

# FCC Part 15C

## Measurement And Test Report For

Wewi telecommunications,Inc  
111 Waterloo St. 505 London, Ontario. Canada

**FCC ID: 2ACSLDBR1-Y**

Jul. 16, 2014

<b>This Report Concerns:</b> <input checked="" type="checkbox"/> Original Report	<b>Equipment Type:</b> SOL Laptop
<b>Report Number:</b>	MTI140627003RF
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<b>Test Date:</b>	May10- May21,2014
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**Note:** This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Microtest Technology Co.,Ltd.

## TEST RESULT CERTIFICATION

<b>Applicant's name</b> .....	Wewi telecommunications,Inc
Address .....	111 Waterloo St. 505 London, Ontario. Canada
<b>Manufacture's Name</b> .....	Ningbo COOR Design & Manufacture Co., LTD
Address .....	905, North Jiangdong Road 375, Ningbo, China
<b>Product description</b>	
Product name .....	SOL Laptop
Model and/or type reference :	DBR1-Y
Trade	SOL
Serial Model .....	N/A
<b>Standards</b> .....	FCC Part15.247
Test procedure .....	ANSI C63.4-2003

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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

## 1.1 TEST FACILITY

Shenzhen Toby Technology Co., Ltd.

Add.: 10/F.,A Block, Jiada R&D Bldg., No.5 Songpingshan, Road, Science&Technology Park, Shenzhen, 518057

FCC Registration No.:811562

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated (<1G)	$\pm 4.68\text{dB}$
5	All emissions, radiated (>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	SOL Laptop	
Trade Name	SOL	
Model Name	DBR1-Y	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a SOL Laptop	
	Operation Frequency:	802.11b/g:2412~2462 MHz
	Modulation Type:	CCK/OFDM/DBPSK/DAPSK
	Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps
		802.11g:54/48/36/24/18/12/9/6Mbps
	Number Of Channel	802.11b/g: 11CH
	Antenna Designation:	Please see Note 3.
	Output Power(Conducted):	802.11b: 10.99 dBm (Max.) 802.11g: 9.95 dBm (Max.)
	Antenna Gain (dBi)	1.0dBi
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Channel List	Please refer to the Note 2.	
Ratings	DC 5V from adapter AC120V/60Hz	
Adapter	Model: DYGK-42SZ INPUT:AC100-240V,50/60Hz OUTPUT: 19V,3.5A	
Battery	Rated Voltage:3.7V Charge Limit:4.2V	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.

Channel List for 802.11b/g							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3.

Table for Filed Antenna

Ant .	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	FPCB Antenna	NA	1.0	Wifi Antenna

## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 3	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	Link Mode

Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

**2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**



## 2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	SOL Laptop	SOL	DBR1-Y	N/A	EUT
E-2	Adapter	N/A	DYGK-42SZ	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0m	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

### Radiation Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Mar. 20, 2014	Mar. 19, 2015
Spectrum Analyzer	Rohde & Schwarz	FSP30	DE25181	Aug. 10, 2013	Aug.09, 2014
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Aug. 10, 2013	Aug.09, 2014
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 07, 2014	Mar.06, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 07, 2014	Mar.06, 2015
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 07, 2014	Mar.06, 2015
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	11909A	185903	Mar. 07, 2014	Mar.06, 2015
Pre-amplifier	HP	8447B	3008A00849	Mar. 07, 2014	Mar.06, 2015
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 07, 2014	Mar.06, 2015
Signal Generator	Rohde & Schwarz	SML03	IKW682-054	Feb. 11, 2014	Feb.10, 2015
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

### Conduction Test equipment

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100321	2013-08-10	2014-08-09
50ΩCoaxial Switch	Anritsu	MP59B	X10321	2013-08-10	2014-08-09
L.I.S.N	Rohde & Schwarz	ENV216	101131	2013-08-10	2014-08-09
L.I.S.N	SCHWARZBECK	NNBL 8226-2	8226-2/164	2013-08-10	2014-08-09

### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

##### 3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

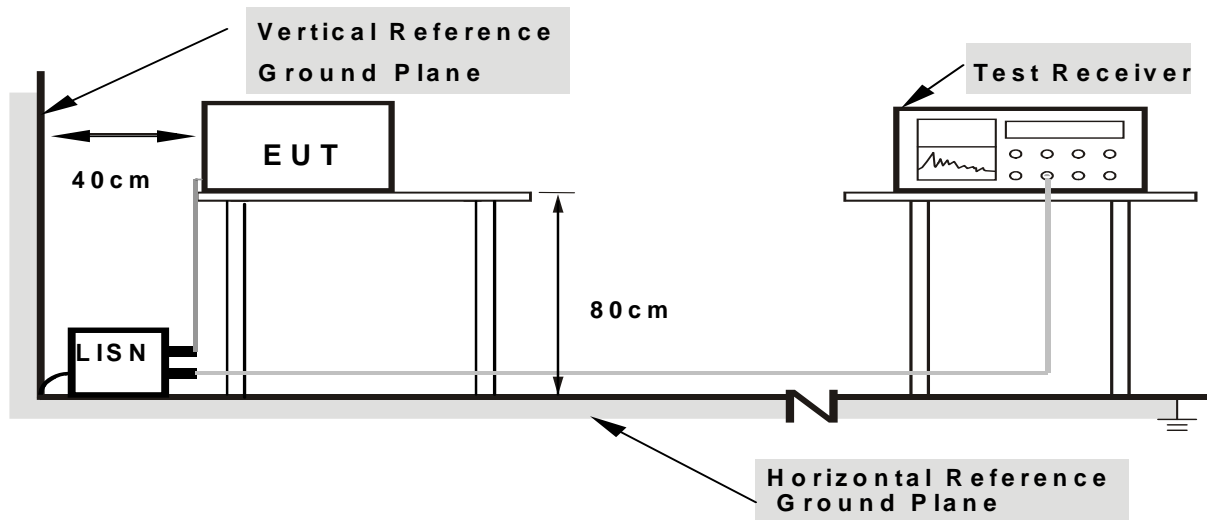
### 3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.1.3 DEVIATION FROM TEST STANDARD

No deviation

### 3.1.4 TEST SETUP



**Note: 1.**Support units were connected to second LISN.

**2.**Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

### 3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

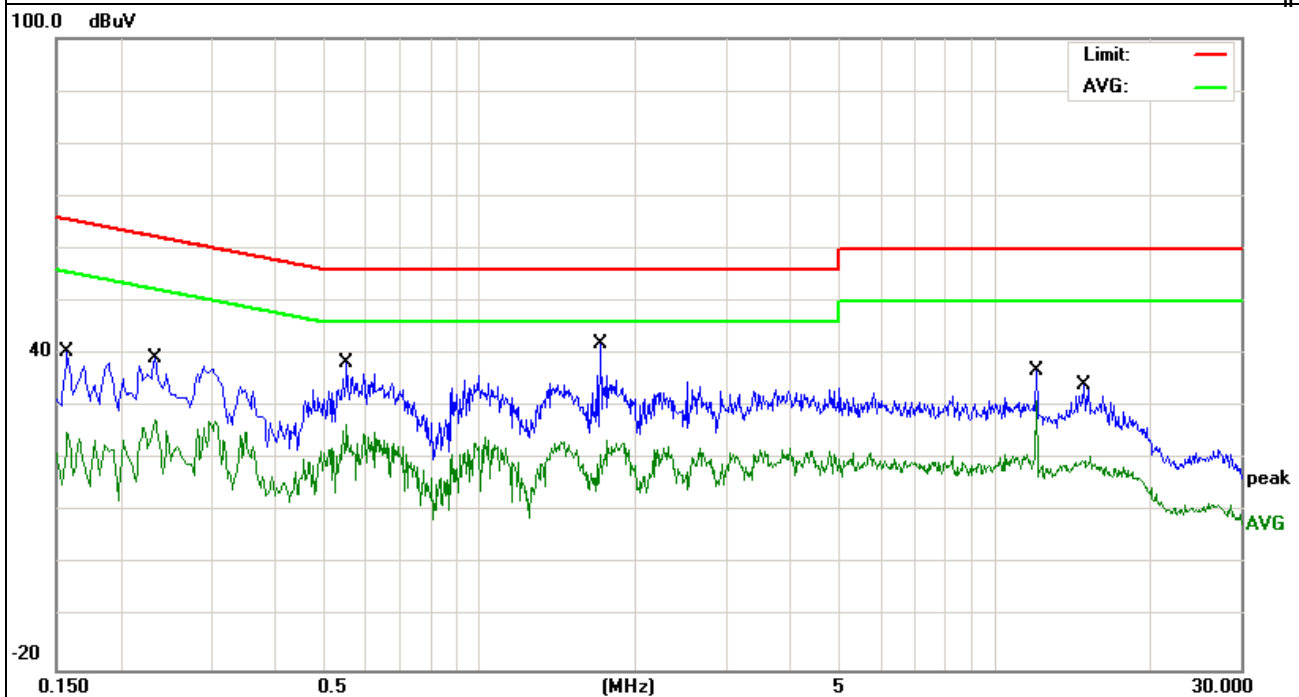
### 3.1.6 TEST RESULTS

EUT :	SOL Laptop	Model Name. :	DBR1-Y
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	AC120V/60Hz	Test Mode :	Mode 3

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.1580	28.99	11.36	40.35	65.56	-25.21	QP
0.2340	28.47	10.77	39.24	62.30	-23.06	QP
0.5500	27.68	10.56	38.24	56.00	-17.76	QP
1.7140	31.49	10.52	42.01	56.00	-13.99	QP
11.9979	25.98	10.87	36.85	60.00	-23.15	QP
14.8419	23.14	10.92	34.06	60.00	-25.94	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



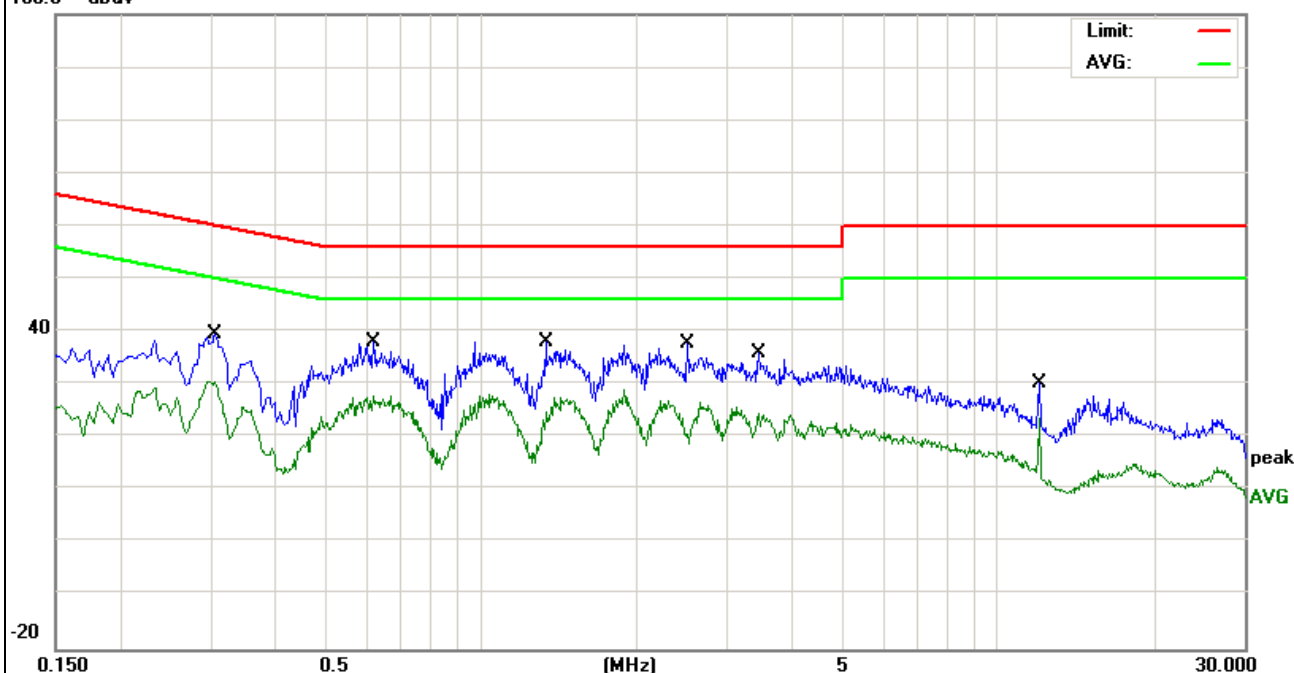
EUT :	SOL Laptop	Model Name. :	DBR1-Y
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	AC120V/60Hz	Test Mode :	Mode 3

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.3060	28.68	10.94	39.62	60.08	-20.46	QP
0.6180	27.50	10.55	38.05	56.00	-17.95	QP
1.3340	27.48	10.52	38.00	56.00	-18.00	QP
2.5020	27.17	10.54	37.71	56.00	-18.29	QP
3.4460	25.32	10.57	35.89	56.00	-20.11	QP
12.0019	19.52	10.87	30.39	60.00	-29.61	QP

