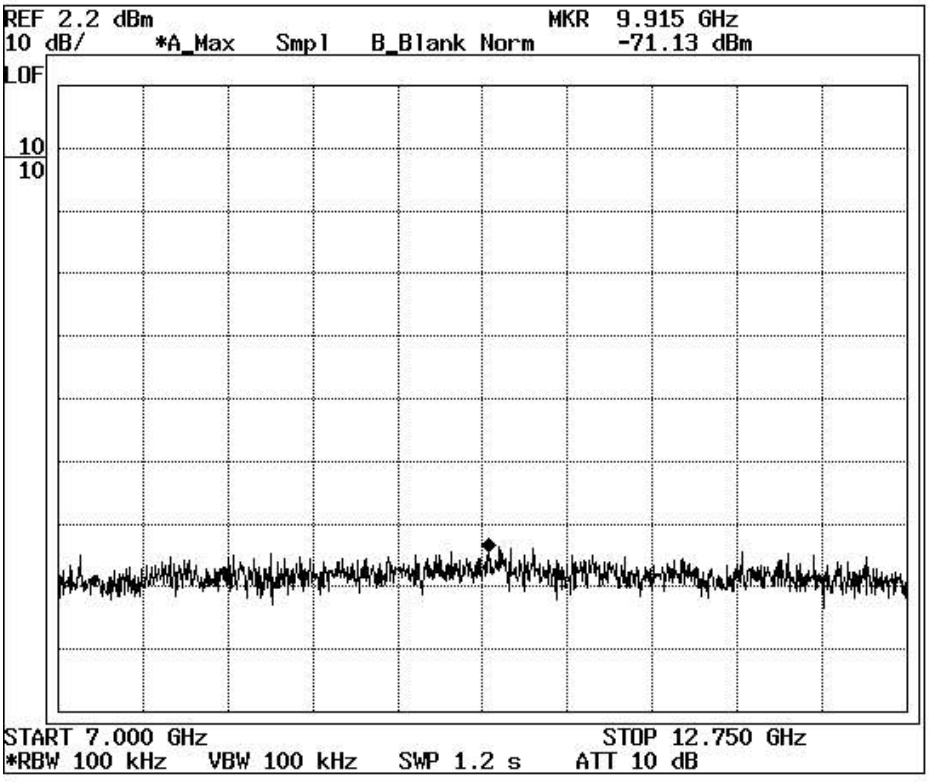
2. 30 MHz ~ 2.4 GHz / « 20dBc



3. 2483.5 MHz ~ 7 GHz / « 20dBc

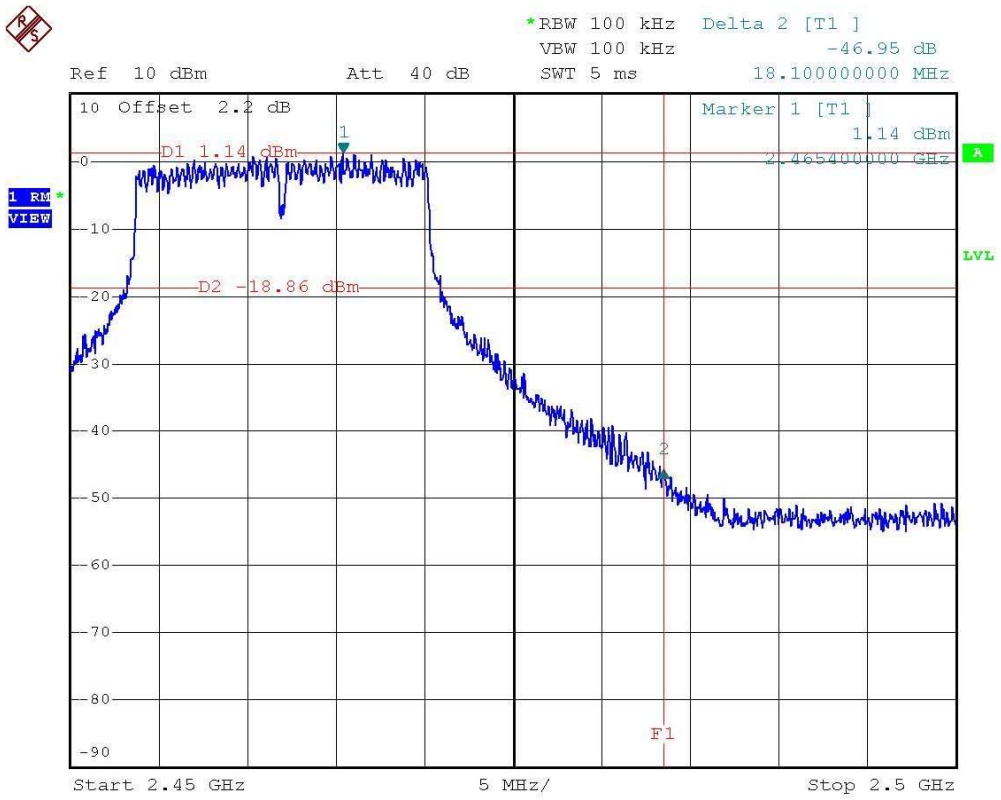


4. 7 GHz ~ 12.75 GHz / « 20dBc

