

Report No.: SEWM2207000133RG04
Rev.: 01
Page: 1 of 441

TEST REPORT

Application No.:	SEWM2207000133RG
Applicant:	Quectel Wireless Solutions Co., Ltd
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer:	Quectel Wireless Solutions Co., Ltd
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
EUT Description:	Smart Module
Model No.:	SA800U-WF
Trade Mark:	QUECTEL
FCC ID:	XMR2022SA800UWF
Standards:	FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart E
Date of Receipt:	2022/08/09
Date of Test:	2022/08/15 to 2022/09/02
Date of Issue:	2022/09/06
Test Result :	PASS *

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:



Panta Sun
Wireless Laboratory Manager



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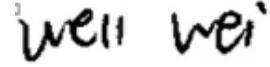
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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022/09/06		Original

Prepared By	 (Tizzy Song) / Test Engineer
Checked By	 (Well Wei) / Reviewer

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2 Test Summary

Test Item	Band ^[1]	FCC rules No.	Test Requirements	Test Result	Result		
Antenna Requirement	--	15.203/15.407(a)	--	Clause 4.1	PASS		
26dB Emission Bandwidth	Band I	15.407(a)(1)	No limit.	Clause 4.5	Reporting only		
	Band II-A	15.407(a)(2)					
	Band II-C	15.407(a)(2)					
6dB Emission Bandwidth	Band III	15.407(e)	≥ 500 kHz.	Clause 4.6	PASS		
99% Occupied Bandwidth	Band I	KDB 789033 D02§ D	No limit.	Clause 4.7	Reporting only		
	Band II-A						
	Band II-C						
	Band III						
Duty Cycle	Band I Band II-A Band II-C Band III	--	No limit.	Clause 4.3	Reporting only		
Maximum Conducted Output Power	Band I	15.407(a)	< 250mW	Clause 4.4	PASS		
	Band II-A	15.407(a)(2)	<MIN{250mW,11dBm+10*Ig(EBW)}				
	Band II-C						
	Band III	15.407(a)(3)	< 1W				
Maximum Power Spectral Density	Band I	15.407(a)	<11dBm/MHz	Clause 4.8	PASS		
	Band II-A	15.407(a)(2)	<11dBm/MHz				
	Band II-C						
	Band III	15.407(a)(3)	<30dBm/500KHz				
Unwanted Emissions that fall Out of the Restricted Bands (Radiated)	Band I	15.209 15.407(b)	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.15-5.35 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).	Clause 4.9	PASS		
	Band II-A	15.407(b) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.25-5.35 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).		PASS		
	Band II-	15.407(b) 15.209	F<1GHz:		PASS		

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	C		§15.209/§7.2.5 limit (QP). F \geq 1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.47- 5.725 GHz). F \geq 1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).		
		Band III	15.407(b) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP) F \geq 1GHz & out-restricted: (QP) a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges; b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges; c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges. F \geq 1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).	
Unwanted Emissions in the Restricted Bands (Radiated)	Band I Band II-A Band II-C Band III	15.209	---	Clause 4.10	PASS
AC Power Line Conducted Emissions	Band I Band II-A Band II-C Band III	15.207	---	Clause 4.2	PASS
Dynamic Frequency Selection	Band II-A Band II-C	15.407	Channel Move Time:10 Seconds	Clause 4.11	PASS
Frequency Stability	Band I Band II-A Band II-C Band III	15.407(g)	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual	N/A	N/A

Note 1:

Band I: 5150-5250MHz

Band II-A: 5250-5350MHz

Band II-C: 5470-5725MHz

Band III: 5725-5850MHz



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3 General Information

3.1 Details of Client

Applicant:	Quectel Wireless Solutions Co., Ltd
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Manufacturer:	Quectel Wireless Solutions Co., Ltd
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test engineer:	Lves Cheng, Tizzy Song

3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327

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3.4 General Description of EUT

EUT Description:	Smart Module	
Model No.:	SA800U-WF	
Trade Mark:	QUECTEL	
Hardware Version:	R1.0	
Software Version:	SA800UWFPAR01A06	
IMEI:	RF Conducted	P1C20LH18000327
	RSE & AC power line	P1C20LH18000832
WLAN Mode Supported:	802.11a:	20 MHz channel bandwidth
	802.11n:	20 MHz / 40 MHz channel bandwidth
	802.11ac:	20 MHz / 40 MHz / 80 MHz channel bandwidth
Operation Frequency:	5150MHz to 5250MHz	
	5250MHz to 5350MHz	
	5470MHz to 5725MHz	
	5725MHz to 5850MHz	
Modulation Type:	802.11a:	OFDM (BPSK, QPSK, 16QAM, 64QAM)
	802.11n:	OFDM (BPSK, QPSK, 16QAM, 64QAM)
	802.11ac:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing:	20MHz:	802.11a/n(HT20)/ac(VHT20)
	40MHz:	802.11n(HT40)/ac(VHT40)
	80MHz:	802.11ac(VHT80)
Antenna Type:	PCB Antenna	
Antenna Gain:	5150MHz to 5250MHz: 3.83dBi(Ant1); 3.83dBi(Ant2)	
	5250MHz to 5350MHz: 4.83dBi(Ant1); 4.83dBi(Ant2)	
	5470MHz to 5725MHz: 6.08dBi(Ant1); 6.08dBi(Ant2)	
	5725MHz to 5850MHz: 6.00dBi(Ant1); 6.00dBi(Ant2)	
Note: The antenna gain are derived from the gain information report provided by the manufacturer.		
Smart System:	<input checked="" type="checkbox"/> SISO	802.11a/n/ac
	<input checked="" type="checkbox"/> MIMO	802.11n/ac: 2Tx & 2Rx
	<input checked="" type="checkbox"/> Diversity	802.11a: 2Tx & 2Rx
DFS Function:	<input type="checkbox"/> Master	
	<input type="checkbox"/> Slave with radar detection	<input checked="" type="checkbox"/> Slave without radar detection
RF Cable:	1.0dB	
Remark:	As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.	

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Remark:

In FCC 15.31, for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table, and the selected channel to perform the test as below:

Frequency Range of Operation Operating Frequency Range (in each Band)	Number of Measurement Frequencies Required	Location of Measurement Frequency in Band of Operation
1 MHz or less	1	centre
1 MHz to 10 MHz	2	1 near high end, 1 near low end
Greater than 10 MHz	3	1 near high end, 1 near centre

For UNII Band I:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5180
	The Middle channel	5200
	The Highest channel	5240
IEEE 802.11n/ac 40MHz	The Lowest channel	5190
	The Highest channel	5230
IEEE 802.11ac 80MHz	The Middle channel	5210

For UNII Band II-A:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5260
	The Middle channel	5280
	The Highest channel	5320
IEEE 802.11n/ac 40MHz	The Lowest channel	5270
	The Highest channel	5310
IEEE 802.11ac 80MHz	The Middle channel	5290

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For UNII Band II-C:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5500
	The Middle channel	5580
	The Highest channel	5700
IEEE 802.11n/ac 40MHz	The Lowest channel	5510
	The Middle channel	5550
	The Highest channel	5670
IEEE 802.11ac 80MHz	The Lowest channel	5530
	The Highest channel	5610

For UNII Band III:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5745
	The Middle channel	5785
	The Highest channel	5825
IEEE 802.11n/ac 40MHz	The Lowest channel	5755
	The Highest channel	5795
IEEE 802.11ac 80MHz	The Middle channel	5775

Frequency Band	Channel	Freq.(MHz)	Channel	Freq.(MHz)
Straddle Channel	138#	5690	144	5720
	142*	5710		

Note:

1. The above Frequency and Channel in “*” were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in “#” were 802.11ac VHT80.

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3.5 Test Environment and Mode

Environment Parameter	101.0 kPa Selected Values During Tests	
Relative Humidity	44-46 % RH Ambient	
Value	Temperature(°C)	Voltage(V)
NTNV	22~23	3.8

Remark:
NV: Normal Voltage
NT: Normal Temperature

3.6 Description of Support Units

Description	Manufacturer	Model No.
Test auxiliary PCB board	Quectel	N/A

Remark: all above the information of table are provided by client.

3.7 Worst-case configuration and mode

Low data rate was used to test on antenna port conducted tests and radiated spurious emissions since it has the highest maximum power. Following are the worst-case data rates set for test:

Modulation Type	SISO - Data Rate	CDD/MIMO - Data Rate
802.11a	6 Mbps	12 Mbps
802.11n (HT 20)	MCS0 (6.5 Mbps)	MCS0 (13 Mbps)
802.11n (HT 40)	MCS0 (13.5 Mbps)	MCS0 (27 Mbps)
802.11ac (VHT 20)	MCS0 (6.5 Mbps)	MCS0 (13 Mbps)
802.11ac (VHT 40)	MCS0 (13.5 Mbps)	MCS0 (27 Mbps)
802.11ac (VHT 80)	MCS0 (29.3 Mbps)	MCS0 (58.5 Mbps)



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4 Test results and Measurement Data

4.1 Antenna Requirement

Standard requirement:	47 CFR Part 15 Section 15.203
The antenna is PCB Antenna on the main PCB and no consideration of replacement.	
The best case gain of the antenna is	
5150MHz to 5250MHz: 3.83dBi(Ant1); 3.83dBi(Ant2)	
5250MHz to 5350MHz: 4.83dBi(Ant1); 4.83dBi(Ant2)	
5470MHz to 5725MHz: 6.08dBi(Ant1); 6.08dBi(Ant2)	
5725MHz to 5850MHz: 6.00dBi(Ant1); 6.00dBi(Ant2) *	
<i>*Note:</i>	
<i>The antenna gain are derived from the gain information report provided by the manufacturer.</i>	
<i>Remark:</i>	
<i>As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.</i>	



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Cyclic Delay Diversity (CDD) System:

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,
 $Array\ Gain = 10 \log(N_{ANT}/N_{SS}=1) \ dB.$
 - For power measurements on IEEE 802.11 devices:
 $Array\ Gain = 0 \ dB$ (i.e., no array gain) for $N_{ANT} \leq 4$;
 $Array\ Gain = 0 \ dB$ (i.e., no array gain) for channel widths $\geq 40 \ MHz$ for any N_{ANT} ;
 $Array\ Gain = 5 \ log(N_{ANT}/N_{SS}=1) \ dB$ or $3 \ dB$, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, \dots, G_N dBi

- If transmit signals are correlated, then

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{\text{ANT}}] \text{ dBi}$$

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]
 - If all transmit signals are completely uncorrelated, then

$$\text{Directional gain} = 10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{\text{ANT}}] \text{ dBi}$$

The Power and PSD limit should be modified if the directional gain of eut is over 6dbi.

The EUT supports CDD System.

All antennas have the same gain:

Operation Frequency	ANT Gain1 (dBi)	ANT Gain2 (dBi)	Directional gain For Power (dBi)	Directional gain For PSD (dBi)	Power Limit Reduction (dBm)	PSD Limit Reduction (dBm)
5150MHz to 5250MHz	3.83	3.83	3.83	6.84	0	0.84
5250MHz to 5350MHz	4.83	4.83	4.83	7.84	0	1.84
5470MHz to 5725MHz	6.08	6.08	6.08	9.09	0.08	3.09
5725MHz to 5850MHz	6.00	6.00	6.00	9.01	0	3.01

5150MHz to 5250MHz:

Power Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi) =0

PSD Limit Reduction = Directional gain - 6dB, (Directional gain > 6dB) = $6.84 - 6 = 0.84$

5250MHz to 5350MHz:

Power Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi) =0

PSD Limit Reduction = Directional gain - 6dB. (Directional gain > 6dB) = 7.84 - 6 = 1.84

5470MHz to 5725MHz:

Power Limit Reduction = Directional gain – 6dBi. (Directional gain < 6dBi) =6.08 -6 = 0.08

$$\text{PSD Limit Reduction} = \text{Directional gain} - 6\text{dBi}, (\text{Directional gain} > 6\text{dBi}) = 9.09 - 6 = 3.09$$

5725MHz to 5850MHz

Power Limit Reduction = Directional gain - 6dBi. (Directional gain < 6dBi) =0

$$\text{PSD Limit Reduction} = \text{Directional gain}_{\text{SAB}} / (\text{Directional gain}_{\text{SAB}} - 6)$$



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4.2 AC Power Line Conducted Emissions

Test Requirement:	47 CFR Part 15 Section 15.407(b)		
Test Method:	ANSI C63.10: 2013 Section 6.2		
Test Frequency Range:	150kHz to 30MHz		
Receiver Setup:	RBW = 9kHz, VBW = 30kHz		
Limit:	Frequency range (MHz)		Limit (dBuV)
			Quasi-peak
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test Procedure:	<ol style="list-style-type: none">1) The mains terminal disturbance voltage test was conducted in a shielded room.2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.		

