



**FCC PART 15C  
TEST REPORT  
No. 2013WLN0661**

**for**

**Sony Mobile Communications AB**

**GSM/WCDMA/CDMA2000/LTE FDD Mobile Phone**

**Type: PM-0400-BV**

**With**

**FCC ID: PY7PM-0400**

**Hardware Version: A**

**Software Version: 10.2.F.1.33**

**Issued Date: 2013-05-14**



**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.

**Test Laboratory:**

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China, 100191

Tel:+86(0)10-62304633-2561, Fax:+86(0)10-62304633-2504 Email:welcome@emcite.com. www.emcite.com

## 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)	28
FIG. 17	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 30 MHZ-1 GHZ)	28
FIG. 18	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 1 GHZ-2.5 GHZ)	29
FIG. 19	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 2.5 GHZ-7.5 GHZ)	29
FIG. 20	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 7.5 GHZ-10 GHZ)	30
FIG. 21	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 10 GHZ-15 GHZ)	30
FIG. 22	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 15 GHZ-20 GHZ)	31
FIG. 23	CONDUCTED SPURIOUS EMISSION (802.11B, CH1, 20 GHZ-26 GHZ)	31
FIG. 24	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, CENTER FREQUENCY)	32
FIG. 25	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 30 MHZ-1 GHZ)	32
FIG. 26	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 1 GHZ-2.5 GHZ)	33
FIG. 27	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 2.5 GHZ-7.5 GHZ)	33
FIG. 28	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 7.5 GHZ-10 GHZ)	34
FIG. 29	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 10 GHZ-15 GHZ)	34
FIG. 30	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 15 GHZ-20 GHZ)	35
FIG. 31	CONDUCTED SPURIOUS EMISSION (802.11B, CH6, 20 GHZ-26 GHZ)	35
FIG. 32	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, CENTER FREQUENCY)	36
FIG. 33	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 30 MHZ-1 GHZ)	36
FIG. 34	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 1 GHZ-2.5 GHZ)	37
FIG. 35	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 2.5 GHZ-7.5 GHZ)	37
FIG. 36	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 7.5 GHZ-10 GHZ)	38
FIG. 37	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 10 GHZ-15 GHZ)	38
FIG. 38	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 15 GHZ-20 GHZ)	39
FIG. 39	CONDUCTED SPURIOUS EMISSION (802.11B, CH11, 20 GHZ-26 GHZ)	39
FIG. 40	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, CENTER FREQUENCY)	40
FIG. 41	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 30 MHZ-1 GHZ)	40
FIG. 42	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 1 GHZ-2.5 GHZ)	41
FIG. 43	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 2.5 GHZ-7.5 GHZ)	41
FIG. 44	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 7.5 GHZ-10 GHZ)	42
FIG. 45	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 10 GHZ-15 GHZ)	42
FIG. 46	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 15 GHZ-20 GHZ)	43
FIG. 47	CONDUCTED SPURIOUS EMISSION (802.11G, CH1, 20 GHZ-26 GHZ)	43
FIG. 48	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, CENTER FREQUENCY)	44
FIG. 49	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 30 MHZ-1 GHZ)	44

FIG. 50	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 1 GHZ-2.5 GHZ).....	45
FIG. 51	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 2.5 GHZ-7.5 GHZ).....	45
FIG. 52	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 7.5 GHZ-10 GHZ).....	46
FIG. 53	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 10 GHZ-15 GHZ).....	46
FIG. 54	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 15 GHZ-20 GHZ).....	47
FIG. 55	CONDUCTED SPURIOUS EMISSION (802.11G, CH6, 20 GHZ-26 GHZ).....	47
FIG. 56	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, CENTER FREQUENCY) .....	48
FIG. 57	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 30 MHZ-1 GHZ).....	48
FIG. 58	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 1 GHZ-2.5 GHZ).....	49
FIG. 59	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 2.5 GHZ-7.5 GHZ).....	49
FIG. 60	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 7.5 GHZ-10 GHZ).....	50
FIG. 61	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 10 GHZ-15 GHZ).....	50
FIG. 62	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 15 GHZ-20 GHZ).....	51
FIG. 63	CONDUCTED SPURIOUS EMISSION (802.11G, CH11, 20 GHZ-26 GHZ).....	51
FIG. 64	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, CENTER FREQUENCY).....	52
FIG. 65	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 30 MHZ-1 GHZ).....	52
FIG. 66	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 1 GHZ-2.5 GHZ).....	53
FIG. 67	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 2.5 GHZ-7.5 GHZ).....	53
FIG. 68	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 7.5 GHZ-10 GHZ).....	54
FIG. 69	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 10 GHZ-15 GHZ).....	54
FIG. 70	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 15 GHZ-20 GHZ).....	55
FIG. 71	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH1, 20 GHZ-26 GHZ).....	55
FIG. 72	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, CENTER FREQUENCY).....	56
FIG. 73	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 30 MHZ-1 GHZ).....	56
FIG. 74	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 1 GHZ-2.5 GHZ).....	57
FIG. 75	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 2.5 GHZ-7.5 GHZ).....	57
FIG. 76	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 7.5 GHZ-10 GHZ).....	58
FIG. 77	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 10 GHZ-15 GHZ).....	58
FIG. 78	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 15 GHZ-20 GHZ).....	59
FIG. 79	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH6, 20 GHZ-26 GHZ).....	59
FIG. 80	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, CENTER FREQUENCY).....	60
FIG. 81	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 30 MHZ-1 GHZ).....	60
FIG. 82	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 1 GHZ-2.5 GHZ).....	61
FIG. 83	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 2.5 GHZ-7.5 GHZ).....	61
FIG. 84	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 7.5 GHZ-10 GHZ).....	62
FIG. 85	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 10 GHZ-15 GHZ).....	62
FIG. 86	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 15 GHZ-20 GHZ).....	63
FIG. 87	CONDUCTED SPURIOUS EMISSION (802.11N-HT20, CH11, 20 GHZ-26 GHZ).....	63
A.6.2	TRANSMITTER SPURIOUS EMISSION - RADIATED .....	64
FIG. 88	RADIATED SPURIOUS EMISSION (POWER): 802.11B, CH1, 2.38 GHZ - 2.45GHZ .....	68
FIG. 89	RADIATED SPURIOUS EMISSION (802.11B, CH1, 30 MHZ-1 GHZ).....	68
FIG. 90	RADIATED SPURIOUS EMISSION (802.11B, CH1, 1 GHZ-3 GHZ).....	69
FIG. 91	RADIATED SPURIOUS EMISSION (802.11B, CH1, 3 GHZ-18 GHZ).....	69
FIG. 92	RADIATED SPURIOUS EMISSION (802.11B, CH6, 30 MHZ-1 GHZ).....	70

FIG. 93	RADIATED SPURIOUS EMISSION (802.11B, CH6, 1 GHz-3 GHz) .....	70
FIG. 94	RADIATED SPURIOUS EMISSION (802.11B, CH6, 3 GHz-18 GHz) .....	71
FIG. 95	RADIATED SPURIOUS EMISSION (POWER): 802.11B, CH11, 2.45 GHz - 2.5GHz.....	71
FIG. 96	RADIATED SPURIOUS EMISSION (802.11B, CH11, 30 MHz-1 GHz) .....	72
FIG. 97	RADIATED SPURIOUS EMISSION (802.11B, CH11, 1 GHz-3 GHz).....	72
FIG. 98	RADIATED SPURIOUS EMISSION (802.11B, CH11, 3 GHz-18 GHz) .....	73
FIG. 99	RADIATED SPURIOUS EMISSION (POWER): 802.11G, CH1, 2.38 GHz - 2.45GHz .....	73
FIG. 100	RADIATED SPURIOUS EMISSION (802.11G, CH1, 30 MHz-1 GHz) .....	74
FIG. 101	RADIATED SPURIOUS EMISSION (802.11G, CH1, 1 GHz-3 GHz).....	74
FIG. 102	RADIATED SPURIOUS EMISSION (802.11G, CH1, 3 GHz-18 GHz).....	75
FIG. 103	RADIATED SPURIOUS EMISSION (802.11G, CH6, 30 MHz-1 GHz) .....	75
FIG. 104	RADIATED SPURIOUS EMISSION (802.11G, CH6, 1 GHz-3 GHz).....	76
FIG. 105	RADIATED SPURIOUS EMISSION (802.11G, CH6, 3 GHz-18 GHz).....	76
FIG. 106	RADIATED SPURIOUS EMISSION (POWER): 802.11G, CH11, 2.45 GHz - 2.5GHz .....	77
FIG. 107	RADIATED SPURIOUS EMISSION (802.11G, CH11, 30 MHz-1 GHz).....	77
FIG. 108	RADIATED SPURIOUS EMISSION (802.11G, CH11, 1 GHz-3 GHz).....	78
FIG. 109	RADIATED SPURIOUS EMISSION (802.11G, CH11, 3 GHz-18 GHz).....	78
FIG. 110	RADIATED SPURIOUS EMISSION (POWER): 802.11N-HT20, CH1, 2.38 GHz - 2.45GHz	79
FIG. 111	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH1, 30 MHz-1 GHz) .....	79
FIG. 112	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH1, 1 GHz-3 GHz) .....	80
FIG. 113	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH1, 3 GHz-18 GHz) .....	80
FIG. 114	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH6, 30 MHz-1 GHz) .....	81
FIG. 115	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH6, 1 GHz-3 GHz) .....	81
FIG. 116	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH6, 3 GHz-18 GHz) .....	82
FIG. 117	RADIATED SPURIOUS EMISSION (POWER): 802.11N-HT20, CH11, 2.45 GHz - 2.5GHz.	82
FIG. 118	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH11, 30 MHz-1 GHz) .....	83
FIG. 119	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH11, 1 GHz-3 GHz).....	83
FIG. 120	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH11, 3 GHz-18 GHz).....	84
FIG. 121	RADIATED EMISSION: 18 GHz - 26 GHz.....	84
A.7.	AC POWERLINE CONDUCTED EMISSION .....	85
FIG. 122	AC POWERLINE CONDUCTED EMISSION .....	86
FIG. 123	AC POWERLINE CONDUCTED EMISSION .....	87

## 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: +86-10-62304633-2561  
Fax: +86-10-62304633-2504

### 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

Testing Start Date: 2013-03-26  
Testing End Date: 2013-04-08

### 1.4. Signature



---

**Xu Zhongfei**  
**(Prepared this test report)**



---

**Gao Hong**  
**(Reviewed this test report)**



---

**Xiao Li**  
**Deputy Director of the laboratory**  
**(Approved this test report)**

## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: Sony Mobile Communications (China) Co. Ltd  
Address /Post: Sony Mobile R&D Center, No. 16, Guangshun South Street,  
Chaoyang District  
City: Beijing  
Postal Code: 100102  
Country: China  
Contact Person: Ma, Gang  
Telephone: +86-10-58656312  
Fax: +86-10-58659049

### **2.2. Manufacturer Information**

Company Name: Sony Mobile Communications AB  
Address /Post: Nya Vattentorget, 22188 Lund, Sweden  
City: Lund  
Postal Code: 22188  
Country: Sweden  
Contact Person: Nordlof, Anders  
Telephone: +46-10-802 3919  
Fax: +46-10-800 2441

### 3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY

#### EQUIPMENT(AE)

##### 3.1. About EUT

Description	GSM 850/900/1800/1900, GPRS, EDGE, WCDMA FDD Band 1/2/5, HSDPA, HSUPA, LTE FDD Band 1/11/18, CDMA2000 Band Class0/6 Bluetooth EDR & BLE, WLAN ( 802.11 a/b/g/n), FM, NFC, GPS receiver mobile phone
Type	PM-0400-BV
FCC ID	PY7PM-0400
WLAN Frequency Range	ISM Band: 2400MHz~2483.5MHz
Type of modulation	DSSS/CCK/OFDM
Number of Channels	11
GSM Frequency Band	GSM 850/900/1800/1900
Antenna	Integral Antenna
MAX Radiated Power	23.70dBm(CCK)
MAX Conducted Power	20.14dBm(CCK)
Extreme Temperature	-20/+55°C
Normal Voltage	4.1VDC
Extreme Low Voltage	3.5VDC
Extreme High Voltage	4.1VDC

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

EUT ID*	S/N	IMEI	HW Version	SW Version
EUT1	CB5123RQCN	004402450736727	A	10.2.F.1.33
EUT2	CB5123SGRK	004402450925288	A	10.2.F.1.33

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

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

AE ID*	Description	Type	SN
AE1	Travel Charger	EP880	/
AE2	Battery	AB-0300	/
AE3	USB Cable	AI-0401	/

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

##### 3.4. General Description

The Equipment Under Test (EUT) is a model of GSM/WCDMA/CDMA2000/LTE FDD Mobile

Phone with integrated antenna.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD bands 1/2/5, LTE FDD bands 1/11/18 and CDMA2000 band class0/6. It also supports GPRS service with multi-slots class 12 and EGPRS service with multi-slots class 12 too. The HSDPA and HSUPA features are also supported.

It has MP3, camera, FM radio, USB memory, GPS receiver, NFC, Mobile High-Definition Link (MHL), Bluetooth (EDR and Bluetooth 4.0), WLAN (802.11 a/b/g/n) and Wi-Fi hotspot functions.

It includes normal option: travel charger, Portable Hands-Free and USB cable.

Manual and specifications of the EUT were provided to fulfil 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 CFR 47, Part 15, Subpart C:	
	15.205 Restricted bands of operation;	
FCC Part15	15.209 Radiated emission limits, general requirements;	Oct,
	15.247 Operation within the bands 902–928MHz,	2010
	2400–2483.5 MHz, and 5725–5850 MHz.	
	Methods of Measurement of Radio-Noise Emissions from	
ANSI C63.4	Low-Voltage Electrical and Electronic Equipment in the	2009
	Range of 9 kHz to 40 GHz	
	Measurement of Digital Transmission Systems	Jan,
KDB558074	Operating under Section 15.247	2012

## 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

**Semi-anechoic chamber** (10 meters×6.7meters×6.15meters) 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	> 2 M ohm
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance
Site voltage standing-wave ratio ( $S_{VSWR}$ )	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 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)	/	P
Peak Power Spectral Density	15.247 (d)	/	P
Occupied 6dB Bandwidth	15.247 (d)	/	P
Band Edges Compliance	15.247 (b)	/	P
Transmitter Spurious Emission - Conducted	15.247	/	P
Transmitter Spurious Emission - Radiated	15.247, 15.209, 15.209	/	P
AC Powerline Conducted Emission	15.107, 15.207	/	P
Occupied 20dB Bandwidth	15.247 (d)	/	P

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

The measurement is made according to Public notice KDB558074 and ANSI C63.4.

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/matrix 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 case listed above are tested under Normal Temperature and Normal Voltage, 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

## **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	2013-07-19
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2013-10-30
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2013-08-13

### **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	2014-02-12
2	BiLog Antenna	3142B	9908-1403	EMCO	2014-03-15
3	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2013-12-25

### **Anechoic chamber**

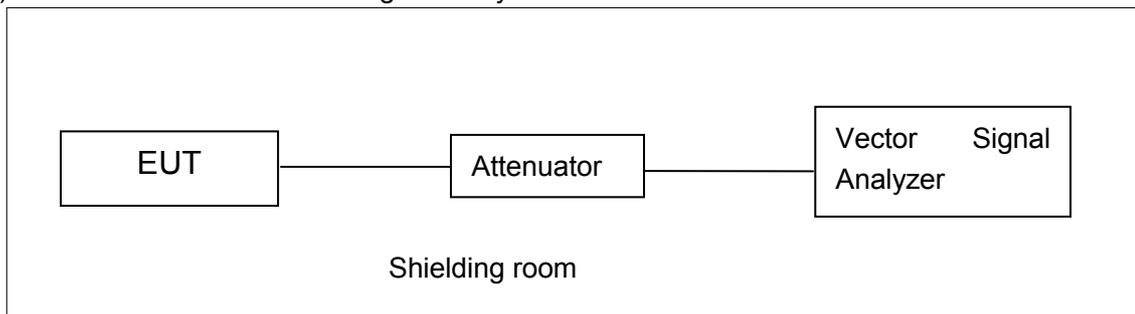
Fully anechoic chamber by Frankonia German.

## 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

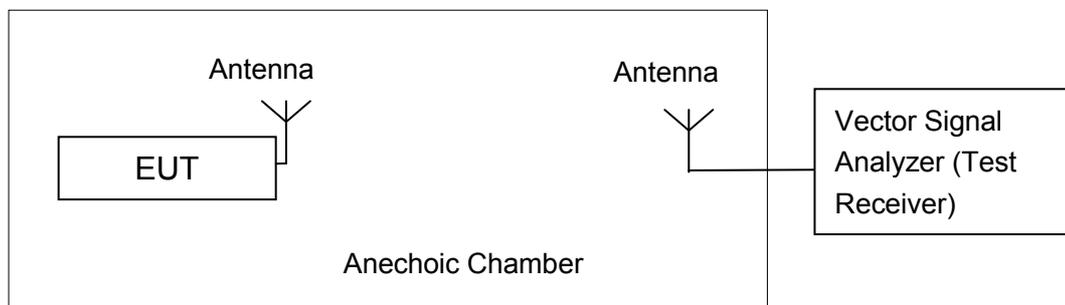


#### A.1.2. Radiated Emission Measurements

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 C63.4 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 C63.4 and KDB558074

### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
-------------------------	--------

### A.2.1. Antenna Gain

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

Test	Channel		
Tnom,Vnom	1	6	11
Conducted Power(dBm)	14.73	14.79	14.58
Radiated Power(dBm)	18.38	18.59	18.25
Gain(dBi)	3.65	3.80	3.67

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	20.14	23.70	19.86	23.42	19.93	23.49
802.11g	19.54	23.34	18.87	22.67	19.45	23.25
802.11n	19.52	23.19	18.93	22.60	19.41	23.08

**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 C63.4 and KDB558074

### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
-------------------------	--------

**Measurement Results:**

Mode	Channel	Power Spectral Density ( dBm/3 kHz )	Conclusion
802.11b	1	-8.56	P
	6	-8.91	P
	11	-9.15	P
802.11g	1	-14.99	P
	6	-16.10	P
	11	-15.82	P
802.11n	1	-15.18	P
	6	-16.76	P
	11	-15.76	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 C63.4 and KDB558074

**Measurement Uncertainty:**

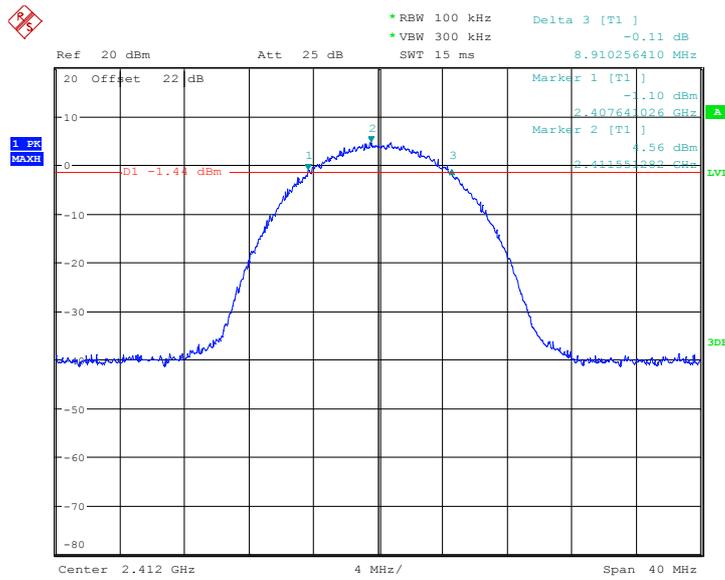
Measurement Uncertainty	60.80Hz
-------------------------	---------

**Measurement Result:**

Mode	Channel	Occupied 6dB Bandwidth ( kHz)		conclusion
802.11b	1	Fig.1	8910	P
	6	Fig.2	8654	P
	11	Fig.3	8526	P
802.11g	1	Fig.4	16603	P
	6	Fig.5	16603	P
	11	Fig.6	16603	P
802.11n	1	Fig.7	17821	P
	6	Fig.8	17821	P
	11	Fig.9	17821	P

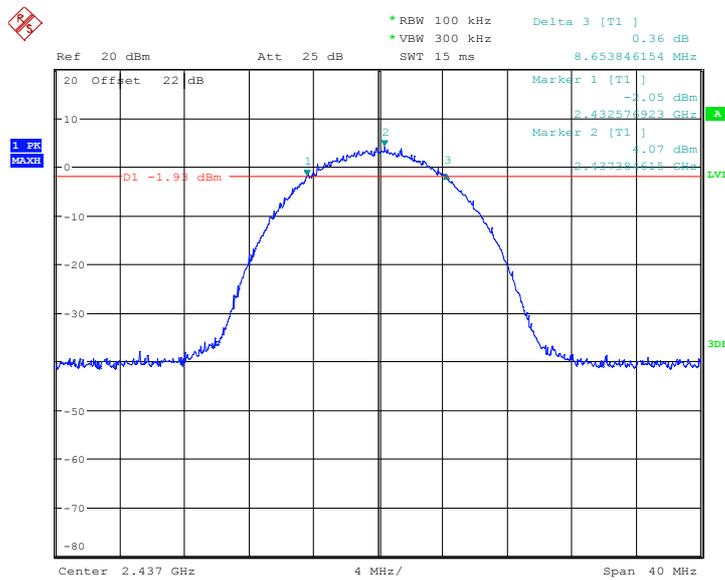
**Conclusion: PASS**

**Test graphs as below:**



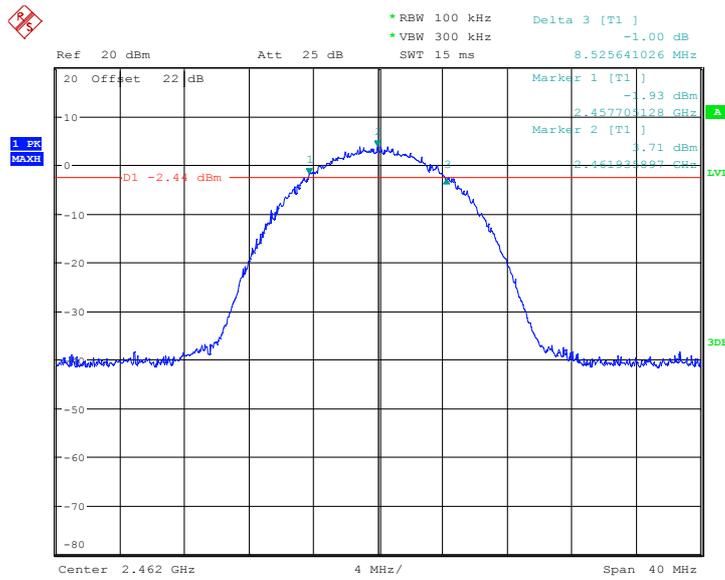
Date: 7.APR.2013 14:31:48

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



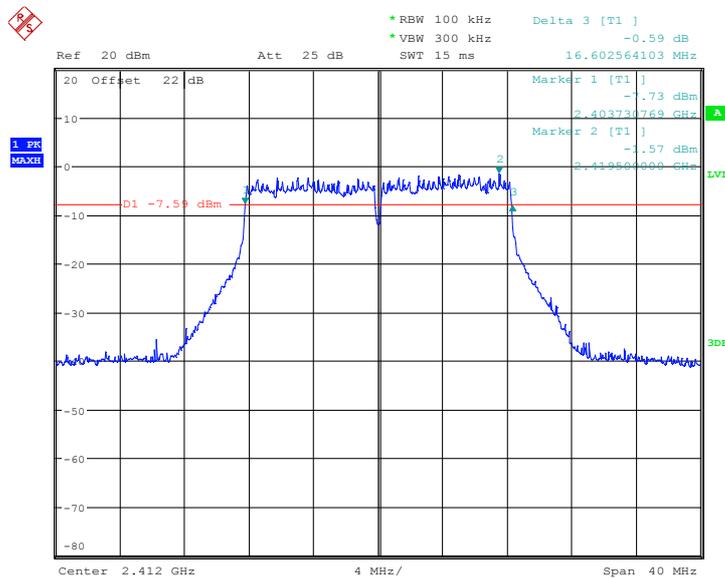
Date: 7.APR.2013 14:34:11

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



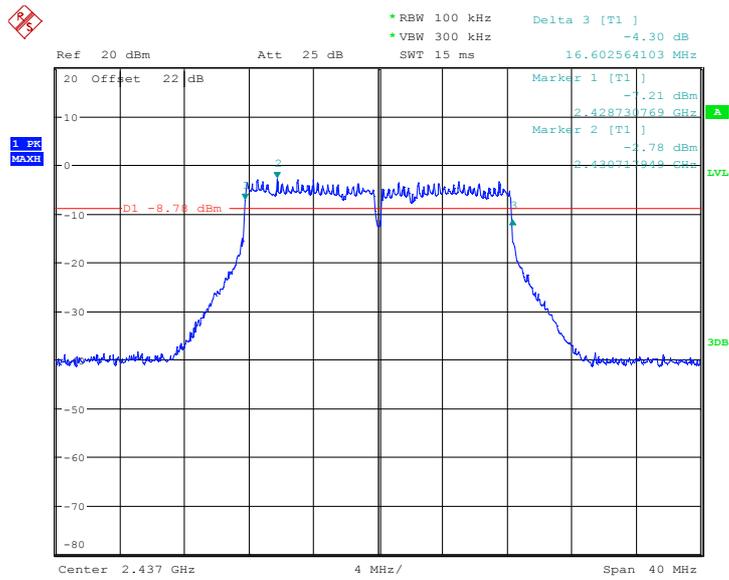
Date: 7.APR.2013 14:36:21

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



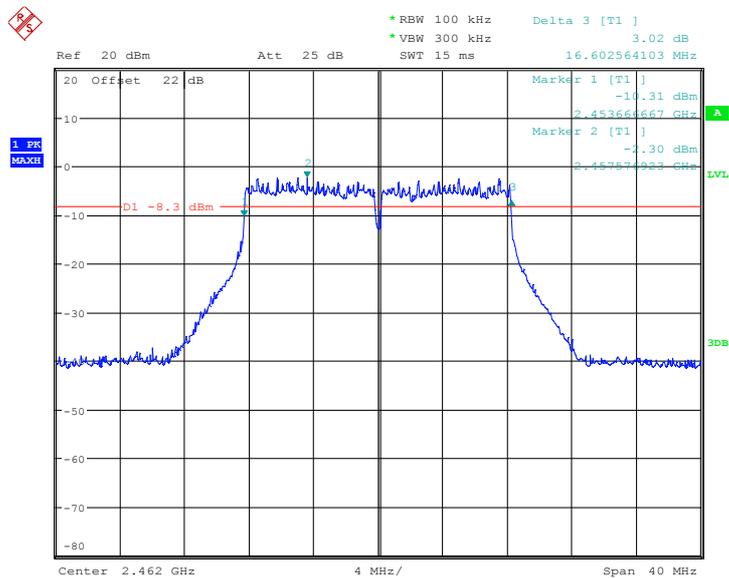
Date: 7.APR.2013 14:38:17

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



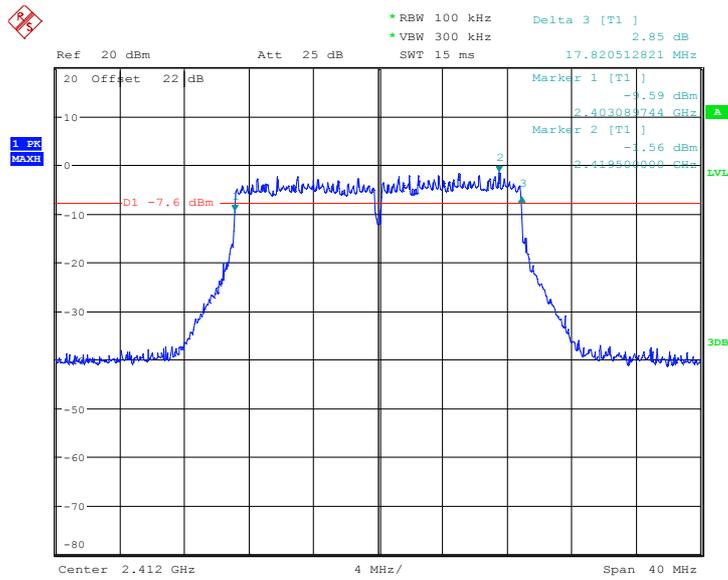
Date: 7.APR.2013 14:39:58

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



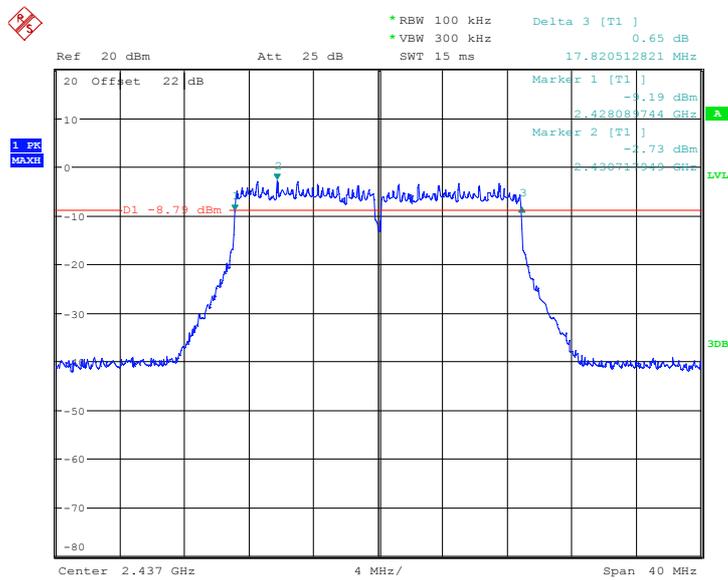
Date: 7.APR.2013 14:41:25

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



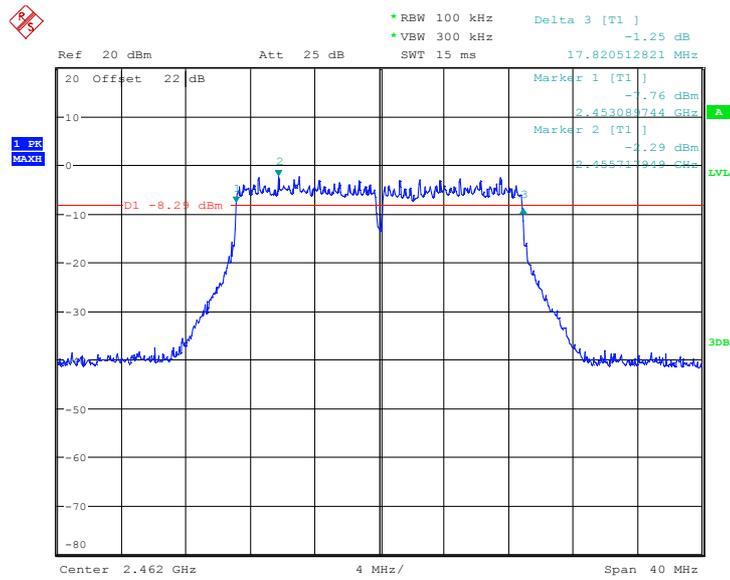
Date: 7.APR.2013 14:43:07

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



Date: 7.APR.2013 14:43:56

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



Date: 7.APR.2013 14:45:13

**Fig. 9 Occupied 6dB Bandwidth (802.11n-HT20, Ch 11)**

### 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 C63.4 and KDB558074

**Measurement Uncertainty:**

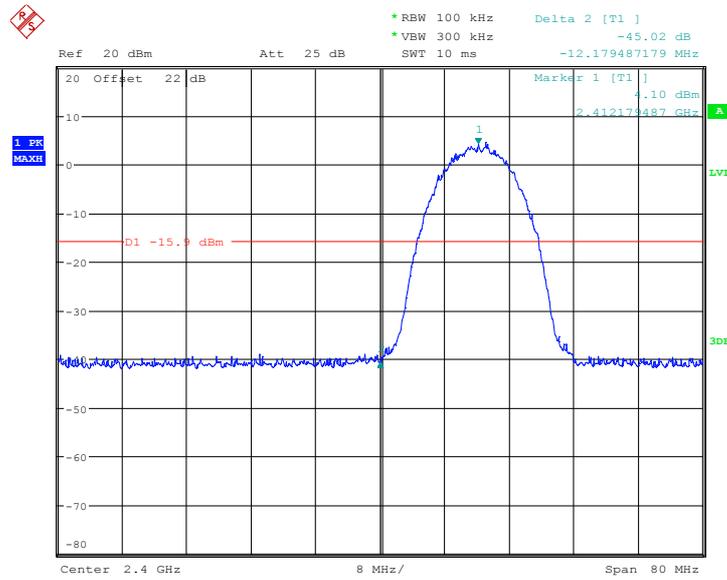
Measurement Uncertainty	0.75dB
-------------------------	--------