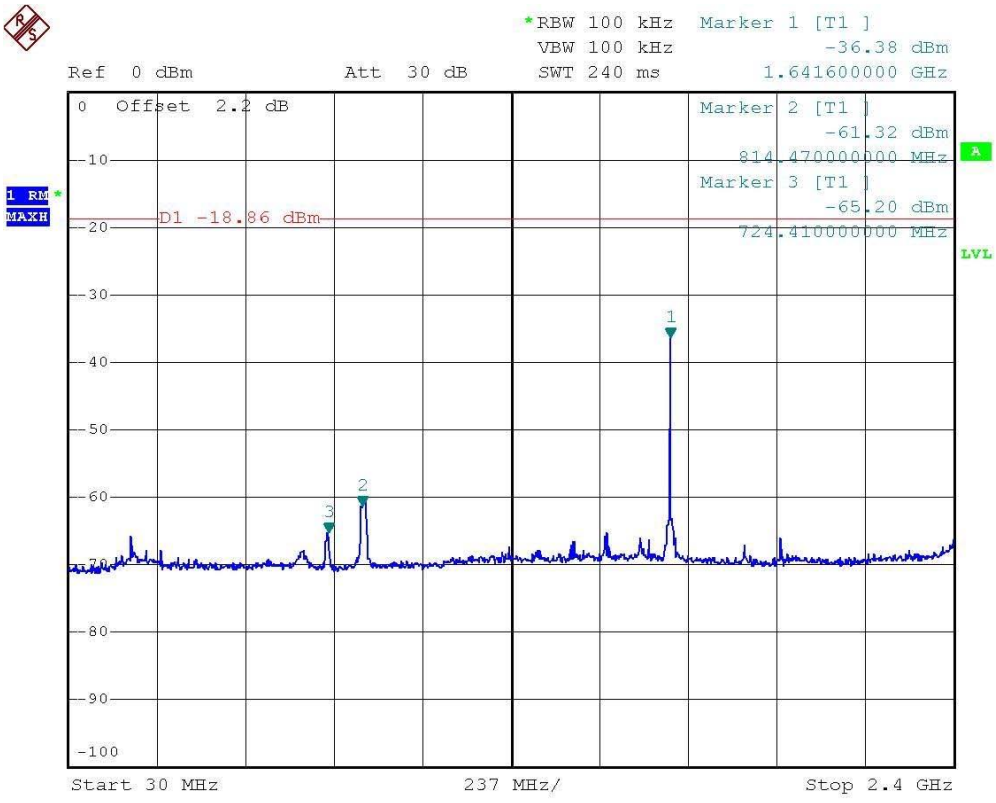


Plots of Conducted Emission / 802.11g, 2462 MHz

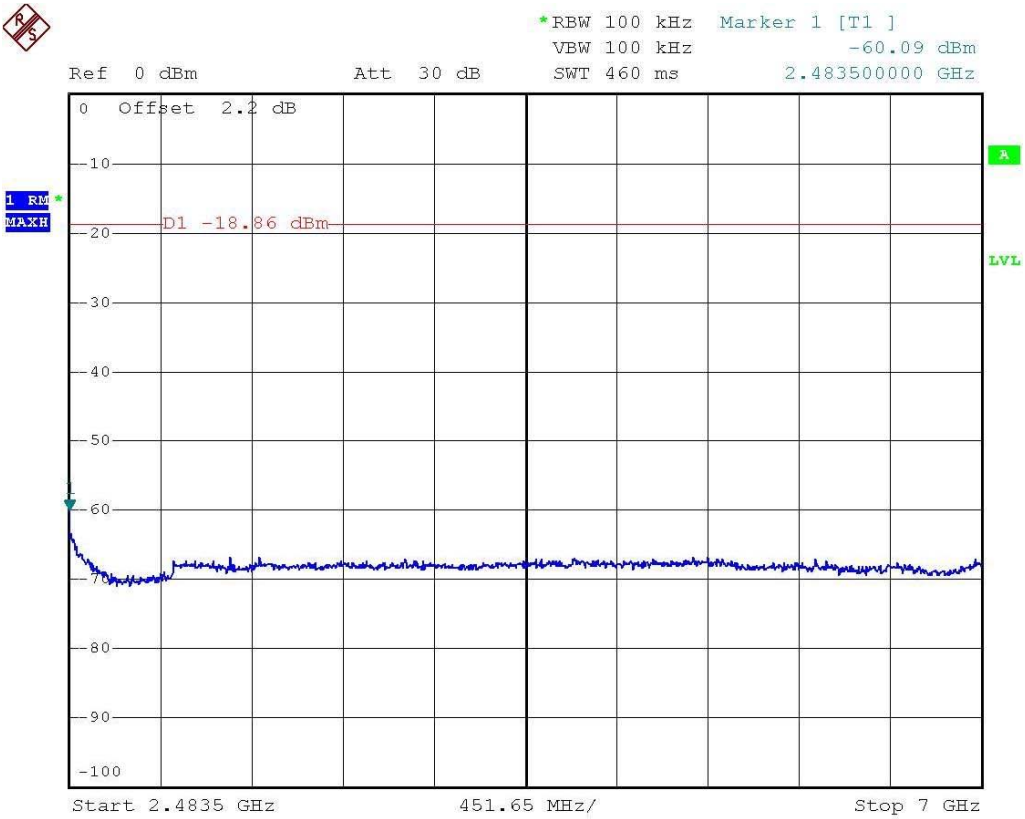
1. Band Edge (2483.5 MHz ~ 2500 MHz) / « 20dBc



