

TEST REPORT

Application No.: SEWM2308000314RG
Applicant: Shenzhen Tinno Mobile Technology Corp.
Address of Applicant: 27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC
Manufacturer: Shenzhen Tinno Mobile Technology Corp.
Address of Manufacturer: 27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC
EUT Description: Smart Phone
Model No.: Celero3 5G
FCC ID: XD6U653DS
Standards: FCC 47 CFR Part 2, Subpart J
 FCC 47 CFR Part 15, Subpart E
Date of Receipt: 2023/08/19
Date of Test: 2023/08/22 to 2023/10/12
Date of Issue: 2023/10/13

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

Authorized Signature:


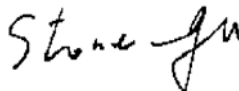
Well Wei
 Wireless Laboratory Manager



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1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2023/10/13		Original

Prepared By		 <hr/> (Ives Cheng) / Test Engineer
Checked By		 <hr/> (Stone Gu) / 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	For Report Purpose
	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	For Report Purpose
	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	For Report Purpose
Maximum Conducted Output Power	Band I	15.407(a)(iv)	< 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)(iv)	<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		
Radiated Spurious Emissions	Band I	15.407(b) 15.205/15.209	F<1GHz: §15.209 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 limit (AV&PK).	Clause 4.9	PASS
	Band II-A	15.407(b) 15.205/15.209	F<1GHz: §15.209 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 limit (AV&PK).		PASS
	Band II-C	15.407(b) 15.205/15.209	F<1GHz: §15.209 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.47-5.725 GHz). F≥1GHz & in-restricted: §15.209 limit (AV&PK).		PASS
	Band III	15.407(b) 15.205/15.209	F<1GHz: §15.209 limit (QP) F≥1GHz & out-restricted:(PK)		PASS



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			All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. F≥1GHz & in-restricted: §15.209 limit (AV&PK).		
Restricted bands around fundamental frequency	Band I Band II-A Band II-C Band III	15.407(b) 15.205/15.209	---	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
<p>Note 1: Band I: 5150-5250MHz Band II-A: 5250-5350MHz Band II-C: 5470-5725MHz Band III: 5725-5850MHz</p>					



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Report No.: SEWM2308000314RG06

Rev.: 01

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3 General Information

3.1 Details of Client

Applicant:	Shenzhen Tinno Mobile Technology Corp.
Address of Applicant:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC
Manufacturer:	Shenzhen Tinno Mobile Technology Corp.
Address of Manufacturer:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC

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:	Ives Cheng, King-p Li

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 Phone	
Model No.:	Celero3 5G	
Hardware Version:	V1.0	
Software Version:	N/A	
Power Supply:	Lithium Battery (3.85V)	
IMEI:	RF Conducted	860284060002432
	RSE & AC power line	860284060010906
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
	802.11ax:	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)
	802.11ax:	OFDM/OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Channel Spacing:	20MHz:	802.11a/n(HT20)/ac(VHT20)/ax(HE20)
	40MHz:	802.11n(HT40)/ac(VHT40)/ax(HE40)
	80MHz:	802.11ac(VHT80)/ax(HE80)
Antenna Type:	Fixed Internal Antenna	
Antenna Gain:	5150MHz to 5250MHz: -1.2dBi (Ant7); -6.1dBi (Ant9); 5250MHz to 5350MHz: -1.2dBi (Ant7); -6.1dBi (Ant9); 5470MHz to 5725MHz: -1.2dBi (Ant7); -6.1dBi (Ant9); 5725MHz to 5850MHz: -1.2dBi (Ant7); -6.1dBi (Ant9);	
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.	
Smart System:	<input checked="" type="checkbox"/> SISO	802.11a
	<input checked="" type="checkbox"/> MIMO	802.11n/ac/ax: 2Tx & 2Rx
	<input checked="" type="checkbox"/> Diversity	802.11a: 2Tx & 2Rx
TPC Function:	<input type="checkbox"/> Support, <input checked="" type="checkbox"/> Not Support	
DFS Function:	<input type="checkbox"/> Master	
	<input type="checkbox"/> Slave with radar detection	<input checked="" type="checkbox"/> Slave without radar detection



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RF Cable:	1.5dB
Remark: 1. 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. 2. 802.11ax support full RU tone and partial RU tone, both full RU and partial RU are tested for conducted power/PSD/Duty cycle, all the other test case were performed with full RU with its maximum power/PSD.	

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 over which device operates	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/ax 20MHz	The Lowest channel	5180
	The Middle channel	5200
	The Highest channel	5240
IEEE 802.11n/ac/ax 40MHz	The Lowest channel	5190
	The Highest channel	5230
IEEE 802.11ac/ax 80MHz	The Middle channel	5210

For UNII Band II-A:		
Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac/ax 20MHz	The Lowest channel	5260
	The Middle channel	5280
	The Highest channel	5320
IEEE 802.11n/ac/ax 40MHz	The Lowest channel	5270
	The Highest channel	5310
IEEE 802.11ac/ax 80MHz	The Middle channel	5290



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For UNII Band II-C:		
Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac/ax 20MHz	The Lowest channel	5500
	The Middle channel	5580
	The Highest channel	5700
IEEE 802.11n/ac/ax 40MHz	The Lowest channel	5510
	The Middle channel	5550
	The Highest channel	5670
IEEE 802.11ac/ax 80MHz	The Middle channel	5530

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

Frequency Band	Channel	Freq.(MHz)	Channel	Freq.(MHz)
TDWR Channel	120 ^[1]	5600	124 ^[1]	5620
	128 ^[1]	5640	118 ^[2]	5590
	126 ^[2]	5630	122 ^[3]	5610

Note:

1. The above Frequency and Channel were 802.11a, 802.11n HT20, 802.11ac VHT20 and 802.11ax(HE20).
2. The above Frequency and Channel were 802.11n HT40, 802.11ac VHT40 and 802.11ax(HE40).
3. The above Frequency and Channel were 802.11ac VHT80 and 802.11ax(HE80).



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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	3.85
Remark: NV: Normal Voltage NT: Normal Temperature		

3.6 Description of Support Units

Test Equipment	Manufacturer	Model No.	Inventory No.
Router	TP-LINK	Archer BE800 (FCC ID: 2AXJ4BE800)	SUWI-03-14-03

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 (13 Mbps)
802.11n (HT 40)	/	MCS0 (27 Mbps)
802.11ac (VHT 20)	/	MCS0 (13 Mbps)
802.11ac (VHT 40)	/	MCS0 (27 Mbps)
802.11ac (VHT 80)	/	MCS0 (58.5 Mbps)
802.11ax (HE 20)	/	MCS0 (16 Mbps)
802.11ax (HE 40)	/	MCS0 (32 Mbps)
802.11ax (HE 80)	/	MCS0 (68 Mbps)



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4 Test results and Measurement Data

4.1 Antenna Requirement

Standard requirement:	47 CFR Part 15 Section 15.203
<p>The antenna is Fixed Internal Antenna and no consideration of replacement. The best case gain of the antenna is 5150MHz to 5250MHz: -1.2dBi (Ant7); -6.1dBi (Ant9);* 5250MHz to 5350MHz: -1.2dBi (Ant7); -6.1dBi (Ant9);* 5470MHz to 5725MHz: -1.2dBi (Ant7); -6.1dBi (Ant9);* 5725MHz to 5850MHz: -1.2dBi (Ant7); -6.1dBi (Ant9);*</p> <p><i>*Note:</i> The antenna gain are derived from the gain information report provided by the manufacturer.</p> <p><i>Remark:</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.</p>	



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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,
 $Array\ Gain = 10 \log(N_{ANT}/N_{SS}=1) \text{ dB}$.
- For power measurements on IEEE 802.11 devices:
 $Array\ Gain = 0 \text{ dB}$ (i.e., no array gain) for $N_{ANT} \leq 4$;

For power, the directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

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

The EUT supports CDD System.

Unequal antenna gain:

Operation Frequency	ANT Gain7 (dBi)	ANT Gain9 (dBi)	Directional gain For Power (dBi)	Directional gain For PSD (dBi)	Power Limit Reduction (dBm)	PSD Limit Reduction (dBm)
5150MHz to 5250MHz	-1.2	-6.1	-1.2	-0.30	0	0
5250MHz to 5350MHz	-1.2	-6.1	-1.2	-0.30	0	0
5470MHz to 5725MHz	-1.2	-6.1	-1.2	-0.30	0	0
5725MHz to 5850MHz	-1.2	-6.1	-1.2	-0.30	0	0

5150MHz to 5250MHz:

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

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

5250MHz to 5350MHz:

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

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

5470MHz to 5725MHz:

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

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

5725MHz to 5850MHz:

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

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



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4.2 AC Power Line Conducted Emissions

Test Requirement:	47 CFR Part 15 Section 15.207		
Test Method:	ANSI C63.10-2020 Section 6.2		
Test Frequency Range:	150kHz to 30MHz		
Receiver Setup:	RBW = 9kHz, VBW = 30kHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	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 50Ω/50μH + 5Ω 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 C63.10-2020 on conducted measurement. 		



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



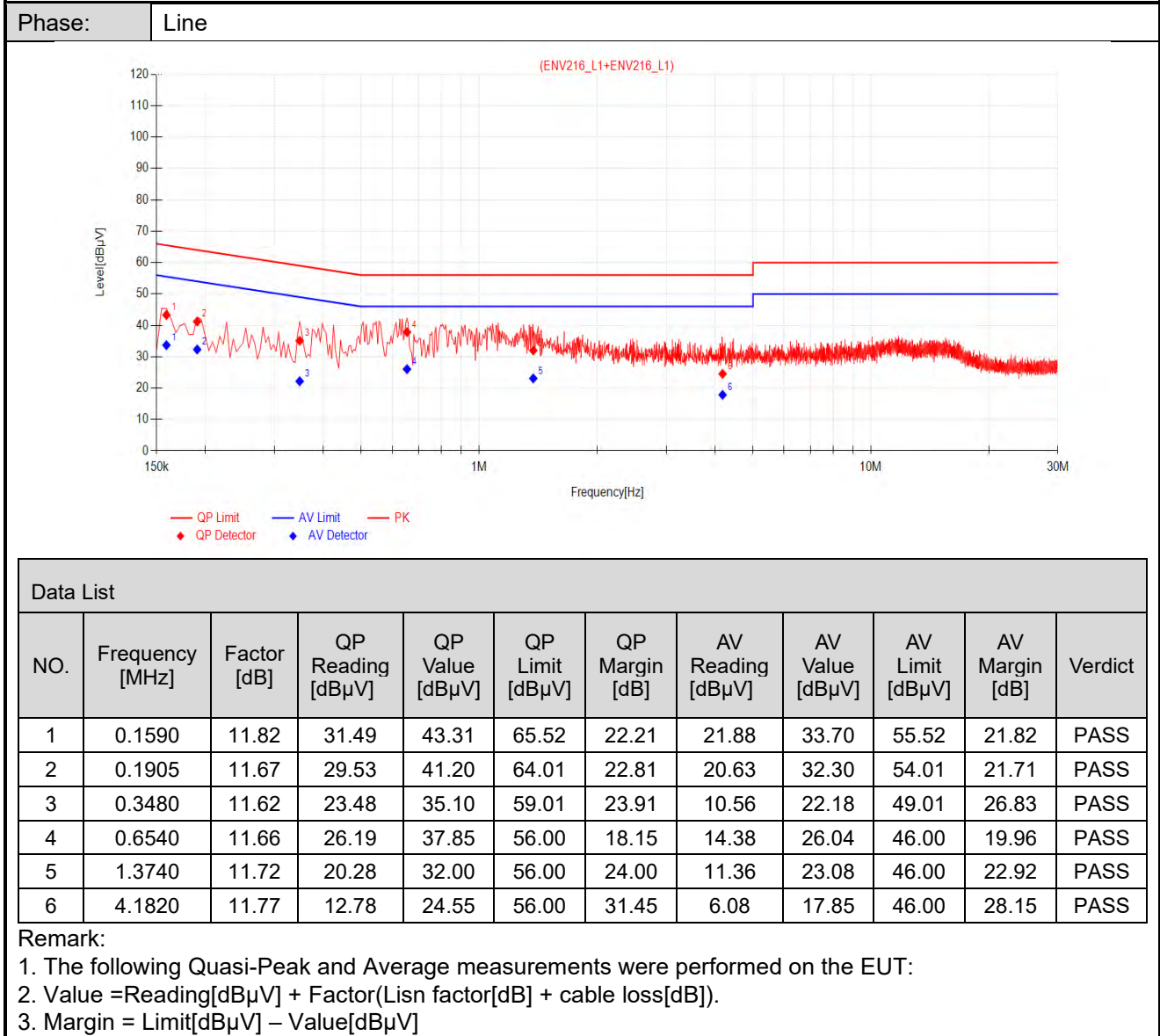
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Measurement Data

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.

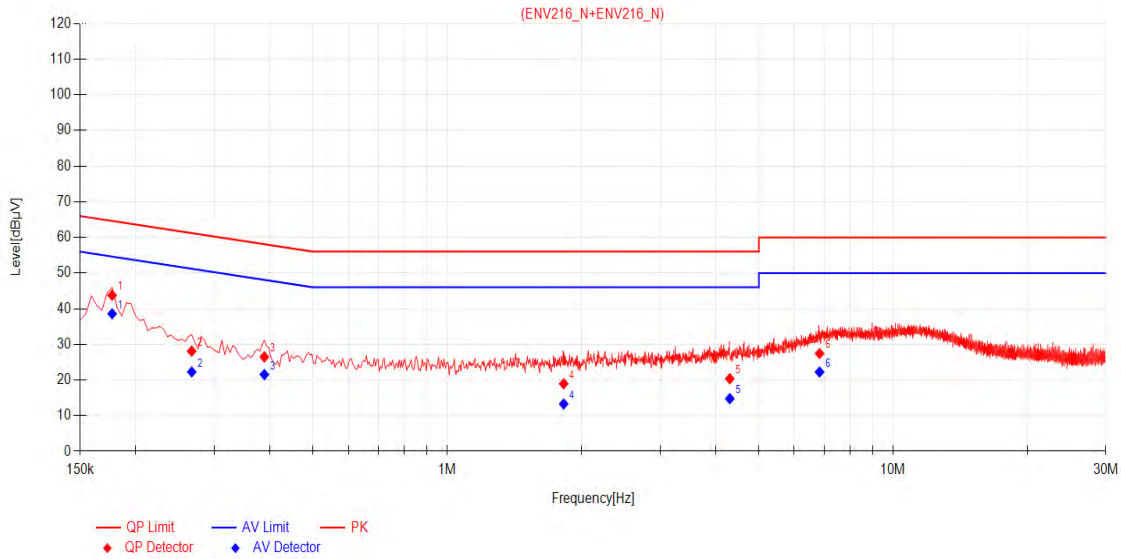


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Phase:	Neutral
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Data List

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	0.1770	11.73	32.04	43.77	64.63	20.86	26.86	38.59	54.63	16.04	PASS
2	0.2670	11.64	16.45	28.09	61.21	33.12	10.64	22.28	51.21	28.93	PASS
3	0.3885	11.61	14.87	26.48	58.10	31.62	9.92	21.53	48.10	26.57	PASS
4	1.8240	11.73	7.23	18.96	56.00	37.04	1.56	13.29	46.00	32.71	PASS
5	4.3035	11.78	8.59	20.37	56.00	35.63	2.99	14.77	46.00	31.23	PASS
6	6.8415	11.88	15.57	27.45	60.00	32.55	10.36	22.24	50.00	27.76	PASS

Remark:

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



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4.3 Duty Cycle

Test Requirement:	ANSI C63.10-2020 Section 12.2
Test Method:	ANSI C63.10-2020 Section 12.2
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:	For report purpose
The detailed test data see: Appendix	



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4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10-2020 Section 12.4.3.2	
Test Setup:	<p>* Test with power meter (Detector function: Average) Method PM-G is measurement using a gated RF average power meter. Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.</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(23.98dBm)
	5250-5350MHz	The lesser of 250mW(23.98dBm) or 11+ 10logB
	5470-5725MHz	The lesser of 250mW(23.98dBm) or 11+ 10logB
	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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4.5 26dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a), KDB 789033 D02& C
Test Method:	ANSI C63.10-2020 Section 12.5.2
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:	For Report Purpose
The detailed test data see: Appendix	



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4.6 6dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(e)	
Test Method:	ANSI C63.10-2020 Section 12.5.1	
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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4.7 99% Occupied Bandwidth

Test Requirement:	KDB 789033 D02§ D
Test Method:	ANSI C63.10-2020 Section 12.5.3
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:	For Report Purpose
The detailed test data see: Appendix	



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4.8 Power Spectral Density

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10-2020 Section 12.6 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:	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 15.205/15.209/15.407(b)
Test Method:	ANSI C63.10-2020 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:

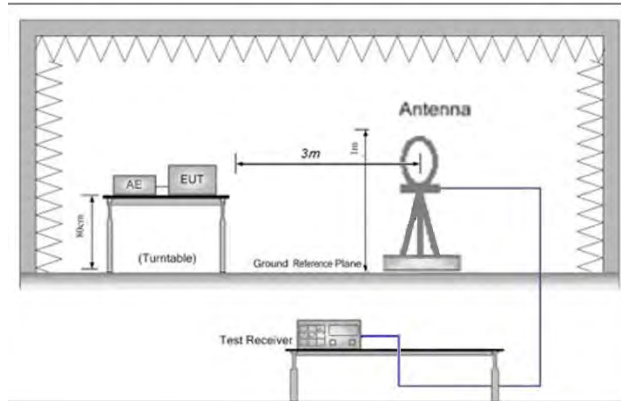


Figure 1. 9kHz to 30MHz

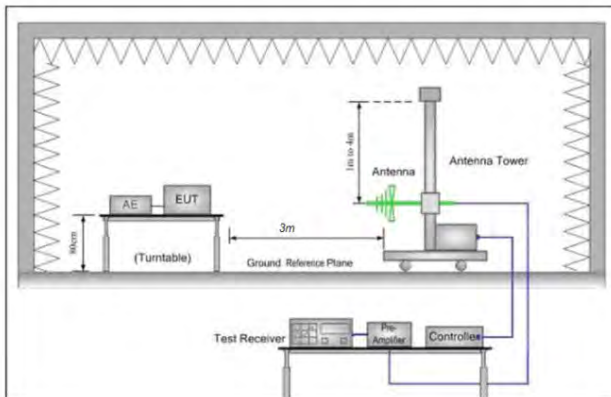


Figure 1. 30MHz to 1GHz

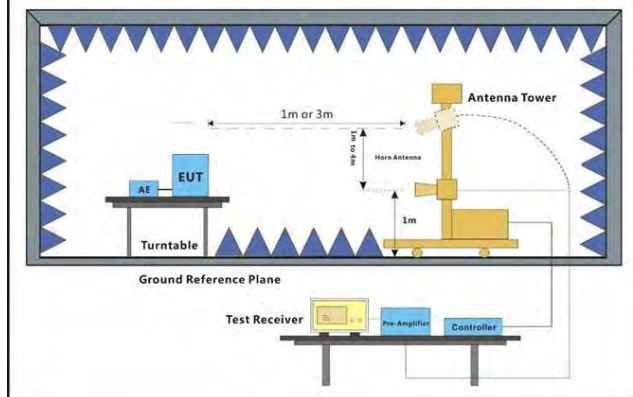


Figure 2. Above 1 GHz

Test Procedure:

- 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.



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	<p>e. 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.</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 it 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 $20 \cdot \text{LOG}(3/1) = 9.54$ dB.</p>
<p>Test Configuration:</p>	<p>Measurements below 30MHz</p> <ul style="list-style-type: none"> • RBW = 10 kHz • VBW = 30 kHz • Detector = Peak & Average & Quasi-peak • Trace mode = max hold <p>Measurements Below 1000MHz</p> <ul style="list-style-type: none"> • RBW = 120 kHz • VBW = 300 kHz • Detector = Quasi-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 = 10Hz, when duty cycle is no less than 98 percent. • VBW \geq 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
<p>Exploratory Test Mode:</p>	<p>Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.</p>
<p>Final Test Mode:</p>	<p>Refer to section 3.7 for details. For below 1GHz part, through pre-scan all channels, but only the worst case is recorded in the report.</p>
<p>Instruments Used:</p>	<p>Refer to section 6 for details.</p>



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Test Results:	Pass
The detailed test data see: Appendix	



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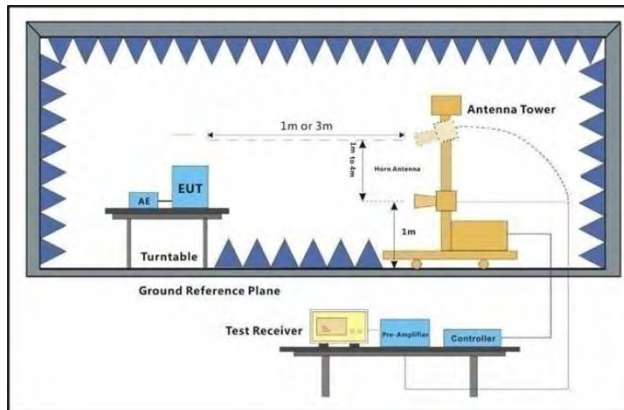
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4.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15 Section 15.205/15.209/15.407(b)		
Test Method:	ANSI C63.10-2020 Section 12.7		
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:

- 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



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	Transmitting mode, And found the X axis positioning which it is worse case. 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 = Quasi-peak • Trace mode = max hold <p>Peak Measurements Above 1000 MHz</p> <ul style="list-style-type: none"> • RBW = 1 MHz • VBW ≥ 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 = 10Hz, when duty cycle is no less than 98 percent. • VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
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
<p>Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.</p>		



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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.



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4.11.3 RADAR TEST WAVEFORMS

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	Roundup $\left\{ \begin{matrix} \left(\frac{1}{360} \right) \cdot \\ \left(\frac{19 \cdot 10^6}{PRI_{\mu sec}} \right) \end{matrix} \right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					



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Table 5a - Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4. For example, the following table indicates how to compute the aggregate of percentage of successful detections.