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

100.0 dBμV



## 3.2 RADIATED EMISSION MEASUREMENT

### 3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

### **3.2.2 TEST PROCEDURE**

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

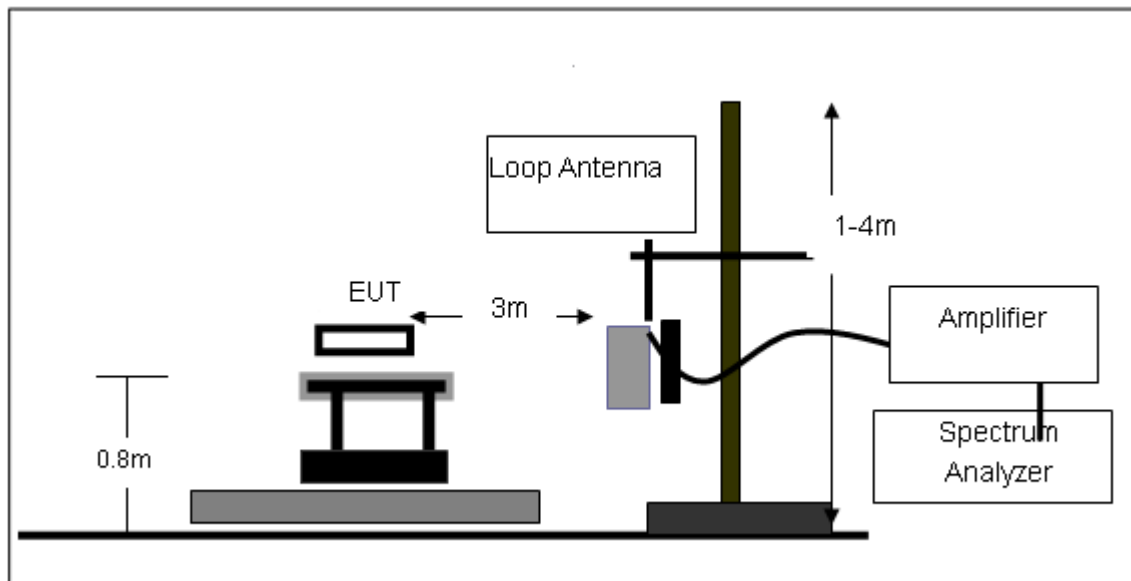
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

### **3.2.3 DEVIATION FROM TEST STANDARD**

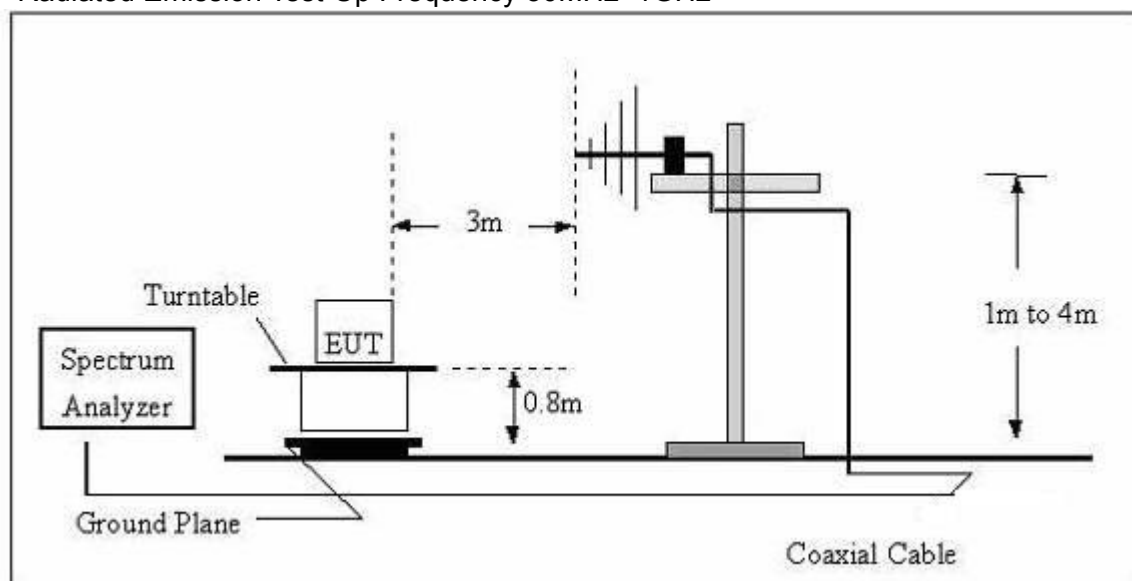
No deviation

### 3.2.4 TEST SETUP

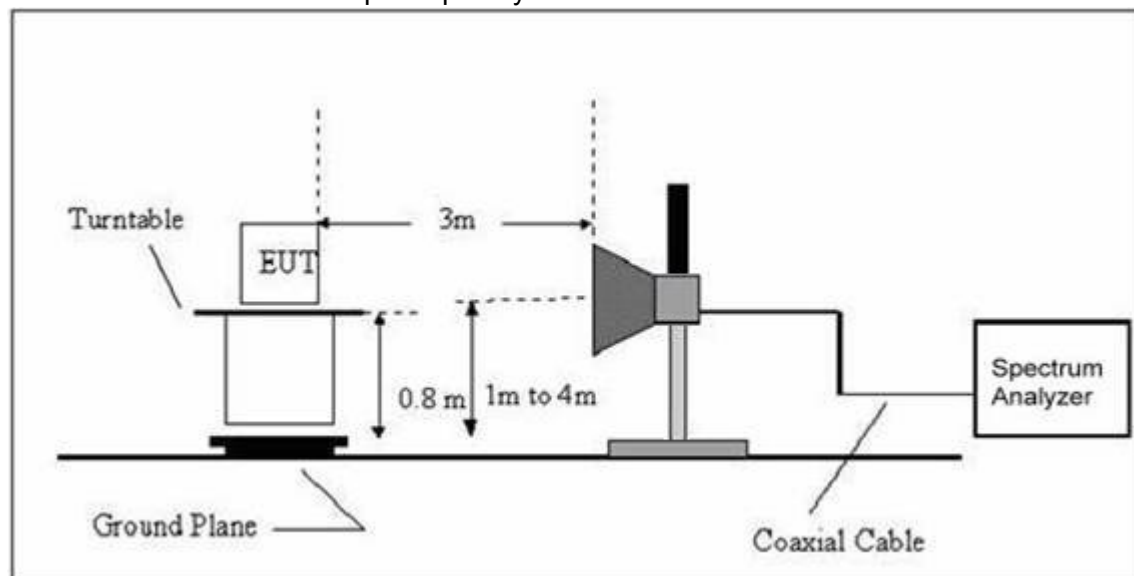
#### (A) Radiated Emission Test-Up Frequency Below 30MHz



#### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



### 3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 3.2.6 TEST RESULTS

9K-30MHz

EUT:	SOL Laptop	Model Name. :	DBR1-Y
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	AC 120V
Test Mode :	Mode 3	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

#### NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuV) + distance extrapolation factor.

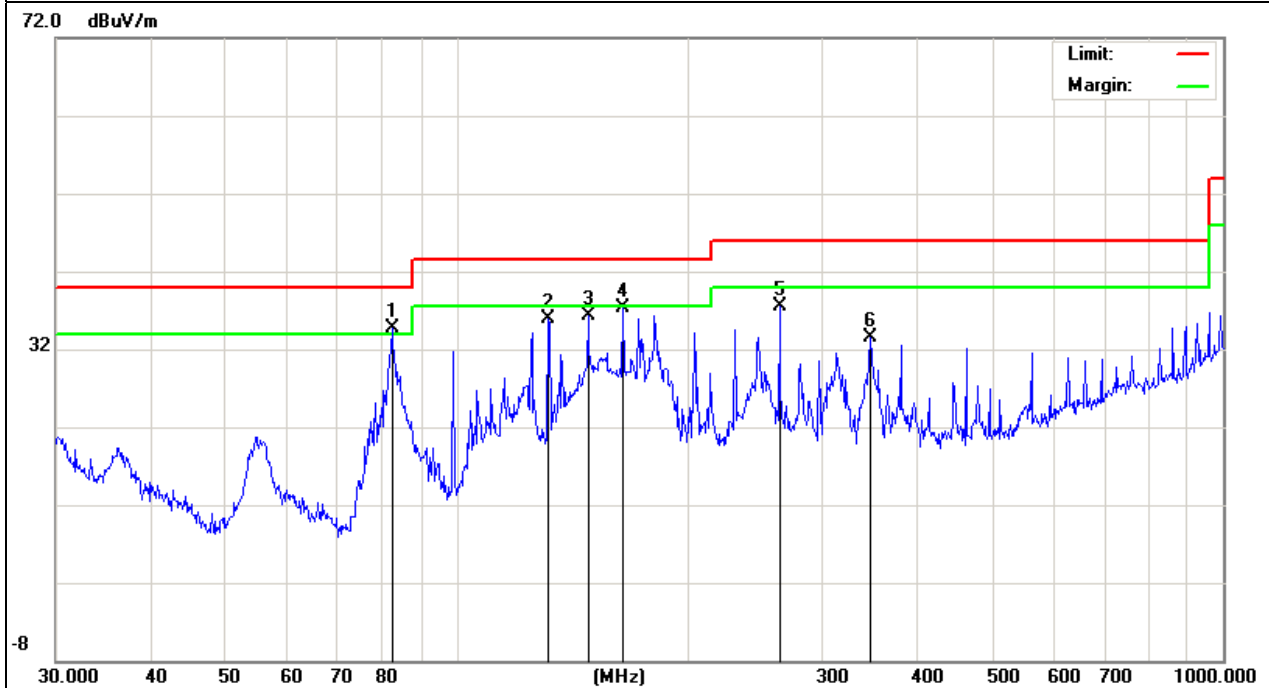
### Radiated Spurious Emission (30M-1GHz)

EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Power :	AC120V/60Hz	Test Mode :	Mode 3

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
82.3588	26.45	8.17	34.62	40.00	-5.38	QP
131.7576	23.61	12.22	35.83	43.50	-7.67	QP
148.4410	24.57	11.83	36.40	43.50	-7.10	QP
164.9074	26.46	10.81	37.27	43.50	-6.23	QP
263.8190	22.98	14.62	37.60	46.00	-8.40	QP
346.8091	17.22	16.28	33.50	46.00	-12.50	QP

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

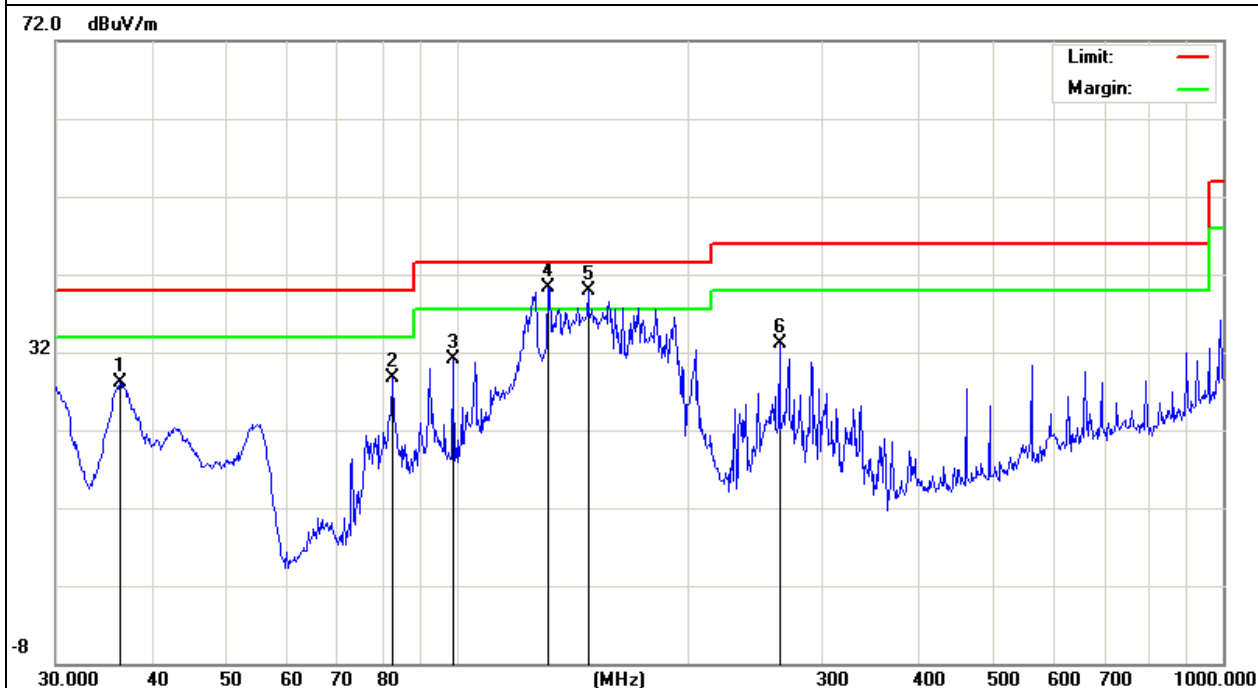


EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Power :	AC120V/60Hz	Test Mode :	Mode 3

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
36.3813	12.87	15.19	28.06	40.00	-11.94	QP
82.3588	20.45	8.17	28.62	40.00	-11.38	QP
98.8324	20.57	10.51	31.08	43.50	-12.42	QP
131.7576	28.09	12.22	40.31	43.50	-3.19	QP
148.4410	28.06	11.83	39.89	43.50	-3.61	QP
263.8190	18.50	14.62	33.12	46.00	-12.88	QP

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



# Radiated Spurious Emission

1GHz~25GHz:(Scan with 802.11b, 802.11g),the worst case is 802.11b.

