
RF Test Report

Report No.: AGC00552200704EE05

PRODUCT DESIGNATION : Smart Phone
BRAND NAME : CUBOT
MODEL NAME : NOTE 20 PRO
APPLICANT : Shenzhen Huafurui Technology Co., Ltd.
DATE OF ISSUE : Jul 24, 2020
STANDARD(S) : ETSI EN 300 328 V2.2.2 (2019-07)
REPORT VERSION : V1.0

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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jul. 24, 2020	Valid	Initial Release

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1. TEST REPORT CERTIFICATION

Applicant	Shenzhen Huafurui Technology Co., Ltd.
Address	Unit 1401 &1402, 14/F, Jinqi zhigu mansion (No. 4 building of Chongwen Garden), Crossing of the Liuxian street and Tangling road, Taoyuan street, Nanshan district, Shenzhen,P.R. China
manufacturer	Shenzhen Huafurui Technology Co., Ltd.
Address	Unit 1401 &1402, 14/F, Jinqi zhigu mansion (No. 4 building of Chongwen Garden), Crossing of the Liuxian street and Tangling road, Taoyuan street, Nanshan district, Shenzhen,P.R. China
Factory	Shenzhen Huafurui Technology Co., Ltd.
Address	Unit 1401 &1402, 14/F, Jinqi zhigu mansion (No. 4 building of Chongwen Garden), Crossing of the Liuxian street and Tangling road, Taoyuan street, Nanshan district, Shenzhen,P.R. China
Product Designation	Smart Phone
Brand Name	CUBOT
Test Model	NOTE 20 PRO
Date of test	Jul. 13, 2020~Jul. 24, 2020
Deviation	None
Condition of Test Sample	Normal
Test Result	Pass
Report Template	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 300 328 V2.2.2. The results of test 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.

Prepared By

*Calvin Liu*Calvin Liu
(Project Engineer)

Jul. 24, 2020

Reviewed By

*Max Zhang*Max Zhang
(Reviewer)

Jul. 24, 2020

Approved By

*Forrest Lei*Forrest Lei
(Authorized Officer)

Jul. 24, 2020

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2. GENERAL INFORMATION

2.1. DESCRIPTION OF EUT

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

Hardware Version	LV966_MB_V1.0	
Software Version	CUBOT_NOTE 20 PRO_A013C_V02_20200729	
The type of the equipment	non-FHSS adaptive equipment with only one antenna	
The maximum RF Output Power	16.17dBm	
Nominal Channel Bandwidth	<input checked="" type="checkbox"/> 20MHz <input checked="" type="checkbox"/> 40MHz	
Operating Frequency(WIFI)	2412MHz-2472MHz	
Support Channels	13 Channels	
Modulation(WIFI)	IEEE 802.11b mode:DSSS(CCK, QPSK, BPSK) IEEE 802.11g mode:OFDM(BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11n HT20 MHz mode:OFDM(BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11n HT40 MHz mode:OFDM(BPSK, QPSK, 16QAM, 64QAM)	
Antenna designation	PIFA Antenna	
Antenna Gain	0dBi	
Power Supply	DC 3.85V by battery or DC 5V by adapter	
Channels Frequency	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. The above information was declared by the manufacturer.
4. The equipment submitted are representative production models.
5. The EUT is a stand-alone and portable equipment according to ETSI EN 300 328 V2.2.2.
6. For more details, please refer to the User's manual of the EUT.

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2.2. SUPPORT EQUIPMENT

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
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2.3. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Low channel (Receiver Mode)
5	Middle channel (Receiver Mode)
6	High channel (Receiver Mode)
Note: 1. All modes have been tested and the worst mode test data recording in the test report, if no any other data.	

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2.4. OBJECTIVE

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

2.5. TEST ITEMS AND THE RESULTS

The EUT has been tested according to ETSI EN 300 328 V2.2.2

ETSI EN 300 328 V2.2.2 (2019-07)	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum
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Test items and the results are as bellow:

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.

2.6. ENVIRONMENTAL CONDITIONS

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

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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: $\pm 2\%$

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4. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	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 Due.	Calibration Due.
MXG X-Series Vector Signal Generator	Agilent	N5182B	MY50140530	Sep. 09, 2019	Sep. 08, 2020
Signal Generator	Agilent	N5171B	MY45141029	Sep. 09, 2019	Sep. 08, 2020
EXA Signal Analyzer	Agilent	N9020A	MY52090123	Sep. 09, 2019	Sep. 08, 2020
Signal Analyzer	Agilent	E4440A	MY44303916	Feb. 26, 2020	Feb. 25, 2021
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
RF Communication Tester	R&S	CMW270	1201.0002K75-100528-Tu WIRELESSCO NN.TESTER	Sep. 09, 2019	Sep. 08, 2020
Attenuator	Warriors	W13	11324	Sep. 09, 2019	Sep. 08, 2020
Power splitter	Mini-Circuits	ZFRSC-183-s	3122	Sep. 09, 2019	Sep. 08, 2020
2.4G Band Filter	EM Electronics	2400-2500	N/A	Feb. 26, 2020	Feb. 25, 2021
Small environment tester	ESPEC	SH-242	N/A	Oct. 08, 2019	Oct. 07, 2020
AMPLIFIER	ETS-LINDGREN	3117PA	00225134	Oct. 15, 2019	Oct. 14, 2020
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 09, 2019	Jan. 08, 2021
ANTENNA	ETS-LINDGREN	3142C	00060447	May. 17, 2019	May. 16, 2021
HORN ANTENNA	ETS-LINDGREN	3117	00154520	Oct. 21, 2018	Oct. 20, 2020
HORN ANTENNA	ETS-LINDGREN	3117	00034609	May. 17, 2019	May. 16, 2021
RF Cable	Harbour	SHWCB-3000-N	N/A	May. 12, 2020	May. 11, 2021

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5. ETSI EN 300 328 REQUIREMENTS

5.1. RF OUTPUT POWER

5.1.1 LIMIT

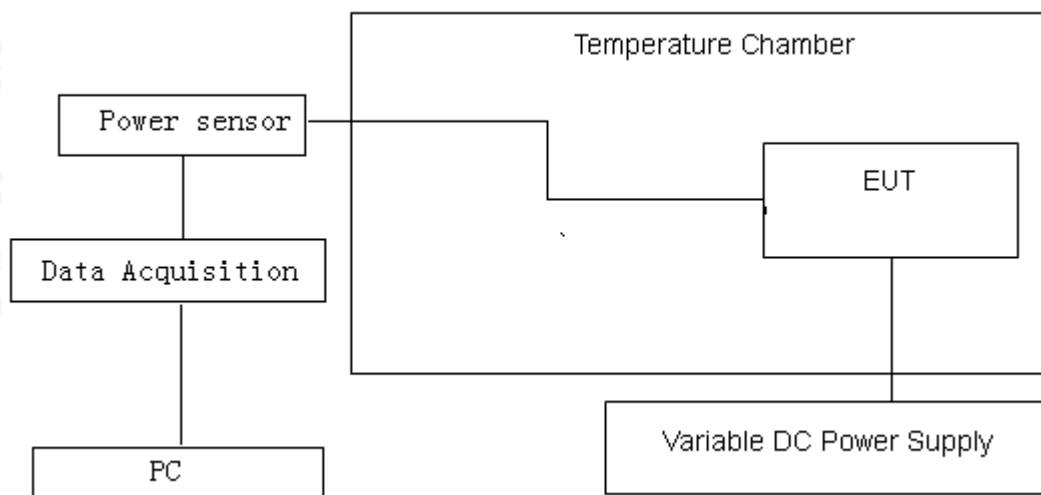
RF Output Power \leq 100mW (20dBm) over Normal and Extreme conditions.

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)



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5.1.4 MEASUREMENT RESULTS

Operation Mode	Single TX	Test Date	Jul. 21. 2020
Temperature	25°C	Tested by	Calvin
Humidity	55 % RH	Polarity	--
Antenna assembly Gain	=0dBi		
Cable Loss	=0.5dB		
Beamforming gain	=0dB		
EIRP	= P+ Gain+Y		

TEST CONDITIONS		IEEE 802.11b TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CH 01	EIRP	15.23	15.03	15.15
CH 07	EIRP	16.17	16.00	15.99
CH 13	EIRP	14.94	14.89	14.91
Limit		20dBm		

TEST CONDITIONS		IEEE 802.11g TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CH 01	EIRP	12.69	12.58	12.62
CH 07	EIRP	14.00	13.96	13.85
CH 13	EIRP	12.87	12.74	12.80
Limit		20dBm		

TEST CONDITIONS		IEEE 802.11n(20) TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CH 01	EIRP	12.60	12.45	12.59
CH 07	EIRP	13.76	13.69	13.73
CH 13	EIRP	12.95	12.88	12.92
Limit		20dBm		

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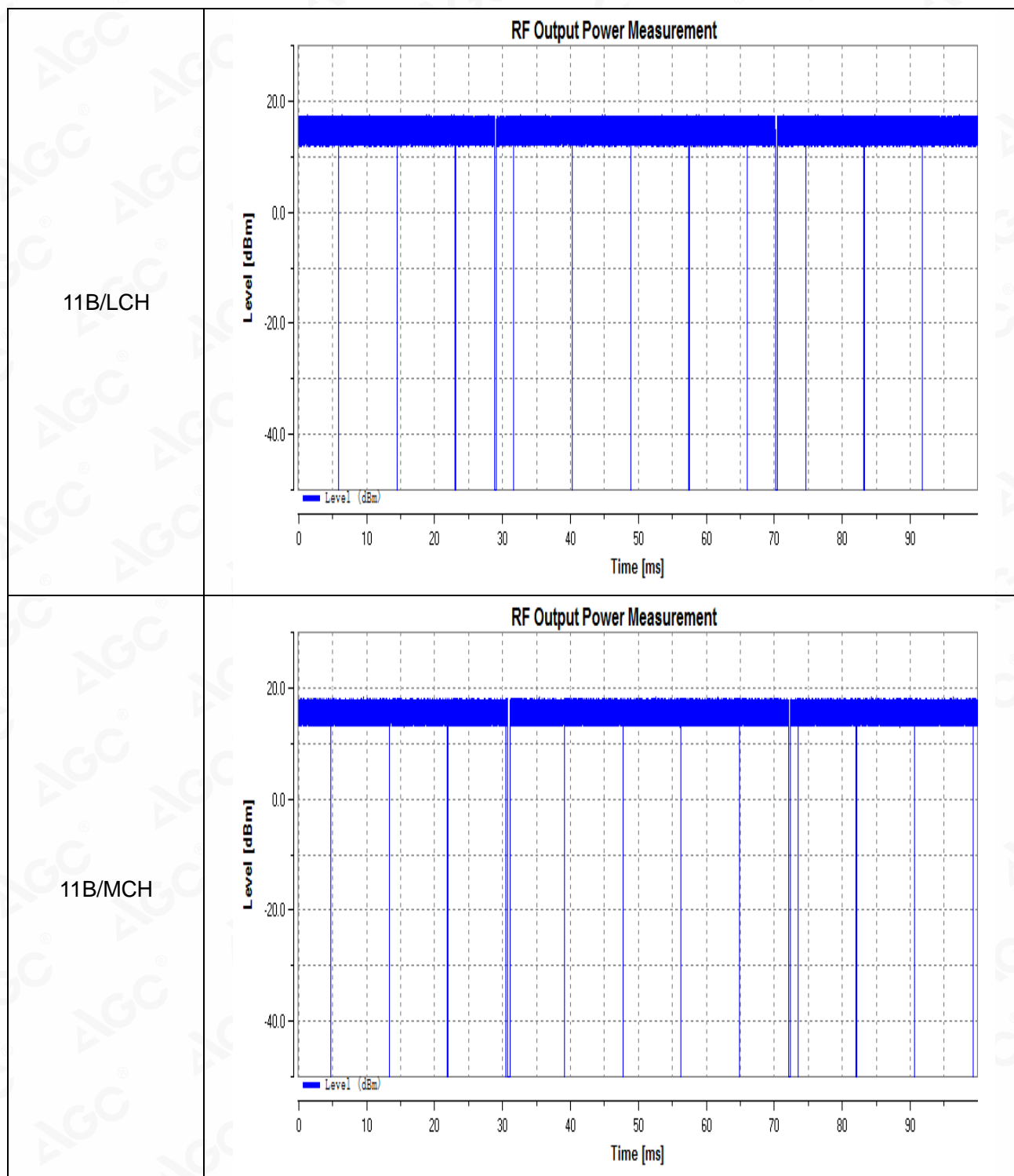
TEST CONDITIONS		IEEE 802.11n(40) TRANSMITTER POWER (dBm)		
		Temp (25)°C	Temp (-10)°C	Temp (40)°C
CH 03	EIRP	12.93	12.89	12.91
CH 07	EIRP	13.37	13.22	13.31
CH 11	EIRP	13.96	13.85	13.94
Limit		20dBm		

Note: Only the worst case data is reported as below.

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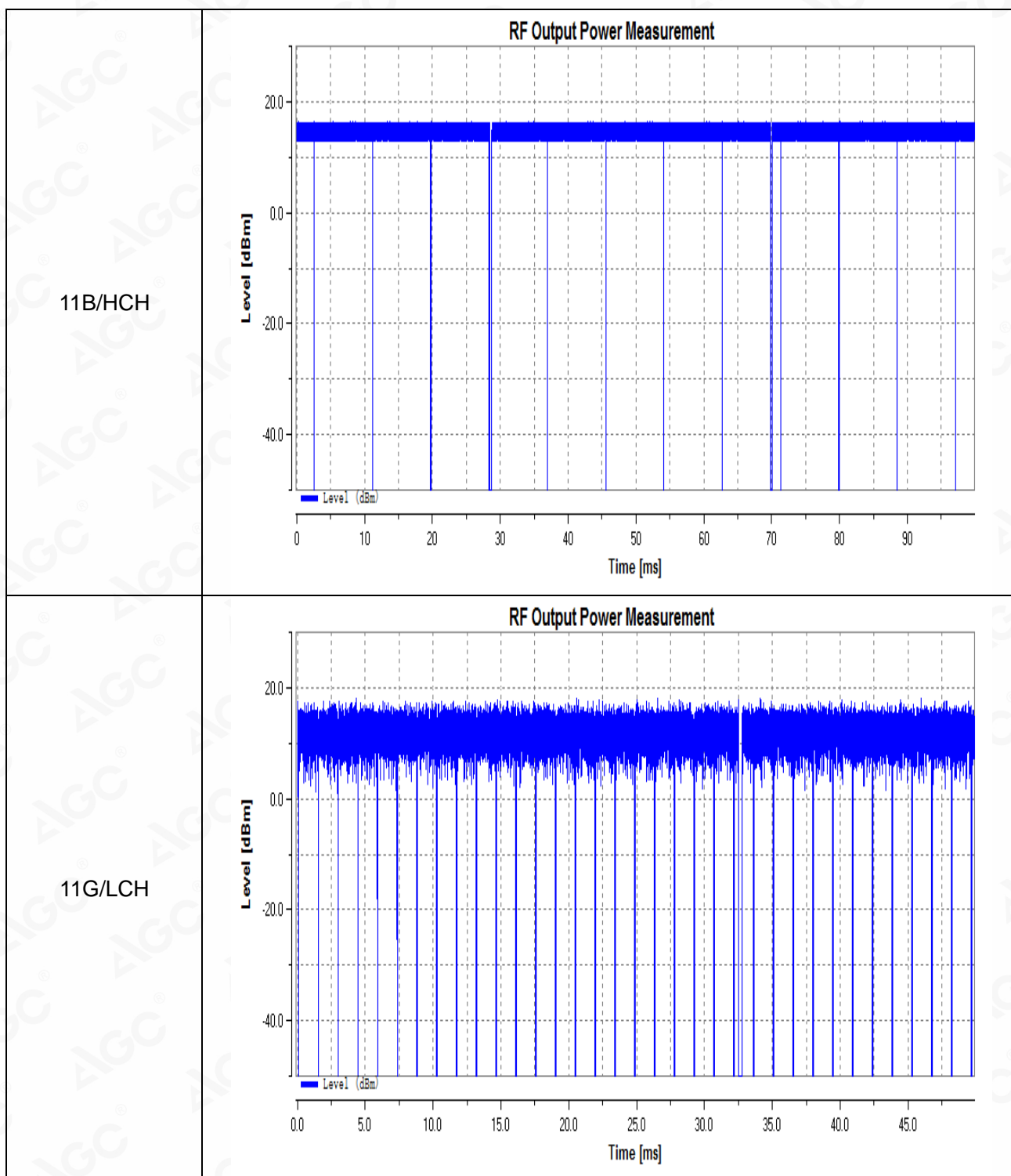




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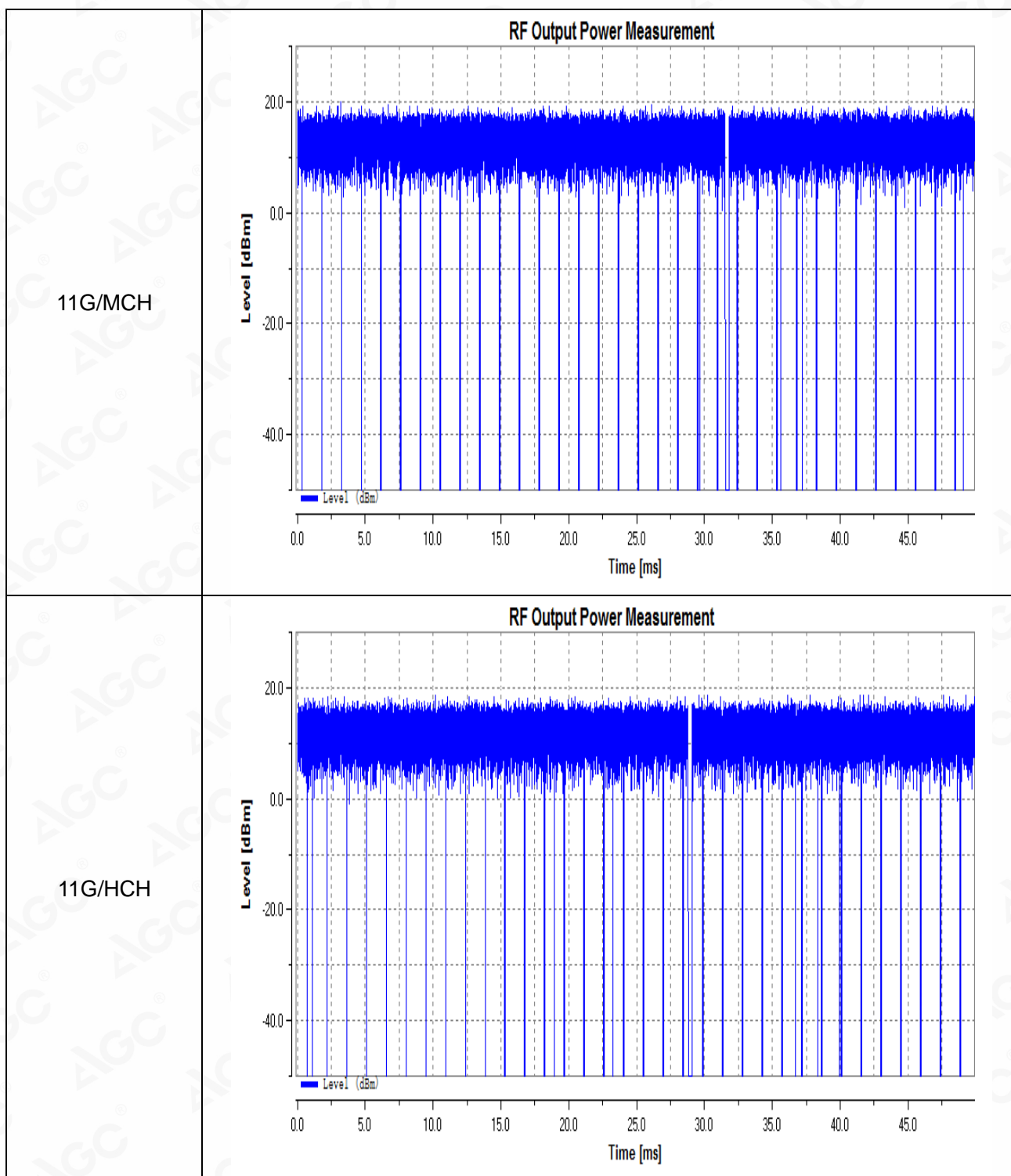




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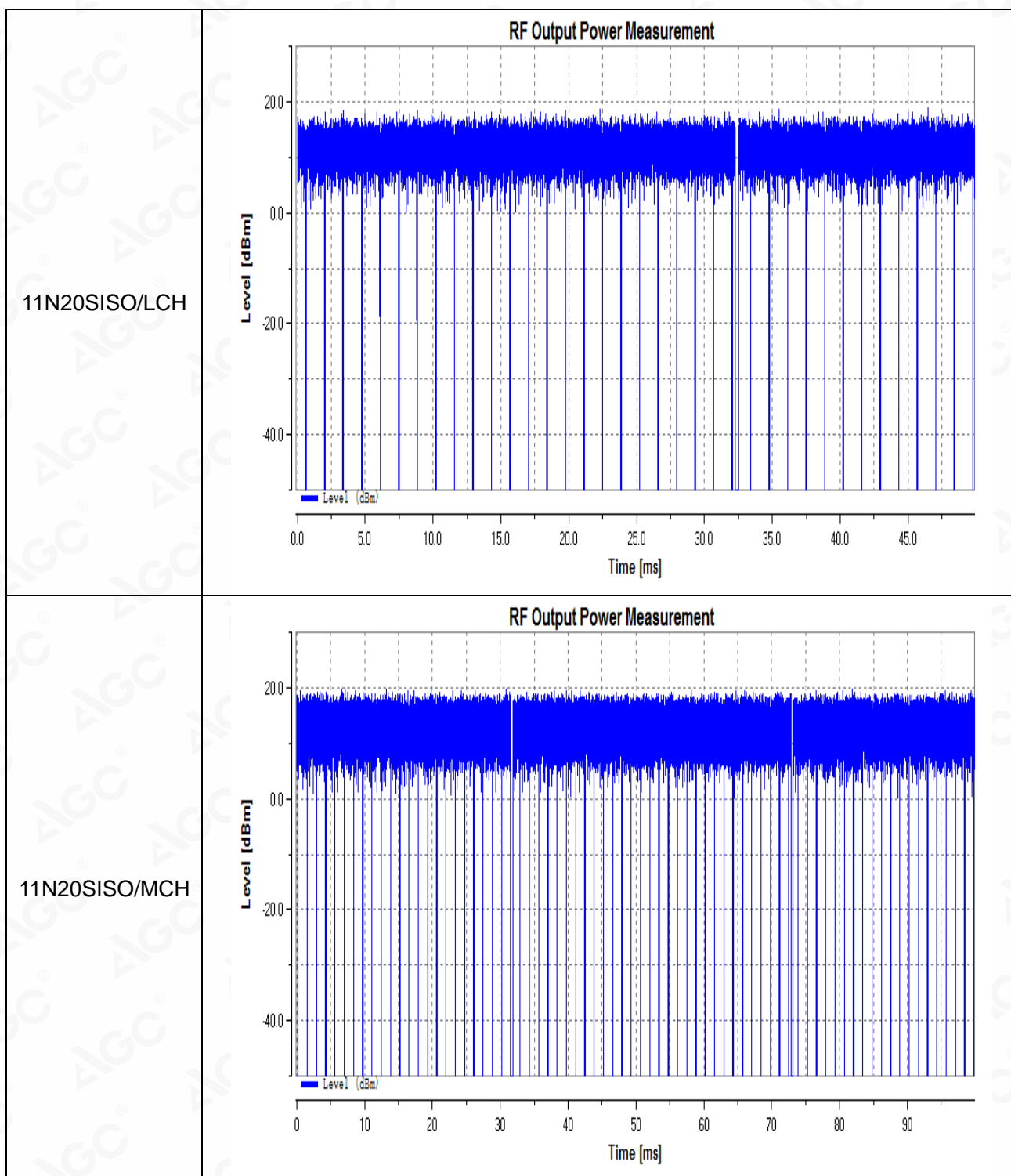




