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# RF Test Report

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Report No.: AGC00552191002EE05

**PRODUCT DESIGNATION** : Smart Phone  
**BRAND NAME** : CUBOT  
**MODEL NAME** : X20  
**APPLICANT** : Shenzhen Huafurui Technology Co., Ltd.  
**DATE OF ISSUE** : Nov. 07, 2019  
**STANDARD(S)** : EN 300 328 V2.1.1 (2016-11)  
**REPORT VERSION** : V1.2

## Attestation of Global Compliance (Shenzhen) Co., Ltd

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### Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct. 23, 2019	Invalid	Initial release
V1.1	1 <sup>st</sup>	Nov. 06, 2019	Invalid	Add test photo
V1.2	2 <sup>nd</sup>	Nov. 07, 2019	Valid	Update test photo



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### 1. TEST REPORT CERTIFICATION

<b>Applicant</b>	Shenzhen Huafurui Technology Co., Ltd.
<b>Address</b>	Unit 1401 &1402, 14/F, Jin qi zhi gu mansion (No. 4 building of Chong wen Garden), Crossing of the Liu xian street and Tang ling road, Tao yuan street, Nan shan district, Shenzhen, P.R. China
<b>Manufacturer</b>	Shenzhen Huafurui Technology Co., Ltd.
<b>Address</b>	Unit 1401 &1402, 14/F, Jin qi zhi gu mansion (No. 4 building of Chong wen Garden), Crossing of the Liu xian street and Tang ling road, Tao yuan street, Nan shan district, Shenzhen, P.R. China
<b>Factory Name</b>	Shenzhen Huafurui Technology Co., Ltd.
<b>Address</b>	Unit 1401 &1402, 14/F, Jin qi zhi gu mansion (No. 4 building of Chong wen Garden), Crossing of the Liu xian street and Tang ling road, Tao yuan street, Nan shan district, Shenzhen, P.R. China
<b>Product Designation</b>	Smart Phone
<b>Brand Name</b>	CUBOT
<b>Test Model</b>	X20
<b>Date of test</b>	Oct. 14, 2019 to Oct. 22, 2019
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Report Template</b>	AGCRT-EC-BGN/RF

We, Attestation of Global Compliance (Shenzhen) Co., Ltd., for compliance with the requirements set forth in the European Standard ETSI EN EN 300 328 V2.1.1. The results of testing in this report apply to the product /system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

The test results of this report relate only to the tested sample identified in this report.

Prepared By



Donjon Huang  
(Project Engineer)

Oct. 22, 2019

Reviewed By



Max Zhang  
(Reviewer)

Nov. 07, 2019

Approved By



Forrest Lei  
( Authorized Officer )

Nov. 07, 2019



## 2. GENERAL INFORMATION

### 2.1. DESCRIPTION OF EUT

Note: the following data is based on the information by the applicant.

<b>Hardware Version</b>	E965_MAIN_PCB_V1.0	
<b>Software Version</b>	CUBOT_X20_9071C-1_V01_20190920	
<b>Operating Frequency</b>	2.412 GHz~2.472GHz	
<b>Support Channels</b>	13 Channels (IEEE802.11(20)b/g/n)& 9 Channels (IEEE802.11(40)n)	
<b>Modulation</b>	CCK,OFDM,BPSK,GPSK,16-QAM,64-QAM	
<b>Adaptive / non-adaptive equipment</b>	Adaptive Equipment	
<b>Antenna Type</b>	Hardware antenna	
<b>Antenna Gain</b>	0dBi	
<b>Power Supply</b>	Normal Voltage: DC 3.85V	
<b>Extreme Temperature</b>	Low Temperature (TL) = -10°C High Temperature (TH) = +40°C	
<b>Channels Frequency</b>	01: 2412MHZ 02: 2417MHZ 03: 2422MHZ 04: 2427MHZ 05: 2432MHZ 06: 2437MHZ 07: 2442MHZ	08: 2447MHZ 09: 2452MHZ 10: 2457MHZ 11: 2462MHZ 12: 2467MHZ 13: 2472MHZ

#### Note:

1. For 802.11b, 802.11g, 802.11n 20MHZ bandwidth system use Channel 1 to Channel 13.
2. For 802.11n 40MHZ bandwidth system use Channel 3 to Channel 11.
3. Please refer to the photographs of the EUT. For more details, please refer to the User's manual of the EUT.
4. The maximum temperature of 40°C is not a standard requirement and is measured according to the maximum service temperature stated by the manufacturer.

### 2.2. OBJECTIVE

Perform Radio Spectrum tests for CE Marking according to the provisions of article 3.2 of the RED Directive (2014/53/EU) for the WLAN of the EUT.

### 2.3. TEST STANDARDS AND RESULTS

The EUT has been tested according to ETSI EN 300 328 V2.1.1

<b>ETSI EN 300 328 V2.1.1 (2016-11)</b>	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
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#### 2.4. TEST ITEMS AND THE RESULTS

No.	Basic Standard	Test Type	Result
1	ETSI EN 300 328 4.3.2.2	RF Output Power	Pass
2	ETSI EN 300 328 4.3.2.3	Power Spectral Density	Pass
3	ETSI EN 300 328 4.3.2.4	Duty Cycle, Tx-sequence, Tx-gap	N/A
4	ETSI EN 300 328 4.3.2.5	Medium Utilisation(MU) factor	N/A
5	ETSI EN 300 328 4.3.2.6	Adaptivity	Pass
6	ETSI EN 300 328 4.3.2.7	Occupied Channel Bandwidth	Pass
7	ETSI EN 300 328 4.3.2.8	Transmitter unwanted emissions in the out-of-band domain	Pass
8	ETSI EN 300 328 4.3.2.9	Transmitter unwanted emissions in the spurious domain	Pass
9	ETSI EN 300 328 4.3.2.10	Receiver spurious emissions	Pass
10	ETSI EN 300 328 4.3.2.11	Receiver Blocking	Pass

**Note:**

1. N/A- Not Applicable.
2. The latest versions of basic standards are applied.

#### 2.5. ENVIRONMENTAL CONDITIONS

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa



### 3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Radio Frequency,  $U_c = \pm 1 \times 10^{-7}$
- Uncertainty of total RF power, conducted,  $U_c = \pm 0.8\text{dB}$
- Uncertainty of RF power density, conducted,  $U_c = \pm 2.6\text{dB}$
- Uncertainty of spurious emissions, conducted,  $U_c = \pm 2.7\text{dB}$
- Uncertainty of spurious emissions, radiated,  $U_c = \pm 5.4\text{dB}$
- Uncertainty of Temperature:  $\pm 0.5^\circ\text{C}$
- Uncertainty of Humidity:  $\pm 1\%$
- Uncertainty of DC and low frequency voltages:  $\pm 2\%$



#### 4. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

Company Name:	Attestation of Global Compliance (Shenzhen) Co., Ltd.
Address	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao 'an District, Shenzhen, Guangdong, China

#### List of Equipments Used

Description	Manufacturer	Model No.	S/N	Calibration Date	Calibration Due.
SIGNAL ANALYZER	Agilent	N9020A	MY52090123	Sep. 09, 2019	Sep. 08, 2020
SIGNAL GENERATOR	Agilent	N5182A	MY50140530	Sep. 09, 2019	Sep. 08, 2020
SIGNAL GENERATOR	Agilent	E8257D	MY45141029	Sep. 09, 2019	Sep. 08, 2020
USB Wideband Power Sensor	Agilent	U2021XA	MY54110007	Sep. 09, 2019	Sep. 08, 2020
USB Wideband Power Sensor	Agilent	U2021XA	MY54110009	Sep. 09, 2019	Sep. 08, 2020
USB Wideband Power Sensor	Agilent	U2021XA	MY54110014	Sep. 09, 2019	Sep. 08, 2020
USB Wideband Power Sensor	Agilent	U2021XA	MY54110012	Sep. 09, 2019	Sep. 08, 2020
USB Simultaneous Sampling Multifunction DAQ	Agilent	U2531A	MY5211038	Sep. 09, 2019	Sep. 08, 2020
2.4 GHz Filter	Micro-Tronics	BRM50702	017	Feb. 27, 2019	Feb. 26, 2020
VECTOR ANALYZER	Agilent	E4440A	MY44303916	June 12, 2019	June 11, 2020
Trilog-Broadband Antenna	SCHWARZBEK	VULB 9168	VULB 9168-492	Mar. 01, 2018	Feb. 28, 2020
Trilog-Broadband Antenna	SCHWARZBEK	VULB 9168	VULB 9168-494	Mar. 01, 2018	Feb. 28, 2020
Amplifier	EM	EM30180	060552	June 12, 2019	June 11, 2020
Horn Antenna	EM	EM-AH-10180	67	Mar. 01, 2018	Feb. 28, 2020
HORN ANTENNA	ETS	3117	00034609	Mar. 01, 2018	Feb. 28, 2020
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	#768	Mar. 01, 2018	Feb. 28, 2020
Horn Ant (18G-40GHz)	ETS	QWH_SL_18_40_K_SG	N/A	Mar. 01, 2018	Feb. 28, 2020
UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMW500	120909	July 11, 2019	July 10, 2020



R					
Adjustable attenuator	warison	WATT-6SR1211 (1dB, 10dB)	N/A	June 12, 2019	June 11, 2020
Attenuator	Weinachel Corp	58-30-33 (30dB)	N/A	June 12, 2019	June 11, 2020
Power divider	Mini-Circuits	SF781901412	ZFRSX-183-S+	July 11, 2019	July 10, 2020
Directional Coupler	Werlatone	C5571-10	99463	June 12, 2019	June 11, 2020



## 5. ETSI EN 300 328 REQUIREMENTS

### 5.1. RF OUTPUT POWER

#### 5.1.1 LIMIT

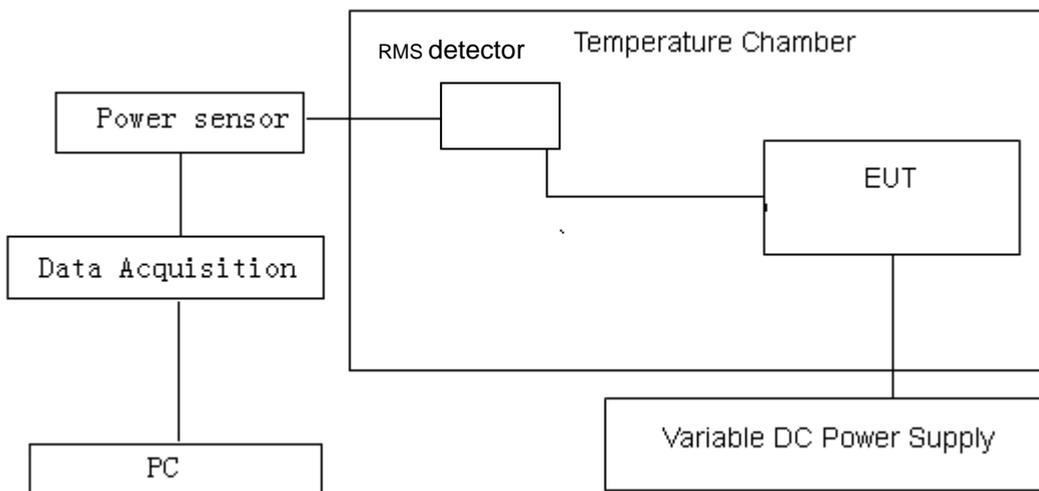
RF Output Power  $\leq$  100mW (20dBm) over Normal and Extreme conditions.

#### 5.1.2 MEASUREMENT PROCEDURE

- 1) Use a fast power sensor and set the samples speed 1MS/s or faster.
- 2) Connect one power sensor to each transmit port, Trigger the power sensors so that they start sampling at the same time. For each instant in time, sum the power of the individual samples of all ports and store them. Use these stored samples in all following steps.
- 3) Find the start and stop times of each burst in the stored measurement samples.
- 4) Between the start and stop times of each individual burst calculate the RMS power over the burst. Save these Pburst values, as well as the start and stop times for each burst.
- 5) The highest of all Pburst values (Value "A" in dBm) will be used for maximum e.i.r.p calculations.
- 6) The cable loss and attenuator factor shall be considered to the value "A".
- 6) Add the (stated) antenna assembly gain "G" in dBi of the individual antenna. If applicable, add the additional beamforming gain "Y" in dB.
- 7) The RF output power (P) shall be calculated using the formula:  $P=A+G+Y$

#### 5.1.3 TEST CONFIGURATION

Temperature and Voltage Measurement (under normal and extreme test conditions)



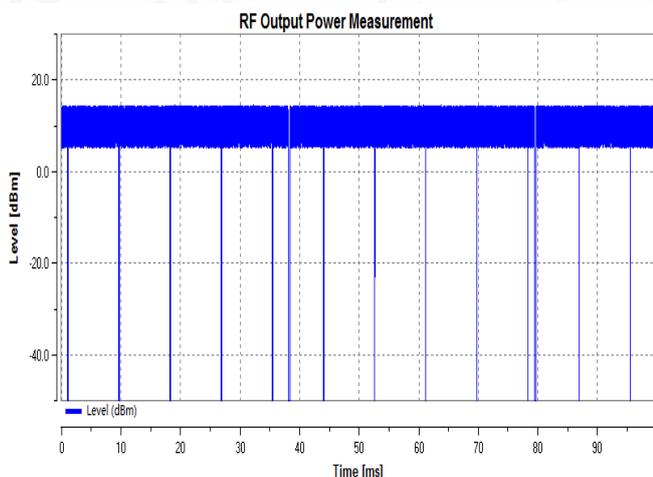
### 5.1.4 MEASUREMENT RESULTS

Operation Mode	Single TX	Test Date	Oct. 18, 2019
Temperature	25°C	Tested by	Donjon
Humidity	55 % RH	Polarity	--
Antenna assembly Gain	= 0dBi		
Cable Loss	=1.0dB		
Beamforming gain	=0dB		
EIRP	= P+ Gain+Y		

TEST CONDITIONS		IEEE 802.11b TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CHANNEL	VOL	DC 3.85V	DC 3.85V	DC 3.85V
	POWER			
CH 01	EIRP	11.33	11.30	11.32
CH 07	EIRP	12.10	12.04	12.01
CH 13	EIRP	11.12	11.09	11.06
Limit		20dBm		
Measurement uncertainty		+ 0.28dB / - 0.30dB		
Note		Only the worst case data is reported as below.		

