

Test Report

Product	Desktop Collaboration Unit		
Name and address of the applicant	Cisco Systems Norway AS Philip Pedersens vei 1 1366 Lysaker, Norway		
Name and address of the manufacturer	Cisco Systems, Inc. 170 West Tasman Drive San Jose CA 95134, USA		
Model	07-100577		
Rating	100 – 240 V _{AC}		
Trademark	CISCO		
Serial number	FOC2528NJ5W		
Additional information	WiFi, BT Classic, BLE		
Tested according to	Parts of FCC Part 15.407 Unlicensed National Information Infrastructure Devices (U-NII) Parts of Industry Canada RSS-247, Issue 2 Licence-Exempt Local Area Network (LE-LAN) Devices		
Order number	431731		
Tested in period	2021-08-25 to 2021-08-27		
Issue date	2021-09-27		
Name and address of the testing laboratory	 Instituttveien 6 Kjeller, Norway www.nemko.com CAB Number FCC: NO0001 ISED: NO0470 TEL: +47 22 96 03 30 FAX: +47 22 96 05 50  NORWEGIAN ACCREDITATION TEST 033		
An accredited technical test executed under the Norwegian accreditation scheme			
 Prepared by [Frode Sveinsen]		 Approved by [G.Suhanthakumar]	
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1 INFORMATION

1.1 Test Item

Name	CISCO
Model Number	07-100577
FCC ID	LDK073002357
ISED ID	2461N-073002357
Serial number	FOC2528NJ5W
Hardware identity and/or version	DV1
Software identity and/or version	Room OS 10.6.0
Frequency Ranges	U-NII 1 : 5180 – 5240 MHz: 4 channels U-NII 2A : 5260 – 5320 MHz: 4 channels U-NII 2C : 5500 – 5720 MHz: 12 channels U-NII 3 : 5745 – 5825 MHz: 5 channels
Operating Modes	802.11a 802.11n (20/40 MHz BW) 802.11ac (40/80 MHz BW)
Type of Modulation	Digital (OFDM - Orthogonal frequency-division multiplexing)
Conducted Output Power	5180 – 5240 MHz: 39.6 mW 5260 – 5320 MHz: 86.7 mW 5500 – 5720 MHz: 99.5 mW 5745 – 5825 MHz: 111.7 mW
Antenna Connector	None
Number of Antennas	2
Antenna Diversity Supported	Yes
Smart Antennas Supported	Yes
TPC Supported	Not implemented. Not required when EIRP is below 500 mW
DFS Supported	Client Device without Radar Detection
Ad-hoc Mode	EUT does not support Ad-hoc Mode in DFS bands*
Hotspot Mode	EUT does not support Hotspot Mode in DFS bands*
Power Supply	Mains Powered

* EUTs that support Ad-hoc or Hotspot mode in the DFS Bands are considered Master Devices

Description of Test Item

The EUT is a radio module with WiFi and BT/BLE module in a collaboration end-point system.

This 5 GHz WiFi part has been tested as a U-NII system.

The radio is a certified radio module. This test report only covers additional tests for use with new antennas.

Data for the original radio module				
Brand Name	FCC ID	IC ID	Original Test Report No	Radio Technology
muRata	VPYLBEE5XV1XA	772C-LBEE5XV1XA	ER-2020-90106	BT Classic
			ER-2020-90107	BT Low Energy
			ER-2020-90108	WLAN
			ER-2020-90109	UNII 2TX
			ER-2020-90110	DFS

1.3 Normal test conditions

Temperature: 20 - 24 °C
Relative humidity: 20 - 50 %
Normal test voltage: 120V 60Hz

The EUT was powered from a regulated Power Source during all tests.

The values are the limit registered during the test period.

1.4 Test Engineer(s)

Frode Sveinsen

1.5 Antenna Requirement

Is the antenna detachable?

☐ Yes ☒ No

If detachable, is the antenna connector non-standard?

☐ Yes ☐ No

Type of antenna connector: N/A, Integral Antenna

1.6 Worst-Case Configuration

Radiated Emissions and Power Line Conducted Emissions were performed with the EUT set to transmit at the channel with the highest output power as worst-case scenario.

Worst case data rates were:

802.11a mode: 6 Mbps
802.11n HT20 mode: MCS0 SISO, MCS8 MIMO
802.11n HT40 mode : MCS0 SISO, MCS8 MIMO
802.11ac VHT80 mode : MCS0 SISO, MCS0 MIMO

1.7 EUT Operating Modes

Description of operating modes	Continuous TX, 5 GHz 20/40/80 MHz Mode
Additional information	EUT was controlled from a computer and programmed with test scripts from Putty.

1.8 Comments

The measurements were done with the EUT powered by 120V 60Hz from the power source.

It was checked that power variations between 85% and 115% did not have any influence on the measurements.

All ports were populated during spurious emission measurements.

This test report covers only selected tests for new antennas, all other tests are covered by the original SGS Test Report.

1.9 EUT Power Levels

Channel	Carrier Freq (MHz)	11a	11n HT20 SISO	11n HT20 MIMO	11n HT40 SISO	11n HT40 MIMO	11ac VHT80 SISO	11ac VHT80 MIMO
36	5180	10	9	7.5				
40	5200	13.5	13.5	10.5				
44	5220	13.5	13.5	10.5				
48	5240	13.5	13.5	10.5				
52	5260	15	15	14				
56	5280	15	15	14				
60	5300	15	15	14				
64	5320	10.5	10	7				
100	5500	10	9	7				
104	5520	15	15	14.0				
108	5540	15	15	14.5				
112	5560	15	15	14.5				
116	5580	15	15	14.5				
120	5600	15	15	14.5				
124	5620	15	15	14.5				
128	5640	15	15	14.5				
132	5660	15	15	14.5				
136	5680	15	15	14.5				
140	5700	10	9	6				
144	5720	15	15	14.5				
149	5745	15	15	15				
153	5765	15	15	15				
157	5785	15	15	15				
161	5805	15	15	15				
165	5825	15	15	15				
38	5190				10.5	7.5		
46	5230				13	10		
54	5270				14	14		
62	5310				9.5	7		
102	5510				8.5	8		
110	5550				14	14		
118	5590				14	14		
126	5630				14	14		
134	5670				12	9		
142	5710				14	14		
151	5755				14	14		
159	5795				14	14		
42	5210						8	6
58	5290						5.5	D
106	5530						7.5	5.5
122	5610						14	14
138	5690						14	14
155	5775						13	10.5

D = Disabled/ Not Used

ISED Canada require that all channels in the TDWR Band (5.60-5.65 GHz) are disabled, also on client devices.

Power is reduced on Ch104 with 802.11n HT20 MIMO, all other channels have default power levels from Murata.

2 TEST REPORT SUMMARY

2.1 General

All measurements are traceable to national standards.

The tests were conducted for demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.407 and ISSED RSS-247 Issue 2.

Tests were performed in accordance with ANSI C63.4-2014 and ANSI C63.10-2013.

Radiated tests were performed in a semi-anechoic chamber at measuring distances of 1m and 3m.

☐ New Submission

☒ Production Unit

☒ Class II Permissive Change

☐ Pre-production Unit

NII Equipment Code

☐ Family Listing



THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

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2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-247 Issue 2 RSS-GEN Issue 5 reference	Result
Supply Voltage Variations	15.31(e)	6.11 (RSS-GEN)	Complies
Antenna Requirement	15.203	6.8 (RSS-GEN)	Complies
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2 / 8.8 (RSS-GEN)	N/T
Maximum Output Power	15.407(a)	6.2	Complies
Power Spectral Density	15.407(a)	6.2	N/T
Emission Bandwidth	15.407(a)(2)	6.2	N/T
Unwanted Emissions	15.407(b)	6.2	Complies
Discontinuation of Transmission	15.407(c)	6.3	N/T ¹
6 dB Bandwidth	15.407(e)	6.2.4	N/T
Transmit Power Control	15.407(h)	6.2.3	N/A ²
Dynamic Frequency Selection	15.407(h)	6.3	N/T ³
Radiated Emissions	15.205 15.209	7.3 (RSS-GEN) 8.9 (RSS-GEN)	Complies

¹ See manufacturers declaration

² Transmit Power Control is not required when Max EIRP is below 500 mW

³ The EUT is a Client Device without Radar Detection.

Revision history

Revision	Date	Comment	Sign
00	2021-09-09	First edition	FS

3 TEST RESULTS

3.1 Maximum Output Power, EIRP

FCC 15.407 (a)

ISED RSS-247, Issue 2, Clause 6.2

Measurement procedure: ANSI C63.10-2013 Clause 12.3, method SA-1

Test Results: Complies

Measurement Data:

Ch. No.	Nominal Frequency (MHz)	Maximum Field Strength (dB μ V/m)			Maximum e.i.r.p. (dBm)		
		802.11a	802.11n HT20		802.11a	802.11n HT20	
			SISO	MIMO		SISO	MIMO
36	5180	107.3	105.6	107.1	12.1	10.4	11.9
40	5200	109.9	109.9	111.8	14.7	14.7	16.6
44	5220	109.8			14.6		
56	5280	109.1			13.9		
60	5300	109.2	109.1	111.7	14.0	13.9	16.5
64	5320	104.8	101.0	104.3	9.6	5.8	9.1
100	5500	105.5	102.5	104.4	10.3	7.3	9.2
104	5520	110.9	108.7	111.8	15.7	13.5	16.6
108	5540	110.7			15.5		
136	5680	106.8	107.2	111.4	11.6	12.0	16.2
140	5700	101.2	100.2	102.1	6.0	5.0	6.9
144	5720	105.2	104.9	111.1	10.0	9.7	15.9
149	5745	105.8	105.7	111.7	10.6	10.5	16.5
165	5825	103.6	103.5	110.4	8.4	8.3	15.2

Ch. No.	Nominal Frequency (MHz)	Maximum Field Strength (dBµV/m)			Maximum e.i.r.p. (dBm)		
		802.11n HT40		802.11ac VHT80	802.11n HT40		802.11ac VHT80
		SISO	MIMO	MIMO	SISO	MIMO	MIMO
38	5190	106.1	105.4		10.9	10.2	
46	5230	109.0	108.0		13.8	12.8	
54	5270	109.2	110.8		14.0	15.6	
62	5310	104.7	103.4		9.5	8.2	
102	5510	103.2	104.5		8.0	9.3	
110	5550	108.7	110.9		13.5	15.7	
126	5630	106.9	110.4		11.7	15.2	
134	5670	103.4	104.3		8.2	9.1	
142	5710	104.6	109.9		9.4	14.7	
151	5755	103.3	110.0		8.1	14.8	
159	5795	99.3	109.5		4.1	14.3	
42	5210			102.0			6.8
58	5290			99.5			4.3
106	5530			101.4			6.2
122	5610			110.3			15.1
138	5690			109.8			14.6
155	5775			109.4			14.2

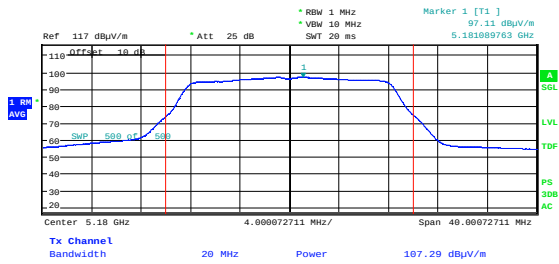
The EUT operates continuously; therefore, method SA-1 of ANSI C63.10-2013 clause 12.3 was used.

EIRP values were calculated from Field Strength values using the method described in KDB 412172 D01.

This is an indoor device with directional Antenna Gain less than 6 dBi.

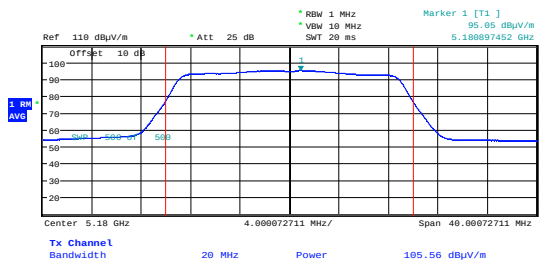
Limits for Indoor Device:

Frequency Band	FCC 15.407(a)	ISED RSS-247 Issue 2
5150 – 5250 MHz	Less than 250 mW (24 dBm) for client device Less than 1 W (30 dBm) for master device	Less than the lesser of 200 mW e.i.r.p. or $10 + 10 \log_{10} B$ dBm e.i.r.p.
5250 – 5350 MHz 5470 – 5725 MHz	Less than the lesser of 250 mW (24 dBm) or $11 + 10 \log_{10} B$ dBm	Less than the lesser of 250 mW or $11 + 10 \log_{10} B$ dBm, and Less than the lesser of 1 W e.i.r.p. or $17 + 10 \log_{10} B$ dBm e.i.r.p. Devices with e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W
5725 – 5825 MHz	Less than 1 Watt	Less than 1 Watt If Antenna Gain is more than 6 dBi the Power Limit is reduced by the amount exceeding 6 dBi
	If Antenna Gain is more than 6 dBi the Power Limit is reduced by the amount exceeding 6 dBi	
	B is the 26dB emission bandwidth in MHz	B is the 99% emission bandwidth in MHz



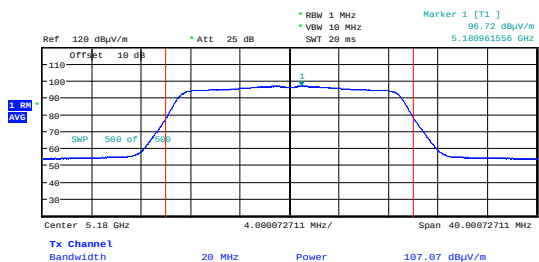
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Maximum EIRP, Ch036, 802.11a, 6Mb



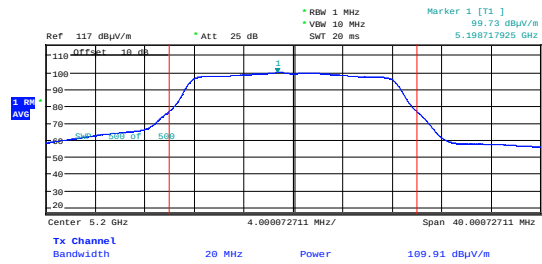
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Maximum EIRP, Ch036, 802.11n, HT20, SISO



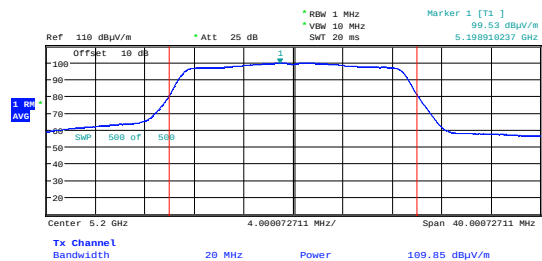
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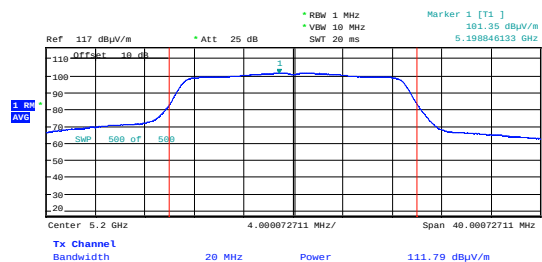
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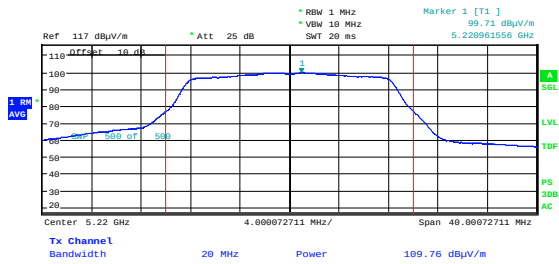
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Maximum EIRP, Ch040, 802.11n, HT20, SISO



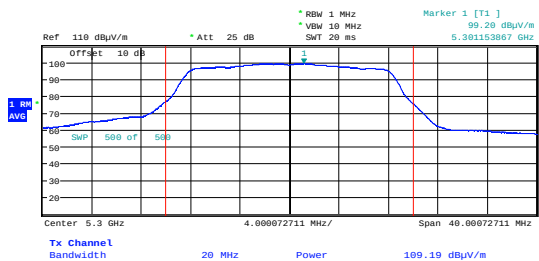
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Maximum EIRP, Ch040, 802.11n, HT20 MIMO



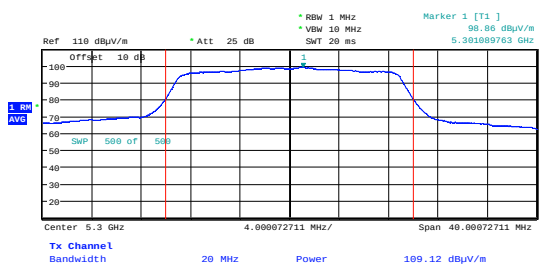
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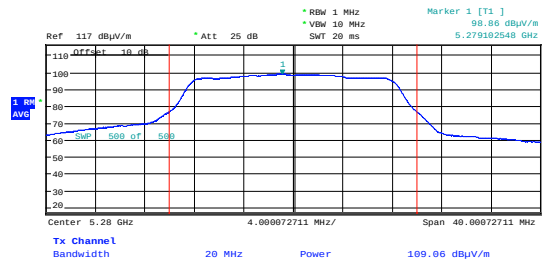
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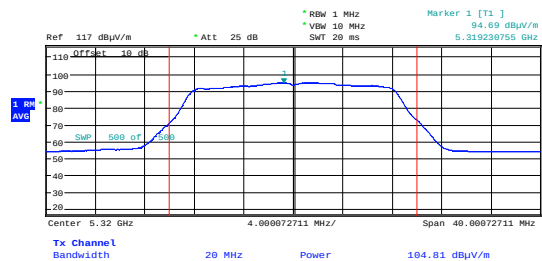
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Maximum EIRP, Ch060, 802.11n, HT20, SISO



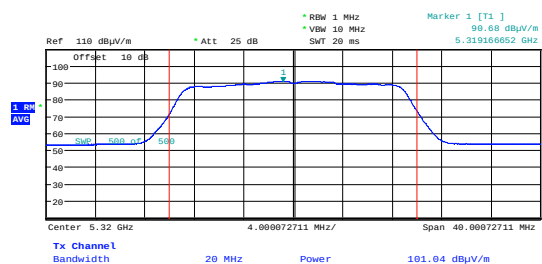
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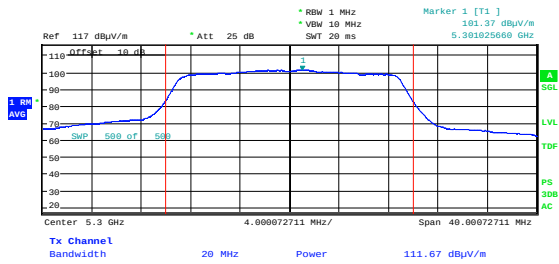
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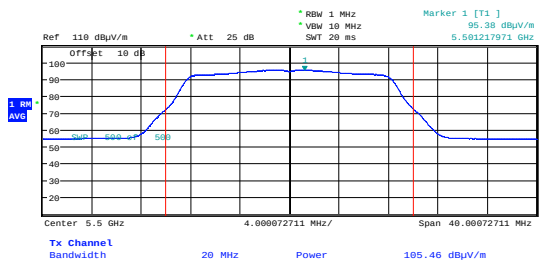
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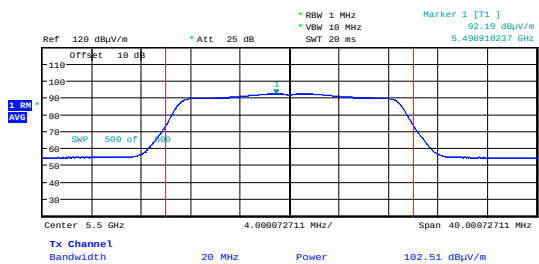
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Maximum EIRP, Ch060, 802.11n, HT20 MIMO



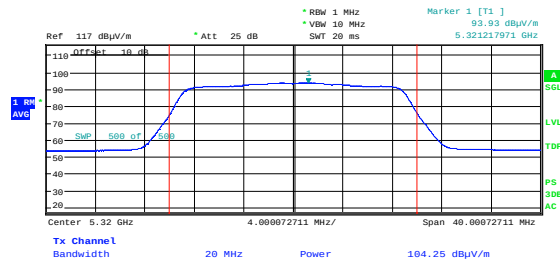
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Maximum EIRP, Ch100, 802.11a, 6Mb



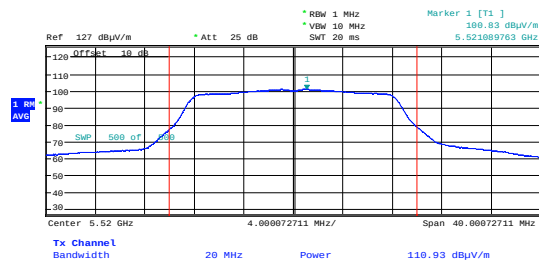
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Maximum EIRP, Ch100, 802.11n, HT20, SISO



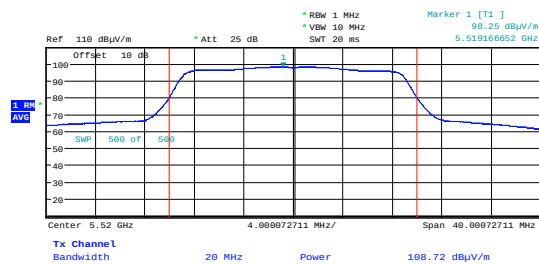
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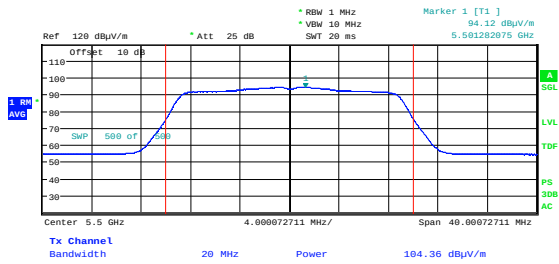
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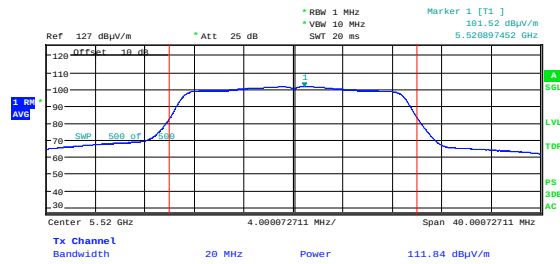
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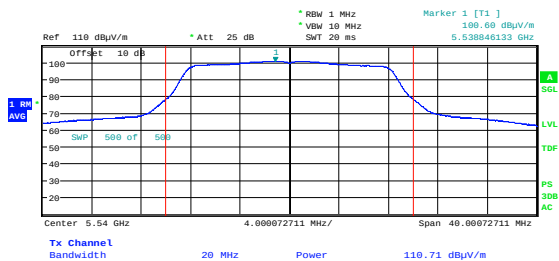
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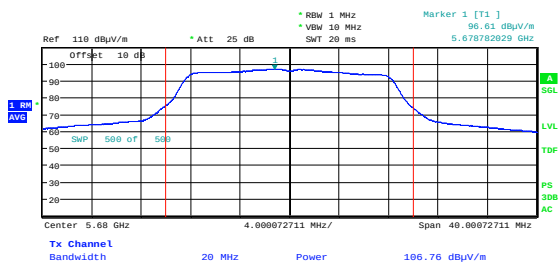
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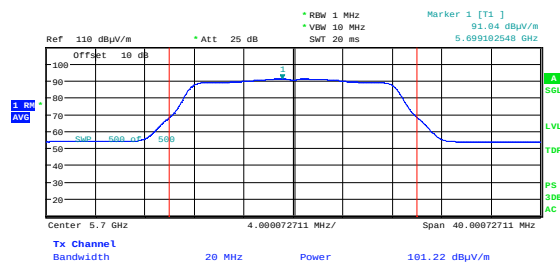
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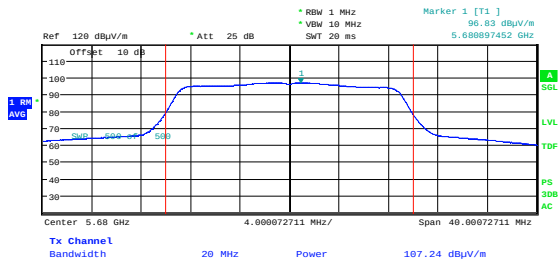
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Maximum EIRP, Ch136, 802.11a, 6Mb