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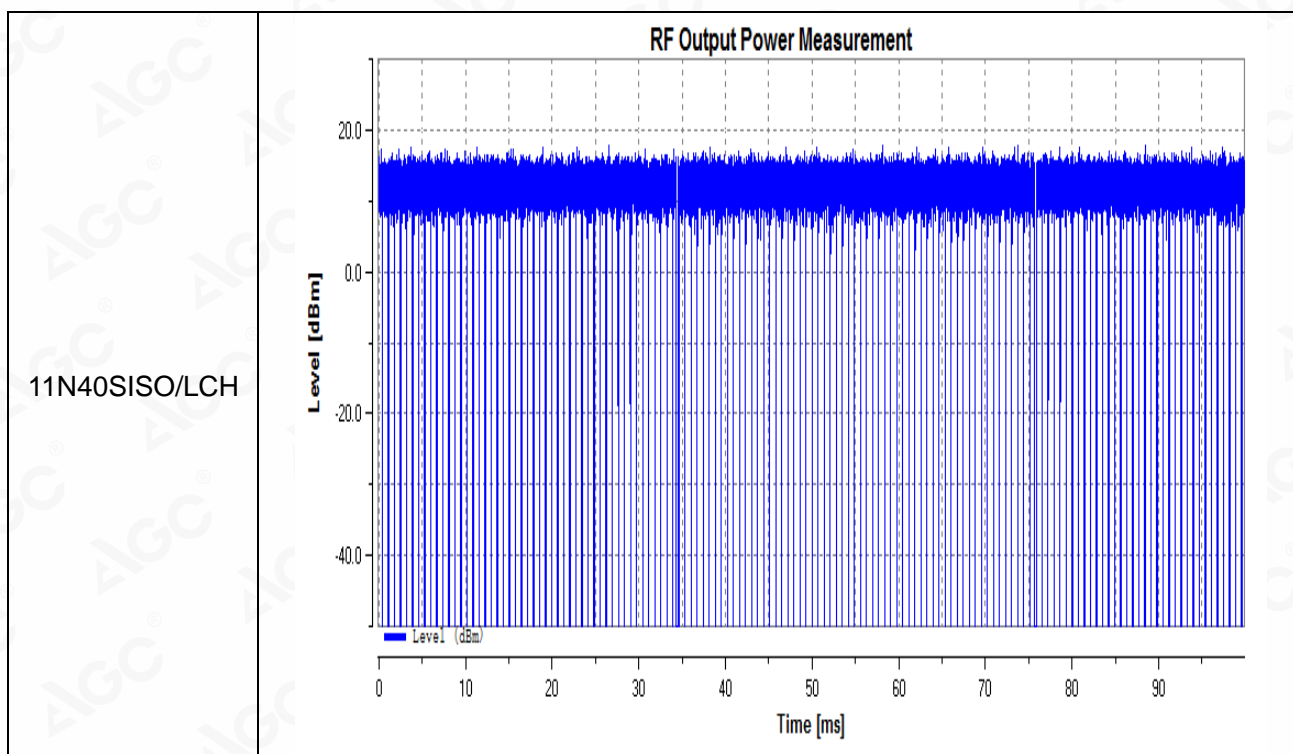
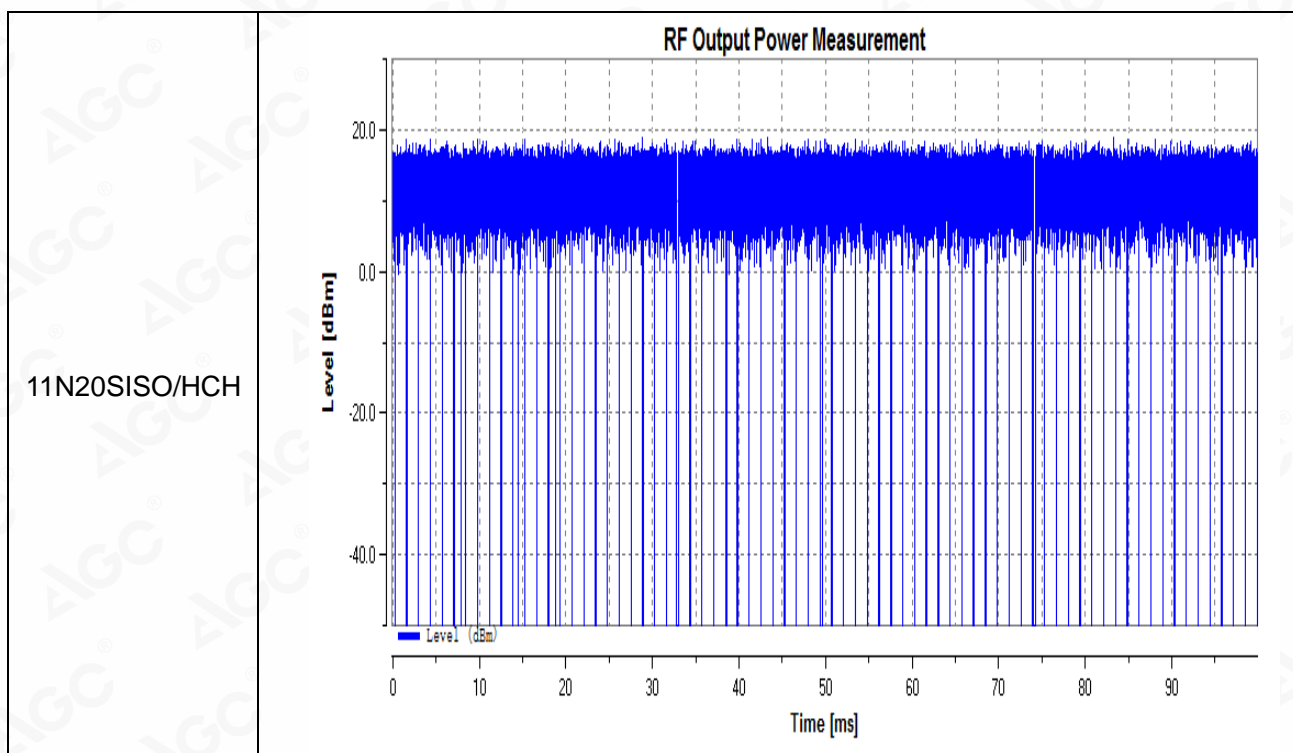




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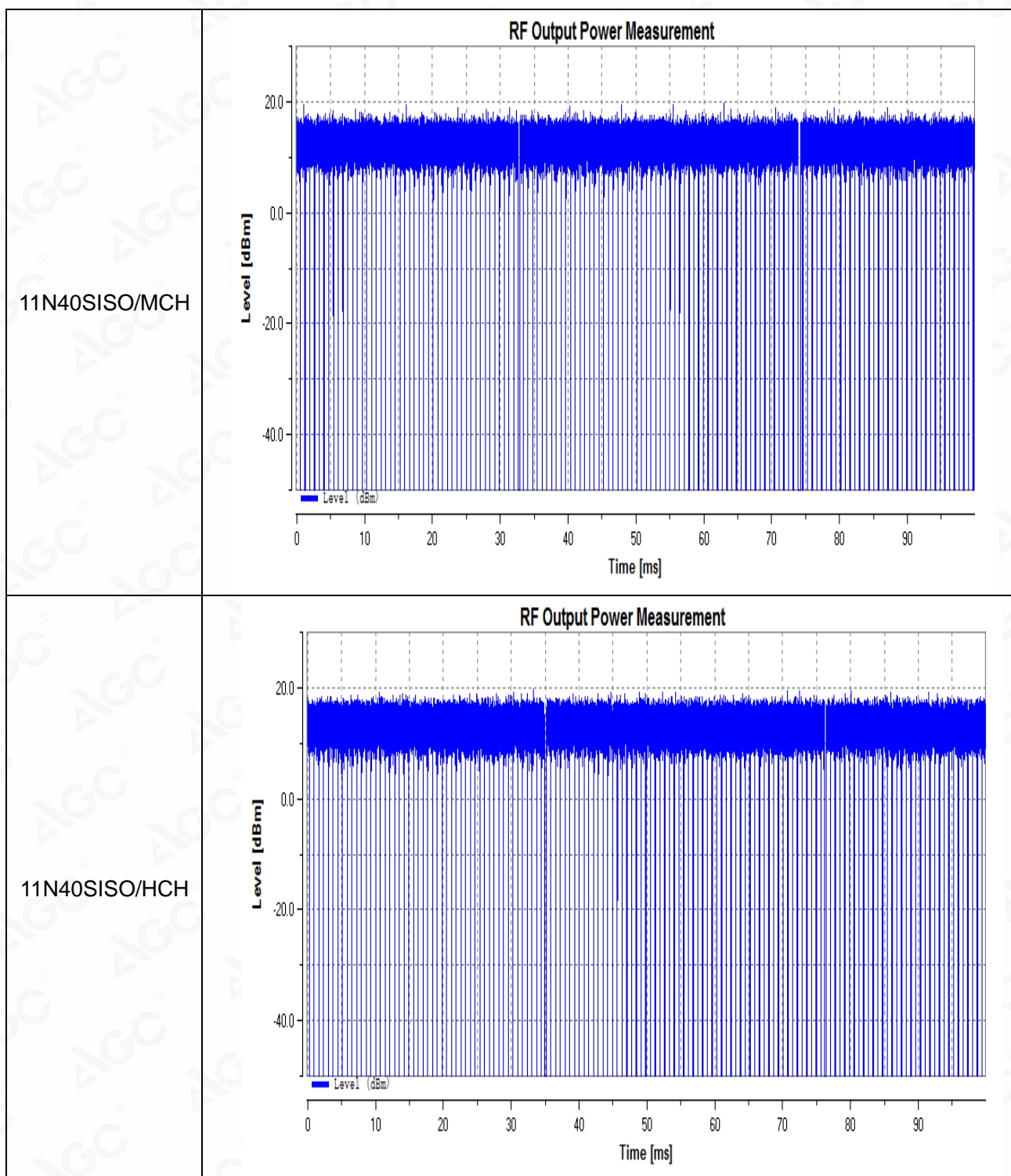
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Conclusion: PASS

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5.2. POWER SPECTRAL DENSITY

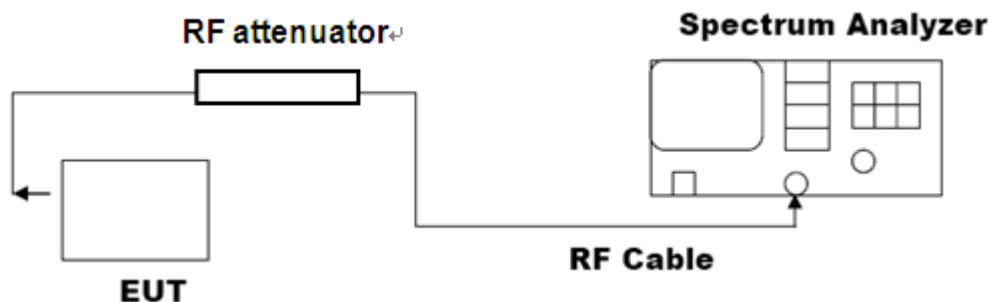
5.2.1 LIMIT

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



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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	7.16	10	Pass
CH 07	8.17	10	Pass
CH 13	6.64	10	Pass

IEEE 802.11g Power Spectral Density			
Channel Tested	Power Density (dBm/MHz)	Test Limit (dBm/MHz)	Pass / Fail
CH 01	1.94	10	Pass
CH 07	3.96	10	Pass
CH 13	4.32	10	Pass

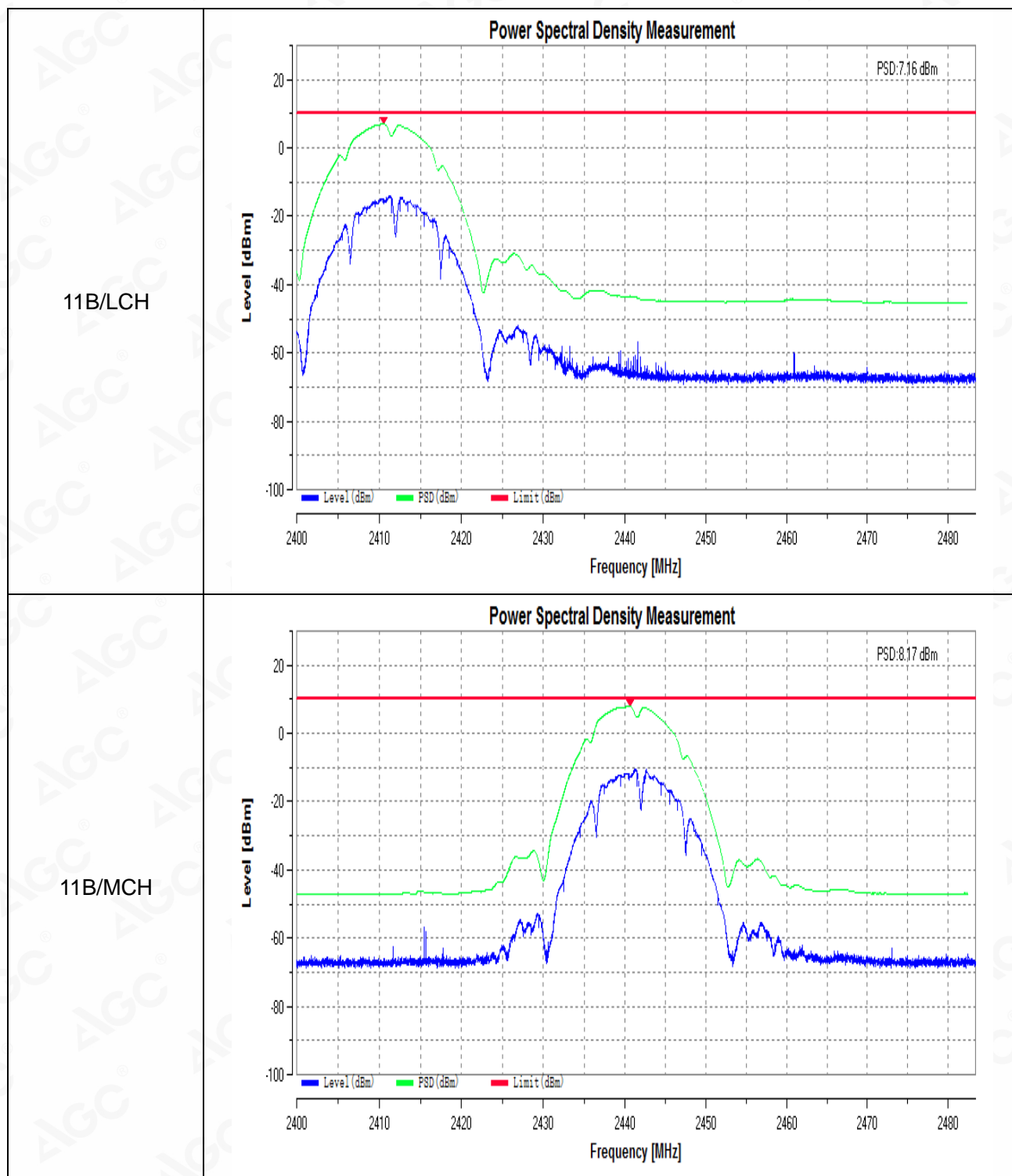
IEEE 802.11n(20) Power Spectral Density			
Channel Tested	Power Density (dBm/MHz)	Test Limit (dBm/MHz)	Pass / Fail
CH 01	1.49	10	Pass
CH 07	3.62	10	Pass
CH 13	3.89	10	Pass

IEEE 802.11n(40) Power Spectral Density			
Channel Tested	Power Density (dBm/MHz)	Test Limit (dBm/MHz)	Pass / Fail
CH 03	0.97	10	Pass
CH 07	2.07	10	Pass
CH 11	3.95	10	Pass

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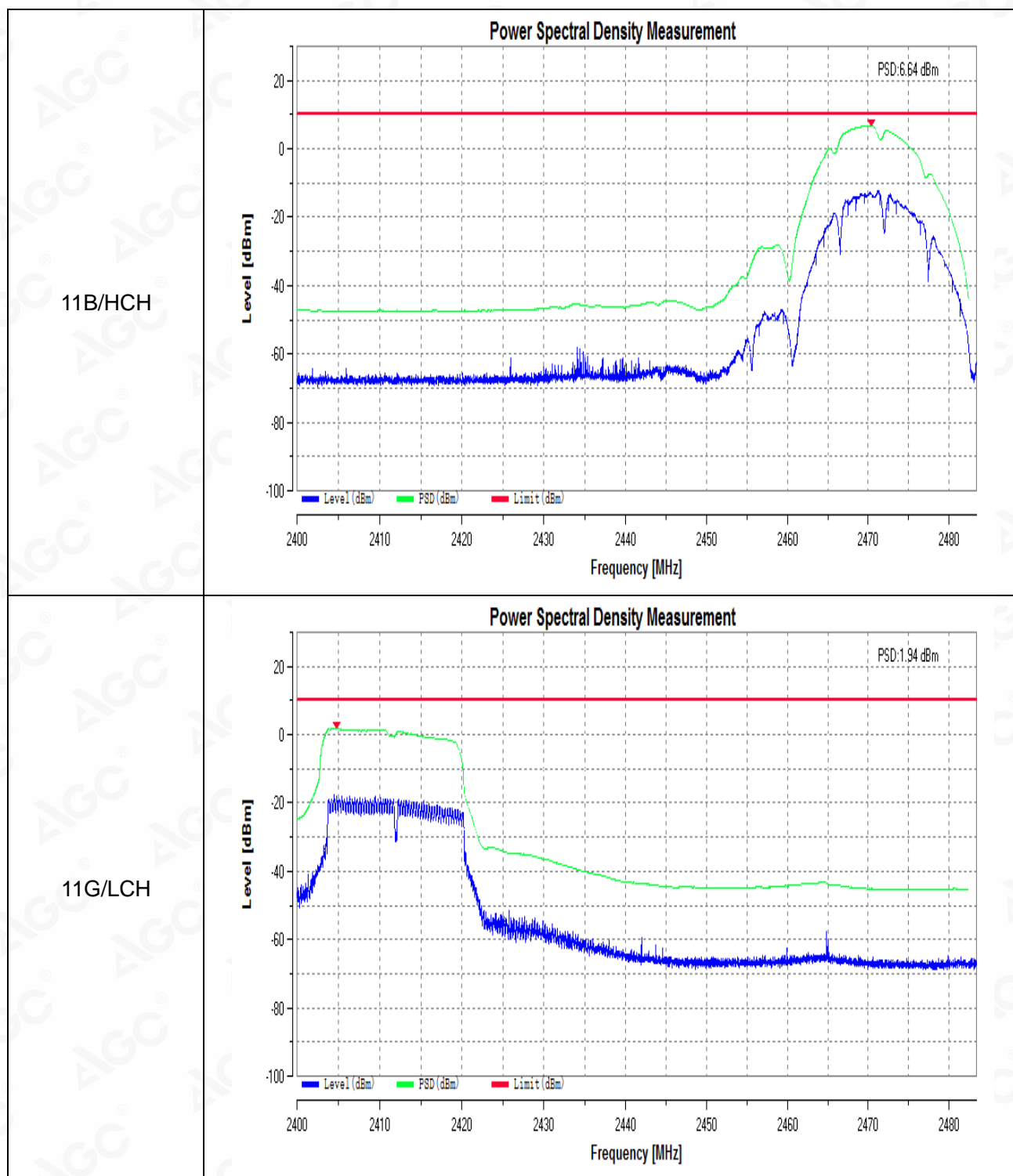




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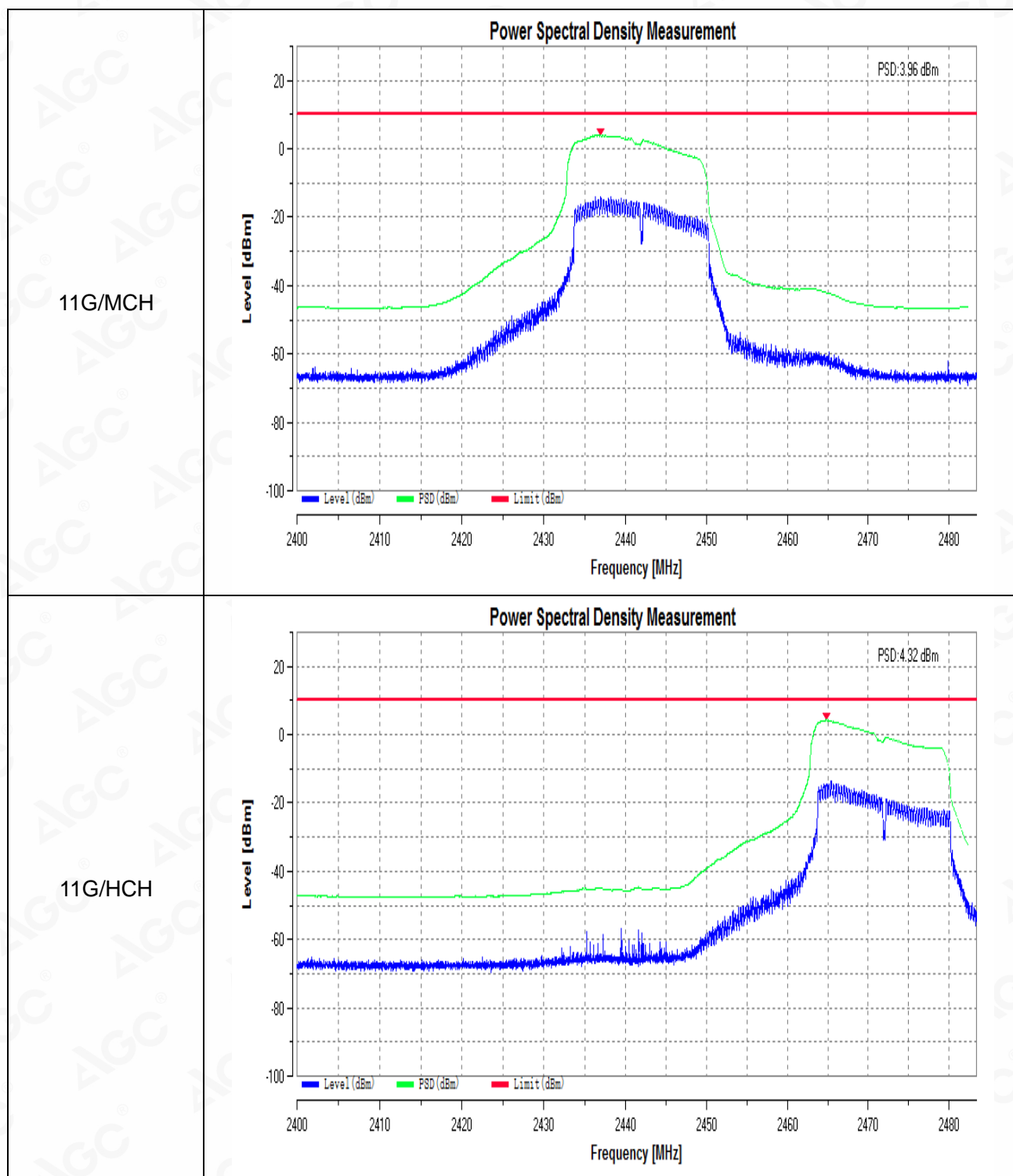




