



**FCC PART 15C/IC RSS-210  
TEST REPORT  
No. 2012WLN0347**

for

**Sony Mobile Communications AB**

**GSM 850/900/1800/1900 quad bands and UMTS FDD 1/8 mobile**

**Type: PM-0090-BV**

**With**

**FCC ID: PY7PM-0090**

**IC No.: 4170B-PM-0090**

**Hardware Version: A**

**Software Version: s\_atp\_lotus\_0\_0\_98**

**Issued Date: 2012-05-21**



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*IC O.A.T.S listed: No.6629A-1*

**Note:**The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

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## CONTENTS

<b>CONTENTS</b> .....	<b>2</b>
<b>1. TEST LATORATORY</b> .....	<b>6</b>
1.1. TESTING LOCATION.....	6
1.2. TESTING ENVIRONMENT.....	6
1.3. PROJECT DATA .....	6
1.4. SIGNATURE .....	6
<b>2. CLIENT INFORMATION</b> .....	<b>7</b>
2.1. APPLICANT INFORMATION.....	7
2.2. MANUFACTURER INFORMATION.....	7
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE)</b> .....	<b>8</b>
3.1. ABOUT EUT .....	8
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST.....	8
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST .....	8
3.4. GENERAL DESCRIPTION .....	8
<b>4. REFERENCE DOCUMENTS</b> .....	<b>9</b>
4.1. DOCUMENTS SUPPLIED BY APPLICANT.....	9
4.2. REFERENCE DOCUMENTS FOR TESTING.....	9
<b>5. LABORATORY ENVIRONMENT</b> .....	<b>10</b>
<b>6. SUMMARY OF TEST RESULTS</b> .....	<b>11</b>
6.1. SUMMARY OF TEST RESULTS .....	11
6.2. STATEMENTS.....	11
<b>7. TEST EQUIPMENTS UTILIZED</b> .....	<b>12</b>
<b>ANNEX A: MEASUREMENT RESULTS</b> .....	<b>13</b>
A.1. MEASUREMENT METHOD .....	13
A.2. MAXIMUM PEAK OUTPUT POWER .....	14
A.2.1. ANTENNA GAIN.....	14
A.2.2. MAXIMUM PEAK OUTPUT POWER .....	14
A.3. PEAK POWER SPECTRAL DENSITY .....	14
A.4. OCCUPIED 6dB BANDWIDTH .....	15
FIG. 1 OCCUPIED 6dB BANDWIDTH (802.11B, CH 1) .....	16
FIG. 2 OCCUPIED 6dB BANDWIDTH (802.11B, CH 6) .....	16
FIG. 3 OCCUPIED 6dB BANDWIDTH (802.11B, CH 11) .....	17
FIG. 4 OCCUPIED 6dB BANDWIDTH (802.11G, CH 1) .....	17
FIG. 5 OCCUPIED 6dB BANDWIDTH (802.11G, CH 6) .....	18
FIG. 6 OCCUPIED 6dB BANDWIDTH (802.11G, CH 11) .....	18

FIG. 7	OCCUPIED 6DB BANDWIDTH (802.11N-HT20, CH 1).....	19
FIG. 8	OCCUPIED 6DB BANDWIDTH (802.11N-HT20, CH 6).....	19
FIG. 9	OCCUPIED 6DB BANDWIDTH (802.11N-HT20, CH 11) .....	20
A.5.	BAND EDGES COMPLIANCE.....	21
FIG. 10	BAND EDGES (802.11B, CH 1).....	22
FIG. 11	BAND EDGES (802.11B, CH 11) .....	22
FIG. 12	BAND EDGES (802.11G, CH 1).....	23
FIG. 13	BAND EDGES (802.11G, CH 11) .....	23
FIG. 14	BAND EDGES (802.11N-HT20, CH 1).....	24
FIG. 15	BAND EDGES (802.11N-HT20, CH 11) .....	24
A.6.	TRANSMITTER SPURIOUS EMISSION .....	25
A.6.1	TRANSMITTER SPURIOUS EMISSION - CONDUCTED .....	25
FIG. 16	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, CENTER FREQUENCY) .....	27
FIG. 17	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 30 MHz-1 GHz) .....	27
FIG. 18	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 1 GHz-26 GHz) .....	28
FIG. 19	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, CENTER FREQUENCY) .....	28
FIG. 20	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 30 MHz-1 GHz) .....	29
FIG. 21	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 1 GHz-26 GHz) .....	29
FIG. 22	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, CENTER FREQUENCY).....	30
FIG. 23	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 30 MHz-1 GHz) .....	30
FIG. 24	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 1 GHz-26 GHz) .....	31
FIG. 25	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, CENTER FREQUENCY) .....	31
FIG. 26	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 30 MHz-1 GHz) .....	32
FIG. 27	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 1 GHz-26 GHz) .....	32
FIG. 28	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, CENTER FREQUENCY) .....	33
FIG. 29	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 30 MHz-1 GHz) .....	33
FIG. 30	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 1 GHz-26 GHz) .....	34
FIG. 31	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, CENTER FREQUENCY).....	34
FIG. 32	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 30 MHz-1 GHz) .....	35
FIG. 33	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 1 GHz-26 GHz) .....	35
FIG. 34	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, CENTER FREQUENCY) .....	36
FIG. 35	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 30 MHz-1 GHz).....	36
FIG. 36	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 1 GHz-26 GHz) .....	37
FIG. 37	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, CENTER FREQUENCY) .....	37
FIG. 38	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 30 MHz-1 GHz).....	38
FIG. 39	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 1 GHz-26 GHz) .....	38
FIG. 40	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, CENTER FREQUENCY).....	39
FIG. 41	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 30 MHz-1 GHz) .....	39
FIG. 42	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 1 GHz-26 GHz) .....	40
A.6.2	TRANSMITTER SPURIOUS EMISSION - RADIATED .....	41
FIG. 43	RADIATED SPURIOUS EMISSION (POWER): 802.11B, CH1, 2.38 GHz - 2.45GHz.....	42
FIG. 44	RADIATED SPURIOUS EMISSION (802.11B, CH1, 30 MHz-1 GHz) .....	42
FIG. 45	RADIATED SPURIOUS EMISSION (802.11B, CH1, 1 GHz-3 GHz) .....	43
FIG. 46	RADIATED SPURIOUS EMISSION (802.11B, CH1, 3 GHz-18 GHz) .....	43

FIG. 47	RADIATED SPURIOUS EMISSION (802.11B, CH6, 30 MHz-1 GHz) .....	44
FIG. 48	RADIATED SPURIOUS EMISSION (802.11B, CH6, 1 GHz-3 GHz) .....	44
FIG. 49	RADIATED SPURIOUS EMISSION (802.11B, CH6, 3 GHz-18 GHz) .....	45
FIG. 50	RADIATED SPURIOUS EMISSION (POWER): 802.11B, CH11, 2.45 GHz - 2.5GHz .....	45
FIG. 51	RADIATED SPURIOUS EMISSION (802.11B, CH11, 30 MHz-1 GHz) .....	46
FIG. 52	RADIATED SPURIOUS EMISSION (802.11B, CH11, 1 GHz-3 GHz) .....	46
FIG. 53	RADIATED SPURIOUS EMISSION (802.11B, CH11, 3 GHz-18 GHz) .....	47
FIG. 54	RADIATED SPURIOUS EMISSION (POWER): 802.11G, CH1, 2.38 GHz - 2.45GHz.....	47
FIG. 55	RADIATED SPURIOUS EMISSION (802.11G, CH1, 30 MHz-1 GHz) .....	48
FIG. 56	RADIATED SPURIOUS EMISSION (802.11G, CH1, 1 GHz-3 GHz) .....	48
FIG. 57	RADIATED SPURIOUS EMISSION (802.11G, CH1, 3 GHz-18 GHz) .....	49
FIG. 58	RADIATED SPURIOUS EMISSION (802.11G, CH6, 30 MHz-1 GHz) .....	49
FIG. 59	RADIATED SPURIOUS EMISSION (802.11G, CH6, 1 GHz-3 GHz) .....	50
FIG. 60	RADIATED SPURIOUS EMISSION (802.11G, CH6, 3 GHz-18 GHz) .....	50
FIG. 61	RADIATED SPURIOUS EMISSION (POWER): 802.11G, CH11, 2.45 GHz - 2.5GHz .....	51
FIG. 62	RADIATED SPURIOUS EMISSION (802.11G, CH11, 30 MHz-1 GHz) .....	51
FIG. 63	RADIATED SPURIOUS EMISSION (802.11G, CH11, 1 GHz-3 GHz) .....	52
FIG. 64	RADIATED SPURIOUS EMISSION (802.11G, CH11, 3 GHz-18 GHz) .....	52
FIG. 65	RADIATED SPURIOUS EMISSION (POWER): 802.11N-HT20, CH1, 2.38 GHz - 2.45GHz....	53
FIG. 66	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH1, 30 MHz-1 GHz) .....	53
FIG. 67	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH1, 1 GHz-3 GHz) .....	54
FIG. 68	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH1, 3 GHz-18 GHz) .....	54
FIG. 69	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH6, 30 MHz-1 GHz) .....	55
FIG. 70	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH6, 1 GHz-3 GHz) .....	55
FIG. 71	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH6, 3 GHz-18 GHz) .....	56
FIG. 72	RADIATED SPURIOUS EMISSION (POWER): 802.11N-HT20, CH11, 2.45 GHz - 2.5GHz ....	56
FIG. 73	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH11, 30 MHz-1 GHz) .....	57
FIG. 74	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH11, 1 GHz-3 GHz) .....	57
FIG. 75	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH11, 3 GHz-18 GHz) .....	58
FIG. 76	RADIATED EMISSION: 18 GHz - 26 GHz.....	58
A.7.	OCCUPIED 20dB BANDWIDTH .....	59
FIG. 77	OCCUPIED 20dB BANDWIDTH (802.11B, CH 1) .....	60
FIG. 78	OCCUPIED 20dB BANDWIDTH (802.11B, CH 6) .....	60
FIG. 79	OCCUPIED 20dB BANDWIDTH (802.11B, CH 11) .....	61
FIG. 80	OCCUPIED 20dB BANDWIDTH (802.11G, CH 1) .....	61
FIG. 81	OCCUPIED 20dB BANDWIDTH (802.11G, CH 6) .....	62
FIG. 82	OCCUPIED 20dB BANDWIDTH (802.11G, CH 11) .....	62
FIG. 83	OCCUPIED 20dB BANDWIDTH (802.11N-HT20, CH 1) .....	63
FIG. 84	OCCUPIED 20dB BANDWIDTH (802.11N-HT20, CH 6) .....	63
FIG. 85	OCCUPIED 20dB BANDWIDTH (802.11N-HT20, CH 11) .....	64
A.8.	AC POWERLINE CONDUCTED EMISSION .....	65
FIG. 86	AC POWERLINE CONDUCTED EMISSION .....	66
FIG. 87	AC POWERLINE CONDUCTED EMISSION .....	67
<b>ANNEX B: PHOTOGRAPHS OF THE TEST SET-UP .....</b>		<b>68</b>

**ANNEX C: PHOTOGRAPHS OF THE EUT .....69**

## 1. TEST LATORATORY

### 1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China  
Postal Code: 100191  
Telephone: 00861062304633  
Fax: 00861062304793

### 1.2. Testing Environment

Normal Temperature: 15-30°C  
Extreme Temperature: -20/+55°C  
Relative Humidity: 30-60%  
Air Pressure 990hPa-1040hPa

Note: The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

### 1.3. Project data

Project Leader: SunZhenyu  
Testing Start Date: 2012-04-03  
Testing End Date: 2012-05-17

### 1.4. Signature



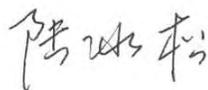
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Sun Zhenyu  
(Prepared this test report)



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Gao Hong  
(Reviewed this test report)



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Lu Bingsong  
Deputy Director of the laboratory  
(Approved this test report)

## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: Sony Mobile Communications (China) Co. Ltd  
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### **2.2. Manufacturer Information**

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Postal Code: 22188  
Country: Sweden  
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### **3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE)**

#### **3.1. About EUT**

Description	GSM 850/900/1800/1900 quad bands and UMTS FDD 1/8 mobile
Type	PM-0090-BV

Note: Photographs of EUT are shown in ANNEX C of this test report. Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

#### **3.2. Internal Identification of EUT used during the test**

<b>EUT ID*</b>	<b>S/N</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
EUT1	CB5A1JZ6RN	004402144646324	A	s_atp_lotus_0_0_98
EUT2	CB5A1JZ70T	004402144647009	A	s_atp_lotus_0_0_98

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE used during the test**

<b>AE ID*</b>	<b>Description</b>	<b>Type</b>	<b>SN</b>
AE1	Dummy battery	/	/
AE2	Travel Charger	CAA-0002016-BV	/

\*AE ID: is used to identify the test sample in the lab internally.

#### **3.4. General Description**

Equipment Under Test (EUT) is a model of GSM 850/900/1800/1900 quad bands and UMTS FDD 1/8 mobile phone with integrated antenna.

It has MP3, Camera, FM radio, USB memory, GPS receiver, Bluetooth (EDR), WLAN (802.11 b/g/n) and Wi-Fi hotspot functions. It also supports GPRS function with multi-slots class 33 and EGPRS function with multi-slots class 33 too. It consists of normal options: Lithium Battery and Travel Charger.

Manual and specifications of the EUT were provided to fulfill the test. Samples undergoing test were selected by the Client.

## 4. REFERENCE DOCUMENTS

### 4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

### 4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz.	Oct, 2009 Edition
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2009
KDB558074 D01	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247	January 18, 2012
RSS-GEN	Spectrum Management and Telecommunications - Radio Standards Specification General Requirements and Information for the Certification of Radiocommunication Equipment	Issue 2
RSS-210	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	Issue 8

## 5. LABORATORY ENVIRONMENT

**Shielding Room1** (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

**Control room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

**Fully-anechoic chamber** (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

**Shielding Room2** (7.30 meters×4.00 meters×3.80 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

## 6. SUMMARY OF TEST RESULTS

### 6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247 (a)	A8.4	<b>P</b>
Peak Power Spectral Density	15.247 (d)	A8.2, A8.3	<b>P</b>
Occupied 6dB Bandwidth	15.247 (d)	A8.2	<b>P</b>
Band Edges Compliance	15.247 (b)	A8.5	<b>P</b>
Transmitter Spurious Emission - Conducted	15.247	A8.5	<b>P</b>
Transmitter Spurious Emission - Radiated	15.247, 15.209, 15.209	A8.5	<b>P</b>
AC Powerline Conducted Emission	15.107, 15.207	7.2.2	<b>P</b>
Occupied 20dB Bandwidth	15.247 (d)	A8.2	<b>P</b>

Please refer to **ANNEX A** for detail.

The measurement is made according to Public notice KDB558074 D01 and ANSI C63.10.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by TMC
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

### 6.2. Statements

TMC has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

Test Conditions

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage
V min	Low Voltage
V max	High Voltage
H nom	Norm Humidity
A nom	Norm Air Pressure

For this report, all the test cases listed above are tested under Normal Temperature and Normal Voltage which is using a new battery, and also under norm humidity, the specific conditions as following:

Temperature	T nom	26°C
Voltage	V nom	3.7V(By battery)
Humidity	H nom	44%

Air Pressure	A nom	1010hPa
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## **7. TEST EQUIPMENTS UTILIZED**

### **Conducted test system**

<b>No.</b>	<b>Equipment</b>	<b>Model</b>	<b>Serial Number</b>	<b>Manufacturer</b>	<b>Calibration Due date</b>
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2012-07-19
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2012-10-30
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2012-08-13

### **Radiated emission test system**

<b>No.</b>	<b>Equipment</b>	<b>Model</b>	<b>Serial Number</b>	<b>Manufacturer</b>	<b>Calibration Due date</b>
1	Test Receiver	ESI40	831564/002	Rohde & Schwarz	2012-08-11
2	BiLog Antenna	3142B	9908-1403	EMCO	2013-03-15
3	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2012-12-25
4	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2012-06-30

### **Anechoic chamber**

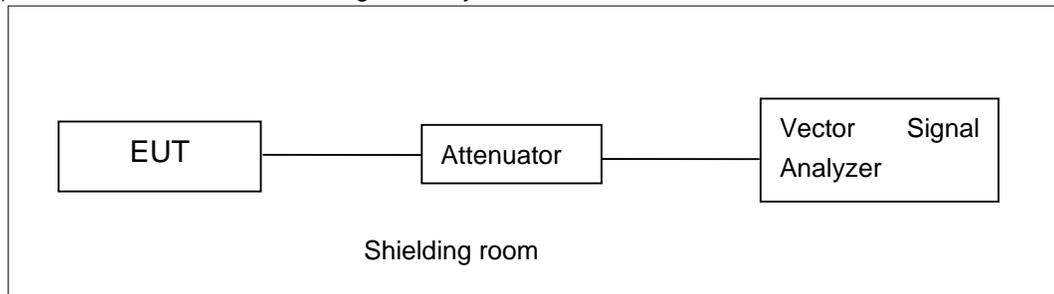
Fully anechoic chamber by Frankonia German.

## ANNEX A: MEASUREMENT RESULTS

### A.1. Measurement Method

#### A.1.1. Conducted Measurements

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values. Vector Signal Analyzer

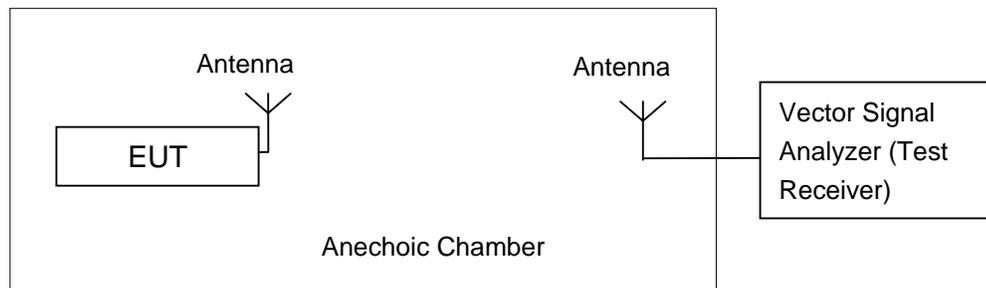


#### A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;



The measurement is made according to ANSI C63.10 and KDB558074

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

## A.2. Maximum Peak Output Power

### Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.247(b)	< 30

The measurement is made according to ANSI C63.10 and KDB558074 D01.

### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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### A.2.1. Antenna Gain

The antenna gain of the complete system is calculated by the difference of radiated peak power and the conducted peak power of the EUT.

Test	Channel		
	1	6	11
Tnom,Vnom			
<b>Conducted Power(dBm)</b>	18.03	17.44	18.19
<b>Radiated Power(dBm)</b>	16.94	13.66	16.93
<b>Gain(dBi)</b>	-1.09	-3.78	-1.26

Antenna Gain = Radiated value (with radiated sample) - Conducted values (with conducted samples)

### A.2.2. Maximum Peak Output Power

#### Measurement Results:

Mode	Test Result (dBm)					
	2412MHz (Ch1)		2437MHz (Ch6)		2462 MHz (Ch11)	
	Conducted	Radiated	Conducted	Radiated	Conducted	Radiated
802.11b	18.03	16.94	17.44	13.66	18.19	16.93
802.11g	19.86	18.77	19.32	15.54	20.06	18.80
802.11n	19.72	18.63	19.22	15.44	19.97	18.71

The data rate 11Mbps (11b mode), 6Mbps (11g mode) and MCS0 (11nmode) are selected as the worst condition; as the maximum power is got with these data rate. The following cases are performed with this condition.

**Conclusion: PASS**

## A.3. Peak Power Spectral Density

### Measurement Limit:

Standard	Limit
FCC CRF Part 15.247(d)	< 8 dBm/3 kHz

The measurement is made according to ANSI C63.10 and KDB558074 D01.

**Measurement Uncertainty:**

Measurement Uncertainty	0.75dB
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**Measurement Results:**

Mode	Channel	Power Spectral Density ( dBm/3 kHz )	Conclusion
802.11b	1	-1.94	P
	6	-1.51	P
	11	-1.21	P
802.11g	1	-16.57	P
	6	-17.36	P
	11	-17.29	P
802.11n	1	-15.77	P
	6	-14.76	P
	11	-15.30	P

**Conclusion: PASS**

**A.4. Occupied 6dB Bandwidth**

**Measurement Limit:**

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

The measurement is made according to ANSI C63.10 and KDB558074 D01.