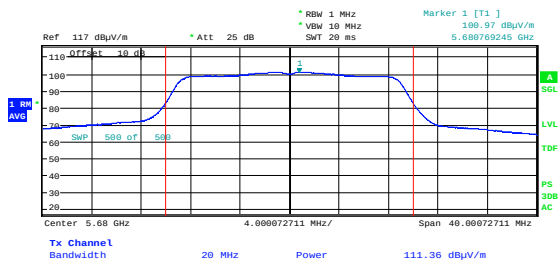
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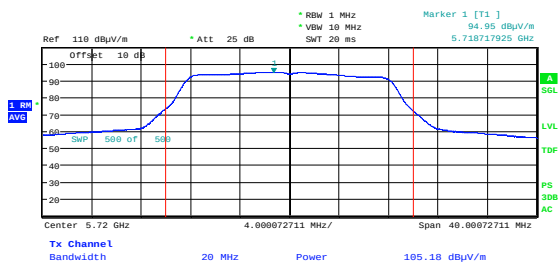
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Maximum EIRP, Ch136, 802.11n, HT20, SISO



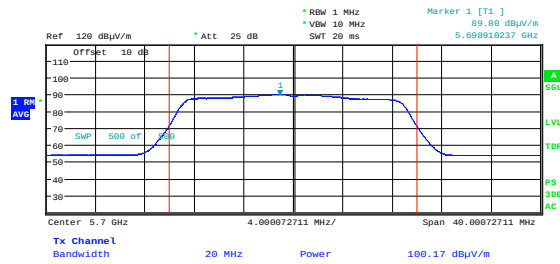
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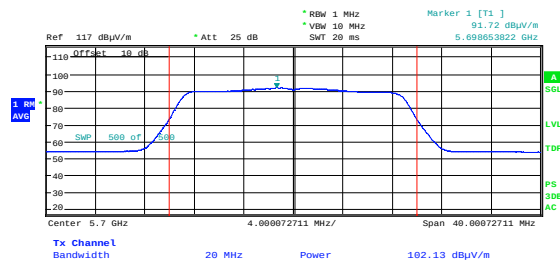
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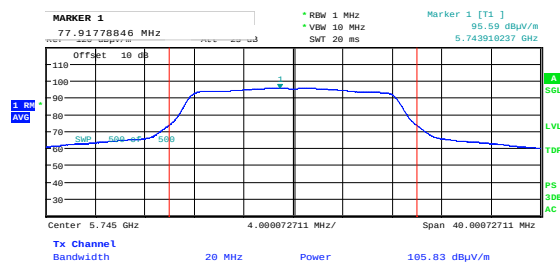
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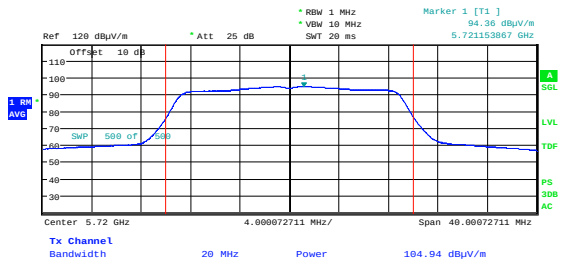
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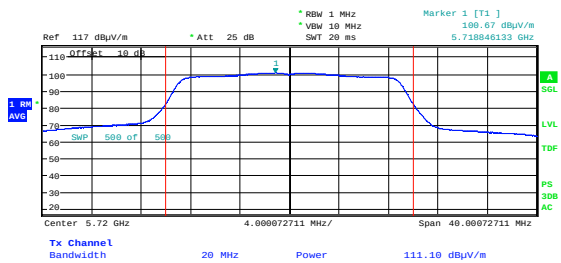
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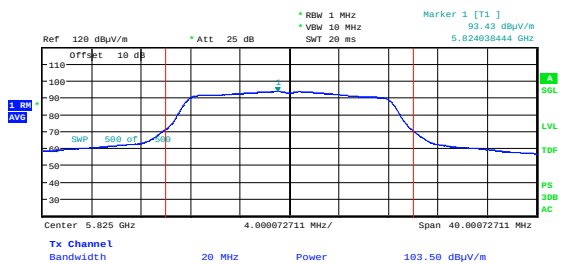
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Maximum EIRP, Ch144, 802.11n, HT20, SISO



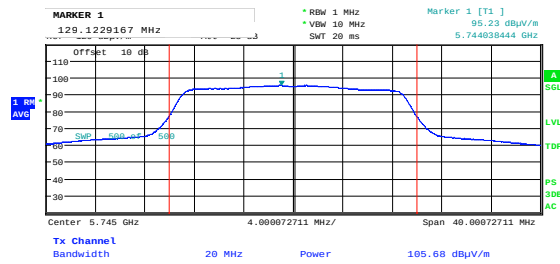
Date: 27.AUG.2021 12:12:56

Maximum EIRP, Ch144, 802.11n, HT20 MIMO



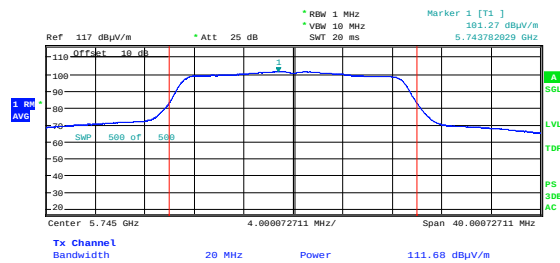
Date: 26.AUG.2021 12:27:01

Maximum EIRP, Ch165, 802.11a, 6Mb



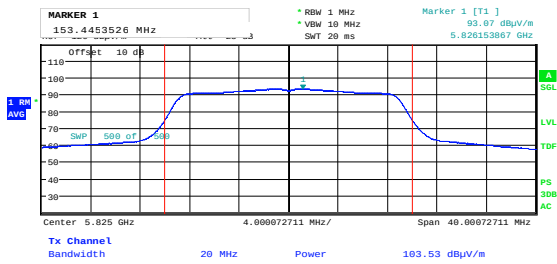
Date: 26.AUG.2021 12:32:20

Maximum EIRP, Ch149, 802.11n, HT20, SISO



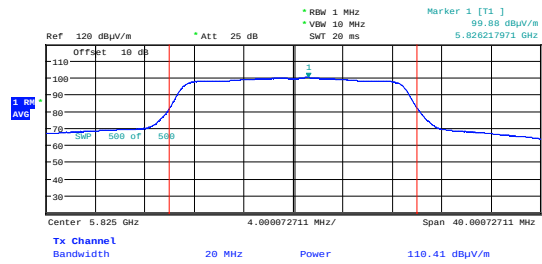
Date: 27.AUG.2021 12:13:53

Maximum EIRP, Ch149, 802.11n, HT20 MIMO



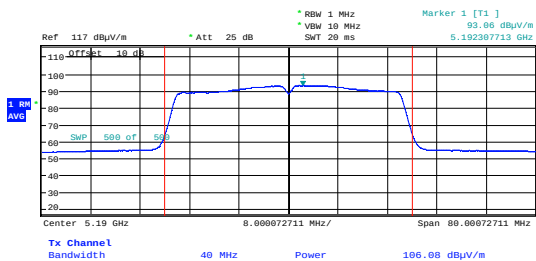
Date: 26.AUG.2021 12:34:51

Maximum EIRP, Ch165, 802.11n, HT20, SISO



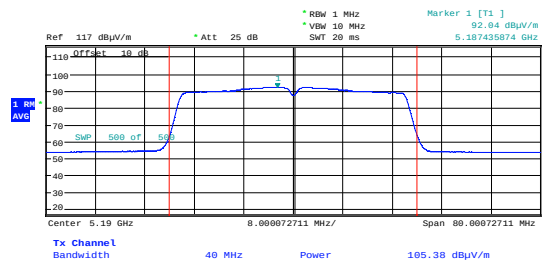
Date: 27.AUG.2021 12:16:51

Maximum EIRP, Ch165, 802.11n, HT20 MIMO



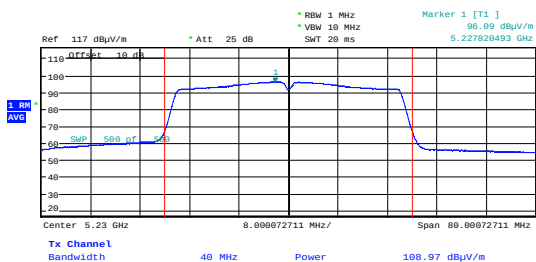
Date: 26.AUG.2021 15:57:46

Maximum EIRP, Ch038, 802.11n, HT40, SISO



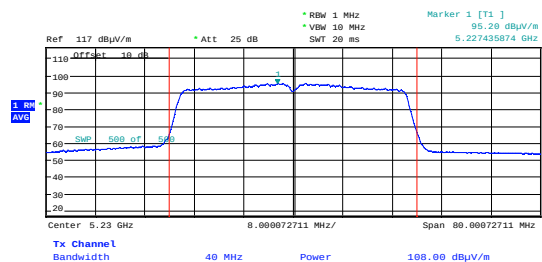
Date: 26.AUG.2021 14:11:12

Maximum EIRP, Ch038, 802.11n, HT40, MIMO



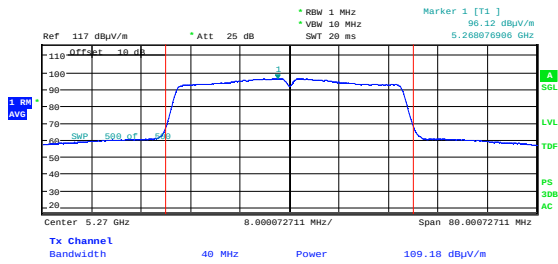
Date: 26.AUG.2021 15:33:04

Maximum EIRP, Ch046, 802.11n, HT40, SISO



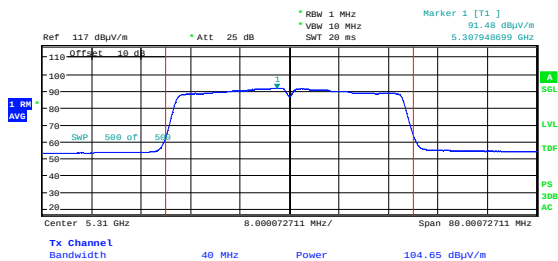
Date: 26.AUG.2021 14:12:55

Maximum EIRP, Ch046, 802.11n, HT40, MIMO



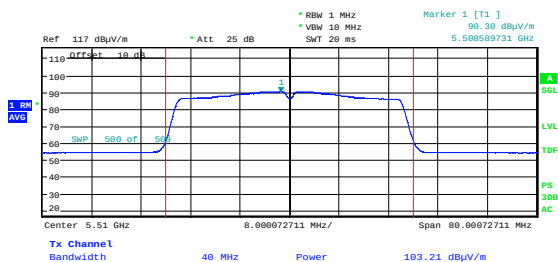
Date: 26.AUG.2021 16:00:24

Maximum EIRP, Ch054, 802.11n, HT40, SISO



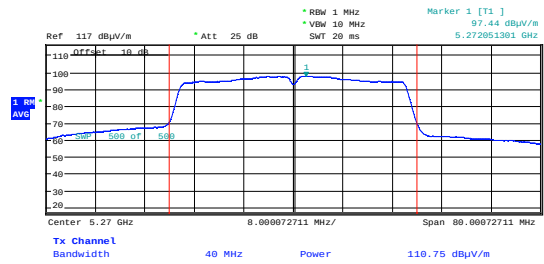
Date: 26.AUG.2021 16:04:50

Maximum EIRP, Ch062, 802.11n, HT40, SISO



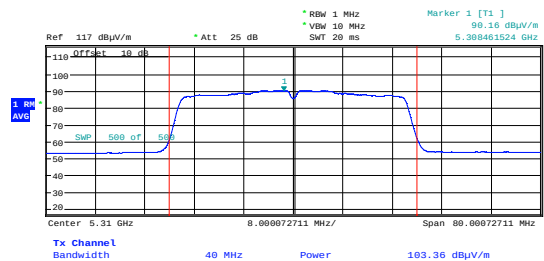
Date: 26.AUG.2021 16:10:12

Maximum EIRP, Ch102, 802.11n, HT40, SISO



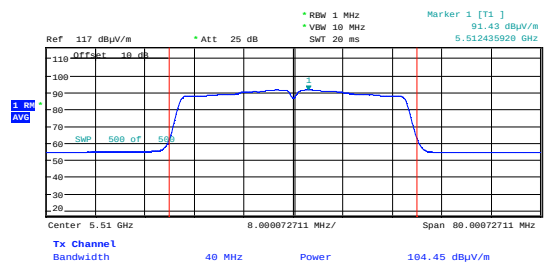
Date: 26.AUG.2021 14:05:12

Maximum EIRP, Ch054, 802.11n, HT40, MIMO



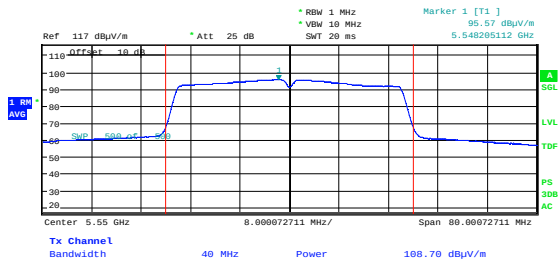
Date: 26.AUG.2021 14:00:29

Maximum EIRP, Ch062, 802.11n, HT40, MIMO



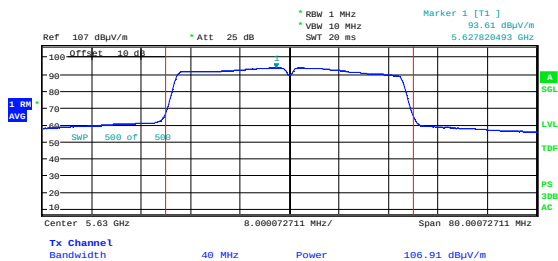
Date: 26.AUG.2021 14:20:47

Maximum EIRP, Ch102, 802.11n, HT40, MIMO



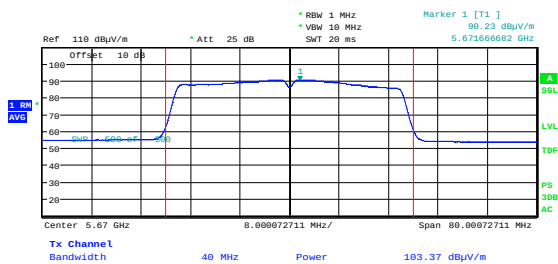
Date: 26.AUG.2021 16:13:02

Maximum EIRP, Ch110, 802.11n, HT40, SISO



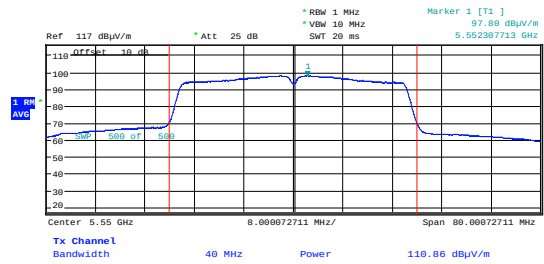
Date: 26.AUG.2021 16:15:44

Maximum EIRP, Ch126, 802.11n, HT40, SISO



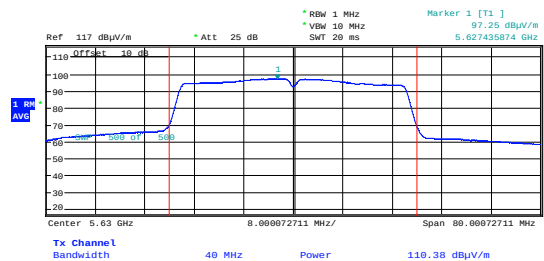
Date: 26.AUG.2021 16:21:57

Maximum EIRP, Ch134, 802.11n, HT40, SISO



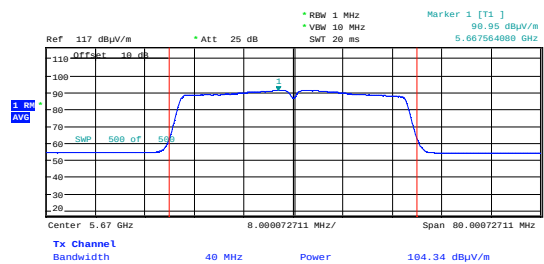
Date: 26.AUG.2021 14:23:38

Maximum EIRP, Ch110, 802.11n, HT40, MIMO



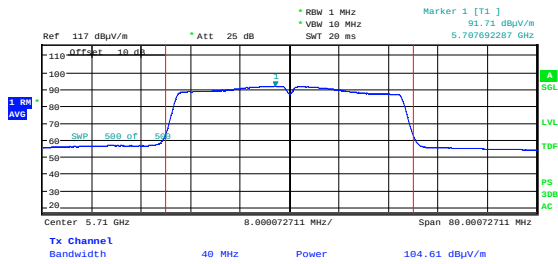
Date: 26.AUG.2021 14:36:11

Maximum EIRP, Ch126, 802.11n, HT40, MIMO



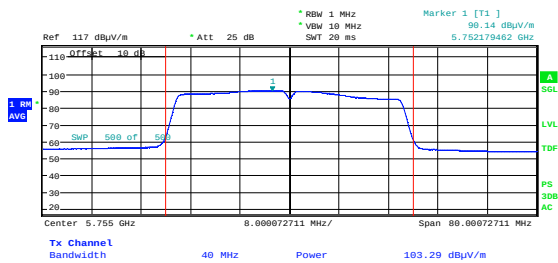
Date: 26.AUG.2021 14:29:41

Maximum EIRP, Ch134, 802.11n, HT40, MIMO



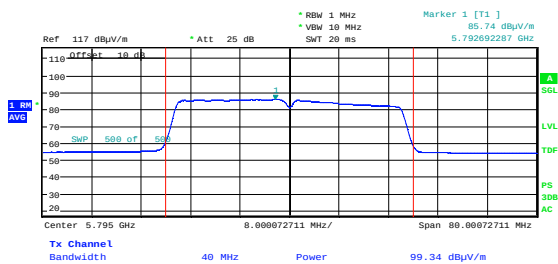
Date: 26.AUG.2021 16:23:57

Maximum EIRP, Ch142, 802.11n, HT40, SISO



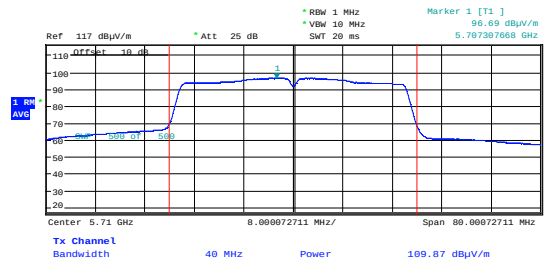
Date: 26.AUG.2021 16:24:54

Maximum EIRP, Ch151, 802.11n, HT40, SISO



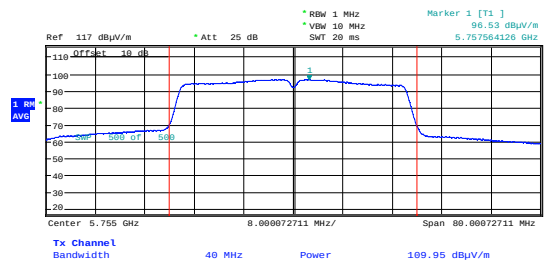
Date: 26.AUG.2021 16:26:38

Maximum EIRP, Ch159, 802.11n, HT40, SISO



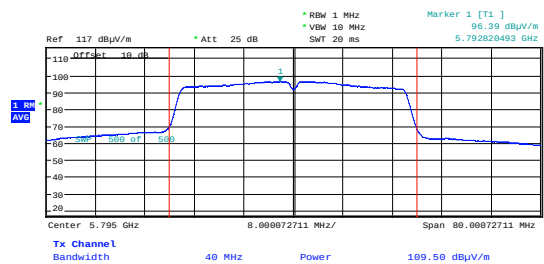
Date: 26.AUG.2021 14:34:42

Maximum EIRP, Ch142, 802.11n, HT40, MIMO



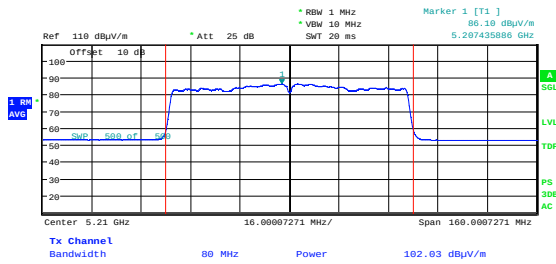
Date: 26.AUG.2021 14:39:25

Maximum EIRP, Ch151, 802.11n, HT40, MIMO



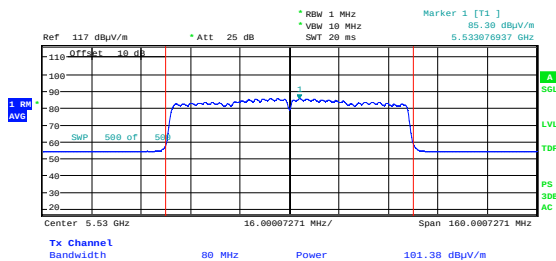
Date: 26.AUG.2021 14:41:53

Maximum EIRP, Ch159, 802.11n, HT40, MIMO



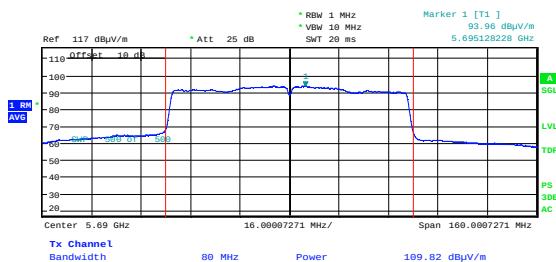
Date: 26.AUG.2021 15:05:15

Maximum EIRP, Ch042, 802.11ac, VHT80, MIMO



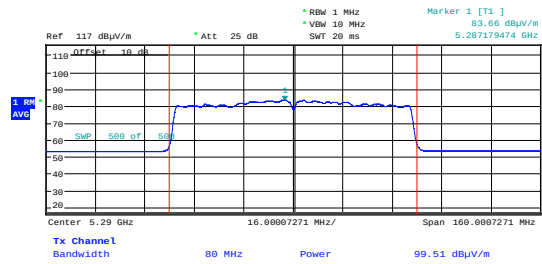
Date: 26.AUG.2021 14:51:15

Maximum EIRP, Ch106, 802.11ac, VHT80, MIMO



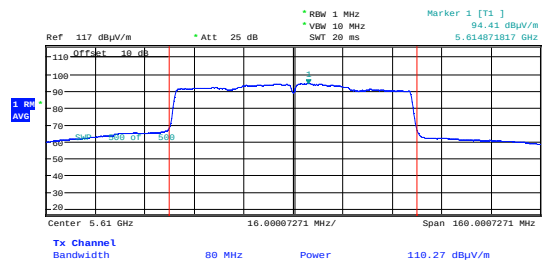
Date: 26.AUG.2021 14:49:53

Maximum EIRP, Ch138, 802.11ac, VHT80, MIMO



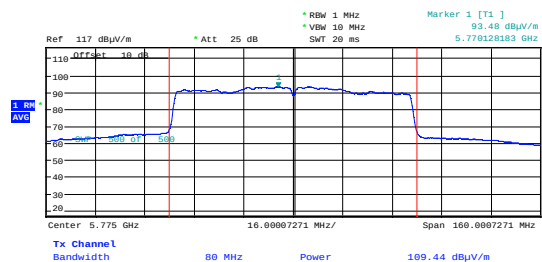
Date: 26.AUG.2021 15:00:34

Maximum EIRP, Ch058, 802.11ac, VHT80, MIMO



Date: 26.AUG.2021 14:57:01

Maximum EIRP, Ch122, 802.11ac, VHT80, MIMO



Date: 26.AUG.2021 14:47:46

Maximum EIRP, Ch155, 802.11ac, VHT80, MIMO

3.2 Unwanted Emissions

FCC 15.407 (b)

ISED RSS-247, Issue 2, clause 6.2

Measurement procedure: ANSI C63.10-2013 Clause 12.7

Test Results: Complies

Measurement Data:

Band Edge Emissions:

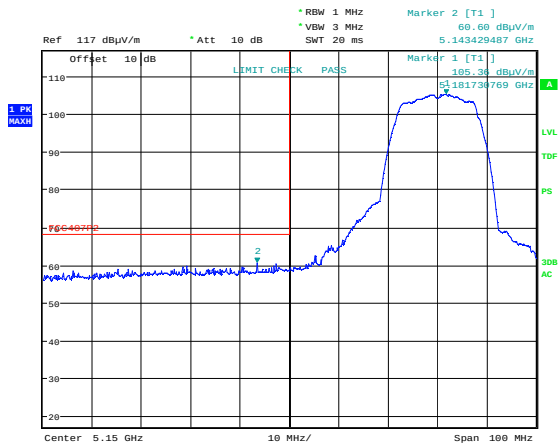
Ch. No.	Carrier Frequency (MHz)	Band Edge Frequency (MHz)	Measured Values (dBm/MHz e.i.r.p.)					
			11a 6Mb	11n HT20 SISO	11n HT20 MIMO	11n HT40 SISO	11n HT40 MIMO	11ac VHT80 MIMO
36	5180	5150	60.6	60.9	60.8			
40	5200	5150	64.5	65.7	64.0			
60	5300	5350	62.6	66.7	65.5			
64	5320	5350	60.0	62.2	59.9			
100	5500	5470	61.4	59.4	60.7			
104	5520	5470	65.4	66.1	67.8			
108	5540	5470	62.0					
136	5680	5725	61.2	62.6	67.1			
140	5700	5725	60.3	60.5	58.9			
149	5745	5650	< -40	< -40	< -40			
149	5745	5700	< -45	< -45	< -45			
165	5825	5875	< -45	< -45	< -45			
165	5825	5925	< -40	< -40	< -40			
38	5190	5150				64.8	60.5	
46	5230	5150				65.5	60.1	
54	5270	5350				66.1	62.7	
62	5310	5350				61.3	59.3	
102	5510	5470				60.9	60.6	
110	5550	5470				66.2	66.2	
126	5630	5725				58.5	61.0	
134	5670	5725				59.4	58.5	
151	5755	5650				< -40	< -40	
151	5755	5700				< -45	< -45	
159	5795	5875				< -45	< -45	
159	5795	5925				< -40	< -40	
42	5210	5150						50.9
58	5290	5350						55.1
106	5530	5470						58.0
122	5610	5725						64.3
155	5775	5650						< -40
155	5775	5700						< -45
155	5775	5875						< -45
155	5775	5925						< -40

The measurement was performed radiated.
EIRP values were calculated from field strength using the method in KDB 412172 D01.
The tested equipment is for indoor use only, no band-edge requirements apply at 5250 MHz.
A 10 dB attenuator was used before the preamp for all Band Edge measurements.