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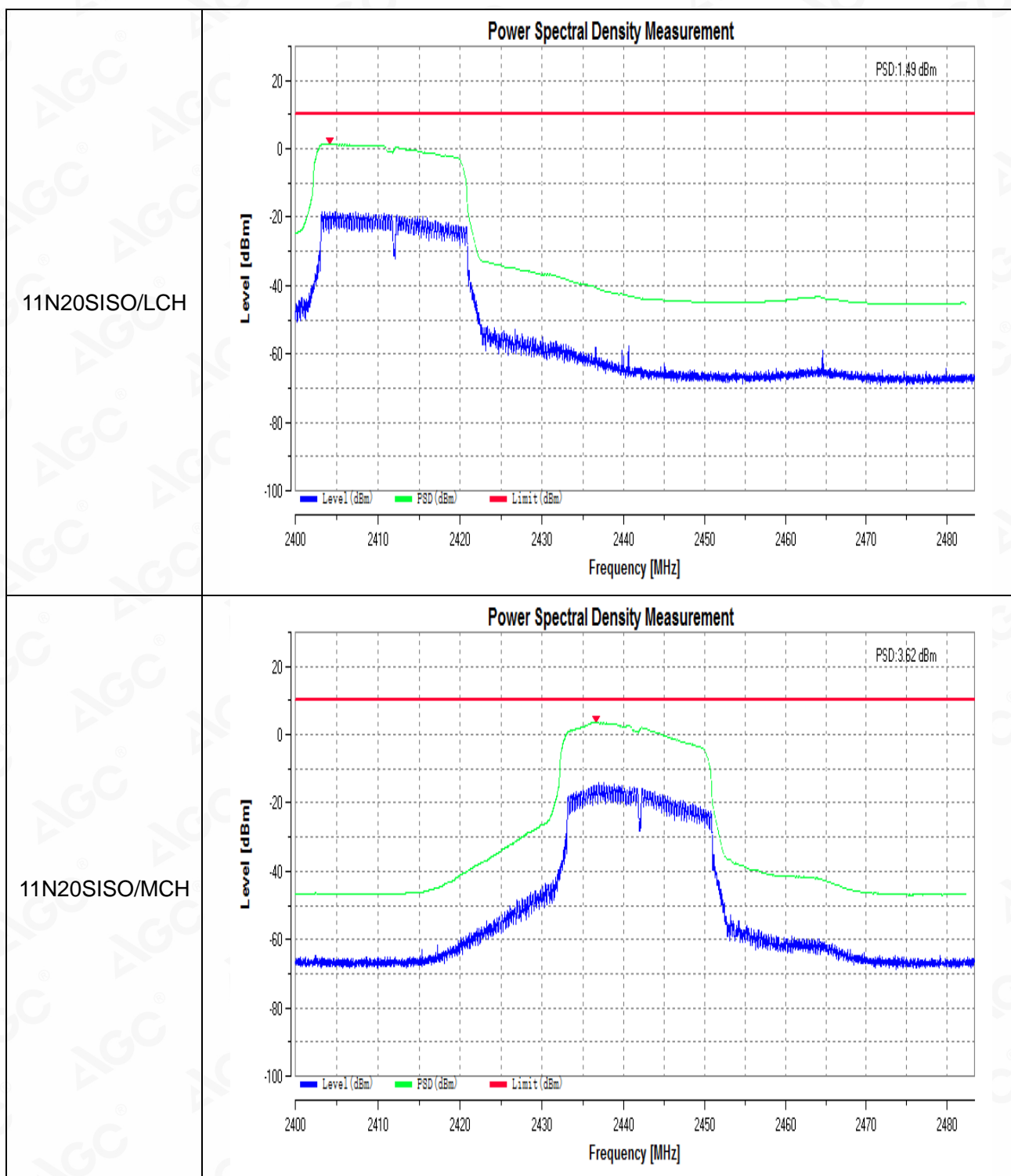




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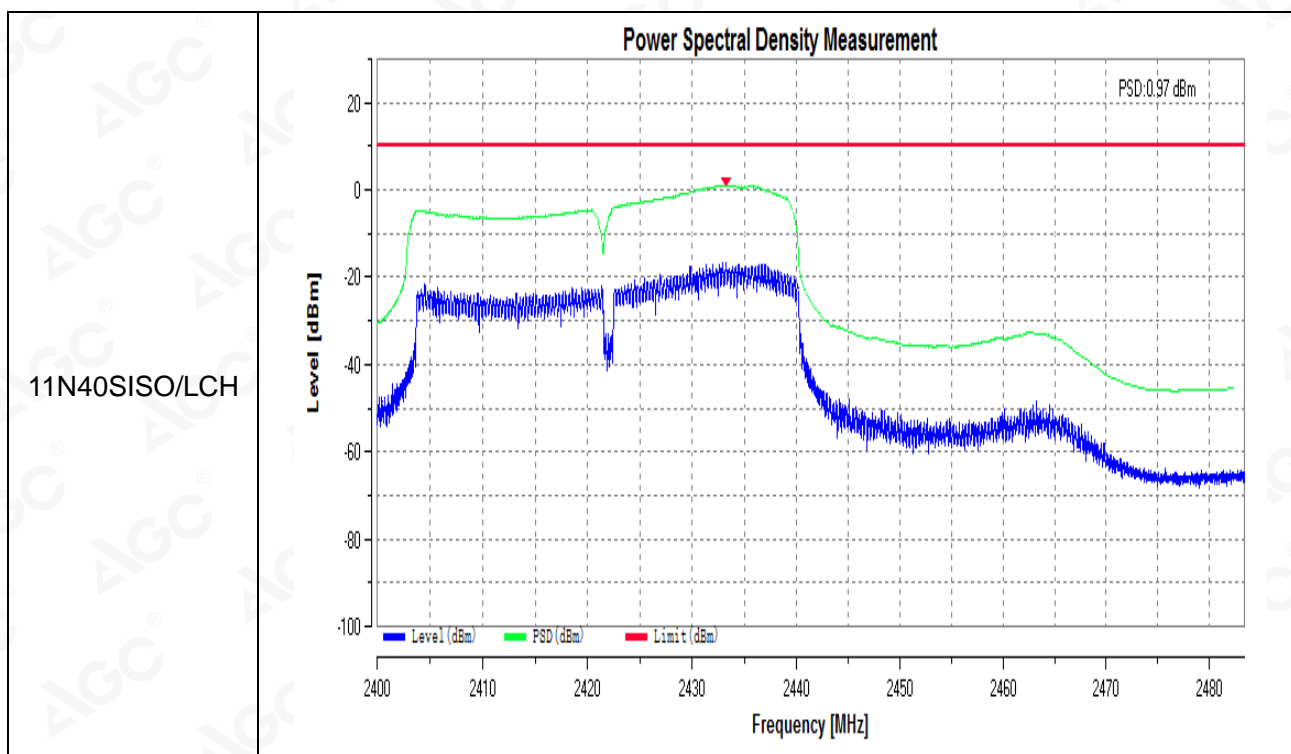
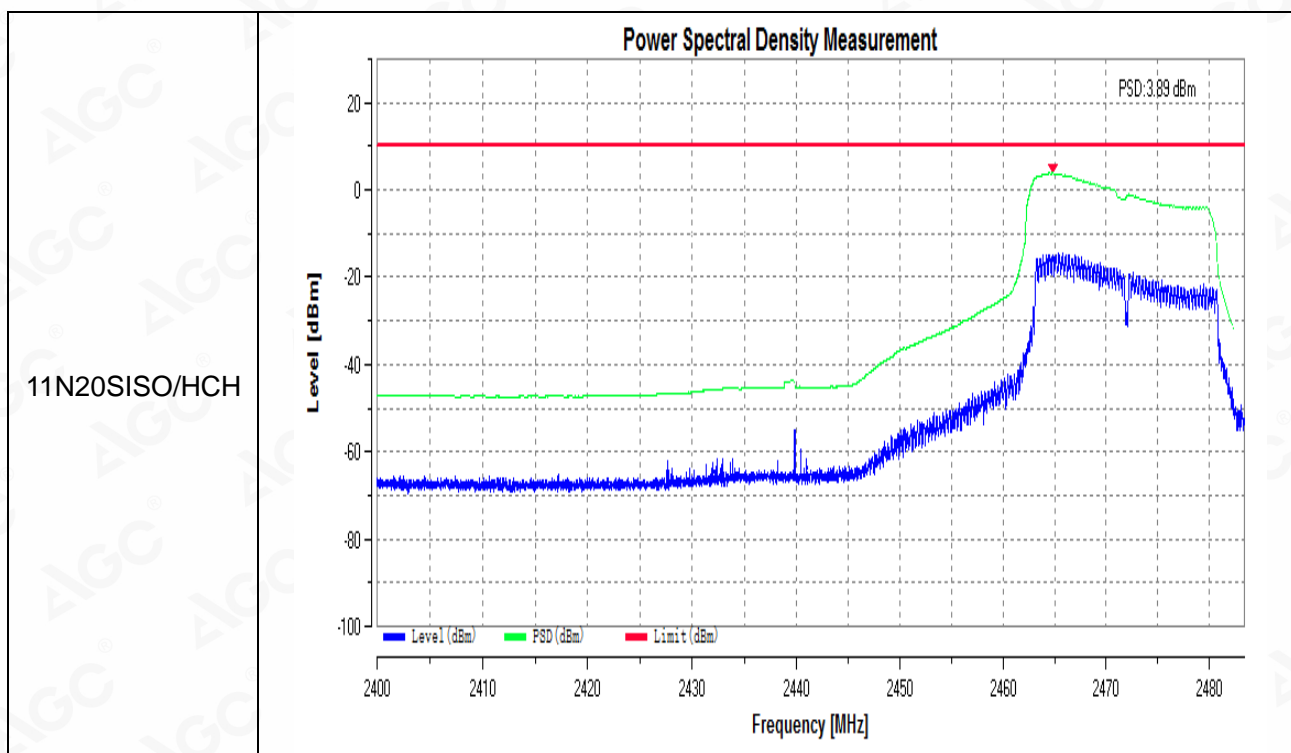




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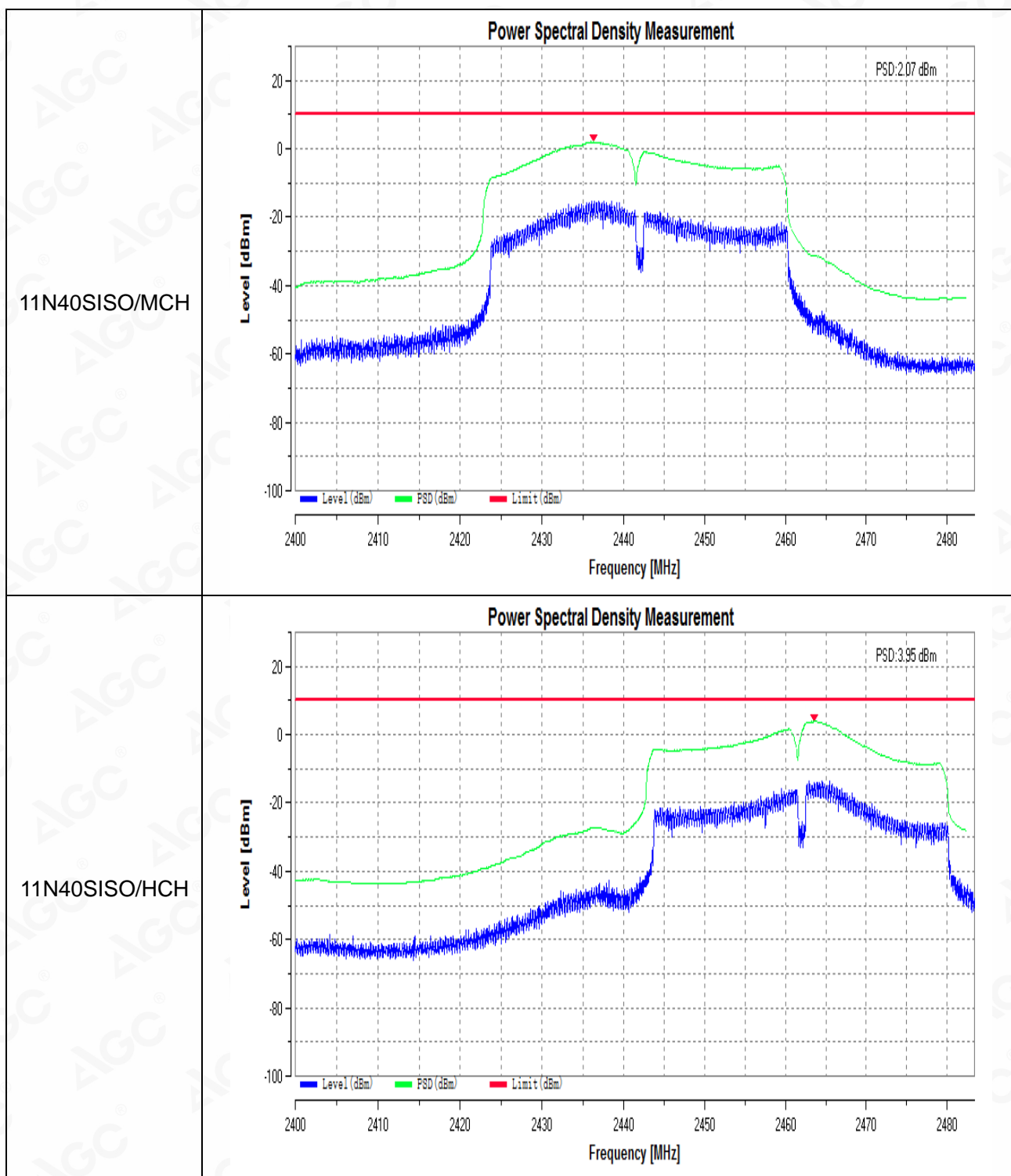




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5.3. ADAPTIVITY

The method of adaptivity is using LBT based on LBE.

5.3.1 LIMIT

The Channel Occupancy Time shall be less than 13ms.

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.

For power levels less than 20 dBm e.i.r.p., the CCA threshold level(TL) may be relaxed to:

$$TL = -70 \text{ dBm/MHz} + 10 \times \log_{10} (100 \text{ mW} / P_{out}) \text{ (Pout in mW e.i.r.p.)}$$

An unwanted CW signal as defined in the below table.

Wanted signal mean power from companion device	Unwanted CW signal frequency (MHz)	Unwanted CW signal power (dBm)
sufficient to maintain the link (see note 2)	2 395 or 2 488,5 (see note 1)	-35 (see note 3)
<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 conducted value which can be used in most cases is -50 dBm/MHz.</p> <p>NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna.</p>		

5.3.2 TEST PROCEDURE

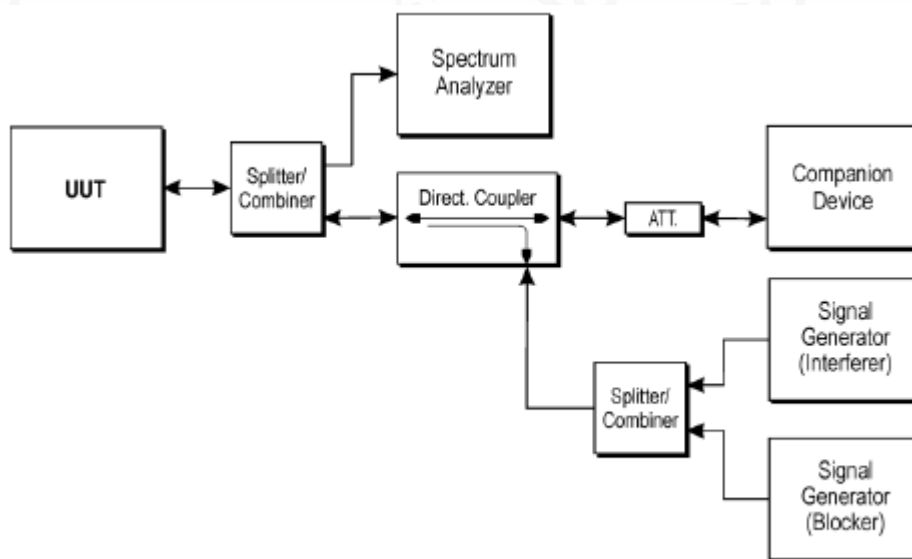
- 1) The EUT connect to a companion device during the test. Adjust the received signal level at the EuT to the value of -50dBm/MHz.
- 2) the analyzer shall be set as below: RBW>=Occupied Channel Bandwidth (if the analyser does not support this setting, the highest available setting shall be used) and 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 verification of reaction to the interference signal.
- 5) Adding the unwanted signal and verification of reaction to the unwanted signal.
- 6) Removing the interference and unwanted signal.

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5.3.3 TEST CONFIGURATION



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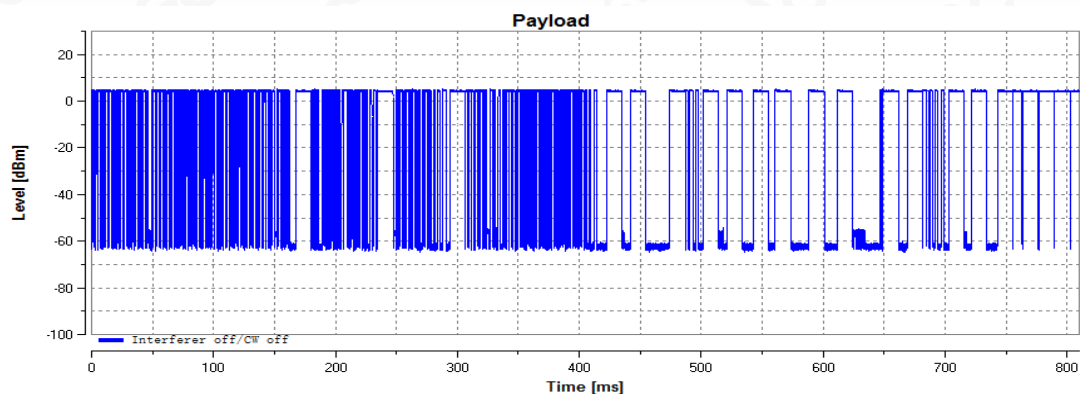
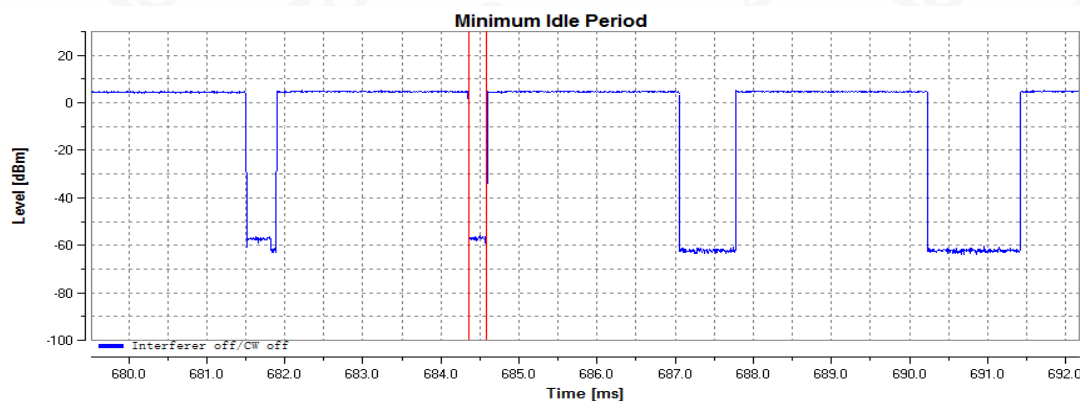
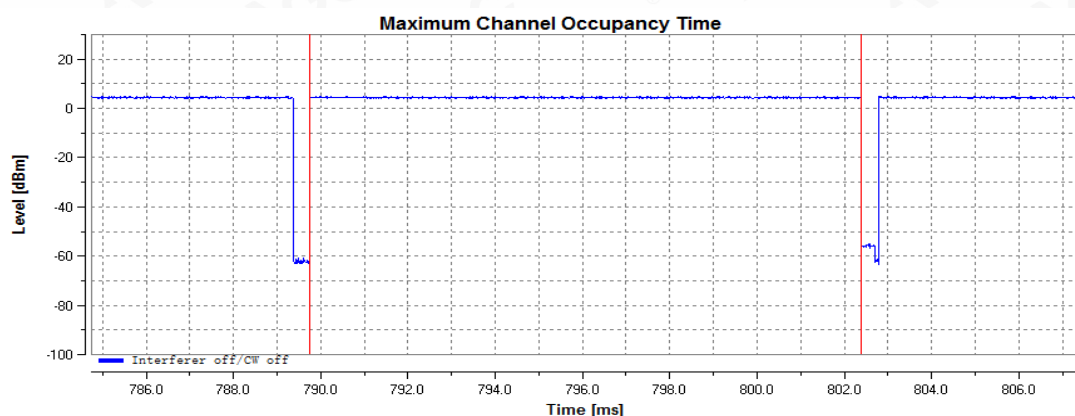
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5.3.4 TEST RESULTS

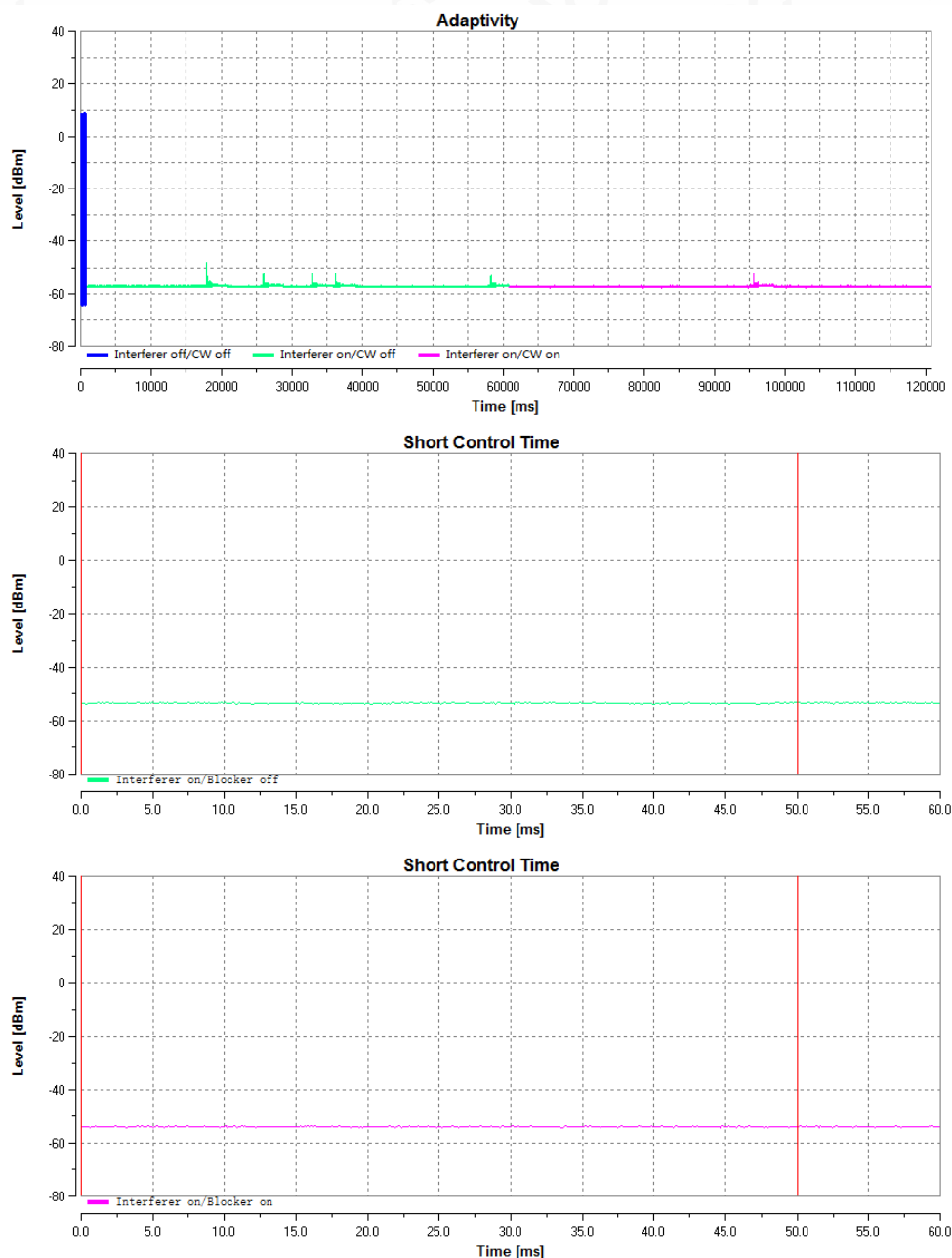
IEEE802.11b Low Channel	
Threshold Level (dBm/MHz)	-65.23
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	12.48
Minimum Idle Time (ms)	0.253
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time



