



FCC RF Test Report

FCC ID : UZ7EM45A2
EQUIPMENT : Enterprise Mobile
BRAND NAME : Zebra
MODEL NAME : EM45A2
APPLICANT : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
MANUFACTURER : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : 15E 6 GHz Low Power Dual Client (6CD)
TEST DATE(S) : Jun. 16, 2024 ~ Aug. 22, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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History of this test report

Report No.	Version	Description	Issued Date
FR460505G	01	Initial issue of report	Sep. 05, 2024



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403(i) 15.407(a)(10)	26dB Emission Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)(7)	Maximum Conducted Output Power	Reporting only	-
3.2	15.407(a)(7)	Fundamental Maximum EIRP	Pass	-
3.3	15.407(a)(7)	Fundamental Power Spectral Density	Pass	-
3.4	15.407(b)(6)	In-Band Emissions (Channel Mask)	Pass	-
-	15.407(d)(6)	Contention Based Protocol	Pass	1
3.5	15.407(b)	Unwanted Emissions	Pass	Under limit 19.53 dB at 5922.44 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 11.52 dB at 2.371 MHz
3.7	15.203 15.407(a)	Antenna Requirement	Pass	-

Remark 1: The device is dual client, the standard power client and low power client share the same RF Path, the Contention Based Protocol have been demonstrated compliance in the Indoor low power test report which is issued separately (Report No. FR460505H).

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Enterprise Mobile
Brand Name	Zebra
Model Name	EM45A2
FCC ID	UZ7EM45A2
SN/IMEI Code	Conducted: 24128000613410 Conduction: 352991990029245/352991990029427 Radiation: 352991990055026
HW Version	EV2.5
SW Version	13-32-08.00-TG-U06-STD-ATH-04
MFD	08AUG24
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Specification of Accessory				
Battery	Brand Name	Zebra	Model	BT-000501
			Part Number	BT-000501-2000

Supported Unit used in test configuration and system				
AC Adapter 1 (Type C Wall Charger 1)	Brand Name	Zebra	Model	SAWA-102-22520A
			Part Number	PWR-WUA5V45W1US
AC Adapter 2 (Type A Wall Charger 2)	Brand Name	Zebra	Model	SAWA-65-20005A
			Part Number	PWR-WUA5V12W0US
Earphone 1 (Wired headset USB-C)	Brand Name	Zebra	Part Number	HDST-USBC-PTT1-01
Earphone 2 (Rugged Bluetooth Headset)	Brand Name	Zebra	Part Number	HS3100-OTH
Earphone 3 (3.5mm PTT Headset)	Brand Name	Zebra	Part Number	HDST-35MM-PTT1-02
Earphone 4 (Rugged Headset)	Brand Name	Zebra	Part Number	HS2100-OTH
3.5mm to 3.5mm audio connector	Brand Name	Zebra	Part Number	CBL-HS2100-3MS1-01
Type C-Audio Cable (Type C to 3.5mm)	Brand Name	Zebra	Part Number	ADP-USBC-35MM1-01
USB Cable 1 (USB-C to C Cable)	Brand Name	Zebra	Part Number	CBL-EC5X-USBC3A-01
USB Cable 2 (USB-A to C Cable)	Brand Name	Zebra	Part Number	CBL-TC5X-USBC2A-01
EM45 Protective Case	Brand Name	Zebra	Part Number	SG-EM45EXO1-01

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification			
Tx/Rx Frequency Range	U-NII-5: 5925 MHz ~ 6425 MHz U-NII-7: 6525 MHz ~ 6875 MHz		
Maximum EIRP	<MIMO Ant.8+10> <U-NII-5> 802.11a : 17.37 dBm / 0.0546 W 802.11ax HE20 : 17.30 dBm / 0.0537 W 802.11ax HE40 : 17.25 dBm / 0.0531 W 802.11ax HE80 : 17.20 dBm / 0.0525 W 802.11ax HE160 : 17.30 dBm / 0.0537 W <U-NII-7> 802.11a : 17.71 dBm / 0.0590 W 802.11ax HE20 : 17.63 dBm / 0.0579 W 802.11ax HE40 : 17.54 dBm / 0.0568 W 802.11ax HE80 : 17.45 dBm / 0.0556 W 802.11ax HE160 : 17.44 dBm / 0.0555 W		
99% Occupied Bandwidth	<U-NII-5> 802.11a : 16.743 MHz 802.11ax HE20 : 19.067 MHz 802.11ax HE40 : 37.943 MHz 802.11ax HE80 : 77.562 MHz 802.11ax HE160 : 157.105 MHz <U-NII-7> 802.11a : 16.724 MHz 802.11ax HE20 : 19.048 MHz 802.11ax HE40 : 37.981 MHz 802.11ax HE80 : 77.486 MHz 802.11ax HE160 : 157.105 MHz		
Antenna Type / Gain	<5925 MHz ~ 6425 MHz > <Ant. 8>: Monopole Antenna with gain 0.35 dBi <Ant. 10>: Monopole Antenna with gain -0.85 dBi <6525 MHz ~ 6875 MHz > <Ant. 8>: Monopole Antenna with gain 1.02 dBi <Ant. 10>: Monopole Antenna with gain 0.16 dBi		
Type of Modulation	802.11a : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM / 1024QAM)		
Antenna Function Description		Ant. 8	Ant. 10
	802.11 a/ax SISO	V	V
	802.11 a/ax CDD	V	
	802.11 ax SDM	V	

Remark:

- 802.11ax support full RU tone and partial RU tone(26/52/242/484/996-tone), both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) are tested for conducted power/PSD/Channel Mask in appendix A, all the other test case were performed with full RU with its maximum power/PSD.
- The EUT does not support 802.11ax channel puncturing mode.

3. The device does not support UNII-5 CH 2.
4. WIFI MIMO support CDD mode for 802.11a, and support CDD & SDM mode for 802.11ax.
5. For WLAN SISO & MIMO(CDD) mode of 802.11a, the whole testing has assessed CDD mode by referring to the higher normal conducted power.
6. For WLAN SISO & MIMO(CDD) & MIMO(SDM) mode of 802.11ax, the whole testing has assessed CDD mode by referring to the higher output power.
7. The device supports 1S2T (CDD) and 2S2T (SDM) mode; 1S2T: Nss=1, MIMO 2Tx; 2S2T: Nss=2, MIMO 2Tx.

1.3 Modification of EUT

No modifications are made to the EUT during all test items.

1.4 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH06-KS TH01-KS	CN1257	314309

1.5 Test Software

Item	Site	Manufacture	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH06-KS	AUDIX	E3	210616
3.	CO01-KS	AUDIX	E3	6.2009-8-24



1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ FCC KDB 987594 D02 U-NII 6 GHz EMC Measurement v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

<U-NII-5>

BW 20M	Channel	1	5	9	13	17	21	25	29
	Freq. (MHz)	5955	5975	5995	6015	6035	6055	6075	6095
BW 40M	Channel	3		11		19		27	
	Freq. (MHz)	5965		6005		6045		6085	
BW 80M	Channel	7				23			
	Freq. (MHz)	5985				6065			
BW 160M	Channel	15							
	Freq. (MHz)	6025							

BW 20M	Channel	33	37	41	45	49	53	57	61
	Freq. (MHz)	6115	6135	6155	6175	6195	6215	6235	6255
BW 40M	Channel	35		43		51		59	
	Freq. (MHz)	6125		6165		6205		6245	
BW 80M	Channel	39				55			
	Freq. (MHz)	6145				6225			
BW 160M	Channel	47							
	Freq. (MHz)	6185							

BW 20M	Channel	65	69	73	77	81	85	89	93
	Freq. (MHz)	6275	6295	6315	6335	6355	6375	6395	6415
BW 40M	Channel	67		75		83		91	
	Freq. (MHz)	6285		6325		6365		6405	
BW 80M	Channel	71				87			
	Freq. (MHz)	6305				6385			
BW 160M	Channel	79							
	Freq. (MHz)	6345							



<U-NII-7>

BW 20M	Channel	-	-	-	-	-	117	121	125
	Freq. (MHz)	-	-	-	-	-	6535	6555	6575
BW 40M	Channel	-		-		-		123	
	Freq. (MHz)	-		-		-		6565	

BW 20M	Channel	129	133	137	141	145	149	153	157
	Freq. (MHz)	6595	6615	6635	6655	6675	6695	6715	6735
BW 40M	Channel	131		139		147		155	
	Freq. (MHz)	6605		6645		6685		6725	
BW 80M	Channel	135				151			
	Freq. (MHz)	6625				6705			
BW 160M	Channel	143							
	Freq. (MHz)	6665							

BW 20M	Channel	161	165	169	173	177	181	-	-
	Freq. (MHz)	6755	6775	6795	6815	6835	6855	-	-
BW 40M	Channel	163		171		179		-	
	Freq. (MHz)	6765		6805		6845		-	
BW 80M	Channel	167				-			
	Freq. (MHz)	6785				-			

2.2 Test Mode

Radiated Spurious Emission Test Modes

For Radiated Test Cases, The tests were performed with Adapter. All radiated test mode refer to Appendix C of this report.

Test Cases	
AC Conducted Emission	Mode 1 : WLAN 6G Link + BT Link + USB Cable1(Charging from AC Adapter 1) + Battery

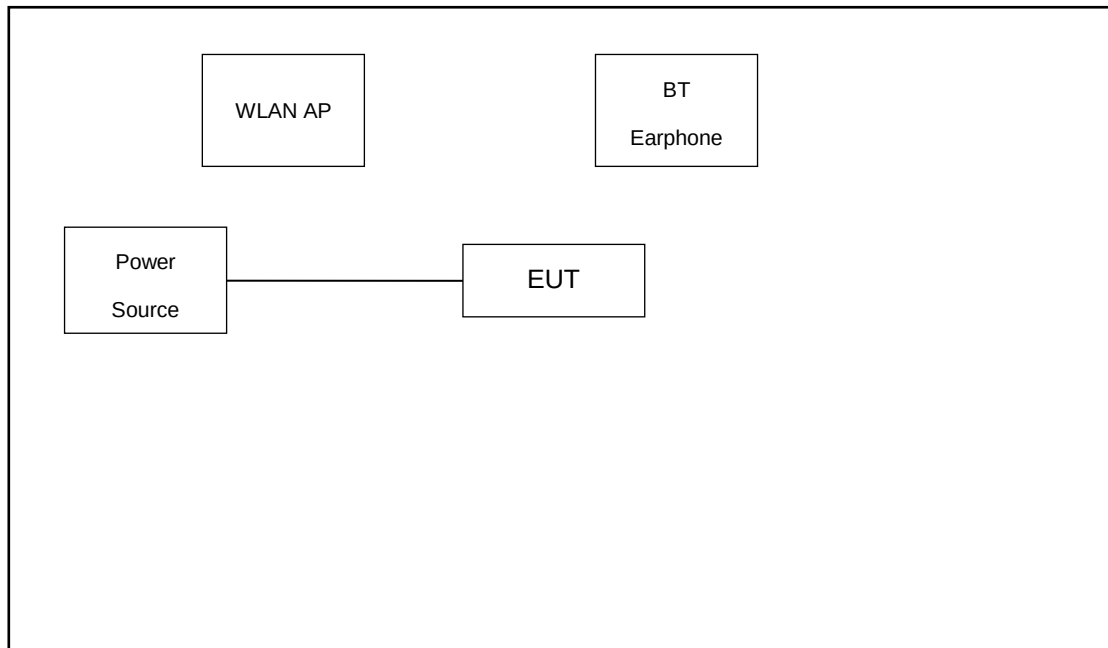
Ch. #		5925-6425 MHz UNII-5	6525-6875 MHz UNII-7	5925-6425 MHz UNII-5	6525-6875 MHz UNII-7
		802.11a/ax HE20	802.11a/ax HE20	802.11ax HE40	802.11ax HE40
L	Low	001	117	003	123
M	Middle	049	149	051	147
H	High	093	181	091	179

Ch. #		5925-6425 MHz UNII-5	6525-6875 MHz UNII-7	5925-6425 MHz UNII-5	6525-6875 MHz UNII-7
		802.11ax HE80	802.11ax HE80	802.11ax HE160	802.11ax HE160
L	Low	007	135	015	143
M	Middle	055	151	047	-
H	High	087	167	079	-

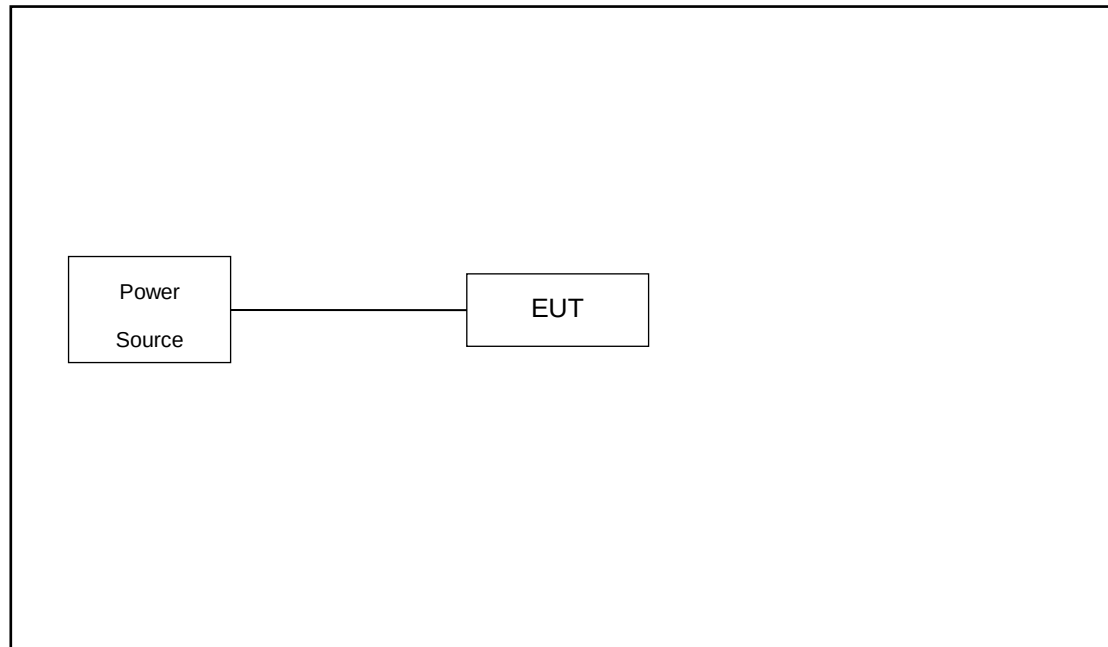
Remark: For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

2.3 Connection Diagram of Test System

For Conducted Emission:



For Radiated Emission:



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded, 1.8m
2.	SD Card	Kingston	8GB	N/A	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program (QRCT TX Tool) was provided and enabled to make EUT continuously transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5.07 dB and 20dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 5.07 + 20 = 25.07(\text{dB})\end{aligned}$$

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Limit of 26dB & 99% Occupied Bandwidth

<FCC 14-30 CFR 15.407>

(a)(10) The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.

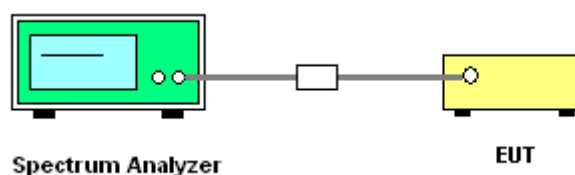
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) $\geq 3 * RBW$.
8. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Maximum conducted Output Power and Fundamental Maximum EIRP Measurement

3.2.1 Limit of Fundamental Maximum EIRP

<FCC 14-30 CFR 15.407>

(a)(7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm and the device must limit its power to no more than 6 dB below its associated standard power access point's authorized transmit power.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

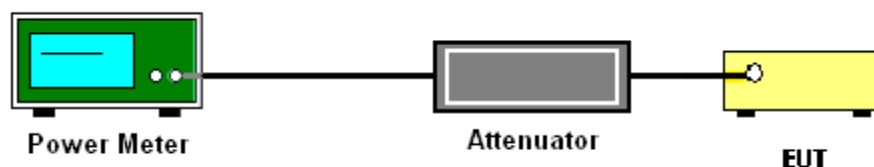
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.
4. For MIMO mode, the measure-and-sum technique should be used for measuring the in-band transmit power of a device.

3.2.4 Test Setup



3.2.5 Test Result of Fundamental Maximum EIRP

Please refer to Appendix A.

3.3 Fundamental Power Spectral Density Measurement

3.3.1 Limit of Fundamental Power Spectral Density

<FCC 14-30 CFR 15.407>

(a)(7) For client devices, except for fixed client devices as defined in this subpart, operating under the control of a standard power access point in 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed 17 dBm e.i.r.p. in any 1-megahertz band.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

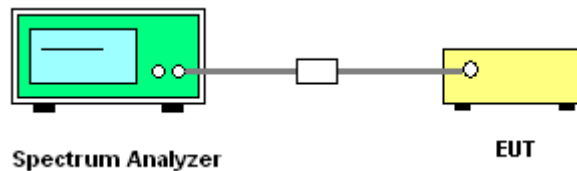
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW $\geq$ 3 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, attenuator loss and duty factor. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Method (b): Measure and sum spectral maxima across the outputs.

The measurement on each individual output were performed with the same span and number on each individual output. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 In-Band Emissions (Channel Mask)

3.4.1 Limit of Unwanted Emissions

<FCC 14-30 CFR 15.407>

(b)(6) For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

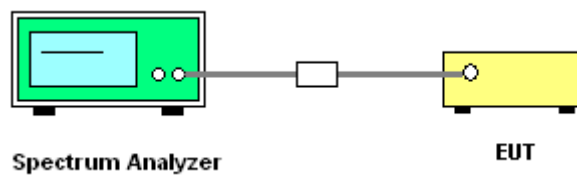
The testing follows FCC KDB 987594 D02 U-NII 6GHz EMC Measurement v01r01.

Section J) In-Band Emissions.

1. Take nominal bandwidth as reference channel bandwidth provided that 26 dB emission bandwidth is always larger than nominal bandwidth
2. Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:
 - a) Set the span to encompass the entire 26 dB EBW of the signal.
 - b) Set RBW = same RBW used for 26 dB EBW measurement.
 - c) Set VBW $\geq 3 \times$ RBW
 - d) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$.
 - e) Sweep time = auto.
 - f) Detector = RMS (i.e., power averaging)
 - g) Trace average at least 100 traces in power averaging (rms) mode.
 - h) Use the peak search function on the instrument to find the peak of the spectrum.
3. Using the measuring equipment limit line function, develop the emissions mask based on the following requirements. The emissions power spectral density must be reduced below the peak power spectral density (in dB) as follows:
 - a. Suppressed by 20 dB at 1 MHz outside of the channel edge.
 - b. Suppressed by 28 dB at one channel bandwidth from the channel center.

- c. Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.
4. Adjust the span to encompass the entire mask as necessary.
5. Clear trace.
6. Trace average at least 100 traces in power averaging (rms) mode.
7. Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

3.4.4 Test Setup



3.4.5 Test Result

Please refer to Appendix A.

3.5 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.5.1 Limit of Unwanted Emissions

- (1) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of -27 dBm/MHz.

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27 (RMS)	68.3
- 7 (Peak)	88.3

According 987594 D02 U-NII 6GHz EMC Measurement v01r01 section G:

Unwanted emissions outside of restricted bands are measured with a RMS detector.

