中国认可
国际互认
检测
TESTING
CNAS L5662

ETSI EN 301 893 V2.1.1 (2017-05)

TEST REPORT

For

SHENZHEN TENDA TECHNOLOGY CO.,LTD.

6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

Tested Model: RX2 Pro
Multiple Model: TX2 Pro

Report Type:	**Product Type:**
Original Report	Dual-Band Gigabit Wi-Fi 6 Router

Report Number:	DG2220617-27055E-22B
Report Date:	2022-08-19
Reviewed By:	Rocky Xiao RF Engineer
Approved By:	Ivan Cao Assistant Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Name:		Dual-Band Gigabit Wi-Fi 6 Router
EUT Model:		RX2 Pro
Multiple Models:		TX2 Pro
Model Difference:		Refer to Dos
Rated Input Voltage:		12Vdc from adapter
Adapter 1# Information	**Model:**	BN073-A12012E
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	12Vdc 1A
Adapter 2# Information	**Model:**	BN073-A12012B
	Input:	100-240Vac 50/60Hz 0.4A
	Output:	12Vdc 1A
Serial Number:		DG2220617-27055E-RF-S1
EUT Received Date:		2022.06.21
EUT Received Status:		Good

Technical Specification

Operation Frequency Range (MHz):		802.11 a/n20/ac20/ax20: 5180-5240 802.11 n40/ac40/ax40: 5190-5230 802.11 ac80/ax80: 5210
RF Output Power (EIRP) (dBm):		802.11 a: 21.29dBm; 802.11 n20: 21.1dBm; 802.11 ac20: 21.27dBm; 802.11 ax20: 21.35dBm; 802.11 n40: 21.37dBm; 802.11 ac40: 21.02dBm; 802.11 ax40: 20.99dBm; 802.11 ac80: 20.7dBm; 802.11 ax80: 21.05dBm
Number of Chains	**Transmit:**	2
	Receive:	2
Antenna Gain (dBi)▲:		5
Beamforming Gain(dB):		5
Modulation Type:		OFDM, OFDMA

Objective

This report is prepared on behalf of ***SHENZHEN TENDA TECHNOLOGY CO.,LTD.*** in accordance with ETSI EN 301 893 V2.1.1 (2017-05) 5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

The objective is to determine the compliance of EUT with: ETSI EN 301 893 V2.1.1 (2017-05).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 893 V2.1.1 (2017-05) 5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

Measurement Uncertainty

Parameter	F_{lab}	Maximum allow uncertainty
RF Frequency	$\pm 1\times10^{-6}$	$\pm 1\times10^{-5}$
RF power conducted	±0.61dB	±1,5dB
RF power radiated	±3.62dB	±6dB
Spurious emissions, conducted	±2.47dB	±3dB
Spurious emissions, radiated	±3.62dB	±6dB
Temperature	±1℃	±2℃
Humidity	±5%	±5%
Time	1%	±10%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk "★ ".

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in engineering mode, which was provided by manufacture. The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80.

For 5150~5250 MHz band(W52), 7 channels were provided. 802.11a /n ht20 mode was tested with 5180MHz; 802.11n ht40 mode was tested with 5190MHz; 802.11ac vht80 mode was tested with 5210 MHz:

Frequency (MHz)	Frequency (MHz)
5180	5220
5190	5230
5200	5240
5210	/

Test condition as below:
NT: Normal Temperature 25℃, LT: Low Temperature 0℃, HT: High Temperature +40℃

Note: The Ant 3(Chain 2) and Ant 5(Chain 1) are alternative for TX and RX, work with Ant 4(Chain 0) for MIMO mode. They are from the same RF chain, controled by a switch chipset. Chain 1 was selected for fully test.

EUT Exercise Software

Software “cmd.exe▲” and ”MP_tool_8832b(FRE) ▲” was used and the power level was configured as below. The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power and PSD across all data rates, bandwidths, and modulations▲.

Band	Mode	Frequency (MHz)	Data rate (Mbps)	Power level	
				Ant 4(Chain 0)	Ant 5(Chain 1)
5150-5250MHz	802.11 a	5180	6	17	17
		5240	6	17	17
	802.11 n20	5180	HTMCS8	14	14
		5240	HTMCS8	14	14
	802.11 n40	5190	HTMCS8	14	14
		5230	HTMCS8	14	14
	802.11 ac20	5180	VHT1MCS8	14	14
		5240	VHT1MCS8	14	14
	802.11 ac40	5190	VHT1MCS8	14	15
		5230	VHT1MCS8	14	15
	802.11 ac80	5210	VHT1MCS8	15	15
	802.11 ax20	5180	HE1 MCS8	14	14
		5240	HE1 MCS8	14	14
	802.11 ax40	5190	HE1 MCS8	14	14
		5230	HE1 MCS8	14	14
	802.11 ax80	5210	HE1 MCS8	15	15

Beamforming

Band	Mode	Frequency (MHz)	Data rate (Mbps)	Power level	
				Ant 4(Chain 0)	Ant 5(Chain 1)
5150-5250MHz	802.11 n20	5180	HTMCS8	11	11
		5240	HTMCS8	11	11
	802.11 n40	5190	HTMCS8	11	11
		5230	HTMCS8	11	11
	802.11 ac20	5180	VHT1MCS8	11	11
		5240	VHT1MCS8	11	11
	802.11 ac40	5190	VHT1MCS8	12	12
		5230	VHT1MCS8	12	12
	802.11 ac80	5210	VHT1MCS8	12	12
	802.11 ax20	5180	HE1 MCS8	11	10
		5240	HE1 MCS8	11	10
	802.11 ax40	5190	HE1 MCS8	12	12
		5230	HE1 MCS8	12	12
	802.11 ax80	5210	HE1 MCS8	13	13

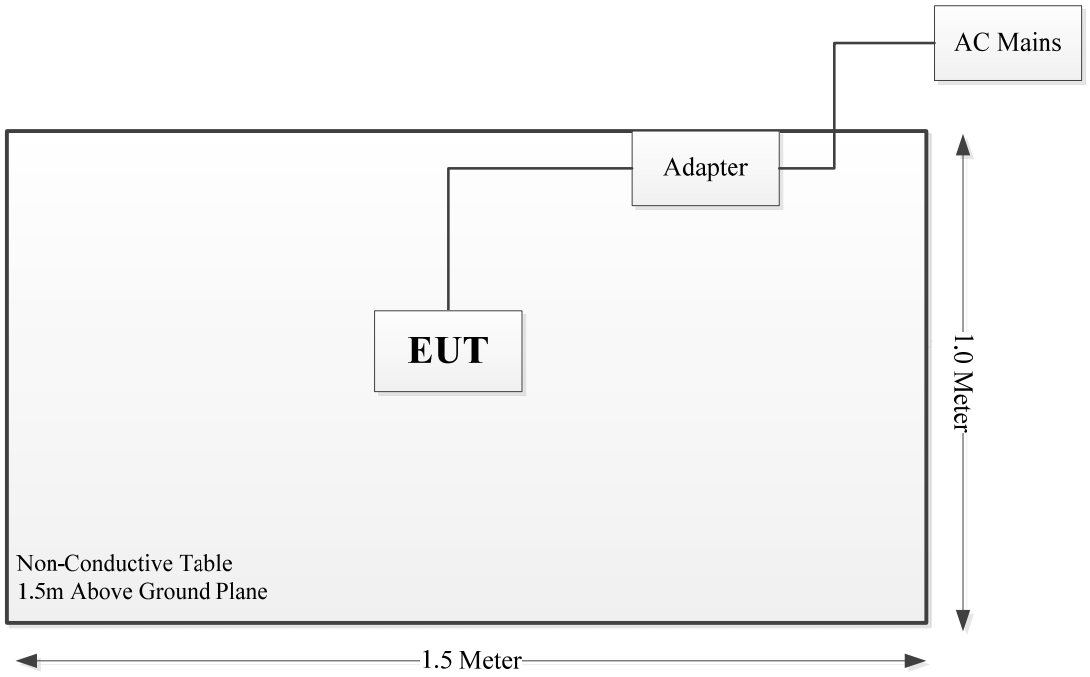
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated emissions below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-1	2020-11-10	2023-11-10
R&S	EMI Test Receiver	ESR3	102453	2021-10-26	2022-10-25
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2021-07-19	2022-07-18
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2021-07-19	2022-07-18
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2021-07-19	2022-07-18
Sonoma	Amplifier	310N	372193	2021-07-18	2022-07-17
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2021-09-04	2022-09-03
Agilent	Signal Generator	E8247C	MY43321350	2022-04-01	2023-03-31
Radiated emissions above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2021-10-12	2024-10-11
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2020-12-05	2023-12-04
Agilent	Spectrum Analyzer	E4440A	SG43360054	2021-07-22	2022-07-21
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2021-09-04	2022-09-03
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2022-06-27	2023-06-26
AH	Preamplifier	PAM-0118	469	2021-10-13	2022-10-12
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2022-06-27	2023-06-26
ETS-Lindgren	Horn Antenna	3115	000 527 35	2021-10-12	2024-10-11
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2020-12-05	2023-12-04
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2021-09-04	2022-09-03
Agilent	Signal Generator	E8247C	MY43321350	2022-04-01	2023-03-31
Sinoscite	Bandstop Filters	BSF5150-5850MN-0899-003	0899003	2022-05-06	2023-05-05
Mini Circuits	High Pass Filter	VHF-6010+	31118	2022-06-16	2023-06-15
RF conducted					
R&S	Spectrum Analyzer	FSV40	101589	2021-07-22	2022-07-21
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	OE01201048	2022-05-06	2023-05-05
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	2021-09-04	2022-09-03
Agilent	USB Wideband Power Sensor	U2022XA	MY54170006	2022-04-01	2023-03-31
R&S	Wideband Radio Communication Tester	CMW500	149216	2022-04-01	2023-03-31
BACL	TEMP&HUMI Test Chamber	BTH-150	30022	2022-02-24	2023-02-23
Keysight	MXA Signal Analyzer	N9020	MY48490137	2021-10-26	2022-10-25
Agilent	MXG Analog Signal Generator	N5181A	MY48180151	2021-10-26	2022-10-25
Agilent	MXG Vector Signal Generator	N5182A	MY49060274	2021-10-26	2022-10-25
Tonscend	RF Control Unit	JS0806-2	19G8060171	2021-10-26	2022-10-25

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

Test Item:	Radiated emissions (below 1GHz)	Radiated emissions (above 1GHz)	RF conducted
Temperature:	24.4 ℃	27.2 ℃	25.9~26.8℃
Relative Humidity:	50.0 %	59.0 %	62~69%
ATM Pressure:	100.4 kPa	99.5 kPa	99.5~100.2kPa
Tester:	Leo Yuan	Bill Yang	Fan Fan
Test Date:	2022.06.27	2022.07.04	2022.07.01~2022.07.05

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	EN 301 893 Clause 4.2.1	Carrier frequencies	Compliant
2	EN 301 893 Clause 4.2.2	Nominal channel bandwidth and occupied channel bandwidth	Compliant
3	EN 301 893 Clause 4.2.3	RF output power	Compliant
		Transmit power control (TPC)	Not applicable*
		Power Density	Compliant
4	EN 301 893 Clause 4.2.4.1	Transmitter unwanted emissions outside the 5 GHz RLAN bands	Compliant
5	EN 301 893 Clause 4.2.4.2	Transmitter unwanted emissions within the 5 GHz RLAN bands	Compliant
6	EN 301 893 Clause 4.2.5	Receiver spurious emissions	Compliant
7	EN 301 893 Clause 4.2.6	Dynamic frequency selection (DFS)	Not applicable**
8	EN 301 893 Clause 4.2.7	Adaptivity	Compliant
9	EN 301 893 Clause 4.2.8	Receiver blocking	Compliant
10	EN 301 893 Clause 4.2.9	User access restrictions	Compliant*
11	EN 301 893 Clause 4.2.10	Geo-location capability	Not applicable*

Note:
Not applicable*: The device without this function.
Not applicable**: The device do not works on DFS frequency Band.
Compliant*: Please refer to the product information declared by the manufacturer.

1 – CARRIER FREQUENCIES

Definition

The Nominal Centre Frequency is the centre of the Operating Channel.

Limit

The actual centre frequency for any given channel declared by the manufacturer shall be maintained within the range fc ± 20 ppm.

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.2

Test Data

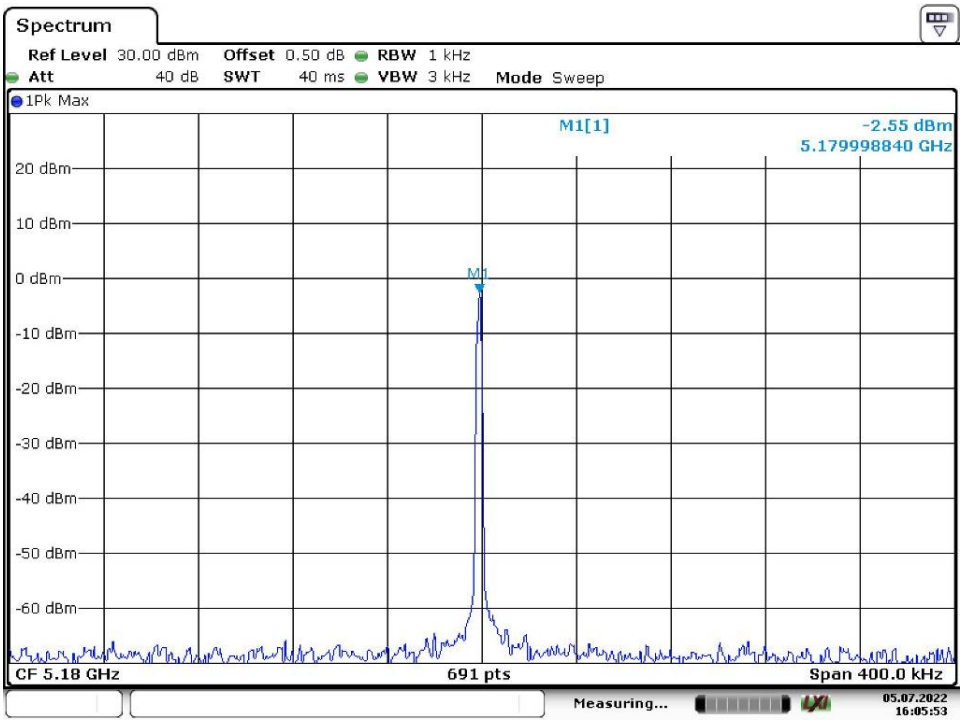
Test Result: *Compliant. Please refer to following table(s) and Plot(s).*

Band (MHz)	Fc (MHz)	Test Condition	F (MHz)	Result (ppm)	Limit (ppm)
5150-5250	5180	NT	5180.00	0	± 20
		LT	5180.02	3.86	
		HT	5179.98	-3.86	
	5240	NT	5240.00	0	± 20
		LT	5240.02	3.82	
		HT	5239.98	-3.82	

Note: Result = (F-Fc)/Fc*10^6

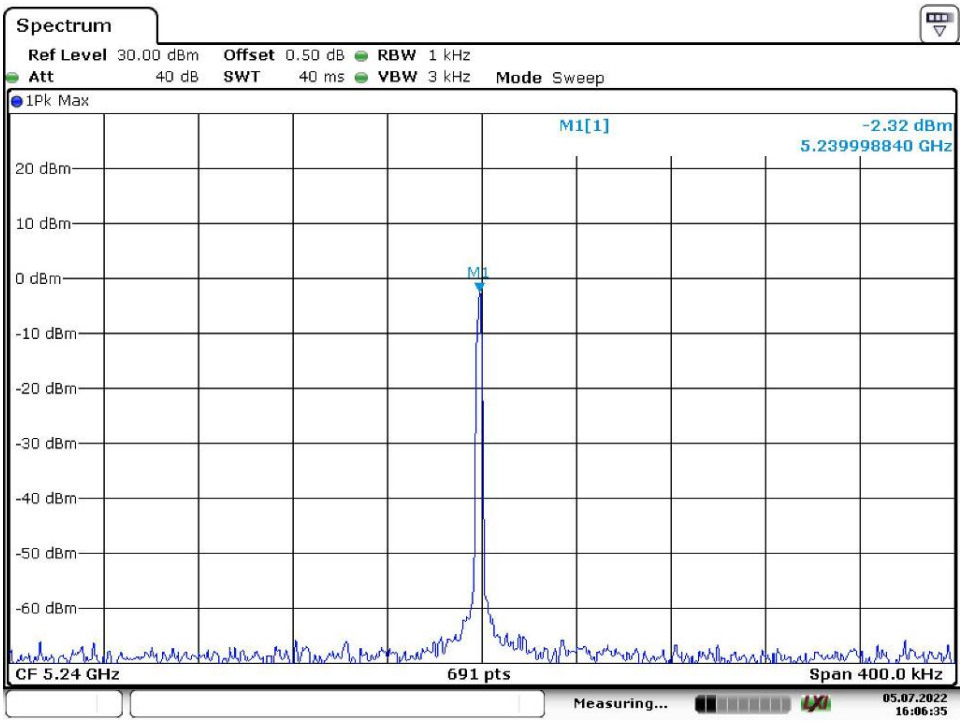
The Normal condition test plots, please refer to following Plots:

5180 MHz



Date: 5.JUL.2022 16:05:53

5240 MHz



Date: 5.JUL.2022 16:06:35

2 – NOMINAL CHANNEL BANDWIDTH AND OCCUPIED CHANNEL BANDWIDTH

Definition

The Nominal Channel Bandwidth is the widest band of frequencies, inclusive of guard bands, assigned to a single channel.

The Occupied Channel Bandwidth is the bandwidth containing 99 % of the power of the signal.

When equipment has simultaneous transmissions in adjacent channels, these transmissions may be considered as one signal with an actual Nominal Channel Bandwidth of 'n' times the individual Nominal Channel Bandwidth where 'n' is the number of adjacent channels. When equipment has simultaneous transmissions in non-adjacent channels, each power envelope shall be considered separately.

Limit

The Nominal Channel Bandwidth for a single Operating Channel shall be 20 MHz.

Alternatively, equipment may implement a lower Nominal Channel Bandwidth with a minimum of 5 MHz, providing they still comply with the Nominal Centre Frequencies defined in clause 4.2.1 (20 MHz raster).
The Occupied Channel Bandwidth shall be between 80 % and 100 % of the Nominal Channel Bandwidth. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet this requirement.

The Occupied Channel Bandwidth might change with time/payload.

During a Channel Occupancy Time (COT), equipment may operate temporarily with an Occupied Channel Bandwidth of less than 80 % of its Nominal Channel Bandwidth with a minimum of 2 MHz.

Test Procedure

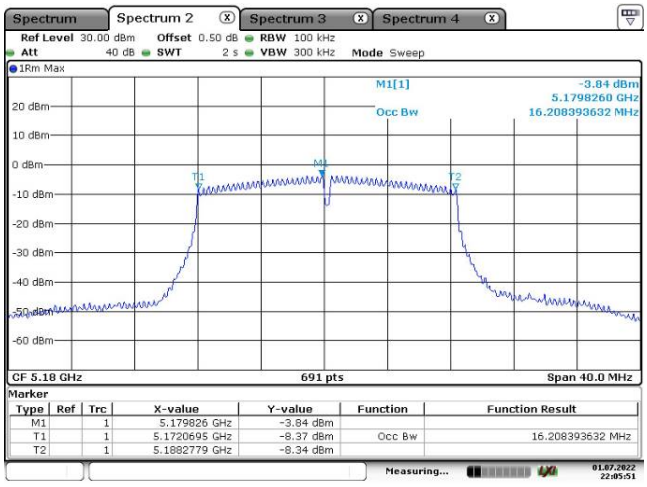
According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.3

Test Data

Test Result: *Compliant. Please refer to following table(s) and Plot(s).*

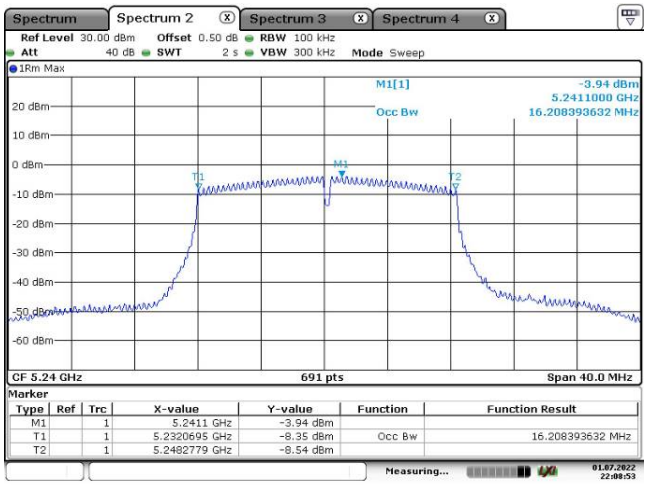
Band (MHz)	Mode	Fc (MHz)	Nominal Channel Bandwidth (MHz)	Result (MHz)	Limit (MHz)	Verdict
5150-5250	802.11 a	5180	20	16.21	16~20	Pass
		5240	20	16.21	16~20	Pass
	802.11 n20	5180	20	17.48	16~20	Pass
		5240	20	17.48	16~20	Pass
	802.11 ac20	5180	20	17.48	16~20	Pass
		5240	20	17.48	16~20	Pass
	802.11 ax20	5180	20	18.81	16~20	Pass
		5240	20	18.81	16~20	Pass
	802.11 n40	5190	40	35.77	32~40	Pass
		5230	40	35.77	32~40	Pass
	802.11 ac40	5190	40	36.12	32~40	Pass
		5230	40	36.12	32~40	Pass
	802.11 ax40	5190	40	37.63	32~40	Pass
		5230	40	37.63	32~40	Pass
	802.11 ac80	5210	80	75.48	64~80	Pass
	802.11 ax80	5210	80	76.64	64~80	Pass