**Measurement Uncertainty:**

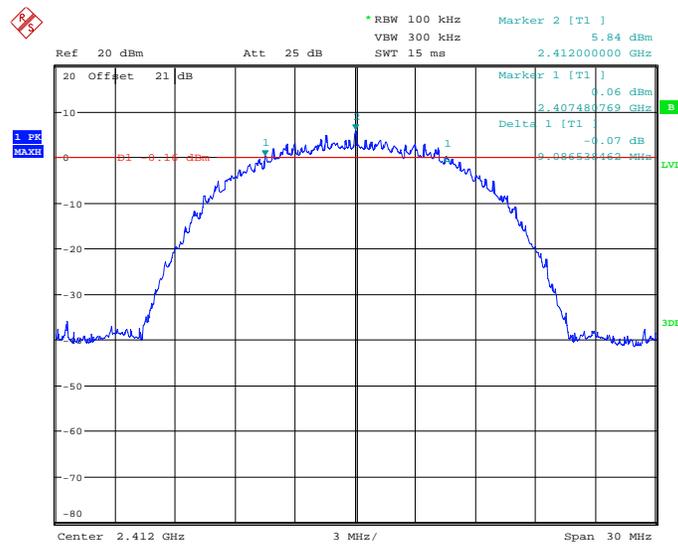
Measurement Uncertainty	60.80Hz
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**Measurement Result:**

Mode	Channel	Occupied 6dB Bandwidth ( kHz)		conclusion
802.11b	1	Fig.1	9086	P
	6	Fig.2	9182	P
	11	Fig.3	9663	P
802.11g	1	Fig.4	16538	P
	6	Fig.5	16442	P
	11	Fig.6	16538	P
802.11n	1	Fig.7	17692	P
	6	Fig.8	17692	P
	11	Fig.9	17692	P

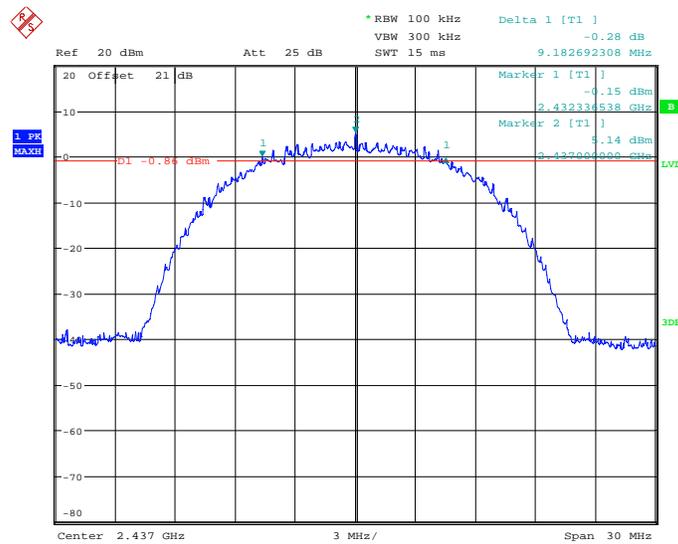
**Conclusion: PASS**

**Test graphs as below:**



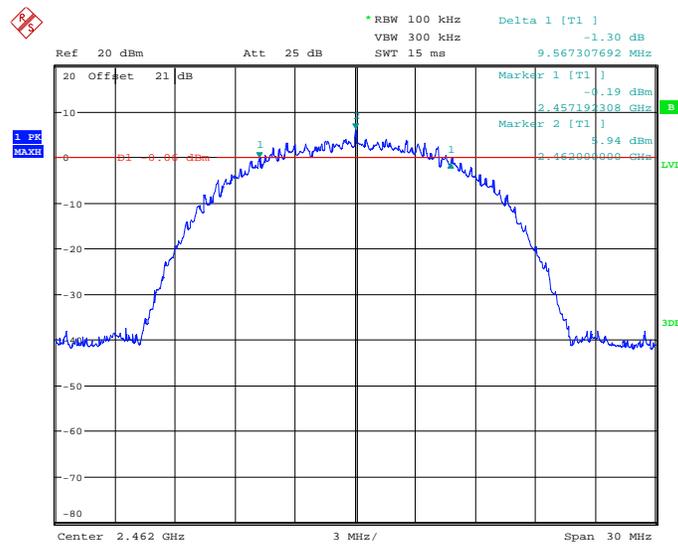
Date: 2.MAY.2012 21:14:37

**Fig. 1 Occupied 6dB Bandwidth (802.11b, Ch 1)**



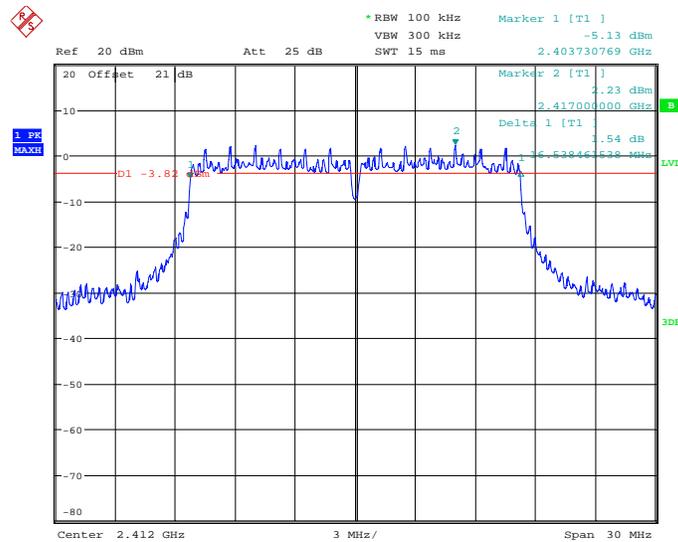
Date: 2.MAY.2012 21:49:14

**Fig. 2 Occupied 6dB Bandwidth (802.11b, Ch 6)**



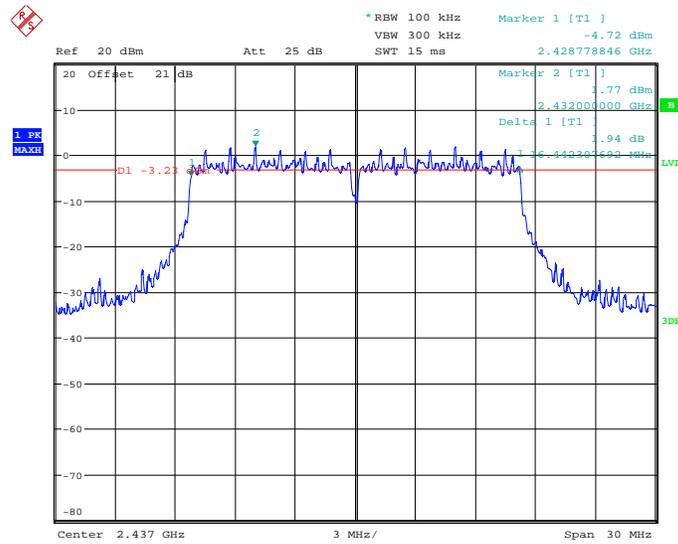
Date: 2.MAY.2012 21:57:25

**Fig. 3 Occupied 6dB Bandwidth (802.11b, Ch 11)**



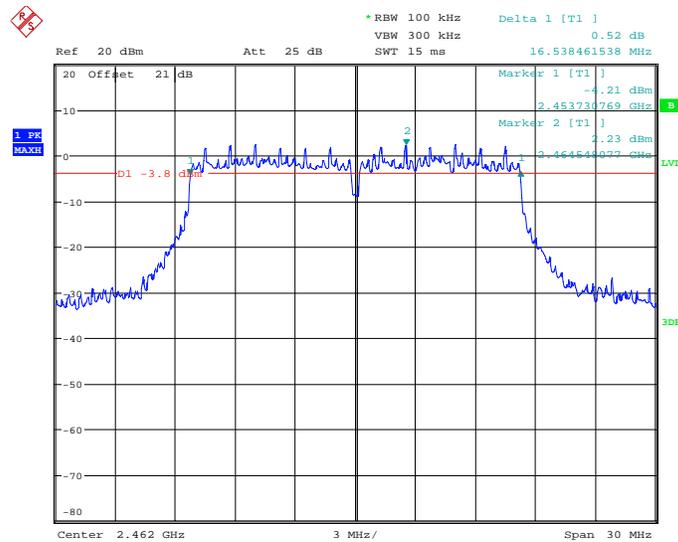
Date: 2.MAY.2012 21:30:01

**Fig. 4 Occupied 6dB Bandwidth (802.11g, Ch 1)**



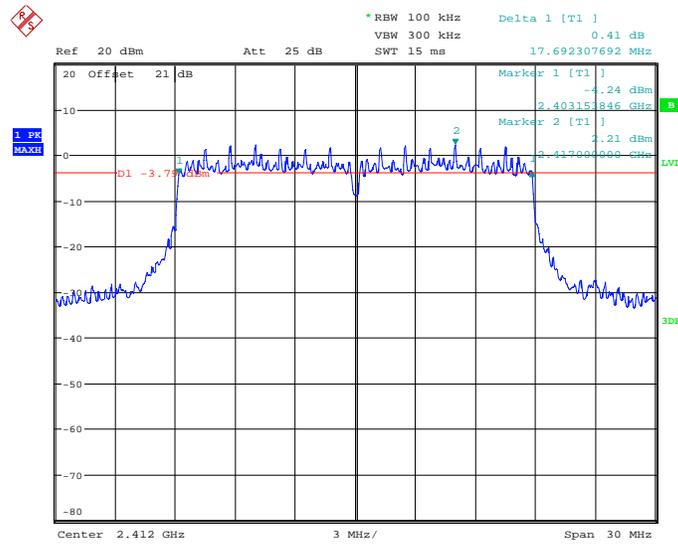
Date: 2.MAY.2012 21:47:01

Fig. 5 Occupied 6dB Bandwidth (802.11g, Ch 6)



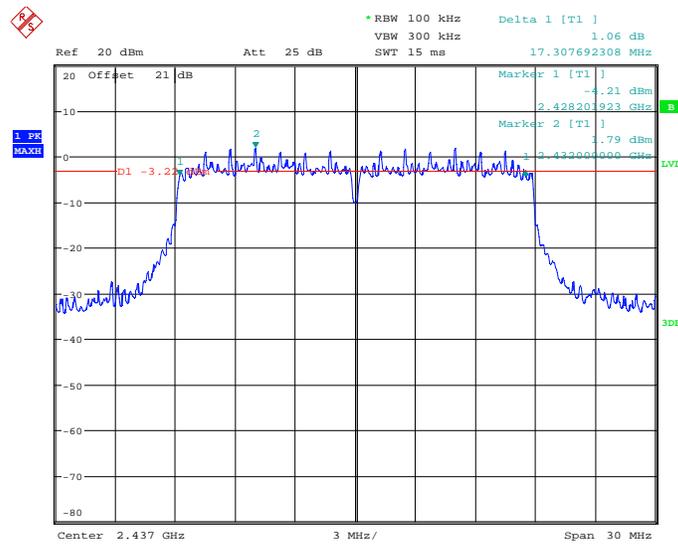
Date: 2.MAY.2012 22:11:00

Fig. 6 Occupied 6dB Bandwidth (802.11g, Ch 11)



Date: 2.MAY.2012 21:42:51

**Fig. 7 Occupied 6dB Bandwidth (802.11n-HT20, Ch 1)**



Date: 2.MAY.2012 21:45:16

**Fig. 8 Occupied 6dB Bandwidth (802.11n-HT20, Ch 6)**



### A.5. Band Edges Compliance

**Measurement Limit:**

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d)	> 20

The measurement is made according to ANSI C63.10 and KDB558074 D01.

**Measurement Uncertainty:**

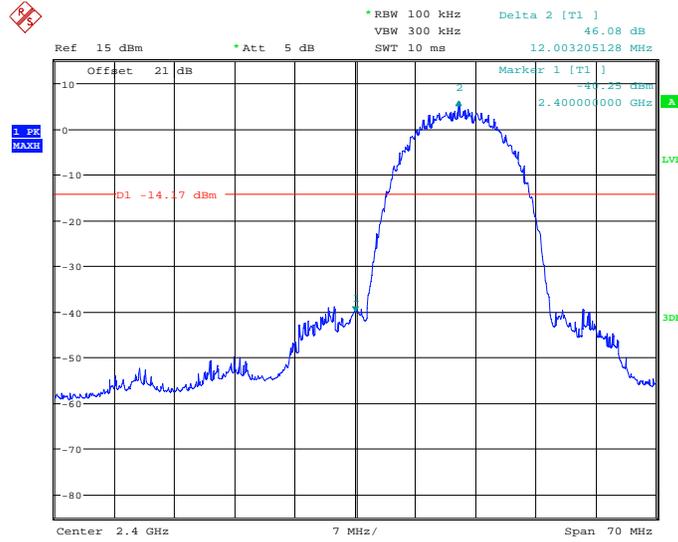
Measurement Uncertainty	0.75dB
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**Measurement Result:**

Mode	Channel	Test Results	Conclusion
802.11b	1	Fig.10	P
	11	Fig.11	P
802.11g	1	Fig.12	P
	11	Fig.13	P
802.11n	1	Fig.14	P
	11	Fig.15	P

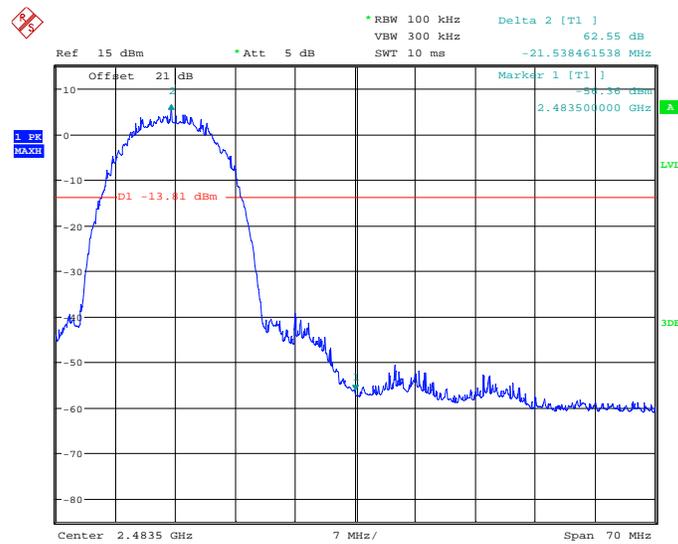
**Conclusion: PASS**

**Test graphs as below:**



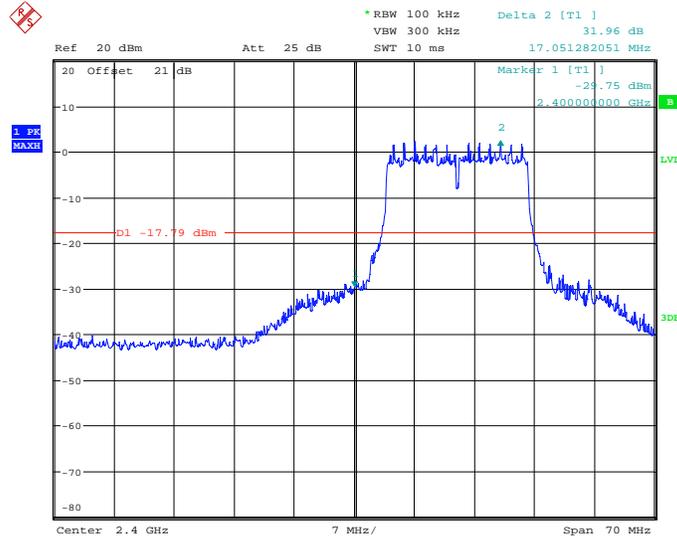
Date: 3.MAY.2012 18:14:00

**Fig. 10 Band Edges (802.11b, Ch 1)**



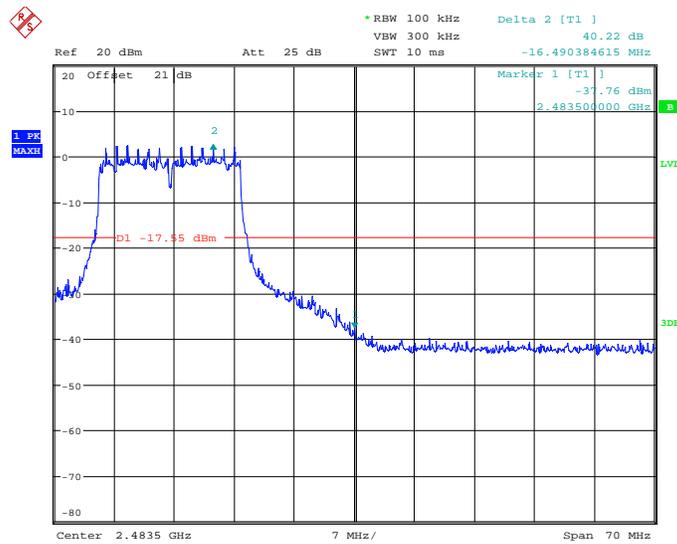
Date: 3.MAY.2012 18:20:34

**Fig. 11 Band Edges (802.11b, Ch 11)**



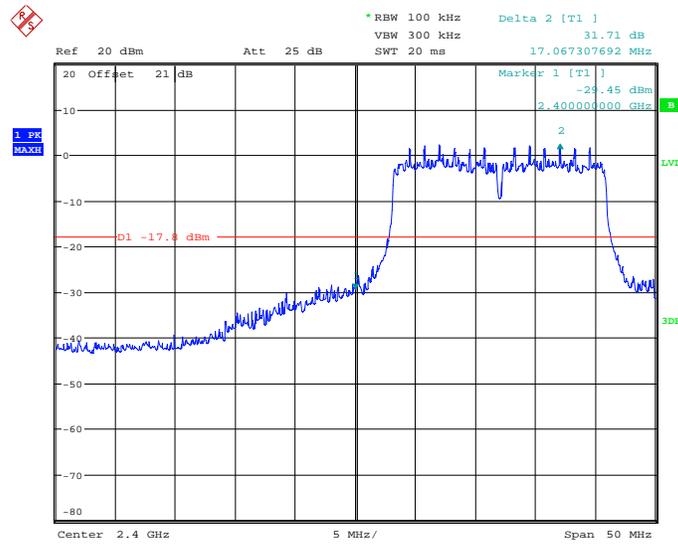
Date: 2.MAY.2012 22:50:19

Fig. 12 Band Edges (802.11g, Ch 1)



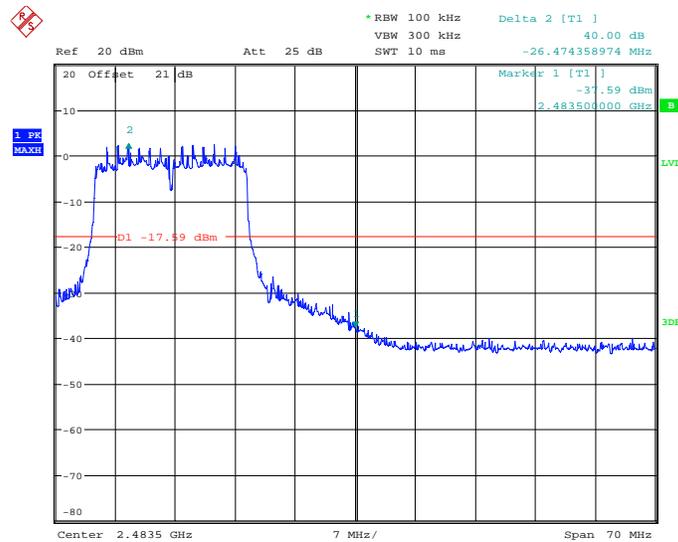
Date: 2.MAY.2012 22:47:51

Fig. 13 Band Edges (802.11g, Ch 11)



Date: 2.MAY.2012 22:37:55

**Fig. 14 Band Edges (802.11n-HT20, Ch 1)**



Date: 2.MAY.2012 22:41:59

**Fig. 15 Band Edges (802.11n-HT20, Ch 11)**

## A.6. Transmitter Spurious Emission

### Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

The measurement is made according to ANSI C63.10 and KDB558074 D01.

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)).

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

### Measurement Uncertainty:

Frequency Range	Uncertainty
30MHz ≤ f ≤ 2GHz	0.63
2GHz ≤ f ≤ 3.6GHz	0.82
3.6GHz ≤ f ≤ 8GHz	1.55
8GHz ≤ f ≤ 20GHz	1.86
20GHz ≤ f ≤ 22GHz	1.90
22GHz ≤ f ≤ 26GHz	2.20

### A.6.1 Transmitter Spurious Emission - Conducted

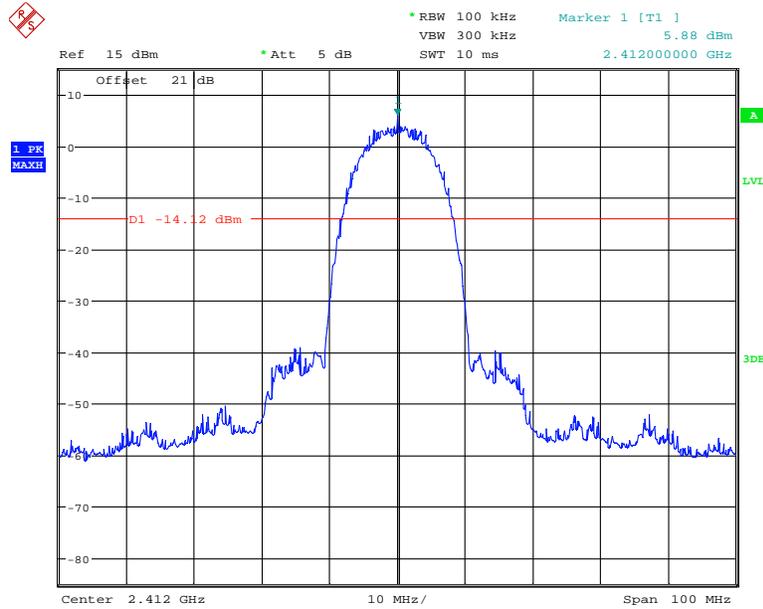
#### Measurement Results:

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.412 GHz	Fig.16	P
		30 MHz ~ 1 GHz	Fig.17	P
		1 GHz ~ 26 GHz	Fig.18	P
	6	2.437 GHz	Fig.19	P
		30 MHz ~ 1 GHz	Fig.20	P
		1 GHz ~ 26 GHz	Fig.21	P
	11	2.462 GHz	Fig.22	P
		30 MHz ~ 1 GHz	Fig.23	P
		1 GHz ~ 26 GHz	Fig.24	P
802.11g	1	2.412 GHz	Fig.25	P
		30 MHz ~ 1 GHz	Fig.26	P

	6	1 GHz ~ 26 GHz	Fig.27	P
		2.437 GHz	Fig.28	P
		30 MHz ~ 1 GHz	Fig.29	P
	11	1 GHz ~ 26 GHz	Fig.30	P
		2.462 GHz	Fig.31	P
		30 MHz ~ 1 GHz	Fig.32	P
802.11n (20MHz)	1	1 GHz ~ 26 GHz	Fig.33	P
		2.412 GHz	Fig.34	P
		30 MHz ~ 1 GHz	Fig.35	P
	6	1 GHz ~ 26 GHz	Fig.36	P
		2.437 GHz	Fig.37	P
		30 MHz ~ 1 GHz	Fig.38	P
	11	1 GHz ~ 26 GHz	Fig.39	P
		2.462 GHz	Fig.40	P
		30 MHz ~ 1 GHz	Fig.41	P
		1 GHz ~ 26 GHz	Fig.42	P