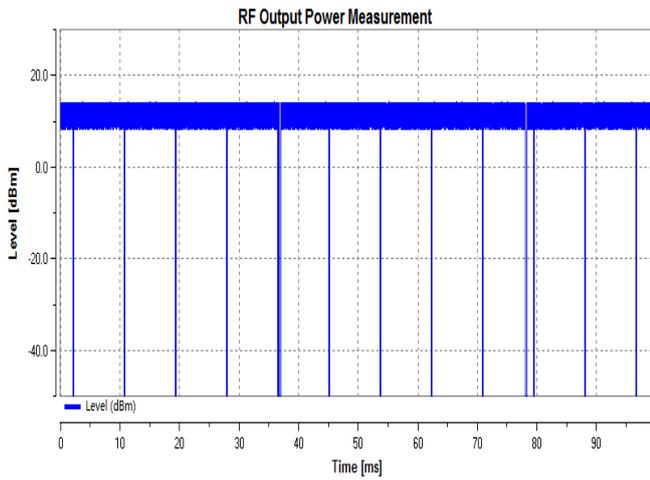
### 1\*802.11 b:CH Low-2412: ( Temp - Normal )

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Low-2412	Normal	11.33	11.33



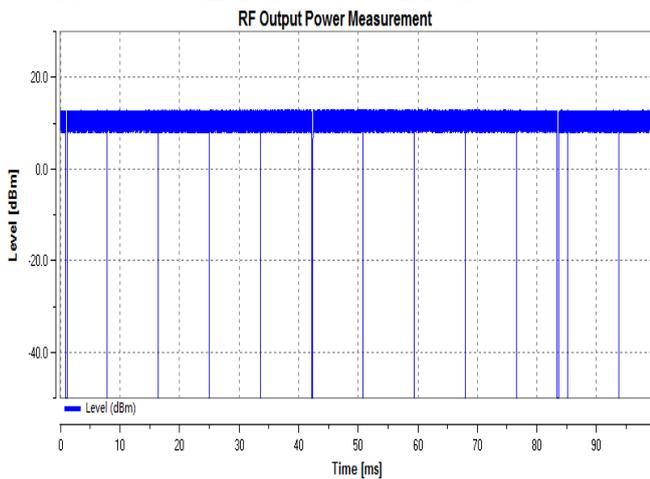
**2\*802.11 b:CH Mid-2442: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Mid-2442	Normal	12.1	12.1



**3\*802.11 b:CH High-2472: ( Temp - Normal )**

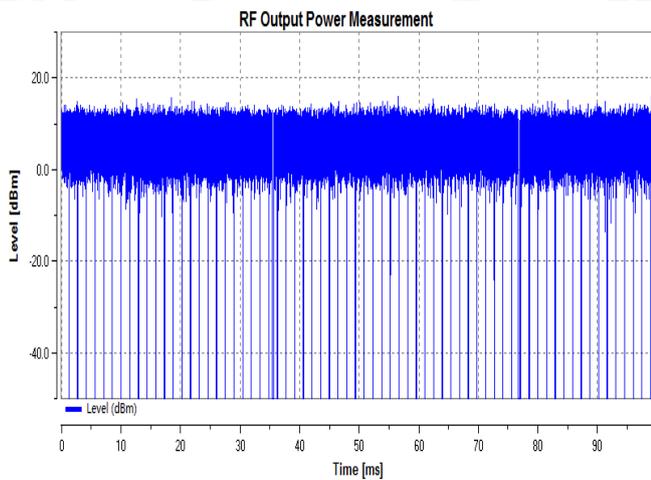
Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH High-2472	High	11.12	11.12



TEST CONDITIONS		IEEE 802.11g TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CHANNEL	VOL	DC 3.85V	DC 3.85V	DC 3.85V
	POWER			
CH 01	EIRP	7.5	7.42	7.40
CH 07	EIRP	9.88	9.82	9.87
CH 13	EIRP	7.44	7.40	7.38
Limit		20dBm		
Measurement uncertainty		+ 0.28dB / - 0.30dB		
Note		Only the worst case data is reported as below.		

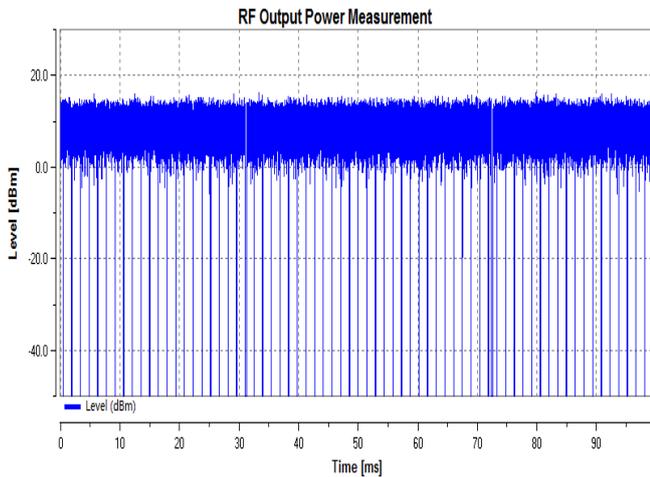
#### 4\*802.11 g:CH Low-2412: ( Temp - Normal )

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Low-2412	Normal	7.5	7.5



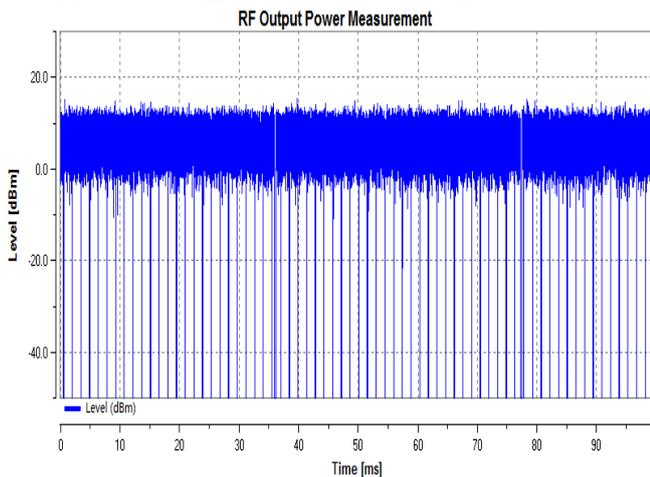
**5\*802.11 g:CH Mid-2442: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Mid-2442	Normal	9.88	9.88



**6\*802.11 g:CH High-2472: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH High-2472	Normal	7.44	7.44



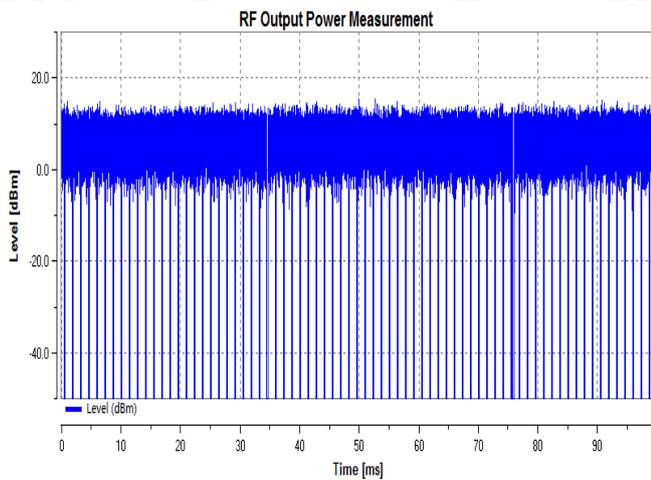
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TEST CONDITIONS		IEEE 802.11n(20) TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CHANNEL	VOL	DC 3.85V	DC 3.85V	DC 3.85V
	POWER			
CH 01	EIRP	7.41	7.35	7.39
CH 07	EIRP	9.94	9.92	9.87
CH 13	EIRP	7.45	7.40	7.38
Limit		20dBm		
Measurement uncertainty		+ 0.28dB / - 0.30dB		
Note		Only the worst case data is reported as below.		

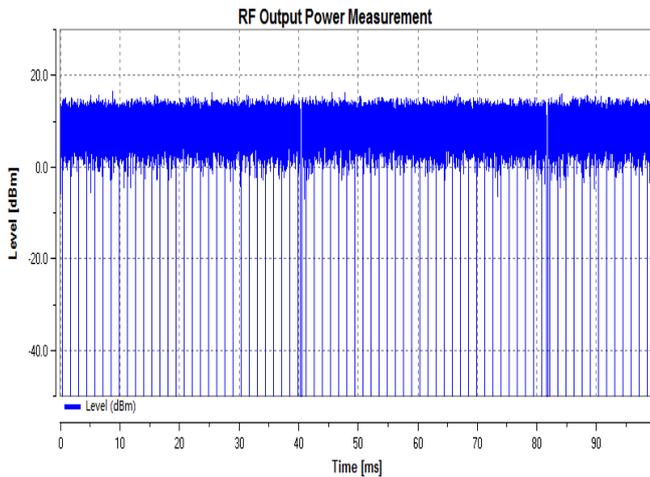
**7\*802.11 n20:CH Low-2412: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Low-2412	Normal	7.41	7.41



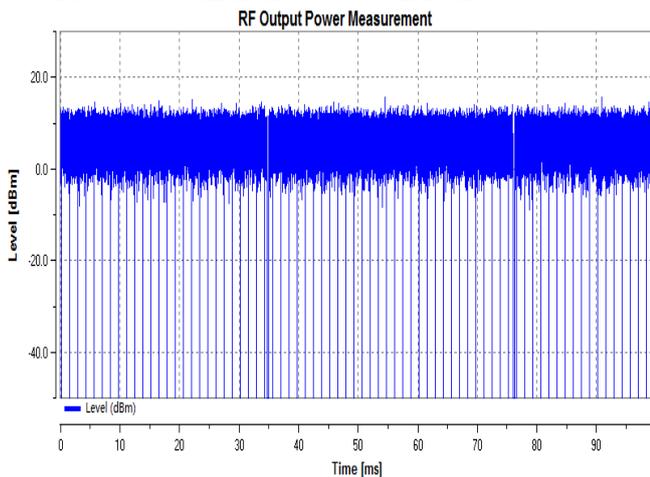
**8\*802.11 n20:CH Mid-2442: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Mid-2442	Normal	9.94	9.94



**9\*802.11 n20:CH High-2472: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH High-2472	Normal	7.45	7.45



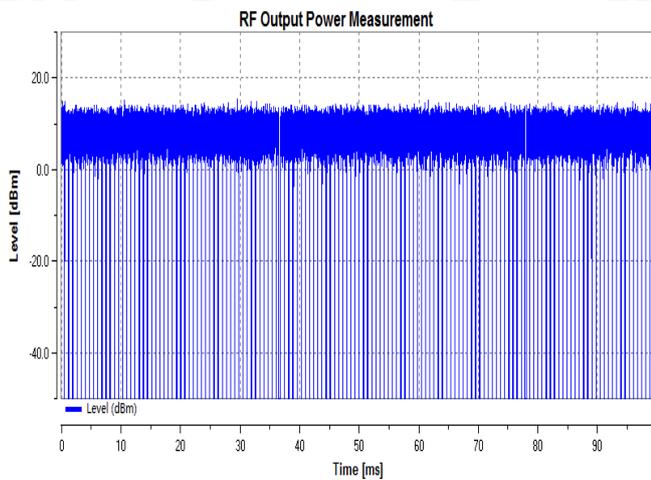
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TEST CONDITIONS		IEEE 802.11n(40) TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CHANNEL	VOL	DC 3.85V	DC 3.85V	DC 3.85V
	POWER			
CH 03	EIRP	9.09	8.99	9.05
CH 07	EIRP	9.18	9.12	9.16
CH 11	EIRP	9.86	9.82	9.79
Limit		20dBm		
Measurement uncertainty		+ 0.28dB / - 0.30dB		
Note		Only the worst case data is reported as below.		

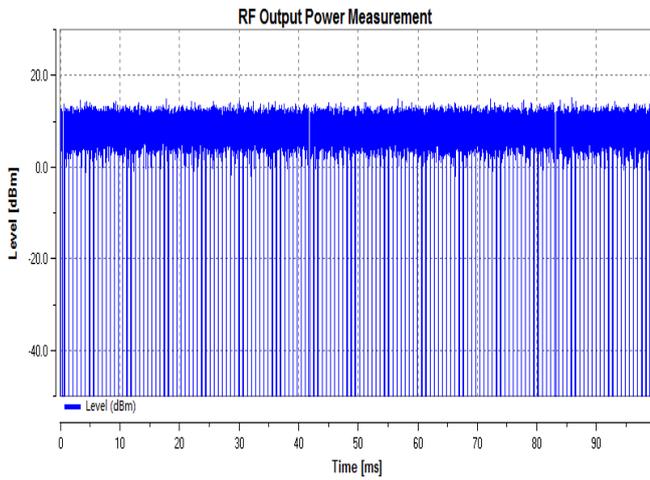
**10\*802.11 n40:CH Low-2422: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Low-2422	Normal	9.09	9.09



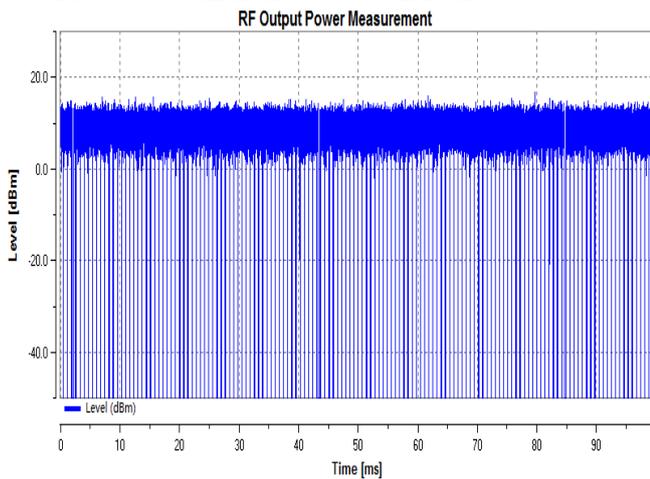
**11\*802.11 n40:CH Mid-2442: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH Mid-2442	Normal	9.18	9.18



**12\*802.11 n40:CH High-2462: ( Temp - Normal )**

Channel	Voltage	Conducted Power (dBm)	EIRP (dBm)
CH High-2462	Normal	9.86	9.86



**Conclusion: PASS**



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## 5.2. POWER SPECTRAL DENSITY

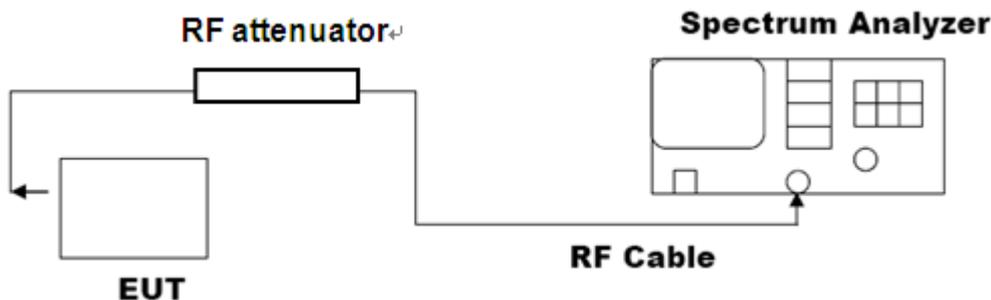
### 5.2.1 LIMIT

For non-adaptive equipment using wide band modulations other than FHSS, The maximum Power spectral density is limited to 10dBm Per MHz

### 5.2.2 TEST PROCEDURE

- 1) Set the frequency from 2400MHz to 2483.5MHz, use 10kHz RBW and 30kHz VBW for pre-scan. The number of sweep points shall be more than 8350. Wait for the trace to be completed and save the (trace) data set to a file.
- 2) Add up the values for amplitude (power) for all the samples in the file.
- 3) Normalize the individual values for amplitude so that the sum is equal to the RF Output Power(e.i.r.p) measured in 5.1.
- 4) Starting from the first sample in the file (lowest frequency), add up the power of the following samples representing a 1MHz segment and record the results for power and position (i.e. sample #1 to #100). This is the Power Spectral Density (e.i.r.p) for the first 1MHz segment which shall be recorded.
- 5) Shift the start point of the samples added up in step 5 by 1 sample and repeat the procedure in step 4(i.e. sample #2 to #101).
- 6) Repeat step 5 until the end of the data set and record the radiated power spectral Density values for each of the 1MHz segments.
- 7) The cable loss and attenuator factor shall be considered to the test result.
- 8) The highest value shall be recorded in the test report.