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Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Refer to section 3.7 for details. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details.
Test Results:	Pass

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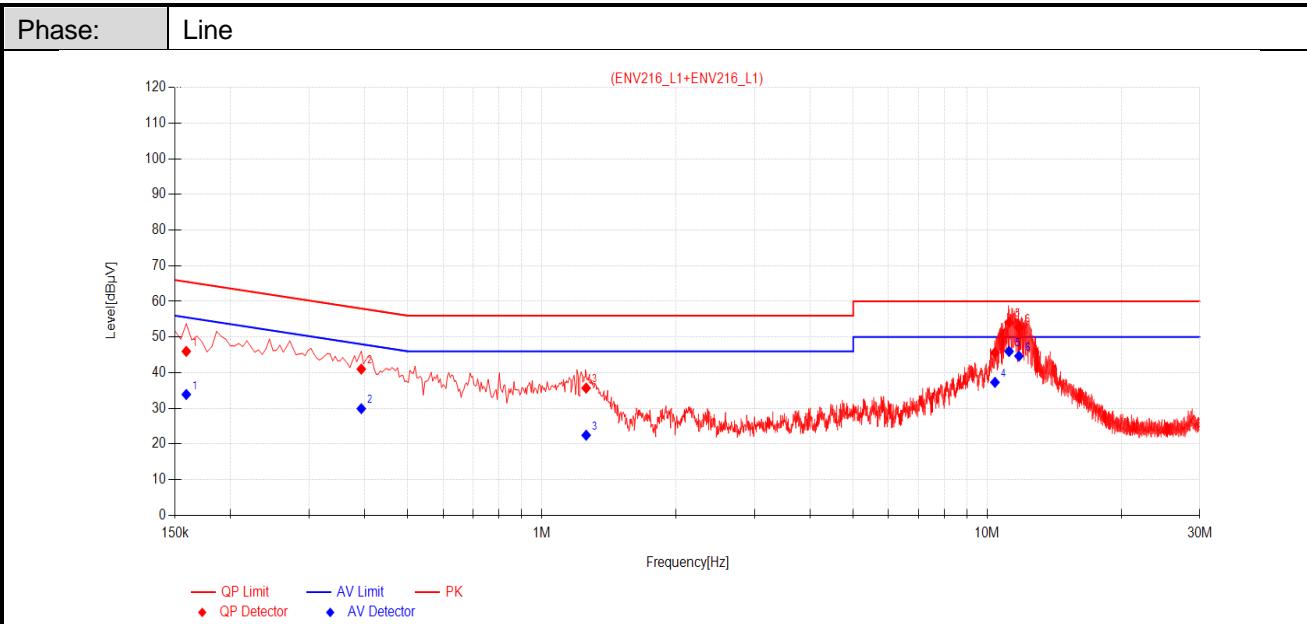
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Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



Final Data List											
NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1590	10.67	35.31	45.98	65.52	19.54	23.23	33.90	55.52	21.62	PASS
2	0.3930	10.49	30.52	41.01	58.00	16.99	19.42	29.91	48.00	18.09	PASS
3	1.2570	10.78	24.91	35.69	56.00	20.31	11.68	22.46	46.00	23.54	PASS
4	10.4055	10.63	35.01	45.64	60.00	14.36	26.66	37.29	50.00	12.71	PASS
5	11.1930	10.61	43.49	54.10	60.00	5.90	35.35	45.96	50.00	4.04	PASS
6	11.7825	10.58	42.13	52.71	60.00	7.29	34.09	44.67	50.00	5.33	PASS

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Value =Reading[dBμV] + Factor(Lisn factor[dB] + cable loss[dB]).
3. Margin = Limit[dBμV] – Value[dBμV]



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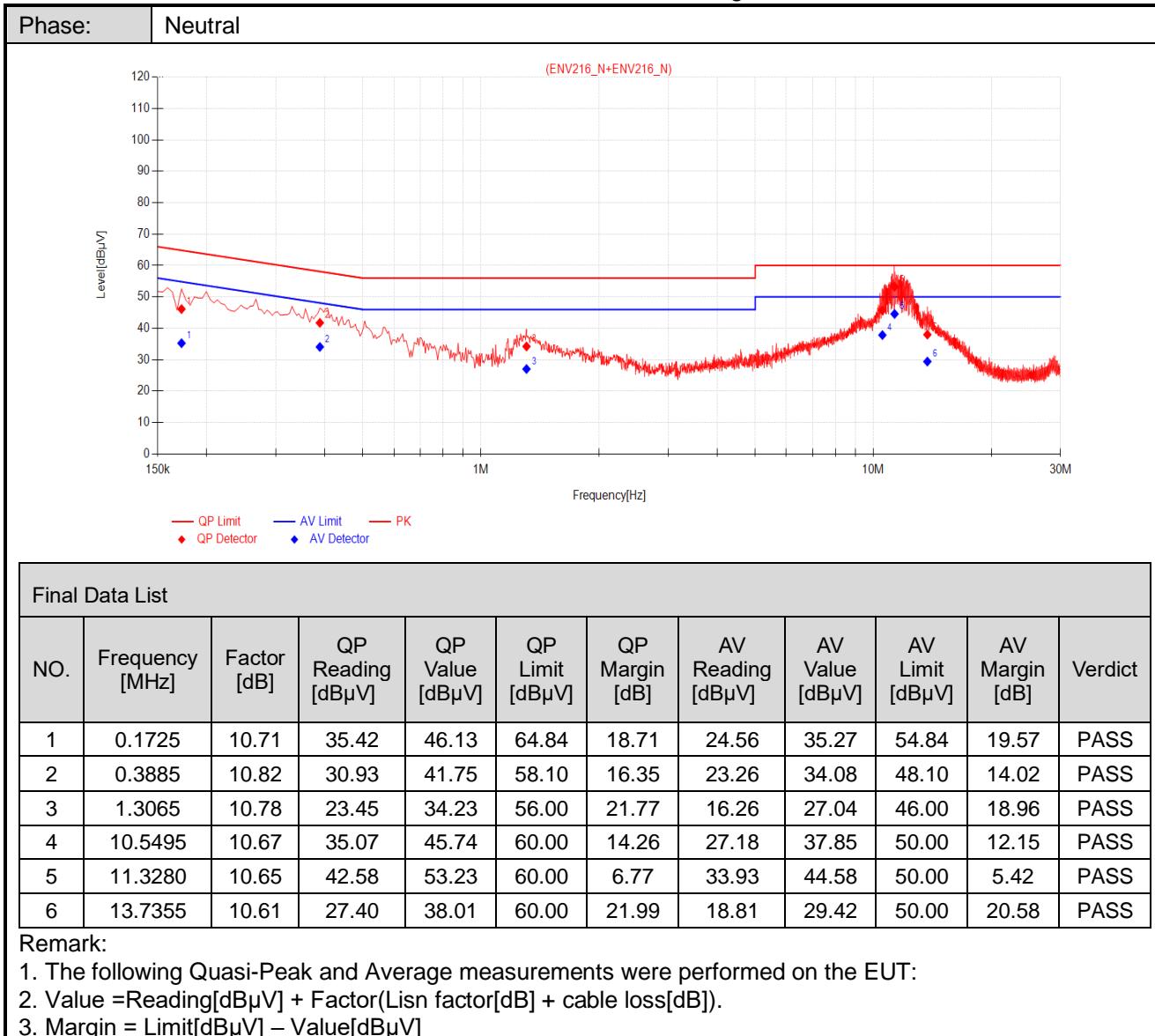
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4.3 Duty Cycle

The detailed test data see: **Appendix**



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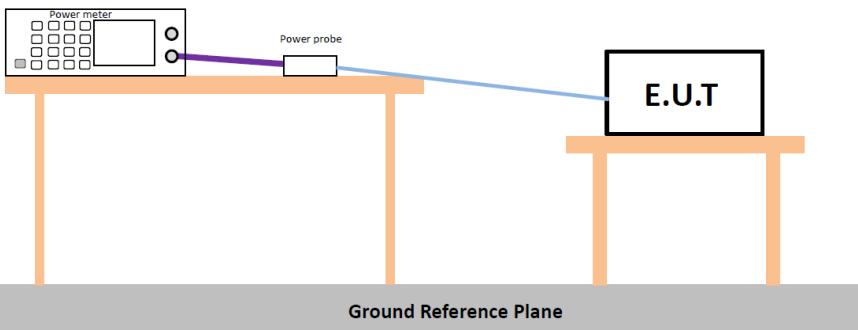
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4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10 :2013 Section11.9.2.3	
Test Setup:	 <p>* Test with power meter (Detector function: Average)</p>	
Test Instruments:	Refer to section 6 for details.	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Refer to section 3.7 for details.	
Limit:	Frequency Band	Limit
	5150-5250MHz	Not exceed 250mW(24dBm)
	5250-5350MHz	The lesser of 250mW(24dBm) or $11 + 10\log B$
	5470-5725MHz	The lesser of 250mW(24dBm) or $11 + 10\log B$
	5725-5850MHz	Not exceed 1W(30dBm)
	*Where B is the 26dB emission bandwidth in MHz	
Test Results:	Pass	
The detailed test data see: Appendix		

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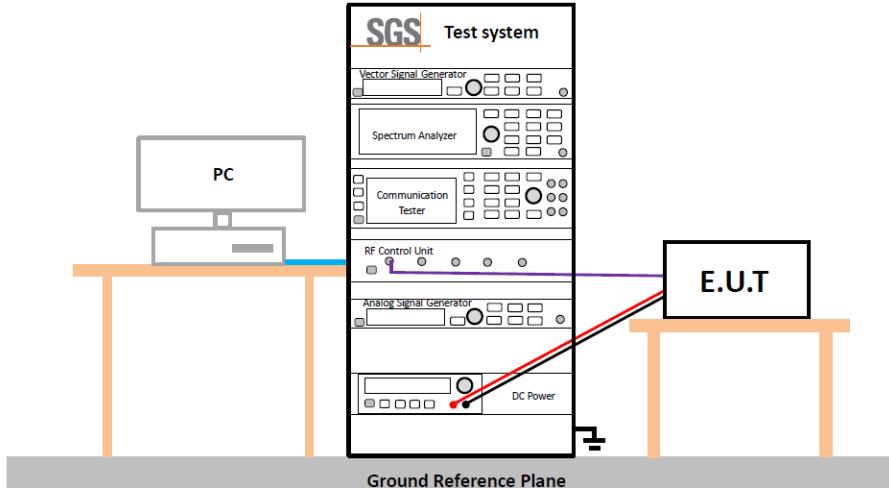
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4.5 26dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013 Section 11.8 Option 2
Test Setup:	
Instruments Used:	Refer to section 6 for details.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	No restriction limits
Test Results:	Pass
The detailed test data see: Appendix	



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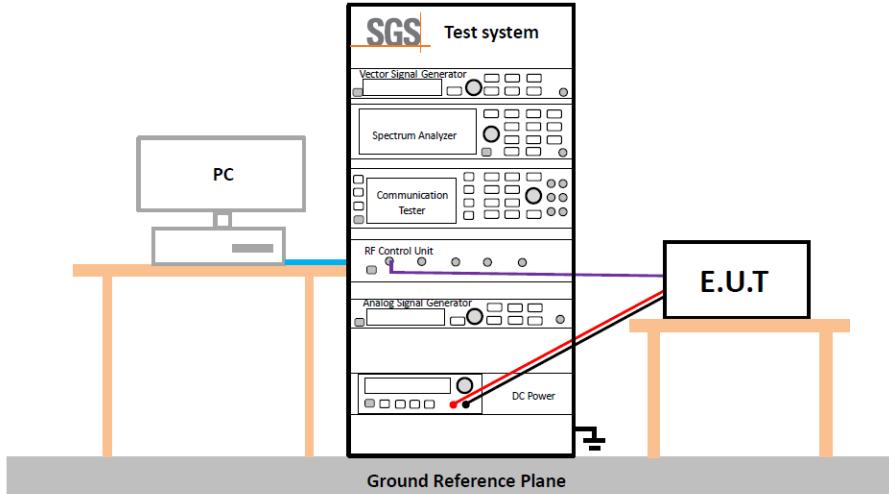
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4.6 6dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(e)	
Test Method:	ANSI C63.10: 2013 Section 11.8 Option 2	
Test Setup:		
Test Instruments:	Refer to section 6 for details.	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Refer to section 3.7 for details.	
Limit:	Frequency Band	Limit
	5725-5850MHz	At least 500kHz
Test Results:	Pass	
The detailed test data see: Appendix		

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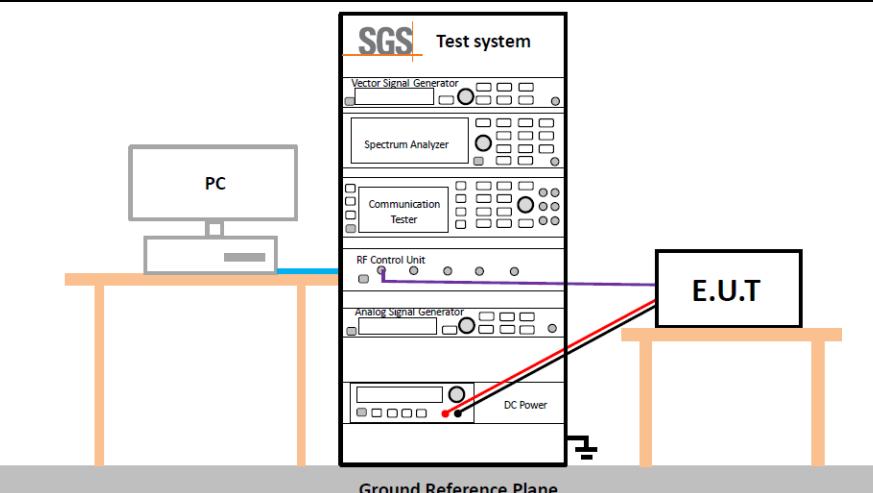


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4.7 99% Occupied Bandwidth

Test Requirement:	KDB 789033 D02§ D
Test Method:	ANSI C63.10: 2013 Section 6.9.3
Test Setup:	
Instruments Used:	Refer to section 6 for details.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Refer to section 3.7 for details.
Limit:	No restriction limits
Test Results:	Pass
The detailed test data see: Appendix	

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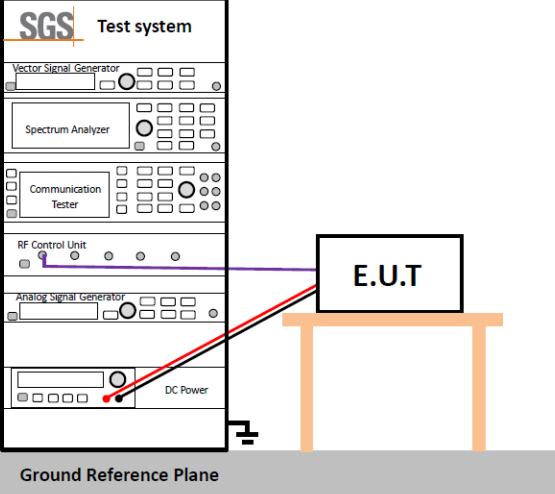


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4.8 Power Spectral Density

Test Requirement:	47 CFR Part 15 Section 15.407(a)										
Test Method:	ANSI C63.10: 2013 Section 11.10.2 KDB 789033 D02 v02r01, Section F.										
Test Setup:											
Instruments Used:	Refer to section 6 for details.										
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates										
Final Test Mode:	Refer to section 3.7 for details.										
Limit:	<table border="1"> <thead> <tr> <th>Frequency Band</th> <th>Limit</th> </tr> </thead> <tbody> <tr> <td>5150-5250MHz</td> <td>The power spectral density less than 11dBm/1MHz</td> </tr> <tr> <td>5250-5350MHz</td> <td>The power spectral density less than 11dBm/1MHz</td> </tr> <tr> <td>5470-5725MHz</td> <td>The power spectral density less than 11dBm/1MHz</td> </tr> <tr> <td>5725-5850MHz</td> <td>The power spectral density less than <30dBm/500KHz</td> </tr> </tbody> </table>	Frequency Band	Limit	5150-5250MHz	The power spectral density less than 11dBm/1MHz	5250-5350MHz	The power spectral density less than 11dBm/1MHz	5470-5725MHz	The power spectral density less than 11dBm/1MHz	5725-5850MHz	The power spectral density less than <30dBm/500KHz
Frequency Band	Limit										
5150-5250MHz	The power spectral density less than 11dBm/1MHz										
5250-5350MHz	The power spectral density less than 11dBm/1MHz										
5470-5725MHz	The power spectral density less than 11dBm/1MHz										
5725-5850MHz	The power spectral density less than <30dBm/500KHz										
Test Results:	Pass										
The detailed test data see: Appendix											