**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

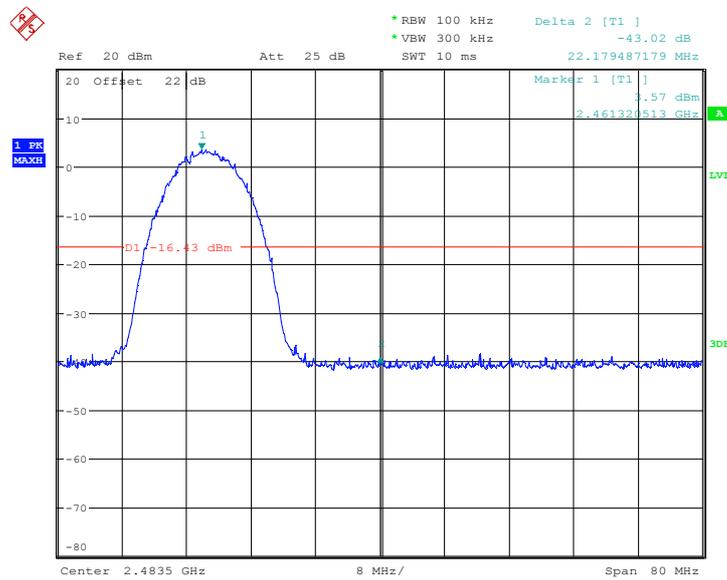
**Conclusion: PASS**

**Test graphs as below:**



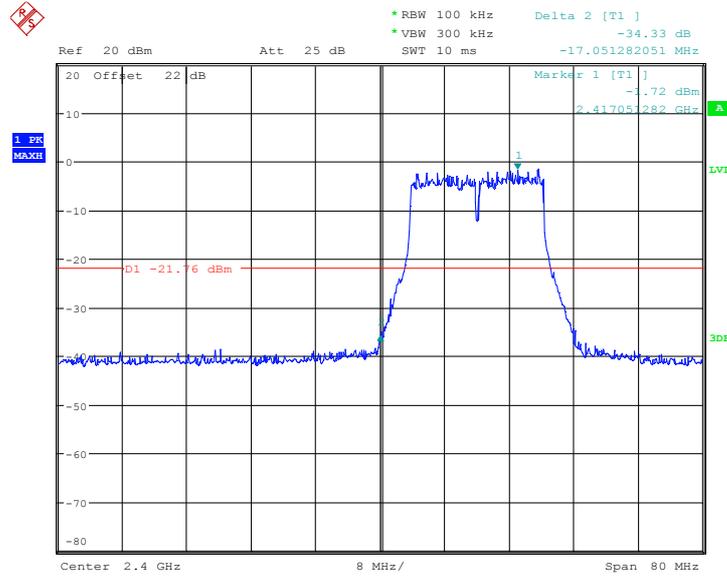
Date: 7.APR.2013 14:51:54

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



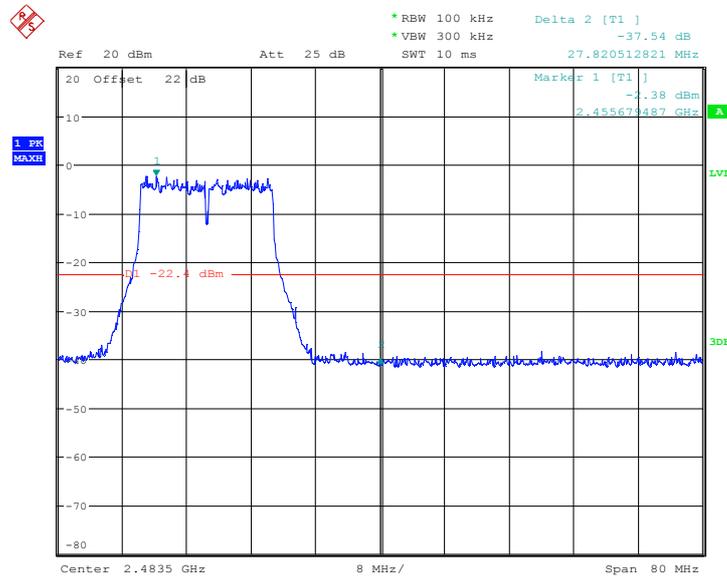
Date: 7.APR.2013 14:53:34

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



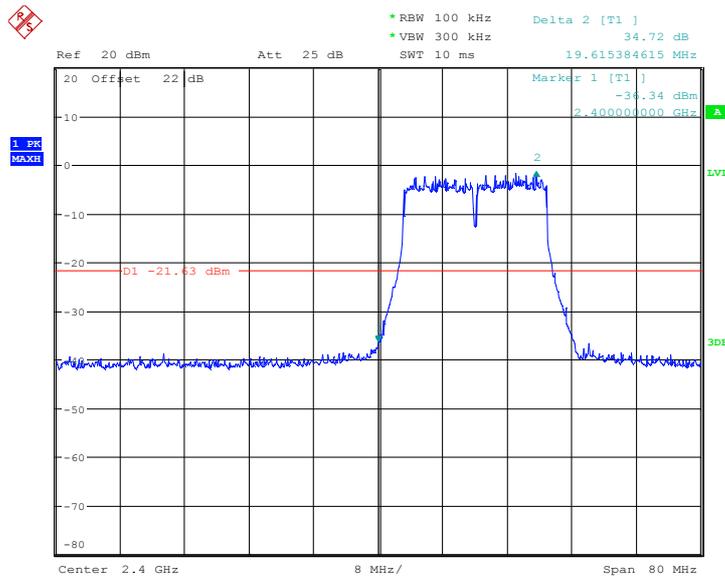
Date: 7.APR.2013 14:54:48

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



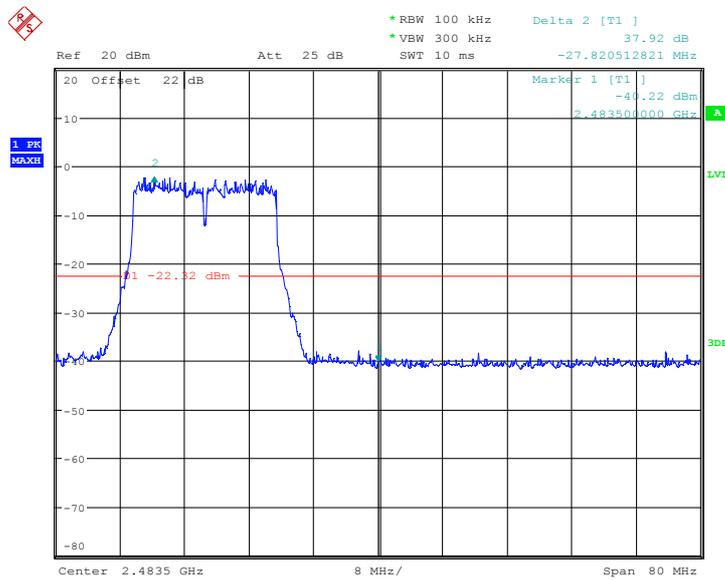
Date: 7.APR.2013 14:56:03

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



Date: 7.APR.2013 15:12:25

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



Date: 7.APR.2013 15:13:53

**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 C63.4 and KDB558074

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:

##### 802.11b/g mode

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 ~ 2.5 GHz	Fig.18	P
		2.5 GHz ~ 7.5 GHz	Fig.19	P
		7.5 GHz ~ 10 GHz	Fig.20	P
		10 GHz ~ 15 GHz	Fig.21	P
		15 GHz ~ 20 GHz	Fig.22	P
	20 GHz ~ 26 GHz	Fig.23	P	
	6	2.437 GHz	Fig.24	P

		30 MHz ~ 1 GHz	Fig.25	P
		1 GHz ~ 2.5 GHz	Fig.26	P
		2.5 GHz ~ 7.5 GHz	Fig.27	P
		7.5 GHz ~ 10 GHz	Fig.28	P
		10 GHz ~ 15 GHz	Fig.29	P
		15 GHz ~ 20 GHz	Fig.30	P
		20 GHz ~ 26 GHz	Fig.31	P
	11	2.462 GHz	Fig.32	P
		30 MHz ~ 1 GHz	Fig.33	P
		1 GHz ~ 2.5 GHz	Fig.34	P
		2.5 GHz ~ 7.5 GHz	Fig.35	P
		7.5 GHz ~ 10 GHz	Fig.36	P
		10 GHz ~ 15 GHz	Fig.37	P
		15 GHz ~ 20 GHz	Fig.38	P
802.11g	1	2.412 GHz	Fig.40	P
		30 MHz ~ 1 GHz	Fig.41	P
		1 GHz ~ 2.5 GHz	Fig.42	P
		2.5 GHz ~ 7.5 GHz	Fig.43	P
		7.5 GHz ~ 10 GHz	Fig.44	P
		10 GHz ~ 15 GHz	Fig.45	P
		15 GHz ~ 20 GHz	Fig.46	P
		20 GHz ~ 26 GHz	Fig.47	P
	6	2.437 GHz	Fig.48	P
		30 MHz ~ 1 GHz	Fig.49	P
		1 GHz ~ 2.5 GHz	Fig.50	P
		2.5 GHz ~ 7.5 GHz	Fig.51	P
		7.5 GHz ~ 10 GHz	Fig.52	P
		10 GHz ~ 15 GHz	Fig.53	P
		15 GHz ~ 20 GHz	Fig.54	P
		20 GHz ~ 26 GHz	Fig.55	P
	11	2.462 GHz	Fig.56	P
		30 MHz ~ 1 GHz	Fig.57	P
		1 GHz ~ 2.5 GHz	Fig.58	P
		2.5 GHz ~ 7.5 GHz	Fig.59	P
		7.5 GHz ~ 10 GHz	Fig.60	P
		10 GHz ~ 15 GHz	Fig.61	P
		15 GHz ~ 20 GHz	Fig.62	P
		20 GHz ~ 26 GHz	Fig.63	P

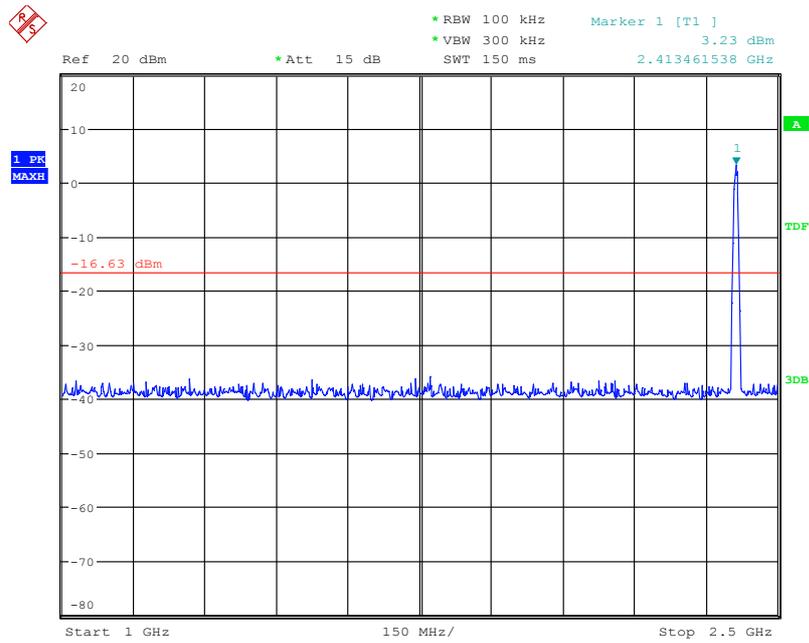
802.11n-HT20 mode

MODE	Channel	Frequency Range	Test Results	Conclusion
802.11n (20MHz)	1	2.412 GHz	Fig.64	P
		30 MHz ~ 1 GHz	Fig.65	P
		1 GHz ~ 2.5 GHz	Fig.66	P
		2.5 GHz ~ 7.5 GHz	Fig.67	P
		7.5 GHz ~ 10 GHz	Fig.68	P
		10 GHz ~ 15 GHz	Fig.69	P
		15 GHz ~ 20 GHz	Fig.70	P
		20 GHz ~ 26 GHz	Fig.71	P
	6	2.437 GHz	Fig.72	P
		30 MHz ~ 1 GHz	Fig.73	P
		1 GHz ~ 2.5 GHz	Fig.74	P
		2.5 GHz ~ 7.5 GHz	Fig.75	P
		7.5 GHz ~ 10 GHz	Fig.76	P
		10 GHz ~ 15 GHz	Fig.77	P
		15 GHz ~ 20 GHz	Fig.78	P
		20 GHz ~ 26 GHz	Fig.79	P
	11	2.462 GHz	Fig.80	P
		30 MHz ~ 1 GHz	Fig.81	P
		1 GHz ~ 2.5 GHz	Fig.82	P
		2.5 GHz ~ 7.5 GHz	Fig.83	P
		7.5 GHz ~ 10 GHz	Fig.84	P
		10 GHz ~ 15 GHz	Fig.85	P
		15 GHz ~ 20 GHz	Fig.86	P
		20 GHz ~ 26 GHz	Fig.87	P