Radar Type	Number of Trials	Number of Successful Detections	Minimum Percentage of Successful Detection
1	35	29	82.9%
2	30	18	60%
3	30	27	90%
4	50	44	88%
Aggregate $(82.9\% + 60\% + 90\% + 88\%)/4 = 80.2\%$			



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Table 6 – Long Pulse Radar Test Waveform

Radar Type	Pulse Width (μsec)	Chirp Width (MHz)	PRI (μsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

4.11.4 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)
		± 4.8dB (30M -1GHz)
		± 4.8dB (1GHz to 18GHz)
		± 4.80dB (Above 18GHz)

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{CISPR/ETSI}$ (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					
Test 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	2023/02/06	2024/02/05
Signal Analyzer	ROHDE&SCHWARZ	FSV3030	SUWI-01-02-02	2023/05/11	2024/05/10
Measurement Software	Tonscend	JS1120-3 Test System V 3.3.20	SUWI-02-09-09	NCR	NCR
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2023/05/11	2024/05/10
Temperature Chamber	ESPEC	SU-242	SUWI-01-13-01	2023/02/06	2024/02/05
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-05	2023/02/06	2024/02/05
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2023/02/06	2024/02/05
Power meter	Anritsu	ML2495A	SUWI-01-31-01	2022/11/23	2023/11/22
Pulse power sensor	Anritsu	MA2411B	SUWI-01-32-01	2022/11/23	2023/11/22
MXG Vector signal genitor	KEYSIGHT	N5182B	SUWI-01-38-01	2023/02/06	2024/02/05
Signal Generator	ROHDE&SCHWARZ	SMM100A	SN: 101716	2023/02/22	2024/02/21

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-06	2023/02/07	2024/02/06
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2023/02/08	2024/02/07
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-03	2023/02/08	2024/02/07
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-04	2023/02/08	2024/02/07
Measurement Software	Tonscend	JS32-CE V4.0.0.2	SUWI-02-09-05	NCR	NCR



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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	2023/02/07	2024/02/06
Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-05	2022/11/23	2023/11/22
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2023/02/08	2024/02/07
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2023/02/06	2024/02/05
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	VULB 9163	SUWI-01-11-01	2023/05/13	2024/05/12
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	2023/05/13	2024/05/12
Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2023/05/12	2024/05/11
Active Loop Antenna	SCHWRZBECK MESS-ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2023/05/13	2024/05/12
Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	2023/02/06	2024/02/05
Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	2023/02/06	2024/02/05
Measurement Software	Tonscend	JS32-RE 4.0.0.0	SUWI-02-09-04	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	Ant7	5180	26.84	5167.60	5194.44	For Report Purpose
11a	Ant7	5220	28.20	5205.56	5233.76	
11a	Ant7	5240	28.88	5226.76	5255.64	
11a	Ant7	5260	25.52	5247.08	5272.60	
11a	Ant7	5300	25.40	5287.84	5313.24	
11a	Ant7	5320	27.44	5305.88	5333.32	
11a	Ant7	5500	27.80	5485.08	5512.88	
11a	Ant7	5580	27.84	5565.96	5593.80	
11a	Ant7	5700	25.80	5687.04	5712.84	
11a	Ant7	5745	27.24	5731.52	5758.76	
11a	Ant7	5785	23.60	5773.00	5796.60	
11a	Ant7	5825	27.44	5810.64	5838.08	
11n20MIMO	Ant7	5180	29.00	5166.24	5195.24	
11n20MIMO	Ant9	5180	28.16	5166.20	5194.36	
11n20MIMO	Ant7	5220	24.72	5207.72	5232.44	
11n20MIMO	Ant9	5220	24.80	5207.60	5232.40	
11n20MIMO	Ant7	5240	24.76	5228.40	5253.16	
11n20MIMO	Ant9	5240	25.16	5228.04	5253.20	
11n20MIMO	Ant7	5260	24.68	5247.80	5272.48	
11n20MIMO	Ant9	5260	25.72	5247.84	5273.56	
11n20MIMO	Ant7	5300	27.08	5286.60	5313.68	
11n20MIMO	Ant9	5300	25.92	5287.28	5313.20	
11n20MIMO	Ant7	5320	25.56	5308.24	5333.80	
11n20MIMO	Ant9	5320	25.52	5307.44	5332.96	
11n20MIMO	Ant7	5500	26.84	5486.00	5512.84	
11n20MIMO	Ant9	5500	27.68	5486.80	5514.48	
11n20MIMO	Ant7	5580	25.60	5566.08	5591.68	
11n20MIMO	Ant9	5580	23.64	5568.16	5591.80	
11n20MIMO	Ant7	5700	24.60	5687.24	5711.84	
11n20MIMO	Ant9	5700	25.04	5687.52	5712.56	
11n20MIMO	Ant7	5745	27.72	5729.96	5757.68	
11n20MIMO	Ant9	5745	24.36	5732.88	5757.24	
11n20MIMO	Ant7	5785	23.44	5773.24	5796.68	
11n20MIMO	Ant9	5785	24.00	5772.88	5796.88	
11n20MIMO	Ant7	5825	24.32	5812.88	5837.20	
11n20MIMO	Ant9	5825	24.88	5813.08	5837.96	
11n40MIMO	Ant7	5190	45.20	5169.44	5214.64	
11n40MIMO	Ant9	5190	40.80	5169.76	5210.56	
11n40MIMO	Ant7	5230	40.64	5209.76	5250.40	
11n40MIMO	Ant9	5230	40.88	5209.52	5250.40	
11n40MIMO	Ant7	5270	41.04	5249.60	5290.64	
11n40MIMO	Ant9	5270	41.12	5249.60	5290.72	
11n40MIMO	Ant7	5310	41.12	5289.28	5330.40	
11n40MIMO	Ant9	5310	41.36	5289.20	5330.56	
11n40MIMO	Ant7	5510	40.56	5489.76	5530.32	
11n40MIMO	Ant9	5510	41.04	5489.44	5530.48	
11n40MIMO	Ant7	5550	40.72	5529.68	5570.40	
11n40MIMO	Ant9	5550	41.04	5529.52	5570.56	
11n40MIMO	Ant7	5670	40.56	5649.60	5690.16	



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11n40MIMO	Ant9	5670	41.28	5649.20	5690.48
11n40MIMO	Ant7	5755	43.28	5734.28	5777.56
11n40MIMO	Ant9	5755	41.20	5734.68	5775.88
11n40MIMO	Ant7	5795	47.12	5772.84	5819.96
11n40MIMO	Ant9	5795	46.16	5769.80	5815.96
11ac80MIMO	Ant7	5210	83.52	5166.80	5250.32
11ac80MIMO	Ant9	5210	86.40	5164.08	5250.48
11ac80MIMO	Ant7	5290	94.24	5250.00	5344.24
11ac80MIMO	Ant9	5290	92.16	5246.00	5338.16
11ac80MIMO	Ant7	5530	89.28	5482.16	5571.44
11ac80MIMO	Ant9	5530	86.56	5483.76	5570.32
11ac80MIMO	Ant7	5610	93.28	5558.00	5651.28
11ac80MIMO	Ant9	5610	87.84	5566.00	5653.84
11ac80MIMO	Ant7	5775	97.92	5725.56	5823.48
11ac80MIMO	Ant9	5775	96.96	5730.04	5827.00
11ax20MIMO	Ant7	5180	23.60	5168.36	5191.96
11ax20MIMO	Ant9	5180	23.64	5168.28	5191.92
11ax20MIMO	Ant7	5220	23.52	5208.04	5231.56
11ax20MIMO	Ant9	5220	22.96	5208.36	5231.32
11ax20MIMO	Ant7	5240	23.60	5228.28	5251.88
11ax20MIMO	Ant9	5240	23.52	5228.00	5251.52
11ax20MIMO	Ant7	5260	22.32	5248.76	5271.08
11ax20MIMO	Ant9	5260	22.92	5248.60	5271.52
11ax20MIMO	Ant7	5300	24.20	5288.00	5312.20
11ax20MIMO	Ant9	5300	24.12	5288.04	5312.16
11ax20MIMO	Ant7	5320	23.04	5308.60	5331.64
11ax20MIMO	Ant9	5320	23.36	5308.32	5331.68
11ax20MIMO	Ant7	5500	26.84	5486.56	5513.40
11ax20MIMO	Ant9	5500	24.64	5487.64	5512.28
11ax20MIMO	Ant7	5580	23.56	5568.20	5591.76
11ax20MIMO	Ant9	5580	23.28	5568.28	5591.56
11ax20MIMO	Ant7	5700	23.32	5687.96	5711.28
11ax20MIMO	Ant9	5700	23.24	5688.60	5711.84
11ax20MIMO	Ant7	5745	24.16	5733.48	5757.64
11ax20MIMO	Ant9	5745	23.36	5733.28	5756.64
11ax20MIMO	Ant7	5785	23.44	5773.28	5796.72
11ax20MIMO	Ant9	5785	22.88	5773.52	5796.40
11ax20MIMO	Ant7	5825	23.00	5813.28	5836.28
11ax20MIMO	Ant9	5825	25.04	5812.12	5837.16
11ax40MIMO	Ant7	5190	39.84	5170.08	5209.92
11ax40MIMO	Ant9	5190	39.60	5170.24	5209.84
11ax40MIMO	Ant7	5230	39.44	5210.24	5249.68
11ax40MIMO	Ant9	5230	39.84	5210.08	5249.92
11ax40MIMO	Ant7	5270	39.60	5250.16	5289.76
11ax40MIMO	Ant9	5270	39.68	5250.24	5289.92
11ax40MIMO	Ant7	5310	39.68	5290.08	5329.76
11ax40MIMO	Ant9	5310	39.68	5290.16	5329.84
11ax40MIMO	Ant7	5510	39.36	5490.24	5529.60
11ax40MIMO	Ant9	5510	39.60	5490.24	5529.84
11ax40MIMO	Ant7	5550	40.00	5530.00	5570.00
11ax40MIMO	Ant9	5550	39.84	5530.00	5569.84
11ax40MIMO	Ant7	5670	39.92	5650.00	5689.92
11ax40MIMO	Ant9	5670	39.92	5649.92	5689.84
11ax40MIMO	Ant7	5755	39.92	5735.16	5775.08
11ax40MIMO	Ant9	5755	39.76	5735.16	5774.92
11ax40MIMO	Ant7	5795	39.84	5775.08	5814.92
11ax40MIMO	Ant9	5795	39.68	5775.16	5814.84



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Rev.: 01

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11ax80MIMO	Ant7	5210	81.12	5169.52	5250.64
11ax80MIMO	Ant9	5210	80.96	5169.52	5250.48
11ax80MIMO	Ant7	5290	89.44	5249.52	5338.96
11ax80MIMO	Ant9	5290	81.12	5249.52	5330.64
11ax80MIMO	Ant7	5530	91.52	5479.12	5570.64
11ax80MIMO	Ant9	5530	81.12	5489.52	5570.64
11ax80MIMO	Ant7	5610	81.12	5569.52	5650.64
11ax80MIMO	Ant9	5610	81.12	5569.52	5650.64
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11ax80MIMO	Ant9	5775	90.72	5727.64	5818.36

Remark:

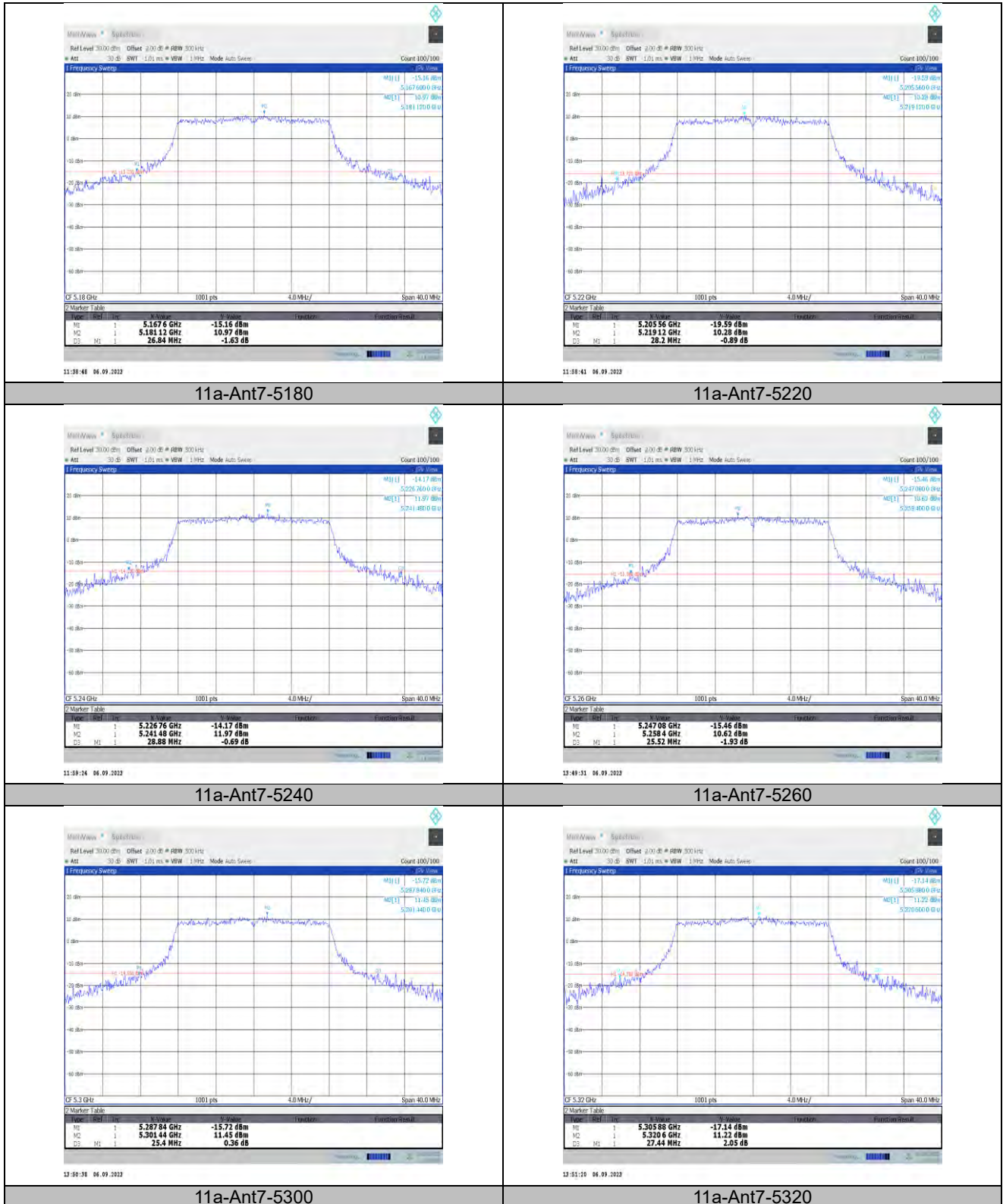
For 802.11n HT20/ac VHT20 and 802.11n HT40/ac VHT40 mode, the whole testing have assessed only, 802.11n HT20/40 by referring to their higher output power.



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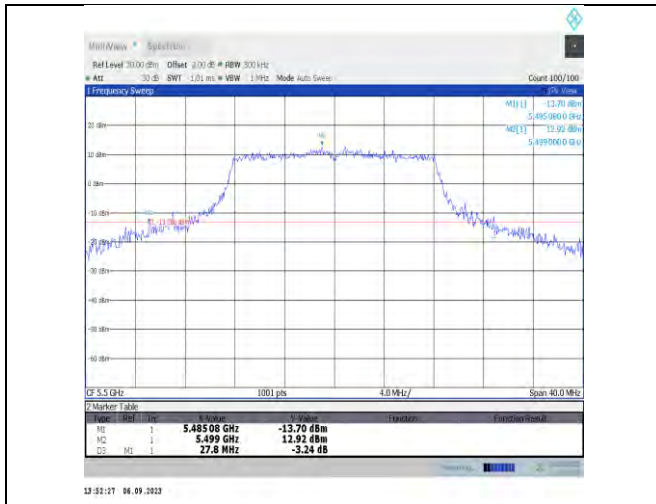
Test Graphs



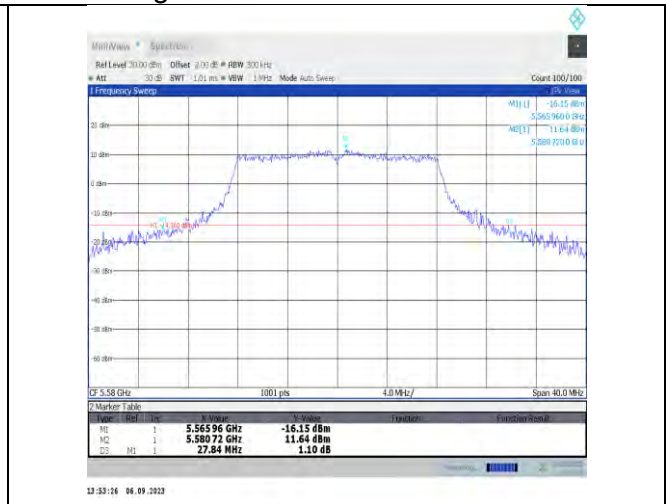
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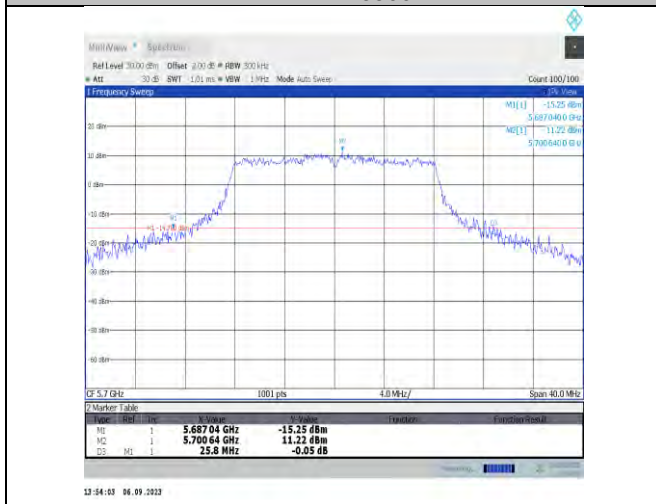
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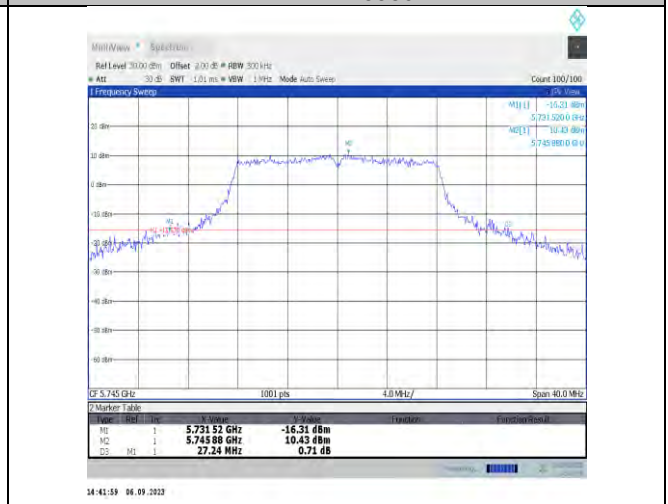
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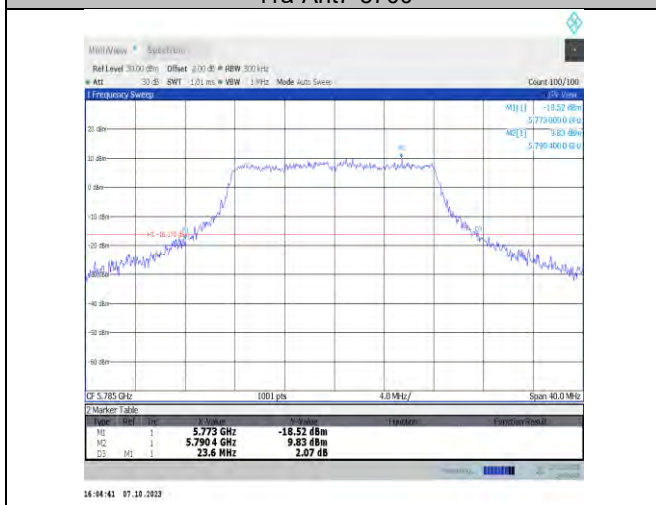
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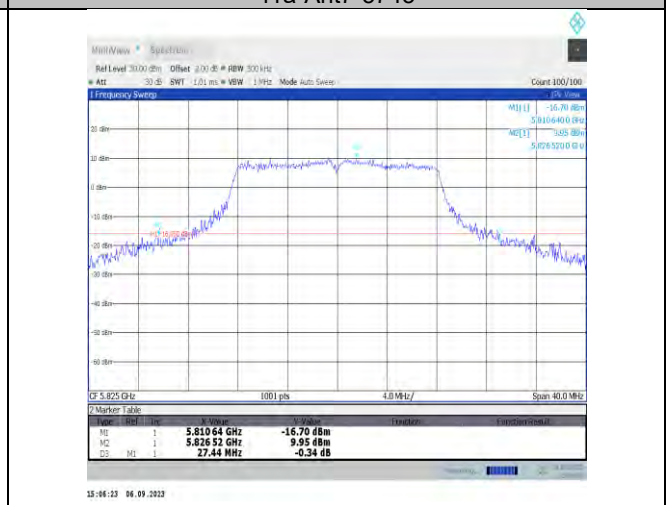
11a-Ant7-5700



11a-Ant7-5745



11a-Ant7-5785



11a-Ant7-5825



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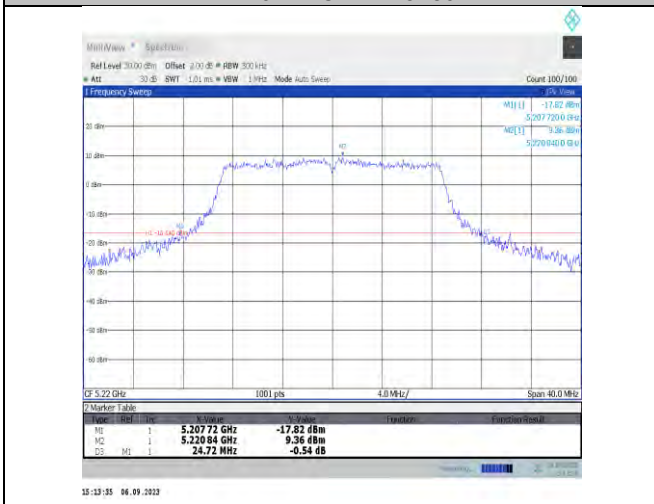
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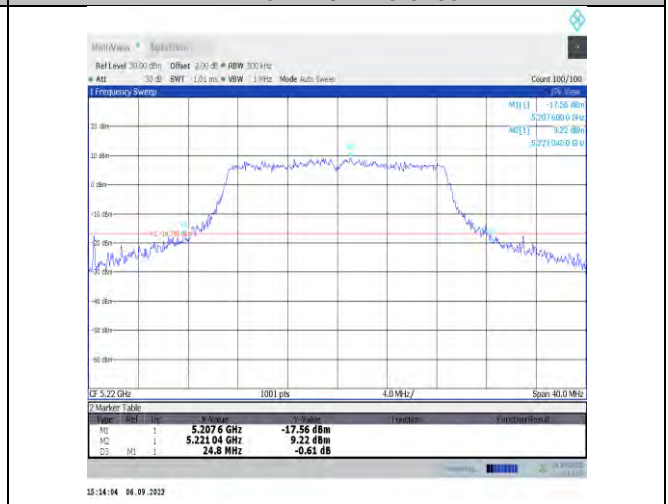
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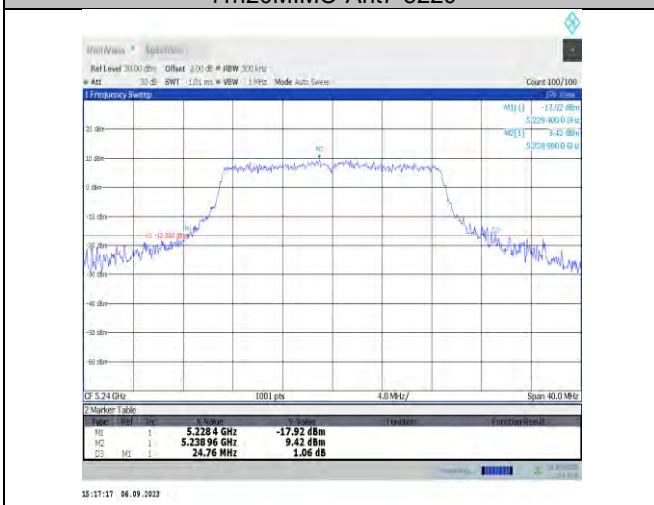
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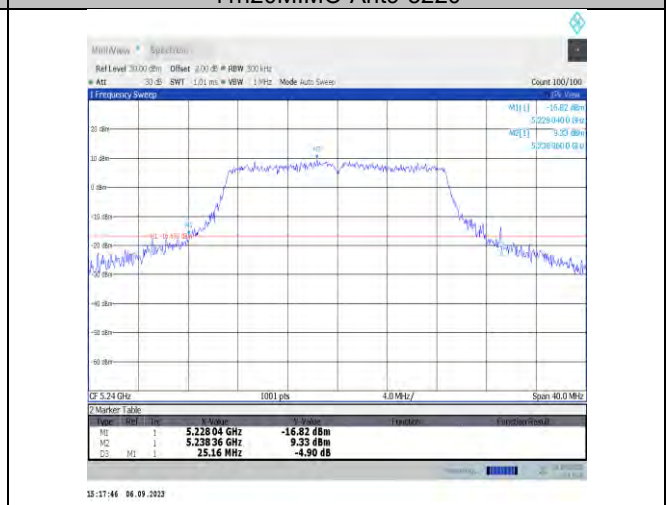
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11n20MIMO-Ant9-5220