In addition, 15.35(b) applies where the peak emissions must be limited to no more than 20 dB above the average limit

- (2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

3.5.2 Measuring Instruments

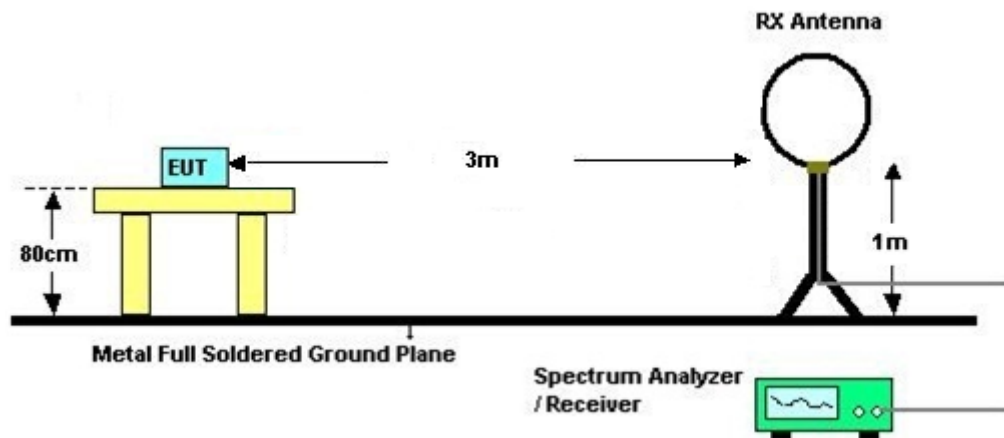
See list of measuring equipment of this test report.

3.5.3 Test Procedures

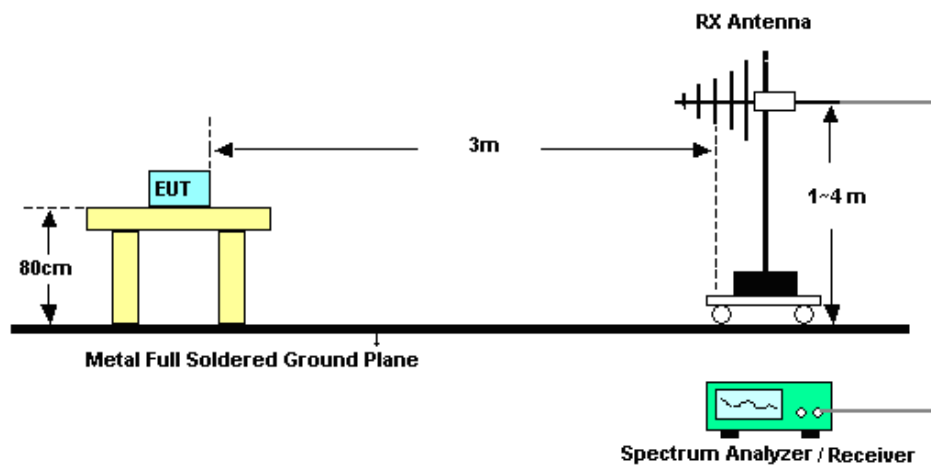
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, 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.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.5.4 Test Setup

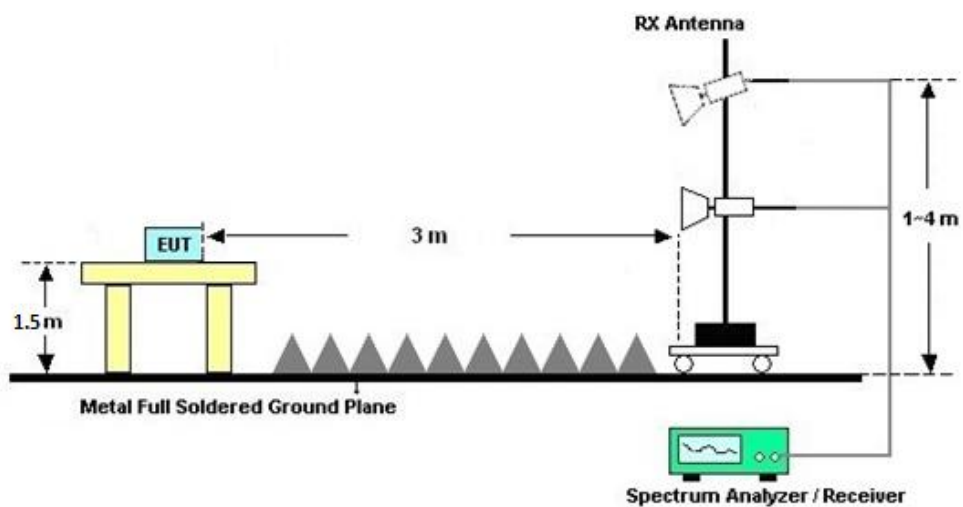
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



**3.5.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)**

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.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C

3.5.7 Duty Cycle

Please refer to Appendix D.

3.5.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

The emission level above 18GHz is checked that the emission level is noise floor only, so it is not reflected in the report.

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	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.

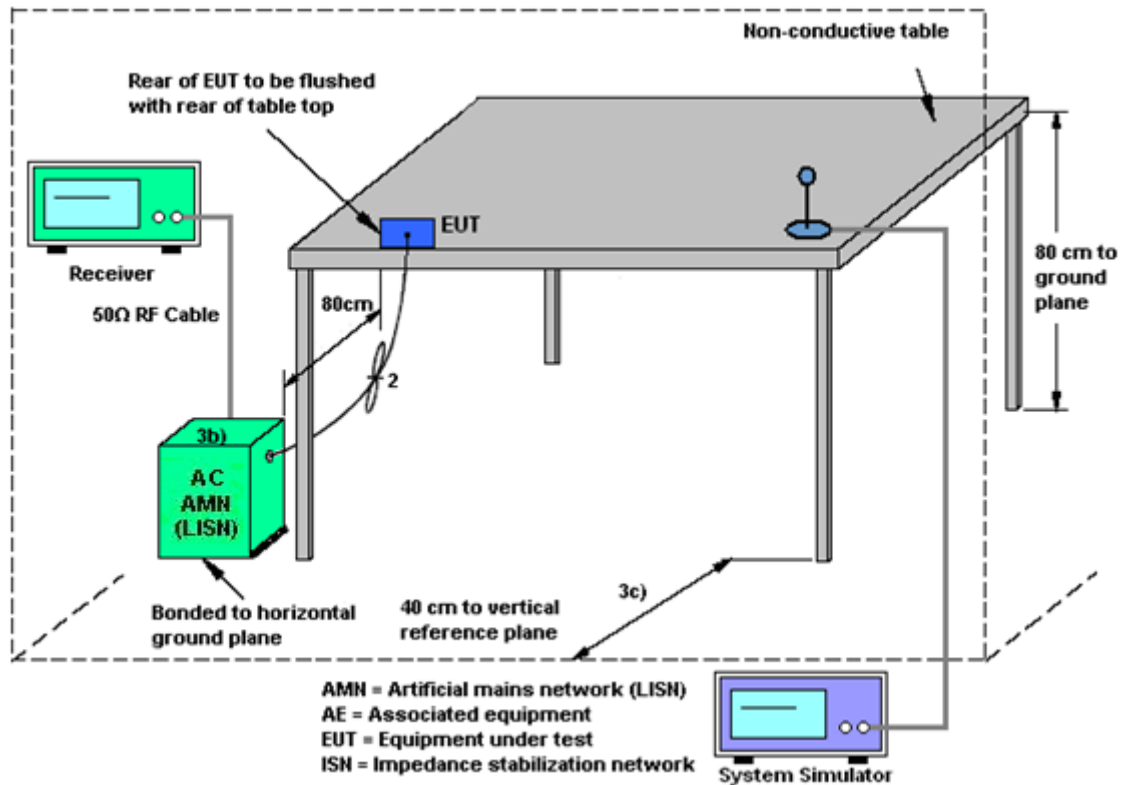
3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.7 Antenna Requirements

3.7.1 Standard Applicable

§15.203: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used. The EUT complies with the requirement of 15.203.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For 802.11a/ax mode, directional gain is calculated as

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e.,

Directional gain = $G_{ANT\ MAX}(Ant.1\ Gain, Ant.2\ Gain, \dots) + \text{Array Gain}$, as following table for Power, where Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

For PSD, the directional gain calculation is following,

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / N_{ANT}]$ dBi, as following table for PSD.

N_{ANT} = number of transmit antennas

N_{SS} = number of spatial streams. (The worst case directional gain will occur when $N_{SS} = 1$)

<CDD Modes>				
			DG for Power (dBi)	DG for PSD (dBi)
	Ant. 8 (dBi)	Ant. 10 (dBi)		
UNII-5	0.35	-0.85	0.35	2.78
UNII-7	1.02	0.16	1.02	3.61

<SDM Modes>

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For 802.11ax mode, directional gain is calculated as

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e.,

Directional gain = $G_{ANT\ MAX}(Ant.1\ Gain, Ant.2\ Gain, \dots) + \text{Array Gain}$, as following table for Power, where Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

For PSD, the directional gain calculation is following,

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{Gn/10})/N_{ANT}]$ dBi, as following table for PSD.

N_{ANT} = number of transmit antennas

			DG	DG
			for	for
	Ant. 8	Ant. 10	Power	PSD
	(dBi)	(dBi)	(dBi)	(dBi)
U-NII-5	0.35	-0.85	0.35	-0.21
U-NII-7	1.02	0.16	1.02	0.61



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Aug. 10, 2024~ Aug. 22, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Aug. 10, 2024~ Aug. 22, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Aug. 10, 2024~ Aug. 22, 2024	Jan. 01, 2025	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400023	3Hz~8.5GHz; Max 30dBm	Jan. 02, 2024	Aug. 17, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz~44GHz	Oct. 11, 2023	Aug. 17, 2024	Oct. 10, 2024	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Aug. 17, 2024	Sep. 10, 2024	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59915	30MHz~1GHz	Aug. 19, 2023	Aug. 17, 2024	Aug. 18, 2024	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 11, 2024	Aug. 17, 2024	Apr. 10, 2025	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 06, 2024	Aug. 17, 2024	Jan. 05, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	372171	9KHz ~1GHZ	Jan. 02, 2024	Aug. 17, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	EM	EM18G40GA	060728	18~40GHz	Jan. 02, 2024	Aug. 17, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2082395	1Ghz-18Ghz	Jan. 02, 2024	Aug. 17, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5GHz	Oct. 11, 2023	Aug. 17, 2024	Oct. 10, 2024	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Aug. 17, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Aug. 17, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Aug. 17, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESC17	100768	9kHz~7GHz;	Apr. 18, 2024	Jun. 16, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Jun. 16, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Jun. 16, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Jun. 16, 2024	Oct. 10, 2024	Conduction (CO01-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

Uncertainty of Conducted Measurement

Conducted Spurious Emission & Bandedge	± 2.22 dB
Occupied Channel Bandwidth	$\pm 0.1\%$
Conducted Power	± 0.50 dB
Conducted Power Spectral Density	± 0.90 dB
Frequency	0.04ppm
Conducted Generated signal Levels	± 0.56 dB
Conducted Time	0.54%

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.84 dB
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Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.30 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.06 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.18 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.38 dB
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----- THE END -----



Appendix A. Conducted Test Results

A1. Conducted Test Results

Test Engineer:	Jiang Jun	Temperature:	21~25	°C
Test Date:	2024.08.10~2024.08.22	Relative Humidity:	51~54	%

TEST RESULTS DATA
EIRP Power Table

U-NII-5 MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM		
11a	6Mbps	2	001	5955	0.03	0.04	14.01	13.62	16.83	0.35		17.18	30.00	Pass
11a	6Mbps	2	049	6195	0.03	0.04	14.29	13.70	17.02	0.35		17.37	30.00	Pass
11a	6Mbps	2	093	6415	0.03	0.04	13.80	13.19	16.52	0.35		16.87	30.00	Pass

Power Setting	
Ant 8	Ant 10
	14
	14
	14

TEST RESULTS DATA
EIRP Power Table

U-NII-7 MIMO														
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM		
11a	6Mbps	2	117	6535	0.03	0.04	13.80	13.27	16.56	1.02		17.58	30.00	Pass
11a	6Mbps	2	149	6695	0.03	0.04	13.56	13.49	16.54	1.02		17.56	30.00	Pass
11a	6Mbps	2	181	6855	0.03	0.04	13.70	13.65	16.69	1.02		17.71	30.00	Pass

Power Setting	
Ant 8	Ant 10
14	
14	
14	

TEST RESULTS DATA
EIRP Power Table

U-NII-5 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10				SUM	Ant 8
HE20	MCS0	2	001	5955	Full	0.00	0.00	13.97	13.58	16.79	0.35		17.14	30.00	Pass	14	
HE20	MCS0	2	001	5955	26/0	0.00	0.00	4.76	4.12	7.46	0.35		7.81	30.00	Pass	4	
HE20	MCS0	2	001	5955	52/37	0.00	0.00	7.39	6.42	9.94	0.35		10.29	30.00	Pass	6.5	
HE20	MCS0	2	001	5955	106/53	0.00	0.00	10.73	10.35	13.55	0.35		13.90	30.00	Pass	10	
HE20	MCS0	2	049	6195	Full	0.00	0.00	14.23	13.62	16.95	0.35		17.30	30.00	Pass	14	
HE20	MCS0	2	049	6195	26/0	0.00	0.00	4.69	4.32	7.52	0.35		7.87	30.00	Pass	4.5	
HE20	MCS0	2	049	6195	52/37	0.00	0.00	7.51	6.96	10.25	0.35		10.60	30.00	Pass	6.5	
HE20	MCS0	2	049	6195	106/53	0.00	0.00	10.78	10.33	13.57	0.35		13.92	30.00	Pass	10	
HE20	MCS0	2	093	6415	Full	0.00	0.00	13.71	13.22	16.48	0.35		16.83	30.00	Pass	14	
HE20	MCS0	2	093	6415	26/8	0.00	0.00	3.62	3.13	6.39	0.35		6.74	30.00	Pass	5.5	
HE20	MCS0	2	093	6415	52/40	0.00	0.00	7.41	6.78	10.12	0.35		10.47	30.00	Pass	7	
HE20	MCS0	2	093	6415	106/54	0.00	0.00	10.27	9.74	13.02	0.35		13.37	30.00	Pass	10	
HE40	MCS0	2	003	5965	Full	0.00	0.00	13.91	13.38	16.66	0.35		17.01	30.00	Pass	14	
HE40	MCS0	2	003	5965	242/61	0.00	0.00	11.48	11.23	14.37	0.35		14.72	30.00	Pass	11	
HE40	MCS0	2	051	6205	Full	0.00	0.00	14.23	13.52	16.90	0.35		17.25	30.00	Pass	14	
HE40	MCS0	2	051	6205	242/61	0.00	0.00	11.29	10.77	14.05	0.35		14.40	30.00	Pass	10.5	
HE40	MCS0	2	091	6405	Full	0.00	0.00	13.77	12.99	16.41	0.35		16.76	30.00	Pass	14	
HE40	MCS0	2	091	6405	242/62	0.00	0.00	10.77	10.19	13.50	0.35		13.85	30.00	Pass	10.5	
HE80	MCS0	2	007	5985	Full	0.00	0.00	13.86	13.06	16.49	0.35		16.84	30.00	Pass	14	
HE80	MCS0	2	007	5985	484/65	0.07	0.04	11.69	11.12	14.42	0.35		14.77	30.00	Pass	11	
HE80	MCS0	2	055	6225	Full	0.00	0.00	14.16	13.49	16.85	0.35		17.20	30.00	Pass	14	
HE80	MCS0	2	055	6225	484/65	0.07	0.04	11.41	10.76	14.11	0.35		14.46	30.00	Pass	10.5	
HE80	MCS0	2	087	6385	Full	0.00	0.00	13.62	12.63	16.16	0.35		16.51	30.00	Pass	14	
HE80	MCS0	2	087	6385	484/66	0.07	0.04	11.20	10.68	13.96	0.35		14.31	30.00	Pass	11	
HE160	MCS0	2	015	6025	Full	0.00	0.00	13.78	13.67	16.74	0.35		17.09	30.00	Pass	14	
HE160	MCS0	2	015	6025	996/67	0.05	0.05	11.53	10.93	14.25	0.35		14.60	30.00	Pass	11	
HE160	MCS0	2	047	6185	Full	0.00	0.00	14.22	13.65	16.95	0.35		17.30	30.00	Pass	14	
HE160	MCS0	2	047	6185	996/67	0.05	0.05	11.68	10.90	14.31	0.35		14.66	30.00	Pass	10.5	
HE160	MCS0	2	079	6345	Full	0.00	0.00	13.45	13.77	16.62	0.35		16.97	30.00	Pass	14	
HE160	MCS0	2	079	6345	996/68	0.05	0.05	11.10	11.31	14.21	0.35		14.56	30.00	Pass	11.5	

TEST RESULTS DATA
EIRP Power Table

U-NII-7 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM				
HE20	MCS0	2	117	6535	Full	0.00	0.00	13.82	13.37	16.61	1.02	17.63	30.00	Pass		14	
HE20	MCS0	2	117	6535	26/0	0.00	0.00	4.57	3.69	7.16	1.02	8.18	30.00	Pass		4	
HE20	MCS0	2	117	6535	52/37	0.00	0.00	7.28	6.41	9.88	1.02	10.90	30.00	Pass		6.5	
HE20	MCS0	2	117	6535	106/53	0.00	0.00	10.61	9.77	13.22	1.02	14.24	30.00	Pass		10	
HE20	MCS0	2	149	6695	Full	0.00	0.00	13.58	13.45	16.53	1.02	17.55	30.00	Pass		14	
HE20	MCS0	2	149	6695	26/0	0.00	0.00	4.12	3.83	6.99	1.02	8.01	30.00	Pass		4	
HE20	MCS0	2	149	6695	52/37	0.00	0.00	6.66	6.39	9.54	1.02	10.56	30.00	Pass		6.5	
HE20	MCS0	2	149	6695	106/53	0.00	0.00	10.33	9.85	13.11	1.02	14.13	30.00	Pass		10	
HE20	MCS0	2	181	6855	Full	0.00	0.00	13.62	13.54	16.59	1.02	17.61	30.00	Pass		14	
HE20	MCS0	2	181	6855	26/8	0.00	0.00	4.13	4.19	7.17	1.02	8.19	30.00	Pass		4	
HE20	MCS0	2	181	6855	52/40	0.00	0.00	6.65	6.63	9.65	1.02	10.67	30.00	Pass		6.5	
HE20	MCS0	2	181	6855	106/54	0.00	0.00	10.39	10.11	13.26	1.02	14.28	30.00	Pass		10	
HE40	MCS0	2	123	6565	Full	0.00	0.00	13.74	13.27	16.52	1.02	17.54	30.00	Pass		14	
HE40	MCS0	2	123	6565	242/61	0.00	0.00	10.93	10.24	13.61	1.02	14.63	30.00	Pass		10.5	
HE40	MCS0	2	147	6685	Full	0.00	0.00	13.65	13.22	16.45	1.02	17.47	30.00	Pass		14	
HE40	MCS0	2	147	6685	242/61	0.00	0.00	10.77	10.35	13.58	1.02	14.60	30.00	Pass		10.5	
HE40	MCS0	2	179	6845	Full	0.00	0.00	13.64	13.26	16.46	1.02	17.48	30.00	Pass		14	
HE40	MCS0	2	179	6845	242/62	0.00	0.00	10.75	10.63	13.70	1.02	14.72	30.00	Pass		10.5	
HE80	MCS0	2	135	6625	Full	0.00	0.00	13.39	12.66	16.05	1.02	17.07	30.00	Pass		14	
HE80	MCS0	2	135	6625	484/65	0.07	0.04	11.34	10.65	14.02	1.02	15.04	30.00	Pass		11	
HE80	MCS0	2	151	6705	Full	0.00	0.00	13.28	12.63	15.98	1.02	17.00	30.00	Pass		14	
HE80	MCS0	2	151	6705	484/65	0.07	0.04	10.98	10.20	13.62	1.02	14.64	30.00	Pass		10.5	
HE80	MCS0	2	167	6785	Full	0.00	0.00	13.62	13.21	16.43	1.02	17.45	30.00	Pass		14	
HE80	MCS0	2	167	6785	484/66	0.07	0.04	11.68	10.87	14.30	1.02	15.32	30.00	Pass		11	
HE160	MCS0	2	143	6665	Full	0.00	0.00	13.68	13.12	16.42	1.02	17.44	30.00	Pass		14	
HE160	MCS0	2	143	6665	996/68	0.05	0.05	11.40	10.27	13.88	1.02	14.90	30.00	Pass		11	