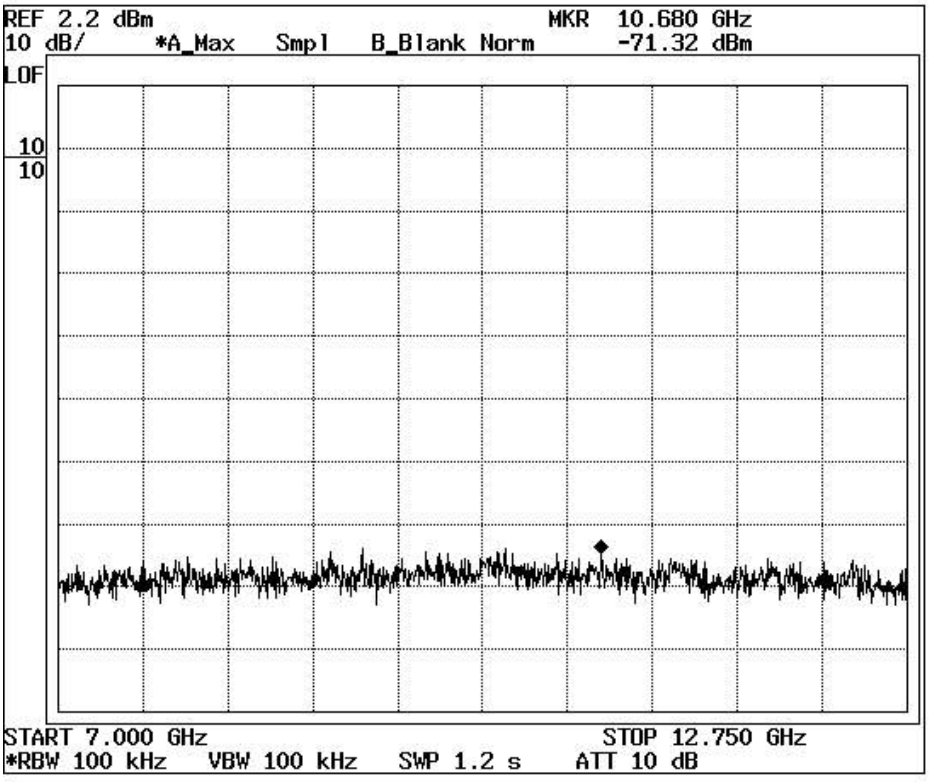
2. 30 MHz ~ 2.4 GHz / « 20dBc



3. 2483.5 MHz ~ 7 GHz / « 20dBc



4. 7 GHz ~ 12.75 GHz / « 20dBc



7.5 Radiated Emission

EUT : AAP-240G

Test Standard : FCC Part15 Subpart C Section 15.247(c)
RSS-210 Annex 8.5

Test Date : March 17 to April 18, 2008

Operating Condition : The EUT was operated at transmitting condition continuously during the test.