11n20MIMO-Ant7-5240

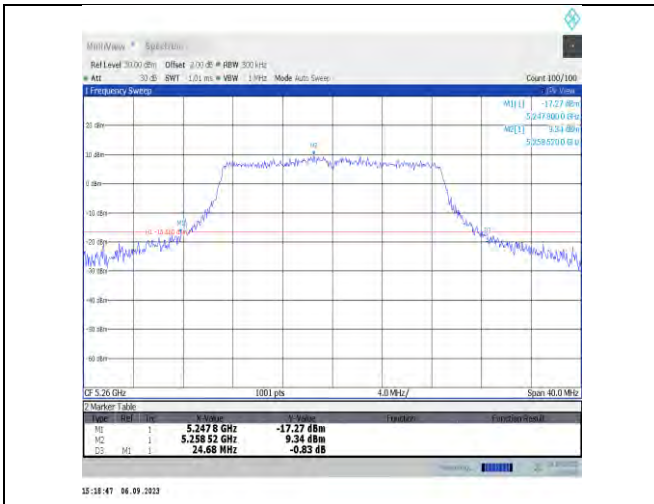


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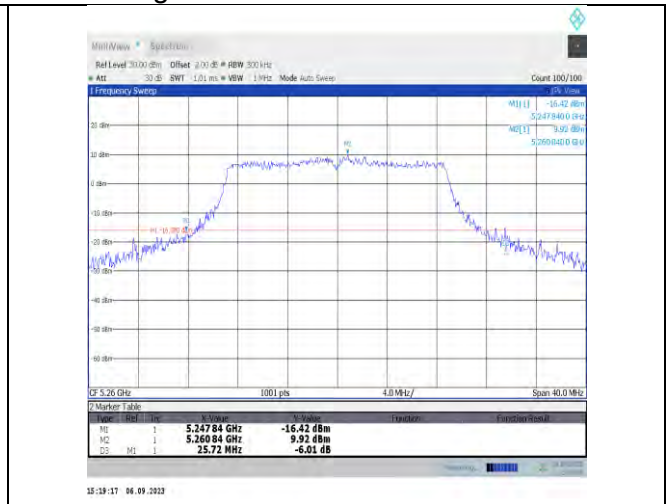


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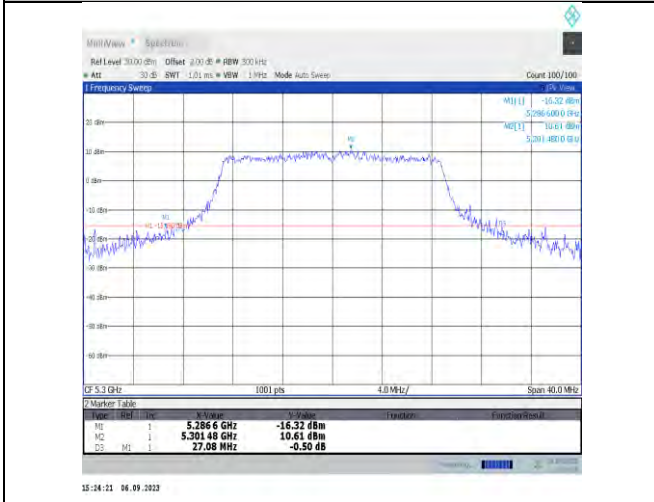
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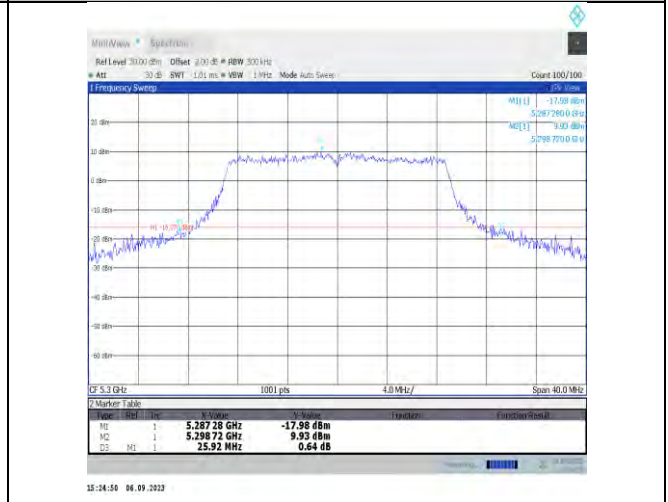
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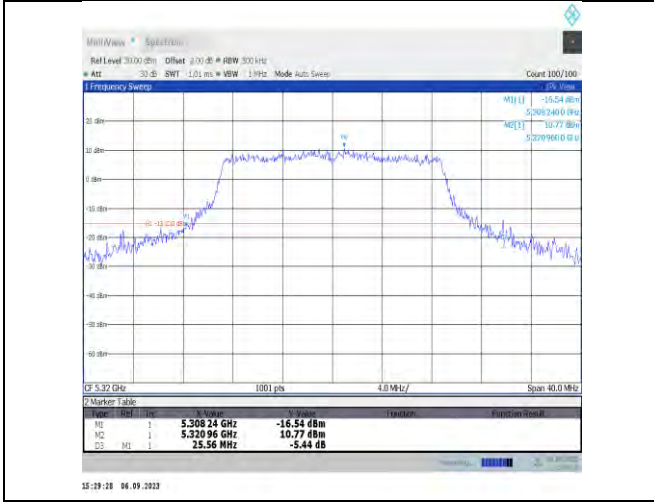
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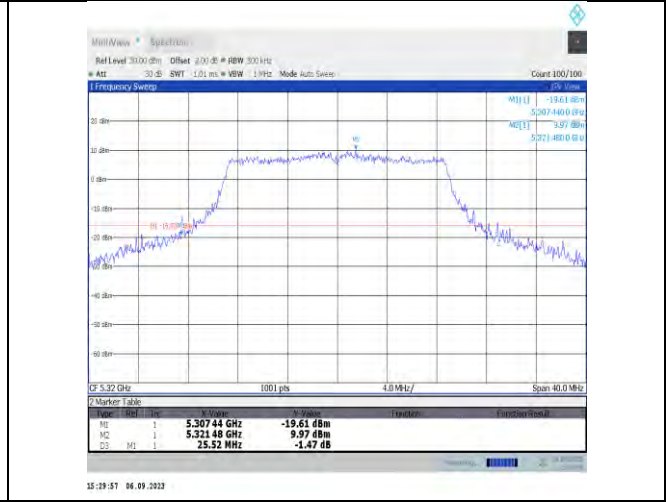
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11n20MIMO-Ant9-5300



11n20MIMO-Ant7-5320

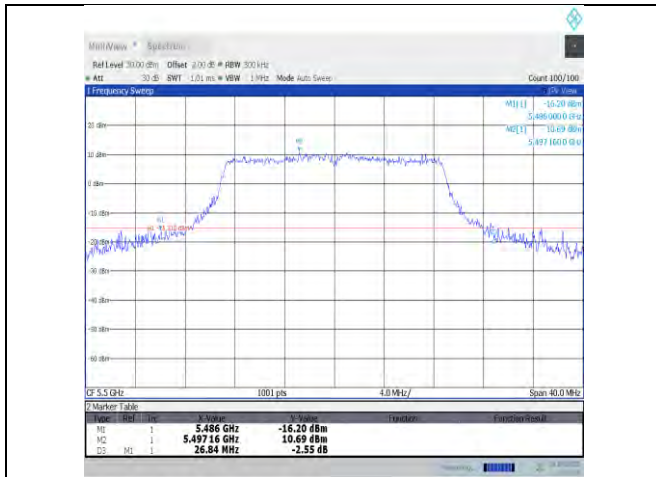


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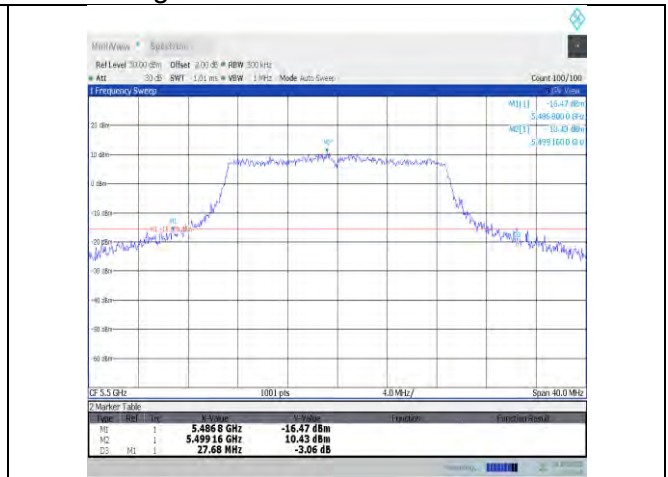


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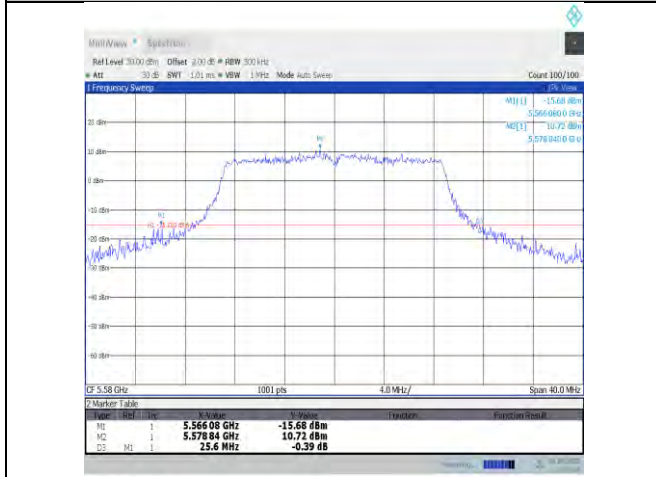
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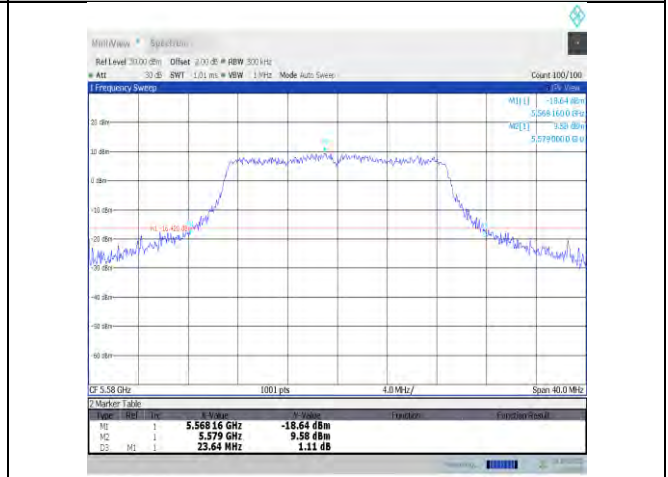
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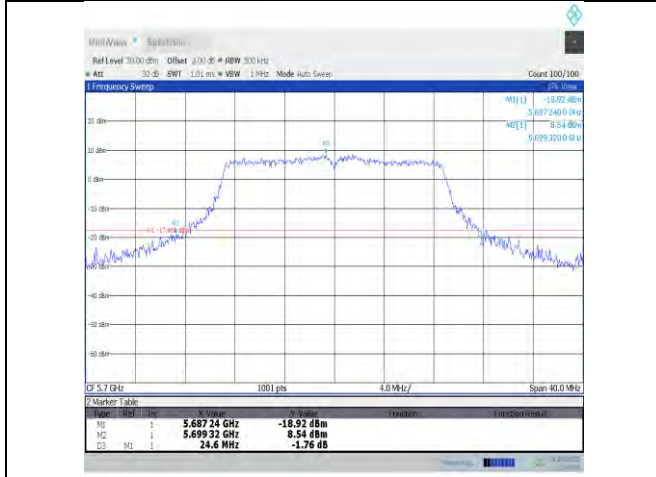
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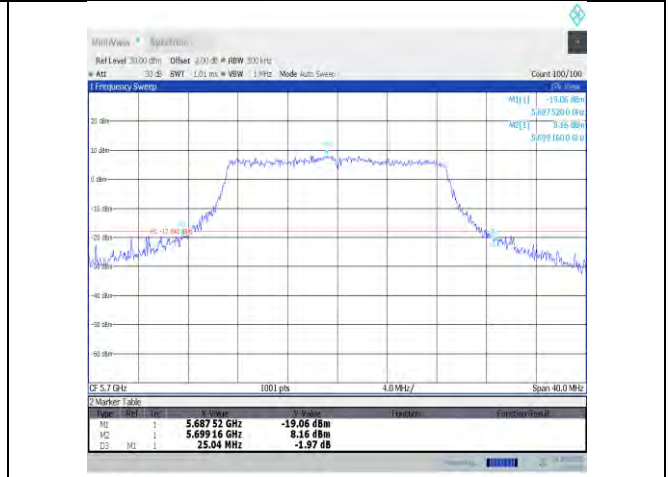
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11n20MIMO-Ant9-5580



11n20MIMO-Ant7-5700

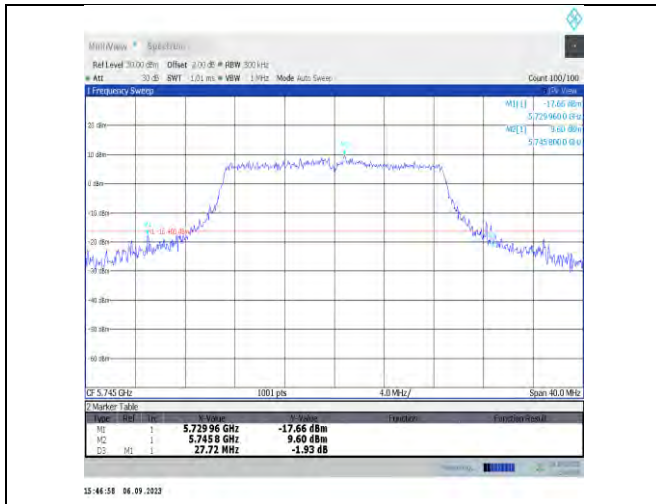


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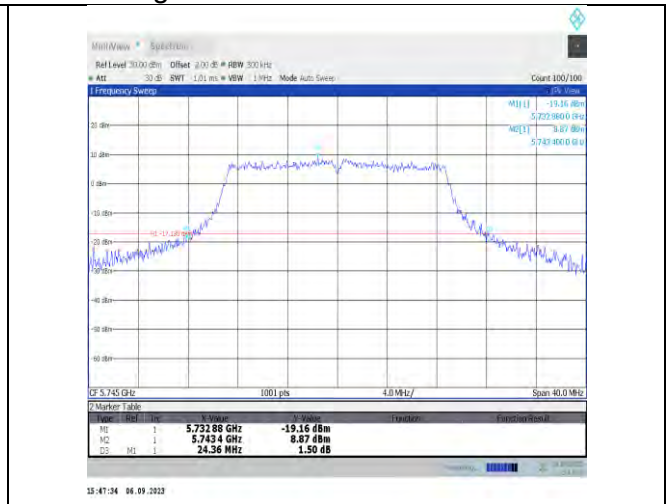


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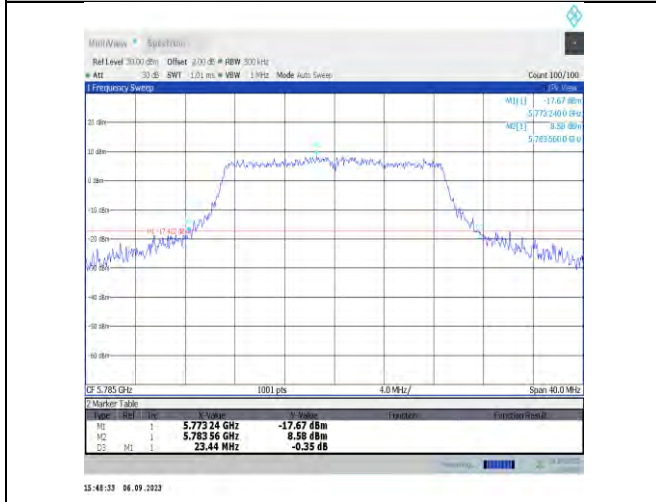
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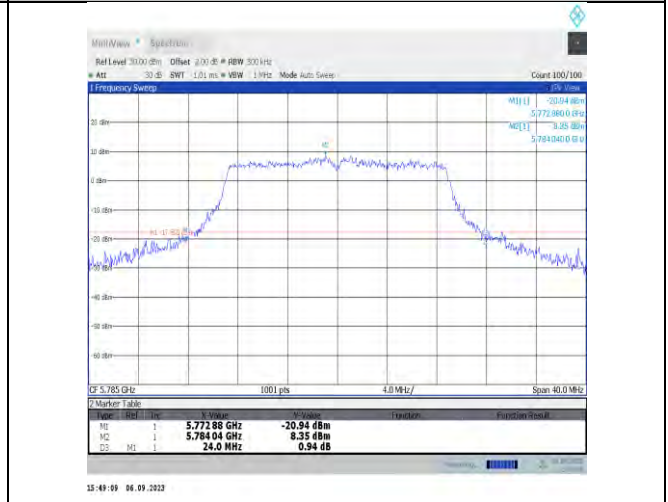
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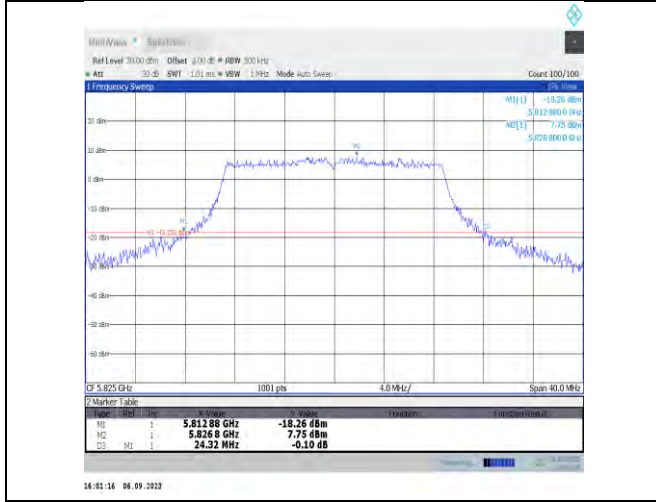
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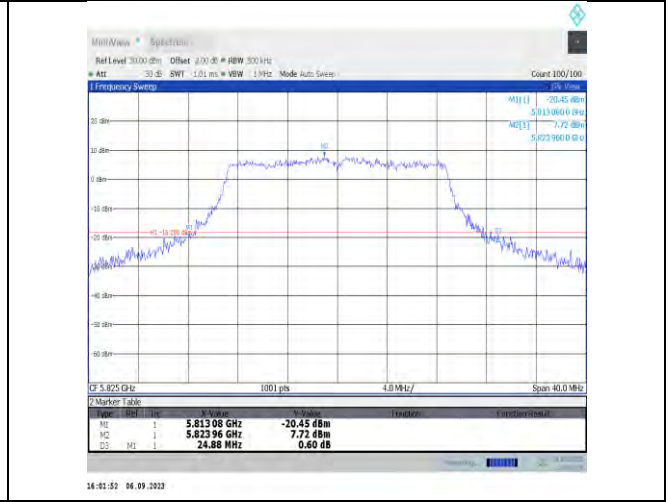
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11n20MIMO-Ant9-5785



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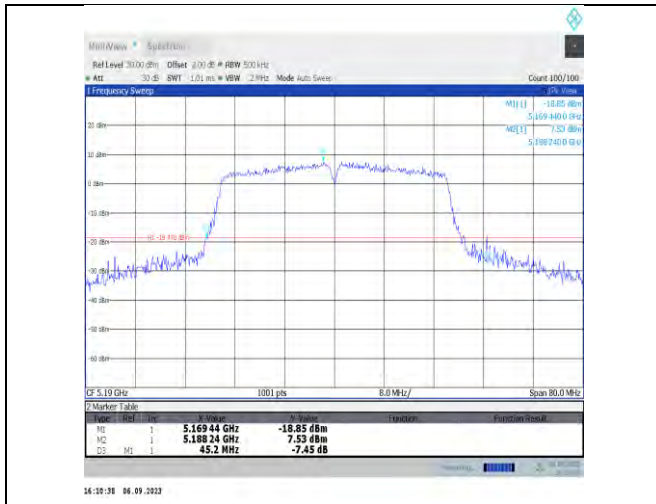


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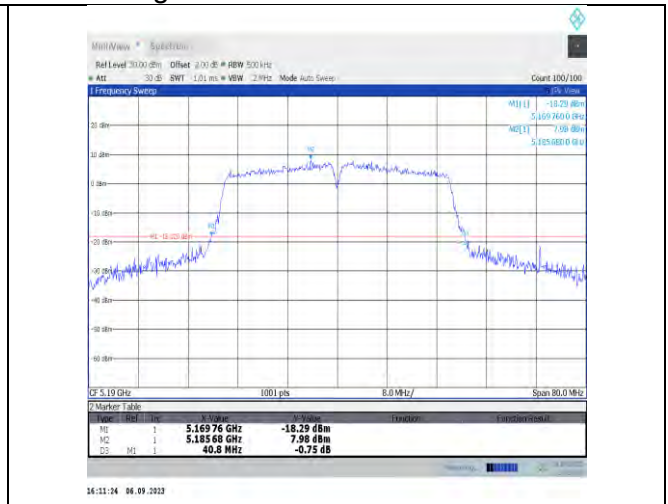