Limits:

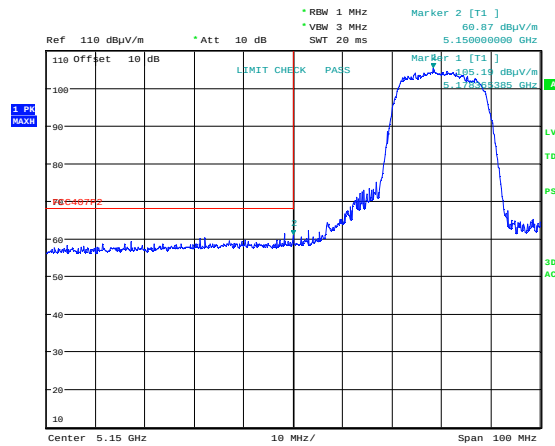
Operating Frequency band	Limit for Emissions Outside Operating Frequency Band
5150 – 5250 MHz	-27 dBm/MHz e.i.r.p.
5250 – 5350 MHz	-27 dBm/MHz e.i.r.p.
5470 – 5725 MHz	-27 dBm/MHz e.i.r.p.
5725 – 5825 MHz	See FCC 15.407(b)(4)(i) or 15.407(b)(4)(ii)

Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.



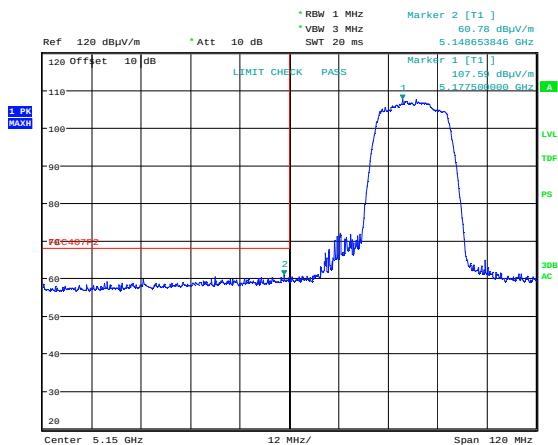
Date: 26.AUG.2021 10:54:53

Band Edge 5150MHz, ch036, 802.11a 6M, Max



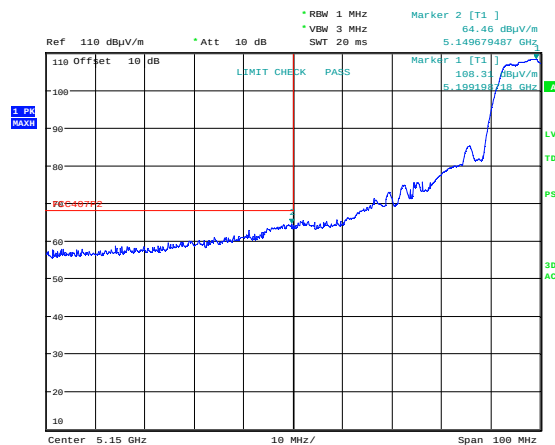
Date: 26.AUG.2021 13:12:46

Band Edge 5150MHz, ch036, 802.11n SISO, Max



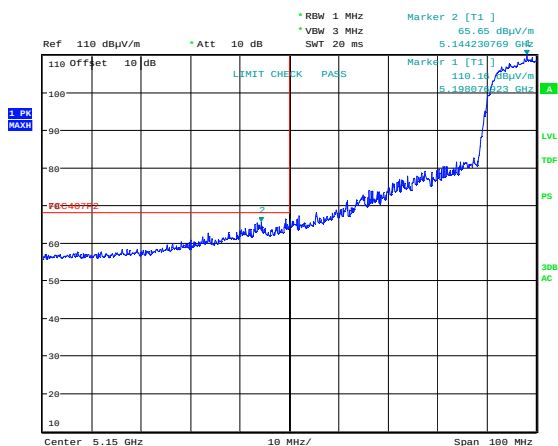
Date: 27.AUG.2021 14:41:33

Band Edge 5150MHz, ch036, 802.11n MIMO, Max



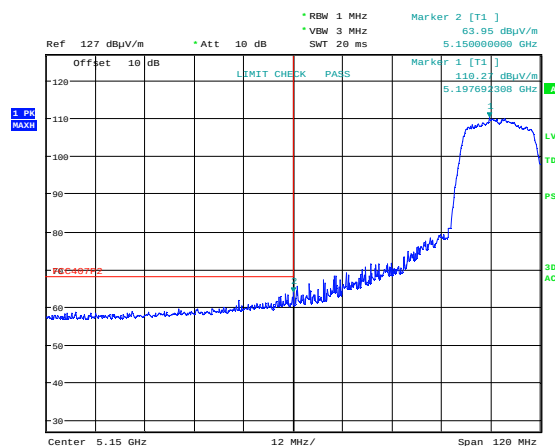
Date: 26.AUG.2021 11:16:35

Band Edge 5150MHz, ch040, 802.11a 6M, Max



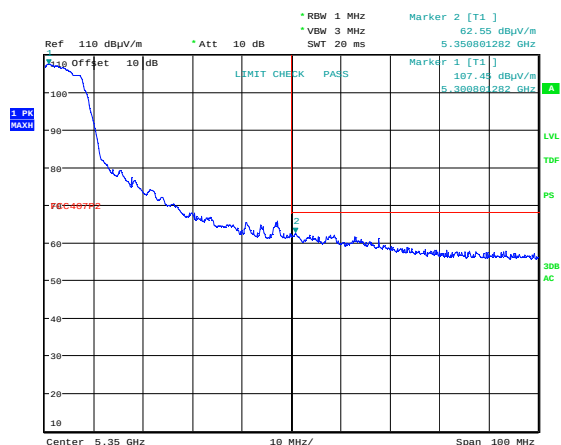
Date: 26.AUG.2021 13:15:21

Band Edge 5150MHz, ch040, 802.11n SISO, Max



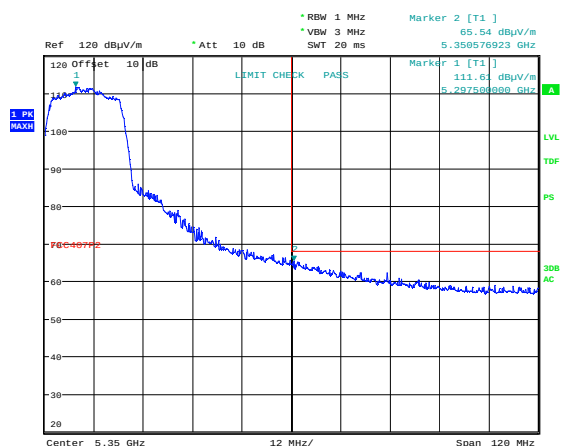
Date: 27.AUG.2021 14:45:00

Band Edge 5150MHz, ch040, 802.11n MIMO, Max



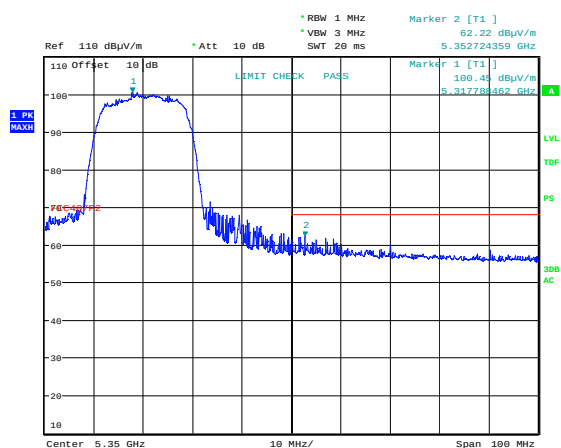
Date: 26.AUG.2021 11:19:00

Band Edge 5350MHz, ch060, 802.11a 6M, Max



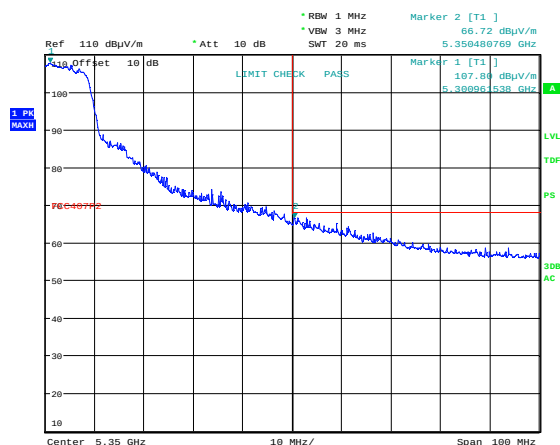
Date: 27.AUG.2021 14:38:30

Band Edge 5350MHz, ch060, 802.11n MIMO, Max



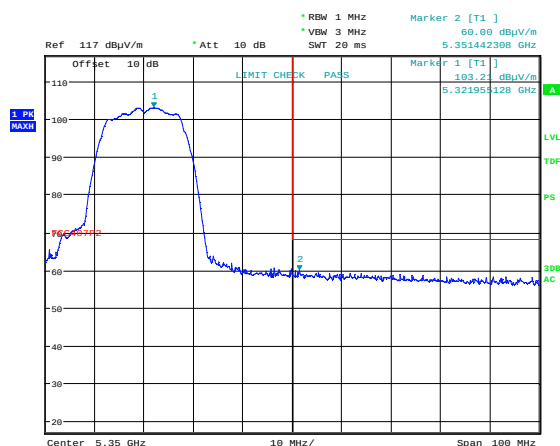
Date: 26.AUG.2021 12:57:19

Band Edge 5350MHz, ch064, 802.11n SISO, Max



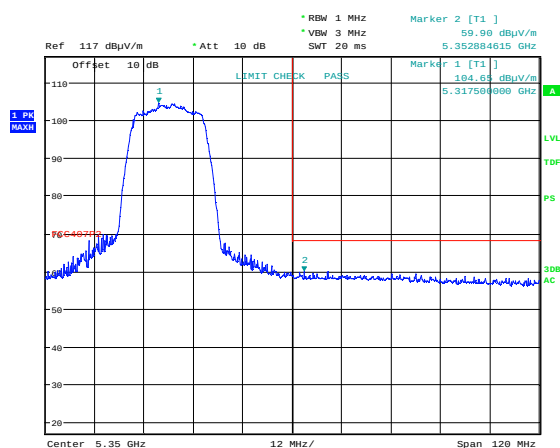
Date: 26.AUG.2021 13:03:59

Band Edge 5350MHz, ch060, 802.11n SISO, Max



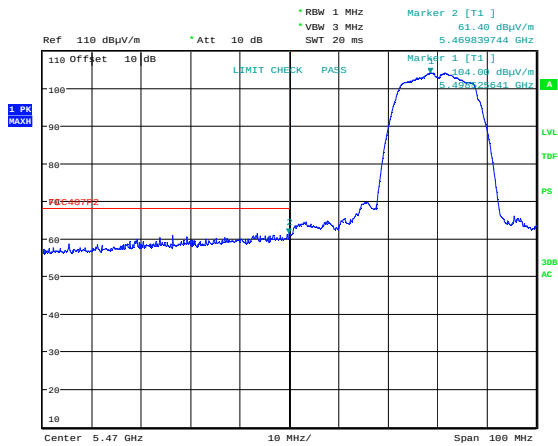
Date: 26.AUG.2021 11:01:42

Band Edge 5350MHz, ch064, 802.11a 6M, Max



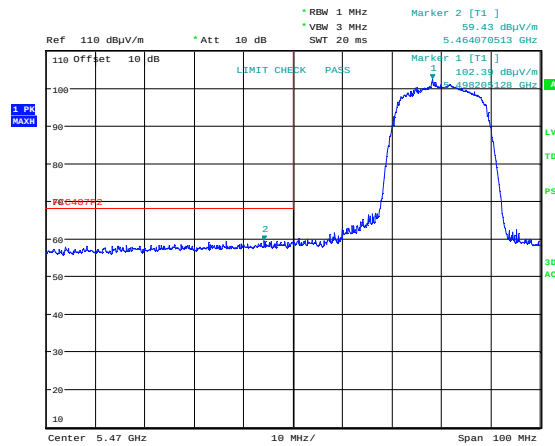
Date: 27.AUG.2021 14:35:53

Band Edge 5350MHz, ch064, 802.11n MIMO, Max



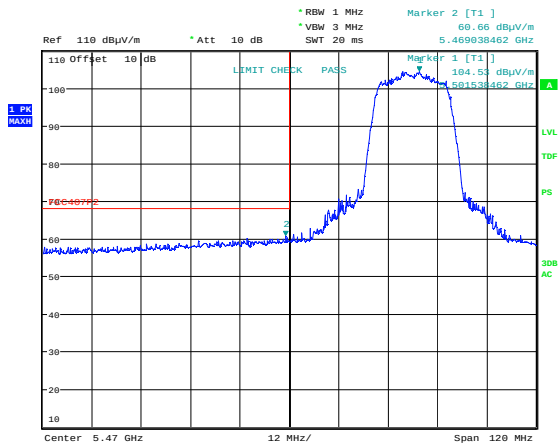
Date: 26.AUG.2021 11:52:05

Band Edge 5470MHz, ch100, 802.11a 6M, Max



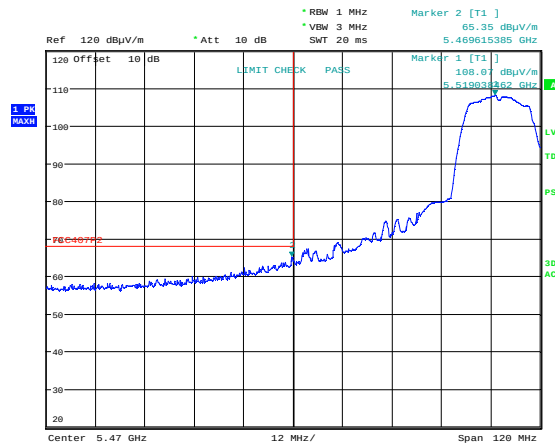
Date: 26.AUG.2021 12:49:42

Band Edge 5470MHz, ch100, 802.11n SISO, Max



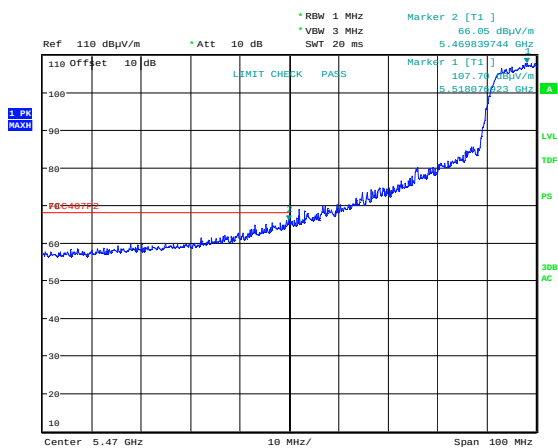
Date: 27.AUG.2021 11:16:44

Band Edge 5470MHz, ch100, 802.11n MIMO, Max



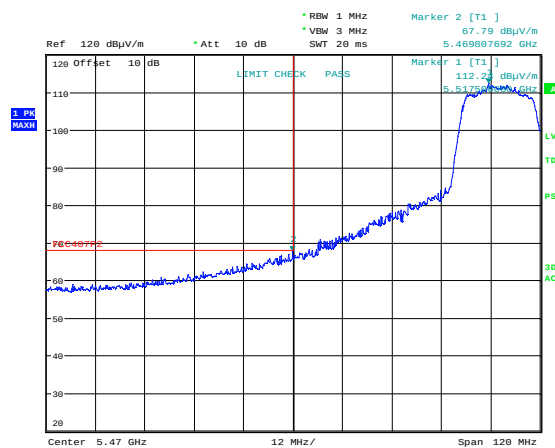
Date: 27.AUG.2021 14:57:12

Band Edge 5470MHz, ch104, 802.11a 6M, Max



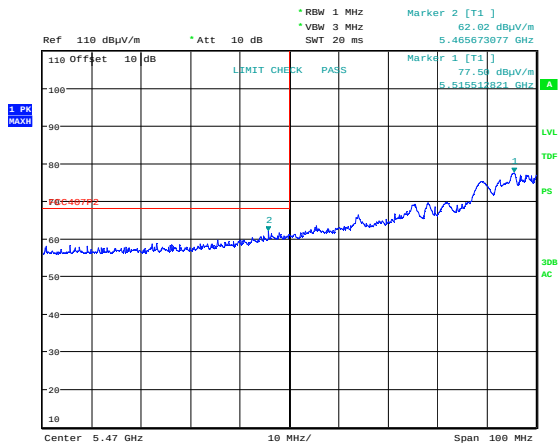
Date: 26.AUG.2021 12:53:23

Band Edge 5470MHz, ch104, 802.11n SISO, Max



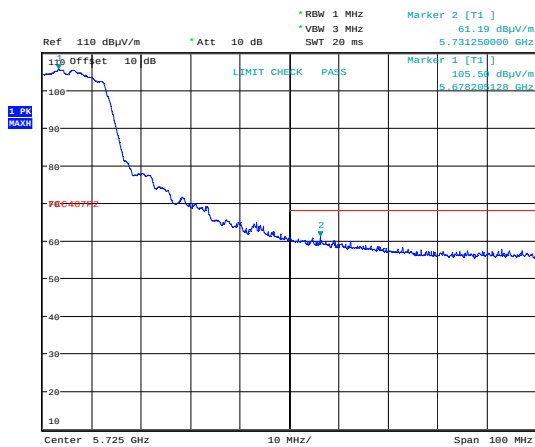
Date: 27.AUG.2021 14:51:49

Band Edge 5470MHz, ch104, 802.11n MIMO, Max (PowLev 14.0)