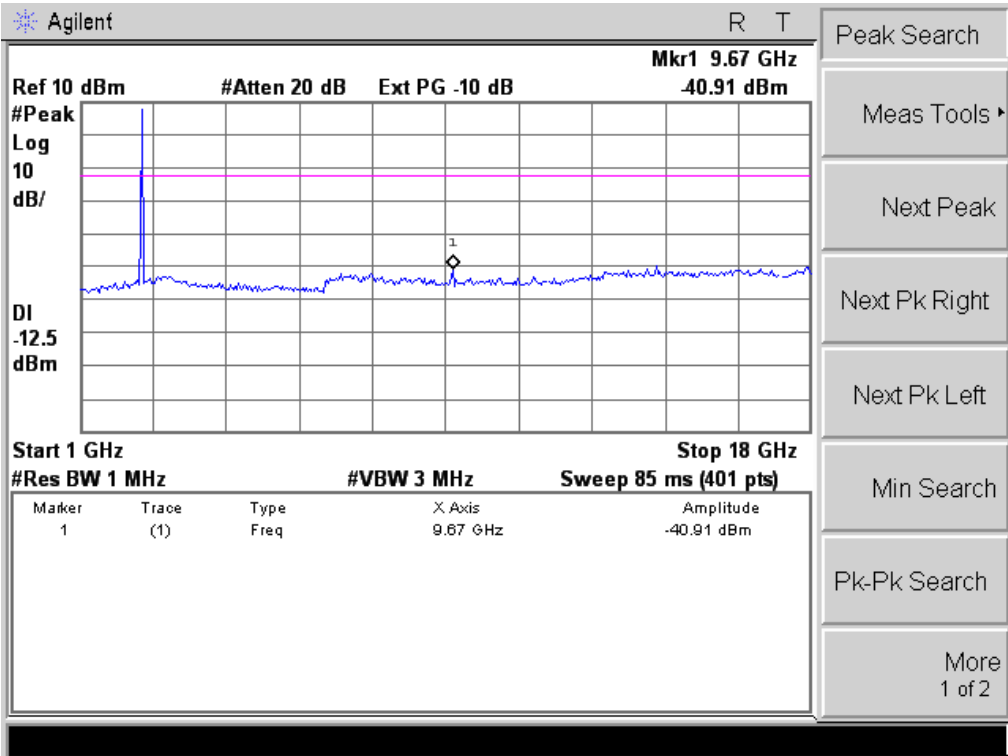
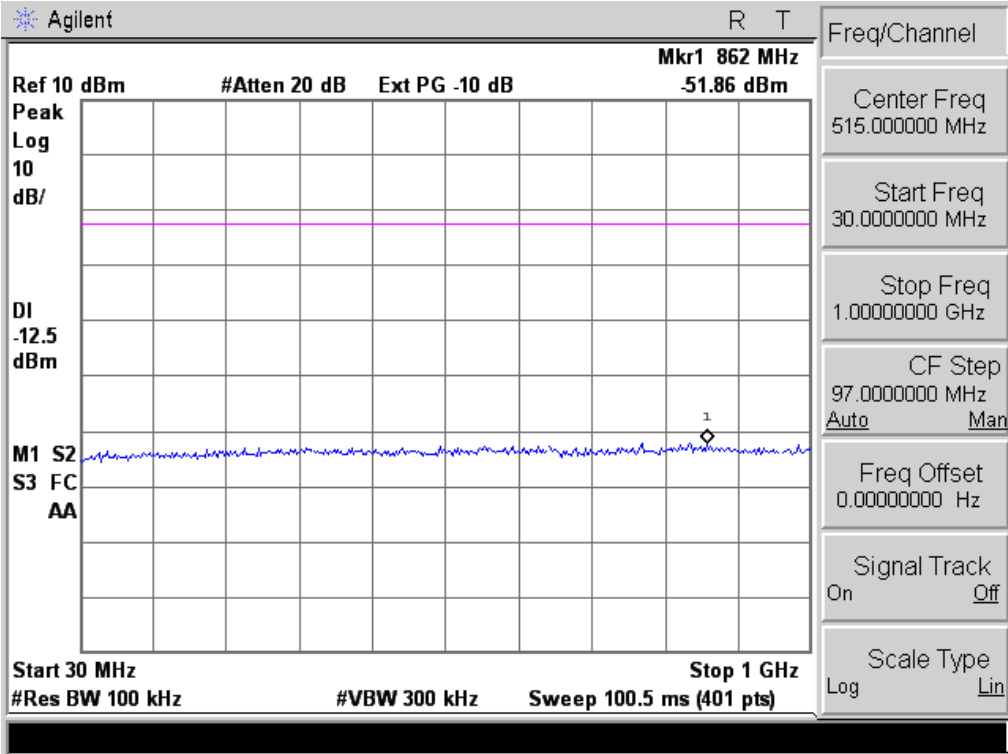
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Low Channel (2412 MHz)-Above 1G-802.11B							
2491.777	59.40	-11.65	47.75	54	-6.25	Pk	Vertical
2498.247	56.30	-12.73	43.57	54	-10.43	Pk	Horizontal
4823.884	56.40	-3.60	52.8	54	-1.2	Pk	Vertical
4823.749	56.40	-9.23	44.54	54	-9.46	Pk	Horizontal
1485.838	60.10	-17.10	43.00	54	-11.00	Pk	Vertical
1636.784	59.79	-16.06	43.73	54	-10.27	Pk	Vertical
2095.928	58.60	-11.88	46.72	54	-7.28	Pk	Vertical
1074.301	60.33	-19.69	40.64	54	-13.36	Pk	Horizontal
1483.178	59.32	-17.09	42.23	54	-11.77	Pk	Horizontal
1895.832	56.34	-14.25	42.09	54	-11.91	Pk	Horizontal
Mid Channel (2437 MHz)-Above 1G-802.11B							
2474.777	56.14	-11.65	44.49	54	-9.51	Pk	Vertical
2474.144	56.83	-9.37	47.46	54	-6.54	Pk	Horizontal
4874.425	56.21	-6.15	47.47	54	-6.53	Pk	Vertical
4874.979	56.21	-6.83	49.38	54	-4.62	Pk	Horizontal
1433.535	63.20	-17.12	46.08	54	-7.92	Pk	Vertical
1636.784	60.53	-16.06	44.47	54	-9.53	Pk	Vertical
2284.166	54.27	-12.83	41.44	54	-12.56	Pk	Vertical
1280.515	59.93	-17.82	42.11	54	-11.89	Pk	Horizontal
1636.784	58.76	-16.06	42.7	54	-11.3	Pk	Horizontal
1892.438	58.88	-14.28	44.6	54	-9.4	Pk	Horizontal
High Channel (2462 MHz)- Above 1G-802.11B							
2453.883	56.89	-12.91	43.98	54	-10.02	Pk	Vertical
2453.839	56.89	-11.59	44.65	54	-9.35	Pk	Horizontal
4924.325	53.40	-9.22	44.18	54	-9.82	Pk	Vertical
4924.683	53.40	-3.64	49.62	54	-4.38	Pk	Horizontal
1187.688	57.92	-18.27	39.65	54	-14.35	Pk	Vertical
1636.784	56.73	-16.06	40.67	54	-13.33	Pk	Vertical
2084.693	54.32	-11.99	42.33	54	-11.67	Pk	Vertical
1534.540	56.98	-16.94	40.04	54	-13.96	Pk	Horizontal
1786.985	56.69	-15.04	41.65	54	-12.35	Pk	Horizontal
1892.438	56.57	-14.28	42.29	54	-11.71	Pk	Horizontal

Note: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

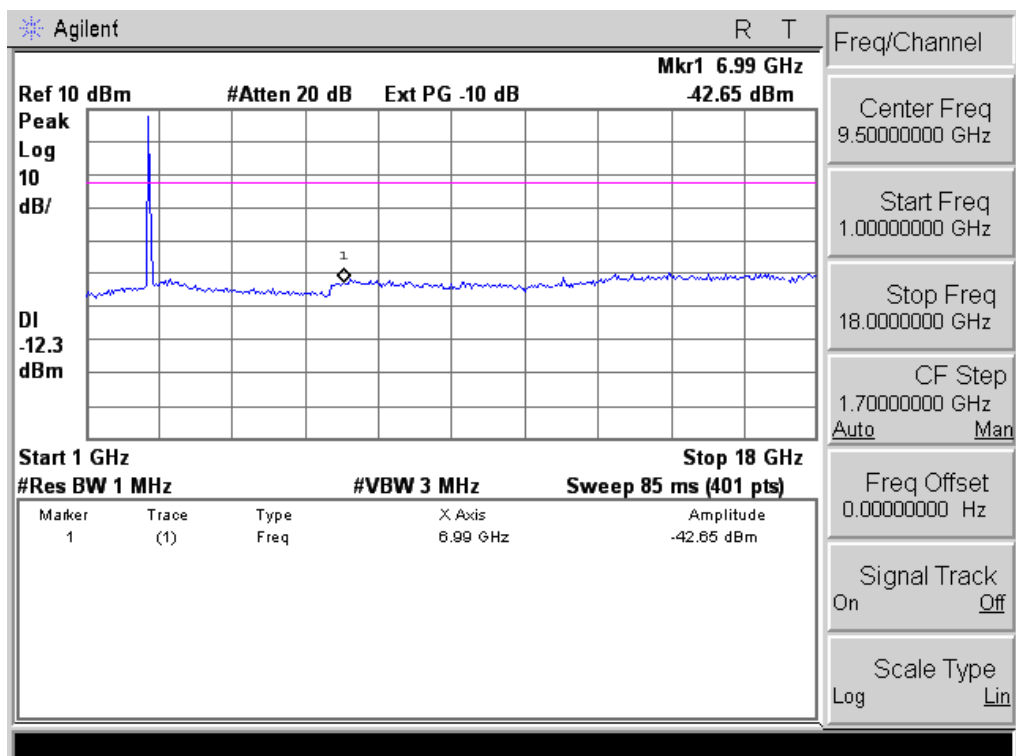
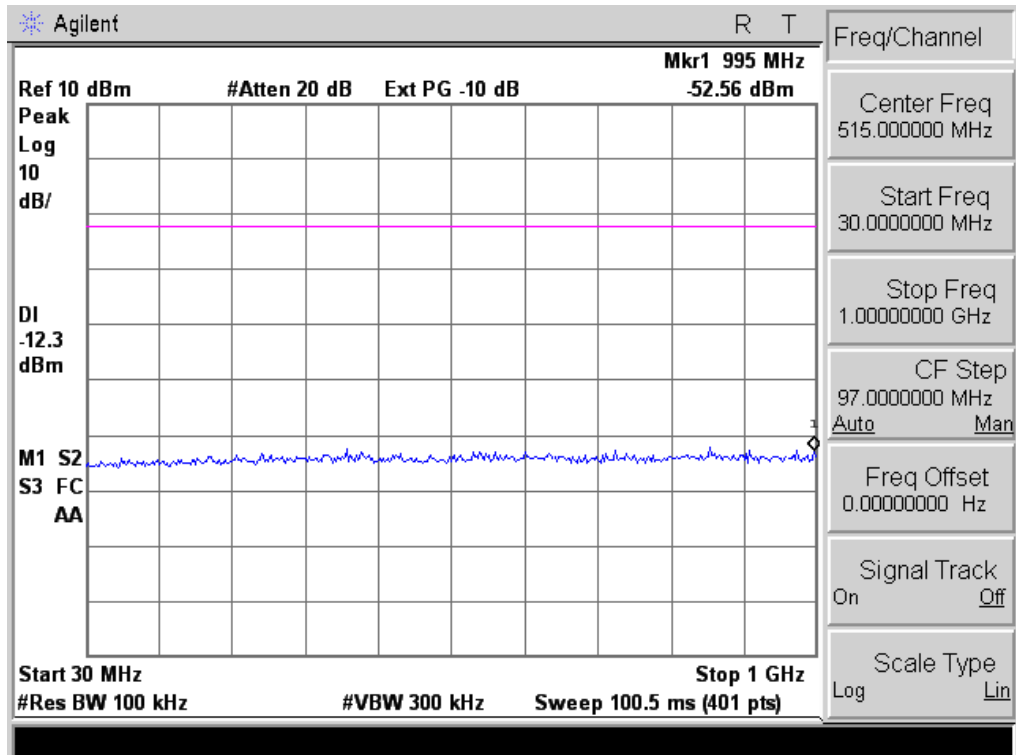
Factor added by measurement software automatically.