Environment Condition : 25 °C/ 41 %

Result : Passed

Radiated Emission Test Data (below 1 GHz)

Frequency [MHz]	Reading [dBμV]	**Polarization [*H/**V]**	Ant.Factor [dB/m]	Cable Loss [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
86.85	17.35	V	8.73	2.04	40.00	28.12	-11.88
184.01	17.96	H	11.65	3.01	43.50	32.62	-10.88
275.99	19.57	V	12.61	3.74	46.00	35.92	-10.08
368.01	14.81	V	15.03	4.29	46.00	34.13	-11.87
508.40	13.67	V	17.84	5.13	46.00	36.64	-9.36
844.75	7.23	V	22.93	6.90	46.00	37.06	-8.94

Radiated Emission Test Data (above 1 GHz)

Frequency [MHz]	Reading [dBμV]	Ant.Factor [dB/m]	Cable Loss [dB]	Limit [dBμV/m]	Emission Level [dBμV/m]	Margin [dB]
Low Channel (2412 MHz)						
1608.00 (b)	15.36	24.90	8.90	53.98	49.16	4.82
1608.00 (g)	11.57	24.90	8.90	53.98	45.37	8.61
Middle Channel (2437 MHz)						
1624.67 (b)	14.58	24.90	8.92	53.98	48.40	5.58
1624.67 (g)	14.65	24.90	8.92	53.98	48.47	5.51
High Channel (2462 MHz)						
1641.33 (b)	15.45	24.90	8.93	53.98	49.28	4.70
1641.33 (g)	14.63	24.90	8.93	53.98	48.46	5.52

The other emissions below noise floor.

NOTES:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. AF = Antenna Factor CL = Cable Loss F/S = Field Strength
3. POL H = Horizontal POL V = Vertical

7.6 Power Spectral Density

EUT	:	AAP-240G
Test Standard	:	FCC Part15 Subpart C Section 15.247(d) RSS-210 Annex 8.2 (b)
Test Date	:	March 17 to April 18, 2008
Operating Condition	:	The EUT was operated at transmitting condition continuously during the test.
Environment Condition	:	25 °C/ 41 %
Result	:	Passed

Power Spectral Density Test Data

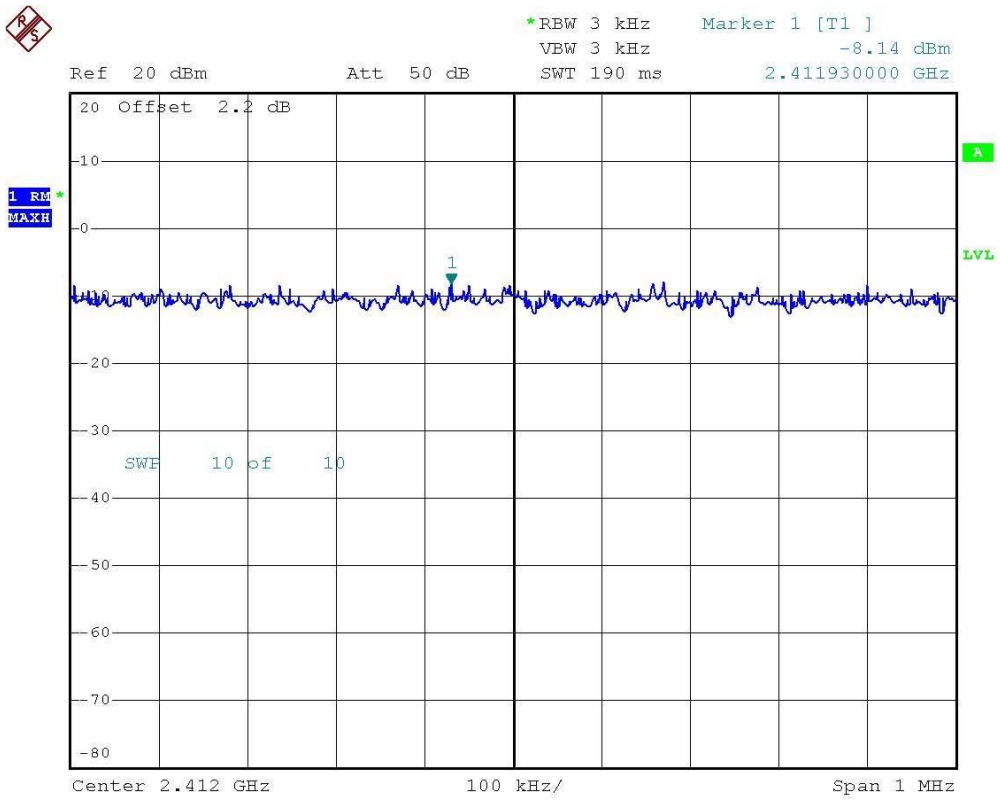
Mode	Frequency (MHz)	Power Spectral Density (dBm)	Limit
802.11b	2412	-8.14	Less than 8 dBm
	2437	-8.51	
	2462	-8.81	
802.11g	2412	-13.77	
	2437	-13.07	
	2462	-12.80	

NOTES:

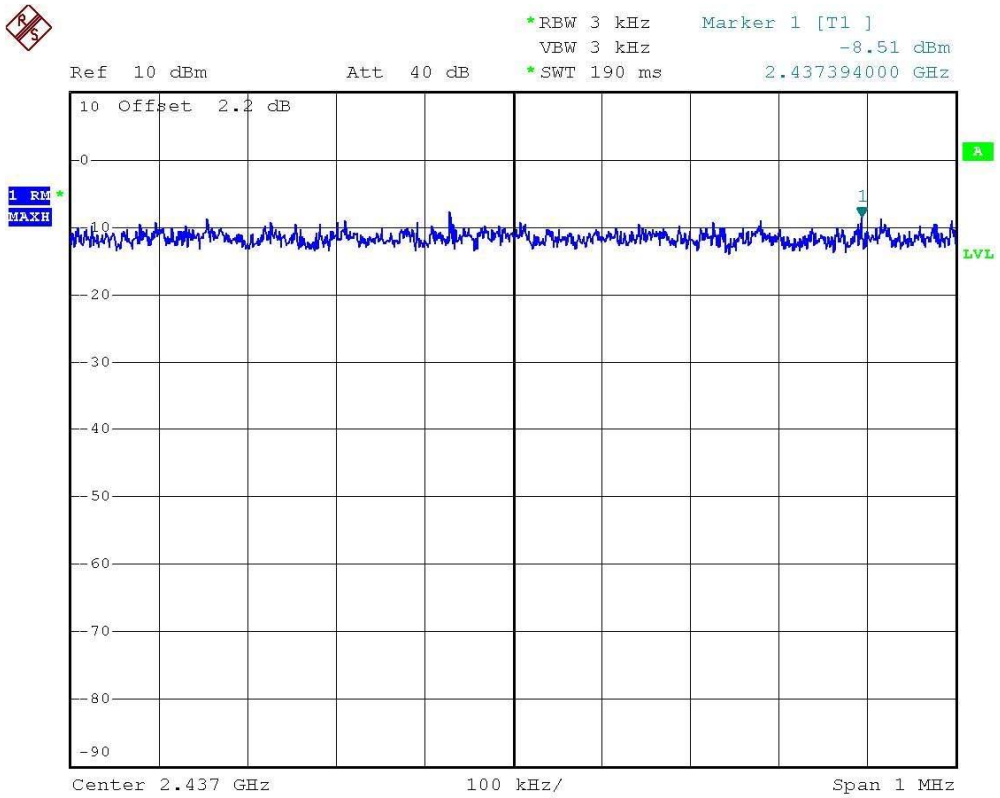
1. Measure conducted Maximum Peak Output of relevant channel using Spectrum analyzer.
2. RBW 3kHz, VBW 3kHz