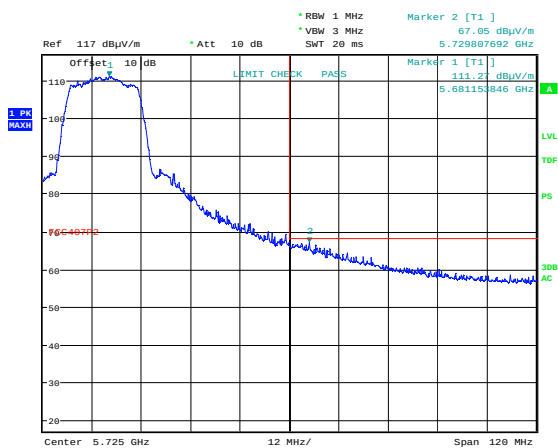
Date: 26.AUG.2021 11:14:06

Band Edge 5470MHz, ch108, 802.11a 6M, Max



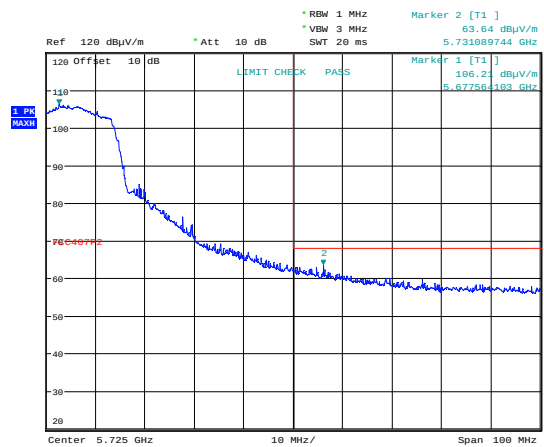
Date: 26.AUG.2021 12:01:49

Band Edge 5725MHz, ch136, 802.11a 6M, Max



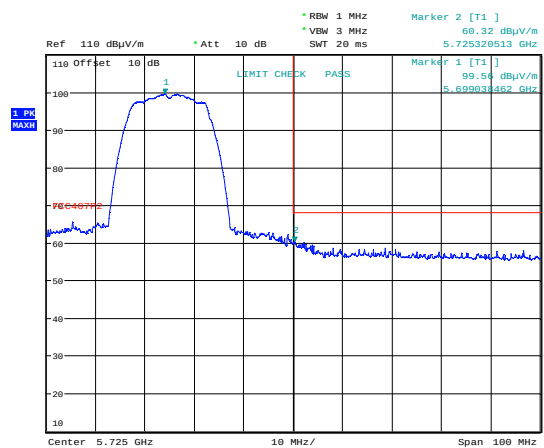
Date: 27.AUG.2021 12:11:27

Band Edge 5725MHz, ch136, 802.11n MIMO, Max



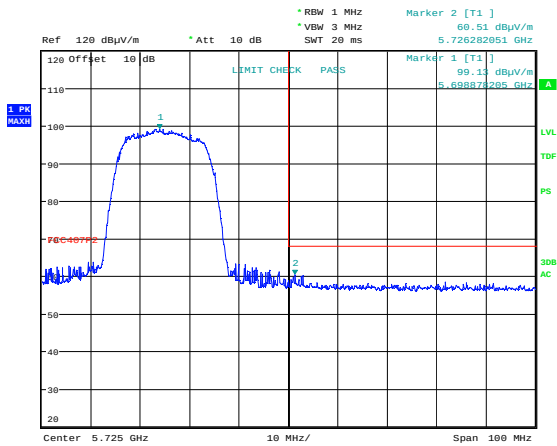
Date: 26.AUG.2021 12:44:52

Band Edge 5725MHz, ch136, 802.11n SISO, Max



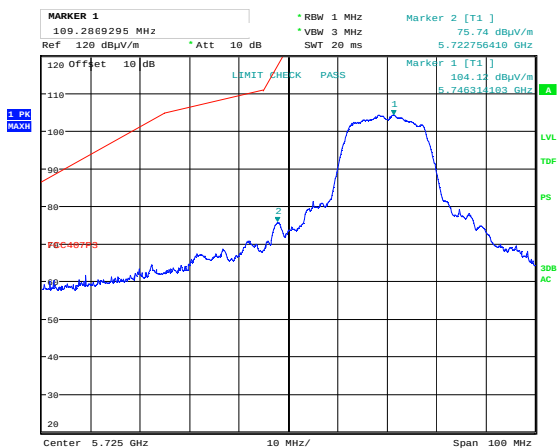
Date: 26.AUG.2021 12:07:15

Band Edge 5725MHz, ch140, 802.11a 6M, Max



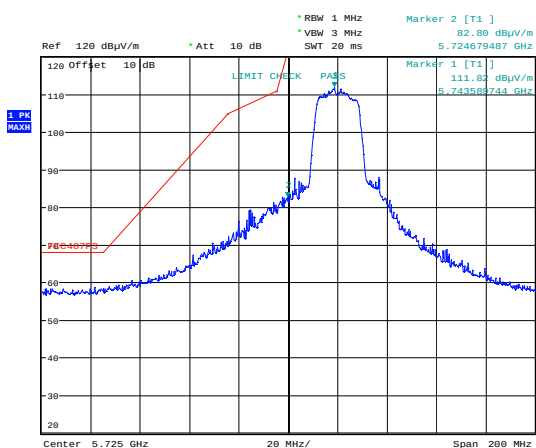
Date: 26.AUG.2021 12:42:56

Band Edge 5725MHz, ch140, 802.11n SISO, Max



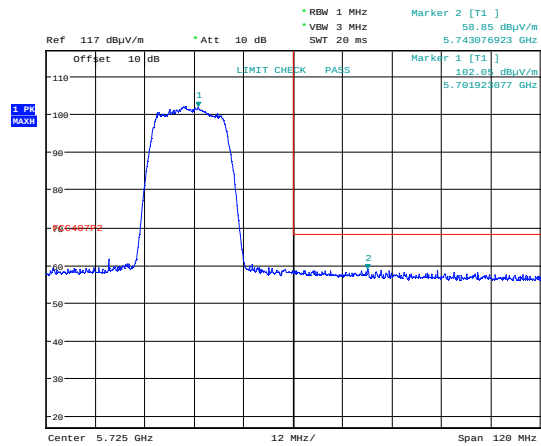
Date: 26.AUG.2021 12:38:59

Band Edge 5725MHz, ch149, 802.11a 6M, Max



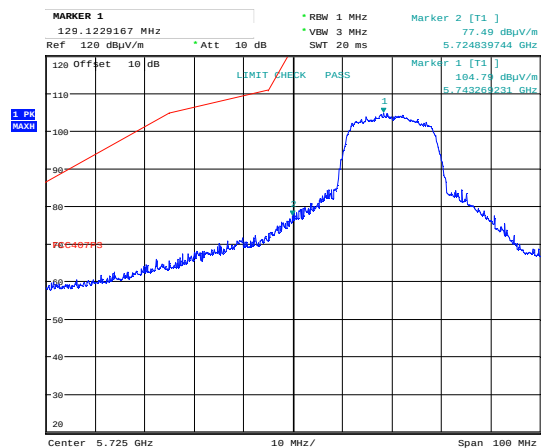
Date: 27.AUG.2021 12:15:55

Band Edge 5725MHz, ch149, 802.11n MIMO, Max



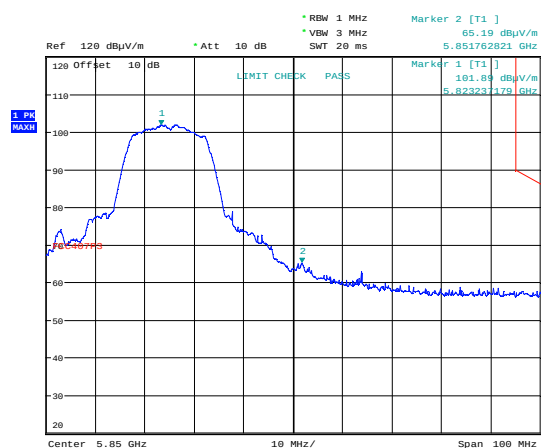
Date: 27.AUG.2021 12:08:38

Band Edge 5725MHz, ch140, 802.11n MIMO, Max



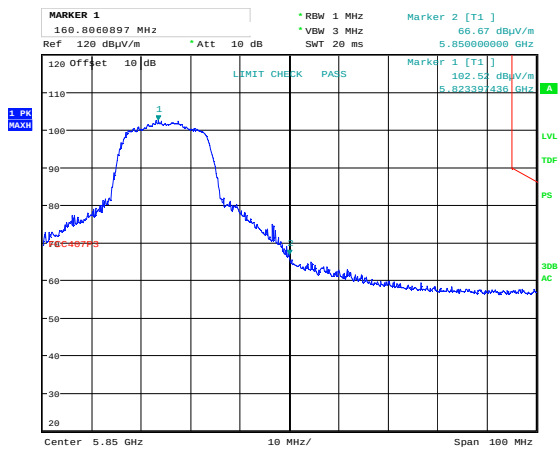
Date: 26.AUG.2021 12:33:52

Band Edge 5725MHz, ch149, 802.11n SISO, Max



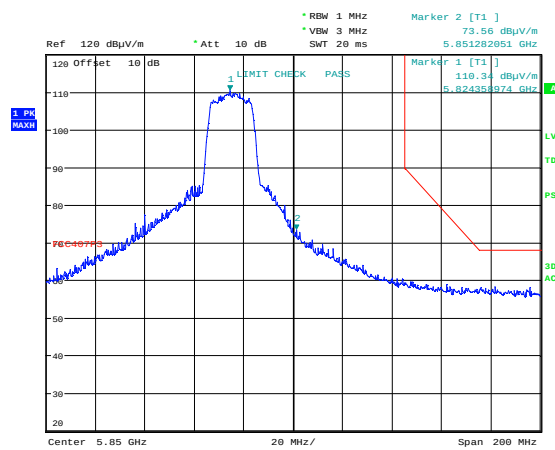
Date: 26.AUG.2021 12:28:01

Band Edge 5850MHz, ch165, 802.11a 6M, Max



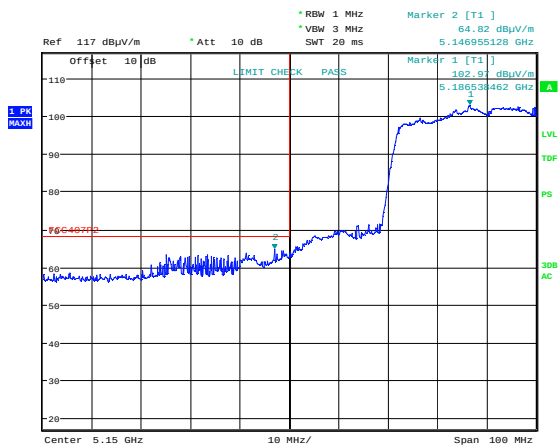
Date: 26.AUG.2021 12:35:52

Band Edge 5850MHz, ch165, 802.11n SISO, Max



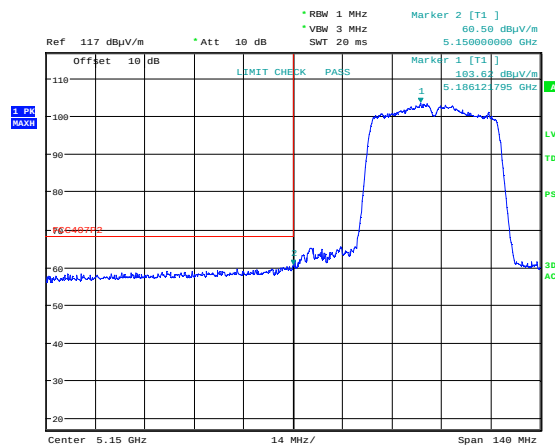
Date: 27.AUG.2021 12:17:51

Band Edge 5850MHz, ch165, 802.11n MIMO, Max



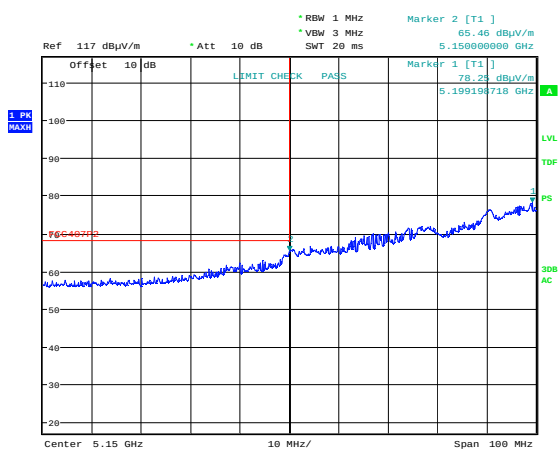
Date: 26.AUG.2021 15:58:41

Band Edge 5150 MHz, ch038, 802.11n HT40 SISO, Max



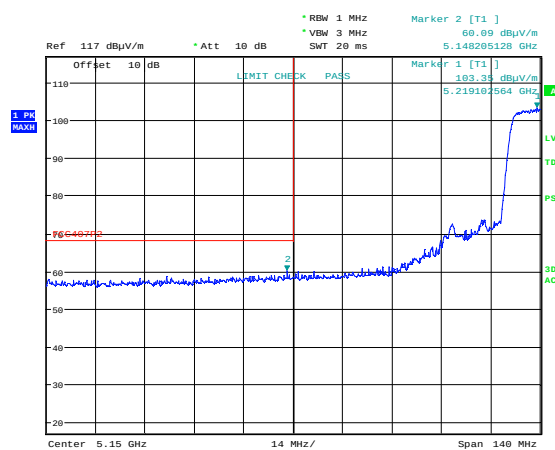
Date: 26.AUG.2021 14:09:17

Band Edge 5150 MHz, ch038, 802.11n HT40 MIMO, Max



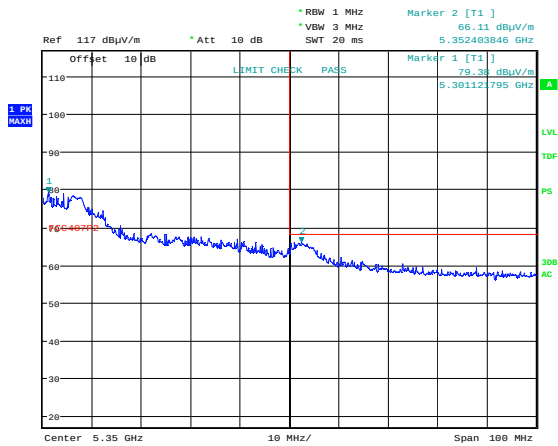
Date: 26.AUG.2021 15:54:15

Band Edge 5150 MHz, ch046, 802.11n HT40 SISO, Max



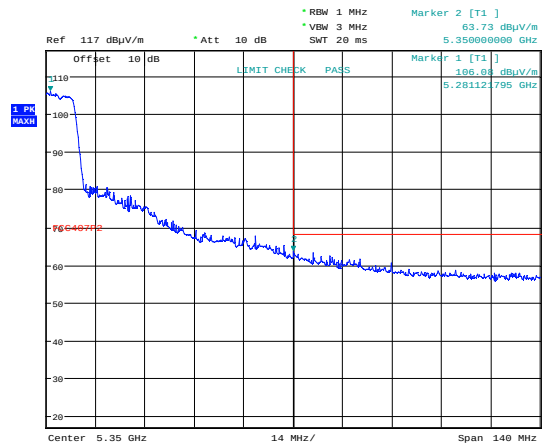
Date: 26.AUG.2021 14:14:11

Band Edge 5150 MHz, ch046, 802.11n HT40 MIMO, Max



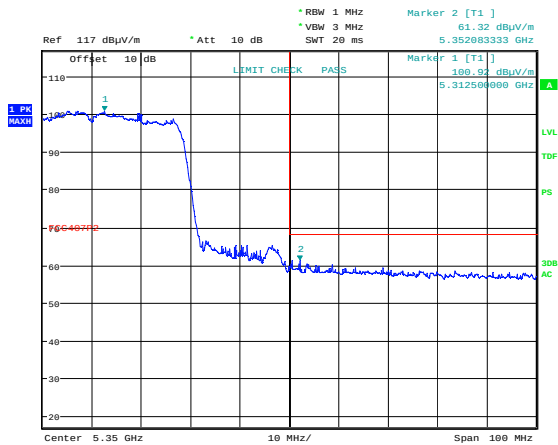
Date: 26.AUG.2021 16:02:05

Band Edge 5350 MHz, ch054, 802.11n HT40 SISO, Max



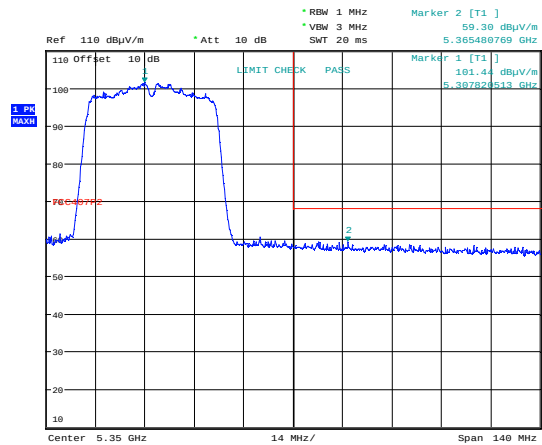
Date: 26.AUG.2021 14:06:24

Band Edge 5350 MHz, ch054, 802.11n HT40 MIMO, Max



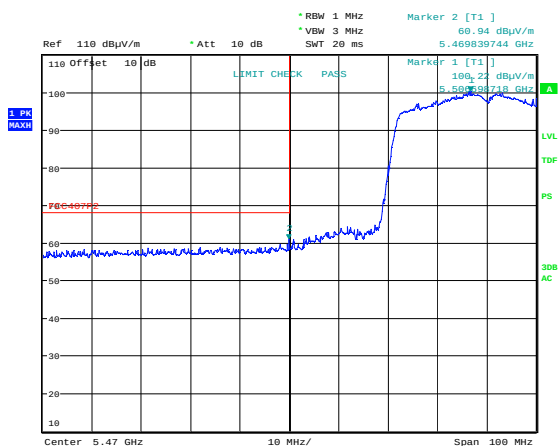
Date: 26.AUG.2021 16:06:06

Band Edge 5350 MHz, ch062, 802.11n HT40 SISO, Max



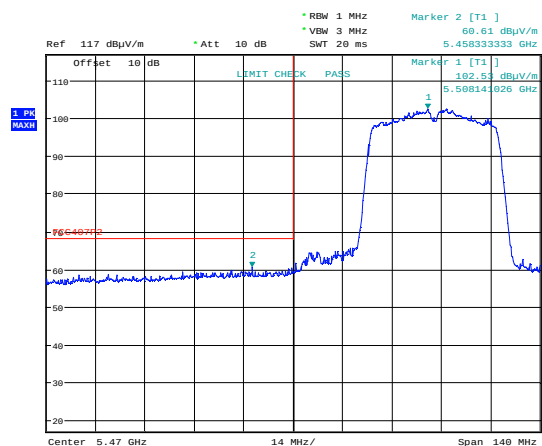
Date: 26.AUG.2021 14:02:31

Band Edge 5350 MHz, ch062, 802.11n HT40 MIMO, Max



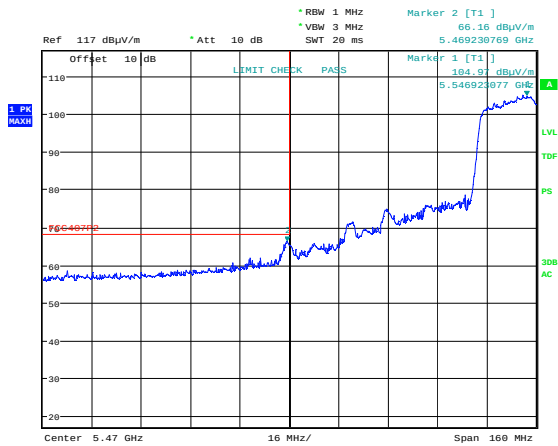
Date: 26.AUG.2021 16:11:08

Band Edge 5470 MHz, ch102, 802.11n HT40 SISO, Max



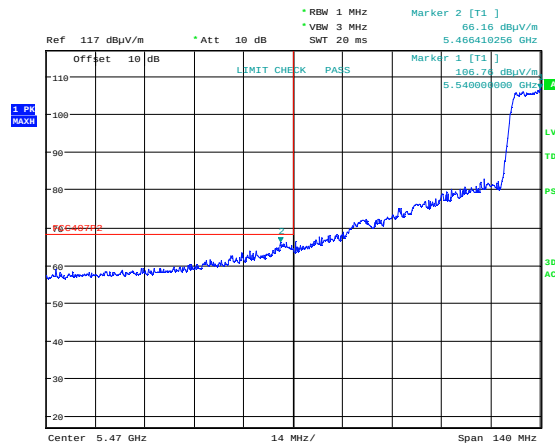
Date: 26.AUG.2021 14:21:55

Band Edge 5470 MHz, ch102, 802.11n HT40 MIMO, Max



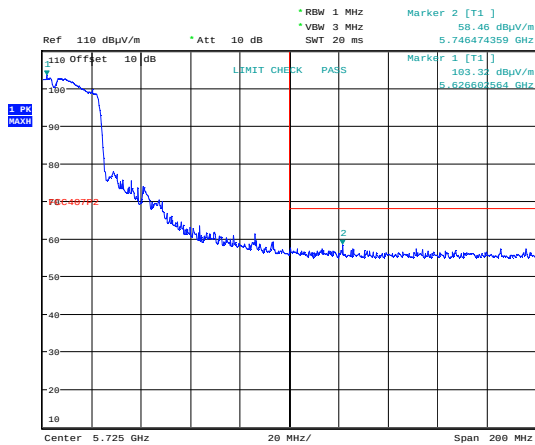
Date: 26.AUG.2021 16:13:58

Band Edge 5470 MHz, ch110, 802.11n HT40 SISO, Max



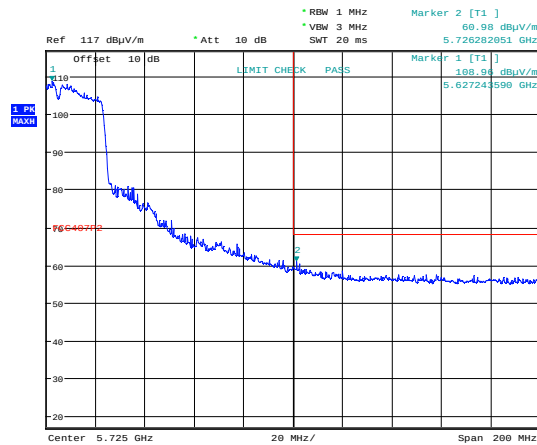
Date: 26.AUG.2021 14:24:45

Band Edge 5470 MHz, ch110, 802.11n HT40 MIMO, Max



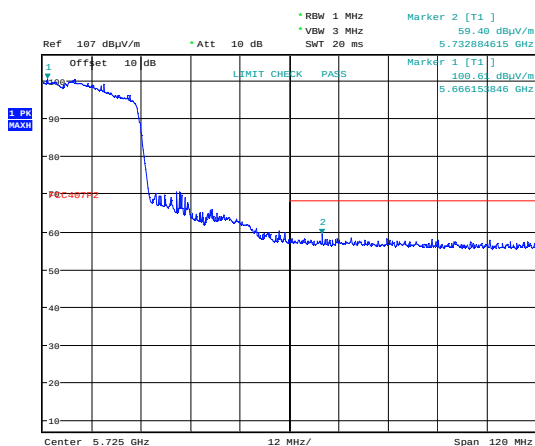
Date: 26.AUG.2021 16:20:59

Band Edge 5725 MHz, ch126, 802.11n HT40 SISO, Max



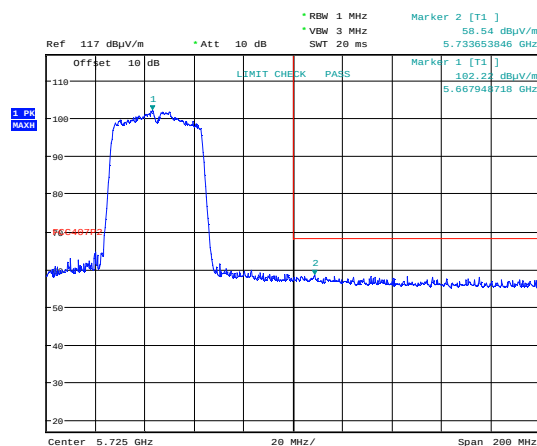
Date: 26.AUG.2021 14:37:09

Band Edge 5725 MHz, ch126, 802.11n HT40 MIMO, Max



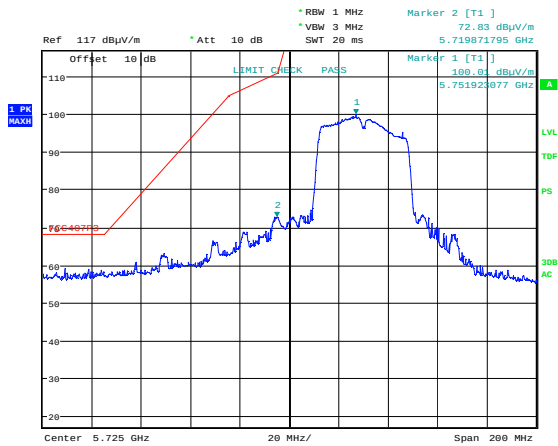
Date: 26.AUG.2021 16:22:56

Band Edge 5725 MHz, ch134, 802.11n HT40 SISO, Max



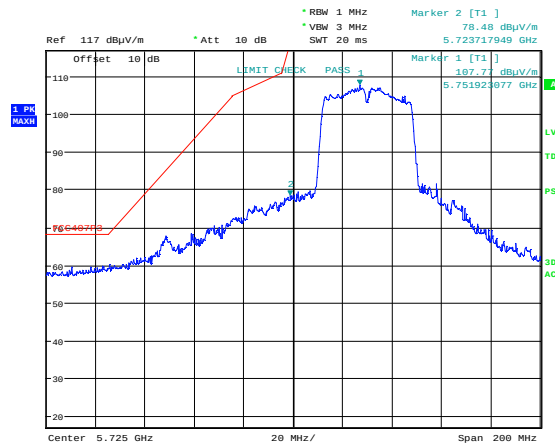
Date: 26.AUG.2021 14:31:50

Band Edge 5725 MHz, ch134, 802.11n HT40 MIMO, Max



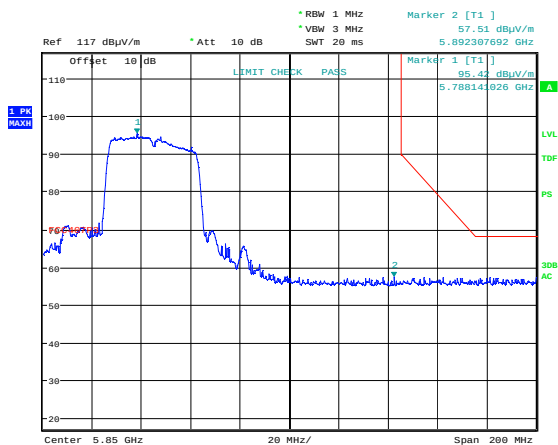
Date: 26.AUG.2021 16:25:50

Band Edge 5725 MHz, ch151, 802.11n HT40 SISO, Max



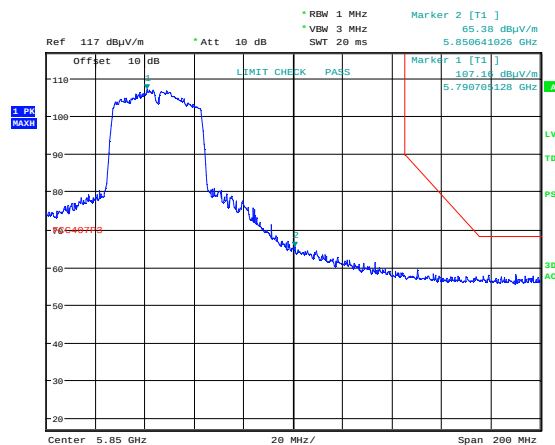
Date: 26.AUG.2021 14:40:47

Band Edge 5725 MHz, ch151, 802.11n HT40 MIMO, Max



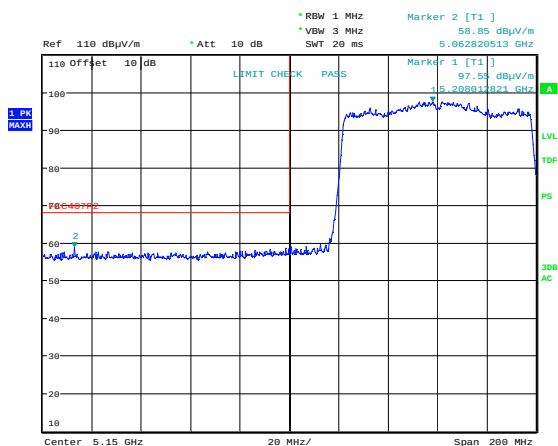
Date: 26.AUG.2021 16:27:34

Band Edge 5850 MHz, ch159, 802.11n HT40 SISO, Max



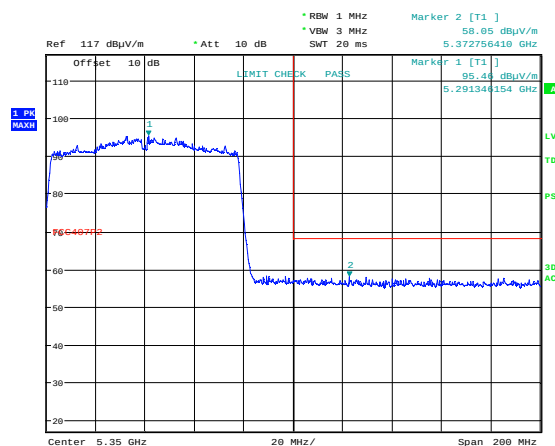
Date: 26.AUG.2021 14:44:12

Band Edge 5850 MHz, ch159, 802.11n HT40 MIMO, Max



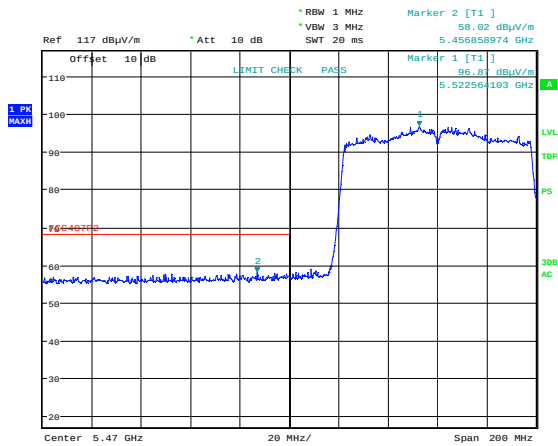
Date: 26.AUG.2021 15:06:12

Band Edge 5150 MHz, ch042, 802.11ac VHT80 MIMO, Max



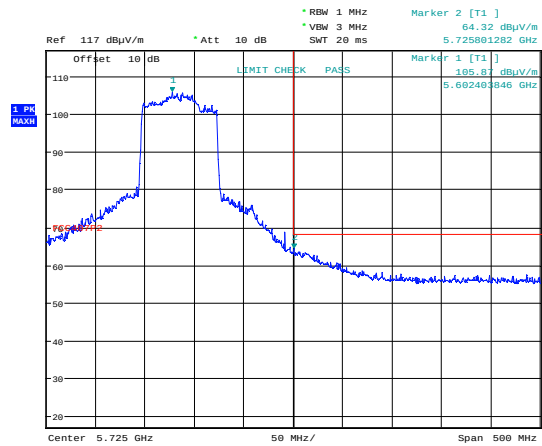
Date: 26.AUG.2021 15:02:47

Band Edge 5350 MHz, ch058, 802.11ac VHT80 MIMO, Max



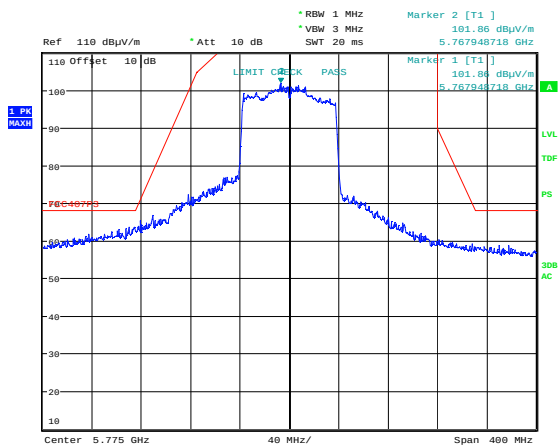
Date: 26.AUG.2021 14:53:09

Band Edge 5470 MHz, ch106, 802.11ac VHT80 MIMO, Max



Date: 26.AUG.2021 14:59:11

Band Edge 5725 MHz, ch122, 802.11ac VHT80 MIMO, Max



Date: 26.AUG.2021 15:13:25