**Conclusion: PASS**

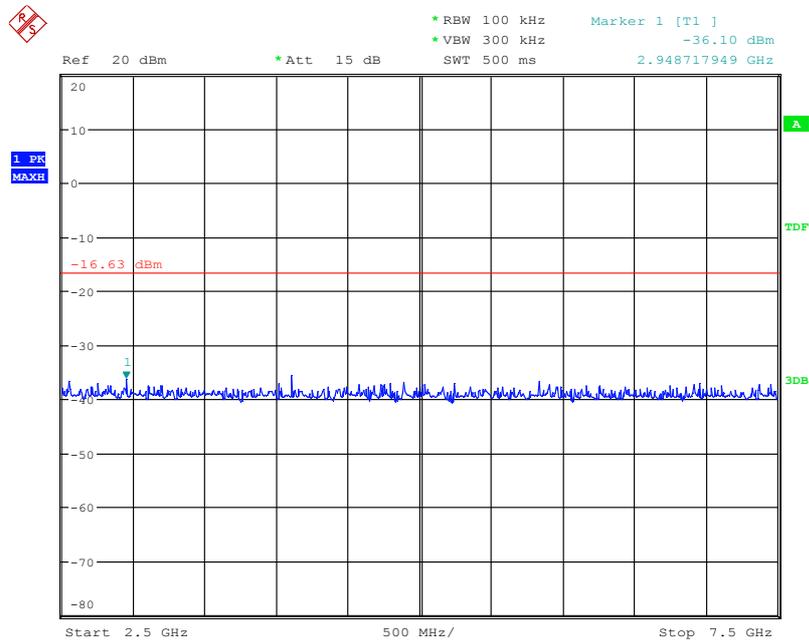
**Test graphs as below:**





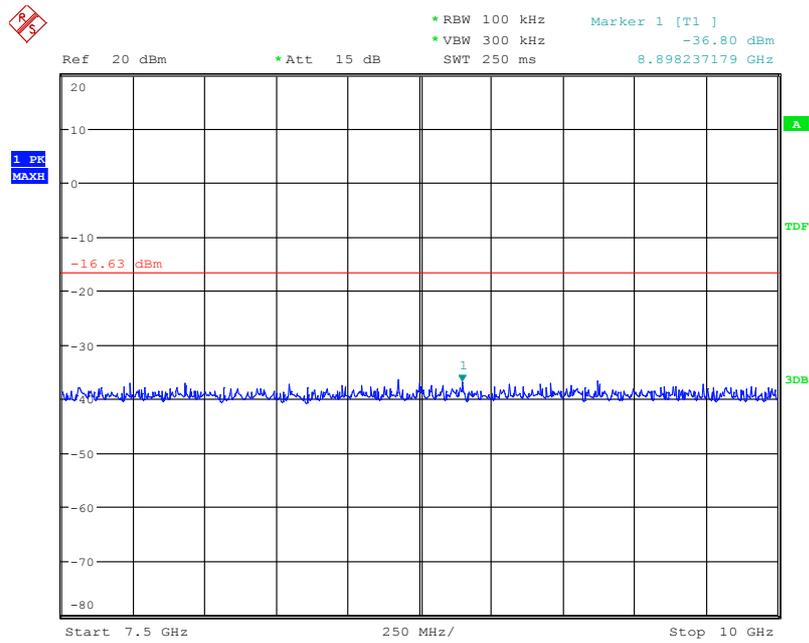
Date: 7.APR.2013 15:33:39

**Fig. 18 Conducted Spurious Emission (802.11b, Ch1, 1 GHz-2.5 GHz)**



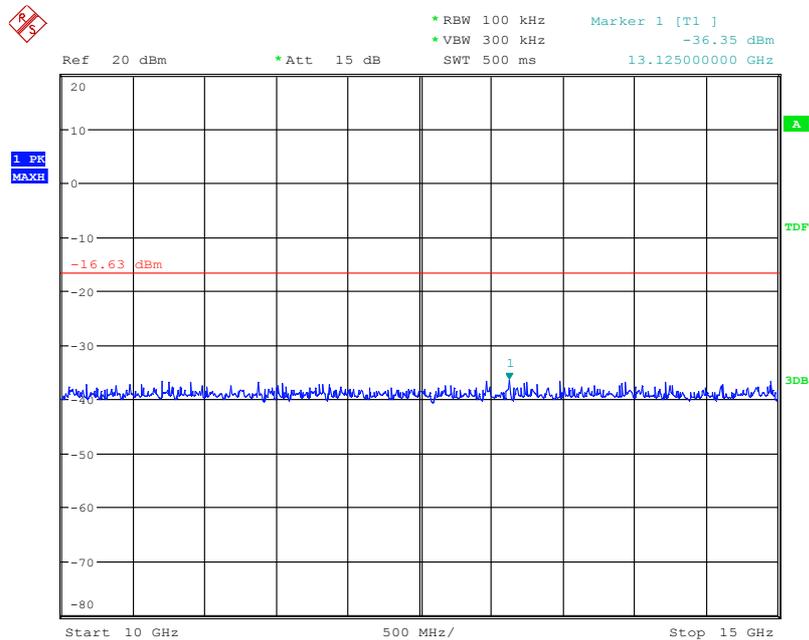
Date: 7.APR.2013 15:33:45

**Fig. 19 Conducted Spurious Emission (802.11b, Ch1, 2.5 GHz-7.5 GHz)**



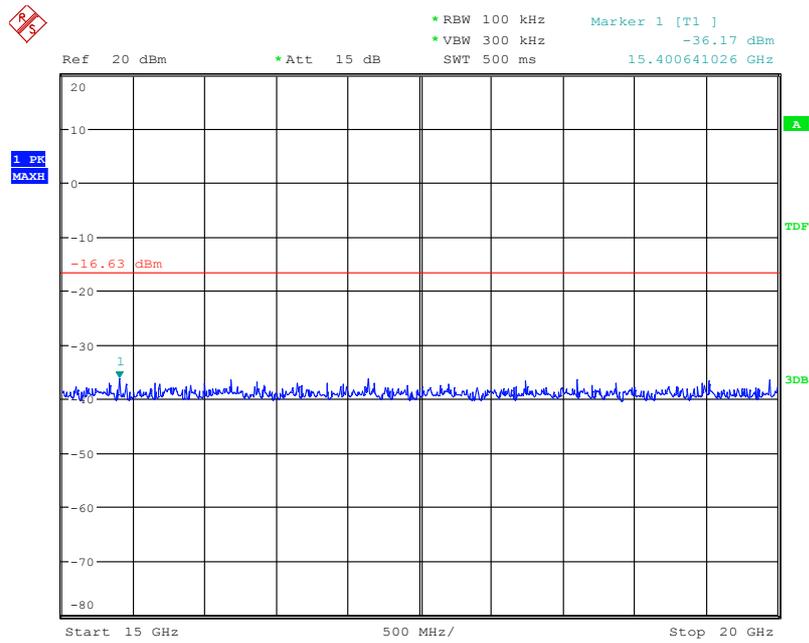
Date: 7.APR.2013 15:33:52

**Fig. 20 Conducted Spurious Emission (802.11b, Ch1, 7.5 GHz-10 GHz)**



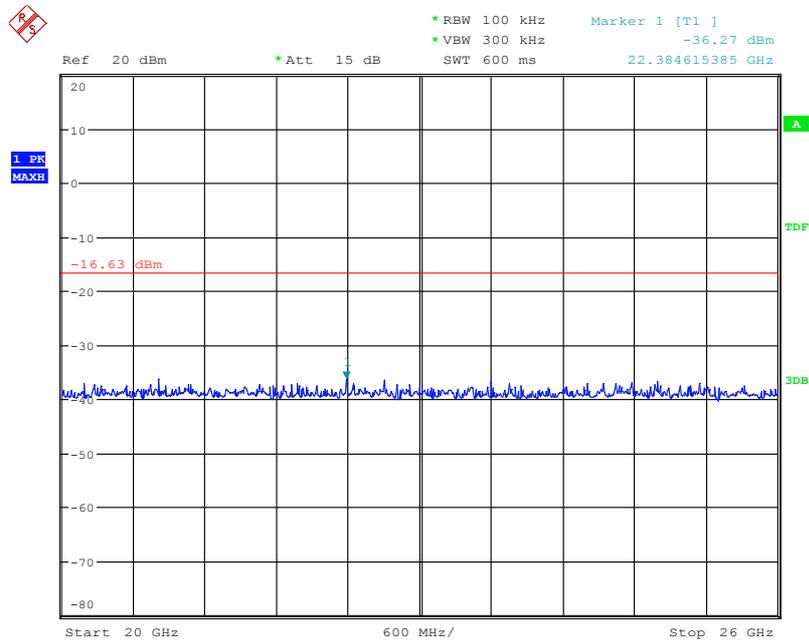
Date: 7.APR.2013 15:33:59

**Fig. 21 Conducted Spurious Emission (802.11b, Ch1, 10 GHz-15 GHz)**



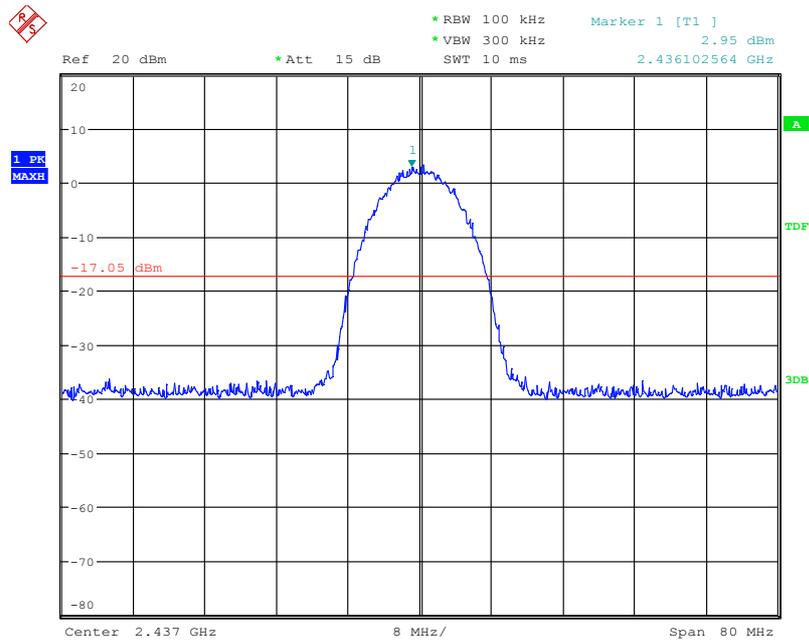
Date: 7.APR.2013 15:34:06

**Fig. 22 Conducted Spurious Emission (802.11b, Ch1, 15 GHz-20 GHz)**



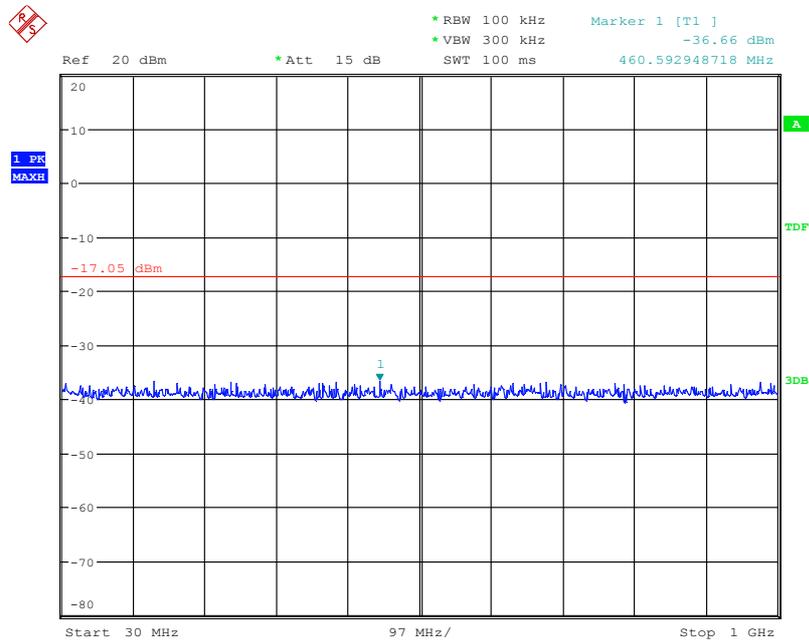
Date: 7.APR.2013 15:34:12

**Fig. 23 Conducted Spurious Emission (802.11b, Ch1, 20 GHz-26 GHz)**



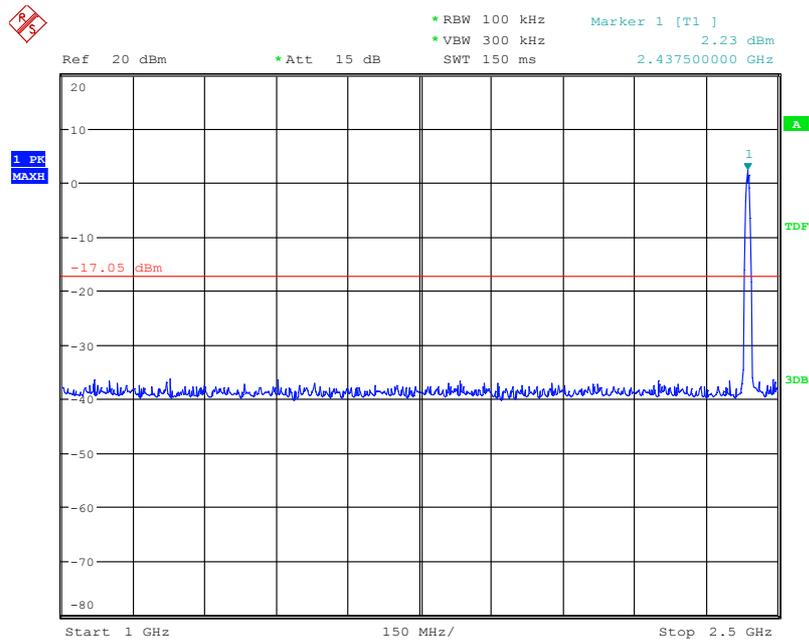
Date: 7.APR.2013 15:35:45

**Fig. 24 Conducted Spurious Emission (802.11b, Ch6, Center Frequency)**



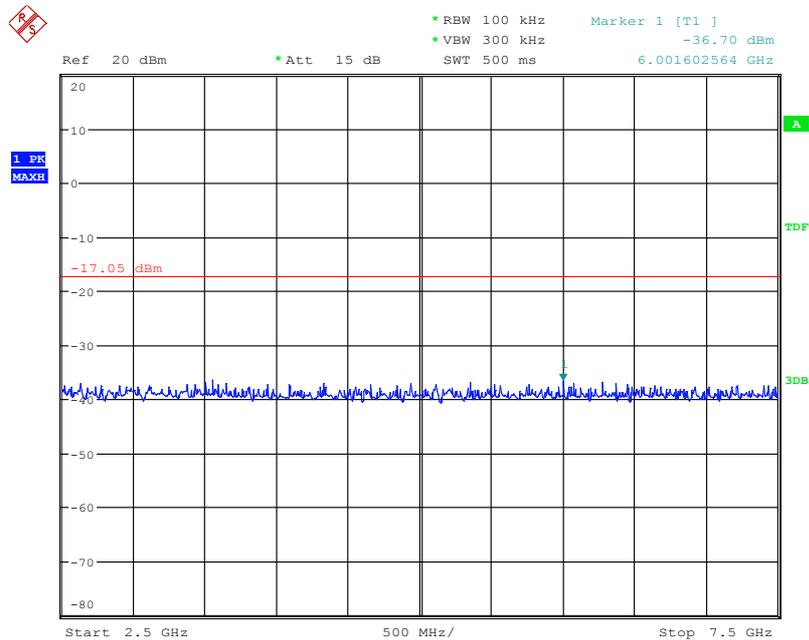
Date: 7.APR.2013 15:35:52

**Fig. 25 Conducted Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)**



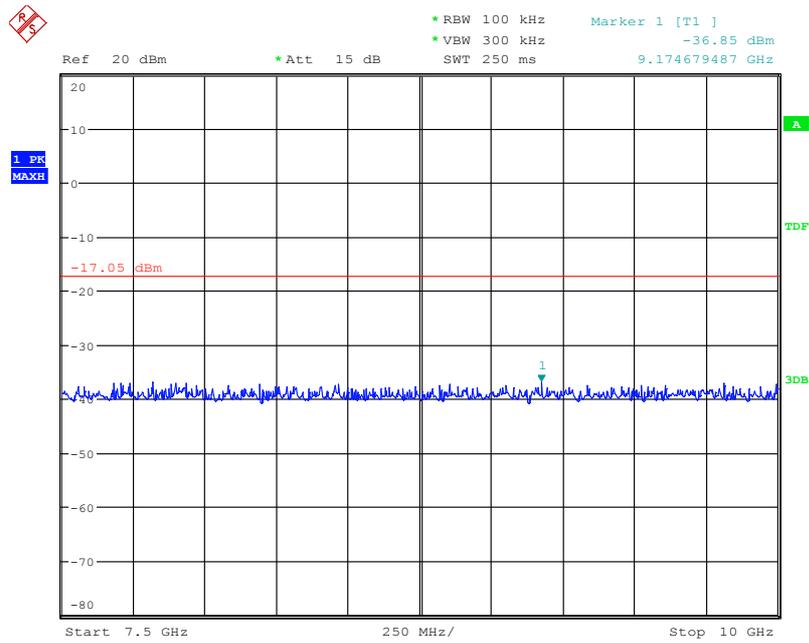
Date: 7.APR.2013 15:35:59

**Fig. 26 Conducted Spurious Emission (802.11b, Ch6, 1 GHz-2.5 GHz)**



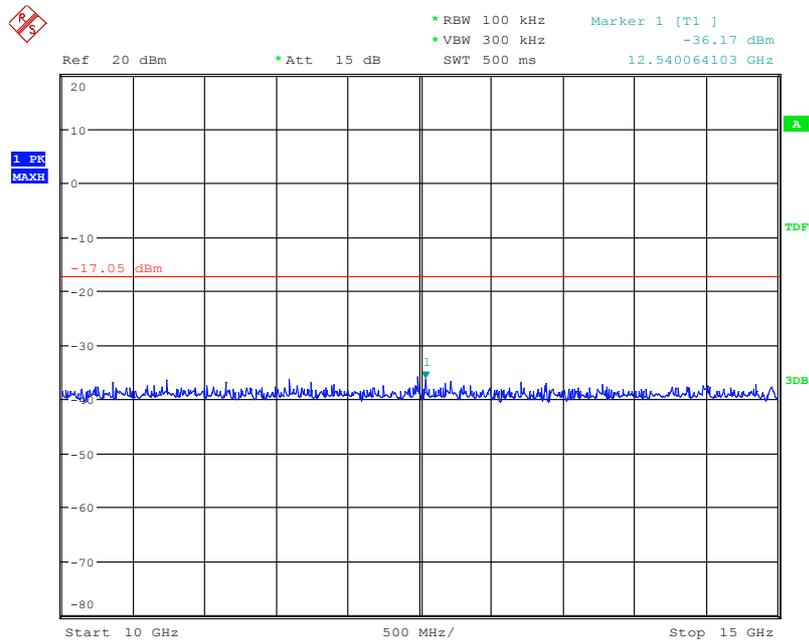
Date: 7.APR.2013 15:36:05

**Fig. 27 Conducted Spurious Emission (802.11b, Ch6, 2.5 GHz-7.5 GHz)**



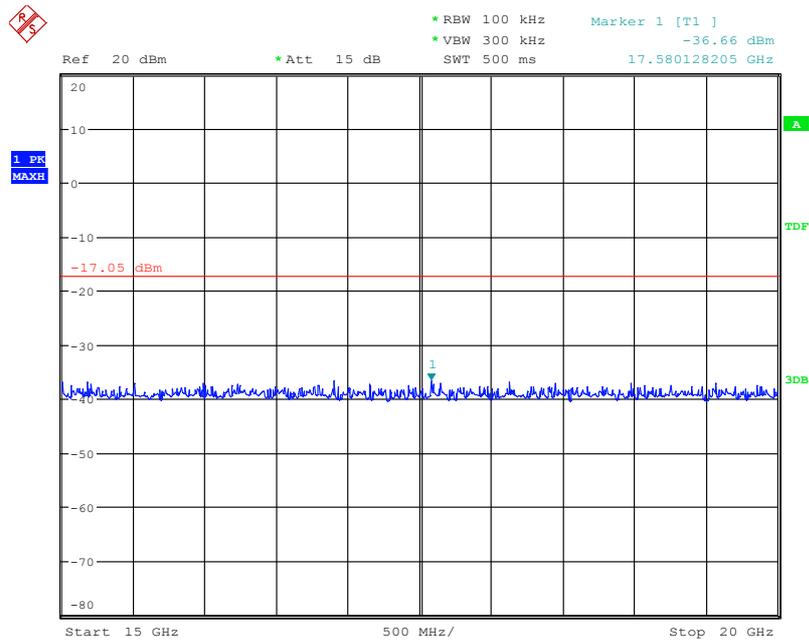
Date: 7.APR.2013 15:36:12

**Fig. 28 Conducted Spurious Emission (802.11b, Ch6, 7.5 GHz-10 GHz)**



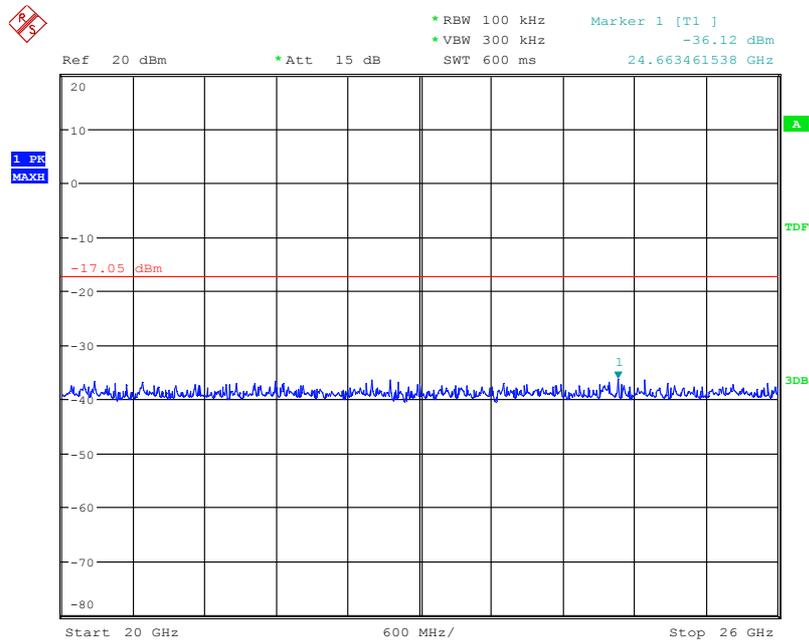
Date: 7.APR.2013 15:36:19

**Fig. 29 Conducted Spurious Emission (802.11b, Ch6, 10 GHz-15 GHz)**



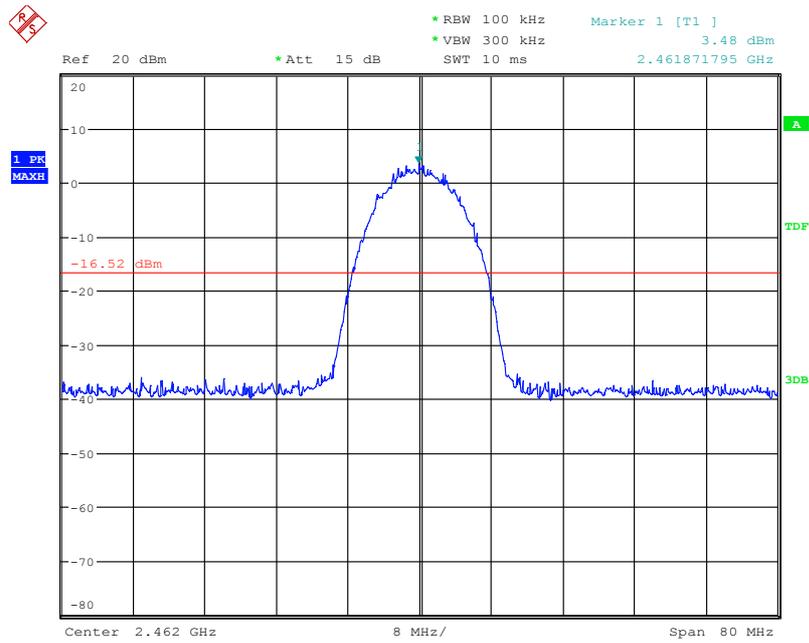
Date: 7.APR.2013 15:36:26

**Fig. 30 Conducted Spurious Emission (802.11b, Ch6, 15 GHz-20 GHz)**



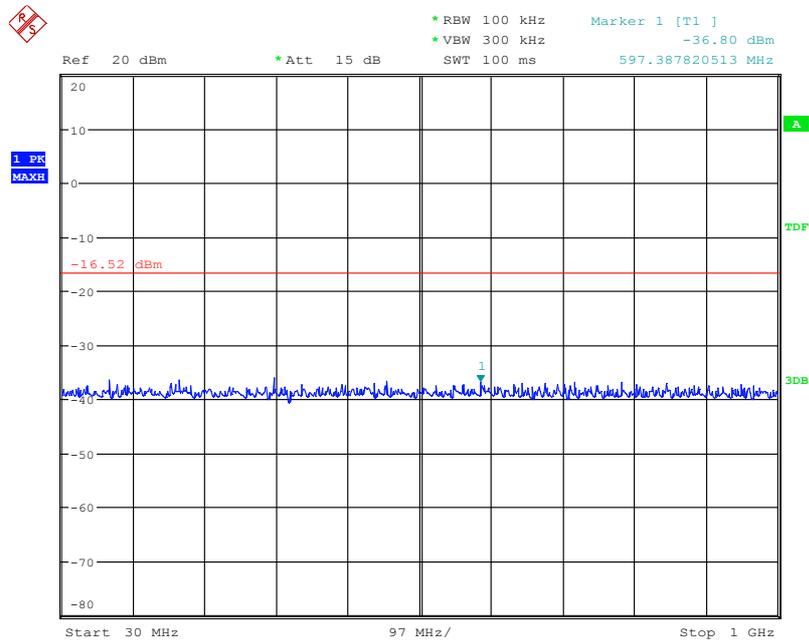
Date: 7.APR.2013 15:36:32

**Fig. 31 Conducted Spurious Emission (802.11b, Ch6, 20 GHz-26 GHz)**



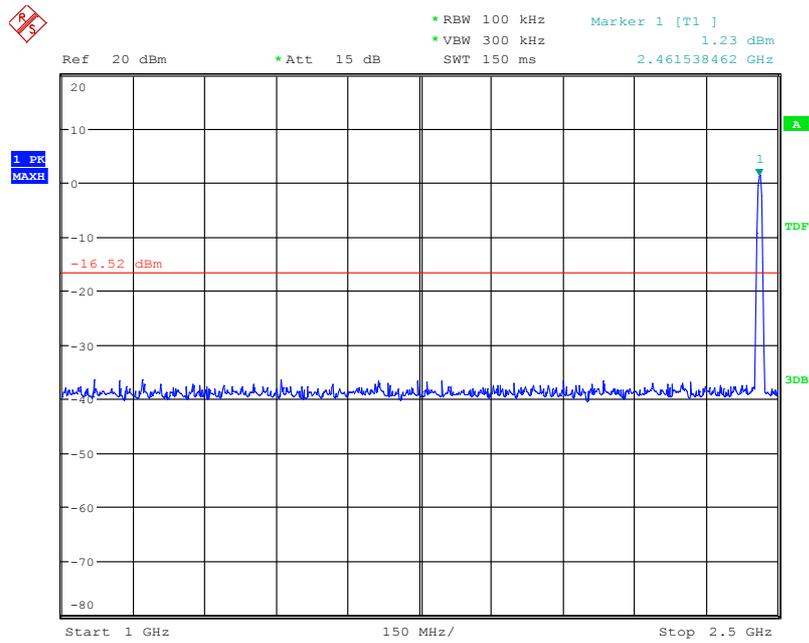
Date: 7.APR.2013 15:37:00

**Fig. 32 Conducted Spurious Emission (802.11b, Ch11, Center Frequency)**



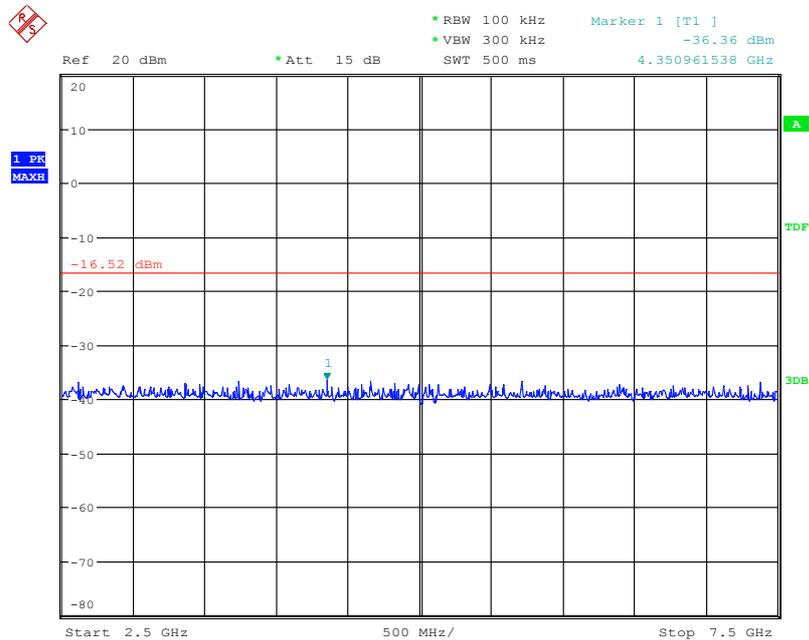
Date: 7.APR.2013 15:37:08

**Fig. 33 Conducted Spurious Emission (802.11b, Ch11, 30 MHz-1 GHz)**



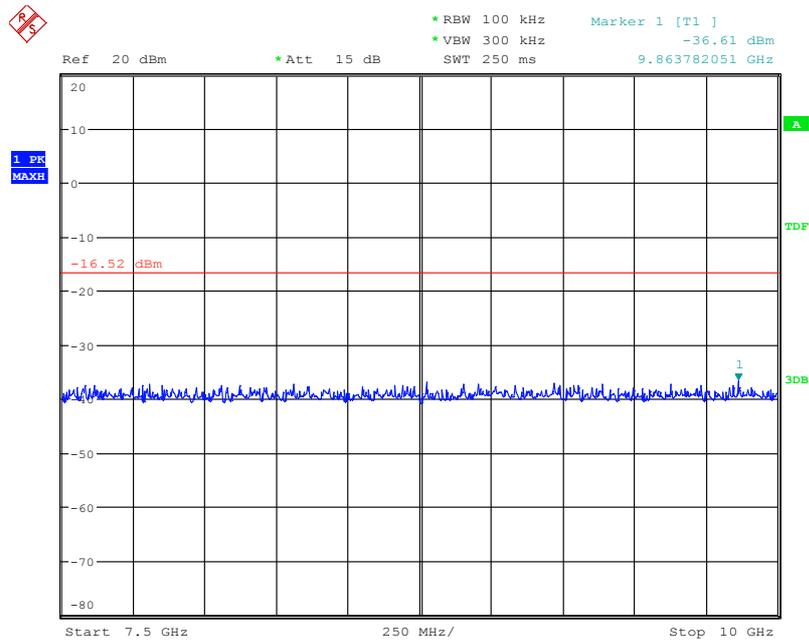
Date: 7.APR.2013 15:37:14

**Fig. 34 Conducted Spurious Emission (802.11b, Ch11, 1 GHz-2.5 GHz)**



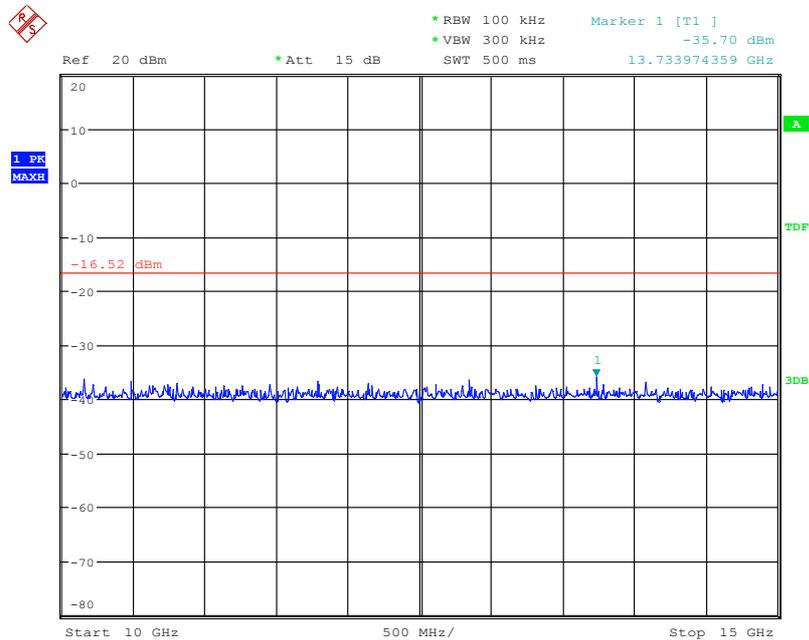
Date: 7.APR.2013 15:37:21

**Fig. 35 Conducted Spurious Emission (802.11b, Ch11, 2.5 GHz-7.5 GHz)**



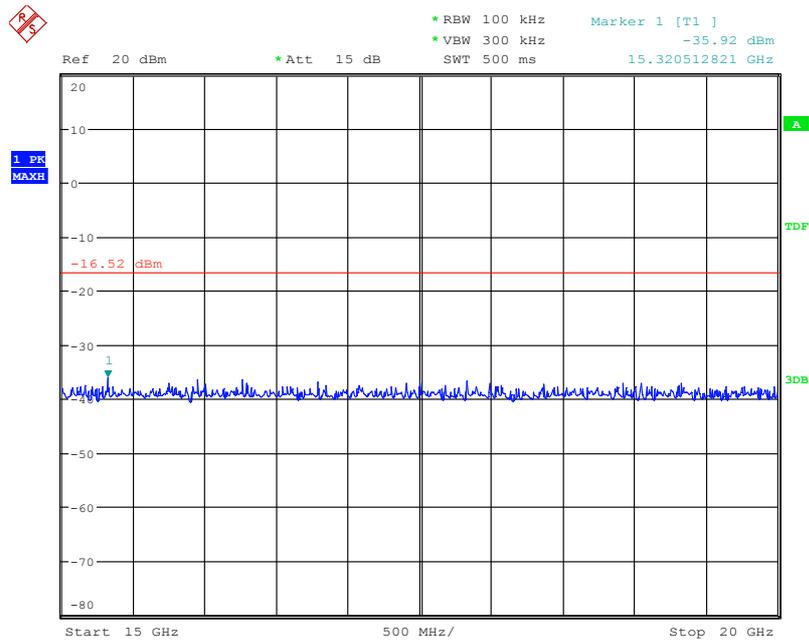
Date: 7.APR.2013 15:37:28

**Fig. 36 Conducted Spurious Emission (802.11b, Ch11, 7.5 GHz-10 GHz)**



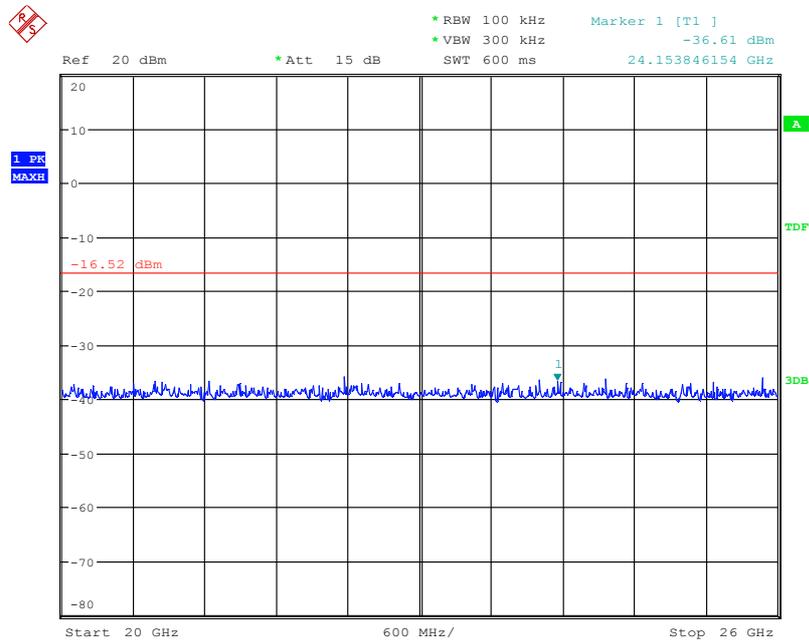
Date: 7.APR.2013 15:37:35

**Fig. 37 Conducted Spurious Emission (802.11b, Ch11, 10 GHz-15 GHz)**



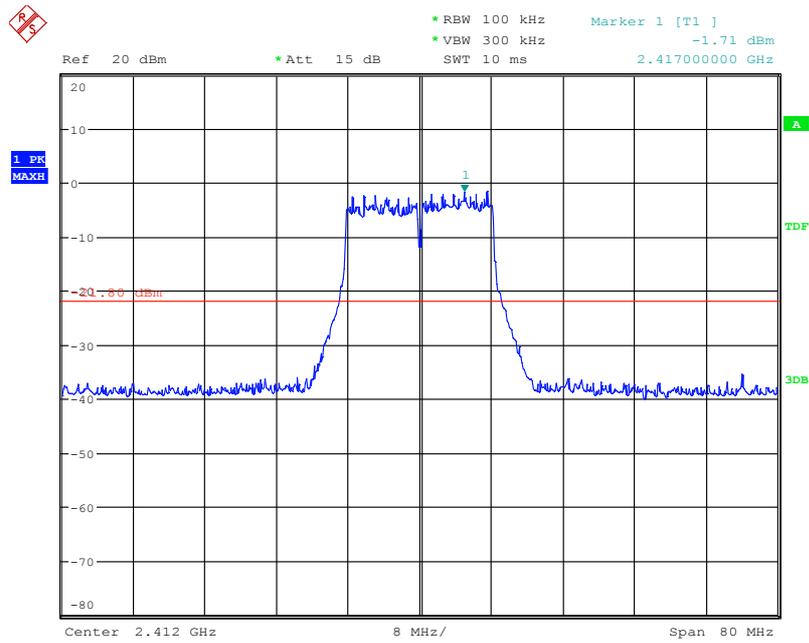
Date: 7.APR.2013 15:37:42

**Fig. 38 Conducted Spurious Emission (802.11b, Ch11, 15 GHz-20 GHz)**



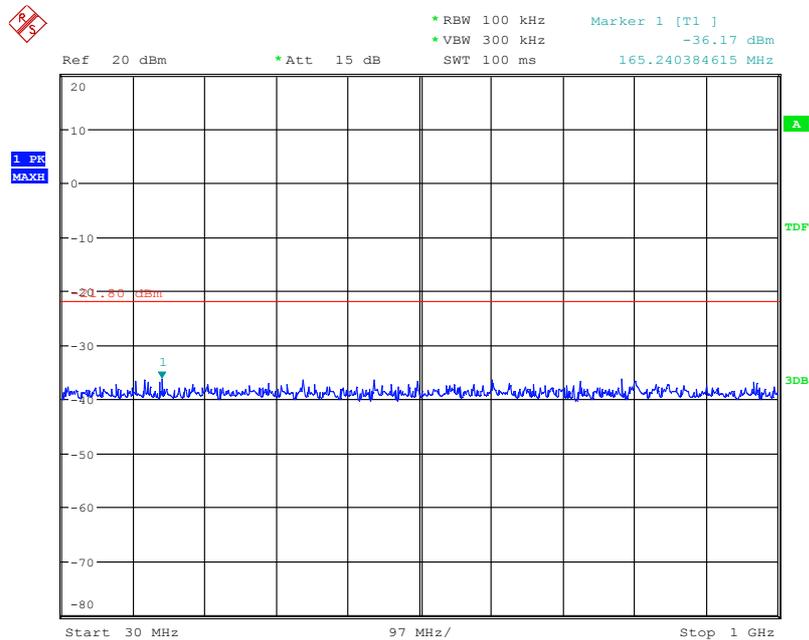
Date: 7.APR.2013 15:37:48

**Fig. 39 Conducted Spurious Emission (802.11b, Ch11, 20 GHz-26 GHz)**



Date: 7.APR.2013 15:38:21

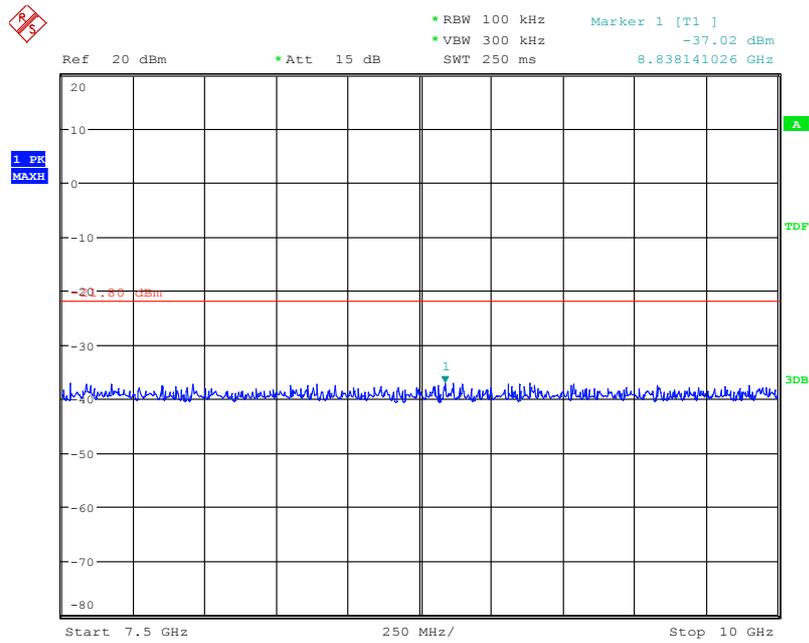
**Fig. 40 Conducted Spurious Emission (802.11g, Ch1, Center Frequency)**



Date: 7.APR.2013 15:38:28

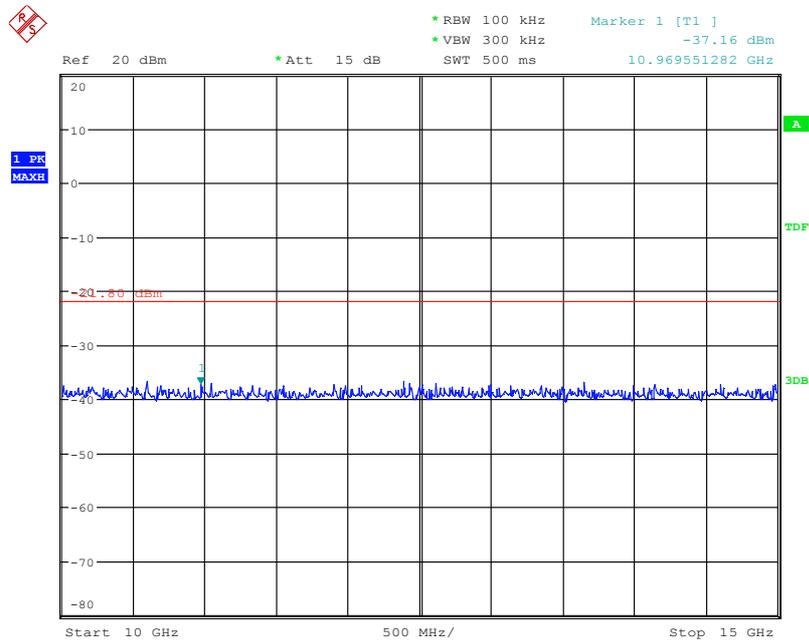
**Fig. 41 Conducted Spurious Emission (802.11g, Ch1, 30 MHz-1 GHz)**