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4.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15 Section 15.205 and 15.209
Test Method:	ANSI C63.10: 2013 Section 6.4 / 6.5 / 6.6
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)
Test frequency:	9kHz ~ 40GHz (or 10 Harmonic)

Test Setup:

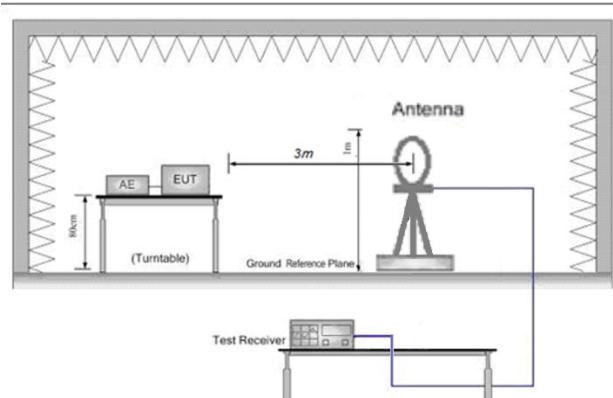


Figure 1. 9kHz to 30MHz

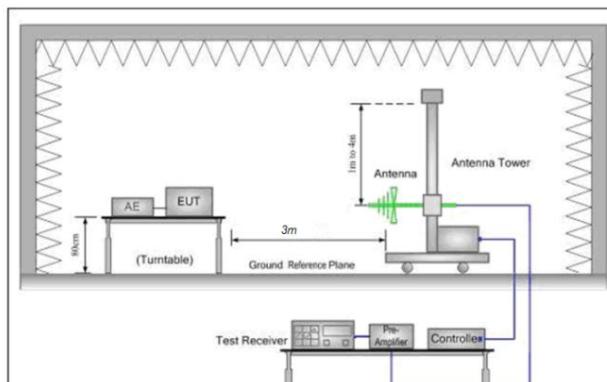


Figure 1. 30MHz to 1GHz

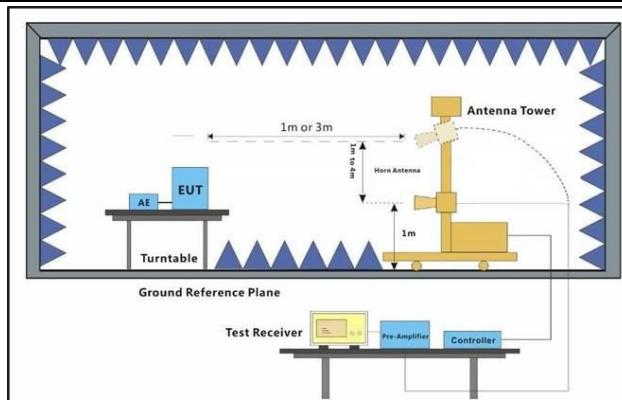


Figure 2. Above 1 GHz

Test Procedure:	<ol style="list-style-type: none"> For below 1GHz test, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. For above 1GHz test, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. (Distance from antenna to EUT is 1m for measurements >18GHz). The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and
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	<p>then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>g. Test the EUT in the outermost channels.</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which is worse case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p> <p>j. The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported</p> <p>k. The disturbance above 18GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed.</p> <p>l. At a measurement distance of 1 meter the limit line was increased by $20 \times \log(3/1) = 9.54$ dB.</p>
Test Configuration:	<p>Measurements Below 1000MHz</p> <ul style="list-style-type: none"> • RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold <p>Peak Measurements Above 1000 MHz</p> <ul style="list-style-type: none"> • RBW = 1 MHz • VBW \geq 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold <p>Average Measurements Above 1000MHz</p> <ul style="list-style-type: none"> • RBW = 1 MHz • VBW \geq [3 *RBW] • Detector = RMS (power averaging), if span / (# of points in sweep) \leq (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak. • Sweep time = auto • Perform a trace average of at least 100 traces.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.
Final Test Mode:	Refer to section 3.7 for details.
Instruments Used:	Refer to section 6 for details.
Test Results:	Pass
The detailed test data see: Appendix	

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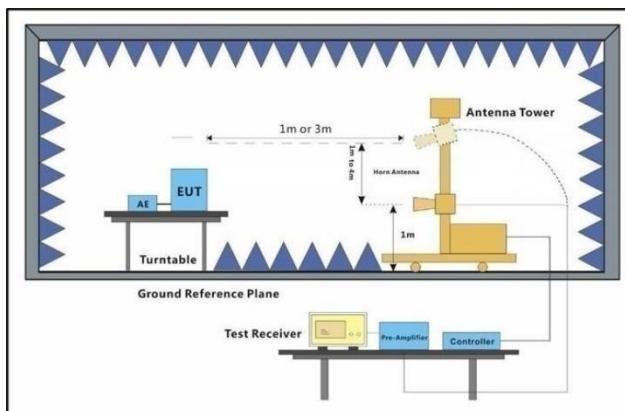
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4.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15 Section 15.407(b)		
Test Method:	ANSI C63.10: 2013 Section 11.12		
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
	Above 1GHz	54.0	Average Value
		74.0	Peak Value

Test Setup:



Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel Test the EUT in the outermost channels. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
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	i. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	<p>Measurements Below 1000MHz</p> <ul style="list-style-type: none">• RBW = 120 kHz• VBW = 300 kHz• Detector = Peak• Trace mode = max hold <p>Peak Measurements Above 1000 MHz</p> <ul style="list-style-type: none">• RBW = 1 MHz• VBW \geq 3 MHz• Detector = Peak• Sweep time = auto• Trace mode = max hold <p>Average Measurements Above 1000MHz</p> <ul style="list-style-type: none">• RBW = 1 MHz• VBW \geq [3 *RBW]• Detector = RMS (power averaging), if span / (# of points in sweep) \leq (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.• Sweep time = auto• Perform a trace average of at least 100 traces.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.
Final Test Mode:	Refer to section 3.7 for details.
Instruments Used:	Refer to section 6 for details.
Test Results:	Pass
The detailed test data see: Appendix	

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4.11 Dynamic Frequency Selection

4.11.1 DFS Overview

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>Non-Occupancy Period</i>	Yes	Not required	Yes
<i>DFS Detection Threshold</i>	Yes	Not required	Yes
<i>Channel Availability Check Time</i>	Yes	Not required	Not required
<i>U-NII Detection Bandwidth</i>	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>DFS Detection Threshold</i>	Yes	Not required
<i>Channel Closing Transmission Time</i>	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not required
Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	Any single BW mode	Not required

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4.11.2 DFS Detection Thresholds

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP \geq 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

4.11.3 Response Requirements

Table 4: DFS Response Requirement Values

Parameter	Value
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

The detailed test data see: **Appendix**



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5 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.54dB
2	RF power density, conducted	±1.03dB
3	Spurious emissions, conducted	±0.54dB
4	Radio Frequency	±1.0 %
5	Duty Cycle	±0.37%
6	Occupied Bandwidth	±1.0 %
7	Conduction Emission	± 2.90dB (150kHz to 30MHz)
8	Radiated Emission	± 3.13dB (9k -30MHz)
		± 4.80dB (30M -1GHz)
		± 4.80dB (1GHz to 18GHz)
		± 4.80dB (Above 18GHz)

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{cisp/ETSI}$ (CISPR/ETSI Uncertainty), so the test results
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

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6 Equipment List

RF Test Equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)
Shielding Room	Brilliant-emc	N/A	SUWI-04-01-06	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2022/02/16	2023/02/15
Signal Analyzer	ROHDE &SCHWARZ	FSV3030	SUWI-01-02-02	2022/05/17	2023/05/16
Measurement Software	Tonscend	JS1120-3 Test System V3.1.55	SUWI-02-09-09	NCR	NCR
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2022/02/15	2023/02/14
Signal Analyzer	ROHDE &SCHWARZ	FSW43	SUWI-01-02-04	2022/05/28	2023/05/27
Power meter	Anritsu	ML2495A	SUWI-01-31-01	2021/12/04	2022/12/03
Pulse power sensor	Anritsu	MA2411b	SUWI-01-32-01	2021/12/04	2022/12/03
MXG Vector signal genitor	KEYSIGHT	N5182B	SUWI-01-38-01	2022/02/14	2023/02/13
Temperature Chamber	ESPEC	SU-242	SUWI-01-13-01	2022/02/15	2023/02/14
Wideband Radio Communication Tester	ROHDE &SCHWARZ	CMW500	SUWI-01-16-05	2022/02/14	2023/02/13
Router	ASUS	GT-AXE11000(FCC ID MSQ-RTAXJF00)	SUWI-03-14-02	NCR	NCR

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)
Shielding Room	Brilliant-emc	N/A	SUWI-04-03-01	2021/05/08	2024/05/07
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-01	2022/02/19	2023/02/18
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-02	2022/02/19	2023/02/18
Measurement Software	Tonscend	JS32-CE V4.0.0.2	SUWI-02-09-05	NCR	NCR
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2022/02/19	2023/02/18
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-06	2022/02/16	2023/02/15
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2022/02/15	2023/02/14

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RSE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)
Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-01	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-05	2022/02/16	2023/02/15
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2022/05/28	2023/05/27
Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-05	2021/12/04	2022/12/03
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2022/02/19	2023/02/18
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	VULB 9163	SUWI-01-11-01	2021/05/16	2023/05/15
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	2021/05/16	2023/05/15
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2021/05/14	2023/05/13
Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	2022/02/14	2023/02/13
Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	2022/02/14	2023/02/13
Amplifier	Tonscend	TAP18040048	SUWI-01-14-03	2022/02/19	2023/02/18
Active Loop Antenna	SCHWRZBECK MESS-ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2021/06/10	2023/06/09
Measurement Software	Tonscend	JS32-RSE V4.0.0.0	SUWI-02-09-06	NCR	NCR

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7 Photographs - Setup Photos

Refer to Appendix A.2 WLAN Setup Photos.



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Appendix



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Emission Bandwidth Test Result

TestMode	Antenna	Frequency[MHz]	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Verdict
11a-CDD	Ant1	5180	26.40	5167.60	5194.00	
	Ant2	5180	29.60	5164.92	5194.52	
	Ant1	5220	28.92	5205.16	5234.08	
	Ant2	5220	29.44	5205.04	5234.48	
	Ant1	5240	28.80	5225.04	5253.84	
	Ant2	5240	28.88	5225.04	5253.92	
	Ant1	5260	28.76	5245.16	5273.92	
	Ant2	5260	28.36	5245.68	5274.04	
	Ant1	5300	25.68	5287.08	5312.76	
	Ant2	5300	27.60	5286.24	5313.84	
	Ant1	5320	26.16	5307.32	5333.48	
	Ant2	5320	26.44	5307.44	5333.88	
	Ant1	5500	24.92	5487.72	5512.64	
	Ant2	5500	26.72	5487.16	5513.88	
	Ant1	5580	25.20	5567.64	5592.84	
	Ant2	5580	24.60	5568.20	5592.80	
	Ant1	5700	26.36	5687.68	5714.04	
	Ant2	5700	23.60	5688.72	5712.32	
	Ant1	5720	23.76	5708.68	5732.44	
	Ant2	5720	24.24	5708.24	5732.48	
	Ant1	5720 UNII-2C	16.32	5708.68	5725	
	Ant2	5720 UNII-2C	16.76	5708.24	5725	
	Ant1	5720 UNII-3	7.44	5725	5732.44	
	Ant2	5720 UNII-3	7.48	5725	5732.48	
	Ant1	5745	24.64	5733.20	5757.84	
	Ant2	5745	29.64	5730.00	5759.64	
	Ant1	5785	28.92	5770.16	5799.08	
	Ant2	5785	25.84	5772.96	5798.80	
	Ant1	5825	24.96	5812.88	5837.84	
	Ant2	5825	23.96	5813.36	5837.32	
11n20MIMO	Ant1	5180	25.12	5167.76	5192.88	
	Ant2	5180	27.60	5166.64	5194.24	
	Ant1	5220	24.00	5208.52	5232.52	
	Ant2	5220	23.72	5208.32	5232.04	
	Ant1	5240	23.92	5228.52	5252.44	
	Ant2	5240	23.68	5228.56	5252.24	
	Ant1	5260	25.04	5247.96	5273.00	
	Ant2	5260	23.80	5248.40	5272.20	
	Ant1	5300	25.76	5287.16	5312.92	
	Ant2	5300	23.96	5288.16	5312.12	
	Ant1	5320	25.56	5307.36	5332.92	
	Ant2	5320	24.44	5308.12	5332.56	
	Ant1	5500	23.00	5488.80	5511.80	
	Ant2	5500	23.72	5488.48	5512.20	
	Ant1	5580	24.36	5568.04	5592.40	
	Ant2	5580	24.12	5568.08	5592.20	
	Ant1	5700	25.16	5687.88	5713.04	
	Ant2	5700	25.24	5687.40	5712.64	
	Ant1	5720	25.12	5707.40	5732.52	
	Ant2	5720	25.04	5707.24	5732.28	
	Ant1	5720 UNII-2C	17.6	5707.40	5725	
	Ant2	5720 UNII-2C	17.76	5707.24	5725	