Band Edge 5725/5850 MHz, ch155, 802.11ac VHT80 MIMO, Max

3.3 Restricted Bands of operation

Restricted Bands of operation for FCC and ISSED are defined in FCC Part 15.205 and ISSED RSS-GEN, Issue 5 clause 8.10.

Generally, no fundamentals are allowed in the restricted bands and all emissions must comply with the limits in FCC 15.209 or RSS-GEN, Issue 5, clause 8.9.

FCC (MHz)	ISED (MHz)	FCC (GHz)	ISED (GHz)
0.090-0.110		0.96-1.24 1.3-1.427	0.96-1.427
0.495-0.505		1.435-1.6265	
2.1735-2.1905		1.6455-1.6465	
	3.020-3.026	1.660-1.710	
4.125-4.128		1.7188-1.7222	
4.17725-4.17775		2.2-2.3	
4.20725-4.20775		2.31-2.39	
	5.677-5.683	2.4835-2.5	
6.215-6.218		2.69-2.9	2.655-2.9
6.26775-6.26825		3.26-3.267	
6.31175-6.31225		3.332-3.339	
8.291-8.294		3.3458-3.358	
8.362-8.366		3.6-4.4	3.5-4.4
8.37625-8.38675		4.5-5.15	
8.41425-8.41475		5.35-5.46	
12.29-12.293		7.25-7.75	
12.51975-12.52025		8.025-8.5	
12.57675-12.57725		9.0-9.2	
13.36-13.41		9.3-9.5	
16.42-16.423		10.6-12.7	
16.69475-16.69525		13.25-13.4	
16.80425-16.80475		14.47-14.5	
25.5-25.67		15.35-16.2	
37.5-38.25		17.7-21.4	
73-74.6		22.01-23.12	
74.8-75.2		23.6-24.0	
108-121.94 123-138	108-138	31.2-31.8	
149.9-150.05		36.43-36.5	
156.52475-156.52525		Above 38.6	
156.7-156.9			
162.0125-167.17			
167.72-173.2			
240-285			
322-335.4			
399.9-410			
608-614			

Frequencies in **Bold** text are specific for FCC or ISSED, all other frequencies are common.

3.4 Radiated Emissions, 30 – 1000 MHz

FCC 15.205, 15.209, 15.407

ISED RSS-GEN, Issue 5, Clause 8.9

Measurement procedure: ANSI C63.10-2013 Clause 12.7

Test Results: Complies

Measurement Data:

Detector: QuasiPeak (Peak for Pre-Scan)

Measuring distance 3m

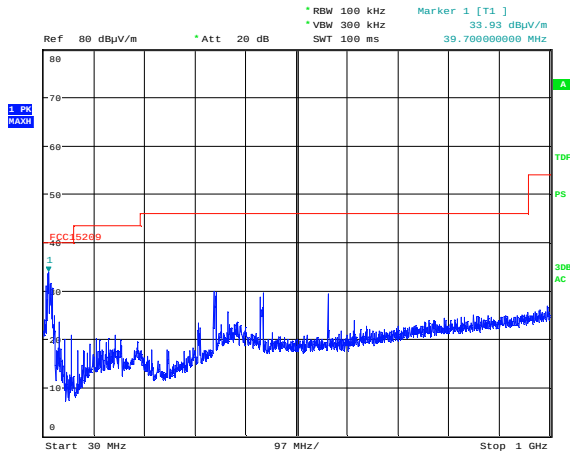
Tested in test mode with EUT transmitting on Ch 64.

Measured Frequency (MHz)	Carrier Frequency (MHz)	Modulation	Measured Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30 – 88	5300	802.11a 6Mbps	< 30	40.0	> 10
88 – 216	5300	802.11a 6Mbps	< 30	43.5	> 13.5
216 – 960	5300	802.11a 6Mbps	< 30	46.0	> 16
960 – 1000	5300	802.11a 6Mbps	< 30	54.0	> 24
39.94	Any	802.11a 6Mbps	27.6	40.0	12.4
576.02	Any	802.11a 6Mbps	34.1	43.5	9.4

See attached plots.

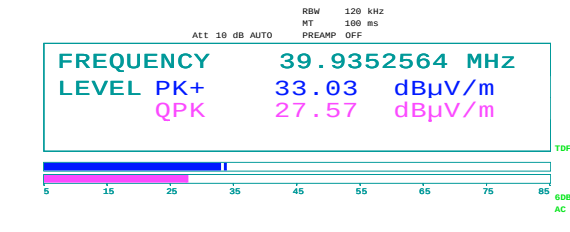
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10	
Frequency	Radiated emission limit @3 meters	
30 – 88 MHz	100 μV/m	40.0 dBμV/m
88 – 216 MHz	150 μV/m	43.5 dBμV/m
216 – 960 MHz	200 μV/m	46.0 dBμV/m
960 – 1000 MHz	500 μV/m	54.0 dBμV/m
Limits above are with Quasi Peak Detector		



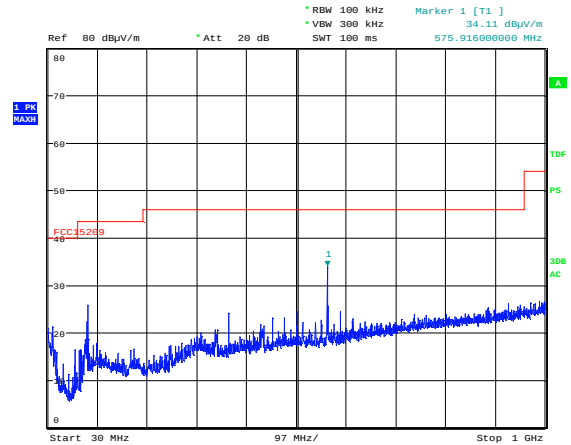
Date: 25.AUG.2021 10:41:51

Radiated Emissions 30-1000 MHz, Ch064, VP



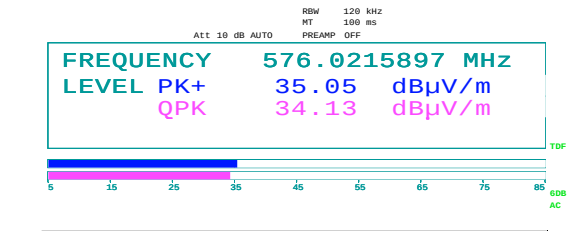
Date: 25.AUG.2021 10:30:52

Radiated Emissions 39.94 MHz, Max: VP



Date: 25.AUG.2021 10:44:02

Radiated Emissions 30-1000 MHz, Ch064, HP



Date: 25.AUG.2021 10:15:59

Radiated Emissions 576.02 MHz, Max: HP

3.5 Radiated Emissions, 1 – 40 GHz

FCC 15.205, 15.209, 15.407

ISED RSS-GEN, Issue 5, Clause 8.9

Measurement procedure: ANSI C63.10-2013 Clause 12.7

Test Results: Complies

Measurement Data:

Measuring distance 3m up to 18 GHz, 1m above 18 GHz.

RBW/VBW = 1MHz/3MHz

Worst Carrier Frequency (MHz)	Spurious Frequency (GHz)	Modulation	Measured Emissions (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
			Peak	Average	Peak	Average	Peak	Average
5200	5150	802.11a 6Mbps	64.5	48.9	74	54	9.5	5.1
5200	5150	802.11n MCS0	65.7	48.5	74	54	8.3	5.5
5300	5350	802.11a 6Mbps	62.6	48.9	74	54	11.4	5.1
5300	5350	802.11n MCS0	66.7	51.6	74	54	7.3	2.4
5520	5460	802.11a 6Mbps	65.4	48.9	74	54	8.6	5.1
5520	5460	802.11n MCS0	66.1	51.6	74	54	7.9	2.4
Any	Any	Any	<60	<44	74	54	>14	>10

Band Edge values with Peak Detector are reported in clause 2.8

Measured results are for 802.11a 6Mbps and 802.11n MCS0, it was checked that other modulations and/or bitrates did not produce higher emissions.

Band Stop Filters were used for measurements from 1 to 18 GHz that were not at the Band Edge.

A 10 dB attenuator was used before the preamp for all Band Edge measurements.

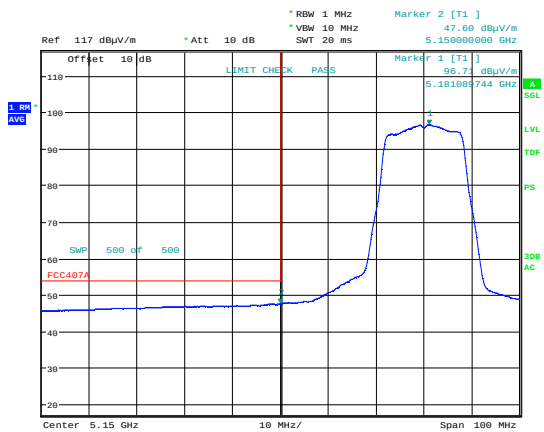
Only harmonics that fall in the restricted bands (ref. §15.205) have been measured.

Antenna factor, amplifier gain and cable loss are included in Spectrum Analyzer "Transducer factor".

See attached plots.

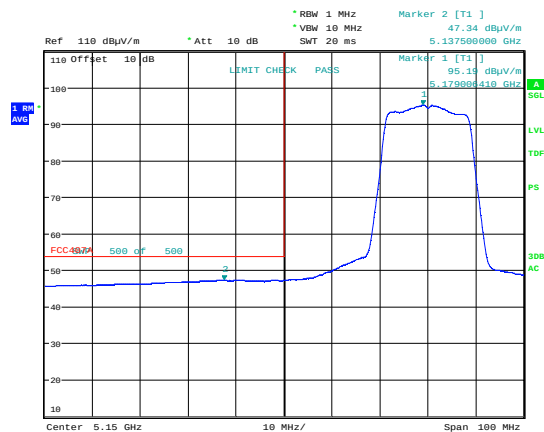
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency	Average Detector (dBμV/m)	Peak Detector (dBμV/m)
1 – 40 GHz	54.0	74.0