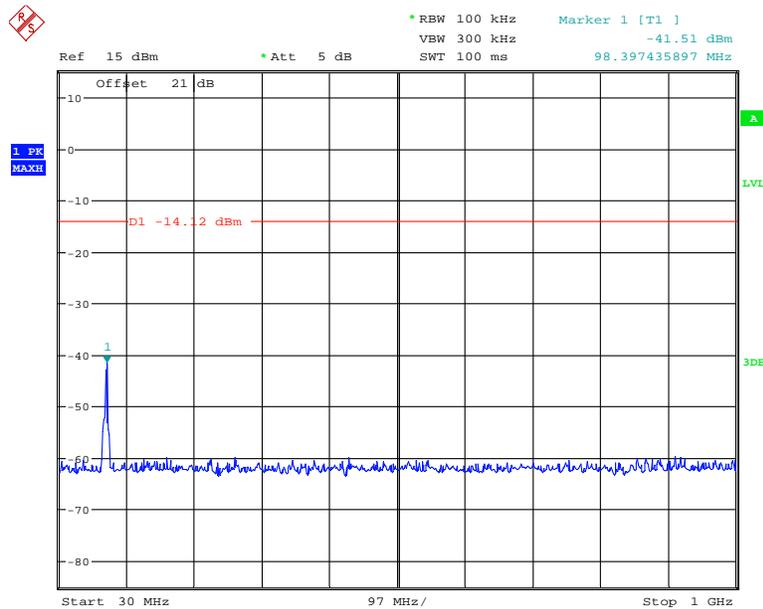
**Conclusion: PASS**

Test graphs as below:



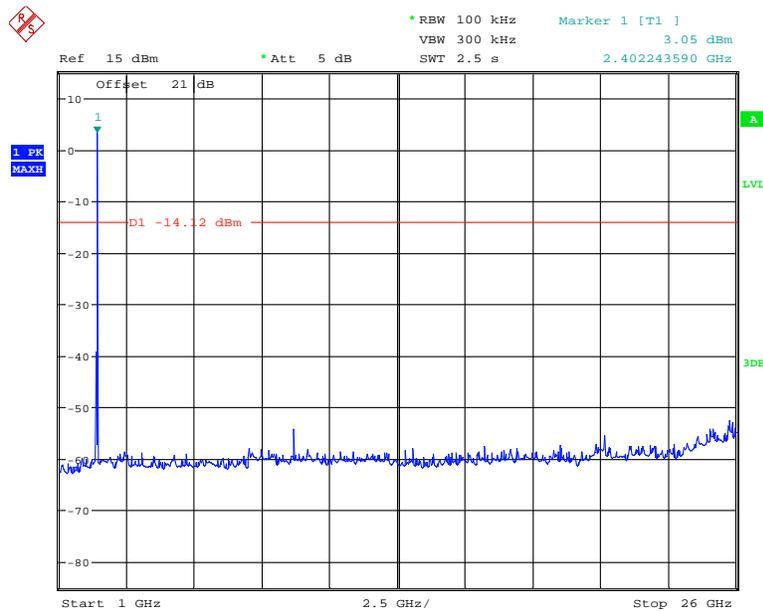
Date: 3.MAY.2012 18:14:56

Fig. 16 Conducted Spurious Emission (802.11b, Ch1, Center Frequency)



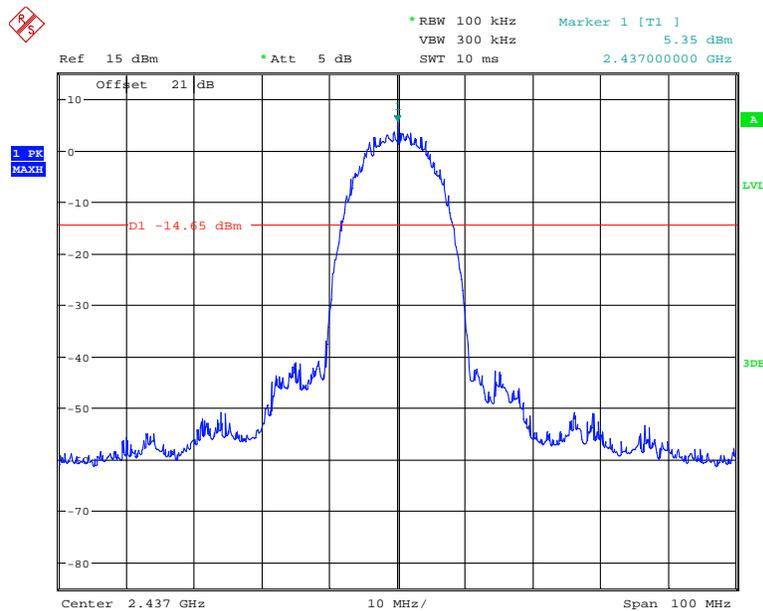
Date: 3.MAY.2012 18:15:21

Fig. 17 Conducted Spurious Emission (802.11b, Ch1, 30 MHz-1 GHz)



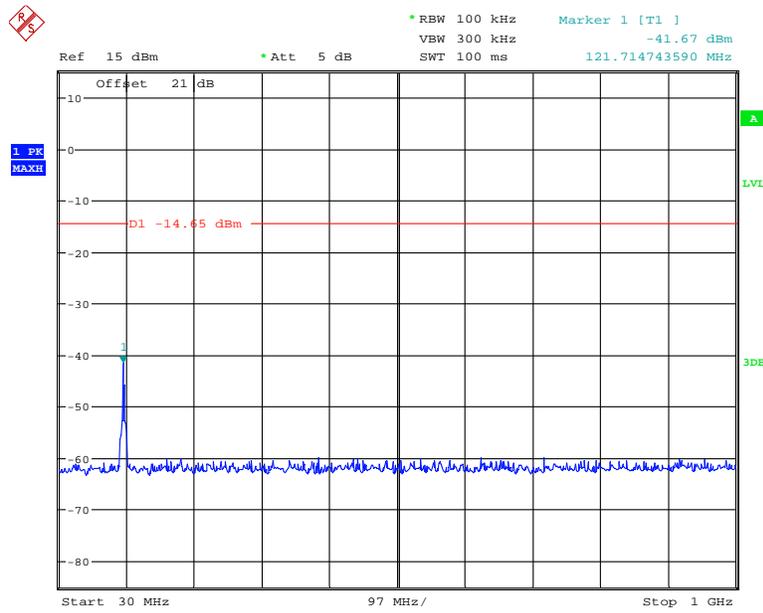
Date: 3.MAY.2012 18:15:36

**Fig. 18 Conducted Spurious Emission (802.11b, Ch1, 1 GHz-26 GHz)**



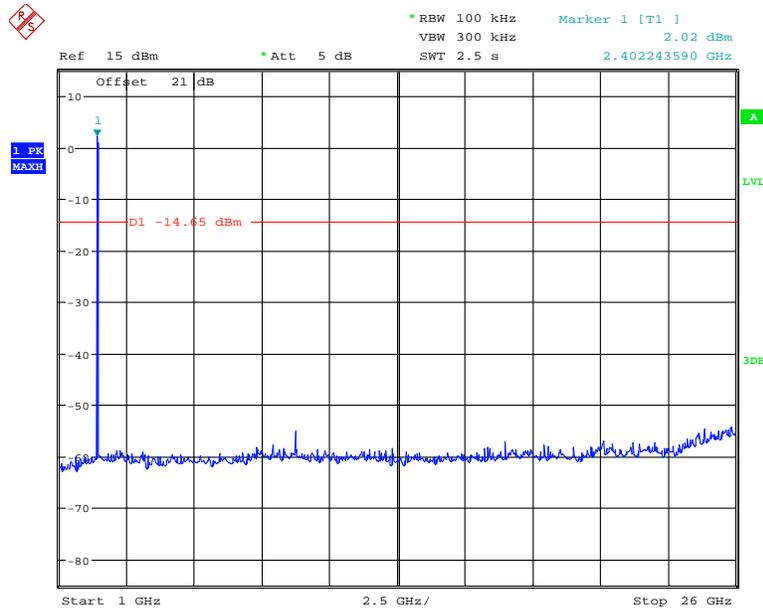
Date: 3.MAY.2012 18:16:46

**Fig. 19 Conducted Spurious Emission (802.11b, Ch6, Center Frequency)**



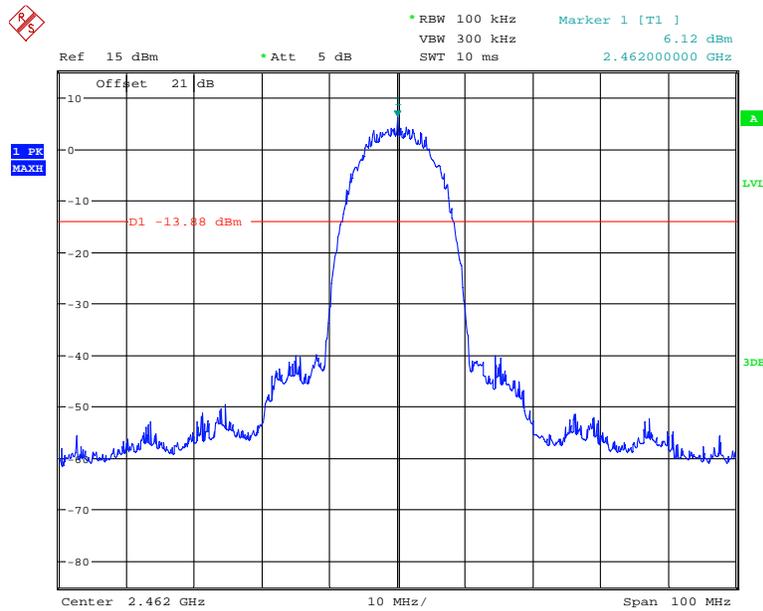
Date: 3.MAY.2012 18:17:04

Fig. 20 Conducted Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)



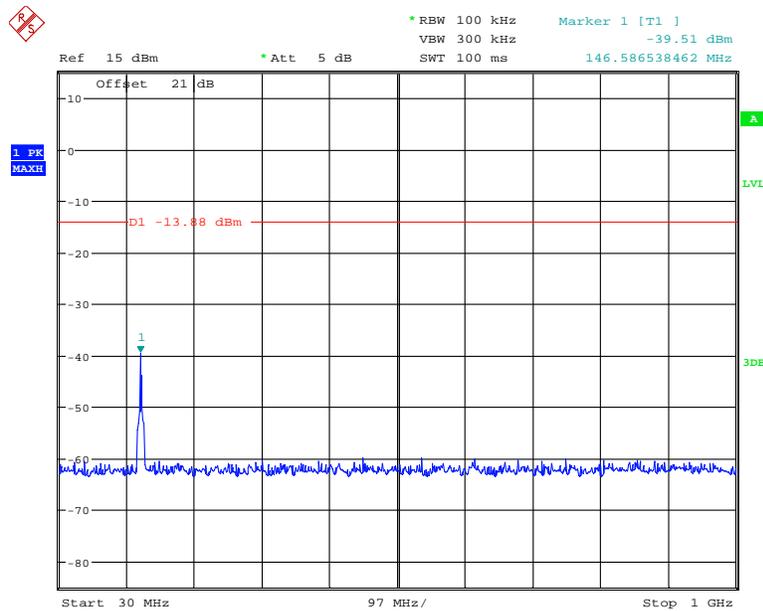
Date: 3.MAY.2012 18:17:24

Fig. 21 Conducted Spurious Emission (802.11b, Ch6, 1 GHz-26 GHz)



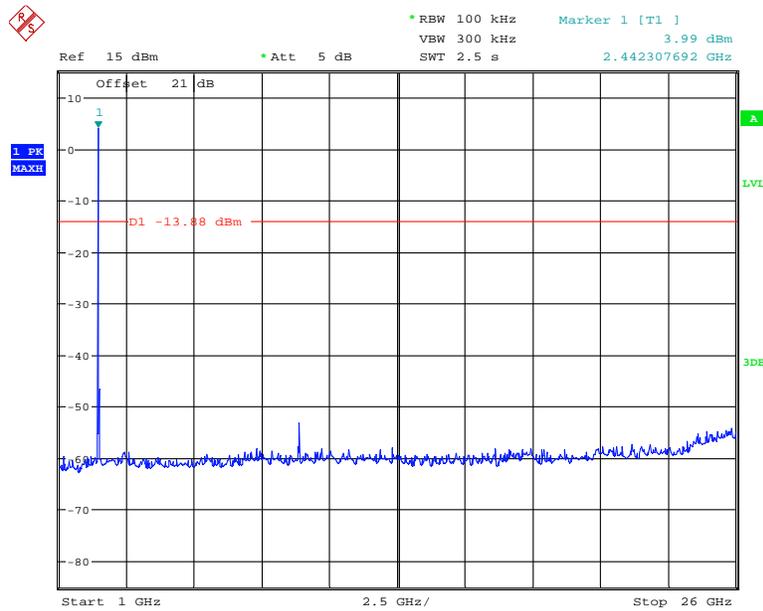
Date: 3.MAY.2012 18:18:13

Fig. 22 Conducted Spurious Emission (802.11b, Ch11, Center Frequency)



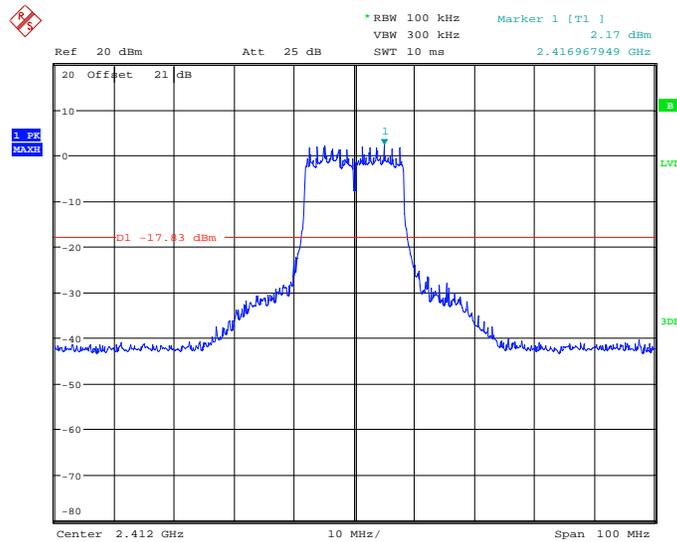
Date: 3.MAY.2012 18:18:26

Fig. 23 Conducted Spurious Emission (802.11b, Ch11, 30 MHz-1 GHz)



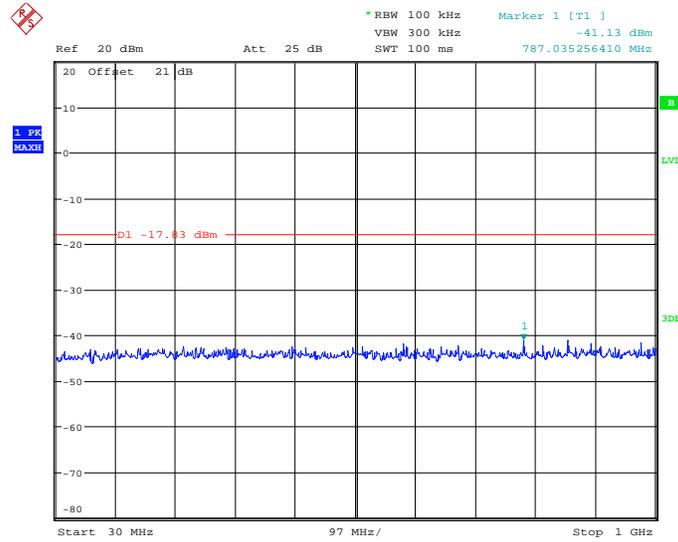
Date: 3.MAY.2012 18:18:41

Fig. 24 Conducted Spurious Emission (802.11b, Ch11, 1 GHz-26 GHz)



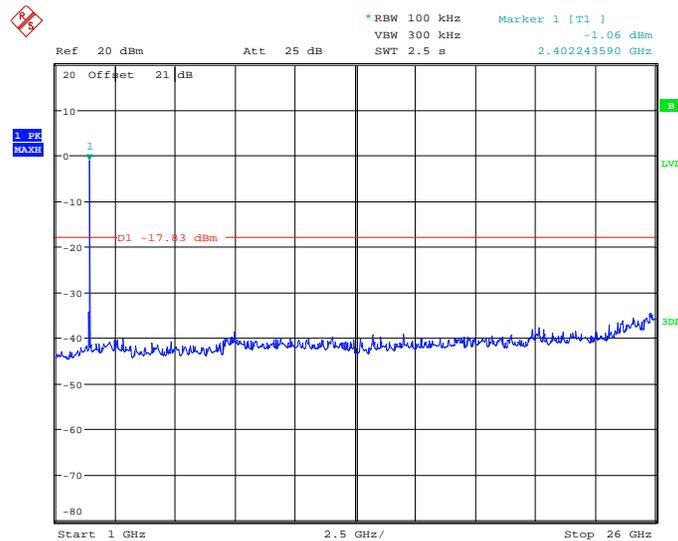
Date: 2.MAY.2012 22:49:02

Fig. 25 Conducted Spurious Emission (802.11g, Ch1, Center Frequency)



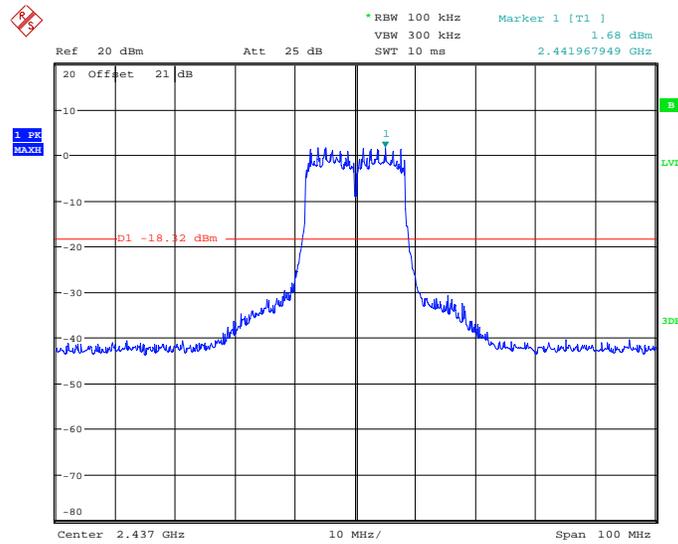
Date: 2.MAY.2012 22:49:14

**Fig. 26 Conducted Spurious Emission (802.11g, Ch1, 30 MHz-1 GHz)**



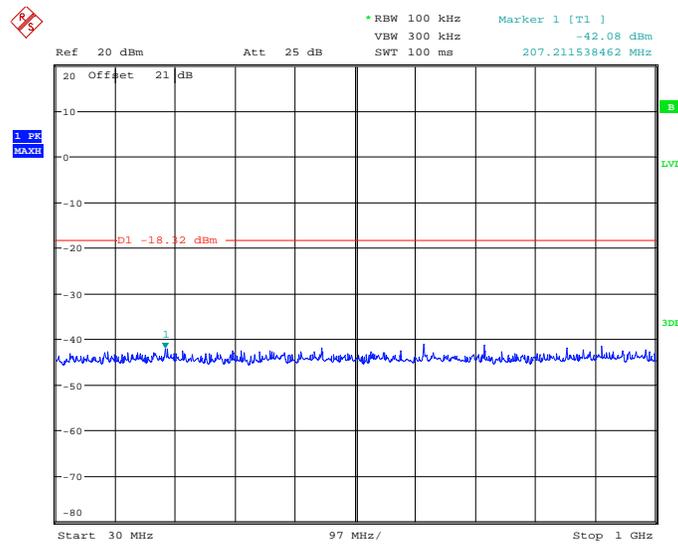
Date: 2.MAY.2012 22:49:24

**Fig. 27 Conducted Spurious Emission (802.11g, Ch1, 1 GHz-26 GHz)**



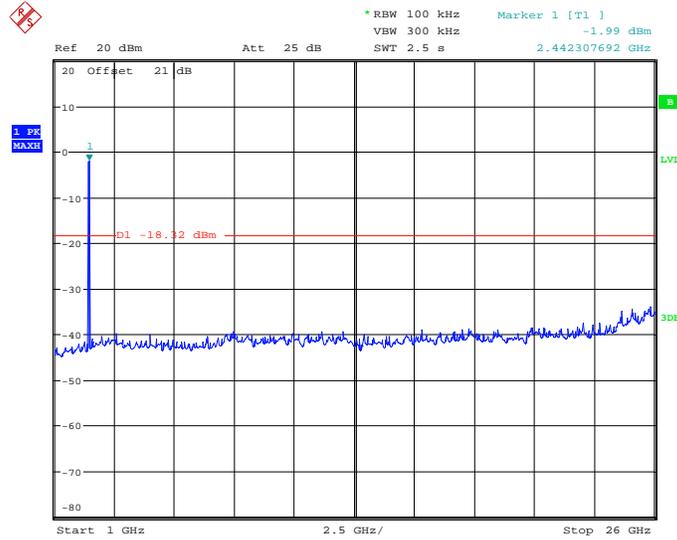
Date: 2.MAY.2012 22:45:22

Fig. 28 Conducted Spurious Emission (802.11g, Ch6, Center Frequency)



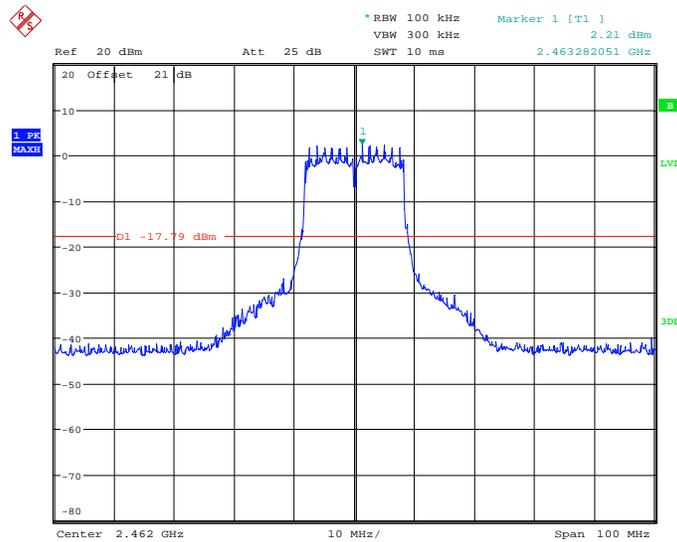
Date: 2.MAY.2012 22:45:35

Fig. 29 Conducted Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)