TEST RESULTS DATA
EIRP Power Table

U-NII-5 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	001	5955	Full	0.00	0.00	13.95	13.55	16.76	0.35		17.11	30.00	Pass		14
HE20	MCS0	2	001	5955	26/0	0.00	0.00	4.73	4.07	7.42	0.35		7.77	30.00	Pass		4
HE20	MCS0	2	001	5955	52/37	0.00	0.00	7.34	6.38	9.90	0.35		10.25	30.00	Pass		6.5
HE20	MCS0	2	001	5955	106/53	0.00	0.00	10.71	10.32	13.53	0.35		13.88	30.00	Pass		10
HE20	MCS0	2	049	6195	Full	0.00	0.00	14.20	13.57	16.91	0.35		17.26	30.00	Pass		14
HE20	MCS0	2	049	6195	26/0	0.00	0.00	4.66	4.25	7.47	0.35		7.82	30.00	Pass		4.5
HE20	MCS0	2	049	6195	52/37	0.00	0.00	7.42	6.93	10.19	0.35		10.54	30.00	Pass		6.5
HE20	MCS0	2	049	6195	106/53	0.00	0.00	10.75	10.29	13.54	0.35		13.89	30.00	Pass		10
HE20	MCS0	2	093	6415	Full	0.00	0.00	13.64	13.19	16.43	0.35		16.78	30.00	Pass		14
HE20	MCS0	2	093	6415	26/8	0.00	0.00	3.57	3.11	6.36	0.35		6.71	30.00	Pass		5.5
HE20	MCS0	2	093	6415	52/40	0.00	0.00	7.33	6.69	10.03	0.35		10.38	30.00	Pass		7
HE20	MCS0	2	093	6415	106/54	0.00	0.00	10.22	9.68	12.97	0.35		13.32	30.00	Pass		10
HE40	MCS0	2	003	5965	Full	0.00	0.00	13.88	13.34	16.63	0.35		16.98	30.00	Pass		14
HE40	MCS0	2	003	5965	242/61	0.00	0.00	11.44	11.18	14.32	0.35		14.67	30.00	Pass		11
HE40	MCS0	2	051	6205	Full	0.00	0.00	14.18	13.47	16.85	0.35		17.20	30.00	Pass		14
HE40	MCS0	2	051	6205	242/61	0.00	0.00	11.22	10.71	13.98	0.35		14.33	30.00	Pass		10.5
HE40	MCS0	2	091	6405	Full	0.00	0.00	13.71	12.91	16.34	0.35		16.69	30.00	Pass		14
HE40	MCS0	2	091	6405	242/62	0.00	0.00	10.71	10.14	13.44	0.35		13.79	30.00	Pass		10.5
HE80	MCS0	2	007	5985	Full	0.00	0.00	13.82	13.00	16.44	0.35		16.79	30.00	Pass		14
HE80	MCS0	2	007	5985	484/65	0.07	0.04	11.61	11.05	14.35	0.35		14.70	30.00	Pass		11
HE80	MCS0	2	055	6225	Full	0.00	0.00	14.10	13.41	16.78	0.35		17.13	30.00	Pass		14
HE80	MCS0	2	055	6225	484/65	0.07	0.04	11.37	10.68	14.05	0.35		14.40	30.00	Pass		10.5
HE80	MCS0	2	087	6385	Full	0.00	0.00	13.55	12.59	16.11	0.35		16.46	30.00	Pass		14
HE80	MCS0	2	087	6385	484/66	0.07	0.04	11.16	10.65	13.92	0.35		14.27	30.00	Pass		11
HE160	MCS0	2	015	6025	Full	0.00	0.00	13.71	13.63	16.68	0.35		17.03	30.00	Pass		14
HE160	MCS0	2	015	6025	996/67	0.05	0.05	11.46	10.87	14.18	0.35		14.53	30.00	Pass		11
HE160	MCS0	2	047	6185	Full	0.00	0.00	14.16	13.62	16.91	0.35		17.26	30.00	Pass		14
HE160	MCS0	2	047	6185	996/67	0.05	0.05	11.62	10.86	14.26	0.35		14.61	30.00	Pass		10.5
HE160	MCS0	2	079	6345	Full	0.00	0.00	13.41	13.72	16.58	0.35		16.93	30.00	Pass		14
HE160	MCS0	2	079	6345	996/68	0.05	0.05	11.06	11.26	14.17	0.35		14.52	30.00	Pass		11.5

TEST RESULTS DATA
EIRP Power Table

U-NII-7 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM				
HE20	MCS0	2	117	6535	Full	0.00	0.00	13.80	13.31	16.57	1.02	17.59	30.00	Pass	14		
HE20	MCS0	2	117	6535	26/0	0.00	0.00	4.51	3.66	7.12	1.02	8.14	30.00	Pass	4		
HE20	MCS0	2	117	6535	52/37	0.00	0.00	7.24	6.34	9.82	1.02	10.84	30.00	Pass	6.5		
HE20	MCS0	2	117	6535	106/53	0.00	0.00	10.56	9.71	13.17	1.02	14.19	30.00	Pass	10		
HE20	MCS0	2	149	6695	Full	0.00	0.00	13.55	13.38	16.48	1.02	17.50	30.00	Pass	14		
HE20	MCS0	2	149	6695	26/0	0.00	0.00	4.07	3.74	6.92	1.02	7.94	30.00	Pass	4		
HE20	MCS0	2	149	6695	52/37	0.00	0.00	6.64	6.36	9.51	1.02	10.53	30.00	Pass	6.5		
HE20	MCS0	2	149	6695	106/53	0.00	0.00	10.28	9.76	13.04	1.02	14.06	30.00	Pass	10		
HE20	MCS0	2	181	6855	Full	0.00	0.00	13.60	13.47	16.55	1.02	17.57	30.00	Pass	14		
HE20	MCS0	2	181	6855	26/8	0.00	0.00	4.05	4.17	7.12	1.02	8.14	30.00	Pass	4		
HE20	MCS0	2	181	6855	52/40	0.00	0.00	6.56	6.59	9.59	1.02	10.61	30.00	Pass	6.5		
HE20	MCS0	2	181	6855	106/54	0.00	0.00	10.30	10.05	13.19	1.02	14.21	30.00	Pass	10		
HE40	MCS0	2	123	6565	Full	0.00	0.00	13.68	13.19	16.45	1.02	17.47	30.00	Pass	14		
HE40	MCS0	2	123	6565	242/61	0.00	0.00	10.85	10.21	13.55	1.02	14.57	30.00	Pass	10.5		
HE40	MCS0	2	147	6685	Full	0.00	0.00	13.61	13.14	16.39	1.02	17.41	30.00	Pass	14		
HE40	MCS0	2	147	6685	242/61	0.00	0.00	10.71	10.31	13.52	1.02	14.54	30.00	Pass	10.5		
HE40	MCS0	2	179	6845	Full	0.00	0.00	13.57	13.18	16.39	1.02	17.41	30.00	Pass	14		
HE40	MCS0	2	179	6845	242/62	0.00	0.00	10.72	10.60	13.67	1.02	14.69	30.00	Pass	10.5		
HE80	MCS0	2	135	6625	Full	0.00	0.00	13.32	12.60	15.99	1.02	17.01	30.00	Pass	14		
HE80	MCS0	2	135	6625	484/65	0.07	0.04	11.31	10.57	13.97	1.02	14.99	30.00	Pass	11		
HE80	MCS0	2	151	6705	Full	0.00	0.00	13.23	12.57	15.92	1.02	16.94	30.00	Pass	14		
HE80	MCS0	2	151	6705	484/65	0.07	0.04	10.95	10.12	13.57	1.02	14.59	30.00	Pass	10.5		
HE80	MCS0	2	167	6785	Full	0.00	0.00	13.57	13.14	16.37	1.02	17.39	30.00	Pass	14		
HE80	MCS0	2	167	6785	484/66	0.07	0.04	11.62	10.80	14.24	1.02	15.26	30.00	Pass	11		
HE160	MCS0	2	143	6665	Full	0.00	0.00	13.63	13.05	16.36	1.02	17.38	30.00	Pass	14		
HE160	MCS0	2	143	6665	996/68	0.05	0.05	11.35	10.20	13.82	1.02	14.84	30.00	Pass	11		



Emission Bandwidth

Test Result

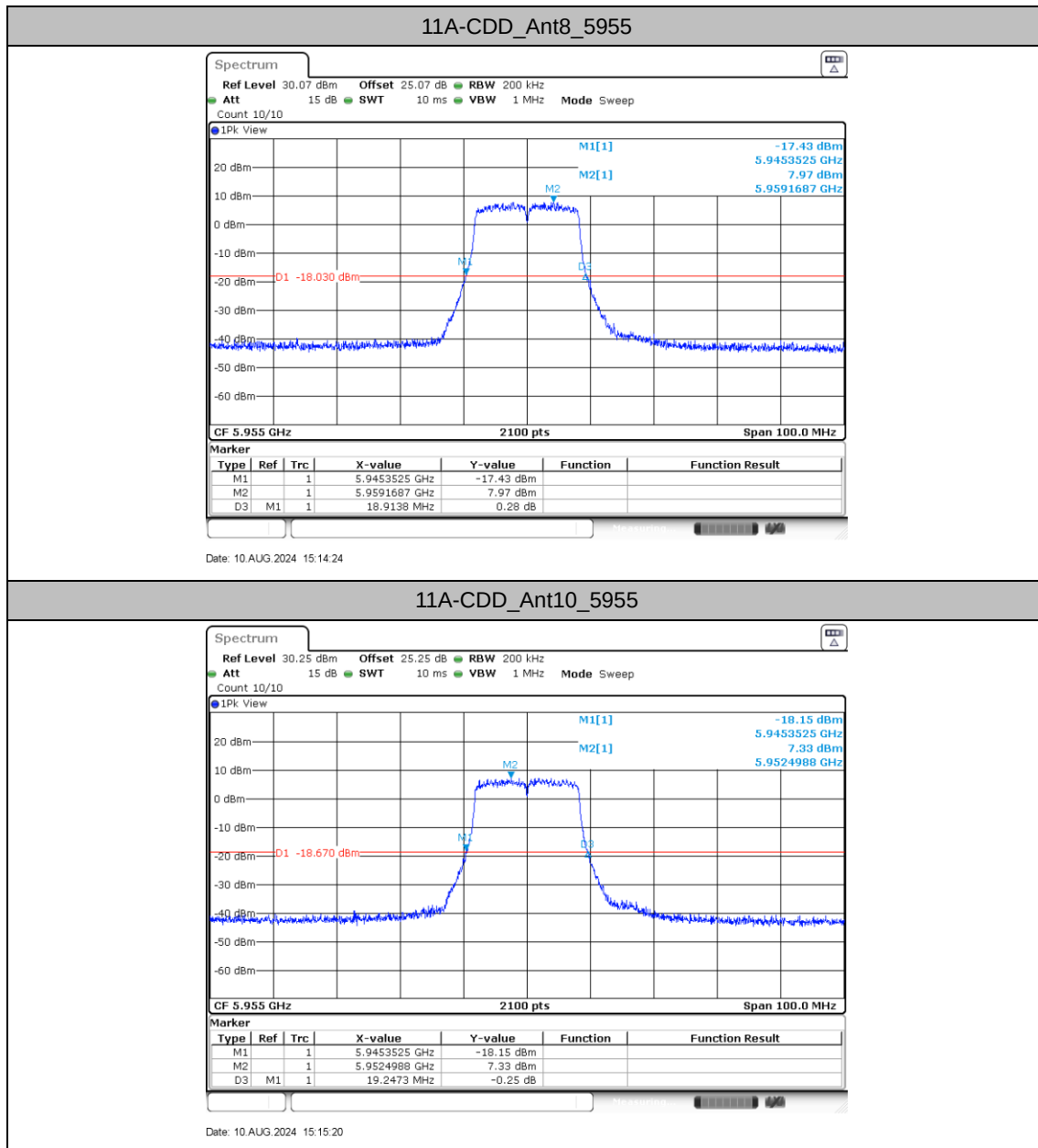
TestMode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A-CDD	Ant8	5955	18.91	5945.35	5964.27	≤ 320	PASS
	Ant10	5955	19.25	5945.35	5964.60	≤ 320	PASS
	Ant8	6195	19.06	6185.30	6204.36	≤ 320	PASS
	Ant10	6195	19.25	6185.40	6204.65	≤ 320	PASS
	Ant8	6415	18.96	6405.35	6424.31	≤ 320	PASS
	Ant10	6415	19.25	6405.35	6424.60	≤ 320	PASS
	Ant8	6535	18.96	6525.40	6544.36	≤ 320	PASS
	Ant10	6535	19.25	6525.35	6544.60	≤ 320	PASS
	Ant8	6695	19.06	6685.30	6704.36	≤ 320	PASS
	Ant10	6695	19.34	6685.30	6704.65	≤ 320	PASS
	Ant8	6855	18.96	6845.35	6864.31	≤ 320	PASS
	Ant10	6855	19.20	6845.30	6864.50	≤ 320	PASS
11AX20MIMO -CDD	Ant8	5955	20.91	5944.49	5965.41	≤ 320	PASS
	Ant10	5955	21.25	5944.26	5965.51	≤ 320	PASS
	Ant8	6195	21.15	6184.30	6205.46	≤ 320	PASS
	Ant10	6195	21.01	6184.45	6205.46	≤ 320	PASS
	Ant8	6415	21.15	6404.40	6425.55	≤ 320	PASS
	Ant10	6415	21.11	6404.30	6425.41	≤ 320	PASS
	Ant8	6535	20.96	6524.45	6545.41	≤ 320	PASS
	Ant10	6535	21.01	6524.40	6545.41	≤ 320	PASS
	Ant8	6695	21.44	6684.40	6705.84	≤ 320	PASS
	Ant10	6695	20.96	6684.54	6705.51	≤ 320	PASS
	Ant8	6855	21.25	6844.40	6865.65	≤ 320	PASS
	Ant10	6855	20.87	6844.59	6865.46	≤ 320	PASS
11AX40MIMO -CDD	Ant8	5965	40.59	5944.66	5985.25	≤ 320	PASS
	Ant10	5965	40.69	5944.47	5985.15	≤ 320	PASS
	Ant8	6205	40.69	6184.66	6225.34	≤ 320	PASS
	Ant10	6205	40.59	6184.66	6225.25	≤ 320	PASS
	Ant8	6405	40.50	6384.66	6425.15	≤ 320	PASS
	Ant10	6405	40.59	6384.66	6425.25	≤ 320	PASS
	Ant8	6565	40.50	6544.75	6585.25	≤ 320	PASS
	Ant10	6565	40.59	6544.75	6585.34	≤ 320	PASS
	Ant8	6685	40.50	6664.85	6705.34	≤ 320	PASS



	Ant10	6685	40.88	6664.75	6705.63	≤ 320	PASS
	Ant8	6845	40.78	6824.66	6865.44	≤ 320	PASS
	Ant10	6845	40.78	6824.47	6865.25	≤ 320	PASS
11AX80MIMO -CDD	Ant8	5985	82.71	5943.36	6026.07	≤ 320	PASS
	Ant10	5985	83.09	5943.17	6026.26	≤ 320	PASS
	Ant8	6225	82.52	6183.55	6266.07	≤ 320	PASS
	Ant10	6225	82.52	6183.55	6266.07	≤ 320	PASS
	Ant8	6385	82.13	6343.74	6425.88	≤ 320	PASS
	Ant10	6385	82.13	6343.93	6426.07	≤ 320	PASS
	Ant8	6625	81.94	6584.12	6666.07	≤ 320	PASS
	Ant10	6625	82.32	6583.74	6666.07	≤ 320	PASS
	Ant8	6705	82.52	6663.74	6746.26	≤ 320	PASS
	Ant10	6705	82.32	6663.93	6746.26	≤ 320	PASS
	Ant8	6785	82.13	6744.12	6826.26	≤ 320	PASS
	Ant10	6785	81.94	6743.93	6825.88	≤ 320	PASS
11AX160MIMO -CDD	Ant8	6025	165.03	5942.48	6107.52	≤ 320	PASS
	Ant10	6025	165.03	5942.87	6107.90	≤ 320	PASS
	Ant8	6185	165.79	6101.34	6267.13	≤ 320	PASS
	Ant10	6185	165.79	6102.10	6267.90	≤ 320	PASS
	Ant8	6345	164.27	6262.48	6426.75	≤ 320	PASS
	Ant10	6345	165.41	6261.72	6427.13	≤ 320	PASS
	Ant8	6665	165.79	6582.48	6748.28	≤ 320	PASS
	Ant10	6665	165.41	6582.10	6747.52	≤ 320	PASS