802.11 a-Low



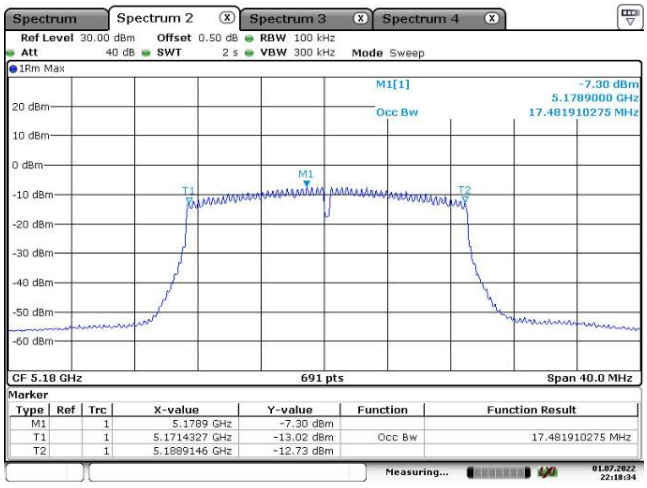
Date: 1.JUL.2022 22:05:52

802.11 a-High



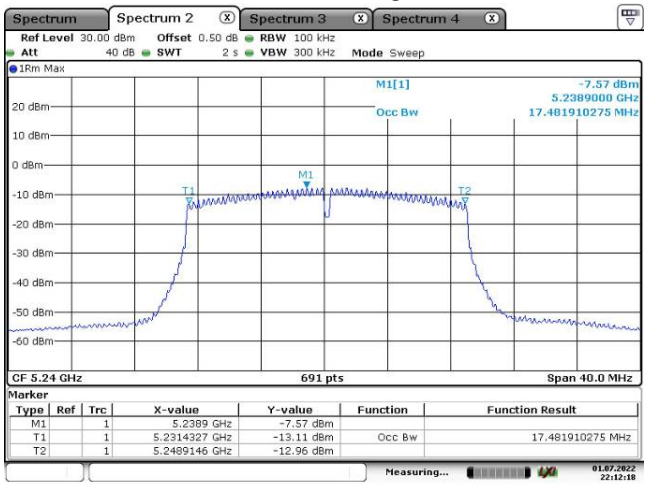
Date: 1.JUL.2022 22:08:53

802.11 n20- Low



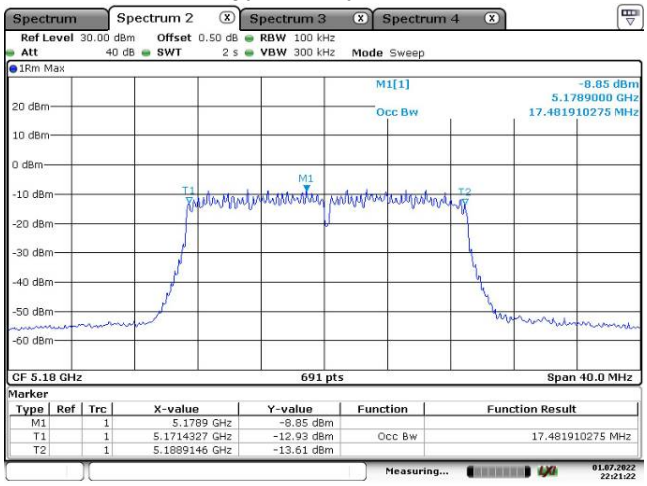
Date: 1.JUL.2022 22:18:34

802.11 n20- High



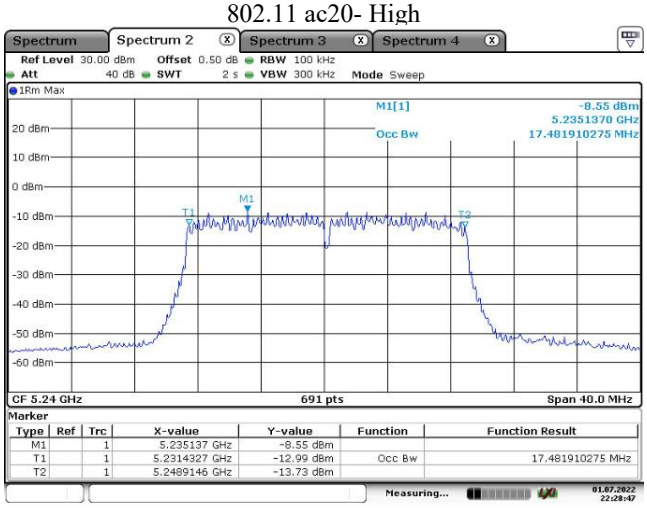
Date: 1.JUL.2022 22:12:19

802.11 ac20- Low



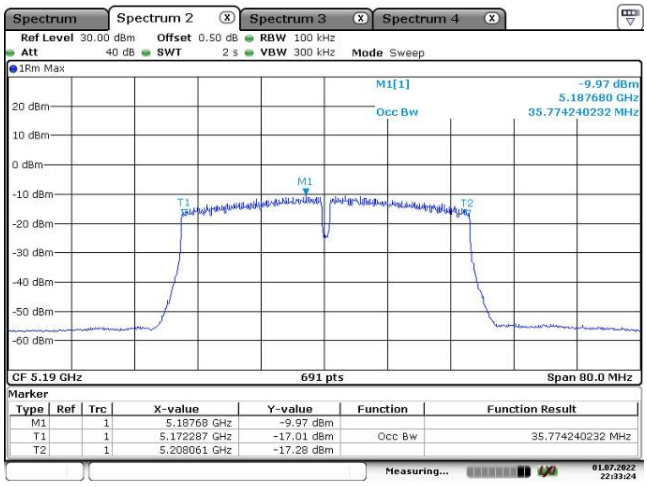
Date: 1.JUL.2022 22:21:23

802.11 ac20- High



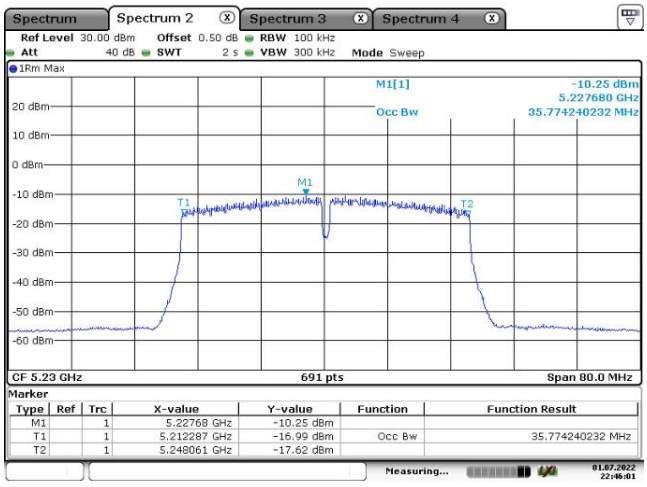
Date: 1.JUL.2022 22:28:48

802.11 n40- Low



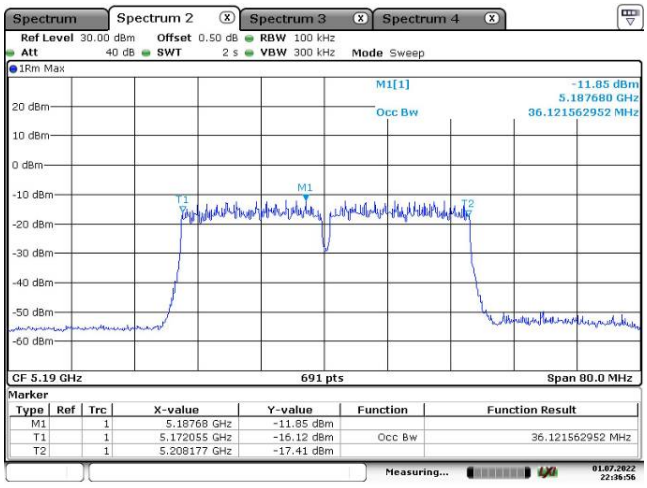
Date: 1.JUL.2022 22:33:25

802.11 n40- High



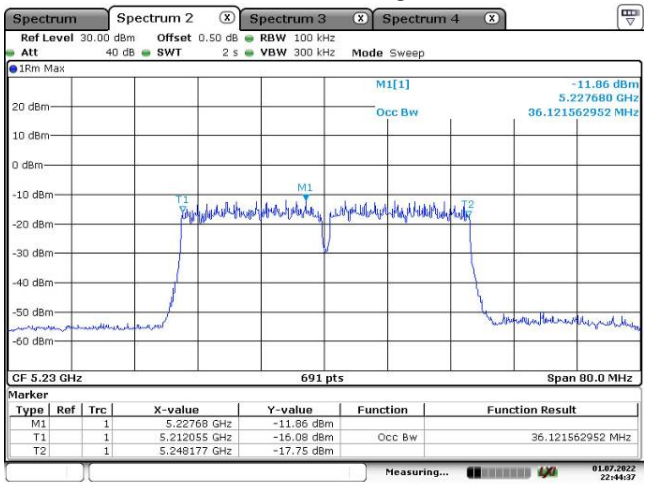
Date: 1.JUL.2022 22:46:01

802.11 ac40- Low



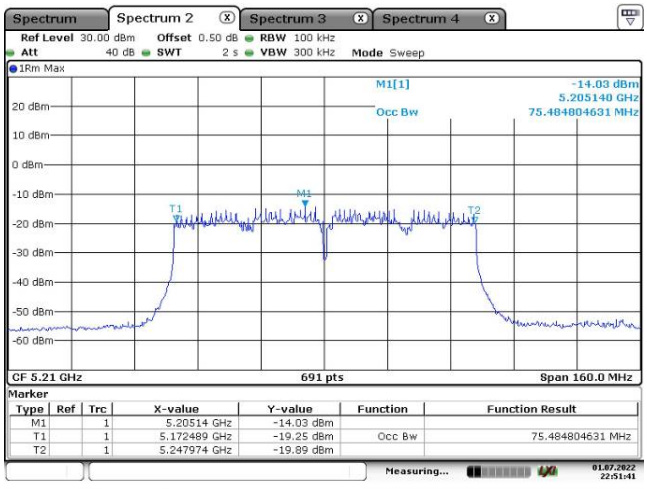
Date: 1.JUL.2022 22:36:56

802.11 ac40- High



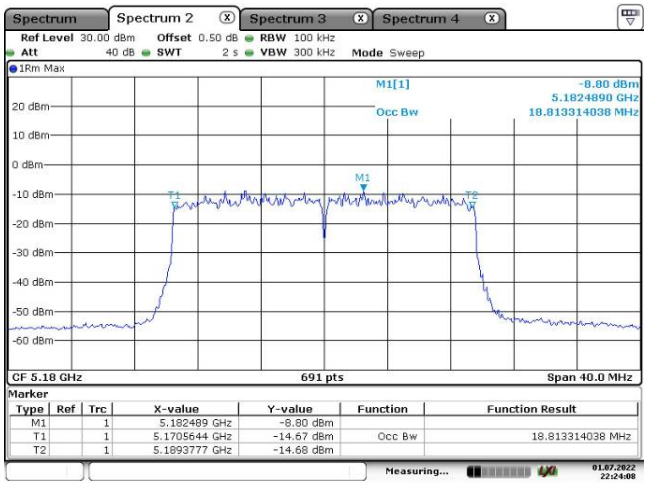
Date: 1.JUL.2022 22:44:38

802.11 ac80- Middle



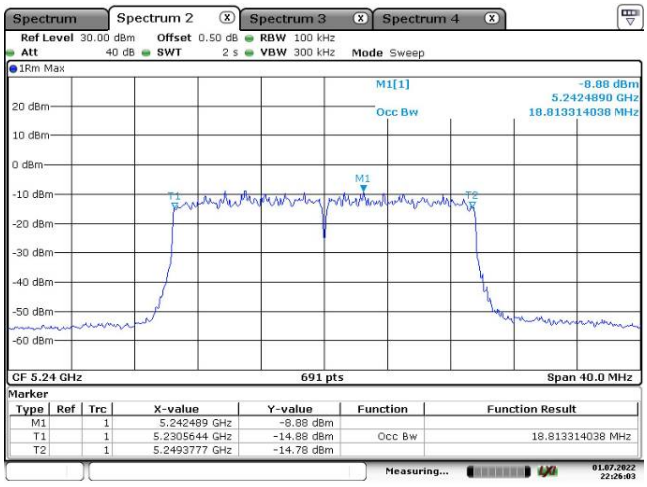
Date: 1.JUL.2022 22:51:41

802.11 ax20- Low



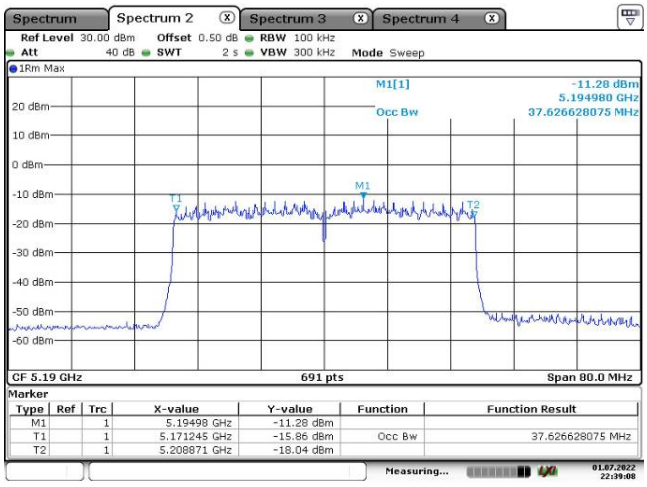
Date: 1.JUL.2022 22:24:09

802.11 ax20- High



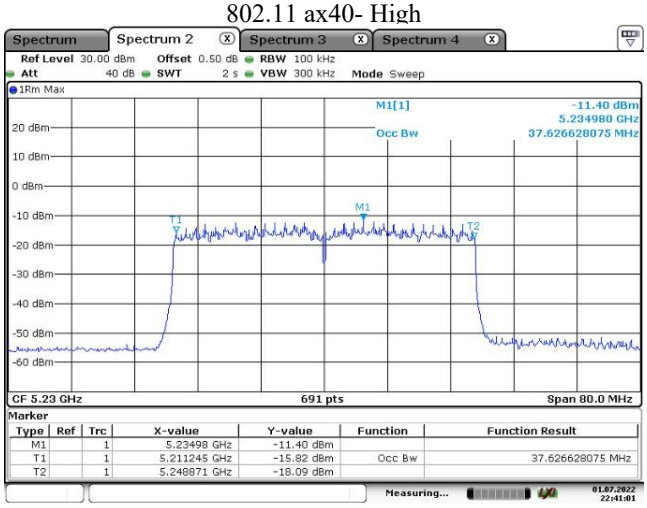
Date: 1.JUL.2022 22:26:04

802.11 ax40- Low



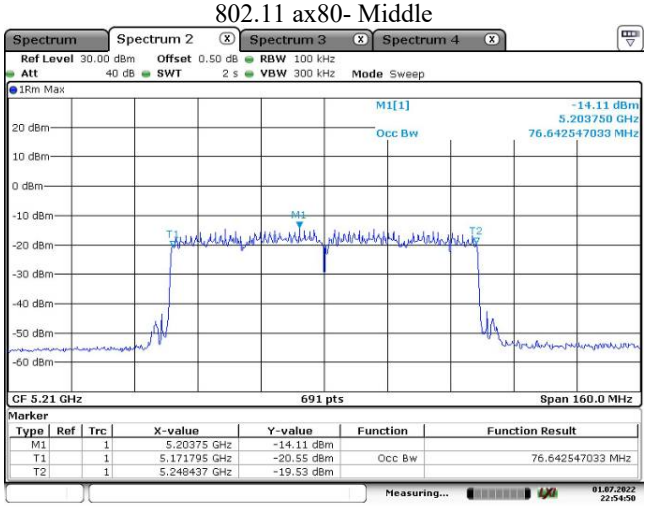
Date: 1.JUL.2022 22:39:09

802.11 ax40- High



Date: 1.JUL.2022 22:41:02

802.11 ax80- Middle



Date: 1.JUL.2022 22:54:51

3 – RF OUTPUT POWER, TRANSMIT POWER CONTROL (TPC), POWER DENSITY

Definition

RF Output Power:

The RF Output Power is the mean equivalent isotropically radiated power (e.i.r.p.) during a transmission burst.

Transmit Power Control (TPC):

Transmit Power Control (TPC) is a mechanism to be used by the RLAN device to ensure a mitigation factor of at least 3 dB on the aggregate power from a large number of devices. This requires the RLAN device to have a TPC range from which the lowest value is at least 6 dB below the values for mean e.i.r.p. given in table 2 for devices with TPC.

Power Density:

The Power Density is the mean Equivalent Isotropically Radiated Power (e.i.r.p.) density during a transmission burst.

Limit

TPC is not required for channels whose nominal bandwidth falls completely within the band 5150 MHz to 5250 MH.

For devices with TPC, the RF output power and the power density when configured to operate at the highest stated power level of the TPC range shall not exceed the levels given in table 2.

Devices are allowed to operate without TPC. See table 2 for the applicable limits in this case.

Table 2: Mean e.i.r.p. limits for RF output power and Power Density at the highest power level (P_H)

Frequency range (MHz)	Mean e.i.r.p. limit for P_H (dBm)		Mean e.i.r.p. density limit (dBm/MHz)	
	with TPC	without TPC	with TPC	without TPC
5 150 to 5 350	23	20/23 (see note 1)	10	7/10 (see note 2)
5 470 to 5 725	30 (see note 3)	27 (see note 3)	17 (see note 3)	14 (see note 3)

NOTE 1: The applicable limit is 20 dBm, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 23 dBm.
NOTE 2: The applicable limit is 7 dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 10 dBm/MHz.
NOTE 3: Slave devices without a *Radar Interference Detection* function shall comply with the limits for the frequency range 5 250 MHz to 5 350 MHz.

Table 3: Mean e.i.r.p. limits for RF Output Power at the lowest power level of the TPC range

Frequency range	Mean e.i.r.p. (dBm) limit for P_L
5 250 MHz to 5 350 MHz	17
5 470 MHz to 5 725 MHz	24 (see note)
NOTE: Slave devices without a *Radar Interference Detection* function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.	

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.4

Test Data

Test Result: *Compliant. Please refer to following table(s) and Plot(s).*

Test Mode	Band (MHz)	Fc (MHz)	Test Condition	Result_EIRP (dBm)		Limit (dBm)
				Chain 0	Chain 1	
802.11 a	5150-5250	5180	NT	21.26	21.27	≤ 23
			LT	21.28	21.29	
			HT	21.24	21.25	
		5240	NT	21.09	21.18	
			LT	21.11	21.20	
			HT	21.07	21.16	
802.11 n20	5150-5250	5180	NT	21.08		≤ 23
			LT	21.10		
			HT	21.06		
		5240	NT	20.95		
			LT	20.97		
			HT	20.93		
802.11 ac20	5150-5250	5180	NT	21.25		≤ 23
			LT	21.27		
			HT	21.23		
		5240	NT	21.19		
			LT	21.21		
			HT	21.17		
802.11 ax20	5150-5250	5180	NT	21.33		≤ 23
			LT	21.35		
			HT	21.31		
		5240	NT	21.20		
			LT	21.22		
			HT	21.18		

Test Mode	Band (MHz)	Fc (MHz)	Test Condition	Result_EIRP (dBm)		Limit (dBm)
				Chain 0	Chain 1	
802.11 n40	5150-5250	5190	NT	21.35		≤ 23
			LT	21.37		
			HT	21.33		
		5230	NT	21.25		
			LT	21.27		
			HT	21.23		
802.11 ac40	5150-5250	5190	NT	21.00		≤ 23
			LT	21.02		
			HT	20.98		
		5230	NT	20.98		
			LT	21.01		
			HT	20.96		
802.11 ax40	5150-5250	5190	NT	20.97		≤ 23
			LT	20.99		
			HT	20.95		
		5230	NT	20.87		
			LT	20.89		
			HT	20.85		
802.11 ac80	5150-5250	5210	NT	20.68		≤ 23
			LT	20.70		
			HT	20.66		
802.11 ax80	5150-5250	5210	NT	21.03		≤ 23
			LT	21.05		
			HT	21.01		

Note: The antenna Gain was added into the result.

Beamforming(Output Power)

Test Mode	Band (MHz)	Fc (MHz)	Test Condition	Result_EIRP (dBm)		Limit (dBm)
				Chain 0	Chain 1	
802.11 n20	5150-5250	5180	NT	20.84		≤ 23
			LT	20.86		
			HT	20.82		
		5240	NT	20.63		
			LT	20.65		
			HT	20.61		
802.11 ac20	5150-5250	5180	NT	20.33		≤ 23
			LT	20.35		
			HT	20.31		
		5240	NT	20.13		
			LT	20.15		
			HT	20.11		
802.11 ax20	5150-5250	5180	NT	20.75		≤ 23
			LT	20.77		
			HT	20.73		
		5240	NT	20.63		
			LT	20.65		
			HT	20.61		
802.11 n40	5150-5250	5190	NT	21.09		≤ 23
			LT	21.11		
			HT	21.07		
		5230	NT	21.04		
			LT	21.06		
			HT	21.03		
802.11 ac40	5150-5250	5190	NT	21.51		≤ 23
			LT	21.53		
			HT	21.49		
		5230	NT	21.28		
			LT	21.30		
			HT	21.26		
802.11 ax40	5150-5250	5190	NT	21.30		≤ 23
			LT	21.32		
			HT	21.28		
		5230	NT	21.29		
			LT	21.31		
			HT	21.27		
802.11 ac80	5150-5250	5210	NT	20.58		≤ 23
			LT	20.60		
			HT	20.56		
802.11 ax80	5150-5250	5210	NT	20.56		≤ 23
			LT	20.58		
			HT	20.54		

Power Density

Band (MHz)	Mode	Fc (MHz)	Conducted power density (dBm/MHz)		Result (dBm/MHz)		Limit (dBm/MHz)
			Chain 0	Chain 1	Chain 0	Chain 1	
5150-5250	802.11 a	5180	4.74	4.56	9.98	9.80	10
		5240	4.68	4.31	9.92	9.55	10
	802.11 n20	5180	0.82	0.86	9.40		10
		5240	1.06	0.64	9.42		10
	802.11 ac20	5180	-1.25	-1.60	8.81		10
		5240	-1.28	-1.59	8.80		10
	802.11 ax20	5180	-1.90	-2.16	8.32		10
		5240	-1.97	-2.38	8.18		10
	802.11 n40	5190	-2.17	-2.27	8.80		10
		5230	-2.68	-2.31	8.53		10
	802.11 ac40	5190	-5.53	-4.44	6.07		10
		5230	-5.90	-4.55	5.85		10
	802.11 ax40	5190	-6.02	-5.35	5.35		10
		5230	-5.51	-5.60	5.47		10
	802.11 ac80	5210	-7.04	-7.24	4.72		10
	802.11 ax80	5210	-7.19	-7.21	3.82		10

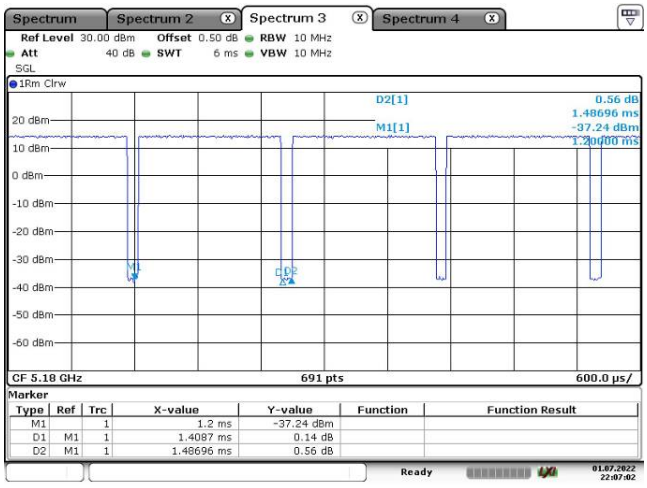
Note:
1, The antenna gain and duty cycle factor were added into the result.
2, Duty cycle factor = 10*log(1/duty cycle)

Duty Cycle:

Mode	Ton (ms)	Ton+Toff (ms)	Duty cycle (%)	Duty cycle Factor (dB)
802.11 a	1.41	1.49	94.63	0.24
802.11 n20	0.67	0.76	88.16	0.55
802.11 ac20	0.15	0.25	60.00	2.22
802.11 ax20	0.14	0.24	58.33	2.34
802.11 n40	0.36	0.45	80.00	0.97
802.11 ac40	0.1	0.2	50.00	3.01
802.11 ax40	0.1	0.2	50.00	3.01
802.11 ac80	0.07	0.17	41.18	3.85
802.11 ax80	0.09	0.18	50.00	3.01

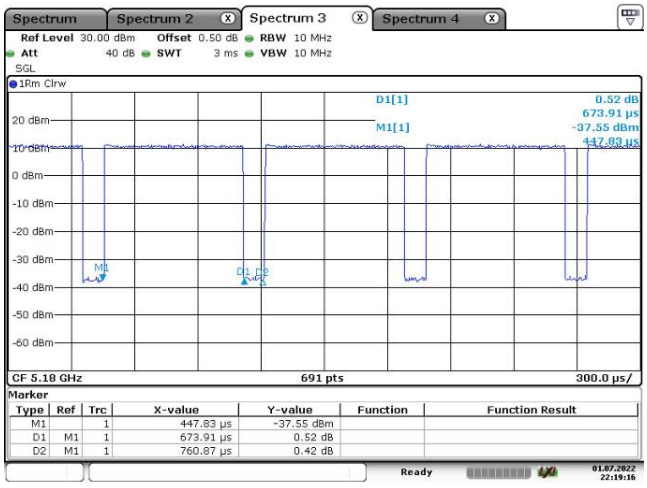
Duty Cycle:

802.11 a



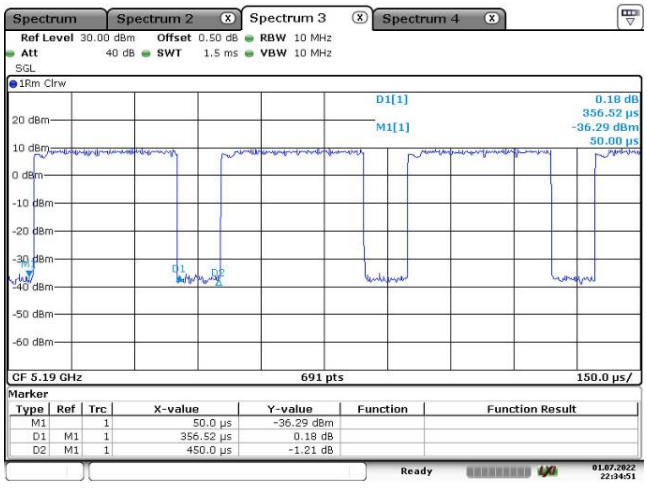
Date: 1.JUL.2022 22:07:02

802.11 n20



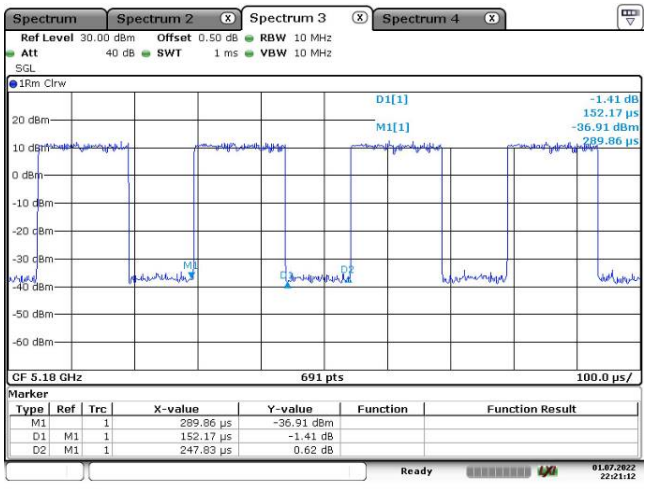
Date: 1.JUL.2022 22:19:16

802.11 n40



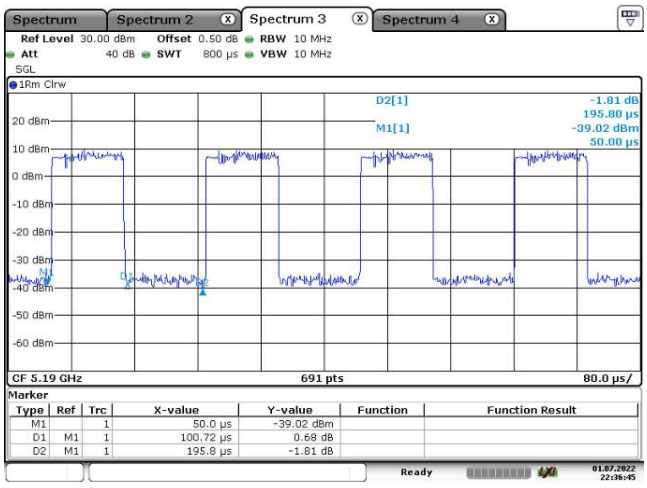
Date: 1.JUL.2022 22:34:52

802.11 ac20



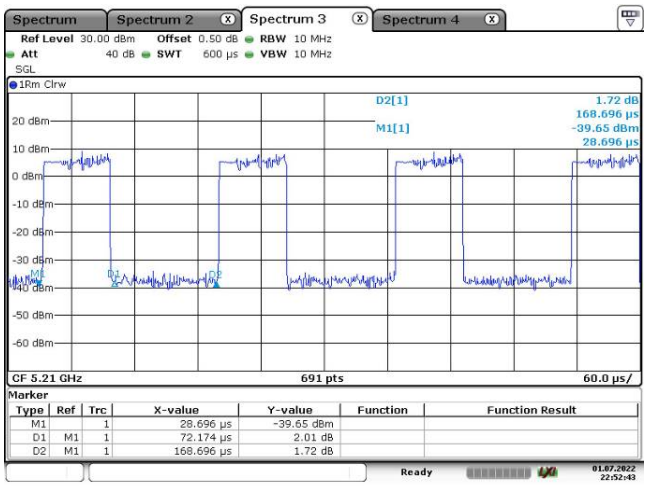
Date: 1.JUL.2022 22:21:13

802.11 ac40



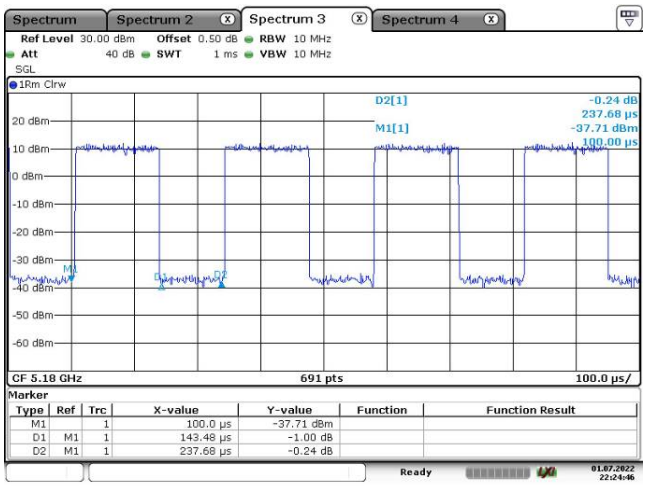
Date: 1.JUL.2022 22:36:46

802.11 ac80



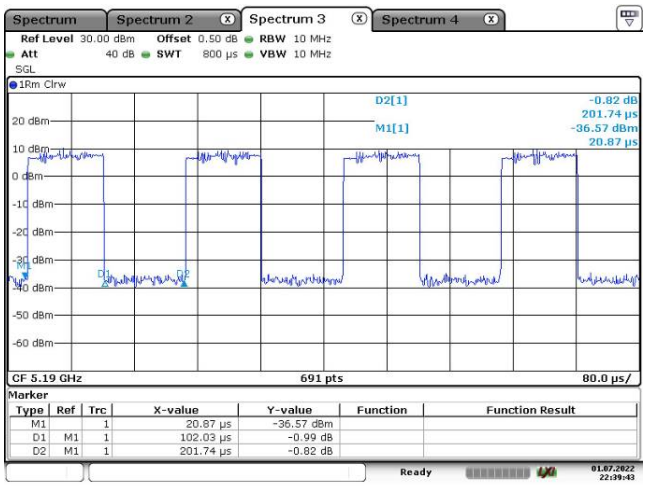
Date: 1.JUL.2022 22:52:44

802.11 ax20



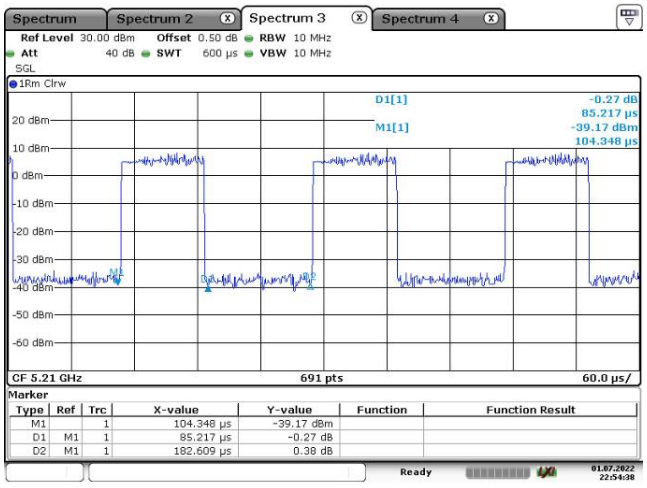
Date: 1.JUL.2022 22:24:46

802.11 ax40



Date: 1.JUL.2022 22:39:43

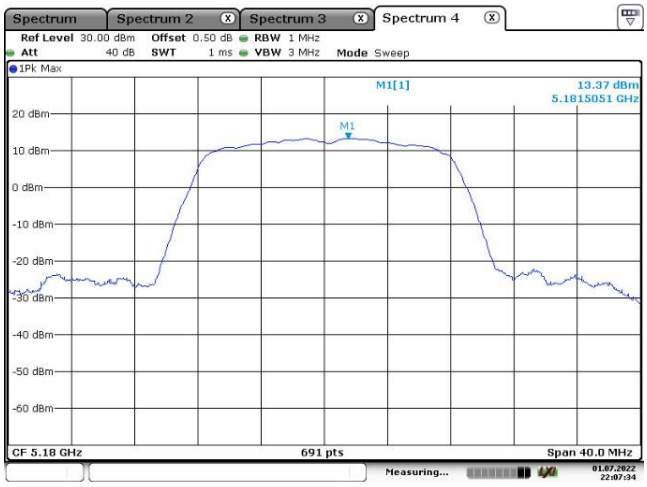
802.11 ax80



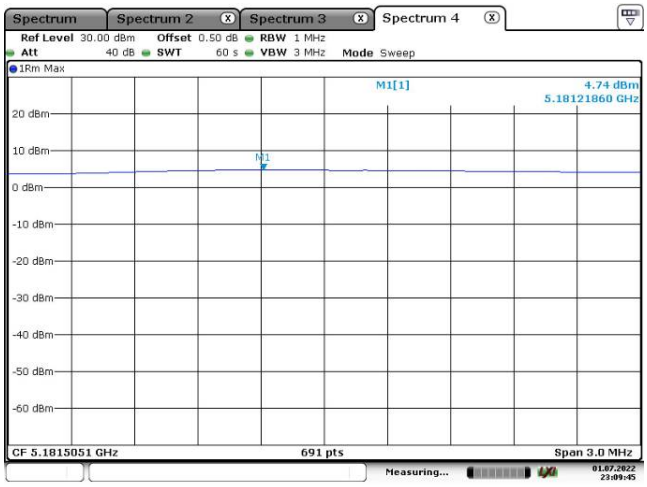
Date: 1.JUL.2022 22:54:39

PSD:
Chain 0:

802.11 a-Low

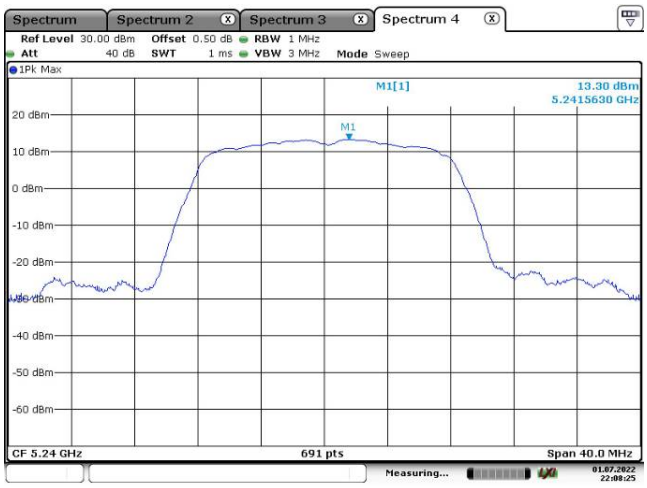


Date: 1.JUL.2022 22:07:35

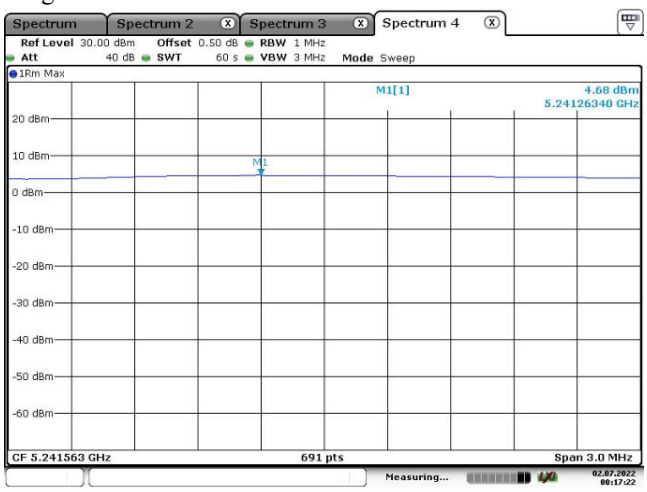


Date: 1.JUL.2022 23:09:45

802.11 a-High

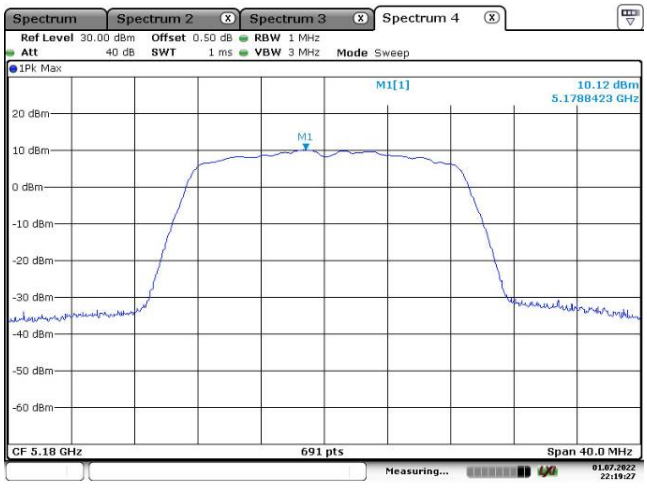


Date: 1.JUL.2022 22:08:25

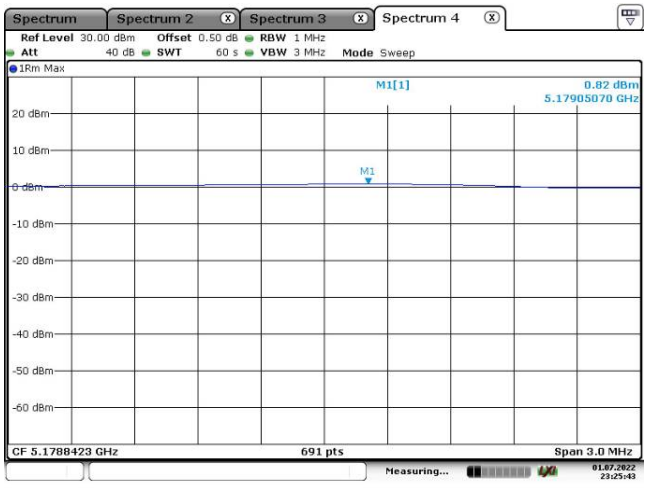


Date: 2.JUL.2022 00:17:23

802.11 n20-Low

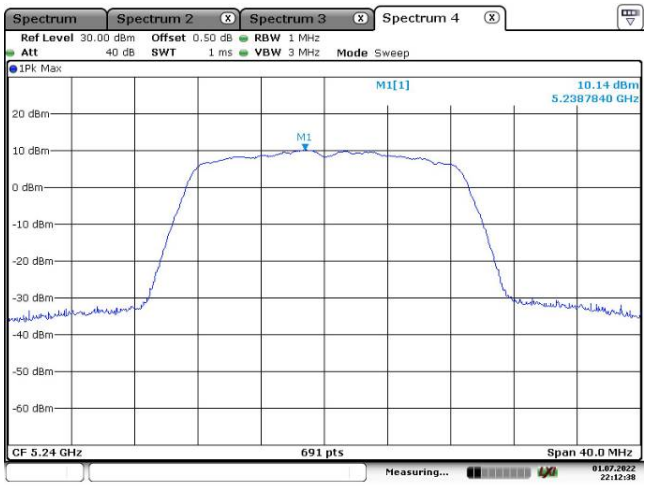


Date: 1.JUL.2022 22:19:28

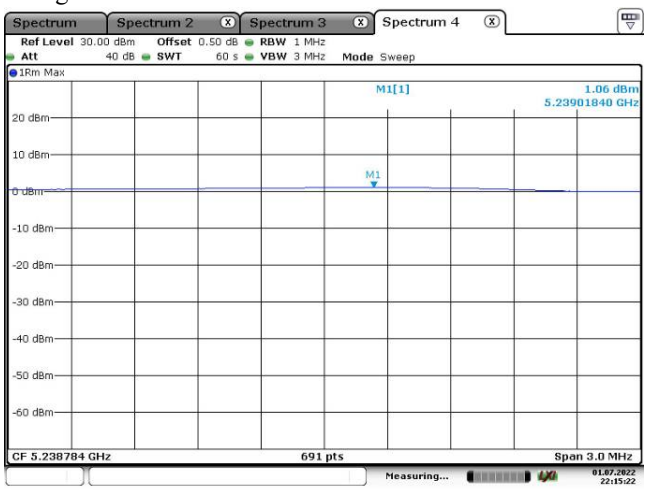


Date: 1.JUL.2022 23:25:43

802.11 n20-High

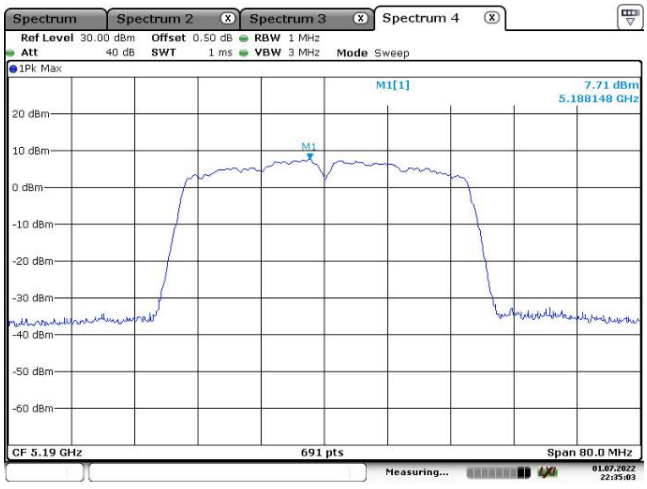


Date: 1.JUL.2022 22:12:38

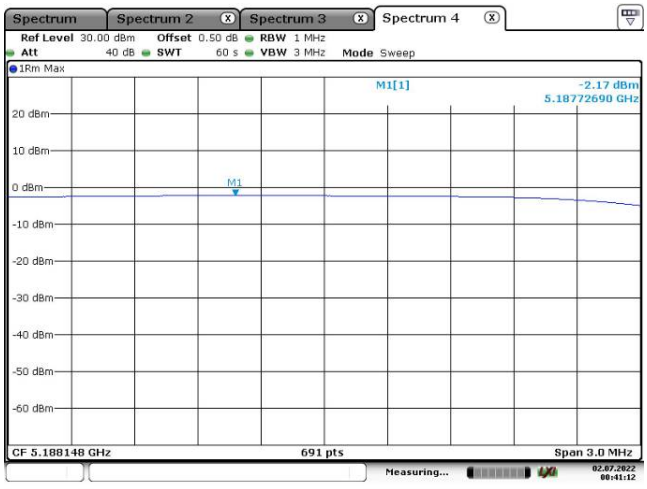


Date: 1.JUL.2022 22:15:22

802.11 n40-Low

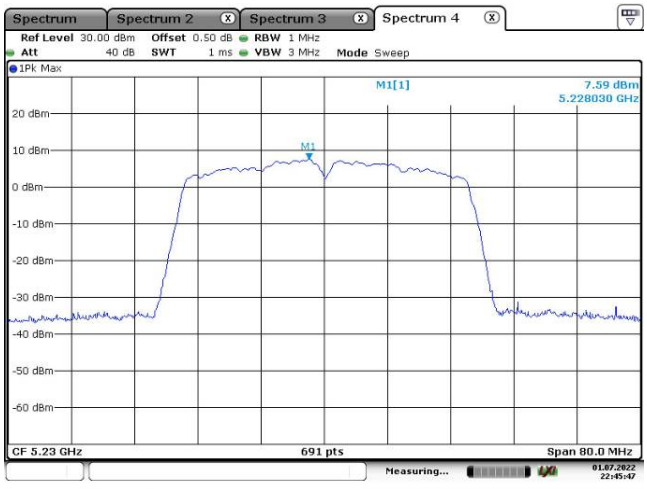


Date: 1.JUL.2022 22:35:03

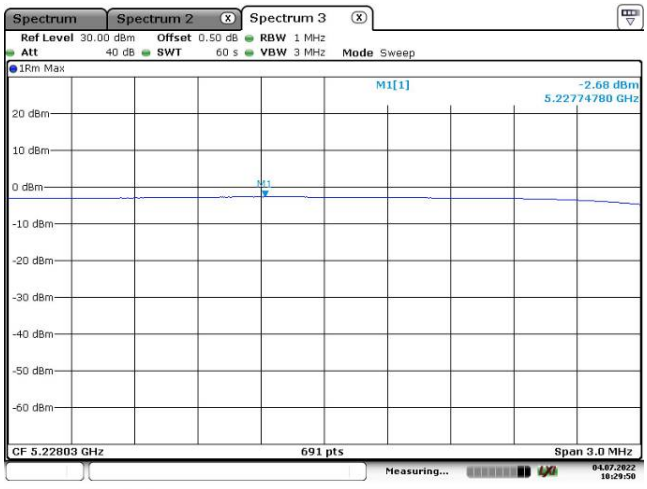


Date: 2.JUL.2022 00:41:13

802.11 n40-High

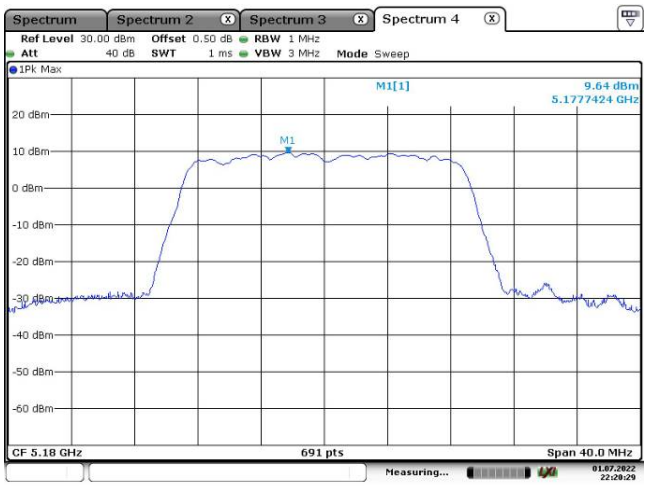


Date: 1.JUL.2022 22:45:48

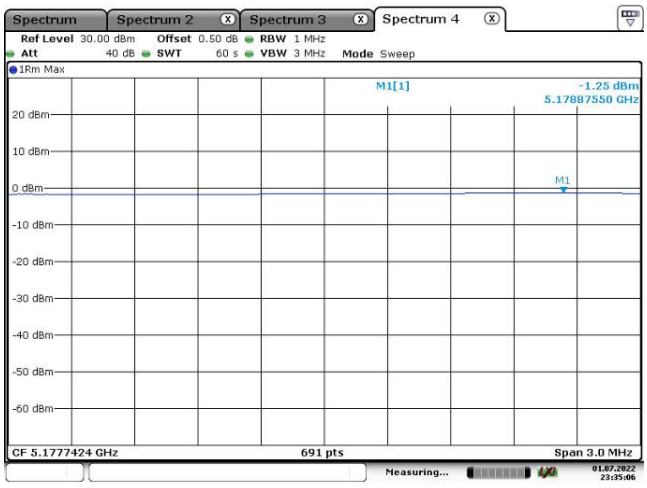


Date: 4.JUL.2022 10:29:50

802.11 ac20-Low

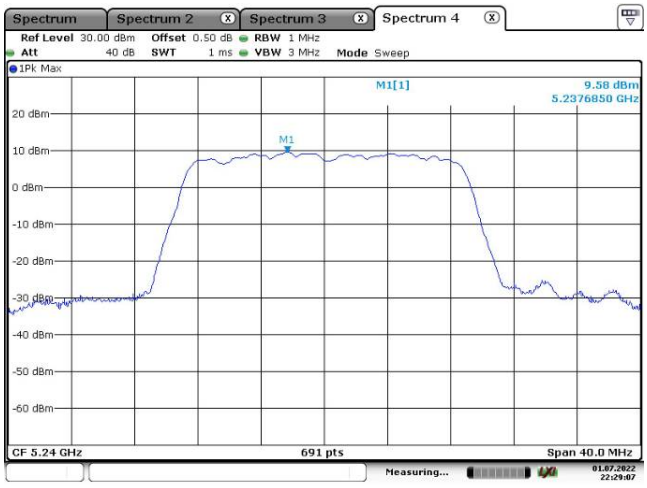


Date: 1.JUL.2022 22:20:30

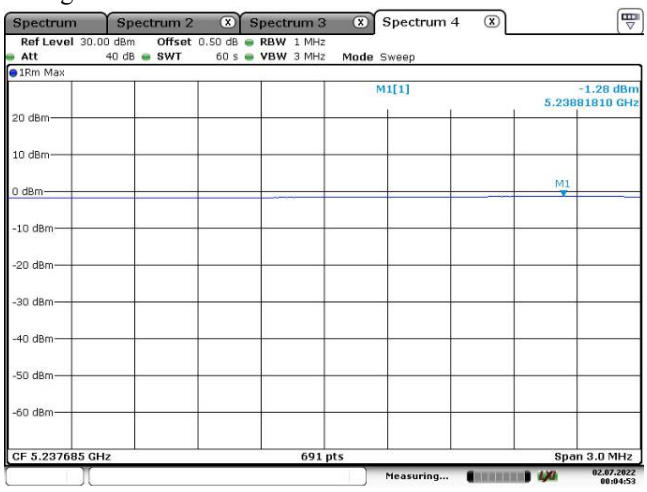


Date: 1.JUL.2022 23:35:07

802.11 ac20-High

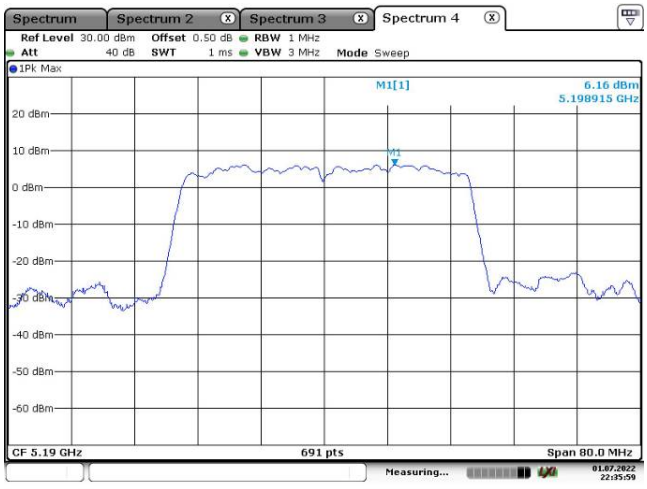


Date: 1.JUL.2022 22:29:07

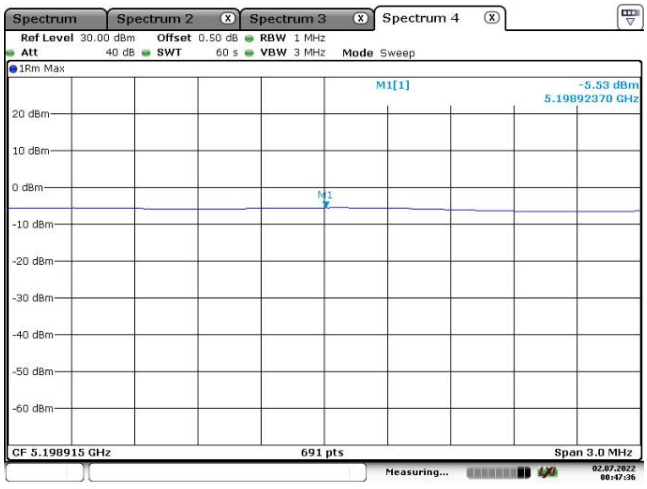


Date: 2.JUL.2022 00:04:54

802.11 ac40-Low

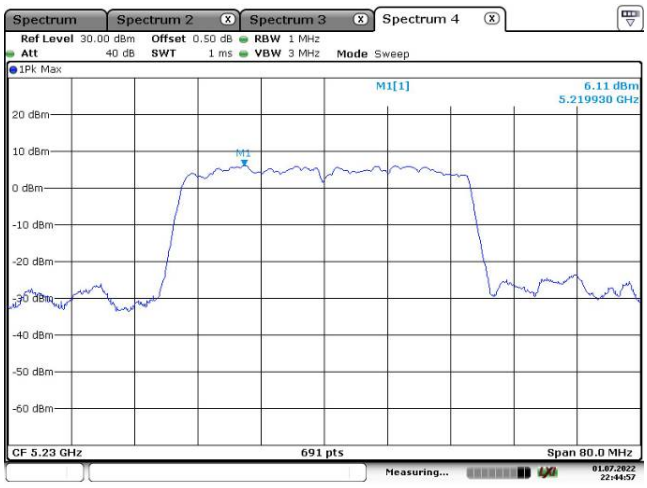


Date: 1.JUL.2022 22:36:00

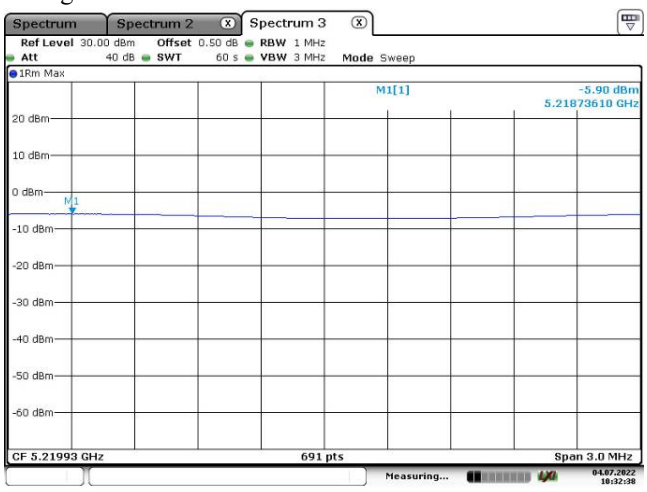


Date: 2.JUL.2022 00:47:37

802.11 ac40-High

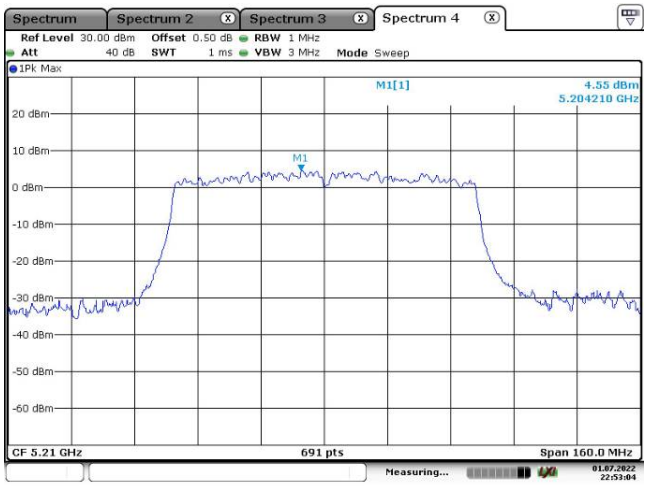


Date: 1.JUL.2022 22:44:57

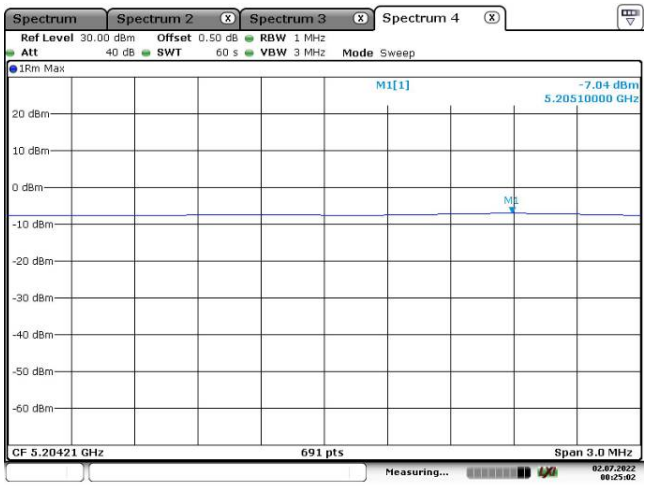


Date: 4.JUL.2022 10:32:38

802.11 ac80-Middle

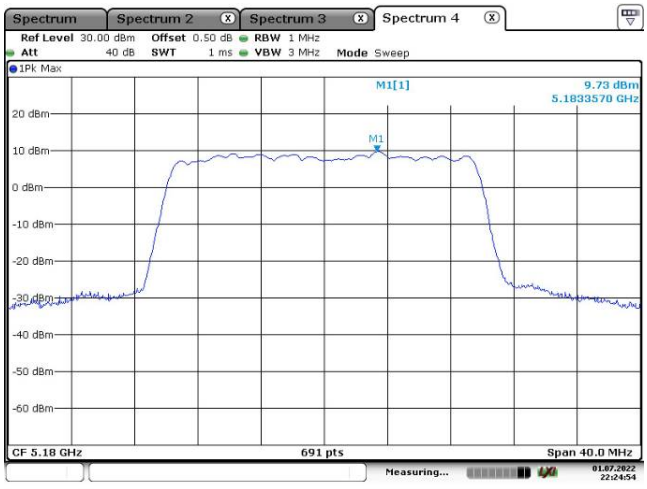


Date: 1.JUL.2022 22:53:05

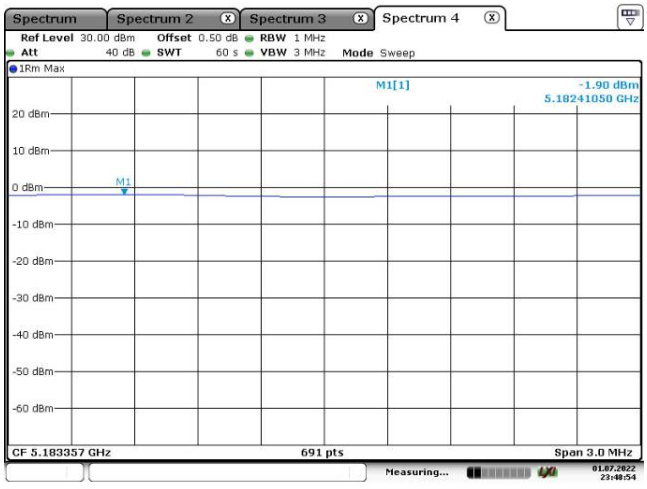


Date: 2.JUL.2022 00:25:03

802.11 ax20-Low

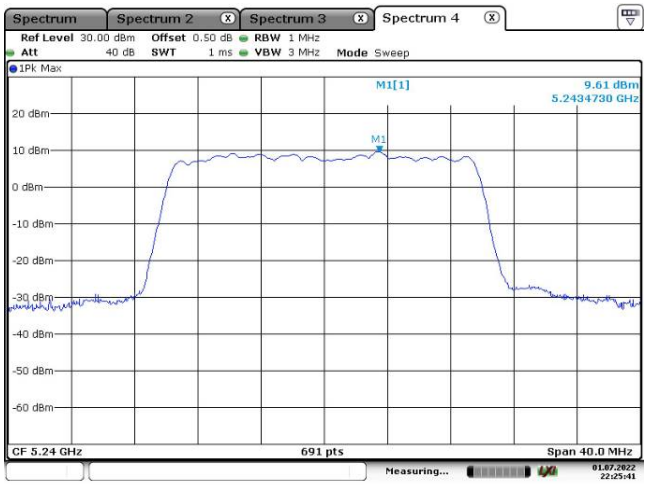


Date: 1.JUL.2022 22:24:55

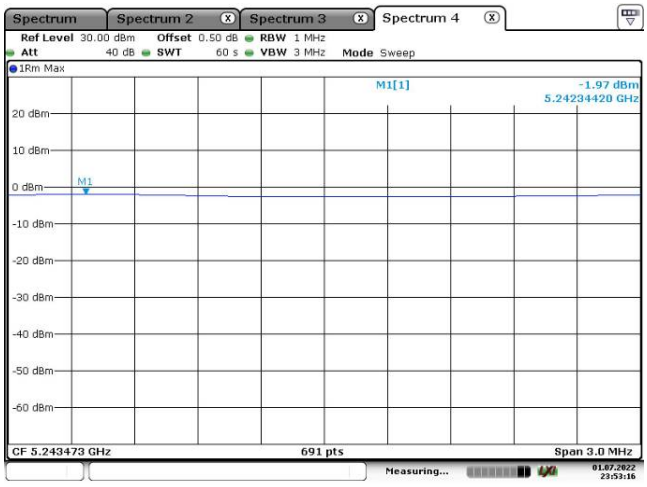


Date: 1.JUL.2022 23:48:54

802.11 ax20- High

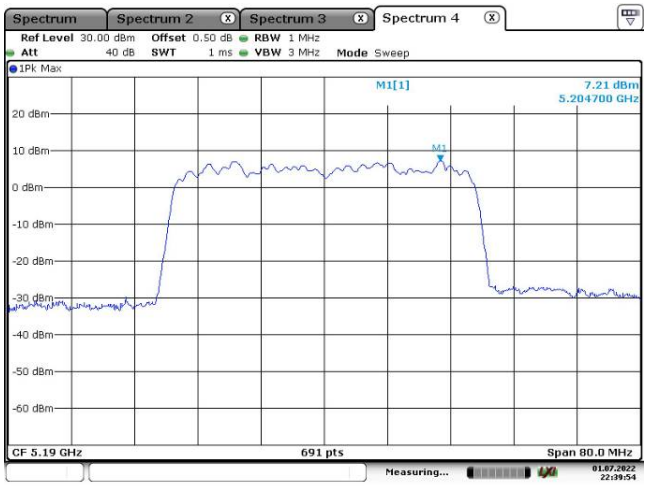


Date: 1.JUL.2022 22:25:42

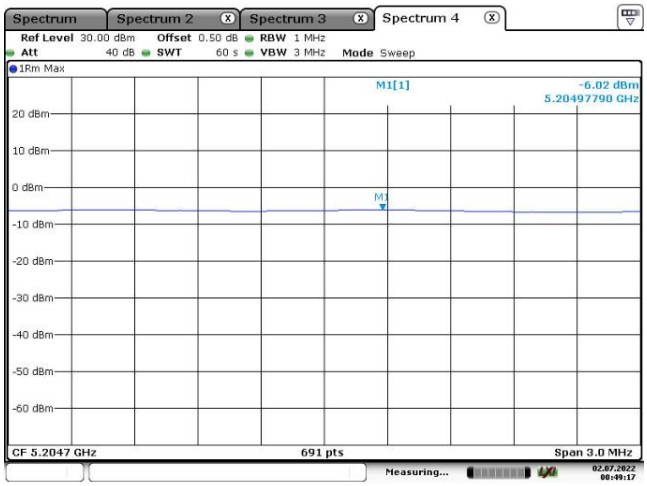


Date: 1.JUL.2022 23:53:17

802.11 ax40-Low

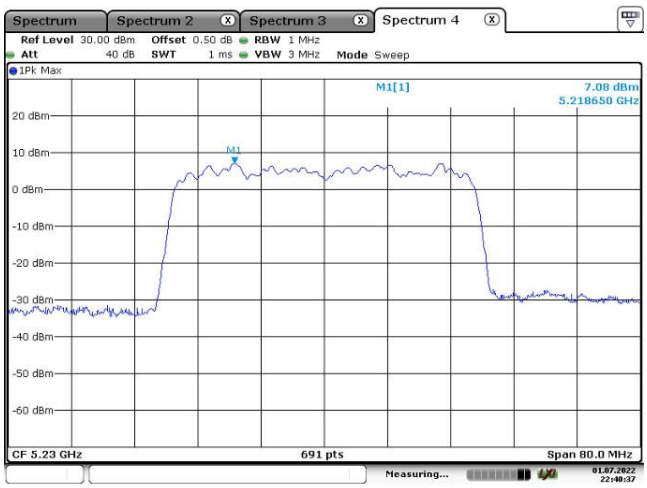


Date: 1.JUL.2022 22:39:55

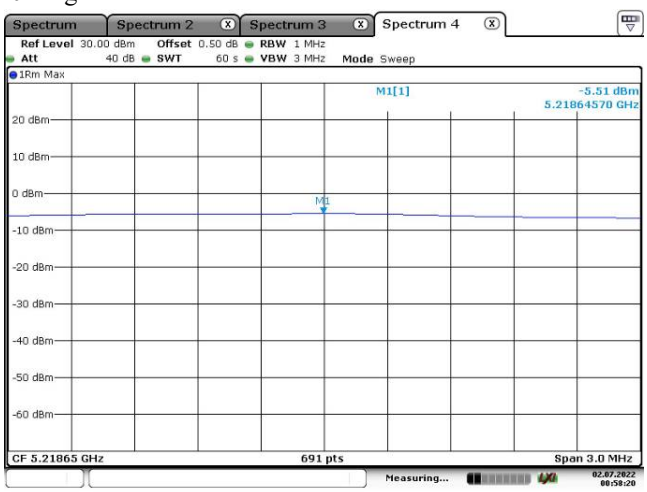


Date: 2.JUL.2022 00:49:18

802.11 ax40- High

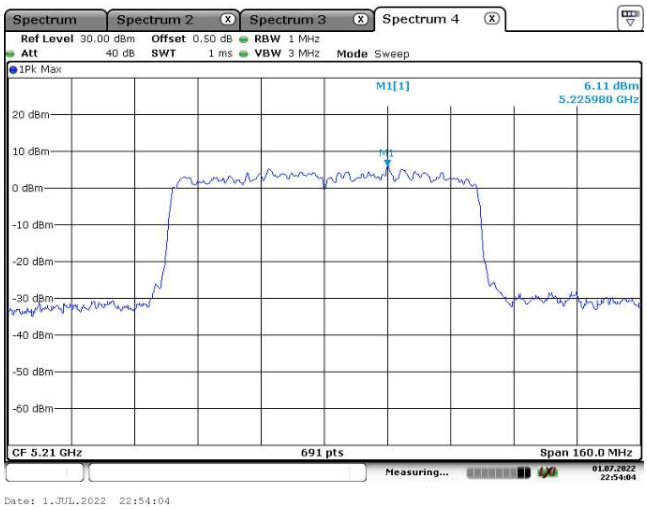


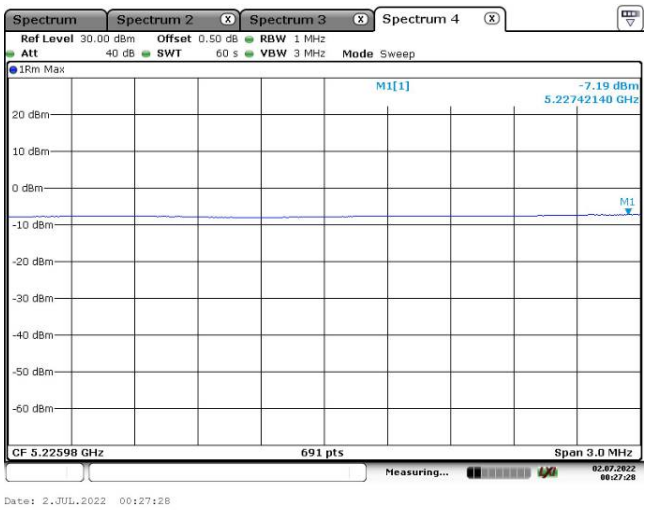
Date: 1.JUL.2022 22:40:37



Date: 2.JUL.2022 00:58:21

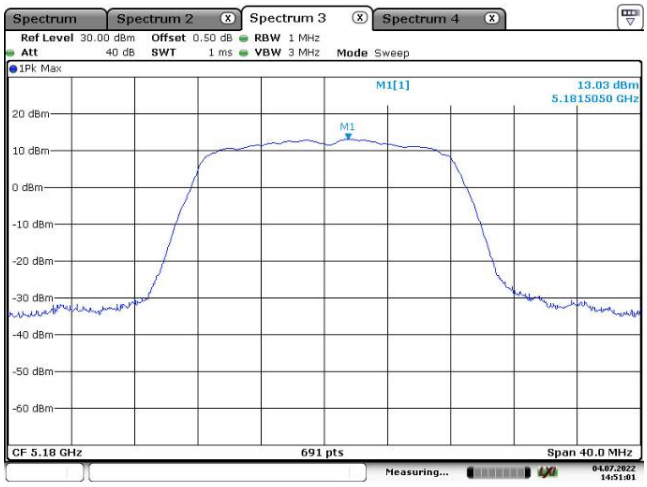
802.11 ax80- Middle



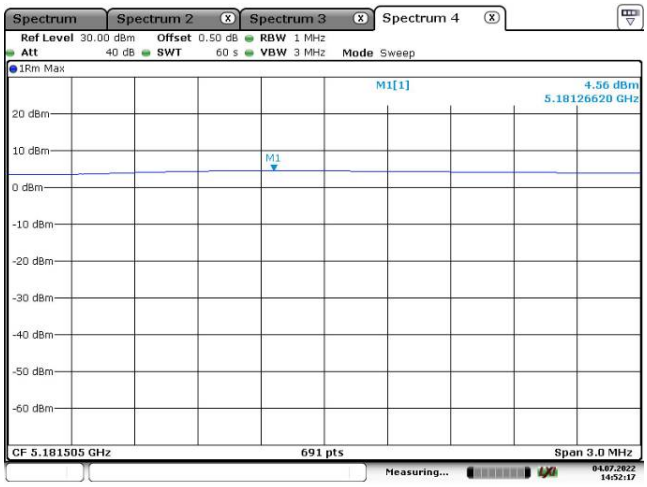


Chain 1:

802.11 a-Low

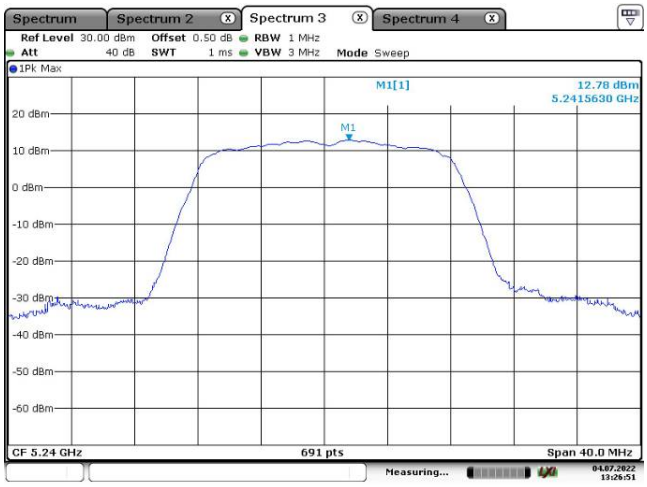


Date: 4.JUL.2022 14:51:02

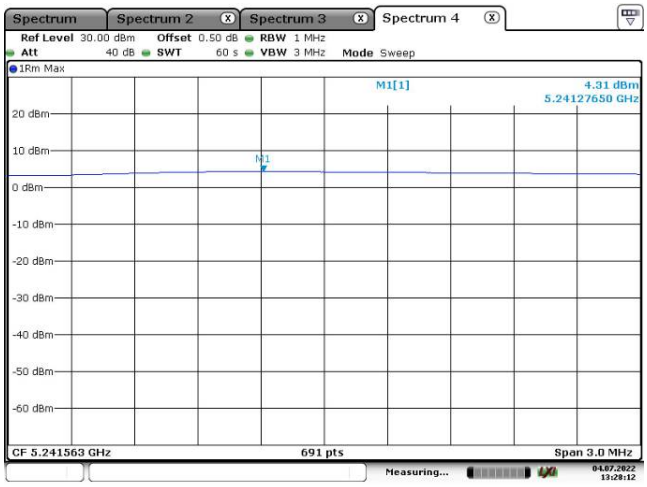


Date: 4.JUL.2022 14:52:18

802.11 a-High

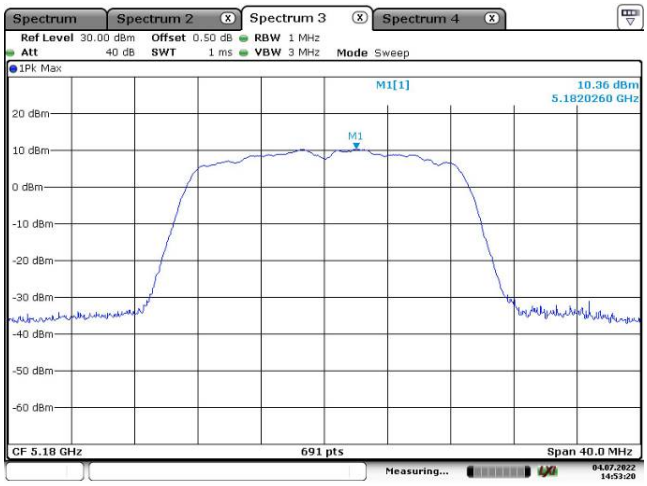


Date: 4.JUL.2022 13:26:52

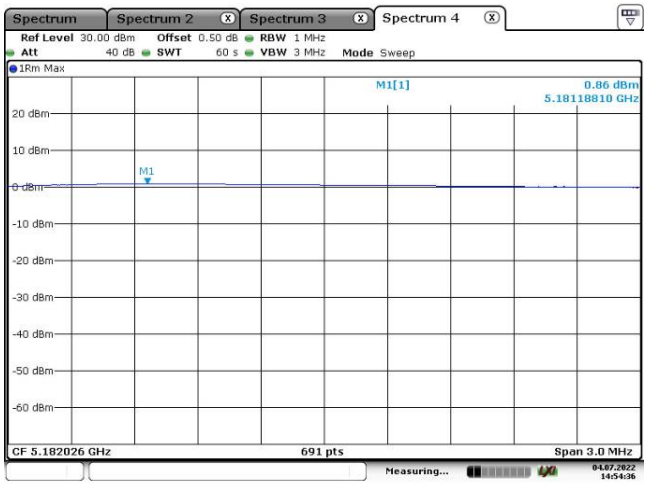


Date: 4.JUL.2022 13:28:12

802.11 n20-Low

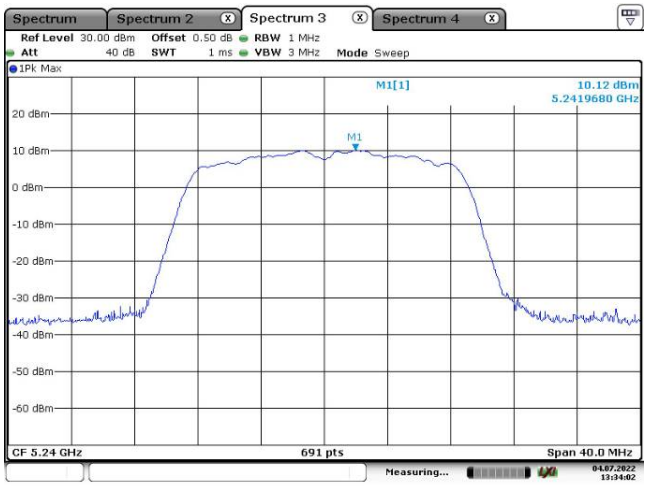


Date: 4.JUL.2022 14:53:21

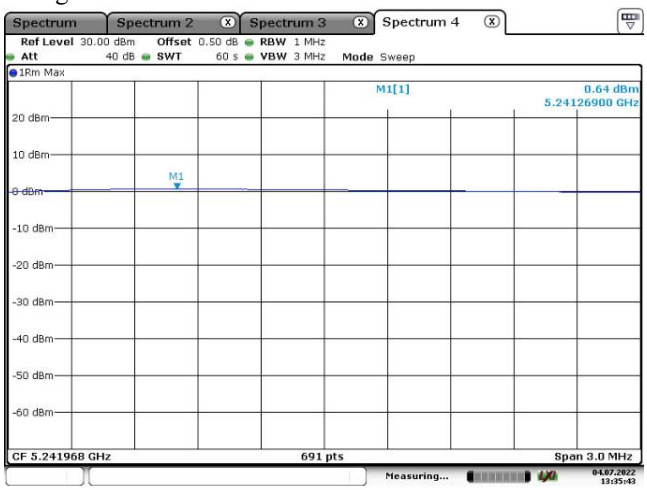


Date: 4.JUL.2022 14:54:36

802.11 n20-High

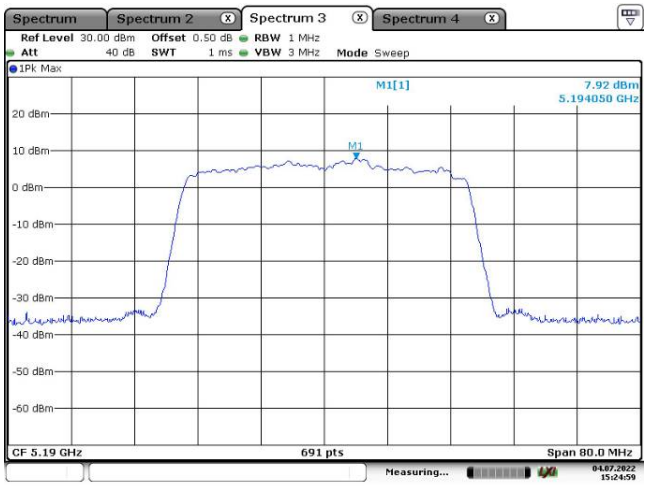


Date: 4.JUL.2022 13:34:02

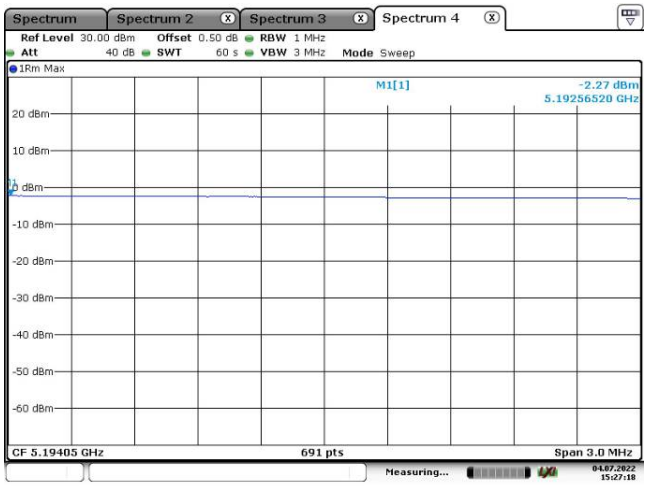


Date: 4.JUL.2022 13:35:44

802.11 n40-Low

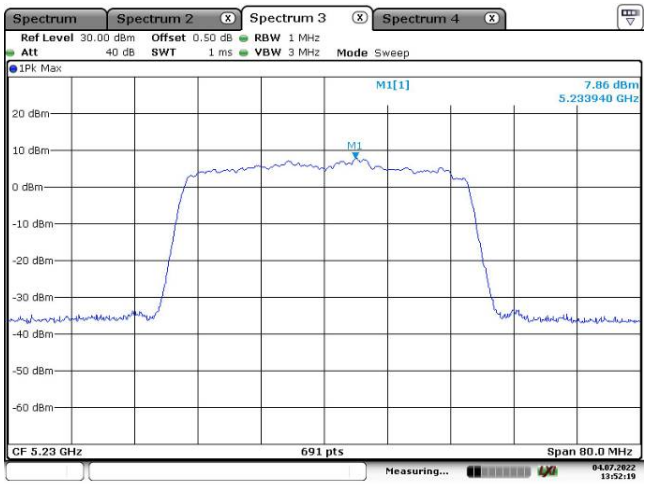


Date: 4.JUL.2022 15:24:59

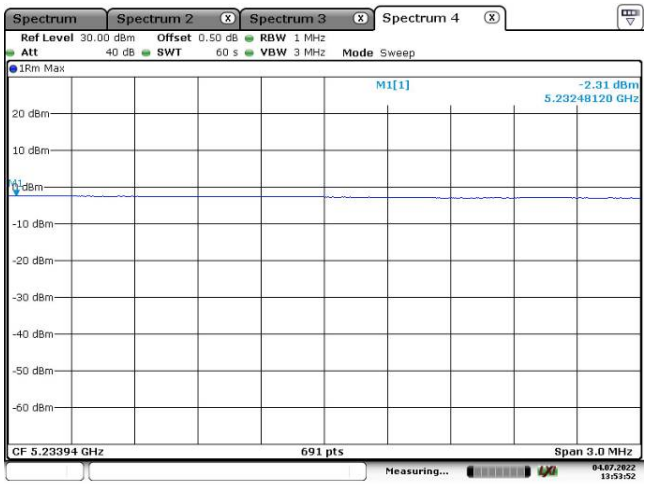


Date: 4.JUL.2022 15:27:18

802.11 n40-High

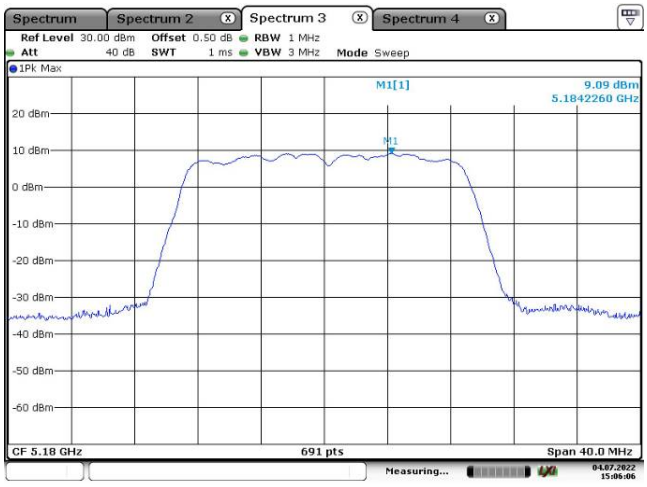


Date: 4.JUL.2022 13:52:20

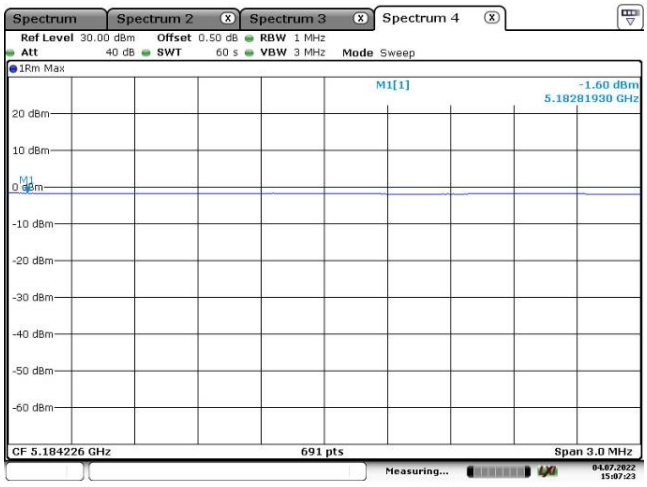


Date: 4.JUL.2022 13:53:52

802.11 ac20-Low

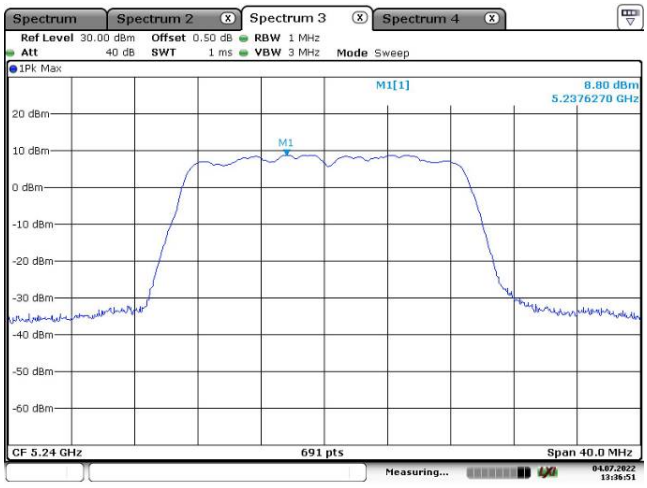


Date: 4.JUL.2022 15:06:06

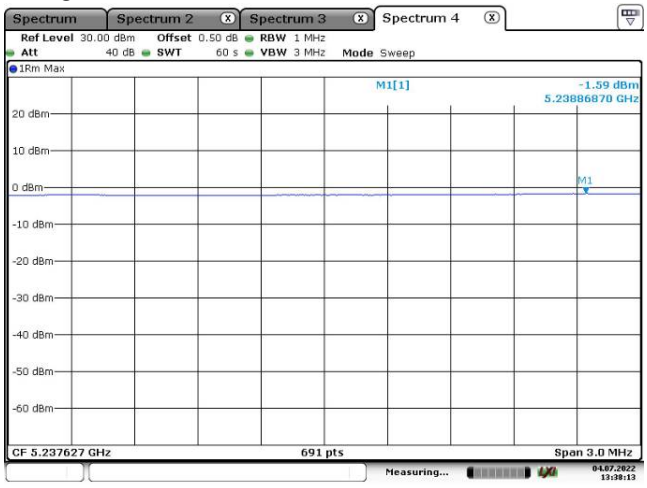


Date: 4.JUL.2022 15:07:23

802.11 ac20-High

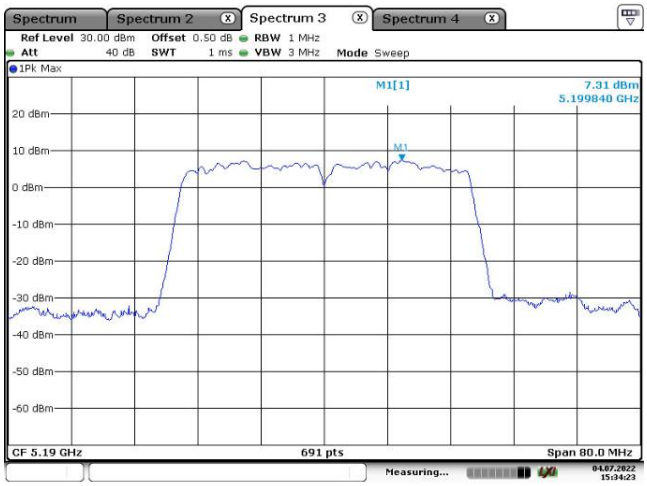


Date: 4.JUL.2022 13:36:51

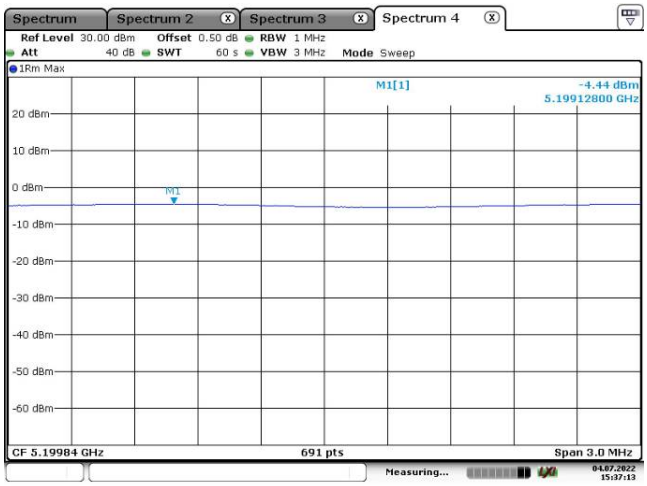


Date: 4.JUL.2022 13:38:13

802.11 ac40-Low

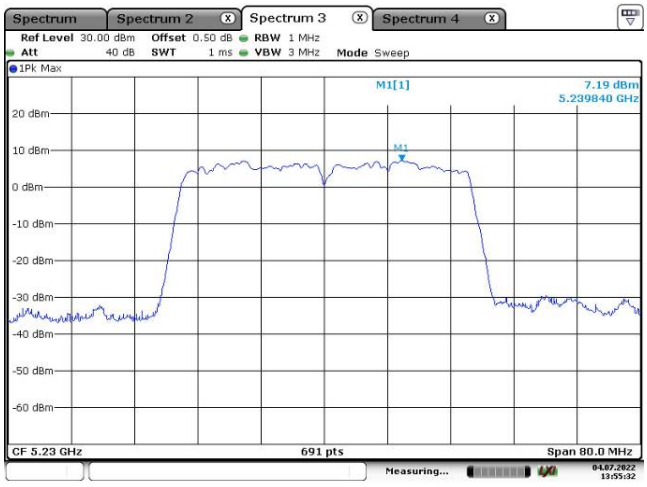


Date: 4.JUL.2022 15:34:23

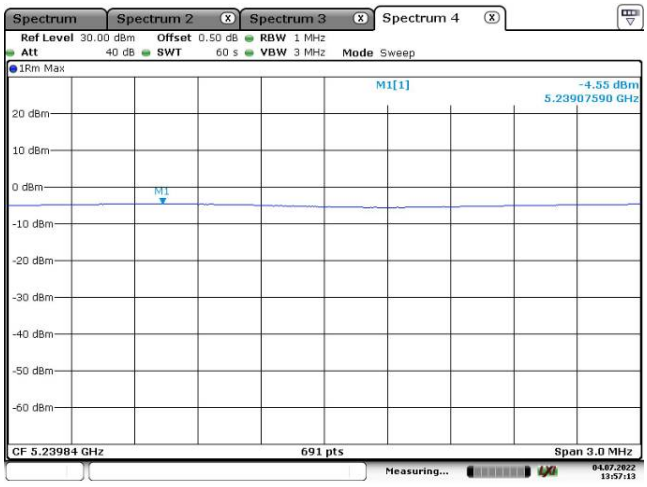


Date: 4.JUL.2022 15:37:13

802.11 ac40-High

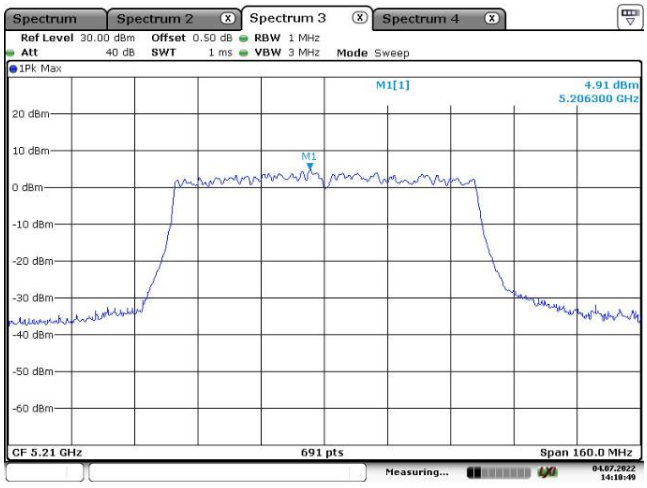


Date: 4.JUL.2022 13:55:33

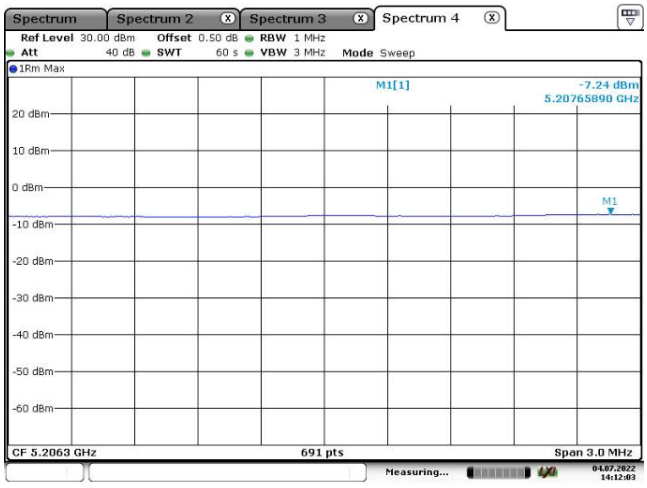


Date: 4.JUL.2022 13:57:13

802.11 ac80-Middle

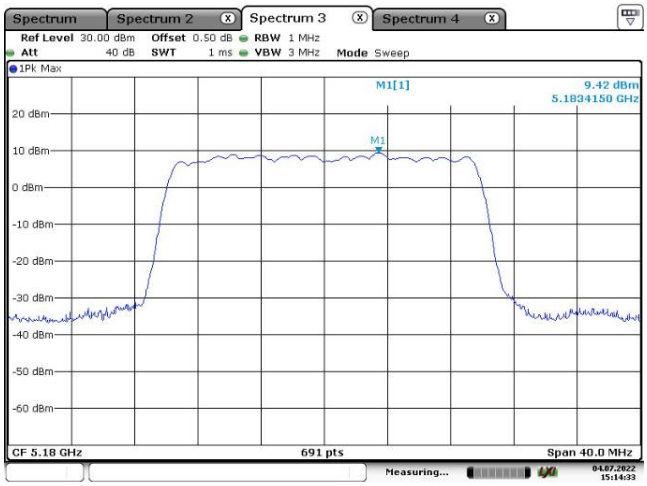


Date: 4.JUL.2022 14:10:49

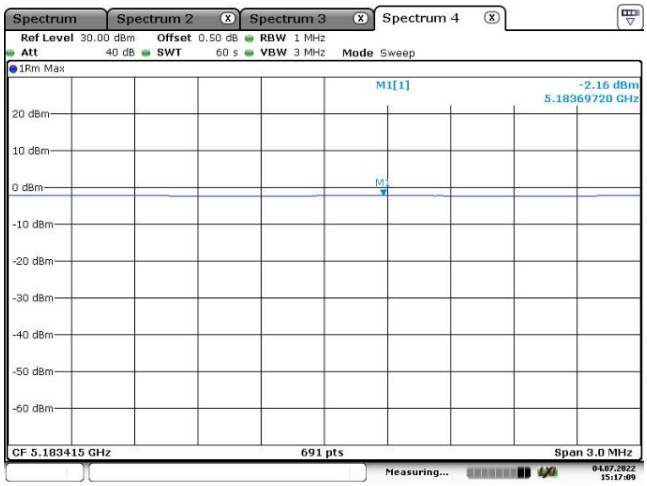


Date: 4.JUL.2022 14:12:03

802.11 ax20- Low

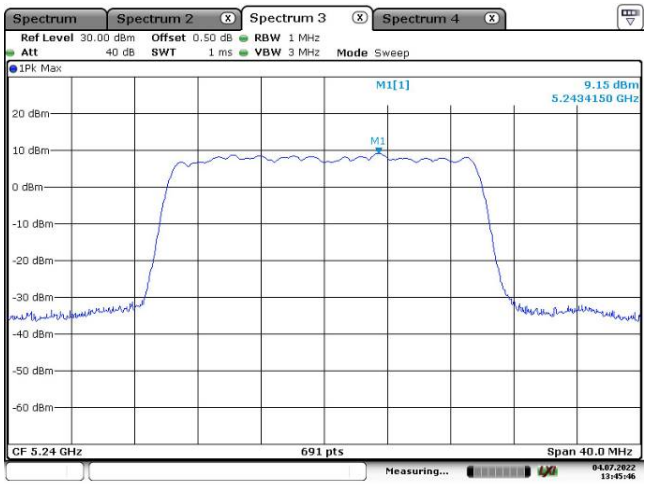


Date: 4.JUL.2022 15:14:33

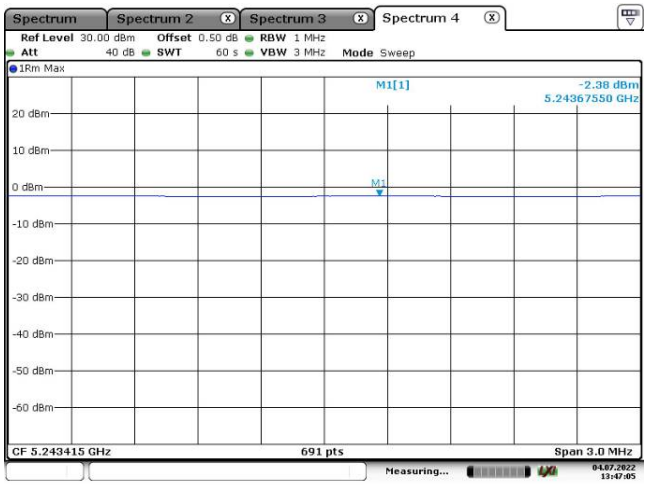


Date: 4.JUL.2022 15:17:10

802.11 ax20- High

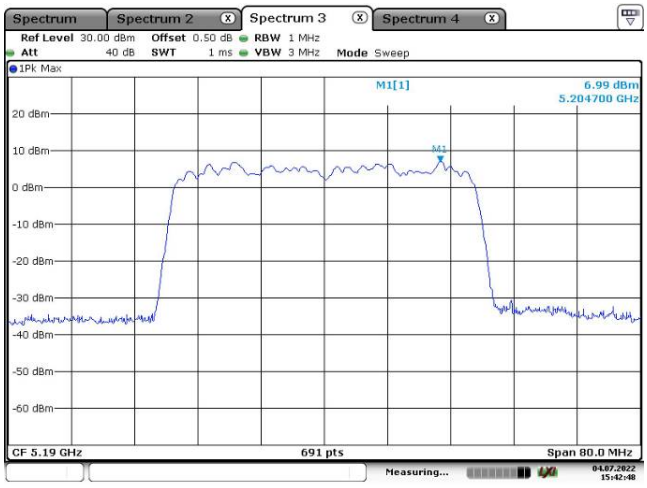


Date: 4.JUL.2022 13:45:46

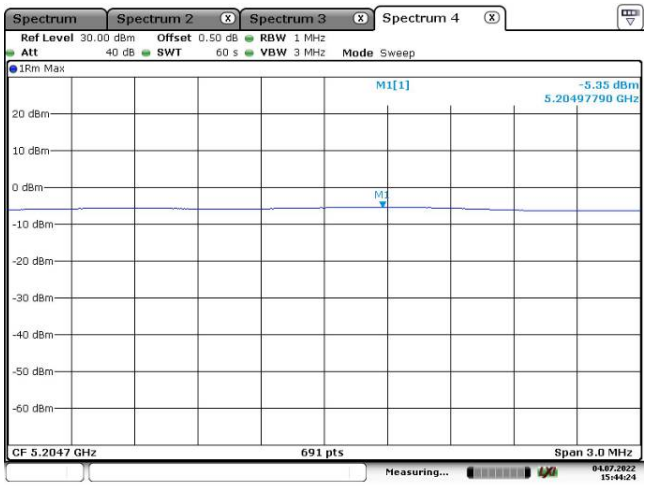


Date: 4.JUL.2022 13:47:05

802.11 ax40-Low

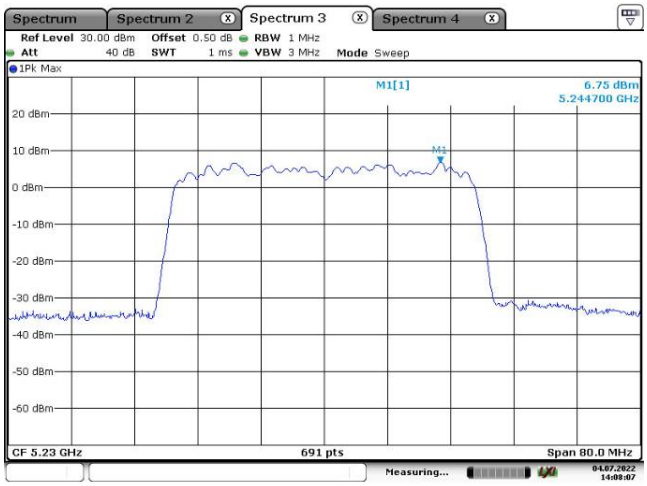


Date: 4.JUL.2022 15:42:48

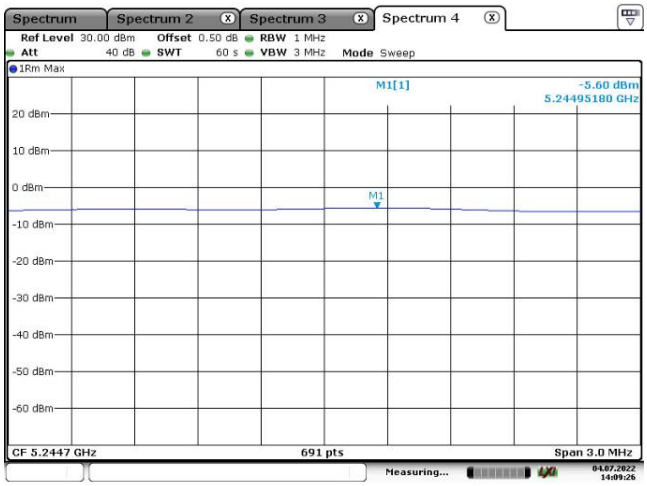


Date: 4.JUL.2022 15:44:24

802.11 ax40- High

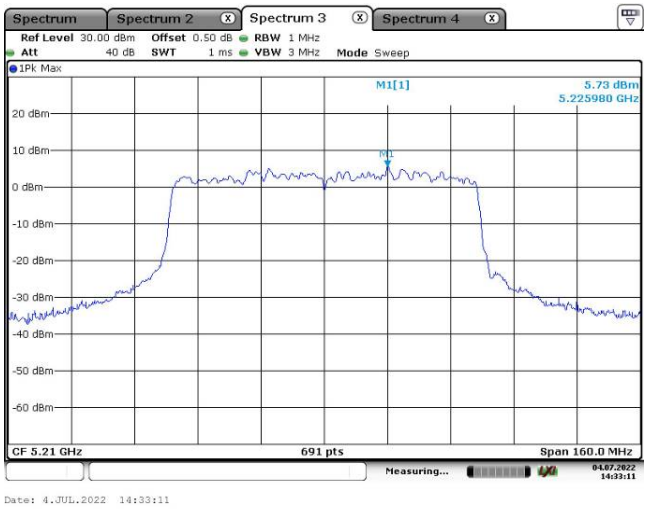


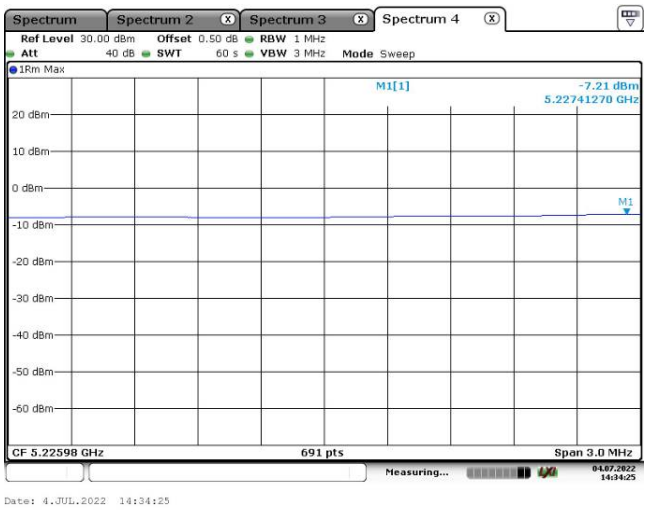
Date: 4.JUL.2022 14:08:07



Date: 4.JUL.2022 14:09:26

802.11 ax80- Middle





4 – TRANSMITTER UNWANTED EMISSIONS OUTSIDE THE 5 GHZ RLAN BANDS

Definition

Transmitter unwanted emissions outside the 5 GHz RLAN bands are radio frequency emissions outside the 5 GHz RLAN bands defined in clause 3.1.

Limit

The level of transmitter unwanted emissions outside the 5 GHz RLAN bands shall not exceed the limits given in table 4.

Table 4: Transmitter unwanted emission limits outside the 5 GHz RLAN bands

Frequency range	Maximum power	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 5,15 GHz	-30 dBm	1 MHz
5,35 GHz to 5,47 GHz	-30 dBm	1 MHz
5,725 GHz to 26 GHz	-30 dBm	1 MHz

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.5

Test Data

Test Result: *Compliant.*

802.11 a_ Chain 0 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10360.00	H	49.08	-50.66	13.48	0.40	-37.58	-30.00	7.58
10360.00	V	43.21	-55.97	13.48	0.40	-42.89	-30.00	12.89
71.40	H	53.63	-65.55	-4.30	0.26	-70.11	-54.00	16.11
68.60	V	54.41	-64.22	-5.74	0.24	-70.20	-54.00	16.20

802.11 a_ Chain 0 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10480.00	H	48.95	-50.79	13.32	0.30	-37.77	-30.00	7.77
10480.00	V	41.32	-57.68	13.32	0.30	-44.66	-30.00	14.66
71.25	H	54.55	-64.58	-4.38	0.26	-69.22	-54.00	15.22
68.33	V	55.46	-63.00	-5.89	0.24	-69.13	-54.00	15.13

802.11 a_ Chain 1 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10360.00	H	50.32	-49.42	13.48	0.40	-36.34	-30.00	6.34
10360.00	V	44.65	-54.53	13.48	0.40	-41.45	-30.00	11.45
71.66	H	52.14	-67.11	-4.17	0.26	-71.54	-54.00	17.54
68.78	V	53.63	-65.12	-5.65	0.24	-71.01	-54.00	17.01

802.11 a_ Chain 1 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10480.00	H	43.65	-56.09	13.32	0.30	-43.07	-30.00	13.07
10480.00	V	50.36	-48.64	13.32	0.30	-35.62	-30.00	5.62
71.02	H	54.11	-64.96	-4.49	0.25	-69.70	-54.00	15.70
68.03	V	55.16	-63.11	-6.04	0.24	-69.39	-54.00	15.39

802.11 n20 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10360.00	H	50.71	-49.03	13.48	0.40	-35.95	-30.00	5.95