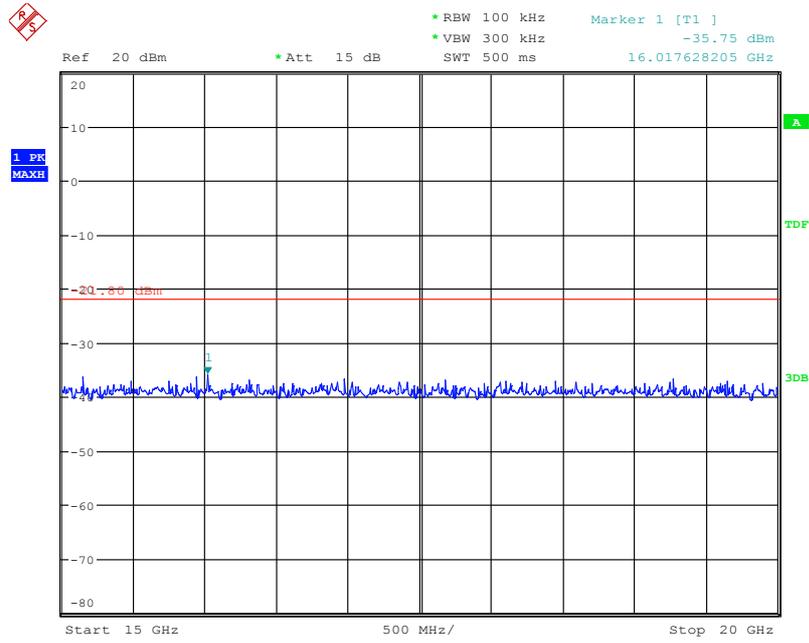
Date: 7.APR.2013 15:38:49

**Fig. 44 Conducted Spurious Emission (802.11g, Ch1, 7.5 GHz-10 GHz)**



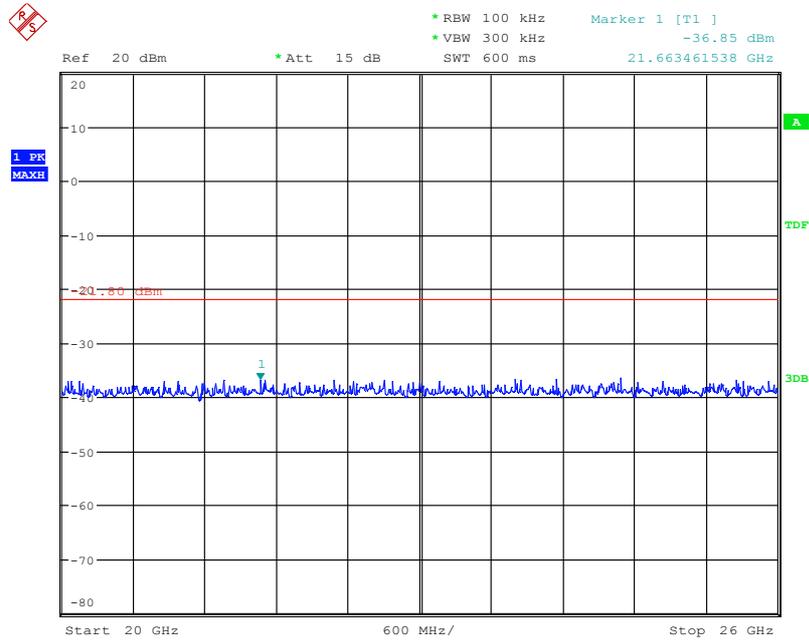
Date: 7.APR.2013 15:38:56

**Fig. 45 Conducted Spurious Emission (802.11g, Ch1, 10 GHz-15 GHz)**



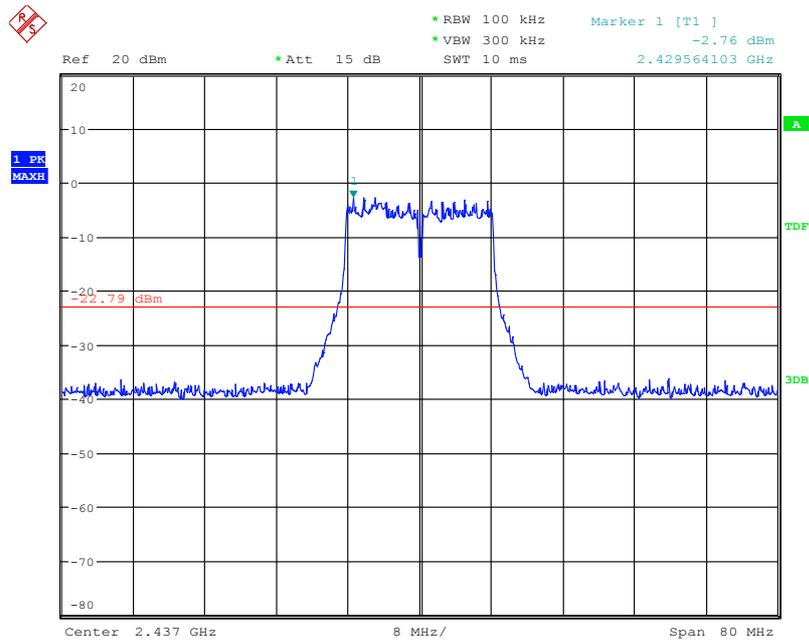
Date: 7.APR.2013 15:39:03

**Fig. 46 Conducted Spurious Emission (802.11g, Ch1, 15 GHz-20 GHz)**



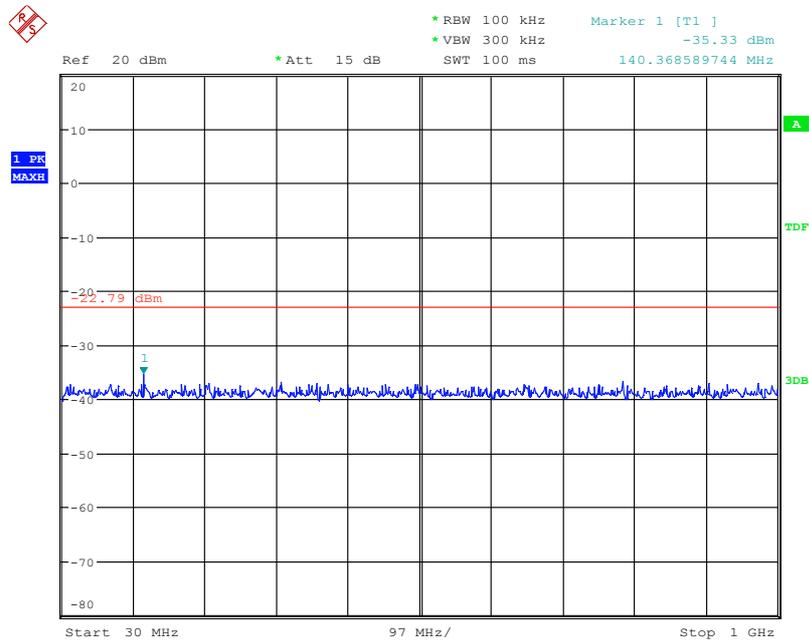
Date: 7.APR.2013 15:39:10

**Fig. 47 Conducted Spurious Emission (802.11g, Ch1, 20 GHz-26 GHz)**



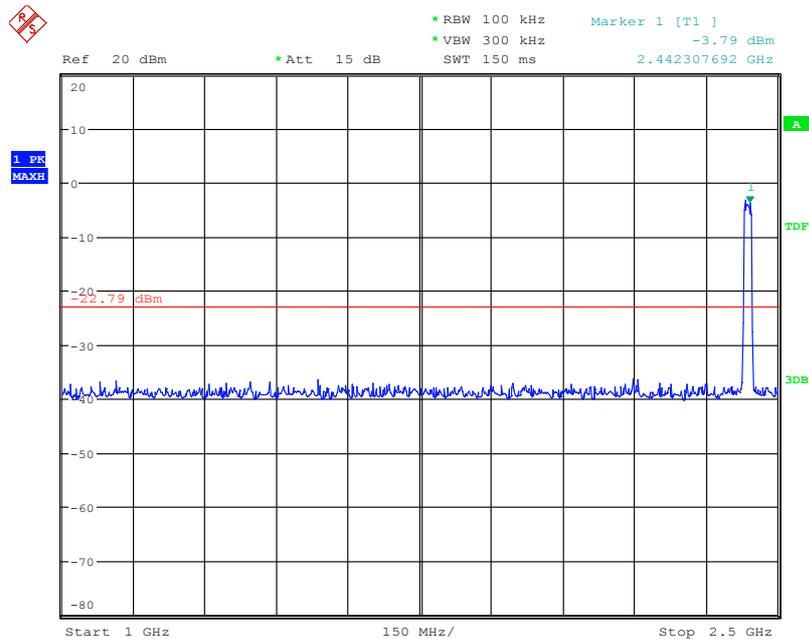
Date: 7.APR.2013 15:39:41

**Fig. 48 Conducted Spurious Emission (802.11g, Ch6, Center Frequency)**



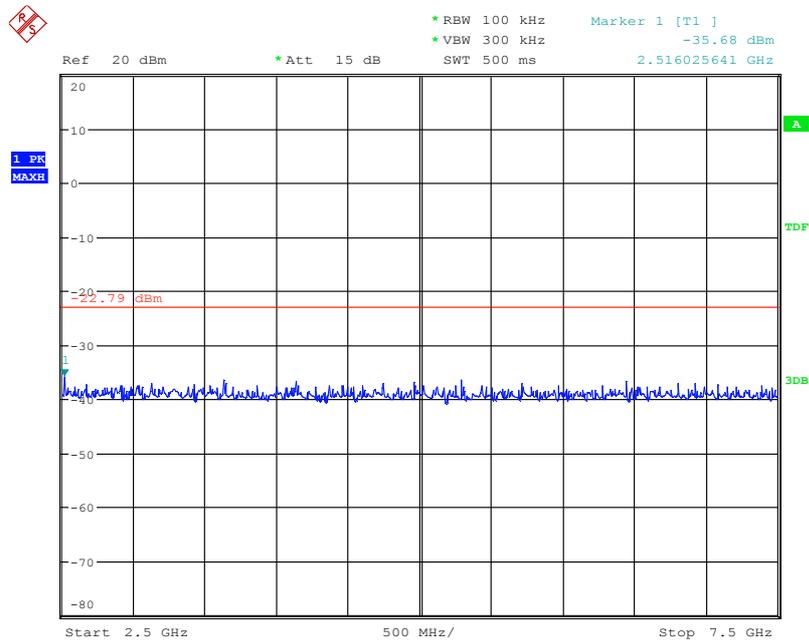
Date: 7.APR.2013 15:39:48

**Fig. 49 Conducted Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)**



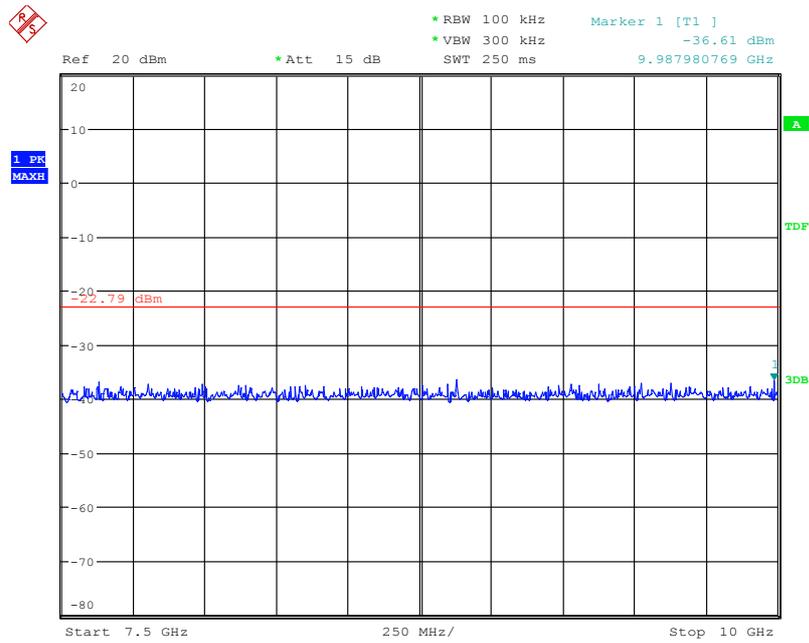
Date: 7.APR.2013 15:39:54

**Fig. 50 Conducted Spurious Emission (802.11g, Ch6, 1 GHz-2.5 GHz)**



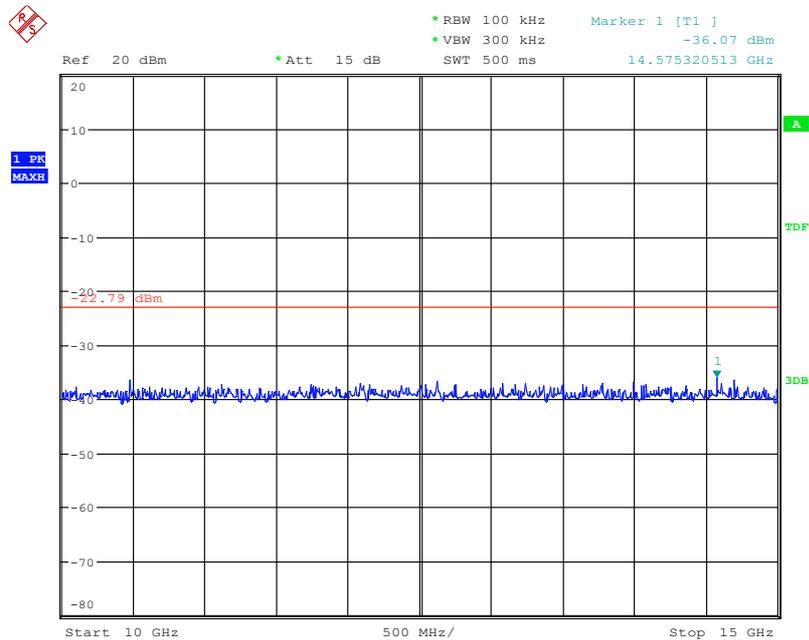
Date: 7.APR.2013 15:40:01

**Fig. 51 Conducted Spurious Emission (802.11g, Ch6, 2.5 GHz-7.5 GHz)**



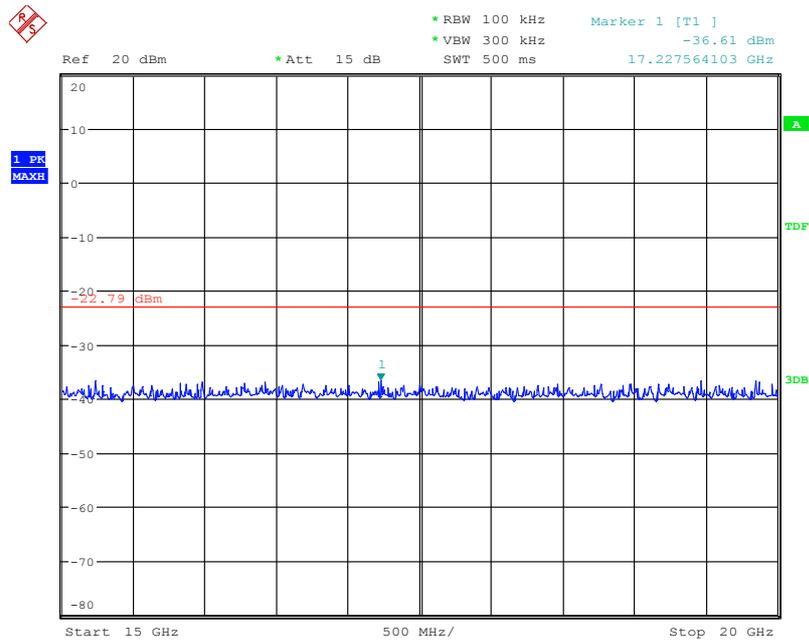
Date: 7.APR.2013 15:40:08

**Fig. 52 Conducted Spurious Emission (802.11g, Ch6, 7.5 GHz-10 GHz)**



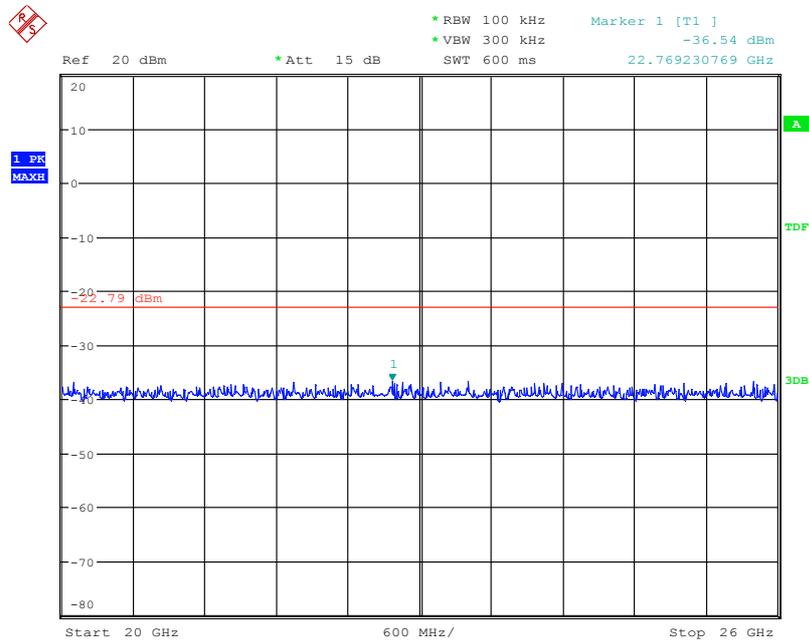
Date: 7.APR.2013 15:40:15

**Fig. 53 Conducted Spurious Emission (802.11g, Ch6, 10 GHz-15 GHz)**



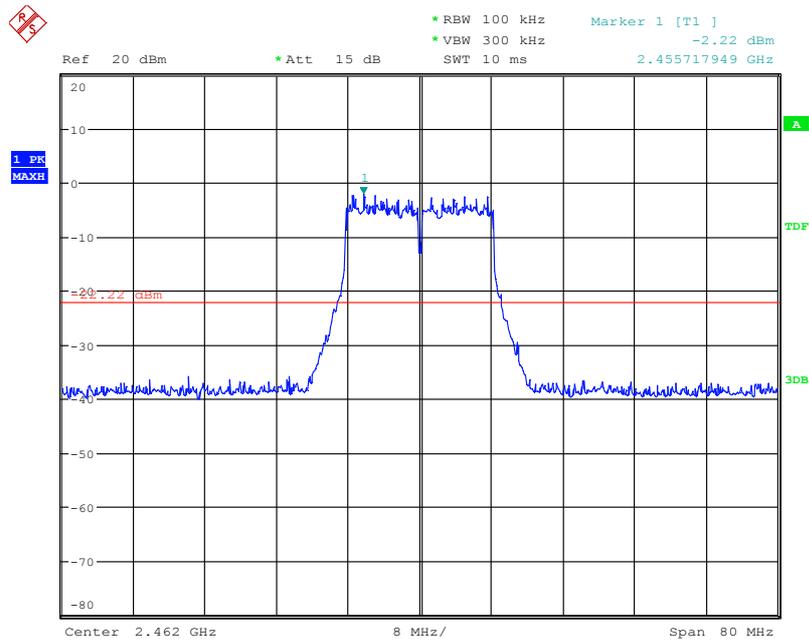
Date: 7.APR.2013 15:40:22

**Fig. 54 Conducted Spurious Emission (802.11g, Ch6, 15 GHz-20 GHz)**



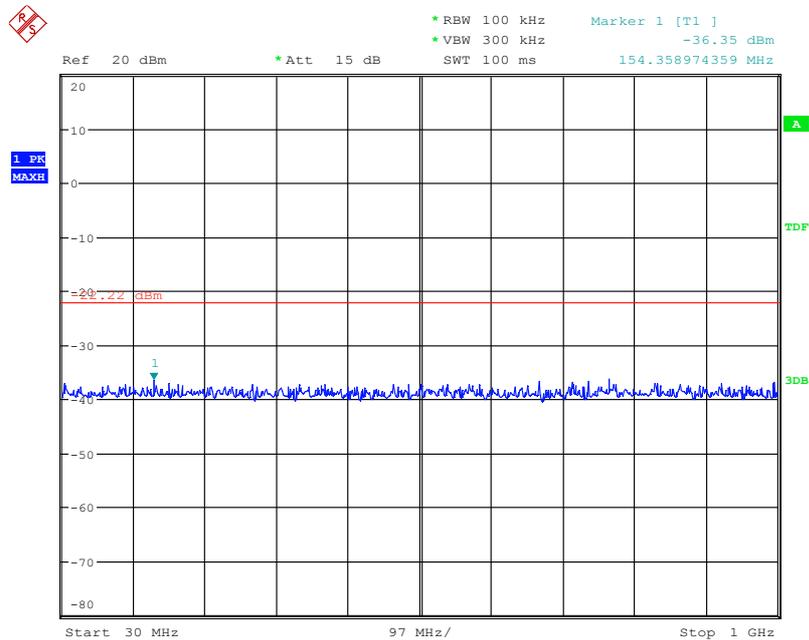
Date: 7.APR.2013 15:40:28

**Fig. 55 Conducted Spurious Emission (802.11g, Ch6, 20 GHz-26 GHz)**



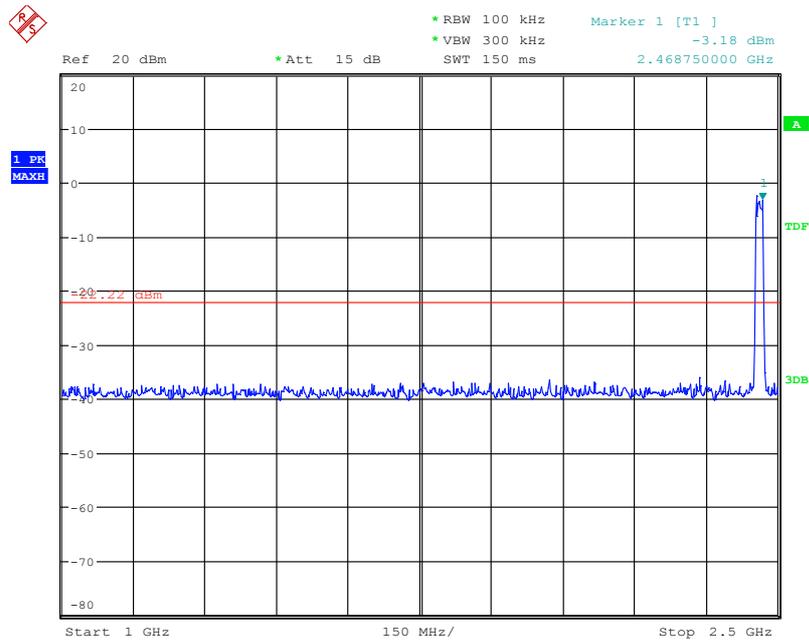
Date: 7.APR.2013 15:40:58

**Fig. 56 Conducted Spurious Emission (802.11g, Ch11, Center Frequency)**



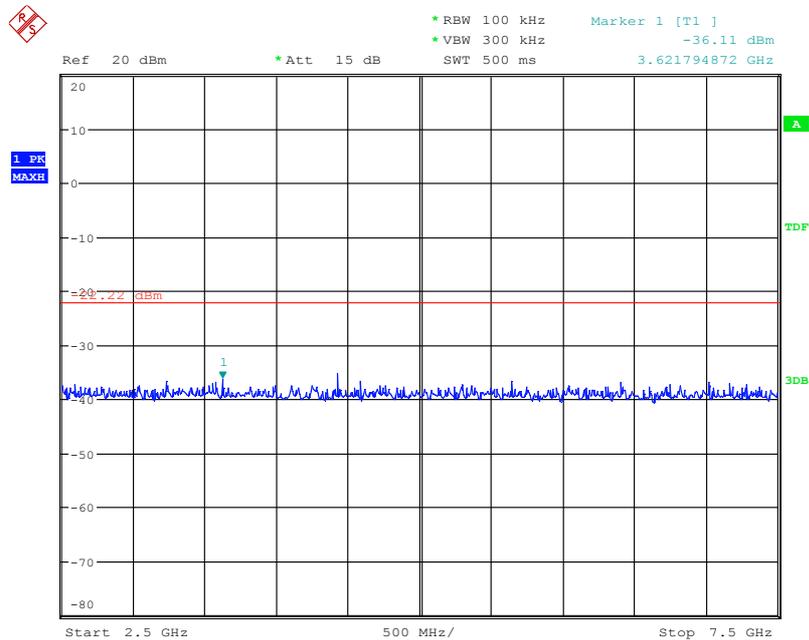
Date: 7.APR.2013 15:41:05

**Fig. 57 Conducted Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)**



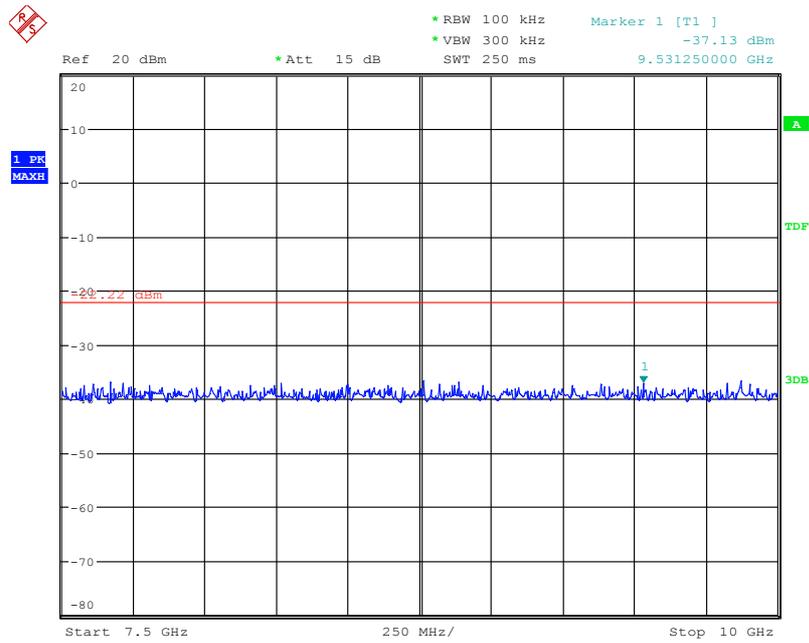
Date: 7.APR.2013 15:41:11

**Fig. 58 Conducted Spurious Emission (802.11g, Ch11, 1 GHz-2.5 GHz)**



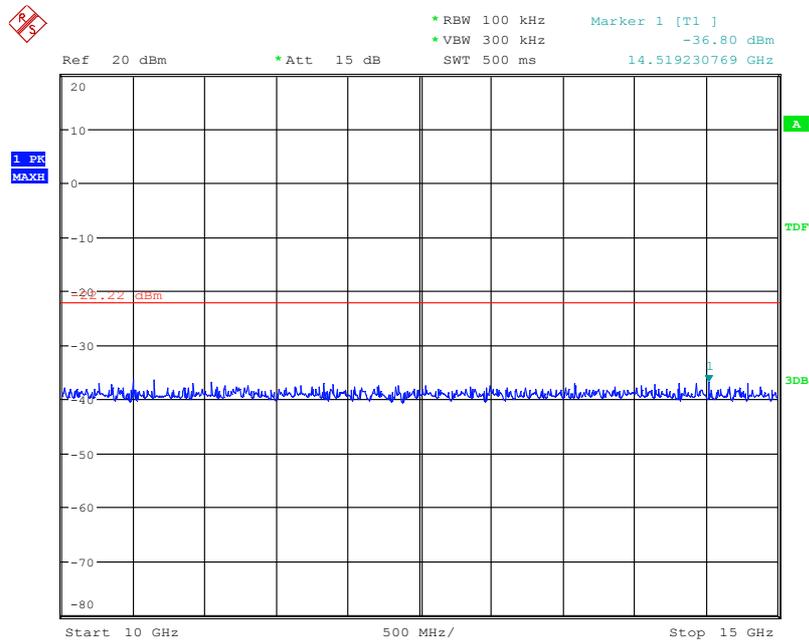
Date: 7.APR.2013 15:41:18

**Fig. 59 Conducted Spurious Emission (802.11g, Ch11, 2.5 GHz-7.5 GHz)**



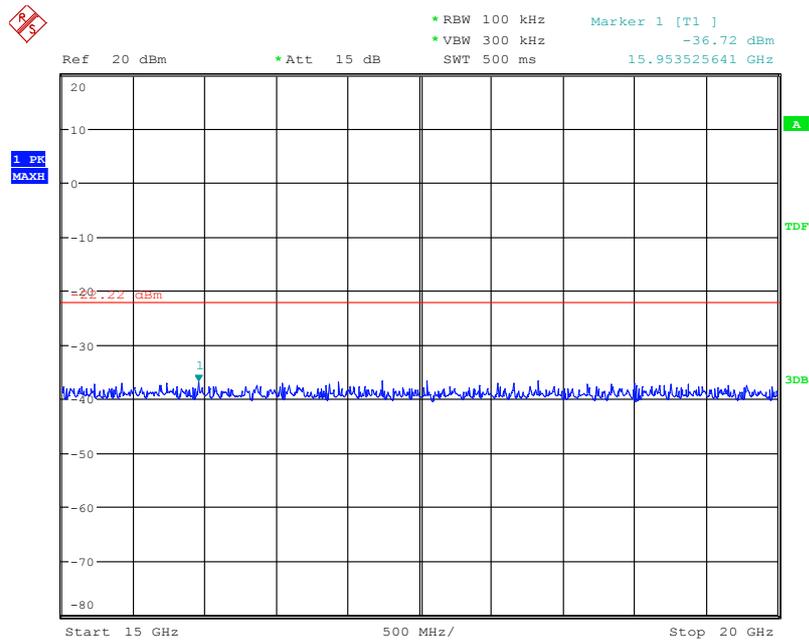
Date: 7.APR.2013 15:41:25

**Fig. 60 Conducted Spurious Emission (802.11g, Ch11, 7.5 GHz-10 GHz)**



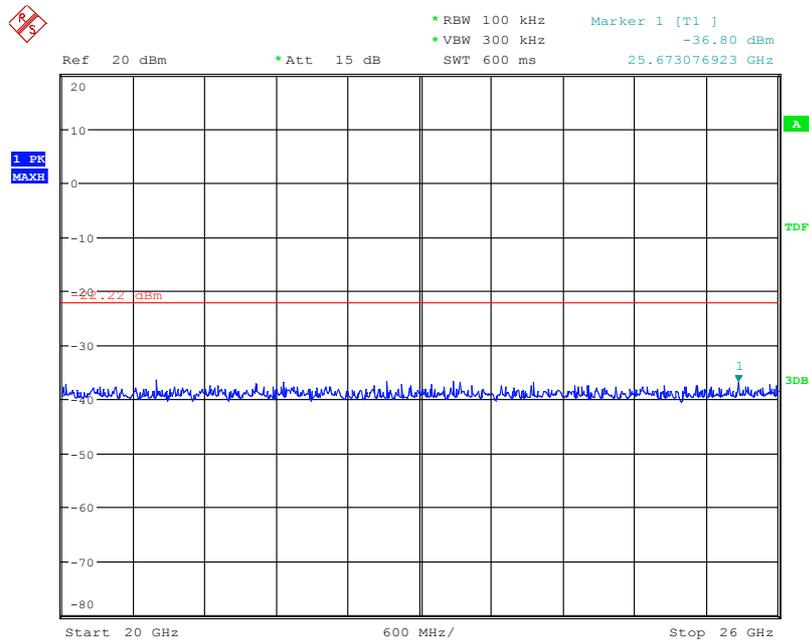
Date: 7.APR.2013 15:41:32

**Fig. 61 Conducted Spurious Emission (802.11g, Ch11, 10 GHz-15 GHz)**



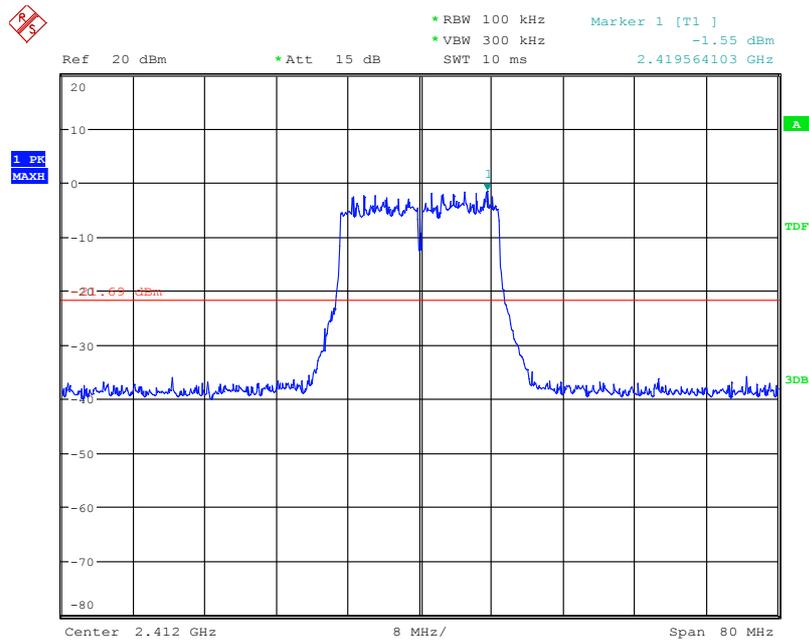
Date: 7.APR.2013 15:41:38

**Fig. 62 Conducted Spurious Emission (802.11g, Ch11, 15 GHz-20 GHz)**



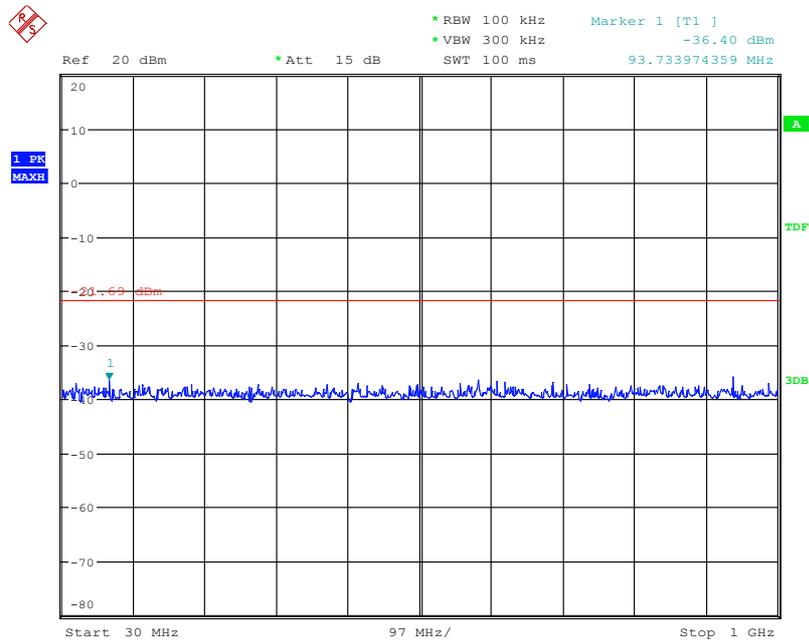
Date: 7.APR.2013 15:41:45

**Fig. 63 Conducted Spurious Emission (802.11g, Ch11, 20 GHz-26 GHz)**



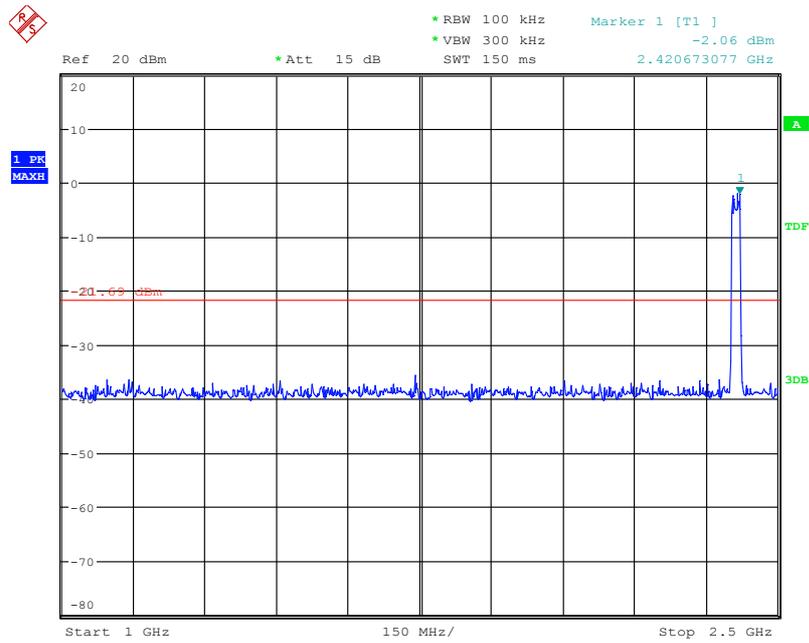
Date: 7.APR.2013 15:42:16

**Fig. 64 Conducted Spurious Emission (802.11n-HT20, Ch1, Center Frequency)**



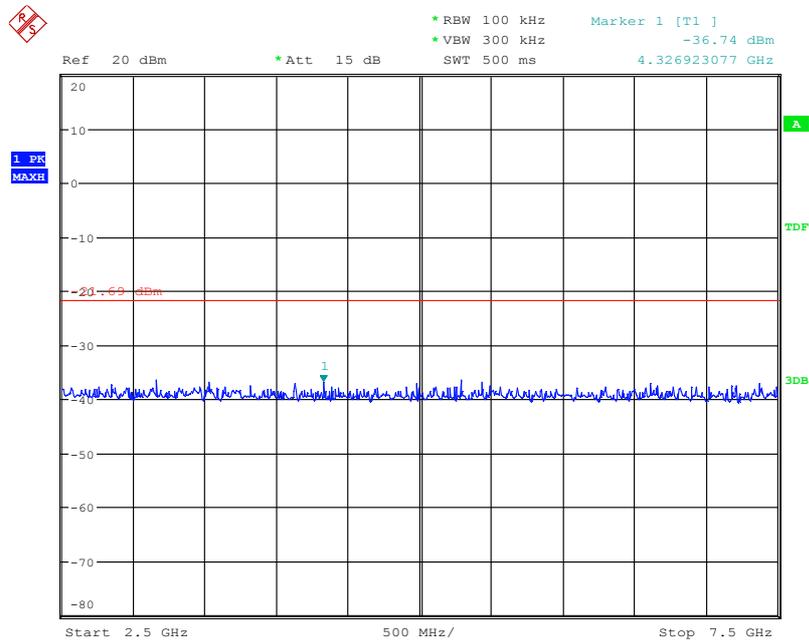
Date: 7.APR.2013 15:42:22

**Fig. 65 Conducted Spurious Emission (802.11n-HT20, Ch1, 30 MHz-1 GHz)**



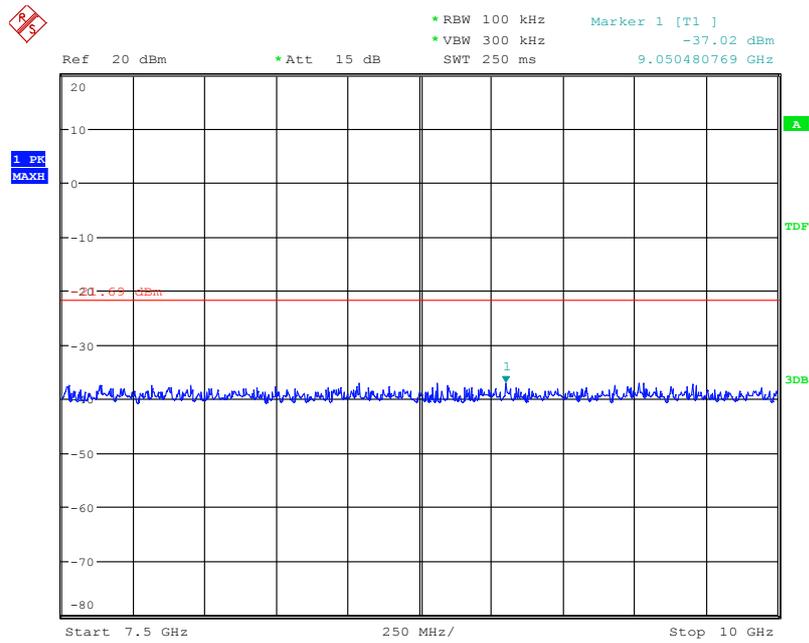
Date: 7.APR.2013 15:42:28

**Fig. 66 Conducted Spurious Emission (802.11n-HT20, Ch1, 1 GHz-2.5 GHz)**



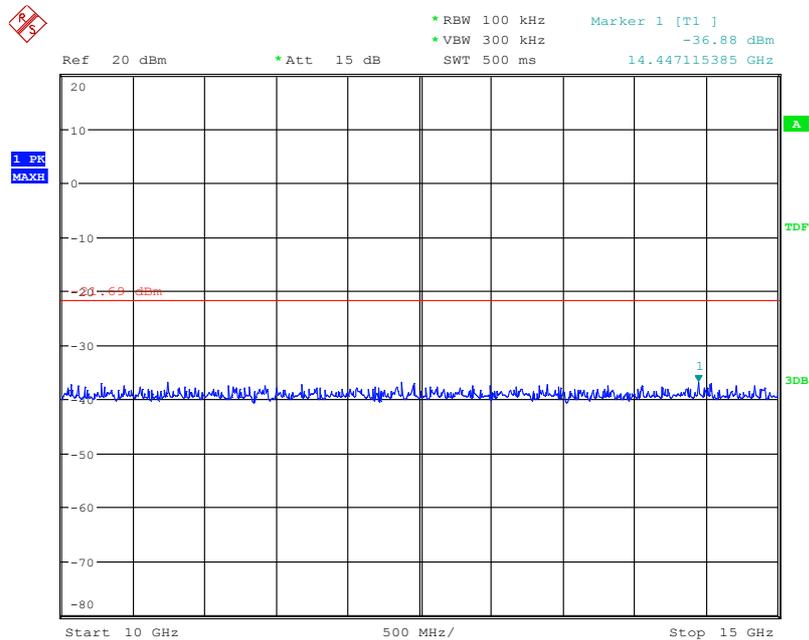
Date: 7.APR.2013 15:42:34

**Fig. 67 Conducted Spurious Emission (802.11n-HT20, Ch1, 2.5 GHz-7.5 GHz)**



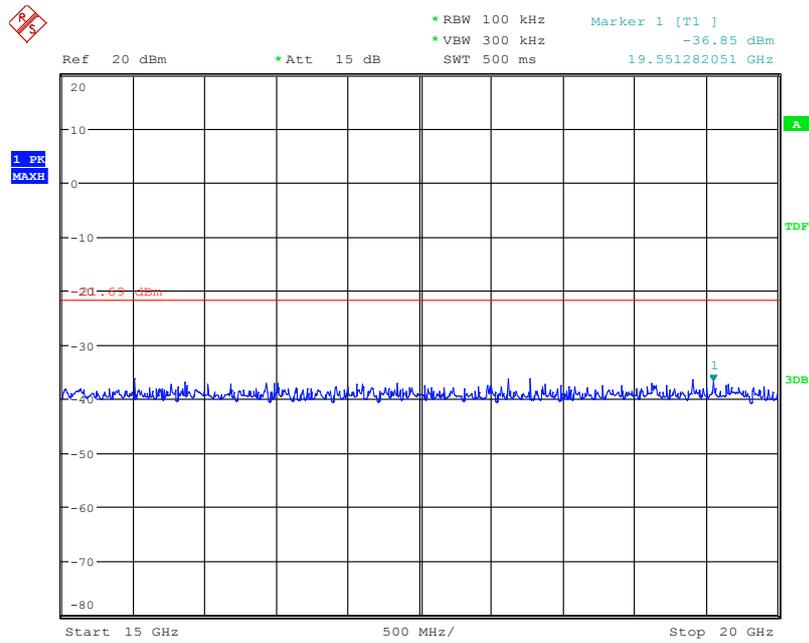
Date: 7.APR.2013 15:42:40

**Fig. 68 Conducted Spurious Emission (802.11n-HT20, Ch1, 7.5 GHz-10 GHz)**



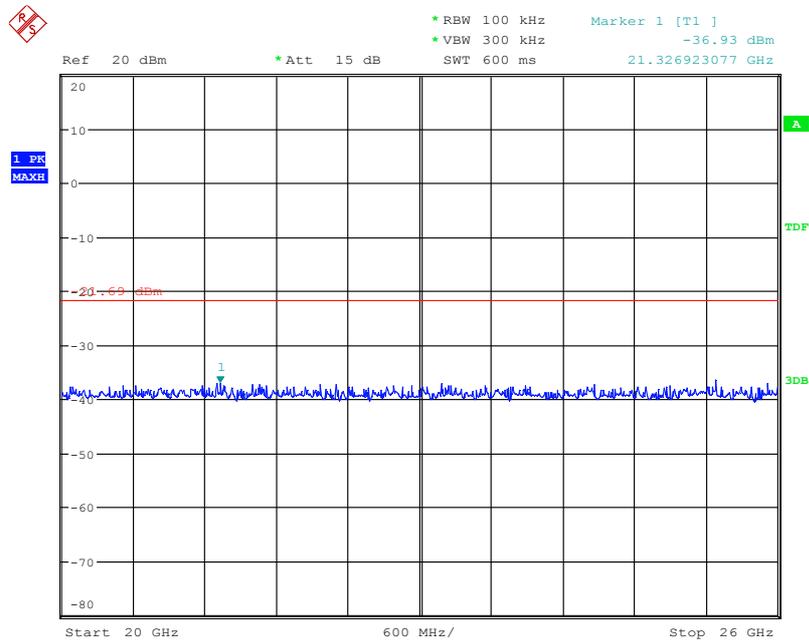
Date: 7.APR.2013 15:42:46

**Fig. 69 Conducted Spurious Emission (802.11n-HT20, Ch1, 10 GHz-15 GHz)**



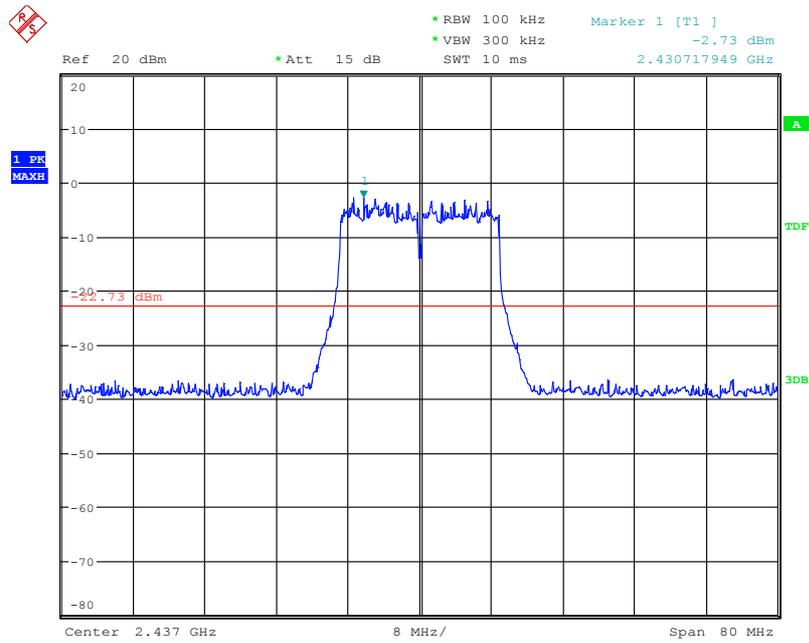