Plots of Power Spectral Density

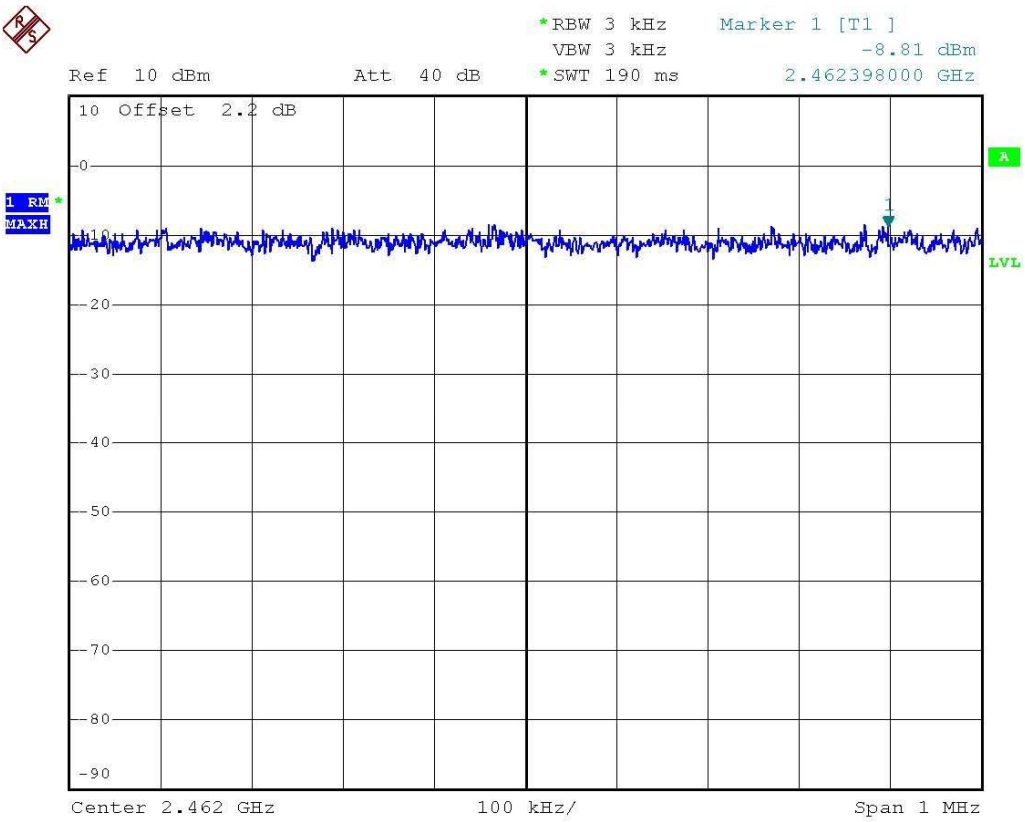
1. 802.11b, 2412 MHz / -8.14 dBm



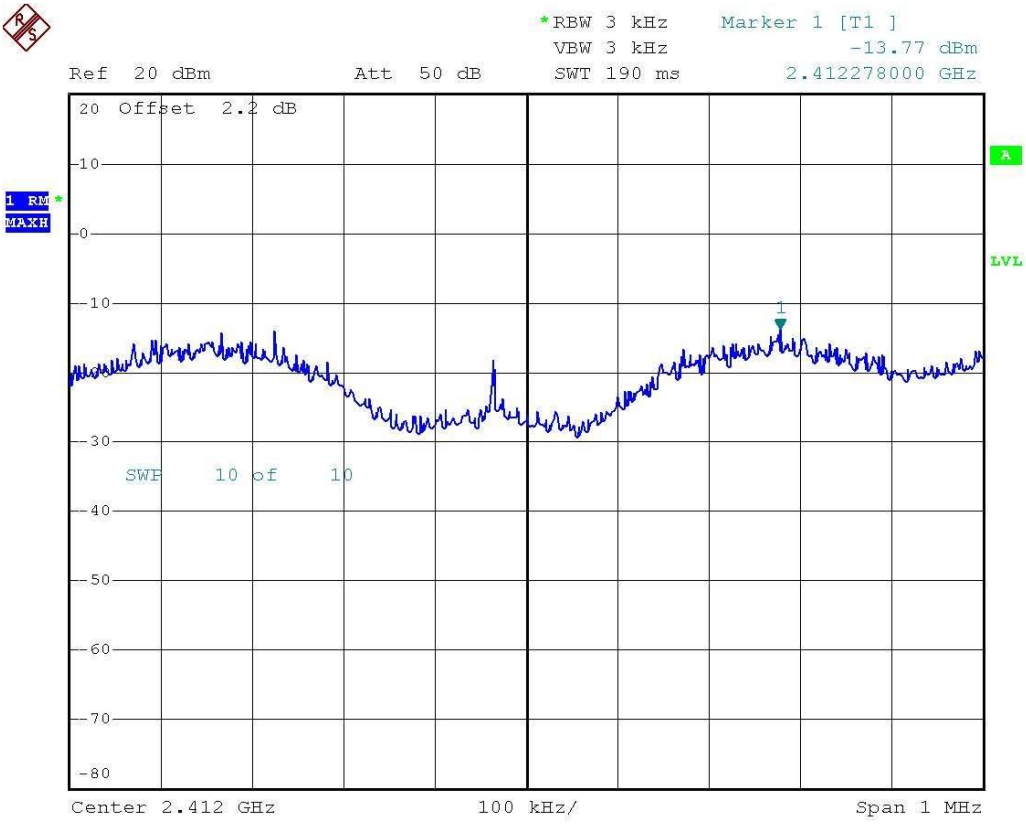
2. 802.11b, 2437 MHz / -8.51 dBm



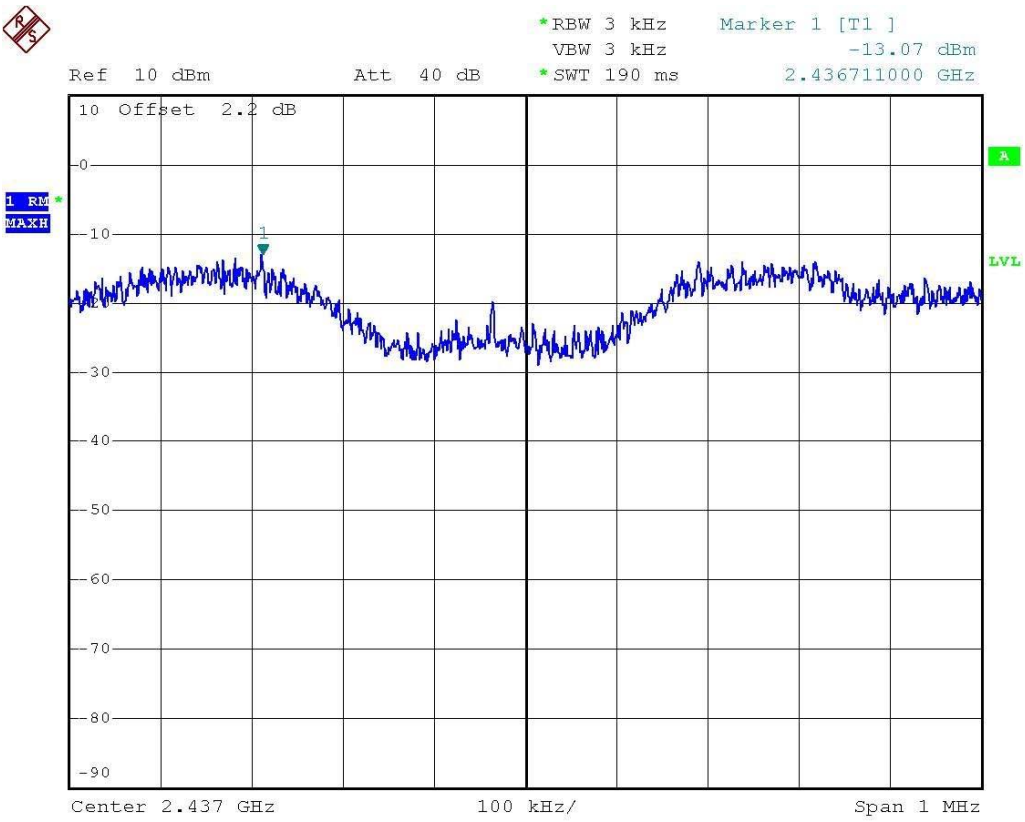
3. 802.11b, 2462 MHz / -8.81 dBm



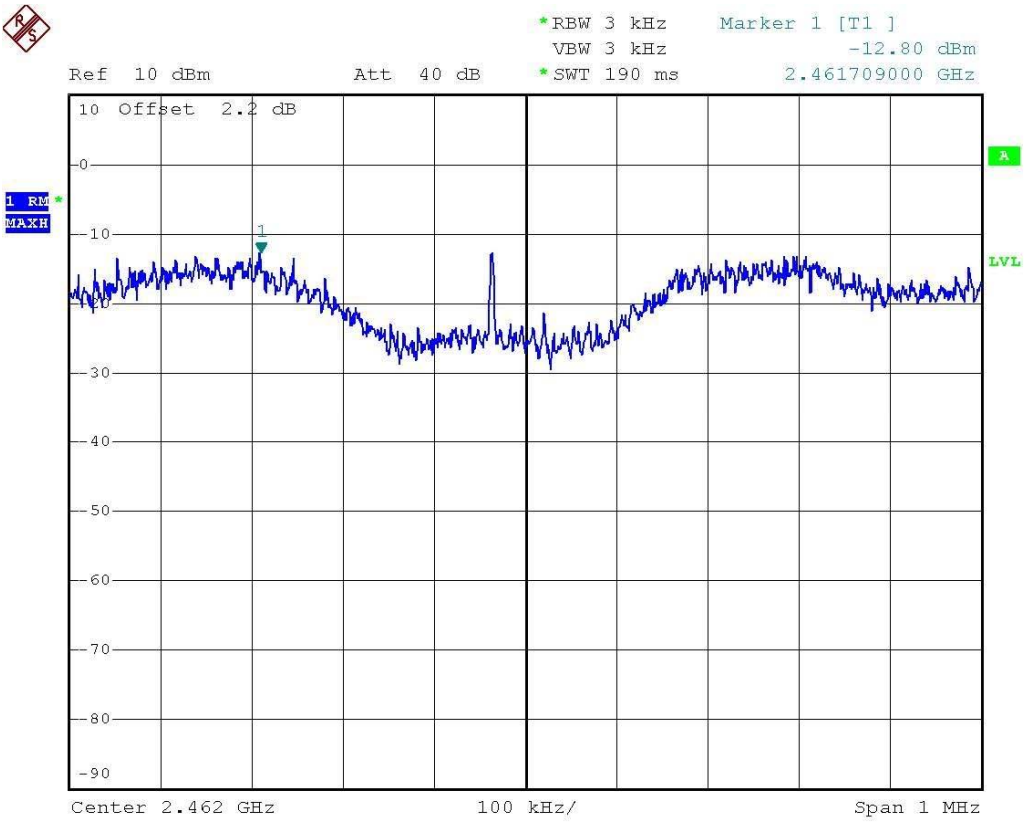
4. 802.11g, 2412 MHz / -13.77 dBm



5. 802.11g, 2437 MHz / -13.07 dBm



6. 802.11g, 2422 MHz / -12.80 dBm



7.7 RF Exposure Requirement

7.7.1 Method of Measurement

These devices are not exempted from compliance does not exceed the Commission's RF exposure guidelines. Unless a device operates at substantially low power levels, with a low gain antenna(s), supporting information is generally needed to establish the various potential operating configurations and exposure conditions of a transmitter and its antenna(s) in order to determine compliance with the RF exposure guidelines.