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



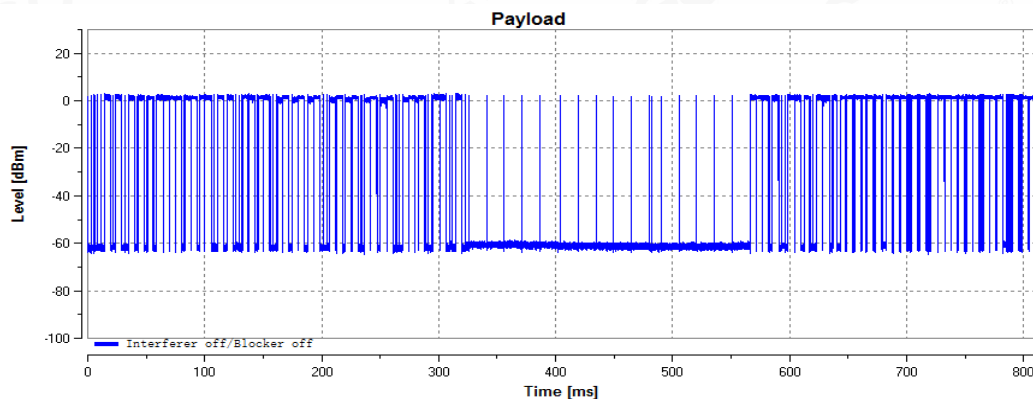
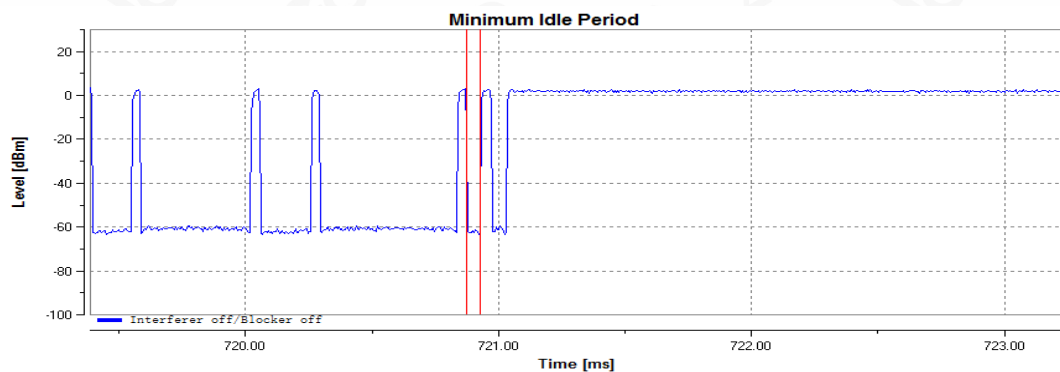
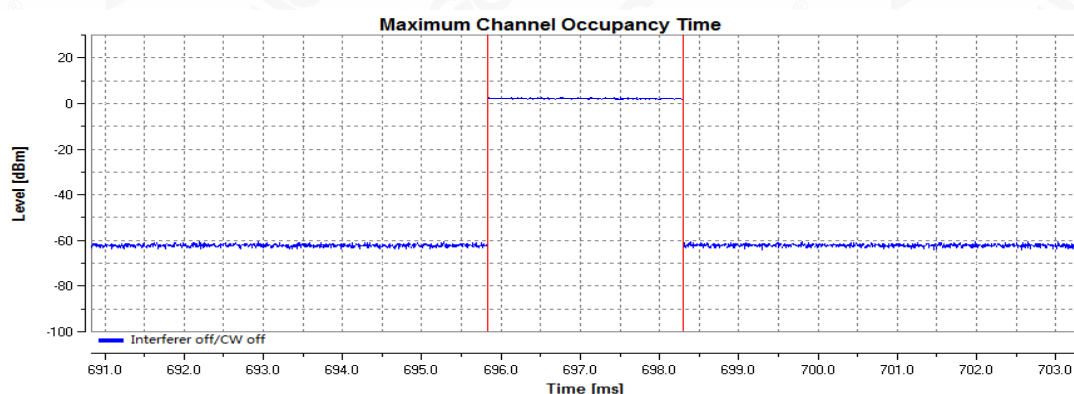
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IEEE802.11b High Channel	
Threshold Level (dBm/MHz)	-64.94
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	2.432
Minimum Idle Time (ms)	0.075
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time

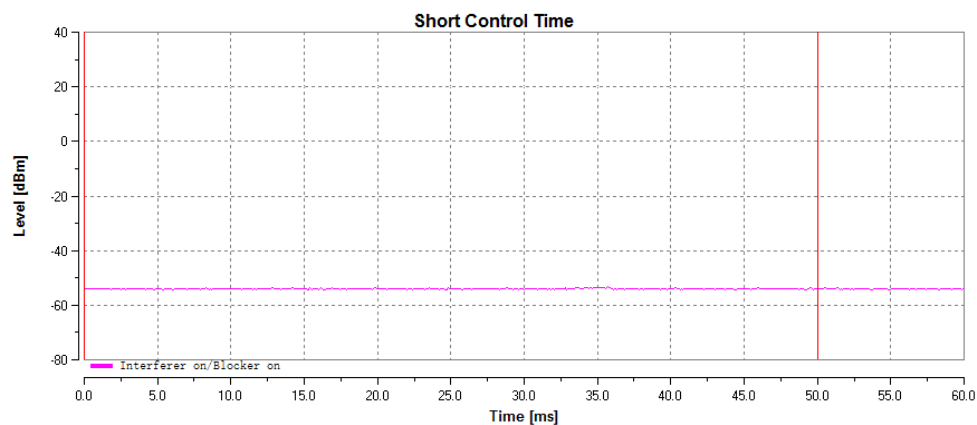
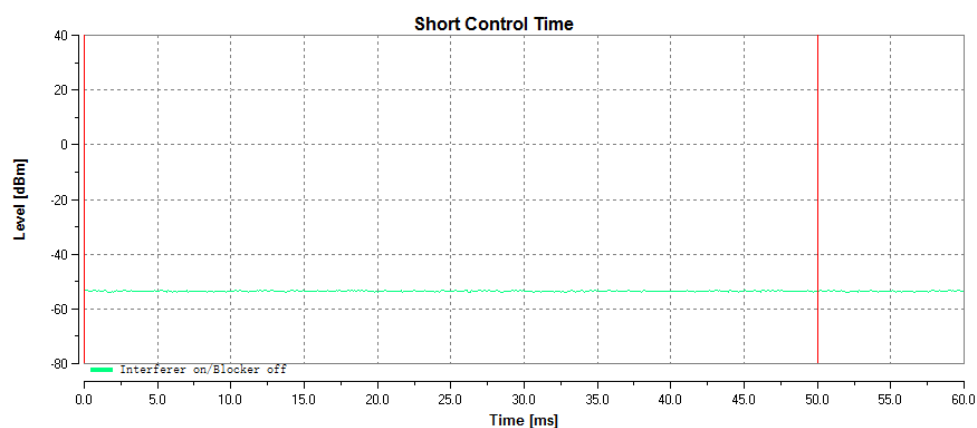
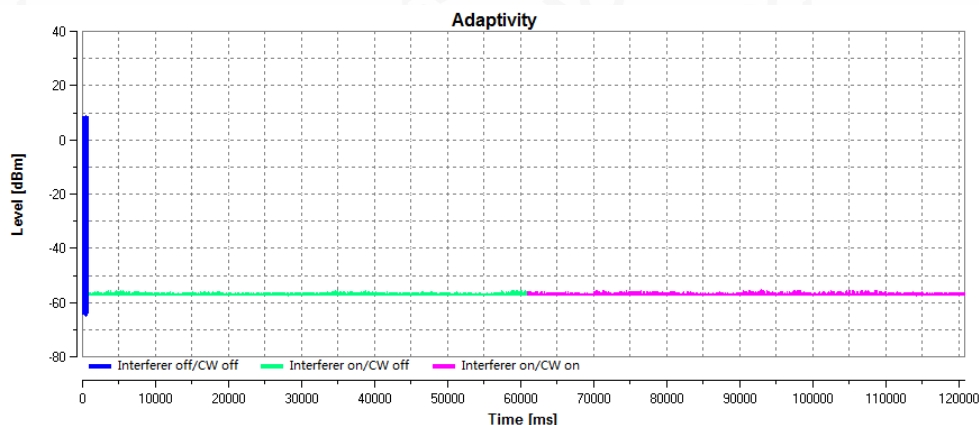


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Adding the interference signal(Green line) and the unwanted signal(Red line)



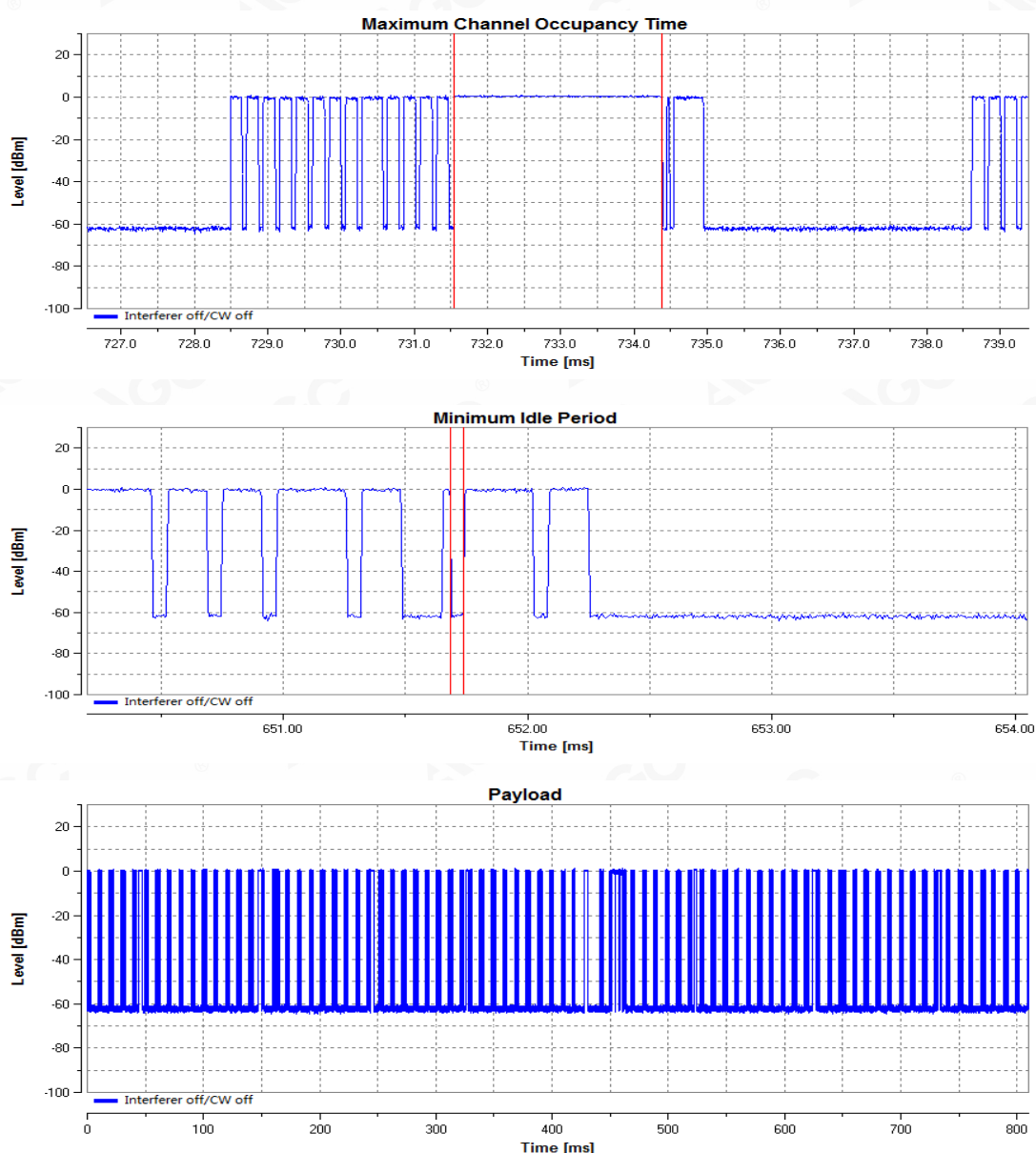
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IEEE802.11g Low Channel	
Threshold Level (dBm/MHz)	-62.69
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	2.816
Minimum Idle Time (ms)	0.077
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time

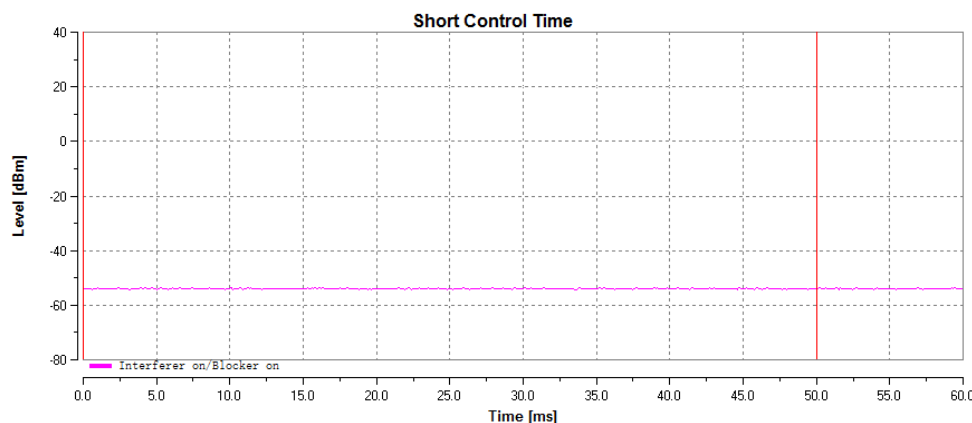
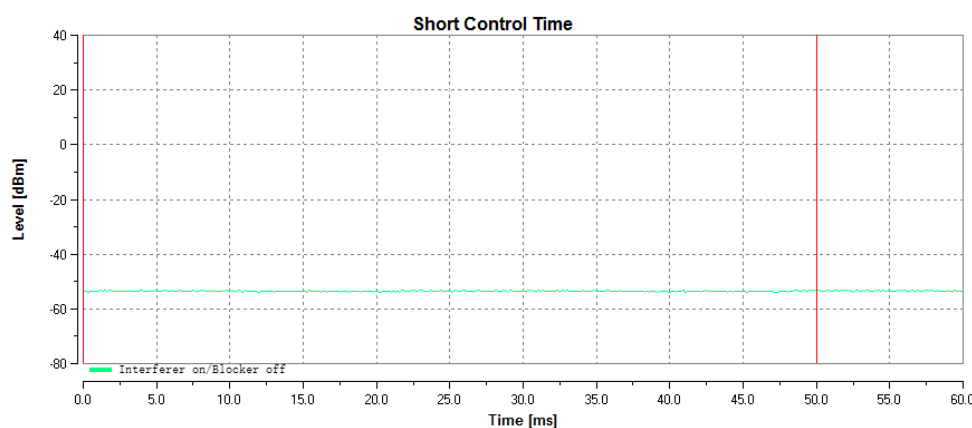
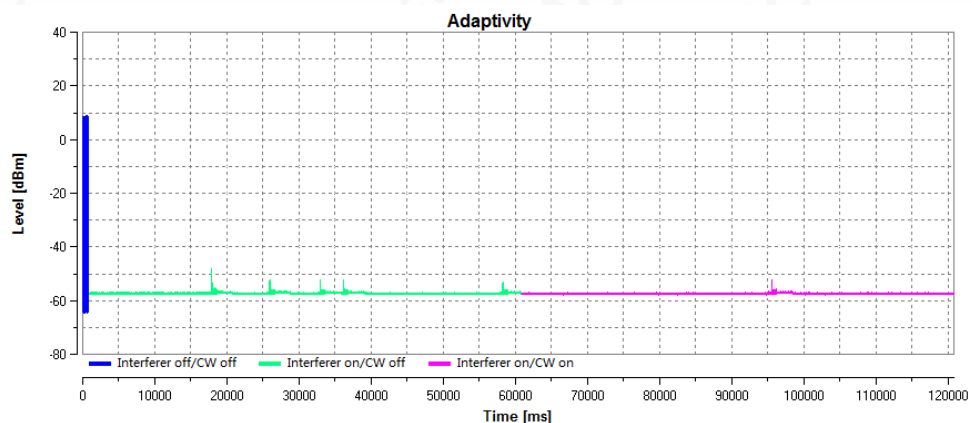


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Adding the interference signal(Green line) and the unwanted signal(Red line)



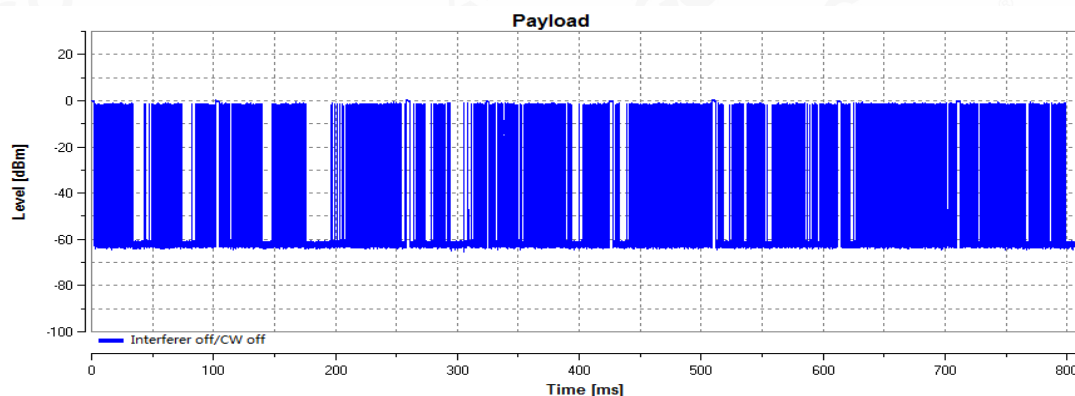
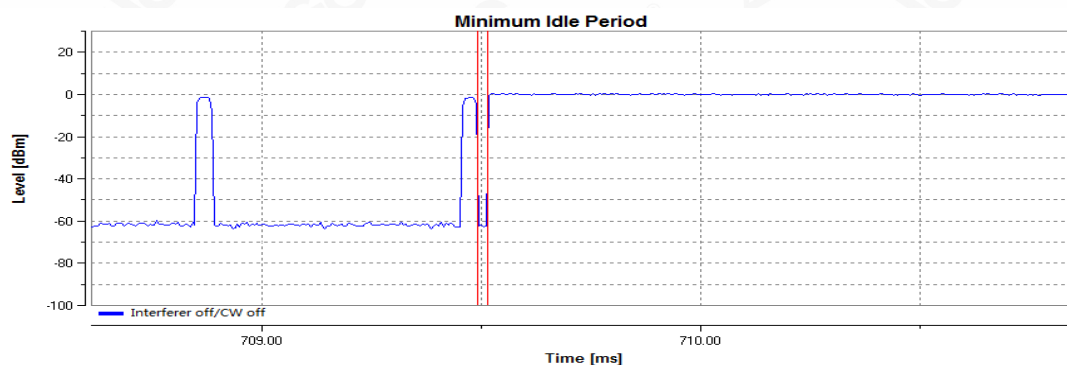
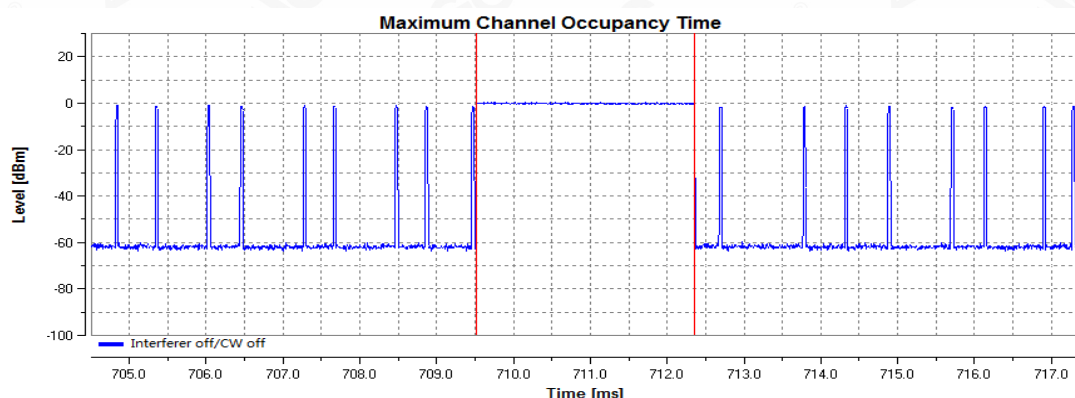
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IEEE802.11g High Channel	
Threshold Level (dBm/MHz)	-62.87
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	2.816
Minimum Idle Time (ms)	0.045
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time

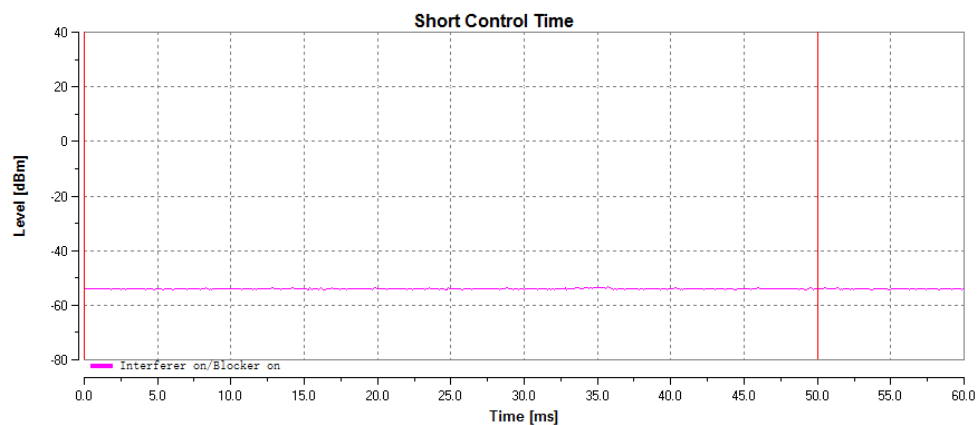
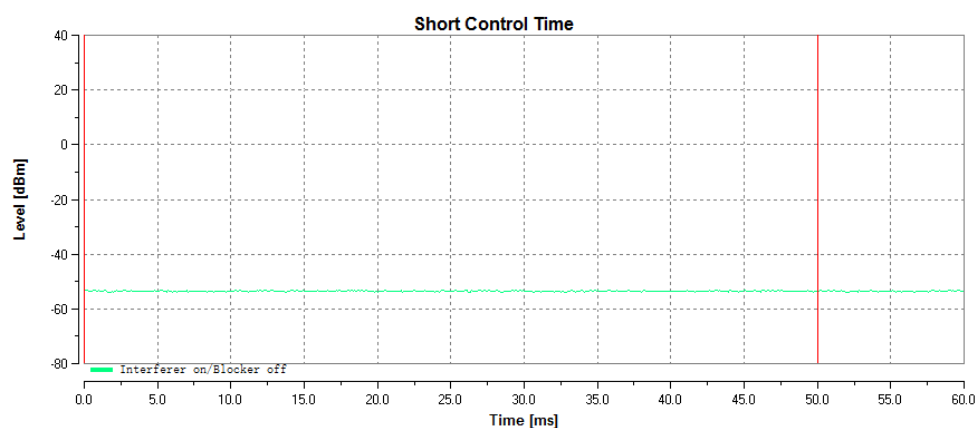
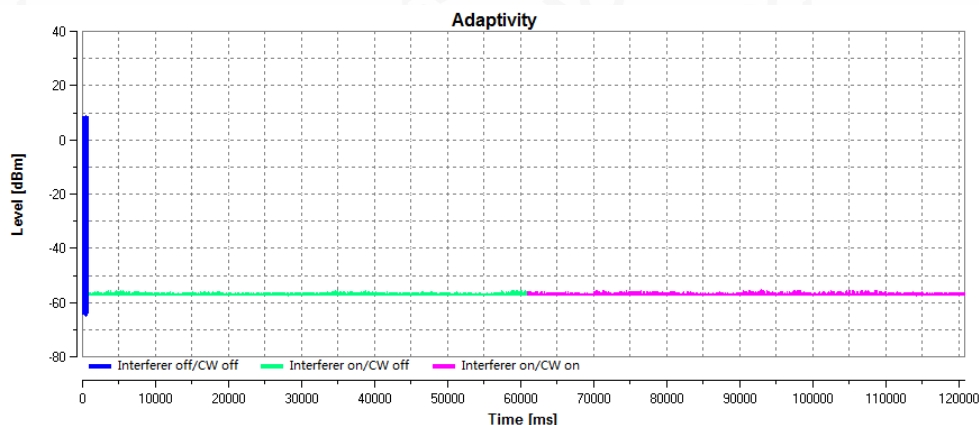