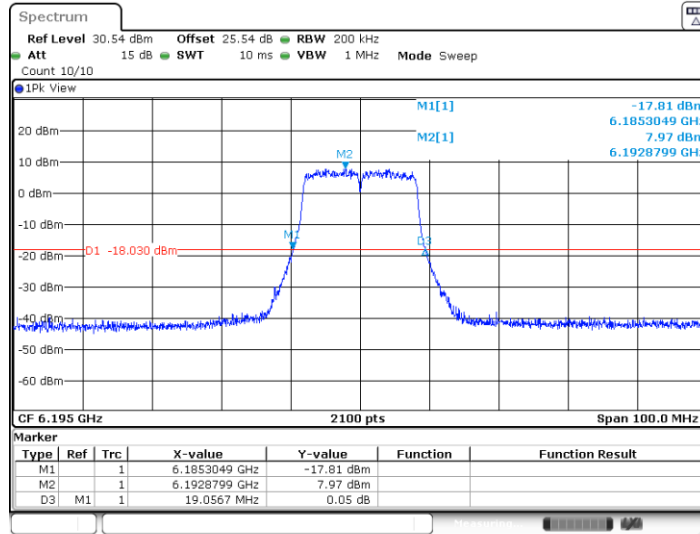


Test Graphs



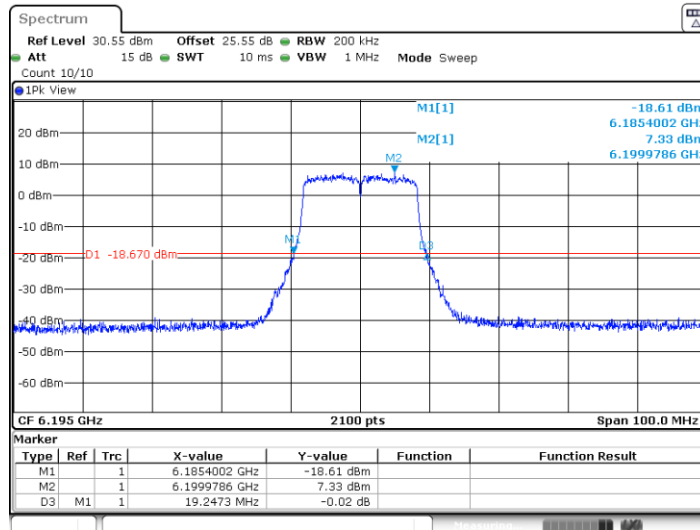


11A-CDD_Ant8_6195



Date: 10 AUG. 2024 15:17:04

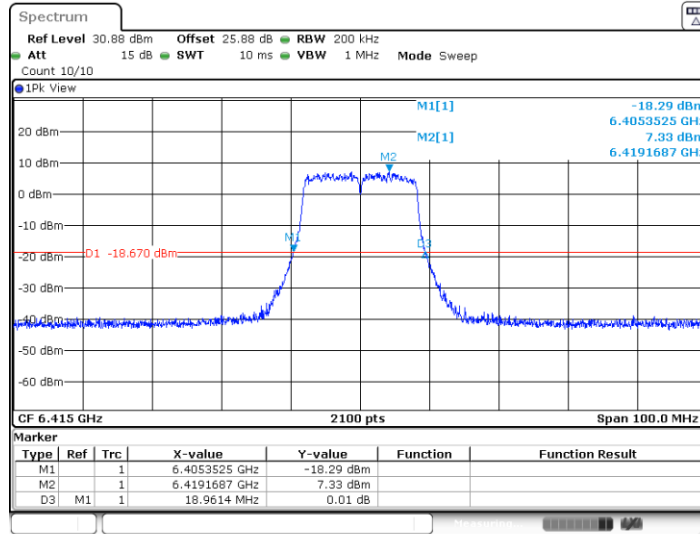
11A-CDD_Ant10_6195



Date: 10 AUG. 2024 15:17:48

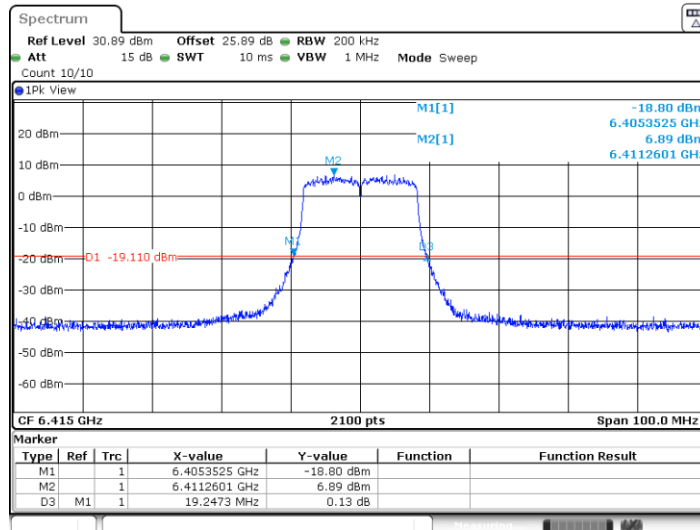


11A-CDD_Ant8_6415

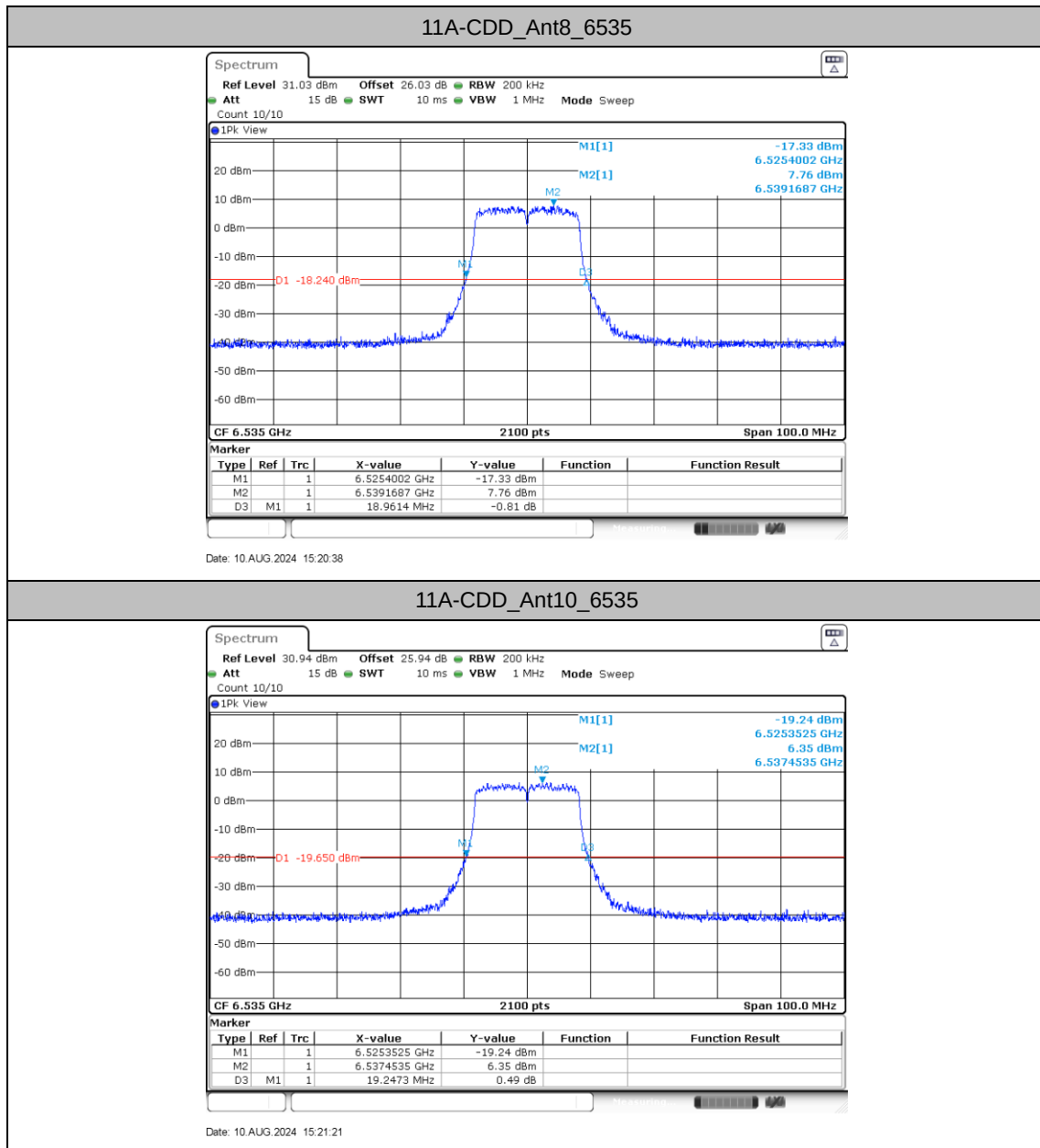


Date: 10 AUG 2024 15:18:42

11A-CDD_Ant10_6415

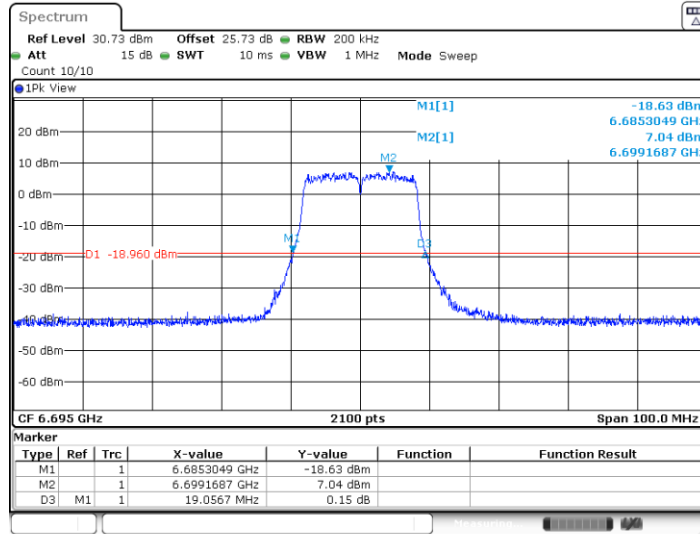


Date: 10 AUG 2024 15:19:25



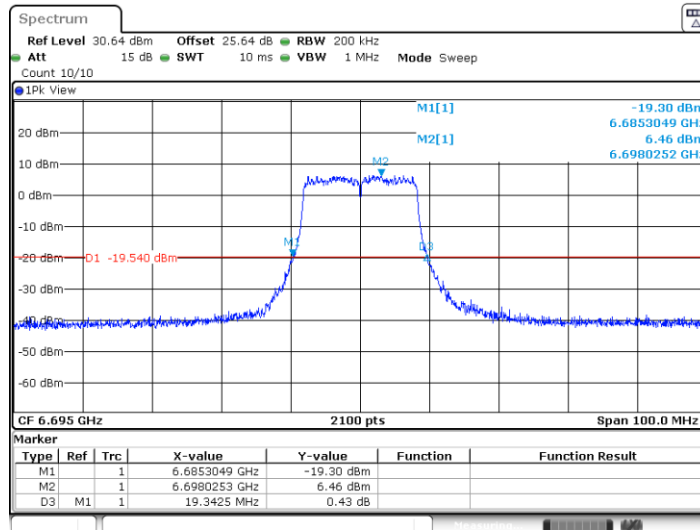


11A-CDD_Ant8_6695



Date: 10 AUG. 2024 15:22:17

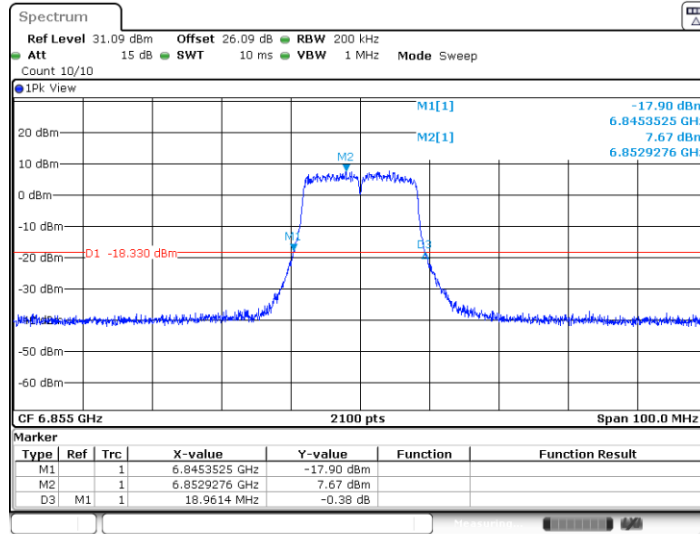
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Date: 10 AUG. 2024 15:23:01

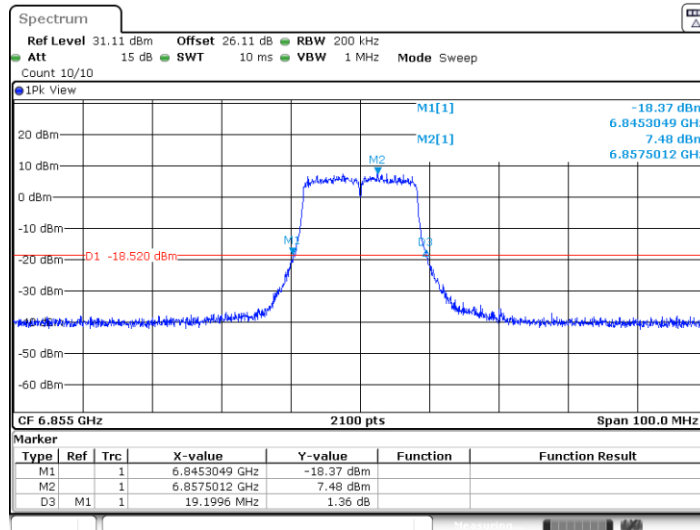


11A-CDD_Ant8_6855



Date: 10 AUG 2024 15:23:55

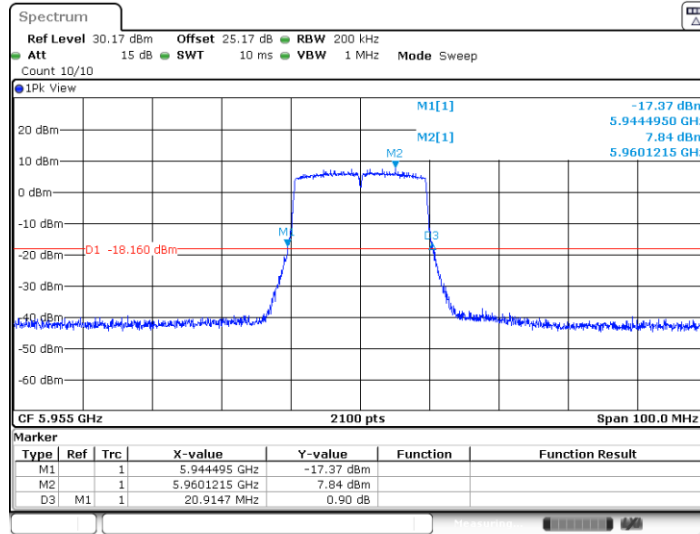
11A-CDD_Ant10_6855



Date: 10 AUG 2024 15:24:38

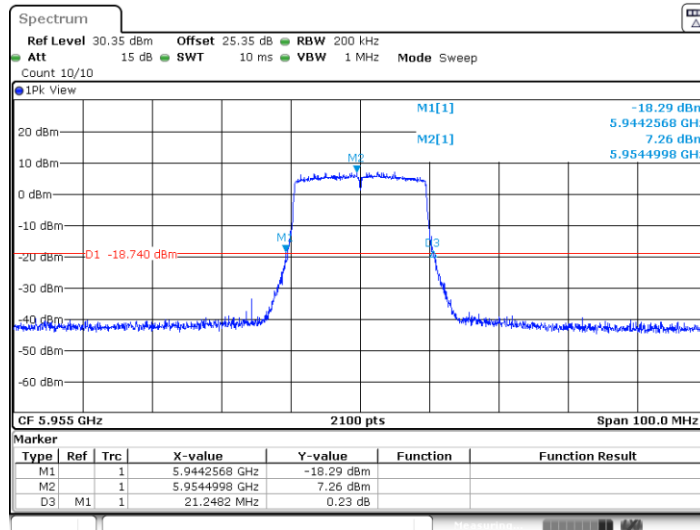


11AX20MIMO_Ant8_5955



Date: 10 AUG 2024 15:28:01

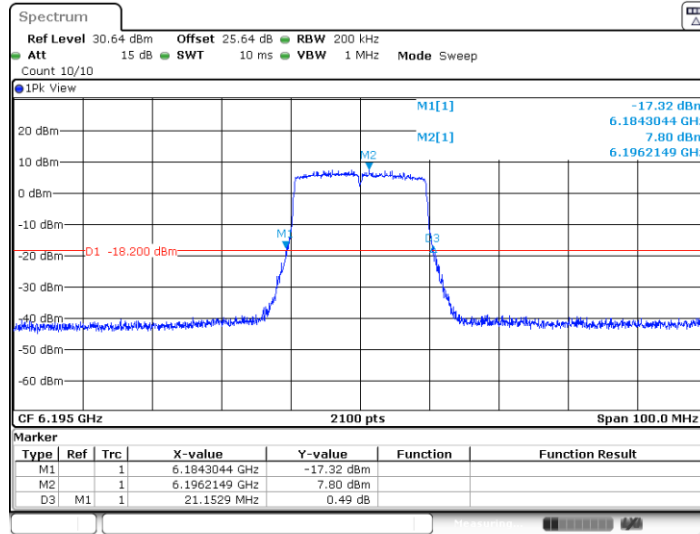
11AX20MIMO_Ant10_5955



Date: 10 AUG 2024 15:28:52

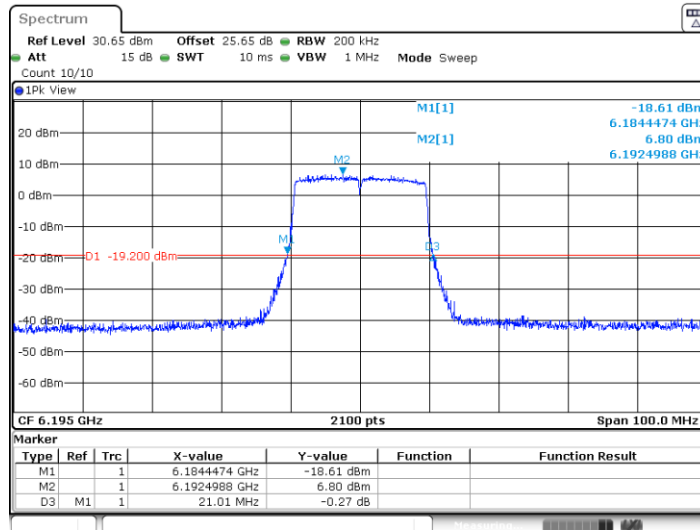


11AX20MIMO_Ant8_6195



Date: 10 AUG. 2024 15:33:10

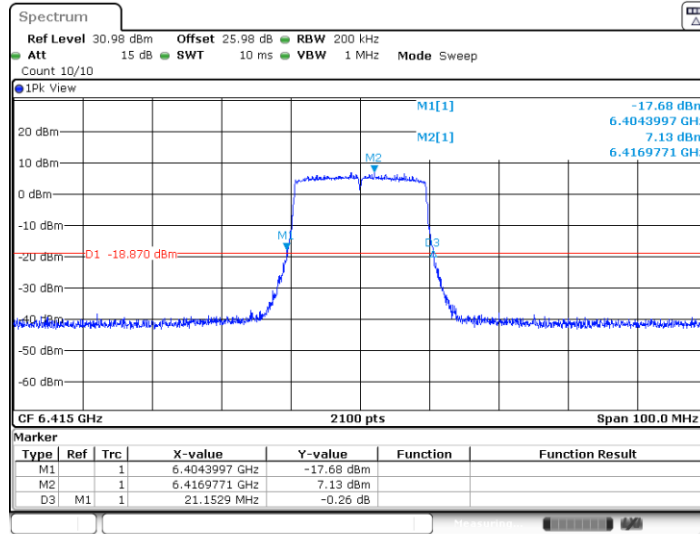
11AX20MIMO_Ant10_6195



Date: 10 AUG. 2024 15:33:53

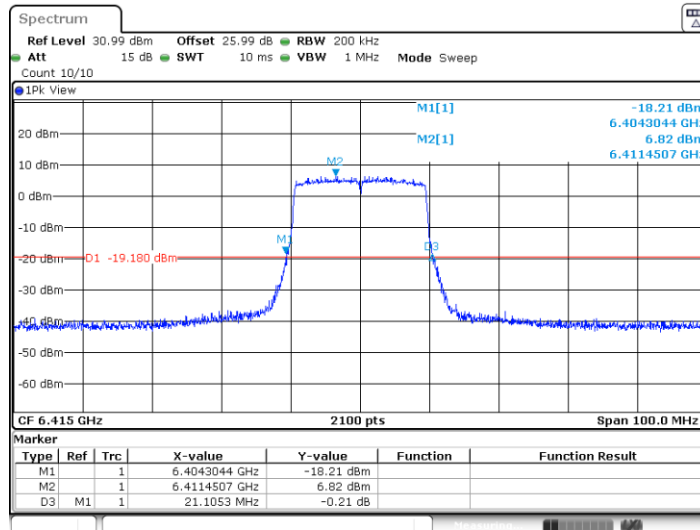


11AX20MIMO_Ant8_6415



Date: 10 AUG. 2024 15:34:51

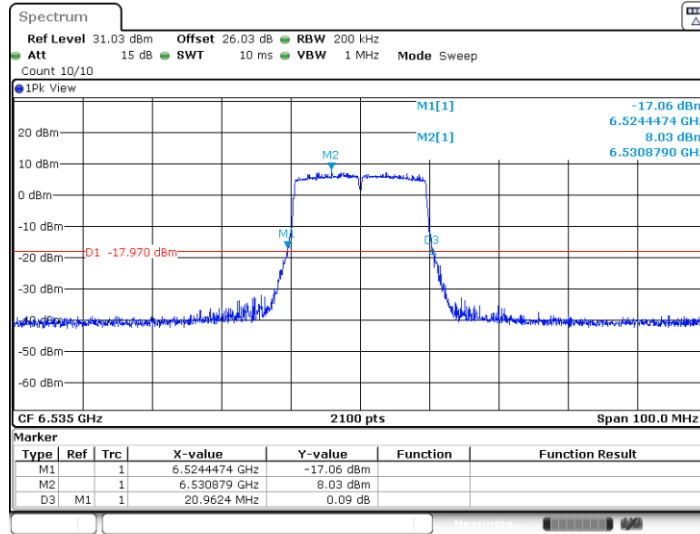
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Date: 10 AUG. 2024 15:35:33