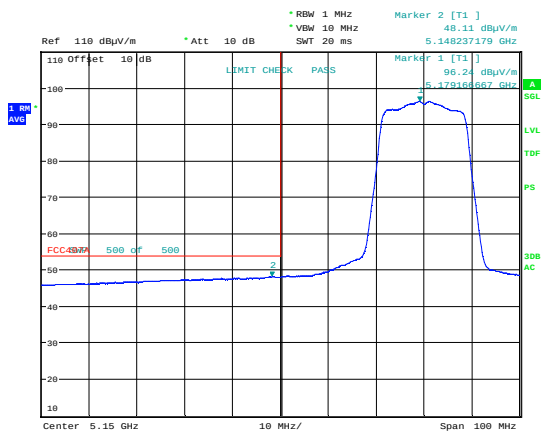
Date: 26.AUG.2021 10:56:44

Band Edge, 5150 MHz, Ch036, 802.11a 6M, AV, Max



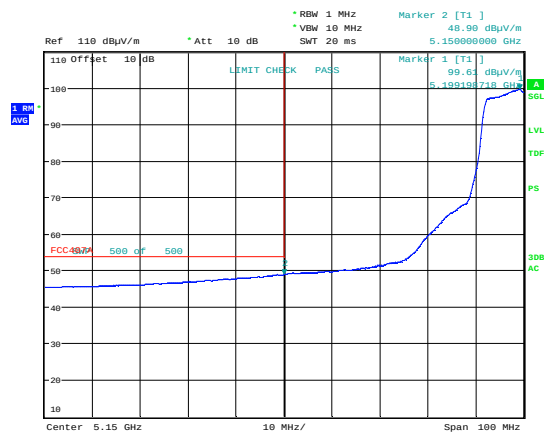
Date: 26.AUG.2021 13:13:29

Band Edge, 5150 MHz, Ch036, 802.11n HT20 SISO, AV, Max



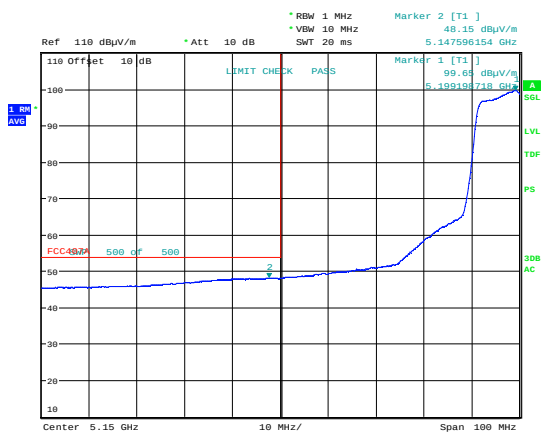
Date: 26.AUG.2021 13:29:43

Band Edge, 5150 MHz, Ch036, 802.11n HT20 MIMO, AV, Max



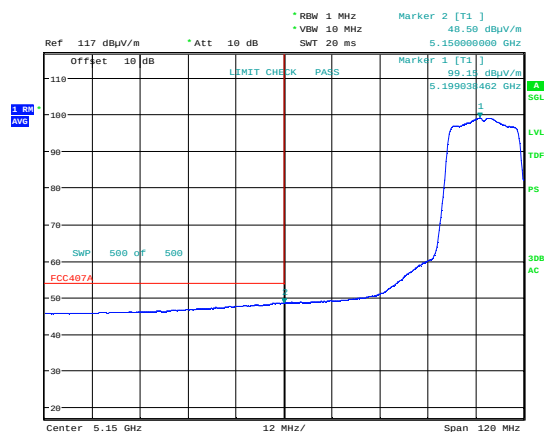
Date: 26.AUG.2021 11:17:11

Band Edge, 5150 MHz, Ch040, 802.11a 6M, AV, Max



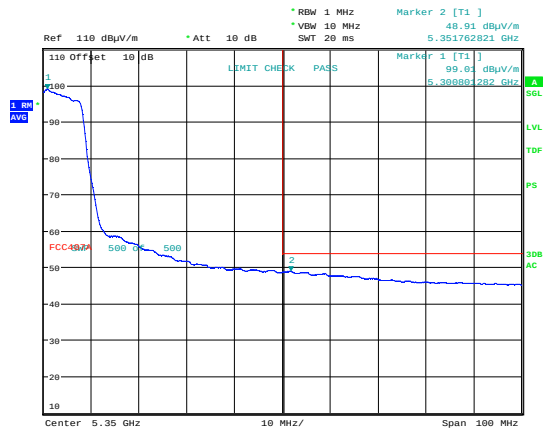
Date: 26.AUG.2021 13:16:01

Band Edge, 5150 MHz, Ch040, 802.11n HT20 SISO, AV, Max



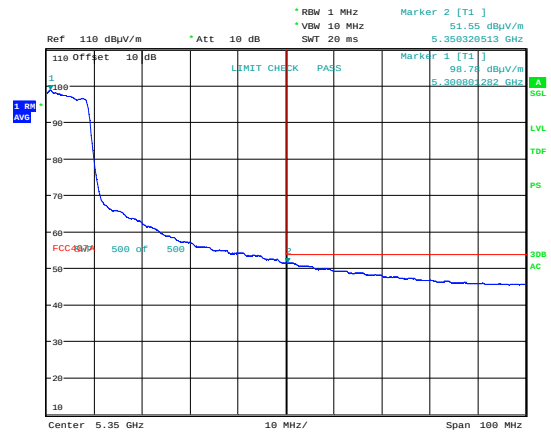
Date: 27.AUG.2021 14:45:35

Band Edge, 5150 MHz, Ch040, 802.11n HT20 MIMO, AV, Max



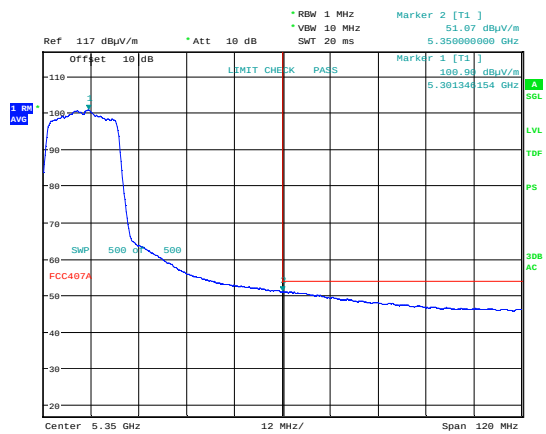
Date: 26.AUG.2021 11:19:34

Band Edge, 5350 MHz, Ch060, 802.11a 6M, AV, Max



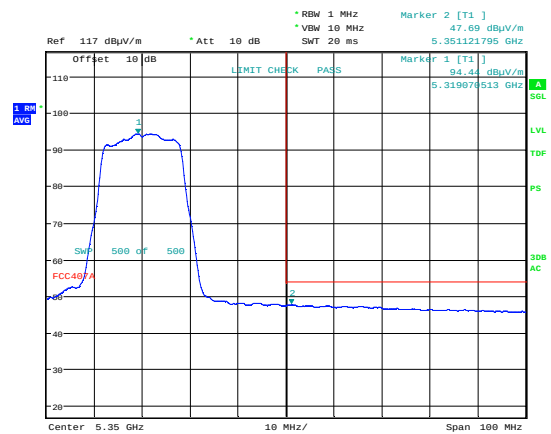
Date: 26.AUG.2021 13:04:39

Band Edge, 5350 MHz, Ch060, 802.11n HT20 SISO, AV, Max



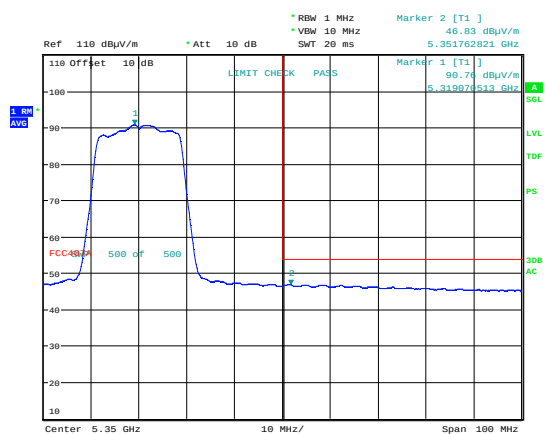
Date: 27.AUG.2021 14:39:43

Band Edge, 5350 MHz, Ch060, 802.11n HT20 MIMO, AV, Max



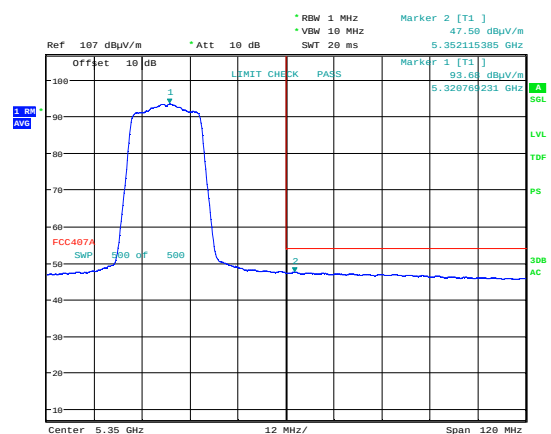
Date: 26.AUG.2021 11:02:19

Band Edge, 5350 MHz, Ch064, 802.11a 6M, AV, Max



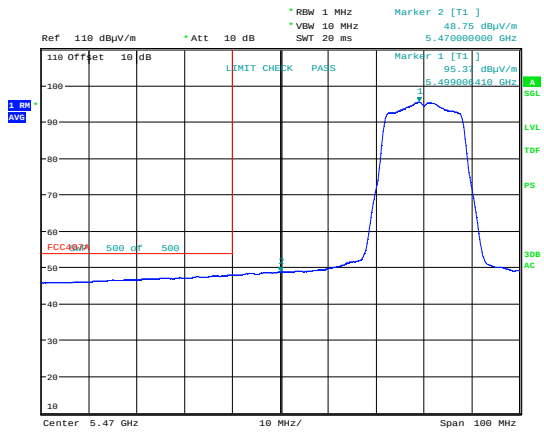
Date: 26.AUG.2021 12:57:56

Band Edge, 5350 MHz, Ch064, 802.11n HT20 SISO, AV, Max



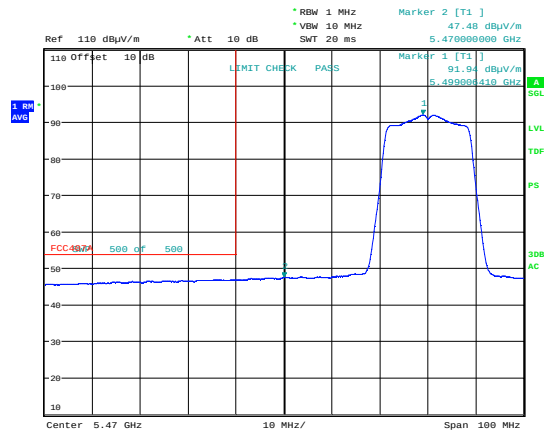
Date: 27.AUG.2021 14:36:32

Band Edge, 5350 MHz, Ch064, 802.11n HT20 MIMO, AV, Max



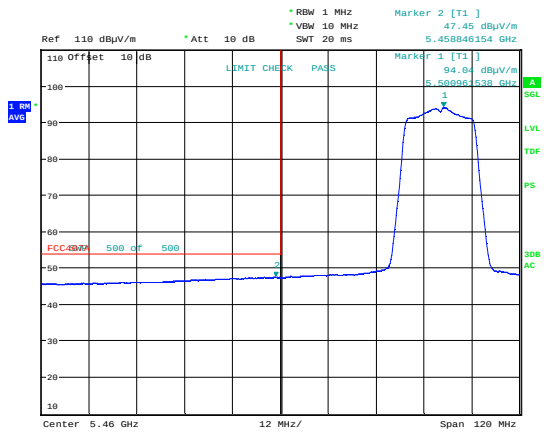
Date: 26.AUG.2021 11:52:54

Band Edge, 5460 MHz, Ch100, 802.11a 6M, AV, Max



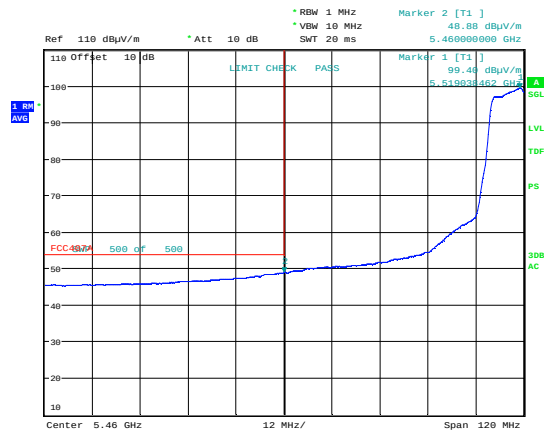
Date: 26.AUG.2021 12:51:09

Band Edge, 5460 MHz, Ch100, 802.11n HT20 SISO, AV, Max



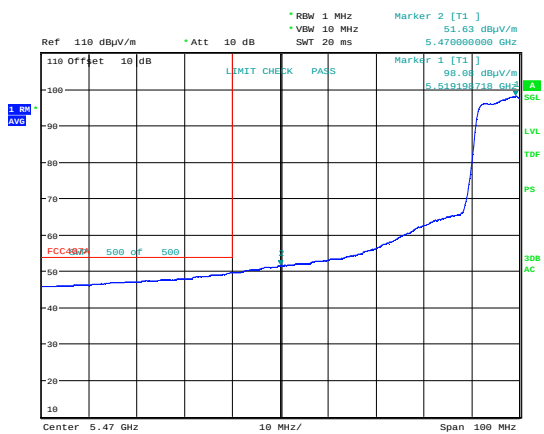
Date: 27.AUG.2021 14:47:57

Band Edge, 5460 MHz, Ch100, 802.11n HT20 MIMO, AV, Max



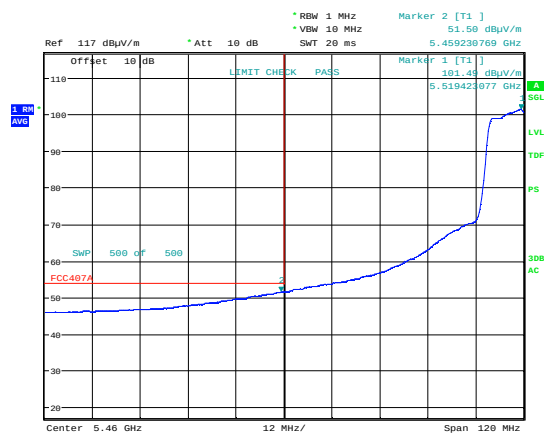
Date: 27.AUG.2021 14:57:55

Band Edge, 5460 MHz, Ch104, 802.11a 6M, AV, Max



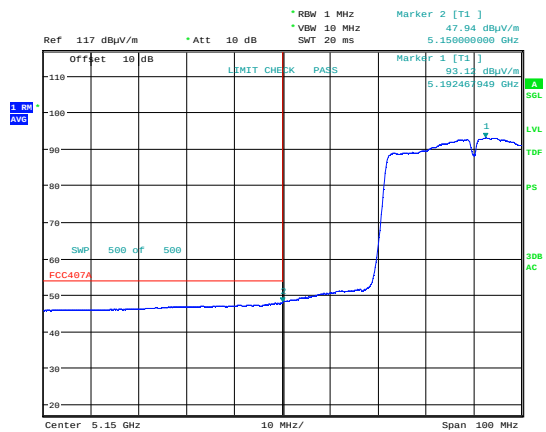
Date: 26.AUG.2021 12:53:59

Band Edge, 5460 MHz, Ch104, 802.11n HT20 SISO, AV, Max



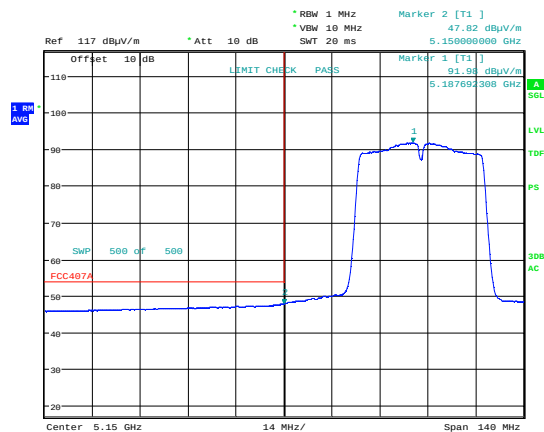
Date: 27.AUG.2021 14:58:04

Band Edge, 5460 MHz, Ch104, 802.11n HT20 MIMO, AV, Max



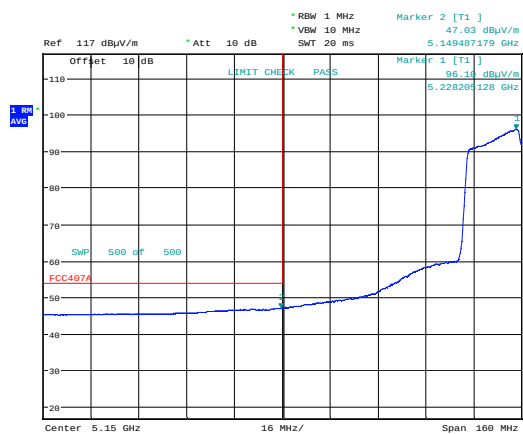
Date: 26.AUG.2021 15:59:16

Band Edge, 5150 MHz, Ch038, 802.11n HT40 SISO, AV, Max



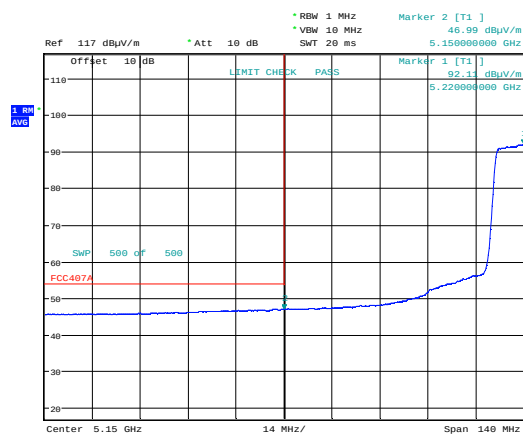
Date: 26.AUG.2021 14:10:32

Band Edge, 5150 MHz, Ch038, 802.11n HT40 MIMO, AV, Max



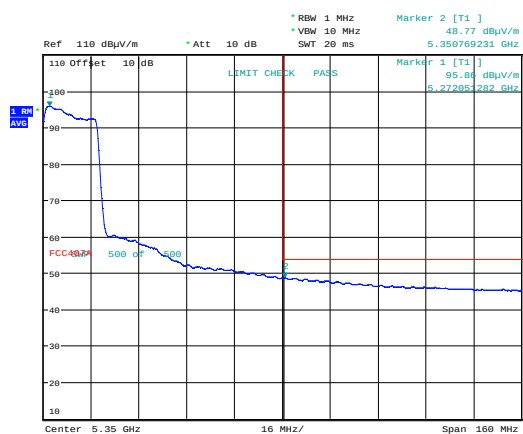
Date: 26.AUG.2021 15:55:44

Band Edge, 5150 MHz, Ch046, 802.11n HT40 SISO, AV, Max



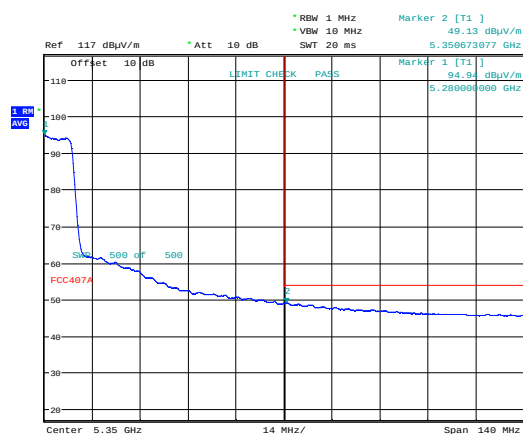
Date: 26.AUG.2021 14:14:58

Band Edge, 5150 MHz, Ch046, 802.11n HT40 MIMO, AV, Max



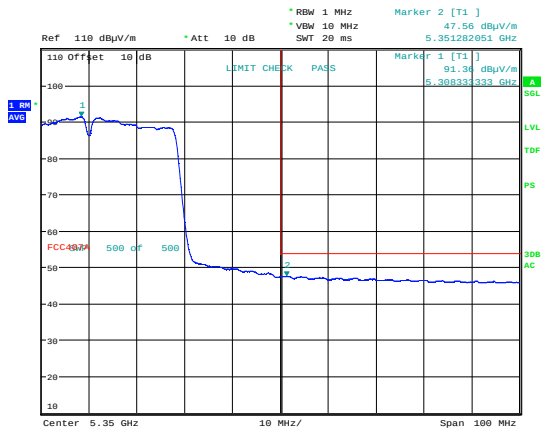
Date: 26.AUG.2021 16:03:43

Band Edge, 5350 MHz, Ch054, 802.11n HT40 SISO, AV, Max



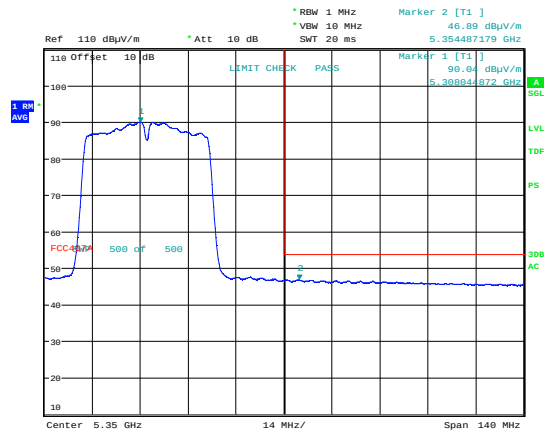
Date: 26.AUG.2021 14:07:23

Band Edge, 5350 MHz, Ch054, 802.11n HT40 MIMO, AV, Max



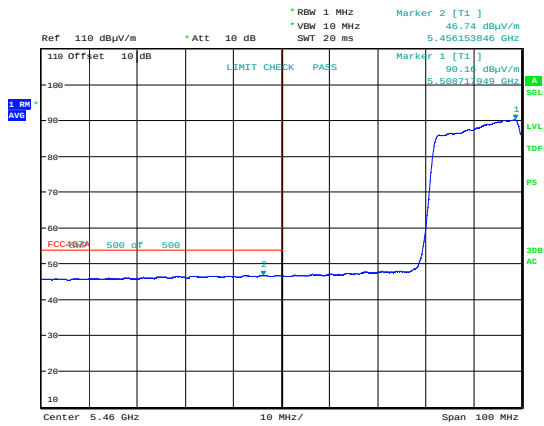
Date: 26.AUG.2021 16:06:46

Band Edge, 5350 MHz, Ch062, 802.11n HT40 SISO, AV, Max



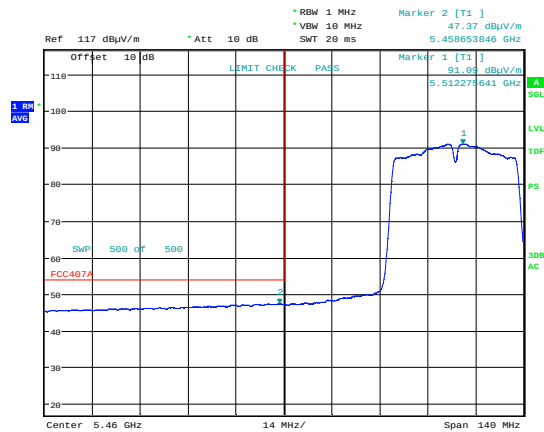
Date: 26.AUG.2021 14:03:06

Band Edge, 5350 MHz, Ch062, 802.11n HT40 MIMO, AV, Max



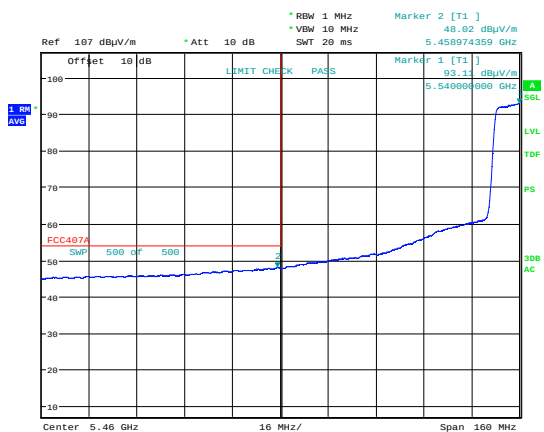
Date: 26.AUG.2021 16:11:43

Band Edge, 5460 MHz, Ch102, 802.11n HT40 SISO, AV, Max



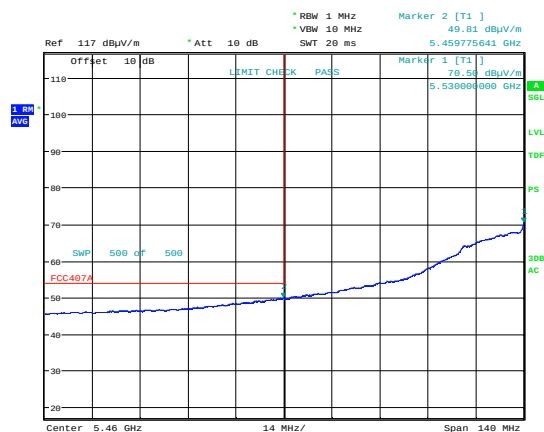
Date: 26.AUG.2021 14:22:29

Band Edge, 5460 MHz, Ch102, 802.11n HT40 MIMO, AV, Max



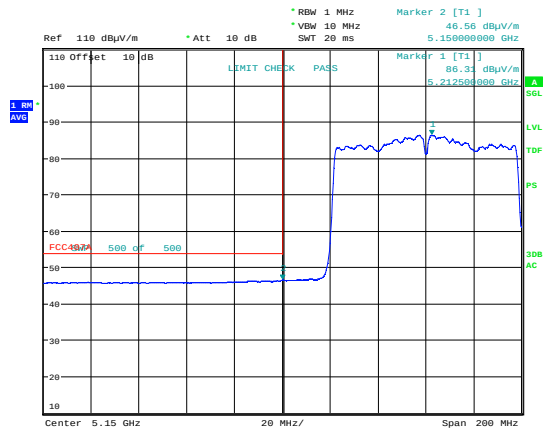
Date: 26.AUG.2021 16:14:39

Band Edge, 5460 MHz, Ch110, 802.11n HT40 SISO, AV, Max



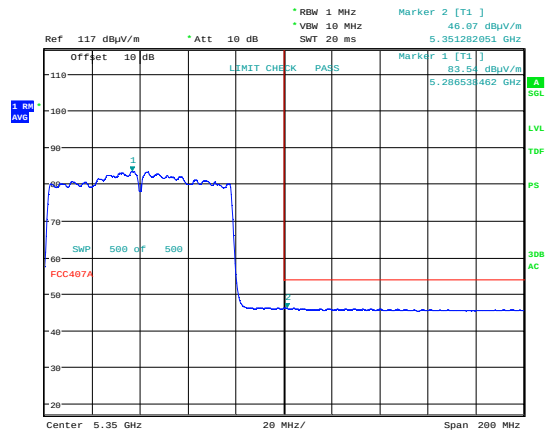
Date: 26.AUG.2021 14:25:39

Band Edge, 5460 MHz, Ch110, 802.11n HT40 MIMO, AV, Max



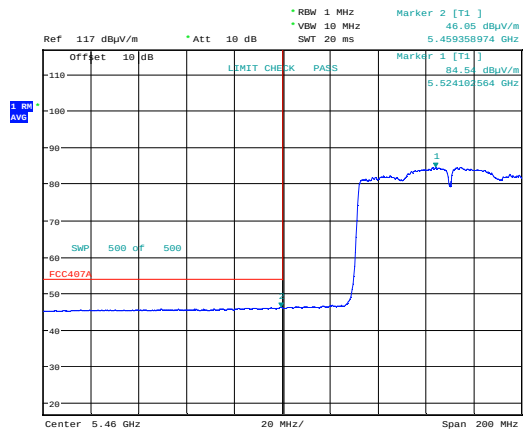
Date: 26.AUG.2021 15:07:35

Band Edge, 5150 MHz, Ch042, 802. 11ac VHT80 MIMO, AV, Max



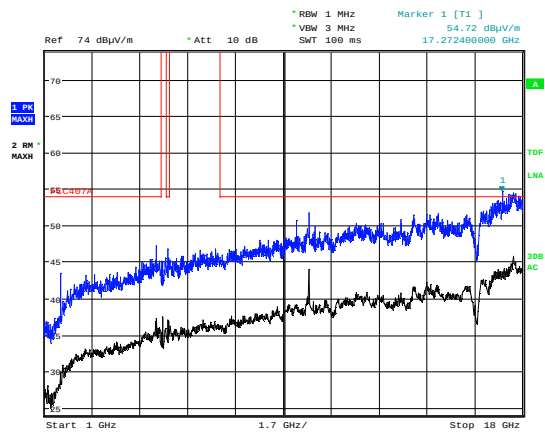
Date: 26.AUG.2021 15:04:03

Band Edge, 5350 MHz, Ch058, 802. 11ac VHT80 MIMO, AV, Max



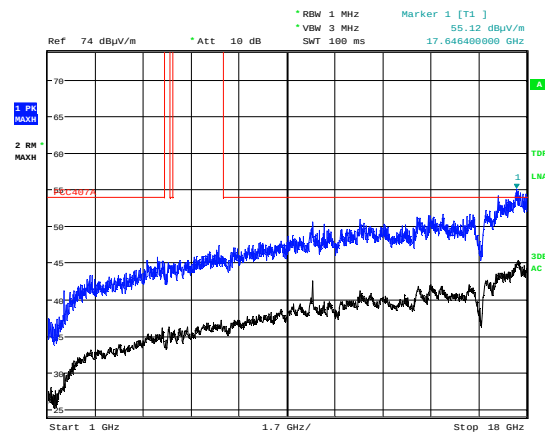
Date: 26.AUG.2021 14:54:32

Band Edge, 5460 MHz, Ch106, 802. 11ac VHT80 MIMO, AV, Max



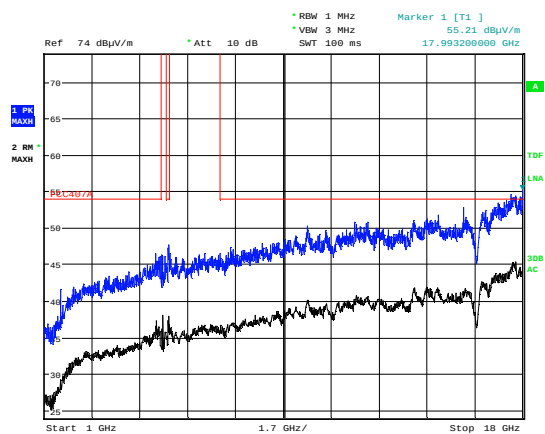
Date: 26.AUG.2021 16:51:22

Radiated Emissions 1 -18 GHz, Ch040, 802.11a 6M, Ant1, HP



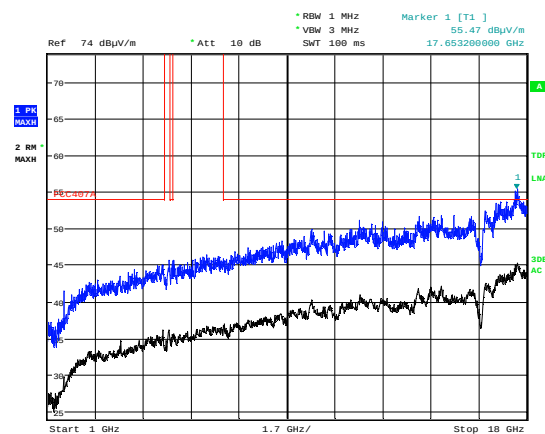
Date: 26.AUG.2021 16:49:32

Radiated Emissions 1 -18 GHz, Ch040, 802.11a 6M, Ant1, VP