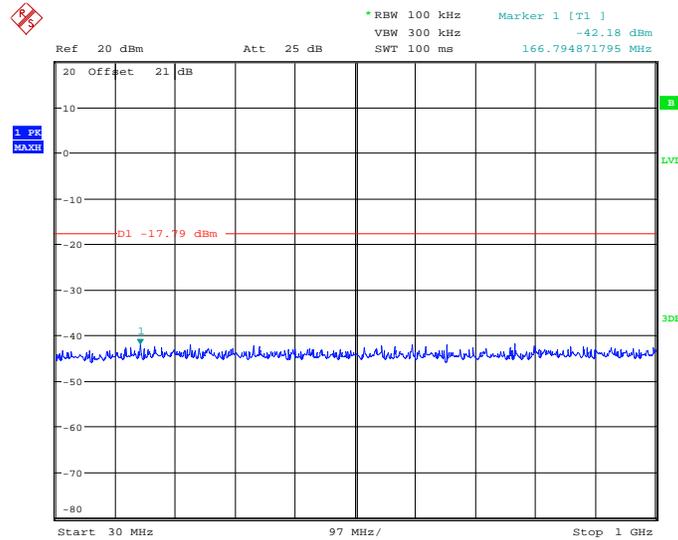
Date: 2.MAY.2012 22:45:50

**Fig. 30 Conducted Spurious Emission (802.11g, Ch6, 1 GHz-26 GHz)**



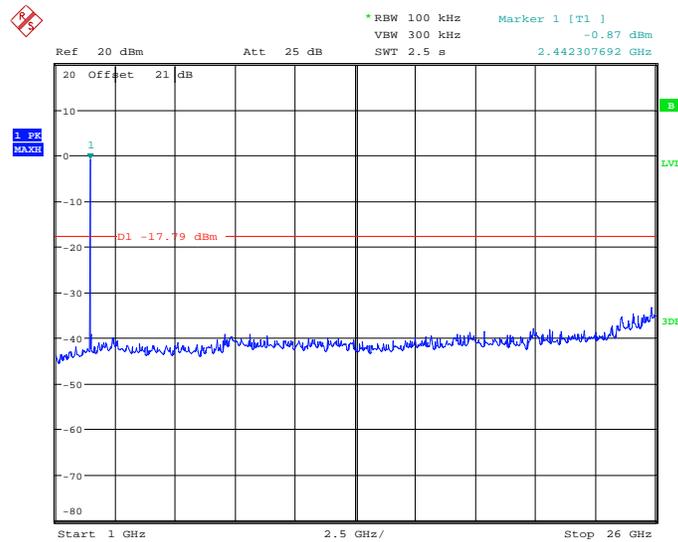
Date: 2.MAY.2012 22:46:28

**Fig. 31 Conducted Spurious Emission (802.11g, Ch11, Center Frequency)**



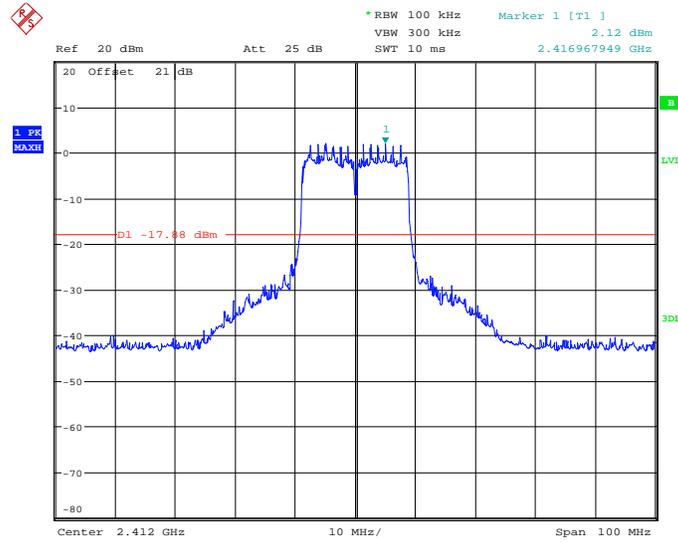
Date: 2.MAY.2012 22:46:41

Fig. 32 Conducted Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)



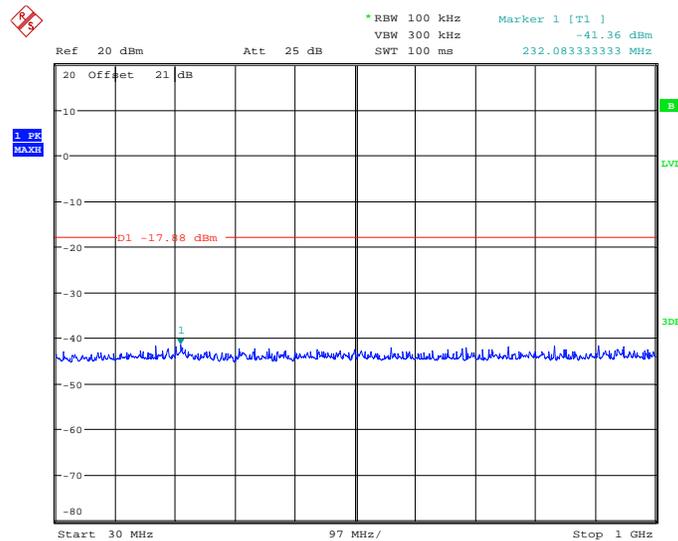
Date: 2.MAY.2012 22:46:53

Fig. 33 Conducted Spurious Emission (802.11g, Ch11, 1 GHz-26 GHz)



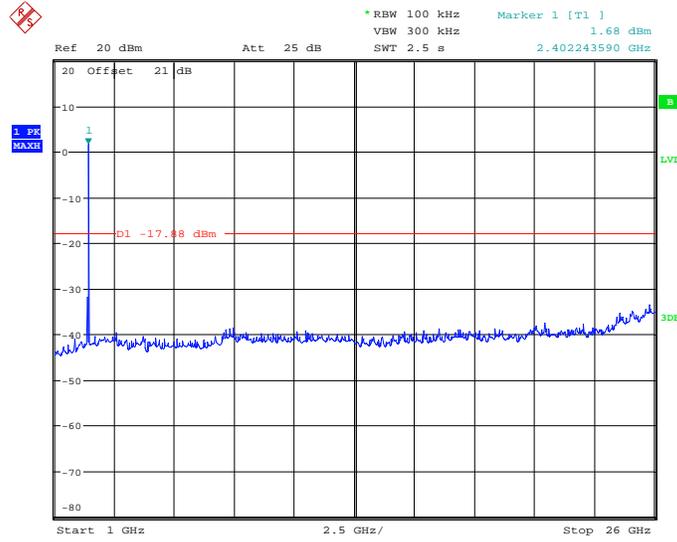
Date: 2.MAY.2012 22:35:58

**Fig. 34 Conducted Spurious Emission (802.11n-HT20, Ch1, Center Frequency)**



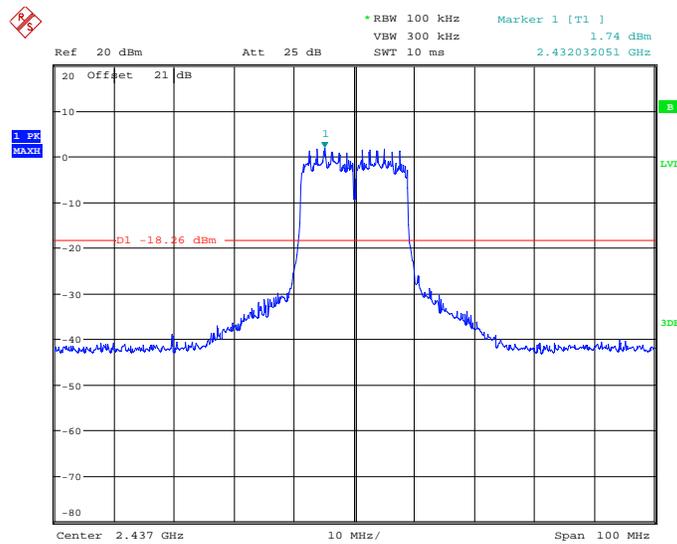
Date: 2.MAY.2012 22:36:18

**Fig. 35 Conducted Spurious Emission (802.11n-HT20, Ch1, 30 MHz-1 GHz)**



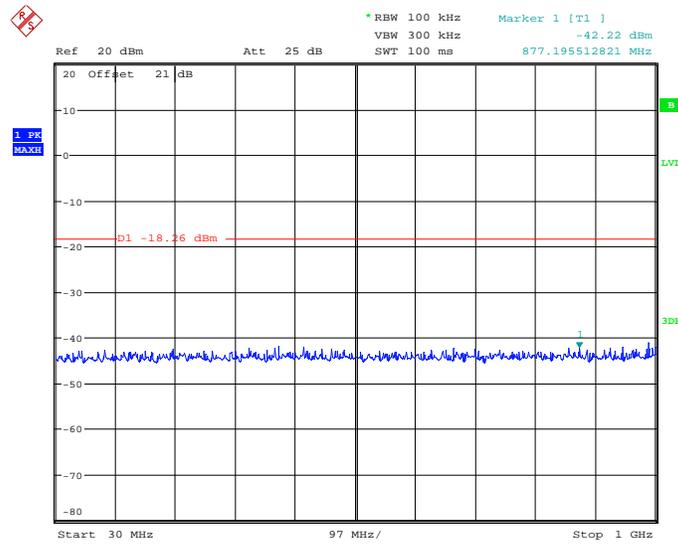
Date: 2.MAY.2012 22:36:39

Fig. 36 Conducted Spurious Emission (802.11n-HT20, Ch1, 1 GHz-26 GHz)



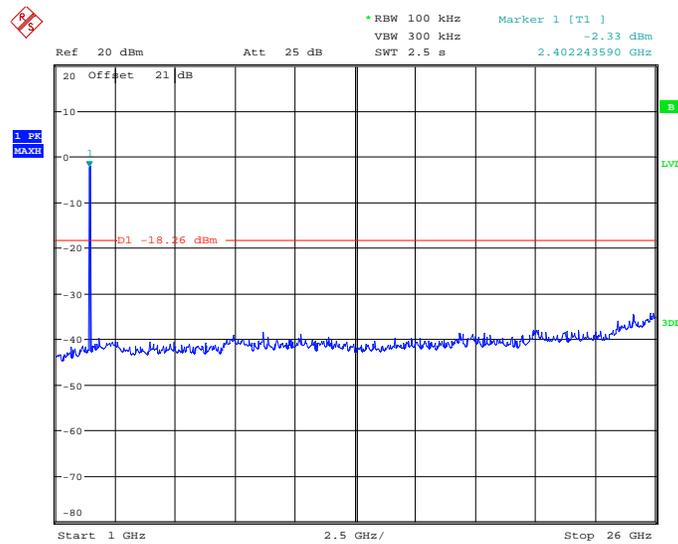
Date: 2.MAY.2012 22:43:34

Fig. 37 Conducted Spurious Emission (802.11n-HT20, Ch6, Center Frequency)



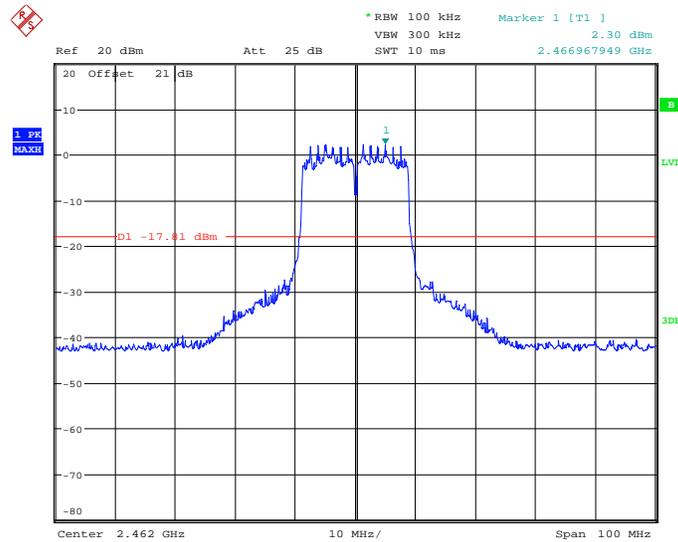
Date: 2.MAY.2012 22:43:50

**Fig. 38 Conducted Spurious Emission (802.11n-HT20, Ch6, 30 MHz-1 GHz)**



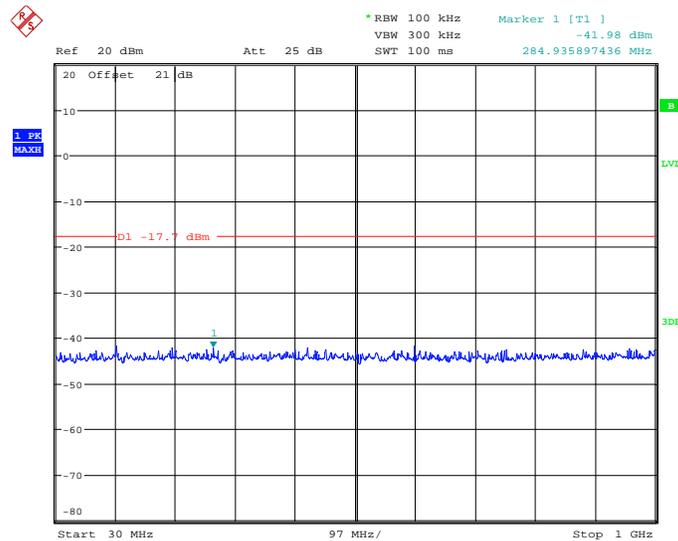
Date: 2.MAY.2012 22:44:07

**Fig. 39 Conducted Spurious Emission (802.11n-HT20, Ch6, 1 GHz-26 GHz)**



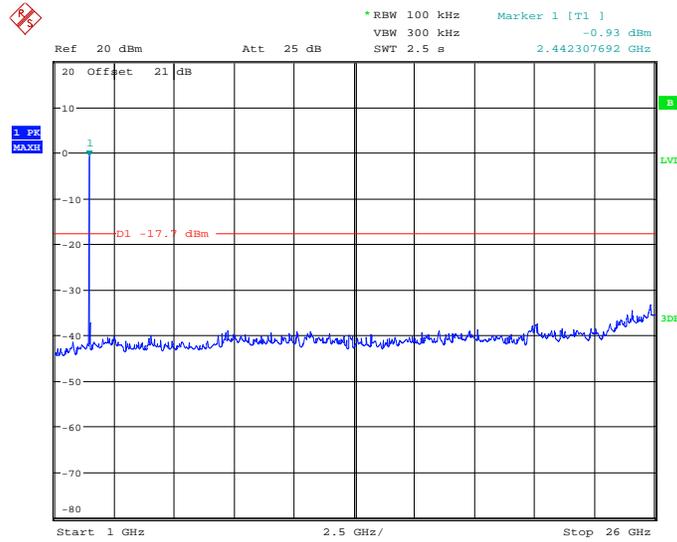
Date: 2.MAY.2012 22:39:43

**Fig. 40 Conducted Spurious Emission (802.11n-HT20, Ch11, Center Frequency)**



Date: 2.MAY.2012 22:40:12

**Fig. 41 Conducted Spurious Emission (802.11n-HT20, Ch11, 30 MHz-1 GHz)**



Date: 2.MAY.2012 22:40:29

**Fig. 42 Conducted Spurious Emission (802.11n-HT20, Ch11, 1 GHz-26 GHz)**

### A.6.2 Transmitter Spurious Emission - Radiated

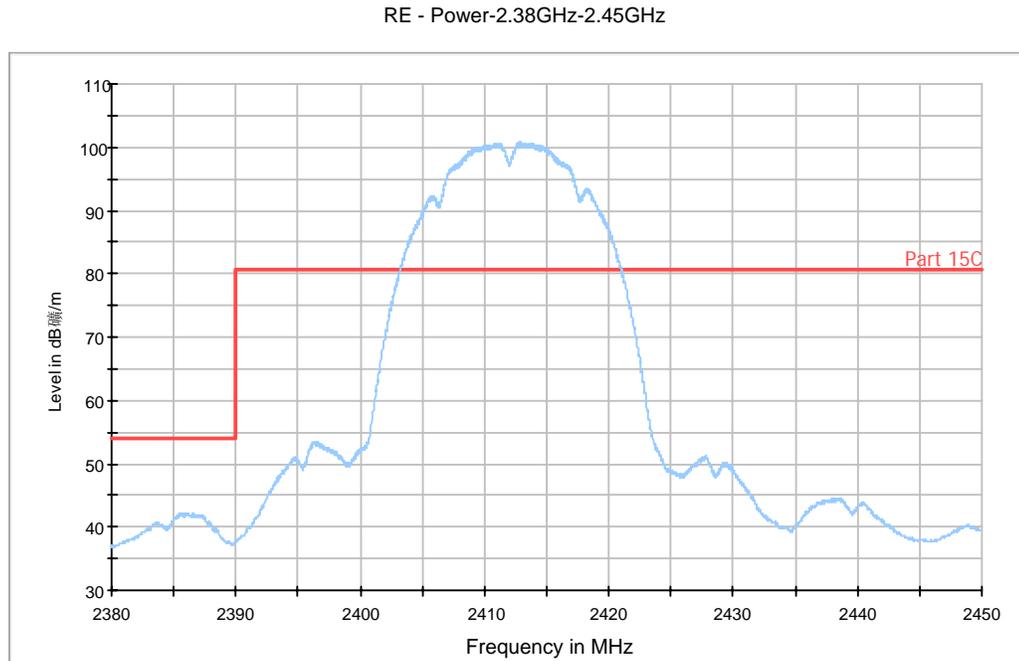
Limit in restricted band:

#### Measurement Results:

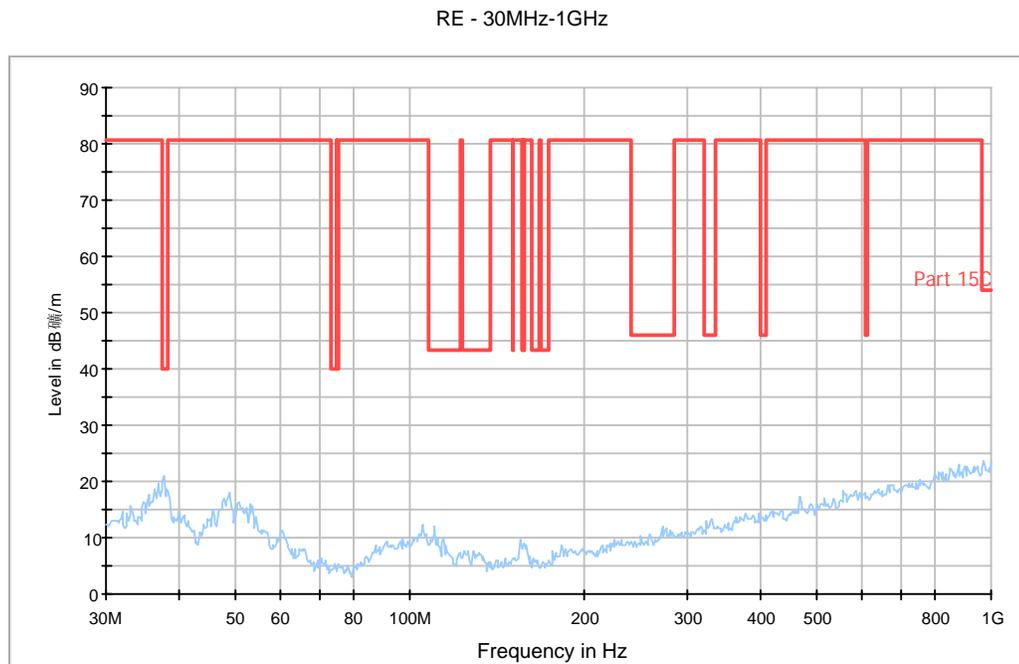
Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	Power	2.38GHz ~2.45GHz	Fig.43	P
	1	30 MHz ~1 GHz	Fig.44	P
		1 GHz ~ 4 GHz	Fig.45	P
		4 GHz ~ 18 GHz	Fig.46	P
	6	30 MHz ~1 GHz	Fig.47	P
		1 GHz ~ 4 GHz	Fig.48	P
		4 GHz ~ 18 GHz	Fig.49	P
	Power	2.45GHz ~2.5GHz	Fig.50	P
	11	30 MHz ~1 GHz	Fig.51	P
		1 GHz ~ 4 GHz	Fig.52	P
		4 GHz ~ 18 GHz	Fig.53	P
	802.11g	Power	2.38GHz ~2.45GHz	Fig.54
1		30 MHz ~1 GHz	Fig.55	P
		1 GHz ~ 4 GHz	Fig.56	P
		4 GHz ~ 18 GHz	Fig.57	P
6		30 MHz ~1 GHz	Fig.58	P
		1 GHz ~ 4 GHz	Fig.59	P
		4 GHz ~ 18 GHz	Fig.60	P
Power		2.45GHz~2.5GHz	Fig.61	P
11		30 MHz ~1 GHz	Fig.62	P
		1 GHz ~ 4 GHz	Fig.63	P
		4 GHz ~ 18 GHz	Fig.64	P
/		All channels	18 GHz~ 26 GHz	Fig.65
802.11n	Power	2.38GHz ~2.45GHz	Fig.66	P
	1	30 MHz ~1 GHz	Fig.67	P
		1 GHz ~ 4 GHz	Fig.68	P
		4 GHz ~ 18 GHz	Fig.69	P
	6	30 MHz ~1 GHz	Fig.70	P
		1 GHz ~ 4 GHz	Fig.71	P
		4 GHz ~ 18 GHz	Fig.72	P
	Power	2.45GHz~2.5GHz	Fig.73	P
	11	30 MHz ~1 GHz	Fig.74	P
		1 GHz ~ 4 GHz	Fig.75	P
		4 GHz ~ 18 GHz	Fig.76	P
	/	All channels	18 GHz~ 26 GHz	Fig.77