Date: 7.APR.2013 15:42:51

**Fig. 70 Conducted Spurious Emission (802.11n-HT20, Ch1, 15 GHz-20 GHz)**



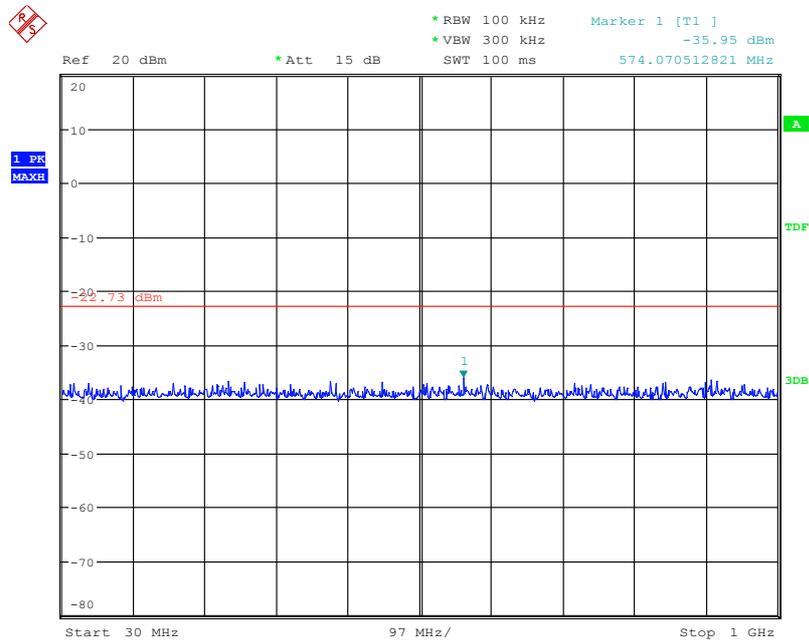
Date: 7.APR.2013 15:42:57

**Fig. 71 Conducted Spurious Emission (802.11n-HT20, Ch1, 20 GHz-26 GHz)**



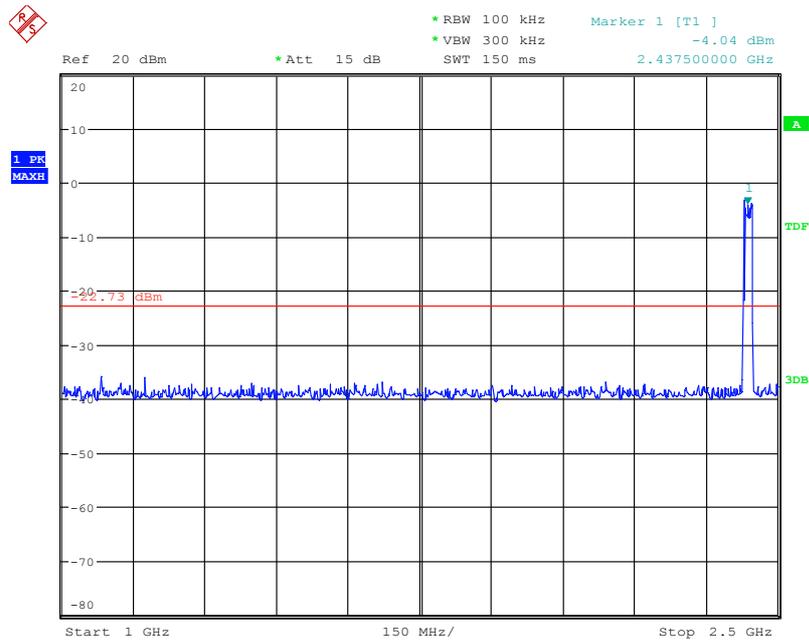
Date: 7.APR.2013 15:43:30

**Fig. 72 Conducted Spurious Emission (802.11n-HT20, Ch6, Center Frequency)**



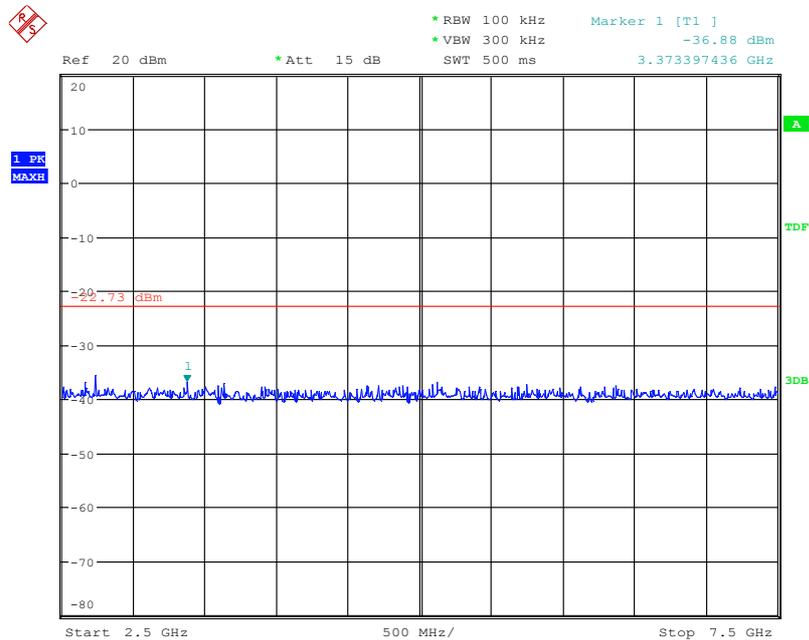
Date: 7.APR.2013 15:43:36

**Fig. 73 Conducted Spurious Emission (802.11n-HT20, Ch6, 30 MHz-1 GHz)**



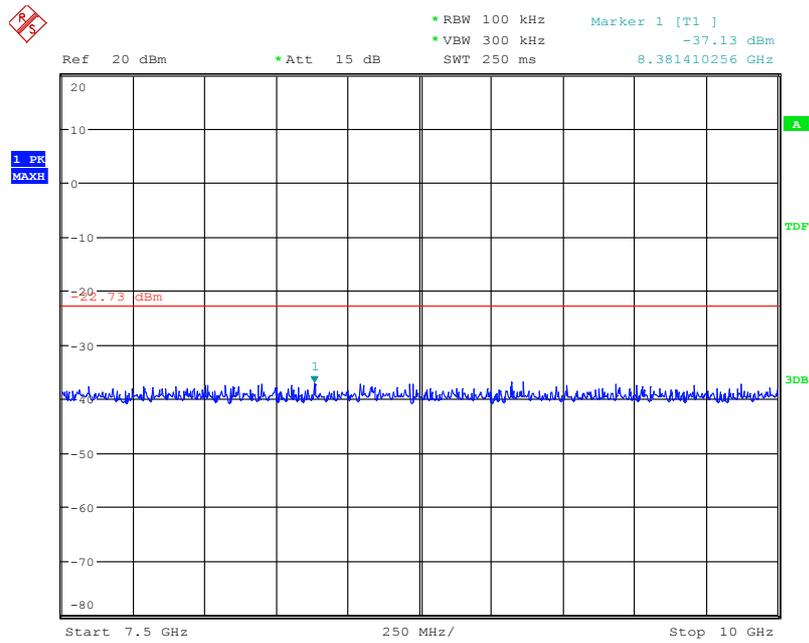
Date: 7.APR.2013 15:43:42

**Fig. 74 Conducted Spurious Emission (802.11n-HT20, Ch6, 1 GHz-2.5 GHz)**



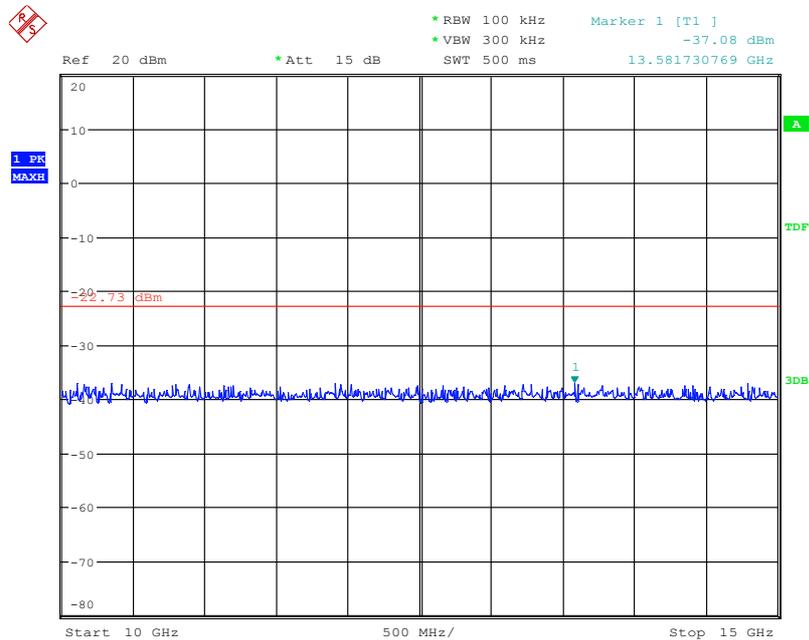
Date: 7.APR.2013 15:43:48

**Fig. 75 Conducted Spurious Emission (802.11n-HT20, Ch6, 2.5 GHz-7.5 GHz)**



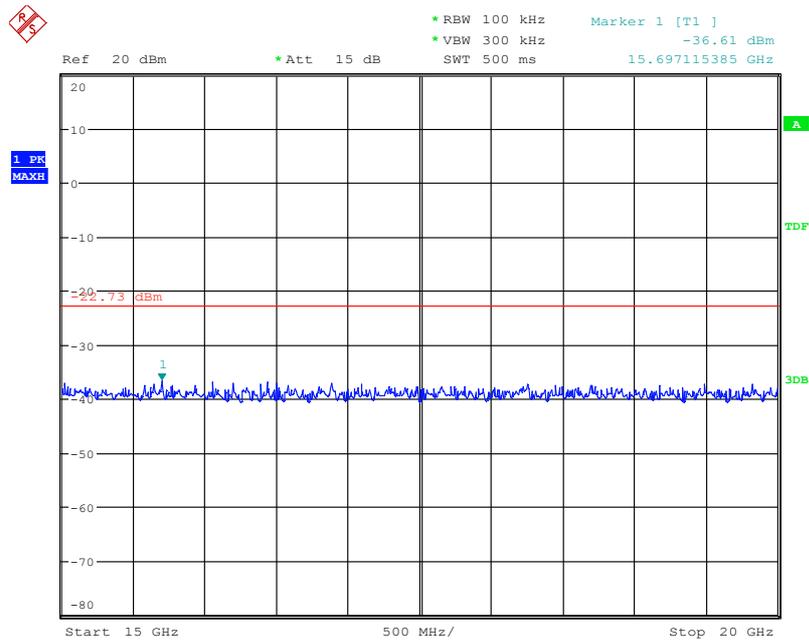
Date: 7.APR.2013 15:43:54

**Fig. 76 Conducted Spurious Emission (802.11n-HT20, Ch6, 7.5 GHz-10 GHz)**



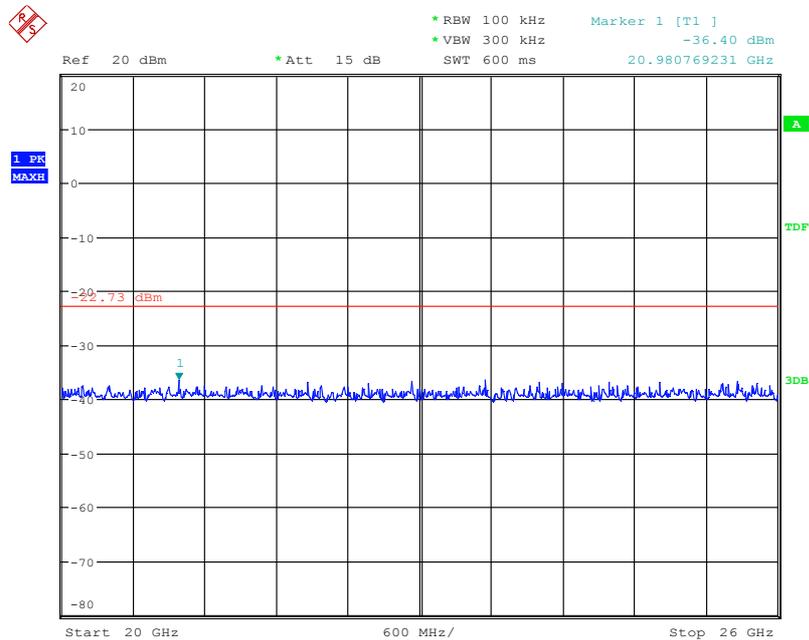
Date: 7.APR.2013 15:43:59

**Fig. 77 Conducted Spurious Emission (802.11n-HT20, Ch6, 10 GHz-15 GHz)**



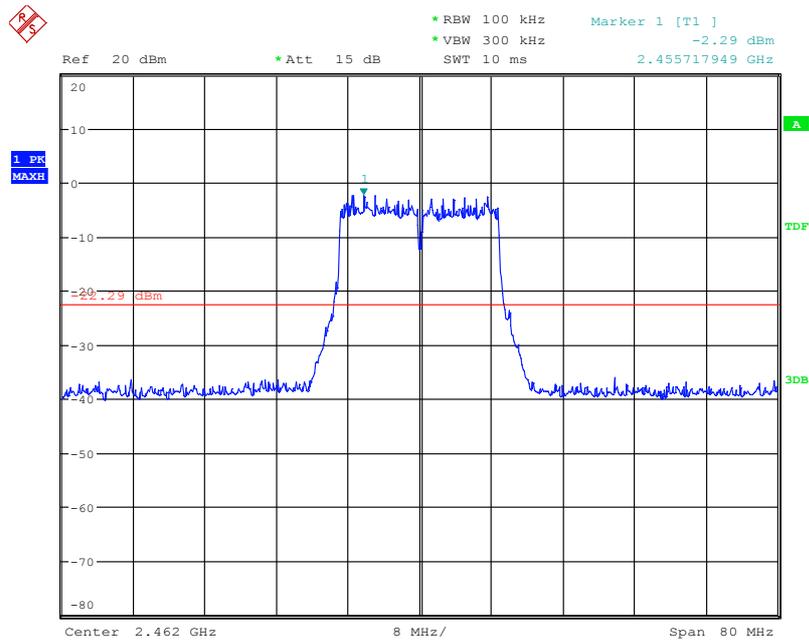
Date: 7.APR.2013 15:44:05

**Fig. 78 Conducted Spurious Emission (802.11n-HT20, Ch6, 15 GHz-20 GHz)**



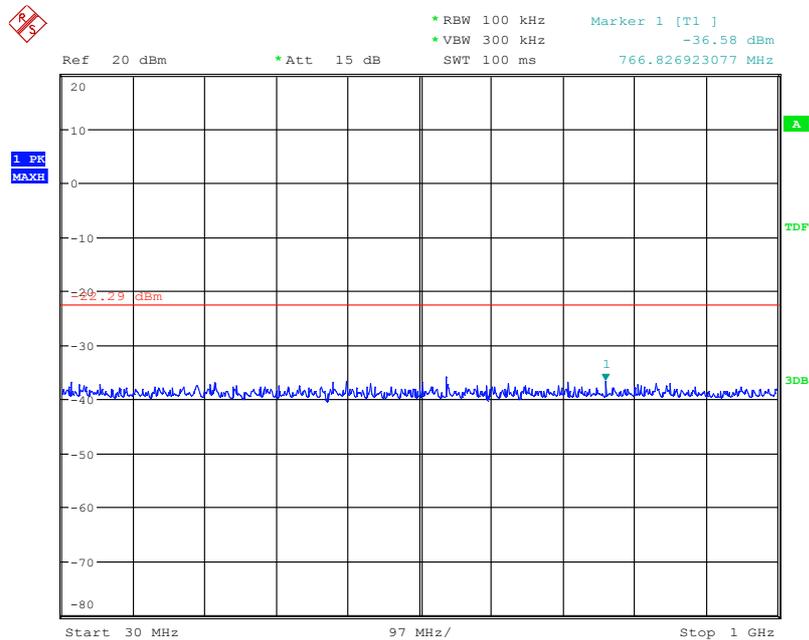
Date: 7.APR.2013 15:44:11

**Fig. 79 Conducted Spurious Emission (802.11n-HT20, Ch6, 20 GHz-26 GHz)**



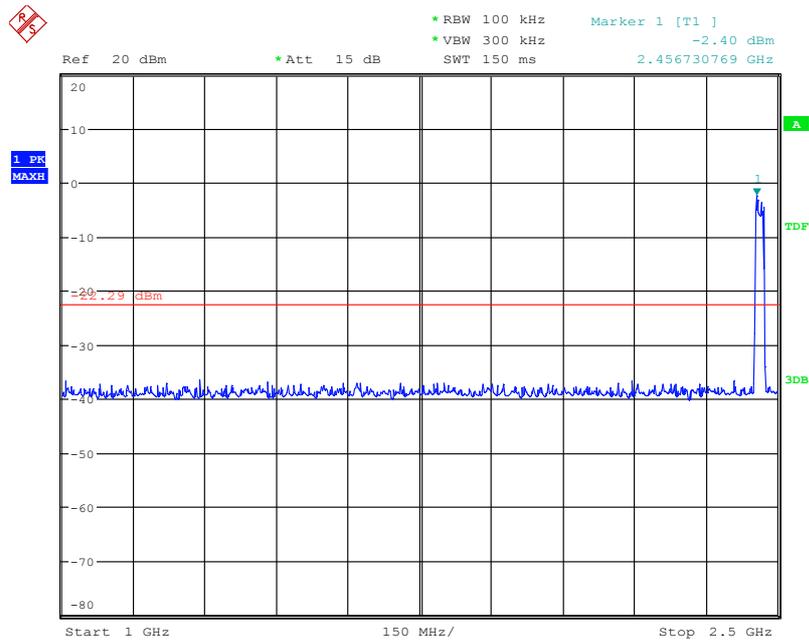
Date: 7.APR.2013 15:44:45

**Fig. 80 Conducted Spurious Emission (802.11n-HT20, Ch11, Center Frequency)**



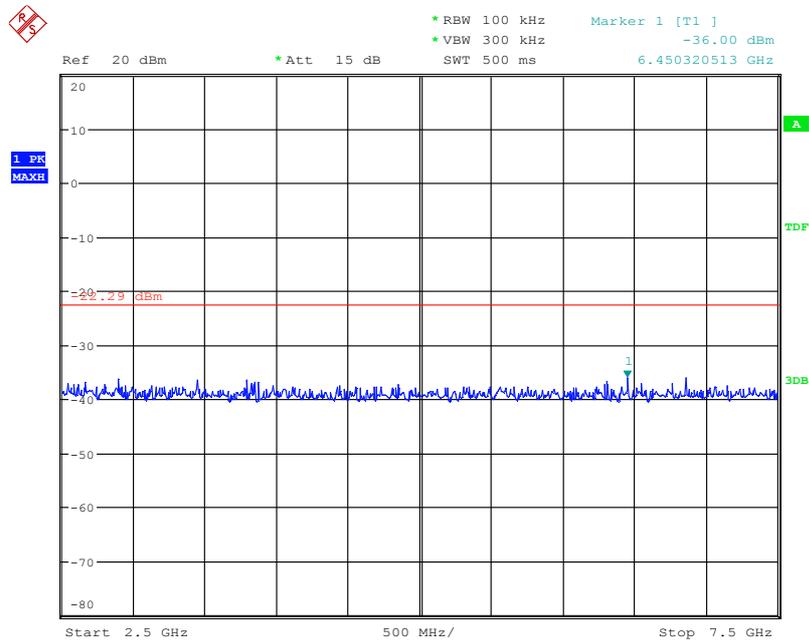
Date: 7.APR.2013 15:44:51

**Fig. 81 Conducted Spurious Emission (802.11n-HT20, Ch11, 30 MHz-1 GHz)**



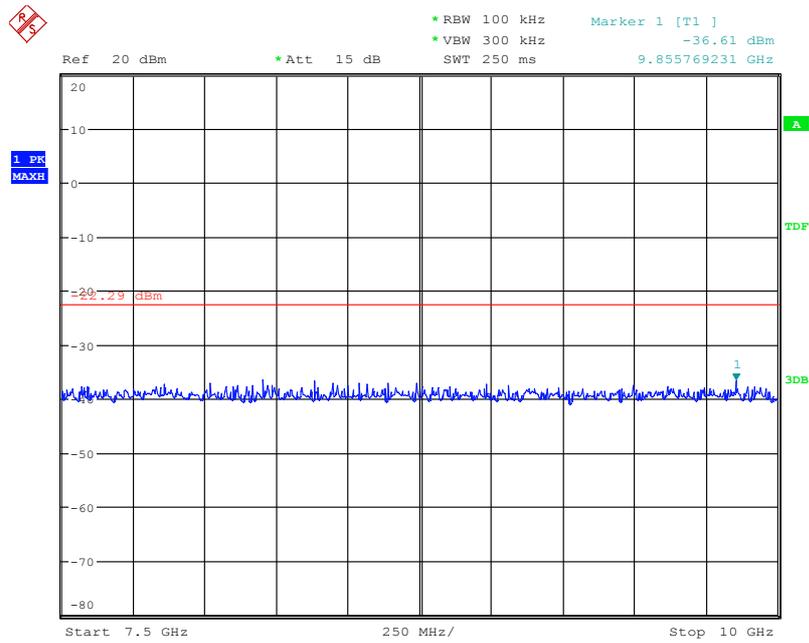
Date: 7.APR.2013 15:44:58

**Fig. 82 Conducted Spurious Emission (802.11n-HT20, Ch11, 1 GHz-2.5 GHz)**



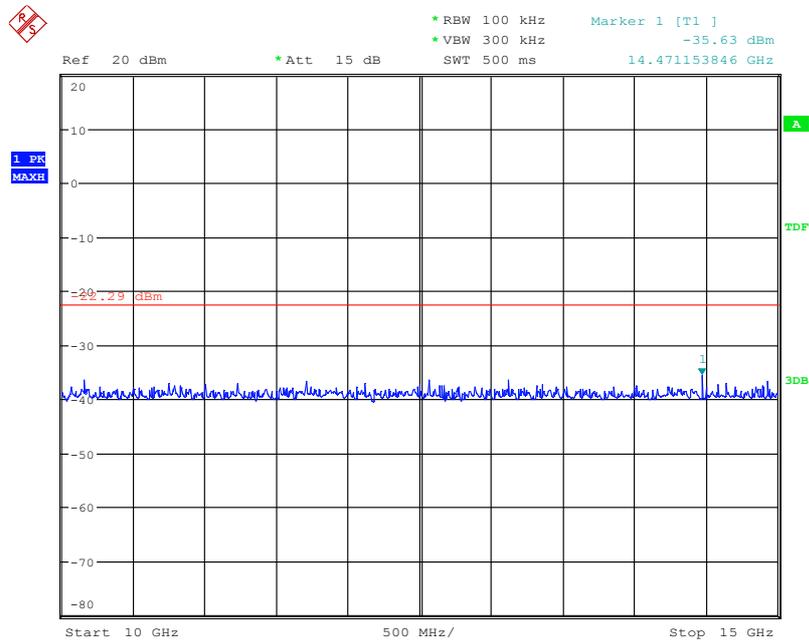
Date: 7.APR.2013 15:45:05

**Fig. 83 Conducted Spurious Emission (802.11n-HT20, Ch11, 2.5 GHz-7.5 GHz)**



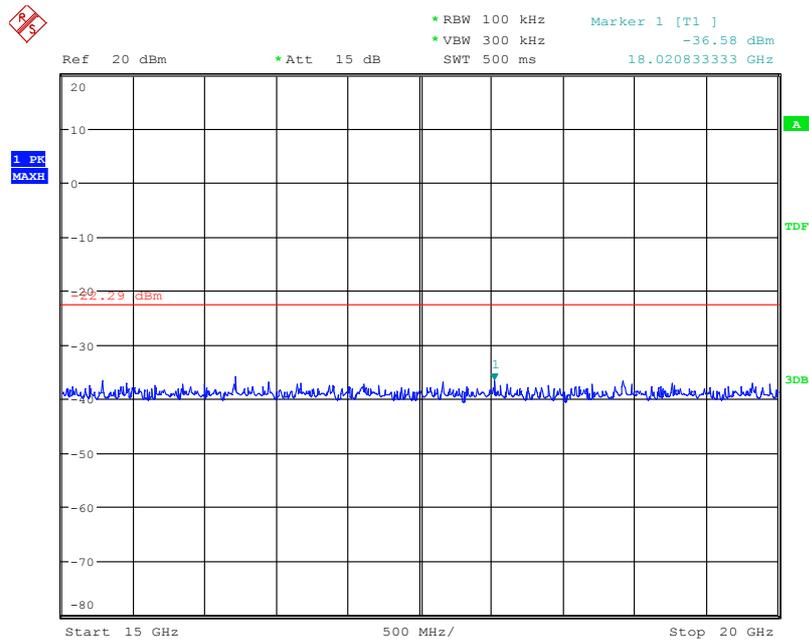
Date: 7.APR.2013 15:45:12

**Fig. 84 Conducted Spurious Emission (802.11n-HT20, Ch11, 7.5 GHz-10 GHz)**



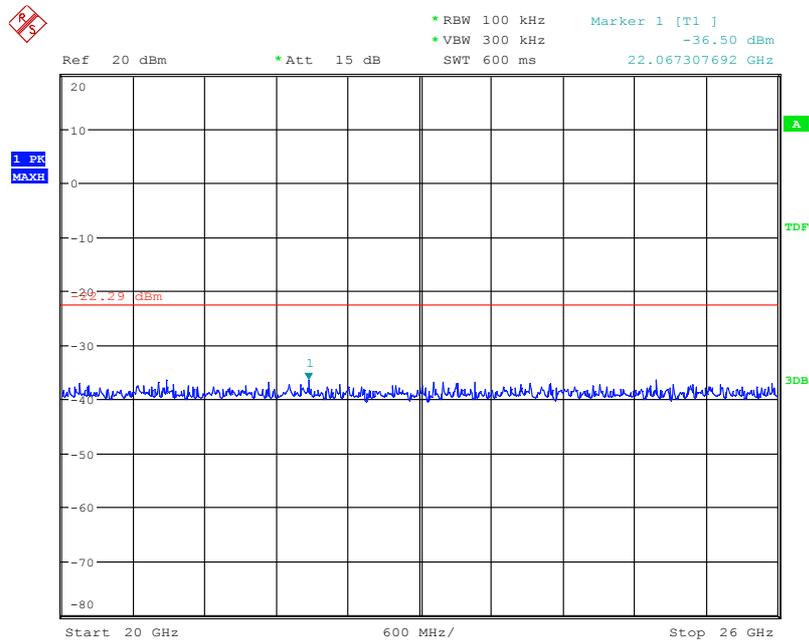
Date: 7.APR.2013 15:45:18

**Fig. 85 Conducted Spurious Emission (802.11n-HT20, Ch11, 10 GHz-15 GHz)**



Date: 7.APR.2013 15:45:25

**Fig. 86 Conducted Spurious Emission (802.11n-HT20, Ch11, 15 GHz-20 GHz)**



Date: 7.APR.2013 15:45:32

**Fig. 87 Conducted Spurious Emission (802.11n-HT20, Ch11, 20 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.88	P
	1	30 MHz ~1 GHz	Fig.89	P
		1 GHz ~ 3 GHz	Fig.90	P
		3 GHz ~ 18 GHz	Fig.91	P
	6	30 MHz ~1 GHz	Fig.92	P
		1 GHz ~ 3 GHz	Fig.93	P
		3 GHz ~ 18 GHz	Fig.94	P
	Power	2.45GHz ~2.5GHz	Fig.95	P
	11	30 MHz ~1 GHz	Fig.96	P
		1 GHz ~ 3 GHz	Fig.97	P
		3 GHz ~ 18 GHz	Fig.98	P
	802.11g	Power	2.38GHz ~2.45GHz	Fig.99
1		30 MHz ~1 GHz	Fig.100	P
		1 GHz ~ 3 GHz	Fig.101	P
		3 GHz ~ 18 GHz	Fig.102	P
6		30 MHz ~1 GHz	Fig.103	P
		1 GHz ~ 3 GHz	Fig.104	P
		3 GHz ~ 18 GHz	Fig.105	P
Power		2.45GHz~2.5GHz	Fig.106	P
11		30 MHz ~1 GHz	Fig.107	P
		1 GHz ~ 3 GHz	Fig.108	P
		3 GHz ~ 18 GHz	Fig.109	P
802.11n		Power	2.38GHz ~2.45GHz	Fig.110
	1	30 MHz ~1 GHz	Fig.111	P
		1 GHz ~ 3 GHz	Fig.112	P
		3 GHz ~ 18 GHz	Fig.113	P
	6	30 MHz ~1 GHz	Fig.114	P
		1 GHz ~ 3 GHz	Fig.115	P
		3 GHz ~ 18 GHz	Fig.116	P
	Power	2.45GHz~2.5GHz	Fig.117	P
	11	30 MHz ~1 GHz	Fig.118	P
		1 GHz ~ 3 GHz	Fig.119	P
		3 GHz ~ 18 GHz	Fig.120	P
	/	All channels	18 GHz~ 26 GHz	Fig.121

**Conclusion: PASS**

**Note:**

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

$P_{Mea}$  is the field strength recorded from the instrument.