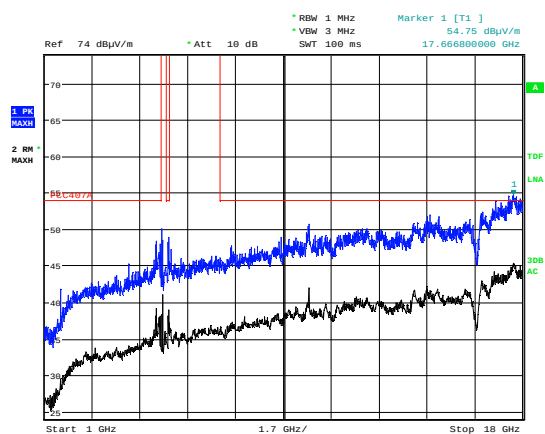
Date: 26.AUG.2021 16:56:54

Radiated Emissions 1 -18 GHz, Ch040, 802.11a 6M, Ant2, HP



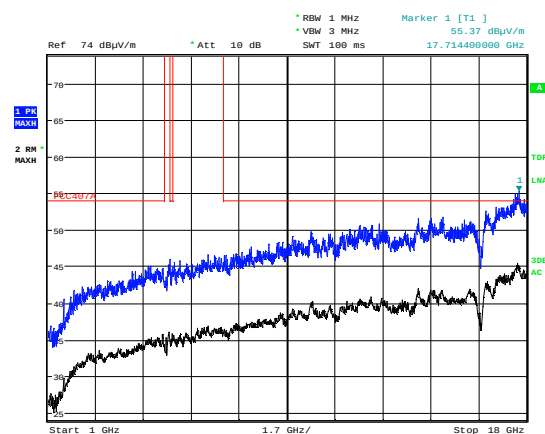
Date: 26.AUG.2021 16:54:41

Radiated Emissions 1 -18 GHz, Ch040, 802.11a 6M, Ant2, VP



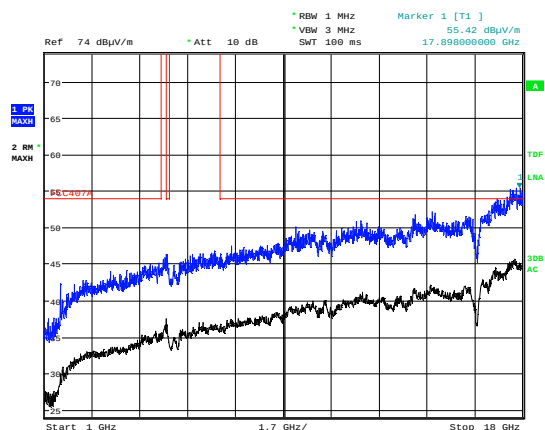
Date: 26.AUG.2021 16:39:44

Radiated Emissions 1 -18 GHz, Ch040, 802.11n HT20, MIMO, HP



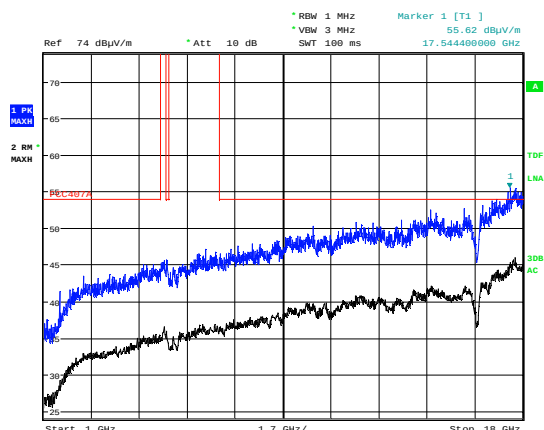
Date: 26.AUG.2021 16:37:32

Radiated Emissions 1 -18 GHz, Ch040, 802.11n HT20, MIMO, VP



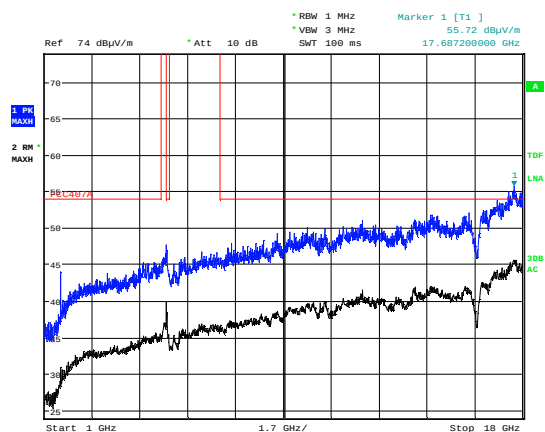
Date: 27.AUG.2021 10:41:29

Radiated Emissions 1 -18 GHz, Ch116, 802.11a 6M, Ant1, HP



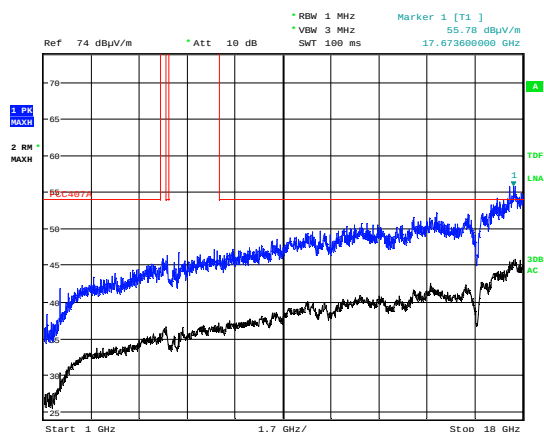
Date: 27.AUG.2021 10:39:33

Radiated Emissions 1 -18 GHz, Ch116, 802.11a 6M, Ant1, VP



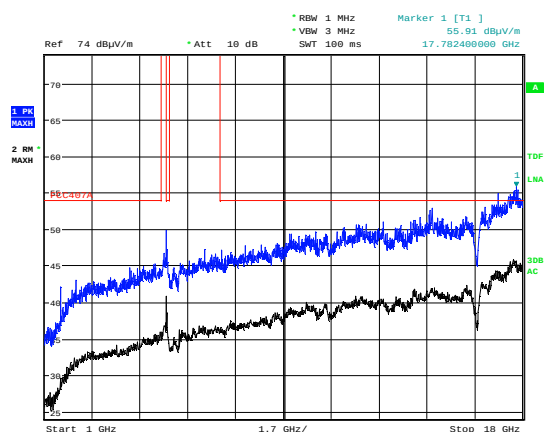
Date: 27.AUG.2021 10:45:54

Radiated Emissions 1 -18 GHz, Ch116, 802.11a 6M, Ant2, HP



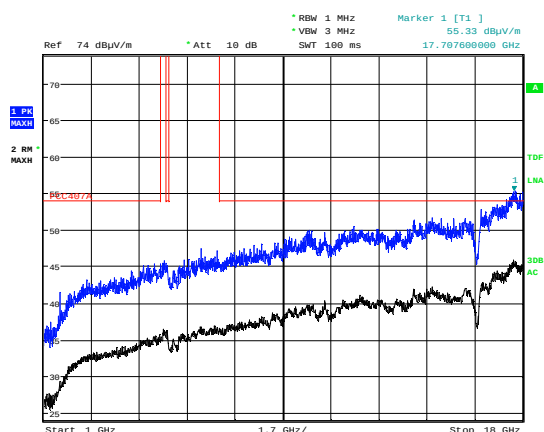
Date: 27.AUG.2021 10:43:58

Radiated Emissions 1 -18 GHz, Ch116, 802.11a 6M, Ant2, VP



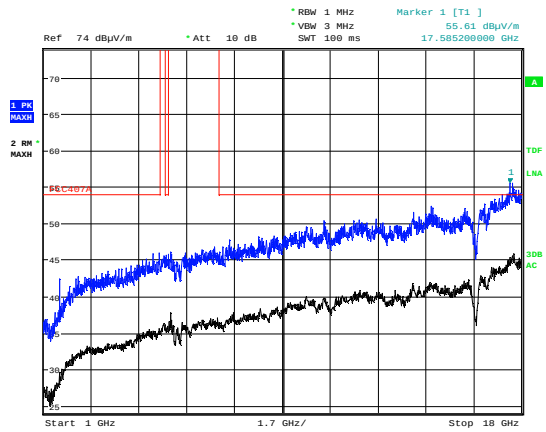
Date: 27.AUG.2021 10:35:56

Radiated Emissions 1 -18 GHz, Ch116, 802.11n HT20, MIMO, HP



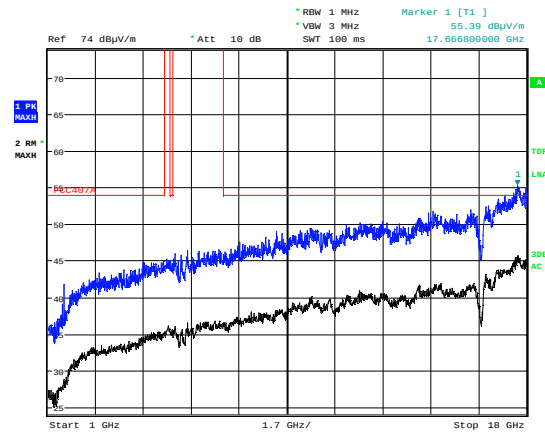
Date: 27.AUG.2021 10:33:44

Radiated Emissions 1 -18 GHz, Ch116, 802.11n HT20, MIMO, VP



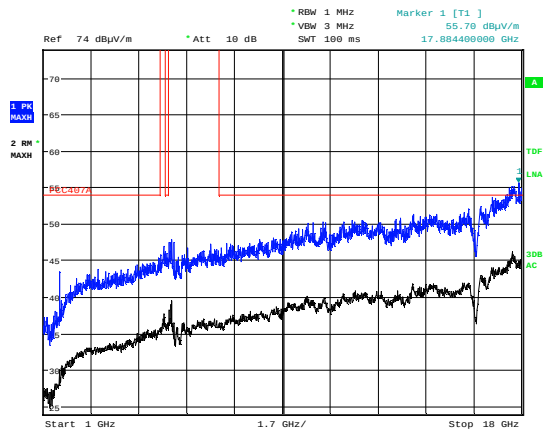
Date: 27.AUG.2021 11:04:46

Radiated Emissions 1 -18 GHz, Ch157, 802.11a 6M, Ant1, HP



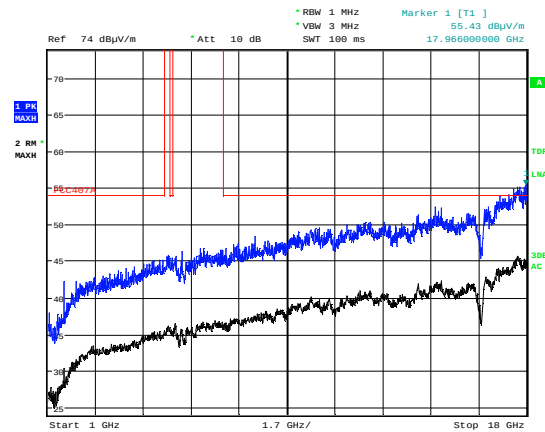
Date: 27.AUG.2021 11:02:50

Radiated Emissions 1 -18 GHz, Ch157, 802.11a 6M, Ant1, VP



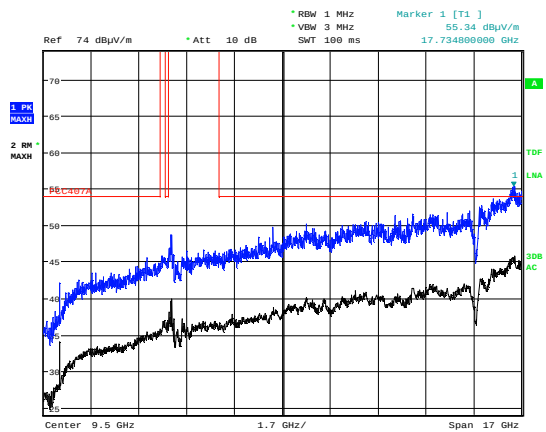
Date: 27.AUG.2021 11:09:23

Radiated Emissions 1 -18 GHz, Ch157, 802.11a 6M, Ant2, HP



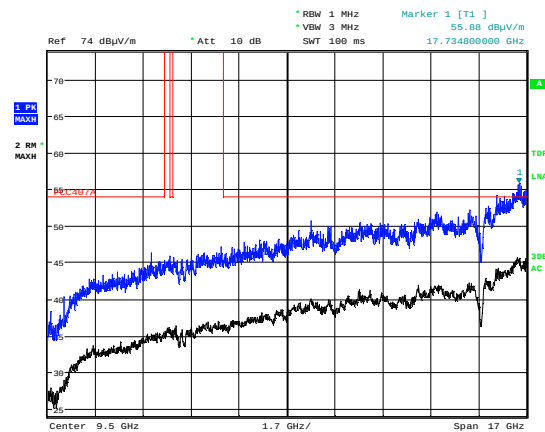
Date: 27.AUG.2021 11:07:26

Radiated Emissions 1 -18 GHz, Ch157, 802.11a 6M, Ant2, VP



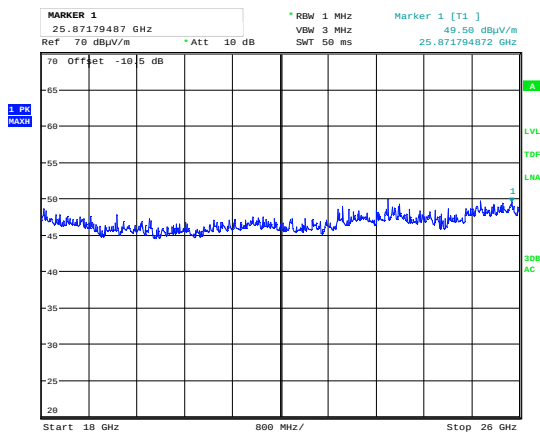
Date: 27.AUG.2021 10:58:57

Radiated Emissions 1 -18 GHz, Ch157, 802.11n HT20, MIMO, HP



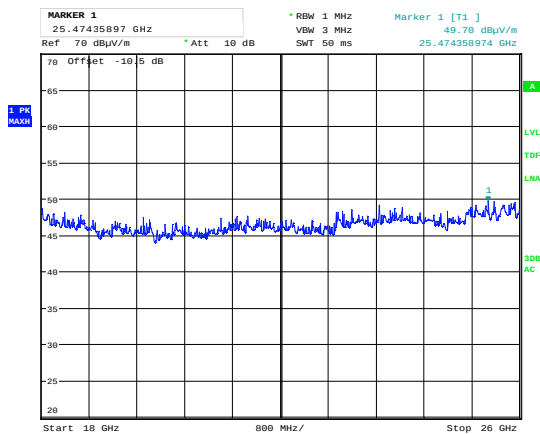
Date: 27.AUG.2021 10:56:45

Radiated Emissions 1 -18 GHz, Ch157, 802.11n HT20, MIMO, VP



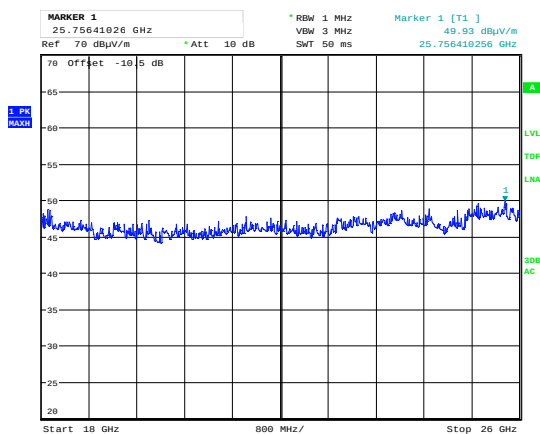
Date: 27.AUG.2021 13:30:29

Emissions 18-26 GHz, Ch052, 802.11a 6M, Ant1, HP, @1m



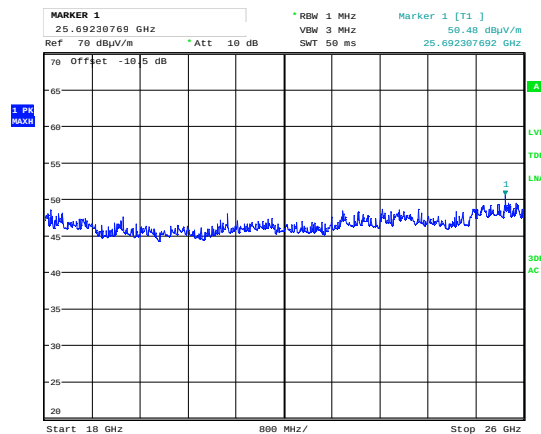
Date: 27.AUG.2021 13:31:26

Emissions 18-26 GHz, Ch052, 802.11a 6M, Ant2, HP, @1m



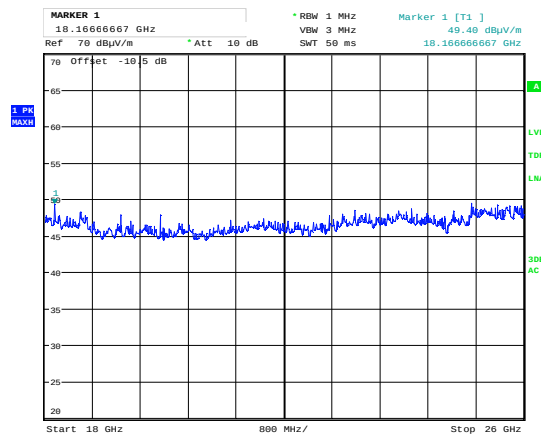
Date: 27.AUG.2021 13:43:22

Emissions 18-26 GHz, Ch052, 802.11n HT20, MIMO, HP, @1m



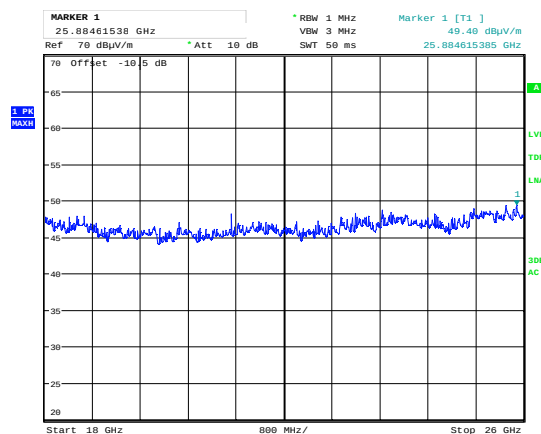
Date: 27.AUG.2021 13:29:26

Emissions 18-26 GHz, Ch052, 802.11a 6M, Ant1, VP, @1m



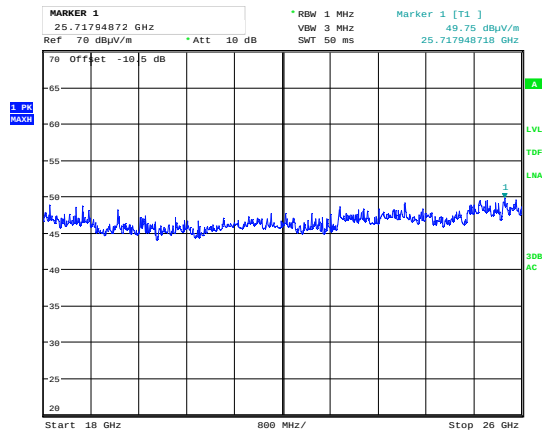
Date: 27.AUG.2021 13:32:13

Emissions 18-26 GHz, Ch052, 802.11a 6M, Ant2, VP, @1m



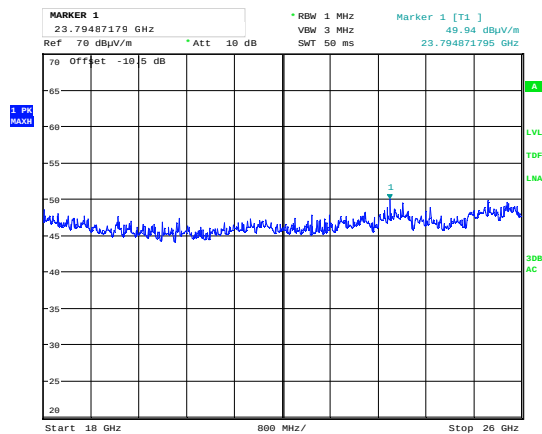
Date: 27.AUG.2021 13:42:39

Emissions 18-26 GHz, Ch052, 802.11n HT20, MIMO, VP, @1m



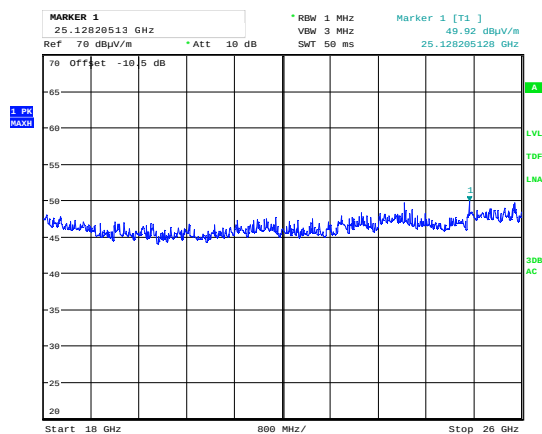
Date: 27.AUG.2021 13:34:41

Emissions 18-26 GHz, Ch116, 802.11a 6M, Ant1, HP, @1m



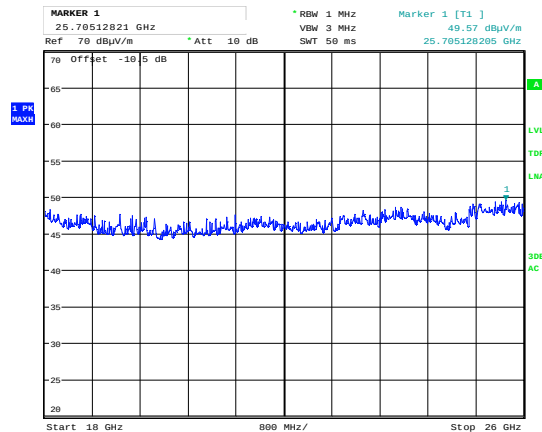
Date: 27.AUG.2021 13:35:27

Emissions 18-26 GHz, Ch116, 802.11a 6M, Ant2, HP, @1m



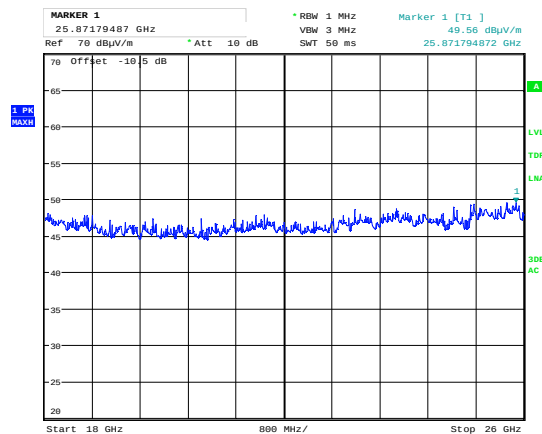
Date: 27.AUG.2021 13:44:18

Emissions 18-26 GHz, Ch116, 802.11n HT20, MIMO, HP, @1m



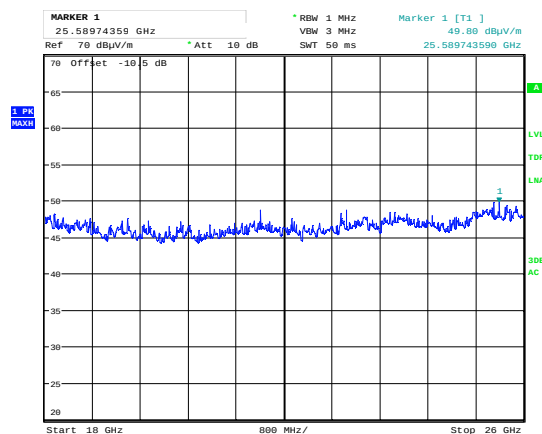
Date: 27.AUG.2021 13:33:49

Emissions 18-26 GHz, Ch116, 802.11a 6M, Ant1, VP, @1m



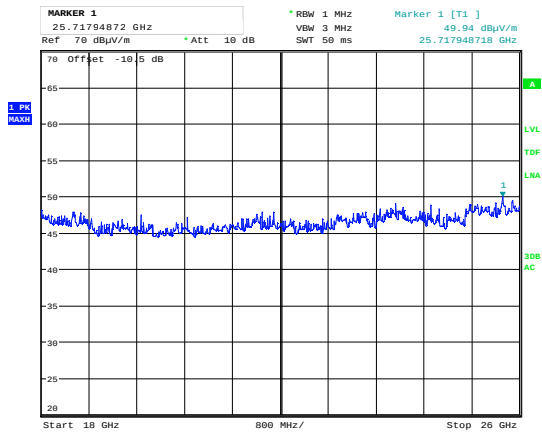
Date: 27.AUG.2021 13:36:22

Emissions 18-26 GHz, Ch116, 802.11a 6M, Ant2, VP, @1m



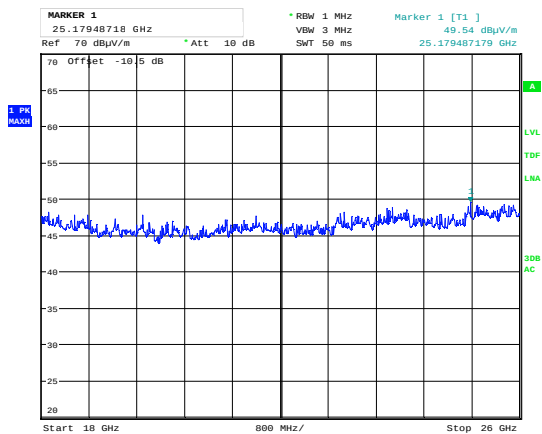
Date: 27.AUG.2021 13:45:06

Emissions 18-26 GHz, Ch116, 802.11n HT20, MIMO, VP, @1m



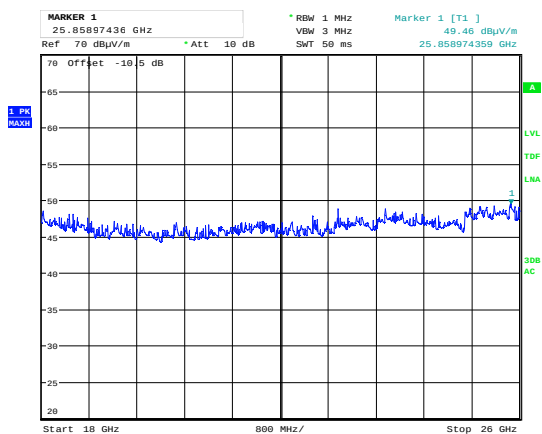
Date: 27.AUG.2021 13:39:56

Emissions 18-26 GHz, Ch157, 802.11a 6M, Ant1, HP, @1m



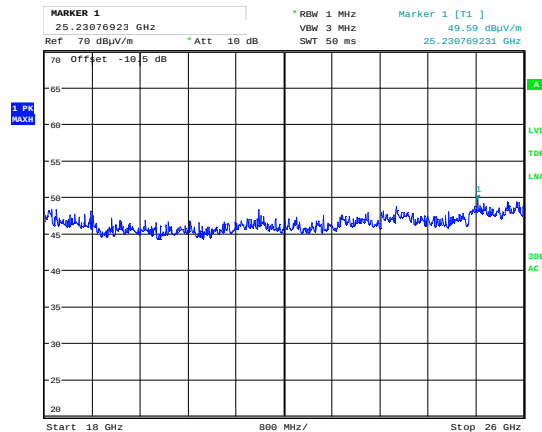
Date: 27.AUG.2021 13:40:36

Emissions 18-26 GHz, Ch157, 802.11a 6M, Ant2, HP, @1m



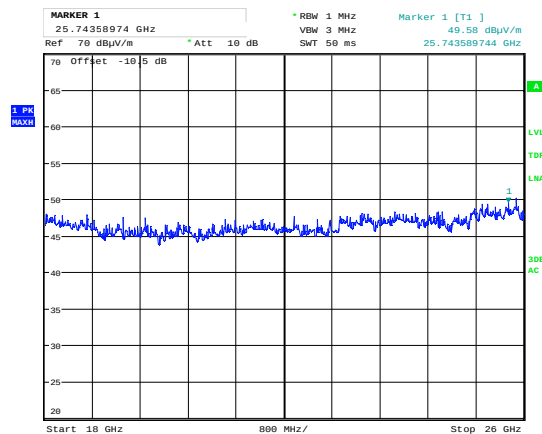
Date: 27.AUG.2021 13:46:55

Emissions 18-26 GHz, Ch157, 802.11n HT20, MIMO, HP, @1m



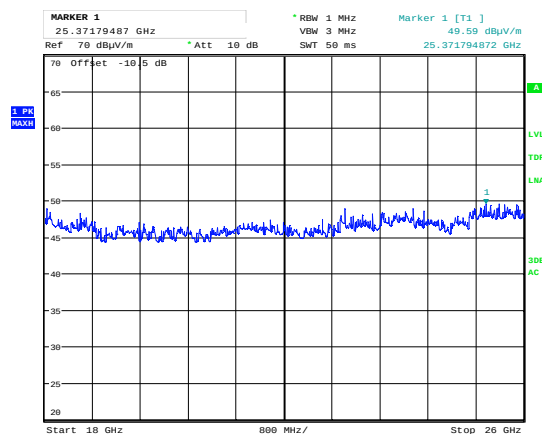
Date: 27.AUG.2021 13:39:12

Emissions 18-26 GHz, Ch157, 802.11a 6M, Ant1, VP, @1m



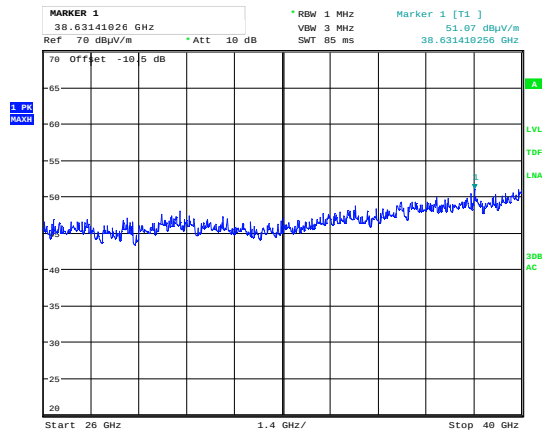
Date: 27.AUG.2021 13:41:25

Emissions 18-26 GHz, Ch157, 802.11a 6M, Ant2, VP, @1m



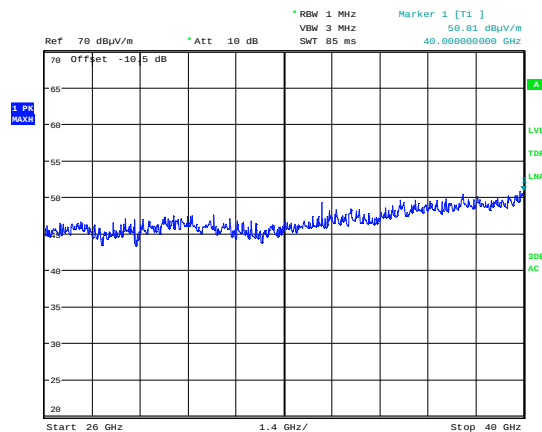
Date: 27.AUG.2021 13:46:01

Emissions 18-26 GHz, Ch157, 802.11n HT20, MIMO, VP, @1m