**Conclusion: PASS**

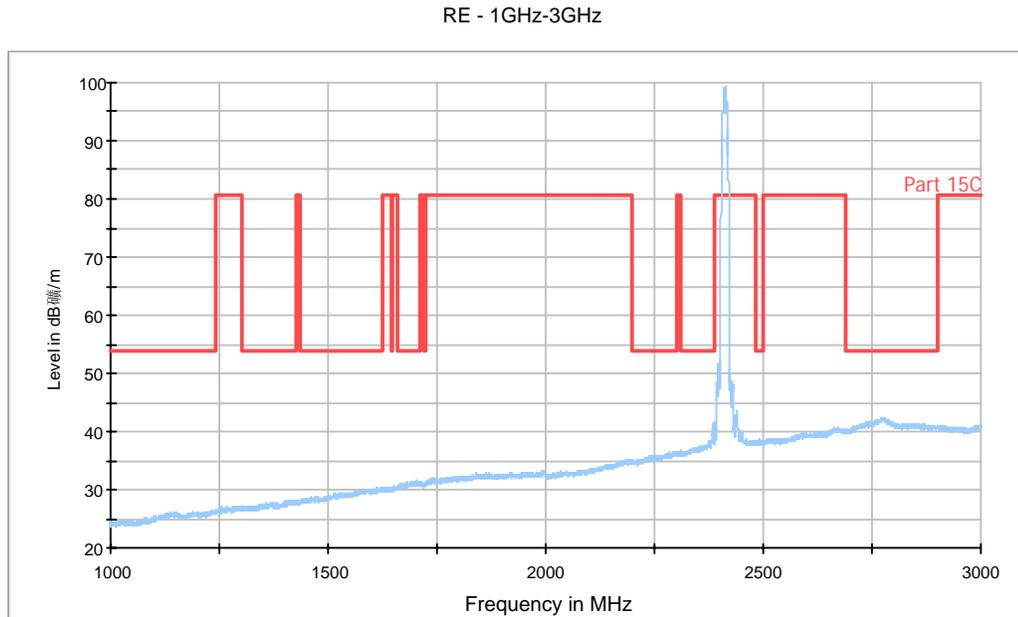
Test graphs as below:



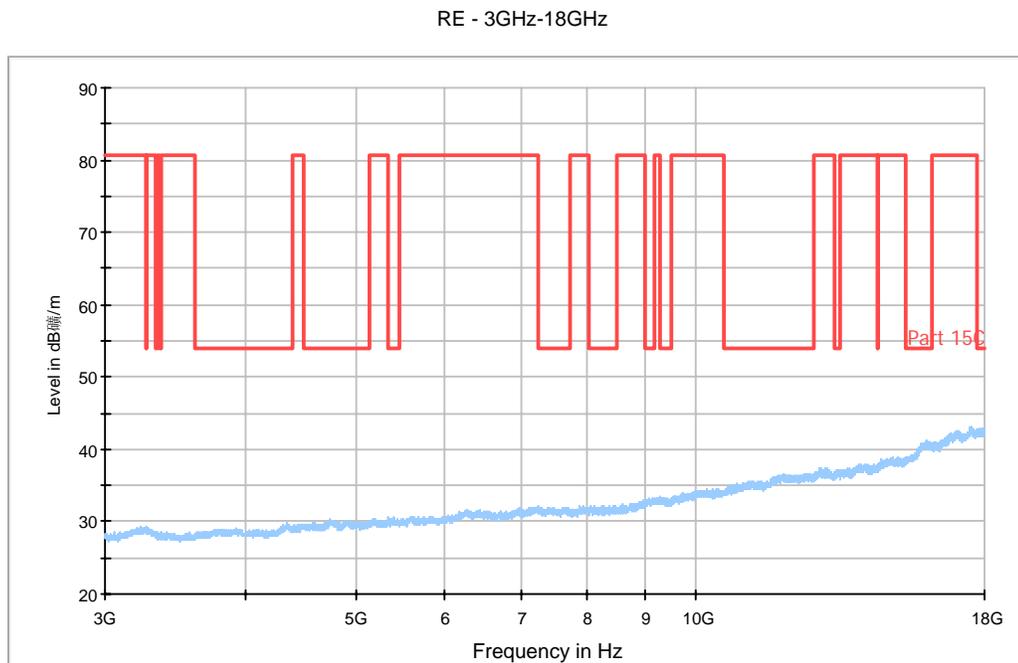
**Fig. 43 Radiated Spurious Emission (Power): 802.11b, ch1, 2.38 GHz - 2.45GHz**



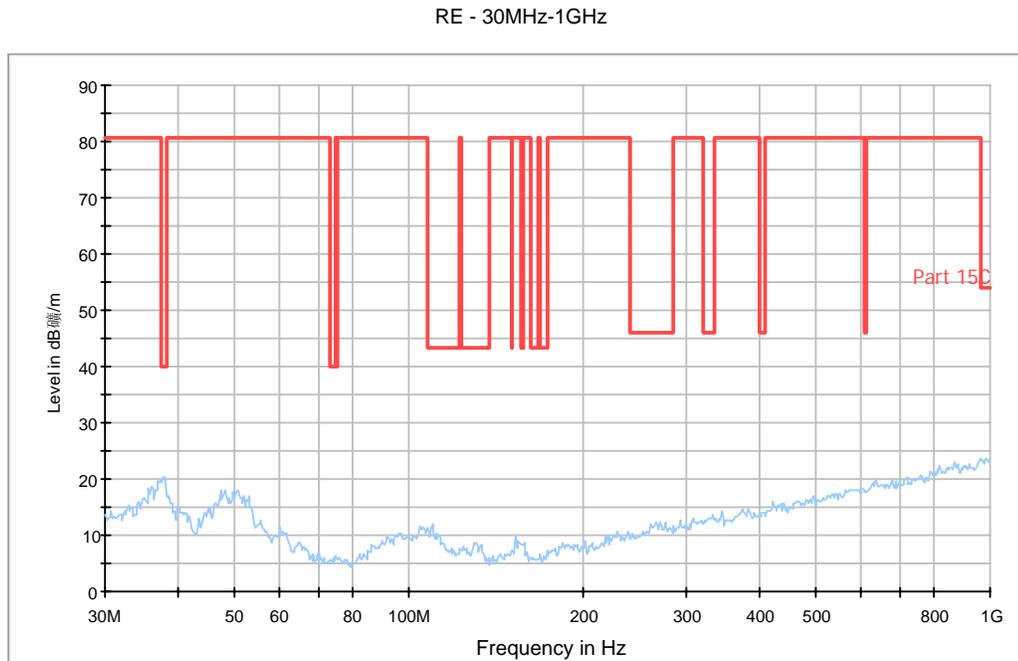
**Fig. 44 Radiated Spurious Emission (802.11b, Ch1, 30 MHz-1 GHz)**



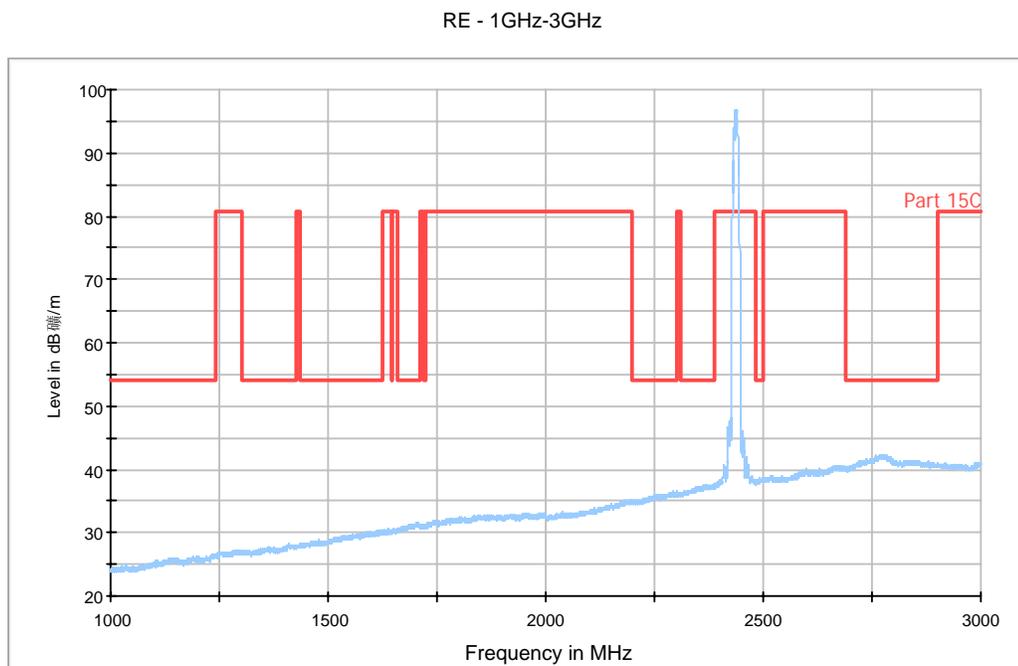
**Fig. 45 Radiated Spurious Emission (802.11b, Ch1, 1 GHz-3 GHz)**



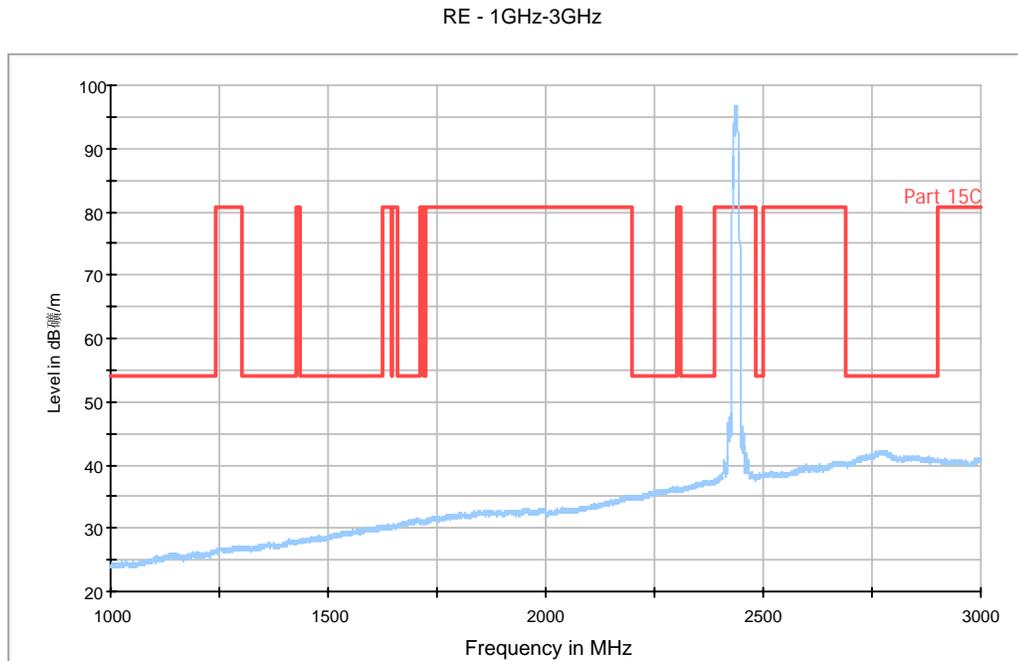
**Fig. 46 Radiated Spurious Emission (802.11b, Ch1, 3 GHz-18 GHz)**



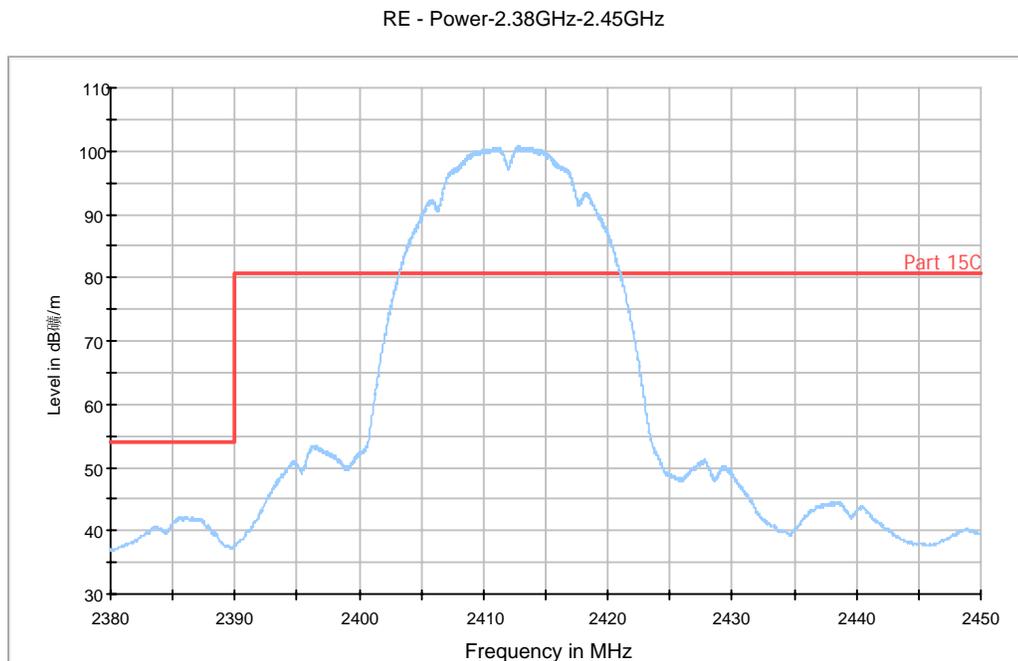
**Fig. 47 Radiated Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)**



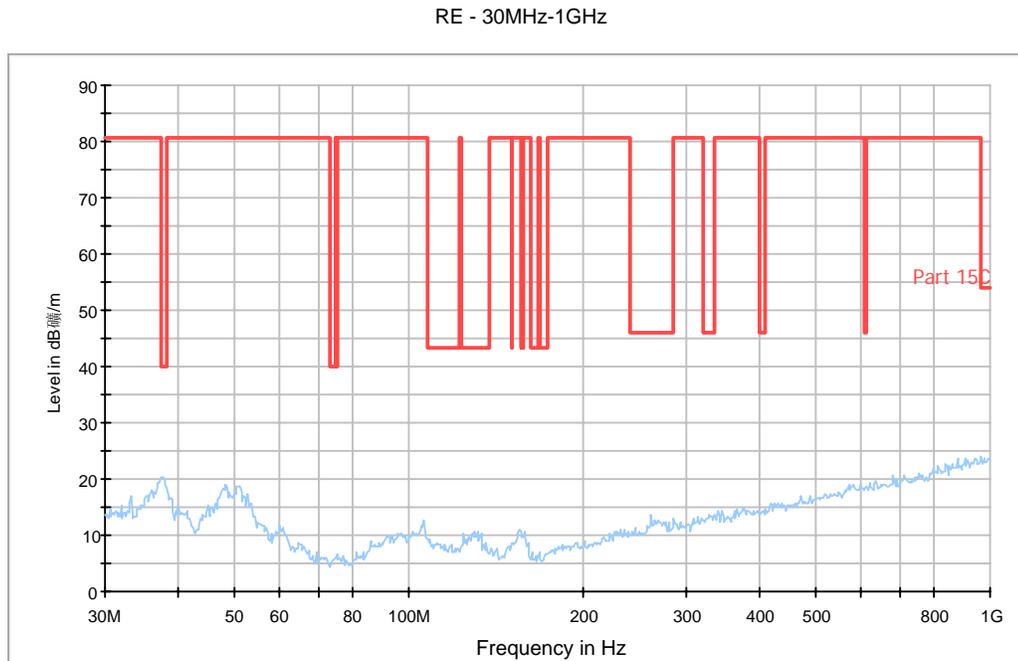
**Fig. 48 Radiated Spurious Emission (802.11b, Ch6, 1 GHz-3 GHz)**



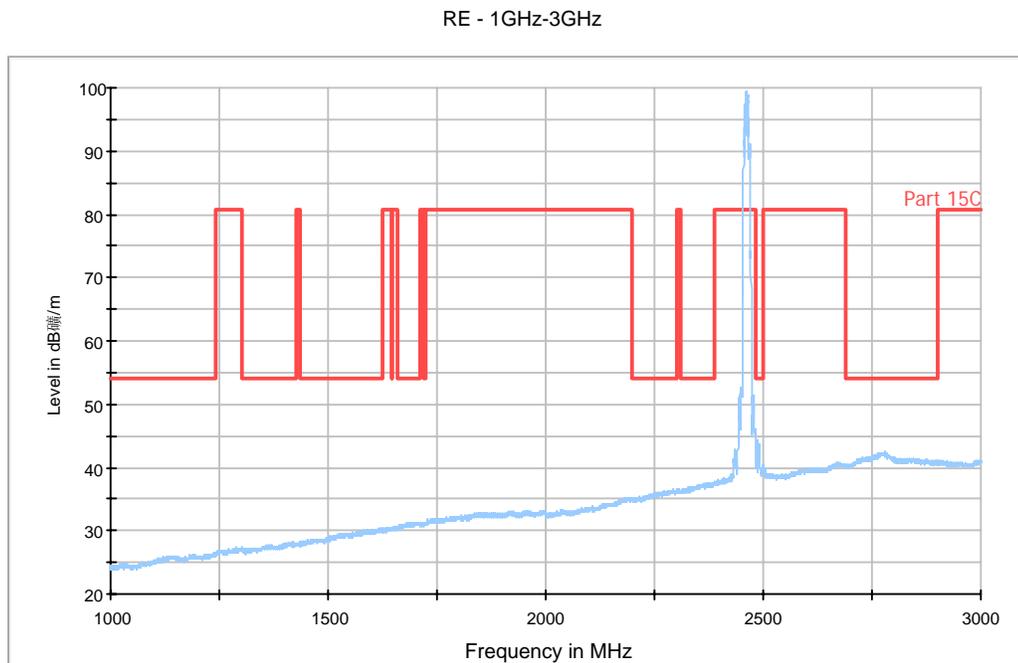
**Fig. 49 Radiated Spurious Emission (802.11b, Ch6, 3 GHz-18 GHz)**



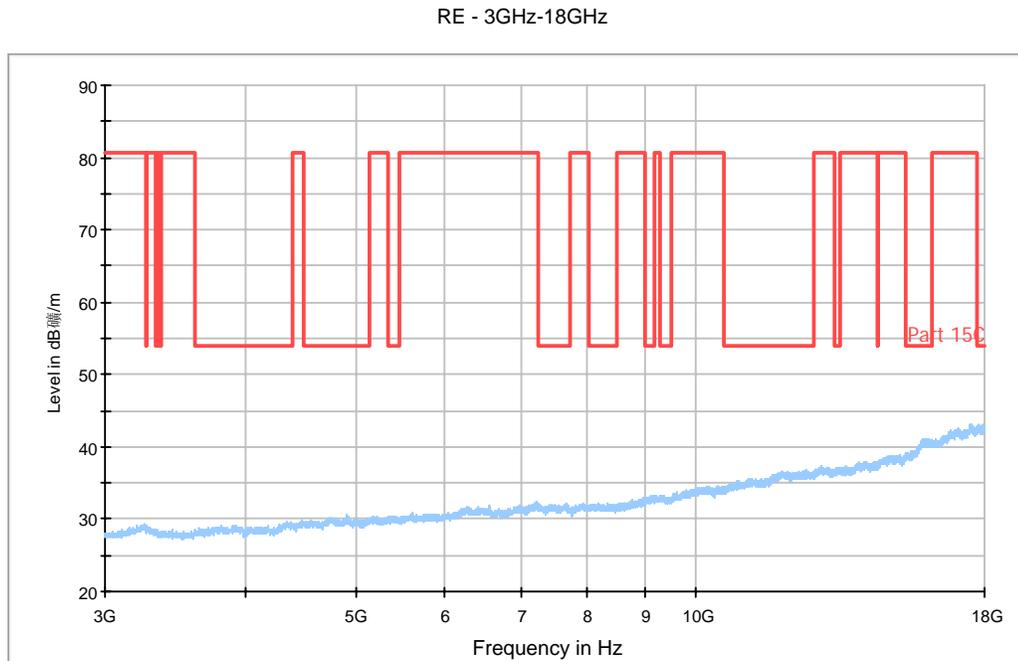
**Fig. 50 Radiated Spurious Emission (Power): 802.11b, ch11, 2.45 GHz - 2.5GHz**



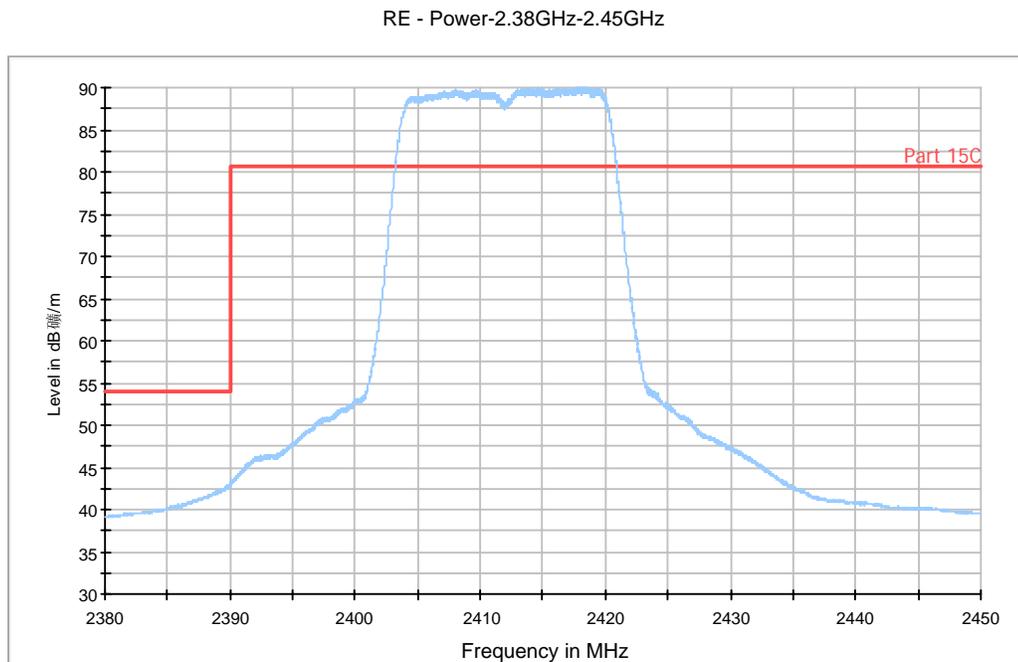
**Fig. 51 Radiated Spurious Emission (802.11b, Ch11, 30 MHz-1 GHz)**