The measurement results are obtained as described below:

$$\text{Result} = P_{Mea} + A_{Rpl} = P_{Mea} + \text{Cable Loss} + \text{Antenna Factor}$$

**802.11b**

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	$P_{Mea}$ (dBuV/m)	Polarization
17523.750	43.8	-25.3	42.8	26.327	HORIZONTAL
18000.000	43.7	-24.6	42.7	25.604	VERTICAL
17497.500	43.7	-25.3	43.0	25.957	HORIZONTAL
17491.500	43.7	-25.3	43.0	25.957	VERTICAL
17526.750	43.6	-25.3	42.9	25.967	HORIZONTAL
17508.000	43.6	-25.3	42.8	26.127	HORIZONTAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	$P_{Mea}$ (dBuV/m)	Polarization
17996.250	43.8	-24.7	42.3	26.254	HORIZONTAL
17544.750	43.7	-25.3	42.9	26.067	HORIZONTAL
17520.000	43.6	-25.3	42.8	26.127	VERTICAL
17482.500	43.6	-25.3	43.0	25.857	HORIZONTAL
17502.750	43.6	-25.3	42.8	26.127	HORIZONTAL
17521.500	43.6	-25.3	42.8	26.127	HORIZONTAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	$P_{Mea}$ (dBuV/m)	Polarization
17485.500	43.8	-25.3	43.0	26.057	VERTICAL
17484.750	43.7	-25.3	43.0	25.957	HORIZONTAL
17999.250	43.7	-24.7	42.3	26.154	VERTICAL
17520.000	43.7	-25.3	42.8	26.227	HORIZONTAL
17499.000	43.7	-25.3	43.0	25.957	HORIZONTAL
17514.750	43.6	-25.3	42.8	26.127	VERTICAL

**802.11g**

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P <sub>Mea</sub> (dBuV/m)	Polarization
17516.250	43.7	-25.3	42.8	26.227	HORIZONTAL
17535.000	43.6	-25.3	42.9	25.967	VERTICAL
17994.000	43.6	-24.7	42.3	26.054	HORIZONTAL
17997.750	43.6	-24.7	42.3	26.054	HORIZONTAL
17523.750	43.6	-25.3	42.8	26.127	VERTICAL
17490.000	43.6	-25.3	43.0	25.857	VERTICAL

Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P <sub>Mea</sub> (dBuV/m)	Polarization
17490.000	43.7	-25.3	43.0	25.957	HORIZONTAL
17494.500	43.6	-25.3	43.0	25.857	VERTICAL
17523.750	43.6	-25.3	42.8	26.127	HORIZONTAL
17486.250	43.6	-25.3	43.0	25.857	VERTICAL
17499.750	43.6	-25.3	43.0	25.857	HORIZONTAL
17997.750	43.6	-24.7	42.3	26.054	HORIZONTAL

Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P <sub>Mea</sub> (dBuV/m)	Polarization
17510.250	43.7	-25.3	42.8	26.227	HORIZONTAL
17492.250	43.7	-25.3	43.0	25.957	VERTICAL
17505.750	43.7	-25.3	42.8	26.227	HORIZONTAL
17544.000	43.7	-25.3	42.9	26.067	HORIZONTAL
17524.500	43.7	-25.3	42.8	26.227	HORIZONTAL
17496.000	43.7	-25.3	43.0	25.957	VERTICAL

**802.11n-HT20**

Ch1

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P <sub>Mea</sub> (dBuV/m)	Polarization
17997.750	43.9	-24.7	42.3	26.354	HORIZONTAL
17515.500	43.7	-25.3	42.8	26.227	HORIZONTAL
17500.500	43.6	-25.3	42.8	26.127	VERTICAL
17533.500	43.6	-25.3	42.9	25.967	HORIZONTAL
17764.500	43.6	-25.4	42.2	26.861	HORIZONTAL
17494.500	43.6	-25.3	43.0	25.857	VERTICAL

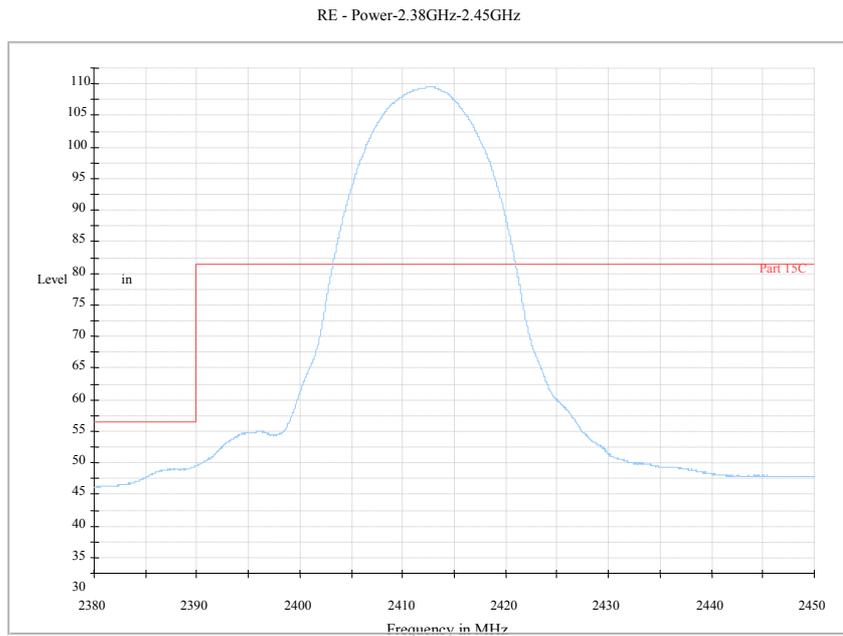
Ch6

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P <sub>Mea</sub> (dBuV/m)	Polarization
17523.750	43.9	-25.3	42.8	26.427	HORIZONTAL
17490.750	43.6	-25.3	43.0	25.857	VERTICAL
17496.750	43.6	-25.3	43.0	25.857	VERTICAL
17519.250	43.6	-25.3	42.8	26.127	HORIZONTAL
17484.000	43.6	-25.3	43.0	25.857	VERTICAL
17526.000	43.6	-25.3	42.9	25.967	VERTICAL

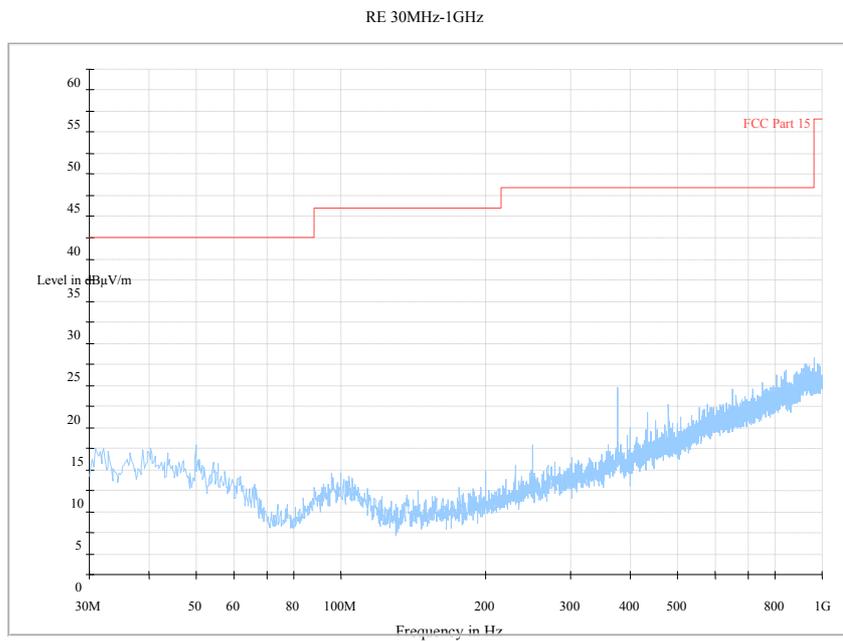
Ch11

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P <sub>Mea</sub> (dBuV/m)	Polarization
17485.500	43.9	-25.3	43.0	26.157	HORIZONTAL
17996.250	43.8	-24.7	42.3	26.254	VERTICAL
17494.500	43.7	-25.3	43.0	25.957	VERTICAL
17501.250	43.7	-25.3	42.8	26.227	HORIZONTAL
17514.750	43.7	-25.3	42.8	26.227	HORIZONTAL
17995.500	43.6	-24.7	42.3	26.054	VERTICAL

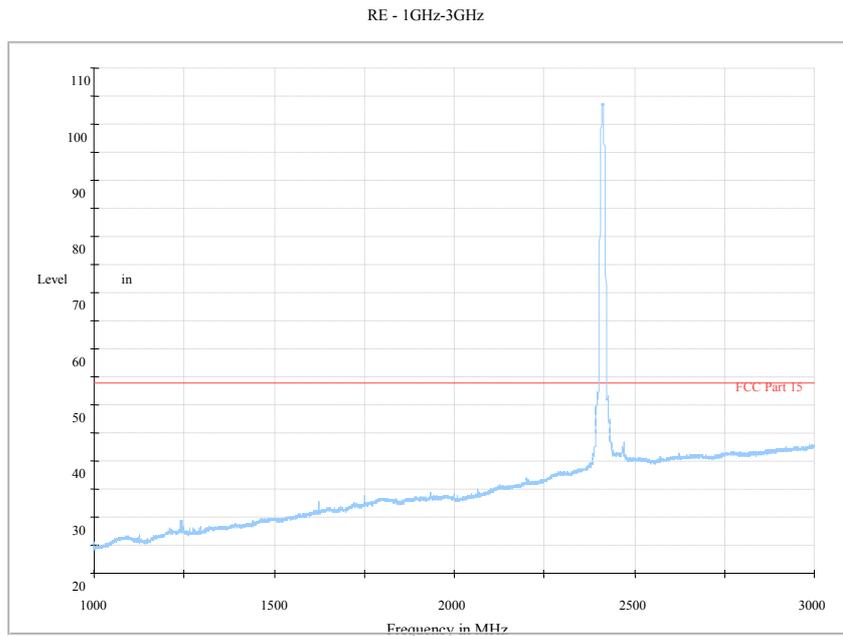
**Test graphs as below:**



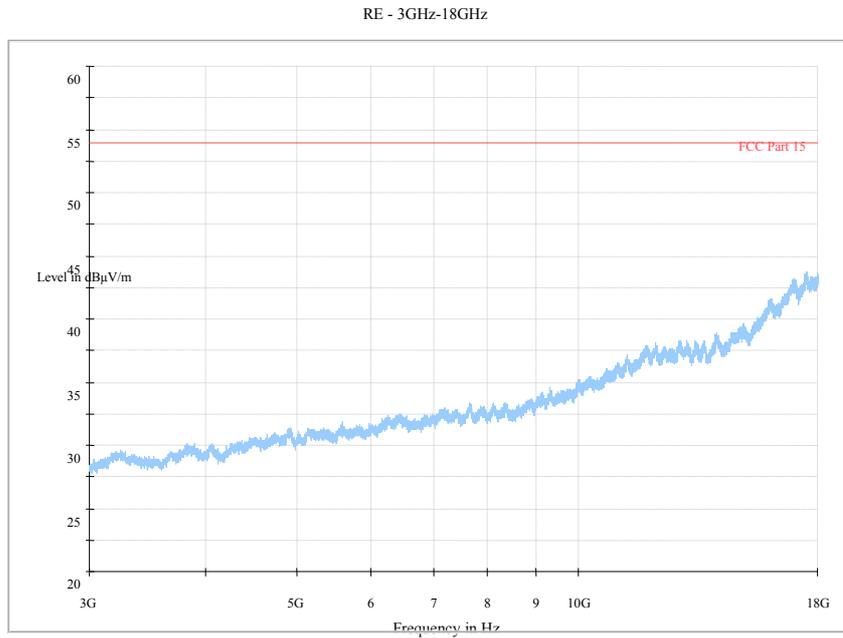
**Fig. 88 Radiated Spurious Emission (Power): 802.11b, ch1, 2.38 GHz - 2.45GHz**



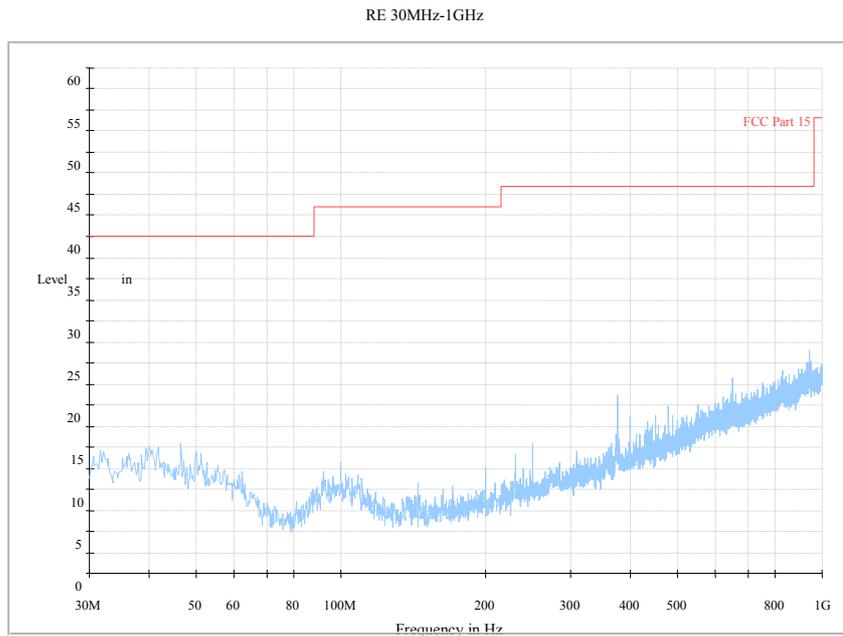
**Fig. 89 Radiated Spurious Emission (802.11b, Ch1, 30 MHz-1 GHz)**