Emission Level is less(PK) than AV Limits,No need AV lever

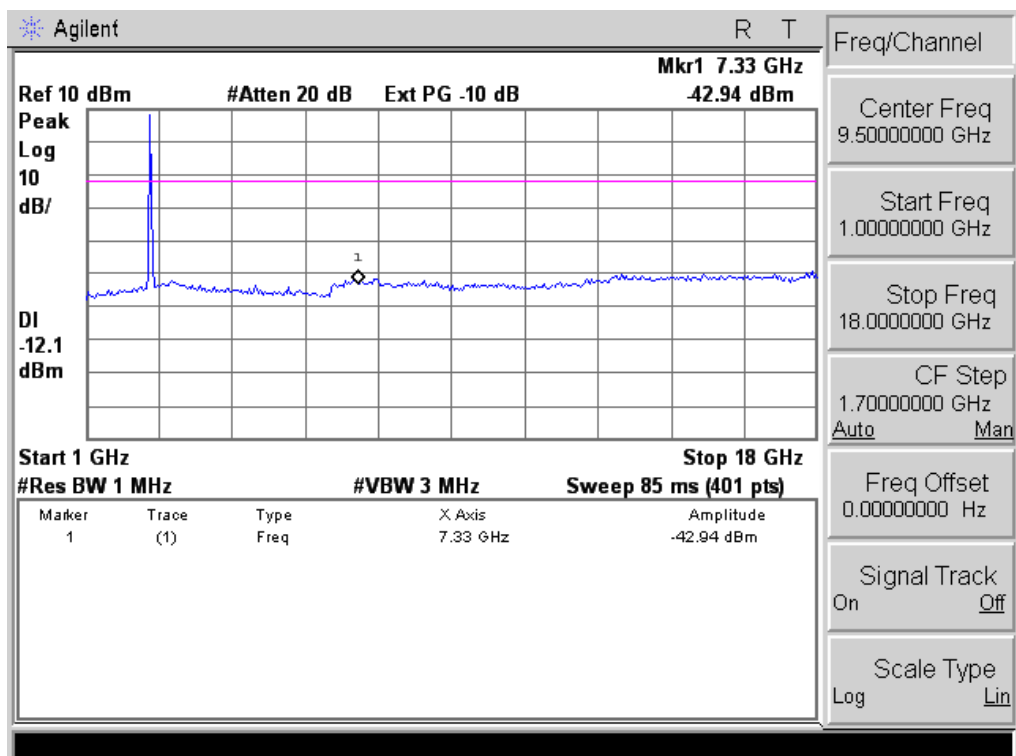
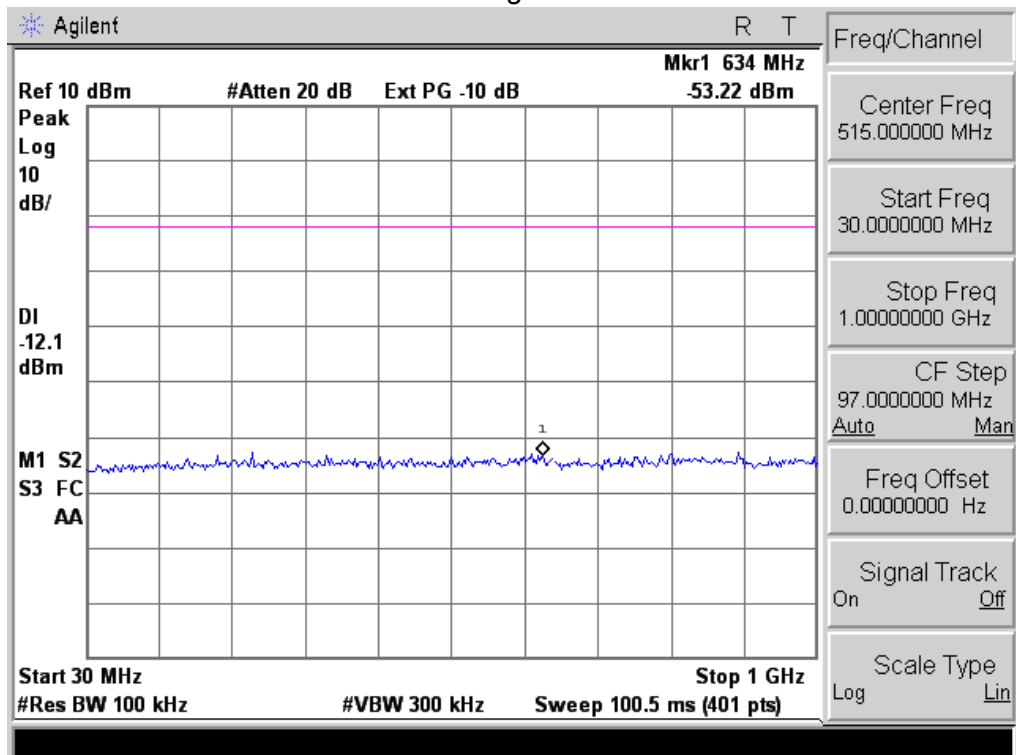
Conducted Spurious Emissions at Antenna Port:  
802.11b Low Channel



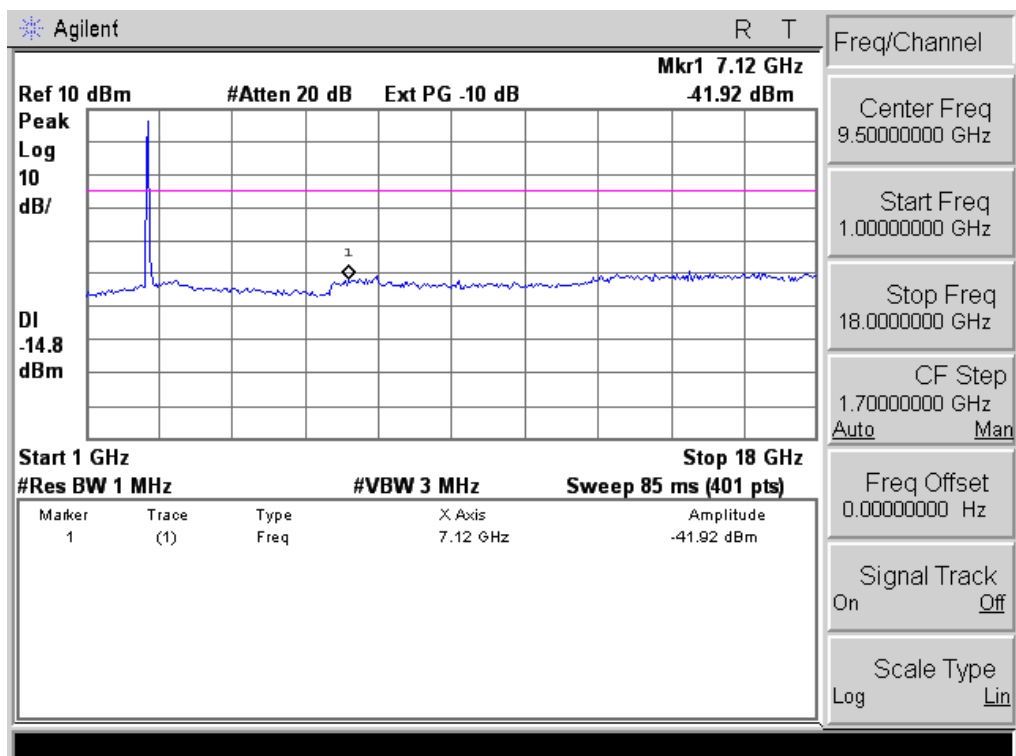
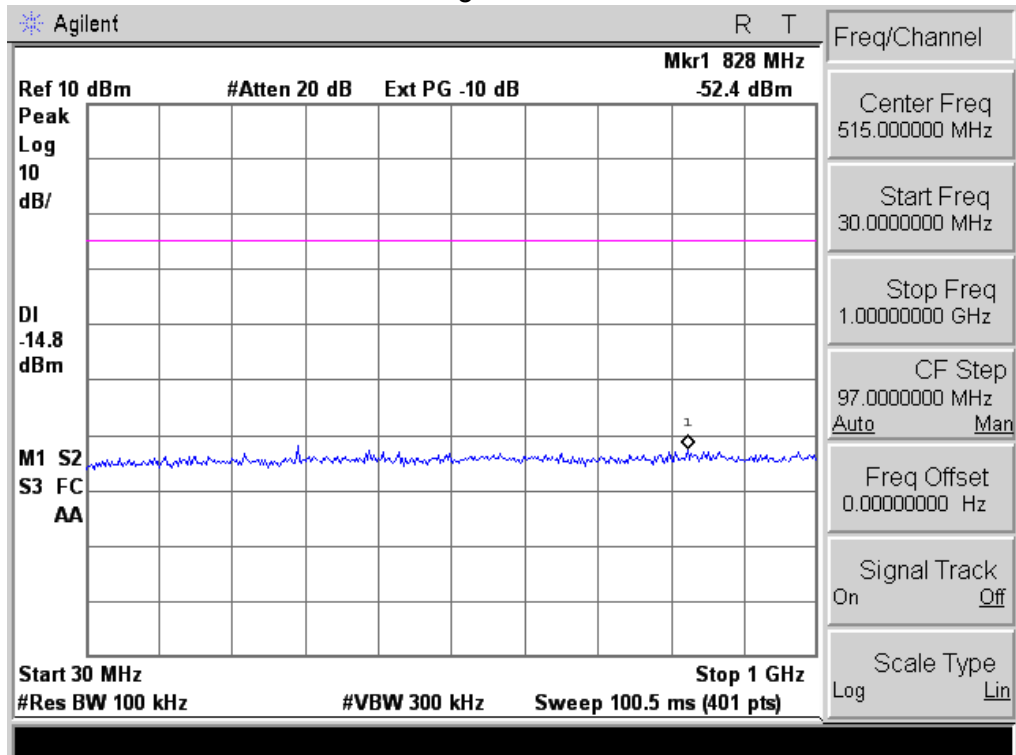
# 802.11b Middle Channel



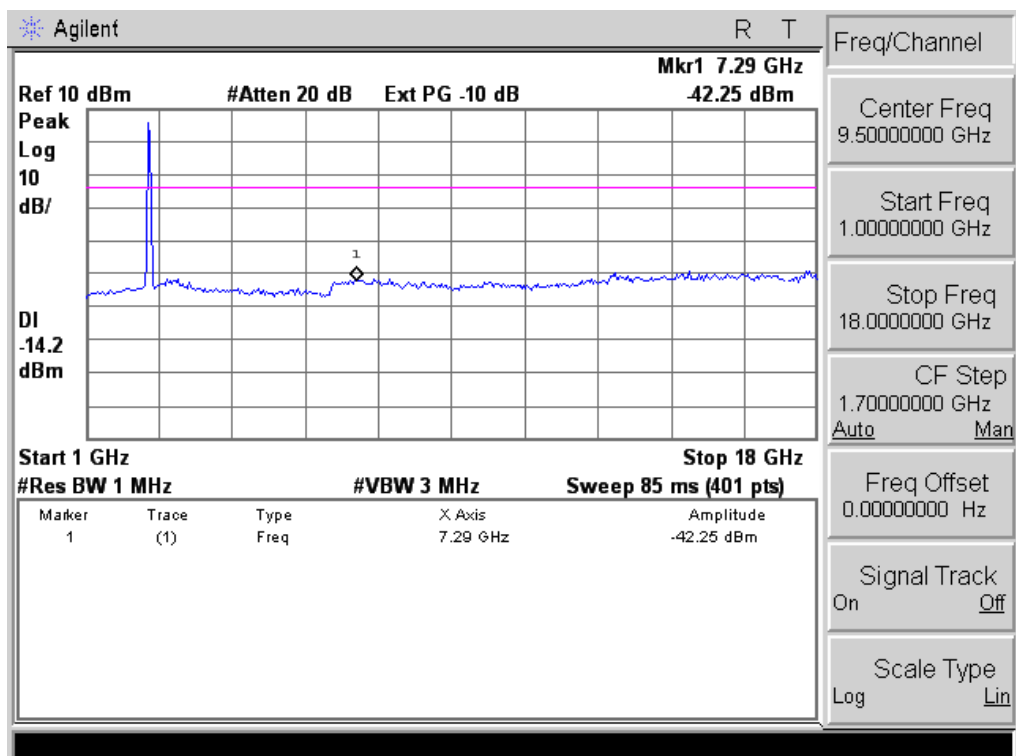
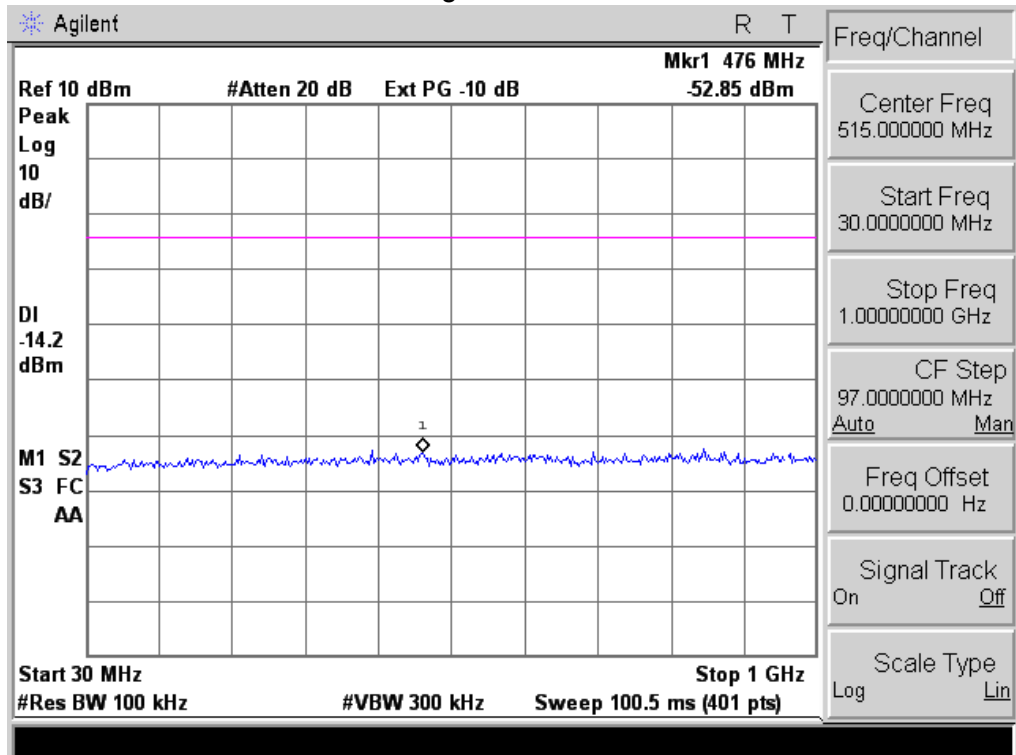
# 802.11b High Channel