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11n40MIMO	Ant1	5720_UNII-3	7.52	5725	5732.52	
	Ant2	5720_UNII-3	7.28	5725	5732.28	
	Ant1	5745	23.76	5733.56	5757.32	
	Ant2	5745	23.72	5733.40	5757.12	
	Ant1	5785	25.60	5771.84	5797.44	
	Ant2	5785	24.32	5773.04	5797.36	
	Ant1	5825	25.64	5812.32	5837.96	
	Ant2	5825	25.16	5812.20	5837.36	
	Ant1	5190	41.84	5168.96	5210.80	
	Ant2	5190	41.76	5168.80	5210.56	
	Ant1	5230	41.84	5208.72	5250.56	
	Ant2	5230	41.36	5209.04	5250.40	
	Ant1	5270	41.68	5249.04	5290.72	
	Ant2	5270	41.84	5248.88	5290.72	
	Ant1	5310	41.12	5289.36	5330.48	
	Ant2	5310	41.44	5289.04	5330.48	
	Ant1	5510	41.76	5488.96	5530.72	
	Ant2	5510	42.00	5488.80	5530.80	
	Ant1	5550	41.92	5528.80	5570.72	
	Ant2	5550	41.36	5529.04	5570.40	
	Ant1	5670	41.92	5648.72	5690.64	
	Ant2	5670	41.92	5648.80	5690.72	
	Ant1	5710	41.36	5689.36	5730.72	
	Ant2	5710	41.52	5689.36	5730.88	
	Ant1	5710_UNII-2C	35.64	5689.36	5725	
	Ant2	5710_UNII-2C	35.64	5689.36	5725	
	Ant1	5710 UNII-3	5.72	5725	5730.72	
	Ant2	5710 UNII-3	5.88	5725	5730.88	
	Ant1	5755	41.60	5734.04	5775.64	
	Ant2	5755	41.28	5734.36	5775.64	
	Ant1	5795	41.44	5774.12	5815.56	
	Ant2	5795	41.44	5774.52	5815.96	
11ac20MIMO	Ant1	5180	27.84	5166.96	5194.80	
	Ant2	5180	25.08	5167.76	5192.84	
	Ant1	5220	24.84	5208.16	5233.00	
	Ant2	5220	24.40	5208.40	5232.80	
	Ant1	5240	24.12	5228.40	5252.52	
	Ant2	5240	24.56	5227.76	5252.32	
	Ant1	5260	25.36	5247.36	5272.72	
	Ant2	5260	25.60	5247.20	5272.80	
	Ant1	5300	25.68	5287.28	5312.96	
	Ant2	5300	25.68	5287.32	5313.00	
	Ant1	5320	25.60	5307.36	5332.96	
	Ant2	5320	23.92	5308.36	5332.28	
	Ant1	5500	23.84	5488.28	5512.12	
	Ant2	5500	24.72	5487.48	5512.20	
	Ant1	5580	24.92	5567.40	5592.32	
	Ant2	5580	23.84	5568.40	5592.24	
	Ant1	5700	26.32	5686.76	5713.08	
	Ant2	5700	25.72	5686.68	5712.40	
	Ant1	5720	23.92	5708.32	5732.24	
	Ant2	5720	23.84	5708.32	5732.16	
	Ant1	5720_UNII-2C	16.68	5708.32	5725	
	Ant2	5720_UNII-2C	16.68	5708.32	5725	
	Ant1	5720 UNII-3	7.24	5725	5732.24	
	Ant2	5720 UNII-3	7.16	5725	5732.16	
	Ant1	5745	25.60	5732.40	5758.00	

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11ac40MIMO	Ant2	5745	24.28	5733.08	5757.36	
	Ant1	5785	26.24	5771.80	5798.04	
	Ant2	5785	23.76	5773.44	5797.20	
	Ant1	5825	25.36	5812.68	5838.04	
	Ant2	5825	25.20	5812.20	5837.40	
	Ant1	5190	41.68	5168.88	5210.56	
	Ant2	5190	41.44	5169.12	5210.56	
	Ant1	5230	41.04	5209.44	5250.48	
	Ant2	5230	41.92	5208.64	5250.56	
	Ant1	5270	41.60	5249.12	5290.72	
	Ant2	5270	41.60	5248.96	5290.56	
	Ant1	5310	41.92	5288.72	5330.64	
	Ant2	5310	41.20	5289.04	5330.24	
	Ant1	5510	42.24	5488.72	5530.96	
	Ant2	5510	41.12	5489.36	5530.48	
	Ant1	5550	42.00	5528.88	5570.88	
	Ant2	5550	41.84	5528.96	5570.80	
	Ant1	5670	42.00	5648.72	5690.72	
	Ant2	5670	41.36	5649.36	5690.72	
	Ant1	5710	42.24	5688.72	5730.96	
	Ant2	5710	40.88	5689.36	5730.24	
	Ant1	5710 UNII-2C	36.28	5688.72	5725	
	Ant2	5710 UNII-2C	35.64	5689.36	5725	
	Ant1	5710 UNII-3	5.96	5725	5730.96	
	Ant2	5710 UNII-3	5.24	5725	5730.24	
	Ant1	5755	41.60	5734.04	5775.64	
	Ant2	5755	41.84	5734.04	5775.88	
	Ant1	5795	41.76	5773.96	5815.72	
	Ant2	5795	41.12	5774.52	5815.64	
11ac80MIMO	Ant1	5210	83.52	5168.72	5252.24	
	Ant2	5210	83.20	5168.72	5251.92	
	Ant1	5290	83.84	5248.08	5331.92	
	Ant2	5290	83.20	5248.56	5331.76	
	Ant1	5530	84.32	5487.92	5572.24	
	Ant2	5530	83.68	5488.24	5571.92	
	Ant1	5610	84.00	5568.08	5652.08	
	Ant2	5610	82.88	5568.72	5651.60	
	Ant1	5690	84.00	5648.08	5732.08	
	Ant2	5690	83.20	5648.72	5731.92	
	Ant1	5690 UNII-2C	76.92	5648.08	5725	
	Ant2	5690 UNII-2C	76.28	5648.72	5725	
	Ant1	5690 UNII-3	7.08	5725	5732.08	
	Ant2	5690 UNII-3	6.92	5725	5731.92	
	Ant1	5775	84.00	5733.08	5817.08	
	Ant2	5775	82.88	5733.88	5816.76	