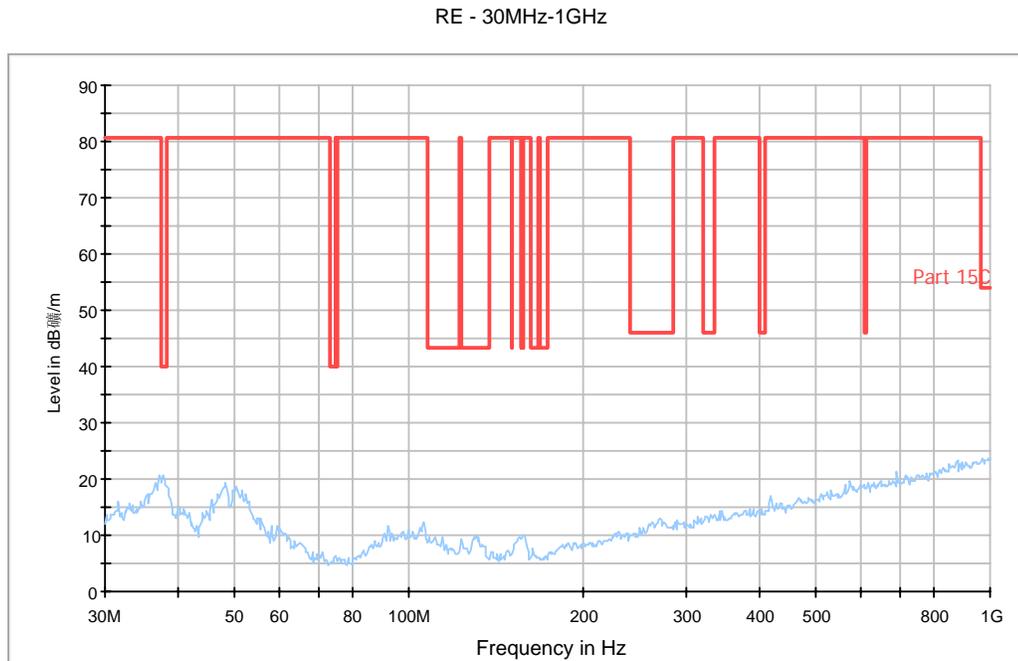
**Fig. 52 Radiated Spurious Emission (802.11b, Ch11, 1 GHz-3 GHz)**



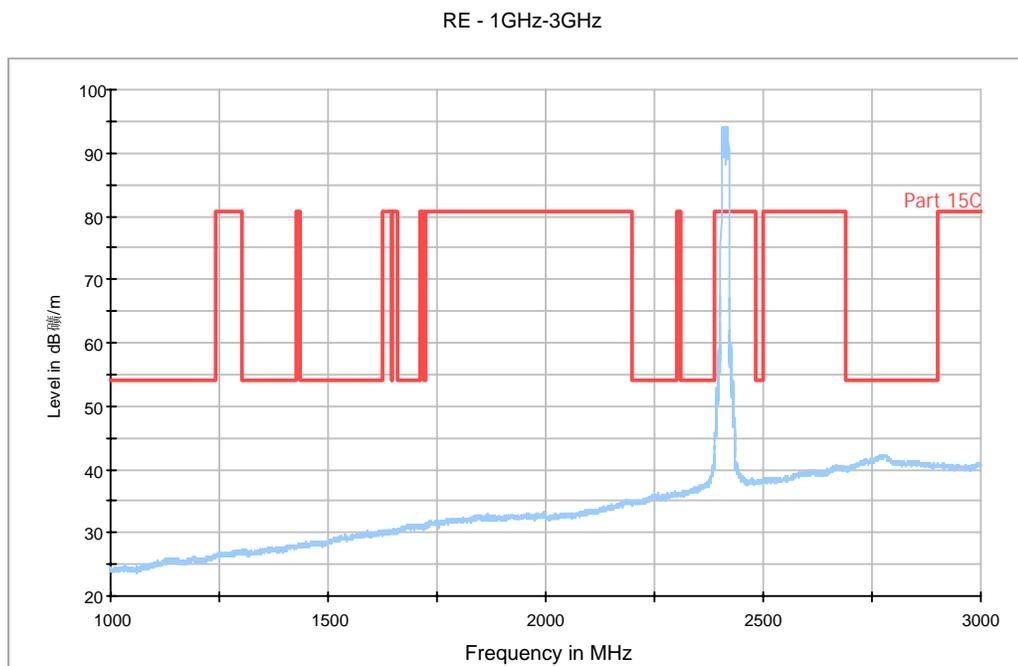
**Fig. 53 Radiated Spurious Emission (802.11b, Ch11, 3 GHz-18 GHz)**



**Fig. 54 Radiated Spurious Emission (Power): 802.11g, ch1, 2.38 GHz - 2.45GHz**



**Fig. 55 Radiated Spurious Emission (802.11g, Ch1, 30 MHz-1 GHz)**



**Fig. 56 Radiated Spurious Emission (802.11g, Ch1, 1 GHz-3 GHz)**

RE - 3GHz-18GHz

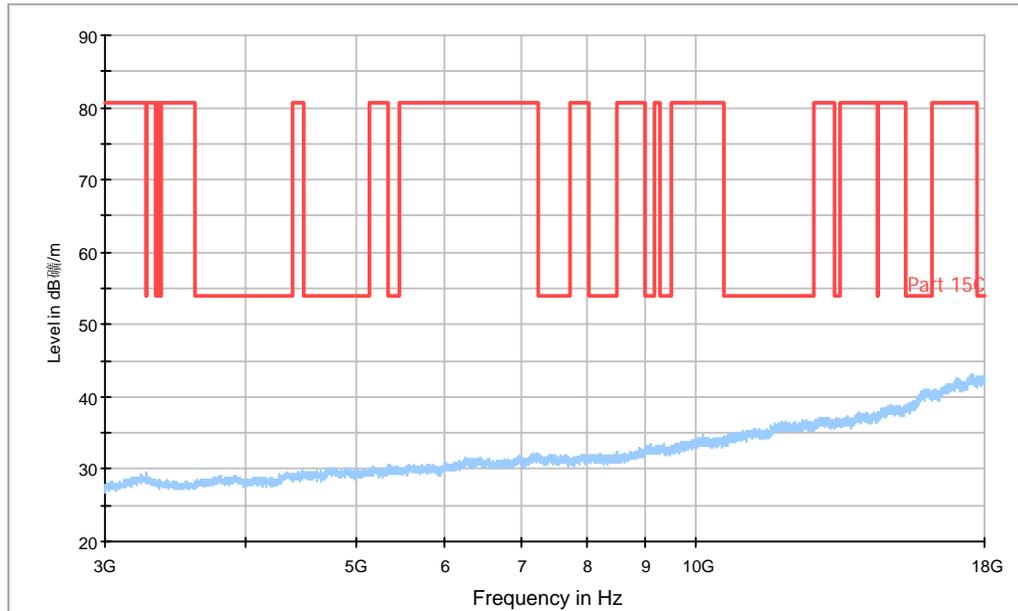


Fig. 57 Radiated Spurious Emission (802.11g, Ch1, 3 GHz-18 GHz)

RE - 30MHz-1GHz

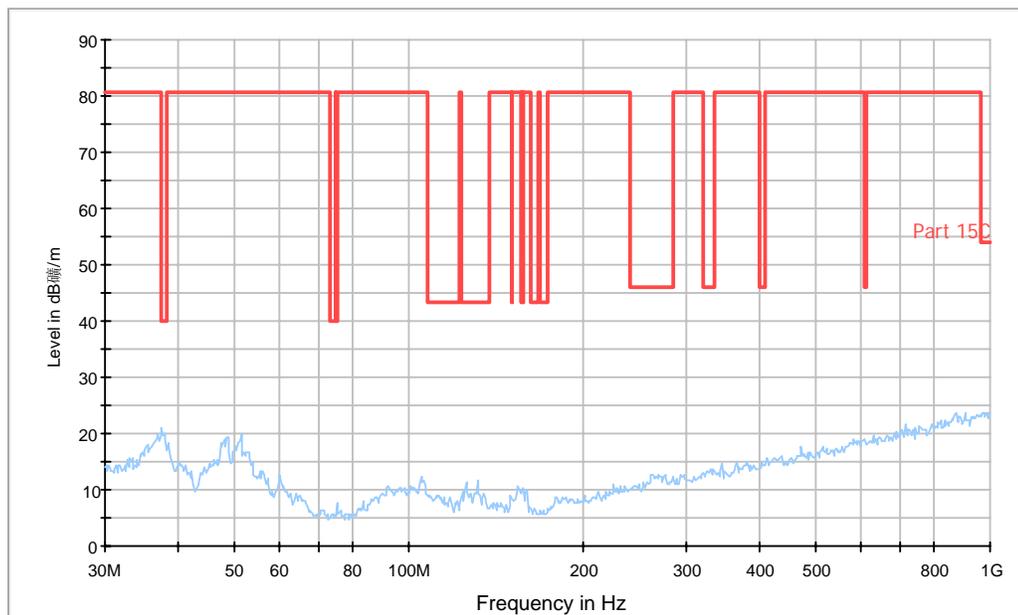
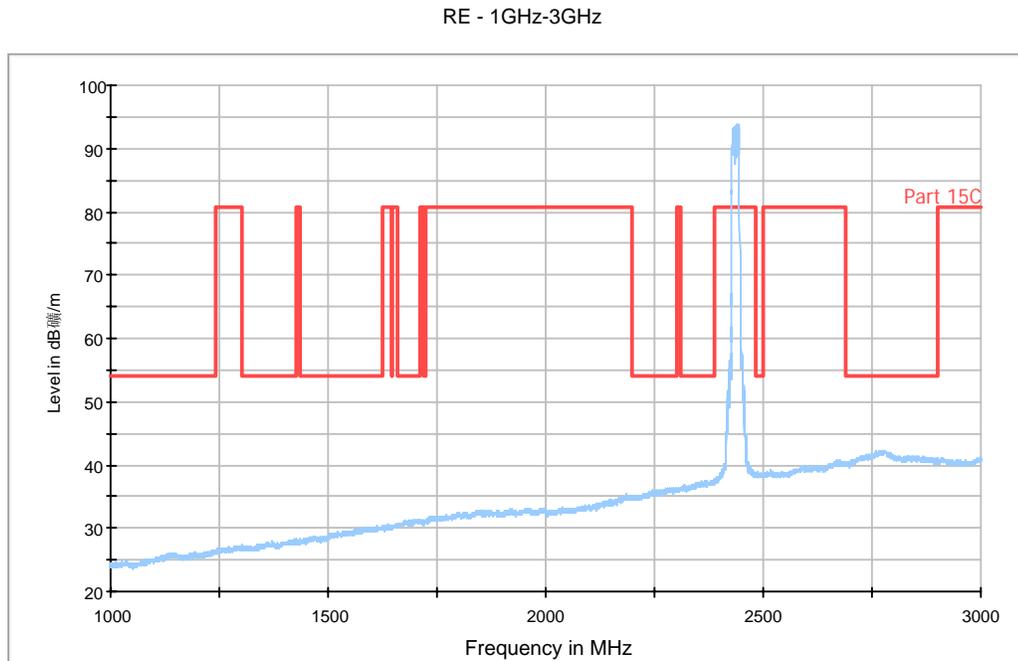
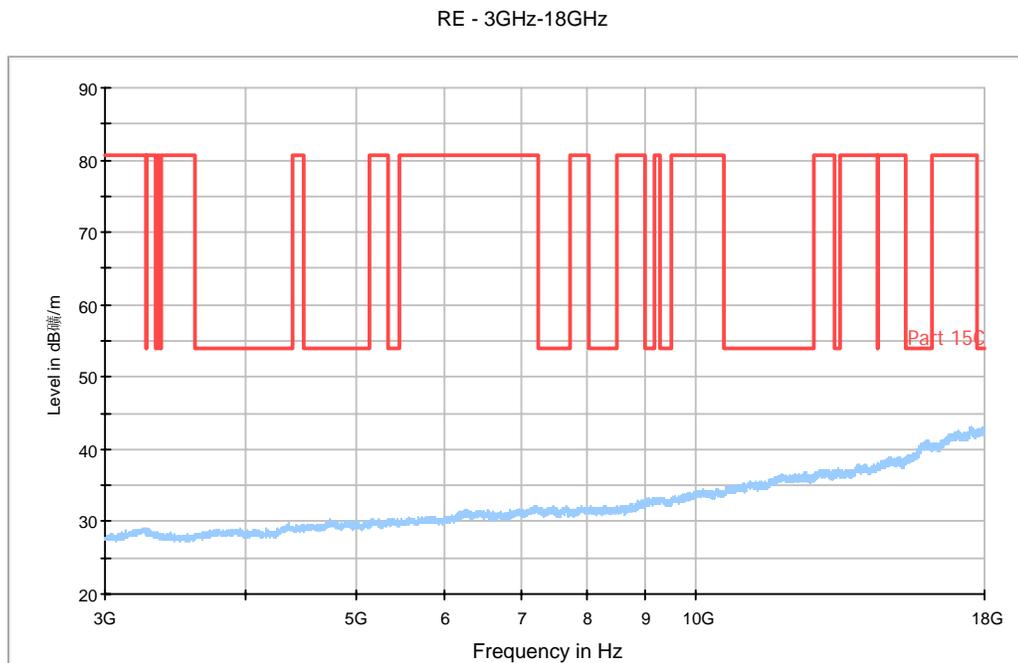


Fig. 58 Radiated Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)



**Fig. 59 Radiated Spurious Emission (802.11g, Ch6, 1 GHz-3 GHz)**



**Fig. 60 Radiated Spurious Emission (802.11g, Ch6, 3 GHz-18 GHz)**

RE - Power-2.45GHz-2.5GHz

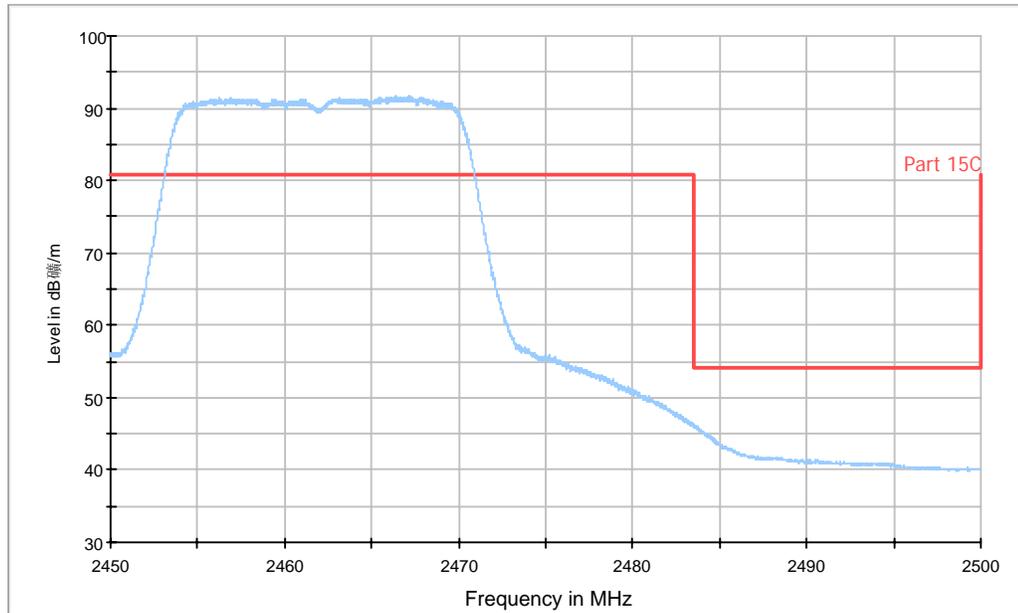


Fig. 61 Radiated Spurious Emission (Power): 802.11g, ch11, 2.45 GHz - 2.5GHz

RE - 30MHz-1GHz

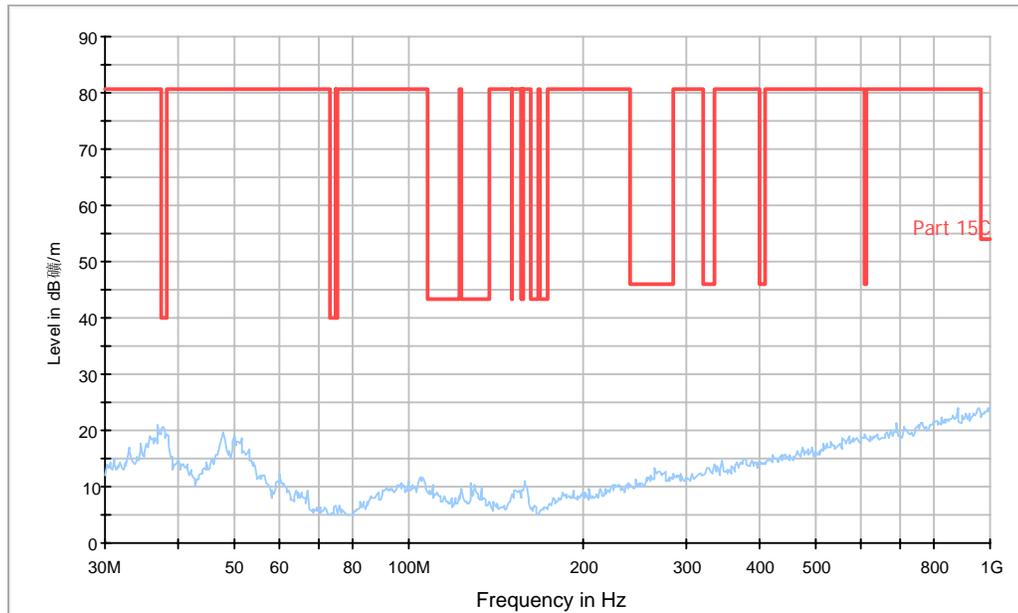
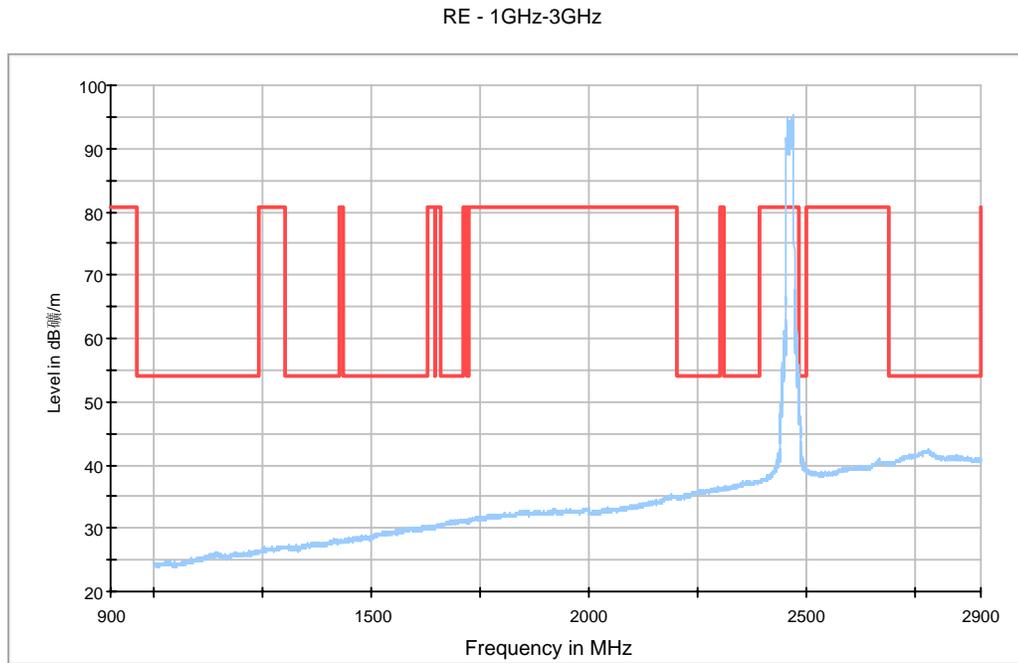
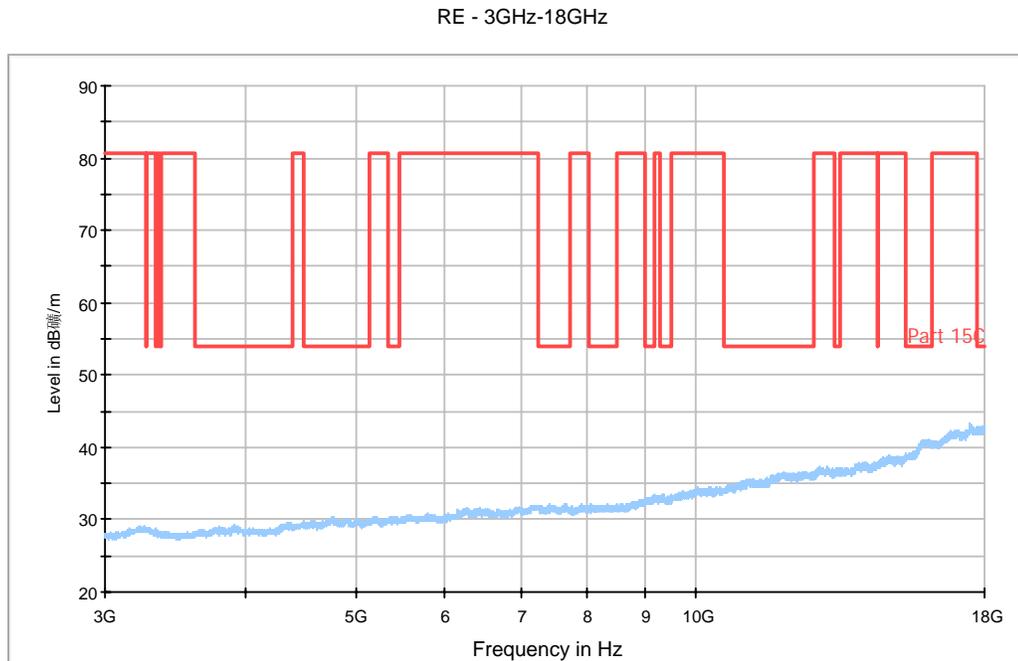


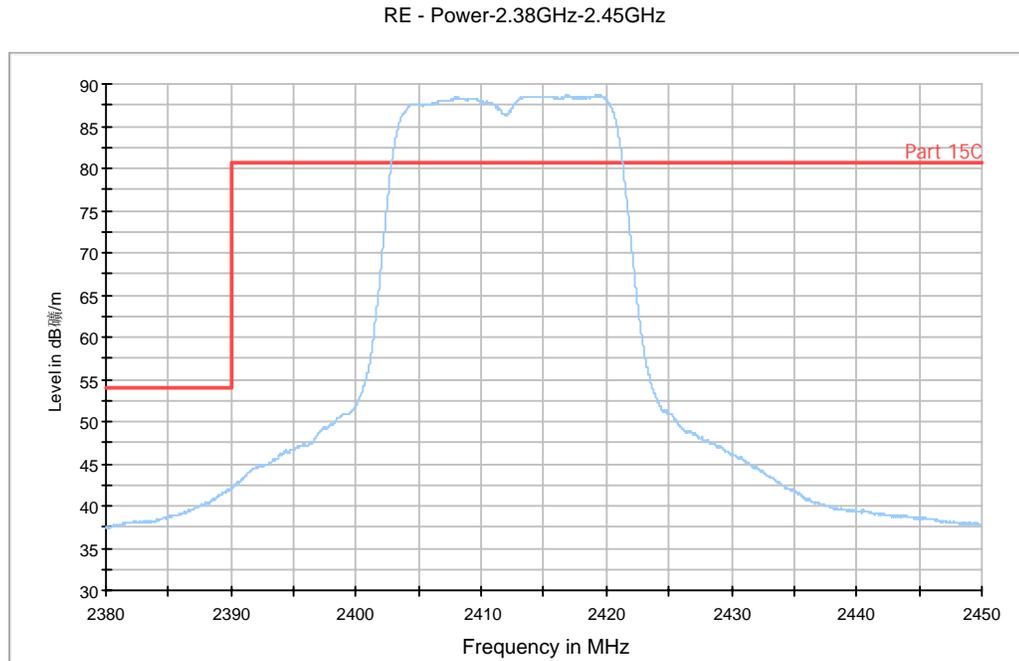
Fig. 62 Radiated Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)