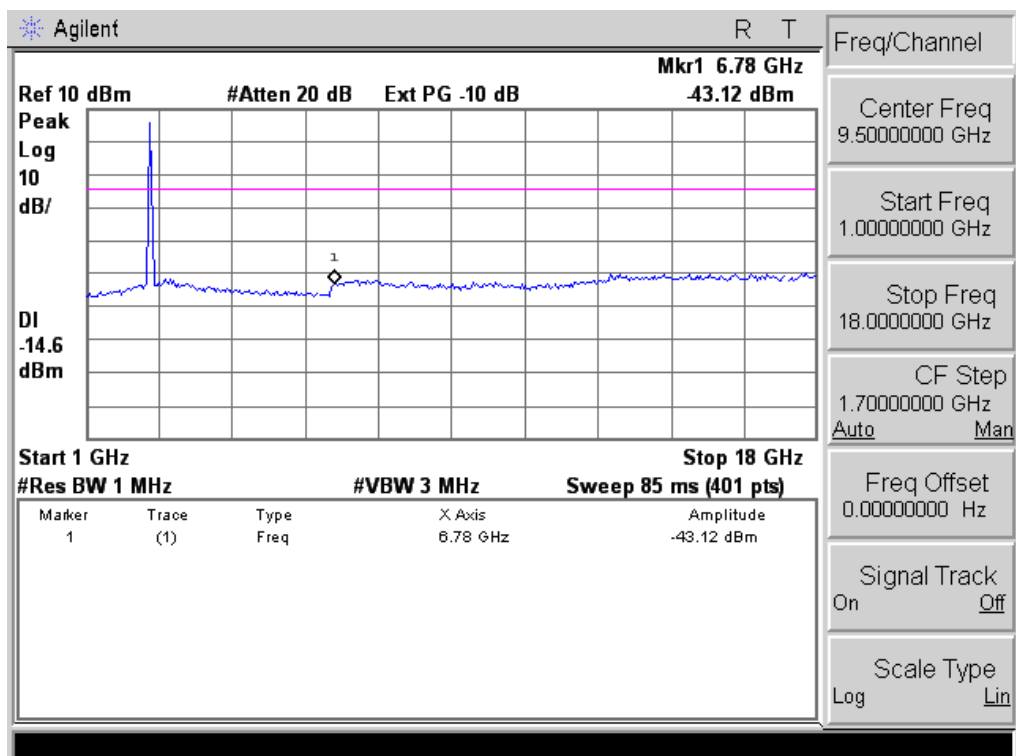
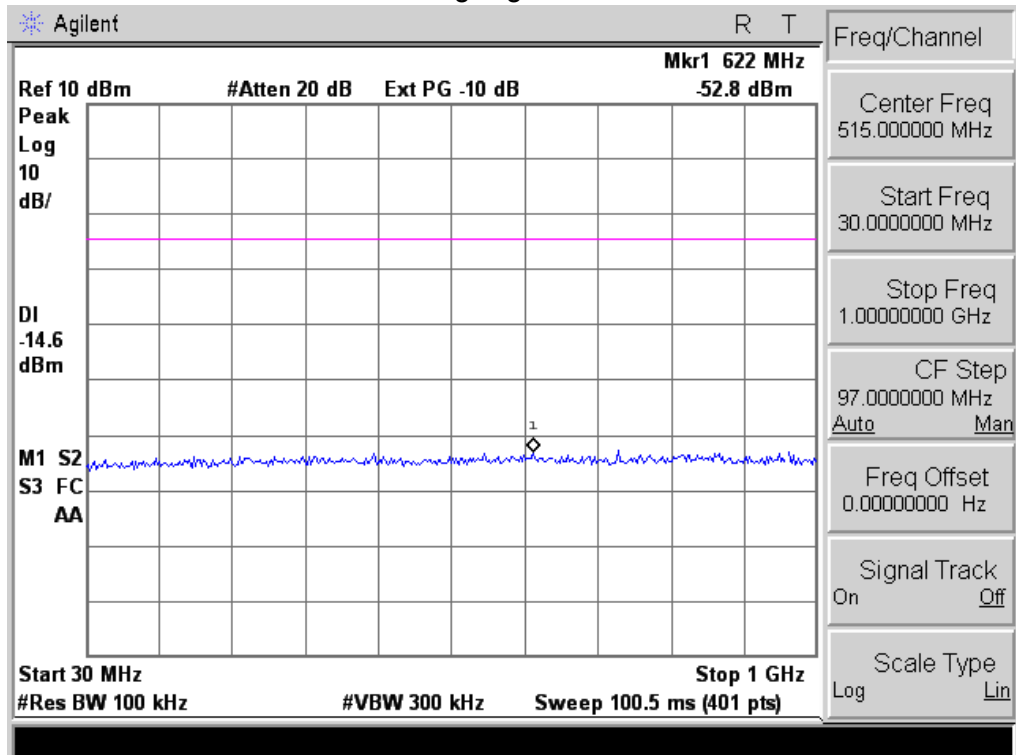
# 802.11g Low Channel



# 802.11g Middle Channel



# 802.11g High Channel



# Radiated band edge:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
802.11b							
2390	61.97	-12.99	48.98	54	-5.02	peak	Vertical
2390	58.88	-12.99	45.89	54	-8.11	peak	Horizontal
2483.5	50.78	-12.78	38.00	54	-16.00	peak	Vertical
2483.5	50.63	-12.78	37.85	54	-15.69	peak	Horizontal
802.11g							
2390	56.44	-12.99	43.45	54	-10.55	peak	Vertical
2390	59.38	-12.99	46.39	54	-7.61	peak	Horizontal
2483.5	52.42	-12.78	39.64	54	-14.46	peak	Vertical
2483.5	51.11	-12.78	38.43	54	-15.57	peak	Horizontal

Note: Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
Factor added by measurement software automatically.  
Emission Level is less(PK) than AV Limits,No need AV lever

## 4. POWER SPECTRAL DENSITY TEST

### 4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

#### 4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW  $\geq 3$  kHz.
4. Set the VBW  $\geq 3 \times$  RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

#### 4.1.2 DEVIATION FROM STANDARD

No deviation.

#### 4.1.3 TEST SETUP



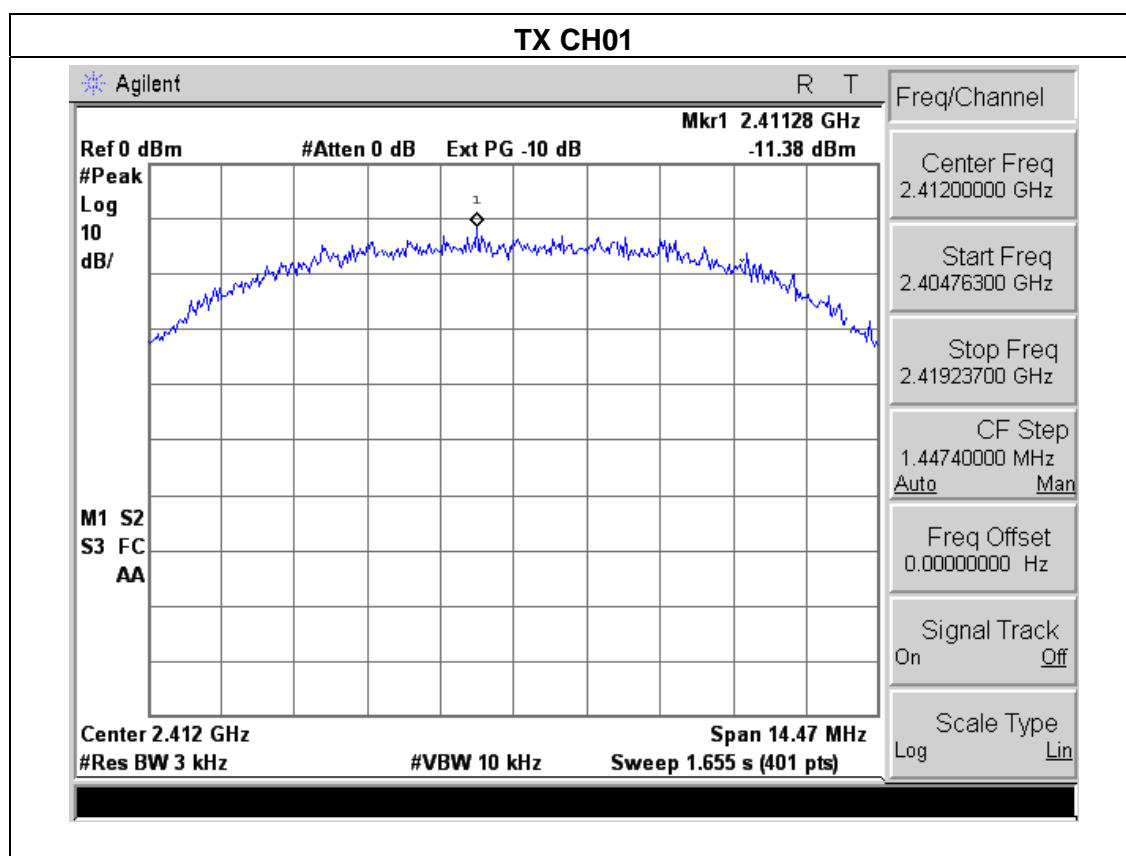
#### 4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

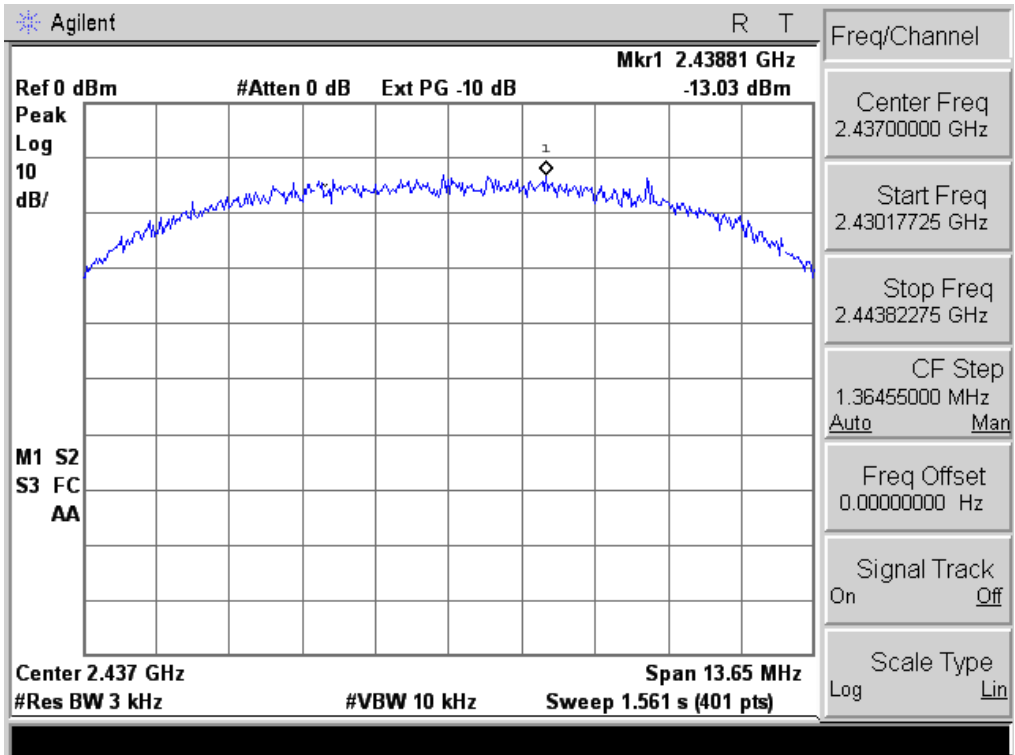
#### 4.1.5 TEST RESULTS

EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX b Mode /CH01, CH06, CH11		

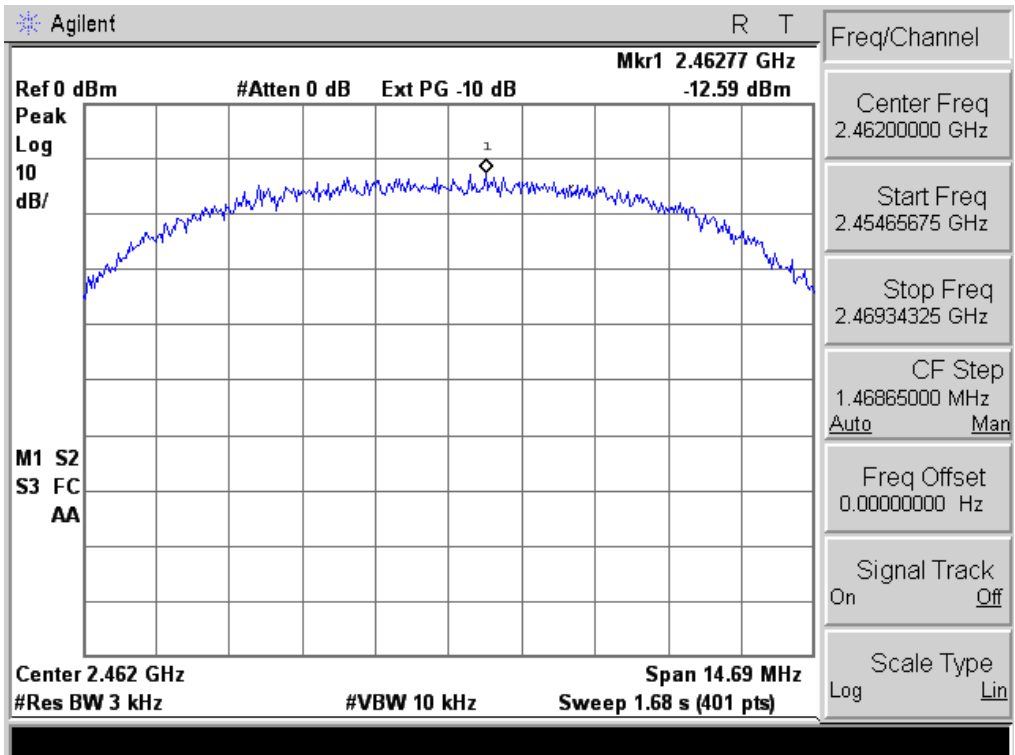
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-11.38	8	PASS
2437 MHz	-13.03	8	PASS
2462 MHz	-12.59	8	PASS