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Adding the interference signal(Green line) and the unwanted signal(Red line)



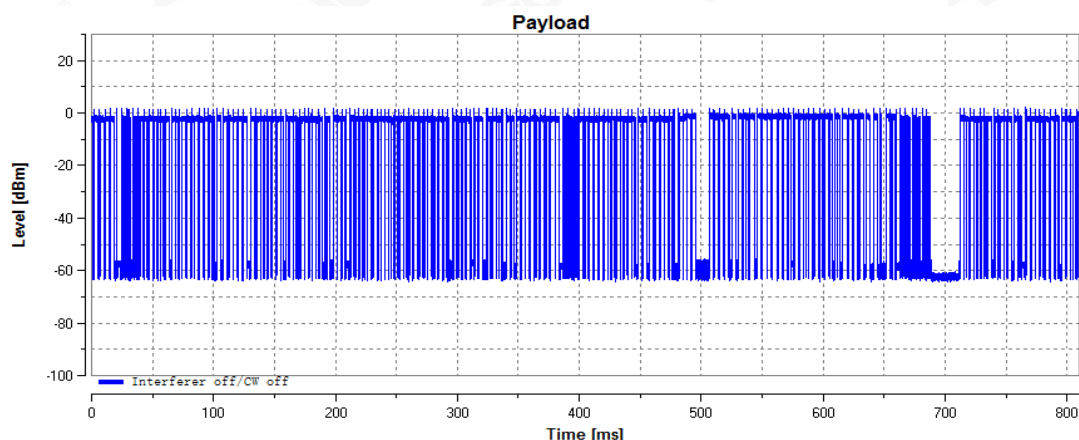
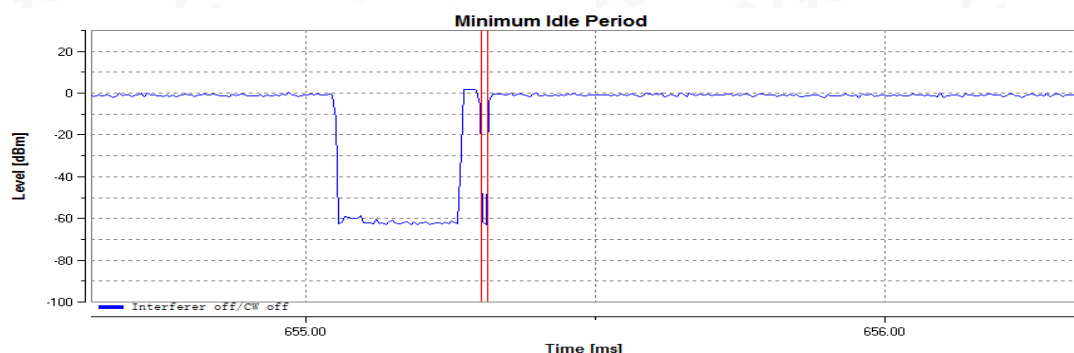
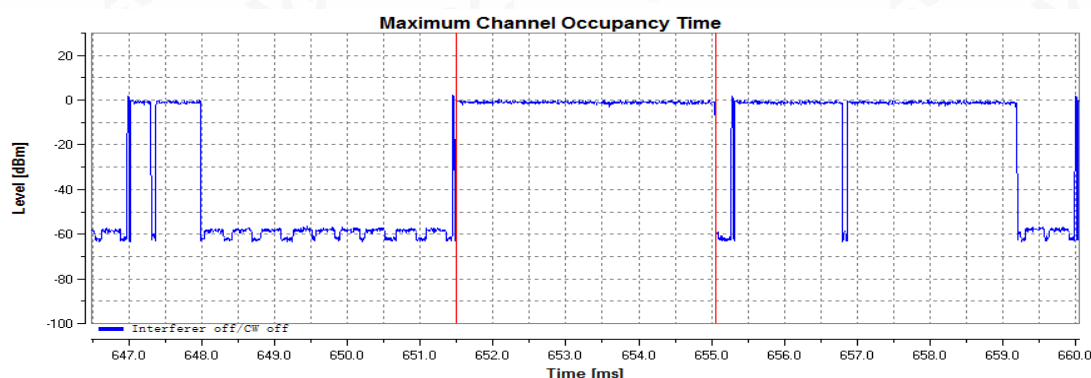
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IEEE802.11n20 Low Channel	
Threshold Level (dBm/MHz)	-62.60
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	3.525
Minimum Idle Time (ms)	0.034
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time

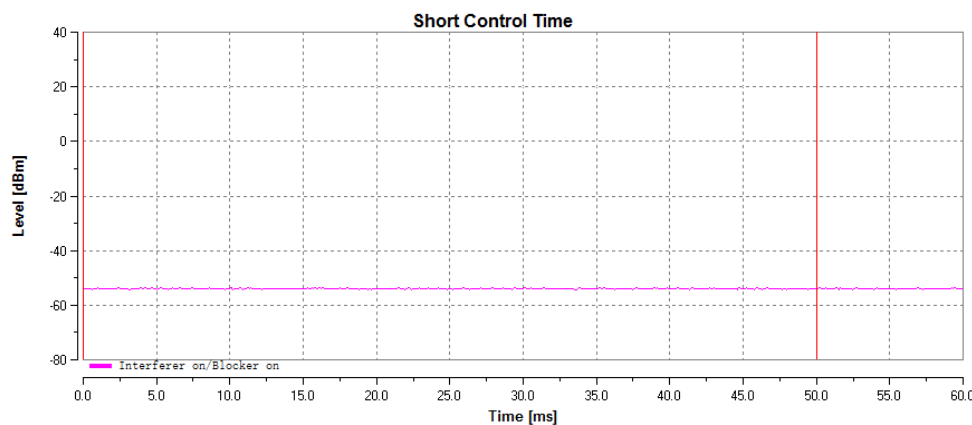
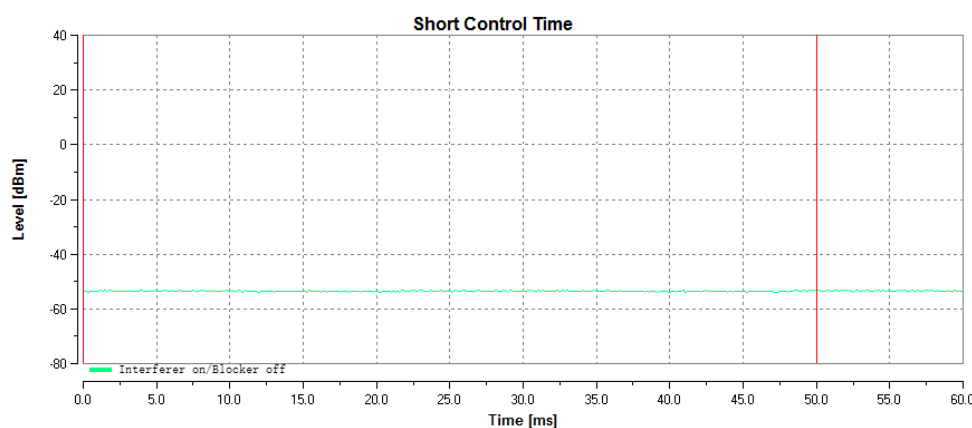
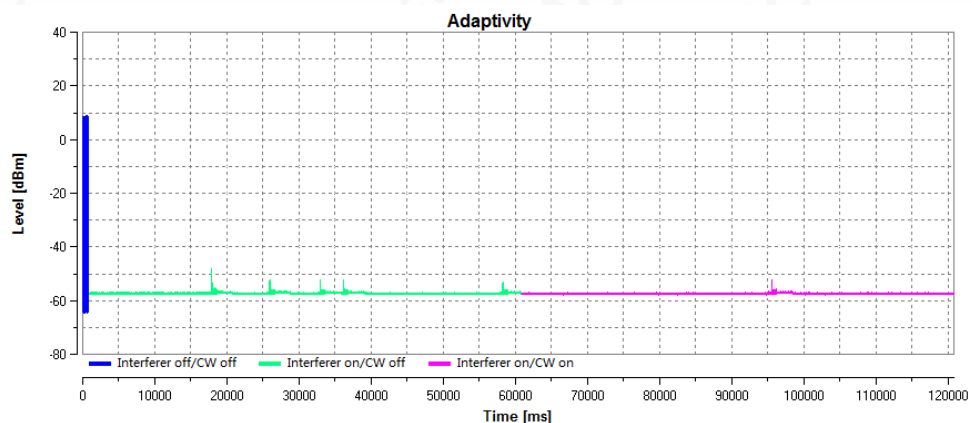


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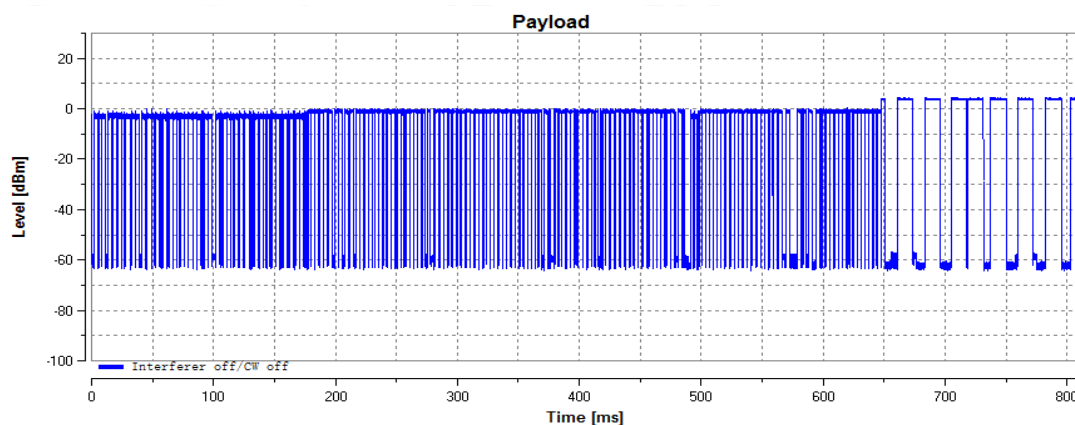
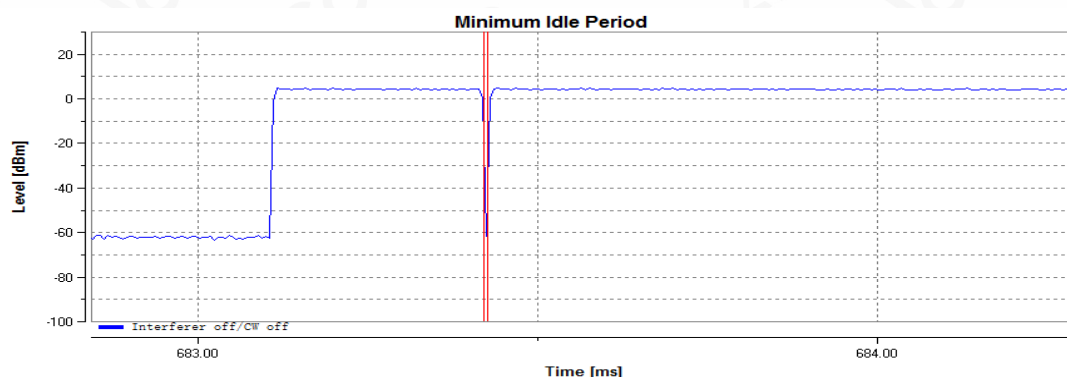
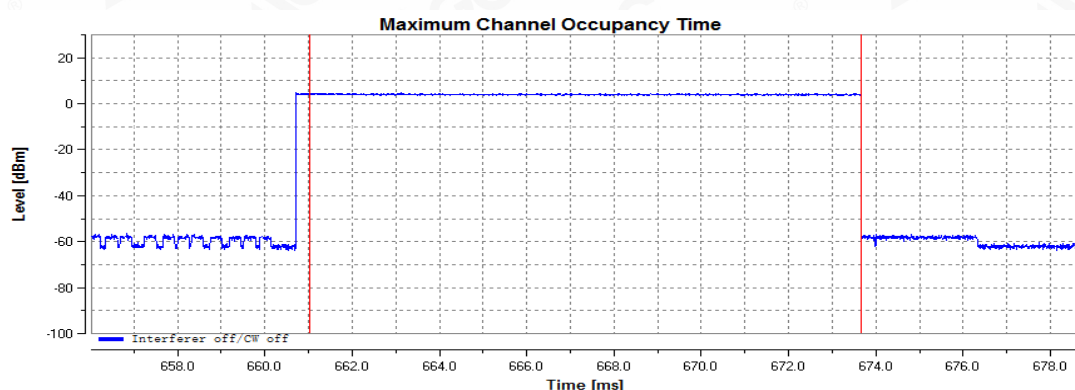
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IEEE802.11n20 High Channel	
Threshold Level (dBm/MHz)	-62.95
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	12.475
Minimum Idle Time (ms)	0.029
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time

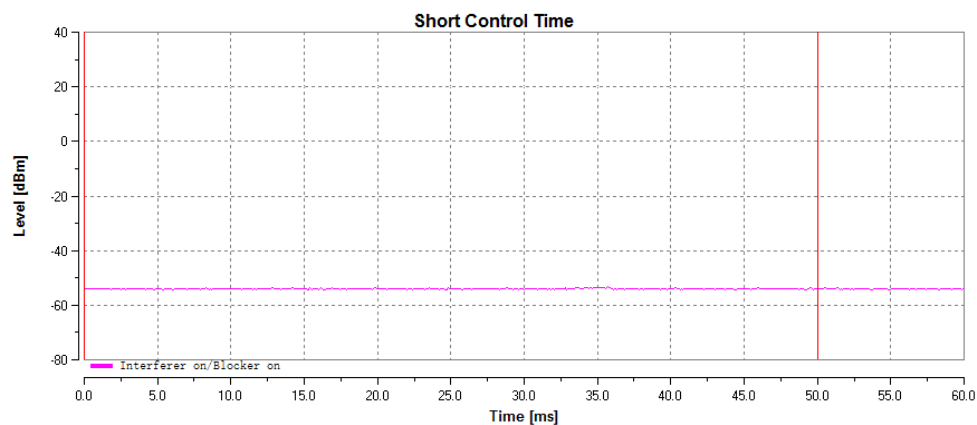
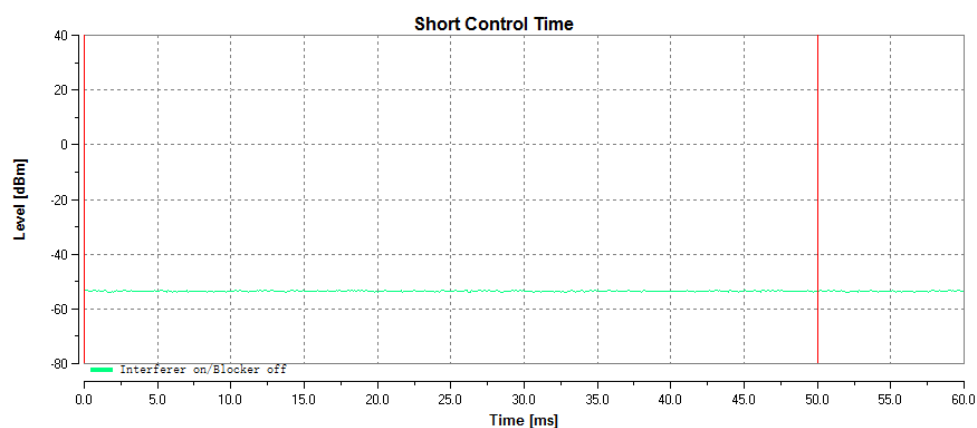
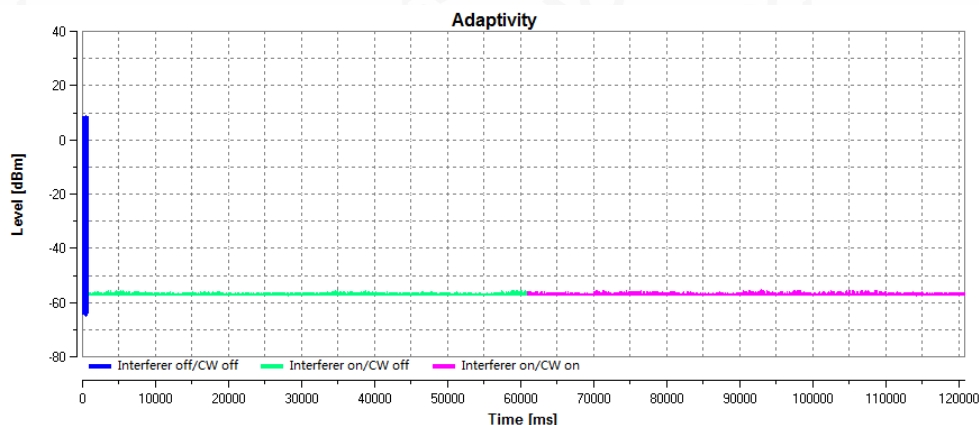


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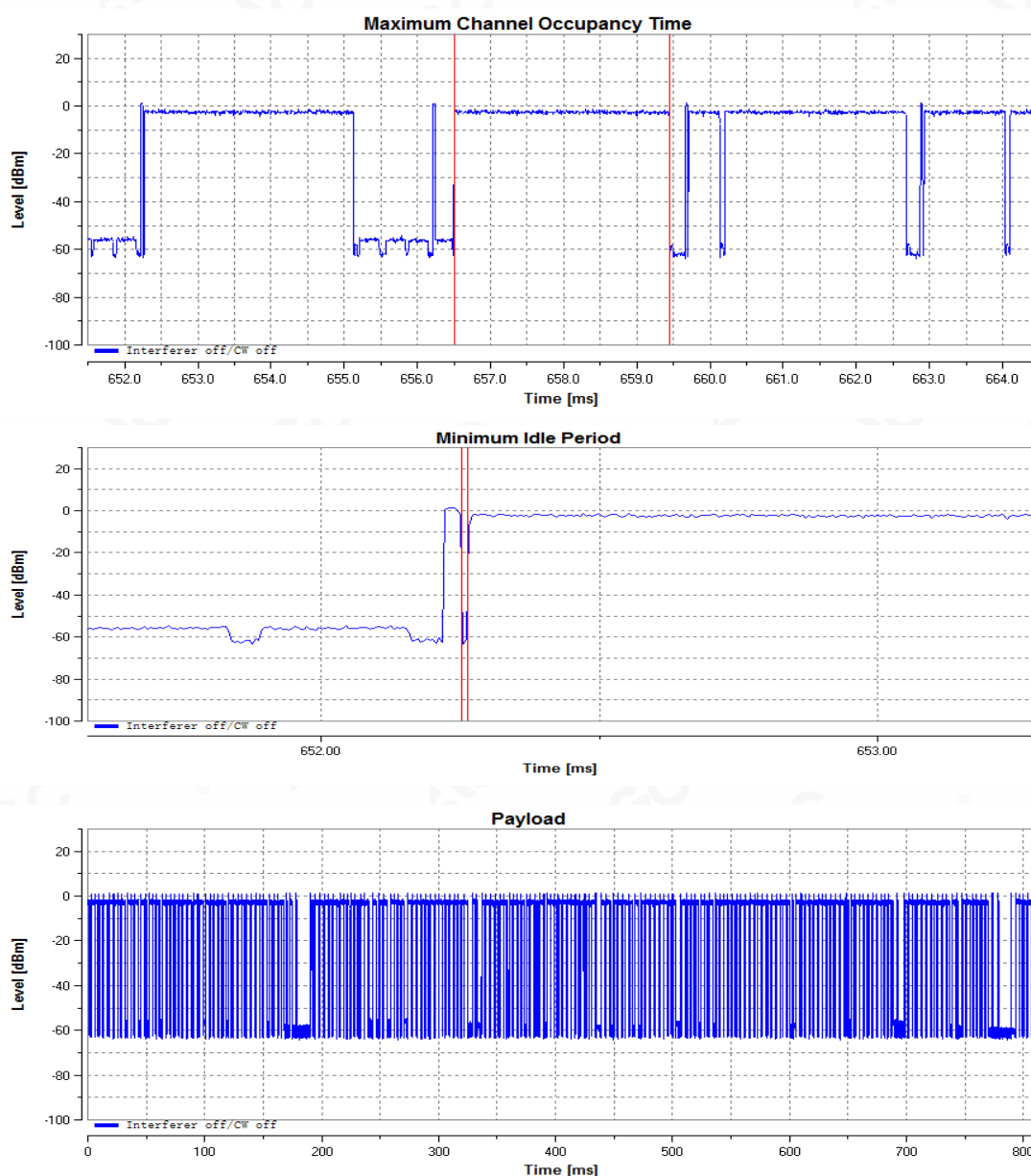
Adding the interference signal(Green line) and the unwanted signal(Red line)



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IEEE802.11n40 Low Channel	
Threshold Level (dBm/MHz)	-62.93
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	2.912
Minimum Idle Time (ms)	0.034
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time