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Test Graphs



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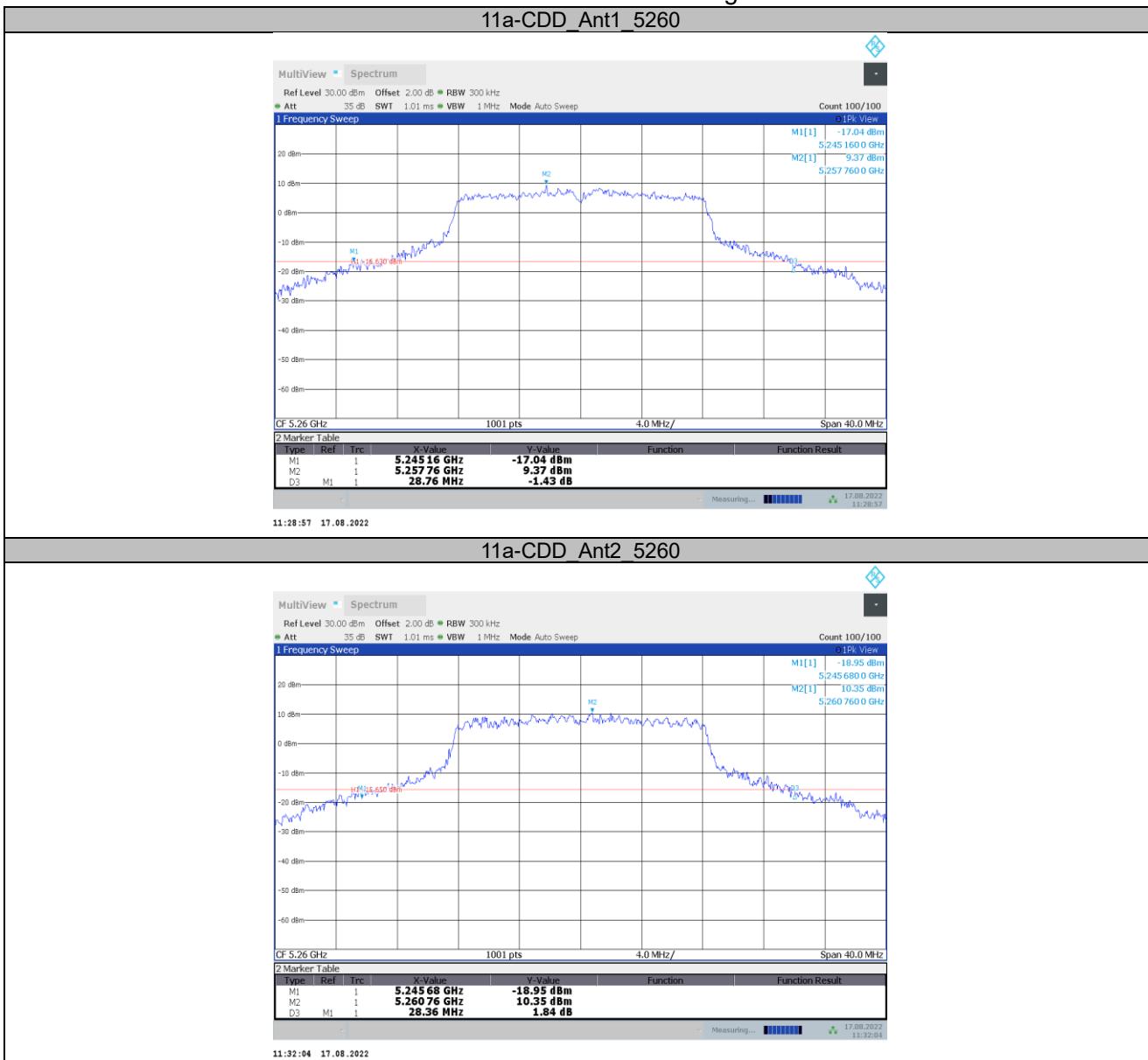
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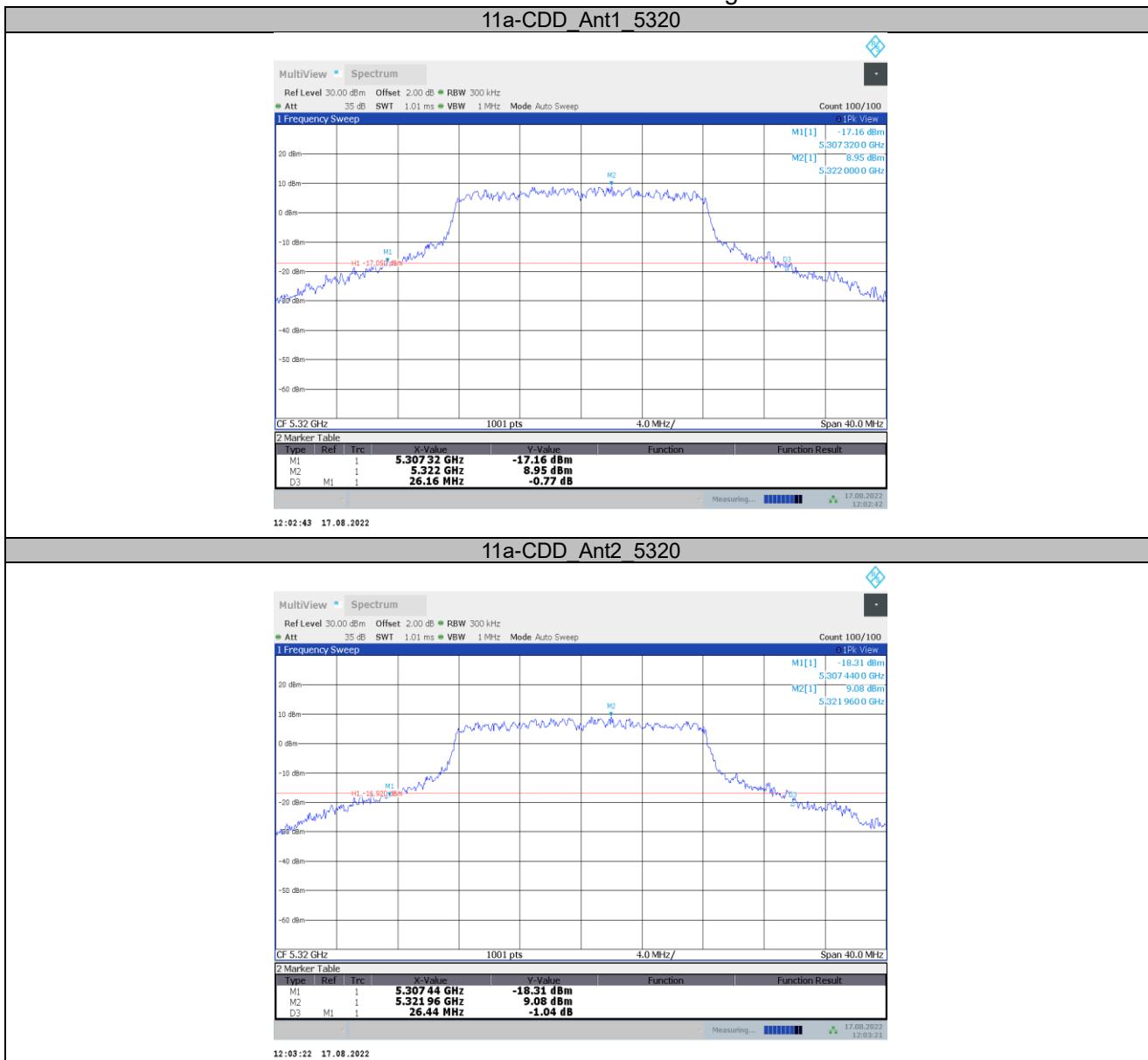
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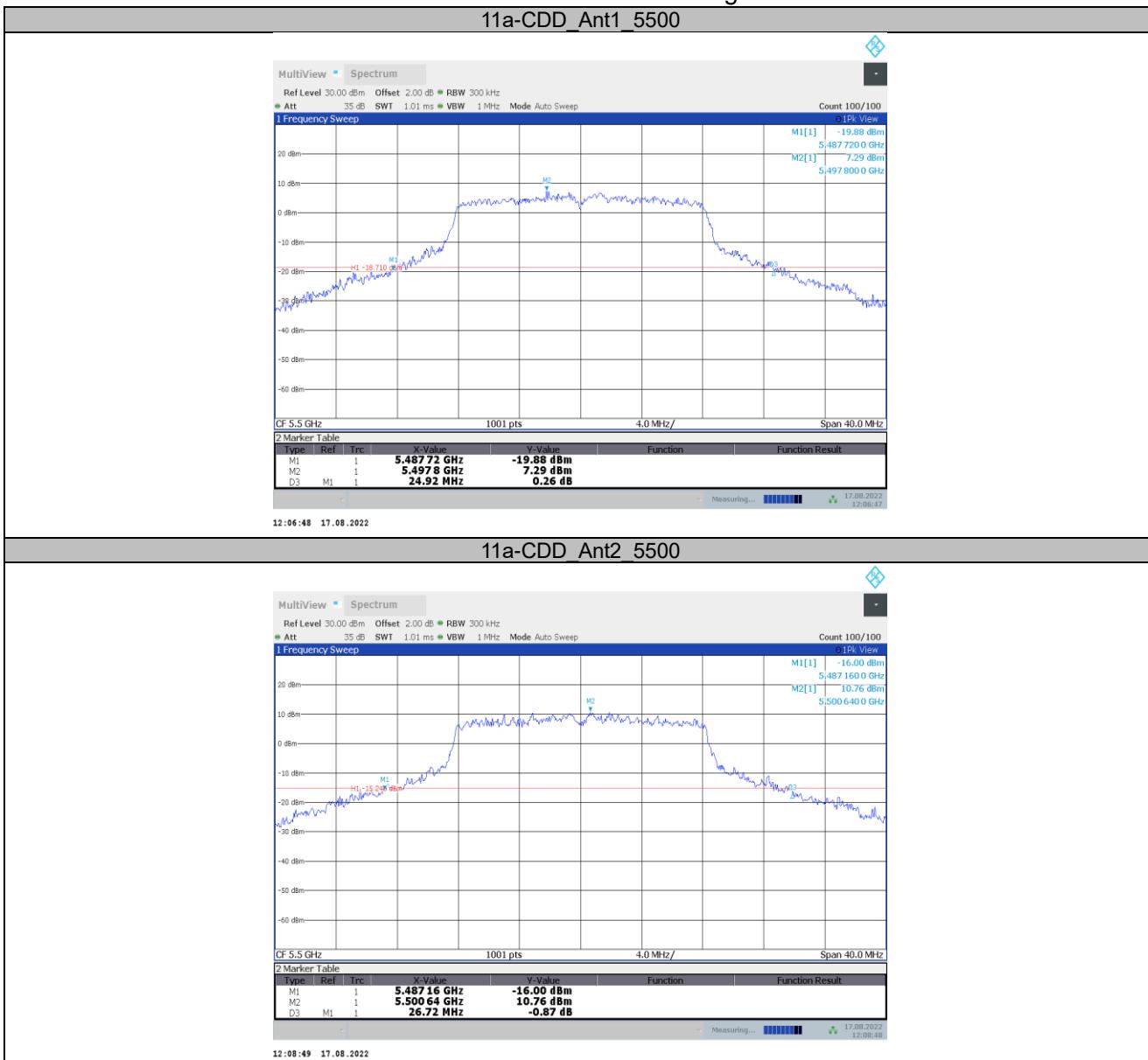
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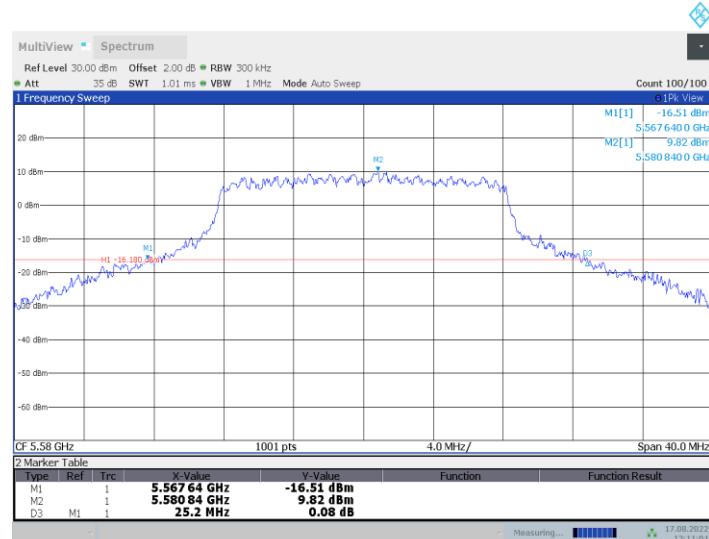
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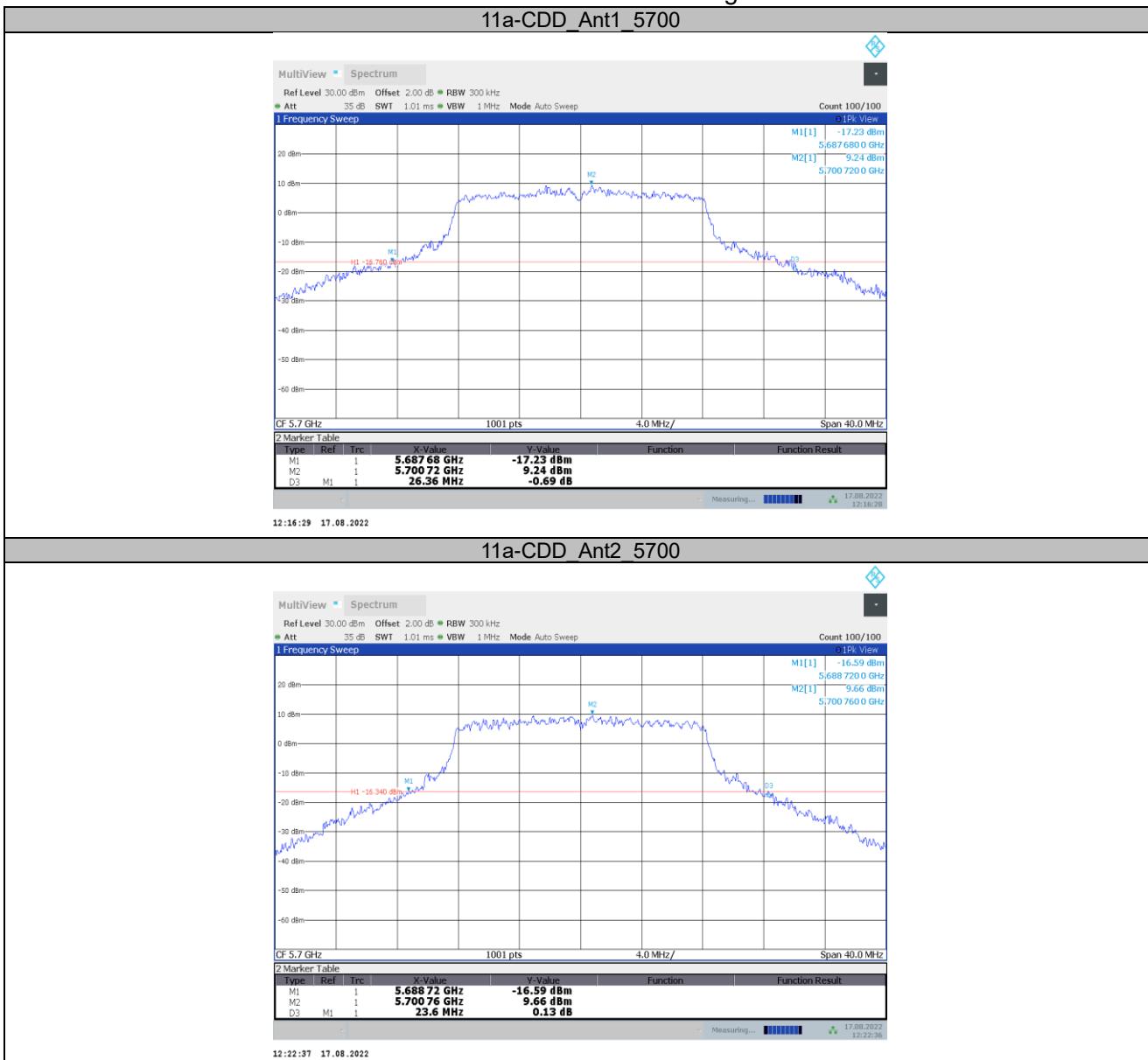
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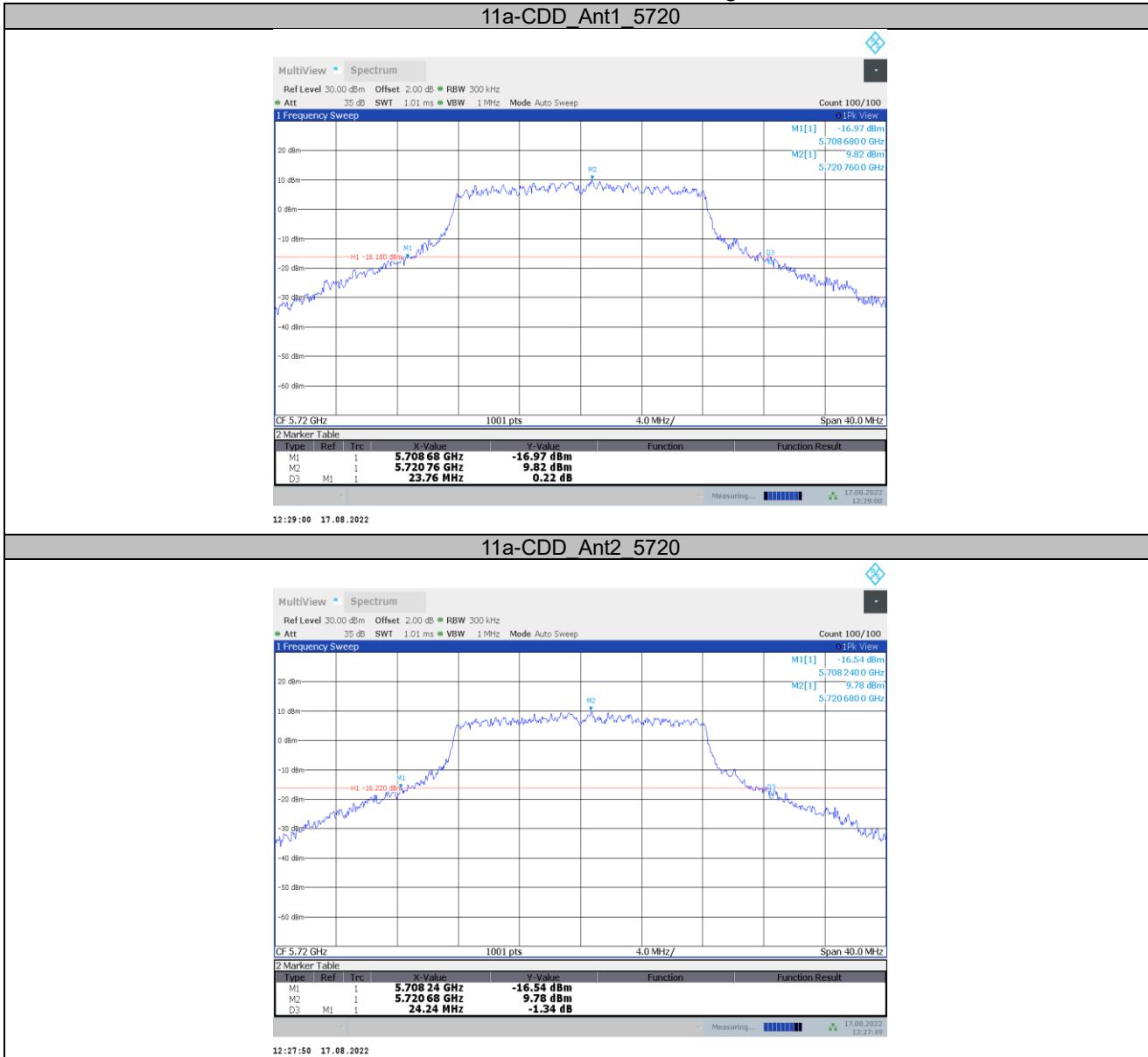