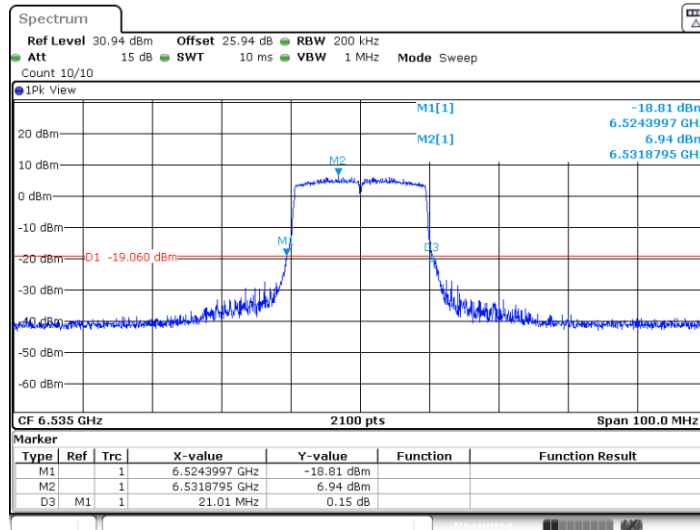


11AX20MIMO_Ant8_6535



Date: 10 AUG 2024 15:39:11

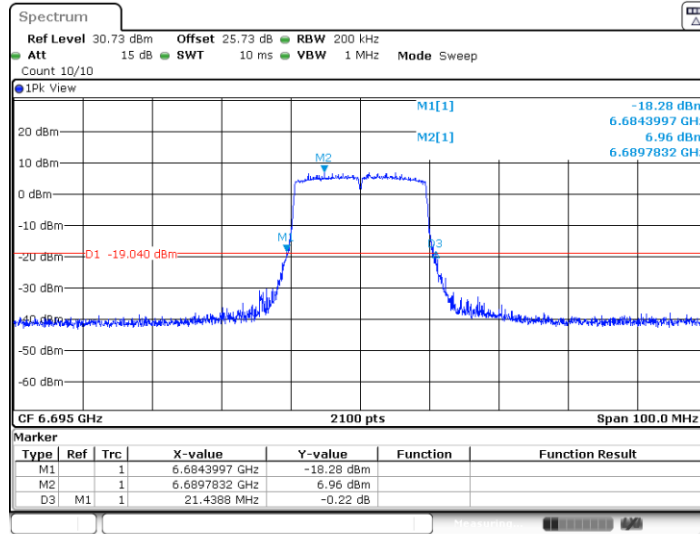
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Date: 10 AUG 2024 15:39:55

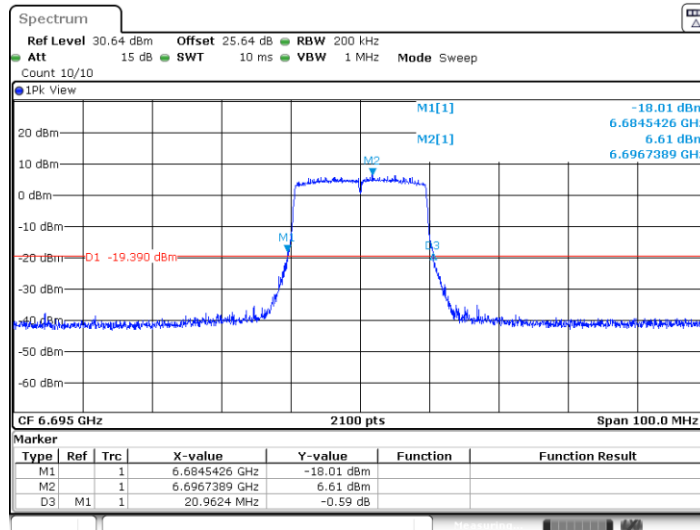


11AX20MIMO_Ant8_6695



Date: 10 AUG 2024 15:40:55

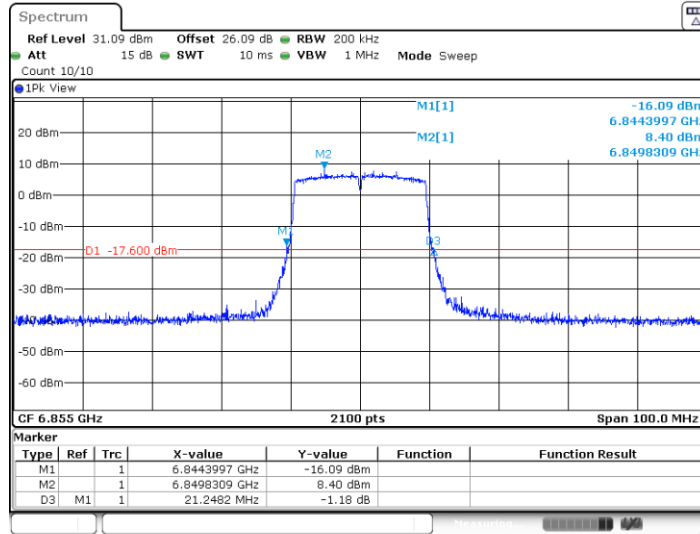
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Date: 10 AUG 2024 15:41:38

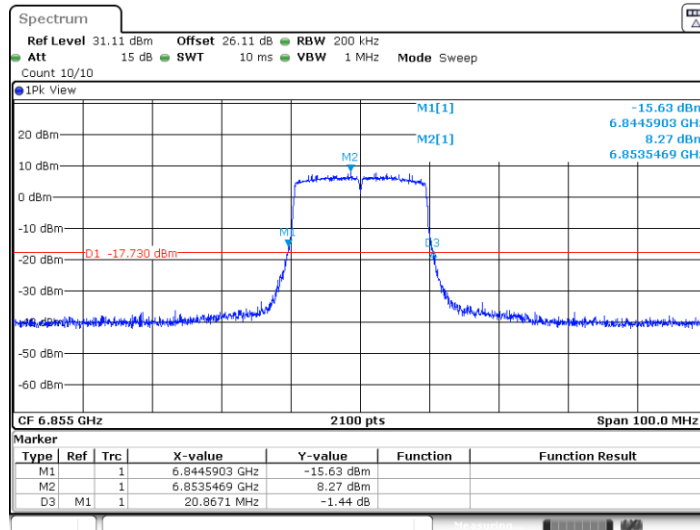


11AX20MIMO_Ant8_6855



Date: 10 AUG 2024 15:43:27

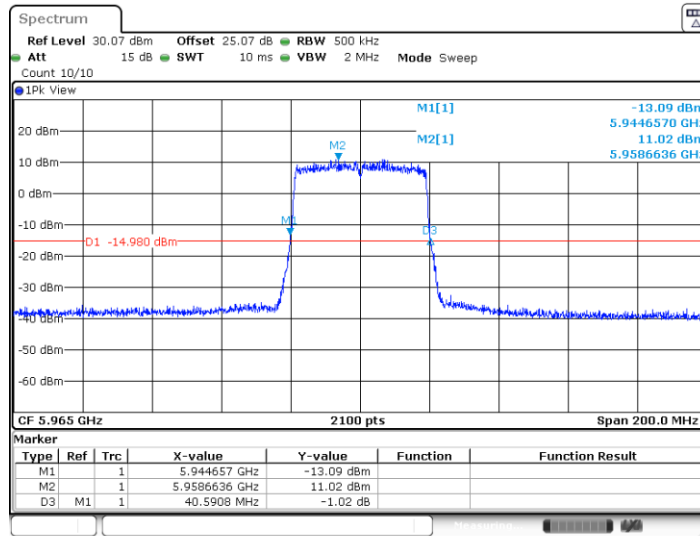
11AX20MIMO_Ant10_6855



Date: 10 AUG 2024 15:44:10

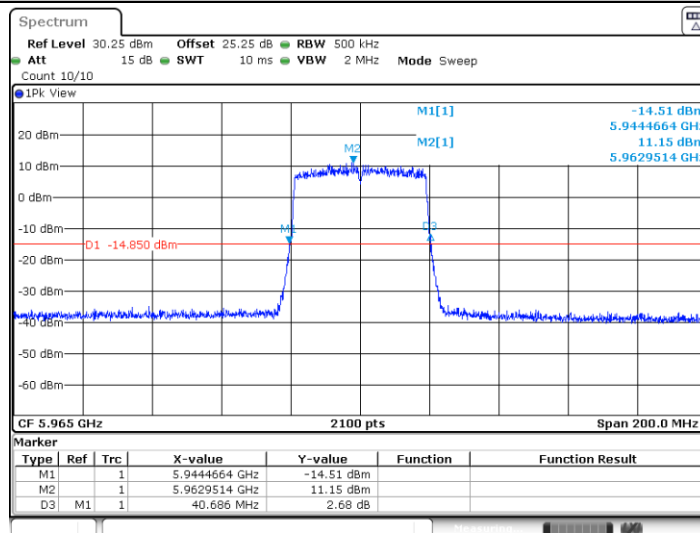


11AX40MIMO_Ant8_5965



Date: 10 AUG 2024 15:45:40

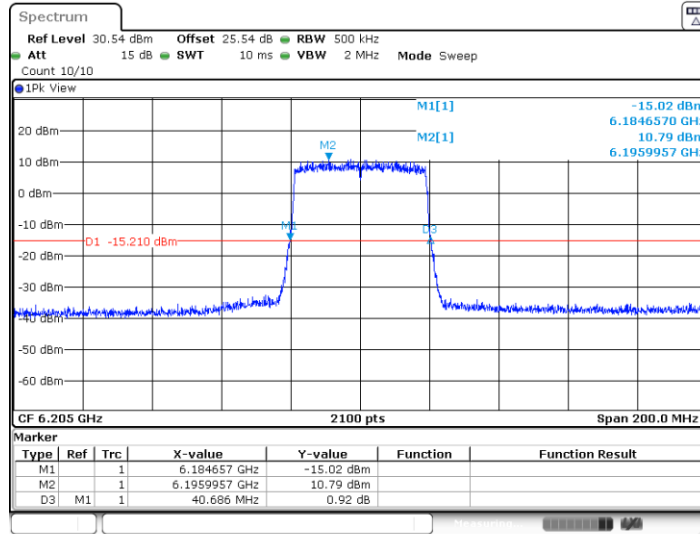
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Date: 10 AUG 2024 15:46:31

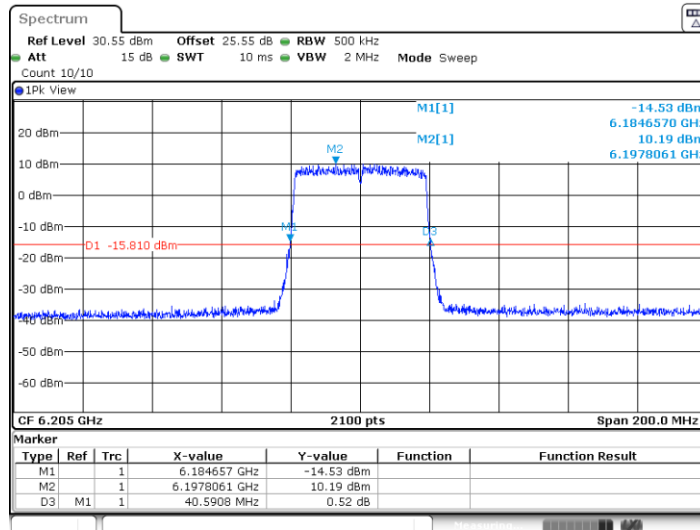


11AX40MIMO_Ant8_6205



Date: 10 AUG 2024 15:48:11

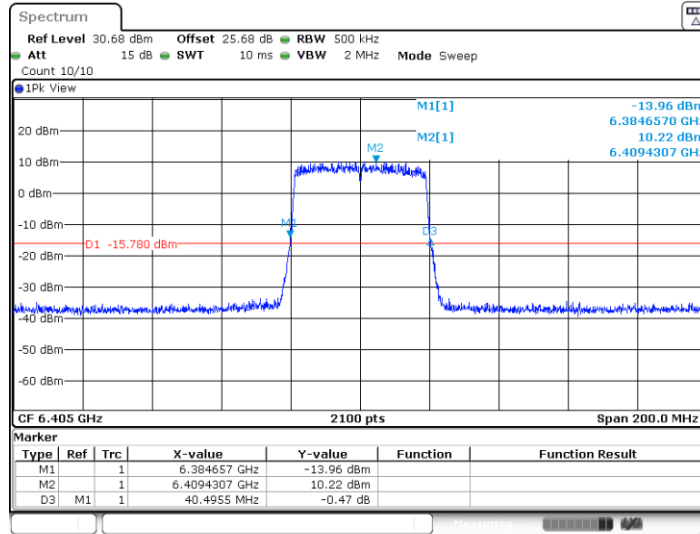
11AX40MIMO_Ant10_6205



Date: 10 AUG 2024 15:48:54

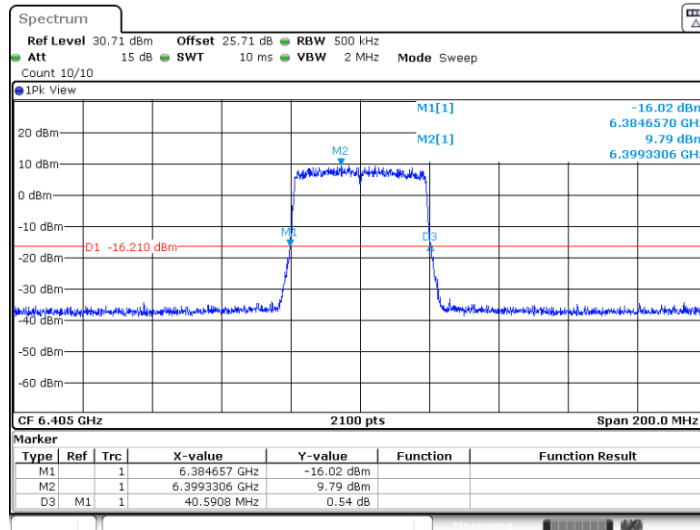


11AX40MIMO_Ant8_6405



Date: 10 AUG 2024 15:50:00

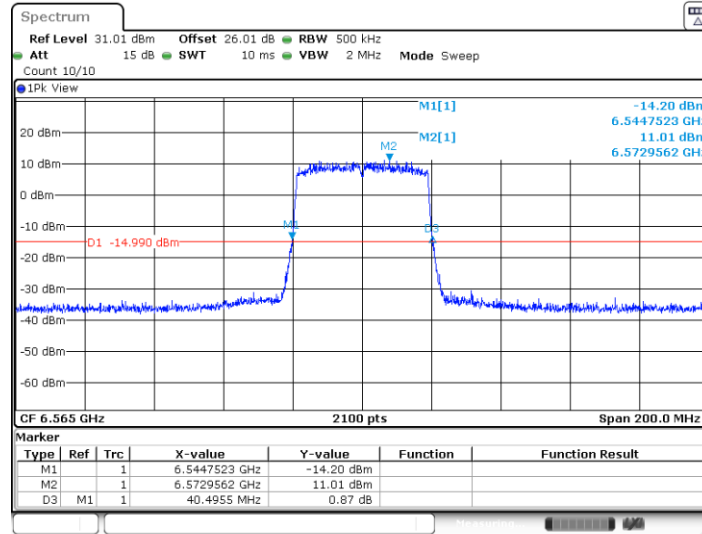
11AX40MIMO_Ant10_6405



Date: 10 AUG 2024 15:50:43

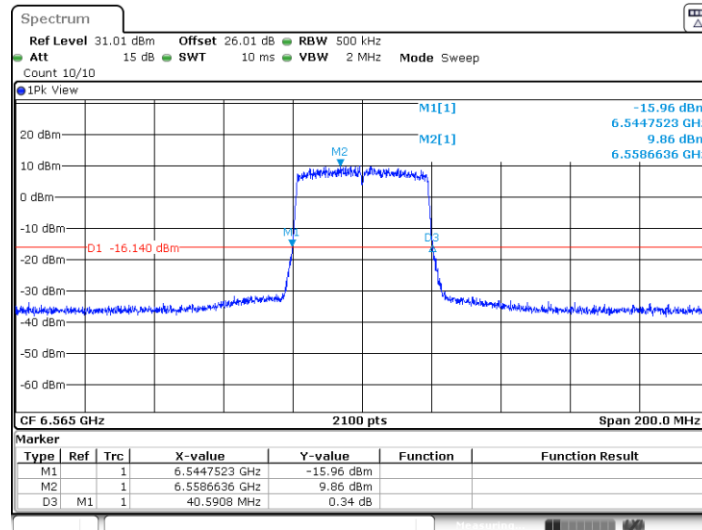


11AX40MIMO_Ant8_6565



Date: 10 AUG 2024 15:52:27

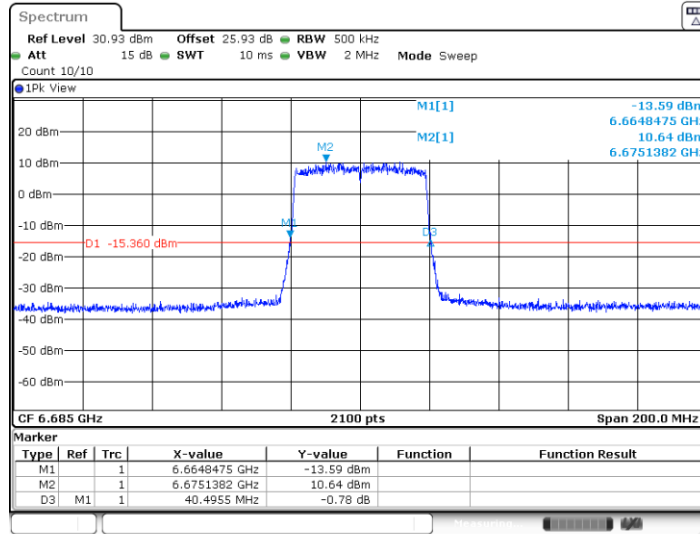
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Date: 10 AUG 2024 15:53:12