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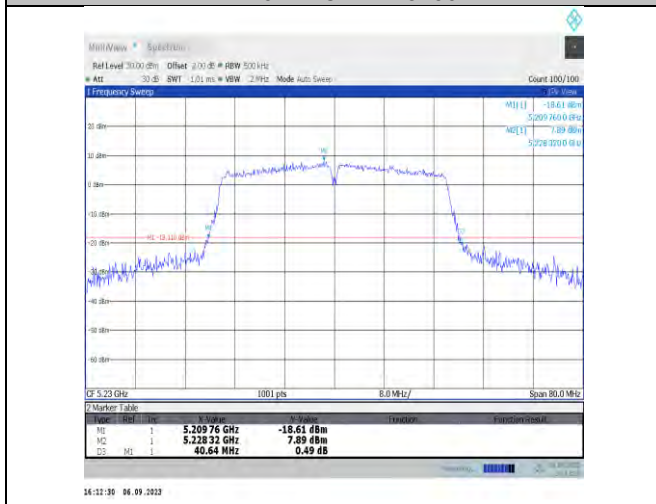
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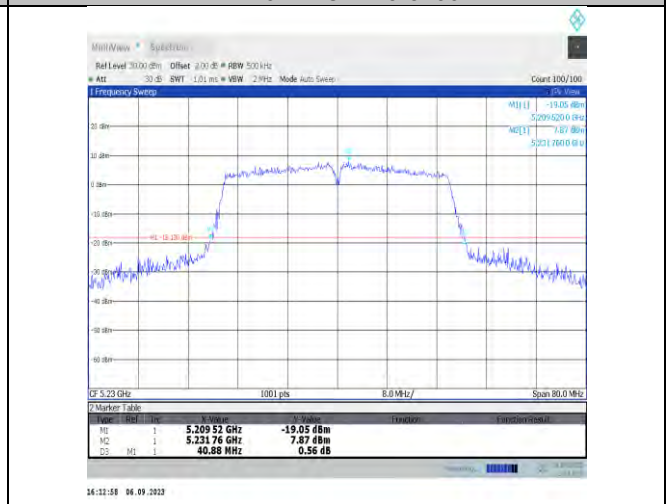
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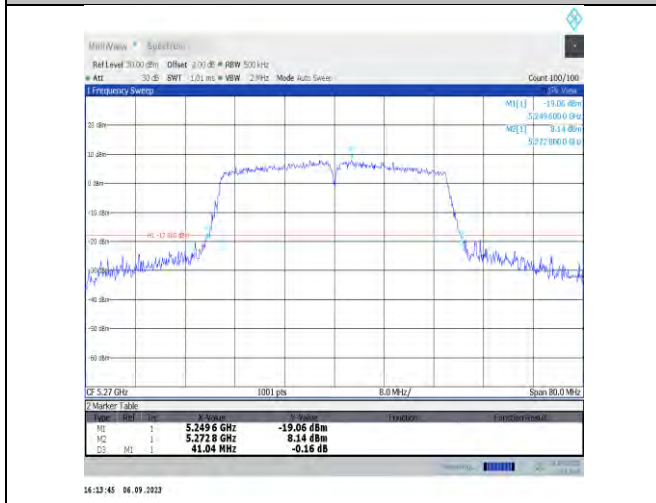
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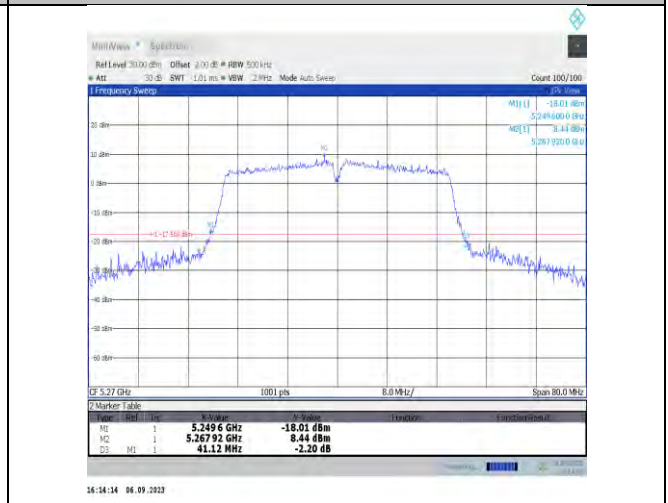
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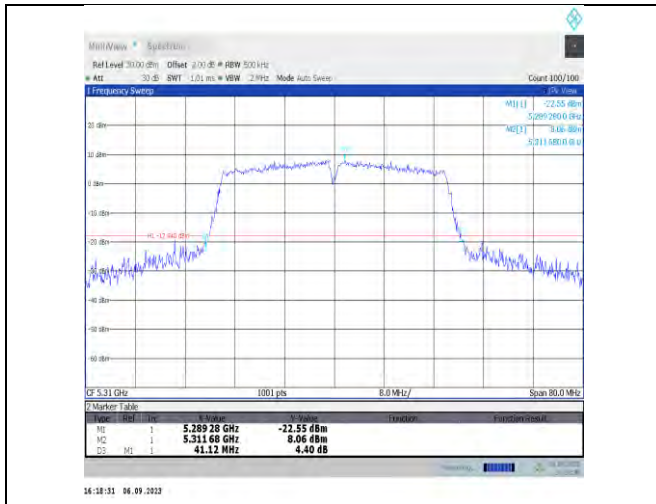


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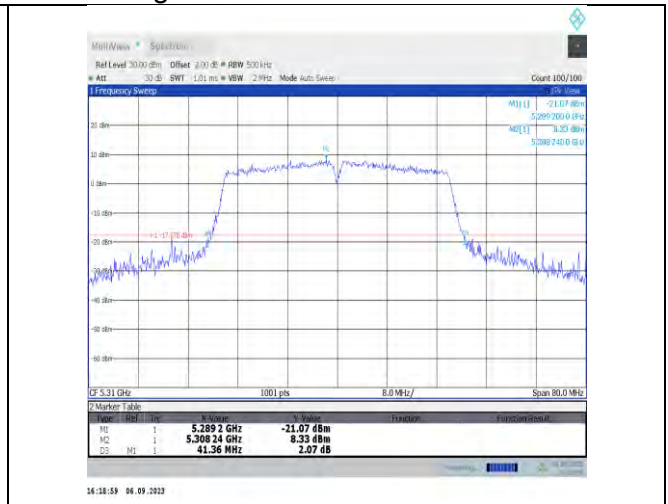


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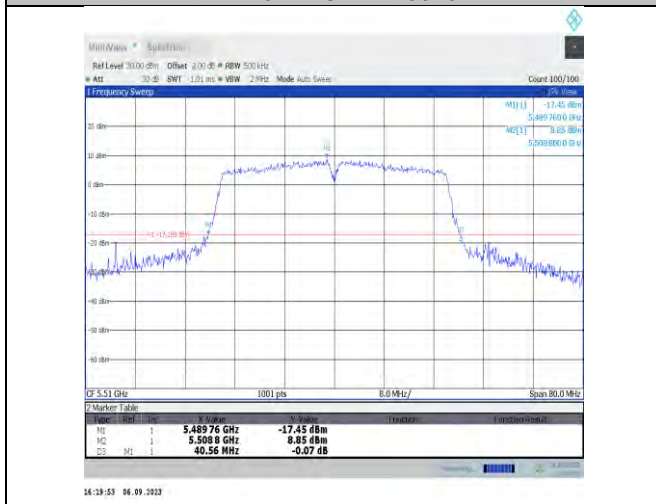
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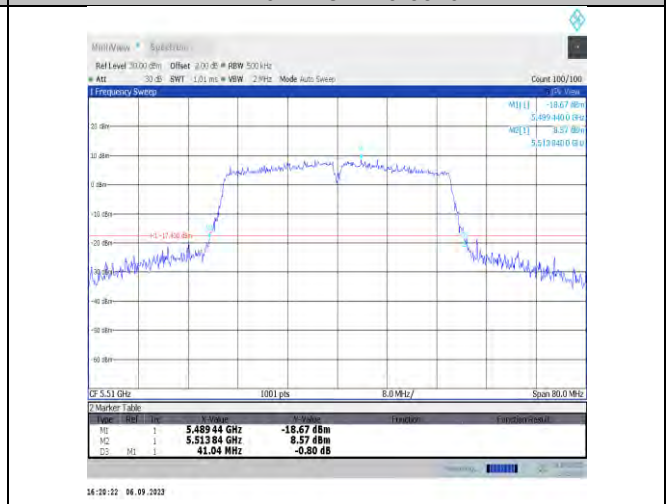
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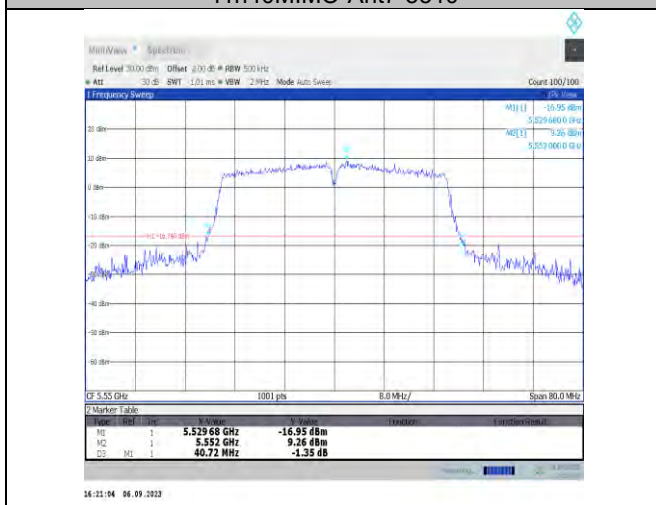
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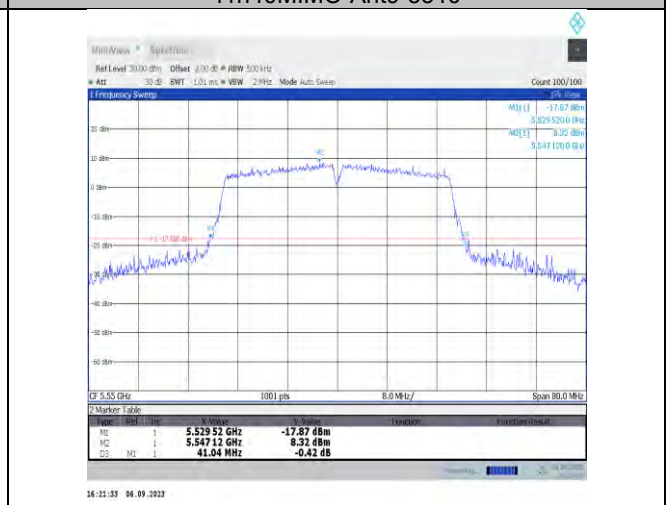
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11n40MIMO-Ant9-5510



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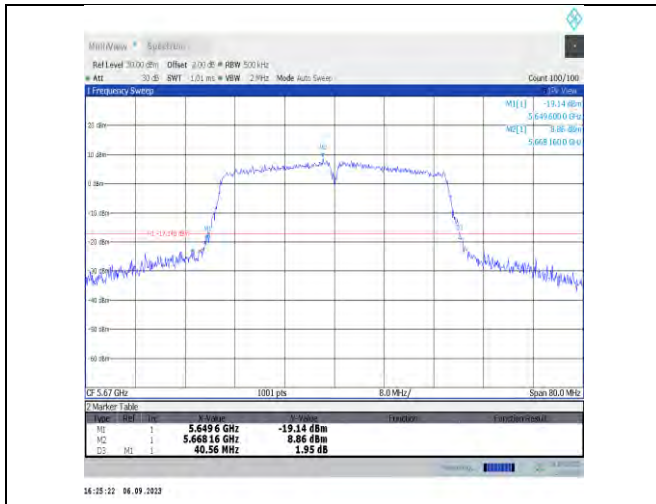


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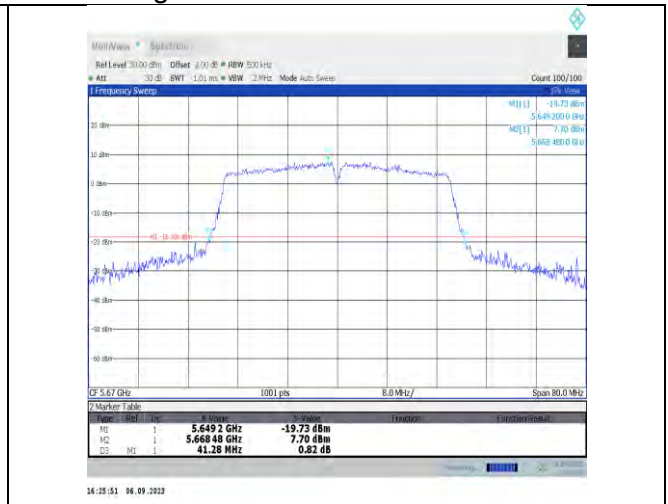


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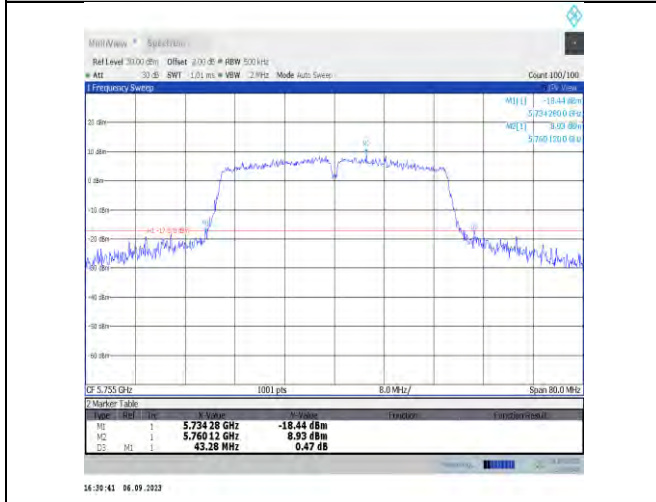
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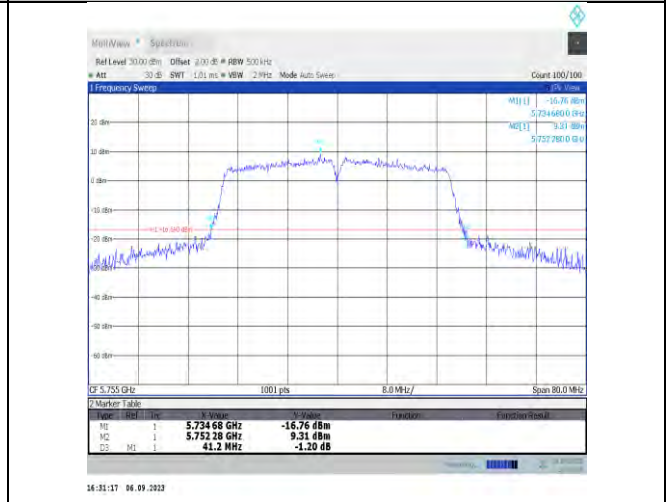
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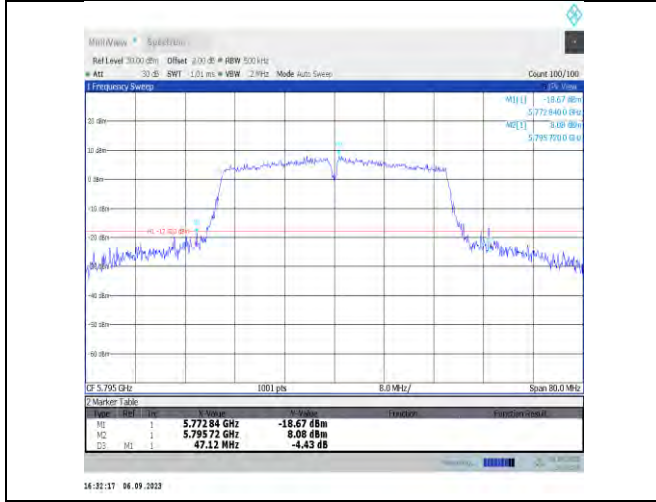
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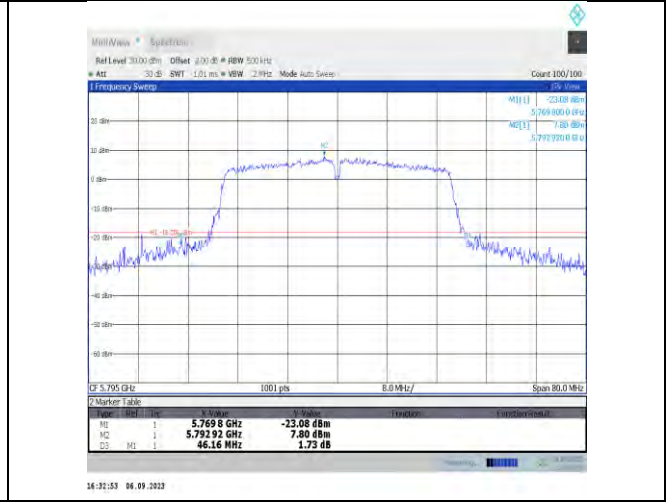
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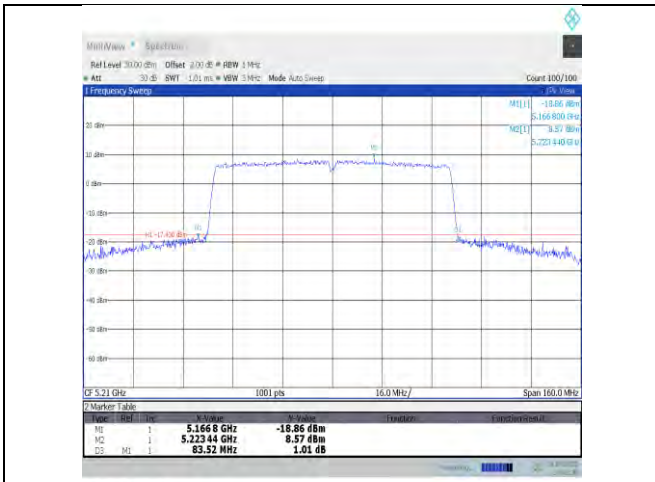


11n40MIMO-Ant9-5795



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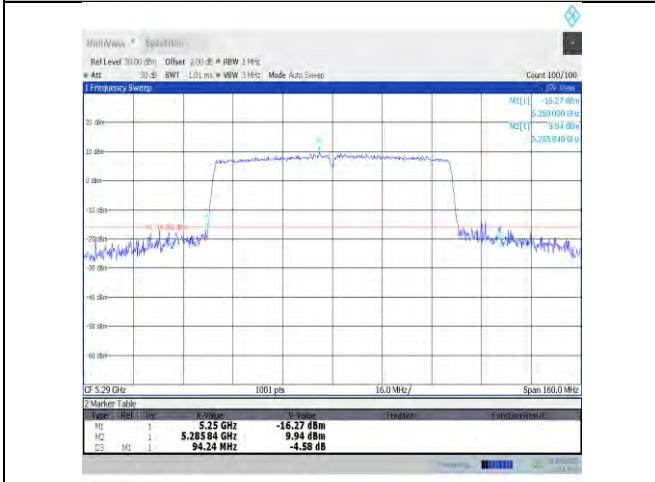
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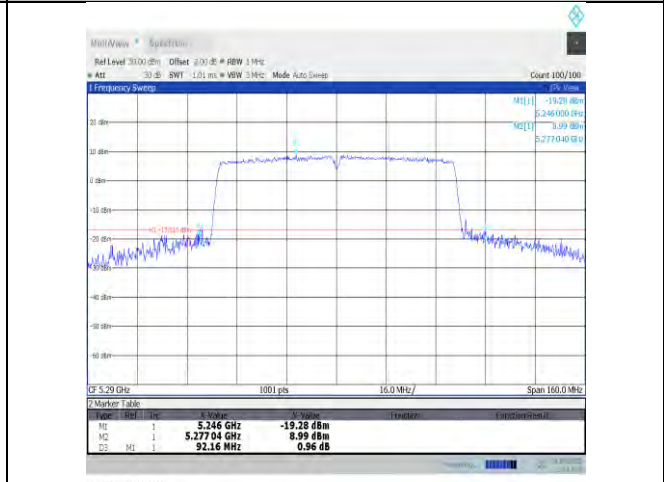
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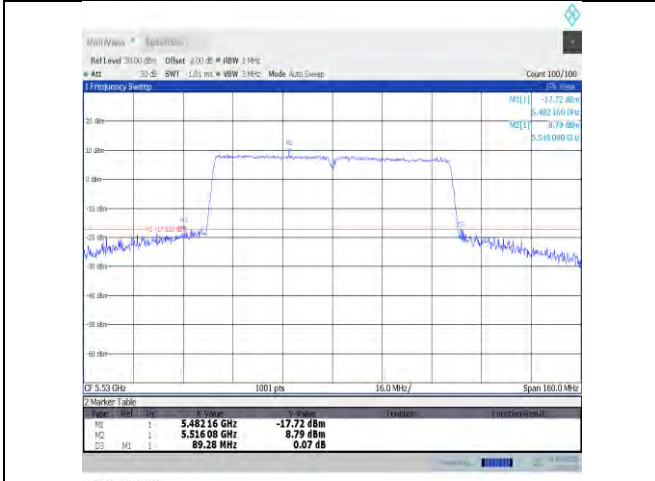
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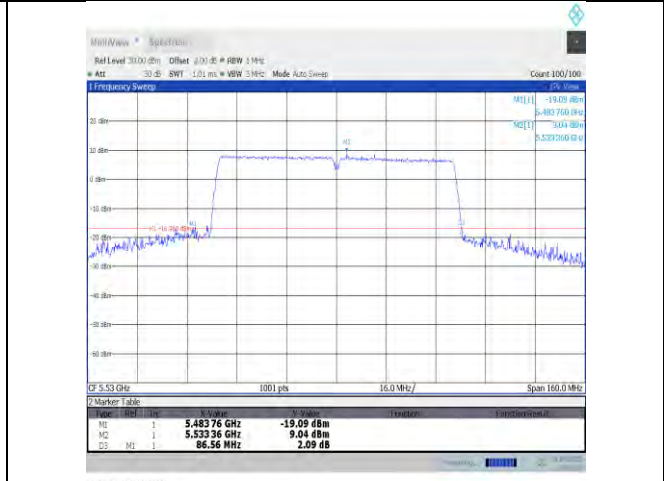
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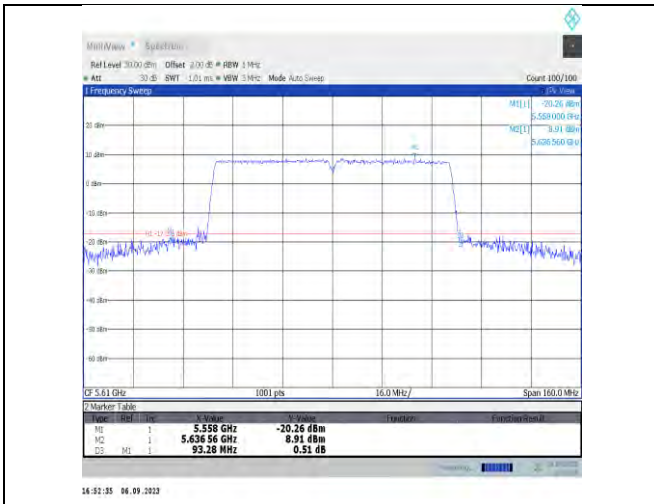


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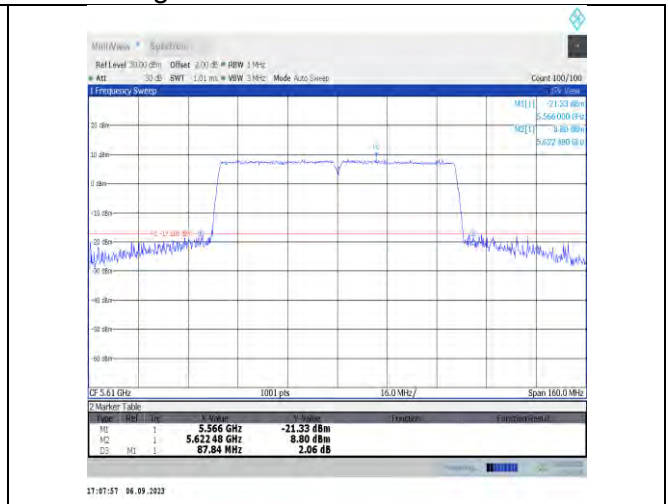