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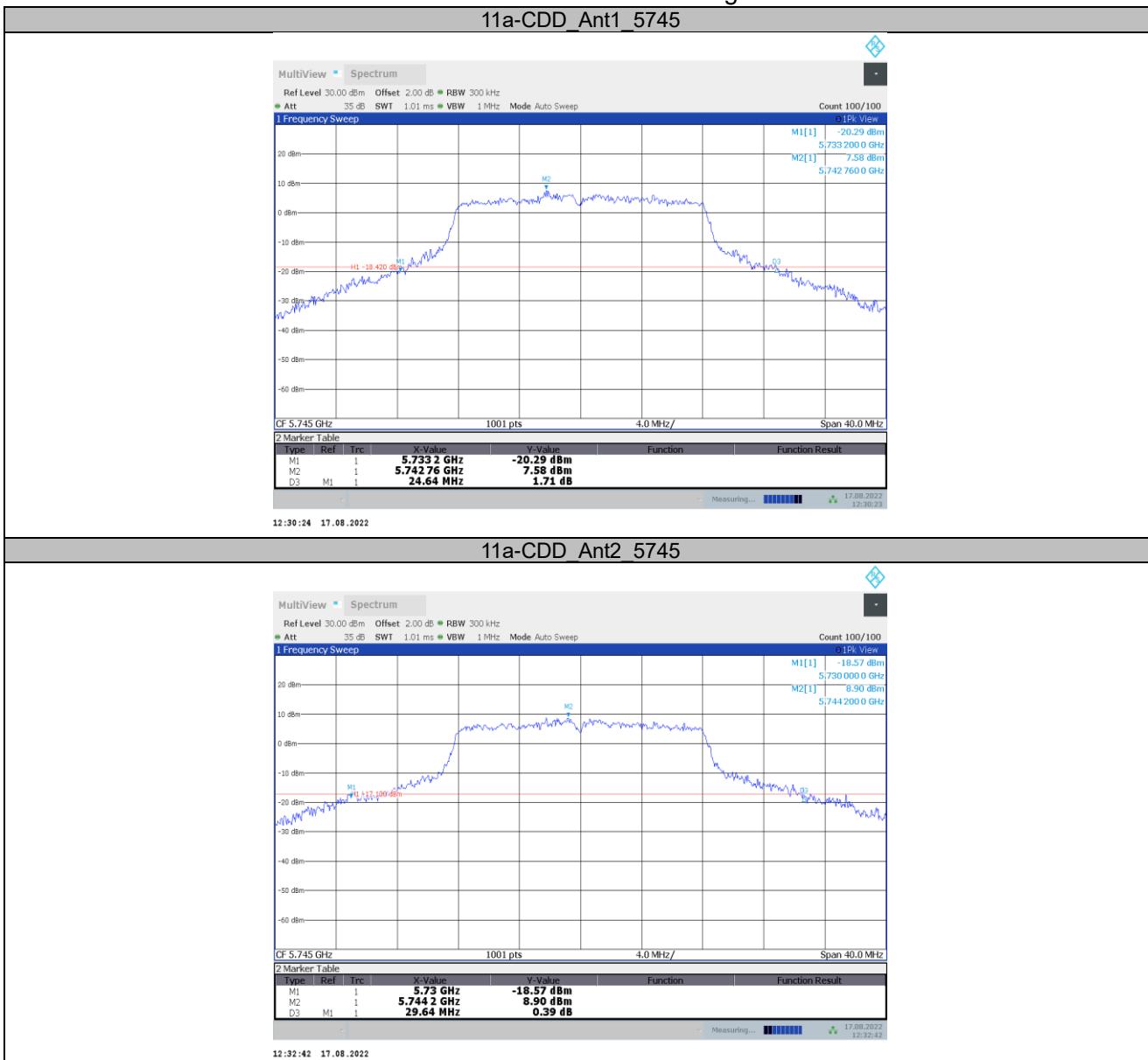
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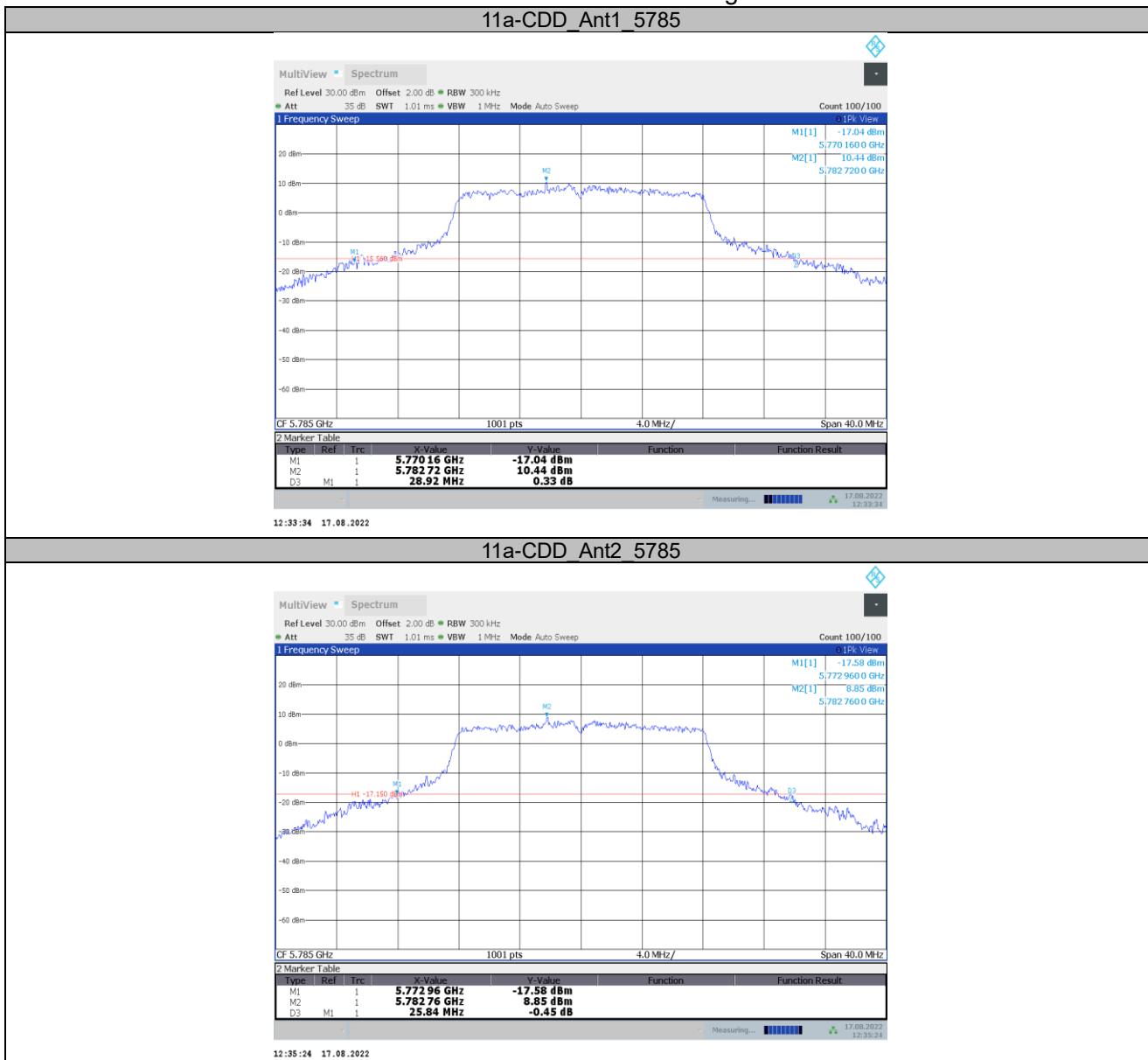
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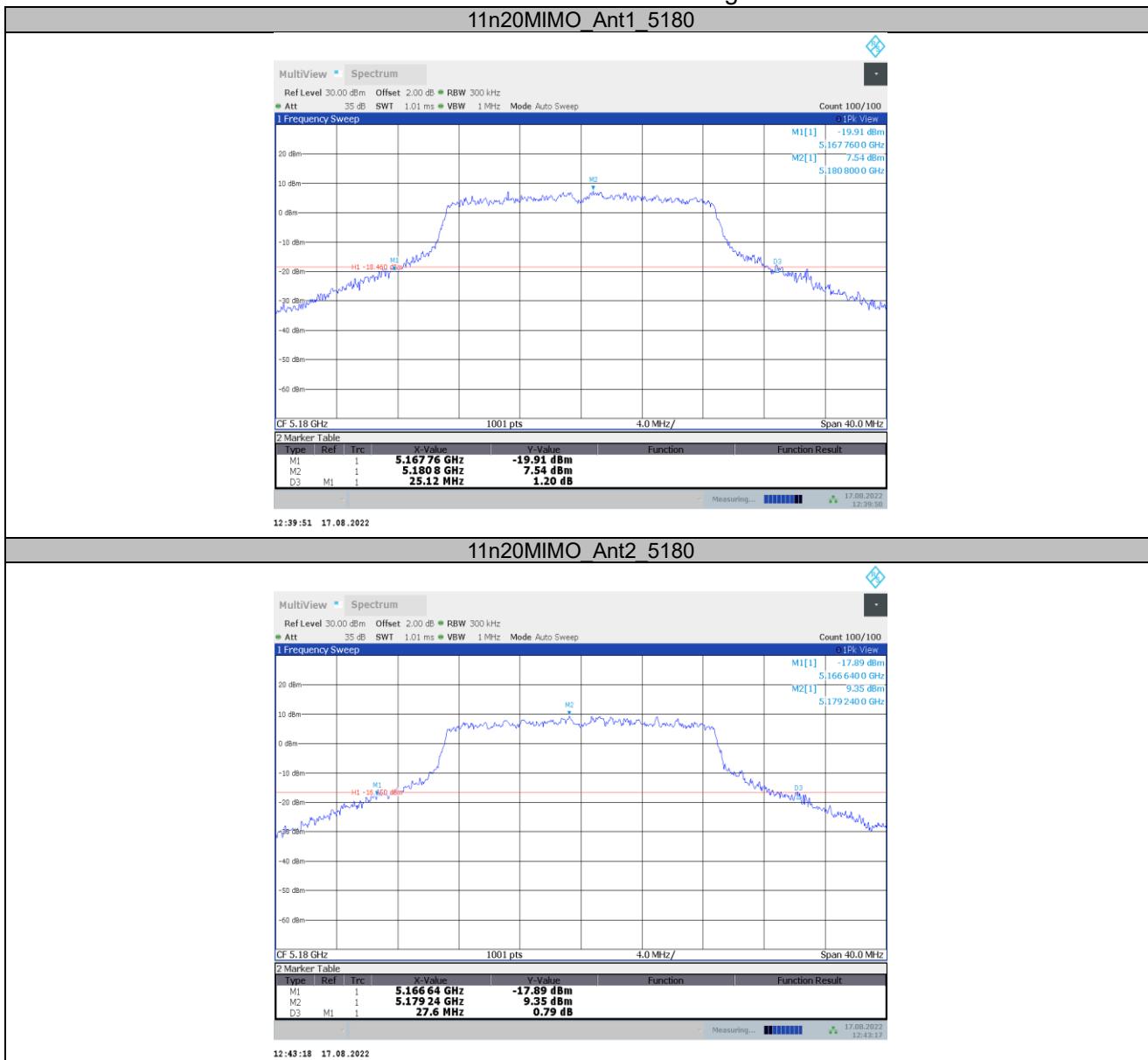
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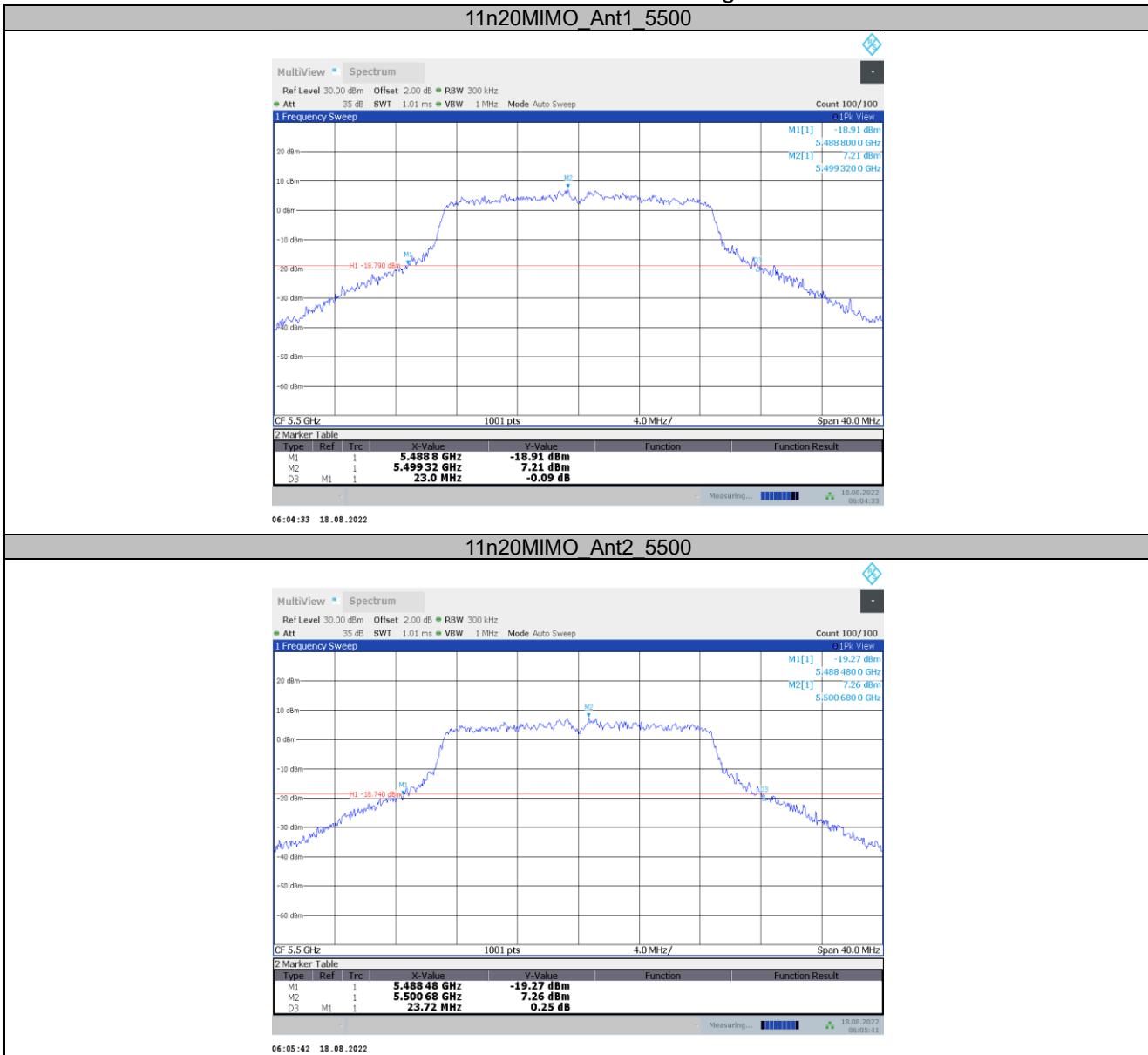
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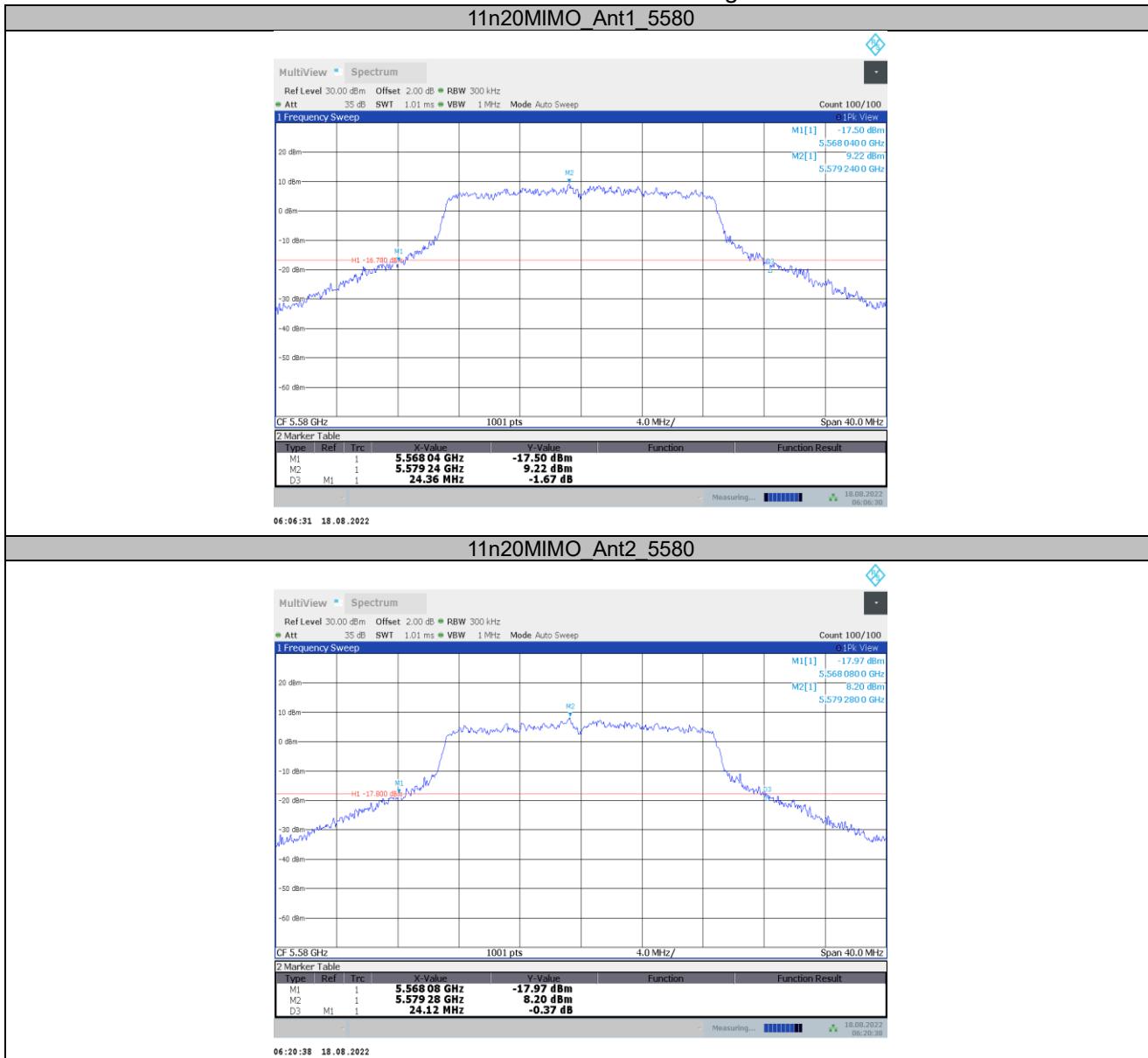
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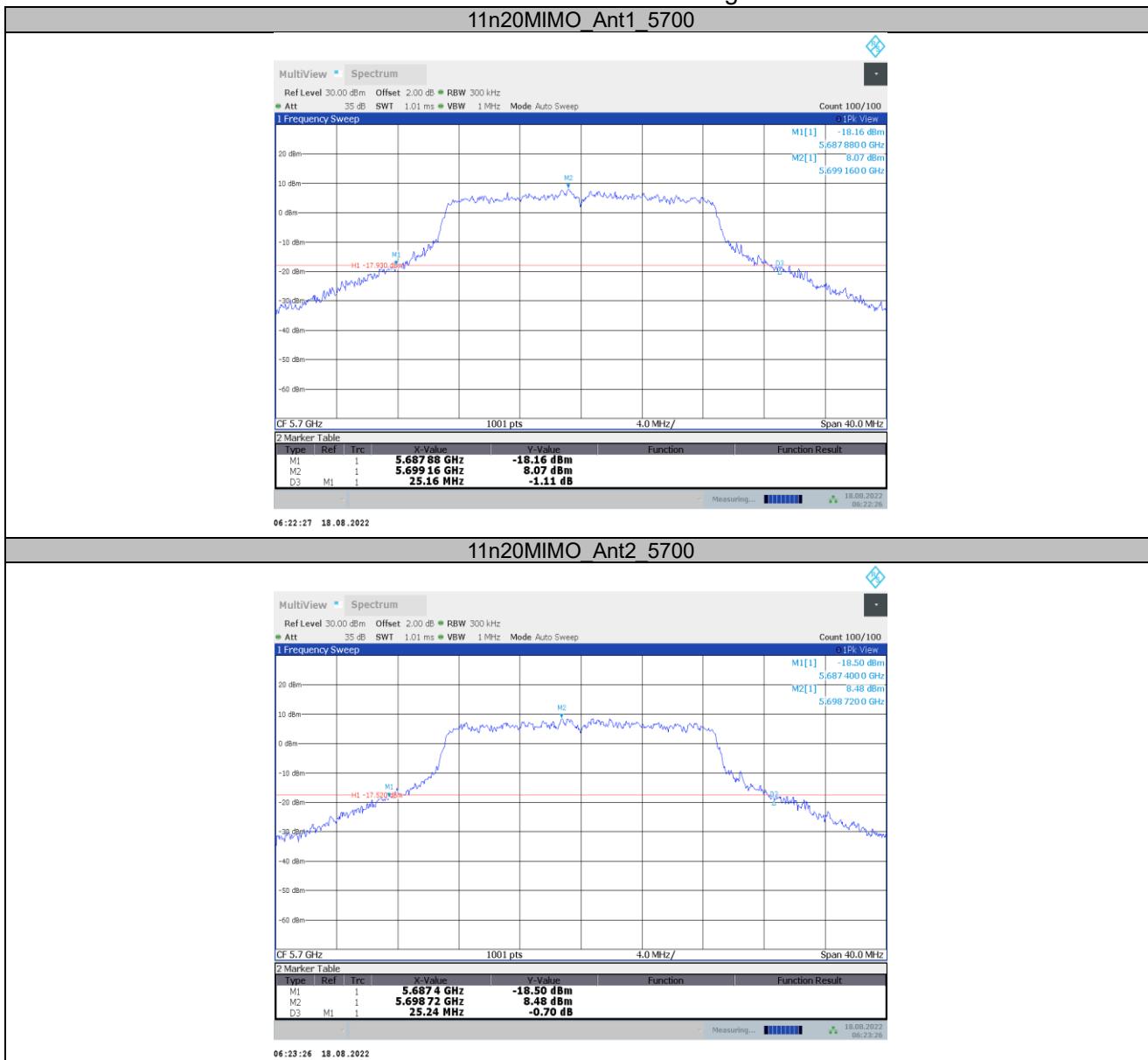
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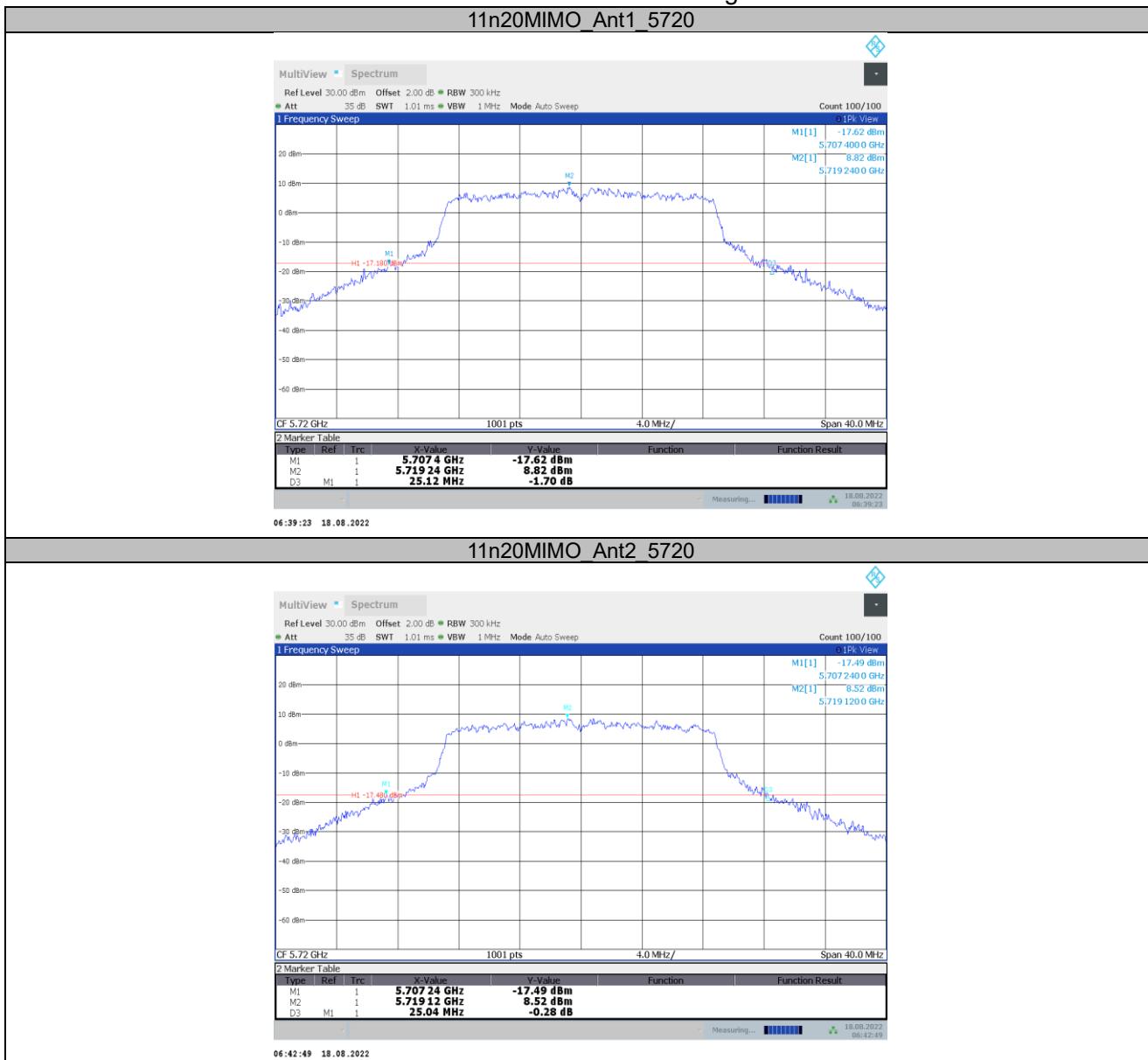