10360.00	V	43.21	-55.97	13.48	0.40	-42.89	-30.00	12.89
71.35	H	53.12	-66.04	-4.33	0.26	-70.63	-54.00	16.63
68.22	V	54.11	-64.28	-5.94	0.24	-70.46	-54.00	16.46

802.11 n20 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10480.00	H	50.63	-49.11	13.32	0.30	-36.09	-30.00	6.09
10480.00	V	46.57	-52.43	13.32	0.30	-39.41	-30.00	9.41
71.96	H	54.00	-65.33	-4.02	0.27	-69.62	-54.00	15.62
68.59	V	54.41	-64.22	-5.75	0.24	-70.21	-54.00	16.21

802.11 ac20 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10360.00	H	48.97	-50.77	13.48	0.40	-37.69	-30.00	7.69
10360.00	V	40.21	-58.97	13.48	0.40	-45.89	-30.00	15.89
71.22	H	53.23	-65.90	-4.39	0.26	-70.55	-54.00	16.55
68.17	V	53.21	-65.15	-5.97	0.24	-71.36	-54.00	17.36

802.11 ac20 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10480.00	H	41.65	-58.08	13.32	0.30	-45.06	-30.00	15.06
10480.00	V	48.93	-50.07	13.32	0.30	-37.05	-30.00	7.05
71.33	H	54.66	-64.50	-4.34	0.26	-69.10	-54.00	15.10
68.74	V	54.78	-63.94	-5.67	0.24	-69.85	-54.00	15.85

802.11 ax20 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10360.00	H	49.66	-50.08	13.48	0.40	-37.00	-30.00	7.00
10360.00	V	41.56	-57.62	13.48	0.40	-44.54	-30.00	14.54
71.87	H	53.32	-65.99	-4.07	0.27	-70.33	-54.00	16.33
68.82	V	54.89	-63.88	-5.63	0.24	-69.75	-54.00	15.75

802.11 ax20 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10480.00	H	50.67	-49.07	13.32	0.30	-36.05	-30.00	6.05
10480.00	V	44.65	-54.35	13.32	0.30	-41.33	-30.00	11.33
71.31	H	53.64	-65.51	-4.35	0.26	-70.12	-54.00	16.12
68.11	V	55.52	-62.80	-6.00	0.24	-69.04	-54.00	15.04

802.11 n40 **5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10380.00	H	50.69	-49.05	13.44	0.38	-35.99	-30.00	5.99
10380.00	V	50.17	-48.98	13.44	0.38	-35.92	-30.00	5.92
71.02	H	53.62	-65.45	-4.49	0.25	-70.19	-54.00	16.19
68.00	V	54.11	-64.14	-6.06	0.24	-70.44	-54.00	16.44

802.11 n40 **5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10460.00	H	49.68	-50.06	13.34	0.31	-37.03	-30.00	7.03
10460.00	V	45.68	-53.35	13.34	0.31	-40.32	-30.00	10.32
71.45	H	54.32	-64.87	-4.28	0.26	-69.41	-54.00	15.41
68.64	V	54.45	-64.21	-5.72	0.24	-70.17	-54.00	16.17

802.11 ac40 **5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10380.00	H	49.01	-50.73	13.44	0.38	-37.67	-30.00	7.67
10380.00	V	41.27	-57.88	13.44	0.38	-44.82	-30.00	14.82
71.32	H	53.31	-65.84	-4.34	0.26	-70.44	-54.00	16.44
68.37	V	53.19	-65.30	-5.86	0.24	-71.40	-54.00	17.40

802.11 ac40 **5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10460.00	H	49.16	-50.58	13.34	0.31	-37.55	-30.00	7.55
10460.00	V	43.65	-55.38	13.34	0.31	-42.35	-30.00	12.35
71.45	H	54.45	-64.74	-4.28	0.26	-69.28	-54.00	15.28
68.54	V	54.75	-63.85	-5.77	0.24	-69.86	-54.00	15.86

802.11 ax40 **5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10380.00	H	48.59	-51.15	13.44	0.38	-38.09	-30.00	8.09
10380.00	V	41.05	-58.10	13.44	0.38	-45.04	-30.00	15.04
71.77	H	53.45	-65.83	-4.12	0.26	-70.21	-54.00	16.21
68.75	V	54.45	-64.28	-5.66	0.24	-70.18	-54.00	16.18

802.11 ax40 **5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10460.00	H	48.92	-50.82	13.34	0.31	-37.79	-30.00	7.79
10460.00	V	42.56	-56.47	13.34	0.31	-43.44	-30.00	13.44
71.45	H	53.54	-65.65	-4.28	0.26	-70.19	-54.00	16.19
68.32	V	54.95	-63.50	-5.89	0.24	-69.63	-54.00	15.63

802.11 ac80 **5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10420.00	H	48.67	-51.07	13.38	0.35	-38.04	-30.00	8.04
10420.00	V	42.54	-56.55	13.38	0.35	-43.52	-30.00	13.52
71.32	H	54.45	-64.70	-4.34	0.26	-69.30	-54.00	15.30
68.32	V	55.32	-63.13	-5.89	0.24	-69.26	-54.00	15.26

802.11 ax80 **5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
10420.00	H	49.05	-50.69	13.38	0.35	-37.66	-30.00	7.66
10420.00	V	41.56	-57.53	13.38	0.35	-44.50	-30.00	14.50
71.45	H	53.45	-65.74	-4.28	0.26	-70.28	-54.00	16.28
68.48	V	53.32	-65.24	-5.81	0.24	-71.29	-54.00	17.29

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

5 – TRANSMITTER UNWANTED EMISSIONS WITHIN THE 5 GHZ RLAN BANDS

Definition

Transmitter unwanted emissions within the 5 GHz RLAN bands are radio frequency emissions within the 5 GHz RLAN bands defined in clause 3.1.

Limit

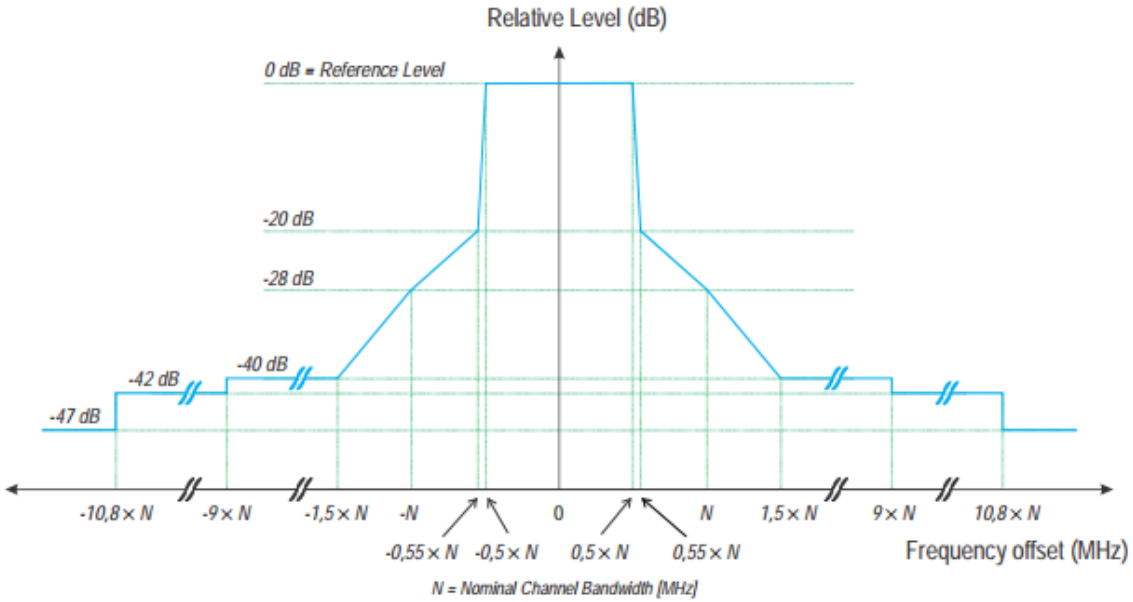


Figure 1: Transmit spectral power mask

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.6

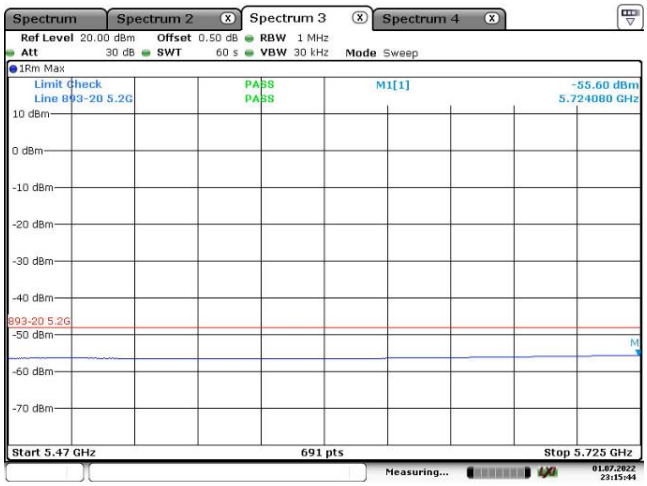
Test Data

Test Result: *Compliant. Please refer to following Plots:*

Chain 0:

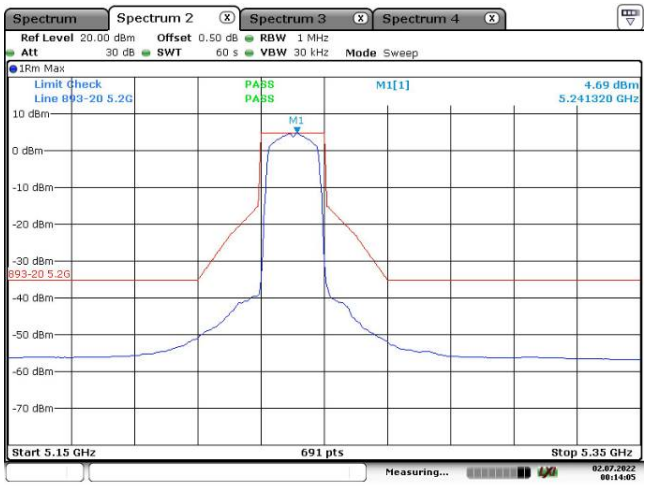
802.11 a-Low

Date: 1.JUL.2022 23:14:32

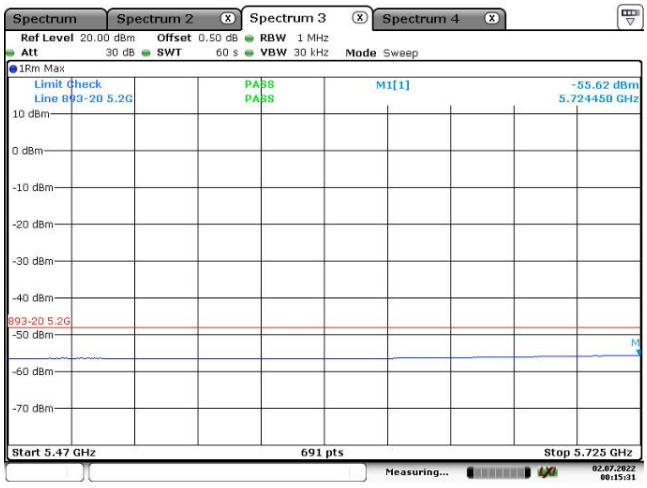


Date: 1.JUL.2022 23:15:45

802.11 a-High



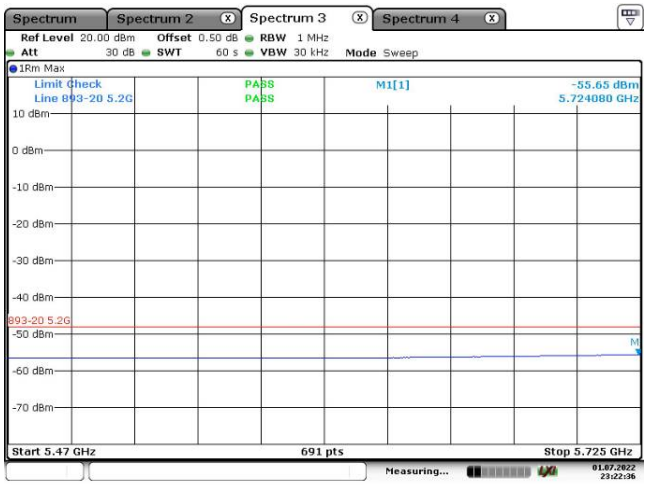
Date: 2.JUL.2022 00:14:06



Date: 2.JUL.2022 00:15:32

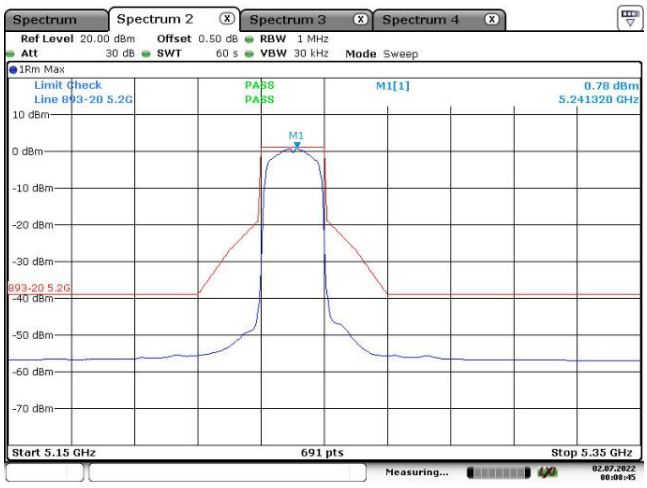
802.11 n20-Low

Date: 1.JUL.2022 23:19:52

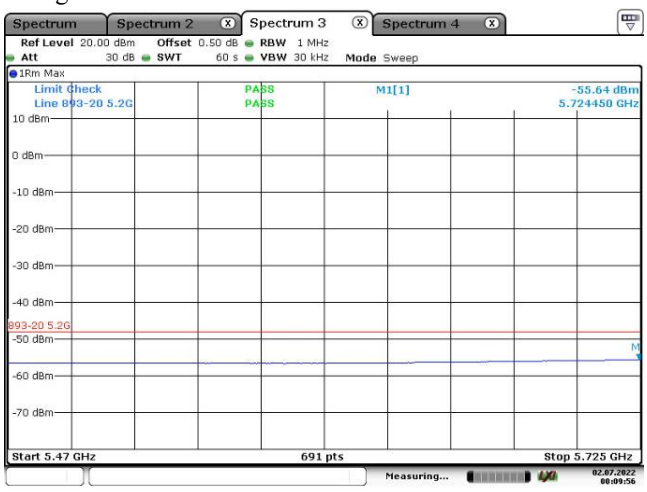


Date: 1.JUL.2022 23:22:37

802.11 n20-High



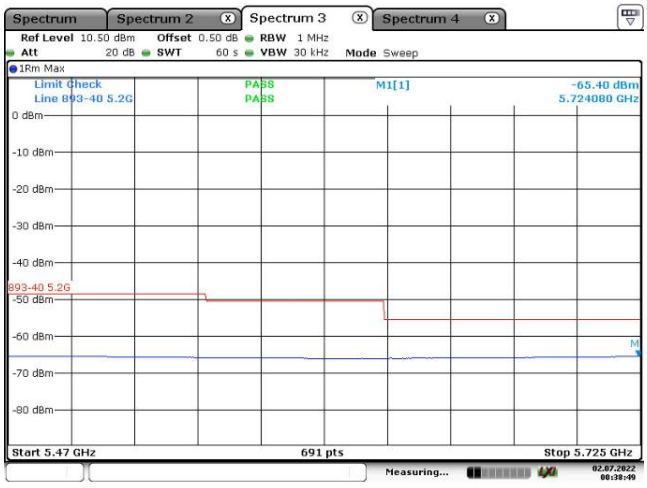
Date: 2.JUL.2022 00:08:46



Date: 2.JUL.2022 00:09:57

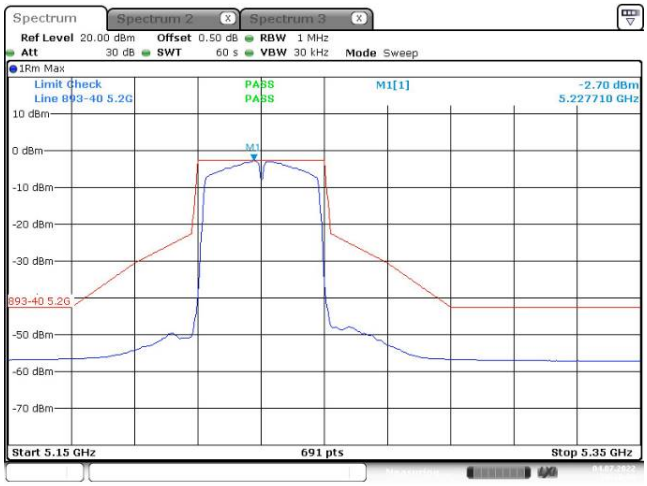
802.11 n40-Low

Date: 2.JUL.2022 00:34:05

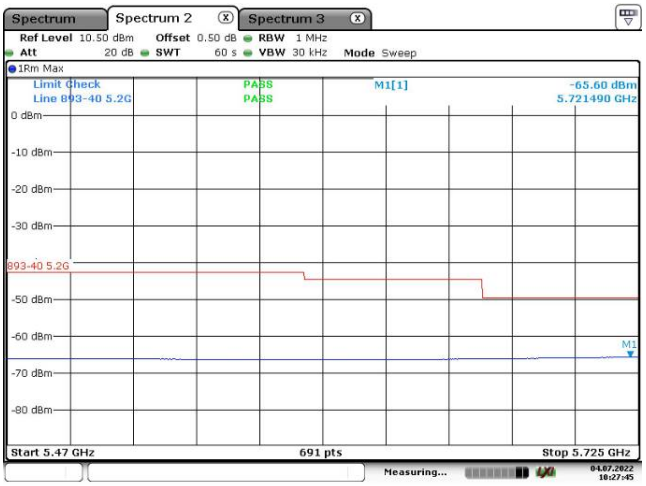


Date: 2.JUL.2022 00:38:50

802.11 n40-High



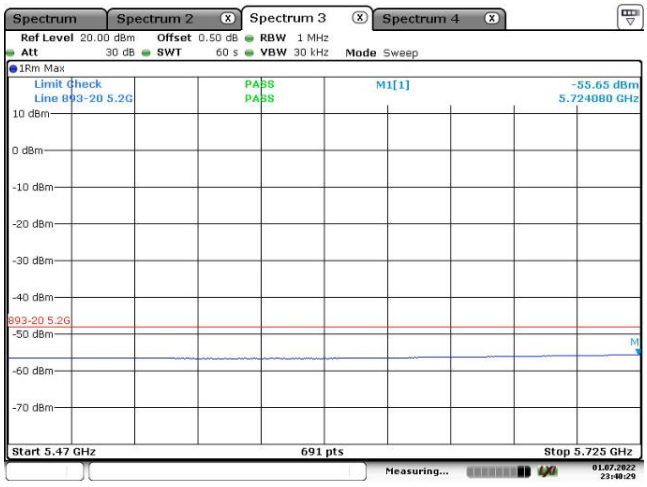
Date: 4.JUL.2022 10:17:56



Date: 4.JUL.2022 10:27:45

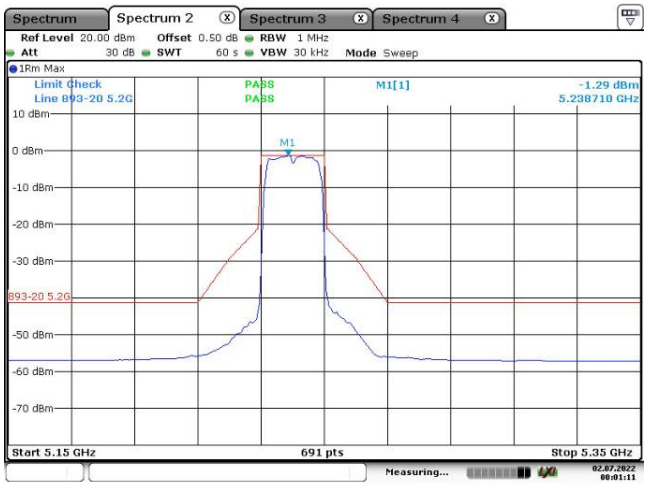
802.11 ac20-Low

Date: 1.JUL.2022 23:39:13

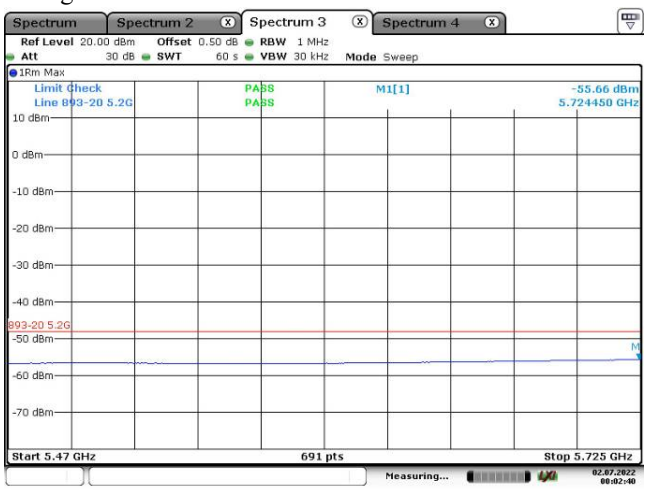


Date: 1.JUL.2022 23:40:29

802.11 ac20-High



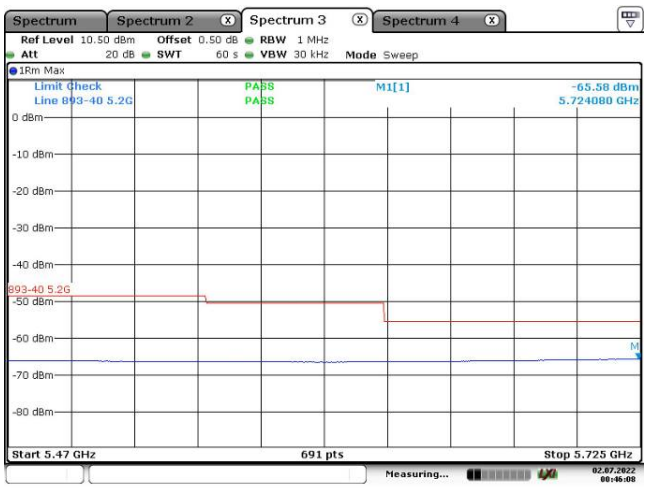
Date: 2.JUL.2022 00:01:12



Date: 2.JUL.2022 00:02:41

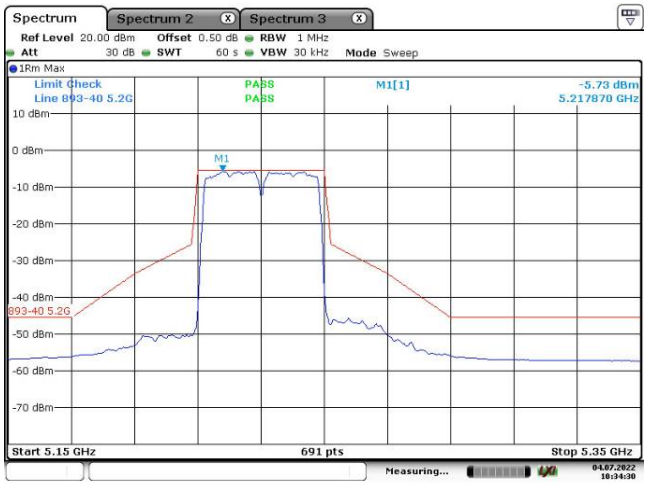
802.11 ac40-Low

Date: 2.JUL.2022 00:45:01



Date: 2.JUL.2022 00:46:09

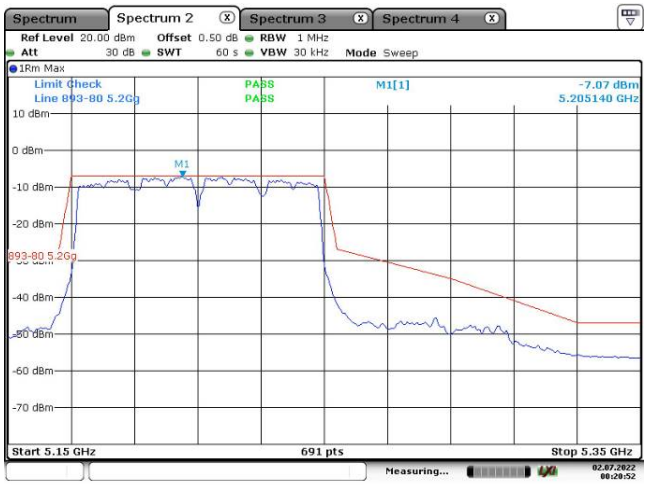
802.11 ac40-High



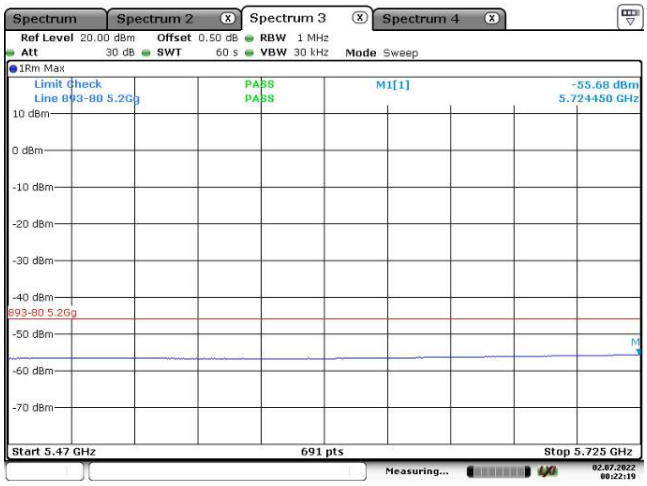
Date: 4.JUL.2022 10:34:30

Date: 4.JUL.2022 10:35:58

802.11 ac80-Middle



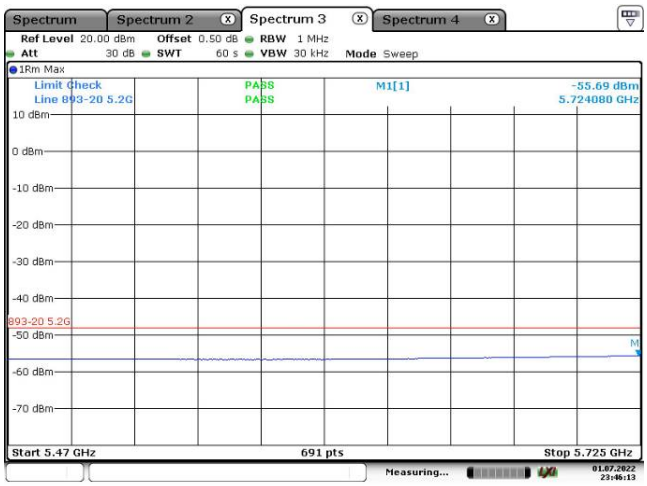
Date: 2.JUL.2022 00:20:52



Date: 2.JUL.2022 00:22:19

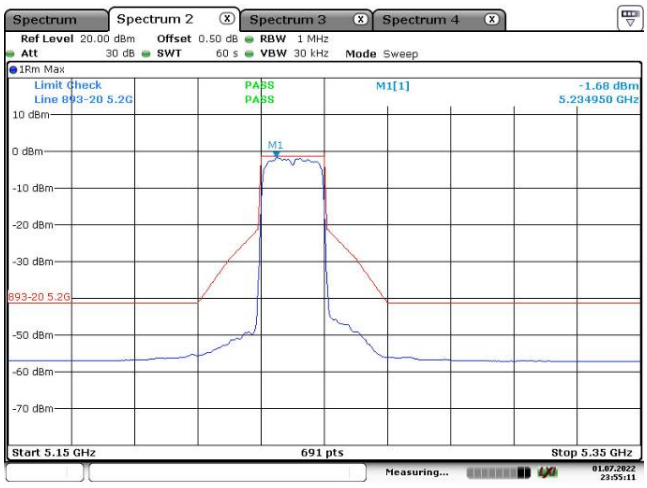
802.11 ax20-Low

Date: 1.JUL.2022 23:44:27

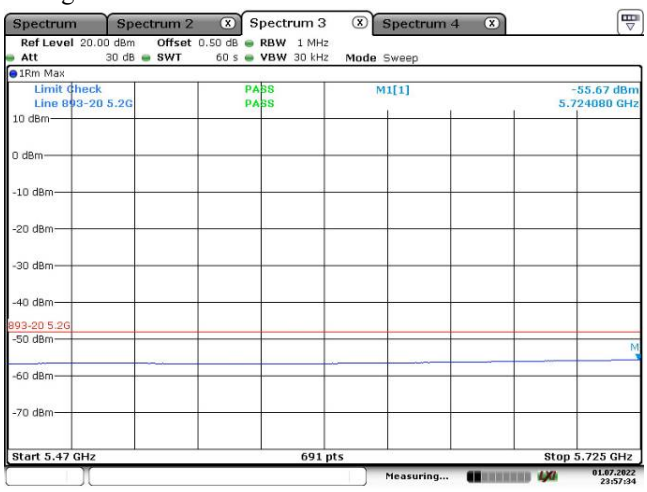


Date: 1.JUL.2022 23:46:14

802.11 ax20-High



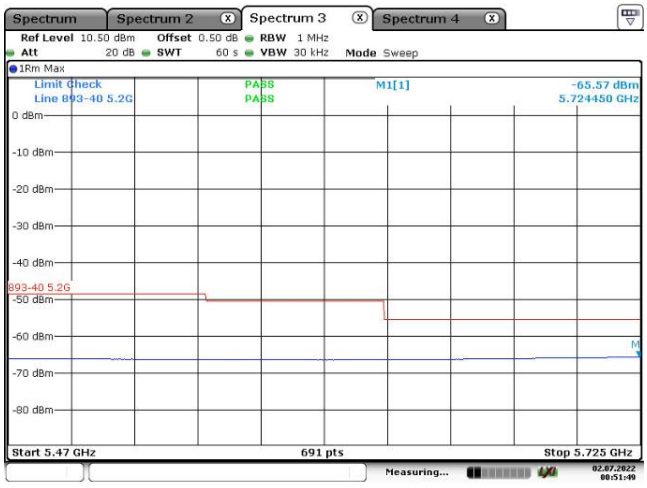
Date: 1.JUL.2022 23:55:12



Date: 1.JUL.2022 23:57:34

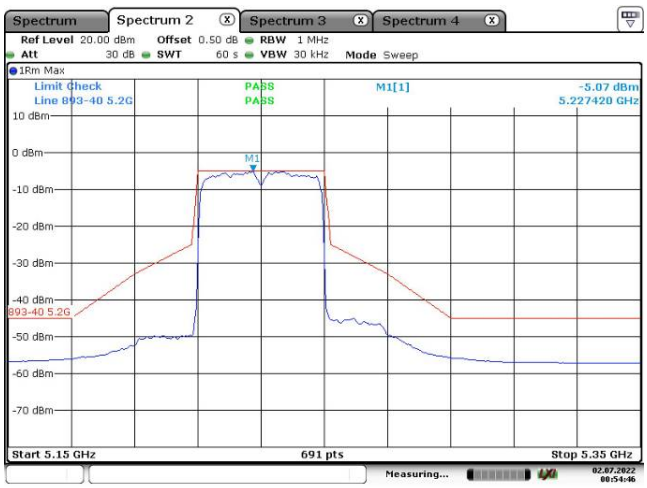
802.11 ax40-Low

Date: 2.JUL.2022 00:50:28

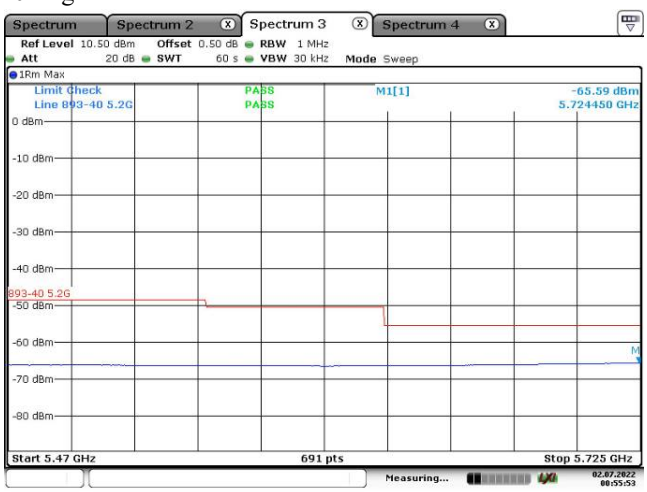


Date: 2.JUL.2022 00:51:49

802.11 ax40-High

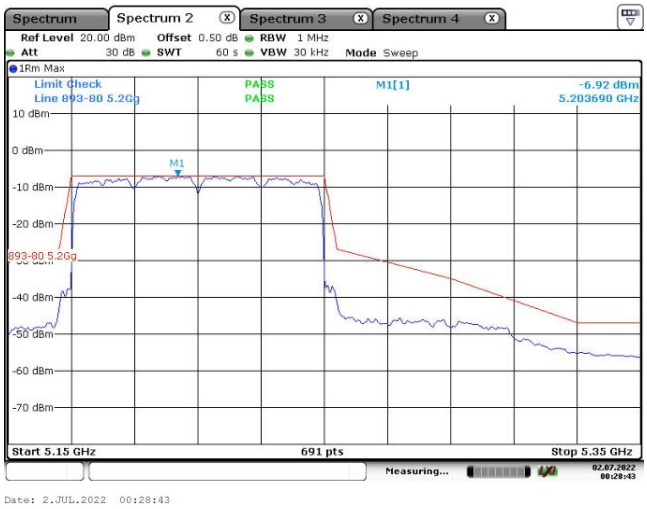


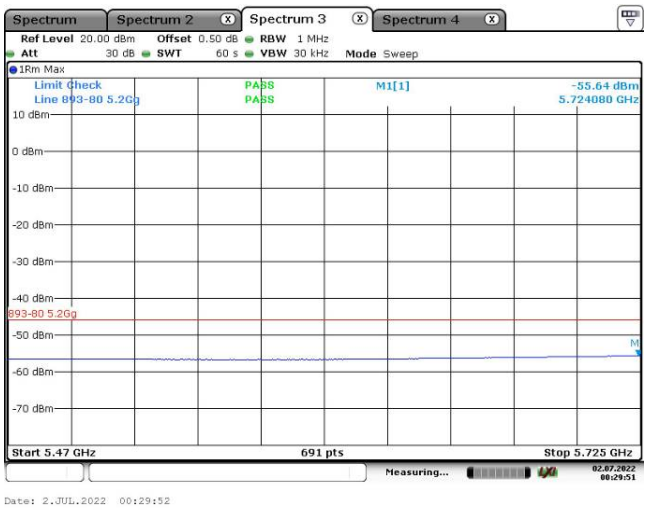
Date: 2.JUL.2022 00:54:46



Date: 2.JUL.2022 00:55:54

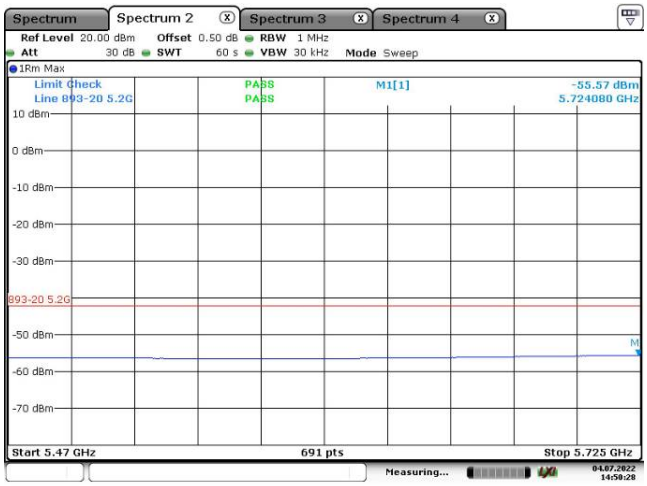
802.11 ax80-Middle



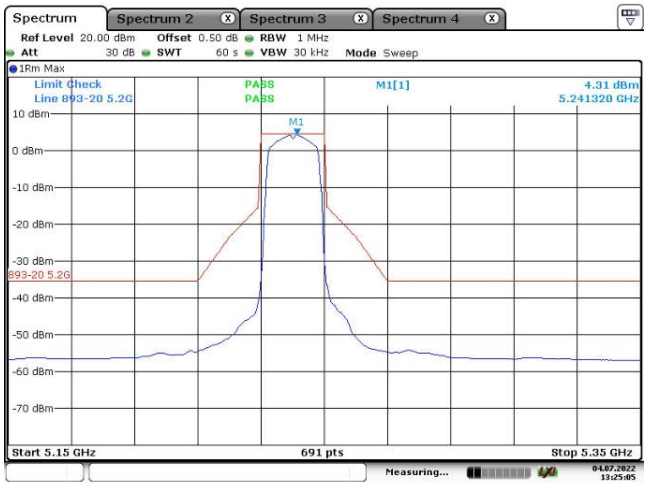


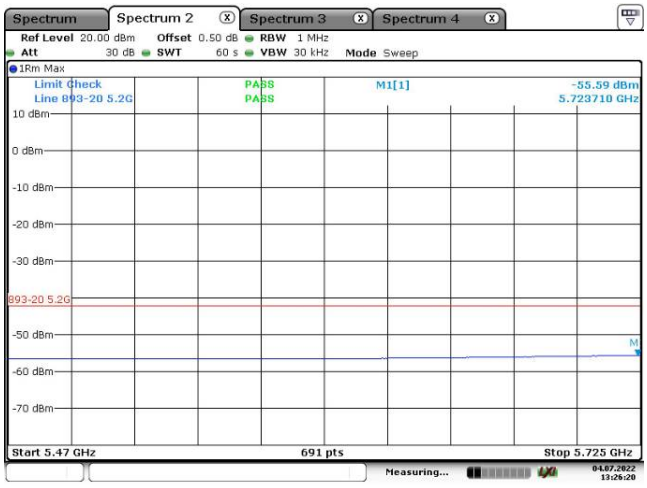
Chain 1:

802.11 a-Low

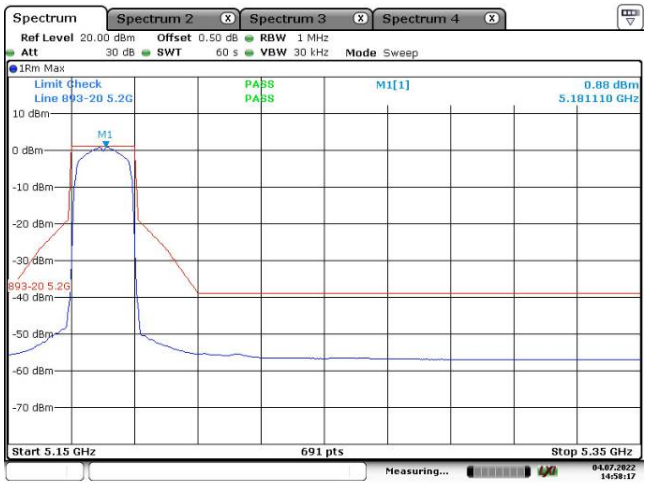


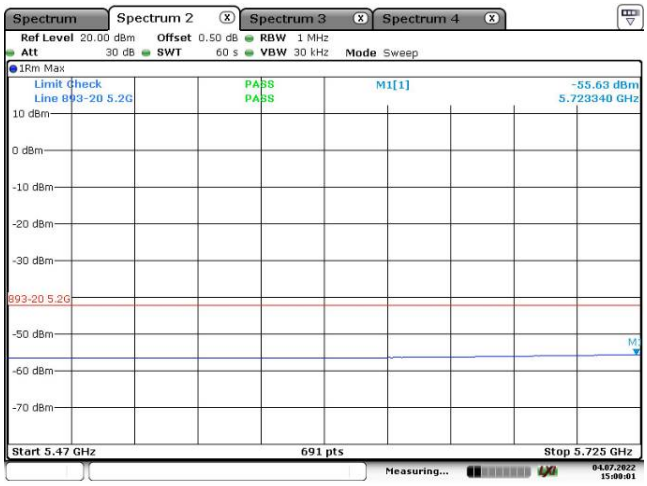
802.11 a-High



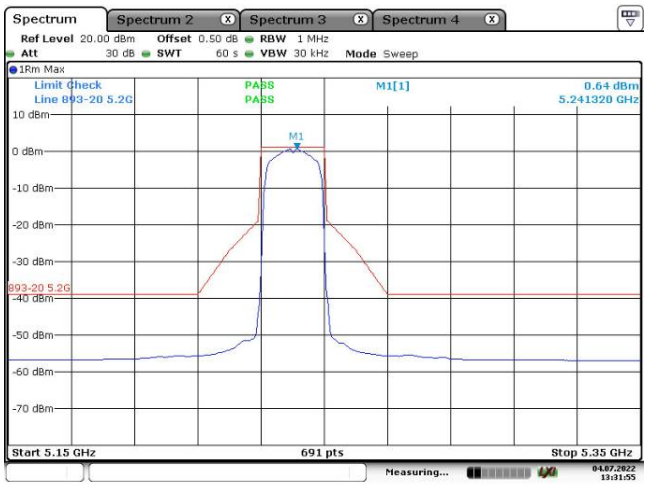


802.11 n20-Low

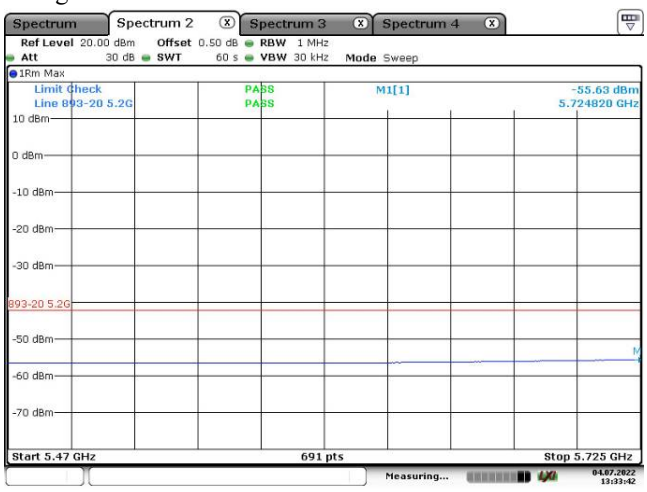




802.11 n20-High



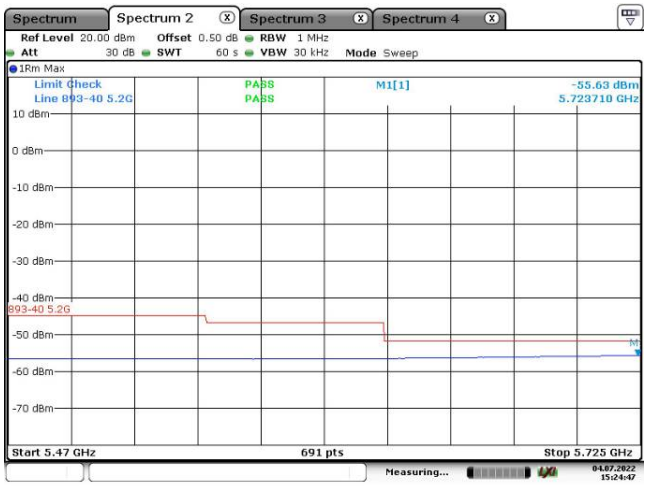
Date: 4.JUL.2022 13:31:55



Date: 4.JUL.2022 13:33:43

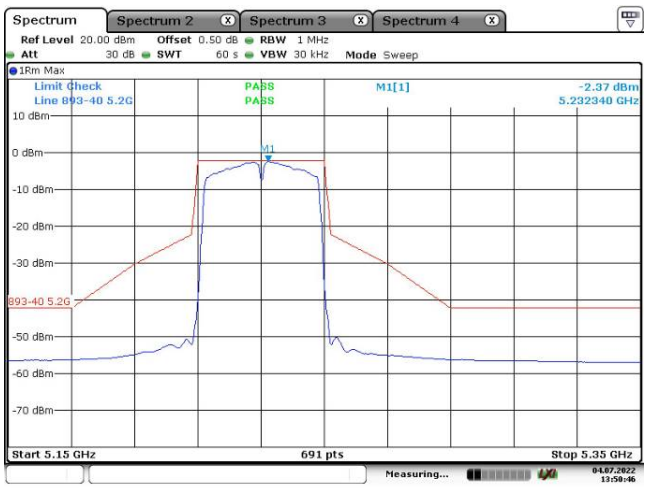
802.11 n40-Low

Date: 4.JUL.2022 15:23:32

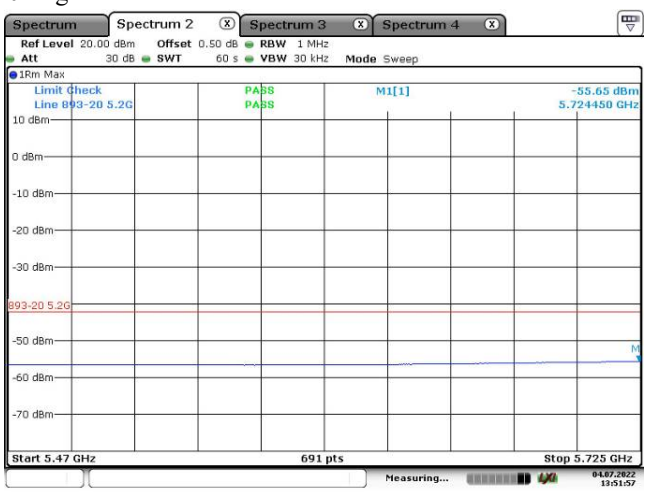


Date: 4.JUL.2022 15:24:47

802.11 n40-High



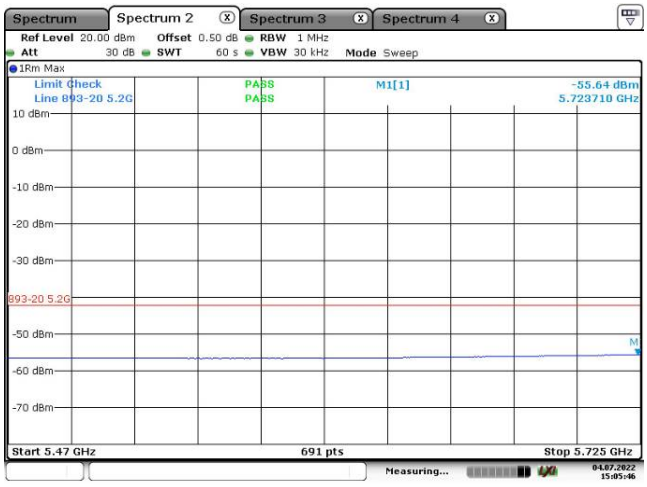
Date: 4.JUL.2022 13:50:46



Date: 4.JUL.2022 13:51:57

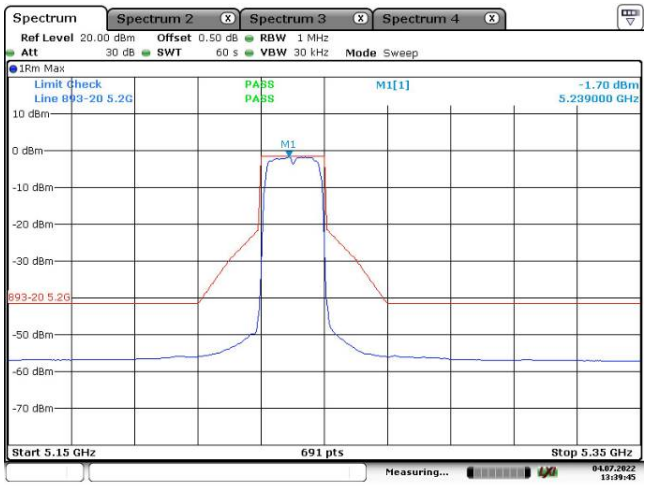
802.11 ac20-Low

Date: 4.JUL.2022 15:04:28

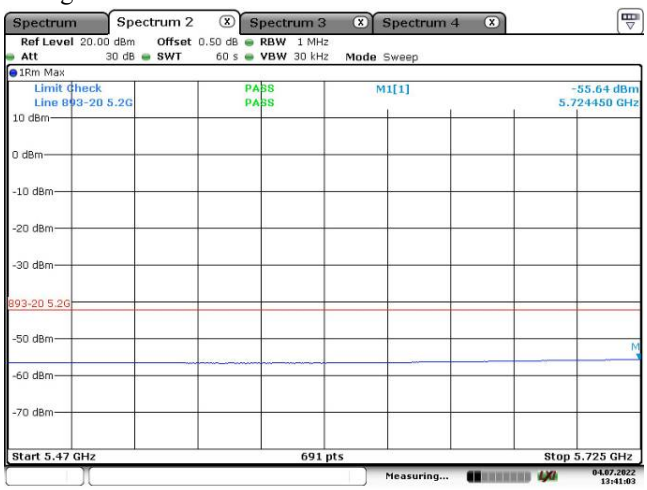


Date: 4.JUL.2022 15:05:46

802.11 ac20-High

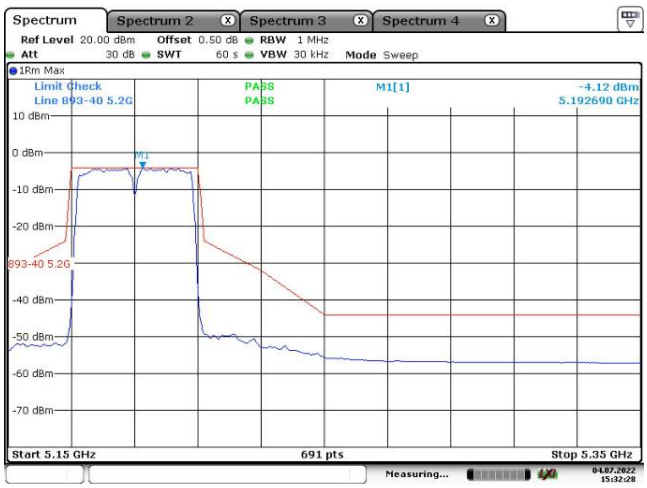


Date: 4.JUL.2022 13:39:45

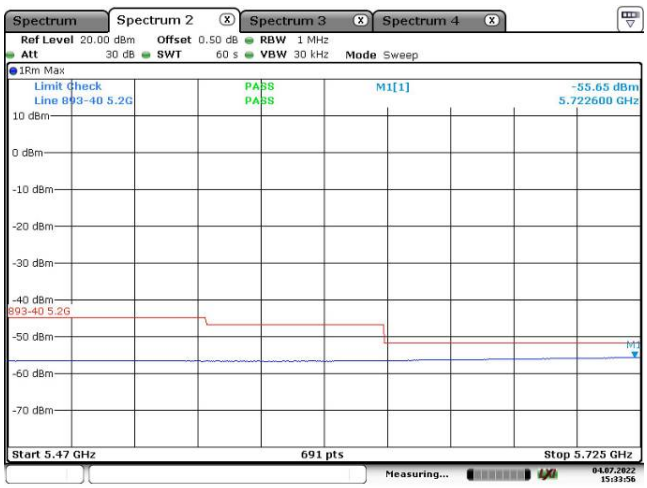


Date: 4.JUL.2022 13:41:04

802.11 ac40-Low

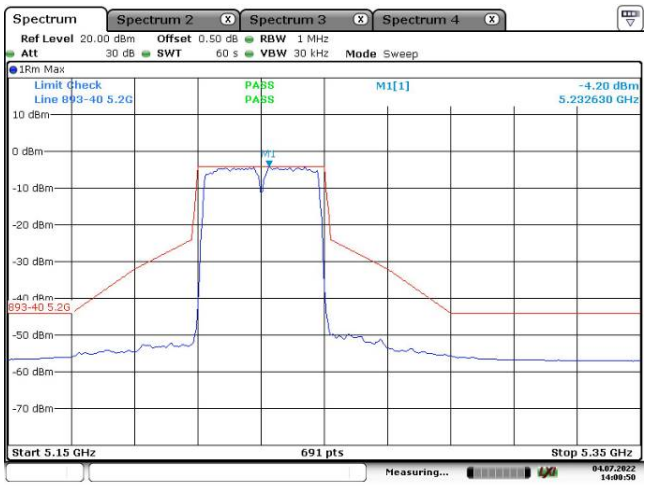


Date: 4.JUL.2022 15:32:28

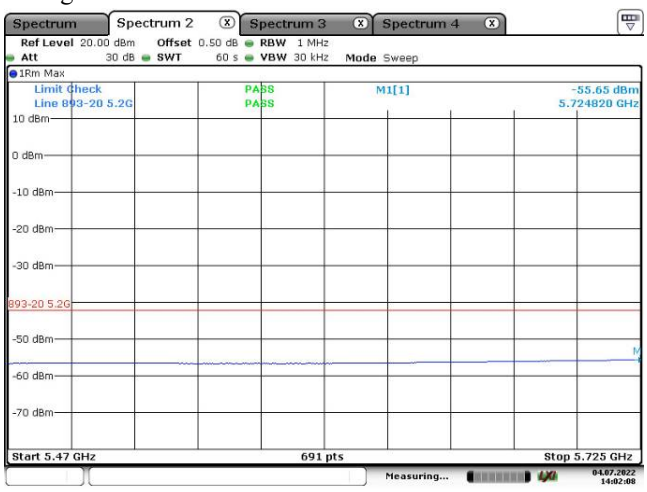


Date: 4.JUL.2022 15:33:56

802.11 ac40-High



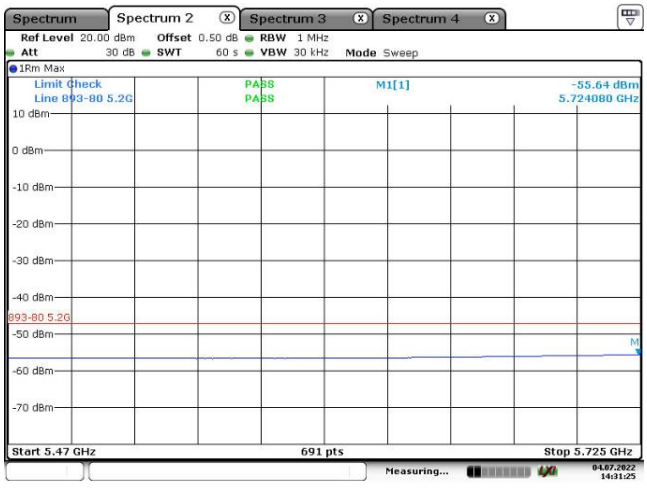
Date: 4.JUL.2022 14:00:51



Date: 4.JUL.2022 14:02:08

802.11 ac80-Middle

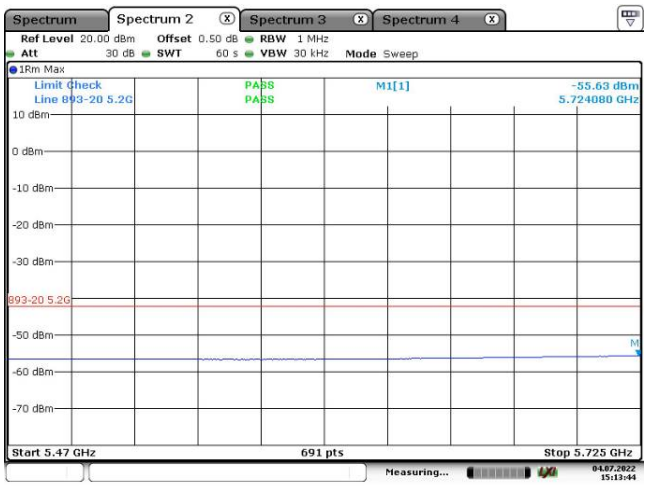
Date: 4.JUL.2022 14:18:16



Date: 4.JUL.2022 14:31:26

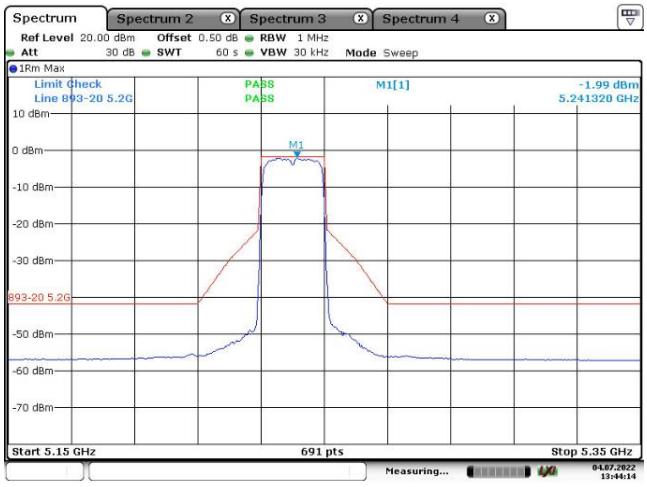
802.11 ax20- Low

Date: 4.JUL.2022 15:12:37

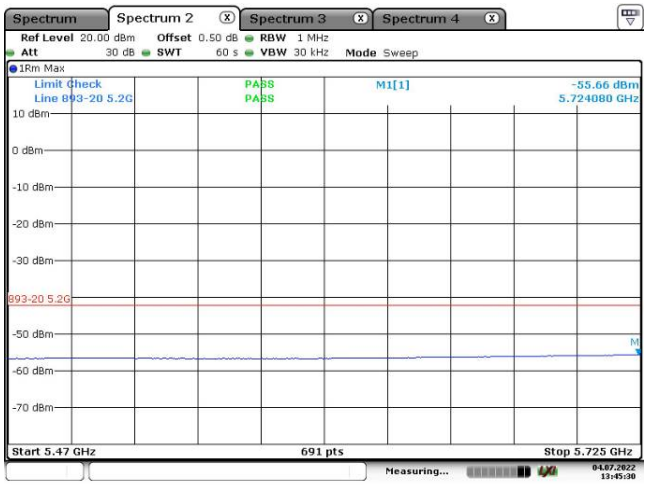


Date: 4.JUL.2022 15:13:44

802.11 ax20-High



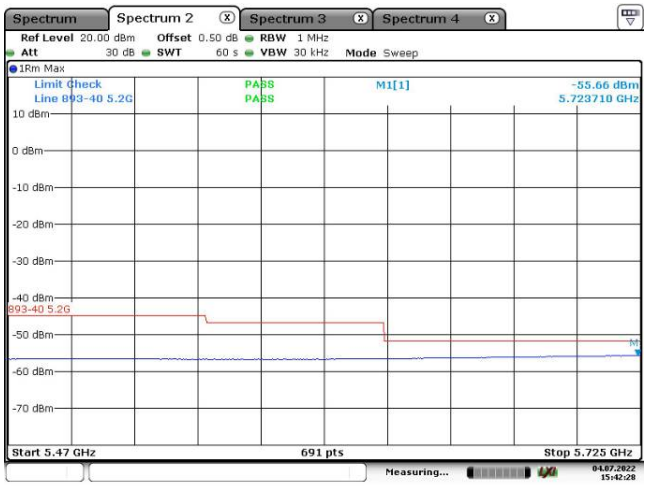
Date: 4.JUL.2022 13:44:14



Date: 4.JUL.2022 13:45:31

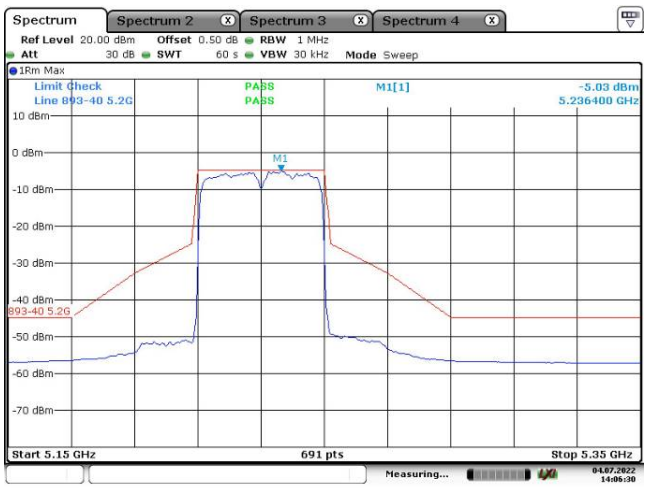
802.11 ax40-Low

Date: 4.JUL.2022 15:41:10

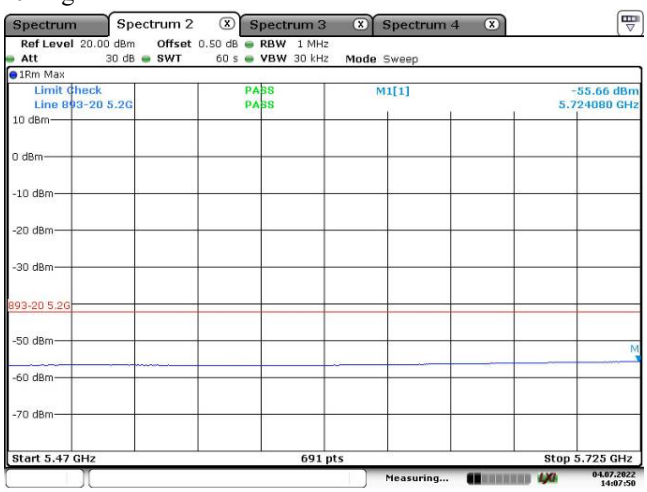


Date: 4.JUL.2022 15:42:29

802.11 ax40-High

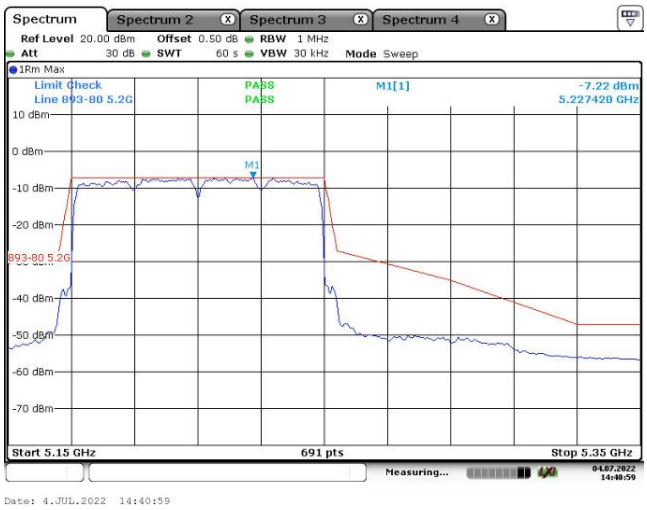


Date: 4.JUL.2022 14:06:31

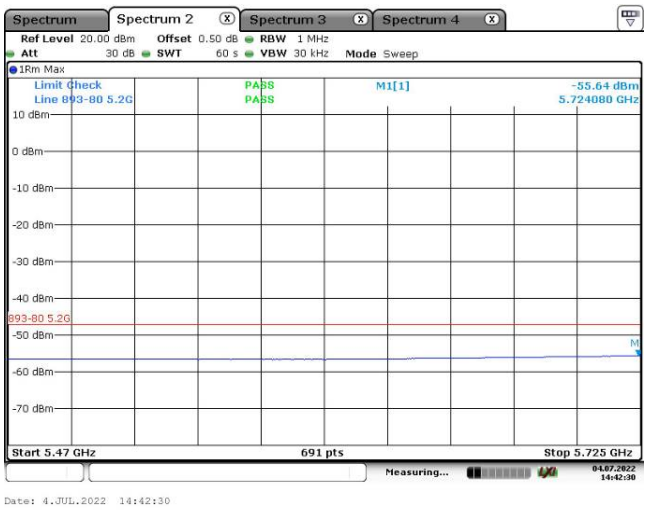


Date: 4.JUL.2022 14:07:50

802.11 ax80-Middle



Date: 4.JUL.2022 14:40:59



Date: 4.JUL.2022 14:42:30

6 – RECEIVER SPURIOUS EMISSIONS

Definition

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

Limit

The spurious emissions of the receiver shall not exceed the limits given in table 5.

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and e.i.r.p. for emissions above 1 GHz.

Table 5: Spurious radiated emission limits

Frequency range	Maximum power	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 26 GHz	-47 dBm	1 MHz

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.7

Test Data

Test Result: *Compliant.*

802.11 a_ Chain 0 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1645.21	H	50.21	-67.95	10.42	0.71	-58.24	-47.00	11.24
1542.32	V	50.64	-68.87	9.75	1.07	-60.19	-47.00	13.19
70.00	H	56.59	-62.19	-5.00	0.24	-67.43	-57.00	10.43
68.60	V	53.27	-65.36	-5.74	0.24	-71.34	-57.00	14.34

802.11 a_ Chain 0 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1487.66	H	50.48	-68.69	9.44	1.33	-60.58	-47.00	13.58
1594.34	V	50.66	-68.79	10.07	0.72	-59.44	-47.00	12.44
374.60	H	44.19	-67.83	0.00	0.59	-68.42	-57.00	11.42
374.60	V	46.24	-68.63	0.00	0.59	-69.22	-57.00	12.22

802.11 a_ Chain 1 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1879.54	H	50.47	-66.30	11.66	0.95	-55.59	-47.00	8.59
1659.32	V	50.18	-68.37	10.52	0.72	-58.57	-47.00	11.57
72.22	H	55.55	-63.86	-3.89	0.27	-68.02	-57.00	11.02
69.63	V	52.69	-66.60	-5.20	0.24	-72.04	-57.00	15.04

802.11 a_ Chain 1 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1523.01	H	50.15	-69.17	9.64	1.20	-60.73	-47.00	13.73
1346.16	V	50.89	-67.18	8.62	1.19	-59.75	-47.00	12.75
374.74	H	45.66	-66.35	0.00	0.59	-66.94	-57.00	9.94
374.44	V	47.98	-66.89	0.00	0.59	-67.48	-57.00	10.48

802.11 n20 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1450.02	H	52.12	-66.18	9.25	1.28	-58.21	-47.00	11.21
1570.12	V	51.45	-68.03	9.92	0.88	-58.99	-47.00	11.99
70.33	H	55.74	-63.13	-4.84	0.24	-68.21	-57.00	11.21
68.25	V	52.39	-66.02	-5.93	0.24	-72.19	-57.00	15.19

802.11 n20 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1456.05	H	51.88	-66.56	9.28	1.28	-58.56	-47.00	11.56
1645.66	V	51.45	-67.31	10.42	0.71	-57.60	-47.00	10.60
374.55	H	45.25	-66.77	0.00	0.59	-67.36	-57.00	10.36
374.52	V	46.55	-68.32	0.00	0.59	-68.91	-57.00	11.91

802.11 ac20 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1458.12	H	51.45	-67.04	9.29	1.29	-59.04	-47.00	12.04
1654.02	V	51.89	-66.74	10.48	0.72	-56.98	-47.00	9.98
71.44	H	55.20	-63.99	-4.28	0.26	-68.53	-57.00	11.53
69.87	V	52.78	-66.67	-5.07	0.24	-71.98	-57.00	14.98

802.11 ac20 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1765.12	H	51.62	-66.05	11.00	0.70	-55.75	-47.00	8.75
1654.23	V	51.24	-67.39	10.48	0.72	-57.63	-47.00	10.63
374.74	H	45.47	-66.54	0.00	0.59	-67.13	-57.00	10.13
374.85	V	56.33	-58.53	0.00	0.59	-59.12	-57.00	2.12

802.11 ax20 **5180 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1654.12	H	51.32	-66.71	10.48	0.72	-56.95	-47.00	9.95
1546.12	V	51.12	-68.38	9.78	1.04	-59.64	-47.00	12.64
70.96	H	56.58	-62.47	-4.52	0.25	-67.24	-57.00	10.24
68.57	V	53.21	-65.40	-5.76	0.24	-71.40	-57.00	14.40

802.11 ax20 **5240 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1768.12	H	51.23	-66.45	11.00	0.70	-56.15	-47.00	9.15
1565.12	V	50.14	-69.34	9.89	0.91	-60.36	-47.00	13.36
374.47	H	46.66	-65.36	0.00	0.59	-65.95	-57.00	8.95
374.26	V	48.52	-66.35	0.00	0.59	-66.94	-57.00	9.94

802.11 n40 **5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1645.00	H	50.32	-67.85	10.42	0.71	-58.14	-47.00	11.14
1546.12	V	50.89	-68.61	9.78	1.04	-59.87	-47.00	12.87
70.32	H	55.45	-63.42	-4.84	0.24	-68.50	-57.00	11.50
68.45	V	52.45	-66.09	-5.82	0.24	-72.15	-57.00	15.15

802.11 n40 **5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1648.12	H	50.12	-68.00	10.44	0.71	-58.27	-47.00	11.27
1702.23	V	50.32	-67.63	10.81	0.75	-57.57	-47.00	10.57
374.45	H	45.00	-67.03	0.00	0.59	-67.62	-57.00	10.62
374.58	V	46.85	-68.02	0.00	0.59	-68.61	-57.00	11.61

802.11 ac40 **5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1645.12	H	50.32	-67.84	10.42	0.71	-58.13	-47.00	11.13
1678.33	V	50.45	-67.82	10.65	0.73	-57.90	-47.00	10.90
71.54	H	55.12	-64.10	-4.23	0.26	-68.59	-57.00	11.59
69.46	V	52.58	-66.60	-5.29	0.24	-72.13	-57.00	15.13

802.11 ac40 **5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1545.32	H	50.58	-68.60	9.77	1.05	-59.88	-47.00	12.88
1689.00	V	50.23	-67.88	10.72	0.74	-57.90	-47.00	10.90
374.54	H	45.47	-66.55	0.00	0.59	-67.14	-57.00	10.14
374.12	V	54.32	-60.56	0.00	0.59	-61.15	-57.00	4.15

802.11 ax40 **5190 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1645.78	H	50.89	-67.26	10.42	0.71	-57.55	-47.00	10.55
1745.32	V	50.12	-68.05	10.94	0.72	-57.83	-47.00	10.83
70.86	H	56.52	-62.50	-4.57	0.25	-67.32	-57.00	10.32
68.57	V	53.31	-65.30	-5.76	0.24	-71.30	-57.00	14.30

802.11 ax40 **5230 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1696.23	H	50.89	-66.51	10.77	0.75	-56.49	-47.00	9.49
1545.32	V	50.45	-69.06	9.77	1.05	-60.34	-47.00	13.34
374.37	H	46.45	-65.58	0.00	0.59	-66.17	-57.00	9.17
374.36	V	48.52	-66.35	0.00	0.59	-66.94	-57.00	9.94

802.11 ac80 **5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1456.23	H	50.89	-67.55	9.28	1.28	-59.55	-47.00	12.55
1525.23	V	50.12	-69.41	9.65	1.18	-60.94	-47.00	13.94
70.45	H	57.86	-61.05	-4.78	0.25	-66.08	-57.00	9.08
68.64	V	54.65	-64.01	-5.72	0.24	-69.97	-57.00	12.97

802.11 ax80 **5210 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1658.23	H	50.89	-67.08	10.51	0.72	-57.29	-47.00	10.29
1525.56	V	50.45	-69.08	9.65	1.18	-60.61	-47.00	13.61
71.22	H	56.27	-62.86	-4.39	0.26	-67.51	-57.00	10.51
68.60	V	54.33	-64.30	-5.74	0.24	-70.28	-57.00	13.28

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

8 – ADAPTIVITY

Applicable Standard

Adaptivity (Channel Access Mechanism) is an automatic mechanism by which a device limits its transmissions and gains access to an Operating Channel.

§4.2.7.3.1 Frame Based Equipment:

Frame Based Equipment shall implement a Listen Before Talk (LBT) based Channel Access Mechanism to detect the presence of other RLAN transmissions on an Operating Channel.

§4.2.7.3.2 Load Based Equipment:

Load based Equipment shall implement a Listen Before Talk (LBT) based Channel Access Mechanism to detect the presence of other RLAN transmissions on an Operating Channel.