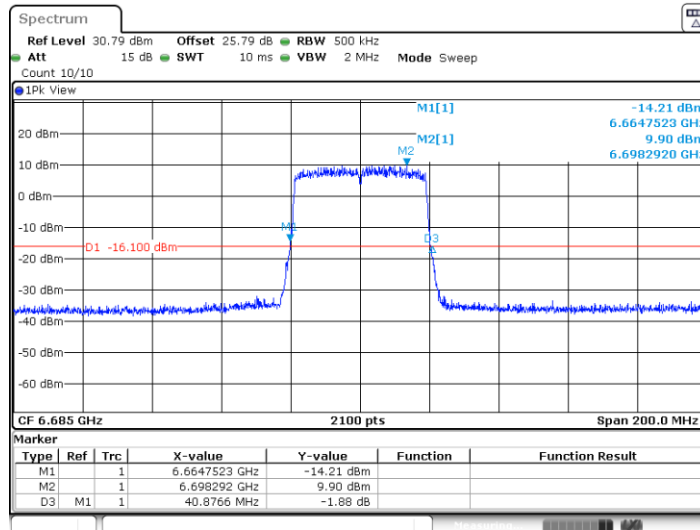


11AX40MIMO_Ant8_6685



Date: 10 AUG. 2024 15:54:08

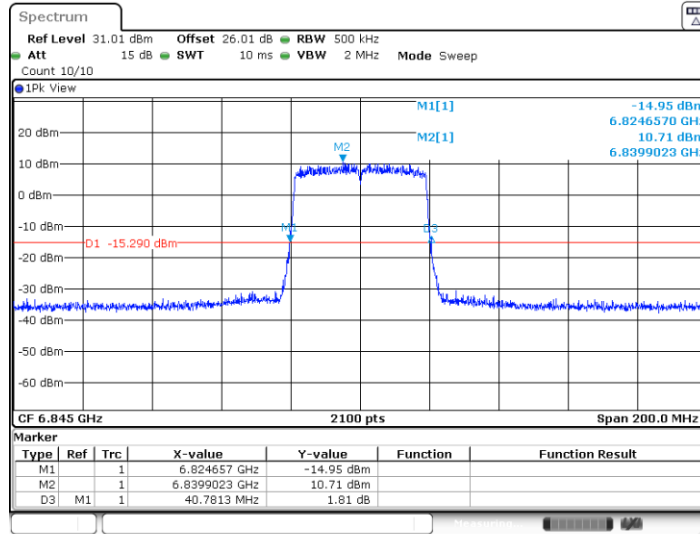
11AX40MIMO_Ant10_6685



Date: 10 AUG. 2024 15:54:51

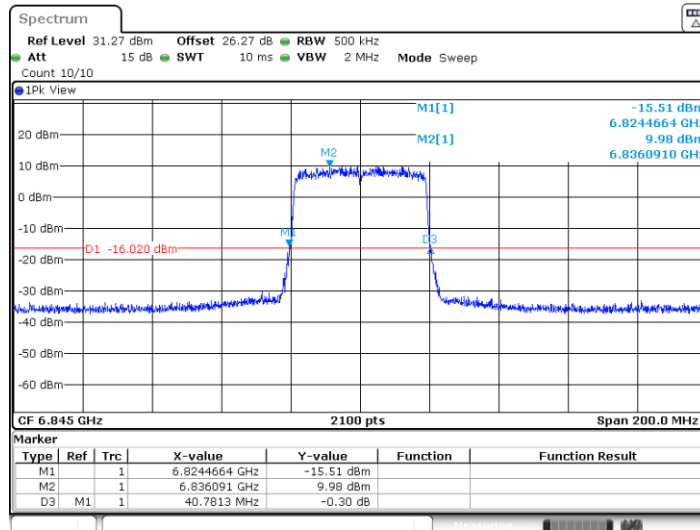


11AX40MIMO_Ant8_6845



Date: 10 AUG 2024 15:57:55

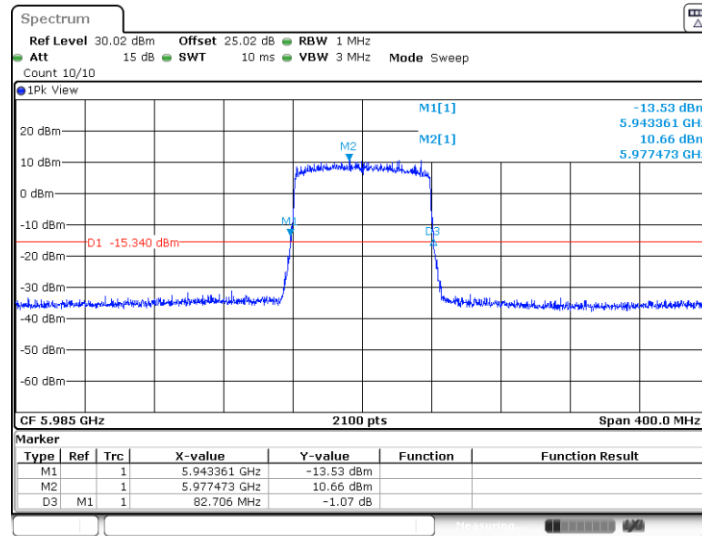
11AX40MIMO_Ant10_6845



Date: 10 AUG 2024 15:58:38

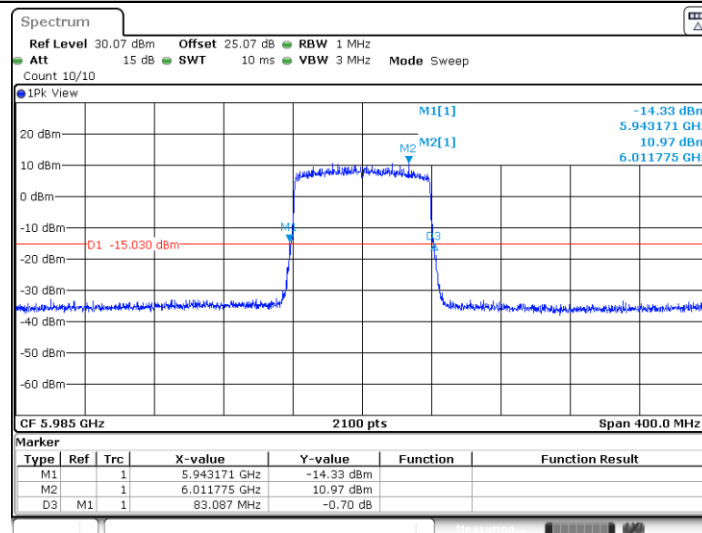


11AX80MIMO_Ant8_5985



Date: 10 AUG. 2024 16:00:40

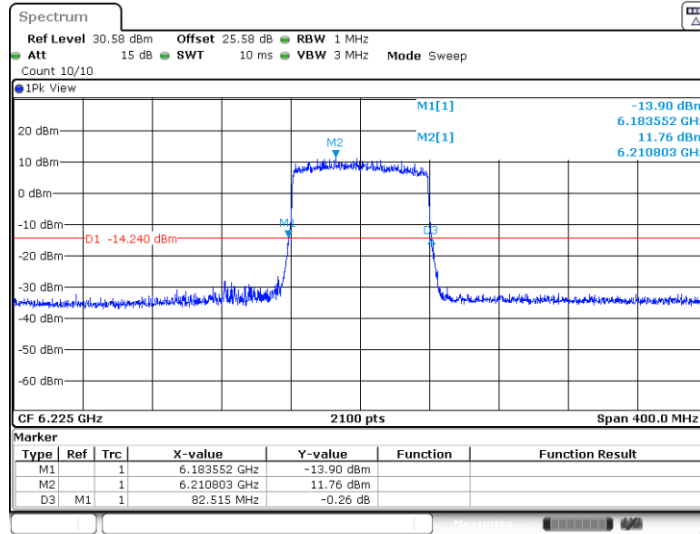
11AX80MIMO_Ant10_5985



Date: 10 AUG. 2024 16:01:31

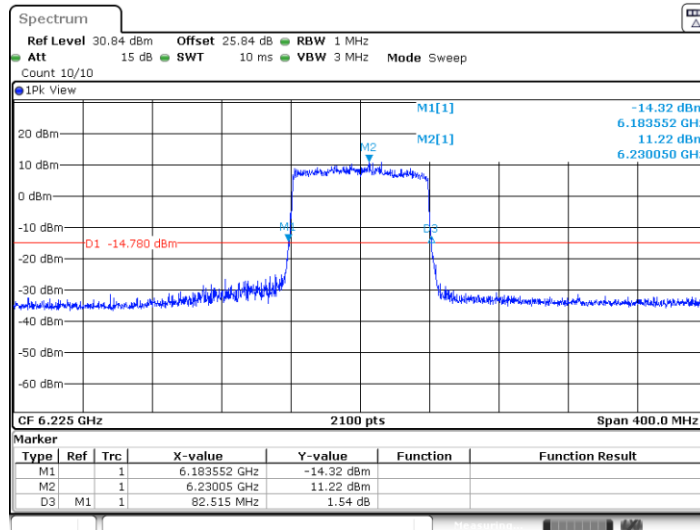


11AX80MIMO_Ant8_6225



Date: 10 AUG 2024 16:02:41

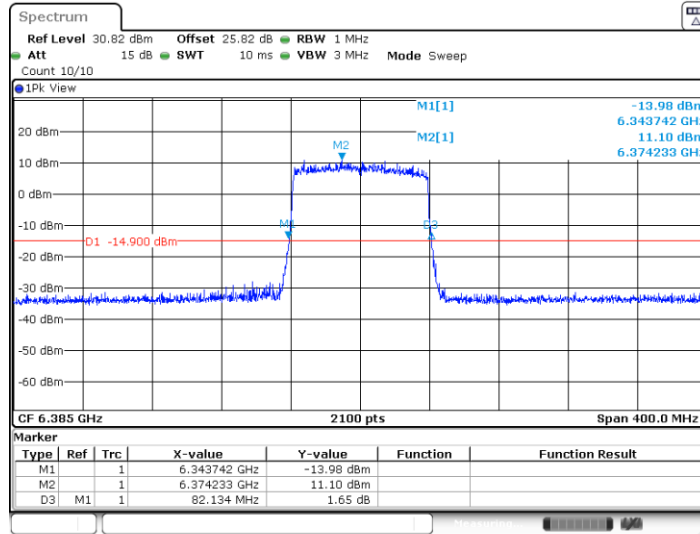
11AX80MIMO_Ant10_6225



Date: 10 AUG 2024 16:03:24

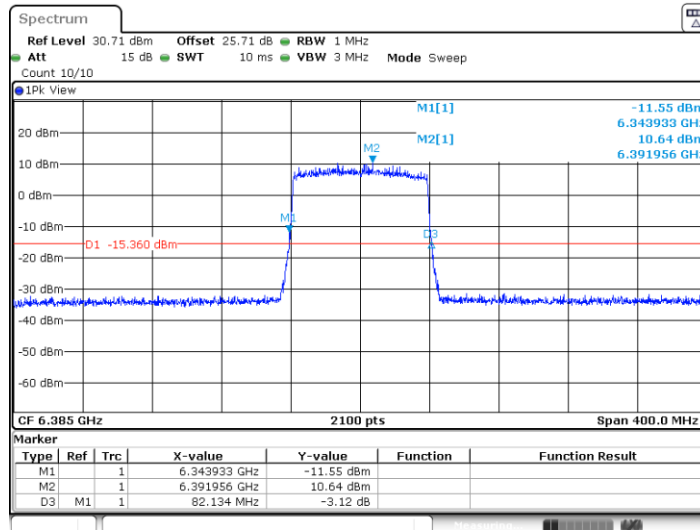


11AX80MIMO_Ant8_6385



Date: 10 AUG 2024 16:04:29

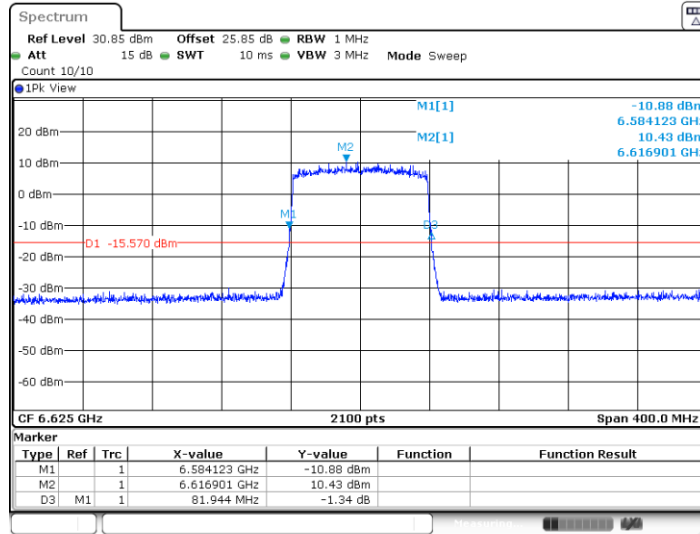
11AX80MIMO_Ant10_6385



Date: 10 AUG 2024 16:05:14

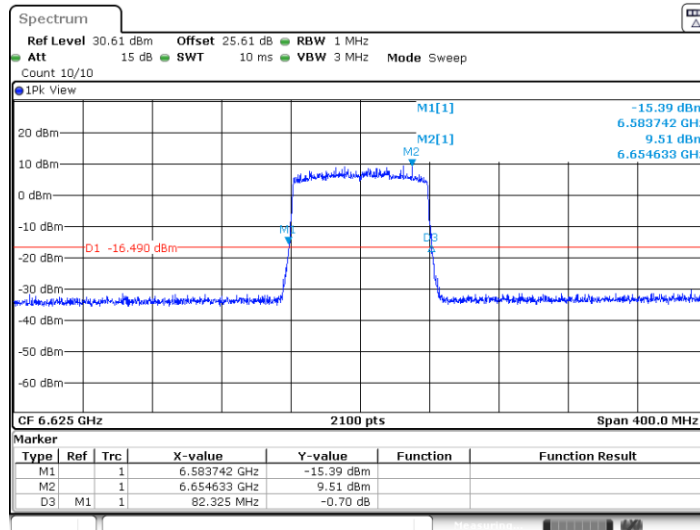


11AX80MIMO_Ant8_6625



Date: 10 AUG. 2024 16:06:42

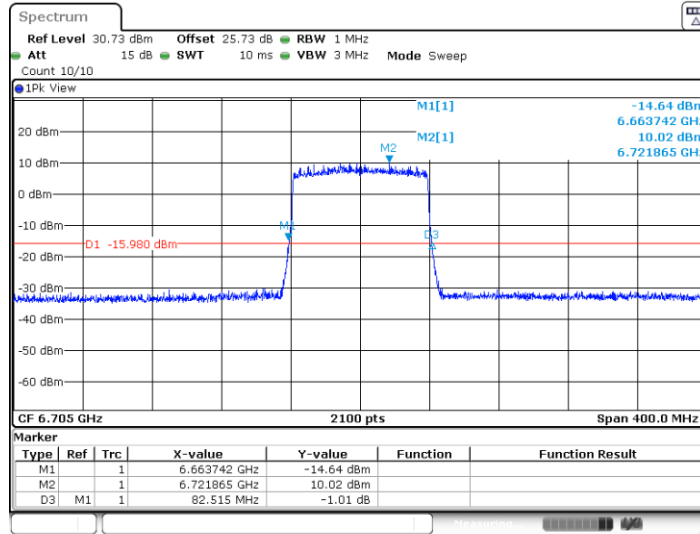
11AX80MIMO_Ant10_6625



Date: 10 AUG. 2024 16:07:25

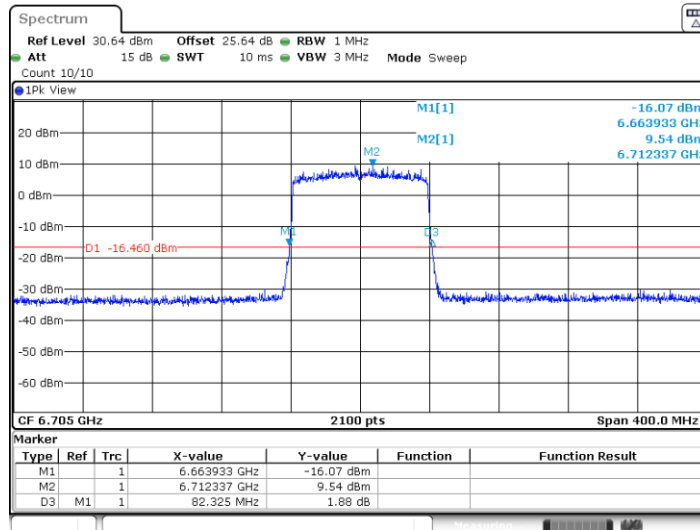


11AX80MIMO_Ant8_6705



Date: 10 AUG. 2024 16:08:25

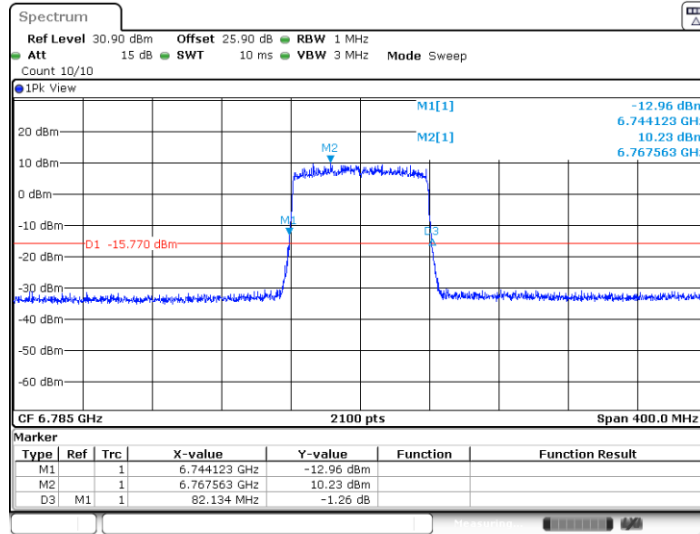
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Date: 10 AUG. 2024 16:09:08