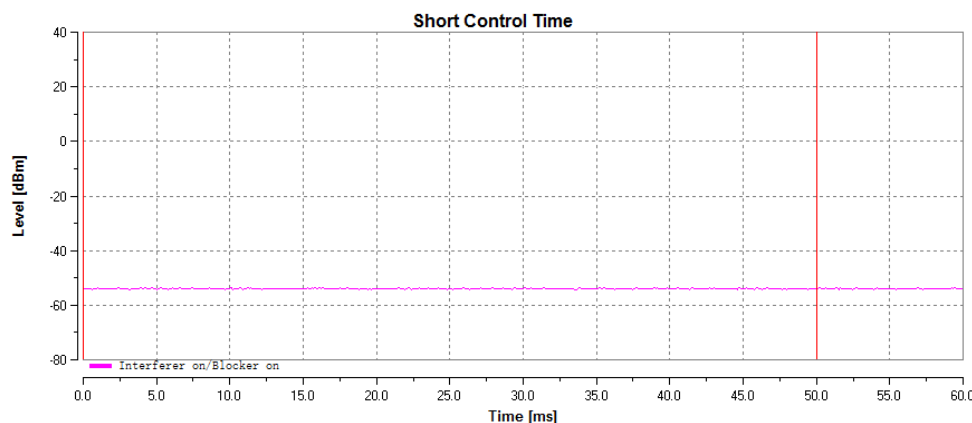
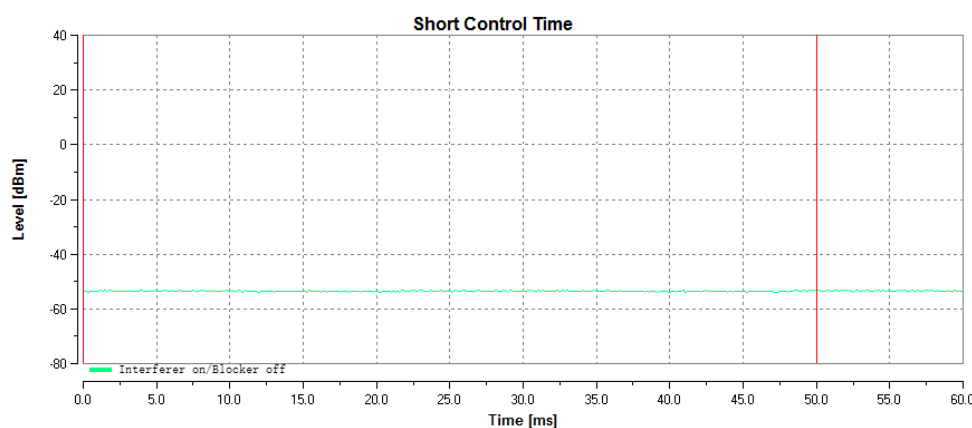
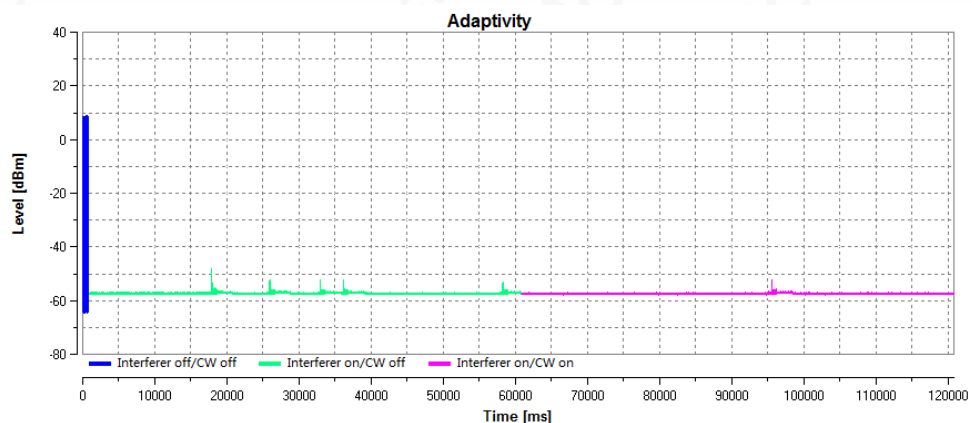


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Adding the interference signal(Green line) and the unwanted signal(Red line)



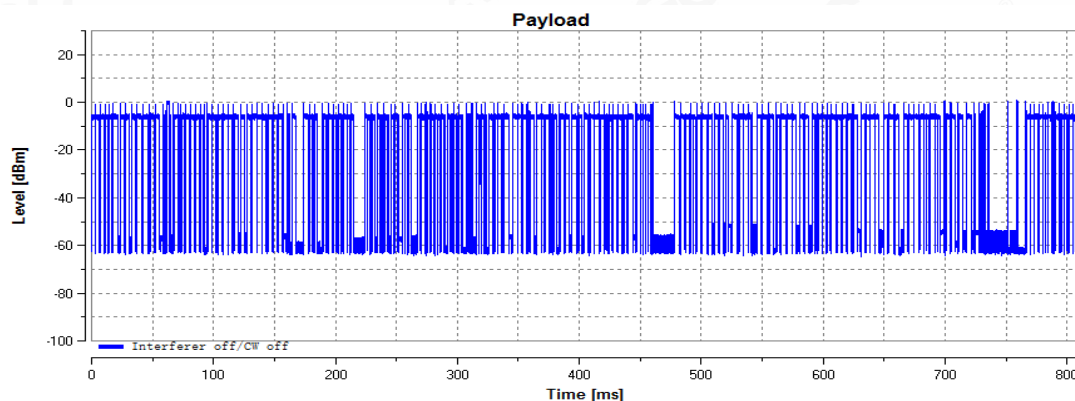
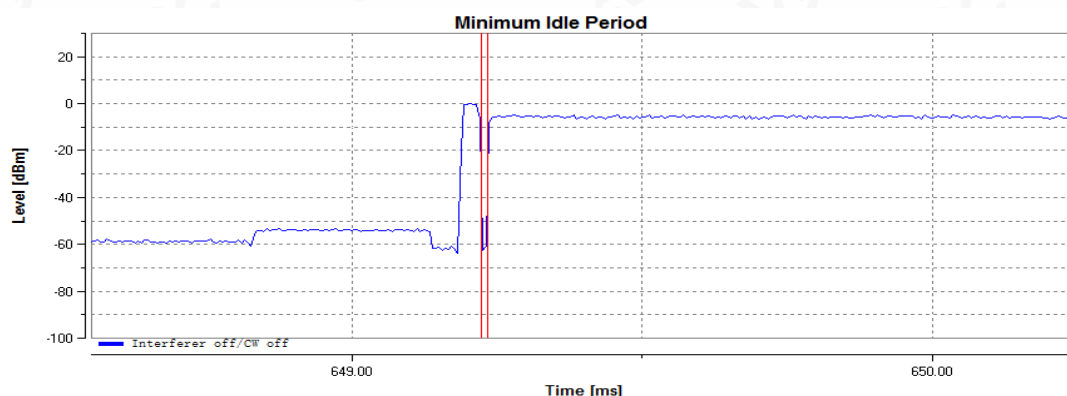
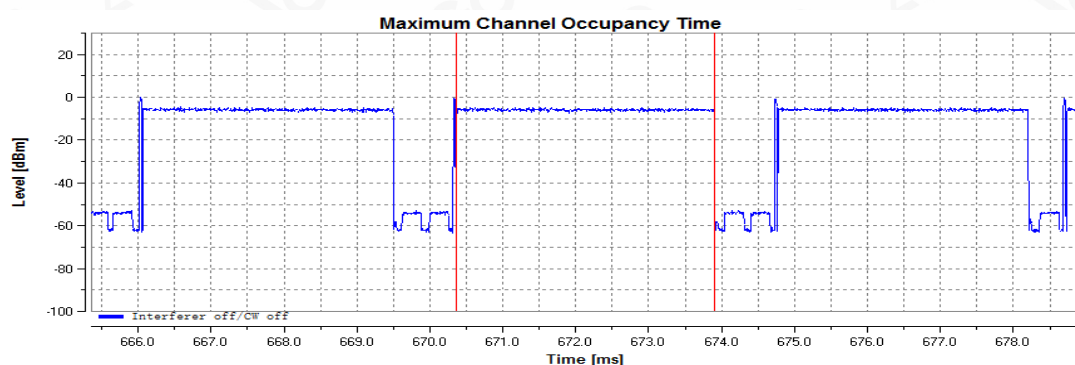
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IEEE802.11n40 High Channel	
Threshold Level (dBm/MHz)	-63.96
Unwanted CW signal power (dBm)	-35
Max COT Time (ms)	3.499
Minimum Idle Time (ms)	0.034
Duty Cycle (%) after adding the interference signal 50ms	0.00
Duty Cycle (%) after adding the blocking signal with the interfering signal 50ms	0.00

Max COT Time and Minimum Idle time

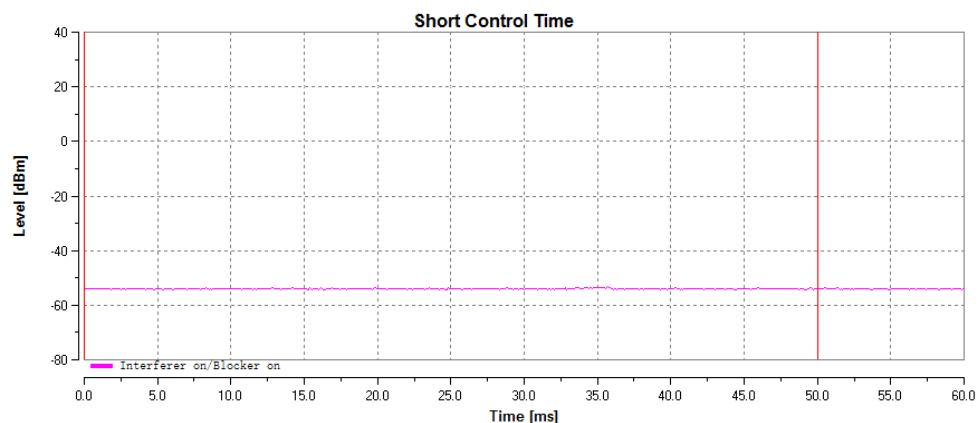
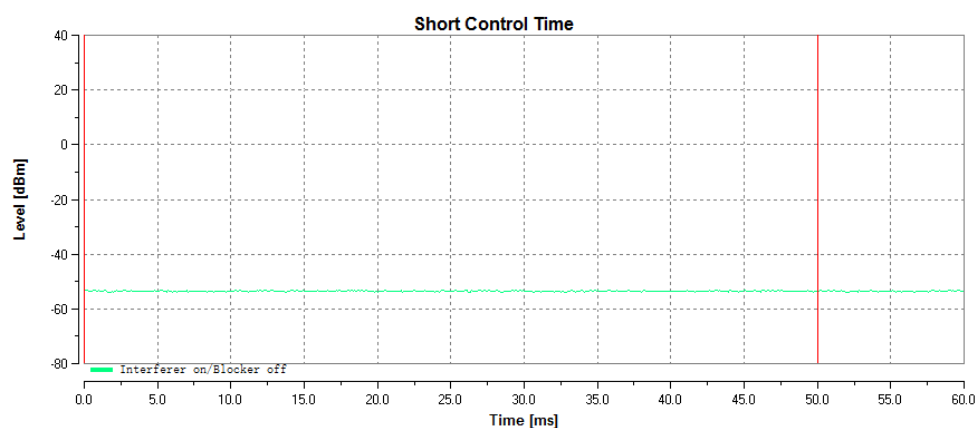
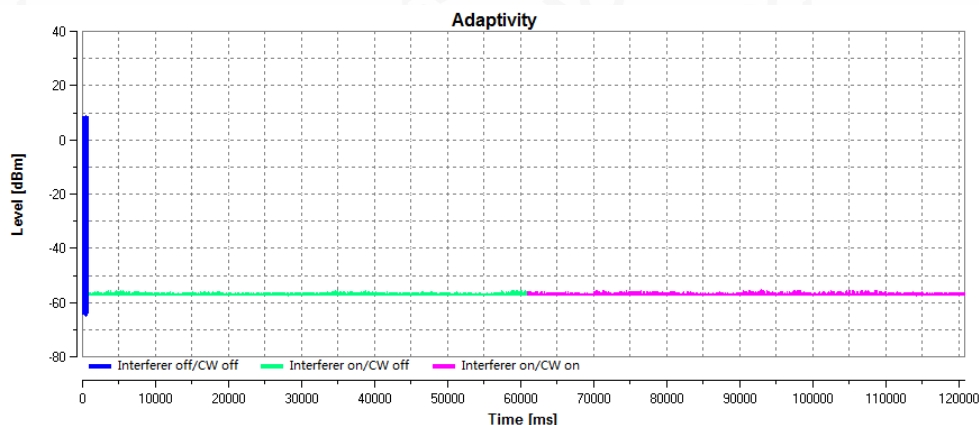


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Adding the interference signal(Green line) and the unwanted signal(Red line)



Note: When removal of the interference and blocking signal the UUT will be transmitting again on this channel.

Conclusion: PASS

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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

1) 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: $3 \times \text{RBW}$

Span: $2 \times \text{OBW}$

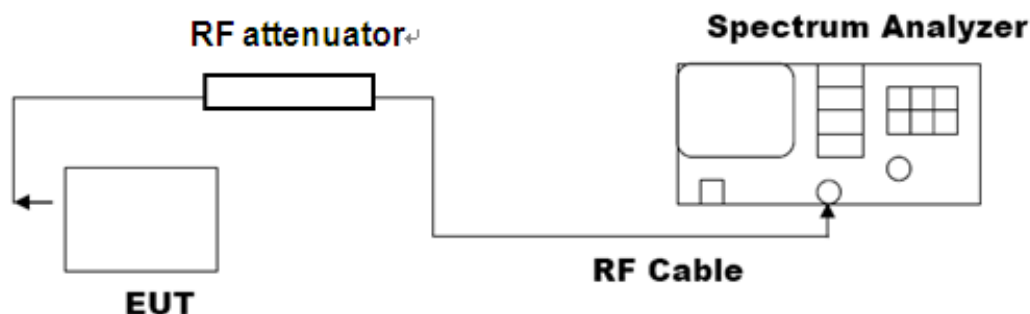
Detector: RMS

Trace mode: Max Hold

2) Wait until the trace is completed, find the peak value of the trace and place the analyser marker on this peak.

3) Use the 99 % bandwidth function of the spectrum analyser to measure the Occupied Channel Bandwidth of the UUT. This value shall be recorded.

5.4.3 TEST CONFIGURATION



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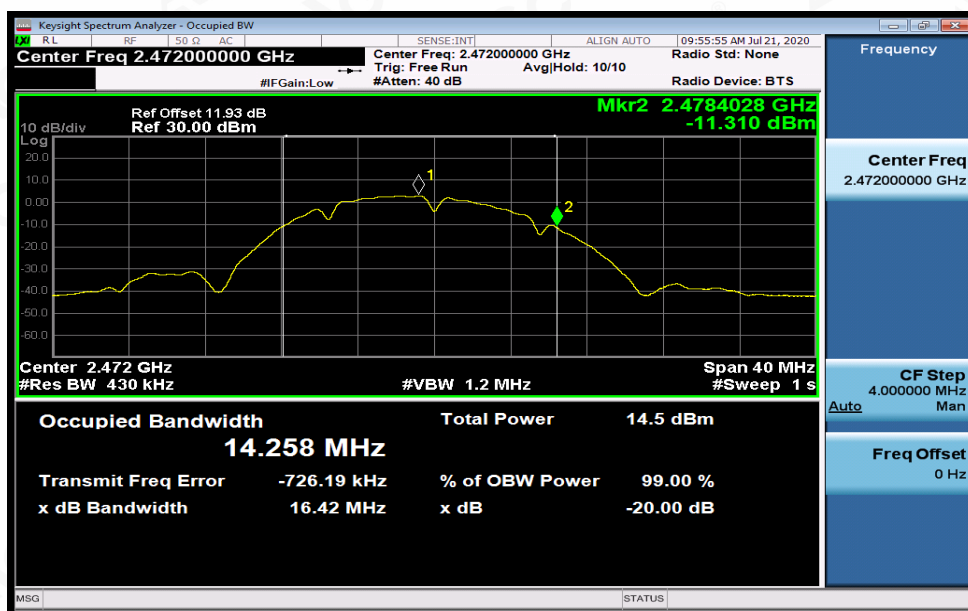
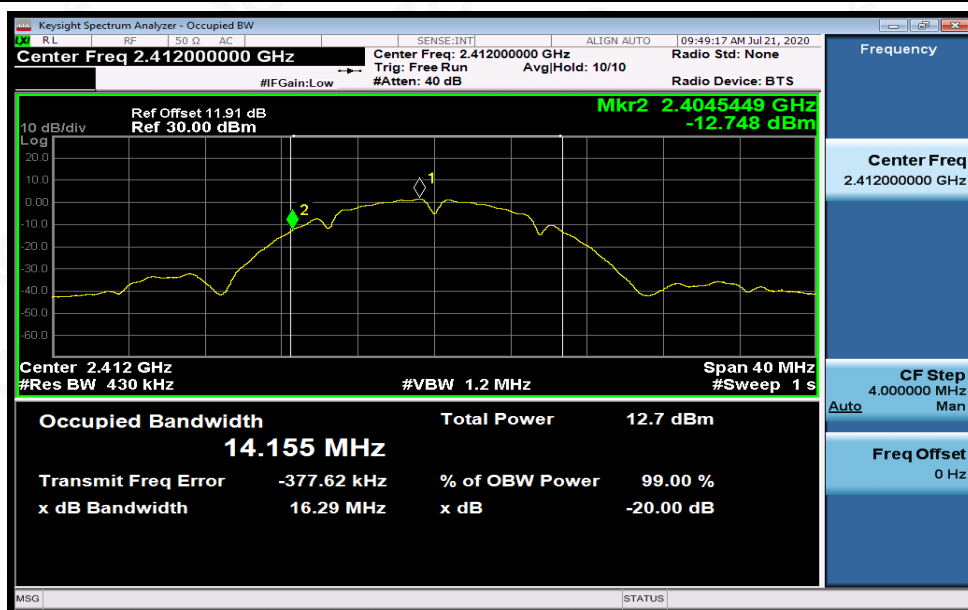
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5.4.4 TEST RESULTS

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	14.155	PASS
	High Channel	14.258	PASS



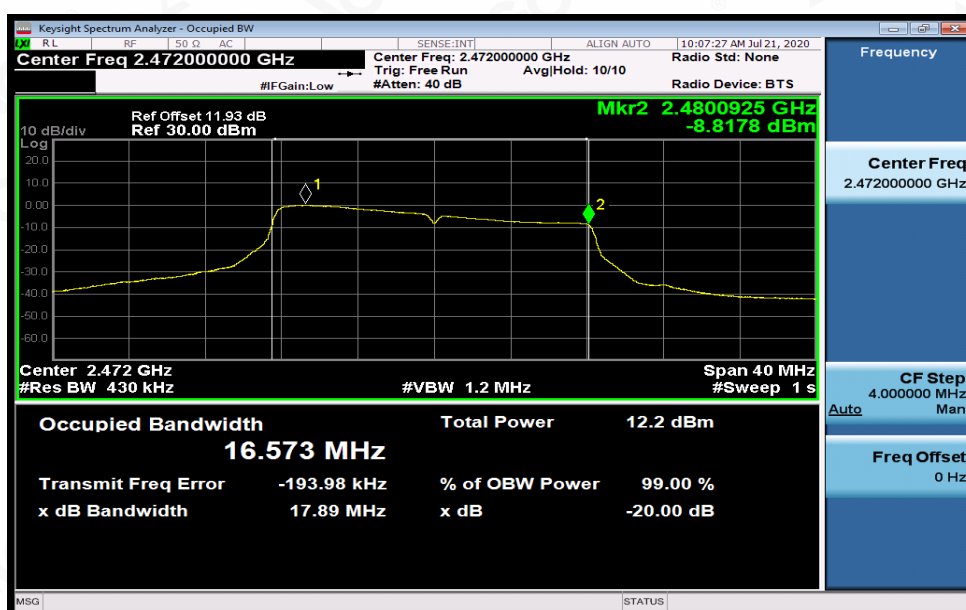
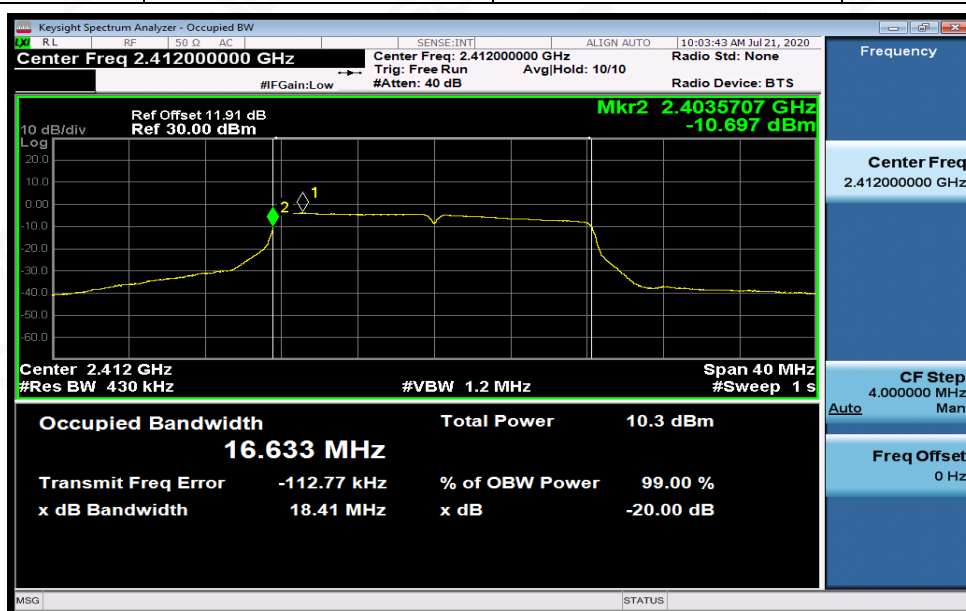
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TEST ITEM	99% BANDWIDTH
TEST MODE	802.11g with data rate 54

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
2400MHz-2483.5MHz	Low Channel	16.633	PASS
	High Channel	16.573	PASS



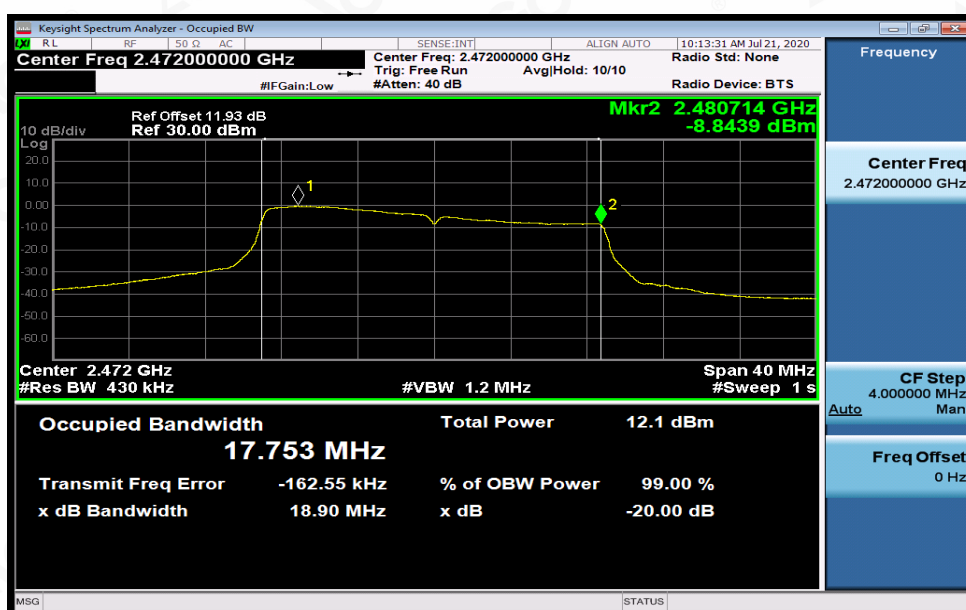
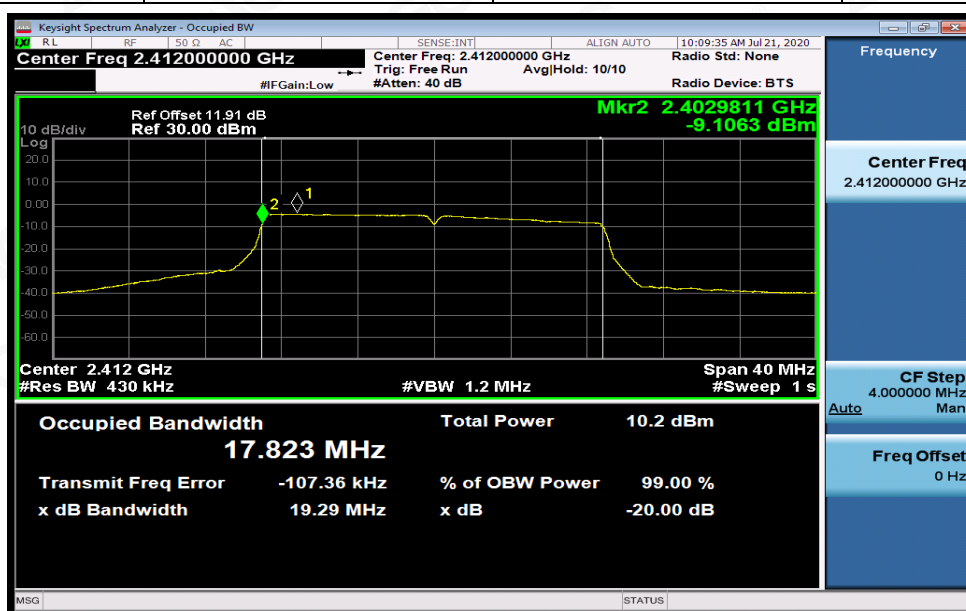
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TEST ITEM	99% BANDWIDTH
TEST MODE	802.11n(20) with data rate 65