# TX CH06

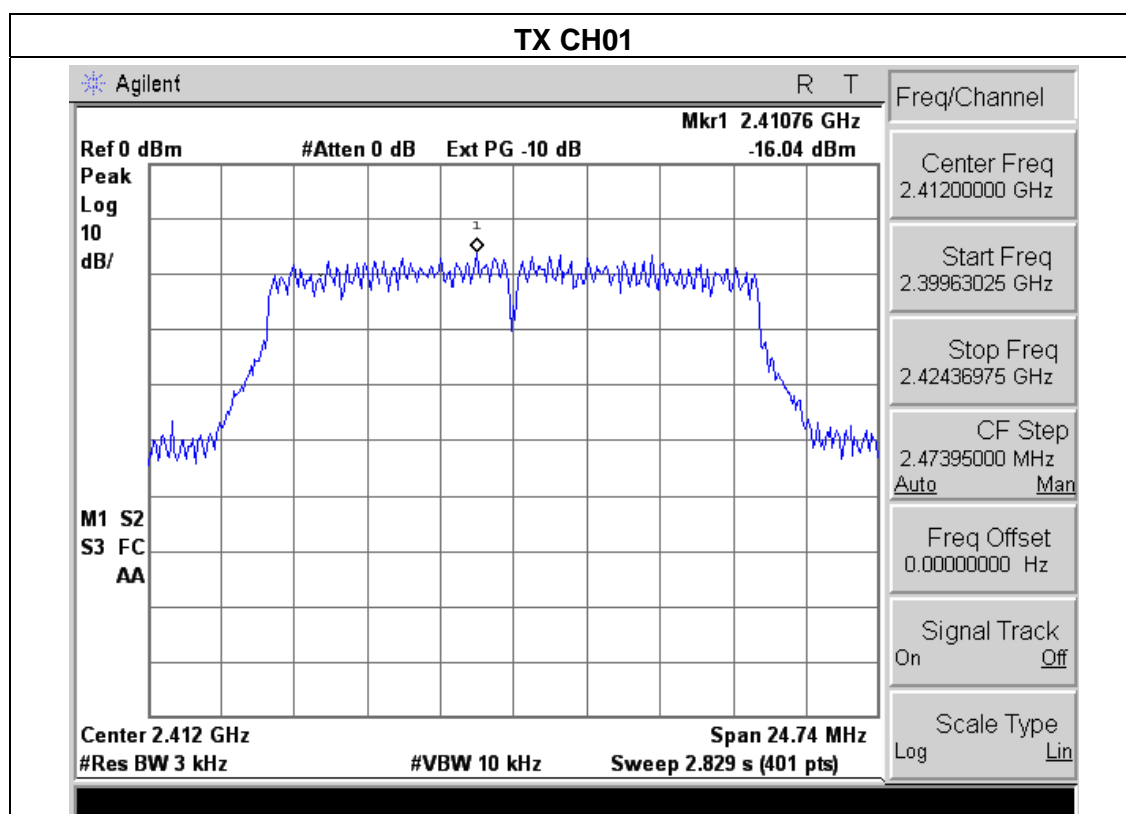


# TX CH11

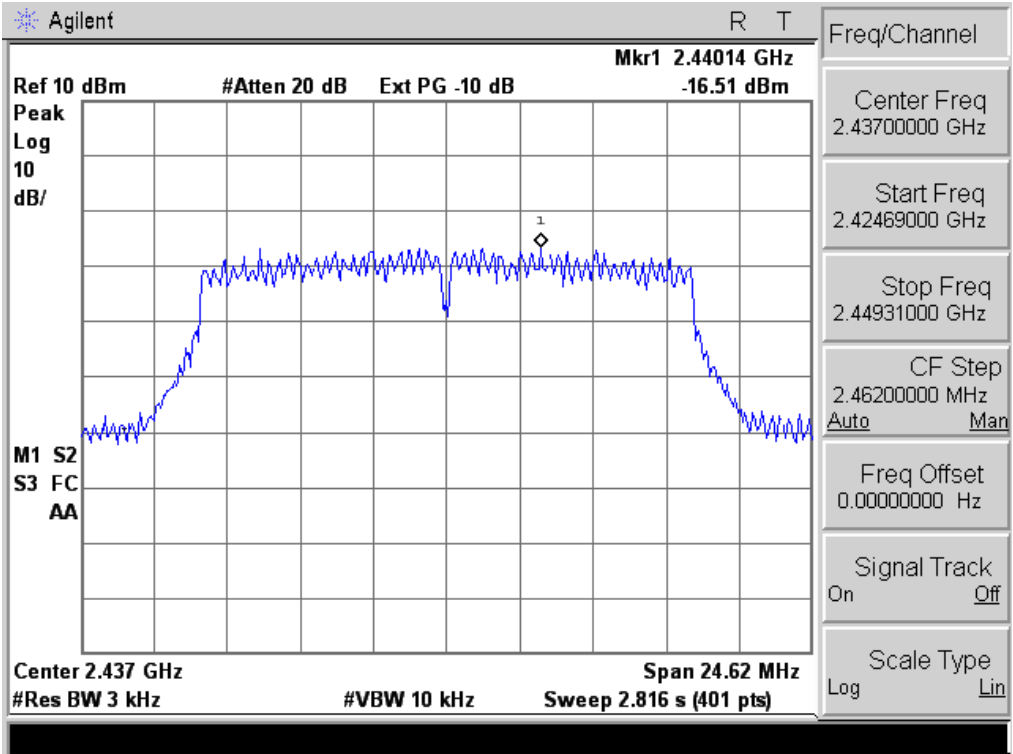


EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX g Mode /CH01, CH06, CH11		

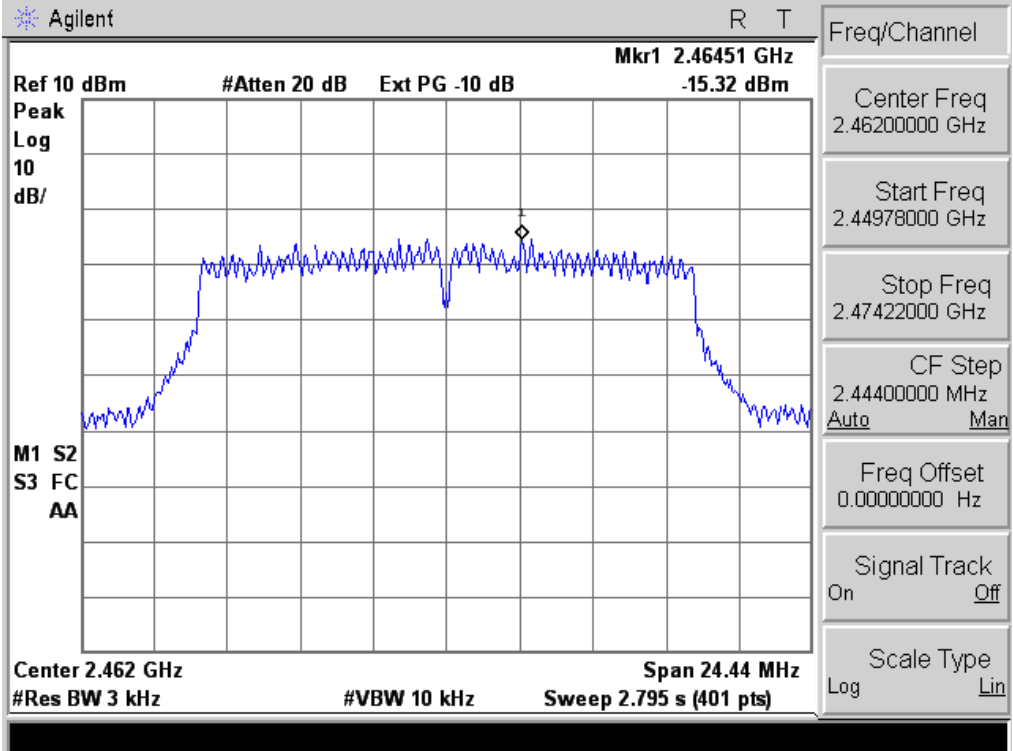
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-16.04	8	PASS
2437 MHz	-16.51	8	PASS
2462 MHz	-15.32	8	PASS



# TX CH06



# TX CH11



## 5. BANDWIDTH TEST

### 5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

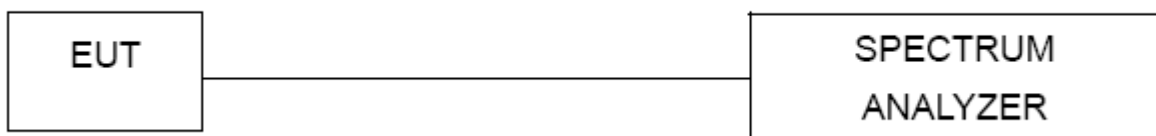
#### 5.1.1 TEST PROCEDURE

1. Set RBW= 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 5.1.2 DEVIATION FROM STANDARD

No deviation.

#### 5.1.3 TEST SETUP



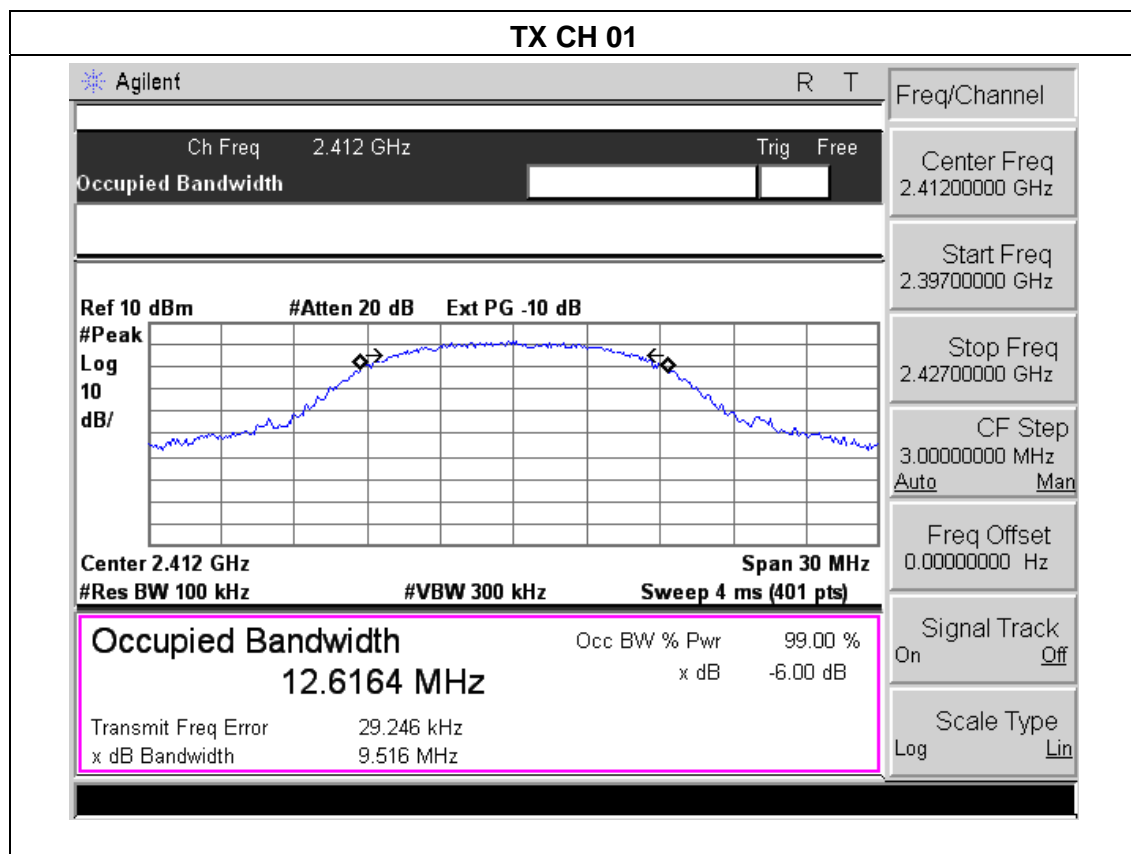
#### 5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