In order to demonstrate compliance with MPE requirements (see Section 2.1091), the following information is typically needed:

Calculation that estimates the minimum separation distance (20 cm or more) between an antenna and persons required to satisfy power density limits defined for free space.

Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement Any caution statements and/or warning labels that are necessary in order to comply with the exposure limits Any other RF exposure related issues that may affect MPE compliance.

7.7.2 Limits

FCC 1.1310:- The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Average Time (minutes)
(A) Limits for Occupational/Control Exposures				
1500 - 100000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
1500 - 100000	**-**	**-**	**1.0**	**30**

7.7.3 Result

802.11b Mode

Frequency [MHz]	Conducted Power [dBm]	Antenna Gain [dBi]	Calculated EIRP [mW]	Laboratory's Recommended Minimum RF Safety Distance r (Cm)	Power Density in mW/cm2 at Formula When r=20Cm (mW/cm2)
2412.00	17.74	4.50	167.49	3.65	0.0333
2437.00	17.09	4.50	144.21	3.39	0.0287
2462.00	16.87	4.50	137.09	3.30	0.0273

802.11g Mode

Frequency [MHz]	Conducted Power [dBm]	Antenna Gain [dBi]	Calculated EIRP [mW]	Laboratory's Recommended Minimum RF Safety Distance r (Cm)	Power Density in mW/cm2 at Formula When r=20Cm (mW/cm2)
2412.00	12.58	4.50	51.05	2.02	0.0102
2437.00	13.49	4.50	62.95	2.24	0.0125
2462.00	13.24	4.50	59.43	2.17	0.0118

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi r^2} = \frac{EIRP}{4\pi r^2}$$

P : power input to the antenna in mW
EIRP : Equivalent (effective) isotropic radiated power.
S : power density mW/cm2
G : numeric gain of antenna relative to isotropic radiator
R : distance to centre of radiation in cm

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device

$$r = \sqrt{\frac{PG}{4\pi S}} = \sqrt{\frac{EIRP}{4\pi S}}$$

Note :

1. S = 1.0 mW/cm^2 for Limits for General Population/Uncontrolled Exposures.
2. The time averaged power over 30 minutes will be equaled Output Power.
3. Minimum calculated separation distance between antenna and persons required : 3.65 Cm
4. The power density at a distance of 20Cm calculated from the formula is far below the limit of 1mW/cm^2.
5. The maximum power density is 0.0333 mW/cm^2.
6. So it is complied with the limit. SAR report is not required.

8. TEST EQUIPMENTS LIST

The listing below denotes the test equipments utilized for the test(s).

EQUIPMENT		MODEL	MANUFACTURE	SERIAL NUMBER	Calibration Due date
1	Receiver	ESPI	ROHDE & SCHWARZ	100012	11/02/08
2	LISN	NSLK 8127	Schwarzbeck	8127-414	01/03/09
3	LISN multiline	L1-115	Com-Power	241017	11/14/08
4	Receiver	8594E	HP	3911A08040	11/07/08
5	Spectrum analyzer	FSP7	ROHDE & SCHWARZ	100001	02/22/09
6	Spectrum analyzer	R3273	ADVANTEST	150100195	06/25/08
7	Shield Room (7m x 4m x 3m)	N/A	SJEMC	0004	N/A
8	Turn Table	OSC-30	N/A	BWS-01	N/A
9	Antenna Mask	JAC-3	DAIL EMC	N/A	N/A
10	Bilog Antenna	VULB9160	Schwarzbeck	VULB9160-3122	12/29/08
11	Bilog Antenna	VULB9161	Schwarzbeck	VULB9161-4067	12/23/08
12	Bilog Antenna	VULB9161	Schwarzbeck	VULB9161-4068	12/23/08
13	Horn Antenna	BBHA 9120 D	Schwarzbeck	BBHA 9120 D 517	05/09/08
14	Horn Antenna	BBHA 9120 D	Schwarzbeck	BBHA 9120 D 234	03/15/09
15	Horn Antenna	BBHA 9170	Schwarzbeck	BBHA9170157	02/13/09
16	Power Meter	E4418A	Agilent	GB38272621	11/14/08
17	Power Sensor	E9301B	Agilent	US40010238	11/14/08
18	Power supply	IPS-30B03DD	Interact	42052	03/20/09