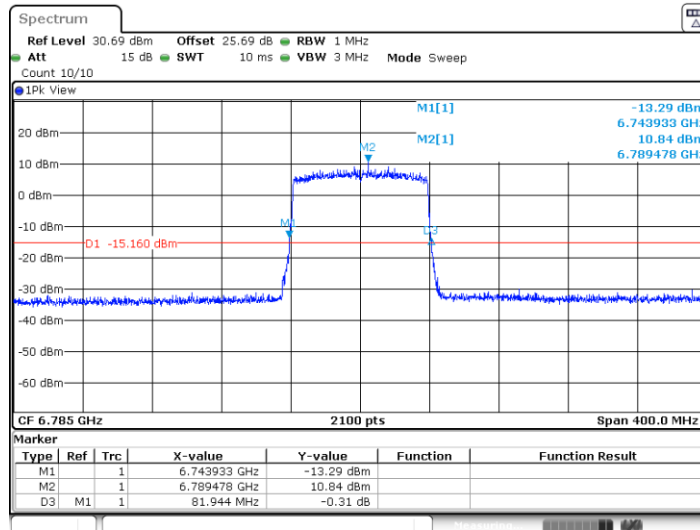


11AX80MIMO_Ant8_6785

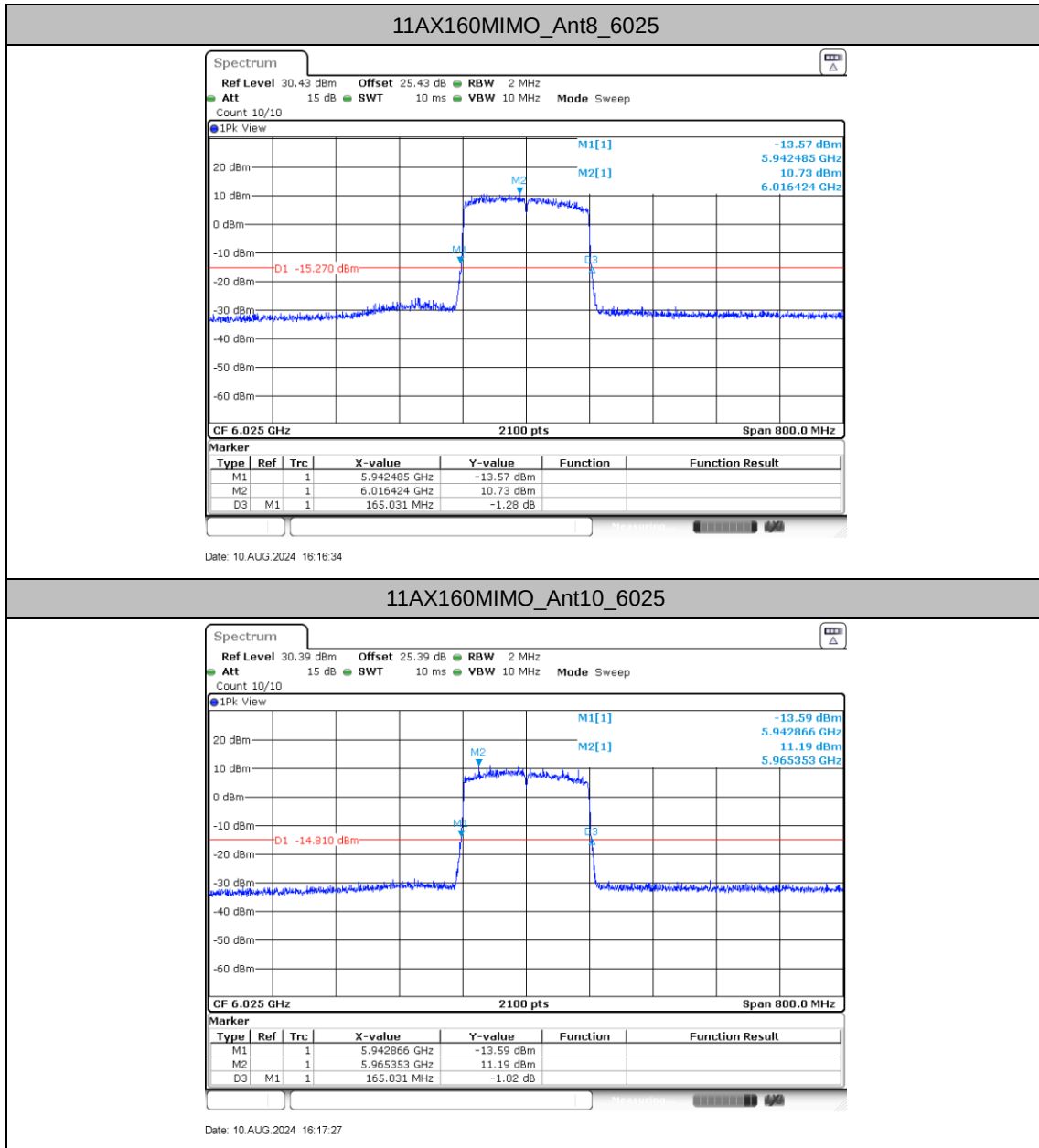


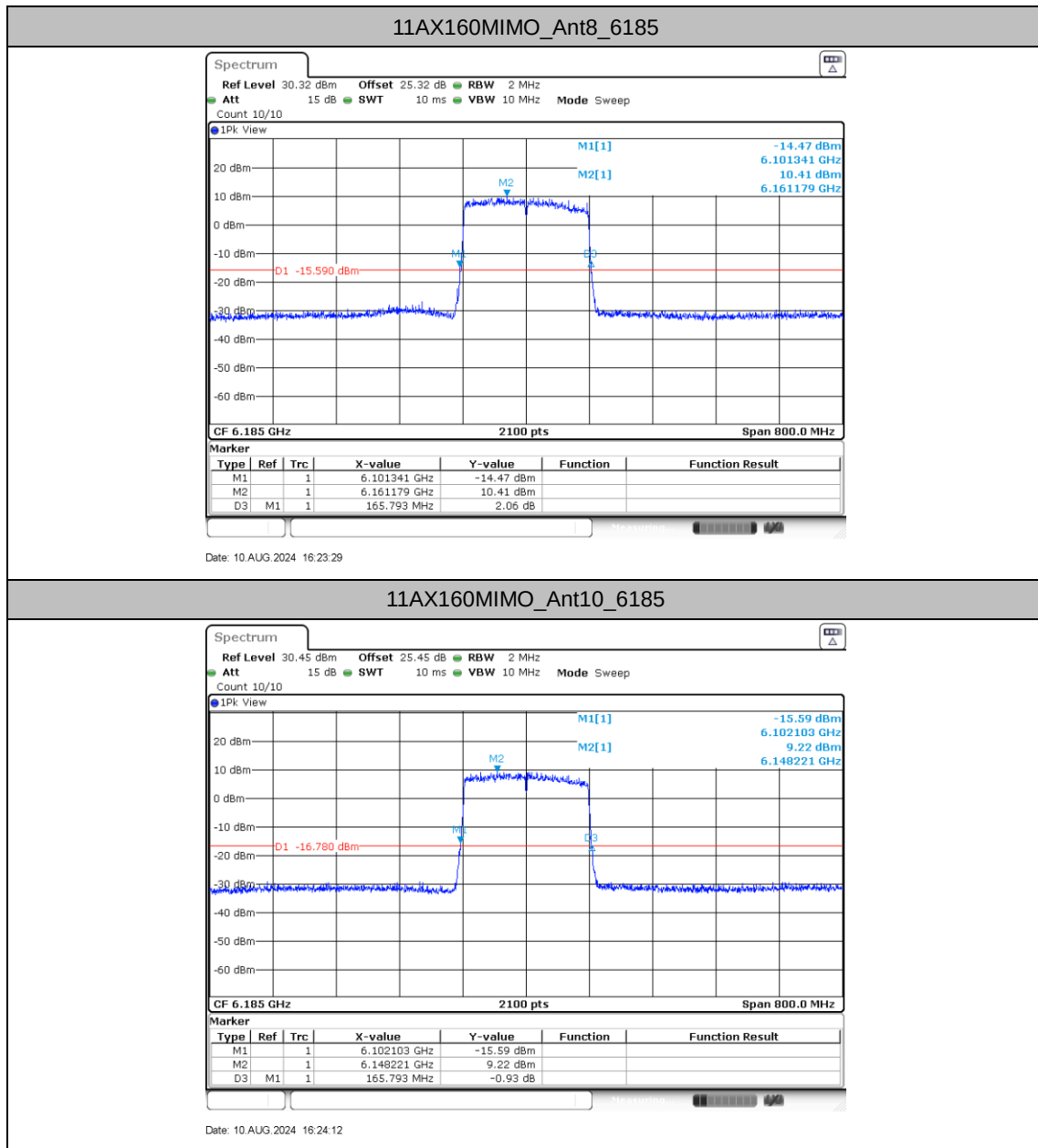
Date: 10 AUG. 2024 16:12:45

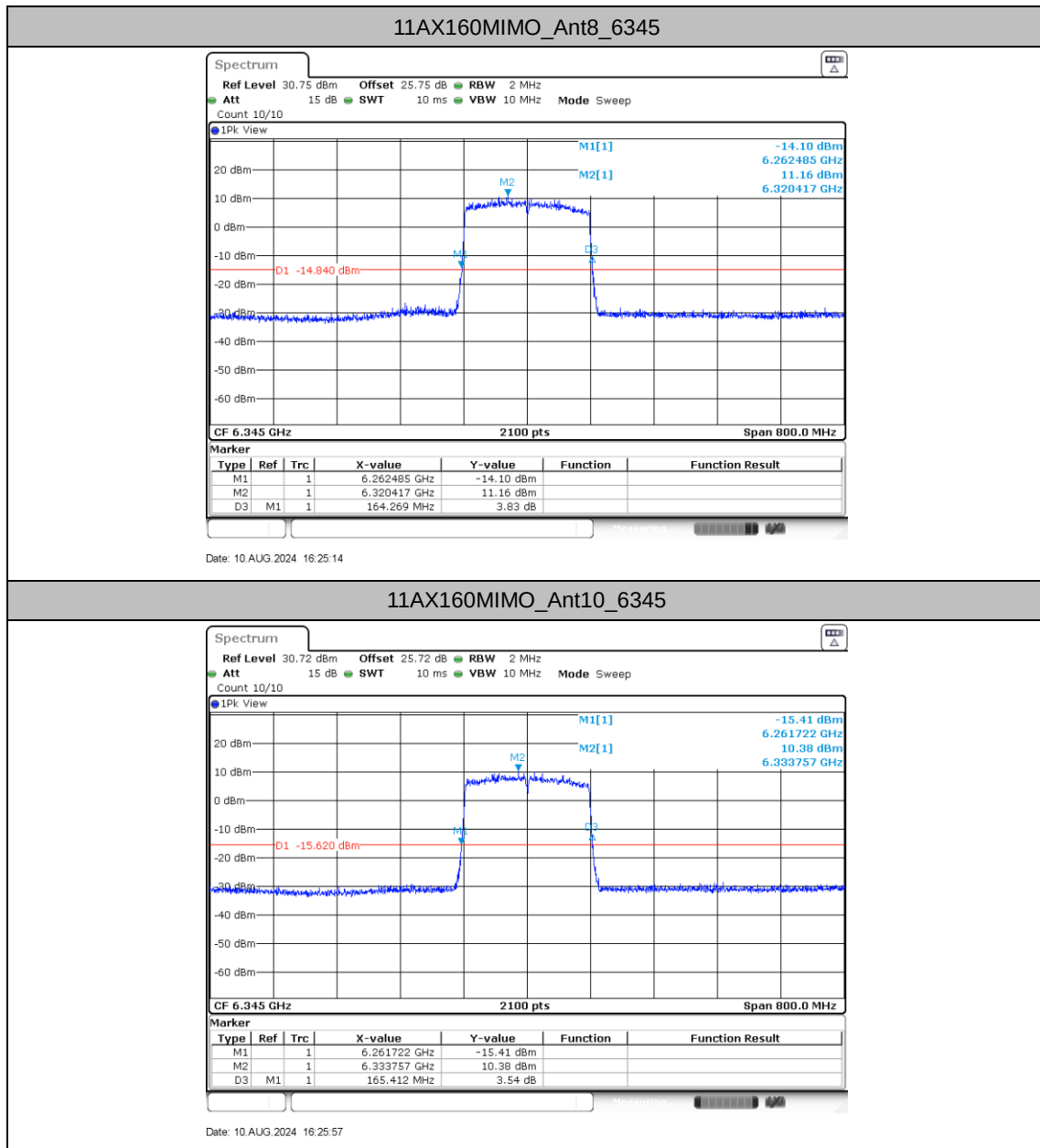
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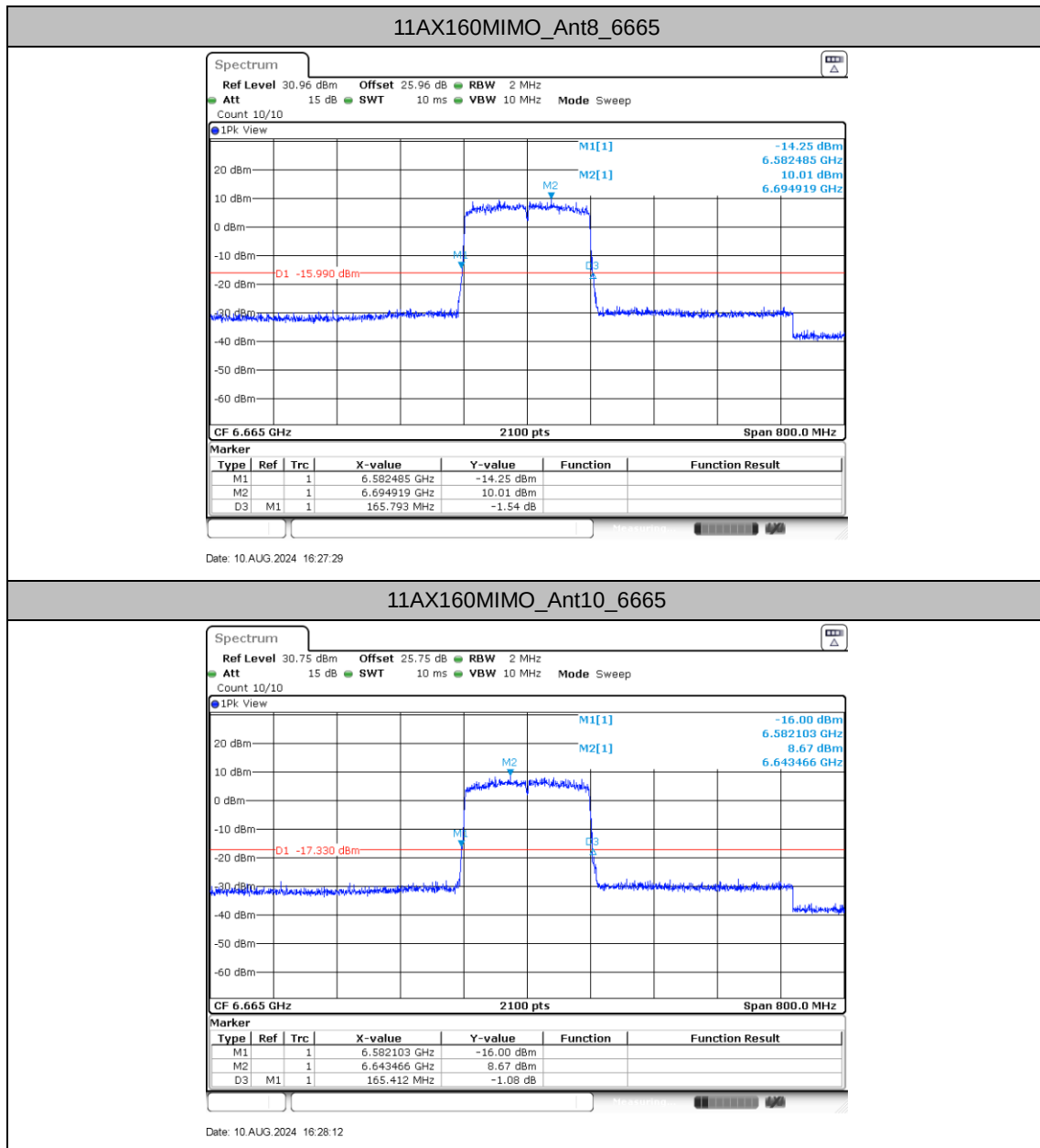


Date: 10 AUG. 2024 16:13:27











Occupied channel bandwidth

Test Result

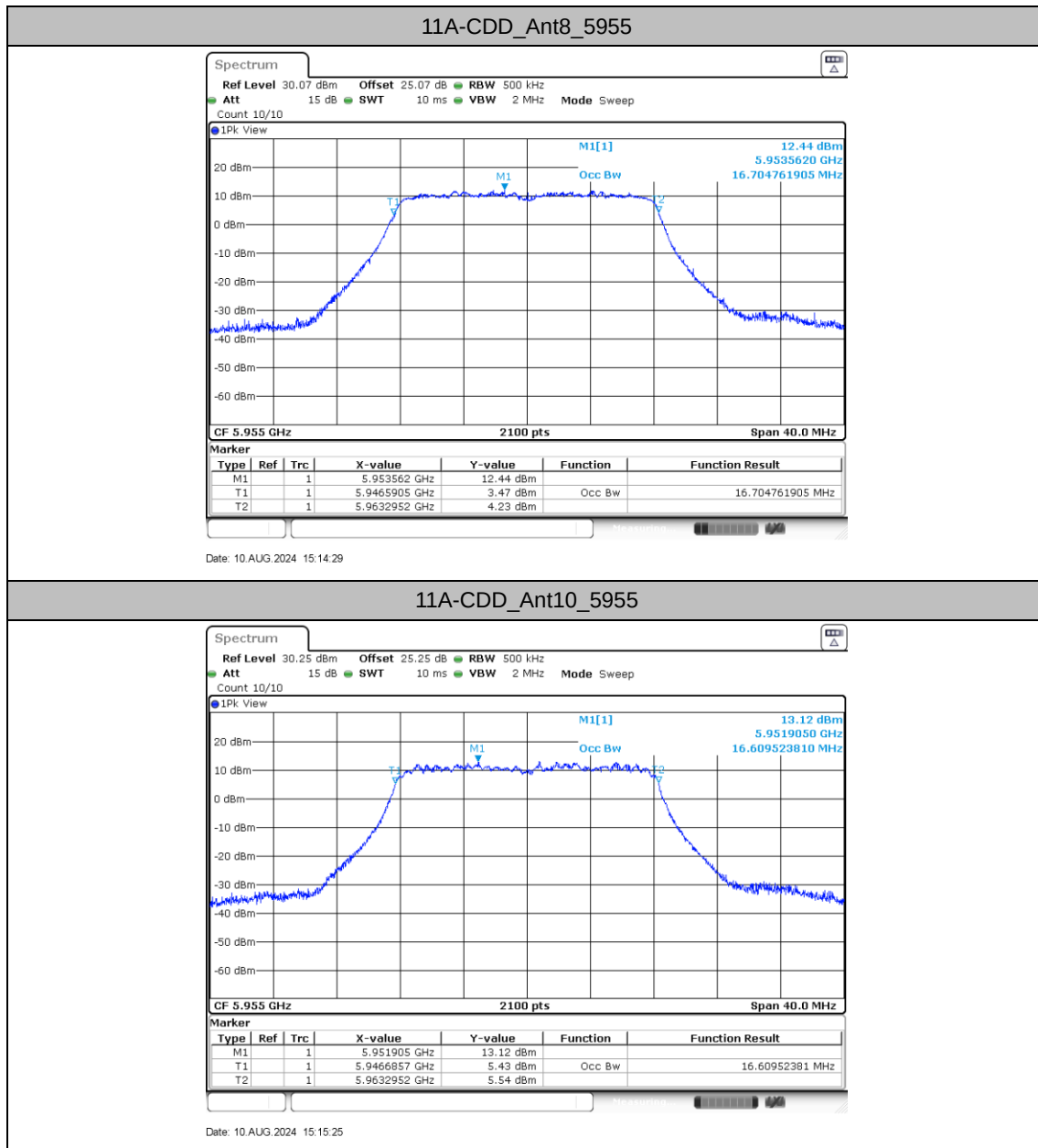
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
11A-CDD	Ant8	5955	16.705	5946.5905	5963.2952
	Ant10	5955	16.610	5946.6857	5963.2952
	Ant8	6195	16.743	6186.5333	6203.2762
	Ant10	6195	16.629	6186.6476	6203.2762
	Ant8	6415	16.724	6406.5524	6423.2762
	Ant10	6415	16.610	6406.6667	6423.2762
	Ant8	6535	16.724	6526.5524	6543.2762
	Ant10	6535	16.629	6526.6667	6543.2952
	Ant8	6695	16.705	6686.5714	6703.2762
	Ant10	6695	16.629	6686.6667	6703.2952
	Ant8	6855	16.705	6846.5714	6863.2762
	Ant10	6855	16.610	6846.6667	6863.2762
11AX20MIMO -CDD	Ant8	5955	19.029	5945.4667	5964.4952
	Ant10	5955	19.029	5945.4667	5964.4952
	Ant8	6195	19.067	6185.4286	6204.4952
	Ant10	6195	19.067	6185.4286	6204.4952
	Ant8	6415	19.048	6405.4476	6424.4952
	Ant10	6415	19.048	6405.4476	6424.4952
	Ant8	6535	19.048	6525.4476	6544.4952
	Ant10	6535	19.048	6525.4476	6544.4952
	Ant8	6695	19.029	6685.4667	6704.4952
	Ant10	6695	19.048	6685.4476	6704.4952
	Ant8	6855	19.029	6845.4667	6864.4952
	Ant10	6855	19.048	6845.4476	6864.4952
11AX40MIMO -CDD	Ant8	5965	37.867	5946.0476	5983.9143
	Ant10	5965	37.905	5946.0476	5983.9524
	Ant8	6205	37.943	6186.0095	6223.9524
	Ant10	6205	37.943	6185.9714	6223.9143
	Ant8	6405	37.943	6385.9714	6423.9143
	Ant10	6405	37.905	6386.0095	6423.9143
	Ant8	6565	37.943	6546.0095	6583.9524
	Ant10	6565	37.943	6546.0095	6583.9524
	Ant8	6685	37.867	6666.0476	6703.9143
	Ant10	6685	37.981	6665.9714	6703.9524