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
2400MHz-2483.5MHz	Low Channel	17.823	PASS
	High Channel	17.753	PASS



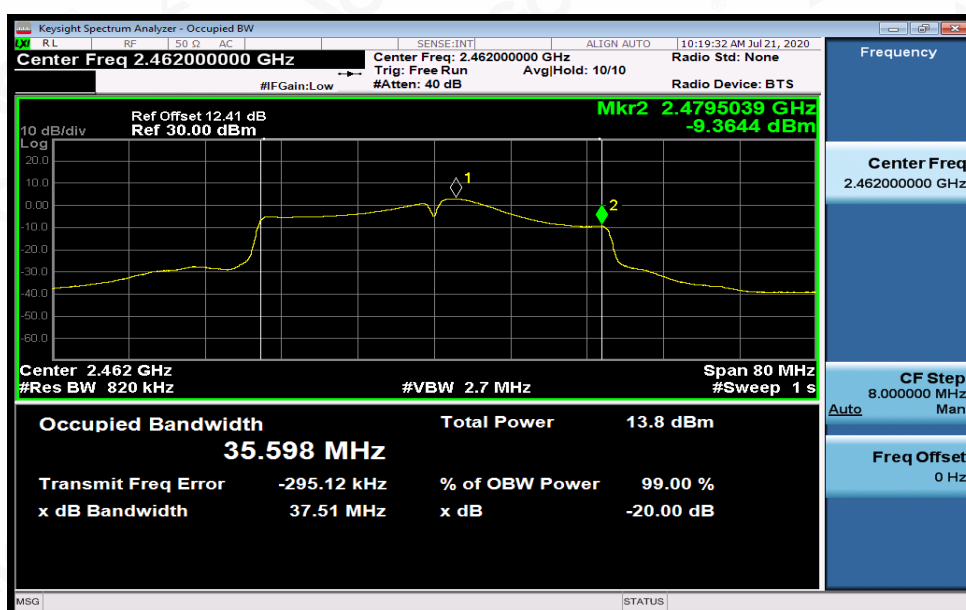
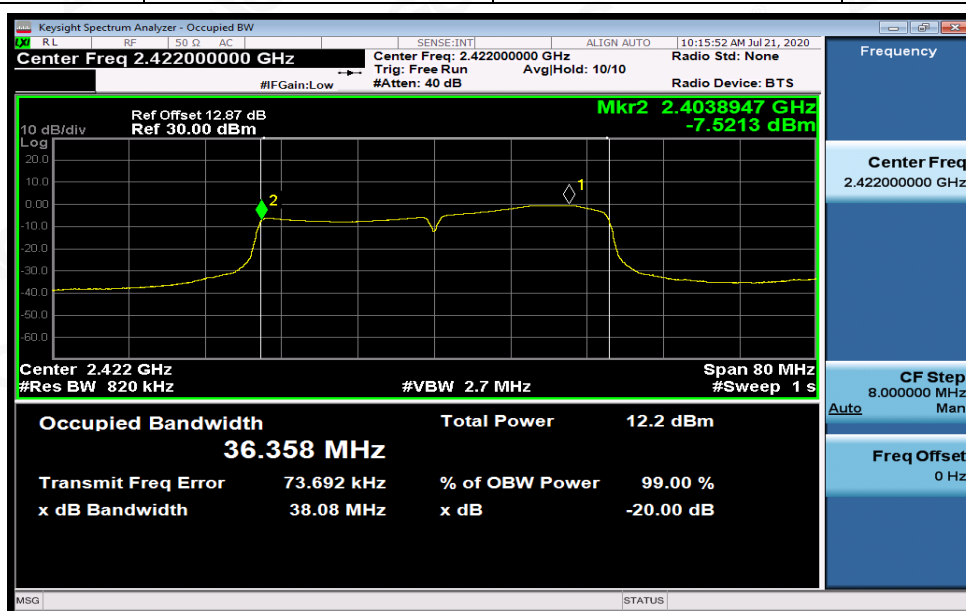
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TEST ITEM	99% BANDWIDTH
TEST MODE	802.11n(40) with data rate 135

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
2400MHz-2483.5MHz	Low Channel	36.358	PASS
	High Channel	35.598	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: 2484MHz

Resolution BW: 1MHz; Video BW: 3MHz; Span: 0Hz; Detector: RMS

Trace mode: Max Hold; Sweep Points: 5000

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.

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

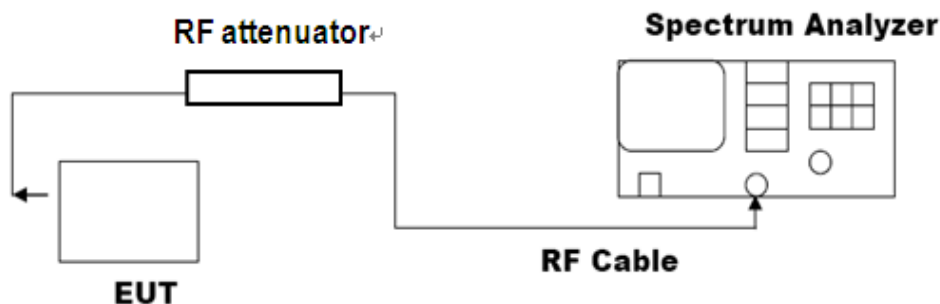
Change the centre frequency of the analyser to 2 399.5 MHz and perform the measurement for the first 1 MHz segment within range 2 400 MHz - BW to 2 400 MHz Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment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

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.

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

5.5.3 TEST CONFIGURATION



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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

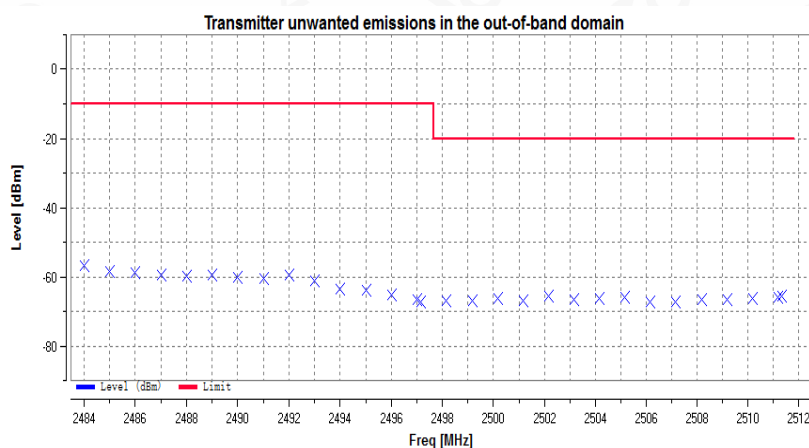
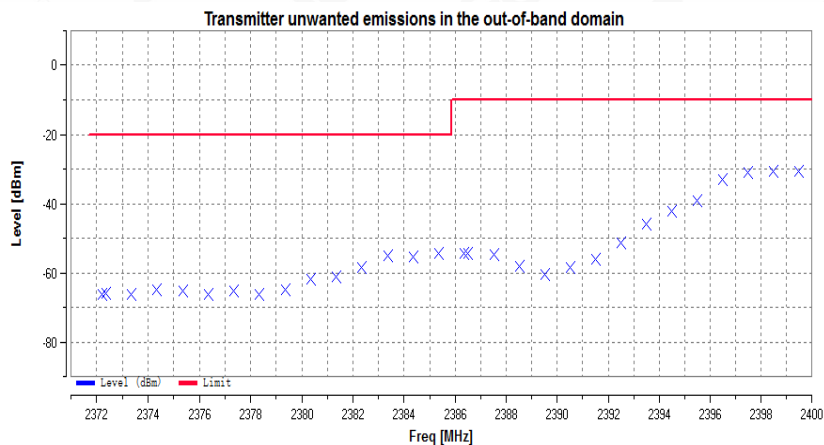
TEST CONDITIONS	IEEE 802.11n(40) OUT-OF-BAND DOMAIN		
	Temp (25)°C	Temp (-10)°C	Temp (40)°C
Low channel	PASS	PASS	PASS
High channel	PASS	PASS	PASS

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CH Low-2412 (802.11b)

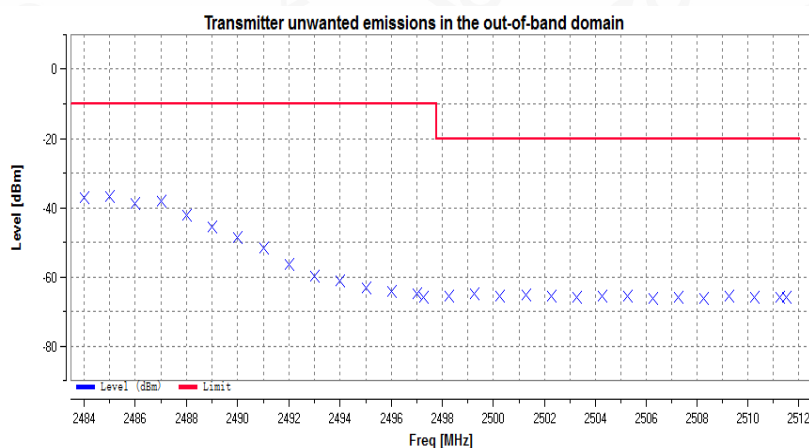
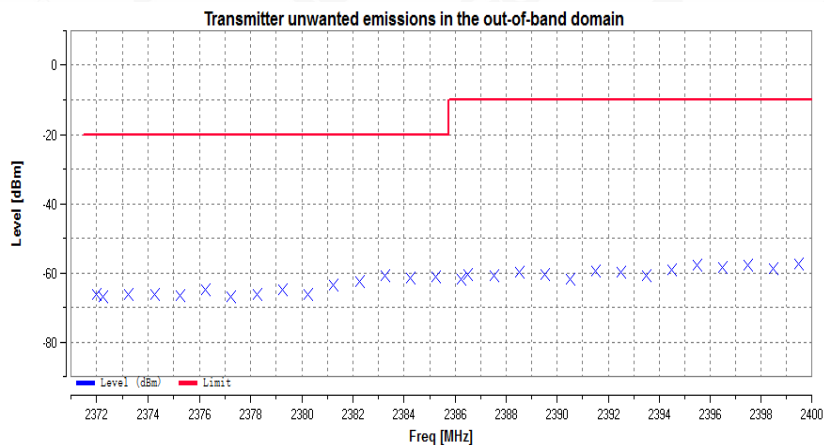


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CH High-2472 (802.11b)



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

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5.6. TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

5.6.1 LIMIT

Spurious emissions are emissions outside the frequency range(s) of the equipment as defined in Clause 4.3.2.9.

The spurious emissions of the transmitter shall not exceed the values in tables in the indicated bands:

Frequency Range	Maximum Power e.r.p(<=1GHz)/e.i.r.p(>1GHz)	Bandwidth
30MHz to 47MHz	-36dBm	100kHz
47MHz to 74MHz	-54dBm	100kHz
74MHz to 87.5MHz	-36dBm	100kHz
87.5MHz to 118MHz	-54dBm	100kHz
118MHz to 174MHz	-36dBm	100kHz
174 MHz to 230MHz	-54dBm	100kHz
230 MHz to 470MHz	-36dBm	100kHz
470 MHz to 694MHz	-54dBm	100kHz
694 MHz to 1GHZ	-36dBm	100kHz
1 GHZ to 12.75GHZ	-30dBm	1MHz

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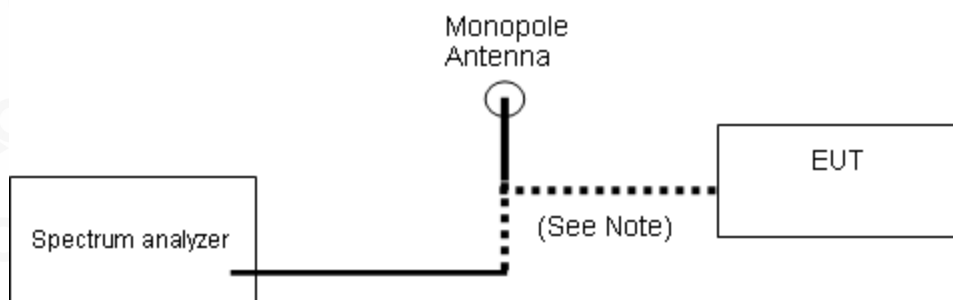
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5.6.2 TEST PROCEDURE

- 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: $\geq 19\,400$
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: $\geq 23\,500$
- 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 V2.2.2 annex C.2 and C.4 are used.

5.6.3 TEST CONFIGURATION



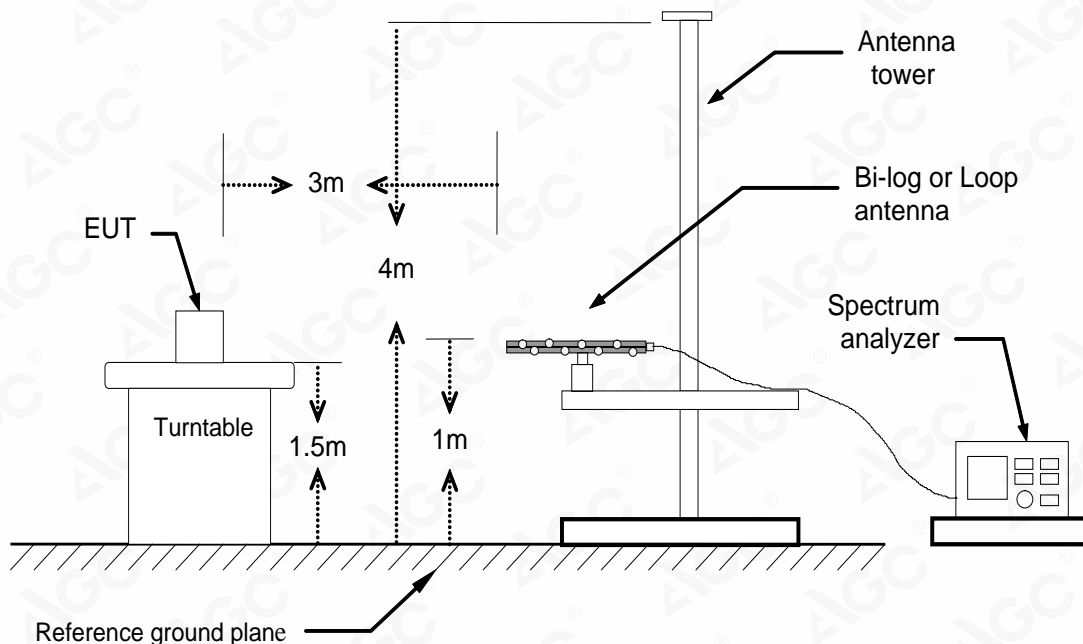
Conducted Method

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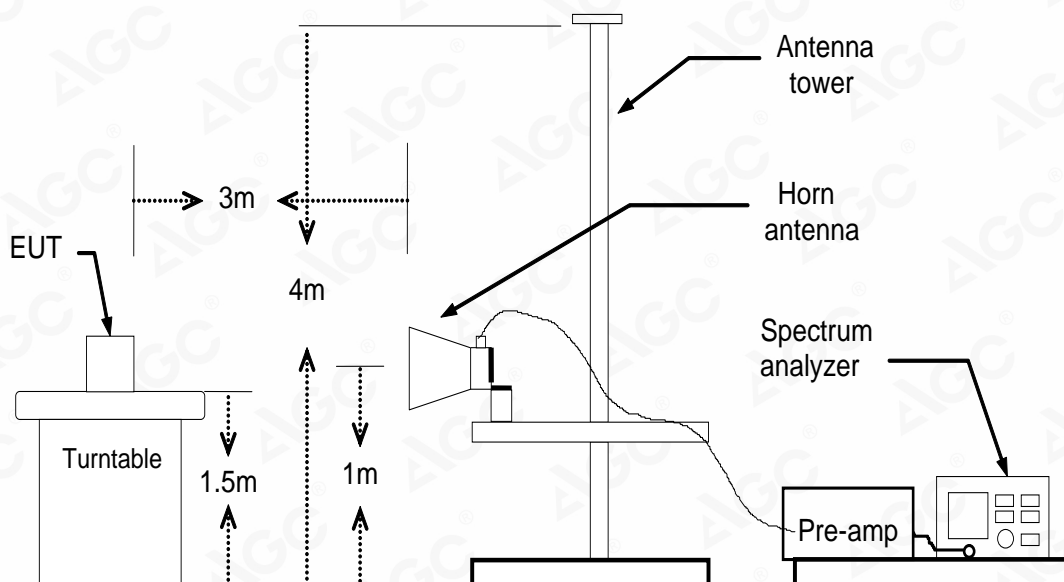
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Below 1GHz



Above 1GHz



Radiated Method

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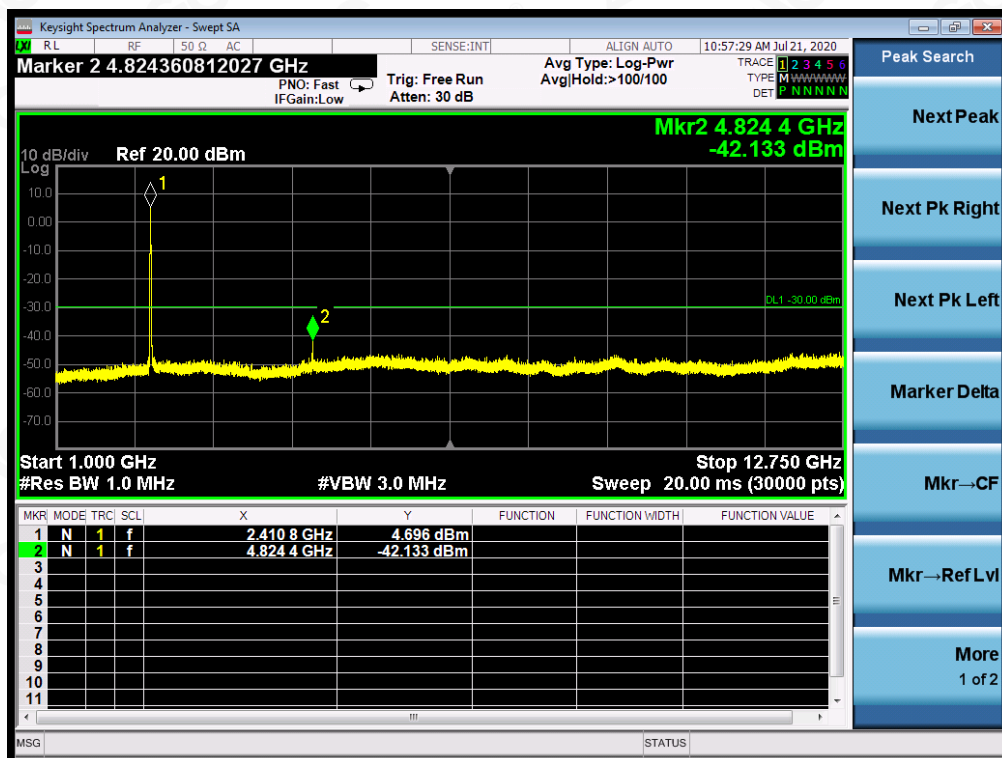
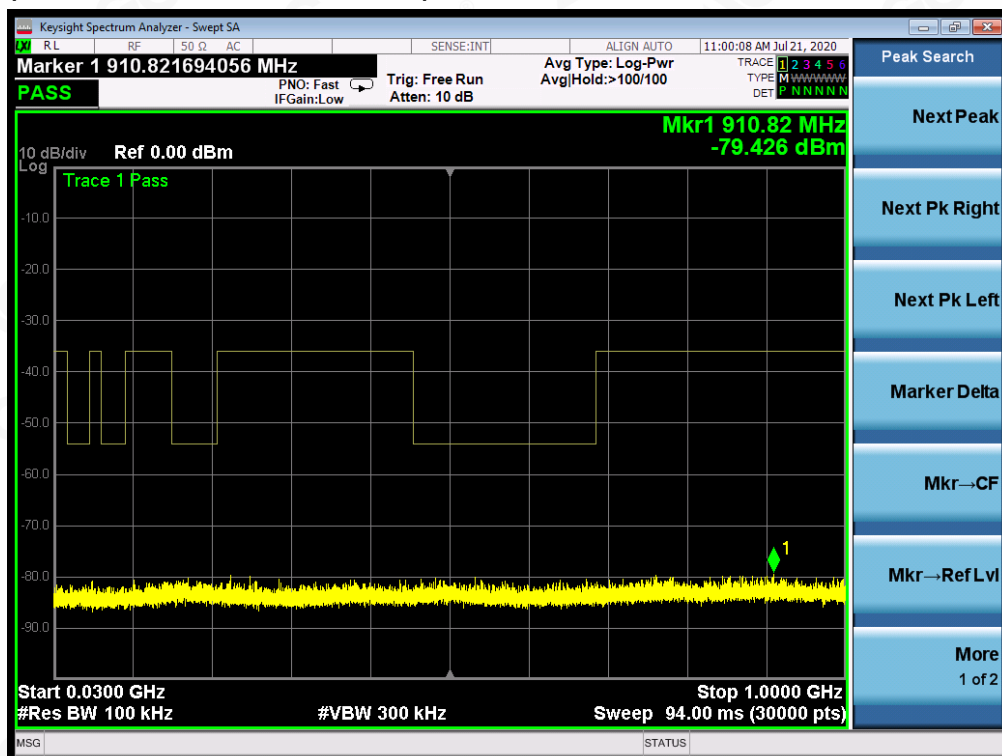
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5.6.4 TEST RESULT

(Worst Case: Low channel, 11B)