### 5.2.3 TEST CONFIGURATION



### 5.2.4 TEST RESULTS

IEEE 802.11b Power Spectral Density			
Channel Tested	Power Density (dBm/MHz)	Test Limit (dBm/MHz)	Pass / Fail
CH 01	3.49	10	Pass
CH 07	3.48	10	Pass
CH 13	2.77	10	Pass

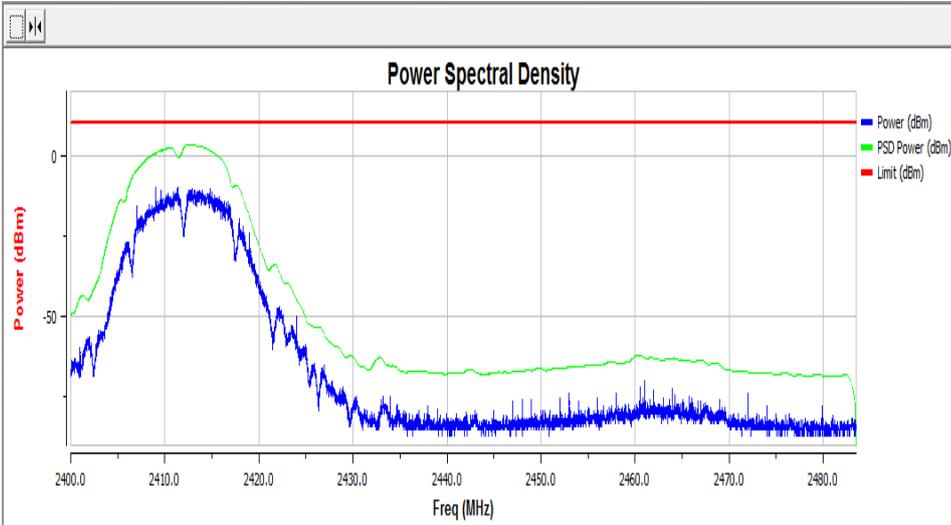
IEEE 802.11g Power Spectral Density			
Channel Tested	Power Density (dBm/MHz)	Test Limit (dBm/MHz)	Pass / Fail
CH 01	-1.79	10	Pass
CH 07	-0.73	10	Pass
CH 13	-2.51	10	Pass

IEEE 802.11n(20) Power Spectral Density			
Channel Tested	Power Density (dBm/MHz)	Test Limit (dBm/MHz)	Pass / Fail
CH 01	-1.47	10	Pass
CH 07	-0.89	10	Pass
CH 13	-2.70	10	Pass

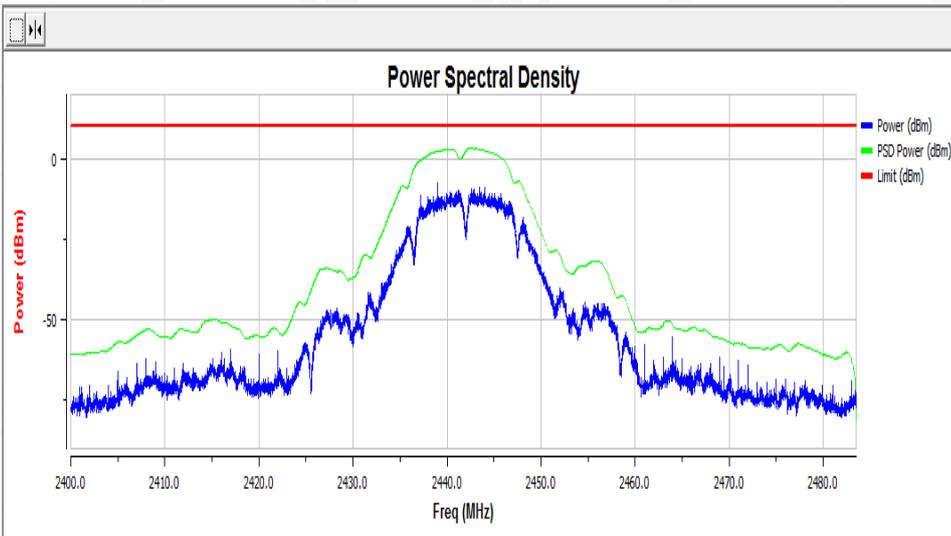
IEEE 802.11n(40) Power Spectral Density			
Channel Tested	Power Density (dBm/MHz)	Test Limit (dBm/MHz)	Pass / Fail
CH 03	-2.25	10	Pass
CH 07	-3.04	10	Pass
CH 11	-1.74	10	Pass



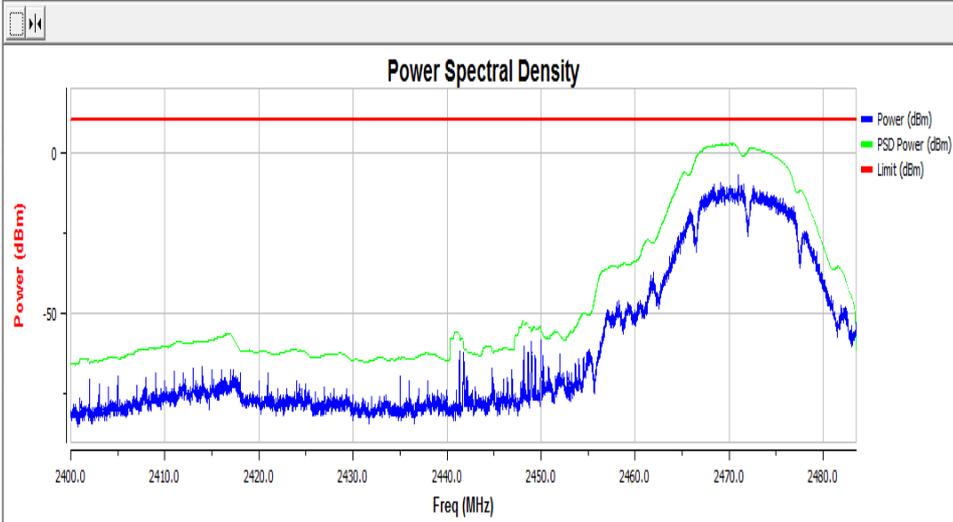
Channel	Max Power Spectral Density Level (dBm)
CH Low-2412	3.49



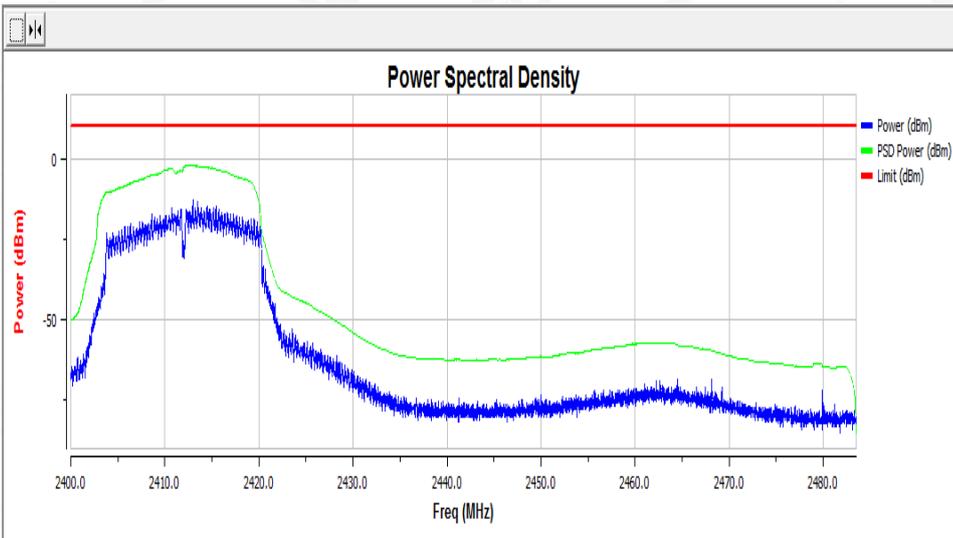
Channel	Max Power Spectral Density Level (dBm)
CH Mid-2442	3.48



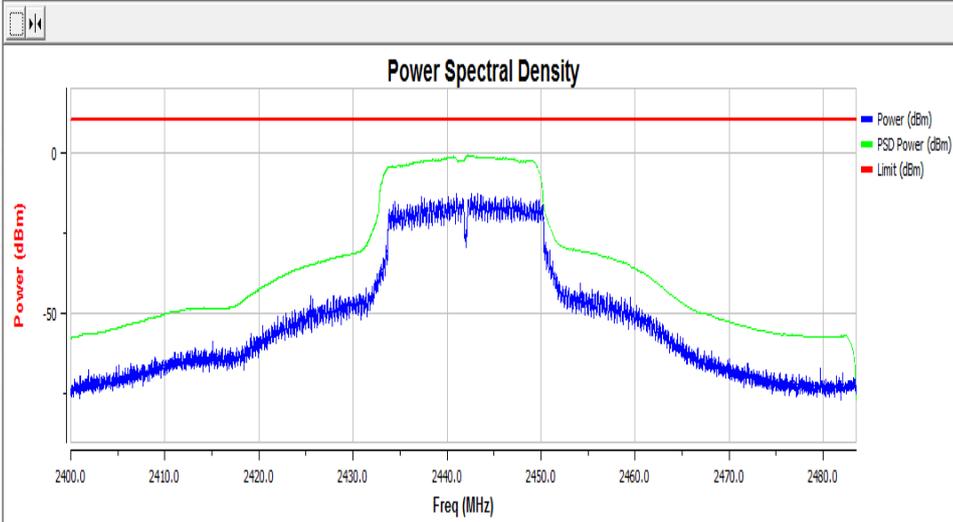
Channel	Max Power Spectral Density Level (dBm)
CH High-2472	2.77



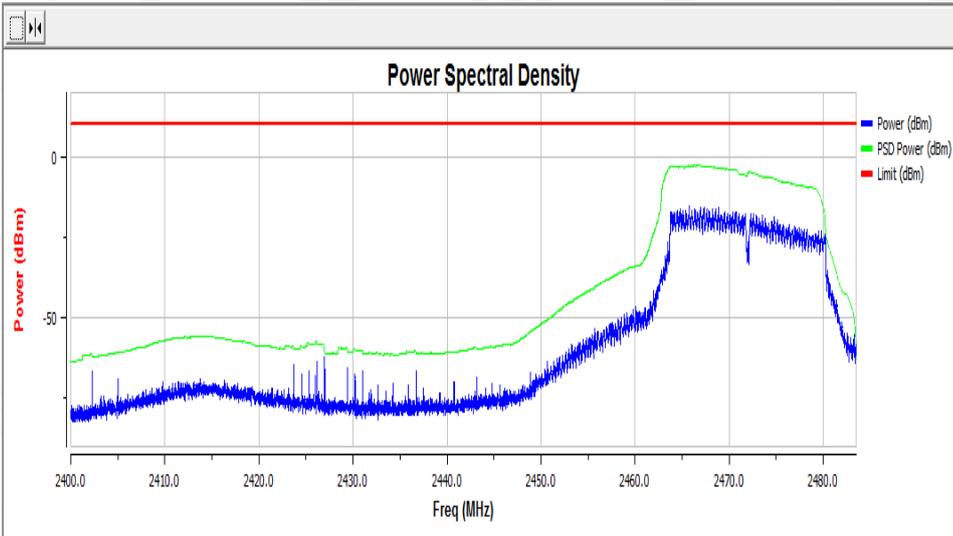
Channel	Max Power Spectral Density Level (dBm)
CH Low-2412	-1.79



Channel	Max Power Spectral Density Level (dBm)
CH Mid-2442	-0.73



Channel	Max Power Spectral Density Level (dBm)
CH High-2472	-2.51



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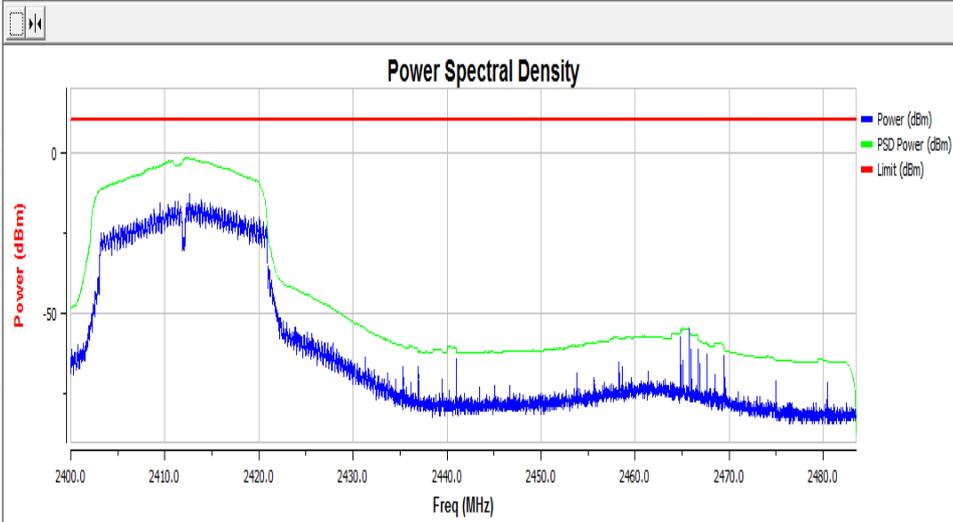
Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,  
Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755 2523 4088

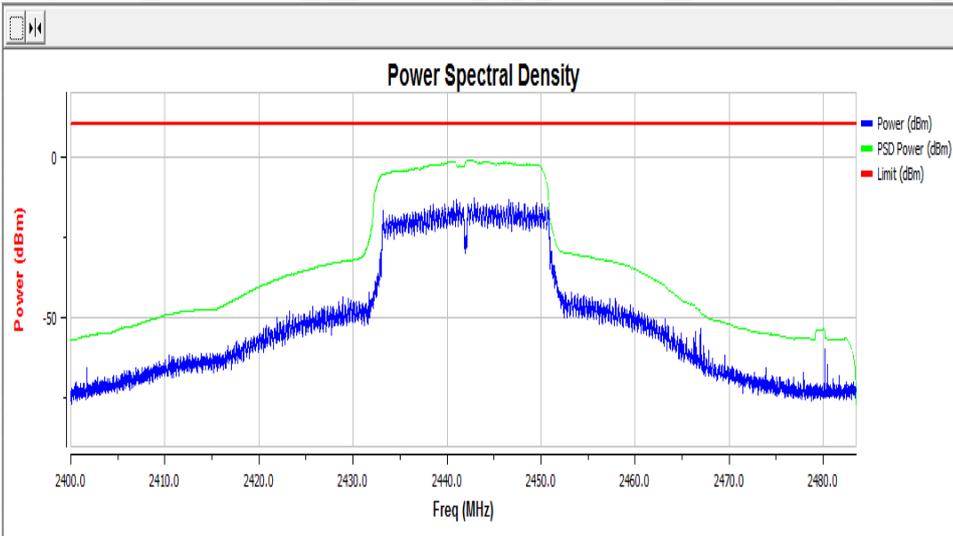
E-mail: agc@agc-cert.com

Service Hotline: 400 089 2118

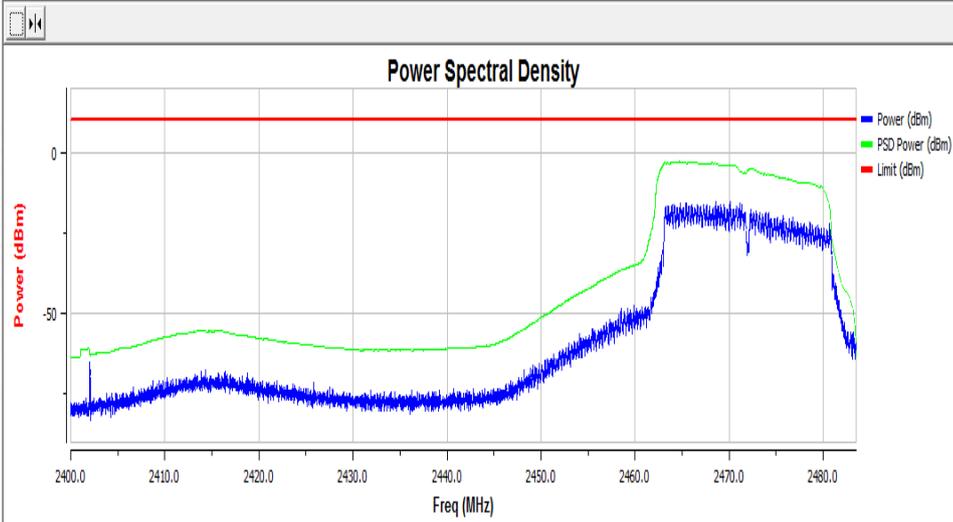
Channel	Max Power Spectral Density Level (dBm)
CH Low-2412	-1.47