	Ant8	6845	37.943	6826.0095	6863.9524
	Ant10	6845	37.905	6826.0095	6863.9143
11AX80MIMO -CDD	Ant8	5985	77.410	5946.2571	6023.6667
	Ant10	5985	77.410	5946.2571	6023.6667
	Ant8	6225	77.562	6186.1048	6263.6667
	Ant10	6225	77.562	6186.1810	6263.7429
	Ant8	6385	77.562	6346.1048	6423.6667
	Ant10	6385	77.410	6346.1810	6423.5905
	Ant8	6625	77.410	6586.2571	6663.6667
	Ant10	6625	77.333	6586.3333	6663.6667
	Ant8	6705	77.410	6666.2571	6743.6667
	Ant10	6705	77.486	6666.2571	6743.7429
	Ant8	6785	77.486	6746.1810	6823.6667
	Ant10	6785	77.486	6746.2571	6823.7429
11AX160MIMO -CDD	Ant8	6025	156.495	5946.2952	6102.7905
	Ant10	6025	156.648	5946.2952	6102.9429
	Ant8	6185	157.105	6105.9905	6263.0952
	Ant10	6185	157.105	6106.1429	6263.2476
	Ant8	6345	156.952	6266.1429	6423.0952
	Ant10	6345	156.952	6266.2952	6423.2476
	Ant8	6665	157.105	6586.6000	6743.7048
	Ant10	6665	156.800	6586.7524	6743.5524

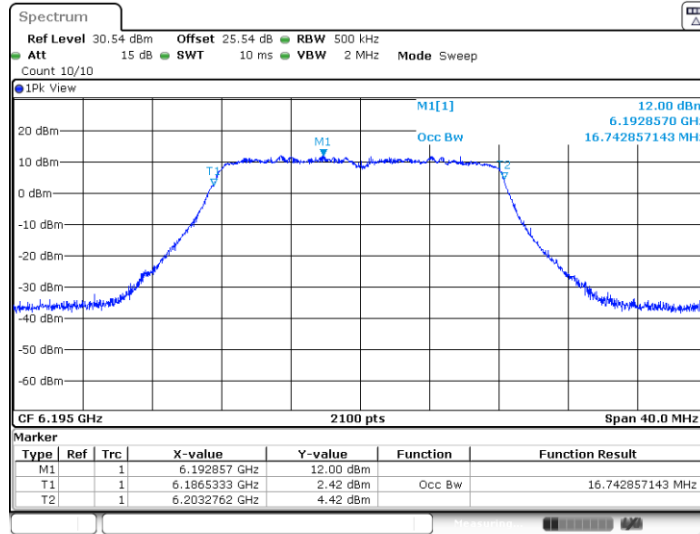


Test Graphs

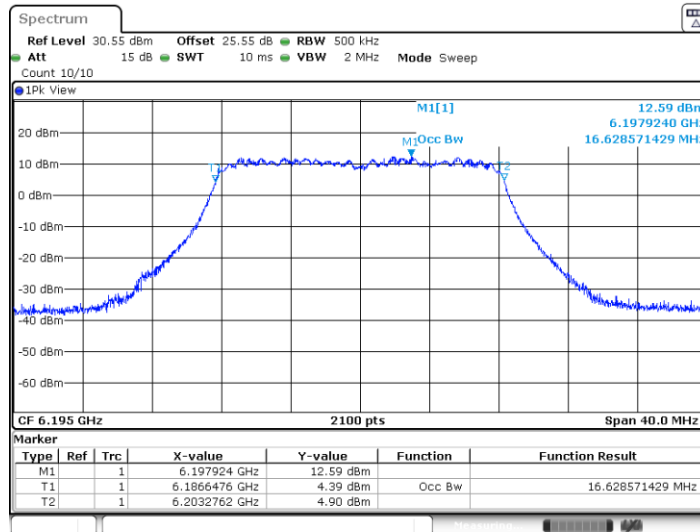




11A-CDD_Ant8_6195

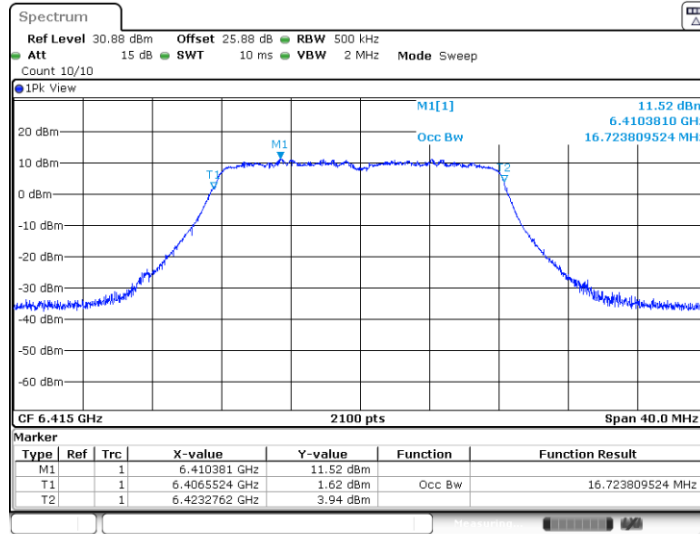


11A-CDD_Ant10_6195



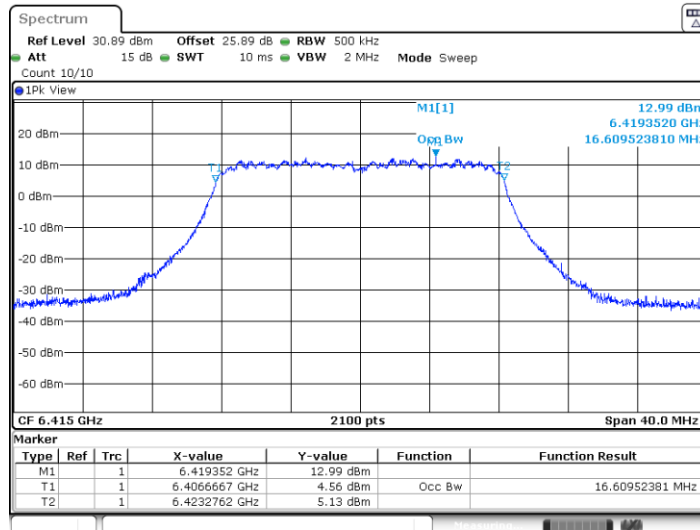


11A-CDD_Ant8_6415



Date: 10 AUG 2024 15:18:48

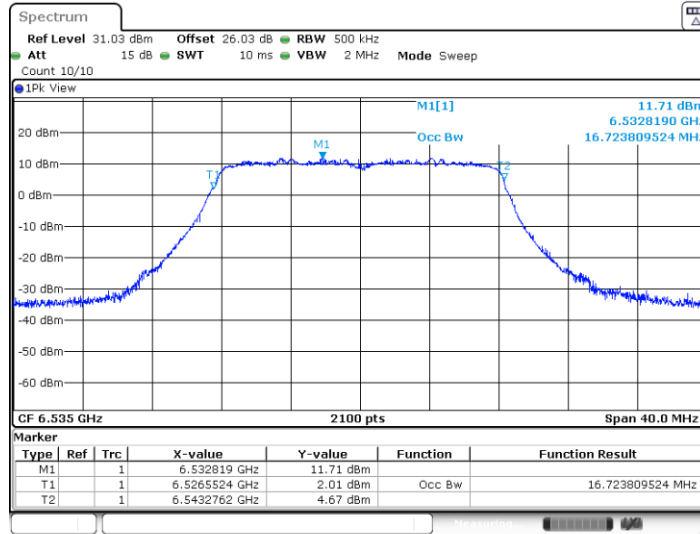
11A-CDD_Ant10_6415



Date: 10 AUG 2024 15:19:30

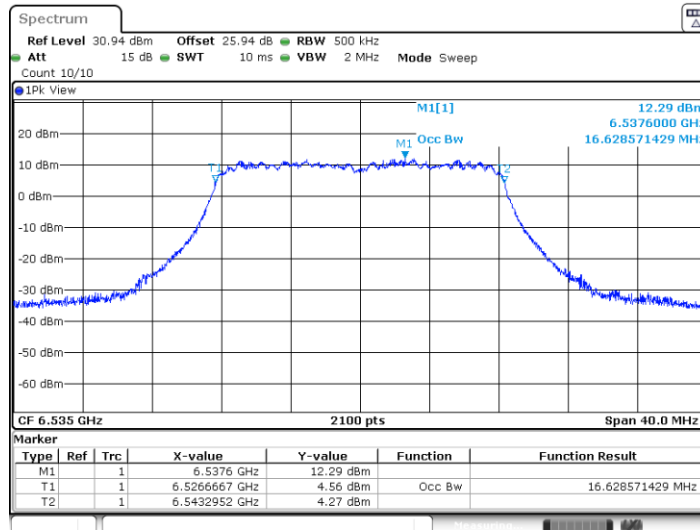


11A-CDD_Ant8_6535



Date: 10 AUG 2024 15:20:43

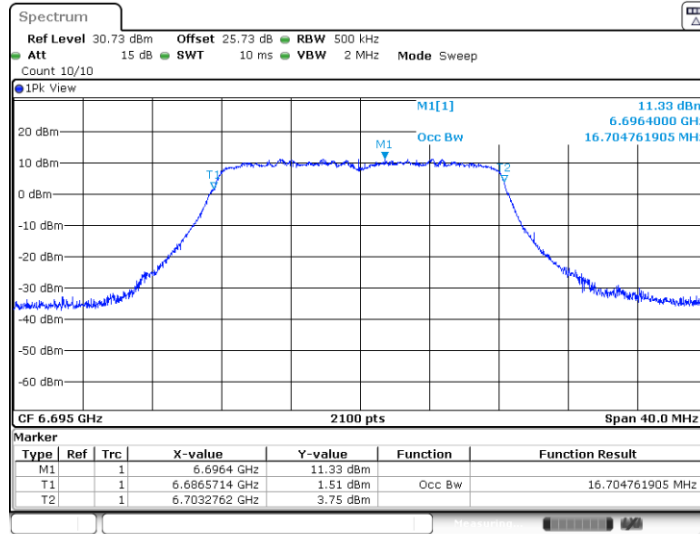
11A-CDD_Ant10_6535



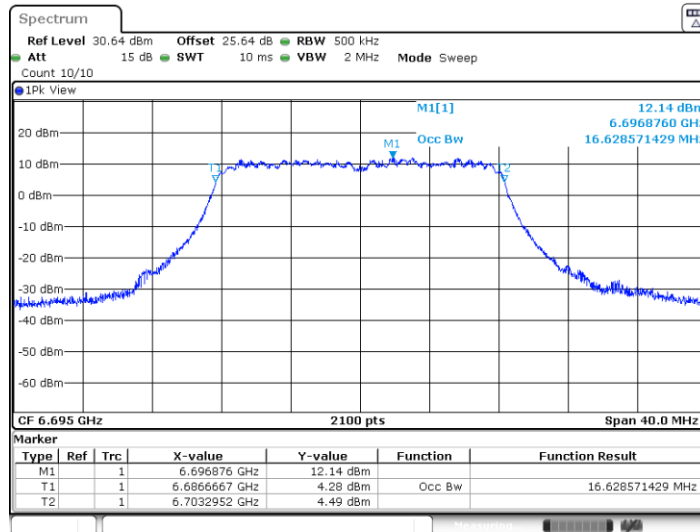
Date: 10 AUG 2024 15:21:26



11A-CDD_Ant8_6695

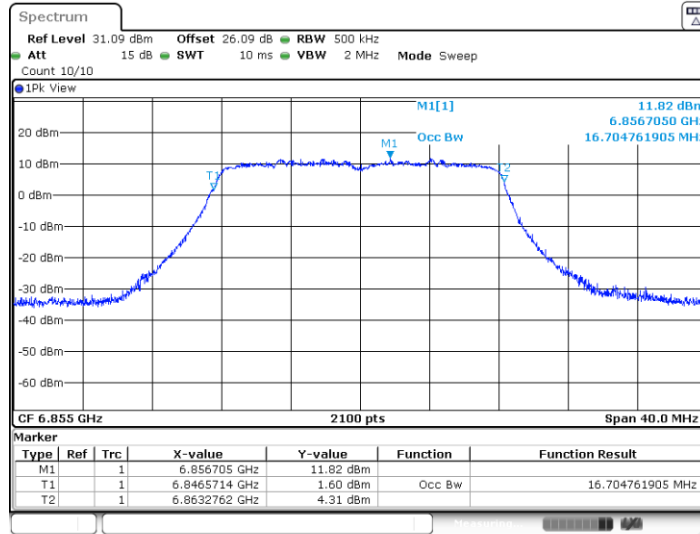


11A-CDD_Ant10_6695



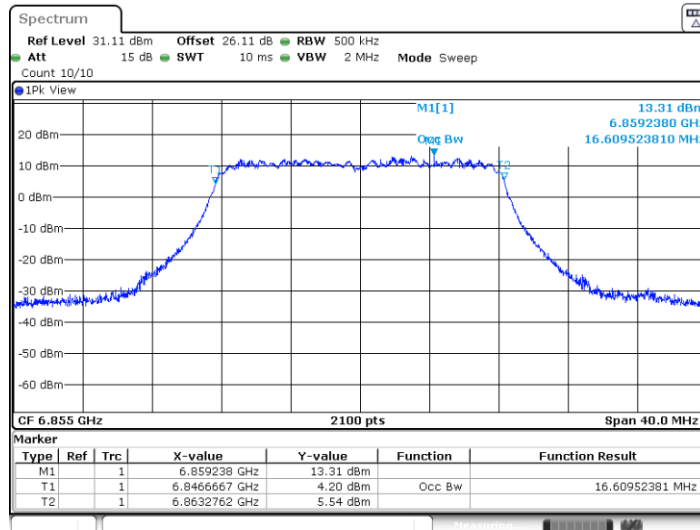


11A-CDD_Ant8_6855



Date: 10 AUG 2024 15:24:00

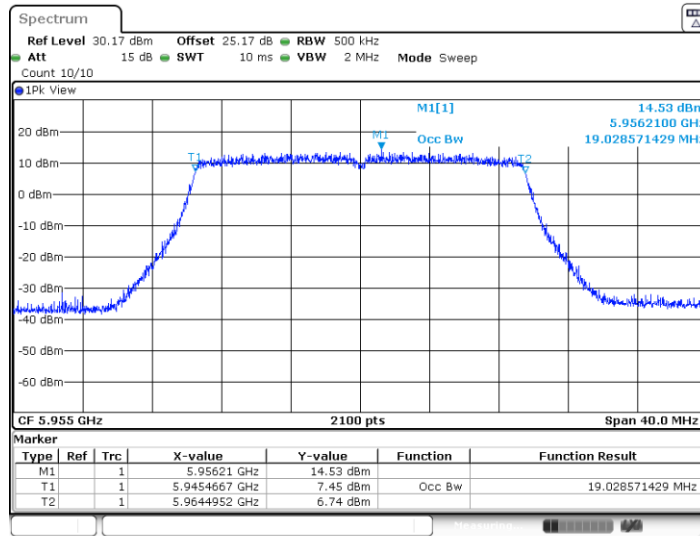
11A-CDD_Ant10_6855



Date: 10 AUG 2024 15:24:43

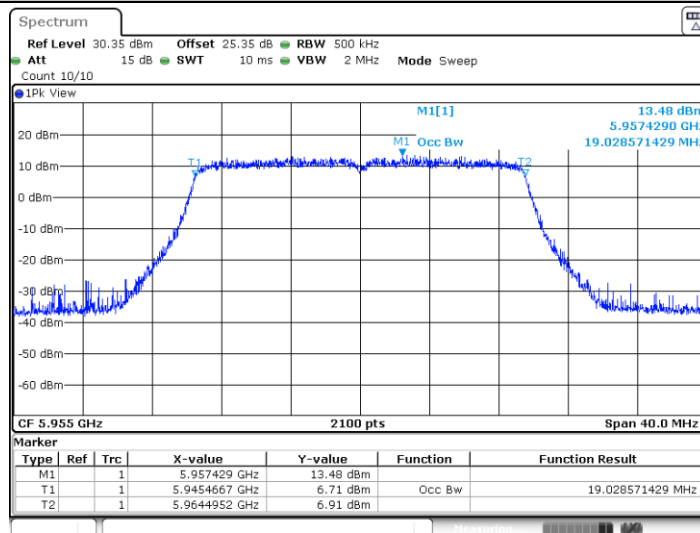


11AX20MIMO_Ant8_5955



Date: 10 AUG 2024 15:28:06

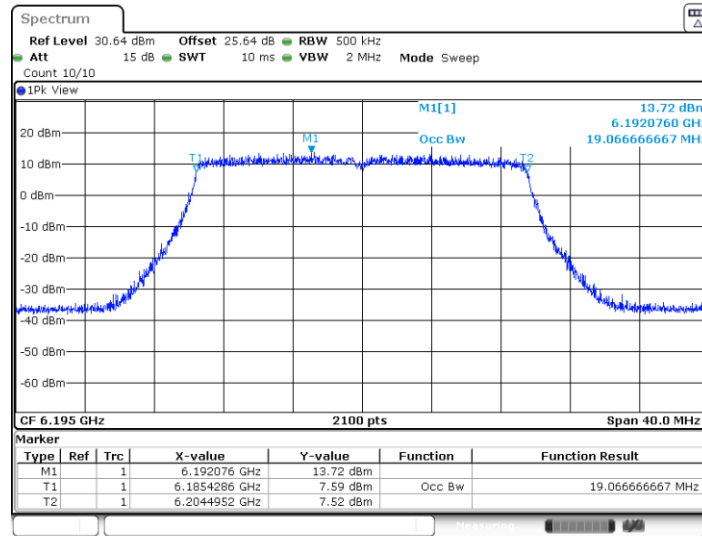
11AX20MIMO_Ant10_5955



Date: 10 AUG 2024 15:28:57

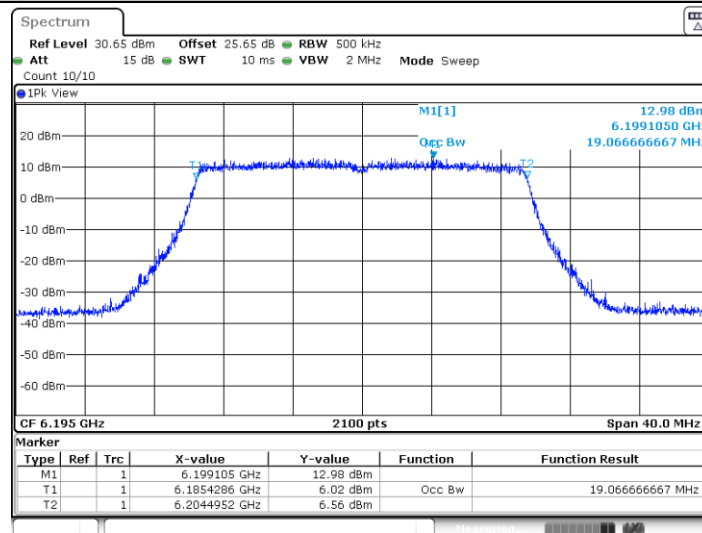


11AX20MIMO_Ant8_6195



Date: 10 AUG 2024 15:33:15

11AX20MIMO_Ant10_6195



Date: 10 AUG 2024 15:33:58