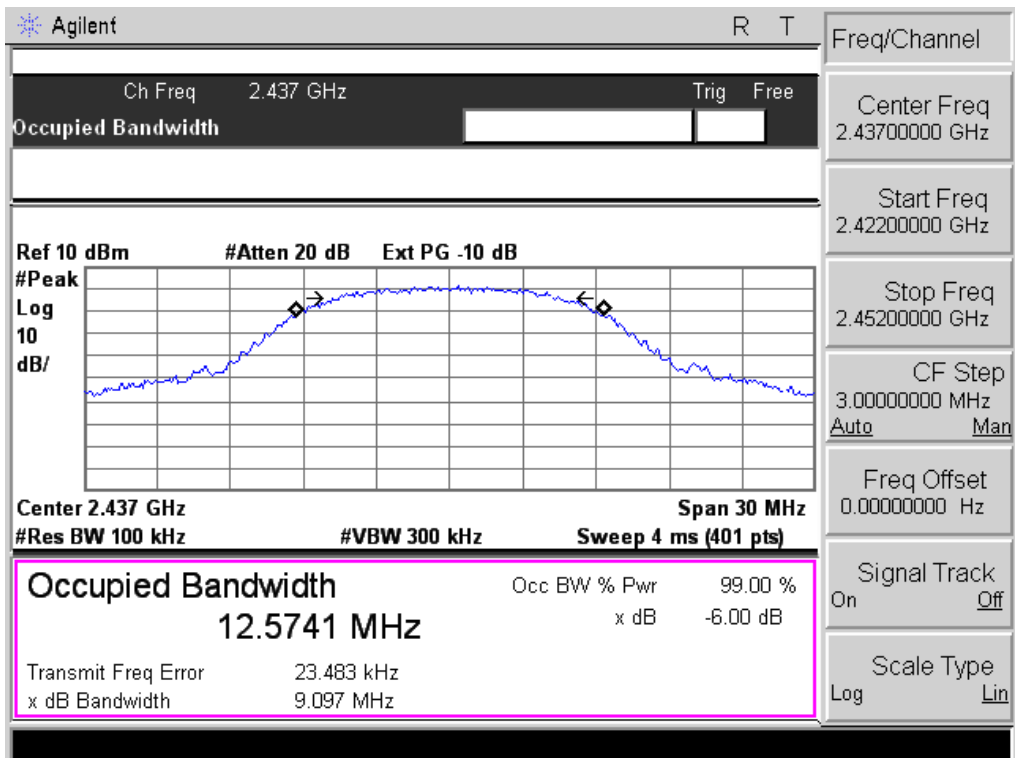
### 5.1.5 TEST RESULTS

EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX b Mode /CH01, CH06, CH11		

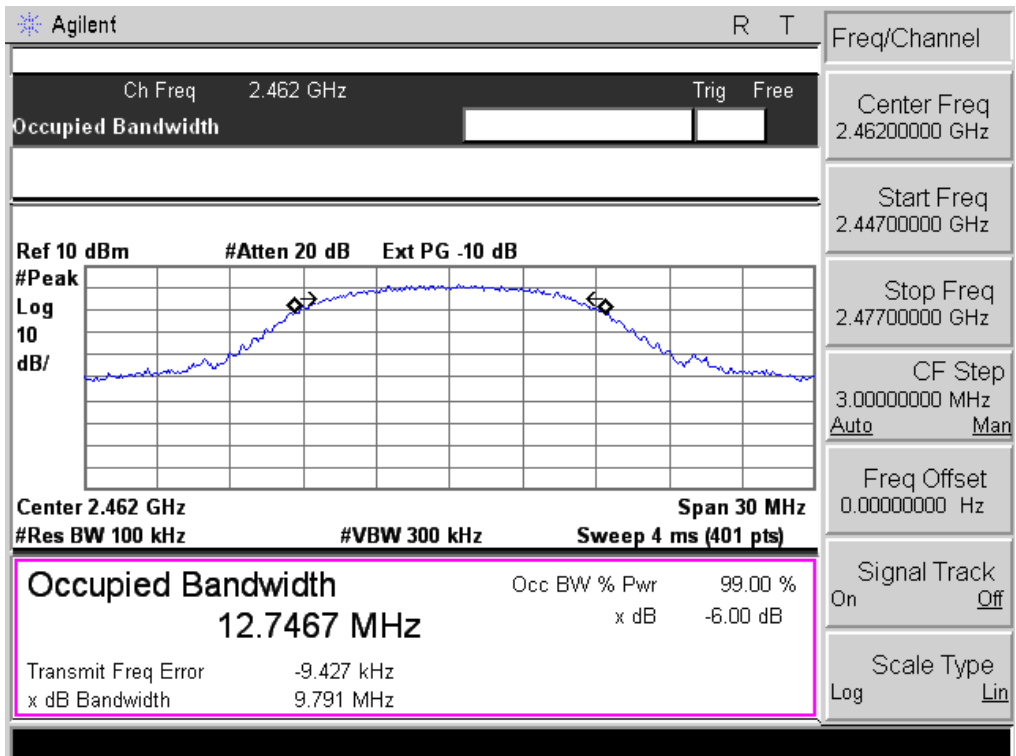
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	9.52	500	Pass
Middle	2437	9.10	500	Pass
High	2462	9.79	500	Pass



## TX CH 06

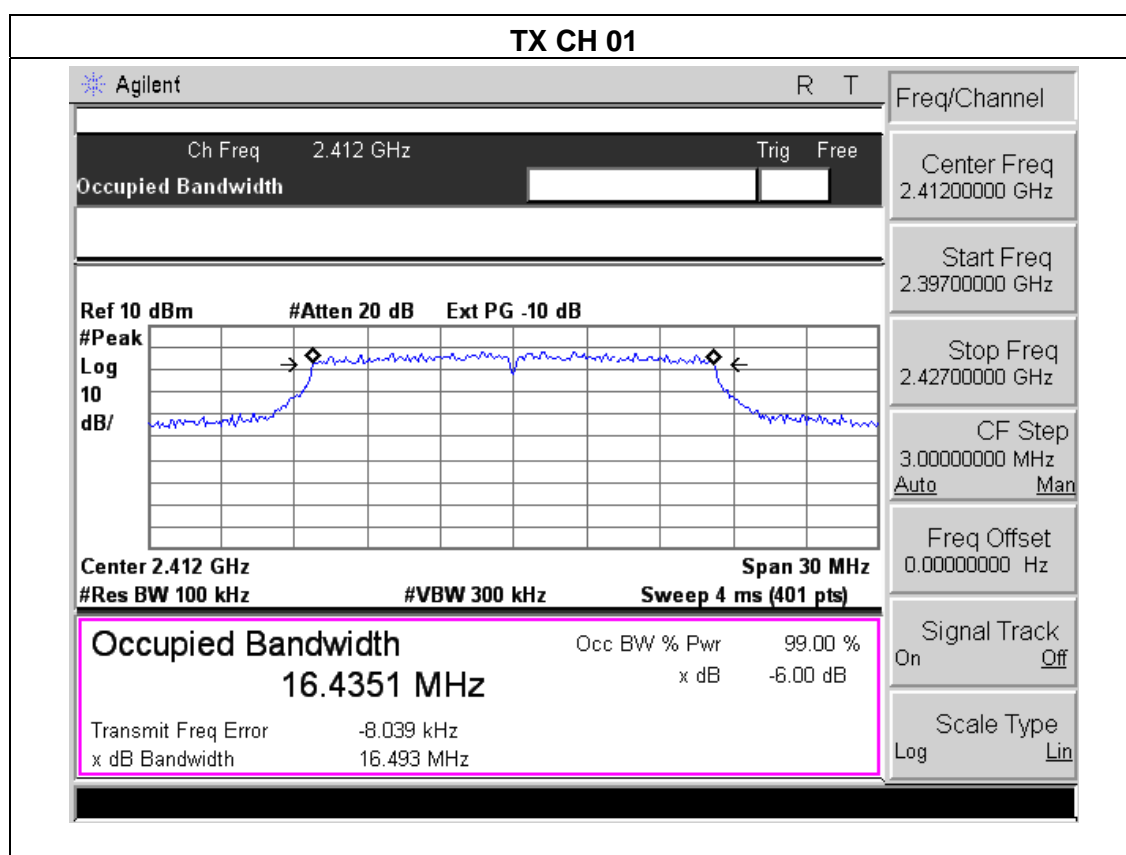


## TX CH 11

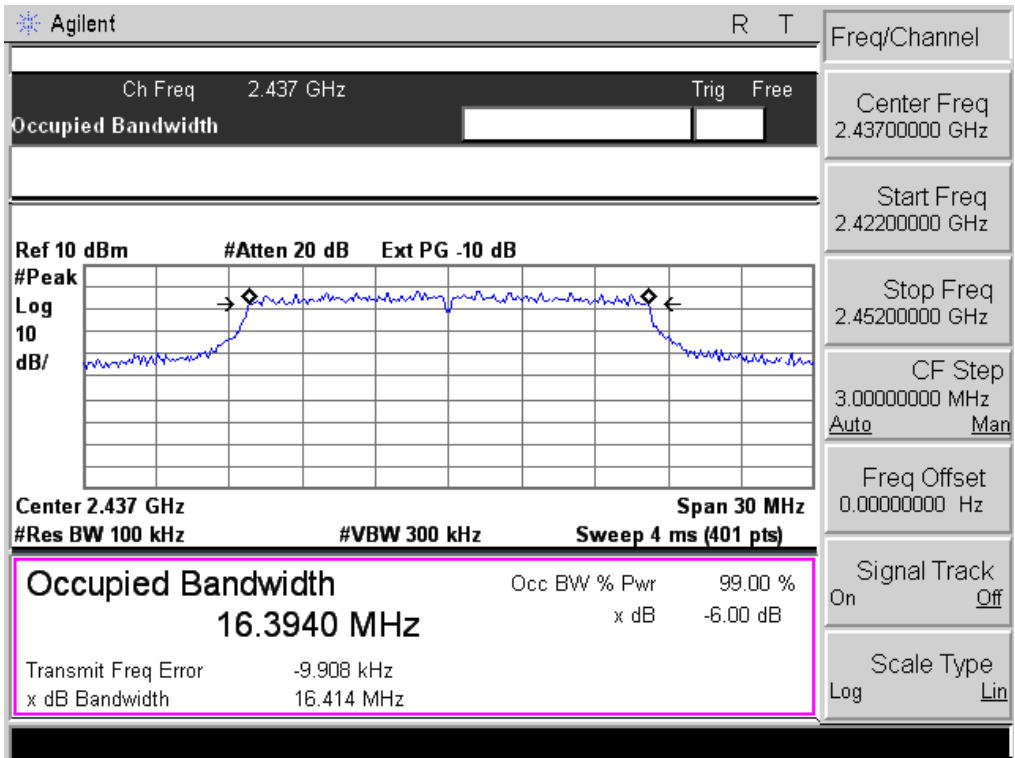


EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX g Mode /CH01, CH06, CH11		

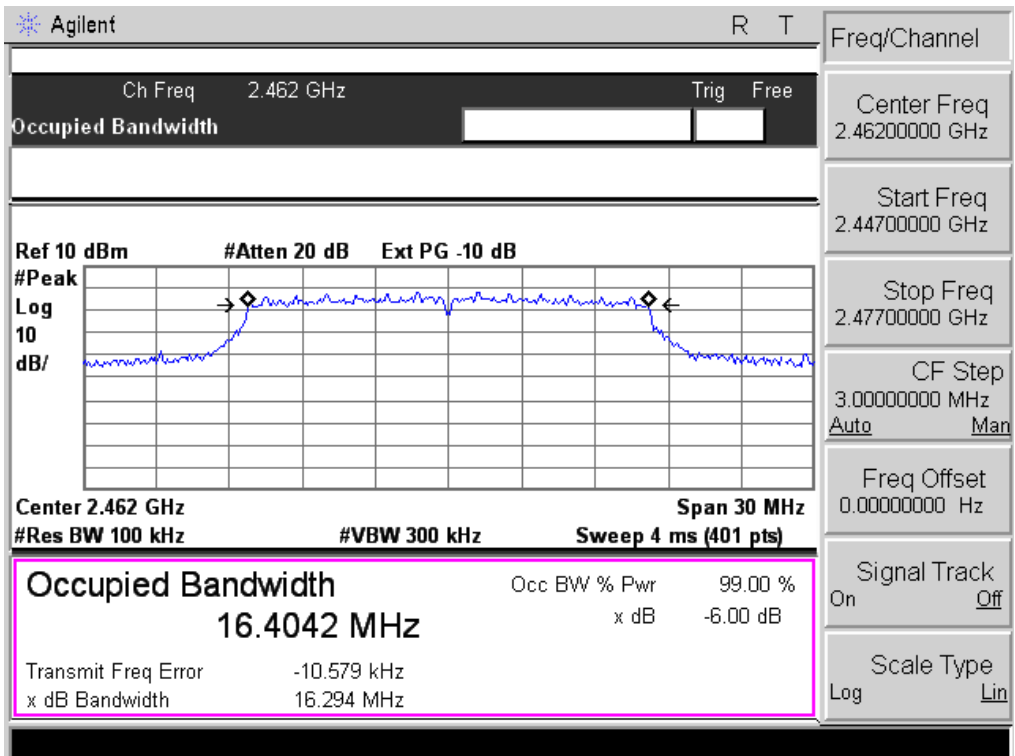
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.49	500	Pass
Middle	2437	16.41	500	Pass
High	2462	16.29	500	Pass



# TX CH 06



# TX CH 11



## 6. PEAK OUTPUT POWER TEST

### 6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

#### 6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### 6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 6.1.5 TEST RESULTS

EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC120V/60Hz
Test Mode :	TX b/g/n Mode /CH01, CH06, CH11		

#### TX 802.11b Mode

Test Channe	Frequency	Maximum Peak Conducted Output Power	Maximum AV Conducted Output Power	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH01	2412	10.99	8.02	30
CH06	2437	10.57	8.10	30
CH11	2462	10.09	8.17	30

#### TX 802.11g Mode

CH01	2412	9.01	7.28	30
CH06	2437	9.71	7.38	30
CH11	2462	9.95	7.80	30

## 7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

### APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

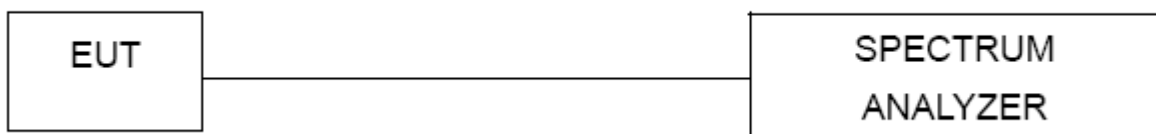
### TEST PROCEDURE

- a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e) Repeat above procedures until all measured frequencies were complete.