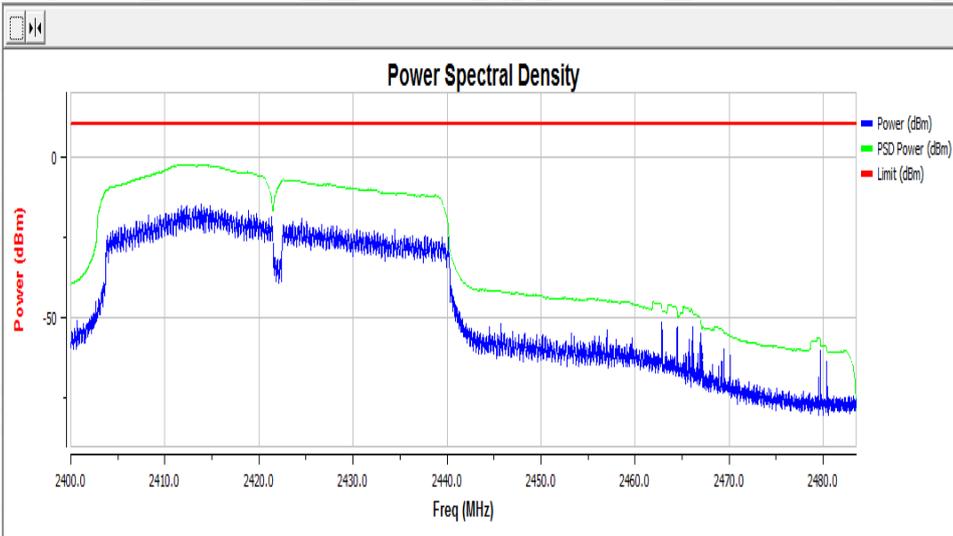
Channel	Max Power Spectral Density Level (dBm)
CH Mid-2442	-0.89



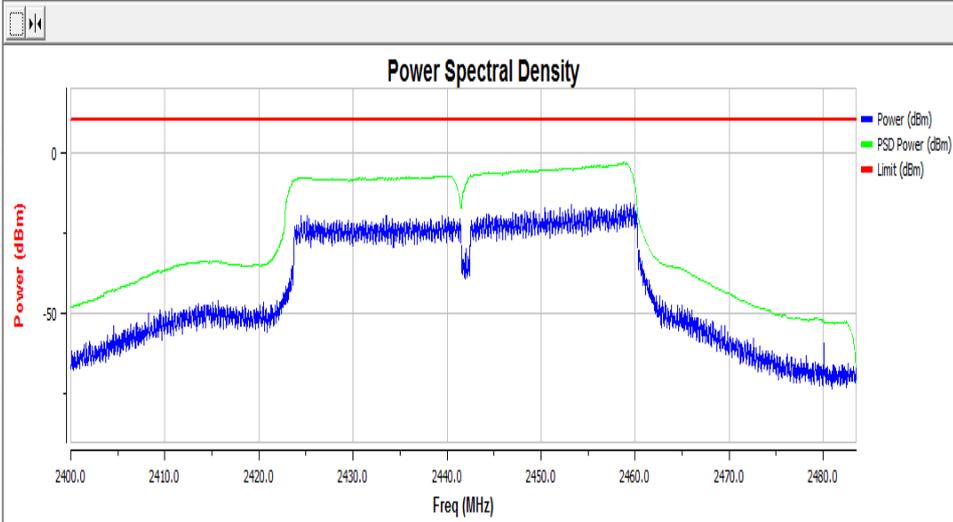
Channel	Max Power Spectral Density Level (dBm)
CH High-2472	-2.70



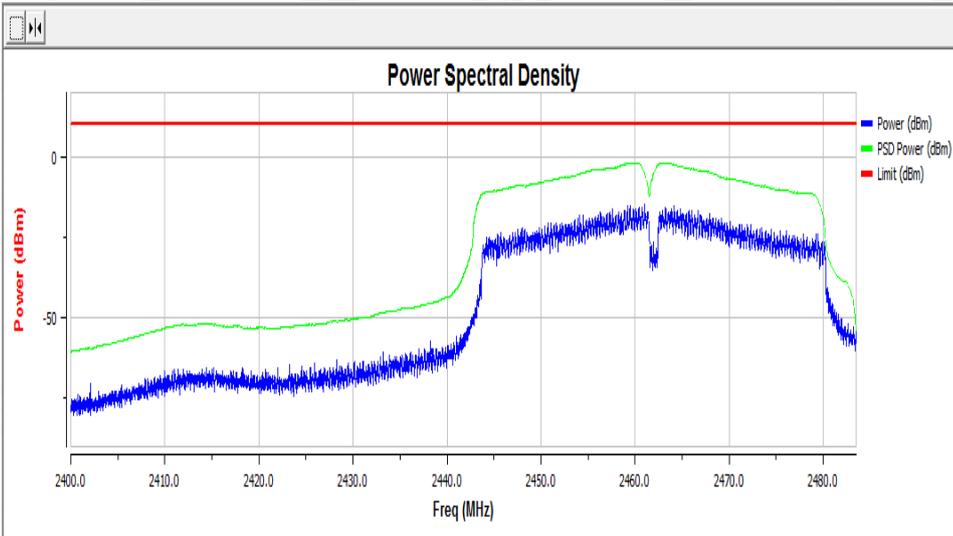
Channel	Max Power Spectral Density Level (dBm)
CH Low-2422	-2.25



Channel	Max Power Spectral Density Level (dBm)
CH Mid-2442	-3.04



Channel	Max Power Spectral Density Level (dBm)
CH High-2462	-1.74



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### 5.3. ADAPTIVITY

The method of adaptivity is using LBT based DAA

#### 5.3.1 LIMIT

The Channel Occupancy Time shall be less than 13ms (the value of q equal to 32 which declared by manufacturer).

If implemented, Short Control Signalling Transmissions of adaptive equipment using wide band modulations other than FHSS shall have a maximum duty cycle of 10 % within an observation period of 50 ms.

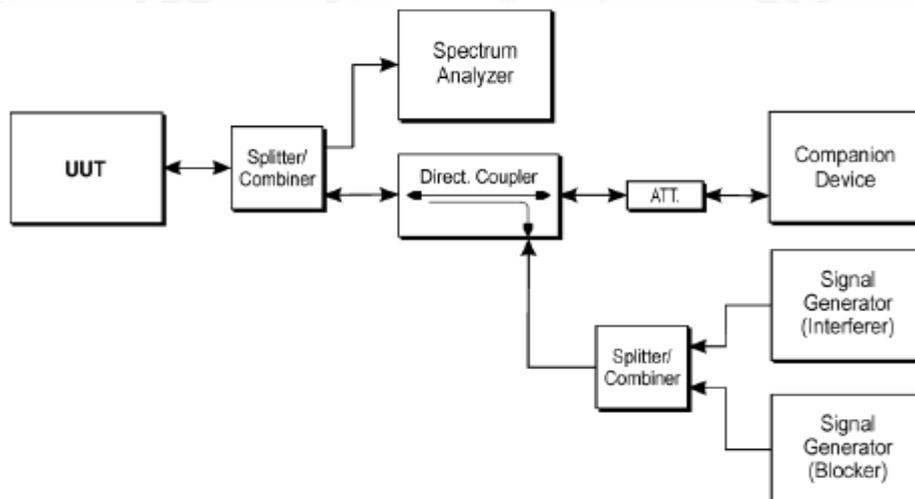
**Table 2: Unwanted Signal parameters**

Wanted signal meanpower from companiondevice	Unwantedsignal frequency (MHz)	Unwanted CWsignal power(dBm)
sufficient to maintain the link (see note2)	2 395 or 2488,5 (see note1)	-35 (see note3)
<p>NOTE 1: The highest frequency shall be used for testing operating channels within the range 2 400 MHz to 2 442 MHz, while the lowest frequency shall be used for testing operating channels within the range 2 442 MHz to 2 483,5 MHz. See clause 5.4.6.1.</p> <p>NOTE 2: A typical value which can be used in most cases is -50dBm/MHz.</p> <p>NOTE 3: The level specified is the level in front of the UUT antenna. In case of conducted measurements, this level has to be corrected by the actual antenna assembly gain.</p>		

#### 5.3.2 TEST PROCEDURE

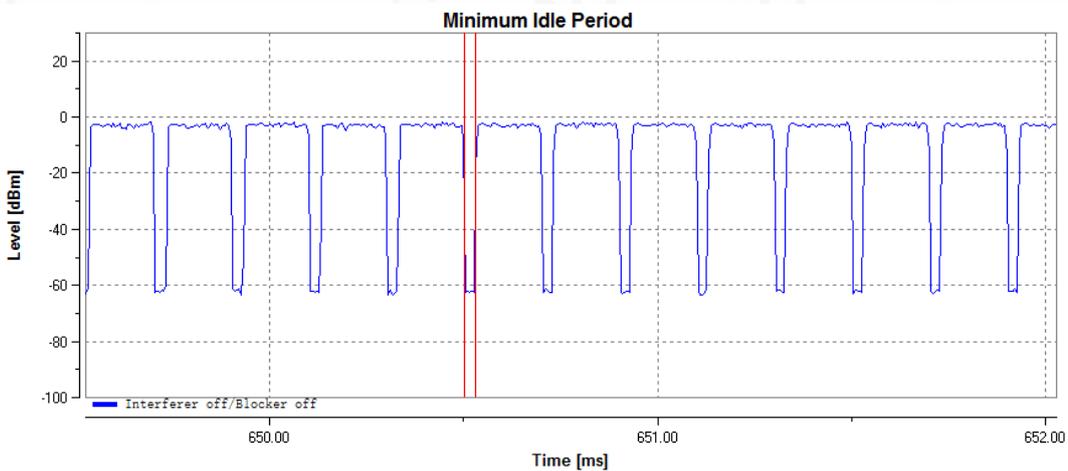
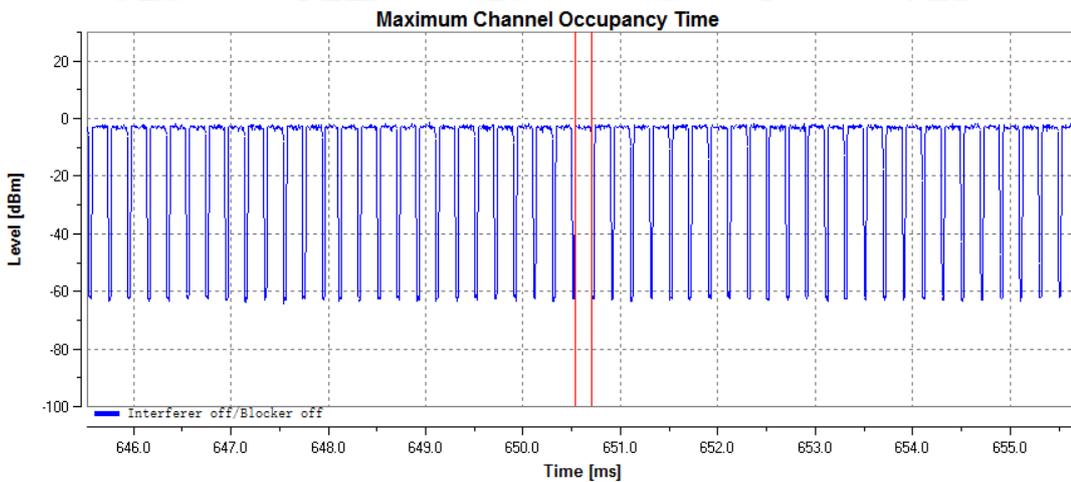
- 1) The EuT connect to a companion device during the test. Adjust the received signal level at the EuT to the value of -50dBm/MHz.
- 2) the analyzer shall be set as below: RBW>=Occupied Channel Bandwidth and VBW>=3×RBW.
- 3) Configure the EuT for normal transmission with a sufficiently high payload to allow demonstration of compliance of the adaptive mechanism on the channel being tested.
- 4) Adding the interference signal and blocking signal.
- 5) Record the data.

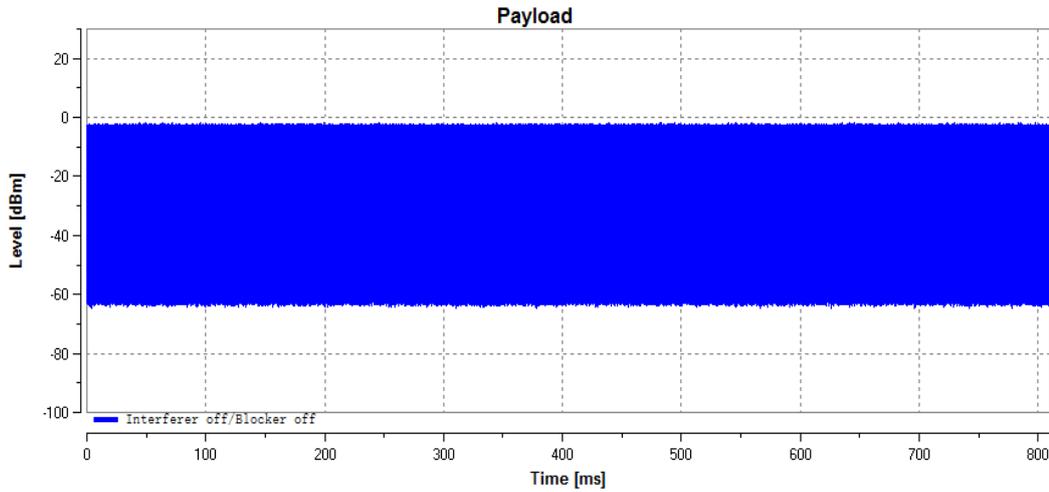
#### 5.3.3 TEST CONFIGURATION



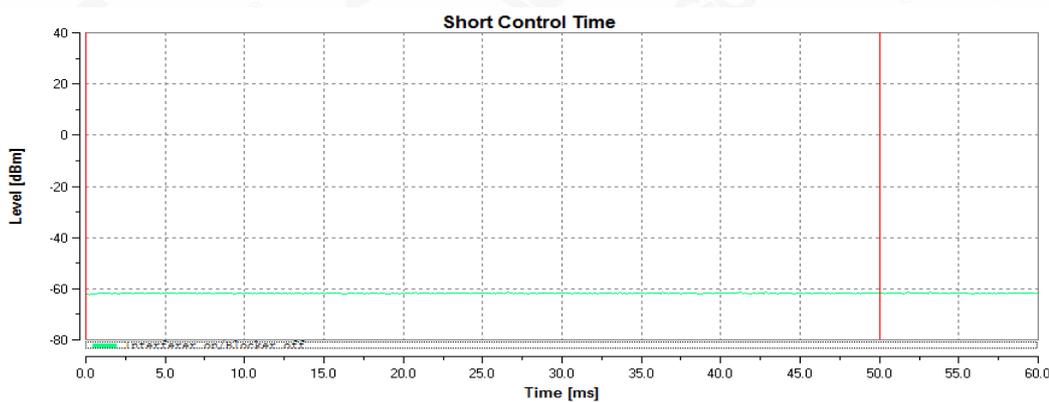
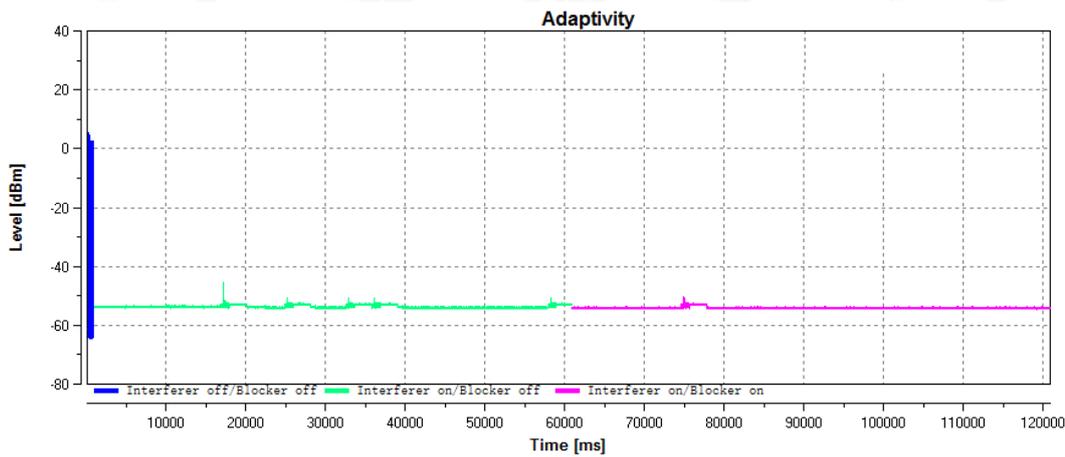
### 5.3.4 TEST RESULTS