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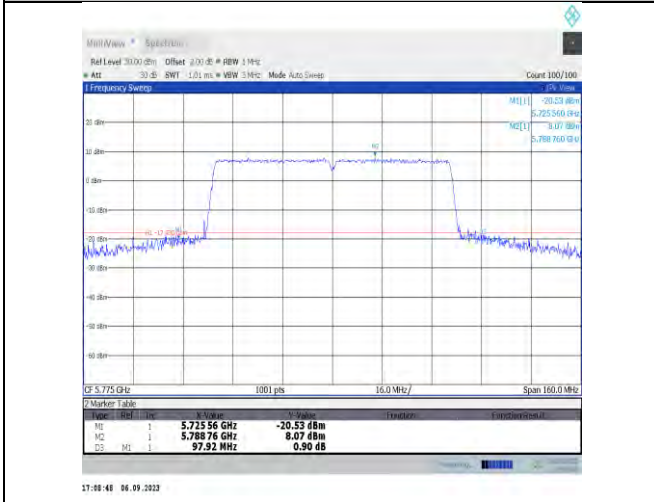
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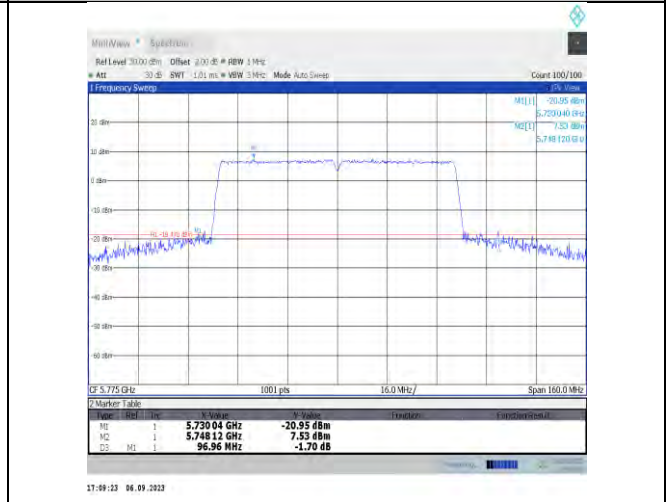
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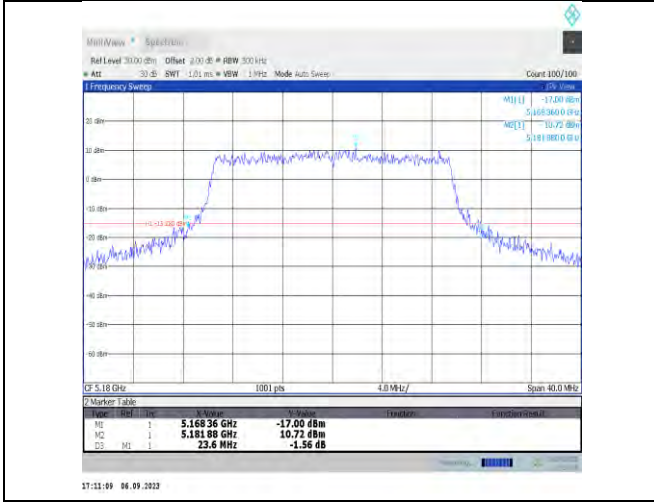
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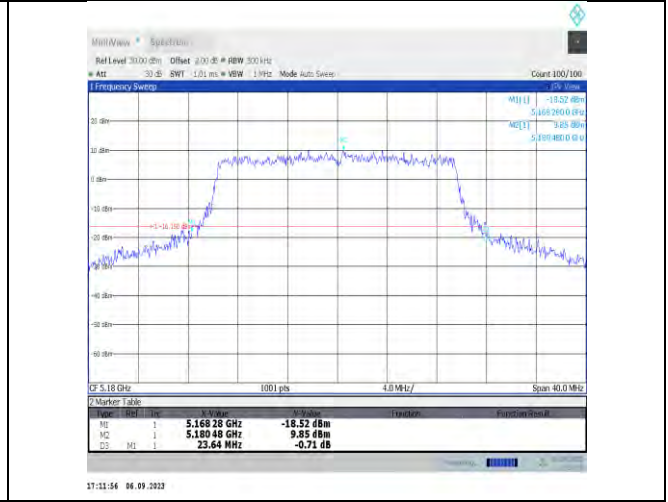
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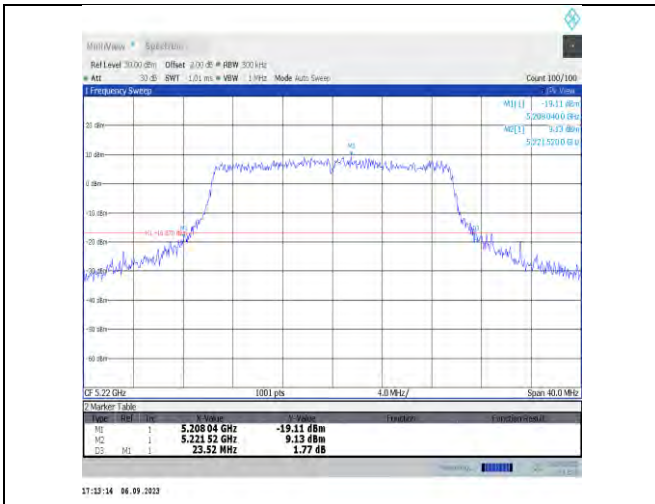


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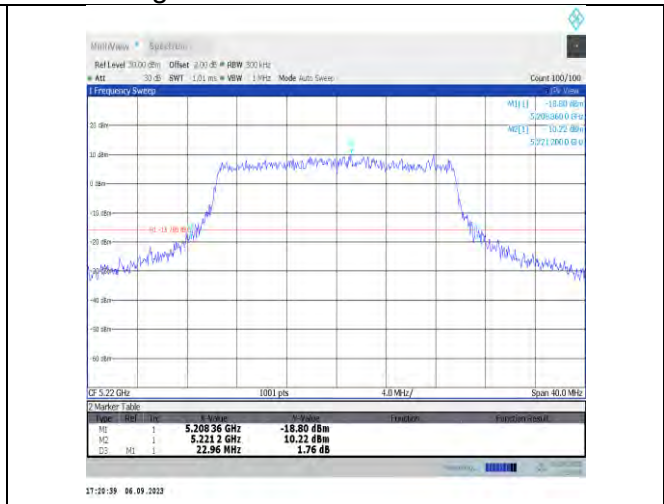


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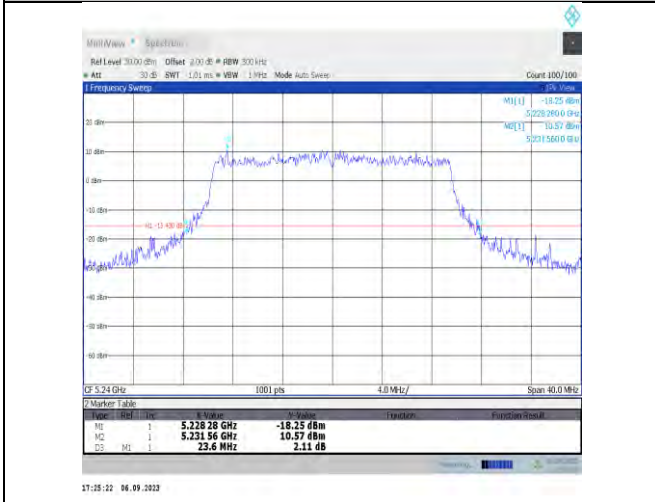
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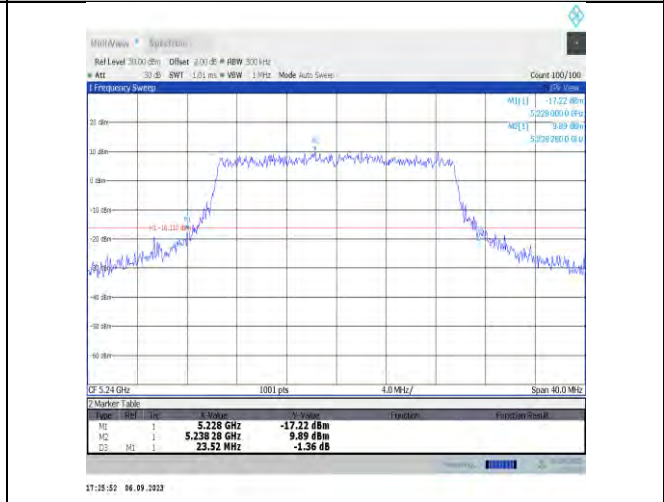
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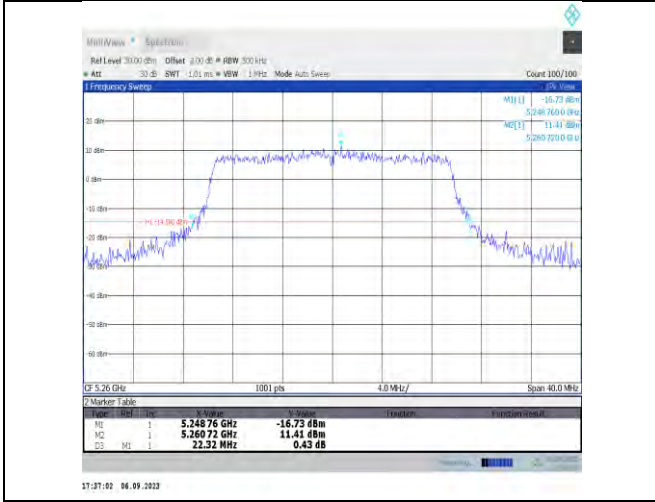
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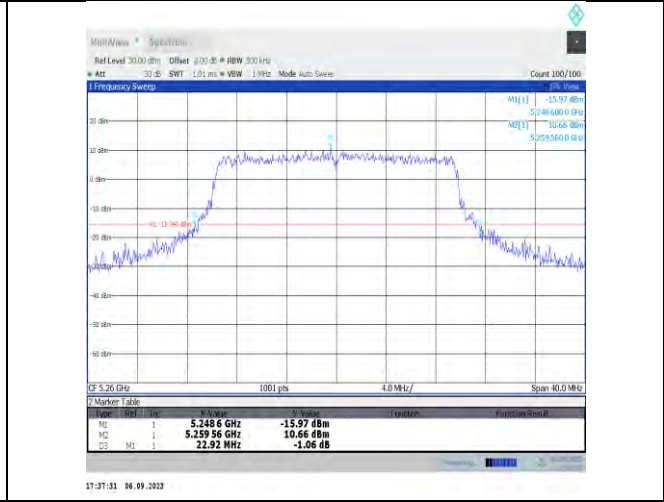
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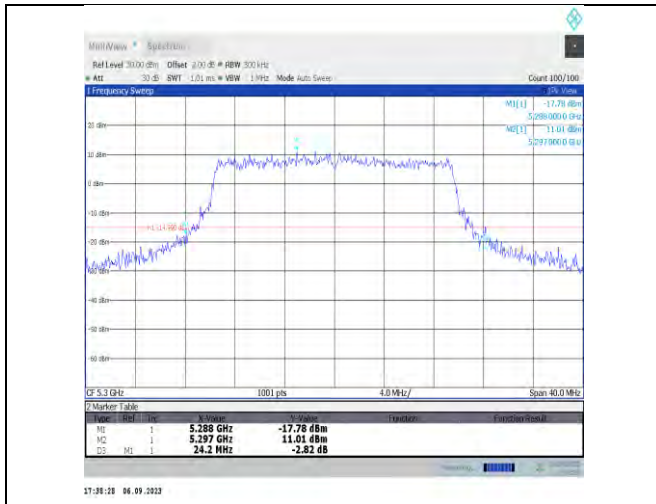


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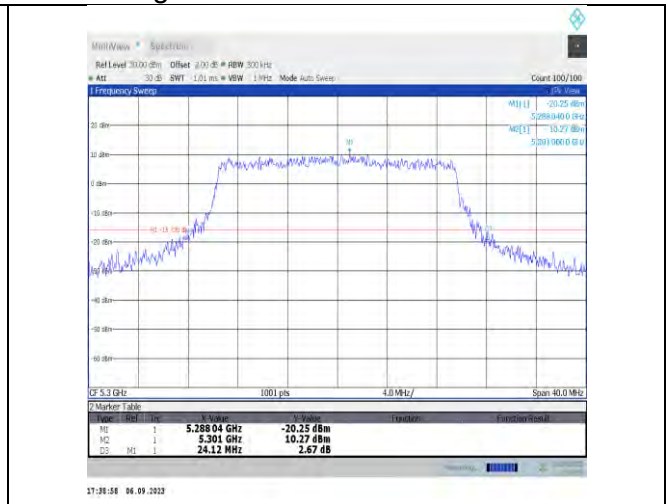


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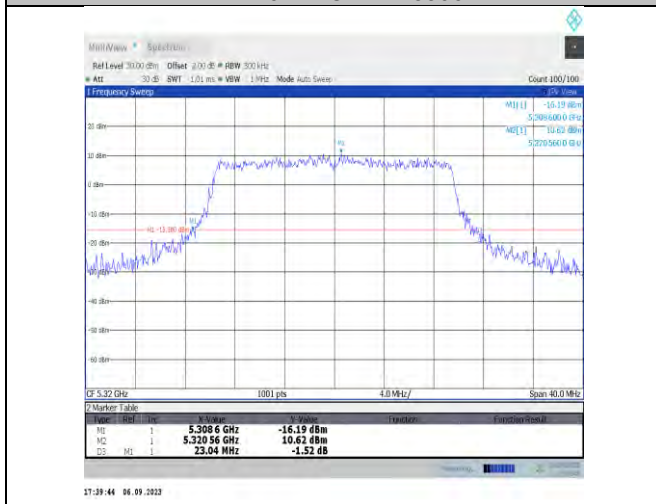
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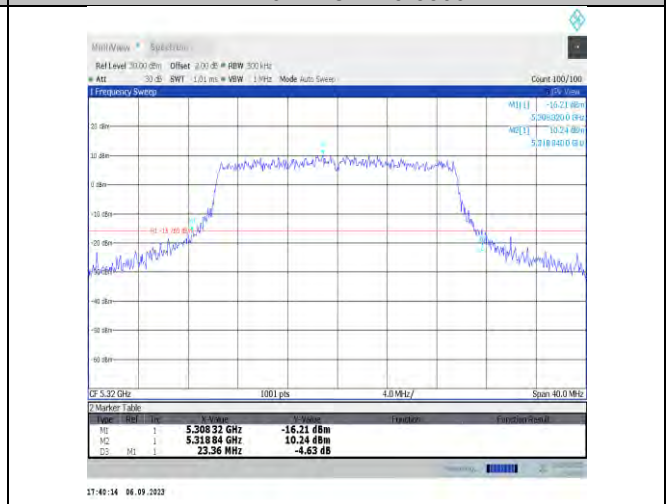
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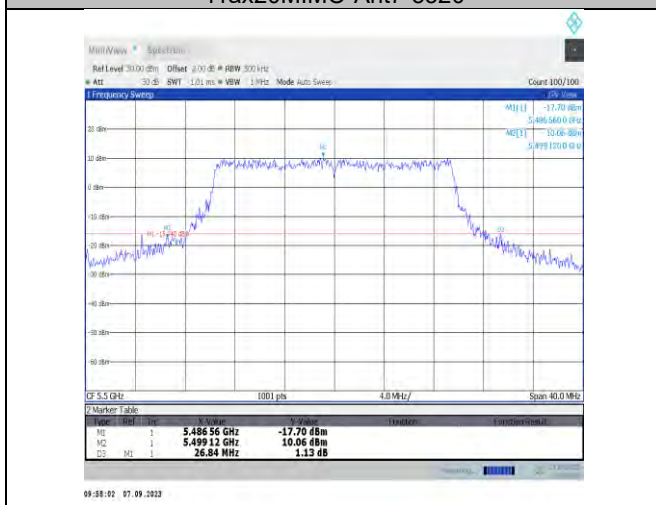
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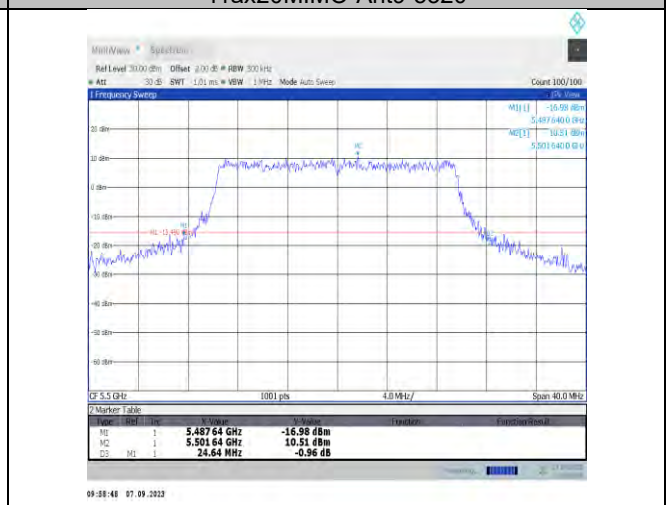
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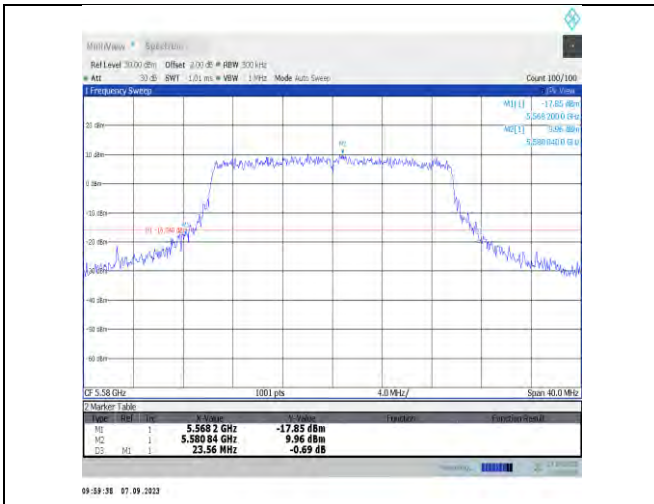


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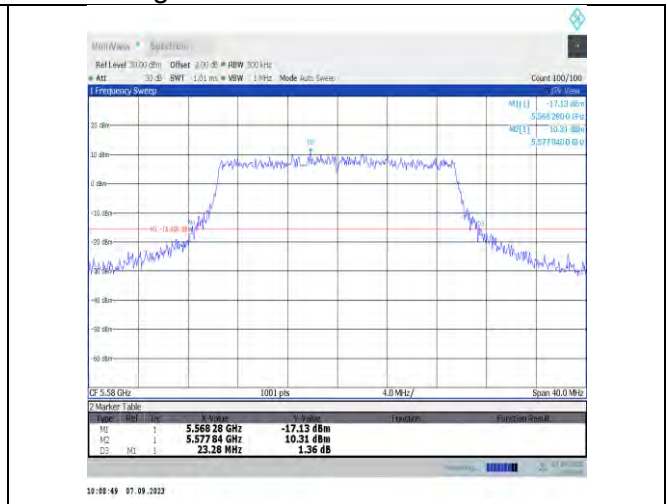


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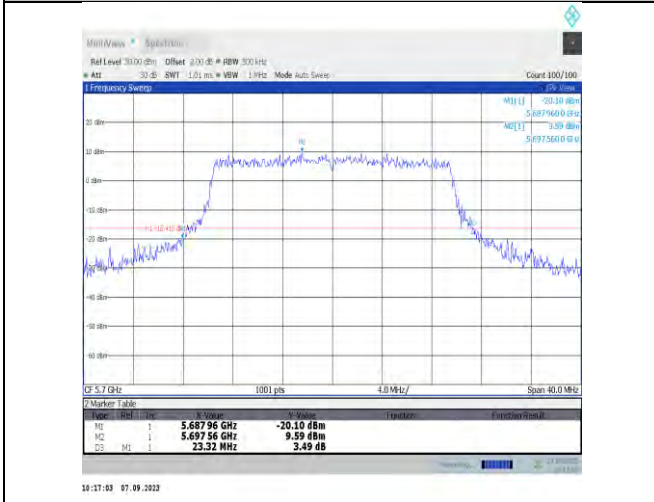
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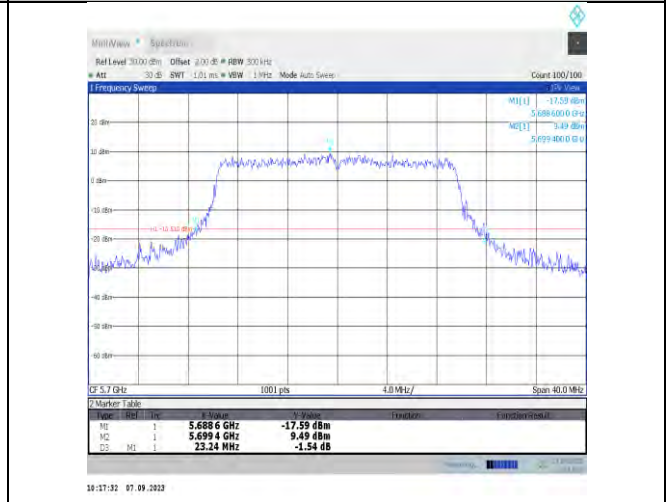
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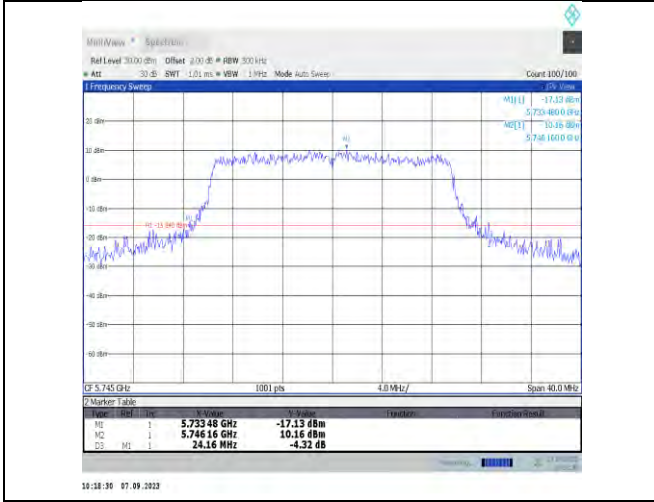
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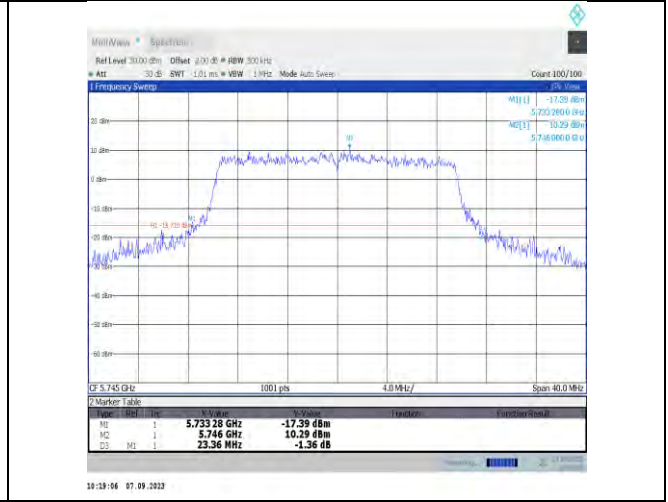
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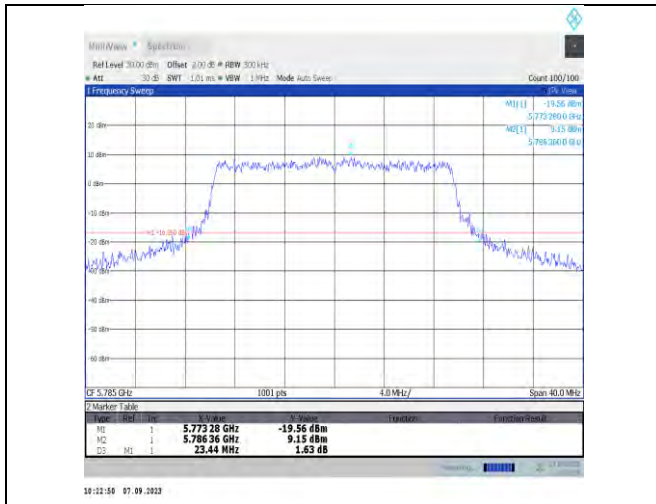