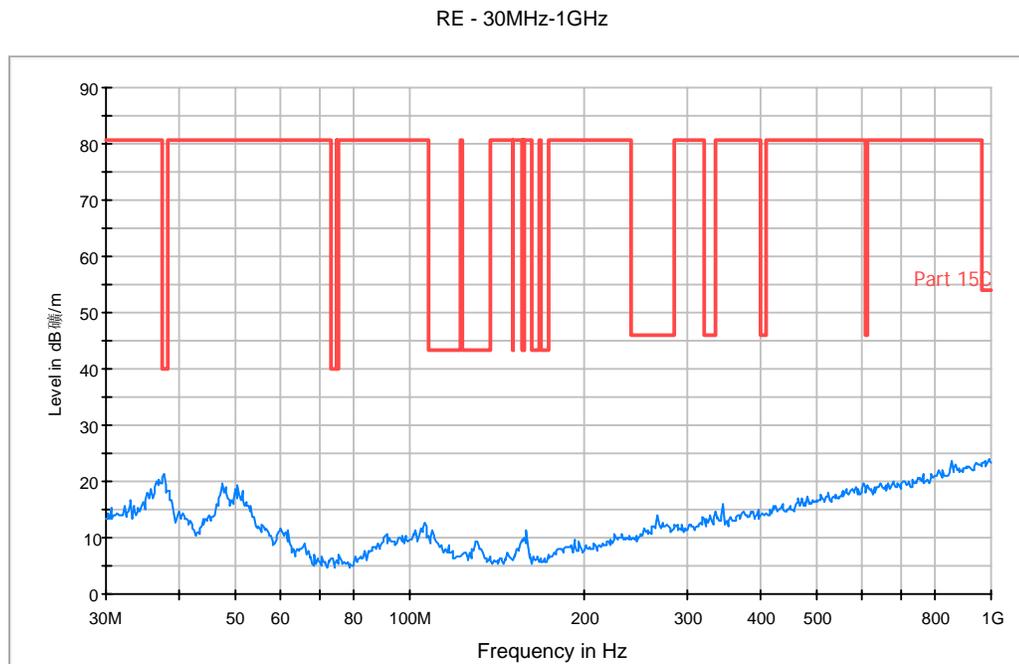
**Fig. 63 Radiated Spurious Emission (802.11g, Ch11, 1 GHz-3 GHz)**



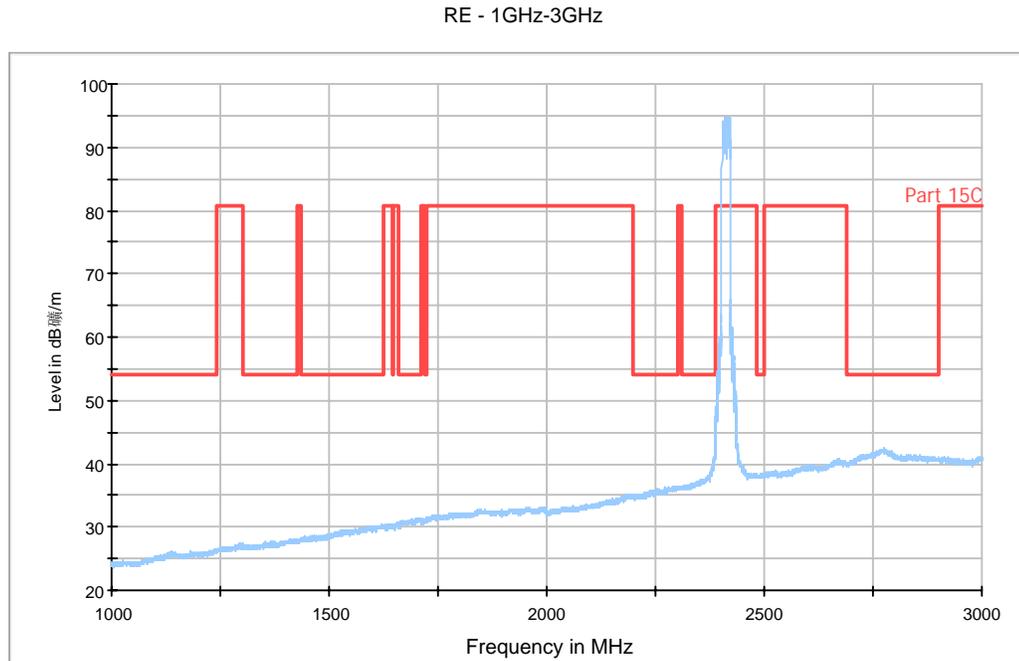
**Fig. 64 Radiated Spurious Emission (802.11g, Ch11, 3 GHz-18 GHz)**



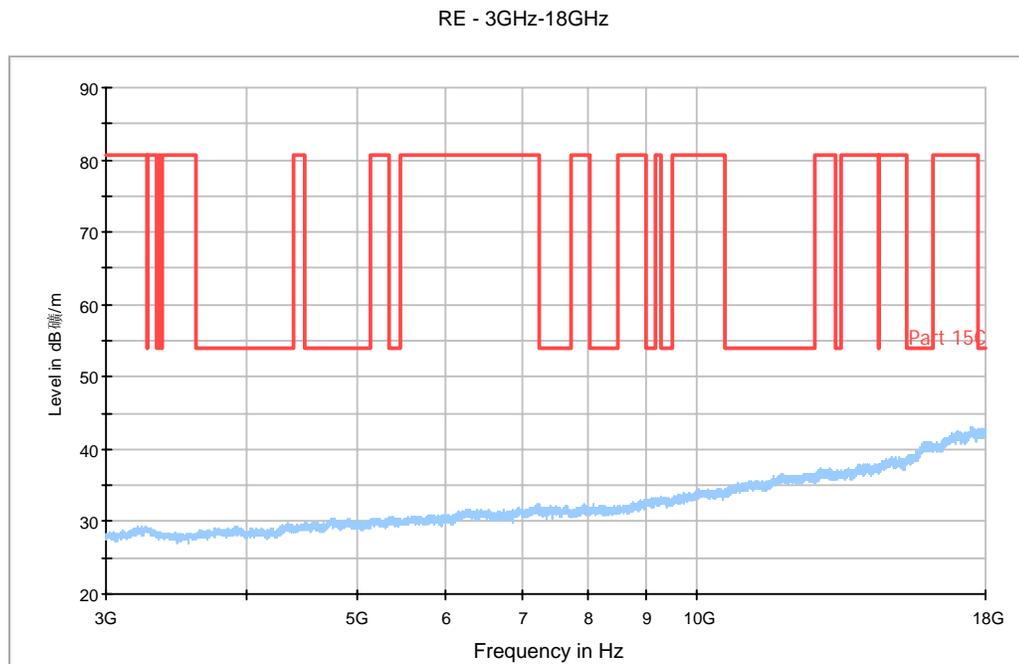
**Fig. 65 Radiated Spurious Emission (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz**



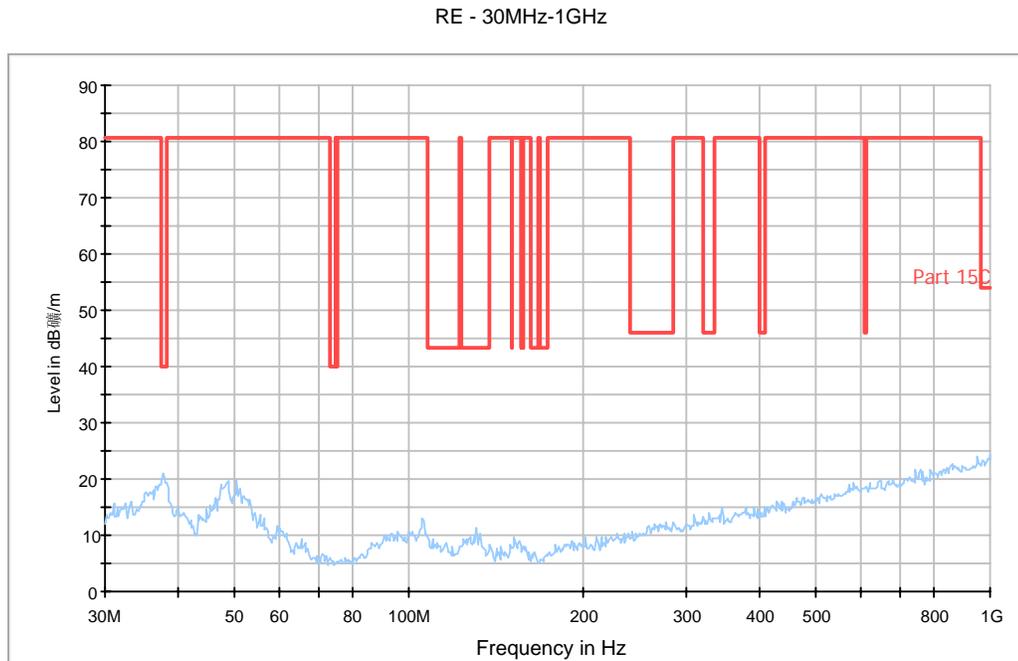
**Fig. 66 Radiated Spurious Emission (802.11n-HT20, Ch1, 30 MHz-1 GHz)**



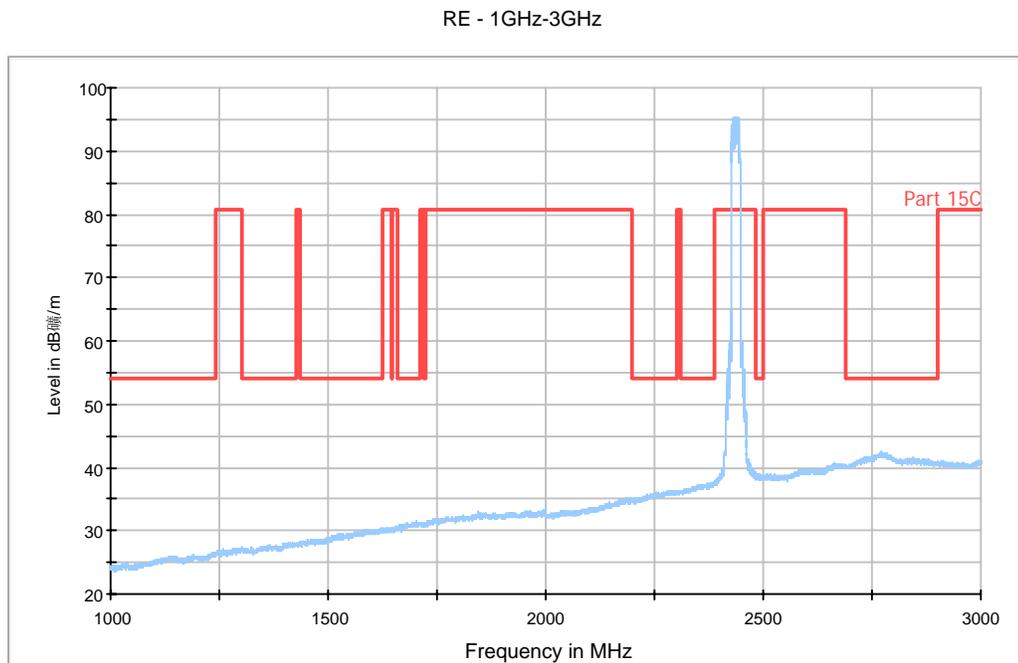
**Fig. 67 Radiated Spurious Emission (802.11n-HT20, Ch1, 1 GHz-3 GHz)**



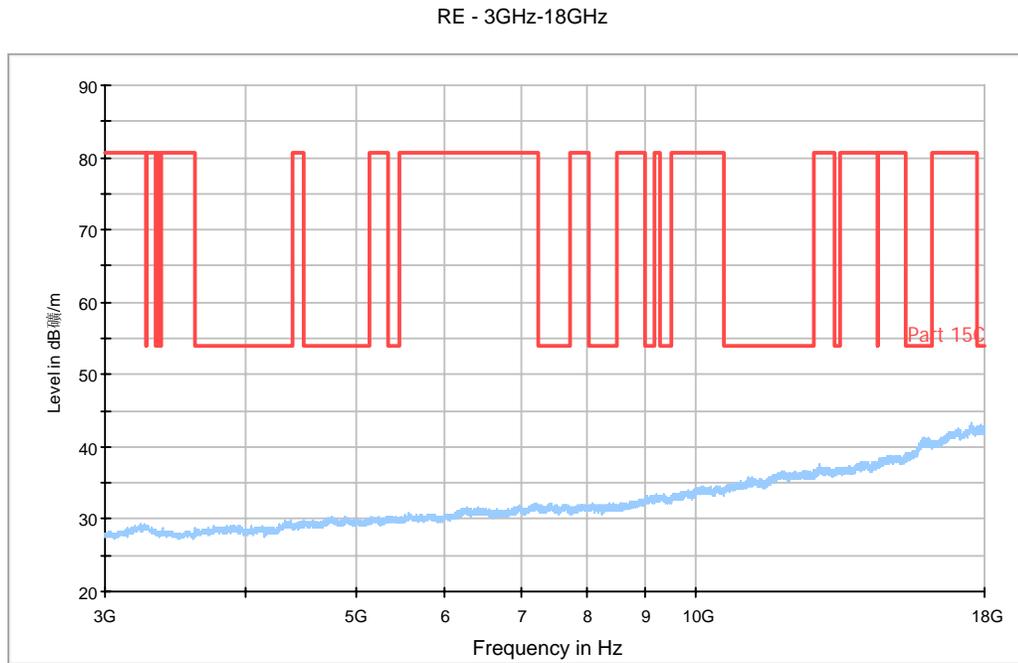
**Fig. 68 Radiated Spurious Emission (802.11n-HT20, Ch1, 3 GHz-18 GHz)**



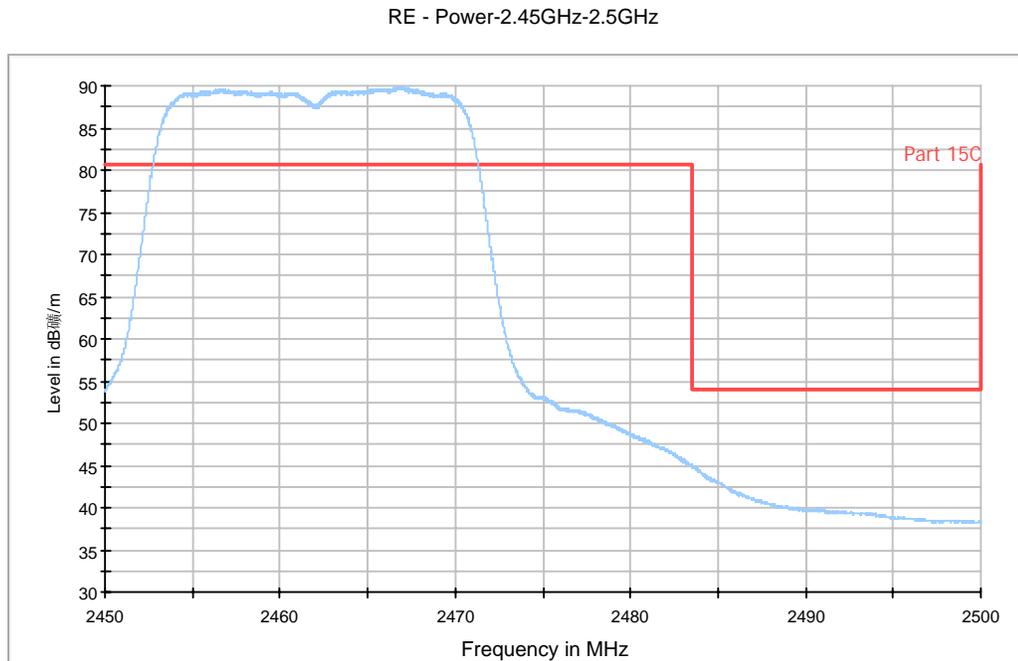
**Fig. 69 Radiated Spurious Emission (802.11n-HT20, Ch6, 30 MHz-1 GHz)**



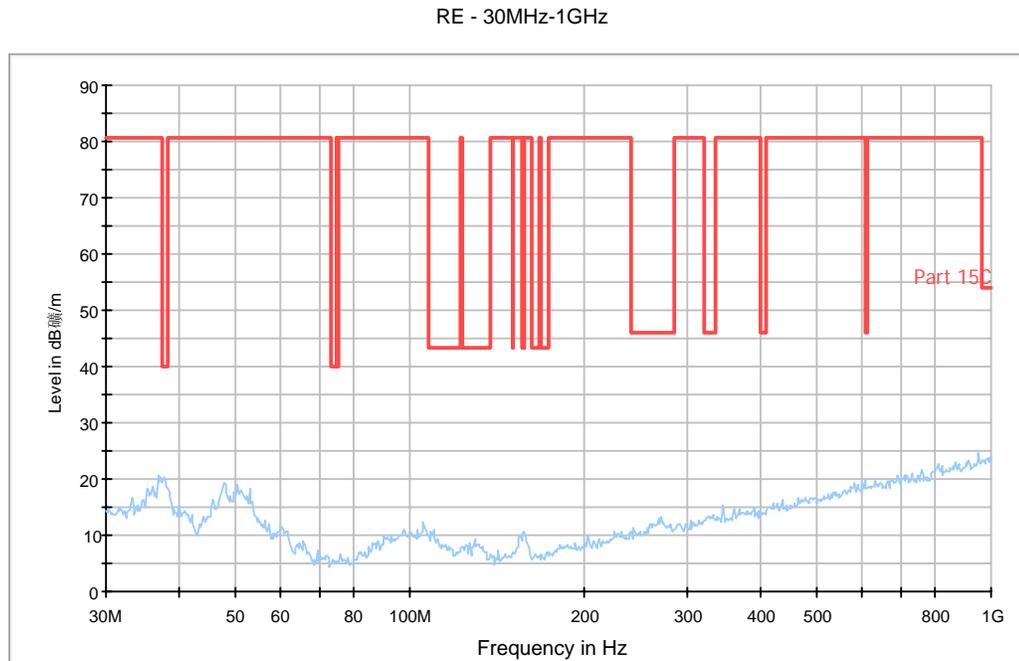
**Fig. 70 Radiated Spurious Emission (802.11n-HT20, Ch6, 1 GHz-3 GHz)**



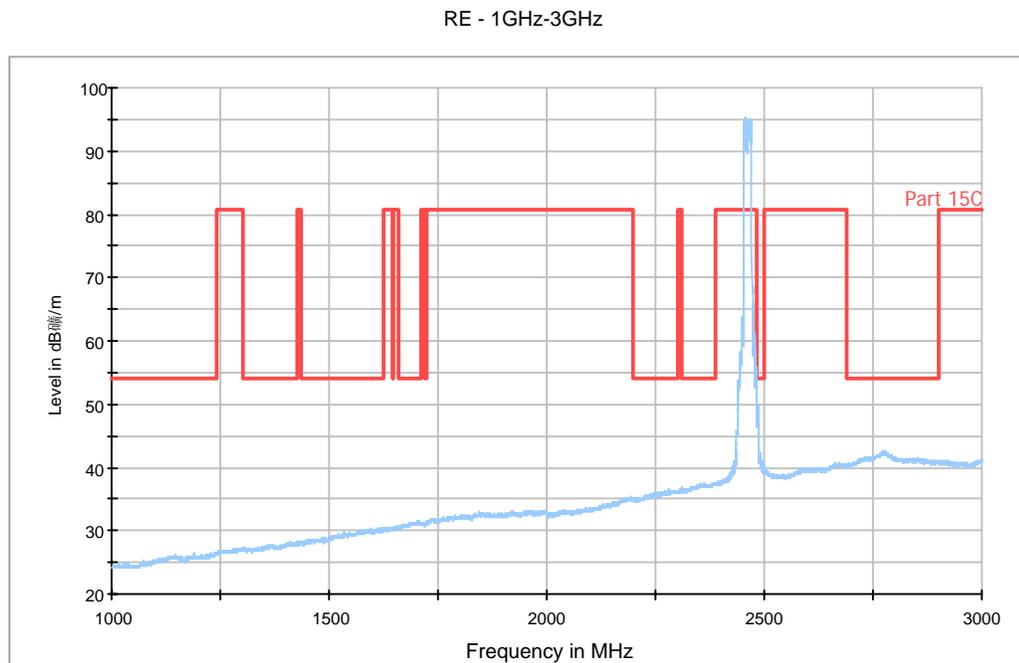
**Fig. 71 Radiated Spurious Emission (802.11n-HT20, Ch6, 3 GHz-18 GHz)**