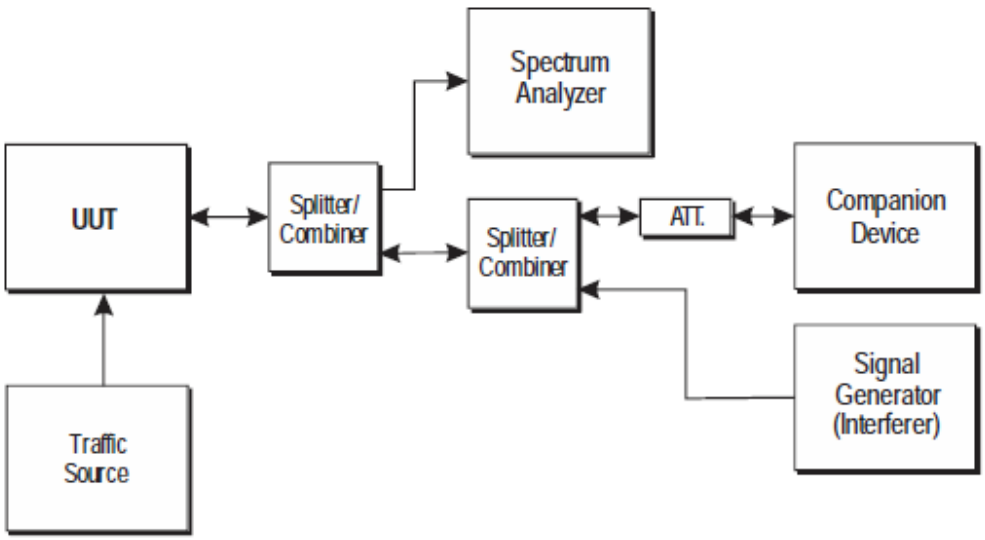
Limit

According to ETSI EN 301 893 V2.1.1 (2017-05) §4.2.7.3.1&§4.2.7.3.2

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.9

Block Diagram of Test Setup



Test Data

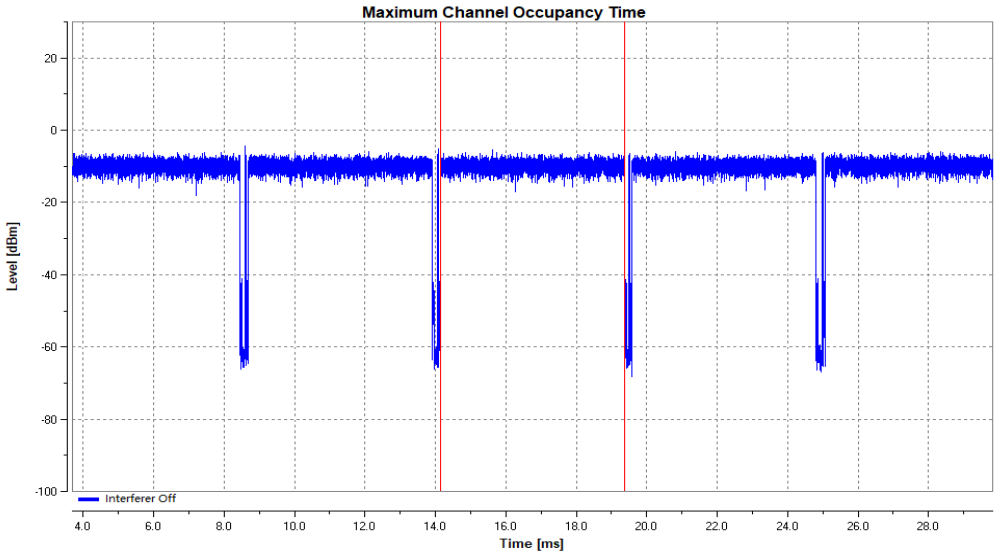
Test Result: *Compliant. Please refer to following tables.*

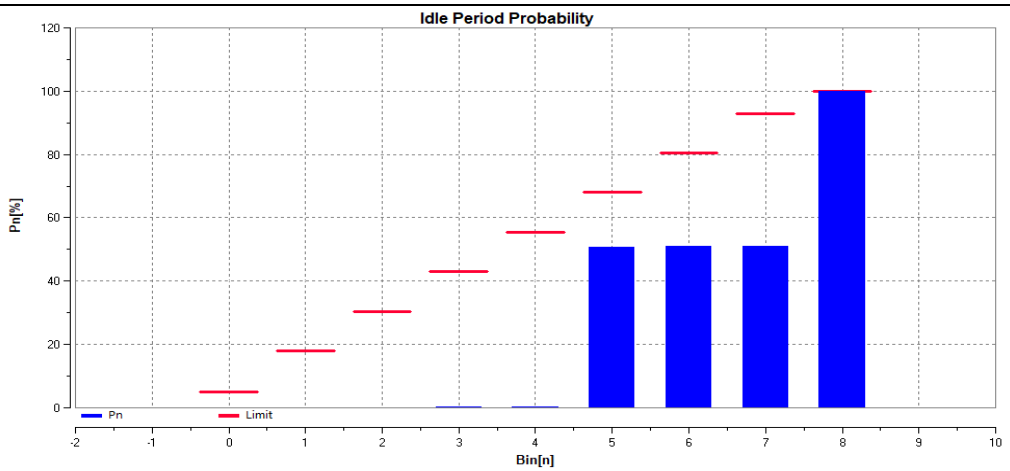
Test Mode	Channel	Priority Class	Max. COT [ms]	Limit [ms]	Min.Idle Time[ms]	Limit [ms]	Idle Period probability	Verdict
802.11a	5180	3	5.225	6.000	0.036	0.027	See the graph	PASS
802.11n40	5190	3	5.031	6.000	0.053	0.027	See the graph	PASS

Test Mode	Channel	Interference Type	Add interference Time[ms]	Max.Short Control number[n]	Limit [n]	Max.Short Control Time[ms]	Limit [ms]	Verdict
802.11a	5180	AWGN	2100	1	50	0.2	2.5	PASS
		OFDM	2100	2	50	0.4	2.5	PASS
		LTE	2100	2	50	0.4	2.5	PASS
802.11n40	5190	AWGN	2100	0	50	0	2.5	PASS

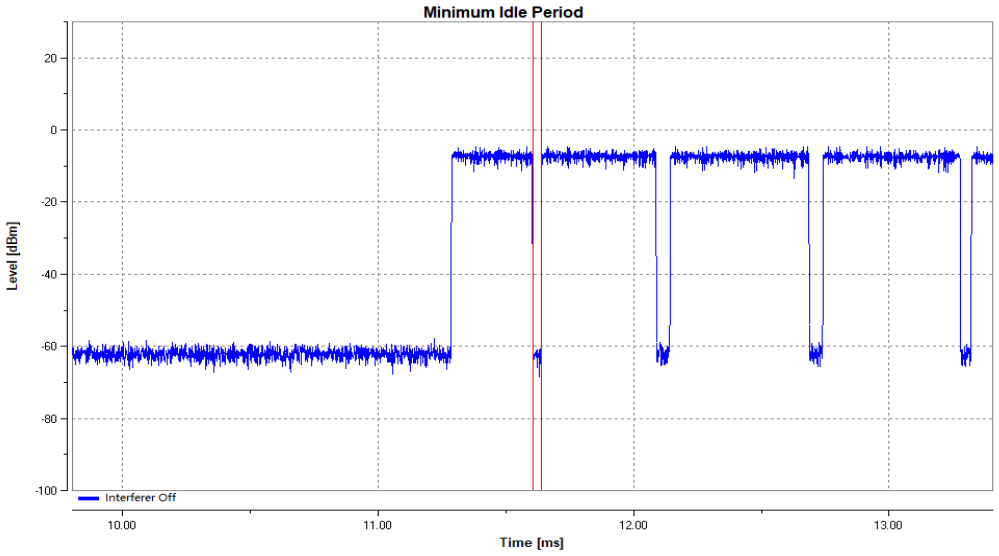
Please refer to following plots:

11A_Ant1_5180

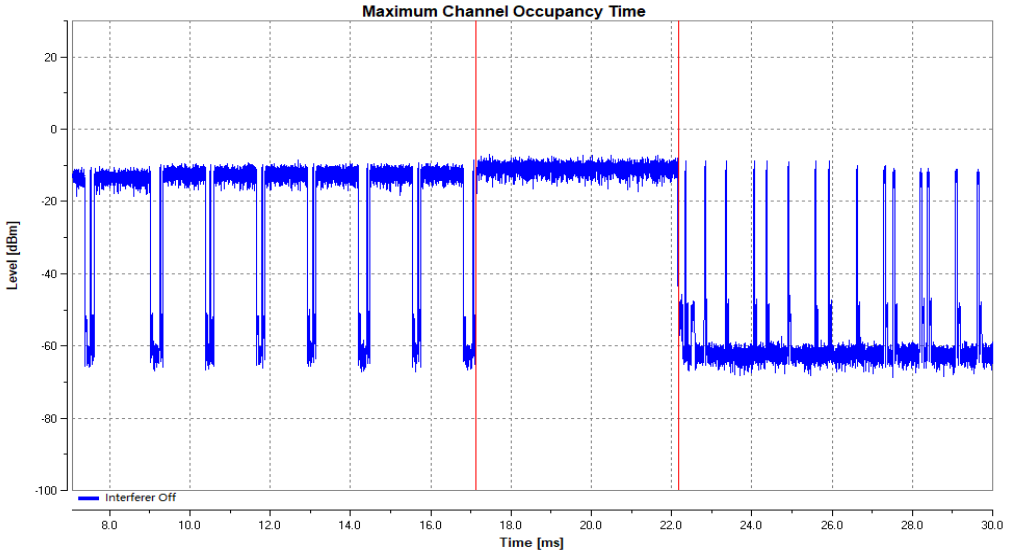


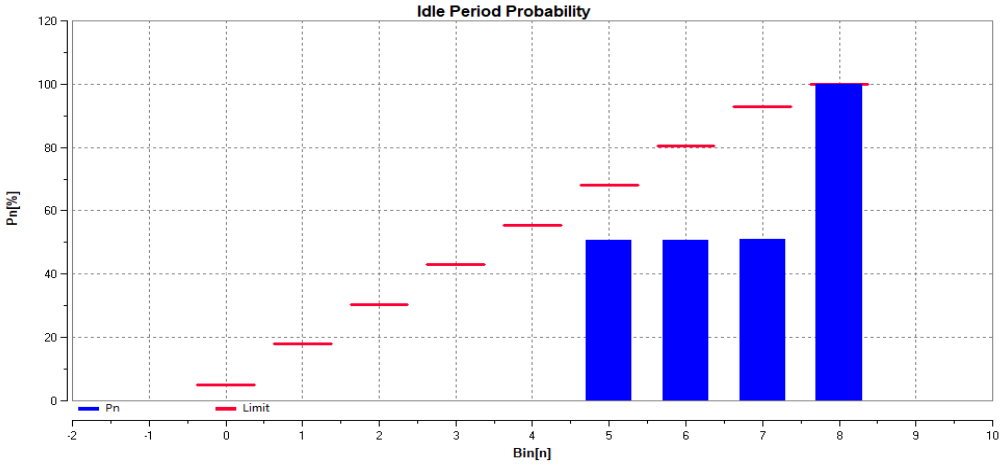


n	0	1	2	3	4	5	6	7	8
B[n]	0	0	8	12	21	5050	6	10	4908
P[n]	0	0	0.08	0.2	0.41	50.83	50.89	50.99	100
Limit	5	18	30.5	43	55.5	68	80.5	93	100

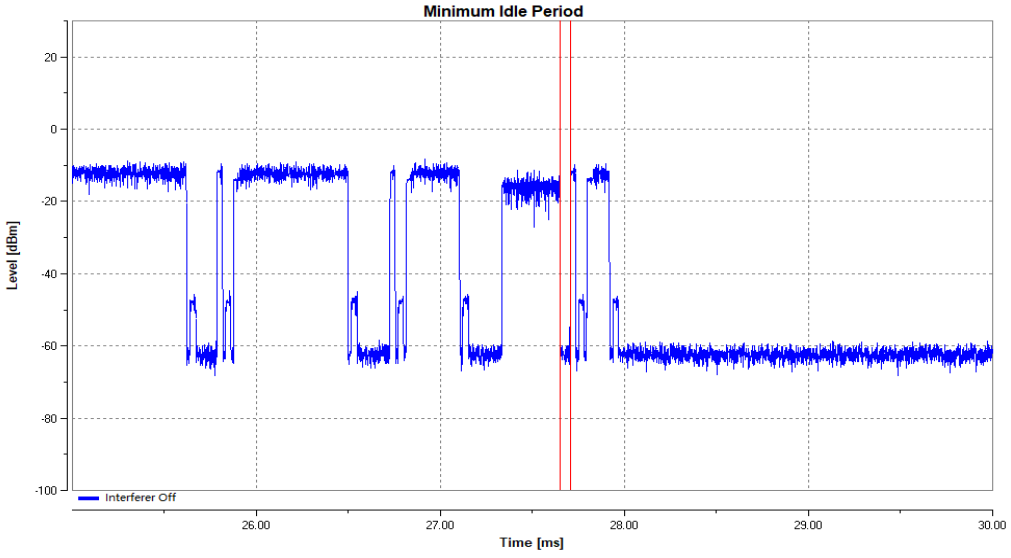


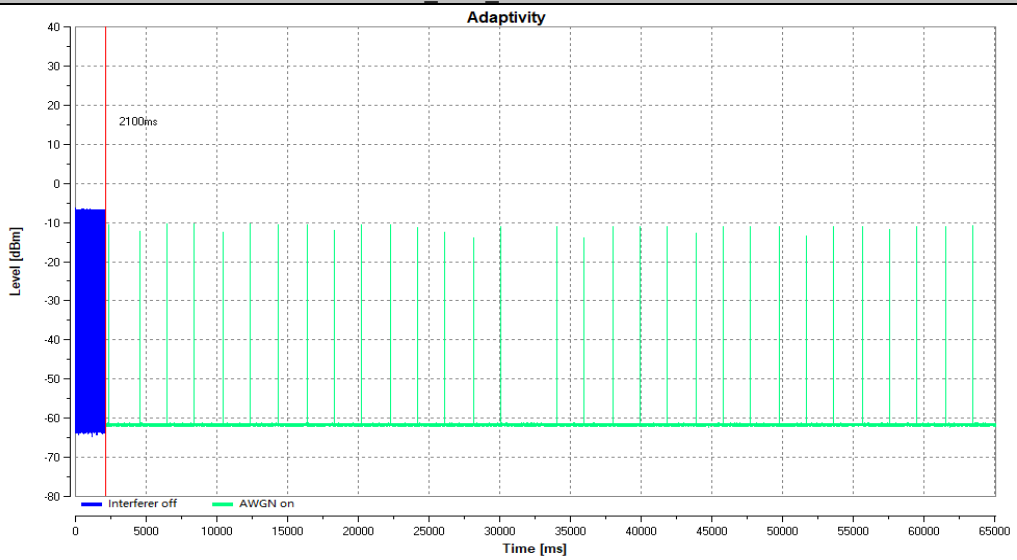
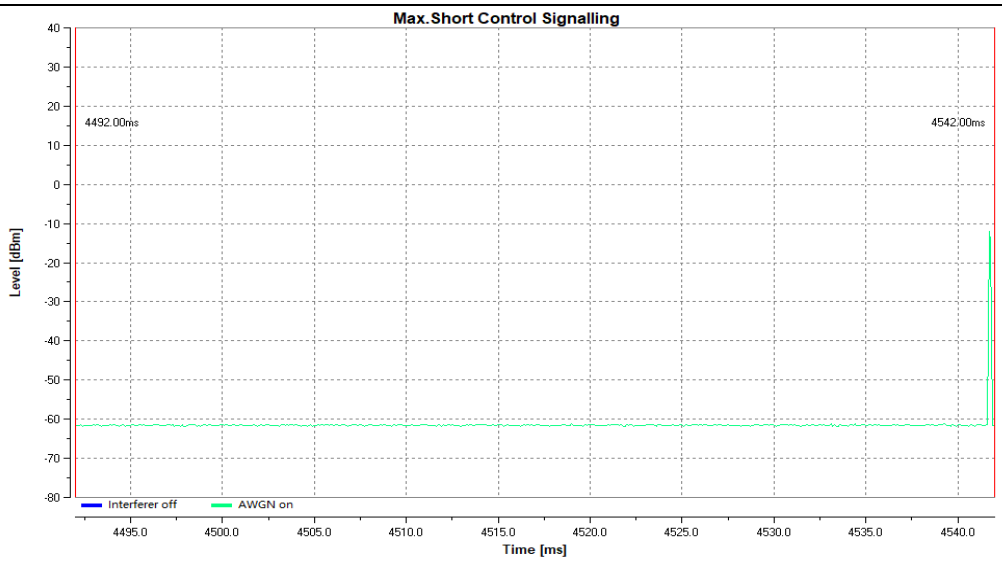
11N40SISO_Ant1_5190

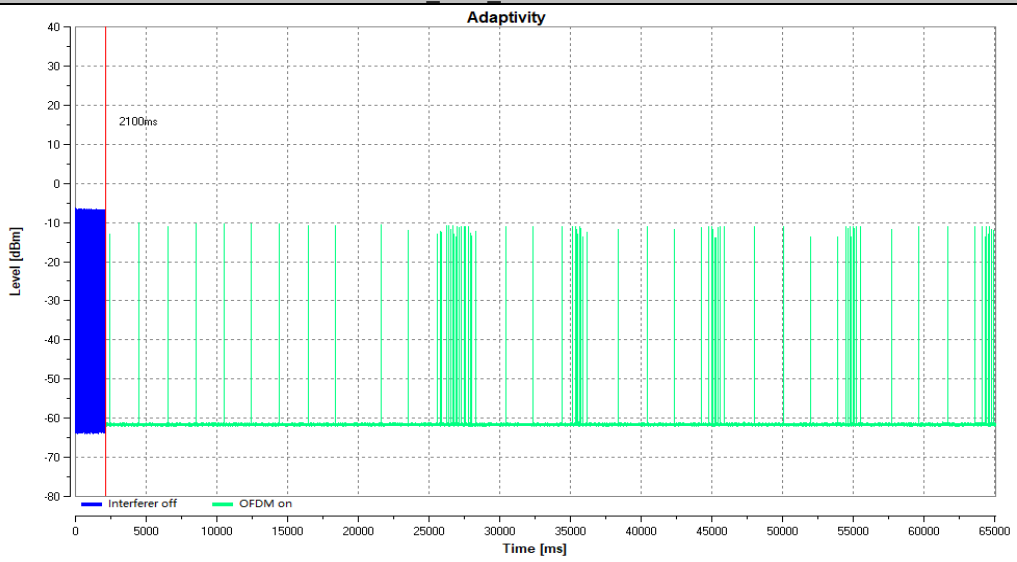
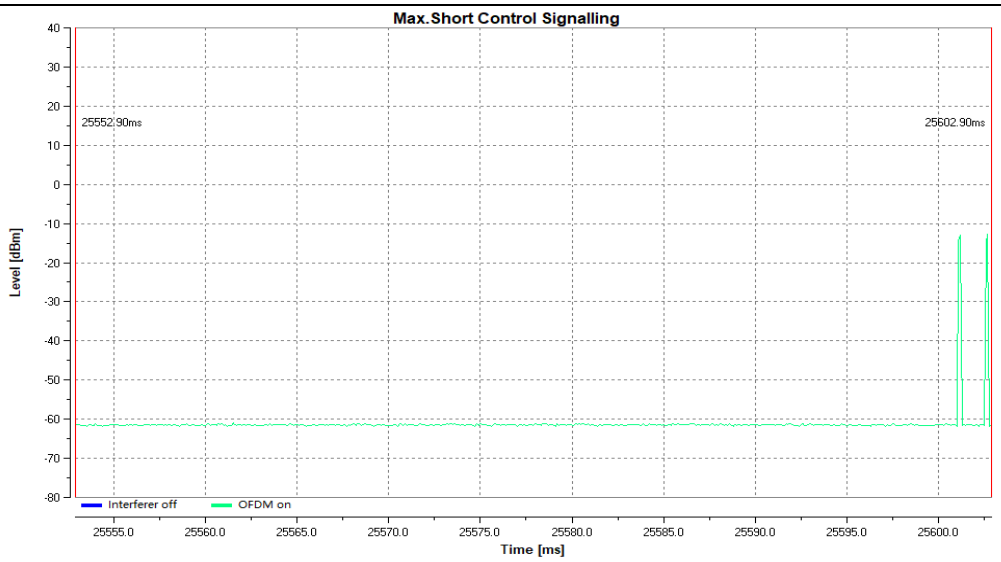


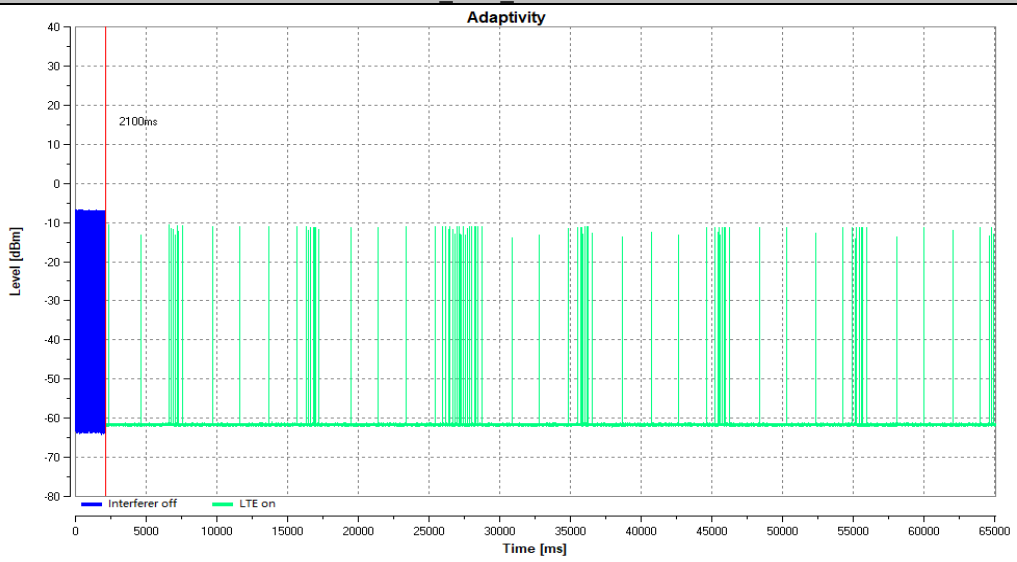
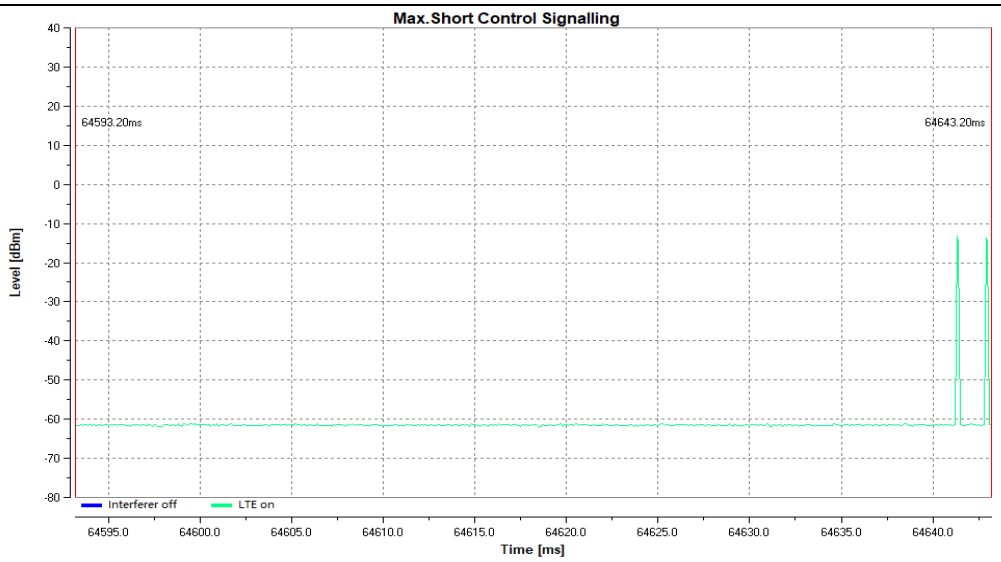


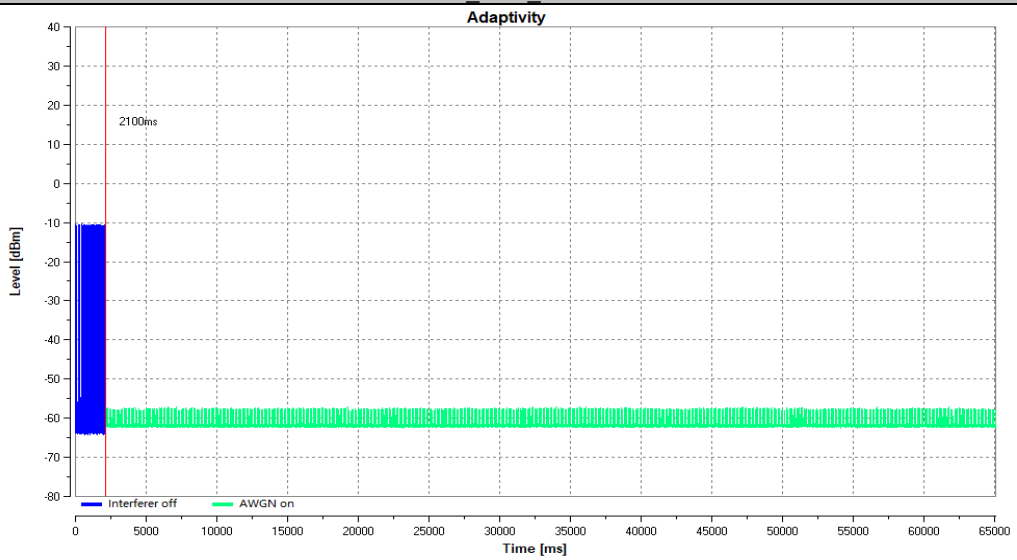
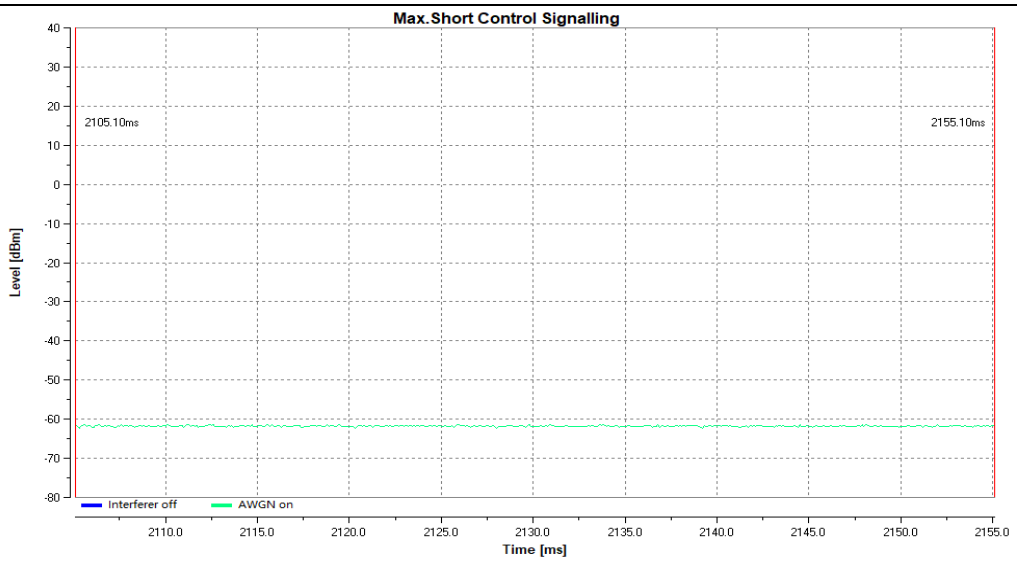
n	0	1	2	3	4	5	6	7	8
B[n]	0	0	0	0	11	5089	2	7	4924
P[n]	0	0	0	0	0.11	50.83	50.85	50.92	100
Limit	5	18	30.5	43	55.5	68	80.5	93	100



11A_Ant1_5180 AWGN



11A_Ant1_5180 OFDM



11A_Ant1_5180 LTE



11N40SISO_Ant1_5190 AWGN



9 – RECEIVER BLOCKING

Applicable Standard

Receiver blocking is a measure of the capability of the equipment to receive a wanted signal on its operating channel without exceeding a given degradation due to the presence of an unwanted input signal (blocking signal) on frequencies other than those of the operating bands provided in table 1.

Limit

The minimum performance criterion shall be a PER of less than or equal to 10 %. The manufacturer may declare alternative performance criteria as long as that is appropriate for the intended use of the equipment

While maintaining the minimum performance criteria as defined in clause 4.2.8.3, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined in table 9.

Table 9: Receiver Blocking parameters

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)		Type of blocking signal
		Master or Slave with radar detection (see table D.2, note 2)	Slave without radar detection (see table D.2, note 2)	
Pmin + 6 dB	5 100	-53	-59	Continuous Wave
Pmin + 6 dB	4 900 5 000 5 975	-47	-53	Continuous Wave
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined clause 4.2.8.3 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 same levels should be used at the antenna connector irrespective of antenna gain.				

Test Procedure

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.10

Block Diagram of Test Setup

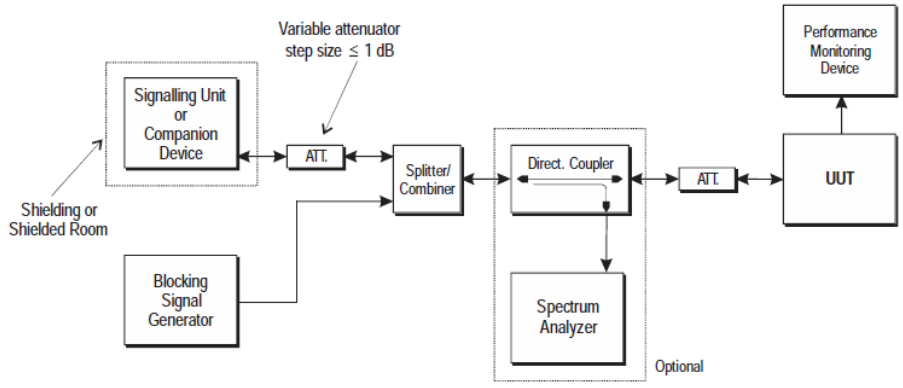


Figure 14: Test Set-up for receiver blocking

Test Data

Test Result: *Compliant. Please refer to following tables.*

Test Mode	Pmin (dBm)	Wanted signal Power from companion device (dBm)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Max Blocking Signal Power (dBm)	PER (%)	Limit (%)
802.11 a (5180 MHz)	-92	-86	5100	-53	-41	2.36	≤ 10
			4900	-47	-37	3.12	
			5000	-47	-32	2.18	
			5975	-47	-34	2.56	

Note: CMW500 was used to monitor the PER, and the worst case as below.

EXHIBIT A – EUT PHOTOGRAPHS

For photos in this section, please refer to report No.: DG2220617-27055E-02 EXHIBIT A..

EXHIBIT B – TEST SET UP PHOTOGRAPHS

Radiated Emission Below 1GHz View

Radiated Emission Above 1GHz View

DECLARATION LETTER

SHENZHEN TENDA TECHNOLOGY CO.,LTD.
ADD: 6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052
TEL: 86-755-27657098 FAX:66-755-27657178
Email: cert@tenda.cn

DECLARATION OF SIMILARITY

Date: 2022-06-17

To whom it may concern

Dear Sir or Madam:

We, SHENZHEN TENDA TECHNOLOGY CO.,LTD., hereby declare that the product: Dual-Band Gigabit Wi-Fi 6 Router, model: TX2 Pro are electrically identical with the model:RX2 Pro which was tested by BACL(Dongguan)with the same electromagnetic emissions and electromagnetic compatibility characteristics.

A description of the differences between those models and that are declared similar are as follows:
They are the same product, and just the different model name the rest are the same.
The detail information, please check the reports.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Signature:

Printed Name: Shenyue
Title: Engineer

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