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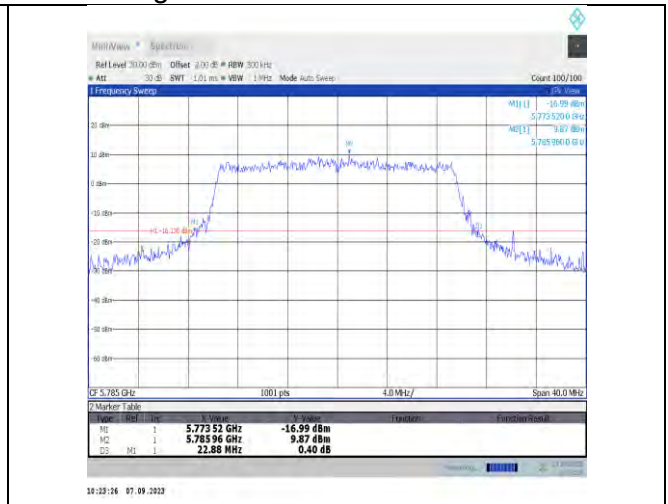


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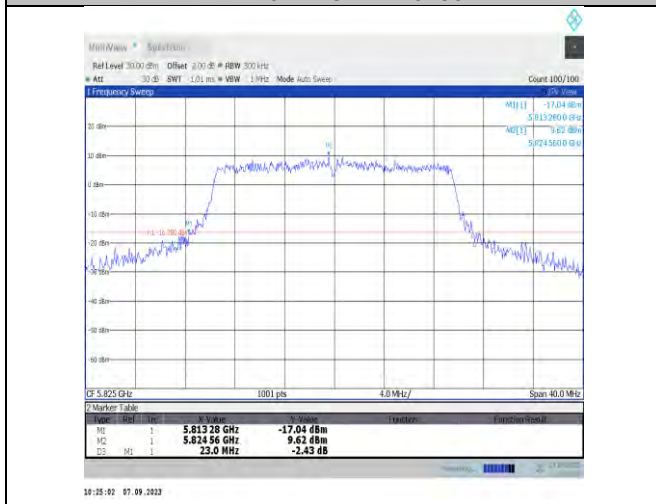
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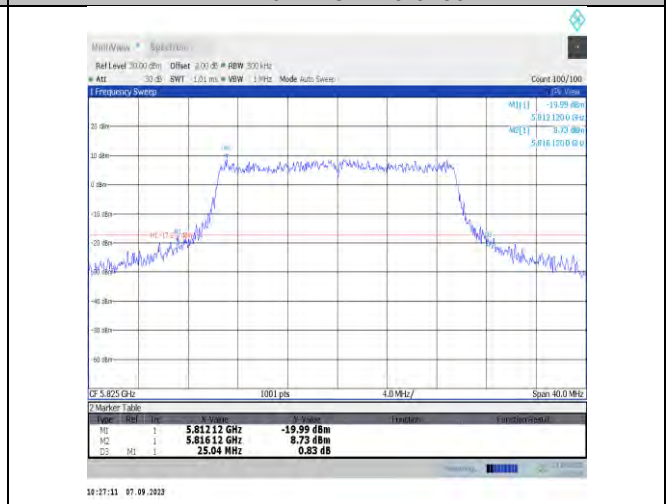
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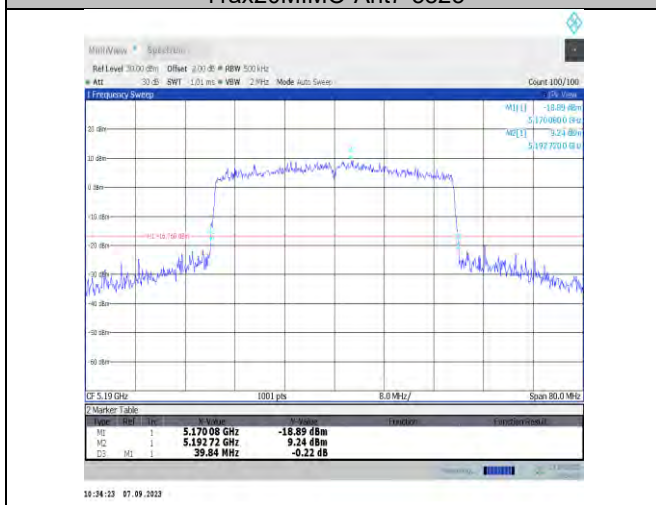
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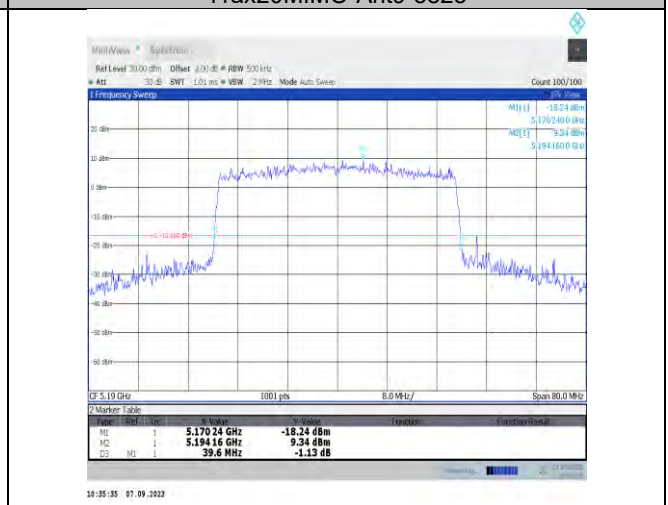
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11ax20MIMO-Ant9-5825



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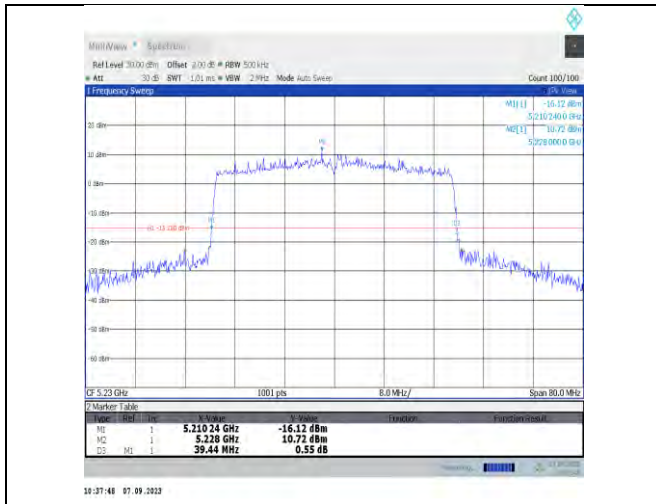


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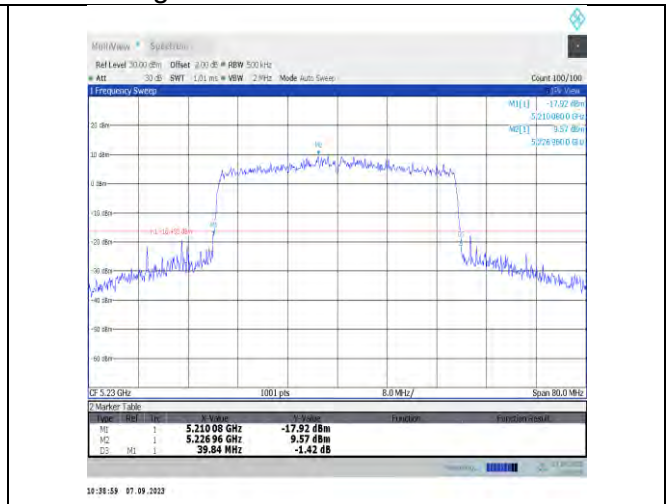


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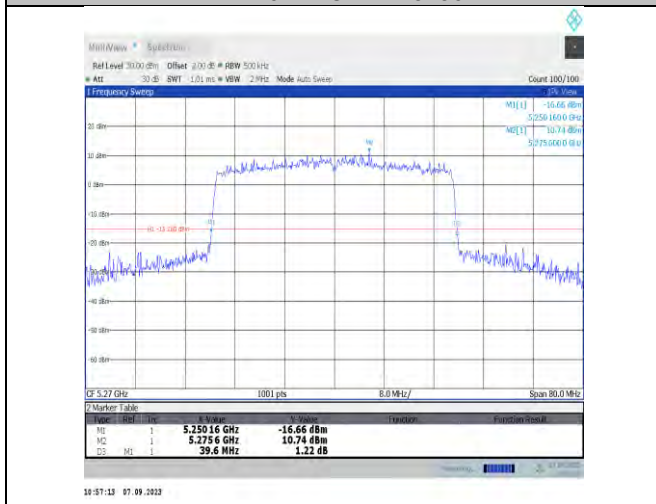
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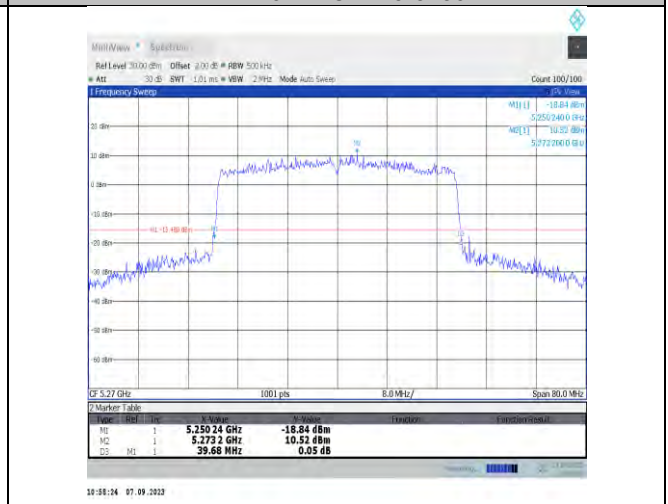
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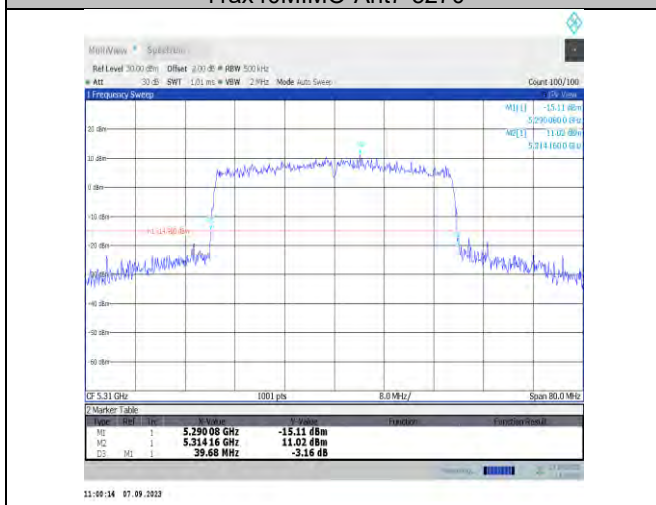
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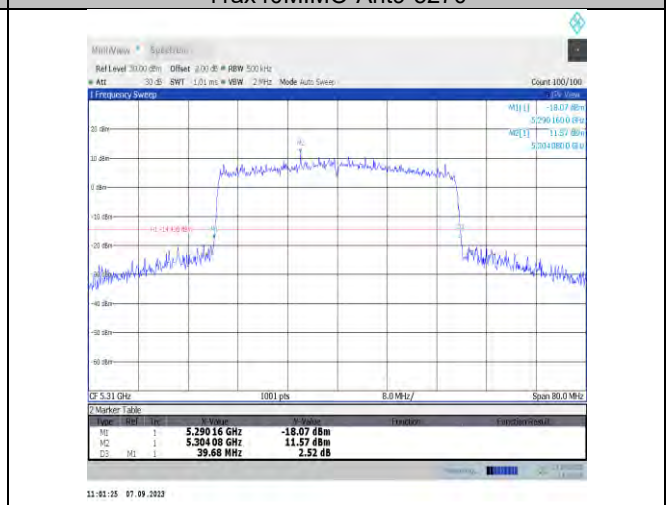
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11ax40MIMO-Ant9-5270



11ax40MIMO-Ant7-5310

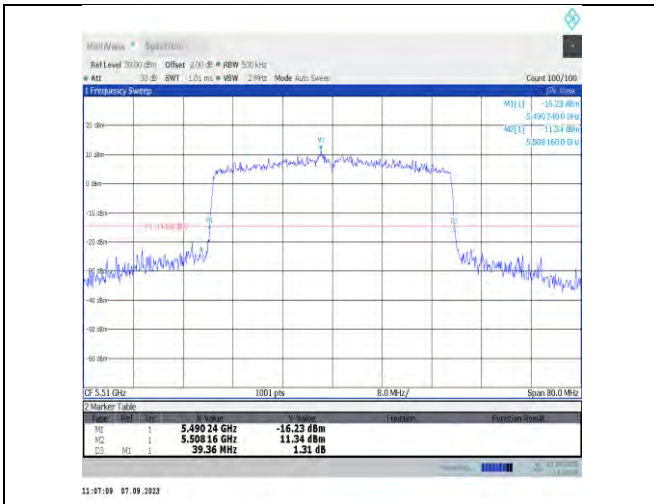


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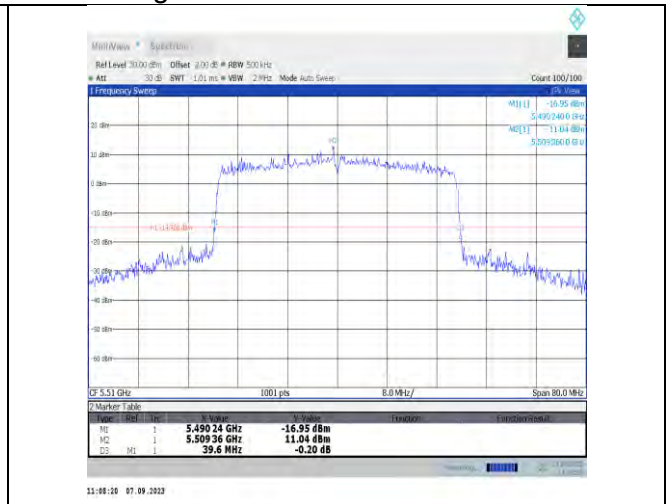


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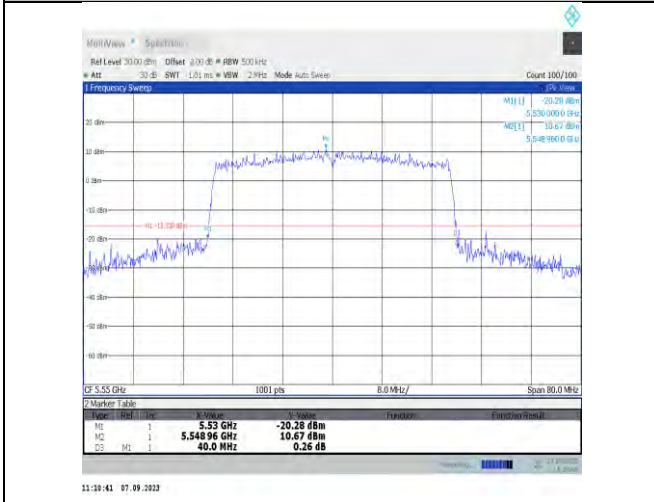
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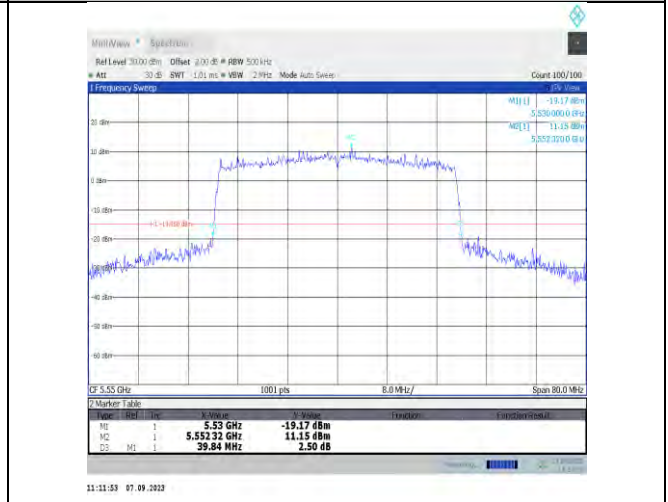
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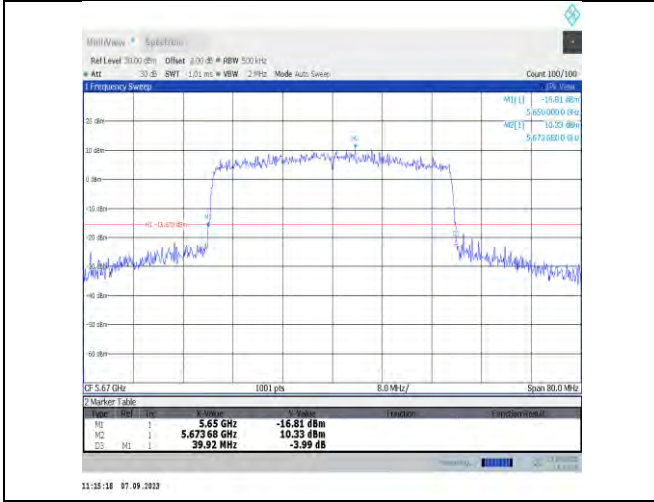
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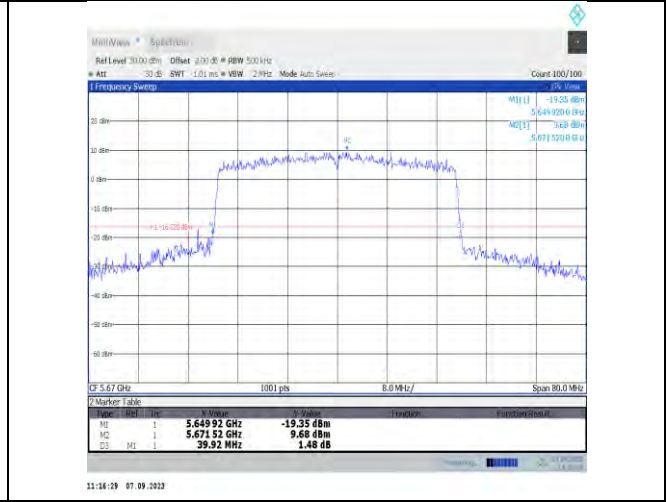
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11ax40MIMO-Ant9-5550



11ax40MIMO-Ant7-5670

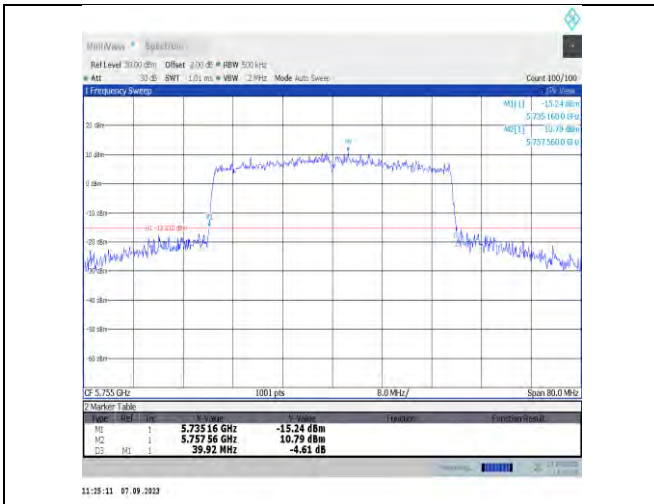


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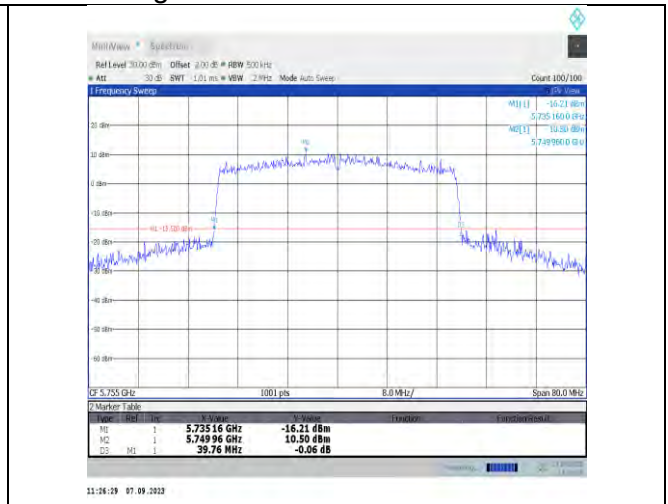


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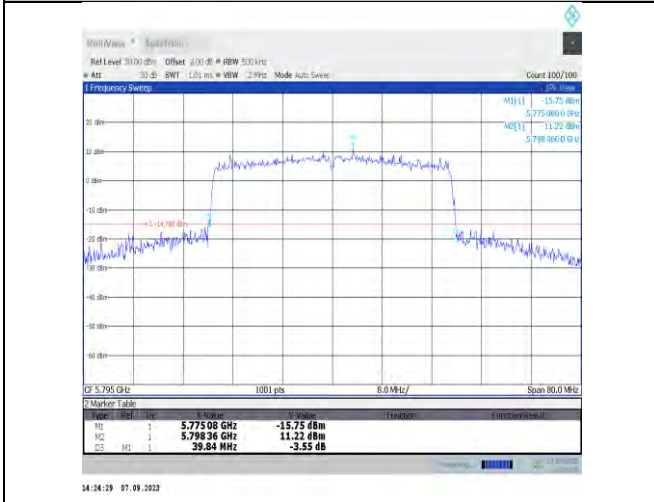
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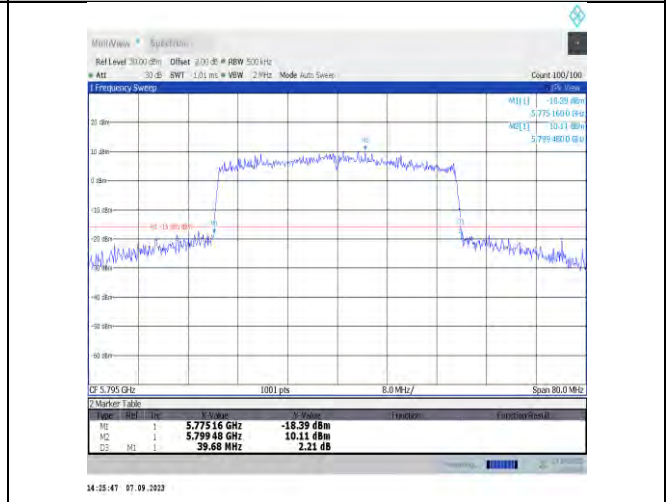
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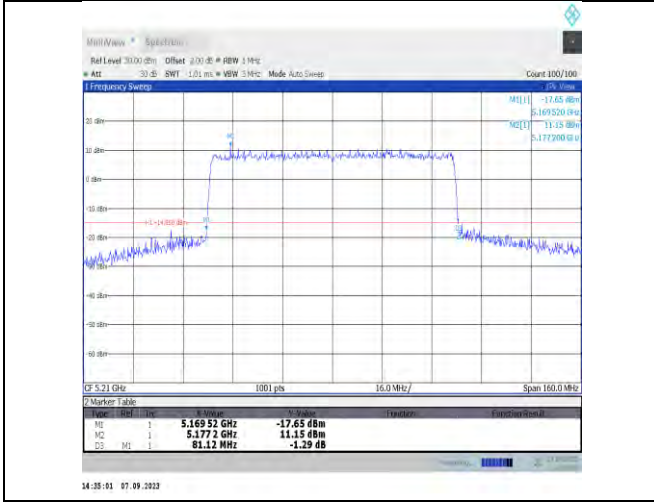
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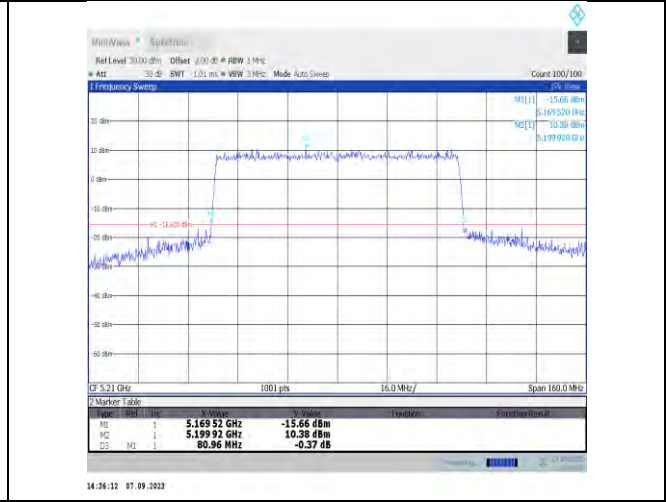
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11ax40MIMO-Ant9-5795