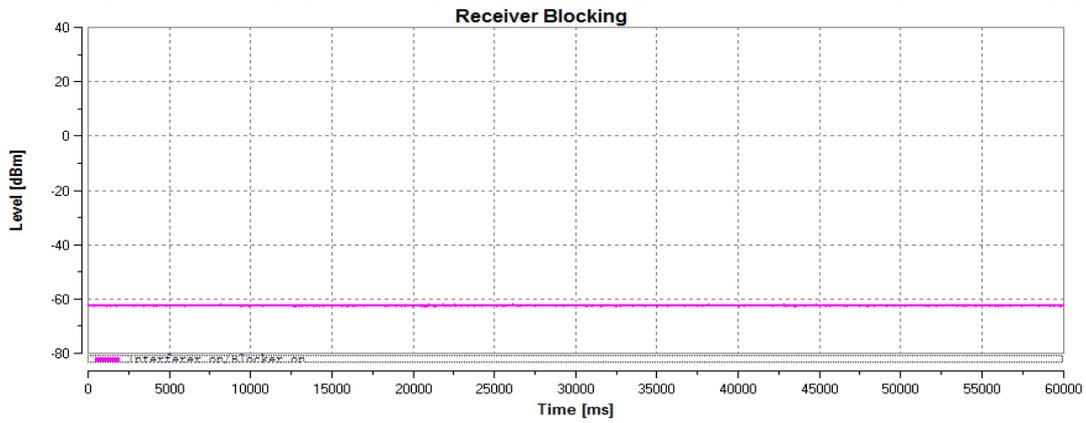
IEEE802.11b Low Channel	
Threshold Level (dBm/MHz)	-61.33
Blocking Interference Level (dBm)	-35
Max COT Time (ms)	0.292ms
Minimum Idle Time (ms)	0.170ms
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00



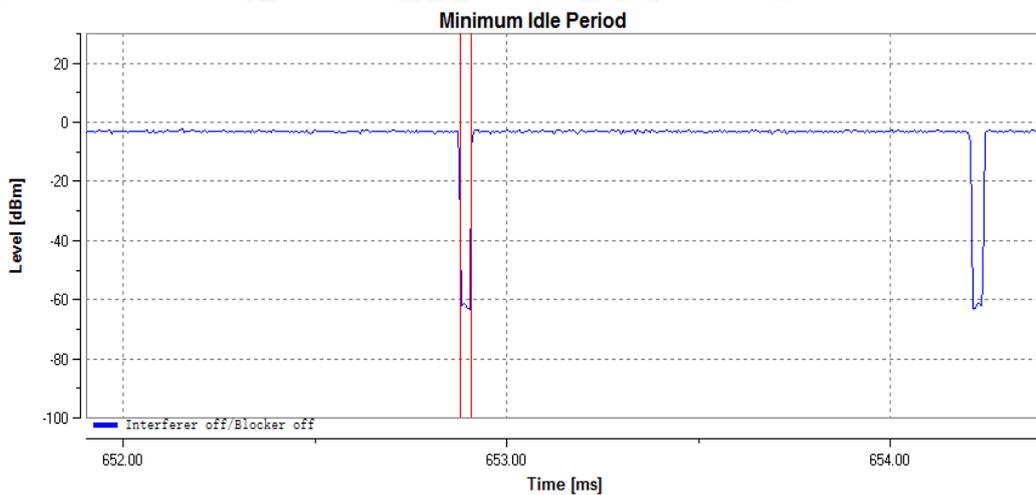
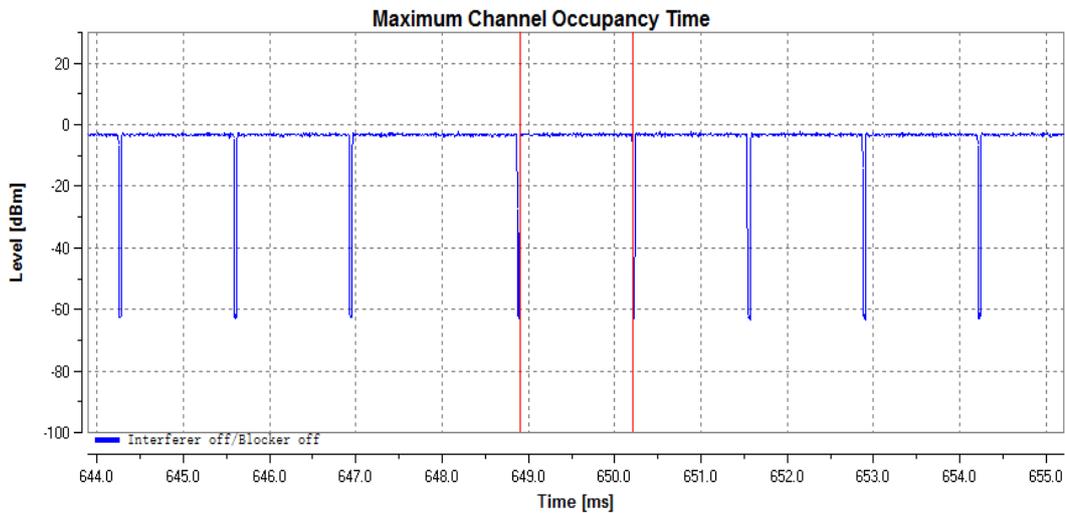


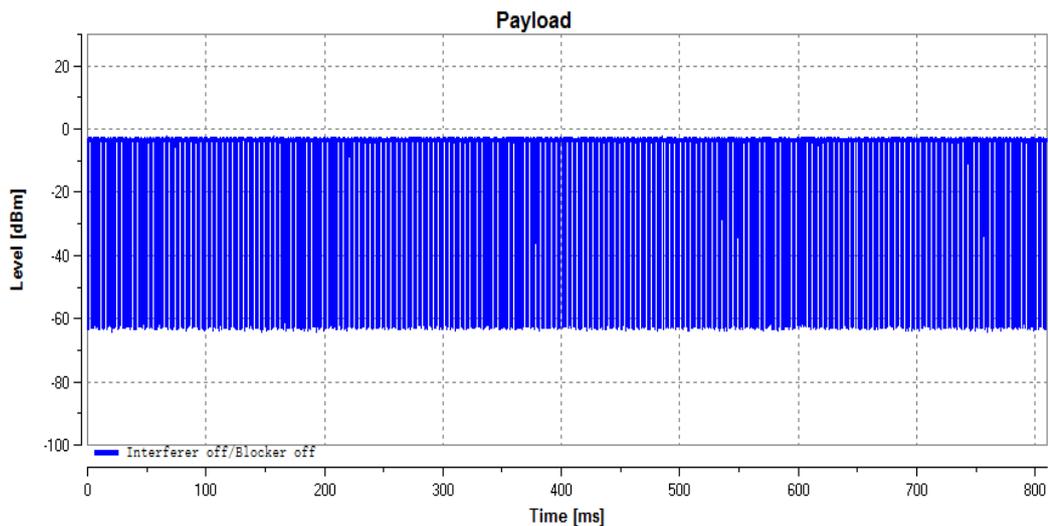
**Adding the interference signal(Green line) and the unwanted signal(Red line)**



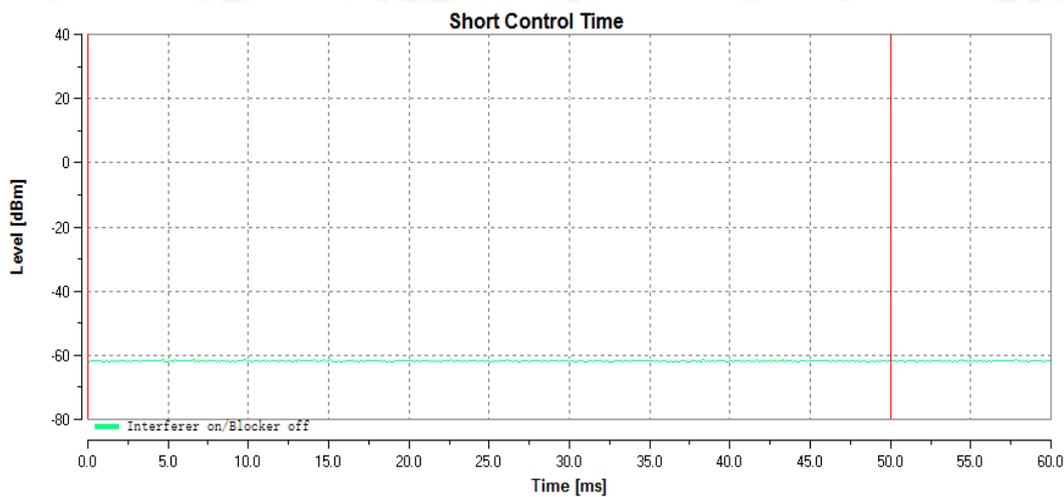
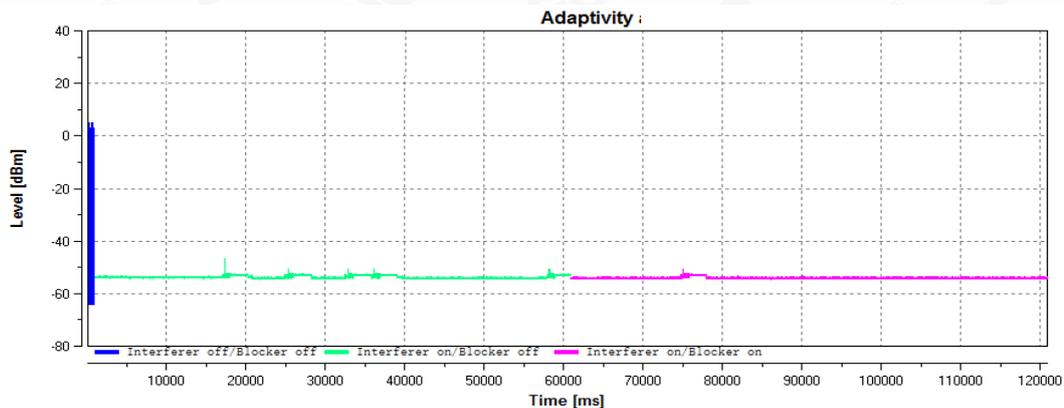


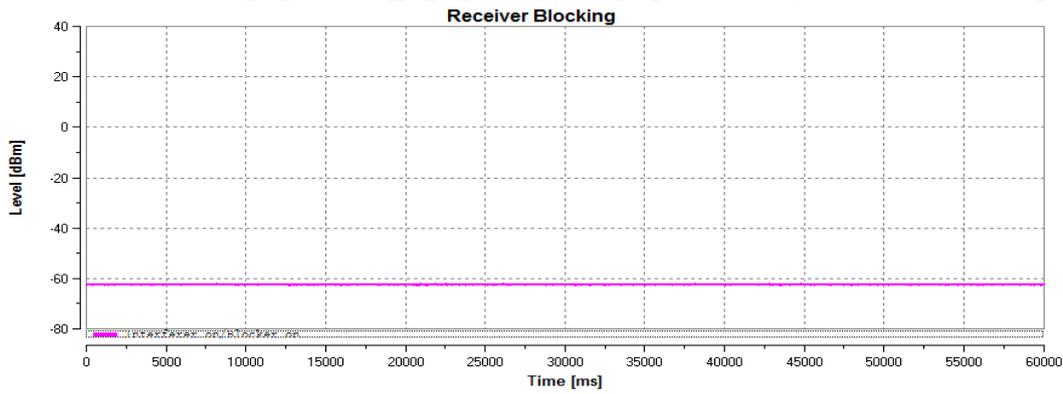
IEEE802.11b High Channel	
Threshold Level (dBm/MHz)	-61.12
Blocking Interference Level (dBm)	-35
Max COT Time (ms)	1.691ms
Minimum Idle Time (ms)	0.145ms
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00





**Adding the interference signal(Green line) and the unwanted signal(Red line)**





Note: 1) 802.11g, 802.11n(20) , 802.11n(40)Mode output Power less than 10dBm, no need to be tested.

**Conclusion: PASS**



## 5.4. OCCUPIED CHANNEL BANDWIDTH

### 5.4.1 LIMIT

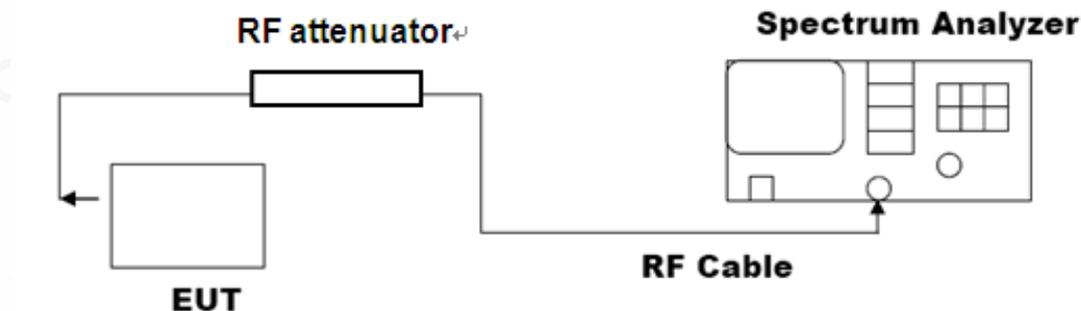
The Occupied Channel Bandwidth shall fall completely within the band 2400MHz to 2483.5MHz.

### 5.4.2 TEST PROCEDURE

The spectrum analyser shall be used the following settings:

- Centre Frequency: The centre frequency of the channel under test
- Resolution BW: ~ 1 % of the span without going below 1 %
- Video BW: 3 × RBW
- Frequency Span for frequency hopping equipment: Lowest frequency separation that is used within the hopping sequence
- Frequency Span for other types of equipment: 2 × Nominal Channel Bandwidth (e.g. 40 MHz for a 20 MHz channel)
- Detector Mode: RMS
- Trace Mode: Max Hold
- Sweep time: 1 s

### 5.4.3 TEST CONFIGURATION



### 5.4.4 TEST RESULTS

TEST ITEM	99% BANDWIDTH
TEST MODE	802.11b with data rate 11

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
2400MHz-2483.5MHz	Low Channel	11.682	PASS
	High Channel	12.963	PASS



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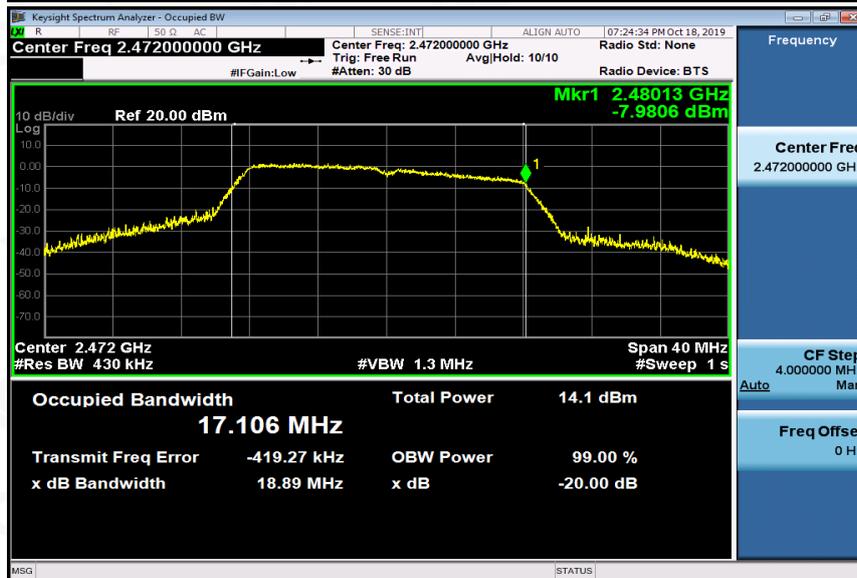
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E-mail: agc@agc-cert.com

Service Hotline: 400 089 2118

TEST ITEM	99% BANDWIDTH
TEST MODE	802.11g with data rate 54

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
2400MHz-2483.5MHz	Low Channel	16.364	PASS
	High Channel	17.106	PASS