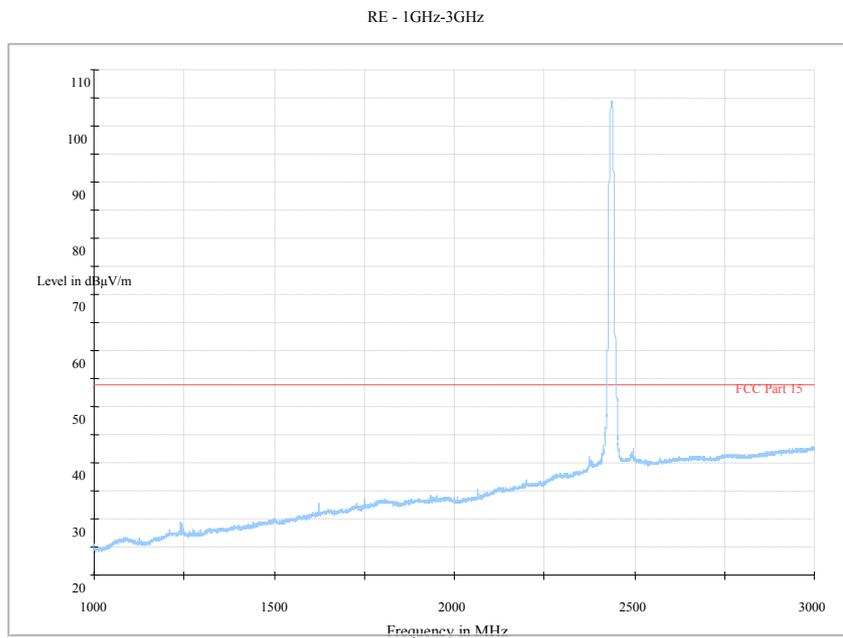
**Fig. 90 Radiated Spurious Emission (802.11b, Ch1, 1 GHz-3 GHz)**



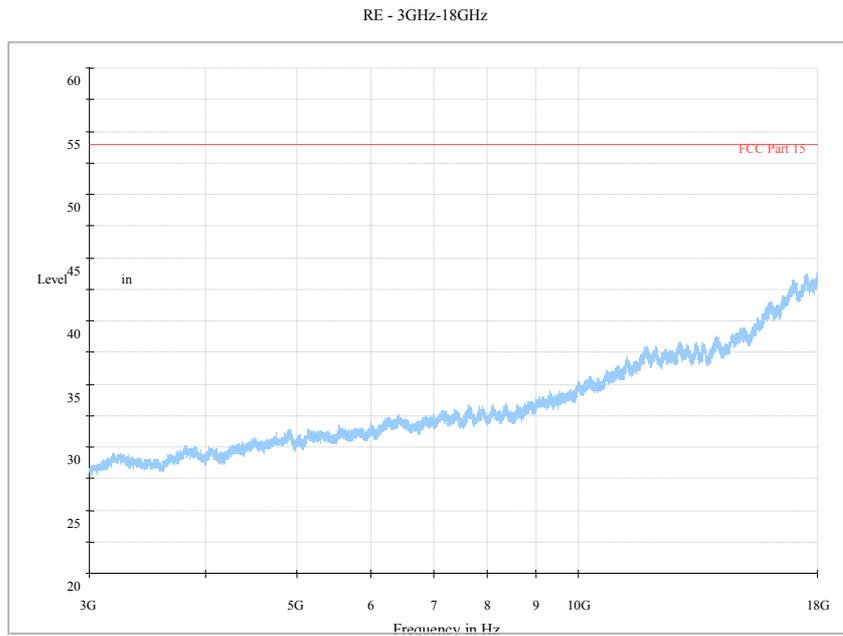
**Fig. 91 Radiated Spurious Emission (802.11b, Ch1, 3 GHz-18 GHz)**



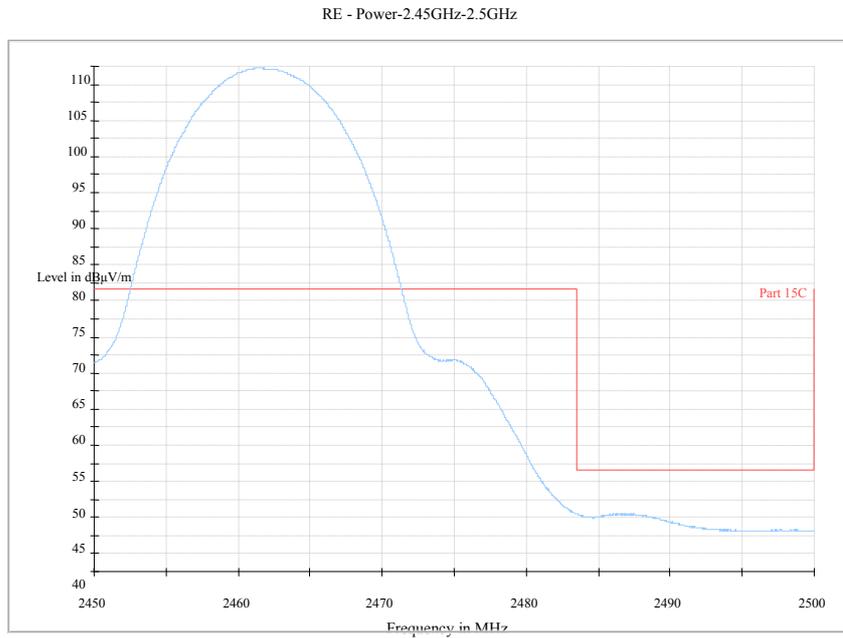
**Fig. 92 Radiated Spurious Emission (802.11b, Ch6, 30 MHz-1 GHz)**



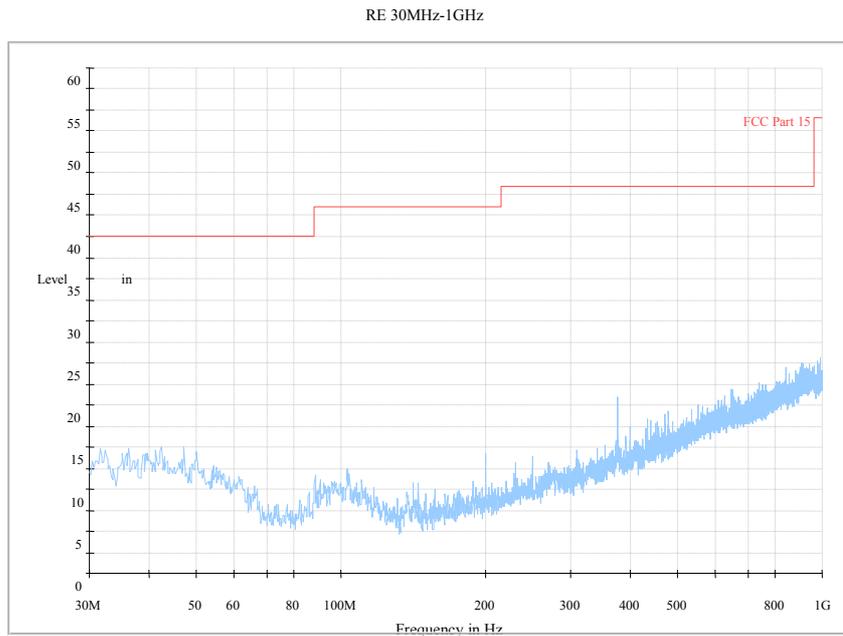
**Fig. 93 Radiated Spurious Emission (802.11b, Ch6, 1 GHz-3 GHz)**



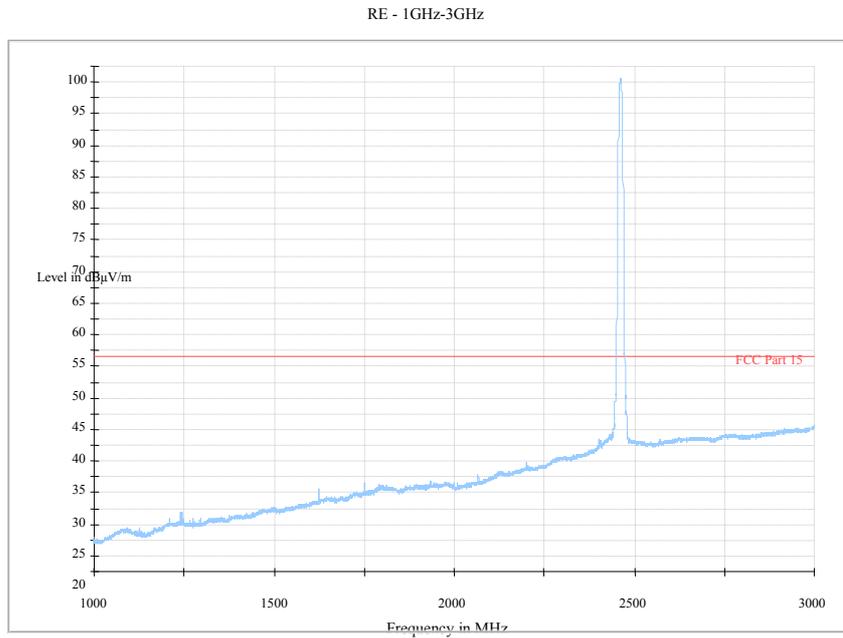
**Fig. 94 Radiated Spurious Emission (802.11b, Ch6, 3 GHz-18 GHz)**



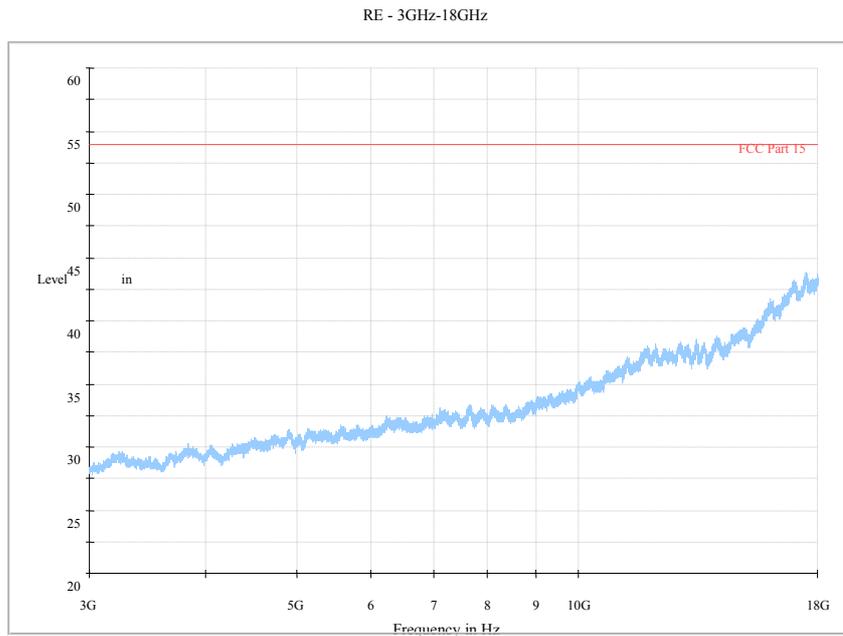
**Fig. 95 Radiated Spurious Emission (Power): 802.11b, ch11, 2.45 GHz - 2.5GHz**



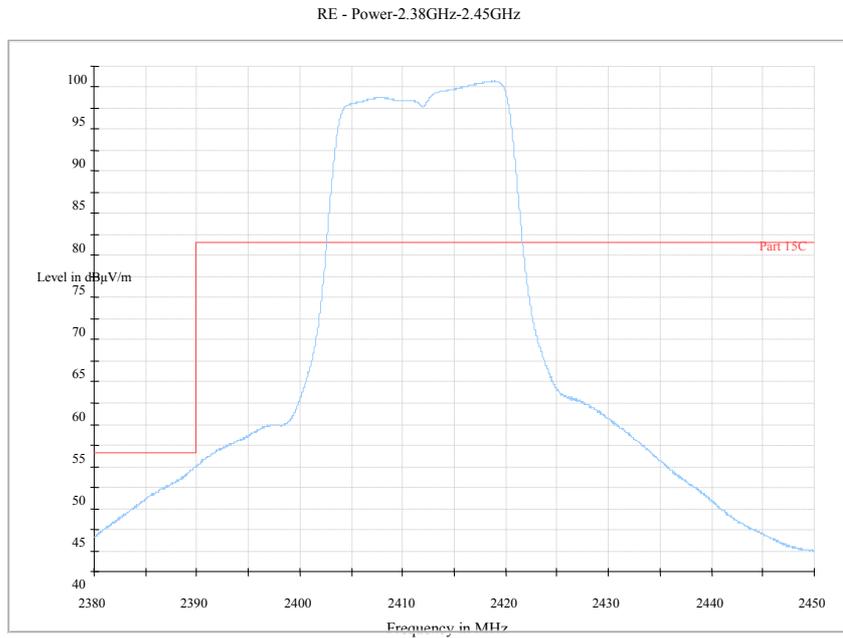
**Fig. 96 Radiated Spurious Emission (802.11b, Ch11, 30 MHz-1 GHz)**



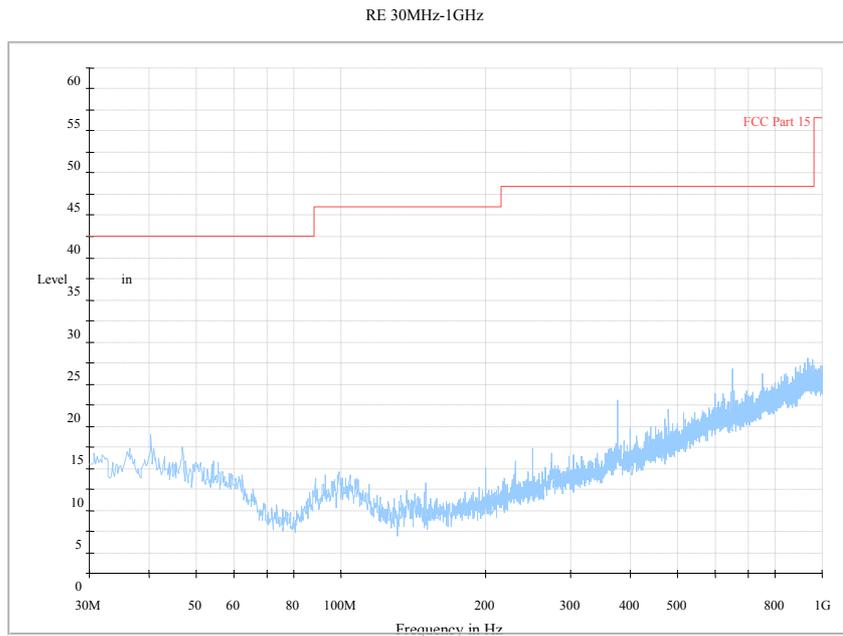
**Fig. 97 Radiated Spurious Emission (802.11b, Ch11, 1 GHz-3 GHz)**



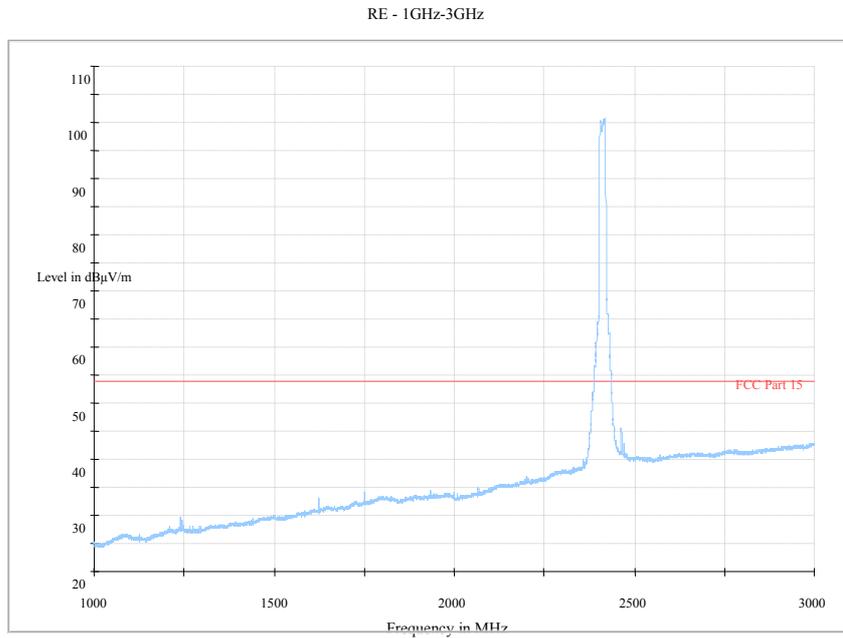
**Fig. 98 Radiated Spurious Emission (802.11b, Ch11, 3 GHz-18 GHz)**



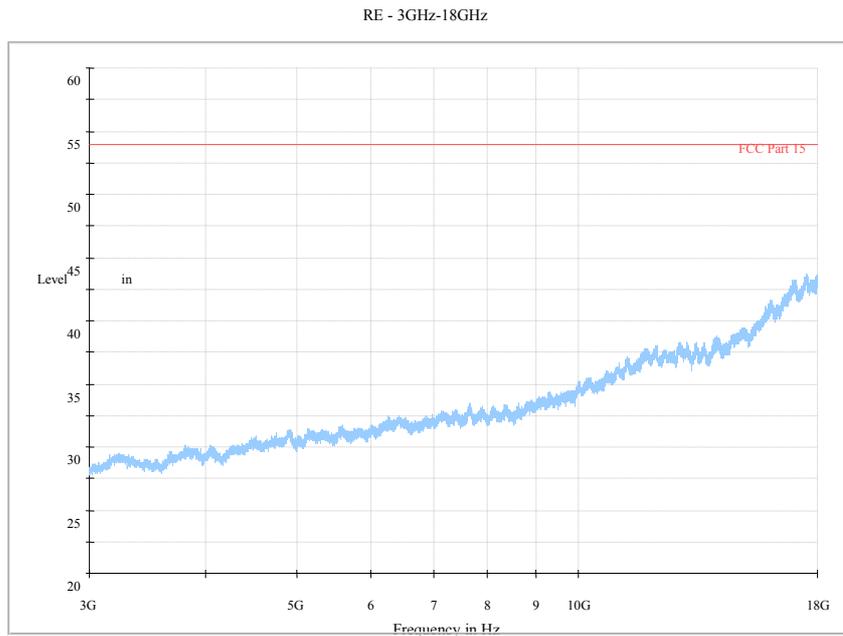
**Fig. 99 Radiated Spurious Emission (Power): 802.11g, ch1, 2.38 GHz - 2.45GHz**



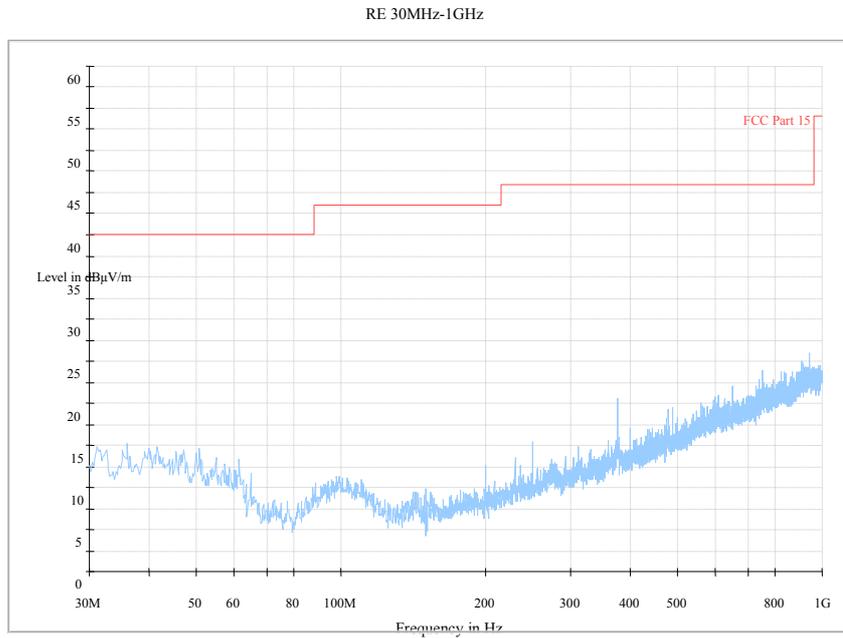
**Fig. 100 Radiated Spurious Emission (802.11g, Ch1, 30 MHz-1 GHz)**



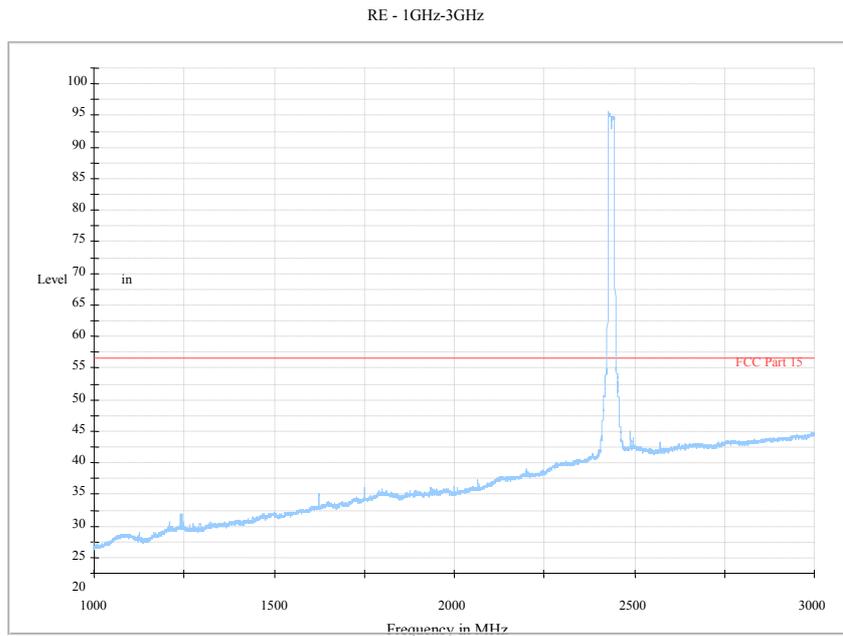
**Fig. 101 Radiated Spurious Emission (802.11g, Ch1, 1 GHz-3 GHz)**



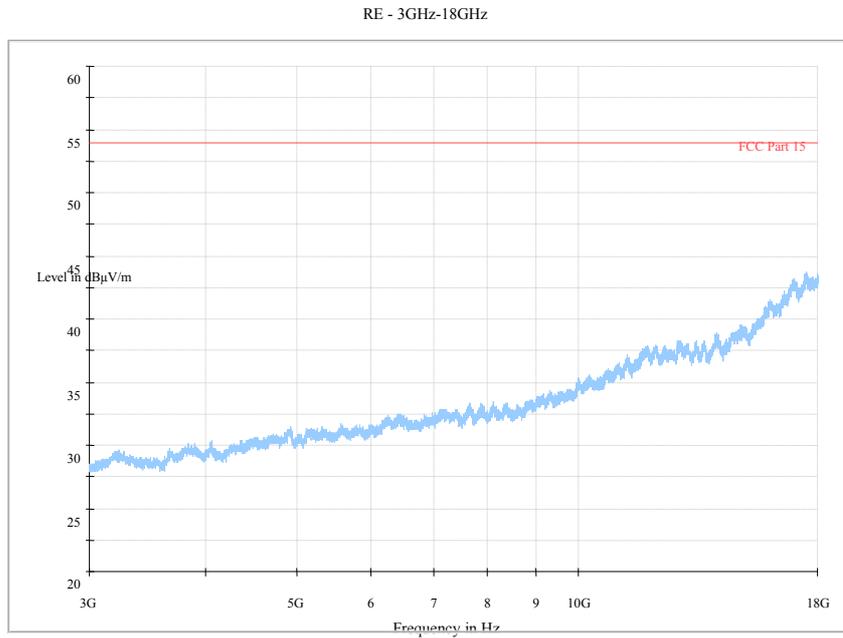
**Fig. 102 Radiated Spurious Emission (802.11g, Ch1, 3 GHz-18 GHz)**



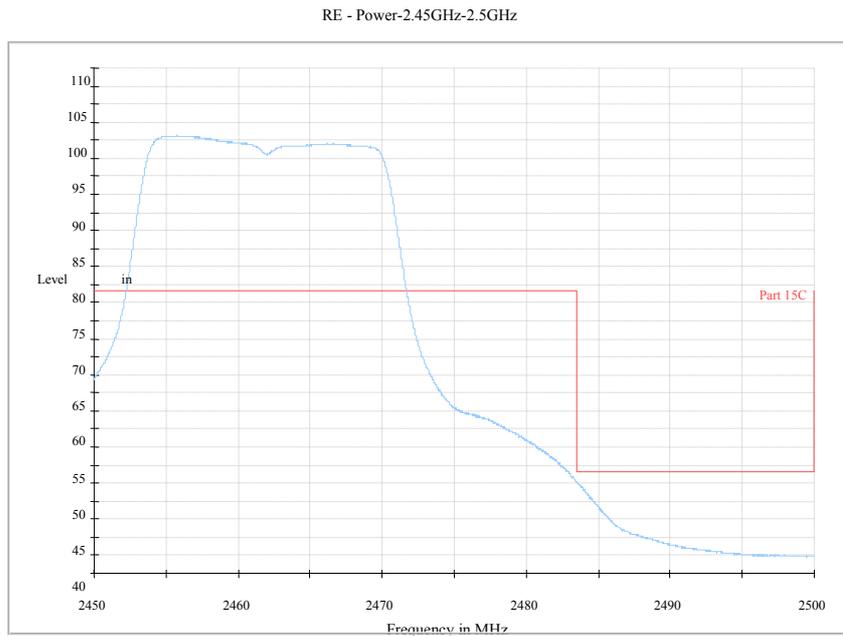
**Fig. 103 Radiated Spurious Emission (802.11g, Ch6, 30 MHz-1 GHz)**



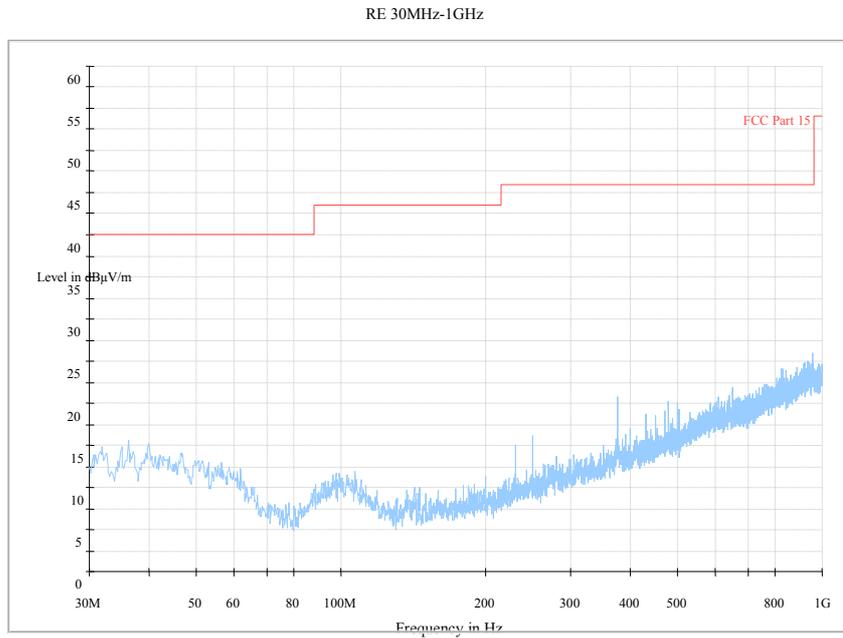
**Fig. 104 Radiated Spurious Emission (802.11g, Ch6, 1 GHz-3 GHz)**



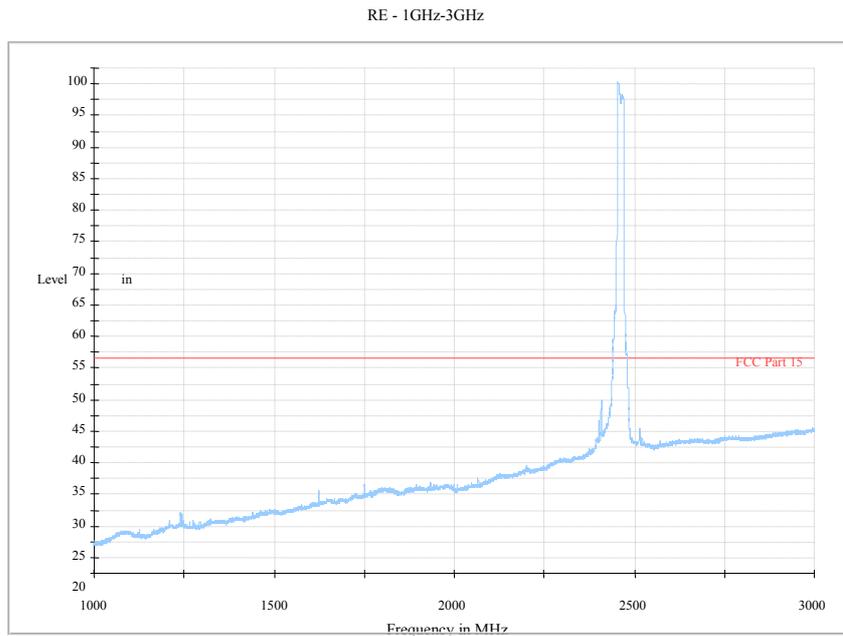
**Fig. 105 Radiated Spurious Emission (802.11g, Ch6, 3 GHz-18 GHz)**