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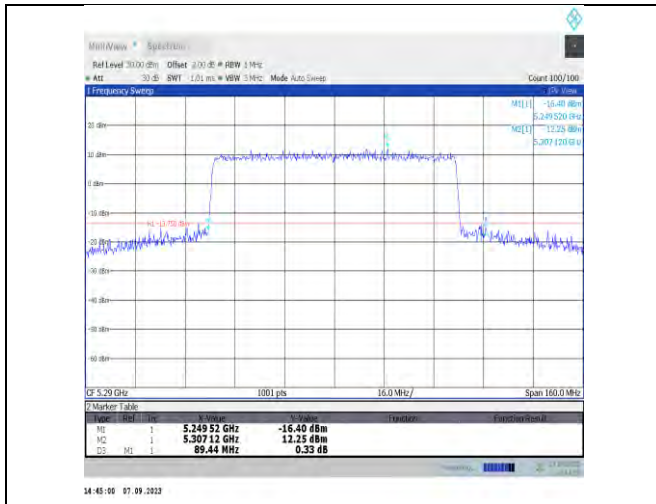


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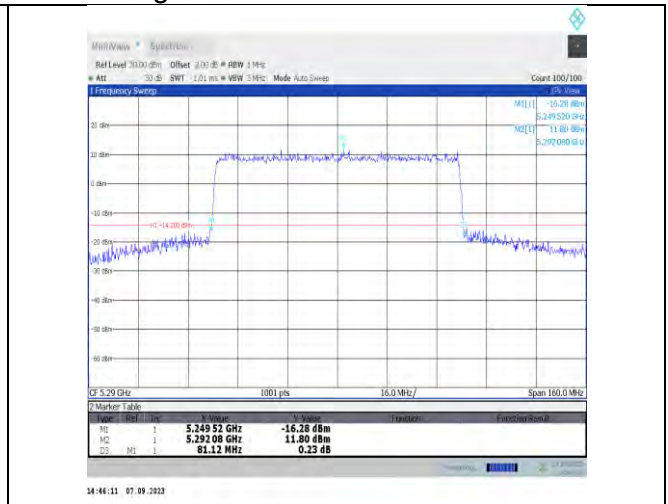


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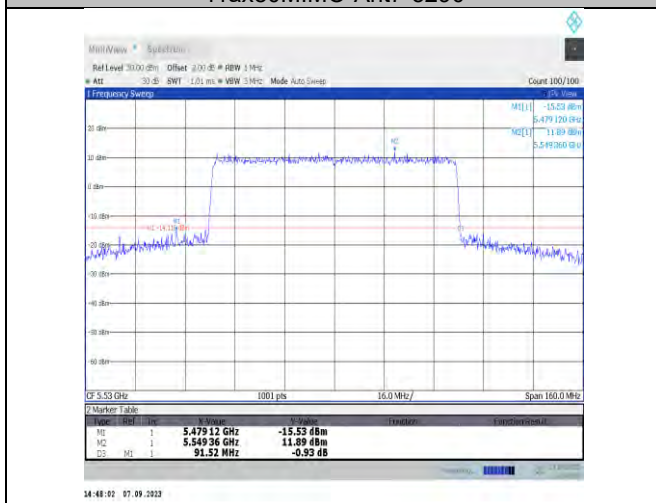
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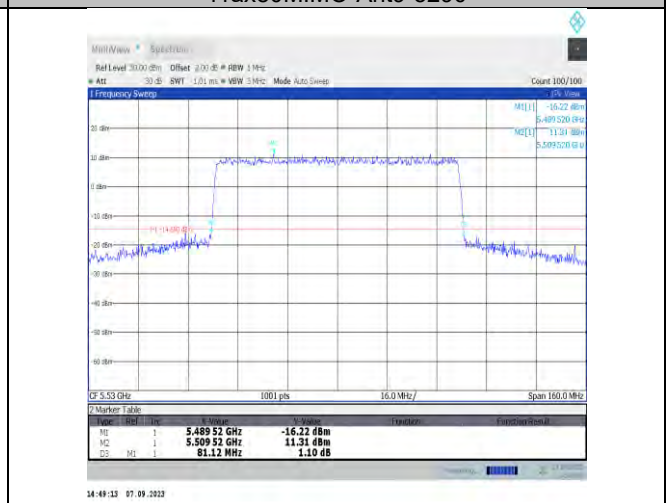
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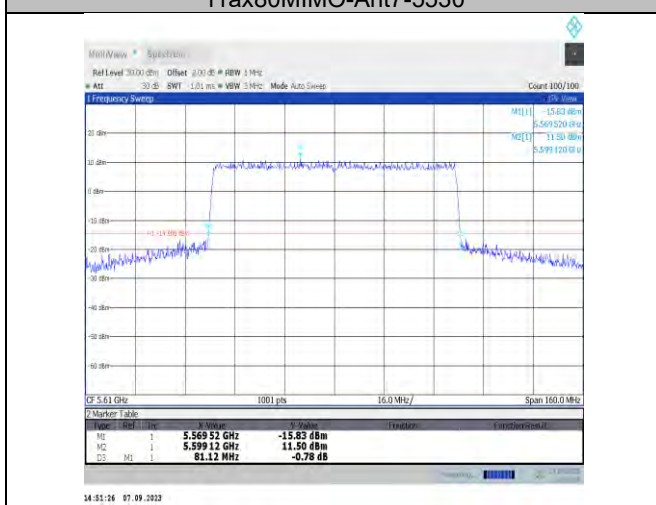
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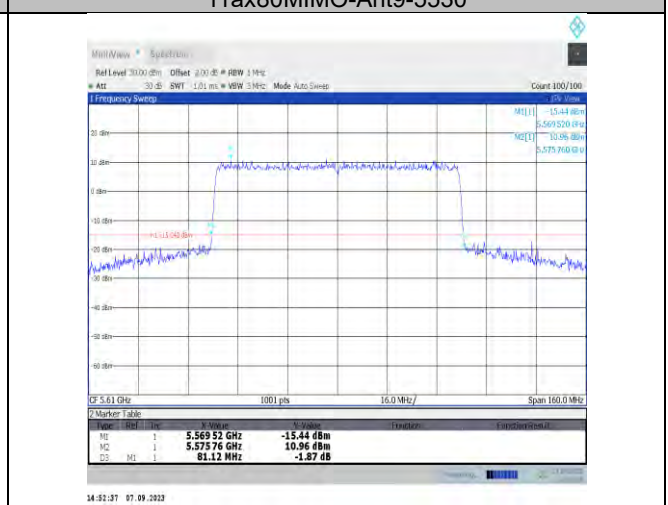
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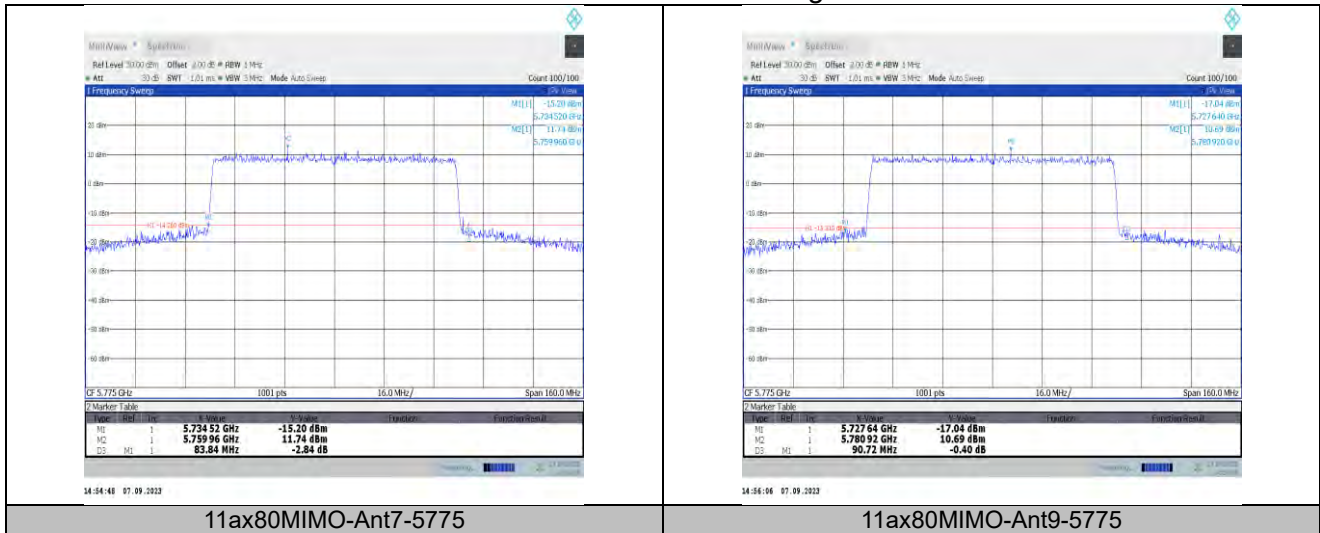


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11ax80MIMO-Ant7-5775

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**Occupied channel bandwidth
Test Result**

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
11a	Ant7	5180	18.499	5170.8391	5189.3383	For Report Purpose
11a	Ant7	5220	17.574	5211.1907	5228.7651	
11a	Ant7	5240	17.813	5231.0333	5248.8464	
11a	Ant7	5260	17.575	5251.1754	5268.7504	
11a	Ant7	5300	17.581	5291.2150	5308.7958	
11a	Ant7	5320	17.529	5311.2364	5328.7654	
11a	Ant7	5500	17.758	5491.1178	5508.8758	
11a	Ant7	5580	17.749	5571.0743	5588.8237	
11a	Ant7	5700	17.592	5691.1793	5708.7713	
11a	Ant7	5745	17.788	5736.1244	5753.9122	
11a	Ant7	5785	17.807	5776.0767	5793.8835	
11a	Ant7	5825	17.69	5816.1619	5833.8519	
11n20MIMO	Ant7	5180	18.784	5170.6214	5189.4053	
11n20MIMO	Ant9	5180	18.79	5170.6211	5189.4111	
11n20MIMO	Ant7	5220	18.586	5210.6896	5229.2760	
11n20MIMO	Ant9	5220	18.621	5210.7028	5229.3234	
11n20MIMO	Ant7	5240	18.541	5230.7252	5249.2662	
11n20MIMO	Ant9	5240	18.549	5230.7453	5249.2947	
11n20MIMO	Ant7	5260	18.591	5250.6638	5269.2544	
11n20MIMO	Ant9	5260	18.566	5250.7184	5269.2846	
11n20MIMO	Ant7	5300	18.685	5290.6404	5309.3259	
11n20MIMO	Ant9	5300	18.629	5290.6699	5309.2986	
11n20MIMO	Ant7	5320	18.556	5310.6812	5329.2376	
11n20MIMO	Ant9	5320	18.604	5310.6649	5329.2694	
11n20MIMO	Ant7	5500	18.719	5490.6233	5509.3424	
11n20MIMO	Ant9	5500	18.704	5490.6491	5509.3536	
11n20MIMO	Ant7	5580	18.616	5570.6702	5589.2865	
11n20MIMO	Ant9	5580	18.652	5570.6541	5589.3065	
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11n20MIMO	Ant9	5700	18.519	5690.7067	5709.2258	
11n20MIMO	Ant7	5745	18.636	5735.6681	5754.3045	
11n20MIMO	Ant9	5745	18.716	5735.6219	5754.3375	
11n20MIMO	Ant7	5785	18.606	5775.7151	5794.3212	
11n20MIMO	Ant9	5785	18.627	5775.7059	5794.3331	
11n20MIMO	Ant7	5825	18.596	5815.6971	5834.2934	
11n20MIMO	Ant9	5825	18.637	5815.6745	5834.3115	
11n40MIMO	Ant7	5190	36.347	5171.8342	5208.1814	
11n40MIMO	Ant9	5190	36.618	5171.7322	5208.3504	
11n40MIMO	Ant7	5230	36.505	5211.7643	5248.2693	
11n40MIMO	Ant9	5230	36.63	5211.6796	5248.3100	
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11n40MIMO	Ant9	5270	36.626	5251.6985	5288.3250	
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11n40MIMO	Ant9	5310	36.585	5291.7270	5328.3116	
11n40MIMO	Ant7	5510	36.557	5491.7100	5528.2669	
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11n40MIMO	Ant9	5550	36.609	5531.7101	5568.3189	
11n40MIMO	Ant7	5670	36.58	5651.6867	5688.2666	
11n40MIMO	Ant9	5670	36.606	5651.6795	5688.2859	
11n40MIMO	Ant7	5755	36.813	5736.6014	5773.4140	
11n40MIMO	Ant9	5755	36.74	5736.6144	5773.3543	



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11n40MIMO	Ant7	5795	36.764	5776.6662	5813.4307
11n40MIMO	Ant9	5795	36.667	5776.6801	5813.3472
11ac80MIMO	Ant7	5210	75.973	5172.0496	5248.0230
11ac80MIMO	Ant9	5210	75.932	5172.0791	5248.0107
11ac80MIMO	Ant7	5290	75.858	5252.1773	5328.0354
11ac80MIMO	Ant9	5290	75.845	5252.2218	5328.0668
11ac80MIMO	Ant7	5530	76.213	5491.7608	5567.9739
11ac80MIMO	Ant9	5530	76.29	5491.7614	5568.0516
11ac80MIMO	Ant7	5610	76.27	5571.9107	5648.1808
11ac80MIMO	Ant9	5610	76.224	5571.9063	5648.1300
11ac80MIMO	Ant7	5775	76.233	5736.9237	5813.1568
11ac80MIMO	Ant9	5775	76.318	5736.8661	5813.1845
11ax20MIMO	Ant7	5180	19.366	5170.3130	5189.6785
11ax20MIMO	Ant9	5180	19.435	5170.3276	5189.7627
11ax20MIMO	Ant7	5220	19.301	5210.3173	5229.6178
11ax20MIMO	Ant9	5220	19.352	5210.2783	5229.6301
11ax20MIMO	Ant7	5240	19.364	5230.2795	5249.6436
11ax20MIMO	Ant9	5240	19.314	5230.3279	5249.6417
11ax20MIMO	Ant7	5260	19.394	5250.2783	5269.6722
11ax20MIMO	Ant9	5260	19.311	5250.3155	5269.6268
11ax20MIMO	Ant7	5300	19.35	5290.3287	5309.6789
11ax20MIMO	Ant9	5300	19.359	5290.3113	5309.6705
11ax20MIMO	Ant7	5320	19.306	5310.2987	5329.6051
11ax20MIMO	Ant9	5320	19.413	5310.3250	5329.7376
11ax20MIMO	Ant7	5500	19.579	5490.1956	5509.7748
11ax20MIMO	Ant9	5500	19.668	5490.1609	5509.8285
11ax20MIMO	Ant7	5580	19.454	5570.2445	5589.6984
11ax20MIMO	Ant9	5580	19.399	5570.2593	5589.6580
11ax20MIMO	Ant7	5700	19.356	5690.3190	5709.6755
11ax20MIMO	Ant9	5700	19.346	5690.2908	5709.6370
11ax20MIMO	Ant7	5745	19.363	5735.3160	5754.6787
11ax20MIMO	Ant9	5745	19.353	5735.3027	5754.6555
11ax20MIMO	Ant7	5785	19.31	5775.3239	5794.6343
11ax20MIMO	Ant9	5785	19.308	5775.2938	5794.6016
11ax20MIMO	Ant7	5825	19.328	5815.2865	5834.6146
11ax20MIMO	Ant9	5825	19.386	5815.2882	5834.6744
11ax40MIMO	Ant7	5190	37.844	5171.1027	5208.9470
11ax40MIMO	Ant9	5190	37.753	5171.1591	5208.9121
11ax40MIMO	Ant7	5230	37.696	5211.1743	5248.8707
11ax40MIMO	Ant9	5230	37.778	5211.1229	5248.9014
11ax40MIMO	Ant7	5270	37.831	5251.1401	5288.9710
11ax40MIMO	Ant9	5270	37.783	5251.1248	5288.9078
11ax40MIMO	Ant7	5310	37.698	5291.1440	5328.8423
11ax40MIMO	Ant9	5310	37.76	5291.1410	5328.9011
11ax40MIMO	Ant7	5510	37.669	5491.1773	5528.8459
11ax40MIMO	Ant9	5510	37.769	5491.1394	5528.9079
11ax40MIMO	Ant7	5550	37.784	5531.1369	5568.9211
11ax40MIMO	Ant9	5550	37.806	5531.1093	5568.9150
11ax40MIMO	Ant7	5670	37.824	5651.0437	5688.8676
11ax40MIMO	Ant9	5670	37.639	5651.1970	5688.8357
11ax40MIMO	Ant7	5755	37.921	5736.0627	5773.9836
11ax40MIMO	Ant9	5755	37.916	5736.0554	5773.9711
11ax40MIMO	Ant7	5795	37.869	5776.0913	5813.9607
11ax40MIMO	Ant9	5795	37.987	5776.0010	5813.9879
11ax80MIMO	Ant7	5210	78.026	5171.0882	5249.1145
11ax80MIMO	Ant9	5210	77.95	5171.1091	5249.0592
11ax80MIMO	Ant7	5290	77.971	5251.0821	5329.0529



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11ax80MIMO	Ant9	5290	77.984	5251.0243	5329.0082
11ax80MIMO	Ant7	5530	78.112	5490.8851	5568.9973
11ax80MIMO	Ant9	5530	77.977	5491.0144	5568.9917
11ax80MIMO	Ant7	5610	77.919	5571.0783	5648.9972
11ax80MIMO	Ant9	5610	77.968	5571.0823	5649.0499
11ax80MIMO	Ant7	5775	78.246	5735.8844	5814.1304
11ax80MIMO	Ant9	5775	78.316	5735.9477	5814.2641

Remark:

For 802.11n HT20/ac VHT20 and 802.11n HT40/ac VHT40 mode, the whole testing have assessed only, 802.11n HT20/40 by referring to their higher output power.

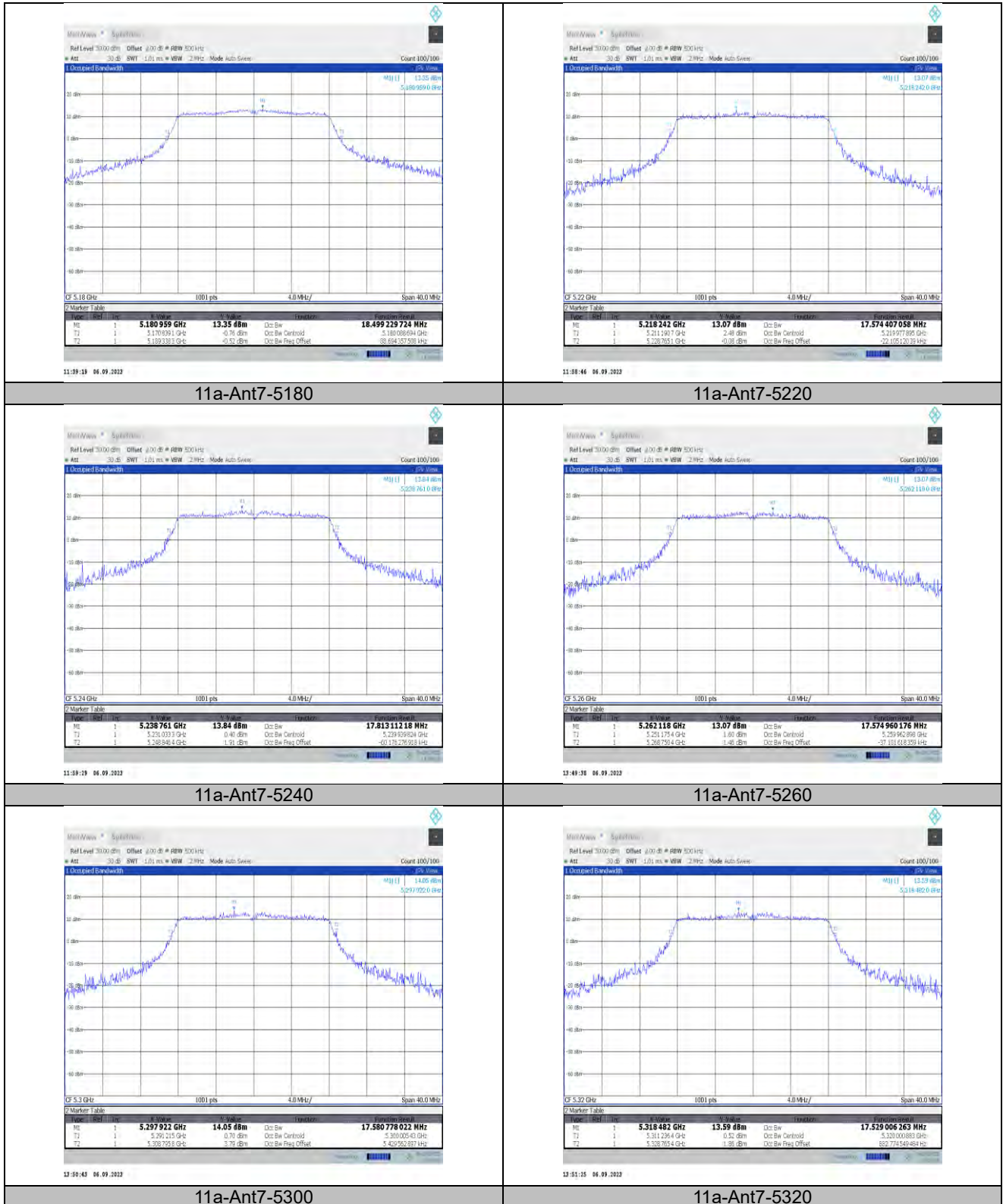


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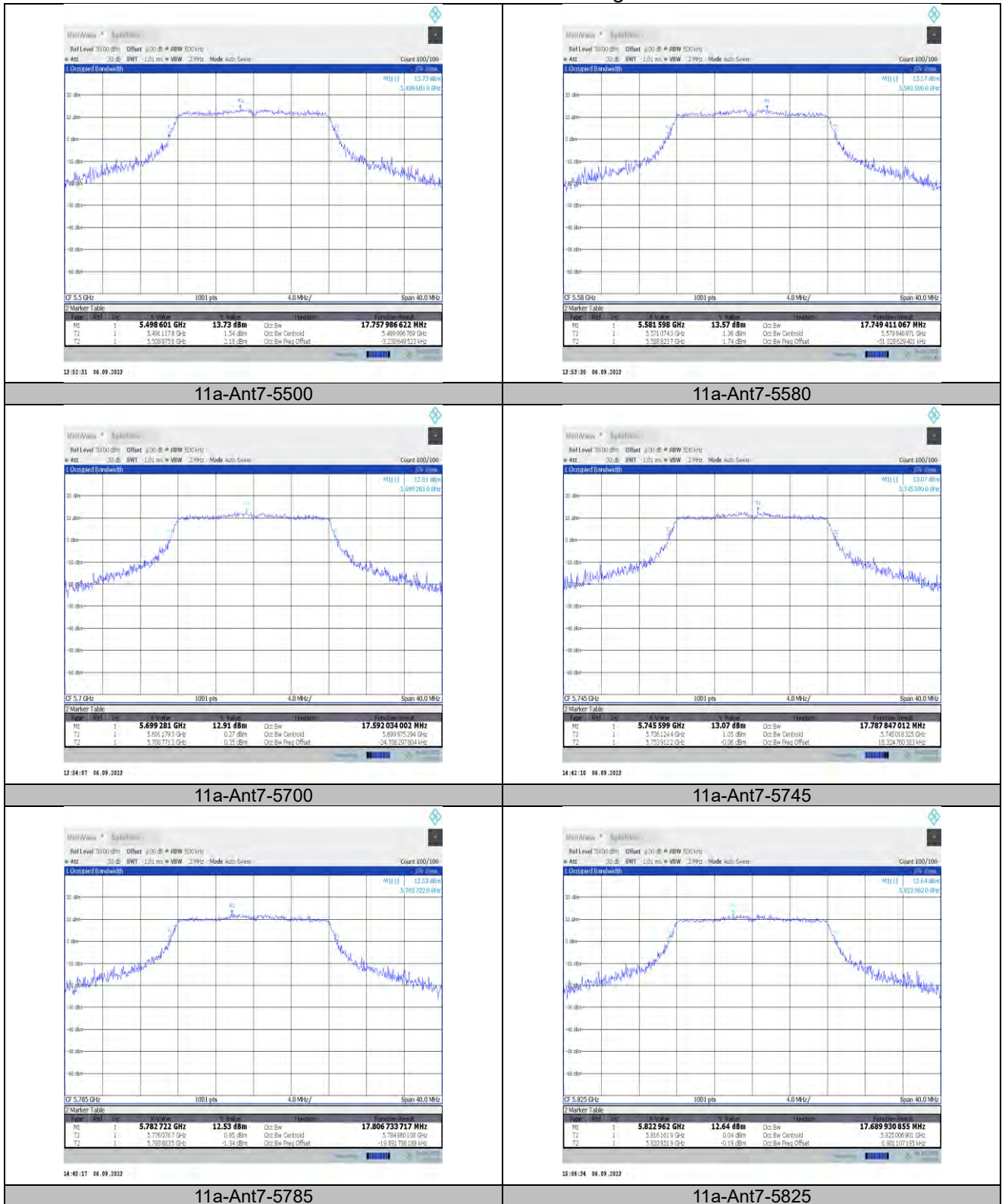
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Test Graphs