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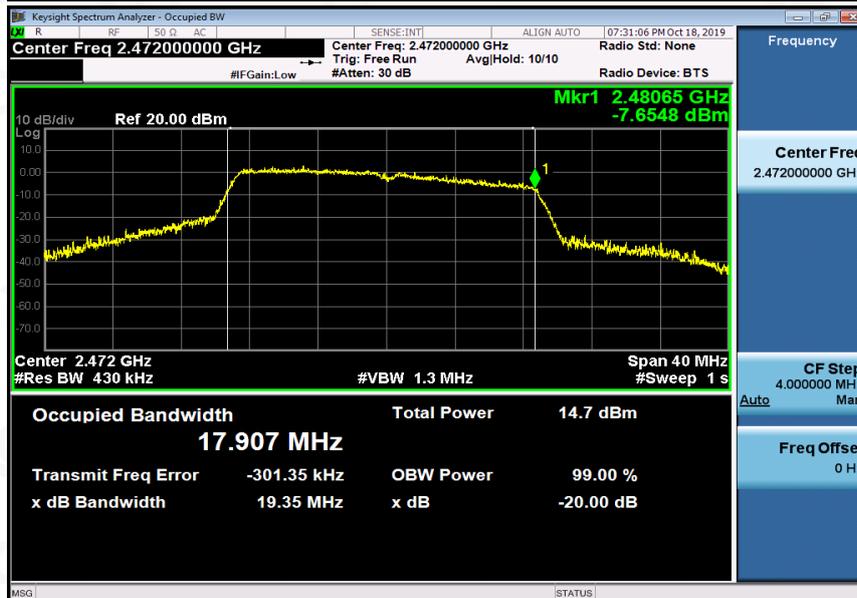
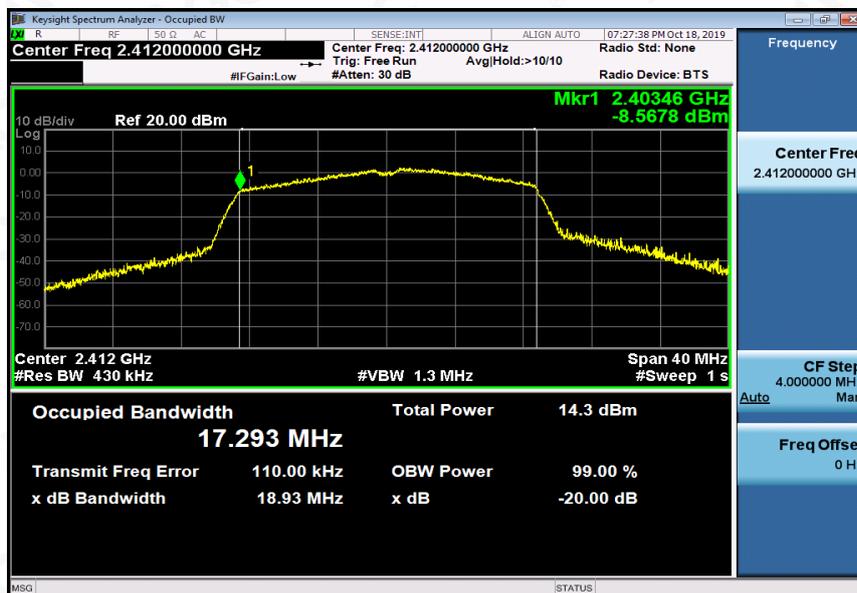
Tel: +86-755 2523 4088

E-mail: agc@agc-cert.com

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TEST ITEM	99% BANDWIDTH
TEST MODE	802.11n(20) with data rate 65

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
2400MHz-2483.5MHz	Low Channel	17.293	PASS
	High Channel	17.907	PASS



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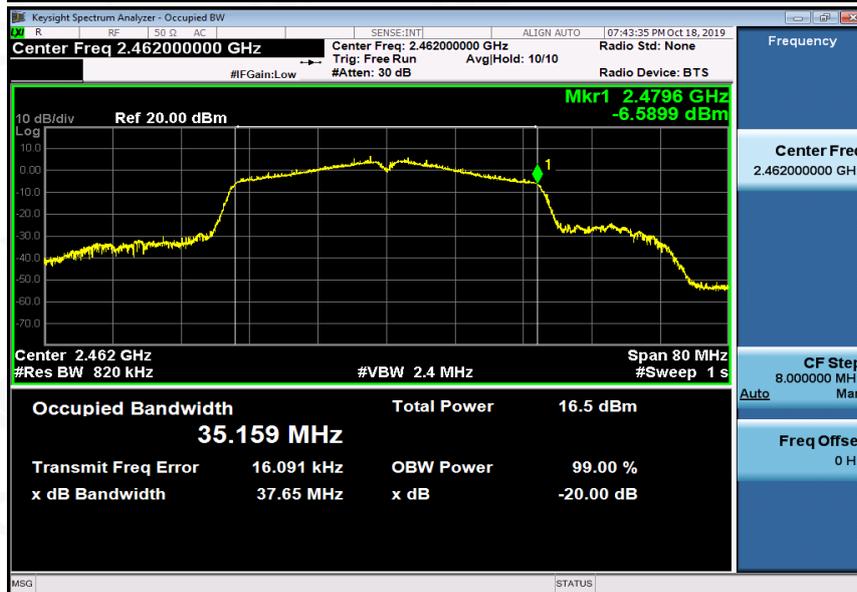
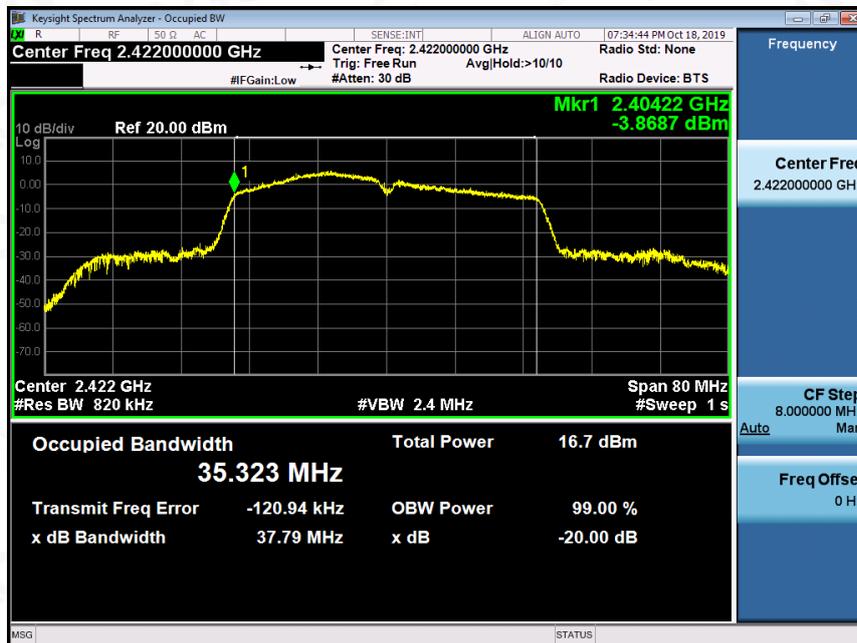
Tel: +86-755 2523 4088

E-mail: agc@agc-cert.com

Service Hotline: 400 089 2118

TEST ITEM	99% BANDWIDTH
TEST MODE	802.11n(40) with data rate 135

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
2400MHz-2483.5MHz	Low Channel	35.323	PASS
	High Channel	35.159	PASS



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## 5.5. TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN

### 5.5.1 LIMIT

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask.

### 5.5.2 TEST PROCEDURE

1) The spectrum analyser shall be used the following settings:

- Centre Frequency: 2 484 MHz
- Span: 0 Hz
- Resolution BW: 1 MHz
- Filter mode: Channel filter
- Video BW: 3 MHz
- Detector Mode: RMS
- Trace Mode: Max Hold
- Sweep Mode: Continuous
- Sweep Points: Sweep Time [s] / (1  $\mu$ s) or 5 000 whichever is greater
- Trigger Mode: Video trigger
- Sweep Time: > 120 % of the duration of the longest burst detected during the measurement of the RF

Output Power

2) (segment 2 483.5 MHz to 2 483.5 MHz + BW)

Adjust the trigger level to select the transmissions with the highest power level.

Increase the centre frequency in steps of 1 MHz and repeat this measurement for every 1 MHz segment within the range 2 483.5 MHz to 2 483.5 MHz + BW.

3) Segment 2 483.5 MHz + BW to 2 483.5 MHz + 2BW

Change the centre frequency of the analyser to 2 484 MHz + BW and perform the measurement for the first 1 MHz segment within range 2 483.5 MHz + BW to 2 483.5 MHz + 2BW. Increase the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + 2 BW – 0.5 MHz. (which means this may partly overlap with the previous 1 MHz segment).

4) Segment 2 400 MHz - BW to 2 400 MHz

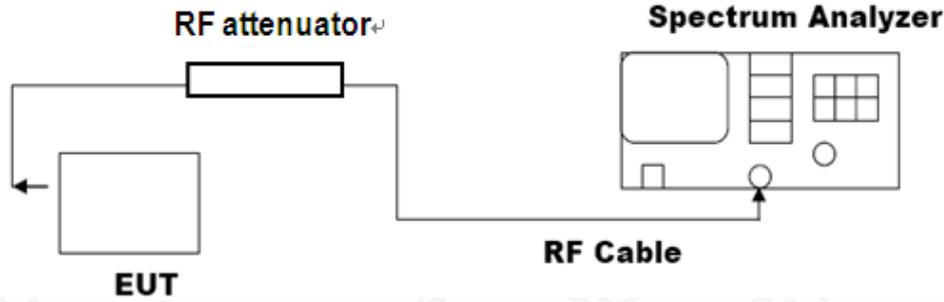
Change the centre frequency of the analyser to 2 399.5 MHz and perform the measurement for the first 1 MHz segment within range 2 400 MHz - BW to 2 400 MHz Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - 2BW + 0.5 MHz. (which means this may partly overlap with the previous 1 MHz segment).

5) Segment 2 400 MHz - 2BW to 2 400 MHz - BW

Change the centre frequency of the analyser to 2 399,5 MHz - BW and perform the measurement for the first 1 MHz segment within range 2 400 MHz - 2BW to 2 400 MHz - BW. Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - 2BW + 0.5 MHz. (which means this may partly overlap with the previous 1 MHz segment).

6) The cable loss and attenuator factor shall be considered to the test result.

### 5.5.3 TEST CONFIGURATION



**5.5.4 TEST RESULT**

TEST CONDITIONS	IEEE 802.11b OUT-OF-BAND DOMAIN		
	Temp (25)°C	Temp (-10)°C	Temp (40)°C
Low channel	PASS	PASS	PASS
High channel	PASS	PASS	PASS

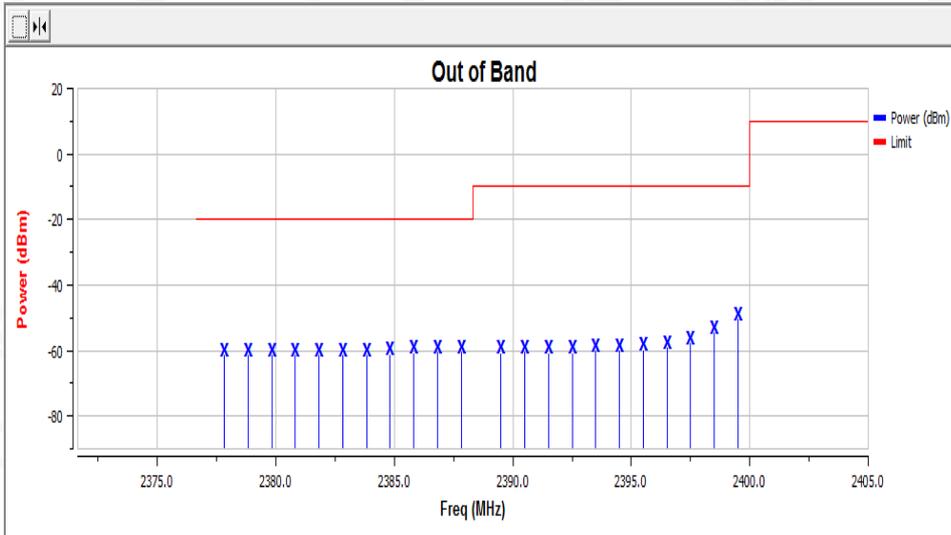
TEST CONDITIONS	IEEE 802.11g OUT-OF-BAND DOMAIN		
	Temp (25)°C	Temp (-10)°C	Temp (40)°C
Low channel	PASS	PASS	PASS
High channel	PASS	PASS	PASS

TEST CONDITIONS	IEEE 802.11n(20) OUT-OF-BAND DOMAIN		
	Temp (25)°C	Temp (-10)°C	Temp (40)°C
Low channel	PASS	PASS	PASS
High channel	PASS	PASS	PASS

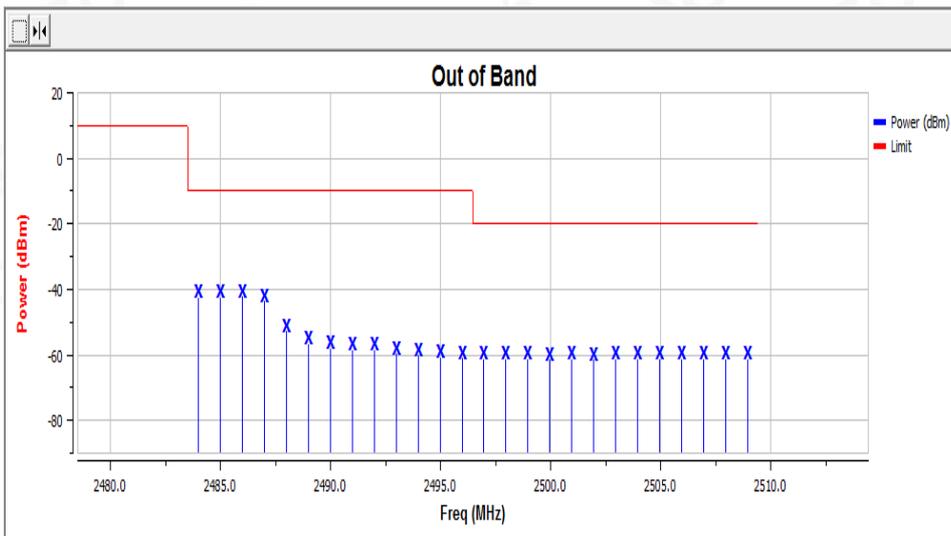
TEST CONDITIONS	IEEE 802.11n(40) OUT-OF-BAND DOMAIN		
	Temp (25)°C	Temp (-10)°C	Temp (40)°C
Low channel	PASS	PASS	PASS
High channel	PASS	PASS	PASS



CH Low-2412 (802.11b)



CH High-2472 (802.11b)



**Note:** All the modes had been tested, but only the worst data recorded in the report.



## 5.6 TRANSMITTER SPURIOUS EMISSIONS

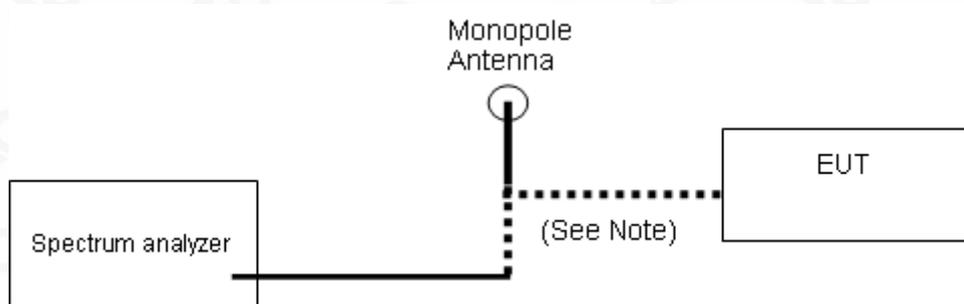
### 5.6.1 LIMIT

Frequency range	Maximum power, e.r.p. ( $\leq 1$ GHz) e.i.r.p. ( $> 1$ GHz)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

### 5.6.2 TEST PROCEDURE

- 1) The emissions over the range 30 MHz to 1 000 MHz shall be identified.
- 2) Spectrum analyzer settings:
  - Resolution bandwidth: 100 kHz
  - Video bandwidth: 300 kHz
  - Detector mode: Peak
  - Sweep Points:  $\geq 9\ 400$
  - Trace Mode: Max Hold
- 3) Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using RMS detector and compared to the limits.
- 4) The emissions over the range 1 GHz to 12,75 GHz shall be identified.
- 5) Resolution bandwidth: 1 MHz
  - Video bandwidth: 3 MHz
  - Detector mode: Peak
  - Trace Mode: Max Hold
  - Sweep Points:  $\geq 3\ 500$
- 6) Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using RMS detector and compared to the limits.
- 7) For radiated method, the applicable measurement procedures as described in the EN 300 328 V2.1.1 annex C.2 and C.4 are used.