### 7.1 DEVIATION FROM STANDARD

No deviation.

### 7.2 TEST SETUP



### 7.3 EUT OPERATION CONDITIONS

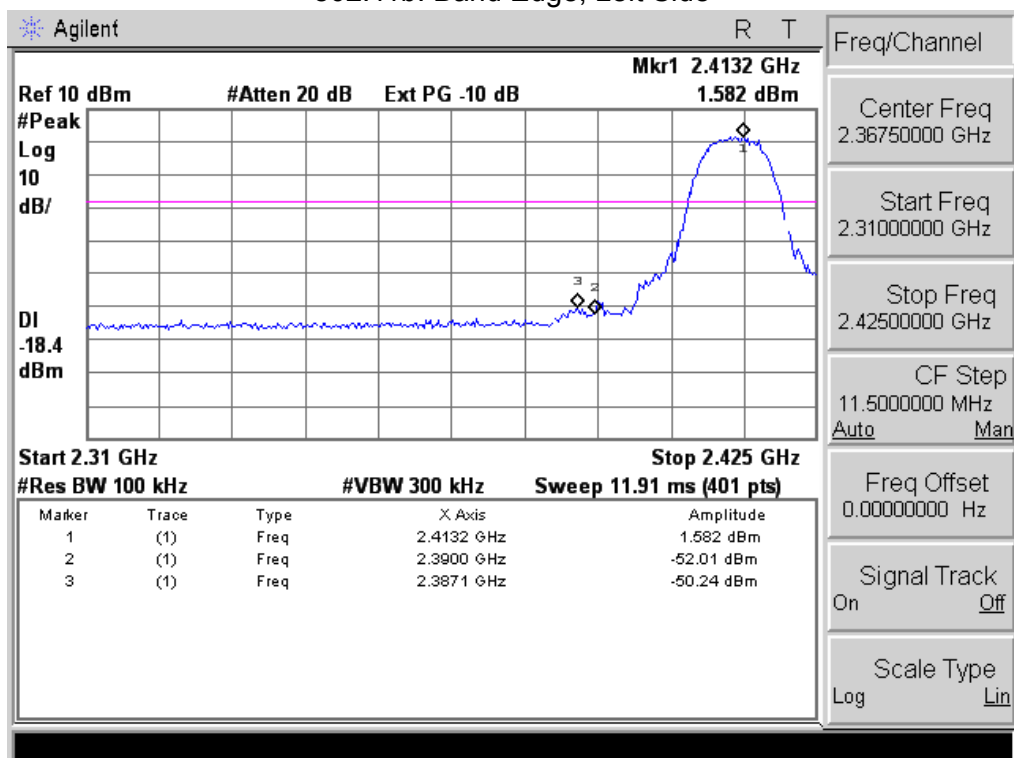
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

## 7.4 TEST RESULTS

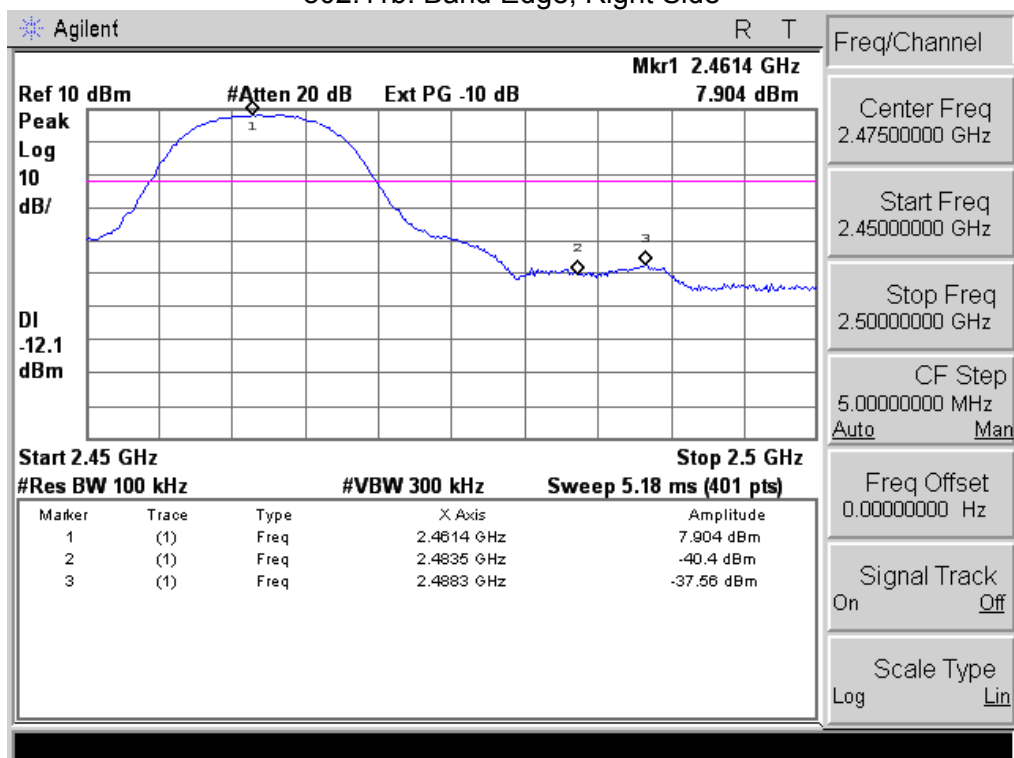
EUT :	SOL Laptop	Model Name :	DBR1-Y
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	AC120V/60Hz

Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
802.11b mode			
Left-band	53.59	20	Pass
Right-band	48.30	20	Pass
802.11g mode			
Left-band	40.91	20	Pass
Right-band	34.02	20	Pass

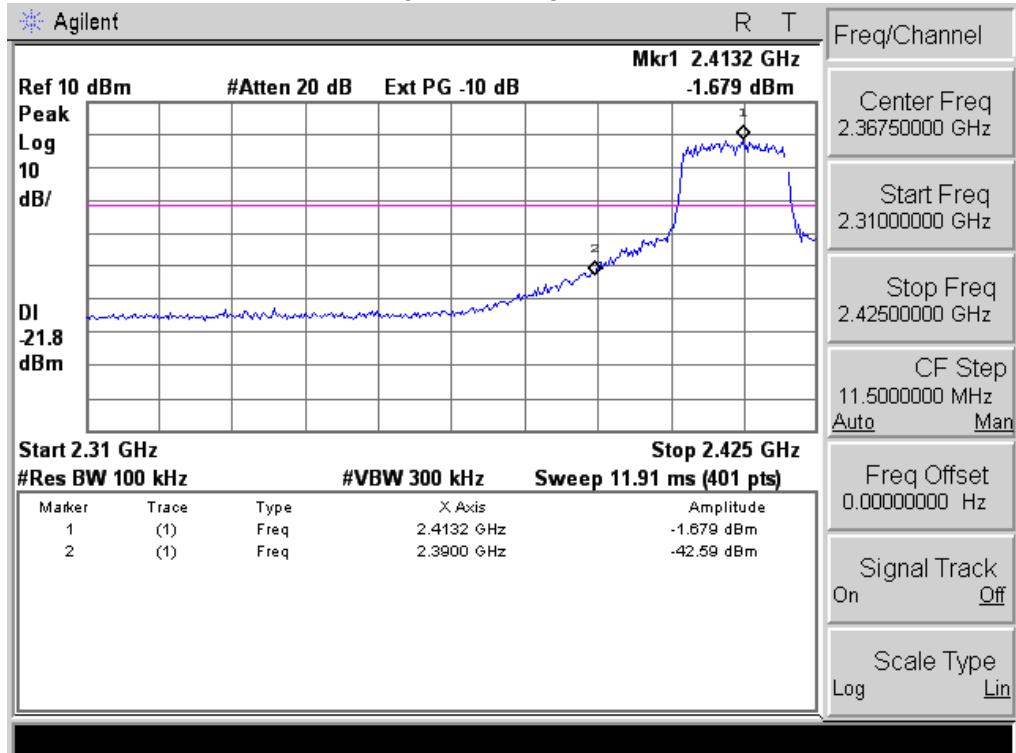
# 802.11b: Band Edge, Left Side



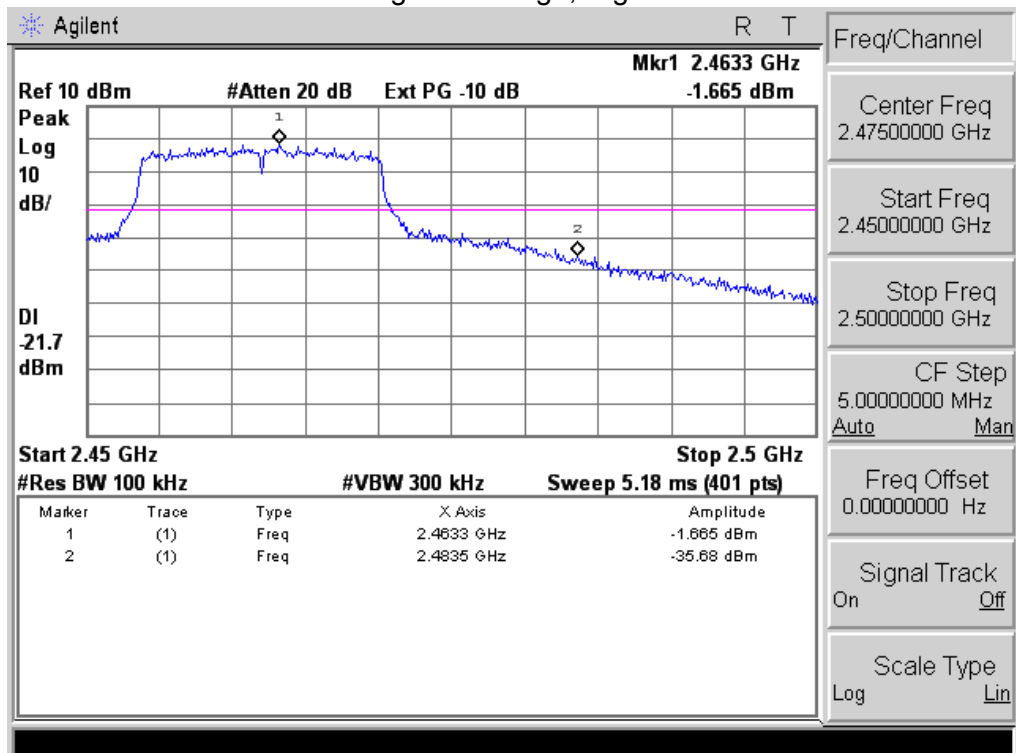
# 802.11b: Band Edge, Right Side



### 802.11g: Band Edge, Left Side



### 802.11g: Band Edge, Right Side



## **8. ANTENNA REQUIREMENT**

### **8.1 STANDARD REQUIREMENT**

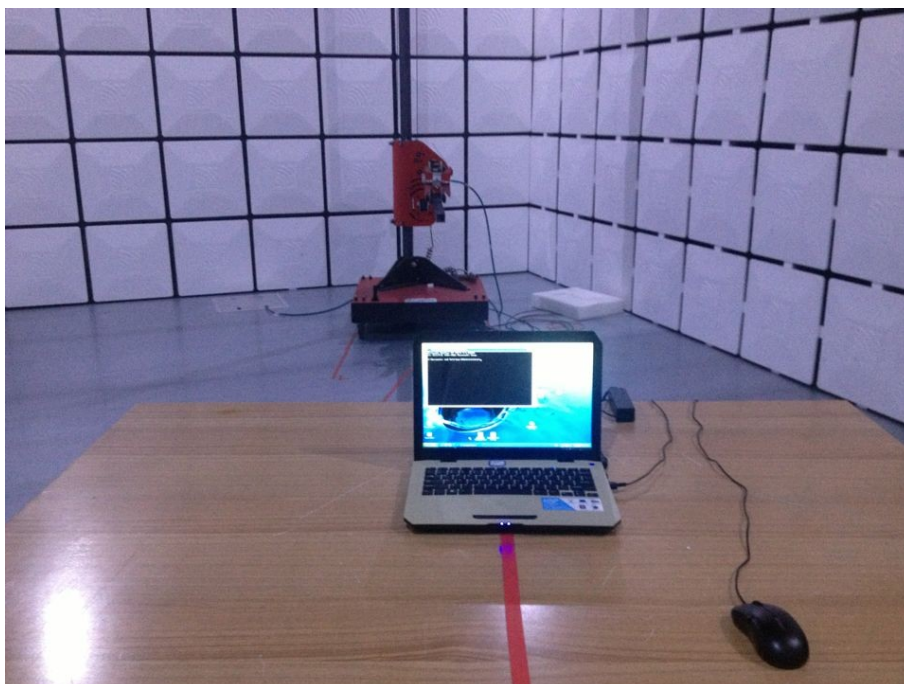
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### **8.2 EUT ANTENNA**

The EUT antenna is Integrated(FPCB) antenna. It comply with the standard requirement.

## 9. EUT TEST PHOTO

### Radiated Measurement Photos



### Conducted Measurement Photos