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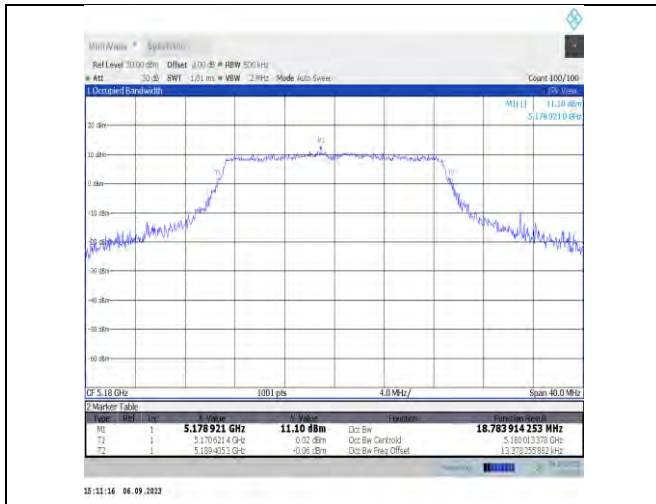
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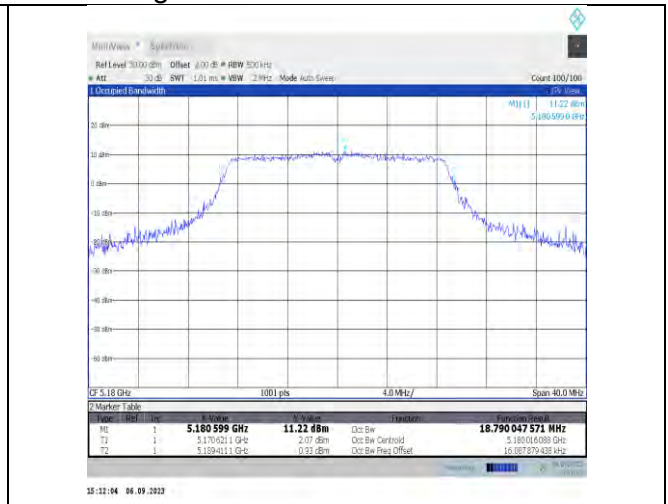
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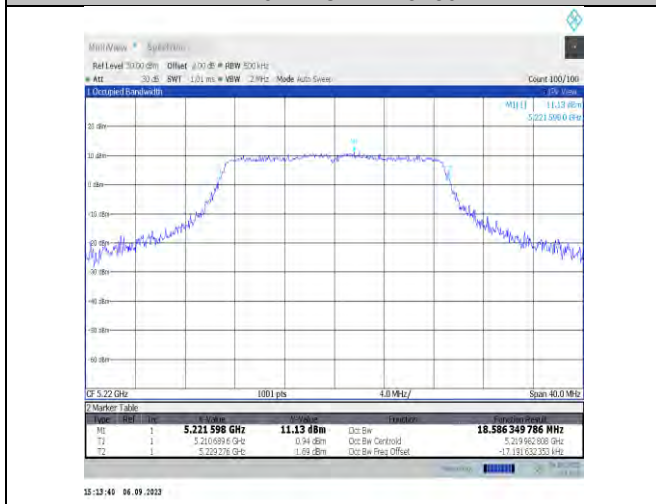
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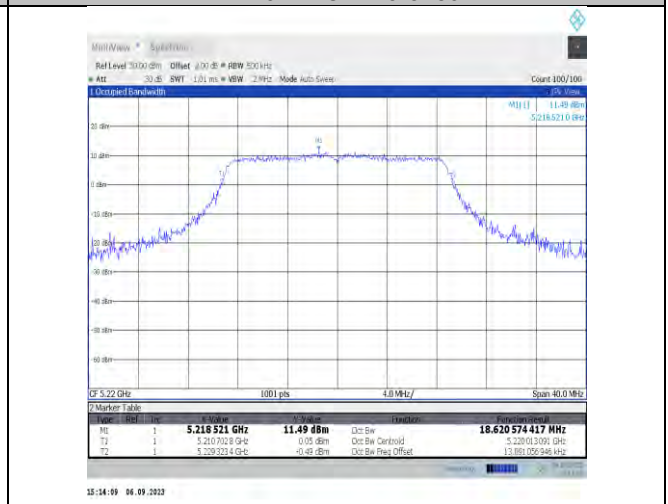
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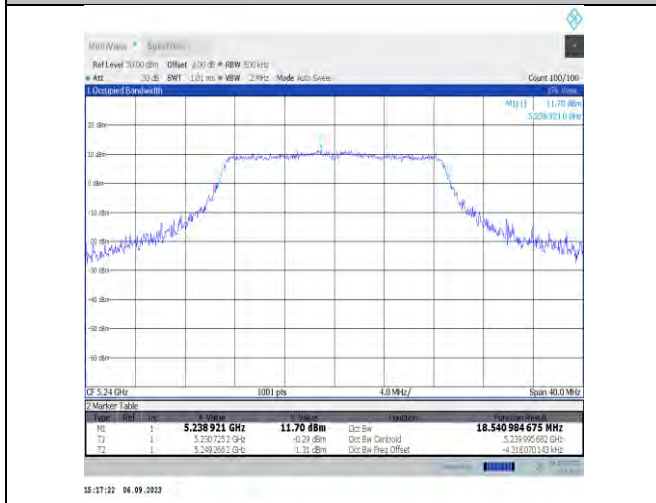
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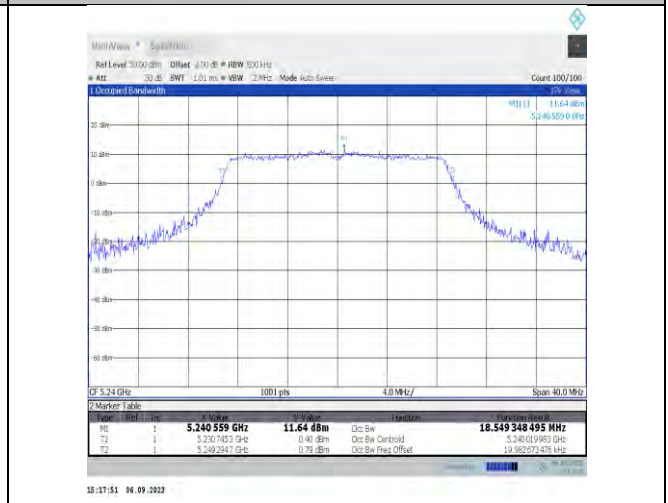
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11n20MIMO-Ant9-5220



11n20MIMO-Ant7-5240

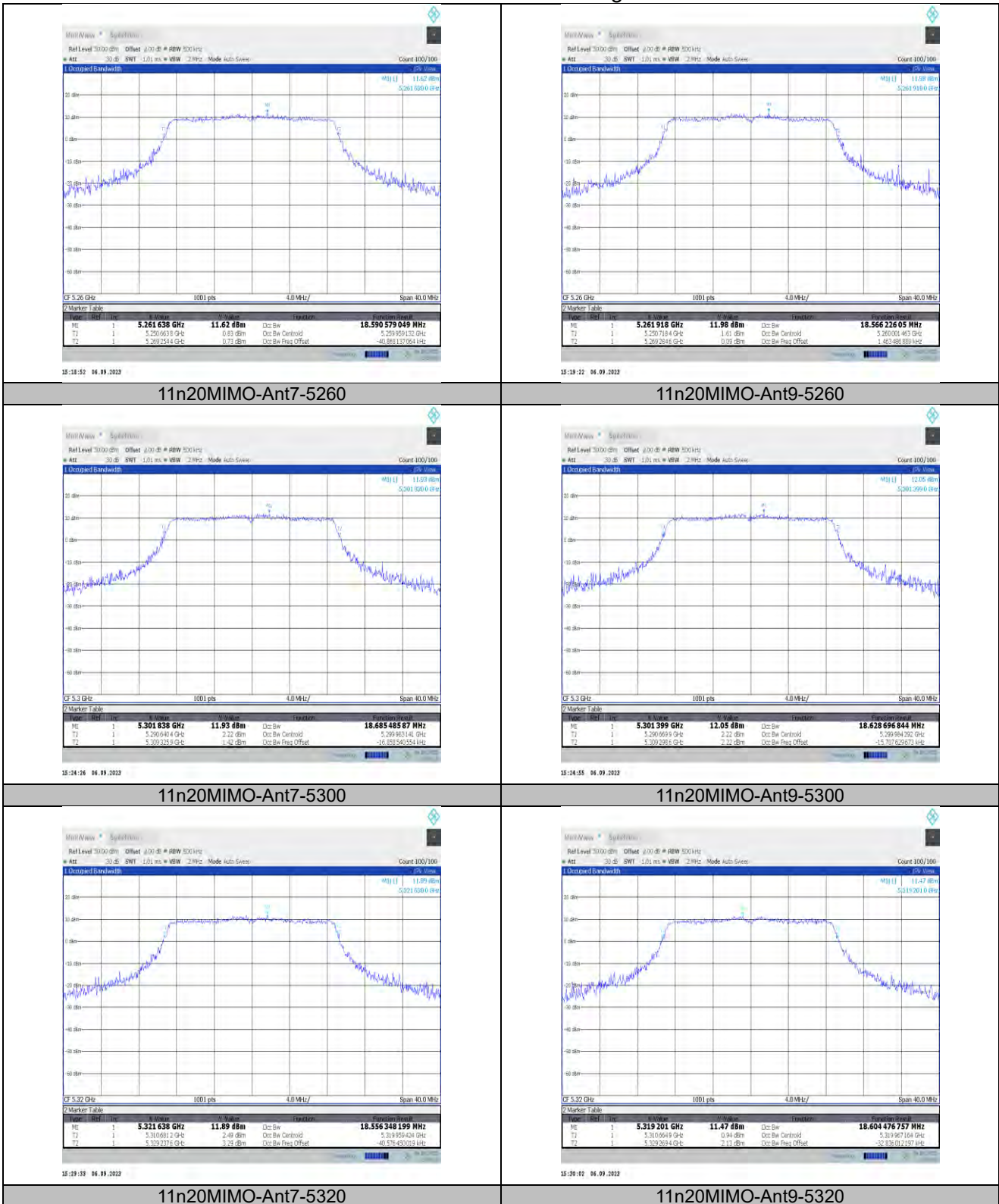


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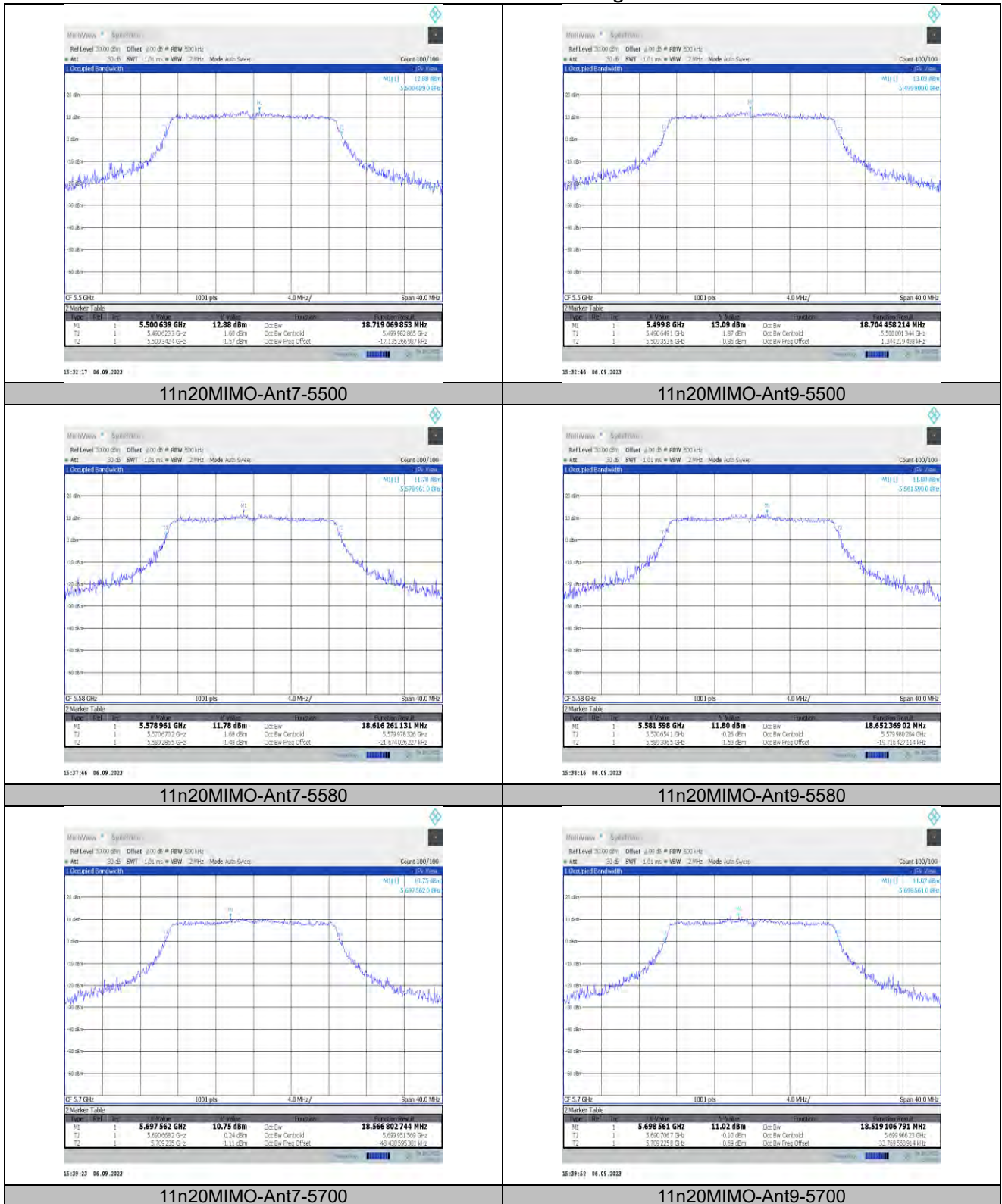
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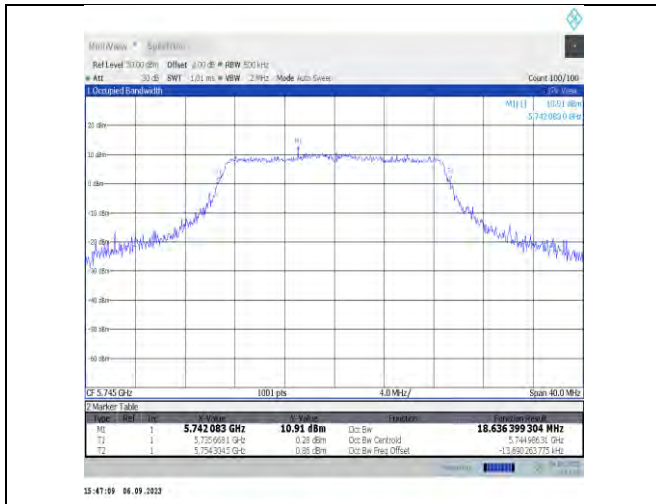
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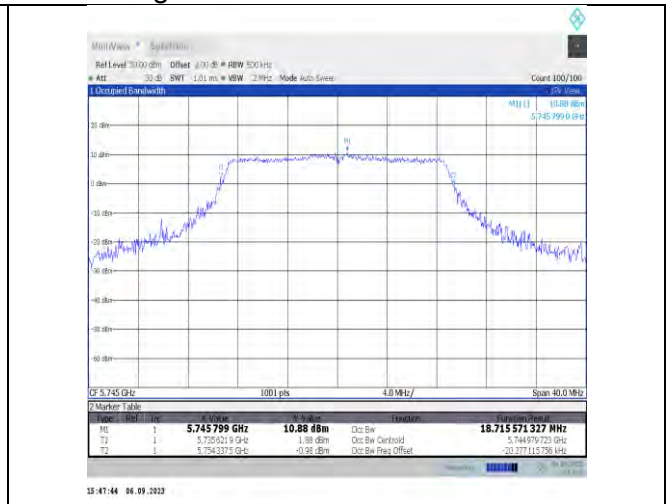
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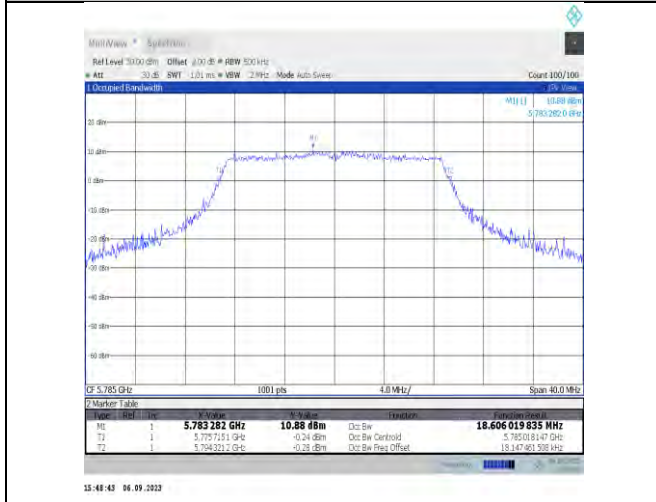
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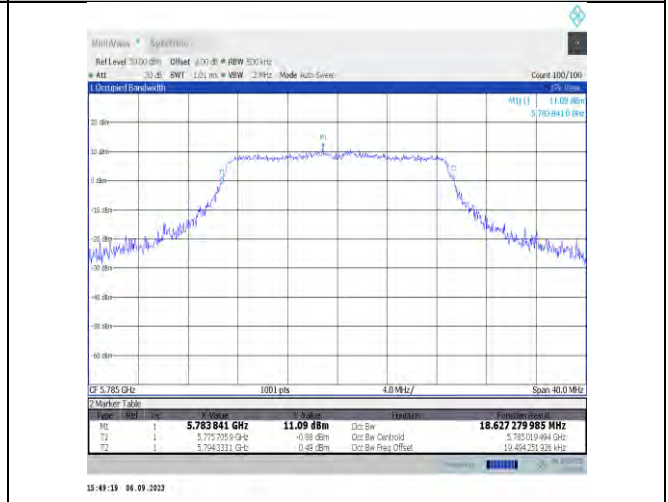
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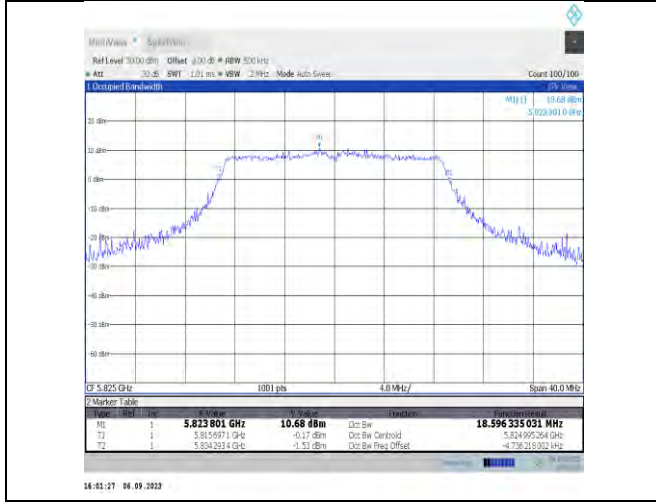
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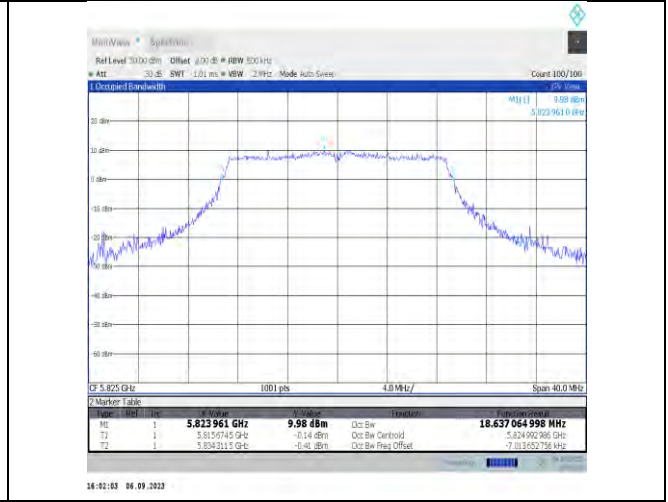
11n20MIMO-Ant7-5785



11n20MIMO-Ant9-5785



11n20MIMO-Ant7-5825



11n20MIMO-Ant9-5825



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