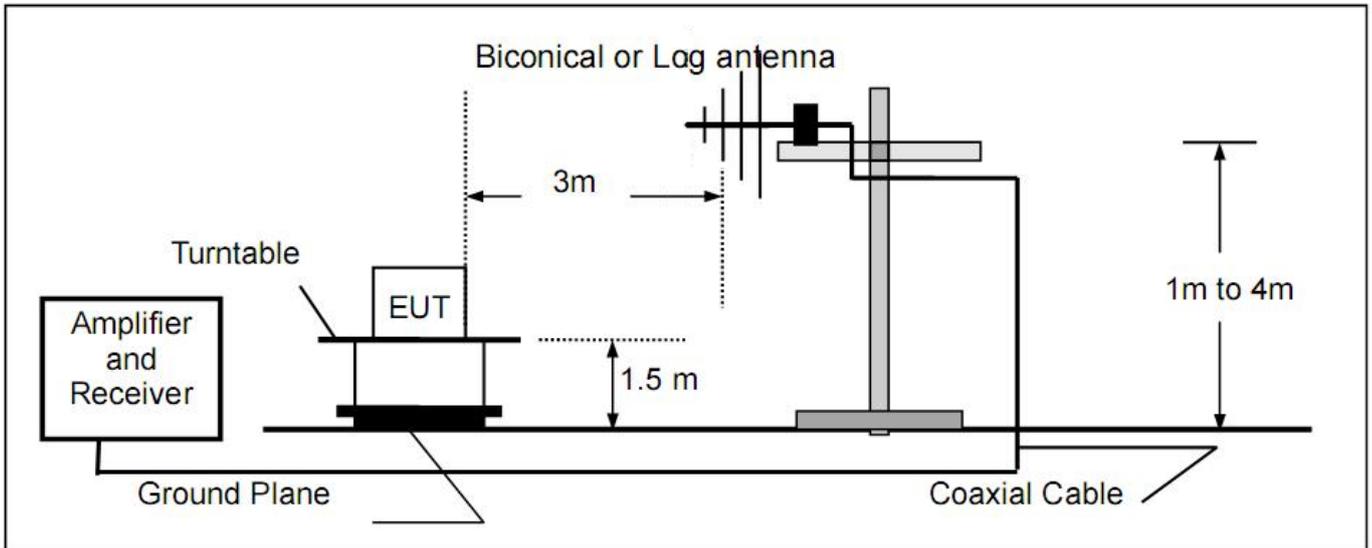
### 5.6.3 TEST CONFIGURATION



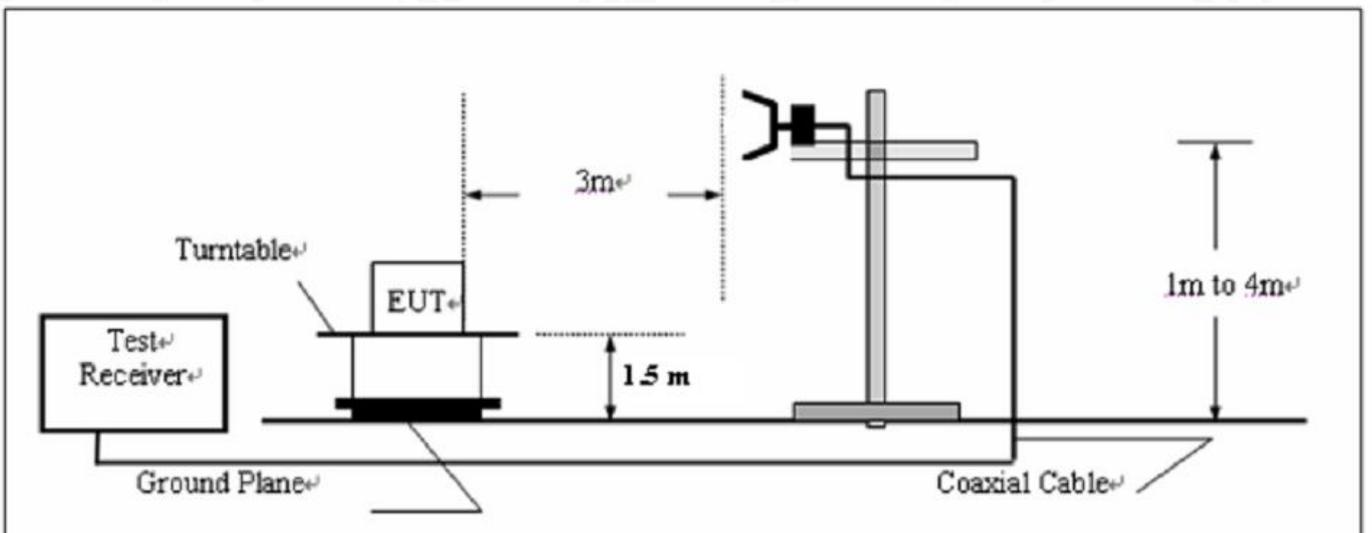
### Conducted Method



**Below 1GHz**



**Above 1GHz**

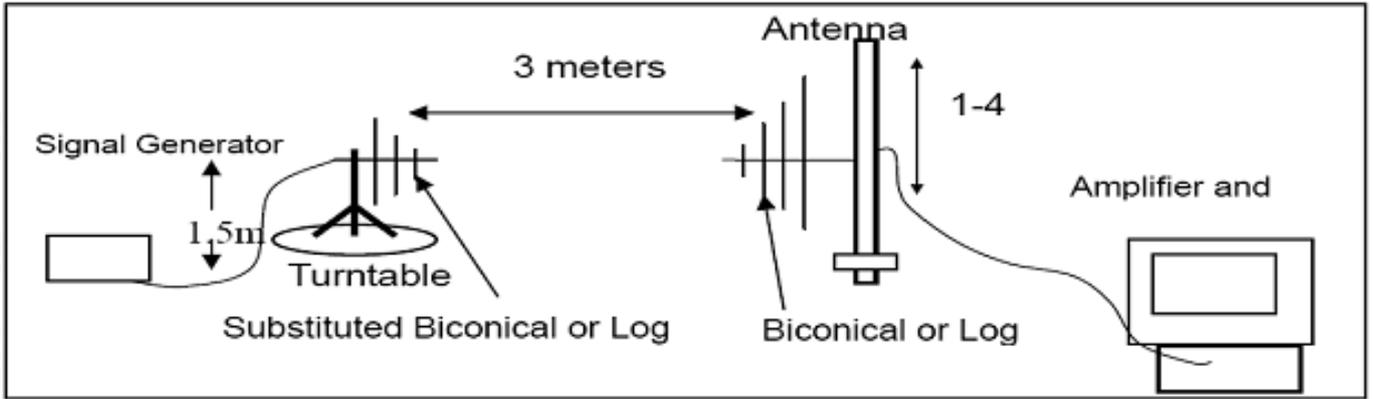


**Radiated Method**

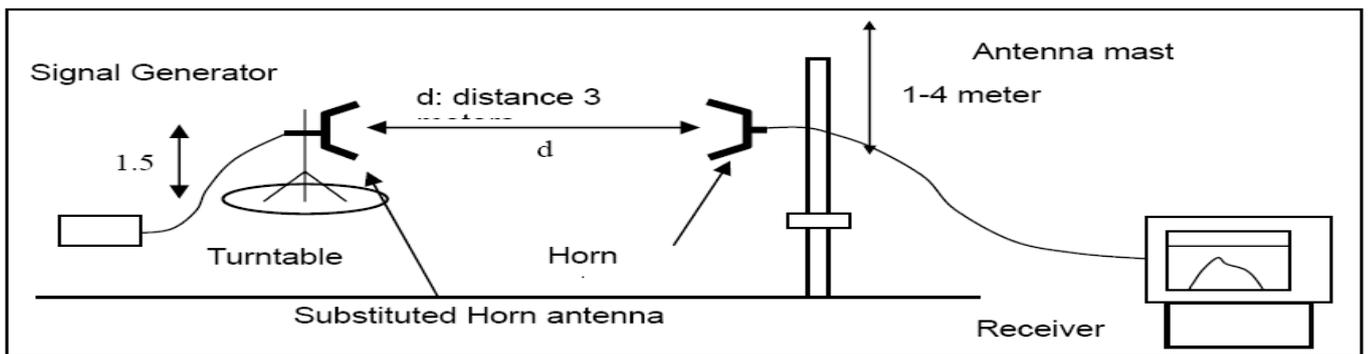


**SUBSTITUTION METHOD: (RADIATED EMISSIONS)**

**RADIATED BELOW 1GHZ**



**RADIATED ABOVE 1 GHZ**

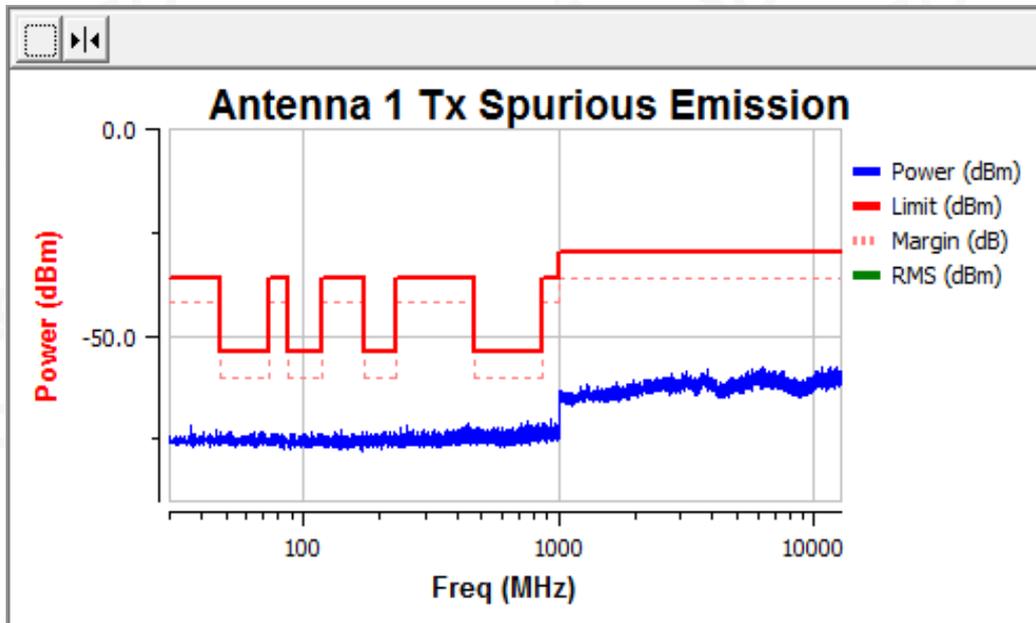


**5.6.4 TEST RESULT**

(Worst Case: Low channel, 11B)

Channel	Peak Result	RMS Result
CH Low-2412	Pass	-

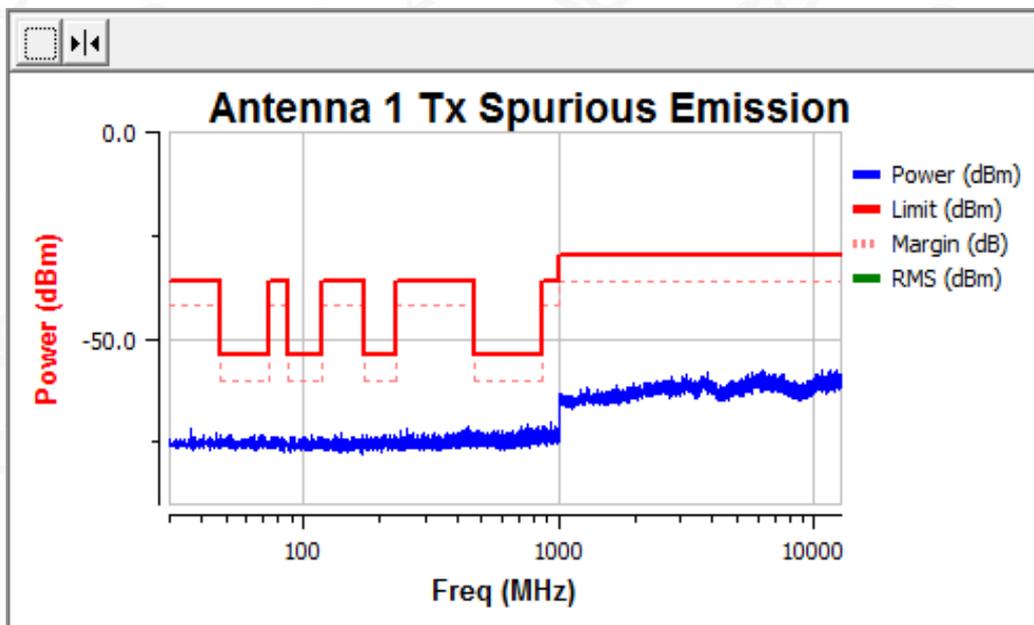
Freq	RMS Level (dBm)	Limit (dBm)	Over Limit (dB)	Status
712.113	-70.82	-54.00	-16.82	Pass
759.494	-70.31	-54.00	-16.31	Pass
10723.000	-57.11	-30.00	-27.11	Pass
11324.000	-57.38	-30.00	-27.38	Pass



(Worst Case: High channel, 11B)

Channel	Peak Result	RMS Result
CH High-2472	Pass	-

Freq	RMS Level (dBm)	Limit (dBm)	Over Limit (dB)	Status
848.030	-70.60	-54.00	-16.60	Pass
856.494	-70.61	-54.00	-16.61	Pass
12161.000	-57.25	-30.00	-27.25	Pass
12245.000	-56.94	-30.00	-26.94	Pass



- Note: 1. All the modes had been test but only the worst data record in the report.  
2. The 2.4G fundamental frequency is filtered out.  
3. The effective radiated power has been considered in this test.

**Conclusion: PASS**



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**Radiated Method**

**(Worst Case: Low channel, 11B)**

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
77.98	29.30	V	-63.82	0.04	-0.70	-64.56	-36.00	28.56
234.63	30.42	V	-70.10	0.11	6.60	-63.61	-36.00	27.61
383.41	29.03	V	-71.17	0.28	6.47	-64.99	-36.00	28.99
384.99	30.56	V	-69.34	0.28	6.46	-63.16	-36.00	27.16
425.55	28.36	V	-72.28	0.33	7.00	-65.62	-36.00	29.62
829.06	30.70	V	-68.64	0.66	6.35	-62.95	-54.00	8.95
Other(30-1000)	--	V	--	--	--	--	-36.00/-54.00	--
138.62	31.36	H	-61.31	0.05	0.00	-61.36	-36.00	25.36
339.43	32.96	H	-65.36	0.23	5.74	-59.85	-36.00	23.85
398.46	28.89	H	-71.43	0.30	6.56	-65.17	-36.00	29.17
457.65	28.00	H	-71.17	0.37	6.61	-64.93	-36.00	28.93
617.02	31.32	H	-69.02	0.51	6.78	-62.75	-54.00	8.75
765.21	30.34	H	-68.14	0.61	6.75	-62.01	-54.00	8.01
Other(30-1000)	--	H	--	--	--	--	-36.00/-54.00	--



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Transmitter Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuv)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4824	50.42	V	-48.90	2.65	9.34	-42.21	-30.00	12.21
7236	48.12	V	-52.81	3.13	11.32	-44.62	-30.00	14.62
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-30.00	--
4824	51.35	H	-49.01	2.65	9.34	-42.32	-30.00	12.32
7236	48.75	H	-52.48	3.13	11.32	-44.29	-30.00	14.29
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
Other(1000-12750)	--	H	--	--	--	--	-30.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.