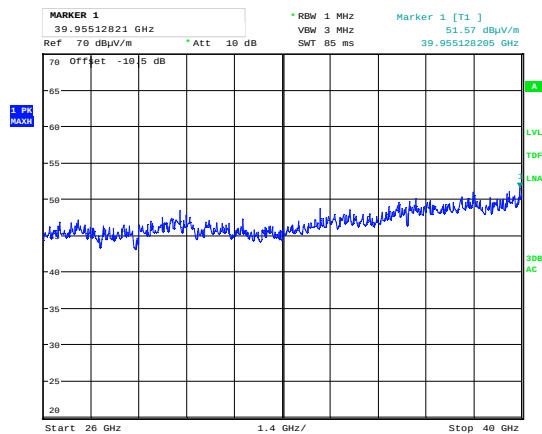
Date: 27.AUG.2021 14:04:25

Emissions 26-40 GHz, Ch052, 802.11a 6M, Ant1, HP, @1m



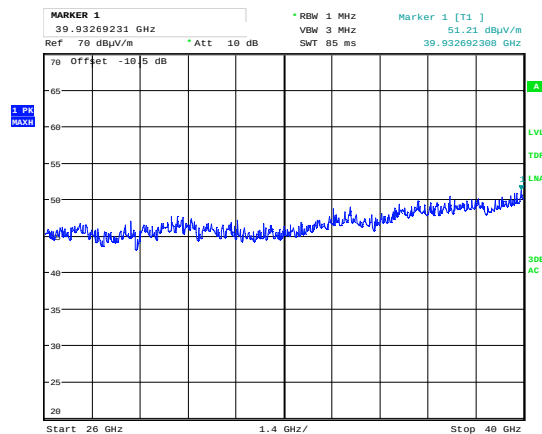
Date: 27.AUG.2021 14:03:52

Emissions 26-40 GHz, Ch052, 802.11a 6M, Ant1, VP, @1m



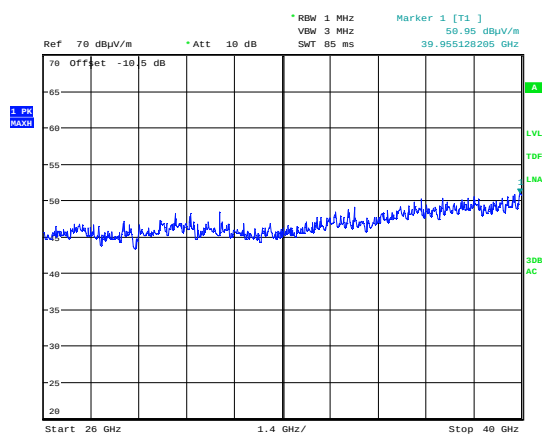
Date: 27.AUG.2021 14:05:23

Emissions 26-40 GHz, Ch052, 802.11a 6M, Ant2, HP, @1m



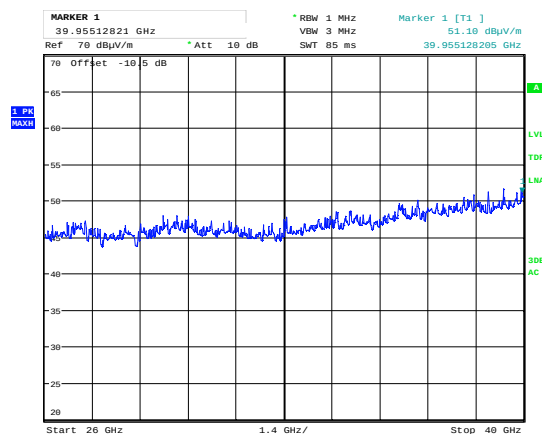
Date: 27.AUG.2021 14:06:02

Emissions 26-40 GHz, Ch052, 802.11a 6M, Ant2, VP, @1m



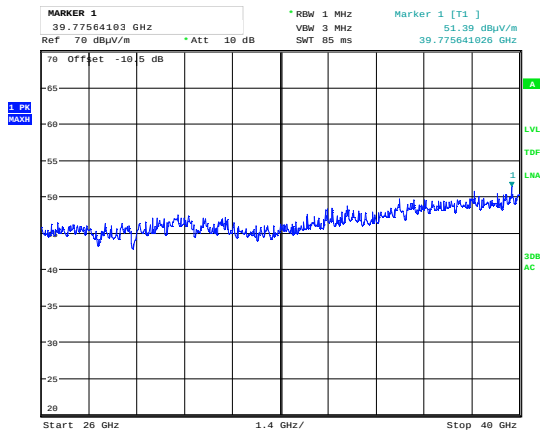
Date: 27.AUG.2021 14:01:15

Emissions 26-40 GHz, Ch052, 802.11n HT20, MIMO, HP, @1m



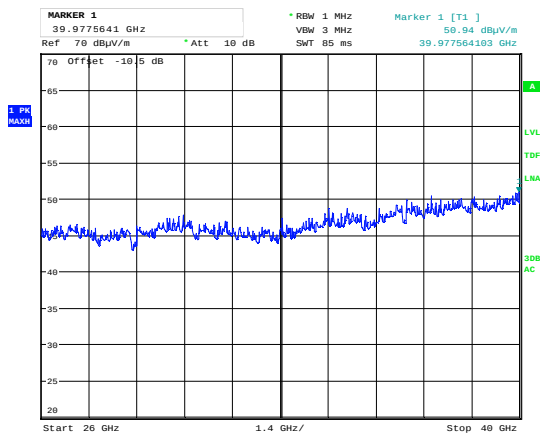
Date: 27.AUG.2021 14:00:36

Emissions 26-40 GHz, Ch052, 802.11n HT20, MIMO, VP, @1m



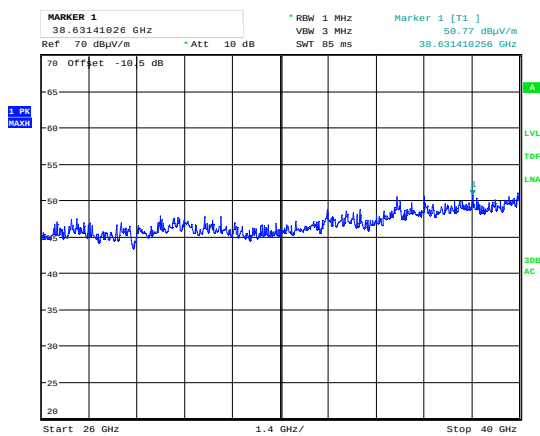
Date: 27.AUG.2021 14:08:19

Emissions 26-40 GHz, Ch116, 802.11a 6M, Ant1, HP, @1m



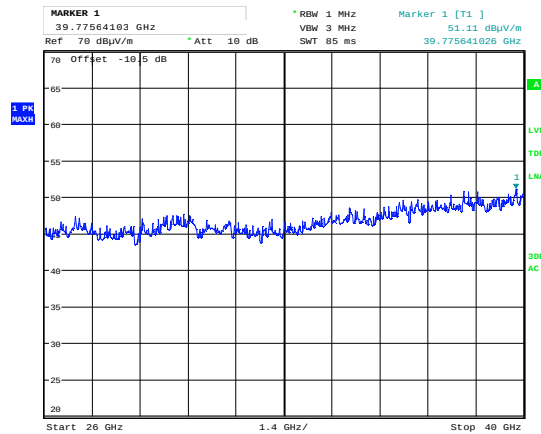
Date: 27.AUG.2021 14:09:32

Emissions 26-40 GHz, Ch116, 802.11a 6M, Ant2, HP, @1m



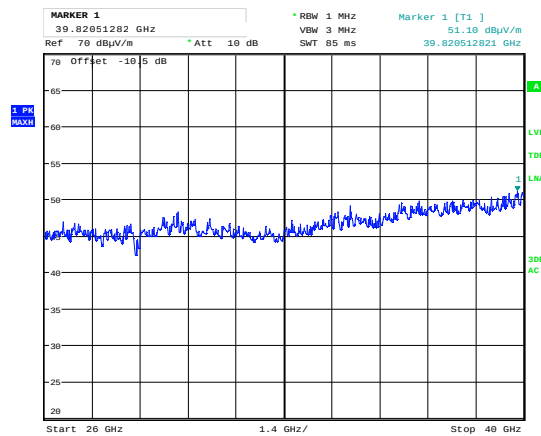
Date: 27.AUG.2021 13:57:02

Emissions 26-40 GHz, Ch116, 802.11n HT20, MIMO, HP, @1m



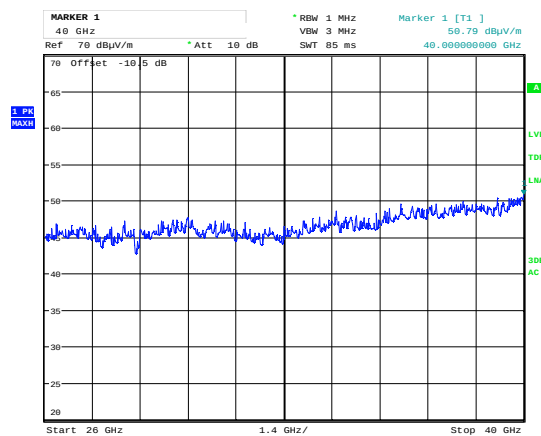
Date: 27.AUG.2021 14:07:30

Emissions 26-40 GHz, Ch116, 802.11a 6M, Ant1, VP, @1m



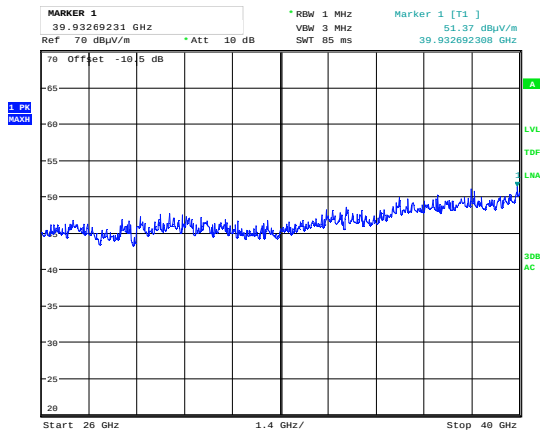
Date: 27.AUG.2021 14:10:14

Emissions 26-40 GHz, Ch116, 802.11a 6M, Ant2, VP, @1m



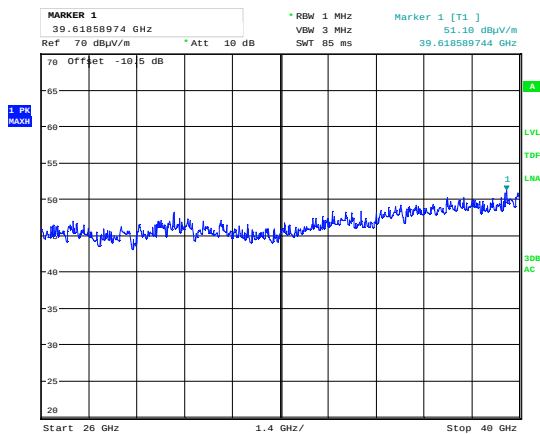
Date: 27.AUG.2021 14:02:07

Emissions 26-40 GHz, Ch116, 802.11n HT20, MIMO, VP, @1m



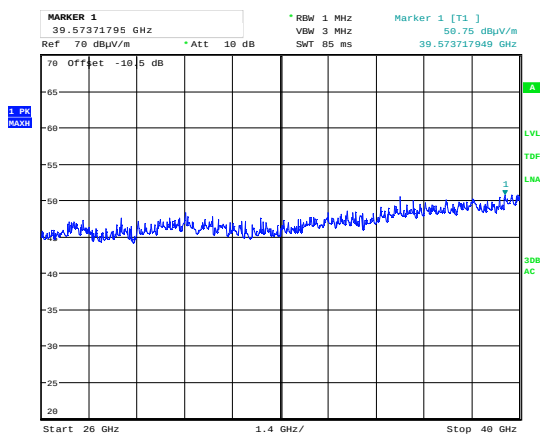
Date: 27.AUG.2021 14:12:20

Emissions 26-40 GHz, Ch157, 802.11a 6M, Ant1, HP, @1m



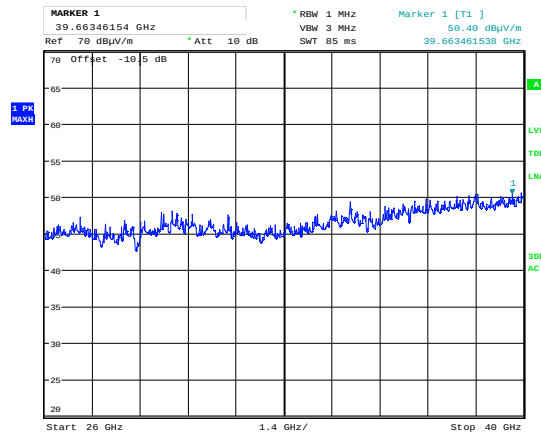
Date: 27.AUG.2021 14:11:42

Emissions 26-40 GHz, Ch157, 802.11a 6M, Ant2, HP, @1m



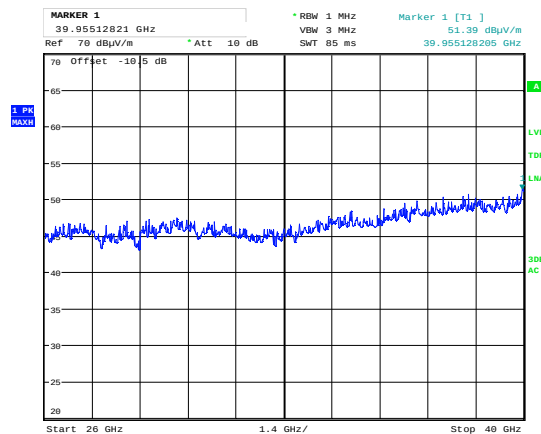
Date: 27.AUG.2021 13:55:40

Emissions 26-40 GHz, Ch157, 802.11n HT20, MIMO, HP, @1m



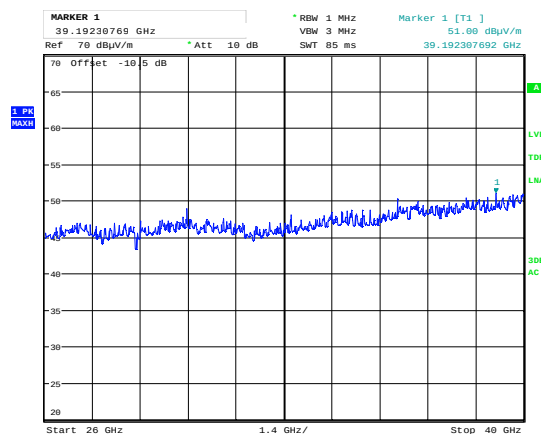
Date: 27.AUG.2021 14:13:18

Emissions 26-40 GHz, Ch157, 802.11a 6M, Ant1, VP, @1m



Date: 27.AUG.2021 14:14:00

Emissions 26-40 GHz, Ch157, 802.11a 6M, Ant2, VP, @1m



Date: 27.AUG.2021 13:54:46

Emissions 26-40 GHz, Ch157, 802.11n HT20, MIMO, VP, @1m

4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		Uncertainty
Output Power		±0.5 dB
Power Spectral Density		±0.5 dB
Out of Band Emissions, Conducted	< 3.6 GHz	±0.6 dB
	> 3.6 GHz	±0.9 dB
Spurious Emissions, Radiated	< 1 GHz	±2.5 dB
	> 1 GHz	±2.2 dB
Emission Bandwidth		±4 %
Power Line Conducted Emissions		+2.9 / -4.1 dB
Spectrum Mask Measurements	Frequency	±5 %
	Amplitude	±1.0 dB
Frequency Error		±0.6 ppm
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2021-02	2022-02
2	6810-17B	Attenuator	Suhner	LR 1669	COU	
3	317	Preamplifier	Sonoma Inst.	LR 1687	2021-08	2022-08
4	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2021-08	2022-08
5	3115	Horn Antenna	EMCO	LR 1330	2016-10	2021-10
6	3117-PA	Horn Antenna +PreAmp	EMCO	LR 1717	2021-08	2022-08
7	Model 638	Antenna Horn	Narda	LR 1480	N/A	
8	WLK5-1100-1485-7000-40SS	Low Pass Filter (1 GHz)	Wainwright Inst.	LR 1761	COU	
9	N0452501 (5150-5350 MHz)	BandStop Filter	Microwave Circuits	LR 1775	COU	
10	N0555983 (5470-5725 MHz)	BandStop Filter	Microwave Circuits	LR 1774	COU	
11	N0257881 (5725-5850 MHz)	BandStop Filter	Microwave Circuits	LR 1764	COU	
12	Model 87 V	Multimeter	Fluke	LR 1599	2021-01	2023-01
13	6812B	AC Power Source	Agilent	LR 1515	COU	
14	ENV216	Two Line V-Network	Rohde & Schwarz	LR 1665	2019-11	2021-11
15	ESCI3	Measuring Receiver	Rohde & Schwarz	N-4259	2019-10	2021-10
16	ST18/SMA/N/36	RF Cable	Suhner	LR 1627	COU	

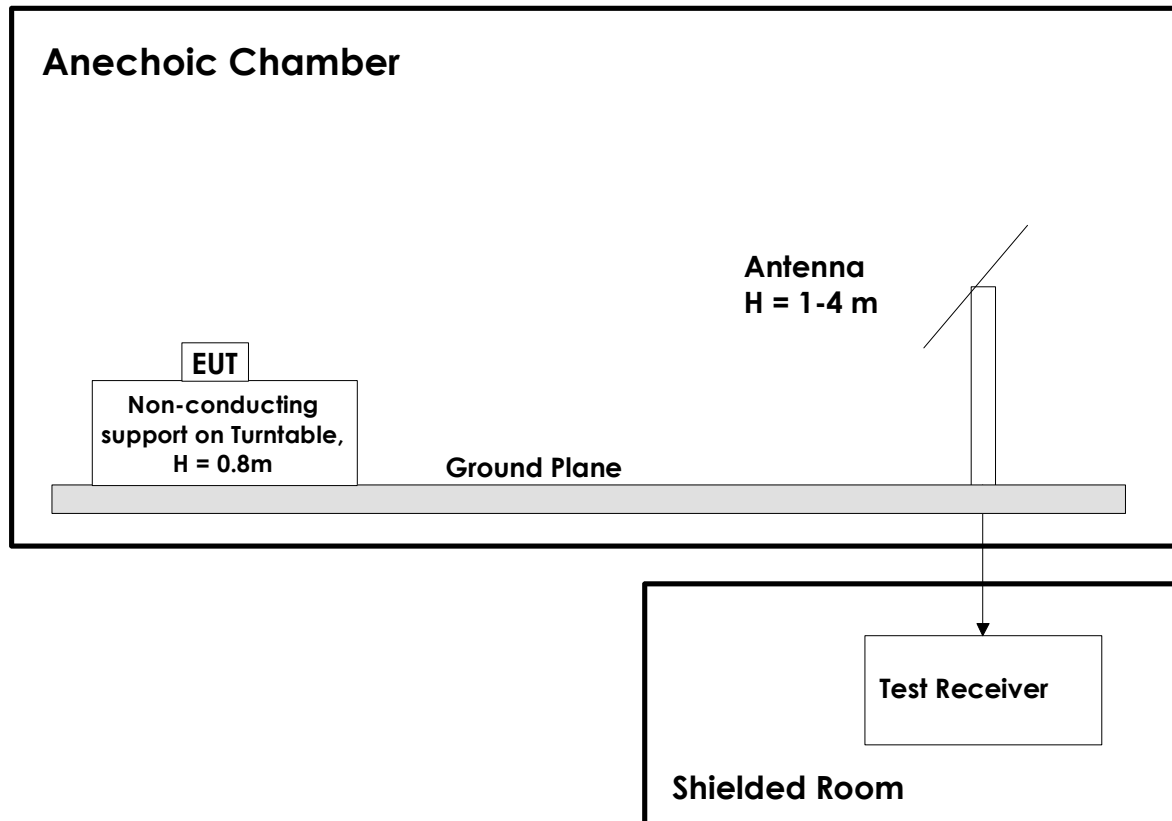
Note: COU – calibrate on use; N/A – Not Applicable

The software listed below has been used for one or more tests.

No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC32	10.50.10	Power Line Conducted test software
2	Nemko AS	RSPlot	1.0.8.0	Screenshots from R&S Spectrum Analyzers

6 BLOCK DIAGRAM

6.1 Test Site Radiated Emission



This test setup is used for all radiated emissions tests. Measuring distance is 3m for all frequencies.

Emissions above 1 GHz are measured with a Spectrum Analyzer and Horn Antenna.

All measurements at 1GHz and above were performed with turntable height 1.5m and with the ground plane covered by absorbers.

A pre-amplifier is used for all measurements, and High-Pass filter is used for all harmonics.