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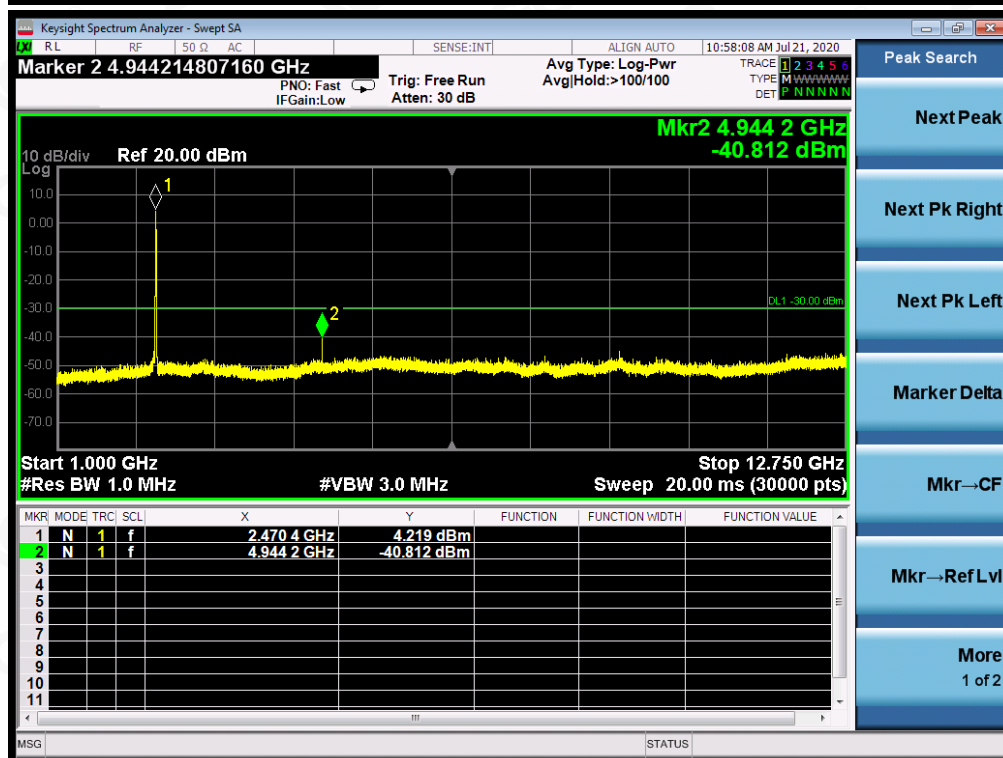
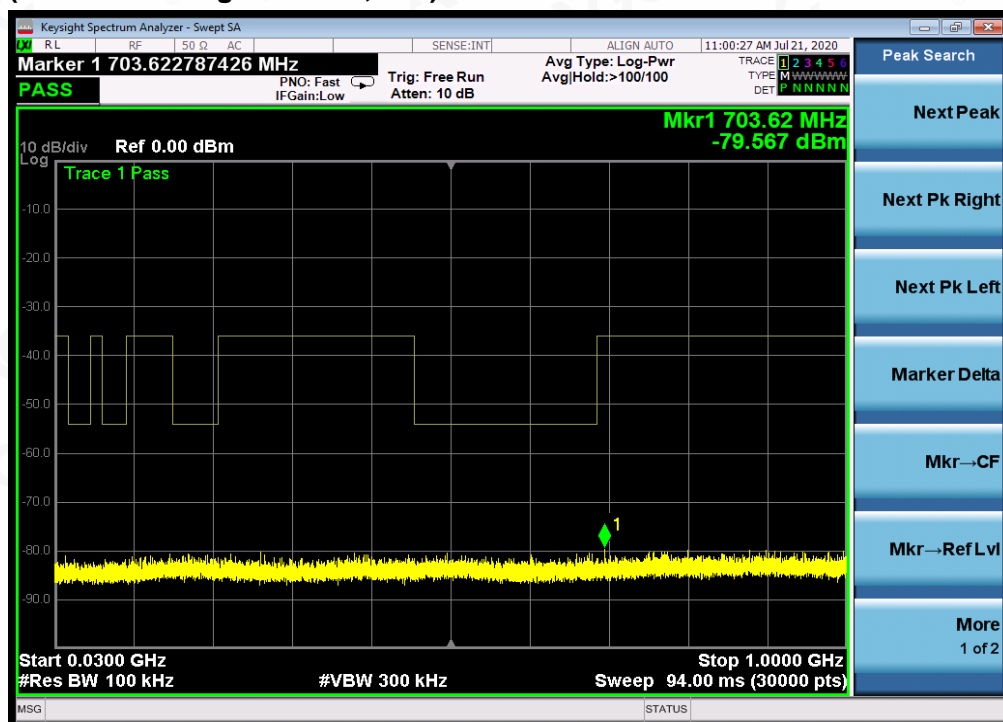
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(Worst Case: High channel, 11B)



- 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

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

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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)
75.81	28.36	V	-63.54	0.03	-1.10	-64.67	-36.00	28.67
236.76	29.24	V	-70.32	0.11	6.60	-63.84	-36.00	27.84
378.60	27.88	V	-71.69	0.28	6.52	-65.44	-36.00	29.44
387.76	29.40	V	-68.95	0.29	6.43	-62.81	-36.00	26.81
426.32	27.55	V	-73.00	0.33	6.98	-66.36	-36.00	30.36
827.96	30.02	V	-68.03	0.66	6.45	-62.24	-36.00	26.24
Other(30-1000)	--	V	--	--	--	--	-36.00/-54.00	--
141.49	31.77	H	-61.20	0.05	0.06	-61.19	-36.00	25.19
341.48	32.39	H	-66.46	0.23	5.68	-61.01	-36.00	25.01
394.19	30.46	H	-68.81	0.30	6.48	-62.63	-36.00	26.63
457.85	28.70	H	-71.59	0.37	6.61	-65.35	-36.00	29.35
612.76	31.12	H	-67.32	0.50	6.58	-61.24	-54.00	7.24
764.80	30.87	H	-69.20	0.61	6.72	-63.10	-36.00	27.10
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/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4804	58.67	V	-41.86	2.64	9.30	-35.19	-30.00	5.19
7206	56.54	V	-45.40	3.14	11.28	-37.25	-30.00	7.25
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-30.00	--
4804	59.42	H	-40.03	2.64	9.30	-33.36	-30.00	3.36
7206	56.13	H	-44.85	3.14	11.28	-36.71	-30.00	6.71
--	--	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.

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(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)
29.24	V	-63.52	0.04	-0.90	-64.46	-36.00	28.46	29.24
30.19	V	-69.56	0.11	6.60	-63.08	-36.00	27.08	30.19
27.51	V	-71.19	0.28	6.49	-64.99	-36.00	28.99	27.51
30.58	V	-68.41	0.29	6.42	-62.28	-36.00	26.28	30.58
27.15	V	-73.26	0.33	6.98	-66.61	-36.00	30.61	27.15
30.92	V	-68.28	0.66	6.40	-62.54	-36.00	26.54	30.92
Other(30-1000)	--	V	--	--	--	--	-36.00/-54.00	--
31.80	H	-61.98	0.05	0.00	-62.03	-36.00	26.03	31.80
31.39	H	-67.80	0.23	5.70	-62.34	-36.00	26.34	31.39
29.06	H	-71.00	0.30	6.52	-64.78	-36.00	28.78	29.06
28.81	H	-69.61	0.37	6.58	-63.39	-36.00	27.39	28.81
31.71	H	-68.35	0.51	6.74	-62.11	-54.00	8.11	31.71
31.36	H	-68.17	0.61	6.75	-62.03	-36.00	26.03	31.36
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/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4944	58.74	V	-42.12	2.75	9.62	-35.25	-30.00	5.25
7416	53.25	V	-49.33	3.09	11.62	-40.80	-30.00	10.80
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-30.00	--
4944	57.68	H	-42.19	2.75	9.62	-35.32	-30.00	5.32
7416	52.16	H	-49.84	3.09	11.62	-41.31	-30.00	11.31
--	--	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

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

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5.7. RECEIVER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

5.7.1 LIMIT

ETSI EN300328 SUBCLAUSE 4.3.2.10

Receiver spurious emissions are emissions at any frequency when the equipment is in receive mode.

The spurious emissions of the receiver shall not exceed the values given in table.

Frequency Range	Maximum Power e.r.p(<=1GHz)/e.i.r.p(>1GHz)	Measurement Bandwidth
30MHz to 1000MHz	-57dBm	100kHz
1GHz to 12.75GHz	-47dBm	1MHz

5.7.2 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: $\geq 19\,400$
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 given in 5.7.1.
- 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: $\geq 23\,200$
- 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 given in 5.7.1.
- 7) For radiated method, the applicable measurement procedures as described in the EN 300 328 V2.2.2 annex C.2 and C.4 are used.

5.7.3 TEST CONFIGURATION

Refer to 5.6.3

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

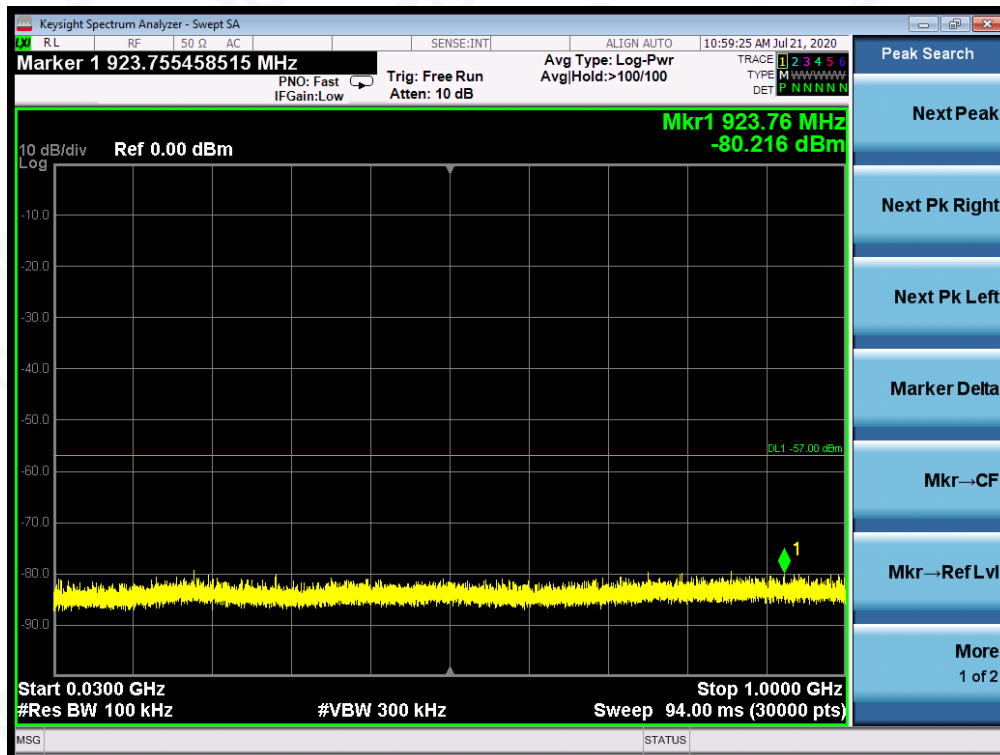
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5.7.4 TEST RESULT

TEST RESULT

(Worst Case: Low channel, 11B)



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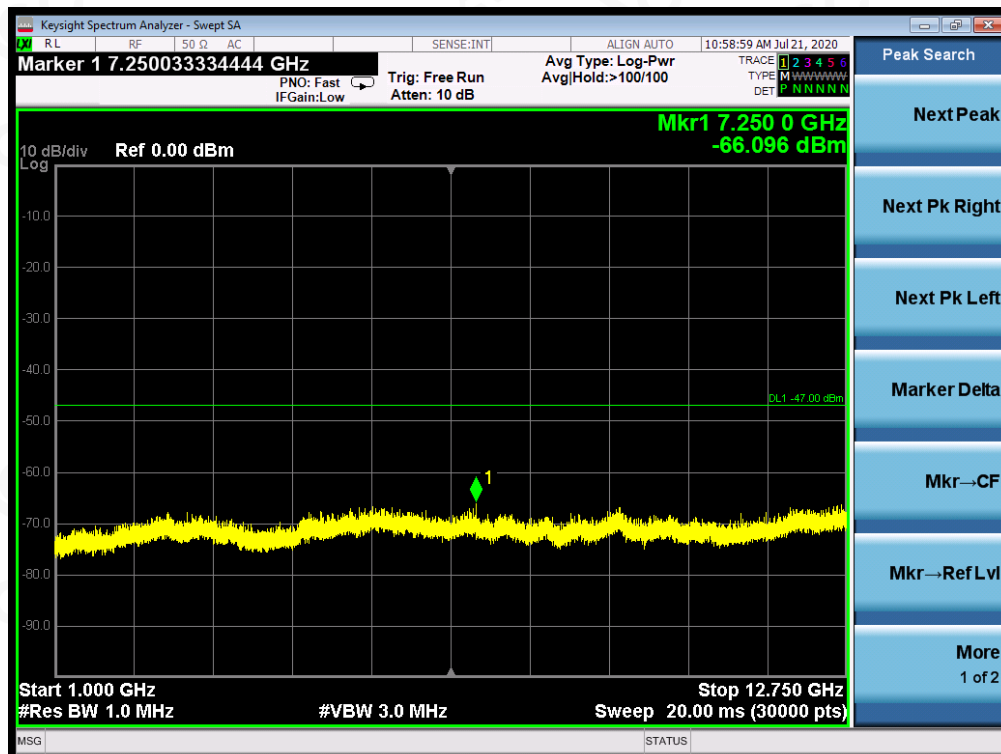
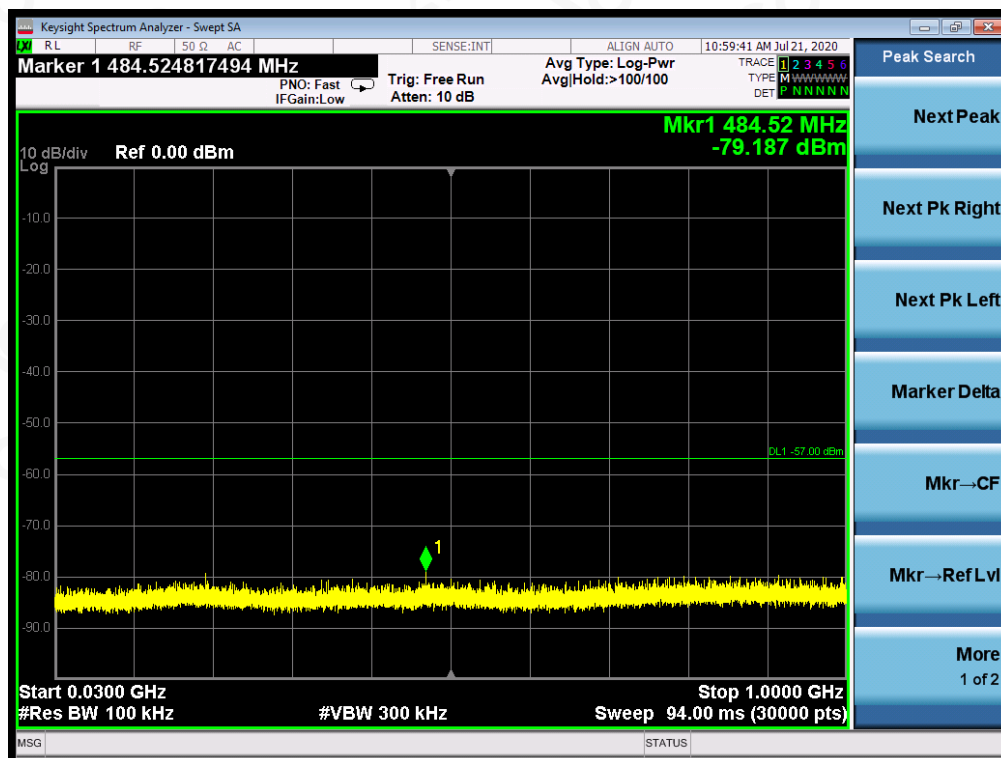
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(Worst Case: High channel, 11B)



Note: 1. All the modes had been test but only the worst data record in the report.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

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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)
77.53	28.94	V	-63.16	0.04	-0.70	-63.90	-36.00	27.90
235.94	29.83	V	-70.28	0.11	6.60	-63.79	-36.00	27.79
379.48	28.81	V	-70.63	0.28	6.51	-64.40	-36.00	28.40
385.59	29.00	V	-70.85	0.29	6.45	-64.69	-36.00	28.69
424.29	27.72	V	-71.34	0.33	7.02	-64.65	-36.00	28.65
829.27	31.24	V	-67.63	0.66	6.35	-61.94	-36.00	25.94
Other(30-1000)	--	V	--	--	--	--	-57.00	--
140.44	31.32	H	-60.90	0.05	0.00	-60.95	-36.00	24.95
338.23	32.28	H	-67.29	0.23	5.78	-61.74	-36.00	25.74
398.14	28.87	H	-69.82	0.30	6.56	-63.56	-36.00	27.56
456.93	27.39	H	-71.54	0.37	6.58	-65.33	-36.00	29.33
613.25	30.92	H	-69.17	0.50	6.62	-63.05	-54.00	9.05
766.00	31.15	H	-68.45	0.62	6.78	-62.29	-36.00	26.29
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/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
1834.95	33.25	V	-66.00	1.26	7.15	-60.10	-47.00	13.10
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-47.00	--
1788.21	30.71	H	-68.44	1.23	6.93	-62.74	-47.00	15.74
--	--	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.

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(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)
89.32	29.14	V	-64.53	0.04	1.26	-63.31	-57.00	6.31
240.20	30.52	V	-68.55	0.12	6.60	-62.07	-57.00	5.07
315.84	28.43	V	-71.66	0.20	6.25	-65.61	-57.00	8.61
386.12	29.85	V	-68.99	0.29	6.44	-62.83	-57.00	5.83
478.62	27.71	V	-70.99	0.39	6.88	-64.50	-57.00	7.50
832.10	31.45	V	-67.27	0.66	6.44	-61.49	-57.00	4.49
Other(30-1000)	--	V	--	--	--	--	-57.00	--
138.50	30.09	H	-62.81	0.05	0.00	-62.86	-57.00	5.86
331.86	29.20	H	-69.02	0.22	6.06	-63.18	-57.00	6.18
394.65	29.21	H	-70.54	0.30	6.48	-64.35	-57.00	7.35
570.25	30.04	H	-68.67	0.47	6.80	-62.34	-57.00	5.34
616.87	29.29	H	-71.13	0.51	6.74	-64.90	-57.00	7.90
815.04	29.70	H	-69.34	0.65	6.95	-63.04	-57.00	6.04
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/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
1838.07	32.70	V	-66.04	1.26	7.15	-60.14	-47.00	13.14
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-47.00	--
1783.14	32.14	H	-67.67	1.23	6.93	-61.97	-47.00	14.97
--	--	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) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × log ₁₀ (OCBW)) or -68 dBm whichever is less (see note 2)	2 380	-34	CW
	2 504		
(-139 dBm + 10 × log ₁₀ (OCBW)) or -74 dBm whichever is less (see note 3)	2 300		
	2 330		
	2 360		
	2 524		
	2 584		
	2 674		

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{min} + 26$ dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to $P_{min} + 20$ dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

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☐ Receiver Blocking parameters for Receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × log ₁₀ (OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

☐ Receiver Blocking parameters for Receiver Category 3 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × log ₁₀ (OCBW) + 20 dB) or (-74 dBm + 20 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 30 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

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5.8.2 TEST PROCEDURE

For non-FHSS equipment, having more than one operating channel, the operating channels on which the testing has to be performed shall be selected as follows:

- For testing blocking frequencies less than 2 400 MHz, the equipment shall operate on the lowest operating channel.
- For testing blocking frequencies greater than 2 500 MHz, the equipment shall operate on the highest operating channel.

The simplified conducted measure procedures are as follows:

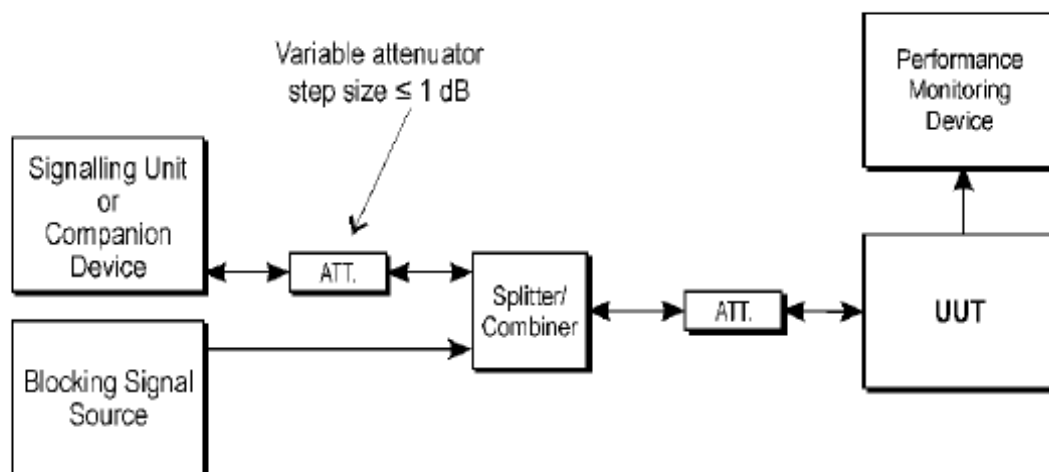
- 1) For non-FHSS equipment, the UUT shall be set to the lowest operating channel on which the blocking test has to be performed.
- 2) The blocking signal generator is set to the first frequency as defined in the appropriate table corresponding to the receiver category and type of equipment.
- 3) With the blocking signal generator switched off, a communication link is established between the UUT and the associated companion device using the test setup. The level of the wanted signal shall be set to the value provided in the table corresponding to the receiver category and type of equipment. This level may be measured directly at the output of the companion device and a correction is made for the coupling loss into the UUT. The actual level for the wanted signal shall be recorded in the test report.
- 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.

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5.8.3 TEST CONFIGURATION



Test Set-up for receiver blocking

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5.8.4 TEST RESULT

(802.11 b mode 1Mbps)

Test channel	Blocking Signal Frequency(MHz)	Blocking Signal Power(dBm)	Wanted signal mean power from companion device(dBm)	Performance PER	Limit PER	Result
Low	2 300	-34.00	-74.00	1.42%	10%	Pass
	2 330		-74.00	1.33%		
	2 360		-74.00	1.25%		
	2 380		-68.00	1.11%		
High	2 504		-68.00	2.00%		
	2 524		-74.00	1.89%		
	2 584		-74.00	1.74%		
	2 674		-74.00	2.01%		

Note:

1. If the equipment can be configured to operate with different Nominal Channel Bandwidths (e.g. 20 MHz and 40 MHz) and different data rates, then the combination of the smallest channel bandwidth and the lowest data rate for this channel bandwidth which still allows the equipment to operate as intended shall be used.
2. The levels of the blocking signal and wanted signal have to be corrected for the (in-band) antenna assembly gain.

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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED SPURIOUS EMISSION



RADIATED SPURIOUS ABOVE 1G EMISSION

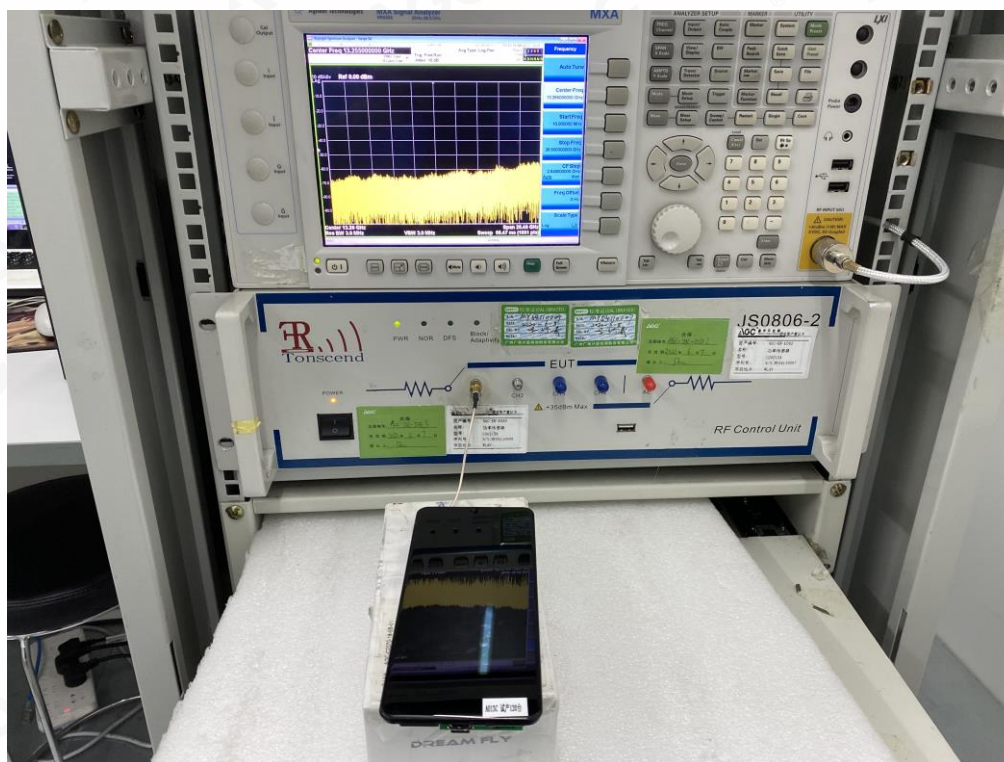


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CONDUCTED TEST SETUP



----END OF REPORT----

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1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the “Company”) solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the “Clients”).
2. Any report issued by Company as a result of this application for testing services (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.
5. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
6. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
7. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
8. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
9. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
10. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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