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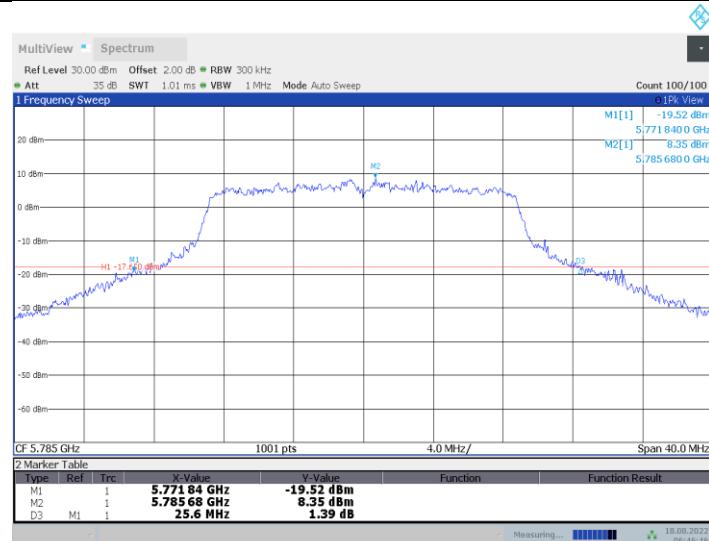
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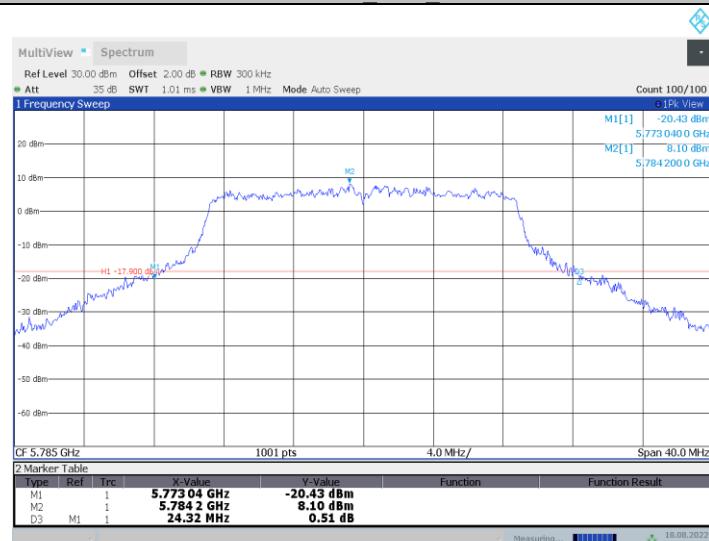
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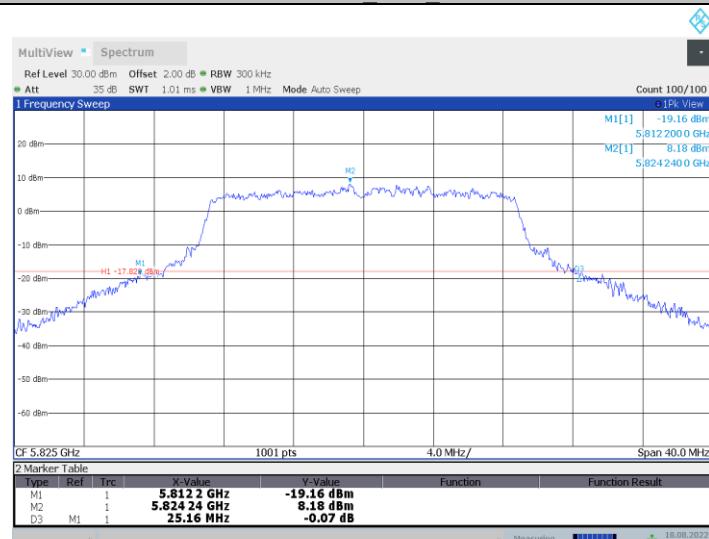
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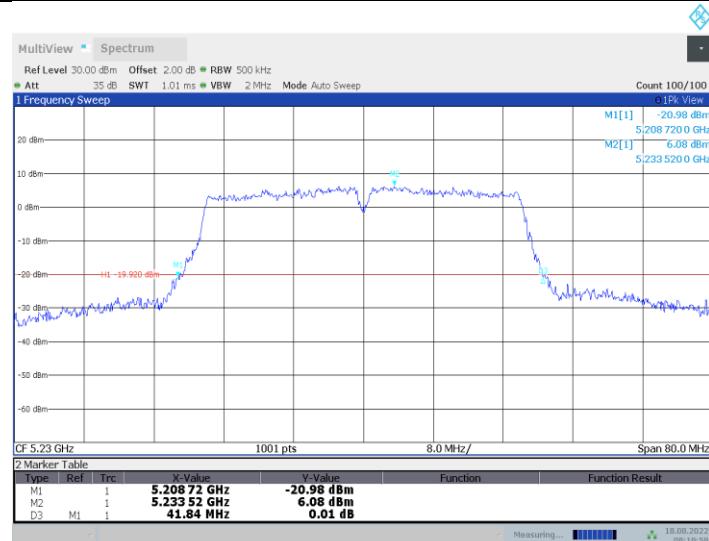
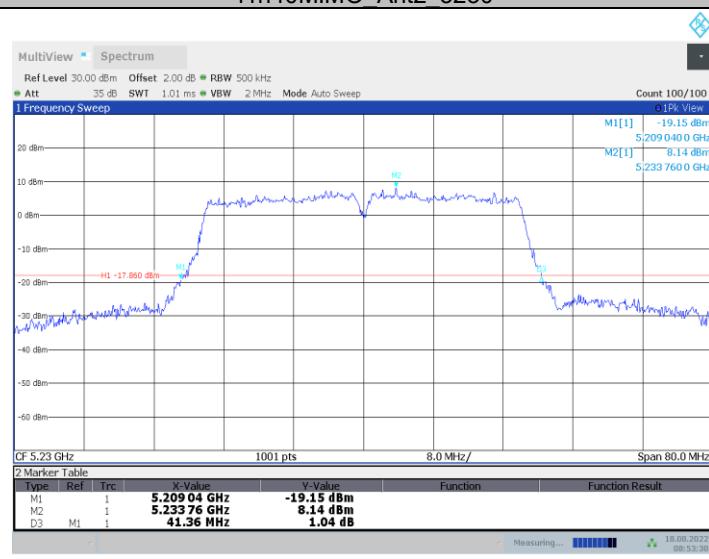
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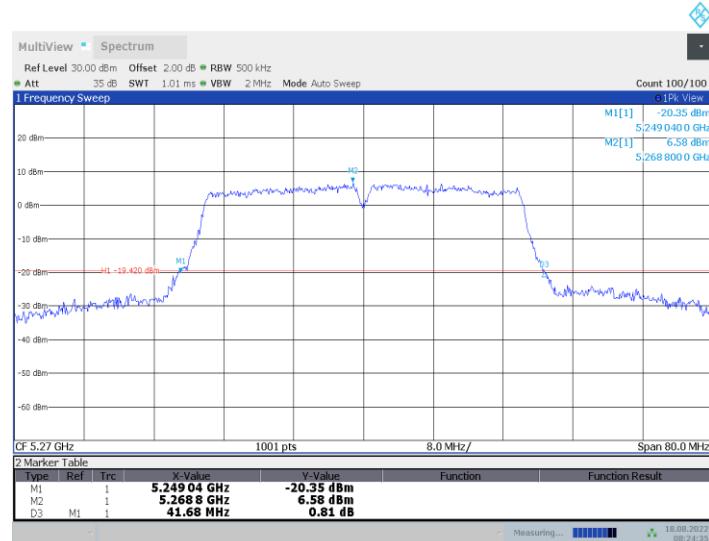
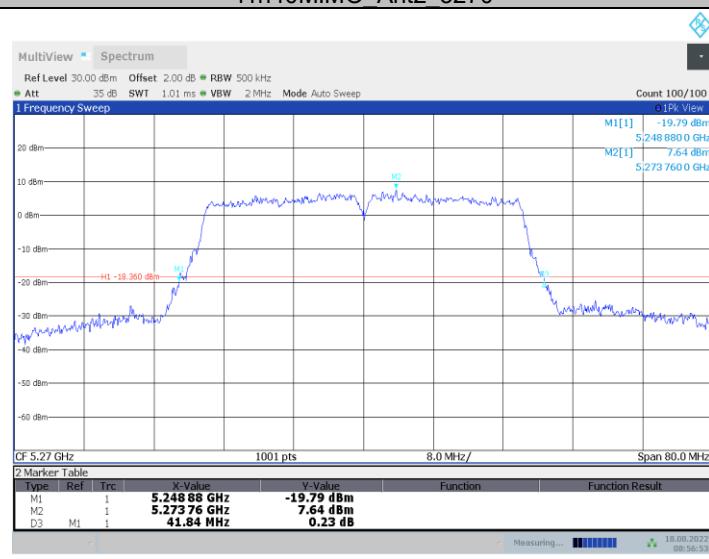
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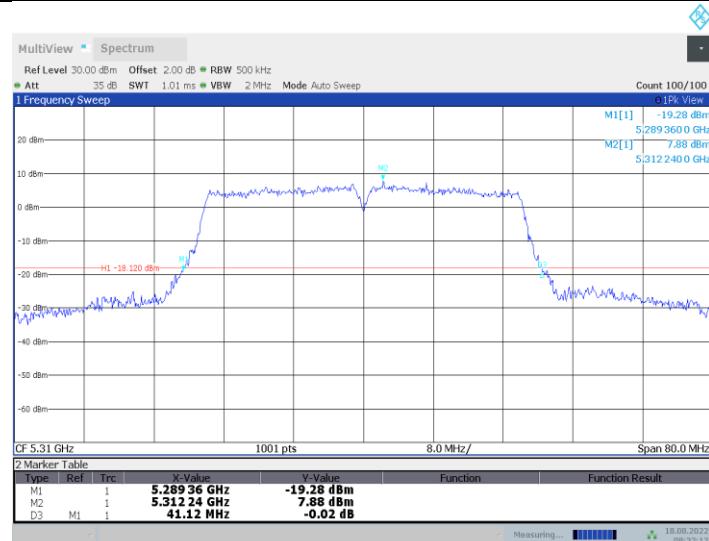
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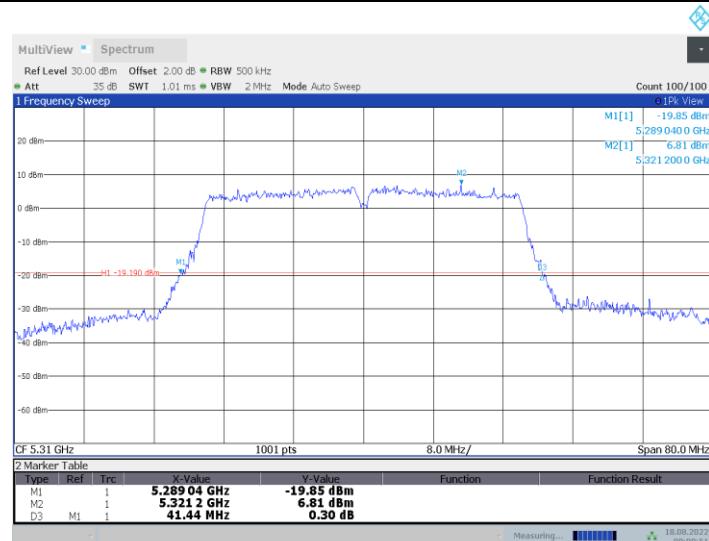