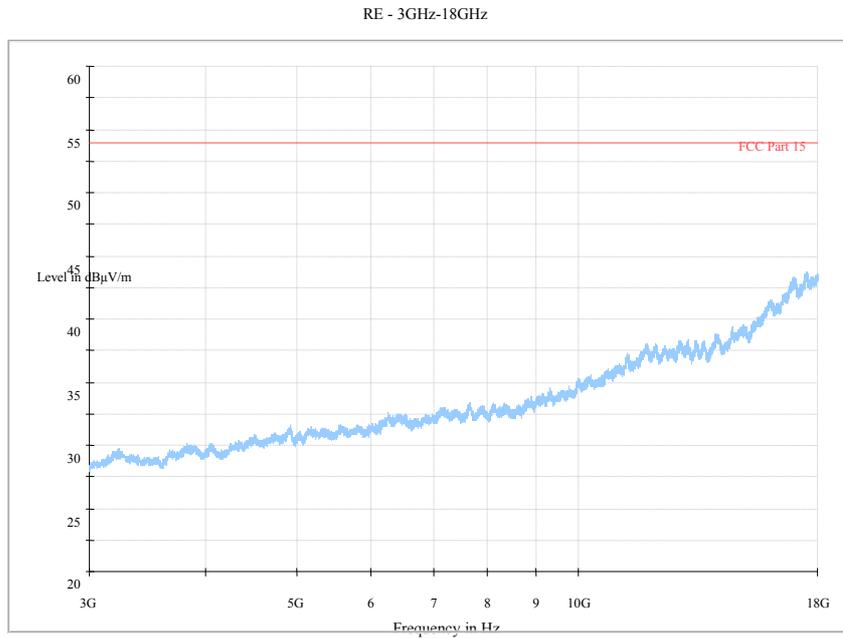
**Fig. 106 Radiated Spurious Emission (Power): 802.11g, ch11, 2.45 GHz - 2.5GHz**



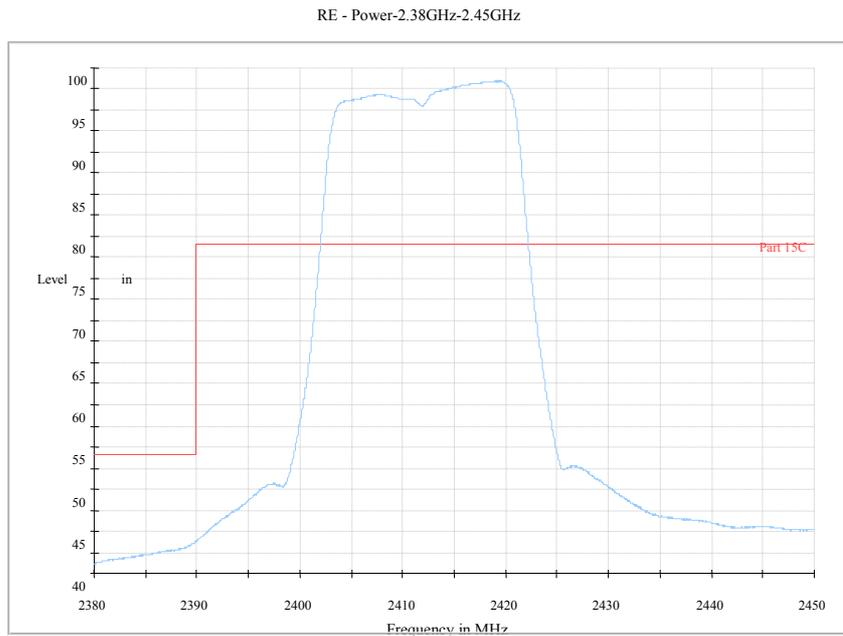
**Fig. 107 Radiated Spurious Emission (802.11g, Ch11, 30 MHz-1 GHz)**



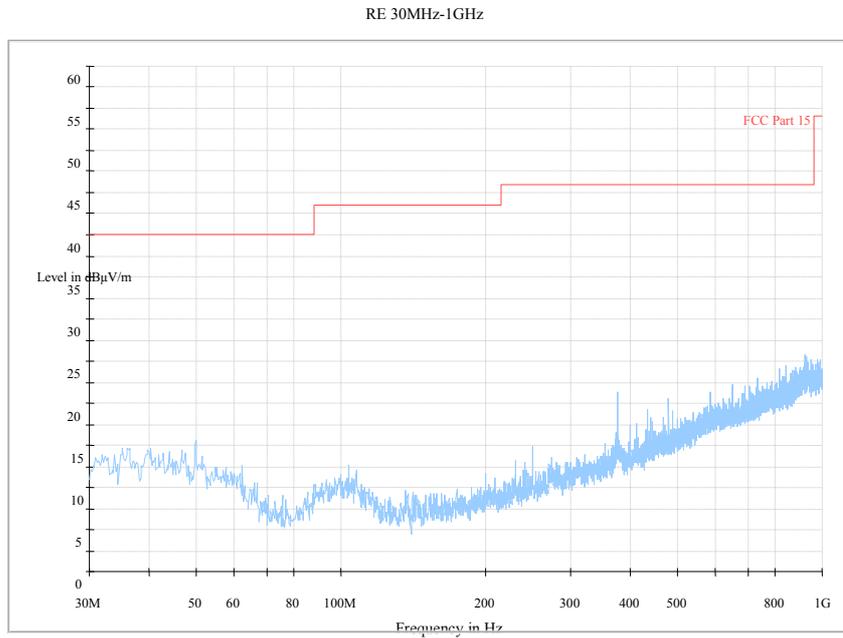
**Fig. 108 Radiated Spurious Emission (802.11g, Ch11, 1 GHz-3 GHz)**



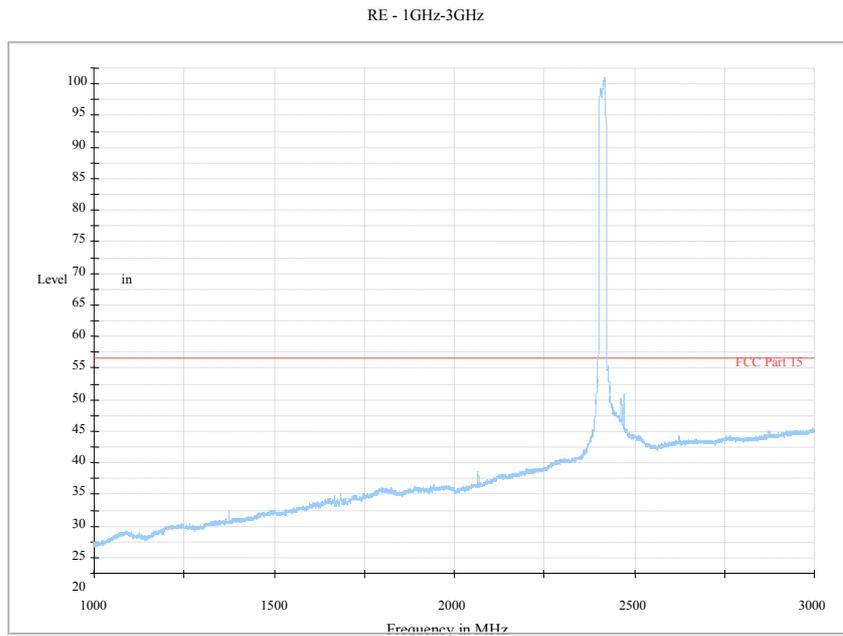
**Fig. 109 Radiated Spurious Emission (802.11g, Ch11, 3 GHz-18 GHz)**



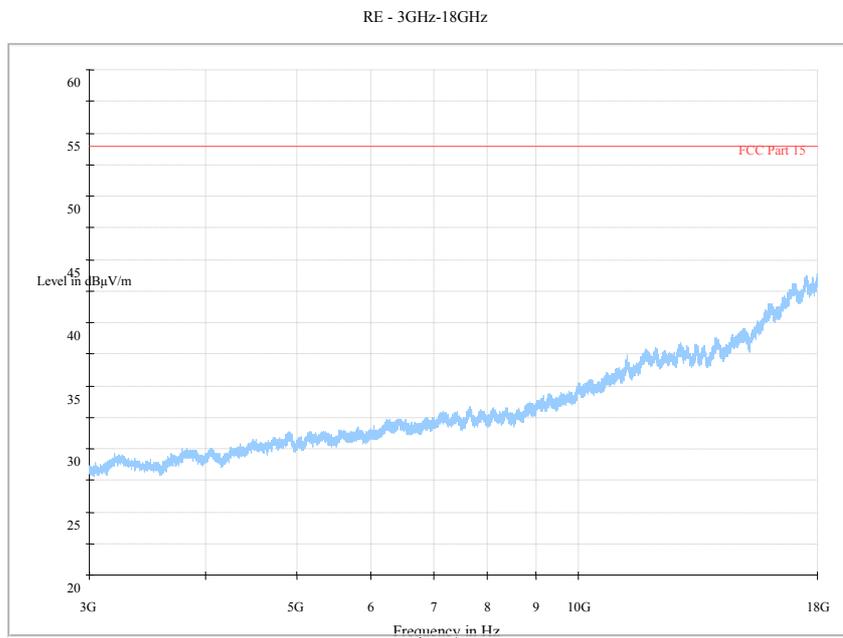
**Fig. 110 Radiated Spurious Emission (Power): 802.11n-HT20, ch1, 2.38 GHz - 2.45GHz**



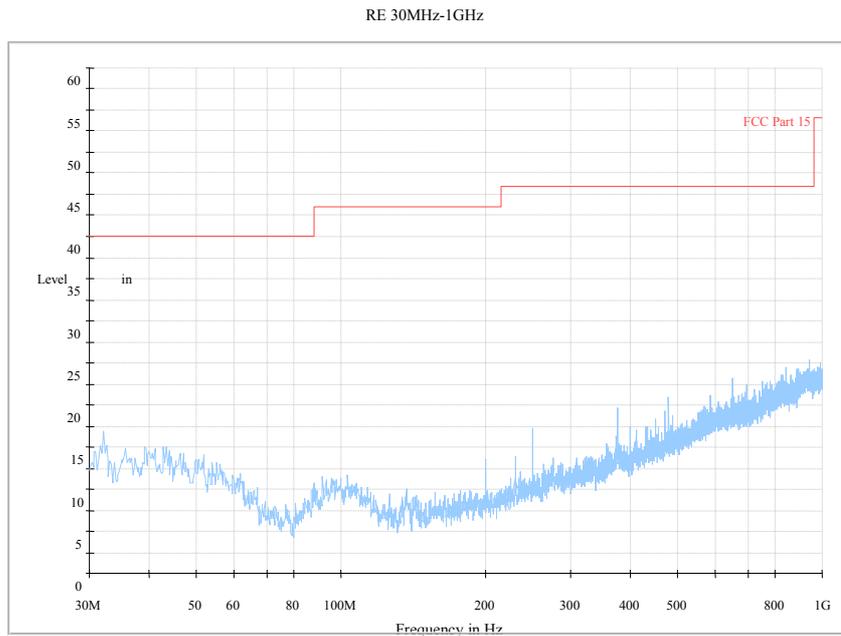
**Fig. 111 Radiated Spurious Emission (802.11n-HT20, Ch1, 30 MHz-1 GHz)**



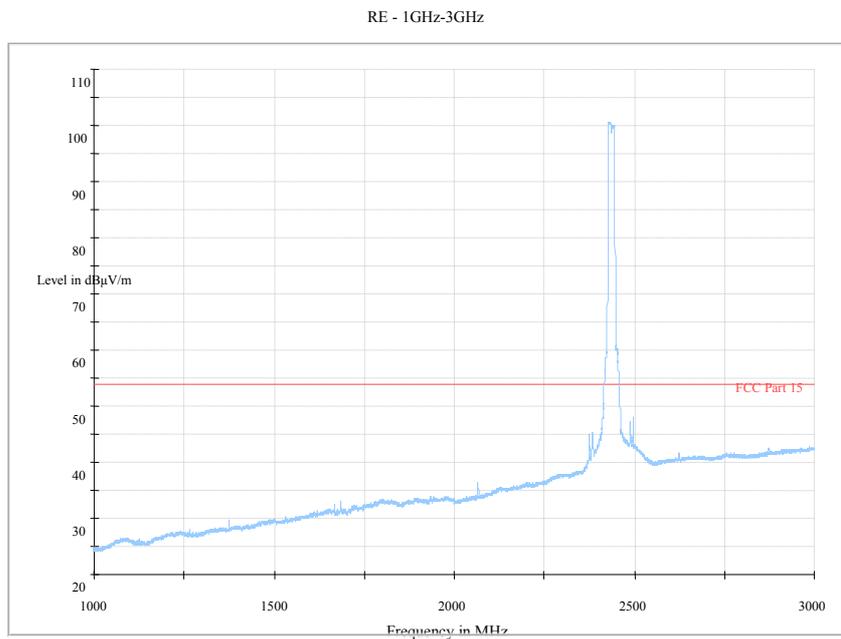
**Fig. 112 Radiated Spurious Emission (802.11n-HT20, Ch1, 1 GHz-3 GHz)**



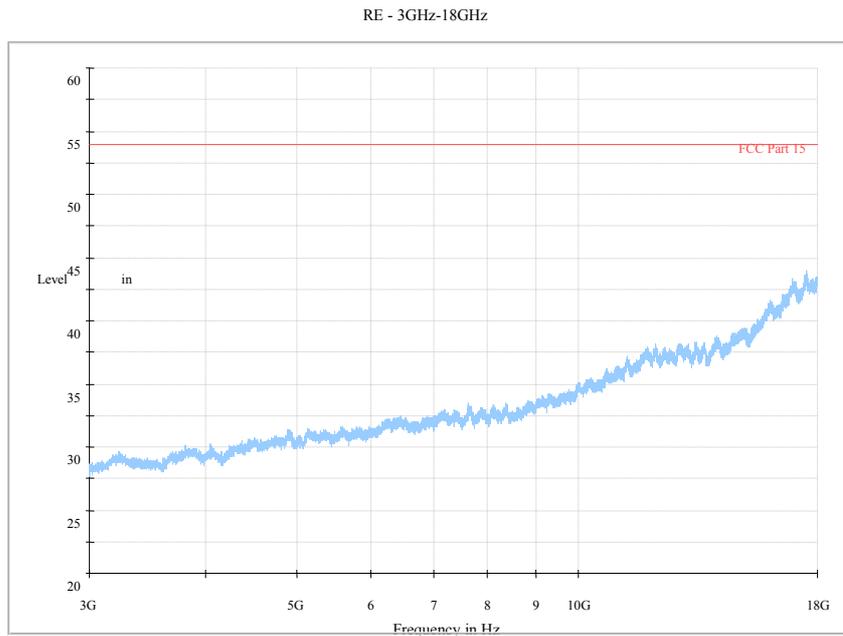
**Fig. 113 Radiated Spurious Emission (802.11n-HT20, Ch1, 3 GHz-18 GHz)**



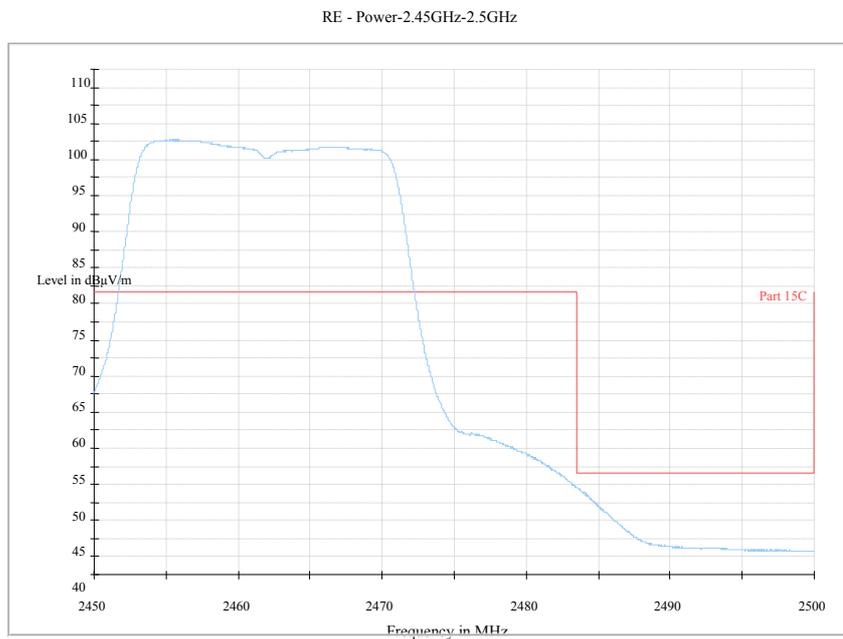
**Fig. 114 Radiated Spurious Emission (802.11n-HT20, Ch6, 30 MHz-1 GHz)**



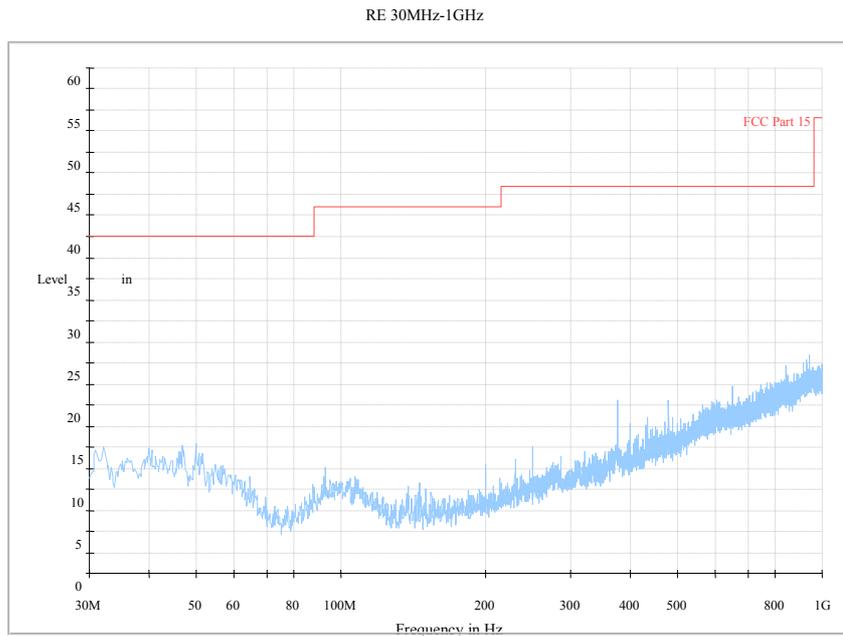
**Fig. 115 Radiated Spurious Emission (802.11n-HT20, Ch6, 1 GHz-3 GHz)**



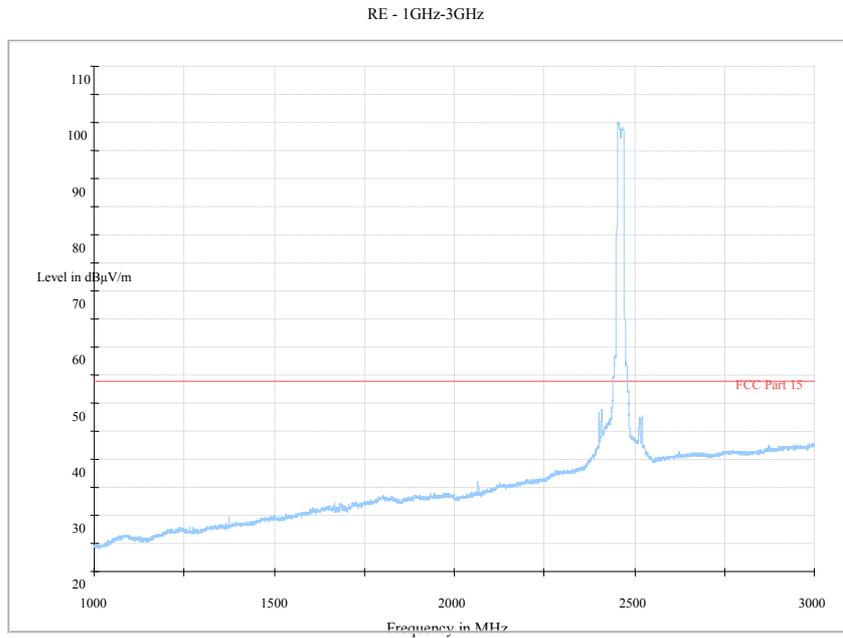
**Fig. 116 Radiated Spurious Emission (802.11n-HT20, Ch6, 3 GHz-18 GHz)**



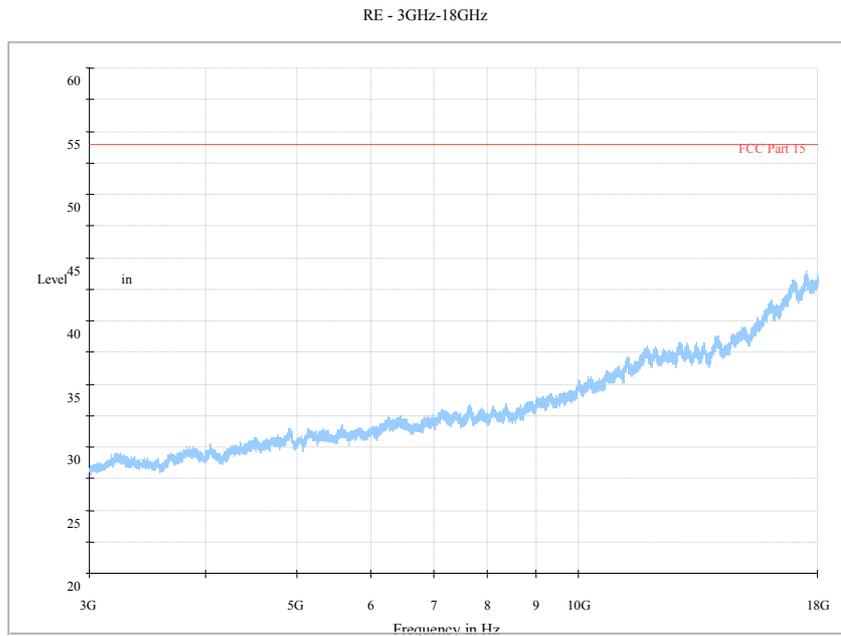
**Fig. 117 Radiated Spurious Emission (Power): 802.11n-HT20, ch11, 2.45 GHz - 2.5GHz**



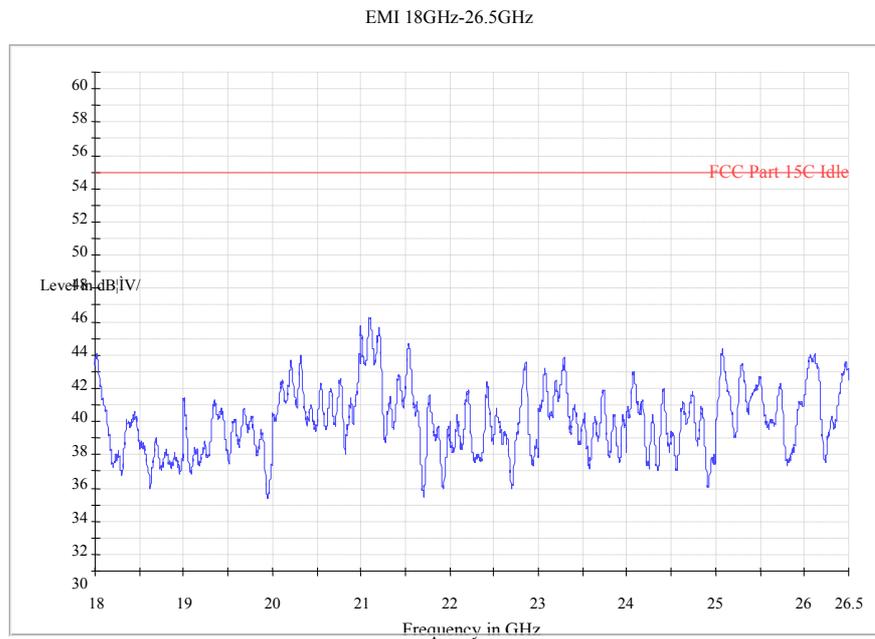
**Fig. 118 Radiated Spurious Emission (802.11n-HT20, Ch11, 30 MHz-1 GHz)**



**Fig. 119 Radiated Spurious Emission (802.11n-HT20, Ch11, 1 GHz-3 GHz)**



**Fig. 120 Radiated Spurious Emission (802.11n-HT20, Ch11, 3 GHz-18 GHz)**



**Fig. 121 Radiated emission: 18 GHz - 26 GHz**

### A.7. 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		
		11b mode	Idle	
0.15 to 0.5	66 to 56	Fig. 122	Fig. 123	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)

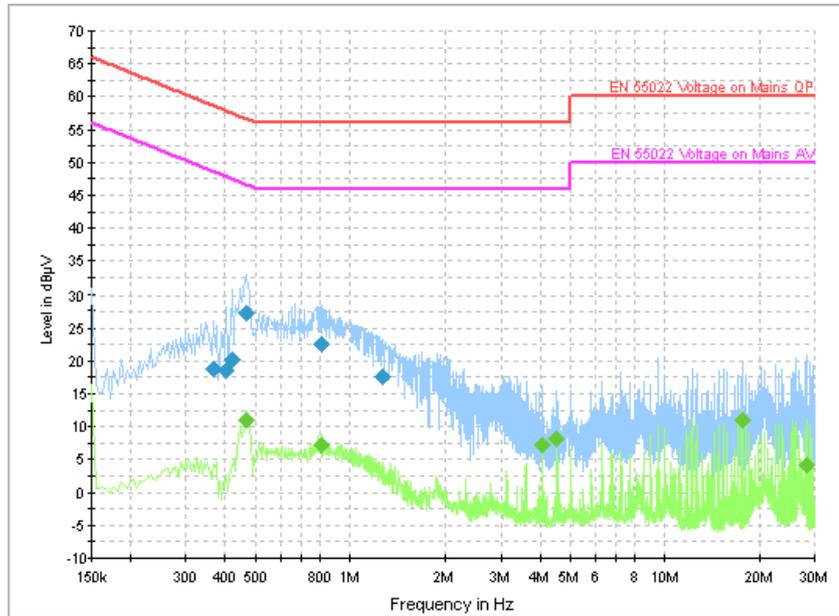
Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		With charger		
		11b mode	Idle	
0.15 to 0.5	56 to 46	Fig.122	Fig.123	P
0.5 to 5	46			
5 to 30	50			

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 C63.4 and KDB558074

**Conclusion: PASS**

**Test graphs as below:**



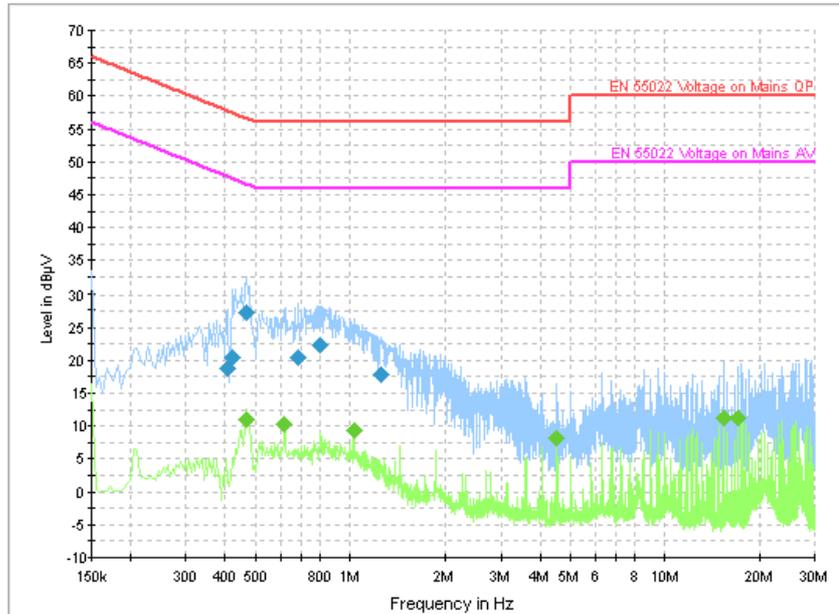
**Fig. 122 AC Powerline Conducted Emission**

Measurement Result: "12A00452\_WNC\_fin QP"

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.366000	18.8	GND	L1	10.0	39.8	58.6
0.402000	18.6	GND	L1	10.0	39.2	57.8
0.420000	20.1	GND	L1	10.0	37.3	57.4
0.469500	27.3	GND	L1	10.0	29.3	56.5
0.816000	22.5	GND	L1	10.0	33.5	56.0
1.275000	17.7	GND	L1	10.0	38.3	56.0

Measurement Result: "12A00452\_WNC\_fin AV"

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.469500	11.0	GND	L1	10.0	35.5	46.5
0.816000	7.1	GND	L1	10.0	38.9	46.0
4.065000	7.2	GND	L1	10.0	38.8	46.0
4.528500	8.1	GND	L1	10.0	37.9	46.0
17.583000	11.0	GND	L1	9.7	39.0	50.0
28.432500	4.2	GND	L1	9.3	45.8	50.0



**Fig. 123 AC Powerline Conducted Emission**

Measurement Result: "12A00452\_WIC\_fin QP"

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.406500	18.9	GND	L1	10.0	38.8	57.7
0.420000	20.4	GND	L1	10.0	37.0	57.4
0.469500	27.3	GND	L1	10.0	29.2	56.5
0.685500	20.5	GND	L1	10.0	35.5	56.0
0.807000	22.4	GND	L1	10.0	33.6	56.0
1.261500	17.8	GND	L1	10.0	38.2	56.0

Measurement Result: "2A00452\_WIC\_fin AV"

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.469500	11.0	GND	L1	10.0	35.5	46.5
0.618000	10.4	GND	L1	10.0	35.6	46.0
1.032000	9.3	GND	L1	10.0	36.7	46.0
4.528500	8.1	GND	L1	10.0	37.9	46.0
15.373500	11.3	GND	L1	9.7	38.7	50.0
17.115000	11.3	GND	L1	9.7	38.7	50.0

\*\*\* END OF REPORT BODY \*\*\*