**(Worst Case: High channel, 11B)**

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
76.74	28.35	V	-63.14	0.04	-0.90	-64.08	-36.00	28.08
234.31	28.81	V	-71.28	0.11	6.60	-64.79	-36.00	28.79
380.49	28.98	V	-70.99	0.28	6.50	-64.77	-36.00	28.77
386.51	29.14	V	-70.78	0.29	6.44	-64.63	-36.00	28.63
427.11	27.80	V	-71.39	0.33	6.96	-64.76	-36.00	28.76
830.54	30.15	V	-68.70	0.66	6.30	-63.06	-54.00	9.06
Other(30-1000)	--	V	--	--	--	--	-36.00/-54.00	--
138.61	31.85	H	-61.65	0.05	0.00	-61.70	-36.00	25.70
342.43	32.07	H	-67.41	0.24	5.66	-61.98	-36.00	25.98
398.37	29.43	H	-69.64	0.30	6.56	-63.38	-36.00	27.38
457.48	29.16	H	-70.60	0.37	6.61	-64.36	-36.00	28.36
617.25	30.50	H	-69.91	0.51	6.78	-63.63	-54.00	9.63
767.69	30.58	H	-69.05	0.62	6.81	-62.86	-54.00	8.86
Other(30-1000)	--	H	--	--	--	--	-36.00/-54.00	--



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Transmitter Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuv)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4944	49.25	V	-51.47	2.74	9.58	-44.63	-30.00	14.63
7416	45.16	V	-55.91	3.09	11.57	-47.43	-30.00	17.43
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-30.00	--
4944	50.04	H	-50.75	2.74	9.58	-43.90	-30.00	13.90
7416	43.95	H	-58.73	3.09	11.57	-50.25	-30.00	20.25
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
Other(1000-12750)	--	H	--	--	--	--	-30.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Conclusion: PASS**



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### 5.7 RECEIVER SPURIOUS EMISSIONS

The level of spurious emissions shall be measured as, either:

- a) Their power in a specified load (conducted spurious emissions) and their effective radiated power when radiated by the cabinet or structure of the equipment (cabinet radiation); or
- b) Their effective radiated power when radiated by cabinet and antenna in case of integral antenna equipment with no temporary antenna connectors.

Testing shall be performed when the equipment is in a receive-only mode.

#### LIMIT

**Note:** In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted) and to the emissions radiated by the cabinet. In case of integral antenna equipment (without temporary antenna connectors), these limits apply to emissions radiated by the equipment.

Frequency range	Maximum power, e.r.p.	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

#### Test Configuration

Same as section 5.6.3 in this test report

#### TEST PROCEDURE

Refer to chapter 5.4.10.2 of ETSI EN 300 328 V2.1.1

#### Measurement

Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> Radiated measurement



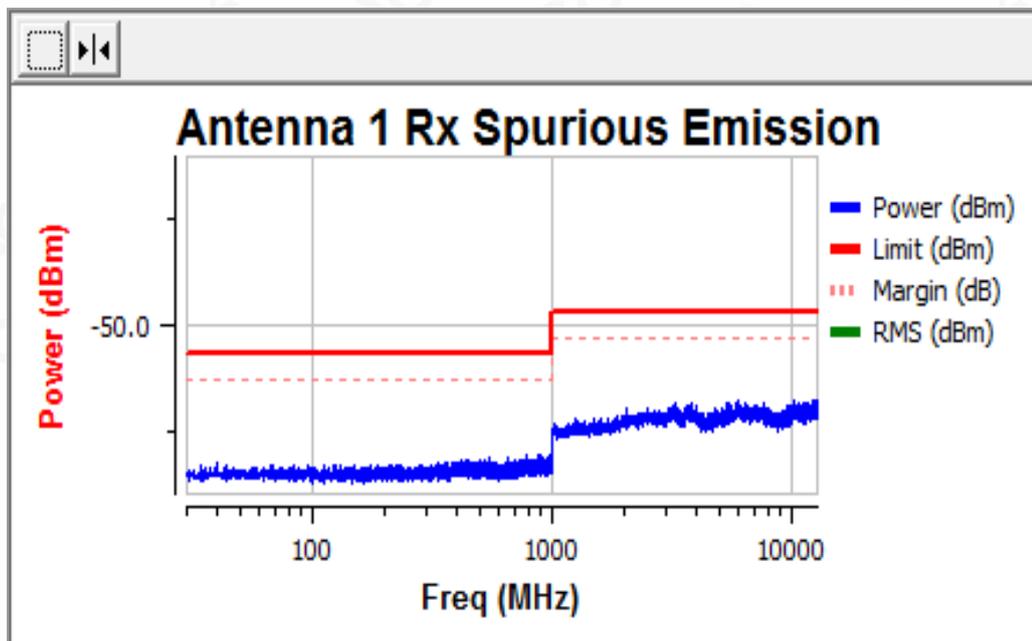
**CONDUCTED MEASUREMENT**

**TEST RESULT**

(Worst Case: Low channel, 11B)

Channel	Peak Result	RMS Result
CH Low-2412	Pass	-

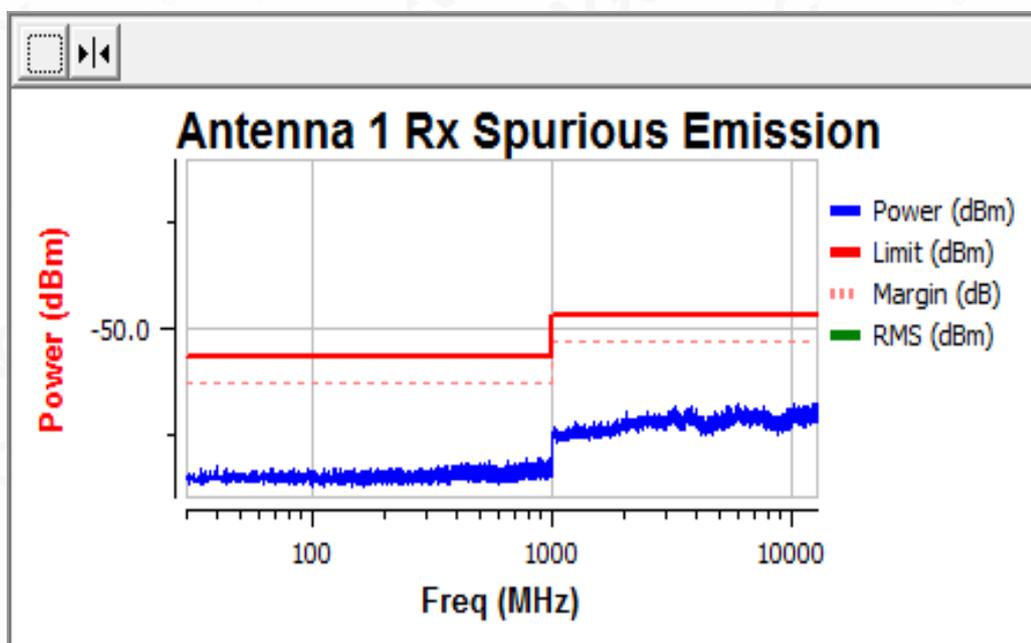
Freq	RMS Level (dBm)	Limit (dBm)	Over Limit (dB)	Status
869.726	-79.87	-57.00	-22.87	Pass
891.909	-80.27	-57.00	-23.27	Pass
12149.000	-67.04	-47.00	-20.04	Pass
12150.000	-67.19	-47.00	-20.19	Pass



(Worst Case: High channel, 11B)

Channel	Peak Result	RMS Result
CH High-2472	Pass	-

Freq	RMS Level (dBm)	Limit (dBm)	Over Limit (dB)	Status
966.045	-80.63	-57.00	-23.63	Pass
987.449	-79.99	-57.00	-22.99	Pass
12396.000	-67.36	-47.00	-20.36	Pass
12688.000	-67.00	-47.00	-20.00	Pass



Note: 1. All the modes had been test but only the worst data record in the report.  
2. The effective radiated power has been considered in this test.

**Conclusion: PASS**



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**TEST RESULTS for Radiated Method :**  
**(Worst Case: Low channel, 11B)**

Receiver Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
87.30	28.70	V	-66.36	0.04	0.98	-65.42	-57.00	8.42
237.94	30.12	V	-69.03	0.11	6.60	-62.54	-57.00	5.54
314.23	29.22	V	-69.15	0.20	6.28	-63.07	-57.00	6.07
385.84	29.31	V	-70.71	0.29	6.45	-64.54	-57.00	7.54
476.09	28.45	V	-72.11	0.39	6.86	-65.64	-57.00	8.64
829.29	30.03	V	-68.08	0.66	6.35	-62.39	-57.00	5.39
Other(30-1000)	--	V	--	--	--	--	-57.00	--
139.69	30.20	H	-62.72	0.05	0.00	-62.77	-57.00	5.77
337.25	30.46	H	-67.55	0.23	5.82	-61.96	-57.00	4.96
396.54	29.89	H	-69.84	0.30	6.52	-63.62	-57.00	6.62
568.04	28.75	H	-71.42	0.47	6.82	-65.07	-57.00	8.07
613.21	29.20	H	-69.99	0.50	6.62	-63.87	-57.00	6.87
819.38	28.46	H	-71.04	0.65	6.83	-64.86	-57.00	7.86
Other(30-1000)	--	H	--	--	--	--	-57.00	--



Receiver Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuv)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
1847.55	32.80	V	-67.13	1.27	7.20	-61.20	-47.00	14.20
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-47.00	--
1784.67	31.86	H	-67.96	1.23	6.93	-62.26	-47.00	15.26
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
Other(1000-12750)	--	H	--	--	--	--	-47.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**(Worst Case: High channel, 11B)**

Receiver Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
88.98	28.72	V	-66.24	0.04	1.12	-65.16	-57.00	8.16
238.44	30.61	V	-68.76	0.11	6.60	-62.28	-57.00	5.28
313.00	27.78	V	-72.21	0.20	6.31	-66.10	-57.00	9.10
382.61	28.30	V	-71.24	0.28	6.48	-65.04	-57.00	8.04
474.71	27.77	V	-70.95	0.39	6.84	-64.50	-57.00	7.50
830.77	30.92	V	-67.29	0.66	6.30	-61.65	-57.00	4.65
Other(30-1000)	--	V	--	--	--	--	-57.00	--
135.84	29.84	H	-62.82	0.05	0.00	-62.87	-57.00	5.87
336.47	29.47	H	-70.00	0.23	5.86	-64.37	-57.00	7.37
398.82	29.26	H	-69.24	0.30	6.56	-62.98	-57.00	5.98
567.19	30.31	H	-68.67	0.47	6.83	-62.31	-57.00	5.31
617.35	28.59	H	-71.48	0.51	6.78	-65.20	-57.00	8.20
815.46	28.51	H	-70.20	0.65	6.95	-63.90	-57.00	6.90
Other(30-1000)	--	H	--	--	--	--	-57.00	--



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Receiver Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuv)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
1846.01	32.08	V	-67.24	1.27	7.20	-61.31	-47.00	14.31
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-47.00	--
1780.48	31.49	H	-68.27	1.23	6.93	-62.57	-47.00	15.57
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
--	--	H	--	--	--	--	--	--
Other(1000-12750)	--	H	--	--	--	--	-47.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Conclusion: PASS**



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## 5.8. RECEIVER BLOCKING

### 5.8.1 LIMIT

**Receiver Blocking parameters for Receiver Category 1 equipment**

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
Pmin + 6 dB	2 380 2 503,5	-53	CW
Pmin + 6 dB	2 300 2 330 2 360	-47	CW
Pmin + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-47	CW

NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in EN 300 328 V2.1.1 clause 4.3.2.11.3 in the absence of any blocking signal.

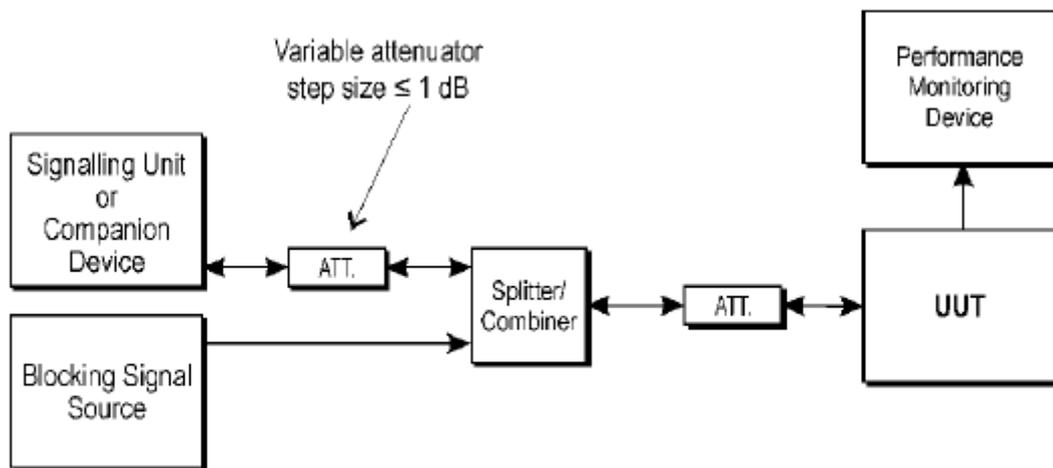
NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.

### 5.8.2 TEST PROCEDURE

- 1) The UUT shall be set to the lowest operating channel.
- 2) The blocking signal generator is set to the first frequency as defined in the appropriate table corresponding to the receiver category and type of equipment.
- 3) With the blocking signal generator switched off, a communication link is established between the UUT and the associated companion device using the test setup shown in the Test Set-up. The attenuation of the variable attenuator shall be increased in 1 dB steps to a value at which the minimum performance criteria is still met. The resulting level for the wanted signal at the input of the UUT is Pmin. This signal level (Pmin) is increased by the value provided in the table corresponding to the receiver category and type of equipment.
- 4) The blocking signal at the UUT is set to the level provided in the table corresponding to the receiver category and type of equipment. It shall be verified and recorded in the test report that the performance criteria is met.
- 5) Repeat step 4 for each remaining combination of frequency and level for the blocking signal as provided in the table corresponding to the receiver category and type of equipment.
- 6) Repeat step 2 to step 5 with the UUT operating at the highest operating channel.



### 5.8.3 TEST CONFIGURATION



**Test Set-up for receiver blocking**

### 5.8.4 TEST RESULT

Low Channel

Wanted Signal Power (MHz)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Test Result ( PER)	Limit ( PER)	Result
P <sub>min</sub> +6dB	2380	-53	2.85%	10%	Pass
P <sub>min</sub> +6dB	2503.5	-53	0.57%	10%	Pass
P <sub>min</sub> +6dB	2300	-47	0.48%	10%	Pass
P <sub>min</sub> +6dB	2330	-47	0.12%	10%	Pass
P <sub>min</sub> +6dB	2360	-47	0.22%	10%	Pass
P <sub>min</sub> +6dB	2 523,5	-47	0.30%	10%	Pass
P <sub>min</sub> +6dB	2 553,5	-47	0.17%	10%	Pass
P <sub>min</sub> +6dB	2 583,5	-47	0.28%	10%	Pass
P <sub>min</sub> +6dB	2 613,5	-47	0.54%	10%	Pass
P <sub>min</sub> +6dB	2 643,5	-47	0.60%	10%	Pass
P <sub>min</sub> +6dB	2 673,5	-47	0.72%	10%	Pass



High Channel

Wanted Signal Power (MHz)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Test Result ( PER)	Limit ( PER)	Result
P <sub>min</sub> +6dB	2380	-53	0.84%	10%	Pass
P <sub>min</sub> +6dB	2503.5	-53	2.25%	10%	Pass
P <sub>min</sub> +6dB	2300	-47	0.11%	10%	Pass
P <sub>min</sub> +6dB	2330	-47	0.31%	10%	Pass
P <sub>min</sub> +6dB	2360	-47	0.22%	10%	Pass
P <sub>min</sub> +6dB	2 523,5	-47	1.41%	10%	Pass
P <sub>min</sub> +6dB	2 553,5	-47	1.33%	10%	Pass
P <sub>min</sub> +6dB	2 583,5	-47	0.58%	10%	Pass
P <sub>min</sub> +6dB	2 613,5	-47	0.17%	10%	Pass
P <sub>min</sub> +6dB	2 643,5	-47	0.34%	10%	Pass
P <sub>min</sub> +6dB	2 673,5	-47	0.16%	10%	Pass



## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

### RADIATED SPURIOUS EMISSION TEST SETUP



RADIATED SPURIOUS EMISSION-ABOVE 1G TEST SETUP



**CONDUCTED TEST SETUP**



**ADAPTIVITY TEST SETUP**



**----END OF REPORT----**