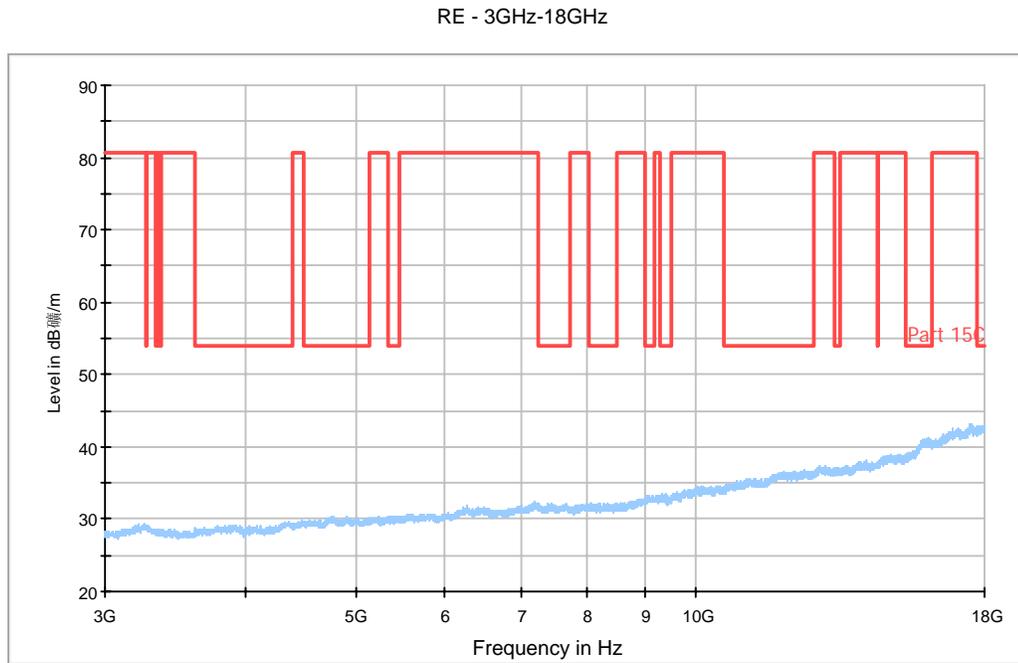
**Fig. 72 Radiated Spurious Emission (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.5GHz**



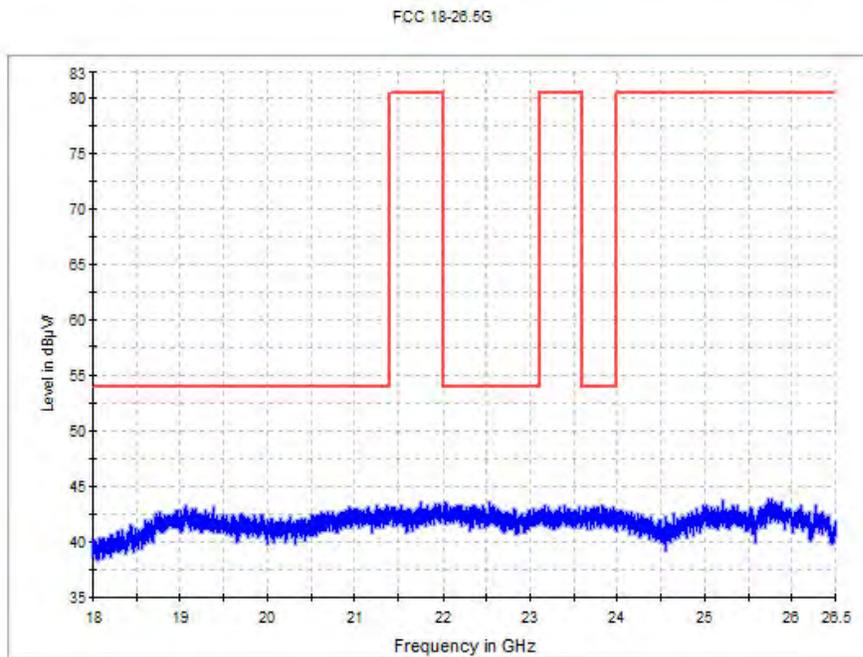
**Fig. 73 Radiated Spurious Emission (802.11n-HT20, Ch11, 30 MHz-1 GHz)**



**Fig. 74 Radiated Spurious Emission (802.11n-HT20, Ch11, 1 GHz-3 GHz)**



**Fig. 75 Radiated Spurious Emission (802.11n-HT20, Ch11, 3 GHz-18 GHz)**



**Fig. 76 Radiated emission: 18 GHz - 26 GHz**

### A.7. Occupied 20dB Bandwidth

**Measurement Limit:**

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

The measurement is made according to ANSI C63.10 and KDB558074 D01.

**Measurement Uncertainty:**

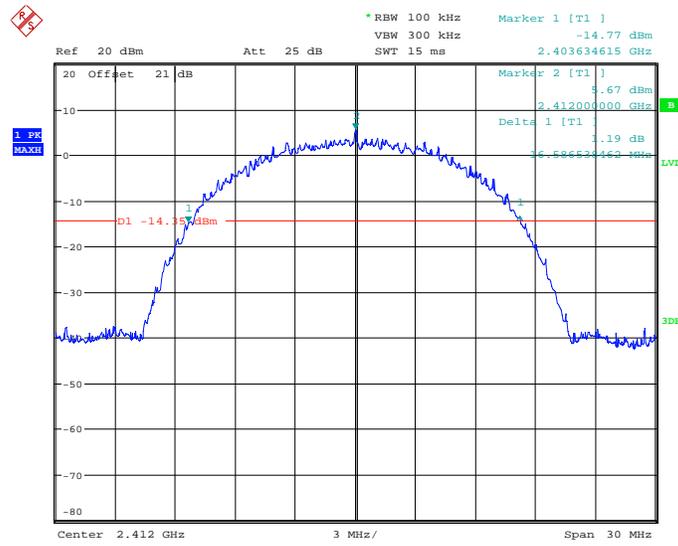
Measurement Uncertainty	60.80Hz
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**Measurement Result:**

Mode	Channel	Occupied 20dB Bandwidth ( kHz)		conclusion
		Fig.	Value	
802.11b	1	Fig.78	16587	P
	6	Fig.79	16731	P
	11	Fig.80	16538	P
802.11g	1	Fig.81	17596	P
	6	Fig.82	17596	P
	11	Fig.83	17596	P
802.11n (HT20)	1	Fig.84	18510	P
	6	Fig.85	18606	P
	11	Fig.86	18462	P

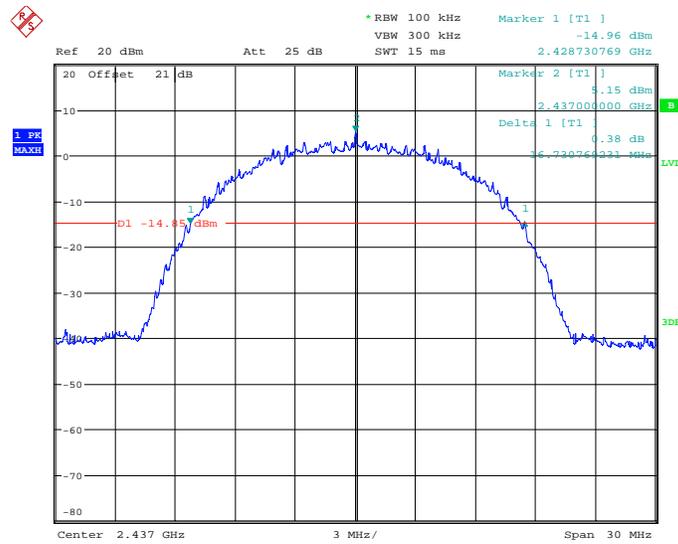
**Conclusion: Pass**

**Test graphs as below:**



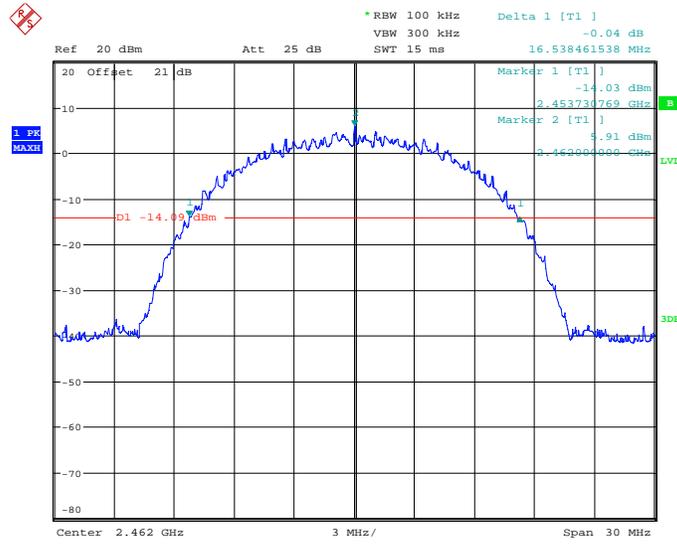
Date: 2.MAY.2012 22:32:05

Fig. 77 Occupied 20dB Bandwidth (802.11b, Ch 1)



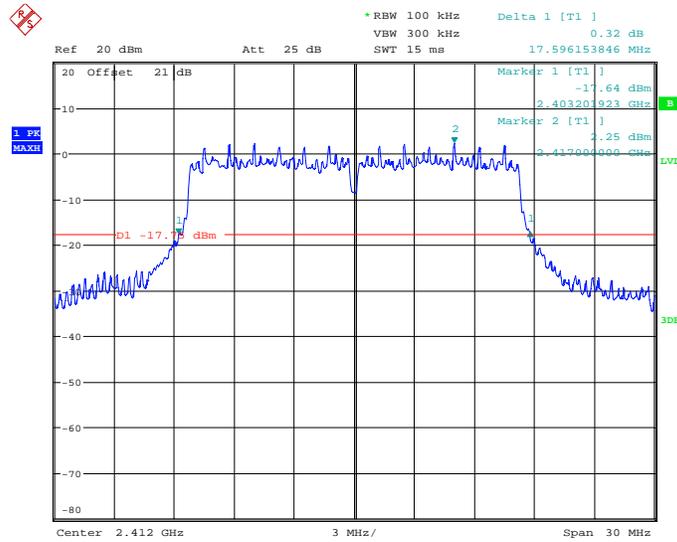
Date: 2.MAY.2012 22:29:31

Fig. 78 Occupied 20dB Bandwidth (802.11b, Ch 6)



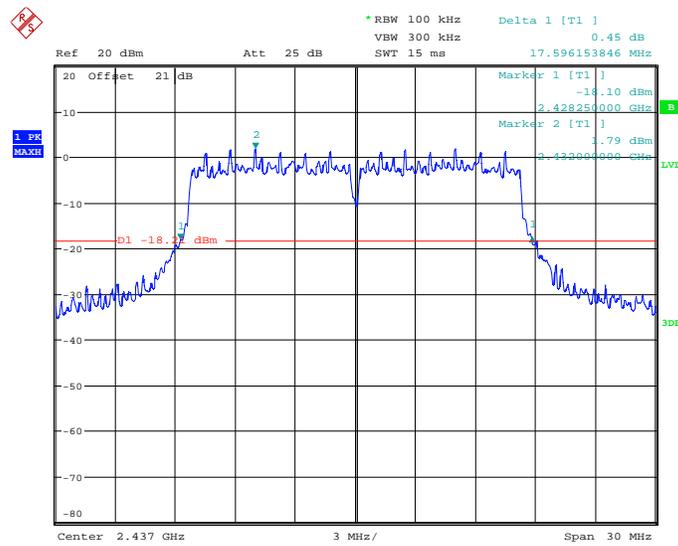
Date: 2.MAY.2012 22:19:36

Fig. 79 Occupied 20dB Bandwidth (802.11b, Ch 11)



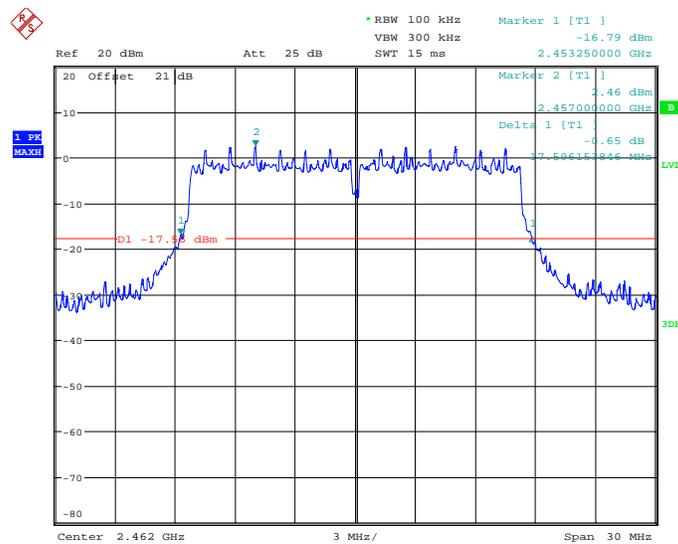
Date: 2.MAY.2012 22:33:12

Fig. 80 Occupied 20dB Bandwidth (802.11g, Ch 1)



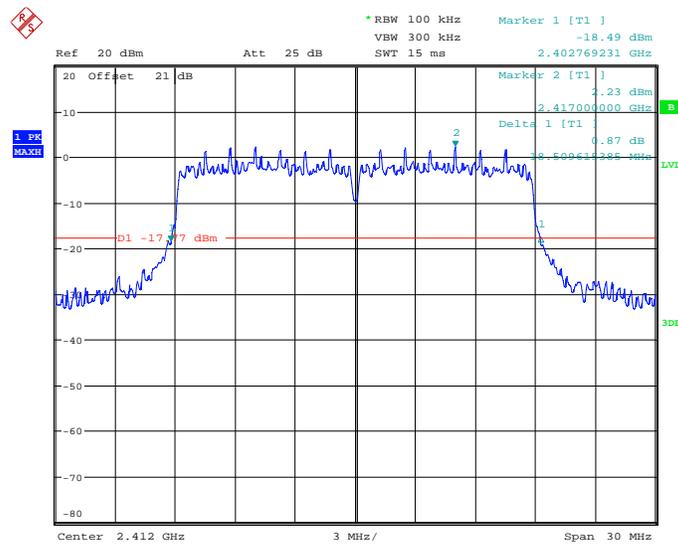
Date: 2.MAY.2012 22:27:24

**Fig. 81 Occupied 20dB Bandwidth (802.11g, Ch 6)**



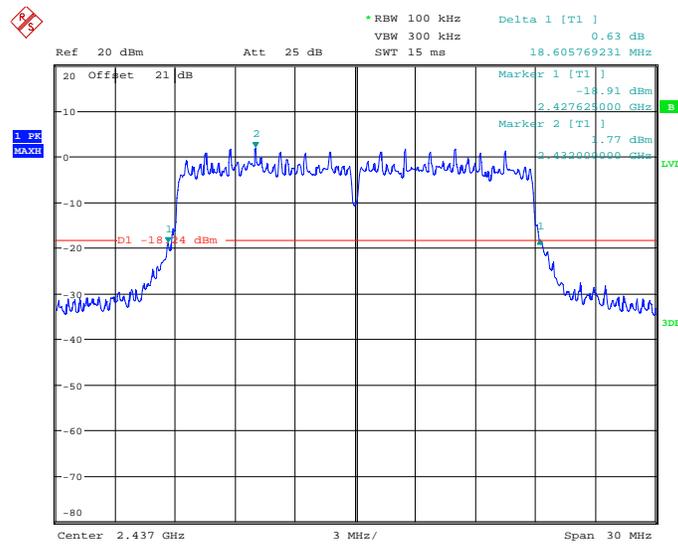
Date: 2.MAY.2012 22:20:54

**Fig. 82 Occupied 20dB Bandwidth (802.11g, Ch 11)**



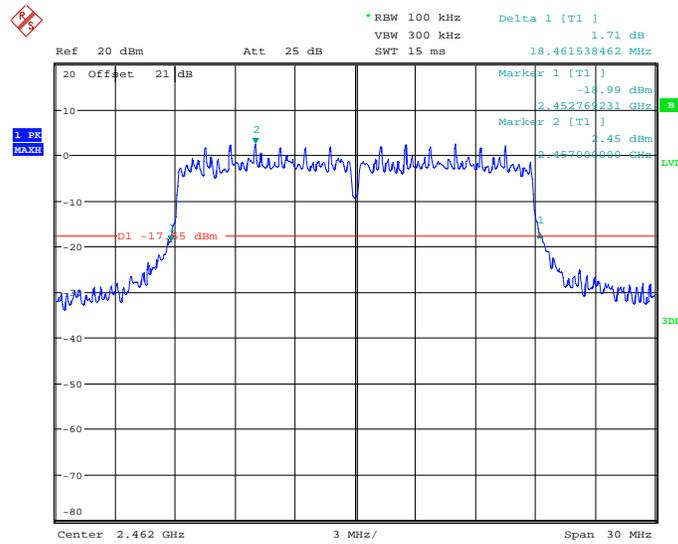
Date: 2.MAY.2012 22:34:50

**Fig. 83 Occupied 20dB Bandwidth (802.11n-HT20, Ch 1)**



Date: 2.MAY.2012 22:26:03

**Fig. 84 Occupied 20dB Bandwidth (802.11n-HT20, Ch 6)**



Date: 2.MAY.2012 22:23:11

Fig. 85 Occupied 20dB Bandwidth (802.11n-HT20, Ch 11)

### A.8. AC Powerline Conducted Emission

**Test Condition:**

Voltage (V)	Frequency (Hz)
110	60

**Measurement Result and limit:**

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		11n mode	Idle	
0.15 to 0.5	66 to 56	Fig. 87	Fig. 88	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		11n mode	Idle	
0.15 to 0.5	56 to 46	Fig.87	Fig.88	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to ANSI C63.10 and KDB558074 D01.

**Conclusion: PASS**

**Test graphs as below:**

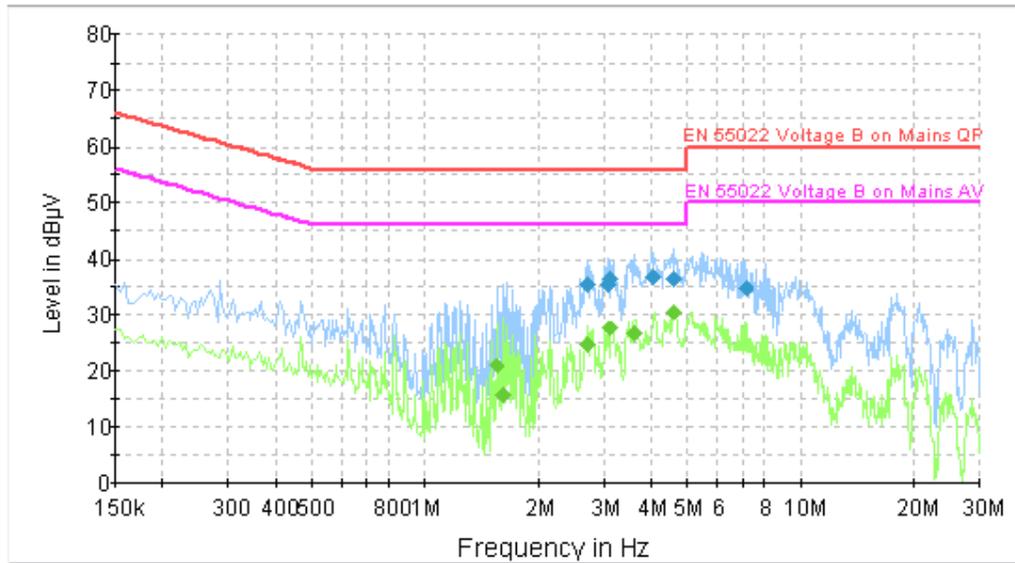


Fig. 86 AC Powerline Conducted Emission

### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.711189	35.3	GND	N	9.8	20.7	56.0
3.055943	35.3	GND	N	9.8	20.7	56.0
3.117522	36.3	GND	N	9.8	19.7	56.0
4.040589	36.6	GND	N	9.8	19.4	56.0
4.577162	36.5	GND	N	9.8	19.5	56.0
7.170374	34.8	GND	N	9.8	25.2	60.0

### Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.558500	20.9	GND	N	9.8	25.1	46.0
1.608000	15.8	GND	L1	9.8	30.2	46.0
2.711189	24.5	GND	N	9.8	21.5	46.0
3.133110	27.5	GND	N	9.8	18.5	46.0
3.602677	26.8	GND	N	9.8	19.2	46.0
4.577162	30.4	GND	N	9.8	15.6	46.0

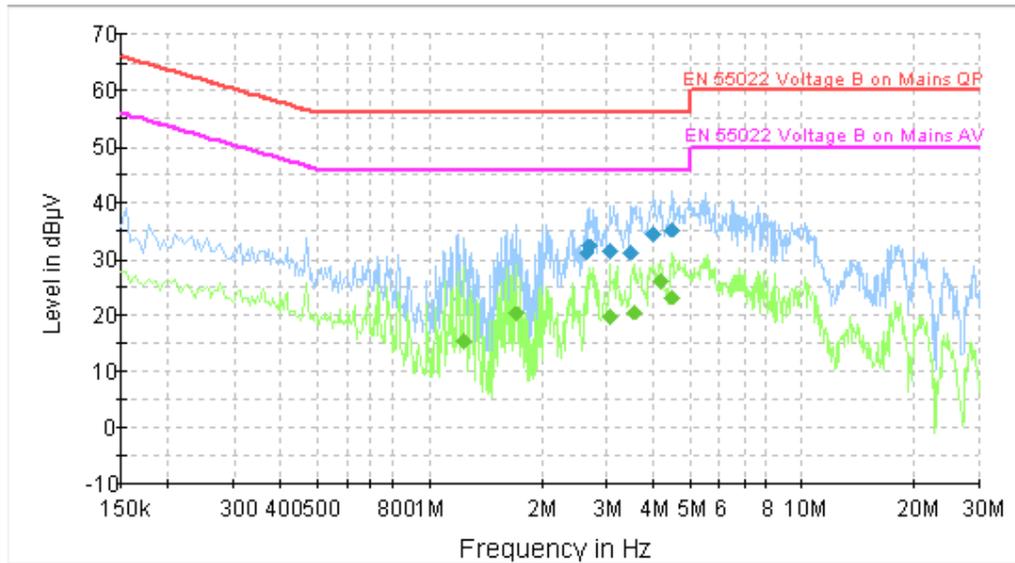


Fig. 87 AC Powerline Conducted Emission

### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.657636	31.1	GND	N	9.8	24.9	56.0
2.697700	32.2	GND	N	9.8	23.8	56.0
3.071223	31.4	GND	N	9.8	24.6	56.0
3.479068	31.2	GND	N	9.8	24.8	56.0
4.000485	34.3	GND	N	9.8	21.7	56.0
4.509185	35.2	GND	N	9.8	20.8	56.0

### Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.239000	15.4	GND	N	9.8	30.6	46.0
1.716000	20.3	GND	N	9.8	25.7	46.0
3.071223	19.7	GND	L1	9.8	26.3	46.0
3.549173	20.6	GND	L1	9.8	25.4	46.0
4.163332	26.2	GND	L1	9.8	19.8	46.0
4.509185	23.2	GND	L1	9.8	22.8	46.0