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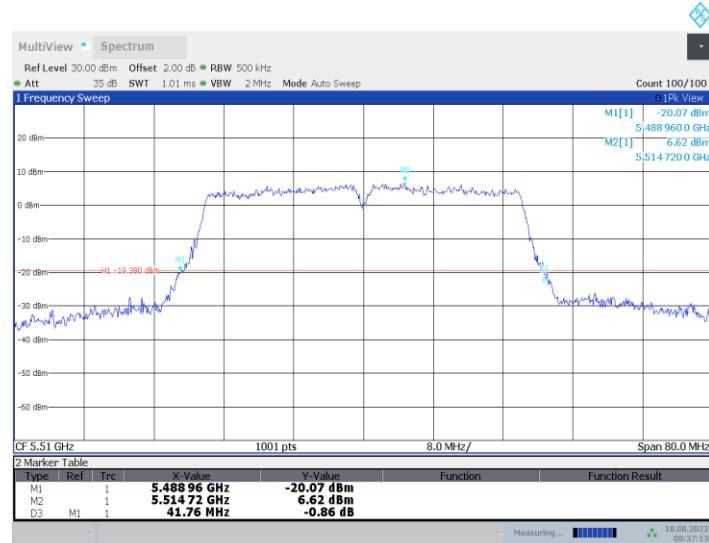
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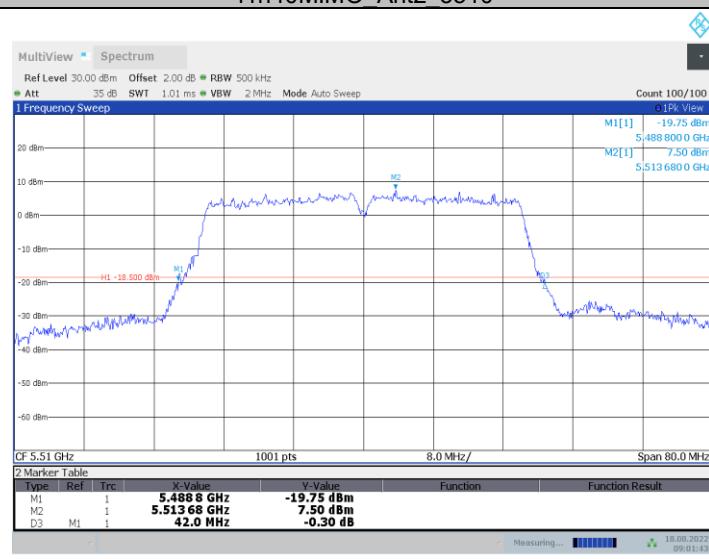
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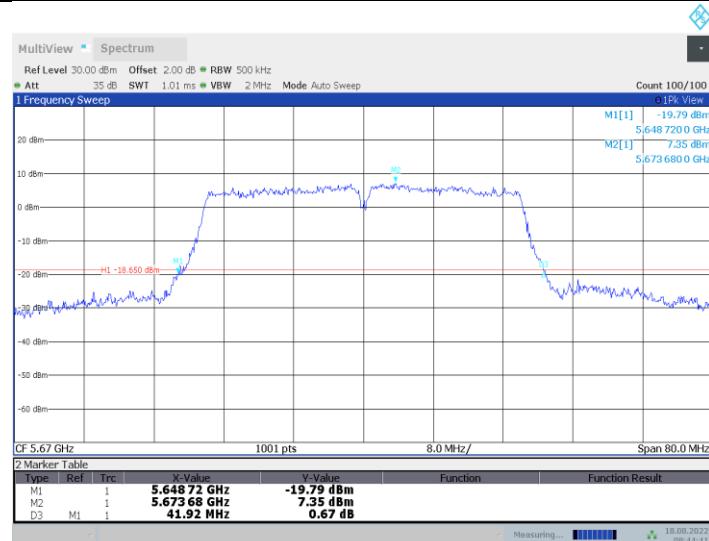
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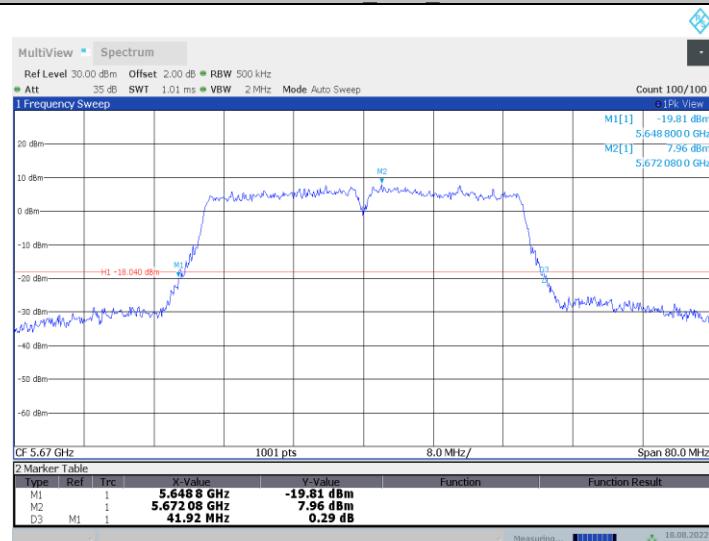
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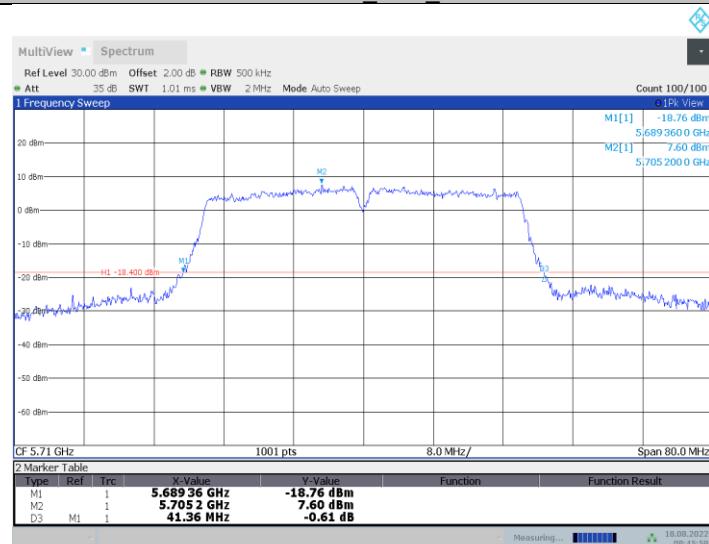
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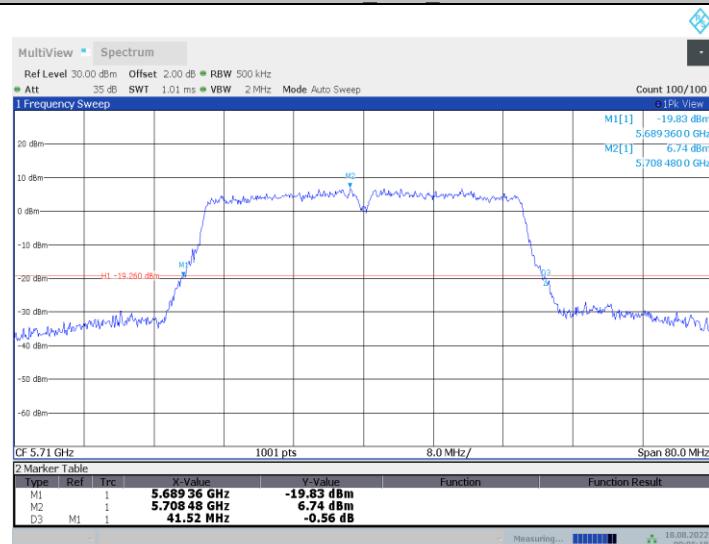
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